Computer algebra independent integration tests

1-Algebraic-functions/1.2-Trinomial-products/1.2.1-Quadratic/1.2.1.3-d+e-x-^m-f+g-x-a+b-x+c-x^2-^p

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June 29, 2021 Compiled on June 29, 2021 at 4:29am

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3.215 $\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$ 1163

3.216 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx$ 1167

3.217 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx$ 1170

3.218 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx$ 1173

3.219 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx$ 1176

3.220 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx$ 1179

3.221 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx$ 1182

3.222 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx$ 1186

3.223 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx$ 1190

3.224 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{17/2}}\,dx$ 1193

3.225 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$ 1197

3.226 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$ 1200

3.227 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$ 1203

3.228 $\int \frac{\sqrt{x}\,(A+Bx)}{\sqrt{bx+cx^2}}\,dx$ 1206

3.229 $\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{bx+cx^2}}\,dx$ 1209

3.230 $\int \frac{A+Bx}{x^{3/2}\sqrt{bx+cx^2}}\,dx$ 1212

3.231 $\int \frac{A+Bx}{x^{5/2}\sqrt{bx+cx^2}}\,dx$ 1215

3.232 $\int \frac{A+Bx}{x^{7/2}\sqrt{bx+cx^2}}\,dx$ 1218

3.233 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$ 1221

3.234 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$ 1224

3.235 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$ 1227

3.236 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}} \, dx$ 1230

3.237 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{3/2}} \, dx$ 1233

3.238 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{3/2}} \, dx$ 1236

3.239 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{3/2}} \, dx$ 1239

3.240 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^{3/2}} \, dx$ 1243

3.241 $\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)^{3/2}} \, dx$ 1247

3.242 $\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1251

3.243 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1254

3.244 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1257

3.245 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1260

3.246 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1263

3.247 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$ 1266

3.248 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{5/2}} \, dx$ 1270

3.249 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{5/2}} \, dx$ 1274

3.250 $\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p \, dx$ 1278

3.251 $\int x^3(A+Bx)\left(a+cx^2\right) \, dx$ 1280

3.252 $\int x^2(A+Bx)\left(a+cx^2\right) \, dx$ 1282

3.253 $\int x(A+Bx)\left(a+cx^2\right) \, dx$ 1284

3.254 $\int (A+Bx)\left(a+cx^2\right) \, dx$ 1286

3.255 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x} \, dx$ 1288

3.256 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^2} \, dx$ 1290

3.257 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^3} \, dx$ 1292

3.258 $\int x^3(A+Bx)\left(a+cx^2\right)^2 \, dx$ 1294

3.259 $\int x^2(A+Bx)\left(a+cx^2\right)^2 \, dx$ 1296

3.260 $\int x(A+Bx)\left(a+cx^2\right)^2 \, dx$ 1298

3.261 $\int (A+Bx)\left(a+cx^2\right)^2 \, dx$ 1300

3.262 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x} \, dx$ 1302

3.263 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2} \, dx$ 1304

3.264 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3} \, dx$ 1306

3.265 $\int x^3(A+Bx)\left(a+cx^2\right)^3 \, dx$ 1308

3.266 $\int x^2(A+Bx)\left(a+cx^2\right)^3 \, dx$ 1310

3.267 $\int x(A+Bx)\left(a+cx^2\right)^3 \, dx$ 1312

3.268 $\int (A+Bx)\left(a+cx^2\right)^3 \, dx$ 1314

3.269 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x} \, dx$ 1317
3.270 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^2} \, dx$ 1319
3.271 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3} \, dx$ 1321
3.272 $\int x^3(A+Bx)\left(a+cx^2\right)^4 \, dx$ 1323
3.273 $\int x^2(A+Bx)\left(a+cx^2\right)^4 \, dx$ 1325
3.274 $\int x(A+Bx)\left(a+cx^2\right)^4 \, dx$ 1327
3.275 $\int (A+Bx)\left(a+cx^2\right)^4 \, dx$ 1329
3.276 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x} \, dx$ 1332
3.277 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2} \, dx$ 1334
3.278 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3} \, dx$ 1336
3.279 $\int \frac{x^4(d+ex)}{a+cx^2} \, dx$ 1339
3.280 $\int \frac{x^3(d+ex)}{a+cx^2} \, dx$ 1342
3.281 $\int \frac{x^2(d+ex)}{a+cx^2} \, dx$ 1345
3.282 $\int \frac{x(d+ex)}{a+cx^2} \, dx$ 1348
3.283 $\int \frac{d+ex}{a+cx^2} \, dx$ 1351
3.284 $\int \frac{d+ex}{x\left(a+cx^2\right)} \, dx$ 1354
3.285 $\int \frac{d+ex}{x^2\left(a+cx^2\right)} \, dx$ 1357
3.286 $\int \frac{d+ex}{x^3\left(a+cx^2\right)} \, dx$ 1360
3.287 $\int \frac{d+ex}{x^4\left(a+cx^2\right)} \, dx$ 1363
3.288 $\int \frac{d+ex}{a-cx^2} \, dx$ 1366
3.289 $\int \frac{x^4(d+ex)}{\left(a+cx^2\right)^2} \, dx$ 1369
3.290 $\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2} \, dx$ 1372
3.291 $\int \frac{x^2(d+ex)}{\left(a+cx^2\right)^2} \, dx$ 1375
3.292 $\int \frac{x(d+ex)}{\left(a+cx^2\right)^2} \, dx$ 1378
3.293 $\int \frac{d+ex}{\left(a+cx^2\right)^2} \, dx$ 1381
3.294 $\int \frac{d+ex}{x\left(a+cx^2\right)^2} \, dx$ 1384
3.295 $\int \frac{d+ex}{x^2\left(a+cx^2\right)^2} \, dx$ 1387
3.296 $\int \frac{d+ex}{x^3\left(a+cx^2\right)^2} \, dx$ 1390
3.297 $\int \frac{x^4(d+ex)}{a^2-c^2x^2} \, dx$ 1394
3.298 $\int \frac{x^3(d+ex)}{a^2-c^2x^2} \, dx$ 1397
3.299 $\int \frac{x^2(d+ex)}{a^2-c^2x^2} \, dx$ 1400
3.300 $\int \frac{x(d+ex)}{a^2-c^2x^2} \, dx$ 1403
3.301 $\int \frac{d+ex}{a^2-c^2x^2} \, dx$ 1406
3.302 $\int \frac{d+ex}{x\left(a^2-c^2x^2\right)} \, dx$ 1408

3.303 $\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)}\,dx$ . . . 1410

3.304 $\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)}\,dx$ . . . 1412

3.305 $\int \frac{d+ex}{x^4\left(a^2-c^2x^2\right)}\,dx$ . . . 1415

3.306 $\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1418

3.307 $\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1421

3.308 $\int \frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1424

3.309 $\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1427

3.310 $\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1429

3.311 $\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1432

3.312 $\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1435

3.313 $\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2}\,dx$ . . . 1438

3.314 $\int x^4(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1441

3.315 $\int x^3(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1445

3.316 $\int x^2(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1448

3.317 $\int x(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1451

3.318 $\int (A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1454

3.319 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x}\,dx$ . . . 1457

3.320 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^2}\,dx$ . . . 1461

3.321 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^3}\,dx$ . . . 1465

3.322 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^4}\,dx$ . . . 1469

3.323 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^5}\,dx$ . . . 1472

3.324 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^6}\,dx$ . . . 1476

3.325 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^7}\,dx$ . . . 1480

3.326 $\int x^4(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1484

3.327 $\int x^3(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1488

3.328 $\int x^2(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1492

3.329 $\int x(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1495

3.330 $\int (A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1498

3.331 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x}\,dx$ . . . 1501

3.332 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx$ . . . 1505

3.333 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx$ . . . 1509

3.334 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx$ . . . 1513

3.335 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^5}\,dx$ . . . 1517

3.336 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx$ . . . 1521

3.337 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx$ 1525

3.338 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^8}\,dx$ 1529

3.339 $\int x^4(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ 1533

3.340 $\int x^3(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ 1537

3.341 $\int x^2(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ 1541

3.342 $\int x(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ 1545

3.343 $\int (A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ 1549

3.344 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x}\,dx$ 1553

3.345 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^2}\,dx$ 1557

3.346 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^3}\,dx$ 1561

3.347 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^4}\,dx$ 1565

3.348 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^5}\,dx$ 1569

3.349 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^6}\,dx$ 1573

3.350 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^7}\,dx$ 1577

3.351 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx$ 1581

3.352 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx$ 1585

3.353 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^{10}}\,dx$ 1589

3.354 $\int \frac{x^4(A+Bx)}{\sqrt{a+cx^2}}\,dx$ 1594

3.355 $\int \frac{x^3(A+Bx)}{\sqrt{a+cx^2}}\,dx$ 1597

3.356 $\int \frac{x^2(A+Bx)}{\sqrt{a+cx^2}}\,dx$ 1600

3.357 $\int \frac{x(A+Bx)}{\sqrt{a+cx^2}}\,dx$ 1603

3.358 $\int \frac{A+Bx}{\sqrt{a+cx^2}}\,dx$ 1606

3.359 $\int \frac{A+Bx}{x\sqrt{a+cx^2}}\,dx$ 1609

3.360 $\int \frac{A+Bx}{x^2\sqrt{a+cx^2}}\,dx$ 1612

3.361 $\int \frac{A+Bx}{x^3\sqrt{a+cx^2}}\,dx$ 1615

3.362 $\int \frac{A+Bx}{x^4\sqrt{a+cx^2}}\,dx$ 1618

3.363 $\int \frac{A+Bx}{x^5\sqrt{a+cx^2}}\,dx$ 1622

3.364 $\int \frac{A+Bx}{x^6\sqrt{a+cx^2}}\,dx$ 1626

3.365 $\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ 1630

3.366 $\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ 1634

3.367 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ 1637

3.368 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ 1640

3.369 $\int \frac{A+Bx}{\left(a+cx^2\right)^{3/2}}\,dx$ 1643

3.370 $\int \frac{A+Bx}{x\left(a+cx^2\right)^{3/2}}\,dx$ 1645

3.371 $\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{3/2}}\,dx$ 1648

3.372 $\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{3/2}}\,dx$ 1651

3.373 $\int \frac{A+Bx}{x^4\left(a+cx^2\right)^{3/2}}\,dx$ 1655

3.374 $\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ 1659

3.375 $\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ 1663

3.376 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ 1666

3.377 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ 1669

3.378 $\int \frac{A+Bx}{\left(a+cx^2\right)^{5/2}}\,dx$ 1672

3.379 $\int \frac{A+Bx}{x\left(a+cx^2\right)^{5/2}}\,dx$ 1675

3.380 $\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{5/2}}\,dx$ 1679

3.381 $\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{5/2}}\,dx$ 1683

3.382 $\int \frac{d+ex}{\left(a+cx^2\right)^{7/2}}\,dx$ 1687

3.383 $\int \frac{d+ex}{\left(a+cx^2\right)^{9/2}}\,dx$ 1690

3.384 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)\,dx$ 1694

3.385 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)\,dx$ 1696

3.386 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)\,dx$ 1698

3.387 $\int \sqrt{x}\,(A+Bx)\left(a+cx^2\right)\,dx$ 1700

3.388 $\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{x}}\,dx$ 1702

3.389 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{3/2}}\,dx$ 1704

3.390 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{5/2}}\,dx$ 1706

3.391 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{7/2}}\,dx$ 1708

3.392 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{9/2}}\,dx$ 1710

3.393 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^2\,dx$ 1712

3.394 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^2\,dx$ 1714

3.395 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^2\,dx$ 1716

3.396 $\int \sqrt{x}\,(A+Bx)\left(a+cx^2\right)^2\,dx$ 1718

3.397 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{x}}\,dx$ 1720

3.398 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{3/2}}\,dx$ 1722

3.399 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{5/2}}\,dx$ 1724

3.400 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{7/2}}\,dx$ 1726

3.401 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{9/2}}\,dx$ 1728

3.402 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^3\,dx$ 1730

3.403 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^3\,dx$ . . . 1733
3.404 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^3\,dx$ . . . 1736
3.405 $\int \sqrt{x}\,(A+Bx)\left(a+cx^2\right)^3\,dx$ . . . 1739
3.406 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{x}}\,dx$ . . . 1741
3.407 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{3/2}}\,dx$ . . . 1744
3.408 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{5/2}}\,dx$ . . . 1747
3.409 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{7/2}}\,dx$ . . . 1750
3.410 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{9/2}}\,dx$ . . . 1753
3.411 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{11/2}}\,dx$ . . . 1756
3.412 $\int \frac{x^{5/2}(A+Bx)}{a+cx^2}\,dx$ . . . 1759
3.413 $\int \frac{x^{3/2}(A+Bx)}{a+cx^2}\,dx$ . . . 1765
3.414 $\int \frac{\sqrt{x}\,(A+Bx)}{a+cx^2}\,dx$ . . . 1770
3.415 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx$ . . . 1775
3.416 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)}\,dx$ . . . 1780
3.417 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)}\,dx$ . . . 1785
3.418 $\int \frac{A+Bx}{x^{7/2}\left(a+cx^2\right)}\,dx$ . . . 1791
3.419 $\int \frac{A+Bx}{x^{9/2}\left(a+cx^2\right)}\,dx$ . . . 1797
3.420 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx$ . . . 1802
3.421 $\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx$ . . . 1808
3.422 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+cx^2\right)^2}\,dx$ . . . 1814
3.423 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^2}\,dx$ . . . 1820
3.424 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^2}\,dx$ . . . 1826
3.425 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)^2}\,dx$ . . . 1832
3.426 $\int \frac{x^{7/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$ . . . 1838
3.427 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$ . . . 1844
3.428 $\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$ . . . 1850
3.429 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+cx^2\right)^3}\,dx$ . . . 1856
3.430 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^3}\,dx$ . . . 1862
3.431 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^3}\,dx$ . . . 1868
3.432 $\int \frac{1-x}{\sqrt{x}\left(1+x^2\right)}\,dx$ . . . 1874
3.433 $\int (ex)^{7/2}(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1877
3.434 $\int (ex)^{5/2}(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1882

3.435 $\int (ex)^{3/2}(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1886

3.436 $\int \sqrt{ex}\,(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 1890

3.437 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx$ . . . 1894

3.438 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{3/2}}\,dx$ . . . 1898

3.439 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{5/2}}\,dx$ . . . 1902

3.440 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{7/2}}\,dx$ . . . 1906

3.441 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{9/2}}\,dx$ . . . 1910

3.442 $\int (ex)^{5/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1914

3.443 $\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1919

3.444 $\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 1924

3.445 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx$ . . . 1928

3.446 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{3/2}}\,dx$ . . . 1932

3.447 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{5/2}}\,dx$ . . . 1937

3.448 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{7/2}}\,dx$ . . . 1941

3.449 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{9/2}}\,dx$ . . . 1946

3.450 $\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ . . . 1950

3.451 $\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ . . . 1955

3.452 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{\sqrt{ex}}\,dx$ . . . 1960

3.453 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{3/2}}\,dx$ . . . 1965

3.454 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{5/2}}\,dx$ . . . 1970

3.455 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{7/2}}\,dx$ . . . 1975

3.456 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{9/2}}\,dx$ . . . 1979

3.457 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{11/2}}\,dx$ . . . 1984

3.458 $\int \frac{(ex)^{7/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$ . . . 1988

3.459 $\int \frac{(ex)^{5/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$ . . . 1993

3.460 $\int \frac{(ex)^{3/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$ . . . 1997

3.461 $\int \frac{\sqrt{ex}\,(A+Bx)}{\sqrt{a+cx^2}}\,dx$ . . . 2001

3.462 $\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx$ . . . 2005

3.463 $\int \frac{A+Bx}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx$ . . . 2008

3.464 $\int \frac{A+Bx}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx$ . . . 2012

3.465 $\int \frac{A+Bx}{(ex)^{7/2}\sqrt{a+cx^2}}\,dx$ . . . 2016

3.466 $\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2020

3.467 $\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2024

3.468 $\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2028

3.469 $\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2032

3.470 $\int \frac{A+Bx}{\sqrt{ex}\,\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2036

3.471 $\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2040

3.472 $\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2044

3.473 $\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2048

3.474 $\int \frac{(ex)^{13/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2053

3.475 $\int \frac{(ex)^{11/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2058

3.476 $\int \frac{(ex)^{9/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2063

3.477 $\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2068

3.478 $\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2072

3.479 $\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2077

3.480 $\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2082

3.481 $\int \frac{A+Bx}{\sqrt{ex}\,\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2087

3.482 $\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2091

3.483 $\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2096

3.484 $\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2101

3.485 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx$ . . . 2106

3.486 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx$ . . . 2115

3.487 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^2\,dx$ . . . 2121

3.488 $\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx$ . . . 2125

3.489 $\int \frac{(ex)^m(A+Bx)}{a+cx^2}\,dx$ . . . 2128

3.490 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^2}\,dx$ . . . 2131

3.491 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^3}\,dx$ . . . 2134

3.492 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$ . . . 2138

3.493 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$ . . . 2141

3.494 $\int (ex)^m(A+Bx)\sqrt{a+cx^2}\,dx$ . . . 2144

3.495 $\int \frac{(ex)^m(A+Bx)}{\sqrt{a+cx^2}}\,dx$ . . . 2147

3.496 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$ . . . 2150

3.497 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$ . . . 2153

3.498 $\int \frac{x^m(1+ax)}{\left(1-a^2x^2\right)^2}\,dx$ 2156

3.499 $\int \frac{x^m}{(1-ax)^2(1+ax)}\,dx$ 2159

3.500 $\int \left(\frac{x^m}{\left(1-a^2x^2\right)^2}+\frac{ax^{1+m}}{\left(1-a^2x^2\right)^2}\right)dx$ 2162

3.501 $\int \frac{x^m}{(1-ax)\left(1-a^2x^2\right)}\,dx$ 2165

3.502 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^p\,dx$ 2168

3.503 $\int x^3(d+ex)\left(a+cx^2\right)^p\,dx$ 2171

3.504 $\int x^2(d+ex)\left(a+cx^2\right)^p\,dx$ 2174

3.505 $\int x(d+ex)\left(a+cx^2\right)^p\,dx$ 2177

3.506 $\int (d+ex)\left(a+cx^2\right)^p\,dx$ 2180

3.507 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x}\,dx$ 2183

3.508 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^2}\,dx$ 2186

3.509 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^3}\,dx$ 2189

3.510 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)dx$ 2192

3.511 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)dx$ 2195

3.512 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)dx$ 2198

3.513 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)dx$ 2201

3.514 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)dx$ 2204

3.515 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x}\,dx$ 2206

3.516 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2}\,dx$ 2209

3.517 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx$ 2211

3.518 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4}\,dx$ 2214

3.519 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx$ 2217

3.520 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^6}\,dx$ 2220

3.521 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx$ 2223

3.522 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^8}\,dx$ 2226

3.523 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2dx$ 2229

3.524 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2dx$ 2232

3.525 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2dx$ 2235

3.526 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2dx$ 2238

3.527 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2dx$ 2241

3.528 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx$ 2244

3.529 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx$ 2247

3.530 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx$ 2250

3.531 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx$ 2253

3.532 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx$ 2256

3.533 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx$ 2259

3.534 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx$ . . . 2262
3.535 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx$ . . . 2265
3.536 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx$ . . . 2268
3.537 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx$ . . . 2271
3.538 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}}\,dx$ . . . 2274
3.539 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2277
3.540 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2280
3.541 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2283
3.542 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2286
3.543 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2289
3.544 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2292
3.545 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x}\,dx$ . . . 2295
3.546 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx$ . . . 2298
3.547 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx$ . . . 2301
3.548 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^4}\,dx$ . . . 2304
3.549 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx$ . . . 2307
3.550 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx$ . . . 2310
3.551 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx$ . . . 2313
3.552 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx$ . . . 2316
3.553 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx$ . . . 2319
3.554 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx$ . . . 2322
3.555 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}}\,dx$ . . . 2325
3.556 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}}\,dx$ . . . 2328
3.557 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx$ . . . 2331
3.558 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx$ . . . 2334
3.559 $\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2337
3.560 $\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2340
3.561 $\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2343
3.562 $\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2346
3.563 $\int x^3(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2349
3.564 $\int x^2(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2352
3.565 $\int x(d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2355
3.566 $\int (d+ex)\left(1+2x+x^2\right)^5\,dx$ . . . 2358
3.567 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx$ . . . 2361

3.568 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2}\,dx$ 2364
3.569 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^3}\,dx$ 2367
3.570 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx$ 2370
3.571 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx$ 2373
3.572 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^6}\,dx$ 2376
3.573 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7}\,dx$ 2379
3.574 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^8}\,dx$ 2382
3.575 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx$ 2385
3.576 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$ 2388
3.577 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$ 2391
3.578 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{12}}\,dx$ 2394
3.579 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{13}}\,dx$ 2397
3.580 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$ 2400
3.581 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$ 2403
3.582 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$ 2406
3.583 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$ 2409
3.584 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$ 2412
3.585 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$ 2415
3.586 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$ 2418
3.587 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$ 2421
3.588 $\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx$ 2424
3.589 $\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx$ 2427
3.590 $\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx$ 2430
3.591 $\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx$ 2433
3.592 $\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx$ 2436
3.593 $\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx$ 2439
3.594 $\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx$ 2442
3.595 $\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx$ 2445
3.596 $\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx$ 2448
3.597 $\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx$ 2450
3.598 $\int x(1+x)\left(1+2x+x^2\right)^5\,dx$ 2452
3.599 $\int (1+x)\left(1+2x+x^2\right)^5\,dx$ 2454
3.600 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx$ 2456

3.601 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx$ 2459

3.602 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx$ 2462

3.603 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx$ 2465

3.604 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^5}\,dx$ 2468

3.605 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6}\,dx$ 2471

3.606 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^7}\,dx$ 2474

3.607 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx$ 2477

3.608 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^9}\,dx$ 2480

3.609 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$ 2483

3.610 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$ 2486

3.611 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}}\,dx$ 2489

3.612 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}}\,dx$ 2492

3.613 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$ 2494

3.614 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$ 2497

3.615 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$ 2500

3.616 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$ 2503

3.617 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$ 2506

3.618 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$ 2509

3.619 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$ 2512

3.620 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$ 2515

3.621 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx$ 2518

3.622 $\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ 2521

3.623 $\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ 2524

3.624 $\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ 2527

3.625 $\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ 2530

3.626 $\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ 2533

3.627 $\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$ 2536

3.628 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx$ 2538

3.629 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)}\,dx$ 2540

3.630 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)}\,dx$ 2543

3.631 $\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)}\,dx$ 2546

3.632 $\int \frac{A+Bx}{x^5\left(a^2+2abx+b^2x^2\right)}\,dx$ 2549

3.633 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2552
3.634 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2555
3.635 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2558
3.636 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2561
3.637 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2564
3.638 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2567
3.639 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2569
3.640 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2572
3.641 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2575
3.642 $\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2578
3.643 $\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2581
3.644 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2584
3.645 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2587
3.646 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2590
3.647 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2593
3.648 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2596
3.649 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2599
3.650 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2601
3.651 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2604
3.652 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2607
3.653 $\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 2610
3.654 $\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 2613
3.655 $\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 2616
3.656 $\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 2619
3.657 $\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 2622
3.658 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x}\,dx$ 2625
3.659 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^2}\,dx$ 2628
3.660 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx$ 2631
3.661 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^4}\,dx$ 2634
3.662 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^5}\,dx$ 2637
3.663 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^6}\,dx$ 2640
3.664 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^7}\,dx$ 2643

3.665 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2646
3.666 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2649
3.667 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2652
3.668 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2655
3.669 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2658
3.670 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 2661
3.671 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x}\,dx$ . . . 2664
3.672 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^2}\,dx$ . . . 2667
3.673 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^3}\,dx$ . . . 2670
3.674 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^4}\,dx$ . . . 2673
3.675 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx$ . . . 2676
3.676 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^6}\,dx$ . . . 2679
3.677 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^7}\,dx$ . . . 2682
3.678 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^8}\,dx$ . . . 2685
3.679 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^9}\,dx$ . . . 2688
3.680 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{10}}\,dx$ . . . 2691
3.681 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{11}}\,dx$ . . . 2694
3.682 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{12}}\,dx$ . . . 2697
3.683 $\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2700
3.684 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2703
3.685 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2706
3.686 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2709
3.687 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2712
3.688 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2715
3.689 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 2718
3.690 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x}\,dx$ . . . 2721
3.691 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^2}\,dx$ . . . 2724
3.692 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^3}\,dx$ . . . 2727
3.693 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^4}\,dx$ . . . 2730
3.694 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^5}\,dx$ . . . 2733
3.695 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^6}\,dx$ . . . 2736
3.696 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx$ . . . 2739
3.697 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^8}\,dx$ . . . 2742

3.698 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^9}\,dx$ 2745

3.699 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{10}}\,dx$ 2748

3.700 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{11}}\,dx$ 2751

3.701 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{12}}\,dx$ 2754

3.702 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{13}}\,dx$ 2757

3.703 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{14}}\,dx$ 2760

3.704 $\int \frac{x^4(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2764

3.705 $\int \frac{x^3(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2767

3.706 $\int \frac{x^2(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2770

3.707 $\int \frac{x(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2773

3.708 $\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2776

3.709 $\int \frac{A+Bx}{x\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2779

3.710 $\int \frac{A+Bx}{x^2\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2782

3.711 $\int \frac{A+Bx}{x^3\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2785

3.712 $\int \frac{A+Bx}{x^4\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2788

3.713 $\int \frac{A+Bx}{x^5\sqrt{a^2+2abx+b^2x^2}}\,dx$ 2791

3.714 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2794

3.715 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2797

3.716 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2800

3.717 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2803

3.718 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2806

3.719 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2808

3.720 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2811

3.721 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 2814

3.722 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2817

3.723 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2820

3.724 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2823

3.725 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2826

3.726 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2829

3.727 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2832

3.728 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 2835

3.729 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$ 2838

3.730 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 2841
3.731 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 2844
3.732 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 2847
3.733 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{x}}\,dx$ . . . 2850
3.734 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{3/2}}\,dx$ . . . 2853
3.735 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{5/2}}\,dx$ . . . 2856
3.736 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{7/2}}\,dx$ . . . 2859
3.737 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{9/2}}\,dx$ . . . 2862
3.738 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 2865
3.739 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 2868
3.740 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 2871
3.741 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 2874
3.742 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{x}}\,dx$ . . . 2877
3.743 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{3/2}}\,dx$ . . . 2880
3.744 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{5/2}}\,dx$ . . . 2883
3.745 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{7/2}}\,dx$ . . . 2886
3.746 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{9/2}}\,dx$ . . . 2889
3.747 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2892
3.748 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2895
3.749 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2898
3.750 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$ . . . 2901
3.751 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{x}}\,dx$ . . . 2904
3.752 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{3/2}}\,dx$ . . . 2907
3.753 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{5/2}}\,dx$ . . . 2910
3.754 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{7/2}}\,dx$ . . . 2913
3.755 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{9/2}}\,dx$ . . . 2916
3.756 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11/2}}\,dx$ . . . 2919
3.757 $\int \frac{x^{7/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ . . . 2922
3.758 $\int \frac{x^{5/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ . . . 2926
3.759 $\int \frac{x^{3/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ . . . 2930
3.760 $\int \frac{\sqrt{x}\,(A+Bx)}{a^2+2abx+b^2x^2}\,dx$ . . . 2934
3.761 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)}\,dx$ . . . 2938
3.762 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$ . . . 2942
3.763 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx$ . . . 2946
3.764 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$ . . . 2950

3.765 $\int \frac{A+Bx}{x^{9/2}\left(a^2+2abx+b^2x^2\right)}\,dx$ 2954

3.766 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2958

3.767 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2962

3.768 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2967

3.769 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2971

3.770 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2976

3.771 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2980

3.772 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$ 2985

3.773 $\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2989

3.774 $\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2993

3.775 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 2997

3.776 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3001

3.777 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3005

3.778 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3009

3.779 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3013

3.780 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3017

3.781 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$ 3021

3.782 $\int x^{7/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 3025

3.783 $\int x^{5/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 3028

3.784 $\int x^{3/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 3031

3.785 $\int \sqrt{x}\,(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$ 3034

3.786 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}}\,dx$ 3037

3.787 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{3/2}}\,dx$ 3040

3.788 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{5/2}}\,dx$ 3043

3.789 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{7/2}}\,dx$ 3046

3.790 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{9/2}}\,dx$ 3049

3.791 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ 3052

3.792 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ 3055

3.793 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ 3058

3.794 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ 3061

3.795 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{x}}\,dx$ 3064

3.796 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{3/2}}\,dx$ 3067

3.797 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{5/2}}\,dx$ 3070

3.798 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{7/2}}\,dx$ 3073

3.799 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{9/2}}\,dx$ 3076

3.800 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ 3079

3.801 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ 3082

3.802 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ 3085

3.803 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ 3088

3.804 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{x}}\,dx$ 3091

3.805 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{3/2}}\,dx$ 3094

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3.807 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{7/2}}\,dx$ 3100

3.808 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{9/2}}\,dx$ 3103

3.809 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3106

3.810 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3110

3.811 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3114

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3.813 $\int \frac{A+Bx}{\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3121

3.814 $\int \frac{A+Bx}{x^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3124

3.815 $\int \frac{A+Bx}{x^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3127

3.816 $\int \frac{A+Bx}{x^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3130

3.817 $\int \frac{A+Bx}{x^{9/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ 3134

3.818 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3138

3.819 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3142

3.820 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3146

3.821 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3150

3.822 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3154

3.823 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3158

3.824 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3162

3.825 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ 3166

3.826 $\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 3170

3.827 $\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ 3175

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3.845 $\int x(A+Bx)\left(a+bx+cx^2\right)\,dx$ 3249
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3.849 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^3}\,dx$ 3257
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3.851 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^5}\,dx$ 3261
3.852 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6}\,dx$ 3263
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3.854 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx$ 3267
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3.865 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^8}\,dx$ 3293

3.866 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^9}\,dx$ 3296

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3.870 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x}\,dx$ 3308

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3.873 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx$ 3317

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3.878 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx$ 3332

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3.880 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx$ 3338

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3.1000 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$ . . . 3786

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3.1246 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)^2}\,dx$ 4984
3.1247 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^3}\,dx$ 4997
3.1248 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^3}\,dx$ 5008
3.1249 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^3}\,dx$ 5018
3.1250 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^3}\,dx$ 5026
3.1251 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^3}\,dx$ 5034
3.1252 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^3}\,dx$ 5043
3.1253 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^3}\,dx$ 5053
3.1254 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^3}\,dx$ 5068
3.1255 $\int (A+Bx)\sqrt{d+ex}\,\sqrt{bx+cx^2}\,dx$ 5084
3.1256 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{d+ex}}\,dx$ 5089
3.1257 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{3/2}}\,dx$ 5093
3.1258 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{5/2}}\,dx$ 5097
3.1259 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{7/2}}\,dx$ 5102
3.1260 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$ 5108

3.1261 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$ 5113

3.1262 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$ 5118

3.1263 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$ 5123

3.1264 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{bx+cx^2}}\,dx$ 5129

3.1265 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{bx+cx^2}}\,dx$ 5134

3.1266 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx$ 5138

3.1267 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx$ 5142

3.1268 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{bx+cx^2}}\,dx$ 5145

3.1269 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{bx+cx^2}}\,dx$ 5149

3.1270 $\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{bx+cx^2}}\,dx$ 5153

3.1271 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$ 5159

3.1272 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$ 5164

3.1273 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$ 5169

3.1274 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{3/2}}\,dx$ 5173

3.1275 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}}\,dx$ 5177

3.1276 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx$ 5181

3.1277 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx$ 5186

3.1278 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$ 5192

3.1279 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$ 5198

3.1280 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$ 5203

3.1281 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{5/2}}\,dx$ 5208

3.1282 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{5/2}}\,dx$ 5213

3.1283 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx$ 5218

3.1284 $\int (A+Bx)(d+ex)^5\left(a+cx^2\right)\,dx$ 5224

3.1285 $\int (A+Bx)(d+ex)^4\left(a+cx^2\right)\,dx$ 5227

3.1286 $\int (A+Bx)(d+ex)^3\left(a+cx^2\right)\,dx$ 5230

3.1287 $\int (A+Bx)(d+ex)^2\left(a+cx^2\right)\,dx$ 5233

3.1288 $\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx$ 5236

3.1289 $\int (A+Bx)\left(a+cx^2\right)\,dx$ 5238

3.1290 $\int \frac{(A+Bx)\left(a+cx^2\right)}{d+ex}\,dx$ 5240

3.1291 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^2}\,dx$ 5243

3.1292 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx$ 5246

3.1293 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^4} \, dx$ 5249

3.1294 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^5} \, dx$ 5252

3.1295 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6} \, dx$ 5255

3.1296 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^7} \, dx$ 5258

3.1297 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^2 \, dx$ 5261

3.1298 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx$ 5264

3.1299 $\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^2 \, dx$ 5267

3.1300 $\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^2 \, dx$ 5270

3.1301 $\int (A+Bx)(d+ex) \left(a+cx^2\right)^2 \, dx$ 5273

3.1302 $\int (A+Bx) \left(a+cx^2\right)^2 \, dx$ 5275

3.1303 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{d+ex} \, dx$ 5277

3.1304 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2} \, dx$ 5280

3.1305 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3} \, dx$ 5283

3.1306 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4} \, dx$ 5286

3.1307 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5} \, dx$ 5289

3.1308 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6} \, dx$ 5292

3.1309 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7} \, dx$ 5295

3.1310 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^8} \, dx$ 5298

3.1311 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9} \, dx$ 5301

3.1312 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}} \, dx$ 5304

3.1313 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^3 \, dx$ 5307

3.1314 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^3 \, dx$ 5311

3.1315 $\int (A+Bx)(d+ex)^3 \left(a+cx^2\right)^3 \, dx$ 5315

3.1316 $\int (A+Bx)(d+ex)^2 \left(a+cx^2\right)^3 \, dx$ 5318

3.1317 $\int (A+Bx)(d+ex) \left(a+cx^2\right)^3 \, dx$ 5321

3.1318 $\int (A+Bx) \left(a+cx^2\right)^3 \, dx$ 5324

3.1319 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex} \, dx$ 5327

3.1320 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2} \, dx$ 5332

3.1321 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^3} \, dx$ 5336

3.1322 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^4} \, dx$ 5340

3.1323 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5} \, dx$ 5344

3.1324 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6} \, dx$ 5348

3.1325 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7} \, dx$ 5352

3.1326 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^8}\,dx$ 5356

3.1327 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9}\,dx$ 5360

3.1328 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx$ 5364

3.1329 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}}\,dx$ 5368

3.1330 $\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx$ 5372

3.1331 $\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx$ 5376

3.1332 $\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx$ 5380

3.1333 $\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx$ 5383

3.1334 $\int \frac{A+Bx}{a+cx^2}\,dx$ 5386

3.1335 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)}\,dx$ 5389

3.1336 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)}\,dx$ 5392

3.1337 $\int \frac{A+Bx}{(d+ex)^3\left(a+cx^2\right)}\,dx$ 5396

3.1338 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx$ 5401

3.1339 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2}\,dx$ 5406

3.1340 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2}\,dx$ 5410

3.1341 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^2}\,dx$ 5414

3.1342 $\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^2}\,dx$ 5418

3.1343 $\int \frac{A+Bx}{\left(a+cx^2\right)^2}\,dx$ 5421

3.1344 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^2}\,dx$ 5424

3.1345 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^2}\,dx$ 5428

3.1346 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3}\,dx$ 5433

3.1347 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3}\,dx$ 5438

3.1348 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx$ 5443

3.1349 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3}\,dx$ 5447

3.1350 $\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3}\,dx$ 5451

3.1351 $\int \frac{A+Bx}{\left(a+cx^2\right)^3}\,dx$ 5454

3.1352 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx$ 5457

3.1353 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx$ 5462

3.1354 $\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)}\,dx$ 5468

3.1355 $\int \frac{x(1+x)^2}{\left(1+x^2\right)^3}\,dx$ 5470

3.1356 $\int (5-x)(3+2x)^4\sqrt{2+3x^2}\,dx$ 5473

3.1357 $\int (5-x)(3+2x)^3\sqrt{2+3x^2}\,dx$ . . . 5476
3.1358 $\int (5-x)(3+2x)^2\sqrt{2+3x^2}\,dx$ . . . 5479
3.1359 $\int (5-x)(3+2x)\sqrt{2+3x^2}\,dx$ . . . 5482
3.1360 $\int (5-x)\sqrt{2+3x^2}\,dx$ . . . 5485
3.1361 $\int \frac{(5-x)\sqrt{2+3x^2}}{3+2x}\,dx$ . . . 5488
3.1362 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$ . . . 5491
3.1363 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx$ . . . 5494
3.1364 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx$ . . . 5497
3.1365 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx$ . . . 5500
3.1366 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx$ . . . 5504
3.1367 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^7}\,dx$ . . . 5508
3.1368 $\int (5-x)(3+2x)^4\left(2+3x^2\right)^{3/2}\,dx$ . . . 5512
3.1369 $\int (5-x)(3+2x)^3\left(2+3x^2\right)^{3/2}\,dx$ . . . 5515
3.1370 $\int (5-x)(3+2x)^2\left(2+3x^2\right)^{3/2}\,dx$ . . . 5518
3.1371 $\int (5-x)(3+2x)\left(2+3x^2\right)^{3/2}\,dx$ . . . 5521
3.1372 $\int (5-x)\left(2+3x^2\right)^{3/2}\,dx$ . . . 5524
3.1373 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx$ . . . 5527
3.1374 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$ . . . 5530
3.1375 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx$ . . . 5534
3.1376 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$ . . . 5538
3.1377 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$ . . . 5542
3.1378 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx$ . . . 5546
3.1379 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$ . . . 5550
3.1380 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^8}\,dx$ . . . 5554
3.1381 $\int (5-x)(3+2x)^4\left(2+3x^2\right)^{5/2}\,dx$ . . . 5558
3.1382 $\int (5-x)(3+2x)^3\left(2+3x^2\right)^{5/2}\,dx$ . . . 5562
3.1383 $\int (5-x)(3+2x)^2\left(2+3x^2\right)^{5/2}\,dx$ . . . 5565
3.1384 $\int (5-x)(3+2x)\left(2+3x^2\right)^{5/2}\,dx$ . . . 5568
3.1385 $\int (5-x)\left(2+3x^2\right)^{5/2}\,dx$ . . . 5571
3.1386 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{3+2x}\,dx$ . . . 5574
3.1387 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^2}\,dx$ . . . 5577
3.1388 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$ . . . 5581
3.1389 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$ . . . 5585
3.1390 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^5}\,dx$ . . . 5589

3.1391 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$ 5593

3.1392 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$ 5597

3.1393 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$ 5601

3.1394 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$ 5605

3.1395 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx$ 5609

3.1396 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{11}}\,dx$ 5614

3.1397 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+3x^2}}\,dx$ 5619

3.1398 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+3x^2}}\,dx$ 5622

3.1399 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx$ 5625

3.1400 $\int \frac{(5-x)(3+2x)}{\sqrt{2+3x^2}}\,dx$ 5628

3.1401 $\int \frac{5-x}{\sqrt{2+3x^2}}\,dx$ 5631

3.1402 $\int \frac{5-x}{(3+2x)\sqrt{2+3x^2}}\,dx$ 5633

3.1403 $\int \frac{5-x}{(3+2x)^2\sqrt{2+3x^2}}\,dx$ 5636

3.1404 $\int \frac{5-x}{(3+2x)^3\sqrt{2+3x^2}}\,dx$ 5639

3.1405 $\int \frac{5-x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$ 5642

3.1406 $\int \frac{5-x}{(3+2x)^5\sqrt{2+3x^2}}\,dx$ 5645

3.1407 $\int \frac{5-x}{(3+2x)^6\sqrt{2+3x^2}}\,dx$ 5649

3.1408 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx$ 5653

3.1409 $\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx$ 5656

3.1410 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx$ 5659

3.1411 $\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx$ 5662

3.1412 $\int \frac{5-x}{\left(2+3x^2\right)^{3/2}}\,dx$ 5665

3.1413 $\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx$ 5667

3.1414 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx$ 5670

3.1415 $\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx$ 5673

3.1416 $\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx$ 5677

3.1417 $\int \frac{5-x}{(3+2x)^5\left(2+3x^2\right)^{3/2}}\,dx$ 5681

3.1418 $\int \frac{(5-x)(3+2x)^6}{\left(2+3x^2\right)^{5/2}}\,dx$ 5685

3.1419 $\int \frac{(5-x)(3+2x)^5}{\left(2+3x^2\right)^{5/2}}\,dx$ 5689

3.1420 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{5/2}}\,dx$ 5692

3.1421 $\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{5/2}}\,dx$ 5695

3.1422 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{5/2}}\,dx$ 5698
3.1423 $\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{5/2}}\,dx$ 5701
3.1424 $\int \frac{5-x}{\left(2+3x^2\right)^{5/2}}\,dx$ 5704
3.1425 $\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{5/2}}\,dx$ 5707
3.1426 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx$ 5710
3.1427 $\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{5/2}}\,dx$ 5714
3.1428 $\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{5/2}}\,dx$ 5718
3.1429 $\int (A+Bx)(d+ex)^{3/2}\left(a+cx^2\right)\,dx$ 5722
3.1430 $\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)\,dx$ 5725
3.1431 $\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{d+ex}}\,dx$ 5728
3.1432 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{3/2}}\,dx$ 5731
3.1433 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{5/2}}\,dx$ 5734
3.1434 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{7/2}}\,dx$ 5737
3.1435 $\int (A+Bx)\sqrt{d+ex}\left(a+cx^2\right)^2\,dx$ 5740
3.1436 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{d+ex}}\,dx$ 5743
3.1437 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$ 5746
3.1438 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$ 5749
3.1439 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{7/2}}\,dx$ 5752
3.1440 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{9/2}}\,dx$ 5756
3.1441 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{d+ex}}\,dx$ 5760
3.1442 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{3/2}}\,dx$ 5764
3.1443 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{5/2}}\,dx$ 5768
3.1444 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{7/2}}\,dx$ 5772
3.1445 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{9/2}}\,dx$ 5776
3.1446 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11/2}}\,dx$ 5781
3.1447 $\int \frac{(A+Bx)(d+ex)^{5/2}}{a-cx^2}\,dx$ 5786
3.1448 $\int \frac{(A+Bx)(d+ex)^{3/2}}{a-cx^2}\,dx$ 5796
3.1449 $\int \frac{(A+Bx)\sqrt{d+ex}}{a-cx^2}\,dx$ 5804
3.1450 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx$ 5810
3.1451 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx$ 5815
3.1452 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a-cx^2\right)}\,dx$ 5825

3.1453 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^2} \, dx$ 5839

3.1454 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^2} \, dx$ 5848

3.1455 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^2} \, dx$ 5854

3.1456 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^2} \, dx$ 5860

3.1457 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)^2} \, dx$ 5870

3.1458 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a-cx^2\right)^3} \, dx$ 5882

3.1459 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^3} \, dx$ 5893

3.1460 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^3} \, dx$ 5902

3.1461 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^3} \, dx$ 5910

3.1462 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^3} \, dx$ 5923

3.1463 $\int \frac{A+Bx}{\sqrt{d+ex}\left(2ABd-A^2e-B^2ex^2\right)} \, dx$ 5934

3.1464 $\int \frac{A+Bx}{\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\left(1+x^2\right)} \, dx$ 5939

3.1465 $\int \frac{A+Bx}{\sqrt{d+ex}\left(1-x^2\right)} \, dx$ 5952

3.1466 $\int \frac{A+Bx}{\sqrt{d+ex}\left(1+x^2\right)} \, dx$ 5956

3.1467 $\int \frac{(1-x)\sqrt{1+x}}{1+x^2} \, dx$ 5964

3.1468 $\int \frac{3+x}{\sqrt{4+3x}\left(1+x^2\right)} \, dx$ 5968

3.1469 $\int \frac{1-3x}{\sqrt{4+3x}\left(1+x^2\right)} \, dx$ 5971

3.1470 $\int \frac{2+x}{\sqrt{3+4x}\left(1+x^2\right)} \, dx$ 5974

3.1471 $\int \frac{-2+x}{\sqrt{-3+x}\left(-8+x^2\right)} \, dx$ 5977

3.1472 $\int (A+Bx)\sqrt{d+ex}\sqrt{a+cx^2} \, dx$ 5980

3.1473 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{d+ex}} \, dx$ 5985

3.1474 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{3/2}} \, dx$ 5989

3.1475 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{5/2}} \, dx$ 5994

3.1476 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{d+ex}} \, dx$ 5999

3.1477 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{3/2}} \, dx$ 6004

3.1478 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{5/2}} \, dx$ 6010

3.1479 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{7/2}} \, dx$ 6016

3.1480 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+cx^2}} \, dx$ 6021

3.1481 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+cx^2}} \, dx$ 6026

3.1482 $\int \frac{A+Bx}{\sqrt{d+ex}\sqrt{a+cx^2}} \, dx$ 6030

3.1483 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+cx^2}} \, dx$ 6034

3.1484 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+cx^2\right)^{3/2}} \, dx$ 6038

3.1485 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+cx^2\right)^{3/2}} \, dx$ 6042

3.1486 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a+cx^2\right)^{3/2}} \, dx$ 6046

3.1487 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^3 \, dx$ 6050

3.1488 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^2 \, dx$ 6059

3.1489 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right) \, dx$ 6064

3.1490 $\int \frac{(A+Bx)(d+ex)^m}{a+cx^2} \, dx$ 6069

3.1491 $\int \frac{(A+Bx)(d+ex)^m}{\left(a+cx^2\right)^2} \, dx$ 6072

3.1492 $\int \frac{(A+Bx)(d+ex)^{1+m}}{a+cx^2} \, dx$ 6075

3.1493 $\int (-ae+cdx)(d+ex)^{-3-2p} \left(a+cx^2\right)^p \, dx$ 6078

3.1494 $\int (b+2cx)(d+ex)^4 \left(a+bx+cx^2\right) \, dx$ 6080

3.1495 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right) \, dx$ 6083

3.1496 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right) \, dx$ 6086

3.1497 $\int (b+2cx)(d+ex) \left(a+bx+cx^2\right) \, dx$ 6089

3.1498 $\int (b+2cx) \left(a+bx+cx^2\right) \, dx$ 6091

3.1499 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{d+ex} \, dx$ 6093

3.1500 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^2} \, dx$ 6096

3.1501 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^3} \, dx$ 6099

3.1502 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^4} \, dx$ 6102

3.1503 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5} \, dx$ 6105

3.1504 $\int (b+2cx)(d+ex)^4 \left(a+bx+cx^2\right)^2 \, dx$ 6108

3.1505 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^2 \, dx$ 6112

3.1506 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^2 \, dx$ 6115

3.1507 $\int (b+2cx)(d+ex) \left(a+bx+cx^2\right)^2 \, dx$ 6118

3.1508 $\int (b+2cx) \left(a+bx+cx^2\right)^2 \, dx$ 6121

3.1509 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex} \, dx$ 6123

3.1510 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^2} \, dx$ 6126

3.1511 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3} \, dx$ 6129

3.1512 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4} \, dx$ 6132

3.1513 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^5} \, dx$ 6135

3.1514 $\int (b+2cx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx$ 6138

3.1515 $\int (b+2cx)(d+ex)^3 \left(a+bx+cx^2\right)^3 \, dx$ 6143

3.1516 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^3 \, dx$ 6147

3.1517 $\int (b+2cx)(d+ex) \left(a+bx+cx^2\right)^3 \, dx$ 6151

3.1518 $\int (b+2cx) \left(a+bx+cx^2\right)^3 \, dx$ 6154

3.1519 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex} \, dx$ 6156

3.1520 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$ 6161

3.1521 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$ 6166

3.1522 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$ 6171

3.1523 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx$ 6176

3.1524 $\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2}\,dx$ 6180

3.1525 $\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx$ 6185

3.1526 $\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx$ 6189

3.1527 $\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2}\,dx$ 6193

3.1528 $\int \frac{b+2cx}{a+bx+cx^2}\,dx$ 6196

3.1529 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$ 6198

3.1530 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx$ 6202

3.1531 $\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$ 6206

3.1532 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx$ 6212

3.1533 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx$ 6217

3.1534 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx$ 6221

3.1535 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$ 6225

3.1536 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^2}\,dx$ 6228

3.1537 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx$ 6230

3.1538 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx$ 6235

3.1539 $\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx$ 6242

3.1540 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^3}\,dx$ 6248

3.1541 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^3}\,dx$ 6254

3.1542 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^3}\,dx$ 6258

3.1543 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx$ 6262

3.1544 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx$ 6266

3.1545 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$ 6268

3.1546 $\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx$ 6276

3.1547 $\int (b+2cx)(d+ex)^3\sqrt{a+bx+cx^2}\,dx$ 6282

3.1548 $\int (b+2cx)(d+ex)^2\sqrt{a+bx+cx^2}\,dx$ 6287

3.1549 $\int (b+2cx)(d+ex)\sqrt{a+bx+cx^2}\,dx$ 6291

3.1550 $\int (b+2cx)\sqrt{a+bx+cx^2}\,dx$ 6295

3.1551 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx$ 6297

3.1552 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx$ 6301

3.1553 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx$ . . . 6306

3.1554 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx$ . . . 6310

3.1555 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx$ . . . 6315

3.1556 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx$ . . . 6320

3.1557 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}\,dx$ . . . 6330

3.1558 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\,dx$ . . . 6335

3.1559 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{3/2}\,dx$ . . . 6339

3.1560 $\int (b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx$ . . . 6343

3.1561 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{d+ex}\,dx$ . . . 6345

3.1562 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx$ . . . 6349

3.1563 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx$ . . . 6353

3.1564 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx$ . . . 6357

3.1565 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{5/2}\,dx$ . . . 6362

3.1566 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}\,dx$ . . . 6368

3.1567 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{5/2}\,dx$ . . . 6373

3.1568 $\int (b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx$ . . . 6377

3.1569 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{d+ex}\,dx$ . . . 6379

3.1570 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx$ . . . 6383

3.1571 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx$ . . . 6387

3.1572 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx$ . . . 6392

3.1573 $\int \frac{(b+2cx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$ . . . 6397

3.1574 $\int \frac{(b+2cx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$ . . . 6401

3.1575 $\int \frac{(b+2cx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$ . . . 6404

3.1576 $\int \frac{b+2cx}{\sqrt{a+bx+cx^2}}\,dx$ . . . 6407

3.1577 $\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$ . . . 6409

3.1578 $\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$ . . . 6413

3.1579 $\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$ . . . 6417

3.1580 $\int \frac{b+2cx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$ . . . 6422

3.1581 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 6428

3.1582 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 6432

3.1583 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 6436

3.1584 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 6439

3.1585 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 6442

3.1586 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}} \, dx$ 6444

3.1587 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}} \, dx$ 6448

3.1588 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6453

3.1589 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6458

3.1590 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6462

3.1591 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6465

3.1592 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6468

3.1593 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6470

3.1594 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}} \, dx$ 6478

3.1595 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right) \, dx$ 6488

3.1596 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right) \, dx$ 6491

3.1597 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right) \, dx$ 6494

3.1598 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{\sqrt{d+ex}} \, dx$ 6497

3.1599 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{3/2}} \, dx$ 6500

3.1600 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{5/2}} \, dx$ 6503

3.1601 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^2 \, dx$ 6506

3.1602 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^2 \, dx$ 6511

3.1603 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^2 \, dx$ 6515

3.1604 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{\sqrt{d+ex}} \, dx$ 6519

3.1605 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{3/2}} \, dx$ 6523

3.1606 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{5/2}} \, dx$ 6526

3.1607 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^3 \, dx$ 6529

3.1608 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^3 \, dx$ 6537

3.1609 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^3 \, dx$ 6543

3.1610 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{\sqrt{d+ex}} \, dx$ 6548

3.1611 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{3/2}} \, dx$ 6552

3.1612 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{5/2}} \, dx$ 6556

3.1613 $\int \frac{(b+2cx)(d+ex)^{3/2}}{a+bx+cx^2} \, dx$ 6560

3.1614 $\int \frac{(b+2cx)\sqrt{d+ex}}{a+bx+cx^2} \, dx$ 6568

3.1615 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)} \, dx$ 6573

3.1616 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)} \, dx$ 6577

3.1617 $\int \frac{b+2cx}{(d+ex)^{5/2}\left(a+bx+cx^2\right)} \, dx$ 6596

3.1618 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2} \, dx$ 6620

3.1619 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2} dx$ . . . 6628

3.1620 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2} dx$ . . . 6632

3.1621 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2} dx$ . . . 6638

3.1622 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^2} dx$ . . . 6653

3.1623 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^3} dx$ . . . 6680

3.1624 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^3} dx$ . . . 6698

3.1625 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^3} dx$ . . . 6709

3.1626 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^3} dx$ . . . 6722

3.1627 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^3} dx$ . . . 6745

3.1628 $\int (b+2cx)\sqrt{d+ex}\sqrt{a+bx+cx^2}\, dx$ . . . 6783

3.1629 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{\sqrt{d+ex}} dx$ . . . 6787

3.1630 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{3/2}} dx$ . . . 6793

3.1631 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{5/2}} dx$ . . . 6799

3.1632 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{7/2}} dx$ . . . 6804

3.1633 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{\sqrt{d+ex}} dx$ . . . 6808

3.1634 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}} dx$ . . . 6812

3.1635 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}} dx$ . . . 6816

3.1636 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{7/2}} dx$ . . . 6820

3.1637 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} dx$ . . . 6824

3.1638 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}} dx$ . . . 6829

3.1639 $\int \frac{(b+2cx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}} dx$ . . . 6835

3.1640 $\int \frac{b+2cx}{\sqrt{d+ex}\sqrt{a+bx+cx^2}} dx$ . . . 6840

3.1641 $\int \frac{b+2cx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}} dx$ . . . 6844

3.1642 $\int \frac{b+2cx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}} dx$ . . . 6849

3.1643 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6854

3.1644 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6861

3.1645 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6867

3.1646 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6871

3.1647 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6875

3.1648 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}} dx$ . . . 6879

3.1649 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ . . . 6885

3.1650 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ . . . 6890

3.1651 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ . . . 6895

3.1652 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{5/2}} \, dx$ . . . 6902

3.1653 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{5/2}} \, dx$ . . . 6907

3.1654 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$ . . . 6912

3.1655 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx$ . . . 6923

3.1656 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right) \, dx$ . . . 6929

3.1657 $\int \frac{(b+2cx)(d+ex)^m}{a+bx+cx^2} \, dx$ . . . 6934

3.1658 $\int \frac{(b+2cx)(d+ex)^m}{\left(a+bx+cx^2\right)^2} \, dx$ . . . 6937

3.1659 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) \, dx$ . . . 6940

3.1660 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) \, dx$ . . . 6943

3.1661 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right) \, dx$ . . . 6946

3.1662 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right) \, dx$ . . . 6949

3.1663 $\int (A+Bx)(d+ex) \left(a^2+2abx+b^2x^2\right) \, dx$ . . . 6952

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3.1676 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx$ . . . 6995

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3.1678 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx$ . . . 7003

3.1679 $\int (A+Bx)(d+ex) \left(a^2+2abx+b^2x^2\right)^2 \, dx$ . . . 7006

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3.1751 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$ 7262

3.1752 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$ 7266

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3.1754 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$ 7275

3.1755 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$ 7280

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3.1757 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx$ 7288

3.1758 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx$ 7292

3.1759 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ 7296

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3.1835 $\int (A+Bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 7622

3.1836 $\int (A+Bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 7625

3.1837 $\int (A+Bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 7628

3.1838 $\int (A+Bx)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 7631

3.1839 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx$ . . . 7634

3.1840 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx$ . . . 7637

3.1841 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx$ . . . 7640

3.1842 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx$ . . . 7643

3.1843 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 7646

3.1844 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 7651

3.1845 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 7655

3.1846 $\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 7659

3.1847 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$ . . . 7662

3.1848 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$ . . . 7666

3.1849 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$ . . . 7670

3.1850 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$ . . . 7674

3.1851 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 7678

3.1852 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 7685

3.1853 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 7691

3.1854 $\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 7696

3.1855 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$ . . . 7701

3.1856 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$ . . . 7705

3.1857 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$ . . . 7709

3.1858 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$ . . . 7713

3.1859 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7717

3.1860 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7721

3.1861 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7725

3.1862 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7729

3.1863 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7732

3.1864 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7735

3.1865 $\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7739

3.1866 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7743

3.1867 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7748

3.1868 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7753

3.1869 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7757

3.1870 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7761

3.1871 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7765

3.1872 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7769

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3.1874 $\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ . . . 7779

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3.1876 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ . . . 7792

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3.1881 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ . . . 7818

3.1882 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ . . . 7824

3.1883 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$ . . . 7830

3.1884 $\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7837

3.1885 $\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 7844

3.1886 $\int \frac{(A+Bx)(d+ex)^m}{a^2+2abx+b^2x^2}\,dx$ . . . 7850

3.1887 $\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$ . . . 7853

3.1888 $\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 7856

3.1889 $\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 7866

3.1890 $\int (A+Bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 7871

3.1891 $\int \frac{(A+Bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx$ . . . 7874

3.1892 $\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$ . . . 7877

3.1893 $\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^p\,dx$ . . . 7880

3.1894 $\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$ . . . 7883

3.1895 $\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 7887

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3.1900 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx$ . . . 7901

3.1901 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$ . . . 7903

3.1902 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx$ . . . 7906

3.1903 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$ . . . 7909

3.1904 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$ . . . 7912

3.1905 $\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7915

3.1906 $\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7919

3.1907 $\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7923

3.1908 $\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7926

3.1909 $\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7929

3.1910 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7932

3.1911 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$ . . . 7935

3.1912 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$ . . . 7937

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3.1949 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$ . . . 8050

3.1950 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3}\,dx$ . . . 8052

3.1951 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$ . . . 8056

3.1952 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$ . . . 8060

3.1953 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3}\,dx$ . . . 8065

3.1954 $\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 8070

3.1955 $\int (a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$ . . . 8074

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3.1960 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$ . . . 8089

3.1961 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$ . . . 8092

3.1962 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$ . . . 8095

3.1963 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx$ . . . 8098

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3.1965 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx$ . . . 8103

3.1966 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx$ . . . 8106

3.1967 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^8}\,dx$ . . . 8109

3.1968 $\int (a+bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 8112

3.1969 $\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$ . . . 8117

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3.1989 $\int (a+bx)(d+ex)^8\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 8189

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3.1991 $\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$ . . . 8199

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3.2339 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex} \, dx$ 9635
3.2340 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2} \, dx$ 9641
3.2341 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3} \, dx$ 9646
3.2342 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4} \, dx$ 9652
3.2343 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^5} \, dx$ 9657
3.2344 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^6} \, dx$ 9662
3.2345 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^7} \, dx$ 9667
3.2346 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8} \, dx$ 9672
3.2347 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9} \, dx$ 9677
3.2348 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}} \, dx$ 9682
3.2349 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{11}} \, dx$ 9687
3.2350 $\int x(d+ex)^m \left(a+bx+cx^2\right) \, dx$ 9692
3.2351 $\int x(d+ex)^5 \left(a+bx+cx^2\right) \, dx$ 9696
3.2352 $\int x(d+ex)^4 \left(a+bx+cx^2\right) \, dx$ 9699
3.2353 $\int x(d+ex)^3 \left(a+bx+cx^2\right) \, dx$ 9702
3.2354 $\int x(d+ex)^2 \left(a+bx+cx^2\right) \, dx$ 9705
3.2355 $\int x(d+ex) \left(a+bx+cx^2\right) \, dx$ 9707
3.2356 $\int x \left(a+bx+cx^2\right) \, dx$ 9709
3.2357 $\int \frac{x\left(a+bx+cx^2\right)}{d+ex} \, dx$ 9711
3.2358 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^2} \, dx$ 9713
3.2359 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^3} \, dx$ 9716
3.2360 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^4} \, dx$ 9719
3.2361 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^5} \, dx$ 9722
3.2362 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^6} \, dx$ 9725
3.2363 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^7} \, dx$ 9728
3.2364 $\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2} \, dx$ 9731
3.2365 $\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2} \, dx$ 9736
3.2366 $\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2} \, dx$ 9740

3.2367 $\int \frac{A+Bx}{a+bx+cx^2}\,dx$ 9744

3.2368 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$ 9747

3.2369 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx$ 9751

3.2370 $\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$ 9756

3.2371 $\int \frac{(d+ex)^4(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$ 9763

3.2372 $\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$ 9770

3.2373 $\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$ 9776

3.2374 $\int \frac{(d+ex)(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$ 9782

3.2375 $\int \frac{f+gx}{\left(a+bx+cx^2\right)^3}\,dx$ 9787

3.2376 $\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$ 9791

3.2377 $\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx$ 9805

3.2378 $\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2}\,dx$ 9826

3.2379 $\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2}\,dx$ 9829

3.2380 $\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2}\,dx$ 9832

3.2381 $\int \frac{(5-x)(3+2x)}{2+5x+3x^2}\,dx$ 9835

3.2382 $\int \frac{5-x}{2+5x+3x^2}\,dx$ 9837

3.2383 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)}\,dx$ 9839

3.2384 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx$ 9841

3.2385 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx$ 9843

3.2386 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx$ 9845

3.2387 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx$ 9847

3.2388 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2}\,dx$ 9850

3.2389 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx$ 9853

3.2390 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^2}\,dx$ 9856

3.2391 $\int \frac{5-x}{\left(2+5x+3x^2\right)^2}\,dx$ 9859

3.2392 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx$ 9862

3.2393 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx$ 9865

3.2394 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx$ 9868

3.2395 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^2}\,dx$ 9871

3.2396 $\int \frac{(5-x)(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx$ 9874

3.2397 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^3}\,dx$ 9877

3.2398 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx$ 9880

3.2399 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^3} \, dx$ . . . 9883

3.2400 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3} \, dx$ . . . 9886

3.2401 $\int \frac{5-x}{\left(2+5x+3x^2\right)^3} \, dx$ . . . 9889

3.2402 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^3} \, dx$ . . . 9892

3.2403 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3} \, dx$ . . . 9895

3.2404 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3} \, dx$ . . . 9898

3.2405 $\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3} \, dx$ . . . 9901

3.2406 $\int (5-x)(3+2x)^4\sqrt{2+5x+3x^2} \, dx$ . . . 9904

3.2407 $\int (5-x)(3+2x)^3\sqrt{2+5x+3x^2} \, dx$ . . . 9908

3.2408 $\int (5-x)(3+2x)^2\sqrt{2+5x+3x^2} \, dx$ . . . 9911

3.2409 $\int (5-x)(3+2x)\sqrt{2+5x+3x^2} \, dx$ . . . 9914

3.2410 $\int (5-x)\sqrt{2+5x+3x^2} \, dx$ . . . 9917

3.2411 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{3+2x} \, dx$ . . . 9920

3.2412 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^2} \, dx$ . . . 9923

3.2413 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^3} \, dx$ . . . 9926

3.2414 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^4} \, dx$ . . . 9930

3.2415 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^5} \, dx$ . . . 9933

3.2416 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^6} \, dx$ . . . 9937

3.2417 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^7} \, dx$ . . . 9941

3.2418 $\int (5-x)(3+2x)^4\left(2+5x+3x^2\right)^{3/2} \, dx$ . . . 9945

3.2419 $\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{3/2} \, dx$ . . . 9949

3.2420 $\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{3/2} \, dx$ . . . 9953

3.2421 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{3/2} \, dx$ . . . 9956

3.2422 $\int (5-x)\left(2+5x+3x^2\right)^{3/2} \, dx$ . . . 9959

3.2423 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{3+2x} \, dx$ . . . 9962

3.2424 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2} \, dx$ . . . 9965

3.2425 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3} \, dx$ . . . 9969

3.2426 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4} \, dx$ . . . 9973

3.2427 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5} \, dx$ . . . 9977

3.2428 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6} \, dx$ . . . 9981

3.2429 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7} \, dx$ . . . 9985

3.2430 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8} \, dx$ . . . 9989

3.2431 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^9} \, dx$ . . . 9993

3.2432 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{5/2} \, dx$ . . . 9998

3.2433 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{5/2} \, dx$ . . . 10002

3.2434 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{5/2} \, dx$ . . . 10006

3.2435 $\int (5-x)(3+2x) \left(2+5x+3x^2\right)^{5/2} \, dx$ . . . 10010

3.2436 $\int (5-x) \left(2+5x+3x^2\right)^{5/2} \, dx$ . . . 10013

3.2437 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{3+2x} \, dx$ . . . 10016

3.2438 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2} \, dx$ . . . 10020

3.2439 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3} \, dx$ . . . 10024

3.2440 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4} \, dx$ . . . 10028

3.2441 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5} \, dx$ . . . 10032

3.2442 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6} \, dx$ . . . 10036

3.2443 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7} \, dx$ . . . 10040

3.2444 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8} \, dx$ . . . 10044

3.2445 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9} \, dx$ . . . 10048

3.2446 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{10}} \, dx$ . . . 10053

3.2447 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} \, dx$ . . . 10058

3.2448 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{7/2} \, dx$ . . . 10062

3.2449 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{7/2} \, dx$ . . . 10066

3.2450 $\int (5-x)(3+2x) \left(2+5x+3x^2\right)^{7/2} \, dx$ . . . 10070

3.2451 $\int (5-x) \left(2+5x+3x^2\right)^{7/2} \, dx$ . . . 10073

3.2452 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{3+2x} \, dx$ . . . 10076

3.2453 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^2} \, dx$ . . . 10080

3.2454 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^3} \, dx$ . . . 10085

3.2455 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^4} \, dx$ . . . 10089

3.2456 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^5} \, dx$ . . . 10093

3.2457 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^6} \, dx$ . . . 10097

3.2458 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^7} \, dx$ . . . 10102

3.2459 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^8} \, dx$ . . . 10107

3.2460 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9} \, dx$ . . . 10112

3.2461 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}} \, dx$ . . . 10117

3.2462 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}} \, dx$ . . . 10122

3.2463 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx$ . . . 10127

3.2464 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{13}}\,dx$ . . . 10132

3.2465 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$ . . . 10138

3.2466 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$ . . . 10142

3.2467 $\int \frac{(A+Bx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$ . . . 10146

3.2468 $\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$ . . . 10149

3.2469 $\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$ . . . 10152

3.2470 $\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$ . . . 10156

3.2471 $\int \frac{A+Bx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$ . . . 10160

3.2472 $\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$ . . . 10165

3.2473 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10173

3.2474 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10178

3.2475 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10182

3.2476 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10185

3.2477 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10187

3.2478 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10191

3.2479 $\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}\,dx$ . . . 10197

3.2480 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10205

3.2481 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10212

3.2482 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10217

3.2483 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10220

3.2484 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10223

3.2485 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10226

3.2486 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx$ . . . 10237

3.2487 $\int \frac{(A+Bx)(d+ex)^6}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10249

3.2488 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10255

3.2489 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10262

3.2490 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10270

3.2491 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10276

3.2492 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ . . . 10281

3.2493 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{7/2}}\,dx$ 10285

3.2494 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{7/2}}\,dx$ 10289

3.2495 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+5x+3x^2}}\,dx$ 10294

3.2496 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+5x+3x^2}}\,dx$ 10297

3.2497 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+5x+3x^2}}\,dx$ 10300

3.2498 $\int \frac{(5-x)(3+2x)}{\sqrt{2+5x+3x^2}}\,dx$ 10303

3.2499 $\int \frac{5-x}{\sqrt{2+5x+3x^2}}\,dx$ 10306

3.2500 $\int \frac{5-x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$ 10309

3.2501 $\int \frac{5-x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx$ 10312

3.2502 $\int \frac{5-x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$ 10315

3.2503 $\int \frac{5-x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$ 10318

3.2504 $\int \frac{5-x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$ 10321

3.2505 $\int \frac{5-x}{(3+2x)^6\sqrt{2+5x+3x^2}}\,dx$ 10325

3.2506 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10329

3.2507 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10333

3.2508 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10336

3.2509 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10339

3.2510 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10342

3.2511 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10344

3.2512 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10347

3.2513 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10350

3.2514 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10354

3.2515 $\int \frac{5-x}{(3+2x)^5\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10358

3.2516 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10362

3.2517 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10366

3.2518 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10370

3.2519 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10373

3.2520 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10376

3.2521 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10379

3.2522 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10382

3.2523 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10386

3.2524 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10390

3.2525 $\int \frac{-1+x}{(1+x)\sqrt{1+x+x^2}}\,dx$ 10394

3.2526 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)dx$ 10397

3.2527 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)dx$ 10399

3.2528 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)dx$ 10401

3.2529 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)dx$ 10403

3.2530 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{\sqrt{3+2x}}\,dx$ 10405

3.2531 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{3/2}}\,dx$ 10407

3.2532 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{5/2}}\,dx$ 10409

3.2533 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{7/2}}\,dx$ 10411

3.2534 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^2dx$ 10413

3.2535 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^2dx$ 10416

3.2536 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^2dx$ 10418

3.2537 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^2dx$ 10420

3.2538 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{\sqrt{3+2x}}\,dx$ 10422

3.2539 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{3/2}}\,dx$ 10424

3.2540 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{5/2}}\,dx$ 10426

3.2541 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{7/2}}\,dx$ 10429

3.2542 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^3dx$ 10432

3.2543 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^3dx$ 10435

3.2544 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^3dx$ 10438

3.2545 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^3dx$ 10441

3.2546 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{\sqrt{3+2x}}\,dx$ 10444

3.2547 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{3/2}}\,dx$ 10447

3.2548 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{5/2}}\,dx$ 10450

3.2549 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{7/2}}\,dx$ 10453

3.2550 $\int \frac{(5-x)(3+2x)^{7/2}}{2+5x+3x^2}\,dx$ 10456

3.2551 $\int \frac{(5-x)(3+2x)^{5/2}}{2+5x+3x^2}\,dx$ 10459

3.2552 $\int \frac{(5-x)(3+2x)^{3/2}}{2+5x+3x^2}\,dx$ 10462

3.2553 $\int \frac{(5-x)\sqrt{3+2x}}{2+5x+3x^2}\,dx$ 10465

3.2554 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$ 10468

3.2555 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx$ 10471

3.2556 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx$ 10474

3.2557 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx$ 10477

3.2558 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^2}\,dx$ 10480

3.2559 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^2}\,dx$ 10484

3.2560 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2}\,dx$ 10488

3.2561 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx$ 10491

3.2562 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx$ 10494

3.2563 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx$ 10497

3.2564 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx$ 10501

3.2565 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx$ 10505

3.2566 $\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^3}\,dx$ 10509

3.2567 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^3}\,dx$ 10513

3.2568 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^3}\,dx$ 10516

3.2569 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^3}\,dx$ 10520

3.2570 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^3}\,dx$ 10524

3.2571 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^3}\,dx$ 10528

3.2572 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^3}\,dx$ 10531

3.2573 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^3}\,dx$ 10535

3.2574 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^3}\,dx$ 10539

3.2575 $\int \frac{5+\sqrt{35}+10x}{\sqrt{1+2x}\left(2+3x+5x^2\right)}\,dx$ 10543

3.2576 $\int (5-x)(3+2x)^{5/2}\sqrt{2+5x+3x^2}\,dx$ 10547

3.2577 $\int (5-x)(3+2x)^{3/2}\sqrt{2+5x+3x^2}\,dx$ 10551

3.2578 $\int (5-x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}\,dx$ 10555

3.2579 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}\,dx$ 10559

3.2580 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{3/2}}\,dx$ 10562

3.2581 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{5/2}}\,dx$ 10565

3.2582 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{7/2}}\,dx$ 10569

3.2583 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{9/2}}\,dx$ 10573

3.2584 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}\,dx$ 10577

3.2585 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}\,dx$ 10581

3.2586 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}\,dx$ 10585

3.2587 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{3+2x}}\,dx$ 10589

3.2588 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{3/2}}\,dx$ 10593

3.2589 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{5/2}}\,dx$ 10597

3.2590 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{7/2}}\,dx$ 10601

3.2591 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{9/2}}\,dx$ 10605

3.2592 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{11/2}}\,dx$ 10609

3.2593 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{13/2}}\,dx$ 10613

3.2594 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}\,dx$ 10618

3.2595 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}\,dx$ 10623

3.2596 $\int (5-x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{5/2}\,dx$ 10627

3.2597 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{\sqrt{3+2x}}\,dx$ 10631

3.2598 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{3/2}}\,dx$ 10635

3.2599 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{5/2}}\,dx$ 10639

3.2600 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{7/2}}\,dx$ 10643

3.2601 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{9/2}}\,dx$ 10647

3.2602 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{11/2}}\,dx$ 10651

3.2603 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{13/2}}\,dx$ 10655

3.2604 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{15/2}}\,dx$ 10659

3.2605 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{17/2}}\,dx$ 10664

3.2606 $\int \frac{(5-x)(3+2x)^{5/2}}{\sqrt{2+5x+3x^2}}\,dx$ 10669

3.2607 $\int \frac{(5-x)(3+2x)^{3/2}}{\sqrt{2+5x+3x^2}}\,dx$ 10673

3.2608 $\int \frac{(5-x)\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx$ 10676

3.2609 $\int \frac{5-x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx$ 10679

3.2610 $\int \frac{5-x}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx$ 10682

3.2611 $\int \frac{5-x}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx$ 10685

3.2612 $\int \frac{5-x}{(3+2x)^{7/2}\sqrt{2+5x+3x^2}}\,dx$ 10689

3.2613 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10693

3.2614 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10697

3.2615 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10701

3.2616 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10705

3.2617 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10708

3.2618 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10711

3.2619 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10715
3.2620 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$ 10719
3.2621 $\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10723
3.2622 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10727
3.2623 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10731
3.2624 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10735
3.2625 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10739
3.2626 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10743
3.2627 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10747
3.2628 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10751
3.2629 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$ 10756
3.2630 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx$ 10761
3.2631 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$ 10766
3.2632 $\int \frac{A+Bx}{\sqrt{d+ex}\sqrt{a+bx+cx^2}}\,dx$ 10772
3.2633 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx$ 10776
3.2634 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}}\,dx$ 10781
3.2635 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ 10786
3.2636 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ 10791
3.2637 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$ 10796
3.2638 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{3/2}}\,dx$ 10801
3.2639 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}}\,dx$ 10806
3.2640 $\int (A+Bx)(d+ex)^m\left(a+bx+cx^2\right)^3\,dx$ 10811
3.2641 $\int (A+Bx)(d+ex)^m\left(a+bx+cx^2\right)^2\,dx$ 10827
3.2642 $\int (A+Bx)(d+ex)^m\left(a+bx+cx^2\right)\,dx$ 10835
3.2643 $\int \frac{(A+Bx)(d+ex)^m}{a+bx+cx^2}\,dx$ 10841
3.2644 $\int \frac{(A+Bx)(d+ex)^m}{\left(a+bx+cx^2\right)^2}\,dx$ 10844
3.2645 $\int \frac{(A+Bx)(d+ex)^{1+m}}{a+bx+cx^2}\,dx$ 10848
3.2646 $\int (A+Bx)(d+ex)^{-3-2p}\left(a+bx+cx^2\right)^p\,dx$ 10851

4 Listing of Grading functions **10855**
- 4.0.1 Mathematica and Rubi grading function 10855
- 4.0.2 Maple grading function 10857
- 4.0.3 Sympy grading function 10860
- 4.0.4 SageMath grading function 10862

Chapter 1

Introduction

This report gives the result of running the computer algebra independent integration problems. The listing of the problems are maintained by and can be downloaded from `https://rulebasedintegration.org`

The number of integrals in this report is [2646]. This is test number [34].

1.1 Listing of CAS systems tested

The following systems were tested at this time.

1. Mathematica 12.3 (64 bit) on windows 10.
2. Rubi 4.16.1 in Mathematica 12.1 on windows 10.
3. Maple 2021.1 (64 bit) on windows 10.
4. Maxima 5.44 on Linux. (via sagemath 9.3)
5. Fricas 1.3.7 on Linux (via sagemath 9.3)
6. Giac/Xcas 1.7 on Linux. (via sagemath 9.3)
7. Sympy 1.8 under Python 3.8.8 using Anaconda distribution on Ubuntu.
8. Mupad using Matlab 2021a with Symbolic Math Toolbox Version 8.7 under windows 10 (64 bit)

Maxima, Fricas and Giac/Xcas were called from inside SageMath. This was done using SageMath integrate command by changing the name of the algorithm to use the different CAS systems.

Sympy was called directly using Python.

1.2 Results

Important note: A number of problems in this test suite have no antiderivative in closed form. This means the antiderivative of these integrals can not be expressed in terms of elementary, special functions or `Hypergeometric2F1` functions. `RootSum` and `RootOf` are not allowed.

If a CAS returns the above integral unevaluated within the time limit, then the result is counted as passed and assigned an A grade.

However, if CAS times out, then it is assigned an F grade even if the integral is not integrable, as this implies CAS could not determine that the integral is not integrable in the time limit.

If a CAS returns an antiderivative to such an integral, it is assigned an A grade automatically and this special result is listed in the introduction section of each individual test report to make it easy to identify as this can be important result to investigate.

The results given in in the table below reflects the above.

System	solved	Failed
Rubi	% 100.00 (2646)	% 0.00 (0)
Mathematica	% 100.00 (2646)	% 0.00 (0)
Maple	% 97.66 (2584)	% 2.34 (62)
Maxima	% 65.00 (1720)	% 35.00 (926)
Fricas	% 86.39 (2286)	% 13.61 (360)
Sympy	% 45.88 (1214)	% 54.12 (1432)
Giac	% 81.37 (2153)	% 18.63 (493)
Mupad	% 63.68 (1685)	% 36.32 (961)

Table 1.1: Percentage solved for each CAS

The table below gives additional break down of the grading of quality of the antiderivatives generated by each CAS. The grading is given using the letters A,B,C and F with A being the best quality. The grading is accomplished by comparing the antiderivative generated with the optimal antiderivatives included in the test suite. The following table describes the meaning of these grades.

grade	description
A	Integral was solved and antiderivative is optimal in quality and leaf size.
B	Integral was solved and antiderivative is optimal in quality but leaf size is larger than twice the optimal antiderivatives leaf size.
C	Integral was solved and antiderivative is non-optimal in quality. This can be due to one or more of the following reasons 1. antiderivative contains a hypergeometric function and the optimal antiderivative does not. 2. antiderivative contains a special function and the optimal antiderivative does not. 3. antiderivative contains the imaginary unit and the optimal antiderivative does not.
F	Integral was not solved. Either the integral was returned unevaluated within the time limit, or it timed out, or CAS hanged or crashed or an exception was raised.

Table 1.2: Description of grading applied to integration result

Grading is implemented for all CAS systems. Based on the above, the following table summarizes the grading for this test suite.

System	% A grade	% B grade	% C grade	% F grade
Rubi	100.00	0.00	0.00	0.00
Mathematica	81.25	3.36	15.38	0.00
Maple	64.51	32.73	0.42	2.34
Maxima	50.15	14.85	0.00	35.00
Fricas	60.32	26.08	0.00	13.61
Sympy	33.30	10.24	2.34	54.12
Giac	53.55	27.82	0.00	18.63
Mupad	0.00	63.68	0.00	36.32

Table 1.3: Antiderivative Grade distribution of each CAS

The following is a Bar chart illustration of the data in the above table.

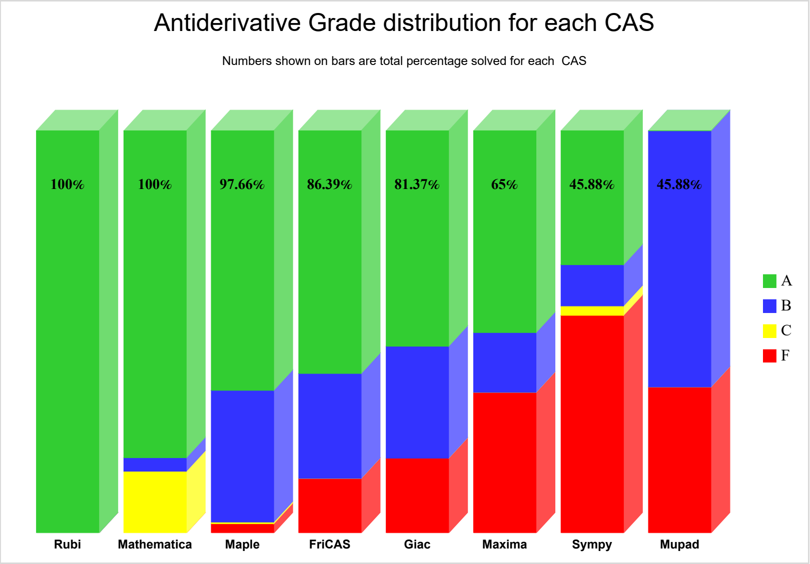

The figure below compares the CAS systems for each grade level.

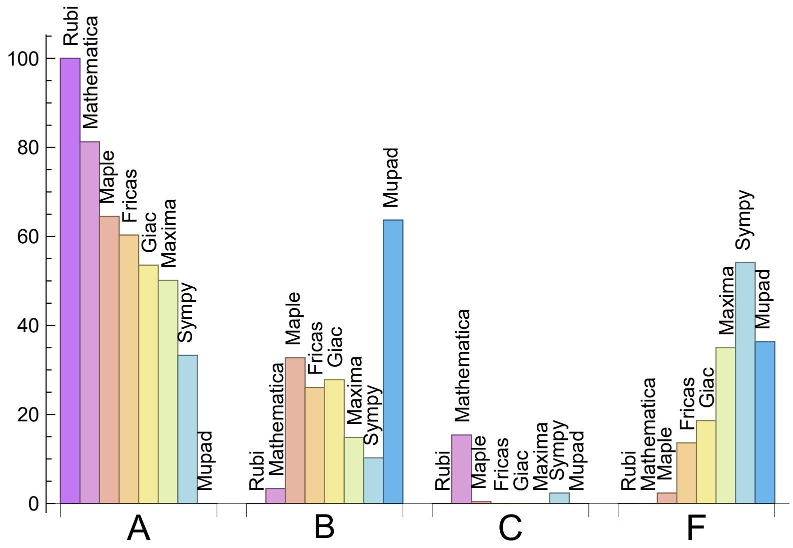

The following table shows the distribution of the different types of failure for each CAS. There are 3 types of reasons why it can fail. The first is when CAS returns back the input within the time limit, which means it could not solve it. This the typical normal failure **F** .

The second is due to time out. CAS could not solve the integral within the 3 minutes time limit which is assigned **F(-1)**.

The third is due to an exception generated. Assigned **F(-2)**. This most likely indicates an interface problem between sagemath and the CAS (applicable only to FriCAS, Maxima and Giac) or it could be an indication of an internal error in CAS. This type of error requires more investigations to determine the cause.

System	Number failed	Percentage normal failure	Percentage timeout failure	Percentage exception failure
Rubi	0	0.00 %	0.00 %	0.00 %
Mathematica	0	0.00 %	0.00 %	0.00 %
Maple	62	100.00 %	0.00 %	0.00 %
Maxima	926	51.30 %	0.00 %	48.70 %
Fricas	360	85.83 %	14.17 %	0.00 %
Sympy	1432	57.89 %	40.78 %	1.33 %
Giac	493	76.47 %	11.16 %	12.37 %
Mupad	961	99.90 %	0.10 %	0.00 %

Table 1.4: Time and leaf size performance for each CAS

1.3 Performance

The table below summarizes the performance of each CAS system in terms of CPU time and leaf size of results.

System	Mean time (sec)	Mean size	Normalized mean	Median size	Normalized median
Rubi	0.21	187.62	1.00	152.00	1.00
Mathematica	0.41	194.89	0.98	117.00	0.90
Maple	0.07	656.42	2.31	169.50	1.22
Maxima	0.77	232.06	1.50	134.00	1.13
Fricas	2.83	575.08	2.58	197.00	1.61
Sympy	14.23	373.39	2.76	136.00	1.35
Giac	0.32	456.68	2.13	166.00	1.25
Mupad	1.74	1085.85	3.93	136.00	1.17

Table 1.5: Time and leaf size performance for each CAS

The following are bar charts for the normalized leafsize and time used columns from the above table.

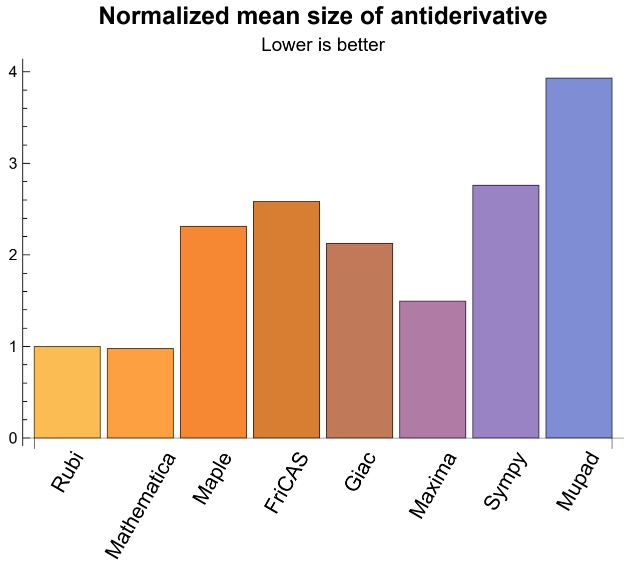

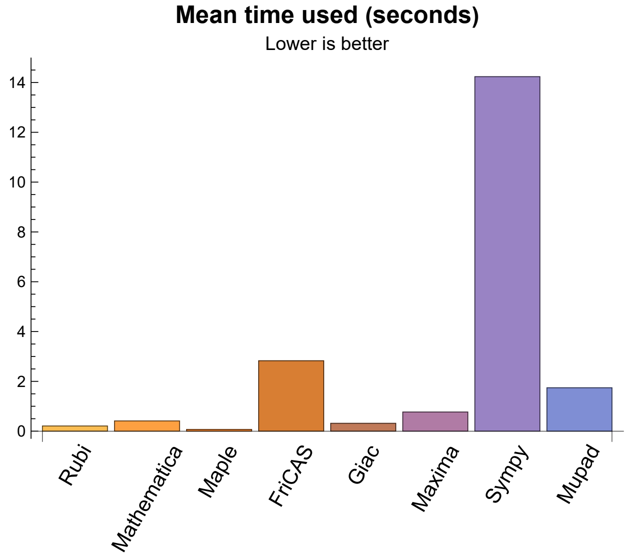

1.4 list of integrals that has no closed form antiderivative

{}

1.5 list of integrals solved by CAS but has no known antiderivative

Rubi {}

Mathematica {}

Maple {}

Maxima {}

Fricas {}

Sympy {}

Giac {}

Mupad {}

1.6 list of integrals solved by CAS but failed verification

The following are integrals solved by CAS but the verification phase failed to verify the anti-derivative produced is correct. This does not mean necessarily that the anti-derivative is wrong, as additional methods of verification might be needed, or more time is needed (3 minutes time limit was used). These integrals are listed here to make it easier to do further investigation to determine why it was not possible to verify the result produced.

Rubi {1471}

Mathematica {1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1471, 1633, 1634, 1635, 1636}

Maple Verification phase not implemented yet.

Maxima Verification phase not implemented yet.

Fricas Verification phase not implemented yet.

Sympy Verification phase not implemented yet.

Giac Verification phase not implemented yet.

Mupad Verification phase not implemented yet.

1.7 Timing

The command `AboluteTiming[]` was used in Mathematica to obtain the elapsed time for each integrate call. In Maple, the command `Usage` was used as in the following example

```
cpu_time := Usage(assign ('result_of _int',int(expr,x)),output='realtime'
```

For all other CAS systems, the elapsed time to complete each integral was found by taking the difference between the time after the call has completed from the time before the call was made. This was done using Python's `time.time()` call.

All elapsed times shown are in seconds. A time limit of 3 minutes was used for each integral. If the integrate command did not complete within this time limit, the integral was aborted and considered to have failed and assigned an F grade. The time used by failed integrals due to time out is not counted in the final statistics.

1.8 Verification

A verification phase was applied on the result of integration for Rubi and Mathematica. Future version of this report will implement verification for the other CAS systems. For the integrals whose result was not run through a verification phase, it is assumed that the antiderivative produced was correct.

Verification phase has 3 minutes time out. An integral whose result was not verified could still be correct. Further investigation is needed on those integrals which failed verifications. Such integrals are marked in the summary table below and also in each integral separate section so they are easy to identify and locate.

1.9 Important notes about some of the results

1.9.1 Important note about Maxima results

Since these integrals are run in a batch mode, using an automated script, and by using sagemath (SageMath uses Maxima), then any integral where Maxima needs an interactive response from the user to answer a question during evaluation of the integral in order to complete the integration, will fail and is counted as failed.

The exception raised is `ValueError`. Therefore Maxima result below is lower than what could result if Maxima was run directly and each question Maxima asks was answered correctly.

The percentage of such failures were not counted for each test file, but for an example, for the Timofeev test file, there were about 14 such integrals out of total 705, or about 2 percent. This pecrentage can be higher or lower depending on the specific input test file.

Such integrals can be indentified by looking at the output of the integration in each section for Maxima. The exception message will indicate of the error is due to the interactive question being asked or not.

Maxima integrate was run using SageMath with the following settings set by default

```
'besselexpand : true'
'display2d : false'
```

```
'domain : complex'
'keepfloat : true'
'load(to_poly_solve)'
'load(simplify_sum)'
'load(abs_integrate)' 'load(diag)'
```

SageMath loading of Maxima `abs_integrate` was found to cause some problem. So the following code was added to disable this effect.

```
 from sage.interfaces.maxima_lib import maxima_lib
 maxima_lib.set('extra_definite_integration_methods', '[]')
 maxima_lib.set('extra_integration_methods', '[]')
```

See `https://ask.sagemath.org/question/43088/integrate-results-that-are-different-from-using-maxima/` for reference.

1.9.2 Important note about FriCAS and Giac/XCAS results

There are Few integrals which failed due to SageMath not able to translate the result back to SageMath syntax and not because these CAS system were not able to do the integrations.

These will fail With error `Exception raised: NotImplementedError`

The number of such cases seems to be very small. About 1 or 2 percent of all integrals.

Hopefully the next version of SageMath will have complete translation of FriCAS and XCAS syntax and I will re-run all the tests again when this happens.

1.9.3 Important note about finding leaf size of antiderivative

For Mathematica, Rubi and Maple, the buildin system function `LeafSize` is used to find the leaf size of each antiderivative.

The other CAS systems (SageMath and Sympy) do not have special buildin function for this purpose at this time. Therefore the leaf size for Fricas and Sympy and Giac antiderivatives is determined using the following function, thanks to user `slelievre` at `https://ask.sagemath.org/question/57123/could-we-have-a-leaf_count-function-in-base-sagemath/`

```
def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)
```

For Sympy, which is called directly from Python, the following code is used to obtain the leafsize of its result

```
try:
  # 1.7 is a fudge factor since it is low side from actual leaf count
  leafCount = round(1.7*count_ops(anti))
```

```
except Exception as ee:
       leafCount =1
```

1.9.4 Important note about Mupad results

Matlab's symbolic toolbox does not have a leaf count function to measure the size of the antiderivative, Maple was used to determine the leaf size of Mupad output by post processing.

Currently no grading of the antiderivative for Mupad is implemented. If it can integrate the problem, it was assigned a B grade automatically as a placeholder. In the future, when grading function is implemented for Mupad, the tests will be rerun again.

The following is an example of using Matlab's symbolic toolbox (Mupad) to solve an integral

```
integrand = evalin(symengine,'cos(x)*sin(x)')
the_variable = evalin(symengine,'x')
anti = int(integrand,the_variable)
```

Which gives `sin(x)^2/2`

1.10 Design of the test system

The following diagram gives a high level view of the current test build system.

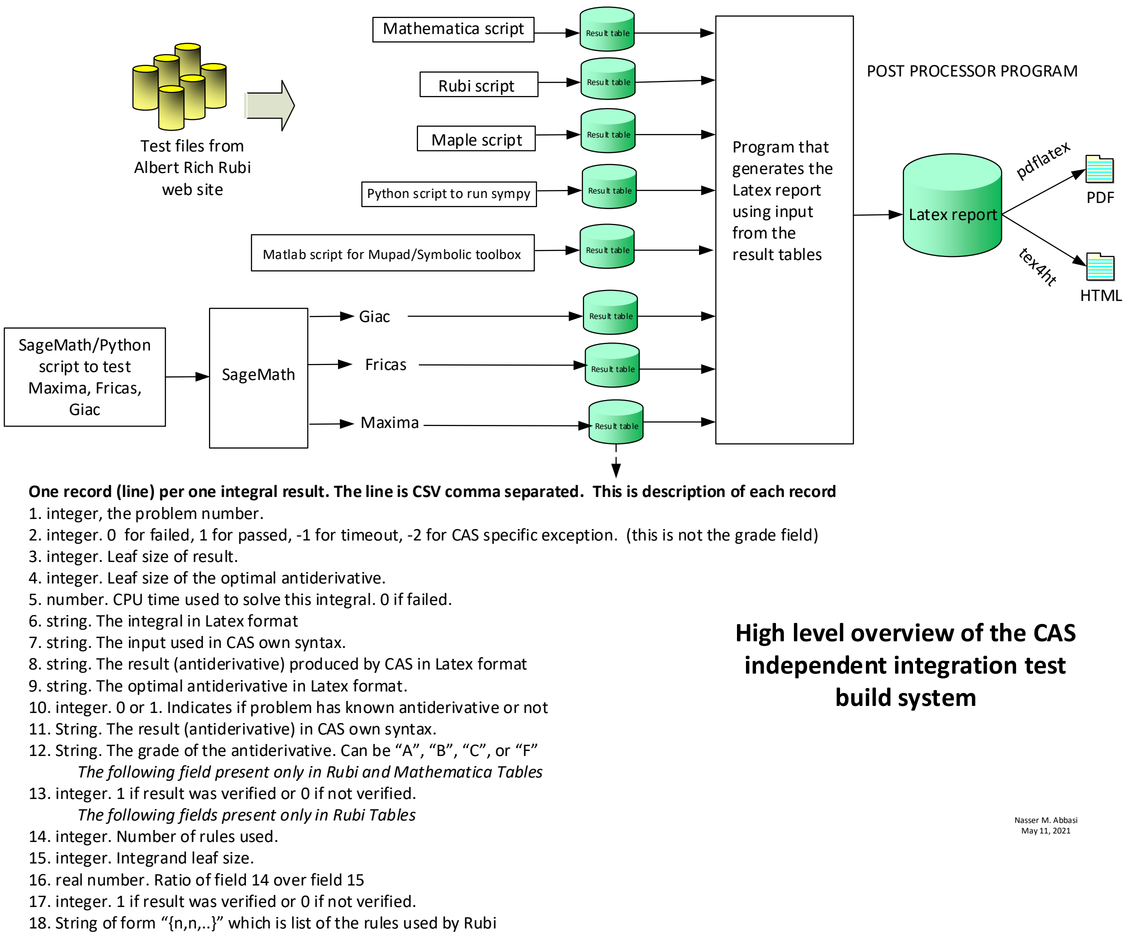
Test files from
Albert Rich Rubi
web site
Mathematica script
Rubi script
Maple script
Python script to run sympy
Matlab script for Mupad/Symbolic toolbox
SageMath/Python
script to test
Maxima, Fricas,
Giac
SageMath
Giac
Fricas
Maxima
Result table
Program that
generates the
Latex report
using input
from the
result tables
POST PROCESSOR PROGRAM
Latex report
pdflatex
tex4ht
PDF
HTML

One record (line) per one integral result. The line is CSV comma separated. This is description of each record

1. integer, the problem number.
2. integer. 0 for failed, 1 for passed, -1 for timeout, -2 for CAS specific exception. (this is not the grade field)
3. integer. Leaf size of result.
4. integer. Leaf size of the optimal antiderivative.
5. number. CPU time used to solve this integral. 0 if failed.
6. string. The integral in Latex format
7. string. The input used in CAS own syntax.
8. string. The result (antiderivative) produced by CAS in Latex format
9. string. The optimal antiderivative in Latex format.
10. integer. 0 or 1. Indicates if problem has known antiderivative or not
11. String. The result (antiderivative) in CAS own syntax.
12. String. The grade of the antiderivative. Can be "A", "B", "C", or "F"

The following field present only in Rubi and Mathematica Tables

13. integer. 1 if result was verified or 0 if not verified.

The following fields present only in Rubi Tables

14. integer. Number of rules used.
15. integer. Integrand leaf size.
16. real number. Ratio of field 14 over field 15
17. integer. 1 if result was verified or 0 if not verified.
18. String of form "{n,n,..}" which is list of the rules used by Rubi

High level overview of the CAS independent integration test build system

Nasser M. Abbasi
May 11, 2021

Chapter 2

detailed summary tables of results

2.1 List of integrals sorted by grade for each CAS

2.1.1 Rubi

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864,

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2.1.2 Mathematica

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B grade: { 527, 543, 544, 553, 563, 564, 565, 566, 579, 580, 581, 596, 597, 598, 612, 613, 614, 980, 1083, 1088, 1168, 1177, 1178, 1179, 1188, 1189, 1190, 1284, 1458, 1487, 1508, 1518, 1623, 1624, 1625, 1626, 1654, 1659, 1660, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1686, 1687, 1688, 1731, 1738, 1752, 1753, 1895, 1896, 1905, 1906, 1907, 1908, 1909, 1910, 1916, 1917, 1918, 1919, 1920, 1921, 1924, 1925, 1946, 1981, 1988, 2005, 2006, 2183, 2184, 2195, 2196, 2197, 2198, 2318, 2333, 2372, 2482, 2489, 2490, 2491, 2640 }

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B grade: { 1, 14, 27, 34, 69, 81, 82, 85, 86, 87, 95, 96, 99, 100, 101, 102, 103, 129, 130, 131, 309, 335, 348, 349, 350, 485, 486, 487, 527, 534, 543, 544, 553, 563, 564, 565, 566, 579, 580, 581, 596, 597, 598, 599, 612, 613, 689, 697, 728, 829, 832, 836, 837, 838, 841, 842, 881, 882, 883, 884, 890, 891, 892, 895, 896, 897, 910, 911, 912, 913, 914, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 959, 960, 961, 962, 963, 964, 967, 968, 969, 970, 971, 975, 976, 977, 978, 979, 980, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1083, 1084, 1085, 1102, 1114, 1119, 1120, 1127, 1133, 1134, 1135, 1138, 1146, 1147, 1154, 1155, 1156, 1162, 1163, 1164, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1183, 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1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1810, 1812, 1813, 1814, 1815, 1816, 1817, 1818, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1859, 1860, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1876, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1888, 1889, 1895, 1896, 1897, 1898, 1899, 1900, 1902, 1903, 1904, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1927, 1936, 1937, 1945, 1946, 1954, 1963, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1981, 1982, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2003, 2005, 2006, 2007, 2008, 2015, 2025, 2033, 2034, 2040, 2041, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2074, 2075, 2076, 2083, 2084, 2085, 2090, 2091, 2130, 2131, 2132, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2151, 2152, 2158, 2172, 2173, 2174, 2175, 2176, 2177, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2209, 2210, 2211, 2217, 2218, 2219, 2222, 2223, 2224, 2225, 2228, 2229, 2230, 2237, 2238, 2239, 2245, 2246, 2247, 2248, 2249, 2256, 2257, 2258, 2259, 2260, 2261, 2266, 2267, 2273, 2274, 2275, 2281, 2282, 2283, 2284, 2293, 2301, 2302, 2304, 2305, 2306, 2318, 2324, 2325, 2326, 2327, 2328, 2329, 2333, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2350, 2364, 2365, 2366, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2376, 2377, 2427, 2428, 2437, 2442, 2443, 2444, 2445, 2452, 2458, 2459, 2460, 2461, 2462, 2463, 2465, 2466, 2467, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2477, 2478, 2479, 2480, 2481, 2482, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2517, 2521, 2582, 2583, 2590, 2591, 2592, 2593, 2601, 2602, 2603, 2604, 2605, 2622, 2623, 2624, 2625, 2626, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642 }

C grade: { 498, 500, 658, 659, 660, 1713, 1714, 1715, 1960, 1961, 1962 }

F grade: { 489, 490, 491, 492, 493, 494, 495, 496, 497, 499, 501, 502, 503, 504, 505, 506, 507, 508, 509, 839, 840, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1490, 1491, 1492, 1657, 1658, 1886, 1887, 1891, 1892, 1893, 2149, 2150, 2155, 2156, 2162, 2285, 2286, 2287, 2288, 2289, 2290, 2643, 2644, 2645, 2646 }

2.1.4 Maxima

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70, 71, 72, 73, 75, 76, 77, 78, 79, 80, 83, 84, 85, 86, 87, 93, 94, 97, 98, 99, 100, 101, 102, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 133, 136, 137, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 203, 204, 225, 226, 227, 228, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 485, 486, 487, 488, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 528, 529, 530, 531, 532, 533, 535, 536, 537, 538, 539, 540, 541, 542, 545, 546, 547, 548, 549, 550, 551, 552, 555, 556, 557, 558, 559, 560, 561, 562, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 647, 648, 650, 651, 652, 658, 668, 671, 684, 685, 690, 691, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 818, 819, 820, 824, 825, 826, 827, 828, 835, 836, 837, 838, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1083, 1084, 1085, 1103, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1125, 1126, 1128, 1129, 1130, 1131, 1132, 1134, 1135, 1136, 1137, 1138, 1139, 1140, 1141, 1142, 1143, 1144, 1147, 1148, 1149, 1150, 1151, 1155, 1156, 1157, 1158, 1159, 1162, 1165, 1191, 1192, 1193, 1194, 1199, 1200, 1201, 1202, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1224, 1225, 1226, 1227, 1228, 1285, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329, 1330, 1331, 1332, 1333, 1334, 1335, 1336, 1337, 1338, 1339, 1340, 1341, 1342, 1343, 1344, 1345, 1346, 1347, 1349, 1350, 1351, 1352, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1361, 1362, 1363, 1364, 1365, 1366, 1367, 1368, 1369, 1370, 1371, 1372, 1373, 1374, 1375, 1376, 1381, 1382, 1383, 1384, 1385, 1386, 1387, 1388, 1389, 1390, 1397, 1398, 1399, 1400, 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1418, 1419, 1420, 1421, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1444, 1445, 1446, 1470, 1489, 1493, 1494, 1495, 1496, 1497, 1498, 1499, 1500, 1501, 1502, 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1512, 1513, 1514, 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1528, 1536, 1544, 1550, 1560, 1568, 1576, 1585, 1592, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1610, 1611, 1612, 1662, 1663, 1664, 1665, 1666, 1667, 1668, 1670, 1671, 1694, 1695, 1696, 1697, 1698, 1703, 1704, 1705, 1760, 1761, 1762, 1769, 1770, 1771, 1779, 1780, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1836, 1837, 1838, 1839, 1840, 1841, 1842, 1846, 1847, 1848, 1849, 1850, 1856, 1857, 1858, 1890, 1897, 1900, 1901, 1902, 1903, 1904, 1911, 1922, 1927, 1928, 1929, 1930, 1932, 1933, 1936, 1937, 1938, 1939, 1940, 1947, 1948, 1949, 1959, 1975, 1997, 2019, 2029, 2038, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2104, 2105, 2106, 2107, 2108, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2153, 2154, 2161, 2165, 2166, 2167, 2168, 2231, 2232, 2233, 2234, 2243, 2244, 2262, 2263, 2264, 2268, 2269, 2270, 2271, 2276, 2277, 2278, 2279, 2280, 2291, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574 }

B grade: { 34, 69, 74, 81, 82, 88, 89, 90, 91, 92, 95, 96, 103, 104, 105, 106, 107, 108, 129, 130, 131, 132, 134, 135, 138, 139, 205, 206, 207, 214, 215, 216, 217, 218, 350, 527, 534, 543, 544, 553, 554, 563, 564, 565, 566, 579, 580, 581, 596, 597, 598, 612, 613, 646, 649, 653, 654, 655, 656, 657, 659, 660, 661, 662, 663, 664, 665, 666, 667, 669, 670, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 686, 687, 688, 689, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 724, 813, 814, 815, 816, 817, 821, 822, 823, 829, 830, 831, 832, 833, 834, 909, 980, 1102, 1114, 1127, 1133, 1145, 1146, 1152, 1153, 1154, 1160, 1161, 1163, 1164, 1172, 1173, 1174, 1183, 1184, 1185, 1206, 1207, 1208, 1209, 1210, 1284, 1297, 1348, 1353, 1377, 1378, 1379, 1380, 1391, 1392, 1393, 1394, 1395, 1396, 1417, 1487, 1488, 1654, 1655, 1656, 1659, 1660, 1661, 1669, 1672, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1699, 1700, 1701, 1702, 1706, 1707, 1708, 1709, 1710, 1711, 1712, 1720, 1721, 1722, 1723, 1724, 1725, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1759, 1767, 1768, 1775, 1776, 1777, 1778, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1835, 1843, 1844, 1845, 1851, 1852, 1853, 1854, 1855, 1884, 1885, 1888, 1889, 1895, 1896, 1898, 1899, 1905, 1906, 1907, 1908, 1909, 1910, 1912, 1913, 1914, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1923, 1924, 1925, 1926, 1931, 1934, 1935, 1941, 1942, 1943, 1944, 1945, 1946, 1950, 1951, 1952, 1953, 1954, 1955, 1956, 1957, 1958, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 2015, 2016, 2017, 2018, 2025, 2026, 2027, 2028, 2033, 2034, 2035, 2036, 2037, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2092, 2100, 2101, 2102, 2103, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2146, 2147, 2148, 2151, 2152, 2158, 2159, 2160, 2163, 2164, 2169, 2170, 2171, 2199, 2240, 2241, 2242, 2250, 2251, 2252, 2253, 2254, 2255, 2318, 2333, 2427, 2428, 2429, 2430, 2431, 2442, 2443, 2444, 2445, 2446, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2515, 2516, 2517, 2554, 2640, 2641, 2642 }

C grade: { }

F grade: { 199, 200, 201, 202, 208, 209, 210, 211, 212, 213, 219, 220, 221, 222, 223, 224, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 839, 840, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1166, 1167, 1168, 1169, 1170, 1171, 1175, 1176, 1177, 1178, 1179, 1180, 1181, 1182, 1186, 1187, 1188, 1189, 1190, 1195, 1196, 1197, 1198, 1203, 1204, 1205, 1211, 1212, 1229, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1238, 1239, 1240, 1241, 1242, 1243, 1244, 1245, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 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F grade: { 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 839, 840, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1145, 1152, 1153, 1160, 1161, 1186, 1187, 1238, 1239, 1246, 1247, 1253, 1254, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1352, 1353, 1457, 1462, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1490, 1491, 1492, 1553, 1561, 1562, 1563, 1564, 1569, 1570, 1571, 1572, 1617, 1622, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1657, 1658, 1886, 1887, 1891, 1892, 1893, 2149, 2150, 2155, 2156, 2162, 2180, 2181, 2182, 2192, 2193, 2194, 2205, 2206, 2207, 2208, 2216, 2222, 2228, 2229, 2230, 2285, 2286, 2287, 2288, 2289, 2290, 2301, 2302, 2303, 2304, 2305, 2370, 2376, 2377, 2487, 2492, 2494, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2643, 2644, 2645, 2646 }

2.1.6 Sympy

A grade: { 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 51, 52, 53, 54, 55, 59, 60, 61, 62, 63, 66, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 179, 180, 181, 182, 183, 191, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 292, 293, 297, 298, 299, 300, 301, 306, 307, 308, 309, 310, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 337, 339, 340, 341, 342, 343, 344, 345, 346, 347, 354, 355, 356, 357, 359, 360, 361, 362, 363, 365, 366, 367, 368, 369, 372, 375, 377, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 420, 421, 422, 423, 424, 432, 485, 486, 487, 488, 505, 506, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 528, 529, 530, 531, 532, 533, 535, 536, 537, 538, 539, 540, 541, 545, 546, 547, 548, 549, 550, 551, 552, 555, 556, 557, 558, 559, 560, 561, 562, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 632, 633, 634, 635, 636, 637, 638, 639, 642, 643, 644, 645, 647, 648, 650, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 767, 768, 769, 770, 771, 836, 837, 838, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000, 1001, 1002, 1003, 1004, 1005, 1006, 1007, 1008, 1083, 1084, 1085, 1102, 1104, 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1115, 1116, 1117, 1118, 1119, 1120, 1121, 1122, 1123, 1124, 1128, 1129, 1130, 1131, 1132, 1135, 1136, 1137, 1141, 1213, 1214, 1216, 1217, 1218, 1219, 1220, 1221, 1224, 1225, 1226, 1227, 1228, 1230, 1231, 1232, 1233, 1234, 1235, 1236, 1237, 1286, 1287, 1288, 1289, 1290, 1291, 1292, 1293, 1294, 1295, 1296, 1298, 1299, 1300, 1301, 1302, 1303, 1304, 1305, 1306, 1307, 1308, 1309, 1314, 1315, 1316, 1317, 1318, 1319, 1320, 1321, 1322, 1323, 1342, 1343, 1349, 1350, 1351, 1354, 1355, 1356, 1357, 1358, 1359, 1360, 1368, 1369, 1370, 1371, 1372, 1381, 1382, 1383, 1384, 1385, 1397, 1398, 1399, 1400, 1401, 1412, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441, 1442, 1443, 1445, 1446, 1465, 1467, 1470, 1489, 1495, 1496, 1497, 1499, 1500, 1501, 1502, 1503, 1505, 1506, 1507, 1509, 1510, 1511, 1512, 1513, 1515, 1516, 1517, 1519, 1520, 1521, 1528, 1536, 1576, 1585, 1595, 1596, 1597, 1598, 1599, 1600, 1601, 1602, 1603, 1604, 1605, 1606, 1607, 1608, 1609, 1656, 1662, 1663, 1664, 1665, 1666, 1667, 1694, 1695, 1696, 1697, 1704, 1705, 1708, 1709, 1710, 1711, 1712, 1713, 1714, 1715, 1716, 1717, 1718, 1719, 1759, 1760, 1761, 1762, 1784, 1785, 1786, 1787, 1788, 1789, 1790, 1791, 1792, 1793, 1794, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1885, 1901, 1902, 1903, 1904, 1913, 1927, 1928, 1929, 1930, 1931, 1936, 1937, 1938, 1939, 1947, 1955, 1956, 1957, 1958, 1959, 1960, 1961, 1962, 1964, 1965, 1966, 1967, 1975, 1997, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2029, 2038, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2062, 2064, 2069, 2070, 2071, 2072, 2073, 2148, 2161, 2163, 2164, 2170, 2171, 2291, 2294, 2295, 2296, 2297, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2336, 2337, 2338, 2339, 2350, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2528, 2529, 2530, 2531, 2535, 2536, 2537, 2538, 2539, 2540, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2561, 2642 }

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C grade: { 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 458, 459, 460, 461, 462, 463, 464, 465, 467, 468, 469, 470, 471, 472, 473, 480, 481, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 502, 503, 504, 507, 508, 509, 2298, 2299, 2300 }

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B grade: { 1, 14, 27, 34, 73, 74, 75, 76, 77, 78, 87, 88, 89, 90, 91, 92, 102, 103, 104, 105, 106, 107, 108, 132, 203, 204, 205, 206, 207, 214, 215, 216, 217, 218, 250, 321, 322, 323, 324, 325, 333, 334, 335, 336, 337, 338, 347, 348, 349, 350, 351, 352, 353, 361, 363, 364, 372, 373, 485, 486, 487, 488, 527, 534, 543, 544, 553, 554, 563, 564, 565, 566, 579, 580, 581, 596, 597, 598, 599, 612, 613, 670, 676, 688, 689, 697, 698, 836, 837, 838, 841, 842, 909, 917, 918, 919, 920, 921, 929, 930, 931, 932, 933, 934, 937, 938, 939, 942, 943, 944, 945, 946, 947, 948, 949, 957, 958, 959, 960, 968, 969, 972, 974, 977, 978, 979, 980, 1009, 1010, 1011, 1012, 1013, 1014, 1015, 1016, 1017, 1018, 1019, 1020, 1021, 1022, 1023, 1024, 1025, 1026, 1027, 1028, 1083, 1084, 1085, 1102, 1114, 1119, 1120, 1123, 1127, 1133, 1134, 1143, 1146, 1152, 1153, 1154, 1156, 1160, 1161, 1168, 1169, 1170, 1171, 1177, 1178, 1179, 1180, 1181, 1182, 1188, 1189, 1196, 1197, 1198, 1204, 1205, 1208, 1211, 1212, 1213, 1214, 1215, 1216, 1221, 1222, 1223, 1224, 1229, 1230, 1237, 1238, 1239, 1240, 1241, 1244, 1246, 1247, 1248, 1249, 1250, 1251, 1252, 1253, 1254, 1284, 1285, 1297, 1307, 1323, 1348, 1362, 1363, 1364, 1365, 1366, 1367, 1374, 1375, 1376, 1378, 1379, 1380, 1387, 1388, 1389, 1390, 1391, 1392, 1393, 1394, 1395, 1396, 1402, 1403, 1404, 1405, 1407, 1414, 1415, 1416, 1426, 1428, 1429, 1430, 1435, 1447, 1448, 1449, 1451, 1453, 1454, 1455, 1456, 1457, 1459, 1460, 1461, 1463, 1487, 1488, 1489, 1494, 1504, 1508, 1513, 1514, 1518, 1520, 1523, 1531, 1538, 1539, 1540, 1541, 1545, 1554, 1556, 1557, 1558, 1559, 1565, 1566, 1567, 1579, 1580, 1581, 1582, 1583, 1584, 1586, 1588, 1589, 1590, 1591, 1593, 1594, 1595, 1596, 1597, 1601, 1602, 1603, 1605, 1607, 1608, 1609, 1610, 1611, 1612, 1613, 1614, 1616, 1617, 1618, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1654, 1655, 1656, 1659, 1660, 1661, 1666, 1669, 1673, 1674, 1675, 1676, 1677, 1678, 1679, 1680, 1681, 1682, 1683, 1684, 1685, 1686, 1687, 1688, 1689, 1690, 1691, 1692, 1693, 1694, 1700, 1701, 1706, 1707, 1708, 1709, 1720, 1721, 1722, 1723, 1724, 1725, 1726, 1730, 1731, 1732, 1738, 1739, 1740, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748, 1749, 1750, 1751, 1752, 1753, 1754, 1755, 1756, 1757, 1758, 1759, 1766, 1773, 1782, 1784, 1785, 1786, 1787, 1792, 1793, 1794, 1795, 1796, 1797, 1798, 1799, 1800, 1801, 1802, 1803, 1804, 1805, 1806, 1807, 1808, 1809, 1815, 1816, 1817, 1819, 1820, 1821, 1822, 1823, 1824, 1825, 1826, 1827, 1828, 1829, 1830, 1831, 1832, 1833, 1834, 1835, 1836, 1837, 1838, 1843, 1844, 1845, 1846, 1848, 1849, 1850, 1851, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1866, 1869, 1870, 1871, 1872, 1873, 1874, 1875, 1877, 1878, 1879, 1880, 1881, 1882, 1883, 1884, 1885, 1888, 1889, 1890, 1894, 1895, 1896, 1897, 1898, 1899, 1900, 1902, 1905, 1906, 1907, 1908, 1909, 1910, 1911, 1912, 1913, 1915, 1916, 1917, 1918, 1919, 1920, 1921, 1922, 1923, 1924, 1925, 1926, 1931, 1934, 1935, 1941, 1943, 1944, 1946, 1950, 1951, 1952, 1953, 1954, 1955, 1963, 1968, 1969, 1970, 1971, 1972, 1973, 1974, 1975, 1981, 1982, 1983, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 2005, 2006, 2007, 2008, 2027, 2028, 2030, 2031, 2032, 2040, 2042, 2043, 2044, 2045, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2074, 2075, 2080, 2081, 2082, 2083, 2084, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2100, 2101, 2102, 2110, 2111, 2112, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2130, 2134, 2135, 2136, 2137, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2151, 2152, 2153, 2157, 2158, 2159, 2160, 2163, 2165, 2167, 2168, 2169, 2170, 2183, 2184, 2185, 2190, 2195, 2196, 2197, 2217, 2218, 2219, 2223, 2224, 2225, 2226, 2227, 2291, 2292, 2293, 2306, 2318, 2319, 2325, 2328, 2333, 2334, 2339, 2340, 2342, 2343, 2347, 2348, 2349, 2350, 2371, 2372, 2373, 2376, 2377, 2412, 2413, 2414, 2416, 2417, 2424, 2425, 2426, 2428, 2429, 2430, 2431, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2453, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2471, 2472, 2477, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2501, 2502, 2503, 2505, 2512, 2513, 2514, 2522, 2554, 2575, 2640, 2641, 2642 }

C grade: { }

F grade: { 123, 125, 126, 127, 128, 131, 133, 135, 136, 137, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 839, 840, 915, 916, 927, 928, 940, 941, 955, 1029, 1030, 1031, 1032, 1033, 1034, 1035, 1036, 1037, 1038, 1039, 1040, 1041, 1042, 1043, 1044, 1045, 1046, 1047, 1048, 1049, 1050, 1051, 1052, 1053, 1054, 1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064, 1065, 1066, 1067, 1068, 1069, 1070, 1071, 1072, 1073, 1074, 1075, 1076, 1077, 1078, 1079, 1080, 1081, 1082, 1086, 1087, 1088, 1089, 1090, 1091, 1092, 1093, 1094, 1095, 1096, 1097, 1098, 1099, 1100, 1101, 1166, 1167, 1175, 1176, 1186, 1187, 1190, 1195, 1255, 1256, 1257, 1258, 1259, 1260, 1261, 1262, 1263, 1264, 1265, 1266, 1267, 1268, 1269, 1270, 1271, 1272, 1273, 1274, 1275, 1276, 1277, 1278, 1279, 1280, 1281, 1282, 1283, 1452, 1458, 1462, 1464, 1466, 1472, 1473, 1474, 1475, 1476, 1477, 1478, 1479, 1480, 1481, 1482, 1483, 1484, 1485, 1486, 1490, 1491, 1492, 1493, 1551, 1552, 1553, 1555, 1561, 1562, 1563, 1564, 1569, 1570, 1571, 1572, 1577, 1578, 1587, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636, 1637, 1638, 1639, 1640, 1641, 1642, 1643, 1644, 1645, 1646, 1647, 1648, 1649, 1650, 1651, 1652, 1653, 1657, 1658, 1767, 1768, 1769, 1770, 1771, 1772, 1774, 1775, 1776, 1777, 1778, 1779, 1780, 1781, 1783, 1886, 1887, 1891, 1892, 1893, 2029, 2033, 2034, 2035, 2036, 2037, 2039, 2041, 2149, 2150, 2154, 2155, 2156, 2162, 2164, 2166, 2171, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2186, 2187, 2188, 2189, 2191, 2192, 2193, 2194, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2212, 2213, 2214, 2215, 2216, 2220, 2221, 2222, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2301, 2302, 2303, 2304, 2305, 2469, 2470, 2478, 2494, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2643, 2644, 2645, 2646 }

2.1.8 Mupad

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2.2 Detailed conclusion table per each integral for all CAS systems

Detailed conclusion table per each integral is given by table below. The elapsed time is in seconds. For failed result it is given as F(-1) if the failure was due to timeout. It is given as F(-2) if the failure was due to an exception being raised, which could indicate a bug in the system. If the failure was due to integral not being evaluated within the time limit, then it is given just an F.

In this table,the column **normalized size** is defined as $\frac{\text{antiderivative leaf size}}{\text{optimal antiderivative leaf size}}$

Problem 1	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	57	98	53	94	394	149	97
normalized size	1	1.00	1.27	2.18	1.18	2.09	8.76	3.31	2.16
time (sec)	N/A	0.021	0.042	0.050	0.855	1.085	0.806	0.228	1.134

Problem 2	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	28	27	29	29	29	28
normalized size	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85
time (sec)	N/A	0.044	0.006	0.049	0.861	0.726	0.065	0.146	0.041

Problem 3	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	28	27	29	29	29	28
normalized size	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85
time (sec)	N/A	0.036	0.005	0.047	0.842	0.719	0.065	0.147	0.038

Problem 4	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	28	27	29	29	29	28
normalized size	1	1.00	1.00	0.85	0.82	0.88	0.88	0.88	0.85
time (sec)	N/A	0.026	0.005	0.045	0.811	0.848	0.066	0.146	0.038

Problem 5	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	29	28	27	29	29	29	28
normalized size	1	1.00	0.88	0.85	0.82	0.88	0.88	0.88	0.85
time (sec)	N/A	0.019	0.005	0.042	0.892	0.885	0.064	0.145	0.037

Problem 6	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	25	24	24	26	26	25
normalized size	1	1.00	1.00	0.89	0.86	0.86	0.93	0.93	0.89
time (sec)	N/A	0.018	0.005	0.049	0.846	0.956	0.064	0.147	0.035

Problem 7	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	22	22	22	22	22	22
normalized size	1	1.00	1.00	0.92	0.92	0.92	0.92	0.92	0.92
time (sec)	N/A	0.013	0.005	0.043	0.900	0.617	0.113	0.145	0.035

Problem 8	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	23	22	26	19	23	22
normalized size	1	1.00	1.00	1.05	1.00	1.18	0.86	1.05	1.00
time (sec)	N/A	0.016	0.009	0.049	0.874	0.924	0.148	0.148	0.043

Problem 9	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	28	28	25	29	27	26	25
normalized size	1	1.00	1.04	1.04	0.93	1.07	1.00	0.96	0.93
time (sec)	N/A	0.017	0.010	0.052	0.842	1.049	0.224	0.150	1.017

Problem 10	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	28	28	27	27	31	27	27
normalized size	1	1.00	0.90	0.90	0.87	0.87	1.00	0.87	0.87
time (sec)	N/A	0.017	0.010	0.046	0.883	0.750	0.280	0.148	0.038

Problem 11	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	29	28	27	27	31	27	28
normalized size	1	1.00	0.88	0.85	0.82	0.82	0.94	0.82	0.85
time (sec)	N/A	0.017	0.008	0.046	0.904	0.878	0.338	0.152	0.036

Problem 12	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	31	28	27	27	31	27	28
normalized size	1	1.00	0.94	0.85	0.82	0.82	0.94	0.82	0.85
time (sec)	N/A	0.017	0.010	0.050	0.911	0.902	0.410	0.149	0.040

Problem 13	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	31	28	27	27	31	27	28
normalized size	1	1.00	0.94	0.85	0.82	0.82	0.94	0.82	0.85
time (sec)	N/A	0.016	0.009	0.054	0.879	0.698	0.485	0.146	0.039

Problem 14	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	246	91	217	1027	340	179
normalized size	1	1.00	1.00	3.46	1.28	3.06	14.46	4.79	2.52
time (sec)	N/A	0.042	0.096	0.057	0.859	0.634	1.552	0.173	1.199

Problem 15	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	52	51	53	54	53	51
normalized size	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.062	0.010	0.046	0.874	0.486	0.076	0.170	1.053

Problem 16	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	52	51	53	54	53	51
normalized size	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.056	0.009	0.047	0.888	0.756	0.081	0.170	0.047

Problem 17	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	52	51	53	54	53	51
normalized size	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.049	0.008	0.046	0.843	0.746	0.077	0.161	0.045

Problem 18	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	49	52	51	53	54	53	51
normalized size	1	1.00	0.89	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.034	0.011	0.043	0.922	0.781	0.076	0.147	0.047

Problem 19	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	49	52	51	51	54	53	51
normalized size	1	1.00	0.89	0.95	0.93	0.93	0.98	0.96	0.93
time (sec)	N/A	0.036	0.010	0.045	0.897	0.859	0.078	0.178	0.048

Problem 20	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	47	49	48	48	49	49	47
normalized size	1	1.00	1.24	1.29	1.26	1.26	1.29	1.29	1.24
time (sec)	N/A	0.027	0.010	0.042	0.945	0.850	0.078	0.150	0.047

Problem 21	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	43	46	46	46	46	46	45
normalized size	1	1.00	0.93	1.00	1.00	1.00	1.00	1.00	0.98
time (sec)	N/A	0.027	0.015	0.046	0.901	0.536	0.144	0.150	0.041

Problem 22	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	43	46	46	52	42	46	46
normalized size	1	1.00	0.98	1.05	1.05	1.18	0.95	1.05	1.05
time (sec)	N/A	0.032	0.028	0.052	0.888	0.948	0.187	0.161	0.045

Problem 23	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	48	46	53	46	47	46
normalized size	1	1.00	1.00	1.09	1.05	1.20	1.05	1.07	1.05
time (sec)	N/A	0.030	0.025	0.053	0.934	0.824	0.332	0.159	1.042

Problem 24	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	47	52	50	53	54	51	48
normalized size	1	1.00	0.96	1.06	1.02	1.08	1.10	1.04	0.98
time (sec)	N/A	0.028	0.025	0.049	0.875	0.847	0.534	0.165	1.118

Problem 25	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	50	48	51	51	56	51	49
normalized size	1	1.00	0.94	0.91	0.96	0.96	1.06	0.96	0.92
time (sec)	N/A	0.030	0.014	0.051	0.918	0.731	0.680	0.149	0.038

Problem 26	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	53	48	51	51	56	51	51
normalized size	1	1.00	0.96	0.87	0.93	0.93	1.02	0.93	0.93
time (sec)	N/A	0.028	0.014	0.046	0.843	0.815	0.857	0.164	0.036

Problem 27	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	87	454	129	381	2026	603	291
normalized size	1	1.00	0.91	4.73	1.34	3.97	21.10	6.28	3.03
time (sec)	N/A	0.059	0.106	0.049	0.908	0.996	2.761	0.255	1.282

Problem 28	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	77	80	77	69
normalized size	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92
time (sec)	N/A	0.081	0.013	0.043	0.901	0.636	0.084	0.155	0.039

Problem 29	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	77	82	77	69
normalized size	1	1.00	1.00	1.01	0.97	1.03	1.09	1.03	0.92
time (sec)	N/A	0.065	0.011	0.049	0.854	1.015	0.083	0.179	0.032

Problem 30	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	77	82	77	69
normalized size	1	1.00	1.00	1.01	0.97	1.03	1.09	1.03	0.92
time (sec)	N/A	0.057	0.011	0.042	0.877	0.613	0.083	0.156	0.033

Problem 31	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	77	80	77	69
normalized size	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92
time (sec)	N/A	0.055	0.010	0.040	0.881	0.616	0.083	0.150	0.032

Problem 32	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	73	82	77	69
normalized size	1	1.00	1.00	1.01	0.97	0.97	1.09	1.03	0.92
time (sec)	N/A	0.044	0.010	0.041	0.939	0.940	0.085	0.150	0.033

Problem 33	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	67	76	73	73	80	76	68
normalized size	1	1.00	1.08	1.23	1.18	1.18	1.29	1.23	1.10
time (sec)	N/A	0.042	0.014	0.049	0.815	0.719	0.084	0.147	0.031

Problem 34	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	67	73	69	69	73	72	65
normalized size	1	1.00	1.76	1.92	1.82	1.82	1.92	1.89	1.71
time (sec)	N/A	0.020	0.008	0.047	0.897	0.806	0.083	0.156	0.030

Problem 35	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	63	70	68	68	73	70	63
normalized size	1	1.00	0.95	1.06	1.03	1.03	1.11	1.06	0.95
time (sec)	N/A	0.041	0.025	0.048	0.932	0.912	0.172	0.149	0.035

Problem 36	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	67	71	69	75	70	71	65
normalized size	1	1.00	1.03	1.09	1.06	1.15	1.08	1.09	1.00
time (sec)	N/A	0.047	0.034	0.053	0.908	0.696	0.219	0.181	0.041

Problem 37	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	71	71	69	74	68	69	70
normalized size	1	1.00	1.09	1.09	1.06	1.14	1.05	1.06	1.08
time (sec)	N/A	0.045	0.020	0.061	0.897	1.212	0.361	0.151	1.058

Problem 38	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	73	72	69	75	73	70	70
normalized size	1	1.00	1.14	1.12	1.08	1.17	1.14	1.09	1.09
time (sec)	N/A	0.040	0.033	0.058	0.818	0.880	0.663	0.151	0.067

Problem 39	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	71	76	72	75	80	73	71
normalized size	1	1.00	1.03	1.10	1.04	1.09	1.16	1.06	1.03
time (sec)	N/A	0.038	0.031	0.047	0.921	0.873	0.993	0.181	0.078

Problem 40	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	72	66	73	73	82	75	71
normalized size	1	1.00	1.01	0.93	1.03	1.03	1.15	1.06	1.00
time (sec)	N/A	0.040	0.019	0.050	0.842	1.101	1.298	0.150	1.017

Problem 41	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	74	66	73	73	82	75	73
normalized size	1	1.00	0.99	0.88	0.97	0.97	1.09	1.00	0.97
time (sec)	N/A	0.037	0.019	0.046	0.805	1.044	1.630	0.175	0.043

Problem 42	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	66	73	73	82	75	74
normalized size	1	1.00	1.00	0.88	0.97	0.97	1.09	1.00	0.99
time (sec)	N/A	0.041	0.018	0.047	0.912	0.780	2.040	0.165	0.047

Problem 43	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	80	100	93	94	85	100	94
normalized size	1	1.00	0.92	1.15	1.07	1.08	0.98	1.15	1.08
time (sec)	N/A	0.089	0.030	0.046	0.891	0.930	0.243	0.157	0.049

Problem 44	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	61	76	69	71	61	74	72
normalized size	1	1.00	0.92	1.15	1.05	1.08	0.92	1.12	1.09
time (sec)	N/A	0.057	0.020	0.044	0.949	0.599	0.219	0.163	1.014

Problem 45	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	41	52	46	47	37	49	46
normalized size	1	1.00	0.91	1.16	1.02	1.04	0.82	1.09	1.02
time (sec)	N/A	0.040	0.013	0.053	0.894	1.113	0.188	0.149	1.021

Problem 46	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	32	25	24	20	28	26
normalized size	1	1.00	1.00	1.28	1.00	0.96	0.80	1.12	1.04
time (sec)	N/A	0.023	0.007	0.046	0.940	0.872	0.158	0.138	0.047

Problem 47	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	30	30	29	32	30	29	41	33	28
normalized size	1	1.00	0.97	1.07	1.00	0.97	1.37	1.10	0.93
time (sec)	N/A	0.020	0.009	0.049	0.853	0.798	0.416	0.148	0.096

Problem 48	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	42	51	43	41	95	53	33
normalized size	1	1.00	0.98	1.19	1.00	0.95	2.21	1.23	0.77
time (sec)	N/A	0.037	0.017	0.053	0.848	1.180	0.368	0.242	0.085

Problem 49	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	58	75	63	68	131	78	73
normalized size	1	1.00	0.94	1.21	1.02	1.10	2.11	1.26	1.18
time (sec)	N/A	0.048	0.031	0.049	0.916	0.911	0.445	0.184	0.085

Problem 50	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	81	101	89	94	165	103	97
normalized size	1	1.00	0.94	1.17	1.03	1.09	1.92	1.20	1.13
time (sec)	N/A	0.065	0.048	0.052	0.878	0.841	0.499	0.160	0.094

Problem 51	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	87	109	98	139	92	107	115
normalized size	1	1.00	0.97	1.21	1.09	1.54	1.02	1.19	1.28
time (sec)	N/A	0.094	0.053	0.055	0.926	0.754	0.423	0.160	1.026

Problem 52	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	66	84	75	111	68	81	77
normalized size	1	1.00	0.96	1.22	1.09	1.61	0.99	1.17	1.12
time (sec)	N/A	0.069	0.050	0.047	0.906	0.581	0.372	0.154	0.058

Problem 53	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	41	61	50	69	44	51	56
normalized size	1	1.00	0.91	1.36	1.11	1.53	0.98	1.13	1.24
time (sec)	N/A	0.043	0.023	0.052	0.825	1.148	0.289	0.173	1.030

Problem 54	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	31	39	35	39	27	35	31
normalized size	1	1.00	0.97	1.22	1.09	1.22	0.84	1.09	0.97
time (sec)	N/A	0.030	0.010	0.046	0.845	0.805	0.199	0.154	0.043

Problem 55	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	38	46	43	61	32	48	40
normalized size	1	1.00	0.90	1.10	1.02	1.45	0.76	1.14	0.95
time (sec)	N/A	0.031	0.025	0.054	0.851	0.948	0.294	0.149	1.021

Problem 56	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	56	78	69	111	128	77	57
normalized size	1	1.00	0.86	1.20	1.06	1.71	1.97	1.18	0.88
time (sec)	N/A	0.049	0.037	0.052	0.915	0.894	0.484	0.174	0.087

Problem 57	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	107	100	151	184	111	105
normalized size	1	1.00	1.00	1.26	1.18	1.78	2.16	1.31	1.24
time (sec)	N/A	0.076	0.066	0.056	0.898	0.845	0.593	0.159	0.110

Problem 58	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	106	134	129	180	219	139	132
normalized size	1	1.00	0.94	1.19	1.14	1.59	1.94	1.23	1.17
time (sec)	N/A	0.104	0.082	0.120	0.971	0.858	0.661	0.154	1.082

Problem 59	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	86	117	106	167	107	104	108
normalized size	1	1.00	0.91	1.24	1.13	1.78	1.14	1.11	1.15
time (sec)	N/A	0.099	0.052	0.072	0.813	0.965	0.677	0.151	1.038

Problem 60	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	75	94	83	131	83	74	87
normalized size	1	1.00	1.06	1.32	1.17	1.85	1.17	1.04	1.23
time (sec)	N/A	0.064	0.027	0.053	0.934	0.561	0.547	0.189	1.077

Problem 61	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	54	70	63	79	63	55	63
normalized size	1	1.00	0.98	1.27	1.15	1.44	1.15	1.00	1.15
time (sec)	N/A	0.047	0.016	0.048	0.914	1.004	0.357	0.153	1.050

Problem 62	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	26	35	38	38	39	26	39
normalized size	1	1.00	0.72	0.97	1.06	1.06	1.08	0.72	1.08
time (sec)	N/A	0.029	0.009	0.050	0.916	0.909	0.281	0.180	1.026

Problem 63	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	53	59	68	109	63	60	62
normalized size	1	1.00	0.93	1.04	1.19	1.91	1.11	1.05	1.09
time (sec)	N/A	0.044	0.040	0.051	0.921	0.918	0.411	0.167	0.067

Problem 64	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	81	105	104	195	168	107	84
normalized size	1	1.00	0.92	1.19	1.18	2.22	1.91	1.22	0.95
time (sec)	N/A	0.075	0.048	0.054	0.865	0.786	0.639	0.160	1.095

Problem 65	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	102	138	136	234	219	132	132
normalized size	1	1.00	0.93	1.25	1.24	2.13	1.99	1.20	1.20
time (sec)	N/A	0.093	0.075	0.055	0.946	0.572	0.737	0.205	1.117

Problem 66	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	129	168	165	263	262	165	163
normalized size	1	1.00	0.92	1.20	1.18	1.88	1.87	1.18	1.16
time (sec)	N/A	0.124	0.117	0.056	0.994	0.838	0.798	0.172	1.087

Problem 67	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	166	291	288	349	0	188	267
normalized size	1	1.00	0.83	1.46	1.44	1.74	0.00	0.94	1.34
time (sec)	N/A	0.191	0.282	0.053	0.899	0.990	0.000	0.218	1.822

Problem 68	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	148	245	242	302	0	160	215
normalized size	1	1.00	0.90	1.48	1.47	1.83	0.00	0.97	1.30
time (sec)	N/A	0.160	0.252	0.052	0.862	0.991	0.000	0.241	1.481

Problem 69	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	128	201	198	253	0	132	165
normalized size	1	1.00	1.13	1.78	1.75	2.24	0.00	1.17	1.46
time (sec)	N/A	0.050	0.214	0.053	0.899	0.732	0.000	0.431	1.517

Problem 70	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	108	157	154	204	0	102	127
normalized size	1	1.00	1.11	1.62	1.59	2.10	0.00	1.05	1.31
time (sec)	N/A	0.038	0.180	0.050	0.945	0.820	0.000	0.198	1.376

Problem 71	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	89	112	109	153	0	77	101
normalized size	1	1.00	0.97	1.22	1.18	1.66	0.00	0.84	1.10
time (sec)	N/A	0.072	0.144	0.051	0.885	0.724	0.000	0.233	1.318

Problem 72	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	75	113	89	138	0	82	-1
normalized size	1	1.00	0.90	1.36	1.07	1.66	0.00	0.99	-0.01
time (sec)	N/A	0.086	0.140	0.057	0.839	0.912	0.000	0.215	0.000

Problem 73	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	86	89	85	141	0	151	-1
normalized size	1	1.00	1.18	1.22	1.16	1.93	0.00	2.07	-0.01
time (sec)	N/A	0.075	0.063	0.067	0.953	1.220	0.000	0.255	0.000

Problem 74	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	36	40	100	55	0	191	100
normalized size	1	1.00	0.63	0.70	1.75	0.96	0.00	3.35	1.75
time (sec)	N/A	0.045	0.013	0.046	0.948	0.792	0.000	0.250	1.444

Problem 75	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	56	62	146	80	0	251	146
normalized size	1	1.00	0.62	0.69	1.62	0.89	0.00	2.79	1.62
time (sec)	N/A	0.087	0.031	0.047	0.927	0.705	0.000	0.228	1.665

Problem 76	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	78	86	192	105	0	311	192
normalized size	1	1.00	0.62	0.69	1.54	0.84	0.00	2.49	1.54
time (sec)	N/A	0.109	0.031	0.046	0.978	0.853	0.000	0.198	1.941

Problem 77	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	100	110	238	129	0	371	238
normalized size	1	1.00	0.62	0.69	1.49	0.81	0.00	2.32	1.49
time (sec)	N/A	0.157	0.045	0.049	0.979	0.959	0.000	0.196	2.227

Problem 78	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	123	134	284	153	0	431	284
normalized size	1	1.00	0.63	0.69	1.46	0.78	0.00	2.21	1.46
time (sec)	N/A	0.195	0.043	0.045	0.988	0.936	0.000	0.201	2.487

Problem 79	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	179	373	370	446	0	249	-1
normalized size	1	1.00	0.75	1.57	1.55	1.87	0.00	1.05	-0.00
time (sec)	N/A	0.248	0.433	0.053	0.950	0.900	0.000	0.225	0.000

Problem 80	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	167	327	324	399	0	222	-1
normalized size	1	1.00	0.82	1.61	1.60	1.97	0.00	1.09	-0.00
time (sec)	N/A	0.201	0.337	0.055	1.041	0.866	0.000	0.237	0.000

Problem 81	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	166	283	280	350	0	194	-1
normalized size	1	1.00	1.10	1.87	1.85	2.32	0.00	1.28	-0.01
time (sec)	N/A	0.071	0.291	0.048	0.955	0.905	0.000	0.217	0.000

Problem 82	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	146	239	236	297	0	162	208
normalized size	1	1.00	1.09	1.78	1.76	2.22	0.00	1.21	1.55
time (sec)	N/A	0.051	0.252	0.050	0.895	0.869	0.000	0.219	1.453

Problem 83	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	128	192	189	256	0	138	-1
normalized size	1	1.00	0.97	1.45	1.43	1.94	0.00	1.05	-0.01
time (sec)	N/A	0.100	0.220	0.051	0.858	0.899	0.000	0.209	0.000

Problem 84	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	109	187	147	205	0	109	-1
normalized size	1	1.00	0.87	1.48	1.17	1.63	0.00	0.87	-0.01
time (sec)	N/A	0.136	0.186	0.056	0.898	0.973	0.000	0.238	0.000

Problem 85	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	94	232	129	186	0	109	-1
normalized size	1	1.00	0.80	1.97	1.09	1.58	0.00	0.92	-0.01
time (sec)	N/A	0.120	0.170	0.064	0.866	1.026	0.000	0.259	0.000

Problem 86	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	84	284	146	170	0	181	-1
normalized size	1	1.00	0.70	2.37	1.22	1.42	0.00	1.51	-0.01
time (sec)	N/A	0.120	0.044	0.064	1.001	0.980	0.000	0.269	0.000

Problem 87	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	88	176	158	188	0	270	-1
normalized size	1	1.00	0.93	1.85	1.66	1.98	0.00	2.84	-0.01
time (sec)	N/A	0.104	0.078	0.053	0.952	0.900	0.000	0.247	0.000

Problem 88	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	36	40	176	78	0	311	142
normalized size	1	1.00	0.63	0.70	3.09	1.37	0.00	5.46	2.49
time (sec)	N/A	0.048	0.018	0.048	0.944	0.873	0.000	0.229	2.024

Problem 89	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	56	62	222	104	0	371	188
normalized size	1	1.00	0.62	0.69	2.47	1.16	0.00	4.12	2.09
time (sec)	N/A	0.086	0.027	0.048	0.978	0.870	0.000	0.225	2.396

Problem 90	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	79	86	268	130	0	431	234
normalized size	1	1.00	0.63	0.69	2.14	1.04	0.00	3.45	1.87
time (sec)	N/A	0.118	0.034	0.050	0.960	0.881	0.000	0.398	2.882

Problem 91	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	100	110	314	153	0	491	280
normalized size	1	1.00	0.62	0.69	1.96	0.96	0.00	3.07	1.75
time (sec)	N/A	0.165	0.039	0.045	1.011	0.885	0.000	0.215	3.271

Problem 92	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	122	134	360	177	0	551	326
normalized size	1	1.00	0.63	0.69	1.85	0.91	0.00	2.83	1.67
time (sec)	N/A	0.185	0.043	0.048	0.975	0.871	0.000	0.334	3.780

Problem 93	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	207	455	452	541	0	309	-1
normalized size	1	1.00	0.75	1.65	1.64	1.96	0.00	1.12	-0.00
time (sec)	N/A	0.298	0.356	0.048	0.971	0.636	0.000	0.259	0.000

Problem 94	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	197	409	406	496	0	282	-1
normalized size	1	1.00	0.82	1.70	1.68	2.06	0.00	1.17	-0.00
time (sec)	N/A	0.247	0.396	0.052	0.963	0.792	0.000	0.462	0.000

Problem 95	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	182	365	362	447	0	253	-1
normalized size	1	1.00	0.96	1.93	1.92	2.37	0.00	1.34	-0.01
time (sec)	N/A	0.087	0.406	0.058	0.998	1.083	0.000	0.256	0.000

Problem 96	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	171	321	318	392	0	221	-1
normalized size	1	1.00	1.00	1.88	1.86	2.29	0.00	1.29	-0.01
time (sec)	N/A	0.067	0.389	0.050	0.938	0.895	0.000	0.223	0.000

Problem 97	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	166	274	271	351	0	198	-1
normalized size	1	1.00	0.98	1.61	1.59	2.06	0.00	1.16	-0.01
time (sec)	N/A	0.129	0.291	0.054	0.967	0.700	0.000	0.234	0.000

Problem 98	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	147	266	226	304	0	170	-1
normalized size	1	1.00	0.87	1.57	1.34	1.80	0.00	1.01	-0.01
time (sec)	N/A	0.170	0.257	0.053	0.939	0.930	0.000	0.240	0.000

Problem 99	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	128	306	187	253	0	141	-1
normalized size	1	1.00	0.83	1.97	1.21	1.63	0.00	0.91	-0.01
time (sec)	N/A	0.173	0.224	0.063	0.910	1.217	0.000	0.224	0.000

Problem 100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	117	358	172	240	0	141	-1
normalized size	1	1.00	0.76	2.34	1.12	1.57	0.00	0.92	-0.01
time (sec)	N/A	0.167	0.206	0.060	0.914	0.836	0.000	0.243	0.000

Problem 101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	86	411	191	224	0	211	-1
normalized size	1	1.00	0.55	2.62	1.22	1.43	0.00	1.34	-0.01
time (sec)	N/A	0.164	0.053	0.052	0.960	0.830	0.000	0.282	0.000

Problem 102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	87	460	244	224	0	304	-1
normalized size	1	1.00	0.56	2.97	1.57	1.45	0.00	1.96	-0.01
time (sec)	N/A	0.163	0.052	0.058	0.980	0.968	0.000	0.268	0.000

Problem 103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	83	263	258	238	0	390	-1
normalized size	1	1.00	0.70	2.21	2.17	2.00	0.00	3.28	-0.01
time (sec)	N/A	0.139	0.059	0.060	0.908	0.861	0.000	0.275	0.000

Problem 104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	43	40	258	102	0	431	188
normalized size	1	1.00	0.75	0.70	4.53	1.79	0.00	7.56	3.30
time (sec)	N/A	0.049	0.015	0.044	1.001	1.085	0.000	0.226	2.889

Problem 105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	63	62	304	127	0	491	234
normalized size	1	1.00	0.70	0.69	3.38	1.41	0.00	5.46	2.60
time (sec)	N/A	0.089	0.024	0.048	0.969	1.072	0.000	0.224	3.464

Problem 106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	86	86	350	153	0	551	280
normalized size	1	1.00	0.69	0.69	2.80	1.22	0.00	4.41	2.24
time (sec)	N/A	0.122	0.029	0.047	0.942	0.698	0.000	0.237	4.085

Problem 107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	107	110	396	177	0	611	326
normalized size	1	1.00	0.67	0.69	2.48	1.11	0.00	3.82	2.04
time (sec)	N/A	0.164	0.034	0.049	0.934	0.599	0.000	0.236	4.761

Problem 108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	130	134	442	202	0	671	372
normalized size	1	1.00	0.67	0.69	2.27	1.04	0.00	3.44	1.91
time (sec)	N/A	0.206	0.038	0.049	1.092	1.011	0.000	0.242	5.397

Problem 109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	133	255	252	303	0	165	-1
normalized size	1	1.00	0.68	1.29	1.28	1.54	0.00	0.84	-0.01
time (sec)	N/A	0.200	0.346	0.052	0.958	1.027	0.000	0.231	0.000

Problem 110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	129	209	206	256	0	137	-1
normalized size	1	1.00	0.80	1.29	1.27	1.58	0.00	0.85	-0.01
time (sec)	N/A	0.156	0.329	0.054	0.873	0.869	0.000	0.265	0.000

Problem 111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	116	163	160	207	0	109	-1
normalized size	1	1.00	0.91	1.28	1.26	1.63	0.00	0.86	-0.01
time (sec)	N/A	0.118	0.083	0.058	0.924	0.984	0.000	0.231	0.000

Problem 112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	96	118	115	158	0	83	-1
normalized size	1	1.00	1.28	1.57	1.53	2.11	0.00	1.11	-0.01
time (sec)	N/A	0.034	0.071	0.051	0.790	0.687	0.000	0.235	0.000

Problem 113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	80	78	75	115	0	60	77
normalized size	1	1.00	1.45	1.42	1.36	2.09	0.00	1.09	1.40
time (sec)	N/A	0.022	0.058	0.056	0.904	0.962	0.000	0.224	1.348

Problem 114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	69	51	49	116	0	59	50
normalized size	1	1.00	1.33	0.98	0.94	2.23	0.00	1.13	0.96
time (sec)	N/A	0.035	0.148	0.048	0.734	0.899	0.000	0.321	1.273

Problem 115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	35	39	62	34	0	76	33
normalized size	1	1.00	0.61	0.68	1.09	0.60	0.00	1.33	0.58
time (sec)	N/A	0.043	0.019	0.052	0.871	0.718	0.000	0.224	1.090

Problem 116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	54	62	106	57	0	133	56
normalized size	1	1.00	0.60	0.69	1.18	0.63	0.00	1.48	0.62
time (sec)	N/A	0.081	0.028	0.047	0.915	0.927	0.000	0.225	1.093

Problem 117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	79	86	152	82	0	191	113
normalized size	1	1.00	0.63	0.69	1.22	0.66	0.00	1.53	0.90
time (sec)	N/A	0.109	0.030	0.046	0.926	0.846	0.000	0.219	1.122

Problem 118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	100	110	198	106	0	251	146
normalized size	1	1.00	0.62	0.69	1.24	0.66	0.00	1.57	0.91
time (sec)	N/A	0.143	0.047	0.049	0.893	0.983	0.000	0.220	1.101

Problem 119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	123	134	244	130	0	311	177
normalized size	1	1.00	0.63	0.69	1.25	0.67	0.00	1.59	0.91
time (sec)	N/A	0.177	0.039	0.049	0.954	0.894	0.000	0.223	1.117

Problem 120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	137	215	212	313	0	163	-1
normalized size	1	1.00	0.81	1.26	1.25	1.84	0.00	0.96	-0.01
time (sec)	N/A	0.152	0.216	0.057	0.939	1.123	0.000	0.262	0.000

Problem 121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	109	166	163	262	0	135	-1
normalized size	1	1.00	0.81	1.23	1.21	1.94	0.00	1.00	-0.01
time (sec)	N/A	0.117	0.093	0.051	0.944	0.948	0.000	0.305	0.000

Problem 122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	88	118	115	202	0	106	-1
normalized size	1	1.00	0.89	1.19	1.16	2.04	0.00	1.07	-0.01
time (sec)	N/A	0.089	0.083	0.052	0.883	0.738	0.000	0.278	0.000

Problem 123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	79	67	65	164	0	0	64
normalized size	1	1.00	1.32	1.12	1.08	2.73	0.00	0.00	1.07
time (sec)	N/A	0.028	0.066	0.052	0.873	0.858	0.000	0.000	1.328

Problem 124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	30	37	55	44	0	33	31
normalized size	1	1.00	0.91	1.12	1.67	1.33	0.00	1.00	0.94
time (sec)	N/A	0.009	0.013	0.051	0.898	0.879	0.000	0.219	1.118

Problem 125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	52	58	96	68	0	0	62
normalized size	1	1.00	0.87	0.97	1.60	1.13	0.00	0.00	1.03
time (sec)	N/A	0.032	0.020	0.046	0.908	0.919	0.000	0.000	1.159

Problem 126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	75	86	142	93	0	0	87
normalized size	1	1.00	0.81	0.92	1.53	1.00	0.00	0.00	0.94
time (sec)	N/A	0.084	0.025	0.053	0.921	0.884	0.000	0.000	1.229

Problem 127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	98	110	188	117	0	0	161
normalized size	1	1.00	0.77	0.86	1.47	0.91	0.00	0.00	1.26
time (sec)	N/A	0.115	0.030	0.055	0.922	0.873	0.000	0.000	1.290

Problem 128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	163	163	123	134	234	142	0	0	191
normalized size	1	1.00	0.75	0.82	1.44	0.87	0.00	0.00	1.17
time (sec)	N/A	0.144	0.035	0.048	0.520	0.881	0.000	0.000	1.358

Problem 129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	80	338	362	380	0	253	-1
normalized size	1	1.00	0.47	1.97	2.10	2.21	0.00	1.47	-0.01
time (sec)	N/A	0.168	0.059	0.054	0.684	0.792	0.000	0.493	0.000

Problem 130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	80	283	310	321	0	224	-1
normalized size	1	1.00	0.59	2.08	2.28	2.36	0.00	1.65	-0.01
time (sec)	N/A	0.125	0.056	0.050	0.597	0.852	0.000	0.288	0.000

Problem 131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	99	206	221	239	0	0	-1
normalized size	1	1.00	1.18	2.45	2.63	2.85	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.095	0.046	0.666	0.627	0.000	0.000	0.000

Problem 132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	35	39	134	51	0	119	37
normalized size	1	1.00	0.52	0.58	2.00	0.76	0.00	1.78	0.55
time (sec)	N/A	0.054	0.015	0.050	0.656	0.803	0.000	0.231	1.163

Problem 133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	55	62	111	77	0	0	63
normalized size	1	1.00	0.79	0.89	1.59	1.10	0.00	0.00	0.90
time (sec)	N/A	0.031	0.024	0.048	0.515	0.928	0.000	0.000	1.183

Problem 134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	72	83	130	101	0	82	76
normalized size	1	1.00	1.03	1.19	1.86	1.44	0.00	1.17	1.09
time (sec)	N/A	0.018	0.028	0.048	0.567	0.689	0.000	0.243	1.146

Problem 135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	98	107	176	128	0	0	111
normalized size	1	1.00	1.02	1.11	1.83	1.33	0.00	0.00	1.16
time (sec)	N/A	0.068	0.032	0.047	0.712	0.969	0.000	0.000	1.255

Problem 136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	123	134	224	153	0	0	235
normalized size	1	1.00	0.94	1.02	1.71	1.17	0.00	0.00	1.79
time (sec)	N/A	0.117	0.037	0.051	0.592	0.938	0.000	0.000	1.332

Problem 137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	145	158	270	177	0	0	266
normalized size	1	1.00	0.87	0.95	1.63	1.07	0.00	0.00	1.60
time (sec)	N/A	0.150	0.047	0.052	0.505	0.651	0.000	0.000	1.414

Problem 138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	105	132	210	164	0	147	125
normalized size	1	1.00	0.98	1.23	1.96	1.53	0.00	1.37	1.17
time (sec)	N/A	0.031	0.042	0.044	0.605	0.965	0.000	0.233	1.196

Problem 139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	150	180	292	223	0	205	185
normalized size	1	1.00	1.03	1.24	2.01	1.54	0.00	1.41	1.28
time (sec)	N/A	0.045	0.057	0.068	0.629	0.993	0.000	0.332	1.198

Problem 140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	28	27	32	46	29	27
normalized size	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69
time (sec)	N/A	0.017	0.010	0.050	0.473	0.758	7.886	0.220	0.050

Problem 141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	28	27	32	46	29	27
normalized size	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69
time (sec)	N/A	0.017	0.011	0.046	0.556	1.013	3.857	0.195	0.041

Problem 142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	28	27	32	46	29	27
normalized size	1	1.00	0.85	0.72	0.69	0.82	1.18	0.74	0.69
time (sec)	N/A	0.016	0.009	0.043	0.673	0.725	1.625	0.154	1.021

Problem 143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	28	27	32	37	29	27
normalized size	1	1.00	0.85	0.72	0.69	0.82	0.95	0.74	0.69
time (sec)	N/A	0.015	0.011	0.041	0.583	0.993	2.333	0.147	0.044

Problem 144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	33	28	27	30	46	29	27
normalized size	1	1.00	0.85	0.72	0.69	0.77	1.18	0.74	0.69
time (sec)	N/A	0.016	0.011	0.046	0.503	0.909	0.441	0.149	0.042

Problem 145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	31	28	27	27	44	29	27
normalized size	1	1.00	0.84	0.76	0.73	0.73	1.19	0.78	0.73
time (sec)	N/A	0.015	0.011	0.043	0.584	0.939	0.475	0.174	0.043

Problem 146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	29	28	27	26	41	29	27
normalized size	1	1.00	0.83	0.80	0.77	0.74	1.17	0.83	0.77
time (sec)	N/A	0.016	0.012	0.046	0.706	0.795	0.761	0.148	1.022

Problem 147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	28	27	27	27	41	27	27
normalized size	1	1.00	0.80	0.77	0.77	0.77	1.17	0.77	0.77
time (sec)	N/A	0.016	0.010	0.046	0.589	0.824	1.345	0.151	1.018

Problem 148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	30	28	27	27	46	27	28
normalized size	1	1.00	0.81	0.76	0.73	0.73	1.24	0.73	0.76
time (sec)	N/A	0.017	0.011	0.052	0.508	0.810	2.930	0.148	0.035

Problem 149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	52	51	56	80	53	51
normalized size	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.033	0.019	0.050	0.507	0.728	14.982	0.152	1.033

Problem 150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	52	51	56	80	53	51
normalized size	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.031	0.017	0.046	0.571	0.929	8.357	0.160	0.048

Problem 151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	52	51	56	80	53	51
normalized size	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.029	0.016	0.050	0.542	0.647	4.487	0.151	0.051

Problem 152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	52	51	56	66	53	51
normalized size	1	1.00	0.87	0.83	0.81	0.89	1.05	0.84	0.81
time (sec)	N/A	0.030	0.018	0.045	0.532	0.856	3.240	0.154	0.051

Problem 153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	55	52	51	56	80	53	51
normalized size	1	1.00	0.87	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.030	0.017	0.055	0.558	0.893	1.573	0.155	0.046

Problem 154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	54	52	51	54	80	53	51
normalized size	1	1.00	0.86	0.83	0.81	0.86	1.27	0.84	0.81
time (sec)	N/A	0.031	0.016	0.048	0.513	0.617	1.503	0.192	0.053

Problem 155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	54	52	51	51	78	53	51
normalized size	1	1.00	0.89	0.85	0.84	0.84	1.28	0.87	0.84
time (sec)	N/A	0.030	0.016	0.052	0.511	0.814	1.838	0.151	0.052

Problem 156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	54	52	51	51	75	53	51
normalized size	1	1.00	0.92	0.88	0.86	0.86	1.27	0.90	0.86
time (sec)	N/A	0.030	0.016	0.051	0.532	0.976	2.899	0.164	0.050

Problem 157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	52	51	51	50	73	51	51
normalized size	1	1.00	0.88	0.86	0.86	0.85	1.24	0.86	0.86
time (sec)	N/A	0.030	0.016	0.046	0.526	1.207	3.958	0.196	0.052

Problem 158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81
time (sec)	N/A	0.048	0.046	0.048	0.472	0.990	26.590	0.155	1.009

Problem 159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81
time (sec)	N/A	0.045	0.045	0.049	0.493	0.855	15.917	0.152	0.033

Problem 160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81
time (sec)	N/A	0.042	0.044	0.055	0.567	1.108	8.270	0.155	0.032

Problem 161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	95	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.12	0.91	0.81
time (sec)	N/A	0.042	0.045	0.049	0.680	1.130	3.763	0.164	0.034

Problem 162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81
time (sec)	N/A	0.041	0.047	0.046	0.565	0.966	3.513	0.173	0.033

Problem 163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	78	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.92	1.34	0.91	0.81
time (sec)	N/A	0.044	0.045	0.050	0.467	0.960	3.726	0.154	0.032

Problem 164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	70	76	73	76	114	77	69
normalized size	1	1.00	0.82	0.89	0.86	0.89	1.34	0.91	0.81
time (sec)	N/A	0.044	0.042	0.045	0.647	0.603	4.352	0.152	0.032

Problem 165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	63	76	73	73	110	77	69
normalized size	1	1.00	0.76	0.92	0.88	0.88	1.33	0.93	0.83
time (sec)	N/A	0.044	0.043	0.050	0.491	0.772	5.972	0.156	0.034

Problem 166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	75	76	73	73	105	77	69
normalized size	1	1.00	0.95	0.96	0.92	0.92	1.33	0.97	0.87
time (sec)	N/A	0.042	0.023	0.052	0.617	0.694	7.852	0.154	0.037

Problem 167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	74	76	73	73	105	75	70
normalized size	1	1.00	0.91	0.94	0.90	0.90	1.30	0.93	0.86
time (sec)	N/A	0.042	0.023	0.049	0.572	0.765	10.337	0.156	0.062

Problem 168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	101	126	105	229	279	115	125
normalized size	1	1.00	0.89	1.12	0.93	2.03	2.47	1.02	1.11
time (sec)	N/A	0.071	0.063	0.053	1.275	0.872	45.394	0.193	1.038

Problem 169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	81	102	82	180	245	91	101
normalized size	1	1.00	0.90	1.13	0.91	2.00	2.72	1.01	1.12
time (sec)	N/A	0.048	0.059	0.056	1.232	0.947	16.350	0.168	1.047

Problem 170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	63	78	58	129	212	64	76
normalized size	1	1.00	0.91	1.13	0.84	1.87	3.07	0.93	1.10
time (sec)	N/A	0.039	0.032	0.054	1.509	0.965	6.703	0.157	0.078

Problem 171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	53	39	102	218	39	37
normalized size	1	1.00	1.00	1.08	0.80	2.08	4.45	0.80	0.76
time (sec)	N/A	0.026	0.026	0.052	1.217	0.902	2.193	0.178	0.062

Problem 172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	53	39	112	216	39	50
normalized size	1	1.00	1.00	1.08	0.80	2.29	4.41	0.80	1.02
time (sec)	N/A	0.029	0.032	0.061	1.195	0.893	3.399	0.151	0.072

Problem 173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	44	78	56	146	248	55	54
normalized size	1	1.00	0.64	1.13	0.81	2.12	3.59	0.80	0.78
time (sec)	N/A	0.042	0.014	0.059	1.283	0.876	7.005	0.163	1.065

Problem 174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	43	102	80	195	289	80	71
normalized size	1	1.00	0.48	1.13	0.89	2.17	3.21	0.89	0.79
time (sec)	N/A	0.053	0.016	0.063	1.361	0.784	18.367	0.156	1.091

Problem 175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	44	126	103	246	326	104	90
normalized size	1	1.00	0.39	1.12	0.91	2.18	2.88	0.92	0.80
time (sec)	N/A	0.068	0.015	0.058	1.321	1.057	52.048	0.160	1.092

Problem 176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	44	150	126	291	360	128	109
normalized size	1	1.00	0.32	1.10	0.93	2.14	2.65	0.94	0.80
time (sec)	N/A	0.080	0.014	0.066	1.155	0.976	126.307	0.162	1.108

Problem 177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	110	139	115	290	0	122	146
normalized size	1	1.00	0.84	1.06	0.88	2.21	0.00	0.93	1.11
time (sec)	N/A	0.070	0.070	0.068	1.217	0.639	0.000	0.165	1.045

Problem 178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	88	113	88	231	0	95	107
normalized size	1	1.00	0.81	1.04	0.81	2.12	0.00	0.87	0.98
time (sec)	N/A	0.056	0.057	0.071	1.201	0.966	0.000	0.160	1.091

Problem 179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	69	87	65	198	782	65	62
normalized size	1	1.00	0.78	0.99	0.74	2.25	8.89	0.74	0.70
time (sec)	N/A	0.043	0.041	0.067	1.301	0.932	107.254	0.155	0.093

Problem 180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	63	69	58	177	716	60	51
normalized size	1	1.00	0.98	1.08	0.91	2.77	11.19	0.94	0.80
time (sec)	N/A	0.031	0.036	0.068	1.352	0.695	55.268	0.162	1.080

Problem 181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	59	87	65	215	884	60	65
normalized size	1	1.00	0.69	1.02	0.76	2.53	10.40	0.71	0.76
time (sec)	N/A	0.045	0.017	0.067	1.348	1.003	33.158	0.167	1.080

Problem 182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	64	113	93	262	983	85	81
normalized size	1	1.00	0.58	1.03	0.85	2.38	8.94	0.77	0.74
time (sec)	N/A	0.055	0.020	0.068	1.234	0.976	42.917	0.260	1.088

Problem 183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	64	139	118	319	1127	110	103
normalized size	1	1.00	0.49	1.07	0.91	2.45	8.67	0.85	0.79
time (sec)	N/A	0.070	0.018	0.065	1.169	0.671	81.928	0.165	1.105

Problem 184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	64	163	143	372	0	136	121
normalized size	1	1.00	0.41	1.04	0.92	2.38	0.00	0.87	0.78
time (sec)	N/A	0.083	0.018	0.071	1.193	1.287	0.000	0.164	1.118

Problem 185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	61	178	151	408	0	146	183
normalized size	1	1.00	0.36	1.05	0.89	2.41	0.00	0.86	1.08
time (sec)	N/A	0.089	0.023	0.071	1.127	1.180	0.000	0.215	1.073

Problem 186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	61	152	124	349	0	119	143
normalized size	1	1.00	0.41	1.03	0.84	2.37	0.00	0.81	0.97
time (sec)	N/A	0.071	0.022	0.066	1.185	0.841	0.000	0.184	0.090

Problem 187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	61	125	99	319	0	87	96
normalized size	1	1.00	0.48	0.99	0.79	2.53	0.00	0.69	0.76
time (sec)	N/A	0.059	0.022	0.070	1.461	0.981	0.000	0.160	0.112

Problem 188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	85	94	94	291	0	82	84
normalized size	1	1.00	0.85	0.94	0.94	2.91	0.00	0.82	0.84
time (sec)	N/A	0.049	0.062	0.065	1.293	0.781	0.000	0.159	1.098

Problem 189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	91	95	94	291	0	82	84
normalized size	1	1.00	0.91	0.95	0.94	2.91	0.00	0.82	0.84
time (sec)	N/A	0.048	0.098	0.071	1.234	0.941	0.000	0.159	1.087

Problem 190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	59	125	98	331	0	86	116
normalized size	1	1.00	0.48	1.02	0.80	2.69	0.00	0.70	0.94
time (sec)	N/A	0.058	0.022	0.069	1.286	0.999	0.000	0.205	1.121

Problem 191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	61	152	128	380	1880	108	114
normalized size	1	1.00	0.41	1.03	0.87	2.59	12.79	0.73	0.78
time (sec)	N/A	0.068	0.023	0.086	1.286	1.189	165.441	0.165	1.109

Problem 192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	61	178	154	437	0	135	135
normalized size	1	1.00	0.36	1.05	0.91	2.59	0.00	0.80	0.80
time (sec)	N/A	0.087	0.023	0.079	1.559	0.912	0.000	0.175	1.140

Problem 193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	61	202	178	490	0	159	154
normalized size	1	1.00	0.32	1.05	0.92	2.54	0.00	0.82	0.80
time (sec)	N/A	0.101	0.023	0.072	1.371	0.968	0.000	0.174	1.184

Problem 194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	113	131	142	150	0	158	-1
normalized size	1	1.00	0.55	0.63	0.69	0.72	0.00	0.76	-0.00
time (sec)	N/A	0.194	0.088	0.051	0.648	0.757	0.000	0.215	0.000

Problem 195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	94	107	120	126	0	134	-1
normalized size	1	1.00	0.55	0.63	0.71	0.74	0.00	0.79	-0.01
time (sec)	N/A	0.159	0.071	0.051	0.727	1.006	0.000	0.187	0.000

Problem 196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	72	83	98	102	0	110	-1
normalized size	1	1.00	0.54	0.62	0.74	0.77	0.00	0.83	-0.01
time (sec)	N/A	0.095	0.053	0.085	0.579	0.830	0.000	0.193	0.000

Problem 197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	56	59	75	78	0	86	-1
normalized size	1	1.00	0.58	0.61	0.78	0.81	0.00	0.90	-0.01
time (sec)	N/A	0.076	0.041	0.046	0.610	0.931	0.000	0.240	0.000

Problem 198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	37	39	45	53	0	60	-1
normalized size	1	1.00	0.61	0.64	0.74	0.87	0.00	0.98	-0.02
time (sec)	N/A	0.043	0.026	0.047	0.520	1.098	0.000	0.167	0.000

Problem 199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	80	79	0	148	0	103	-1
normalized size	1	1.00	0.99	0.98	0.00	1.83	0.00	1.27	-0.01
time (sec)	N/A	0.065	0.056	0.058	0.000	0.706	0.000	0.185	0.000

Problem 200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	80	86	0	157	0	61	-1
normalized size	1	1.00	0.84	0.91	0.00	1.65	0.00	0.64	-0.01
time (sec)	N/A	0.091	0.048	0.067	0.000	0.991	0.000	0.278	0.000

Problem 201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	83	108	0	187	0	110	-1
normalized size	1	1.00	0.79	1.03	0.00	1.78	0.00	1.05	-0.01
time (sec)	N/A	0.092	0.100	0.069	0.000	0.927	0.000	0.275	0.000

Problem 202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	61	147	0	238	0	128	-1
normalized size	1	1.00	0.43	1.04	0.00	1.68	0.00	0.90	-0.01
time (sec)	N/A	0.120	0.026	0.093	0.000	0.977	0.000	0.273	0.000

Problem 203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	110	131	318	174	0	343	-1
normalized size	1	1.00	0.53	0.63	1.54	0.84	0.00	1.66	-0.00
time (sec)	N/A	0.153	0.088	0.059	0.607	0.807	0.000	0.246	0.000

Problem 204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	94	107	274	150	0	295	-1
normalized size	1	1.00	0.55	0.63	1.61	0.88	0.00	1.74	-0.01
time (sec)	N/A	0.161	0.075	0.054	0.593	0.828	0.000	0.288	0.000

Problem 205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	75	83	229	127	0	247	-1
normalized size	1	1.00	0.56	0.62	1.72	0.95	0.00	1.86	-0.01
time (sec)	N/A	0.111	0.058	0.050	0.660	1.127	0.000	0.220	0.000

Problem 206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	56	59	182	102	0	199	-1
normalized size	1	1.00	0.58	0.61	1.90	1.06	0.00	2.07	-0.01
time (sec)	N/A	0.079	0.044	0.062	0.625	0.883	0.000	0.206	0.000

Problem 207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	37	39	129	76	0	149	-1
normalized size	1	1.00	0.61	0.64	2.11	1.25	0.00	2.44	-0.02
time (sec)	N/A	0.046	0.029	0.050	0.617	0.857	0.000	0.189	0.000

Problem 208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	100	113	0	195	0	123	-1
normalized size	1	1.00	0.95	1.08	0.00	1.86	0.00	1.17	-0.01
time (sec)	N/A	0.086	0.081	0.056	0.000	0.838	0.000	0.199	0.000

Problem 209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	94	122	0	184	0	93	-1
normalized size	1	1.00	0.73	0.95	0.00	1.44	0.00	0.73	-0.01
time (sec)	N/A	0.126	0.059	0.068	0.000	1.085	0.000	0.268	0.000

Problem 210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	59	126	0	206	0	119	-1
normalized size	1	1.00	0.43	0.92	0.00	1.50	0.00	0.87	-0.01
time (sec)	N/A	0.128	0.032	0.068	0.000	1.048	0.000	0.419	0.000

Problem 211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	107	147	0	239	0	145	-1
normalized size	1	1.00	0.75	1.04	0.00	1.68	0.00	1.02	-0.01
time (sec)	N/A	0.129	0.124	0.067	0.000	0.906	0.000	0.322	0.000

Problem 212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	62	185	0	288	0	176	-1
normalized size	1	1.00	0.35	1.03	0.00	1.61	0.00	0.98	-0.01
time (sec)	N/A	0.169	0.034	0.084	0.000	1.017	0.000	0.320	0.000

Problem 213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	61	223	0	335	0	192	-1
normalized size	1	1.00	0.28	1.03	0.00	1.55	0.00	0.89	-0.00
time (sec)	N/A	0.191	0.034	0.071	0.000	0.829	0.000	0.351	0.000

Problem 214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	120	131	507	199	0	560	-1
normalized size	1	1.00	0.58	0.63	2.45	0.96	0.00	2.71	-0.00
time (sec)	N/A	0.203	0.093	0.051	0.853	0.892	0.000	0.309	0.000

Problem 215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	101	107	441	174	0	488	-1
normalized size	1	1.00	0.59	0.63	2.59	1.02	0.00	2.87	-0.01
time (sec)	N/A	0.144	0.074	0.054	0.823	0.548	0.000	0.278	0.000

Problem 216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	82	83	375	150	0	416	-1
normalized size	1	1.00	0.62	0.62	2.82	1.13	0.00	3.13	-0.01
time (sec)	N/A	0.111	0.058	0.053	0.709	0.631	0.000	0.267	0.000

Problem 217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	63	59	305	125	0	344	-1
normalized size	1	1.00	0.66	0.61	3.18	1.30	0.00	3.58	-0.01
time (sec)	N/A	0.089	0.046	0.050	0.857	0.894	0.000	0.275	0.000

Problem 218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	44	39	230	100	0	270	-1
normalized size	1	1.00	0.72	0.64	3.77	1.64	0.00	4.43	-0.02
time (sec)	N/A	0.049	0.031	0.044	0.609	0.816	0.000	0.236	0.000

Problem 219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	95	151	0	245	0	139	-1
normalized size	1	1.00	0.73	1.15	0.00	1.87	0.00	1.06	-0.01
time (sec)	N/A	0.116	0.211	0.059	0.000	0.784	0.000	0.222	0.000

Problem 220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	118	162	0	238	0	125	-1
normalized size	1	1.00	0.74	1.01	0.00	1.49	0.00	0.78	-0.01
time (sec)	N/A	0.160	0.077	0.071	0.000	1.005	0.000	0.347	0.000

Problem 221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	67	167	0	238	0	155	-1
normalized size	1	1.00	0.39	0.97	0.00	1.38	0.00	0.90	-0.01
time (sec)	N/A	0.159	0.032	0.062	0.000	0.733	0.000	0.315	0.000

Problem 222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	68	166	0	258	0	151	-1
normalized size	1	1.00	0.39	0.95	0.00	1.47	0.00	0.86	-0.01
time (sec)	N/A	0.170	0.033	0.073	0.000	1.002	0.000	0.352	0.000

Problem 223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	129	185	0	289	0	177	-1
normalized size	1	1.00	0.72	1.03	0.00	1.61	0.00	0.99	-0.01
time (sec)	N/A	0.166	0.139	0.067	0.000	0.754	0.000	0.340	0.000

Problem 224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	69	223	0	336	0	208	-1
normalized size	1	1.00	0.32	1.03	0.00	1.56	0.00	0.96	-0.00
time (sec)	N/A	0.206	0.036	0.074	0.000	0.938	0.000	0.440	0.000

Problem 225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	94	107	120	103	0	135	-1
normalized size	1	1.00	0.55	0.63	0.71	0.61	0.00	0.79	-0.01
time (sec)	N/A	0.148	0.070	0.048	0.700	0.628	0.000	0.188	0.000

Problem 226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	75	83	98	79	0	108	-1
normalized size	1	1.00	0.56	0.62	0.74	0.59	0.00	0.81	-0.01
time (sec)	N/A	0.108	0.056	0.049	0.641	0.986	0.000	0.252	0.000

Problem 227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	55	59	75	55	0	81	-1
normalized size	1	1.00	0.57	0.61	0.78	0.57	0.00	0.84	-0.01
time (sec)	N/A	0.079	0.039	0.060	0.569	0.901	0.000	0.178	0.000

Problem 228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	36	38	45	32	0	53	-1
normalized size	1	1.00	0.59	0.62	0.74	0.52	0.00	0.87	-0.02
time (sec)	N/A	0.041	0.026	0.048	0.622	0.850	0.000	0.177	0.000

Problem 229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	71	72	0	166	0	103	-1
normalized size	1	1.00	0.99	1.00	0.00	2.31	0.00	1.43	-0.01
time (sec)	N/A	0.061	0.036	0.085	0.000	0.813	0.000	0.207	0.000

Problem 230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	73	71	0	144	0	58	-1
normalized size	1	1.00	1.11	1.08	0.00	2.18	0.00	0.88	-0.02
time (sec)	N/A	0.051	0.035	0.062	0.000	0.745	0.000	0.229	0.000

Problem 231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	92	109	0	188	0	111	-1
normalized size	1	1.00	0.88	1.04	0.00	1.79	0.00	1.06	-0.01
time (sec)	N/A	0.086	0.091	0.069	0.000	1.013	0.000	0.260	0.000

Problem 232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	61	147	0	241	0	144	-1
normalized size	1	1.00	0.43	1.04	0.00	1.70	0.00	1.01	-0.01
time (sec)	N/A	0.120	0.027	0.065	0.000	0.884	0.000	0.281	0.000

Problem 233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	93	107	0	116	0	156	-1
normalized size	1	1.00	0.52	0.60	0.00	0.65	0.00	0.88	-0.01
time (sec)	N/A	0.149	0.064	0.050	0.000	1.290	0.000	0.213	0.000

Problem 234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	74	83	0	92	0	124	-1
normalized size	1	1.00	0.52	0.59	0.00	0.65	0.00	0.88	-0.01
time (sec)	N/A	0.111	0.048	0.048	0.000	0.965	0.000	0.192	0.000

Problem 235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	54	58	0	67	0	89	-1
normalized size	1	1.00	0.51	0.55	0.00	0.63	0.00	0.84	-0.01
time (sec)	N/A	0.080	0.033	0.044	0.000	0.762	0.000	0.191	0.000

Problem 236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	34	38	0	45	0	51	-1
normalized size	1	1.00	0.49	0.54	0.00	0.64	0.00	0.73	-0.01
time (sec)	N/A	0.045	0.020	0.047	0.000	0.866	0.000	0.202	0.000

Problem 237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	69	63	0	192	0	96	-1
normalized size	1	1.00	1.01	0.93	0.00	2.82	0.00	1.41	-0.01
time (sec)	N/A	0.051	0.034	0.060	0.000	0.612	0.000	0.209	0.000

Problem 238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	52	94	0	248	0	87	-1
normalized size	1	1.00	0.54	0.97	0.00	2.56	0.00	0.90	-0.01
time (sec)	N/A	0.075	0.023	0.091	0.000	0.982	0.000	0.240	0.000

Problem 239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	60	124	0	304	0	125	-1
normalized size	1	1.00	0.43	0.89	0.00	2.17	0.00	0.89	-0.01
time (sec)	N/A	0.114	0.024	0.090	0.000	0.795	0.000	0.281	0.000

Problem 240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	62	150	0	359	0	165	-1
normalized size	1	1.00	0.35	0.84	0.00	2.01	0.00	0.92	-0.01
time (sec)	N/A	0.152	0.023	0.111	0.000	0.654	0.000	0.328	0.000

Problem 241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	62	174	0	406	0	197	-1
normalized size	1	1.00	0.29	0.81	0.00	1.88	0.00	0.91	-0.00
time (sec)	N/A	0.186	0.024	0.092	0.000	1.337	0.000	0.343	0.000

Problem 242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	93	107	0	127	0	147	-1
normalized size	1	1.00	0.52	0.59	0.00	0.71	0.00	0.82	-0.01
time (sec)	N/A	0.159	0.068	0.049	0.000	0.688	0.000	0.206	0.000

Problem 243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	70	82	0	102	0	112	-1
normalized size	1	1.00	0.49	0.57	0.00	0.71	0.00	0.78	-0.01
time (sec)	N/A	0.115	0.047	0.047	0.000	0.889	0.000	0.198	0.000

Problem 244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	53	59	0	79	0	72	-1
normalized size	1	1.00	0.49	0.55	0.00	0.73	0.00	0.67	-0.01
time (sec)	N/A	0.090	0.035	0.045	0.000	0.648	0.000	0.221	0.000

Problem 245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	36	38	0	56	0	45	-1
normalized size	1	1.00	0.49	0.52	0.00	0.77	0.00	0.62	-0.01
time (sec)	N/A	0.053	0.025	0.046	0.000	0.801	0.000	0.195	0.000

Problem 246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	62	101	0	262	0	110	-1
normalized size	1	1.00	0.66	1.07	0.00	2.79	0.00	1.17	-0.01
time (sec)	N/A	0.077	0.027	0.070	0.000	0.922	0.000	0.289	0.000

Problem 247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	55	175	0	367	0	90	-1
normalized size	1	1.00	0.38	1.20	0.00	2.51	0.00	0.62	-0.01
time (sec)	N/A	0.119	0.026	0.075	0.000	0.895	0.000	0.295	0.000

Problem 248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	60	208	0	424	0	149	-1
normalized size	1	1.00	0.34	1.20	0.00	2.44	0.00	0.86	-0.01
time (sec)	N/A	0.147	0.027	0.076	0.000	1.085	0.000	0.304	0.000

Problem 249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	62	234	0	477	0	200	-1
normalized size	1	1.00	0.29	1.09	0.00	2.23	0.00	0.93	-0.00
time (sec)	N/A	0.183	0.027	0.074	0.000	0.654	0.000	0.306	0.000

Problem 250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	22	28	32	31	56	49	41
normalized size	1	1.00	0.92	1.17	1.33	1.29	2.33	2.04	1.71
time (sec)	N/A	0.012	0.014	0.044	0.797	0.873	43.344	0.266	1.174

Problem 251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	30	29	29	32	29	29
normalized size	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78
time (sec)	N/A	0.035	0.002	0.056	0.612	0.648	0.068	0.162	0.046

Problem 252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	30	29	29	32	29	29
normalized size	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78
time (sec)	N/A	0.029	0.002	0.048	0.499	0.737	0.068	0.166	0.042

Problem 253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	37	30	29	29	32	29	29
normalized size	1	1.00	1.00	0.81	0.78	0.78	0.86	0.78	0.78
time (sec)	N/A	0.023	0.002	0.042	0.531	0.501	0.072	0.140	0.043

Problem 254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	32	27	26	26	29	26	26
normalized size	1	1.00	1.03	0.87	0.84	0.84	0.94	0.84	0.84
time (sec)	N/A	0.006	0.001	0.050	0.558	0.495	0.066	0.168	0.046

Problem 255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	25	24	24	27	25	24
normalized size	1	1.00	1.00	0.89	0.86	0.86	0.96	0.89	0.86
time (sec)	N/A	0.010	0.003	0.045	0.567	0.895	0.114	0.174	0.035

Problem 256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	26	25	24	30	24	25	24
normalized size	1	1.00	1.00	0.96	0.92	1.15	0.92	0.96	0.92
time (sec)	N/A	0.014	0.003	0.049	0.600	0.873	0.136	0.164	0.036

Problem 257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	26	26	26	25	24	31	27	25	24
normalized size	1	1.00	1.00	0.96	0.92	1.19	1.04	0.96	0.92
time (sec)	N/A	0.014	0.004	0.054	0.635	0.574	0.215	0.147	1.034

Problem 258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	65	54	53	53	61	53	53
normalized size	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82
time (sec)	N/A	0.062	0.003	0.042	0.550	0.828	0.076	0.152	0.029

Problem 259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	65	54	53	53	61	53	53
normalized size	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82
time (sec)	N/A	0.053	0.003	0.042	0.571	0.553	0.076	0.178	0.025

Problem 260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	65	54	53	53	61	53	53
normalized size	1	1.00	1.00	0.83	0.82	0.82	0.94	0.82	0.82
time (sec)	N/A	0.044	0.002	0.045	0.781	0.713	0.075	0.150	0.024

Problem 261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	60	51	50	50	58	50	50
normalized size	1	1.00	1.33	1.13	1.11	1.11	1.29	1.11	1.11
time (sec)	N/A	0.015	0.002	0.043	0.672	0.778	0.076	0.175	0.024

Problem 262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	53	48	47	47	54	48	47
normalized size	1	1.00	1.00	0.91	0.89	0.89	1.02	0.91	0.89
time (sec)	N/A	0.021	0.006	0.049	0.564	0.868	0.147	0.149	0.030

Problem 263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	52	49	48	55	51	49	48
normalized size	1	1.00	1.00	0.94	0.92	1.06	0.98	0.94	0.92
time (sec)	N/A	0.026	0.007	0.061	0.512	0.829	0.168	0.222	0.029

Problem 264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	56	51	50	55	58	51	50
normalized size	1	1.00	1.00	0.91	0.89	0.98	1.04	0.91	0.89
time (sec)	N/A	0.026	0.007	0.056	0.618	0.901	0.249	0.167	0.028

Problem 265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	93	78	77	77	90	77	77
normalized size	1	1.00	1.00	0.84	0.83	0.83	0.97	0.83	0.83
time (sec)	N/A	0.101	0.003	0.040	0.567	0.806	0.081	0.151	0.033

Problem 266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	93	78	77	77	92	77	77
normalized size	1	1.00	1.00	0.84	0.83	0.83	0.99	0.83	0.83
time (sec)	N/A	0.088	0.003	0.043	0.506	0.718	0.083	0.155	0.032

Problem 267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	93	78	77	77	92	77	77
normalized size	1	1.00	1.00	0.84	0.83	0.83	0.99	0.83	0.83
time (sec)	N/A	0.079	0.003	0.053	0.563	0.522	0.082	0.150	0.031

Problem 268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	85	74	73	73	85	73	73
normalized size	1	1.00	1.52	1.32	1.30	1.30	1.52	1.30	1.30
time (sec)	N/A	0.021	0.003	0.040	0.507	0.740	0.082	0.152	0.031

Problem 269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	81	72	71	71	85	72	71
normalized size	1	1.00	1.00	0.89	0.88	0.88	1.05	0.89	0.88
time (sec)	N/A	0.036	0.007	0.046	0.521	0.972	0.180	0.147	0.035

Problem 270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	73	72	79	82	73	72
normalized size	1	1.00	1.00	0.91	0.90	0.99	1.02	0.91	0.90
time (sec)	N/A	0.041	0.007	0.053	0.550	0.829	0.203	0.176	0.037

Problem 271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	81	74	73	79	85	74	73
normalized size	1	1.00	1.00	0.91	0.90	0.98	1.05	0.91	0.90
time (sec)	N/A	0.040	0.007	0.050	0.622	0.998	0.294	0.162	0.034

Problem 272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	121	102	101	101	124	101	101
normalized size	1	1.00	1.00	0.84	0.83	0.83	1.02	0.83	0.83
time (sec)	N/A	0.141	0.004	0.041	0.488	0.754	0.090	0.178	0.050

Problem 273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	121	102	101	101	124	101	101
normalized size	1	1.00	1.00	0.84	0.83	0.83	1.02	0.83	0.83
time (sec)	N/A	0.124	0.003	0.046	0.477	1.041	0.089	0.154	0.045

Problem 274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	115	100	99	99	116	99	99
normalized size	1	1.00	1.00	0.87	0.86	0.86	1.01	0.86	0.86
time (sec)	N/A	0.116	0.003	0.050	0.601	0.843	0.091	0.191	0.047

Problem 275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	110	97	96	96	112	96	96
normalized size	1	1.00	1.51	1.33	1.32	1.32	1.53	1.32	1.32
time (sec)	N/A	0.025	0.003	0.045	0.516	0.806	0.088	0.155	0.047

Problem 276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	110	97	96	96	117	97	96
normalized size	1	1.00	1.00	0.88	0.87	0.87	1.06	0.88	0.87
time (sec)	N/A	0.052	0.007	0.043	0.482	1.014	0.219	0.152	0.051

Problem 277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	107	98	97	103	112	98	97
normalized size	1	1.00	1.00	0.92	0.91	0.96	1.05	0.92	0.91
time (sec)	N/A	0.056	0.007	0.051	0.516	0.903	0.253	0.169	0.053

Problem 278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	105	98	97	103	112	98	97
normalized size	1	1.00	1.00	0.93	0.92	0.98	1.07	0.93	0.92
time (sec)	N/A	0.055	0.007	0.054	0.493	0.878	0.329	0.166	0.047

Problem 279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	75	77	72	176	189	85	71
normalized size	1	1.00	0.86	0.89	0.83	2.02	2.17	0.98	0.82
time (sec)	N/A	0.062	0.034	0.048	1.187	0.802	0.383	0.151	0.059

Problem 280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	64	65	63	144	167	71	59
normalized size	1	1.00	0.88	0.89	0.86	1.97	2.29	0.97	0.81
time (sec)	N/A	0.047	0.039	0.052	1.263	0.914	0.359	0.165	0.053

Problem 281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	56	53	52	127	151	56	49
normalized size	1	1.00	0.92	0.87	0.85	2.08	2.48	0.92	0.80
time (sec)	N/A	0.044	0.021	0.048	1.155	0.921	0.447	0.197	1.062

Problem 282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	43	42	108	112	44	39
normalized size	1	1.00	1.00	0.88	0.86	2.20	2.29	0.90	0.80
time (sec)	N/A	0.027	0.021	0.044	1.155	0.839	0.302	0.149	1.067

Problem 283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	32	31	98	124	32	32
normalized size	1	1.00	1.00	0.76	0.74	2.33	2.95	0.76	0.76
time (sec)	N/A	0.016	0.014	0.044	1.194	0.884	0.273	0.154	0.047

Problem 284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	49	39	38	109	321	40	216
normalized size	1	1.00	1.00	0.80	0.78	2.22	6.55	0.82	4.41
time (sec)	N/A	0.042	0.020	0.059	1.250	0.919	1.470	0.153	1.409

Problem 285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	59	53	52	124	326	55	131
normalized size	1	1.00	1.00	0.90	0.88	2.10	5.53	0.93	2.22
time (sec)	N/A	0.047	0.033	0.055	1.257	0.816	1.621	0.151	1.214

Problem 286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	73	65	60	153	360	66	154
normalized size	1	1.00	1.00	0.89	0.82	2.10	4.93	0.90	2.11
time (sec)	N/A	0.059	0.028	0.053	1.370	0.966	1.703	0.153	1.254

Problem 287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	77	75	72	170	408	76	177
normalized size	1	1.00	0.93	0.90	0.87	2.05	4.92	0.92	2.13
time (sec)	N/A	0.058	0.041	0.060	1.368	0.939	1.772	0.153	0.258

Problem 288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	34	49	102	119	37	103
normalized size	1	1.00	1.00	0.79	1.14	2.37	2.77	0.86	2.40
time (sec)	N/A	0.015	0.015	0.045	1.283	0.882	0.283	0.150	0.212

Problem 289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	77	88	81	248	189	87	81
normalized size	1	1.00	0.91	1.04	0.95	2.92	2.22	1.02	0.95
time (sec)	N/A	0.070	0.058	0.054	1.216	0.969	0.722	0.197	0.064

Problem 290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	75	76	67	192	162	67	65
normalized size	1	1.00	0.96	0.97	0.86	2.46	2.08	0.86	0.83
time (sec)	N/A	0.045	0.050	0.053	1.160	0.767	0.672	0.155	1.077

Problem 291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	62	61	61	186	162	62	72
normalized size	1	1.00	0.93	0.91	0.91	2.78	2.42	0.93	1.07
time (sec)	N/A	0.031	0.037	0.051	1.160	1.153	0.575	0.188	1.043

Problem 292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	53	46	41	137	85	42	44
normalized size	1	1.00	1.06	0.92	0.82	2.74	1.70	0.84	0.88
time (sec)	N/A	0.015	0.033	0.053	1.211	0.872	0.357	0.170	0.051

Problem 293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	49	48	140	90	48	44
normalized size	1	1.00	1.00	0.86	0.84	2.46	1.58	0.84	0.77
time (sec)	N/A	0.013	0.022	0.059	1.262	0.891	0.361	0.152	0.048

Problem 294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	65	74	61	217	359	67	165
normalized size	1	1.00	0.89	1.01	0.84	2.97	4.92	0.92	2.26
time (sec)	N/A	0.062	0.060	0.054	1.277	0.848	1.712	0.152	1.261

Problem 295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	81	85	78	225	389	80	165
normalized size	1	1.00	0.93	0.98	0.90	2.59	4.47	0.92	1.90
time (sec)	N/A	0.068	0.117	0.084	1.124	0.537	1.810	0.158	1.216

Problem 296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	82	97	88	285	398	95	186
normalized size	1	1.00	0.85	1.01	0.92	2.97	4.15	0.99	1.94
time (sec)	N/A	0.084	0.103	0.065	1.175	1.048	2.035	0.158	1.256

Problem 297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	86	106	90	89	129	102	89
normalized size	1	1.00	0.91	1.12	0.95	0.94	1.36	1.07	0.94
time (sec)	N/A	0.070	0.016	0.052	0.540	0.922	0.473	0.166	0.100

Problem 298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	72	94	81	75	110	90	77
normalized size	1	1.00	0.89	1.16	1.00	0.93	1.36	1.11	0.95
time (sec)	N/A	0.067	0.014	0.055	0.554	0.826	0.443	0.174	1.087

Problem 299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	56	78	61	59	88	72	61
normalized size	1	1.00	0.89	1.24	0.97	0.94	1.40	1.14	0.97
time (sec)	N/A	0.056	0.011	0.064	0.533	0.807	0.466	0.159	0.082

Problem 300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	42	63	47	42	60	52	60
normalized size	1	1.00	0.84	1.26	0.94	0.84	1.20	1.04	1.20
time (sec)	N/A	0.038	0.009	0.050	0.499	0.665	0.353	0.153	1.102

Problem 301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	37	60	46	41	71	50	45
normalized size	1	1.00	0.80	1.30	1.00	0.89	1.54	1.09	0.98
time (sec)	N/A	0.023	0.007	0.050	0.540	0.771	0.332	0.153	0.092

Problem 302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	44	67	53	48	194	64	52
normalized size	1	1.00	0.79	1.20	0.95	0.86	3.46	1.14	0.93
time (sec)	N/A	0.049	0.013	0.050	0.546	0.908	1.594	0.168	1.149

Problem 303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	51	72	56	54	221	74	55
normalized size	1	1.00	0.86	1.22	0.95	0.92	3.75	1.25	0.93
time (sec)	N/A	0.054	0.013	0.056	0.536	1.123	1.696	0.153	0.095

Problem 304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	68	90	70	78	236	93	73
normalized size	1	1.00	0.91	1.20	0.93	1.04	3.15	1.24	0.97
time (sec)	N/A	0.066	0.016	0.056	0.557	0.790	1.863	0.155	0.106

Problem 305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	84	106	91	93	279	104	89
normalized size	1	1.00	0.90	1.14	0.98	1.00	3.00	1.12	0.96
time (sec)	N/A	0.069	0.016	0.056	0.496	1.310	1.996	0.169	1.111

Problem 306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	84	143	99	156	141	112	99
normalized size	1	1.00	0.89	1.52	1.05	1.66	1.50	1.19	1.05
time (sec)	N/A	0.099	0.046	0.064	0.536	0.977	0.805	0.157	1.090

Problem 307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	64	126	81	129	110	88	81
normalized size	1	1.00	0.76	1.50	0.96	1.54	1.31	1.05	0.96
time (sec)	N/A	0.073	0.054	0.060	0.692	0.831	0.736	0.156	1.081

Problem 308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	64	118	79	115	110	85	103
normalized size	1	1.00	0.83	1.53	1.03	1.49	1.43	1.10	1.34
time (sec)	N/A	0.049	0.036	0.052	0.580	1.032	0.625	0.179	0.109

Problem 309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	42	96	58	80	46	63	46
normalized size	1	1.00	0.93	2.13	1.29	1.78	1.02	1.40	1.02
time (sec)	N/A	0.020	0.022	0.053	0.509	0.872	0.363	0.164	0.064

Problem 310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	58	102	68	87	56	71	46
normalized size	1	1.00	1.05	1.85	1.24	1.58	1.02	1.29	0.84
time (sec)	N/A	0.016	0.013	0.051	0.568	0.849	0.326	0.156	1.067

Problem 311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	65	129	80	139	231	94	82
normalized size	1	1.00	0.77	1.54	0.95	1.65	2.75	1.12	0.98
time (sec)	N/A	0.075	0.064	0.063	0.692	1.003	1.828	0.162	0.111

Problem 312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	77	130	93	155	291	112	92
normalized size	1	1.00	0.83	1.40	1.00	1.67	3.13	1.20	0.99
time (sec)	N/A	0.095	0.081	0.063	0.474	0.941	1.946	0.157	1.107

Problem 313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	91	155	115	184	311	139	116
normalized size	1	1.00	0.84	1.44	1.06	1.70	2.88	1.29	1.07
time (sec)	N/A	0.108	0.070	0.064	0.535	1.253	2.298	0.193	1.112

Problem 314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	113	136	128	224	216	106	-1
normalized size	1	1.00	0.74	0.89	0.84	1.47	1.42	0.70	-0.01
time (sec)	N/A	0.129	0.211	0.056	0.560	0.870	8.364	0.187	0.000

Problem 315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	107	115	107	206	192	93	-1
normalized size	1	1.00	0.84	0.91	0.84	1.62	1.51	0.73	-0.01
time (sec)	N/A	0.081	0.183	0.064	0.480	0.823	7.859	0.195	0.000

Problem 316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	93	94	86	175	165	81	-1
normalized size	1	1.00	0.89	0.90	0.83	1.68	1.59	0.78	-0.01
time (sec)	N/A	0.047	0.168	0.058	0.481	1.060	5.460	0.526	0.000

Problem 317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	86	75	67	157	124	68	-1
normalized size	1	1.00	1.08	0.94	0.84	1.96	1.55	0.85	-0.01
time (sec)	N/A	0.026	0.140	0.052	0.473	0.676	5.407	0.180	0.000

Problem 318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	67	53	45	128	70	55	52
normalized size	1	1.00	1.00	0.79	0.67	1.91	1.04	0.82	0.78
time (sec)	N/A	0.019	0.044	0.052	0.574	0.666	3.384	0.200	1.277

Problem 319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	100	78	59	341	107	78	68
normalized size	1	1.00	1.27	0.99	0.75	4.32	1.35	0.99	0.86
time (sec)	N/A	0.064	0.215	0.053	0.532	0.968	6.742	0.201	1.361

Problem 320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	99	97	59	333	124	102	89
normalized size	1	1.00	1.32	1.29	0.79	4.44	1.65	1.36	1.19
time (sec)	N/A	0.058	0.154	0.056	0.538	0.858	4.556	0.190	1.797

Problem 321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	108	121	83	377	107	163	94
normalized size	1	1.00	1.35	1.51	1.04	4.71	1.34	2.04	1.18
time (sec)	N/A	0.063	0.085	0.059	0.532	1.030	4.843	0.197	1.867

Problem 322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	85	84	72	142	92	143	55
normalized size	1	1.00	1.20	1.18	1.01	2.00	1.30	2.01	0.77
time (sec)	N/A	0.041	0.035	0.069	0.591	0.952	4.212	0.216	1.888

Problem 323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	53	107	95	171	144	267	75
normalized size	1	1.00	0.54	1.08	0.96	1.73	1.45	2.70	0.76
time (sec)	N/A	0.062	0.015	0.059	0.694	1.010	5.941	0.191	2.094

Problem 324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	62	126	114	190	173	267	95
normalized size	1	1.00	0.51	1.03	0.93	1.56	1.42	2.19	0.78
time (sec)	N/A	0.086	0.022	0.064	0.752	0.676	6.249	0.190	2.372

Problem 325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	64	147	135	219	201	325	116
normalized size	1	1.00	0.44	1.00	0.92	1.49	1.37	2.21	0.79
time (sec)	N/A	0.117	0.031	0.059	0.594	1.315	8.568	0.226	2.704

Problem 326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	132	155	147	272	366	130	-1
normalized size	1	1.00	0.75	0.89	0.84	1.55	2.09	0.74	-0.01
time (sec)	N/A	0.135	0.246	0.058	0.666	0.982	19.240	0.215	0.000

Problem 327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	126	134	126	254	318	115	-1
normalized size	1	1.00	0.84	0.89	0.84	1.69	2.12	0.77	-0.01
time (sec)	N/A	0.094	0.225	0.063	0.597	0.832	18.140	0.201	0.000

Problem 328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	113	113	105	223	287	103	-1
normalized size	1	1.00	0.89	0.89	0.83	1.76	2.26	0.81	-0.01
time (sec)	N/A	0.057	0.210	0.054	0.503	0.713	12.447	0.198	0.000

Problem 329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	107	94	86	205	223	89	-1
normalized size	1	1.00	1.04	0.91	0.83	1.99	2.17	0.86	-0.01
time (sec)	N/A	0.031	0.176	0.051	0.490	0.946	12.114	0.238	0.000

Problem 330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	88	69	61	176	219	76	54
normalized size	1	1.00	1.01	0.79	0.70	2.02	2.52	0.87	0.62
time (sec)	N/A	0.026	0.060	0.047	0.489	0.994	7.618	0.187	1.281

Problem 331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	118	107	88	439	218	100	83
normalized size	1	1.00	1.11	1.01	0.83	4.14	2.06	0.94	0.78
time (sec)	N/A	0.089	0.249	0.052	0.483	1.148	17.917	0.205	1.403

Problem 332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	105	126	88	411	184	124	86
normalized size	1	1.00	0.97	1.17	0.81	3.81	1.70	1.15	0.80
time (sec)	N/A	0.082	0.164	0.057	0.555	1.023	7.071	0.202	1.976

Problem 333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	90	150	112	425	182	191	91
normalized size	1	1.00	0.81	1.35	1.01	3.83	1.64	1.72	0.82
time (sec)	N/A	0.079	0.036	0.057	0.561	1.076	8.188	0.250	2.205

Problem 334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	92	174	136	426	202	211	-1
normalized size	1	1.00	0.84	1.60	1.25	3.91	1.85	1.94	-0.01
time (sec)	N/A	0.086	0.037	0.056	0.529	1.098	7.328	0.217	0.000

Problem 335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	114	202	164	474	236	285	-1
normalized size	1	1.00	1.03	1.82	1.48	4.27	2.13	2.57	-0.01
time (sec)	N/A	0.087	0.081	0.054	0.562	1.072	9.337	0.221	0.000

Problem 336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	103	125	113	190	199	232	73
normalized size	1	1.00	1.11	1.34	1.22	2.04	2.14	2.49	0.78
time (sec)	N/A	0.057	0.081	0.059	0.650	0.867	8.952	0.222	2.762

Problem 337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	54	146	134	219	201	379	94
normalized size	1	1.00	0.44	1.18	1.08	1.77	1.62	3.06	0.76
time (sec)	N/A	0.078	0.020	0.069	0.577	1.088	13.387	0.274	3.207

Problem 338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	64	165	153	238	575	379	150
normalized size	1	1.00	0.44	1.12	1.04	1.62	3.91	2.58	1.02
time (sec)	N/A	0.105	0.028	0.068	0.491	1.007	13.985	0.220	3.767

Problem 339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	151	174	166	320	541	155	-1
normalized size	1	1.00	0.76	0.88	0.84	1.62	2.73	0.78	-0.01
time (sec)	N/A	0.151	0.286	0.058	0.534	1.003	37.229	0.212	0.000

Problem 340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	145	153	145	302	469	140	-1
normalized size	1	1.00	0.84	0.88	0.84	1.75	2.71	0.81	-0.01
time (sec)	N/A	0.105	0.268	0.055	0.587	1.009	34.716	0.223	0.000

Problem 341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	131	132	124	271	442	128	-1
normalized size	1	1.00	0.87	0.88	0.83	1.81	2.95	0.85	-0.01
time (sec)	N/A	0.066	0.256	0.061	0.672	1.123	24.058	0.213	0.000

Problem 342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	112	113	105	253	354	114	-1
normalized size	1	1.00	0.89	0.90	0.83	2.01	2.81	0.90	-0.01
time (sec)	N/A	0.040	0.488	0.053	0.558	0.784	22.221	0.197	0.000

Problem 343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	108	85	77	224	348	101	54
normalized size	1	1.00	1.01	0.79	0.72	2.09	3.25	0.94	0.50
time (sec)	N/A	0.034	0.080	0.046	0.460	1.089	14.703	0.196	1.340

Problem 344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	139	138	119	539	323	125	101
normalized size	1	1.00	1.05	1.05	0.90	4.08	2.45	0.95	0.77
time (sec)	N/A	0.122	0.327	0.049	0.583	1.325	29.890	0.213	1.434

Problem 345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	117	158	120	519	318	150	104
normalized size	1	1.00	0.86	1.16	0.88	3.82	2.34	1.10	0.76
time (sec)	N/A	0.120	0.213	0.063	0.533	1.387	11.723	0.256	2.231

Problem 346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	92	181	143	535	279	219	111
normalized size	1	1.00	0.65	1.28	1.01	3.79	1.98	1.55	0.79
time (sec)	N/A	0.118	0.028	0.058	0.694	1.184	12.579	0.221	2.510

Problem 347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	94	207	169	529	277	239	-1
normalized size	1	1.00	0.69	1.51	1.23	3.86	2.02	1.74	-0.01
time (sec)	N/A	0.110	0.027	0.061	0.656	0.988	9.682	0.232	0.000

Problem 348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	96	236	198	534	299	316	-1
normalized size	1	1.00	0.67	1.65	1.38	3.73	2.09	2.21	-0.01
time (sec)	N/A	0.116	0.029	0.063	0.646	0.755	12.865	0.245	0.000

Problem 349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	A	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	96	257	219	534	294	331	-1
normalized size	1	1.00	0.69	1.84	1.56	3.81	2.10	2.36	-0.01
time (sec)	N/A	0.118	0.027	0.060	0.690	0.660	12.216	0.265	0.000

Problem 350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	A	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	125	281	243	574	299	397	-1
normalized size	1	1.00	0.89	2.01	1.74	4.10	2.14	2.84	-0.01
time (sec)	N/A	0.122	0.118	0.067	0.758	1.080	17.159	0.257	0.000

Problem 351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	123	164	152	238	605	316	150
normalized size	1	1.00	1.07	1.43	1.32	2.07	5.26	2.75	1.30
time (sec)	N/A	0.073	0.092	0.080	0.630	1.052	16.820	0.244	4.390

Problem 352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	53	185	173	267	609	491	168
normalized size	1	1.00	0.36	1.24	1.16	1.79	4.09	3.30	1.13
time (sec)	N/A	0.099	0.018	0.129	0.513	1.042	25.768	0.236	5.350

Problem 353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	64	204	192	286	1202	491	189
normalized size	1	1.00	0.37	1.19	1.12	1.66	6.99	2.85	1.10
time (sec)	N/A	0.123	0.024	0.091	0.587	1.020	25.672	0.251	6.337

Problem 354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	86	117	109	176	173	87	-1
normalized size	1	1.00	0.67	0.91	0.84	1.36	1.34	0.67	-0.01
time (sec)	N/A	0.107	0.058	0.053	0.575	0.974	6.584	0.195	0.000

Problem 355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	76	96	88	158	150	74	-1
normalized size	1	1.00	0.73	0.92	0.85	1.52	1.44	0.71	-0.01
time (sec)	N/A	0.069	0.041	0.055	0.476	1.115	6.225	0.218	0.000

Problem 356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	64	75	67	127	94	61	93
normalized size	1	1.00	0.79	0.93	0.83	1.57	1.16	0.75	1.15
time (sec)	N/A	0.040	0.036	0.059	0.476	1.007	4.272	0.195	1.640

Problem 357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	57	55	47	109	70	50	82
normalized size	1	1.00	1.02	0.98	0.84	1.95	1.25	0.89	1.46
time (sec)	N/A	0.018	0.032	0.051	0.493	0.921	4.202	0.200	1.431

Problem 358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	46	37	29	92	102	39	36
normalized size	1	1.00	1.07	0.86	0.67	2.14	2.37	0.91	0.84
time (sec)	N/A	0.012	0.031	0.050	0.574	0.789	1.487	0.190	1.333

Problem 359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	53	52	33	273	99	58	42
normalized size	1	1.00	1.00	0.98	0.62	5.15	1.87	1.09	0.79
time (sec)	N/A	0.039	0.015	0.051	0.543	0.934	3.328	0.209	1.514

Problem 360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	49	37	101	41	65	39
normalized size	1	1.00	1.00	1.04	0.79	2.15	0.87	1.38	0.83
time (sec)	N/A	0.031	0.015	0.051	0.569	0.921	2.640	0.191	1.370

Problem 361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	63	68	56	123	66	146	58
normalized size	1	1.00	0.88	0.94	0.78	1.71	0.92	2.03	0.81
time (sec)	N/A	0.051	0.101	0.057	0.646	0.974	3.664	0.197	1.494

Problem 362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	73	87	75	142	97	151	66
normalized size	1	1.00	0.75	0.90	0.77	1.46	1.00	1.56	0.68
time (sec)	N/A	0.073	0.151	0.057	0.523	0.867	3.790	0.221	1.644

Problem 363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	60	108	96	171	153	241	86
normalized size	1	1.00	0.49	0.89	0.79	1.40	1.25	1.98	0.70
time (sec)	N/A	0.100	0.021	0.059	0.636	0.800	5.715	0.211	1.717

Problem 364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	72	129	117	190	408	241	99
normalized size	1	1.00	0.49	0.88	0.80	1.29	2.78	1.64	0.67
time (sec)	N/A	0.129	0.020	0.065	0.482	0.632	6.463	0.210	1.788

Problem 365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	91	115	107	217	144	83	-1
normalized size	1	1.00	0.87	1.10	1.02	2.07	1.37	0.79	-0.01
time (sec)	N/A	0.071	0.047	0.052	0.488	0.607	12.307	0.198	0.000

Problem 366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	72	93	85	197	117	70	-1
normalized size	1	1.00	0.89	1.15	1.05	2.43	1.44	0.86	-0.01
time (sec)	N/A	0.040	0.048	0.095	0.673	0.795	10.926	0.208	0.000

Problem 367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	67	72	64	164	83	58	61
normalized size	1	1.00	1.02	1.09	0.97	2.48	1.26	0.88	0.92
time (sec)	N/A	0.034	0.034	0.052	0.533	0.555	8.869	0.209	1.470

Problem 368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	64	54	46	147	66	48	53
normalized size	1	1.00	1.33	1.12	0.96	3.06	1.38	1.00	1.10
time (sec)	N/A	0.018	0.052	0.046	0.475	0.751	8.031	0.237	1.216

Problem 369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	27	26	31	35	46	23	24
normalized size	1	1.00	0.96	0.93	1.11	1.25	1.64	0.82	0.86
time (sec)	N/A	0.007	0.014	0.047	0.465	1.014	7.227	0.198	1.076

Problem 370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	60	48	146	206	59	50
normalized size	1	1.00	1.00	1.28	1.02	3.11	4.38	1.26	1.06
time (sec)	N/A	0.037	0.028	0.049	0.470	1.005	9.568	0.192	1.433

Problem 371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	72	80	68	169	235	96	70
normalized size	1	1.00	1.03	1.14	0.97	2.41	3.36	1.37	1.00
time (sec)	N/A	0.053	0.037	0.056	0.613	1.276	13.930	0.207	1.582

Problem 372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	75	101	89	211	124	171	94
normalized size	1	1.00	0.79	1.06	0.94	2.22	1.31	1.80	0.99
time (sec)	N/A	0.080	0.155	0.056	0.585	0.728	10.374	0.203	1.734

Problem 373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	90	122	110	232	311	203	95
normalized size	1	1.00	0.75	1.02	0.92	1.93	2.59	1.69	0.79
time (sec)	N/A	0.106	0.135	0.051	0.499	0.758	28.083	0.205	1.851

Problem 374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	89	111	122	258	445	82	-1
normalized size	1	1.00	0.90	1.12	1.23	2.61	4.49	0.83	-0.01
time (sec)	N/A	0.064	0.064	0.054	0.617	1.311	29.109	0.212	0.000

Problem 375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	69	91	102	239	400	70	-1
normalized size	1	1.00	0.87	1.15	1.29	3.03	5.06	0.89	-0.01
time (sec)	N/A	0.041	0.069	0.051	0.622	0.849	15.979	0.224	0.000

Problem 376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	44	41	70	63	141	36	51
normalized size	1	1.00	0.83	0.77	1.32	1.19	2.66	0.68	0.96
time (sec)	N/A	0.020	0.017	0.056	0.581	0.805	13.693	0.196	1.135

Problem 377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	47	32	29	51	49	95	26	34
normalized size	1	0.94	0.64	0.58	1.02	0.98	1.90	0.52	0.68
time (sec)	N/A	0.015	0.017	0.048	0.549	0.889	13.255	0.240	1.093

Problem 378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	43	40	48	62	146	37	41
normalized size	1	1.00	0.84	0.78	0.94	1.22	2.86	0.73	0.80
time (sec)	N/A	0.010	0.019	0.043	0.657	0.953	12.460	0.217	1.088

Problem 379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	69	92	80	239	840	82	80
normalized size	1	1.00	0.91	1.21	1.05	3.14	11.05	1.08	1.05
time (sec)	N/A	0.064	0.055	0.052	0.595	0.920	25.672	0.204	1.512

Problem 380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	95	112	100	264	910	119	96
normalized size	1	1.00	0.91	1.08	0.96	2.54	8.75	1.14	0.92
time (sec)	N/A	0.085	0.054	0.055	0.572	0.987	22.255	0.207	1.688

Problem 381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	106	134	122	307	1034	197	123
normalized size	1	1.00	0.82	1.04	0.95	2.38	8.02	1.53	0.95
time (sec)	N/A	0.112	0.144	0.059	0.557	1.021	22.822	0.220	1.734

Problem 382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	55	52	64	85	486	53	59
normalized size	1	1.00	0.77	0.73	0.90	1.20	6.85	0.75	0.83
time (sec)	N/A	0.015	0.027	0.052	0.530	0.900	23.374	0.250	1.181

Problem 383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	67	64	80	108	1360	68	74
normalized size	1	1.00	0.74	0.70	0.88	1.19	14.95	0.75	0.81
time (sec)	N/A	0.021	0.032	0.049	0.607	0.835	39.861	0.227	1.184

Problem 384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	35	30	29	34	46	29	29
normalized size	1	1.00	0.78	0.67	0.64	0.76	1.02	0.64	0.64
time (sec)	N/A	0.012	0.013	0.044	0.464	0.835	8.223	0.233	0.049

Problem 385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	35	30	29	34	46	29	29
normalized size	1	1.00	0.78	0.67	0.64	0.76	1.02	0.64	0.64
time (sec)	N/A	0.012	0.013	0.063	0.621	1.110	3.764	0.152	0.044

Problem 386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	37	30	29	34	46	29	29
normalized size	1	1.00	0.82	0.67	0.64	0.76	1.02	0.64	0.64
time (sec)	N/A	0.013	0.016	0.059	0.488	0.629	1.657	0.150	0.044

Problem 387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	35	30	29	32	46	29	29
normalized size	1	1.00	0.78	0.67	0.64	0.71	1.02	0.64	0.64
time (sec)	N/A	0.012	0.012	0.049	0.600	0.844	2.383	0.150	0.044

Problem 388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	34	30	29	29	44	29	29
normalized size	1	1.00	0.79	0.70	0.67	0.67	1.02	0.67	0.67
time (sec)	N/A	0.012	0.012	0.041	0.491	0.636	0.451	0.148	0.043

Problem 389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	30	29	29	42	29	29
normalized size	1	1.00	0.78	0.73	0.71	0.71	1.02	0.71	0.71
time (sec)	N/A	0.012	0.014	0.043	0.515	1.258	0.622	0.152	0.052

Problem 390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	29	29	28	42	29	29
normalized size	1	1.00	0.78	0.71	0.71	0.68	1.02	0.71	0.71
time (sec)	N/A	0.012	0.011	0.052	0.709	0.846	0.846	0.150	1.055

Problem 391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	30	30	29	42	30	29
normalized size	1	1.00	0.78	0.73	0.73	0.71	1.02	0.73	0.71
time (sec)	N/A	0.012	0.014	0.045	0.508	0.873	1.441	0.151	0.036

Problem 392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	33	30	29	29	46	29	29
normalized size	1	1.00	0.77	0.70	0.67	0.67	1.07	0.67	0.67
time (sec)	N/A	0.012	0.014	0.042	0.591	0.587	3.155	0.156	1.053

Problem 393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	60	54	53	58	80	53	53
normalized size	1	1.00	0.78	0.70	0.69	0.75	1.04	0.69	0.69
time (sec)	N/A	0.025	0.024	0.047	0.585	0.998	16.122	0.157	0.030

Problem 394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	60	54	53	58	80	53	53
normalized size	1	1.00	0.78	0.70	0.69	0.75	1.04	0.69	0.69
time (sec)	N/A	0.026	0.023	0.049	0.526	0.781	8.498	0.150	0.027

Problem 395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	54	54	53	58	80	53	53
normalized size	1	1.00	0.70	0.70	0.69	0.75	1.04	0.69	0.69
time (sec)	N/A	0.024	0.020	0.046	0.505	0.917	4.264	0.153	0.027

Problem 396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	60	54	53	56	80	53	53
normalized size	1	1.00	0.78	0.70	0.69	0.73	1.04	0.69	0.69
time (sec)	N/A	0.024	0.020	0.052	0.477	0.854	3.077	0.148	0.030

Problem 397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	59	54	53	53	78	53	53
normalized size	1	1.00	0.79	0.72	0.71	0.71	1.04	0.71	0.71
time (sec)	N/A	0.025	0.027	0.049	0.534	0.926	1.443	0.150	0.026

Problem 398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	52	54	53	53	76	53	53
normalized size	1	1.00	0.71	0.74	0.73	0.73	1.04	0.73	0.73
time (sec)	N/A	0.025	0.018	0.053	0.656	0.781	1.678	0.154	0.029

Problem 399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	51	54	53	53	76	53	54
normalized size	1	1.00	0.70	0.74	0.73	0.73	1.04	0.73	0.74
time (sec)	N/A	0.024	0.018	0.047	0.528	0.925	2.120	0.170	0.027

Problem 400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	53	54	54	53	76	54	54
normalized size	1	1.00	0.73	0.74	0.74	0.73	1.04	0.74	0.74
time (sec)	N/A	0.026	0.022	0.049	0.485	0.543	2.903	0.155	0.051

Problem 401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	51	54	54	53	76	54	53
normalized size	1	1.00	0.70	0.74	0.74	0.73	1.04	0.74	0.73
time (sec)	N/A	0.024	0.022	0.046	0.479	0.739	4.021	0.153	0.048

Problem 402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	83	78	77	82	114	77	77
normalized size	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71
time (sec)	N/A	0.038	0.043	0.048	0.515	0.915	27.936	0.154	0.037

Problem 403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	83	78	77	82	114	77	77
normalized size	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71
time (sec)	N/A	0.040	0.039	0.049	0.600	0.994	16.451	0.155	0.034

Problem 404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	83	78	77	82	114	77	77
normalized size	1	1.00	0.76	0.72	0.71	0.75	1.05	0.71	0.71
time (sec)	N/A	0.037	0.039	0.048	0.594	0.880	9.820	0.150	0.034

Problem 405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	83	78	77	80	114	77	77
normalized size	1	1.00	0.76	0.72	0.71	0.73	1.05	0.71	0.71
time (sec)	N/A	0.037	0.044	0.046	0.523	0.964	4.415	0.156	0.036

Problem 406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	72	78	77	77	112	77	77
normalized size	1	1.00	0.67	0.73	0.72	0.72	1.05	0.72	0.72
time (sec)	N/A	0.039	0.027	0.049	0.507	0.943	3.874	0.150	0.036

Problem 407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	80	78	77	77	109	77	77
normalized size	1	1.00	0.78	0.76	0.75	0.75	1.06	0.75	0.75
time (sec)	N/A	0.038	0.039	0.047	0.509	0.635	4.260	0.154	0.038

Problem 408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	78	78	77	77	109	77	78
normalized size	1	1.00	0.76	0.76	0.75	0.75	1.06	0.75	0.76
time (sec)	N/A	0.037	0.034	0.070	0.543	0.924	4.834	0.196	0.033

Problem 409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	72	78	78	77	109	78	78
normalized size	1	1.00	0.70	0.76	0.76	0.75	1.06	0.76	0.76
time (sec)	N/A	0.039	0.027	0.048	0.530	0.934	6.486	0.157	0.032

Problem 410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	70	78	78	77	107	78	78
normalized size	1	1.00	0.69	0.77	0.77	0.76	1.06	0.77	0.77
time (sec)	N/A	0.037	0.029	0.047	0.525	1.063	8.607	0.186	0.031

Problem 411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	71	78	78	77	109	78	78
normalized size	1	1.00	0.69	0.76	0.76	0.75	1.06	0.76	0.76
time (sec)	N/A	0.039	0.027	0.051	0.521	0.834	11.242	0.189	0.060

Problem 412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	290	302	265	862	403	262	665
normalized size	1	1.00	0.99	1.03	0.91	2.95	1.38	0.90	2.28
time (sec)	N/A	0.345	0.099	0.059	1.309	1.024	33.964	0.202	1.256

Problem 413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	287	289	247	772	379	255	601
normalized size	1	1.00	1.03	1.04	0.89	2.78	1.36	0.92	2.16
time (sec)	N/A	0.272	0.065	0.052	1.287	1.084	10.060	0.186	0.248

Problem 414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	266	277	246	764	359	249	566
normalized size	1	1.00	1.00	1.05	0.93	2.88	1.35	0.94	2.14
time (sec)	N/A	0.235	0.061	0.048	1.452	0.692	6.481	0.187	1.258

Problem 415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	262	268	224	775	348	244	607
normalized size	1	1.00	1.03	1.06	0.88	3.05	1.37	0.96	2.39
time (sec)	N/A	0.185	0.057	0.068	1.149	1.157	7.034	0.178	1.265

Problem 416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	177	277	246	767	355	249	602
normalized size	1	1.00	0.67	1.05	0.93	2.89	1.34	0.94	2.27
time (sec)	N/A	0.221	0.078	0.057	1.186	1.027	14.433	0.193	0.235

Problem 417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	53	289	244	802	376	258	606
normalized size	1	1.00	0.19	1.04	0.88	2.88	1.35	0.93	2.18
time (sec)	N/A	0.273	0.014	0.054	1.227	0.991	34.451	0.238	1.254

Problem 418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	54	302	263	869	398	265	664
normalized size	1	1.00	0.18	1.03	0.90	2.98	1.36	0.91	2.27
time (sec)	N/A	0.322	0.013	0.056	1.280	0.896	108.650	0.191	1.247

Problem 419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	54	318	264	884	0	276	678
normalized size	1	1.00	0.18	1.04	0.86	2.89	0.00	0.90	2.22
time (sec)	N/A	0.368	0.014	0.070	1.243	1.019	0.000	0.222	1.266

Problem 420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	344	314	283	884	1374	283	617
normalized size	1	1.00	1.13	1.03	0.93	2.91	4.52	0.93	2.03
time (sec)	N/A	0.311	0.521	0.075	1.357	1.042	170.566	0.197	1.275

Problem 421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	289	323	307	259	888	1316	271	656
normalized size	1	1.00	1.12	1.06	0.90	3.07	4.55	0.94	2.27
time (sec)	N/A	0.244	0.234	0.075	1.212	1.031	90.986	0.203	1.286

Problem 422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	315	316	272	901	1266	271	652
normalized size	1	1.00	1.08	1.08	0.93	3.09	4.34	0.93	2.23
time (sec)	N/A	0.226	0.229	0.054	1.239	0.928	52.794	0.192	1.277

Problem 423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	304	313	256	877	1294	273	649
normalized size	1	1.00	1.06	1.09	0.89	3.06	4.51	0.95	2.26
time (sec)	N/A	0.246	0.222	0.066	1.141	1.048	77.783	0.218	1.277

Problem 424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	256	314	280	877	1435	281	634
normalized size	1	1.00	0.84	1.03	0.92	2.88	4.72	0.92	2.09
time (sec)	N/A	0.299	0.461	0.076	1.194	1.284	149.465	0.223	0.248

Problem 425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	85	327	280	916	0	291	638
normalized size	1	1.00	0.27	1.03	0.88	2.89	0.00	0.92	2.01
time (sec)	N/A	0.350	0.032	0.112	1.239	1.035	0.000	0.228	0.245

Problem 426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	385	327	292	986	0	293	686
normalized size	1	1.00	1.20	1.02	0.91	3.08	0.00	0.92	2.14
time (sec)	N/A	0.306	0.475	0.061	1.335	0.955	0.000	0.219	1.293

Problem 427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	372	335	312	1031	0	298	697
normalized size	1	1.00	1.14	1.03	0.96	3.17	0.00	0.92	2.14
time (sec)	N/A	0.282	0.342	0.058	1.222	0.806	0.000	0.201	1.285

Problem 428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	360	334	289	982	0	289	695
normalized size	1	1.00	1.14	1.06	0.92	3.12	0.00	0.92	2.21
time (sec)	N/A	0.280	0.175	0.061	1.350	0.963	0.000	0.215	1.288

Problem 429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	356	335	311	1022	0	297	690
normalized size	1	1.00	1.08	1.01	0.94	3.09	0.00	0.90	2.08
time (sec)	N/A	0.286	0.177	0.067	1.285	0.797	0.000	0.213	1.286

Problem 430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	344	349	291	981	0	293	687
normalized size	1	1.00	1.08	1.09	0.91	3.07	0.00	0.92	2.15
time (sec)	N/A	0.306	0.172	0.056	1.496	0.989	0.000	0.231	1.278

Problem 431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	300	354	313	958	0	304	673
normalized size	1	1.00	0.90	1.06	0.94	2.88	0.00	0.91	2.02
time (sec)	N/A	0.354	0.286	0.064	1.385	0.620	0.000	0.214	0.281

Problem 432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	99	62	34	33	49	34	20
normalized size	1	1.00	2.20	1.38	0.76	0.73	1.09	0.76	0.44
time (sec)	N/A	0.031	0.036	0.048	1.248	0.805	0.692	0.151	0.125

Problem 433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	142	368	0	0	97	0	-1
normalized size	1	1.00	0.33	0.86	0.00	0.00	0.23	0.00	-0.00
time (sec)	N/A	0.590	0.134	0.237	0.000	1.011	77.118	0.000	0.000

Problem 434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	133	360	0	0	97	0	-1
normalized size	1	1.00	0.34	0.91	0.00	0.00	0.24	0.00	-0.00
time (sec)	N/A	0.489	0.114	0.099	0.000	1.025	27.583	0.000	0.000

Problem 435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	363	363	118	342	0	0	97	0	-1
normalized size	1	1.00	0.33	0.94	0.00	0.00	0.27	0.00	-0.00
time (sec)	N/A	0.417	0.086	0.110	0.000	0.803	8.753	0.000	0.000

Problem 436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	328	328	111	333	0	0	95	0	-1
normalized size	1	1.00	0.34	1.02	0.00	0.00	0.29	0.00	-0.00
time (sec)	N/A	0.335	0.061	0.084	0.000	0.559	3.701	0.000	0.000

Problem 437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	82	312	0	0	97	0	-1
normalized size	1	1.00	0.28	1.05	0.00	0.00	0.33	0.00	-0.00
time (sec)	N/A	0.272	0.024	0.088	0.000	0.884	3.557	0.000	0.000

Problem 438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	300	300	80	307	0	0	100	0	-1
normalized size	1	1.00	0.27	1.02	0.00	0.00	0.33	0.00	-0.00
time (sec)	N/A	0.260	0.029	0.122	0.000	0.853	4.141	0.000	0.000

Problem 439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	82	303	0	0	104	0	-1
normalized size	1	1.00	0.28	1.02	0.00	0.00	0.35	0.00	-0.00
time (sec)	N/A	0.287	0.030	0.102	0.000	0.993	7.503	0.000	0.000

Problem 440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	338	338	83	331	0	0	107	0	-1
normalized size	1	1.00	0.25	0.98	0.00	0.00	0.32	0.00	-0.00
time (sec)	N/A	0.350	0.028	0.101	0.000	1.084	22.465	0.000	0.000

Problem 441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	88	340	0	0	110	0	-1
normalized size	1	1.00	0.24	0.92	0.00	0.00	0.30	0.00	-0.00
time (sec)	N/A	0.406	0.033	0.130	0.000	0.975	66.625	0.000	0.000

Problem 442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	137	384	0	0	199	0	-1
normalized size	1	1.00	0.31	0.88	0.00	0.00	0.45	0.00	-0.00
time (sec)	N/A	0.577	0.145	0.105	0.000	1.048	68.100	0.000	0.000

Problem 443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	400	400	124	366	0	0	199	0	-1
normalized size	1	1.00	0.31	0.92	0.00	0.00	0.50	0.00	-0.00
time (sec)	N/A	0.495	0.115	0.076	0.000	0.934	22.267	0.000	0.000

Problem 444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	366	366	116	357	0	0	197	0	-1
normalized size	1	1.00	0.32	0.98	0.00	0.00	0.54	0.00	-0.00
time (sec)	N/A	0.420	0.076	0.073	0.000	0.958	7.505	0.000	0.000

Problem 445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	83	338	0	0	199	0	-1
normalized size	1	1.00	0.25	1.02	0.00	0.00	0.60	0.00	-0.00
time (sec)	N/A	0.349	0.027	0.070	0.000	0.968	8.350	0.000	0.000

Problem 446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	81	340	0	0	202	0	-1
normalized size	1	1.00	0.24	1.00	0.00	0.00	0.59	0.00	-0.00
time (sec)	N/A	0.345	0.025	0.074	0.000	1.050	8.623	0.000	0.000

Problem 447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	83	325	0	0	206	0	-1
normalized size	1	1.00	0.24	0.95	0.00	0.00	0.60	0.00	-0.00
time (sec)	N/A	0.319	0.032	0.080	0.000	0.984	13.699	0.000	0.000

Problem 448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	84	329	0	0	212	0	-1
normalized size	1	1.00	0.25	0.97	0.00	0.00	0.63	0.00	-0.00
time (sec)	N/A	0.344	0.031	0.079	0.000	0.973	37.892	0.000	0.000

Problem 449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	89	337	0	0	219	0	-1
normalized size	1	1.00	0.26	0.99	0.00	0.00	0.65	0.00	-0.00
time (sec)	N/A	0.338	0.033	0.081	0.000	0.945	115.629	0.000	0.000

Problem 450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	437	437	124	390	0	0	301	0	-1
normalized size	1	1.00	0.28	0.89	0.00	0.00	0.69	0.00	-0.00
time (sec)	N/A	0.569	0.137	0.102	0.000	1.037	53.612	0.000	0.000

Problem 451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	117	381	0	0	299	0	-1
normalized size	1	1.00	0.29	0.94	0.00	0.00	0.74	0.00	-0.00
time (sec)	N/A	0.487	0.092	0.074	0.000	1.335	15.276	0.000	0.000

Problem 452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	85	362	0	0	301	0	-1
normalized size	1	1.00	0.23	0.98	0.00	0.00	0.82	0.00	-0.00
time (sec)	N/A	0.414	0.028	0.092	0.000	1.021	18.200	0.000	0.000

Problem 453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	379	379	83	364	0	0	304	0	-1
normalized size	1	1.00	0.22	0.96	0.00	0.00	0.80	0.00	-0.00
time (sec)	N/A	0.414	0.027	0.077	0.000	0.751	18.553	0.000	0.000

Problem 454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	85	359	0	0	308	0	-1
normalized size	1	1.00	0.22	0.95	0.00	0.00	0.81	0.00	-0.00
time (sec)	N/A	0.385	0.035	0.079	0.000	0.988	24.276	0.000	0.000

Problem 455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	86	367	0	0	314	0	-1
normalized size	1	1.00	0.23	0.98	0.00	0.00	0.84	0.00	-0.00
time (sec)	N/A	0.406	0.027	0.090	0.000	1.005	56.589	0.000	0.000

Problem 456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	377	377	91	366	0	0	321	0	-1
normalized size	1	1.00	0.24	0.97	0.00	0.00	0.85	0.00	-0.00
time (sec)	N/A	0.413	0.033	0.081	0.000	1.136	163.470	0.000	0.000

Problem 457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	375	91	366	0	0	0	0	-1
normalized size	1	1.00	0.24	0.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.423	0.036	0.107	0.000	0.995	0.000	0.000	0.000

Problem 458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	142	344	0	0	94	0	-1
normalized size	1	1.00	0.37	0.89	0.00	0.00	0.24	0.00	-0.00
time (sec)	N/A	0.483	0.073	0.104	0.000	1.021	55.518	0.000	0.000

Problem 459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	133	336	0	0	94	0	-1
normalized size	1	1.00	0.37	0.94	0.00	0.00	0.26	0.00	-0.00
time (sec)	N/A	0.405	0.063	0.135	0.000	0.924	20.008	0.000	0.000

Problem 460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	118	316	0	0	94	0	-1
normalized size	1	1.00	0.36	0.97	0.00	0.00	0.29	0.00	-0.00
time (sec)	N/A	0.335	0.051	0.086	0.000	0.998	6.712	0.000	0.000

Problem 461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	109	295	0	0	92	0	-1
normalized size	1	1.00	0.38	1.03	0.00	0.00	0.32	0.00	-0.00
time (sec)	N/A	0.254	0.041	0.060	0.000	0.980	3.746	0.000	0.000

Problem 462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	253	253	82	175	0	0	94	0	-1
normalized size	1	1.00	0.32	0.69	0.00	0.00	0.37	0.00	-0.00
time (sec)	N/A	0.181	0.026	0.075	0.000	0.980	2.995	0.000	0.000

Problem 463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	80	296	0	0	97	0	-1
normalized size	1	1.00	0.27	1.01	0.00	0.00	0.33	0.00	-0.00
time (sec)	N/A	0.248	0.032	0.076	0.000	0.894	4.211	0.000	0.000

Problem 464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	82	306	0	0	100	0	-1
normalized size	1	1.00	0.25	0.94	0.00	0.00	0.31	0.00	-0.00
time (sec)	N/A	0.318	0.032	0.074	0.000	0.961	9.105	0.000	0.000

Problem 465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	363	363	83	331	0	0	104	0	-1
normalized size	1	1.00	0.23	0.91	0.00	0.00	0.29	0.00	-0.00
time (sec)	N/A	0.391	0.030	0.087	0.000	0.945	29.241	0.000	0.000

Problem 466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	127	318	0	0	0	0	-1
normalized size	1	1.00	0.35	0.88	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.404	0.067	0.132	0.000	0.983	0.000	0.000	0.000

Problem 467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	120	308	0	0	94	0	-1
normalized size	1	1.00	0.37	0.94	0.00	0.00	0.29	0.00	-0.00
time (sec)	N/A	0.339	0.060	0.162	0.000	0.956	141.569	0.000	0.000

Problem 468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	296	102	290	0	0	94	0	-1
normalized size	1	1.00	0.34	0.98	0.00	0.00	0.32	0.00	-0.00
time (sec)	N/A	0.266	0.051	0.100	0.000	0.718	28.549	0.000	0.000

Problem 469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	113	297	0	0	94	0	-1
normalized size	1	1.00	0.38	1.00	0.00	0.00	0.32	0.00	-0.00
time (sec)	N/A	0.243	0.061	0.088	0.000	1.179	13.194	0.000	0.000

Problem 470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	107	288	0	0	94	0	-1
normalized size	1	1.00	0.37	0.99	0.00	0.00	0.32	0.00	-0.00
time (sec)	N/A	0.269	0.054	0.129	0.000	0.927	14.742	0.000	0.000

Problem 471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	100	304	0	0	97	0	-1
normalized size	1	1.00	0.31	0.93	0.00	0.00	0.30	0.00	-0.00
time (sec)	N/A	0.336	0.049	0.088	0.000	0.939	29.208	0.000	0.000

Problem 472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	107	307	0	0	100	0	-1
normalized size	1	1.00	0.30	0.86	0.00	0.00	0.28	0.00	-0.00
time (sec)	N/A	0.417	0.057	0.107	0.000	0.952	65.584	0.000	0.000

Problem 473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	107	331	0	0	104	0	-1
normalized size	1	1.00	0.27	0.84	0.00	0.00	0.26	0.00	-0.00
time (sec)	N/A	0.504	0.058	0.078	0.000	0.792	150.957	0.000	0.000

Problem 474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	428	428	183	637	0	0	0	0	-1
normalized size	1	1.00	0.43	1.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.594	0.140	0.118	0.000	1.057	0.000	0.000	0.000

Problem 475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	165	615	0	0	0	0	-1
normalized size	1	1.00	0.41	1.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.486	0.128	0.130	0.000	0.665	0.000	0.000	0.000

Problem 476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	156	607	0	0	0	0	-1
normalized size	1	1.00	0.42	1.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.423	0.120	0.086	0.000	0.751	0.000	0.000	0.000

Problem 477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	139	584	0	0	0	0	-1
normalized size	1	1.00	0.41	1.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.338	0.112	0.116	0.000	0.874	0.000	0.000	0.000

Problem 478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	149	601	0	0	0	0	-1
normalized size	1	1.00	0.43	1.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.344	0.156	0.103	0.000	0.856	0.000	0.000	0.000

Problem 479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	137	583	0	0	0	0	-1
normalized size	1	1.00	0.40	1.71	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.346	0.146	0.095	0.000	1.143	0.000	0.000	0.000

Problem 480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	342	145	596	0	0	94	0	-1
normalized size	1	1.00	0.42	1.74	0.00	0.00	0.27	0.00	-0.00
time (sec)	N/A	0.346	0.129	0.072	0.000	1.089	64.644	0.000	0.000

Problem 481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	335	335	140	581	0	0	94	0	-1
normalized size	1	1.00	0.42	1.73	0.00	0.00	0.28	0.00	-0.00
time (sec)	N/A	0.358	0.108	0.105	0.000	0.884	130.850	0.000	0.000

Problem 482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	373	137	605	0	0	0	0	-1
normalized size	1	1.00	0.37	1.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.422	0.089	0.087	0.000	0.701	0.000	0.000	0.000

Problem 483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	137	602	0	0	0	0	-1
normalized size	1	1.00	0.34	1.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.498	0.093	0.125	0.000	0.717	0.000	0.000	0.000

Problem 484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	137	632	0	0	0	0	-1
normalized size	1	1.00	0.32	1.46	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.579	0.092	0.262	0.000	1.063	0.000	0.000	0.000

Problem 485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	128	1255	208	1051	8202	1778	1075
normalized size	1	1.00	0.59	5.78	0.96	4.84	37.80	8.19	4.95
time (sec)	N/A	0.165	0.303	0.051	0.782	0.945	5.167	0.244	1.793

Problem 486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	101	765	162	649	4507	1102	695
normalized size	1	1.00	0.60	4.53	0.96	3.84	26.67	6.52	4.11
time (sec)	N/A	0.102	0.217	0.058	0.619	0.925	3.178	0.202	1.481

Problem 487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	74	395	116	343	2076	586	371
normalized size	1	1.00	0.61	3.26	0.96	2.83	17.16	4.84	3.07
time (sec)	N/A	0.062	0.073	0.047	0.610	0.837	1.732	0.178	1.280

Problem 488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	47	145	70	133	685	230	161
normalized size	1	1.00	0.64	1.99	0.96	1.82	9.38	3.15	2.21
time (sec)	N/A	0.033	0.041	0.047	0.613	0.863	0.861	0.163	1.146

Problem 489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	82	0	0	0	192	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	2.11	0.00	-0.01
time (sec)	N/A	0.042	0.030	0.706	0.000	1.138	4.207	0.000	0.000

Problem 490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	82	0	0	0	770	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	8.46	0.00	-0.01
time (sec)	N/A	0.040	0.028	0.659	0.000	1.160	34.159	0.000	0.000

Problem 491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	82	0	0	0	2509	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	27.57	0.00	-0.01
time (sec)	N/A	0.039	0.029	0.732	0.000	1.125	117.118	0.000	0.000

Problem 492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	111	0	0	0	360	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	2.48	0.00	-0.01
time (sec)	N/A	0.076	0.054	0.698	0.000	1.084	21.116	0.000	0.000

Problem 493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	109	0	0	0	238	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	1.69	0.00	-0.01
time (sec)	N/A	0.068	0.049	1.150	0.000	0.933	9.548	0.000	0.000

Problem 494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	108	0	0	0	116	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.83	0.00	-0.01
time (sec)	N/A	0.065	0.044	0.694	0.000	0.749	3.863	0.000	0.000

Problem 495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	108	0	0	0	112	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.81	0.00	-0.01
time (sec)	N/A	0.063	0.048	0.658	0.000	0.965	3.649	0.000	0.000

Problem 496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	111	0	0	0	112	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	0.77	0.00	-0.01
time (sec)	N/A	0.069	0.048	0.665	0.000	0.849	12.660	0.000	0.000

Problem 497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	111	0	0	0	112	0	-1
normalized size	1	1.00	0.77	0.00	0.00	0.00	0.77	0.00	-0.01
time (sec)	N/A	0.067	0.050	0.674	0.000	0.880	159.103	0.000	0.000

Problem 498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	67	177	0	0	673	0	-1
normalized size	1	1.00	0.96	2.53	0.00	0.00	9.61	0.00	-0.01
time (sec)	N/A	0.023	0.034	0.722	0.000	0.993	6.368	0.000	0.000

Problem 499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	67	0	0	0	313	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	4.47	0.00	-0.01
time (sec)	N/A	0.020	0.006	0.868	0.000	0.767	2.320	0.000	0.000

Problem 500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	67	177	0	0	673	0	-1
normalized size	1	1.00	0.96	2.53	0.00	0.00	9.61	0.00	-0.01
time (sec)	N/A	0.023	0.006	0.842	0.000	0.855	2.790	0.000	0.000

Problem 501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	67	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.034	0.006	0.813	0.000	0.909	0.000	0.000	0.000

Problem 502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	106	0	0	0	109	0	-1
normalized size	1	1.00	0.79	0.00	0.00	0.00	0.81	0.00	-0.01
time (sec)	N/A	0.055	0.038	0.785	0.000	0.926	83.445	0.000	0.000

Problem 503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	87	0	0	0	394	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	3.94	0.00	-0.01
time (sec)	N/A	0.061	0.083	0.768	0.000	0.940	15.848	0.000	0.000

Problem 504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	87	0	0	0	394	0	-1
normalized size	1	1.00	0.87	0.00	0.00	0.00	3.94	0.00	-0.01
time (sec)	N/A	0.060	0.067	1.070	0.000	0.907	11.457	0.000	0.000

Problem 505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	A	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	71	0	0	0	65	0	-1
normalized size	1	1.00	0.95	0.00	0.00	0.00	0.87	0.00	-0.01
time (sec)	N/A	0.028	0.033	0.856	0.000	1.012	8.818	0.000	0.000

Problem 506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	98	0	0	0	61	0	65
normalized size	1	1.00	1.40	0.00	0.00	0.00	0.87	0.00	0.93
time (sec)	N/A	0.019	0.055	0.046	0.000	0.790	6.193	0.000	1.703

Problem 507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	88	0	0	0	65	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.74	0.00	-0.01
time (sec)	N/A	0.045	0.052	0.660	0.000	0.871	9.448	0.000	0.000

Problem 508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	91	0	0	0	68	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.75	0.00	-0.01
time (sec)	N/A	0.047	0.053	0.662	0.000	0.723	9.892	0.000	0.000

Problem 509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	C	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	89	0	0	0	71	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.77	0.00	-0.01
time (sec)	N/A	0.050	0.044	0.622	0.000	0.854	13.601	0.000	0.000

Problem 510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	52	51	53	54	53	51
normalized size	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.048	0.009	0.042	0.578	0.818	0.073	0.147	1.064

Problem 511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	52	51	53	54	53	51
normalized size	1	1.00	1.00	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.039	0.007	0.046	0.556	0.494	0.074	0.211	0.045

Problem 512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	50	52	51	53	54	53	51
normalized size	1	1.00	0.91	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.032	0.012	0.040	0.559	0.654	0.075	0.152	0.050

Problem 513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	50	52	51	53	54	53	51
normalized size	1	1.00	0.91	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.029	0.010	0.042	0.524	0.717	0.073	0.150	0.044

Problem 514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	46	49	48	49	49	49	47
normalized size	1	1.00	1.21	1.29	1.26	1.29	1.29	1.29	1.24
time (sec)	N/A	0.021	0.009	0.040	0.470	0.704	0.071	0.154	0.043

Problem 515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	43	46	46	46	46	46	45
normalized size	1	1.00	1.08	1.15	1.15	1.15	1.15	1.15	1.12
time (sec)	N/A	0.013	0.015	0.059	0.596	1.046	0.137	0.149	0.040

Problem 516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	43	46	46	52	42	46	46
normalized size	1	1.00	0.98	1.05	1.05	1.18	0.95	1.05	1.05
time (sec)	N/A	0.027	0.023	0.061	0.600	0.955	0.183	0.148	0.044

Problem 517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	43	48	46	53	46	47	46
normalized size	1	1.00	0.98	1.09	1.05	1.20	1.05	1.07	1.05
time (sec)	N/A	0.024	0.025	0.047	0.563	0.967	0.325	0.150	1.070

Problem 518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	48	52	50	53	54	51	48
normalized size	1	1.00	0.98	1.06	1.02	1.08	1.10	1.04	0.98
time (sec)	N/A	0.024	0.025	0.053	0.551	0.754	0.519	0.156	0.053

Problem 519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	47	48	51	51	56	51	49
normalized size	1	1.00	1.07	1.09	1.16	1.16	1.27	1.16	1.11
time (sec)	N/A	0.011	0.016	0.048	0.566	0.977	0.661	0.148	0.036

Problem 520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	50	48	51	51	56	51	51
normalized size	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93
time (sec)	N/A	0.024	0.015	0.053	0.516	0.913	0.859	0.151	0.037

Problem 521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	50	48	51	51	56	51	51
normalized size	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93
time (sec)	N/A	0.024	0.016	0.051	0.588	0.905	1.008	0.190	0.035

Problem 522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	50	48	51	51	56	51	51
normalized size	1	1.00	0.91	0.87	0.93	0.93	1.02	0.93	0.93
time (sec)	N/A	0.025	0.016	0.050	0.467	0.899	1.240	0.160	0.035

Problem 523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	99	100	99	101	109	101	91
normalized size	1	1.00	1.00	1.01	1.00	1.02	1.10	1.02	0.92
time (sec)	N/A	0.084	0.014	0.043	0.483	0.673	0.087	0.164	0.046

Problem 524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	99	100	99	100	105	100	91
normalized size	1	1.00	1.00	1.01	1.00	1.01	1.06	1.01	0.92
time (sec)	N/A	0.057	0.013	0.069	0.566	0.742	0.088	0.154	1.044

Problem 525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	88	100	99	99	104	99	90
normalized size	1	1.00	1.01	1.15	1.14	1.14	1.20	1.14	1.03
time (sec)	N/A	0.053	0.026	0.047	0.519	0.793	0.087	0.165	0.035

Problem 526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	88	100	99	100	107	100	91
normalized size	1	1.00	1.44	1.64	1.62	1.64	1.75	1.64	1.49
time (sec)	N/A	0.041	0.023	0.046	0.455	0.588	0.086	0.152	0.034

Problem 527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	84	97	96	97	100	97	88
normalized size	1	1.00	2.21	2.55	2.53	2.55	2.63	2.55	2.32
time (sec)	N/A	0.014	0.015	0.040	0.480	0.712	0.088	0.183	0.034

Problem 528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	83	94	93	93	95	94	84
normalized size	1	1.00	1.26	1.42	1.41	1.41	1.44	1.42	1.27
time (sec)	N/A	0.023	0.023	0.047	0.492	0.761	0.206	0.171	0.039

Problem 529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	85	95	94	101	94	95	86
normalized size	1	1.00	0.99	1.10	1.09	1.17	1.09	1.10	1.00
time (sec)	N/A	0.051	0.035	0.051	0.535	1.210	0.257	0.157	0.042

Problem 530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	86	96	96	101	97	96	91
normalized size	1	1.00	0.96	1.07	1.07	1.12	1.08	1.07	1.01
time (sec)	N/A	0.050	0.032	0.056	0.553	0.937	0.417	0.153	1.067

Problem 531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	86	95	96	101	99	96	94
normalized size	1	1.00	0.97	1.07	1.08	1.13	1.11	1.08	1.06
time (sec)	N/A	0.054	0.034	0.051	0.485	0.607	0.731	0.160	1.075

Problem 532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	85	96	95	101	99	96	93
normalized size	1	1.00	0.99	1.12	1.10	1.17	1.15	1.12	1.08
time (sec)	N/A	0.047	0.040	0.053	0.462	0.688	1.223	0.167	1.086

Problem 533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	87	100	98	101	105	99	94
normalized size	1	1.00	1.23	1.41	1.38	1.42	1.48	1.39	1.32
time (sec)	N/A	0.029	0.044	0.059	0.461	0.836	1.750	0.165	1.090

Problem 534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	85	88	99	99	107	99	95
normalized size	1	1.00	1.93	2.00	2.25	2.25	2.43	2.25	2.16
time (sec)	N/A	0.012	0.024	0.063	0.582	0.869	2.350	0.171	0.052

Problem 535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	88	88	99	99	107	99	96
normalized size	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.97
time (sec)	N/A	0.048	0.023	0.051	0.590	0.839	2.852	0.156	1.080

Problem 536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	88	88	99	99	107	99	95
normalized size	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.96
time (sec)	N/A	0.046	0.026	0.053	0.517	0.922	3.707	0.161	1.073

Problem 537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	88	88	99	99	107	99	96
normalized size	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.97
time (sec)	N/A	0.048	0.026	0.054	0.470	0.928	4.555	0.184	0.053

Problem 538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	88	88	99	99	107	99	97
normalized size	1	1.00	0.89	0.89	1.00	1.00	1.08	1.00	0.98
time (sec)	N/A	0.049	0.025	0.061	0.453	0.914	5.450	0.152	1.064

Problem 539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	143	148	147	149	162	149	131
normalized size	1	1.00	1.00	1.03	1.03	1.04	1.13	1.04	0.92
time (sec)	N/A	0.142	0.024	0.046	0.478	0.823	0.102	0.167	0.064

Problem 540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	143	148	147	148	162	148	130
normalized size	1	1.00	1.03	1.06	1.06	1.06	1.17	1.06	0.94
time (sec)	N/A	0.098	0.019	0.045	0.498	0.500	0.100	0.157	1.067

Problem 541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	143	148	147	148	162	148	131
normalized size	1	1.00	1.28	1.32	1.31	1.32	1.45	1.32	1.17
time (sec)	N/A	0.077	0.019	0.040	0.531	0.722	0.100	0.203	0.048

Problem 542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	143	148	147	149	163	149	131
normalized size	1	1.00	1.64	1.70	1.69	1.71	1.87	1.71	1.51
time (sec)	N/A	0.064	0.017	0.040	0.505	0.830	0.102	0.189	0.049

Problem 543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	140	148	146	149	160	149	130
normalized size	1	1.00	2.30	2.43	2.39	2.44	2.62	2.44	2.13
time (sec)	N/A	0.050	0.017	0.041	0.459	0.714	0.099	0.151	0.048

Problem 544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	122	145	142	145	148	145	126
normalized size	1	1.00	3.21	3.82	3.74	3.82	3.89	3.82	3.32
time (sec)	N/A	0.015	0.034	0.045	0.674	0.675	0.098	0.154	0.050

Problem 545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	128	142	142	142	148	142	125
normalized size	1	1.00	1.33	1.48	1.48	1.48	1.54	1.48	1.30
time (sec)	N/A	0.037	0.050	0.041	0.506	0.705	0.281	0.171	1.077

Problem 546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	129	143	143	149	148	143	127
normalized size	1	1.00	0.97	1.08	1.08	1.12	1.11	1.08	0.95
time (sec)	N/A	0.077	0.051	0.048	0.624	0.919	0.330	0.156	0.060

Problem 547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	128	144	143	149	148	144	130
normalized size	1	1.00	0.98	1.10	1.09	1.14	1.13	1.10	0.99
time (sec)	N/A	0.080	0.057	0.058	0.562	0.795	0.513	0.172	1.078

Problem 548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	127	144	145	149	150	145	135
normalized size	1	1.00	0.95	1.07	1.08	1.11	1.12	1.08	1.01
time (sec)	N/A	0.080	0.047	0.049	0.517	0.734	0.829	0.167	0.057

Problem 549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	128	144	145	149	150	145	138
normalized size	1	1.00	0.96	1.07	1.08	1.11	1.12	1.08	1.03
time (sec)	N/A	0.082	0.048	0.058	0.548	0.561	1.347	0.185	0.056

Problem 550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	128	143	144	149	150	144	140
normalized size	1	1.00	0.98	1.09	1.10	1.14	1.15	1.10	1.07
time (sec)	N/A	0.081	0.049	0.062	0.614	0.845	2.092	0.179	1.086

Problem 551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	125	144	143	149	150	144	139
normalized size	1	1.00	0.95	1.09	1.08	1.13	1.14	1.09	1.05
time (sec)	N/A	0.076	0.069	0.053	0.474	1.033	3.160	0.156	0.084

Problem 552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	132	148	146	149	156	147	140
normalized size	1	1.00	1.31	1.47	1.45	1.48	1.54	1.46	1.39
time (sec)	N/A	0.044	0.055	0.055	0.648	0.642	4.372	0.166	1.097

Problem 553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	123	128	147	147	158	147	141
normalized size	1	1.00	2.80	2.91	3.34	3.34	3.59	3.34	3.20
time (sec)	N/A	0.013	0.033	0.053	0.544	0.453	5.523	0.154	1.093

Problem 554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	126	128	147	147	158	147	143
normalized size	1	1.00	1.75	1.78	2.04	2.04	2.19	2.04	1.99
time (sec)	N/A	0.022	0.032	0.060	0.561	0.791	6.879	0.177	0.074

Problem 555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	126	128	147	147	158	147	143
normalized size	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	1.00
time (sec)	N/A	0.076	0.033	0.061	0.585	0.944	9.001	0.162	0.072

Problem 556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	126	128	147	147	158	147	142
normalized size	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	0.99
time (sec)	N/A	0.072	0.033	0.051	0.574	0.915	11.114	0.189	1.083

Problem 557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	126	128	147	147	158	147	142
normalized size	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	0.99
time (sec)	N/A	0.069	0.032	0.048	0.576	0.848	13.841	0.157	0.074

Problem 558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	126	128	147	147	158	147	143
normalized size	1	1.00	0.88	0.90	1.03	1.03	1.10	1.03	1.00
time (sec)	N/A	0.071	0.033	0.052	0.589	0.719	17.514	0.152	1.096

Problem 559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	149	130	129	132	133	143	121
normalized size	1	1.00	1.14	0.99	0.98	1.01	1.02	1.09	0.92
time (sec)	N/A	0.128	0.026	0.046	0.479	0.757	0.098	0.169	1.118

Problem 560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	150	130	128	133	134	144	123
normalized size	1	1.00	1.26	1.09	1.08	1.12	1.13	1.21	1.03
time (sec)	N/A	0.074	0.019	0.043	0.627	0.751	0.097	0.152	0.079

Problem 561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	151	130	129	133	136	144	123
normalized size	1	1.00	1.53	1.31	1.30	1.34	1.37	1.45	1.24
time (sec)	N/A	0.064	0.019	0.045	0.676	0.722	0.098	0.193	0.079

Problem 562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	153	130	129	133	139	144	123
normalized size	1	1.00	1.76	1.49	1.48	1.53	1.60	1.66	1.41
time (sec)	N/A	0.057	0.018	0.048	0.572	0.914	0.096	0.155	0.077

Problem 563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	153	130	129	133	136	144	123
normalized size	1	1.00	2.22	1.88	1.87	1.93	1.97	2.09	1.78
time (sec)	N/A	0.047	0.019	0.039	0.540	0.748	0.096	0.154	0.080

Problem 564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	148	130	128	133	133	144	123
normalized size	1	1.00	2.69	2.36	2.33	2.42	2.42	2.62	2.24
time (sec)	N/A	0.043	0.019	0.042	0.578	0.815	0.097	0.177	0.081

Problem 565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	147	130	129	133	133	144	123
normalized size	1	1.00	3.77	3.33	3.31	3.41	3.41	3.69	3.15
time (sec)	N/A	0.035	0.016	0.043	0.560	0.773	0.097	0.154	0.082

Problem 566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	113	127	126	129	119	140	118
normalized size	1	1.00	4.52	5.08	5.04	5.16	4.76	5.60	4.72
time (sec)	N/A	0.009	0.021	0.046	0.507	0.578	0.097	0.191	0.080

Problem 567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	85	126	124	124	117	137	115
normalized size	1	1.00	0.98	1.45	1.43	1.43	1.34	1.57	1.32
time (sec)	N/A	0.022	0.033	0.043	0.633	1.097	0.313	0.171	0.084

Problem 568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	139	127	125	131	121	137	118
normalized size	1	1.00	1.00	0.91	0.90	0.94	0.87	0.99	0.85
time (sec)	N/A	0.068	0.044	0.058	0.665	0.636	0.355	0.156	0.087

Problem 569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	139	128	125	131	122	137	119
normalized size	1	1.00	1.01	0.93	0.91	0.95	0.88	0.99	0.86
time (sec)	N/A	0.070	0.041	0.084	0.508	0.766	0.453	0.157	0.078

Problem 570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	140	128	127	131	124	139	121
normalized size	1	1.00	1.01	0.93	0.92	0.95	0.90	1.01	0.88
time (sec)	N/A	0.071	0.040	0.049	0.509	0.956	0.650	0.157	0.069

Problem 571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	139	128	126	131	122	139	121
normalized size	1	1.00	1.01	0.93	0.92	0.96	0.89	1.01	0.88
time (sec)	N/A	0.068	0.036	0.054	0.639	0.889	1.000	0.194	0.064

Problem 572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	142	128	127	131	124	139	121
normalized size	1	1.00	1.01	0.91	0.91	0.94	0.89	0.99	0.86
time (sec)	N/A	0.071	0.035	0.049	0.543	0.877	1.419	0.150	1.082

Problem 573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	142	128	127	131	128	139	121
normalized size	1	1.00	1.01	0.91	0.91	0.94	0.91	0.99	0.86
time (sec)	N/A	0.072	0.038	0.061	0.539	0.948	2.167	0.154	1.068

Problem 574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	139	128	127	131	128	139	121
normalized size	1	1.00	1.01	0.93	0.92	0.95	0.93	1.01	0.88
time (sec)	N/A	0.073	0.038	0.052	0.592	0.878	2.986	0.148	1.069

Problem 575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	140	128	127	131	126	139	121
normalized size	1	1.00	1.01	0.93	0.92	0.95	0.91	1.01	0.88
time (sec)	N/A	0.074	0.041	0.056	0.469	1.139	4.273	0.158	1.080

Problem 576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	139	127	126	131	126	138	119
normalized size	1	1.00	1.01	0.93	0.92	0.96	0.92	1.01	0.87
time (sec)	N/A	0.080	0.041	0.056	0.511	0.749	5.588	0.175	0.072

Problem 577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	140	128	125	131	124	137	118
normalized size	1	1.00	1.01	0.93	0.91	0.95	0.90	0.99	0.86
time (sec)	N/A	0.071	0.040	0.059	0.498	0.766	7.763	0.153	1.094

Problem 578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	143	132	128	131	129	140	118
normalized size	1	1.00	1.55	1.43	1.39	1.42	1.40	1.52	1.28
time (sec)	N/A	0.032	0.049	0.048	0.577	0.921	9.300	0.180	1.104

Problem 579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	114	130	129	129	131	142	120
normalized size	1	1.00	3.68	4.19	4.16	4.16	4.23	4.58	3.87
time (sec)	N/A	0.006	0.026	0.055	0.559	1.096	11.461	0.156	0.119

Problem 580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	115	130	129	129	131	142	123
normalized size	1	1.00	2.21	2.50	2.48	2.48	2.52	2.73	2.37
time (sec)	N/A	0.012	0.025	0.056	0.554	0.829	13.824	0.157	1.137

Problem 581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	149	130	129	129	131	142	123
normalized size	1	1.00	2.10	1.83	1.82	1.82	1.85	2.00	1.73
time (sec)	N/A	0.017	0.037	0.054	0.724	0.827	16.090	0.175	0.116

Problem 582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	153	130	129	129	131	142	123
normalized size	1	1.00	1.70	1.44	1.43	1.43	1.46	1.58	1.37
time (sec)	N/A	0.022	0.037	0.064	0.705	0.930	19.111	0.155	0.119

Problem 583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	153	130	129	129	131	142	123
normalized size	1	1.00	1.40	1.19	1.18	1.18	1.20	1.30	1.13
time (sec)	N/A	0.027	0.035	0.053	0.712	0.584	21.699	0.156	0.119

Problem 584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	151	130	129	129	131	142	123
normalized size	1	1.00	1.18	1.02	1.01	1.01	1.02	1.11	0.96
time (sec)	N/A	0.034	0.042	0.051	0.510	0.772	24.869	0.159	1.129

Problem 585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	151	130	129	129	131	142	123
normalized size	1	1.00	1.00	0.86	0.85	0.85	0.87	0.94	0.81
time (sec)	N/A	0.075	0.046	0.054	0.567	0.871	27.789	0.163	0.117

Problem 586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	149	130	129	129	131	142	121
normalized size	1	1.00	1.00	0.87	0.87	0.87	0.88	0.95	0.81
time (sec)	N/A	0.066	0.041	0.051	0.589	0.897	31.790	0.154	1.135

Problem 587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	151	130	129	129	131	142	121
normalized size	1	1.00	1.00	0.86	0.85	0.85	0.87	0.94	0.80
time (sec)	N/A	0.064	0.047	0.048	0.598	0.597	35.330	0.179	0.123

Problem 588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	62	61	61	73	61	61
normalized size	1	1.00	1.00	0.75	0.73	0.73	0.88	0.73	0.73
time (sec)	N/A	0.033	0.002	0.058	0.534	0.791	0.077	0.181	0.061

Problem 589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	62	61	61	75	61	61
normalized size	1	1.00	1.00	0.75	0.73	0.73	0.90	0.73	0.73
time (sec)	N/A	0.026	0.002	0.043	0.600	0.774	0.073	0.169	0.060

Problem 590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	91	91	81	60	59	59	73	59	59
normalized size	1	1.00	0.89	0.66	0.65	0.65	0.80	0.65	0.65
time (sec)	N/A	0.026	0.002	0.040	0.586	0.479	0.073	0.162	0.061

Problem 591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	81	62	61	61	73	61	61
normalized size	1	1.00	1.01	0.78	0.76	0.76	0.91	0.76	0.76
time (sec)	N/A	0.025	0.002	0.082	0.627	0.796	0.071	0.150	0.060

Problem 592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	79	62	61	61	71	61	61
normalized size	1	1.00	1.08	0.85	0.84	0.84	0.97	0.84	0.84
time (sec)	N/A	0.023	0.002	0.042	0.555	0.619	0.073	0.152	0.062

Problem 593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	81	62	61	61	73	61	61
normalized size	1	1.00	1.27	0.97	0.95	0.95	1.14	0.95	0.95
time (sec)	N/A	0.021	0.002	0.038	0.660	0.836	0.071	0.150	0.060

Problem 594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	81	62	61	61	73	61	61
normalized size	1	1.00	1.47	1.13	1.11	1.11	1.33	1.11	1.11
time (sec)	N/A	0.019	0.002	0.042	0.664	0.494	0.072	0.152	0.062

Problem 595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	46	46	83	62	61	61	75	61	61
normalized size	1	1.00	1.80	1.35	1.33	1.33	1.63	1.33	1.33
time (sec)	N/A	0.018	0.002	0.040	0.694	0.831	0.071	0.148	0.061

Problem 596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	83	62	61	61	75	61	61
normalized size	1	1.00	2.24	1.68	1.65	1.65	2.03	1.65	1.65
time (sec)	N/A	0.016	0.002	0.049	0.598	0.781	0.071	0.148	0.063

Problem 597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	79	62	61	61	71	61	61
normalized size	1	1.00	2.82	2.21	2.18	2.18	2.54	2.18	2.18
time (sec)	N/A	0.014	0.002	0.048	0.610	0.501	0.071	0.150	0.063

Problem 598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	77	62	61	61	70	61	61
normalized size	1	1.00	4.05	3.26	3.21	3.21	3.68	3.21	3.21
time (sec)	N/A	0.005	0.001	0.038	0.580	0.673	0.070	0.175	0.062

Problem 599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	56	12	55	65	62	55
normalized size	1	1.00	1.00	6.22	1.33	6.11	7.22	6.89	6.11
time (sec)	N/A	0.001	0.001	0.045	0.666	0.756	0.077	0.149	0.060

Problem 600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	96	57	56	56	68	57	56
normalized size	1	1.00	1.33	0.79	0.78	0.78	0.94	0.79	0.78
time (sec)	N/A	0.017	0.011	0.049	0.634	0.857	0.106	0.154	0.062

Problem 601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	59	58	62	66	59	58
normalized size	1	1.00	1.00	0.82	0.81	0.86	0.92	0.82	0.81
time (sec)	N/A	0.021	0.003	0.052	0.488	0.928	0.110	0.156	0.064

Problem 602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	66	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.94	0.84	0.83
time (sec)	N/A	0.021	0.003	0.056	0.545	0.844	0.118	0.166	0.054

Problem 603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	65	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.93	0.84	0.83
time (sec)	N/A	0.022	0.003	0.056	0.519	0.784	0.125	0.148	0.043

Problem 604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	63	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.90	0.84	0.83
time (sec)	N/A	0.022	0.003	0.050	0.652	0.607	0.131	0.151	0.036

Problem 605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	59	58	62	63	59	58
normalized size	1	1.00	1.00	0.82	0.81	0.86	0.88	0.82	0.81
time (sec)	N/A	0.022	0.003	0.048	0.615	0.840	0.137	0.162	0.032

Problem 606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	59	58	62	65	59	58
normalized size	1	1.00	1.00	0.82	0.81	0.86	0.90	0.82	0.81
time (sec)	N/A	0.022	0.003	0.055	0.665	0.950	0.142	0.153	0.029

Problem 607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	63	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.90	0.84	0.83
time (sec)	N/A	0.021	0.003	0.053	0.484	0.904	0.147	0.150	0.026

Problem 608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	61	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.87	0.84	0.83
time (sec)	N/A	0.021	0.003	0.043	0.622	0.902	0.153	0.151	0.026

Problem 609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	59	58	62	60	59	58
normalized size	1	1.00	1.00	0.84	0.83	0.89	0.86	0.84	0.83
time (sec)	N/A	0.022	0.003	0.056	0.547	0.859	0.162	0.168	0.031

Problem 610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	70	57	56	62	58	57	62
normalized size	1	1.00	1.00	0.81	0.80	0.89	0.83	0.81	0.89
time (sec)	N/A	0.021	0.003	0.054	0.534	1.148	0.169	0.149	1.076

Problem 611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	74	59	58	62	60	59	58
normalized size	1	1.00	1.00	0.80	0.78	0.84	0.81	0.80	0.78
time (sec)	N/A	0.021	0.003	0.052	0.578	0.819	0.176	0.189	1.083

Problem 612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	12	12	75	62	60	60	61	60	56
normalized size	1	1.00	6.25	5.17	5.00	5.00	5.08	5.00	4.67
time (sec)	N/A	0.002	0.002	0.051	0.474	0.850	0.175	0.167	0.030

Problem 613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	77	62	60	60	61	60	60
normalized size	1	1.00	3.08	2.48	2.40	2.40	2.44	2.40	2.40
time (sec)	N/A	0.003	0.003	0.045	0.518	0.788	0.181	0.178	0.031

Problem 614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	79	62	60	60	61	60	60
normalized size	1	1.00	2.14	1.68	1.62	1.62	1.65	1.62	1.62
time (sec)	N/A	0.005	0.002	0.052	0.483	0.813	0.184	0.169	1.080

Problem 615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	83	62	60	60	61	60	60
normalized size	1	1.00	1.69	1.27	1.22	1.22	1.24	1.22	1.22
time (sec)	N/A	0.009	0.003	0.048	0.557	0.891	0.190	0.154	1.066

Problem 616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	83	62	60	60	61	60	60
normalized size	1	1.00	1.36	1.02	0.98	0.98	1.00	0.98	0.98
time (sec)	N/A	0.011	0.002	0.054	0.579	0.932	0.194	0.151	1.054

Problem 617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	81	62	60	60	61	60	60
normalized size	1	1.00	1.11	0.85	0.82	0.82	0.84	0.82	0.82
time (sec)	N/A	0.016	0.002	0.051	0.530	0.817	0.199	0.153	0.033

Problem 618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	81	62	60	60	61	60	60
normalized size	1	1.00	0.95	0.73	0.71	0.71	0.72	0.71	0.71
time (sec)	N/A	0.019	0.002	0.050	0.573	0.836	0.207	0.154	1.063

Problem 619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	79	62	60	60	61	60	60
normalized size	1	1.00	0.81	0.64	0.62	0.62	0.63	0.62	0.62
time (sec)	N/A	0.027	0.003	0.054	0.583	0.954	0.207	0.164	0.033

Problem 620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	81	62	60	60	61	60	60
normalized size	1	1.00	1.00	0.77	0.74	0.74	0.75	0.74	0.74
time (sec)	N/A	0.021	0.002	0.048	0.512	0.750	0.219	0.152	0.034

Problem 621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	83	62	60	60	61	60	58
normalized size	1	1.00	1.00	0.75	0.72	0.72	0.73	0.72	0.70
time (sec)	N/A	0.022	0.004	0.053	0.575	0.612	0.223	0.159	1.069

Problem 622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	127	156	149	188	143	152	279
normalized size	1	1.00	0.95	1.16	1.11	1.40	1.07	1.13	2.08
time (sec)	N/A	0.158	0.065	0.059	0.547	0.753	0.506	0.164	1.102

Problem 623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	107	133	123	164	119	126	173
normalized size	1	1.00	0.95	1.18	1.09	1.45	1.05	1.12	1.53
time (sec)	N/A	0.109	0.054	0.054	0.716	0.848	0.460	0.163	0.056

Problem 624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	87	109	101	140	92	104	115
normalized size	1	1.00	0.97	1.21	1.12	1.56	1.02	1.16	1.28
time (sec)	N/A	0.082	0.053	0.059	0.570	0.830	0.416	0.176	0.052

Problem 625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	66	84	74	113	68	75	77
normalized size	1	1.00	0.96	1.22	1.07	1.64	0.99	1.09	1.12
time (sec)	N/A	0.056	0.056	0.061	0.472	0.897	0.363	0.157	0.061

Problem 626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	41	61	53	72	44	51	54
normalized size	1	1.00	0.91	1.36	1.18	1.60	0.98	1.13	1.20
time (sec)	N/A	0.036	0.024	0.059	0.486	0.643	0.278	0.179	1.100

Problem 627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	31	39	34	37	27	32	32
normalized size	1	1.00	0.97	1.22	1.06	1.16	0.84	1.00	1.00
time (sec)	N/A	0.023	0.010	0.062	0.476	0.879	0.189	0.154	1.080

Problem 628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	38	46	44	62	32	48	39
normalized size	1	1.00	0.90	1.10	1.05	1.48	0.76	1.14	0.93
time (sec)	N/A	0.029	0.025	0.056	0.607	1.026	0.291	0.154	0.066

Problem 629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	56	78	67	107	128	71	58
normalized size	1	1.00	0.86	1.20	1.03	1.65	1.97	1.09	0.89
time (sec)	N/A	0.051	0.039	0.061	0.532	1.018	0.491	0.151	1.123

Problem 630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	107	99	150	184	106	104
normalized size	1	1.00	1.00	1.26	1.16	1.76	2.16	1.25	1.22
time (sec)	N/A	0.071	0.067	0.058	0.587	1.362	0.593	0.157	1.142

Problem 631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	106	134	128	179	219	133	131
normalized size	1	1.00	0.94	1.19	1.13	1.58	1.94	1.18	1.16
time (sec)	N/A	0.092	0.084	0.056	0.497	0.836	0.646	0.156	0.109

Problem 632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	129	158	152	203	243	157	150
normalized size	1	1.00	0.97	1.19	1.14	1.53	1.83	1.18	1.13
time (sec)	N/A	0.114	0.090	0.056	0.503	0.890	0.728	0.181	1.147

Problem 633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	147	174	168	257	168	149	180
normalized size	1	1.00	1.03	1.22	1.17	1.80	1.17	1.04	1.26
time (sec)	N/A	0.160	0.053	0.055	0.569	0.794	1.253	0.154	1.114

Problem 634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	129	149	143	231	144	124	141
normalized size	1	1.00	1.07	1.23	1.18	1.91	1.19	1.02	1.17
time (sec)	N/A	0.123	0.045	0.060	0.503	0.669	1.148	0.160	0.079

Problem 635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	97	126	120	193	119	96	118
normalized size	1	1.00	1.00	1.30	1.24	1.99	1.23	0.99	1.22
time (sec)	N/A	0.088	0.036	0.061	0.543	0.816	0.957	0.158	1.121

Problem 636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	73	101	100	128	100	76	96
normalized size	1	1.00	1.01	1.40	1.39	1.78	1.39	1.06	1.33
time (sec)	N/A	0.033	0.027	0.070	0.625	0.959	0.657	0.154	0.078

Problem 637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	42	56	71	71	75	45	68
normalized size	1	1.00	0.71	0.95	1.20	1.20	1.27	0.76	1.15
time (sec)	N/A	0.042	0.015	0.070	0.710	0.701	0.445	0.192	0.041

Problem 638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	50	50	53	25	52
normalized size	1	1.00	0.71	0.92	1.32	1.32	1.39	0.66	1.37
time (sec)	N/A	0.022	0.010	0.056	0.512	0.890	0.355	0.149	0.030

Problem 639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	65	72	91	156	90	71	84
normalized size	1	1.00	0.90	1.00	1.26	2.17	1.25	0.99	1.17
time (sec)	N/A	0.049	0.048	0.053	0.594	0.863	0.527	0.150	1.106

Problem 640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	102	132	134	267	204	122	118
normalized size	1	1.00	0.92	1.19	1.21	2.41	1.84	1.10	1.06
time (sec)	N/A	0.104	0.064	0.056	0.543	0.656	0.757	0.169	1.149

Problem 641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	123	168	172	318	264	157	168
normalized size	1	1.00	0.91	1.24	1.27	2.36	1.96	1.16	1.24
time (sec)	N/A	0.121	0.117	0.053	0.615	0.932	0.882	0.154	1.162

Problem 642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	148	200	193	333	291	175	195
normalized size	1	1.00	0.89	1.20	1.16	2.01	1.75	1.05	1.17
time (sec)	N/A	0.169	0.142	0.067	0.666	1.089	0.943	0.154	1.185

Problem 643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	151	213	213	349	216	172	210
normalized size	1	1.00	0.88	1.25	1.25	2.04	1.26	1.01	1.23
time (sec)	N/A	0.216	0.095	0.069	0.697	0.778	2.753	0.161	1.163

Problem 644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	130	190	190	311	190	144	187
normalized size	1	1.00	0.89	1.30	1.30	2.13	1.30	0.99	1.28
time (sec)	N/A	0.163	0.077	0.069	0.644	0.830	2.484	0.155	0.125

Problem 645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	113	165	170	222	172	124	161
normalized size	1	1.00	1.07	1.56	1.60	2.09	1.62	1.17	1.52
time (sec)	N/A	0.062	0.041	0.053	0.604	0.718	1.953	0.153	1.166

Problem 646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	76	102	139	139	150	93	128
normalized size	1	1.00	1.33	1.79	2.44	2.44	2.63	1.63	2.25
time (sec)	N/A	0.014	0.031	0.050	0.654	0.832	1.474	0.169	0.054

Problem 647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	63	80	119	119	126	70	113
normalized size	1	1.00	0.72	0.92	1.37	1.37	1.45	0.80	1.30
time (sec)	N/A	0.066	0.023	0.046	0.609	0.819	1.009	0.164	0.044

Problem 648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	46	56	95	95	100	46	93
normalized size	1	1.00	0.75	0.92	1.56	1.56	1.64	0.75	1.52
time (sec)	N/A	0.042	0.016	0.047	0.629	0.748	0.681	0.176	1.104

Problem 649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	72	72	76	25	74
normalized size	1	1.00	0.71	0.92	1.89	1.89	2.00	0.66	1.95
time (sec)	N/A	0.023	0.010	0.051	0.687	0.793	0.541	0.155	1.078

Problem 650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	89	98	137	250	141	95	130
normalized size	1	1.00	0.87	0.96	1.34	2.45	1.38	0.93	1.27
time (sec)	N/A	0.074	0.065	0.059	0.906	0.888	0.766	0.155	1.129

Problem 651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	142	186	202	427	275	168	180
normalized size	1	1.00	0.90	1.18	1.29	2.72	1.75	1.07	1.15
time (sec)	N/A	0.165	0.092	0.059	0.751	0.886	1.063	0.164	0.149

Problem 652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	162	228	242	484	335	205	230
normalized size	1	1.00	0.92	1.29	1.37	2.73	1.89	1.16	1.30
time (sec)	N/A	0.203	0.177	0.080	0.776	0.920	1.189	0.160	1.206

Problem 653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	49	44	361	27	29	78	431
normalized size	1	1.00	0.43	0.39	3.17	0.24	0.25	0.68	3.78
time (sec)	N/A	0.067	0.019	0.055	0.581	0.921	0.098	0.197	1.870

Problem 654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	49	44	301	27	29	78	340
normalized size	1	1.00	0.43	0.39	2.64	0.24	0.25	0.68	2.98
time (sec)	N/A	0.059	0.016	0.044	0.589	0.857	0.099	0.154	1.304

Problem 655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	49	44	241	27	29	78	271
normalized size	1	1.00	0.43	0.39	2.11	0.24	0.25	0.68	2.38
time (sec)	N/A	0.057	0.016	0.047	0.574	0.946	0.098	0.216	1.301

Problem 656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	47	44	183	27	29	77	176
normalized size	1	1.00	0.41	0.39	1.61	0.24	0.25	0.68	1.54
time (sec)	N/A	0.046	0.016	0.046	0.509	0.932	0.098	0.191	1.282

Problem 657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	45	42	125	24	26	74	77
normalized size	1	1.00	0.65	0.61	1.81	0.35	0.38	1.07	1.12
time (sec)	N/A	0.022	0.015	0.046	0.628	0.651	0.096	0.219	1.254

Problem 658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	44	53	133	22	22	46	122
normalized size	1	1.00	0.42	0.50	1.27	0.21	0.21	0.44	1.16
time (sec)	N/A	0.040	0.020	0.070	0.507	1.119	0.131	0.164	1.366

Problem 659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	44	42	175	26	19	47	207
normalized size	1	1.00	0.43	0.41	1.70	0.25	0.18	0.46	2.01
time (sec)	N/A	0.042	0.018	0.062	0.716	1.016	0.170	0.184	1.464

Problem 660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	48	37	172	29	27	50	134
normalized size	1	1.00	0.44	0.34	1.59	0.27	0.25	0.46	1.24
time (sec)	N/A	0.043	0.017	0.064	0.547	1.372	0.251	0.193	1.330

Problem 661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	46	44	195	27	31	77	43
normalized size	1	1.00	0.61	0.59	2.60	0.36	0.41	1.03	0.57
time (sec)	N/A	0.045	0.014	0.049	0.490	0.772	0.298	0.161	1.114

Problem 662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	47	44	255	27	31	77	43
normalized size	1	1.00	0.41	0.39	2.24	0.24	0.27	0.68	0.38
time (sec)	N/A	0.043	0.012	0.055	0.537	0.601	0.366	0.159	1.125

Problem 663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	49	44	315	27	31	77	43
normalized size	1	1.00	0.43	0.39	2.76	0.24	0.27	0.68	0.38
time (sec)	N/A	0.046	0.015	0.053	0.650	0.498	0.425	0.223	1.122

Problem 664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	49	44	375	27	31	77	43
normalized size	1	1.00	0.43	0.39	3.29	0.24	0.27	0.68	0.38
time (sec)	N/A	0.042	0.014	0.046	0.615	0.880	0.511	0.156	1.145

Problem 665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	421	73	0	150	-1
normalized size	1	1.00	0.41	0.44	2.00	0.35	0.00	0.71	-0.00
time (sec)	N/A	0.126	0.034	0.058	0.697	0.655	0.000	0.181	0.000

Problem 666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	361	73	0	150	-1
normalized size	1	1.00	0.41	0.44	1.72	0.35	0.00	0.71	-0.00
time (sec)	N/A	0.093	0.031	0.052	0.567	0.892	0.000	0.214	0.000

Problem 667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	301	73	0	149	-1
normalized size	1	1.00	0.41	0.44	1.43	0.35	0.00	0.71	-0.00
time (sec)	N/A	0.088	0.029	0.047	0.565	0.899	0.000	0.196	0.000

Problem 668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	241	73	0	150	-1
normalized size	1	1.00	0.41	0.44	1.15	0.35	0.00	0.71	-0.00
time (sec)	N/A	0.087	0.030	0.051	0.537	0.830	0.000	0.162	0.000

Problem 669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	87	92	183	73	0	148	-1
normalized size	1	1.00	0.72	0.76	1.51	0.60	0.00	1.22	-0.01
time (sec)	N/A	0.068	0.028	0.054	0.658	0.772	0.000	0.162	0.000

Problem 670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	83	90	125	69	0	144	42
normalized size	1	1.00	1.20	1.30	1.81	1.00	0.00	2.09	0.61
time (sec)	N/A	0.021	0.029	0.051	0.607	0.889	0.000	0.170	1.220

Problem 671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	83	91	186	68	0	118	-1
normalized size	1	1.00	0.46	0.50	1.02	0.37	0.00	0.65	-0.01
time (sec)	N/A	0.062	0.037	0.059	0.477	0.737	0.000	0.162	0.000

Problem 672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	89	96	283	75	0	119	-1
normalized size	1	1.00	0.44	0.48	1.42	0.38	0.00	0.60	-0.00
time (sec)	N/A	0.086	0.033	0.058	0.541	0.874	0.000	0.183	0.000

Problem 673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	85	95	351	74	0	117	-1
normalized size	1	1.00	0.42	0.48	1.76	0.37	0.00	0.58	-0.00
time (sec)	N/A	0.088	0.041	0.063	0.627	0.927	0.000	0.159	0.000

Problem 674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	88	96	443	75	0	118	-1
normalized size	1	1.00	0.44	0.48	2.23	0.38	0.00	0.59	-0.01
time (sec)	N/A	0.086	0.033	0.063	0.665	0.849	0.000	0.167	0.000

Problem 675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	88	94	379	75	0	121	-1
normalized size	1	1.00	0.47	0.50	2.03	0.40	0.00	0.65	-0.01
time (sec)	N/A	0.065	0.032	0.064	0.760	0.724	0.000	0.175	0.000

Problem 676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	84	92	315	73	0	149	196
normalized size	1	1.00	1.09	1.19	4.09	0.95	0.00	1.94	2.55
time (sec)	N/A	0.046	0.028	0.049	0.805	0.814	0.000	0.161	1.172

Problem 677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	375	73	0	149	195
normalized size	1	1.00	0.41	0.44	1.79	0.35	0.00	0.71	0.93
time (sec)	N/A	0.079	0.027	0.047	0.571	0.878	0.000	0.161	1.180

Problem 678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	435	73	0	149	196
normalized size	1	1.00	0.41	0.44	2.07	0.35	0.00	0.71	0.93
time (sec)	N/A	0.078	0.028	0.048	0.554	0.870	0.000	0.233	1.193

Problem 679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	495	73	0	149	196
normalized size	1	1.00	0.41	0.44	2.36	0.35	0.00	0.71	0.93
time (sec)	N/A	0.081	0.028	0.050	0.522	0.809	0.000	0.173	1.174

Problem 680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	555	73	0	149	196
normalized size	1	1.00	0.41	0.44	2.64	0.35	0.00	0.71	0.93
time (sec)	N/A	0.078	0.029	0.051	0.570	0.925	0.000	0.183	1.165

Problem 681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	615	73	0	149	196
normalized size	1	1.00	0.41	0.44	2.93	0.35	0.00	0.71	0.93
time (sec)	N/A	0.078	0.028	0.046	0.691	0.757	0.000	0.162	1.176

Problem 682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	87	92	675	73	0	149	196
normalized size	1	1.00	0.41	0.44	3.21	0.35	0.00	0.71	0.93
time (sec)	N/A	0.079	0.029	0.058	0.653	0.819	0.000	0.197	1.163

Problem 683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	125	140	481	118	0	220	-1
normalized size	1	1.00	0.41	0.46	1.59	0.39	0.00	0.73	-0.00
time (sec)	N/A	0.177	0.045	0.056	0.660	0.615	0.000	0.184	0.000

Problem 684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	125	140	421	119	0	220	-1
normalized size	1	1.00	0.41	0.46	1.38	0.39	0.00	0.72	-0.00
time (sec)	N/A	0.141	0.042	0.073	0.524	0.808	0.000	0.173	0.000

Problem 685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	125	140	361	119	0	222	-1
normalized size	1	1.00	0.41	0.46	1.18	0.39	0.00	0.73	-0.00
time (sec)	N/A	0.127	0.041	0.055	0.597	0.899	0.000	0.169	0.000

Problem 686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	125	140	301	119	0	221	-1
normalized size	1	1.00	0.59	0.66	1.42	0.56	0.00	1.04	-0.00
time (sec)	N/A	0.119	0.040	0.048	0.754	0.859	0.000	0.171	0.000

Problem 687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	125	140	241	118	0	220	-1
normalized size	1	1.00	0.75	0.84	1.44	0.71	0.00	1.32	-0.01
time (sec)	N/A	0.102	0.043	0.051	0.605	0.915	0.000	0.192	0.000

Problem 688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	125	140	183	119	0	221	-1
normalized size	1	1.00	1.03	1.16	1.51	0.98	0.00	1.83	-0.01
time (sec)	N/A	0.076	0.039	0.051	0.678	0.711	0.000	0.169	0.000

Problem 689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	121	138	125	115	0	217	-1
normalized size	1	1.00	1.75	2.00	1.81	1.67	0.00	3.14	-0.01
time (sec)	N/A	0.021	0.040	0.049	0.519	0.870	0.000	0.198	0.000

Problem 690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	122	139	236	114	0	190	-1
normalized size	1	1.00	0.47	0.53	0.90	0.44	0.00	0.73	-0.00
time (sec)	N/A	0.077	0.057	0.060	0.535	0.952	0.000	0.209	0.000

Problem 691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	294	294	128	144	386	121	0	191	-1
normalized size	1	1.00	0.44	0.49	1.31	0.41	0.00	0.65	-0.00
time (sec)	N/A	0.123	0.047	0.062	0.593	0.975	0.000	0.220	0.000

Problem 692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	126	144	461	121	0	191	-1
normalized size	1	1.00	0.42	0.48	1.55	0.41	0.00	0.64	-0.00
time (sec)	N/A	0.121	0.059	0.066	0.580	0.771	0.000	0.167	0.000

Problem 693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	127	144	557	121	0	190	-1
normalized size	1	1.00	0.43	0.48	1.88	0.41	0.00	0.64	-0.00
time (sec)	N/A	0.122	0.052	0.065	0.638	0.786	0.000	0.204	0.000

Problem 694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	296	296	126	144	615	121	0	188	-1
normalized size	1	1.00	0.43	0.49	2.08	0.41	0.00	0.64	-0.00
time (sec)	N/A	0.129	0.042	0.365	0.617	0.883	0.000	0.170	0.000

Problem 695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	127	144	673	121	0	188	-1
normalized size	1	1.00	0.43	0.49	2.30	0.41	0.00	0.64	-0.00
time (sec)	N/A	0.116	0.057	0.069	0.642	0.909	0.000	0.193	0.000

Problem 696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	127	142	554	121	0	191	-1
normalized size	1	1.00	0.48	0.53	2.07	0.45	0.00	0.72	-0.00
time (sec)	N/A	0.084	0.045	0.064	0.571	0.875	0.000	0.169	0.000

Problem 697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	122	140	435	119	0	221	284
normalized size	1	1.00	1.58	1.82	5.65	1.55	0.00	2.87	3.69
time (sec)	N/A	0.047	0.039	0.082	0.578	0.950	0.000	0.223	1.327

Problem 698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	125	140	495	119	0	221	284
normalized size	1	1.00	0.96	1.08	3.81	0.92	0.00	1.70	2.18
time (sec)	N/A	0.073	0.038	0.052	0.632	0.719	0.000	0.171	1.308

Problem 699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	125	140	555	119	0	221	284
normalized size	1	1.00	0.41	0.46	1.83	0.39	0.00	0.73	0.93
time (sec)	N/A	0.117	0.038	0.053	0.735	0.860	0.000	0.174	1.303

Problem 700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	125	140	615	119	0	221	283
normalized size	1	1.00	0.41	0.46	2.01	0.39	0.00	0.72	0.92
time (sec)	N/A	0.112	0.038	0.050	0.661	0.793	0.000	0.218	1.309

Problem 701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	125	140	675	119	0	221	284
normalized size	1	1.00	0.41	0.46	2.21	0.39	0.00	0.72	0.93
time (sec)	N/A	0.117	0.037	0.056	0.736	0.708	0.000	0.203	1.387

Problem 702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	125	140	735	119	0	221	284
normalized size	1	1.00	0.41	0.46	2.40	0.39	0.00	0.72	0.93
time (sec)	N/A	0.113	0.038	0.055	0.832	0.906	0.000	0.221	2.191

Problem 703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	125	140	795	119	0	221	284
normalized size	1	1.00	0.41	0.46	2.62	0.39	0.00	0.73	0.93
time (sec)	N/A	0.117	0.041	0.055	0.743	0.641	0.000	0.200	1.232

Problem 704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	116	138	272	117	109	185	-1
normalized size	1	1.00	0.45	0.53	1.05	0.45	0.42	0.72	-0.00
time (sec)	N/A	0.154	0.059	0.059	0.569	0.866	0.290	0.164	0.000

Problem 705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	96	114	212	94	85	148	-1
normalized size	1	1.00	0.45	0.54	1.00	0.44	0.40	0.70	-0.00
time (sec)	N/A	0.115	0.044	0.054	0.748	0.845	0.265	0.160	0.000

Problem 706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	77	90	125	71	61	113	-1
normalized size	1	1.00	0.46	0.54	0.75	0.43	0.37	0.68	-0.01
time (sec)	N/A	0.090	0.036	0.051	0.537	0.911	0.241	0.153	0.000

Problem 707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	57	66	72	47	37	75	-1
normalized size	1	1.00	0.48	0.55	0.60	0.39	0.31	0.62	-0.01
time (sec)	N/A	0.061	0.026	0.051	0.759	0.862	0.209	0.152	0.000

Problem 708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	40	43	52	25	20	45	79
normalized size	1	1.00	0.58	0.62	0.75	0.36	0.29	0.65	1.14
time (sec)	N/A	0.025	0.017	0.049	0.608	1.123	0.180	0.163	1.466

Problem 709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	44	49	53	28	41	49	68
normalized size	1	1.00	0.55	0.61	0.66	0.35	0.51	0.61	0.85
time (sec)	N/A	0.050	0.019	0.058	0.558	0.964	0.436	0.156	1.447

Problem 710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	57	61	106	41	95	81	117
normalized size	1	1.00	0.50	0.54	0.94	0.36	0.84	0.72	1.04
time (sec)	N/A	0.065	0.033	0.064	0.512	0.558	0.398	0.157	1.489

Problem 711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	79	92	164	69	131	117	-1
normalized size	1	1.00	0.49	0.57	1.01	0.43	0.81	0.72	-0.01
time (sec)	N/A	0.085	0.041	0.064	0.593	0.866	0.477	0.155	0.000

Problem 712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	102	119	224	94	165	153	-1
normalized size	1	1.00	0.48	0.56	1.06	0.45	0.78	0.73	-0.00
time (sec)	N/A	0.104	0.050	0.066	0.667	0.969	0.527	0.160	0.000

Problem 713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	121	143	284	117	189	188	-1
normalized size	1	1.00	0.47	0.56	1.11	0.46	0.74	0.73	-0.00
time (sec)	N/A	0.120	0.060	0.073	0.539	0.891	0.594	0.231	0.000

Problem 714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	140	217	303	197	0	0	-1
normalized size	1	1.00	0.56	0.87	1.22	0.79	0.00	0.00	-0.00
time (sec)	N/A	0.181	0.062	0.072	0.589	0.891	0.000	0.000	0.000

Problem 715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	117	191	242	171	0	0	-1
normalized size	1	1.00	0.58	0.95	1.20	0.85	0.00	0.00	-0.00
time (sec)	N/A	0.138	0.052	0.105	0.512	0.918	0.000	0.000	0.000

Problem 716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	89	153	154	134	0	0	-1
normalized size	1	1.00	0.58	0.99	1.00	0.87	0.00	0.00	-0.01
time (sec)	N/A	0.106	0.059	0.092	0.532	0.527	0.000	0.000	0.000

Problem 717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	65	83	89	81	0	0	-1
normalized size	1	1.00	0.58	0.73	0.79	0.72	0.00	0.00	-0.01
time (sec)	N/A	0.074	0.027	0.063	0.501	0.893	0.000	0.000	0.000

Problem 718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	39	32	56	38	0	0	42
normalized size	1	1.00	0.57	0.46	0.81	0.55	0.00	0.00	0.61
time (sec)	N/A	0.022	0.015	0.053	0.458	0.753	0.000	0.000	1.192

Problem 719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	80	116	96	109	0	0	-1
normalized size	1	1.00	0.57	0.83	0.69	0.78	0.00	0.00	-0.01
time (sec)	N/A	0.089	0.036	0.067	0.473	0.759	0.000	0.000	0.000

Problem 720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	110	221	191	187	0	0	-1
normalized size	1	1.00	0.56	1.13	0.97	0.95	0.00	0.00	-0.01
time (sec)	N/A	0.136	0.063	0.073	0.521	0.656	0.000	0.000	0.000

Problem 721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	133	262	250	225	0	0	-1
normalized size	1	1.00	0.55	1.08	1.03	0.93	0.00	0.00	-0.00
time (sec)	N/A	0.161	0.074	0.063	0.487	0.761	0.000	0.000	0.000

Problem 722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	127	273	211	252	0	0	-1
normalized size	1	1.00	0.52	1.11	0.86	1.03	0.00	0.00	-0.00
time (sec)	N/A	0.179	0.066	0.072	0.788	0.886	0.000	0.000	0.000

Problem 723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	103	168	201	175	0	0	-1
normalized size	1	1.00	0.55	0.89	1.07	0.93	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.048	0.061	0.652	0.853	0.000	0.000	0.000

Problem 724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	73	77	156	105	0	0	201
normalized size	1	1.00	0.95	1.00	2.03	1.36	0.00	0.00	2.61
time (sec)	N/A	0.051	0.033	0.050	0.517	0.889	0.000	0.000	1.270

Problem 725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	56	52	90	80	0	0	62
normalized size	1	1.00	0.46	0.43	0.74	0.66	0.00	0.00	0.51
time (sec)	N/A	0.072	0.023	0.051	0.551	0.861	0.000	0.000	1.248

Problem 726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	39	33	56	61	0	0	43
normalized size	1	1.00	0.55	0.46	0.79	0.86	0.00	0.00	0.61
time (sec)	N/A	0.021	0.020	0.055	0.519	0.603	0.000	0.000	1.203

Problem 727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	104	205	138	203	0	0	-1
normalized size	1	1.00	0.50	0.98	0.66	0.97	0.00	0.00	-0.00
time (sec)	N/A	0.120	0.062	0.071	0.486	0.882	0.000	0.000	0.000

Problem 728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	282	148	397	276	347	0	0	-1
normalized size	1	1.00	0.52	1.41	0.98	1.23	0.00	0.00	-0.00
time (sec)	N/A	0.207	0.108	0.061	0.465	0.832	0.000	0.000	0.000

Problem 729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	52	52	51	56	80	53	51
normalized size	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.028	0.022	0.053	0.586	0.832	8.080	0.150	0.061

Problem 730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	52	52	51	56	80	53	51
normalized size	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.028	0.017	0.048	0.570	0.856	3.979	0.164	0.047

Problem 731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	52	52	51	56	80	53	51
normalized size	1	1.00	0.83	0.83	0.81	0.89	1.27	0.84	0.81
time (sec)	N/A	0.028	0.021	0.052	0.526	0.943	1.774	0.152	0.048

Problem 732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	52	52	51	54	66	53	51
normalized size	1	1.00	0.83	0.83	0.81	0.86	1.05	0.84	0.81
time (sec)	N/A	0.029	0.017	0.053	0.553	0.881	2.900	0.153	0.053

Problem 733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	51	52	51	51	78	53	51
normalized size	1	1.00	0.84	0.85	0.84	0.84	1.28	0.87	0.84
time (sec)	N/A	0.027	0.021	0.052	0.478	0.904	0.463	0.180	0.047

Problem 734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	49	52	51	51	75	53	51
normalized size	1	1.00	0.83	0.88	0.86	0.86	1.27	0.90	0.86
time (sec)	N/A	0.027	0.015	0.051	0.517	0.853	0.665	0.158	0.053

Problem 735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	47	51	51	50	73	51	51
normalized size	1	1.00	0.80	0.86	0.86	0.85	1.24	0.86	0.86
time (sec)	N/A	0.026	0.016	0.052	0.525	0.787	0.803	0.151	1.126

Problem 736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	47	52	52	51	75	52	52
normalized size	1	1.00	0.80	0.88	0.88	0.86	1.27	0.88	0.88
time (sec)	N/A	0.026	0.018	0.048	0.506	0.871	1.472	0.152	0.056

Problem 737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	50	52	51	51	80	51	51
normalized size	1	1.00	0.82	0.85	0.84	0.84	1.31	0.84	0.84
time (sec)	N/A	0.027	0.017	0.051	0.542	0.849	3.067	0.177	1.118

Problem 738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	81	100	99	104	148	101	91
normalized size	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82
time (sec)	N/A	0.058	0.069	0.054	0.602	0.839	15.901	0.188	0.049

Problem 739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	81	100	99	104	148	101	91
normalized size	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82
time (sec)	N/A	0.055	0.076	0.052	0.592	0.837	8.746	0.156	0.037

Problem 740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	81	100	99	104	148	101	91
normalized size	1	1.00	0.73	0.90	0.89	0.94	1.33	0.91	0.82
time (sec)	N/A	0.052	0.064	0.055	0.497	0.882	4.299	0.153	0.038

Problem 741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	81	100	99	102	124	101	91
normalized size	1	1.00	0.73	0.90	0.89	0.92	1.12	0.91	0.82
time (sec)	N/A	0.054	0.059	0.056	0.556	0.933	4.383	0.152	0.037

Problem 742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	89	100	99	99	146	101	91
normalized size	1	1.00	0.82	0.92	0.91	0.91	1.34	0.93	0.83
time (sec)	N/A	0.055	0.033	0.054	0.474	0.746	1.583	0.154	0.038

Problem 743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	87	100	99	99	141	101	91
normalized size	1	1.00	0.81	0.93	0.93	0.93	1.32	0.94	0.85
time (sec)	N/A	0.051	0.026	0.053	0.616	0.859	1.799	0.198	0.041

Problem 744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	86	100	99	99	139	99	92
normalized size	1	1.00	0.80	0.93	0.93	0.93	1.30	0.93	0.86
time (sec)	N/A	0.050	0.034	0.052	0.512	0.852	2.156	0.163	0.042

Problem 745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	85	100	100	99	141	100	95
normalized size	1	1.00	0.79	0.93	0.93	0.93	1.32	0.93	0.89
time (sec)	N/A	0.052	0.029	0.054	0.485	0.779	3.137	0.194	0.066

Problem 746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	85	100	100	99	139	100	98
normalized size	1	1.00	0.79	0.93	0.93	0.93	1.30	0.93	0.92
time (sec)	N/A	0.052	0.028	0.052	0.581	0.642	4.103	0.174	0.065

Problem 747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	131	148	147	152	214	149	131
normalized size	1	1.00	0.82	0.93	0.92	0.96	1.35	0.94	0.82
time (sec)	N/A	0.090	0.100	0.054	0.535	0.918	28.782	0.165	0.065

Problem 748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	128	148	147	152	214	149	131
normalized size	1	1.00	0.81	0.93	0.92	0.96	1.35	0.94	0.82
time (sec)	N/A	0.080	0.088	0.059	0.569	0.849	19.548	0.156	0.052

Problem 749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	103	148	147	152	214	149	131
normalized size	1	1.00	0.65	0.93	0.92	0.96	1.35	0.94	0.82
time (sec)	N/A	0.085	0.086	0.061	0.537	0.889	10.107	0.159	0.051

Problem 750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	103	148	147	150	182	149	131
normalized size	1	1.00	0.65	0.93	0.92	0.94	1.14	0.94	0.82
time (sec)	N/A	0.081	0.084	0.052	0.505	0.840	5.908	0.174	0.051

Problem 751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	103	148	147	147	211	149	131
normalized size	1	1.00	0.66	0.94	0.94	0.94	1.34	0.95	0.83
time (sec)	N/A	0.080	0.088	0.054	0.605	0.936	4.110	0.158	0.050

Problem 752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	101	148	147	147	204	149	131
normalized size	1	1.00	0.67	0.98	0.97	0.97	1.35	0.99	0.87
time (sec)	N/A	0.079	0.077	0.053	0.556	0.842	4.601	0.162	0.054

Problem 753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	97	148	147	147	204	147	132
normalized size	1	1.00	0.63	0.97	0.96	0.96	1.33	0.96	0.86
time (sec)	N/A	0.079	0.070	0.056	0.662	0.963	5.441	0.166	0.054

Problem 754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	124	148	148	147	204	148	135
normalized size	1	1.00	0.80	0.95	0.95	0.95	1.32	0.95	0.87
time (sec)	N/A	0.083	0.040	0.049	0.542	0.783	7.323	0.195	0.054

Problem 755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	123	148	148	147	202	148	138
normalized size	1	1.00	0.81	0.98	0.98	0.97	1.34	0.98	0.91
time (sec)	N/A	0.082	0.039	0.055	0.561	0.859	9.615	0.179	1.147

Problem 756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	123	148	148	147	204	148	141
normalized size	1	1.00	0.79	0.95	0.95	0.95	1.32	0.95	0.91
time (sec)	N/A	0.080	0.039	0.053	0.463	0.912	12.625	0.160	1.157

Problem 757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	128	163	139	341	1197	146	209
normalized size	1	1.00	0.83	1.06	0.90	2.21	7.77	0.95	1.36
time (sec)	N/A	0.083	0.089	0.069	1.321	0.912	153.514	0.186	0.072

Problem 758	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	110	139	115	290	1068	122	146
normalized size	1	1.00	0.85	1.07	0.88	2.23	8.22	0.94	1.12
time (sec)	N/A	0.066	0.071	0.096	1.208	0.924	52.862	0.181	1.147

Problem 759	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	88	113	88	231	932	95	107
normalized size	1	1.00	0.81	1.05	0.81	2.14	8.63	0.88	0.99
time (sec)	N/A	0.048	0.059	0.133	1.350	0.864	14.338	0.190	0.083

Problem 760	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	67	87	65	198	782	65	62
normalized size	1	1.00	0.79	1.02	0.76	2.33	9.20	0.76	0.73
time (sec)	N/A	0.037	0.041	0.076	1.330	0.957	10.573	0.156	0.094

Problem 761	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	63	63	63	69	58	177	716	60	51
normalized size	1	1.00	1.00	1.10	0.92	2.81	11.37	0.95	0.81
time (sec)	N/A	0.025	0.037	0.069	1.433	0.893	8.357	0.188	1.179

Problem 762	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	59	87	65	215	884	60	65
normalized size	1	1.00	0.67	0.99	0.74	2.44	10.05	0.68	0.74
time (sec)	N/A	0.037	0.017	0.086	1.411	0.890	19.074	0.157	1.166

Problem 763	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	64	113	93	262	983	85	81
normalized size	1	1.00	0.60	1.06	0.87	2.45	9.19	0.79	0.76
time (sec)	N/A	0.049	0.018	0.073	1.507	0.943	53.229	0.158	1.181

Problem 764	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	64	139	118	319	1127	110	103
normalized size	1	1.00	0.49	1.06	0.90	2.44	8.60	0.84	0.79
time (sec)	N/A	0.063	0.019	0.069	1.317	0.845	155.213	0.162	1.194

Problem 765	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	64	163	143	372	0	136	121
normalized size	1	1.00	0.42	1.07	0.93	2.43	0.00	0.89	0.79
time (sec)	N/A	0.079	0.019	0.076	1.355	0.833	0.000	0.166	1.265

Problem 766	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	61	190	161	467	0	143	176
normalized size	1	1.00	0.35	1.10	0.93	2.70	0.00	0.83	1.02
time (sec)	N/A	0.078	0.031	0.073	1.173	1.025	0.000	0.169	1.224

Problem 767	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	61	163	136	437	2649	111	131
normalized size	1	1.00	0.40	1.07	0.89	2.86	17.31	0.73	0.86
time (sec)	N/A	0.065	0.027	0.071	1.200	0.986	151.180	0.165	1.245

Problem 768	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	105	111	130	411	2547	107	112
normalized size	1	1.00	0.81	0.85	1.00	3.16	19.59	0.82	0.86
time (sec)	N/A	0.056	0.081	0.095	1.104	0.893	84.208	0.162	1.252

Problem 769	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	60	111	128	399	2550	106	107
normalized size	1	1.00	0.47	0.87	1.01	3.14	20.08	0.83	0.84
time (sec)	N/A	0.057	0.024	0.095	1.226	0.925	49.696	0.161	1.236

Problem 770	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	59	112	129	409	2548	107	112
normalized size	1	1.00	0.45	0.86	0.99	3.15	19.60	0.82	0.86
time (sec)	N/A	0.057	0.025	0.065	1.239	0.918	70.821	0.207	1.226

Problem 771	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	59	163	132	445	2917	110	147
normalized size	1	1.00	0.38	1.04	0.84	2.83	18.58	0.70	0.94
time (sec)	N/A	0.065	0.035	0.086	1.148	0.937	144.728	0.165	1.277

Problem 772	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	61	190	158	482	0	136	145
normalized size	1	1.00	0.34	1.07	0.89	2.71	0.00	0.76	0.81
time (sec)	N/A	0.079	0.028	0.076	1.396	0.913	0.000	0.168	1.250

Problem 773	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	61	266	231	703	0	191	246
normalized size	1	1.00	0.25	1.11	0.96	2.93	0.00	0.80	1.02
time (sec)	N/A	0.117	0.035	0.079	1.183	0.914	0.000	0.182	1.241

Problem 774	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	61	239	206	673	0	159	200
normalized size	1	1.00	0.29	1.12	0.97	3.16	0.00	0.75	0.94
time (sec)	N/A	0.096	0.032	0.080	1.340	1.019	0.000	0.169	0.177

Problem 775	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	134	150	198	639	0	155	173
normalized size	1	1.00	0.71	0.79	1.04	3.36	0.00	0.82	0.91
time (sec)	N/A	0.085	0.179	0.064	1.381	0.907	0.000	0.169	1.275

Problem 776	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	61	154	205	657	0	156	175
normalized size	1	1.00	0.31	0.79	1.05	3.37	0.00	0.80	0.90
time (sec)	N/A	0.090	0.031	0.073	1.545	0.881	0.000	0.168	1.241

Problem 777	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	60	143	194	619	0	154	161
normalized size	1	1.00	0.32	0.77	1.05	3.35	0.00	0.83	0.87
time (sec)	N/A	0.093	0.029	0.067	1.187	0.912	0.000	0.164	1.230

Problem 778	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	61	154	205	657	0	156	174
normalized size	1	1.00	0.31	0.79	1.05	3.37	0.00	0.80	0.89
time (sec)	N/A	0.089	0.029	0.075	1.381	0.835	0.000	0.180	1.256

Problem 779	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	59	150	198	637	0	155	172
normalized size	1	1.00	0.31	0.79	1.04	3.35	0.00	0.82	0.91
time (sec)	N/A	0.084	0.030	0.073	1.187	0.984	0.000	0.177	1.239

Problem 780	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	59	239	200	673	0	158	209
normalized size	1	1.00	0.27	1.09	0.91	3.07	0.00	0.72	0.95
time (sec)	N/A	0.098	0.030	0.107	1.252	0.935	0.000	0.207	1.360

Problem 781	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	61	266	233	734	0	180	207
normalized size	1	1.00	0.25	1.11	0.97	3.06	0.00	0.75	0.86
time (sec)	N/A	0.116	0.031	0.096	1.442	0.679	0.000	0.176	1.330

Problem 782	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	51	44	35	32	0	53	-1
normalized size	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01
time (sec)	N/A	0.047	0.032	0.053	0.544	0.952	0.000	0.182	0.000

Problem 783	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	51	44	35	32	0	53	-1
normalized size	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01
time (sec)	N/A	0.046	0.026	0.048	0.621	0.883	0.000	0.226	0.000

Problem 784	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	51	44	35	32	0	53	-1
normalized size	1	1.00	0.42	0.37	0.29	0.27	0.00	0.44	-0.01
time (sec)	N/A	0.043	0.027	0.048	0.517	0.854	0.000	0.209	0.000

Problem 785	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	51	44	35	30	0	53	-1
normalized size	1	1.00	0.42	0.37	0.29	0.25	0.00	0.44	-0.01
time (sec)	N/A	0.045	0.026	0.052	0.592	0.856	0.000	0.155	0.000

Problem 786	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	49	44	34	27	0	53	56
normalized size	1	1.00	0.42	0.37	0.29	0.23	0.00	0.45	0.47
time (sec)	N/A	0.042	0.029	0.049	0.496	0.855	0.000	0.163	1.312

Problem 787	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	47	44	33	26	0	53	53
normalized size	1	1.00	0.41	0.38	0.28	0.22	0.00	0.46	0.46
time (sec)	N/A	0.043	0.026	0.051	0.621	0.923	0.000	0.184	1.321

Problem 788	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	46	43	33	27	0	51	54
normalized size	1	1.00	0.40	0.37	0.28	0.23	0.00	0.44	0.47
time (sec)	N/A	0.044	0.026	0.054	0.637	0.608	0.000	0.161	1.364

Problem 789	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	48	44	34	27	0	51	54
normalized size	1	1.00	0.41	0.37	0.29	0.23	0.00	0.43	0.46
time (sec)	N/A	0.043	0.025	0.058	0.568	0.997	0.000	0.174	1.358

Problem 790	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	51	44	35	27	0	51	54
normalized size	1	1.00	0.42	0.37	0.29	0.22	0.00	0.42	0.45
time (sec)	N/A	0.043	0.025	0.049	0.664	0.955	0.000	0.192	1.354

Problem 791	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	89	92	137	78	0	125	-1
normalized size	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00
time (sec)	N/A	0.089	0.042	0.054	0.568	0.860	0.000	0.197	0.000

Problem 792	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	89	92	137	78	0	125	-1
normalized size	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00
time (sec)	N/A	0.081	0.036	0.049	0.625	0.860	0.000	0.172	0.000

Problem 793	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	89	92	137	78	0	125	-1
normalized size	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00
time (sec)	N/A	0.084	0.036	0.053	0.537	0.780	0.000	0.161	0.000

Problem 794	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	89	92	137	76	0	125	-1
normalized size	1	1.00	0.40	0.42	0.62	0.35	0.00	0.57	-0.00
time (sec)	N/A	0.083	0.035	0.056	0.623	0.833	0.000	0.332	0.000

Problem 795	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	88	92	136	73	0	125	-1
normalized size	1	1.00	0.40	0.42	0.62	0.33	0.00	0.57	-0.00
time (sec)	N/A	0.080	0.038	0.049	0.619	0.838	0.000	0.190	0.000

Problem 796	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	85	92	133	73	0	125	107
normalized size	1	1.00	0.40	0.43	0.62	0.34	0.00	0.58	0.50
time (sec)	N/A	0.086	0.032	0.050	0.557	0.857	0.000	0.169	1.635

Problem 797	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	84	92	130	73	0	123	-1
normalized size	1	1.00	0.39	0.43	0.60	0.34	0.00	0.57	-0.00
time (sec)	N/A	0.083	0.033	0.048	0.646	0.930	0.000	0.164	0.000

Problem 798	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	83	92	131	73	0	124	-1
normalized size	1	1.00	0.38	0.43	0.61	0.34	0.00	0.57	-0.00
time (sec)	N/A	0.079	0.034	0.067	0.649	0.596	0.000	0.170	0.000

Problem 799	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	84	92	134	73	0	124	-1
normalized size	1	1.00	0.39	0.43	0.63	0.34	0.00	0.58	-0.00
time (sec)	N/A	0.080	0.036	0.059	0.602	0.877	0.000	0.179	0.000

Problem 800	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	110	140	241	124	0	197	-1
normalized size	1	1.00	0.34	0.44	0.75	0.39	0.00	0.62	-0.00
time (sec)	N/A	0.134	0.090	0.054	0.677	0.957	0.000	0.208	0.000

Problem 801	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	110	140	241	124	0	197	-1
normalized size	1	1.00	0.34	0.44	0.75	0.39	0.00	0.62	-0.00
time (sec)	N/A	0.122	0.082	0.051	0.728	0.895	0.000	0.186	0.000

Problem 802	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	127	140	241	124	0	197	-1
normalized size	1	1.00	0.40	0.44	0.75	0.39	0.00	0.62	-0.00
time (sec)	N/A	0.120	0.051	0.051	0.690	0.913	0.000	0.169	0.000

Problem 803	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	127	140	241	122	0	197	-1
normalized size	1	1.00	0.40	0.44	0.75	0.38	0.00	0.62	-0.00
time (sec)	N/A	0.120	0.049	0.050	0.778	0.890	0.000	0.171	0.000

Problem 804	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	126	140	240	119	0	197	-1
normalized size	1	1.00	0.40	0.44	0.76	0.38	0.00	0.62	-0.00
time (sec)	N/A	0.119	0.057	0.050	0.769	0.923	0.000	0.170	0.000

Problem 805	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	314	314	124	140	238	119	0	197	140
normalized size	1	1.00	0.39	0.45	0.76	0.38	0.00	0.63	0.45
time (sec)	N/A	0.119	0.044	0.059	0.640	0.947	0.000	0.179	1.853

Problem 806	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	314	314	122	140	236	119	0	195	-1
normalized size	1	1.00	0.39	0.45	0.75	0.38	0.00	0.62	-0.00
time (sec)	N/A	0.122	0.044	0.056	0.572	0.890	0.000	0.178	0.000

Problem 807	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	122	140	234	119	0	196	-1
normalized size	1	1.00	0.39	0.44	0.74	0.38	0.00	0.62	-0.00
time (sec)	N/A	0.119	0.045	0.052	0.576	0.786	0.000	0.177	0.000

Problem 808	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	122	140	234	119	0	196	-1
normalized size	1	1.00	0.39	0.44	0.74	0.38	0.00	0.62	-0.00
time (sec)	N/A	0.120	0.046	0.052	0.631	0.832	0.000	0.176	0.000

Problem 809	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	286	139	197	257	276	0	205	-1
normalized size	1	1.00	0.49	0.69	0.90	0.97	0.00	0.72	-0.00
time (sec)	N/A	0.135	0.080	0.061	1.517	0.950	0.000	0.374	0.000

Problem 810	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	120	163	203	229	0	169	-1
normalized size	1	1.00	0.50	0.68	0.85	0.96	0.00	0.71	-0.00
time (sec)	N/A	0.108	0.063	0.073	1.743	0.972	0.000	0.199	0.000

Problem 811	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	100	129	147	180	0	133	-1
normalized size	1	1.00	0.53	0.68	0.77	0.95	0.00	0.70	-0.01
time (sec)	N/A	0.086	0.052	0.060	1.592	0.908	0.000	0.173	0.000

Problem 812	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	82	94	122	129	0	94	-1
normalized size	1	1.00	0.57	0.65	0.85	0.90	0.00	0.65	-0.01
time (sec)	N/A	0.070	0.040	0.066	1.342	1.041	0.000	0.159	0.000

Problem 813	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	72	65	140	102	0	57	-1
normalized size	1	1.00	0.73	0.66	1.41	1.03	0.00	0.58	-0.01
time (sec)	N/A	0.052	0.036	0.057	1.540	0.883	0.000	0.160	0.000

Problem 814	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	79	71	180	112	0	57	-1
normalized size	1	1.00	0.80	0.72	1.82	1.13	0.00	0.58	-0.01
time (sec)	N/A	0.057	0.031	0.064	1.607	0.659	0.000	0.158	0.000

Problem 815	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	59	97	244	146	0	85	-1
normalized size	1	1.00	0.41	0.67	1.69	1.01	0.00	0.59	-0.01
time (sec)	N/A	0.075	0.021	0.064	1.671	1.090	0.000	0.169	0.000

Problem 816	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	60	131	305	195	0	122	-1
normalized size	1	1.00	0.32	0.69	1.61	1.03	0.00	0.64	-0.01
time (sec)	N/A	0.094	0.023	0.064	1.653	1.131	0.000	0.165	0.000

Problem 817	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	60	165	357	246	0	158	-1
normalized size	1	1.00	0.25	0.69	1.50	1.03	0.00	0.66	-0.00
time (sec)	N/A	0.116	0.022	0.074	1.509	1.133	0.000	0.182	0.000

Problem 818	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	79	283	273	408	0	170	-1
normalized size	1	1.00	0.26	0.94	0.90	1.35	0.00	0.56	-0.00
time (sec)	N/A	0.151	0.034	0.074	1.859	1.014	0.000	0.222	0.000

Problem 819	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	79	247	252	349	0	143	-1
normalized size	1	1.00	0.31	0.97	0.99	1.37	0.00	0.56	-0.00
time (sec)	N/A	0.121	0.030	0.070	1.702	1.043	0.000	0.258	0.000

Problem 820	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	79	208	237	319	0	111	-1
normalized size	1	1.00	0.38	1.01	1.15	1.55	0.00	0.54	-0.00
time (sec)	N/A	0.111	0.032	0.067	1.579	1.070	0.000	0.207	0.000

Problem 821	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	105	194	218	291	0	98	-1
normalized size	1	1.00	0.66	1.23	1.38	1.84	0.00	0.62	-0.01
time (sec)	N/A	0.086	0.050	0.070	1.680	0.971	0.000	0.302	0.000

Problem 822	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	106	194	234	291	0	98	-1
normalized size	1	1.00	0.67	1.23	1.48	1.84	0.00	0.62	-0.01
time (sec)	N/A	0.086	0.049	0.066	1.710	0.749	0.000	0.233	0.000

Problem 823	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	77	214	280	331	0	110	-1
normalized size	1	1.00	0.37	1.02	1.34	1.58	0.00	0.53	-0.00
time (sec)	N/A	0.109	0.032	0.073	1.653	1.181	0.000	0.209	0.000

Problem 824	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	79	253	341	380	0	132	-1
normalized size	1	1.00	0.31	0.99	1.34	1.49	0.00	0.52	-0.00
time (sec)	N/A	0.129	0.031	0.069	1.663	1.129	0.000	0.207	0.000

Problem 825	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	79	289	404	437	0	159	-1
normalized size	1	1.00	0.26	0.96	1.34	1.45	0.00	0.53	-0.00
time (sec)	N/A	0.146	0.031	0.069	1.676	0.676	0.000	0.211	0.000

Problem 826	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	80	443	401	644	0	218	-1
normalized size	1	1.00	0.20	1.10	0.99	1.59	0.00	0.54	-0.00
time (sec)	N/A	0.202	0.038	0.097	1.871	1.131	0.000	0.293	0.000

Problem 827	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	80	407	381	585	0	191	-1
normalized size	1	1.00	0.22	1.14	1.07	1.64	0.00	0.54	-0.00
time (sec)	N/A	0.182	0.031	0.084	1.762	1.263	0.000	0.228	0.000

Problem 828	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	79	368	374	555	0	159	-1
normalized size	1	1.00	0.26	1.20	1.22	1.81	0.00	0.52	-0.00
time (sec)	N/A	0.150	0.033	0.082	1.618	1.259	0.000	0.384	0.000

Problem 829	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	146	357	376	525	0	147	-1
normalized size	1	1.00	0.57	1.38	1.46	2.03	0.00	0.57	-0.00
time (sec)	N/A	0.133	0.079	0.069	1.751	1.099	0.000	0.357	0.000

Problem 830	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	79	357	372	537	0	148	-1
normalized size	1	1.00	0.30	1.36	1.42	2.05	0.00	0.56	-0.00
time (sec)	N/A	0.147	0.032	0.070	1.797	1.027	0.000	0.266	0.000

Problem 831	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	79	357	368	537	0	148	-1
normalized size	1	1.00	0.30	1.36	1.40	2.05	0.00	0.56	-0.00
time (sec)	N/A	0.139	0.033	0.074	1.528	1.157	0.000	0.217	0.000

Problem 832	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	77	357	390	523	0	147	-1
normalized size	1	1.00	0.30	1.38	1.51	2.03	0.00	0.57	-0.00
time (sec)	N/A	0.138	0.035	0.070	1.866	0.882	0.000	0.240	0.000

Problem 833	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	79	374	427	559	0	158	-1
normalized size	1	1.00	0.25	1.20	1.37	1.80	0.00	0.51	-0.00
time (sec)	N/A	0.158	0.034	0.070	1.935	1.018	0.000	0.267	0.000

Problem 834	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	B	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	80	413	495	616	0	180	-1
normalized size	1	1.00	0.22	1.16	1.39	1.73	0.00	0.50	-0.00
time (sec)	N/A	0.186	0.034	0.082	2.026	1.032	0.000	0.241	0.000

Problem 835	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	80	449	550	673	0	207	-1
normalized size	1	1.00	0.20	1.11	1.36	1.67	0.00	0.51	-0.00
time (sec)	N/A	0.211	0.034	0.083	2.125	1.149	0.000	0.230	0.000

Problem 836	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	135	1438	243	1191	7745	1808	729
normalized size	1	1.00	0.75	8.03	1.36	6.65	43.27	10.10	4.07
time (sec)	N/A	0.119	0.198	0.058	0.477	1.107	5.082	0.267	1.770

Problem 837	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	103	722	167	607	3417	926	417
normalized size	1	1.00	0.82	5.78	1.34	4.86	27.34	7.41	3.34
time (sec)	N/A	0.074	0.133	0.051	0.610	1.040	2.544	0.195	1.476

Problem 838	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	246	91	215	1020	332	177
normalized size	1	1.00	1.00	3.46	1.28	3.03	14.37	4.68	2.49
time (sec)	N/A	0.037	0.089	0.055	0.458	1.172	1.133	0.175	1.293

Problem 839	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	63	0	0	0	0	0	-1
normalized size	1	1.00	0.86	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.030	0.039	1.159	0.000	1.030	0.000	0.000	0.000

Problem 840	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	71	0	0	0	0	0	-1
normalized size	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.032	0.034	1.085	0.000	0.798	0.000	0.000	0.000

Problem 841	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	119	1096	143	757	0	1560	1459
normalized size	1	1.00	0.83	7.66	1.00	5.29	0.00	10.91	10.20
time (sec)	N/A	0.043	0.052	0.050	0.594	0.764	0.000	0.238	2.066

Problem 842	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	135	2246	283	1569	0	3224	1515
normalized size	1	1.00	0.65	10.75	1.35	7.51	0.00	15.43	7.25
time (sec)	N/A	0.097	0.663	0.054	0.576	0.661	0.000	0.335	2.454

Problem 843	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	40	39	43	42	43	41
normalized size	1	1.00	1.00	0.85	0.83	0.91	0.89	0.91	0.87
time (sec)	N/A	0.062	0.011	0.044	0.484	0.933	0.070	0.171	0.046

Problem 844	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	40	39	43	42	43	41
normalized size	1	1.00	1.00	0.85	0.83	0.91	0.89	0.91	0.87
time (sec)	N/A	0.050	0.015	0.038	0.600	0.906	0.069	0.215	0.042

Problem 845	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	41	40	39	43	42	43	41
normalized size	1	1.00	0.87	0.85	0.83	0.91	0.89	0.91	0.87
time (sec)	N/A	0.037	0.014	0.079	0.528	0.851	0.069	0.151	0.040

Problem 846	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	37	36	40	39	40	38
normalized size	1	1.00	1.00	0.88	0.86	0.95	0.93	0.95	0.90
time (sec)	N/A	0.028	0.013	0.065	0.558	0.981	0.068	0.147	0.041

Problem 847	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	36	34	34	36	36	35
normalized size	1	1.00	1.00	0.95	0.89	0.89	0.95	0.95	0.92
time (sec)	N/A	0.020	0.011	0.044	0.526	0.865	0.130	0.146	0.036

Problem 848	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	36	34	34	40	31	34	34
normalized size	1	1.00	1.00	0.94	0.94	1.11	0.86	0.94	0.94
time (sec)	N/A	0.025	0.017	0.051	0.532	0.788	0.168	0.181	0.040

Problem 849	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	37	37	34	41	36	35	34
normalized size	1	1.00	1.03	1.03	0.94	1.14	1.00	0.97	0.94
time (sec)	N/A	0.024	0.020	0.051	0.500	0.904	0.312	0.150	1.166

Problem 850	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	41	42	38	41	44	39	38
normalized size	1	1.00	1.00	1.02	0.93	1.00	1.07	0.95	0.93
time (sec)	N/A	0.025	0.027	0.053	0.617	1.009	0.577	0.166	1.176

Problem 851	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	42	40	39	39	46	41	40
normalized size	1	1.00	0.93	0.89	0.87	0.87	1.02	0.91	0.89
time (sec)	N/A	0.024	0.015	0.055	0.647	0.797	1.036	0.166	0.028

Problem 852	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	44	40	39	39	46	41	41
normalized size	1	1.00	0.94	0.85	0.83	0.83	0.98	0.87	0.87
time (sec)	N/A	0.024	0.015	0.050	0.671	1.030	1.701	0.152	0.029

Problem 853	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	45	40	39	39	46	41	41
normalized size	1	1.00	0.96	0.85	0.83	0.83	0.98	0.87	0.87
time (sec)	N/A	0.023	0.016	0.046	0.593	0.943	2.675	0.148	0.029

Problem 854	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	46	40	39	39	46	41	41
normalized size	1	1.00	0.98	0.85	0.83	0.83	0.98	0.87	0.87
time (sec)	N/A	0.025	0.018	0.059	0.490	0.986	3.868	0.166	0.030

Problem 855	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	101	94	93	103	105	103	93
normalized size	1	1.00	1.00	0.93	0.92	1.02	1.04	1.02	0.92
time (sec)	N/A	0.142	0.027	0.050	0.557	0.959	0.087	0.151	1.158

Problem 856	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	101	94	93	103	105	103	93
normalized size	1	1.00	1.00	0.93	0.92	1.02	1.04	1.02	0.92
time (sec)	N/A	0.101	0.022	0.043	0.537	0.798	0.086	0.153	0.031

Problem 857	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	96	91	90	99	100	99	89
normalized size	1	1.00	1.00	0.95	0.94	1.03	1.04	1.03	0.93
time (sec)	N/A	0.069	0.020	0.040	0.524	0.960	0.089	0.151	0.031

Problem 858	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	92	95	88	88	95	95	86
normalized size	1	1.00	1.00	1.03	0.96	0.96	1.03	1.03	0.93
time (sec)	N/A	0.052	0.034	0.050	0.454	0.862	0.209	0.159	0.036

Problem 859	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	87	92	88	95	88	92	86
normalized size	1	1.00	0.97	1.02	0.98	1.06	0.98	1.02	0.96
time (sec)	N/A	0.072	0.060	0.052	0.580	0.660	0.257	0.196	0.038

Problem 860	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	86	92	88	95	94	89	87
normalized size	1	1.00	0.96	1.02	0.98	1.06	1.04	0.99	0.97
time (sec)	N/A	0.067	0.050	0.055	0.527	1.036	0.441	0.159	1.154

Problem 861	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	90	95	89	95	99	89	87
normalized size	1	1.00	1.00	1.06	0.99	1.06	1.10	0.99	0.97
time (sec)	N/A	0.061	0.050	0.057	0.499	0.986	1.074	0.167	0.050

Problem 862	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	92	98	89	95	99	90	86
normalized size	1	1.00	1.02	1.09	0.99	1.06	1.10	1.00	0.96
time (sec)	N/A	0.059	0.049	0.051	0.751	0.757	3.049	0.152	0.066

Problem 863	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	95	95	92	102	92	95	105	93	89
normalized size	1	1.00	0.97	1.07	0.97	1.00	1.11	0.98	0.94
time (sec)	N/A	0.054	0.057	0.054	0.718	0.780	7.106	0.184	0.067

Problem 864	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	97	90	93	93	107	101	91
normalized size	1	1.00	0.98	0.91	0.94	0.94	1.08	1.02	0.92
time (sec)	N/A	0.054	0.035	0.054	0.461	1.001	14.089	0.152	0.047

Problem 865	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	100	90	93	93	107	101	93
normalized size	1	1.00	0.99	0.89	0.92	0.92	1.06	1.00	0.92
time (sec)	N/A	0.053	0.036	0.047	0.634	1.072	24.022	0.155	1.168

Problem 866	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	99	90	93	93	107	101	93
normalized size	1	1.00	0.98	0.89	0.92	0.92	1.06	1.00	0.92
time (sec)	N/A	0.052	0.038	0.054	0.600	1.238	41.523	0.193	0.046

Problem 867	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	166	226	166	192	201	192	168
normalized size	1	1.00	1.00	1.36	1.00	1.16	1.21	1.16	1.01
time (sec)	N/A	0.264	0.048	0.044	0.708	0.927	0.105	0.204	0.067

Problem 868	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	166	226	166	191	199	191	167
normalized size	1	1.00	1.00	1.36	1.00	1.15	1.20	1.15	1.01
time (sec)	N/A	0.203	0.040	0.042	0.660	0.800	0.103	0.153	1.158

Problem 869	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	158	223	162	187	190	187	163
normalized size	1	1.00	1.00	1.41	1.03	1.18	1.20	1.18	1.03
time (sec)	N/A	0.151	0.034	0.046	0.577	0.883	0.105	0.153	0.047

Problem 870	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	157	185	161	161	192	185	162
normalized size	1	1.00	1.00	1.18	1.03	1.03	1.22	1.18	1.03
time (sec)	N/A	0.111	0.062	0.053	0.485	0.972	0.309	0.153	0.051

Problem 871	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	156	183	162	168	184	183	163
normalized size	1	1.00	1.00	1.17	1.04	1.08	1.18	1.17	1.04
time (sec)	N/A	0.108	0.085	0.056	0.520	0.748	0.356	0.154	1.186

Problem 872	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	153	179	161	168	175	174	162
normalized size	1	1.00	1.00	1.17	1.05	1.10	1.14	1.14	1.06
time (sec)	N/A	0.125	0.077	0.056	0.584	1.019	0.601	0.166	0.056

Problem 873	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	160	179	162	168	187	169	164
normalized size	1	1.00	1.03	1.15	1.05	1.08	1.21	1.09	1.06
time (sec)	N/A	0.136	0.061	0.049	0.493	1.024	1.360	0.167	0.057

Problem 874	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	154	183	163	168	189	166	164
normalized size	1	1.00	0.99	1.17	1.04	1.08	1.21	1.06	1.05
time (sec)	N/A	0.123	0.059	0.072	0.489	1.010	4.206	0.184	1.170

Problem 875	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	161	186	163	168	182	162	162
normalized size	1	1.00	1.05	1.21	1.06	1.09	1.18	1.05	1.05
time (sec)	N/A	0.116	0.088	0.054	0.622	0.780	11.617	0.161	1.184

Problem 876	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	169	188	162	168	187	162	163
normalized size	1	1.00	1.09	1.21	1.05	1.08	1.21	1.05	1.05
time (sec)	N/A	0.109	0.088	0.058	0.539	0.566	28.647	0.152	0.094

Problem 877	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	175	192	165	168	194	165	165
normalized size	1	1.00	1.09	1.20	1.03	1.05	1.21	1.03	1.03
time (sec)	N/A	0.106	0.080	0.045	0.537	0.789	57.145	0.193	1.217

Problem 878	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	172	154	166	166	196	191	165
normalized size	1	1.00	1.06	0.95	1.02	1.02	1.21	1.18	1.02
time (sec)	N/A	0.105	0.058	0.047	0.564	0.682	119.400	0.172	1.183

Problem 879	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	175	154	166	166	0	191	167
normalized size	1	1.00	1.05	0.93	1.00	1.00	0.00	1.15	1.01
time (sec)	N/A	0.105	0.060	0.062	0.523	1.038	0.000	0.157	1.189

Problem 880	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	176	154	166	166	0	191	168
normalized size	1	1.00	1.06	0.93	1.00	1.00	0.00	1.15	1.01
time (sec)	N/A	0.104	0.062	0.058	0.455	0.948	0.000	0.156	1.190

Problem 881	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	222	445	0	730	1100	247	302
normalized size	1	1.00	0.97	1.94	0.00	3.19	4.80	1.08	1.32
time (sec)	N/A	0.421	0.135	0.056	0.000	0.811	3.919	0.182	0.233

Problem 882	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	165	335	0	563	840	178	221
normalized size	1	1.00	0.98	1.98	0.00	3.33	4.97	1.05	1.31
time (sec)	N/A	0.236	0.102	0.047	0.000	0.840	2.960	0.162	1.301

Problem 883	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	119	241	0	414	609	122	168
normalized size	1	1.00	0.98	1.99	0.00	3.42	5.03	1.01	1.39
time (sec)	N/A	0.148	0.081	0.044	0.000	1.152	2.036	0.171	0.172

Problem 884	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	86	161	0	289	423	88	127
normalized size	1	1.00	1.01	1.89	0.00	3.40	4.98	1.04	1.49
time (sec)	N/A	0.078	0.083	0.044	0.000	1.112	1.345	0.159	1.336

Problem 885	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	66	93	0	204	280	65	162
normalized size	1	1.00	1.00	1.41	0.00	3.09	4.24	0.98	2.45
time (sec)	N/A	0.034	0.056	0.048	0.000	1.124	0.741	0.171	0.117

Problem 886	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	71	100	0	228	0	72	375
normalized size	1	1.00	1.00	1.41	0.00	3.21	0.00	1.01	5.28
time (sec)	N/A	0.094	0.109	0.058	0.000	1.018	0.000	0.163	1.952

Problem 887	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	100	180	0	361	0	105	791
normalized size	1	1.00	0.96	1.73	0.00	3.47	0.00	1.01	7.61
time (sec)	N/A	0.147	0.083	0.059	0.000	1.369	0.000	0.153	2.962

Problem 888	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	141	273	0	517	0	152	814
normalized size	1	1.00	0.97	1.88	0.00	3.57	0.00	1.05	5.61
time (sec)	N/A	0.230	0.135	0.066	0.000	1.908	0.000	0.184	2.495

Problem 889	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	196	381	0	687	0	214	1063
normalized size	1	1.00	0.96	1.87	0.00	3.37	0.00	1.05	5.21
time (sec)	N/A	0.286	0.144	0.066	0.000	4.026	0.000	0.178	2.747

Problem 890	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	249	809	0	1696	1572	297	427
normalized size	1	1.00	0.95	3.09	0.00	6.47	6.00	1.13	1.63
time (sec)	N/A	0.638	0.361	0.063	0.000	1.115	7.711	0.162	1.979

Problem 891	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	190	639	0	1283	1248	235	360
normalized size	1	1.00	0.99	3.33	0.00	6.68	6.50	1.22	1.88
time (sec)	N/A	0.312	0.286	0.064	0.000	1.132	5.404	0.162	1.854

Problem 892	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	146	270	0	813	901	169	895
normalized size	1	1.00	1.11	2.05	0.00	6.16	6.83	1.28	6.78
time (sec)	N/A	0.105	0.194	0.069	0.000	0.977	2.837	0.203	1.536

Problem 893	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	99	147	0	521	379	113	177
normalized size	1	1.00	1.00	1.48	0.00	5.26	3.83	1.14	1.79
time (sec)	N/A	0.047	0.076	0.055	0.000	1.094	1.048	0.164	1.279

Problem 894	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	88	118	0	459	359	99	159
normalized size	1	1.00	1.01	1.36	0.00	5.28	4.13	1.14	1.83
time (sec)	N/A	0.038	0.074	0.049	0.000	0.972	0.951	0.155	0.110

Problem 895	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	134	337	0	955	0	160	920
normalized size	1	1.00	0.99	2.50	0.00	7.07	0.00	1.19	6.81
time (sec)	N/A	0.199	0.204	0.060	0.000	1.936	0.000	0.160	2.420

Problem 896	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	192	582	0	1615	0	245	1366
normalized size	1	1.00	0.91	2.76	0.00	7.65	0.00	1.16	6.47
time (sec)	N/A	0.357	0.341	0.063	0.000	4.873	0.000	0.160	3.092

Problem 897	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	253	770	0	2003	0	345	1661
normalized size	1	1.00	0.89	2.72	0.00	7.08	0.00	1.22	5.87
time (sec)	N/A	0.613	0.447	0.072	0.000	9.742	0.000	0.169	3.056

Problem 898	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	9	9	9	10	9	9	8	10	9
normalized size	1	1.00	1.00	1.11	1.00	1.00	0.89	1.11	1.00
time (sec)	N/A	0.003	0.002	0.039	0.491	0.694	0.097	0.191	0.045

Problem 899	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	14	13	13	14	15	13
normalized size	1	1.00	1.00	0.82	0.76	0.76	0.82	0.88	0.76
time (sec)	N/A	0.005	0.004	0.057	0.445	0.716	0.109	0.147	0.046

Problem 900	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	15	14	14	14	14	14
normalized size	1	1.00	1.00	1.07	1.00	1.00	1.00	1.00	1.00
time (sec)	N/A	0.011	0.004	0.051	1.419	0.636	0.116	0.148	1.177

Problem 901	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	35	29	26	26	39	26	30
normalized size	1	1.00	1.06	0.88	0.79	0.79	1.18	0.79	0.91
time (sec)	N/A	0.022	0.014	0.056	1.356	0.949	0.152	0.152	1.167

Problem 902	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	49	29	39	49	49	42	36
normalized size	1	1.00	0.96	0.57	0.76	0.96	0.96	0.82	0.71
time (sec)	N/A	0.019	0.027	0.053	1.319	0.741	0.124	0.149	0.124

Problem 903	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	44	31	41	51	42	46	36
normalized size	1	1.00	0.90	0.63	0.84	1.04	0.86	0.94	0.73
time (sec)	N/A	0.026	0.023	0.043	1.140	0.881	0.123	0.155	0.174

Problem 904	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	16	15	14	14	12	14	14
normalized size	1	1.00	1.00	0.94	0.88	0.88	0.75	0.88	0.88
time (sec)	N/A	0.004	0.006	0.047	0.528	0.753	0.107	0.149	1.160

Problem 905	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	24	23	22	31	19	22	19
normalized size	1	1.00	1.00	0.96	0.92	1.29	0.79	0.92	0.79
time (sec)	N/A	0.009	0.011	0.049	1.176	0.890	0.121	0.165	0.032

Problem 906	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	39	33	32	37	42	32	34
normalized size	1	1.00	1.00	0.85	0.82	0.95	1.08	0.82	0.87
time (sec)	N/A	0.013	0.024	0.043	1.297	0.820	0.139	0.150	0.041

Problem 907	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	49	52	54	71	61	44	53
normalized size	1	1.00	0.84	0.90	0.93	1.22	1.05	0.76	0.91
time (sec)	N/A	0.021	0.029	0.083	1.265	0.924	0.160	0.150	0.048

Problem 908	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	10	10	7	11	10
normalized size	1	1.00	1.00	1.10	1.00	1.00	0.70	1.10	1.00
time (sec)	N/A	0.002	0.001	0.045	0.476	1.135	0.072	0.146	1.150

Problem 909	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	22	10	7	22	10
normalized size	1	1.00	1.00	1.10	2.20	1.00	0.70	2.20	1.00
time (sec)	N/A	0.002	0.001	0.085	0.710	0.954	0.074	0.152	0.017

Problem 910	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	367	367	312	872	0	843	0	414	992
normalized size	1	1.00	0.85	2.38	0.00	2.30	0.00	1.13	2.70
time (sec)	N/A	0.508	0.543	0.061	0.000	1.302	0.000	0.241	3.908

Problem 911	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	241	671	0	667	0	323	781
normalized size	1	1.00	0.86	2.40	0.00	2.38	0.00	1.15	2.79
time (sec)	N/A	0.323	0.362	0.063	0.000	1.060	0.000	0.258	1.955

Problem 912	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	179	497	0	517	0	245	463
normalized size	1	1.00	0.87	2.42	0.00	2.52	0.00	1.20	2.26
time (sec)	N/A	0.196	0.230	0.057	0.000	1.117	0.000	0.226	1.724

Problem 913	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	127	352	0	393	0	178	256
normalized size	1	1.00	0.88	2.44	0.00	2.73	0.00	1.24	1.78
time (sec)	N/A	0.064	0.133	0.054	0.000	1.111	0.000	0.250	1.511

Problem 914	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	114	229	0	291	0	123	145
normalized size	1	1.00	1.01	2.03	0.00	2.58	0.00	1.09	1.28
time (sec)	N/A	0.046	0.105	0.047	0.000	1.064	0.000	0.245	1.433

Problem 915	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	127	184	0	651	0	0	146
normalized size	1	1.00	0.98	1.43	0.00	5.05	0.00	0.00	1.13
time (sec)	N/A	0.104	0.166	0.061	0.000	3.184	0.000	0.000	1.372

Problem 916	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	118	207	0	648	0	0	166
normalized size	1	1.00	0.98	1.71	0.00	5.36	0.00	0.00	1.37
time (sec)	N/A	0.089	0.175	0.080	0.000	2.038	0.000	0.000	1.560

Problem 917	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	129	304	0	699	0	359	-1
normalized size	1	1.00	0.97	2.29	0.00	5.26	0.00	2.70	-0.01
time (sec)	N/A	0.102	0.354	0.059	0.000	2.116	0.000	0.303	0.000

Problem 918	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	116	386	0	317	0	524	-1
normalized size	1	1.00	0.96	3.19	0.00	2.62	0.00	4.33	-0.01
time (sec)	N/A	0.066	0.161	0.060	0.000	1.374	0.000	0.220	0.000

Problem 919	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	153	569	0	425	0	991	-1
normalized size	1	1.00	0.89	3.31	0.00	2.47	0.00	5.76	-0.01
time (sec)	N/A	0.143	0.182	0.062	0.000	2.354	0.000	0.274	0.000

Problem 920	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	206	777	0	553	0	1407	-1
normalized size	1	1.00	0.88	3.31	0.00	2.35	0.00	5.99	-0.00
time (sec)	N/A	0.270	0.390	0.066	0.000	4.692	0.000	0.262	0.000

Problem 921	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	262	1014	0	709	0	1955	-1
normalized size	1	1.00	0.85	3.27	0.00	2.29	0.00	6.31	-0.00
time (sec)	N/A	0.357	0.443	0.069	0.000	9.881	0.000	0.324	0.000

Problem 922	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	455	455	338	1311	0	1263	0	639	-1
normalized size	1	1.00	0.74	2.88	0.00	2.78	0.00	1.40	-0.00
time (sec)	N/A	0.628	0.822	0.063	0.000	1.784	0.000	0.324	0.000

Problem 923	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	267	1061	0	1037	0	524	-1
normalized size	1	1.00	0.75	2.98	0.00	2.91	0.00	1.47	-0.00
time (sec)	N/A	0.397	0.519	0.063	0.000	1.439	0.000	0.274	0.000

Problem 924	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	206	838	0	845	0	422	-1
normalized size	1	1.00	0.77	3.12	0.00	3.14	0.00	1.57	-0.00
time (sec)	N/A	0.248	0.327	0.062	0.000	1.368	0.000	0.243	0.000

Problem 925	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	156	644	0	669	0	332	-1
normalized size	1	1.00	0.79	3.25	0.00	3.38	0.00	1.68	-0.01
time (sec)	N/A	0.095	0.206	0.049	0.000	1.092	0.000	0.273	0.000

Problem 926	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	144	469	0	515	0	251	305
normalized size	1	1.00	0.91	2.97	0.00	3.26	0.00	1.59	1.93
time (sec)	N/A	0.067	0.283	0.048	0.000	1.225	0.000	0.229	1.613

Problem 927	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	206	390	0	1023	0	0	-1
normalized size	1	1.00	0.94	1.79	0.00	4.69	0.00	0.00	-0.00
time (sec)	N/A	0.254	0.339	0.053	0.000	12.714	0.000	0.000	0.000

Problem 928	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	183	365	0	917	0	0	-1
normalized size	1	1.00	0.95	1.89	0.00	4.75	0.00	0.00	-0.01
time (sec)	N/A	0.177	0.322	0.057	0.000	5.662	0.000	0.000	0.000

Problem 929	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	162	463	0	921	0	412	-1
normalized size	1	1.00	0.91	2.59	0.00	5.15	0.00	2.30	-0.01
time (sec)	N/A	0.167	0.444	0.062	0.000	4.812	0.000	0.377	0.000

Problem 930	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	182	635	0	953	0	630	-1
normalized size	1	1.00	0.88	3.08	0.00	4.63	0.00	3.06	-0.00
time (sec)	N/A	0.223	0.502	0.062	0.000	4.522	0.000	0.436	0.000

Problem 931	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	202	838	0	1083	0	1019	-1
normalized size	1	1.00	0.93	3.86	0.00	4.99	0.00	4.70	-0.00
time (sec)	N/A	0.248	0.631	0.081	0.000	6.356	0.000	0.591	0.000

Problem 932	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	157	978	0	555	0	1357	-1
normalized size	1	1.00	0.92	5.75	0.00	3.26	0.00	7.98	-0.01
time (sec)	N/A	0.098	0.259	0.090	0.000	4.507	0.000	0.293	0.000

Problem 933	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	182	1264	0	709	0	2059	-1
normalized size	1	1.00	0.79	5.50	0.00	3.08	0.00	8.95	-0.00
time (sec)	N/A	0.203	0.327	0.077	0.000	9.118	0.000	0.359	0.000

Problem 934	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	234	1575	0	889	0	2713	-1
normalized size	1	1.00	0.77	5.20	0.00	2.93	0.00	8.95	-0.00
time (sec)	N/A	0.386	0.564	0.085	0.000	11.681	0.000	0.357	0.000

Problem 935	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	543	386	1848	0	1775	0	908	-1
normalized size	1	1.00	0.71	3.40	0.00	3.27	0.00	1.67	-0.00
time (sec)	N/A	0.718	1.007	0.067	0.000	2.068	0.000	0.309	0.000

Problem 936	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	432	432	315	1549	0	1511	0	769	-1
normalized size	1	1.00	0.73	3.59	0.00	3.50	0.00	1.78	-0.00
time (sec)	N/A	0.486	0.763	0.067	0.000	1.753	0.000	0.323	0.000

Problem 937	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	333	333	254	1277	0	1263	0	643	-1
normalized size	1	1.00	0.76	3.83	0.00	3.79	0.00	1.93	-0.00
time (sec)	N/A	0.309	0.450	0.059	0.000	1.769	0.000	0.270	0.000

Problem 938	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	205	1034	0	1039	0	528	-1
normalized size	1	1.00	0.81	4.10	0.00	4.12	0.00	2.10	-0.00
time (sec)	N/A	0.125	0.603	0.056	0.000	1.623	0.000	0.309	0.000

Problem 939	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	179	807	0	843	0	425	-1
normalized size	1	1.00	0.88	3.98	0.00	4.15	0.00	2.09	-0.00
time (sec)	N/A	0.095	0.289	0.051	0.000	1.127	0.000	0.307	0.000

Problem 940	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	350	350	349	694	0	1575	0	0	-1
normalized size	1	1.00	1.00	1.98	0.00	4.50	0.00	0.00	-0.00
time (sec)	N/A	0.420	0.460	0.059	0.000	40.052	0.000	0.000	0.000

Problem 941	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	288	615	0	1393	0	0	-1
normalized size	1	1.00	0.93	1.98	0.00	4.49	0.00	0.00	-0.00
time (sec)	N/A	0.313	0.520	0.063	0.000	20.590	0.000	0.000	0.000

Problem 942	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	254	663	0	1269	0	527	-1
normalized size	1	1.00	0.93	2.43	0.00	4.65	0.00	1.93	-0.00
time (sec)	N/A	0.259	0.460	0.062	0.000	14.082	0.000	0.415	0.000

Problem 943	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	236	840	0	1293	0	784	-1
normalized size	1	1.00	0.93	3.29	0.00	5.07	0.00	3.07	-0.00
time (sec)	N/A	0.322	0.716	0.068	0.000	7.494	0.000	0.622	0.000

Problem 944	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	255	1094	0	1305	0	1163	-1
normalized size	1	1.00	0.90	3.85	0.00	4.60	0.00	4.10	-0.00
time (sec)	N/A	0.386	0.691	0.071	0.000	12.279	0.000	0.669	0.000

Problem 945	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	289	1371	0	1445	0	1526	-1
normalized size	1	1.00	0.84	3.96	0.00	4.18	0.00	4.41	-0.00
time (sec)	N/A	0.491	0.845	0.073	0.000	16.844	0.000	0.990	0.000

Problem 946	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	308	1677	0	1659	0	2089	-1
normalized size	1	1.00	0.93	5.05	0.00	5.00	0.00	6.29	-0.00
time (sec)	N/A	0.466	0.978	0.086	0.000	21.579	0.000	1.450	0.000

Problem 947	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	198	1874	0	887	0	2598	-1
normalized size	1	1.00	0.90	8.56	0.00	4.05	0.00	11.86	-0.00
time (sec)	N/A	0.134	0.471	0.113	0.000	10.905	0.000	0.427	0.000

Problem 948	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	242	2263	0	1091	0	3603	-1
normalized size	1	1.00	0.84	7.86	0.00	3.79	0.00	12.51	-0.00
time (sec)	N/A	0.247	0.747	0.174	0.000	19.443	0.000	0.471	0.000

Problem 949	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	375	375	292	2677	0	1315	0	4427	-1
normalized size	1	1.00	0.78	7.14	0.00	3.51	0.00	11.81	-0.00
time (sec)	N/A	0.478	0.728	0.164	0.000	23.882	0.000	0.583	0.000

Problem 950	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	225	531	0	519	0	249	-1
normalized size	1	1.00	0.80	1.89	0.00	1.85	0.00	0.89	-0.00
time (sec)	N/A	0.422	0.390	0.071	0.000	1.220	0.000	0.256	0.000

Problem 951	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	169	379	0	395	0	183	-1
normalized size	1	1.00	0.82	1.84	0.00	1.92	0.00	0.89	-0.00
time (sec)	N/A	0.243	0.269	0.054	0.000	0.931	0.000	0.265	0.000

Problem 952	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	126	254	0	295	0	128	-1
normalized size	1	1.00	0.88	1.78	0.00	2.06	0.00	0.90	-0.01
time (sec)	N/A	0.120	0.148	0.059	0.000	1.286	0.000	0.248	0.000

Problem 953	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	90	155	0	213	0	90	-1
normalized size	1	1.00	0.98	1.68	0.00	2.32	0.00	0.98	-0.01
time (sec)	N/A	0.040	0.121	0.051	0.000	0.996	0.000	0.239	0.000

Problem 954	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	66	81	0	162	0	62	80
normalized size	1	1.00	0.99	1.21	0.00	2.42	0.00	0.93	1.19
time (sec)	N/A	0.024	0.084	0.058	0.000	1.040	0.000	0.236	1.559

Problem 955	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	75	67	0	468	0	0	66
normalized size	1	1.00	0.97	0.87	0.00	6.08	0.00	0.00	0.86
time (sec)	N/A	0.048	0.023	0.053	0.000	1.214	0.000	0.000	1.470

Problem 956	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	70	94	0	177	0	110	87
normalized size	1	1.00	0.97	1.31	0.00	2.46	0.00	1.53	1.21
time (sec)	N/A	0.039	0.085	0.075	0.000	1.359	0.000	0.232	1.459

Problem 957	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	95	176	0	235	0	303	-1
normalized size	1	1.00	0.82	1.52	0.00	2.03	0.00	2.61	-0.01
time (sec)	N/A	0.089	0.130	0.058	0.000	1.230	0.000	0.287	0.000

Problem 958	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	132	283	0	321	0	511	-1
normalized size	1	1.00	0.79	1.69	0.00	1.92	0.00	3.06	-0.01
time (sec)	N/A	0.162	0.140	0.070	0.000	1.580	0.000	0.243	0.000

Problem 959	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	176	417	0	425	0	884	-1
normalized size	1	1.00	0.76	1.81	0.00	1.84	0.00	3.83	-0.00
time (sec)	N/A	0.277	0.229	0.056	0.000	2.515	0.000	0.297	0.000

Problem 960	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	233	578	0	557	0	1266	-1
normalized size	1	1.00	0.76	1.89	0.00	1.82	0.00	4.14	-0.00
time (sec)	N/A	0.397	0.299	0.066	0.000	4.128	0.000	0.267	0.000

Problem 961	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	300	800	0	1035	0	367	-1
normalized size	1	1.00	1.07	2.86	0.00	3.70	0.00	1.31	-0.00
time (sec)	N/A	0.267	0.428	0.072	0.000	1.859	0.000	0.310	0.000

Problem 962	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	221	576	0	793	0	268	-1
normalized size	1	1.00	1.12	2.92	0.00	4.03	0.00	1.36	-0.01
time (sec)	N/A	0.135	0.275	0.060	0.000	1.753	0.000	0.252	0.000

Problem 963	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	148	382	0	603	0	177	-1
normalized size	1	1.00	0.97	2.50	0.00	3.94	0.00	1.16	-0.01
time (sec)	N/A	0.135	0.231	0.055	0.000	1.547	0.000	0.259	0.000

Problem 964	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	102	216	0	405	0	110	111
normalized size	1	1.00	1.06	2.25	0.00	4.22	0.00	1.15	1.16
time (sec)	N/A	0.041	0.282	0.053	0.000	1.250	0.000	0.247	1.641

Problem 965	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	44	45	0	74	0	55	44
normalized size	1	1.00	0.98	1.00	0.00	1.64	0.00	1.22	0.98
time (sec)	N/A	0.011	0.161	0.050	0.000	1.329	0.000	0.239	1.389

Problem 966	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	104	153	0	412	0	125	-1
normalized size	1	1.00	1.08	1.59	0.00	4.29	0.00	1.30	-0.01
time (sec)	N/A	0.058	0.125	0.053	0.000	1.629	0.000	0.269	0.000

Problem 967	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	150	330	0	657	0	220	-1
normalized size	1	1.00	0.95	2.09	0.00	4.16	0.00	1.39	-0.01
time (sec)	N/A	0.119	0.183	0.060	0.000	1.685	0.000	0.272	0.000

Problem 968	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	214	506	0	869	0	467	-1
normalized size	1	1.00	0.93	2.19	0.00	3.76	0.00	2.02	-0.00
time (sec)	N/A	0.200	0.289	0.073	0.000	2.714	0.000	0.257	0.000

Problem 969	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	294	708	0	1093	0	798	-1
normalized size	1	1.00	0.93	2.23	0.00	3.45	0.00	2.52	-0.00
time (sec)	N/A	0.388	0.430	0.067	0.000	4.695	0.000	0.275	0.000

Problem 970	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	414	1262	0	1601	0	458	-1
normalized size	1	1.00	1.45	4.43	0.00	5.62	0.00	1.61	-0.00
time (sec)	N/A	0.268	0.793	0.060	0.000	3.468	0.000	0.288	0.000

Problem 971	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	201	860	0	1061	0	314	-1
normalized size	1	1.00	1.06	4.55	0.00	5.61	0.00	1.66	-0.01
time (sec)	N/A	0.133	0.394	0.061	0.000	3.650	0.000	0.279	0.000

Problem 972	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	110	141	0	248	0	195	131
normalized size	1	1.00	1.17	1.50	0.00	2.64	0.00	2.07	1.39
time (sec)	N/A	0.038	0.250	0.057	0.000	2.852	0.000	0.260	1.732

Problem 973	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	114	138	0	244	0	196	128
normalized size	1	1.00	1.00	1.21	0.00	2.14	0.00	1.72	1.12
time (sec)	N/A	0.044	0.170	0.051	0.000	2.839	0.000	0.253	1.570

Problem 974	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	99	132	0	245	0	193	121
normalized size	1	1.00	1.10	1.47	0.00	2.72	0.00	2.14	1.34
time (sec)	N/A	0.021	0.101	0.056	0.000	2.806	0.000	0.306	1.521

Problem 975	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	179	390	0	1077	0	333	-1
normalized size	1	1.00	0.97	2.12	0.00	5.85	0.00	1.81	-0.01
time (sec)	N/A	0.128	0.128	0.053	0.000	5.939	0.000	0.255	0.000

Problem 976	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	285	709	0	1655	0	483	-1
normalized size	1	1.00	0.99	2.46	0.00	5.75	0.00	1.68	-0.00
time (sec)	N/A	0.312	0.435	0.070	0.000	8.420	0.000	0.267	0.000

Problem 977	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	343	1051	0	2057	0	765	-1
normalized size	1	1.00	0.90	2.76	0.00	5.40	0.00	2.01	-0.00
time (sec)	N/A	0.461	0.732	0.081	0.000	21.400	0.000	0.283	0.000

Problem 978	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	119	288	0	550	0	448	395
normalized size	1	1.00	0.88	2.13	0.00	4.07	0.00	3.32	2.93
time (sec)	N/A	0.038	0.240	0.062	0.000	10.252	0.000	0.282	1.951

Problem 979	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	159	500	0	941	0	788	599
normalized size	1	1.00	0.88	2.76	0.00	5.20	0.00	4.35	3.31
time (sec)	N/A	0.059	0.189	0.057	0.000	41.487	0.000	0.321	2.468

Problem 980	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	19	19	49	38	48	47	0	56	41
normalized size	1	1.00	2.58	2.00	2.53	2.47	0.00	2.95	2.16
time (sec)	N/A	0.015	0.007	0.055	0.711	0.682	0.000	0.198	1.829

Problem 981	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	47	42	39	44	70	43	41
normalized size	1	1.00	0.85	0.76	0.71	0.80	1.27	0.78	0.75
time (sec)	N/A	0.026	0.047	0.050	0.599	0.553	8.079	0.150	1.263

Problem 982	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	48	42	39	44	70	43	41
normalized size	1	1.00	0.87	0.76	0.71	0.80	1.27	0.78	0.75
time (sec)	N/A	0.024	0.048	0.053	0.568	0.610	3.972	0.188	0.045

Problem 983	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	48	42	39	44	70	43	41
normalized size	1	1.00	0.87	0.76	0.71	0.80	1.27	0.78	0.75
time (sec)	N/A	0.025	0.046	0.055	0.484	0.749	1.751	0.151	0.044

Problem 984	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	47	42	39	42	53	43	41
normalized size	1	1.00	0.85	0.76	0.71	0.76	0.96	0.78	0.75
time (sec)	N/A	0.024	0.045	0.053	0.497	0.474	2.792	0.219	0.044

Problem 985	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	46	42	39	39	68	43	41
normalized size	1	1.00	0.87	0.79	0.74	0.74	1.28	0.81	0.77
time (sec)	N/A	0.024	0.045	0.046	0.500	0.631	0.469	0.156	0.045

Problem 986	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	44	42	39	39	65	43	41
normalized size	1	1.00	0.86	0.82	0.76	0.76	1.27	0.84	0.80
time (sec)	N/A	0.024	0.043	0.058	0.555	0.688	0.638	0.151	0.049

Problem 987	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	42	41	39	38	63	41	41
normalized size	1	1.00	0.82	0.80	0.76	0.75	1.24	0.80	0.80
time (sec)	N/A	0.023	0.055	0.058	0.662	0.643	0.809	0.152	0.045

Problem 988	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	42	42	40	39	65	42	42
normalized size	1	1.00	0.82	0.82	0.78	0.76	1.27	0.82	0.82
time (sec)	N/A	0.022	0.043	0.052	0.690	0.676	1.428	0.166	1.295

Problem 989	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	45	42	39	39	70	41	41
normalized size	1	1.00	0.85	0.79	0.74	0.74	1.32	0.77	0.77
time (sec)	N/A	0.029	0.045	0.061	0.524	0.521	3.089	0.150	0.040

Problem 990	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	102	93	98	162	103	93
normalized size	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82
time (sec)	N/A	0.063	0.102	0.056	0.520	0.693	16.112	0.153	1.285

Problem 991	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	102	93	98	162	103	93
normalized size	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82
time (sec)	N/A	0.060	0.096	0.051	0.458	0.800	9.004	0.164	0.034

Problem 992	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	102	93	98	162	103	93
normalized size	1	1.00	0.90	0.90	0.82	0.87	1.43	0.91	0.82
time (sec)	N/A	0.059	0.117	0.050	0.535	0.606	5.770	0.158	0.034

Problem 993	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	102	102	93	96	121	103	93
normalized size	1	1.00	0.90	0.90	0.82	0.85	1.07	0.91	0.82
time (sec)	N/A	0.057	0.093	0.054	0.498	0.753	5.598	0.158	0.039

Problem 994	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	100	102	93	93	160	103	93
normalized size	1	1.00	0.90	0.92	0.84	0.84	1.44	0.93	0.84
time (sec)	N/A	0.056	0.119	0.049	0.531	0.902	2.050	0.157	0.034

Problem 995	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	97	102	93	93	156	103	93
normalized size	1	1.00	0.89	0.94	0.85	0.85	1.43	0.94	0.85
time (sec)	N/A	0.061	0.119	0.054	0.564	0.778	2.295	0.160	0.039

Problem 996	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	94	102	93	93	153	101	94
normalized size	1	1.00	0.86	0.94	0.85	0.85	1.40	0.93	0.86
time (sec)	N/A	0.055	0.117	0.059	0.574	0.837	2.886	0.168	0.039

Problem 997	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	95	102	94	93	151	102	94
normalized size	1	1.00	0.87	0.94	0.86	0.85	1.39	0.94	0.86
time (sec)	N/A	0.056	0.113	0.051	0.623	0.840	3.940	0.203	0.060

Problem 998	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	95	102	94	93	153	102	94
normalized size	1	1.00	0.87	0.94	0.86	0.85	1.40	0.94	0.86
time (sec)	N/A	0.056	0.085	0.052	0.478	0.545	5.881	0.161	1.282

Problem 999	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	178	192	166	171	294	193	169
normalized size	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93
time (sec)	N/A	0.125	0.199	0.049	0.559	0.715	36.591	0.226	0.070

Problem 1000	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	178	192	166	171	294	193	169
normalized size	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93
time (sec)	N/A	0.116	0.225	0.051	0.682	0.527	17.201	0.205	1.267

Problem 1001	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	178	192	166	171	294	193	169
normalized size	1	1.00	0.98	1.05	0.91	0.94	1.62	1.06	0.93
time (sec)	N/A	0.112	0.192	0.054	0.663	0.614	9.586	0.185	0.052

Problem 1002	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	178	192	166	169	216	193	169
normalized size	1	1.00	0.98	1.05	0.91	0.93	1.19	1.06	0.93
time (sec)	N/A	0.115	0.203	0.054	0.532	0.504	9.168	0.163	0.049

Problem 1003	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	176	192	166	166	291	193	169
normalized size	1	1.00	0.98	1.07	0.92	0.92	1.62	1.07	0.94
time (sec)	N/A	0.111	0.196	0.054	0.562	0.668	5.896	0.165	0.050

Problem 1004	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	176	176	173	192	166	166	284	193	169
normalized size	1	1.00	0.98	1.09	0.94	0.94	1.61	1.10	0.96
time (sec)	N/A	0.117	0.194	0.054	0.593	0.524	5.811	0.170	0.055

Problem 1005	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	170	192	166	166	280	191	170
normalized size	1	1.00	0.96	1.08	0.93	0.93	1.57	1.07	0.96
time (sec)	N/A	0.112	0.160	0.048	0.574	0.933	7.051	0.179	0.051

Problem 1006	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	169	192	167	166	275	192	170
normalized size	1	1.00	0.95	1.08	0.94	0.93	1.54	1.08	0.96
time (sec)	N/A	0.115	0.184	0.053	0.500	0.738	10.670	0.198	0.053

Problem 1007	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	168	192	167	166	270	192	170
normalized size	1	1.00	0.97	1.10	0.96	0.95	1.55	1.10	0.98
time (sec)	N/A	0.115	0.187	0.061	0.518	0.596	12.899	0.171	0.057

Problem 1008	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	178	178	172	192	167	166	275	192	170
normalized size	1	1.00	0.97	1.08	0.94	0.93	1.54	1.08	0.96
time (sec)	N/A	0.112	0.195	0.058	0.527	0.719	15.376	0.168	0.079

Problem 1009	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	480	1141	0	7707	0	5319	14120
normalized size	1	1.00	1.38	3.29	0.00	22.21	0.00	15.33	40.69
time (sec)	N/A	4.545	0.884	0.147	0.000	13.866	0.000	1.359	3.188

Problem 1010	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	413	855	0	5148	0	4399	10204
normalized size	1	1.00	1.50	3.11	0.00	18.72	0.00	16.00	37.11
time (sec)	N/A	1.481	0.639	0.096	0.000	4.934	0.000	1.376	2.641

Problem 1011	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	264	581	0	2642	14158	3186	6401
normalized size	1	1.00	1.19	2.63	0.00	11.95	64.06	14.42	28.96
time (sec)	N/A	0.812	0.221	0.083	0.000	1.449	22.134	1.177	2.420

Problem 1012	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	181	337	0	1577	4663	1404	4141
normalized size	1	1.00	1.01	1.87	0.00	8.76	25.91	7.80	23.01
time (sec)	N/A	0.285	0.278	0.107	0.000	1.110	24.864	0.952	2.181

Problem 1013	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	216	362	0	2925	0	2809	6367
normalized size	1	1.00	1.09	1.82	0.00	14.70	0.00	14.12	31.99
time (sec)	N/A	0.546	0.206	0.117	0.000	1.590	0.000	1.231	2.497

Problem 1014	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	258	630	0	5453	0	2874	10133
normalized size	1	1.00	0.91	2.22	0.00	19.20	0.00	10.12	35.68
time (sec)	N/A	0.806	0.582	0.116	0.000	1.988	0.000	1.290	3.345

Problem 1015	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	337	913	0	7971	0	5013	13983
normalized size	1	1.00	1.10	2.97	0.00	25.96	0.00	16.33	45.55
time (sec)	N/A	1.959	0.789	0.096	0.000	5.462	0.000	2.147	4.146

Problem 1016	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	381	381	430	1210	0	10514	0	4086	17910
normalized size	1	1.00	1.13	3.18	0.00	27.60	0.00	10.72	47.01
time (sec)	N/A	1.671	1.069	0.102	0.000	8.455	0.000	1.863	5.148

Problem 1017	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	411	411	413	1537	0	7251	0	5691	16631
normalized size	1	1.00	1.00	3.74	0.00	17.64	0.00	13.85	40.46
time (sec)	N/A	4.166	1.399	0.098	0.000	13.889	0.000	2.127	5.143

Problem 1018	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	321	321	339	1059	0	4653	0	4544	12408
normalized size	1	1.00	1.06	3.30	0.00	14.50	0.00	14.16	38.65
time (sec)	N/A	1.431	1.080	0.098	0.000	4.401	0.000	1.831	6.475

Problem 1019	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	295	755	0	3462	0	3781	9434
normalized size	1	1.00	1.07	2.74	0.00	12.54	0.00	13.70	34.18
time (sec)	N/A	0.958	0.682	0.094	0.000	2.377	0.000	1.597	5.599

Problem 1020	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	285	1796	0	4884	0	4434	12364
normalized size	1	1.00	0.94	5.91	0.00	16.07	0.00	14.59	40.67
time (sec)	N/A	0.834	0.634	0.367	0.000	5.745	0.000	1.811	5.996

Problem 1021	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	406	406	367	1273	0	7597	0	5405	17623
normalized size	1	1.00	0.90	3.14	0.00	18.71	0.00	13.31	43.41
time (sec)	N/A	0.977	0.996	0.104	0.000	20.464	0.000	2.215	6.704

Problem 1022	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	521	521	473	1679	0	10203	0	6335	21585
normalized size	1	1.00	0.91	3.22	0.00	19.58	0.00	12.16	41.43
time (sec)	N/A	1.555	1.834	0.184	0.000	56.325	0.000	2.562	6.804

Problem 1023	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	528	528	745	2061	0	9631	0	3997	22943
normalized size	1	1.00	1.41	3.90	0.00	18.24	0.00	7.57	43.45
time (sec)	N/A	9.319	2.582	0.130	0.000	50.855	0.000	2.415	5.961

Problem 1024	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	459	459	589	1669	0	7056	0	7586	19073
normalized size	1	1.00	1.28	3.64	0.00	15.37	0.00	16.53	41.55
time (sec)	N/A	4.687	2.146	0.180	0.000	17.225	0.000	3.364	4.976

Problem 1025	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	558	1312	0	5646	0	3170	16720
normalized size	1	1.00	1.35	3.17	0.00	13.64	0.00	7.66	40.39
time (sec)	N/A	2.037	1.661	0.114	0.000	11.658	0.000	2.335	4.706

Problem 1026	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	426	426	510	1364	0	7267	0	7277	19024
normalized size	1	1.00	1.20	3.20	0.00	17.06	0.00	17.08	44.66
time (sec)	N/A	1.246	1.435	0.109	0.000	23.314	0.000	3.195	5.049

Problem 1027	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	468	468	440	11936	0	9907	0	4621	22946
normalized size	1	1.00	0.94	25.50	0.00	21.17	0.00	9.87	49.03
time (sec)	N/A	1.660	1.685	0.835	0.000	60.512	0.000	2.465	5.813

Problem 1028	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	664	664	628	2918	0	12534	0	9534	29137
normalized size	1	1.00	0.95	4.39	0.00	18.88	0.00	14.36	43.88
time (sec)	N/A	1.710	2.311	0.125	0.000	139.067	0.000	3.357	8.044

Problem 1029	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	454	454	638	2884	0	0	0	0	-1
normalized size	1	1.00	1.41	6.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.582	4.917	0.157	0.000	1.045	0.000	0.000	0.000

Problem 1030	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	373	550	2012	0	0	0	0	-1
normalized size	1	1.00	1.47	5.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.345	3.983	0.150	0.000	0.687	0.000	0.000	0.000

Problem 1031	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	491	1652	0	0	0	0	-1
normalized size	1	1.00	1.44	4.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.316	2.361	0.188	0.000	1.100	0.000	0.000	0.000

Problem 1032	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	353	353	499	1687	0	0	0	0	-1
normalized size	1	1.00	1.41	4.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.333	2.798	0.130	0.000	1.067	0.000	0.000	0.000

Problem 1033	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	576	2109	0	0	0	0	-1
normalized size	1	1.00	1.37	5.01	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.439	4.050	0.127	0.000	1.191	0.000	0.000	0.000

Problem 1034	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	178	137	0	0	0	0	-1
normalized size	1	1.00	0.71	0.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.201	0.215	0.076	0.000	1.008	0.000	0.000	0.000

Problem 1035	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	170	132	0	0	0	0	-1
normalized size	1	1.00	0.75	0.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.173	0.170	0.072	0.000	0.932	0.000	0.000	0.000

Problem 1036	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	165	127	0	0	0	0	-1
normalized size	1	1.00	0.80	0.62	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.147	0.160	0.071	0.000	0.964	0.000	0.000	0.000

Problem 1037	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	163	122	0	0	0	0	-1
normalized size	1	1.00	0.90	0.67	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.126	0.168	0.071	0.000	0.936	0.000	0.000	0.000

Problem 1038	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	158	117	0	0	0	0	-1
normalized size	1	1.00	0.99	0.74	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.161	0.071	0.000	0.902	0.000	0.000	0.000

Problem 1039	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	153	113	0	0	0	0	-1
normalized size	1	1.00	0.96	0.71	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.173	0.085	0.000	0.761	0.000	0.000	0.000

Problem 1040	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	153	115	0	0	0	0	-1
normalized size	1	1.00	0.97	0.73	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	0.168	0.081	0.000	0.814	0.000	0.000	0.000

Problem 1041	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	153	124	0	0	0	0	-1
normalized size	1	1.00	0.85	0.69	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.114	0.170	0.076	0.000	0.613	0.000	0.000	0.000

Problem 1042	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	155	129	0	0	0	0	-1
normalized size	1	1.00	0.76	0.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.133	0.163	0.077	0.000	0.900	0.000	0.000	0.000

Problem 1043	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	160	134	0	0	0	0	-1
normalized size	1	1.00	0.70	0.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.157	0.170	0.099	0.000	0.872	0.000	0.000	0.000

Problem 1044	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	183	142	0	0	0	0	-1
normalized size	1	1.00	0.71	0.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.197	0.198	0.077	0.000	0.954	0.000	0.000	0.000

Problem 1045	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	178	137	0	0	0	0	-1
normalized size	1	1.00	0.76	0.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.172	0.189	0.061	0.000	0.891	0.000	0.000	0.000

Problem 1046	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	173	132	0	0	0	0	-1
normalized size	1	1.00	0.82	0.63	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.146	0.192	0.063	0.000	0.821	0.000	0.000	0.000

Problem 1047	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	165	127	0	0	0	0	-1
normalized size	1	1.00	0.88	0.68	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.163	0.066	0.000	0.945	0.000	0.000	0.000

Problem 1048	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	163	123	0	0	0	0	-1
normalized size	1	1.00	0.87	0.66	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.179	0.122	0.000	0.937	0.000	0.000	0.000

Problem 1049	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	163	125	0	0	0	0	-1
normalized size	1	1.00	0.89	0.68	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	0.195	0.086	0.000	0.916	0.000	0.000	0.000

Problem 1050	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	163	129	0	0	0	0	-1
normalized size	1	1.00	0.88	0.70	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.189	0.107	0.000	0.961	0.000	0.000	0.000

Problem 1051	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	163	129	0	0	0	0	-1
normalized size	1	1.00	0.87	0.69	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.119	0.177	0.093	0.000	0.808	0.000	0.000	0.000

Problem 1052	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	160	134	0	0	0	0	-1
normalized size	1	1.00	0.76	0.64	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.132	0.169	0.077	0.000	0.950	0.000	0.000	0.000

Problem 1053	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	165	139	0	0	0	0	-1
normalized size	1	1.00	0.71	0.60	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.152	0.173	0.087	0.000	0.720	0.000	0.000	0.000

Problem 1054	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	170	144	0	0	0	0	-1
normalized size	1	1.00	0.66	0.56	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.179	0.182	0.085	0.000	0.701	0.000	0.000	0.000

Problem 1055	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	300	300	444	538	0	0	0	0	-1
normalized size	1	1.00	1.48	1.79	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.219	1.695	0.119	0.000	0.699	0.000	0.000	0.000

Problem 1056	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	168	127	0	0	0	0	-1
normalized size	1	1.00	0.75	0.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.163	0.189	0.093	0.000	0.951	0.000	0.000	0.000

Problem 1057	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	160	122	0	0	0	0	-1
normalized size	1	1.00	0.80	0.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.143	0.166	0.150	0.000	0.911	0.000	0.000	0.000

Problem 1058	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	158	117	0	0	0	0	-1
normalized size	1	1.00	0.89	0.66	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.174	0.107	0.000	1.021	0.000	0.000	0.000

Problem 1059	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	150	112	0	0	0	0	-1
normalized size	1	1.00	0.97	0.73	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.159	0.074	0.000	0.849	0.000	0.000	0.000

Problem 1060	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	129	150	77	0	0	0	0	-1
normalized size	1	1.00	1.16	0.60	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.151	0.089	0.000	0.909	0.000	0.000	0.000

Problem 1061	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	90	108	0	0	0	0	-1
normalized size	1	1.00	0.62	0.74	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.092	0.142	0.083	0.000	0.847	0.000	0.000	0.000

Problem 1062	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	148	115	0	0	0	0	-1
normalized size	1	1.00	0.85	0.66	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.112	0.157	0.078	0.000	0.956	0.000	0.000	0.000

Problem 1063	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	150	124	0	0	0	0	-1
normalized size	1	1.00	0.77	0.63	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.136	0.165	0.082	0.000	0.844	0.000	0.000	0.000

Problem 1064	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	156	117	0	0	0	0	-1
normalized size	1	1.00	0.79	0.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.140	0.176	0.112	0.000	0.617	0.000	0.000	0.000

Problem 1065	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	150	112	0	0	0	0	-1
normalized size	1	1.00	0.82	0.62	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.120	0.173	0.082	0.000	0.754	0.000	0.000	0.000

Problem 1066	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	145	107	0	0	0	0	-1
normalized size	1	1.00	0.91	0.67	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	0.160	0.082	0.000	0.924	0.000	0.000	0.000

Problem 1067	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	140	107	0	0	0	0	-1
normalized size	1	1.00	0.90	0.69	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.101	0.152	0.122	0.000	0.923	0.000	0.000	0.000

Problem 1068	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	137	107	0	0	0	0	-1
normalized size	1	1.00	0.91	0.71	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.091	0.162	0.094	0.000	0.985	0.000	0.000	0.000

Problem 1069	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	137	108	0	0	0	0	-1
normalized size	1	1.00	0.80	0.63	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.170	0.097	0.000	1.125	0.000	0.000	0.000

Problem 1070	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	145	115	0	0	0	0	-1
normalized size	1	1.00	0.72	0.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.122	0.166	0.094	0.000	1.106	0.000	0.000	0.000

Problem 1071	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	150	124	0	0	0	0	-1
normalized size	1	1.00	0.67	0.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.144	0.172	0.109	0.000	0.754	0.000	0.000	0.000

Problem 1072	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	187	312	0	0	0	0	-1
normalized size	1	1.00	0.73	1.22	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.188	0.271	0.120	0.000	0.908	0.000	0.000	0.000

Problem 1073	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	179	307	0	0	0	0	-1
normalized size	1	1.00	0.77	1.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.164	0.263	0.088	0.000	0.913	0.000	0.000	0.000

Problem 1074	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	177	302	0	0	0	0	-1
normalized size	1	1.00	0.84	1.44	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.147	0.258	0.090	0.000	0.894	0.000	0.000	0.000

Problem 1075	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	169	297	0	0	0	0	-1
normalized size	1	1.00	0.90	1.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.122	0.252	0.085	0.000	0.893	0.000	0.000	0.000

Problem 1076	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	167	297	0	0	0	0	-1
normalized size	1	1.00	0.89	1.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.254	0.091	0.000	0.945	0.000	0.000	0.000

Problem 1077	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	164	297	0	0	0	0	-1
normalized size	1	1.00	0.88	1.59	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.247	0.131	0.000	0.939	0.000	0.000	0.000

Problem 1078	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	165	297	0	0	0	0	-1
normalized size	1	1.00	0.92	1.66	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.113	0.299	0.092	0.000	0.963	0.000	0.000	0.000

Problem 1079	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	167	297	0	0	0	0	-1
normalized size	1	1.00	0.90	1.61	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.110	0.245	0.106	0.000	0.897	0.000	0.000	0.000

Problem 1080	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	167	298	0	0	0	0	-1
normalized size	1	1.00	0.80	1.43	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.124	0.250	0.101	0.000	0.895	0.000	0.000	0.000

Problem 1081	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	169	309	0	0	0	0	-1
normalized size	1	1.00	0.75	1.37	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.145	0.253	0.103	0.000	0.908	0.000	0.000	0.000

Problem 1082	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	177	318	0	0	0	0	-1
normalized size	1	1.00	0.69	1.24	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.167	0.261	0.099	0.000	0.977	0.000	0.000	0.000

Problem 1083	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	672	1903	408	1350	11388	2736	769
normalized size	1	1.00	2.80	7.93	1.70	5.62	47.45	11.40	3.20
time (sec)	N/A	0.190	1.418	0.051	1.009	0.957	5.524	0.338	2.028

Problem 1084	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	289	759	230	573	4150	1142	405
normalized size	1	1.00	1.86	4.90	1.48	3.70	26.77	7.37	2.61
time (sec)	N/A	0.097	0.479	0.051	0.787	0.914	2.629	0.249	1.656

Problem 1085	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	91	205	104	171	1022	338	171
normalized size	1	1.00	1.10	2.47	1.25	2.06	12.31	4.07	2.06
time (sec)	N/A	0.042	0.114	0.044	0.688	0.936	1.018	0.173	1.440

Problem 1086	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	135	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.305	0.276	1.495	0.000	0.871	0.000	0.000	0.000

Problem 1087	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	318	317	253	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.883	1.002	1.411	0.000	0.692	0.000	0.000	0.000

Problem 1088	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	618	0	0	0	0	0	-1
normalized size	1	1.00	2.20	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.548	1.333	1.707	0.000	0.901	0.000	0.000	0.000

Problem 1089	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	405	0	0	0	0	0	-1
normalized size	1	1.00	1.44	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.414	0.452	1.439	0.000	0.982	0.000	0.000	0.000

Problem 1090	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	234	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.413	0.179	1.188	0.000	0.922	0.000	0.000	0.000

Problem 1091	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	234	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.407	0.209	1.158	0.000	0.890	0.000	0.000	0.000

Problem 1092	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	272	0	0	0	0	0	-1
normalized size	1	1.00	0.97	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.407	0.345	1.241	0.000	0.871	0.000	0.000	0.000

Problem 1093	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	281	281	237	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.411	0.330	1.232	0.000	0.826	0.000	0.000	0.000

Problem 1094	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	232	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.404	0.349	1.254	0.000	0.686	0.000	0.000	0.000

Problem 1095	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	442	442	210	0	0	0	0	0	-1
normalized size	1	1.00	0.48	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.743	0.395	1.571	0.000	0.664	0.000	0.000	0.000

Problem 1096	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	210	0	0	0	0	0	-1
normalized size	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.287	0.308	1.552	0.000	0.835	0.000	0.000	0.000

Problem 1097	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	211	211	210	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.089	0.281	1.332	0.000	0.959	0.000	0.000	0.000

Problem 1098	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	268	0	0	0	0	0	-1
normalized size	1	1.00	1.70	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.049	0.396	1.184	0.000	0.893	0.000	0.000	0.000

Problem 1099	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	273	273	263	0	0	0	0	0	-1
normalized size	1	1.00	0.96	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.148	0.381	1.228	0.000	0.863	0.000	0.000	0.000

Problem 1100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	315	315	289	0	0	0	0	0	-1
normalized size	1	1.00	0.92	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.203	0.243	1.288	0.000	0.919	0.000	0.000	0.000

Problem 1101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	376	375	295	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.356	0.298	1.199	0.000	0.697	0.000	0.000	0.000

Problem 1102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	118	402	288	427	4537	847	400
normalized size	1	1.00	0.87	2.96	2.12	3.14	33.36	6.23	2.94
time (sec)	N/A	0.098	0.117	0.050	0.763	0.894	4.746	0.182	1.644

Problem 1103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	177	200	178	218	230	210	182
normalized size	1	1.00	1.50	1.69	1.51	1.85	1.95	1.78	1.54
time (sec)	N/A	0.175	0.060	0.045	0.476	0.815	0.104	0.168	0.096

Problem 1104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	135	152	137	168	177	164	146
normalized size	1	1.00	1.14	1.29	1.16	1.42	1.50	1.39	1.24
time (sec)	N/A	0.137	0.043	0.049	0.609	0.803	0.093	0.157	1.374

Problem 1105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	91	104	96	117	121	117	102
normalized size	1	1.00	0.92	1.05	0.97	1.18	1.22	1.18	1.03
time (sec)	N/A	0.101	0.042	0.046	0.523	0.568	0.084	0.161	0.047

Problem 1106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	55	56	55	65	66	69	57
normalized size	1	1.00	0.90	0.92	0.90	1.07	1.08	1.13	0.93
time (sec)	N/A	0.063	0.022	0.040	0.555	0.459	0.073	0.154	1.355

Problem 1107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	29	28	27	29	29	29	28
normalized size	1	1.00	0.88	0.85	0.82	0.88	0.88	0.88	0.85
time (sec)	N/A	0.023	0.005	0.043	0.576	0.880	0.065	0.147	1.337

Problem 1108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	88	138	105	106	95	117	113
normalized size	1	1.00	1.01	1.59	1.21	1.22	1.09	1.34	1.30
time (sec)	N/A	0.098	0.044	0.040	0.542	0.687	0.341	0.163	0.075

Problem 1109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	93	155	109	170	121	167	116
normalized size	1	1.00	0.94	1.57	1.10	1.72	1.22	1.69	1.17
time (sec)	N/A	0.115	0.078	0.056	0.608	0.855	0.658	0.161	1.395

Problem 1110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	96	174	120	186	138	113	123
normalized size	1	1.00	0.92	1.67	1.15	1.79	1.33	1.09	1.18
time (sec)	N/A	0.107	0.082	0.055	0.488	0.655	1.491	0.158	0.113

Problem 1111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	112	182	137	168	158	119	134
normalized size	1	1.00	1.01	1.64	1.23	1.51	1.42	1.07	1.21
time (sec)	N/A	0.106	0.053	0.048	0.550	0.862	3.200	0.151	1.405

Problem 1112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	101	118	140	140	168	177	134
normalized size	1	1.00	0.87	1.02	1.21	1.21	1.45	1.53	1.16
time (sec)	N/A	0.099	0.044	0.047	0.589	0.875	6.109	0.235	0.068

Problem 1113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	104	118	156	156	185	115	154
normalized size	1	1.00	0.88	1.00	1.32	1.32	1.57	0.97	1.31
time (sec)	N/A	0.100	0.048	0.058	0.625	0.819	10.373	0.151	0.078

Problem 1114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	282	282	309	1616	755	1417	0	2827	1176
normalized size	1	1.00	1.10	5.73	2.68	5.02	0.00	10.02	4.17
time (sec)	N/A	0.227	0.444	0.057	0.757	0.789	0.000	0.268	2.100

Problem 1115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	228	247	239	291	301	285	234
normalized size	1	1.00	1.00	1.08	1.05	1.28	1.32	1.25	1.03
time (sec)	N/A	0.248	0.081	0.039	0.580	0.755	0.113	0.155	0.110

Problem 1116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	162	172	171	205	212	205	161
normalized size	1	1.00	1.00	1.06	1.06	1.27	1.31	1.27	0.99
time (sec)	N/A	0.224	0.055	0.044	0.642	0.725	0.101	0.150	0.056

Problem 1117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	101	97	103	117	121	123	102
normalized size	1	1.00	1.01	0.97	1.03	1.17	1.21	1.23	1.02
time (sec)	N/A	0.112	0.030	0.044	0.489	0.539	0.086	0.155	0.048

Problem 1118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	49	52	51	53	54	53	51
normalized size	1	1.00	0.89	0.95	0.93	0.96	0.98	0.96	0.93
time (sec)	N/A	0.044	0.013	0.039	0.473	0.713	0.076	0.159	1.343

Problem 1119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	156	369	282	283	280	322	308
normalized size	1	1.00	0.97	2.29	1.75	1.76	1.74	2.00	1.91
time (sec)	N/A	0.226	0.141	0.047	0.536	0.891	0.621	0.155	1.368

Problem 1120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	184	394	291	420	316	380	371
normalized size	1	1.00	0.95	2.03	1.50	2.16	1.63	1.96	1.91
time (sec)	N/A	0.278	0.077	0.053	0.527	0.918	1.386	0.169	1.430

Problem 1121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	232	232	219	420	302	483	362	307	334
normalized size	1	1.00	0.94	1.81	1.30	2.08	1.56	1.32	1.44
time (sec)	N/A	0.321	0.159	0.057	0.622	0.606	4.072	0.159	0.145

Problem 1122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	220	446	311	505	374	299	328
normalized size	1	1.00	0.92	1.87	1.31	2.12	1.57	1.26	1.38
time (sec)	N/A	0.300	0.161	0.069	0.541	0.905	11.733	0.158	0.141

Problem 1123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	275	465	321	475	381	474	338
normalized size	1	1.00	1.15	1.94	1.34	1.98	1.59	1.98	1.41
time (sec)	N/A	0.282	0.142	0.063	0.580	0.614	32.260	0.177	1.470

Problem 1124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	269	472	340	407	405	301	343
normalized size	1	1.00	1.08	1.90	1.37	1.64	1.63	1.21	1.38
time (sec)	N/A	0.240	0.125	0.063	0.672	0.699	94.462	0.158	1.465

Problem 1125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	253	253	257	307	340	340	0	318	337
normalized size	1	1.00	1.02	1.21	1.34	1.34	0.00	1.26	1.33
time (sec)	N/A	0.227	0.111	0.052	0.643	0.826	0.000	0.179	0.133

Problem 1126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	260	307	359	359	0	320	357
normalized size	1	1.00	1.02	1.20	1.41	1.41	0.00	1.25	1.40
time (sec)	N/A	0.224	0.110	0.051	0.705	0.921	0.000	0.157	0.120

Problem 1127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	484	484	525	4138	1527	3254	0	6663	2500
normalized size	1	1.00	1.08	8.55	3.15	6.72	0.00	13.77	5.17
time (sec)	N/A	0.407	0.980	0.072	0.981	1.094	0.000	0.390	2.881

Problem 1128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	412	412	412	444	428	540	564	524	445
normalized size	1	1.00	1.00	1.08	1.04	1.31	1.37	1.27	1.08
time (sec)	N/A	0.510	0.155	0.045	0.508	0.682	0.147	0.160	0.160

Problem 1129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	305	342	329	416	430	408	340
normalized size	1	1.00	1.00	1.12	1.08	1.36	1.41	1.34	1.11
time (sec)	N/A	0.475	0.116	0.044	0.589	0.844	0.131	0.200	1.419

Problem 1130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	225	240	242	292	303	292	235
normalized size	1	1.00	1.00	1.07	1.08	1.30	1.35	1.30	1.04
time (sec)	N/A	0.298	0.078	0.042	0.466	0.773	0.115	0.176	0.092

Problem 1131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	141	138	149	169	177	177	147
normalized size	1	1.00	1.01	0.99	1.07	1.22	1.27	1.27	1.06
time (sec)	N/A	0.163	0.044	0.040	0.527	0.802	0.094	0.190	1.372

Problem 1132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	75	76	73	77	80	77	69
normalized size	1	1.00	1.00	1.01	0.97	1.03	1.07	1.03	0.92
time (sec)	N/A	0.074	0.012	0.041	0.553	0.750	0.083	0.150	0.038

Problem 1133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	248	708	530	531	578	629	560
normalized size	1	1.00	0.96	2.75	2.06	2.07	2.25	2.45	2.18
time (sec)	N/A	0.449	0.102	0.055	0.554	0.851	1.008	0.183	1.387

Problem 1134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	274	742	541	722	619	673	997
normalized size	1	1.00	0.95	2.59	1.89	2.52	2.16	2.34	3.47
time (sec)	N/A	0.545	0.119	0.066	0.532	0.865	2.288	0.198	1.444

Problem 1135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	342	775	550	819	660	599	828
normalized size	1	1.00	0.95	2.16	1.53	2.28	1.84	1.67	2.31
time (sec)	N/A	0.583	0.146	0.096	0.670	0.895	7.266	0.186	0.190

Problem 1136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	422	422	400	807	561	910	700	581	676
normalized size	1	1.00	0.95	1.91	1.33	2.16	1.66	1.38	1.60
time (sec)	N/A	0.636	0.160	0.073	0.570	0.971	23.065	0.165	0.202

Problem 1137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	187	396	309	331	396	330	322
normalized size	1	1.00	0.90	1.91	1.49	1.60	1.91	1.59	1.56
time (sec)	N/A	0.263	0.133	0.050	0.502	0.983	7.180	0.156	1.675

Problem 1138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	118	252	200	216	264	207	208
normalized size	1	1.00	0.92	1.97	1.56	1.69	2.06	1.62	1.62
time (sec)	N/A	0.156	0.078	0.056	0.607	0.892	4.588	0.152	1.582

Problem 1139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	74	144	115	125	163	117	122
normalized size	1	1.00	0.96	1.87	1.49	1.62	2.12	1.52	1.58
time (sec)	N/A	0.086	0.044	0.050	0.589	0.828	2.803	0.151	0.193

Problem 1140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	46	68	57	57	88	59	58
normalized size	1	1.00	1.02	1.51	1.27	1.27	1.96	1.31	1.29
time (sec)	N/A	0.045	0.023	0.046	0.504	0.808	1.364	0.146	0.177

Problem 1141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	29	32	29	28	41	31	28
normalized size	1	1.00	1.00	1.10	1.00	0.97	1.41	1.07	0.97
time (sec)	N/A	0.020	0.010	0.049	0.471	0.745	0.412	0.180	1.400

Problem 1142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	63	94	68	65	0	85	67
normalized size	1	1.00	0.93	1.38	1.00	0.96	0.00	1.25	0.99
time (sec)	N/A	0.073	0.043	0.058	0.529	3.175	0.000	0.160	1.671

Problem 1143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	106	169	150	260	0	323	141
normalized size	1	1.00	0.96	1.54	1.36	2.36	0.00	2.94	1.28
time (sec)	N/A	0.134	0.136	0.060	0.626	20.772	0.000	0.238	1.809

Problem 1144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	169	275	312	644	0	308	284
normalized size	1	1.00	0.99	1.61	1.82	3.77	0.00	1.80	1.66
time (sec)	N/A	0.225	0.203	0.054	0.707	76.908	0.000	0.160	1.965

Problem 1145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F(-1)	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	241	415	553	0	0	475	471
normalized size	1	1.00	0.98	1.69	2.26	0.00	0.00	1.94	1.92
time (sec)	N/A	0.302	0.338	0.081	0.784	0.000	0.000	0.169	2.248

Problem 1146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	155	403	310	517	644	315	331
normalized size	1	1.00	0.99	2.58	1.99	3.31	4.13	2.02	2.12
time (sec)	N/A	0.225	0.088	0.062	0.504	1.314	15.978	0.155	1.737

Problem 1147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	128	286	225	362	502	229	212
normalized size	1	1.00	1.00	2.23	1.76	2.83	3.92	1.79	1.66
time (sec)	N/A	0.159	0.070	0.062	0.514	1.237	9.384	0.189	1.594

Problem 1148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	101	199	165	258	367	167	154
normalized size	1	1.00	0.94	1.84	1.53	2.39	3.40	1.55	1.43
time (sec)	N/A	0.121	0.112	0.051	0.474	0.944	3.861	0.155	0.267

Problem 1149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	80	133	106	184	233	112	117
normalized size	1	1.00	0.93	1.55	1.23	2.14	2.71	1.30	1.36
time (sec)	N/A	0.082	0.101	0.056	0.470	0.951	1.221	0.156	1.438

Problem 1150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	56	78	67	107	128	71	58
normalized size	1	1.00	0.90	1.26	1.08	1.73	2.06	1.15	0.94
time (sec)	N/A	0.050	0.045	0.055	0.644	0.806	0.474	0.160	1.416

Problem 1151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	146	248	227	450	0	268	201
normalized size	1	1.00	0.99	1.69	1.54	3.06	0.00	1.82	1.37
time (sec)	N/A	0.199	0.164	0.058	0.707	67.634	0.000	0.163	2.044

Problem 1152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	201	357	467	0	0	670	410
normalized size	1	1.00	1.00	1.78	2.32	0.00	0.00	3.33	2.04
time (sec)	N/A	0.331	0.315	0.076	0.713	0.000	0.000	0.282	2.405

Problem 1153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	279	528	813	0	0	745	726
normalized size	1	1.00	0.99	1.87	2.87	0.00	0.00	2.63	2.57
time (sec)	N/A	0.462	0.488	0.105	1.111	0.000	0.000	0.204	2.937

Problem 1154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	254	661	513	889	0	511	498
normalized size	1	1.00	0.99	2.57	2.00	3.46	0.00	1.99	1.94
time (sec)	N/A	0.428	0.129	0.072	0.802	1.557	0.000	0.161	1.835

Problem 1155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	228	536	430	736	881	428	403
normalized size	1	1.00	0.97	2.28	1.83	3.13	3.75	1.82	1.71
time (sec)	N/A	0.332	0.158	0.057	0.596	1.465	77.980	0.163	1.803

Problem 1156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	177	440	347	627	653	391	345
normalized size	1	1.00	0.96	2.38	1.88	3.39	3.53	2.11	1.86
time (sec)	N/A	0.246	0.123	0.056	0.550	1.359	28.928	0.176	1.617

Problem 1157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	190	365	293	558	660	324	319
normalized size	1	1.00	0.96	1.84	1.48	2.82	3.33	1.64	1.61
time (sec)	N/A	0.245	0.267	0.060	0.590	1.333	10.666	0.193	0.257

Problem 1158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	162	261	217	410	449	225	223
normalized size	1	1.00	0.96	1.55	1.29	2.44	2.67	1.34	1.33
time (sec)	N/A	0.210	0.145	0.058	0.499	1.368	2.867	0.157	1.532

Problem 1159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	106	138	131	225	219	124	136
normalized size	1	1.00	0.97	1.27	1.20	2.06	2.01	1.14	1.25
time (sec)	N/A	0.099	0.078	0.048	0.510	0.870	0.716	0.154	0.107

Problem 1160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	279	279	276	490	612	0	0	649	512
normalized size	1	1.00	0.99	1.76	2.19	0.00	0.00	2.33	1.84
time (sec)	N/A	0.502	1.052	0.072	0.708	0.000	0.000	0.242	2.613

Problem 1161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	328	598	1043	0	0	1292	879
normalized size	1	1.00	0.99	1.81	3.15	0.00	0.00	3.90	2.66
time (sec)	N/A	0.672	0.551	0.084	0.909	0.000	0.000	0.365	3.260

Problem 1162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	404	404	422	1027	760	1022	0	521	827
normalized size	1	1.00	1.04	2.54	1.88	2.53	0.00	1.29	2.05
time (sec)	N/A	0.547	1.076	0.062	0.763	1.268	0.000	0.232	3.839

Problem 1163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	293	671	512	684	0	349	537
normalized size	1	1.00	1.10	2.51	1.92	2.56	0.00	1.31	2.01
time (sec)	N/A	0.274	0.585	0.059	0.614	0.614	0.000	0.216	3.030

Problem 1164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	177	372	295	408	0	205	299
normalized size	1	1.00	1.15	2.42	1.92	2.65	0.00	1.33	1.94
time (sec)	N/A	0.141	0.431	0.050	0.537	0.721	0.000	0.232	2.441

Problem 1165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	108	157	154	204	0	102	127
normalized size	1	1.00	1.11	1.62	1.59	2.10	0.00	1.05	1.31
time (sec)	N/A	0.039	0.183	0.047	0.561	0.647	0.000	0.271	1.695

Problem 1166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	208	1069	0	800	0	0	-1
normalized size	1	1.00	1.04	5.34	0.00	4.00	0.00	0.00	-0.00
time (sec)	N/A	0.276	0.695	0.057	0.000	1.920	0.000	0.000	0.000

Problem 1167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	252	2285	0	1513	0	0	-1
normalized size	1	1.00	1.36	12.35	0.00	8.18	0.00	0.00	-0.01
time (sec)	N/A	0.186	1.261	0.059	0.000	1.708	0.000	0.000	0.000

Problem 1168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	235	235	690	4316	0	2234	0	819	-1
normalized size	1	1.00	2.94	18.37	0.00	9.51	0.00	3.49	-0.00
time (sec)	N/A	0.323	3.647	0.066	0.000	3.347	0.000	0.397	0.000

Problem 1169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	199	6956	0	1216	0	1555	-1
normalized size	1	1.00	1.00	34.78	0.00	6.08	0.00	7.78	-0.00
time (sec)	N/A	0.181	0.386	0.066	0.000	1.008	0.000	0.344	0.000

Problem 1170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	279	10550	0	2190	0	1720	-1
normalized size	1	1.00	0.90	34.03	0.00	7.06	0.00	5.55	-0.00
time (sec)	N/A	0.405	0.747	0.099	0.000	0.754	0.000	1.368	0.000

Problem 1171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	387	15015	0	3454	0	4102	-1
normalized size	1	1.00	0.86	33.44	0.00	7.69	0.00	9.14	-0.00
time (sec)	N/A	0.782	2.708	0.089	0.000	1.093	0.000	0.544	0.000

Problem 1172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	415	949	728	987	0	518	-1
normalized size	1	1.00	1.20	2.75	2.11	2.86	0.00	1.50	-0.00
time (sec)	N/A	0.337	1.597	0.061	0.598	0.964	0.000	0.249	0.000

Problem 1173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	245	544	434	603	0	317	-1
normalized size	1	1.00	1.17	2.60	2.08	2.89	0.00	1.52	-0.00
time (sec)	N/A	0.191	0.590	0.056	0.538	0.745	0.000	0.239	0.000

Problem 1174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	146	239	236	297	0	162	208
normalized size	1	1.00	1.09	1.78	1.76	2.22	0.00	1.21	1.55
time (sec)	N/A	0.053	0.251	0.048	0.550	0.869	0.000	0.218	1.849

Problem 1175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	392	392	386	2334	0	1695	0	0	-1
normalized size	1	1.00	0.98	5.95	0.00	4.32	0.00	0.00	-0.00
time (sec)	N/A	0.590	1.409	0.051	0.000	50.274	0.000	0.000	0.000

Problem 1176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	353	4283	0	2017	0	0	-1
normalized size	1	1.00	1.09	13.26	0.00	6.24	0.00	0.00	-0.00
time (sec)	N/A	0.424	1.641	0.064	0.000	5.947	0.000	0.000	0.000

Problem 1177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	314	314	1358	7365	0	3342	0	936	-1
normalized size	1	1.00	4.32	23.46	0.00	10.64	0.00	2.98	-0.00
time (sec)	N/A	0.427	6.125	0.064	0.000	2.904	0.000	0.522	0.000

Problem 1178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	426	426	1533	11396	0	5005	0	1788	-1
normalized size	1	1.00	3.60	26.75	0.00	11.75	0.00	4.20	-0.00
time (sec)	N/A	0.530	6.192	0.071	0.000	10.210	0.000	0.667	0.000

Problem 1179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	1984	16396	0	5781	0	1255	-1
normalized size	1	1.00	4.71	38.95	0.00	13.73	0.00	2.98	-0.00
time (sec)	N/A	0.539	6.206	0.077	0.000	32.635	0.000	1.191	0.000

Problem 1180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	268	22107	0	2338	0	4214	-1
normalized size	1	1.00	1.00	82.18	0.00	8.69	0.00	15.67	-0.00
time (sec)	N/A	0.231	1.043	0.092	0.000	0.721	0.000	0.704	0.000

Problem 1181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	402	402	352	29243	0	3734	0	5748	-1
normalized size	1	1.00	0.88	72.74	0.00	9.29	0.00	14.30	-0.00
time (sec)	N/A	0.578	1.326	0.096	0.000	0.731	0.000	0.811	0.000

Problem 1182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	565	565	505	37630	0	5398	0	7914	-1
normalized size	1	1.00	0.89	66.60	0.00	9.55	0.00	14.01	-0.00
time (sec)	N/A	1.015	3.505	0.406	0.000	0.879	0.000	0.981	0.000

Problem 1183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	417	1227	944	1292	0	681	-1
normalized size	1	1.00	0.99	2.90	2.23	3.05	0.00	1.61	-0.00
time (sec)	N/A	0.433	1.450	0.076	0.598	0.669	0.000	0.304	0.000

Problem 1184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	315	716	573	802	0	425	-1
normalized size	1	1.00	1.19	2.71	2.17	3.04	0.00	1.61	-0.00
time (sec)	N/A	0.250	0.798	0.053	0.544	0.679	0.000	0.270	0.000

Problem 1185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	171	321	318	392	0	221	-1
normalized size	1	1.00	1.00	1.88	1.86	2.29	0.00	1.29	-0.01
time (sec)	N/A	0.073	0.344	0.046	0.623	0.641	0.000	0.256	0.000

Problem 1186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	703	703	650	4097	0	0	0	0	-1
normalized size	1	1.00	0.92	5.83	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.125	2.466	0.056	0.000	0.000	0.000	0.000	0.000

Problem 1187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	574	574	618	7095	0	0	0	0	-1
normalized size	1	1.00	1.08	12.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.928	3.197	0.062	0.000	0.000	0.000	0.000	0.000

Problem 1188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	508	508	2047	11558	0	4075	0	1425	-1
normalized size	1	1.00	4.03	22.75	0.00	8.02	0.00	2.81	-0.00
time (sec)	N/A	0.748	6.174	0.072	0.000	27.285	0.000	0.630	0.000

Problem 1189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	495	495	2233	17133	0	5934	0	1907	-1
normalized size	1	1.00	4.51	34.61	0.00	11.99	0.00	3.85	-0.00
time (sec)	N/A	0.662	6.261	0.087	0.000	10.961	0.000	0.801	0.000

Problem 1190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	633	633	2680	23819	0	8045	0	0	-1
normalized size	1	1.00	4.23	37.63	0.00	12.71	0.00	0.00	-0.00
time (sec)	N/A	0.902	6.288	0.089	0.000	31.818	0.000	0.000	0.000

Problem 1191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	278	646	474	621	0	311	-1
normalized size	1	1.00	0.91	2.12	1.55	2.04	0.00	1.02	-0.00
time (sec)	N/A	0.443	0.790	0.063	0.587	0.931	0.000	0.329	0.000

Problem 1192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	190	395	299	391	0	196	-1
normalized size	1	1.00	1.01	2.09	1.58	2.07	0.00	1.04	-0.01
time (sec)	N/A	0.190	0.224	0.059	0.678	0.848	0.000	0.282	0.000

Problem 1193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	115	202	159	217	0	110	-1
normalized size	1	1.00	1.16	2.04	1.61	2.19	0.00	1.11	-0.01
time (sec)	N/A	0.076	0.327	0.049	0.698	0.971	0.000	0.281	0.000

Problem 1194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	80	78	75	115	0	60	77
normalized size	1	1.00	1.45	1.42	1.36	2.09	0.00	1.09	1.40
time (sec)	N/A	0.033	0.059	0.047	0.592	0.763	0.000	0.267	2.120

Problem 1195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	113	113	131	298	0	534	0	0	-1
normalized size	1	1.00	1.16	2.64	0.00	4.73	0.00	0.00	-0.01
time (sec)	N/A	0.082	0.166	0.049	0.000	1.055	0.000	0.000	0.000

Problem 1196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	133	849	0	399	0	509	-1
normalized size	1	1.00	1.04	6.63	0.00	3.12	0.00	3.98	-0.01
time (sec)	N/A	0.085	0.070	0.062	0.000	0.892	0.000	1.096	0.000

Problem 1197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	217	1821	0	954	0	769	-1
normalized size	1	1.00	1.00	8.43	0.00	4.42	0.00	3.56	-0.00
time (sec)	N/A	0.263	0.390	0.060	0.000	0.706	0.000	0.310	0.000

Problem 1198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	345	3242	0	1781	0	1667	-1
normalized size	1	1.00	1.04	9.79	0.00	5.38	0.00	5.04	-0.00
time (sec)	N/A	0.497	1.716	0.128	0.000	1.040	0.000	0.385	0.000

Problem 1199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	229	450	367	694	0	251	-1
normalized size	1	1.00	0.96	1.89	1.54	2.92	0.00	1.05	-0.00
time (sec)	N/A	0.215	0.234	0.063	0.723	1.021	0.000	0.314	0.000

Problem 1200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	150	252	227	446	0	155	-1
normalized size	1	1.00	0.99	1.67	1.50	2.95	0.00	1.03	-0.01
time (sec)	N/A	0.150	0.199	0.061	0.586	0.904	0.000	0.318	0.000

Problem 1201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	101	113	125	254	0	95	101
normalized size	1	1.00	1.19	1.33	1.47	2.99	0.00	1.12	1.19
time (sec)	N/A	0.038	0.067	0.053	0.571	1.147	0.000	0.305	2.273

Problem 1202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	30	37	55	44	0	33	31
normalized size	1	1.00	0.91	1.12	1.67	1.33	0.00	1.00	0.94
time (sec)	N/A	0.010	0.012	0.046	0.601	1.085	0.000	0.281	1.646

Problem 1203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	144	837	0	543	0	187	-1
normalized size	1	1.00	1.02	5.94	0.00	3.85	0.00	1.33	-0.01
time (sec)	N/A	0.121	0.159	0.064	0.000	1.073	0.000	0.279	0.000

Problem 1204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	226	2069	0	1240	0	1181	-1
normalized size	1	1.00	0.92	8.44	0.00	5.06	0.00	4.82	-0.00
time (sec)	N/A	0.313	0.593	0.064	0.000	1.226	0.000	1.618	0.000

Problem 1205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	374	374	377	3735	0	2282	0	1095	-1
normalized size	1	1.00	1.01	9.99	0.00	6.10	0.00	2.93	-0.00
time (sec)	N/A	0.590	1.503	0.069	0.000	1.001	0.000	0.391	0.000

Problem 1206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	237	1026	795	974	0	370	-1
normalized size	1	1.00	0.70	3.01	2.33	2.86	0.00	1.09	-0.00
time (sec)	N/A	0.458	5.372	0.059	0.648	1.312	0.000	0.299	0.000

Problem 1207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	199	680	550	671	0	289	-1
normalized size	1	1.00	0.90	3.09	2.50	3.05	0.00	1.31	-0.00
time (sec)	N/A	0.203	5.482	0.062	0.721	0.996	0.000	0.308	0.000

Problem 1208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	149	197	347	189	0	176	190
normalized size	1	1.00	1.62	2.14	3.77	2.05	0.00	1.91	2.07
time (sec)	N/A	0.052	0.075	0.054	0.515	1.010	0.000	0.293	1.908

Problem 1209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	107	141	211	152	0	132	134
normalized size	1	1.00	0.96	1.27	1.90	1.37	0.00	1.19	1.21
time (sec)	N/A	0.098	0.048	0.052	0.544	0.580	0.000	0.297	1.733

Problem 1210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	72	83	130	101	0	82	76
normalized size	1	1.00	1.03	1.19	1.86	1.44	0.00	1.17	1.09
time (sec)	N/A	0.022	0.023	0.054	0.531	0.667	0.000	0.236	1.629

Problem 1211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	277	2000	0	1390	0	853	-1
normalized size	1	1.00	0.97	6.97	0.00	4.84	0.00	2.97	-0.00
time (sec)	N/A	0.354	0.767	0.055	0.000	0.777	0.000	0.275	0.000

Problem 1212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	557	4295	0	2582	0	2413	-1
normalized size	1	1.00	1.24	9.57	0.00	5.75	0.00	5.37	-0.00
time (sec)	N/A	0.720	0.828	0.069	0.000	0.853	0.000	2.299	0.000

Problem 1213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	113	121	112	271	683	1383	111
normalized size	1	1.00	0.90	0.96	0.89	2.15	5.42	10.98	0.88
time (sec)	N/A	0.089	0.141	0.049	0.569	0.582	9.271	0.242	0.101

Problem 1214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	113	121	112	230	581	999	111
normalized size	1	1.00	0.90	0.96	0.89	1.83	4.61	7.93	0.88
time (sec)	N/A	0.079	0.123	0.046	0.464	0.722	4.639	0.215	0.072

Problem 1215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	114	121	112	190	434	667	111
normalized size	1	1.00	0.90	0.96	0.89	1.51	3.44	5.29	0.88
time (sec)	N/A	0.073	0.112	0.049	0.493	0.654	17.816	0.190	0.073

Problem 1216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	113	121	112	148	146	386	111
normalized size	1	1.00	0.90	0.96	0.89	1.17	1.16	3.06	0.88
time (sec)	N/A	0.077	0.099	0.045	0.508	0.702	4.182	0.172	0.070

Problem 1217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	113	121	112	108	430	167	111
normalized size	1	1.00	0.91	0.98	0.90	0.87	3.47	1.35	0.90
time (sec)	N/A	0.076	0.086	0.048	0.597	0.699	47.605	0.179	0.072

Problem 1218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	110	121	120	118	126	167	124
normalized size	1	1.00	0.90	0.99	0.98	0.97	1.03	1.37	1.02
time (sec)	N/A	0.076	0.046	0.057	0.570	0.687	24.164	0.180	1.553

Problem 1219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	110	121	116	128	539	156	137
normalized size	1	1.00	0.90	0.99	0.95	1.05	4.42	1.28	1.12
time (sec)	N/A	0.074	0.046	0.049	0.641	0.634	1.556	0.180	0.086

Problem 1220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	111	121	117	141	784	152	120
normalized size	1	1.00	0.91	0.99	0.96	1.16	6.43	1.25	0.98
time (sec)	N/A	0.075	0.047	0.047	0.582	0.800	3.427	0.189	0.092

Problem 1221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	273	341	291	562	1352	2710	254
normalized size	1	1.00	1.02	1.28	1.09	2.10	5.06	10.15	0.95
time (sec)	N/A	0.214	0.232	0.072	0.492	0.683	15.939	0.340	1.618

Problem 1222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	273	341	291	494	1556	2007	254
normalized size	1	1.00	1.02	1.28	1.09	1.85	5.83	7.52	0.95
time (sec)	N/A	0.152	0.204	0.051	0.612	0.677	52.785	0.287	1.619

Problem 1223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	272	341	291	425	937	1382	254
normalized size	1	1.00	1.02	1.28	1.09	1.59	3.51	5.18	0.95
time (sec)	N/A	0.158	0.195	0.047	0.535	0.626	33.458	0.239	0.061

Problem 1224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	273	341	291	357	377	835	254
normalized size	1	1.00	1.02	1.28	1.09	1.34	1.41	3.13	0.95
time (sec)	N/A	0.153	0.183	0.050	0.507	0.658	7.013	0.208	1.527

Problem 1225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	273	341	291	290	944	378	254
normalized size	1	1.00	1.03	1.29	1.10	1.09	3.56	1.43	0.96
time (sec)	N/A	0.158	0.203	0.054	0.481	0.569	106.601	0.186	1.507

Problem 1226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	273	341	299	299	321	441	296
normalized size	1	1.00	1.04	1.30	1.14	1.14	1.22	1.68	1.13
time (sec)	N/A	0.159	0.173	0.053	0.489	0.614	62.035	0.561	1.527

Problem 1227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	271	341	297	310	292	427	316
normalized size	1	1.00	1.03	1.30	1.13	1.18	1.11	1.62	1.20
time (sec)	N/A	0.154	0.161	0.064	0.535	0.612	75.511	0.262	0.073

Problem 1228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	272	341	298	322	1833	427	312
normalized size	1	1.00	1.03	1.30	1.13	1.22	6.97	1.62	1.19
time (sec)	N/A	0.157	0.154	0.057	0.576	0.659	4.863	0.234	1.560

Problem 1229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	228	228	212	741	0	1474	0	476	6515
normalized size	1	1.00	0.93	3.25	0.00	6.46	0.00	2.09	28.57
time (sec)	N/A	0.561	0.501	0.115	0.000	25.014	0.000	0.297	2.358

Problem 1230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	174	516	0	1006	199	316	5138
normalized size	1	1.00	1.01	2.98	0.00	5.82	1.15	1.83	29.70
time (sec)	N/A	0.362	0.227	0.075	0.000	6.802	136.765	0.239	2.189

Problem 1231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	123	335	0	646	134	197	3810
normalized size	1	1.00	0.94	2.56	0.00	4.93	1.02	1.50	29.08
time (sec)	N/A	0.296	0.147	0.088	0.000	2.212	82.049	0.186	0.586

Problem 1232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	101	196	0	450	104	116	2368
normalized size	1	1.00	1.00	1.94	0.00	4.46	1.03	1.15	23.45
time (sec)	N/A	0.175	0.114	0.064	0.000	1.164	17.771	0.204	1.910

Problem 1233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	84	101	0	489	87	79	1130
normalized size	1	1.00	0.98	1.17	0.00	5.69	1.01	0.92	13.14
time (sec)	N/A	0.180	0.150	0.058	0.000	0.742	69.748	0.194	1.918

Problem 1234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	89	168	0	835	107	129	3674
normalized size	1	1.00	0.75	1.42	0.00	7.08	0.91	1.09	31.14
time (sec)	N/A	0.302	0.030	0.066	0.000	1.461	61.492	0.225	3.123

Problem 1235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	91	243	0	1709	160	217	6340
normalized size	1	1.00	0.55	1.48	0.00	10.42	0.98	1.32	38.66
time (sec)	N/A	0.325	0.031	0.069	0.000	4.254	66.516	0.219	3.918

Problem 1236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	91	350	0	3081	228	386	13404
normalized size	1	1.00	0.40	1.56	0.00	13.69	1.01	1.72	59.57
time (sec)	N/A	0.450	0.034	0.066	0.000	14.787	78.316	0.234	4.722

Problem 1237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	301	301	91	489	0	4757	311	615	11601
normalized size	1	1.00	0.30	1.62	0.00	15.80	1.03	2.04	38.54
time (sec)	N/A	0.552	0.039	0.095	0.000	48.778	92.506	0.278	5.646

Problem 1238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	386	386	376	1075	0	0	0	846	12636
normalized size	1	1.00	0.97	2.78	0.00	0.00	0.00	2.19	32.74
time (sec)	N/A	1.194	2.363	0.098	0.000	0.000	0.000	0.314	6.713

Problem 1239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	341	823	0	0	0	639	7328
normalized size	1	1.00	1.17	2.82	0.00	0.00	0.00	2.19	25.10
time (sec)	N/A	0.882	1.547	0.087	0.000	0.000	0.000	0.305	3.293

Problem 1240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	302	614	0	1589	0	468	5878
normalized size	1	1.00	1.34	2.73	0.00	7.06	0.00	2.08	26.12
time (sec)	N/A	0.582	1.226	0.070	0.000	22.885	0.000	0.237	2.700

Problem 1241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	171	443	0	1146	0	334	4391
normalized size	1	1.00	0.94	2.45	0.00	6.33	0.00	1.85	24.26
time (sec)	N/A	0.337	0.331	0.069	0.000	2.300	0.000	0.213	2.608

Problem 1242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	232	299	0	1574	1431	234	2558
normalized size	1	1.00	1.47	1.89	0.00	9.96	9.06	1.48	16.19
time (sec)	N/A	0.314	0.548	0.069	0.000	1.379	147.846	0.221	2.561

Problem 1243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	231	370	0	1540	0	315	5828
normalized size	1	1.00	1.23	1.97	0.00	8.19	0.00	1.68	31.00
time (sec)	N/A	0.339	0.430	0.071	0.000	6.154	0.000	0.237	4.278

Problem 1244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	191	427	0	3240	0	500	8946
normalized size	1	1.00	0.75	1.68	0.00	12.76	0.00	1.97	35.22
time (sec)	N/A	0.556	0.176	0.080	0.000	36.317	0.000	0.257	6.076

Problem 1245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	194	535	0	5665	0	603	18450
normalized size	1	1.00	0.56	1.56	0.00	16.47	0.00	1.75	53.63
time (sec)	N/A	0.917	0.193	0.079	0.000	71.338	0.000	0.319	6.095

Problem 1246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	457	194	707	0	0	0	867	20597
normalized size	1	1.00	0.42	1.55	0.00	0.00	0.00	1.90	45.07
time (sec)	N/A	1.283	0.198	0.095	0.000	0.000	0.000	0.490	7.157

Problem 1247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	461	461	589	1421	0	0	0	1245	16542
normalized size	1	1.00	1.28	3.08	0.00	0.00	0.00	2.70	35.88
time (sec)	N/A	1.215	5.223	0.088	0.000	0.000	0.000	0.363	5.051

Problem 1248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	363	363	554	1218	0	3378	0	1047	11072
normalized size	1	1.00	1.53	3.36	0.00	9.31	0.00	2.88	30.50
time (sec)	N/A	0.827	4.051	0.115	0.000	67.444	0.000	0.341	6.397

Problem 1249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	516	1004	0	2754	0	841	7001
normalized size	1	1.00	1.50	2.92	0.00	8.01	0.00	2.44	20.35
time (sec)	N/A	0.698	3.045	0.084	0.000	7.340	0.000	0.340	3.852

Problem 1250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	472	785	0	3471	0	661	5796
normalized size	1	1.00	1.36	2.27	0.00	10.03	0.00	1.91	16.75
time (sec)	N/A	0.869	2.853	0.078	0.000	2.579	0.000	0.279	4.465

Problem 1251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	317	317	449	829	0	3396	0	841	8411
normalized size	1	1.00	1.42	2.62	0.00	10.71	0.00	2.65	26.53
time (sec)	N/A	0.700	2.216	0.076	0.000	11.734	0.000	0.286	5.716

Problem 1252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	394	394	408	1009	0	4310	0	1046	11338
normalized size	1	1.00	1.04	2.56	0.00	10.94	0.00	2.65	28.78
time (sec)	N/A	0.900	1.480	0.079	0.000	53.288	0.000	0.309	7.110

Problem 1253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	506	506	387	1022	0	0	0	1313	23541
normalized size	1	1.00	0.76	2.02	0.00	0.00	0.00	2.59	46.52
time (sec)	N/A	1.451	0.549	0.100	0.000	0.000	0.000	0.411	9.527

Problem 1254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	644	644	388	1130	0	0	0	1600	24572
normalized size	1	1.00	0.60	1.75	0.00	0.00	0.00	2.48	38.16
time (sec)	N/A	1.791	0.573	0.090	0.000	0.000	0.000	1.095	6.933

Problem 1255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	433	433	461	1526	0	0	0	0	-1
normalized size	1	1.00	1.06	3.52	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.604	3.373	0.136	0.000	1.046	0.000	0.000	0.000

Problem 1256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	318	318	344	1129	0	0	0	0	-1
normalized size	1	1.00	1.08	3.55	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.329	1.527	0.087	0.000	0.768	0.000	0.000	0.000

Problem 1257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	269	804	0	0	0	0	-1
normalized size	1	1.00	0.95	2.84	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.288	1.262	0.101	0.000	1.217	0.000	0.000	0.000

Problem 1258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	346	1959	0	0	0	0	-1
normalized size	1	1.00	1.00	5.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.380	1.714	0.156	0.000	0.876	0.000	0.000	0.000

Problem 1259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	494	494	491	3831	0	0	0	0	-1
normalized size	1	1.00	0.99	7.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.638	2.454	0.127	0.000	0.806	0.000	0.000	0.000

Problem 1260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	574	574	630	2112	0	0	0	0	-1
normalized size	1	1.00	1.10	3.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.782	4.552	0.085	0.000	0.849	0.000	0.000	0.000

Problem 1261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	514	1610	0	0	0	0	-1
normalized size	1	1.00	1.14	3.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.569	3.517	0.107	0.000	0.768	0.000	0.000	0.000

Problem 1262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	436	2367	0	0	0	0	-1
normalized size	1	1.00	1.06	5.73	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.502	2.128	0.108	0.000	0.848	0.000	0.000	0.000

Problem 1263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	516	516	530	4120	0	0	0	0	-1
normalized size	1	1.00	1.03	7.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.666	2.979	0.115	0.000	0.859	0.000	0.000	0.000

Problem 1264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	479	1610	0	0	0	0	-1
normalized size	1	1.00	1.04	3.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.766	4.124	0.098	0.000	0.840	0.000	0.000	0.000

Problem 1265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	356	1144	0	0	0	0	-1
normalized size	1	1.00	1.05	3.37	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.478	1.837	0.096	0.000	0.774	0.000	0.000	0.000

Problem 1266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	263	629	0	0	0	0	-1
normalized size	1	1.00	1.04	2.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.283	1.122	0.088	0.000	0.746	0.000	0.000	0.000

Problem 1267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	209	216	0	0	0	0	-1
normalized size	1	1.00	1.02	1.06	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.120	1.058	0.116	0.000	0.988	0.000	0.000	0.000

Problem 1268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	226	547	0	0	0	0	-1
normalized size	1	1.00	0.86	2.09	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.253	0.996	0.107	0.000	0.651	0.000	0.000	0.000

Problem 1269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	347	1635	0	0	0	0	-1
normalized size	1	1.00	0.94	4.43	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.478	2.040	0.115	0.000	0.743	0.000	0.000	0.000

Problem 1270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	510	510	506	3863	0	0	0	0	-1
normalized size	1	1.00	0.99	7.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.801	3.031	0.143	0.000	0.645	0.000	0.000	0.000

Problem 1271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	527	527	493	1766	0	0	0	0	-1
normalized size	1	1.00	0.94	3.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.907	4.062	0.112	0.000	0.932	0.000	0.000	0.000

Problem 1272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	399	399	391	1324	0	0	0	0	-1
normalized size	1	1.00	0.98	3.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.548	3.173	0.108	0.000	0.807	0.000	0.000	0.000

Problem 1273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	295	295	302	898	0	0	0	0	-1
normalized size	1	1.00	1.02	3.04	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.311	1.669	0.096	0.000	0.685	0.000	0.000	0.000

Problem 1274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	253	253	210	610	0	0	0	0	-1
normalized size	1	1.00	0.83	2.41	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.218	0.839	0.105	0.000	0.606	0.000	0.000	0.000

Problem 1275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	295	295	233	814	0	0	0	0	-1
normalized size	1	1.00	0.79	2.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.288	1.077	0.244	0.000	0.638	0.000	0.000	0.000

Problem 1276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	415	415	367	1079	0	0	0	0	-1
normalized size	1	1.00	0.88	2.60	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.544	1.805	0.124	0.000	0.744	0.000	0.000	0.000

Problem 1277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	570	570	506	3024	0	0	0	0	-1
normalized size	1	1.00	0.89	5.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.987	4.797	0.139	0.000	0.659	0.000	0.000	0.000

Problem 1278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	524	524	530	3247	0	0	0	0	-1
normalized size	1	1.00	1.01	6.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.729	4.775	0.147	0.000	0.891	0.000	0.000	0.000

Problem 1279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	454	454	452	2644	0	0	0	0	-1
normalized size	1	1.00	1.00	5.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.561	3.630	0.125	0.000	0.594	0.000	0.000	0.000

Problem 1280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	410	410	378	2043	0	0	0	0	-1
normalized size	1	1.00	0.92	4.98	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.586	2.191	0.126	0.000	0.562	0.000	0.000	0.000

Problem 1281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	420	441	2503	0	0	0	0	-1
normalized size	1	1.00	1.05	5.96	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.546	2.271	0.132	0.000	0.783	0.000	0.000	0.000

Problem 1282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	543	514	3140	0	0	0	0	-1
normalized size	1	1.00	0.95	5.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.756	4.136	0.135	0.000	0.839	0.000	0.000	0.000

Problem 1283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	706	706	628	4001	0	0	0	0	-1
normalized size	1	1.00	0.89	5.67	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.194	5.467	0.151	0.000	0.983	0.000	0.000	0.000

Problem 1284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	233	247	237	268	287	256	231
normalized size	1	1.00	2.16	2.29	2.19	2.48	2.66	2.37	2.14
time (sec)	N/A	0.176	0.058	0.046	0.550	0.497	0.113	0.156	0.123

Problem 1285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	194	199	194	215	226	207	185
normalized size	1	1.00	1.80	1.84	1.80	1.99	2.09	1.92	1.71
time (sec)	N/A	0.138	0.048	0.042	0.473	0.487	0.102	0.155	0.093

Problem 1286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	150	151	148	164	173	160	141
normalized size	1	1.00	1.39	1.40	1.37	1.52	1.60	1.48	1.31
time (sec)	N/A	0.114	0.038	0.043	0.641	0.577	0.093	0.149	0.064

Problem 1287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	106	103	102	113	119	113	98
normalized size	1	1.00	0.98	0.95	0.94	1.05	1.10	1.05	0.91
time (sec)	N/A	0.085	0.027	0.044	0.579	0.426	0.084	0.160	0.041

Problem 1288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	55	56	62	66	66	55
normalized size	1	1.00	1.00	0.89	0.90	1.00	1.06	1.06	0.89
time (sec)	N/A	0.058	0.021	0.044	0.490	0.466	0.072	0.155	1.667

Problem 1289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	32	27	26	26	29	26	26
normalized size	1	1.00	1.03	0.87	0.84	0.84	0.94	0.84	0.84
time (sec)	N/A	0.007	0.001	0.039	0.493	0.534	0.063	0.151	0.041

Problem 1290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	80	116	97	98	82	97	100
normalized size	1	1.00	0.93	1.35	1.13	1.14	0.95	1.13	1.16
time (sec)	N/A	0.076	0.040	0.046	0.619	0.747	0.328	0.149	1.684

Problem 1291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	86	131	101	152	104	151	105
normalized size	1	1.00	0.97	1.47	1.13	1.71	1.17	1.70	1.18
time (sec)	N/A	0.078	0.061	0.056	0.538	0.738	0.588	0.156	0.076

Problem 1292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	88	144	111	168	117	96	111
normalized size	1	1.00	0.94	1.53	1.18	1.79	1.24	1.02	1.18
time (sec)	N/A	0.072	0.075	0.049	0.629	0.741	1.267	0.150	1.764

Problem 1293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	98	151	129	160	138	103	122
normalized size	1	1.00	0.97	1.50	1.28	1.58	1.37	1.02	1.21
time (sec)	N/A	0.073	0.049	0.055	0.460	0.553	2.605	0.158	0.095

Problem 1294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	87	110	132	132	150	151	128
normalized size	1	1.00	0.82	1.04	1.25	1.25	1.42	1.42	1.21
time (sec)	N/A	0.069	0.044	0.053	0.573	0.906	4.894	0.159	1.711

Problem 1295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	90	110	148	148	165	95	145
normalized size	1	1.00	0.83	1.02	1.37	1.37	1.53	0.88	1.34
time (sec)	N/A	0.071	0.042	0.065	0.624	0.476	8.414	0.178	0.075

Problem 1296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	87	110	153	153	173	93	150
normalized size	1	1.00	0.81	1.02	1.42	1.42	1.60	0.86	1.39
time (sec)	N/A	0.068	0.042	0.049	0.589	0.605	13.570	0.172	1.781

Problem 1297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	390	402	410	465	495	447	374
normalized size	1	1.00	1.89	1.95	1.99	2.26	2.40	2.17	1.82
time (sec)	N/A	0.391	0.097	0.039	0.534	0.640	0.137	0.186	1.863

Problem 1298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	314	327	332	377	398	365	298
normalized size	1	1.00	1.52	1.59	1.61	1.83	1.93	1.77	1.45
time (sec)	N/A	0.273	0.078	0.040	0.513	0.400	0.125	0.194	0.128

Problem 1299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	244	252	260	287	303	281	229
normalized size	1	1.00	1.18	1.22	1.26	1.39	1.47	1.36	1.11
time (sec)	N/A	0.217	0.066	0.043	0.626	0.394	0.112	0.189	1.753

Problem 1300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	174	177	184	200	211	200	168
normalized size	1	1.00	0.84	0.86	0.89	0.97	1.02	0.97	0.82
time (sec)	N/A	0.171	0.044	0.043	0.566	0.442	0.101	0.164	1.731

Problem 1301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	95	99	106	114	124	120	98
normalized size	1	1.00	0.90	0.93	1.00	1.08	1.17	1.13	0.92
time (sec)	N/A	0.128	0.044	0.043	0.568	0.435	0.085	0.161	1.683

Problem 1302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	60	51	50	50	58	50	50
normalized size	1	1.00	1.33	1.13	1.11	1.11	1.29	1.11	1.11
time (sec)	N/A	0.016	0.002	0.040	0.655	0.531	0.073	0.150	0.025

Problem 1303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	174	285	242	243	207	244	260
normalized size	1	1.00	1.03	1.69	1.43	1.44	1.22	1.44	1.54
time (sec)	N/A	0.192	0.098	0.046	0.557	0.556	0.576	0.164	0.066

Problem 1304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	175	309	249	354	246	317	311
normalized size	1	1.00	0.97	1.72	1.38	1.97	1.37	1.76	1.73
time (sec)	N/A	0.215	0.138	0.054	0.579	0.676	1.191	0.230	0.088

Problem 1305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	174	331	258	394	282	237	275
normalized size	1	1.00	0.94	1.79	1.39	2.13	1.52	1.28	1.49
time (sec)	N/A	0.199	0.162	0.059	0.555	0.691	3.333	0.187	1.752

Problem 1306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	232	346	270	411	294	237	268
normalized size	1	1.00	1.23	1.83	1.43	2.17	1.56	1.25	1.42
time (sec)	N/A	0.190	0.113	0.055	0.606	0.634	9.161	0.154	1.766

Problem 1307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	221	356	279	405	304	372	277
normalized size	1	1.00	1.17	1.88	1.48	2.14	1.61	1.97	1.47
time (sec)	N/A	0.168	0.106	0.058	0.581	0.565	21.566	0.175	1.843

Problem 1308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	212	362	298	365	326	239	243
normalized size	1	1.00	1.08	1.84	1.51	1.85	1.65	1.21	1.23
time (sec)	N/A	0.152	0.106	0.051	0.641	0.573	54.057	0.204	1.776

Problem 1309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	198	249	292	292	337	238	273
normalized size	1	1.00	0.97	1.22	1.43	1.43	1.65	1.17	1.34
time (sec)	N/A	0.141	0.095	0.051	0.656	0.575	125.889	0.175	0.110

Problem 1310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	202	249	317	317	0	242	299
normalized size	1	1.00	0.98	1.21	1.54	1.54	0.00	1.17	1.45
time (sec)	N/A	0.139	0.093	0.048	0.577	0.612	0.000	0.176	1.730

Problem 1311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	202	249	328	328	0	242	310
normalized size	1	1.00	0.98	1.21	1.59	1.59	0.00	1.17	1.50
time (sec)	N/A	0.137	0.094	0.058	0.548	0.643	0.000	0.188	0.115

Problem 1312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	202	249	339	339	0	242	321
normalized size	1	1.00	0.98	1.21	1.65	1.65	0.00	1.17	1.56
time (sec)	N/A	0.137	0.095	0.052	0.776	0.623	0.000	0.194	1.757

Problem 1313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	542	557	584	658	694	634	542
normalized size	1	1.00	1.62	1.67	1.75	1.97	2.08	1.90	1.62
time (sec)	N/A	0.603	0.145	0.049	0.655	0.584	0.163	0.192	1.862

Problem 1314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	436	455	478	536	564	520	438
normalized size	1	1.00	1.31	1.36	1.43	1.60	1.69	1.56	1.31
time (sec)	N/A	0.449	0.121	0.050	0.633	0.796	0.152	0.206	0.189

Problem 1315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	323	353	363	411	435	403	317
normalized size	1	1.00	0.97	1.06	1.09	1.23	1.30	1.21	0.95
time (sec)	N/A	0.375	0.093	0.041	0.489	0.734	0.137	0.184	0.151

Problem 1316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	238	251	262	287	306	287	227
normalized size	1	1.00	0.71	0.75	0.78	0.86	0.92	0.86	0.68
time (sec)	N/A	0.307	0.057	0.043	0.490	0.672	0.114	0.154	1.726

Problem 1317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	135	143	154	165	182	173	140
normalized size	1	1.00	0.91	0.97	1.04	1.11	1.23	1.17	0.95
time (sec)	N/A	0.211	0.048	0.044	0.530	0.650	0.094	0.170	0.067

Problem 1318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	85	74	73	73	85	73	73
normalized size	1	1.00	1.52	1.32	1.30	1.30	1.52	1.30	1.30
time (sec)	N/A	0.022	0.003	0.041	0.637	0.510	0.077	0.174	0.033

Problem 1319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	311	526	447	448	410	459	494
normalized size	1	1.00	1.07	1.81	1.54	1.54	1.41	1.58	1.70
time (sec)	N/A	0.400	0.178	0.049	0.557	0.583	0.919	0.179	0.076

Problem 1320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	405	558	456	621	454	539	826
normalized size	1	1.00	1.31	1.81	1.48	2.01	1.47	1.74	2.67
time (sec)	N/A	0.435	0.175	0.056	0.563	0.785	1.958	0.196	1.741

Problem 1321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	300	300	414	589	464	691	490	440	681
normalized size	1	1.00	1.38	1.96	1.55	2.30	1.63	1.47	2.27
time (sec)	N/A	0.417	0.195	0.057	0.689	0.639	6.096	0.163	0.144

Problem 1322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	294	611	478	732	530	435	548
normalized size	1	1.00	0.95	1.97	1.54	2.36	1.71	1.40	1.77
time (sec)	N/A	0.396	0.134	0.068	0.660	0.719	18.980	0.158	1.780

Problem 1323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	314	314	405	632	487	746	537	647	501
normalized size	1	1.00	1.29	2.01	1.55	2.38	1.71	2.06	1.60
time (sec)	N/A	0.382	0.210	0.066	0.606	0.596	63.111	0.183	1.797

Problem 1324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	388	646	499	730	0	429	494
normalized size	1	1.00	1.24	2.06	1.59	2.33	0.00	1.37	1.58
time (sec)	N/A	0.345	0.200	0.061	0.791	0.595	0.000	0.163	0.165

Problem 1325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	320	320	377	656	511	695	0	426	505
normalized size	1	1.00	1.18	2.05	1.60	2.17	0.00	1.33	1.58
time (sec)	N/A	0.320	0.213	0.062	0.773	0.764	0.000	0.163	1.862

Problem 1326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	366	662	527	624	0	431	448
normalized size	1	1.00	1.12	2.02	1.61	1.91	0.00	1.32	1.37
time (sec)	N/A	0.297	0.196	0.055	0.676	0.554	0.000	0.193	1.812

Problem 1327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	330	330	357	448	532	532	0	457	570
normalized size	1	1.00	1.08	1.36	1.61	1.61	0.00	1.38	1.73
time (sec)	N/A	0.274	0.172	0.053	0.663	0.764	0.000	0.192	0.159

Problem 1328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	359	449	546	546	0	457	513
normalized size	1	1.00	1.07	1.34	1.63	1.63	0.00	1.37	1.54
time (sec)	N/A	0.264	0.181	0.051	0.600	0.652	0.000	0.197	1.802

Problem 1329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	334	357	449	557	557	0	457	524
normalized size	1	1.00	1.07	1.34	1.67	1.67	0.00	1.37	1.57
time (sec)	N/A	0.261	0.172	0.049	0.702	0.520	0.000	0.169	1.905

Problem 1330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	217	345	230	550	908	245	249
normalized size	1	1.00	0.90	1.44	0.96	2.29	3.78	1.02	1.04
time (sec)	N/A	0.261	0.178	0.046	1.174	0.660	3.505	0.161	0.236

Problem 1331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	151	238	160	398	641	165	175
normalized size	1	1.00	0.90	1.43	0.96	2.38	3.84	0.99	1.05
time (sec)	N/A	0.179	0.146	0.051	1.159	0.582	2.146	0.153	1.823

Problem 1332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	99	148	100	235	425	101	114
normalized size	1	1.00	0.92	1.37	0.93	2.18	3.94	0.94	1.06
time (sec)	N/A	0.095	0.089	0.054	1.275	0.755	1.407	0.162	0.138

Problem 1333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	65	78	56	147	212	59	75
normalized size	1	1.00	1.02	1.22	0.88	2.30	3.31	0.92	1.17
time (sec)	N/A	0.043	0.051	0.050	1.146	0.727	0.726	0.154	1.732

Problem 1334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	32	31	98	124	31	32
normalized size	1	1.00	1.00	0.76	0.74	2.33	2.95	0.74	0.76
time (sec)	N/A	0.015	0.013	0.058	1.159	0.690	0.260	0.154	0.049

Problem 1335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	91	159	98	200	0	104	535
normalized size	1	1.00	0.83	1.46	0.90	1.83	0.00	0.95	4.91
time (sec)	N/A	0.106	0.061	0.055	1.306	2.121	0.000	0.158	3.132

Problem 1336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	148	312	216	562	0	229	810
normalized size	1	1.00	0.86	1.80	1.25	3.25	0.00	1.32	4.68
time (sec)	N/A	0.170	0.181	0.053	1.308	9.624	0.000	0.163	3.322

Problem 1337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	223	509	419	1350	0	383	1680
normalized size	1	1.00	0.89	2.03	1.67	5.38	0.00	1.53	6.69
time (sec)	N/A	0.323	0.357	0.061	1.354	49.679	0.000	0.167	3.643

Problem 1338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	307	553	356	1190	1091	347	370
normalized size	1	1.00	1.03	1.86	1.20	4.01	3.67	1.17	1.25
time (sec)	N/A	0.339	0.175	0.059	1.340	0.719	14.772	0.159	0.318

Problem 1339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	220	220	231	414	268	849	836	261	276
normalized size	1	1.00	1.05	1.88	1.22	3.86	3.80	1.19	1.25
time (sec)	N/A	0.275	0.202	0.054	1.506	0.595	10.536	0.204	1.906

Problem 1340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	161	161	171	296	188	609	583	179	193
normalized size	1	1.00	1.06	1.84	1.17	3.78	3.62	1.11	1.20
time (sec)	N/A	0.208	0.120	0.054	1.149	0.521	6.041	0.195	0.187

Problem 1341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	119	151	130	384	382	127	203
normalized size	1	1.00	1.06	1.35	1.16	3.43	3.41	1.13	1.81
time (sec)	N/A	0.073	0.099	0.059	1.281	0.655	2.960	0.161	1.804

Problem 1342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	78	86	72	225	133	74	70
normalized size	1	1.00	0.99	1.09	0.91	2.85	1.68	0.94	0.89
time (sec)	N/A	0.032	0.071	0.056	1.204	0.555	0.923	0.155	1.773

Problem 1343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	49	48	140	90	47	44
normalized size	1	1.00	1.00	0.86	0.84	2.46	1.58	0.82	0.77
time (sec)	N/A	0.017	0.026	0.052	1.157	0.556	0.298	0.173	0.051

Problem 1344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	158	495	243	795	0	268	1086
normalized size	1	1.00	0.81	2.54	1.25	4.08	0.00	1.37	5.57
time (sec)	N/A	0.281	0.159	0.064	1.336	23.936	0.000	0.183	3.760

Problem 1345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	251	661	511	1940	0	494	2029
normalized size	1	1.00	0.87	2.28	1.76	6.69	0.00	1.70	7.00
time (sec)	N/A	0.411	0.359	0.070	1.352	82.963	0.000	0.180	4.047

Problem 1346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	341	678	438	1403	1044	403	424
normalized size	1	1.00	1.12	2.23	1.44	4.62	3.43	1.33	1.39
time (sec)	N/A	0.422	0.246	0.060	1.149	0.732	97.928	0.162	0.291

Problem 1347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	263	359	352	1055	816	312	763
normalized size	1	1.00	1.22	1.66	1.63	4.88	3.78	1.44	3.53
time (sec)	N/A	0.209	0.211	0.053	1.341	0.667	46.139	0.162	2.560

Problem 1348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	186	260	248	752	468	233	265
normalized size	1	1.00	1.49	2.08	1.98	6.02	3.74	1.86	2.12
time (sec)	N/A	0.058	0.097	0.056	1.508	0.714	20.046	0.194	0.223

Problem 1349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	142	142	158	180	184	537	274	169	154
normalized size	1	1.00	1.11	1.27	1.30	3.78	1.93	1.19	1.08
time (sec)	N/A	0.125	0.108	0.053	1.183	0.754	7.838	0.158	1.808

Problem 1350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	101	108	114	355	180	102	100
normalized size	1	1.00	0.92	0.98	1.04	3.23	1.64	0.93	0.91
time (sec)	N/A	0.044	0.083	0.061	1.124	0.464	1.927	0.157	1.773

Problem 1351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	71	65	74	212	124	60	64
normalized size	1	1.00	0.95	0.87	0.99	2.83	1.65	0.80	0.85
time (sec)	N/A	0.021	0.047	0.049	1.301	0.609	0.450	0.193	0.075

Problem 1352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	F(-1)	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	263	1087	525	0	0	534	2415
normalized size	1	1.00	0.86	3.54	1.71	0.00	0.00	1.74	7.87
time (sec)	N/A	0.505	0.283	0.101	1.269	0.000	0.000	0.187	4.443

Problem 1353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	F(-1)	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	443	443	378	1410	997	0	0	836	3015
normalized size	1	1.00	0.85	3.18	2.25	0.00	0.00	1.89	6.81
time (sec)	N/A	0.724	0.488	0.115	1.390	0.000	0.000	0.224	5.514

Problem 1354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	31	22	21	21	26	24	19
normalized size	1	1.00	1.07	0.76	0.72	0.72	0.90	0.83	0.66
time (sec)	N/A	0.023	0.010	0.049	0.570	0.814	0.141	0.171	0.066

Problem 1355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	28	29	32	40	27	27	29
normalized size	1	1.00	0.72	0.74	0.82	1.03	0.69	0.69	0.74
time (sec)	N/A	0.015	0.015	0.045	1.175	0.939	0.134	0.152	0.043

Problem 1356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	65	91	90	70	131	64	55
normalized size	1	1.00	0.53	0.75	0.74	0.57	1.07	0.52	0.45
time (sec)	N/A	0.069	0.077	0.052	1.390	1.104	3.127	0.185	1.706

Problem 1357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	60	77	76	65	150	57	50
normalized size	1	1.00	0.60	0.77	0.76	0.65	1.50	0.57	0.50
time (sec)	N/A	0.047	0.050	0.056	1.103	0.922	20.718	0.172	1.693

Problem 1358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	55	63	62	60	95	54	45
normalized size	1	1.00	0.71	0.81	0.79	0.77	1.22	0.69	0.58
time (sec)	N/A	0.030	0.045	0.046	1.283	0.921	0.931	0.165	1.707

Problem 1359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	50	49	48	55	94	48	40
normalized size	1	1.00	0.89	0.88	0.86	0.98	1.68	0.86	0.71
time (sec)	N/A	0.014	0.038	0.056	1.462	0.536	8.076	0.221	0.032

Problem 1360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	43	37	36	50	61	44	33
normalized size	1	1.00	0.88	0.76	0.73	1.02	1.24	0.90	0.67
time (sec)	N/A	0.010	0.021	0.054	1.377	0.706	0.264	0.160	0.030

Problem 1361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	68	72	70	90	0	104	66
normalized size	1	1.00	0.94	1.00	0.97	1.25	0.00	1.44	0.92
time (sec)	N/A	0.043	0.041	0.062	1.081	0.632	0.000	0.252	0.175

Problem 1362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	71	98	76	109	0	285	80
normalized size	1	1.00	0.97	1.34	1.04	1.49	0.00	3.90	1.10
time (sec)	N/A	0.043	0.094	0.053	1.250	0.780	0.000	0.567	0.110

Problem 1363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	80	119	99	126	0	205	92
normalized size	1	1.00	1.01	1.51	1.25	1.59	0.00	2.59	1.16
time (sec)	N/A	0.042	0.099	0.059	1.252	0.650	0.000	0.268	1.898

Problem 1364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	65	128	115	104	0	232	106
normalized size	1	1.00	0.79	1.56	1.40	1.27	0.00	2.83	1.29
time (sec)	N/A	0.034	0.052	0.059	1.346	0.700	0.000	0.308	1.810

Problem 1365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	70	149	148	119	0	181	140
normalized size	1	1.00	0.67	1.43	1.42	1.14	0.00	1.74	1.35
time (sec)	N/A	0.052	0.080	0.059	1.173	0.483	0.000	0.219	1.864

Problem 1366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	75	170	186	134	0	322	178
normalized size	1	1.00	0.60	1.35	1.48	1.06	0.00	2.56	1.41
time (sec)	N/A	0.071	0.087	0.066	1.227	0.701	0.000	0.262	1.799

Problem 1367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	80	191	229	149	0	367	223
normalized size	1	1.00	0.54	1.29	1.55	1.01	0.00	2.48	1.51
time (sec)	N/A	0.092	0.088	0.067	1.228	0.658	0.000	0.267	0.129

Problem 1368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	75	103	102	80	162	72	65
normalized size	1	1.00	0.54	0.75	0.74	0.58	1.17	0.52	0.47
time (sec)	N/A	0.073	0.082	0.053	1.276	0.647	22.519	0.189	2.100

Problem 1369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	70	89	88	75	144	66	60
normalized size	1	1.00	0.60	0.77	0.76	0.65	1.24	0.57	0.52
time (sec)	N/A	0.054	0.063	0.059	1.356	0.680	14.074	0.177	0.045

Problem 1370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	65	75	74	70	129	62	55
normalized size	1	1.00	0.69	0.80	0.79	0.74	1.37	0.66	0.59
time (sec)	N/A	0.036	0.053	0.061	1.326	0.962	8.155	0.169	0.044

Problem 1371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	60	61	60	65	110	56	50
normalized size	1	1.00	0.83	0.85	0.83	0.90	1.53	0.78	0.69
time (sec)	N/A	0.019	0.057	0.050	1.368	0.546	5.004	0.193	1.739

Problem 1372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	55	49	48	60	97	53	45
normalized size	1	1.00	0.82	0.73	0.72	0.90	1.45	0.79	0.67
time (sec)	N/A	0.014	0.024	0.043	1.332	0.544	2.756	0.174	0.037

Problem 1373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	80	117	93	102	0	116	76
normalized size	1	1.00	0.87	1.27	1.01	1.11	0.00	1.26	0.83
time (sec)	N/A	0.057	0.040	0.047	1.400	0.568	0.000	0.266	0.133

Problem 1374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	87	131	99	121	0	475	108
normalized size	1	1.00	0.90	1.35	1.02	1.25	0.00	4.90	1.11
time (sec)	N/A	0.061	0.098	0.049	1.344	0.616	0.000	0.733	0.122

Problem 1375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	89	152	122	136	0	219	117
normalized size	1	1.00	0.86	1.46	1.17	1.31	0.00	2.11	1.12
time (sec)	N/A	0.061	0.113	0.052	1.300	0.561	0.000	0.281	1.824

Problem 1376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	89	173	150	151	0	265	133
normalized size	1	1.00	0.84	1.63	1.42	1.42	0.00	2.50	1.25
time (sec)	N/A	0.058	0.121	0.055	1.431	0.650	0.000	0.278	0.123

Problem 1377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	90	194	183	166	0	106	155
normalized size	1	1.00	0.85	1.83	1.73	1.57	0.00	1.00	1.46
time (sec)	N/A	0.062	0.148	0.066	1.449	0.604	0.000	0.236	0.123

Problem 1378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	112	203	209	134	0	318	179
normalized size	1	1.00	1.03	1.86	1.92	1.23	0.00	2.92	1.64
time (sec)	N/A	0.049	0.095	0.070	1.323	0.476	0.000	0.267	1.978

Problem 1379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	137	224	252	149	0	367	223
normalized size	1	1.00	1.05	1.71	1.92	1.14	0.00	2.80	1.70
time (sec)	N/A	0.069	0.199	0.065	1.321	0.749	0.000	0.314	1.858

Problem 1380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	161	245	300	164	0	408	272
normalized size	1	1.00	1.05	1.60	1.96	1.07	0.00	2.67	1.78
time (sec)	N/A	0.100	0.147	0.082	1.430	0.813	0.000	0.280	0.138

Problem 1381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	85	115	114	90	199	82	75
normalized size	1	1.00	0.55	0.75	0.74	0.58	1.29	0.53	0.49
time (sec)	N/A	0.082	0.089	0.073	1.100	0.609	113.005	0.179	1.752

Problem 1382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	80	101	100	85	180	76	70
normalized size	1	1.00	0.61	0.77	0.76	0.64	1.36	0.58	0.53
time (sec)	N/A	0.062	0.077	0.055	1.161	0.882	77.880	0.234	1.745

Problem 1383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	75	87	86	80	162	72	65
normalized size	1	1.00	0.68	0.79	0.78	0.73	1.47	0.65	0.59
time (sec)	N/A	0.043	0.072	0.050	1.320	0.660	50.467	0.192	0.065

Problem 1384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	70	73	72	75	143	63	60
normalized size	1	1.00	0.80	0.83	0.82	0.85	1.62	0.72	0.68
time (sec)	N/A	0.025	0.061	0.047	1.155	0.553	34.005	0.206	1.865

Problem 1385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	65	61	60	70	131	61	55
normalized size	1	1.00	0.78	0.73	0.72	0.84	1.58	0.73	0.66
time (sec)	N/A	0.020	0.043	0.046	1.126	0.635	20.989	0.168	1.743

Problem 1386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	90	162	116	112	0	125	86
normalized size	1	1.00	0.80	1.45	1.04	1.00	0.00	1.12	0.77
time (sec)	N/A	0.076	0.055	0.051	1.308	0.572	0.000	0.283	1.806

Problem 1387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	97	164	122	131	0	665	138
normalized size	1	1.00	0.83	1.40	1.04	1.12	0.00	5.68	1.18
time (sec)	N/A	0.078	0.133	0.054	1.244	0.750	0.000	1.021	0.131

Problem 1388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	97	185	145	146	0	230	147
normalized size	1	1.00	0.77	1.47	1.15	1.16	0.00	1.83	1.17
time (sec)	N/A	0.079	0.148	0.064	1.320	0.627	0.000	0.290	0.126

Problem 1389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	97	206	173	167	0	275	161
normalized size	1	1.00	0.73	1.55	1.30	1.26	0.00	2.07	1.21
time (sec)	N/A	0.079	0.162	0.066	1.438	0.689	0.000	0.365	0.124

Problem 1390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	97	227	206	176	0	440	180
normalized size	1	1.00	0.73	1.71	1.55	1.32	0.00	3.31	1.35
time (sec)	N/A	0.080	0.160	0.066	1.537	0.870	0.000	0.823	0.133

Problem 1391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	100	248	244	191	0	355	206
normalized size	1	1.00	0.75	1.86	1.83	1.44	0.00	2.67	1.55
time (sec)	N/A	0.081	0.200	0.057	1.240	0.782	0.000	0.324	1.945

Problem 1392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	100	269	287	206	0	389	238
normalized size	1	1.00	0.75	2.02	2.16	1.55	0.00	2.92	1.79
time (sec)	N/A	0.078	0.235	0.068	1.561	0.657	0.000	0.340	0.144

Problem 1393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	122	278	323	164	0	408	272
normalized size	1	1.00	0.90	2.04	2.38	1.21	0.00	3.00	2.00
time (sec)	N/A	0.065	0.177	0.074	1.288	0.621	0.000	0.316	2.026

Problem 1394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	144	299	376	179	0	457	326
normalized size	1	1.00	0.91	1.89	2.38	1.13	0.00	2.89	2.06
time (sec)	N/A	0.083	0.210	0.086	1.450	0.804	0.000	0.328	1.887

Problem 1395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	185	320	434	194	0	502	385
normalized size	1	1.00	1.03	1.78	2.41	1.08	0.00	2.79	2.14
time (sec)	N/A	0.109	0.306	0.102	1.707	0.707	0.000	0.306	0.160

Problem 1396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	207	341	497	209	0	547	449
normalized size	1	1.00	1.02	1.69	2.46	1.03	0.00	2.71	2.22
time (sec)	N/A	0.134	0.265	0.150	1.466	0.742	0.000	0.530	1.896

Problem 1397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	55	79	78	60	97	53	45
normalized size	1	1.00	0.52	0.75	0.74	0.57	0.92	0.50	0.42
time (sec)	N/A	0.058	0.059	0.058	1.418	0.687	1.934	0.194	0.043

Problem 1398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	50	65	64	55	80	49	40
normalized size	1	1.00	0.60	0.77	0.76	0.65	0.95	0.58	0.48
time (sec)	N/A	0.043	0.044	0.061	1.464	0.741	1.078	0.247	0.036

Problem 1399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	45	51	50	50	63	42	35
normalized size	1	1.00	0.73	0.82	0.81	0.81	1.02	0.68	0.56
time (sec)	N/A	0.025	0.039	0.049	1.404	0.793	0.542	0.176	0.034

Problem 1400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	38	37	36	43	44	37	28
normalized size	1	1.00	0.95	0.92	0.90	1.08	1.10	0.92	0.70
time (sec)	N/A	0.012	0.022	0.049	1.290	0.636	0.299	0.169	0.032

Problem 1401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	33	25	24	40	29	34	25
normalized size	1	1.00	1.00	0.76	0.73	1.21	0.88	1.03	0.76
time (sec)	N/A	0.007	0.019	0.047	1.302	0.695	0.184	0.191	0.026

Problem 1402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	52	52	52	44	47	76	0	90	49
normalized size	1	1.00	1.00	0.85	0.90	1.46	0.00	1.73	0.94
time (sec)	N/A	0.027	0.017	0.051	1.599	0.776	0.000	0.248	0.121

Problem 1403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	53	53	74	0	125	53
normalized size	1	1.00	1.00	0.96	0.96	1.35	0.00	2.27	0.96
time (sec)	N/A	0.025	0.022	0.057	1.350	0.582	0.000	0.271	1.919

Problem 1404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	60	74	76	89	0	183	77
normalized size	1	1.00	0.78	0.96	0.99	1.16	0.00	2.38	1.00
time (sec)	N/A	0.039	0.066	0.058	1.453	0.704	0.000	0.295	1.861

Problem 1405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	65	95	104	104	0	232	106
normalized size	1	1.00	0.66	0.96	1.05	1.05	0.00	2.34	1.07
time (sec)	N/A	0.057	0.068	0.055	1.377	0.549	0.000	0.319	0.112

Problem 1406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	70	116	137	118	0	191	146
normalized size	1	1.00	0.58	0.96	1.13	0.98	0.00	1.58	1.21
time (sec)	N/A	0.075	0.079	0.069	1.296	0.664	0.000	0.255	0.213

Problem 1407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	75	137	175	133	0	322	160
normalized size	1	1.00	0.52	0.96	1.22	0.93	0.00	2.25	1.12
time (sec)	N/A	0.096	0.091	0.069	1.164	0.722	0.000	0.271	1.925

Problem 1408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	58	79	78	78	0	54	110
normalized size	1	1.00	0.65	0.89	0.88	0.88	0.00	0.61	1.24
time (sec)	N/A	0.043	0.055	0.058	1.411	0.710	0.000	0.188	0.057

Problem 1409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	53	65	64	73	0	47	105
normalized size	1	1.00	0.79	0.97	0.96	1.09	0.00	0.70	1.57
time (sec)	N/A	0.027	0.044	0.049	1.304	0.792	0.000	0.181	1.759

Problem 1410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	48	51	50	68	0	44	100
normalized size	1	1.00	0.80	0.85	0.83	1.13	0.00	0.73	1.67
time (sec)	N/A	0.022	0.041	0.050	1.116	0.720	0.000	0.172	1.750

Problem 1411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	40	40	43	37	36	62	99	39	88
normalized size	1	1.00	1.08	0.92	0.90	1.55	2.48	0.98	2.20
time (sec)	N/A	0.011	0.027	0.051	1.236	0.633	14.978	0.181	1.776

Problem 1412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	20	20	20	17	24	16	27	16	15
normalized size	1	1.00	1.00	0.85	1.20	0.80	1.35	0.80	0.75
time (sec)	N/A	0.004	0.008	0.042	0.539	0.674	14.369	0.167	0.040

Problem 1413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	53	77	58	83	0	84	106
normalized size	1	1.00	1.00	1.45	1.09	1.57	0.00	1.58	2.00
time (sec)	N/A	0.027	0.025	0.052	1.242	0.644	0.000	0.209	1.809

Problem 1414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	65	86	86	104	0	168	157
normalized size	1	1.00	0.79	1.05	1.05	1.27	0.00	2.05	1.91
time (sec)	N/A	0.042	0.036	0.052	1.425	0.596	0.000	0.266	0.123

Problem 1415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	70	107	128	119	0	199	181
normalized size	1	1.00	0.67	1.03	1.23	1.14	0.00	1.91	1.74
time (sec)	N/A	0.057	0.078	0.076	1.424	0.646	0.000	0.255	1.784

Problem 1416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	75	128	184	134	0	248	210
normalized size	1	1.00	0.60	1.02	1.46	1.06	0.00	1.97	1.67
time (sec)	N/A	0.076	0.083	0.060	1.295	0.668	0.000	0.288	1.793

Problem 1417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	80	149	254	149	0	234	244
normalized size	1	1.00	0.54	1.01	1.72	1.01	0.00	1.58	1.65
time (sec)	N/A	0.094	0.093	0.100	1.304	0.562	0.000	0.293	0.144

Problem 1418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	73	119	133	98	0	60	222
normalized size	1	1.00	0.63	1.03	1.15	0.84	0.00	0.52	1.91
time (sec)	N/A	0.061	0.076	0.060	1.443	0.830	0.000	0.184	1.708

Problem 1419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	68	105	119	93	0	55	217
normalized size	1	1.00	0.72	1.12	1.27	0.99	0.00	0.59	2.31
time (sec)	N/A	0.044	0.068	0.068	1.308	0.672	0.000	0.246	0.047

Problem 1420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	63	91	105	87	0	52	212
normalized size	1	1.00	0.72	1.05	1.21	1.00	0.00	0.60	2.44
time (sec)	N/A	0.039	0.063	0.058	1.355	0.649	0.000	0.182	1.722

Problem 1421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	58	77	91	81	0	48	200
normalized size	1	1.00	0.87	1.15	1.36	1.21	0.00	0.72	2.99
time (sec)	N/A	0.027	0.060	0.050	1.177	0.701	0.000	0.203	1.702

Problem 1422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	30	27	50	40	0	25	185
normalized size	1	1.00	0.62	0.56	1.04	0.83	0.00	0.52	3.85
time (sec)	N/A	0.018	0.127	0.045	0.527	0.727	0.000	0.180	1.697

Problem 1423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	25	22	36	35	122	23	161
normalized size	1	1.00	0.68	0.59	0.97	0.95	3.30	0.62	4.35
time (sec)	N/A	0.010	0.016	0.040	0.503	0.726	58.399	0.183	0.043

Problem 1424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	37	37	25	22	36	35	90	21	161
normalized size	1	1.00	0.68	0.59	0.97	0.95	2.43	0.57	4.35
time (sec)	N/A	0.007	0.010	0.041	0.451	0.570	43.078	0.183	1.691

Problem 1425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	63	122	81	103	0	93	218
normalized size	1	1.00	0.86	1.67	1.11	1.41	0.00	1.27	2.99
time (sec)	N/A	0.043	0.040	0.054	1.281	0.675	0.000	0.213	0.136

Problem 1426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	101	119	109	134	0	233	270
normalized size	1	1.00	0.93	1.09	1.00	1.23	0.00	2.14	2.48
time (sec)	N/A	0.059	0.047	0.058	1.223	0.696	0.000	0.307	1.883

Problem 1427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	80	140	151	149	0	208	301
normalized size	1	1.00	0.61	1.07	1.15	1.14	0.00	1.59	2.30
time (sec)	N/A	0.077	0.107	0.053	1.231	0.608	0.000	0.275	1.829

Problem 1428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	85	161	207	164	0	257	330
normalized size	1	1.00	0.56	1.05	1.35	1.07	0.00	1.68	2.16
time (sec)	N/A	0.098	0.117	0.066	1.417	0.573	0.000	0.467	1.862

Problem 1429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	99	101	104	190	379	580	100
normalized size	1	1.00	0.85	0.87	0.90	1.64	3.27	5.00	0.86
time (sec)	N/A	0.062	0.089	0.049	0.636	0.665	15.780	0.347	0.091

Problem 1430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	116	96	101	104	143	131	327	100
normalized size	1	1.00	0.83	0.87	0.90	1.23	1.13	2.82	0.86
time (sec)	N/A	0.051	0.068	0.049	0.768	0.681	3.738	0.164	1.744

Problem 1431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	96	101	104	100	374	138	100
normalized size	1	1.00	0.84	0.89	0.91	0.88	3.28	1.21	0.88
time (sec)	N/A	0.049	0.078	0.046	0.576	0.526	36.488	0.196	0.068

Problem 1432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	97	101	112	110	112	135	111
normalized size	1	1.00	0.87	0.90	1.00	0.98	1.00	1.21	0.99
time (sec)	N/A	0.050	0.072	0.048	0.512	0.637	21.210	0.170	0.075

Problem 1433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	94	100	108	120	449	126	113
normalized size	1	1.00	0.84	0.89	0.96	1.07	4.01	1.12	1.01
time (sec)	N/A	0.050	0.070	0.049	0.500	0.562	1.439	0.173	1.766

Problem 1434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	95	101	109	133	653	122	100
normalized size	1	1.00	0.85	0.90	0.97	1.19	5.83	1.09	0.89
time (sec)	N/A	0.050	0.072	0.049	0.521	0.488	3.221	0.173	1.745

Problem 1435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	214	259	248	320	308	670	197
normalized size	1	1.00	0.98	1.19	1.14	1.47	1.41	3.07	0.90
time (sec)	N/A	0.127	0.193	0.054	0.537	0.763	5.557	0.190	1.791

Problem 1436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	213	259	248	247	772	295	197
normalized size	1	1.00	0.99	1.20	1.15	1.14	3.57	1.37	0.91
time (sec)	N/A	0.095	0.160	0.047	0.462	0.680	79.704	0.177	1.711

Problem 1437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	214	259	256	257	253	331	237
normalized size	1	1.00	1.00	1.21	1.20	1.20	1.18	1.55	1.11
time (sec)	N/A	0.093	0.145	0.054	0.484	0.758	48.985	0.193	0.067

Problem 1438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	214	259	254	269	231	319	249
normalized size	1	1.00	1.00	1.21	1.19	1.26	1.08	1.49	1.16
time (sec)	N/A	0.092	0.143	0.046	0.680	0.726	61.952	0.275	1.726

Problem 1439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	212	259	255	280	1426	319	251
normalized size	1	1.00	0.99	1.21	1.19	1.31	6.66	1.49	1.17
time (sec)	N/A	0.092	0.141	0.050	0.570	0.682	4.403	0.206	1.793

Problem 1440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	214	259	255	290	1855	316	258
normalized size	1	1.00	1.00	1.21	1.19	1.36	8.67	1.48	1.21
time (sec)	N/A	0.097	0.153	0.051	0.681	0.683	8.150	0.223	1.821

Problem 1441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	373	489	453	454	1284	504	324
normalized size	1	1.00	1.07	1.41	1.30	1.30	3.69	1.45	0.93
time (sec)	N/A	0.205	0.354	0.049	0.560	0.567	139.187	0.217	0.138

Problem 1442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	373	489	461	463	461	615	394
normalized size	1	1.00	1.08	1.42	1.34	1.35	1.34	1.79	1.15
time (sec)	N/A	0.163	0.290	0.051	0.549	0.664	101.301	0.286	1.839

Problem 1443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	375	489	459	475	406	599	434
normalized size	1	1.00	1.08	1.41	1.33	1.37	1.17	1.73	1.25
time (sec)	N/A	0.162	0.280	0.055	0.651	0.796	113.122	0.233	1.832

Problem 1444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	373	489	461	487	0	599	455
normalized size	1	1.00	1.08	1.41	1.33	1.41	0.00	1.73	1.32
time (sec)	N/A	0.162	0.277	0.054	0.642	0.696	0.000	0.225	1.843

Problem 1445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	342	372	489	460	496	3218	597	452
normalized size	1	1.00	1.09	1.43	1.35	1.45	9.41	1.75	1.32
time (sec)	N/A	0.156	0.289	0.049	0.631	0.766	9.860	0.251	1.847

Problem 1446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	375	489	461	509	3952	595	454
normalized size	1	1.00	1.08	1.41	1.33	1.47	11.42	1.72	1.31
time (sec)	N/A	0.162	0.300	0.046	0.579	0.692	16.440	0.242	1.890

Problem 1447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	237	237	223	981	0	7410	0	655	11383
normalized size	1	1.00	0.94	4.14	0.00	31.27	0.00	2.76	48.03
time (sec)	N/A	0.642	0.460	0.095	0.000	13.362	0.000	0.438	3.127

Problem 1448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	194	689	0	4480	0	528	7560
normalized size	1	1.00	0.96	3.41	0.00	22.18	0.00	2.61	37.43
time (sec)	N/A	0.437	0.241	0.085	0.000	2.390	0.000	0.413	2.715

Problem 1449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	178	427	0	1538	396	303	4276
normalized size	1	1.00	0.99	2.39	0.00	8.59	2.21	1.69	23.89
time (sec)	N/A	0.317	0.149	0.073	0.000	0.713	38.486	0.372	0.436

Problem 1450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	155	203	0	2385	0	177	2065
normalized size	1	1.00	1.02	1.34	0.00	15.69	0.00	1.16	13.59
time (sec)	N/A	0.163	0.182	0.075	0.000	0.804	0.000	0.259	3.306

Problem 1451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	271	588	0	6448	0	920	10288
normalized size	1	1.00	1.38	2.98	0.00	32.73	0.00	4.67	52.22
time (sec)	N/A	0.402	0.328	0.078	0.000	4.708	0.000	0.702	5.669

Problem 1452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	243	243	266	973	0	11231	0	0	17610
normalized size	1	1.00	1.09	4.00	0.00	46.22	0.00	0.00	72.47
time (sec)	N/A	0.536	0.142	0.082	0.000	23.893	0.000	0.000	7.425

Problem 1453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	269	269	279	1055	0	5611	0	728	9253
normalized size	1	1.00	1.04	3.92	0.00	20.86	0.00	2.71	34.40
time (sec)	N/A	0.541	0.563	0.096	0.000	12.743	0.000	0.783	3.020

Problem 1454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	244	694	0	2327	0	533	5212
normalized size	1	1.00	1.03	2.92	0.00	9.78	0.00	2.24	21.90
time (sec)	N/A	0.392	0.374	0.111	0.000	1.046	0.000	0.707	0.916

Problem 1455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	375	432	0	3195	0	436	5062
normalized size	1	1.00	1.67	1.92	0.00	14.20	0.00	1.94	22.50
time (sec)	N/A	0.397	0.473	0.089	0.000	3.526	0.000	0.536	4.102

Problem 1456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	353	635	0	7506	0	1156	10862
normalized size	1	1.00	1.41	2.54	0.00	30.02	0.00	4.62	43.45
time (sec)	N/A	0.498	0.448	0.290	0.000	52.564	0.000	0.914	6.239

Problem 1457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	365	1392	0	0	0	1895	19787
normalized size	1	1.00	1.20	4.59	0.00	0.00	0.00	6.25	65.30
time (sec)	N/A	0.686	0.611	0.100	0.000	0.000	0.000	2.068	8.116

Problem 1458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	802	1828	0	6669	0	0	11687
normalized size	1	1.00	2.03	4.62	0.00	16.84	0.00	0.00	29.51
time (sec)	N/A	0.877	2.960	0.113	0.000	29.559	0.000	0.000	3.693

Problem 1459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	569	1447	0	3382	0	728	7702
normalized size	1	1.00	1.53	3.89	0.00	9.09	0.00	1.96	20.70
time (sec)	N/A	0.686	1.563	0.108	0.000	3.418	0.000	0.604	3.001

Problem 1460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	350	350	550	1060	0	4176	0	754	7239
normalized size	1	1.00	1.57	3.03	0.00	11.93	0.00	2.15	20.68
time (sec)	N/A	0.801	1.424	0.090	0.000	4.835	0.000	0.743	8.081

Problem 1461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	522	1733	0	8803	0	1637	13200
normalized size	1	1.00	1.40	4.66	0.00	23.66	0.00	4.40	35.48
time (sec)	N/A	0.761	1.044	0.098	0.000	120.315	0.000	1.247	7.833

Problem 1462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	417	417	536	1778	0	0	0	0	19125
normalized size	1	1.00	1.29	4.26	0.00	0.00	0.00	0.00	45.86
time (sec)	N/A	0.926	1.060	0.712	0.000	0.000	0.000	0.000	9.230

Problem 1463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	302	223	0	236	0	2892	310
normalized size	1	1.00	1.95	1.44	0.00	1.52	0.00	18.66	2.00
time (sec)	N/A	0.211	1.233	0.193	0.000	1.385	0.000	1.851	0.315

Problem 1464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	142	128	0	164	0	0	206
normalized size	1	1.00	1.07	0.96	0.00	1.23	0.00	0.00	1.55
time (sec)	N/A	0.430	0.176	0.330	0.000	1.147	0.000	0.000	0.220

Problem 1465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	66	95	0	451	78	68	773
normalized size	1	1.00	1.00	1.44	0.00	6.83	1.18	1.03	11.71
time (sec)	N/A	0.102	0.074	0.094	0.000	1.290	57.364	0.192	1.986

Problem 1466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	440	440	89	3511	0	7715	0	0	1244
normalized size	1	1.00	0.20	7.98	0.00	17.53	0.00	0.00	2.83
time (sec)	N/A	0.656	0.091	0.277	0.000	9.454	0.000	0.000	2.172

Problem 1467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	58	429	0	294	36	157	233
normalized size	1	1.00	0.29	2.12	0.00	1.46	0.18	0.78	1.15
time (sec)	N/A	0.234	0.046	0.139	0.000	1.135	10.717	0.931	1.807

Problem 1468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	63	52	0	22	0	63	38
normalized size	1	1.00	1.40	1.16	0.00	0.49	0.00	1.40	0.84
time (sec)	N/A	0.054	0.045	0.156	0.000	1.065	0.000	0.241	1.758

Problem 1469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	63	48	0	37	0	53	21
normalized size	1	1.00	1.19	0.91	0.00	0.70	0.00	1.00	0.40
time (sec)	N/A	0.054	0.029	0.067	0.000	0.913	0.000	0.218	1.837

Problem 1470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	41	22	21	14	26	21	26
normalized size	1	1.00	1.41	0.76	0.72	0.48	0.90	0.72	0.90
time (sec)	N/A	0.033	0.019	0.052	1.202	1.084	99.083	0.185	0.144

Problem 1471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	A	B
verified	N/A	NO	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	45	57	69	119	0	19	0	23	39
normalized size	1	1.27	1.53	2.64	0.00	0.42	0.00	0.51	0.87
time (sec)	N/A	0.075	0.137	0.439	0.000	0.886	0.000	0.184	2.035

Problem 1472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	622	2549	0	0	0	0	-1
normalized size	1	1.00	1.42	5.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.461	4.549	0.099	0.000	1.032	0.000	0.000	0.000

Problem 1473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	549	1826	0	0	0	0	-1
normalized size	1	1.00	1.50	5.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.337	3.913	0.111	0.000	1.041	0.000	0.000	0.000

Problem 1474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	352	512	1465	0	0	0	0	-1
normalized size	1	1.00	1.45	4.16	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.252	3.283	0.092	0.000	1.126	0.000	0.000	0.000

Problem 1475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	420	420	609	3552	0	0	0	0	-1
normalized size	1	1.00	1.45	8.46	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.342	4.641	0.107	0.000	1.259	0.000	0.000	0.000

Problem 1476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	498	498	730	3113	0	0	0	0	-1
normalized size	1	1.00	1.47	6.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.554	5.447	0.085	0.000	0.980	0.000	0.000	0.000

Problem 1477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	448	448	661	2561	0	0	0	0	-1
normalized size	1	1.00	1.48	5.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.444	4.871	0.100	0.000	1.199	0.000	0.000	0.000

Problem 1478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	437	437	628	3868	0	0	0	0	-1
normalized size	1	1.00	1.44	8.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.461	4.543	0.118	0.000	1.119	0.000	0.000	0.000

Problem 1479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	541	541	705	7383	0	0	0	0	-1
normalized size	1	1.00	1.30	13.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.471	5.414	0.129	0.000	0.785	0.000	0.000	0.000

Problem 1480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	550	2127	0	0	0	0	-1
normalized size	1	1.00	1.42	5.48	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.408	4.266	0.158	0.000	1.118	0.000	0.000	0.000

Problem 1481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	331	331	464	1286	0	0	0	0	-1
normalized size	1	1.00	1.40	3.89	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.260	3.271	0.159	0.000	0.860	0.000	0.000	0.000

Problem 1482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	439	520	0	0	0	0	-1
normalized size	1	1.00	1.52	1.81	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.165	1.587	0.148	0.000	1.069	0.000	0.000	0.000

Problem 1483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	320	1298	0	0	0	0	-1
normalized size	1	1.00	0.93	3.77	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.261	1.498	0.154	0.000	0.918	0.000	0.000	0.000

Problem 1484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	465	1319	0	0	0	0	-1
normalized size	1	1.00	1.35	3.82	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.286	4.799	0.131	0.000	1.011	0.000	0.000	0.000

Problem 1485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	319	319	431	979	0	0	0	0	-1
normalized size	1	1.00	1.35	3.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.229	3.975	0.113	0.000	0.823	0.000	0.000	0.000

Problem 1486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	525	1317	0	0	0	0	-1
normalized size	1	1.00	1.47	3.70	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.282	3.246	0.135	0.000	0.978	0.000	0.000	0.000

Problem 1487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	773	3176	1104	3116	0	5560	2585
normalized size	1	1.00	2.08	8.54	2.97	8.38	0.00	14.95	6.95
time (sec)	N/A	0.251	1.616	0.074	0.872	1.262	0.000	0.384	3.275

Problem 1488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	355	1271	575	1373	0	2435	1229
normalized size	1	1.00	1.52	5.43	2.46	5.87	0.00	10.41	5.25
time (sec)	N/A	0.136	0.534	0.057	0.739	1.358	0.000	0.262	2.457

Problem 1489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	122	338	238	434	3958	770	446
normalized size	1	1.00	0.97	2.68	1.89	3.44	31.41	6.11	3.54
time (sec)	N/A	0.069	0.199	0.049	0.668	0.953	4.753	0.180	2.037

Problem 1490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	182	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.274	0.251	1.574	0.000	0.818	0.000	0.000	0.000

Problem 1491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	361	359	310	0	0	0	0	0	-1
normalized size	1	0.99	0.86	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.583	0.751	1.205	0.000	1.229	0.000	0.000	0.000

Problem 1492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	182	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.186	0.173	0.868	0.000	0.855	0.000	0.000	0.000

Problem 1493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	31	31	31	30	58	47	0	0	98
normalized size	1	1.00	1.00	0.97	1.87	1.52	0.00	0.00	3.16
time (sec)	N/A	0.019	0.061	0.048	1.279	1.130	0.000	0.000	1.899

Problem 1494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	229	290	231	280	279	270	238
normalized size	1	1.00	1.85	2.34	1.86	2.26	2.25	2.18	1.92
time (sec)	N/A	0.189	0.074	0.040	0.599	0.767	0.115	0.157	0.107

Problem 1495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	175	221	174	211	211	206	179
normalized size	1	1.00	1.41	1.78	1.40	1.70	1.70	1.66	1.44
time (sec)	N/A	0.142	0.055	0.046	0.526	1.063	0.102	0.156	0.070

Problem 1496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	133	152	126	146	146	146	124
normalized size	1	1.00	1.07	1.23	1.02	1.18	1.18	1.18	1.00
time (sec)	N/A	0.109	0.040	0.041	0.511	0.658	0.090	0.180	0.049

Problem 1497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	79	83	73	80	82	85	71
normalized size	1	1.00	1.00	1.05	0.92	1.01	1.04	1.08	0.90
time (sec)	N/A	0.064	0.018	0.043	0.525	0.516	0.077	0.189	0.033

Problem 1498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	21	33	14	33	31	25	32
normalized size	1	1.00	1.31	2.06	0.88	2.06	1.94	1.56	2.00
time (sec)	N/A	0.004	0.005	0.041	0.604	0.686	0.066	0.149	0.040

Problem 1499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	95	146	116	117	100	118	121
normalized size	1	1.00	0.91	1.40	1.12	1.12	0.96	1.13	1.16
time (sec)	N/A	0.112	0.039	0.047	0.531	0.764	0.346	0.151	1.782

Problem 1500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	97	166	117	172	126	177	127
normalized size	1	1.00	0.95	1.63	1.15	1.69	1.24	1.74	1.25
time (sec)	N/A	0.103	0.064	0.090	0.493	1.160	0.666	0.166	0.073

Problem 1501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	118	179	128	187	139	116	135
normalized size	1	1.00	1.06	1.61	1.15	1.68	1.25	1.05	1.22
time (sec)	N/A	0.094	0.048	0.049	0.645	0.957	1.710	0.149	0.114

Problem 1502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	111	188	146	179	158	123	144
normalized size	1	1.00	0.93	1.58	1.23	1.50	1.33	1.03	1.21
time (sec)	N/A	0.095	0.045	0.046	0.476	0.921	3.820	0.151	1.835

Problem 1503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	100	131	150	150	170	186	151
normalized size	1	1.00	0.82	1.07	1.23	1.23	1.39	1.52	1.24
time (sec)	N/A	0.090	0.039	0.047	0.534	1.067	7.372	0.194	1.811

Problem 1504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	433	554	430	561	552	543	454
normalized size	1	1.00	1.80	2.31	1.79	2.34	2.30	2.26	1.89
time (sec)	N/A	0.416	0.157	0.040	0.539	1.299	0.160	0.173	1.884

Problem 1505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	351	428	343	429	430	420	349
normalized size	1	1.00	1.46	1.78	1.43	1.79	1.79	1.75	1.45
time (sec)	N/A	0.316	0.123	0.039	0.491	1.069	0.142	0.160	0.111

Problem 1506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	240	240	244	302	241	298	294	298	242
normalized size	1	1.00	1.02	1.26	1.00	1.24	1.22	1.24	1.01
time (sec)	N/A	0.232	0.084	0.038	0.603	0.821	0.121	0.167	1.833

Problem 1507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	153	176	151	167	168	176	144
normalized size	1	1.00	1.00	1.15	0.99	1.09	1.10	1.15	0.94
time (sec)	N/A	0.131	0.043	0.038	0.546	0.691	0.102	0.195	0.062

Problem 1508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	36	86	14	71	65	40	62
normalized size	1	1.00	2.25	5.38	0.88	4.44	4.06	2.50	3.88
time (sec)	N/A	0.004	0.010	0.046	0.534	1.063	0.094	0.162	0.033

Problem 1509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	228	406	307	308	280	337	326
normalized size	1	1.00	1.00	1.77	1.34	1.34	1.22	1.47	1.42
time (sec)	N/A	0.275	0.112	0.053	0.502	0.797	0.749	0.156	1.805

Problem 1510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	241	444	310	444	325	420	387
normalized size	1	1.00	1.08	1.99	1.39	1.99	1.46	1.88	1.74
time (sec)	N/A	0.290	0.185	0.057	0.643	1.003	1.824	0.173	1.841

Problem 1511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	233	471	317	487	360	317	358
normalized size	1	1.00	1.06	2.15	1.45	2.22	1.64	1.45	1.63
time (sec)	N/A	0.250	0.081	0.049	0.680	0.913	6.706	0.159	1.842

Problem 1512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	300	495	327	487	379	314	349
normalized size	1	1.00	1.38	2.28	1.51	2.24	1.75	1.45	1.61
time (sec)	N/A	0.226	0.128	0.051	0.631	1.164	21.025	0.157	1.856

Problem 1513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	292	507	338	458	401	525	369
normalized size	1	1.00	1.29	2.23	1.49	2.02	1.77	2.31	1.63
time (sec)	N/A	0.209	0.175	0.060	0.655	0.763	58.011	0.202	1.918

Problem 1514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	411	411	735	1052	729	936	935	908	768
normalized size	1	1.00	1.79	2.56	1.77	2.28	2.27	2.21	1.87
time (sec)	N/A	0.723	0.237	0.040	0.548	0.720	0.207	0.167	0.236

Problem 1515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	411	411	562	830	565	719	726	705	589
normalized size	1	1.00	1.37	2.02	1.37	1.75	1.77	1.72	1.43
time (sec)	N/A	0.588	0.198	0.045	0.540	0.816	0.178	0.177	0.184

Problem 1516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	411	411	413	608	417	502	503	502	414
normalized size	1	1.00	1.00	1.48	1.01	1.22	1.22	1.22	1.01
time (sec)	N/A	0.455	0.135	0.041	0.550	0.873	0.153	0.157	1.889

Problem 1517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	251	386	261	286	291	300	243
normalized size	1	1.00	1.00	1.54	1.04	1.14	1.16	1.20	0.97
time (sec)	N/A	0.229	0.057	0.044	0.594	0.865	0.119	0.175	0.106

Problem 1518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	51	218	14	126	121	56	112
normalized size	1	1.00	3.19	13.62	0.88	7.88	7.56	3.50	7.00
time (sec)	N/A	0.005	0.019	0.048	0.492	0.837	0.097	0.150	1.888

Problem 1519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	399	399	483	872	644	645	641	742	697
normalized size	1	1.00	1.21	2.19	1.61	1.62	1.61	1.86	1.75
time (sec)	N/A	0.581	0.244	0.057	0.659	1.273	1.361	0.170	0.098

Problem 1520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	637	930	649	903	688	828	1090
normalized size	1	1.00	1.61	2.35	1.64	2.28	1.74	2.09	2.75
time (sec)	N/A	0.568	0.251	0.059	0.710	1.209	4.109	0.198	1.820

Problem 1521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	390	390	403	978	656	990	733	694	936
normalized size	1	1.00	1.03	2.51	1.68	2.54	1.88	1.78	2.40
time (sec)	N/A	0.513	0.165	0.067	0.694	1.213	17.281	0.170	1.879

Problem 1522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	396	396	404	1023	670	1031	821	678	807
normalized size	1	1.00	1.02	2.58	1.69	2.60	2.07	1.71	2.04
time (sec)	N/A	0.512	0.155	0.063	0.645	0.767	71.722	0.170	1.873

Problem 1523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	389	389	614	1056	679	1017	0	1057	763
normalized size	1	1.00	1.58	2.71	1.75	2.61	0.00	2.72	1.96
time (sec)	N/A	0.483	0.303	0.061	0.662	0.785	0.000	0.220	1.880

Problem 1524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	299	299	297	781	0	709	1056	401	726
normalized size	1	1.00	0.99	2.61	0.00	2.37	3.53	1.34	2.43
time (sec)	N/A	0.397	0.223	0.049	0.000	0.721	12.739	0.159	2.091

Problem 1525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	177	492	0	458	561	251	433
normalized size	1	1.00	0.94	2.62	0.00	2.44	2.98	1.34	2.30
time (sec)	N/A	0.236	0.182	0.050	0.000	0.930	4.805	0.156	2.004

Problem 1526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	111	264	0	282	335	144	230
normalized size	1	1.00	0.97	2.32	0.00	2.47	2.94	1.26	2.02
time (sec)	N/A	0.133	0.094	0.047	0.000	1.127	1.799	0.177	0.255

Problem 1527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	70	70	72	113	0	176	134	81	129
normalized size	1	1.00	1.03	1.61	0.00	2.51	1.91	1.16	1.84
time (sec)	N/A	0.090	0.063	0.056	0.000	0.914	0.706	0.158	0.321

Problem 1528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	11	11	10	12	11	11	10	12	11
normalized size	1	1.00	0.91	1.09	1.00	1.00	0.91	1.09	1.00
time (sec)	N/A	0.004	0.002	0.049	0.714	0.938	0.154	0.148	0.040

Problem 1529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	116	233	0	229	0	149	515
normalized size	1	1.00	0.89	1.79	0.00	1.76	0.00	1.15	3.96
time (sec)	N/A	0.176	0.115	0.067	0.000	0.824	0.000	0.158	4.377

Problem 1530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	177	560	0	745	0	362	1637
normalized size	1	1.00	0.84	2.67	0.00	3.55	0.00	1.72	7.80
time (sec)	N/A	0.300	0.287	0.053	0.000	4.880	0.000	0.264	4.080

Problem 1531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	268	1033	0	1961	0	710	2608
normalized size	1	1.00	0.88	3.41	0.00	6.47	0.00	2.34	8.61
time (sec)	N/A	0.476	0.374	0.063	0.000	31.917	0.000	0.195	10.980

Problem 1532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	241	618	0	1701	1071	285	358
normalized size	1	1.00	1.40	3.59	0.00	9.89	6.23	1.66	2.08
time (sec)	N/A	0.216	0.277	0.057	0.000	0.951	25.124	0.164	0.323

Problem 1533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	161	363	0	1050	733	173	226
normalized size	1	1.00	1.28	2.88	0.00	8.33	5.82	1.37	1.79
time (sec)	N/A	0.145	0.172	0.056	0.000	0.821	11.140	0.160	1.948

Problem 1534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	98	141	0	573	340	114	248
normalized size	1	1.00	1.13	1.62	0.00	6.59	3.91	1.31	2.85
time (sec)	N/A	0.058	0.114	0.051	0.000	0.843	4.354	0.175	0.181

Problem 1535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	58	58	0	269	158	57	73
normalized size	1	1.00	1.05	1.05	0.00	4.89	2.87	1.04	1.33
time (sec)	N/A	0.030	0.028	0.051	0.000	0.968	1.197	0.158	0.063

Problem 1536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	13	15	14	14	12	14	14
normalized size	1	1.00	0.93	1.07	1.00	1.00	0.86	1.00	1.00
time (sec)	N/A	0.005	0.004	0.044	0.563	0.870	0.382	0.170	0.031

Problem 1537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	236	236	173	668	0	1834	0	357	1833
normalized size	1	1.00	0.73	2.83	0.00	7.77	0.00	1.51	7.77
time (sec)	N/A	0.358	0.243	0.099	0.000	5.805	0.000	0.210	7.933

Problem 1538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	327	327	275	1177	0	4494	0	741	3631
normalized size	1	1.00	0.84	3.60	0.00	13.74	0.00	2.27	11.10
time (sec)	N/A	0.534	0.602	0.082	0.000	89.106	0.000	0.241	8.681

Problem 1539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	293	293	480	1921	0	3618	0	636	1148
normalized size	1	1.00	1.64	6.56	0.00	12.35	0.00	2.17	3.92
time (sec)	N/A	0.677	0.804	0.087	0.000	0.935	0.000	0.210	3.018

Problem 1540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	334	649	0	2400	1545	439	753
normalized size	1	1.00	1.70	3.29	0.00	12.18	7.84	2.23	3.82
time (sec)	N/A	0.335	0.545	0.064	0.000	0.921	133.502	0.180	2.920

Problem 1541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	216	365	0	1455	762	292	412
normalized size	1	1.00	1.71	2.90	0.00	11.55	6.05	2.32	3.27
time (sec)	N/A	0.083	0.276	0.059	0.000	0.946	40.976	0.184	2.134

Problem 1542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	143	229	0	1004	530	183	284
normalized size	1	1.00	1.28	2.04	0.00	8.96	4.73	1.63	2.54
time (sec)	N/A	0.062	0.182	0.054	0.000	0.922	12.584	0.171	2.000

Problem 1543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	91	93	146	0	681	377	122	213
normalized size	1	0.97	0.99	1.55	0.00	7.24	4.01	1.30	2.27
time (sec)	N/A	0.042	0.124	0.057	0.000	0.794	3.396	0.164	1.906

Problem 1544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	15	15	14	39	44	14	43
normalized size	1	1.00	0.94	0.94	0.88	2.44	2.75	0.88	2.69
time (sec)	N/A	0.004	0.005	0.044	0.691	0.615	0.821	0.156	0.057

Problem 1545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	356	3233	0	6667	0	1117	2461
normalized size	1	1.00	0.90	8.14	0.00	16.79	0.00	2.81	6.20
time (sec)	N/A	0.823	1.111	0.085	0.000	152.532	0.000	0.283	5.462

Problem 1546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	431	431	549	1537	0	1445	0	759	2712
normalized size	1	1.00	1.27	3.57	0.00	3.35	0.00	1.76	6.29
time (sec)	N/A	0.789	0.848	0.072	0.000	0.964	0.000	0.252	13.549

Problem 1547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	312	312	270	992	0	985	0	506	1679
normalized size	1	1.00	0.87	3.18	0.00	3.16	0.00	1.62	5.38
time (sec)	N/A	0.419	0.513	0.086	0.000	0.933	0.000	0.244	5.084

Problem 1548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	177	535	0	617	0	308	876
normalized size	1	1.00	0.91	2.74	0.00	3.16	0.00	1.58	4.49
time (sec)	N/A	0.328	0.251	0.110	0.000	0.769	0.000	0.235	3.626

Problem 1549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	134	235	0	343	0	170	395
normalized size	1	1.00	1.10	1.93	0.00	2.81	0.00	1.39	3.24
time (sec)	N/A	0.090	0.145	0.053	0.000	0.698	0.000	0.222	2.792

Problem 1550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	15	14	14	60	14	14
normalized size	1	1.00	0.94	0.83	0.78	0.78	3.33	0.78	0.78
time (sec)	N/A	0.006	0.010	0.051	0.624	0.841	0.174	0.168	1.830

Problem 1551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	195	1302	0	1196	0	0	-1
normalized size	1	1.00	0.98	6.54	0.00	6.01	0.00	0.00	-0.01
time (sec)	N/A	0.256	0.252	0.056	0.000	17.693	0.000	0.000	0.000

Problem 1552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	203	203	280	3088	0	1964	0	0	-1
normalized size	1	1.00	1.38	15.21	0.00	9.67	0.00	0.00	-0.00
time (sec)	N/A	0.209	0.407	0.061	0.000	31.887	0.000	0.000	0.000

Problem 1553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	389	5046	0	0	0	0	-1
normalized size	1	1.00	1.39	18.02	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.321	1.214	0.069	0.000	0.000	0.000	0.000	0.000

Problem 1554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	214	7916	0	2040	0	2611	-1
normalized size	1	1.00	0.99	36.48	0.00	9.40	0.00	12.03	-0.00
time (sec)	N/A	0.226	0.469	0.136	0.000	7.003	0.000	0.767	0.000

Problem 1555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	290	10723	0	3996	0	0	-1
normalized size	1	1.00	0.94	34.93	0.00	13.02	0.00	0.00	-0.00
time (sec)	N/A	0.459	0.736	0.110	0.000	38.094	0.000	0.000	0.000

Problem 1556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	430	430	401	15192	0	6858	0	10103	-1
normalized size	1	1.00	0.93	35.33	0.00	15.95	0.00	23.50	-0.00
time (sec)	N/A	0.645	3.113	0.091	0.000	174.367	0.000	73.159	0.000

Problem 1557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	379	379	297	1607	0	1587	0	856	-1
normalized size	1	1.00	0.78	4.24	0.00	4.19	0.00	2.26	-0.00
time (sec)	N/A	0.514	0.689	0.075	0.000	1.284	0.000	0.271	0.000

Problem 1558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	242	242	204	895	0	1015	0	534	-1
normalized size	1	1.00	0.84	3.70	0.00	4.19	0.00	2.21	-0.00
time (sec)	N/A	0.447	0.341	0.079	0.000	1.271	0.000	0.251	0.000

Problem 1559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	147	401	0	559	0	294	-1
normalized size	1	1.00	0.92	2.51	0.00	3.49	0.00	1.84	-0.01
time (sec)	N/A	0.123	0.190	0.058	0.000	0.795	0.000	0.258	0.000

Problem 1560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	15	14	49	136	14	14
normalized size	1	1.00	0.94	0.83	0.78	2.72	7.56	0.78	0.78
time (sec)	N/A	0.006	0.015	0.044	0.509	0.905	0.605	0.189	1.921

Problem 1561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	342	3119	0	0	0	0	-1
normalized size	1	1.00	0.95	8.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.601	0.742	0.061	0.000	0.000	0.000	0.000	0.000

Problem 1562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	303	303	395	6898	0	0	0	0	-1
normalized size	1	1.00	1.30	22.77	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.481	1.057	0.068	0.000	0.000	0.000	0.000	0.000

Problem 1563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	309	309	544	10362	0	0	0	0	-1
normalized size	1	1.00	1.76	33.53	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.369	2.305	0.082	0.000	0.000	0.000	0.000	0.000

Problem 1564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	462	462	485	15982	0	0	0	0	-1
normalized size	1	1.00	1.05	34.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.626	2.965	0.087	0.000	0.000	0.000	0.000	0.000

Problem 1565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	446	446	345	2387	0	2343	0	1302	-1
normalized size	1	1.00	0.77	5.35	0.00	5.25	0.00	2.92	-0.00
time (sec)	N/A	0.624	1.101	0.072	0.000	1.874	0.000	0.320	0.000

Problem 1566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	289	252	1358	0	1523	0	824	-1
normalized size	1	1.00	0.87	4.70	0.00	5.27	0.00	2.85	-0.00
time (sec)	N/A	0.548	0.677	0.065	0.000	2.031	0.000	0.298	0.000

Problem 1567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	194	616	0	841	0	452	-1
normalized size	1	1.00	0.98	3.11	0.00	4.25	0.00	2.28	-0.01
time (sec)	N/A	0.169	0.517	0.057	0.000	0.951	0.000	0.269	0.000

Problem 1568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	15	14	86	243	14	14
normalized size	1	1.00	0.94	0.83	0.78	4.78	13.50	0.78	0.78
time (sec)	N/A	0.006	0.012	0.049	0.471	0.921	2.900	0.153	2.034

Problem 1569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	627	627	607	6077	0	0	0	0	-1
normalized size	1	1.00	0.97	9.69	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.144	1.630	0.061	0.000	0.000	0.000	0.000	0.000

Problem 1570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	508	508	659	13167	0	0	0	0	-1
normalized size	1	1.00	1.30	25.92	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.749	2.452	0.066	0.000	0.000	0.000	0.000	0.000

Problem 1571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	464	464	535	18705	0	0	0	0	-1
normalized size	1	1.00	1.15	40.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.845	2.134	0.077	0.000	0.000	0.000	0.000	0.000

Problem 1572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	473	473	823	28593	0	0	0	0	-1
normalized size	1	1.00	1.74	60.45	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.747	2.624	0.319	0.000	0.000	0.000	0.000	0.000

Problem 1573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	245	245	302	539	0	545	0	252	-1
normalized size	1	1.00	1.23	2.20	0.00	2.22	0.00	1.03	-0.00
time (sec)	N/A	0.329	0.393	0.069	0.000	1.185	0.000	0.264	0.000

Problem 1574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	185	280	0	335	0	146	-1
normalized size	1	1.00	1.25	1.89	0.00	2.26	0.00	0.99	-0.01
time (sec)	N/A	0.199	0.182	0.063	0.000	0.999	0.000	0.283	0.000

Problem 1575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	82	117	0	197	0	84	-1
normalized size	1	1.00	0.98	1.39	0.00	2.35	0.00	1.00	-0.01
time (sec)	N/A	0.053	0.124	0.054	0.000	0.744	0.000	0.436	0.000

Problem 1576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	15	15	14	14	14	14	14
normalized size	1	1.00	0.94	0.94	0.88	0.88	0.88	0.88	0.88
time (sec)	N/A	0.006	0.007	0.048	0.557	0.851	0.156	0.153	1.886

Problem 1577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	127	350	0	1048	0	0	-1
normalized size	1	1.00	0.95	2.63	0.00	7.88	0.00	0.00	-0.01
time (sec)	N/A	0.091	0.144	0.056	0.000	3.272	0.000	0.000	0.000

Problem 1578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	138	860	0	686	0	0	-1
normalized size	1	1.00	0.98	6.10	0.00	4.87	0.00	0.00	-0.01
time (sec)	N/A	0.115	0.107	0.062	0.000	1.279	0.000	0.000	0.000

Problem 1579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	220	1588	0	1500	0	1046	-1
normalized size	1	1.00	0.98	7.06	0.00	6.67	0.00	4.65	-0.00
time (sec)	N/A	0.272	0.318	0.064	0.000	1.944	0.000	0.393	0.000

Problem 1580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	328	328	323	2659	0	2998	0	2666	-1
normalized size	1	1.00	0.98	8.11	0.00	9.14	0.00	8.13	-0.00
time (sec)	N/A	0.449	0.559	0.078	0.000	9.875	0.000	0.775	0.000

Problem 1581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	248	1320	0	965	0	545	-1
normalized size	1	1.00	1.23	6.53	0.00	4.78	0.00	2.70	-0.00
time (sec)	N/A	0.206	0.332	0.066	0.000	1.229	0.000	0.368	0.000

Problem 1582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	164	788	0	615	0	347	-1
normalized size	1	1.00	1.07	5.15	0.00	4.02	0.00	2.27	-0.01
time (sec)	N/A	0.154	0.219	0.062	0.000	1.261	0.000	0.324	0.000

Problem 1583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	95	427	0	363	0	197	-1
normalized size	1	1.00	1.02	4.59	0.00	3.90	0.00	2.12	-0.01
time (sec)	N/A	0.052	0.166	0.055	0.000	1.093	0.000	0.332	0.000

Problem 1584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	56	158	0	211	0	101	161
normalized size	1	1.00	0.93	2.63	0.00	3.52	0.00	1.68	2.68
time (sec)	N/A	0.029	0.271	0.054	0.000	0.989	0.000	0.304	2.620

Problem 1585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	16	16	15	15	14	14	15	14	14
normalized size	1	1.00	0.94	0.94	0.88	0.88	0.94	0.88	0.88
time (sec)	N/A	0.006	0.007	0.049	0.508	0.639	0.920	0.205	1.890

Problem 1586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	166	166	133	1084	0	918	0	501	-1
normalized size	1	1.00	0.80	6.53	0.00	5.53	0.00	3.02	-0.01
time (sec)	N/A	0.129	0.191	0.058	0.000	1.497	0.000	0.308	0.000

Problem 1587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	215	2293	0	2102	0	0	-1
normalized size	1	1.00	0.87	9.25	0.00	8.48	0.00	0.00	-0.00
time (sec)	N/A	0.273	0.538	0.065	0.000	4.254	0.000	0.000	0.000

Problem 1588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	354	1692	0	1493	0	754	-1
normalized size	1	1.00	1.70	8.13	0.00	7.18	0.00	3.62	-0.00
time (sec)	N/A	0.225	1.008	0.066	0.000	2.611	0.000	0.375	0.000

Problem 1589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	285	865	0	958	0	492	-1
normalized size	1	1.00	1.80	5.47	0.00	6.06	0.00	3.11	-0.01
time (sec)	N/A	0.116	0.490	0.064	0.000	2.435	0.000	0.349	0.000

Problem 1590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	110	123	0	194	0	289	122
normalized size	1	1.00	1.49	1.66	0.00	2.62	0.00	3.91	1.65
time (sec)	N/A	0.039	0.786	0.056	0.000	2.134	0.000	0.322	2.265

Problem 1591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	64	67	0	145	0	205	66
normalized size	1	1.00	1.08	1.14	0.00	2.46	0.00	3.47	1.12
time (sec)	N/A	0.022	0.204	0.046	0.000	1.921	0.000	0.279	2.064

Problem 1592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	18	18	17	15	14	51	58	14	14
normalized size	1	1.00	0.94	0.83	0.78	2.83	3.22	0.78	0.78
time (sec)	N/A	0.006	0.010	0.056	0.532	0.866	1.700	0.280	1.994

Problem 1593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	249	2451	0	3858	0	8417	-1
normalized size	1	1.00	0.86	8.42	0.00	13.26	0.00	28.92	-0.00
time (sec)	N/A	0.293	0.420	0.067	0.000	4.925	0.000	2.404	0.000

Problem 1594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	384	4855	0	7442	0	6103	-1
normalized size	1	1.00	0.91	11.48	0.00	17.59	0.00	14.43	-0.00
time (sec)	N/A	0.572	1.347	0.114	0.000	20.349	0.000	3.182	0.000

Problem 1595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	111	123	121	272	643	1087	118
normalized size	1	1.00	0.84	0.93	0.92	2.06	4.87	8.23	0.89
time (sec)	N/A	0.082	0.136	0.046	0.549	0.882	4.915	0.227	0.095

Problem 1596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	109	123	121	220	457	711	118
normalized size	1	1.00	0.83	0.93	0.92	1.67	3.46	5.39	0.89
time (sec)	N/A	0.066	0.127	0.048	0.806	0.816	20.229	0.195	1.881

Problem 1597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	110	123	121	167	155	400	118
normalized size	1	1.00	0.83	0.93	0.92	1.27	1.17	3.03	0.89
time (sec)	N/A	0.070	0.119	0.050	0.522	0.900	5.144	0.270	0.066

Problem 1598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	109	123	121	116	427	166	118
normalized size	1	1.00	0.84	0.95	0.93	0.89	3.28	1.28	0.91
time (sec)	N/A	0.062	0.112	0.046	0.533	0.831	45.951	0.267	0.067

Problem 1599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	106	123	129	126	128	163	133
normalized size	1	1.00	0.84	0.98	1.02	1.00	1.02	1.29	1.06
time (sec)	N/A	0.068	0.105	0.048	0.717	0.873	28.767	0.193	0.071

Problem 1600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	108	122	126	137	536	153	139
normalized size	1	1.00	0.84	0.95	0.98	1.07	4.19	1.20	1.09
time (sec)	N/A	0.064	0.115	0.044	0.600	0.825	1.653	0.203	0.086

Problem 1601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	291	359	308	590	1860	2447	267
normalized size	1	1.00	1.15	1.42	1.22	2.34	7.38	9.71	1.06
time (sec)	N/A	0.173	0.410	0.057	0.600	0.640	70.394	0.327	0.097

Problem 1602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	291	359	308	495	1093	1648	267
normalized size	1	1.00	1.15	1.42	1.22	1.96	4.34	6.54	1.06
time (sec)	N/A	0.129	0.357	0.055	0.528	0.563	43.463	0.289	0.065

Problem 1603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	291	359	308	399	405	966	267
normalized size	1	1.00	1.15	1.42	1.22	1.58	1.61	3.83	1.06
time (sec)	N/A	0.125	0.363	0.055	0.538	0.635	8.783	0.221	1.923

Problem 1604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	290	359	308	306	1025	421	267
normalized size	1	1.00	1.16	1.44	1.23	1.22	4.10	1.68	1.07
time (sec)	N/A	0.126	0.391	0.051	0.530	0.587	121.363	0.183	1.853

Problem 1605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	287	359	316	316	316	460	333
normalized size	1	1.00	1.16	1.45	1.27	1.27	1.27	1.85	1.34
time (sec)	N/A	0.127	0.344	0.052	0.641	0.798	90.272	0.212	0.072

Problem 1606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	246	246	289	359	314	327	274	440	329
normalized size	1	1.00	1.17	1.46	1.28	1.33	1.11	1.79	1.34
time (sec)	N/A	0.127	0.334	0.049	0.534	0.751	113.802	0.221	1.887

Problem 1607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	600	795	645	1113	3529	4552	444
normalized size	1	1.00	1.41	1.86	1.51	2.61	8.26	10.66	1.04
time (sec)	N/A	0.303	0.616	0.054	0.541	0.836	126.018	0.594	1.959

Problem 1608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	600	795	645	958	2122	3123	444
normalized size	1	1.00	1.41	1.86	1.51	2.24	4.97	7.31	1.04
time (sec)	N/A	0.243	0.616	0.049	0.545	0.889	77.354	0.372	0.124

Problem 1609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	427	427	601	795	645	802	843	1876	444
normalized size	1	1.00	1.41	1.86	1.51	1.88	1.97	4.39	1.04
time (sec)	N/A	0.238	0.602	0.053	0.649	0.832	13.406	0.284	0.128

Problem 1610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	425	425	599	795	645	648	0	841	444
normalized size	1	1.00	1.41	1.87	1.52	1.52	0.00	1.98	1.04
time (sec)	N/A	0.234	0.618	0.057	0.553	0.815	0.000	0.226	1.931

Problem 1611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	594	795	653	657	0	1000	581
normalized size	1	1.00	1.41	1.89	1.55	1.56	0.00	2.38	1.38
time (sec)	N/A	0.239	0.540	0.056	0.538	0.739	0.000	0.311	1.938

Problem 1612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	598	795	651	669	0	972	677
normalized size	1	1.00	1.42	1.89	1.55	1.59	0.00	2.31	1.61
time (sec)	N/A	0.228	0.593	0.055	0.665	0.960	0.000	0.304	1.957

Problem 1613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	422	422	782	1494	0	2909	0	813	6933
normalized size	1	1.00	1.85	3.54	0.00	6.89	0.00	1.93	16.43
time (sec)	N/A	2.229	2.422	0.105	0.000	1.157	0.000	0.480	0.963

Problem 1614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	288	724	0	368	0	614	2611
normalized size	1	1.00	0.99	2.49	0.00	1.26	0.00	2.11	8.97
time (sec)	N/A	0.888	0.348	0.088	0.000	0.937	0.000	0.458	2.145

Problem 1615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	165	158	0	1317	0	254	205
normalized size	1	1.00	0.94	0.90	0.00	7.53	0.00	1.45	1.17
time (sec)	N/A	0.176	0.631	0.073	0.000	0.972	0.000	0.297	2.371

Problem 1616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	317	927	0	8557	0	1366	33147
normalized size	1	1.00	0.90	2.62	0.00	24.17	0.00	3.86	93.64
time (sec)	N/A	0.704	0.498	0.112	0.000	1.234	0.000	0.999	9.404

Problem 1617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	518	518	481	1962	0	0	0	1255	50695
normalized size	1	1.00	0.93	3.79	0.00	0.00	0.00	2.42	97.87
time (sec)	N/A	1.902	1.674	0.137	0.000	0.000	0.000	4.004	11.380

Problem 1618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	350	350	297	1333	0	2928	0	772	8776
normalized size	1	1.00	0.85	3.81	0.00	8.37	0.00	2.21	25.07
time (sec)	N/A	1.287	1.836	0.207	0.000	1.094	0.000	1.670	1.442

Problem 1619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	221	590	0	828	0	288	841
normalized size	1	1.00	0.99	2.63	0.00	3.70	0.00	1.29	3.75
time (sec)	N/A	0.344	0.418	0.089	0.000	0.713	0.000	1.107	0.468

Problem 1620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	221	232	0	2750	0	351	4814
normalized size	1	1.00	0.99	1.04	0.00	12.33	0.00	1.57	21.59
time (sec)	N/A	0.320	0.755	0.086	0.000	1.090	0.000	1.080	2.926

Problem 1621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	278	469	0	11482	0	1534	18615
normalized size	1	1.00	0.76	1.29	0.00	31.54	0.00	4.21	51.14
time (sec)	N/A	0.761	1.211	0.084	0.000	1.275	0.000	1.533	5.325

Problem 1622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	469	381	1758	0	0	0	1441	58573
normalized size	1	1.00	0.81	3.75	0.00	0.00	0.00	3.07	124.89
time (sec)	N/A	1.721	2.633	0.145	0.000	0.000	0.000	8.041	10.414

Problem 1623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	543	1403	3503	0	5701	0	1749	22151
normalized size	1	1.00	2.58	6.45	0.00	10.50	0.00	3.22	40.79
time (sec)	N/A	5.723	6.746	0.149	0.000	1.749	0.000	6.053	6.065

Problem 1624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	398	398	1197	2126	0	2773	0	1425	12750
normalized size	1	1.00	3.01	5.34	0.00	6.97	0.00	3.58	32.04
time (sec)	N/A	1.704	6.586	0.148	0.000	1.196	0.000	3.655	7.653

Problem 1625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	322	322	1069	1231	0	6728	0	1189	16393
normalized size	1	1.00	3.32	3.82	0.00	20.89	0.00	3.69	50.91
time (sec)	N/A	0.789	6.461	0.178	0.000	1.025	0.000	3.705	7.151

Problem 1626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	463	463	1080	3056	0	0	0	3071	46559
normalized size	1	1.00	2.33	6.60	0.00	0.00	0.00	6.63	100.56
time (sec)	N/A	1.890	6.412	0.115	0.000	0.000	0.000	5.527	9.030

Problem 1627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	673	673	1033	2743	0	0	0	5779	84064
normalized size	1	1.00	1.53	4.08	0.00	0.00	0.00	8.59	124.91
time (sec)	N/A	5.256	6.200	0.620	0.000	0.000	0.000	10.016	11.821

Problem 1628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	576	576	833	6516	0	0	0	0	-1
normalized size	1	1.00	1.45	11.31	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.791	12.578	0.106	0.000	0.768	0.000	0.000	0.000

Problem 1629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	487	487	709	4356	0	0	0	0	-1
normalized size	1	1.00	1.46	8.94	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.430	3.728	0.092	0.000	0.635	0.000	0.000	0.000

Problem 1630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	469	469	955	2977	0	0	0	0	-1
normalized size	1	1.00	2.04	6.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.378	4.198	0.113	0.000	0.682	0.000	0.000	0.000

Problem 1631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	548	548	1343	8612	0	0	0	0	-1
normalized size	1	1.00	2.45	15.72	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.426	6.327	0.230	0.000	1.157	0.000	0.000	0.000

Problem 1632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	691	691	5427	19265	0	0	0	0	-1
normalized size	1	1.00	7.85	27.88	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.748	6.570	0.191	0.000	1.012	0.000	0.000	0.000

Problem 1633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	688	688	7917	9176	0	0	0	0	-1
normalized size	1	1.00	11.51	13.34	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.981	6.584	0.131	0.000	0.908	0.000	0.000	0.000

Problem 1634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	592	592	5373	6527	0	0	0	0	-1
normalized size	1	1.00	9.08	11.03	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.713	6.724	0.141	0.000	0.966	0.000	0.000	0.000

Problem 1635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	573	573	8929	9599	0	0	0	0	-1
normalized size	1	1.00	15.58	16.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.580	6.781	0.245	0.000	0.905	0.000	0.000	0.000

Problem 1636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	NO	TBD	TBD	TBD	TBD	TBD	TBD
size	701	701	5450	19270	0	0	0	0	-1
normalized size	1	1.00	7.77	27.49	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.755	6.986	0.194	0.000	0.929	0.000	0.000	0.000

Problem 1637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	600	600	834	6517	0	0	0	0	-1
normalized size	1	1.00	1.39	10.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.893	12.635	0.132	0.000	0.788	0.000	0.000	0.000

Problem 1638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	507	507	693	4356	0	0	0	0	-1
normalized size	1	1.00	1.37	8.59	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.510	10.272	0.118	0.000	0.924	0.000	0.000	0.000

Problem 1639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	441	441	933	1854	0	0	0	0	-1
normalized size	1	1.00	2.12	4.20	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.322	7.726	0.108	0.000	0.732	0.000	0.000	0.000

Problem 1640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	391	391	793	837	0	0	0	0	-1
normalized size	1	1.00	2.03	2.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.205	1.984	0.110	0.000	0.677	0.000	0.000	0.000

Problem 1641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	458	458	625	1863	0	0	0	0	-1
normalized size	1	1.00	1.36	4.07	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.311	0.744	0.166	0.000	0.813	0.000	0.000	0.000

Problem 1642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	581	581	807	8632	0	0	0	0	-1
normalized size	1	1.00	1.39	14.86	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.507	5.513	0.240	0.000	0.797	0.000	0.000	0.000

Problem 1643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	540	540	943	4802	0	0	0	0	-1
normalized size	1	1.00	1.75	8.89	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.634	8.928	0.307	0.000	0.716	0.000	0.000	0.000

Problem 1644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	468	468	627	2942	0	0	0	0	-1
normalized size	1	1.00	1.34	6.29	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.409	4.224	0.148	0.000	0.843	0.000	0.000	0.000

Problem 1645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	378	1349	0	0	0	0	-1
normalized size	1	1.00	1.75	6.25	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.111	0.780	0.125	0.000	0.946	0.000	0.000	0.000

Problem 1646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	318	705	0	0	0	0	-1
normalized size	1	1.00	1.47	3.26	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.110	2.300	0.124	0.000	0.933	0.000	0.000	0.000

Problem 1647	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	290	290	405	1366	0	0	0	0	-1
normalized size	1	1.00	1.40	4.71	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.181	1.098	0.139	0.000	0.910	0.000	0.000	0.000

Problem 1648	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	559	559	672	2977	0	0	0	0	-1
normalized size	1	1.00	1.20	5.33	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.548	4.602	0.173	0.000	0.974	0.000	0.000	0.000

Problem 1649	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	573	573	1454	12975	0	0	0	0	-1
normalized size	1	1.00	2.54	22.64	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.615	13.427	0.303	0.000	1.058	0.000	0.000	0.000

Problem 1650	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	494	494	1150	5517	0	0	0	0	-1
normalized size	1	1.00	2.33	11.17	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.415	10.005	0.227	0.000	0.784	0.000	0.000	0.000

Problem 1651	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	456	456	928	4740	0	0	0	0	-1
normalized size	1	1.00	2.04	10.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.324	6.657	0.206	0.000	0.886	0.000	0.000	0.000

Problem 1652	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	517	517	1016	5571	0	0	0	0	-1
normalized size	1	1.00	1.97	10.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.384	7.379	0.197	0.000	0.966	0.000	0.000	0.000

Problem 1653	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	665	665	1450	13089	0	0	0	0	-1
normalized size	1	1.00	2.18	19.68	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.588	12.185	0.378	0.000	0.964	0.000	0.000	0.000

Problem 1654	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	449	449	1226	5439	1772	4607	0	9689	4573
normalized size	1	1.00	2.73	12.11	3.95	10.26	0.00	21.58	10.18
time (sec)	N/A	0.345	3.365	0.079	1.028	0.970	0.000	0.504	4.203

Problem 1655	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	408	1852	802	1750	0	3633	1825
normalized size	1	1.00	1.51	6.86	2.97	6.48	0.00	13.46	6.76
time (sec)	N/A	0.189	1.078	0.062	0.748	1.191	0.000	0.315	2.823

Problem 1656	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	134	424	287	511	4760	980	554
normalized size	1	1.00	0.94	2.97	2.01	3.57	33.29	6.85	3.87
time (sec)	N/A	0.092	0.204	0.048	0.552	0.819	4.713	0.194	2.253

Problem 1657	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	152	0	0	0	0	0	-1
normalized size	1	1.00	0.91	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.300	0.242	1.424	0.000	0.674	0.000	0.000	0.000

Problem 1658	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	358	358	287	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.571	0.593	1.659	0.000	1.177	0.000	0.000	0.000

Problem 1659	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	330	394	369	463	481	445	381
normalized size	1	1.00	2.75	3.28	3.08	3.86	4.01	3.71	3.18
time (sec)	N/A	0.286	0.114	0.052	0.579	0.748	0.132	0.154	0.172

Problem 1660	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	283	319	304	374	384	362	305
normalized size	1	1.00	2.36	2.66	2.53	3.12	3.20	3.02	2.54
time (sec)	N/A	0.214	0.097	0.046	0.497	0.662	0.118	0.158	2.053

Problem 1661	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	216	244	236	287	296	281	231
normalized size	1	1.00	1.80	2.03	1.97	2.39	2.47	2.34	1.92
time (sec)	N/A	0.163	0.074	0.048	0.487	0.704	0.106	0.167	0.091

Problem 1662	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	157	169	168	199	202	199	157
normalized size	1	1.00	1.33	1.43	1.42	1.69	1.71	1.69	1.33
time (sec)	N/A	0.129	0.054	0.047	0.588	0.408	0.094	0.157	0.066

Problem 1663	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	96	94	100	113	116	119	98
normalized size	1	1.00	1.28	1.25	1.33	1.51	1.55	1.59	1.31
time (sec)	N/A	0.076	0.028	0.039	0.523	0.783	0.078	0.170	0.044

Problem 1664	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	46	49	48	49	49	49	47
normalized size	1	1.00	1.21	1.29	1.26	1.29	1.29	1.29	1.24
time (sec)	N/A	0.028	0.010	0.043	0.558	0.769	0.069	0.151	1.953

Problem 1665	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	102	197	152	153	117	162	159
normalized size	1	1.00	1.11	2.14	1.65	1.66	1.27	1.76	1.73
time (sec)	N/A	0.063	0.058	0.046	0.542	0.634	0.433	0.187	1.975

Problem 1666	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	98	223	156	238	151	227	165
normalized size	1	1.00	0.97	2.21	1.54	2.36	1.50	2.25	1.63
time (sec)	N/A	0.103	0.103	0.053	0.457	0.724	0.882	0.159	0.102

Problem 1667	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	143	242	166	247	187	156	170
normalized size	1	1.00	1.35	2.28	1.57	2.33	1.76	1.47	1.60
time (sec)	N/A	0.092	0.078	0.053	0.480	0.882	2.415	0.152	0.139

Problem 1668	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	138	251	184	221	211	163	178
normalized size	1	1.00	1.37	2.49	1.82	2.19	2.09	1.61	1.76
time (sec)	N/A	0.080	0.063	0.063	0.527	0.883	5.764	0.156	0.123

Problem 1669	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	125	166	187	187	223	245	184
normalized size	1	1.00	1.45	1.93	2.17	2.17	2.59	2.85	2.14
time (sec)	N/A	0.035	0.055	0.056	0.584	0.894	11.665	0.201	0.092

Problem 1670	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	129	166	203	203	238	160	201
normalized size	1	1.00	1.08	1.38	1.69	1.69	1.98	1.33	1.68
time (sec)	N/A	0.097	0.057	0.048	0.614	0.678	21.111	0.154	2.226

Problem 1671	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	126	166	208	208	246	158	206
normalized size	1	1.00	1.05	1.38	1.73	1.73	2.05	1.32	1.72
time (sec)	N/A	0.084	0.063	0.054	0.569	0.833	36.794	0.153	0.113

Problem 1672	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	129	166	225	225	262	160	223
normalized size	1	1.00	1.08	1.38	1.88	1.88	2.18	1.33	1.86
time (sec)	N/A	0.081	0.057	0.053	0.603	0.859	60.721	0.154	0.103

Problem 1673	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	823	950	929	1175	1210	1125	980
normalized size	1	1.00	4.00	4.61	4.51	5.70	5.87	5.46	4.76
time (sec)	N/A	0.804	0.281	0.039	0.647	0.562	0.218	0.167	2.296

Problem 1674	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	737	821	810	1015	1035	975	845
normalized size	1	1.00	3.58	3.99	3.93	4.93	5.02	4.73	4.10
time (sec)	N/A	0.661	0.247	0.044	0.784	0.786	0.197	0.164	2.223

Problem 1675	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	615	692	686	856	884	826	711
normalized size	1	1.00	2.99	3.36	3.33	4.16	4.29	4.01	3.45
time (sec)	N/A	0.539	0.203	0.045	0.663	0.735	0.179	0.200	0.252

Problem 1676	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	512	563	562	696	717	676	576
normalized size	1	1.00	2.51	2.76	2.75	3.41	3.51	3.31	2.82
time (sec)	N/A	0.459	0.162	0.046	0.561	0.651	0.160	0.162	2.169

Problem 1677	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	402	434	444	534	546	524	439
normalized size	1	1.00	2.53	2.73	2.79	3.36	3.43	3.30	2.76
time (sec)	N/A	0.313	0.137	0.043	0.504	0.476	0.140	0.174	0.151

Problem 1678	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	288	305	322	374	384	374	305
normalized size	1	1.00	2.44	2.58	2.73	3.17	3.25	3.17	2.58
time (sec)	N/A	0.222	0.092	0.050	0.523	0.681	0.121	0.168	2.062

Problem 1679	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	172	176	198	216	226	226	182
normalized size	1	1.00	2.29	2.35	2.64	2.88	3.01	3.01	2.43
time (sec)	N/A	0.138	0.054	0.041	0.515	0.492	0.099	0.190	0.091

Problem 1680	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	84	97	96	97	100	97	88
normalized size	1	1.00	2.21	2.55	2.53	2.55	2.63	2.55	2.32
time (sec)	N/A	0.016	0.017	0.047	0.618	0.786	0.083	0.167	2.004

Problem 1681	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	258	521	403	404	352	442	411
normalized size	1	1.00	1.65	3.34	2.58	2.59	2.26	2.83	2.63
time (sec)	N/A	0.119	0.134	0.049	0.722	0.609	0.920	0.199	0.082

Problem 1682	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	354	564	410	598	396	526	486
normalized size	1	1.00	1.88	3.00	2.18	3.18	2.11	2.80	2.59
time (sec)	N/A	0.316	0.148	0.058	0.512	0.874	2.088	0.192	0.105

Problem 1683	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	187	601	419	652	444	418	451
normalized size	1	1.00	0.97	3.11	2.17	3.38	2.30	2.17	2.34
time (sec)	N/A	0.246	0.101	0.057	0.685	0.867	7.275	0.166	2.052

Problem 1684	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	351	626	431	650	486	415	451
normalized size	1	1.00	1.86	3.31	2.28	3.44	2.57	2.20	2.39
time (sec)	N/A	0.224	0.163	0.059	0.638	0.871	21.584	0.160	0.173

Problem 1685	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	189	189	338	641	440	602	518	652	462
normalized size	1	1.00	1.79	3.39	2.33	3.19	2.74	3.45	2.44
time (sec)	N/A	0.198	0.167	0.055	0.620	0.866	62.239	0.181	2.402

Problem 1686	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	332	651	459	526	0	415	465
normalized size	1	1.00	2.14	4.20	2.96	3.39	0.00	2.68	3.00
time (sec)	N/A	0.155	0.148	0.059	0.614	0.575	0.000	0.164	0.199

Problem 1687	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	317	430	453	453	0	438	460
normalized size	1	1.00	3.69	5.00	5.27	5.27	0.00	5.09	5.35
time (sec)	N/A	0.034	0.132	0.057	0.796	0.907	0.000	0.161	2.223

Problem 1688	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	323	430	478	478	0	440	479
normalized size	1	1.00	2.39	3.19	3.54	3.54	0.00	3.26	3.55
time (sec)	N/A	0.059	0.131	0.056	0.741	0.829	0.000	0.159	2.363

Problem 1689	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	320	430	489	489	0	440	490
normalized size	1	1.00	1.73	2.32	2.64	2.64	0.00	2.38	2.65
time (sec)	N/A	0.090	0.134	0.052	0.770	0.915	0.000	0.163	2.257

Problem 1690	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	322	430	500	500	0	440	501
normalized size	1	1.00	1.56	2.09	2.43	2.43	0.00	2.14	2.43
time (sec)	N/A	0.195	0.136	0.054	0.693	0.965	0.000	0.161	0.195

Problem 1691	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	320	430	501	501	0	438	502
normalized size	1	1.00	1.55	2.09	2.43	2.43	0.00	2.13	2.44
time (sec)	N/A	0.160	0.146	0.051	0.636	0.949	0.000	0.167	0.307

Problem 1692	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	323	430	522	522	0	440	523
normalized size	1	1.00	1.57	2.09	2.53	2.53	0.00	2.14	2.54
time (sec)	N/A	0.168	0.138	0.054	0.698	1.337	0.000	0.160	0.265

Problem 1693	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	365	564	411	610	396	433	486
normalized size	1	1.00	1.95	3.02	2.20	3.26	2.12	2.32	2.60
time (sec)	N/A	0.265	0.165	0.056	0.601	1.213	2.078	0.165	2.149

Problem 1694	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	145	145	250	376	273	417	257	282	293
normalized size	1	1.00	1.72	2.59	1.88	2.88	1.77	1.94	2.02
time (sec)	N/A	0.176	0.119	0.056	0.534	0.840	1.430	0.165	0.104

Problem 1695	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	99	99	153	223	158	249	151	162	165
normalized size	1	1.00	1.55	2.25	1.60	2.52	1.53	1.64	1.67
time (sec)	N/A	0.098	0.071	0.061	0.462	0.783	0.879	0.155	2.107

Problem 1696	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	56	106	77	109	71	74	75
normalized size	1	1.00	0.93	1.77	1.28	1.82	1.18	1.23	1.25
time (sec)	N/A	0.056	0.046	0.052	0.561	0.808	0.433	0.158	0.104

Problem 1697	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	31	39	34	37	27	32	32
normalized size	1	1.00	0.97	1.22	1.06	1.16	0.84	1.00	1.00
time (sec)	N/A	0.022	0.011	0.051	0.524	0.895	0.179	0.152	2.047

Problem 1698	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	69	123	118	157	355	141	94
normalized size	1	1.00	0.84	1.50	1.44	1.91	4.33	1.72	1.15
time (sec)	N/A	0.063	0.059	0.051	0.486	0.930	1.188	0.155	2.137

Problem 1699	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	103	208	256	396	706	195	263
normalized size	1	1.00	0.88	1.78	2.19	3.38	6.03	1.67	2.25
time (sec)	N/A	0.104	0.112	0.059	0.542	0.779	2.287	0.221	2.237

Problem 1700	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	157	157	146	289	479	801	1066	393	454
normalized size	1	1.00	0.93	1.84	3.05	5.10	6.79	2.50	2.89
time (sec)	N/A	0.154	0.119	0.063	0.801	0.815	3.583	0.163	2.662

Problem 1701	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	362	626	434	671	486	415	451
normalized size	1	1.00	1.95	3.37	2.33	3.61	2.61	2.23	2.42
time (sec)	N/A	0.228	0.191	0.061	0.611	1.227	21.382	0.180	0.192

Problem 1702	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	217	419	292	427	337	266	301
normalized size	1	1.00	1.51	2.91	2.03	2.97	2.34	1.85	2.09
time (sec)	N/A	0.152	0.121	0.058	0.635	0.819	12.682	0.191	2.336

Problem 1703	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	138	251	189	226	211	161	178
normalized size	1	1.00	1.37	2.49	1.87	2.24	2.09	1.59	1.76
time (sec)	N/A	0.078	0.068	0.054	0.638	0.523	5.772	0.158	2.253

Problem 1704	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	61	79	97	97	107	75	91
normalized size	1	1.00	0.84	1.08	1.33	1.33	1.47	1.03	1.25
time (sec)	N/A	0.059	0.029	0.049	0.558	1.009	1.494	0.162	0.054

Problem 1705	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	50	50	53	25	52
normalized size	1	1.00	0.71	0.92	1.32	1.32	1.39	0.66	1.37
time (sec)	N/A	0.023	0.010	0.057	0.519	0.847	0.334	0.151	0.033

Problem 1706	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	136	220	452	643	818	364	398
normalized size	1	1.00	0.93	1.51	3.10	4.40	5.60	2.49	2.73
time (sec)	N/A	0.128	0.088	0.055	0.705	0.892	2.811	0.186	2.543

Problem 1707	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	189	365	757	1228	1445	411	711
normalized size	1	1.00	0.95	1.83	3.80	6.17	7.26	2.07	3.57
time (sec)	N/A	0.250	0.130	0.063	0.759	1.058	5.354	0.225	2.815

Problem 1708	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	208	232	1002	175	226	328	1400
normalized size	1	1.00	1.32	1.47	6.34	1.11	1.43	2.08	8.86
time (sec)	N/A	0.185	0.079	0.046	0.586	0.878	0.154	0.171	4.253

Problem 1709	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	163	180	698	134	168	255	935
normalized size	1	1.00	1.03	1.14	4.42	0.85	1.06	1.61	5.92
time (sec)	N/A	0.145	0.065	0.043	0.617	0.859	0.139	0.178	3.323

Problem 1710	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	120	128	456	93	116	185	564
normalized size	1	1.00	0.76	0.81	2.89	0.59	0.73	1.17	3.57
time (sec)	N/A	0.118	0.045	0.046	0.596	0.716	0.123	0.161	3.017

Problem 1711	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	74	76	254	52	63	114	223
normalized size	1	1.00	0.45	0.46	1.55	0.32	0.38	0.70	1.36
time (sec)	N/A	0.085	0.036	0.046	0.636	0.627	0.105	0.160	2.917

Problem 1712	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	45	42	125	24	26	74	77
normalized size	1	1.00	0.65	0.61	1.81	0.35	0.38	1.07	1.12
time (sec)	N/A	0.022	0.015	0.039	0.557	0.802	0.092	0.211	2.416

Problem 1713	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	74	146	0	68	53	119	-1
normalized size	1	1.00	0.56	1.11	0.00	0.52	0.40	0.90	-0.01
time (sec)	N/A	0.086	0.041	0.069	0.000	0.658	0.283	0.165	0.000

Problem 1714	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	96	158	0	102	71	123	-1
normalized size	1	1.00	0.67	1.10	0.00	0.71	0.49	0.85	-0.01
time (sec)	N/A	0.101	0.046	0.070	0.000	0.769	0.459	0.182	0.000

Problem 1715	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	89	117	0	105	94	127	-1
normalized size	1	1.00	0.59	0.77	0.00	0.70	0.62	0.84	-0.01
time (sec)	N/A	0.098	0.048	0.086	0.000	0.565	0.840	0.183	0.000

Problem 1716	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	104	104	81	87	0	93	107	117	86
normalized size	1	1.00	0.78	0.84	0.00	0.89	1.03	1.12	0.83
time (sec)	N/A	0.059	0.037	0.048	0.000	0.691	1.513	0.164	2.135

Problem 1717	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	80	86	0	102	117	116	85
normalized size	1	1.00	0.51	0.54	0.00	0.65	0.74	0.73	0.54
time (sec)	N/A	0.099	0.035	0.046	0.000	0.940	2.619	0.201	2.155

Problem 1718	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	83	89	0	117	134	119	88
normalized size	1	1.00	0.53	0.56	0.00	0.74	0.85	0.75	0.56
time (sec)	N/A	0.093	0.038	0.046	0.000	0.867	4.360	0.160	2.166

Problem 1719	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	82	88	0	126	144	118	87
normalized size	1	1.00	0.52	0.56	0.00	0.80	0.91	0.75	0.55
time (sec)	N/A	0.096	0.039	0.047	0.000	0.786	6.566	0.159	2.159

Problem 1720	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	496	676	1330	518	0	922	-1
normalized size	1	1.00	1.66	2.27	4.46	1.74	0.00	3.09	-0.00
time (sec)	N/A	0.508	0.205	0.052	0.631	0.870	0.000	0.219	0.000

Problem 1721	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	410	552	1004	425	0	758	-1
normalized size	1	1.00	1.38	1.85	3.37	1.43	0.00	2.54	-0.00
time (sec)	N/A	0.399	0.157	0.052	0.792	1.047	0.000	0.198	0.000

Problem 1722	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	320	428	698	325	0	594	-1
normalized size	1	1.00	1.24	1.65	2.69	1.25	0.00	2.29	-0.00
time (sec)	N/A	0.322	0.141	0.054	0.561	0.517	0.000	0.206	0.000

Problem 1723	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	233	304	456	239	0	431	-1
normalized size	1	1.00	1.18	1.54	2.30	1.21	0.00	2.18	-0.01
time (sec)	N/A	0.236	0.090	0.050	0.566	0.951	0.000	0.177	0.000

Problem 1724	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	144	180	254	146	0	267	-1
normalized size	1	1.00	1.07	1.33	1.88	1.08	0.00	1.98	-0.01
time (sec)	N/A	0.144	0.086	0.053	0.539	0.932	0.000	0.169	0.000

Problem 1725	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	83	90	125	69	0	144	42
normalized size	1	1.00	1.20	1.30	1.81	1.00	0.00	2.09	0.61
time (sec)	N/A	0.024	0.028	0.041	0.527	0.686	0.000	0.188	2.212

Problem 1726	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	236	236	187	358	0	260	0	428	-1
normalized size	1	1.00	0.79	1.52	0.00	1.10	0.00	1.81	-0.00
time (sec)	N/A	0.168	0.115	0.058	0.000	0.652	0.000	0.178	0.000

Problem 1727	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	262	540	0	396	0	425	-1
normalized size	1	1.00	0.92	1.89	0.00	1.39	0.00	1.49	-0.00
time (sec)	N/A	0.267	0.141	0.066	0.000	0.570	0.000	0.194	0.000

Problem 1728	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	256	566	0	420	0	417	-1
normalized size	1	1.00	0.91	2.02	0.00	1.50	0.00	1.49	-0.00
time (sec)	N/A	0.234	0.148	0.066	0.000	0.920	0.000	0.242	0.000

Problem 1729	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	251	512	0	406	0	411	-1
normalized size	1	1.00	0.88	1.80	0.00	1.43	0.00	1.45	-0.00
time (sec)	N/A	0.212	0.146	0.062	0.000	1.026	0.000	0.189	0.000

Problem 1730	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	240	394	0	354	0	419	-1
normalized size	1	1.00	0.93	1.53	0.00	1.38	0.00	1.63	-0.00
time (sec)	N/A	0.179	0.138	0.065	0.000	0.895	0.000	0.232	0.000

Problem 1731	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	229	315	0	304	0	425	577
normalized size	1	1.00	2.16	2.97	0.00	2.87	0.00	4.01	5.44
time (sec)	N/A	0.059	0.104	0.056	0.000	0.824	0.000	0.185	2.197

Problem 1732	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	229	316	0	317	0	426	577
normalized size	1	1.00	1.19	1.64	0.00	1.64	0.00	2.21	2.99
time (sec)	N/A	0.147	0.101	0.052	0.000	0.978	0.000	0.183	2.175

Problem 1733	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	233	317	0	332	0	427	577
normalized size	1	1.00	0.78	1.06	0.00	1.11	0.00	1.43	1.94
time (sec)	N/A	0.218	0.101	0.067	0.000	0.949	0.000	0.230	2.219

Problem 1734	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	229	315	0	335	0	425	577
normalized size	1	1.00	0.77	1.06	0.00	1.12	0.00	1.43	1.94
time (sec)	N/A	0.181	0.105	0.056	0.000	0.688	0.000	0.192	2.273

Problem 1735	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	232	317	0	354	0	427	577
normalized size	1	1.00	0.78	1.06	0.00	1.19	0.00	1.43	1.94
time (sec)	N/A	0.177	0.108	0.057	0.000	0.844	0.000	0.195	2.578

Problem 1736	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	232	317	0	365	0	427	577
normalized size	1	1.00	0.78	1.06	0.00	1.22	0.00	1.43	1.94
time (sec)	N/A	0.177	0.101	0.049	0.000	0.693	0.000	0.241	2.389

Problem 1737	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	233	317	0	376	0	427	577
normalized size	1	1.00	0.78	1.06	0.00	1.26	0.00	1.43	1.94
time (sec)	N/A	0.178	0.112	0.055	0.000	0.936	0.000	0.197	2.359

Problem 1738	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	436	436	876	1264	1744	964	0	1702	-1
normalized size	1	1.00	2.01	2.90	4.00	2.21	0.00	3.90	-0.00
time (sec)	N/A	1.011	0.365	0.053	0.698	0.741	0.000	0.269	0.000

Problem 1739	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	740	1068	1330	813	0	1446	-1
normalized size	1	1.00	1.93	2.79	3.47	2.12	0.00	3.78	-0.00
time (sec)	N/A	0.795	0.315	0.051	0.810	0.877	0.000	0.280	0.000

Problem 1740	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	611	872	1004	677	0	1192	-1
normalized size	1	1.00	1.89	2.69	3.10	2.09	0.00	3.68	-0.00
time (sec)	N/A	0.624	0.236	0.053	0.646	0.827	0.000	0.253	0.000

Problem 1741	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	478	676	698	532	0	934	-1
normalized size	1	1.00	1.85	2.61	2.69	2.05	0.00	3.61	-0.00
time (sec)	N/A	0.461	0.196	0.049	0.544	0.777	0.000	0.224	0.000

Problem 1742	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	347	480	456	384	0	679	-1
normalized size	1	1.00	1.75	2.42	2.30	1.94	0.00	3.43	-0.01
time (sec)	N/A	0.339	0.145	0.052	0.611	0.905	0.000	0.196	0.000

Problem 1743	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	214	284	254	239	0	425	-1
normalized size	1	1.00	1.59	2.10	1.88	1.77	0.00	3.15	-0.01
time (sec)	N/A	0.204	0.098	0.050	0.568	0.648	0.000	0.183	0.000

Problem 1744	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	121	138	125	115	0	217	-1
normalized size	1	1.00	1.75	2.00	1.81	1.67	0.00	3.14	-0.01
time (sec)	N/A	0.022	0.044	0.063	0.566	0.683	0.000	0.210	0.000

Problem 1745	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	386	754	0	555	0	920	-1
normalized size	1	1.00	1.14	2.22	0.00	1.63	0.00	2.71	-0.00
time (sec)	N/A	0.254	0.235	0.068	0.000	0.634	0.000	0.237	0.000

Problem 1746	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	423	423	506	1084	0	797	0	905	-1
normalized size	1	1.00	1.20	2.56	0.00	1.88	0.00	2.14	-0.00
time (sec)	N/A	0.563	0.308	0.071	0.000	0.623	0.000	0.223	0.000

Problem 1747	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	501	1205	0	871	0	887	-1
normalized size	1	1.00	1.18	2.84	0.00	2.05	0.00	2.09	-0.00
time (sec)	N/A	0.479	0.288	0.073	0.000	0.663	0.000	0.262	0.000

Problem 1748	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	425	425	504	1233	0	899	0	874	-1
normalized size	1	1.00	1.19	2.90	0.00	2.12	0.00	2.06	-0.00
time (sec)	N/A	0.429	0.319	0.072	0.000	0.824	0.000	0.223	0.000

Problem 1749	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	421	421	497	1163	0	871	0	870	-1
normalized size	1	1.00	1.18	2.76	0.00	2.07	0.00	2.07	-0.00
time (sec)	N/A	0.393	0.299	0.074	0.000	0.878	0.000	0.226	0.000

Problem 1750	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	422	422	490	1012	0	802	0	863	-1
normalized size	1	1.00	1.16	2.40	0.00	1.90	0.00	2.05	-0.00
time (sec)	N/A	0.359	0.287	0.073	0.000	0.555	0.000	0.271	0.000

Problem 1751	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-2)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	477	809	0	703	0	871	-1
normalized size	1	1.00	1.31	2.22	0.00	1.93	0.00	2.39	-0.00
time (sec)	N/A	0.285	0.287	0.074	0.000	0.890	0.000	0.298	0.000

Problem 1752	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	465	687	0	621	0	917	1489
normalized size	1	1.00	4.39	6.48	0.00	5.86	0.00	8.65	14.05
time (sec)	N/A	0.060	0.204	0.058	0.000	0.715	0.000	0.219	2.590

Problem 1753	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	466	688	0	634	0	918	1489
normalized size	1	1.00	2.41	3.56	0.00	3.28	0.00	4.76	7.72
time (sec)	N/A	0.142	0.213	0.049	0.000	0.539	0.000	0.220	2.536

Problem 1754	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	468	688	0	645	0	918	1489
normalized size	1	1.00	1.79	2.63	0.00	2.46	0.00	3.50	5.68
time (sec)	N/A	0.192	0.213	0.049	0.000	0.586	0.000	0.241	2.639

Problem 1755	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	468	689	0	662	0	919	1488
normalized size	1	1.00	1.07	1.57	0.00	1.51	0.00	2.10	3.40
time (sec)	N/A	0.390	0.215	0.056	0.000	0.605	0.000	0.225	2.570

Problem 1756	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	471	689	0	673	0	919	1489
normalized size	1	1.00	1.08	1.57	0.00	1.54	0.00	2.10	3.40
time (sec)	N/A	0.323	0.228	0.053	0.000	0.879	0.000	0.364	2.596

Problem 1757	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	438	438	465	687	0	672	0	917	1489
normalized size	1	1.00	1.06	1.57	0.00	1.53	0.00	2.09	3.40
time (sec)	N/A	0.296	0.210	0.058	0.000	0.744	0.000	0.225	2.634

Problem 1758	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	435	435	471	689	0	695	0	919	1489
normalized size	1	1.00	1.08	1.58	0.00	1.60	0.00	2.11	3.42
time (sec)	N/A	0.294	0.214	0.061	0.000	0.836	0.000	0.219	2.622

Problem 1759	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	248	248	185	356	438	269	221	431	-1
normalized size	1	1.00	0.75	1.44	1.77	1.08	0.89	1.74	-0.00
time (sec)	N/A	0.139	0.126	0.063	0.576	0.774	0.705	0.189	0.000

Problem 1760	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	118	212	244	158	117	254	-1
normalized size	1	1.00	0.62	1.11	1.28	0.83	0.61	1.33	-0.01
time (sec)	N/A	0.108	0.083	0.058	0.624	0.476	0.493	0.220	0.000

Problem 1761	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	72	104	101	75	53	122	-1
normalized size	1	1.00	0.54	0.78	0.75	0.56	0.40	0.91	-0.01
time (sec)	N/A	0.079	0.041	0.059	0.494	0.584	0.292	0.167	0.000

Problem 1762	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	40	43	52	25	20	45	79
normalized size	1	1.00	0.58	0.62	0.75	0.36	0.29	0.65	1.14
time (sec)	N/A	0.027	0.017	0.049	0.564	0.525	0.169	0.154	2.471

Problem 1763	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	66	76	0	53	226	87	-1
normalized size	1	1.00	0.62	0.71	0.00	0.50	2.11	0.81	-0.01
time (sec)	N/A	0.077	0.039	0.056	0.000	0.634	1.448	0.167	0.000

Problem 1764	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	97	161	0	148	355	190	-1
normalized size	1	1.00	0.66	1.09	0.00	1.00	2.40	1.28	-0.01
time (sec)	N/A	0.081	0.124	0.062	0.000	1.514	1.222	0.174	0.000

Problem 1765	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	131	321	0	343	558	306	-1
normalized size	1	1.00	0.62	1.51	0.00	1.62	2.63	1.44	-0.00
time (sec)	N/A	0.148	0.154	0.068	0.000	0.773	1.989	0.183	0.000

Problem 1766	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	168	545	0	608	818	494	-1
normalized size	1	1.00	0.62	2.01	0.00	2.24	3.02	1.82	-0.00
time (sec)	N/A	0.177	0.160	0.063	0.000	0.606	2.859	0.231	0.000

Problem 1767	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	329	329	373	858	761	668	0	0	-1
normalized size	1	1.00	1.13	2.61	2.31	2.03	0.00	0.00	-0.00
time (sec)	N/A	0.372	0.228	0.079	0.534	0.815	0.000	0.000	0.000

Problem 1768	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	249	249	256	556	487	442	0	0	-1
normalized size	1	1.00	1.03	2.23	1.96	1.78	0.00	0.00	-0.00
time (sec)	N/A	0.223	0.159	0.136	0.511	0.691	0.000	0.000	0.000

Problem 1769	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	151	303	277	258	0	0	-1
normalized size	1	1.00	0.81	1.63	1.49	1.39	0.00	0.00	-0.01
time (sec)	N/A	0.150	0.093	0.067	0.605	0.857	0.000	0.000	0.000

Problem 1770	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	127	86	109	120	110	0	0	-1
normalized size	1	1.00	0.68	0.86	0.94	0.87	0.00	0.00	-0.01
time (sec)	N/A	0.099	0.048	0.058	0.574	0.776	0.000	0.000	0.000

Problem 1771	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	39	32	56	38	0	0	42
normalized size	1	1.00	0.57	0.46	0.81	0.55	0.00	0.00	0.61
time (sec)	N/A	0.023	0.016	0.044	0.592	0.714	0.000	0.000	2.053

Problem 1772	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	132	315	0	361	0	0	-1
normalized size	1	1.00	0.67	1.61	0.00	1.84	0.00	0.00	-0.01
time (sec)	N/A	0.157	0.111	0.066	0.000	1.124	0.000	0.000	0.000

Problem 1773	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	266	174	828	0	803	0	708	-1
normalized size	1	1.00	0.65	3.11	0.00	3.02	0.00	2.66	-0.00
time (sec)	N/A	0.246	0.185	0.073	0.000	0.760	0.000	0.531	0.000

Problem 1774	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	220	1271	0	1215	0	0	-1
normalized size	1	1.00	0.66	3.83	0.00	3.66	0.00	0.00	-0.00
time (sec)	N/A	0.319	0.272	0.069	0.000	0.747	0.000	0.000	0.000

Problem 1775	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	373	373	513	1153	1010	914	0	0	-1
normalized size	1	1.00	1.38	3.09	2.71	2.45	0.00	0.00	-0.00
time (sec)	N/A	0.426	0.325	0.072	1.189	0.614	0.000	0.000	0.000

Problem 1776	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	331	735	755	619	0	0	-1
normalized size	1	1.00	1.07	2.37	2.44	2.00	0.00	0.00	-0.00
time (sec)	N/A	0.304	0.218	0.082	0.946	0.541	0.000	0.000	0.000

Problem 1777	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	227	227	239	385	533	359	0	0	-1
normalized size	1	1.00	1.05	1.70	2.35	1.58	0.00	0.00	-0.00
time (sec)	N/A	0.174	0.135	0.060	0.673	1.679	0.000	0.000	0.000

Problem 1778	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	142	174	279	189	0	0	302
normalized size	1	1.00	1.34	1.64	2.63	1.78	0.00	0.00	2.85
time (sec)	N/A	0.062	0.075	0.049	0.630	0.650	0.000	0.000	2.360

Problem 1779	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	75	77	121	106	0	0	87
normalized size	1	1.00	0.56	0.57	0.90	0.79	0.00	0.00	0.64
time (sec)	N/A	0.101	0.044	0.048	0.677	1.347	0.000	0.000	2.238

Problem 1780	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	71	71	39	33	56	61	0	0	43
normalized size	1	1.00	0.55	0.46	0.79	0.86	0.00	0.00	0.61
time (sec)	N/A	0.021	0.018	0.046	0.559	0.582	0.000	0.000	2.124

Problem 1781	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	182	777	0	969	0	0	-1
normalized size	1	1.00	0.60	2.57	0.00	3.21	0.00	0.00	-0.00
time (sec)	N/A	0.258	0.150	0.077	0.000	0.708	0.000	0.000	0.000

Problem 1782	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	388	388	250	1652	0	1724	0	1136	-1
normalized size	1	1.00	0.64	4.26	0.00	4.44	0.00	2.93	-0.00
time (sec)	N/A	0.455	0.274	0.076	0.000	0.922	0.000	0.596	0.000

Problem 1783	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	302	2420	0	2466	0	0	-1
normalized size	1	1.00	0.66	5.26	0.00	5.36	0.00	0.00	-0.00
time (sec)	N/A	0.557	0.388	0.082	0.000	1.501	0.000	0.000	0.000

Problem 1784	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	107	169	159	424	1020	1913	115
normalized size	1	1.00	0.84	1.32	1.24	3.31	7.97	14.95	0.90
time (sec)	N/A	0.072	0.152	0.055	0.538	0.496	9.096	0.293	2.043

Problem 1785	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	107	169	159	356	857	1368	115
normalized size	1	1.00	0.84	1.32	1.24	2.78	6.70	10.69	0.90
time (sec)	N/A	0.057	0.121	0.049	0.553	0.534	4.629	0.258	2.112

Problem 1786	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	107	169	159	289	586	901	115
normalized size	1	1.00	0.84	1.32	1.24	2.26	4.58	7.04	0.90
time (sec)	N/A	0.057	0.109	0.051	0.563	0.780	22.383	0.233	0.069

Problem 1787	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	107	169	159	220	201	511	115
normalized size	1	1.00	0.84	1.32	1.24	1.72	1.57	3.99	0.90
time (sec)	N/A	0.056	0.098	0.055	0.471	1.033	4.910	0.184	0.074

Problem 1788	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	107	169	159	155	583	215	115
normalized size	1	1.00	0.85	1.34	1.26	1.23	4.63	1.71	0.91
time (sec)	N/A	0.052	0.085	0.049	0.544	0.496	53.775	0.170	0.075

Problem 1789	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	107	169	167	165	150	219	154
normalized size	1	1.00	0.86	1.36	1.35	1.33	1.21	1.77	1.24
time (sec)	N/A	0.055	0.086	0.051	0.531	0.740	33.869	0.205	0.084

Problem 1790	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	105	168	163	175	709	206	189
normalized size	1	1.00	0.85	1.35	1.31	1.41	5.72	1.66	1.52
time (sec)	N/A	0.054	0.093	0.047	0.575	0.532	1.706	0.211	1.987

Problem 1791	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	107	169	164	188	1015	202	168
normalized size	1	1.00	0.86	1.36	1.32	1.52	8.19	1.63	1.35
time (sec)	N/A	0.055	0.089	0.055	0.644	0.679	3.639	0.208	0.097

Problem 1792	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	183	469	409	894	2091	3913	197
normalized size	1	1.00	0.84	2.15	1.88	4.10	9.59	17.95	0.90
time (sec)	N/A	0.145	0.203	0.053	0.741	0.678	16.307	0.461	1.977

Problem 1793	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	183	469	409	772	2193	2860	197
normalized size	1	1.00	0.84	2.15	1.88	3.54	10.06	13.12	0.90
time (sec)	N/A	0.097	0.171	0.051	0.596	1.047	74.115	0.516	1.921

Problem 1794	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	183	469	409	649	1297	1937	197
normalized size	1	1.00	0.84	2.15	1.88	2.98	5.95	8.89	0.90
time (sec)	N/A	0.099	0.158	0.054	0.499	1.105	45.217	0.315	0.061

Problem 1795	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	218	218	183	469	409	527	517	1144	197
normalized size	1	1.00	0.84	2.15	1.88	2.42	2.37	5.25	0.90
time (sec)	N/A	0.098	0.138	0.072	0.529	0.706	9.115	0.235	1.933

Problem 1796	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	183	469	409	408	1311	503	197
normalized size	1	1.00	0.85	2.17	1.89	1.89	6.07	2.33	0.91
time (sec)	N/A	0.094	0.120	0.049	0.603	0.916	127.179	0.196	0.058

Problem 1797	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	183	469	417	418	394	587	296
normalized size	1	1.00	0.86	2.19	1.95	1.95	1.84	2.74	1.38
time (sec)	N/A	0.095	0.121	0.068	0.618	0.881	120.613	0.248	1.954

Problem 1798	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	183	469	415	430	304	567	367
normalized size	1	1.00	0.86	2.19	1.94	2.01	1.42	2.65	1.71
time (sec)	N/A	0.094	0.106	0.051	0.613	0.998	139.123	0.241	1.944

Problem 1799	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	183	469	416	441	2440	567	413
normalized size	1	1.00	0.86	2.19	1.94	2.06	11.40	2.65	1.93
time (sec)	N/A	0.092	0.110	0.050	0.654	0.928	5.279	0.250	1.996

Problem 1800	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	259	913	767	1470	5414	6433	279
normalized size	1	1.00	0.84	2.96	2.49	4.77	17.58	20.89	0.91
time (sec)	N/A	0.209	0.349	0.051	0.641	0.757	163.184	0.739	2.022

Problem 1801	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	259	913	767	1293	3728	4768	279
normalized size	1	1.00	0.84	2.96	2.49	4.20	12.10	15.48	0.91
time (sec)	N/A	0.146	0.262	0.061	0.546	0.709	113.732	0.506	1.933

Problem 1802	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	259	913	767	1118	2252	3285	279
normalized size	1	1.00	0.84	2.96	2.49	3.63	7.31	10.67	0.91
time (sec)	N/A	0.141	0.239	0.055	0.535	0.702	69.777	0.407	1.933

Problem 1803	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	259	913	767	942	969	1984	279
normalized size	1	1.00	0.84	2.96	2.49	3.06	3.15	6.44	0.91
time (sec)	N/A	0.144	0.244	0.057	0.654	0.773	13.350	0.286	1.935

Problem 1804	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	259	913	767	769	0	895	279
normalized size	1	1.00	0.85	2.98	2.51	2.51	0.00	2.92	0.91
time (sec)	N/A	0.146	0.195	0.056	0.610	0.679	0.000	0.243	0.080

Problem 1805	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	300	300	259	913	775	778	0	1131	438
normalized size	1	1.00	0.86	3.04	2.58	2.59	0.00	3.77	1.46
time (sec)	N/A	0.145	0.201	0.056	0.769	0.692	0.000	0.323	1.938

Problem 1806	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	259	913	773	790	0	1103	569
normalized size	1	1.00	0.86	3.02	2.56	2.62	0.00	3.65	1.88
time (sec)	N/A	0.145	0.190	0.055	0.527	1.101	0.000	0.308	1.968

Problem 1807	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	259	913	775	802	0	1103	675
normalized size	1	1.00	0.85	3.00	2.55	2.64	0.00	3.63	2.22
time (sec)	N/A	0.146	0.192	0.051	0.631	0.702	0.000	0.328	1.965

Problem 1808	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	193	915	0	1006	0	604	562
normalized size	1	1.00	0.75	3.57	0.00	3.93	0.00	2.36	2.20
time (sec)	N/A	0.324	0.637	0.078	0.000	1.069	0.000	0.252	0.156

Problem 1809	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	166	626	0	666	0	400	363
normalized size	1	1.00	0.78	2.93	0.00	3.11	0.00	1.87	1.70
time (sec)	N/A	0.201	0.358	0.069	0.000	0.763	0.000	0.199	0.133

Problem 1810	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	136	381	0	392	0	239	174
normalized size	1	1.00	0.78	2.19	0.00	2.25	0.00	1.37	1.00
time (sec)	N/A	0.150	0.225	0.071	0.000	0.608	0.000	0.190	0.192

Problem 1811	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	119	186	0	393	1251	126	108
normalized size	1	1.00	0.85	1.33	0.00	2.81	8.94	0.90	0.77
time (sec)	N/A	0.115	0.138	0.070	0.000	0.521	107.952	0.222	2.010

Problem 1812	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	102	195	0	397	0	135	99
normalized size	1	1.00	0.99	1.89	0.00	3.85	0.00	1.31	0.96
time (sec)	N/A	0.095	0.077	0.063	0.000	0.985	0.000	0.174	0.154

Problem 1813	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	95	253	0	775	0	204	156
normalized size	1	1.00	0.68	1.81	0.00	5.54	0.00	1.46	1.11
time (sec)	N/A	0.145	0.040	0.069	0.000	0.946	0.000	0.189	2.085

Problem 1814	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	94	328	0	1106	0	297	210
normalized size	1	1.00	0.52	1.81	0.00	6.11	0.00	1.64	1.16
time (sec)	N/A	0.171	0.037	0.070	0.000	0.679	0.000	0.221	2.100

Problem 1815	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	94	403	0	1749	0	435	261
normalized size	1	1.00	0.43	1.82	0.00	7.91	0.00	1.97	1.18
time (sec)	N/A	0.229	0.039	0.073	0.000	0.847	0.000	0.228	2.157

Problem 1816	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	332	332	100	1285	0	1514	0	829	790
normalized size	1	1.00	0.30	3.87	0.00	4.56	0.00	2.50	2.38
time (sec)	N/A	0.333	0.106	0.086	0.000	0.988	0.000	0.295	2.121

Problem 1817	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	99	905	0	1026	0	577	513
normalized size	1	1.00	0.35	3.19	0.00	3.61	0.00	2.03	1.81
time (sec)	N/A	0.242	0.088	0.080	0.000	1.177	0.000	0.248	2.158

Problem 1818	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	99	573	0	1075	0	370	416
normalized size	1	1.00	0.40	2.29	0.00	4.30	0.00	1.48	1.66
time (sec)	N/A	0.201	0.079	0.075	0.000	1.083	0.000	0.274	0.234

Problem 1819	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	177	487	0	1115	0	381	325
normalized size	1	1.00	0.85	2.33	0.00	5.33	0.00	1.82	1.56
time (sec)	N/A	0.181	0.448	0.102	0.000	1.136	0.000	0.231	2.124

Problem 1820	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	98	494	0	1218	0	386	310
normalized size	1	1.00	0.47	2.36	0.00	5.83	0.00	1.85	1.48
time (sec)	N/A	0.177	0.065	0.085	0.000	0.742	0.000	0.250	2.131

Problem 1821	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	97	679	0	1337	0	429	331
normalized size	1	1.00	0.46	3.25	0.00	6.40	0.00	2.05	1.58
time (sec)	N/A	0.201	0.053	0.076	0.000	0.672	0.000	0.209	2.129

Problem 1822	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	99	768	0	2114	0	516	420
normalized size	1	1.00	0.40	3.07	0.00	8.46	0.00	2.06	1.68
time (sec)	N/A	0.242	0.056	0.076	0.000	1.573	0.000	0.256	2.340

Problem 1823	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	100	853	0	2648	0	750	483
normalized size	1	1.00	0.34	2.93	0.00	9.10	0.00	2.58	1.66
time (sec)	N/A	0.303	0.062	0.081	0.000	0.864	0.000	0.288	2.511

Problem 1824	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	100	935	0	3685	0	779	547
normalized size	1	1.00	0.29	2.76	0.00	10.87	0.00	2.30	1.61
time (sec)	N/A	0.381	0.070	0.083	0.000	1.456	0.000	0.340	2.651

Problem 1825	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	100	1633	0	1862	0	1066	996
normalized size	1	1.00	0.25	4.16	0.00	4.74	0.00	2.71	2.53
time (sec)	N/A	0.364	0.080	0.089	0.000	0.798	0.000	0.360	0.479

Problem 1826	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	352	99	1173	0	1955	0	770	838
normalized size	1	1.00	0.28	3.33	0.00	5.55	0.00	2.19	2.38
time (sec)	N/A	0.296	0.071	0.084	0.000	0.638	0.000	0.303	2.276

Problem 1827	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	260	959	0	2041	0	781	594
normalized size	1	1.00	0.83	3.06	0.00	6.52	0.00	2.50	1.90
time (sec)	N/A	0.259	0.946	0.073	0.000	0.719	0.000	0.296	0.441

Problem 1828	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	99	872	0	2238	0	805	572
normalized size	1	1.00	0.32	2.79	0.00	7.15	0.00	2.57	1.83
time (sec)	N/A	0.273	0.062	0.080	0.000	1.004	0.000	0.305	0.346

Problem 1829	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	98	871	0	2349	0	814	535
normalized size	1	1.00	0.31	2.78	0.00	7.50	0.00	2.60	1.71
time (sec)	N/A	0.269	0.061	0.086	0.000	1.143	0.000	0.268	2.232

Problem 1830	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	99	1037	0	2580	0	857	564
normalized size	1	1.00	0.32	3.31	0.00	8.24	0.00	2.74	1.80
time (sec)	N/A	0.288	0.059	0.090	0.000	0.778	0.000	0.272	2.243

Problem 1831	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	97	1274	0	2715	0	881	567
normalized size	1	1.00	0.31	4.07	0.00	8.67	0.00	2.81	1.81
time (sec)	N/A	0.315	0.053	0.075	0.000	0.648	0.000	0.300	2.294

Problem 1832	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	352	97	1568	0	3876	0	994	683
normalized size	1	1.00	0.28	4.45	0.00	11.01	0.00	2.82	1.94
time (sec)	N/A	0.382	0.072	0.093	0.000	0.987	0.000	0.366	2.840

Problem 1833	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	400	400	99	1653	0	4664	0	1103	755
normalized size	1	1.00	0.25	4.13	0.00	11.66	0.00	2.76	1.89
time (sec)	N/A	0.448	0.076	0.093	0.000	1.069	0.000	0.417	3.150

Problem 1834	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	435	435	100	1735	0	6033	0	1676	802
normalized size	1	1.00	0.23	3.99	0.00	13.87	0.00	3.85	1.84
time (sec)	N/A	0.490	0.069	0.098	0.000	1.199	0.000	0.437	3.500

Problem 1835	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	88	89	263	230	0	1228	-1
normalized size	1	1.00	0.54	0.54	1.60	1.40	0.00	7.49	-0.01
time (sec)	N/A	0.095	0.084	0.048	0.564	0.514	0.000	0.290	0.000

Problem 1836	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	88	89	214	189	0	874	-1
normalized size	1	1.00	0.54	0.54	1.30	1.15	0.00	5.33	-0.01
time (sec)	N/A	0.082	0.081	0.044	0.584	0.768	0.000	0.255	0.000

Problem 1837	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	88	89	167	149	0	571	-1
normalized size	1	1.00	0.54	0.54	1.02	0.91	0.00	3.48	-0.01
time (sec)	N/A	0.084	0.067	0.046	0.612	0.744	0.000	0.268	0.000

Problem 1838	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	88	89	120	108	0	322	-1
normalized size	1	1.00	0.54	0.54	0.73	0.66	0.00	1.96	-0.01
time (sec)	N/A	0.084	0.059	0.050	0.600	0.732	0.000	0.241	0.000

Problem 1839	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	86	89	119	70	0	133	156
normalized size	1	1.00	0.53	0.55	0.73	0.43	0.00	0.82	0.96
time (sec)	N/A	0.088	0.068	0.050	0.707	1.007	0.000	0.169	2.266

Problem 1840	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	85	89	75	79	0	148	109
normalized size	1	1.00	0.53	0.56	0.47	0.49	0.00	0.92	0.68
time (sec)	N/A	0.081	0.060	0.045	0.771	0.635	0.000	0.180	2.412

Problem 1841	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	86	88	96	91	0	136	146
normalized size	1	1.00	0.54	0.55	0.60	0.57	0.00	0.85	0.91
time (sec)	N/A	0.086	0.067	0.041	0.609	0.492	0.000	0.215	2.479

Problem 1842	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	86	89	118	101	0	135	174
normalized size	1	1.00	0.53	0.55	0.73	0.62	0.00	0.83	1.07
time (sec)	N/A	0.077	0.064	0.047	0.582	0.496	0.000	0.294	2.525

Problem 1843	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	163	317	697	633	0	3088	-1
normalized size	1	1.00	0.53	1.03	2.26	2.06	0.00	10.03	-0.00
time (sec)	N/A	0.185	0.250	0.053	0.754	0.616	0.000	0.536	0.000

Problem 1844	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	163	317	592	539	0	2254	-1
normalized size	1	1.00	0.53	1.03	1.92	1.75	0.00	7.32	-0.00
time (sec)	N/A	0.139	0.197	0.050	0.729	0.901	0.000	0.416	0.000

Problem 1845	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	163	317	488	446	0	1524	-1
normalized size	1	1.00	0.53	1.03	1.58	1.45	0.00	4.95	-0.00
time (sec)	N/A	0.144	0.176	0.051	0.632	0.879	0.000	0.344	0.000

Problem 1846	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	163	317	384	353	0	898	-1
normalized size	1	1.00	0.53	1.03	1.25	1.15	0.00	2.92	-0.00
time (sec)	N/A	0.142	0.170	0.058	0.614	0.757	0.000	0.273	0.000

Problem 1847	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	306	306	163	317	382	263	0	393	434
normalized size	1	1.00	0.53	1.04	1.25	0.86	0.00	1.28	1.42
time (sec)	N/A	0.148	0.100	0.059	0.633	0.847	0.000	0.234	2.745

Problem 1848	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	302	240	317	282	272	0	525	327
normalized size	1	1.00	0.79	1.05	0.93	0.90	0.00	1.74	1.08
time (sec)	N/A	0.145	0.138	0.053	0.772	0.693	0.000	0.305	2.969

Problem 1849	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	241	317	304	284	0	509	362
normalized size	1	1.00	0.79	1.04	1.00	0.93	0.00	1.67	1.19
time (sec)	N/A	0.143	0.175	0.052	0.646	0.622	0.000	0.254	3.093

Problem 1850	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	244	317	326	294	0	508	377
normalized size	1	1.00	0.80	1.04	1.07	0.97	0.00	1.67	1.24
time (sec)	N/A	0.137	0.153	0.053	0.744	0.722	0.000	0.256	3.079

Problem 1851	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	239	689	1241	1137	0	5468	-1
normalized size	1	1.00	0.53	1.52	2.75	2.52	0.00	12.10	-0.00
time (sec)	N/A	0.283	0.309	0.054	0.688	0.719	0.000	0.775	0.000

Problem 1852	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	239	689	1080	993	0	4050	-1
normalized size	1	1.00	0.53	1.52	2.39	2.20	0.00	8.96	-0.00
time (sec)	N/A	0.216	0.241	0.050	0.845	0.516	0.000	0.615	0.000

Problem 1853	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	239	689	921	848	0	2788	-1
normalized size	1	1.00	0.53	1.52	2.04	1.88	0.00	6.17	-0.00
time (sec)	N/A	0.217	0.221	0.055	0.774	0.876	0.000	0.479	0.000

Problem 1854	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	239	689	760	702	0	1682	-1
normalized size	1	1.00	0.53	1.52	1.68	1.55	0.00	3.72	-0.00
time (sec)	N/A	0.206	0.203	0.052	0.808	0.776	0.000	0.394	0.000

Problem 1855	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	448	448	239	689	758	560	0	758	826
normalized size	1	1.00	0.53	1.54	1.69	1.25	0.00	1.69	1.84
time (sec)	N/A	0.218	0.193	0.058	0.737	0.658	0.000	0.247	3.260

Problem 1856	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	446	446	239	689	603	569	0	1125	659
normalized size	1	1.00	0.54	1.54	1.35	1.28	0.00	2.52	1.48
time (sec)	N/A	0.216	0.196	0.059	0.659	0.880	0.000	0.335	3.738

Problem 1857	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	446	446	239	689	625	581	0	1101	695
normalized size	1	1.00	0.54	1.54	1.40	1.30	0.00	2.47	1.56
time (sec)	N/A	0.205	0.290	0.054	0.875	0.791	0.000	0.397	3.887

Problem 1858	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	448	448	239	689	647	592	0	1101	718
normalized size	1	1.00	0.53	1.54	1.44	1.32	0.00	2.46	1.60
time (sec)	N/A	0.205	0.312	0.056	0.784	0.665	0.000	0.355	3.946

Problem 1859	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	289	154	671	0	591	0	497	-1
normalized size	1	1.00	0.53	2.32	0.00	2.04	0.00	1.72	-0.00
time (sec)	N/A	0.223	0.300	0.063	0.000	0.576	0.000	0.234	0.000

Problem 1860	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	230	230	127	414	0	373	0	306	-1
normalized size	1	1.00	0.55	1.80	0.00	1.62	0.00	1.33	-0.00
time (sec)	N/A	0.145	0.172	0.058	0.000	0.674	0.000	0.216	0.000

Problem 1861	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	114	226	0	211	0	168	-1
normalized size	1	1.00	0.66	1.31	0.00	1.22	0.00	0.97	-0.01
time (sec)	N/A	0.102	0.089	0.062	0.000	0.574	0.000	0.242	0.000

Problem 1862	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	111	110	0	209	0	87	-1
normalized size	1	1.00	0.90	0.89	0.00	1.69	0.00	0.70	-0.01
time (sec)	N/A	0.076	0.065	0.058	0.000	0.570	0.000	0.170	0.000

Problem 1863	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	128	148	0	363	0	117	-1
normalized size	1	1.00	0.93	1.07	0.00	2.63	0.00	0.85	-0.01
time (sec)	N/A	0.110	0.085	0.064	0.000	0.551	0.000	0.292	0.000

Problem 1864	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	194	194	102	235	0	506	0	209	-1
normalized size	1	1.00	0.53	1.21	0.00	2.61	0.00	1.08	-0.01
time (sec)	N/A	0.134	0.050	0.073	0.000	0.633	0.000	0.207	0.000

Problem 1865	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	251	251	102	386	0	902	0	368	-1
normalized size	1	1.00	0.41	1.54	0.00	3.59	0.00	1.47	-0.00
time (sec)	N/A	0.156	0.052	0.079	0.000	0.750	0.000	0.273	0.000

Problem 1866	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	407	407	111	1873	0	1060	0	685	-1
normalized size	1	1.00	0.27	4.60	0.00	2.60	0.00	1.68	-0.00
time (sec)	N/A	0.377	0.121	0.111	0.000	0.781	0.000	0.439	0.000

Problem 1867	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	341	341	111	1150	0	680	0	478	-1
normalized size	1	1.00	0.33	3.37	0.00	1.99	0.00	1.40	-0.00
time (sec)	N/A	0.304	0.105	0.078	0.000	0.695	0.000	0.366	0.000

Problem 1868	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	280	280	110	608	0	703	0	312	-1
normalized size	1	1.00	0.39	2.17	0.00	2.51	0.00	1.11	-0.00
time (sec)	N/A	0.229	0.086	0.072	0.000	0.863	0.000	0.300	0.000

Problem 1869	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	167	555	0	721	0	337	-1
normalized size	1	1.00	0.78	2.58	0.00	3.35	0.00	1.57	-0.00
time (sec)	N/A	0.188	0.334	0.066	0.000	0.667	0.000	0.359	0.000

Problem 1870	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	215	215	170	556	0	808	0	402	-1
normalized size	1	1.00	0.79	2.59	0.00	3.76	0.00	1.87	-0.00
time (sec)	N/A	0.205	0.257	0.072	0.000	0.964	0.000	0.300	0.000

Problem 1871	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	280	110	681	0	1410	0	616	-1
normalized size	1	1.00	0.39	2.42	0.00	5.02	0.00	2.19	-0.00
time (sec)	N/A	0.256	0.068	0.079	0.000	1.355	0.000	0.400	0.000

Problem 1872	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	348	348	111	928	0	1776	0	785	-1
normalized size	1	1.00	0.32	2.67	0.00	5.10	0.00	2.26	-0.00
time (sec)	N/A	0.319	0.069	0.129	0.000	1.273	0.000	0.493	0.000

Problem 1873	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	111	1230	0	2675	0	1011	-1
normalized size	1	1.00	0.27	2.97	0.00	6.46	0.00	2.44	-0.00
time (sec)	N/A	0.373	0.074	0.083	0.000	0.818	0.000	0.574	0.000

Problem 1874	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	557	557	117	3768	0	2006	0	1167	-1
normalized size	1	1.00	0.21	6.76	0.00	3.60	0.00	2.10	-0.00
time (sec)	N/A	0.521	0.212	0.162	0.000	0.762	0.000	0.612	0.000

Problem 1875	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	489	489	117	2430	0	1414	0	872	-1
normalized size	1	1.00	0.24	4.97	0.00	2.89	0.00	1.78	-0.00
time (sec)	N/A	0.420	0.182	0.135	0.000	0.738	0.000	0.523	0.000

Problem 1876	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	114	1390	0	1485	0	620	-1
normalized size	1	1.00	0.27	3.28	0.00	3.50	0.00	1.46	-0.00
time (sec)	N/A	0.351	0.162	0.082	0.000	0.793	0.000	0.488	0.000

Problem 1877	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	219	1273	0	1547	0	647	-1
normalized size	1	1.00	0.61	3.55	0.00	4.31	0.00	1.80	-0.00
time (sec)	N/A	0.315	1.001	0.072	0.000	0.705	0.000	0.480	0.000

Problem 1878	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	116	1273	0	1706	0	715	-1
normalized size	1	1.00	0.32	3.55	0.00	4.75	0.00	1.99	-0.00
time (sec)	N/A	0.324	0.120	0.075	0.000	1.246	0.000	0.448	0.000

Problem 1879	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	116	1296	0	1841	0	787	-1
normalized size	1	1.00	0.32	3.61	0.00	5.13	0.00	2.19	-0.00
time (sec)	N/A	0.350	0.100	0.076	0.000	0.722	0.000	0.443	0.000

Problem 1880	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	114	1296	0	1980	0	851	-1
normalized size	1	1.00	0.32	3.61	0.00	5.52	0.00	2.37	-0.00
time (sec)	N/A	0.348	0.084	0.081	0.000	1.346	0.000	0.411	0.000

Problem 1881	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	114	1493	0	2968	0	1132	-1
normalized size	1	1.00	0.27	3.52	0.00	7.00	0.00	2.67	-0.00
time (sec)	N/A	0.437	0.088	0.118	0.000	0.772	0.000	0.625	0.000

Problem 1882	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	496	496	115	1860	0	3596	0	1301	-1
normalized size	1	1.00	0.23	3.75	0.00	7.25	0.00	2.62	-0.00
time (sec)	N/A	0.546	0.094	0.131	0.000	1.418	0.000	0.711	0.000

Problem 1883	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	564	564	115	2282	0	4833	0	1527	-1
normalized size	1	1.00	0.20	4.05	0.00	8.57	0.00	2.71	-0.00
time (sec)	N/A	0.572	0.100	0.139	0.000	1.267	0.000	0.851	0.000

Problem 1884	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	208	2355	957	2274	0	4381	2117
normalized size	1	1.00	0.89	10.06	4.09	9.72	0.00	18.72	9.05
time (sec)	N/A	0.167	0.216	0.138	0.909	0.903	0.000	0.319	3.103

Problem 1885	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	122	576	364	660	6186	1267	676
normalized size	1	1.00	0.88	4.17	2.64	4.78	44.83	9.18	4.90
time (sec)	N/A	0.084	0.102	0.056	0.764	1.312	6.648	0.264	2.398

Problem 1886	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	99	0	0	0	0	0	-1
normalized size	1	1.00	0.88	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.068	0.047	1.288	0.000	0.932	0.000	0.000	0.000

Problem 1887	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	125	109	0	0	0	0	0	-1
normalized size	1	0.99	0.87	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.073	0.082	1.247	0.000	1.172	0.000	0.000	0.000

Problem 1888	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-2)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	471	471	269	3931	1864	3485	0	8708	-1
normalized size	1	1.00	0.57	8.35	3.96	7.40	0.00	18.49	-0.00
time (sec)	N/A	0.332	0.311	0.069	0.818	1.483	0.000	0.845	0.000

Problem 1889	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	321	321	183	1286	756	1282	0	3208	-1
normalized size	1	1.00	0.57	4.01	2.36	3.99	0.00	9.99	-0.00
time (sec)	N/A	0.208	0.270	0.058	0.655	1.261	0.000	0.425	0.000

Problem 1890	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	121	205	177	256	0	659	-1
normalized size	1	1.00	0.71	1.20	1.04	1.50	0.00	3.85	-0.01
time (sec)	N/A	0.097	0.116	0.046	0.587	1.162	0.000	0.216	0.000

Problem 1891	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	94	0	0	0	0	0	-1
normalized size	1	1.00	0.70	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.081	0.061	1.556	0.000	0.903	0.000	0.000	0.000

Problem 1892	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	168	120	0	0	0	0	0	-1
normalized size	1	0.99	0.71	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.156	0.149	1.944	0.000	1.280	0.000	0.000	0.000

Problem 1893	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	125	0	0	0	0	0	-1
normalized size	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.187	0.117	1.425	0.000	1.413	0.000	0.000	0.000

Problem 1894	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	97	174	0	348	0	1352	375
normalized size	1	1.00	0.82	1.46	0.00	2.92	0.00	11.36	3.15
time (sec)	N/A	0.069	0.077	0.051	0.000	1.794	0.000	0.342	2.435

Problem 1895	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	267	394	277	303	308	291	261
normalized size	1	1.00	2.90	4.28	3.01	3.29	3.35	3.16	2.84
time (sec)	N/A	0.155	0.035	0.038	0.580	0.781	0.128	0.154	0.108

Problem 1896	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	217	319	225	245	243	237	208
normalized size	1	1.00	2.36	3.47	2.45	2.66	2.64	2.58	2.26
time (sec)	N/A	0.120	0.031	0.043	0.501	0.933	0.110	0.162	0.081

Problem 1897	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	161	244	167	188	190	184	152
normalized size	1	1.00	1.75	2.65	1.82	2.04	2.07	2.00	1.65
time (sec)	N/A	0.095	0.023	0.040	0.516	0.673	0.100	0.150	0.067

Problem 1898	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	122	169	124	130	133	130	115
normalized size	1	1.00	1.88	2.60	1.91	2.00	2.05	2.00	1.77
time (sec)	N/A	0.067	0.018	0.046	0.528	1.036	0.089	0.152	0.050

Problem 1899	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	67	94	69	72	73	76	65
normalized size	1	1.00	1.76	2.47	1.82	1.89	1.92	2.00	1.71
time (sec)	N/A	0.017	0.010	0.040	0.541	0.866	0.076	0.166	0.035

Problem 1900	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	32	23	31	32	31	31
normalized size	1	1.00	1.00	2.29	1.64	2.21	2.29	2.21	2.21
time (sec)	N/A	0.002	0.001	0.046	0.486	0.619	0.068	0.153	0.038

Problem 1901	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	74	133	114	115	83	113	118
normalized size	1	1.00	1.00	1.80	1.54	1.55	1.12	1.53	1.59
time (sec)	N/A	0.030	0.029	0.049	0.683	1.431	0.316	0.182	2.027

Problem 1902	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	75	75	114	149	117	172	102	164	123
normalized size	1	1.00	1.52	1.99	1.56	2.29	1.36	2.19	1.64
time (sec)	N/A	0.062	0.035	0.053	0.596	1.043	0.658	0.158	0.073

Problem 1903	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	114	160	125	188	128	110	130
normalized size	1	1.00	1.46	2.05	1.60	2.41	1.64	1.41	1.67
time (sec)	N/A	0.055	0.039	0.049	0.487	1.133	0.831	0.162	2.042

Problem 1904	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	79	166	143	177	148	117	138
normalized size	1	1.00	0.92	1.93	1.66	2.06	1.72	1.36	1.60
time (sec)	N/A	0.057	0.039	0.051	0.459	0.984	1.184	0.165	0.093

Problem 1905	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	501	817	517	579	580	555	492
normalized size	1	1.00	3.50	5.71	3.62	4.05	4.06	3.88	3.44
time (sec)	N/A	0.311	0.068	0.038	0.488	0.861	0.163	0.223	2.132

Problem 1906	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	413	688	427	488	500	470	405
normalized size	1	1.00	2.83	4.71	2.92	3.34	3.42	3.22	2.77
time (sec)	N/A	0.251	0.048	0.043	0.532	0.413	0.149	0.180	2.084

Problem 1907	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	301	559	360	396	401	384	340
normalized size	1	1.00	2.53	4.70	3.03	3.33	3.37	3.23	2.86
time (sec)	N/A	0.216	0.085	0.041	0.637	0.893	0.137	0.160	2.074

Problem 1908	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	235	430	277	303	308	297	261
normalized size	1	1.00	2.55	4.67	3.01	3.29	3.35	3.23	2.84
time (sec)	N/A	0.150	0.066	0.043	0.614	0.567	0.125	0.173	0.099

Problem 1909	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	189	301	197	212	218	212	181
normalized size	1	1.00	2.91	4.63	3.03	3.26	3.35	3.26	2.78
time (sec)	N/A	0.105	0.030	0.048	0.628	0.603	0.109	0.156	0.076

Problem 1910	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	109	172	115	121	129	127	103
normalized size	1	1.00	2.87	4.53	3.03	3.18	3.39	3.34	2.71
time (sec)	N/A	0.017	0.015	0.040	0.597	1.031	0.096	0.150	2.025

Problem 1911	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	54	23	53	60	51	53
normalized size	1	1.00	1.00	3.86	1.64	3.79	4.29	3.64	3.79
time (sec)	N/A	0.003	0.002	0.039	0.484	0.992	0.077	0.151	0.027

Problem 1912	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	167	302	258	259	209	259	280
normalized size	1	1.00	1.37	2.48	2.11	2.12	1.71	2.12	2.30
time (sec)	N/A	0.056	0.061	0.046	0.546	1.132	0.506	0.155	1.988

Problem 1913	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	228	326	264	373	231	328	327
normalized size	1	1.00	1.75	2.51	2.03	2.87	1.78	2.52	2.52
time (sec)	N/A	0.147	0.067	0.048	0.511	1.046	0.904	0.190	2.018

Problem 1914	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	230	346	271	416	258	250	291
normalized size	1	1.00	1.73	2.60	2.04	3.13	1.94	1.88	2.19
time (sec)	N/A	0.127	0.074	0.056	0.723	1.091	1.648	0.159	0.095

Problem 1915	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	229	361	282	425	284	249	285
normalized size	1	1.00	1.76	2.78	2.17	3.27	2.18	1.92	2.19
time (sec)	N/A	0.115	0.077	0.055	0.757	1.500	3.059	0.158	0.120

Problem 1916	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	581	1165	706	798	796	766	683
normalized size	1	1.00	3.36	6.73	4.08	4.61	4.60	4.43	3.95
time (sec)	N/A	0.441	0.170	0.041	0.607	0.771	0.195	0.270	2.261

Problem 1917	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	493	982	594	670	673	646	570
normalized size	1	1.00	3.45	6.87	4.15	4.69	4.71	4.52	3.99
time (sec)	N/A	0.359	0.140	0.048	0.571	1.029	0.177	0.164	2.167

Problem 1918	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	405	799	489	546	549	530	470
normalized size	1	1.00	3.40	6.71	4.11	4.59	4.61	4.45	3.95
time (sec)	N/A	0.276	0.125	0.049	0.592	0.895	0.160	0.188	0.178

Problem 1919	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	360	616	376	420	427	412	356
normalized size	1	1.00	3.91	6.70	4.09	4.57	4.64	4.48	3.87
time (sec)	N/A	0.220	0.048	0.040	0.584	1.198	0.142	0.174	2.173

Problem 1920	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	229	433	273	294	303	294	249
normalized size	1	1.00	3.52	6.66	4.20	4.52	4.66	4.52	3.83
time (sec)	N/A	0.154	0.069	0.049	0.558	1.604	0.124	0.186	2.091

Problem 1921	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	151	250	163	169	178	177	143
normalized size	1	1.00	3.97	6.58	4.29	4.45	4.68	4.66	3.76
time (sec)	N/A	0.018	0.022	0.039	0.552	0.765	0.104	0.210	0.071

Problem 1922	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	76	23	75	83	71	75
normalized size	1	1.00	1.00	5.43	1.64	5.36	5.93	5.07	5.36
time (sec)	N/A	0.003	0.001	0.039	0.478	1.292	0.084	0.183	0.034

Problem 1923	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	304	539	458	459	408	469	510
normalized size	1	1.00	1.79	3.17	2.69	2.70	2.40	2.76	3.00
time (sec)	N/A	0.083	0.108	0.051	0.655	1.355	0.826	0.169	0.073

Problem 1924	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	387	571	466	629	428	542	839
normalized size	1	1.00	2.08	3.07	2.51	3.38	2.30	2.91	4.51
time (sec)	N/A	0.258	0.113	0.056	0.793	1.303	1.501	0.214	2.002

Problem 1925	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	185	185	388	599	473	701	447	448	690
normalized size	1	1.00	2.10	3.24	2.56	3.79	2.42	2.42	3.73
time (sec)	N/A	0.223	0.120	0.059	0.668	1.841	3.019	0.212	2.025

Problem 1926	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	187	187	199	622	485	737	474	442	558
normalized size	1	1.00	1.06	3.33	2.59	3.94	2.53	2.36	2.98
time (sec)	N/A	0.210	0.094	0.069	0.670	0.861	6.272	0.177	2.120

Problem 1927	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	97	97	114	209	179	181	136	174	188
normalized size	1	1.00	1.18	2.15	1.85	1.87	1.40	1.79	1.94
time (sec)	N/A	0.042	0.045	0.048	0.480	0.993	0.442	0.184	0.053

Problem 1928	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	74	133	114	116	83	110	118
normalized size	1	1.00	1.01	1.82	1.56	1.59	1.14	1.51	1.62
time (sec)	N/A	0.029	0.030	0.047	0.496	1.301	0.330	0.158	1.989

Problem 1929	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	43	74	61	63	44	59	62
normalized size	1	1.00	0.88	1.51	1.24	1.29	0.90	1.20	1.27
time (sec)	N/A	0.020	0.016	0.047	0.486	1.064	0.258	0.153	0.066

Problem 1930	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	32	25	24	20	28	26
normalized size	1	1.00	1.00	1.28	1.00	0.96	0.80	1.12	1.04
time (sec)	N/A	0.021	0.008	0.046	0.553	1.171	0.190	0.164	0.044

Problem 1931	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	10	10	10	11	22	10	7	22	10
normalized size	1	1.00	1.00	1.10	2.20	1.00	0.70	2.20	1.00
time (sec)	N/A	0.002	0.001	0.040	0.525	1.030	0.094	0.153	0.023

Problem 1932	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	26	37	36	26	128	49	40
normalized size	1	1.00	0.72	1.03	1.00	0.72	3.56	1.36	1.11
time (sec)	N/A	0.008	0.012	0.048	0.617	0.949	0.380	0.157	0.084

Problem 1933	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	56	56	53	58	90	92	233	82	77
normalized size	1	1.00	0.95	1.04	1.61	1.64	4.16	1.46	1.38
time (sec)	N/A	0.035	0.029	0.055	0.481	1.056	0.708	0.170	2.320

Problem 1934	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	67	81	202	242	381	166	183
normalized size	1	1.00	0.82	0.99	2.46	2.95	4.65	2.02	2.23
time (sec)	N/A	0.048	0.049	0.052	0.467	1.237	1.080	0.158	2.256

Problem 1935	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	106	104	362	425	570	238	313
normalized size	1	1.00	1.00	0.98	3.42	4.01	5.38	2.25	2.95
time (sec)	N/A	0.067	0.039	0.095	0.618	1.335	1.533	0.172	0.215

Problem 1936	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	163	245	190	292	185	172	197
normalized size	1	1.00	1.60	2.40	1.86	2.86	1.81	1.69	1.93
time (sec)	N/A	0.094	0.055	0.071	0.542	0.733	1.243	0.157	0.103

Problem 1937	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	114	160	125	188	128	107	130
normalized size	1	1.00	1.46	2.05	1.60	2.41	1.64	1.37	1.67
time (sec)	N/A	0.064	0.042	0.057	0.530	0.952	0.854	0.156	0.099

Problem 1938	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	49	92	79	99	80	67	77
normalized size	1	1.00	0.83	1.56	1.34	1.68	1.36	1.14	1.31
time (sec)	N/A	0.044	0.024	0.056	0.581	0.971	0.476	0.153	0.069

Problem 1939	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	26	35	38	38	39	26	39
normalized size	1	1.00	0.93	1.25	1.36	1.36	1.39	0.93	1.39
time (sec)	N/A	0.004	0.009	0.045	0.499	1.132	0.278	0.156	2.006

Problem 1940	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	23	24	26	23	26
normalized size	1	1.00	1.00	0.93	1.64	1.71	1.86	1.64	1.86
time (sec)	N/A	0.002	0.003	0.048	0.519	0.909	0.191	0.152	0.028

Problem 1941	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	82	82	67	81	202	242	381	162	182
normalized size	1	1.00	0.82	0.99	2.46	2.95	4.65	1.98	2.22
time (sec)	N/A	0.051	0.054	0.052	0.557	1.067	1.092	0.162	2.157

Problem 1942	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	109	109	98	109	386	494	634	212	330
normalized size	1	1.00	0.90	1.00	3.54	4.53	5.82	1.94	3.03
time (sec)	N/A	0.074	0.070	0.056	0.660	1.400	1.730	0.187	2.210

Problem 1943	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	128	140	594	760	881	332	542
normalized size	1	1.00	0.90	0.98	4.15	5.31	6.16	2.32	3.79
time (sec)	N/A	0.110	0.104	0.059	0.704	1.151	2.422	0.201	2.342

Problem 1944	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	154	165	890	1151	1221	435	798
normalized size	1	1.00	0.91	0.97	5.24	6.77	7.18	2.56	4.69
time (sec)	N/A	0.153	0.151	0.059	1.065	1.755	3.363	0.166	2.583

Problem 1945	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	120	260	219	267	230	174	213
normalized size	1	1.00	1.08	2.34	1.97	2.41	2.07	1.57	1.92
time (sec)	N/A	0.099	0.059	0.054	0.587	0.933	3.340	0.179	2.086

Problem 1946	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	91	122	143	143	155	106	135
normalized size	1	1.00	3.25	4.36	5.11	5.11	5.54	3.79	4.82
time (sec)	N/A	0.005	0.028	0.047	0.524	1.516	1.832	0.162	0.055

Problem 1947	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	65	65	56	71	98	98	104	60	96
normalized size	1	1.00	0.86	1.09	1.51	1.51	1.60	0.92	1.48
time (sec)	N/A	0.042	0.019	0.056	0.672	1.081	0.799	0.155	0.042

Problem 1948	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	27	35	61	61	65	27	63
normalized size	1	1.00	0.71	0.92	1.61	1.61	1.71	0.71	1.66
time (sec)	N/A	0.024	0.008	0.093	0.525	1.072	0.455	0.156	2.009

Problem 1949	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	14	14	14	13	23	46	49	23	48
normalized size	1	1.00	1.00	0.93	1.64	3.29	3.50	1.64	3.43
time (sec)	N/A	0.003	0.003	0.059	0.564	1.096	0.320	0.152	1.992

Problem 1950	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	130	130	130	125	558	657	802	322	505
normalized size	1	1.00	1.00	0.96	4.29	5.05	6.17	2.48	3.88
time (sec)	N/A	0.085	0.047	0.056	0.778	1.373	2.141	0.179	2.268

Problem 1951	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	144	155	858	1083	1178	358	763
normalized size	1	1.00	0.91	0.97	5.40	6.81	7.41	2.25	4.80
time (sec)	N/A	0.138	0.074	0.059	0.859	1.260	3.553	0.206	0.517

Problem 1952	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	179	189	1200	1565	1571	547	1098
normalized size	1	1.00	0.93	0.98	6.25	8.15	8.18	2.85	5.72
time (sec)	N/A	0.192	0.098	0.062	1.270	1.204	5.063	0.174	2.692

Problem 1953	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	222	222	204	215	1587	2090	2009	673	1469
normalized size	1	1.00	0.92	0.97	7.15	9.41	9.05	3.03	6.62
time (sec)	N/A	0.261	0.129	0.061	1.579	1.443	7.633	0.176	3.016

Problem 1954	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	196	230	1323	197	218	311	1541
normalized size	1	1.00	1.34	1.58	9.06	1.35	1.49	2.13	10.55
time (sec)	N/A	0.152	0.061	0.051	0.577	1.225	0.165	0.167	4.770

Problem 1955	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	163	189	996	156	168	254	1095
normalized size	1	1.00	1.12	1.29	6.82	1.07	1.15	1.74	7.50
time (sec)	N/A	0.133	0.047	0.049	0.697	1.234	0.165	0.183	3.593

Problem 1956	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	130	148	693	124	133	199	734
normalized size	1	1.00	0.89	1.01	4.75	0.85	0.91	1.36	5.03
time (sec)	N/A	0.109	0.040	0.052	0.613	1.130	0.134	0.159	3.007

Problem 1957	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	97	107	452	81	87	143	438
normalized size	1	1.00	0.78	0.86	3.62	0.65	0.70	1.14	3.50
time (sec)	N/A	0.097	0.032	0.046	0.550	0.618	0.124	0.159	2.579

Problem 1958	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	64	66	251	48	49	88	219
normalized size	1	1.00	0.82	0.85	3.22	0.62	0.63	1.13	2.81
time (sec)	N/A	0.058	0.022	0.053	0.641	1.778	0.108	0.159	2.499

Problem 1959	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	18	38	14	20	19	18	76
normalized size	1	1.00	0.67	1.41	0.52	0.74	0.70	0.67	2.81
time (sec)	N/A	0.008	0.008	0.049	0.704	1.017	0.088	0.148	2.169

Problem 1960	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	122	122	61	102	0	62	44	97	-1
normalized size	1	1.00	0.50	0.84	0.00	0.51	0.36	0.80	-0.01
time (sec)	N/A	0.068	0.029	0.077	0.000	1.314	0.245	0.156	0.000

Problem 1961	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	87	131	0	92	60	101	-1
normalized size	1	1.00	0.66	0.99	0.00	0.70	0.45	0.77	-0.01
time (sec)	N/A	0.079	0.048	0.066	0.000	1.006	0.366	0.154	0.000

Problem 1962	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	C	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	73	112	0	100	80	105	-1
normalized size	1	1.00	0.52	0.80	0.00	0.71	0.57	0.75	-0.01
time (sec)	N/A	0.081	0.034	0.066	0.000	0.656	0.478	0.155	0.000

Problem 1963	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	71	76	0	84	88	94	75
normalized size	1	1.00	1.73	1.85	0.00	2.05	2.15	2.29	1.83
time (sec)	N/A	0.023	0.031	0.047	0.000	0.974	0.654	0.156	2.099

Problem 1964	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	73	78	0	98	104	96	77
normalized size	1	1.00	0.50	0.53	0.00	0.67	0.71	0.66	0.53
time (sec)	N/A	0.082	0.027	0.050	0.000	1.053	0.988	0.170	2.139

Problem 1965	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	73	78	0	109	116	96	77
normalized size	1	1.00	0.50	0.53	0.00	0.75	0.79	0.66	0.53
time (sec)	N/A	0.081	0.034	0.043	0.000	1.261	1.019	0.206	2.123

Problem 1966	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	73	78	0	120	128	96	77
normalized size	1	1.00	0.50	0.53	0.00	0.82	0.88	0.66	0.53
time (sec)	N/A	0.081	0.028	0.051	0.000	1.270	1.220	0.160	2.118

Problem 1967	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	73	78	0	131	139	96	77
normalized size	1	1.00	0.50	0.53	0.00	0.90	0.95	0.66	0.53
time (sec)	N/A	0.080	0.031	0.055	0.000	1.066	1.427	0.204	2.130

Problem 1968	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	432	564	2152	489	0	761	-1
normalized size	1	1.00	1.70	2.22	8.47	1.93	0.00	3.00	-0.00
time (sec)	N/A	0.352	0.132	0.048	0.754	0.939	0.000	0.208	0.000

Problem 1969	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	377	489	1736	418	0	660	-1
normalized size	1	1.00	1.48	1.93	6.83	1.65	0.00	2.60	-0.00
time (sec)	N/A	0.303	0.121	0.052	0.640	1.247	0.000	0.220	0.000

Problem 1970	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	322	414	1323	360	0	561	-1
normalized size	1	1.00	1.27	1.63	5.21	1.42	0.00	2.21	-0.00
time (sec)	N/A	0.271	0.100	0.049	0.771	1.010	0.000	0.190	0.000

Problem 1971	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	267	339	998	285	0	461	-1
normalized size	1	1.00	1.22	1.55	4.56	1.30	0.00	2.11	-0.00
time (sec)	N/A	0.218	0.084	0.052	0.736	1.278	0.000	0.195	0.000

Problem 1972	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	212	264	693	225	0	360	-1
normalized size	1	1.00	1.23	1.53	4.03	1.31	0.00	2.09	-0.01
time (sec)	N/A	0.180	0.069	0.051	0.649	1.541	0.000	0.205	0.000

Problem 1973	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	157	189	452	156	0	260	-1
normalized size	1	1.00	1.26	1.51	3.62	1.25	0.00	2.08	-0.01
time (sec)	N/A	0.135	0.054	0.048	0.572	0.457	0.000	0.175	0.000

Problem 1974	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	102	114	251	96	0	162	-1
normalized size	1	1.00	1.31	1.46	3.22	1.23	0.00	2.08	-0.01
time (sec)	N/A	0.045	0.034	0.053	0.606	0.604	0.000	0.181	0.000

Problem 1975	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	25	60	23	42	158	86	30
normalized size	1	1.00	0.93	2.22	0.85	1.56	5.85	3.19	1.11
time (sec)	N/A	0.008	0.007	0.052	0.477	1.141	0.928	0.199	2.162

Problem 1976	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	133	225	0	179	0	266	-1
normalized size	1	1.00	0.63	1.07	0.00	0.85	0.00	1.27	-0.00
time (sec)	N/A	0.103	0.063	0.065	0.000	1.291	0.000	0.173	0.000

Problem 1977	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	183	327	0	267	0	268	-1
normalized size	1	1.00	0.77	1.37	0.00	1.12	0.00	1.12	-0.00
time (sec)	N/A	0.163	0.123	0.063	0.000	1.001	0.000	0.208	0.000

Problem 1978	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	185	350	0	291	0	265	-1
normalized size	1	1.00	0.78	1.47	0.00	1.22	0.00	1.11	-0.00
time (sec)	N/A	0.149	0.119	0.082	0.000	1.696	0.000	0.175	0.000

Problem 1979	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	238	238	181	330	0	292	0	260	-1
normalized size	1	1.00	0.76	1.39	0.00	1.23	0.00	1.09	-0.00
time (sec)	N/A	0.140	0.086	0.063	0.000	0.789	0.000	0.198	0.000

Problem 1980	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	246	246	144	276	0	268	0	268	-1
normalized size	1	1.00	0.59	1.12	0.00	1.09	0.00	1.09	-0.00
time (sec)	N/A	0.135	0.092	0.059	0.000	0.899	0.000	0.174	0.000

Problem 1981	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	158	197	0	215	0	260	449
normalized size	1	1.00	3.85	4.80	0.00	5.24	0.00	6.34	10.95
time (sec)	N/A	0.023	0.060	0.058	0.000	1.087	0.000	0.205	2.149

Problem 1982	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	162	201	0	236	0	264	449
normalized size	1	1.00	1.65	2.05	0.00	2.41	0.00	2.69	4.58
time (sec)	N/A	0.052	0.058	0.049	0.000	1.165	0.000	0.208	2.135

Problem 1983	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	162	201	0	247	0	264	449
normalized size	1	1.00	1.09	1.35	0.00	1.66	0.00	1.77	3.01
time (sec)	N/A	0.066	0.058	0.053	0.000	1.280	0.000	0.173	2.154

Problem 1984	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	162	201	0	258	0	264	449
normalized size	1	1.00	0.64	0.80	0.00	1.02	0.00	1.05	1.78
time (sec)	N/A	0.131	0.057	0.072	0.000	0.761	0.000	0.205	2.168

Problem 1985	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	162	201	0	269	0	264	449
normalized size	1	1.00	0.64	0.79	0.00	1.06	0.00	1.04	1.77
time (sec)	N/A	0.132	0.060	0.056	0.000	1.426	0.000	0.172	2.173

Problem 1986	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	162	201	0	280	0	264	449
normalized size	1	1.00	0.64	0.79	0.00	1.10	0.00	1.04	1.77
time (sec)	N/A	0.136	0.056	0.055	0.000	1.271	0.000	0.198	2.201

Problem 1987	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	254	254	162	201	0	291	0	264	449
normalized size	1	1.00	0.64	0.79	0.00	1.15	0.00	1.04	1.77
time (sec)	N/A	0.133	0.070	0.055	0.000	1.228	0.000	0.172	2.200

Problem 1988	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	756	1034	3175	892	0	1387	-1
normalized size	1	1.00	2.09	2.86	8.77	2.46	0.00	3.83	-0.00
time (sec)	N/A	0.687	0.232	0.051	0.797	0.624	0.000	0.288	0.000

Problem 1989	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	679	925	2653	797	0	1242	-1
normalized size	1	1.00	1.88	2.56	7.33	2.20	0.00	3.43	-0.00
time (sec)	N/A	0.594	0.219	0.051	0.819	0.987	0.000	0.236	0.000

Problem 1990	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	602	816	2153	706	0	1099	-1
normalized size	1	1.00	1.66	2.25	5.95	1.95	0.00	3.04	-0.00
time (sec)	N/A	0.525	0.188	0.050	0.719	1.217	0.000	0.282	0.000

Problem 1991	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	311	311	525	707	1736	599	0	955	-1
normalized size	1	1.00	1.69	2.27	5.58	1.93	0.00	3.07	-0.00
time (sec)	N/A	0.447	0.160	0.049	0.703	0.813	0.000	0.215	0.000

Problem 1992	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	263	263	448	598	1323	517	0	810	-1
normalized size	1	1.00	1.70	2.27	5.03	1.97	0.00	3.08	-0.00
time (sec)	N/A	0.377	0.138	0.057	0.642	0.898	0.000	0.211	0.000

Problem 1993	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	371	489	998	418	0	666	-1
normalized size	1	1.00	1.69	2.23	4.56	1.91	0.00	3.04	-0.00
time (sec)	N/A	0.304	0.118	0.056	0.532	0.888	0.000	0.194	0.000

Problem 1994	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	294	380	693	327	0	523	-1
normalized size	1	1.00	1.71	2.21	4.03	1.90	0.00	3.04	-0.01
time (sec)	N/A	0.244	0.097	0.053	0.597	1.002	0.000	0.224	0.000

Problem 1995	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	125	125	217	271	452	234	0	379	-1
normalized size	1	1.00	1.74	2.17	3.62	1.87	0.00	3.03	-0.01
time (sec)	N/A	0.180	0.076	0.050	0.756	0.896	0.000	0.175	0.000

Problem 1996	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	140	162	251	142	0	236	-1
normalized size	1	1.00	1.79	2.08	3.22	1.82	0.00	3.03	-0.01
time (sec)	N/A	0.049	0.049	0.053	0.631	0.959	0.000	0.168	0.000

Problem 1997	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	25	82	23	64	226	120	14
normalized size	1	1.00	0.93	3.04	0.85	2.37	8.37	4.44	0.52
time (sec)	N/A	0.008	0.009	0.043	0.675	1.108	5.515	0.187	2.239

Problem 1998	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	298	298	248	428	0	351	0	522	-1
normalized size	1	1.00	0.83	1.44	0.00	1.18	0.00	1.75	-0.00
time (sec)	N/A	0.163	0.113	0.064	0.000	0.993	0.000	0.219	0.000

Problem 1999	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	320	601	0	496	0	519	-1
normalized size	1	1.00	0.93	1.74	0.00	1.44	0.00	1.50	-0.00
time (sec)	N/A	0.299	0.201	0.071	0.000	0.940	0.000	0.196	0.000

Problem 2000	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	321	669	0	548	0	509	-1
normalized size	1	1.00	0.93	1.93	0.00	1.58	0.00	1.47	-0.00
time (sec)	N/A	0.259	0.143	0.067	0.000	1.984	0.000	0.188	0.000

Problem 2001	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	345	345	320	692	0	576	0	503	-1
normalized size	1	1.00	0.93	2.01	0.00	1.67	0.00	1.46	-0.00
time (sec)	N/A	0.250	0.148	0.112	0.000	0.818	0.000	0.189	0.000

Problem 2002	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	318	670	0	571	0	504	-1
normalized size	1	1.00	0.92	1.95	0.00	1.66	0.00	1.47	-0.00
time (sec)	N/A	0.242	0.147	0.085	0.000	1.081	0.000	0.230	0.000

Problem 2003	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	344	344	315	603	0	542	0	499	-1
normalized size	1	1.00	0.92	1.75	0.00	1.58	0.00	1.45	-0.00
time (sec)	N/A	0.227	0.157	0.112	0.000	0.790	0.000	0.199	0.000

Problem 2004	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	356	356	258	507	0	492	0	507	-1
normalized size	1	1.00	0.72	1.42	0.00	1.38	0.00	1.42	-0.00
time (sec)	N/A	0.210	0.171	0.071	0.000	0.861	0.000	0.190	0.000

Problem 2005	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	289	386	0	398	0	514	1010
normalized size	1	1.00	7.05	9.41	0.00	9.71	0.00	12.54	24.63
time (sec)	N/A	0.025	0.109	0.053	0.000	0.827	0.000	0.194	2.379

Problem 2006	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	295	392	0	430	0	520	1010
normalized size	1	1.00	3.01	4.00	0.00	4.39	0.00	5.31	10.31
time (sec)	N/A	0.053	0.109	0.053	0.000	0.788	0.000	0.240	2.298

Problem 2007	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	295	392	0	441	0	520	1010
normalized size	1	1.00	1.98	2.63	0.00	2.96	0.00	3.49	6.78
time (sec)	N/A	0.065	0.109	0.056	0.000	1.239	0.000	0.194	2.264

Problem 2008	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	295	392	0	452	0	520	1010
normalized size	1	1.00	1.48	1.96	0.00	2.26	0.00	2.60	5.05
time (sec)	N/A	0.085	0.106	0.056	0.000	0.792	0.000	0.203	2.530

Problem 2009	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	359	359	295	392	0	463	0	520	1010
normalized size	1	1.00	0.82	1.09	0.00	1.29	0.00	1.45	2.81
time (sec)	N/A	0.198	0.106	0.069	0.000	0.873	0.000	0.199	2.530

Problem 2010	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	295	392	0	474	0	520	1010
normalized size	1	1.00	0.81	1.08	0.00	1.31	0.00	1.44	2.79
time (sec)	N/A	0.198	0.101	0.064	0.000	1.105	0.000	0.242	2.374

Problem 2011	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	295	392	0	485	0	520	1010
normalized size	1	1.00	0.82	1.09	0.00	1.35	0.00	1.44	2.81
time (sec)	N/A	0.193	0.115	0.060	0.000	1.102	0.000	0.205	2.390

Problem 2012	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	295	392	0	496	0	520	1010
normalized size	1	1.00	0.81	1.08	0.00	1.37	0.00	1.44	2.79
time (sec)	N/A	0.198	0.109	0.058	0.000	0.868	0.000	0.203	2.399

Problem 2013	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	295	392	0	507	0	520	1010
normalized size	1	1.00	0.81	1.08	0.00	1.40	0.00	1.44	2.79
time (sec)	N/A	0.197	0.115	0.072	0.000	0.939	0.000	0.193	2.447

Problem 2014	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F(-2)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	362	362	295	392	0	518	0	520	1010
normalized size	1	1.00	0.81	1.08	0.00	1.43	0.00	1.44	2.79
time (sec)	N/A	0.201	0.103	0.056	0.000	0.794	0.000	0.225	2.450

Problem 2015	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	30	58	688	42	42	18	-1
normalized size	1	1.00	0.77	1.49	17.64	1.08	1.08	0.46	-0.03
time (sec)	N/A	0.029	0.016	0.050	0.572	0.814	0.122	0.152	0.000

Problem 2016	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	30	47	432	31	32	18	-1
normalized size	1	1.00	0.77	1.21	11.08	0.79	0.82	0.46	-0.03
time (sec)	N/A	0.030	0.010	0.051	0.535	1.328	0.111	0.169	0.000

Problem 2017	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	30	36	239	20	19	18	-1
normalized size	1	1.00	0.77	0.92	6.13	0.51	0.49	0.46	-0.03
time (sec)	N/A	0.030	0.010	0.040	0.494	0.847	0.103	0.184	0.000

Problem 2018	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	28	25	95	10	8	19	-1
normalized size	1	1.00	0.45	0.40	1.53	0.16	0.13	0.31	-0.02
time (sec)	N/A	0.030	0.011	0.048	0.761	0.820	0.095	0.148	0.000

Problem 2019	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	18	17	13	1	0	20	76
normalized size	1	1.00	0.75	0.71	0.54	0.04	0.00	0.83	3.17
time (sec)	N/A	0.007	0.004	0.048	0.545	0.870	0.084	0.150	2.382

Problem 2020	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	26	25	0	10	7	17	-1
normalized size	1	1.00	0.74	0.71	0.00	0.29	0.20	0.49	-0.03
time (sec)	N/A	0.028	0.008	0.049	0.000	1.058	0.099	0.164	0.000

Problem 2021	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	28	27	0	13	10	18	28
normalized size	1	1.00	0.74	0.71	0.00	0.34	0.26	0.47	0.74
time (sec)	N/A	0.023	0.010	0.047	0.000	1.193	0.165	0.170	2.101

Problem 2022	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	39	30	27	0	24	26	18	28
normalized size	1	0.93	0.71	0.64	0.00	0.57	0.62	0.43	0.67
time (sec)	N/A	0.028	0.011	0.049	0.000	0.768	0.224	0.151	2.168

Problem 2023	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	39	30	27	0	35	37	18	28
normalized size	1	0.93	0.71	0.64	0.00	0.83	0.88	0.43	0.67
time (sec)	N/A	0.028	0.011	0.047	0.000	2.110	0.283	0.160	2.143

Problem 2024	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	39	30	27	0	46	49	18	28
normalized size	1	0.93	0.71	0.64	0.00	1.10	1.17	0.43	0.67
time (sec)	N/A	0.028	0.012	0.054	0.000	0.898	0.343	0.153	2.171

Problem 2025	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	170	321	754	268	0	237	-1
normalized size	1	1.00	0.81	1.53	3.59	1.28	0.00	1.13	-0.00
time (sec)	N/A	0.107	0.082	0.071	0.641	0.862	0.000	0.333	0.000

Problem 2026	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	120	209	481	173	0	185	-1
normalized size	1	1.00	0.74	1.29	2.97	1.07	0.00	1.14	-0.01
time (sec)	N/A	0.087	0.051	0.068	0.627	0.872	0.000	0.339	0.000

Problem 2027	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	106	106	74	116	272	92	0	148	-1
normalized size	1	1.00	0.70	1.09	2.57	0.87	0.00	1.40	-0.01
time (sec)	N/A	0.057	0.034	0.066	0.565	0.796	0.000	0.357	0.000

Problem 2028	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	36	48	117	39	0	114	-1
normalized size	1	1.00	0.54	0.72	1.75	0.58	0.00	1.70	-0.01
time (sec)	N/A	0.029	0.015	0.059	0.548	1.457	0.000	0.332	0.000

Problem 2029	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	16	22	23	13	34	0	23
normalized size	1	1.00	0.64	0.88	0.92	0.52	1.36	0.00	0.92
time (sec)	N/A	0.008	0.007	0.042	0.672	0.797	0.846	0.000	2.145

Problem 2030	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	120	120	57	77	0	93	0	203	-1
normalized size	1	1.00	0.48	0.64	0.00	0.78	0.00	1.69	-0.01
time (sec)	N/A	0.084	0.036	0.065	0.000	0.853	0.000	0.245	0.000

Problem 2031	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	92	181	0	241	0	486	-1
normalized size	1	1.00	0.54	1.07	0.00	1.43	0.00	2.88	-0.01
time (sec)	N/A	0.112	0.065	0.087	0.000	0.854	0.000	0.464	0.000

Problem 2032	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	135	331	0	495	0	461	-1
normalized size	1	1.00	0.61	1.48	0.00	2.22	0.00	2.07	-0.00
time (sec)	N/A	0.147	0.095	0.069	0.000	1.495	0.000	2.846	0.000

Problem 2033	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	252	252	232	495	1010	426	0	0	-1
normalized size	1	1.00	0.92	1.96	4.01	1.69	0.00	0.00	-0.00
time (sec)	N/A	0.193	0.114	0.061	1.180	0.924	0.000	0.000	0.000

Problem 2034	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	201	201	170	322	755	292	0	0	-1
normalized size	1	1.00	0.85	1.60	3.76	1.45	0.00	0.00	-0.00
time (sec)	N/A	0.144	0.079	0.069	0.985	1.435	0.000	0.000	0.000

Problem 2035	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	91	179	533	176	0	0	-1
normalized size	1	1.00	0.59	1.16	3.46	1.14	0.00	0.00	-0.01
time (sec)	N/A	0.109	0.047	0.059	0.777	1.266	0.000	0.000	0.000

Problem 2036	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	60	69	274	84	0	0	77
normalized size	1	1.00	1.46	1.68	6.68	2.05	0.00	0.00	1.88
time (sec)	N/A	0.024	0.029	0.050	0.727	0.810	0.000	0.000	2.245

Problem 2037	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	32	35	118	50	0	0	43
normalized size	1	1.00	0.47	0.51	1.74	0.74	0.00	0.00	0.63
time (sec)	N/A	0.028	0.019	0.055	0.597	0.948	0.000	0.000	2.159

Problem 2038	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	18	22	23	35	97	23	30
normalized size	1	1.00	0.67	0.81	0.85	1.30	3.59	0.85	1.11
time (sec)	N/A	0.008	0.008	0.048	0.587	0.929	1.568	0.200	2.091

Problem 2039	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	116	251	0	425	0	0	-1
normalized size	1	1.00	0.55	1.20	0.00	2.02	0.00	0.00	-0.00
time (sec)	N/A	0.140	0.085	0.065	0.000	1.086	0.000	0.000	0.000

Problem 2040	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	260	144	483	0	751	0	774	-1
normalized size	1	1.00	0.55	1.86	0.00	2.89	0.00	2.98	-0.00
time (sec)	N/A	0.186	0.105	0.072	0.000	0.875	0.000	0.506	0.000

Problem 2041	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	323	323	184	753	0	1151	0	0	-1
normalized size	1	1.00	0.57	2.33	0.00	3.56	0.00	0.00	-0.00
time (sec)	N/A	0.238	0.120	0.075	0.000	0.622	0.000	0.000	0.000

Problem 2042	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	79	116	118	320	654	1270	87
normalized size	1	1.00	0.79	1.16	1.18	3.20	6.54	12.70	0.87
time (sec)	N/A	0.044	0.077	0.049	0.602	1.091	9.575	0.258	0.084

Problem 2043	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	79	116	118	268	549	908	87
normalized size	1	1.00	0.79	1.16	1.18	2.68	5.49	9.08	0.87
time (sec)	N/A	0.037	0.062	0.054	0.569	1.005	4.586	0.219	2.067

Problem 2044	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	79	116	118	216	386	598	87
normalized size	1	1.00	0.79	1.16	1.18	2.16	3.86	5.98	0.87
time (sec)	N/A	0.034	0.057	0.059	0.550	0.780	16.767	0.184	0.061

Problem 2045	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	79	116	118	164	146	339	87
normalized size	1	1.00	0.79	1.16	1.18	1.64	1.46	3.39	0.87
time (sec)	N/A	0.032	0.054	0.049	0.620	1.206	4.576	0.244	0.063

Problem 2046	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	79	116	118	115	394	143	87
normalized size	1	1.00	0.82	1.21	1.23	1.20	4.10	1.49	0.91
time (sec)	N/A	0.034	0.048	0.050	0.539	1.300	38.314	0.192	0.061

Problem 2047	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	78	116	125	124	109	150	114
normalized size	1	1.00	0.83	1.23	1.33	1.32	1.16	1.60	1.21
time (sec)	N/A	0.033	0.049	0.049	0.591	0.819	22.105	0.188	2.065

Problem 2048	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	76	115	122	136	461	142	128
normalized size	1	1.00	0.79	1.20	1.27	1.42	4.80	1.48	1.33
time (sec)	N/A	0.033	0.051	0.048	0.514	0.889	1.552	0.175	0.075

Problem 2049	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	77	115	121	148	665	136	114
normalized size	1	1.00	0.82	1.22	1.29	1.57	7.07	1.45	1.21
time (sec)	N/A	0.032	0.050	0.046	0.706	0.829	3.446	0.185	2.063

Problem 2050	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	123	273	259	579	1187	2325	137
normalized size	1	1.00	0.78	1.73	1.64	3.66	7.51	14.72	0.87
time (sec)	N/A	0.074	0.107	0.053	0.506	1.634	15.958	0.311	0.068

Problem 2051	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	123	273	259	497	1292	1698	137
normalized size	1	1.00	0.78	1.73	1.64	3.15	8.18	10.75	0.87
time (sec)	N/A	0.057	0.080	0.051	0.525	1.097	48.316	0.274	2.045

Problem 2052	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	123	273	259	418	763	1149	137
normalized size	1	1.00	0.78	1.73	1.64	2.65	4.83	7.27	0.87
time (sec)	N/A	0.057	0.111	0.049	0.558	1.393	30.565	0.225	0.051

Problem 2053	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	123	273	259	338	314	678	137
normalized size	1	1.00	0.79	1.75	1.66	2.17	2.01	4.35	0.88
time (sec)	N/A	0.054	0.105	0.046	0.485	1.199	7.699	0.187	0.049

Problem 2054	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	123	273	259	261	740	298	137
normalized size	1	1.00	0.80	1.77	1.68	1.69	4.81	1.94	0.89
time (sec)	N/A	0.057	0.066	0.044	0.565	0.898	84.600	0.175	0.049

Problem 2055	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	123	273	267	271	243	346	192
normalized size	1	1.00	0.81	1.80	1.76	1.78	1.60	2.28	1.26
time (sec)	N/A	0.058	0.090	0.050	0.525	1.559	49.192	0.196	2.036

Problem 2056	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	123	273	265	283	196	334	229
normalized size	1	1.00	0.81	1.80	1.74	1.86	1.29	2.20	1.51
time (sec)	N/A	0.055	0.090	0.058	0.520	0.749	59.861	0.206	2.020

Problem 2057	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	123	273	265	294	1428	333	255
normalized size	1	1.00	0.80	1.77	1.72	1.91	9.27	2.16	1.66
time (sec)	N/A	0.055	0.094	0.065	0.541	0.792	4.348	0.202	0.083

Problem 2058	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	167	498	456	891	3046	3640	187
normalized size	1	1.00	0.77	2.31	2.11	4.12	14.10	16.85	0.87
time (sec)	N/A	0.108	0.175	0.049	0.580	0.760	101.433	0.409	2.082

Problem 2059	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	216	216	167	498	456	783	2096	2696	187
normalized size	1	1.00	0.77	2.31	2.11	3.62	9.70	12.48	0.87
time (sec)	N/A	0.076	0.130	0.046	0.649	0.988	70.414	0.429	0.064

Problem 2060	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	167	498	456	676	1265	1856	187
normalized size	1	1.00	0.78	2.33	2.13	3.16	5.91	8.67	0.87
time (sec)	N/A	0.075	0.123	0.047	0.596	0.963	45.364	0.274	2.044

Problem 2061	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	167	498	456	568	544	1119	187
normalized size	1	1.00	0.78	2.33	2.13	2.65	2.54	5.23	0.87
time (sec)	N/A	0.073	0.114	0.048	0.600	0.980	10.163	0.222	2.055

Problem 2062	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	167	498	456	463	1217	505	187
normalized size	1	1.00	0.79	2.35	2.15	2.18	5.74	2.38	0.88
time (sec)	N/A	0.074	0.098	0.055	0.705	1.172	140.052	0.193	2.066

Problem 2063	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	167	498	464	472	439	625	270
normalized size	1	1.00	0.81	2.42	2.25	2.29	2.13	3.03	1.31
time (sec)	N/A	0.079	0.096	0.049	0.501	0.790	99.355	0.226	2.068

Problem 2064	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	167	498	462	484	360	609	335
normalized size	1	1.00	0.80	2.39	2.22	2.33	1.73	2.93	1.61
time (sec)	N/A	0.076	0.098	0.051	0.581	0.878	113.695	0.339	2.048

Problem 2065	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	167	498	463	496	0	608	388
normalized size	1	1.00	0.80	2.37	2.20	2.36	0.00	2.90	1.85
time (sec)	N/A	0.079	0.104	0.046	0.548	1.084	0.000	0.231	0.075

Problem 2066	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	132	380	0	424	0	264	165
normalized size	1	1.00	0.96	2.75	0.00	3.07	0.00	1.91	1.20
time (sec)	N/A	0.125	0.216	0.055	0.000	0.881	0.000	0.185	2.059

Problem 2067	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	105	263	0	290	0	180	130
normalized size	1	1.00	0.94	2.35	0.00	2.59	0.00	1.61	1.16
time (sec)	N/A	0.059	0.115	0.054	0.000	1.155	0.000	0.171	0.072

Problem 2068	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	86	86	77	167	0	188	0	112	93
normalized size	1	1.00	0.90	1.94	0.00	2.19	0.00	1.30	1.08
time (sec)	N/A	0.043	0.056	0.053	0.000	1.640	0.000	0.188	0.074

Problem 2069	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	92	0	143	61	67	50
normalized size	1	1.00	1.00	1.48	0.00	2.31	0.98	1.08	0.81
time (sec)	N/A	0.029	0.024	0.053	0.000	1.076	58.917	0.162	0.059

Problem 2070	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	47	37	0	119	44	41	38
normalized size	1	1.00	1.00	0.79	0.00	2.53	0.94	0.87	0.81
time (sec)	N/A	0.022	0.012	0.050	0.000	0.916	96.515	0.229	2.047

Problem 2071	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	46	68	0	214	60	75	57
normalized size	1	1.00	0.67	0.99	0.00	3.10	0.87	1.09	0.83
time (sec)	N/A	0.041	0.010	0.055	0.000	0.926	121.044	0.175	2.074

Problem 2072	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	93	93	48	90	0	398	83	119	100
normalized size	1	1.00	0.52	0.97	0.00	4.28	0.89	1.28	1.08
time (sec)	N/A	0.046	0.010	0.056	0.000	1.054	136.913	0.175	2.090

Problem 2073	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	48	112	0	706	109	189	137
normalized size	1	1.00	0.40	0.94	0.00	5.93	0.92	1.59	1.15
time (sec)	N/A	0.059	0.011	0.056	0.000	0.846	140.180	0.213	0.124

Problem 2074	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	52	543	0	730	0	374	361
normalized size	1	1.00	0.30	3.10	0.00	4.17	0.00	2.14	2.06
time (sec)	N/A	0.106	0.021	0.102	0.000	0.858	0.000	0.221	0.143

Problem 2075	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	52	380	0	520	0	265	268
normalized size	1	1.00	0.36	2.60	0.00	3.56	0.00	1.82	1.84
time (sec)	N/A	0.076	0.018	0.074	0.000	1.194	0.000	0.196	0.142

Problem 2076	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	52	238	0	344	0	174	199
normalized size	1	1.00	0.44	2.00	0.00	2.89	0.00	1.46	1.67
time (sec)	N/A	0.056	0.016	0.071	0.000	0.882	0.000	0.232	2.159

Problem 2077	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	90	121	0	383	0	112	135
normalized size	1	1.00	0.90	1.21	0.00	3.83	0.00	1.12	1.35
time (sec)	N/A	0.049	0.092	0.066	0.000	0.965	0.000	0.177	0.121

Problem 2078	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	52	111	0	456	0	132	135
normalized size	1	1.00	0.47	1.01	0.00	4.15	0.00	1.20	1.23
time (sec)	N/A	0.055	0.013	0.062	0.000	0.937	0.000	0.177	0.101

Problem 2079	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	50	115	0	549	0	152	142
normalized size	1	1.00	0.44	1.01	0.00	4.82	0.00	1.33	1.25
time (sec)	N/A	0.049	0.011	0.054	0.000	0.862	0.000	0.170	2.148

Problem 2080	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	140	140	50	179	0	782	0	235	205
normalized size	1	1.00	0.36	1.28	0.00	5.59	0.00	1.68	1.46
time (sec)	N/A	0.063	0.014	0.109	0.000	0.879	0.000	0.182	2.321

Problem 2081	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	52	206	0	1226	0	295	243
normalized size	1	1.00	0.31	1.23	0.00	7.34	0.00	1.77	1.46
time (sec)	N/A	0.083	0.016	0.067	0.000	0.893	0.000	0.209	2.536

Problem 2082	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	196	196	52	231	0	1858	0	379	284
normalized size	1	1.00	0.27	1.18	0.00	9.48	0.00	1.93	1.45
time (sec)	N/A	0.139	0.021	0.071	0.000	1.323	0.000	0.233	2.542

Problem 2083	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	52	701	0	968	0	476	535
normalized size	1	1.00	0.26	3.54	0.00	4.89	0.00	2.40	2.70
time (sec)	N/A	0.123	0.026	0.069	0.000	1.276	0.000	0.243	2.252

Problem 2084	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	171	171	52	497	0	680	0	343	436
normalized size	1	1.00	0.30	2.91	0.00	3.98	0.00	2.01	2.55
time (sec)	N/A	0.081	0.020	0.071	0.000	0.899	0.000	0.232	2.254

Problem 2085	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	152	318	0	765	0	239	337
normalized size	1	1.00	1.00	2.09	0.00	5.03	0.00	1.57	2.22
time (sec)	N/A	0.073	0.206	0.069	0.000	0.699	0.000	0.222	0.181

Problem 2086	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	52	246	0	894	0	265	309
normalized size	1	1.00	0.32	1.52	0.00	5.52	0.00	1.64	1.91
time (sec)	N/A	0.089	0.017	0.067	0.000	0.977	0.000	0.209	2.117

Problem 2087	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	172	172	52	222	0	1043	0	289	296
normalized size	1	1.00	0.30	1.29	0.00	6.06	0.00	1.68	1.72
time (sec)	N/A	0.091	0.016	0.068	0.000	0.889	0.000	0.198	2.144

Problem 2088	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	182	182	52	248	0	1176	0	313	297
normalized size	1	1.00	0.29	1.36	0.00	6.46	0.00	1.72	1.63
time (sec)	N/A	0.095	0.014	0.063	0.000	0.875	0.000	0.193	0.148

Problem 2089	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	50	179	0	1325	0	331	307
normalized size	1	1.00	0.28	0.99	0.00	7.36	0.00	1.84	1.71
time (sec)	N/A	0.095	0.011	0.060	0.000	0.769	0.000	0.182	2.147

Problem 2090	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	50	446	0	1734	0	440	398
normalized size	1	1.00	0.24	2.17	0.00	8.42	0.00	2.14	1.93
time (sec)	N/A	0.124	0.015	0.071	0.000	0.961	0.000	0.253	2.393

Problem 2091	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	52	473	0	2494	0	500	436
normalized size	1	1.00	0.22	2.03	0.00	10.70	0.00	2.15	1.87
time (sec)	N/A	0.205	0.017	0.078	0.000	0.961	0.000	0.270	2.643

Problem 2092	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	79	79	263	212	0	930	-1
normalized size	1	1.00	0.52	0.52	1.73	1.39	0.00	6.12	-0.01
time (sec)	N/A	0.074	0.062	0.056	0.664	0.814	0.000	0.271	0.000

Problem 2093	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	79	79	214	174	0	663	-1
normalized size	1	1.00	0.52	0.52	1.41	1.14	0.00	4.36	-0.01
time (sec)	N/A	0.070	0.054	0.046	0.705	0.793	0.000	0.241	0.000

Problem 2094	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	79	79	167	137	0	434	-1
normalized size	1	1.00	0.52	0.52	1.10	0.90	0.00	2.86	-0.01
time (sec)	N/A	0.067	0.045	0.049	0.620	1.082	0.000	0.213	0.000

Problem 2095	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	79	79	120	99	0	246	-1
normalized size	1	1.00	0.52	0.52	0.79	0.65	0.00	1.62	-0.01
time (sec)	N/A	0.066	0.041	0.047	0.665	0.515	0.000	0.174	0.000

Problem 2096	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	78	79	119	64	0	103	127
normalized size	1	1.00	0.52	0.53	0.79	0.43	0.00	0.69	0.85
time (sec)	N/A	0.069	0.045	0.046	0.662	0.823	0.000	0.191	2.414

Problem 2097	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	78	79	75	73	0	119	90
normalized size	1	1.00	0.53	0.53	0.51	0.49	0.00	0.80	0.61
time (sec)	N/A	0.066	0.041	0.050	0.656	0.840	0.000	0.175	2.653

Problem 2098	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	79	78	96	85	0	111	126
normalized size	1	1.00	0.53	0.53	0.65	0.57	0.00	0.75	0.85
time (sec)	N/A	0.067	0.043	0.069	0.814	0.758	0.000	0.205	2.721

Problem 2099	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	79	79	118	95	0	108	151
normalized size	1	1.00	0.53	0.53	0.79	0.63	0.00	0.72	1.01
time (sec)	N/A	0.069	0.042	0.049	0.612	0.857	0.000	0.197	2.630

Problem 2100	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	172	202	592	377	0	1397	-1
normalized size	1	1.00	0.65	0.77	2.24	1.43	0.00	5.29	-0.00
time (sec)	N/A	0.128	0.116	0.053	0.845	0.871	0.000	0.316	0.000

Problem 2101	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	172	202	488	311	0	944	-1
normalized size	1	1.00	0.65	0.77	1.85	1.18	0.00	3.58	-0.00
time (sec)	N/A	0.103	0.085	0.049	0.703	1.033	0.000	0.271	0.000

Problem 2102	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	172	202	384	245	0	556	-1
normalized size	1	1.00	0.65	0.77	1.45	0.93	0.00	2.11	-0.00
time (sec)	N/A	0.105	0.081	0.049	0.647	0.895	0.000	0.209	0.000

Problem 2103	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	171	202	382	182	0	244	285
normalized size	1	1.00	0.65	0.77	1.46	0.69	0.00	0.93	1.09
time (sec)	N/A	0.101	0.093	0.059	0.633	1.026	0.000	0.186	2.500

Problem 2104	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	169	202	282	192	0	327	218
normalized size	1	1.00	0.66	0.78	1.09	0.74	0.00	1.27	0.84
time (sec)	N/A	0.106	0.096	0.049	0.808	0.798	0.000	0.216	2.810

Problem 2105	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	260	171	202	304	203	0	319	254
normalized size	1	1.00	0.66	0.78	1.17	0.78	0.00	1.23	0.98
time (sec)	N/A	0.104	0.093	0.048	0.729	0.776	0.000	0.256	2.892

Problem 2106	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	260	260	172	202	326	213	0	316	283
normalized size	1	1.00	0.66	0.78	1.25	0.82	0.00	1.22	1.09
time (sec)	N/A	0.100	0.085	0.051	0.685	0.874	0.000	0.221	2.978

Problem 2107	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	258	258	173	202	348	225	0	310	309
normalized size	1	1.00	0.67	0.78	1.35	0.87	0.00	1.20	1.20
time (sec)	N/A	0.104	0.085	0.051	0.727	0.951	0.000	0.234	3.003

Problem 2108	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	262	262	172	202	371	235	0	307	333
normalized size	1	1.00	0.66	0.77	1.42	0.90	0.00	1.17	1.27
time (sec)	N/A	0.101	0.079	0.051	0.779	0.884	0.000	0.227	2.930

Problem 2109	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	172	202	393	247	0	307	353
normalized size	1	1.00	0.65	0.77	1.49	0.94	0.00	1.16	1.34
time (sec)	N/A	0.104	0.086	0.061	0.765	0.819	0.000	0.237	2.951

Problem 2110	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	374	374	163	393	1080	635	0	2339	-1
normalized size	1	1.00	0.44	1.05	2.89	1.70	0.00	6.25	-0.00
time (sec)	N/A	0.167	0.203	0.044	0.785	0.909	0.000	0.458	0.000

Problem 2111	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	163	393	921	541	0	1609	-1
normalized size	1	1.00	0.43	1.05	2.45	1.44	0.00	4.28	-0.00
time (sec)	N/A	0.137	0.165	0.052	0.818	0.881	0.000	0.385	0.000

Problem 2112	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	163	393	760	447	0	970	-1
normalized size	1	1.00	0.43	1.05	2.02	1.19	0.00	2.58	-0.00
time (sec)	N/A	0.143	0.151	0.063	0.955	0.884	0.000	0.268	0.000

Problem 2113	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	163	393	758	356	0	437	491
normalized size	1	1.00	0.44	1.06	2.05	0.96	0.00	1.18	1.33
time (sec)	N/A	0.140	0.097	0.052	0.703	0.768	0.000	0.229	2.776

Problem 2114	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	163	393	603	365	0	642	396
normalized size	1	1.00	0.44	1.07	1.64	0.99	0.00	1.74	1.08
time (sec)	N/A	0.139	0.143	0.059	0.634	1.281	0.000	0.276	3.093

Problem 2115	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	163	393	625	377	0	630	432
normalized size	1	1.00	0.44	1.06	1.69	1.02	0.00	1.70	1.17
time (sec)	N/A	0.144	0.147	0.050	0.879	0.770	0.000	0.276	3.154

Problem 2116	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	163	393	647	388	0	626	455
normalized size	1	1.00	0.44	1.07	1.76	1.05	0.00	1.70	1.24
time (sec)	N/A	0.143	0.152	0.053	0.856	0.780	0.000	0.299	3.182

Problem 2117	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	163	393	668	399	0	625	489
normalized size	1	1.00	0.44	1.07	1.82	1.08	0.00	1.70	1.33
time (sec)	N/A	0.141	0.157	0.053	0.823	0.997	0.000	0.276	3.232

Problem 2118	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	163	393	687	409	0	623	508
normalized size	1	1.00	0.44	1.06	1.86	1.11	0.00	1.68	1.37
time (sec)	N/A	0.146	0.147	0.046	0.923	0.932	0.000	0.269	3.278

Problem 2119	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	368	368	163	393	712	421	0	617	532
normalized size	1	1.00	0.44	1.07	1.93	1.14	0.00	1.68	1.45
time (sec)	N/A	0.143	0.152	0.055	0.977	1.170	0.000	0.279	3.367

Problem 2120	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	370	370	163	393	735	431	0	614	561
normalized size	1	1.00	0.44	1.06	1.99	1.16	0.00	1.66	1.52
time (sec)	N/A	0.141	0.161	0.050	0.903	0.871	0.000	0.293	3.485

Problem 2121	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	376	376	163	393	757	443	0	614	588
normalized size	1	1.00	0.43	1.05	2.01	1.18	0.00	1.63	1.56
time (sec)	N/A	0.142	0.157	0.051	0.969	0.842	0.000	0.288	3.533

Problem 2122	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	50	50	0	226	-1
normalized size	1	1.00	0.78	0.66	1.22	1.22	0.00	5.51	-0.02
time (sec)	N/A	0.030	0.027	0.044	1.007	1.895	0.000	0.178	0.000

Problem 2123	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	39	39	0	154	-1
normalized size	1	1.00	0.78	0.66	0.95	0.95	0.00	3.76	-0.02
time (sec)	N/A	0.030	0.022	0.047	0.974	0.957	0.000	0.238	0.000

Problem 2124	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	28	28	0	95	-1
normalized size	1	1.00	0.78	0.66	0.68	0.68	0.00	2.32	-0.02
time (sec)	N/A	0.029	0.017	0.046	0.954	1.111	0.000	0.162	0.000

Problem 2125	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	12	12	0	49	-1
normalized size	1	1.00	0.78	0.66	0.29	0.29	0.00	1.20	-0.02
time (sec)	N/A	0.029	0.013	0.046	0.843	0.798	0.000	0.165	0.000

Problem 2126	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	30	27	12	12	0	18	50
normalized size	1	1.00	0.77	0.69	0.31	0.31	0.00	0.46	1.28
time (sec)	N/A	0.030	0.012	0.048	0.739	1.187	0.000	0.158	2.422

Problem 2127	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	39	39	30	27	20	20	0	18	41
normalized size	1	1.00	0.77	0.69	0.51	0.51	0.00	0.46	1.05
time (sec)	N/A	0.029	0.014	0.046	0.802	1.351	0.000	0.160	2.501

Problem 2128	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	31	31	0	18	75
normalized size	1	1.00	0.78	0.66	0.76	0.76	0.00	0.44	1.83
time (sec)	N/A	0.029	0.015	0.053	0.822	0.763	0.000	0.161	2.561

Problem 2129	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	41	41	32	27	42	42	0	18	103
normalized size	1	1.00	0.78	0.66	1.02	1.02	0.00	0.44	2.51
time (sec)	N/A	0.029	0.017	0.045	0.834	1.239	0.000	0.167	2.564

Problem 2130	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	66	662	0	486	0	359	-1
normalized size	1	1.00	0.26	2.65	0.00	1.94	0.00	1.44	-0.00
time (sec)	N/A	0.173	0.035	0.075	0.000	0.833	0.000	0.304	0.000

Problem 2131	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	198	198	66	409	0	330	0	269	-1
normalized size	1	1.00	0.33	2.07	0.00	1.67	0.00	1.36	-0.01
time (sec)	N/A	0.122	0.030	0.063	0.000	1.104	0.000	0.275	0.000

Problem 2132	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	66	222	0	210	0	198	-1
normalized size	1	1.00	0.45	1.50	0.00	1.42	0.00	1.34	-0.01
time (sec)	N/A	0.092	0.028	0.069	0.000	1.572	0.000	0.328	0.000

Problem 2133	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	81	108	0	232	0	128	-1
normalized size	1	1.00	0.75	1.00	0.00	2.15	0.00	1.19	-0.01
time (sec)	N/A	0.070	0.082	0.063	0.000	0.927	0.000	0.224	0.000

Problem 2134	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	85	112	0	280	0	189	-1
normalized size	1	1.00	0.75	0.98	0.00	2.46	0.00	1.66	-0.01
time (sec)	N/A	0.089	0.084	0.064	0.000	1.212	0.000	0.238	0.000

Problem 2135	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	162	162	64	167	0	423	0	289	-1
normalized size	1	1.00	0.40	1.03	0.00	2.61	0.00	1.78	-0.01
time (sec)	N/A	0.101	0.022	0.069	0.000	1.359	0.000	0.274	0.000

Problem 2136	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	66	242	0	782	0	494	-1
normalized size	1	1.00	0.31	1.14	0.00	3.69	0.00	2.33	-0.00
time (sec)	N/A	0.110	0.025	0.068	0.000	1.289	0.000	0.363	0.000

Problem 2137	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	66	343	0	1218	0	640	-1
normalized size	1	1.00	0.25	1.30	0.00	4.61	0.00	2.42	-0.00
time (sec)	N/A	0.133	0.028	0.070	0.000	1.913	0.000	0.395	0.000

Problem 2138	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	241	241	68	638	0	498	0	320	-1
normalized size	1	1.00	0.28	2.65	0.00	2.07	0.00	1.33	-0.00
time (sec)	N/A	0.137	0.037	0.074	0.000	1.116	0.000	0.350	0.000

Problem 2139	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	132	316	0	563	0	213	-1
normalized size	1	1.00	0.67	1.60	0.00	2.86	0.00	1.08	-0.01
time (sec)	N/A	0.113	0.157	0.106	0.000	1.102	0.000	0.288	0.000

Problem 2140	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	68	326	0	666	0	279	-1
normalized size	1	1.00	0.33	1.57	0.00	3.22	0.00	1.35	-0.00
time (sec)	N/A	0.138	0.027	0.067	0.000	1.062	0.000	0.284	0.000

Problem 2141	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	68	326	0	785	0	343	-1
normalized size	1	1.00	0.31	1.50	0.00	3.62	0.00	1.58	-0.00
time (sec)	N/A	0.148	0.025	0.069	0.000	1.065	0.000	0.288	0.000

Problem 2142	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	66	334	0	884	0	409	-1
normalized size	1	1.00	0.29	1.48	0.00	3.93	0.00	1.82	-0.00
time (sec)	N/A	0.141	0.025	0.065	0.000	0.972	0.000	0.296	0.000

Problem 2143	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	66	431	0	1204	0	654	-1
normalized size	1	1.00	0.24	1.56	0.00	4.36	0.00	2.37	-0.00
time (sec)	N/A	0.180	0.026	0.071	0.000	0.942	0.000	0.411	0.000

Problem 2144	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	328	328	68	563	0	1840	0	691	-1
normalized size	1	1.00	0.21	1.72	0.00	5.61	0.00	2.11	-0.00
time (sec)	N/A	0.244	0.033	0.086	0.000	1.516	0.000	0.474	0.000

Problem 2145	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	382	382	68	722	0	2550	0	932	-1
normalized size	1	1.00	0.18	1.89	0.00	6.68	0.00	2.44	-0.00
time (sec)	N/A	0.250	0.038	0.079	0.000	0.965	0.000	0.555	0.000

Problem 2146	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	239	239	203	3244	1108	3201	0	5639	2653
normalized size	1	1.00	0.85	13.57	4.64	13.39	0.00	23.59	11.10
time (sec)	N/A	0.139	0.209	0.074	0.842	1.014	0.000	0.367	3.670

Problem 2147	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	149	1345	581	1460	0	2525	1291
normalized size	1	1.00	0.85	7.69	3.32	8.34	0.00	14.43	7.38
time (sec)	N/A	0.085	0.133	0.056	0.673	2.459	0.000	0.249	2.777

Problem 2148	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	95	386	246	496	4058	835	478
normalized size	1	1.00	0.86	3.48	2.22	4.47	36.56	7.52	4.31
time (sec)	N/A	0.051	0.069	0.052	0.661	1.109	4.733	0.182	2.433

Problem 2149	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	51	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.015	0.009	1.251	0.000	0.815	0.000	0.000	0.000

Problem 2150	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	54	0	0	0	0	0	-1
normalized size	1	1.00	1.00	0.00	0.00	0.00	0.00	0.00	-0.02
time (sec)	N/A	0.015	0.014	1.261	0.000	1.508	0.000	0.000	0.000

Problem 2151	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-2)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	395	395	193	2173	1864	2230	0	4885	-1
normalized size	1	1.00	0.49	5.50	4.72	5.65	0.00	12.37	-0.00
time (sec)	N/A	0.220	0.179	0.067	0.851	1.219	0.000	0.663	0.000

Problem 2152	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	277	277	139	784	756	901	0	1949	-1
normalized size	1	1.00	0.50	2.83	2.73	3.25	0.00	7.04	-0.00
time (sec)	N/A	0.150	0.162	0.053	0.760	1.195	0.000	0.325	0.000

Problem 2153	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	159	159	113	175	177	237	0	508	-1
normalized size	1	1.00	0.71	1.10	1.11	1.49	0.00	3.19	-0.01
time (sec)	N/A	0.084	0.086	0.056	0.581	0.810	0.000	0.219	0.000

Problem 2154	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	34	33	21	20	0	0	-1
normalized size	1	1.00	0.79	0.77	0.49	0.47	0.00	0.00	-0.02
time (sec)	N/A	0.034	0.020	0.045	0.745	1.656	0.000	0.000	0.000

Problem 2155	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	76	76	68	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.055	0.028	1.345	0.000	0.925	0.000	0.000	0.000

Problem 2156	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	70	0	0	0	0	0	-1
normalized size	1	1.00	0.90	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.060	0.032	1.637	0.000	1.086	0.000	0.000	0.000

Problem 2157	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F(-2)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	51	51	42	59	0	99	0	305	178
normalized size	1	1.00	0.82	1.16	0.00	1.94	0.00	5.98	3.49
time (sec)	N/A	0.026	0.028	0.048	0.000	0.902	0.000	0.274	2.250

Problem 2158	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	104	407	679	715	0	1805	683
normalized size	1	1.00	0.57	2.22	3.71	3.91	0.00	9.86	3.73
time (sec)	N/A	0.119	0.088	0.054	0.745	1.152	0.000	0.291	2.490

Problem 2159	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	134	109	179	404	353	0	903	355
normalized size	1	1.00	0.81	1.34	3.01	2.63	0.00	6.74	2.65
time (sec)	N/A	0.086	0.070	0.049	0.641	1.003	0.000	0.320	2.272

Problem 2160	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	51	67	206	142	0	353	142
normalized size	1	1.00	0.61	0.81	2.48	1.71	0.00	4.25	1.71
time (sec)	N/A	0.054	0.034	0.047	0.540	0.941	0.000	0.222	2.151

Problem 2161	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	32	32	23	36	30	43	119	30	53
normalized size	1	1.00	0.72	1.12	0.94	1.34	3.72	0.94	1.66
time (sec)	N/A	0.008	0.011	0.050	0.646	1.176	0.475	0.155	2.067

Problem 2162	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	74	74	59	0	0	0	0	0	-1
normalized size	1	1.00	0.80	0.00	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.051	0.019	1.503	0.000	1.028	0.000	0.000	0.000

Problem 2163	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	58	58	48	71	2113	350	1488	695	319
normalized size	1	1.00	0.83	1.22	36.43	6.03	25.66	11.98	5.50
time (sec)	N/A	0.042	0.045	0.046	1.014	0.932	7.825	0.277	2.552

Problem 2164	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	48	73	216	212	1268	0	113
normalized size	1	1.00	0.75	1.14	3.38	3.31	19.81	0.00	1.77
time (sec)	N/A	0.049	0.038	0.044	0.739	1.303	5.733	0.000	2.202

Problem 2165	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	59	62	180	219	0	545	254
normalized size	1	1.00	0.53	0.55	1.61	1.96	0.00	4.87	2.27
time (sec)	N/A	0.076	0.061	0.051	0.679	0.947	0.000	0.270	2.305

Problem 2166	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	55	62	117	113	0	0	105
normalized size	1	1.00	0.49	0.55	1.04	1.01	0.00	0.00	0.94
time (sec)	N/A	0.085	0.058	0.051	0.750	1.388	0.000	0.000	2.303

Problem 2167	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	67	96	128	155	0	404	178
normalized size	1	1.00	0.67	0.96	1.28	1.55	0.00	4.04	1.78
time (sec)	N/A	0.078	0.053	0.050	0.671	1.321	0.000	0.211	2.214

Problem 2168	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	61	61	49	55	101	52	0	221	106
normalized size	1	1.00	0.80	0.90	1.66	0.85	0.00	3.62	1.74
time (sec)	N/A	0.043	0.030	0.046	0.583	1.086	0.000	0.259	2.135

Problem 2169	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	32	48	127	60	0	100	90
normalized size	1	1.00	0.71	1.07	2.82	1.33	0.00	2.22	2.00
time (sec)	N/A	0.028	0.021	0.045	0.566	0.818	0.000	0.194	2.123

Problem 2170	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	24	24	25	45	1221	102	270	183	139
normalized size	1	1.00	1.04	1.88	50.88	4.25	11.25	7.62	5.79
time (sec)	N/A	0.017	0.020	0.051	0.915	1.333	3.925	0.214	2.183

Problem 2171	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	A	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	25	45	216	101	136	0	61
normalized size	1	1.00	0.93	1.67	8.00	3.74	5.04	0.00	2.26
time (sec)	N/A	0.018	0.013	0.047	0.846	1.075	4.178	0.000	2.178

Problem 2172	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	527	2217	0	1469	0	699	3311
normalized size	1	1.00	1.27	5.36	0.00	3.55	0.00	1.69	8.00
time (sec)	N/A	0.830	5.928	0.112	0.000	4.175	0.000	0.467	8.142

Problem 2173	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	339	339	464	1618	0	1117	0	526	1732
normalized size	1	1.00	1.37	4.77	0.00	3.29	0.00	1.55	5.11
time (sec)	N/A	0.463	3.933	0.068	0.000	2.103	0.000	0.354	5.553

Problem 2174	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	391	1114	0	825	0	381	801
normalized size	1	1.00	1.75	5.00	0.00	3.70	0.00	1.71	3.59
time (sec)	N/A	0.281	2.444	0.072	0.000	2.140	0.000	0.386	4.159

Problem 2175	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	174	697	0	395	0	0	-1
normalized size	1	1.00	0.91	3.63	0.00	2.06	0.00	0.00	-0.01
time (sec)	N/A	0.220	0.513	0.059	0.000	1.411	0.000	0.000	0.000

Problem 2176	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	200	200	185	880	0	399	0	0	-1
normalized size	1	1.00	0.92	4.40	0.00	2.00	0.00	0.00	-0.00
time (sec)	N/A	0.339	0.706	0.064	0.000	2.347	0.000	0.000	0.000

Problem 2177	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	168	168	146	404	0	579	0	0	-1
normalized size	1	1.00	0.87	2.40	0.00	3.45	0.00	0.00	-0.01
time (sec)	N/A	0.319	0.222	0.069	0.000	4.677	0.000	0.000	0.000

Problem 2178	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	102	128	0	307	0	0	1022
normalized size	1	1.00	0.74	0.93	0.00	2.24	0.00	0.00	7.46
time (sec)	N/A	0.207	0.060	0.071	0.000	10.305	0.000	0.000	4.289

Problem 2179	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	154	236	0	540	0	0	2325
normalized size	1	1.00	0.73	1.12	0.00	2.57	0.00	0.00	11.07
time (sec)	N/A	0.339	0.118	0.056	0.000	59.724	0.000	0.000	6.891

Problem 2180	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	232	382	0	0	0	0	4962
normalized size	1	1.00	0.81	1.34	0.00	0.00	0.00	0.00	17.41
time (sec)	N/A	0.457	0.173	0.057	0.000	0.000	0.000	0.000	13.955

Problem 2181	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	335	564	0	0	0	0	10084
normalized size	1	1.00	0.93	1.57	0.00	0.00	0.00	0.00	28.01
time (sec)	N/A	0.576	0.256	0.058	0.000	0.000	0.000	0.000	28.093

Problem 2182	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	439	439	176	782	0	0	0	0	19572
normalized size	1	1.00	0.40	1.78	0.00	0.00	0.00	0.00	44.58
time (sec)	N/A	0.718	0.446	0.066	0.000	0.000	0.000	0.000	55.430

Problem 2183	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	488	488	1418	3576	0	2337	0	1138	-1
normalized size	1	1.00	2.91	7.33	0.00	4.79	0.00	2.33	-0.00
time (sec)	N/A	1.066	6.476	0.085	0.000	12.591	0.000	0.641	0.000

Problem 2184	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	413	413	1329	2799	0	1877	0	910	-1
normalized size	1	1.00	3.22	6.78	0.00	4.54	0.00	2.20	-0.00
time (sec)	N/A	0.603	6.301	0.073	0.000	5.518	0.000	0.467	0.000

Problem 2185	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	297	504	2117	0	1473	0	708	-1
normalized size	1	1.00	1.70	7.13	0.00	4.96	0.00	2.38	-0.00
time (sec)	N/A	0.440	5.720	0.066	0.000	2.113	0.000	0.454	0.000

Problem 2186	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	266	266	361	1817	0	809	0	0	-1
normalized size	1	1.00	1.36	6.83	0.00	3.04	0.00	0.00	-0.00
time (sec)	N/A	0.333	2.565	0.058	0.000	0.747	0.000	0.000	0.000

Problem 2187	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	278	278	228	2174	0	567	0	0	-1
normalized size	1	1.00	0.82	7.82	0.00	2.04	0.00	0.00	-0.00
time (sec)	N/A	0.420	0.874	0.073	0.000	0.932	0.000	0.000	0.000

Problem 2188	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	271	208	2535	0	635	0	0	-1
normalized size	1	1.00	0.77	9.35	0.00	2.34	0.00	0.00	-0.00
time (sec)	N/A	0.467	0.845	0.068	0.000	1.859	0.000	0.000	0.000

Problem 2189	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	276	276	150	2773	0	593	0	0	-1
normalized size	1	1.00	0.54	10.05	0.00	2.15	0.00	0.00	-0.00
time (sec)	N/A	0.454	0.198	0.069	0.000	3.223	0.000	0.000	0.000

Problem 2190	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	214	214	150	1023	0	879	0	849	-1
normalized size	1	1.00	0.70	4.78	0.00	4.11	0.00	3.97	-0.00
time (sec)	N/A	0.443	0.280	0.069	0.000	14.111	0.000	1.749	0.000

Problem 2191	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	104	128	0	464	0	0	3763
normalized size	1	1.00	0.75	0.93	0.00	3.36	0.00	0.00	27.27
time (sec)	N/A	0.227	0.079	0.057	0.000	67.188	0.000	0.000	9.502

Problem 2192	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	168	236	0	0	0	0	8039
normalized size	1	1.00	0.80	1.12	0.00	0.00	0.00	0.00	38.28
time (sec)	N/A	0.346	0.117	0.054	0.000	0.000	0.000	0.000	19.833

Problem 2193	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	249	382	0	0	0	0	16485
normalized size	1	1.00	0.87	1.34	0.00	0.00	0.00	0.00	57.84
time (sec)	N/A	0.448	0.178	0.052	0.000	0.000	0.000	0.000	42.704

Problem 2194	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	349	564	0	0	0	0	33375
normalized size	1	1.00	0.97	1.57	0.00	0.00	0.00	0.00	92.71
time (sec)	N/A	0.572	0.256	0.057	0.000	0.000	0.000	0.000	82.706

Problem 2195	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	562	562	1600	5287	0	3437	0	1686	-1
normalized size	1	1.00	2.85	9.41	0.00	6.12	0.00	3.00	-0.00
time (sec)	N/A	1.215	6.778	0.115	0.000	73.158	0.000	0.944	0.000

Problem 2196	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	487	487	1511	4332	0	2861	0	1402	-1
normalized size	1	1.00	3.10	8.90	0.00	5.87	0.00	2.88	-0.00
time (sec)	N/A	0.811	6.564	0.069	0.000	31.674	0.000	0.721	0.000

Problem 2197	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	1422	3472	0	2345	0	1144	-1
normalized size	1	1.00	3.83	9.36	0.00	6.32	0.00	3.08	-0.00
time (sec)	N/A	0.619	6.379	0.069	0.000	16.022	0.000	0.656	0.000

Problem 2198	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	346	346	1230	3533	0	1457	0	0	-1
normalized size	1	1.00	3.55	10.21	0.00	4.21	0.00	0.00	-0.00
time (sec)	N/A	0.528	6.204	0.061	0.000	3.770	0.000	0.000	0.000

Problem 2199	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	379	4215	1751	1097	0	0	-1
normalized size	1	1.00	1.07	11.91	4.95	3.10	0.00	0.00	-0.00
time (sec)	N/A	0.609	4.408	0.075	1.760	2.051	0.000	0.000	0.000

Problem 2200	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	354	354	294	4726	0	813	0	0	-1
normalized size	1	1.00	0.83	13.35	0.00	2.30	0.00	0.00	-0.00
time (sec)	N/A	0.751	1.366	0.074	0.000	1.888	0.000	0.000	0.000

Problem 2201	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	342	342	309	4987	0	931	0	0	-1
normalized size	1	1.00	0.90	14.58	0.00	2.72	0.00	0.00	-0.00
time (sec)	N/A	0.598	1.887	0.071	0.000	4.389	0.000	0.000	0.000

Problem 2202	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	350	350	173	5227	0	951	0	0	-1
normalized size	1	1.00	0.49	14.93	0.00	2.72	0.00	0.00	-0.00
time (sec)	N/A	0.627	0.197	0.072	0.000	7.436	0.000	0.000	0.000

Problem 2203	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	352	352	175	5440	0	917	0	0	-1
normalized size	1	1.00	0.50	15.45	0.00	2.61	0.00	0.00	-0.00
time (sec)	N/A	0.571	0.198	0.115	0.000	26.756	0.000	0.000	0.000

Problem 2204	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	162	1905	0	1239	0	0	-1
normalized size	1	1.00	0.61	7.22	0.00	4.69	0.00	0.00	-0.00
time (sec)	N/A	0.568	0.377	0.067	0.000	127.463	0.000	0.000	0.000

Problem 2205	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	104	128	0	0	0	0	12294
normalized size	1	1.00	0.75	0.93	0.00	0.00	0.00	0.00	89.09
time (sec)	N/A	0.221	0.099	0.056	0.000	0.000	0.000	0.000	26.336

Problem 2206	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	169	236	0	0	0	0	25236
normalized size	1	1.00	0.80	1.12	0.00	0.00	0.00	0.00	120.17
time (sec)	N/A	0.327	0.151	0.053	0.000	0.000	0.000	0.000	53.397

Problem 2207	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	250	382	0	0	0	0	51074
normalized size	1	1.00	0.88	1.34	0.00	0.00	0.00	0.00	179.21
time (sec)	N/A	0.437	0.221	0.111	0.000	0.000	0.000	0.000	105.183

Problem 2208	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F(-1)	F(-1)	F(-1)
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	351	564	0	0	0	0	-1
normalized size	1	1.00	0.98	1.57	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.581	0.298	0.065	0.000	0.000	0.000	0.000	0.000

Problem 2209	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	340	340	375	1208	0	825	0	383	-1
normalized size	1	1.00	1.10	3.55	0.00	2.43	0.00	1.13	-0.00
time (sec)	N/A	0.609	1.742	0.067	0.000	2.237	0.000	1.135	0.000

Problem 2210	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	265	265	251	786	0	585	0	264	-1
normalized size	1	1.00	0.95	2.97	0.00	2.21	0.00	1.00	-0.00
time (sec)	N/A	0.354	1.278	0.064	0.000	1.514	0.000	0.548	0.000

Problem 2211	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	218	460	0	403	0	179	-1
normalized size	1	1.00	1.46	3.09	0.00	2.70	0.00	1.20	-0.01
time (sec)	N/A	0.157	0.788	0.060	0.000	1.263	0.000	0.540	0.000

Problem 2212	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	189	134	0	405	0	0	-1
normalized size	1	1.00	1.56	1.11	0.00	3.35	0.00	0.00	-0.01
time (sec)	N/A	0.156	0.472	0.058	0.000	2.093	0.000	0.000	0.000

Problem 2213	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	89	127	0	182	0	0	101
normalized size	1	1.00	0.65	0.93	0.00	1.33	0.00	0.00	0.74
time (sec)	N/A	0.197	0.072	0.050	0.000	5.065	0.000	0.000	2.794

Problem 2214	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	166	236	0	368	0	0	471
normalized size	1	1.00	0.79	1.12	0.00	1.75	0.00	0.00	2.24
time (sec)	N/A	0.330	0.098	0.056	0.000	21.212	0.000	0.000	3.320

Problem 2215	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	285	285	247	382	0	606	0	0	624
normalized size	1	1.00	0.87	1.34	0.00	2.13	0.00	0.00	2.19
time (sec)	N/A	0.442	0.144	0.054	0.000	122.555	0.000	0.000	4.752

Problem 2216	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	F(-1)	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	348	564	0	0	0	0	949
normalized size	1	1.00	0.97	1.57	0.00	0.00	0.00	0.00	2.64
time (sec)	N/A	0.558	0.213	0.054	0.000	0.000	0.000	0.000	8.011

Problem 2217	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	287	287	250	2032	0	745	0	623	-1
normalized size	1	1.00	0.87	7.08	0.00	2.60	0.00	2.17	-0.00
time (sec)	N/A	0.443	0.898	0.065	0.000	3.498	0.000	0.598	0.000

Problem 2218	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	213	213	201	1320	0	503	0	427	-1
normalized size	1	1.00	0.94	6.20	0.00	2.36	0.00	2.00	-0.00
time (sec)	N/A	0.284	0.581	0.064	0.000	2.169	0.000	0.616	0.000

Problem 2219	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	129	148	173	710	0	483	0	282	344
normalized size	1	1.15	1.34	5.50	0.00	3.74	0.00	2.19	2.67
time (sec)	N/A	0.173	0.440	0.056	0.000	1.478	0.000	0.564	4.041

Problem 2220	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	149	228	0	407	0	0	872
normalized size	1	1.00	1.10	1.68	0.00	2.99	0.00	0.00	6.41
time (sec)	N/A	0.145	0.098	0.049	0.000	14.813	0.000	0.000	3.200

Problem 2221	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	233	382	0	649	0	0	2126
normalized size	1	1.00	1.11	1.83	0.00	3.11	0.00	0.00	10.17
time (sec)	N/A	0.285	0.135	0.056	0.000	64.423	0.000	0.000	4.591

Problem 2222	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	284	284	331	564	0	0	0	0	4339
normalized size	1	1.00	1.17	1.99	0.00	0.00	0.00	0.00	15.28
time (sec)	N/A	0.390	0.202	0.056	0.000	0.000	0.000	0.000	7.860

Problem 2223	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	364	364	139	6704	0	1233	0	1460	-1
normalized size	1	1.00	0.38	18.42	0.00	3.39	0.00	4.01	-0.00
time (sec)	N/A	0.555	0.291	0.094	0.000	17.533	0.000	0.944	0.000

Problem 2224	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F(-2)	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	139	5032	0	881	0	1116	-1
normalized size	1	1.00	0.48	17.29	0.00	3.03	0.00	3.84	-0.00
time (sec)	N/A	0.428	0.251	0.078	0.000	10.428	0.000	0.866	0.000

Problem 2225	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	177	177	228	3485	0	785	0	841	-1
normalized size	1	1.00	1.29	19.69	0.00	4.44	0.00	4.75	-0.01
time (sec)	N/A	0.302	1.234	0.076	0.000	5.966	0.000	0.891	0.000

Problem 2226	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	100	128	0	227	0	587	107
normalized size	1	1.00	0.68	0.88	0.00	1.55	0.00	4.02	0.73
time (sec)	N/A	0.172	0.065	0.048	0.000	6.028	0.000	0.733	3.299

Problem 2227	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	151	227	0	431	0	521	795
normalized size	1	1.00	0.92	1.38	0.00	2.61	0.00	3.16	4.82
time (sec)	N/A	0.179	0.092	0.059	0.000	23.754	0.000	0.667	3.443

Problem 2228	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	345	557	0	0	0	0	3326
normalized size	1	1.00	1.66	2.68	0.00	0.00	0.00	0.00	15.99
time (sec)	N/A	0.199	0.187	0.060	0.000	0.000	0.000	0.000	5.128

Problem 2229	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	283	283	468	782	0	0	0	0	11539
normalized size	1	1.00	1.65	2.76	0.00	0.00	0.00	0.00	40.77
time (sec)	N/A	0.395	0.301	0.052	0.000	0.000	0.000	0.000	10.349

Problem 2230	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	358	358	598	1036	0	0	0	0	33819
normalized size	1	1.00	1.67	2.89	0.00	0.00	0.00	0.00	94.47
time (sec)	N/A	0.511	0.356	0.058	0.000	0.000	0.000	0.000	22.914

Problem 2231	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	262	367	501	499	0	0	501
normalized size	1	1.00	0.76	1.06	1.44	1.44	0.00	0.00	1.44
time (sec)	N/A	0.624	0.229	0.046	1.017	1.522	0.000	0.000	3.090

Problem 2232	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	179	235	354	352	0	0	337
normalized size	1	1.00	0.67	0.88	1.33	1.32	0.00	0.00	1.26
time (sec)	N/A	0.435	0.157	0.048	0.822	1.502	0.000	0.000	2.894

Problem 2233	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	191	191	119	139	236	233	0	0	219
normalized size	1	1.00	0.62	0.73	1.24	1.22	0.00	0.00	1.15
time (sec)	N/A	0.302	0.100	0.043	0.788	1.019	0.000	0.000	2.652

Problem 2234	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	76	79	112	140	0	0	100
normalized size	1	1.00	0.64	0.67	0.95	1.19	0.00	0.00	0.85
time (sec)	N/A	0.174	0.064	0.043	0.671	1.313	0.000	0.000	2.499

Problem 2235	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	186	186	154	330	0	419	0	0	-1
normalized size	1	1.00	0.83	1.77	0.00	2.25	0.00	0.00	-0.01
time (sec)	N/A	0.352	0.187	0.089	0.000	1.196	0.000	0.000	0.000

Problem 2236	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	173	359	0	659	0	0	-1
normalized size	1	1.00	0.78	1.61	0.00	2.96	0.00	0.00	-0.00
time (sec)	N/A	0.358	0.232	0.068	0.000	0.842	0.000	0.000	0.000

Problem 2237	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	231	231	222	630	0	1043	0	0	-1
normalized size	1	1.00	0.96	2.73	0.00	4.52	0.00	0.00	-0.00
time (sec)	N/A	0.368	0.598	0.075	0.000	1.201	0.000	0.000	0.000

Problem 2238	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	128	1033	0	1604	0	0	-1
normalized size	1	1.00	0.42	3.36	0.00	5.22	0.00	0.00	-0.00
time (sec)	N/A	0.532	0.133	0.108	0.000	0.998	0.000	0.000	0.000

Problem 2239	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	387	128	1541	0	2256	0	0	-1
normalized size	1	1.00	0.33	3.98	0.00	5.83	0.00	0.00	-0.00
time (sec)	N/A	0.760	0.145	0.086	0.000	1.168	0.000	0.000	0.000

Problem 2240	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	419	419	364	535	875	880	0	0	863
normalized size	1	1.00	0.87	1.28	2.09	2.10	0.00	0.00	2.06
time (sec)	N/A	0.726	0.347	0.053	1.100	0.991	0.000	0.000	3.927

Problem 2241	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	347	347	264	367	676	678	0	0	637
normalized size	1	1.00	0.76	1.06	1.95	1.95	0.00	0.00	1.84
time (sec)	N/A	0.601	0.256	0.054	0.991	1.087	0.000	0.000	3.630

Problem 2242	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	267	183	235	502	505	0	0	441
normalized size	1	1.00	0.69	0.88	1.88	1.89	0.00	0.00	1.65
time (sec)	N/A	0.428	0.174	0.046	0.936	1.013	0.000	0.000	3.342

Problem 2243	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	121	139	320	354	0	0	239
normalized size	1	1.00	0.63	0.72	1.66	1.83	0.00	0.00	1.24
time (sec)	N/A	0.308	0.119	0.049	0.841	1.237	0.000	0.000	3.049

Problem 2244	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	78	79	197	229	0	0	133
normalized size	1	1.00	0.66	0.67	1.67	1.94	0.00	0.00	1.13
time (sec)	N/A	0.191	0.085	0.049	0.751	0.745	0.000	0.000	2.808

Problem 2245	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	250	250	199	601	0	656	0	0	-1
normalized size	1	1.00	0.80	2.40	0.00	2.62	0.00	0.00	-0.00
time (sec)	N/A	0.449	0.277	0.076	0.000	1.430	0.000	0.000	0.000

Problem 2246	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	195	695	0	639	0	0	-1
normalized size	1	1.00	0.68	2.41	0.00	2.22	0.00	0.00	-0.00
time (sec)	N/A	0.482	0.256	0.082	0.000	1.302	0.000	0.000	0.000

Problem 2247	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	305	129	665	0	998	0	0	-1
normalized size	1	1.00	0.42	2.18	0.00	3.27	0.00	0.00	-0.00
time (sec)	N/A	0.483	0.178	0.076	0.000	1.147	0.000	0.000	0.000

Problem 2248	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	307	307	254	999	0	1454	0	0	-1
normalized size	1	1.00	0.83	3.25	0.00	4.74	0.00	0.00	-0.00
time (sec)	N/A	0.482	1.281	0.088	0.000	1.213	0.000	0.000	0.000

Problem 2249	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	387	128	1517	0	2104	0	0	-1
normalized size	1	1.00	0.33	3.92	0.00	5.44	0.00	0.00	-0.00
time (sec)	N/A	0.652	0.208	0.085	0.000	1.031	0.000	0.000	0.000

Problem 2250	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	501	501	284	739	1364	1370	0	0	1307
normalized size	1	1.00	0.57	1.48	2.72	2.73	0.00	0.00	2.61
time (sec)	N/A	0.960	0.698	0.050	1.027	1.048	0.000	0.000	5.389

Problem 2251	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	424	424	367	535	1108	1112	0	0	1023
normalized size	1	1.00	0.87	1.26	2.61	2.62	0.00	0.00	2.41
time (sec)	N/A	0.764	0.384	0.051	1.030	1.328	0.000	0.000	4.643

Problem 2252	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	343	343	264	367	878	881	0	0	769
normalized size	1	1.00	0.77	1.07	2.56	2.57	0.00	0.00	2.24
time (sec)	N/A	0.575	0.287	0.053	0.997	0.705	0.000	0.000	4.025

Problem 2253	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	183	235	638	675	0	0	491
normalized size	1	1.00	0.68	0.87	2.36	2.50	0.00	0.00	1.82
time (sec)	N/A	0.439	0.210	0.049	0.751	0.688	0.000	0.000	3.723

Problem 2254	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	121	139	465	500	0	0	320
normalized size	1	1.00	0.63	0.72	2.41	2.59	0.00	0.00	1.66
time (sec)	N/A	0.340	0.149	0.043	0.892	1.374	0.000	0.000	3.229

Problem 2255	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	B	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	118	118	78	79	314	345	0	0	170
normalized size	1	1.00	0.66	0.67	2.66	2.92	0.00	0.00	1.44
time (sec)	N/A	0.191	0.113	0.051	0.737	1.046	0.000	0.000	2.897

Problem 2256	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	316	316	197	956	0	949	0	0	-1
normalized size	1	1.00	0.62	3.03	0.00	3.00	0.00	0.00	-0.00
time (sec)	N/A	0.588	0.572	0.071	0.000	0.964	0.000	0.000	0.000

Problem 2257	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	360	360	221	1136	0	990	0	0	-1
normalized size	1	1.00	0.61	3.16	0.00	2.75	0.00	0.00	-0.00
time (sec)	N/A	0.610	0.662	0.085	0.000	0.978	0.000	0.000	0.000

Problem 2258	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	372	372	130	1189	0	959	0	0	-1
normalized size	1	1.00	0.35	3.20	0.00	2.58	0.00	0.00	-0.00
time (sec)	N/A	0.604	0.246	0.082	0.000	1.144	0.000	0.000	0.000

Problem 2259	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	A	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	127	1070	0	1388	0	0	-1
normalized size	1	1.00	0.33	2.79	0.00	3.62	0.00	0.00	-0.00
time (sec)	N/A	0.590	0.139	0.087	0.000	1.284	0.000	0.000	0.000

Problem 2260	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	383	383	303	1517	0	1910	0	0	-1
normalized size	1	1.00	0.79	3.96	0.00	4.99	0.00	0.00	-0.00
time (sec)	N/A	0.594	3.531	0.113	0.000	0.983	0.000	0.000	0.000

Problem 2261	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	464	464	129	2087	0	2650	0	0	-1
normalized size	1	1.00	0.28	4.50	0.00	5.71	0.00	0.00	-0.00
time (sec)	N/A	0.751	0.163	0.089	0.000	1.026	0.000	0.000	0.000

Problem 2262	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	270	270	181	235	319	235	0	0	246
normalized size	1	1.00	0.67	0.87	1.18	0.87	0.00	0.00	0.91
time (sec)	N/A	0.455	0.149	0.051	0.721	0.869	0.000	0.000	2.770

Problem 2263	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	193	193	118	139	201	143	0	0	149
normalized size	1	1.00	0.61	0.72	1.04	0.74	0.00	0.00	0.77
time (sec)	N/A	0.324	0.091	0.046	0.868	1.190	0.000	0.000	2.553

Problem 2264	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	63	79	110	79	0	0	89
normalized size	1	1.00	0.54	0.68	0.94	0.68	0.00	0.00	0.76
time (sec)	N/A	0.180	0.065	0.051	0.741	1.062	0.000	0.000	2.524

Problem 2265	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	A	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	148	161	0	442	0	0	-1
normalized size	1	1.00	1.13	1.23	0.00	3.37	0.00	0.00	-0.01
time (sec)	N/A	0.196	0.140	0.061	0.000	1.124	0.000	0.000	0.000

Problem 2266	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	153	153	328	0	698	0	0	-1
normalized size	1	1.00	1.00	2.14	0.00	4.56	0.00	0.00	-0.01
time (sec)	N/A	0.229	0.165	0.082	0.000	1.162	0.000	0.000	0.000

Problem 2267	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	B	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	233	233	209	630	0	1168	0	0	-1
normalized size	1	1.00	0.90	2.70	0.00	5.01	0.00	0.00	-0.00
time (sec)	N/A	0.374	0.541	0.087	0.000	1.184	0.000	0.000	0.000

Problem 2268	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	369	369	245	367	317	374	0	0	398
normalized size	1	1.00	0.66	0.99	0.86	1.01	0.00	0.00	1.08
time (sec)	N/A	0.555	0.218	0.046	0.737	1.201	0.000	0.000	3.095

Problem 2269	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-2)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	292	292	168	235	203	257	0	0	267
normalized size	1	1.00	0.58	0.80	0.70	0.88	0.00	0.00	0.91
time (sec)	N/A	0.414	0.132	0.049	0.729	0.906	0.000	0.000	2.947

Problem 2270	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	105	139	112	165	0	0	167
normalized size	1	1.00	0.48	0.64	0.52	0.76	0.00	0.00	0.77
time (sec)	N/A	0.288	0.078	0.044	0.717	1.015	0.000	0.000	2.760

Problem 2271	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	148	148	60	78	62	102	0	0	107
normalized size	1	1.00	0.41	0.53	0.42	0.69	0.00	0.00	0.72
time (sec)	N/A	0.156	0.050	0.046	0.737	0.784	0.000	0.000	2.776

Problem 2272	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	155	155	147	207	0	776	0	0	-1
normalized size	1	1.00	0.95	1.34	0.00	5.01	0.00	0.00	-0.01
time (sec)	N/A	0.171	0.137	0.071	0.000	0.765	0.000	0.000	0.000

Problem 2273	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	223	223	117	479	0	1351	0	0	-1
normalized size	1	1.00	0.52	2.15	0.00	6.06	0.00	0.00	-0.00
time (sec)	N/A	0.354	0.075	0.071	0.000	1.264	0.000	0.000	0.000

Problem 2274	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	308	308	129	824	0	1976	0	0	-1
normalized size	1	1.00	0.42	2.68	0.00	6.42	0.00	0.00	-0.00
time (sec)	N/A	0.467	0.105	0.092	0.000	1.042	0.000	0.000	0.000

Problem 2275	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	387	387	127	1224	0	2832	0	0	-1
normalized size	1	1.00	0.33	3.16	0.00	7.32	0.00	0.00	-0.00
time (sec)	N/A	0.629	0.112	0.086	0.000	1.017	0.000	0.000	0.000

Problem 2276	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	448	448	366	535	511	578	0	0	596
normalized size	1	1.00	0.82	1.19	1.14	1.29	0.00	0.00	1.33
time (sec)	N/A	0.705	0.310	0.050	1.096	0.745	0.000	0.000	3.499

Problem 2277	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	371	371	263	367	363	428	0	0	435
normalized size	1	1.00	0.71	0.99	0.98	1.15	0.00	0.00	1.17
time (sec)	N/A	0.546	0.203	0.048	0.965	1.004	0.000	0.000	3.292

Problem 2278	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	291	291	180	235	246	308	0	0	314
normalized size	1	1.00	0.62	0.81	0.85	1.06	0.00	0.00	1.08
time (sec)	N/A	0.413	0.153	0.047	0.964	0.980	0.000	0.000	3.206

Problem 2279	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	217	217	117	138	157	216	0	0	214
normalized size	1	1.00	0.54	0.64	0.72	1.00	0.00	0.00	0.99
time (sec)	N/A	0.287	0.093	0.043	0.929	1.088	0.000	0.000	2.888

Problem 2280	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	F(-1)	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	152	152	76	78	103	154	0	0	154
normalized size	1	1.00	0.50	0.51	0.68	1.01	0.00	0.00	1.01
time (sec)	N/A	0.160	0.058	0.044	0.971	0.996	0.000	0.000	2.854

Problem 2281	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	146	485	0	1437	0	0	-1
normalized size	1	1.00	0.66	2.19	0.00	6.50	0.00	0.00	-0.00
time (sec)	N/A	0.304	0.081	0.072	0.000	1.346	0.000	0.000	0.000

Problem 2282	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	313	313	135	904	0	2106	0	0	-1
normalized size	1	1.00	0.43	2.89	0.00	6.73	0.00	0.00	-0.00
time (sec)	N/A	0.435	0.077	0.082	0.000	1.091	0.000	0.000	0.000

Problem 2283	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	378	378	129	1528	0	3096	0	0	-1
normalized size	1	1.00	0.34	4.04	0.00	8.19	0.00	0.00	-0.00
time (sec)	N/A	0.590	0.109	0.083	0.000	1.211	0.000	0.000	0.000

Problem 2284	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	457	457	128	2011	0	4084	0	0	-1
normalized size	1	1.00	0.28	4.40	0.00	8.94	0.00	0.00	-0.00
time (sec)	N/A	0.753	0.112	0.112	0.000	1.844	0.000	0.000	0.000

Problem 2285	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	221	161	0	0	0	0	0	-1
normalized size	1	1.00	0.73	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.353	0.664	1.490	0.000	1.332	0.000	0.000	0.000

Problem 2286	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	219	219	170	0	0	0	0	0	-1
normalized size	1	1.00	0.78	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.340	0.573	2.211	0.000	1.190	0.000	0.000	0.000

Problem 2287	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	208	208	149	0	0	0	0	0	-1
normalized size	1	1.00	0.72	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.310	0.315	1.368	0.000	1.425	0.000	0.000	0.000

Problem 2288	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	155	0	0	0	0	0	-1
normalized size	1	1.00	0.76	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.313	0.301	1.377	0.000	1.525	0.000	0.000	0.000

Problem 2289	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	176	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.330	0.328	1.367	0.000	0.754	0.000	0.000	0.000

Problem 2290	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-2)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	185	0	0	0	0	0	-1
normalized size	1	1.00	0.83	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.328	0.348	1.368	0.000	1.296	0.000	0.000	0.000

Problem 2291	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	34	56	64	66	173	173	79
normalized size	1	1.00	0.81	1.33	1.52	1.57	4.12	4.12	1.88
time (sec)	N/A	0.053	0.138	0.055	0.796	1.016	16.860	0.461	2.579

Problem 2292	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	48	98	0	132	0	444	138
normalized size	1	1.00	0.75	1.53	0.00	2.06	0.00	6.94	2.16
time (sec)	N/A	0.035	0.134	0.048	0.000	0.972	0.000	0.507	2.631

Problem 2293	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	153	449	268	448	0	297	224
normalized size	1	1.00	1.07	3.14	1.87	3.13	0.00	2.08	1.57
time (sec)	N/A	0.209	0.127	0.058	0.649	1.048	0.000	0.168	2.735

Problem 2294	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	73	73	73	58	57	57	70	57	57
normalized size	1	1.00	1.00	0.79	0.78	0.78	0.96	0.78	0.78
time (sec)	N/A	0.053	0.002	0.042	0.562	0.855	0.083	0.236	0.056

Problem 2295	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	60	47	46	46	56	46	46
normalized size	1	1.00	1.00	0.78	0.77	0.77	0.93	0.77	0.77
time (sec)	N/A	0.038	0.002	0.043	0.555	0.903	0.076	0.166	0.030

Problem 2296	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	44	44	44	35	34	34	37	34	34
normalized size	1	1.00	1.00	0.80	0.77	0.77	0.84	0.77	0.77
time (sec)	N/A	0.028	0.002	0.041	0.551	0.918	0.071	0.172	0.023

Problem 2297	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	28	28	28	23	22	22	22	22	22
normalized size	1	1.00	1.00	0.82	0.79	0.79	0.79	0.79	0.79
time (sec)	N/A	0.017	0.002	0.039	0.515	0.895	0.064	0.168	0.039

Problem 2298	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	C	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	49	74	47	47	201	53	78
normalized size	1	1.00	0.91	1.37	0.87	0.87	3.72	0.98	1.44
time (sec)	N/A	0.066	0.027	0.064	1.318	0.871	0.432	0.154	2.345

Problem 2299	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	C	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	72	116	71	103	238	101	97
normalized size	1	1.00	0.91	1.47	0.90	1.30	3.01	1.28	1.23
time (sec)	N/A	0.067	0.043	0.057	1.355	0.941	0.587	0.192	2.293

Problem 2300	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	C	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	94	154	92	160	292	88	114
normalized size	1	1.00	0.93	1.52	0.91	1.58	2.89	0.87	1.13
time (sec)	N/A	0.097	0.061	0.063	1.269	1.065	0.709	0.168	0.135

Problem 2301	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	365	365	437	608	0	0	0	0	-1
normalized size	1	1.00	1.20	1.67	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.205	1.835	1.806	0.000	0.988	0.000	0.000	0.000

Problem 2302	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	326	326	423	596	0	0	0	0	-1
normalized size	1	1.00	1.30	1.83	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.143	1.603	0.960	0.000	0.900	0.000	0.000	0.000

Problem 2303	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	275	275	389	313	0	0	0	0	-1
normalized size	1	1.00	1.41	1.14	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.104	1.107	1.414	0.000	0.835	0.000	0.000	0.000

Problem 2304	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	304	417	584	0	0	0	0	-1
normalized size	1	1.00	1.37	1.92	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.160	0.985	1.533	0.000	0.695	0.000	0.000	0.000

Problem 2305	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	351	351	435	1152	0	0	0	0	-1
normalized size	1	1.00	1.24	3.28	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.190	1.699	2.253	0.000	1.132	0.000	0.000	0.000

Problem 2306	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	133	251	283	244	324	332	312	270
normalized size	1	0.99	1.87	2.11	1.82	2.42	2.48	2.33	2.01
time (sec)	N/A	0.263	0.137	0.044	0.479	0.959	0.114	0.177	0.130

Problem 2307	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	133	192	214	188	247	252	241	206
normalized size	1	0.99	1.43	1.60	1.40	1.84	1.88	1.80	1.54
time (sec)	N/A	0.185	0.086	0.046	0.495	1.091	0.102	0.155	2.355

Problem 2308	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	133	137	145	132	171	172	171	143
normalized size	1	0.99	1.02	1.08	0.99	1.28	1.28	1.28	1.07
time (sec)	N/A	0.135	0.060	0.042	0.558	0.926	0.093	0.169	2.324

Problem 2309	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	80	76	76	94	94	100	79
normalized size	1	1.00	1.00	0.95	0.95	1.18	1.18	1.25	0.99
time (sec)	N/A	0.081	0.029	0.042	0.461	0.901	0.076	0.153	0.034

Problem 2310	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	42	42	42	37	36	40	39	40	38
normalized size	1	1.00	1.00	0.88	0.86	0.95	0.93	0.95	0.90
time (sec)	N/A	0.036	0.014	0.046	0.541	0.585	0.068	0.149	0.042

Problem 2311	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	109	100	171	122	123	107	136	130
normalized size	1	0.98	0.90	1.54	1.10	1.11	0.96	1.23	1.17
time (sec)	N/A	0.133	0.051	0.044	0.459	0.934	0.433	0.173	2.365

Problem 2312	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	114	106	195	126	192	143	200	137
normalized size	1	0.98	0.91	1.68	1.09	1.66	1.23	1.72	1.18
time (sec)	N/A	0.134	0.074	0.062	0.543	1.068	1.040	0.172	0.091

Problem 2313	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	135	217	136	203	162	129	142
normalized size	1	1.00	1.13	1.82	1.14	1.71	1.36	1.08	1.19
time (sec)	N/A	0.133	0.068	0.051	0.520	0.834	4.703	0.176	0.123

Problem 2314	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	127	126	130	225	154	185	184	138	154
normalized size	1	0.99	1.02	1.77	1.21	1.46	1.45	1.09	1.21
time (sec)	N/A	0.120	0.070	0.053	0.458	1.097	16.198	0.197	2.374

Problem 2315	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	131	118	142	157	157	194	220	158
normalized size	1	0.99	0.89	1.08	1.19	1.19	1.47	1.67	1.20
time (sec)	N/A	0.121	0.056	0.052	0.652	1.097	45.730	0.182	0.075

Problem 2316	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	133	122	142	173	173	212	135	180
normalized size	1	0.99	0.91	1.06	1.29	1.29	1.58	1.01	1.34
time (sec)	N/A	0.108	0.061	0.053	0.572	0.672	114.504	0.167	0.087

Problem 2317	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	134	133	119	142	178	178	0	132	182
normalized size	1	0.99	0.89	1.06	1.33	1.33	0.00	0.99	1.36
time (sec)	N/A	0.102	0.059	0.053	0.516	0.733	0.000	0.164	2.361

Problem 2318	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	665	671	648	919	957	883	739
normalized size	1	0.99	2.19	2.21	2.13	3.02	3.15	2.90	2.43
time (sec)	N/A	0.822	0.300	0.040	0.488	0.583	0.237	0.165	0.274

Problem 2319	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	550	545	532	743	765	719	594
normalized size	1	0.99	1.81	1.79	1.75	2.44	2.52	2.37	1.95
time (sec)	N/A	0.629	0.244	0.039	0.523	0.582	0.175	0.163	2.481

Problem 2320	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	421	419	416	568	583	556	450
normalized size	1	0.99	1.38	1.38	1.37	1.87	1.92	1.83	1.48
time (sec)	N/A	0.494	0.189	0.045	0.473	0.664	0.151	0.184	0.137

Problem 2321	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	301	293	300	396	405	396	310
normalized size	1	0.99	0.99	0.96	0.99	1.30	1.33	1.30	1.02
time (sec)	N/A	0.443	0.143	0.041	0.471	0.761	0.129	0.156	2.331

Problem 2322	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	180	180	180	167	184	225	231	237	184
normalized size	1	1.00	1.00	0.93	1.02	1.25	1.28	1.32	1.02
time (sec)	N/A	0.297	0.078	0.044	0.479	0.781	0.104	0.157	2.334

Problem 2323	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	96	91	90	99	100	99	89
normalized size	1	1.00	1.00	0.95	0.94	1.03	1.04	1.03	0.93
time (sec)	N/A	0.093	0.024	0.046	0.621	0.845	0.085	0.153	2.239

Problem 2324	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	257	257	298	558	378	379	372	463	423
normalized size	1	1.00	1.16	2.17	1.47	1.47	1.45	1.80	1.65
time (sec)	N/A	0.538	0.179	0.046	0.666	0.920	1.139	0.161	0.083

Problem 2325	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	267	264	250	609	387	567	442	551	499
normalized size	1	0.99	0.94	2.28	1.45	2.12	1.66	2.06	1.87
time (sec)	N/A	0.490	0.113	0.056	0.610	1.099	4.412	0.174	0.121

Problem 2326	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	281	280	262	654	397	620	534	430	468
normalized size	1	1.00	0.93	2.33	1.41	2.21	1.90	1.53	1.67
time (sec)	N/A	0.440	0.124	0.053	0.628	0.971	28.799	0.176	2.392

Problem 2327	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	286	284	263	690	409	618	547	424	465
normalized size	1	0.99	0.92	2.41	1.43	2.16	1.91	1.48	1.63
time (sec)	N/A	0.409	0.114	0.056	0.657	1.071	152.976	0.164	2.371

Problem 2328	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	289	287	391	710	417	572	0	719	475
normalized size	1	0.99	1.35	2.46	1.44	1.98	0.00	2.49	1.64
time (sec)	N/A	0.362	0.264	0.052	0.779	1.185	0.000	0.212	2.418

Problem 2329	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	297	295	386	715	438	505	0	426	483
normalized size	1	0.99	1.30	2.41	1.47	1.70	0.00	1.43	1.63
time (sec)	N/A	0.344	0.207	0.056	0.686	1.047	0.000	0.194	2.503

Problem 2330	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	302	300	372	453	438	438	0	460	485
normalized size	1	0.99	1.23	1.50	1.45	1.45	0.00	1.52	1.61
time (sec)	N/A	0.323	0.182	0.052	0.633	0.840	0.000	0.220	0.156

Problem 2331	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	377	453	457	457	0	462	505
normalized size	1	0.99	1.24	1.49	1.50	1.50	0.00	1.52	1.66
time (sec)	N/A	0.319	0.201	0.051	0.681	0.865	0.000	0.166	0.173

Problem 2332	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	304	302	375	453	468	468	0	462	516
normalized size	1	0.99	1.23	1.49	1.54	1.54	0.00	1.52	1.70
time (sec)	N/A	0.317	0.189	0.047	0.948	1.100	0.000	0.161	2.433

Problem 2333	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	1178	1263	1114	1663	1731	1603	1348
normalized size	1	1.00	2.12	2.28	2.01	3.00	3.12	2.89	2.43
time (sec)	N/A	1.747	0.599	0.040	0.744	0.893	0.277	0.181	2.656

Problem 2334	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	957	1041	919	1353	1401	1313	1093
normalized size	1	1.00	1.72	1.88	1.66	2.44	2.52	2.37	1.97
time (sec)	N/A	1.378	0.473	0.049	0.568	0.666	0.235	0.198	0.293

Problem 2335	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	715	819	713	1040	1080	1020	835
normalized size	1	1.00	1.29	1.48	1.28	1.87	1.95	1.84	1.50
time (sec)	N/A	1.110	0.353	0.043	0.734	1.043	0.202	0.167	0.217

Problem 2336	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	526	597	529	727	753	727	578
normalized size	1	1.00	0.95	1.08	0.95	1.31	1.36	1.31	1.04
time (sec)	N/A	0.863	0.275	0.046	0.647	0.890	0.166	0.164	2.493

Problem 2337	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	310	310	310	375	334	417	435	437	338
normalized size	1	1.00	1.00	1.21	1.08	1.35	1.40	1.41	1.09
time (sec)	N/A	0.640	0.161	0.039	0.595	0.648	0.126	0.163	0.127

Problem 2338	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	158	223	162	187	190	187	163
normalized size	1	1.00	1.00	1.41	1.03	1.18	1.20	1.18	1.03
time (sec)	N/A	0.206	0.044	0.037	0.532	0.886	0.100	0.152	0.070

Problem 2339	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	544	541	700	1319	842	843	979	1130	968
normalized size	1	0.99	1.29	2.42	1.55	1.55	1.80	2.08	1.78
time (sec)	N/A	1.195	0.457	0.049	0.547	1.049	2.133	0.201	2.369

Problem 2340	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	525	522	922	1404	853	1189	1056	1200	1483
normalized size	1	0.99	1.76	2.67	1.62	2.26	2.01	2.29	2.82
time (sec)	N/A	1.093	0.571	0.059	0.579	0.822	10.136	0.246	2.441

Problem 2341	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	531	530	503	1483	861	1311	1149	1048	1297
normalized size	1	1.00	0.95	2.79	1.62	2.47	2.16	1.97	2.44
time (sec)	N/A	1.085	0.277	0.061	0.787	0.727	86.430	0.197	2.506

Problem 2342	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	521	519	488	1545	875	1369	0	1021	1151
normalized size	1	1.00	0.94	2.97	1.68	2.63	0.00	1.96	2.21
time (sec)	N/A	0.990	0.261	0.066	0.789	1.072	0.000	0.175	2.528

Problem 2343	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	533	531	496	1605	884	1343	0	1567	1106
normalized size	1	1.00	0.93	3.01	1.66	2.52	0.00	2.94	2.08
time (sec)	N/A	0.943	0.254	0.066	0.719	1.137	0.000	0.415	2.537

Problem 2344	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	534	532	885	1637	898	1247	0	998	1106
normalized size	1	1.00	1.66	3.07	1.68	2.34	0.00	1.87	2.07
time (sec)	N/A	0.901	0.560	0.059	0.663	0.962	0.000	0.179	0.261

Problem 2345	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	541	539	868	1656	905	1145	0	989	1598
normalized size	1	1.00	1.60	3.06	1.67	2.12	0.00	1.83	2.95
time (sec)	N/A	0.810	0.655	0.063	0.714	0.942	0.000	0.227	2.543

Problem 2346	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	548	546	863	1661	926	1023	0	1001	1353
normalized size	1	1.00	1.57	3.03	1.69	1.87	0.00	1.83	2.47
time (sec)	N/A	0.768	0.487	0.056	1.006	0.869	0.000	0.183	2.577

Problem 2347	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	550	548	847	1067	922	922	0	1127	1115
normalized size	1	1.00	1.54	1.94	1.68	1.68	0.00	2.05	2.03
time (sec)	N/A	0.706	0.470	0.053	1.060	1.078	0.000	0.184	0.279

Problem 2348	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	852	1067	945	945	0	1129	1142
normalized size	1	1.00	1.54	1.92	1.70	1.70	0.00	2.03	2.06
time (sec)	N/A	0.744	0.488	0.054	1.050	0.795	0.000	0.205	2.568

Problem 2349	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	555	553	849	1067	956	956	0	1129	1153
normalized size	1	1.00	1.53	1.92	1.72	1.72	0.00	2.03	2.08
time (sec)	N/A	0.673	0.504	0.050	1.017	1.267	0.000	0.183	2.680

Problem 2350	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	142	281	215	342	3267	606	300
normalized size	1	1.00	1.17	2.32	1.78	2.83	27.00	5.01	2.48
time (sec)	N/A	0.081	0.244	0.046	0.650	1.192	3.379	0.198	2.548

Problem 2351	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	166	172	168	186	192	177	160
normalized size	1	1.00	1.61	1.67	1.63	1.81	1.86	1.72	1.55
time (sec)	N/A	0.163	0.040	0.040	0.569	0.611	0.096	0.151	2.358

Problem 2352	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	140	139	138	149	153	143	132
normalized size	1	1.00	1.36	1.35	1.34	1.45	1.49	1.39	1.28
time (sec)	N/A	0.126	0.031	0.040	0.730	0.887	0.088	0.164	0.056

Problem 2353	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	109	106	105	114	116	111	104
normalized size	1	1.00	1.06	1.03	1.02	1.11	1.13	1.08	1.01
time (sec)	N/A	0.103	0.027	0.042	0.497	0.759	0.082	0.173	2.237

Problem 2354	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	78	78	70	73	72	79	80	79	73
normalized size	1	1.00	0.90	0.94	0.92	1.01	1.03	1.01	0.94
time (sec)	N/A	0.073	0.023	0.039	0.565	1.105	0.075	0.151	0.033

Problem 2355	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	41	40	39	43	42	46	41
normalized size	1	1.00	0.87	0.85	0.83	0.91	0.89	0.98	0.87
time (sec)	N/A	0.037	0.014	0.041	0.603	1.010	0.066	0.166	0.043

Problem 2356	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	25	25	25	20	19	19	19	19	19
normalized size	1	1.00	1.00	0.80	0.76	0.76	0.76	0.76	0.76
time (sec)	N/A	0.008	0.001	0.038	0.654	0.626	0.058	0.151	0.029

Problem 2357	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	74	95	81	82	71	82	85
normalized size	1	1.00	0.94	1.20	1.03	1.04	0.90	1.04	1.08
time (sec)	N/A	0.073	0.028	0.039	0.496	0.975	0.238	0.182	2.344

Problem 2358	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	84	84	79	108	85	131	82	131	88
normalized size	1	1.00	0.94	1.29	1.01	1.56	0.98	1.56	1.05
time (sec)	N/A	0.090	0.057	0.050	0.506	1.069	0.419	0.199	2.336

Problem 2359	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	80	121	96	147	97	82	96
normalized size	1	1.00	0.90	1.36	1.08	1.65	1.09	0.92	1.08
time (sec)	N/A	0.083	0.052	0.049	0.626	0.871	0.759	0.155	2.351

Problem 2360	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	96	96	86	128	113	141	114	88	107
normalized size	1	1.00	0.90	1.33	1.18	1.47	1.19	0.92	1.11
time (sec)	N/A	0.078	0.034	0.050	0.607	1.012	1.330	0.157	0.085

Problem 2361	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	101	101	77	93	116	116	126	128	111
normalized size	1	1.00	0.76	0.92	1.15	1.15	1.25	1.27	1.10
time (sec)	N/A	0.073	0.027	0.053	0.468	0.970	2.214	0.159	0.057

Problem 2362	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	79	93	132	132	141	80	128
normalized size	1	1.00	0.77	0.90	1.28	1.28	1.37	0.78	1.24
time (sec)	N/A	0.075	0.029	0.049	0.532	0.788	3.659	0.174	0.064

Problem 2363	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	77	93	137	137	150	78	133
normalized size	1	1.00	0.75	0.90	1.33	1.33	1.46	0.76	1.29
time (sec)	N/A	0.073	0.028	0.049	0.621	0.817	5.833	0.152	2.345

Problem 2364	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	357	357	352	946	0	1139	2759	402	539
normalized size	1	1.00	0.99	2.65	0.00	3.19	7.73	1.13	1.51
time (sec)	N/A	0.652	0.293	0.049	0.000	1.531	25.809	0.178	3.106

Problem 2365	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	203	543	0	673	1532	219	316
normalized size	1	1.00	0.99	2.65	0.00	3.28	7.47	1.07	1.54
time (sec)	N/A	0.371	0.165	0.048	0.000	0.866	11.088	0.161	2.783

Problem 2366	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	108	261	0	369	677	112	163
normalized size	1	1.00	1.00	2.42	0.00	3.42	6.27	1.04	1.51
time (sec)	N/A	0.128	0.089	0.047	0.000	0.804	3.445	0.157	2.704

Problem 2367	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	66	93	0	207	280	63	162
normalized size	1	1.00	1.03	1.45	0.00	3.23	4.38	0.98	2.53
time (sec)	N/A	0.039	0.052	0.043	0.000	0.982	0.690	0.183	0.115

Problem 2368	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	125	343	0	409	0	155	1027
normalized size	1	1.00	0.86	2.35	0.00	2.80	0.00	1.06	7.03
time (sec)	N/A	0.224	0.124	0.051	0.000	11.769	0.000	0.158	8.696

Problem 2369	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	255	255	219	729	0	1594	0	383	2650
normalized size	1	1.00	0.86	2.86	0.00	6.25	0.00	1.50	10.39
time (sec)	N/A	0.444	0.343	0.059	0.000	142.528	0.000	0.174	7.218

Problem 2370	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	414	414	413	1339	0	0	0	797	7042
normalized size	1	1.00	1.00	3.23	0.00	0.00	0.00	1.93	17.01
time (sec)	N/A	0.803	0.472	0.062	0.000	0.000	0.000	0.185	26.751

Problem 2371	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	543	543	897	2221	0	5676	0	1316	1763
normalized size	1	1.00	1.65	4.09	0.00	10.45	0.00	2.42	3.25
time (sec)	N/A	1.214	1.857	0.066	0.000	3.559	0.000	0.254	5.593

Problem 2372	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	550	1458	0	3941	0	979	1167
normalized size	1	1.00	2.82	7.48	0.00	20.21	0.00	5.02	5.98
time (sec)	N/A	0.162	0.978	0.062	0.000	1.617	0.000	0.206	3.356

Problem 2373	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	305	303	408	1014	0	2906	2076	645	913
normalized size	1	0.99	1.34	3.32	0.00	9.53	6.81	2.11	2.99
time (sec)	N/A	0.380	0.668	0.063	0.000	1.359	128.603	0.180	3.226

Problem 2374	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	221	219	216	591	0	1879	1234	369	555
normalized size	1	0.99	0.98	2.67	0.00	8.50	5.58	1.67	2.51
time (sec)	N/A	0.209	0.402	0.055	0.000	1.291	15.170	0.215	0.594

Problem 2375	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	128	242	0	1116	651	199	353
normalized size	1	1.00	0.98	1.85	0.00	8.52	4.97	1.52	2.69
time (sec)	N/A	0.056	0.127	0.053	0.000	0.883	1.681	0.170	2.571

Problem 2376	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	666	664	668	9360	0	0	0	2288	25467
normalized size	1	1.00	1.00	14.05	0.00	0.00	0.00	3.44	38.24
time (sec)	N/A	2.551	2.822	0.085	0.000	0.000	0.000	0.266	8.102

Problem 2377	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1043	1043	1409	13679	0	0	0	3417	40079
normalized size	1	1.00	1.35	13.12	0.00	0.00	0.00	3.28	38.43
time (sec)	N/A	6.294	6.749	0.107	0.000	0.000	0.000	2.139	12.999

Problem 2378	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	43	34	33	33	41	35	31
normalized size	1	1.00	1.00	0.79	0.77	0.77	0.95	0.81	0.72
time (sec)	N/A	0.024	0.021	0.048	0.492	0.705	0.132	0.161	0.054

Problem 2379	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	35	29	28	28	34	30	26
normalized size	1	1.00	0.97	0.81	0.78	0.78	0.94	0.83	0.72
time (sec)	N/A	0.024	0.015	0.052	0.505	0.519	0.125	0.150	2.305

Problem 2380	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	29	29	34	24	23	23	27	25	21
normalized size	1	1.00	1.17	0.83	0.79	0.79	0.93	0.86	0.72
time (sec)	N/A	0.023	0.014	0.060	0.561	0.707	0.123	0.171	0.034

Problem 2381	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	22	22	22	19	18	18	20	20	16
normalized size	1	1.00	1.00	0.86	0.82	0.82	0.91	0.91	0.73
time (sec)	N/A	0.015	0.007	0.049	0.484	0.690	0.115	0.213	0.038

Problem 2382	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	17	17	17	16	15	15	15	17	13
normalized size	1	1.00	1.00	0.94	0.88	0.88	0.88	1.00	0.76
time (sec)	N/A	0.006	0.004	0.049	0.727	0.609	0.104	0.150	2.323

Problem 2383	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	27	27	27	24	23	23	26	26	19
normalized size	1	1.00	1.00	0.89	0.85	0.85	0.96	0.96	0.70
time (sec)	N/A	0.026	0.008	0.053	0.553	0.675	0.137	0.148	0.053

Problem 2384	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	33	32	48	32	40	28
normalized size	1	1.00	1.00	0.87	0.84	1.26	0.84	1.05	0.74
time (sec)	N/A	0.029	0.026	0.056	0.727	0.612	0.163	0.187	2.289

Problem 2385	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	49	49	47	42	42	71	41	40	36
normalized size	1	1.00	0.96	0.86	0.86	1.45	0.84	0.82	0.73
time (sec)	N/A	0.035	0.027	0.050	0.578	0.807	0.181	0.164	0.042

Problem 2386	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	60	60	62	51	52	96	51	45	46
normalized size	1	1.00	1.03	0.85	0.87	1.60	0.85	0.75	0.77
time (sec)	N/A	0.038	0.033	0.054	0.548	0.594	0.198	0.170	0.041

Problem 2387	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	50	50	56	40	42	68	42	44	38
normalized size	1	1.00	1.12	0.80	0.84	1.36	0.84	0.88	0.76
time (sec)	N/A	0.056	0.036	0.051	0.823	0.648	0.163	0.155	0.039

Problem 2388	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	43	43	47	35	37	63	36	39	33
normalized size	1	1.00	1.09	0.81	0.86	1.47	0.84	0.91	0.77
time (sec)	N/A	0.047	0.031	0.053	0.564	0.637	0.158	0.193	2.258

Problem 2389	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	32	34	53	31	36	30
normalized size	1	1.00	1.00	0.84	0.89	1.39	0.82	0.95	0.79
time (sec)	N/A	0.036	0.027	0.051	0.471	0.638	0.152	0.194	0.050

Problem 2390	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	36	36	34	32	34	53	29	36	26
normalized size	1	1.00	0.94	0.89	0.94	1.47	0.81	1.00	0.72
time (sec)	N/A	0.015	0.017	0.049	0.607	0.606	0.134	0.160	2.270

Problem 2391	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	34	34	33	32	34	53	29	36	26
normalized size	1	1.00	0.97	0.94	1.00	1.56	0.85	1.06	0.76
time (sec)	N/A	0.010	0.014	0.052	0.531	0.550	0.126	0.149	2.261

Problem 2392	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	48	48	48	40	42	71	41	45	36
normalized size	1	1.00	1.00	0.83	0.88	1.48	0.85	0.94	0.75
time (sec)	N/A	0.038	0.031	0.051	0.464	0.832	0.182	0.152	0.040

Problem 2393	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	57	49	52	96	51	77	46
normalized size	1	1.00	0.86	0.74	0.79	1.45	0.77	1.17	0.70
time (sec)	N/A	0.047	0.032	0.056	0.562	0.701	0.189	0.169	2.322

Problem 2394	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	66	58	62	121	60	62	56
normalized size	1	1.00	0.86	0.75	0.81	1.57	0.78	0.81	0.73
time (sec)	N/A	0.050	0.032	0.058	0.617	0.670	0.211	0.151	2.315

Problem 2395	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	88	88	75	67	72	146	71	67	66
normalized size	1	1.00	0.85	0.76	0.82	1.66	0.81	0.76	0.75
time (sec)	N/A	0.056	0.043	0.059	0.514	0.763	0.234	0.174	2.366

Problem 2396	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	81	51	57	103	58	49	52
normalized size	1	1.00	1.27	0.80	0.89	1.61	0.91	0.77	0.81
time (sec)	N/A	0.080	0.032	0.056	0.547	0.604	0.195	0.153	2.439

Problem 2397	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	59	59	62	48	54	93	53	46	49
normalized size	1	1.00	1.05	0.81	0.92	1.58	0.90	0.78	0.83
time (sec)	N/A	0.049	0.035	0.053	0.494	0.643	0.190	0.165	2.447

Problem 2398	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	59	48	54	93	51	46	45
normalized size	1	1.00	0.86	0.70	0.78	1.35	0.74	0.67	0.65
time (sec)	N/A	0.030	0.028	0.052	0.547	0.582	0.172	0.178	0.048

Problem 2399	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	56	48	54	93	51	46	45
normalized size	1	1.00	0.98	0.84	0.95	1.63	0.89	0.81	0.79
time (sec)	N/A	0.043	0.029	0.052	0.542	0.556	0.168	0.157	2.837

Problem 2400	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	48	54	93	51	46	45
normalized size	1	1.00	1.00	0.84	0.95	1.63	0.89	0.81	0.79
time (sec)	N/A	0.021	0.018	0.052	0.483	0.582	0.162	0.200	2.302

Problem 2401	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	57	48	54	93	51	46	45
normalized size	1	1.00	1.00	0.84	0.95	1.63	0.89	0.81	0.79
time (sec)	N/A	0.015	0.014	0.048	0.496	0.585	0.155	0.156	0.045

Problem 2402	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	69	69	68	56	62	121	63	55	55
normalized size	1	1.00	0.99	0.81	0.90	1.75	0.91	0.80	0.80
time (sec)	N/A	0.053	0.046	0.051	0.587	0.711	0.214	0.152	2.321

Problem 2403	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	78	65	72	146	73	95	65
normalized size	1	1.00	0.83	0.69	0.77	1.55	0.78	1.01	0.69
time (sec)	N/A	0.060	0.045	0.053	0.688	0.605	0.230	0.158	0.045

Problem 2404	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	86	74	82	171	83	70	75
normalized size	1	1.00	0.82	0.70	0.78	1.63	0.79	0.67	0.71
time (sec)	N/A	0.070	0.051	0.055	0.587	0.675	0.238	0.161	2.294

Problem 2405	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	33	33	22	20	32	32	31	20	20
normalized size	1	1.00	0.67	0.61	0.97	0.97	0.94	0.61	0.61
time (sec)	N/A	0.013	0.008	0.040	0.520	0.732	0.121	0.150	0.038

Problem 2406	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	82	130	138	83	0	79	170
normalized size	1	1.00	0.51	0.81	0.86	0.52	0.00	0.49	1.06
time (sec)	N/A	0.095	0.060	0.055	1.241	0.629	0.000	0.196	3.648

Problem 2407	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	77	113	121	78	0	74	153
normalized size	1	1.00	0.57	0.84	0.90	0.58	0.00	0.55	1.13
time (sec)	N/A	0.074	0.043	0.052	1.354	0.733	0.000	0.204	3.470

Problem 2408	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	110	110	72	96	104	73	0	69	136
normalized size	1	1.00	0.65	0.87	0.95	0.66	0.00	0.63	1.24
time (sec)	N/A	0.049	0.035	0.051	1.316	0.555	0.000	0.189	3.508

Problem 2409	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	67	79	87	68	0	64	119
normalized size	1	1.00	0.79	0.93	1.02	0.80	0.00	0.75	1.40
time (sec)	N/A	0.027	0.029	0.051	1.334	0.668	0.000	0.250	0.698

Problem 2410	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	80	80	62	64	72	63	0	59	104
normalized size	1	1.00	0.78	0.80	0.90	0.79	0.00	0.74	1.30
time (sec)	N/A	0.023	0.049	0.049	1.349	0.593	0.000	0.178	2.664

Problem 2411	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	93	127	99	109	0	126	-1
normalized size	1	1.00	0.93	1.27	0.99	1.09	0.00	1.26	-0.01
time (sec)	N/A	0.062	0.042	0.049	1.115	0.807	0.000	0.292	0.000

Problem 2412	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	98	121	105	127	0	291	-1
normalized size	1	1.00	0.93	1.15	1.00	1.21	0.00	2.77	-0.01
time (sec)	N/A	0.060	0.067	0.059	1.219	0.708	0.000	0.745	0.000

Problem 2413	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	100	142	131	143	0	240	-1
normalized size	1	1.00	0.93	1.33	1.22	1.34	0.00	2.24	-0.01
time (sec)	N/A	0.061	0.080	0.064	1.189	0.733	0.000	0.311	0.000

Problem 2414	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	74	132	135	111	0	257	-1
normalized size	1	1.00	0.79	1.40	1.44	1.18	0.00	2.73	-0.01
time (sec)	N/A	0.044	0.033	0.061	1.303	0.662	0.000	0.318	0.000

Problem 2415	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	119	153	171	126	0	183	-1
normalized size	1	1.00	1.00	1.29	1.44	1.06	0.00	1.54	-0.01
time (sec)	N/A	0.064	0.046	0.059	1.253	0.694	0.000	0.268	0.000

Problem 2416	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	146	174	212	141	0	363	-1
normalized size	1	1.00	1.01	1.21	1.47	0.98	0.00	2.52	-0.01
time (sec)	N/A	0.090	0.107	0.061	1.422	0.712	0.000	0.409	0.000

Problem 2417	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	169	195	258	156	0	410	-1
normalized size	1	1.00	1.00	1.15	1.53	0.92	0.00	2.43	-0.01
time (sec)	N/A	0.109	0.091	0.056	1.292	0.690	0.000	0.340	0.000

Problem 2418	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	183	183	92	149	167	93	0	89	-1
normalized size	1	1.00	0.50	0.81	0.91	0.51	0.00	0.49	-0.01
time (sec)	N/A	0.108	0.062	0.056	1.175	0.615	0.000	0.213	0.000

Problem 2419	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	87	132	150	88	0	84	-1
normalized size	1	1.00	0.55	0.84	0.95	0.56	0.00	0.53	-0.01
time (sec)	N/A	0.083	0.053	0.051	1.339	0.689	0.000	0.214	0.000

Problem 2420	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	82	115	133	83	0	79	-1
normalized size	1	1.00	0.62	0.86	1.00	0.62	0.00	0.59	-0.01
time (sec)	N/A	0.061	0.055	0.049	1.310	0.679	0.000	0.212	0.000

Problem 2421	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	108	108	77	98	116	78	0	74	-1
normalized size	1	1.00	0.71	0.91	1.07	0.72	0.00	0.69	-0.01
time (sec)	N/A	0.039	0.037	0.046	1.348	0.757	0.000	0.241	0.000

Problem 2422	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	103	103	72	83	101	73	0	69	130
normalized size	1	1.00	0.70	0.81	0.98	0.71	0.00	0.67	1.26
time (sec)	N/A	0.029	0.059	0.082	1.330	0.858	0.000	0.193	2.870

Problem 2423	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	123	123	103	183	128	119	0	136	-1
normalized size	1	1.00	0.84	1.49	1.04	0.97	0.00	1.11	-0.01
time (sec)	N/A	0.079	0.044	0.051	1.513	0.860	0.000	0.303	0.000

Problem 2424	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	110	158	134	139	0	481	-1
normalized size	1	1.00	0.86	1.23	1.05	1.09	0.00	3.76	-0.01
time (sec)	N/A	0.083	0.073	0.055	1.240	0.620	0.000	1.132	0.000

Problem 2425	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	135	135	110	179	160	153	0	259	-1
normalized size	1	1.00	0.81	1.33	1.19	1.13	0.00	1.92	-0.01
time (sec)	N/A	0.082	0.094	0.056	1.186	0.728	0.000	0.340	0.000

Problem 2426	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	110	200	191	169	0	305	-1
normalized size	1	1.00	0.80	1.46	1.39	1.23	0.00	2.23	-0.01
time (sec)	N/A	0.081	0.100	0.056	1.359	0.557	0.000	0.343	0.000

Problem 2427	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	110	221	227	183	0	106	-1
normalized size	1	1.00	0.80	1.61	1.66	1.34	0.00	0.77	-0.01
time (sec)	N/A	0.080	0.111	0.063	1.337	0.619	0.000	0.286	0.000

Problem 2428	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	128	211	241	140	0	359	-1
normalized size	1	1.00	1.03	1.70	1.94	1.13	0.00	2.90	-0.01
time (sec)	N/A	0.062	0.076	0.059	1.287	0.724	0.000	0.310	0.000

Problem 2429	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	151	232	287	155	0	410	-1
normalized size	1	1.00	1.01	1.56	1.93	1.04	0.00	2.75	-0.01
time (sec)	N/A	0.082	0.091	0.064	1.202	0.706	0.000	0.357	0.000

Problem 2430	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	157	253	338	170	0	461	-1
normalized size	1	1.00	0.90	1.45	1.94	0.98	0.00	2.65	-0.01
time (sec)	N/A	0.107	0.148	0.074	1.302	0.619	0.000	0.325	0.000

Problem 2431	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	199	199	182	274	394	185	0	512	-1
normalized size	1	1.00	0.91	1.38	1.98	0.93	0.00	2.57	-0.01
time (sec)	N/A	0.135	0.125	0.138	1.307	0.865	0.000	0.351	0.000

Problem 2432	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	206	206	102	168	196	103	0	99	-1
normalized size	1	1.00	0.50	0.82	0.95	0.50	0.00	0.48	-0.00
time (sec)	N/A	0.118	0.071	0.060	1.316	0.642	0.000	0.220	0.000

Problem 2433	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	97	151	179	98	0	94	-1
normalized size	1	1.00	0.54	0.83	0.99	0.54	0.00	0.52	-0.01
time (sec)	N/A	0.098	0.062	0.050	1.204	0.644	0.000	0.239	0.000

Problem 2434	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	156	156	92	134	162	93	0	89	-1
normalized size	1	1.00	0.59	0.86	1.04	0.60	0.00	0.57	-0.01
time (sec)	N/A	0.070	0.054	0.049	1.304	0.578	0.000	0.435	0.000

Problem 2435	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	131	131	101	117	145	88	0	84	-1
normalized size	1	1.00	0.77	0.89	1.11	0.67	0.00	0.64	-0.01
time (sec)	N/A	0.046	0.079	0.052	1.262	0.697	0.000	0.219	0.000

Problem 2436	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	108	102	130	83	0	79	-1
normalized size	1	1.00	0.86	0.81	1.03	0.66	0.00	0.63	-0.01
time (sec)	N/A	0.041	0.064	0.044	1.215	0.735	0.000	0.231	0.000

Problem 2437	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	146	146	113	239	157	129	0	146	-1
normalized size	1	1.00	0.77	1.64	1.08	0.88	0.00	1.00	-0.01
time (sec)	N/A	0.100	0.061	0.044	1.227	0.768	0.000	0.333	0.000

Problem 2438	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	151	151	120	195	163	149	0	671	-1
normalized size	1	1.00	0.79	1.29	1.08	0.99	0.00	4.44	-0.01
time (sec)	N/A	0.102	0.088	0.061	1.461	0.829	0.000	1.168	0.000

Problem 2439	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	160	160	120	216	189	163	0	269	-1
normalized size	1	1.00	0.75	1.35	1.18	1.02	0.00	1.68	-0.01
time (sec)	N/A	0.104	0.094	0.059	1.326	0.669	0.000	0.336	0.000

Problem 2440	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	120	237	220	179	0	315	-1
normalized size	1	1.00	0.73	1.44	1.33	1.08	0.00	1.91	-0.01
time (sec)	N/A	0.110	0.098	0.061	1.363	0.814	0.000	0.339	0.000

Problem 2441	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	120	258	256	193	0	445	-1
normalized size	1	1.00	0.72	1.54	1.53	1.16	0.00	2.66	-0.01
time (sec)	N/A	0.104	0.129	0.061	1.263	0.694	0.000	1.055	0.000

Problem 2442	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	120	279	297	209	0	407	-1
normalized size	1	1.00	0.72	1.67	1.78	1.25	0.00	2.44	-0.01
time (sec)	N/A	0.106	0.144	0.064	1.526	0.707	0.000	0.401	0.000

Problem 2443	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	167	167	120	300	343	223	0	444	-1
normalized size	1	1.00	0.72	1.80	2.05	1.34	0.00	2.66	-0.01
time (sec)	N/A	0.103	0.149	0.072	1.324	0.777	0.000	0.371	0.000

Problem 2444	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	154	290	367	171	0	461	-1
normalized size	1	1.00	1.00	1.88	2.38	1.11	0.00	2.99	-0.01
time (sec)	N/A	0.078	0.078	0.070	1.477	0.671	0.000	0.330	0.000

Problem 2445	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	182	311	423	186	0	512	-1
normalized size	1	1.00	1.02	1.74	2.36	1.04	0.00	2.86	-0.01
time (sec)	N/A	0.102	0.176	0.078	1.627	0.664	0.000	0.348	0.000

Problem 2446	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	207	332	484	201	0	563	-1
normalized size	1	1.00	1.01	1.63	2.37	0.99	0.00	2.76	-0.00
time (sec)	N/A	0.129	0.150	0.097	1.396	0.830	0.000	0.347	0.000

Problem 2447	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	184	187	225	113	0	109	-1
normalized size	1	1.00	0.80	0.82	0.98	0.49	0.00	0.48	-0.00
time (sec)	N/A	0.141	0.219	0.057	1.342	0.717	0.000	0.233	0.000

Problem 2448	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	204	204	163	170	208	108	0	104	-1
normalized size	1	1.00	0.80	0.83	1.02	0.53	0.00	0.51	-0.00
time (sec)	N/A	0.107	0.148	0.054	1.257	0.639	0.000	0.333	0.000

Problem 2449	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	179	179	138	153	191	103	0	99	-1
normalized size	1	1.00	0.77	0.85	1.07	0.58	0.00	0.55	-0.01
time (sec)	N/A	0.084	0.143	0.056	1.311	0.587	0.000	0.225	0.000

Problem 2450	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	154	154	111	136	174	98	0	94	-1
normalized size	1	1.00	0.72	0.88	1.13	0.64	0.00	0.61	-0.01
time (sec)	N/A	0.058	0.055	0.046	1.233	0.821	0.000	0.229	0.000

Problem 2451	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	149	149	119	121	159	93	0	89	-1
normalized size	1	1.00	0.80	0.81	1.07	0.62	0.00	0.60	-0.01
time (sec)	N/A	0.050	0.121	0.049	1.390	0.862	0.000	0.218	0.000

Problem 2452	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	123	295	186	139	0	156	-1
normalized size	1	1.00	0.73	1.75	1.10	0.82	0.00	0.92	-0.01
time (sec)	N/A	0.128	0.078	0.052	1.313	0.730	0.000	0.357	0.000

Problem 2453	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	130	232	192	159	0	861	-1
normalized size	1	1.00	0.75	1.33	1.10	0.91	0.00	4.95	-0.01
time (sec)	N/A	0.123	0.107	0.059	1.308	0.776	0.000	1.453	0.000

Problem 2454	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	181	181	130	253	218	173	0	279	-1
normalized size	1	1.00	0.72	1.40	1.20	0.96	0.00	1.54	-0.01
time (sec)	N/A	0.128	0.108	0.062	1.140	0.569	0.000	0.381	0.000

Problem 2455	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	190	190	130	274	249	189	0	325	-1
normalized size	1	1.00	0.68	1.44	1.31	0.99	0.00	1.71	-0.01
time (sec)	N/A	0.129	0.110	0.057	1.249	0.704	0.000	0.483	0.000

Problem 2456	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	195	195	130	295	285	203	0	636	-1
normalized size	1	1.00	0.67	1.51	1.46	1.04	0.00	3.26	-0.01
time (sec)	N/A	0.130	0.120	0.060	1.183	0.862	0.000	1.309	0.000

Problem 2457	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	130	316	326	219	0	417	-1
normalized size	1	1.00	0.66	1.60	1.65	1.11	0.00	2.12	-0.01
time (sec)	N/A	0.126	0.154	0.064	1.290	0.707	0.000	0.367	0.000

Problem 2458	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	130	337	372	233	0	467	-1
normalized size	1	1.00	0.66	1.71	1.89	1.18	0.00	2.37	-0.01
time (sec)	N/A	0.131	0.172	0.069	1.348	0.685	0.000	0.387	0.000

Problem 2459	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	130	358	423	249	0	509	-1
normalized size	1	1.00	0.66	1.82	2.15	1.26	0.00	2.58	-0.01
time (sec)	N/A	0.129	0.182	0.075	1.627	0.610	0.000	0.411	0.000

Problem 2460	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	130	379	479	263	0	546	-1
normalized size	1	1.00	0.66	1.92	2.43	1.34	0.00	2.77	-0.01
time (sec)	N/A	0.132	0.190	0.085	1.643	0.606	0.000	0.509	0.000

Problem 2461	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	184	184	185	369	513	200	0	563	-1
normalized size	1	1.00	1.01	2.01	2.79	1.09	0.00	3.06	-0.01
time (sec)	N/A	0.096	0.137	0.112	1.401	0.768	0.000	0.376	0.000

Problem 2462	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	209	209	212	390	579	215	0	614	-1
normalized size	1	1.00	1.01	1.87	2.77	1.03	0.00	2.94	-0.00
time (sec)	N/A	0.121	0.161	0.149	1.502	0.715	0.000	0.407	0.000

Problem 2463	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	239	411	650	230	0	665	-1
normalized size	1	1.00	1.02	1.76	2.78	0.98	0.00	2.84	-0.00
time (sec)	N/A	0.152	0.308	0.194	1.421	0.777	0.000	0.381	0.000

Problem 2464	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	259	259	262	432	726	245	0	716	-1
normalized size	1	1.00	1.01	1.67	2.80	0.95	0.00	2.76	-0.00
time (sec)	N/A	0.182	0.241	9.365	1.400	0.768	0.000	0.543	0.000

Problem 2465	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	407	407	357	981	0	811	0	412	-1
normalized size	1	1.00	0.88	2.41	0.00	1.99	0.00	1.01	-0.00
time (sec)	N/A	0.684	0.528	0.059	0.000	1.122	0.000	0.295	0.000

Problem 2466	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	225	537	0	487	0	231	-1
normalized size	1	1.00	0.96	2.29	0.00	2.08	0.00	0.99	-0.00
time (sec)	N/A	0.250	0.198	0.060	0.000	0.869	0.000	0.263	0.000

Problem 2467	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	116	115	115	243	0	273	0	119	-1
normalized size	1	0.99	0.99	2.09	0.00	2.35	0.00	1.03	-0.01
time (sec)	N/A	0.088	0.071	0.059	0.000	0.613	0.000	0.249	0.000

Problem 2468	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	67	67	66	81	0	162	0	62	80
normalized size	1	1.00	0.99	1.21	0.00	2.42	0.00	0.93	1.19
time (sec)	N/A	0.024	0.090	0.050	0.000	0.646	0.000	0.237	2.657

Problem 2469	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	132	132	126	349	0	1079	0	0	-1
normalized size	1	1.00	0.95	2.64	0.00	8.17	0.00	0.00	-0.01
time (sec)	N/A	0.121	0.153	0.060	0.000	47.342	0.000	0.000	0.000

Problem 2470	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	150	150	147	1033	0	748	0	0	-1
normalized size	1	1.00	0.98	6.89	0.00	4.99	0.00	0.00	-0.01
time (sec)	N/A	0.138	0.091	0.062	0.000	2.380	0.000	0.000	0.000

Problem 2471	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	271	269	264	2204	0	1750	0	1476	-1
normalized size	1	0.99	0.97	8.13	0.00	6.46	0.00	5.45	-0.00
time (sec)	N/A	0.378	0.457	0.122	0.000	16.535	0.000	0.392	0.000

Problem 2472	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	444	442	434	3898	0	3684	0	4249	-1
normalized size	1	1.00	0.98	8.78	0.00	8.30	0.00	9.57	-0.00
time (sec)	N/A	0.835	0.929	0.071	0.000	86.900	0.000	0.744	0.000

Problem 2473	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	325	325	426	1451	0	1605	0	530	-1
normalized size	1	1.00	1.31	4.46	0.00	4.94	0.00	1.63	-0.00
time (sec)	N/A	0.338	0.640	0.069	0.000	3.206	0.000	0.329	0.000

Problem 2474	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	238	779	0	945	0	294	-1
normalized size	1	1.00	1.13	3.71	0.00	4.50	0.00	1.40	-0.00
time (sec)	N/A	0.189	0.448	0.053	0.000	2.629	0.000	0.306	0.000

Problem 2475	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	126	126	127	341	0	489	0	147	163
normalized size	1	1.00	1.01	2.71	0.00	3.88	0.00	1.17	1.29
time (sec)	N/A	0.064	0.366	0.053	0.000	1.651	0.000	0.319	3.281

Problem 2476	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	45	45	44	45	0	74	0	55	44
normalized size	1	1.00	0.98	1.00	0.00	1.64	0.00	1.22	0.98
time (sec)	N/A	0.011	0.157	0.050	0.000	0.522	0.000	0.288	2.510

Problem 2477	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	188	188	184	1261	0	1656	0	568	-1
normalized size	1	1.00	0.98	6.71	0.00	8.81	0.00	3.02	-0.01
time (sec)	N/A	0.156	0.159	0.056	0.000	5.071	0.000	0.307	0.000

Problem 2478	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	334	332	326	3090	0	4122	0	0	-1
normalized size	1	0.99	0.98	9.25	0.00	12.34	0.00	0.00	-0.00
time (sec)	N/A	0.425	0.847	0.065	0.000	23.215	0.000	0.000	0.000

Problem 2479	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	545	545	527	5528	0	8054	0	4002	-1
normalized size	1	1.00	0.97	10.14	0.00	14.78	0.00	7.34	-0.00
time (sec)	N/A	0.933	3.349	0.068	0.000	134.254	0.000	0.859	0.000

Problem 2480	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	608	608	849	3912	0	3181	0	1185	-1
normalized size	1	1.00	1.40	6.43	0.00	5.23	0.00	1.95	-0.00
time (sec)	N/A	0.835	2.396	0.093	0.000	22.000	0.000	0.401	0.000

Problem 2481	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	397	397	505	2443	0	1881	0	790	-1
normalized size	1	1.00	1.27	6.15	0.00	4.74	0.00	1.99	-0.00
time (sec)	N/A	0.341	1.342	0.102	0.000	17.422	0.000	0.387	0.000

Problem 2482	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	121	121	314	433	0	469	0	448	423
normalized size	1	1.00	2.60	3.58	0.00	3.88	0.00	3.70	3.50
time (sec)	N/A	0.067	0.955	0.020	0.000	14.029	0.000	0.334	3.094

Problem 2483	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	158	158	200	256	0	353	0	309	246
normalized size	1	1.00	1.27	1.62	0.00	2.23	0.00	1.96	1.56
time (sec)	N/A	0.124	0.308	0.013	0.000	13.245	0.000	0.327	2.820

Problem 2484	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	90	90	99	132	0	245	0	193	121
normalized size	1	1.00	1.10	1.47	0.00	2.72	0.00	2.14	1.34
time (sec)	N/A	0.021	0.099	0.008	0.000	1.545	0.000	0.304	2.660

Problem 2485	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	436	436	437	2996	0	6068	0	11729	-1
normalized size	1	1.00	1.00	6.87	0.00	13.92	0.00	26.90	-0.00
time (sec)	N/A	0.554	1.040	0.035	0.000	38.567	0.000	0.903	0.000

Problem 2486	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	746	744	754	6675	0	12690	0	8475	-1
normalized size	1	1.00	1.01	8.95	0.00	17.01	0.00	11.36	-0.00
time (sec)	N/A	1.558	4.713	0.080	0.000	141.453	0.000	3.787	0.000

Problem 2487	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	1401	1401	2369	11346	0	0	0	3352	-1
normalized size	1	1.00	1.69	8.10	0.00	0.00	0.00	2.39	-0.00
time (sec)	N/A	2.195	11.248	0.052	0.000	0.000	0.000	0.490	0.000

Problem 2488	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	942	942	1608	7765	0	5253	0	2525	-1
normalized size	1	1.00	1.71	8.24	0.00	5.58	0.00	2.68	-0.00
time (sec)	N/A	0.961	9.191	0.022	0.000	82.330	0.000	0.837	0.000

Problem 2489	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	210	210	1196	1914	0	1628	0	1763	7972
normalized size	1	1.00	5.70	9.11	0.00	7.75	0.00	8.40	37.96
time (sec)	N/A	0.135	6.304	0.017	0.000	80.216	0.000	0.368	5.478

Problem 2490	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	264	264	963	1502	0	1370	0	1437	4090
normalized size	1	1.00	3.65	5.69	0.00	5.19	0.00	5.44	15.49
time (sec)	N/A	0.362	1.620	0.019	0.000	128.106	0.000	0.360	4.432

Problem 2491	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	324	324	711	1064	0	1095	0	1089	1996
normalized size	1	1.00	2.19	3.28	0.00	3.38	0.00	3.36	6.16
time (sec)	N/A	0.385	1.405	0.015	0.000	161.642	0.000	0.341	3.769

Problem 2492	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	225	225	200	608	0	0	0	727	892
normalized size	1	1.00	0.89	2.70	0.00	0.00	0.00	3.23	3.96
time (sec)	N/A	0.184	0.589	0.011	0.000	0.000	0.000	0.313	3.263

Problem 2493	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	133	133	120	288	0	543	0	433	394
normalized size	1	1.00	0.90	2.17	0.00	4.08	0.00	3.26	2.96
time (sec)	N/A	0.037	0.197	0.009	0.000	7.948	0.000	0.279	3.118

Problem 2494	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F(-2)	F(-1)	F(-1)	F(-1)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	974	974	1120	5461	0	0	0	0	-1
normalized size	1	1.00	1.15	5.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.710	6.240	0.019	0.000	0.000	0.000	0.000	0.000

Problem 2495	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	72	111	109	73	0	69	-1
normalized size	1	1.00	0.53	0.81	0.80	0.53	0.00	0.50	-0.01
time (sec)	N/A	0.086	0.051	0.018	1.292	0.949	0.000	0.231	0.000

Problem 2496	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	112	112	67	94	92	68	0	64	-1
normalized size	1	1.00	0.60	0.84	0.82	0.61	0.00	0.57	-0.01
time (sec)	N/A	0.064	0.033	0.007	1.365	0.935	0.000	0.226	0.000

Problem 2497	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	87	87	62	77	75	63	0	59	-1
normalized size	1	1.00	0.71	0.89	0.86	0.72	0.00	0.68	-0.01
time (sec)	N/A	0.045	0.026	0.008	1.241	0.964	0.000	0.226	0.000

Problem 2498	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	57	60	58	58	0	54	-1
normalized size	1	1.00	0.92	0.97	0.94	0.94	0.00	0.87	-0.02
time (sec)	N/A	0.023	0.020	0.009	1.311	1.094	0.000	0.218	0.000

Problem 2499	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	57	57	52	45	43	53	0	49	44
normalized size	1	1.00	0.91	0.79	0.75	0.93	0.00	0.86	0.77
time (sec)	N/A	0.016	0.009	0.005	1.335	0.863	0.000	0.249	2.682

Problem 2500	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	77	77	72	61	70	90	0	107	-1
normalized size	1	1.00	0.94	0.79	0.91	1.17	0.00	1.39	-0.01
time (sec)	N/A	0.046	0.018	0.009	1.168	0.517	0.000	0.293	0.000

Problem 2501	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	64	64	64	53	64	80	0	127	-1
normalized size	1	1.00	1.00	0.83	1.00	1.25	0.00	1.98	-0.02
time (sec)	N/A	0.041	0.022	0.010	1.292	0.731	0.000	0.343	0.000

Problem 2502	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	89	89	69	74	90	95	0	206	-1
normalized size	1	1.00	0.78	0.83	1.01	1.07	0.00	2.31	-0.01
time (sec)	N/A	0.061	0.034	0.011	1.267	0.924	0.000	0.324	0.000

Problem 2503	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	114	114	74	95	121	110	0	257	-1
normalized size	1	1.00	0.65	0.83	1.06	0.96	0.00	2.25	-0.01
time (sec)	N/A	0.075	0.042	0.012	1.209	0.758	0.000	0.315	0.000

Problem 2504	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	139	139	79	116	157	125	0	193	-1
normalized size	1	1.00	0.57	0.83	1.13	0.90	0.00	1.39	-0.01
time (sec)	N/A	0.097	0.050	0.011	1.271	0.889	0.000	0.368	0.000

Problem 2505	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	164	164	84	137	198	140	0	359	-1
normalized size	1	1.00	0.51	0.84	1.21	0.85	0.00	2.19	-0.01
time (sec)	N/A	0.144	0.062	0.014	1.166	0.860	0.000	0.555	0.000

Problem 2506	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	117	117	81	130	109	97	0	67	-1
normalized size	1	1.00	0.69	1.11	0.93	0.83	0.00	0.57	-0.01
time (sec)	N/A	0.074	0.040	0.015	1.112	0.678	0.000	0.226	0.000

Problem 2507	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	76	113	92	92	0	62	-1
normalized size	1	1.00	0.83	1.23	1.00	1.00	0.00	0.67	-0.01
time (sec)	N/A	0.052	0.034	0.007	1.403	1.015	0.000	0.227	0.000

Problem 2508	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	83	83	68	96	75	87	0	58	-1
normalized size	1	1.00	0.82	1.16	0.90	1.05	0.00	0.70	-0.01
time (sec)	N/A	0.039	0.029	0.007	1.600	0.547	0.000	0.217	0.000

Problem 2509	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	53	79	58	81	0	54	78
normalized size	1	1.00	0.85	1.27	0.94	1.31	0.00	0.87	1.26
time (sec)	N/A	0.024	0.091	0.005	1.225	0.603	0.000	0.213	0.379

Problem 2510	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	21	21	21	28	30	19	0	19	19
normalized size	1	1.00	1.00	1.33	1.43	0.90	0.00	0.90	0.90
time (sec)	N/A	0.005	0.041	0.005	0.509	0.486	0.000	0.231	0.071

Problem 2511	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	62	62	62	87	72	95	0	93	-1
normalized size	1	1.00	1.00	1.40	1.16	1.53	0.00	1.50	-0.02
time (sec)	N/A	0.038	0.026	0.008	1.359	0.584	0.000	0.277	0.000

Problem 2512	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	90	90	106	110	0	170	-1
normalized size	1	1.00	0.96	0.96	1.13	1.17	0.00	1.81	-0.01
time (sec)	N/A	0.053	0.031	0.011	1.356	0.675	0.000	0.315	0.000

Problem 2513	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	119	119	79	111	157	125	0	225	-1
normalized size	1	1.00	0.66	0.93	1.32	1.05	0.00	1.89	-0.01
time (sec)	N/A	0.075	0.046	0.013	1.270	0.876	0.000	0.356	0.000

Problem 2514	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	144	144	84	132	225	140	0	276	-1
normalized size	1	1.00	0.58	0.92	1.56	0.97	0.00	1.92	-0.01
time (sec)	N/A	0.103	0.056	0.011	1.297	0.572	0.000	0.322	0.000

Problem 2515	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	169	169	89	153	310	155	0	235	-1
normalized size	1	1.00	0.53	0.91	1.83	0.92	0.00	1.39	-0.01
time (sec)	N/A	0.117	0.065	0.012	1.255	0.632	0.000	0.350	0.000

Problem 2516	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	83	178	214	117	0	68	-1
normalized size	1	1.00	0.72	1.55	1.86	1.02	0.00	0.59	-0.01
time (sec)	N/A	0.057	0.073	0.014	1.159	0.587	0.000	0.231	0.000

Problem 2517	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	92	92	67	161	197	112	0	63	-1
normalized size	1	1.00	0.73	1.75	2.14	1.22	0.00	0.68	-0.01
time (sec)	N/A	0.042	0.059	0.008	1.235	0.571	0.000	0.464	0.000

Problem 2518	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	54	54	33	38	76	51	0	28	48
normalized size	1	1.00	0.61	0.70	1.41	0.94	0.00	0.52	0.89
time (sec)	N/A	0.022	0.032	0.003	0.505	0.684	0.000	0.218	0.116

Problem 2519	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	31	38	59	51	0	28	48
normalized size	1	1.00	0.66	0.81	1.26	1.09	0.00	0.60	1.02
time (sec)	N/A	0.016	0.058	0.005	0.525	0.651	0.000	0.240	2.437

Problem 2520	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	47	47	31	38	59	51	0	29	36
normalized size	1	1.00	0.66	0.81	1.26	1.09	0.00	0.62	0.77
time (sec)	N/A	0.010	0.043	0.004	0.445	0.789	0.000	0.206	2.424

Problem 2521	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	72	144	101	125	0	102	-1
normalized size	1	1.00	0.85	1.69	1.19	1.47	0.00	1.20	-0.01
time (sec)	N/A	0.055	0.054	0.009	1.451	0.635	0.000	0.280	0.000

Problem 2522	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	B	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	124	124	113	127	135	140	0	235	-1
normalized size	1	1.00	0.91	1.02	1.09	1.13	0.00	1.90	-0.01
time (sec)	N/A	0.073	0.057	0.012	1.314	0.828	0.000	0.393	0.000

Problem 2523	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	147	147	143	148	186	155	0	234	-1
normalized size	1	1.00	0.97	1.01	1.27	1.05	0.00	1.59	-0.01
time (sec)	N/A	0.095	0.078	0.012	1.242	0.826	0.000	0.321	0.000

Problem 2524	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	174	174	150	169	254	170	0	285	-1
normalized size	1	1.00	0.86	0.97	1.46	0.98	0.00	1.64	-0.01
time (sec)	N/A	0.116	0.113	0.013	1.274	0.733	0.000	0.335	0.000

Problem 2525	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F	A	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	35	35	35	32	41	50	0	52	-1
normalized size	1	1.00	1.00	0.91	1.17	1.43	0.00	1.49	-0.03
time (sec)	N/A	0.030	0.007	0.008	1.176	0.601	0.000	0.181	0.000

Problem 2526	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	44	116	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.83	2.19	0.70	0.70
time (sec)	N/A	0.016	0.014	0.005	0.543	0.632	3.784	0.157	3.028

Problem 2527	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	39	100	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.74	1.89	0.70	0.70
time (sec)	N/A	0.016	0.012	0.005	0.498	0.693	1.850	0.193	0.038

Problem 2528	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	34	46	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.64	0.87	0.70	0.70
time (sec)	N/A	0.020	0.012	0.004	0.551	0.569	13.957	0.209	0.037

Problem 2529	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	29	44	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.55	0.83	0.70	0.70
time (sec)	N/A	0.015	0.010	0.004	0.605	0.601	2.695	0.154	0.038

Problem 2530	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	24	46	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.45	0.87	0.70	0.70
time (sec)	N/A	0.016	0.012	0.004	0.486	0.591	41.281	0.159	0.035

Problem 2531	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	37	24	46	37	37
normalized size	1	1.00	0.53	0.47	0.70	0.45	0.87	0.70	0.70
time (sec)	N/A	0.016	0.012	0.003	0.514	0.605	19.150	0.158	0.039

Problem 2532	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	33	36	102	33	38
normalized size	1	1.00	0.53	0.47	0.62	0.68	1.92	0.62	0.72
time (sec)	N/A	0.016	0.012	0.003	0.576	0.509	0.660	0.199	0.047

Problem 2533	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	53	53	28	25	33	41	158	33	24
normalized size	1	1.00	0.53	0.47	0.62	0.77	2.98	0.62	0.45
time (sec)	N/A	0.015	0.012	0.004	0.456	0.688	1.373	0.210	2.371

Problem 2534	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	54	146	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.68	1.85	0.70	0.70
time (sec)	N/A	0.024	0.017	0.007	0.526	0.676	5.885	0.165	2.390

Problem 2535	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	49	70	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.62	0.89	0.70	0.70
time (sec)	N/A	0.023	0.016	0.007	0.481	0.881	29.675	0.163	0.029

Problem 2536	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	44	70	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.56	0.89	0.70	0.70
time (sec)	N/A	0.023	0.015	0.006	0.465	0.854	23.804	0.176	0.027

Problem 2537	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	39	70	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.49	0.89	0.70	0.70
time (sec)	N/A	0.023	0.014	0.005	0.642	0.553	3.560	0.156	0.031

Problem 2538	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	34	70	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.43	0.89	0.70	0.70
time (sec)	N/A	0.023	0.016	0.005	0.518	0.520	85.806	0.167	0.027

Problem 2539	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	55	34	68	55	55
normalized size	1	1.00	0.48	0.44	0.70	0.43	0.86	0.70	0.70
time (sec)	N/A	0.033	0.015	0.006	0.525	0.674	35.236	0.167	0.029

Problem 2540	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	51	46	70	51	50
normalized size	1	1.00	0.48	0.44	0.65	0.58	0.89	0.65	0.63
time (sec)	N/A	0.026	0.015	0.006	0.626	0.530	43.540	0.176	0.028

Problem 2541	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	B	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	79	79	38	35	51	51	238	51	50
normalized size	1	1.00	0.48	0.44	0.65	0.65	3.01	0.65	0.63
time (sec)	N/A	0.024	0.015	0.005	0.656	0.721	1.563	0.170	0.041

Problem 2542	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	64	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.61	0.90	0.70	0.70
time (sec)	N/A	0.035	0.021	0.005	0.711	0.621	49.990	0.176	0.035

Problem 2543	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	59	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.56	0.90	0.70	0.70
time (sec)	N/A	0.038	0.019	0.006	0.788	0.638	42.098	0.172	0.034

Problem 2544	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	54	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.51	0.90	0.70	0.70
time (sec)	N/A	0.033	0.019	0.005	0.525	0.546	35.463	0.172	0.035

Problem 2545	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	49	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.47	0.90	0.70	0.70
time (sec)	N/A	0.034	0.017	0.005	0.671	0.940	4.017	0.211	0.035

Problem 2546	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	44	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.42	0.90	0.70	0.70
time (sec)	N/A	0.030	0.020	0.006	0.514	0.709	124.644	0.165	0.035

Problem 2547	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	73	44	94	73	73
normalized size	1	1.00	0.46	0.43	0.70	0.42	0.90	0.70	0.70
time (sec)	N/A	0.031	0.018	0.007	0.505	0.708	46.036	0.167	0.036

Problem 2548	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	69	56	94	69	68
normalized size	1	1.00	0.46	0.43	0.66	0.53	0.90	0.66	0.65
time (sec)	N/A	0.030	0.019	0.006	0.559	0.693	56.094	0.176	0.032

Problem 2549	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	105	48	45	69	61	94	69	68
normalized size	1	1.00	0.46	0.43	0.66	0.58	0.90	0.66	0.65
time (sec)	N/A	0.028	0.019	0.005	0.489	0.668	62.144	0.182	0.030

Problem 2550	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	94	94	70	80	97	86	138	101	71
normalized size	1	1.00	0.74	0.85	1.03	0.91	1.47	1.07	0.76
time (sec)	N/A	0.099	0.068	0.020	1.219	0.482	113.477	0.216	2.383

Problem 2551	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	64	71	88	81	126	92	62
normalized size	1	1.00	0.79	0.88	1.09	1.00	1.56	1.14	0.77
time (sec)	N/A	0.079	0.067	0.012	1.126	0.553	83.328	0.175	0.058

Problem 2552	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	56	62	79	74	114	83	53
normalized size	1	1.00	0.82	0.91	1.16	1.09	1.68	1.22	0.78
time (sec)	N/A	0.060	0.029	0.012	1.200	0.636	59.215	0.179	0.072

Problem 2553	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	53	70	71	102	74	38
normalized size	1	1.00	1.00	0.96	1.27	1.29	1.85	1.35	0.69
time (sec)	N/A	0.046	0.015	0.012	1.296	0.574	8.205	0.171	0.065

Problem 2554	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	B	A	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	38	38	38	44	61	56	95	65	29
normalized size	1	1.00	1.00	1.16	1.61	1.47	2.50	1.71	0.76
time (sec)	N/A	0.030	0.013	0.010	1.184	0.573	82.714	0.167	0.059

Problem 2555	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	55	55	55	53	70	95	102	74	38
normalized size	1	1.00	1.00	0.96	1.27	1.73	1.85	1.35	0.69
time (sec)	N/A	0.045	0.037	0.013	1.373	0.526	76.667	0.184	2.371

Problem 2556	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	68	68	65	62	75	120	114	79	43
normalized size	1	1.00	0.96	0.91	1.10	1.76	1.68	1.16	0.63
time (sec)	N/A	0.062	0.084	0.014	1.205	0.816	105.817	0.173	0.072

Problem 2557	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	63	71	84	145	126	88	52
normalized size	1	1.00	0.78	0.88	1.04	1.79	1.56	1.09	0.64
time (sec)	N/A	0.078	0.094	0.015	1.035	0.853	94.034	0.170	0.072

Problem 2558	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	81	104	116	129	0	120	90
normalized size	1	1.00	0.83	1.06	1.18	1.32	0.00	1.22	0.92
time (sec)	N/A	0.081	0.088	0.027	1.228	0.923	0.000	0.184	0.065

Problem 2559	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	81	81	92	95	107	124	0	111	81
normalized size	1	1.00	1.14	1.17	1.32	1.53	0.00	1.37	1.00
time (sec)	N/A	0.071	0.048	0.020	1.386	0.754	0.000	0.305	0.078

Problem 2560	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	70	86	98	119	0	102	66
normalized size	1	1.00	0.97	1.19	1.36	1.65	0.00	1.42	0.92
time (sec)	N/A	0.046	0.054	0.019	1.366	0.863	0.000	0.175	2.409

Problem 2561	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	A	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	66	66	66	86	98	113	212	102	66
normalized size	1	1.00	1.00	1.30	1.48	1.71	3.21	1.55	1.00
time (sec)	N/A	0.040	0.056	0.019	1.121	0.902	122.219	0.175	2.401

Problem 2562	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	72	72	72	86	98	119	0	102	66
normalized size	1	1.00	1.00	1.19	1.36	1.65	0.00	1.42	0.92
time (sec)	N/A	0.045	0.059	0.020	1.208	0.707	0.000	0.174	0.067

Problem 2563	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	85	85	85	95	107	144	0	111	72
normalized size	1	1.00	1.00	1.12	1.26	1.69	0.00	1.31	0.85
time (sec)	N/A	0.061	0.078	0.023	1.227	0.632	0.000	0.175	0.072

Problem 2564	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	98	98	94	104	116	169	0	116	82
normalized size	1	1.00	0.96	1.06	1.18	1.72	0.00	1.18	0.84
time (sec)	N/A	0.080	0.111	0.023	1.173	0.675	0.000	0.178	0.071

Problem 2565	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	111	111	86	113	125	194	0	125	91
normalized size	1	1.00	0.77	1.02	1.13	1.75	0.00	1.13	0.82
time (sec)	N/A	0.098	0.198	0.023	1.313	0.536	0.000	0.197	0.075

Problem 2566	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	A	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	86	133	143	175	0	129	116
normalized size	1	1.00	0.75	1.16	1.24	1.52	0.00	1.12	1.01
time (sec)	N/A	0.082	0.118	0.022	1.381	0.660	0.000	0.200	2.413

Problem 2567	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	80	124	134	169	0	120	101
normalized size	1	1.00	0.80	1.24	1.34	1.69	0.00	1.20	1.01
time (sec)	N/A	0.063	0.082	0.020	1.291	0.617	0.000	0.186	2.424

Problem 2568	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	82	124	134	170	0	120	101
normalized size	1	1.00	0.80	1.22	1.31	1.67	0.00	1.18	0.99
time (sec)	N/A	0.059	0.081	0.020	1.358	0.617	0.000	0.191	0.069

Problem 2569	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	100	100	80	124	133	170	0	119	101
normalized size	1	1.00	0.80	1.24	1.33	1.70	0.00	1.19	1.01
time (sec)	N/A	0.067	0.077	0.020	1.312	0.729	0.000	0.182	0.071

Problem 2570	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	81	124	134	170	0	120	101
normalized size	1	1.00	0.79	1.22	1.31	1.67	0.00	1.18	0.99
time (sec)	N/A	0.062	0.149	0.021	1.055	0.616	0.000	0.191	2.392

Problem 2571	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	102	102	81	124	134	170	0	120	101
normalized size	1	1.00	0.79	1.22	1.31	1.67	0.00	1.18	0.99
time (sec)	N/A	0.063	0.097	0.021	0.961	0.671	0.000	0.176	2.401

Problem 2572	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	115	115	86	133	143	195	0	129	109
normalized size	1	1.00	0.75	1.16	1.24	1.70	0.00	1.12	0.95
time (sec)	N/A	0.085	0.141	0.021	0.994	0.684	0.000	0.184	2.402

Problem 2573	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	128	128	91	142	152	220	0	134	118
normalized size	1	1.00	0.71	1.11	1.19	1.72	0.00	1.05	0.92
time (sec)	N/A	0.096	0.286	0.023	0.982	0.828	0.000	0.182	0.080

Problem 2574	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	A	B	F(-1)	A	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	121	151	161	245	0	143	127
normalized size	1	1.00	0.86	1.07	1.14	1.74	0.00	1.01	0.90
time (sec)	N/A	0.116	0.176	0.027	0.976	0.594	0.000	0.190	0.079

Problem 2575	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	A	F	A	F	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	105	115	141	111	0	52	0	313	143
normalized size	1	1.10	1.34	1.06	0.00	0.50	0.00	2.98	1.36
time (sec)	N/A	0.243	0.273	0.334	0.000	0.561	0.000	1.012	3.274

Problem 2576	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	208	156	0	0	0	0	-1
normalized size	1	1.00	0.93	0.70	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.157	0.370	0.115	0.000	0.685	0.000	0.000	0.000

Problem 2577	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	203	151	0	0	0	0	-1
normalized size	1	1.00	1.03	0.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.133	0.324	0.012	0.000	0.680	0.000	0.000	0.000

Problem 2578	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	198	146	0	0	0	0	-1
normalized size	1	1.00	1.16	0.86	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.124	0.296	0.010	0.000	0.845	0.000	0.000	0.000

Problem 2579	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	193	141	0	0	0	0	-1
normalized size	1	1.00	1.35	0.99	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.081	0.309	0.023	0.000	0.900	0.000	0.000	0.000

Problem 2580	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	185	136	0	0	0	0	-1
normalized size	1	1.00	1.31	0.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.083	0.336	0.040	0.000	0.722	0.000	0.000	0.000

Problem 2581	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	182	203	0	0	0	0	-1
normalized size	1	1.00	1.27	1.42	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.298	0.036	0.000	0.746	0.000	0.000	0.000

Problem 2582	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	182	296	0	0	0	0	-1
normalized size	1	1.00	1.07	1.74	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.108	0.295	0.039	0.000	0.688	0.000	0.000	0.000

Problem 2583	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	217	389	0	0	0	0	-1
normalized size	1	1.00	1.10	1.97	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.136	0.383	0.038	0.000	0.583	0.000	0.000	0.000

Problem 2584	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	218	166	0	0	0	0	-1
normalized size	1	1.00	0.85	0.65	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.193	0.349	0.032	0.000	0.754	0.000	0.000	0.000

Problem 2585	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	213	161	0	0	0	0	-1
normalized size	1	1.00	0.93	0.70	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.163	0.332	0.012	0.000	0.701	0.000	0.000	0.000

Problem 2586	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	208	156	0	0	0	0	-1
normalized size	1	1.00	1.03	0.77	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.130	0.332	0.013	0.000	0.708	0.000	0.000	0.000

Problem 2587	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	203	151	0	0	0	0	-1
normalized size	1	1.00	1.16	0.86	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.105	0.323	0.013	0.000	0.579	0.000	0.000	0.000

Problem 2588	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	192	146	0	0	0	0	-1
normalized size	1	1.00	1.11	0.84	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	0.334	0.020	0.000	0.765	0.000	0.000	0.000

Problem 2589	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	195	213	0	0	0	0	-1
normalized size	1	1.00	1.11	1.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.314	0.022	0.000	0.699	0.000	0.000	0.000

Problem 2590	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	192	301	0	0	0	0	-1
normalized size	1	1.00	1.10	1.72	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.342	0.022	0.000	0.558	0.000	0.000	0.000

Problem 2591	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	192	389	0	0	0	0	-1
normalized size	1	1.00	1.10	2.22	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	0.330	0.022	0.000	0.633	0.000	0.000	0.000

Problem 2592	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	192	482	0	0	0	0	-1
normalized size	1	1.00	0.95	2.39	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.127	0.435	0.041	0.000	0.826	0.000	0.000	0.000

Problem 2593	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	227	575	0	0	0	0	-1
normalized size	1	1.00	0.99	2.51	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.152	0.470	0.043	0.000	0.639	0.000	0.000	0.000

Problem 2594	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	288	288	228	176	0	0	0	0	-1
normalized size	1	1.00	0.79	0.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.216	0.377	0.030	0.000	0.606	0.000	0.000	0.000

Problem 2595	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	223	171	0	0	0	0	-1
normalized size	1	1.00	0.85	0.66	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.203	0.366	0.013	0.000	0.702	0.000	0.000	0.000

Problem 2596	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	218	166	0	0	0	0	-1
normalized size	1	1.00	0.93	0.71	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.155	0.363	0.012	0.000	0.785	0.000	0.000	0.000

Problem 2597	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	213	161	0	0	0	0	-1
normalized size	1	1.00	1.03	0.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.127	0.331	0.012	0.000	0.623	0.000	0.000	0.000

Problem 2598	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	205	156	0	0	0	0	-1
normalized size	1	1.00	1.00	0.76	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.129	0.401	0.019	0.000	0.651	0.000	0.000	0.000

Problem 2599	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	205	205	202	223	0	0	0	0	-1
normalized size	1	1.00	0.99	1.09	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.130	0.315	0.021	0.000	0.692	0.000	0.000	0.000

Problem 2600	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	202	311	0	0	0	0	-1
normalized size	1	1.00	0.98	1.50	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.132	0.430	0.022	0.000	0.657	0.000	0.000	0.000

Problem 2601	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	202	399	0	0	0	0	-1
normalized size	1	1.00	0.98	1.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.130	0.391	0.023	0.000	0.673	0.000	0.000	0.000

Problem 2602	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	227	487	0	0	0	0	-1
normalized size	1	1.00	1.10	2.35	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.129	0.436	0.027	0.000	0.600	0.000	0.000	0.000

Problem 2603	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	207	207	227	575	0	0	0	0	-1
normalized size	1	1.00	1.10	2.78	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.133	0.454	0.026	0.000	0.610	0.000	0.000	0.000

Problem 2604	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	234	234	232	668	0	0	0	0	-1
normalized size	1	1.00	0.99	2.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.162	0.510	0.044	0.000	0.818	0.000	0.000	0.000

Problem 2605	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	261	261	237	761	0	0	0	0	-1
normalized size	1	1.00	0.91	2.92	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.188	0.528	0.047	0.000	0.618	0.000	0.000	0.000

Problem 2606	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	198	146	0	0	0	0	-1
normalized size	1	1.00	1.03	0.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.130	0.316	0.032	0.000	0.614	0.000	0.000	0.000

Problem 2607	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	193	141	0	0	0	0	-1
normalized size	1	1.00	1.17	0.85	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.100	0.287	0.017	0.000	0.655	0.000	0.000	0.000

Problem 2608	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	138	138	188	136	0	0	0	0	-1
normalized size	1	1.00	1.36	0.99	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.078	0.306	0.015	0.000	0.643	0.000	0.000	0.000

Problem 2609	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	107	107	177	65	0	0	0	0	-1
normalized size	1	1.00	1.65	0.61	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.055	0.398	0.019	0.000	0.639	0.000	0.000	0.000

Problem 2610	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	136	136	104	131	0	0	0	0	-1
normalized size	1	1.00	0.76	0.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.081	0.171	0.023	0.000	0.722	0.000	0.000	0.000

Problem 2611	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	165	165	183	203	0	0	0	0	-1
normalized size	1	1.00	1.11	1.23	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.308	0.024	0.000	0.635	0.000	0.000	0.000

Problem 2612	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	192	192	182	296	0	0	0	0	-1
normalized size	1	1.00	0.95	1.54	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.132	0.292	0.025	0.000	0.611	0.000	0.000	0.000

Problem 2613	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	192	141	0	0	0	0	-1
normalized size	1	1.00	0.97	0.72	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.128	0.333	0.054	0.000	0.810	0.000	0.000	0.000

Problem 2614	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	187	136	0	0	0	0	-1
normalized size	1	1.00	1.10	0.80	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.102	0.323	0.023	0.000	0.775	0.000	0.000	0.000

Problem 2615	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	143	143	183	131	0	0	0	0	-1
normalized size	1	1.00	1.28	0.92	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.078	0.328	0.022	0.000	0.610	0.000	0.000	0.000

Problem 2616	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	137	137	178	131	0	0	0	0	-1
normalized size	1	1.00	1.30	0.96	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.080	0.317	0.023	0.000	0.788	0.000	0.000	0.000

Problem 2617	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	141	141	178	131	0	0	0	0	-1
normalized size	1	1.00	1.26	0.93	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.085	0.311	0.024	0.000	0.731	0.000	0.000	0.000

Problem 2618	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	170	170	172	131	0	0	0	0	-1
normalized size	1	1.00	1.01	0.77	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.111	0.315	0.026	0.000	0.722	0.000	0.000	0.000

Problem 2619	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	197	197	177	203	0	0	0	0	-1
normalized size	1	1.00	0.90	1.03	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.130	0.338	0.031	0.000	0.832	0.000	0.000	0.000

Problem 2620	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	224	224	182	296	0	0	0	0	-1
normalized size	1	1.00	0.81	1.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.155	0.375	0.029	0.000	0.543	0.000	0.000	0.000

Problem 2621	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	220	325	0	0	0	0	-1
normalized size	1	1.00	1.09	1.61	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.129	0.482	0.055	0.000	0.768	0.000	0.000	0.000

Problem 2622	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	196	308	0	0	0	0	-1
normalized size	1	1.00	1.12	1.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.108	0.354	0.027	0.000	0.631	0.000	0.000	0.000

Problem 2623	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	196	308	0	0	0	0	-1
normalized size	1	1.00	1.12	1.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.104	0.344	0.028	0.000	0.557	0.000	0.000	0.000

Problem 2624	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	196	308	0	0	0	0	-1
normalized size	1	1.00	1.12	1.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.107	0.347	0.028	0.000	0.594	0.000	0.000	0.000

Problem 2625	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	173	173	196	308	0	0	0	0	-1
normalized size	1	1.00	1.13	1.78	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.103	0.343	0.026	0.000	0.670	0.000	0.000	0.000

Problem 2626	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	175	175	196	308	0	0	0	0	-1
normalized size	1	1.00	1.12	1.76	0.00	0.00	0.00	0.00	-0.01
time (sec)	N/A	0.108	0.334	0.027	0.000	0.743	0.000	0.000	0.000

Problem 2627	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	A	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	202	202	215	308	0	0	0	0	-1
normalized size	1	1.00	1.06	1.52	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.131	0.383	0.031	0.000	0.708	0.000	0.000	0.000

Problem 2628	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	229	229	222	401	0	0	0	0	-1
normalized size	1	1.00	0.97	1.75	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.157	0.525	0.031	0.000	0.668	0.000	0.000	0.000

Problem 2629	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	256	256	229	494	0	0	0	0	-1
normalized size	1	1.00	0.89	1.93	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.189	0.509	0.031	0.000	0.765	0.000	0.000	0.000

Problem 2630	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	545	545	978	7523	0	0	0	0	-1
normalized size	1	1.00	1.79	13.80	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.784	10.583	0.152	0.000	0.808	0.000	0.000	0.000

Problem 2631	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	452	452	653	3804	0	0	0	0	-1
normalized size	1	1.00	1.44	8.42	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.395	7.125	0.043	0.000	0.714	0.000	0.000	0.000

Problem 2632	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	393	393	814	1014	0	0	0	0	-1
normalized size	1	1.00	2.07	2.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.213	5.203	0.050	0.000	0.713	0.000	0.000	0.000

Problem 2633	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	550	3388	0	0	0	0	-1
normalized size	1	1.00	1.20	7.37	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.343	4.503	0.084	0.000	0.753	0.000	0.000	0.000

Problem 2634	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	591	587	992	11733	0	0	0	0	-1
normalized size	1	0.99	1.68	19.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.624	9.681	0.121	0.000	0.649	0.000	0.000	0.000

Problem 2635	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	678	678	1287	10385	0	0	0	0	-1
normalized size	1	1.00	1.90	15.32	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	1.031	12.428	0.131	0.000	0.753	0.000	0.000	0.000

Problem 2636	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	530	530	932	5490	0	0	0	0	-1
normalized size	1	1.00	1.76	10.36	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.509	9.704	0.092	0.000	0.737	0.000	0.000	0.000

Problem 2637	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	460	460	962	3171	0	0	0	0	-1
normalized size	1	1.00	2.09	6.89	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.384	9.045	0.089	0.000	1.031	0.000	0.000	0.000

Problem 2638	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	528	528	893	5059	0	0	0	0	-1
normalized size	1	1.00	1.69	9.58	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.398	9.004	0.098	0.000	0.844	0.000	0.000	0.000

Problem 2639	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	C	B	F	F	F(-1)	F(-2)	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	705	705	1267	8357	0	0	0	0	-1
normalized size	1	1.00	1.80	11.85	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.847	11.647	0.179	0.000	0.953	0.000	0.000	0.000

Problem 2640	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	B	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	594	591	4291	8232	2662	5919	0	14376	6425
normalized size	1	0.99	7.22	13.86	4.48	9.96	0.00	24.20	10.82
time (sec)	N/A	0.687	6.699	0.051	0.899	1.055	0.000	0.821	5.848

Problem 2641	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	F(-1)	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	333	330	633	2557	1118	2156	0	4940	2307
normalized size	1	0.99	1.90	7.68	3.36	6.47	0.00	14.83	6.93
time (sec)	N/A	0.351	1.454	0.020	0.658	1.118	0.000	0.336	3.802

Problem 2642	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	B	B	B	A	B	B
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	153	151	181	498	352	538	5930	1162	602
normalized size	1	0.99	1.18	3.25	2.30	3.52	38.76	7.59	3.93
time (sec)	N/A	0.109	0.339	0.007	0.527	0.917	5.252	0.224	2.971

Problem 2643	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	197	0	0	0	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.459	0.402	0.203	0.000	0.880	0.000	0.000	0.000

Problem 2644	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	538	536	452	0	0	0	0	0	-1
normalized size	1	1.00	0.84	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	3.494	5.673	0.120	0.000	0.950	0.000	0.000	0.000

Problem 2645	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	212	212	197	0	0	0	0	0	-1
normalized size	1	1.00	0.93	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.309	0.340	0.121	0.000	0.968	0.000	0.000	0.000

Problem 2646	Optimal	Rubi	Mathematica	Maple	Maxima	Fricas	Sympy	Giac	Mupad
grade	A	A	A	F	F	F	F(-1)	F	F
verified	N/A	Yes	Yes	TBD	TBD	TBD	TBD	TBD	TBD
size	349	349	311	0	0	0	0	0	-1
normalized size	1	1.00	0.89	0.00	0.00	0.00	0.00	0.00	-0.00
time (sec)	N/A	0.266	0.625	0.129	0.000	1.076	0.000	0.000	0.000

2.3 Detailed conclusion table specific for Rubi results

The following table is specific to Rubi. It gives additional statistics for each integral. the column **steps** is the number of steps used by Rubi to obtain the antiderivative. The **rules** column is the number of unique rules used. The **integrand size** column is the leaf size of the integrand. Finally the ratio $\frac{\text{number of rules}}{\text{integrand size}}$ is given. The larger this ratio is, the harder the integral was to solve. In this test, problem number [420] had the largest ratio of [.4500]

Table 2.1: Rubi specific breakdown of results for each integral

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1	A	2	1	1.00	18	0.056
2	A	2	1	1.00	18	0.056
3	A	2	1	1.00	18	0.056
4	A	2	1	1.00	16	0.062
5	A	2	1	1.00	15	0.067
6	A	2	1	1.00	18	0.056
7	A	2	1	1.00	18	0.056
8	A	2	1	1.00	18	0.056
9	A	2	1	1.00	18	0.056
10	A	2	1	1.00	18	0.056
11	A	2	1	1.00	18	0.056
12	A	2	1	1.00	18	0.056
13	A	2	1	1.00	18	0.056
14	A	2	1	1.00	20	0.050
15	A	2	1	1.00	20	0.050
16	A	2	1	1.00	20	0.050
17	A	2	1	1.00	18	0.056
18	A	2	1	1.00	17	0.059
19	A	2	1	1.00	20	0.050
20	A	2	1	1.00	20	0.050

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
21	A	2	1	1.00	20	0.050
22	A	2	1	1.00	20	0.050
23	A	2	1	1.00	20	0.050
24	A	2	1	1.00	20	0.050
25	A	2	1	1.00	20	0.050
26	A	2	1	1.00	20	0.050
27	A	2	1	1.00	20	0.050
28	A	2	1	1.00	20	0.050
29	A	2	1	1.00	20	0.050
30	A	2	1	1.00	18	0.056
31	A	2	1	1.00	17	0.059
32	A	2	1	1.00	20	0.050
33	A	2	1	1.00	20	0.050
34	A	2	1	1.00	20	0.050
35	A	2	1	1.00	20	0.050
36	A	2	1	1.00	20	0.050
37	A	2	1	1.00	20	0.050
38	A	2	1	1.00	20	0.050
39	A	2	1	1.00	20	0.050
40	A	2	1	1.00	20	0.050
41	A	2	1	1.00	20	0.050
42	A	2	1	1.00	20	0.050
43	A	2	1	1.00	20	0.050
44	A	2	1	1.00	20	0.050
45	A	2	1	1.00	20	0.050
46	A	2	1	1.00	18	0.056
47	A	2	1	1.00	17	0.059
48	A	2	1	1.00	20	0.050
49	A	2	1	1.00	20	0.050
50	A	2	1	1.00	20	0.050
51	A	2	1	1.00	20	0.050
52	A	2	1	1.00	20	0.050
53	A	2	1	1.00	20	0.050
54	A	2	1	1.00	20	0.050
55	A	2	1	1.00	18	0.056
56	A	2	1	1.00	17	0.059

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
57	A	2	1	1.00	20	0.050
58	A	2	1	1.00	20	0.050
59	A	2	1	1.00	20	0.050
60	A	2	1	1.00	20	0.050
61	A	2	1	1.00	20	0.050
62	A	2	1	1.00	20	0.050
63	A	2	1	1.00	20	0.050
64	A	2	1	1.00	18	0.056
65	A	2	1	1.00	17	0.059
66	A	2	1	1.00	20	0.050
67	A	7	6	1.00	22	0.273
68	A	6	6	1.00	22	0.273
69	A	4	4	1.00	20	0.200
70	A	4	4	1.00	19	0.210
71	A	4	4	1.00	22	0.182
72	A	4	4	1.00	22	0.182
73	A	4	4	1.00	22	0.182
74	A	2	2	1.00	22	0.091
75	A	3	3	1.00	22	0.136
76	A	4	3	1.00	22	0.136
77	A	5	3	1.00	22	0.136
78	A	6	3	1.00	22	0.136
79	A	8	6	1.00	22	0.273
80	A	7	6	1.00	22	0.273
81	A	5	4	1.00	20	0.200
82	A	5	4	1.00	19	0.210
83	A	5	5	1.00	22	0.227
84	A	5	5	1.00	22	0.227
85	A	5	4	1.00	22	0.182
86	A	5	5	1.00	22	0.227
87	A	5	4	1.00	22	0.182
88	A	2	2	1.00	22	0.091
89	A	3	3	1.00	22	0.136
90	A	4	3	1.00	22	0.136
91	A	5	3	1.00	22	0.136
92	A	6	3	1.00	22	0.136

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
93	A	9	6	1.00	22	0.273
94	A	8	6	1.00	22	0.273
95	A	6	4	1.00	20	0.200
96	A	6	4	1.00	19	0.210
97	A	6	5	1.00	22	0.227
98	A	6	5	1.00	22	0.227
99	A	6	5	1.00	22	0.227
100	A	6	6	1.00	22	0.273
101	A	6	5	1.00	22	0.227
102	A	6	5	1.00	22	0.227
103	A	6	4	1.00	22	0.182
104	A	2	2	1.00	22	0.091
105	A	3	3	1.00	22	0.136
106	A	4	3	1.00	22	0.136
107	A	5	3	1.00	22	0.136
108	A	6	3	1.00	22	0.136
109	A	7	5	1.00	22	0.227
110	A	6	5	1.00	22	0.227
111	A	5	5	1.00	22	0.227
112	A	3	3	1.00	20	0.150
113	A	3	3	1.00	19	0.158
114	A	3	3	1.00	22	0.136
115	A	2	2	1.00	22	0.091
116	A	3	3	1.00	22	0.136
117	A	4	3	1.00	22	0.136
118	A	5	3	1.00	22	0.136
119	A	6	3	1.00	22	0.136
120	A	6	5	1.00	22	0.227
121	A	5	5	1.00	22	0.227
122	A	4	4	1.00	22	0.182
123	A	3	3	1.00	20	0.150
124	A	1	1	1.00	19	0.053
125	A	2	2	1.00	22	0.091
126	A	3	3	1.00	22	0.136
127	A	4	3	1.00	22	0.136
128	A	5	3	1.00	22	0.136

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
129	A	6	6	1.00	22	0.273
130	A	5	5	1.00	22	0.227
131	A	4	4	1.00	22	0.182
132	A	2	2	1.00	22	0.091
133	A	2	2	1.00	20	0.100
134	A	2	2	1.00	19	0.105
135	A	3	3	1.00	22	0.136
136	A	4	4	1.00	22	0.182
137	A	5	4	1.00	22	0.182
138	A	3	3	1.00	19	0.158
139	A	4	3	1.00	19	0.158
140	A	2	1	1.00	20	0.050
141	A	2	1	1.00	20	0.050
142	A	2	1	1.00	20	0.050
143	A	2	1	1.00	20	0.050
144	A	2	1	1.00	20	0.050
145	A	2	1	1.00	20	0.050
146	A	2	1	1.00	20	0.050
147	A	2	1	1.00	20	0.050
148	A	2	1	1.00	20	0.050
149	A	2	1	1.00	22	0.045
150	A	2	1	1.00	22	0.045
151	A	2	1	1.00	22	0.045
152	A	2	1	1.00	22	0.045
153	A	2	1	1.00	22	0.045
154	A	2	1	1.00	22	0.045
155	A	2	1	1.00	22	0.045
156	A	2	1	1.00	22	0.045
157	A	2	1	1.00	22	0.045
158	A	2	1	1.00	22	0.045
159	A	2	1	1.00	22	0.045
160	A	2	1	1.00	22	0.045
161	A	2	1	1.00	22	0.045
162	A	2	1	1.00	22	0.045
163	A	2	1	1.00	22	0.045
164	A	2	1	1.00	22	0.045

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
165	A	2	1	1.00	22	0.045
166	A	2	1	1.00	22	0.045
167	A	2	1	1.00	22	0.045
168	A	7	5	1.00	22	0.227
169	A	6	5	1.00	22	0.227
170	A	5	5	1.00	22	0.227
171	A	4	4	1.00	22	0.182
172	A	4	4	1.00	22	0.182
173	A	5	5	1.00	22	0.227
174	A	6	5	1.00	22	0.227
175	A	7	5	1.00	22	0.227
176	A	8	5	1.00	22	0.227
177	A	7	5	1.00	22	0.227
178	A	6	5	1.00	22	0.227
179	A	5	5	1.00	22	0.227
180	A	4	4	1.00	22	0.182
181	A	5	5	1.00	22	0.227
182	A	6	5	1.00	22	0.227
183	A	7	5	1.00	22	0.227
184	A	8	5	1.00	22	0.227
185	A	8	6	1.00	22	0.273
186	A	7	6	1.00	22	0.273
187	A	6	6	1.00	22	0.273
188	A	5	5	1.00	22	0.227
189	A	5	5	1.00	22	0.227
190	A	6	5	1.00	22	0.227
191	A	7	5	1.00	22	0.227
192	A	8	5	1.00	22	0.227
193	A	9	5	1.00	22	0.227
194	A	6	3	1.00	24	0.125
195	A	5	3	1.00	24	0.125
196	A	4	3	1.00	24	0.125
197	A	3	3	1.00	24	0.125
198	A	2	2	1.00	24	0.083
199	A	4	4	1.00	24	0.167
200	A	4	4	1.00	24	0.167

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
201	A	4	4	1.00	24	0.167
202	A	5	5	1.00	24	0.208
203	A	6	3	1.00	24	0.125
204	A	5	3	1.00	24	0.125
205	A	4	3	1.00	24	0.125
206	A	3	3	1.00	24	0.125
207	A	2	2	1.00	24	0.083
208	A	5	4	1.00	24	0.167
209	A	5	4	1.00	24	0.167
210	A	5	5	1.00	24	0.208
211	A	5	4	1.00	24	0.167
212	A	6	5	1.00	24	0.208
213	A	7	5	1.00	24	0.208
214	A	6	3	1.00	24	0.125
215	A	5	3	1.00	24	0.125
216	A	4	3	1.00	24	0.125
217	A	3	3	1.00	24	0.125
218	A	2	2	1.00	24	0.083
219	A	6	4	1.00	24	0.167
220	A	6	4	1.00	24	0.167
221	A	6	5	1.00	24	0.208
222	A	6	5	1.00	24	0.208
223	A	6	4	1.00	24	0.167
224	A	7	5	1.00	24	0.208
225	A	5	3	1.00	24	0.125
226	A	4	3	1.00	24	0.125
227	A	3	3	1.00	24	0.125
228	A	2	2	1.00	24	0.083
229	A	3	3	1.00	26	0.115
230	A	3	3	1.00	24	0.125
231	A	4	4	1.00	24	0.167
232	A	5	4	1.00	24	0.167
233	A	5	3	1.00	24	0.125
234	A	4	3	1.00	24	0.125
235	A	3	3	1.00	24	0.125
236	A	2	2	1.00	24	0.083

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
237	A	3	3	1.00	24	0.125
238	A	4	4	1.00	24	0.167
239	A	5	5	1.00	24	0.208
240	A	6	5	1.00	24	0.208
241	A	7	5	1.00	24	0.208
242	A	5	3	1.00	24	0.125
243	A	4	3	1.00	24	0.125
244	A	3	3	1.00	24	0.125
245	A	2	2	1.00	24	0.083
246	A	4	4	1.00	24	0.167
247	A	5	5	1.00	24	0.208
248	A	6	5	1.00	24	0.208
249	A	7	5	1.00	24	0.208
250	A	1	1	1.00	25	0.040
251	A	2	1	1.00	16	0.062
252	A	2	1	1.00	16	0.062
253	A	2	1	1.00	14	0.071
254	A	2	1	1.00	13	0.077
255	A	2	1	1.00	16	0.062
256	A	2	1	1.00	16	0.062
257	A	2	1	1.00	16	0.062
258	A	2	1	1.00	18	0.056
259	A	2	1	1.00	18	0.056
260	A	2	1	1.00	16	0.062
261	A	3	2	1.00	15	0.133
262	A	2	1	1.00	18	0.056
263	A	2	1	1.00	18	0.056
264	A	2	1	1.00	18	0.056
265	A	2	1	1.00	18	0.056
266	A	2	1	1.00	18	0.056
267	A	2	1	1.00	16	0.062
268	A	3	2	1.00	15	0.133
269	A	2	1	1.00	18	0.056
270	A	2	1	1.00	18	0.056
271	A	2	1	1.00	18	0.056
272	A	2	1	1.00	18	0.056

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
273	A	2	1	1.00	18	0.056
274	A	2	1	1.00	16	0.062
275	A	3	2	1.00	15	0.133
276	A	2	1	1.00	18	0.056
277	A	2	1	1.00	18	0.056
278	A	2	1	1.00	18	0.056
279	A	5	4	1.00	18	0.222
280	A	5	4	1.00	18	0.222
281	A	5	4	1.00	18	0.222
282	A	4	4	1.00	16	0.250
283	A	3	3	1.00	15	0.200
284	A	5	4	1.00	18	0.222
285	A	5	4	1.00	18	0.222
286	A	5	4	1.00	18	0.222
287	A	5	4	1.00	18	0.222
288	A	3	3	1.00	16	0.188
289	A	6	5	1.00	18	0.278
290	A	5	5	1.00	18	0.278
291	A	4	4	1.00	18	0.222
292	A	2	2	1.00	16	0.125
293	A	2	2	1.00	15	0.133
294	A	6	5	1.00	18	0.278
295	A	6	5	1.00	18	0.278
296	A	6	5	1.00	18	0.278
297	A	5	3	1.00	23	0.130
298	A	5	3	1.00	23	0.130
299	A	5	3	1.00	23	0.130
300	A	4	3	1.00	21	0.143
301	A	3	2	1.00	20	0.100
302	A	2	1	1.00	23	0.043
303	A	2	1	1.00	23	0.043
304	A	2	1	1.00	23	0.043
305	A	2	1	1.00	23	0.043
306	A	6	4	1.00	23	0.174
307	A	5	4	1.00	23	0.174
308	A	4	3	1.00	23	0.130

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
309	A	2	2	1.00	21	0.095
310	A	2	2	1.00	20	0.100
311	A	3	2	1.00	23	0.087
312	A	3	2	1.00	23	0.087
313	A	3	2	1.00	23	0.087
314	A	7	5	1.00	20	0.250
315	A	6	5	1.00	20	0.250
316	A	5	5	1.00	20	0.250
317	A	4	4	1.00	18	0.222
318	A	4	4	1.00	17	0.235
319	A	7	7	1.00	20	0.350
320	A	7	7	1.00	20	0.350
321	A	7	7	1.00	20	0.350
322	A	5	5	1.00	20	0.250
323	A	6	6	1.00	20	0.300
324	A	7	6	1.00	20	0.300
325	A	8	6	1.00	20	0.300
326	A	8	5	1.00	20	0.250
327	A	7	5	1.00	20	0.250
328	A	6	5	1.00	20	0.250
329	A	5	4	1.00	18	0.222
330	A	5	4	1.00	17	0.235
331	A	8	7	1.00	20	0.350
332	A	8	8	1.00	20	0.400
333	A	8	7	1.00	20	0.350
334	A	8	8	1.00	20	0.400
335	A	8	7	1.00	20	0.350
336	A	6	5	1.00	20	0.250
337	A	7	6	1.00	20	0.300
338	A	8	6	1.00	20	0.300
339	A	9	5	1.00	20	0.250
340	A	8	5	1.00	20	0.250
341	A	7	5	1.00	20	0.250
342	A	6	4	1.00	18	0.222
343	A	6	4	1.00	17	0.235
344	A	9	7	1.00	20	0.350

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
345	A	9	8	1.00	20	0.400
346	A	9	8	1.00	20	0.400
347	A	9	7	1.00	20	0.350
348	A	9	8	1.00	20	0.400
349	A	9	8	1.00	20	0.400
350	A	9	7	1.00	20	0.350
351	A	7	5	1.00	20	0.250
352	A	8	6	1.00	20	0.300
353	A	9	6	1.00	20	0.300
354	A	6	4	1.00	20	0.200
355	A	5	4	1.00	20	0.200
356	A	4	4	1.00	20	0.200
357	A	3	3	1.00	18	0.167
358	A	3	3	1.00	17	0.176
359	A	6	6	1.00	20	0.300
360	A	4	4	1.00	20	0.200
361	A	5	5	1.00	20	0.250
362	A	6	5	1.00	20	0.250
363	A	7	5	1.00	20	0.250
364	A	8	5	1.00	20	0.250
365	A	5	5	1.00	20	0.250
366	A	4	4	1.00	20	0.200
367	A	4	4	1.00	20	0.200
368	A	3	3	1.00	18	0.167
369	A	1	1	1.00	17	0.059
370	A	5	5	1.00	20	0.250
371	A	5	5	1.00	20	0.250
372	A	6	6	1.00	20	0.300
373	A	7	6	1.00	20	0.300
374	A	5	4	1.00	20	0.200
375	A	4	4	1.00	20	0.200
376	A	2	2	1.00	20	0.100
377	A	2	2	0.94	18	0.111
378	A	2	2	1.00	17	0.118
379	A	6	5	1.00	20	0.250
380	A	6	5	1.00	20	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
381	A	7	6	1.00	20	0.300
382	A	3	3	1.00	17	0.176
383	A	4	3	1.00	17	0.176
384	A	2	1	1.00	18	0.056
385	A	2	1	1.00	18	0.056
386	A	2	1	1.00	18	0.056
387	A	2	1	1.00	18	0.056
388	A	2	1	1.00	18	0.056
389	A	2	1	1.00	18	0.056
390	A	2	1	1.00	18	0.056
391	A	2	1	1.00	18	0.056
392	A	2	1	1.00	18	0.056
393	A	2	1	1.00	20	0.050
394	A	2	1	1.00	20	0.050
395	A	2	1	1.00	20	0.050
396	A	2	1	1.00	20	0.050
397	A	2	1	1.00	20	0.050
398	A	2	1	1.00	20	0.050
399	A	2	1	1.00	20	0.050
400	A	2	1	1.00	20	0.050
401	A	2	1	1.00	20	0.050
402	A	2	1	1.00	20	0.050
403	A	2	1	1.00	20	0.050
404	A	2	1	1.00	20	0.050
405	A	2	1	1.00	20	0.050
406	A	2	1	1.00	20	0.050
407	A	2	1	1.00	20	0.050
408	A	2	1	1.00	20	0.050
409	A	2	1	1.00	20	0.050
410	A	2	1	1.00	20	0.050
411	A	2	1	1.00	20	0.050
412	A	13	8	1.00	20	0.400
413	A	12	8	1.00	20	0.400
414	A	11	8	1.00	20	0.400
415	A	10	7	1.00	20	0.350
416	A	11	8	1.00	20	0.400

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
417	A	12	8	1.00	20	0.400
418	A	13	8	1.00	20	0.400
419	A	14	8	1.00	20	0.400
420	A	12	9	1.00	20	0.450
421	A	11	8	1.00	20	0.400
422	A	11	8	1.00	20	0.400
423	A	11	8	1.00	20	0.400
424	A	12	9	1.00	20	0.450
425	A	13	9	1.00	20	0.450
426	A	12	8	1.00	20	0.400
427	A	12	9	1.00	20	0.450
428	A	12	9	1.00	20	0.450
429	A	12	9	1.00	20	0.450
430	A	12	8	1.00	20	0.400
431	A	13	9	1.00	20	0.450
432	A	4	3	1.00	18	0.167
433	A	10	7	1.00	24	0.292
434	A	9	7	1.00	24	0.292
435	A	8	7	1.00	24	0.292
436	A	7	7	1.00	24	0.292
437	A	6	6	1.00	24	0.250
438	A	6	6	1.00	24	0.250
439	A	6	6	1.00	24	0.250
440	A	7	7	1.00	24	0.292
441	A	8	7	1.00	24	0.292
442	A	10	7	1.00	24	0.292
443	A	9	7	1.00	24	0.292
444	A	8	7	1.00	24	0.292
445	A	7	6	1.00	24	0.250
446	A	7	7	1.00	24	0.292
447	A	7	6	1.00	24	0.250
448	A	7	7	1.00	24	0.292
449	A	7	6	1.00	24	0.250
450	A	10	7	1.00	24	0.292
451	A	9	7	1.00	24	0.292
452	A	8	6	1.00	24	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
453	A	8	7	1.00	24	0.292
454	A	8	7	1.00	24	0.292
455	A	8	6	1.00	24	0.250
456	A	8	7	1.00	24	0.292
457	A	8	7	1.00	24	0.292
458	A	9	6	1.00	24	0.250
459	A	8	6	1.00	24	0.250
460	A	7	6	1.00	24	0.250
461	A	6	6	1.00	24	0.250
462	A	5	5	1.00	24	0.208
463	A	6	6	1.00	24	0.250
464	A	7	6	1.00	24	0.250
465	A	8	6	1.00	24	0.250
466	A	8	7	1.00	24	0.292
467	A	7	7	1.00	24	0.292
468	A	6	6	1.00	24	0.250
469	A	6	6	1.00	24	0.250
470	A	6	6	1.00	24	0.250
471	A	7	7	1.00	24	0.292
472	A	8	7	1.00	24	0.292
473	A	9	7	1.00	24	0.292
474	A	10	7	1.00	24	0.292
475	A	9	7	1.00	24	0.292
476	A	8	7	1.00	24	0.292
477	A	7	6	1.00	24	0.250
478	A	7	7	1.00	24	0.292
479	A	7	7	1.00	24	0.292
480	A	7	7	1.00	24	0.292
481	A	7	6	1.00	24	0.250
482	A	8	7	1.00	24	0.292
483	A	9	7	1.00	24	0.292
484	A	10	7	1.00	24	0.292
485	A	2	1	1.00	20	0.050
486	A	2	1	1.00	20	0.050
487	A	2	1	1.00	20	0.050
488	A	2	1	1.00	18	0.056

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
489	A	3	2	1.00	20	0.100
490	A	3	2	1.00	20	0.100
491	A	3	2	1.00	20	0.100
492	A	5	3	1.00	22	0.136
493	A	5	3	1.00	22	0.136
494	A	5	3	1.00	22	0.136
495	A	5	3	1.00	22	0.136
496	A	5	3	1.00	22	0.136
497	A	5	3	1.00	22	0.136
498	A	3	2	1.00	21	0.095
499	A	5	3	1.00	19	0.158
500	A	3	1	1.00	36	0.028
501	A	6	4	1.00	24	0.167
502	A	5	3	1.00	20	0.150
503	A	6	5	1.00	18	0.278
504	A	6	5	1.00	18	0.278
505	A	4	4	1.00	16	0.250
506	A	3	3	1.00	15	0.200
507	A	5	5	1.00	18	0.278
508	A	5	5	1.00	18	0.278
509	A	5	5	1.00	18	0.278
510	A	3	2	1.00	25	0.080
511	A	3	2	1.00	25	0.080
512	A	3	2	1.00	25	0.080
513	A	3	2	1.00	23	0.087
514	A	3	2	1.00	22	0.091
515	A	4	3	1.00	25	0.120
516	A	3	2	1.00	25	0.080
517	A	3	2	1.00	25	0.080
518	A	3	2	1.00	25	0.080
519	A	3	3	1.00	25	0.120
520	A	3	2	1.00	25	0.080
521	A	3	2	1.00	25	0.080
522	A	3	2	1.00	25	0.080
523	A	3	2	1.00	27	0.074
524	A	3	2	1.00	27	0.074

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
525	A	3	2	1.00	27	0.074
526	A	3	2	1.00	25	0.080
527	A	3	2	1.00	24	0.083
528	A	4	3	1.00	27	0.111
529	A	3	2	1.00	27	0.074
530	A	3	2	1.00	27	0.074
531	A	3	2	1.00	27	0.074
532	A	3	2	1.00	27	0.074
533	A	4	3	1.00	27	0.111
534	A	3	3	1.00	27	0.111
535	A	3	2	1.00	27	0.074
536	A	3	2	1.00	27	0.074
537	A	3	2	1.00	27	0.074
538	A	3	2	1.00	27	0.074
539	A	3	2	1.00	27	0.074
540	A	3	2	1.00	27	0.074
541	A	3	2	1.00	27	0.074
542	A	3	2	1.00	27	0.074
543	A	3	2	1.00	25	0.080
544	A	3	2	1.00	24	0.083
545	A	4	3	1.00	27	0.111
546	A	3	2	1.00	27	0.074
547	A	3	2	1.00	27	0.074
548	A	3	2	1.00	27	0.074
549	A	3	2	1.00	27	0.074
550	A	3	2	1.00	27	0.074
551	A	3	2	1.00	27	0.074
552	A	4	3	1.00	27	0.111
553	A	3	3	1.00	27	0.111
554	A	4	4	1.00	27	0.148
555	A	3	2	1.00	27	0.074
556	A	3	2	1.00	27	0.074
557	A	3	2	1.00	27	0.074
558	A	3	2	1.00	27	0.074
559	A	3	2	1.00	19	0.105
560	A	3	2	1.00	19	0.105

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
561	A	3	2	1.00	19	0.105
562	A	3	2	1.00	19	0.105
563	A	3	2	1.00	19	0.105
564	A	3	2	1.00	19	0.105
565	A	3	2	1.00	17	0.118
566	A	3	2	1.00	16	0.125
567	A	4	3	1.00	19	0.158
568	A	3	2	1.00	19	0.105
569	A	3	2	1.00	19	0.105
570	A	3	2	1.00	19	0.105
571	A	3	2	1.00	19	0.105
572	A	3	2	1.00	19	0.105
573	A	3	2	1.00	19	0.105
574	A	3	2	1.00	19	0.105
575	A	3	2	1.00	19	0.105
576	A	3	2	1.00	19	0.105
577	A	3	2	1.00	19	0.105
578	A	4	3	1.00	19	0.158
579	A	3	3	1.00	19	0.158
580	A	4	4	1.00	19	0.210
581	A	5	4	1.00	19	0.210
582	A	6	4	1.00	19	0.210
583	A	7	4	1.00	19	0.210
584	A	8	4	1.00	19	0.210
585	A	3	2	1.00	19	0.105
586	A	3	2	1.00	19	0.105
587	A	3	2	1.00	19	0.105
588	A	3	2	1.00	17	0.118
589	A	3	2	1.00	17	0.118
590	A	3	2	1.00	17	0.118
591	A	3	2	1.00	17	0.118
592	A	3	2	1.00	17	0.118
593	A	3	2	1.00	17	0.118
594	A	3	2	1.00	17	0.118
595	A	3	2	1.00	17	0.118
596	A	3	2	1.00	17	0.118

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
597	A	3	2	1.00	17	0.118
598	A	3	2	1.00	15	0.133
599	A	2	2	1.00	14	0.143
600	A	3	2	1.00	17	0.118
601	A	3	2	1.00	17	0.118
602	A	3	2	1.00	17	0.118
603	A	3	2	1.00	17	0.118
604	A	3	2	1.00	17	0.118
605	A	3	2	1.00	17	0.118
606	A	3	2	1.00	17	0.118
607	A	3	2	1.00	17	0.118
608	A	3	2	1.00	17	0.118
609	A	3	2	1.00	17	0.118
610	A	3	2	1.00	17	0.118
611	A	3	2	1.00	17	0.118
612	A	2	2	1.00	17	0.118
613	A	3	3	1.00	17	0.176
614	A	4	3	1.00	17	0.176
615	A	5	3	1.00	17	0.176
616	A	6	3	1.00	17	0.176
617	A	7	3	1.00	17	0.176
618	A	8	3	1.00	17	0.176
619	A	9	3	1.00	17	0.176
620	A	3	2	1.00	17	0.118
621	A	3	2	1.00	17	0.118
622	A	3	2	1.00	27	0.074
623	A	3	2	1.00	27	0.074
624	A	3	2	1.00	27	0.074
625	A	3	2	1.00	27	0.074
626	A	3	2	1.00	25	0.080
627	A	3	2	1.00	24	0.083
628	A	3	2	1.00	27	0.074
629	A	3	2	1.00	27	0.074
630	A	3	2	1.00	27	0.074
631	A	3	2	1.00	27	0.074
632	A	3	2	1.00	27	0.074

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
633	A	3	2	1.00	27	0.074
634	A	3	2	1.00	27	0.074
635	A	3	2	1.00	27	0.074
636	A	4	3	1.00	27	0.111
637	A	3	2	1.00	25	0.080
638	A	3	2	1.00	24	0.083
639	A	3	2	1.00	27	0.074
640	A	3	2	1.00	27	0.074
641	A	3	2	1.00	27	0.074
642	A	3	2	1.00	27	0.074
643	A	3	2	1.00	27	0.074
644	A	3	2	1.00	27	0.074
645	A	4	3	1.00	27	0.111
646	A	3	3	1.00	27	0.111
647	A	3	2	1.00	27	0.074
648	A	3	2	1.00	25	0.080
649	A	3	2	1.00	24	0.083
650	A	3	2	1.00	27	0.074
651	A	3	2	1.00	27	0.074
652	A	3	2	1.00	27	0.074
653	A	3	2	1.00	29	0.069
654	A	3	2	1.00	29	0.069
655	A	3	2	1.00	29	0.069
656	A	3	2	1.00	27	0.074
657	A	2	2	1.00	26	0.077
658	A	3	2	1.00	29	0.069
659	A	3	2	1.00	29	0.069
660	A	3	2	1.00	29	0.069
661	A	3	3	1.00	29	0.103
662	A	3	2	1.00	29	0.069
663	A	3	2	1.00	29	0.069
664	A	3	2	1.00	29	0.069
665	A	3	2	1.00	29	0.069
666	A	3	2	1.00	29	0.069
667	A	3	2	1.00	29	0.069
668	A	3	2	1.00	29	0.069

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
669	A	3	2	1.00	27	0.074
670	A	2	2	1.00	26	0.077
671	A	4	3	1.00	29	0.103
672	A	3	2	1.00	29	0.069
673	A	3	2	1.00	29	0.069
674	A	3	2	1.00	29	0.069
675	A	4	3	1.00	29	0.103
676	A	3	3	1.00	29	0.103
677	A	3	2	1.00	29	0.069
678	A	3	2	1.00	29	0.069
679	A	3	2	1.00	29	0.069
680	A	3	2	1.00	29	0.069
681	A	3	2	1.00	29	0.069
682	A	3	2	1.00	29	0.069
683	A	3	2	1.00	29	0.069
684	A	3	2	1.00	29	0.069
685	A	3	2	1.00	29	0.069
686	A	3	2	1.00	29	0.069
687	A	3	2	1.00	29	0.069
688	A	3	2	1.00	27	0.074
689	A	2	2	1.00	26	0.077
690	A	4	3	1.00	29	0.103
691	A	3	2	1.00	29	0.069
692	A	3	2	1.00	29	0.069
693	A	3	2	1.00	29	0.069
694	A	3	2	1.00	29	0.069
695	A	3	2	1.00	29	0.069
696	A	4	3	1.00	29	0.103
697	A	3	3	1.00	29	0.103
698	A	4	4	1.00	29	0.138
699	A	3	2	1.00	29	0.069
700	A	3	2	1.00	29	0.069
701	A	3	2	1.00	29	0.069
702	A	3	2	1.00	29	0.069
703	A	3	2	1.00	29	0.069
704	A	3	2	1.00	29	0.069

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
705	A	3	2	1.00	29	0.069
706	A	3	2	1.00	29	0.069
707	A	3	2	1.00	27	0.074
708	A	3	3	1.00	26	0.115
709	A	3	2	1.00	29	0.069
710	A	5	5	1.00	29	0.172
711	A	3	2	1.00	29	0.069
712	A	3	2	1.00	29	0.069
713	A	3	2	1.00	29	0.069
714	A	3	2	1.00	29	0.069
715	A	3	2	1.00	29	0.069
716	A	3	2	1.00	29	0.069
717	A	3	2	1.00	27	0.074
718	A	2	2	1.00	26	0.077
719	A	3	2	1.00	29	0.069
720	A	3	2	1.00	29	0.069
721	A	3	2	1.00	29	0.069
722	A	3	2	1.00	29	0.069
723	A	4	3	1.00	29	0.103
724	A	3	3	1.00	29	0.103
725	A	3	2	1.00	27	0.074
726	A	2	2	1.00	26	0.077
727	A	3	2	1.00	29	0.069
728	A	3	2	1.00	29	0.069
729	A	3	2	1.00	27	0.074
730	A	3	2	1.00	27	0.074
731	A	3	2	1.00	27	0.074
732	A	3	2	1.00	27	0.074
733	A	3	2	1.00	27	0.074
734	A	3	2	1.00	27	0.074
735	A	3	2	1.00	27	0.074
736	A	3	2	1.00	27	0.074
737	A	3	2	1.00	27	0.074
738	A	3	2	1.00	29	0.069
739	A	3	2	1.00	29	0.069
740	A	3	2	1.00	29	0.069

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
741	A	3	2	1.00	29	0.069
742	A	3	2	1.00	29	0.069
743	A	3	2	1.00	29	0.069
744	A	3	2	1.00	29	0.069
745	A	3	2	1.00	29	0.069
746	A	3	2	1.00	29	0.069
747	A	3	2	1.00	29	0.069
748	A	3	2	1.00	29	0.069
749	A	3	2	1.00	29	0.069
750	A	3	2	1.00	29	0.069
751	A	3	2	1.00	29	0.069
752	A	3	2	1.00	29	0.069
753	A	3	2	1.00	29	0.069
754	A	3	2	1.00	29	0.069
755	A	3	2	1.00	29	0.069
756	A	3	2	1.00	29	0.069
757	A	8	5	1.00	29	0.172
758	A	7	5	1.00	29	0.172
759	A	6	5	1.00	29	0.172
760	A	5	5	1.00	29	0.172
761	A	4	4	1.00	29	0.138
762	A	5	5	1.00	29	0.172
763	A	6	5	1.00	29	0.172
764	A	7	5	1.00	29	0.172
765	A	8	5	1.00	29	0.172
766	A	8	6	1.00	29	0.207
767	A	7	6	1.00	29	0.207
768	A	6	5	1.00	29	0.172
769	A	6	6	1.00	29	0.207
770	A	6	5	1.00	29	0.172
771	A	7	5	1.00	29	0.172
772	A	8	5	1.00	29	0.172
773	A	10	6	1.00	29	0.207
774	A	9	6	1.00	29	0.207
775	A	8	5	1.00	29	0.172
776	A	8	6	1.00	29	0.207

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
777	A	8	6	1.00	29	0.207
778	A	8	6	1.00	29	0.207
779	A	8	5	1.00	29	0.172
780	A	9	5	1.00	29	0.172
781	A	10	5	1.00	29	0.172
782	A	3	2	1.00	31	0.065
783	A	3	2	1.00	31	0.065
784	A	3	2	1.00	31	0.065
785	A	3	2	1.00	31	0.065
786	A	3	2	1.00	31	0.065
787	A	3	2	1.00	31	0.065
788	A	3	2	1.00	31	0.065
789	A	3	2	1.00	31	0.065
790	A	3	2	1.00	31	0.065
791	A	3	2	1.00	31	0.065
792	A	3	2	1.00	31	0.065
793	A	3	2	1.00	31	0.065
794	A	3	2	1.00	31	0.065
795	A	3	2	1.00	31	0.065
796	A	3	2	1.00	31	0.065
797	A	3	2	1.00	31	0.065
798	A	3	2	1.00	31	0.065
799	A	3	2	1.00	31	0.065
800	A	3	2	1.00	31	0.065
801	A	3	2	1.00	31	0.065
802	A	3	2	1.00	31	0.065
803	A	3	2	1.00	31	0.065
804	A	3	2	1.00	31	0.065
805	A	3	2	1.00	31	0.065
806	A	3	2	1.00	31	0.065
807	A	3	2	1.00	31	0.065
808	A	3	2	1.00	31	0.065
809	A	8	5	1.00	31	0.161
810	A	7	5	1.00	31	0.161
811	A	6	5	1.00	31	0.161
812	A	5	5	1.00	31	0.161

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
813	A	4	4	1.00	31	0.129
814	A	4	4	1.00	31	0.129
815	A	5	5	1.00	31	0.161
816	A	6	5	1.00	31	0.161
817	A	7	5	1.00	31	0.161
818	A	8	6	1.00	31	0.194
819	A	7	6	1.00	31	0.194
820	A	6	6	1.00	31	0.194
821	A	5	5	1.00	31	0.161
822	A	5	5	1.00	31	0.161
823	A	6	5	1.00	31	0.161
824	A	7	5	1.00	31	0.161
825	A	8	5	1.00	31	0.161
826	A	10	6	1.00	31	0.194
827	A	9	6	1.00	31	0.194
828	A	8	6	1.00	31	0.194
829	A	7	5	1.00	31	0.161
830	A	7	6	1.00	31	0.194
831	A	7	6	1.00	31	0.194
832	A	7	5	1.00	31	0.161
833	A	8	5	1.00	31	0.161
834	A	9	5	1.00	31	0.161
835	A	10	5	1.00	31	0.161
836	A	3	2	1.00	27	0.074
837	A	3	2	1.00	27	0.074
838	A	3	2	1.00	25	0.080
839	A	3	3	1.00	27	0.111
840	A	3	3	1.00	27	0.111
841	A	3	2	1.00	17	0.118
842	A	3	2	1.00	19	0.105
843	A	2	1	1.00	19	0.053
844	A	2	1	1.00	19	0.053
845	A	2	1	1.00	17	0.059
846	A	2	1	1.00	16	0.062
847	A	2	1	1.00	19	0.053
848	A	2	1	1.00	19	0.053

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
849	A	2	1	1.00	19	0.053
850	A	2	1	1.00	19	0.053
851	A	2	1	1.00	19	0.053
852	A	2	1	1.00	19	0.053
853	A	2	1	1.00	19	0.053
854	A	2	1	1.00	19	0.053
855	A	2	1	1.00	21	0.048
856	A	2	1	1.00	19	0.053
857	A	2	1	1.00	18	0.056
858	A	2	1	1.00	21	0.048
859	A	2	1	1.00	21	0.048
860	A	2	1	1.00	21	0.048
861	A	2	1	1.00	21	0.048
862	A	2	1	1.00	21	0.048
863	A	2	1	1.00	21	0.048
864	A	2	1	1.00	21	0.048
865	A	2	1	1.00	21	0.048
866	A	2	1	1.00	21	0.048
867	A	2	1	1.00	21	0.048
868	A	2	1	1.00	19	0.053
869	A	2	1	1.00	18	0.056
870	A	2	1	1.00	21	0.048
871	A	2	1	1.00	21	0.048
872	A	2	1	1.00	21	0.048
873	A	2	1	1.00	21	0.048
874	A	2	1	1.00	21	0.048
875	A	2	1	1.00	21	0.048
876	A	2	1	1.00	21	0.048
877	A	2	1	1.00	21	0.048
878	A	2	1	1.00	21	0.048
879	A	2	1	1.00	21	0.048
880	A	2	1	1.00	21	0.048
881	A	6	5	1.00	21	0.238
882	A	6	5	1.00	21	0.238
883	A	6	5	1.00	21	0.238
884	A	5	5	1.00	19	0.263

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
885	A	4	4	1.00	18	0.222
886	A	6	5	1.00	21	0.238
887	A	6	5	1.00	21	0.238
888	A	6	5	1.00	21	0.238
889	A	6	5	1.00	21	0.238
890	A	7	6	1.00	21	0.286
891	A	6	6	1.00	21	0.286
892	A	5	5	1.00	21	0.238
893	A	3	3	1.00	19	0.158
894	A	3	3	1.00	18	0.167
895	A	7	6	1.00	21	0.286
896	A	7	6	1.00	21	0.286
897	A	7	6	1.00	21	0.286
898	A	1	1	1.00	16	0.062
899	A	3	2	1.00	16	0.125
900	A	4	4	1.00	16	0.250
901	A	4	4	1.00	18	0.222
902	A	3	2	1.00	14	0.143
903	A	3	2	1.00	18	0.111
904	A	1	1	1.00	18	0.056
905	A	3	3	1.00	14	0.214
906	A	3	3	1.00	14	0.214
907	A	4	4	1.00	14	0.286
908	A	1	1	1.00	7	0.143
909	A	2	2	1.00	24	0.083
910	A	7	5	1.00	23	0.217
911	A	6	5	1.00	23	0.217
912	A	5	5	1.00	23	0.217
913	A	4	4	1.00	21	0.190
914	A	4	4	1.00	20	0.200
915	A	6	5	1.00	23	0.217
916	A	6	5	1.00	23	0.217
917	A	6	5	1.00	23	0.217
918	A	4	4	1.00	23	0.174
919	A	5	5	1.00	23	0.217
920	A	6	5	1.00	23	0.217

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
921	A	7	5	1.00	23	0.217
922	A	8	5	1.00	23	0.217
923	A	7	5	1.00	23	0.217
924	A	6	5	1.00	23	0.217
925	A	5	4	1.00	21	0.190
926	A	5	4	1.00	20	0.200
927	A	7	5	1.00	23	0.217
928	A	7	6	1.00	23	0.261
929	A	7	5	1.00	23	0.217
930	A	7	6	1.00	23	0.261
931	A	7	5	1.00	23	0.217
932	A	5	4	1.00	23	0.174
933	A	6	5	1.00	23	0.217
934	A	7	5	1.00	23	0.217
935	A	9	5	1.00	23	0.217
936	A	8	5	1.00	23	0.217
937	A	7	5	1.00	23	0.217
938	A	6	4	1.00	21	0.190
939	A	6	4	1.00	20	0.200
940	A	8	5	1.00	23	0.217
941	A	8	6	1.00	23	0.261
942	A	8	6	1.00	23	0.261
943	A	8	5	1.00	23	0.217
944	A	8	6	1.00	23	0.261
945	A	8	6	1.00	23	0.261
946	A	8	5	1.00	23	0.217
947	A	6	4	1.00	23	0.174
948	A	7	5	1.00	23	0.217
949	A	8	5	1.00	23	0.217
950	A	6	4	1.00	23	0.174
951	A	5	4	1.00	23	0.174
952	A	4	4	1.00	23	0.174
953	A	3	3	1.00	21	0.143
954	A	3	3	1.00	20	0.150
955	A	5	4	1.00	23	0.174
956	A	3	3	1.00	23	0.130

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
957	A	4	4	1.00	23	0.174
958	A	5	4	1.00	23	0.174
959	A	6	4	1.00	23	0.174
960	A	7	4	1.00	23	0.174
961	A	5	5	1.00	23	0.217
962	A	4	4	1.00	23	0.174
963	A	4	4	1.00	23	0.174
964	A	3	3	1.00	21	0.143
965	A	1	1	1.00	20	0.050
966	A	4	4	1.00	23	0.174
967	A	4	4	1.00	23	0.174
968	A	5	5	1.00	23	0.217
969	A	6	5	1.00	23	0.217
970	A	5	4	1.00	23	0.174
971	A	4	4	1.00	23	0.174
972	A	2	2	1.00	23	0.087
973	A	2	2	1.00	21	0.095
974	A	2	2	1.00	20	0.100
975	A	5	4	1.00	23	0.174
976	A	5	4	1.00	23	0.174
977	A	6	5	1.00	23	0.217
978	A	3	3	1.00	20	0.150
979	A	4	3	1.00	20	0.150
980	A	2	2	1.00	21	0.095
981	A	2	1	1.00	21	0.048
982	A	2	1	1.00	21	0.048
983	A	2	1	1.00	21	0.048
984	A	2	1	1.00	21	0.048
985	A	2	1	1.00	21	0.048
986	A	2	1	1.00	21	0.048
987	A	2	1	1.00	21	0.048
988	A	2	1	1.00	21	0.048
989	A	2	1	1.00	21	0.048
990	A	2	1	1.00	23	0.043
991	A	2	1	1.00	23	0.043
992	A	2	1	1.00	23	0.043

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
993	A	2	1	1.00	23	0.043
994	A	2	1	1.00	23	0.043
995	A	2	1	1.00	23	0.043
996	A	2	1	1.00	23	0.043
997	A	2	1	1.00	23	0.043
998	A	2	1	1.00	23	0.043
999	A	2	1	1.00	23	0.043
1000	A	2	1	1.00	23	0.043
1001	A	2	1	1.00	23	0.043
1002	A	2	1	1.00	23	0.043
1003	A	2	1	1.00	23	0.043
1004	A	2	1	1.00	23	0.043
1005	A	2	1	1.00	23	0.043
1006	A	2	1	1.00	23	0.043
1007	A	2	1	1.00	23	0.043
1008	A	2	1	1.00	23	0.043
1009	A	7	4	1.00	23	0.174
1010	A	6	4	1.00	23	0.174
1011	A	5	4	1.00	23	0.174
1012	A	4	3	1.00	23	0.130
1013	A	5	4	1.00	23	0.174
1014	A	6	4	1.00	23	0.174
1015	A	7	4	1.00	23	0.174
1016	A	8	4	1.00	23	0.174
1017	A	6	5	1.00	23	0.217
1018	A	5	4	1.00	23	0.174
1019	A	5	4	1.00	23	0.174
1020	A	5	4	1.00	23	0.174
1021	A	6	5	1.00	23	0.217
1022	A	7	5	1.00	23	0.217
1023	A	6	4	1.00	23	0.174
1024	A	6	5	1.00	23	0.217
1025	A	6	5	1.00	23	0.217
1026	A	6	5	1.00	23	0.217
1027	A	6	4	1.00	23	0.174
1028	A	7	5	1.00	23	0.217

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1029	A	6	6	1.00	25	0.240
1030	A	5	5	1.00	25	0.200
1031	A	5	5	1.00	25	0.200
1032	A	5	5	1.00	25	0.200
1033	A	6	6	1.00	25	0.240
1034	A	9	6	1.00	25	0.240
1035	A	8	6	1.00	25	0.240
1036	A	7	6	1.00	25	0.240
1037	A	6	6	1.00	25	0.240
1038	A	5	5	1.00	25	0.200
1039	A	5	5	1.00	25	0.200
1040	A	5	5	1.00	25	0.200
1041	A	6	6	1.00	25	0.240
1042	A	7	6	1.00	25	0.240
1043	A	8	6	1.00	25	0.240
1044	A	9	6	1.00	25	0.240
1045	A	8	6	1.00	25	0.240
1046	A	7	6	1.00	25	0.240
1047	A	6	5	1.00	25	0.200
1048	A	6	6	1.00	25	0.240
1049	A	6	5	1.00	25	0.200
1050	A	6	6	1.00	25	0.240
1051	A	6	5	1.00	25	0.200
1052	A	7	6	1.00	25	0.240
1053	A	8	6	1.00	25	0.240
1054	A	9	6	1.00	25	0.240
1055	A	5	5	1.00	27	0.185
1056	A	8	5	1.00	25	0.200
1057	A	7	5	1.00	25	0.200
1058	A	6	5	1.00	25	0.200
1059	A	5	5	1.00	25	0.200
1060	A	4	4	1.00	25	0.160
1061	A	5	5	1.00	25	0.200
1062	A	6	5	1.00	25	0.200
1063	A	7	5	1.00	25	0.200
1064	A	7	6	1.00	25	0.240

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1065	A	6	6	1.00	25	0.240
1066	A	5	5	1.00	25	0.200
1067	A	5	5	1.00	25	0.200
1068	A	5	5	1.00	25	0.200
1069	A	6	6	1.00	25	0.240
1070	A	7	6	1.00	25	0.240
1071	A	8	6	1.00	25	0.240
1072	A	9	6	1.00	25	0.240
1073	A	8	6	1.00	25	0.240
1074	A	7	6	1.00	25	0.240
1075	A	6	5	1.00	25	0.200
1076	A	6	6	1.00	25	0.240
1077	A	6	6	1.00	25	0.240
1078	A	6	6	1.00	25	0.240
1079	A	6	5	1.00	25	0.200
1080	A	7	6	1.00	25	0.240
1081	A	8	6	1.00	25	0.240
1082	A	9	6	1.00	25	0.240
1083	A	2	1	1.00	23	0.043
1084	A	2	1	1.00	23	0.043
1085	A	2	1	1.00	21	0.048
1086	A	4	2	1.00	23	0.087
1087	A	5	3	1.00	23	0.130
1088	A	5	3	1.00	25	0.120
1089	A	5	3	1.00	25	0.120
1090	A	5	3	1.00	25	0.120
1091	A	5	3	1.00	25	0.120
1092	A	5	3	1.00	25	0.120
1093	A	5	3	1.00	25	0.120
1094	A	5	3	1.00	23	0.130
1095	A	4	3	1.00	21	0.143
1096	A	3	3	1.00	21	0.143
1097	A	2	2	1.00	19	0.105
1098	A	2	2	1.00	18	0.111
1099	A	4	4	1.00	21	0.190
1100	A	5	5	1.00	21	0.238

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1101	A	6	5	1.00	21	0.238
1102	A	2	1	1.00	22	0.045
1103	A	2	1	1.00	22	0.045
1104	A	2	1	1.00	22	0.045
1105	A	2	1	1.00	22	0.045
1106	A	2	1	1.00	20	0.050
1107	A	2	1	1.00	15	0.067
1108	A	2	1	1.00	22	0.045
1109	A	2	1	1.00	22	0.045
1110	A	2	1	1.00	22	0.045
1111	A	2	1	1.00	22	0.045
1112	A	2	1	1.00	22	0.045
1113	A	2	1	1.00	22	0.045
1114	A	2	1	1.00	24	0.042
1115	A	2	1	1.00	24	0.042
1116	A	2	1	1.00	24	0.042
1117	A	2	1	1.00	22	0.045
1118	A	2	1	1.00	17	0.059
1119	A	2	1	1.00	24	0.042
1120	A	2	1	1.00	24	0.042
1121	A	2	1	1.00	24	0.042
1122	A	2	1	1.00	24	0.042
1123	A	2	1	1.00	24	0.042
1124	A	2	1	1.00	24	0.042
1125	A	2	1	1.00	24	0.042
1126	A	2	1	1.00	24	0.042
1127	A	2	1	1.00	24	0.042
1128	A	2	1	1.00	24	0.042
1129	A	2	1	1.00	24	0.042
1130	A	2	1	1.00	24	0.042
1131	A	2	1	1.00	22	0.045
1132	A	2	1	1.00	17	0.059
1133	A	2	1	1.00	24	0.042
1134	A	2	1	1.00	24	0.042
1135	A	2	1	1.00	24	0.042
1136	A	2	1	1.00	24	0.042

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1137	A	2	1	1.00	24	0.042
1138	A	2	1	1.00	24	0.042
1139	A	2	1	1.00	24	0.042
1140	A	2	1	1.00	22	0.045
1141	A	2	1	1.00	17	0.059
1142	A	2	1	1.00	24	0.042
1143	A	2	1	1.00	24	0.042
1144	A	2	1	1.00	24	0.042
1145	A	2	1	1.00	24	0.042
1146	A	2	1	1.00	24	0.042
1147	A	2	1	1.00	24	0.042
1148	A	2	1	1.00	24	0.042
1149	A	2	1	1.00	22	0.045
1150	A	2	1	1.00	17	0.059
1151	A	2	1	1.00	24	0.042
1152	A	2	1	1.00	24	0.042
1153	A	2	1	1.00	24	0.042
1154	A	2	1	1.00	24	0.042
1155	A	2	1	1.00	24	0.042
1156	A	2	1	1.00	24	0.042
1157	A	2	1	1.00	24	0.042
1158	A	2	1	1.00	22	0.045
1159	A	2	1	1.00	17	0.059
1160	A	2	1	1.00	24	0.042
1161	A	2	1	1.00	24	0.042
1162	A	6	5	1.00	26	0.192
1163	A	5	5	1.00	26	0.192
1164	A	4	4	1.00	24	0.167
1165	A	4	4	1.00	19	0.210
1166	A	6	5	1.00	26	0.192
1167	A	6	5	1.00	26	0.192
1168	A	6	5	1.00	26	0.192
1169	A	4	4	1.00	26	0.154
1170	A	5	5	1.00	26	0.192
1171	A	6	5	1.00	26	0.192
1172	A	6	5	1.00	26	0.192

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1173	A	5	4	1.00	24	0.167
1174	A	5	4	1.00	19	0.210
1175	A	7	5	1.00	26	0.192
1176	A	7	6	1.00	26	0.231
1177	A	7	5	1.00	26	0.192
1178	A	7	6	1.00	26	0.231
1179	A	7	5	1.00	26	0.192
1180	A	5	4	1.00	26	0.154
1181	A	6	5	1.00	26	0.192
1182	A	7	5	1.00	26	0.192
1183	A	7	5	1.00	26	0.192
1184	A	6	4	1.00	24	0.167
1185	A	6	4	1.00	19	0.210
1186	A	8	5	1.00	26	0.192
1187	A	8	6	1.00	26	0.231
1188	A	8	6	1.00	26	0.231
1189	A	8	5	1.00	26	0.192
1190	A	8	6	1.00	26	0.231
1191	A	5	4	1.00	26	0.154
1192	A	4	4	1.00	26	0.154
1193	A	3	3	1.00	24	0.125
1194	A	3	3	1.00	19	0.158
1195	A	5	4	1.00	26	0.154
1196	A	3	3	1.00	26	0.115
1197	A	4	4	1.00	26	0.154
1198	A	5	4	1.00	26	0.154
1199	A	4	4	1.00	26	0.154
1200	A	4	4	1.00	26	0.154
1201	A	3	3	1.00	24	0.125
1202	A	1	1	1.00	19	0.053
1203	A	4	4	1.00	26	0.154
1204	A	4	4	1.00	26	0.154
1205	A	5	5	1.00	26	0.192
1206	A	5	4	1.00	26	0.154
1207	A	4	4	1.00	26	0.154
1208	A	2	2	1.00	26	0.077

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1209	A	2	2	1.00	24	0.083
1210	A	2	2	1.00	19	0.105
1211	A	5	4	1.00	26	0.154
1212	A	5	4	1.00	26	0.154
1213	A	2	1	1.00	24	0.042
1214	A	2	1	1.00	24	0.042
1215	A	2	1	1.00	24	0.042
1216	A	2	1	1.00	24	0.042
1217	A	2	1	1.00	24	0.042
1218	A	2	1	1.00	24	0.042
1219	A	2	1	1.00	24	0.042
1220	A	2	1	1.00	24	0.042
1221	A	2	1	1.00	26	0.038
1222	A	2	1	1.00	26	0.038
1223	A	2	1	1.00	26	0.038
1224	A	2	1	1.00	26	0.038
1225	A	2	1	1.00	26	0.038
1226	A	2	1	1.00	26	0.038
1227	A	2	1	1.00	26	0.038
1228	A	2	1	1.00	26	0.038
1229	A	8	4	1.00	26	0.154
1230	A	7	4	1.00	26	0.154
1231	A	6	4	1.00	26	0.154
1232	A	5	4	1.00	26	0.154
1233	A	4	3	1.00	26	0.115
1234	A	5	4	1.00	26	0.154
1235	A	6	4	1.00	26	0.154
1236	A	7	4	1.00	26	0.154
1237	A	8	4	1.00	26	0.154
1238	A	8	5	1.00	26	0.192
1239	A	7	5	1.00	26	0.192
1240	A	6	5	1.00	26	0.192
1241	A	5	4	1.00	26	0.154
1242	A	5	4	1.00	26	0.154
1243	A	5	4	1.00	26	0.154
1244	A	6	5	1.00	26	0.192

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1245	A	7	5	1.00	26	0.192
1246	A	8	5	1.00	26	0.192
1247	A	7	5	1.00	26	0.192
1248	A	6	4	1.00	26	0.154
1249	A	6	5	1.00	26	0.192
1250	A	6	5	1.00	26	0.192
1251	A	6	5	1.00	26	0.192
1252	A	6	4	1.00	26	0.154
1253	A	7	5	1.00	26	0.192
1254	A	8	5	1.00	26	0.192
1255	A	9	8	1.00	28	0.286
1256	A	8	7	1.00	28	0.250
1257	A	8	7	1.00	28	0.250
1258	A	8	7	1.00	28	0.250
1259	A	9	8	1.00	28	0.286
1260	A	9	7	1.00	28	0.250
1261	A	9	8	1.00	28	0.286
1262	A	9	7	1.00	28	0.250
1263	A	9	8	1.00	28	0.286
1264	A	10	7	1.00	28	0.250
1265	A	9	7	1.00	28	0.250
1266	A	8	7	1.00	28	0.250
1267	A	7	6	1.00	28	0.214
1268	A	8	7	1.00	28	0.250
1269	A	9	7	1.00	28	0.250
1270	A	10	7	1.00	28	0.250
1271	A	10	8	1.00	28	0.286
1272	A	9	8	1.00	28	0.286
1273	A	8	7	1.00	28	0.250
1274	A	8	7	1.00	28	0.250
1275	A	8	7	1.00	28	0.250
1276	A	9	8	1.00	28	0.286
1277	A	10	8	1.00	28	0.286
1278	A	9	7	1.00	28	0.250
1279	A	9	8	1.00	28	0.286
1280	A	9	8	1.00	28	0.286

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1281	A	9	8	1.00	28	0.286
1282	A	9	7	1.00	28	0.250
1283	A	10	8	1.00	28	0.286
1284	A	2	1	1.00	20	0.050
1285	A	2	1	1.00	20	0.050
1286	A	2	1	1.00	20	0.050
1287	A	2	1	1.00	20	0.050
1288	A	2	1	1.00	18	0.056
1289	A	2	1	1.00	13	0.077
1290	A	2	1	1.00	20	0.050
1291	A	2	1	1.00	20	0.050
1292	A	2	1	1.00	20	0.050
1293	A	2	1	1.00	20	0.050
1294	A	2	1	1.00	20	0.050
1295	A	2	1	1.00	20	0.050
1296	A	2	1	1.00	20	0.050
1297	A	2	1	1.00	22	0.045
1298	A	2	1	1.00	22	0.045
1299	A	2	1	1.00	22	0.045
1300	A	2	1	1.00	22	0.045
1301	A	2	1	1.00	20	0.050
1302	A	3	2	1.00	15	0.133
1303	A	2	1	1.00	22	0.045
1304	A	2	1	1.00	22	0.045
1305	A	2	1	1.00	22	0.045
1306	A	2	1	1.00	22	0.045
1307	A	2	1	1.00	22	0.045
1308	A	2	1	1.00	22	0.045
1309	A	2	1	1.00	22	0.045
1310	A	2	1	1.00	22	0.045
1311	A	2	1	1.00	22	0.045
1312	A	2	1	1.00	22	0.045
1313	A	2	1	1.00	22	0.045
1314	A	2	1	1.00	22	0.045
1315	A	2	1	1.00	22	0.045
1316	A	2	1	1.00	22	0.045

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1317	A	2	1	1.00	20	0.050
1318	A	3	2	1.00	15	0.133
1319	A	2	1	1.00	22	0.045
1320	A	2	1	1.00	22	0.045
1321	A	2	1	1.00	22	0.045
1322	A	2	1	1.00	22	0.045
1323	A	2	1	1.00	22	0.045
1324	A	2	1	1.00	22	0.045
1325	A	2	1	1.00	22	0.045
1326	A	2	1	1.00	22	0.045
1327	A	2	1	1.00	22	0.045
1328	A	2	1	1.00	22	0.045
1329	A	2	1	1.00	22	0.045
1330	A	5	4	1.00	22	0.182
1331	A	5	4	1.00	22	0.182
1332	A	5	4	1.00	22	0.182
1333	A	4	4	1.00	20	0.200
1334	A	3	3	1.00	15	0.200
1335	A	5	4	1.00	22	0.182
1336	A	5	4	1.00	22	0.182
1337	A	5	4	1.00	22	0.182
1338	A	6	5	1.00	22	0.227
1339	A	6	5	1.00	22	0.227
1340	A	5	5	1.00	22	0.227
1341	A	4	4	1.00	22	0.182
1342	A	2	2	1.00	20	0.100
1343	A	2	2	1.00	15	0.133
1344	A	6	5	1.00	22	0.227
1345	A	6	5	1.00	22	0.227
1346	A	6	5	1.00	22	0.227
1347	A	5	4	1.00	22	0.182
1348	A	3	3	1.00	22	0.136
1349	A	3	3	1.00	22	0.136
1350	A	3	3	1.00	20	0.150
1351	A	3	3	1.00	15	0.200
1352	A	7	5	1.00	22	0.227

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1353	A	7	5	1.00	22	0.227
1354	A	2	1	1.00	20	0.050
1355	A	3	3	1.00	14	0.214
1356	A	6	4	1.00	24	0.167
1357	A	5	4	1.00	24	0.167
1358	A	4	4	1.00	24	0.167
1359	A	3	3	1.00	22	0.136
1360	A	3	3	1.00	17	0.176
1361	A	5	5	1.00	24	0.208
1362	A	5	5	1.00	24	0.208
1363	A	5	5	1.00	24	0.208
1364	A	4	4	1.00	24	0.167
1365	A	5	5	1.00	24	0.208
1366	A	6	5	1.00	24	0.208
1367	A	7	5	1.00	24	0.208
1368	A	7	4	1.00	24	0.167
1369	A	6	4	1.00	24	0.167
1370	A	5	4	1.00	24	0.167
1371	A	4	3	1.00	22	0.136
1372	A	4	3	1.00	17	0.176
1373	A	6	5	1.00	24	0.208
1374	A	6	6	1.00	24	0.250
1375	A	6	5	1.00	24	0.208
1376	A	6	6	1.00	24	0.250
1377	A	6	5	1.00	24	0.208
1378	A	5	4	1.00	24	0.167
1379	A	6	5	1.00	24	0.208
1380	A	7	5	1.00	24	0.208
1381	A	8	4	1.00	24	0.167
1382	A	7	4	1.00	24	0.167
1383	A	6	4	1.00	24	0.167
1384	A	5	3	1.00	22	0.136
1385	A	5	3	1.00	17	0.176
1386	A	7	5	1.00	24	0.208
1387	A	7	6	1.00	24	0.250
1388	A	7	6	1.00	24	0.250

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1389	A	7	5	1.00	24	0.208
1390	A	7	6	1.00	24	0.250
1391	A	7	6	1.00	24	0.250
1392	A	7	5	1.00	24	0.208
1393	A	6	4	1.00	24	0.167
1394	A	7	5	1.00	24	0.208
1395	A	8	5	1.00	24	0.208
1396	A	9	5	1.00	24	0.208
1397	A	5	3	1.00	24	0.125
1398	A	4	3	1.00	24	0.125
1399	A	3	3	1.00	24	0.125
1400	A	2	2	1.00	22	0.091
1401	A	2	2	1.00	17	0.118
1402	A	4	4	1.00	24	0.167
1403	A	3	3	1.00	24	0.125
1404	A	4	4	1.00	24	0.167
1405	A	5	4	1.00	24	0.167
1406	A	6	4	1.00	24	0.167
1407	A	7	4	1.00	24	0.167
1408	A	4	4	1.00	24	0.167
1409	A	3	3	1.00	24	0.125
1410	A	3	3	1.00	24	0.125
1411	A	2	2	1.00	22	0.091
1412	A	1	1	1.00	17	0.059
1413	A	4	4	1.00	24	0.167
1414	A	4	4	1.00	24	0.167
1415	A	5	5	1.00	24	0.208
1416	A	6	5	1.00	24	0.208
1417	A	7	5	1.00	24	0.208
1418	A	5	4	1.00	24	0.167
1419	A	4	3	1.00	24	0.125
1420	A	4	3	1.00	24	0.125
1421	A	3	3	1.00	24	0.125
1422	A	2	2	1.00	24	0.083
1423	A	2	2	1.00	22	0.091
1424	A	2	2	1.00	17	0.118

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1425	A	5	4	1.00	24	0.167
1426	A	5	4	1.00	24	0.167
1427	A	6	5	1.00	24	0.208
1428	A	7	5	1.00	24	0.208
1429	A	2	1	1.00	22	0.045
1430	A	2	1	1.00	22	0.045
1431	A	2	1	1.00	22	0.045
1432	A	2	1	1.00	22	0.045
1433	A	2	1	1.00	22	0.045
1434	A	2	1	1.00	22	0.045
1435	A	2	1	1.00	24	0.042
1436	A	2	1	1.00	24	0.042
1437	A	2	1	1.00	24	0.042
1438	A	2	1	1.00	24	0.042
1439	A	2	1	1.00	24	0.042
1440	A	2	1	1.00	24	0.042
1441	A	2	1	1.00	24	0.042
1442	A	2	1	1.00	24	0.042
1443	A	2	1	1.00	24	0.042
1444	A	2	1	1.00	24	0.042
1445	A	2	1	1.00	24	0.042
1446	A	2	1	1.00	24	0.042
1447	A	7	4	1.00	25	0.160
1448	A	6	4	1.00	25	0.160
1449	A	5	4	1.00	25	0.160
1450	A	4	3	1.00	25	0.120
1451	A	5	4	1.00	25	0.160
1452	A	6	4	1.00	25	0.160
1453	A	6	5	1.00	25	0.200
1454	A	5	4	1.00	25	0.160
1455	A	5	4	1.00	25	0.160
1456	A	5	4	1.00	25	0.160
1457	A	6	5	1.00	25	0.200
1458	A	6	4	1.00	25	0.160
1459	A	6	5	1.00	25	0.200
1460	A	6	5	1.00	25	0.200

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1461	A	6	5	1.00	25	0.200
1462	A	6	4	1.00	25	0.160
1463	A	4	3	1.00	38	0.079
1464	A	6	4	1.00	43	0.093
1465	A	4	3	1.00	24	0.125
1466	A	10	6	1.00	22	0.273
1467	A	12	8	1.00	20	0.400
1468	A	6	4	1.00	20	0.200
1469	A	4	3	1.00	22	0.136
1470	A	6	4	1.00	20	0.200
1471	A	4	3	1.27	18	0.167
1472	A	7	6	1.00	26	0.231
1473	A	6	5	1.00	26	0.192
1474	A	6	5	1.00	26	0.192
1475	A	6	5	1.00	26	0.192
1476	A	7	5	1.00	26	0.192
1477	A	7	6	1.00	26	0.231
1478	A	7	5	1.00	26	0.192
1479	A	7	6	1.00	26	0.231
1480	A	7	5	1.00	26	0.192
1481	A	6	5	1.00	26	0.192
1482	A	5	4	1.00	26	0.154
1483	A	6	5	1.00	26	0.192
1484	A	6	5	1.00	26	0.192
1485	A	6	5	1.00	26	0.192
1486	A	6	5	1.00	26	0.192
1487	A	2	1	1.00	22	0.045
1488	A	2	1	1.00	22	0.045
1489	A	2	1	1.00	20	0.050
1490	A	4	2	1.00	22	0.091
1491	A	5	3	0.99	22	0.136
1492	A	4	2	1.00	24	0.083
1493	A	1	1	1.00	30	0.033
1494	A	2	1	1.00	24	0.042
1495	A	2	1	1.00	24	0.042
1496	A	2	1	1.00	24	0.042

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1497	A	2	1	1.00	22	0.045
1498	A	1	1	1.00	17	0.059
1499	A	2	1	1.00	24	0.042
1500	A	2	1	1.00	24	0.042
1501	A	2	1	1.00	24	0.042
1502	A	2	1	1.00	24	0.042
1503	A	2	1	1.00	24	0.042
1504	A	2	1	1.00	26	0.038
1505	A	2	1	1.00	26	0.038
1506	A	2	1	1.00	26	0.038
1507	A	2	1	1.00	24	0.042
1508	A	1	1	1.00	19	0.053
1509	A	2	1	1.00	26	0.038
1510	A	2	1	1.00	26	0.038
1511	A	2	1	1.00	26	0.038
1512	A	2	1	1.00	26	0.038
1513	A	2	1	1.00	26	0.038
1514	A	2	1	1.00	26	0.038
1515	A	2	1	1.00	26	0.038
1516	A	2	1	1.00	26	0.038
1517	A	2	1	1.00	24	0.042
1518	A	1	1	1.00	19	0.053
1519	A	2	1	1.00	26	0.038
1520	A	2	1	1.00	26	0.038
1521	A	2	1	1.00	26	0.038
1522	A	2	1	1.00	26	0.038
1523	A	2	1	1.00	26	0.038
1524	A	6	5	1.00	26	0.192
1525	A	6	5	1.00	26	0.192
1526	A	6	5	1.00	26	0.192
1527	A	5	5	1.00	24	0.208
1528	A	1	1	1.00	19	0.053
1529	A	6	5	1.00	26	0.192
1530	A	6	5	1.00	26	0.192
1531	A	6	5	1.00	26	0.192
1532	A	7	6	1.00	26	0.231

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1533	A	7	6	1.00	26	0.231
1534	A	5	5	1.00	26	0.192
1535	A	3	3	1.00	24	0.125
1536	A	1	1	1.00	19	0.053
1537	A	7	6	1.00	26	0.231
1538	A	7	6	1.00	26	0.231
1539	A	8	7	1.00	26	0.269
1540	A	7	7	1.00	26	0.269
1541	A	4	4	1.00	26	0.154
1542	A	4	4	1.00	26	0.154
1543	A	4	4	0.97	24	0.167
1544	A	1	1	1.00	19	0.053
1545	A	8	6	1.00	26	0.231
1546	A	7	5	1.00	28	0.179
1547	A	6	5	1.00	28	0.179
1548	A	5	5	1.00	28	0.179
1549	A	4	4	1.00	26	0.154
1550	A	1	1	1.00	21	0.048
1551	A	6	5	1.00	28	0.179
1552	A	6	5	1.00	28	0.179
1553	A	6	5	1.00	28	0.179
1554	A	4	4	1.00	28	0.143
1555	A	5	5	1.00	28	0.179
1556	A	6	5	1.00	28	0.179
1557	A	7	5	1.00	28	0.179
1558	A	6	5	1.00	28	0.179
1559	A	5	4	1.00	26	0.154
1560	A	1	1	1.00	21	0.048
1561	A	7	5	1.00	28	0.179
1562	A	7	6	1.00	28	0.214
1563	A	7	5	1.00	28	0.179
1564	A	7	6	1.00	28	0.214
1565	A	8	5	1.00	28	0.179
1566	A	7	5	1.00	28	0.179
1567	A	6	4	1.00	26	0.154
1568	A	1	1	1.00	21	0.048

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1569	A	8	5	1.00	28	0.179
1570	A	8	6	1.00	28	0.214
1571	A	8	6	1.00	28	0.214
1572	A	8	5	1.00	28	0.179
1573	A	5	4	1.00	28	0.143
1574	A	4	4	1.00	28	0.143
1575	A	3	3	1.00	26	0.115
1576	A	1	1	1.00	21	0.048
1577	A	5	4	1.00	28	0.143
1578	A	3	3	1.00	28	0.107
1579	A	4	4	1.00	28	0.143
1580	A	5	4	1.00	28	0.143
1581	A	5	5	1.00	28	0.179
1582	A	5	5	1.00	28	0.179
1583	A	4	4	1.00	28	0.143
1584	A	3	3	1.00	26	0.115
1585	A	1	1	1.00	21	0.048
1586	A	4	4	1.00	28	0.143
1587	A	4	4	1.00	28	0.143
1588	A	5	5	1.00	28	0.179
1589	A	5	5	1.00	28	0.179
1590	A	2	2	1.00	28	0.071
1591	A	2	2	1.00	26	0.077
1592	A	1	1	1.00	21	0.048
1593	A	5	4	1.00	28	0.143
1594	A	5	4	1.00	28	0.143
1595	A	2	1	1.00	26	0.038
1596	A	2	1	1.00	26	0.038
1597	A	2	1	1.00	26	0.038
1598	A	2	1	1.00	26	0.038
1599	A	2	1	1.00	26	0.038
1600	A	2	1	1.00	26	0.038
1601	A	2	1	1.00	28	0.036
1602	A	2	1	1.00	28	0.036
1603	A	2	1	1.00	28	0.036
1604	A	2	1	1.00	28	0.036

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1605	A	2	1	1.00	28	0.036
1606	A	2	1	1.00	28	0.036
1607	A	2	1	1.00	28	0.036
1608	A	2	1	1.00	28	0.036
1609	A	2	1	1.00	28	0.036
1610	A	2	1	1.00	28	0.036
1611	A	2	1	1.00	28	0.036
1612	A	2	1	1.00	28	0.036
1613	A	6	4	1.00	28	0.143
1614	A	5	4	1.00	28	0.143
1615	A	4	3	1.00	28	0.107
1616	A	5	4	1.00	28	0.143
1617	A	6	4	1.00	28	0.143
1618	A	6	5	1.00	28	0.179
1619	A	5	4	1.00	28	0.143
1620	A	5	4	1.00	28	0.143
1621	A	5	4	1.00	28	0.143
1622	A	6	5	1.00	28	0.179
1623	A	7	6	1.00	28	0.214
1624	A	6	5	1.00	28	0.179
1625	A	6	5	1.00	28	0.179
1626	A	6	5	1.00	28	0.179
1627	A	6	4	1.00	28	0.143
1628	A	7	6	1.00	30	0.200
1629	A	6	5	1.00	30	0.167
1630	A	6	5	1.00	30	0.167
1631	A	6	5	1.00	30	0.167
1632	A	7	6	1.00	30	0.200
1633	A	7	5	1.00	30	0.167
1634	A	7	6	1.00	30	0.200
1635	A	7	5	1.00	30	0.167
1636	A	7	6	1.00	30	0.200
1637	A	8	5	1.00	30	0.167
1638	A	7	5	1.00	30	0.167
1639	A	6	5	1.00	30	0.167
1640	A	5	4	1.00	30	0.133

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1641	A	6	5	1.00	30	0.167
1642	A	7	5	1.00	30	0.167
1643	A	8	7	1.00	30	0.233
1644	A	7	6	1.00	30	0.200
1645	A	3	3	1.00	30	0.100
1646	A	3	3	1.00	30	0.100
1647	A	4	4	1.00	30	0.133
1648	A	7	6	1.00	30	0.200
1649	A	8	7	1.00	30	0.233
1650	A	7	6	1.00	30	0.200
1651	A	7	6	1.00	30	0.200
1652	A	7	6	1.00	30	0.200
1653	A	7	5	1.00	30	0.167
1654	A	2	1	1.00	26	0.038
1655	A	2	1	1.00	26	0.038
1656	A	2	1	1.00	24	0.042
1657	A	4	2	1.00	26	0.077
1658	A	5	3	1.00	26	0.115
1659	A	3	2	1.00	29	0.069
1660	A	3	2	1.00	29	0.069
1661	A	3	2	1.00	29	0.069
1662	A	3	2	1.00	29	0.069
1663	A	3	2	1.00	27	0.074
1664	A	3	2	1.00	22	0.091
1665	A	3	2	1.00	29	0.069
1666	A	3	2	1.00	29	0.069
1667	A	3	2	1.00	29	0.069
1668	A	4	3	1.00	29	0.103
1669	A	3	3	1.00	29	0.103
1670	A	3	2	1.00	29	0.069
1671	A	3	2	1.00	29	0.069
1672	A	3	2	1.00	29	0.069
1673	A	3	2	1.00	31	0.065
1674	A	3	2	1.00	31	0.065
1675	A	3	2	1.00	31	0.065
1676	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1677	A	3	2	1.00	31	0.065
1678	A	3	2	1.00	31	0.065
1679	A	3	2	1.00	29	0.069
1680	A	3	2	1.00	24	0.083
1681	A	3	2	1.00	31	0.065
1682	A	3	2	1.00	31	0.065
1683	A	3	2	1.00	31	0.065
1684	A	3	2	1.00	31	0.065
1685	A	3	2	1.00	31	0.065
1686	A	4	3	1.00	31	0.097
1687	A	3	3	1.00	31	0.097
1688	A	4	4	1.00	31	0.129
1689	A	5	4	1.00	31	0.129
1690	A	3	2	1.00	31	0.065
1691	A	3	2	1.00	31	0.065
1692	A	3	2	1.00	31	0.065
1693	A	3	2	1.00	31	0.065
1694	A	3	2	1.00	31	0.065
1695	A	3	2	1.00	31	0.065
1696	A	3	2	1.00	29	0.069
1697	A	3	2	1.00	24	0.083
1698	A	3	2	1.00	31	0.065
1699	A	3	2	1.00	31	0.065
1700	A	3	2	1.00	31	0.065
1701	A	3	2	1.00	31	0.065
1702	A	3	2	1.00	31	0.065
1703	A	4	3	1.00	31	0.097
1704	A	3	2	1.00	29	0.069
1705	A	3	2	1.00	24	0.083
1706	A	3	2	1.00	31	0.065
1707	A	3	2	1.00	31	0.065
1708	A	3	2	1.00	33	0.061
1709	A	3	2	1.00	33	0.061
1710	A	3	2	1.00	33	0.061
1711	A	3	2	1.00	31	0.065
1712	A	2	2	1.00	26	0.077

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1713	A	3	2	1.00	33	0.061
1714	A	3	2	1.00	33	0.061
1715	A	3	2	1.00	33	0.061
1716	A	3	3	1.00	33	0.091
1717	A	3	2	1.00	33	0.061
1718	A	3	2	1.00	33	0.061
1719	A	3	2	1.00	33	0.061
1720	A	3	2	1.00	33	0.061
1721	A	3	2	1.00	33	0.061
1722	A	3	2	1.00	33	0.061
1723	A	3	2	1.00	33	0.061
1724	A	3	2	1.00	31	0.065
1725	A	2	2	1.00	26	0.077
1726	A	3	2	1.00	33	0.061
1727	A	3	2	1.00	33	0.061
1728	A	3	2	1.00	33	0.061
1729	A	3	2	1.00	33	0.061
1730	A	4	3	1.00	33	0.091
1731	A	3	3	1.00	33	0.091
1732	A	4	4	1.00	33	0.121
1733	A	3	2	1.00	33	0.061
1734	A	3	2	1.00	33	0.061
1735	A	3	2	1.00	33	0.061
1736	A	3	2	1.00	33	0.061
1737	A	3	2	1.00	33	0.061
1738	A	3	2	1.00	33	0.061
1739	A	3	2	1.00	33	0.061
1740	A	3	2	1.00	33	0.061
1741	A	3	2	1.00	33	0.061
1742	A	3	2	1.00	33	0.061
1743	A	3	2	1.00	31	0.065
1744	A	2	2	1.00	26	0.077
1745	A	3	2	1.00	33	0.061
1746	A	3	2	1.00	33	0.061
1747	A	3	2	1.00	33	0.061
1748	A	3	2	1.00	33	0.061

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1749	A	3	2	1.00	33	0.061
1750	A	3	2	1.00	33	0.061
1751	A	4	3	1.00	33	0.091
1752	A	3	3	1.00	33	0.091
1753	A	4	4	1.00	33	0.121
1754	A	5	4	1.00	33	0.121
1755	A	3	2	1.00	33	0.061
1756	A	3	2	1.00	33	0.061
1757	A	3	2	1.00	33	0.061
1758	A	3	2	1.00	33	0.061
1759	A	3	2	1.00	33	0.061
1760	A	3	2	1.00	33	0.061
1761	A	3	2	1.00	31	0.065
1762	A	3	3	1.00	26	0.115
1763	A	3	2	1.00	33	0.061
1764	A	5	4	1.00	33	0.121
1765	A	3	2	1.00	33	0.061
1766	A	3	2	1.00	33	0.061
1767	A	3	2	1.00	33	0.061
1768	A	3	2	1.00	33	0.061
1769	A	3	2	1.00	33	0.061
1770	A	3	2	1.00	31	0.065
1771	A	2	2	1.00	26	0.077
1772	A	3	2	1.00	33	0.061
1773	A	3	2	1.00	33	0.061
1774	A	3	2	1.00	33	0.061
1775	A	3	2	1.00	33	0.061
1776	A	3	2	1.00	33	0.061
1777	A	4	3	1.00	33	0.091
1778	A	3	3	1.00	33	0.091
1779	A	3	2	1.00	31	0.065
1780	A	2	2	1.00	26	0.077
1781	A	3	2	1.00	33	0.061
1782	A	3	2	1.00	33	0.061
1783	A	3	2	1.00	33	0.061
1784	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1785	A	3	2	1.00	31	0.065
1786	A	3	2	1.00	31	0.065
1787	A	3	2	1.00	31	0.065
1788	A	3	2	1.00	31	0.065
1789	A	3	2	1.00	31	0.065
1790	A	3	2	1.00	31	0.065
1791	A	3	2	1.00	31	0.065
1792	A	3	2	1.00	33	0.061
1793	A	3	2	1.00	33	0.061
1794	A	3	2	1.00	33	0.061
1795	A	3	2	1.00	33	0.061
1796	A	3	2	1.00	33	0.061
1797	A	3	2	1.00	33	0.061
1798	A	3	2	1.00	33	0.061
1799	A	3	2	1.00	33	0.061
1800	A	3	2	1.00	33	0.061
1801	A	3	2	1.00	33	0.061
1802	A	3	2	1.00	33	0.061
1803	A	3	2	1.00	33	0.061
1804	A	3	2	1.00	33	0.061
1805	A	3	2	1.00	33	0.061
1806	A	3	2	1.00	33	0.061
1807	A	3	2	1.00	33	0.061
1808	A	8	5	1.00	33	0.152
1809	A	7	5	1.00	33	0.152
1810	A	6	5	1.00	33	0.152
1811	A	5	5	1.00	33	0.152
1812	A	4	4	1.00	33	0.121
1813	A	5	5	1.00	33	0.152
1814	A	6	5	1.00	33	0.152
1815	A	7	5	1.00	33	0.152
1816	A	9	6	1.00	33	0.182
1817	A	8	6	1.00	33	0.182
1818	A	7	6	1.00	33	0.182
1819	A	6	5	1.00	33	0.152
1820	A	6	6	1.00	33	0.182

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1821	A	6	5	1.00	33	0.152
1822	A	7	5	1.00	33	0.152
1823	A	8	5	1.00	33	0.152
1824	A	9	5	1.00	33	0.152
1825	A	10	6	1.00	33	0.182
1826	A	9	6	1.00	33	0.182
1827	A	8	5	1.00	33	0.152
1828	A	8	6	1.00	33	0.182
1829	A	8	6	1.00	33	0.182
1830	A	8	6	1.00	33	0.182
1831	A	8	5	1.00	33	0.152
1832	A	9	5	1.00	33	0.152
1833	A	10	5	1.00	33	0.152
1834	A	11	5	1.00	33	0.152
1835	A	3	2	1.00	35	0.057
1836	A	3	2	1.00	35	0.057
1837	A	3	2	1.00	35	0.057
1838	A	3	2	1.00	35	0.057
1839	A	3	2	1.00	35	0.057
1840	A	3	2	1.00	35	0.057
1841	A	3	2	1.00	35	0.057
1842	A	3	2	1.00	35	0.057
1843	A	3	2	1.00	35	0.057
1844	A	3	2	1.00	35	0.057
1845	A	3	2	1.00	35	0.057
1846	A	3	2	1.00	35	0.057
1847	A	3	2	1.00	35	0.057
1848	A	3	2	1.00	35	0.057
1849	A	3	2	1.00	35	0.057
1850	A	3	2	1.00	35	0.057
1851	A	3	2	1.00	35	0.057
1852	A	3	2	1.00	35	0.057
1853	A	3	2	1.00	35	0.057
1854	A	3	2	1.00	35	0.057
1855	A	3	2	1.00	35	0.057
1856	A	3	2	1.00	35	0.057

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1857	A	3	2	1.00	35	0.057
1858	A	3	2	1.00	35	0.057
1859	A	7	5	1.00	35	0.143
1860	A	6	5	1.00	35	0.143
1861	A	5	5	1.00	35	0.143
1862	A	4	4	1.00	35	0.114
1863	A	4	4	1.00	35	0.114
1864	A	5	5	1.00	35	0.143
1865	A	6	5	1.00	35	0.143
1866	A	8	6	1.00	35	0.171
1867	A	7	6	1.00	35	0.171
1868	A	6	6	1.00	35	0.171
1869	A	5	5	1.00	35	0.143
1870	A	5	5	1.00	35	0.143
1871	A	6	5	1.00	35	0.143
1872	A	7	5	1.00	35	0.143
1873	A	8	5	1.00	35	0.143
1874	A	10	6	1.00	35	0.171
1875	A	9	6	1.00	35	0.171
1876	A	8	6	1.00	35	0.171
1877	A	7	5	1.00	35	0.143
1878	A	7	6	1.00	35	0.171
1879	A	7	6	1.00	35	0.171
1880	A	7	5	1.00	35	0.143
1881	A	8	5	1.00	35	0.143
1882	A	9	5	1.00	35	0.143
1883	A	10	5	1.00	35	0.143
1884	A	3	2	1.00	31	0.065
1885	A	3	2	1.00	29	0.069
1886	A	3	3	1.00	31	0.097
1887	A	3	3	0.99	31	0.097
1888	A	3	2	1.00	33	0.061
1889	A	3	2	1.00	33	0.061
1890	A	3	2	1.00	33	0.061
1891	A	3	3	1.00	33	0.091
1892	A	3	3	0.99	33	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1893	A	4	4	1.00	31	0.129
1894	A	3	3	1.00	35	0.086
1895	A	3	2	1.00	29	0.069
1896	A	3	2	1.00	29	0.069
1897	A	3	2	1.00	29	0.069
1898	A	3	2	1.00	29	0.069
1899	A	3	2	1.00	27	0.074
1900	A	2	2	1.00	22	0.091
1901	A	3	2	1.00	29	0.069
1902	A	3	2	1.00	29	0.069
1903	A	3	2	1.00	29	0.069
1904	A	3	2	1.00	29	0.069
1905	A	3	2	1.00	31	0.065
1906	A	3	2	1.00	31	0.065
1907	A	3	2	1.00	31	0.065
1908	A	3	2	1.00	31	0.065
1909	A	3	2	1.00	31	0.065
1910	A	3	2	1.00	29	0.069
1911	A	2	2	1.00	24	0.083
1912	A	3	2	1.00	31	0.065
1913	A	3	2	1.00	31	0.065
1914	A	3	2	1.00	31	0.065
1915	A	3	2	1.00	31	0.065
1916	A	3	2	1.00	31	0.065
1917	A	3	2	1.00	31	0.065
1918	A	3	2	1.00	31	0.065
1919	A	3	2	1.00	31	0.065
1920	A	3	2	1.00	31	0.065
1921	A	3	2	1.00	29	0.069
1922	A	2	2	1.00	24	0.083
1923	A	3	2	1.00	31	0.065
1924	A	3	2	1.00	31	0.065
1925	A	3	2	1.00	31	0.065
1926	A	3	2	1.00	31	0.065
1927	A	3	2	1.00	31	0.065
1928	A	3	2	1.00	31	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1929	A	3	2	1.00	31	0.065
1930	A	3	2	1.00	29	0.069
1931	A	2	2	1.00	24	0.083
1932	A	4	3	1.00	31	0.097
1933	A	3	2	1.00	31	0.065
1934	A	3	2	1.00	31	0.065
1935	A	3	2	1.00	31	0.065
1936	A	3	2	1.00	31	0.065
1937	A	3	2	1.00	31	0.065
1938	A	3	2	1.00	31	0.065
1939	A	2	2	1.00	29	0.069
1940	A	2	2	1.00	24	0.083
1941	A	3	2	1.00	31	0.065
1942	A	3	2	1.00	31	0.065
1943	A	3	2	1.00	31	0.065
1944	A	3	2	1.00	31	0.065
1945	A	3	2	1.00	31	0.065
1946	A	2	2	1.00	31	0.065
1947	A	3	2	1.00	31	0.065
1948	A	3	2	1.00	29	0.069
1949	A	2	2	1.00	24	0.083
1950	A	3	2	1.00	31	0.065
1951	A	3	2	1.00	31	0.065
1952	A	3	2	1.00	31	0.065
1953	A	3	2	1.00	31	0.065
1954	A	4	3	1.00	33	0.091
1955	A	4	3	1.00	33	0.091
1956	A	4	3	1.00	33	0.091
1957	A	4	3	1.00	33	0.091
1958	A	4	3	1.00	31	0.097
1959	A	1	1	1.00	26	0.038
1960	A	4	3	1.00	33	0.091
1961	A	4	3	1.00	33	0.091
1962	A	4	3	1.00	33	0.091
1963	A	1	1	1.00	33	0.030
1964	A	4	3	1.00	33	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
1965	A	4	3	1.00	33	0.091
1966	A	4	3	1.00	33	0.091
1967	A	4	3	1.00	33	0.091
1968	A	4	3	1.00	33	0.091
1969	A	4	3	1.00	33	0.091
1970	A	4	3	1.00	33	0.091
1971	A	4	3	1.00	33	0.091
1972	A	4	3	1.00	33	0.091
1973	A	4	3	1.00	33	0.091
1974	A	4	3	1.00	31	0.097
1975	A	1	1	1.00	26	0.038
1976	A	4	3	1.00	33	0.091
1977	A	4	3	1.00	33	0.091
1978	A	4	3	1.00	33	0.091
1979	A	4	3	1.00	33	0.091
1980	A	4	3	1.00	33	0.091
1981	A	1	1	1.00	33	0.030
1982	A	4	4	1.00	33	0.121
1983	A	5	4	1.00	33	0.121
1984	A	4	3	1.00	33	0.091
1985	A	4	3	1.00	33	0.091
1986	A	4	3	1.00	33	0.091
1987	A	4	3	1.00	33	0.091
1988	A	4	3	1.00	33	0.091
1989	A	4	3	1.00	33	0.091
1990	A	4	3	1.00	33	0.091
1991	A	4	3	1.00	33	0.091
1992	A	4	3	1.00	33	0.091
1993	A	4	3	1.00	33	0.091
1994	A	4	3	1.00	33	0.091
1995	A	4	3	1.00	33	0.091
1996	A	4	3	1.00	31	0.097
1997	A	1	1	1.00	26	0.038
1998	A	4	3	1.00	33	0.091
1999	A	4	3	1.00	33	0.091
2000	A	4	3	1.00	33	0.091

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2001	A	4	3	1.00	33	0.091
2002	A	4	3	1.00	33	0.091
2003	A	4	3	1.00	33	0.091
2004	A	4	3	1.00	33	0.091
2005	A	1	1	1.00	33	0.030
2006	A	4	4	1.00	33	0.121
2007	A	5	4	1.00	33	0.121
2008	A	6	4	1.00	33	0.121
2009	A	4	3	1.00	33	0.091
2010	A	4	3	1.00	33	0.091
2011	A	4	3	1.00	33	0.091
2012	A	4	3	1.00	33	0.091
2013	A	4	3	1.00	33	0.091
2014	A	4	3	1.00	33	0.091
2015	A	3	3	1.00	33	0.091
2016	A	3	3	1.00	33	0.091
2017	A	3	3	1.00	33	0.091
2018	A	3	2	1.00	31	0.065
2019	A	1	1	1.00	26	0.038
2020	A	3	3	1.00	33	0.091
2021	A	1	1	1.00	33	0.030
2022	A	3	3	0.93	33	0.091
2023	A	3	3	0.93	33	0.091
2024	A	3	3	0.93	33	0.091
2025	A	4	3	1.00	33	0.091
2026	A	4	3	1.00	33	0.091
2027	A	4	4	1.00	33	0.121
2028	A	3	3	1.00	31	0.097
2029	A	1	1	1.00	26	0.038
2030	A	4	3	1.00	33	0.091
2031	A	4	3	1.00	33	0.091
2032	A	4	3	1.00	33	0.091
2033	A	4	3	1.00	33	0.091
2034	A	4	3	1.00	33	0.091
2035	A	4	3	1.00	33	0.091
2036	A	1	1	1.00	33	0.030

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2037	A	2	2	1.00	31	0.065
2038	A	1	1	1.00	26	0.038
2039	A	4	3	1.00	33	0.091
2040	A	4	3	1.00	33	0.091
2041	A	4	3	1.00	33	0.091
2042	A	3	2	1.00	31	0.065
2043	A	3	2	1.00	31	0.065
2044	A	3	2	1.00	31	0.065
2045	A	3	2	1.00	31	0.065
2046	A	3	2	1.00	31	0.065
2047	A	3	2	1.00	31	0.065
2048	A	3	2	1.00	31	0.065
2049	A	3	2	1.00	31	0.065
2050	A	3	2	1.00	33	0.061
2051	A	3	2	1.00	33	0.061
2052	A	3	2	1.00	33	0.061
2053	A	3	2	1.00	33	0.061
2054	A	3	2	1.00	33	0.061
2055	A	3	2	1.00	33	0.061
2056	A	3	2	1.00	33	0.061
2057	A	3	2	1.00	33	0.061
2058	A	3	2	1.00	33	0.061
2059	A	3	2	1.00	33	0.061
2060	A	3	2	1.00	33	0.061
2061	A	3	2	1.00	33	0.061
2062	A	3	2	1.00	33	0.061
2063	A	3	2	1.00	33	0.061
2064	A	3	2	1.00	33	0.061
2065	A	3	2	1.00	33	0.061
2066	A	7	4	1.00	33	0.121
2067	A	6	4	1.00	33	0.121
2068	A	5	4	1.00	33	0.121
2069	A	4	4	1.00	33	0.121
2070	A	3	3	1.00	33	0.091
2071	A	4	4	1.00	33	0.121
2072	A	5	4	1.00	33	0.121

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2073	A	6	4	1.00	33	0.121
2074	A	8	5	1.00	33	0.152
2075	A	7	5	1.00	33	0.152
2076	A	6	5	1.00	33	0.152
2077	A	5	4	1.00	33	0.121
2078	A	5	5	1.00	33	0.152
2079	A	5	4	1.00	33	0.121
2080	A	6	4	1.00	33	0.121
2081	A	7	4	1.00	33	0.121
2082	A	8	4	1.00	33	0.121
2083	A	9	5	1.00	33	0.152
2084	A	8	5	1.00	33	0.152
2085	A	7	4	1.00	33	0.121
2086	A	7	5	1.00	33	0.152
2087	A	7	5	1.00	33	0.152
2088	A	7	5	1.00	33	0.152
2089	A	7	4	1.00	33	0.121
2090	A	8	4	1.00	33	0.121
2091	A	9	4	1.00	33	0.121
2092	A	4	3	1.00	35	0.086
2093	A	4	3	1.00	35	0.086
2094	A	4	3	1.00	35	0.086
2095	A	4	3	1.00	35	0.086
2096	A	4	3	1.00	35	0.086
2097	A	4	3	1.00	35	0.086
2098	A	4	3	1.00	35	0.086
2099	A	4	3	1.00	35	0.086
2100	A	4	3	1.00	35	0.086
2101	A	4	3	1.00	35	0.086
2102	A	4	3	1.00	35	0.086
2103	A	4	3	1.00	35	0.086
2104	A	4	3	1.00	35	0.086
2105	A	4	3	1.00	35	0.086
2106	A	4	3	1.00	35	0.086
2107	A	4	3	1.00	35	0.086
2108	A	4	3	1.00	35	0.086

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2109	A	4	3	1.00	35	0.086
2110	A	4	3	1.00	35	0.086
2111	A	4	3	1.00	35	0.086
2112	A	4	3	1.00	35	0.086
2113	A	4	3	1.00	35	0.086
2114	A	4	3	1.00	35	0.086
2115	A	4	3	1.00	35	0.086
2116	A	4	3	1.00	35	0.086
2117	A	4	3	1.00	35	0.086
2118	A	4	3	1.00	35	0.086
2119	A	4	3	1.00	35	0.086
2120	A	4	3	1.00	35	0.086
2121	A	4	3	1.00	35	0.086
2122	A	3	3	1.00	35	0.086
2123	A	3	3	1.00	35	0.086
2124	A	3	3	1.00	35	0.086
2125	A	3	3	1.00	35	0.086
2126	A	3	3	1.00	35	0.086
2127	A	3	3	1.00	35	0.086
2128	A	3	3	1.00	35	0.086
2129	A	3	3	1.00	35	0.086
2130	A	7	5	1.00	35	0.143
2131	A	6	5	1.00	35	0.143
2132	A	5	5	1.00	35	0.143
2133	A	4	4	1.00	35	0.114
2134	A	5	5	1.00	35	0.143
2135	A	6	5	1.00	35	0.143
2136	A	7	5	1.00	35	0.143
2137	A	8	5	1.00	35	0.143
2138	A	7	6	1.00	35	0.171
2139	A	6	5	1.00	35	0.143
2140	A	6	6	1.00	35	0.171
2141	A	6	5	1.00	35	0.143
2142	A	7	5	1.00	35	0.143
2143	A	8	5	1.00	35	0.143
2144	A	9	5	1.00	35	0.143

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2145	A	10	5	1.00	35	0.143
2146	A	3	2	1.00	31	0.065
2147	A	3	2	1.00	31	0.065
2148	A	3	2	1.00	29	0.069
2149	A	2	2	1.00	31	0.065
2150	A	2	2	1.00	31	0.065
2151	A	4	3	1.00	33	0.091
2152	A	4	3	1.00	33	0.091
2153	A	4	3	1.00	33	0.091
2154	A	3	3	1.00	33	0.091
2155	A	3	3	1.00	33	0.091
2156	A	3	3	1.00	33	0.091
2157	A	1	1	1.00	38	0.026
2158	A	4	3	1.00	31	0.097
2159	A	4	3	1.00	31	0.097
2160	A	4	3	1.00	29	0.103
2161	A	1	1	1.00	24	0.042
2162	A	3	3	1.00	31	0.097
2163	A	4	3	1.00	34	0.088
2164	A	4	3	1.00	34	0.088
2165	A	4	3	1.00	36	0.083
2166	A	4	3	1.00	36	0.083
2167	A	4	3	1.00	34	0.088
2168	A	3	3	1.00	38	0.079
2169	A	3	3	1.00	34	0.088
2170	A	4	3	1.00	34	0.088
2171	A	4	3	1.00	34	0.088
2172	A	7	6	1.00	44	0.136
2173	A	7	7	1.00	44	0.159
2174	A	4	4	1.00	42	0.095
2175	A	4	4	1.00	44	0.091
2176	A	4	4	1.00	44	0.091
2177	A	4	4	1.00	44	0.091
2178	A	2	2	1.00	44	0.045
2179	A	3	3	1.00	44	0.068
2180	A	4	3	1.00	44	0.068

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2181	A	5	3	1.00	44	0.068
2182	A	6	3	1.00	44	0.068
2183	A	8	6	1.00	44	0.136
2184	A	8	7	1.00	44	0.159
2185	A	5	4	1.00	42	0.095
2186	A	5	5	1.00	44	0.114
2187	A	5	5	1.00	44	0.114
2188	A	5	4	1.00	44	0.091
2189	A	5	5	1.00	44	0.114
2190	A	5	4	1.00	44	0.091
2191	A	2	2	1.00	44	0.045
2192	A	3	3	1.00	44	0.068
2193	A	4	3	1.00	44	0.068
2194	A	5	3	1.00	44	0.068
2195	A	9	6	1.00	44	0.136
2196	A	9	7	1.00	44	0.159
2197	A	6	4	1.00	42	0.095
2198	A	6	5	1.00	44	0.114
2199	A	6	5	1.00	44	0.114
2200	A	7	7	1.00	44	0.159
2201	A	6	6	1.00	44	0.136
2202	A	6	5	1.00	44	0.114
2203	A	6	5	1.00	44	0.114
2204	A	6	4	1.00	44	0.091
2205	A	2	2	1.00	44	0.045
2206	A	3	3	1.00	44	0.068
2207	A	4	3	1.00	44	0.068
2208	A	5	3	1.00	44	0.068
2209	A	6	5	1.00	44	0.114
2210	A	6	6	1.00	44	0.136
2211	A	3	3	1.00	42	0.071
2212	A	3	3	1.00	44	0.068
2213	A	2	2	1.00	44	0.045
2214	A	3	3	1.00	44	0.068
2215	A	4	3	1.00	44	0.068
2216	A	5	3	1.00	44	0.068

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2217	A	5	5	1.00	44	0.114
2218	A	4	4	1.00	44	0.091
2219	A	3	3	1.15	42	0.071
2220	A	2	2	1.00	44	0.045
2221	A	3	3	1.00	44	0.068
2222	A	4	3	1.00	44	0.068
2223	A	6	6	1.00	44	0.136
2224	A	5	5	1.00	44	0.114
2225	A	4	4	1.00	44	0.091
2226	A	2	2	1.00	44	0.045
2227	A	2	2	1.00	42	0.048
2228	A	3	3	1.00	44	0.068
2229	A	4	4	1.00	44	0.091
2230	A	5	4	1.00	44	0.091
2231	A	5	3	1.00	46	0.065
2232	A	4	3	1.00	46	0.065
2233	A	3	3	1.00	46	0.065
2234	A	2	2	1.00	46	0.043
2235	A	4	4	1.00	46	0.087
2236	A	4	4	1.00	46	0.087
2237	A	4	4	1.00	46	0.087
2238	A	5	5	1.00	46	0.109
2239	A	6	5	1.00	46	0.109
2240	A	6	3	1.00	46	0.065
2241	A	5	3	1.00	46	0.065
2242	A	4	3	1.00	46	0.065
2243	A	3	3	1.00	46	0.065
2244	A	2	2	1.00	46	0.043
2245	A	5	4	1.00	46	0.087
2246	A	5	4	1.00	46	0.087
2247	A	5	5	1.00	46	0.109
2248	A	5	4	1.00	46	0.087
2249	A	6	5	1.00	46	0.109
2250	A	7	3	1.00	46	0.065
2251	A	6	3	1.00	46	0.065
2252	A	5	3	1.00	46	0.065

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2253	A	4	3	1.00	46	0.065
2254	A	3	3	1.00	46	0.065
2255	A	2	2	1.00	46	0.043
2256	A	6	4	1.00	46	0.087
2257	A	6	4	1.00	46	0.087
2258	A	6	5	1.00	46	0.109
2259	A	6	5	1.00	46	0.109
2260	A	6	4	1.00	46	0.087
2261	A	7	5	1.00	46	0.109
2262	A	4	3	1.00	46	0.065
2263	A	3	3	1.00	46	0.065
2264	A	2	2	1.00	46	0.043
2265	A	3	3	1.00	46	0.065
2266	A	3	3	1.00	46	0.065
2267	A	4	4	1.00	46	0.087
2268	A	5	3	1.00	46	0.065
2269	A	4	3	1.00	46	0.065
2270	A	3	3	1.00	46	0.065
2271	A	2	2	1.00	46	0.043
2272	A	3	3	1.00	46	0.065
2273	A	4	4	1.00	46	0.087
2274	A	5	5	1.00	46	0.109
2275	A	6	5	1.00	46	0.109
2276	A	6	3	1.00	46	0.065
2277	A	5	3	1.00	46	0.065
2278	A	4	3	1.00	46	0.065
2279	A	3	3	1.00	46	0.065
2280	A	2	2	1.00	46	0.043
2281	A	4	4	1.00	46	0.087
2282	A	5	5	1.00	46	0.109
2283	A	6	5	1.00	46	0.109
2284	A	7	5	1.00	46	0.109
2285	A	5	5	1.00	44	0.114
2286	A	5	5	1.00	44	0.114
2287	A	5	5	1.00	44	0.114
2288	A	5	5	1.00	44	0.114

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2289	A	5	5	1.00	44	0.114
2290	A	5	5	1.00	44	0.114
2291	A	1	1	1.00	61	0.016
2292	A	1	1	1.00	60	0.017
2293	A	3	2	1.00	42	0.048
2294	A	2	1	1.00	21	0.048
2295	A	2	1	1.00	21	0.048
2296	A	2	1	1.00	21	0.048
2297	A	2	1	1.00	17	0.059
2298	A	6	5	1.00	21	0.238
2299	A	8	8	1.00	21	0.381
2300	A	9	8	1.00	21	0.381
2301	A	6	5	1.00	25	0.200
2302	A	5	5	1.00	25	0.200
2303	A	4	4	1.00	25	0.160
2304	A	5	5	1.00	25	0.200
2305	A	6	5	1.00	25	0.200
2306	A	2	1	0.99	23	0.043
2307	A	2	1	0.99	23	0.043
2308	A	2	1	0.99	23	0.043
2309	A	2	1	1.00	21	0.048
2310	A	2	1	1.00	16	0.062
2311	A	2	1	0.98	23	0.043
2312	A	2	1	0.98	23	0.043
2313	A	2	1	1.00	23	0.043
2314	A	2	1	0.99	23	0.043
2315	A	2	1	0.99	23	0.043
2316	A	2	1	0.99	23	0.043
2317	A	2	1	0.99	23	0.043
2318	A	2	1	0.99	25	0.040
2319	A	2	1	0.99	25	0.040
2320	A	2	1	0.99	25	0.040
2321	A	2	1	0.99	25	0.040
2322	A	2	1	1.00	23	0.043
2323	A	2	1	1.00	18	0.056
2324	A	2	1	1.00	25	0.040

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2325	A	2	1	0.99	25	0.040
2326	A	2	1	1.00	25	0.040
2327	A	2	1	0.99	25	0.040
2328	A	2	1	0.99	25	0.040
2329	A	2	1	0.99	25	0.040
2330	A	2	1	0.99	25	0.040
2331	A	2	1	0.99	25	0.040
2332	A	2	1	0.99	25	0.040
2333	A	2	1	1.00	25	0.040
2334	A	2	1	1.00	25	0.040
2335	A	2	1	1.00	25	0.040
2336	A	2	1	1.00	25	0.040
2337	A	2	1	1.00	23	0.043
2338	A	2	1	1.00	18	0.056
2339	A	2	1	0.99	25	0.040
2340	A	2	1	0.99	25	0.040
2341	A	2	1	1.00	25	0.040
2342	A	2	1	1.00	25	0.040
2343	A	2	1	1.00	25	0.040
2344	A	2	1	1.00	25	0.040
2345	A	2	1	1.00	25	0.040
2346	A	2	1	1.00	25	0.040
2347	A	2	1	1.00	25	0.040
2348	A	2	1	1.00	25	0.040
2349	A	2	1	1.00	25	0.040
2350	A	2	1	1.00	19	0.053
2351	A	2	1	1.00	19	0.053
2352	A	2	1	1.00	19	0.053
2353	A	2	1	1.00	19	0.053
2354	A	2	1	1.00	19	0.053
2355	A	2	1	1.00	17	0.059
2356	A	2	1	1.00	12	0.083
2357	A	2	1	1.00	19	0.053
2358	A	2	1	1.00	19	0.053
2359	A	2	1	1.00	19	0.053
2360	A	2	1	1.00	19	0.053

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2361	A	2	1	1.00	19	0.053
2362	A	2	1	1.00	19	0.053
2363	A	2	1	1.00	19	0.053
2364	A	6	5	1.00	25	0.200
2365	A	6	5	1.00	25	0.200
2366	A	5	5	1.00	23	0.217
2367	A	4	4	1.00	18	0.222
2368	A	6	5	1.00	25	0.200
2369	A	6	5	1.00	25	0.200
2370	A	6	5	1.00	25	0.200
2371	A	6	5	1.00	25	0.200
2372	A	4	4	1.00	25	0.160
2373	A	4	4	0.99	25	0.160
2374	A	4	4	0.99	23	0.174
2375	A	4	4	1.00	18	0.222
2376	A	8	6	1.00	25	0.240
2377	A	8	6	1.00	25	0.240
2378	A	5	3	1.00	25	0.120
2379	A	5	3	1.00	25	0.120
2380	A	5	3	1.00	25	0.120
2381	A	4	3	1.00	23	0.130
2382	A	3	2	1.00	18	0.111
2383	A	2	1	1.00	25	0.040
2384	A	2	1	1.00	25	0.040
2385	A	2	1	1.00	25	0.040
2386	A	2	1	1.00	25	0.040
2387	A	7	5	1.00	25	0.200
2388	A	7	5	1.00	25	0.200
2389	A	5	4	1.00	25	0.160
2390	A	4	3	1.00	23	0.130
2391	A	4	3	1.00	18	0.167
2392	A	3	2	1.00	25	0.080
2393	A	3	2	1.00	25	0.080
2394	A	3	2	1.00	25	0.080
2395	A	3	2	1.00	25	0.080
2396	A	8	5	1.00	25	0.200

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2397	A	6	4	1.00	25	0.160
2398	A	5	4	1.00	25	0.160
2399	A	6	5	1.00	25	0.200
2400	A	5	4	1.00	23	0.174
2401	A	5	4	1.00	18	0.222
2402	A	4	2	1.00	25	0.080
2403	A	4	2	1.00	25	0.080
2404	A	4	2	1.00	25	0.080
2405	A	2	2	1.00	15	0.133
2406	A	7	5	1.00	27	0.185
2407	A	6	5	1.00	27	0.185
2408	A	5	5	1.00	27	0.185
2409	A	4	4	1.00	25	0.160
2410	A	4	4	1.00	20	0.200
2411	A	6	5	1.00	27	0.185
2412	A	6	5	1.00	27	0.185
2413	A	6	5	1.00	27	0.185
2414	A	4	4	1.00	27	0.148
2415	A	5	5	1.00	27	0.185
2416	A	6	5	1.00	27	0.185
2417	A	7	5	1.00	27	0.185
2418	A	8	5	1.00	27	0.185
2419	A	7	5	1.00	27	0.185
2420	A	6	5	1.00	27	0.185
2421	A	5	4	1.00	25	0.160
2422	A	5	4	1.00	20	0.200
2423	A	7	5	1.00	27	0.185
2424	A	7	6	1.00	27	0.222
2425	A	7	5	1.00	27	0.185
2426	A	7	6	1.00	27	0.222
2427	A	7	5	1.00	27	0.185
2428	A	5	4	1.00	27	0.148
2429	A	6	5	1.00	27	0.185
2430	A	7	5	1.00	27	0.185
2431	A	8	5	1.00	27	0.185
2432	A	9	5	1.00	27	0.185

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2433	A	8	5	1.00	27	0.185
2434	A	7	5	1.00	27	0.185
2435	A	6	4	1.00	25	0.160
2436	A	6	4	1.00	20	0.200
2437	A	8	5	1.00	27	0.185
2438	A	8	6	1.00	27	0.222
2439	A	8	6	1.00	27	0.222
2440	A	8	5	1.00	27	0.185
2441	A	8	6	1.00	27	0.222
2442	A	8	6	1.00	27	0.222
2443	A	8	5	1.00	27	0.185
2444	A	6	4	1.00	27	0.148
2445	A	7	5	1.00	27	0.185
2446	A	8	5	1.00	27	0.185
2447	A	10	5	1.00	27	0.185
2448	A	9	5	1.00	27	0.185
2449	A	8	5	1.00	27	0.185
2450	A	7	4	1.00	25	0.160
2451	A	7	4	1.00	20	0.200
2452	A	9	5	1.00	27	0.185
2453	A	9	6	1.00	27	0.222
2454	A	9	6	1.00	27	0.222
2455	A	9	6	1.00	27	0.222
2456	A	9	5	1.00	27	0.185
2457	A	9	6	1.00	27	0.222
2458	A	9	6	1.00	27	0.222
2459	A	9	6	1.00	27	0.222
2460	A	9	5	1.00	27	0.185
2461	A	7	4	1.00	27	0.148
2462	A	8	5	1.00	27	0.185
2463	A	9	5	1.00	27	0.185
2464	A	10	5	1.00	27	0.185
2465	A	5	4	1.00	27	0.148
2466	A	4	4	1.00	27	0.148
2467	A	3	3	0.99	25	0.120
2468	A	3	3	1.00	20	0.150

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2469	A	5	4	1.00	27	0.148
2470	A	3	3	1.00	27	0.111
2471	A	4	4	0.99	27	0.148
2472	A	5	4	1.00	27	0.148
2473	A	4	4	1.00	27	0.148
2474	A	4	4	1.00	27	0.148
2475	A	3	3	1.00	25	0.120
2476	A	1	1	1.00	20	0.050
2477	A	4	4	1.00	27	0.148
2478	A	4	4	0.99	27	0.148
2479	A	5	5	1.00	27	0.185
2480	A	5	4	1.00	27	0.148
2481	A	4	4	1.00	27	0.148
2482	A	2	2	1.00	27	0.074
2483	A	2	2	1.00	25	0.080
2484	A	2	2	1.00	20	0.100
2485	A	5	4	1.00	27	0.148
2486	A	5	4	1.00	27	0.148
2487	A	6	4	1.00	27	0.148
2488	A	5	4	1.00	27	0.148
2489	A	3	3	1.00	27	0.111
2490	A	3	3	1.00	27	0.111
2491	A	3	3	1.00	27	0.111
2492	A	3	3	1.00	25	0.120
2493	A	3	3	1.00	20	0.150
2494	A	6	4	1.00	27	0.148
2495	A	6	4	1.00	27	0.148
2496	A	5	4	1.00	27	0.148
2497	A	4	4	1.00	27	0.148
2498	A	3	3	1.00	25	0.120
2499	A	3	3	1.00	20	0.150
2500	A	5	4	1.00	27	0.148
2501	A	3	3	1.00	27	0.111
2502	A	4	4	1.00	27	0.148
2503	A	5	4	1.00	27	0.148
2504	A	6	4	1.00	27	0.148

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2505	A	7	4	1.00	27	0.148
2506	A	5	5	1.00	27	0.185
2507	A	4	4	1.00	27	0.148
2508	A	4	4	1.00	27	0.148
2509	A	3	3	1.00	25	0.120
2510	A	1	1	1.00	20	0.050
2511	A	4	4	1.00	27	0.148
2512	A	4	4	1.00	27	0.148
2513	A	5	5	1.00	27	0.185
2514	A	6	5	1.00	27	0.185
2515	A	7	5	1.00	27	0.185
2516	A	5	4	1.00	27	0.148
2517	A	4	4	1.00	27	0.148
2518	A	2	2	1.00	27	0.074
2519	A	2	2	1.00	25	0.080
2520	A	2	2	1.00	20	0.100
2521	A	5	4	1.00	27	0.148
2522	A	5	4	1.00	27	0.148
2523	A	6	5	1.00	27	0.185
2524	A	7	5	1.00	27	0.185
2525	A	5	5	1.00	19	0.263
2526	A	2	1	1.00	25	0.040
2527	A	2	1	1.00	25	0.040
2528	A	2	1	1.00	25	0.040
2529	A	2	1	1.00	25	0.040
2530	A	2	1	1.00	25	0.040
2531	A	2	1	1.00	25	0.040
2532	A	2	1	1.00	25	0.040
2533	A	2	1	1.00	25	0.040
2534	A	2	1	1.00	27	0.037
2535	A	2	1	1.00	27	0.037
2536	A	2	1	1.00	27	0.037
2537	A	2	1	1.00	27	0.037
2538	A	2	1	1.00	27	0.037
2539	A	2	1	1.00	27	0.037
2540	A	2	1	1.00	27	0.037

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2541	A	2	1	1.00	27	0.037
2542	A	2	1	1.00	27	0.037
2543	A	2	1	1.00	27	0.037
2544	A	2	1	1.00	27	0.037
2545	A	2	1	1.00	27	0.037
2546	A	2	1	1.00	27	0.037
2547	A	2	1	1.00	27	0.037
2548	A	2	1	1.00	27	0.037
2549	A	2	1	1.00	27	0.037
2550	A	8	4	1.00	27	0.148
2551	A	7	4	1.00	27	0.148
2552	A	6	4	1.00	27	0.148
2553	A	5	4	1.00	27	0.148
2554	A	4	3	1.00	27	0.111
2555	A	5	4	1.00	27	0.148
2556	A	6	4	1.00	27	0.148
2557	A	7	4	1.00	27	0.148
2558	A	7	5	1.00	27	0.185
2559	A	6	5	1.00	27	0.185
2560	A	5	4	1.00	27	0.148
2561	A	5	4	1.00	27	0.148
2562	A	5	4	1.00	27	0.148
2563	A	6	5	1.00	27	0.185
2564	A	7	5	1.00	27	0.185
2565	A	8	5	1.00	27	0.185
2566	A	7	5	1.00	27	0.185
2567	A	6	4	1.00	27	0.148
2568	A	6	5	1.00	27	0.185
2569	A	6	5	1.00	27	0.185
2570	A	6	5	1.00	27	0.185
2571	A	6	4	1.00	27	0.148
2572	A	7	5	1.00	27	0.185
2573	A	8	5	1.00	27	0.185
2574	A	9	5	1.00	27	0.185
2575	A	6	4	1.10	32	0.125
2576	A	9	6	1.00	29	0.207

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2577	A	8	6	1.00	29	0.207
2578	A	7	6	1.00	29	0.207
2579	A	6	5	1.00	29	0.172
2580	A	6	5	1.00	29	0.172
2581	A	6	5	1.00	29	0.172
2582	A	7	6	1.00	29	0.207
2583	A	8	6	1.00	29	0.207
2584	A	10	6	1.00	29	0.207
2585	A	9	6	1.00	29	0.207
2586	A	8	6	1.00	29	0.207
2587	A	7	5	1.00	29	0.172
2588	A	7	6	1.00	29	0.207
2589	A	7	5	1.00	29	0.172
2590	A	7	6	1.00	29	0.207
2591	A	7	5	1.00	29	0.172
2592	A	8	6	1.00	29	0.207
2593	A	9	6	1.00	29	0.207
2594	A	11	6	1.00	29	0.207
2595	A	10	6	1.00	29	0.207
2596	A	9	6	1.00	29	0.207
2597	A	8	5	1.00	29	0.172
2598	A	8	6	1.00	29	0.207
2599	A	8	6	1.00	29	0.207
2600	A	8	5	1.00	29	0.172
2601	A	8	6	1.00	29	0.207
2602	A	8	6	1.00	29	0.207
2603	A	8	5	1.00	29	0.172
2604	A	9	6	1.00	29	0.207
2605	A	10	6	1.00	29	0.207
2606	A	8	5	1.00	29	0.172
2607	A	7	5	1.00	29	0.172
2608	A	6	5	1.00	29	0.172
2609	A	5	4	1.00	29	0.138
2610	A	6	5	1.00	29	0.172
2611	A	7	5	1.00	29	0.172
2612	A	8	5	1.00	29	0.172

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Table 2.1 – continued from previous page

#	grade	number of steps used	number of unique rules	normalized antiderivative leaf size	integrand leaf size	$\frac{\text{number of rules}}{\text{integrand leaf size}}$
2613	A	8	6	1.00	29	0.207
2614	A	7	6	1.00	29	0.207
2615	A	6	5	1.00	29	0.172
2616	A	6	5	1.00	29	0.172
2617	A	6	5	1.00	29	0.172
2618	A	7	6	1.00	29	0.207
2619	A	8	6	1.00	29	0.207
2620	A	9	6	1.00	29	0.207
2621	A	8	6	1.00	29	0.207
2622	A	7	5	1.00	29	0.172
2623	A	7	6	1.00	29	0.207
2624	A	7	6	1.00	29	0.207
2625	A	7	6	1.00	29	0.207
2626	A	7	5	1.00	29	0.172
2627	A	8	6	1.00	29	0.207
2628	A	9	6	1.00	29	0.207
2629	A	10	6	1.00	29	0.207
2630	A	7	5	1.00	29	0.172
2631	A	6	5	1.00	29	0.172
2632	A	5	4	1.00	29	0.138
2633	A	6	5	1.00	29	0.172
2634	A	7	5	0.99	29	0.172
2635	A	7	6	1.00	29	0.207
2636	A	6	5	1.00	29	0.172
2637	A	6	5	1.00	29	0.172
2638	A	6	5	1.00	29	0.172
2639	A	7	6	1.00	29	0.207
2640	A	2	1	0.99	25	0.040
2641	A	2	1	0.99	25	0.040
2642	A	2	1	0.99	23	0.043
2643	A	4	2	1.00	25	0.080
2644	A	5	3	1.00	25	0.120
2645	A	4	2	1.00	27	0.074
2646	A	2	2	1.00	29	0.069

Chapter 3

Listing of integrals

3.1 $\int x^m(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{x^{m+3}(Ac+bB)}{m+3}+\frac{Abx^{m+2}}{m+2}+\frac{Bcx^{m+4}}{m+4}$$

```
[Out] A*b*x^(2+m)/(2+m)+(A*c+B*b)*x^(3+m)/(3+m)+B*c*x^(4+m)/(4+m)
```

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{x^{m+3}(Ac+bB)}{m+3}+\frac{Abx^{m+2}}{m+2}+\frac{Bcx^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^(2 + m))/(2 + m) + ((b*B + A*c)*x^(3 + m))/(3 + m) + (B*c*x^(4 + m))
/(4 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^{1+m}+(bB+Ac)x^{2+m}+Bcx^{3+m}\right)\,dx\\&=\frac{Abx^{2+m}}{2+m}+\frac{(bB+Ac)x^{3+m}}{3+m}+\frac{Bcx^{4+m}}{4+m}\end{aligned}$$

Mathematica [A] time = 0.04, size = 57, normalized size = 1.27

$$\frac{x^{m+2}(A(m+4)(b(m+3)+c(m+2)x)+B(m+2)x(b(m+4)+c(m+3)x))}{(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^(2 + m)*(A*(4 + m)*(b*(3 + m) + c*(2 + m)*x) + B*(2 + m)*x*(b*(4 + m) +
c*(3 + m)*x)))/((2 + m)*(3 + m)*(4 + m))
```

fricas [B] time = 1.08, size = 94, normalized size = 2.09

$$\frac{\left(\left(Bcm^2 + 5\,Bcm + 6\,Bc\right)x^4 + \left((Bb + Ac)m^2 + 8\,Bb + 8\,Ac + 6\,(Bb + Ac)m\right)x^3 + \left(Abm^2 + 7\,Abm + 12\,Ab\right)x^2\right)x^m}{m^3 + 9\,m^2 + 26\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] ((B*c*m^2 + 5*B*c*m + 6*B*c)*x^4 + ((B*b + A*c)*m^2 + 8*B*b + 8*A*c + 6*(B*
b + A*c)*m)*x^3 + (A*b*m^2 + 7*A*b*m + 12*A*b)*x^2)*x^m/(m^3 + 9*m^2 + 26*m
 + 24)
```

giac [B] time = 0.23, size = 149, normalized size = 3.31

$$\frac{Bcm^2x^4x^m + Bbm^2x^3x^m + Acm^2x^3x^m + 5\,Bcmx^4x^m + Abm^2x^2x^m + 6\,Bbmx^3x^m + 6\,Acmx^3x^m + 6\,Bcx^4x^m + 7\,A}{m^3 + 9\,m^2 + 26\,m + 24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*c*m^2*x^4*x^m + B*b*m^2*x^3*x^m + A*c*m^2*x^3*x^m + 5*B*c*m*x^4*x^m + A*
b*m^2*x^2*x^m + 6*B*b*m*x^3*x^m + 6*A*c*m*x^3*x^m + 6*B*c*x^4*x^m + 7*A*b*m
*x^2*x^m + 8*B*b*x^3*x^m + 8*A*c*x^3*x^m + 12*A*b*x^2*x^m)/(m^3 + 9*m^2 + 2
6*m + 24)
```

maple [B] time = 0.05, size = 98, normalized size = 2.18

$$\frac{\bigl(Bc\,m^2x^2 + Ac\,m^2x + Bb\,m^2x + 5Bcm\,x^2 + Ab\,m^2 + 6Acmx + 6Bbmx + 6Bc\,x^2 + 7Abm + 8Acx + 8Bbx + 12Ab}{(m+4)\,(m+3)\,(m+2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] x^(m+2)*(B*c*m^2*x^2+A*c*m^2*x+B*b*m^2*x+5*B*c*m*x^2+A*b*m^2+6*A*c*m*x+6*B*
b*m*x+6*B*c*x^2+7*A*b*m+8*A*c*x+8*B*b*x+12*A*b)/(m+4)/(m+3)/(m+2)
```

maxima [A] time = 0.86, size = 53, normalized size = 1.18

$$\frac{Bcx^{m+4}}{m+4} + \frac{Bbx^{m+3}}{m+3} + \frac{Acx^{m+3}}{m+3} + \frac{Abx^{m+2}}{m+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] B*c*x^(m + 4)/(m + 4) + B*b*x^(m + 3)/(m + 3) + A*c*x^(m + 3)/(m + 3) + A*b
*x^(m + 2)/(m + 2)
```

mupad [B] time = 1.13, size = 97, normalized size = 2.16

$$x^m\,\left(\frac{x^3\,\left(A\,c+B\,b\right)\,\left(m^2+6\,m+8\right)}{m^3+9\,m^2+26\,m+24}+\frac{A\,b\,x^2\,\left(m^2+7\,m+12\right)}{m^3+9\,m^2+26\,m+24}+\frac{B\,c\,x^4\,\left(m^2+5\,m+6\right)}{m^3+9\,m^2+26\,m+24}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^m*((x^3*(A*c + B*b)*(6*m + m^2 + 8))/(26*m + 9*m^2 + m^3 + 24) + (A*b*x^2
*(7*m + m^2 + 12))/(26*m + 9*m^2 + m^3 + 24) + (B*c*x^4*(5*m + m^2 + 6))/(2
6*m + 9*m^2 + m^3 + 24))
```

sympy [A] time = 0.81, size = 394, normalized size = 8.76

$$\begin{cases} -\frac{Ab}{2x^2} - \frac{Ac}{x} - \frac{Bb}{x} + Bc\log(x) \\ -\frac{Ab}{x} + Ac\log(x) + Bb\log(x) + Bcx \\ Ab\log(x) + Acx + Bbx + \frac{Bcx^2}{2} \\ \frac{Abm^2x^2x^m}{m^3+9m^2+26m+24} + \frac{7Abmx^2x^m}{m^3+9m^2+26m+24} + \frac{12Abx^2x^m}{m^3+9m^2+26m+24} + \frac{Acm^2x^3x^m}{m^3+9m^2+26m+24} + \frac{6Acmx^3x^m}{m^3+9m^2+26m+24} + \frac{8Acx^3x^m}{m^3+9m^2+26m+24} + \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-A*b/(2*x**2) - A*c/x - B*b/x + B*c*log(x), Eq(m, -4)), (-A*b/x
+ A*c*log(x) + B*b*log(x) + B*c*x, Eq(m, -3)), (A*b*log(x) + A*c*x + B*b*x
+ B*c*x**2/2, Eq(m, -2)), (A*b*m**2*x**2*x**m/(m**3 + 9*m**2 + 26*m + 24) +
 7*A*b*m*x**2*x**m/(m**3 + 9*m**2 + 26*m + 24) + 12*A*b*x**2*x**m/(m**3 + 9
*m**2 + 26*m + 24) + A*c*m**2*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 6*A*c
*m*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 8*A*c*x**3*x**m/(m**3 + 9*m**2 +
 26*m + 24) + B*b*m**2*x**3*x**m/(m**3 + 9*m**2 + 26*m + 24) + 6*B*b*m*x**3
*x**m/(m**3 + 9*m**2 + 26*m + 24) + 8*B*b*x**3*x**m/(m**3 + 9*m**2 + 26*m +
 24) + B*c*m**2*x**4*x**m/(m**3 + 9*m**2 + 26*m + 24) + 5*B*c*m*x**4*x**m/(
m**3 + 9*m**2 + 26*m + 24) + 6*B*c*x**4*x**m/(m**3 + 9*m**2 + 26*m + 24), T
rue))
```

3.2 $\int x^3(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

```
[Out] 1/5*A*b*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

Rubi [A] time = 0.04, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^4+(bB+Ac)x^5+Bcx^6\right)\,dx\\&=\frac{1}{5}Abx^5+\frac{1}{6}(bB+Ac)x^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 1.00

$$\frac{1}{6}x^6(Ac+bB)+\frac{1}{5}Abx^5+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

fricas [A] time = 0.73, size = 29, normalized size = 0.88

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6bB+\frac{1}{6}x^6cA+\frac{1}{5}x^5bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c*B + 1/6*x^6*b*B + 1/6*x^6*c*A + 1/5*x^5*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{7}Bcx^7+\frac{1}{6}Bbx^6+\frac{1}{6}Acx^6+\frac{1}{5}Abx^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7 + 1/6*B*b*x^6 + 1/6*A*c*x^6 + 1/5*A*b*x^5
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$\frac{Bc\,x^{7}}{7}+\frac{Ab\,x^{5}}{5}+\frac{(Ac+bB)\,x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/5*A*b*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

maxima [A] time = 0.86, size = 27, normalized size = 0.82

$$\frac{1}{7}\,Bcx^{7}+\frac{1}{5}\,Abx^{5}+\frac{1}{6}\,(Bb+Ac)x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*x^7 + 1/5*A*b*x^5 + 1/6*(B*b + A*c)*x^6
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^{7}}{7}+\left(\frac{A\,c}{6}+\frac{B\,b}{6}\right)\,x^{6}+\frac{A\,b\,x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^6*((A*c)/6 + (B*b)/6) + (A*b*x^5)/5 + (B*c*x^7)/7
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^{5}}{5}+\frac{Bcx^{7}}{7}+x^{6}\left(\frac{Ac}{6}+\frac{Bb}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**5/5 + B*c*x**7/7 + x**6*(A*c/6 + B*b/6)
```

3.3 $\int x^2(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

```
[Out] 1/4*A*b*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

Rubi [A] time = 0.04, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)\,dx &= \int\left(Abx^3+(bB+Ac)x^4+Bcx^5\right)\,dx\\ &= \frac{1}{4}Abx^4+\frac{1}{5}(bB+Ac)x^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.00, size = 33, normalized size = 1.00

$$\frac{1}{5}x^5(Ac+bB)+\frac{1}{4}Abx^4+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

fricas [A] time = 0.72, size = 29, normalized size = 0.88

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5bB+\frac{1}{5}x^5cA+\frac{1}{4}x^4bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c*B + 1/5*x^5*b*B + 1/5*x^5*c*A + 1/4*x^4*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{6}Bcx^6+\frac{1}{5}Bbx^5+\frac{1}{5}Acx^5+\frac{1}{4}Abx^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/5*B*b*x^5 + 1/5*A*c*x^5 + 1/4*A*b*x^4
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$\frac{Bc\,x^{6}}{6}+\frac{Ab\,x^{4}}{4}+\frac{(Ac+bB)\,x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/4*A*b*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

maxima [A] time = 0.84, size = 27, normalized size = 0.82

$$\frac{1}{6}\,Bcx^{6}+\frac{1}{4}\,Abx^{4}+\frac{1}{5}\,(Bb+Ac)x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/4*A*b*x^4 + 1/5*(B*b + A*c)*x^5
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^{6}}{6}+\left(\frac{A\,c}{5}+\frac{B\,b}{5}\right)\,x^{5}+\frac{A\,b\,x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^5*((A*c)/5 + (B*b)/5) + (A*b*x^4)/4 + (B*c*x^6)/6
```

sympy [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{Abx^{4}}{4}+\frac{Bcx^{6}}{6}+x^{5}\left(\frac{Ac}{5}+\frac{Bb}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**4/4 + B*c*x**6/6 + x**5*(A*c/5 + B*b/5)
```

3.4 $\int x(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

```
[Out] 1/3*A*b*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

Rubi [A] time = 0.03, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {765}

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^2+(bB+Ac)x^3+Bcx^4\right)\,dx\\ &= \frac{1}{3}Abx^3+\frac{1}{4}(bB+Ac)x^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.00, size = 33, normalized size = 1.00

$$\frac{1}{4}x^4(Ac+bB)+\frac{1}{3}Abx^3+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

fricas [A] time = 0.85, size = 29, normalized size = 0.88

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4bB+\frac{1}{4}x^4cA+\frac{1}{3}x^3bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c*B + 1/4*x^4*b*B + 1/4*x^4*c*A + 1/3*x^3*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{5}Bcx^5+\frac{1}{4}Bbx^4+\frac{1}{4}Acx^4+\frac{1}{3}Abx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/4*B*b*x^4 + 1/4*A*c*x^4 + 1/3*A*b*x^3
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^{5}}{5}+\frac{Ab\,x^{3}}{3}+\frac{(Ac+bB)\,x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/3*A*b*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

maxima [A] time = 0.81, size = 27, normalized size = 0.82

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{3}\,Abx^{3}+\frac{1}{4}\,(Bb+Ac)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/3*A*b*x^3 + 1/4*(B*b + A*c)*x^4
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^{5}}{5}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x^{4}+\frac{A\,b\,x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^4*((A*c)/4 + (B*b)/4) + (A*b*x^3)/3 + (B*c*x^5)/5
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^{3}}{3}+\frac{Bcx^{5}}{5}+x^{4}\left(\frac{Ac}{4}+\frac{Bb}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**3/3 + B*c*x**5/5 + x**4*(A*c/4 + B*b/4)
```

3.5 $\int (A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

```
[Out] 1/2*A*b*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {631}

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)\,dx&=\int \left(Abx+(bB+Ac)x^2+Bcx^3\right)\,dx\\&=\frac{1}{2}Abx^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.00, size = 29, normalized size = 0.88

$$\frac{1}{12}x^2(A(6b+4cx)+Bx(4b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(B*x*(4*b + 3*c*x) + A*(6*b + 4*c*x)))/12
```

fricas [A] time = 0.88, size = 29, normalized size = 0.88

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*b*A
```

giac [A] time = 0.14, size = 29, normalized size = 0.88

$$\frac{1}{4}Bcx^4+\frac{1}{3}Bbx^3+\frac{1}{3}Acx^3+\frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*A*b*x^2
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^4}{4}+\frac{Ab\,x^2}{2}+\frac{(Ac+bB)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/2*A*b*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

maxima [A] time = 0.89, size = 27, normalized size = 0.82

$$\frac{1}{4}\,Bcx^4+\frac{1}{2}\,Abx^2+\frac{1}{3}\,(Bb+Ac)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/2*A*b*x^2 + 1/3*(B*b + A*c)*x^3
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^4}{4}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^3+\frac{A\,b\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^3*((A*c)/3 + (B*b)/3) + (A*b*x^2)/2 + (B*c*x^4)/4
```

sympy [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{Abx^2}{2}+\frac{Bcx^4}{4}+x^3\left(\frac{Ac}{3}+\frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**2/2 + B*c*x**4/4 + x**3*(A*c/3 + B*b/3)
```

3.6 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x}\,dx$

Optimal. Leaf size=28

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

```
[Out] A*b*x+1/2*(A*c+B*b)*x^2+1/3*B*c*x^3
```

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {765}

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x,x]
```

```
[Out] A*b*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x}\,dx &= \int \left(Ab+(bB+Ac)x+Bcx^2\right)dx\\ &= Abx+\frac{1}{2}(bB+Ac)x^2+\frac{1}{3}Bcx^3\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$\frac{1}{2}x^2(Ac+bB)+Abx+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x,x]
```

```
[Out] A*b*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3
```

fricas [A] time = 0.96, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^3+Abx+\frac{1}{2}\,(Bb+Ac)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + A*b*x + 1/2*(B*b + A*c)*x^2
```

giac [A] time = 0.15, size = 26, normalized size = 0.93

$$\frac{1}{3}\,Bcx^3+\frac{1}{2}\,Bbx^2+\frac{1}{2}\,Acx^2+Abx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*B*b*x^2 + 1/2*A*c*x^2 + A*b*x
```

maple [A] time = 0.05, size = 25, normalized size = 0.89

$$\frac{Bc\,x^{3}}{3}+Abx+\frac{\left(Ac+bB\right)x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x,x)
```

```
[Out] A*b*x+1/2*(A*c+B*b)*x^2+1/3*B*c*x^3
```

maxima [A] time = 0.85, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^{3}+Abx+\frac{1}{2}\,(Bb+Ac)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + A*b*x + 1/2*(B*b + A*c)*x^2
```

mupad [B] time = 0.04, size = 25, normalized size = 0.89

$$\frac{B\,c\,x^{3}}{3}+\left(\frac{A\,c}{2}+\frac{B\,b}{2}\right)\,x^{2}+A\,b\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x,x)
```

```
[Out] x^2*((A*c)/2 + (B*b)/2) + A*b*x + (B*c*x^3)/3
```

sympy [A] time = 0.06, size = 26, normalized size = 0.93

$$Abx+\frac{Bcx^{3}}{3}+x^{2}\left(\frac{Ac}{2}+\frac{Bb}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x,x)
```

```
[Out] A*b*x + B*c*x**3/3 + x**2*(A*c/2 + B*b/2)
```

3.7 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^2} dx$

Optimal. Leaf size=24

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

```
[Out] (A*c+B*b)*x+1/2*B*c*x^2+A*b*ln(x)
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^2,x]
```

```
[Out] (b*B + A*c)*x + (B*c*x^2)/2 + A*b*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^2}\,dx &= \int \left(bB+Ac+\frac{Ab}{x}+Bcx\right)dx\\ &= (bB+Ac)x+\frac{1}{2}Bcx^2+Ab\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$x(Ac+bB)+Ab\log(x)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^2,x]
```

```
[Out] (b*B + A*c)*x + (B*c*x^2)/2 + A*b*Log[x]
```

fricas [A] time = 0.62, size = 22, normalized size = 0.92

$$\frac{1}{2}Bcx^2+Ab\log(x)+(Bb+Ac)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*B*c*x^2 + A*b*log(x) + (B*b + A*c)*x
```

giac [A] time = 0.14, size = 22, normalized size = 0.92

$$\frac{1}{2}Bcx^2+Bbx+Acx+Ab\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="giac")
```

```
[Out] 1/2*B*c*x^2 + B*b*x + A*c*x + A*b*log(abs(x))
```

maple [A] time = 0.04, size = 22, normalized size = 0.92

$$\frac{Bc\,x^2}{2}+Ab\ln(x)+Acx+Bbx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^2,x)
```

```
[Out] 1/2*B*c*x^2+A*c*x+B*b*x+A*b*ln(x)
```

maxima [A] time = 0.90, size = 22, normalized size = 0.92

$$\frac{1}{2}\,Bcx^2+Ab\log(x)+(Bb+Ac)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*c*x^2 + A*b*log(x) + (B*b + A*c)*x
```

mupad [B] time = 0.03, size = 22, normalized size = 0.92

$$x\,(A\,c+B\,b)+\frac{B\,c\,x^2}{2}+A\,b\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^2,x)
```

```
[Out] x*(A*c + B*b) + (B*c*x^2)/2 + A*b*log(x)
```

sympy [A] time = 0.11, size = 22, normalized size = 0.92

$$Ab\log\left(x\right)+\frac{Bcx^2}{2}+x\left(Ac+Bb\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**2,x)
```

```
[Out] A*b*log(x) + B*c*x**2/2 + x*(A*c + B*b)
```

3.8 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^3}\,dx$

Optimal. Leaf size=22

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

```
[Out] -A*b/x+B*c*x+(A*c+B*b)*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^3,x]
```

```
[Out] -((A*b)/x) + B*c*x + (b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^3}\,dx &= \int \left(Bc+\frac{Ab}{x^2}+\frac{bB+Ac}{x}\right)dx\\ &= -\frac{Ab}{x}+Bcx+(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$\log(x)(Ac+bB)-\frac{Ab}{x}+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^3,x]
```

```
[Out] -((A*b)/x) + B*c*x + (b*B + A*c)*Log[x]
```

fricas [A] time = 0.92, size = 26, normalized size = 1.18

$$\frac{Bcx^2+(Bb+Ac)x\log(x)-Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="fricas")
```

```
[Out] (B*c*x^2 + (B*b + A*c)*x*log(x) - A*b)/x
```

giac [A] time = 0.15, size = 23, normalized size = 1.05

$$Bcx+(Bb+Ac)\log(|x|)-\frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="giac")
```

```
[Out] B*c*x + (B*b + A*c)*log(abs(x)) - A*b/x
```

maple [A] time = 0.05, size = 23, normalized size = 1.05

$$Ac\ln(x) + Bb\ln(x) + Bcx - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^3,x)
```

```
[Out] B*c*x-A*b/x+A*c*ln(x)+B*b*ln(x)
```

maxima [A] time = 0.87, size = 22, normalized size = 1.00

$$Bcx + (Bb + Ac)\log(x) - \frac{Ab}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^3,x, algorithm="maxima")
```

```
[Out] B*c*x + (B*b + A*c)*log(x) - A*b/x
```

mupad [B] time = 0.04, size = 22, normalized size = 1.00

$$\ln(x)\,\left(A\,c + B\,b\right) + B\,c\,x - \frac{A\,b}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^3,x)
```

```
[Out] log(x)*(A*c + B*b) + B*c*x - (A*b)/x
```

sympy [A] time = 0.15, size = 19, normalized size = 0.86

$$-\frac{Ab}{x} + Bcx + (Ac + Bb)\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**3,x)
```

```
[Out] -A*b/x + B*c*x + (A*c + B*b)*log(x)
```

3.9 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^4}\,dx$

Optimal. Leaf size=27

$$-\frac{Ac+bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

```
[Out] -1/2*A*b/x^2+(-A*c-B*b)/x+B*c*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^4,x]
```

```
[Out] -(A*b)/(2*x^2) - (b*B + A*c)/x + B*c*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^4}\,dx &= \int \left(\frac{Ab}{x^3}+\frac{bB+Ac}{x^2}+\frac{Bc}{x}\right)dx\\ &= -\frac{Ab}{2x^2}-\frac{bB+Ac}{x}+Bc\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 1.04

$$\frac{-Ac-bB}{x}-\frac{Ab}{2x^2}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^4,x]
```

```
[Out] -1/2*(A*b)/x^2 + (-(b*B) - A*c)/x + B*c*Log[x]
```

fricas [A] time = 1.05, size = 29, normalized size = 1.07

$$\frac{2\,Bcx^2\log(x)-Ab-2\,(Bb+Ac)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*x^2*log(x) - A*b - 2*(B*b + A*c)*x)/x^2
```

giac [A] time = 0.15, size = 26, normalized size = 0.96

$$Bc\log\left(|x|\right)-\frac{Ab+2\,(Bb+Ac)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="giac")
```

```
[Out] B*c*log(abs(x)) - 1/2*(A*b + 2*(B*b + A*c)*x)/x^2
```

maple [A]   time = 0.05, size = 28, normalized size = 1.04

$$Bc\ln(x) - \frac{Ac}{x} - \frac{Bb}{x} - \frac{Ab}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^4,x)
```

```
[Out] -1/2*A*b/x^2-1/x*A*c-1/x*b*B+B*c*ln(x)
```

maxima [A]   time = 0.84, size = 25, normalized size = 0.93

$$Bc\log(x) - \frac{Ab + 2\,(Bb + Ac)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^4,x, algorithm="maxima")
```

```
[Out] B*c*log(x) - 1/2*(A*b + 2*(B*b + A*c)*x)/x^2
```

mupad [B]   time = 1.02, size = 25, normalized size = 0.93

$$B\,c\,\ln(x) - \frac{\frac{A\,b}{2} + x\,\left(A\,c + B\,b\right)}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^4,x)
```

```
[Out] B*c*log(x) - ((A*b)/2 + x*(A*c + B*b))/x^2
```

sympy [A]   time = 0.22, size = 27, normalized size = 1.00

$$Bc\log{(x)} + \frac{-Ab + x\,(-2Ac - 2Bb)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**4,x)
```

```
[Out] B*c*log(x) + (-A*b + x*(-2*A*c - 2*B*b))/(2*x**2)
```

3.10 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^5}\,dx$

Optimal. Leaf size=31

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{3x^3}-\frac{Bc}{x}$$

```
[Out] -1/3*A*b/x^3+1/2*(-A*c-B*b)/x^2-B*c/x
```

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{2x^2}-\frac{Ab}{3x^3}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^5,x]
```

```
[Out] -(A*b)/(3*x^3) - (b*B + A*c)/(2*x^2) - (B*c)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^5}\,dx &= \int \left(\frac{Ab}{x^4}+\frac{bB+Ac}{x^3}+\frac{Bc}{x^2}\right)dx\\ &= -\frac{Ab}{3x^3}-\frac{bB+Ac}{2x^2}-\frac{Bc}{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.90

$$-\frac{A(2b+3cx)+3Bx(b+2cx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^5,x]
```

```
[Out] -1/6*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x))/x^3
```

fricas [A] time = 0.75, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^2+2\,Ab+3\,(Bb+Ac)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*c*x^2 + 2*A*b + 3*(B*b + A*c)*x)/x^3
```

giac [A] time = 0.15, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^2+3\,Bbx+3\,Acx+2\,Ab}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*c*x^2 + 3*B*b*x + 3*A*c*x + 2*A*b)/x^3
```

maple [**A**] time = 0.05, size = 28, normalized size = 0.90

$$-\frac{Bc}{x}-\frac{Ab}{3x^3}-\frac{Ac+bB}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^5,x)
```

```
[Out] -1/3*A*b/x^3-1/2*(A*c+B*b)/x^2-B*c/x
```

maxima [**A**] time = 0.88, size = 27, normalized size = 0.87

$$-\frac{6\,Bcx^2+2\,Ab+3\,(Bb+Ac)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^5,x, algorithm="maxima")
```

```
[Out] -1/6*(6*B*c*x^2 + 2*A*b + 3*(B*b + A*c)*x)/x^3
```

mupad [**B**] time = 0.04, size = 27, normalized size = 0.87

$$-\frac{B\,c\,x^2+\left(\frac{A\,c}{2}+\frac{B\,b}{2}\right)\,x+\frac{A\,b}{3}}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^5,x)
```

```
[Out] -((A*b)/3 + x*((A*c)/2 + (B*b)/2) + B*c*x^2)/x^3
```

sympy [**A**] time = 0.28, size = 31, normalized size = 1.00

$$\frac{-2Ab-6Bcx^2+x\,(-3Ac-3Bb)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**5,x)
```

```
[Out] (-2*A*b - 6*B*c*x**2 + x*(-3*A*c - 3*B*b))/(6*x**3)
```

3.11 $\int \frac{(A+Bx)(bx+cx^2)}{x^6} \, dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{4x^4}-\frac{Bc}{2x^2}$$

```
[Out] -1/4*A*b/x^4+1/3*(-A*c-B*b)/x^3-1/2*B*c/x^2
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{3x^3}-\frac{Ab}{4x^4}-\frac{Bc}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^6,x]
```

```
[Out] -(A*b)/(4*x^4) - (b*B + A*c)/(3*x^3) - (B*c)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^6} \, dx &= \int \left(\frac{Ab}{x^5}+\frac{bB+Ac}{x^4}+\frac{Bc}{x^3}\right) dx\\ &= -\frac{Ab}{4x^4}-\frac{bB+Ac}{3x^3}-\frac{Bc}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.88

$$-\frac{3Ab+4Acx+4bBx+6Bcx^2}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^6,x]
```

```
[Out] -1/12*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)/x^4
```

fricas [A] time = 0.88, size = 27, normalized size = 0.82

$$-\frac{6\,Bcx^2+3\,Ab+4\,(Bb+Ac)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*c*x^2 + 3*A*b + 4*(B*b + A*c)*x)/x^4
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{6\,Bcx^2+4\,Bbx+4\,Acx+3\,Ab}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="giac")
```

```
[Out] -1/12*(6*B*c*x^2 + 4*B*b*x + 4*A*c*x + 3*A*b)/x^4
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{Bc}{2x^2}-\frac{Ab}{4x^4}-\frac{Ac+bB}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^6,x)
```

```
[Out] -1/4*A*b/x^4-1/3*(A*c+B*b)/x^3-1/2*B*c/x^2
```

maxima [A] time = 0.90, size = 27, normalized size = 0.82

$$-\frac{6\,Bcx^2+3\,Ab+4\,(Bb+Ac)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^6,x, algorithm="maxima")
```

```
[Out] -1/12*(6*B*c*x^2 + 3*A*b + 4*(B*b + A*c)*x)/x^4
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{2}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x+\frac{A\,b}{4}}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^6,x)
```

```
[Out] -((A*b)/4 + x*((A*c)/3 + (B*b)/3) + (B*c*x^2)/2)/x^4
```

sympy [A] time = 0.34, size = 31, normalized size = 0.94

$$\frac{-3Ab-6Bcx^2+x\,(-4Ac-4Bb)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**6,x)
```

```
[Out] (-3*A*b - 6*B*c*x**2 + x*(-4*A*c - 4*B*b))/(12*x**4)
```

3.12 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^7}\,dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{4x^4}-\frac{Ab}{5x^5}-\frac{Bc}{3x^3}$$

```
[Out] -1/5*A*b/x^5+1/4*(-A*c-B*b)/x^4-1/3*B*c/x^3
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{4x^4}-\frac{Ab}{5x^5}-\frac{Bc}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^7,x]
```

```
[Out] -(A*b)/(5*x^5) - (b*B + A*c)/(4*x^4) - (B*c)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^7}\,dx &= \int \left(\frac{Ab}{x^6}+\frac{bB+Ac}{x^5}+\frac{Bc}{x^4}\right)dx\\ &= -\frac{Ab}{5x^5}-\frac{bB+Ac}{4x^4}-\frac{Bc}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.94

$$-\frac{3A(4b+5cx)+5Bx(3b+4cx)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^7,x]
```

```
[Out] -1/60*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x))/x^5
```

fricas [A] time = 0.90, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2+12\,Ab+15\,(Bb+Ac)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*x^2 + 12*A*b + 15*(B*b + A*c)*x)/x^5
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2+15\,Bbx+15\,Acx+12\,Ab}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^2 + 15*B*b*x + 15*A*c*x + 12*A*b)/x^5
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{Bc}{3x^3}-\frac{Ab}{5x^5}-\frac{Ac+bB}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^7,x)
```

```
[Out] -1/5*A*b/x^5-1/4*(A*c+B*b)/x^4-1/3*B*c/x^3
```

maxima [A] time = 0.91, size = 27, normalized size = 0.82

$$-\frac{20\,Bcx^2+12\,Ab+15\,(Bb+Ac)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*x^2 + 12*A*b + 15*(B*b + A*c)*x)/x^5
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{3}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x+\frac{A\,b}{5}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^7,x)
```

```
[Out] -((A*b)/5 + x*((A*c)/4 + (B*b)/4) + (B*c*x^2)/3)/x^5
```

sympy [A] time = 0.41, size = 31, normalized size = 0.94

$$\frac{-12Ab-20Bcx^2+x\,(-15Ac-15Bb)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**7,x)
```

```
[Out] (-12*A*b - 20*B*c*x**2 + x*(-15*A*c - 15*B*b))/(60*x**5)
```

3.13 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^8}\,dx$

Optimal. Leaf size=33

$$-\frac{Ac+bB}{5x^5}-\frac{Ab}{6x^6}-\frac{Bc}{4x^4}$$

```
[Out] -1/6*A*b/x^6+1/5*(-A*c-B*b)/x^5-1/4*B*c/x^4
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{Ac+bB}{5x^5}-\frac{Ab}{6x^6}-\frac{Bc}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^8,x]
```

```
[Out] -(A*b)/(6*x^6) - (b*B + A*c)/(5*x^5) - (B*c)/(4*x^4)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^8}\,dx &= \int \left(\frac{Ab}{x^7}+\frac{bB+Ac}{x^6}+\frac{Bc}{x^5}\right)dx\\ &= -\frac{Ab}{6x^6}-\frac{bB+Ac}{5x^5}-\frac{Bc}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.94

$$-\frac{2A(5b+6cx)+3Bx(4b+5cx)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^8,x]
```

```
[Out] -1/60*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c*x))/x^6
```

fricas [A] time = 0.70, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2+10\,Ab+12\,(Bb+Ac)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="fricas")
```

```
[Out] -1/60*(15*B*c*x^2 + 10*A*b + 12*(B*b + A*c)*x)/x^6
```

giac [A] time = 0.15, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2+12\,Bbx+12\,Acx+10\,Ab}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="giac")
```

```
[Out] -1/60*(15*B*c*x^2 + 12*B*b*x + 12*A*c*x + 10*A*b)/x^6
```

maple [A] time = 0.05, size = 28, normalized size = 0.85

$$-\frac{Bc}{4x^4}-\frac{Ab}{6x^6}-\frac{Ac+bB}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^8,x)
```

```
[Out] -1/5*(A*c+B*b)/x^5-1/4*B*c/x^4-1/6*A*b/x^6
```

maxima [A] time = 0.88, size = 27, normalized size = 0.82

$$-\frac{15\,Bcx^2+10\,Ab+12\,(Bb+Ac)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^8,x, algorithm="maxima")
```

```
[Out] -1/60*(15*B*c*x^2 + 10*A*b + 12*(B*b + A*c)*x)/x^6
```

mupad [B] time = 0.04, size = 28, normalized size = 0.85

$$-\frac{\frac{B\,c\,x^2}{4}+\left(\frac{A\,c}{5}+\frac{B\,b}{5}\right)\,x+\frac{A\,b}{6}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^8,x)
```

```
[Out] -((A*b)/6 + x*((A*c)/5 + (B*b)/5) + (B*c*x^2)/4)/x^6
```

sympy [A] time = 0.49, size = 31, normalized size = 0.94

$$\frac{-10Ab-15Bcx^2+x\,(-12Ac-12Bb)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**8,x)
```

```
[Out] (-10*A*b - 15*B*c*x**2 + x*(-12*A*c - 12*B*b))/(60*x**6)
```

3.14 $\int x^m(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=71

$$\frac{Ab^2x^{m+3}}{m+3}+\frac{bx^{m+4}(2Ac+bB)}{m+4}+\frac{cx^{m+5}(Ac+2bB)}{m+5}+\frac{Bc^2x^{m+6}}{m+6}$$

```
[Out] A*b^2*x^(3+m)/(3+m)+b*(2*A*c+B*b)*x^(4+m)/(4+m)+c*(A*c+2*B*b)*x^(5+m)/(5+m)
+B*c^2*x^(6+m)/(6+m)
```

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{Ab^2x^{m+3}}{m+3}+\frac{bx^{m+4}(2Ac+bB)}{m+4}+\frac{cx^{m+5}(Ac+2bB)}{m+5}+\frac{Bc^2x^{m+6}}{m+6}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^(3 + m))/(3 + m) + (b*(b*B + 2*A*c)*x^(4 + m))/(4 + m) + (c*(2*b*B
 + A*c)*x^(5 + m))/(5 + m) + (B*c^2*x^(6 + m))/(6 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{2+m}+b(bB+2Ac)x^{3+m}+c(2bB+Ac)x^{4+m}+Bc^2x^{5+m}\right)dx\\&=\frac{Ab^2x^{3+m}}{3+m}+\frac{b(bB+2Ac)x^{4+m}}{4+m}+\frac{c(2bB+Ac)x^{5+m}}{5+m}+\frac{Bc^2x^{6+m}}{6+m}\end{aligned}$$

Mathematica [A] time = 0.10, size = 71, normalized size = 1.00

$$\frac{x^{m+3}\left(\left(\frac{b^2}{m+3}+\frac{2bcx}{m+4}+\frac{c^2x^2}{m+5}\right)(Ac(m+6)-bB(m+3))+B(b+cx)^3\right)}{c(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^(3 + m)*(B*(b + c*x)^3 + (-(b*B*(3 + m)) + A*c*(6 + m))*(b^2/(3 + m) + (
2*b*c*x)/(4 + m) + (c^2*x^2)/(5 + m))))/(c*(6 + m))
```

fricas [B] time = 0.63, size = 217, normalized size = 3.06

$$\frac{\left(\left(Bc^2m^3+12\,Bc^2m^2+47\,Bc^2m+60\,Bc^2\right)x^6+\left(\left(2\,Bbc+Ac^2\right)m^3+144\,Bbc+72\,Ac^2+13\left(2\,Bbc+Ac^2\right)m^2+54\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^3 + 12*B*c^2*m^2 + 47*B*c^2*m + 60*B*c^2)*x^6 + ((2*B*b*c + A*c^2
)*m^3 + 144*B*b*c + 72*A*c^2 + 13*(2*B*b*c + A*c^2)*m^2 + 54*(2*B*b*c + A*c
^2)*m)*x^5 + ((B*b^2 + 2*A*b*c)*m^3 + 90*B*b^2 + 180*A*b*c + 14*(B*b^2 + 2*
A*b*c)*m^2 + 63*(B*b^2 + 2*A*b*c)*m)*x^4 + (A*b^2*m^3 + 15*A*b^2*m^2 + 74*A
*b^2*m + 120*A*b^2)*x^3)*x^m/(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)
```

giac [B] time = 0.17, size = 340, normalized size = 4.79

$$Bc^2m^3x^6x^m + 2\,Bbcm^3x^5x^m + Ac^2m^3x^5x^m + 12\,Bc^2m^2x^6x^m + Bb^2m^3x^4x^m + 2\,Abcm^3x^4x^m + 26\,Bbcm^2x^5x^m +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^3*x^6*x^m + 2*B*b*c*m^3*x^5*x^m + A*c^2*m^3*x^5*x^m + 12*B*c^2*m^2
*x^6*x^m + B*b^2*m^3*x^4*x^m + 2*A*b*c*m^3*x^4*x^m + 26*B*b*c*m^2*x^5*x^m +
 13*A*c^2*m^2*x^5*x^m + 47*B*c^2*m*x^6*x^m + A*b^2*m^3*x^3*x^m + 14*B*b^2*m
^2*x^4*x^m + 28*A*b*c*m^2*x^4*x^m + 108*B*b*c*m*x^5*x^m + 54*A*c^2*m*x^5*x^
m + 60*B*c^2*x^6*x^m + 15*A*b^2*m^2*x^3*x^m + 63*B*b^2*m*x^4*x^m + 126*A*b*
c*m*x^4*x^m + 144*B*b*c*x^5*x^m + 72*A*c^2*x^5*x^m + 74*A*b^2*m*x^3*x^m + 9
0*B*b^2*x^4*x^m + 180*A*b*c*x^4*x^m + 120*A*b^2*x^3*x^m)/(m^4 + 18*m^3 + 11
9*m^2 + 342*m + 360)
```

maple [B] time = 0.06, size = 246, normalized size = 3.46

$$\left(B\,c^2m^3x^3 + A\,c^2m^3x^2 + 2Bbc\,m^3x^2 + 12B\,c^2m^2x^3 + 2Abc\,m^3x + 13A\,c^2m^2x^2 + B\,b^2m^3x + 26Bbc\,m^2x^2 + 47B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] x^(m+3)*(B*c^2*m^3*x^3+A*c^2*m^3*x^2+2*B*b*c*m^3*x^2+12*B*c^2*m^2*x^3+2*A*b
*c*m^3*x+13*A*c^2*m^2*x^2+B*b^2*m^3*x+26*B*b*c*m^2*x^2+47*B*c^2*m*x^3+A*b^2
*m^3+28*A*b*c*m^2*x+54*A*c^2*m*x^2+14*B*b^2*m^2*x+108*B*b*c*m*x^2+60*B*c^2*
x^3+15*A*b^2*m^2+126*A*b*c*m*x+72*A*c^2*x^2+63*B*b^2*m*x+144*B*b*c*x^2+74*A
*b^2*m+180*A*b*c*x+90*B*b^2*x+120*A*b^2)/(m+6)/(m+5)/(m+4)/(m+3)
```

maxima [A] time = 0.86, size = 91, normalized size = 1.28

$$\frac{Bc^2x^{m+6}}{m+6} + \frac{2\,Bbcx^{m+5}}{m+5} + \frac{Ac^2x^{m+5}}{m+5} + \frac{Bb^2x^{m+4}}{m+4} + \frac{2\,Abcx^{m+4}}{m+4} + \frac{Ab^2x^{m+3}}{m+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*x^(m + 6)/(m + 6) + 2*B*b*c*x^(m + 5)/(m + 5) + A*c^2*x^(m + 5)/(m +
5) + B*b^2*x^(m + 4)/(m + 4) + 2*A*b*c*x^(m + 4)/(m + 4) + A*b^2*x^(m + 3)/
(m + 3)
```

mupad [B] time = 1.20, size = 179, normalized size = 2.52

$$x^m\,\left(\frac{A\,b^2\,x^3\,\left(m^3+15\,m^2+74\,m+120\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}+\frac{B\,c^2\,x^6\,\left(m^3+12\,m^2+47\,m+60\right)}{m^4+18\,m^3+119\,m^2+342\,m+360}+\frac{b\,x^4\,\left(2\,A\,c+B\,b\right)\,\left(m^3+1\right.}{m^4+18\,m^3+119\,m^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^m*((A*b^2*x^3*(74*m + 15*m^2 + m^3 + 120))/(342*m + 119*m^2 + 18*m^3 + m^
4 + 360) + (B*c^2*x^6*(47*m + 12*m^2 + m^3 + 60))/(342*m + 119*m^2 + 18*m^3
```

```
 + m^4 + 360) + (b*x^4*(2*A*c + B*b)*(63*m + 14*m^2 + m^3 + 90))/(342*m + 1
19*m^2 + 18*m^3 + m^4 + 360) + (c*x^5*(A*c + 2*B*b)*(54*m + 13*m^2 + m^3 +
72))/(342*m + 119*m^2 + 18*m^3 + m^4 + 360))
```

sympy [**A**] time = 1.55, size = 1027, normalized size = 14.46

$$\begin{cases} -\frac{Ab^2}{3x^3} - \frac{Abc}{x^2} - \frac{Ac^2}{x} - \frac{Bb^2}{2x^2} - \frac{2Bbc}{x} + Bc^2\log{(x)} \\ -\frac{Ab^2}{2x^2} - \frac{2Abc}{x} + Ac^2\log{(x)} - \frac{Bb^2}{x} + 2Bbc\log{(x)} + Bc^2x \\ -\frac{Ab^2}{x} + 2Abc\log{(x)} + Ac^2x + Bb^2\log{(x)} + 2Bbcx + \frac{Bc^2x^2}{2} \\ Ab^2\log{(x)} + 2Abcx + \frac{Ac^2x^2}{2} + Bb^2x + Bbcx^2 + \frac{Bc^2x^3}{3} \\ \frac{Ab^2m^3x^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{15Ab^2m^2x^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{74Ab^2mx^3x^m}{m^4+18m^3+119m^2+342m+360} + \frac{120Ab^2x^3x^m}{m^4+18m^3+119m^2+342m+360} + \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((-A*b**2/(3*x**3) - A*b*c/x**2 - A*c**2/x - B*b**2/(2*x**2) - 2*B
*b*c/x + B*c**2*log(x), Eq(m, -6)), (-A*b**2/(2*x**2) - 2*A*b*c/x + A*c**2*
log(x) - B*b**2/x + 2*B*b*c*log(x) + B*c**2*x, Eq(m, -5)), (-A*b**2/x + 2*A
*b*c*log(x) + A*c**2*x + B*b**2*log(x) + 2*B*b*c*x + B*c**2*x**2/2, Eq(m, -
4)), (A*b**2*log(x) + 2*A*b*c*x + A*c**2*x**2/2 + B*b**2*x + B*b*c*x**2 + B
*c**2*x**3/3, Eq(m, -3)), (A*b**2*m**3*x**3*x**m/(m**4 + 18*m**3 + 119*m**2
 + 342*m + 360) + 15*A*b**2*m**2*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342
*m + 360) + 74*A*b**2*m*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360)
 + 120*A*b**2*x**3*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 2*A*b*c
*m**3*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 28*A*b*c*m**2*x
**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 126*A*b*c*m*x**4*x**m/
(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 180*A*b*c*x**4*x**m/(m**4 + 18*
m**3 + 119*m**2 + 342*m + 360) + A*c**2*m**3*x**5*x**m/(m**4 + 18*m**3 + 11
9*m**2 + 342*m + 360) + 13*A*c**2*m**2*x**5*x**m/(m**4 + 18*m**3 + 119*m**2
 + 342*m + 360) + 54*A*c**2*m*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m
+ 360) + 72*A*c**2*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + B*
b**2*m**3*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 14*B*b**2*m
**2*x**4*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 63*B*b**2*m*x**4*
x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 90*B*b**2*x**4*x**m/(m**4
+ 18*m**3 + 119*m**2 + 342*m + 360) + 2*B*b*c*m**3*x**5*x**m/(m**4 + 18*m**
3 + 119*m**2 + 342*m + 360) + 26*B*b*c*m**2*x**5*x**m/(m**4 + 18*m**3 + 119
*m**2 + 342*m + 360) + 108*B*b*c*m*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 3
42*m + 360) + 144*B*b*c*x**5*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360)
 + B*c**2*m**3*x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 12*B*c
**2*m**2*x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 47*B*c**2*m*
x**6*x**m/(m**4 + 18*m**3 + 119*m**2 + 342*m + 360) + 60*B*c**2*x**6*x**m/(
m**4 + 18*m**3 + 119*m**2 + 342*m + 360), True))
```

3.15 $\int x^3(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

```
[Out] 1/6*A*b^2*x^6+1/7*b*(2*A*c+B*b)*x^7+1/8*c*(A*c+2*B*b)*x^8+1/9*B*c^2*x^9
```

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^6)/6 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^8)/8 + (B*c^2*
x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2x^5+b(bB+2Ac)x^6+c(2bB+Ac)x^7+Bc^2x^8\right)dx\\ &= \frac{1}{6}Ab^2x^6+\frac{1}{7}b(bB+2Ac)x^7+\frac{1}{8}c(2bB+Ac)x^8+\frac{1}{9}Bc^2x^9\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{6}Ab^2x^6+\frac{1}{8}cx^8(Ac+2bB)+\frac{1}{7}bx^7(2Ac+bB)+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^6)/6 + (b*(b*B + 2*A*c)*x^7)/7 + (c*(2*b*B + A*c)*x^8)/8 + (B*c^2*
x^9)/9
```

fricas [A] time = 0.49, size = 53, normalized size = 0.96

$$\frac{1}{9}x^9c^2B+\frac{1}{4}x^8cbB+\frac{1}{8}x^8c^2A+\frac{1}{7}x^7b^2B+\frac{2}{7}x^7cbA+\frac{1}{6}x^6b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^2*B + 1/4*x^8*c*b*B + 1/8*x^8*c^2*A + 1/7*x^7*b^2*B + 2/7*x^7*c*b
*A + 1/6*x^6*b^2*A
```

giac [**A**] time = 0.17, size = 53, normalized size = 0.96

$$\frac{1}{9}\,Bc^2x^9 + \frac{1}{4}\,Bbcx^8 + \frac{1}{8}\,Ac^2x^8 + \frac{1}{7}\,Bb^2x^7 + \frac{2}{7}\,Abcx^7 + \frac{1}{6}\,Ab^2x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9 + 1/4*B*b*c*x^8 + 1/8*A*c^2*x^8 + 1/7*B*b^2*x^7 + 2/7*A*b*c*x
^7 + 1/6*A*b^2*x^6
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^9}{9} + \frac{A\,b^2x^6}{6} + \frac{\left(A\,c^2 + 2bBc\right)x^8}{8} + \frac{\left(2Abc + b^2B\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/9*B*c^2*x^9+1/8*(A*c^2+2*B*b*c)*x^8+1/7*(2*A*b*c+B*b^2)*x^7+1/6*A*b^2*x^6
```

maxima [**A**] time = 0.87, size = 51, normalized size = 0.93

$$\frac{1}{9}\,Bc^2x^9 + \frac{1}{6}\,Ab^2x^6 + \frac{1}{8}\,\left(2\,Bbc + Ac^2\right)x^8 + \frac{1}{7}\,\left(Bb^2 + 2\,Abc\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*x^9 + 1/6*A*b^2*x^6 + 1/8*(2*B*b*c + A*c^2)*x^8 + 1/7*(B*b^2 + 2*
A*b*c)*x^7
```

mupad [**B**] time = 1.05, size = 51, normalized size = 0.93

$$x^7\left(\frac{B\,b^2}{7} + \frac{2\,A\,c\,b}{7}\right) + x^8\left(\frac{A\,c^2}{8} + \frac{B\,b\,c}{4}\right) + \frac{A\,b^2\,x^6}{6} + \frac{B\,c^2\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^7*((B*b^2)/7 + (2*A*b*c)/7) + x^8*((A*c^2)/8 + (B*b*c)/4) + (A*b^2*x^6)/6
 + (B*c^2*x^9)/9
```

sympy [**A**] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^6}{6} + \frac{Bc^2x^9}{9} + x^8\left(\frac{Ac^2}{8} + \frac{Bbc}{4}\right) + x^7\left(\frac{2Abc}{7} + \frac{Bb^2}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**6/6 + B*c**2*x**9/9 + x**8*(A*c**2/8 + B*b*c/4) + x**7*(2*A*b*c/7
 + B*b**2/7)
```

3.16 $\int x^2(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

```
[Out] 1/5*A*b^2*x^5+1/6*b*(2*A*c+B*b)*x^6+1/7*c*(A*c+2*B*b)*x^7+1/8*B*c^2*x^8
```

Rubi [A] time = 0.06, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2*
x^8)/8
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^4+b(bB+2Ac)x^5+c(2bB+Ac)x^6+Bc^2x^7\right)dx\\&=\frac{1}{5}Ab^2x^5+\frac{1}{6}b(bB+2Ac)x^6+\frac{1}{7}c(2bB+Ac)x^7+\frac{1}{8}Bc^2x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{5}Ab^2x^5+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{6}bx^6(2Ac+bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^5)/5 + (b*(b*B + 2*A*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2*
x^8)/8
```

fricas [A] time = 0.76, size = 53, normalized size = 0.96

$$\frac{1}{8}x^8c^2B+\frac{2}{7}x^7cbB+\frac{1}{7}x^7c^2A+\frac{1}{6}x^6b^2B+\frac{1}{3}x^6cbA+\frac{1}{5}x^5b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 2/7*x^7*c*b*B + 1/7*x^7*c^2*A + 1/6*x^6*b^2*B + 1/3*x^6*c*b
*A + 1/5*x^5*b^2*A
```

giac [**A**] time = 0.17, size = 53, normalized size = 0.96

$$\frac{1}{8}\,Bc^{2}x^{8}+\frac{2}{7}\,Bbcx^{7}+\frac{1}{7}\,Ac^{2}x^{7}+\frac{1}{6}\,Bb^{2}x^{6}+\frac{1}{3}\,Abcx^{6}+\frac{1}{5}\,Ab^{2}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 2/7*B*b*c*x^7 + 1/7*A*c^2*x^7 + 1/6*B*b^2*x^6 + 1/3*A*b*c*x
^6 + 1/5*A*b^2*x^5
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,c^{2}x^{8}}{8}+\frac{A\,b^{2}x^{5}}{5}+\frac{\left(A\,c^{2}+2bBc\right)x^{7}}{7}+\frac{\left(2Abc+b^{2}B\right)x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/8*B*c^2*x^8+1/7*(A*c^2+2*B*b*c)*x^7+1/6*(2*A*b*c+B*b^2)*x^6+1/5*A*b^2*x^5
```

maxima [**A**] time = 0.89, size = 51, normalized size = 0.93

$$\frac{1}{8}\,Bc^{2}x^{8}+\frac{1}{5}\,Ab^{2}x^{5}+\frac{1}{7}\left(2\,Bbc+Ac^{2}\right)x^{7}+\frac{1}{6}\left(Bb^{2}+2\,Abc\right)x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/5*A*b^2*x^5 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/6*(B*b^2 + 2*
A*b*c)*x^6
```

mupad [**B**] time = 0.05, size = 51, normalized size = 0.93

$$x^{6}\left(\frac{B\,b^{2}}{6}+\frac{A\,c\,b}{3}\right)+x^{7}\left(\frac{A\,c^{2}}{7}+\frac{2\,B\,b\,c}{7}\right)+\frac{A\,b^{2}\,x^{5}}{5}+\frac{B\,c^{2}\,x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^6*((B*b^2)/6 + (A*b*c)/3) + x^7*((A*c^2)/7 + (2*B*b*c)/7) + (A*b^2*x^5)/5
 + (B*c^2*x^8)/8
```

sympy [**A**] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^{2}x^{5}}{5}+\frac{Bc^{2}x^{8}}{8}+x^{7}\left(\frac{Ac^{2}}{7}+\frac{2Bbc}{7}\right)+x^{6}\left(\frac{Abc}{3}+\frac{Bb^{2}}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**5/5 + B*c**2*x**8/8 + x**7*(A*c**2/7 + 2*B*b*c/7) + x**6*(A*b*c/3
 + B*b**2/6)
```

3.17 $\int x(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

```
[Out] 1/4*A*b^2*x^4+1/5*b*(2*A*c+B*b)*x^5+1/6*c*(A*c+2*B*b)*x^6+1/7*B*c^2*x^7
```

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2*
x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^3+b(bB+2Ac)x^4+c(2bB+Ac)x^5+Bc^2x^6\right)dx\\&=\frac{1}{4}Ab^2x^4+\frac{1}{5}b(bB+2Ac)x^5+\frac{1}{6}c(2bB+Ac)x^6+\frac{1}{7}Bc^2x^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{4}Ab^2x^4+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{5}bx^5(2Ac+bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^4)/4 + (b*(b*B + 2*A*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2*
x^7)/7
```

fricas [A] time = 0.75, size = 53, normalized size = 0.96

$$\frac{1}{7}x^7c^2B+\frac{1}{3}x^6cbB+\frac{1}{6}x^6c^2A+\frac{1}{5}x^5b^2B+\frac{2}{5}x^5cbA+\frac{1}{4}x^4b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/3*x^6*c*b*B + 1/6*x^6*c^2*A + 1/5*x^5*b^2*B + 2/5*x^5*c*b
*A + 1/4*x^4*b^2*A
```

giac [A] time = 0.16, size = 53, normalized size = 0.96

$$\frac{1}{7}\,Bc^2x^7 + \frac{1}{3}\,Bbcx^6 + \frac{1}{6}\,Ac^2x^6 + \frac{1}{5}\,Bb^2x^5 + \frac{2}{5}\,Abcx^5 + \frac{1}{4}\,Ab^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/3*B*b*c*x^6 + 1/6*A*c^2*x^6 + 1/5*B*b^2*x^5 + 2/5*A*b*c*x
^5 + 1/4*A*b^2*x^4
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,c^2x^7}{7} + \frac{A\,b^2x^4}{4} + \frac{\left(A\,c^2 + 2bBc\right)x^6}{6} + \frac{\left(2Abc + b^2B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/7*B*c^2*x^7+1/6*(A*c^2+2*B*b*c)*x^6+1/5*(2*A*b*c+B*b^2)*x^5+1/4*A*b^2*x^4
```

maxima [A] time = 0.84, size = 51, normalized size = 0.93

$$\frac{1}{7}\,Bc^2x^7 + \frac{1}{4}\,Ab^2x^4 + \frac{1}{6}\left(2\,Bbc + Ac^2\right)x^6 + \frac{1}{5}\left(Bb^2 + 2\,Abc\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/4*A*b^2*x^4 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/5*(B*b^2 + 2*
A*b*c)*x^5
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^5\left(\frac{B\,b^2}{5} + \frac{2\,A\,c\,b}{5}\right) + x^6\left(\frac{A\,c^2}{6} + \frac{B\,b\,c}{3}\right) + \frac{A\,b^2\,x^4}{4} + \frac{B\,c^2\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^5*((B*b^2)/5 + (2*A*b*c)/5) + x^6*((A*c^2)/6 + (B*b*c)/3) + (A*b^2*x^4)/4
 + (B*c^2*x^7)/7
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^2x^4}{4} + \frac{Bc^2x^7}{7} + x^6\left(\frac{Ac^2}{6} + \frac{Bbc}{3}\right) + x^5\left(\frac{2Abc}{5} + \frac{Bb^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**4/4 + B*c**2*x**7/7 + x**6*(A*c**2/6 + B*b*c/3) + x**5*(2*A*b*c/5
 + B*b**2/5)
```

3.18 $\int (A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

```
[Out] 1/3*A*b^2*x^3+1/4*b*(2*A*c+B*b)*x^4+1/5*c*(A*c+2*B*b)*x^5+1/6*B*c^2*x^6
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*
x^6)/6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^2\,dx&=\int \left(Ab^2x^2+b(bB+2Ac)x^3+c(2bB+Ac)x^4+Bc^2x^5\right)\,dx\\&=\frac{1}{3}Ab^2x^3+\frac{1}{4}b(bB+2Ac)x^4+\frac{1}{5}c(2bB+Ac)x^5+\frac{1}{6}Bc^2x^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^3\left(20Ab^2+12cx^2(Ac+2bB)+15bx(2Ac+bB)+10Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^3*(20*A*b^2 + 15*b*(b*B + 2*A*c)*x + 12*c*(2*b*B + A*c)*x^2 + 10*B*c^2*x
^3))/60
```

fricas [A] time = 0.78, size = 53, normalized size = 0.96

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4cbA+\frac{1}{3}x^3b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*b
*A + 1/3*x^3*b^2*A
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{6}\,Bc^{2}x^{6}+\frac{2}{5}\,Bbcx^{5}+\frac{1}{5}\,Ac^{2}x^{5}+\frac{1}{4}\,Bb^{2}x^{4}+\frac{1}{2}\,Abcx^{4}+\frac{1}{3}\,Ab^{2}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*A*b*c*x
^4 + 1/3*A*b^2*x^3
```

maple [**A**] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^{2}x^{6}}{6}+\frac{A\,b^{2}x^{3}}{3}+\frac{\left(A\,c^{2}+2bBc\right)x^{5}}{5}+\frac{\left(2Abc+b^{2}B\right)x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*b^2)*x^4+1/3*A*b^2*x^3
```

maxima [**A**] time = 0.92, size = 51, normalized size = 0.93

$$\frac{1}{6}\,Bc^{2}x^{6}+\frac{1}{3}\,Ab^{2}x^{3}+\frac{1}{5}\,\left(2\,Bbc+Ac^{2}\right)x^{5}+\frac{1}{4}\,\left(Bb^{2}+2\,Abc\right)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/3*A*b^2*x^3 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*
A*b*c)*x^4
```

mupad [**B**] time = 0.05, size = 51, normalized size = 0.93

$$x^{4}\,\left(\frac{B\,b^{2}}{4}+\frac{A\,c\,b}{2}\right)+x^{5}\,\left(\frac{A\,c^{2}}{5}+\frac{2\,B\,b\,c}{5}\right)+\frac{A\,b^{2}\,x^{3}}{3}+\frac{B\,c^{2}\,x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^4*((B*b^2)/4 + (A*b*c)/2) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + (A*b^2*x^3)/3
 + (B*c^2*x^6)/6
```

sympy [**A**] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^{2}x^{3}}{3}+\frac{Bc^{2}x^{6}}{6}+x^{5}\left(\frac{Ac^{2}}{5}+\frac{2Bbc}{5}\right)+x^{4}\left(\frac{Abc}{2}+\frac{Bb^{2}}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2
 + B*b**2/4)
```

3.19 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x}\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}Ab^2x^2+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{3}bx^3(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

```
[Out] 1/2*A*b^2*x^2+1/3*b*(2*A*c+B*b)*x^3+1/4*c*(A*c+2*B*b)*x^4+1/5*B*c^2*x^5
```

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{2}Ab^2x^2+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{3}bx^3(2Ac+bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x,x]
```

```
[Out] (A*b^2*x^2)/2 + (b*(b*B + 2*A*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*
x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x}\,dx &= \int \left(Ab^2x+b(bB+2Ac)x^2+c(2bB+Ac)x^3+Bc^2x^4\right)dx\\ &= \frac{1}{2}Ab^2x^2+\frac{1}{3}b(bB+2Ac)x^3+\frac{1}{4}c(2bB+Ac)x^4+\frac{1}{5}Bc^2x^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^2\left(30Ab^2+15cx^2(Ac+2bB)+20bx(2Ac+bB)+12Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x,x]
```

```
[Out] (x^2*(30*A*b^2 + 20*b*(b*B + 2*A*c)*x + 15*c*(2*b*B + A*c)*x^2 + 12*B*c^2*x
^3))/60
```

fricas [A] time = 0.86, size = 51, normalized size = 0.93

$$\frac{1}{5}Bc^2x^5+\frac{1}{2}Ab^2x^2+\frac{1}{4}\left(2Bbc+Ac^2\right)x^4+\frac{1}{3}\left(Bb^2+2Abc\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*A*b^2*x^2 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*
A*b*c)*x^3
```

giac [A] time = 0.18, size = 53, normalized size = 0.96

$$\frac{1}{5}\,Bc^{2}x^{5}+\frac{1}{2}\,Bbcx^{4}+\frac{1}{4}\,Ac^{2}x^{4}+\frac{1}{3}\,Bb^{2}x^{3}+\frac{2}{3}\,Abcx^{3}+\frac{1}{2}\,Ab^{2}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*B*b*c*x^4 + 1/4*A*c^2*x^4 + 1/3*B*b^2*x^3 + 2/3*A*b*c*x
^3 + 1/2*A*b^2*x^2
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^{2}x^{5}}{5}+\frac{A\,b^{2}x^{2}}{2}+\frac{\left(A\,c^{2}+2bBc\right)x^{4}}{4}+\frac{\left(2Abc+b^{2}B\right)x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x,x)
```

```
[Out] 1/5*B*c^2*x^5+1/4*(A*c^2+2*B*b*c)*x^4+1/3*(2*A*b*c+B*b^2)*x^3+1/2*A*b^2*x^2
```

maxima [A] time = 0.90, size = 51, normalized size = 0.93

$$\frac{1}{5}\,Bc^{2}x^{5}+\frac{1}{2}\,Ab^{2}x^{2}+\frac{1}{4}\left(2\,Bbc+Ac^{2}\right)x^{4}+\frac{1}{3}\left(Bb^{2}+2\,Abc\right)x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*A*b^2*x^2 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*
A*b*c)*x^3
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^{3}\left(\frac{B\,b^{2}}{3}+\frac{2\,A\,c\,b}{3}\right)+x^{4}\left(\frac{A\,c^{2}}{4}+\frac{B\,b\,c}{2}\right)+\frac{A\,b^{2}\,x^{2}}{2}+\frac{B\,c^{2}\,x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x,x)
```

```
[Out] x^3*((B*b^2)/3 + (2*A*b*c)/3) + x^4*((A*c^2)/4 + (B*b*c)/2) + (A*b^2*x^2)/2
 + (B*c^2*x^5)/5
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^{2}x^{2}}{2}+\frac{Bc^{2}x^{5}}{5}+x^{4}\left(\frac{Ac^{2}}{4}+\frac{Bbc}{2}\right)+x^{3}\left(\frac{2Abc}{3}+\frac{Bb^{2}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x,x)
```

```
[Out] A*b**2*x**2/2 + B*c**2*x**5/5 + x**4*(A*c**2/4 + B*b*c/2) + x**3*(2*A*b*c/3
 + B*b**2/3)
```

3.20 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^2} dx$

Optimal. Leaf size=38

$$\frac{B(b+cx)^4}{4c^2}-\frac{(b+cx)^3(bB-Ac)}{3c^2}$$

```
[Out] -1/3*(-A*c+B*b)*(c*x+b)^3/c^2+1/4*B*(c*x+b)^4/c^2
```

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{B(b+cx)^4}{4c^2}-\frac{(b+cx)^3(bB-Ac)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((b*B - A*c)*(b + c*x)^3)/(3*c^2) + (B*(b + c*x)^4)/(4*c^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^2} dx &= \int \left(\frac{(-bB+Ac)(b+cx)^2}{c}+\frac{B(b+cx)^3}{c}\right) dx\\ &= -\frac{(bB-Ac)(b+cx)^3}{3c^2}+\frac{B(b+cx)^4}{4c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.24

$$\frac{1}{12}x\left(12Ab^2+4cx^2(Ac+2bB)+6bx(2Ac+bB)+3Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^2,x]
```

```
[Out] (x*(12*A*b^2 + 6*b*(b*B + 2*A*c)*x + 4*c*(2*b*B + A*c)*x^2 + 3*B*c^2*x^3))/
12
```

fricas [A] time = 0.85, size = 48, normalized size = 1.26

$$\frac{1}{4}Bc^2x^4+Ab^2x+\frac{1}{3}\left(2Bbc+Ac^2\right)x^3+\frac{1}{2}\left(Bb^2+2Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/4*B*c^2*x^4 + A*b^2*x + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*A*b*c)
*x^2
```

giac [**A**] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}\,Bc^2x^4+\frac{2}{3}\,Bbcx^3+\frac{1}{3}\,Ac^2x^3+\frac{1}{2}\,Bb^2x^2+Abcx^2+Ab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 2/3*B*b*c*x^3 + 1/3*A*c^2*x^3 + 1/2*B*b^2*x^2 + A*b*c*x^2 +
 A*b^2*x
```

maple [**A**] time = 0.04, size = 49, normalized size = 1.29

$$\frac{B\,c^2x^4}{4}+A\,b^2x+\frac{\left(A\,c^2+2bBc\right)x^3}{3}+\frac{\left(2Abc+b^2B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^2,x)
```

```
[Out] 1/4*B*c^2*x^4+1/3*(A*c^2+2*B*b*c)*x^3+1/2*(2*A*b*c+B*b^2)*x^2+A*b^2*x
```

maxima [**A**] time = 0.95, size = 48, normalized size = 1.26

$$\frac{1}{4}\,Bc^2x^4+Ab^2x+\frac{1}{3}\left(2\,Bbc+Ac^2\right)x^3+\frac{1}{2}\left(Bb^2+2\,Abc\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + A*b^2*x + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*A*b*c)
*x^2
```

mupad [**B**] time = 0.05, size = 47, normalized size = 1.24

$$x^2\left(\frac{B\,b^2}{2}+A\,c\,b\right)+x^3\left(\frac{A\,c^2}{3}+\frac{2\,B\,b\,c}{3}\right)+\frac{B\,c^2\,x^4}{4}+A\,b^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^2,x)
```

```
[Out] x^2*((B*b^2)/2 + A*b*c) + x^3*((A*c^2)/3 + (2*B*b*c)/3) + (B*c^2*x^4)/4 + A
*b^2*x
```

sympy [**A**] time = 0.08, size = 49, normalized size = 1.29

$$Ab^2x+\frac{Bc^2x^4}{4}+x^3\left(\frac{Ac^2}{3}+\frac{2Bbc}{3}\right)+x^2\left(Abc+\frac{Bb^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**2,x)
```

```
[Out] A*b**2*x + B*c**2*x**4/4 + x**3*(A*c**2/3 + 2*B*b*c/3) + x**2*(A*b*c + B*b*
*2/2)
```

3.21 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^3}\,dx$

Optimal. Leaf size=46

$$Ab^2\log(x)+\frac{1}{2}cx^2(Ac+2bB)+bx(2Ac+bB)+\frac{1}{3}Bc^2x^3$$

```
[Out] b*(2*A*c+B*b)*x+1/2*c*(A*c+2*B*b)*x^2+1/3*B*c^2*x^3+A*b^2*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$Ab^2\log(x)+\frac{1}{2}cx^2(Ac+2bB)+bx(2Ac+bB)+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b*(b*B + 2*A*c)*x + (c*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^3)/3 + A*b^2*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^3}\,dx &= \int \left(b(bB+2Ac)+\frac{Ab^2}{x}+c(2bB+Ac)x+Bc^2x^2\right)dx\\ &= b(bB+2Ac)x+\frac{1}{2}c(2bB+Ac)x^2+\frac{1}{3}Bc^2x^3+Ab^2\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 0.93

$$Ab^2\log(x)+bcx(2A+Bx)+\frac{1}{6}c^2x^2(3A+2Bx)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b^2*B*x + b*c*x*(2*A + B*x) + (c^2*x^2*(3*A + 2*B*x))/6 + A*b^2*Log[x]
```

fricas [A] time = 0.54, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^2x^3+Ab^2\log(x)+\frac{1}{2}\left(2\,Bbc+Ac^2\right)x^2+\left(Bb^2+2\,Abc\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/3*B*c^2*x^3 + A*b^2*log(x) + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*A*b*c
)*x
```

giac [A] time = 0.15, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^{2}x^{3}+Bbcx^{2}+\frac{1}{2}\,Ac^{2}x^{2}+Bb^{2}x+2\,Abcx+Ab^{2}\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + B*b*c*x^2 + 1/2*A*c^2*x^2 + B*b^2*x + 2*A*b*c*x + A*b^2*log
(abs(x))
```

maple [A] time = 0.05, size = 46, normalized size = 1.00

$$\frac{B\,c^{2}x^{3}}{3}+\frac{A\,c^{2}x^{2}}{2}+Bbc\,x^{2}+A\,b^{2}\ln(x)+2Abcx+B\,b^{2}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^3,x)
```

```
[Out] 1/3*B*c^2*x^3+1/2*A*c^2*x^2+B*b*c*x^2+2*A*b*c*x+B*b^2*x+A*b^2*ln(x)
```

maxima [A] time = 0.90, size = 46, normalized size = 1.00

$$\frac{1}{3}\,Bc^{2}x^{3}+Ab^{2}\log(x)+\frac{1}{2}\left(2\,Bbc+Ac^{2}\right)x^{2}+\left(Bb^{2}+2\,Abc\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + A*b^2*log(x) + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*A*b*c
)*x
```

mupad [B] time = 0.04, size = 45, normalized size = 0.98

$$x^{2}\left(\frac{A\,c^{2}}{2}+B\,b\,c\right)+x\,\left(B\,b^{2}+2\,A\,c\,b\right)+\frac{B\,c^{2}\,x^{3}}{3}+A\,b^{2}\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^3,x)
```

```
[Out] x^2*((A*c^2)/2 + B*b*c) + x*(B*b^2 + 2*A*b*c) + (B*c^2*x^3)/3 + A*b^2*log(x
)
```

sympy [A] time = 0.14, size = 46, normalized size = 1.00

$$Ab^{2}\log\left(x\right)+\frac{Bc^{2}x^{3}}{3}+x^{2}\left(\frac{Ac^{2}}{2}+Bbc\right)+x\left(2Abc+Bb^{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**3,x)
```

```
[Out] A*b**2*log(x) + B*c**2*x**3/3 + x**2*(A*c**2/2 + B*b*c) + x*(2*A*b*c + B*b*
*2)
```

3.22 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^4} \, dx$

Optimal. Leaf size=44

$$-\frac{Ab^2}{x}+cx(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{2}Bc^2x^2$$

```
[Out] -A*b^2/x+c*(A*c+2*B*b)*x+1/2*B*c^2*x^2+b*(2*A*c+B*b)*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{x}+cx(Ac+2bB)+b\log(x)(2Ac+bB)+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -((A*b^2)/x) + c*(2*b*B + A*c)*x + (B*c^2*x^2)/2 + b*(b*B + 2*A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^4} \, dx &= \int \left(c(2bB+Ac)+\frac{Ab^2}{x^2}+\frac{b(bB+2Ac)}{x}+Bc^2x\right) dx\\ &= -\frac{Ab^2}{x}+c(2bB+Ac)x+\frac{1}{2}Bc^2x^2+b(bB+2Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 0.98

$$A\left(c^2x-\frac{b^2}{x}\right)+b\log(x)(2Ac+bB)+\frac{1}{2}Bcx(4b+cx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^4,x]
```

```
[Out] (B*c*x*(4*b + c*x))/2 + A*(-(b^2/x) + c^2*x) + b*(b*B + 2*A*c)*Log[x]
```

fricas [A] time = 0.95, size = 52, normalized size = 1.18

$$\frac{Bc^2x^3-2\,Ab^2+2\left(2\,Bbc+Ac^2\right)x^2+2\left(Bb^2+2\,Abc\right)x\log(x)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c^2*x^3 - 2*A*b^2 + 2*(2*B*b*c + A*c^2)*x^2 + 2*(B*b^2 + 2*A*b*c)*x*
log(x))/x
```

giac [**A**] time = 0.16, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bc^2x^2 + 2\,Bbcx + Ac^2x - \frac{Ab^2}{x} + \left(Bb^2 + 2\,Abc\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*x^2 + 2*B*b*c*x + A*c^2*x - A*b^2/x + (B*b^2 + 2*A*b*c)*log(abs(x
))
```

maple [**A**] time = 0.05, size = 46, normalized size = 1.05

$$\frac{B\,c^2x^2}{2} + 2Abc\ln(x) + A\,c^2x + B\,b^2\ln(x) + 2Bbcx - \frac{A\,b^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^4,x)
```

```
[Out] 1/2*B*c^2*x^2+A*c^2*x+2*b*B*c*x-A*b^2/x+2*A*ln(x)*b*c+b^2*B*ln(x)
```

maxima [**A**] time = 0.89, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bc^2x^2 - \frac{Ab^2}{x} + \left(2\,Bbc + Ac^2\right)x + \left(Bb^2 + 2\,Abc\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*x^2 - A*b^2/x + (2*B*b*c + A*c^2)*x + (B*b^2 + 2*A*b*c)*log(x)
```

mupad [**B**] time = 0.05, size = 46, normalized size = 1.05

$$x\,\left(A\,c^2 + 2\,B\,b\,c\right) + \ln(x)\,\left(B\,b^2 + 2\,A\,c\,b\right) - \frac{A\,b^2}{x} + \frac{B\,c^2\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^4,x)
```

```
[Out] x*(A*c^2 + 2*B*b*c) + log(x)*(B*b^2 + 2*A*b*c) - (A*b^2)/x + (B*c^2*x^2)/2
```

sympy [**A**] time = 0.19, size = 42, normalized size = 0.95

$$-\frac{Ab^2}{x} + \frac{Bc^2x^2}{2} + b\,(2Ac + Bb)\log\left(x\right) + x\left(Ac^2 + 2Bbc\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**4,x)
```

```
[Out] -A*b**2/x + B*c**2*x**2/2 + b*(2*A*c + B*b)*log(x) + x*(A*c**2 + 2*B*b*c)
```

3.23 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^5}\,dx$

Optimal. Leaf size=44

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

```
[Out] -1/2*A*b^2/x^2-b*(2*A*c+B*b)/x+B*c^2*x+c*(A*c+2*B*b)*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -(A*b^2)/(2*x^2) - (b*(b*B + 2*A*c))/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^5}\,dx&=\int \left(Bc^2+\frac{Ab^2}{x^3}+\frac{b(bB+2Ac)}{x^2}+\frac{c(2bB+Ac)}{x}\right)dx\\&=-\frac{Ab^2}{2x^2}-\frac{b(bB+2Ac)}{x}+Bc^2x+c(2bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 44, normalized size = 1.00

$$-\frac{Ab^2}{2x^2}-\frac{b(2Ac+bB)}{x}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -1/2*(A*b^2)/x^2 - (b*(b*B + 2*A*c))/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

fricas [A] time = 0.82, size = 53, normalized size = 1.20

$$\frac{2\,Bc^2x^3+2\left(2\,Bbc+Ac^2\right)x^2\log(x)-Ab^2-2\left(Bb^2+2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c^2*x^3 + 2*(2*B*b*c + A*c^2)*x^2*log(x) - A*b^2 - 2*(B*b^2 + 2*A*
b*c)*x)/x^2
```

giac [A] time = 0.16, size = 47, normalized size = 1.07

$$Bc^2x+\left(2\,Bbc+Ac^2\right)\log\left(|x|\right)-\frac{Ab^2+2\left(Bb^2+2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="giac")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(abs(x)) - 1/2*(A*b^2 + 2*(B*b^2 + 2*A*b*c)*
x)/x^2
```

maple [A] time = 0.05, size = 48, normalized size = 1.09

$$A\,c^2\ln(x)+2Bbc\ln(x)+B\,c^2x-\frac{2Abc}{x}-\frac{B\,b^2}{x}-\frac{A\,b^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^5,x)
```

```
[Out] B*c^2*x-1/2*A*b^2/x^2-2*b/x*A*c-b^2/x*B+A*ln(x)*c^2+2*B*ln(x)*b*c
```

maxima [A] time = 0.93, size = 46, normalized size = 1.05

$$Bc^2x+\left(2\,Bbc+Ac^2\right)\log(x)-\frac{Ab^2+2\left(Bb^2+2\,Abc\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(x) - 1/2*(A*b^2 + 2*(B*b^2 + 2*A*b*c)*x)/x^
2
```

mupad [B] time = 1.04, size = 46, normalized size = 1.05

$$\ln(x)\,\left(A\,c^2+2\,B\,b\,c\right)-\frac{\frac{A\,b^2}{2}+x\,\left(B\,b^2+2\,A\,c\,b\right)}{x^2}+B\,c^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^5,x)
```

```
[Out] log(x)*(A*c^2 + 2*B*b*c) - ((A*b^2)/2 + x*(B*b^2 + 2*A*b*c))/x^2 + B*c^2*x
```

sympy [A] time = 0.33, size = 46, normalized size = 1.05

$$Bc^2x+c\left(Ac+2Bb\right)\log\left(x\right)+\frac{-Ab^2+x\left(-4Abc-2Bb^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**5,x)
```

```
[Out] B*c**2*x + c*(A*c + 2*B*b)*log(x) + (-A*b**2 + x*(-4*A*b*c - 2*B*b**2))/(2*
x**2)
```

3.24 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^6} dx$

Optimal. Leaf size=49

$$-\frac{Ab^2}{3x^3}-\frac{b(2Ac+bB)}{2x^2}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

```
[Out] -1/3*A*b^2/x^3-1/2*b*(2*A*c+B*b)/x^2-c*(A*c+2*B*b)/x+B*c^2*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{3x^3}-\frac{b(2Ac+bB)}{2x^2}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -(A*b^2)/(3*x^3) - (b*(b*B + 2*A*c))/(2*x^2) - (c*(2*b*B + A*c))/x + B*c^2*
Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^6}\,dx &= \int \left(\frac{Ab^2}{x^4}+\frac{b(bB+2Ac)}{x^3}+\frac{c(2bB+Ac)}{x^2}+\frac{Bc^2}{x}\right) dx\\ &= -\frac{Ab^2}{3x^3}-\frac{b(bB+2Ac)}{2x^2}-\frac{c(2bB+Ac)}{x}+Bc^2\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.96

$$Bc^2\log(x)-\frac{2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b+4cx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -1/6*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2))/x^3 + B*c^2*Lo
g[x]
```

fricas [A] time = 0.85, size = 53, normalized size = 1.08

$$\frac{6\,Bc^2x^3\log(x)-2\,Ab^2-6\left(2\,Bbc+Ac^2\right)x^2-3\left(Bb^2+2\,Abc\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*c^2*x^3*log(x) - 2*A*b^2 - 6*(2*B*b*c + A*c^2)*x^2 - 3*(B*b^2 + 2*
A*b*c)*x)/x^3
```

giac [A] time = 0.17, size = 51, normalized size = 1.04

$$Bc^2\log(|x|) - \frac{2\,Ab^2 + 6\left(2\,Bbc + Ac^2\right)x^2 + 3\left(Bb^2 + 2\,Abc\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="giac")
```

```
[Out] B*c^2*log(abs(x)) - 1/6*(2*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 3*(B*b^2 + 2*A
*b*c)*x)/x^3
```

maple [A] time = 0.05, size = 52, normalized size = 1.06

$$B\,c^2\ln(x) - \frac{A\,c^2}{x} - \frac{2Bbc}{x} - \frac{Abc}{x^2} - \frac{B\,b^2}{2x^2} - \frac{A\,b^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^6,x)
```

```
[Out] -1/3*A*b^2/x^3-b/x^2*A*c-1/2*b^2*B/x^2-c^2/x*A-2*c/x*b*B+B*c^2*ln(x)
```

maxima [A] time = 0.87, size = 50, normalized size = 1.02

$$Bc^2\log(x) - \frac{2\,Ab^2 + 6\left(2\,Bbc + Ac^2\right)x^2 + 3\left(Bb^2 + 2\,Abc\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^6,x, algorithm="maxima")
```

```
[Out] B*c^2*log(x) - 1/6*(2*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 3*(B*b^2 + 2*A*b*c)
*x)/x^3
```

mupad [B] time = 1.12, size = 48, normalized size = 0.98

$$B\,c^2\,\ln(x) - \frac{x^2\,\left(A\,c^2 + 2\,B\,b\,c\right) + \frac{A\,b^2}{3} + x\,\left(\frac{B\,b^2}{2} + A\,c\,b\right)}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^6,x)
```

```
[Out] B*c^2*log(x) - (x^2*(A*c^2 + 2*B*b*c) + (A*b^2)/3 + x*((B*b^2)/2 + A*b*c))/
x^3
```

sympy [A] time = 0.53, size = 54, normalized size = 1.10

$$Bc^2\log(x) + \frac{-2Ab^2 + x^2\left(-6Ac^2 - 12Bbc\right) + x\left(-6Abc - 3Bb^2\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**6,x)
```

```
[Out] B*c**2*log(x) + (-2*A*b**2 + x**2*(-6*A*c**2 - 12*B*b*c) + x*(-6*A*b*c - 3*
B*b**2))/(6*x**3)
```

3.25 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^7}\,dx$

Optimal. Leaf size=53

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

```
[Out] -1/4*A*b^2/x^4-1/3*b*(2*A*c+B*b)/x^3-1/2*c*(A*c+2*B*b)/x^2-B*c^2/x
```

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{4x^4}-\frac{b(2Ac+bB)}{3x^3}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -(A*b^2)/(4*x^4) - (b*(b*B + 2*A*c))/(3*x^3) - (c*(2*b*B + A*c))/(2*x^2) -
(B*c^2)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^7}\,dx &= \int \left(\frac{Ab^2}{x^5}+\frac{b(bB+2Ac)}{x^4}+\frac{c(2bB+Ac)}{x^3}+\frac{Bc^2}{x^2}\right)dx\\ &= -\frac{Ab^2}{4x^4}-\frac{b(bB+2Ac)}{3x^3}-\frac{c(2bB+Ac)}{2x^2}-\frac{Bc^2}{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.94

$$-\frac{A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\left(b^2+3bcx+3c^2x^2\right)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -1/12*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*c^2*x^2))
/x^4
```

fricas [A] time = 0.73, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3+3\,Ab^2+6\left(2\,Bbc+Ac^2\right)x^2+4\left(Bb^2+2\,Abc\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c^2*x^3 + 3*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 4*(B*b^2 + 2*A*b*
c)*x)/x^4
```

giac [A] time = 0.15, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3 + 12\,Bbcx^2 + 6\,Ac^2x^2 + 4\,Bb^2x + 8\,Abcx + 3\,Ab^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c^2*x^3 + 12*B*b*c*x^2 + 6*A*c^2*x^2 + 4*B*b^2*x + 8*A*b*c*x +
3*A*b^2)/x^4
```

maple [A] time = 0.05, size = 48, normalized size = 0.91

$$-\frac{B\,c^2}{x} - \frac{A\,b^2}{4x^4} - \frac{(Ac+2bB)\,c}{2x^2} - \frac{(2Ac+bB)\,b}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^7,x)
```

```
[Out] -1/4*A*b^2/x^4-1/3*(2*A*c+B*b)*b/x^3-1/2*c*(A*c+2*B*b)/x^2-B*c^2/x
```

maxima [A] time = 0.92, size = 51, normalized size = 0.96

$$-\frac{12\,Bc^2x^3 + 3\,Ab^2 + 6\left(2\,Bbc + Ac^2\right)x^2 + 4\left(Bb^2 + 2\,Abc\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c^2*x^3 + 3*A*b^2 + 6*(2*B*b*c + A*c^2)*x^2 + 4*(B*b^2 + 2*A*b*
c)*x)/x^4
```

mupad [B] time = 0.04, size = 49, normalized size = 0.92

$$-\frac{x^2\left(\frac{A\,c^2}{2} + B\,b\,c\right) + \frac{A\,b^2}{4} + x\left(\frac{B\,b^2}{3} + \frac{2\,A\,c\,b}{3}\right) + B\,c^2\,x^3}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^7,x)
```

```
[Out] -(x^2*((A*c^2)/2 + B*b*c) + (A*b^2)/4 + x*((B*b^2)/3 + (2*A*b*c)/3) + B*c^2
*x^3)/x^4
```

sympy [A] time = 0.68, size = 56, normalized size = 1.06

$$\frac{-3Ab^2 - 12Bc^2x^3 + x^2\left(-6Ac^2 - 12Bbc\right) + x\left(-8Abc - 4Bb^2\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**7,x)
```

```
[Out] (-3*A*b**2 - 12*B*c**2*x**3 + x**2*(-6*A*c**2 - 12*B*b*c) + x*(-8*A*b*c - 4
*B*b**2))/(12*x**4)
```

3.26 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^8}\,dx$

Optimal. Leaf size=55

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

```
[Out] -1/5*A*b^2/x^5-1/4*b*(2*A*c+B*b)/x^4-1/3*c*(A*c+2*B*b)/x^3-1/2*B*c^2/x^2
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{Ab^2}{5x^5}-\frac{b(2Ac+bB)}{4x^4}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -(A*b^2)/(5*x^5) - (b*(b*B + 2*A*c))/(4*x^4) - (c*(2*b*B + A*c))/(3*x^3) -
(B*c^2)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^8}\,dx &= \int \left(\frac{Ab^2}{x^6}+\frac{b(bB+2Ac)}{x^5}+\frac{c(2bB+Ac)}{x^4}+\frac{Bc^2}{x^3}\right)dx\\ &= -\frac{Ab^2}{5x^5}-\frac{b(bB+2Ac)}{4x^4}-\frac{c(2bB+Ac)}{3x^3}-\frac{Bc^2}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 53, normalized size = 0.96

$$-\frac{2A\left(6b^2+15bcx+10c^2x^2\right)+5Bx\left(3b^2+8bcx+6c^2x^2\right)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -1/60*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*c*x + 10*c^2
*x^2))/x^5
```

fricas [A] time = 0.81, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3+12\,Ab^2+20\left(2\,Bbc+Ac^2\right)x^2+15\left(Bb^2+2\,Abc\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 12*A*b^2 + 20*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A
*b*c)*x)/x^5
```

giac [A] time = 0.16, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3 + 40\,Bbcx^2 + 20\,Ac^2x^2 + 15\,Bb^2x + 30\,Abcx + 12\,Ab^2}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 40*B*b*c*x^2 + 20*A*c^2*x^2 + 15*B*b^2*x + 30*A*b*c*x
 + 12*A*b^2)/x^5
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,c^2}{2x^2}-\frac{A\,b^2}{5x^5}-\frac{(Ac+2bB)\,c}{3x^3}-\frac{(2Ac+bB)\,b}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^8,x)
```

```
[Out] -1/5*A*b^2/x^5-1/4*b*(2*A*c+B*b)/x^4-1/3*(A*c+2*B*b)*c/x^3-1/2*B*c^2/x^2
```

maxima [A] time = 0.84, size = 51, normalized size = 0.93

$$-\frac{30\,Bc^2x^3 + 12\,Ab^2 + 20\left(2\,Bbc + Ac^2\right)x^2 + 15\left(Bb^2 + 2\,Abc\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c^2*x^3 + 12*A*b^2 + 20*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A
*b*c)*x)/x^5
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,c^2}{3}+\frac{2\,B\,b\,c}{3}\right)+\frac{A\,b^2}{5}+x\left(\frac{B\,b^2}{4}+\frac{A\,c\,b}{2}\right)+\frac{B\,c^2\,x^3}{2}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^8,x)
```

```
[Out] -(x^2*((A*c^2)/3 + (2*B*b*c)/3) + (A*b^2)/5 + x*((B*b^2)/4 + (A*b*c)/2) + (
B*c^2*x^3)/2)/x^5
```

sympy [A] time = 0.86, size = 56, normalized size = 1.02

$$\frac{-12Ab^2 - 30Bc^2x^3 + x^2\left(-20Ac^2 - 40Bbc\right) + x\left(-30Abc - 15Bb^2\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**8,x)
```

```
[Out] (-12*A*b**2 - 30*B*c**2*x**3 + x**2*(-20*A*c**2 - 40*B*b*c) + x*(-30*A*b*c
- 15*B*b**2))/(60*x**5)
```

3.27 $\int x^m(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=96

$$\frac{Ab^3x^{m+4}}{m+4}+\frac{b^2x^{m+5}(3Ac+bB)}{m+5}+\frac{c^2x^{m+7}(Ac+3bB)}{m+7}+\frac{3bcx^{m+6}(Ac+bB)}{m+6}+\frac{Bc^3x^{m+8}}{m+8}$$

```
[Out] A*b^3*x^(4+m)/(4+m)+b^2*(3*A*c+B*b)*x^(5+m)/(5+m)+3*b*c*(A*c+B*b)*x^(6+m)/(
6+m)+c^2*(A*c+3*B*b)*x^(7+m)/(7+m)+B*c^3*x^(8+m)/(8+m)
```

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2x^{m+5}(3Ac+bB)}{m+5}+\frac{Ab^3x^{m+4}}{m+4}+\frac{c^2x^{m+7}(Ac+3bB)}{m+7}+\frac{3bcx^{m+6}(Ac+bB)}{m+6}+\frac{Bc^3x^{m+8}}{m+8}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^(4 + m))/(4 + m) + (b^2*(b*B + 3*A*c)*x^(5 + m))/(5 + m) + (3*b*c*
(b*B + A*c)*x^(6 + m))/(6 + m) + (c^2*(3*b*B + A*c)*x^(7 + m))/(7 + m) + (B
*c^3*x^(8 + m))/(8 + m)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^{3+m}+b^2(bB+3Ac)x^{4+m}+3bc(bB+Ac)x^{5+m}+c^2(3bB+Ac)x^{6+m}\right.\\&=\frac{Ab^3x^{4+m}}{4+m}+\frac{b^2(bB+3Ac)x^{5+m}}{5+m}+\frac{3bc(bB+Ac)x^{6+m}}{6+m}+\frac{c^2(3bB+Ac)x^{7+m}}{7+m}+\end{aligned}$$

Mathematica [A] time = 0.11, size = 87, normalized size = 0.91

$$\frac{x^{m+4}\left(\left(\frac{b^3}{m+4}+\frac{3b^2cx}{m+5}+\frac{3bc^2x^2}{m+6}+\frac{c^3x^3}{m+7}\right)(Ac(m+8)-bB(m+4))+B(b+cx)^4\right)}{c(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (x^(4 + m)*(B*(b + c*x)^4 + (-(b*B*(4 + m)) + A*c*(8 + m))*(b^3/(4 + m) + (
3*b^2*c*x)/(5 + m) + (3*b*c^2*x^2)/(6 + m) + (c^3*x^3)/(7 + m))))/(c*(8 + m
))
```

fricas [B] time = 1.00, size = 381, normalized size = 3.97

$$\frac{\left(\left(Bc^3m^4+22\,Bc^3m^3+179\,Bc^3m^2+638\,Bc^3m+840\,Bc^3\right)x^8+\left(\left(3\,Bbc^2+Ac^3\right)m^4+2880\,Bbc^2+960\,Ac^3+2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^4 + 22*B*c^3*m^3 + 179*B*c^3*m^2 + 638*B*c^3*m + 840*B*c^3)*x^8 +
 ((3*B*b*c^2 + A*c^3)*m^4 + 2880*B*b*c^2 + 960*A*c^3 + 23*(3*B*b*c^2 + A*c^
3)*m^3 + 194*(3*B*b*c^2 + A*c^3)*m^2 + 712*(3*B*b*c^2 + A*c^3)*m)*x^7 + 3*(
(B*b^2*c + A*b*c^2)*m^4 + 1120*B*b^2*c + 1120*A*b*c^2 + 24*(B*b^2*c + A*b*c
^2)*m^3 + 211*(B*b^2*c + A*b*c^2)*m^2 + 804*(B*b^2*c + A*b*c^2)*m)*x^6 + ((
B*b^3 + 3*A*b^2*c)*m^4 + 1344*B*b^3 + 4032*A*b^2*c + 25*(B*b^3 + 3*A*b^2*c)
*m^3 + 230*(B*b^3 + 3*A*b^2*c)*m^2 + 920*(B*b^3 + 3*A*b^2*c)*m)*x^5 + (A*b^
3*m^4 + 26*A*b^3*m^3 + 251*A*b^3*m^2 + 1066*A*b^3*m + 1680*A*b^3)*x^4)*x^m/
(m^5 + 30*m^4 + 355*m^3 + 2070*m^2 + 5944*m + 6720)
```

giac [B] time = 0.25, size = 603, normalized size = 6.28

$$Bc^3m^4x^8x^m + 3\,Bbc^2m^4x^7x^m + Ac^3m^4x^7x^m + 22\,Bc^3m^3x^8x^m + 3\,Bb^2cm^4x^6x^m + 3\,Abc^2m^4x^6x^m + 69\,Bbc^2m^3x^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] (B*c^3*m^4*x^8*x^m + 3*B*b*c^2*m^4*x^7*x^m + A*c^3*m^4*x^7*x^m + 22*B*c^3*m
^3*x^8*x^m + 3*B*b^2*c*m^4*x^6*x^m + 3*A*b*c^2*m^4*x^6*x^m + 69*B*b*c^2*m^3
*x^7*x^m + 23*A*c^3*m^3*x^7*x^m + 179*B*c^3*m^2*x^8*x^m + B*b^3*m^4*x^5*x^m
 + 3*A*b^2*c*m^4*x^5*x^m + 72*B*b^2*c*m^3*x^6*x^m + 72*A*b*c^2*m^3*x^6*x^m
+ 582*B*b*c^2*m^2*x^7*x^m + 194*A*c^3*m^2*x^7*x^m + 638*B*c^3*m*x^8*x^m + A
*b^3*m^4*x^4*x^m + 25*B*b^3*m^3*x^5*x^m + 75*A*b^2*c*m^3*x^5*x^m + 633*B*b^
2*c*m^2*x^6*x^m + 633*A*b*c^2*m^2*x^6*x^m + 2136*B*b*c^2*m*x^7*x^m + 712*A*
c^3*m*x^7*x^m + 840*B*c^3*x^8*x^m + 26*A*b^3*m^3*x^4*x^m + 230*B*b^3*m^2*x^
5*x^m + 690*A*b^2*c*m^2*x^5*x^m + 2412*B*b^2*c*m*x^6*x^m + 2412*A*b*c^2*m*x
^6*x^m + 2880*B*b*c^2*x^7*x^m + 960*A*c^3*x^7*x^m + 251*A*b^3*m^2*x^4*x^m +
 920*B*b^3*m*x^5*x^m + 2760*A*b^2*c*m*x^5*x^m + 3360*B*b^2*c*x^6*x^m + 3360
*A*b*c^2*x^6*x^m + 1066*A*b^3*m*x^4*x^m + 1344*B*b^3*x^5*x^m + 4032*A*b^2*c
*x^5*x^m + 1680*A*b^3*x^4*x^m)/(m^5 + 30*m^4 + 355*m^3 + 2070*m^2 + 5944*m
+ 6720)
```

maple [B] time = 0.05, size = 454, normalized size = 4.73

$$\Big(B\,c^3m^4x^4 + A\,c^3m^4x^3 + 3Bb\,c^2m^4x^3 + 22B\,c^3m^3x^4 + 3Ab\,c^2m^4x^2 + 23A\,c^3m^3x^3 + 3B\,b^2c\,m^4x^2 + 69Bb\,c^2m^3x^3 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] x^(m+4)*(B*c^3*m^4*x^4+A*c^3*m^4*x^3+3*B*b*c^2*m^4*x^3+22*B*c^3*m^3*x^4+3*A
*b*c^2*m^4*x^2+23*A*c^3*m^3*x^3+3*B*b^2*c*m^4*x^2+69*B*b*c^2*m^3*x^3+179*B*
c^3*m^2*x^4+3*A*b^2*c*m^4*x+72*A*b*c^2*m^3*x^2+194*A*c^3*m^2*x^3+B*b^3*m^4*
x+72*B*b^2*c*m^3*x^2+582*B*b*c^2*m^2*x^3+638*B*c^3*m*x^4+A*b^3*m^4+75*A*b^2
*c*m^3*x+633*A*b*c^2*m^2*x^2+712*A*c^3*m*x^3+25*B*b^3*m^3*x+633*B*b^2*c*m^2
*x^2+2136*B*b*c^2*m*x^3+840*B*c^3*x^4+26*A*b^3*m^3+690*A*b^2*c*m^2*x+2412*A
*b*c^2*m*x^2+960*A*c^3*x^3+230*B*b^3*m^2*x+2412*B*b^2*c*m*x^2+2880*B*b*c^2*
x^3+251*A*b^3*m^2+2760*A*b^2*c*m*x+3360*A*b*c^2*x^2+920*B*b^3*m*x+3360*B*b^
2*c*x^2+1066*A*b^3*m+4032*A*b^2*c*x+1344*B*b^3*x+1680*A*b^3)/(m+8)/(m+7)/(m
+6)/(m+5)/(m+4)
```

maxima [A] time = 0.91, size = 129, normalized size = 1.34

$$\frac{Bc^3x^{m+8}}{m+8}+\frac{3\,Bbc^2x^{m+7}}{m+7}+\frac{Ac^3x^{m+7}}{m+7}+\frac{3\,Bb^2cx^{m+6}}{m+6}+\frac{3\,Abc^2x^{m+6}}{m+6}+\frac{Bb^3x^{m+5}}{m+5}+\frac{3\,Ab^2cx^{m+5}}{m+5}+\frac{Ab^3x^{m+4}}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*x^(m + 8)/(m + 8) + 3*B*b*c^2*x^(m + 7)/(m + 7) + A*c^3*x^(m + 7)/(m
+ 7) + 3*B*b^2*c*x^(m + 6)/(m + 6) + 3*A*b*c^2*x^(m + 6)/(m + 6) + B*b^3*x^
(m + 5)/(m + 5) + 3*A*b^2*c*x^(m + 5)/(m + 5) + A*b^3*x^(m + 4)/(m + 4)
```

mupad [B] time = 1.28, size = 291, normalized size = 3.03

$$\frac{A\,b^3\,x^m\,x^4\,\left(m^4+26\,m^3+251\,m^2+1066\,m+1680\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{B\,c^3\,x^m\,x^8\,\left(m^4+22\,m^3+179\,m^2+638\,m+840\right)}{m^5+30\,m^4+355\,m^3+2070\,m^2+5944\,m+6720}+\frac{b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*b^3*x^m*x^4*(1066*m + 251*m^2 + 26*m^3 + m^4 + 1680))/(5944*m + 2070*m^2
 + 355*m^3 + 30*m^4 + m^5 + 6720) + (B*c^3*x^m*x^8*(638*m + 179*m^2 + 22*m^
3 + m^4 + 840))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720) + (b^2*
x^m*x^5*(3*A*c + B*b)*(920*m + 230*m^2 + 25*m^3 + m^4 + 1344))/(5944*m + 20
70*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720) + (c^2*x^m*x^7*(A*c + 3*B*b)*(712*m
 + 194*m^2 + 23*m^3 + m^4 + 960))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m
^5 + 6720) + (3*b*c*x^m*x^6*(A*c + B*b)*(804*m + 211*m^2 + 24*m^3 + m^4 + 1
120))/(5944*m + 2070*m^2 + 355*m^3 + 30*m^4 + m^5 + 6720)
```

sympy [A] time = 2.76, size = 2026, normalized size = 21.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] Piecewise((-A*b**3/(4*x**4) - A*b**2*c/x**3 - 3*A*b*c**2/(2*x**2) - A*c**3/
x - B*b**3/(3*x**3) - 3*B*b**2*c/(2*x**2) - 3*B*b*c**2/x + B*c**3*log(x), E
q(m, -8)), (-A*b**3/(3*x**3) - 3*A*b**2*c/(2*x**2) - 3*A*b*c**2/x + A*c**3*
log(x) - B*b**3/(2*x**2) - 3*B*b**2*c/x + 3*B*b*c**2*log(x) + B*c**3*x, Eq(
m, -7)), (-A*b**3/(2*x**2) - 3*A*b**2*c/x + 3*A*b*c**2*log(x) + A*c**3*x -
B*b**3/x + 3*B*b**2*c*log(x) + 3*B*b*c**2*x + B*c**3*x**2/2, Eq(m, -6)), (-
A*b**3/x + 3*A*b**2*c*log(x) + 3*A*b*c**2*x + A*c**3*x**2/2 + B*b**3*log(x)
 + 3*B*b**2*c*x + 3*B*b*c**2*x**2/2 + B*c**3*x**3/3, Eq(m, -5)), (A*b**3*lo
g(x) + 3*A*b**2*c*x + 3*A*b*c**2*x**2/2 + A*c**3*x**3/3 + B*b**3*x + 3*B*b*
*2*c*x**2/2 + B*b*c**2*x**3 + B*c**3*x**4/4, Eq(m, -4)), (A*b**3*m**4*x**4*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 26*A*b**3*m*
*3*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 251*
A*b**3*m**2*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 672
0) + 1066*A*b**3*m*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*
m + 6720) + 1680*A*b**3*x**4*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 +
5944*m + 6720) + 3*A*b**2*c*m**4*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 207
0*m**2 + 5944*m + 6720) + 75*A*b**2*c*m**3*x**5*x**m/(m**5 + 30*m**4 + 355*
m**3 + 2070*m**2 + 5944*m + 6720) + 690*A*b**2*c*m**2*x**5*x**m/(m**5 + 30*
m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 2760*A*b**2*c*m*x**5*x**m/(m
**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 4032*A*b**2*c*x**5*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3*A*b*c**2*m
**4*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 72*
A*b*c**2*m**3*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6
720) + 633*A*b*c**2*m**2*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 +
 5944*m + 6720) + 2412*A*b*c**2*m*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 20
70*m**2 + 5944*m + 6720) + 3360*A*b*c**2*x**6*x**m/(m**5 + 30*m**4 + 355*m*
*3 + 2070*m**2 + 5944*m + 6720) + A*c**3*m**4*x**7*x**m/(m**5 + 30*m**4 + 3
55*m**3 + 2070*m**2 + 5944*m + 6720) + 23*A*c**3*m**3*x**7*x**m/(m**5 + 30*
m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 194*A*c**3*m**2*x**7*x**m/(m
**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 712*A*c**3*m*x**7*x
**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 960*A*c**3*x*
*7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + B*b**3*m*
*4*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 25*B
*b**3*m**3*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720
) + 230*B*b**3*m**2*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944
*m + 6720) + 920*B*b**3*m*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2
+ 5944*m + 6720) + 1344*B*b**3*x**5*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*
m**2 + 5944*m + 6720) + 3*B*b**2*c*m**4*x**6*x**m/(m**5 + 30*m**4 + 355*m**
3 + 2070*m**2 + 5944*m + 6720) + 72*B*b**2*c*m**3*x**6*x**m/(m**5 + 30*m**4
 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 633*B*b**2*c*m**2*x**6*x**m/(m**
5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 2412*B*b**2*c*m*x**6*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3360*B*b**2*
c*x**6*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 3*B*b
*c**2*m**4*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720
) + 69*B*b*c**2*m**3*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 594
4*m + 6720) + 582*B*b*c**2*m**2*x**7*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070
*m**2 + 5944*m + 6720) + 2136*B*b*c**2*m*x**7*x**m/(m**5 + 30*m**4 + 355*m*
*3 + 2070*m**2 + 5944*m + 6720) + 2880*B*b*c**2*x**7*x**m/(m**5 + 30*m**4 +
 355*m**3 + 2070*m**2 + 5944*m + 6720) + B*c**3*m**4*x**8*x**m/(m**5 + 30*m
**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 22*B*c**3*m**3*x**8*x**m/(m**
5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 179*B*c**3*m**2*x**8*
x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 638*B*c**3*m
*x**8*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720) + 840*B*
c**3*x**8*x**m/(m**5 + 30*m**4 + 355*m**3 + 2070*m**2 + 5944*m + 6720), Tru
e))
```

3.28 $\int x^3(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

```
[Out] 1/7*A*b^3*x^7+1/8*b^2*(3*A*c+B*b)*x^8+1/3*b*c*(A*c+B*b)*x^9+1/10*c^2*(A*c+3
*B*b)*x^10+1/11*B*c^3*x^11
```

Rubi [**A**] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{7}Ab^3x^7+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^7)/7 + (b^2*(b*B + 3*A*c)*x^8)/8 + (b*c*(b*B + A*c)*x^9)/3 + (c^2*
(3*b*B + A*c)*x^10)/10 + (B*c^3*x^11)/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^6+b^2(bB+3Ac)x^7+3bc(bB+Ac)x^8+c^2(3bB+Ac)x^9+Bc^3x^{10}\right)\\&=\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2(bB+3Ac)x^8+\frac{1}{3}bc(bB+Ac)x^9+\frac{1}{10}c^2(3bB+Ac)x^{10}+\frac{1}{11}Bc\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{7}Ab^3x^7+\frac{1}{8}b^2x^8(3Ac+bB)+\frac{1}{10}c^2x^{10}(Ac+3bB)+\frac{1}{3}bcx^9(Ac+bB)+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^7)/7 + (b^2*(b*B + 3*A*c)*x^8)/8 + (b*c*(b*B + A*c)*x^9)/3 + (c^2*
(3*b*B + A*c)*x^10)/10 + (B*c^3*x^11)/11
```

fricas [**A**] time = 0.64, size = 77, normalized size = 1.03

$$\frac{1}{11}x^{11}c^3B+\frac{3}{10}x^{10}c^2bB+\frac{1}{10}x^{10}c^3A+\frac{1}{3}x^9cb^2B+\frac{1}{3}x^9c^2bA+\frac{1}{8}x^8b^3B+\frac{3}{8}x^8cb^2A+\frac{1}{7}x^7b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^3*B + 3/10*x^10*c^2*b*B + 1/10*x^10*c^3*A + 1/3*x^9*c*b^2*B + 1
/3*x^9*c^2*b*A + 1/8*x^8*b^3*B + 3/8*x^8*c*b^2*A + 1/7*x^7*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{11}Bc^3x^{11}+\frac{3}{10}Bbc^2x^{10}+\frac{1}{10}Ac^3x^{10}+\frac{1}{3}Bb^2cx^9+\frac{1}{3}Abc^2x^9+\frac{1}{8}Bb^3x^8+\frac{3}{8}Ab^2cx^8+\frac{1}{7}Ab^3x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11 + 3/10*B*b*c^2*x^10 + 1/10*A*c^3*x^10 + 1/3*B*b^2*c*x^9 + 1
/3*A*b*c^2*x^9 + 1/8*B*b^3*x^8 + 3/8*A*b^2*c*x^8 + 1/7*A*b^3*x^7
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^{11}}{11}+\frac{A\,b^3x^7}{7}+\frac{\left(A\,c^3+3Bb\,c^2\right)x^{10}}{10}+\frac{\left(3Ab\,c^2+3B\,b^2c\right)x^9}{9}+\frac{\left(3A\,b^2c+b^3B\right)x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/11*B*c^3*x^11+1/10*(A*c^3+3*B*b*c^2)*x^10+1/9*(3*A*b*c^2+3*B*b^2*c)*x^9+1
/8*(3*A*b^2*c+B*b^3)*x^8+1/7*A*b^3*x^7
```

maxima [A] time = 0.90, size = 73, normalized size = 0.97

$$\frac{1}{11}Bc^3x^{11}+\frac{1}{7}Ab^3x^7+\frac{1}{10}\left(3\,Bbc^2+Ac^3\right)x^{10}+\frac{1}{3}\left(Bb^2c+Abc^2\right)x^9+\frac{1}{8}\left(Bb^3+3\,Ab^2c\right)x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*x^11 + 1/7*A*b^3*x^7 + 1/10*(3*B*b*c^2 + A*c^3)*x^10 + 1/3*(B*b^
2*c + A*b*c^2)*x^9 + 1/8*(B*b^3 + 3*A*b^2*c)*x^8
```

mupad [B] time = 0.04, size = 69, normalized size = 0.92

$$x^8\left(\frac{B\,b^3}{8}+\frac{3\,A\,c\,b^2}{8}\right)+x^{10}\left(\frac{A\,c^3}{10}+\frac{3\,B\,b\,c^2}{10}\right)+\frac{A\,b^3\,x^7}{7}+\frac{B\,c^3\,x^{11}}{11}+\frac{b\,c\,x^9\,\left(A\,c+B\,b\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^8*((B*b^3)/8 + (3*A*b^2*c)/8) + x^10*((A*c^3)/10 + (3*B*b*c^2)/10) + (A*b
^3*x^7)/7 + (B*c^3*x^11)/11 + (b*c*x^9*(A*c + B*b))/3
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^7}{7}+\frac{Bc^3x^{11}}{11}+x^{10}\left(\frac{Ac^3}{10}+\frac{3Bbc^2}{10}\right)+x^9\left(\frac{Abc^2}{3}+\frac{Bb^2c}{3}\right)+x^8\left(\frac{3Ab^2c}{8}+\frac{Bb^3}{8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**7/7 + B*c**3*x**11/11 + x**10*(A*c**3/10 + 3*B*b*c**2/10) + x**9*
(A*b*c**2/3 + B*b**2*c/3) + x**8*(3*A*b**2*c/8 + B*b**3/8)
```

3.29 $\int x^2(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

```
[Out] 1/6*A*b^3*x^6+1/7*b^2*(3*A*c+B*b)*x^7+3/8*b*c*(A*c+B*b)*x^8+1/9*c^2*(A*c+3*
B*b)*x^9+1/10*B*c^3*x^10
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}=0.050$, Rules used = {765}

$$\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{6}Ab^3x^6+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^6)/6 + (b^2*(b*B + 3*A*c)*x^7)/7 + (3*b*c*(b*B + A*c)*x^8)/8 + (c^
2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^5+b^2(bB+3Ac)x^6+3bc(bB+Ac)x^7+c^2(3bB+Ac)x^8+Bc^3x^9\right)\,d\\&=\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2(bB+3Ac)x^7+\frac{3}{8}bc(bB+Ac)x^8+\frac{1}{9}c^2(3bB+Ac)x^9+\frac{1}{10}Bc^3x\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{6}Ab^3x^6+\frac{1}{7}b^2x^7(3Ac+bB)+\frac{1}{9}c^2x^9(Ac+3bB)+\frac{3}{8}bcx^8(Ac+bB)+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^6)/6 + (b^2*(b*B + 3*A*c)*x^7)/7 + (3*b*c*(b*B + A*c)*x^8)/8 + (c^
2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

fricas [A] time = 1.02, size = 77, normalized size = 1.03

$$\frac{1}{10}x^{10}c^3B+\frac{1}{3}x^9c^2bB+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8cb^2B+\frac{3}{8}x^8c^2bA+\frac{1}{7}x^7b^3B+\frac{3}{7}x^7cb^2A+\frac{1}{6}x^6b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/3*x^9*c^2*b*B + 1/9*x^9*c^3*A + 3/8*x^8*c*b^2*B + 3/8*x
^8*c^2*b*A + 1/7*x^7*b^3*B + 3/7*x^7*c*b^2*A + 1/6*x^6*b^3*A
```

giac [A] time = 0.18, size = 77, normalized size = 1.03

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{3}Bbc^2x^9 + \frac{1}{9}Ac^3x^9 + \frac{3}{8}Bb^2cx^8 + \frac{3}{8}Abc^2x^8 + \frac{1}{7}Bb^3x^7 + \frac{3}{7}Ab^2cx^7 + \frac{1}{6}Ab^3x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/3*B*b*c^2*x^9 + 1/9*A*c^3*x^9 + 3/8*B*b^2*c*x^8 + 3/8*A
*b*c^2*x^8 + 1/7*B*b^3*x^7 + 3/7*A*b^2*c*x^7 + 1/6*A*b^3*x^6
```

maple [A] time = 0.05, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^{10}}{10} + \frac{A\,b^3x^6}{6} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^9}{9} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^8}{8} + \frac{\left(3A\,b^2c + b^3B\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/10*B*c^3*x^10+1/9*(A*c^3+3*B*b*c^2)*x^9+1/8*(3*A*b*c^2+3*B*b^2*c)*x^8+1/7
*(3*A*b^2*c+B*b^3)*x^7+1/6*A*b^3*x^6
```

maxima [A] time = 0.85, size = 73, normalized size = 0.97

$$\frac{1}{10}Bc^3x^{10} + \frac{1}{6}Ab^3x^6 + \frac{1}{9}\left(3\,Bbc^2 + Ac^3\right)x^9 + \frac{3}{8}\left(Bb^2c + Abc^2\right)x^8 + \frac{1}{7}\left(Bb^3 + 3\,Ab^2c\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/6*A*b^3*x^6 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/8*(B*b^2*
c + A*b*c^2)*x^8 + 1/7*(B*b^3 + 3*A*b^2*c)*x^7
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^7\left(\frac{B\,b^3}{7} + \frac{3\,A\,c\,b^2}{7}\right) + x^9\left(\frac{A\,c^3}{9} + \frac{B\,b\,c^2}{3}\right) + \frac{A\,b^3\,x^6}{6} + \frac{B\,c^3\,x^{10}}{10} + \frac{3\,b\,c\,x^8\,\left(A\,c + B\,b\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^7*((B*b^3)/7 + (3*A*b^2*c)/7) + x^9*((A*c^3)/9 + (B*b*c^2)/3) + (A*b^3*x^
6)/6 + (B*c^3*x^10)/10 + (3*b*c*x^8*(A*c + B*b))/8
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^6}{6} + \frac{Bc^3x^{10}}{10} + x^9\left(\frac{Ac^3}{9} + \frac{Bbc^2}{3}\right) + x^8\left(\frac{3Abc^2}{8} + \frac{3Bb^2c}{8}\right) + x^7\left(\frac{3Ab^2c}{7} + \frac{Bb^3}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**6/6 + B*c**3*x**10/10 + x**9*(A*c**3/9 + B*b*c**2/3) + x**8*(3*A*
b*c**2/8 + 3*B*b**2*c/8) + x**7*(3*A*b**2*c/7 + B*b**3/7)
```

3.30 $\int x(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

```
[Out] 1/5*A*b^3*x^5+1/6*b^2*(3*A*c+B*b)*x^6+3/7*b*c*(A*c+B*b)*x^7+1/8*c^2*(A*c+3*
B*b)*x^8+1/9*B*c^3*x^9
```

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{5}Ab^3x^5+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^6)/6 + (3*b*c*(b*B + A*c)*x^7)/7 + (c^
2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^4+b^2(bB+3Ac)x^5+3bc(bB+Ac)x^6+c^2(3bB+Ac)x^7+Bc^3x^8\right)dx\\&=\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2(bB+3Ac)x^6+\frac{3}{7}bc(bB+Ac)x^7+\frac{1}{8}c^2(3bB+Ac)x^8+\frac{1}{9}Bc^3x^9\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{5}Ab^3x^5+\frac{1}{6}b^2x^6(3Ac+bB)+\frac{1}{8}c^2x^8(Ac+3bB)+\frac{3}{7}bcx^7(Ac+bB)+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^5)/5 + (b^2*(b*B + 3*A*c)*x^6)/6 + (3*b*c*(b*B + A*c)*x^7)/7 + (c^
2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

fricas [A] time = 0.61, size = 77, normalized size = 1.03

$$\frac{1}{9}x^9c^3B+\frac{3}{8}x^8c^2bB+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7cb^2B+\frac{3}{7}x^7c^2bA+\frac{1}{6}x^6b^3B+\frac{1}{2}x^6cb^2A+\frac{1}{5}x^5b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 3/8*x^8*c^2*b*B + 1/8*x^8*c^3*A + 3/7*x^7*c*b^2*B + 3/7*x^7
*c^2*b*A + 1/6*x^6*b^3*B + 1/2*x^6*c*b^2*A + 1/5*x^5*b^3*A
```

giac [A] time = 0.16, size = 77, normalized size = 1.03

$$\frac{1}{9}\,Bc^3x^9 + \frac{3}{8}\,Bbc^2x^8 + \frac{1}{8}\,Ac^3x^8 + \frac{3}{7}\,Bb^2cx^7 + \frac{3}{7}\,Abc^2x^7 + \frac{1}{6}\,Bb^3x^6 + \frac{1}{2}\,Ab^2cx^6 + \frac{1}{5}\,Ab^3x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 3/8*B*b*c^2*x^8 + 1/8*A*c^3*x^8 + 3/7*B*b^2*c*x^7 + 3/7*A*b
*c^2*x^7 + 1/6*B*b^3*x^6 + 1/2*A*b^2*c*x^6 + 1/5*A*b^3*x^5
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^9}{9} + \frac{A\,b^3x^5}{5} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^8}{8} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^7}{7} + \frac{\left(3A\,b^2c + b^3B\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/9*B*c^3*x^9+1/8*(A*c^3+3*B*b*c^2)*x^8+1/7*(3*A*b*c^2+3*B*b^2*c)*x^7+1/6*(
3*A*b^2*c+B*b^3)*x^6+1/5*A*b^3*x^5
```

maxima [A] time = 0.88, size = 73, normalized size = 0.97

$$\frac{1}{9}\,Bc^3x^9 + \frac{1}{5}\,Ab^3x^5 + \frac{1}{8}\,\left(3\,Bbc^2 + Ac^3\right)x^8 + \frac{3}{7}\,\left(Bb^2c + Abc^2\right)x^7 + \frac{1}{6}\,\left(Bb^3 + 3\,Ab^2c\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/5*A*b^3*x^5 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 3/7*(B*b^2*c
+ A*b*c^2)*x^7 + 1/6*(B*b^3 + 3*A*b^2*c)*x^6
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^6\,\left(\frac{B\,b^3}{6}+\frac{A\,c\,b^2}{2}\right)+x^8\,\left(\frac{A\,c^3}{8}+\frac{3\,B\,b\,c^2}{8}\right)+\frac{A\,b^3\,x^5}{5}+\frac{B\,c^3\,x^9}{9}+\frac{3\,b\,c\,x^7\,\left(A\,c+B\,b\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^6*((B*b^3)/6 + (A*b^2*c)/2) + x^8*((A*c^3)/8 + (3*B*b*c^2)/8) + (A*b^3*x^
5)/5 + (B*c^3*x^9)/9 + (3*b*c*x^7*(A*c + B*b))/7
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^5}{5} + \frac{Bc^3x^9}{9} + x^8\left(\frac{Ac^3}{8} + \frac{3Bbc^2}{8}\right) + x^7\left(\frac{3Abc^2}{7} + \frac{3Bb^2c}{7}\right) + x^6\left(\frac{Ab^2c}{2} + \frac{Bb^3}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**5/5 + B*c**3*x**9/9 + x**8*(A*c**3/8 + 3*B*b*c**2/8) + x**7*(3*A*
b*c**2/7 + 3*B*b**2*c/7) + x**6*(A*b**2*c/2 + B*b**3/6)
```

3.31 $\int (A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

```
[Out] 1/4*A*b^3*x^4+1/5*b^2*(3*A*c+B*b)*x^5+1/2*b*c*(A*c+B*b)*x^6+1/7*c^2*(A*c+3*
B*b)*x^7+1/8*B*c^3*x^8
```

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{4}Ab^3x^4+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^3+b^2(bB+3Ac)x^4+3bc(bB+Ac)x^5+c^2(3bB+Ac)x^6+Bc^3x^7\right)dx\\ &= \frac{1}{4}Ab^3x^4+\frac{1}{5}b^2(bB+3Ac)x^5+\frac{1}{2}bc(bB+Ac)x^6+\frac{1}{7}c^2(3bB+Ac)x^7+\frac{1}{8}Bc^3x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

fricas [A] time = 0.62, size = 77, normalized size = 1.03

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{3}{5}x^5cb^2A+\frac{1}{4}x^4b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*b*A + 1/5*x^5*b^3*B + 3/5*x^5*c*b^2*A + 1/4*x^4*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bb^2cx^6 + \frac{1}{2}Abc^2x^6 + \frac{1}{5}Bb^3x^5 + \frac{3}{5}Ab^2cx^5 + \frac{1}{4}Ab^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*A*b
*c^2*x^6 + 1/5*B*b^3*x^5 + 3/5*A*b^2*c*x^5 + 1/4*A*b^3*x^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^8}{8} + \frac{A\,b^3x^4}{4} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^7}{7} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^6}{6} + \frac{\left(3A\,b^2c + b^3B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+3*B*b^2*c)*x^6+1/5*(
3*A*b^2*c+B*b^3)*x^5+1/4*A*b^3*x^4
```

maxima [A] time = 0.88, size = 73, normalized size = 0.97

$$\frac{1}{8}Bc^3x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{7}\left(3\,Bbc^2 + Ac^3\right)x^7 + \frac{1}{2}\left(Bb^2c + Abc^2\right)x^6 + \frac{1}{5}\left(Bb^3 + 3\,Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/4*A*b^3*x^4 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c
+ A*b*c^2)*x^6 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^5\left(\frac{B\,b^3}{5} + \frac{3\,A\,c\,b^2}{5}\right) + x^7\left(\frac{A\,c^3}{7} + \frac{3\,B\,b\,c^2}{7}\right) + \frac{A\,b^3\,x^4}{4} + \frac{B\,c^3\,x^8}{8} + \frac{b\,c\,x^6\,\left(A\,c + B\,b\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^5*((B*b^3)/5 + (3*A*b^2*c)/5) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + (A*b^3*
x^4)/4 + (B*c^3*x^8)/8 + (b*c*x^6*(A*c + B*b))/2
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^4}{4} + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Ab^2c}{5} + \frac{Bb^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**4/4 + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*
c**2/2 + B*b**2*c/2) + x**5*(3*A*b**2*c/5 + B*b**3/5)
```

3.32 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x} \, dx$

Optimal. Leaf size=75

$$\frac{1}{3}Ab^3x^3+\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

```
[Out] 1/3*A*b^3*x^3+1/4*b^2*(3*A*c+B*b)*x^4+3/5*b*c*(A*c+B*b)*x^5+1/6*c^2*(A*c+3*
B*b)*x^6+1/7*B*c^3*x^7
```

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{3}Ab^3x^3+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^4)/4 + (3*b*c*(b*B + A*c)*x^5)/5 + (c^
2*(3*b*B + A*c)*x^6)/6 + (B*c^3*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x} \, dx &= \int \left(Ab^3x^2+b^2(bB+3Ac)x^3+3bc(bB+Ac)x^4+c^2(3bB+Ac)x^5+Bc^3x^6\right) dx\\ &= \frac{1}{3}Ab^3x^3+\frac{1}{4}b^2(bB+3Ac)x^4+\frac{3}{5}bc(bB+Ac)x^5+\frac{1}{6}c^2(3bB+Ac)x^6+\frac{1}{7}Bc^3x^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{3}Ab^3x^3+\frac{1}{4}b^2x^4(3Ac+bB)+\frac{1}{6}c^2x^6(Ac+3bB)+\frac{3}{5}bcx^5(Ac+bB)+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x,x]
```

```
[Out] (A*b^3*x^3)/3 + (b^2*(b*B + 3*A*c)*x^4)/4 + (3*b*c*(b*B + A*c)*x^5)/5 + (c^
2*(3*b*B + A*c)*x^6)/6 + (B*c^3*x^7)/7
```

fricas [A] time = 0.94, size = 73, normalized size = 0.97

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{3}\,Ab^3x^3+\frac{1}{6}\,\left(3\,Bbc^2+Ac^3\right)x^6+\frac{3}{5}\,\left(Bb^2c+Abc^2\right)x^5+\frac{1}{4}\,\left(Bb^3+3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/3*A*b^3*x^3 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c
+ A*b*c^2)*x^5 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{7}Bc^3x^7 + \frac{1}{2}Bbc^2x^6 + \frac{1}{6}Ac^3x^6 + \frac{3}{5}Bb^2cx^5 + \frac{3}{5}Abc^2x^5 + \frac{1}{4}Bb^3x^4 + \frac{3}{4}Ab^2cx^4 + \frac{1}{3}Ab^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/2*B*b*c^2*x^6 + 1/6*A*c^3*x^6 + 3/5*B*b^2*c*x^5 + 3/5*A*b
*c^2*x^5 + 1/4*B*b^3*x^4 + 3/4*A*b^2*c*x^4 + 1/3*A*b^3*x^3
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^7}{7} + \frac{A\,b^3x^3}{3} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^6}{6} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^5}{5} + \frac{\left(3A\,b^2c + b^3B\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x,x)
```

```
[Out] 1/7*B*c^3*x^7+1/6*(A*c^3+3*B*b*c^2)*x^6+1/5*(3*A*b*c^2+3*B*b^2*c)*x^5+1/4*(
3*A*b^2*c+B*b^3)*x^4+1/3*A*b^3*x^3
```

maxima [A] time = 0.94, size = 73, normalized size = 0.97

$$\frac{1}{7}Bc^3x^7 + \frac{1}{3}Ab^3x^3 + \frac{1}{6}\left(3\,Bbc^2 + Ac^3\right)x^6 + \frac{3}{5}\left(Bb^2c + Abc^2\right)x^5 + \frac{1}{4}\left(Bb^3 + 3\,Ab^2c\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/3*A*b^3*x^3 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c
+ A*b*c^2)*x^5 + 1/4*(B*b^3 + 3*A*b^2*c)*x^4
```

mupad [B] time = 0.03, size = 69, normalized size = 0.92

$$x^4\left(\frac{B\,b^3}{4} + \frac{3\,A\,c\,b^2}{4}\right) + x^6\left(\frac{A\,c^3}{6} + \frac{B\,b\,c^2}{2}\right) + \frac{A\,b^3\,x^3}{3} + \frac{B\,c^3\,x^7}{7} + \frac{3\,b\,c\,x^5\,\left(A\,c + B\,b\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x,x)
```

```
[Out] x^4*((B*b^3)/4 + (3*A*b^2*c)/4) + x^6*((A*c^3)/6 + (B*b*c^2)/2) + (A*b^3*x^
3)/3 + (B*c^3*x^7)/7 + (3*b*c*x^5*(A*c + B*b))/5
```

sympy [A] time = 0.08, size = 82, normalized size = 1.09

$$\frac{Ab^3x^3}{3} + \frac{Bc^3x^7}{7} + x^6\left(\frac{Ac^3}{6} + \frac{Bbc^2}{2}\right) + x^5\left(\frac{3Abc^2}{5} + \frac{3Bb^2c}{5}\right) + x^4\left(\frac{3Ab^2c}{4} + \frac{Bb^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x,x)
```

```
[Out] A*b**3*x**3/3 + B*c**3*x**7/7 + x**6*(A*c**3/6 + B*b*c**2/2) + x**5*(3*A*b*
c**2/5 + 3*B*b**2*c/5) + x**4*(3*A*b**2*c/4 + B*b**3/4)
```

3.33 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=62

$$-\frac{(b+cx)^5(2bB-Ac)}{5c^3}+\frac{b(b+cx)^4(bB-Ac)}{4c^3}+\frac{B(b+cx)^6}{6c^3}$$

```
[Out] 1/4*b*(-A*c+B*b)*(c*x+b)^4/c^3-1/5*(-A*c+2*B*b)*(c*x+b)^5/c^3+1/6*B*(c*x+b)
^6/c^3
```

Rubi [A] time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{(b+cx)^5(2bB-Ac)}{5c^3}+\frac{b(b+cx)^4(bB-Ac)}{4c^3}+\frac{B(b+cx)^6}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^2,x]
```

```
[Out] (b*(b*B - A*c)*(b + c*x)^4)/(4*c^3) - ((2*b*B - A*c)*(b + c*x)^5)/(5*c^3) +
 (B*(b + c*x)^6)/(6*c^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^2}\,dx &= \int \left(\frac{b(bB-Ac)(b+cx)^3}{c^2}+\frac{(-2bB+Ac)(b+cx)^4}{c^2}+\frac{B(b+cx)^5}{c^2}\right)dx\\ &= \frac{b(bB-Ac)(b+cx)^4}{4c^3}-\frac{(2bB-Ac)(b+cx)^5}{5c^3}+\frac{B(b+cx)^6}{6c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.08

$$\frac{1}{60}x^2\left(30Ab^3+20b^2x(3Ac+bB)+12c^2x^3(Ac+3bB)+45bcx^2(Ac+bB)+10Bc^3x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^2,x]
```

```
[Out] (x^2*(30*A*b^3 + 20*b^2*(b*B + 3*A*c)*x + 45*b*c*(b*B + A*c)*x^2 + 12*c^2*(
3*b*B + A*c)*x^3 + 10*B*c^3*x^4))/60
```

fricas [A] time = 0.72, size = 73, normalized size = 1.18

$$\frac{1}{6}\,Bc^3x^6+\frac{1}{2}\,Ab^3x^2+\frac{1}{5}\left(3\,Bbc^2+Ac^3\right)x^5+\frac{3}{4}\left(Bb^2c+Abc^2\right)x^4+\frac{1}{3}\left(Bb^3+3\,Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/6*B*c^3*x^6 + 1/2*A*b^3*x^2 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c
+ A*b*c^2)*x^4 + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

giac [A] time = 0.15, size = 76, normalized size = 1.23

$$\frac{1}{6}Bc^3x^6 + \frac{3}{5}Bbc^2x^5 + \frac{1}{5}Ac^3x^5 + \frac{3}{4}Bb^2cx^4 + \frac{3}{4}Abc^2x^4 + \frac{1}{3}Bb^3x^3 + Ab^2cx^3 + \frac{1}{2}Ab^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 3/5*B*b*c^2*x^5 + 1/5*A*c^3*x^5 + 3/4*B*b^2*c*x^4 + 3/4*A*b
*c^2*x^4 + 1/3*B*b^3*x^3 + A*b^2*c*x^3 + 1/2*A*b^3*x^2
```

maple [A] time = 0.05, size = 76, normalized size = 1.23

$$\frac{B\,c^3x^6}{6} + \frac{A\,b^3x^2}{2} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^5}{5} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^4}{4} + \frac{\left(3A\,b^2c + b^3B\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^2,x)
```

```
[Out] 1/6*B*c^3*x^6+1/5*(A*c^3+3*B*b*c^2)*x^5+1/4*(3*A*b*c^2+3*B*b^2*c)*x^4+1/3*(
3*A*b^2*c+B*b^3)*x^3+1/2*A*b^3*x^2
```

maxima [A] time = 0.82, size = 73, normalized size = 1.18

$$\frac{1}{6}Bc^3x^6 + \frac{1}{2}Ab^3x^2 + \frac{1}{5}\left(3\,Bbc^2 + Ac^3\right)x^5 + \frac{3}{4}\left(Bb^2c + Abc^2\right)x^4 + \frac{1}{3}\left(Bb^3 + 3\,Ab^2c\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/2*A*b^3*x^2 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c
+ A*b*c^2)*x^4 + 1/3*(B*b^3 + 3*A*b^2*c)*x^3
```

mupad [B] time = 0.03, size = 68, normalized size = 1.10

$$x^3\left(\frac{B\,b^3}{3} + A\,c\,b^2\right) + x^5\left(\frac{A\,c^3}{5} + \frac{3\,B\,b\,c^2}{5}\right) + \frac{A\,b^3\,x^2}{2} + \frac{B\,c^3\,x^6}{6} + \frac{3\,b\,c\,x^4\,\left(A\,c + B\,b\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^2,x)
```

```
[Out] x^3*((B*b^3)/3 + A*b^2*c) + x^5*((A*c^3)/5 + (3*B*b*c^2)/5) + (A*b^3*x^2)/2
 + (B*c^3*x^6)/6 + (3*b*c*x^4*(A*c + B*b))/4
```

sympy [A] time = 0.08, size = 80, normalized size = 1.29

$$\frac{Ab^3x^2}{2} + \frac{Bc^3x^6}{6} + x^5\left(\frac{Ac^3}{5} + \frac{3Bbc^2}{5}\right) + x^4\left(\frac{3Abc^2}{4} + \frac{3Bb^2c}{4}\right) + x^3\left(Ab^2c + \frac{Bb^3}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**2,x)
```

```
[Out] A*b**3*x**2/2 + B*c**3*x**6/6 + x**5*(A*c**3/5 + 3*B*b*c**2/5) + x**4*(3*A*
b*c**2/4 + 3*B*b**2*c/4) + x**3*(A*b**2*c + B*b**3/3)
```

3.34 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=38

$$\frac{B(b+cx)^5}{5c^2}-\frac{(b+cx)^4(bB-Ac)}{4c^2}$$

```
[Out] -1/4*(-A*c+B*b)*(c*x+b)^4/c^2+1/5*B*(c*x+b)^5/c^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{B(b+cx)^5}{5c^2}-\frac{(b+cx)^4(bB-Ac)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -((b*B - A*c)*(b + c*x)^4)/(4*c^2) + (B*(b + c*x)^5)/(5*c^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^3}\,dx &= \int \left(\frac{(-bB+Ac)(b+cx)^3}{c}+\frac{B(b+cx)^4}{c}\right)dx\\ &= -\frac{(bB-Ac)(b+cx)^4}{4c^2}+\frac{B(b+cx)^5}{5c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.76

$$Ab^3x+\frac{1}{2}b^2x^2(3Ac+bB)+\frac{1}{4}c^2x^4(Ac+3bB)+bcx^3(Ac+bB)+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^3,x]
```

```
[Out] A*b^3*x + (b^2*(b*B + 3*A*c)*x^2)/2 + b*c*(b*B + A*c)*x^3 + (c^2*(3*b*B + A
*c)*x^4)/4 + (B*c^3*x^5)/5
```

fricas [B] time = 0.81, size = 69, normalized size = 1.82

$$\frac{1}{5}\,Bc^3x^5+Ab^3x+\frac{1}{4}\left(3\,Bbc^2+Ac^3\right)x^4+\left(Bb^2c+Abc^2\right)x^3+\frac{1}{2}\left(Bb^3+3\,Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^3*x^5 + A*b^3*x + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + A*b*c^2)
*x^3 + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

giac [B] time = 0.16, size = 72, normalized size = 1.89

$$\frac{1}{5}Bc^3x^5 + \frac{3}{4}Bbc^2x^4 + \frac{1}{4}Ac^3x^4 + Bb^2cx^3 + Abc^2x^3 + \frac{1}{2}Bb^3x^2 + \frac{3}{2}Ab^2cx^2 + Ab^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 3/4*B*b*c^2*x^4 + 1/4*A*c^3*x^4 + B*b^2*c*x^3 + A*b*c^2*x^3
 + 1/2*B*b^3*x^2 + 3/2*A*b^2*c*x^2 + A*b^3*x
```

maple [B] time = 0.05, size = 73, normalized size = 1.92

$$\frac{B\,c^3x^5}{5} + A\,b^3x + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^4}{4} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^3}{3} + \frac{\left(3A\,b^2c + b^3B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^3,x)
```

```
[Out] 1/5*B*c^3*x^5+1/4*(A*c^3+3*B*b*c^2)*x^4+1/3*(3*A*b*c^2+3*B*b^2*c)*x^3+1/2*(
3*A*b^2*c+B*b^3)*x^2+A*b^3*x
```

maxima [B] time = 0.90, size = 69, normalized size = 1.82

$$\frac{1}{5}Bc^3x^5 + Ab^3x + \frac{1}{4}\left(3\,Bbc^2 + Ac^3\right)x^4 + \left(Bb^2c + Abc^2\right)x^3 + \frac{1}{2}\left(Bb^3 + 3\,Ab^2c\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + A*b^3*x + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + A*b*c^2)
*x^3 + 1/2*(B*b^3 + 3*A*b^2*c)*x^2
```

mupad [B] time = 0.03, size = 65, normalized size = 1.71

$$x^2\left(\frac{B\,b^3}{2} + \frac{3\,A\,c\,b^2}{2}\right) + x^4\left(\frac{A\,c^3}{4} + \frac{3\,B\,b\,c^2}{4}\right) + \frac{B\,c^3\,x^5}{5} + A\,b^3\,x + b\,c\,x^3\,\left(A\,c + B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^3,x)
```

```
[Out] x^2*((B*b^3)/2 + (3*A*b^2*c)/2) + x^4*((A*c^3)/4 + (3*B*b*c^2)/4) + (B*c^3*
x^5)/5 + A*b^3*x + b*c*x^3*(A*c + B*b)
```

sympy [B] time = 0.08, size = 73, normalized size = 1.92

$$Ab^3x + \frac{Bc^3x^5}{5} + x^4\left(\frac{Ac^3}{4} + \frac{3Bbc^2}{4}\right) + x^3\left(Abc^2 + Bb^2c\right) + x^2\left(\frac{3Ab^2c}{2} + \frac{Bb^3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**3,x)
```

```
[Out] A*b**3*x + B*c**3*x**5/5 + x**4*(A*c**3/4 + 3*B*b*c**2/4) + x**3*(A*b*c**2
+ B*b**2*c) + x**2*(3*A*b**2*c/2 + B*b**3/2)
```

3.35 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^4}\,dx$

Optimal. Leaf size=66

$$Ab^3\log(x)+b^2x(3Ac+bB)+\frac{1}{3}c^2x^3(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{4}Bc^3x^4$$

```
[Out] b^2*(3*A*c+B*b)*x+3/2*b*c*(A*c+B*b)*x^2+1/3*c^2*(A*c+3*B*b)*x^3+1/4*B*c^3*x
^4+A*b^3*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$b^2x(3Ac+bB)+Ab^3\log(x)+\frac{1}{3}c^2x^3(Ac+3bB)+\frac{3}{2}bcx^2(Ac+bB)+\frac{1}{4}Bc^3x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^4,x]
```

```
[Out] b^2*(b*B + 3*A*c)*x + (3*b*c*(b*B + A*c)*x^2)/2 + (c^2*(3*b*B + A*c)*x^3)/3
 + (B*c^3*x^4)/4 + A*b^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^4}\,dx &= \int \left(b^2(bB+3Ac)+\frac{Ab^3}{x}+3bc(bB+Ac)x+c^2(3bB+Ac)x^2+Bc^3x^3\right)dx\\ &= b^2(bB+3Ac)x+\frac{3}{2}bc(bB+Ac)x^2+\frac{1}{3}c^2(3bB+Ac)x^3+\frac{1}{4}Bc^3x^4+Ab^3\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.95

$$Ab^3\log(x)+\frac{1}{12}x\left(18b^2c(2A+Bx)+6bc^2x(3A+2Bx)+c^3x^2(4A+3Bx)+12b^3B\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^4,x]
```

```
[Out] (x*(12*b^3*B + 18*b^2*c*(2*A + B*x) + 6*b*c^2*x*(3*A + 2*B*x) + c^3*x^2*(4*
A + 3*B*x)))/12 + A*b^3*Log[x]
```

fricas [A] time = 0.91, size = 68, normalized size = 1.03

$$\frac{1}{4}Bc^3x^4+Ab^3\log(x)+\frac{1}{3}\left(3Bbc^2+Ac^3\right)x^3+\frac{3}{2}\left(Bb^2c+Abc^2\right)x^2+\left(Bb^3+3Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/4*B*c^3*x^4 + A*b^3*log(x) + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c +
 A*b*c^2)*x^2 + (B*b^3 + 3*A*b^2*c)*x
```

giac [A] time = 0.15, size = 70, normalized size = 1.06

$$\frac{1}{4}Bc^3x^4 + Bbc^2x^3 + \frac{1}{3}Ac^3x^3 + \frac{3}{2}Bb^2cx^2 + \frac{3}{2}Abc^2x^2 + Bb^3x + 3Ab^2cx + Ab^3\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="giac")
```

```
[Out] 1/4*B*c^3*x^4 + B*b*c^2*x^3 + 1/3*A*c^3*x^3 + 3/2*B*b^2*c*x^2 + 3/2*A*b*c^2
*x^2 + B*b^3*x + 3*A*b^2*c*x + A*b^3*log(abs(x))
```

maple [A] time = 0.05, size = 70, normalized size = 1.06

$$\frac{Bc^3x^4}{4} + \frac{Ac^3x^3}{3} + Bbc^2x^3 + \frac{3Abc^2x^2}{2} + \frac{3Bb^2cx^2}{2} + Ab^3\ln(x) + 3Ab^2cx + Bb^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^4,x)
```

```
[Out] 1/4*B*c^3*x^4+1/3*A*c^3*x^3+B*b*c^2*x^3+3/2*A*b*c^2*x^2+3/2*B*b^2*c*x^2+3*A
*b^2*c*x+B*b^3*x+A*b^3*ln(x)
```

maxima [A] time = 0.93, size = 68, normalized size = 1.03

$$\frac{1}{4}Bc^3x^4 + Ab^3\log(x) + \frac{1}{3}\left(3Bbc^2 + Ac^3\right)x^3 + \frac{3}{2}\left(Bb^2c + Abc^2\right)x^2 + \left(Bb^3 + 3Ab^2c\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^3*x^4 + A*b^3*log(x) + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c +
 A*b*c^2)*x^2 + (B*b^3 + 3*A*b^2*c)*x
```

mupad [B] time = 0.03, size = 63, normalized size = 0.95

$$x\left(Bb^3 + 3Acb^2\right) + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + \frac{Bc^3x^4}{4} + Ab^3\ln(x) + \frac{3bcx^2(Ac + Bb)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^4,x)
```

```
[Out] x*(B*b^3 + 3*A*b^2*c) + x^3*((A*c^3)/3 + B*b*c^2) + (B*c^3*x^4)/4 + A*b^3*l
og(x) + (3*b*c*x^2*(A*c + B*b))/2
```

sympy [A] time = 0.17, size = 73, normalized size = 1.11

$$Ab^3\log(x) + \frac{Bc^3x^4}{4} + x^3\left(\frac{Ac^3}{3} + Bbc^2\right) + x^2\left(\frac{3Abc^2}{2} + \frac{3Bb^2c}{2}\right) + x\left(3Ab^2c + Bb^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**4,x)
```

```
[Out] A*b**3*log(x) + B*c**3*x**4/4 + x**3*(A*c**3/3 + B*b*c**2) + x**2*(3*A*b*c*
*2/2 + 3*B*b**2*c/2) + x*(3*A*b**2*c + B*b**3)
```

3.36 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^5}\,dx$

Optimal. Leaf size=65

$$-\frac{Ab^3}{x}+b^2\log(x)(3Ac+bB)+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

```
[Out] -A*b^3/x+3*b*c*(A*c+B*b)*x+1/2*c^2*(A*c+3*B*b)*x^2+1/3*B*c^3*x^3+b^2*(3*A*c
+B*b)*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$b^2\log(x)(3Ac+bB)-\frac{Ab^3}{x}+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -((A*b^3)/x) + 3*b*c*(b*B + A*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3
)/3 + b^2*(b*B + 3*A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^5}\,dx &= \int \left(3bc(bB+Ac)+\frac{Ab^3}{x^2}+\frac{b^2(bB+3Ac)}{x}+c^2(3bB+Ac)x+Bc^3x^2\right)dx\\ &= -\frac{Ab^3}{x}+3bc(bB+Ac)x+\frac{1}{2}c^2(3bB+Ac)x^2+\frac{1}{3}Bc^3x^3+b^2(bB+3Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 1.03

$$-\frac{Ab^3}{x}+\log(x)\left(3Ab^2c+b^3B\right)+\frac{1}{2}c^2x^2(Ac+3bB)+3bcx(Ac+bB)+\frac{1}{3}Bc^3x^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -((A*b^3)/x) + 3*b*c*(b*B + A*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3
)/3 + (b^3*B + 3*A*b^2*c)*Log[x]
```

fricas [A] time = 0.70, size = 75, normalized size = 1.15

$$\frac{2\,Bc^3x^4-6\,Ab^3+3\left(3\,Bbc^2+Ac^3\right)x^3+18\left(Bb^2c+Abc^2\right)x^2+6\left(Bb^3+3\,Ab^2c\right)x\log(x)}{6\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^3*x^4 - 6*A*b^3 + 3*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*c + A*b*
c^2)*x^2 + 6*(B*b^3 + 3*A*b^2*c)*x*log(x))/x
```

giac [A] time = 0.18, size = 71, normalized size = 1.09

$$\frac{1}{3}Bc^3x^3 + \frac{3}{2}Bbc^2x^2 + \frac{1}{2}Ac^3x^2 + 3Bb^2cx + 3Abc^2x - \frac{Ab^3}{x} + \left(Bb^3 + 3Ab^2c\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*c^3*x^3 + 3/2*B*b*c^2*x^2 + 1/2*A*c^3*x^2 + 3*B*b^2*c*x + 3*A*b*c^2*x
 - A*b^3/x + (B*b^3 + 3*A*b^2*c)*log(abs(x))
```

maple [A] time = 0.05, size = 71, normalized size = 1.09

$$\frac{Bc^3x^3}{3} + \frac{Ac^3x^2}{2} + \frac{3Bbc^2x^2}{2} + 3Ab^2c\ln(x) + 3Abc^2x + Bb^3\ln(x) + 3Bb^2cx - \frac{Ab^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^5,x)
```

```
[Out] 1/3*B*c^3*x^3+1/2*A*x^2*c^3+3/2*B*x^2*b*c^2+3*A*b*c^2*x+3*B*b^2*c*x-A*b^3/x
+3*A*ln(x)*b^2*c+B*ln(x)*b^3
```

maxima [A] time = 0.91, size = 69, normalized size = 1.06

$$\frac{1}{3}Bc^3x^3 - \frac{Ab^3}{x} + \frac{1}{2}\left(3Bbc^2 + Ac^3\right)x^2 + 3\left(Bb^2c + Abc^2\right)x + \left(Bb^3 + 3Ab^2c\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^3*x^3 - A*b^3/x + 1/2*(3*B*b*c^2 + A*c^3)*x^2 + 3*(B*b^2*c + A*b*c^
2)*x + (B*b^3 + 3*A*b^2*c)*log(x)
```

mupad [B] time = 0.04, size = 65, normalized size = 1.00

$$x^2\left(\frac{Ac^3}{2} + \frac{3Bbc^2}{2}\right) + \ln(x)\left(Bb^3 + 3Acb^2\right) - \frac{Ab^3}{x} + \frac{Bc^3x^3}{3} + 3bcx\,(Ac + Bb)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^5,x)
```

```
[Out] x^2*((A*c^3)/2 + (3*B*b*c^2)/2) + log(x)*(B*b^3 + 3*A*b^2*c) - (A*b^3)/x +
(B*c^3*x^3)/3 + 3*b*c*x*(A*c + B*b)
```

sympy [A] time = 0.22, size = 70, normalized size = 1.08

$$-\frac{Ab^3}{x} + \frac{Bc^3x^3}{3} + b^2(3Ac + Bb)\log(x) + x^2\left(\frac{Ac^3}{2} + \frac{3Bbc^2}{2}\right) + x\left(3Abc^2 + 3Bb^2c\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**5,x)
```

```
[Out] -A*b**3/x + B*c**3*x**3/3 + b**2*(3*A*c + B*b)*log(x) + x**2*(A*c**3/2 + 3*
B*b*c**2/2) + x*(3*A*b*c**2 + 3*B*b**2*c)
```

3.37 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^6} \, dx$

Optimal. Leaf size=65

$$-\frac{Ab^3}{2x^2}-\frac{b^2(3Ac+bB)}{x}+c^2x(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{2}Bc^3x^2$$

```
[Out] -1/2*A*b^3/x^2-b^2*(3*A*c+B*b)/x+c^2*(A*c+3*B*b)*x+1/2*B*c^3*x^2+3*b*c*(A*c
+B*b)*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{x}-\frac{Ab^3}{2x^2}+c^2x(Ac+3bB)+3bc\log(x)(Ac+bB)+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -(A*b^3)/(2*x^2) - (b^2*(b*B + 3*A*c))/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^2
)/2 + 3*b*c*(b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^6} \, dx &= \int \left(c^2(3bB+Ac)+\frac{Ab^3}{x^3}+\frac{b^2(bB+3Ac)}{x^2}+\frac{3bc(bB+Ac)}{x}+Bc^3x\right) \, dx\\ &= -\frac{Ab^3}{2x^2}-\frac{b^2(bB+3Ac)}{x}+c^2(3bB+Ac)x+\frac{1}{2}Bc^3x^2+3bc(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 71, normalized size = 1.09

$$-\frac{Ab^3}{2x^2}+3\log(x)\left(Abc^2+b^2Bc\right)+\frac{b^3(-B)-3Ab^2c}{x}+c^2x(Ac+3bB)+\frac{1}{2}Bc^3x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -1/2*(A*b^3)/x^2 + (-(b^3*B) - 3*A*b^2*c)/x + c^2*(3*b*B + A*c)*x + (B*c^3*
x^2)/2 + 3*(b^2*B*c + A*b*c^2)*Log[x]
```

fricas [A] time = 1.21, size = 74, normalized size = 1.14

$$\frac{Bc^3x^4-Ab^3+2\left(3\,Bbc^2+Ac^3\right)x^3+6\left(Bb^2c+Abc^2\right)x^2\log(x)-2\left(Bb^3+3\,Ab^2c\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c^3*x^4 - A*b^3 + 2*(3*B*b*c^2 + A*c^3)*x^3 + 6*(B*b^2*c + A*b*c^2)*
x^2*log(x) - 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

giac [A] time = 0.15, size = 69, normalized size = 1.06

$$\frac{1}{2}Bc^3x^2 + 3Bbc^2x + Ac^3x + 3\left(Bb^2c + Abc^2\right)\log\left(|x|\right) - \frac{Ab^3 + 2\left(Bb^3 + 3Ab^2c\right)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*x^2 + 3*B*b*c^2*x + A*c^3*x + 3*(B*b^2*c + A*b*c^2)*log(abs(x)) -
 1/2*(A*b^3 + 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

maple [A] time = 0.06, size = 71, normalized size = 1.09

$$\frac{Bc^3x^2}{2} + 3Abc^2\ln(x) + Ac^3x + 3Bb^2c\ln(x) + 3Bbc^2x - \frac{3Ab^2c}{x} - \frac{Bb^3}{x} - \frac{Ab^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^6,x)
```

```
[Out] 1/2*B*c^3*x^2+A*c^3*x+3*B*b*c^2*x-1/2*A*b^3/x^2-3*b^2/x*A*c-b^3/x*B+3*A*ln(
x)*b*c^2+3*B*ln(x)*b^2*c
```

maxima [A] time = 0.90, size = 69, normalized size = 1.06

$$\frac{1}{2}Bc^3x^2 + \left(3Bbc^2 + Ac^3\right)x + 3\left(Bb^2c + Abc^2\right)\log(x) - \frac{Ab^3 + 2\left(Bb^3 + 3Ab^2c\right)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*x^2 + (3*B*b*c^2 + A*c^3)*x + 3*(B*b^2*c + A*b*c^2)*log(x) - 1/2*
(A*b^3 + 2*(B*b^3 + 3*A*b^2*c)*x)/x^2
```

mupad [B] time = 1.06, size = 70, normalized size = 1.08

$$\ln(x)\left(3Bb^2c + 3Abc^2\right) - \frac{x\left(Bb^3 + 3Acb^2\right) + \frac{Ab^3}{2}}{x^2} + x\left(Ac^3 + 3Bbc^2\right) + \frac{Bc^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^6,x)
```

```
[Out] log(x)*(3*A*b*c^2 + 3*B*b^2*c) - (x*(B*b^3 + 3*A*b^2*c) + (A*b^3)/2)/x^2 +
x*(A*c^3 + 3*B*b*c^2) + (B*c^3*x^2)/2
```

sympy [A] time = 0.36, size = 68, normalized size = 1.05

$$\frac{Bc^3x^2}{2} + 3bc\left(Ac + Bb\right)\log\left(x\right) + x\left(Ac^3 + 3Bbc^2\right) + \frac{-Ab^3 + x\left(-6Ab^2c - 2Bb^3\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**6,x)
```

```
[Out] B*c**3*x**2/2 + 3*b*c*(A*c + B*b)*log(x) + x*(A*c**3 + 3*B*b*c**2) + (-A*b*
*3 + x*(-6*A*b**2*c - 2*B*b**3))/(2*x**2)
```

3.38 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^7}\,dx$

Optimal. Leaf size=64

$$-\frac{Ab^3}{3x^3}-\frac{b^2(3Ac+bB)}{2x^2}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+Bc^3x$$

```
[Out] -1/3*A*b^3/x^3-1/2*b^2*(3*A*c+B*b)/x^2-3*b*c*(A*c+B*b)/x+B*c^3*x+c^2*(A*c+3
*B*b)*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{2x^2}-\frac{Ab^3}{3x^3}+c^2\log(x)(Ac+3bB)-\frac{3bc(Ac+bB)}{x}+Bc^3x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -(A*b^3)/(3*x^3) - (b^2*(b*B + 3*A*c))/(2*x^2) - (3*b*c*(b*B + A*c))/x + B*
c^3*x + c^2*(3*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^7}\,dx &= \int \left(Bc^3+\frac{Ab^3}{x^4}+\frac{b^2(bB+3Ac)}{x^3}+\frac{3bc(bB+Ac)}{x^2}+\frac{c^2(3bB+Ac)}{x}\right)dx\\ &= -\frac{Ab^3}{3x^3}-\frac{b^2(bB+3Ac)}{2x^2}-\frac{3bc(bB+Ac)}{x}+Bc^3x+c^2(3bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.14

$$-\frac{Ab^3}{3x^3}-\frac{3\left(Abc^2+b^2Bc\right)}{x}+\frac{b^3(-B)-3Ab^2c}{2x^2}+\log(x)\left(Ac^3+3bBc^2\right)+Bc^3x$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -1/3*(A*b^3)/x^3 + (-(b^3*B) - 3*A*b^2*c)/(2*x^2) - (3*(b^2*B*c + A*b*c^2))
/x + B*c^3*x + (3*b*B*c^2 + A*c^3)*Log[x]
```

fricas [A] time = 0.88, size = 75, normalized size = 1.17

$$\frac{6\,Bc^3x^4+6\left(3\,Bbc^2+Ac^3\right)x^3\log(x)-2\,Ab^3-18\left(Bb^2c+Abc^2\right)x^2-3\left(Bb^3+3\,Ab^2c\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*c^3*x^4 + 6*(3*B*b*c^2 + A*c^3)*x^3*log(x) - 2*A*b^3 - 18*(B*b^2*c
 + A*b*c^2)*x^2 - 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

giac [**A**] time = 0.15, size = 70, normalized size = 1.09

$$Bc^3x + \left(3\,Bbc^2 + Ac^3\right)\log\left(|x|\right) - \frac{2\,Ab^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 3\left(Bb^3 + 3\,Ab^2c\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="giac")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(abs(x)) - 1/6*(2*A*b^3 + 18*(B*b^2*c + A*
b*c^2)*x^2 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

maple [**A**] time = 0.06, size = 72, normalized size = 1.12

$$A\,c^3\ln(x) + 3Bb\,c^2\ln(x) + B\,c^3x - \frac{3Ab\,c^2}{x} - \frac{3B\,b^2c}{x} - \frac{3A\,b^2c}{2x^2} - \frac{B\,b^3}{2x^2} - \frac{A\,b^3}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^7,x)
```

```
[Out] B*c^3*x-1/3*A*b^3/x^3-3/2*b^2/x^2*A*c-1/2*b^3/x^2*B-3*b*c^2/x*A-3*b^2*c/x*B
+A*ln(x)*c^3+3*B*ln(x)*b*c^2
```

maxima [**A**] time = 0.82, size = 69, normalized size = 1.08

$$Bc^3x + \left(3\,Bbc^2 + Ac^3\right)\log(x) - \frac{2\,Ab^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 3\left(Bb^3 + 3\,Ab^2c\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^7,x, algorithm="maxima")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(x) - 1/6*(2*A*b^3 + 18*(B*b^2*c + A*b*c^2
)*x^2 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^3
```

mupad [**B**] time = 0.07, size = 70, normalized size = 1.09

$$\ln(x)\left(A\,c^3 + 3\,B\,b\,c^2\right) - \frac{x^2\left(3\,B\,b^2\,c + 3\,A\,b\,c^2\right) + x\left(\frac{B\,b^3}{2} + \frac{3\,A\,c\,b^2}{2}\right) + \frac{A\,b^3}{3}}{x^3} + B\,c^3\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^7,x)
```

```
[Out] log(x)*(A*c^3 + 3*B*b*c^2) - (x^2*(3*A*b*c^2 + 3*B*b^2*c) + x*((B*b^3)/2 +
(3*A*b^2*c)/2) + (A*b^3)/3)/x^3 + B*c^3*x
```

sympy [**A**] time = 0.66, size = 73, normalized size = 1.14

$$Bc^3x + c^2\left(Ac + 3Bb\right)\log\left(x\right) + \frac{-2Ab^3 + x^2\left(-18Abc^2 - 18Bb^2c\right) + x\left(-9Ab^2c - 3Bb^3\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**7,x)
```

```
[Out] B*c**3*x + c**2*(A*c + 3*B*b)*log(x) + (-2*A*b**3 + x**2*(-18*A*b*c**2 - 18
*B*b**2*c) + x*(-9*A*b**2*c - 3*B*b**3))/(6*x**3)
```

3.39 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^8}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab^3}{4x^4}-\frac{b^2(3Ac+bB)}{3x^3}-\frac{c^2(Ac+3bB)}{x}-\frac{3bc(Ac+bB)}{2x^2}+Bc^3\log(x)$$

```
[Out] -1/4*A*b^3/x^4-1/3*b^2*(3*A*c+B*b)/x^3-3/2*b*c*(A*c+B*b)/x^2-c^2*(A*c+3*B*b
)/x+B*c^3*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{3x^3}-\frac{Ab^3}{4x^4}-\frac{c^2(Ac+3bB)}{x}-\frac{3bc(Ac+bB)}{2x^2}+Bc^3\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -(A*b^3)/(4*x^4) - (b^2*(b*B + 3*A*c))/(3*x^3) - (3*b*c*(b*B + A*c))/(2*x^2
) - (c^2*(3*b*B + A*c))/x + B*c^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^8}\,dx &= \int \left(\frac{Ab^3}{x^5}+\frac{b^2(bB+3Ac)}{x^4}+\frac{3bc(bB+Ac)}{x^3}+\frac{c^2(3bB+Ac)}{x^2}+\frac{Bc^3}{x}\right)dx\\ &= -\frac{Ab^3}{4x^4}-\frac{b^2(bB+3Ac)}{3x^3}-\frac{3bc(bB+Ac)}{2x^2}-\frac{c^2(3bB+Ac)}{x}+Bc^3\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 1.03

$$Bc^3\log(x)-\frac{3A\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)+2bBx\left(2b^2+9bcx+18c^2x^2\right)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -1/12*(2*b*B*x*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*A*(b^3 + 4*b^2*c*x + 6*b*
c^2*x^2 + 4*c^3*x^3))/x^4 + B*c^3*Log[x]
```

fricas [A] time = 0.87, size = 75, normalized size = 1.09

$$\frac{12\,Bc^3x^4\log(x)-3\,Ab^3-12\left(3\,Bbc^2+Ac^3\right)x^3-18\left(Bb^2c+Abc^2\right)x^2-4\left(Bb^3+3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^3*x^4*log(x) - 3*A*b^3 - 12*(3*B*b*c^2 + A*c^3)*x^3 - 18*(B*b^
2*c + A*b*c^2)*x^2 - 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

giac [A] time = 0.18, size = 73, normalized size = 1.06

$$Bc^3 \log(|x|) - \frac{3\,Ab^3 + 12\left(3\,Bbc^2 + Ac^3\right)x^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 4\left(Bb^3 + 3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="giac")
```

```
[Out] B*c^3*log(abs(x)) - 1/12*(3*A*b^3 + 12*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*
c + A*b*c^2)*x^2 + 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

maple [A] time = 0.05, size = 76, normalized size = 1.10

$$B\,c^3 \ln(x) - \frac{A\,c^3}{x} - \frac{3Bb\,c^2}{x} - \frac{3Ab\,c^2}{2x^2} - \frac{3B\,b^2c}{2x^2} - \frac{A\,b^2c}{x^3} - \frac{B\,b^3}{3x^3} - \frac{A\,b^3}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^8,x)
```

```
[Out] -1/4*A*b^3/x^4-b^2/x^3*A*c-1/3*b^3/x^3*B-3/2*b*c^2/x^2*A-3/2*b^2*c/x^2*B-c^
3/x*A-3*c^2/x*b*B+B*c^3*ln(x)
```

maxima [A] time = 0.92, size = 72, normalized size = 1.04

$$Bc^3 \log(x) - \frac{3\,Ab^3 + 12\left(3\,Bbc^2 + Ac^3\right)x^3 + 18\left(Bb^2c + Abc^2\right)x^2 + 4\left(Bb^3 + 3\,Ab^2c\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*c^3*log(x) - 1/12*(3*A*b^3 + 12*(3*B*b*c^2 + A*c^3)*x^3 + 18*(B*b^2*c + A
*b*c^2)*x^2 + 4*(B*b^3 + 3*A*b^2*c)*x)/x^4
```

mupad [B] time = 0.08, size = 71, normalized size = 1.03

$$B\,c^3\,\ln(x) - \frac{x^2\,\left(\frac{3\,B\,b^2\,c}{2} + \frac{3\,A\,b\,c^2}{2}\right) + x\,\left(\frac{B\,b^3}{3} + A\,c\,b^2\right) + \frac{A\,b^3}{4} + x^3\,\left(A\,c^3 + 3\,B\,b\,c^2\right)}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^8,x)
```

```
[Out] B*c^3*log(x) - (x^2*((3*A*b*c^2)/2 + (3*B*b^2*c)/2) + x*((B*b^3)/3 + A*b^2*
c) + (A*b^3)/4 + x^3*(A*c^3 + 3*B*b*c^2))/x^4
```

sympy [A] time = 0.99, size = 80, normalized size = 1.16

$$Bc^3 \log(x) + \frac{-3Ab^3 + x^3\left(-12Ac^3 - 36Bbc^2\right) + x^2\left(-18Abc^2 - 18Bb^2c\right) + x\left(-12Ab^2c - 4Bb^3\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**8,x)
```

```
[Out] B*c**3*log(x) + (-3*A*b**3 + x**3*(-12*A*c**3 - 36*B*b*c**2) + x**2*(-18*A*
b*c**2 - 18*B*b**2*c) + x*(-12*A*b**2*c - 4*B*b**3))/(12*x**4)
```

3.40 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab^3}{5x^5}-\frac{b^2(3Ac+bB)}{4x^4}-\frac{c^2(Ac+3bB)}{2x^2}-\frac{bc(Ac+bB)}{x^3}-\frac{Bc^3}{x}$$

```
[Out] -1/5*A*b^3/x^5-1/4*b^2*(3*A*c+B*b)/x^4-b*c*(A*c+B*b)/x^3-1/2*c^2*(A*c+3*B*b
)/x^2-B*c^3/x
```

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{4x^4}-\frac{Ab^3}{5x^5}-\frac{c^2(Ac+3bB)}{2x^2}-\frac{bc(Ac+bB)}{x^3}-\frac{Bc^3}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -(A*b^3)/(5*x^5) - (b^2*(b*B + 3*A*c))/(4*x^4) - (b*c*(b*B + A*c))/x^3 - (c
^2*(3*b*B + A*c))/(2*x^2) - (B*c^3)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^9}\,dx &= \int \left(\frac{Ab^3}{x^6}+\frac{b^2(bB+3Ac)}{x^5}+\frac{3bc(bB+Ac)}{x^4}+\frac{c^2(3bB+Ac)}{x^3}+\frac{Bc^3}{x^2}\right)dx\\ &= -\frac{Ab^3}{5x^5}-\frac{b^2(bB+3Ac)}{4x^4}-\frac{bc(bB+Ac)}{x^3}-\frac{c^2(3bB+Ac)}{2x^2}-\frac{Bc^3}{x}\end{aligned}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 1.01

$$-\frac{A\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)+5Bx\left(b^3+4b^2cx+6bc^2x^2+4c^3x^3\right)}{20x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -1/20*(5*B*x*(b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^3) + A*(4*b^3 + 15*b^
2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3))/x^5
```

fricas [A] time = 1.10, size = 73, normalized size = 1.03

$$-\frac{20\,Bc^3x^4+4\,Ab^3+10\left(3\,Bbc^2+Ac^3\right)x^3+20\left(Bb^2c+Abc^2\right)x^2+5\left(Bb^3+3\,Ab^2c\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 4*A*b^3 + 10*(3*B*b*c^2 + A*c^3)*x^3 + 20*(B*b^2*c +
A*b*c^2)*x^2 + 5*(B*b^3 + 3*A*b^2*c)*x)/x^5
```

giac [A] time = 0.15, size = 75, normalized size = 1.06

$$-\frac{20\,Bc^3x^4 + 30\,Bbc^2x^3 + 10\,Ac^3x^3 + 20\,Bb^2cx^2 + 20\,Abc^2x^2 + 5\,Bb^3x + 15\,Ab^2cx + 4\,Ab^3}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 30*B*b*c^2*x^3 + 10*A*c^3*x^3 + 20*B*b^2*c*x^2 + 20*A
*b*c^2*x^2 + 5*B*b^3*x + 15*A*b^2*c*x + 4*A*b^3)/x^5
```

maple [A] time = 0.05, size = 66, normalized size = 0.93

$$-\frac{B\,c^3}{x} - \frac{(Ac+3bB)\,c^2}{2x^2} - \frac{A\,b^3}{5x^5} - \frac{(Ac+bB)\,bc}{x^3} - \frac{(3Ac+bB)\,b^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^9,x)
```

```
[Out] -1/5*A*b^3/x^5-1/4*b^2*(3*A*c+B*b)/x^4-(A*c+B*b)*b*c/x^3-1/2*c^2*(A*c+3*B*b
)/x^2-B*c^3/x
```

maxima [A] time = 0.84, size = 73, normalized size = 1.03

$$-\frac{20\,Bc^3x^4 + 4\,Ab^3 + 10\left(3\,Bbc^2 + Ac^3\right)x^3 + 20\left(Bb^2c + Abc^2\right)x^2 + 5\left(Bb^3 + 3\,Ab^2c\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/20*(20*B*c^3*x^4 + 4*A*b^3 + 10*(3*B*b*c^2 + A*c^3)*x^3 + 20*(B*b^2*c +
A*b*c^2)*x^2 + 5*(B*b^3 + 3*A*b^2*c)*x)/x^5
```

mupad [B] time = 1.02, size = 71, normalized size = 1.00

$$-\frac{x^2\,\left(B\,b^2\,c+A\,b\,c^2\right)+x\,\left(\frac{B\,b^3}{4}+\frac{3\,A\,c\,b^2}{4}\right)+\frac{A\,b^3}{5}+x^3\,\left(\frac{A\,c^3}{2}+\frac{3\,B\,b\,c^2}{2}\right)+B\,c^3\,x^4}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^9,x)
```

```
[Out] -(x^2*(A*b*c^2 + B*b^2*c) + x*((B*b^3)/4 + (3*A*b^2*c)/4) + (A*b^3)/5 + x^3
*((A*c^3)/2 + (3*B*b*c^2)/2) + B*c^3*x^4)/x^5
```

sympy [A] time = 1.30, size = 82, normalized size = 1.15

$$\frac{-4Ab^3 - 20Bc^3x^4 + x^3\left(-10Ac^3 - 30Bbc^2\right) + x^2\left(-20Abc^2 - 20Bb^2c\right) + x\left(-15Ab^2c - 5Bb^3\right)}{20x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**9,x)
```

```
[Out] (-4*A*b**3 - 20*B*c**3*x**4 + x**3*(-10*A*c**3 - 30*B*b*c**2) + x**2*(-20*A
*b*c**2 - 20*B*b**2*c) + x*(-15*A*b**2*c - 5*B*b**3))/(20*x**5)
```

3.41 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{10}}\,dx$

Optimal. Leaf size=75

$$-\frac{Ab^3}{6x^6}-\frac{b^2(3Ac+bB)}{5x^5}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{4x^4}-\frac{Bc^3}{2x^2}$$

```
[Out] -1/6*A*b^3/x^6-1/5*b^2*(3*A*c+B*b)/x^5-3/4*b*c*(A*c+B*b)/x^4-1/3*c^2*(A*c+3
*B*b)/x^3-1/2*B*c^3/x^2
```

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{5x^5}-\frac{Ab^3}{6x^6}-\frac{c^2(Ac+3bB)}{3x^3}-\frac{3bc(Ac+bB)}{4x^4}-\frac{Bc^3}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -(A*b^3)/(6*x^6) - (b^2*(b*B + 3*A*c))/(5*x^5) - (3*b*c*(b*B + A*c))/(4*x^4
) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{10}}\,dx &= \int \left(\frac{Ab^3}{x^7}+\frac{b^2(bB+3Ac)}{x^6}+\frac{3bc(bB+Ac)}{x^5}+\frac{c^2(3bB+Ac)}{x^4}+\frac{Bc^3}{x^3}\right)dx\\ &= -\frac{Ab^3}{6x^6}-\frac{b^2(bB+3Ac)}{5x^5}-\frac{3bc(bB+Ac)}{4x^4}-\frac{c^2(3bB+Ac)}{3x^3}-\frac{Bc^3}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 74, normalized size = 0.99

$$-\frac{A\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)+3Bx\left(4b^3+15b^2cx+20bc^2x^2+10c^3x^3\right)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -1/60*(3*B*x*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3) + A*(10*b^3 +
 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3))/x^6
```

fricas [A] time = 1.04, size = 73, normalized size = 0.97

$$-\frac{30\,Bc^3x^4+10\,Ab^3+20\left(3\,Bbc^2+Ac^3\right)x^3+45\left(Bb^2c+Abc^2\right)x^2+12\left(Bb^3+3\,Ab^2c\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 10*A*b^3 + 20*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c +
 A*b*c^2)*x^2 + 12*(B*b^3 + 3*A*b^2*c)*x)/x^6
```

giac [A] time = 0.18, size = 75, normalized size = 1.00

$$-\frac{30\,Bc^3x^4+60\,Bbc^2x^3+20\,Ac^3x^3+45\,Bb^2cx^2+45\,Abc^2x^2+12\,Bb^3x+36\,Ab^2cx+10\,Ab^3}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 60*B*b*c^2*x^3 + 20*A*c^3*x^3 + 45*B*b^2*c*x^2 + 45*A
*b*c^2*x^2 + 12*B*b^3*x + 36*A*b^2*c*x + 10*A*b^3)/x^6
```

maple [A] time = 0.05, size = 66, normalized size = 0.88

$$-\frac{B\,c^3}{2x^2}-\frac{(Ac+3bB)\,c^2}{3x^3}-\frac{A\,b^3}{6x^6}-\frac{3\,(Ac+bB)\,bc}{4x^4}-\frac{(3Ac+bB)\,b^2}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^10,x)
```

```
[Out] -1/6*A*b^3/x^6-1/5*(3*A*c+B*b)*b^2/x^5-3/4*b*c*(A*c+B*b)/x^4-1/3*(A*c+3*B*b
)*c^2/x^3-1/2*B*c^3/x^2
```

maxima [A] time = 0.81, size = 73, normalized size = 0.97

$$-\frac{30\,Bc^3x^4+10\,Ab^3+20\left(3\,Bbc^2+Ac^3\right)x^3+45\left(Bb^2c+Abc^2\right)x^2+12\left(Bb^3+3\,Ab^2c\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c^3*x^4 + 10*A*b^3 + 20*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c +
 A*b*c^2)*x^2 + 12*(B*b^3 + 3*A*b^2*c)*x)/x^6
```

mupad [B] time = 0.04, size = 73, normalized size = 0.97

$$-\frac{x^2\left(\frac{3\,B\,b^2\,c}{4}+\frac{3\,A\,b\,c^2}{4}\right)+x\left(\frac{B\,b^3}{5}+\frac{3\,A\,c\,b^2}{5}\right)+\frac{A\,b^3}{6}+x^3\left(\frac{A\,c^3}{3}+B\,b\,c^2\right)+\frac{B\,c^3\,x^4}{2}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^10,x)
```

```
[Out] -(x^2*((3*A*b*c^2)/4 + (3*B*b^2*c)/4) + x*((B*b^3)/5 + (3*A*b^2*c)/5) + (A*
b^3)/6 + x^3*((A*c^3)/3 + B*b*c^2) + (B*c^3*x^4)/2)/x^6
```

sympy [A] time = 1.63, size = 82, normalized size = 1.09

$$\frac{-10Ab^3-30Bc^3x^4+x^3\left(-20Ac^3-60Bbc^2\right)+x^2\left(-45Abc^2-45Bb^2c\right)+x\left(-36Ab^2c-12Bb^3\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**10,x)
```

```
[Out] (-10*A*b**3 - 30*B*c**3*x**4 + x**3*(-20*A*c**3 - 60*B*b*c**2) + x**2*(-45*
A*b*c**2 - 45*B*b**2*c) + x*(-36*A*b**2*c - 12*B*b**3))/(60*x**6)
```

3.42 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11}}\,dx$

Optimal. Leaf size=75

$$-\frac{Ab^3}{7x^7}-\frac{b^2(3Ac+bB)}{6x^6}-\frac{c^2(Ac+3bB)}{4x^4}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{3x^3}$$

```
[Out] -1/7*A*b^3/x^7-1/6*b^2*(3*A*c+B*b)/x^6-3/5*b*c*(A*c+B*b)/x^5-1/4*c^2*(A*c+3
*B*b)/x^4-1/3*B*c^3/x^3
```

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(3Ac+bB)}{6x^6}-\frac{Ab^3}{7x^7}-\frac{c^2(Ac+3bB)}{4x^4}-\frac{3bc(Ac+bB)}{5x^5}-\frac{Bc^3}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -(A*b^3)/(7*x^7) - (b^2*(b*B + 3*A*c))/(6*x^6) - (3*b*c*(b*B + A*c))/(5*x^5
) - (c^2*(3*b*B + A*c))/(4*x^4) - (B*c^3)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11}}\,dx &= \int \left(\frac{Ab^3}{x^8}+\frac{b^2(bB+3Ac)}{x^7}+\frac{3bc(bB+Ac)}{x^6}+\frac{c^2(3bB+Ac)}{x^5}+\frac{Bc^3}{x^4}\right)dx\\ &= -\frac{Ab^3}{7x^7}-\frac{b^2(bB+3Ac)}{6x^6}-\frac{3bc(bB+Ac)}{5x^5}-\frac{c^2(3bB+Ac)}{4x^4}-\frac{Bc^3}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 1.00

$$-\frac{3A\left(20b^3+70b^2cx+84bc^2x^2+35c^3x^3\right)+7Bx\left(10b^3+36b^2cx+45bc^2x^2+20c^3x^3\right)}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -1/420*(7*B*x*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3) + 3*A*(20*b
^3 + 70*b^2*c*x + 84*b*c^2*x^2 + 35*c^3*x^3))/x^7
```

fricas [A] time = 0.78, size = 73, normalized size = 0.97

$$-\frac{140\,Bc^3x^4+60\,Ab^3+105\left(3\,Bbc^2+Ac^3\right)x^3+252\left(Bb^2c+Abc^2\right)x^2+70\left(Bb^3+3\,Ab^2c\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 60*A*b^3 + 105*(3*B*b*c^2 + A*c^3)*x^3 + 252*(B*b^2
*c + A*b*c^2)*x^2 + 70*(B*b^3 + 3*A*b^2*c)*x)/x^7
```

giac [**A**] time = 0.16, size = 75, normalized size = 1.00

$$-\frac{140\,Bc^3x^4 + 315\,Bbc^2x^3 + 105\,Ac^3x^3 + 252\,Bb^2cx^2 + 252\,Abc^2x^2 + 70\,Bb^3x + 210\,Ab^2cx + 60\,Ab^3}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 315*B*b*c^2*x^3 + 105*A*c^3*x^3 + 252*B*b^2*c*x^2 +
 252*A*b*c^2*x^2 + 70*B*b^3*x + 210*A*b^2*c*x + 60*A*b^3)/x^7
```

maple [**A**] time = 0.05, size = 66, normalized size = 0.88

$$-\frac{B\,c^3}{3x^3} - \frac{(Ac+3bB)\,c^2}{4x^4} - \frac{A\,b^3}{7x^7} - \frac{3\,(Ac+bB)\,bc}{5x^5} - \frac{(3Ac+bB)\,b^2}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^11,x)
```

```
[Out] -1/7*A*b^3/x^7-1/6*b^2*(3*A*c+B*b)/x^6-3/5*(A*c+B*b)*b*c/x^5-1/4*c^2*(A*c+3
*B*b)/x^4-1/3*B*c^3/x^3
```

maxima [**A**] time = 0.91, size = 73, normalized size = 0.97

$$-\frac{140\,Bc^3x^4 + 60\,Ab^3 + 105\left(3\,Bbc^2 + Ac^3\right)x^3 + 252\left(Bb^2c + Abc^2\right)x^2 + 70\left(Bb^3 + 3\,Ab^2c\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/420*(140*B*c^3*x^4 + 60*A*b^3 + 105*(3*B*b*c^2 + A*c^3)*x^3 + 252*(B*b^2
*c + A*b*c^2)*x^2 + 70*(B*b^3 + 3*A*b^2*c)*x)/x^7
```

mupad [**B**] time = 0.05, size = 74, normalized size = 0.99

$$-\frac{x^2\left(\frac{3\,B\,b^2\,c}{5}+\frac{3\,A\,b\,c^2}{5}\right)+x\left(\frac{B\,b^3}{6}+\frac{A\,c\,b^2}{2}\right)+\frac{A\,b^3}{7}+x^3\left(\frac{A\,c^3}{4}+\frac{3\,B\,b\,c^2}{4}\right)+\frac{B\,c^3\,x^4}{3}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^11,x)
```

```
[Out] -(x^2*((3*A*b*c^2)/5 + (3*B*b^2*c)/5) + x*((B*b^3)/6 + (A*b^2*c)/2) + (A*b^
3)/7 + x^3*((A*c^3)/4 + (3*B*b*c^2)/4) + (B*c^3*x^4)/3)/x^7
```

sympy [**A**] time = 2.04, size = 82, normalized size = 1.09

$$\frac{-60Ab^3 - 140Bc^3x^4 + x^3\left(-105Ac^3 - 315Bbc^2\right) + x^2\left(-252Abc^2 - 252Bb^2c\right) + x\left(-210Ab^2c - 70Bb^3\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**11,x)
```

```
[Out] (-60*A*b**3 - 140*B*c**3*x**4 + x**3*(-105*A*c**3 - 315*B*b*c**2) + x**2*(-
252*A*b*c**2 - 252*B*b**2*c) + x*(-210*A*b**2*c - 70*B*b**3))/(420*x**7)
```

3.43 $\int \frac{x^4(d+ex)}{bx+cx^2} \, dx$

Optimal. Leaf size=87

$$-\frac{b^3(cd-be)\log(b+cx)}{c^5}+\frac{b^2x(cd-be)}{c^4}-\frac{bx^2(cd-be)}{2c^3}+\frac{x^3(cd-be)}{3c^2}+\frac{ex^4}{4c}$$

```
[Out] b^2*(-b*e+c*d)*x/c^4-1/2*b*(-b*e+c*d)*x^2/c^3+1/3*(-b*e+c*d)*x^3/c^2+1/4*e*
x^4/c-b^3*(-b*e+c*d)*ln(c*x+b)/c^5
```

Rubi [A] time = 0.09, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2x(cd-be)}{c^4}-\frac{b^3(cd-be)\log(b+cx)}{c^5}+\frac{x^3(cd-be)}{3c^2}-\frac{bx^2(cd-be)}{2c^3}+\frac{ex^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (b^2*(c*d - b*e)*x)/c^4 - (b*(c*d - b*e)*x^2)/(2*c^3) + ((c*d - b*e)*x^3)/(
3*c^2) + (e*x^4)/(4*c) - (b^3*(c*d - b*e)*Log[b + c*x])/c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{bx+cx^2}\,dx &= \int \left(-\frac{b^2(-cd+be)}{c^4}+\frac{b(-cd+be)x}{c^3}+\frac{(cd-be)x^2}{c^2}+\frac{ex^3}{c}+\frac{b^3(-cd+be)}{c^4(b+cx)}\right)dx\\ &= \frac{b^2(cd-be)x}{c^4}-\frac{b(cd-be)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{b^3(cd-be)\log(b+cx)}{c^5}\end{aligned}$$

Mathematica [A] time = 0.03, size = 80, normalized size = 0.92

$$\frac{12b^3(be-cd)\log(b+cx)+cx\left(-12b^3e+6b^2c(2d+ex)-2bc^2x(3d+2ex)+c^3x^2(4d+3ex)\right)}{12c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(-12*b^3*e + 6*b^2*c*(2*d + e*x) - 2*b*c^2*x*(3*d + 2*e*x) + c^3*x^2*(
4*d + 3*e*x)) + 12*b^3*(-(c*d) + b*e)*Log[b + c*x])/(12*c^5)
```

fricas [A] time = 0.93, size = 94, normalized size = 1.08

$$\frac{3\,c^4ex^4+4\left(c^4d-bc^3e\right)x^3-6\left(bc^3d-b^2c^2e\right)x^2+12\left(b^2c^2d-b^3ce\right)x-12\left(b^3cd-b^4e\right)\log\left(cx+b\right)}{12\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/12*(3*c^4*e*x^4 + 4*(c^4*d - b*c^3*e)*x^3 - 6*(b*c^3*d - b^2*c^2*e)*x^2 +
 12*(b^2*c^2*d - b^3*c*e)*x - 12*(b^3*c*d - b^4*e)*log(c*x + b))/c^5
```

giac [A] time = 0.16, size = 100, normalized size = 1.15

$$\frac{3\,c^{3}x^{4}e+4\,c^{3}dx^{3}-4\,bc^{2}x^{3}e-6\,bc^{2}dx^{2}+6\,b^{2}cx^{2}e+12\,b^{2}cdx-12\,b^{3}xe}{12\,c^{4}}-\frac{\left(b^{3}cd-b^{4}e\right)\log\left(|cx+b|\right)}{c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 4*b*c^2*x^3*e - 6*b*c^2*d*x^2 + 6*b^2*c*x
^2*e + 12*b^2*c*d*x - 12*b^3*x*e)/c^4 - (b^3*c*d - b^4*e)*log(abs(c*x + b))
/c^5
```

maple [A] time = 0.05, size = 100, normalized size = 1.15

$$\frac{e\,x^{4}}{4c}-\frac{be\,x^{3}}{3c^{2}}+\frac{d\,x^{3}}{3c}+\frac{b^{2}e\,x^{2}}{2c^{3}}-\frac{bd\,x^{2}}{2c^{2}}+\frac{b^{4}e\ln\left(cx+b\right)}{c^{5}}-\frac{b^{3}d\ln\left(cx+b\right)}{c^{4}}-\frac{b^{3}ex}{c^{4}}+\frac{b^{2}dx}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/4*e*x^4/c-1/3/c^2*x^3*b*e+1/3*d*x^3/c+1/2/c^3*x^2*b^2*e-1/2/c^2*x^2*b*d-1
/c^4*x*b^3*e+1/c^3*x*b^2*d+b^4/c^5*ln(c*x+b)*e-b^3/c^4*ln(c*x+b)*d
```

maxima [A] time = 0.89, size = 93, normalized size = 1.07

$$\frac{3\,c^{3}ex^{4}+4\left(c^{3}d-bc^{2}e\right)x^{3}-6\left(bc^{2}d-b^{2}ce\right)x^{2}+12\left(b^{2}cd-b^{3}e\right)x}{12\,c^{4}}-\frac{\left(b^{3}cd-b^{4}e\right)\log\left(cx+b\right)}{c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/12*(3*c^3*e*x^4 + 4*(c^3*d - b*c^2*e)*x^3 - 6*(b*c^2*d - b^2*c*e)*x^2 + 1
2*(b^2*c*d - b^3*e)*x)/c^4 - (b^3*c*d - b^4*e)*log(c*x + b)/c^5
```

mupad [B] time = 0.05, size = 94, normalized size = 1.08

$$x^{3}\left(\frac{d}{3\,c}-\frac{b\,e}{3\,c^{2}}\right)+\frac{\ln\left(b+c\,x\right)\,\left(b^{4}\,e-b^{3}\,c\,d\right)}{c^{5}}+\frac{e\,x^{4}}{4\,c}-\frac{b\,x^{2}\,\left(\frac{d}{c}-\frac{b\,e}{c^{2}}\right)}{2\,c}+\frac{b^{2}\,x\,\left(\frac{d}{c}-\frac{b\,e}{c^{2}}\right)}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x^3*(d/(3*c) - (b*e)/(3*c^2)) + (log(b + c*x)*(b^4*e - b^3*c*d))/c^5 + (e*x
^4)/(4*c) - (b*x^2*(d/c - (b*e)/c^2))/(2*c) + (b^2*x*(d/c - (b*e)/c^2))/c^2
```

sympy [A] time = 0.24, size = 85, normalized size = 0.98

$$\frac{b^{3}\left(be-cd\right)\log\left(b+cx\right)}{c^{5}}+x^{3}\left(-\frac{be}{3c^{2}}+\frac{d}{3c}\right)+x^{2}\left(\frac{b^{2}e}{2c^{3}}-\frac{bd}{2c^{2}}\right)+x\left(-\frac{b^{3}e}{c^{4}}+\frac{b^{2}d}{c^{3}}\right)+\frac{ex^{4}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] b**3*(b*e - c*d)*log(b + c*x)/c**5 + x**3*(-b*e/(3*c**2) + d/(3*c)) + x**2*
(b**2*e/(2*c**3) - b*d/(2*c**2)) + x*(-b**3*e/c**4 + b**2*d/c**3) + e*x**4/
(4*c)
```

3.44 $\int \frac{x^3(d+ex)}{bx+cx^2}\,dx$

Optimal. Leaf size=66

$$\frac{b^2(cd-be)\log(b+cx)}{c^4}-\frac{bx(cd-be)}{c^3}+\frac{x^2(cd-be)}{2c^2}+\frac{ex^3}{3c}$$

```
[Out] -b*(-b*e+c*d)*x/c^3+1/2*(-b*e+c*d)*x^2/c^2+1/3*e*x^3/c+b^2*(-b*e+c*d)*ln(c*
x+b)/c^4
```

Rubi [A] time = 0.06, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^2(cd-be)\log(b+cx)}{c^4}+\frac{x^2(cd-be)}{2c^2}-\frac{bx(cd-be)}{c^3}+\frac{ex^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] -((b*(c*d - b*e)*x)/c^3) + ((c*d - b*e)*x^2)/(2*c^2) + (e*x^3)/(3*c) + (b^2
*(c*d - b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{b(-cd+be)}{c^3}+\frac{(cd-be)x}{c^2}+\frac{ex^2}{c}-\frac{b^2(-cd+be)}{c^3(b+cx)}\right)dx\\ &= -\frac{b(cd-be)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{b^2(cd-be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 61, normalized size = 0.92

$$\frac{cx\left(6b^2e-3bc(2d+ex)+c^2x(3d+2ex)\right)+6b^2(cd-be)\log(b+cx)}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(6*b^2*e - 3*b*c*(2*d + e*x) + c^2*x*(3*d + 2*e*x)) + 6*b^2*(c*d - b*e
)*Log[b + c*x])/(6*c^4)
```

fricas [A] time = 0.60, size = 71, normalized size = 1.08

$$\frac{2\,c^3ex^3+3\left(c^3d-bc^2e\right)x^2-6\left(bc^2d-b^2ce\right)x+6\left(b^2cd-b^3e\right)\log\left(cx+b\right)}{6\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(2*c^3*e*x^3 + 3*(c^3*d - b*c^2*e)*x^2 - 6*(b*c^2*d - b^2*c*e)*x + 6*(b
^2*c*d - b^3*e)*log(c*x + b))/c^4
```

giac [A] time = 0.16, size = 74, normalized size = 1.12

$$\frac{2\,c^2x^3e + 3\,c^2dx^2 - 3\,bcx^2e - 6\,bcdx + 6\,b^2xe}{6\,c^3} + \frac{\left(b^2cd - b^3e\right)\log\left(|cx + b|\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 3*b*c*x^2*e - 6*b*c*d*x + 6*b^2*x*e)/c^3 +
 (b^2*c*d - b^3*e)*log(abs(c*x + b))/c^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.15

$$\frac{e\,x^3}{3c} - \frac{be\,x^2}{2c^2} + \frac{d\,x^2}{2c} - \frac{b^3e\ln\left(cx + b\right)}{c^4} + \frac{b^2d\ln\left(cx + b\right)}{c^3} + \frac{b^2ex}{c^3} - \frac{bdx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/3*e*x^3/c-1/2/c^2*x^2*b*e+1/2*d*x^2/c+1/c^3*x*b^2*e-1/c^2*x*b*d-b^3/c^4*l
n(c*x+b)*e+b^2/c^3*ln(c*x+b)*d
```

maxima [A] time = 0.95, size = 69, normalized size = 1.05

$$\frac{2\,c^2ex^3 + 3\left(c^2d - bce\right)x^2 - 6\left(bcd - b^2e\right)x}{6\,c^3} + \frac{\left(b^2cd - b^3e\right)\log\left(cx + b\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*(2*c^2*e*x^3 + 3*(c^2*d - b*c*e)*x^2 - 6*(b*c*d - b^2*e)*x)/c^3 + (b^2*
c*d - b^3*e)*log(c*x + b)/c^4
```

mupad [B] time = 1.01, size = 72, normalized size = 1.09

$$x^2\left(\frac{d}{2\,c} - \frac{b\,e}{2\,c^2}\right) - \frac{\ln\left(b + c\,x\right)\,\left(b^3\,e - b^2\,c\,d\right)}{c^4} + \frac{e\,x^3}{3\,c} - \frac{b\,x\,\left(\frac{d}{c} - \frac{b\,e}{c^2}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x^2*(d/(2*c) - (b*e)/(2*c^2)) - (log(b + c*x)*(b^3*e - b^2*c*d))/c^4 + (e*x
^3)/(3*c) - (b*x*(d/c - (b*e)/c^2))/c
```

sympy [A] time = 0.22, size = 61, normalized size = 0.92

$$-\frac{b^2\left(be - cd\right)\log\left(b + cx\right)}{c^4} + x^2\left(-\frac{be}{2c^2} + \frac{d}{2c}\right) + x\left(\frac{b^2e}{c^3} - \frac{bd}{c^2}\right) + \frac{ex^3}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] -b**2*(b*e - c*d)*log(b + c*x)/c**4 + x**2*(-b*e/(2*c**2) + d/(2*c)) + x*(b
**2*e/c**3 - b*d/c**2) + e*x**3/(3*c)
```

3.45 $\int \frac{x^2(d+ex)}{bx+cx^2}\,dx$

Optimal. Leaf size=45

$$-\frac{b(cd-be)\log(b+cx)}{c^3}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

```
[Out] (-b*e+c*d)*x/c^2+1/2*e*x^2/c-b*(-b*e+c*d)*ln(c*x+b)/c^3
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {765}

$$\frac{x(cd-be)}{c^2}-\frac{b(cd-be)\log(b+cx)}{c^3}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] ((c*d - b*e)*x)/c^2 + (e*x^2)/(2*c) - (b*(c*d - b*e)*Log[b + c*x])/c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{cd-be}{c^2}+\frac{ex}{c}+\frac{b(-cd+be)}{c^2(b+cx)}\right)dx\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{b(cd-be)\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.91

$$\frac{cx(-2be+2cd+cex)+2b(be-cd)\log(b+cx)}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (c*x*(2*c*d - 2*b*e + c*e*x) + 2*b*(-(c*d) + b*e)*Log[b + c*x])/(2*c^3)
```

fricas [A] time = 1.11, size = 47, normalized size = 1.04

$$\frac{c^2ex^2+2\left(c^2d-bce\right)x-2\left(bcd-b^2e\right)\log\left(cx+b\right)}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(c^2*e*x^2 + 2*(c^2*d - b*c*e)*x - 2*(b*c*d - b^2*e)*log(c*x + b))/c^3
```

giac [**A**] time = 0.15, size = 49, normalized size = 1.09

$$\frac{cx^2e+2\,cdx-2\,bxe}{2\,c^2}-\frac{\left(bcd-b^2e\right)\log\left(|cx+b|\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/2*(c*x^2*e + 2*c*d*x - 2*b*x*e)/c^2 - (b*c*d - b^2*e)*log(abs(c*x + b))/c
^3
```

maple [**A**] time = 0.05, size = 52, normalized size = 1.16

$$\frac{e\,x^2}{2c}+\frac{b^2e\ln\left(cx+b\right)}{c^3}-\frac{bd\ln\left(cx+b\right)}{c^2}-\frac{bex}{c^2}+\frac{dx}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/2*e*x^2/c-1/c^2*x*b*e+d*x/c+b^2/c^3*ln(c*x+b)*e-b/c^2*ln(c*x+b)*d
```

maxima [**A**] time = 0.89, size = 46, normalized size = 1.02

$$\frac{cex^2+2\left(cd-be\right)x}{2\,c^2}-\frac{\left(bcd-b^2e\right)\log\left(cx+b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/2*(c*e*x^2 + 2*(c*d - b*e)*x)/c^2 - (b*c*d - b^2*e)*log(c*x + b)/c^3
```

mupad [**B**] time = 1.02, size = 46, normalized size = 1.02

$$x\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)+\frac{e\,x^2}{2\,c}+\frac{\ln\left(b+c\,x\right)\,\left(b^2\,e-b\,c\,d\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] x*(d/c - (b*e)/c^2) + (e*x^2)/(2*c) + (log(b + c*x)*(b^2*e - b*c*d))/c^3
```

sympy [**A**] time = 0.19, size = 37, normalized size = 0.82

$$\frac{b\left(be-cd\right)\log\left(b+cx\right)}{c^3}+x\left(-\frac{be}{c^2}+\frac{d}{c}\right)+\frac{ex^2}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] b*(b*e - c*d)*log(b + c*x)/c**3 + x*(-b*e/c**2 + d/c) + e*x**2/(2*c)
```

3.46 $\int \frac{x(d+ex)}{bx+cx^2}\,dx$

Optimal. Leaf size=25

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

```
[Out] e*x/c+(-b*e+c*d)*ln(c*x+b)/c^2
```

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (e*x)/c + ((c*d - b*e)*Log[b + c*x])/c^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{bx+cx^2}\,dx&=\int \left(\frac{e}{c}+\frac{cd-be}{c(b+cx)}\right)dx\\&=\frac{ex}{c}+\frac{(cd-be)\log(b+cx)}{c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 1.00

$$\frac{(cd-be)\log(b+cx)}{c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (e*x)/c + ((c*d - b*e)*Log[b + c*x])/c^2
```

fricas [A] time = 0.87, size = 24, normalized size = 0.96

$$\frac{cex+(cd-be)\log(cx+b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (c*e*x + (c*d - b*e)*log(c*x + b))/c^2
```

giac [A] time = 0.14, size = 28, normalized size = 1.12

$$\frac{xe}{c}+\frac{(cd-be)\log(|cx+b|)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] x*e/c + (c*d - b*e)*log(abs(c*x + b))/c^2
```

maple [A] time = 0.05, size = 32, normalized size = 1.28

$$-\frac{be\ln(cx+b)}{c^2}+\frac{d\ln(cx+b)}{c}+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] e*x/c-1/c^2*ln(c*x+b)*b*e+1/c*ln(c*x+b)*d
```

maxima [A] time = 0.94, size = 25, normalized size = 1.00

$$\frac{ex}{c}+\frac{(cd-be)\log(cx+b)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] e*x/c + (c*d - b*e)*log(c*x + b)/c^2
```

mupad [B] time = 0.05, size = 26, normalized size = 1.04

$$\frac{e\,x}{c}-\frac{\ln(b+c\,x)\,\left(b\,e-c\,d\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] (e*x)/c - (log(b + c*x)*(b*e - c*d))/c^2
```

sympy [A] time = 0.16, size = 20, normalized size = 0.80

$$\frac{ex}{c}-\frac{(be-cd)\log(b+cx)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] e*x/c - (b*e - c*d)*log(b + c*x)/c**2
```

3.47 $\int \frac{d+ex}{bx+cx^2}\,dx$

Optimal. Leaf size=30

$$\frac{d\log(x)}{b}-\frac{(cd-be)\log(b+cx)}{bc}$$

```
[Out] d*ln(x)/b-(-b*e+c*d)*ln(c*x+b)/b/c
```

Rubi [A] time = 0.02, antiderivative size = 30, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{d\log(x)}{b}-\frac{(cd-be)\log(b+cx)}{bc}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2),x]
```

```
[Out] (d*Log[x])/b - ((c*d - b*e)*Log[b + c*x])/(b*c)
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{bx+cx^2}\,dx&=\int\left(\frac{d}{bx}+\frac{-cd+be}{b(b+cx)}\right)dx\\&=\frac{d\log(x)}{b}-\frac{(cd-be)\log(b+cx)}{bc}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.97

$$\frac{(be-cd)\log(b+cx)}{bc}+\frac{d\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2),x]
```

```
[Out] (d*Log[x])/b + ((-(c*d) + b*e)*Log[b + c*x])/(b*c)
```

fricas [A] time = 0.80, size = 29, normalized size = 0.97

$$\frac{cd\log(x)-(cd-be)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (c*d*log(x) - (c*d - b*e)*log(c*x + b))/(b*c)
```

giac [A] time = 0.15, size = 33, normalized size = 1.10

$$\frac{d\log(|x|)}{b}-\frac{(cd-be)\log(|cx+b|)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] d*log(abs(x))/b - (c*d - b*e)*log(abs(c*x + b))/(b*c)
```

maple [A]   time = 0.05, size = 32, normalized size = 1.07

$$\frac{d\ln(x)}{b}-\frac{d\ln\left(cx+b\right)}{b}+\frac{e\ln\left(cx+b\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/c*ln(c*x+b)*e-1/b*ln(c*x+b)*d+1/b*d*ln(x)
```

maxima [A]   time = 0.85, size = 30, normalized size = 1.00

$$\frac{d\log(x)}{b}-\frac{(cd-be)\log\left(cx+b\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] d*log(x)/b - (c*d - b*e)*log(c*x + b)/(b*c)
```

mupad [B]   time = 0.10, size = 28, normalized size = 0.93

$$\frac{d\ \ln(x)}{b}-\ln\left(b+c\,x\right)\,\left(\frac{d}{b}-\frac{e}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2),x)
```

```
[Out] (d*log(x))/b - log(b + c*x)*(d/b - e/c)
```

sympy [A]   time = 0.42, size = 41, normalized size = 1.37

$$\frac{d\log\left(x\right)}{b}+\frac{(be-cd)\log\left(x+\frac{-bd+\frac{b(be-cd)}{c}}{be-2cd}\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x),x)
```

```
[Out] d*log(x)/b + (b*e - c*d)*log(x + (-b*d + b*(b*e - c*d)/c)/(b*e - 2*c*d))/(b
*c)
```

3.48 $\int \frac{d+ex}{x(bx+cx^2)}\,dx$

Optimal. Leaf size=43

$$-\frac{\log(x)(cd-be)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

```
[Out] -d/b/x-(-b*e+c*d)*ln(x)/b^2+(-b*e+c*d)*ln(c*x+b)/b^2
```

Rubi [A] time = 0.04, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{\log(x)(cd-be)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)),x]
```

```
[Out] -(d/(b*x)) - ((c*d - b*e)*Log[x])/b^2 + ((c*d - b*e)*Log[b + c*x])/b^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)}\,dx &= \int \left(\frac{d}{bx^2}+\frac{-cd+be}{b^2x}-\frac{c(-cd+be)}{b^2(b+cx)}\right)dx\\ &= -\frac{d}{bx}-\frac{(cd-be)\log(x)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.98

$$\frac{\log(x)(be-cd)}{b^2}+\frac{(cd-be)\log(b+cx)}{b^2}-\frac{d}{bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)),x]
```

```
[Out] -(d/(b*x)) + ((-(c*d) + b*e)*Log[x])/b^2 + ((c*d - b*e)*Log[b + c*x])/b^2
```

fricas [A] time = 1.18, size = 41, normalized size = 0.95

$$\frac{(cd-be)x\log(cx+b)-(cd-be)x\log(x)-bd}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] ((c*d - b*e)*x*log(c*x + b) - (c*d - b*e)*x*log(x) - b*d)/(b^2*x)
```

giac [A] time = 0.24, size = 53, normalized size = 1.23

$$-\frac{(cd-be)\log(|x|)}{b^2}-\frac{d}{bx}+\frac{\left(c^2d-bce\right)\log(|cx+b|)}{b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -(c*d - b*e)*log(abs(x))/b^2 - d/(b*x) + (c^2*d - b*c*e)*log(abs(c*x + b))/
(b^2*c)
```

maple [A] time = 0.05, size = 51, normalized size = 1.19

$$\frac{e\ln(x)}{b}-\frac{e\ln(cx+b)}{b}-\frac{cd\ln(x)}{b^2}+\frac{cd\ln(cx+b)}{b^2}-\frac{d}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x),x)
```

```
[Out] -1/b*ln(c*x+b)*e+1/b^2*ln(c*x+b)*c*d-d/b/x+1/b*ln(x)*e-1/b^2*ln(x)*c*d
```

maxima [A] time = 0.85, size = 43, normalized size = 1.00

$$\frac{(cd-be)\log(cx+b)}{b^2}-\frac{(cd-be)\log(x)}{b^2}-\frac{d}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (c*d - b*e)*log(c*x + b)/b^2 - (c*d - b*e)*log(x)/b^2 - d/(b*x)
```

mupad [B] time = 0.09, size = 33, normalized size = 0.77

$$-\frac{d}{b\,x}-\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)\,\left(b\,e-c\,d\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)),x)
```

```
[Out] - d/(b*x) - (2*atanh((2*c*x)/b + 1)*(b*e - c*d))/b^2
```

sympy [B] time = 0.37, size = 95, normalized size = 2.21

$$-\frac{d}{bx}+\frac{(be-cd)\log\left(x+\frac{b^2e-bcd-b(be-cd)}{2bce-2c^2d}\right)}{b^2}-\frac{(be-cd)\log\left(x+\frac{b^2e-bcd+b(be-cd)}{2bce-2c^2d}\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x),x)
```

```
[Out] -d/(b*x) + (b*e - c*d)*log(x + (b**2*e - b*c*d - b*(b*e - c*d))/(2*b*c*e -
2*c**2*d))/b**2 - (b*e - c*d)*log(x + (b**2*e - b*c*d + b*(b*e - c*d))/(2*b
*c*e - 2*c**2*d))/b**2
```

3.49 $\int \frac{d+ex}{x^2\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=62

$$\frac{c\log(x)(cd-be)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}+\frac{cd-be}{b^2x}-\frac{d}{2bx^2}$$

```
[Out] -1/2*d/b/x^2+(-b*e+c*d)/b^2/x+c*(-b*e+c*d)*ln(x)/b^3-c*(-b*e+c*d)*ln(c*x+b)
/b^3
```

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{cd-be}{b^2x}+\frac{c\log(x)(cd-be)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}-\frac{d}{2bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(b*x + c*x^2)),x]
```

```
[Out] -d/(2*b*x^2) + (c*d - b*e)/(b^2*x) + (c*(c*d - b*e)*Log[x])/b^3 - (c*(c*d -
 b*e)*Log[b + c*x])/b^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(bx+cx^2\right)}\,dx&=\int \left(\frac{d}{bx^3}+\frac{-cd+be}{b^2x^2}-\frac{c(-cd+be)}{b^3x}+\frac{c^2(-cd+be)}{b^3(b+cx)}\right)dx\\&=-\frac{d}{2bx^2}+\frac{cd-be}{b^2x}+\frac{c(cd-be)\log(x)}{b^3}-\frac{c(cd-be)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 58, normalized size = 0.94

$$\frac{-\frac{b(bd+2bex-2cdx)}{x^2}+2c\log(x)(cd-be)+2c(be-cd)\log(b+cx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(b*x + c*x^2)),x]
```

```
[Out] (-((b*(b*d - 2*c*d*x + 2*b*e*x))/x^2) + 2*c*(c*d - b*e)*Log[x] + 2*c*(-(c*d
) + b*e)*Log[b + c*x])/(2*b^3)
```

fricas [A] time = 0.91, size = 68, normalized size = 1.10

$$-\frac{2\left(c^2d-bce\right)x^2\log\left(cx+b\right)-2\left(c^2d-bce\right)x^2\log(x)+b^2d-2\left(bcd-b^2e\right)x}{2\,b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] -1/2*(2*(c^2*d - b*c*e)*x^2*log(c*x + b) - 2*(c^2*d - b*c*e)*x^2*log(x) + b
^2*d - 2*(b*c*d - b^2*e)*x)/(b^3*x^2)
```

giac [A] time = 0.18, size = 78, normalized size = 1.26

$$\frac{\left(c^2d-bce\right)\log\left(|x|\right)}{b^3}-\frac{\left(c^3d-bc^2e\right)\log\left(|cx+b|\right)}{b^3c}-\frac{b^2d-2\left(bcd-b^2e\right)x}{2\,b^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (c^2*d - b*c*e)*log(abs(x))/b^3 - (c^3*d - b*c^2*e)*log(abs(c*x + b))/(b^3*
c) - 1/2*(b^2*d - 2*(b*c*d - b^2*e)*x)/(b^3*x^2)
```

maple [A] time = 0.05, size = 75, normalized size = 1.21

$$-\frac{ce\ln(x)}{b^2}+\frac{ce\ln\left(cx+b\right)}{b^2}+\frac{c^2d\ln(x)}{b^3}-\frac{c^2d\ln\left(cx+b\right)}{b^3}-\frac{e}{bx}+\frac{cd}{b^2x}-\frac{d}{2b\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x),x)
```

```
[Out] c/b^2*ln(c*x+b)*e-c^2/b^3*ln(c*x+b)*d-1/2*d/b/x^2-1/b/x*e+1/b^2/x*c*d-c/b^2
*ln(x)*e+c^2/b^3*ln(x)*d
```

maxima [A] time = 0.92, size = 63, normalized size = 1.02

$$-\frac{\left(c^2d-bce\right)\log\left(cx+b\right)}{b^3}+\frac{\left(c^2d-bce\right)\log(x)}{b^3}-\frac{bd-2\left(cd-be\right)x}{2\,b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -(c^2*d - b*c*e)*log(c*x + b)/b^3 + (c^2*d - b*c*e)*log(x)/b^3 - 1/2*(b*d -
 2*(c*d - b*e)*x)/(b^2*x^2)
```

mupad [B] time = 0.08, size = 73, normalized size = 1.18

$$-\frac{\frac{d}{2\,b}+\frac{x\,\left(b\,e-c\,d\right)}{b^2}}{x^2}-\frac{2\,c\,\mathrm{atanh}\left(\frac{c\,\left(b\,e-c\,d\right)\,\left(b+2\,c\,x\right)}{b\,\left(c^2\,d-b\,c\,e\right)}\right)\,\left(b\,e-c\,d\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(b*x + c*x^2)),x)
```

```
[Out] - (d/(2*b) + (x*(b*e - c*d))/b^2)/x^2 - (2*c*atanh((c*(b*e - c*d)*(b + 2*c*
x))/(b*(c^2*d - b*c*e)))*(b*e - c*d))/b^3
```

sympy [B] time = 0.45, size = 131, normalized size = 2.11

$$\frac{-bd+x\left(-2be+2cd\right)}{2b^2x^2}-\frac{c\left(be-cd\right)\log\left(x+\frac{b^2ce-bc^2d-bc(be-cd)}{2bc^2e-2c^3d}\right)}{b^3}+\frac{c\left(be-cd\right)\log\left(x+\frac{b^2ce-bc^2d+bc(be-cd)}{2bc^2e-2c^3d}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x),x)
```

```
[Out] (-b*d + x*(-2*b*e + 2*c*d))/(2*b**2*x**2) - c*(b*e - c*d)*log(x + (b**2*c*e
 - b*c**2*d - b*c*(b*e - c*d))/(2*b*c**2*e - 2*c**3*d))/b**3 + c*(b*e - c*d
)*log(x + (b**2*c*e - b*c**2*d + b*c*(b*e - c*d))/(2*b*c**2*e - 2*c**3*d))/
b**3
```

3.50 $\int \frac{d+ex}{x^3\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=86

$$-\frac{c^2\log(x)(cd-be)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}-\frac{c(cd-be)}{b^3x}+\frac{cd-be}{2b^2x^2}-\frac{d}{3bx^3}$$

```
[Out] -1/3*d/b/x^3+1/2*(-b*e+c*d)/b^2/x^2-c*(-b*e+c*d)/b^3/x-c^2*(-b*e+c*d)*ln(x)
/b^4+c^2*(-b*e+c*d)*ln(c*x+b)/b^4
```

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{c^2\log(x)(cd-be)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}+\frac{cd-be}{2b^2x^2}-\frac{c(cd-be)}{b^3x}-\frac{d}{3bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(b*x + c*x^2)),x]
```

```
[Out] -d/(3*b*x^3) + (c*d - b*e)/(2*b^2*x^2) - (c*(c*d - b*e))/(b^3*x) - (c^2*(c*
d - b*e)*Log[x])/b^4 + (c^2*(c*d - b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(bx+cx^2\right)}\,dx&=\int \left(\frac{d}{bx^4}+\frac{-cd+be}{b^2x^3}-\frac{c(-cd+be)}{b^3x^2}+\frac{c^2(-cd+be)}{b^4x}-\frac{c^3(-cd+be)}{b^4(b+cx)}\right)dx\\&=-\frac{d}{3bx^3}+\frac{cd-be}{2b^2x^2}-\frac{c(cd-be)}{b^3x}-\frac{c^2(cd-be)\log(x)}{b^4}+\frac{c^2(cd-be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 81, normalized size = 0.94

$$\frac{\frac{b\left(-\left(b^2(2d+3ex)\right)+3bcx(d+2ex)-6c^2dx^2\right)}{x^3}+6c^2\log(x)(be-cd)+6c^2(cd-be)\log(b+cx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(b*x + c*x^2)),x]
```

```
[Out] ((b*(-6*c^2*d*x^2 + 3*b*c*x*(d + 2*e*x) - b^2*(2*d + 3*e*x)))/x^3 + 6*c^2*(
-(c*d) + b*e)*Log[x] + 6*c^2*(c*d - b*e)*Log[b + c*x])/(6*b^4)
```

fricas [A] time = 0.84, size = 94, normalized size = 1.09

$$\frac{6\left(c^3d-bc^2e\right)x^3\log\left(cx+b\right)-6\left(c^3d-bc^2e\right)x^3\log(x)-2\,b^3d-6\left(bc^2d-b^2ce\right)x^2+3\left(b^2cd-b^3e\right)x}{6\,b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(6*(c^3*d - b*c^2*e)*x^3*log(c*x + b) - 6*(c^3*d - b*c^2*e)*x^3*log(x)
- 2*b^3*d - 6*(b*c^2*d - b^2*c*e)*x^2 + 3*(b^2*c*d - b^3*e)*x)/(b^4*x^3)
```

giac [**A**] time = 0.16, size = 103, normalized size = 1.20

$$-\frac{\left(c^3d-bc^2e\right)\log\left(|x|\right)}{b^4}+\frac{\left(c^4d-bc^3e\right)\log\left(|cx+b|\right)}{b^4c}-\frac{2\,b^3d+6\left(bc^2d-b^2ce\right)x^2-3\left(b^2cd-b^3e\right)x}{6\,b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -(c^3*d - b*c^2*e)*log(abs(x))/b^4 + (c^4*d - b*c^3*e)*log(abs(c*x + b))/(b
^4*c) - 1/6*(2*b^3*d + 6*(b*c^2*d - b^2*c*e)*x^2 - 3*(b^2*c*d - b^3*e)*x)/(
b^4*x^3)
```

maple [**A**] time = 0.05, size = 101, normalized size = 1.17

$$\frac{c^2e\ln(x)}{b^3}-\frac{c^2e\ln\left(cx+b\right)}{b^3}-\frac{c^3d\ln(x)}{b^4}+\frac{c^3d\ln\left(cx+b\right)}{b^4}+\frac{ce}{b^2x}-\frac{c^2d}{b^3x}-\frac{e}{2bx^2}+\frac{cd}{2b^2x^2}-\frac{d}{3bx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x),x)
```

```
[Out] -c^2/b^3*ln(c*x+b)*e+c^3/b^4*ln(c*x+b)*d-1/3*d/b/x^3-1/2/b/x^2*e+1/2/b^2/x^
2*c*d+c^2/b^3*ln(x)*e-c^3/b^4*ln(x)*d+c/b^2/x*e-c^2/b^3/x*d
```

maxima [**A**] time = 0.88, size = 89, normalized size = 1.03

$$\frac{\left(c^3d-bc^2e\right)\log\left(cx+b\right)}{b^4}-\frac{\left(c^3d-bc^2e\right)\log(x)}{b^4}-\frac{2\,b^2d+6\left(c^2d-bce\right)x^2-3\left(bcd-b^2e\right)x}{6\,b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (c^3*d - b*c^2*e)*log(c*x + b)/b^4 - (c^3*d - b*c^2*e)*log(x)/b^4 - 1/6*(2*
b^2*d + 6*(c^2*d - b*c*e)*x^2 - 3*(b*c*d - b^2*e)*x)/(b^3*x^3)
```

mupad [**B**] time = 0.09, size = 97, normalized size = 1.13

$$\frac{2\,c^2\,\mathrm{atanh}\left(\frac{c^2\,(b\,e-c\,d)\,(b+2\,c\,x)}{b\,\left(c^3\,d-b\,c^2\,e\right)}\right)\,(b\,e-c\,d)}{b^4}-\frac{\frac{d}{3\,b}+\frac{x\,(b\,e-c\,d)}{2\,b^2}-\frac{c\,x^2\,(b\,e-c\,d)}{b^3}}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(b*x + c*x^2)),x)
```

```
[Out] (2*c^2*atanh((c^2*(b*e - c*d)*(b + 2*c*x))/(b*(c^3*d - b*c^2*e)))*(b*e - c*
d))/b^4 - (d/(3*b) + (x*(b*e - c*d))/(2*b^2) - (c*x^2*(b*e - c*d))/b^3)/x^3
```

sympy [**B**] time = 0.50, size = 165, normalized size = 1.92

$$\frac{-2b^2d+x^2\left(6bce-6c^2d\right)+x\left(-3b^2e+3bcd\right)}{6b^3x^3}+\frac{c^2\left(be-cd\right)\log\left(x+\frac{b^2c^2e-bc^3d-bc^2(be-cd)}{2bc^3e-2c^4d}\right)}{b^4}-\frac{c^2\left(be-cd\right)\log\left(x+b^2c^2\right.}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x),x)
```

```
[Out] (-2*b**2*d + x**2*(6*b*c*e - 6*c**2*d) + x*(-3*b**2*e + 3*b*c*d))/(6*b**3*x
**3) + c**2*(b*e - c*d)*log(x + (b**2*c**2*e - b*c**3*d - b*c**2*(b*e - c*d
))/(2*b*c**3*e - 2*c**4*d))/b**4 - c**2*(b*e - c*d)*log(x + (b**2*c**2*e -
b*c**3*d + b*c**2*(b*e - c*d))/(2*b*c**3*e - 2*c**4*d))/b**4
```

3.51 $\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=90

$$\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}-\frac{bx(2cd-3be)}{c^4}+\frac{x^2(cd-2be)}{2c^3}+\frac{ex^3}{3c^2}$$

```
[Out] -b*(-3*b*e+2*c*d)*x/c^4+1/2*(-2*b*e+c*d)*x^2/c^3+1/3*e*x^3/c^2+b^3*(-b*e+c*
d)/c^5/(c*x+b)+b^2*(-4*b*e+3*c*d)*ln(c*x+b)/c^5
```

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}+\frac{x^2(cd-2be)}{2c^3}-\frac{bx(2cd-3be)}{c^4}+\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((b*(2*c*d - 3*b*e)*x)/c^4) + ((c*d - 2*b*e)*x^2)/(2*c^3) + (e*x^3)/(3*c^2
) + (b^3*(c*d - b*e))/(c^5*(b + c*x)) + (b^2*(3*c*d - 4*b*e)*Log[b + c*x])/
c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^2}\,dx&=\int \left(\frac{b(-2cd+3be)}{c^4}+\frac{(cd-2be)x}{c^3}+\frac{ex^2}{c^2}+\frac{b^3(-cd+be)}{c^4(b+cx)^2}-\frac{b^2(-3cd+4be)}{c^4(b+cx)}\right)dx\\&=-\frac{b(2cd-3be)x}{c^4}+\frac{(cd-2be)x^2}{2c^3}+\frac{ex^3}{3c^2}+\frac{b^3(cd-be)}{c^5(b+cx)}+\frac{b^2(3cd-4be)\log(b+cx)}{c^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.97

$$\frac{\frac{6b^3(cd-be)}{b+cx}+6b^2(3cd-4be)\log(b+cx)+3c^2x^2(cd-2be)+6bcx(3be-2cd)+2c^3ex^3}{6c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (6*b*c*(-2*c*d + 3*b*e)*x + 3*c^2*(c*d - 2*b*e)*x^2 + 2*c^3*e*x^3 + (6*b^3*
(c*d - b*e))/(b + c*x) + 6*b^2*(3*c*d - 4*b*e)*Log[b + c*x])/(6*c^5)
```

fricas [A] time = 0.75, size = 139, normalized size = 1.54

$$\frac{2\,c^4ex^4+6\,b^3cd-6\,b^4e+\left(3\,c^4d-4\,bc^3e\right)x^3-3\left(3\,bc^3d-4\,b^2c^2e\right)x^2-6\left(2\,b^2c^2d-3\,b^3ce\right)x+6\left(3\,b^3cd-4\,b^4e+\right.}{6\left(c^6x+bc^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*c^4*e*x^4 + 6*b^3*c*d - 6*b^4*e + (3*c^4*d - 4*b*c^3*e)*x^3 - 3*(3*b
*c^3*d - 4*b^2*c^2*e)*x^2 - 6*(2*b^2*c^2*d - 3*b^3*c*e)*x + 6*(3*b^3*c*d -
4*b^4*e + (3*b^2*c^2*d - 4*b^3*c*e)*x)*log(c*x + b))/(c^6*x + b*c^5)
```

giac [A] time = 0.16, size = 107, normalized size = 1.19

$$\frac{\left(3\,b^{2}cd-4\,b^{3}e\right)\log\left(\left|cx+b\right|\right)}{c^{5}}+\frac{2\,c^{4}x^{3}e+3\,c^{4}dx^{2}-6\,bc^{3}x^{2}e-12\,bc^{3}dx+18\,b^{2}c^{2}xe}{6\,c^{6}}+\frac{b^{3}cd-b^{4}e}{(cx+b)c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (3*b^2*c*d - 4*b^3*e)*log(abs(c*x + b))/c^5 + 1/6*(2*c^4*x^3*e + 3*c^4*d*x^
2 - 6*b*c^3*x^2*e - 12*b*c^3*d*x + 18*b^2*c^2*x*e)/c^6 + (b^3*c*d - b^4*e)/
((c*x + b)*c^5)
```

maple [A] time = 0.06, size = 109, normalized size = 1.21

$$\frac{e\,x^{3}}{3c^{2}}-\frac{be\,x^{2}}{c^{3}}+\frac{d\,x^{2}}{2c^{2}}-\frac{b^{4}e}{(cx+b)\,c^{5}}+\frac{b^{3}d}{(cx+b)\,c^{4}}-\frac{4b^{3}e\ln(cx+b)}{c^{5}}+\frac{3b^{2}d\ln(cx+b)}{c^{4}}+\frac{3b^{2}ex}{c^{4}}-\frac{2bdx}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/3*e*x^3/c^2-1/c^3*x^2*b*e+1/2*d*x^2/c^2+3/c^4*x*b^2*e-2/c^3*x*b*d-4*b^3/c
^5*ln(c*x+b)*e+3*b^2/c^4*ln(c*x+b)*d-b^4/c^5/(c*x+b)*e+b^3/c^4/(c*x+b)*d
```

maxima [A] time = 0.93, size = 98, normalized size = 1.09

$$\frac{b^{3}cd-b^{4}e}{c^{6}x+bc^{5}}+\frac{2\,c^{2}ex^{3}+3\left(c^{2}d-2\,bce\right)x^{2}-6\left(2\,bcd-3\,b^{2}e\right)x}{6\,c^{4}}+\frac{\left(3\,b^{2}cd-4\,b^{3}e\right)\log\left(cx+b\right)}{c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (b^3*c*d - b^4*e)/(c^6*x + b*c^5) + 1/6*(2*c^2*e*x^3 + 3*(c^2*d - 2*b*c*e)*
x^2 - 6*(2*b*c*d - 3*b^2*e)*x)/c^4 + (3*b^2*c*d - 4*b^3*e)*log(c*x + b)/c^5
```

mupad [B] time = 1.03, size = 115, normalized size = 1.28

$$x^{2}\left(\frac{d}{2\,c^{2}}-\frac{b\,e}{c^{3}}\right)-x\left(\frac{b^{2}\,e}{c^{4}}+\frac{2\,b\left(\frac{d}{c^{2}}-\frac{2\,b\,e}{c^{3}}\right)}{c}\right)-\frac{\ln\left(b+c\,x\right)\,\left(4\,b^{3}\,e-3\,b^{2}\,c\,d\right)}{c^{5}}+\frac{e\,x^{3}}{3\,c^{2}}-\frac{b^{4}\,e-b^{3}\,c\,d}{c\,\left(x\,c^{5}+b\,c^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^2*(d/(2*c^2) - (b*e)/c^3) - x*((b^2*e)/c^4 + (2*b*(d/c^2 - (2*b*e)/c^3))/
c) - (log(b + c*x)*(4*b^3*e - 3*b^2*c*d))/c^5 + (e*x^3)/(3*c^2) - (b^4*e -
b^3*c*d)/(c*(b*c^4 + c^5*x))
```

sympy [A] time = 0.42, size = 92, normalized size = 1.02

$$-\frac{b^{2}\left(4be-3cd\right)\log\left(b+cx\right)}{c^{5}}+x^{2}\left(-\frac{be}{c^{3}}+\frac{d}{2c^{2}}\right)+x\left(\frac{3b^{2}e}{c^{4}}-\frac{2bd}{c^{3}}\right)+\frac{-b^{4}e+b^{3}cd}{bc^{5}+c^{6}x}+\frac{ex^{3}}{3c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] -b**2*(4*b*e - 3*c*d)*log(b + c*x)/c**5 + x**2*(-b*e/c**3 + d/(2*c**2)) + x
*(3*b**2*e/c**4 - 2*b*d/c**3) + (-b**4*e + b**3*c*d)/(b*c**5 + c**6*x) + e*
x**3/(3*c**2)
```

3.52 $\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=69

$$-\frac{b^2(cd-be)}{c^4(b+cx)}-\frac{b(2cd-3be)\log(b+cx)}{c^4}+\frac{x(cd-2be)}{c^3}+\frac{ex^2}{2c^2}$$

```
[Out] (-2*b*e+c*d)*x/c^3+1/2*e*x^2/c^2-b^2*(-b*e+c*d)/c^4/(c*x+b)-b*(-3*b*e+2*c*d
)*ln(c*x+b)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(cd-be)}{c^4(b+cx)}+\frac{x(cd-2be)}{c^3}-\frac{b(2cd-3be)\log(b+cx)}{c^4}+\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((c*d - 2*b*e)*x)/c^3 + (e*x^2)/(2*c^2) - (b^2*(c*d - b*e))/(c^4*(b + c*x))
 - (b*(2*c*d - 3*b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{cd-2be}{c^3}+\frac{ex}{c^2}-\frac{b^2(-cd+be)}{c^3(b+cx)^2}+\frac{b(-2cd+3be)}{c^3(b+cx)}\right) dx\\ &= \frac{(cd-2be)x}{c^3}+\frac{ex^2}{2c^2}-\frac{b^2(cd-be)}{c^4(b+cx)}-\frac{b(2cd-3be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 66, normalized size = 0.96

$$\frac{\frac{2b^2(be-cd)}{b+cx}+2cx(cd-2be)+2b(3be-2cd)\log(b+cx)+c^2ex^2}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (2*c*(c*d - 2*b*e)*x + c^2*e*x^2 + (2*b^2*(-(c*d) + b*e))/(b + c*x) + 2*b*(
-2*c*d + 3*b*e)*Log[b + c*x])/(2*c^4)
```

fricas [A] time = 0.58, size = 111, normalized size = 1.61

$$\frac{c^3ex^3-2\,b^2cd+2\,b^3e+\left(2\,c^3d-3\,bc^2e\right)x^2+2\left(bc^2d-2\,b^2ce\right)x-2\left(2\,b^2cd-3\,b^3e+\left(2\,bc^2d-3\,b^2ce\right)x\right)\log(c}{2\left(c^5x+bc^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(c^3*e*x^3 - 2*b^2*c*d + 2*b^3*e + (2*c^3*d - 3*b*c^2*e)*x^2 + 2*(b*c^2
*d - 2*b^2*c*e)*x - 2*(2*b^2*c*d - 3*b^3*e + (2*b*c^2*d - 3*b^2*c*e)*x)*log
(c*x + b))/(c^5*x + b*c^4)
```

giac [A] time = 0.15, size = 81, normalized size = 1.17

$$-\frac{\left(2\,bcd-3\,b^{2}e\right)\log\left(|cx+b|\right)}{c^{4}}+\frac{c^{2}x^{2}e+2\,c^{2}dx-4\,bcxe}{2\,c^{4}}-\frac{b^{2}cd-b^{3}e}{(cx+b)c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*b*c*d - 3*b^2*e)*log(abs(c*x + b))/c^4 + 1/2*(c^2*x^2*e + 2*c^2*d*x - 4
*b*c*x*e)/c^4 - (b^2*c*d - b^3*e)/((c*x + b)*c^4)
```

maple [A] time = 0.05, size = 84, normalized size = 1.22

$$\frac{e\,x^{2}}{2c^{2}}+\frac{b^{3}e}{(cx+b)\,c^{4}}-\frac{b^{2}d}{(cx+b)\,c^{3}}+\frac{3b^{2}e\ln(cx+b)}{c^{4}}-\frac{2bd\ln(cx+b)}{c^{3}}-\frac{2bex}{c^{3}}+\frac{dx}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/2*e*x^2/c^2-2/c^3*x*b*e+d*x/c^2+3*b^2/c^4*ln(c*x+b)*e-2*b/c^3*ln(c*x+b)*d
+b^3/c^4/(c*x+b)*e-b^2/c^3/(c*x+b)*d
```

maxima [A] time = 0.91, size = 75, normalized size = 1.09

$$-\frac{b^{2}cd-b^{3}e}{c^{5}x+bc^{4}}+\frac{cex^{2}+2\,(cd-2\,be)x}{2\,c^{3}}-\frac{\left(2\,bcd-3\,b^{2}e\right)\log\left(cx+b\right)}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(b^2*c*d - b^3*e)/(c^5*x + b*c^4) + 1/2*(c*e*x^2 + 2*(c*d - 2*b*e)*x)/c^3
- (2*b*c*d - 3*b^2*e)*log(c*x + b)/c^4
```

mupad [B] time = 0.06, size = 77, normalized size = 1.12

$$x\left(\frac{d}{c^{2}}-\frac{2\,b\,e}{c^{3}}\right)+\frac{e\,x^{2}}{2\,c^{2}}+\frac{b^{3}\,e-b^{2}\,c\,d}{c\,\left(x\,c^{4}+b\,c^{3}\right)}+\frac{\ln\left(b+c\,x\right)\,\left(3\,b^{2}\,e-2\,b\,c\,d\right)}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x*(d/c^2 - (2*b*e)/c^3) + (e*x^2)/(2*c^2) + (b^3*e - b^2*c*d)/(c*(b*c^3 + c
^4*x)) + (log(b + c*x)*(3*b^2*e - 2*b*c*d))/c^4
```

sympy [A] time = 0.37, size = 68, normalized size = 0.99

$$\frac{b\,(3be-2cd)\log\left(b+cx\right)}{c^{4}}+x\left(-\frac{2be}{c^{3}}+\frac{d}{c^{2}}\right)+\frac{b^{3}e-b^{2}cd}{bc^{4}+c^{5}x}+\frac{ex^{2}}{2c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] b*(3*b*e - 2*c*d)*log(b + c*x)/c**4 + x*(-2*b*e/c**3 + d/c**2) + (b**3*e -
b**2*c*d)/(b*c**4 + c**5*x) + e*x**2/(2*c**2)
```

3.53 $\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=45

$$\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}+\frac{ex}{c^2}$$

```
[Out] e*x/c^2+b*(-b*e+c*d)/c^3/(c*x+b)+(-2*b*e+c*d)*ln(c*x+b)/c^3
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}+\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*x)/c^2 + (b*(c*d - b*e))/(c^3*(b + c*x)) + ((c*d - 2*b*e)*Log[b + c*x])/
c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{e}{c^2}+\frac{b(-cd+be)}{c^2(b+cx)^2}+\frac{cd-2be}{c^2(b+cx)}\right)dx\\ &= \frac{ex}{c^2}+\frac{b(cd-be)}{c^3(b+cx)}+\frac{(cd-2be)\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{\frac{b(cd-be)}{b+cx}+(cd-2be)\log(b+cx)+cex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (c*e*x + (b*(c*d - b*e))/(b + c*x) + (c*d - 2*b*e)*Log[b + c*x])/c^3
```

fricas [A] time = 1.15, size = 69, normalized size = 1.53

$$\frac{c^2ex^2+bcex+bcd-b^2e+\left(bcd-2\,b^2e+\left(c^2d-2\,bce\right)x\right)\log\left(cx+b\right)}{c^4x+bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (c^2*e*x^2 + b*c*e*x + b*c*d - b^2*e + (b*c*d - 2*b^2*e + (c^2*d - 2*b*c*e)
*x)*log(c*x + b))/(c^4*x + b*c^3)
```

giac [A] time = 0.17, size = 51, normalized size = 1.13

$$\frac{xe}{c^2}+\frac{(cd-2\,be)\log\left(|cx+b|\right)}{c^3}+\frac{bcd-b^2e}{(cx+b)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] x*e/c^2 + (c*d - 2*b*e)*log(abs(c*x + b))/c^3 + (b*c*d - b^2*e)/((c*x + b)*
c^3)
```

maple [A] time = 0.05, size = 61, normalized size = 1.36

$$-\frac{b^2e}{(cx+b)\,c^3}+\frac{bd}{(cx+b)\,c^2}-\frac{2be\ln\left(cx+b\right)}{c^3}+\frac{d\ln\left(cx+b\right)}{c^2}+\frac{ex}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] e*x/c^2-2/c^3*ln(c*x+b)*b*e+1/c^2*ln(c*x+b)*d-b^2/c^3/(c*x+b)*e+b/c^2/(c*x+
b)*d
```

maxima [A] time = 0.83, size = 50, normalized size = 1.11

$$\frac{bcd-b^2e}{c^4x+bc^3}+\frac{ex}{c^2}+\frac{(cd-2\,be)\log\left(cx+b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (b*c*d - b^2*e)/(c^4*x + b*c^3) + e*x/c^2 + (c*d - 2*b*e)*log(c*x + b)/c^3
```

mupad [B] time = 1.03, size = 56, normalized size = 1.24

$$\frac{e\,x}{c^2}-\frac{b^2\,e-b\,c\,d}{c\,\left(x\,c^3+b\,c^2\right)}-\frac{\ln\left(b+c\,x\right)\,\left(2\,b\,e-c\,d\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (e*x)/c^2 - (b^2*e - b*c*d)/(c*(b*c^2 + c^3*x)) - (log(b + c*x)*(2*b*e - c*
d))/c^3
```

sympy [A] time = 0.29, size = 44, normalized size = 0.98

$$\frac{-b^2e+bcd}{bc^3+c^4x}+\frac{ex}{c^2}-\frac{(2be-cd)\log\left(b+cx\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b**2*e + b*c*d)/(b*c**3 + c**4*x) + e*x/c**2 - (2*b*e - c*d)*log(b + c*x)
/c**3
```

3.54 $\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=32

$$\frac{e\log(b+cx)}{c^2}-\frac{cd-be}{c^2(b+cx)}$$

```
[Out] (b*e-c*d)/c^2/(c*x+b)+e*ln(c*x+b)/c^2
```

Rubi [A] time = 0.03, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{e\log(b+cx)}{c^2}-\frac{cd-be}{c^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((c*d - b*e)/(c^2*(b + c*x))) + (e*Log[b + c*x])/c^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{cd-be}{c(b+cx)^2}+\frac{e}{c(b+cx)}\right)dx\\ &= -\frac{cd-be}{c^2(b+cx)}+\frac{e\log(b+cx)}{c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{be-cd}{c^2(b+cx)}+\frac{e\log(b+cx)}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (-(c*d) + b*e)/(c^2*(b + c*x)) + (e*Log[b + c*x])/c^2
```

fricas [A] time = 0.80, size = 39, normalized size = 1.22

$$-\frac{cd-be-(cex+be)\log\left(cx+b\right)}{c^3x+bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(c*d - b*e - (c*e*x + b*e)*log(c*x + b))/(c^3*x + b*c^2)
```

giac [**A**] time = 0.15, size = 35, normalized size = 1.09

$$\frac{e\log\left(|cx+b|\right)}{c^2}-\frac{cd-be}{(cx+b)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] e*log(abs(c*x + b))/c^2 - (c*d - b*e)/((c*x + b)*c^2)
```

maple [**A**] time = 0.05, size = 39, normalized size = 1.22

$$\frac{be}{(cx+b)\,c^2}-\frac{d}{(cx+b)\,c}+\frac{e\ln\left(cx+b\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] e*ln(c*x+b)/c^2+1/c^2/(c*x+b)*b*e-1/c/(c*x+b)*d
```

maxima [**A**] time = 0.85, size = 35, normalized size = 1.09

$$-\frac{cd-be}{c^3x+bc^2}+\frac{e\log\left(cx+b\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(c*d - b*e)/(c^3*x + b*c^2) + e*log(c*x + b)/c^2
```

mupad [**B**] time = 0.04, size = 31, normalized size = 0.97

$$\frac{b\,e-c\,d}{c^2\,\left(b+c\,x\right)}+\frac{e\,\ln\left(b+c\,x\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (b*e - c*d)/(c^2*(b + c*x)) + (e*log(b + c*x))/c^2
```

sympy [**A**] time = 0.20, size = 27, normalized size = 0.84

$$\frac{be-cd}{bc^2+c^3x}+\frac{e\log\left(b+cx\right)}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (b*e - c*d)/(b*c**2 + c**3*x) + e*log(b + c*x)/c**2
```

3.55 $\int \frac{x(d+ex)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=42

$$-\frac{d\log(b+cx)}{b^2}+\frac{d\log(x)}{b^2}+\frac{cd-be}{bc(b+cx)}$$

```
[Out] (-b*e+c*d)/b/c/(c*x+b)+d*ln(x)/b^2-d*ln(c*x+b)/b^2
```

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{d\log(b+cx)}{b^2}+\frac{d\log(x)}{b^2}+\frac{cd-be}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (c*d - b*e)/(b*c*(b + c*x)) + (d*Log[x])/b^2 - (d*Log[b + c*x])/b^2
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{d}{b^2x}+\frac{-cd+be}{b(b+cx)^2}-\frac{cd}{b^2(b+cx)}\right)dx\\ &= \frac{cd-be}{bc(b+cx)}+\frac{d\log(x)}{b^2}-\frac{d\log(b+cx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.90

$$\frac{\frac{b(cd-be)}{c(b+cx)}-d\log(b+cx)+d\log(x)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((b*(c*d - b*e))/(c*(b + c*x)) + d*Log[x] - d*Log[b + c*x])/b^2
```

fricas [A] time = 0.95, size = 61, normalized size = 1.45

$$\frac{bcd-b^2e-\left(c^2dx+bcd\right)\log\left(cx+b\right)+\left(c^2dx+bcd\right)\log(x)}{b^2c^2x+b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (b*c*d - b^2*e - (c^2*d*x + b*c*d)*log(c*x + b) + (c^2*d*x + b*c*d)*log(x))
/(b^2*c^2*x + b^3*c)
```

giac [A] time = 0.15, size = 48, normalized size = 1.14

$$-\frac{d\log\left(|cx+b|\right)}{b^2}+\frac{d\log\left(|x|\right)}{b^2}+\frac{bcd-b^2e}{(cx+b)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -d*log(abs(c*x + b))/b^2 + d*log(abs(x))/b^2 + (b*c*d - b^2*e)/((c*x + b)*b
^2*c)
```

maple [A] time = 0.05, size = 46, normalized size = 1.10

$$\frac{d}{(cx+b)\,b}+\frac{d\ln(x)}{b^2}-\frac{d\ln\left(cx+b\right)}{b^2}-\frac{e}{(cx+b)\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/c/(c*x+b)*e+1/b/(c*x+b)*d-d*ln(c*x+b)/b^2+d*ln(x)/b^2
```

maxima [A] time = 0.85, size = 43, normalized size = 1.02

$$\frac{cd-be}{bc^2x+b^2c}-\frac{d\log\left(cx+b\right)}{b^2}+\frac{d\log(x)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (c*d - b*e)/(b*c^2*x + b^2*c) - d*log(c*x + b)/b^2 + d*log(x)/b^2
```

mupad [B] time = 1.02, size = 40, normalized size = 0.95

$$-\frac{2\,d\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)}{b^2}-\frac{b\,e-c\,d}{b\,c\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - (2*d*atanh((2*c*x)/b + 1))/b^2 - (b*e - c*d)/(b*c*(b + c*x))
```

sympy [A] time = 0.29, size = 32, normalized size = 0.76

$$\frac{-be+cd}{b^2c+bc^2x}+\frac{d\left(\log\left(x\right)-\log\left(\frac{b}{c}+x\right)\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b*e + c*d)/(b**2*c + b*c**2*x) + d*(log(x) - log(b/c + x))/b**2
```

3.56 $\int \frac{d+ex}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=65

$$-\frac{\log(x)(2cd-be)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}-\frac{cd-be}{b^2(b+cx)}-\frac{d}{b^2x}$$

```
[Out] -d/b^2/x+(b*e-c*d)/b^2/(c*x+b)-(-b*e+2*c*d)*ln(x)/b^3+(-b*e+2*c*d)*ln(c*x+b
)/b^3
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$-\frac{cd-be}{b^2(b+cx)}-\frac{\log(x)(2cd-be)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}-\frac{d}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^2,x]
```

```
[Out] -(d/(b^2*x)) - (c*d - b*e)/(b^2*(b + c*x)) - ((2*c*d - b*e)*Log[x])/b^3 + (
(2*c*d - b*e)*Log[b + c*x])/b^3
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{d}{b^2x^2}+\frac{-2cd+be}{b^3x}-\frac{c(-cd+be)}{b^2(b+cx)^2}-\frac{c(-2cd+be)}{b^3(b+cx)}\right)dx\\ &= -\frac{d}{b^2x}-\frac{cd-be}{b^2(b+cx)}-\frac{(2cd-be)\log(x)}{b^3}+\frac{(2cd-be)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.86

$$\frac{\frac{b(be-cd)}{b+cx}+\log(x)(be-2cd)+(2cd-be)\log(b+cx)-\frac{bd}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((b*d)/x) + (b*(-(c*d) + b*e))/(b + c*x) + (-2*c*d + b*e)*Log[x] + (2*c*d
 - b*e)*Log[b + c*x])/b^3
```

fricas [A] time = 0.89, size = 111, normalized size = 1.71

$$-\frac{b^2d+\left(2\,bcd-b^2e\right)x-\left(\left(2\,c^2d-bce\right)x^2+\left(2\,bcd-b^2e\right)x\right)\log\left(cx+b\right)+\left(\left(2\,c^2d-bce\right)x^2+\left(2\,bcd-b^2e\right)x\right)\mathrm{lo}}{b^3cx^2+b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(b^2*d + (2*b*c*d - b^2*e)*x - ((2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*
x)*log(c*x + b) + ((2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*log(x))/(b^
3*c*x^2 + b^4*x)
```

giac [A] time = 0.17, size = 77, normalized size = 1.18

$$-\frac{(2\,cd - be)\log\left(|x|\right)}{b^3} - \frac{2\,cdx - bxe + bd}{\left(cx^2 + bx\right)b^2} + \frac{\left(2\,c^2d - bce\right)\log\left(|cx + b|\right)}{b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*c*d - b*e)*log(abs(x))/b^3 - (2*c*d*x - b*x*e + b*d)/((c*x^2 + b*x)*b^2
) + (2*c^2*d - b*c*e)*log(abs(c*x + b))/(b^3*c)
```

maple [A] time = 0.05, size = 78, normalized size = 1.20

$$\frac{e}{(cx+b)\,b} - \frac{cd}{(cx+b)\,b^2} + \frac{e\ln(x)}{b^2} - \frac{e\ln(cx+b)}{b^2} - \frac{2cd\ln(x)}{b^3} + \frac{2cd\ln(cx+b)}{b^3} - \frac{d}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^2*ln(c*x+b)*e+2/b^3*ln(c*x+b)*c*d+1/b/(c*x+b)*e-1/b^2/(c*x+b)*c*d-1/b^
2*d/x+1/b^2*ln(x)*e-2/b^3*ln(x)*c*d
```

maxima [A] time = 0.92, size = 69, normalized size = 1.06

$$-\frac{bd + (2\,cd - be)x}{b^2cx^2 + b^3x} + \frac{(2\,cd - be)\log(cx + b)}{b^3} - \frac{(2\,cd - be)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(b*d + (2*c*d - b*e)*x)/(b^2*c*x^2 + b^3*x) + (2*c*d - b*e)*log(c*x + b)/b
^3 - (2*c*d - b*e)*log(x)/b^3
```

mupad [B] time = 0.09, size = 57, normalized size = 0.88

$$-\frac{\frac{d}{b} - \frac{x\,(b\,e-2\,c\,d)}{b^2}}{c\,x^2 + b\,x} - \frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b} + 1\right)\,(b\,e - 2\,c\,d)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^2,x)
```

```
[Out] - (d/b - (x*(b*e - 2*c*d))/b^2)/(b*x + c*x^2) - (2*atanh((2*c*x)/b + 1)*(b*
e - 2*c*d))/b^3
```

sympy [B] time = 0.48, size = 128, normalized size = 1.97

$$\frac{-bd + x\,(be - 2cd)}{b^3x + b^2cx^2} + \frac{(be - 2cd)\log\left(x + \frac{b^2e - 2bcd - b(be - 2cd)}{2bce - 4c^2d}\right)}{b^3} - \frac{(be - 2cd)\log\left(x + \frac{b^2e - 2bcd + b(be - 2cd)}{2bce - 4c^2d}\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-b*d + x*(b*e - 2*c*d))/(b**3*x + b**2*c*x**2) + (b*e - 2*c*d)*log(x + (b*
*2*e - 2*b*c*d - b*(b*e - 2*c*d))/(2*b*c*e - 4*c**2*d))/b**3 - (b*e - 2*c*d
)*log(x + (b**2*e - 2*b*c*d + b*(b*e - 2*c*d))/(2*b*c*e - 4*c**2*d))/b**3
```

3.57 $\int \frac{d+ex}{x\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=85

$$\frac{c\log(x)(3cd-2be)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}+\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}-\frac{d}{2b^2x^2}$$

```
[Out] -1/2*d/b^2/x^2+(-b*e+2*c*d)/b^3/x+c*(-b*e+c*d)/b^3/(c*x+b)+c*(-2*b*e+3*c*d)
*ln(x)/b^4-c*(-2*b*e+3*c*d)*ln(c*x+b)/b^4
```

Rubi [A] time = 0.08, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}+\frac{c\log(x)(3cd-2be)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}-\frac{d}{2b^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)^2),x]
```

```
[Out] -d/(2*b^2*x^2) + (2*c*d - b*e)/(b^3*x) + (c*(c*d - b*e))/(b^3*(b + c*x)) +
(c*(3*c*d - 2*b*e)*Log[x])/b^4 - (c*(3*c*d - 2*b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)^2}\,dx&=\int \left(\frac{d}{b^2x^3}+\frac{-2cd+be}{b^3x^2}-\frac{c(-3cd+2be)}{b^4x}+\frac{c^2(-cd+be)}{b^3(b+cx)^2}+\frac{c^2(-3cd+2be)}{b^4(b+cx)}\right)dx\\&=-\frac{d}{2b^2x^2}+\frac{2cd-be}{b^3x}+\frac{c(cd-be)}{b^3(b+cx)}+\frac{c(3cd-2be)\log(x)}{b^4}-\frac{c(3cd-2be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 85, normalized size = 1.00

$$\frac{-\frac{b\left(b^2(d+2ex)+bcx(4ex-3d)-6c^2dx^2\right)}{x^2(b+cx)}+2c\log(x)(3cd-2be)+2c(2be-3cd)\log(b+cx)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)^2),x]
```

```
[Out] (-((b*(-6*c^2*d*x^2 + b^2*(d + 2*e*x) + b*c*x*(-3*d + 4*e*x)))/(x^2*(b + c*
x))) + 2*c*(3*c*d - 2*b*e)*Log[x] + 2*c*(-3*c*d + 2*b*e)*Log[b + c*x])/(2*b
^4)
```

fricas [A] time = 0.84, size = 151, normalized size = 1.78

$$-\frac{b^3d-2\left(3\,bc^2d-2\,b^2ce\right)x^2-\left(3\,b^2cd-2\,b^3e\right)x+2\,\Big(\left(3\,c^3d-2\,bc^2e\right)x^3+\left(3\,bc^2d-2\,b^2ce\right)x^2\Big)\log\left(cx+b\right)-2}{2\left(b^4cx^3+b^5x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*d - 2*(3*b*c^2*d - 2*b^2*c*e)*x^2 - (3*b^2*c*d - 2*b^3*e)*x + 2*(
(3*c^3*d - 2*b*c^2*e)*x^3 + (3*b*c^2*d - 2*b^2*c*e)*x^2)*log(c*x + b) - 2*(
(3*c^3*d - 2*b*c^2*e)*x^3 + (3*b*c^2*d - 2*b^2*c*e)*x^2)*log(x))/(b^4*c*x^3
 + b^5*x^2)
```

giac [A] time = 0.16, size = 111, normalized size = 1.31

$$\frac{\left(3\,c^{2}d-2\,bce\right)\log\left(|x|\right)}{b^{4}}-\frac{\left(3\,c^{3}d-2\,bc^{2}e\right)\log\left(|cx+b|\right)}{b^{4}c}-\frac{b^{3}d-2\left(3\,bc^{2}d-2\,b^{2}ce\right)x^{2}-\left(3\,b^{2}cd-2\,b^{3}e\right)x}{2\,(cx+b)b^{4}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (3*c^2*d - 2*b*c*e)*log(abs(x))/b^4 - (3*c^3*d - 2*b*c^2*e)*log(abs(c*x + b
))/(b^4*c) - 1/2*(b^3*d - 2*(3*b*c^2*d - 2*b^2*c*e)*x^2 - (3*b^2*c*d - 2*b^
3*e)*x)/((c*x + b)*b^4*x^2)
```

maple [A] time = 0.06, size = 107, normalized size = 1.26

$$-\frac{ce}{(cx+b)\,b^{2}}+\frac{c^{2}d}{(cx+b)\,b^{3}}-\frac{2ce\ln(x)}{b^{3}}+\frac{2ce\ln\left(cx+b\right)}{b^{3}}+\frac{3c^{2}d\ln(x)}{b^{4}}-\frac{3c^{2}d\ln\left(cx+b\right)}{b^{4}}-\frac{e}{b^{2}x}+\frac{2cd}{b^{3}x}-\frac{d}{2b^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x)^2,x)
```

```
[Out] 2*c/b^3*ln(c*x+b)*e-3*c^2/b^4*ln(c*x+b)*d-c/b^2/(c*x+b)*e+c^2/b^3/(c*x+b)*d
-1/2*d/b^2/x^2-1/b^2/x*e+2/b^3/x*c*d-2*c/b^3*ln(x)*e+3*c^2/b^4*ln(x)*d
```

maxima [A] time = 0.90, size = 100, normalized size = 1.18

$$-\frac{b^{2}d-2\left(3\,c^{2}d-2\,bce\right)x^{2}-\left(3\,bcd-2\,b^{2}e\right)x}{2\left(b^{3}cx^{3}+b^{4}x^{2}\right)}-\frac{\left(3\,c^{2}d-2\,bce\right)\log\left(cx+b\right)}{b^{4}}+\frac{\left(3\,c^{2}d-2\,bce\right)\log(x)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*d - 2*(3*c^2*d - 2*b*c*e)*x^2 - (3*b*c*d - 2*b^2*e)*x)/(b^3*c*x^3
 + b^4*x^2) - (3*c^2*d - 2*b*c*e)*log(c*x + b)/b^4 + (3*c^2*d - 2*b*c*e)*lo
g(x)/b^4
```

mupad [B] time = 0.11, size = 105, normalized size = 1.24

$$-\frac{\frac{d}{2\,b}+\frac{x\,(2\,b\,e-3\,c\,d)}{2\,b^{2}}+\frac{c\,x^{2}\,(2\,b\,e-3\,c\,d)}{b^{3}}}{c\,x^{3}+b\,x^{2}}-\frac{2\,c\,\mathrm{atanh}\left(\frac{c\,(2\,b\,e-3\,c\,d)\,(b+2\,c\,x)}{b\,\left(3\,c^{2}\,d-2\,b\,c\,e\right)}\right)\,(2\,b\,e-3\,c\,d)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)^2),x)
```

```
[Out] - (d/(2*b) + (x*(2*b*e - 3*c*d))/(2*b^2) + (c*x^2*(2*b*e - 3*c*d))/b^3)/(b*
x^2 + c*x^3) - (2*c*atanh((c*(2*b*e - 3*c*d)*(b + 2*c*x))/(b*(3*c^2*d - 2*b
*c*e)))*(2*b*e - 3*c*d))/b^4
```

sympy **[B]** time = 0.59, size = 184, normalized size = 2.16

$$\frac{-b^2d + x^2\left(-4bce + 6c^2d\right) + x\left(-2b^2e + 3bcd\right)}{2b^4x^2 + 2b^3cx^3} - \frac{c\left(2be - 3cd\right)\log\left(x + \frac{2b^2ce - 3bc^2d - bc(2be - 3cd)}{4bc^2e - 6c^3d}\right)}{b^4} + c\left(2be - 3cd\right)\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x)**2,x)
```

```
[Out] (-b**2*d + x**2*(-4*b*c*e + 6*c**2*d) + x*(-2*b**2*e + 3*b*c*d))/(2*b**4*x*
*2 + 2*b**3*c*x**3) - c*(2*b*e - 3*c*d)*log(x + (2*b**2*c*e - 3*b*c**2*d -
b*c*(2*b*e - 3*c*d))/(4*b*c**2*e - 6*c**3*d))/b**4 + c*(2*b*e - 3*c*d)*log(
x + (2*b**2*c*e - 3*b*c**2*d + b*c*(2*b*e - 3*c*d))/(4*b*c**2*e - 6*c**3*d)
)/b**4
```

3.58 $\int \frac{d+ex}{x^2\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=113

$$-\frac{c^2\log(x)(4cd-3be)}{b^5}+\frac{c^2(4cd-3be)\log(b+cx)}{b^5}-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c(3cd-2be)}{b^4x}+\frac{2cd-be}{2b^3x^2}-\frac{d}{3b^2x^3}$$

```
[Out] -1/3*d/b^2/x^3+1/2*(-b*e+2*c*d)/b^3/x^2-c*(-2*b*e+3*c*d)/b^4/x-c^2*(-b*e+c*
d)/b^4/(c*x+b)-c^2*(-3*b*e+4*c*d)*ln(x)/b^5+c^2*(-3*b*e+4*c*d)*ln(c*x+b)/b^
5
```

Rubi [A] time = 0.10, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c^2\log(x)(4cd-3be)}{b^5}+\frac{c^2(4cd-3be)\log(b+cx)}{b^5}+\frac{2cd-be}{2b^3x^2}-\frac{c(3cd-2be)}{b^4x}-\frac{d}{3b^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(b*x + c*x^2)^2),x]
```

```
[Out] -d/(3*b^2*x^3) + (2*c*d - b*e)/(2*b^3*x^2) - (c*(3*c*d - 2*b*e))/(b^4*x) -
(c^2*(c*d - b*e))/(b^4*(b + c*x)) - (c^2*(4*c*d - 3*b*e)*Log[x])/b^5 + (c^2
*(4*c*d - 3*b*e)*Log[b + c*x])/b^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{d}{b^2x^4}+\frac{-2cd+be}{b^3x^3}-\frac{c(-3cd+2be)}{b^4x^2}+\frac{c^2(-4cd+3be)}{b^5x}-\frac{c^3(-cd+be)}{b^4(b+cx)^2}-\frac{c^3(-4cd+3be}{b^5(b+cx)}\right.\\ &= -\frac{d}{3b^2x^3}+\frac{2cd-be}{2b^3x^2}-\frac{c(3cd-2be)}{b^4x}-\frac{c^2(cd-be)}{b^4(b+cx)}-\frac{c^2(4cd-3be)\log(x)}{b^5}+\frac{c^2(4cd-3be)\,\mathrm{lo}}{b^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.94

$$\frac{-\frac{2b^3d}{x^3}-\frac{3b^2(be-2cd)}{x^2}+\frac{6bc^2(be-cd)}{b+cx}+6c^2\log(x)(3be-4cd)+6c^2(4cd-3be)\log(b+cx)+\frac{6bc(2be-3cd)}{x}}{6b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(b*x + c*x^2)^2),x]
```

```
[Out] ((-2*b^3*d)/x^3 - (3*b^2*(-2*c*d + b*e))/x^2 + (6*b*c*(-3*c*d + 2*b*e))/x +
 (6*b*c^2*(-(c*d) + b*e))/(b + c*x) + 6*c^2*(-4*c*d + 3*b*e)*Log[x] + 6*c^2
*(4*c*d - 3*b*e)*Log[b + c*x])/(6*b^5)
```

fricas [A] time = 0.86, size = 180, normalized size = 1.59

$$-\frac{2\,b^4d+6\left(4\,bc^3d-3\,b^2c^2e\right)x^3+3\left(4\,b^2c^2d-3\,b^3ce\right)x^2-\left(4\,b^3cd-3\,b^4e\right)x-6\left(\left(4\,c^4d-3\,bc^3e\right)x^4+\left(4\,bc^3d-3\,b\right.\right.}{6\left(b^5cx^4+b^6x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(2*b^4*d + 6*(4*b*c^3*d - 3*b^2*c^2*e)*x^3 + 3*(4*b^2*c^2*d - 3*b^3*c*
e)*x^2 - (4*b^3*c*d - 3*b^4*e)*x - 6*((4*c^4*d - 3*b*c^3*e)*x^4 + (4*b*c^3*
d - 3*b^2*c^2*e)*x^3)*log(c*x + b) + 6*((4*c^4*d - 3*b*c^3*e)*x^4 + (4*b*c^
3*d - 3*b^2*c^2*e)*x^3)*log(x))/(b^5*c*x^4 + b^6*x^3)
```

giac [**A**] time = 0.15, size = 139, normalized size = 1.23

$$-\frac{\left(4\,c^{3}d-3\,bc^{2}e\right)\log\left(|x|\right)}{b^{5}}+\frac{\left(4\,c^{4}d-3\,bc^{3}e\right)\log\left(|cx+b|\right)}{b^{5}c}-\frac{2\,b^{4}d+6\left(4\,bc^{3}d-3\,b^{2}c^{2}e\right)x^{3}+3\left(4\,b^{2}c^{2}d-3\,b^{3}ce\right)}{6\,(cx+b)b^{5}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(4*c^3*d - 3*b*c^2*e)*log(abs(x))/b^5 + (4*c^4*d - 3*b*c^3*e)*log(abs(c*x
 + b))/(b^5*c) - 1/6*(2*b^4*d + 6*(4*b*c^3*d - 3*b^2*c^2*e)*x^3 + 3*(4*b^2*c
^2*d - 3*b^3*c*e)*x^2 - (4*b^3*c*d - 3*b^4*e)*x)/((c*x + b)*b^5*x^3)
```

maple [**A**] time = 0.12, size = 134, normalized size = 1.19

$$\frac{c^{2}e}{(cx+b)\,b^{3}}-\frac{c^{3}d}{(cx+b)\,b^{4}}+\frac{3c^{2}e\ln(x)}{b^{4}}-\frac{3c^{2}e\ln\left(cx+b\right)}{b^{4}}-\frac{4c^{3}d\ln(x)}{b^{5}}+\frac{4c^{3}d\ln\left(cx+b\right)}{b^{5}}+\frac{2ce}{b^{3}x}-\frac{3c^{2}d}{b^{4}x}-\frac{e}{2b^{2}x^{2}}+\frac{cd}{b^{3}x^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x)^2,x)
```

```
[Out] -3*c^2/b^4*ln(c*x+b)*e+4*c^3/b^5*ln(c*x+b)*d+c^2/b^3/(c*x+b)*e-c^3/b^4/(c*x
+b)*d-1/3*d/b^2/x^3-1/2/b^2/x^2*e+1/b^3/x^2*c*d+3*c^2/b^4*ln(x)*e-4*c^3/b^5
*ln(x)*d+2*c/b^3/x*e-3*c^2/b^4/x*d
```

maxima [**A**] time = 0.97, size = 129, normalized size = 1.14

$$-\frac{2\,b^{3}d+6\left(4\,c^{3}d-3\,bc^{2}e\right)x^{3}+3\left(4\,bc^{2}d-3\,b^{2}ce\right)x^{2}-\left(4\,b^{2}cd-3\,b^{3}e\right)x}{6\left(b^{4}cx^{4}+b^{5}x^{3}\right)}+\frac{\left(4\,c^{3}d-3\,bc^{2}e\right)\log\left(cx+b\right)}{b^{5}}-(4\,c^{3}d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^3*d + 6*(4*c^3*d - 3*b*c^2*e)*x^3 + 3*(4*b*c^2*d - 3*b^2*c*e)*x^2
 - (4*b^2*c*d - 3*b^3*e)*x)/(b^4*c*x^4 + b^5*x^3) + (4*c^3*d - 3*b*c^2*e)*l
og(c*x + b)/b^5 - (4*c^3*d - 3*b*c^2*e)*log(x)/b^5
```

mupad [**B**] time = 1.08, size = 132, normalized size = 1.17

$$\frac{2\,c^{2}\,\mathrm{atanh}\left(\frac{c^{2}\,(3\,b\,e-4\,c\,d)\,(b+2\,c\,x)}{b\,\left(4\,c^{3}\,d-3\,b\,c^{2}\,e\right)}\right)\,(3\,b\,e-4\,c\,d)}{b^{5}}-\frac{\frac{d}{3\,b}+\frac{x\,(3\,b\,e-4\,c\,d)}{6\,b^{2}}-\frac{c\,x^{2}\,(3\,b\,e-4\,c\,d)}{2\,b^{3}}-\frac{c^{2}\,x^{3}\,(3\,b\,e-4\,c\,d)}{b^{4}}}{c\,x^{4}+b\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(b*x + c*x^2)^2),x)
```

```
[Out] (2*c^2*atanh((c^2*(3*b*e - 4*c*d)*(b + 2*c*x))/(b*(4*c^3*d - 3*b*c^2*e)))*(
3*b*e - 4*c*d))/b^5 - (d/(3*b) + (x*(3*b*e - 4*c*d))/(6*b^2) - (c*x^2*(3*b*
e - 4*c*d))/(2*b^3) - (c^2*x^3*(3*b*e - 4*c*d))/b^4)/(b*x^3 + c*x^4)
```

sympy [**B**] time = 0.66, size = 219, normalized size = 1.94

$$\frac{-2b^3d + x^3\left(18bc^2e - 24c^3d\right) + x^2\left(9b^2ce - 12bc^2d\right) + x\left(-3b^3e + 4b^2cd\right)}{6b^5x^3 + 6b^4cx^4} + \frac{c^2\left(3be - 4cd\right)\log\left(x + \frac{3b^2c^2e - 4bc^3d - bc^2(3}{6bc^3e - 8c^4d}\right.}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x)**2,x)
```

```
[Out] (-2*b**3*d + x**3*(18*b*c**2*e - 24*c**3*d) + x**2*(9*b**2*c*e - 12*b*c**2*
d) + x*(-3*b**3*e + 4*b**2*c*d))/(6*b**5*x**3 + 6*b**4*c*x**4) + c**2*(3*b*
e - 4*c*d)*log(x + (3*b**2*c**2*e - 4*b*c**3*d - b*c**2*(3*b*e - 4*c*d))/(6
*b*c**3*e - 8*c**4*d))/b**5 - c**2*(3*b*e - 4*c*d)*log(x + (3*b**2*c**2*e -
 4*b*c**3*d + b*c**2*(3*b*e - 4*c*d))/(6*b*c**3*e - 8*c**4*d))/b**5
```

3.59 $\int \frac{x^6(d+ex)}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=94

$$\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}-\frac{3b(cd-2be)\log(b+cx)}{c^5}+\frac{x(cd-3be)}{c^4}+\frac{ex^2}{2c^3}$$

```
[Out] (-3*b*e+c*d)*x/c^4+1/2*e*x^2/c^3+1/2*b^3*(-b*e+c*d)/c^5/(c*x+b)^2-b^2*(-4*b
*e+3*c*d)/c^5/(c*x+b)-3*b*(-2*b*e+c*d)*ln(c*x+b)/c^5
```

Rubi [A] time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}+\frac{x(cd-3be)}{c^4}-\frac{3b(cd-2be)\log(b+cx)}{c^5}+\frac{ex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^6*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((c*d - 3*b*e)*x)/c^4 + (e*x^2)/(2*c^3) + (b^3*(c*d - b*e))/(2*c^5*(b + c*x
)^2) - (b^2*(3*c*d - 4*b*e))/(c^5*(b + c*x)) - (3*b*(c*d - 2*b*e)*Log[b + c
*x])/c^5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^6(d+ex)}{\left(bx+cx^2\right)^3} \, dx &= \int \left(\frac{cd-3be}{c^4}+\frac{ex}{c^3}+\frac{b^3(-cd+be)}{c^4(b+cx)^3}-\frac{b^2(-3cd+4be)}{c^4(b+cx)^2}+\frac{3b(-cd+2be)}{c^4(b+cx)}\right) dx\\ &= \frac{(cd-3be)x}{c^4}+\frac{ex^2}{2c^3}+\frac{b^3(cd-be)}{2c^5(b+cx)^2}-\frac{b^2(3cd-4be)}{c^5(b+cx)}-\frac{3b(cd-2be)\log(b+cx)}{c^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.91

$$\frac{\frac{b^3(cd-be)}{(b+cx)^2}+\frac{2b^2(4be-3cd)}{b+cx}+2cx(cd-3be)+6b(2be-cd)\log(b+cx)+c^2ex^2}{2c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^6*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (2*c*(c*d - 3*b*e)*x + c^2*e*x^2 + (b^3*(c*d - b*e))/(b + c*x)^2 + (2*b^2*(
-3*c*d + 4*b*e))/(b + c*x) + 6*b*(-(c*d) + 2*b*e)*Log[b + c*x])/(2*c^5)
```

fricas [A] time = 0.96, size = 167, normalized size = 1.78

$$\frac{c^4ex^4-5\,b^3cd+7\,b^4e+2\left(c^4d-2\,bc^3e\right)x^3+\left(4\,bc^3d-11\,b^2c^2e\right)x^2-2\left(2\,b^2c^2d-b^3ce\right)x-6\,\Big(b^3cd-2\,b^4e+\Big(bc}{2\left(c^7x^2+2\,bc^6x+b^2c^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(c^4*e*x^4 - 5*b^3*c*d + 7*b^4*e + 2*(c^4*d - 2*b*c^3*e)*x^3 + (4*b*c^3
*d - 11*b^2*c^2*e)*x^2 - 2*(2*b^2*c^2*d - b^3*c*e)*x - 6*(b^3*c*d - 2*b^4*e
 + (b*c^3*d - 2*b^2*c^2*e)*x^2 + 2*(b^2*c^2*d - 2*b^3*c*e)*x)*log(c*x + b))
/(c^7*x^2 + 2*b*c^6*x + b^2*c^5)
```

giac [A] time = 0.15, size = 104, normalized size = 1.11

$$-\frac{3\left(bcd-2\,b^2e\right)\log\left(|cx+b|\right)}{c^5}+\frac{c^3x^2e+2\,c^3dx-6\,bc^2xe}{2\,c^6}-\frac{5\,b^3cd-7\,b^4e+2\left(3\,b^2c^2d-4\,b^3ce\right)x}{2\,(cx+b)^2c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -3*(b*c*d - 2*b^2*e)*log(abs(c*x + b))/c^5 + 1/2*(c^3*x^2*e + 2*c^3*d*x - 6
*b*c^2*x*e)/c^6 - 1/2*(5*b^3*c*d - 7*b^4*e + 2*(3*b^2*c^2*d - 4*b^3*c*e)*x)
/((c*x + b)^2*c^5)
```

maple [A] time = 0.07, size = 117, normalized size = 1.24

$$-\frac{b^4e}{2\,(cx+b)^2\,c^5}+\frac{b^3d}{2\,(cx+b)^2\,c^4}+\frac{e\,x^2}{2c^3}+\frac{4b^3e}{(cx+b)\,c^5}-\frac{3b^2d}{(cx+b)\,c^4}+\frac{6b^2e\ln\left(cx+b\right)}{c^5}-\frac{3bd\ln\left(cx+b\right)}{c^4}-\frac{3bex}{c^4}+\frac{dx}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] 1/2*e*x^2/c^3-3/c^4*x*b*e+1/c^3*x*d+6*b^2/c^5*ln(c*x+b)*e-3*b/c^4*ln(c*x+b)
*d-1/2*b^4/c^5/(c*x+b)^2*e+1/2*b^3/c^4/(c*x+b)^2*d+4*b^3/c^5/(c*x+b)*e-3*b^
2/c^4/(c*x+b)*d
```

maxima [A] time = 0.81, size = 106, normalized size = 1.13

$$-\frac{5\,b^3cd-7\,b^4e+2\left(3\,b^2c^2d-4\,b^3ce\right)x}{2\left(c^7x^2+2\,bc^6x+b^2c^5\right)}+\frac{cex^2+2\,(cd-3\,be)x}{2\,c^4}-\frac{3\left(bcd-2\,b^2e\right)\log\left(cx+b\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*b^3*c*d - 7*b^4*e + 2*(3*b^2*c^2*d - 4*b^3*c*e)*x)/(c^7*x^2 + 2*b*c
^6*x + b^2*c^5) + 1/2*(c*e*x^2 + 2*(c*d - 3*b*e)*x)/c^4 - 3*(b*c*d - 2*b^2*
e)*log(c*x + b)/c^5
```

mupad [B] time = 1.04, size = 108, normalized size = 1.15

$$x\left(\frac{d}{c^3}-\frac{3\,b\,e}{c^4}\right)+\frac{x\left(4\,b^3\,e-3\,b^2\,c\,d\right)+\frac{7\,b^4\,e-5\,b^3\,c\,d}{2\,c}}{b^2\,c^4+2\,b\,c^5\,x+c^6\,x^2}+\frac{e\,x^2}{2\,c^3}+\frac{\ln\left(b+c\,x\right)\,\left(6\,b^2\,e-3\,b\,c\,d\right)}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^6*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] x*(d/c^3 - (3*b*e)/c^4) + (x*(4*b^3*e - 3*b^2*c*d) + (7*b^4*e - 5*b^3*c*d)/
(2*c))/(b^2*c^4 + c^6*x^2 + 2*b*c^5*x) + (e*x^2)/(2*c^3) + (log(b + c*x)*(6
*b^2*e - 3*b*c*d))/c^5
```

sympy [**A**] time = 0.68, size = 107, normalized size = 1.14

$$\frac{3b\left(2be-cd\right)\log\left(b+cx\right)}{c^{5}}+x\left(-\frac{3be}{c^{4}}+\frac{d}{c^{3}}\right)+\frac{7b^{4}e-5b^{3}cd+x\left(8b^{3}ce-6b^{2}c^{2}d\right)}{2b^{2}c^{5}+4bc^{6}x+2c^{7}x^{2}}+\frac{ex^{2}}{2c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] 3*b*(2*b*e - c*d)*log(b + c*x)/c**5 + x*(-3*b*e/c**4 + d/c**3) + (7*b**4*e
- 5*b**3*c*d + x*(8*b**3*c*e - 6*b**2*c**2*d))/(2*b**2*c**5 + 4*b*c**6*x +
2*c**7*x**2) + e*x**2/(2*c**3)
```

3.60 $\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=71

$$-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

```
[Out] e*x/c^3-1/2*b^2*(-b*e+c*d)/c^4/(c*x+b)^2+b*(-3*b*e+2*c*d)/c^4/(c*x+b)+(-3*b
*e+c*d)*ln(c*x+b)/c^4
```

Rubi [A] time = 0.06, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (e*x)/c^3 - (b^2*(c*d - b*e))/(2*c^4*(b + c*x)^2) + (b*(2*c*d - 3*b*e))/(c^
4*(b + c*x)) + ((c*d - 3*b*e)*Log[b + c*x])/c^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{e}{c^3}-\frac{b^2(-cd+be)}{c^3(b+cx)^3}+\frac{b(-2cd+3be)}{c^3(b+cx)^2}+\frac{cd-3be}{c^3(b+cx)}\right)dx\\ &= \frac{ex}{c^3}-\frac{b^2(cd-be)}{2c^4(b+cx)^2}+\frac{b(2cd-3be)}{c^4(b+cx)}+\frac{(cd-3be)\log(b+cx)}{c^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 1.06

$$\frac{2bcd-3b^2e}{c^4(b+cx)}+\frac{b^3e-b^2cd}{2c^4(b+cx)^2}+\frac{(cd-3be)\log(b+cx)}{c^4}+\frac{ex}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (e*x)/c^3 + (-(b^2*c*d) + b^3*e)/(2*c^4*(b + c*x)^2) + (2*b*c*d - 3*b^2*e)/
(c^4*(b + c*x)) + ((c*d - 3*b*e)*Log[b + c*x])/c^4
```

fricas [A] time = 0.56, size = 131, normalized size = 1.85

$$\frac{2\,c^3ex^3+4\,bc^2ex^2+3\,b^2cd-5\,b^3e+4\left(bc^2d-b^2ce\right)x+2\left(b^2cd-3\,b^3e+\left(c^3d-3\,bc^2e\right)x^2+2\left(bc^2d-3\,b^2ce\right)x\right)\mathrm{lc}}{2\left(c^6x^2+2\,bc^5x+b^2c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*c^3*e*x^3 + 4*b*c^2*e*x^2 + 3*b^2*c*d - 5*b^3*e + 4*(b*c^2*d - b^2*c
*e)*x + 2*(b^2*c*d - 3*b^3*e + (c^3*d - 3*b*c^2*e)*x^2 + 2*(b*c^2*d - 3*b^2
*c*e)*x)*log(c*x + b))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)
```

giac [A] time = 0.19, size = 74, normalized size = 1.04

$$\frac{xe}{c^3} + \frac{(cd-3\,be)\log(|cx+b|)}{c^4} + \frac{3\,b^2cd - 5\,b^3e + 2\left(2\,bc^2d - 3\,b^2ce\right)x}{2\,(cx+b)^2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] x*e/c^3 + (c*d - 3*b*e)*log(abs(c*x + b))/c^4 + 1/2*(3*b^2*c*d - 5*b^3*e +
2*(2*b*c^2*d - 3*b^2*c*e)*x)/((c*x + b)^2*c^4)
```

maple [A] time = 0.05, size = 94, normalized size = 1.32

$$\frac{b^3e}{2\,(cx+b)^2\,c^4} - \frac{b^2d}{2\,(cx+b)^2\,c^3} - \frac{3b^2e}{(cx+b)\,c^4} + \frac{2bd}{(cx+b)\,c^3} - \frac{3be\ln(cx+b)}{c^4} + \frac{d\ln(cx+b)}{c^3} + \frac{ex}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] e*x/c^3-3/c^4*ln(c*x+b)*b*e+1/c^3*ln(c*x+b)*d+1/2*b^3/c^4/(c*x+b)^2*e-1/2*b
^2/c^3/(c*x+b)^2*d-3*b^2/c^4/(c*x+b)*e+2*b/c^3/(c*x+b)*d
```

maxima [A] time = 0.93, size = 83, normalized size = 1.17

$$\frac{3\,b^2cd - 5\,b^3e + 2\left(2\,bc^2d - 3\,b^2ce\right)x}{2\left(c^6x^2 + 2\,bc^5x + b^2c^4\right)} + \frac{ex}{c^3} + \frac{(cd-3\,be)\log(cx+b)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(3*b^2*c*d - 5*b^3*e + 2*(2*b*c^2*d - 3*b^2*c*e)*x)/(c^6*x^2 + 2*b*c^5*
x + b^2*c^4) + e*x/c^3 + (c*d - 3*b*e)*log(c*x + b)/c^4
```

mupad [B] time = 1.08, size = 87, normalized size = 1.23

$$\frac{e\,x}{c^3} - \frac{\ln(b+c\,x)\,(3\,b\,e - c\,d)}{c^4} - \frac{x\left(3\,b^2\,e - 2\,b\,c\,d\right) + \frac{5\,b^3\,e - 3\,b^2\,c\,d}{2\,c}}{b^2\,c^3 + 2\,b\,c^4\,x + c^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (e*x)/c^3 - (log(b + c*x)*(3*b*e - c*d))/c^4 - (x*(3*b^2*e - 2*b*c*d) + (5*
b^3*e - 3*b^2*c*d)/(2*c))/(b^2*c^3 + c^5*x^2 + 2*b*c^4*x)
```

sympy [A] time = 0.55, size = 83, normalized size = 1.17

$$\frac{-5b^3e + 3b^2cd + x\left(-6b^2ce + 4bc^2d\right)}{2b^2c^4 + 4bc^5x + 2c^6x^2} + \frac{ex}{c^3} - \frac{(3be-cd)\log(b+cx)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-5*b**3*e + 3*b**2*c*d + x*(-6*b**2*c*e + 4*b*c**2*d))/(2*b**2*c**4 + 4*b*
c**5*x + 2*c**6*x**2) + e*x/c**3 - (3*b*e - c*d)*log(b + c*x)/c**4
```

3.61 $\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=55

$$-\frac{cd-2be}{c^3(b+cx)}+\frac{b(cd-be)}{2c^3(b+cx)^2}+\frac{e\log(b+cx)}{c^3}$$

```
[Out] 1/2*b*(-b*e+c*d)/c^3/(c*x+b)^2+(2*b*e-c*d)/c^3/(c*x+b)+e*ln(c*x+b)/c^3
```

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{cd-2be}{c^3(b+cx)}+\frac{b(cd-be)}{2c^3(b+cx)^2}+\frac{e\log(b+cx)}{c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (b*(c*d - b*e))/(2*c^3*(b + c*x)^2) - (c*d - 2*b*e)/(c^3*(b + c*x)) + (e*Lo
g[b + c*x])/c^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{b(-cd+be)}{c^2(b+cx)^3}+\frac{cd-2be}{c^2(b+cx)^2}+\frac{e}{c^2(b+cx)}\right)dx\\ &= \frac{b(cd-be)}{2c^3(b+cx)^2}-\frac{cd-2be}{c^3(b+cx)}+\frac{e\log(b+cx)}{c^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.98

$$\frac{3b^2e-bc(d-4ex)+2e(b+cx)^2\log(b+cx)-2c^2dx}{2c^3(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*b^2*e - 2*c^2*d*x - b*c*(d - 4*e*x) + 2*e*(b + c*x)^2*Log[b + c*x])/(2*c
^3*(b + c*x)^2)
```

fricas [A] time = 1.00, size = 79, normalized size = 1.44

$$-\frac{bcd-3\,b^2e+2\left(c^2d-2\,bce\right)x-2\left(c^2ex^2+2\,bcex+b^2e\right)\log\left(cx+b\right)}{2\left(c^5x^2+2\,bc^4x+b^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b*c*d - 3*b^2*e + 2*(c^2*d - 2*b*c*e)*x - 2*(c^2*e*x^2 + 2*b*c*e*x +
b^2*e)*log(c*x + b))/(c^5*x^2 + 2*b*c^4*x + b^2*c^3)
```

giac [A] time = 0.15, size = 55, normalized size = 1.00

$$\frac{e\log\left(|cx+b|\right)}{c^3}-\frac{2\,(cd-2\,be)x+\frac{bcd-3\,b^2e}{c}}{2\,(cx+b)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] e*log(abs(c*x + b))/c^3 - 1/2*(2*(c*d - 2*b*e)*x + (b*c*d - 3*b^2*e)/c)/((c
*x + b)^2*c^2)
```

maple [A] time = 0.05, size = 70, normalized size = 1.27

$$-\frac{b^2e}{2\,(cx+b)^2\,c^3}+\frac{bd}{2\,(cx+b)^2\,c^2}+\frac{2be}{(cx+b)\,c^3}-\frac{d}{(cx+b)\,c^2}+\frac{e\ln\left(cx+b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] e*ln(c*x+b)/c^3-1/2*b^2/c^3/(c*x+b)^2*e+1/2*b/c^2/(c*x+b)^2*d+2/c^3/(c*x+b)
*b*e-1/c^2/(c*x+b)*d
```

maxima [A] time = 0.91, size = 63, normalized size = 1.15

$$-\frac{bcd-3\,b^2e+2\left(c^2d-2\,bce\right)x}{2\left(c^5x^2+2\,bc^4x+b^2c^3\right)}+\frac{e\log\left(cx+b\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b*c*d - 3*b^2*e + 2*(c^2*d - 2*b*c*e)*x)/(c^5*x^2 + 2*b*c^4*x + b^2*c
^3) + e*log(c*x + b)/c^3
```

mupad [B] time = 1.05, size = 63, normalized size = 1.15

$$\frac{\frac{3\,b^2\,e-b\,c\,d}{2\,c^3}+\frac{x\,(2\,b\,e-c\,d)}{c^2}}{b^2+2\,b\,c\,x+c^2\,x^2}+\frac{e\,\ln\left(b+c\,x\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*b^2*e - b*c*d)/(2*c^3) + (x*(2*b*e - c*d))/c^2)/(b^2 + c^2*x^2 + 2*b*c*
x) + (e*log(b + c*x))/c^3
```

sympy [A] time = 0.36, size = 63, normalized size = 1.15

$$\frac{3b^2e-bcd+x\left(4bce-2c^2d\right)}{2b^2c^3+4bc^4x+2c^5x^2}+\frac{e\log\left(b+cx\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (3*b**2*e - b*c*d + x*(4*b*c*e - 2*c**2*d))/(2*b**2*c**3 + 4*b*c**4*x + 2*c
**5*x**2) + e*log(b + c*x)/c**3
```

3.62 $\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=36

$$-\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)}$$

```
[Out] 1/2*(b*e-c*d)/c^2/(c*x+b)^2-e/c^2/(c*x+b)
```

Rubi [A] time = 0.03, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(c*d - b*e)/(2*c^2*(b + c*x)^2) - e/(c^2*(b + c*x))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{\left(bx+cx^2\right)^3} \, dx &= \int \left(\frac{cd-be}{c(b+cx)^3}+\frac{e}{c(b+cx)^2}\right) \, dx\\ &= -\frac{cd-be}{2c^2(b+cx)^2}-\frac{e}{c^2(b+cx)}\end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.72

$$-\frac{be+c(d+2ex)}{2c^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*(b*e + c*(d + 2*e*x))/(c^2*(b + c*x)^2)
```

fricas [A] time = 0.91, size = 38, normalized size = 1.06

$$-\frac{2\,cex+cd+be}{2\,\left(c^4x^2+2\,bc^3x+b^2c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*c*e*x + c*d + b*e)/(c^4*x^2 + 2*b*c^3*x + b^2*c^2)
```

giac [A] time = 0.18, size = 26, normalized size = 0.72

$$-\frac{2\,cxe+cd+be}{2\,(cx+b)^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/2*(2*c*x*e + c*d + b*e)/((c*x + b)^2*c^2)
```

maple [A] time = 0.05, size = 35, normalized size = 0.97

$$-\frac{e}{(cx+b)\,c^2}-\frac{-be+cd}{2\,(cx+b)^2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/2*(-b*e+c*d)/c^2/(c*x+b)^2-e/c^2/(c*x+b)
```

maxima [A] time = 0.92, size = 38, normalized size = 1.06

$$-\frac{2\,cex+cd+be}{2\left(c^4x^2+2\,bc^3x+b^2c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*c*e*x + c*d + b*e)/(c^4*x^2 + 2*b*c^3*x + b^2*c^2)
```

mupad [B] time = 1.03, size = 39, normalized size = 1.08

$$-\frac{\frac{b\,e+c\,d}{2\,c^2}+\frac{e\,x}{c}}{b^2+2\,b\,c\,x+c^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] -((b*e + c*d)/(2*c^2) + (e*x)/c)/(b^2 + c^2*x^2 + 2*b*c*x)
```

sympy [A] time = 0.28, size = 39, normalized size = 1.08

$$\frac{-be-cd-2cex}{2b^2c^2+4bc^3x+2c^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-b*e - c*d - 2*c*e*x)/(2*b**2*c**2 + 4*b*c**3*x + 2*c**4*x**2)
```

3.63 $\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=57

$$-\frac{d\log(b+cx)}{b^3}+\frac{d\log(x)}{b^3}+\frac{d}{b^2(b+cx)}+\frac{cd-be}{2bc(b+cx)^2}$$

```
[Out] 1/2*(-b*e+c*d)/b/c/(c*x+b)^2+d/b^2/(c*x+b)+d*ln(x)/b^3-d*ln(c*x+b)/b^3
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{d}{b^2(b+cx)}-\frac{d\log(b+cx)}{b^3}+\frac{d\log(x)}{b^3}+\frac{cd-be}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (c*d - b*e)/(2*b*c*(b + c*x)^2) + d/(b^2*(b + c*x)) + (d*Log[x])/b^3 - (d*L
og[b + c*x])/b^3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{d}{b^3x}+\frac{-cd+be}{b(b+cx)^3}-\frac{cd}{b^2(b+cx)^2}-\frac{cd}{b^3(b+cx)}\right)dx\\ &= \frac{cd-be}{2bc(b+cx)^2}+\frac{d}{b^2(b+cx)}+\frac{d\log(x)}{b^3}-\frac{d\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 0.93

$$\frac{\frac{b\left(b^2(-e)+3bcd+2c^2dx\right)}{c(b+cx)^2}-2d\log(b+cx)+2d\log(x)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((b*(3*b*c*d - b^2*e + 2*c^2*d*x))/(c*(b + c*x)^2) + 2*d*Log[x] - 2*d*Log[b
 + c*x])/(2*b^3)
```

fricas [A] time = 0.92, size = 109, normalized size = 1.91

$$\frac{2\,bc^2dx+3\,b^2cd-b^3e-2\left(c^3dx^2+2\,bc^2dx+b^2cd\right)\log\left(cx+b\right)+2\left(c^3dx^2+2\,bc^2dx+b^2cd\right)\log(x)}{2\left(b^3c^3x^2+2\,b^4c^2x+b^5c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b*c^2*d*x + 3*b^2*c*d - b^3*e - 2*(c^3*d*x^2 + 2*b*c^2*d*x + b^2*c*d
)*log(c*x + b) + 2*(c^3*d*x^2 + 2*b*c^2*d*x + b^2*c*d)*log(x))/(b^3*c^3*x^2
 + 2*b^4*c^2*x + b^5*c)
```

giac [A] time = 0.17, size = 60, normalized size = 1.05

$$-\frac{d\log\left(|cx+b|\right)}{b^3}+\frac{d\log\left(|x|\right)}{b^3}+\frac{2\,bc^2dx+3\,b^2cd-b^3e}{2\,(cx+b)^2b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -d*log(abs(c*x + b))/b^3 + d*log(abs(x))/b^3 + 1/2*(2*b*c^2*d*x + 3*b^2*c*d
 - b^3*e)/((c*x + b)^2*b^3*c)
```

maple [A] time = 0.05, size = 59, normalized size = 1.04

$$\frac{d}{2\,(cx+b)^2\,b}-\frac{e}{2\,(cx+b)^2\,c}+\frac{d}{(cx+b)\,b^2}+\frac{d\ln(x)}{b^3}-\frac{d\ln\left(cx+b\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/2/c/(c*x+b)^2*e+1/2/b/(c*x+b)^2*d-d*ln(c*x+b)/b^3+d/b^2/(c*x+b)+d*ln(x)/
b^3
```

maxima [A] time = 0.92, size = 68, normalized size = 1.19

$$\frac{2\,c^2dx+3\,bcd-b^2e}{2\left(b^2c^3x^2+2\,b^3c^2x+b^4c\right)}-\frac{d\log\left(cx+b\right)}{b^3}+\frac{d\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2*c^2*d*x + 3*b*c*d - b^2*e)/(b^2*c^3*x^2 + 2*b^3*c^2*x + b^4*c) - d*l
og(c*x + b)/b^3 + d*log(x)/b^3
```

mupad [B] time = 0.07, size = 62, normalized size = 1.09

$$-\frac{\frac{b\,e-3\,c\,d}{2\,b\,c}-\frac{c\,d\,x}{b^2}}{b^2+2\,b\,c\,x+c^2\,x^2}-\frac{2\,d\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((b*e - 3*c*d)/(2*b*c) - (c*d*x)/b^2)/(b^2 + c^2*x^2 + 2*b*c*x) - (2*d*at
anh((2*c*x)/b + 1))/b^3
```

sympy [A] time = 0.41, size = 63, normalized size = 1.11

$$\frac{-b^2e+3bcd+2c^2dx}{2b^4c+4b^3c^2x+2b^2c^3x^2}+\frac{d\left(\log\left(x\right)-\log\left(\frac{b}{c}+x\right)\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-b**2*e + 3*b*c*d + 2*c**2*d*x)/(2*b**4*c + 4*b**3*c**2*x + 2*b**2*c**3*x*
*2) + d*(log(x) - log(b/c + x))/b**3
```

3.64 $\int \frac{x(d+ex)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=88

$$-\frac{\log(x)(3cd-be)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}-\frac{2cd-be}{b^3(b+cx)}-\frac{d}{b^3x}-\frac{cd-be}{2b^2(b+cx)^2}$$

```
[Out] -d/b^3/x+1/2*(b*e-c*d)/b^2/(c*x+b)^2+(b*e-2*c*d)/b^3/(c*x+b)-(-b*e+3*c*d)*l
n(x)/b^4+(-b*e+3*c*d)*ln(c*x+b)/b^4
```

Rubi [A] time = 0.07, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {765}

$$-\frac{2cd-be}{b^3(b+cx)}-\frac{cd-be}{2b^2(b+cx)^2}-\frac{\log(x)(3cd-be)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}-\frac{d}{b^3x}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(d/(b^3*x)) - (c*d - b*e)/(2*b^2*(b + c*x)^2) - (2*c*d - b*e)/(b^3*(b + c*
x)) - ((3*c*d - b*e)*Log[x])/b^4 + ((3*c*d - b*e)*Log[b + c*x])/b^4
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(bx+cx^2\right)^3}\,dx&=\int \left(\frac{d}{b^3x^2}+\frac{-3cd+be}{b^4x}-\frac{c(-cd+be)}{b^2(b+cx)^3}-\frac{c(-2cd+be)}{b^3(b+cx)^2}-\frac{c(-3cd+be)}{b^4(b+cx)}\right)dx\\&=-\frac{d}{b^3x}-\frac{cd-be}{2b^2(b+cx)^2}-\frac{2cd-be}{b^3(b+cx)}-\frac{(3cd-be)\log(x)}{b^4}+\frac{(3cd-be)\log(b+cx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 81, normalized size = 0.92

$$\frac{\frac{b^2(be-cd)}{(b+cx)^2}+\frac{2b(be-2cd)}{b+cx}+2\log(x)(be-3cd)+2(3cd-be)\log(b+cx)-\frac{2bd}{x}}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-2*b*d)/x + (b^2*(-(c*d) + b*e))/(b + c*x)^2 + (2*b*(-2*c*d + b*e))/(b +
c*x) + 2*(-3*c*d + b*e)*Log[x] + 2*(3*c*d - b*e)*Log[b + c*x])/(2*b^4)
```

fricas [B] time = 0.79, size = 195, normalized size = 2.22

$$-\frac{2\,b^3d+2\left(3\,bc^2d-b^2ce\right)x^2+3\left(3\,b^2cd-b^3e\right)x-2\left(\left(3\,c^3d-bc^2e\right)x^3+2\left(3\,bc^2d-b^2ce\right)x^2+\left(3\,b^2cd-b^3e\right)x\right)\log}{2\left(b^4c^2x^3+2\,b^5cx^2+b^6x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b^3*d + 2*(3*b*c^2*d - b^2*c*e)*x^2 + 3*(3*b^2*c*d - b^3*e)*x - 2*(
(3*c^3*d - b*c^2*e)*x^3 + 2*(3*b*c^2*d - b^2*c*e)*x^2 + (3*b^2*c*d - b^3*e)
*x)*log(c*x + b) + 2*((3*c^3*d - b*c^2*e)*x^3 + 2*(3*b*c^2*d - b^2*c*e)*x^2
 + (3*b^2*c*d - b^3*e)*x)*log(x))/(b^4*c^2*x^3 + 2*b^5*c*x^2 + b^6*x)
```

giac [**A**] time = 0.16, size = 107, normalized size = 1.22

$$-\frac{(3\,cd-be)\log\left(|x|\right)}{b^4}+\frac{\left(3\,c^2d-bce\right)\log\left(|cx+b|\right)}{b^4c}-\frac{2\,b^3d+2\left(3\,bc^2d-b^2ce\right)x^2+3\left(3\,b^2cd-b^3e\right)x}{2\,(cx+b)^2b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*c*d - b*e)*log(abs(x))/b^4 + (3*c^2*d - b*c*e)*log(abs(c*x + b))/(b^4*c
) - 1/2*(2*b^3*d + 2*(3*b*c^2*d - b^2*c*e)*x^2 + 3*(3*b^2*c*d - b^3*e)*x)/(
(c*x + b)^2*b^4*x)
```

maple [**A**] time = 0.05, size = 105, normalized size = 1.19

$$\frac{e}{2\,(cx+b)^2\,b}-\frac{cd}{2\,(cx+b)^2\,b^2}+\frac{e}{(cx+b)\,b^2}-\frac{2cd}{(cx+b)\,b^3}+\frac{e\ln(x)}{b^3}-\frac{e\ln\left(cx+b\right)}{b^3}-\frac{3cd\ln(x)}{b^4}+\frac{3cd\ln\left(cx+b\right)}{b^4}-\frac{d}{b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/b^3*ln(c*x+b)*e+3/b^4*ln(c*x+b)*c*d+1/b^2/(c*x+b)*e-2/b^3/(c*x+b)*c*d+1/
2/b/(c*x+b)^2*e-1/2/b^2/(c*x+b)^2*c*d-d/b^3/x+1/b^3*ln(x)*e-3/b^4*ln(x)*c*d
```

maxima [**A**] time = 0.86, size = 104, normalized size = 1.18

$$-\frac{2\,b^2d+2\left(3\,c^2d-bce\right)x^2+3\left(3\,bcd-b^2e\right)x}{2\left(b^3c^2x^3+2\,b^4cx^2+b^5x\right)}+\frac{(3\,cd-be)\log\left(cx+b\right)}{b^4}-\frac{(3\,cd-be)\log(x)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b^2*d + 2*(3*c^2*d - b*c*e)*x^2 + 3*(3*b*c*d - b^2*e)*x)/(b^3*c^2*x
^3 + 2*b^4*c*x^2 + b^5*x) + (3*c*d - b*e)*log(c*x + b)/b^4 - (3*c*d - b*e)*
log(x)/b^4
```

mupad [**B**] time = 1.10, size = 84, normalized size = 0.95

$$\frac{\frac{3\,x\,(b\,e-3\,c\,d)}{2\,b^2}-\frac{d}{b}+\frac{c\,x^2\,(b\,e-3\,c\,d)}{b^3}}{b^2\,x+2\,b\,c\,x^2+c^2\,x^3}-\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)\,(b\,e-3\,c\,d)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*x*(b*e - 3*c*d))/(2*b^2) - d/b + (c*x^2*(b*e - 3*c*d))/b^3)/(b^2*x + c^
2*x^3 + 2*b*c*x^2) - (2*atanh((2*c*x)/b + 1)*(b*e - 3*c*d))/b^4
```

sympy [**B**] time = 0.64, size = 168, normalized size = 1.91

$$\frac{-2b^2d+x^2\left(2bce-6c^2d\right)+x\left(3b^2e-9bcd\right)}{2b^5x+4b^4cx^2+2b^3c^2x^3}+\frac{(be-3cd)\log\left(x+\frac{b^2e-3bcd-b(be-3cd)}{2bce-6c^2d}\right)}{b^4}-\frac{(be-3cd)\log\left(x+\frac{b^2e-3bc}{2bc}\right.}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-2*b**2*d + x**2*(2*b*c*e - 6*c**2*d) + x*(3*b**2*e - 9*b*c*d))/(2*b**5*x
+ 4*b**4*c*x**2 + 2*b**3*c**2*x**3) + (b*e - 3*c*d)*log(x + (b**2*e - 3*b*c
*d - b*(b*e - 3*c*d))/(2*b*c*e - 6*c**2*d))/b**4 - (b*e - 3*c*d)*log(x + (b
**2*e - 3*b*c*d + b*(b*e - 3*c*d))/(2*b*c*e - 6*c**2*d))/b**4
```

3.65 $\int \frac{d+ex}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=110

$$\frac{3c\log(x)(2cd-be)}{b^5}-\frac{3c(2cd-be)\log(b+cx)}{b^5}+\frac{3cd-be}{b^4x}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{c(cd-be)}{2b^3(b+cx)^2}-\frac{d}{2b^3x^2}$$

```
[Out] -1/2*d/b^3/x^2+(-b*e+3*c*d)/b^4/x+1/2*c*(-b*e+c*d)/b^3/(c*x+b)^2+c*(-2*b*e+
3*c*d)/b^4/(c*x+b)+3*c*(-b*e+2*c*d)*ln(x)/b^5-3*c*(-b*e+2*c*d)*ln(c*x+b)/b^
5
```

Rubi [A] time = 0.09, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{3cd-be}{b^4x}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{c(cd-be)}{2b^3(b+cx)^2}+\frac{3c\log(x)(2cd-be)}{b^5}-\frac{3c(2cd-be)\log(b+cx)}{b^5}-\frac{d}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^3,x]
```

```
[Out] -d/(2*b^3*x^2) + (3*c*d - b*e)/(b^4*x) + (c*(c*d - b*e))/(2*b^3*(b + c*x)^2
) + (c*(3*c*d - 2*b*e))/(b^4*(b + c*x)) + (3*c*(2*c*d - b*e)*Log[x])/b^5 -
(3*c*(2*c*d - b*e)*Log[b + c*x])/b^5
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{d}{b^3x^3}+\frac{-3cd+be}{b^4x^2}-\frac{3c(-2cd+be)}{b^5x}+\frac{c^2(-cd+be)}{b^3(b+cx)^3}+\frac{c^2(-3cd+2be)}{b^4(b+cx)^2}+\frac{3c^2(-2cd+b}{b^5(b+cx)}\right.\\ &= -\frac{d}{2b^3x^2}+\frac{3cd-be}{b^4x}+\frac{c(cd-be)}{2b^3(b+cx)^2}+\frac{c(3cd-2be)}{b^4(b+cx)}+\frac{3c(2cd-be)\log(x)}{b^5}-\frac{3c(2cd-be)\,l}{b^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 102, normalized size = 0.93

$$\frac{-\frac{b\left(b^3(d+2ex)+b^2cx(9ex-4d)+6bc^2x^2(ex-3d)-12c^3dx^3\right)}{x^2(b+cx)^2}+6c\log(x)(2cd-be)+6c(be-2cd)\log(b+cx)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^3,x]
```

```
[Out] (-((b*(-12*c^3*d*x^3 + 6*b*c^2*x^2*(-3*d + e*x) + b^3*(d + 2*e*x) + b^2*c*x
*(-4*d + 9*e*x)))/(x^2*(b + c*x)^2)) + 6*c*(2*c*d - b*e)*Log[x] + 6*c*(-2*c
*d + b*e)*Log[b + c*x])/(2*b^5)
```

fricas [B] time = 0.57, size = 234, normalized size = 2.13

$$-\frac{b^4d-6\,(2\,bc^3d-b^2c^2e)x^3-9\,(2\,b^2c^2d-b^3ce)x^2-2\,(2\,b^3cd-b^4e)x+6\,((2\,c^4d-bc^3e)x^4+2\,(2\,bc^3d-b^2c^2e}{2\,(b^5c^2x^4+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(b^4*d - 6*(2*b*c^3*d - b^2*c^2*e)*x^3 - 9*(2*b^2*c^2*d - b^3*c*e)*x^2
 - 2*(2*b^3*c*d - b^4*e)*x + 6*((2*c^4*d - b*c^3*e)*x^4 + 2*(2*b*c^3*d - b^
2*c^2*e)*x^3 + (2*b^2*c^2*d - b^3*c*e)*x^2)*log(c*x + b) - 6*((2*c^4*d - b*
c^3*e)*x^4 + 2*(2*b*c^3*d - b^2*c^2*e)*x^3 + (2*b^2*c^2*d - b^3*c*e)*x^2)*l
og(x))/(b^5*c^2*x^4 + 2*b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.20, size = 132, normalized size = 1.20

$$\frac{3\left(2c^2d-bce\right)\log\left(|x|\right)}{b^5}-\frac{3\left(2c^3d-bc^2e\right)\log\left(|cx+b|\right)}{b^5c}+\frac{12c^3dx^3-6bc^2x^3e+18bc^2dx^2-9b^2cx^2e+4b^2cdx-2b}{2\left(cx^2+bx\right)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3*(2*c^2*d - b*c*e)*log(abs(x))/b^5 - 3*(2*c^3*d - b*c^2*e)*log(abs(c*x + b
))/(b^5*c) + 1/2*(12*c^3*d*x^3 - 6*b*c^2*x^3*e + 18*b*c^2*d*x^2 - 9*b^2*c*x
^2*e + 4*b^2*c*d*x - 2*b^3*x*e - b^3*d)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.06, size = 138, normalized size = 1.25

$$-\frac{ce}{2\left(cx+b\right)^2b^2}+\frac{c^2d}{2\left(cx+b\right)^2b^3}-\frac{2ce}{\left(cx+b\right)b^3}+\frac{3c^2d}{\left(cx+b\right)b^4}-\frac{3ce\ln(x)}{b^4}+\frac{3ce\ln\left(cx+b\right)}{b^4}+\frac{6c^2d\ln(x)}{b^5}-\frac{6c^2d\ln\left(cx+b\right)}{b^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -2*c/b^3/(c*x+b)*e+3*c^2/b^4/(c*x+b)*d-1/2*c/b^2/(c*x+b)^2*e+1/2*c^2/b^3/(c
*x+b)^2*d+3*c/b^4*ln(c*x+b)*e-6*c^2/b^5*ln(c*x+b)*d-1/2/b^3*d/x^2-1/b^3/x*e
+3/b^4/x*c*d-3*c/b^4*ln(x)*e+6*c^2/b^5*ln(x)*d
```

maxima [A] time = 0.95, size = 136, normalized size = 1.24

$$-\frac{b^3d-6\left(2c^3d-bc^2e\right)x^3-9\left(2bc^2d-b^2ce\right)x^2-2\left(2b^2cd-b^3e\right)x}{2\left(b^4c^2x^4+2b^5cx^3+b^6x^2\right)}-\frac{3\left(2c^2d-bce\right)\log\left(cx+b\right)}{b^5}+\frac{3\left(2c^2d-bce\right)\mathrm{lo}}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(b^3*d - 6*(2*c^3*d - b*c^2*e)*x^3 - 9*(2*b*c^2*d - b^2*c*e)*x^2 - 2*(
2*b^2*c*d - b^3*e)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) - 3*(2*c^2*d -
b*c*e)*log(c*x + b)/b^5 + 3*(2*c^2*d - b*c*e)*log(x)/b^5
```

mupad [B] time = 1.12, size = 132, normalized size = 1.20

$$-\frac{\frac{d}{2b}+\frac{x\,(b\,e-2\,c\,d)}{b^2}+\frac{9\,c\,x^2\,(b\,e-2\,c\,d)}{2\,b^3}+\frac{3\,c^2\,x^3\,(b\,e-2\,c\,d)}{b^4}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}-\frac{6\,c\,\mathrm{atanh}\left(\frac{3\,c\,(b\,e-2\,c\,d)\,(b+2\,c\,x)}{b\,\left(6\,c^2\,d-3\,b\,c\,e\right)}\right)\,(b\,e-2\,c\,d)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^3,x)
```

```
[Out] - (d/(2*b) + (x*(b*e - 2*c*d))/b^2 + (9*c*x^2*(b*e - 2*c*d))/(2*b^3) + (3*c
^2*x^3*(b*e - 2*c*d))/b^4)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*c*atanh((3*
c*(b*e - 2*c*d)*(b + 2*c*x))/(b*(6*c^2*d - 3*b*c*e)))*(b*e - 2*c*d))/b^5
```

sympy [B] time = 0.74, size = 219, normalized size = 1.99

$$\frac{-b^3d + x^3\left(-6bc^2e + 12c^3d\right) + x^2\left(-9b^2ce + 18bc^2d\right) + x\left(-2b^3e + 4b^2cd\right)}{2b^6x^2 + 4b^5cx^3 + 2b^4c^2x^4} - \frac{3c\left(be - 2cd\right)\log\left(x + \frac{3b^2ce-6bc^2d-3bc}{6bc^2e-12c}\right.}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-b**3*d + x**3*(-6*b*c**2*e + 12*c**3*d) + x**2*(-9*b**2*c*e + 18*b*c**2*d
) + x*(-2*b**3*e + 4*b**2*c*d))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*b**4*c**2*
x**4) - 3*c*(b*e - 2*c*d)*log(x + (3*b**2*c*e - 6*b*c**2*d - 3*b*c*(b*e - 2
*c*d))/(6*b*c**2*e - 12*c**3*d))/b**5 + 3*c*(b*e - 2*c*d)*log(x + (3*b**2*c
*e - 6*b*c**2*d + 3*b*c*(b*e - 2*c*d))/(6*b*c**2*e - 12*c**3*d))/b**5
```

3.66 $\int \frac{d+ex}{x\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=140

$$-\frac{2c^2\log(x)(5cd-3be)}{b^6}+\frac{2c^2(5cd-3be)\log(b+cx)}{b^6}-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{3c(2cd-be)}{b^5x}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}+\frac{3cd-be}{2b^4x^2}-\frac{d}{3b^3x^3}$$

```
[Out] -1/3*d/b^3/x^3+1/2*(-b*e+3*c*d)/b^4/x^2-3*c*(-b*e+2*c*d)/b^5/x-1/2*c^2*(-b*
e+c*d)/b^4/(c*x+b)^2-c^2*(-3*b*e+4*c*d)/b^5/(c*x+b)-2*c^2*(-3*b*e+5*c*d)*ln
(x)/b^6+2*c^2*(-3*b*e+5*c*d)*ln(c*x+b)/b^6
```

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {765}

$$-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}-\frac{2c^2\log(x)(5cd-3be)}{b^6}+\frac{2c^2(5cd-3be)\log(b+cx)}{b^6}+\frac{3cd-be}{2b^4x^2}-\frac{3c(2cd-be)}{b^5x}-\frac{d}{3b^3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(b*x + c*x^2)^3),x]
```

```
[Out] -d/(3*b^3*x^3) + (3*c*d - b*e)/(2*b^4*x^2) - (3*c*(2*c*d - b*e))/(b^5*x) -
(c^2*(c*d - b*e))/(2*b^4*(b + c*x)^2) - (c^2*(4*c*d - 3*b*e))/(b^5*(b + c*x
)) - (2*c^2*(5*c*d - 3*b*e)*Log[x])/b^6 + (2*c^2*(5*c*d - 3*b*e)*Log[b + c*
x])/b^6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{d}{b^3x^4}+\frac{-3cd+be}{b^4x^3}-\frac{3c(-2cd+be)}{b^5x^2}+\frac{2c^2(-5cd+3be)}{b^6x}-\frac{c^3(-cd+be)}{b^4(b+cx)^3}-\frac{c^3(-4cd+3b}{b^5(b+cx)^2}\right.\\ &= -\frac{d}{3b^3x^3}+\frac{3cd-be}{2b^4x^2}-\frac{3c(2cd-be)}{b^5x}-\frac{c^2(cd-be)}{2b^4(b+cx)^2}-\frac{c^2(4cd-3be)}{b^5(b+cx)}-\frac{2c^2(5cd-3be)\log(x)}{b^6}\end{aligned}$$

Mathematica [A] time = 0.12, size = 129, normalized size = 0.92

$$\frac{\frac{b\left(-\left(b^4(2d+3ex)\right)+b^3cx(5d+12ex)+2b^2c^2x^2(27ex-10d)+18bc^3x^3(2ex-5d)-60c^4dx^4\right)}{x^3(b+cx)^2}+12c^2\log(x)(3be-5cd)+12c^2(5cd-3be)\log(b}{6b^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(b*x + c*x^2)^3),x]
```

```
[Out] ((b*(-60*c^4*d*x^4 + 18*b*c^3*x^3*(-5*d + 2*e*x) - b^4*(2*d + 3*e*x) + b^3*
c*x*(5*d + 12*e*x) + 2*b^2*c^2*x^2*(-10*d + 27*e*x)))/(x^3*(b + c*x)^2) + 1
2*c^2*(-5*c*d + 3*b*e)*Log[x] + 12*c^2*(5*c*d - 3*b*e)*Log[b + c*x])/(6*b^6
)
```

fricas [A] time = 0.84, size = 263, normalized size = 1.88

$$-\frac{2\,b^5d+12\,\left(5\,bc^4d-3\,b^2c^3e\right)x^4+18\,\left(5\,b^2c^3d-3\,b^3c^2e\right)x^3+4\,\left(5\,b^3c^2d-3\,b^4ce\right)x^2-\left(5\,b^4cd-3\,b^5e\right)x-12\,((}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/6*(2*b^5*d + 12*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + 18*(5*b^2*c^3*d - 3*b^3*
c^2*e)*x^3 + 4*(5*b^3*c^2*d - 3*b^4*c*e)*x^2 - (5*b^4*c*d - 3*b^5*e)*x - 12
*((5*c^5*d - 3*b*c^4*e)*x^5 + 2*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + (5*b^2*c^3*
d - 3*b^3*c^2*e)*x^3)*log(c*x + b) + 12*((5*c^5*d - 3*b*c^4*e)*x^5 + 2*(5*b
*c^4*d - 3*b^2*c^3*e)*x^4 + (5*b^2*c^3*d - 3*b^3*c^2*e)*x^3)*log(x))/(b^6*c
^2*x^5 + 2*b^7*c*x^4 + b^8*x^3)
```

giac [A] time = 0.17, size = 165, normalized size = 1.18

$$-\frac{2\,\left(5\,c^3d-3\,bc^2e\right)\log\left(|x|\right)}{b^6}+\frac{2\,\left(5\,c^4d-3\,bc^3e\right)\log\left(|cx+b|\right)}{b^6c}-\frac{2\,b^5d+12\,\left(5\,bc^4d-3\,b^2c^3e\right)x^4+18\,\left(5\,b^2c^3d-3}{6\,(cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -2*(5*c^3*d - 3*b*c^2*e)*log(abs(x))/b^6 + 2*(5*c^4*d - 3*b*c^3*e)*log(abs(
c*x + b))/(b^6*c) - 1/6*(2*b^5*d + 12*(5*b*c^4*d - 3*b^2*c^3*e)*x^4 + 18*(5
*b^2*c^3*d - 3*b^3*c^2*e)*x^3 + 4*(5*b^3*c^2*d - 3*b^4*c*e)*x^2 - (5*b^4*c*
d - 3*b^5*e)*x)/((c*x + b)^2*b^6*x^3)
```

maple [A] time = 0.06, size = 168, normalized size = 1.20

$$\frac{c^2e}{2\,(cx+b)^2\,b^3}-\frac{c^3d}{2\,(cx+b)^2\,b^4}+\frac{3c^2e}{(cx+b)\,b^4}-\frac{4c^3d}{(cx+b)\,b^5}+\frac{6c^2e\ln(x)}{b^5}-\frac{6c^2e\ln\left(cx+b\right)}{b^5}-\frac{10c^3d\ln(x)}{b^6}+\frac{10c^3d\ln(cx}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x)^3,x)
```

```
[Out] -6*c^2/b^5*ln(c*x+b)*e+10*c^3/b^6*ln(c*x+b)*d+3*c^2/b^4/(c*x+b)*e-4*c^3/b^5
/(c*x+b)*d+1/2*c^2/b^3/(c*x+b)^2*e-1/2*c^3/b^4/(c*x+b)^2*d-1/3*d/b^3/x^3-1/
2/b^3/x^2*e+3/2/b^4/x^2*c*d+3*c/b^4/x*e-6*c^2/b^5/x*d+6*c^2/b^5*ln(x)*e-10*
c^3/b^6*ln(x)*d
```

maxima [A] time = 0.99, size = 165, normalized size = 1.18

$$-\frac{2\,b^4d+12\,\left(5\,c^4d-3\,bc^3e\right)x^4+18\,\left(5\,bc^3d-3\,b^2c^2e\right)x^3+4\,\left(5\,b^2c^2d-3\,b^3ce\right)x^2-\left(5\,b^3cd-3\,b^4e\right)x}{6\,\left(b^5c^2x^5+2\,b^6cx^4+b^7x^3\right)}+\frac{2\,(5\,c^3d-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/6*(2*b^4*d + 12*(5*c^4*d - 3*b*c^3*e)*x^4 + 18*(5*b*c^3*d - 3*b^2*c^2*e)
*x^3 + 4*(5*b^2*c^2*d - 3*b^3*c*e)*x^2 - (5*b^3*c*d - 3*b^4*e)*x)/(b^5*c^2*
x^5 + 2*b^6*c*x^4 + b^7*x^3) + 2*(5*c^3*d - 3*b*c^2*e)*log(c*x + b)/b^6 - 2
*(5*c^3*d - 3*b*c^2*e)*log(x)/b^6
```

mupad [B] time = 1.09, size = 163, normalized size = 1.16

$$\frac{\frac{2\,c\,x^2\,(3\,b\,e-5\,c\,d)}{3\,b^3}-\frac{x\,(3\,b\,e-5\,c\,d)}{6\,b^2}-\frac{d}{3\,b}+\frac{3\,c^2\,x^3\,(3\,b\,e-5\,c\,d)}{b^4}+\frac{2\,c^3\,x^4\,(3\,b\,e-5\,c\,d)}{b^5}}{b^2\,x^3+2\,b\,c\,x^4+c^2\,x^5}+\frac{4\,c^2\,\mathrm{atanh}\left(\frac{2\,c^2\,(3\,b\,e-5\,c\,d)\,(b+2\,c\,x)}{b\,\left(10\,c^3\,d-6\,b\,c^2\,e\right)}\right)\,(3\,b\,e-5}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(b*x + c*x^2)^3),x)
```

```
[Out] ((2*c*x^2*(3*b*e - 5*c*d))/(3*b^3) - (x*(3*b*e - 5*c*d))/(6*b^2) - d/(3*b)
+ (3*c^2*x^3*(3*b*e - 5*c*d))/b^4 + (2*c^3*x^4*(3*b*e - 5*c*d))/b^5)/(b^2*x
^3 + c^2*x^5 + 2*b*c*x^4) + (4*c^2*atanh((2*c^2*(3*b*e - 5*c*d)*(b + 2*c*x)
)/(b*(10*c^3*d - 6*b*c^2*e)))*(3*b*e - 5*c*d))/b^6
```

sympy [A] time = 0.80, size = 262, normalized size = 1.87

$$\frac{-2b^4d + x^4\left(36bc^3e - 60c^4d\right) + x^3\left(54b^2c^2e - 90bc^3d\right) + x^2\left(12b^3ce - 20b^2c^2d\right) + x\left(-3b^4e + 5b^3cd\right)}{6b^7x^3 + 12b^6cx^4 + 6b^5c^2x^5} + \frac{2c^2\,(3be - 5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x)**3,x)
```

```
[Out] (-2*b**4*d + x**4*(36*b*c**3*e - 60*c**4*d) + x**3*(54*b**2*c**2*e - 90*b*c
**3*d) + x**2*(12*b**3*c*e - 20*b**2*c**2*d) + x*(-3*b**4*e + 5*b**3*c*d))/
(6*b**7*x**3 + 12*b**6*c*x**4 + 6*b**5*c**2*x**5) + 2*c**2*(3*b*e - 5*c*d)*
log(x + (6*b**2*c**2*e - 10*b*c**3*d - 2*b*c**2*(3*b*e - 5*c*d))/(12*b*c**3
*e - 20*c**4*d))/b**6 - 2*c**2*(3*b*e - 5*c*d)*log(x + (6*b**2*c**2*e - 10*
b*c**3*d + 2*b*c**2*(3*b*e - 5*c*d))/(12*b*c**3*e - 20*c**4*d))/b**6
```

3.67 $\int x^3(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=200

$$-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{11/2}}+\frac{7b^3(b+2cx)\sqrt{bx+cx^2}\,(3bB-4Ac)}{512c^5}-\frac{7b^2\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{192c^4}+$$

```
[Out] -7/192*b^2*(-4*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/c^4+7/160*b*(-4*A*c+3*B*b)*x*(c
*x^2+b*x)^(3/2)/c^3-1/20*(-4*A*c+3*B*b)*x^2*(c*x^2+b*x)^(3/2)/c^2+1/6*B*x^3
*(c*x^2+b*x)^(3/2)/c-7/512*b^5*(-4*A*c+3*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)
^(1/2))/c^(11/2)+7/512*b^3*(-4*A*c+3*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^5
```

Rubi [A] time = 0.19, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{7b^3(b+2cx)\sqrt{bx+cx^2}\,(3bB-4Ac)}{512c^5}-\frac{7b^2\left(bx+cx^2\right)^{3/2}(3bB-4Ac)}{192c^4}-\frac{7b^5(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{11/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (7*b^3*(3*b*B - 4*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^5) - (7*b^2*(3
*b*B - 4*A*c)*(b*x + c*x^2)^(3/2))/(192*c^4) + (7*b*(3*b*B - 4*A*c)*x*(b*x
+ c*x^2)^(3/2))/(160*c^3) - ((3*b*B - 4*A*c)*x^2*(b*x + c*x^2)^(3/2))/(20*c
^2) + (B*x^3*(b*x + c*x^2)^(3/2))/(6*c) - (7*b^5*(3*b*B - 4*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c}+\frac{\left(3(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int x^3\sqrt{bx+cx^2}\,dx}{6c}\\
&= -\frac{(3bB-4Ac)x^2\left(bx+cx^2\right)^{3/2}}{20c^2}+\frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c}+\frac{(7b(3bB-4Ac))\int x^2\sqrt{bx+}}{40c^2}\\
&= \frac{7b(3bB-4Ac)x\left(bx+cx^2\right)^{3/2}}{160c^3}-\frac{(3bB-4Ac)x^2\left(bx+cx^2\right)^{3/2}}{20c^2}+\frac{Bx^3\left(bx+cx^2\right)^{3/2}}{6c}\\
&= -\frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4}+\frac{7b(3bB-4Ac)x\left(bx+cx^2\right)^{3/2}}{160c^3}-\frac{(3bB-4Ac)x^2}{20c}\\
&= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5}-\frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4}+\frac{7b(3bB-4}{}\\
&= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5}-\frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4}+\frac{7b(3bB-4}{}\\
&= \frac{7b^3(3bB-4Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^5}-\frac{7b^2(3bB-4Ac)\left(bx+cx^2\right)^{3/2}}{192c^4}+\frac{7b(3bB-4}{}
\end{aligned}
$$

Mathematica [A] time = 0.28, size = 166, normalized size = 0.83

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-210b^4c(2A+Bx)+56b^3c^2x(5A+3Bx)-16b^2c^3x^2(14A+9Bx)+64bc^4x^3(3A+2Bx)+256c\right.\right.}{7680c^{11/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(315*b^5*B - 210*b^4*c*(2*A + B*x) + 64*b*c^4*x
^3*(3*A + 2*B*x) + 56*b^3*c^2*x*(5*A + 3*B*x) + 256*c^5*x^4*(6*A + 5*B*x) -
 16*b^2*c^3*x^2*(14*A + 9*B*x)) - (105*b^(9/2)*(3*b*B - 4*A*c)*ArcSinh[(Sqr
t[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(11/2))
```

fricas [A] time = 0.99, size = 349, normalized size = 1.74

$$
\left[-\frac{105\left(3\,Bb^6-4\,Ab^5c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(1280\,Bc^6x^5+315\,Bb^5c-420\,Ab^4c^2+128\left(Bbc^5\right.\right.}{15360}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 + 315*B*b^5*c - 420*A*b^4*c^2 + 128*(B*b
*c^5 + 12*A*c^6)*x^4 - 48*(3*B*b^2*c^4 - 4*A*b*c^5)*x^3 + 56*(3*B*b^3*c^3 -
 4*A*b^2*c^4)*x^2 - 70*(3*B*b^4*c^2 - 4*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/c^
6, 1/7680*(105*(3*B*b^6 - 4*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt
(-c)/(c*x)) + (1280*B*c^6*x^5 + 315*B*b^5*c - 420*A*b^4*c^2 + 128*(B*b*c^5
+ 12*A*c^6)*x^4 - 48*(3*B*b^2*c^4 - 4*A*b*c^5)*x^3 + 56*(3*B*b^3*c^3 - 4*A*
b^2*c^4)*x^2 - 70*(3*B*b^4*c^2 - 4*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.22, size = 188, normalized size = 0.94

$$\frac{1}{7680}\sqrt{cx^2+bx}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\left(10\,Bx+\frac{Bbc^4+12\,Ac^5}{c^5}\right)x-\frac{3\left(3\,Bb^2c^3-4\,Abc^4\right)}{c^5}\Bigg)x+\frac{7\left(3\,Bb^3c^2-4\,Ab^2c^3\right)}{c^5}\Bigg)x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*x + (B*b*c^4 + 12*A*c^5)/c^5)*x
 - 3*(3*B*b^2*c^3 - 4*A*b*c^4)/c^5)*x + 7*(3*B*b^3*c^2 - 4*A*b^2*c^3)/c^5)*x
 - 35*(3*B*b^4*c - 4*A*b^3*c^2)/c^5)*x + 105*(3*B*b^5 - 4*A*b^4*c)/c^5) + 7
/1024*(3*B*b^6 - 4*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt
(c) - b))/c^(11/2)
```

maple [A] time = 0.05, size = 291, normalized size = 1.46

$$\frac{\left(c\,x^2+bx\right)^{\frac{3}{2}}B\,x^3}{6c}+\frac{7A\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{9}{2}}}-\frac{21B\,b^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{11}{2}}}-\frac{7\sqrt{c\,x^2+bx}\;A\,b^3x}{64c^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/6*B*x^3*(c*x^2+b*x)^(3/2)/c-3/20*B*b/c^2*x^2*(c*x^2+b*x)^(3/2)+21/160*B*b
^2/c^3*x*(c*x^2+b*x)^(3/2)-7/64*B*b^3/c^4*(c*x^2+b*x)^(3/2)+21/256*B*b^4/c^
4*(c*x^2+b*x)^(1/2)*x+21/512*B*b^5/c^5*(c*x^2+b*x)^(1/2)-21/1024*B*b^6/c^(1
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*x^2*(c*x^2+b*x)^(3/2)/
c-7/40*A*b/c^2*x*(c*x^2+b*x)^(3/2)+7/48*A*b^2/c^3*(c*x^2+b*x)^(3/2)-7/64*A*
b^3/c^3*(c*x^2+b*x)^(1/2)*x-7/128*A*b^4/c^4*(c*x^2+b*x)^(1/2)+7/256*A*b^5/c
^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.90, size = 288, normalized size = 1.44

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^3}{6\,c}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bbx^2}{20\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax^2}{5\,c}+\frac{21\sqrt{cx^2+bx}\,Bb^4x}{256\,c^4}+\frac{21\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{160\,c^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(3/2)*B*x^3/c - 3/20*(c*x^2 + b*x)^(3/2)*B*b*x^2/c^2 + 1/
5*(c*x^2 + b*x)^(3/2)*A*x^2/c + 21/256*sqrt(c*x^2 + b*x)*B*b^4*x/c^4 + 21/1
60*(c*x^2 + b*x)^(3/2)*B*b^2*x/c^3 - 7/64*sqrt(c*x^2 + b*x)*A*b^3*x/c^3 - 7
/40*(c*x^2 + b*x)^(3/2)*A*b*x/c^2 - 21/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(11/2) + 7/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(9/2) + 21/512*sqrt(c*x^2 + b*x)*B*b^5/c^5 - 7/64*(c*x^2 + b
*x)^(3/2)*B*b^3/c^4 - 7/128*sqrt(c*x^2 + b*x)*A*b^4/c^4 + 7/48*(c*x^2 + b*x
)^(3/2)*A*b^2/c^3
```

mupad [B] time = 1.82, size = 267, normalized size = 1.34

$$\frac{3\,B\,b\left(\frac{7\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4\,c}-\frac{5\,b\left(\frac{b^3\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}\right)}{10\,c}-\frac{x^2\left(c\,x^2+b\,x\right)^{3/2}}{5\,c}\right)}{4\,c}-7\,A\,b\left(\frac{x\left(c\,x^2+b\,x\right)^{3/2}}{4\,c}-5\,b\left(b^3\ln\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (3*B*b*((7*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^
(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*
x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) - (x^2*(b*x + c*x^2)^(3/2
))/(5*c)))/(4*c) - (7*A*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((
b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^
(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (A*x^2*(b*
x + c*x^2)^(3/2))/(5*c) + (B*x^3*(b*x + c*x^2)^(3/2))/(6*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3\sqrt{x\,(b+cx)}\;(A+Bx)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**3*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.68 $\int x^2(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=165

$$\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{9/2}}-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(7bB-10Ac)}{128c^4}+\frac{b\left(bx+cx^2\right)^{3/2}(7bB-10Ac)}{48c^3}-x\left(bx\right.$$

```
[Out] 1/48*b*(-10*A*c+7*B*b)*(c*x^2+b*x)^(3/2)/c^3-1/40*(-10*A*c+7*B*b)*x*(c*x^2+
b*x)^(3/2)/c^2+1/5*B*x^2*(c*x^2+b*x)^(3/2)/c+1/128*b^4*(-10*A*c+7*B*b)*arct
anh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-1/128*b^2*(-10*A*c+7*B*b)*(2*c*x+b
)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi [A] time = 0.16, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(7bB-10Ac)}{128c^4}+\frac{b^4(7bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{9/2}}+\frac{b\left(bx+cx^2\right)^{3/2}(7bB-10Ac)}{48c^3}-x\left(b\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -(b^2*(7*b*B - 10*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^4) + (b*(7*b*B
 - 10*A*c)*(b*x + c*x^2)^(3/2))/(48*c^3) - ((7*b*B - 10*A*c)*x*(b*x + c*x^2
)^(3/2))/(40*c^2) + (B*x^2*(b*x + c*x^2)^(3/2))/(5*c) + (b^4*(7*b*B - 10*A*
c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c}+\frac{\left(2(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int x^2\sqrt{bx+cx^2}\,dx}{5c}\\
&= -\frac{(7bB-10Ac)x\left(bx+cx^2\right)^{3/2}}{40c^2}+\frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c}+\frac{(b(7bB-10Ac))\int x\sqrt{bx+c}}{16c^2}\\
&= \frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3}-\frac{(7bB-10Ac)x\left(bx+cx^2\right)^{3/2}}{40c^2}+\frac{Bx^2\left(bx+cx^2\right)^{3/2}}{5c}-\\
&= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4}+\frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3}-(7bB-10\\
&= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4}+\frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3}-(7bB-10\\
&= -\frac{b^2(7bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^4}+\frac{b(7bB-10Ac)\left(bx+cx^2\right)^{3/2}}{48c^3}-(7bB-10
\end{aligned}
$$

Mathematica [A] time = 0.25, size = 148, normalized size = 0.90

$$
\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}(7bB-10Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^3c(15A+7Bx)-4b^2c^2x(25A+14Bx)+16bc^3x^2(5A+3Bx)+\right.\right.}{1920c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^4*B + 16*b*c^3*x^2*(5*A + 3*B*x) + 96*c
^4*x^3*(5*A + 4*B*x) + 10*b^3*c*(15*A + 7*B*x) - 4*b^2*c^2*x*(25*A + 14*B*x
)) + (15*b^(7/2)*(7*b*B - 10*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt
[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(9/2))
```

fricas [A] time = 0.99, size = 302, normalized size = 1.83

$$
\left[-\frac{15\left(7Bb^5-10Ab^4c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(384Bc^5x^4-105Bb^4c+150Ab^3c^2+48\left(Bbc^4+\right.\right.}{3840c^5}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(7*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 - 105*B*b^4*c + 150*A*b^3*c^2 + 48*(B*b*c^
4 + 10*A*c^5)*x^3 - 8*(7*B*b^2*c^3 - 10*A*b*c^4)*x^2 + 10*(7*B*b^3*c^2 - 10
*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/1920*(15*(7*B*b^5 - 10*A*b^4*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*x^4 - 105*B*b
^4*c + 150*A*b^3*c^2 + 48*(B*b*c^4 + 10*A*c^5)*x^3 - 8*(7*B*b^2*c^3 - 10*A*
b*c^4)*x^2 + 10*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.24, size = 160, normalized size = 0.97

$$\frac{1}{1920}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(6\Bigg(8Bx+\frac{Bbc^3+10Ac^4}{c^4}\Bigg)x-\frac{7Bb^2c^2-10Abc^3}{c^4}\Bigg)x+\frac{5\left(7Bb^3c-10Ab^2c^2\right)}{c^4}\Bigg)x-\frac{15(7B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x + (B*b*c^3 + 10*A*c^4)/c^4)*x - (7
*B*b^2*c^2 - 10*A*b*c^3)/c^4)*x + 5*(7*B*b^3*c - 10*A*b^2*c^2)/c^4)*x - 15*
(7*B*b^4 - 10*A*b^3*c)/c^4) - 1/256*(7*B*b^5 - 10*A*b^4*c)*log(abs(-2*(sqrt
(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [A] time = 0.05, size = 245, normalized size = 1.48

$$-\frac{5A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{7B\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{9}{2}}}+\frac{5\sqrt{c\,x^2+bx}\;A\,b^2x}{32c^2}-\frac{7\sqrt{c\,x^2+bx}\;B\,b^3x}{64c^3}+\frac{(c\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+b*x)^(3/2)/c-7/40*B*b/c^2*x*(c*x^2+b*x)^(3/2)+7/48*B*b^2/c
^3*(c*x^2+b*x)^(3/2)-7/64*B*b^3/c^3*(c*x^2+b*x)^(1/2)*x-7/128*B*b^4/c^4*(c*
x^2+b*x)^(1/2)+7/256*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2)
)+1/4*A*x*(c*x^2+b*x)^(3/2)/c-5/24*A*b/c^2*(c*x^2+b*x)^(3/2)+5/32*A*b^2/c^2
*(c*x^2+b*x)^(1/2)*x+5/64*A*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*A*b^4/c^(7/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.86, size = 242, normalized size = 1.47

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx^2}{5\,c}-\frac{7\,\sqrt{cx^2+bx}\,Bb^3x}{64\,c^3}-\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bbx}{40\,c^2}+\frac{5\,\sqrt{cx^2+bx}\,Ab^2x}{32\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Ax}{4\,c}+\frac{7\,Bb^5\log\left(2\,cx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + b*x)^(3/2)*B*x^2/c - 7/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^3 - 7/40
*(c*x^2 + b*x)^(3/2)*B*b*x/c^2 + 5/32*sqrt(c*x^2 + b*x)*A*b^2*x/c^2 + 1/4*(
c*x^2 + b*x)^(3/2)*A*x/c + 7/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*
sqrt(c))/c^(9/2) - 5/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
/c^(7/2) - 7/128*sqrt(c*x^2 + b*x)*B*b^4/c^4 + 7/48*(c*x^2 + b*x)^(3/2)*B*b
^2/c^3 + 5/64*sqrt(c*x^2 + b*x)*A*b^3/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*A*b/c^
2
```

mupad [**B**] time = 1.48, size = 215, normalized size = 1.30

$$\frac{Ax\left(cx^2+bx\right)^{3/2}}{4c}-\frac{5Ab\left(\frac{b^3\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+bx}\right)}{16c^{5/2}}+\frac{\sqrt{cx^2+bx}\left(-3b^2+2bcx+8c^2x^2\right)}{24c^2}\right)}{8c}-\frac{7Bb\left(\frac{x\left(cx^2+bx\right)^{3/2}}{4c}-\frac{5b\left(\frac{b^3\ln\left(\frac{b+2cx}{\sqrt{c}}+\right.}{16c}\right.}{}\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x*(b*x + c*x^2)^(3/2))/(4*c) - (5*A*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^
2 + 2*b*c*x))/(24*c^2)))/(8*c) - (7*B*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5
*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (
(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c
) + (B*x^2*(b*x + c*x^2)^(3/2))/(5*c)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**2*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.69 $\int x(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=113

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{7/2}}+\frac{b(b+2cx)\sqrt{bx+cx^2}\,(5bB-8Ac)}{64c^3}-\frac{\left(bx+cx^2\right)^{3/2}(-8Ac+5bB-6Bcx)}{24c^2}$$

```
[Out] -1/24*(-6*B*c*x-8*A*c+5*B*b)*(c*x^2+b*x)^(3/2)/c^2-1/64*b^3*(-8*A*c+5*B*b)*
arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+1/64*b*(-8*A*c+5*B*b)*(2*c*x+b
)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.05, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = $\{779, 612, 620, 206\}$

$$-\frac{b^3(5bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{7/2}}+\frac{b(b+2cx)\sqrt{bx+cx^2}\,(5bB-8Ac)}{64c^3}-\frac{\left(bx+cx^2\right)^{3/2}(-8Ac+5bB-6Bcx)}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (b*(5*b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c^3) - ((5*b*B - 8*A*
c - 6*B*c*x)*(b*x + c*x^2)^(3/2))/(24*c^2) - (b^3*(5*b*B - 8*A*c)*ArcTanh[(
Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\sqrt{bx+cx^2}\,dx = -\frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2} + \frac{(b(5bB-8Ac))\int\sqrt{bx+cx^2}\,dx}{16c^2}$$

$$= \frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2} - \frac{(b^3(5bB -}{}$$

$$= \frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2} - \frac{(b^3(5bB -}{}$$

$$= \frac{b(5bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bB-8Ac-6Bcx)\left(bx+cx^2\right)^{3/2}}{24c^2} - \frac{b^3(5bB -}{}$$

Mathematica [A] time = 0.21, size = 128, normalized size = 1.13

$$\frac{\sqrt{x(b+cx)}\,\Bigg(\sqrt{c}\left(-2b^2c(12A+5Bx)+8bc^2x(2A+Bx)+16c^3x^2(4A+3Bx)+15b^3B\right)-\frac{3b^{5/2}(5bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}}{192c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B + 8*b*c^2*x*(2*A + B*x) + 16*c^3*x^2*
(4*A + 3*B*x) - 2*b^2*c*(12*A + 5*B*x)) - (3*b^(5/2)*(5*b*B - 8*A*c)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(7/2))
```

fricas [A] time = 0.73, size = 253, normalized size = 2.24

$$\Bigg[-\frac{3\left(5\,Bb^4-8\,Ab^3c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(48\,Bc^4x^3+15\,Bb^3c-24\,Ab^2c^2+8\left(Bbc^3+8\,Ac^4\right)}{384\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(5*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(48*B*c^4*x^3 + 15*B*b^3*c - 24*A*b^2*c^2 + 8*(B*b*c^3 + 8*A
*c^4)*x^2 - 2*(5*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/192*(3
*(5*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) +
(48*B*c^4*x^3 + 15*B*b^3*c - 24*A*b^2*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^2 - 2*(
5*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.43, size = 132, normalized size = 1.17

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6\,Bx+\frac{Bbc^2+8\,Ac^3}{c^3}\right)x-\frac{5\,Bb^2c-8\,Abc^2}{c^3}\right)x+\frac{3\left(5\,Bb^3-8\,Ab^2c\right)}{c^3}\right)+\frac{\left(5\,Bb^4-8\,Ab^3c\right)\log(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x + (B*b*c^2 + 8*A*c^3)/c^3)*x - (5*B*b^
2*c - 8*A*b*c^2)/c^3)*x + 3*(5*B*b^3 - 8*A*b^2*c)/c^3) + 1/128*(5*B*b^4 - 8
*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 201, normalized size = 1.78

$$\frac{A b^3 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{16 c^{\frac{5}{2}}}-\frac{5B b^4 \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^2+bx}\right)}{128 c^{\frac{7}{2}}}-\frac{\sqrt{c x^2+bx}\; Abx}{4c}+\frac{5\sqrt{c x^2+bx}\; B b^2 x}{32c^2}-\frac{\sqrt{c x^2+b}}{8c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x)^(3/2)/c-5/24*B*b/c^2*(c*x^2+b*x)^(3/2)+5/32*B*b^2/c^2*x
*(c*x^2+b*x)^(1/2)+5/64*B*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*B*b^4/c^(7/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*(c*x^2+b*x)^(3/2)/c-1/4*A*b/c*
x*(c*x^2+b*x)^(1/2)-1/8*A*b^2/c^2*(c*x^2+b*x)^(1/2)+1/16*A*b^3/c^(5/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.90, size = 198, normalized size = 1.75

$$\frac{5\sqrt{cx^2+bx}\,Bb^2x}{32\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bx}{4\,c}-\frac{\sqrt{cx^2+bx}\,Abx}{4\,c}-\frac{5\,Bb^4\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{128\,c^{\frac{7}{2}}}+\frac{Ab^3\log\left(2\,cx+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 5/32*sqrt(c*x^2 + b*x)*B*b^2*x/c^2 + 1/4*(c*x^2 + b*x)^(3/2)*B*x/c - 1/4*sq
rt(c*x^2 + b*x)*A*b*x/c - 5/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c))/c^(7/2) + 1/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c
^(5/2) + 5/64*sqrt(c*x^2 + b*x)*B*b^3/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*B*b/c^
2 - 1/8*sqrt(c*x^2 + b*x)*A*b^2/c^2 + 1/3*(c*x^2 + b*x)^(3/2)*A/c
```

mupad [B] time = 1.52, size = 165, normalized size = 1.46

$$\frac{A\,\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}+\frac{B\,x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,B\,b\,\left(\frac{b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\right.}{24\,c^2}\right.}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2) + (B*x*(b*x
+ c*x^2)^(3/2))/(4*c) - (5*B*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x
^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*
x))/(24*c^2)))/(8*c) + (A*b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/
2)))/(16*c^(5/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.70 $\int (A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=97

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

```
[Out] 1/3*B*(c*x^2+b*x)^(3/2)/c+1/8*b^2*(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x
)^(1/2))/c^(5/2)-1/8*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi **[A]** time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c^2) + (B*(b*x + c*x^2)^(
3/2))/(3*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{B\left(bx+cx^2\right)^{3/2}}{3c}+\frac{(-bB+2Ac)\int \sqrt{bx+cx^2}\,dx}{2c}\\ &= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}+\frac{\left(b^2(bB-2Ac)\right)\int \frac{1}{\sqrt{bx+cx^2}}\,d}{16c^2}\\ &= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}+\frac{\left(b^2(bB-2Ac)\right)\text{Subst}\left(\int \frac{}{1-}\right.}{8c^2}\\ &= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}+\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}}{\sqrt{bx+c}}\right.}{8c^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.18, size = 108, normalized size = 1.11

$$\frac{\sqrt{x(b+cx)}\left(\frac{3b^{3/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(2bc(3A+Bx)+4c^2x(3A+2Bx)-3b^2B\right)\right)}{24c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c^2*x*(3*A +
2*B*x)) + (3*b^(3/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[x]*Sqrt[1 + (c*x)/b])))/(24*c^(5/2))
```

fricas [A] time = 0.82, size = 204, normalized size = 2.10

$$\left[-\frac{3\left(Bb^3-2\,Ab^2c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(8\,Bc^3x^2-3\,Bb^2c+6\,Abc^2+2\left(Bbc^2+6\,Ac^3\right)x\right)\sqrt{}}{48\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 2*A*b^2*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x)
*sqrt(c*x^2 + b*x))/c^3, -1/24*(3*(B*b^3 - 2*A*b^2*c)*sqrt(-c)*arctan(sqrt(
c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*
b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.20, size = 102, normalized size = 1.05

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(4\,Bx+\frac{Bbc+6\,Ac^2}{c^2}\right)x-\frac{3\left(Bb^2-2\,Abc\right)}{c^2}\right)-\frac{\left(Bb^3-2\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}\right.\right.}{16\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - 3*(B*b^2 - 2*
A*b*c)/c^2) - 1/16*(B*b^3 - 2*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 157, normalized size = 1.62

$$-\frac{A b^{2} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x}\right)}{8 c^{\frac{3}{2}}}+\frac{B b^{3} \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x}\right)}{16 c^{\frac{5}{2}}}+\frac{\sqrt{c x^{2}+b x}\, A x}{2}-\frac{\sqrt{c x^{2}+b x}\, B b x}{4 c}+\frac{\sqrt{c x^{2}+b x}\, A b}{4 c}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*B*(c*x^2+b*x)^(3/2)/c-1/4*B*b/c*x*(c*x^2+b*x)^(1/2)-1/8*B*b^2/c^2*(c*x^
2+b*x)^(1/2)+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1
/2*A*x*(c*x^2+b*x)^(1/2)+1/4*A/c*(c*x^2+b*x)^(1/2)*b-1/8*A*b^2/c^(3/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.95, size = 154, normalized size = 1.59

$$\frac{1}{2} \sqrt{c x^{2}+b x}\, A x-\frac{\sqrt{c x^{2}+b x}\, B b x}{4 c}+\frac{B b^{3} \log\left(2 c x+b+2 \sqrt{c x^{2}+b x} \sqrt{c}\right)}{16 c^{\frac{5}{2}}}-\frac{A b^{2} \log\left(2 c x+b+2 \sqrt{c x^{2}+b x} \sqrt{c}\right)}{8 c^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*A*x - 1/4*sqrt(c*x^2 + b*x)*B*b*x/c + 1/16*B*b^3*log(
2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/8*A*b^2*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 1/8*sqrt(c*x^2 + b*x)*B*b^2/c^2 +
1/3*(c*x^2 + b*x)^(3/2)*B/c + 1/4*sqrt(c*x^2 + b*x)*A*b/c
```

mupad [B] time = 1.38, size = 127, normalized size = 1.31

$$A \sqrt{c x^{2}+b x}\, \left(\frac{x}{2}+\frac{b}{4 c}\right)+\frac{B b^{3} \ln\left(\frac{b+2 c x}{\sqrt{c}}+2 \sqrt{c x^{2}+b x}\right)}{16 c^{5/2}}+\frac{B \sqrt{c x^{2}+b x}\, \left(-3 b^{2}+2 b c x+8 c^{2} x^{2}\right)}{24 c^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] A*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (B*b^3*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*
b^2 + 2*b*c*x))/(24*c^2) - (A*b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(
1/2)))/(8*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x \left(b+c x\right)}\, \left(A+B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x), x)
```

3.71 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x}\,dx$

Optimal. Leaf size=92

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}-\frac{\sqrt{bx+cx^2}\,(bB-4Ac)}{4c}+\frac{B\left(bx+cx^2\right)^{3/2}}{2cx}$$

```
[Out] 1/2*B*(c*x^2+b*x)^(3/2)/c/x-1/4*b*(-4*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x
)^(1/2))/c^(3/2)-1/4*(-4*A*c+B*b)*(c*x^2+b*x)^(1/2)/c
```

Rubi [**A**] time = 0.07, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {794, 664, 620, 206}

$$-\frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}-\frac{\sqrt{bx+cx^2}\,(bB-4Ac)}{4c}+\frac{B\left(bx+cx^2\right)^{3/2}}{2cx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x,x]
```

```
[Out] -((b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(4*c) + (B*(b*x + c*x^2)^(3/2))/(2*c*x)
- (b*(b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x}\,dx = \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} + \frac{\left(bB-Ac+\frac{3}{2}(-bB+2Ac)\right)\int\frac{\sqrt{bx+cx^2}}{x}\,dx}{2c}$$

$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{(b(bB-4Ac))\int\frac{1}{\sqrt{bx+cx^2}}\,dx}{8c}$$

$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{(b(bB-4Ac))\,\text{Subst}\Big(\int\frac{1}{1-cx^2}\,dx, x, \frac{}{\sqrt{bx}}}{4c}$$

$$= -\frac{(bB-4Ac)\sqrt{bx+cx^2}}{4c} + \frac{B\left(bx+cx^2\right)^{3/2}}{2cx} - \frac{b(bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{3/2}}$$

Mathematica [**A**] time = 0.14, size = 89, normalized size = 0.97

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\,(4Ac+bB+2Bcx) - \frac{\sqrt{b}\,(bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{4c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(b*B + 4*A*c + 2*B*c*x) - (Sqrt[b]*(b*B - 4*A*c
)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(4*c^(3
/2))
```

fricas [**A**] time = 0.72, size = 153, normalized size = 1.66

$$\left[-\frac{\left(Bb^2-4\,Abc\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(2\,Bc^2x+Bbc+4\,Ac^2\right)\sqrt{cx^2+bx}}{8\,c^2}, \left(Bb^2-4\,Abc\right)\sqrt{-c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/8*((B*b^2 - 4*A*b*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
)) - 2*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^2, 1/4*((B*b^2 -
4*A*b*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (2*B*c^2*x + B
*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^2]
```

giac [**A**] time = 0.23, size = 77, normalized size = 0.84

$$\frac{1}{4}\sqrt{cx^2+bx}\left(2\,Bx+\frac{Bb+4\,Ac}{c}\right)+\frac{\left(Bb^2-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x + (B*b + 4*A*c)/c) + 1/8*(B*b^2 - 4*A*b*c)*log
(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [**A**] time = 0.05, size = 112, normalized size = 1.22

$$\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2\sqrt{c}}-\frac{B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\;Bx}{2}+\sqrt{c\,x^2+bx}\;A+\frac{\sqrt{c\,x^2+bx}\;Bb}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+b*x)^(1/2)+1/4*B/c*(c*x^2+b*x)^(1/2)*b-1/8*B*b^2/c^(3/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+A*(c*x^2+b*x)^(1/2)+1/2*A*b*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.89, size = 109, normalized size = 1.18

$$\frac{1}{2}\sqrt{cx^2+bx}\,Bx-\frac{Bb^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{3}{2}}}+\frac{Ab\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,\sqrt{c}}+\sqrt{cx^2+bx}\,A+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*x - 1/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c))/c^(3/2) + 1/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt
(c) + sqrt(c*x^2 + b*x)*A + 1/4*sqrt(c*x^2 + b*x)*B*b/c
```

mupad [B] time = 1.32, size = 101, normalized size = 1.10

$$A\,\sqrt{c\,x^2+b\,x}+B\,\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{B\,b^2\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{8\,c^{3/2}}+\frac{A\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(b*x + c*x^2)^(1/2) + B*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (B*b^2*log(
(b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(8*c^(3/2)) + (A*b*log((b/2 + c
*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x, x)
```

3.72 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^2}\,dx$

Optimal. Leaf size=83

$$\frac{\sqrt{bx+cx^2}\,(2Ac+bB)}{b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}$$

```
[Out] -2*A*(c*x^2+b*x)^(3/2)/b/x^2+(2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2
))/c^(1/2)+(2*A*c+B*b)*(c*x^2+b*x)^(1/2)/b
```

Rubi [A] time = 0.09, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 664, 620, 206}

$$\frac{\sqrt{bx+cx^2}\,(2Ac+bB)}{b}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^2,x]
```

```
[Out] ((b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*A*(b*x + c*x^2)^(3/2))/(b*x^2) + (
(b*B + 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^2}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}+\frac{\left(2\left(-2(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{\sqrt{bx+cx^2}}{x}\,dx}{b}\\
&= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}+\frac{1}{2}(bB+2Ac)\int\frac{1}{\sqrt{bx+cx^2}}\,dx\\
&= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}+(bB+2Ac)\,\text{Subst}\left(\int\frac{1}{1-cx^2}\,dx,x,\right.\\
&= \frac{(bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2A\left(bx+cx^2\right)^{3/2}}{bx^2}+\frac{(bB+2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}
\end{aligned}
$$

Mathematica [A] time = 0.14, size = 75, normalized size = 0.90

$$
\frac{\sqrt{x(b+cx)}\left(\frac{\sqrt{x}\,(2Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,\sqrt{c}\,\sqrt{\frac{cx}{b}+1}}-2A+Bx\right)}{x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-2*A + B*x + ((b*B + 2*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sq
rt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b])))/x
```

fricas [A] time = 0.91, size = 138, normalized size = 1.66

$$
\left[\frac{(Bb+2\,Ac)\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\,(Bcx-2\,Ac)\sqrt{cx^2+bx}}{2\,cx},-\frac{(Bb+2\,Ac)\sqrt{-c}\,x\arctan\left(\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*((B*b + 2*A*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
+ 2*(B*c*x - 2*A*c)*sqrt(c*x^2 + b*x))/(c*x), -((B*b + 2*A*c)*sqrt(-c)*x*ar
ctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (B*c*x - 2*A*c)*sqrt(c*x^2 + b*x))
/(c*x)]
```

giac [A] time = 0.21, size = 82, normalized size = 0.99

$$
\sqrt{cx^2+bx}\,B-\frac{(Bb+2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,\sqrt{c}}+\frac{2\,Ab}{\sqrt{c}\,x-\sqrt{cx^2+bx}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B - 1/2*(B*b + 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*sqrt(c) - b))/sqrt(c) + 2*A*b/(sqrt(c)*x - sqrt(c*x^2 + b*x))
```

maple [A] time = 0.06, size = 113, normalized size = 1.36

$$
A\sqrt{c}\;\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2\sqrt{c}}+\frac{2\sqrt{c\,x^2+bx}\;Ac}{b}+\sqrt{c\,x^2+bx}\;B-\frac{2\left(c\,x^2+bx\right)^{\frac{3}{2}}}{b\,x^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(3/2)/b/x^2+2*A/b*c*(c*x^2+b*x)^(1/2)+A*c^(1/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+B*(c*x^2+b*x)^(1/2)+1/2*B*b*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.84, size = 89, normalized size = 1.07

$$\frac{Bb\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,\sqrt{c}}+A\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+\sqrt{cx^2+bx}\,B-\frac{2\,\sqrt{cx^2+bx}\,A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + A*sqrt(c)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + sqrt(c*x^2 + b*x)*B - 2*sqrt(c
*x^2 + b*x)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,(A+Bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**2,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**2, x)
```

3.73 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^3}\,dx$

Optimal. Leaf size=73

$$-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}-\frac{2B\sqrt{bx+cx^2}}{x}+2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)$$

```
[Out] -2/3*A*(c*x^2+b*x)^(3/2)/b/x^3+2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))*c^(
1/2)-2*B*(c*x^2+b*x)^(1/2)/x
```

Rubi [A] time = 0.07, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}-\frac{2B\sqrt{bx+cx^2}}{x}+2B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^3,x]
```

```
[Out] (-2*B*Sqrt[b*x + c*x^2])/x - (2*A*(b*x + c*x^2)^(3/2))/(3*b*x^3) + 2*B*Sqrt
[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^3}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+B\int \frac{\sqrt{bx+cx^2}}{x^2}\,dx \\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+(Bc)\int \frac{1}{\sqrt{bx+cx^2}}\,dx \\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+(2Bc)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right) \\
&= -\frac{2B\sqrt{bx+cx^2}}{x}-\frac{2A\left(bx+cx^2\right)^{3/2}}{3bx^3}+2B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)
\end{aligned}
$$

Mathematica [C] time = 0.06, size = 86, normalized size = 1.18

$$
\frac{2\sqrt{x(b+cx)}\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(bB-Ac)-b^2B\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx}{b}\right)\right)}{3bcx^2\sqrt{\frac{cx}{b}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^3,x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*((b*B - A*c)*(b + c*x)*Sqrt[1 + (c*x)/b] - b^2*B*Hyper
geometric2F1[-3/2, -3/2, -1/2, -((c*x)/b)]))/(3*b*c*x^2*Sqrt[1 + (c*x)/b])
```

fricas [A] time = 1.22, size = 141, normalized size = 1.93

$$
\left[\frac{3\,Bb\sqrt{c}\,x^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\sqrt{cx^2+bx}\,(Ab+(3\,Bb+Ac)x)}{3\,bx^2},-\frac{2\left(3\,Bb\sqrt{-c}\,x^2\arctan\left(\frac{\sqrt{cx^2+bx}}{cx}\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/3*(3*B*b*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sq
rt(c*x^2 + b*x)*(A*b + (3*B*b + A*c)*x))/(b*x^2), -2/3*(3*B*b*sqrt(-c)*x^2*
arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + sqrt(c*x^2 + b*x)*(A*b + (3*B*b
+ A*c)*x))/(b*x^2)]
```

giac [B] time = 0.26, size = 151, normalized size = 2.07

$$
-B\sqrt{c}\,\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}\,-b\right|\right)+\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb\sqrt{c}\,+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Ac^{\frac{3}{2}}+3\left(\right.\right.}{3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3\sqrt{c}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/3*(
3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*sqrt(c) + 3*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^2*A*c^(3/2) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c + A*b^2*sqrt
(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^3*sqrt(c))
```

maple [A] time = 0.07, size = 89, normalized size = 1.22

$$B\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)+\frac{2\sqrt{c\,x^{2}+bx}\,Bc}{b}-\frac{2\left(c\,x^{2}+bx\right)^{\frac{3}{2}}B}{b\,x^{2}}-\frac{2\left(c\,x^{2}+bx\right)^{\frac{3}{2}}A}{3b\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(3/2)/b/x^3-2*B/b/x^2*(c*x^2+b*x)^(3/2)+2*B/b*c*(c*x^2+b
*x)^(1/2)+B*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.95, size = 85, normalized size = 1.16

$$\left(\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-\frac{2\,\sqrt{cx^{2}+bx}}{x}\right)B-\frac{2}{3}\,A\left(\frac{\sqrt{cx^{2}+bx}\,c}{bx}+\frac{\sqrt{cx^{2}+bx}}{x^{2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] (sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sqrt(c*x^2 + b*x)
/x)*B - 2/3*A*(sqrt(c*x^2 + b*x)*c/(b*x) + sqrt(c*x^2 + b*x)/x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^{2}+b\,x}\,\left(A+B\,x\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**3,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**3, x)
```

3.74 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^4}\,dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{3/2}(5bB-2Ac)}{15b^2x^3}-\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}$$

```
[Out] -2/5*A*(c*x^2+b*x)^(3/2)/b/x^4-2/15*(-2*A*c+5*B*b)*(c*x^2+b*x)^(3/2)/b^2/x^
3
```

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{792, 650\}$

$$-\frac{2\left(bx+cx^2\right)^{3/2}(5bB-2Ac)}{15b^2x^3}-\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^4,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(5*b*x^4) - (2*(5*b*B - 2*A*c)*(b*x + c*x^2)^(3/
2))/(15*b^2*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^4}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^3}\,dx}{5b}\\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{5bx^4}-\frac{2(5bB-2Ac)\left(bx+cx^2\right)^{3/2}}{15b^2x^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 36, normalized size = 0.63

$$-\frac{2(x(b+cx))^{3/2}(3Ab-2Acx+5bBx)}{15b^2x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^4,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(3*A*b + 5*b*B*x - 2*A*c*x))/(15*b^2*x^4)
```

fricas [**A**] time = 0.79, size = 55, normalized size = 0.96

$$-\frac{2\left(3\,Ab^2+\left(5\,Bbc-2\,Ac^2\right)x^2+\left(5\,Bb^2+Abc\right)x\right)\sqrt{cx^2+bx}}{15\,b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^2 + (5*B*b*c - 2*A*c^2)*x^2 + (5*B*b^2 + A*b*c)*x)*sqrt(c*x^2
+ b*x)/(b^2*x^3)
```

giac [**B**] time = 0.25, size = 191, normalized size = 3.35

$$\frac{2\left(15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bc+15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3Bb\sqrt{c}+15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3Ac^{\frac{3}{2}}+5\left(\sqrt{c}\,x-\sqrt{cx}\right.\right.}{15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] 2/15*(15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c + 15*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^3*B*b*sqrt(c) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(3/2) + 5
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2 + 25*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b*c + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*sqrt(c) + 3*A*b^3)/(s
qrt(c)*x - sqrt(c*x^2 + b*x))^5
```

maple [**A**] time = 0.05, size = 40, normalized size = 0.70

$$-\frac{2\left(cx+b\right)\left(-2Acx+5Bbx+3Ab\right)\sqrt{c\,x^2+bx}}{15b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x)
```

```
[Out] -2/15*(c*x+b)*(-2*A*c*x+5*B*b*x+3*A*b)*(c*x^2+b*x)^(1/2)/b^2/x^3
```

maxima [**B**] time = 0.95, size = 100, normalized size = 1.75

$$-\frac{2\sqrt{cx^2+bx}\,Bc}{3\,bx}+\frac{4\sqrt{cx^2+bx}\,Ac^2}{15\,b^2x}-\frac{2\sqrt{cx^2+bx}\,B}{3\,x^2}-\frac{2\sqrt{cx^2+bx}\,Ac}{15\,bx^2}-\frac{2\sqrt{cx^2+bx}\,A}{5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(c*x^2 + b*x)*B*c/(b*x) + 4/15*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x) - 2
/3*sqrt(c*x^2 + b*x)*B/x^2 - 2/15*sqrt(c*x^2 + b*x)*A*c/(b*x^2) - 2/5*sqrt(
c*x^2 + b*x)*A/x^3
```

mupad [**B**] time = 1.44, size = 100, normalized size = 1.75

$$\frac{4\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{15\,b^2\,x}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{3\,x^2}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{15\,b\,x^2}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{3\,b\,x}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^4,x)
```

```
[Out] (4*A*c^2*(b*x + c*x^2)^(1/2))/(15*b^2*x) - (2*B*(b*x + c*x^2)^(1/2))/(3*x^2
) - (2*A*c*(b*x + c*x^2)^(1/2))/(15*b*x^2) - (2*B*c*(b*x + c*x^2)^(1/2))/(3
*b*x) - (2*A*(b*x + c*x^2)^(1/2))/(5*x^3)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**4,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**4, x)
```

3.75 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^5}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{105b^3x^3}-\frac{2\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{35b^2x^4}-\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}$$

```
[Out] -2/7*A*(c*x^2+b*x)^(3/2)/b/x^5-2/35*(-4*A*c+7*B*b)*(c*x^2+b*x)^(3/2)/b^2/x^
4+4/105*c*(-4*A*c+7*B*b)*(c*x^2+b*x)^(3/2)/b^3/x^3
```

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{105b^3x^3}-\frac{2\left(bx+cx^2\right)^{3/2}(7bB-4Ac)}{35b^2x^4}-\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^5,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(7*b*x^5) - (2*(7*b*B - 4*A*c)*(b*x + c*x^2)^(3/
2))/(35*b^2*x^4) + (4*c*(7*b*B - 4*A*c)*(b*x + c*x^2)^(3/2))/(105*b^3*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^5}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5} + \frac{\left(2\left(-5(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^4}\,dx}{7b} \\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5} - \frac{2(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{35b^2x^4} - \frac{(2c(7bB-4Ac))\int \frac{\sqrt{bx+cx^2}}{x^3}\,dx}{35b^2} \\ &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{7bx^5} - \frac{2(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{35b^2x^4} + \frac{4c(7bB-4Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^3}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 56, normalized size = 0.62

$$-\frac{2(x(b+cx))^{3/2}\left(A\left(15b^2-12bcx+8c^2x^2\right)+7bBx(3b-2cx)\right)}{105b^3x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^5,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(7*b*B*x*(3*b - 2*c*x) + A*(15*b^2 - 12*b*c*x + 8*c
^2*x^2)))/(105*b^3*x^5)
```

fricas [**A**] time = 0.70, size = 80, normalized size = 0.89

$$-\frac{2\left(15\,Ab^3-2\left(7\,Bbc^2-4\,Ac^3\right)x^3+\left(7\,Bb^2c-4\,Abc^2\right)x^2+3\left(7\,Bb^3+Ab^2c\right)x\right)\sqrt{cx^2+bx}}{105\,b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^3 - 2*(7*B*b*c^2 - 4*A*c^3)*x^3 + (7*B*b^2*c - 4*A*b*c^2)*x^
2 + 3*(7*B*b^3 + A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^3*x^4)
```

giac [**B**] time = 0.23, size = 251, normalized size = 2.79

$$2\Bigl(105\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Bc^{\frac{3}{2}}+175\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bbc+140\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Ac^2+105\bigl(\sqrt{c}\,x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 2/105*(105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(3/2) + 175*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b*c + 140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^2 + 1
05*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c) + 315*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*A*b*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3 +
273*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c + 105*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^3*sqrt(c) + 15*A*b^4)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
```

maple [**A**] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-14Bbc\,x^2-12Abcx+21B\,b^2x+15A\,b^2\right)\sqrt{c\,x^2+bx}}{105b^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x)
```

```
[Out] -2/105*(c*x+b)*(8*A*c^2*x^2-14*B*b*c*x^2-12*A*b*c*x+21*B*b^2*x+15*A*b^2)*(c
*x^2+b*x)^(1/2)/b^3/x^4
```

maxima [A] time = 0.93, size = 146, normalized size = 1.62

$$\frac{4\sqrt{cx^2+bx}\,Bc^2}{15\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^3}{105\,b^3x}-\frac{2\sqrt{cx^2+bx}\,Bc}{15\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac^2}{105\,b^2x^2}-\frac{2\sqrt{cx^2+bx}\,B}{5\,x^3}-\frac{2\sqrt{cx^2+bx}\,Ac}{35\,bx^3}-2\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] 4/15*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x) - 16/105*sqrt(c*x^2 + b*x)*A*c^3/(b^3*
x) - 2/15*sqrt(c*x^2 + b*x)*B*c/(b*x^2) + 8/105*sqrt(c*x^2 + b*x)*A*c^2/(b^
2*x^2) - 2/5*sqrt(c*x^2 + b*x)*B/x^3 - 2/35*sqrt(c*x^2 + b*x)*A*c/(b*x^3) -
 2/7*sqrt(c*x^2 + b*x)*A/x^4
```

mupad [B] time = 1.67, size = 146, normalized size = 1.62

$$\frac{8\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^2}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{5\,x^3}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^3}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{15\,b\,x^2}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{16\,A\,c^3\,\sqrt{c\,x^2+b}}{105\,b^3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] (8*A*c^2*(b*x + c*x^2)^(1/2))/(105*b^2*x^2) - (2*B*(b*x + c*x^2)^(1/2))/(5*
x^3) - (2*A*c*(b*x + c*x^2)^(1/2))/(35*b*x^3) - (2*B*c*(b*x + c*x^2)^(1/2))
/(15*b*x^2) - (2*A*(b*x + c*x^2)^(1/2))/(7*x^4) - (16*A*c^3*(b*x + c*x^2)^(
1/2))/(105*b^3*x) + (4*B*c^2*(b*x + c*x^2)^(1/2))/(15*b^2*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**5,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**5, x)
```

3.76 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^6}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{315b^4x^3}+\frac{8c\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{105b^3x^4}-\frac{2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{21b^2x^5}-\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}$$

```
[Out] -2/9*A*(c*x^2+b*x)^(3/2)/b/x^6-2/21*(-2*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/b^2/x^
5+8/105*c*(-2*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/b^3/x^4-16/315*c^2*(-2*A*c+3*B*b
)*(c*x^2+b*x)^(3/2)/b^4/x^3
```

Rubi [A] time = 0.11, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{315b^4x^3}+\frac{8c\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{105b^3x^4}-\frac{2\left(bx+cx^2\right)^{3/2}(3bB-2Ac)}{21b^2x^5}-\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^6,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(9*b*x^6) - (2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/
2))/(21*b^2*x^5) + (8*c*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/2))/(105*b^3*x^4)
- (16*c^2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(3/2))/(315*b^4*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^6}\,dx &= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{\sqrt{bx+cx^2}}{x^5}\,dx}{9b}\\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5}-\frac{(4c(3bB-2Ac))\int\frac{\sqrt{bx+cx^2}}{x^4}\,dx}{21b^2}\\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5}+\frac{8c(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^4}\\
&= -\frac{2A\left(bx+cx^2\right)^{3/2}}{9bx^6}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{21b^2x^5}+\frac{8c(3bB-2Ac)\left(bx+cx^2\right)^{3/2}}{105b^3x^4}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 78, normalized size = 0.62

$$
-\frac{2(x(b+cx))^{3/2}\left(A\left(35b^3-30b^2cx+24bc^2x^2-16c^3x^3\right)+3bBx\left(15b^2-12bcx+8c^2x^2\right)\right)}{315b^4x^6}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^6,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(3*b*B*x*(15*b^2 - 12*b*c*x + 8*c^2*x^2) + A*(35*b^
3 - 30*b^2*c*x + 24*b*c^2*x^2 - 16*c^3*x^3)))/(315*b^4*x^6)
```

fricas [A] time = 0.85, size = 105, normalized size = 0.84

$$
-\frac{2\left(35\,Ab^4+8\left(3\,Bbc^3-2\,Ac^4\right)x^4-4\left(3\,Bb^2c^2-2\,Abc^3\right)x^3+3\left(3\,Bb^3c-2\,Ab^2c^2\right)x^2+5\left(9\,Bb^4+Ab^3c\right)x\right)\sqrt{c}}{315\,b^4x^5}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 + 8*(3*B*b*c^3 - 2*A*c^4)*x^4 - 4*(3*B*b^2*c^2 - 2*A*b*c^3
)*x^3 + 3*(3*B*b^3*c - 2*A*b^2*c^2)*x^2 + 5*(9*B*b^4 + A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^4*x^5)
```

giac [B] time = 0.20, size = 311, normalized size = 2.49

$$
2\left(420\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Bc^2+945\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Bbc^{\frac{3}{2}}+630\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Ac^{\frac{5}{2}}+819\left(\sqrt{c}\,x\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] 2/315*(420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 945*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*B*b*c^(3/2) + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(5/
2) + 819*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 1764*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b*c^2 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt
(c) + 1995*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 45*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^2*B*b^4 + 1125*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3
*c + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 35*A*b^5)/(sqrt(c)
*x - sqrt(c*x^2 + b*x))^9
```

maple [**A**] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-16A\,c^3x^3+24Bb\,c^2x^3+24Ab\,c^2x^2-36B\,b^2c\,x^2-30A\,b^2cx+45B\,b^3x+35A\,b^3\right)\sqrt{c\,x^2+bx}}{315b^4x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x)
```

```
[Out] -2/315*(c*x+b)*(-16*A*c^3*x^3+24*B*b*c^2*x^3+24*A*b*c^2*x^2-36*B*b^2*c*x^2-
30*A*b^2*c*x+45*B*b^3*x+35*A*b^3)*(c*x^2+b*x)^(1/2)/b^4/x^5
```

maxima [**A**] time = 0.98, size = 192, normalized size = 1.54

$$-\frac{16\sqrt{cx^2+bx}\,Bc^3}{105\,b^3x}+\frac{32\sqrt{cx^2+bx}\,Ac^4}{315\,b^4x}+\frac{8\sqrt{cx^2+bx}\,Bc^2}{105\,b^2x^2}-\frac{16\sqrt{cx^2+bx}\,Ac^3}{315\,b^3x^2}-\frac{2\sqrt{cx^2+bx}\,Bc}{35\,bx^3}+\frac{4\sqrt{cx^2+bx}\,Ac^2}{105\,b^2x^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] -16/105*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x) + 32/315*sqrt(c*x^2 + b*x)*A*c^4/(b
^4*x) + 8/105*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x^2) - 16/315*sqrt(c*x^2 + b*x)*
A*c^3/(b^3*x^2) - 2/35*sqrt(c*x^2 + b*x)*B*c/(b*x^3) + 4/105*sqrt(c*x^2 + b
*x)*A*c^2/(b^2*x^3) - 2/7*sqrt(c*x^2 + b*x)*B/x^4 - 2/63*sqrt(c*x^2 + b*x)*
A*c/(b*x^4) - 2/9*sqrt(c*x^2 + b*x)*A/x^5
```

mupad [**B**] time = 1.94, size = 192, normalized size = 1.54

$$\frac{4\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b^2\,x^3}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^4}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^3}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{16\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{315\,b^3\,x^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] (4*A*c^2*(b*x + c*x^2)^(1/2))/(105*b^2*x^3) - (2*B*(b*x + c*x^2)^(1/2))/(7*
x^4) - (2*A*c*(b*x + c*x^2)^(1/2))/(63*b*x^4) - (2*B*c*(b*x + c*x^2)^(1/2))
/(35*b*x^3) - (2*A*(b*x + c*x^2)^(1/2))/(9*x^5) - (16*A*c^3*(b*x + c*x^2)^(
1/2))/(315*b^3*x^2) + (32*A*c^4*(b*x + c*x^2)^(1/2))/(315*b^4*x) + (8*B*c^2
*(b*x + c*x^2)^(1/2))/(105*b^2*x^2) - (16*B*c^3*(b*x + c*x^2)^(1/2))/(105*b
^3*x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**6,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**6, x)
```

3.77 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^7}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{3465b^5x^3}-\frac{16c^2\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{1155b^4x^4}+\frac{4c\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{231b^3x^5}-\frac{2\left(bx+cx^2\right.}{9}$$

```
[Out] -2/11*A*(c*x^2+b*x)^(3/2)/b/x^7-2/99*(-8*A*c+11*B*b)*(c*x^2+b*x)^(3/2)/b^2/
x^6+4/231*c*(-8*A*c+11*B*b)*(c*x^2+b*x)^(3/2)/b^3/x^5-16/1155*c^2*(-8*A*c+1
1*B*b)*(c*x^2+b*x)^(3/2)/b^4/x^4+32/3465*c^3*(-8*A*c+11*B*b)*(c*x^2+b*x)^(3
/2)/b^5/x^3
```

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = $\{792, 658, 650\}$

$$\frac{32c^3\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{3465b^5x^3}-\frac{16c^2\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{1155b^4x^4}+\frac{4c\left(bx+cx^2\right)^{3/2}(11bB-8Ac)}{231b^3x^5}-\frac{2\left(bx+cx^2\right.}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^7,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(11*b*x^7) - (2*(11*b*B - 8*A*c)*(b*x + c*x^2)^(
3/2))/(99*b^2*x^6) + (4*c*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(231*b^3*x^
5) - (16*c^2*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(1155*b^4*x^4) + (32*c^3
*(11*b*B - 8*A*c)*(b*x + c*x^2)^(3/2))/(3465*b^5*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^7}\,dx = -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} + \frac{\left(2\left(-7(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{x^6}\,dx}{11b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} - \frac{(2c(11bB-8Ac))\int \frac{\sqrt{bx+cx^2}}{x^5}\,dx}{33b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{231b^3x^5} +$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{231b^3x^5} -$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{11bx^7} - \frac{2(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{99b^2x^6} + \frac{4c(11bB-8Ac)\left(bx+cx^2\right)^{3/2}}{231b^3x^5} -$$

Mathematica [**A**] time = 0.05, size = 100, normalized size = 0.62

$$-\frac{2(x(b+cx))^{3/2}\left(A\left(315b^4-280b^3cx+240b^2c^2x^2-192bc^3x^3+128c^4x^4\right)+11bBx\left(35b^3-30b^2cx+24bc^2x^2-1\right.\right.}{3465b^5x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^7,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(11*b*B*x*(35*b^3 - 30*b^2*c*x + 24*b*c^2*x^2 - 16*
c^3*x^3) + A*(315*b^4 - 280*b^3*c*x + 240*b^2*c^2*x^2 - 192*b*c^3*x^3 + 128
*c^4*x^4)))/(3465*b^5*x^7)
```

fricas [**A**] time = 0.96, size = 129, normalized size = 0.81

$$-\frac{2\left(315\,Ab^5-16\left(11\,Bbc^4-8\,Ac^5\right)x^5+8\left(11\,Bb^2c^3-8\,Abc^4\right)x^4-6\left(11\,Bb^3c^2-8\,Ab^2c^3\right)x^3+5\left(11\,Bb^4c-8\,Ab^3\right.\right.}{3465\,b^5x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 - 16*(11*B*b*c^4 - 8*A*c^5)*x^5 + 8*(11*B*b^2*c^3 - 8*A*
b*c^4)*x^4 - 6*(11*B*b^3*c^2 - 8*A*b^2*c^3)*x^3 + 5*(11*B*b^4*c - 8*A*b^3*c
^2)*x^2 + 35*(11*B*b^5 + A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^5*x^6)
```

giac [**B**] time = 0.20, size = 371, normalized size = 2.32

$$\frac{2\left(6930\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Bc^{\frac{5}{2}}+19404\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Bbc^2+11088\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Ac^3+21945\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 2/3465*(6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^(5/2) + 19404*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^6*B*b*c^2 + 11088*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A
*c^3 + 21945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2) + 36960*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2) + 12375*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*b^3*c + 51480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2 + 3465*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c) + 38115*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^3*c^(3/2) + 385*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5 +
 15785*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c + 3465*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^5*sqrt(c) + 315*A*b^6)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(128A\,c^4x^4-176Bb\,c^3x^4-192Ab\,c^3x^3+264B\,b^2c^2x^3+240A\,b^2c^2x^2-330B\,b^3c\,x^2-280A\,b^3cx+\right.}{3465b^5x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x)
```

```
[Out] -2/3465*(c*x+b)*(128*A*c^4*x^4-176*B*b*c^3*x^4-192*A*b*c^3*x^3+264*B*b^2*c^
2*x^3+240*A*b^2*c^2*x^2-330*B*b^3*c*x^2-280*A*b^3*c*x+385*B*b^4*x+315*A*b^4
)*(c*x^2+b*x)^(1/2)/b^5/x^6
```

maxima [A] time = 0.98, size = 238, normalized size = 1.49

$$\frac{32\,\sqrt{cx^2+bx}\,Bc^4}{315\,b^4x}-\frac{256\,\sqrt{cx^2+bx}\,Ac^5}{3465\,b^5x}-\frac{16\,\sqrt{cx^2+bx}\,Bc^3}{315\,b^3x^2}+\frac{128\,\sqrt{cx^2+bx}\,Ac^4}{3465\,b^4x^2}+\frac{4\,\sqrt{cx^2+bx}\,Bc^2}{105\,b^2x^3}-\frac{32\,\sqrt{cx^2+b}}{1155\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] 32/315*sqrt(c*x^2 + b*x)*B*c^4/(b^4*x) - 256/3465*sqrt(c*x^2 + b*x)*A*c^5/(
b^5*x) - 16/315*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x^2) + 128/3465*sqrt(c*x^2 + b
*x)*A*c^4/(b^4*x^2) + 4/105*sqrt(c*x^2 + b*x)*B*c^2/(b^2*x^3) - 32/1155*sqr
t(c*x^2 + b*x)*A*c^3/(b^3*x^3) - 2/63*sqrt(c*x^2 + b*x)*B*c/(b*x^4) + 16/69
3*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x^4) - 2/9*sqrt(c*x^2 + b*x)*B/x^5 - 2/99*sq
rt(c*x^2 + b*x)*A*c/(b*x^5) - 2/11*sqrt(c*x^2 + b*x)*A/x^6
```

mupad [B] time = 2.23, size = 238, normalized size = 1.49

$$\frac{16\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,b^2\,x^4}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{99\,b\,x^5}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^4}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{32\,A\,c^3\,\sqrt{c\,x^2+}}{1155\,b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] (16*A*c^2*(b*x + c*x^2)^(1/2))/(693*b^2*x^4) - (2*B*(b*x + c*x^2)^(1/2))/(9
*x^5) - (2*A*c*(b*x + c*x^2)^(1/2))/(99*b*x^5) - (2*B*c*(b*x + c*x^2)^(1/2)
)/(63*b*x^4) - (2*A*(b*x + c*x^2)^(1/2))/(11*x^6) - (32*A*c^3*(b*x + c*x^2)
^(1/2))/(1155*b^3*x^3) + (128*A*c^4*(b*x + c*x^2)^(1/2))/(3465*b^4*x^2) - (
256*A*c^5*(b*x + c*x^2)^(1/2))/(3465*b^5*x) + (4*B*c^2*(b*x + c*x^2)^(1/2))
/(105*b^2*x^3) - (16*B*c^3*(b*x + c*x^2)^(1/2))/(315*b^3*x^2) + (32*B*c^4*(
b*x + c*x^2)^(1/2))/(315*b^4*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**7,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**7, x)
```

3.78 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^8}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{45045b^6x^3}+\frac{128c^3\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{15015b^5x^4}-\frac{32c^2\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{3003b^4x^5}+\frac{16c}{}$$

```
[Out] -2/13*A*(c*x^2+b*x)^(3/2)/b/x^8-2/143*(-10*A*c+13*B*b)*(c*x^2+b*x)^(3/2)/b^
2/x^7+16/1287*c*(-10*A*c+13*B*b)*(c*x^2+b*x)^(3/2)/b^3/x^6-32/3003*c^2*(-10
*A*c+13*B*b)*(c*x^2+b*x)^(3/2)/b^4/x^5+128/15015*c^3*(-10*A*c+13*B*b)*(c*x^
2+b*x)^(3/2)/b^5/x^4-256/45045*c^4*(-10*A*c+13*B*b)*(c*x^2+b*x)^(3/2)/b^6/x
^3
```

Rubi [A] time = 0.20, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{45045b^6x^3}+\frac{128c^3\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{15015b^5x^4}-\frac{32c^2\left(bx+cx^2\right)^{3/2}(13bB-10Ac)}{3003b^4x^5}+\frac{16c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(3/2))/(13*b*x^8) - (2*(13*b*B - 10*A*c)*(b*x + c*x^2)^
(3/2))/(143*b^2*x^7) + (16*c*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(1287*b
^3*x^6) - (32*c^2*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(3003*b^4*x^5) + (
128*c^3*(13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(15015*b^5*x^4) - (256*c^4*(
13*b*B - 10*A*c)*(b*x + c*x^2)^(3/2))/(45045*b^6*x^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^8}\,dx = -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} + \frac{\left(2\left(-8(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{\sqrt{bx+cx^2}}{x^7}\,dx}{13b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} - \frac{(8c(13bB-10Ac))\int\frac{\sqrt{bx+cx}}{x^6}}{143b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx\right.}{1287b^3x^6}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx\right.}{1287b^3x^6}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx\right.}{1287b^3x^6}$$

$$= -\frac{2A\left(bx+cx^2\right)^{3/2}}{13bx^8} - \frac{2(13bB-10Ac)\left(bx+cx^2\right)^{3/2}}{143b^2x^7} + \frac{16c(13bB-10Ac)\left(bx+cx\right.}{1287b^3x^6}$$

Mathematica [**A**] time = 0.04, size = 123, normalized size = 0.63

$$-\frac{2(x(b+cx))^{3/2}\left(5A\left(693b^5-630b^4cx+560b^3c^2x^2-480b^2c^3x^3+384bc^4x^4-256c^5x^5\right)+13bBx\left(315b^4-28\right.\right.}{45045b^6x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^8,x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(13*b*B*x*(315*b^4 - 280*b^3*c*x + 240*b^2*c^2*x^2
- 192*b*c^3*x^3 + 128*c^4*x^4) + 5*A*(693*b^5 - 630*b^4*c*x + 560*b^3*c^2*x
^2 - 480*b^2*c^3*x^3 + 384*b*c^4*x^4 - 256*c^5*x^5)))/(45045*b^6*x^8)
```

fricas [**A**] time = 0.94, size = 153, normalized size = 0.78

$$-\frac{2\left(3465\,Ab^6+128\left(13\,Bbc^5-10\,Ac^6\right)x^6-64\left(13\,Bb^2c^4-10\,Abc^5\right)x^5+48\left(13\,Bb^3c^3-10\,Ab^2c^4\right)x^4-40\left(13\right.\right.}{45045\,b^6x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/45045*(3465*A*b^6 + 128*(13*B*b*c^5 - 10*A*c^6)*x^6 - 64*(13*B*b^2*c^4 -
 10*A*b*c^5)*x^5 + 48*(13*B*b^3*c^3 - 10*A*b^2*c^4)*x^4 - 40*(13*B*b^4*c^2
- 10*A*b^3*c^3)*x^3 + 35*(13*B*b^5*c - 10*A*b^4*c^2)*x^2 + 315*(13*B*b^6 +
A*b^5*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^7)
```

giac [**B**] time = 0.20, size = 431, normalized size = 2.21

$$\frac{2\left(144144\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Bc^3+480480\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Bbc^{\frac{5}{2}}+240240\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Ac^{\frac{7}{2}}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/45045*(144144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 480480*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^7*B*b*c^(5/2) + 240240*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^7*A*c^(7/2) + 669240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 926640
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b*c^3 + 495495*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^5*B*b^3*c^(3/2) + 1531530*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*
c^(5/2) + 205205*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c + 1401400*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^3*B*b^5*sqrt(c) + 765765*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2)
 + 4095*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6 + 249795*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^5*c + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*sqrt(
c) + 3465*A*b^7)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^13
```

maple [A] time = 0.04, size = 134, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-1280A\,c^5x^5+1664Bb\,c^4x^5+1920Ab\,c^4x^4-2496B\,b^2c^3x^4-2400A\,b^2c^3x^3+3120B\,b^3c^2x^3+2800\right.}{45045b^6x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x)
```

```
[Out] -2/45045*(c*x+b)*(-1280*A*c^5*x^5+1664*B*b*c^4*x^5+1920*A*b*c^4*x^4-2496*B*
b^2*c^3*x^4-2400*A*b^2*c^3*x^3+3120*B*b^3*c^2*x^3+2800*A*b^3*c^2*x^2-3640*B
*b^4*c*x^2-3150*A*b^4*c*x+4095*B*b^5*x+3465*A*b^5)*(c*x^2+b*x)^(1/2)/x^7/b^
6
```

maxima [A] time = 0.99, size = 284, normalized size = 1.46

$$-\frac{256\sqrt{cx^2+bx}\,Bc^5}{3465\,b^5x}+\frac{512\sqrt{cx^2+bx}\,Ac^6}{9009\,b^6x}+\frac{128\sqrt{cx^2+bx}\,Bc^4}{3465\,b^4x^2}-\frac{256\sqrt{cx^2+bx}\,Ac^5}{9009\,b^5x^2}-\frac{32\sqrt{cx^2+bx}\,Bc^3}{1155\,b^3x^3}+\frac{64\sqrt{cx^2}}{3003}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^8,x, algorithm="maxima")
```

```
[Out] -256/3465*sqrt(c*x^2 + b*x)*B*c^5/(b^5*x) + 512/9009*sqrt(c*x^2 + b*x)*A*c^
6/(b^6*x) + 128/3465*sqrt(c*x^2 + b*x)*B*c^4/(b^4*x^2) - 256/9009*sqrt(c*x^
2 + b*x)*A*c^5/(b^5*x^2) - 32/1155*sqrt(c*x^2 + b*x)*B*c^3/(b^3*x^3) + 64/3
003*sqrt(c*x^2 + b*x)*A*c^4/(b^4*x^3) + 16/693*sqrt(c*x^2 + b*x)*B*c^2/(b^2
*x^4) - 160/9009*sqrt(c*x^2 + b*x)*A*c^3/(b^3*x^4) - 2/99*sqrt(c*x^2 + b*x)
*B*c/(b*x^5) + 20/1287*sqrt(c*x^2 + b*x)*A*c^2/(b^2*x^5) - 2/11*sqrt(c*x^2
+ b*x)*B/x^6 - 2/143*sqrt(c*x^2 + b*x)*A*c/(b*x^6) - 2/13*sqrt(c*x^2 + b*x)
*A/x^7
```

mupad [B] time = 2.49, size = 284, normalized size = 1.46

$$\frac{20\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{1287\,b^2\,x^5}-\frac{2\,B\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{2\,A\,c\,\sqrt{c\,x^2+b\,x}}{143\,b\,x^6}-\frac{2\,B\,c\,\sqrt{c\,x^2+b\,x}}{99\,b\,x^5}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{13\,x^7}-\frac{160\,A\,c^3\,\sqrt{c\,x^2+b}}{9009\,b^3\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^8,x)
```

```
[Out] (20*A*c^2*(b*x + c*x^2)^(1/2))/(1287*b^2*x^5) - (2*B*(b*x + c*x^2)^(1/2))/(
11*x^6) - (2*A*c*(b*x + c*x^2)^(1/2))/(143*b*x^6) - (2*B*c*(b*x + c*x^2)^(1
/2))/(99*b*x^5) - (2*A*(b*x + c*x^2)^(1/2))/(13*x^7) - (160*A*c^3*(b*x + c*
x^2)^(1/2))/(9009*b^3*x^4) + (64*A*c^4*(b*x + c*x^2)^(1/2))/(3003*b^4*x^3)
- (256*A*c^5*(b*x + c*x^2)^(1/2))/(9009*b^5*x^2) + (512*A*c^6*(b*x + c*x^2)
^(1/2))/(9009*b^6*x) + (16*B*c^2*(b*x + c*x^2)^(1/2))/(693*b^2*x^4) - (32*B
*c^3*(b*x + c*x^2)^(1/2))/(1155*b^3*x^3) + (128*B*c^4*(b*x + c*x^2)^(1/2))/
(3465*b^4*x^2) - (256*B*c^5*(b*x + c*x^2)^(1/2))/(3465*b^5*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**8,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**8, x)
```

3.79 $\int x^3(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=238

$$\frac{9b^7(11bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{16384c^{13/2}}-\frac{9b^5(b+2cx)\sqrt{bx+cx^2}\,(11bB-16Ac)}{16384c^6}+\frac{3b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB-1}{2048c^5}$$

```
[Out] 3/2048*b^3*(-16*A*c+11*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^5-3/640*b^2*(-16*
A*c+11*B*b)*(c*x^2+b*x)^(5/2)/c^4+3/448*b*(-16*A*c+11*B*b)*x*(c*x^2+b*x)^(5
/2)/c^3-1/112*(-16*A*c+11*B*b)*x^2*(c*x^2+b*x)^(5/2)/c^2+1/8*B*x^3*(c*x^2+b
*x)^(5/2)/c+9/16384*b^7*(-16*A*c+11*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2
))/c^(13/2)-9/16384*b^5*(-16*A*c+11*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^6
```

Rubi [A] time = 0.25, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{9b^5(b+2cx)\sqrt{bx+cx^2}\,(11bB-16Ac)}{16384c^6}+\frac{3b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB-16Ac)}{2048c^5}-\frac{3b^2\left(bx+cx^2\right)^{5/2}(11bB-16}{640c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-9*b^5*(11*b*B - 16*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(16384*c^6) + (3*b
^3*(11*b*B - 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(2048*c^5) - (3*b^2*(
11*b*B - 16*A*c)*(b*x + c*x^2)^(5/2))/(640*c^4) + (3*b*(11*b*B - 16*A*c)*x*
(b*x + c*x^2)^(5/2))/(448*c^3) - ((11*b*B - 16*A*c)*x^2*(b*x + c*x^2)^(5/2)
)/(112*c^2) + (B*x^3*(b*x + c*x^2)^(5/2))/(8*c) + (9*b^7*(11*b*B - 16*A*c)*
ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(16384*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= \frac{Bx^3\left(bx+cx^2\right)^{5/2}}{8c}+\frac{\left(3(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int x^3\left(bx+cx^2\right)^{3/2}\,dx}{8c}\\
&= -\frac{(11bB-16Ac)x^2\left(bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(bx+cx^2\right)^{5/2}}{8c}+\frac{(9b(11bB-16Ac))\int}{224}\\
&= \frac{3b(11bB-16Ac)x\left(bx+cx^2\right)^{5/2}}{448c^3}-\frac{(11bB-16Ac)x^2\left(bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(bx\right.}{8}\\
&= -\frac{3b^2(11bB-16Ac)\left(bx+cx^2\right)^{5/2}}{640c^4}+\frac{3b(11bB-16Ac)x\left(bx+cx^2\right)^{5/2}}{448c^3}-\frac{(11bB}{}\\
&= \frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{2048c^5}-\frac{3b^2(11bB-16Ac)\left(bx+cx^2\right)^{5/2}}{640c^4}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+\right.}{2048c^5}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+\right.}{2048c^5}\\
&= -\frac{9b^5(11bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^6}+\frac{3b^3(11bB-16Ac)(b+2cx)\left(bx+\right.}{2048c^5}
\end{aligned}
$$

Mathematica [A] time = 0.43, size = 179, normalized size = 0.75

$$
\frac{x^5\sqrt{x(b+cx)}\left(\frac{11(11bB-16Ac)\left(315b^{13/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(315b^6-210b^5cx+168b^4c^2x^2-144b^3c^3x^3+128b^2c^4x^4+6400bc^5x^5+51\right.\right.}{71680c^{11/2}x^{11/2}\sqrt{\frac{cx}{b}+1}}\right.}{88c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (x^5*Sqrt[x*(b + c*x)]*(11*B*(b + c*x)^2 + (11*(11*b*B - 16*A*c)*(-(Sqrt[c]
*Sqrt[x]*Sqrt[1 + (c*x)/b]*(315*b^6 - 210*b^5*c*x + 168*b^4*c^2*x^2 - 144*b
^3*c^3*x^3 + 128*b^2*c^4*x^4 + 6400*b*c^5*x^5 + 5120*c^6*x^6)) + 315*b^(13/
2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(71680*c^(11/2)*x^(11/2)*Sqrt[1 + (
c*x)/b])))/(88*c)
```

fricas [A] time = 0.90, size = 446, normalized size = 1.87

$$\left[-\frac{315\left(11\,Bb^{8}-16\,Ab^{7}c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-2\left(71680\,Bc^{8}x^{7}-3465\,Bb^{7}c+5040\,Ab^{6}c^{2}+512\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1146880*(315*(11*B*b^8 - 16*A*b^7*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x
^2 + b*x)*sqrt(c)) - 2*(71680*B*c^8*x^7 - 3465*B*b^7*c + 5040*A*b^6*c^2 + 5
120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 80*A*b*c^7)*x^5 - 128*(
11*B*b^3*c^5 - 16*A*b^2*c^6)*x^4 + 144*(11*B*b^4*c^4 - 16*A*b^3*c^5)*x^3 -
168*(11*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 + 210*(11*B*b^6*c^2 - 16*A*b^5*c^3)*x
)*sqrt(c*x^2 + b*x))/c^7, -1/573440*(315*(11*B*b^8 - 16*A*b^7*c)*sqrt(-c)*a
rctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (71680*B*c^8*x^7 - 3465*B*b^7*c +
 5040*A*b^6*c^2 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 80*A
*b*c^7)*x^5 - 128*(11*B*b^3*c^5 - 16*A*b^2*c^6)*x^4 + 144*(11*B*b^4*c^4 - 1
6*A*b^3*c^5)*x^3 - 168*(11*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 + 210*(11*B*b^6*c^
2 - 16*A*b^5*c^3)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [A] time = 0.22, size = 249, normalized size = 1.05

$$\frac{1}{573440}\,\sqrt{cx^{2}+bx}\left(2\left(4\left(2\left(8\left(10\left(4\left(14\,Bcx+\frac{17\,Bbc^{7}+16\,Ac^{8}}{c^{7}}\right)x+\frac{Bb^{2}c^{6}+80\,Abc^{7}}{c^{7}}\right)x-\frac{11\,Bb^{3}c^{5}-16\,Ab^{2}c^{6}}{c^{7}}\right)\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/573440*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(4*(14*B*c*x + (17*B*b*c^7 + 16*
A*c^8)/c^7)*x + (B*b^2*c^6 + 80*A*b*c^7)/c^7)*x - (11*B*b^3*c^5 - 16*A*b^2*
c^6)/c^7)*x + 9*(11*B*b^4*c^4 - 16*A*b^3*c^5)/c^7)*x - 21*(11*B*b^5*c^3 - 1
6*A*b^4*c^4)/c^7)*x + 105*(11*B*b^6*c^2 - 16*A*b^5*c^3)/c^7)*x - 315*(11*B*
b^7*c - 16*A*b^6*c^2)/c^7) - 9/32768*(11*B*b^8 - 16*A*b^7*c)*log(abs(-2*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [A] time = 0.05, size = 373, normalized size = 1.57

$$-\frac{9A\,b^{7}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2048c^{\frac{11}{2}}}+\frac{99B\,b^{8}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{32768c^{\frac{13}{2}}}+\frac{9\sqrt{c\,x^{2}+bx}\;A\,b^{5}x}{512c^{4}}-\frac{99\sqrt{c\,x^{2}+bx}\;B\,b^{6}x}{8192c^{5}}+\frac{\left(c\,x^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/8*B*x^3*(c*x^2+b*x)^(5/2)/c-11/112*B*b/c^2*x^2*(c*x^2+b*x)^(5/2)+33/448*B
*b^2/c^3*x*(c*x^2+b*x)^(5/2)-33/640*B*b^3/c^4*(c*x^2+b*x)^(5/2)+33/1024*B*b
^4/c^4*(c*x^2+b*x)^(3/2)*x+33/2048*B*b^5/c^5*(c*x^2+b*x)^(3/2)-99/8192*B*b^
6/c^5*(c*x^2+b*x)^(1/2)*x-99/16384*B*b^7/c^6*(c*x^2+b*x)^(1/2)+99/32768*B*b
^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/7*A*x^2*(c*x^2+b*x)
^(5/2)/c-3/28*A*b/c^2*x*(c*x^2+b*x)^(5/2)+3/40*A*b^2/c^3*(c*x^2+b*x)^(5/2)-
3/64*A*b^3/c^3*(c*x^2+b*x)^(3/2)*x-3/128*A*b^4/c^4*(c*x^2+b*x)^(3/2)+9/512*
A*b^5/c^4*(c*x^2+b*x)^(1/2)*x+9/1024*A*b^6/c^5*(c*x^2+b*x)^(1/2)-9/2048*A*b
^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.95, size = 370, normalized size = 1.55

$$\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bx^3}{8c}-\frac{11\left(cx^2+bx\right)^{\frac{5}{2}}Bbx^2}{112c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Ax^2}{7c}-\frac{99\sqrt{cx^2+bx}\,Bb^6x}{8192c^5}+\frac{33\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4x}{1024c^4}+\frac{9\sqrt{cx^2+}}{512}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + b*x)^(5/2)*B*x^3/c - 11/112*(c*x^2 + b*x)^(5/2)*B*b*x^2/c^2 +
1/7*(c*x^2 + b*x)^(5/2)*A*x^2/c - 99/8192*sqrt(c*x^2 + b*x)*B*b^6*x/c^5 + 3
3/1024*(c*x^2 + b*x)^(3/2)*B*b^4*x/c^4 + 9/512*sqrt(c*x^2 + b*x)*A*b^5*x/c^
4 + 33/448*(c*x^2 + b*x)^(5/2)*B*b^2*x/c^3 - 3/64*(c*x^2 + b*x)^(3/2)*A*b^3
*x/c^3 - 3/28*(c*x^2 + b*x)^(5/2)*A*b*x/c^2 + 99/32768*B*b^8*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) - 9/2048*A*b^7*log(2*c*x + b + 2*sq
rt(c*x^2 + b*x)*sqrt(c))/c^(11/2) - 99/16384*sqrt(c*x^2 + b*x)*B*b^7/c^6 +
33/2048*(c*x^2 + b*x)^(3/2)*B*b^5/c^5 + 9/1024*sqrt(c*x^2 + b*x)*A*b^6/c^5
- 33/640*(c*x^2 + b*x)^(5/2)*B*b^3/c^4 - 3/128*(c*x^2 + b*x)^(3/2)*A*b^4/c^
4 + 3/40*(c*x^2 + b*x)^(5/2)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^3*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**3*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.80 $\int x^2(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=203

$$-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{11/2}}+\frac{b^4(b+2cx)\sqrt{bx+cx^2}\,(9bB-14Ac)}{1024c^5}-\frac{b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-14Ac}{384c^4}$$

```
[Out] -1/384*b^2*(-14*A*c+9*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^4+1/120*b*(-14*A*c
+9*B*b)*(c*x^2+b*x)^(5/2)/c^3-1/84*(-14*A*c+9*B*b)*x*(c*x^2+b*x)^(5/2)/c^2+
1/7*B*x^2*(c*x^2+b*x)^(5/2)/c-1/1024*b^6*(-14*A*c+9*B*b)*arctanh(x*c^(1/2)/
(c*x^2+b*x)^(1/2))/c^(11/2)+1/1024*b^4*(-14*A*c+9*B*b)*(2*c*x+b)*(c*x^2+b*x
)^(1/2)/c^5
```

Rubi [**A**] time = 0.20, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{b^4(b+2cx)\sqrt{bx+cx^2}\,(9bB-14Ac)}{1024c^5}-\frac{b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-14Ac)}{384c^4}-\frac{b^6(9bB-14Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{11/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (b^4*(9*b*B - 14*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^5) - (b^2*(9*b
*B - 14*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^4) + (b*(9*b*B - 14*A*
c)*(b*x + c*x^2)^(5/2))/(120*c^3) - ((9*b*B - 14*A*c)*x*(b*x + c*x^2)^(5/2)
)/(84*c^2) + (B*x^2*(b*x + c*x^2)^(5/2))/(7*c) - (b^6*(9*b*B - 14*A*c)*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}
\int x^2(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= \frac{Bx^2\left(bx+cx^2\right)^{5/2}}{7c}+\frac{\left(2(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int x^2\left(bx+cx^2\right)^{3/2}\,dx}{7c}\\
&= -\frac{(9bB-14Ac)x\left(bx+cx^2\right)^{5/2}}{84c^2}+\frac{Bx^2\left(bx+cx^2\right)^{5/2}}{7c}+\frac{(b(9bB-14Ac))\int x\left(b\right.}{24c^2}\\
&= \frac{b(9bB-14Ac)\left(bx+cx^2\right)^{5/2}}{120c^3}-\frac{(9bB-14Ac)x\left(bx+cx^2\right)^{5/2}}{84c^2}+\frac{Bx^2\left(bx+cx^2\right.}{7c}\\
&= -\frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^4}+\frac{b(9bB-14Ac)\left(bx+cx^2\right)^{5/2}}{120c^3}-\frac{(9}{}\\
&= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5}-\frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{384c^4}\\
&= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5}-\frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{384c^4}\\
&= \frac{b^4(9bB-14Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^5}-\frac{b^2(9bB-14Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{384c^4}
\end{aligned}$$

Mathematica [A] time = 0.34, size = 167, normalized size = 0.82

$$\frac{x^4\sqrt{x(b+cx)}\left(9B(b+cx)^2-\frac{3(9bB-14Ac)\left(105b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-105b^5+70b^4cx-56b^3c^2x^2+48b^2c^3x^3+1664bc^4x^4+\right.\right.}{5120c^{9/2}x^{9/2}\sqrt{\frac{cx}{b}+1}}\right.}{63c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (x^4*Sqrt[x*(b + c*x)]*(9*B*(b + c*x)^2 - (3*(9*b*B - 14*A*c)*(Sqrt[c]*Sqrt
[x]*Sqrt[1 + (c*x)/b]*(-105*b^5 + 70*b^4*c*x - 56*b^3*c^2*x^2 + 48*b^2*c^3*
x^3 + 1664*b*c^4*x^4 + 1280*c^5*x^5) + 105*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x
])/Sqrt[b]]))/(5120*c^(9/2)*x^(9/2)*Sqrt[1 + (c*x)/b])))/(63*c)
```

fricas [A] time = 0.87, size = 399, normalized size = 1.97

$$\left[-\frac{105\left(9\,Bb^7-14\,Ab^6c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(15360\,Bc^7x^6+945\,Bb^6c-1470\,Ab^5c^2+128\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(9*B*b^7 - 14*A*b^6*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c)) - 2*(15360*B*c^7*x^6 + 945*B*b^6*c - 1470*A*b^5*c^2 + 1280
*(15*B*b*c^6 + 14*A*c^7)*x^5 + 128*(3*B*b^2*c^5 + 182*A*b*c^6)*x^4 - 48*(9*
B*b^3*c^4 - 14*A*b^2*c^5)*x^3 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^4)*x^2 - 70*(9
*B*b^5*c^2 - 14*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^6, 1/107520*(105*(9*B*b^
7 - 14*A*b^6*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (15360*
B*c^7*x^6 + 945*B*b^6*c - 1470*A*b^5*c^2 + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5
 + 128*(3*B*b^2*c^5 + 182*A*b*c^6)*x^4 - 48*(9*B*b^3*c^4 - 14*A*b^2*c^5)*x^
3 + 56*(9*B*b^4*c^3 - 14*A*b^3*c^4)*x^2 - 70*(9*B*b^5*c^2 - 14*A*b^4*c^3)*x
)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.24, size = 222, normalized size = 1.09

$$\frac{1}{107520}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\left(12\,Bcx+\frac{15\,Bbc^6+14\,Ac^7}{c^6}\right)x+\frac{3\,Bb^2c^5+182\,Abc^6}{c^6}\right)x-\frac{3\left(9\,Bb^3c^4-14\,Ab^2c^5\right.}{c^6}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(12*B*c*x + (15*B*b*c^6 + 14*A*c
^7)/c^6)*x + (3*B*b^2*c^5 + 182*A*b*c^6)/c^6)*x - 3*(9*B*b^3*c^4 - 14*A*b^2
*c^5)/c^6)*x + 7*(9*B*b^4*c^3 - 14*A*b^3*c^4)/c^6)*x - 35*(9*B*b^5*c^2 - 14
*A*b^4*c^3)/c^6)*x + 105*(9*B*b^6*c - 14*A*b^5*c^2)/c^6) + 1/2048*(9*B*b^7
- 14*A*b^6*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(1
1/2)
```

maple [A] time = 0.06, size = 327, normalized size = 1.61

$$\frac{7A\,b^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{9}{2}}}-\frac{9B\,b^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2048c^{\frac{11}{2}}}-\frac{7\sqrt{c\,x^2+bx}\;A\,b^4x}{256c^3}+\frac{9\sqrt{c\,x^2+bx}\;B\,b^5x}{512c^4}-\frac{7\sqrt{c\,x^2+}}{512}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/7*B*x^2*(c*x^2+b*x)^(5/2)/c-3/28*B*b/c^2*x*(c*x^2+b*x)^(5/2)+3/40*B*b^2/c
^3*(c*x^2+b*x)^(5/2)-3/64*B*b^3/c^3*(c*x^2+b*x)^(3/2)*x-3/128*B*b^4/c^4*(c*
x^2+b*x)^(3/2)+9/512*B*b^5/c^4*(c*x^2+b*x)^(1/2)*x+9/1024*B*b^6/c^5*(c*x^2+
b*x)^(1/2)-9/2048*B*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+
1/6*A*x*(c*x^2+b*x)^(5/2)/c-7/60*A*b/c^2*(c*x^2+b*x)^(5/2)+7/96*A*b^2/c^2*(
c*x^2+b*x)^(3/2)*x+7/192*A*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*A*b^4/c^3*(c*x^2
+b*x)^(1/2)*x-7/512*A*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*A*b^6/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 1.04, size = 324, normalized size = 1.60

$$\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bx^2}{7\,c}+\frac{9\,\sqrt{cx^2+bx}\,Bb^5x}{512\,c^4}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3x}{64\,c^3}-\frac{7\,\sqrt{cx^2+bx}\,Ab^4x}{256\,c^3}-\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bbx}{28\,c^2}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}A}{96\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + b*x)^(5/2)*B*x^2/c + 9/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^4 - 3/6
4*(c*x^2 + b*x)^(3/2)*B*b^3*x/c^3 - 7/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^3 - 3
/28*(c*x^2 + b*x)^(5/2)*B*b*x/c^2 + 7/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c^2 +
1/6*(c*x^2 + b*x)^(5/2)*A*x/c - 9/2048*B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c))/c^(11/2) + 7/1024*A*b^6*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*
sqrt(c))/c^(9/2) + 9/1024*sqrt(c*x^2 + b*x)*B*b^6/c^5 - 3/128*(c*x^2 + b*x)
^(3/2)*B*b^4/c^4 - 7/512*sqrt(c*x^2 + b*x)*A*b^5/c^4 + 3/40*(c*x^2 + b*x)^(
5/2)*B*b^2/c^3 + 7/192*(c*x^2 + b*x)^(3/2)*A*b^3/c^3 - 7/60*(c*x^2 + b*x)^(
5/2)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^2*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**2*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.81 $\int x(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=151

$$\frac{b^5(7bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{9/2}}-\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(7bB-12Ac)}{512c^4}+\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(7bB-12Ac)}{192c^3}-$$

```
[Out] 1/192*b*(-12*A*c+7*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^3-1/60*(-10*B*c*x-12*
A*c+7*B*b)*(c*x^2+b*x)^(5/2)/c^2+1/512*b^5*(-12*A*c+7*B*b)*arctanh(x*c^(1/2
)/(c*x^2+b*x)^(1/2))/c^(9/2)-1/512*b^3*(-12*A*c+7*B*b)*(2*c*x+b)*(c*x^2+b*x
)^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {779, 612, 620, 206}

$$-\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(7bB-12Ac)}{512c^4}+\frac{b^5(7bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{512c^{9/2}}+\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(7bB-12Ac)}{192c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^3*(7*b*B - 12*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^4) + (b*(7*b*B
 - 12*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(192*c^3) - ((7*b*B - 12*A*c -
10*B*c*x)*(b*x + c*x^2)^(5/2))/(60*c^2) + (b^5*(7*b*B - 12*A*c)*ArcTanh[(Sq
rt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx &= -\frac{(7bB-12Ac-10Bcx)\left(bx+cx^2\right)^{5/2}}{60c^2}+\frac{(b(7bB-12Ac))\int\left(bx+cx^2\right)^{3/2}\,dx}{24c^2}\\ &= \frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3}-\frac{(7bB-12Ac-10Bcx)\left(bx+cx^2\right)^{5/2}}{60c^2}\\ &= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{192c^3}\\ &= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{192c^3}\\ &= -\frac{b^3(7bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^4}+\frac{b(7bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/}}{192c^3}\end{aligned}$$

Mathematica [A] time = 0.29, size = 166, normalized size = 1.10

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{9/2}(7bB-12Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(10b^4c(18A+7Bx)-8b^3c^2x(15A+7Bx)+48b^2c^3x^2(2A+Bx)\right.\right.}{7680c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^5*B + 48*b^2*c^3*x^2*(2*A + B*x) + 256*
c^5*x^4*(6*A + 5*B*x) - 8*b^3*c^2*x*(15*A + 7*B*x) + 10*b^4*c*(18*A + 7*B*x
) + 64*b*c^4*x^3*(33*A + 26*B*x)) + (15*b^(9/2)*(7*b*B - 12*A*c)*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(9/2))
```

fricas [A] time = 0.90, size = 350, normalized size = 2.32

$$\left[-\frac{15\left(7\,Bb^6-12\,Ab^5c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(1280\,Bc^6x^5-105\,Bb^5c+180\,Ab^4c^2+128\,(13\right.}{15}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 - 105*B*b^5*c + 180*A*b^4*c^2 + 128*(13*
B*b*c^5 + 12*A*c^6)*x^4 + 48*(B*b^2*c^4 + 44*A*b*c^5)*x^3 - 8*(7*B*b^3*c^3
- 12*A*b^2*c^4)*x^2 + 10*(7*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))
/c^5, -1/7680*(15*(7*B*b^6 - 12*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*
sqrt(-c)/(c*x)) - (1280*B*c^6*x^5 - 105*B*b^5*c + 180*A*b^4*c^2 + 128*(13*B
*b*c^5 + 12*A*c^6)*x^4 + 48*(B*b^2*c^4 + 44*A*b*c^5)*x^3 - 8*(7*B*b^3*c^3 -
 12*A*b^2*c^4)*x^2 + 10*(7*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b*x))/
c^5]
```

giac [A] time = 0.22, size = 194, normalized size = 1.28

$$\frac{1}{7680}\,\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\,Bcx+\frac{13\,Bbc^5+12\,Ac^6}{c^5}\right)x+\frac{3\left(Bb^2c^4+44\,Abc^5\right)}{c^5}\right)x-\frac{7\,Bb^3c^3-12\,Ab^2c^4}{c^5}\right)x+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c*x + (13*B*b*c^5 + 12*A*c^6)/c^
5)*x + 3*(B*b^2*c^4 + 44*A*b*c^5)/c^5)*x - (7*B*b^3*c^3 - 12*A*b^2*c^4)/c^5
)*x + 5*(7*B*b^4*c^2 - 12*A*b^3*c^3)/c^5)*x - 15*(7*B*b^5*c - 12*A*b^4*c^2)
/c^5) - 1/1024*(7*B*b^6 - 12*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
b*x))*sqrt(c) - b))/c^(9/2)
```

maple [**B**] time = 0.05, size = 283, normalized size = 1.87

$$-\frac{3A\,b^{5}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{256c^{\frac{7}{2}}}+\frac{7B\,b^{6}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{1024c^{\frac{9}{2}}}+\frac{3\sqrt{c\,x^{2}+bx}\;A\,b^{3}x}{64c^{2}}-\frac{7\sqrt{c\,x^{2}+bx}\;B\,b^{4}x}{256c^{3}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/6*B*x*(c*x^2+b*x)^(5/2)/c-7/60*B*b/c^2*(c*x^2+b*x)^(5/2)+7/96*B*b^2/c^2*x
*(c*x^2+b*x)^(3/2)+7/192*B*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*B*b^4/c^3*(c*x^2
+b*x)^(1/2)*x-7/512*B*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*B*b^6/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*(c*x^2+b*x)^(5/2)/c-1/8*A*b/c*x*(
c*x^2+b*x)^(3/2)-1/16*A*b^2/c^2*(c*x^2+b*x)^(3/2)+3/64*A*b^3/c^2*(c*x^2+b*x
)^(1/2)*x+3/128*A*b^4/c^3*(c*x^2+b*x)^(1/2)-3/256*A*b^5/c^(7/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**B**] time = 0.95, size = 280, normalized size = 1.85

$$-\frac{7\,\sqrt{cx^{2}+bx}\,Bb^{4}x}{256\,c^{3}}+\frac{7\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{2}x}{96\,c^{2}}+\frac{3\,\sqrt{cx^{2}+bx}\,Ab^{3}x}{64\,c^{2}}+\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Bx}{6\,c}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}Abx}{8\,c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -7/256*sqrt(c*x^2 + b*x)*B*b^4*x/c^3 + 7/96*(c*x^2 + b*x)^(3/2)*B*b^2*x/c^2
 + 3/64*sqrt(c*x^2 + b*x)*A*b^3*x/c^2 + 1/6*(c*x^2 + b*x)^(5/2)*B*x/c - 1/8
*(c*x^2 + b*x)^(3/2)*A*b*x/c + 7/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*x^2 +
b*x)*sqrt(c))/c^(9/2) - 3/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(7/2) - 7/512*sqrt(c*x^2 + b*x)*B*b^5/c^4 + 7/192*(c*x^2 + b*x)^(3/
2)*B*b^3/c^3 + 3/128*sqrt(c*x^2 + b*x)*A*b^4/c^3 - 7/60*(c*x^2 + b*x)^(5/2)
*B*b/c^2 - 1/16*(c*x^2 + b*x)^(3/2)*A*b^2/c^2 + 1/5*(c*x^2 + b*x)^(5/2)*A/c
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^{2}+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.82 $\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=134

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}+\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+$$

```
[Out] -1/16*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^2+1/5*B*(c*x^2+b*x)^(5/2)/
c-3/128*b^4*(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+3/128
*b^2*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.05, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^3) - ((b*B - 2*A
*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(16*c^2) + (B*(b*x + c*x^2)^(5/2))/(5*
c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(7
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(bx+cx^2\right)^{3/2}dx = \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{3/2}dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+cx^2\right)^{5/2}}{5c} + \frac{\left(3b^2(bB-2Ac)\right)\int \sqrt{bx+}{32c^2}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(bx+\right.}{5}$$

Mathematica [**A**] time = 0.25, size = 146, normalized size = 1.09

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-10b^3c(3A+Bx)+4b^2c^2x(5A+2Bx)+16bc^3x^2(15A+11Bx)+32c^4x^3(5A+4Bx)+15b^4B\right)-\right.}{640c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^4*B - 10*b^3*c*(3*A + B*x) + 4*b^2*c^2*x*
(5*A + 2*B*x) + 32*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(15*A + 11*B*x)) -
(15*b^(7/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt
[1 + (c*x)/b])))/(640*c^(7/2))
```

fricas [**A**] time = 0.87, size = 297, normalized size = 2.22

$$\left[-\frac{15\left(Bb^5-2Ab^4c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10\right.\right.}{1280c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*b^5 - 2*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b^3*c^2 + 16*(11*B*b*c^4
+ 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 - 10*(B*b^3*c^2 - 2*A*b^2*
c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/640*(15*(B*b^5 - 2*A*b^4*c)*sqrt(-c)*arct
an(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b
^3*c^2 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 -
10*(B*b^3*c^2 - 2*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [**A**] time = 0.22, size = 162, normalized size = 1.21

$$\frac{1}{640}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8Bcx+\frac{11Bbc^4+10Ac^5}{c^4}\right)x+\frac{Bb^2c^3+30Abc^4}{c^4}\right)x-\frac{5\left(Bb^3c^2-2Ab^2c^3\right)}{c^4}\right)x+\frac{15\left(Bb^4c-\right.}{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4)*x
+ (B*b^2*c^3 + 30*A*b*c^4)/c^4)*x - 5*(B*b^3*c^2 - 2*A*b^2*c^3)/c^4)*x + 15
*(B*b^4*c - 2*A*b^3*c^2)/c^4) + 3/256*(B*b^5 - 2*A*b^4*c)*log(abs(-2*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.05, size = 239, normalized size = 1.78

$$\frac{3A\,b^{4}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{128c^{\frac{5}{2}}}-\frac{3B\,b^{5}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{256c^{\frac{7}{2}}}-\frac{3\sqrt{c\,x^{2}+bx}\;A\,b^{2}x}{32c}+\frac{3\sqrt{c\,x^{2}+bx}\;B\,b^{3}x}{64c^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+b*x)^(5/2)/c-1/8*B*b/c*x*(c*x^2+b*x)^(3/2)-1/16*B*b^2/c^2*(c*x
^2+b*x)^(3/2)+3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)*x+3/128*B*b^4/c^3*(c*x^2+b*x
)^(1/2)-3/256*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/4*A
*x*(c*x^2+b*x)^(3/2)+1/8*A/c*(c*x^2+b*x)^(3/2)*b-3/32*A*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*b^4/c^(5/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**B**] time = 0.89, size = 236, normalized size = 1.76

$$\frac{1}{4}\left(cx^{2}+bx\right)^{\frac{3}{2}}Ax+\frac{3\sqrt{cx^{2}+bx}\,Bb^{3}x}{64\,c^{2}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}Bbx}{8\,c}-\frac{3\sqrt{cx^{2}+bx}\,Ab^{2}x}{32\,c}-\frac{3\,Bb^{5}\log\big(2\,cx+b+2\sqrt{cx^{2}+bx}}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*x + 3/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^2 - 1/8*(c*x
^2 + b*x)^(3/2)*B*b*x/c - 3/32*sqrt(c*x^2 + b*x)*A*b^2*x/c - 3/256*B*b^5*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 3/128*A*b^4*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3/128*sqrt(c*x^2 + b*x)*B*b^4/
c^3 - 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c^2 - 3/64*sqrt(c*x^2 + b*x)*A*b^3/c^2
 + 1/5*(c*x^2 + b*x)^(5/2)*B/c + 1/8*(c*x^2 + b*x)^(3/2)*A*b/c
```

mupad [**B**] time = 1.45, size = 208, normalized size = 1.55

$$\frac{B\left(c\,x^{2}+b\,x\right)^{5/2}}{5\,c}+\frac{A\left(c\,x^{2}+b\,x\right)^{3/2}\,\left(\frac{b}{2}+c\,x\right)}{4\,c}-\frac{B\,b\,\Bigg(\frac{x\left(c\,x^{2}+b\,x\right)^{3/2}}{4}+\frac{b\left(c\,x^{2}+b\,x\right)^{3/2}}{8\,c}-\frac{3\,b^{2}\,\Bigg(\frac{\sqrt{c\,x^{2}+b\,x}\,\left(b+2\,c\,x\right)}{4\,c}-\frac{b^{2}\,\ln\Big(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}}}{8\,c^{3/2}}}{16\,c}}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(b*x + c*x^2)^(5/2))/(5*c) + (A*(b*x + c*x^2)^(3/2)*(b/2 + c*x))/(4*c) -
 (B*b*((x*(b*x + c*x^2)^(3/2))/4 + (b*(b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(
((b*x + c*x^2)^(1/2)*(b + 2*c*x))/(4*c) - (b^2*log((b/2 + c*x)/c^(1/2) + (b
*x + c*x^2)^(1/2)))/(8*c^(3/2))))/(16*c)))/(2*c) - (3*A*b^2*((b*x + c*x^2)^
(1/2)*(x/2 + b/(4*c)) - (b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2))
)/(8*c^(3/2))))/(16*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x (b + cx))^{\frac{3}{2}} (A + Bx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.83 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=132

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{5/2}}-\frac{b(b+2cx)\sqrt{bx+cx^2}\,(3bB-8Ac)}{64c^2}-\frac{\left(bx+cx^2\right)^{3/2}(3bB-8Ac)}{24c}+\frac{B\left(bx+cx^2\right)}{4cx}$$

```
[Out] -1/24*(-8*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/c+1/4*B*(c*x^2+b*x)^(5/2)/c/x+1/64*b
^3*(-8*A*c+3*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)-1/64*b*(-8*A
*c+3*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.10, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {794, 664, 612, 620, 206}

$$\frac{b^3(3bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{5/2}}-\frac{b(b+2cx)\sqrt{bx+cx^2}\,(3bB-8Ac)}{64c^2}-\frac{\left(bx+cx^2\right)^{3/2}(3bB-8Ac)}{24c}+\frac{B\left(bx+cx^2\right)}{4cx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] -(b*(3*b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c^2) - ((3*b*B - 8*A
*c)*(b*x + c*x^2)^(3/2))/(24*c) + (B*(b*x + c*x^2)^(5/2))/(4*c*x) + (b^3*(3
*b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x}\,dx &= \frac{B\left(bx+cx^2\right)^{5/2}}{4cx}+\frac{\left(bB-Ac+\frac{5}{2}(-bB+2Ac)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x}\,dx}{4c}\\
&= -\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/2}}{4cx}-\frac{(b(3bB-8Ac))\int\sqrt{bx+cx^2}\,dx}{16c}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}\\
&= -\frac{b(3bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c^2}-\frac{(3bB-8Ac)\left(bx+cx^2\right)^{3/2}}{24c}+\frac{B\left(bx+cx^2\right)^{5/}}{4cx}
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.97

$$
\frac{\sqrt{x(b+cx)}\left(\frac{3b^{5/2}(3bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(6b^2c(4A+Bx)+8bc^2x(14A+9Bx)+16c^3x^2(4A+3Bx)-9b^3B\right)\right)}{192c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-9*b^3*B + 6*b^2*c*(4*A + B*x) + 16*c^3*x^2*(4
*A + 3*B*x) + 8*b*c^2*x*(14*A + 9*B*x)) + (3*b^(5/2)*(3*b*B - 8*A*c)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(5/2))
```

fricas [A] time = 0.90, size = 256, normalized size = 1.94

$$
\Biggl[-\frac{3\left(3\,Bb^4-8\,Ab^3c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\Bigl(48\,Bc^4x^3-9\,Bb^3c+24\,Ab^2c^2+8\left(9\,Bbc^3+8\,Ac^4\right)}{384\,c^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(3*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(48*B*c^4*x^3 - 9*B*b^3*c + 24*A*b^2*c^2 + 8*(9*B*b*c^3 + 8*
A*c^4)*x^2 + 2*(3*B*b^2*c^2 + 56*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^3, -1/192
*(3*(3*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - (48*B*c^4*x^3 - 9*B*b^3*c + 24*A*b^2*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^2 +
 2*(3*B*b^2*c^2 + 56*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.21, size = 138, normalized size = 1.05

$$
\frac{1}{192}\,\sqrt{cx^2+bx}\left(2\left(4\left(6\,Bcx+\frac{9\,Bbc^3+8\,Ac^4}{c^3}\right)x+\frac{3\,Bb^2c^2+56\,Abc^3}{c^3}\right)x-\frac{3\left(3\,Bb^3c-8\,Ab^2c^2\right)}{c^3}\right)-\frac{\bigl(3\,Bb^4-8\,Ab^3}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c*x + (9*B*b*c^3 + 8*A*c^4)/c^3)*x + (3*
B*b^2*c^2 + 56*A*b*c^3)/c^3)*x - 3*(3*B*b^3*c - 8*A*b^2*c^2)/c^3) - 1/128*(
3*B*b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b
))/c^(5/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.45

$$-\frac{A\,b^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{16c^{\frac{3}{2}}}+\frac{3B\,b^{4}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{128c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^{2}+bx}\;Abx}{4}-\frac{3\sqrt{c\,x^{2}+bx}\;B\,b^{2}x}{32c}+\frac{\sqrt{c\,x^{2}+}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x)^(3/2)+1/8*B/c*(c*x^2+b*x)^(3/2)*b-3/32*B*b^2/c*(c*x^2+b
*x)^(1/2)*x-3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*B*b^4/c^(5/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*(c*x^2+b*x)^(3/2)+1/4*A*b*(c*x^2+b*x)
^(1/2)*x+1/8*A/c*(c*x^2+b*x)^(1/2)*b^2-1/16*A*b^3/c^(3/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.86, size = 189, normalized size = 1.43

$$\frac{1}{4}\left(cx^{2}+bx\right)^{\frac{3}{2}}Bx+\frac{1}{4}\sqrt{cx^{2}+bx}\;Abx-\frac{3\sqrt{cx^{2}+bx}\,Bb^{2}x}{32\,c}+\frac{3\,Bb^{4}\log\left(2\,cx+b+2\sqrt{cx^{2}+bx}\sqrt{c}\right)}{128\,c^{\frac{5}{2}}}-\frac{Ab^{3}\log\left(2\,c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*B*x + 1/4*sqrt(c*x^2 + b*x)*A*b*x - 3/32*sqrt(c*x^2
 + b*x)*B*b^2*x/c + 3/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)
)/c^(5/2) - 1/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
 + 1/3*(c*x^2 + b*x)^(3/2)*A - 3/64*sqrt(c*x^2 + b*x)*B*b^3/c^2 + 1/8*(c*x^
2 + b*x)^(3/2)*B*b/c + 1/8*sqrt(c*x^2 + b*x)*A*b^2/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^{2}+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x, x)
```

3.84 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=126

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{3/2}}+\frac{\left(bx+cx^2\right)^{3/2}(bB-6Ac)}{3b}+\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-6Ac)}{8c}+\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}$$

```
[Out] 1/3*(-6*A*c+B*b)*(c*x^2+b*x)^(3/2)/b+2*A*(c*x^2+b*x)^(5/2)/b/x^2-1/8*b^2*(-
6*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)+1/8*(-6*A*c+B*b)*(2
*c*x+b)*(c*x^2+b*x)^(1/2)/c
```

Rubi [A] time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 664, 612, 620, 206}

$$-\frac{b^2(bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{3/2}}+\frac{\left(bx+cx^2\right)^{3/2}(bB-6Ac)}{3b}+\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-6Ac)}{8c}+\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((b*B - 6*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c) + ((b*B - 6*A*c)*(b*x +
 c*x^2)^(3/2))/(3*b) + (2*A*(b*x + c*x^2)^(5/2))/(b*x^2) - (b^2*(b*B - 6*A*
c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^2}\,dx &= \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{\left(2\left(-2(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x}\,dx}{b}\\
&= \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2} - \frac{1}{2}(-bB+6Ac)\int \sqrt{bx+cx^2}\ d\\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}\\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}\\
&= \frac{(bB-6Ac)(b+2cx)\sqrt{bx+cx^2}}{8c} + \frac{(bB-6Ac)\left(bx+cx^2\right)^{3/2}}{3b} + \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^2}
\end{aligned}
$$

Mathematica [**A**] time = 0.19, size = 109, normalized size = 0.87

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(2bc(15A+7Bx)+4c^2x(3A+2Bx)+3b^2B\right)-\frac{3b^{3/2}(bB-6Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right)}{24c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(3*b^2*B + 4*c^2*x*(3*A + 2*B*x) + 2*b*c*(15*A
+ 7*B*x)) - (3*b^(3/2)*(b*B - 6*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(S
qrt[x]*Sqrt[1 + (c*x)/b])))/(24*c^(3/2))
```

fricas [**A**] time = 0.97, size = 205, normalized size = 1.63

$$
\left[-\frac{3\left(Bb^3-6\,Ab^2c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(8\,Bc^3x^2+3\,Bb^2c+30\,Abc^2+2\left(7\,Bbc^2+6\,Ac^3\right)\right.}{48\,c^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 6*A*b^2*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 + 3*B*b^2*c + 30*A*b*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)
*x)*sqrt(c*x^2 + b*x))/c^2, 1/24*(3*(B*b^3 - 6*A*b^2*c)*sqrt(-c)*arctan(sqr
t(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^3*x^2 + 3*B*b^2*c + 30*A*b*c^2 + 2*
(7*B*b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^2]
```

giac [**A**] time = 0.24, size = 109, normalized size = 0.87

$$
\frac{1}{24}\,\sqrt{cx^2+bx}\left(2\left(4\,Bcx+\frac{7\,Bbc^2+6\,Ac^3}{c^2}\right)x+\frac{3\left(Bb^2c+10\,Abc^2\right)}{c^2}\right)+\frac{\left(Bb^3-6\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+}\right.\right.\right.}{16\,c^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*c*x + (7*B*b*c^2 + 6*A*c^3)/c^2)*x + 3*(B*b^
2*c + 10*A*b*c^2)/c^2) + 1/16*(B*b^3 - 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 187, normalized size = 1.48

$$\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8\sqrt{c}}-\frac{B\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{3}{2}}}-\frac{3\sqrt{c\,x^2+bx}\;Acx}{2}+\frac{\sqrt{c\,x^2+bx}\;Bbx}{4}-\frac{3\sqrt{c\,x^2+bx}\;A}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x)
```

```
[Out] 2*A*(c*x^2+b*x)^(5/2)/b/x^2-2*A/b*c*(c*x^2+b*x)^(3/2)-3/2*A*c*(c*x^2+b*x)^(
1/2)*x-3/4*A*b*(c*x^2+b*x)^(1/2)+3/8*A*b^2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x)^(1/2))+1/3*B*(c*x^2+b*x)^(3/2)+1/4*B*b*(c*x^2+b*x)^(1/2)*x+1/8*B
/c*(c*x^2+b*x)^(1/2)*b^2-1/16*B*b^3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))
```

maxima [A] time = 0.90, size = 147, normalized size = 1.17

$$\frac{1}{4}\sqrt{cx^2+bx}\,Bbx-\frac{Bb^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{3}{2}}}+\frac{3\,Ab^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,\sqrt{c}}+\frac{1}{3}\left(cx^2+bx\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*b*x - 1/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(3/2) + 3/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
/sqrt(c) + 1/3*(c*x^2 + b*x)^(3/2)*B + 3/4*sqrt(c*x^2 + b*x)*A*b + 1/8*sqrt
(c*x^2 + b*x)*B*b^2/c + 1/2*(c*x^2 + b*x)^(3/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{x^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**2,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**2, x)
```

3.85 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=118

$$\frac{\left(bx+cx^2\right)^{3/2}(4Ac+bB)}{2bx}+\frac{3}{4}\sqrt{bx+cx^2}\,(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3}$$

```
[Out] 1/2*(4*A*c+B*b)*(c*x^2+b*x)^(3/2)/b/x-2*A*(c*x^2+b*x)^(5/2)/b/x^3+3/4*b*(4*
A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(1/2)+3/4*(4*A*c+B*b)*(c*x^
2+b*x)^(1/2)
```

Rubi **[A]** time = 0.12, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 664, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}(4Ac+bB)}{2bx}+\frac{3}{4}\sqrt{bx+cx^2}\,(4Ac+bB)+\frac{3b(4Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4\sqrt{c}}-\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (3*(b*B + 4*A*c)*Sqrt[b*x + c*x^2])/4 + ((b*B + 4*A*c)*(b*x + c*x^2)^(3/2))
/(2*b*x) - (2*A*(b*x + c*x^2)^(5/2))/(b*x^3) + (3*b*(b*B + 4*A*c)*ArcTanh[(
Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^3}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{\left(2\left(-3(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^2}\,dx}{b}$$
$$= \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{4}(3(bB+4Ac))\int \frac{\sqrt{bx+cx^2}}{x}\,dx$$
$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{8}(3b(b$$
$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{1}{4}(3b(b$$
$$= \frac{3}{4}(bB+4Ac)\sqrt{bx+cx^2} + \frac{(bB+4Ac)\left(bx+cx^2\right)^{3/2}}{2bx} - \frac{2A\left(bx+cx^2\right)^{5/2}}{bx^3} + \frac{3b(bB}{}$$

Mathematica [A] time = 0.17, size = 94, normalized size = 0.80

$$\frac{\sqrt{x(b+cx)}\left(\frac{3\sqrt{b}\sqrt{x}(4Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\sqrt{\frac{cx}{b}+1}}+A(4cx-8b)+Bx(5b+2cx)\right)}{4x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(B*x*(5*b + 2*c*x) + A*(-8*b + 4*c*x) + (3*Sqrt[b]*(b*B
+ 4*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[1 + (c*x
)/b])))/(4*x)
```

fricas [A] time = 1.03, size = 186, normalized size = 1.58

$$\left[\frac{3\left(Bb^2+4\,Abc\right)\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(2\,Bc^2x^2-8\,Abc+\left(5\,Bbc+4\,Ac^2\right)x\right)\sqrt{cx^2+bx}}{8\,cx}, -\frac{3(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(B*b^2 + 4*A*b*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c)) + 2*(2*B*c^2*x^2 - 8*A*b*c + (5*B*b*c + 4*A*c^2)*x)*sqrt(c*x^2 + b*x)
)/(c*x), -1/4*(3*(B*b^2 + 4*A*b*c)*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt
(-c)/(c*x)) - (2*B*c^2*x^2 - 8*A*b*c + (5*B*b*c + 4*A*c^2)*x)*sqrt(c*x^2 +
b*x))/(c*x)]
```

giac [A] time = 0.26, size = 109, normalized size = 0.92

$$\frac{2\,Ab^2}{\sqrt{c}\,x-\sqrt{cx^2+bx}}+\frac{1}{4}\left(2\,Bcx+\frac{5\,Bbc+4\,Ac^2}{c}\right)\sqrt{cx^2+bx}-\frac{3\left(Bb^2+4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right.}{8\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 2*A*b^2/(sqrt(c)*x - sqrt(c*x^2 + b*x)) + 1/4*(2*B*c*x + (5*B*b*c + 4*A*c^2
)/c)*sqrt(c*x^2 + b*x) - 3/8*(B*b^2 + 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c)
```

maple [B] time = 0.06, size = 232, normalized size = 1.97

$$\frac{3Ab\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2}+\frac{3B\,b^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{8\sqrt{c}}-\frac{6\sqrt{c\,x^{2}+bx}\;A\,c^{2}x}{b}-\frac{3\sqrt{c\,x^{2}+bx}\;Bcx}{2}-3\sqrt{c\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(5/2)/b/x^3+8*A/b^2*c/x^2*(c*x^2+b*x)^(5/2)-8*A/b^2*c^2*(c
*x^2+b*x)^(3/2)-6*A/b*c^2*(c*x^2+b*x)^(1/2)*x-3*A*c*(c*x^2+b*x)^(1/2)+3/2*A
*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+2*B/b/x^2*(c*x^2+b*x)^
(5/2)-2*B/b*c*(c*x^2+b*x)^(3/2)-3/2*B*c*(c*x^2+b*x)^(1/2)*x-3/4*B*b*(c*x^2+
b*x)^(1/2)+3/8*B*b^2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.87, size = 129, normalized size = 1.09

$$\frac{3\,Bb^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{8\,\sqrt{c}}+\frac{3}{2}\,Ab\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)+\frac{3}{4}\,\sqrt{cx^{2}+bx}\,Bb+\frac{\left(cx^{2}+bx\right.}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + 3/2*A*b*sq
rt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 3/4*sqrt(c*x^2 + b*x)*
B*b + 1/2*(c*x^2 + b*x)^(3/2)*B/x - 3*sqrt(c*x^2 + b*x)*A*b/x + (c*x^2 + b*
x)^(3/2)*A/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**3,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**3, x)
```

3.86 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^4}\,dx$

Optimal. Leaf size=120

$$-\frac{2\left(bx+cx^2\right)^{3/2}(2Ac+3bB)}{3bx^2}+\frac{c\sqrt{bx+cx^2}\,(2Ac+3bB)}{b}+\sqrt{c}\,(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}$$

```
[Out] -2/3*(2*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/b/x^2-2/3*A*(c*x^2+b*x)^(5/2)/b/x^4+(2
*A*c+3*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))*c^(1/2)+c*(2*A*c+3*B*b)*(c
*x^2+b*x)^(1/2)/b
```

Rubi [**A**] time = 0.12, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 662, 664, 620, 206}

$$-\frac{2\left(bx+cx^2\right)^{3/2}(2Ac+3bB)}{3bx^2}+\frac{c\sqrt{bx+cx^2}\,(2Ac+3bB)}{b}+\sqrt{c}\,(2Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (c*(3*b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*(3*b*B + 2*A*c)*(b*x + c*x^2)^
(3/2))/(3*b*x^2) - (2*A*(b*x + c*x^2)^(5/2))/(3*b*x^4) + Sqrt[c]*(3*b*B + 2
*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^4}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^3}\,dx}{3b}\\
&= -\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\frac{(c(3bB+2Ac))\int\frac{\sqrt{bx+cx^2}}{x}}{b}\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+\\
&= \frac{c(3bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2(3bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2A\left(bx+cx^2\right)^{5/2}}{3bx^4}+
\end{aligned}
$$

Mathematica [C] time = 0.04, size = 84, normalized size = 0.70

$$
-\frac{2\sqrt{x(b+cx)}\left(bx(2Ac+3bB)\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx}{b}\right)+A\sqrt{\frac{cx}{b}+1}\,(b+cx)^2\right)}{3bx^2\sqrt{\frac{cx}{b}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(A*(b + c*x)^2*Sqrt[1 + (c*x)/b] + b*(3*b*B + 2*A*c)*
x*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*x)/b)]))/(3*b*x^2*Sqrt[1 + (c*x)/
b])
```

fricas [A] time = 0.98, size = 170, normalized size = 1.42

$$
\left[\frac{3\,(3\,Bb+2\,Ac)\sqrt{c}\,x^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(3\,Bcx^2-2\,Ab-2\,(3\,Bb+4\,Ac)x\right)\sqrt{cx^2+bx}}{6\,x^2},-\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/6*(3*(3*B*b + 2*A*c)*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c)) + 2*(3*B*c*x^2 - 2*A*b - 2*(3*B*b + 4*A*c)*x)*sqrt(c*x^2 + b*x))/x^2,
 -1/3*(3*(3*B*b + 2*A*c)*sqrt(-c)*x^2*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*
x)) - (3*B*c*x^2 - 2*A*b - 2*(3*B*b + 4*A*c)*x)*sqrt(c*x^2 + b*x))/x^2]
```

giac [**A**] time = 0.27, size = 181, normalized size = 1.51

$$\sqrt{cx^2+bx}\,Bc-\frac{\left(3\,Bbc+2\,Ac^2\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\sqrt{c}}+\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb^2\sqrt{c}+6\left(\sqrt{c}\right.\right.}{3\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c - 1/2*(3*B*b*c + 2*A*c^2)*log(abs(-2*(sqrt(c)*x - sqr
t(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c) + 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b^2*sqrt(c) + 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2) + 3*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c + A*b^3*sqrt(c))/((sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*sqrt(c))
```

maple [**B**] time = 0.06, size = 284, normalized size = 2.37

$$A\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{3Bb\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2}-\frac{4\sqrt{c\,x^2+bx}\,A\,c^3x}{b^2}-\frac{6\sqrt{c\,x^2+bx}\,B\,c^2x}{b}-\frac{2\sqrt{c\,x^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(5/2)/b/x^4-4/3*A/b^2*c/x^3*(c*x^2+b*x)^(5/2)+16/3*A/b^3
*c^2/x^2*(c*x^2+b*x)^(5/2)-16/3*A/b^3*c^3*(c*x^2+b*x)^(3/2)-4*A/b^2*c^3*(c*
x^2+b*x)^(1/2)*x-2*A/b*c^2*(c*x^2+b*x)^(1/2)+A*c^(3/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))-2*B/b/x^3*(c*x^2+b*x)^(5/2)+8*B/b^2*c/x^2*(c*x^2+b*x)
^(5/2)-8*B/b^2*c^2*(c*x^2+b*x)^(3/2)-6*B/b*c^2*(c*x^2+b*x)^(1/2)*x-3*B*c*(c
*x^2+b*x)^(1/2)+3/2*B*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**A**] time = 1.00, size = 146, normalized size = 1.22

$$\frac{3}{2}\,Bb\sqrt{c}\,\log\left(2\,cx+b+2\sqrt{cx^2+bx}\,\sqrt{c}\right)+Ac^{\frac{3}{2}}\log\left(2\,cx+b+2\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{3\sqrt{cx^2+bx}\,Bb}{x}-\frac{7\sqrt{cx^2+bx}\,A}{3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] 3/2*B*b*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + A*c^(3/2)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 3*sqrt(c*x^2 + b*x)*B*b/x - 7/
3*sqrt(c*x^2 + b*x)*A*c/x + (c*x^2 + b*x)^(3/2)*B/x^2 - 1/3*sqrt(c*x^2 + b*
x)*A*b/x^2 - 1/3*(c*x^2 + b*x)^(3/2)*A/x^3
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,(A+B\,x)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**4,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**4, x)
```

3.87 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=95

$$-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2Bc\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}$$

```
[Out] -2/3*B*(c*x^2+b*x)^(3/2)/x^3-2/5*A*(c*x^2+b*x)^(5/2)/b/x^5+2*B*c^(3/2)*arct
anh(x*c^(1/2)/(c*x^2+b*x)^(1/2))-2*B*c*(c*x^2+b*x)^(1/2)/x
```

Rubi **[A]** time = 0.10, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2Bc\sqrt{bx+cx^2}}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (-2*B*c*Sqrt[b*x + c*x^2])/x - (2*B*(b*x + c*x^2)^(3/2))/(3*x^3) - (2*A*(b*
x + c*x^2)^(5/2))/(5*b*x^5) + 2*B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*
x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^5}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+B\int \frac{\left(bx+cx^2\right)^{3/2}}{x^4}\,dx \\
&= -\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+(Bc)\int \frac{\sqrt{bx+cx^2}}{x^2}\,dx \\
&= -\frac{2Bc\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+\left(Bc^2\right)\int \frac{1}{\sqrt{bx+cx^2}} \\
&= -\frac{2Bc\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+\left(2Bc^2\right)\text{Subst}\left(\int \frac{}{1} \right. \\
&= -\frac{2Bc\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2A\left(bx+cx^2\right)^{5/2}}{5bx^5}+2Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{}}{\sqrt{bx}} \right.
\end{aligned}
$$

Mathematica [C] time = 0.08, size = 88, normalized size = 0.93

$$
\frac{2\sqrt{x(b+cx)}\left((b+cx)^2\sqrt{\frac{cx}{b}+1}\,(bB-Ac)-b^3B\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx}{b}\right)\right)}{5bcx^3\sqrt{\frac{cx}{b}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*((b*B - A*c)*(b + c*x)^2*Sqrt[1 + (c*x)/b] - b^3*B*Hyp
ergeometric2F1[-5/2, -5/2, -3/2, -((c*x)/b)]))/(5*b*c*x^3*Sqrt[1 + (c*x)/b]
)
```

fricas [A] time = 0.90, size = 188, normalized size = 1.98

$$
\left[\frac{15\,Bbc^{\frac{3}{2}}x^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(3\,Ab^2+\left(20\,Bbc+3\,Ac^2\right)x^2+\left(5\,Bb^2+6\,Abc\right)x\right)\sqrt{cx^2+bx}}{15\,bx^3},\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/15*(15*B*b*c^(3/2)*x^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*
(3*A*b^2 + (20*B*b*c + 3*A*c^2)*x^2 + (5*B*b^2 + 6*A*b*c)*x)*sqrt(c*x^2 + b
*x))/(b*x^3), -2/15*(15*B*b*sqrt(-c)*c*x^3*arctan(sqrt(c*x^2 + b*x)*sqrt(-c
)/(c*x)) + (3*A*b^2 + (20*B*b*c + 3*A*c^2)*x^2 + (5*B*b^2 + 6*A*b*c)*x)*sqr
t(c*x^2 + b*x))/(b*x^3)]
```

giac [B] time = 0.25, size = 270, normalized size = 2.84

$$
-Bc^{\frac{3}{2}}\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)+\frac{2\left(30\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bbc^{\frac{3}{2}}+15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Ac^{\frac{5}{2}}+\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] -B*c^(3/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/15*
(30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^(3/2) + 15*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*A*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c + 30
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b^3*sqrt(c) + 30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(3/2) +
15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c + 3*A*b^4*sqrt(c))/((sqrt(c)*x -
 sqrt(c*x^2 + b*x))^5*sqrt(c))
```

maple [**B**] time = 0.05, size = 176, normalized size = 1.85

$$B\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)-\frac{4\sqrt{c\,x^{2}+bx}\;B\,c^{3}x}{b^{2}}-\frac{2\sqrt{c\,x^{2}+bx}\;B\,c^{2}}{b}-\frac{16\left(c\,x^{2}+bx\right)^{\frac{3}{2}}B\,c^{3}}{3b^{3}}+\frac{16\left(c\,x^{2}+bx\right)^{\frac{5}{2}}B\,c^{2}}{3b^{3}x^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x)
```

```
[Out] -2/5*A*(c*x^2+b*x)^(5/2)/b/x^5-2/3*B/b/x^4*(c*x^2+b*x)^(5/2)-4/3*B/b^2*c/x^
3*(c*x^2+b*x)^(5/2)+16/3*B/b^3*c^2/x^2*(c*x^2+b*x)^(5/2)-16/3*B/b^3*c^3*(c*
x^2+b*x)^(3/2)-4*B/b^2*c^3*(c*x^2+b*x)^(1/2)*x-2*B/b*c^2*(c*x^2+b*x)^(1/2)+
B*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**A**] time = 0.95, size = 158, normalized size = 1.66

$$Bc^{\frac{3}{2}}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-\frac{7\,\sqrt{cx^{2}+bx}\,Bc}{3\,x}-\frac{2\,\sqrt{cx^{2}+bx}\,Ac^{2}}{5\,bx}-\frac{\sqrt{cx^{2}+bx}\,Bb}{3\,x^{2}}+\frac{\sqrt{cx^{2}+bx}\,Ac}{5\,x^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] B*c^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 7/3*sqrt(c*x^2 + b
*x)*B*c/x - 2/5*sqrt(c*x^2 + b*x)*A*c^2/(b*x) - 1/3*sqrt(c*x^2 + b*x)*B*b/x
^2 + 1/5*sqrt(c*x^2 + b*x)*A*c/x^2 - 1/3*(c*x^2 + b*x)^(3/2)*B/x^3 + 3/5*sq
rt(c*x^2 + b*x)*A*b/x^3 - (c*x^2 + b*x)^(3/2)*A/x^4
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^5, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(A + Bx\right)}{x^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**5,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**5, x)
```

3.88 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^6} \, dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{5/2}(7bB-2Ac)}{35b^2x^5}-\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}$$

```
[Out] -2/7*A*(c*x^2+b*x)^(5/2)/b/x^6-2/35*(-2*A*c+7*B*b)*(c*x^2+b*x)^(5/2)/b^2/x^
5
```

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(7bB-2Ac)}{35b^2x^5}-\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(7*b*x^6) - (2*(7*b*B - 2*A*c)*(b*x + c*x^2)^(5/
2))/(35*b^2*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^6}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^5}\,dx}{7b}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{7bx^6}-\frac{2(7bB-2Ac)\left(bx+cx^2\right)^{5/2}}{35b^2x^5}\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 0.63

$$-\frac{2(x(b+cx))^{5/2}(5Ab-2Acx+7bBx)}{35b^2x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(5*A*b + 7*b*B*x - 2*A*c*x))/(35*b^2*x^6)
```

fricas [A] time = 0.87, size = 78, normalized size = 1.37

$$-\frac{2\left(5\,Ab^{3}+\left(7\,Bbc^{2}-2\,Ac^{3}\right)x^{3}+\left(14\,Bb^{2}c+Abc^{2}\right)x^{2}+\left(7\,Bb^{3}+8\,Ab^{2}c\right)x\right)\sqrt{cx^{2}+bx}}{35\,b^{2}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] -2/35*(5*A*b^3 + (7*B*b*c^2 - 2*A*c^3)*x^3 + (14*B*b^2*c + A*b*c^2)*x^2 + (
7*B*b^3 + 8*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^2*x^4)
```

giac [B] time = 0.23, size = 311, normalized size = 5.46

$$2\left(35\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx}\right)^{6}Bc^{2}+70\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx}\right)^{5}Bbc^{\frac{3}{2}}+35\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx}\right)^{5}Ac^{\frac{5}{2}}+70\left(\sqrt{c}\,x-\sqrt{cx^{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 2/35*(35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 70*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b*c^(3/2) + 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(5/2) +
 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 105*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^4*A*b*c^2 + 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt(c) + 1
40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 7*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^2*B*b^4 + 98*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c + 35*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 5*A*b^5)/(sqrt(c)*x - sqrt(c*x
^2 + b*x))^7
```

maple [A] time = 0.05, size = 40, normalized size = 0.70

$$-\frac{2\,(cx+b)\,(-2Acx+7Bbx+5Ab)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{35b^{2}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x)
```

```
[Out] -2/35*(c*x+b)*(-2*A*c*x+7*B*b*x+5*A*b)*(c*x^2+b*x)^(3/2)/b^2/x^5
```

maxima [B] time = 0.94, size = 176, normalized size = 3.09

$$-\frac{2\,\sqrt{cx^{2}+bx}\,Bc^{2}}{5\,bx}+\frac{4\,\sqrt{cx^{2}+bx}\,Ac^{3}}{35\,b^{2}x}+\frac{\sqrt{cx^{2}+bx}\,Bc}{5\,x^{2}}-\frac{2\,\sqrt{cx^{2}+bx}\,Ac^{2}}{35\,bx^{2}}+\frac{3\,\sqrt{cx^{2}+bx}\,Bb}{5\,x^{3}}+\frac{3\,\sqrt{cx^{2}+bx}\,Ac}{70\,x^{3}}-\left(cx^{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] -2/5*sqrt(c*x^2 + b*x)*B*c^2/(b*x) + 4/35*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x) +
 1/5*sqrt(c*x^2 + b*x)*B*c/x^2 - 2/35*sqrt(c*x^2 + b*x)*A*c^2/(b*x^2) + 3/5
*sqrt(c*x^2 + b*x)*B*b/x^3 + 3/70*sqrt(c*x^2 + b*x)*A*c/x^3 - (c*x^2 + b*x)
^(3/2)*B/x^4 + 3/14*sqrt(c*x^2 + b*x)*A*b/x^4 - 1/2*(c*x^2 + b*x)^(3/2)*A/x
^5
```

mupad [B] time = 2.02, size = 142, normalized size = 2.49

$$\frac{4\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{35\,b^2\,x}-\frac{16\,A\,c\,\sqrt{c\,x^2+b\,x}}{35\,x^3}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{5\,x^3}-\frac{4\,B\,c\,\sqrt{c\,x^2+b\,x}}{5\,x^2}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{35\,b\,x^2}-\frac{2\,A\,b\,\sqrt{c\,x^2}}{7\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^6,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(35*b^2*x) - (16*A*c*(b*x + c*x^2)^(1/2))/(35
*x^3) - (2*B*b*(b*x + c*x^2)^(1/2))/(5*x^3) - (4*B*c*(b*x + c*x^2)^(1/2))/(
5*x^2) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(35*b*x^2) - (2*A*b*(b*x + c*x^2)^(1
/2))/(7*x^4) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(5*b*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**6,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**6, x)
```

3.89 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{315b^3x^5}-\frac{2\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{63b^2x^6}-\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7}$$

```
[Out] -2/9*A*(c*x^2+b*x)^(5/2)/b/x^7-2/63*(-4*A*c+9*B*b)*(c*x^2+b*x)^(5/2)/b^2/x^
6+4/315*c*(-4*A*c+9*B*b)*(c*x^2+b*x)^(5/2)/b^3/x^5
```

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{315b^3x^5}-\frac{2\left(bx+cx^2\right)^{5/2}(9bB-4Ac)}{63b^2x^6}-\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(9*b*x^7) - (2*(9*b*B - 4*A*c)*(b*x + c*x^2)^(5/
2))/(63*b^2*x^6) + (4*c*(9*b*B - 4*A*c)*(b*x + c*x^2)^(5/2))/(315*b^3*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^7}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} + \frac{\left(2\left(-7(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^6}\,dx}{9b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} - \frac{2(9bB-4Ac)\left(bx+cx^2\right)^{5/2}}{63b^2x^6} - \frac{(2c(9bB-4Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x^5}}{63b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{9bx^7} - \frac{2(9bB-4Ac)\left(bx+cx^2\right)^{5/2}}{63b^2x^6} + \frac{4c(9bB-4Ac)\left(bx+cx^2\right)^{5/}}{315b^3x^5}$$

Mathematica [**A**] time = 0.03, size = 56, normalized size = 0.62

$$\frac{2(x(b+cx))^{5/2}\left(A\left(-35b^2+20bcx-8c^2x^2\right)+9bBx(2cx-5b)\right)}{315b^3x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(9*b*B*x*(-5*b + 2*c*x) + A*(-35*b^2 + 20*b*c*x - 8*
c^2*x^2)))/(315*b^3*x^7)
```

fricas [**A**] time = 0.87, size = 104, normalized size = 1.16

$$-\frac{2\left(35\,Ab^4-2\left(9\,Bbc^3-4\,Ac^4\right)x^4+\left(9\,Bb^2c^2-4\,Abc^3\right)x^3+3\left(24\,Bb^3c+Ab^2c^2\right)x^2+5\left(9\,Bb^4+10\,Ab^3c\right)x\right)\sqrt{}}{315\,b^3x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 - 2*(9*B*b*c^3 - 4*A*c^4)*x^4 + (9*B*b^2*c^2 - 4*A*b*c^3)*
x^3 + 3*(24*B*b^3*c + A*b^2*c^2)*x^2 + 5*(9*B*b^4 + 10*A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^3*x^5)
```

giac [**B**] time = 0.23, size = 371, normalized size = 4.12

$$2\Big(315\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Bc^{\frac{5}{2}}+945\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Bbc^2+420\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Ac^3+1260\,(\sqrt{c}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] 2/315*(315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^(5/2) + 945*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^6*B*b*c^2 + 420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*c^3 +
 1260*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2) + 1575*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*A*b*c^(5/2) + 882*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b
^3*c + 2583*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2 + 315*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c) + 2310*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*A*b^3*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5 + 1170*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*A*b^4*c + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b
^5*sqrt(c) + 35*A*b^6)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [**A**] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-18Bbc\,x^2-20Abcx+45B\,b^2x+35A\,b^2\right)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{315b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x)
```

```
[Out] -2/315*(c*x+b)*(8*A*c^2*x^2-18*B*b*c*x^2-20*A*b*c*x+45*B*b^2*x+35*A*b^2)*(c
*x^2+b*x)^(3/2)/b^3/x^6
```

maxima [B] time = 0.98, size = 222, normalized size = 2.47

$$\frac{4\sqrt{cx^2+bx}\,Bc^3}{35\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^4}{315\,b^3x}-\frac{2\sqrt{cx^2+bx}\,Bc^2}{35\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac^3}{315\,b^2x^2}+\frac{3\sqrt{cx^2+bx}\,Bc}{70\,x^3}-\frac{2\sqrt{cx^2+bx}\,Ac^2}{105\,bx^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] 4/35*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x) - 16/315*sqrt(c*x^2 + b*x)*A*c^4/(b^3*
x) - 2/35*sqrt(c*x^2 + b*x)*B*c^2/(b*x^2) + 8/315*sqrt(c*x^2 + b*x)*A*c^3/(
b^2*x^2) + 3/70*sqrt(c*x^2 + b*x)*B*c/x^3 - 2/105*sqrt(c*x^2 + b*x)*A*c^2/(
b*x^3) + 3/14*sqrt(c*x^2 + b*x)*B*b/x^4 + 1/63*sqrt(c*x^2 + b*x)*A*c/x^4 -
1/2*(c*x^2 + b*x)^(3/2)*B/x^5 + 1/9*sqrt(c*x^2 + b*x)*A*b/x^5 - 1/3*(c*x^2
+ b*x)^(3/2)*A/x^6
```

mupad [B] time = 2.40, size = 188, normalized size = 2.09

$$\frac{8\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{315\,b^2\,x^2}-\frac{20\,A\,c\,\sqrt{c\,x^2+b\,x}}{63\,x^4}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{16\,B\,c\,\sqrt{c\,x^2+b\,x}}{35\,x^3}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{105\,b\,x^3}-\frac{2\,A\,b\,\sqrt{c\,x^2+}}{9\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^7,x)
```

```
[Out] (8*A*c^3*(b*x + c*x^2)^(1/2))/(315*b^2*x^2) - (20*A*c*(b*x + c*x^2)^(1/2))/
(63*x^4) - (2*B*b*(b*x + c*x^2)^(1/2))/(7*x^4) - (16*B*c*(b*x + c*x^2)^(1/2
))/(35*x^3) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(105*b*x^3) - (2*A*b*(b*x + c*x
^2)^(1/2))/(9*x^5) - (16*A*c^4*(b*x + c*x^2)^(1/2))/(315*b^3*x) - (2*B*c^2*
(b*x + c*x^2)^(1/2))/(35*b*x^2) + (4*B*c^3*(b*x + c*x^2)^(1/2))/(35*b^2*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**7,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**7, x)
```

3.90 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{3465b^4x^5}+\frac{8c\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{693b^3x^6}-\frac{2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{99b^2x^7}-\frac{2A\,(bx+cx^2}{11bx^8}$$

```
[Out] -2/11*A*(c*x^2+b*x)^(5/2)/b/x^8-2/99*(-6*A*c+11*B*b)*(c*x^2+b*x)^(5/2)/b^2/
x^7+8/693*c*(-6*A*c+11*B*b)*(c*x^2+b*x)^(5/2)/b^3/x^6-16/3465*c^2*(-6*A*c+1
1*B*b)*(c*x^2+b*x)^(5/2)/b^4/x^5
```

Rubi [A] time = 0.12, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{3465b^4x^5}+\frac{8c\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{693b^3x^6}-\frac{2\left(bx+cx^2\right)^{5/2}(11bB-6Ac)}{99b^2x^7}-\frac{2A\,(bx+cx^2}{11bx^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(11*b*x^8) - (2*(11*b*B - 6*A*c)*(b*x + c*x^2)^(
5/2))/(99*b^2*x^7) + (8*c*(11*b*B - 6*A*c)*(b*x + c*x^2)^(5/2))/(693*b^3*x^
6) - (16*c^2*(11*b*B - 6*A*c)*(b*x + c*x^2)^(5/2))/(3465*b^4*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^8}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}+\frac{\left(2\left(-8(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^7}\,dx}{11b}\\
&= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}-\frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7}-\frac{(4c(11bB-6Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^6}}{99b^2}\\
&= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}-\frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7}+\frac{8c(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{693b^3x^6}\\
&= -\frac{2A\left(bx+cx^2\right)^{5/2}}{11bx^8}-\frac{2(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{99b^2x^7}+\frac{8c(11bB-6Ac)\left(bx+cx^2\right)^{5/2}}{693b^3x^6}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.63

$$
-\frac{2(x(b+cx))^{5/2}\left(3A\left(105b^3-70b^2cx+40bc^2x^2-16c^3x^3\right)+11bBx\left(35b^2-20bcx+8c^2x^2\right)\right)}{3465b^4x^8}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(11*b*B*x*(35*b^2 - 20*b*c*x + 8*c^2*x^2) + 3*A*(10
5*b^3 - 70*b^2*c*x + 40*b*c^2*x^2 - 16*c^3*x^3)))/(3465*b^4*x^8)
```

fricas [A] time = 0.88, size = 130, normalized size = 1.04

$$
-\frac{2\,(315\,Ab^5+8\,(11\,Bbc^4-6\,Ac^5)x^5-4\,(11\,Bb^2c^3-6\,Abc^4)x^4+3\,(11\,Bb^3c^2-6\,Ab^2c^3)x^3+5\,(110\,Bb^4c+3\,Ab^3}{3465\,b^4x^6}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 + 8*(11*B*b*c^4 - 6*A*c^5)*x^5 - 4*(11*B*b^2*c^3 - 6*A*b
*c^4)*x^4 + 3*(11*B*b^3*c^2 - 6*A*b^2*c^3)*x^3 + 5*(110*B*b^4*c + 3*A*b^3*c
^2)*x^2 + 35*(11*B*b^5 + 12*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^4*x^6)
```

giac [B] time = 0.40, size = 431, normalized size = 3.45

$$
2\,(4620\,(\sqrt{c}\,x-\sqrt{cx^2+bx})^8Bc^3+17325\,(\sqrt{c}\,x-\sqrt{cx^2+bx})^7Bbc^{\frac{5}{2}}+6930\,(\sqrt{c}\,x-\sqrt{cx^2+bx})^7Ac^{\frac{7}{2}}+28413\,(
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/3465*(4620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 17325*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^7*B*b*c^(5/2) + 6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*
c^(7/2) + 28413*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 30492*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^6*A*b*c^3 + 25410*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*b^3*c^(3/2) + 58905*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^(5/2) + 1
2870*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c + 63855*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*A*b^3*c^2 + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*sqrt
(c) + 41580*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2) + 385*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^2*B*b^6 + 16170*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*
b^5*c + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*sqrt(c) + 315*A*b^7)/(sq
rt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-48A\,c^3x^3+88Bb\,c^2x^3+120Ab\,c^2x^2-220B\,b^2c\,x^2-210A\,b^2cx+385B\,b^3x+315A\,b^3\right)(c\,x^2+b}{3465b^4x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x)
```

```
[Out] -2/3465*(c*x+b)*(-48*A*c^3*x^3+88*B*b*c^2*x^3+120*A*b*c^2*x^2-220*B*b^2*c*x
^2-210*A*b^2*c*x+385*B*b^3*x+315*A*b^3)*(c*x^2+b*x)^(3/2)/x^7/b^4
```

maxima [B] time = 0.96, size = 268, normalized size = 2.14

$$-\frac{16\,\sqrt{cx^2+bx}\,Bc^4}{315\,b^3x}+\frac{32\,\sqrt{cx^2+bx}\,Ac^5}{1155\,b^4x}+\frac{8\,\sqrt{cx^2+bx}\,Bc^3}{315\,b^2x^2}-\frac{16\,\sqrt{cx^2+bx}\,Ac^4}{1155\,b^3x^2}-\frac{2\,\sqrt{cx^2+bx}\,Bc^2}{105\,bx^3}+\frac{4\,\sqrt{cx^2+bx}}{385\,b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] -16/315*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x) + 32/1155*sqrt(c*x^2 + b*x)*A*c^5/(
b^4*x) + 8/315*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x^2) - 16/1155*sqrt(c*x^2 + b*x
)*A*c^4/(b^3*x^2) - 2/105*sqrt(c*x^2 + b*x)*B*c^2/(b*x^3) + 4/385*sqrt(c*x^
2 + b*x)*A*c^3/(b^2*x^3) + 1/63*sqrt(c*x^2 + b*x)*B*c/x^4 - 2/231*sqrt(c*x^
2 + b*x)*A*c^2/(b*x^4) + 1/9*sqrt(c*x^2 + b*x)*B*b/x^5 + 1/132*sqrt(c*x^2 +
 b*x)*A*c/x^5 - 1/3*(c*x^2 + b*x)^(3/2)*B/x^6 + 3/44*sqrt(c*x^2 + b*x)*A*b/
x^6 - 1/4*(c*x^2 + b*x)^(3/2)*A/x^7
```

mupad [B] time = 2.88, size = 234, normalized size = 1.87

$$\frac{4\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{385\,b^2\,x^3}-\frac{8\,A\,c\,\sqrt{c\,x^2+b\,x}}{33\,x^5}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{20\,B\,c\,\sqrt{c\,x^2+b\,x}}{63\,x^4}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{231\,b\,x^4}-\frac{2\,A\,b\,\sqrt{c\,x^2}}{11\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^8,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(385*b^2*x^3) - (8*A*c*(b*x + c*x^2)^(1/2))/(
33*x^5) - (2*B*b*(b*x + c*x^2)^(1/2))/(9*x^5) - (20*B*c*(b*x + c*x^2)^(1/2)
)/(63*x^4) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(231*b*x^4) - (2*A*b*(b*x + c*x^
2)^(1/2))/(11*x^6) - (16*A*c^4*(b*x + c*x^2)^(1/2))/(1155*b^3*x^2) + (32*A*
c^5*(b*x + c*x^2)^(1/2))/(1155*b^4*x) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(105*
b*x^3) + (8*B*c^3*(b*x + c*x^2)^(1/2))/(315*b^2*x^2) - (16*B*c^4*(b*x + c*x
^2)^(1/2))/(315*b^3*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**8,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**8, x)
```

3.91 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^9}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{15015b^5x^5}-\frac{16c^2\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{3003b^4x^6}+\frac{4c\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{429b^3x^7}-\frac{2\left(bx+cx^2\right)^{5/}}{143}$$

```
[Out] -2/13*A*(c*x^2+b*x)^(5/2)/b/x^9-2/143*(-8*A*c+13*B*b)*(c*x^2+b*x)^(5/2)/b^2
/x^8+4/429*c*(-8*A*c+13*B*b)*(c*x^2+b*x)^(5/2)/b^3/x^7-16/3003*c^2*(-8*A*c+
13*B*b)*(c*x^2+b*x)^(5/2)/b^4/x^6+32/15015*c^3*(-8*A*c+13*B*b)*(c*x^2+b*x)^
(5/2)/b^5/x^5
```

Rubi [A] time = 0.17, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$\frac{32c^3\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{15015b^5x^5}-\frac{16c^2\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{3003b^4x^6}+\frac{4c\left(bx+cx^2\right)^{5/2}(13bB-8Ac)}{429b^3x^7}-\frac{2\left(bx+cx^2\right)^{5/}}{143}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^9,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(13*b*x^9) - (2*(13*b*B - 8*A*c)*(b*x + c*x^2)^(
5/2))/(143*b^2*x^8) + (4*c*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(429*b^3*x
^7) - (16*c^2*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(3003*b^4*x^6) + (32*c^
3*(13*b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(15015*b^5*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^9}\,dx = -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} + \frac{\left(2\left(-9(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^8}\,dx}{13b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} - \frac{(6c(13bB-8Ac))\int \frac{(bx+cx}{x^7}}{143b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

$$= -\frac{2A\left(bx+cx^2\right)^{5/2}}{13bx^9} - \frac{2(13bB-8Ac)\left(bx+cx^2\right)^{5/2}}{143b^2x^8} + \frac{4c(13bB-8Ac)\left(bx+cx^2\right.}{429b^3x^7}$$

Mathematica [**A**] time = 0.04, size = 100, normalized size = 0.62

$$\frac{2(x(b+cx))^{5/2}\left(A\left(-1155b^4+840b^3cx-560b^2c^2x^2+320bc^3x^3-128c^4x^4\right)+13bBx\left(-105b^3+70b^2cx-40bc\right.\right.}{15015b^5x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^9,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(13*b*B*x*(-105*b^3 + 70*b^2*c*x - 40*b*c^2*x^2 + 16
*c^3*x^3) + A*(-1155*b^4 + 840*b^3*c*x - 560*b^2*c^2*x^2 + 320*b*c^3*x^3 -
128*c^4*x^4)))/(15015*b^5*x^9)
```

fricas [**A**] time = 0.89, size = 153, normalized size = 0.96

$$-\frac{2\left(1155\,Ab^6-16\left(13\,Bbc^5-8\,Ac^6\right)x^6+8\left(13\,Bb^2c^4-8\,Abc^5\right)x^5-6\left(13\,Bb^3c^3-8\,Ab^2c^4\right)x^4+5\left(13\,Bb^4c^2-\right.\right.}{15015\,b^5x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="fricas")
```

```
[Out] -2/15015*(1155*A*b^6 - 16*(13*B*b*c^5 - 8*A*c^6)*x^6 + 8*(13*B*b^2*c^4 - 8*
A*b*c^5)*x^5 - 6*(13*B*b^3*c^3 - 8*A*b^2*c^4)*x^4 + 5*(13*B*b^4*c^2 - 8*A*b
^3*c^3)*x^3 + 35*(52*B*b^5*c + A*b^4*c^2)*x^2 + 105*(13*B*b^6 + 14*A*b^5*c)
*x)*sqrt(c*x^2 + b*x)/(b^5*x^7)
```

giac [**B**] time = 0.21, size = 491, normalized size = 3.07

$$\frac{2\left(30030\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^9Bc^{\frac{7}{2}}+132132\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Bbc^3+48048\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Ac^4+25\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="giac")
```

```
[Out] 2/15015*(30030*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^(7/2) + 132132*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^8*B*b*c^3 + 48048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
8*A*c^4 + 255255*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^(5/2) + 240240*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b*c^(7/2) + 276705*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^6*B*b^3*c^2 + 531960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^3
 + 180180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^(3/2) + 675675*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^(5/2) + 70070*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*b^5*c + 535535*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^2 + 15015
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*sqrt(c) + 270270*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*A*b^5*c^(3/2) + 1365*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b
^7 + 84630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c + 15015*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*A*b^7*sqrt(c) + 1155*A*b^8)/(sqrt(c)*x - sqrt(c*x^2 + b*x
))^13
```

maple [A] time = 0.04, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\,\bigl(128A\,c^4x^4-208Bb\,c^3x^4-320Ab\,c^3x^3+520B\,b^2c^2x^3+560A\,b^2c^2x^2-910B\,b^3c\,x^2-840A\,b^3cx+13}{15015b^5x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x)
```

```
[Out] -2/15015*(c*x+b)*(128*A*c^4*x^4-208*B*b*c^3*x^4-320*A*b*c^3*x^3+520*B*b^2*c
^2*x^3+560*A*b^2*c^2*x^2-910*B*b^3*c*x^2-840*A*b^3*c*x+1365*B*b^4*x+1155*A*
b^4)*(c*x^2+b*x)^(3/2)/b^5/x^8
```

maxima [B] time = 1.01, size = 314, normalized size = 1.96

$$\frac{32\,\sqrt{cx^2+bx}\,Bc^5}{1155\,b^4x}-\frac{256\,\sqrt{cx^2+bx}\,Ac^6}{15015\,b^5x}-\frac{16\,\sqrt{cx^2+bx}\,Bc^4}{1155\,b^3x^2}+\frac{128\,\sqrt{cx^2+bx}\,Ac^5}{15015\,b^4x^2}+\frac{4\,\sqrt{cx^2+bx}\,Bc^3}{385\,b^2x^3}-\frac{32\,\sqrt{cx^2+bx}}{5005\,b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^9,x, algorithm="maxima")
```

```
[Out] 32/1155*sqrt(c*x^2 + b*x)*B*c^5/(b^4*x) - 256/15015*sqrt(c*x^2 + b*x)*A*c^6
/(b^5*x) - 16/1155*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x^2) + 128/15015*sqrt(c*x^2
 + b*x)*A*c^5/(b^4*x^2) + 4/385*sqrt(c*x^2 + b*x)*B*c^3/(b^2*x^3) - 32/5005
*sqrt(c*x^2 + b*x)*A*c^4/(b^3*x^3) - 2/231*sqrt(c*x^2 + b*x)*B*c^2/(b*x^4)
+ 16/3003*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x^4) + 1/132*sqrt(c*x^2 + b*x)*B*c/x
^5 - 2/429*sqrt(c*x^2 + b*x)*A*c^2/(b*x^5) + 3/44*sqrt(c*x^2 + b*x)*B*b/x^6
 + 3/715*sqrt(c*x^2 + b*x)*A*c/x^6 - 1/4*(c*x^2 + b*x)^(3/2)*B/x^7 + 3/65*s
qrt(c*x^2 + b*x)*A*b/x^7 - 1/5*(c*x^2 + b*x)^(3/2)*A/x^8
```

mupad [B] time = 3.27, size = 280, normalized size = 1.75

$$\frac{16\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{3003\,b^2\,x^4}-\frac{28\,A\,c\,\sqrt{c\,x^2+b\,x}}{143\,x^6}-\frac{2\,B\,b\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{8\,B\,c\,\sqrt{c\,x^2+b\,x}}{33\,x^5}-\frac{2\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{429\,b\,x^5}-\frac{2\,A\,b\,\sqrt{c\,x^2+}}{13\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^9,x)
```

```
[Out] (16*A*c^3*(b*x + c*x^2)^(1/2))/(3003*b^2*x^4) - (28*A*c*(b*x + c*x^2)^(1/2)
)/(143*x^6) - (2*B*b*(b*x + c*x^2)^(1/2))/(11*x^6) - (8*B*c*(b*x + c*x^2)^(
1/2))/(33*x^5) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(429*b*x^5) - (2*A*b*(b*x +
c*x^2)^(1/2))/(13*x^7) - (32*A*c^4*(b*x + c*x^2)^(1/2))/(5005*b^3*x^3) + (1
28*A*c^5*(b*x + c*x^2)^(1/2))/(15015*b^4*x^2) - (256*A*c^6*(b*x + c*x^2)^(1
/2))/(15015*b^5*x) - (2*B*c^2*(b*x + c*x^2)^(1/2))/(231*b*x^4) + (4*B*c^3*(
b*x + c*x^2)^(1/2))/(385*b^2*x^3) - (16*B*c^4*(b*x + c*x^2)^(1/2))/(1155*b^
3*x^2) + (32*B*c^5*(b*x + c*x^2)^(1/2))/(1155*b^4*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{9}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**9,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**9, x)
```

3.92 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{10}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{45045b^6x^5}+\frac{128c^3\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{9009b^5x^6}-\frac{32c^2\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{1287b^4x^7}+16c\left(bx+c\right.$$

```
[Out] -2/15*A*(c*x^2+b*x)^(5/2)/b/x^10-2/39*(-2*A*c+3*B*b)*(c*x^2+b*x)^(5/2)/b^2/
x^9+16/429*c*(-2*A*c+3*B*b)*(c*x^2+b*x)^(5/2)/b^3/x^8-32/1287*c^2*(-2*A*c+3
*B*b)*(c*x^2+b*x)^(5/2)/b^4/x^7+128/9009*c^3*(-2*A*c+3*B*b)*(c*x^2+b*x)^(5/
2)/b^5/x^6-256/45045*c^4*(-2*A*c+3*B*b)*(c*x^2+b*x)^(5/2)/b^6/x^5
```

Rubi [A] time = 0.18, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{45045b^6x^5}+\frac{128c^3\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{9009b^5x^6}-\frac{32c^2\left(bx+cx^2\right)^{5/2}(3bB-2Ac)}{1287b^4x^7}+16c\left(bx+c\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^10,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(5/2))/(15*b*x^10) - (2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(
5/2))/(39*b^2*x^9) + (16*c*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(429*b^3*x^
8) - (32*c^2*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(1287*b^4*x^7) + (128*c^3
*(3*b*B - 2*A*c)*(b*x + c*x^2)^(5/2))/(9009*b^5*x^6) - (256*c^4*(3*b*B - 2*
A*c)*(b*x + c*x^2)^(5/2))/(45045*b^6*x^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{10}}\,dx &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}+\frac{\left(2\left(-10(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^9}\,dx}{15b}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9}-\frac{(8c(3bB-2Ac))\int\frac{\left(bx+cx^2\right)^{3}}{x^8}}{39b^2}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9}+\frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9}+\frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9}+\frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}\\ &= -\frac{2A\left(bx+cx^2\right)^{5/2}}{15bx^{10}}-\frac{2(3bB-2Ac)\left(bx+cx^2\right)^{5/2}}{39b^2x^9}+\frac{16c(3bB-2Ac)\left(bx+cx^2\right)}{429b^3x^8}\end{aligned}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 0.63

$$-\frac{2(x(b+cx))^{5/2}\left(A\left(3003b^5-2310b^4cx+1680b^3c^2x^2-1120b^2c^3x^3+640bc^4x^4-256c^5x^5\right)+3bBx\left(1155b^4-\right.\right.}{45045b^6x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^10,x]
```

```
[Out] (-2*(x*(b + c*x))^(5/2)*(3*b*B*x*(1155*b^4 - 840*b^3*c*x + 560*b^2*c^2*x^2
- 320*b*c^3*x^3 + 128*c^4*x^4) + A*(3003*b^5 - 2310*b^4*c*x + 1680*b^3*c^2*
x^2 - 1120*b^2*c^3*x^3 + 640*b*c^4*x^4 - 256*c^5*x^5)))/(45045*b^6*x^10)
```

fricas [A] time = 0.87, size = 177, normalized size = 0.91

$$-\frac{2\left(3003\,Ab^7+128\left(3\,Bbc^6-2\,Ac^7\right)x^7-64\left(3\,Bb^2c^5-2\,Abc^6\right)x^6+48\left(3\,Bb^3c^4-2\,Ab^2c^5\right)x^5-40\left(3\,Bb^4c^3-\right.\right.}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="fricas")
```

```
[Out] -2/45045*(3003*A*b^7 + 128*(3*B*b*c^6 - 2*A*c^7)*x^7 - 64*(3*B*b^2*c^5 - 2*
A*b*c^6)*x^6 + 48*(3*B*b^3*c^4 - 2*A*b^2*c^5)*x^5 - 40*(3*B*b^4*c^3 - 2*A*b
^3*c^4)*x^4 + 35*(3*B*b^5*c^2 - 2*A*b^4*c^3)*x^3 + 63*(70*B*b^6*c + A*b^5*c
^2)*x^2 + 231*(15*B*b^7 + 16*A*b^6*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^8)
```

giac [B] time = 0.33, size = 551, normalized size = 2.83

$$\frac{2\left(144144\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{10}Bc^4+720720\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{9}Bbc^{\frac{7}{2}}+240240\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{9}Ac^{\frac{9}{2}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="giac")
```

```
[Out] 2/45045*(144144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^4 + 720720*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^9*B*b*c^(7/2) + 240240*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^9*A*c^(9/2) + 1595880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^3 + 1338
480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^4 + 2027025*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^7*B*b^3*c^(5/2) + 3333330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*
b^2*c^(7/2) + 1606605*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^2 + 4844840
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^3 + 810810*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b^5*c^(3/2) + 4513509*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^
4*c^(5/2) + 253890*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c + 2788695*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^3*B*b^7*sqrt(c) + 1141140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^(3
/2) + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8 + 297990*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^2*A*b^7*c + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*sq
rt(c) + 3003*A*b^9)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^15
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-256A\,c^{5}x^{5}+384Bb\,c^{4}x^{5}+640Ab\,c^{4}x^{4}-960B\,b^{2}c^{3}x^{4}-1120A\,b^{2}c^{3}x^{3}+1680B\,b^{3}c^{2}x^{3}+1680A\,b^{3}c\right.}{45045b^{6}x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x)
```

```
[Out] -2/45045*(c*x+b)*(-256*A*c^5*x^5+384*B*b*c^4*x^5+640*A*b*c^4*x^4-960*B*b^2*
c^3*x^4-1120*A*b^2*c^3*x^3+1680*B*b^3*c^2*x^3+1680*A*b^3*c^2*x^2-2520*B*b^4
*c*x^2-2310*A*b^4*c*x+3465*B*b^5*x+3003*A*b^5)*(c*x^2+b*x)^(3/2)/x^9/b^6
```

maxima [B] time = 0.98, size = 360, normalized size = 1.85

$$-\frac{256\,\sqrt{cx^{2}+bx}\,Bc^{6}}{15015\,b^{5}x}+\frac{512\,\sqrt{cx^{2}+bx}\,Ac^{7}}{45045\,b^{6}x}+\frac{128\,\sqrt{cx^{2}+bx}\,Bc^{5}}{15015\,b^{4}x^{2}}-\frac{256\,\sqrt{cx^{2}+bx}\,Ac^{6}}{45045\,b^{5}x^{2}}-\frac{32\,\sqrt{cx^{2}+bx}\,Bc^{4}}{5005\,b^{3}x^{3}}+\frac{64\,\sqrt{cx^{2}}}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^10,x, algorithm="maxima")
```

```
[Out] -256/15015*sqrt(c*x^2 + b*x)*B*c^6/(b^5*x) + 512/45045*sqrt(c*x^2 + b*x)*A*
c^7/(b^6*x) + 128/15015*sqrt(c*x^2 + b*x)*B*c^5/(b^4*x^2) - 256/45045*sqrt(
c*x^2 + b*x)*A*c^6/(b^5*x^2) - 32/5005*sqrt(c*x^2 + b*x)*B*c^4/(b^3*x^3) +
64/15015*sqrt(c*x^2 + b*x)*A*c^5/(b^4*x^3) + 16/3003*sqrt(c*x^2 + b*x)*B*c^
3/(b^2*x^4) - 32/9009*sqrt(c*x^2 + b*x)*A*c^4/(b^3*x^4) - 2/429*sqrt(c*x^2
+ b*x)*B*c^2/(b*x^5) + 4/1287*sqrt(c*x^2 + b*x)*A*c^3/(b^2*x^5) + 3/715*sqr
t(c*x^2 + b*x)*B*c/x^6 - 2/715*sqrt(c*x^2 + b*x)*A*c^2/(b*x^6) + 3/65*sqrt(
c*x^2 + b*x)*B*b/x^7 + 1/390*sqrt(c*x^2 + b*x)*A*c/x^7 - 1/5*(c*x^2 + b*x)^
(3/2)*B/x^8 + 1/30*sqrt(c*x^2 + b*x)*A*b/x^8 - 1/6*(c*x^2 + b*x)^(3/2)*A/x^
9
```

mupad [B] time = 3.78, size = 326, normalized size = 1.67

$$\frac{4\,A\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{1287\,b^{2}\,x^{5}}-\frac{32\,A\,c\,\sqrt{c\,x^{2}+b\,x}}{195\,x^{7}}-\frac{2\,B\,b\,\sqrt{c\,x^{2}+b\,x}}{13\,x^{7}}-\frac{28\,B\,c\,\sqrt{c\,x^{2}+b\,x}}{143\,x^{6}}-\frac{2\,A\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{715\,b\,x^{6}}-\frac{2\,A\,b\,\sqrt{c\,x^{2}+}}{15\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^10,x)
```

```
[Out] (4*A*c^3*(b*x + c*x^2)^(1/2))/(1287*b^2*x^5) - (32*A*c*(b*x + c*x^2)^(1/2))
/(195*x^7) - (2*B*b*(b*x + c*x^2)^(1/2))/(13*x^7) - (28*B*c*(b*x + c*x^2)^(
1/2))/(143*x^6) - (2*A*c^2*(b*x + c*x^2)^(1/2))/(715*b*x^6) - (2*A*b*(b*x +
 c*x^2)^(1/2))/(15*x^8) - (32*A*c^4*(b*x + c*x^2)^(1/2))/(9009*b^3*x^4) + (
64*A*c^5*(b*x + c*x^2)^(1/2))/(15015*b^4*x^3) - (256*A*c^6*(b*x + c*x^2)^(1
/2))/(45045*b^5*x^2) + (512*A*c^7*(b*x + c*x^2)^(1/2))/(45045*b^6*x) - (2*B
*c^2*(b*x + c*x^2)^(1/2))/(429*b*x^5) + (16*B*c^3*(b*x + c*x^2)^(1/2))/(300
3*b^2*x^4) - (32*B*c^4*(b*x + c*x^2)^(1/2))/(5005*b^3*x^3) + (128*B*c^5*(b*
x + c*x^2)^(1/2))/(15015*b^4*x^2) - (256*B*c^6*(b*x + c*x^2)^(1/2))/(15015*
b^5*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**10,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**10, x)
```

3.93 $\int x^3(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=276

$$-\frac{11b^9(13bB-20Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{131072c^{15/2}}+\frac{11b^7(b+2cx)\sqrt{bx+cx^2}\,(13bB-20Ac)}{131072c^7}-\frac{11b^5(b+2cx)\left(bx+cx^2\right)^{3/2}(13}{49152c^6}$$

```
[Out] -11/49152*b^5*(-20*A*c+13*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^6+11/15360*b^3
*(-20*A*c+13*B*b)*(2*c*x+b)*(c*x^2+b*x)^(5/2)/c^5-11/4480*b^2*(-20*A*c+13*B
*b)*(c*x^2+b*x)^(7/2)/c^4+11/2880*b*(-20*A*c+13*B*b)*x*(c*x^2+b*x)^(7/2)/c^
3-1/180*(-20*A*c+13*B*b)*x^2*(c*x^2+b*x)^(7/2)/c^2+1/10*B*x^3*(c*x^2+b*x)^(
7/2)/c-11/131072*b^9*(-20*A*c+13*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/
c^(15/2)+11/131072*b^7*(-20*A*c+13*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^7
```

Rubi [A] time = 0.30, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$\frac{11b^7(b+2cx)\sqrt{bx+cx^2}\,(13bB-20Ac)}{131072c^7}-\frac{11b^5(b+2cx)\left(bx+cx^2\right)^{3/2}(13bB-20Ac)}{49152c^6}+\frac{11b^3(b+2cx)\left(bx+cx^2\right)^{5/2}}{15360c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (11*b^7*(13*b*B - 20*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(131072*c^7) - (11
*b^5*(13*b*B - 20*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(49152*c^6) + (11*b
^3*(13*b*B - 20*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(15360*c^5) - (11*b^2
*(13*b*B - 20*A*c)*(b*x + c*x^2)^(7/2))/(4480*c^4) + (11*b*(13*b*B - 20*A*c
)*x*(b*x + c*x^2)^(7/2))/(2880*c^3) - ((13*b*B - 20*A*c)*x^2*(b*x + c*x^2)^
(7/2))/(180*c^2) + (B*x^3*(b*x + c*x^2)^(7/2))/(10*c) - (11*b^9*(13*b*B - 2
0*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(131072*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(bx+cx^2\right)^{5/2}dx &= \frac{Bx^3\left(bx+cx^2\right)^{7/2}}{10c}+\frac{\left(3(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int x^3\left(bx+cx^2\right)^{5/2}dx}{10c}\\
&= -\frac{(13bB-20Ac)x^2\left(bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(bx+cx^2\right)^{7/2}}{10c}+\frac{(11b(13bB-20Ac))}{36}\\
&= \frac{11b(13bB-20Ac)x\left(bx+cx^2\right)^{7/2}}{2880c^3}-\frac{(13bB-20Ac)x^2\left(bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(b\right.}{}\\
&= -\frac{11b^2(13bB-20Ac)\left(bx+cx^2\right)^{7/2}}{4480c^4}+\frac{11b(13bB-20Ac)x\left(bx+cx^2\right)^{7/2}}{2880c^3}-\frac{(13}{}\\
&= \frac{11b^3(13bB-20Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{15360c^5}-\frac{11b^2(13bB-20Ac)\left(bx+cx^2\right)^{7}}{4480c^4}\\
&= -\frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{49152c^6}+\frac{11b^3(13bB-20Ac)(b+2cx)\left(\right.}{15360c^5}\\
&= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7}-\frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+\right.}{49152c^6}\\
&= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7}-\frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+\right.}{49152c^6}\\
&= \frac{11b^7(13bB-20Ac)(b+2cx)\sqrt{bx+cx^2}}{131072c^7}-\frac{11b^5(13bB-20Ac)(b+2cx)\left(bx+\right.}{49152c^6}
\end{aligned}
$$

Mathematica [A] time = 0.36, size = 207, normalized size = 0.75

$$\frac{x^4(x(b+cx))^{5/2}\left(13B(b+cx)^3-\frac{13(13bB-20Ac)\left(3465b^{17/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-3465b^8+2310b^7cx-1848b^6c^2x^2+1584b^5c^3\right.\right.}{4128768c^{13/2}x^{13/2}\sqrt{\frac{cx}{b}+1}}\right.}{130c(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^4*(x*(b + c*x))^(5/2)*(13*B*(b + c*x)^3 - (13*(13*b*B - 20*A*c)*(Sqrt[c]
*Sqrt[x]*Sqrt[1 + (c*x)/b]*(-3465*b^8 + 2310*b^7*c*x - 1848*b^6*c^2*x^2 + 1
584*b^5*c^3*x^3 - 1408*b^4*c^4*x^4 + 1280*b^3*c^5*x^5 + 316416*b^2*c^6*x^6
+ 530432*b*c^7*x^7 + 229376*c^8*x^8) + 3465*b^(17/2)*ArcSinh[(Sqrt[c]*Sqrt[
x])/Sqrt[b]]))/(4128768*c^(13/2)*x^(13/2)*Sqrt[1 + (c*x)/b])))/(130*c*(b +
c*x)^2)
```

fricas [A] time = 0.64, size = 541, normalized size = 1.96

$$\left[-\frac{3465\left(13\,Bb^{10}-20\,Ab^{9}c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-2\left(4128768\,Bc^{10}x^{9}+45045\,Bb^{9}c-69300\,Ab^{8}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/82575360*(3465*(13*B*b^10 - 20*A*b^9*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 2*(4128768*B*c^10*x^9 + 45045*B*b^9*c - 69300*A*b^8
*c^2 + 229376*(41*B*b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 740*A*b
*c^9)*x^7 + 15360*(B*b^3*c^7 + 412*A*b^2*c^8)*x^6 - 1280*(13*B*b^4*c^6 - 20
*A*b^3*c^7)*x^5 + 1408*(13*B*b^5*c^5 - 20*A*b^4*c^6)*x^4 - 1584*(13*B*b^6*c
^4 - 20*A*b^5*c^5)*x^3 + 1848*(13*B*b^7*c^3 - 20*A*b^6*c^4)*x^2 - 2310*(13*
B*b^8*c^2 - 20*A*b^7*c^3)*x)*sqrt(c*x^2 + b*x))/c^8, 1/41287680*(3465*(13*B
*b^10 - 20*A*b^9*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (41
28768*B*c^10*x^9 + 45045*B*b^9*c - 69300*A*b^8*c^2 + 229376*(41*B*b*c^9 + 2
0*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 740*A*b*c^9)*x^7 + 15360*(B*b^3*c^7
+ 412*A*b^2*c^8)*x^6 - 1280*(13*B*b^4*c^6 - 20*A*b^3*c^7)*x^5 + 1408*(13*B*
b^5*c^5 - 20*A*b^4*c^6)*x^4 - 1584*(13*B*b^6*c^4 - 20*A*b^5*c^5)*x^3 + 1848
*(13*B*b^7*c^3 - 20*A*b^6*c^4)*x^2 - 2310*(13*B*b^8*c^2 - 20*A*b^7*c^3)*x)*
sqrt(c*x^2 + b*x))/c^8]
```

giac [A] time = 0.26, size = 309, normalized size = 1.12

$$\frac{1}{41287680}\,\sqrt{cx^{2}+bx}\left(2\left(4\left(2\left(8\left(2\left(4\left(14\left(16\left(18\,Bc^{2}x+\frac{41\,Bbc^{10}+20\,Ac^{11}}{c^{9}}\right)x+\frac{383\,Bb^{2}c^{9}+740\,Abc^{10}}{c^{9}}\right)x+\frac{15}{}\right.\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/41287680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*(18*B*c^2*x + (41*B*
b*c^10 + 20*A*c^11)/c^9)*x + (383*B*b^2*c^9 + 740*A*b*c^10)/c^9)*x + 15*(B*
b^3*c^8 + 412*A*b^2*c^9)/c^9)*x - 5*(13*B*b^4*c^7 - 20*A*b^3*c^8)/c^9)*x +
11*(13*B*b^5*c^6 - 20*A*b^4*c^7)/c^9)*x - 99*(13*B*b^6*c^5 - 20*A*b^5*c^6)/
c^9)*x + 231*(13*B*b^7*c^4 - 20*A*b^6*c^5)/c^9)*x - 1155*(13*B*b^8*c^3 - 20
*A*b^7*c^4)/c^9)*x + 3465*(13*B*b^9*c^2 - 20*A*b^8*c^3)/c^9) + 11/262144*(1
3*B*b^10 - 20*A*b^9*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) -
 b))/c^(15/2)
```

maple [A] time = 0.05, size = 455, normalized size = 1.65

$$\frac{55A\,b^{9}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{65536c^{\frac{13}{2}}}-\frac{143B\,b^{10}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{262144c^{\frac{15}{2}}}-\frac{55\sqrt{c\,x^{2}+bx}\;A\,b^{7}x}{16384c^{5}}+\frac{143\sqrt{c\,x^{2}+bx}\;B\,b^{8}x}{65536c^{6}}-\frac{5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/10*B*x^3*(c*x^2+b*x)^(7/2)/c-13/180*B*b/c^2*x^2*(c*x^2+b*x)^(7/2)+143/288
0*B*b^2/c^3*x*(c*x^2+b*x)^(7/2)-143/4480*B*b^3/c^4*(c*x^2+b*x)^(7/2)+143/76
```

```
80*B*b^4/c^4*(c*x^2+b*x)^(5/2)*x+143/15360*B*b^5/c^5*(c*x^2+b*x)^(5/2)-143/
24576*B*b^6/c^5*(c*x^2+b*x)^(3/2)*x-143/49152*B*b^7/c^6*(c*x^2+b*x)^(3/2)+1
43/65536*B*b^8/c^6*(c*x^2+b*x)^(1/2)*x+143/131072*B*b^9/c^7*(c*x^2+b*x)^(1/
2)-143/262144*B*b^10/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/9
*A*x^2*(c*x^2+b*x)^(7/2)/c-11/144*A*b/c^2*x*(c*x^2+b*x)^(7/2)+11/224*A*b^2/
c^3*(c*x^2+b*x)^(7/2)-11/384*A*b^3/c^3*(c*x^2+b*x)^(5/2)*x-11/768*A*b^4/c^4
*(c*x^2+b*x)^(5/2)+55/6144*A*b^5/c^4*(c*x^2+b*x)^(3/2)*x+55/12288*A*b^6/c^5
*(c*x^2+b*x)^(3/2)-55/16384*A*b^7/c^5*(c*x^2+b*x)^(1/2)*x-55/32768*A*b^8/c^
6*(c*x^2+b*x)^(1/2)+55/65536*A*b^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))
```

maxima [A] time = 0.97, size = 452, normalized size = 1.64

$$\frac{\left(cx^{2}+bx\right)^{\frac{7}{2}}Bx^{3}}{10\,c}-\frac{13\left(cx^{2}+bx\right)^{\frac{7}{2}}Bbx^{2}}{180\,c^{2}}+\frac{\left(cx^{2}+bx\right)^{\frac{7}{2}}Ax^{2}}{9\,c}+\frac{143\sqrt{cx^{2}+bx}\,Bb^{8}x}{65536\,c^{6}}-\frac{143\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{6}x}{24576\,c^{5}}-\frac{55\sqrt{cx^{2}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(c*x^2 + b*x)^(7/2)*B*x^3/c - 13/180*(c*x^2 + b*x)^(7/2)*B*b*x^2/c^2 +
 1/9*(c*x^2 + b*x)^(7/2)*A*x^2/c + 143/65536*sqrt(c*x^2 + b*x)*B*b^8*x/c^6
- 143/24576*(c*x^2 + b*x)^(3/2)*B*b^6*x/c^5 - 55/16384*sqrt(c*x^2 + b*x)*A*
b^7*x/c^5 + 143/7680*(c*x^2 + b*x)^(5/2)*B*b^4*x/c^4 + 55/6144*(c*x^2 + b*x
)^(3/2)*A*b^5*x/c^4 + 143/2880*(c*x^2 + b*x)^(7/2)*B*b^2*x/c^3 - 11/384*(c*
x^2 + b*x)^(5/2)*A*b^3*x/c^3 - 11/144*(c*x^2 + b*x)^(7/2)*A*b*x/c^2 - 143/2
62144*B*b^10*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(15/2) + 55/655
36*A*b^9*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) + 143/131072
*sqrt(c*x^2 + b*x)*B*b^9/c^7 - 143/49152*(c*x^2 + b*x)^(3/2)*B*b^7/c^6 - 55
/32768*sqrt(c*x^2 + b*x)*A*b^8/c^6 + 143/15360*(c*x^2 + b*x)^(5/2)*B*b^5/c^
5 + 55/12288*(c*x^2 + b*x)^(3/2)*A*b^6/c^5 - 143/4480*(c*x^2 + b*x)^(7/2)*B
*b^3/c^4 - 11/768*(c*x^2 + b*x)^(5/2)*A*b^4/c^4 + 11/224*(c*x^2 + b*x)^(7/2
)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3}\left(c\,x^{2}+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^3*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3}\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**3*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.94 $\int x^2(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=241

$$\frac{5b^8(11bB-18Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{32768c^{13/2}}-\frac{5b^6(b+2cx)\sqrt{bx+cx^2}\,(11bB-18Ac)}{32768c^6}+\frac{5b^4(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB-1}{12288c^5}$$

```
[Out] 5/12288*b^4*(-18*A*c+11*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^5-1/768*b^2*(-18
*A*c+11*B*b)*(2*c*x+b)*(c*x^2+b*x)^(5/2)/c^4+1/224*b*(-18*A*c+11*B*b)*(c*x^
2+b*x)^(7/2)/c^3-1/144*(-18*A*c+11*B*b)*x*(c*x^2+b*x)^(7/2)/c^2+1/9*B*x^2*(
c*x^2+b*x)^(7/2)/c+5/32768*b^8*(-18*A*c+11*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*
x)^(1/2))/c^(13/2)-5/32768*b^6*(-18*A*c+11*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)
/c^6
```

Rubi [A] time = 0.25, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {794, 670, 640, 612, 620, 206}

$$-\frac{5b^6(b+2cx)\sqrt{bx+cx^2}\,(11bB-18Ac)}{32768c^6}+\frac{5b^4(b+2cx)\left(bx+cx^2\right)^{3/2}(11bB-18Ac)}{12288c^5}-\frac{b^2(b+2cx)\left(bx+cx^2\right)^{5/2}(11}{768c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^6*(11*b*B - 18*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(32768*c^6) + (5*b
^4*(11*b*B - 18*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(12288*c^5) - (b^2*(1
1*b*B - 18*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(768*c^4) + (b*(11*b*B - 1
8*A*c)*(b*x + c*x^2)^(7/2))/(224*c^3) - ((11*b*B - 18*A*c)*x*(b*x + c*x^2)^
(7/2))/(144*c^2) + (B*x^2*(b*x + c*x^2)^(7/2))/(9*c) + (5*b^8*(11*b*B - 18*
A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx=\frac{Bx^2\left(bx+cx^2\right)^{7/2}}{9c}+\frac{\left(2(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int x^2\left(bx+cx^2\right)^{5/2}\,dx}{9c}$$

$$=-\frac{(11bB-18Ac)x\left(bx+cx^2\right)^{7/2}}{144c^2}+\frac{Bx^2\left(bx+cx^2\right)^{7/2}}{9c}+\frac{(b(11bB-18Ac))\int x}{32c^2}$$

$$=\frac{b(11bB-18Ac)\left(bx+cx^2\right)^{7/2}}{224c^3}-\frac{(11bB-18Ac)x\left(bx+cx^2\right)^{7/2}}{144c^2}+\frac{Bx^2(bx+c}{9c}$$

$$=-\frac{b^2(11bB-18Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{768c^4}+\frac{b(11bB-18Ac)\left(bx+cx^2\right)^{7/2}}{224c^3}-$$

$$=\frac{5b^4(11bB-18Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{12288c^5}-\frac{b^2(11bB-18Ac)(b+2cx)(bx+}{768c^4}$$

$$=-\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6}+\frac{5b^4(11bB-18Ac)(b+2cx)(bx+}{12288c^5}$$

$$=-\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6}+\frac{5b^4(11bB-18Ac)(b+2cx)(bx+}{12288c^5}$$

$$=-\frac{5b^6(11bB-18Ac)(b+2cx)\sqrt{bx+cx^2}}{32768c^6}+\frac{5b^4(11bB-18Ac)(b+2cx)(bx+}{12288c^5}$$

Mathematica [A] time = 0.40, size = 197, normalized size = 0.82

$$\frac{x^3(x(b+cx))^{5/2}\left(\frac{11(11bB-18Ac)\left(315b^{15/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(315b^7-210b^6cx+168b^5c^2x^2-144b^4c^3x^3+128b^3c^4x^4+20736b^2c^5x}{229376c^{11/2}x^{11/2}\sqrt{\frac{cx}{b}+1}}\right.}{99c(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^3*(x*(b + c*x))^(5/2)*(11*B*(b + c*x)^3 + (11*(11*b*B - 18*A*c)*(-(Sqrt[
c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(315*b^7 - 210*b^6*c*x + 168*b^5*c^2*x^2 - 144
*b^4*c^3*x^3 + 128*b^3*c^4*x^4 + 20736*b^2*c^5*x^5 + 33792*b*c^6*x^6 + 1433
6*c^7*x^7)) + 315*b^(15/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(229376*c^(
11/2)*x^(11/2)*Sqrt[1 + (c*x)/b])))/(99*c*(b + c*x)^2)
```

fricas [A] time = 0.79, size = 496, normalized size = 2.06

$$\Bigg[-\frac{315\,\big(11\,Bb^9-18\,Ab^8c\big)\sqrt{c}\,\log\Big(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\Big)-2\,\big(229376\,Bc^9x^8-3465\,Bb^8c+5670\,Ab^7c^2+14}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/4128768*(315*(11*B*b^9 - 18*A*b^8*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x
^2 + b*x)*sqrt(c)) - 2*(229376*B*c^9*x^8 - 3465*B*b^8*c + 5670*A*b^7*c^2 +
14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 3072*(103*B*b^2*c^7 + 198*A*b*c^8)*x^6
+ 256*(5*B*b^3*c^6 + 1458*A*b^2*c^7)*x^5 - 128*(11*B*b^4*c^5 - 18*A*b^3*c^6
)*x^4 + 144*(11*B*b^5*c^4 - 18*A*b^4*c^5)*x^3 - 168*(11*B*b^6*c^3 - 18*A*b^
5*c^4)*x^2 + 210*(11*B*b^7*c^2 - 18*A*b^6*c^3)*x)*sqrt(c*x^2 + b*x))/c^7, -
1/2064384*(315*(11*B*b^9 - 18*A*b^8*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sq
rt(-c)/(c*x)) - (229376*B*c^9*x^8 - 3465*B*b^8*c + 5670*A*b^7*c^2 + 14336*(
37*B*b*c^8 + 18*A*c^9)*x^7 + 3072*(103*B*b^2*c^7 + 198*A*b*c^8)*x^6 + 256*(
5*B*b^3*c^6 + 1458*A*b^2*c^7)*x^5 - 128*(11*B*b^4*c^5 - 18*A*b^3*c^6)*x^4 +
 144*(11*B*b^5*c^4 - 18*A*b^4*c^5)*x^3 - 168*(11*B*b^6*c^3 - 18*A*b^5*c^4)*
x^2 + 210*(11*B*b^7*c^2 - 18*A*b^6*c^3)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [A] time = 0.46, size = 282, normalized size = 1.17

$$\frac{1}{2064384}\,\sqrt{cx^2+bx}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(4\Bigg(14\Bigg(16\,Bc^2x+\frac{37\,Bbc^9+18\,Ac^{10}}{c^8}\Bigg)x+\frac{3\,\big(103\,Bb^2c^8+198\,Abc^9\big)}{c^8}\Bigg)x+\frac{5\,Bb^3c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x + (37*B*b*c^9
 + 18*A*c^10)/c^8)*x + 3*(103*B*b^2*c^8 + 198*A*b*c^9)/c^8)*x + (5*B*b^3*c^
7 + 1458*A*b^2*c^8)/c^8)*x - (11*B*b^4*c^6 - 18*A*b^3*c^7)/c^8)*x + 9*(11*B
*b^5*c^5 - 18*A*b^4*c^6)/c^8)*x - 21*(11*B*b^6*c^4 - 18*A*b^5*c^5)/c^8)*x +
 105*(11*B*b^7*c^3 - 18*A*b^6*c^4)/c^8)*x - 315*(11*B*b^8*c^2 - 18*A*b^7*c^
3)/c^8) - 5/65536*(11*B*b^9 - 18*A*b^8*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [A] time = 0.05, size = 409, normalized size = 1.70

$$-\frac{45A\,b^8\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{32768c^{\frac{11}{2}}}+\frac{55B\,b^9\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{65536c^{\frac{13}{2}}}+\frac{45\sqrt{c\,x^2+bx}\;A\,b^6x}{8192c^4}-\frac{55\sqrt{c\,x^2+bx}\;B\,b^7x}{16384c^5}+\frac{45}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/9*B*x^2*(c*x^2+b*x)^(7/2)/c-11/144*B*b/c^2*x*(c*x^2+b*x)^(7/2)+11/224*B*b
^2/c^3*(c*x^2+b*x)^(7/2)-11/384*B*b^3/c^3*(c*x^2+b*x)^(5/2)*x-11/768*B*b^4/
c^4*(c*x^2+b*x)^(5/2)+55/6144*B*b^5/c^4*(c*x^2+b*x)^(3/2)*x+55/12288*B*b^6/
c^5*(c*x^2+b*x)^(3/2)-55/16384*B*b^7/c^5*(c*x^2+b*x)^(1/2)*x-55/32768*B*b^8
/c^6*(c*x^2+b*x)^(1/2)+55/65536*B*b^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))+1/8*A*x*(c*x^2+b*x)^(7/2)/c-9/112*A*b/c^2*(c*x^2+b*x)^(7/2)+3
/64*A*b^2/c^2*(c*x^2+b*x)^(5/2)*x+3/128*A*b^3/c^3*(c*x^2+b*x)^(5/2)-15/1024
*A*b^4/c^3*(c*x^2+b*x)^(3/2)*x-15/2048*A*b^5/c^4*(c*x^2+b*x)^(3/2)+45/8192*
```

```
A*b^6/c^4*(c*x^2+b*x)^(1/2)*x+45/16384*A*b^7/c^5*(c*x^2+b*x)^(1/2)-45/32768
*A*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 406, normalized size = 1.68

$$\frac{(cx^2+bx)^{\frac{7}{2}}Bx^2}{9c}-\frac{55\sqrt{cx^2+bx}\,Bb^7x}{16384c^5}+\frac{55(cx^2+bx)^{\frac{3}{2}}Bb^5x}{6144c^4}+\frac{45\sqrt{cx^2+bx}\,Ab^6x}{8192c^4}-\frac{11(cx^2+bx)^{\frac{5}{2}}Bb^3x}{384c^3}-\frac{15(cx^2}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + b*x)^(7/2)*B*x^2/c - 55/16384*sqrt(c*x^2 + b*x)*B*b^7*x/c^5 +
55/6144*(c*x^2 + b*x)^(3/2)*B*b^5*x/c^4 + 45/8192*sqrt(c*x^2 + b*x)*A*b^6*x
/c^4 - 11/384*(c*x^2 + b*x)^(5/2)*B*b^3*x/c^3 - 15/1024*(c*x^2 + b*x)^(3/2)
*A*b^4*x/c^3 - 11/144*(c*x^2 + b*x)^(7/2)*B*b*x/c^2 + 3/64*(c*x^2 + b*x)^(5
/2)*A*b^2*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*A*x/c + 55/65536*B*b^9*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(13/2) - 45/32768*A*b^8*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) - 55/32768*sqrt(c*x^2 + b*x)*B*b^8/
c^6 + 55/12288*(c*x^2 + b*x)^(3/2)*B*b^6/c^5 + 45/16384*sqrt(c*x^2 + b*x)*A
*b^7/c^5 - 11/768*(c*x^2 + b*x)^(5/2)*B*b^4/c^4 - 15/2048*(c*x^2 + b*x)^(3/
2)*A*b^5/c^4 + 11/224*(c*x^2 + b*x)^(7/2)*B*b^2/c^3 + 3/128*(c*x^2 + b*x)^(
5/2)*A*b^3/c^3 - 9/112*(c*x^2 + b*x)^(7/2)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\left(c\,x^2+b\,x\right)^{5/2}\,(A+B\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^2*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\,(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**2*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.95 $\int x(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=189

$$-\frac{5b^7(9bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{16384c^{11/2}}+\frac{5b^5(b+2cx)\sqrt{bx+cx^2}\,(9bB-16Ac)}{16384c^5}-\frac{5b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-16}{6144c^4}$$

```
[Out] -5/6144*b^3*(-16*A*c+9*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^4+1/384*b*(-16*A*
c+9*B*b)*(2*c*x+b)*(c*x^2+b*x)^(5/2)/c^3-1/112*(-14*B*c*x-16*A*c+9*B*b)*(c*
x^2+b*x)^(7/2)/c^2-5/16384*b^7*(-16*A*c+9*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x
)^(1/2))/c^(11/2)+5/16384*b^5*(-16*A*c+9*B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c
^5
```

Rubi [A] time = 0.09, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {779, 612, 620, 206}

$$\frac{5b^5(b+2cx)\sqrt{bx+cx^2}\,(9bB-16Ac)}{16384c^5}-\frac{5b^3(b+2cx)\left(bx+cx^2\right)^{3/2}(9bB-16Ac)}{6144c^4}-\frac{5b^7(9bB-16Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx}}\right.}{16384c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^5*(9*b*B - 16*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(16384*c^5) - (5*b^3
*(9*b*B - 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(6144*c^4) + (b*(9*b*B -
 16*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B - 16*A*c - 14
*B*c*x)*(b*x + c*x^2)^(7/2))/(112*c^2) - (5*b^7*(9*b*B - 16*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int x(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx &= -\frac{(9bB-16Ac-14Bcx)\left(bx+cx^2\right)^{7/2}}{112c^2}+\frac{(b(9bB-16Ac))\int\left(bx+cx^2\right)^{5/2}\,dx}{32c^2}\\
&= \frac{b(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{384c^3}-\frac{(9bB-16Ac-14Bcx)\left(bx+cx^2\right)^{7/2}}{112c^2}\\
&= -\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{6144c^4}+\frac{b(9bB-16Ac)(b+2cx)\left(bx+cx\right.}{384c^3}\\
&= \frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}\\
&= \frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}\\
&= \frac{5b^5(9bB-16Ac)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^3(9bB-16Ac)(b+2cx)\left(bx+cx^2\right)}{6144c^4}
\end{aligned}
$$

Mathematica [**A**] time = 0.41, size = 182, normalized size = 0.96

$$
\frac{(x(b+cx))^{9/2}\left(9B(b+cx)^3-\frac{3(9bB-16Ac)\left(105b^{13/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(-105b^6+70b^5cx-56b^4c^2x^2+48b^3c^3x^3+4736b^2c^4x^4-\right.\right.}{14336c^{9/2}x^{9/2}\sqrt{\frac{cx}{b}+1}}\right.}{72c(b+cx)^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(9/2)*(9*B*(b + c*x)^3 - (3*(9*b*B - 16*A*c)*(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(-105*b^6 + 70*b^5*c*x - 56*b^4*c^2*x^2 + 48*b^3*c^3*x^
3 + 4736*b^2*c^4*x^4 + 7424*b*c^5*x^5 + 3072*c^6*x^6) + 105*b^(13/2)*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(14336*c^(9/2)*x^(9/2)*Sqrt[1 + (c*x)/b])))/
(72*c*(b + c*x)^4)
```

fricas [**A**] time = 1.08, size = 447, normalized size = 2.37

$$
\left[-\frac{105\left(9\,Bb^8-16\,Ab^7c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(43008\,Bc^8x^7+945\,Bb^7c-1680\,Ab^6c^2+307\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/688128*(105*(9*B*b^8 - 16*A*b^7*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c)) - 2*(43008*B*c^8*x^7 + 945*B*b^7*c - 1680*A*b^6*c^2 + 3072
*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 464*A*b*c^7)*x^5 + 128*
(3*B*b^3*c^5 + 592*A*b^2*c^6)*x^4 - 48*(9*B*b^4*c^4 - 16*A*b^3*c^5)*x^3 + 5
6*(9*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 - 70*(9*B*b^6*c^2 - 16*A*b^5*c^3)*x)*sqr
t(c*x^2 + b*x))/c^6, 1/344064*(105*(9*B*b^8 - 16*A*b^7*c)*sqrt(-c)*arctan(s
qrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (43008*B*c^8*x^7 + 945*B*b^7*c - 1680*A*
b^6*c^2 + 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 464*A*b*c
^7)*x^5 + 128*(3*B*b^3*c^5 + 592*A*b^2*c^6)*x^4 - 48*(9*B*b^4*c^4 - 16*A*b^
3*c^5)*x^3 + 56*(9*B*b^5*c^3 - 16*A*b^4*c^4)*x^2 - 70*(9*B*b^6*c^2 - 16*A*b
^5*c^3)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.26, size = 253, normalized size = 1.34

$$\frac{1}{344064}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(12\Bigg(14\,Bc^2x+\frac{33\,Bbc^8+16\,Ac^9}{c^7}\Bigg)x+\frac{243\,Bb^2c^7+464\,Abc^8}{c^7}\Bigg)x+\frac{3\,Bb^3c^6+592}{c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x + (33*B*b*c^8 + 1
6*A*c^9)/c^7)*x + (243*B*b^2*c^7 + 464*A*b*c^8)/c^7)*x + (3*B*b^3*c^6 + 592
*A*b^2*c^7)/c^7)*x - 3*(9*B*b^4*c^5 - 16*A*b^3*c^6)/c^7)*x + 7*(9*B*b^5*c^4
 - 16*A*b^4*c^5)/c^7)*x - 35*(9*B*b^6*c^3 - 16*A*b^5*c^4)/c^7)*x + 105*(9*B
*b^7*c^2 - 16*A*b^6*c^3)/c^7) + 5/32768*(9*B*b^8 - 16*A*b^7*c)*log(abs(-2*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 365, normalized size = 1.93

$$\frac{5Ab^7\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2048c^{\frac{9}{2}}}-\frac{45B\,b^8\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{32768c^{\frac{11}{2}}}-\frac{5\sqrt{c\,x^2+bx}\;A\,b^5x}{512c^3}+\frac{45\sqrt{c\,x^2+bx}\;B\,b^6x}{8192c^4}-\frac{5\sqrt{c\,x^2}}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/8*B*x*(c*x^2+b*x)^(7/2)/c-9/112*B*b/c^2*(c*x^2+b*x)^(7/2)+3/64*B*b^2/c^2*
x*(c*x^2+b*x)^(5/2)+3/128*B*b^3/c^3*(c*x^2+b*x)^(5/2)-15/1024*B*b^4/c^3*(c*
x^2+b*x)^(3/2)*x-15/2048*B*b^5/c^4*(c*x^2+b*x)^(3/2)+45/8192*B*b^6/c^4*(c*x
^2+b*x)^(1/2)*x+45/16384*B*b^7/c^5*(c*x^2+b*x)^(1/2)-45/32768*B*b^8/c^(11/2
)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/7*A*(c*x^2+b*x)^(7/2)/c-1/12*
A*b/c*x*(c*x^2+b*x)^(5/2)-1/24*A*b^2/c^2*(c*x^2+b*x)^(5/2)+5/192*A*b^3/c^2*
(c*x^2+b*x)^(3/2)*x+5/384*A*b^4/c^3*(c*x^2+b*x)^(3/2)-5/512*A*b^5/c^3*(c*x^
2+b*x)^(1/2)*x-5/1024*A*b^6/c^4*(c*x^2+b*x)^(1/2)+5/2048*A*b^7/c^(9/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 1.00, size = 362, normalized size = 1.92

$$\frac{45\sqrt{cx^2+bx}\,Bb^6x}{8192\,c^4}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4x}{1024\,c^3}-\frac{5\sqrt{cx^2+bx}\,Ab^5x}{512\,c^3}+\frac{3\left(cx^2+bx\right)^{\frac{5}{2}}Bb^2x}{64\,c^2}+\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^3x}{192\,c^2}+\frac{\left(cx^2+bx\right.}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 45/8192*sqrt(c*x^2 + b*x)*B*b^6*x/c^4 - 15/1024*(c*x^2 + b*x)^(3/2)*B*b^4*x
/c^3 - 5/512*sqrt(c*x^2 + b*x)*A*b^5*x/c^3 + 3/64*(c*x^2 + b*x)^(5/2)*B*b^2
*x/c^2 + 5/192*(c*x^2 + b*x)^(3/2)*A*b^3*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*B*
x/c - 1/12*(c*x^2 + b*x)^(5/2)*A*b*x/c - 45/32768*B*b^8*log(2*c*x + b + 2*s
qrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/2048*A*b^7*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(9/2) + 45/16384*sqrt(c*x^2 + b*x)*B*b^7/c^5 - 15/204
8*(c*x^2 + b*x)^(3/2)*B*b^5/c^4 - 5/1024*sqrt(c*x^2 + b*x)*A*b^6/c^4 + 3/12
8*(c*x^2 + b*x)^(5/2)*B*b^3/c^3 + 5/384*(c*x^2 + b*x)^(3/2)*A*b^4/c^3 - 9/1
12*(c*x^2 + b*x)^(7/2)*B*b/c^2 - 1/24*(c*x^2 + b*x)^(5/2)*A*b^2/c^2 + 1/7*(
c*x^2 + b*x)^(7/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+b\,x\right)^{5/2}\,(A+B\,x)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.96 $\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=171

$$\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-(b$$

```
[Out] 5/384*b^2*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^3-1/24*(-2*A*c+B*b)*(2
*c*x+b)*(c*x^2+b*x)^(5/2)/c^2+1/7*B*(c*x^2+b*x)^(7/2)/c+5/1024*b^6*(-2*A*c+
B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-5/1024*b^4*(-2*A*c+B*b)*(
2*c*x+b)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}+\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^4*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^4) + (5*b^2*(b
*B - 2*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^3) - ((b*B - 2*A*c)*(b
+ 2*c*x)*(b*x + c*x^2)^(5/2))/(24*c^2) + (B*(b*x + c*x^2)^(7/2))/(7*c) + (5
*b^6*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx &= \frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{5/2}\,dx}{2c}\\ &= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{\left(5b^2(bB-2Ac)\right)\int (b}{48c^2}\\ &= \frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+ B\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\end{aligned}$$

Mathematica [A] time = 0.39, size = 171, normalized size = 1.00

$$\frac{(x(b+cx))^{7/2}\left(\frac{49(bB-2Ac)\left(15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)\right)}{3072c^{7/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+7B(b+c\right.}{49c(b+cx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*(7*B*(b + c*x)^3 + (49*(b*B - 2*A*c)*(-(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432*b^2*c^3*x^3
+ 640*b*c^4*x^4 + 256*c^5*x^5)) + 15*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]]))/(3072*c^(7/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(49*c*(b + c*x)^3)
```

fricas [A] time = 0.89, size = 392, normalized size = 2.29

$$\left[-\frac{105\left(Bb^7-2\,Ab^6c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(3072\,Bc^7x^6-105\,Bb^6c+210\,Ab^5c^2+256\,(29\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/43008*(105*(B*b^7 - 2*A*b^6*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b
*x)*sqrt(c)) - 2*(3072*B*c^7*x^6 - 105*B*b^6*c + 210*A*b^5*c^2 + 256*(29*B*
b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4
 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 -
2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/21504*(105*(B*b^7 - 2*A*b^6*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3072*B*c^7*x^6 - 105*B*
b^6*c + 210*A*b^5*c^2 + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5
 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2
*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 - 2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.22, size = 221, normalized size = 1.29

$$\frac{1}{21504}\,\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12\,Bc^2x+\frac{29\,Bbc^7+14\,Ac^8}{c^6}\right)x+\frac{37\,Bb^2c^6+70\,Abc^7}{c^6}\right)x+\frac{3\left(Bb^3c^5+126\,Ab^2\right.}{c^6}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14*A*c
^8)/c^6)*x + (37*B*b^2*c^6 + 70*A*b*c^7)/c^6)*x + 3*(B*b^3*c^5 + 126*A*b^2*
c^6)/c^6)*x - 7*(B*b^4*c^4 - 2*A*b^3*c^5)/c^6)*x + 35*(B*b^5*c^3 - 2*A*b^4*
c^4)/c^6)*x - 105*(B*b^6*c^2 - 2*A*b^5*c^3)/c^6) - 5/2048*(B*b^7 - 2*A*b^6*
c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 321, normalized size = 1.88

$$-\frac{5A\,b^{6}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{1024c^{\frac{7}{2}}}+\frac{5B\,b^{7}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2048c^{\frac{9}{2}}}+\frac{5\sqrt{c\,x^{2}+bx}\;A\,b^{4}x}{256c^{2}}-\frac{5\sqrt{c\,x^{2}+bx}\;B\,b^{5}x}{512c^{3}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/7*B*(c*x^2+b*x)^(7/2)/c-1/12*B*b/c*x*(c*x^2+b*x)^(5/2)-1/24*B*b^2/c^2*(c*
x^2+b*x)^(5/2)+5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)*x+5/384*B*b^4/c^3*(c*x^2+b
*x)^(3/2)-5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)*x-5/1024*B*b^6/c^4*(c*x^2+b*x)^
(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/6*A*
x*(c*x^2+b*x)^(5/2)+1/12*A/c*(c*x^2+b*x)^(5/2)*b-5/96*A*b^2/c*(c*x^2+b*x)^(
3/2)*x-5/192*A*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*A*b^4/c^2*(c*x^2+b*x)^(1/2)*
x+5/512*A*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*A*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.94, size = 318, normalized size = 1.86

$$\frac{1}{6}\left(cx^{2}+bx\right)^{\frac{5}{2}}Ax-\frac{5\sqrt{cx^{2}+bx}\,Bb^{5}x}{512\,c^{3}}+\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{3}x}{192\,c^{2}}+\frac{5\sqrt{cx^{2}+bx}\,Ab^{4}x}{256\,c^{2}}-\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Bbx}{12\,c}-\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab}{96\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*x - 5/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^3 + 5/192*(
c*x^2 + b*x)^(3/2)*B*b^3*x/c^2 + 5/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^2 - 1/12
*(c*x^2 + b*x)^(5/2)*B*b*x/c - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c + 5/2048*
B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 5/1024*A*b^6*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 5/1024*sqrt(c*x^2 + b
*x)*B*b^6/c^4 + 5/384*(c*x^2 + b*x)^(3/2)*B*b^4/c^3 + 5/512*sqrt(c*x^2 + b*
x)*A*b^5/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*B*b^2/c^2 - 5/192*(c*x^2 + b*x)^(3/
2)*A*b^3/c^2 + 1/7*(c*x^2 + b*x)^(7/2)*B/c + 1/12*(c*x^2 + b*x)^(5/2)*A*b/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int {\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.97 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=170

$$-\frac{b^5(5bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{512c^{7/2}}+\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(5bB-12Ac)}{512c^3}-\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(5bB-12Ac)}{192c^2}$$

```
[Out] -1/192*b*(-12*A*c+5*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^2-1/60*(-12*A*c+5*B*
b)*(c*x^2+b*x)^(5/2)/c+1/6*B*(c*x^2+b*x)^(7/2)/c/x-1/512*b^5*(-12*A*c+5*B*b
)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+1/512*b^3*(-12*A*c+5*B*b)*(2
*c*x+b)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.13, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {794, 664, 612, 620, 206}

$$\frac{b^3(b+2cx)\sqrt{bx+cx^2}\,(5bB-12Ac)}{512c^3}-\frac{b^5(5bB-12Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{512c^{7/2}}-\frac{b(b+2cx)\left(bx+cx^2\right)^{3/2}(5bB-12Ac)}{192c^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (b^3*(5*b*B - 12*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(512*c^3) - (b*(5*b*B
- 12*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(192*c^2) - ((5*b*B - 12*A*c)*(b
*x + c*x^2)^(5/2))/(60*c) + (B*(b*x + c*x^2)^(7/2))/(6*c*x) - (b^5*(5*b*B -
 12*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x}\,dx = \frac{B\left(bx+cx^2\right)^{7/2}}{6cx} + \frac{\left(bB-Ac+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x}\,dx}{6c}$$

$$= -\frac{(5bB-12Ac)\left(bx+cx^2\right)^{5/2}}{60c} + \frac{B\left(bx+cx^2\right)^{7/2}}{6cx} - \frac{(b(5bB-12Ac))\int (bx+cx^2}{24c}$$

$$= -\frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} - \frac{(5bB-12Ac)\left(bx+cx^2\right)^{5/2}}{60c} + \frac{B(bx}{6}$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} -$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} -$$

$$= \frac{b^3(5bB-12Ac)(b+2cx)\sqrt{bx+cx^2}}{512c^3} - \frac{b(5bB-12Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^2} -$$

Mathematica [A] time = 0.29, size = 166, normalized size = 0.98

$$\frac{\sqrt{x(b+cx)}\Bigg(\sqrt{c}\left(-10b^4c(18A+5Bx)+40b^3c^2x(3A+Bx)+48b^2c^3x^2(62A+45Bx)+64bc^4x^3(63A+50Bx)\right.}{7680c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(75*b^5*B + 40*b^3*c^2*x*(3*A + B*x) + 256*c^5*
x^4*(6*A + 5*B*x) - 10*b^4*c*(18*A + 5*B*x) + 48*b^2*c^3*x^2*(62*A + 45*B*x
) + 64*b*c^4*x^3*(63*A + 50*B*x)) - (15*b^(9/2)*(5*b*B - 12*A*c)*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(7/2))
```

fricas [A] time = 0.70, size = 351, normalized size = 2.06

$$\Bigg[-\frac{15\left(5\,Bb^6-12\,Ab^5c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(1280\,Bc^6x^5+75\,Bb^5c-180\,Ab^4c^2+128\,(25}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(5*B*b^6 - 12*A*b^5*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(1280*B*c^6*x^5 + 75*B*b^5*c - 180*A*b^4*c^2 + 128*(25*B
*b*c^5 + 12*A*c^6)*x^4 + 144*(15*B*b^2*c^4 + 28*A*b*c^5)*x^3 + 8*(5*B*b^3*c
^3 + 372*A*b^2*c^4)*x^2 - 10*(5*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 + b
*x))/c^4, 1/7680*(15*(5*B*b^6 - 12*A*b^5*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (1280*B*c^6*x^5 + 75*B*b^5*c - 180*A*b^4*c^2 + 128*(25
*B*b*c^5 + 12*A*c^6)*x^4 + 144*(15*B*b^2*c^4 + 28*A*b*c^5)*x^3 + 8*(5*B*b^3
*c^3 + 372*A*b^2*c^4)*x^2 - 10*(5*B*b^4*c^2 - 12*A*b^3*c^3)*x)*sqrt(c*x^2 +
 b*x))/c^4]
```

giac [A] time = 0.23, size = 198, normalized size = 1.16

$$\frac{1}{7680}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\bigg(10\,Bc^2x+\frac{25\,Bbc^6+12\,Ac^7}{c^5}\bigg)x+\frac{9\left(15\,Bb^2c^5+28\,Abc^6\right)}{c^5}\Bigg)x+\frac{5\,Bb^3c^4+372\,Ab^2c^5}{c^5}\Bigg)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c^2*x + (25*B*b*c^6 + 12*A*c^7)/
c^5)*x + 9*(15*B*b^2*c^5 + 28*A*b*c^6)/c^5)*x + (5*B*b^3*c^4 + 372*A*b^2*c^
5)/c^5)*x - 5*(5*B*b^4*c^3 - 12*A*b^3*c^4)/c^5)*x + 15*(5*B*b^5*c^2 - 12*A*
b^4*c^3)/c^5) + 1/1024*(5*B*b^6 - 12*A*b^5*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [A] time = 0.05, size = 274, normalized size = 1.61

$$\frac{3A\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{5}{2}}}-\frac{5B\,b^6\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{7}{2}}}-\frac{3\sqrt{c\,x^2+bx}\;A\,b^3x}{64c}+\frac{5\sqrt{c\,x^2+bx}\;B\,b^4x}{256c^2}-\frac{3\sqrt{c\,x^2+}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x,x)
```

```
[Out] 1/6*B*x*(c*x^2+b*x)^(5/2)+1/12*B/c*(c*x^2+b*x)^(5/2)*b-5/96*B*b^2/c*(c*x^2+
b*x)^(3/2)*x-5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*B*b^4/c^2*(c*x^2+b*x)^
(1/2)*x+5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*B*b^6/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*A*(c*x^2+b*x)^(5/2)+1/8*A*b*(c*x^2+b*x)^(
3/2)*x+1/16*A/c*(c*x^2+b*x)^(3/2)*b^2-3/64*A*b^3/c*(c*x^2+b*x)^(1/2)*x-3/12
8*A*b^4/c^2*(c*x^2+b*x)^(1/2)+3/256*A*b^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x)^(1/2))
```

maxima [A] time = 0.97, size = 271, normalized size = 1.59

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Bx+\frac{1}{8}\left(cx^2+bx\right)^{\frac{3}{2}}Abx+\frac{5\sqrt{cx^2+bx}\,Bb^4x}{256\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2x}{96\,c}-\frac{3\sqrt{cx^2+bx}\,Ab^3x}{64\,c}-\frac{5\,Bb^6\log\left(2\,cx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*B*x + 1/8*(c*x^2 + b*x)^(3/2)*A*b*x + 5/256*sqrt(c*
x^2 + b*x)*B*b^4*x/c^2 - 5/96*(c*x^2 + b*x)^(3/2)*B*b^2*x/c - 3/64*sqrt(c*x
^2 + b*x)*A*b^3*x/c - 5/1024*B*b^6*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt
(c))/c^(7/2) + 3/256*A*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(
5/2) + 1/5*(c*x^2 + b*x)^(5/2)*A + 5/512*sqrt(c*x^2 + b*x)*B*b^5/c^3 - 5/19
2*(c*x^2 + b*x)^(3/2)*B*b^3/c^2 - 3/128*sqrt(c*x^2 + b*x)*A*b^4/c^2 + 1/12*
(c*x^2 + b*x)^(5/2)*B*b/c + 1/16*(c*x^2 + b*x)^(3/2)*A*b^2/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x, x)
```

3.98 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=169

$$\frac{b^4(3bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{5/2}}-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(3bB-10Ac)}{128c^2}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(3bB-10Ac)}{48c}+\big($$

```
[Out] 1/48*(-10*A*c+3*B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c+1/15*(-10*A*c+3*B*b)*(c*
x^2+b*x)^(5/2)/b+2/3*A*(c*x^2+b*x)^(7/2)/b/x^2+1/128*b^4*(-10*A*c+3*B*b)*ar
ctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)-1/128*b^2*(-10*A*c+3*B*b)*(2*c*x
+b)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.17, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 664, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,(3bB-10Ac)}{128c^2}+\frac{b^4(3bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{5/2}}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(3bB-10Ac)}{48c}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] -(b^2*(3*b*B - 10*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^2) + ((3*b*B -
 10*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(48*c) + ((3*b*B - 10*A*c)*(b*x +
 c*x^2)^(5/2))/(15*b) + (2*A*(b*x + c*x^2)^(7/2))/(3*b*x^2) + (b^4*(3*b*B -
 10*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^2}\,dx &= \frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^2}-\frac{\left(2\left(-2(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x}\,dx}{3b}\\
&= \frac{(3bB-10Ac)\left(bx+cx^2\right)^{5/2}}{15b}+\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^2}-\frac{1}{6}(-3bB+10Ac)\int\left(bx+cx\right.\\
&= \frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c}+\frac{(3bB-10Ac)\left(bx+cx^2\right)^{5/2}}{15b}+\frac{2A\left(bx+\right.}{3b}\\
&= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2}+\frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c}+\\
&= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2}+\frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c}+\\
&= -\frac{b^2(3bB-10Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^2}+\frac{(3bB-10Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{48c}+
\end{aligned}
$$

Mathematica [A] time = 0.26, size = 147, normalized size = 0.87

$$
\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}(3bB-10Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(30b^3c(5A+Bx)+4b^2c^2x(295A+186Bx)+16bc^3x^2(85A+63\right.\right.}{1920c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-45*b^4*B + 30*b^3*c*(5*A + B*x) + 96*c^4*x^3*
(5*A + 4*B*x) + 16*b*c^3*x^2*(85*A + 63*B*x) + 4*b^2*c^2*x*(295*A + 186*B*x
)) + (15*b^(7/2)*(3*b*B - 10*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt
[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(5/2))
```

fricas [A] time = 0.93, size = 304, normalized size = 1.80

$$
\left[-\frac{15\left(3\,Bb^5-10\,Ab^4c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(384\,Bc^5x^4-45\,Bb^4c+150\,Ab^3c^2+48\left(21\,Bb\right.\right.}{3840\,c^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 - 45*B*b^4*c + 150*A*b^3*c^2 + 48*(21*B*b*
c^4 + 10*A*c^5)*x^3 + 8*(93*B*b^2*c^3 + 170*A*b*c^4)*x^2 + 10*(3*B*b^3*c^2
+ 118*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^3, -1/1920*(15*(3*B*b^5 - 10*A*b^4
*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*x^4 - 45
*B*b^4*c + 150*A*b^3*c^2 + 48*(21*B*b*c^4 + 10*A*c^5)*x^3 + 8*(93*B*b^2*c^3
 + 170*A*b*c^4)*x^2 + 10*(3*B*b^3*c^2 + 118*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x)
)/c^3]
```

giac [A] time = 0.24, size = 170, normalized size = 1.01

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(8\,Bc^2x+\frac{21\,Bbc^5+10\,Ac^6}{c^4}\right)x+\frac{93\,Bb^2c^4+170\,Abc^5}{c^4}\right)x+\frac{5\left(3\,Bb^3c^3+118\,Ab^2c^4\right)}{c^4}\right)x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*c^2*x + (21*B*b*c^5 + 10*A*c^6)/c^4)
*x + (93*B*b^2*c^4 + 170*A*b*c^5)/c^4)*x + 5*(3*B*b^3*c^3 + 118*A*b^2*c^4)/
c^4)*x - 15*(3*B*b^4*c^2 - 10*A*b^3*c^3)/c^4) - 1/256*(3*B*b^5 - 10*A*b^4*c
)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 266, normalized size = 1.57

$$-\frac{5A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{3}{2}}}+\frac{3B\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{5}{2}}}+\frac{5\sqrt{c\,x^2+bx}\;A\,b^2x}{32}-\frac{3\sqrt{c\,x^2+bx}\;B\,b^3x}{64c}+\frac{5\sqrt{c\,x^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x)
```

```
[Out] 2/3*A*(c*x^2+b*x)^(7/2)/b/x^2-2/3*A/b*c*(c*x^2+b*x)^(5/2)-5/12*A*c*(c*x^2+b
*x)^(3/2)*x-5/24*A*b*(c*x^2+b*x)^(3/2)+5/32*A*b^2*(c*x^2+b*x)^(1/2)*x+5/64*
A*b^3/c*(c*x^2+b*x)^(1/2)-5/128*A*b^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))+1/5*B*(c*x^2+b*x)^(5/2)+1/8*B*b*(c*x^2+b*x)^(3/2)*x+1/16*B/c*(
c*x^2+b*x)^(3/2)*b^2-3/64*B*b^3/c*(c*x^2+b*x)^(1/2)*x-3/128*B*b^4/c^2*(c*x^
2+b*x)^(1/2)+3/256*B*b^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.94, size = 226, normalized size = 1.34

$$\frac{1}{8}\left(cx^2+bx\right)^{\frac{3}{2}}Bbx+\frac{5}{32}\sqrt{cx^2+bx}\,Ab^2x-\frac{3\sqrt{cx^2+bx}\,Bb^3x}{64\,c}+\frac{3\,Bb^5\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{256\,c^{\frac{5}{2}}}-\frac{5\,Ab^4\log\left(2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + b*x)^(3/2)*B*b*x + 5/32*sqrt(c*x^2 + b*x)*A*b^2*x - 3/64*sqrt(
c*x^2 + b*x)*B*b^3*x/c + 3/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sq
rt(c))/c^(5/2) - 5/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c
^(3/2) + 1/5*(c*x^2 + b*x)^(5/2)*B + 5/24*(c*x^2 + b*x)^(3/2)*A*b - 3/128*s
qrt(c*x^2 + b*x)*B*b^4/c^2 + 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c + 5/64*sqrt(c
*x^2 + b*x)*A*b^3/c + 1/4*(c*x^2 + b*x)^(5/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^2,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**2,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**2, x)
```

3.99 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=155

$$-\frac{5b^3(bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{3/2}}+\frac{\left(bx+cx^2\right)^{5/2}(bB-8Ac)}{4bx}+\frac{5}{24}\left(bx+cx^2\right)^{3/2}(bB-8Ac)+\frac{5b(b+2cx)\sqrt{bx+cx^2}}{64c}$$

```
[Out] 5/24*(-8*A*c+B*b)*(c*x^2+b*x)^(3/2)+1/4*(-8*A*c+B*b)*(c*x^2+b*x)^(5/2)/b/x+
2*A*(c*x^2+b*x)^(7/2)/b/x^3-5/64*b^3*(-8*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+
b*x)^(1/2))/c^(3/2)+5/64*b*(-8*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c
```

Rubi [A] time = 0.17, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {792, 664, 612, 620, 206}

$$-\frac{5b^3(bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{3/2}}+\frac{\left(bx+cx^2\right)^{5/2}(bB-8Ac)}{4bx}+\frac{5}{24}\left(bx+cx^2\right)^{3/2}(bB-8Ac)+\frac{5b(b+2cx)\sqrt{bx+cx^2}}{64c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*b*(b*B - 8*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(64*c) + (5*(b*B - 8*A*c)
*(b*x + c*x^2)^(3/2))/24 + ((b*B - 8*A*c)*(b*x + c*x^2)^(5/2))/(4*b*x) + (2
*A*(b*x + c*x^2)^(7/2))/(b*x^3) - (5*b^3*(b*B - 8*A*c)*ArcTanh[(Sqrt[c]*x)/
Sqrt[b*x + c*x^2]])/(64*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^3}\,dx &= \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} - \frac{\left(2\left(-3(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^2}\,dx}{b}\\
&= \frac{(bB-8Ac)\left(bx+cx^2\right)^{5/2}}{4bx} + \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} + \frac{1}{8}(5(bB-8Ac))\int \frac{\left(bx+cx^2\right)^{3}}{x}\\
&= \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)\left(bx+cx^2\right)^{5/2}}{4bx} + \frac{2A\left(bx+cx^2\right)^{7/2}}{bx^3} +\\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4}\\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4}\\
&= \frac{5b(bB-8Ac)(b+2cx)\sqrt{bx+cx^2}}{64c} + \frac{5}{24}(bB-8Ac)\left(bx+cx^2\right)^{3/2} + \frac{(bB-8Ac)}{4}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 128, normalized size = 0.83

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(2b^2c(132A+59Bx)+8bc^2x(26A+17Bx)+16c^3x^2(4A+3Bx)+15b^3B\right)-\frac{15b^{5/2}(bB-8Ac)\sinh}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}\right.}{192c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B + 16*c^3*x^2*(4*A + 3*B*x) + 8*b*c^2*
x*(26*A + 17*B*x) + 2*b^2*c*(132*A + 59*B*x)) - (15*b^(5/2)*(b*B - 8*A*c)*A
rcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(3/
2))
```

fricas [A] time = 1.22, size = 253, normalized size = 1.63

$$\left[-\frac{15\left(Bb^4-8\,Ab^3c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(48\,Bc^4x^3+15\,Bb^3c+264\,Ab^2c^2+8\left(17\,Bbc^3+\right.\right.}{384\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) - 2*(48*B*c^4*x^3 + 15*B*b^3*c + 264*A*b^2*c^2 + 8*(17*B*b*c^3 +
8*A*c^4)*x^2 + 2*(59*B*b^2*c^2 + 104*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^2, 1/
192*(15*(B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + (48*B*c^4*x^3 + 15*B*b^3*c + 264*A*b^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*
x^2 + 2*(59*B*b^2*c^2 + 104*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^2]
```

giac [A] time = 0.22, size = 141, normalized size = 0.91

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6Bc^2x+\frac{17Bbc^4+8Ac^5}{c^3}\right)x+\frac{59Bb^2c^3+104Abc^4}{c^3}\right)x+\frac{3\left(5Bb^3c^2+88Ab^2c^3\right)}{c^3}\right)+\frac{5\left(Bb^4-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c^2*x + (17*B*b*c^4 + 8*A*c^5)/c^3)*x +
(59*B*b^2*c^3 + 104*A*b*c^4)/c^3)*x + 3*(5*B*b^3*c^2 + 88*A*b^2*c^3)/c^3) +
 5/128*(B*b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(
c) - b))/c^(3/2)
```

maple [B] time = 0.06, size = 306, normalized size = 1.97

$$\frac{5Ab^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{16\sqrt{c}}-\frac{5Bb^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{cx^2+bx}\,Abcx}{4}+\frac{5\sqrt{cx^2+bx}\,Bb^2x}{32}-\frac{5\sqrt{cx^2+}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x)
```

```
[Out] 2*A*(c*x^2+b*x)^(7/2)/b/x^3-16/3*A/b^2*c/x^2*(c*x^2+b*x)^(7/2)+16/3*A/b^2*c
^2*(c*x^2+b*x)^(5/2)+10/3*A/b*c^2*(c*x^2+b*x)^(3/2)*x+5/3*A*c*(c*x^2+b*x)^(
3/2)-5/4*A*b*c*(c*x^2+b*x)^(1/2)*x-5/8*A*b^2*(c*x^2+b*x)^(1/2)+5/16*A*b^3/c
^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+2/3*B/b/x^2*(c*x^2+b*x)^(7
/2)-2/3*B/b*c*(c*x^2+b*x)^(5/2)-5/12*B*c*(c*x^2+b*x)^(3/2)*x-5/24*B*b*(c*x^
2+b*x)^(3/2)+5/32*B*b^2*(c*x^2+b*x)^(1/2)*x+5/64*B*b^3/c*(c*x^2+b*x)^(1/2)-
5/128*B*b^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.91, size = 187, normalized size = 1.21

$$\frac{5}{32}\sqrt{cx^2+bx}\,Bb^2x-\frac{5Bb^4\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{128c^{\frac{3}{2}}}+\frac{5Ab^3\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)}{16\sqrt{c}}+\frac{5}{24}\left(cx^2+b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5/32*sqrt(c*x^2 + b*x)*B*b^2*x - 5/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c))/c^(3/2) + 5/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/sqrt(c) + 5/24*(c*x^2 + b*x)^(3/2)*B*b + 5/8*sqrt(c*x^2 + b*x)*A*b^2
+ 5/64*sqrt(c*x^2 + b*x)*B*b^3/c + 1/4*(c*x^2 + b*x)^(5/2)*B/x + 5/12*(c*x^
2 + b*x)^(3/2)*A*b/x + 1/3*(c*x^2 + b*x)^(5/2)*A/x^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(cx^2+bx\right)^{5/2}\,(A+Bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^3,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^3, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**3,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**3, x)
```

3.100 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=153

$$\frac{5b^2(6Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8\sqrt{c}}+\frac{2\left(bx+cx^2\right)^{5/2}(6Ac+bB)}{bx^2}-\frac{5c\left(bx+cx^2\right)^{3/2}(6Ac+bB)}{3b}-\frac{5}{8}(b+2cx)\sqrt{bx+cx^2}$$

```
[Out] -5/3*c*(6*A*c+B*b)*(c*x^2+b*x)^(3/2)/b+2*(6*A*c+B*b)*(c*x^2+b*x)^(5/2)/b/x^
2-2*A*(c*x^2+b*x)^(7/2)/b/x^4+5/8*b^2*(6*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+
b*x)^(1/2))/c^(1/2)-5/8*(6*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = {792, 662, 664, 612, 620, 206}

$$\frac{5b^2(6Ac+bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8\sqrt{c}}+\frac{2\left(bx+cx^2\right)^{5/2}(6Ac+bB)}{bx^2}-\frac{5c\left(bx+cx^2\right)^{3/2}(6Ac+bB)}{3b}-\frac{5}{8}(b+2cx)\sqrt{bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*(b*B + 6*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/8 - (5*c*(b*B + 6*A*c)*(b*
x + c*x^2)^(3/2))/(3*b) + (2*(b*B + 6*A*c)*(b*x + c*x^2)^(5/2))/(b*x^2) - (
2*A*(b*x + c*x^2)^(7/2))/(b*x^4) + (5*b^2*(b*B + 6*A*c)*ArcTanh[(Sqrt[c]*x)
/Sqrt[b*x + c*x^2]])/(8*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^4}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^3}\,dx}{b}\\
&= \frac{2(bB+6Ac)\left(bx+cx^2\right)^{5/2}}{bx^2}-\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4}-\frac{(5c(bB+6Ac))\int\frac{\left(bx+cx^2\right)^{3/2}}{x}\,dx}{b}\\
&= -\frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b}+\frac{2(bB+6Ac)\left(bx+cx^2\right)^{5/2}}{bx^2}-\frac{2A\left(bx+cx^2\right)^{7/2}}{bx^4}\\
&= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2}-\frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b}+\frac{2(bB+6A}{}\\
&= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2}-\frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b}+\frac{2(bB+6A}{}\\
&= -\frac{5}{8}(bB+6Ac)(b+2cx)\sqrt{bx+cx^2}-\frac{5c(bB+6Ac)\left(bx+cx^2\right)^{3/2}}{3b}+\frac{2(bB+6A}{}
\end{aligned}$$

Mathematica [A] time = 0.21, size = 117, normalized size = 0.76

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{3/2}\sqrt{x}\,(6Ac+bB)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\,\sqrt{\frac{cx}{b}+1}}-6A\left(8b^2-9bcx-2c^2x^2\right)+Bx\left(33b^2+26bcx+8c^2x^2\right)\right)}{24x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-6*A*(8*b^2 - 9*b*c*x - 2*c^2*x^2) + B*x*(33*b^2 + 26*b
*c*x + 8*c^2*x^2) + (15*b^(3/2)*(b*B + 6*A*c)*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt
[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[1 + (c*x)/b])))/(24*x)
```

fricas [A] time = 0.84, size = 240, normalized size = 1.57

$$\Bigg[\frac{15\left(Bb^3+6\,Ab^2c\right)\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(8\,Bc^3x^3-48\,Ab^2c+2\left(13\,Bbc^2+6\,Ac^3\right)x^2+3\,(}{48\,cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/48*(15*(B*b^3 + 6*A*b^2*c)*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) + 2*(8*B*c^3*x^3 - 48*A*b^2*c + 2*(13*B*b*c^2 + 6*A*c^3)*x^2 + 3*
(11*B*b^2*c + 18*A*b*c^2)*x)*sqrt(c*x^2 + b*x))/(c*x), -1/24*(15*(B*b^3 + 6
*A*b^2*c)*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^
3 - 48*A*b^2*c + 2*(13*B*b*c^2 + 6*A*c^3)*x^2 + 3*(11*B*b^2*c + 18*A*b*c^2)
*x)*sqrt(c*x^2 + b*x))/(c*x)]
```

giac [**A**]   time = 0.24, size = 141, normalized size = 0.92

$$\frac{2\,Ab^{3}}{\sqrt{c}\,x-\sqrt{cx^{2}+bx}}+\frac{1}{24}\,\sqrt{cx^{2}+bx}\left(2\left(4\,Bc^{2}x+\frac{13\,Bbc^{3}+6\,Ac^{4}}{c^{2}}\right)x+\frac{3\left(11\,Bb^{2}c^{2}+18\,Abc^{3}\right)}{c^{2}}\right)-\frac{5\left(Bb^{3}+6\,Ab^{2}c\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 2*A*b^3/(sqrt(c)*x - sqrt(c*x^2 + b*x)) + 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*c^
2*x + (13*B*b*c^3 + 6*A*c^4)/c^2)*x + 3*(11*B*b^2*c^2 + 18*A*b*c^3)/c^2) -
5/16*(B*b^3 + 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)
 - b))/sqrt(c)
```

maple [**B**]   time = 0.06, size = 358, normalized size = 2.34

$$\frac{15A\,b^{2}\sqrt{c}\;\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{8}+\frac{5B\,b^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{16\sqrt{c}}-\frac{15\sqrt{c\,x^{2}+bx}\;A\,c^{2}x}{2}-\frac{5\sqrt{c\,x^{2}+bx}\;Bbcx}{4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x)
```

```
[Out] -2*A*(c*x^2+b*x)^(7/2)/b/x^4+12*A/b^2*c/x^3*(c*x^2+b*x)^(7/2)-32*A/b^3*c^2/
x^2*(c*x^2+b*x)^(7/2)+32*A/b^3*c^3*(c*x^2+b*x)^(5/2)+20*A/b^2*c^3*(c*x^2+b*
x)^(3/2)*x+10*A/b*c^2*(c*x^2+b*x)^(3/2)-15/2*A*c^2*(c*x^2+b*x)^(1/2)*x-15/4
*A*b*c*(c*x^2+b*x)^(1/2)+15/8*A*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))+2*B/b/x^3*(c*x^2+b*x)^(7/2)-16/3*B/b^2*c/x^2*(c*x^2+b*x)^(7/2)+1
6/3*B/b^2*c^2*(c*x^2+b*x)^(5/2)+10/3*B/b*c^2*(c*x^2+b*x)^(3/2)*x+5/3*B*c*(c
*x^2+b*x)^(3/2)-5/4*B*b*c*(c*x^2+b*x)^(1/2)*x-5/8*B*b^2*(c*x^2+b*x)^(1/2)+5
/16*B*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [**A**]   time = 0.91, size = 172, normalized size = 1.12

$$\frac{5\,Bb^{3}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{16\,\sqrt{c}}+\frac{15}{8}\,Ab^{2}\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)+\frac{5}{8}\,\sqrt{cx^{2}+bx}\,Bb^{2}+\frac{5\left(cx^{2}+\right.}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 5/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + 15/8*A*b^
2*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 5/8*sqrt(c*x^2 + b
*x)*B*b^2 + 5/12*(c*x^2 + b*x)^(3/2)*B*b/x - 15/4*sqrt(c*x^2 + b*x)*A*b^2/x
 + 1/3*(c*x^2 + b*x)^(5/2)*B/x^2 + 5/4*(c*x^2 + b*x)^(3/2)*A*b/x^2 + 1/2*(c
*x^2 + b*x)^(5/2)*A/x^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**4,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**4, x)
```

3.101 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=157

$$\frac{5c\left(bx+cx^2\right)^{3/2}(4Ac+3bB)}{6bx}+\frac{5}{4}c\sqrt{bx+cx^2}\,(4Ac+3bB)+\frac{5}{4}b\sqrt{c}\,(4Ac+3bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2\left(bx+cx^2\right)^{5/2}}{3bx}$$

```
[Out] 5/6*c*(4*A*c+3*B*b)*(c*x^2+b*x)^(3/2)/b/x-2/3*(4*A*c+3*B*b)*(c*x^2+b*x)^(5/
2)/b/x^3-2/3*A*(c*x^2+b*x)^(7/2)/b/x^5+5/4*b*(4*A*c+3*B*b)*arctanh(x*c^(1/2
)/(c*x^2+b*x)^(1/2))*c^(1/2)+5/4*c*(4*A*c+3*B*b)*(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {792, 662, 664, 620, 206}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(4Ac+3bB)}{3bx^3}+\frac{5c\left(bx+cx^2\right)^{3/2}(4Ac+3bB)}{6bx}+\frac{5}{4}c\sqrt{bx+cx^2}\,(4Ac+3bB)+\frac{5}{4}b\sqrt{c}\,(4Ac+3bB)\tanh$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (5*c*(3*b*B + 4*A*c)*Sqrt[b*x + c*x^2])/4 + (5*c*(3*b*B + 4*A*c)*(b*x + c*x
^2)^(3/2))/(6*b*x) - (2*(3*b*B + 4*A*c)*(b*x + c*x^2)^(5/2))/(3*b*x^3) - (2
*A*(b*x + c*x^2)^(7/2))/(3*b*x^5) + (5*b*Sqrt[c]*(3*b*B + 4*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/4
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^5}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5}+\frac{\left(2\left(-5(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^4}\,dx}{3b}\\ &= -\frac{2(3bB+4Ac)\left(bx+cx^2\right)^{5/2}}{3bx^3}-\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5}+\frac{(5c(3bB+4Ac))\int\frac{\left(bx+cx^2\right)^{3}}{x^2}}{3b}\\ &= \frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx}-\frac{2(3bB+4Ac)\left(bx+cx^2\right)^{5/2}}{3bx^3}-\frac{2A\left(bx+cx^2\right)^{7/2}}{3bx^5}\\ &= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2}+\frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx}-\frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}\\ &= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2}+\frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx}-\frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}\\ &= \frac{5}{4}c(3bB+4Ac)\sqrt{bx+cx^2}+\frac{5c(3bB+4Ac)\left(bx+cx^2\right)^{3/2}}{6bx}-\frac{2(3bB+4Ac)\left(bx\right.}{3bx^3}\end{aligned}$$

Mathematica [C]   time = 0.05, size = 86, normalized size = 0.55

$$-\frac{2\sqrt{x(b+cx)}\left(b^2x(4Ac+3bB)\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx}{b}\right)+A\sqrt{\frac{cx}{b}+1}\,(b+cx)^3\right)}{3bx^2\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(A*(b + c*x)^3*Sqrt[1 + (c*x)/b] + b^2*(3*b*B + 4*A*c
)*x*Hypergeometric2F1[-5/2, -1/2, 1/2, -((c*x)/b)]))/(3*b*x^2*Sqrt[1 + (c*x
)/b])
```

fricas [A]   time = 0.83, size = 224, normalized size = 1.43

$$\left[\frac{15\left(3\,Bb^2+4\,Abc\right)\sqrt{c}\,x^2\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(6\,Bc^2x^3-8\,Ab^2+3\left(9\,Bbc+4\,Ac^2\right)x^2-8\left(3\,B\right.\right.}{24\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/24*(15*(3*B*b^2 + 4*A*b*c)*sqrt(c)*x^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c)) + 2*(6*B*c^2*x^3 - 8*A*b^2 + 3*(9*B*b*c + 4*A*c^2)*x^2 - 8*(3*B
*b^2 + 7*A*b*c)*x)*sqrt(c*x^2 + b*x))/x^2, -1/12*(15*(3*B*b^2 + 4*A*b*c)*sq
rt(-c)*x^2*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (6*B*c^2*x^3 - 8*A*b^
2 + 3*(9*B*b*c + 4*A*c^2)*x^2 - 8*(3*B*b^2 + 7*A*b*c)*x)*sqrt(c*x^2 + b*x))
/x^2]
```

giac [A] time = 0.28, size = 211, normalized size = 1.34

$$\frac{1}{4}\left(2\,Bc^2x+\frac{9\,Bbc^2+4\,Ac^3}{c}\right)\sqrt{cx^2+bx}-\frac{5\left(3\,Bb^2c+4\,Abc^2\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,\sqrt{c}}+\frac{2\left(3\left(\sqrt{c}\,x-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c^2*x + (9*B*b*c^2 + 4*A*c^3)/c)*sqrt(c*x^2 + b*x) - 5/8*(3*B*b^2*
c + 4*A*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/sqr
t(c) + 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*sqrt(c) + 9*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(3/2) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^3*c + A*b^4*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^3*sqrt(c))
```

maple [B] time = 0.05, size = 411, normalized size = 2.62

$$\frac{5Ab\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2}+\frac{15B\,b^2\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8}-\frac{10\sqrt{c\,x^2+bx}\,A\,c^3x}{b}-\frac{15\sqrt{c\,x^2+bx}\,B\,c^2x}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x)
```

```
[Out] -2/3*A*(c*x^2+b*x)^(7/2)/b/x^5-8/3*A/b^2*c/x^4*(c*x^2+b*x)^(7/2)+16*A/b^3*c
^2/x^3*(c*x^2+b*x)^(7/2)-128/3*A/b^4*c^3/x^2*(c*x^2+b*x)^(7/2)+128/3*A/b^4*
c^4*(c*x^2+b*x)^(5/2)+80/3*A/b^3*c^4*(c*x^2+b*x)^(3/2)*x+40/3*A/b^2*c^3*(c*
x^2+b*x)^(3/2)-10*A/b*c^3*(c*x^2+b*x)^(1/2)*x-5*A*c^2*(c*x^2+b*x)^(1/2)+5/2
*A*b*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2*B/b/x^4*(c*x^2+b*x
)^(7/2)+12*B/b^2*c/x^3*(c*x^2+b*x)^(7/2)-32*B/b^3*c^2/x^2*(c*x^2+b*x)^(7/2)
+32*B/b^3*c^3*(c*x^2+b*x)^(5/2)+20*B/b^2*c^3*(c*x^2+b*x)^(3/2)*x+10*B/b*c^2
*(c*x^2+b*x)^(3/2)-15/2*B*c^2*(c*x^2+b*x)^(1/2)*x-15/4*B*b*c*(c*x^2+b*x)^(1
/2)+15/8*B*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 191, normalized size = 1.22

$$\frac{15}{8}\,Bb^2\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+\frac{5}{2}\,Abc^{\frac{3}{2}}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{15\,\sqrt{cx^2+bx}\,Bb^2}{4\,x}-\frac{35\,\sqrt{cx}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 15/8*B*b^2*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 5/2*A*b*c
^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 15/4*sqrt(c*x^2 + b*x
)*B*b^2/x - 35/6*sqrt(c*x^2 + b*x)*A*b*c/x + 5/4*(c*x^2 + b*x)^(3/2)*B*b/x^
2 - 5/6*sqrt(c*x^2 + b*x)*A*b^2/x^2 + 1/2*(c*x^2 + b*x)^(5/2)*B/x^3 - 5/6*(
c*x^2 + b*x)^(3/2)*A*b/x^3 + (c*x^2 + b*x)^(5/2)*A/x^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**5,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**5, x)
```

3.102 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=155

$$c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)+\frac{c^2\sqrt{bx+cx^2}\,(2Ac+5bB)}{b}-\frac{2c\left(bx+cx^2\right)^{3/2}(2Ac+5bB)}{3bx^2}-\frac{2\left(bx+cx^2\right)^{5/2}(2}{15bx^4}$$

```
[Out] -2/3*c*(2*A*c+5*B*b)*(c*x^2+b*x)^(3/2)/b/x^2-2/15*(2*A*c+5*B*b)*(c*x^2+b*x)
^(5/2)/b/x^4-2/5*A*(c*x^2+b*x)^(7/2)/b/x^6+c^(3/2)*(2*A*c+5*B*b)*arctanh(x*
c^(1/2)/(c*x^2+b*x)^(1/2))+c^2*(2*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/b
```

Rubi [A] time = 0.16, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {792, 662, 664, 620, 206}

$$\frac{c^2\sqrt{bx+cx^2}\,(2Ac+5bB)}{b}+c^{3/2}(2Ac+5bB)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2\left(bx+cx^2\right)^{5/2}(2Ac+5bB)}{15bx^4}-\frac{2c\left(bx+cx^2\right)^{3/2}(2}{3bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (c^2*(5*b*B + 2*A*c)*Sqrt[b*x + c*x^2])/b - (2*c*(5*b*B + 2*A*c)*(b*x + c*x
^2)^(3/2))/(3*b*x^2) - (2*(5*b*B + 2*A*c)*(b*x + c*x^2)^(5/2))/(15*b*x^4) -
 (2*A*(b*x + c*x^2)^(7/2))/(5*b*x^6) + c^(3/2)*(5*b*B + 2*A*c)*ArcTanh[(Sqr
t[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^6}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{5bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^5}\,dx}{5b}\\
&= -\frac{2(5bB+2Ac)\left(bx+cx^2\right)^{5/2}}{15bx^4}-\frac{2A\left(bx+cx^2\right)^{7/2}}{5bx^6}+\frac{(c(5bB+2Ac))\int\frac{\left(bx+cx^2\right)^{3/}}{x^3}}{3b}\\
&= -\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)\left(bx+cx^2\right)^{5/2}}{15bx^4}-\frac{2A\left(bx+cx^2\right)^{7}}{5bx^6}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)(bx}{15bx^4}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)(bx}{15bx^4}\\
&= \frac{c^2(5bB+2Ac)\sqrt{bx+cx^2}}{b}-\frac{2c(5bB+2Ac)\left(bx+cx^2\right)^{3/2}}{3bx^2}-\frac{2(5bB+2Ac)(bx}{15bx^4}
\end{aligned}$$

Mathematica [C] time = 0.05, size = 87, normalized size = 0.56

$$-\frac{2\sqrt{x(b+cx)}\left(b^2x(2Ac+5bB)\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx}{b}\right)+3A\sqrt{\frac{cx}{b}+1}\,(b+cx)^3\right)}{15bx^3\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(3*A*(b + c*x)^3*Sqrt[1 + (c*x)/b] + b^2*(5*b*B + 2*A
*c)*x*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x)/b)]))/(15*b*x^3*Sqrt[1 +
(c*x)/b])
```

fricas [A] time = 0.97, size = 224, normalized size = 1.45

$$\left[\frac{15\left(5\,Bbc+2\,Ac^2\right)\sqrt{c}\,x^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(15\,Bc^2x^3-6\,Ab^2-2\left(35\,Bbc+23\,Ac^2\right)x^2-2\right.}{30\,x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/30*(15*(5*B*b*c + 2*A*c^2)*sqrt(c)*x^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c)) + 2*(15*B*c^2*x^3 - 6*A*b^2 - 2*(35*B*b*c + 23*A*c^2)*x^2 - 2*(
5*B*b^2 + 11*A*b*c)*x)*sqrt(c*x^2 + b*x))/x^3, -1/15*(15*(5*B*b*c + 2*A*c^2
)*sqrt(-c)*x^3*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (15*B*c^2*x^3 - 6
*A*b^2 - 2*(35*B*b*c + 23*A*c^2)*x^2 - 2*(5*B*b^2 + 11*A*b*c)*x)*sqrt(c*x^2
 + b*x))/x^3]
```

giac [B] time = 0.27, size = 304, normalized size = 1.96

$$\sqrt{cx^2+bx}\,Bc^2 - \frac{\left(5\,Bbc^2+2\,Ac^3\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,\sqrt{c}} + \frac{2\Bigl(45\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bb^2c^{\frac{3}{2}}+45\Bigl(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c^2 - 1/2*(5*B*b*c^2 + 2*A*c^3)*log(abs(-2*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*sqrt(c) - b))/sqrt(c) + 2/15*(45*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^4*B*b^2*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(5/2
) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c + 45*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*A*b^2*c^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)
+ 35*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(3/2) + 15*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^4*c + 3*A*b^5*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*sqrt(c))
```

maple [B] time = 0.06, size = 460, normalized size = 2.97

$$A\,c^{\frac{5}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)+\frac{5Bb\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2}-\frac{4\sqrt{c\,x^2+bx}\;A\,c^4x}{b^2}-\frac{10\sqrt{c\,x^2+bx}\;B\,c^3x}{b}-\frac{2\sqrt{c\,x}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x)
```

```
[Out] -2/5*A*(c*x^2+b*x)^(7/2)/b/x^6-4/15*A/b^2*c/x^5*(c*x^2+b*x)^(7/2)-16/15*A/b
^3*c^2/x^4*(c*x^2+b*x)^(7/2)+32/5*A/b^4*c^3/x^3*(c*x^2+b*x)^(7/2)-256/15*A/
b^5*c^4/x^2*(c*x^2+b*x)^(7/2)+256/15*A/b^5*c^5*(c*x^2+b*x)^(5/2)+32/3*A/b^4
*c^5*(c*x^2+b*x)^(3/2)*x+16/3*A/b^3*c^4*(c*x^2+b*x)^(3/2)-4*A/b^2*c^4*(c*x^
2+b*x)^(1/2)*x-2*A/b*c^3*(c*x^2+b*x)^(1/2)+A*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x)^(1/2))-2/3*B/b/x^5*(c*x^2+b*x)^(7/2)-8/3*B/b^2*c/x^4*(c*x^2+b*
x)^(7/2)+16*B/b^3*c^2/x^3*(c*x^2+b*x)^(7/2)-128/3*B/b^4*c^3/x^2*(c*x^2+b*x)
^(7/2)+128/3*B/b^4*c^4*(c*x^2+b*x)^(5/2)+80/3*B/b^3*c^4*(c*x^2+b*x)^(3/2)*x
+40/3*B/b^2*c^3*(c*x^2+b*x)^(3/2)-10*B/b*c^3*(c*x^2+b*x)^(1/2)*x-5*B*c^2*(c
*x^2+b*x)^(1/2)+5/2*B*b*c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.98, size = 244, normalized size = 1.57

$$\frac{5}{2}\,Bbc^{\frac{3}{2}}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+Ac^{\frac{5}{2}}\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-\frac{35\,\sqrt{cx^2+bx}\,Bbc}{6\,x}-\frac{38\,\sqrt{cx^2+bx}}{15\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 5/2*B*b*c^(3/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + A*c^(5/2)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 35/6*sqrt(c*x^2 + b*x)*B*b*c/x
 - 38/15*sqrt(c*x^2 + b*x)*A*c^2/x - 5/6*sqrt(c*x^2 + b*x)*B*b^2/x^2 - 7/30
*sqrt(c*x^2 + b*x)*A*b*c/x^2 - 5/6*(c*x^2 + b*x)^(3/2)*B*b/x^3 + 3/10*sqrt(
c*x^2 + b*x)*A*b^2/x^3 - 1/3*(c*x^2 + b*x)^(3/2)*A*c/x^3 + (c*x^2 + b*x)^(5
/2)*B/x^4 - 1/2*(c*x^2 + b*x)^(3/2)*A*b/x^4 - 1/5*(c*x^2 + b*x)^(5/2)*A/x^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^6,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**6,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**6, x)
```

3.103 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=119

$$-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+2Bc^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2Bc^2\sqrt{bx+cx^2}}{x}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}$$

```
[Out] -2/3*B*c*(c*x^2+b*x)^(3/2)/x^3-2/5*B*(c*x^2+b*x)^(5/2)/x^5-2/7*A*(c*x^2+b*x
)^(7/2)/b/x^7+2*B*c^(5/2)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))-2*B*c^2*(c*x
^2+b*x)^(1/2)/x
```

Rubi **[A]** time = 0.14, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 662, 620, 206}

$$-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}-\frac{2Bc^2\sqrt{bx+cx^2}}{x}+2Bc^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (-2*B*c^2*Sqrt[b*x + c*x^2])/x - (2*B*c*(b*x + c*x^2)^(3/2))/(3*x^3) - (2*B
*(b*x + c*x^2)^(5/2))/(5*x^5) - (2*A*(b*x + c*x^2)^(7/2))/(7*b*x^7) + 2*B*c
^(5/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^7}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+B\int \frac{\left(bx+cx^2\right)^{5/2}}{x^6}\,dx\\ &= -\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+(Bc)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^4}\,dx\\ &= -\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+\left(Bc^2\right)\int \frac{\sqrt{bx+c}}{x^2}\\ &= -\frac{2Bc^2\sqrt{bx+cx^2}}{x}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+\\ &= -\frac{2Bc^2\sqrt{bx+cx^2}}{x}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+\\ &= -\frac{2Bc^2\sqrt{bx+cx^2}}{x}-\frac{2Bc\left(bx+cx^2\right)^{3/2}}{3x^3}-\frac{2B\left(bx+cx^2\right)^{5/2}}{5x^5}-\frac{2A\left(bx+cx^2\right)^{7/2}}{7bx^7}+\end{aligned}$$

Mathematica [C] time = 0.06, size = 83, normalized size = 0.70

$$\frac{2(x(b+cx))^{5/2}\left((b+cx)^3(bB-Ac)-\frac{b^4B\,{}_2F_1\left(-\frac{7}{2},-\frac{7}{2};-\frac{5}{2};-\frac{cx}{b}\right)}{\sqrt{\frac{cx}{b}+1}}\right)}{7bcx^6(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*((b*B - A*c)*(b + c*x)^3 - (b^4*B*Hypergeometric2F1[
-7/2, -7/2, -5/2, -((c*x)/b)])/Sqrt[1 + (c*x)/b]))/(7*b*c*x^6*(b + c*x)^2)
```

fricas [A] time = 0.86, size = 238, normalized size = 2.00

$$\left[\frac{105\,Bbc^{\frac{5}{2}}x^4\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(15\,Ab^3+\left(161\,Bbc^2+15\,Ac^3\right)x^3+\left(77\,Bb^2c+45\,Abc^2\right)x^2+\right.}{105\,bx^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/105*(105*B*b*c^(5/2)*x^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) -
2*(15*A*b^3 + (161*B*b*c^2 + 15*A*c^3)*x^3 + (77*B*b^2*c + 45*A*b*c^2)*x^2
+ 3*(7*B*b^3 + 15*A*b^2*c)*x)*sqrt(c*x^2 + b*x))/(b*x^4), -2/105*(105*B*b*s
qrt(-c)*c^2*x^4*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (15*A*b^3 + (161
*B*b*c^2 + 15*A*c^3)*x^3 + (77*B*b^2*c + 45*A*b*c^2)*x^2 + 3*(7*B*b^3 + 15*
A*b^2*c)*x)*sqrt(c*x^2 + b*x))/(b*x^4)]
```

giac [B] time = 0.27, size = 390, normalized size = 3.28

$$-Bc^{\frac{5}{2}}\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)+\frac{2\left(315\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Bbc^{\frac{5}{2}}+105\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Ac\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] -B*c^(5/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b)) + 2/105
*(315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(5/2) + 105*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^6*A*c^(7/2) + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^
2 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^3 + 245*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^3*c^(3/2) + 525*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*
c^(5/2) + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c + 525*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*A*b^3*c^2 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5
*sqrt(c) + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c^(3/2) + 105*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*A*b^5*c + 15*A*b^6*sqrt(c))/((sqrt(c)*x - sqrt(c*
x^2 + b*x))^7*sqrt(c))
```

maple [B] time = 0.06, size = 263, normalized size = 2.21

$$B c^{\frac{5}{2}} \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+bx}\right)-\frac{4\sqrt{c x^{2}+bx}\, B c^{4} x}{b^{2}}-\frac{2\sqrt{c x^{2}+bx}\, B c^{3}}{b}+\frac{32\left(c x^{2}+bx\right)^{\frac{3}{2}} B c^{5} x}{3b^{4}}+\frac{16\left(c x^{2}+bx\right)^{\frac{3}{2}} B c}{3b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x)
```

```
[Out] -2/5*B/b/x^6*(c*x^2+b*x)^(7/2)-4/15*B/b^2*c/x^5*(c*x^2+b*x)^(7/2)-16/15*B/b
^3*c^2/x^4*(c*x^2+b*x)^(7/2)+32/5*B/b^4*c^3/x^3*(c*x^2+b*x)^(7/2)-256/15*B/
b^5*c^4/x^2*(c*x^2+b*x)^(7/2)+256/15*B/b^5*c^5*(c*x^2+b*x)^(5/2)+32/3*B/b^4
*c^5*(c*x^2+b*x)^(3/2)*x+16/3*B/b^3*c^4*(c*x^2+b*x)^(3/2)-4*B/b^2*c^4*(c*x^
2+b*x)^(1/2)*x-2*B/b*c^3*(c*x^2+b*x)^(1/2)+B*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x)^(1/2))-2/7*A*(c*x^2+b*x)^(7/2)/b/x^7
```

maxima [B] time = 0.91, size = 258, normalized size = 2.17

$$Bc^{\frac{5}{2}} \log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-\frac{38\,\sqrt{cx^{2}+bx}\,Bc^{2}}{15\,x}-\frac{2\,\sqrt{cx^{2}+bx}\,Ac^{3}}{7\,bx}-\frac{7\,\sqrt{cx^{2}+bx}\,Bbc}{30\,x^{2}}+\frac{\sqrt{cx^{2}+bx}\,Ac^{2}}{7\,x^{2}}+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] B*c^(5/2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 38/15*sqrt(c*x^2 +
 b*x)*B*c^2/x - 2/7*sqrt(c*x^2 + b*x)*A*c^3/(b*x) - 7/30*sqrt(c*x^2 + b*x)*
B*b*c/x^2 + 1/7*sqrt(c*x^2 + b*x)*A*c^2/x^2 + 3/10*sqrt(c*x^2 + b*x)*B*b^2/
x^3 - 1/3*(c*x^2 + b*x)^(3/2)*B*c/x^3 - 3/28*sqrt(c*x^2 + b*x)*A*b*c/x^3 -
1/2*(c*x^2 + b*x)^(3/2)*B*b/x^4 - 15/28*sqrt(c*x^2 + b*x)*A*b^2/x^4 - 1/5*(
c*x^2 + b*x)^(5/2)*B/x^5 + 5/4*(c*x^2 + b*x)^(3/2)*A*b/x^5 - (c*x^2 + b*x)^
(5/2)*A/x^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^7,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + cx\right)\right)^{\frac{5}{2}} \left(A + Bx\right)}{x^{7}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**7,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**7, x)
```

3.104 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=57

$$-\frac{2\left(bx+cx^2\right)^{7/2}(9bB-2Ac)}{63b^2x^7}-\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}$$

```
[Out] -2/9*A*(c*x^2+b*x)^(7/2)/b/x^8-2/63*(-2*A*c+9*B*b)*(c*x^2+b*x)^(7/2)/b^2/x^
7
```

Rubi [A] time = 0.05, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\left(bx+cx^2\right)^{7/2}(9bB-2Ac)}{63b^2x^7}-\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(9*b*x^8) - (2*(9*b*B - 2*A*c)*(b*x + c*x^2)^(7/
2))/(63*b^2*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^8}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}+\frac{\left(2\left(-8(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^7}\,dx}{9b}\\ &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{9bx^8}-\frac{2(9bB-2Ac)\left(bx+cx^2\right)^{7/2}}{63b^2x^7}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.75

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}\,(7Ab-2Acx+9bBx)}{63b^2x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b + 9*b*B*x - 2*A*c*x))/(63*b^2*x^5)
```

fricas [B] time = 1.08, size = 102, normalized size = 1.79

$$-\frac{2\left(7\,Ab^4+\left(9\,Bbc^3-2\,Ac^4\right)x^4+\left(27\,Bb^2c^2+Abc^3\right)x^3+3\left(9\,Bb^3c+5\,Ab^2c^2\right)x^2+\left(9\,Bb^4+19\,Ab^3c\right)x\right)\sqrt{cx^2}}{63\,b^2x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] -2/63*(7*A*b^4 + (9*B*b*c^3 - 2*A*c^4)*x^4 + (27*B*b^2*c^2 + A*b*c^3)*x^3 +
 3*(9*B*b^3*c + 5*A*b^2*c^2)*x^2 + (9*B*b^4 + 19*A*b^3*c)*x)*sqrt(c*x^2 + b
*x)/(b^2*x^5)
```

giac [B] time = 0.23, size = 431, normalized size = 7.56

$$2\left(63\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Bc^3+189\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Bbc^{\frac{5}{2}}+63\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^7Ac^{\frac{7}{2}}+315\left(\sqrt{c}\,x-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] 2/63*(63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^3 + 189*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^7*B*b*c^(5/2) + 63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*c^(7/2)
+ 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^2 + 273*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^6*A*b*c^3 + 315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^(3/2
) + 567*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^(5/2) + 189*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^4*B*b^4*c + 693*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*
c^2 + 63*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*sqrt(c) + 525*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^3*A*b^4*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6 + 243*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c + 63*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^6*sqrt(c) + 7*A*b^7)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.04, size = 40, normalized size = 0.70

$$-\frac{2\,(cx+b)\,(-2Acx+9Bbx+7Ab)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{63b^2x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x)
```

```
[Out] -2/63*(c*x+b)*(-2*A*c*x+9*B*b*x+7*A*b)*(c*x^2+b*x)^(5/2)/b^2/x^7
```

maxima [B] time = 1.00, size = 258, normalized size = 4.53

$$-\frac{2\sqrt{cx^2+bx}\,Bc^3}{7\,bx}+\frac{4\sqrt{cx^2+bx}\,Ac^4}{63\,b^2x}+\frac{\sqrt{cx^2+bx}\,Bc^2}{7\,x^2}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{63\,bx^2}-\frac{3\sqrt{cx^2+bx}\,Bbc}{28\,x^3}+\frac{\sqrt{cx^2+bx}\,Ac^2}{42\,x^3}-15$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] -2/7*sqrt(c*x^2 + b*x)*B*c^3/(b*x) + 4/63*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x) +
 1/7*sqrt(c*x^2 + b*x)*B*c^2/x^2 - 2/63*sqrt(c*x^2 + b*x)*A*c^3/(b*x^2) - 3
/28*sqrt(c*x^2 + b*x)*B*b*c/x^3 + 1/42*sqrt(c*x^2 + b*x)*A*c^2/x^3 - 15/28*
```

```
sqrt(c*x^2 + b*x)*B*b^2/x^4 - 5/252*sqrt(c*x^2 + b*x)*A*b*c/x^4 + 5/4*(c*x^
2 + b*x)^(3/2)*B*b/x^5 - 5/36*sqrt(c*x^2 + b*x)*A*b^2/x^5 - (c*x^2 + b*x)^(
5/2)*B/x^6 + 5/12*(c*x^2 + b*x)^(3/2)*A*b/x^6 - 1/2*(c*x^2 + b*x)^(5/2)*A/x
^7
```

mupad [B] time = 2.89, size = 188, normalized size = 3.30

$$\frac{4\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{63\,b^2\,x}-\frac{10\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{21\,x^3}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{7\,x^4}-\frac{6\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{7\,x^2}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{63\,b\,x^2}-\frac{2\,A\,b^2\,\sqrt{c\,x^2}}{9\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^8,x)
```

```
[Out] (4*A*c^4*(b*x + c*x^2)^(1/2))/(63*b^2*x) - (10*A*c^2*(b*x + c*x^2)^(1/2))/(
21*x^3) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(7*x^4) - (6*B*c^2*(b*x + c*x^2)^(1
/2))/(7*x^2) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(63*b*x^2) - (2*A*b^2*(b*x + c
*x^2)^(1/2))/(9*x^5) - (2*B*c^3*(b*x + c*x^2)^(1/2))/(7*b*x) - (38*A*b*c*(b
*x + c*x^2)^(1/2))/(63*x^4) - (6*B*b*c*(b*x + c*x^2)^(1/2))/(7*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**8,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**8, x)
```

3.105 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=90

$$\frac{4c\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{693b^3x^7}-\frac{2\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{99b^2x^8}-\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}$$

```
[Out] -2/11*A*(c*x^2+b*x)^(7/2)/b/x^9-2/99*(-4*A*c+11*B*b)*(c*x^2+b*x)^(7/2)/b^2/
x^8+4/693*c*(-4*A*c+11*B*b)*(c*x^2+b*x)^(7/2)/b^3/x^7
```

Rubi [A] time = 0.09, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{693b^3x^7}-\frac{2\left(bx+cx^2\right)^{7/2}(11bB-4Ac)}{99b^2x^8}-\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(11*b*x^9) - (2*(11*b*B - 4*A*c)*(b*x + c*x^2)^(
7/2))/(99*b^2*x^8) + (4*c*(11*b*B - 4*A*c)*(b*x + c*x^2)^(7/2))/(693*b^3*x^
7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^9}\,dx &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}+\frac{\left(2\left(-9(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^8}\,dx}{11b}\\ &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}-\frac{2(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{99b^2x^8}-\frac{(2c(11bB-4Ac))\int \frac{\left(bx+cx^2\right)^{5/2}}{x^7}}{99b^2}\\ &= -\frac{2A\left(bx+cx^2\right)^{7/2}}{11bx^9}-\frac{2(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{99b^2x^8}+\frac{4c(11bB-4Ac)\left(bx+cx^2\right)^{7/2}}{693b^3x^7}\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.70

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\,\left(A\left(-63b^2+28bcx-8c^2x^2\right)+11bBx(2cx-7b)\right)}{693b^3x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(11*b*B*x*(-7*b + 2*c*x) + A*(-63*b^2 + 28
*b*c*x - 8*c^2*x^2)))/(693*b^3*x^6)
```

fricas [A] time = 1.07, size = 127, normalized size = 1.41

$$-\frac{2\left(63\,Ab^5-2\left(11\,Bbc^4-4\,Ac^5\right)x^5+\left(11\,Bb^2c^3-4\,Abc^4\right)x^4+3\left(55\,Bb^3c^2+Ab^2c^3\right)x^3+\left(209\,Bb^4c+113\,Ab^3c^2\right)}{693\,b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] -2/693*(63*A*b^5 - 2*(11*B*b*c^4 - 4*A*c^5)*x^5 + (11*B*b^2*c^3 - 4*A*b*c^4
)*x^4 + 3*(55*B*b^3*c^2 + A*b^2*c^3)*x^3 + (209*B*b^4*c + 113*A*b^3*c^2)*x^
2 + 7*(11*B*b^5 + 23*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^3*x^6)
```

giac [B] time = 0.22, size = 491, normalized size = 5.46

$$2\left(693\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^9Bc^{\frac{7}{2}}+3003\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Bbc^3+924\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^8Ac^4+6237\left(\sqrt{c}\,x\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 2/693*(693*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^(7/2) + 3003*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^8*B*b*c^3 + 924*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^4
+ 6237*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^(5/2) + 4851*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*A*b*c^(7/2) + 7623*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B
*b^3*c^2 + 11781*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^3 + 5775*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^(3/2) + 16863*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*A*b^3*c^(5/2) + 2673*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c + 15
345*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^2 + 693*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*B*b^6*sqrt(c) + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c
^(3/2) + 77*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7 + 3311*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^2*A*b^6*c + 693*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^7*sqrt(
c) + 63*A*b^8)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 62, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-22Bbc\,x^2-28Abcx+77B\,b^2x+63A\,b^2\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{693b^3x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x)
```

```
[Out] -2/693*(c*x+b)*(8*A*c^2*x^2-22*B*b*c*x^2-28*A*b*c*x+77*B*b^2*x+63*A*b^2)*(c
*x^2+b*x)^(5/2)/b^3/x^8
```

maxima [B] time = 0.97, size = 304, normalized size = 3.38

$$\frac{4\sqrt{cx^2+bx}\,Bc^4}{63\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^5}{693\,b^3x}-\frac{2\sqrt{cx^2+bx}\,Bc^3}{63\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac^4}{693\,b^2x^2}+\frac{\sqrt{cx^2+bx}\,Bc^2}{42\,x^3}-\frac{2\sqrt{cx^2+bx}\,Ac^3}{231\,bx^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] 4/63*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x) - 16/693*sqrt(c*x^2 + b*x)*A*c^5/(b^3*
x) - 2/63*sqrt(c*x^2 + b*x)*B*c^3/(b*x^2) + 8/693*sqrt(c*x^2 + b*x)*A*c^4/(
b^2*x^2) + 1/42*sqrt(c*x^2 + b*x)*B*c^2/x^3 - 2/231*sqrt(c*x^2 + b*x)*A*c^3
/(b*x^3) - 5/252*sqrt(c*x^2 + b*x)*B*b*c/x^4 + 5/693*sqrt(c*x^2 + b*x)*A*c^
2/x^4 - 5/36*sqrt(c*x^2 + b*x)*B*b^2/x^5 - 5/792*sqrt(c*x^2 + b*x)*A*b*c/x^
5 + 5/12*(c*x^2 + b*x)^(3/2)*B*b/x^6 - 5/88*sqrt(c*x^2 + b*x)*A*b^2/x^6 - 1
/2*(c*x^2 + b*x)^(5/2)*B/x^7 + 5/24*(c*x^2 + b*x)^(3/2)*A*b/x^7 - 1/3*(c*x^
2 + b*x)^(5/2)*A/x^8
```

mupad [B] time = 3.46, size = 234, normalized size = 2.60

$$\frac{8\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{693\,b^2\,x^2}-\frac{226\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,x^4}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{9\,x^5}-\frac{10\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{21\,x^3}-\frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{231\,b\,x^3}-2\,A\,b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^9,x)
```

```
[Out] (8*A*c^4*(b*x + c*x^2)^(1/2))/(693*b^2*x^2) - (226*A*c^2*(b*x + c*x^2)^(1/2
))/(693*x^4) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(9*x^5) - (10*B*c^2*(b*x + c*x
^2)^(1/2))/(21*x^3) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(231*b*x^3) - (2*A*b^2*
(b*x + c*x^2)^(1/2))/(11*x^6) - (16*A*c^5*(b*x + c*x^2)^(1/2))/(693*b^3*x)
- (2*B*c^3*(b*x + c*x^2)^(1/2))/(63*b*x^2) + (4*B*c^4*(b*x + c*x^2)^(1/2))/
(63*b^2*x) - (46*A*b*c*(b*x + c*x^2)^(1/2))/(99*x^5) - (38*B*b*c*(b*x + c*x
^2)^(1/2))/(63*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**9,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**9, x)
```

3.106 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{9009b^4x^7}+\frac{8c\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{1287b^3x^8}-\frac{2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{143b^2x^9}-\frac{2A\left(bx+cx^2\right)^{7/}}{13bx^{10}}$$

```
[Out] -2/13*A*(c*x^2+b*x)^(7/2)/b/x^10-2/143*(-6*A*c+13*B*b)*(c*x^2+b*x)^(7/2)/b^
2/x^9+8/1287*c*(-6*A*c+13*B*b)*(c*x^2+b*x)^(7/2)/b^3/x^8-16/9009*c^2*(-6*A*
c+13*B*b)*(c*x^2+b*x)^(7/2)/b^4/x^7
```

Rubi [A] time = 0.12, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{9009b^4x^7}+\frac{8c\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{1287b^3x^8}-\frac{2\left(bx+cx^2\right)^{7/2}(13bB-6Ac)}{143b^2x^9}-\frac{2A\left(bx+cx^2\right)^{7/}}{13bx^{10}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(13*b*x^10) - (2*(13*b*B - 6*A*c)*(b*x + c*x^2)^
(7/2))/(143*b^2*x^9) + (8*c*(13*b*B - 6*A*c)*(b*x + c*x^2)^(7/2))/(1287*b^3
*x^8) - (16*c^2*(13*b*B - 6*A*c)*(b*x + c*x^2)^(7/2))/(9009*b^4*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} + \frac{\left(2\left(-10(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^9}\,dx}{13b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} - \frac{(4c(13bB-6Ac))\int \frac{(bx+cx}{x^8}}{143b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} + \frac{8c(13bB-6Ac)(bx+cx^2}{1287b^3x^8}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{13bx^{10}} - \frac{2(13bB-6Ac)\left(bx+cx^2\right)^{7/2}}{143b^2x^9} + \frac{8c(13bB-6Ac)(bx+cx^2}{1287b^3x^8}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.69

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(3A\left(231b^3-126b^2cx+56bc^2x^2-16c^3x^3\right)+13bBx\left(63b^2-28bcx+8c^2x^2\right)\right)}{9009b^4x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(13*b*B*x*(63*b^2 - 28*b*c*x + 8*c^2*x^2)
 + 3*A*(231*b^3 - 126*b^2*c*x + 56*b*c^2*x^2 - 16*c^3*x^3)))/(9009*b^4*x^7)
```

fricas [A] time = 0.70, size = 153, normalized size = 1.22

$$-\frac{2\left(693\,Ab^6+8\left(13\,Bbc^5-6\,Ac^6\right)x^6-4\left(13\,Bb^2c^4-6\,Abc^5\right)x^5+3\left(13\,Bb^3c^3-6\,Ab^2c^4\right)x^4+\left(1469\,Bb^4c^2+1\right.}{9009\,b^4x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] -2/9009*(693*A*b^6 + 8*(13*B*b*c^5 - 6*A*c^6)*x^6 - 4*(13*B*b^2*c^4 - 6*A*b
*c^5)*x^5 + 3*(13*B*b^3*c^3 - 6*A*b^2*c^4)*x^4 + (1469*B*b^4*c^2 + 15*A*b^3
*c^3)*x^3 + 7*(299*B*b^5*c + 159*A*b^4*c^2)*x^2 + 63*(13*B*b^6 + 27*A*b^5*c
)*x)*sqrt(c*x^2 + b*x)/(b^4*x^7)
```

giac [B] time = 0.24, size = 551, normalized size = 4.41

$$\frac{2\left(12012\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{10}Bc^4+63063\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^9Bbc^{\frac{7}{2}}+18018\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^9Ac^{\frac{9}{2}}+15\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] 2/9009*(12012*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^4 + 63063*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^9*B*b*c^(7/2) + 18018*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
*A*c^(9/2) + 153153*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^3 + 108108*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^4 + 219219*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^7*B*b^3*c^(5/2) + 297297*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^(7
/2) + 199485*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^2 + 485199*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^6*A*b^3*c^3 + 117117*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*B*b^5*c^(3/2) + 513513*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^(5/2) +
 43043*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c + 363363*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b^5*c^2 + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*s
qrt(c) + 171171*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^(3/2) + 819*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8 + 51597*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
2*A*b^7*c + 9009*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*sqrt(c) + 693*A*b^9)
/(sqrt(c)*x - sqrt(c*x^2 + b*x))^13
```

maple [**A**] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\,(cx+b)\left(-48A\,c^3x^3+104Bb\,c^2x^3+168Ab\,c^2x^2-364B\,b^2c\,x^2-378A\,b^2cx+819B\,b^3x+693A\,b^3\right)\left(c\,x^2+bx\right.}{9009b^4x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x)
```

```
[Out] -2/9009*(c*x+b)*(-48*A*c^3*x^3+104*B*b*c^2*x^3+168*A*b*c^2*x^2-364*B*b^2*c*
x^2-378*A*b^2*c*x+819*B*b^3*x+693*A*b^3)*(c*x^2+b*x)^(5/2)/x^9/b^4
```

maxima [**B**] time = 0.94, size = 350, normalized size = 2.80

$$-\frac{16\,\sqrt{cx^2+bx}\,Bc^5}{693\,b^3x}+\frac{32\,\sqrt{cx^2+bx}\,Ac^6}{3003\,b^4x}+\frac{8\,\sqrt{cx^2+bx}\,Bc^4}{693\,b^2x^2}-\frac{16\,\sqrt{cx^2+bx}\,Ac^5}{3003\,b^3x^2}-\frac{2\,\sqrt{cx^2+bx}\,Bc^3}{231\,bx^3}+\frac{4\,\sqrt{cx^2+bx}\,Ac^4}{1001\,b^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] -16/693*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x) + 32/3003*sqrt(c*x^2 + b*x)*A*c^6/(
b^4*x) + 8/693*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x^2) - 16/3003*sqrt(c*x^2 + b*x
)*A*c^5/(b^3*x^2) - 2/231*sqrt(c*x^2 + b*x)*B*c^3/(b*x^3) + 4/1001*sqrt(c*x
^2 + b*x)*A*c^4/(b^2*x^3) + 5/693*sqrt(c*x^2 + b*x)*B*c^2/x^4 - 10/3003*sqr
t(c*x^2 + b*x)*A*c^3/(b*x^4) - 5/792*sqrt(c*x^2 + b*x)*B*b*c/x^5 + 5/1716*s
qrt(c*x^2 + b*x)*A*c^2/x^5 - 5/88*sqrt(c*x^2 + b*x)*B*b^2/x^6 - 3/1144*sqrt
(c*x^2 + b*x)*A*b*c/x^6 + 5/24*(c*x^2 + b*x)^(3/2)*B*b/x^7 - 3/104*sqrt(c*x
^2 + b*x)*A*b^2/x^7 - 1/3*(c*x^2 + b*x)^(5/2)*B/x^8 + 1/8*(c*x^2 + b*x)^(3/
2)*A*b/x^8 - 1/4*(c*x^2 + b*x)^(5/2)*A/x^9
```

mupad [**B**] time = 4.09, size = 280, normalized size = 2.24

$$\frac{4\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{1001\,b^2\,x^3}-\frac{106\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{429\,x^5}-\frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{11\,x^6}-\frac{226\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{693\,x^4}-\frac{10\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{3003\,b\,x^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^10,x)
```

```
[Out] (4*A*c^4*(b*x + c*x^2)^(1/2))/(1001*b^2*x^3) - (106*A*c^2*(b*x + c*x^2)^(1/
2))/(429*x^5) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(11*x^6) - (226*B*c^2*(b*x +
c*x^2)^(1/2))/(693*x^4) - (10*A*c^3*(b*x + c*x^2)^(1/2))/(3003*b*x^4) - (2*
A*b^2*(b*x + c*x^2)^(1/2))/(13*x^7) - (16*A*c^5*(b*x + c*x^2)^(1/2))/(3003*
b^3*x^2) + (32*A*c^6*(b*x + c*x^2)^(1/2))/(3003*b^4*x) - (2*B*c^3*(b*x + c*
x^2)^(1/2))/(231*b*x^3) + (8*B*c^4*(b*x + c*x^2)^(1/2))/(693*b^2*x^2) - (16
*B*c^5*(b*x + c*x^2)^(1/2))/(693*b^3*x) - (54*A*b*c*(b*x + c*x^2)^(1/2))/(1
43*x^6) - (46*B*b*c*(b*x + c*x^2)^(1/2))/(99*x^5)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\,(b+cx)\right)^{\frac{5}{2}}\,(A+Bx)}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**10,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**10, x)
```

3.107 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11}}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{45045b^5x^7}-\frac{16c^2\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{6435b^4x^8}+\frac{4c\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{715b^3x^9}-\frac{2\left(bx+cx^2\right)^{7/}}{195}$$

```
[Out] -2/15*A*(c*x^2+b*x)^(7/2)/b/x^11-2/195*(-8*A*c+15*B*b)*(c*x^2+b*x)^(7/2)/b^
2/x^10+4/715*c*(-8*A*c+15*B*b)*(c*x^2+b*x)^(7/2)/b^3/x^9-16/6435*c^2*(-8*A*
c+15*B*b)*(c*x^2+b*x)^(7/2)/b^4/x^8+32/45045*c^3*(-8*A*c+15*B*b)*(c*x^2+b*x
)^(7/2)/b^5/x^7
```

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{32c^3\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{45045b^5x^7}-\frac{16c^2\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{6435b^4x^8}+\frac{4c\left(bx+cx^2\right)^{7/2}(15bB-8Ac)}{715b^3x^9}-\frac{2\left(bx+cx^2\right)^{7/}}{195}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^11,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(15*b*x^11) - (2*(15*b*B - 8*A*c)*(b*x + c*x^2)^
(7/2))/(195*b^2*x^10) + (4*c*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(715*b^3
*x^9) - (16*c^2*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(6435*b^4*x^8) + (32*
c^3*(15*b*B - 8*A*c)*(b*x + c*x^2)^(7/2))/(45045*b^5*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} + \frac{\left(2\left(-11(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{10}}\,dx}{15b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} - \frac{(2c(15bB-8Ac))\int \frac{(bx+cx}{x^9}}{65b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{15bx^{11}} - \frac{2(15bB-8Ac)\left(bx+cx^2\right)^{7/2}}{195b^2x^{10}} + \frac{4c(15bB-8Ac)\left(bx+cx^2\right.}{715b^3x^9}$$

Mathematica [**A**] time = 0.03, size = 107, normalized size = 0.67

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\,\left(A\left(-3003b^4+1848b^3cx-1008b^2c^2x^2+448bc^3x^3-128c^4x^4\right)+15bBx\left(-231b^3+126b\right.\right.}{45045b^5x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^11,x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(15*b*B*x*(-231*b^3 + 126*b^2*c*x - 56*b*c
^2*x^2 + 16*c^3*x^3) + A*(-3003*b^4 + 1848*b^3*c*x - 1008*b^2*c^2*x^2 + 448
*b*c^3*x^3 - 128*c^4*x^4)))/(45045*b^5*x^8)
```

fricas [**A**] time = 0.60, size = 177, normalized size = 1.11

$$-\frac{2\left(3003\,Ab^7-16\left(15\,Bbc^6-8\,Ac^7\right)x^7+8\left(15\,Bb^2c^5-8\,Abc^6\right)x^6-6\left(15\,Bb^3c^4-8\,Ab^2c^5\right)x^5+5\left(15\,Bb^4c^3-\right.\right.}{4504}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="fricas")
```

```
[Out] -2/45045*(3003*A*b^7 - 16*(15*B*b*c^6 - 8*A*c^7)*x^7 + 8*(15*B*b^2*c^5 - 8*
A*b*c^6)*x^6 - 6*(15*B*b^3*c^4 - 8*A*b^2*c^5)*x^5 + 5*(15*B*b^4*c^3 - 8*A*b
^3*c^4)*x^4 + 35*(159*B*b^5*c^2 + A*b^4*c^3)*x^3 + 63*(135*B*b^6*c + 71*A*b
^5*c^2)*x^2 + 231*(15*B*b^7 + 31*A*b^6*c)*x)*sqrt(c*x^2 + b*x)/(b^5*x^8)
```

giac [**B**] time = 0.24, size = 611, normalized size = 3.82

$$\frac{2\left(90090\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{11}Bc^{\frac{9}{2}}+540540\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{10}Bbc^4+144144\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{10}Ac^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="giac")
```

```
[Out] 2/45045*(90090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*c^(9/2) + 540540*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^10*B*b*c^4 + 144144*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^10*A*c^5 + 1486485*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^(7/2) + 960
960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^(9/2) + 2425995*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^8*B*b^3*c^3 + 2934360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*
b^2*c^4 + 2567565*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^(5/2) + 5360355
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^(7/2) + 1816815*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*B*b^5*c^2 + 6451445*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b
^4*c^3 + 855855*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^6*c^(3/2) + 5324319*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^5*c^(5/2) + 257985*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^7*c + 3042585*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^6*c^
2 + 45045*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*sqrt(c) + 1186185*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c^(3/2) + 3465*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^2*B*b^9 + 301455*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*c + 45045*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*sqrt(c) + 3003*A*b^10)/(sqrt(c)*x - sqrt
(c*x^2 + b*x))^15
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\,(cx+b)\,\Big(128A\,c^4x^4 - 240Bb\,c^3x^4 - 448Ab\,c^3x^3 + 840B\,b^2c^2x^3 + 1008A\,b^2c^2x^2 - 1890B\,b^3c\,x^2 - 1848A\,b^3cx +}{45045b^5x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x)
```

```
[Out] -2/45045*(c*x+b)*(128*A*c^4*x^4-240*B*b*c^3*x^4-448*A*b*c^3*x^3+840*B*b^2*c
^2*x^3+1008*A*b^2*c^2*x^2-1890*B*b^3*c*x^2-1848*A*b^3*c*x+3465*B*b^4*x+3003
*A*b^4)*(c*x^2+b*x)^(5/2)/b^5/x^10
```

maxima [B] time = 0.93, size = 396, normalized size = 2.48

$$\frac{32\,\sqrt{cx^2+bx}\,Bc^6}{3003\,b^4x} - \frac{256\,\sqrt{cx^2+bx}\,Ac^7}{45045\,b^5x} - \frac{16\,\sqrt{cx^2+bx}\,Bc^5}{3003\,b^3x^2} + \frac{128\,\sqrt{cx^2+bx}\,Ac^6}{45045\,b^4x^2} + \frac{4\,\sqrt{cx^2+bx}\,Bc^4}{1001\,b^2x^3} - \frac{32\,\sqrt{cx^2+bx}}{15015\,b^3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^11,x, algorithm="maxima")
```

```
[Out] 32/3003*sqrt(c*x^2 + b*x)*B*c^6/(b^4*x) - 256/45045*sqrt(c*x^2 + b*x)*A*c^7
/(b^5*x) - 16/3003*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x^2) + 128/45045*sqrt(c*x^2
 + b*x)*A*c^6/(b^4*x^2) + 4/1001*sqrt(c*x^2 + b*x)*B*c^4/(b^2*x^3) - 32/150
15*sqrt(c*x^2 + b*x)*A*c^5/(b^3*x^3) - 10/3003*sqrt(c*x^2 + b*x)*B*c^3/(b*x
^4) + 16/9009*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x^4) + 5/1716*sqrt(c*x^2 + b*x)*
B*c^2/x^5 - 2/1287*sqrt(c*x^2 + b*x)*A*c^3/(b*x^5) - 3/1144*sqrt(c*x^2 + b*
x)*B*b*c/x^6 + 1/715*sqrt(c*x^2 + b*x)*A*c^2/x^6 - 3/104*sqrt(c*x^2 + b*x)*
B*b^2/x^7 - 1/780*sqrt(c*x^2 + b*x)*A*b*c/x^7 + 1/8*(c*x^2 + b*x)^(3/2)*B*b
/x^8 - 1/60*sqrt(c*x^2 + b*x)*A*b^2/x^8 - 1/4*(c*x^2 + b*x)^(5/2)*B/x^9 + 1
/12*(c*x^2 + b*x)^(3/2)*A*b/x^9 - 1/5*(c*x^2 + b*x)^(5/2)*A/x^10
```

mupad [B] time = 4.76, size = 326, normalized size = 2.04

$$\frac{16\,A\,c^4\,\sqrt{c\,x^2+b\,x}}{9009\,b^2\,x^4} - \frac{142\,A\,c^2\,\sqrt{c\,x^2+b\,x}}{715\,x^6} - \frac{2\,B\,b^2\,\sqrt{c\,x^2+b\,x}}{13\,x^7} - \frac{106\,B\,c^2\,\sqrt{c\,x^2+b\,x}}{429\,x^5} - \frac{2\,A\,c^3\,\sqrt{c\,x^2+b\,x}}{1287\,b\,x^5} - \frac{2\,A\,b^2}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^11,x)
```

```
[Out] (16*A*c^4*(b*x + c*x^2)^(1/2))/(9009*b^2*x^4) - (142*A*c^2*(b*x + c*x^2)^(1
/2))/(715*x^6) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(13*x^7) - (106*B*c^2*(b*x +
 c*x^2)^(1/2))/(429*x^5) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(1287*b*x^5) - (2*
A*b^2*(b*x + c*x^2)^(1/2))/(15*x^8) - (32*A*c^5*(b*x + c*x^2)^(1/2))/(15015
*b^3*x^3) + (128*A*c^6*(b*x + c*x^2)^(1/2))/(45045*b^4*x^2) - (256*A*c^7*(b
*x + c*x^2)^(1/2))/(45045*b^5*x) - (10*B*c^3*(b*x + c*x^2)^(1/2))/(3003*b*x
^4) + (4*B*c^4*(b*x + c*x^2)^(1/2))/(1001*b^2*x^3) - (16*B*c^5*(b*x + c*x^2
)^(1/2))/(3003*b^3*x^2) + (32*B*c^6*(b*x + c*x^2)^(1/2))/(3003*b^4*x) - (62
*A*b*c*(b*x + c*x^2)^(1/2))/(195*x^7) - (54*B*b*c*(b*x + c*x^2)^(1/2))/(143
*x^6)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**11,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**11, x)
```

3.108 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{12}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{765765b^6x^7}+\frac{128c^3\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{109395b^5x^8}-\frac{32c^2\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{12155b^4x^9}+\frac{16c}{}$$

```
[Out] -2/17*A*(c*x^2+b*x)^(7/2)/b/x^12-2/255*(-10*A*c+17*B*b)*(c*x^2+b*x)^(7/2)/b
^2/x^11+16/3315*c*(-10*A*c+17*B*b)*(c*x^2+b*x)^(7/2)/b^3/x^10-32/12155*c^2*
(-10*A*c+17*B*b)*(c*x^2+b*x)^(7/2)/b^4/x^9+128/109395*c^3*(-10*A*c+17*B*b)*
(c*x^2+b*x)^(7/2)/b^5/x^8-256/765765*c^4*(-10*A*c+17*B*b)*(c*x^2+b*x)^(7/2)
/b^6/x^7
```

Rubi [A] time = 0.21, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{765765b^6x^7}+\frac{128c^3\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{109395b^5x^8}-\frac{32c^2\left(bx+cx^2\right)^{7/2}(17bB-10Ac)}{12155b^4x^9}+\frac{16c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^12,x]
```

```
[Out] (-2*A*(b*x + c*x^2)^(7/2))/(17*b*x^12) - (2*(17*b*B - 10*A*c)*(b*x + c*x^2)
^(7/2))/(255*b^2*x^11) + (16*c*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(3315
*b^3*x^10) - (32*c^2*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(12155*b^4*x^9)
 + (128*c^3*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(109395*b^5*x^8) - (256*
c^4*(17*b*B - 10*A*c)*(b*x + c*x^2)^(7/2))/(765765*b^6*x^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{12}}\,dx = -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} + \frac{\left(2\left(-12(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{11}}\,dx}{17b}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} - \frac{(8c(17bB-10Ac))\int \frac{(bx+}{}}{255b^2}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

$$= -\frac{2A\left(bx+cx^2\right)^{7/2}}{17bx^{12}} - \frac{2(17bB-10Ac)\left(bx+cx^2\right)^{7/2}}{255b^2x^{11}} + \frac{16c(17bB-10Ac)\left(bx+\right.}{3315b^3x^{10}}$$

Mathematica [A] time = 0.04, size = 130, normalized size = 0.67

$$-\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(5A\left(9009b^5-6006b^4cx+3696b^3c^2x^2-2016b^2c^3x^3+896bc^4x^4-256c^5x^5\right)+17bBx\right.}{765765b^6x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^12,x]
```

```
[Out] (-2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(17*b*B*x*(3003*b^4 - 1848*b^3*c*x + 1008
*b^2*c^2*x^2 - 448*b*c^3*x^3 + 128*c^4*x^4) + 5*A*(9009*b^5 - 6006*b^4*c*x
+ 3696*b^3*c^2*x^2 - 2016*b^2*c^3*x^3 + 896*b*c^4*x^4 - 256*c^5*x^5)))/(765
765*b^6*x^9)
```

fricas [A] time = 1.01, size = 202, normalized size = 1.04

$$-\frac{2\left(45045\,Ab^8+128\left(17\,Bbc^7-10\,Ac^8\right)x^8-64\left(17\,Bb^2c^6-10\,Abc^7\right)x^7+48\left(17\,Bb^3c^5-10\,Ab^2c^6\right)x^6-40\,(17\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="fricas")
```

```
[Out] -2/765765*(45045*A*b^8 + 128*(17*B*b*c^7 - 10*A*c^8)*x^8 - 64*(17*B*b^2*c^6
 - 10*A*b*c^7)*x^7 + 48*(17*B*b^3*c^5 - 10*A*b^2*c^6)*x^6 - 40*(17*B*b^4*c^
4 - 10*A*b^3*c^5)*x^5 + 35*(17*B*b^5*c^3 - 10*A*b^4*c^4)*x^4 + 63*(1207*B*b
^6*c^2 + 5*A*b^5*c^3)*x^3 + 231*(527*B*b^7*c + 275*A*b^6*c^2)*x^2 + 3003*(1
7*B*b^8 + 35*A*b^7*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^9)
```

giac [B] time = 0.24, size = 671, normalized size = 3.44

$$\frac{2\left(2450448\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{12}Bc^5+16336320\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^{11}Bbc^{\frac{9}{2}}+4084080\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="giac")
```

```
[Out] 2/765765*(2450448*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*B*c^5 + 16336320*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^11*B*b*c^(9/2) + 4084080*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^11*A*c^(11/2) + 49884120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^2*
c^4 + 29755440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b*c^5 + 91126035*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^(7/2) + 99549450*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^9*A*b^2*c^(9/2) + 109674565*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b
^4*c^3 + 200800600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^3*c^4 + 90513423*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^(5/2) + 270315045*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^7*A*b^4*c^(7/2) + 51723945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*B*b^6*c^2 + 254303595*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^3 + 20165
145*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^7*c^(3/2) + 170255085*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^5*A*b^6*c^(5/2) + 5124735*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^4*B*b^8*c + 80994375*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^7*c^2 + 7657
65*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^9*sqrt(c) + 26801775*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*A*b^8*c^(3/2) + 51051*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
2*B*b^10 + 5870865*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^9*c + 765765*(sqrt
(c)*x - sqrt(c*x^2 + b*x))*A*b^10*sqrt(c) + 45045*A*b^11)/(sqrt(c)*x - sqrt
(c*x^2 + b*x))^17
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-1280A\,c^{5}x^{5}+2176Bb\,c^{4}x^{5}+4480Ab\,c^{4}x^{4}-7616B\,b^{2}c^{3}x^{4}-10080A\,b^{2}c^{3}x^{3}+17136B\,b^{3}c^{2}x^{3}+184\right.}{765765b^{6}x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x)
```

```
[Out] -2/765765*(c*x+b)*(-1280*A*c^5*x^5+2176*B*b*c^4*x^5+4480*A*b*c^4*x^4-7616*B
*b^2*c^3*x^4-10080*A*b^2*c^3*x^3+17136*B*b^3*c^2*x^3+18480*A*b^3*c^2*x^2-31
416*B*b^4*c*x^2-30030*A*b^4*c*x+51051*B*b^5*x+45045*A*b^5)*(c*x^2+b*x)^(5/2
)/x^11/b^6
```

maxima [B] time = 1.09, size = 442, normalized size = 2.27

$$-\frac{256\sqrt{cx^{2}+bx}\,Bc^{7}}{45045\,b^{5}x}+\frac{512\sqrt{cx^{2}+bx}\,Ac^{8}}{153153\,b^{6}x}+\frac{128\sqrt{cx^{2}+bx}\,Bc^{6}}{45045\,b^{4}x^{2}}-\frac{256\sqrt{cx^{2}+bx}\,Ac^{7}}{153153\,b^{5}x^{2}}-\frac{32\sqrt{cx^{2}+bx}\,Bc^{5}}{15015\,b^{3}x^{3}}+\frac{64\sqrt{cx^{2}}}{51051}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^12,x, algorithm="maxima")
```

```
[Out] -256/45045*sqrt(c*x^2 + b*x)*B*c^7/(b^5*x) + 512/153153*sqrt(c*x^2 + b*x)*A
*c^8/(b^6*x) + 128/45045*sqrt(c*x^2 + b*x)*B*c^6/(b^4*x^2) - 256/153153*sqr
t(c*x^2 + b*x)*A*c^7/(b^5*x^2) - 32/15015*sqrt(c*x^2 + b*x)*B*c^5/(b^3*x^3)
 + 64/51051*sqrt(c*x^2 + b*x)*A*c^6/(b^4*x^3) + 16/9009*sqrt(c*x^2 + b*x)*B
*c^4/(b^2*x^4) - 160/153153*sqrt(c*x^2 + b*x)*A*c^5/(b^3*x^4) - 2/1287*sqrt
(c*x^2 + b*x)*B*c^3/(b*x^5) + 20/21879*sqrt(c*x^2 + b*x)*A*c^4/(b^2*x^5) +
1/715*sqrt(c*x^2 + b*x)*B*c^2/x^6 - 2/2431*sqrt(c*x^2 + b*x)*A*c^3/(b*x^6)
- 1/780*sqrt(c*x^2 + b*x)*B*b*c/x^7 + 1/1326*sqrt(c*x^2 + b*x)*A*c^2/x^7 -
1/60*sqrt(c*x^2 + b*x)*B*b^2/x^8 - 1/1428*sqrt(c*x^2 + b*x)*A*b*c/x^8 + 1/1
2*(c*x^2 + b*x)^(3/2)*B*b/x^9 - 5/476*sqrt(c*x^2 + b*x)*A*b^2/x^9 - 1/5*(c*
x^2 + b*x)^(5/2)*B/x^10 + 5/84*(c*x^2 + b*x)^(3/2)*A*b/x^10 - 1/6*(c*x^2 +
b*x)^(5/2)*A/x^11
```

mupad [B] time = 5.40, size = 372, normalized size = 1.91

$$\frac{20\,A\,c^{4}\,\sqrt{c\,x^{2}+b\,x}}{21879\,b^{2}\,x^{5}}-\frac{110\,A\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{663\,x^{7}}-\frac{2\,B\,b^{2}\,\sqrt{c\,x^{2}+b\,x}}{15\,x^{8}}-\frac{142\,B\,c^{2}\,\sqrt{c\,x^{2}+b\,x}}{715\,x^{6}}-\frac{2\,A\,c^{3}\,\sqrt{c\,x^{2}+b\,x}}{2431\,b\,x^{6}}-\frac{2\,A\,b^{2}}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^12,x)
```

```
[Out] (20*A*c^4*(b*x + c*x^2)^(1/2))/(21879*b^2*x^5) - (110*A*c^2*(b*x + c*x^2)^(
1/2))/(663*x^7) - (2*B*b^2*(b*x + c*x^2)^(1/2))/(15*x^8) - (142*B*c^2*(b*x
+ c*x^2)^(1/2))/(715*x^6) - (2*A*c^3*(b*x + c*x^2)^(1/2))/(2431*b*x^6) - (2
*A*b^2*(b*x + c*x^2)^(1/2))/(17*x^9) - (160*A*c^5*(b*x + c*x^2)^(1/2))/(153
153*b^3*x^4) + (64*A*c^6*(b*x + c*x^2)^(1/2))/(51051*b^4*x^3) - (256*A*c^7*
(b*x + c*x^2)^(1/2))/(153153*b^5*x^2) + (512*A*c^8*(b*x + c*x^2)^(1/2))/(15
3153*b^6*x) - (2*B*c^3*(b*x + c*x^2)^(1/2))/(1287*b*x^5) + (16*B*c^4*(b*x +
 c*x^2)^(1/2))/(9009*b^2*x^4) - (32*B*c^5*(b*x + c*x^2)^(1/2))/(15015*b^3*x
^3) + (128*B*c^6*(b*x + c*x^2)^(1/2))/(45045*b^4*x^2) - (256*B*c^7*(b*x + c
*x^2)^(1/2))/(45045*b^5*x) - (14*A*b*c*(b*x + c*x^2)^(1/2))/(51*x^8) - (62*
B*b*c*(b*x + c*x^2)^(1/2))/(195*x^7)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**12,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**12, x)
```

3.109 $\int \frac{x^4(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=197

$$-\frac{7b^4(9bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{11/2}}+\frac{7b^3\sqrt{bx+cx^2}\,(9bB-10Ac)}{128c^5}-\frac{7b^2x\sqrt{bx+cx^2}\,(9bB-10Ac)}{192c^4}+\frac{7bx^2\sqrt{bx+cx}}{24}$$

```
[Out] -7/128*b^4*(-10*A*c+9*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(11/2)+7/
128*b^3*(-10*A*c+9*B*b)*(c*x^2+b*x)^(1/2)/c^5-7/192*b^2*(-10*A*c+9*B*b)*x*(
c*x^2+b*x)^(1/2)/c^4+7/240*b*(-10*A*c+9*B*b)*x^2*(c*x^2+b*x)^(1/2)/c^3-1/40
*(-10*A*c+9*B*b)*x^3*(c*x^2+b*x)^(1/2)/c^2+1/5*B*x^4*(c*x^2+b*x)^(1/2)/c
```

Rubi [A] time = 0.20, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {794, 670, 640, 620, 206}

$$\frac{7b^3\sqrt{bx+cx^2}\,(9bB-10Ac)}{128c^5}-\frac{7b^2x\sqrt{bx+cx^2}\,(9bB-10Ac)}{192c^4}-\frac{7b^4(9bB-10Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{128c^{11/2}}+\frac{7bx^2\sqrt{bx+cx^2}}{240}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (7*b^3*(9*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(128*c^5) - (7*b^2*(9*b*B - 10*A
*c)*x*Sqrt[b*x + c*x^2])/(192*c^4) + (7*b*(9*b*B - 10*A*c)*x^2*Sqrt[b*x + c
*x^2])/(240*c^3) - ((9*b*B - 10*A*c)*x^3*Sqrt[b*x + c*x^2])/(40*c^2) + (B*x
^4*Sqrt[b*x + c*x^2])/(5*c) - (7*b^4*(9*b*B - 10*A*c)*ArcTanh[(Sqrt[c]*x)/S
qrt[b*x + c*x^2]])/(128*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{Bx^4\sqrt{bx+cx^2}}{5c} + \frac{\left(4(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^4}{\sqrt{bx+cx^2}}\,dx}{5c}$$

$$= -\frac{(9bB-10Ac)x^3\sqrt{bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{bx+cx^2}}{5c} + \frac{(7b(9bB-10Ac))\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx}{80c^2}$$

$$= \frac{7b(9bB-10Ac)x^2\sqrt{bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{bx+cx^2}}{5c} - \big(7b^2(9bB$$

$$= -\frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{bx+}}{40c^2}$$

$$= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+}}{240c^3}$$

$$= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+}}{240c^3}$$

$$= \frac{7b^3(9bB-10Ac)\sqrt{bx+cx^2}}{128c^5} - \frac{7b^2(9bB-10Ac)x\sqrt{bx+cx^2}}{192c^4} + \frac{7b(9bB-10Ac)x^2\sqrt{bx+}}{240c^3}$$

Mathematica [A] time = 0.35, size = 133, normalized size = 0.68

$$\frac{\sqrt{x(b+cx)}\left(\frac{(9bB-10Ac)\left(cx\sqrt{\frac{cx}{b}+1}\left(105b^3-70b^2cx+56bc^2x^2-48c^3x^3\right)-105b^{7/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{\sqrt{\frac{cx}{b}+1}}+384Bc^5x^5\right)}{1920c^6x}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(384*B*c^5*x^5 + ((9*b*B - 10*A*c)*(c*x*Sqrt[1 + (c*x)/b
]*(105*b^3 - 70*b^2*c*x + 56*b*c^2*x^2 - 48*c^3*x^3) - 105*b^(7/2)*Sqrt[c]*
Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/Sqrt[1 + (c*x)/b]))/(1920*c^6*
x)
```

fricas [A] time = 1.03, size = 303, normalized size = 1.54

$$\left[-\frac{105\left(9\,Bb^5-10\,Ab^4c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(384\,Bc^5x^4+945\,Bb^4c-1050\,Ab^3c^2-48\left(9\right.\right.}{3840\,c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(9*B*b^5 - 10*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 +
 b*x)*sqrt(c)) - 2*(384*B*c^5*x^4 + 945*B*b^4*c - 1050*A*b^3*c^2 - 48*(9*B*
b*c^4 - 10*A*c^5)*x^3 + 56*(9*B*b^2*c^3 - 10*A*b*c^4)*x^2 - 70*(9*B*b^3*c^2
 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^6, 1/1920*(105*(9*B*b^5 - 10*A*b^4
*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (384*B*c^5*x^4 + 94
5*B*b^4*c - 1050*A*b^3*c^2 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 + 56*(9*B*b^2*c^
3 - 10*A*b*c^4)*x^2 - 70*(9*B*b^3*c^2 - 10*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))
/c^6]
```

giac [A] time = 0.23, size = 165, normalized size = 0.84

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(\frac{8Bx}{c}-\frac{9Bbc^3-10Ac^4}{c^5}\right)x+\frac{7\left(9Bb^2c^2-10Abc^3\right)}{c^5}\right)x-\frac{35\left(9Bb^3c-10Ab^2c^2\right)}{c^5}\right)x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x/c - (9*B*b*c^3 - 10*A*c^4)/c^5)*x
+ 7*(9*B*b^2*c^2 - 10*A*b*c^3)/c^5)*x - 35*(9*B*b^3*c - 10*A*b^2*c^2)/c^5)*
x + 105*(9*B*b^4 - 10*A*b^3*c)/c^5) + 7/256*(9*B*b^5 - 10*A*b^4*c)*log(abs(
-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [A] time = 0.05, size = 255, normalized size = 1.29

$$\frac{\sqrt{cx^2+bx}\,Bx^4}{5c}+\frac{\sqrt{cx^2+bx}\,Ax^3}{4c}-\frac{9\sqrt{cx^2+bx}\,Bbx^3}{40c^2}-\frac{7\sqrt{cx^2+bx}\,Abx^2}{24c^2}+\frac{21\sqrt{cx^2+bx}\,Bb^2x^2}{80c^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+b*x)^(1/2)/c-9/40*B*b/c^2*x^3*(c*x^2+b*x)^(1/2)+21/80*B*b^
2/c^3*x^2*(c*x^2+b*x)^(1/2)-21/64*B*b^3/c^4*x*(c*x^2+b*x)^(1/2)+63/128*B*b^
4/c^5*(c*x^2+b*x)^(1/2)-63/256*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))+1/4*A*x^3/c*(c*x^2+b*x)^(1/2)-7/24*A*b/c^2*x^2*(c*x^2+b*x)^(1/
2)+35/96*A*b^2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*A*b^3/c^4*(c*x^2+b*x)^(1/2)+35
/128*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.96, size = 252, normalized size = 1.28

$$\frac{\sqrt{cx^2+bx}\,Bx^4}{5\,c}-\frac{9\,\sqrt{cx^2+bx}\,Bbx^3}{40\,c^2}+\frac{\sqrt{cx^2+bx}\,Ax^3}{4\,c}+\frac{21\,\sqrt{cx^2+bx}\,Bb^2x^2}{80\,c^3}-\frac{7\,\sqrt{cx^2+bx}\,Abx^2}{24\,c^2}-\frac{21\,\sqrt{cx^2+bx}\,Bb^3x}{64\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(c*x^2 + b*x)*B*x^4/c - 9/40*sqrt(c*x^2 + b*x)*B*b*x^3/c^2 + 1/4*sq
rt(c*x^2 + b*x)*A*x^3/c + 21/80*sqrt(c*x^2 + b*x)*B*b^2*x^2/c^3 - 7/24*sqrt
(c*x^2 + b*x)*A*b*x^2/c^2 - 21/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^4 + 35/96*sqr
t(c*x^2 + b*x)*A*b^2*x/c^3 - 63/256*B*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*
x)*sqrt(c))/c^(11/2) + 35/128*A*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(9/2) + 63/128*sqrt(c*x^2 + b*x)*B*b^4/c^5 - 35/64*sqrt(c*x^2 + b*x
)*A*b^3/c^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{\sqrt{x (b + cx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.110 $\int \frac{x^3(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=162

$$\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{9/2}}-\frac{5b^2\sqrt{bx+cx^2}\,(7bB-8Ac)}{64c^4}+\frac{5bx\sqrt{bx+cx^2}\,(7bB-8Ac)}{96c^3}-\frac{x^2\sqrt{bx+cx^2}\,(7bB-}{24c^2}$$

```
[Out] 5/64*b^3*(-8*A*c+7*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-5/64*b
^2*(-8*A*c+7*B*b)*(c*x^2+b*x)^(1/2)/c^4+5/96*b*(-8*A*c+7*B*b)*x*(c*x^2+b*x)
^(1/2)/c^3-1/24*(-8*A*c+7*B*b)*x^2*(c*x^2+b*x)^(1/2)/c^2+1/4*B*x^3*(c*x^2+b
*x)^(1/2)/c
```

Rubi [A] time = 0.16, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {794, 670, 640, 620, 206}

$$-\frac{5b^2\sqrt{bx+cx^2}\,(7bB-8Ac)}{64c^4}+\frac{5b^3(7bB-8Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{64c^{9/2}}+\frac{5bx\sqrt{bx+cx^2}\,(7bB-8Ac)}{96c^3}-\frac{x^2\sqrt{bx+cx^2}\,(7bB}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-5*b^2*(7*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(64*c^4) + (5*b*(7*b*B - 8*A*c)*
x*Sqrt[b*x + c*x^2])/(96*c^3) - ((7*b*B - 8*A*c)*x^2*Sqrt[b*x + c*x^2])/(24
*c^2) + (B*x^3*Sqrt[b*x + c*x^2])/(4*c) + (5*b^3*(7*b*B - 8*A*c)*ArcTanh[(S
qrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{Bx^3\sqrt{bx+cx^2}}{4c} + \frac{\left(3(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx}{4c}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{bx+cx^2}}{4c} + \frac{(5b(7bB-8Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{48c^2}$$

$$= \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{bx+cx^2}}{4c} - \big(5b^2(7bB-$$

$$= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} +$$

$$= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} +$$

$$= -\frac{5b^2(7bB-8Ac)\sqrt{bx+cx^2}}{64c^4} + \frac{5b(7bB-8Ac)x\sqrt{bx+cx^2}}{96c^3} - \frac{(7bB-8Ac)x^2\sqrt{bx+cx^2}}{24c^2} +$$

Mathematica [**A**] time = 0.33, size = 129, normalized size = 0.80

$$\frac{\sqrt{x(b+cx)}\Bigg(\frac{15b^{5/2}(7bB-8Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\,\big(10b^2c(12A+7Bx)-8bc^2x(10A+7Bx)+16c^3x^2(4A+3Bx)-1}{192c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^3*B + 16*c^3*x^2*(4*A + 3*B*x) - 8*b*c^
2*x*(10*A + 7*B*x) + 10*b^2*c*(12*A + 7*B*x)) + (15*b^(5/2)*(7*b*B - 8*A*c)
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(192*c^(
9/2))
```

fricas [**A**] time = 0.87, size = 256, normalized size = 1.58

$$\Bigg[-\frac{15\left(7Bb^4-8Ab^3c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\big(48Bc^4x^3-105Bb^3c+120Ab^2c^2-8\big(7Bbc^3-}{384c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(7*B*b^4 - 8*A*b^3*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*
x)*sqrt(c)) - 2*(48*B*c^4*x^3 - 105*B*b^3*c + 120*A*b^2*c^2 - 8*(7*B*b*c^3
- 8*A*c^4)*x^2 + 10*(7*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1
/192*(15*(7*B*b^4 - 8*A*b^3*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(
c*x)) - (48*B*c^4*x^3 - 105*B*b^3*c + 120*A*b^2*c^2 - 8*(7*B*b*c^3 - 8*A*c^
4)*x^2 + 10*(7*B*b^2*c^2 - 8*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.27, size = 137, normalized size = 0.85

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(\frac{6Bx}{c}-\frac{7Bbc^2-8Ac^3}{c^4}\right)x+\frac{5\left(7Bb^2c-8Abc^2\right)}{c^4}\right)x-\frac{15\left(7Bb^3-8Ab^2c\right)}{c^4}\right)-\frac{5\left(7Bb^4-8Ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x/c - (7*B*b*c^2 - 8*A*c^3)/c^4)*x + 5*(
7*B*b^2*c - 8*A*b*c^2)/c^4)*x - 15*(7*B*b^3 - 8*A*b^2*c)/c^4) - 5/128*(7*B*
b^4 - 8*A*b^3*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c
^(9/2)
```

maple [A] time = 0.05, size = 209, normalized size = 1.29

$$\frac{\sqrt{c\,x^2+bx}\;B\,x^3}{4c}+\frac{\sqrt{c\,x^2+bx}\;A\,x^2}{3c}-\frac{7\sqrt{c\,x^2+bx}\;Bb\,x^2}{24c^2}-\frac{5A\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{35B\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2}\right.}{128c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+b*x)^(1/2)/c-7/24*B*b/c^2*x^2*(c*x^2+b*x)^(1/2)+35/96*B*b^
2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*B*b^3/c^4*(c*x^2+b*x)^(1/2)+35/128*B*b^4/c^
(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*A*x^2/c*(c*x^2+b*x)^(1/
2)-5/12*A*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*A*b^2/c^3*(c*x^2+b*x)^(1/2)-5/16*A*
b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.87, size = 206, normalized size = 1.27

$$\frac{\sqrt{cx^2+bx}\,Bx^3}{4\,c}-\frac{7\,\sqrt{cx^2+bx}\,Bbx^2}{24\,c^2}+\frac{\sqrt{cx^2+bx}\,Ax^2}{3\,c}+\frac{35\,\sqrt{cx^2+bx}\,Bb^2x}{96\,c^3}-\frac{5\,\sqrt{cx^2+bx}\,Abx}{12\,c^2}+\frac{35\,Bb^4\log\left(2\,cx+b\right.}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*x^3/c - 7/24*sqrt(c*x^2 + b*x)*B*b*x^2/c^2 + 1/3*sq
rt(c*x^2 + b*x)*A*x^2/c + 35/96*sqrt(c*x^2 + b*x)*B*b^2*x/c^3 - 5/12*sqrt(c
*x^2 + b*x)*A*b*x/c^2 + 35/128*B*b^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sq
rt(c))/c^(9/2) - 5/16*A*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(7/2) - 35/64*sqrt(c*x^2 + b*x)*B*b^3/c^4 + 5/8*sqrt(c*x^2 + b*x)*A*b^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.111 $\int \frac{x^2(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=127

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{7/2}}+\frac{b\sqrt{bx+cx^2}\,(5bB-6Ac)}{8c^3}-\frac{x\sqrt{bx+cx^2}\,(5bB-6Ac)}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}$$

```
[Out] -1/8*b^2*(-6*A*c+5*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+1/8*b*
(-6*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/c^3-1/12*(-6*A*c+5*B*b)*x*(c*x^2+b*x)^(1/2
)/c^2+1/3*B*x^2*(c*x^2+b*x)^(1/2)/c
```

Rubi [A] time = 0.12, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {794, 670, 640, 620, 206}

$$-\frac{b^2(5bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{7/2}}+\frac{b\sqrt{bx+cx^2}\,(5bB-6Ac)}{8c^3}-\frac{x\sqrt{bx+cx^2}\,(5bB-6Ac)}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (b*(5*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(8*c^3) - ((5*b*B - 6*A*c)*x*Sqrt[b*x
 + c*x^2])/(12*c^2) + (B*x^2*Sqrt[b*x + c*x^2])/(3*c) - (b^2*(5*b*B - 6*A*c
)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
```

```
/; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{Bx^2\sqrt{bx+cx^2}}{3c}+\frac{\left(2(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{3c}\\
&= -\frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}+\frac{(b(5bB-6Ac))\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{8c^2}\\
&= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3}-\frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}-\frac{\left(b^2(5bB-6Ac)\right)}{16c}\\
&= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3}-\frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}-\frac{\left(b^2(5bB-6Ac)\right)}{}\\
&= \frac{b(5bB-6Ac)\sqrt{bx+cx^2}}{8c^3}-\frac{(5bB-6Ac)x\sqrt{bx+cx^2}}{12c^2}+\frac{Bx^2\sqrt{bx+cx^2}}{3c}-\frac{b^2(5bB-6Ac)\,\mathrm{ta}}{8c}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 116, normalized size = 0.91

$$
\frac{\sqrt{c}\,x(b+cx)\left(-2bc(9A+5Bx)+4c^2x(3A+2Bx)+15b^2B\right)-3b^{5/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(5bB-6Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{24c^{7/2}\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(15*b^2*B + 4*c^2*x*(3*A + 2*B*x) - 2*b*c*(9*A + 5*B*x
)) - 3*b^(5/2)*(5*b*B - 6*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(24*c^(7/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.98, size = 207, normalized size = 1.63

$$
\left[-\frac{3\left(5\,Bb^3-6\,Ab^2c\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(8\,Bc^3x^2+15\,Bb^2c-18\,Abc^2-2\left(5\,Bbc^2-6\,Ac\right.\right.}{48\,c^4}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c)) - 2*(8*B*c^3*x^2 + 15*B*b^2*c - 18*A*b*c^2 - 2*(5*B*b*c^2 - 6*A*c
^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/24*(3*(5*B*b^3 - 6*A*b^2*c)*sqrt(-c)*arcta
n(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^3*x^2 + 15*B*b^2*c - 18*A*b*c^
2 - 2*(5*B*b*c^2 - 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.23, size = 109, normalized size = 0.86

$$
\frac{1}{24}\,\sqrt{cx^2+bx}\left(2\left(\frac{4\,Bx}{c}-\frac{5\,Bbc-6\,Ac^2}{c^3}\right)x+\frac{3\left(5\,Bb^2-6\,Abc\right)}{c^3}\right)+\frac{\left(5\,Bb^3-6\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right.\right.\right.}{16\,c^{\frac{7}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x/c - (5*B*b*c - 6*A*c^2)/c^3)*x + 3*(5*B*b^
2 - 6*A*b*c)/c^3) + 1/16*(5*B*b^3 - 6*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [A] time = 0.06, size = 163, normalized size = 1.28

$$\frac{\sqrt{c\,x^2+bx}\;B\,x^2}{3c}+\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{5B\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{7}{2}}}+\frac{\sqrt{c\,x^2+bx}\;Ax}{2c}-\frac{5\sqrt{c\,x^2+bx}\;Bb}{12c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+b*x)^(1/2)/c-5/12*B*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*B*b^2/c^
3*(c*x^2+b*x)^(1/2)-5/16*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))+1/2*A*x/c*(c*x^2+b*x)^(1/2)-3/4*A*b/c^2*(c*x^2+b*x)^(1/2)+3/8*A*b^2/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.92, size = 160, normalized size = 1.26

$$\frac{\sqrt{cx^2+bx}\,Bx^2}{3\,c}-\frac{5\,\sqrt{cx^2+bx}\,Bbx}{12\,c^2}+\frac{\sqrt{cx^2+bx}\,Ax}{2\,c}-\frac{5\,Bb^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{16\,c^{\frac{7}{2}}}+\frac{3\,Ab^2\log\left(2\,cx+b+\right.}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + b*x)*B*x^2/c - 5/12*sqrt(c*x^2 + b*x)*B*b*x/c^2 + 1/2*sqrt
(c*x^2 + b*x)*A*x/c - 5/16*B*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
))/c^(7/2) + 3/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2)
 + 5/8*sqrt(c*x^2 + b*x)*B*b^2/c^3 - 3/4*sqrt(c*x^2 + b*x)*A*b/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.112 $\int \frac{x(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=75

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

```
[Out] 1/4*b*(-4*A*c+3*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)-1/4*(-2*B
*c*x-4*A*c+3*B*b)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.03, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {779, 620, 206}

$$\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x)*Sqrt[b*x + c*x^2])/(4*c^2) + (b*(3*b*B - 4*A*c)
*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{(b(3bB-4Ac))\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{8c^2}\\ &= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{(b(3bB-4Ac))\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{4c^2}\\ &= -\frac{(3bB-4Ac-2Bcx)\sqrt{bx+cx^2}}{4c^2}+\frac{b(3bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 96, normalized size = 1.28

$$\frac{b^{3/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(3bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\,x(b+cx)(4Ac-3bB+2Bcx)}{4c^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(-3*b*B + 4*A*c + 2*B*c*x) + b^(3/2)*(3*b*B - 4*A*c)*S
qrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*c^(5/2)*Sqr
t[x*(b + c*x)])
```

fricas [A] time = 0.69, size = 158, normalized size = 2.11

$$\left[-\frac{\left(3\,Bb^{2}-4\,Abc\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)-2\,\left(2\,Bc^{2}x-3\,Bbc+4\,Ac^{2}\right)\sqrt{cx^{2}+bx}}{8\,c^{3}},\,-\frac{\left(3\,Bb^{2}-4\,Abc\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((3*B*b^2 - 4*A*b*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt
(c)) - 2*(2*B*c^2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^3, -1/4*((3*B
*b^2 - 4*A*b*c)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (2*B*c^
2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A] time = 0.24, size = 83, normalized size = 1.11

$$\frac{1}{4}\,\sqrt{cx^{2}+bx}\left(\frac{2\,Bx}{c}-\frac{3\,Bb-4\,Ac}{c^{2}}\right)-\frac{\left(3\,Bb^{2}-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx}\right)\sqrt{c}\,-b\right|\right)}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c - (3*B*b - 4*A*c)/c^2) - 1/8*(3*B*b^2 - 4*A*
b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 118, normalized size = 1.57

$$-\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2c^{\frac{3}{2}}}+\frac{3B\,b^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{8c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^{2}+bx}\;Bx}{2c}+\frac{\sqrt{c\,x^{2}+bx}\;A}{c}-\frac{3\sqrt{c\,x^{2}+bx}\;Bb}{4c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+b*x)^(1/2)-3/4*B*b/c^2*(c*x^2+b*x)^(1/2)+3/8*B*b^2/c^(5/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+A/c*(c*x^2+b*x)^(1/2)-1/2*A*b/c^
(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.79, size = 115, normalized size = 1.53

$$\frac{\sqrt{cx^{2}+bx}\,Bx}{2\,c}+\frac{3\,Bb^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}-\frac{Ab\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}-\frac{3\,\sqrt{cx^{2}+bx}\,Bb}{4\,c^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*x/c + 3/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(5/2) - 1/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(3/2) - 3/4*sqrt(c*x^2 + b*x)*B*b/c^2 + sqrt(c*x^2 + b*x)*A/c
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,(A+B\,x)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.113 $\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=55

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

```
[Out] -(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)+B*(c*x^2+b*x)^(1
/2)/c
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {640, 620, 206}

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx &= \frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c}\\ &= \frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\ &= \frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 80, normalized size = 1.45

$$\frac{B\sqrt{c}\,x(b+cx)-\sqrt{b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[c]*x*(b + c*x) - Sqrt[b]*(b*B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(3/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.96, size = 115, normalized size = 2.09

$$\Bigg[\frac{2\sqrt{cx^2+bx}\,Bc-(Bb-2\,Ac)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^2},\ \frac{\sqrt{cx^2+bx}\,Bc+(Bb-2\,Ac)\sqrt{-c}\,\arctan\Big(}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(c*x^2 + b*x)*B*c - (B*b - 2*A*c)*sqrt(c)*log(2*c*x + b + 2*sqr
t(c*x^2 + b*x)*sqrt(c)))/c^2, (sqrt(c*x^2 + b*x)*B*c + (B*b - 2*A*c)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/c^2]
```

giac [A] time = 0.22, size = 60, normalized size = 1.09

$$\frac{\sqrt{cx^2+bx}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 78, normalized size = 1.42

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B*(c*x^2+b*x)^(1/2)/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1
/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.90, size = 75, normalized size = 1.36

$$-\frac{Bb\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}+\frac{A\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+bx}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + A*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + sqrt(c*x^2 + b*x)*B/c
```

mupad [B] time = 1.35, size = 77, normalized size = 1.40

$$\frac{A\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{\sqrt{c}}+\frac{B\,\sqrt{c\,x^2+b\,x}}{c}-\frac{B\,b\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) + (B*(b*x + c*x^
2)^(1/2))/c - (B*b*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(3/
2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(x*(b + c*x)), x)
```

3.114 $\int \frac{A+Bx}{x\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=52

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\sqrt{bx+cx^2}}{bx}$$

```
[Out] 2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(1/2)-2*A*(c*x^2+b*x)^(1/2)/b/x
```

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 620, 206}

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}-\frac{2A\sqrt{bx+cx^2}}{bx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(b*x) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]
])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{bx}+B\int \frac{1}{\sqrt{bx+cx^2}}\,dx\\ &= -\frac{2A\sqrt{bx+cx^2}}{bx}+(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)\\ &= -\frac{2A\sqrt{bx+cx^2}}{bx}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 69, normalized size = 1.33

$$\frac{2\sqrt{x(b+cx)}\left(\frac{\sqrt{b}B\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\sqrt{\frac{cx}{b}+1}}-A\right)}{bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-A + (Sqrt[b]*B*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]])/(Sqrt[c]*Sqrt[1 + (c*x)/b])))/(b*x)
```

fricas [A] time = 0.90, size = 116, normalized size = 2.23

$$\left[\frac{Bb\sqrt{c}\,x\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\sqrt{cx^2+bx}\,Ac}{bcx},-\frac{2\left(Bb\sqrt{-c}\,x\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-c}}{cx}\right)+\sqrt{cx^2+bx}\,Ac\right)}{bcx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [(B*b*sqrt(c)*x*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*sqrt(c*x^2
 + b*x)*A*c)/(b*c*x), -2*(B*b*sqrt(-c)*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/
(c*x)) + sqrt(c*x^2 + b*x)*A*c)/(b*c*x)]
```

giac [A] time = 0.32, size = 59, normalized size = 1.13

$$-\frac{B\log\left(\left|2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right|\right)}{\sqrt{c}}+\frac{2\,A}{\sqrt{c}\,x-\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -B*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 2*A/(s
qrt(c)*x - sqrt(c*x^2 + b*x))
```

maple [A] time = 0.05, size = 51, normalized size = 0.98

$$\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{2\sqrt{c\,x^2+bx}\;A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)-2*A*(c*x^2+b*x)^(1/2)/b
/x
```

maxima [A] time = 0.73, size = 49, normalized size = 0.94

$$\frac{B\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}-\frac{2\,\sqrt{cx^2+bx}\,A}{bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] B*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) - 2*sqrt(c*x^2 + b*x
)*A/(b*x)
```

mupad [B] time = 1.27, size = 50, normalized size = 0.96

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{\sqrt{c}}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{b\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) - (2*A*(b*x + c*
x^2)^(1/2))/(b*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x*sqrt(x*(b + c*x))), x)
```

3.115 $\int \frac{A+Bx}{x^2\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=57

$$-\frac{2\sqrt{bx+cx^2}\,(3bB-2Ac)}{3b^2x}-\frac{2A\sqrt{bx+cx^2}}{3bx^2}$$

```
[Out] -2/3*A*(c*x^2+b*x)^(1/2)/b/x^2-2/3*(-2*A*c+3*B*b)*(c*x^2+b*x)^(1/2)/b^2/x
```

Rubi [**A**] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 650}

$$-\frac{2\sqrt{bx+cx^2}\,(3bB-2Ac)}{3b^2x}-\frac{2A\sqrt{bx+cx^2}}{3bx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(3*b*x^2) - (2*(3*b*B - 2*A*c)*Sqrt[b*x + c*x^2])/
(3*b^2*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\sqrt{bx+cx^2}}\,dx&=-\frac{2A\sqrt{bx+cx^2}}{3bx^2}+\frac{\left(2\left(-2(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x\sqrt{bx+cx^2}}\,dx}{3b}\\&=-\frac{2A\sqrt{bx+cx^2}}{3bx^2}-\frac{2(3bB-2Ac)\sqrt{bx+cx^2}}{3b^2x}\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 35, normalized size = 0.61

$$-\frac{2\sqrt{x(b+cx)}\,(A(b-2cx)+3bBx)}{3b^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(3*b*B*x + A*(b - 2*c*x)))/(3*b^2*x^2)
```

fricas [A] time = 0.72, size = 34, normalized size = 0.60

$$-\frac{2\sqrt{cx^2+bx}\,(Ab+(3\,Bb-2\,Ac)x)}{3\,b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(c*x^2 + b*x)*(A*b + (3*B*b - 2*A*c)*x)/(b^2*x^2)
```

giac [A] time = 0.22, size = 76, normalized size = 1.33

$$\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2B+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)A\sqrt{c}+Ab\right)}{3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B + 3*(sqrt(c)*x - sqrt(c*x^2 + b*
x))*A*sqrt(c) + A*b)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
```

maple [A] time = 0.05, size = 39, normalized size = 0.68

$$-\frac{2\,(cx+b)\,(-2Acx+3Bbx+Ab)}{3\sqrt{c\,x^2+bx}\;b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3*(c*x+b)*(-2*A*c*x+3*B*b*x+A*b)/x/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.87, size = 62, normalized size = 1.09

$$-\frac{2\sqrt{cx^2+bx}\,B}{bx}+\frac{4\sqrt{cx^2+bx}\,Ac}{3\,b^2x}-\frac{2\sqrt{cx^2+bx}\,A}{3\,bx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -2*sqrt(c*x^2 + b*x)*B/(b*x) + 4/3*sqrt(c*x^2 + b*x)*A*c/(b^2*x) - 2/3*sqrt
(c*x^2 + b*x)*A/(b*x^2)
```

mupad [B] time = 1.09, size = 33, normalized size = 0.58

$$-\frac{2\sqrt{c\,x^2+b\,x}\;\left(A\,b-2\,A\,c\,x+3\,B\,b\,x\right)}{3\,b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(A*b - 2*A*c*x + 3*B*b*x))/(3*b^2*x^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{x^2\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*sqrt(x*(b + c*x))), x)
```

3.116 $\int \frac{A+Bx}{x^3\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=90

$$\frac{4c\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^3x}-\frac{2\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^2x^2}-\frac{2A\sqrt{bx+cx^2}}{5bx^3}$$

```
[Out] -2/5*A*(c*x^2+b*x)^(1/2)/b/x^3-2/15*(-4*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^
2+4/15*c*(-4*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/b^3/x
```

Rubi [A] time = 0.08, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{4c\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^3x}-\frac{2\sqrt{bx+cx^2}\,(5bB-4Ac)}{15b^2x^2}-\frac{2A\sqrt{bx+cx^2}}{5bx^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(5*b*x^3) - (2*(5*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/
(15*b^2*x^2) + (4*c*(5*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(15*b^3*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^3\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{5bx^3} + \frac{\left(2\left(-3(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^2\sqrt{bx+cx^2}}\,dx}{5b} \\
&= -\frac{2A\sqrt{bx+cx^2}}{5bx^3} - \frac{2(5bB-4Ac)\sqrt{bx+cx^2}}{15b^2x^2} - \frac{(2c(5bB-4Ac))\int \frac{1}{x\sqrt{bx+cx^2}}\,dx}{15b^2} \\
&= -\frac{2A\sqrt{bx+cx^2}}{5bx^3} - \frac{2(5bB-4Ac)\sqrt{bx+cx^2}}{15b^2x^2} + \frac{4c(5bB-4Ac)\sqrt{bx+cx^2}}{15b^3x}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 54, normalized size = 0.60

$$
-\frac{2\sqrt{x(b+cx)}\,\left(A\left(3b^2-4bcx+8c^2x^2\right)+5bBx(b-2cx)\right)}{15b^3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(5*b*B*x*(b - 2*c*x) + A*(3*b^2 - 4*b*c*x + 8*c^2*x^2
)))/(15*b^3*x^3)
```

fricas [**A**] time = 0.93, size = 57, normalized size = 0.63

$$
-\frac{2\left(3\,Ab^2-2\left(5\,Bbc-4\,Ac^2\right)x^2+\left(5\,Bb^2-4\,Abc\right)x\right)\sqrt{cx^2+bx}}{15\,b^3x^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^2 - 2*(5*B*b*c - 4*A*c^2)*x^2 + (5*B*b^2 - 4*A*b*c)*x)*sqrt(c*
x^2 + b*x)/(b^3*x^3)
```

giac [**A**] time = 0.22, size = 133, normalized size = 1.48

$$
\frac{2\left(15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3B\sqrt{c}\,+5\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb+20\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Ac+15\left(\sqrt{c}\,x-\sqrt{cx^2+b}\right.\right.}{15\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*sqrt(c) + 5*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c + 15*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*A*b*sqrt(c) + 3*A*b^2)/(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5
```

maple [**A**] time = 0.05, size = 62, normalized size = 0.69

$$
-\frac{2\,(cx+b)\left(8A\,c^2x^2-10Bbc\,x^2-4Abcx+5B\,b^2x+3A\,b^2\right)}{15\sqrt{c\,x^2+bx}\;b^3x^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/15*(c*x+b)*(8*A*c^2*x^2-10*B*b*c*x^2-4*A*b*c*x+5*B*b^2*x+3*A*b^2)/x^2/b^
3/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.92, size = 106, normalized size = 1.18

$$\frac{4\sqrt{cx^2+bx}\,Bc}{3\,b^2x}-\frac{16\sqrt{cx^2+bx}\,Ac^2}{15\,b^3x}-\frac{2\sqrt{cx^2+bx}\,B}{3\,bx^2}+\frac{8\sqrt{cx^2+bx}\,Ac}{15\,b^2x^2}-\frac{2\sqrt{cx^2+bx}\,A}{5\,bx^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 4/3*sqrt(c*x^2 + b*x)*B*c/(b^2*x) - 16/15*sqrt(c*x^2 + b*x)*A*c^2/(b^3*x) -
 2/3*sqrt(c*x^2 + b*x)*B/(b*x^2) + 8/15*sqrt(c*x^2 + b*x)*A*c/(b^2*x^2) - 2
/5*sqrt(c*x^2 + b*x)*A/(b*x^3)
```

mupad [B] time = 1.09, size = 56, normalized size = 0.62

$$-\frac{2\sqrt{c\,x^2+b\,x}\,\left(5\,B\,b^2\,x+3\,A\,b^2-10\,B\,b\,c\,x^2-4\,A\,b\,c\,x+8\,A\,c^2\,x^2\right)}{15\,b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^2 + 8*A*c^2*x^2 + 5*B*b^2*x - 10*B*b*c*x^2 -
 4*A*b*c*x))/(15*b^3*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*sqrt(x*(b + c*x))), x)
```

3.117 $\int \frac{A+Bx}{x^4\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=125

$$-\frac{16c^2\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^4x}+\frac{8c\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^3x^2}-\frac{2\sqrt{bx+cx^2}\,(7bB-6Ac)}{35b^2x^3}-\frac{2A\sqrt{bx+cx^2}}{7bx^4}$$

```
[Out] -2/7*A*(c*x^2+b*x)^(1/2)/b/x^4-2/35*(-6*A*c+7*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^
3+8/105*c*(-6*A*c+7*B*b)*(c*x^2+b*x)^(1/2)/b^3/x^2-16/105*c^2*(-6*A*c+7*B*b
)*(c*x^2+b*x)^(1/2)/b^4/x
```

Rubi [A] time = 0.11, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{16c^2\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^4x}+\frac{8c\sqrt{bx+cx^2}\,(7bB-6Ac)}{105b^3x^2}-\frac{2\sqrt{bx+cx^2}\,(7bB-6Ac)}{35b^2x^3}-\frac{2A\sqrt{bx+cx^2}}{7bx^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(7*b*x^4) - (2*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/
(35*b^2*x^3) + (8*c*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(105*b^3*x^2) - (16*
c^2*(7*b*B - 6*A*c)*Sqrt[b*x + c*x^2])/(105*b^4*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{7bx^4}+\frac{\left(2\left(-4(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^3\sqrt{bx+cx^2}}\,dx}{7b}\\ &= -\frac{2A\sqrt{bx+cx^2}}{7bx^4}-\frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3}-\frac{(4c(7bB-6Ac))\int \frac{1}{x^2\sqrt{bx+cx^2}}\,dx}{35b^2}\\ &= -\frac{2A\sqrt{bx+cx^2}}{7bx^4}-\frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3}+\frac{8c(7bB-6Ac)\sqrt{bx+cx^2}}{105b^3x^2}+\big(8c^2(7bB-6\\ &= -\frac{2A\sqrt{bx+cx^2}}{7bx^4}-\frac{2(7bB-6Ac)\sqrt{bx+cx^2}}{35b^2x^3}+\frac{8c(7bB-6Ac)\sqrt{bx+cx^2}}{105b^3x^2}-\frac{16c^2(7bB-6}{10}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 79, normalized size = 0.63

$$-\frac{2\sqrt{x(b+cx)}\left(3A\left(5b^3-6b^2cx+8bc^2x^2-16c^3x^3\right)+7bBx\left(3b^2-4bcx+8c^2x^2\right)\right)}{105b^4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(7*b*B*x*(3*b^2 - 4*b*c*x + 8*c^2*x^2) + 3*A*(5*b^3 -
 6*b^2*c*x + 8*b*c^2*x^2 - 16*c^3*x^3)))/(105*b^4*x^4)
```

fricas [**A**] time = 0.85, size = 82, normalized size = 0.66

$$-\frac{2\left(15\,Ab^3+8\left(7\,Bbc^2-6\,Ac^3\right)x^3-4\left(7\,Bb^2c-6\,Abc^2\right)x^2+3\left(7\,Bb^3-6\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{105\,b^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^3 + 8*(7*B*b*c^2 - 6*A*c^3)*x^3 - 4*(7*B*b^2*c - 6*A*b*c^2)*
x^2 + 3*(7*B*b^3 - 6*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*x^4)
```

giac [**A**] time = 0.22, size = 191, normalized size = 1.53

$$\frac{2\left(140\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bc+105\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3Bb\sqrt{c}+210\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^3Ac^{\frac{3}{2}}+21\left(\sqrt{c}\,x-\right.\right.}{105\left(\sqrt{c}\,x-\sqrt{cx^2+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(140*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c + 105*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*B*b*sqrt(c) + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(3/2)
 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2 + 252*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^2*A*b*c + 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*sqrt(c) + 15*A
*b^3)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
```

maple [**A**] time = 0.05, size = 86, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-48A\,c^3x^3+56Bb\,c^2x^3+24Ab\,c^2x^2-28B\,b^2c\,x^2-18A\,b^2cx+21B\,b^3x+15A\,b^3\right)}{105\sqrt{c\,x^2+bx}\;b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/105*(c*x+b)*(-48*A*c^3*x^3+56*B*b*c^2*x^3+24*A*b*c^2*x^2-28*B*b^2*c*x^2-
18*A*b^2*c*x+21*B*b^3*x+15*A*b^3)/x^3/b^4/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.93, size = 152, normalized size = 1.22

$$-\frac{16\sqrt{cx^2+bx}\,Bc^2}{15\,b^3x}+\frac{32\sqrt{cx^2+bx}\,Ac^3}{35\,b^4x}+\frac{8\sqrt{cx^2+bx}\,Bc}{15\,b^2x^2}-\frac{16\sqrt{cx^2+bx}\,Ac^2}{35\,b^3x^2}-\frac{2\sqrt{cx^2+bx}\,B}{5\,bx^3}+\frac{12\sqrt{cx^2+bx}\,Ac}{35\,b^2x^3}-\ 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x) + 32/35*sqrt(c*x^2 + b*x)*A*c^3/(b^4
*x) + 8/15*sqrt(c*x^2 + b*x)*B*c/(b^2*x^2) - 16/35*sqrt(c*x^2 + b*x)*A*c^2/
(b^3*x^2) - 2/5*sqrt(c*x^2 + b*x)*B/(b*x^3) + 12/35*sqrt(c*x^2 + b*x)*A*c/(
b^2*x^3) - 2/7*sqrt(c*x^2 + b*x)*A/(b*x^4)
```

mupad [B] time = 1.12, size = 113, normalized size = 0.90

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(96\,A\,c^3-112\,B\,b\,c^2\right)}{105\,b^4\,x}-\frac{\left(48\,A\,c^2-56\,B\,b\,c\right)\sqrt{c\,x^2+b\,x}}{105\,b^3\,x^2}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{7\,b\,x^4}+\frac{\sqrt{c\,x^2+b\,x}\,\left(12\,A\,c-14\right.}{35\,b^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(96*A*c^3 - 112*B*b*c^2))/(105*b^4*x) - ((48*A*c^2 - 5
6*B*b*c)*(b*x + c*x^2)^(1/2))/(105*b^3*x^2) - (2*A*(b*x + c*x^2)^(1/2))/(7*
b*x^4) + ((b*x + c*x^2)^(1/2)*(12*A*c - 14*B*b))/(35*b^2*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^4\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*sqrt(x*(b + c*x))), x)
```

3.118 $\int \frac{A+Bx}{x^5\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=160

$$\frac{32c^3\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^5x}-\frac{16c^2\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^4x^2}+\frac{4c\sqrt{bx+cx^2}\,(9bB-8Ac)}{105b^3x^3}-\frac{2\sqrt{bx+cx^2}\,(9bB-8A}{63b^2x^4}$$

```
[Out] -2/9*A*(c*x^2+b*x)^(1/2)/b/x^5-2/63*(-8*A*c+9*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^
4+4/105*c*(-8*A*c+9*B*b)*(c*x^2+b*x)^(1/2)/b^3/x^3-16/315*c^2*(-8*A*c+9*B*b
)*(c*x^2+b*x)^(1/2)/b^4/x^2+32/315*c^3*(-8*A*c+9*B*b)*(c*x^2+b*x)^(1/2)/b^5
/x
```

Rubi [A] time = 0.14, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$\frac{32c^3\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^5x}-\frac{16c^2\sqrt{bx+cx^2}\,(9bB-8Ac)}{315b^4x^2}+\frac{4c\sqrt{bx+cx^2}\,(9bB-8Ac)}{105b^3x^3}-\frac{2\sqrt{bx+cx^2}\,(9bB-8A}{63b^2x^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(9*b*x^5) - (2*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/
(63*b^2*x^4) + (4*c*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(105*b^3*x^3) - (16*
c^2*(9*b*B - 8*A*c)*Sqrt[b*x + c*x^2])/(315*b^4*x^2) + (32*c^3*(9*b*B - 8*A
*c)*Sqrt[b*x + c*x^2])/(315*b^5*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^5\sqrt{bx+cx^2}}\,dx = -\frac{2A\sqrt{bx+cx^2}}{9bx^5} + \frac{\left(2\left(-5(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^4\sqrt{bx+cx^2}}\,dx}{9b}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} - \frac{(2c(9bB-8Ac))\int \frac{1}{x^3\sqrt{bx+cx^2}}\,dx}{21b^2}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} + \frac{\left(8c^2(9bB-8Ac\right.}{10}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} - \frac{16c^2(9bB-8Ac}{315b^4}$$

$$= -\frac{2A\sqrt{bx+cx^2}}{9bx^5} - \frac{2(9bB-8Ac)\sqrt{bx+cx^2}}{63b^2x^4} + \frac{4c(9bB-8Ac)\sqrt{bx+cx^2}}{105b^3x^3} - \frac{16c^2(9bB-8Ac}{315b^4}$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.62

$$-\frac{2\sqrt{x(b+cx)}\left(A\left(35b^4-40b^3cx+48b^2c^2x^2-64bc^3x^3+128c^4x^4\right)+9bBx\left(5b^3-6b^2cx+8bc^2x^2-16c^3x^3\right)\right)}{315b^5x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(9*b*B*x*(5*b^3 - 6*b^2*c*x + 8*b*c^2*x^2 - 16*c^3*x^
3) + A*(35*b^4 - 40*b^3*c*x + 48*b^2*c^2*x^2 - 64*b*c^3*x^3 + 128*c^4*x^4))
)/(315*b^5*x^5)
```

fricas [A] time = 0.98, size = 106, normalized size = 0.66

$$-\frac{2\left(35\,Ab^4-16\left(9\,Bbc^3-8\,Ac^4\right)x^4+8\left(9\,Bb^2c^2-8\,Abc^3\right)x^3-6\left(9\,Bb^3c-8\,Ab^2c^2\right)x^2+5\left(9\,Bb^4-8\,Ab^3c\right)x\right)\sqrt{c}}{315\,b^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^4 - 16*(9*B*b*c^3 - 8*A*c^4)*x^4 + 8*(9*B*b^2*c^2 - 8*A*b*c^
3)*x^3 - 6*(9*B*b^3*c - 8*A*b^2*c^2)*x^2 + 5*(9*B*b^4 - 8*A*b^3*c)*x)*sqrt(
c*x^2 + b*x)/(b^5*x^5)
```

giac [A] time = 0.22, size = 251, normalized size = 1.57

$$\frac{2\left(630\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Bc^{\frac{3}{2}}+756\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Bbc+1008\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^4Ac^2+315\left(\sqrt{c}\,x-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(630*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(3/2) + 756*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b*c + 1008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^2 +
315*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c) + 1680*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^3*A*b*c^(3/2) + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3
+ 1080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c + 315*(sqrt(c)*x - sqrt(c*
x^2 + b*x))*A*b^3*sqrt(c) + 35*A*b^4)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
```

maple [A] time = 0.05, size = 110, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(128A\,c^{4}x^{4}-144Bb\,c^{3}x^{4}-64Ab\,c^{3}x^{3}+72B\,b^{2}c^{2}x^{3}+48A\,b^{2}c^{2}x^{2}-54B\,b^{3}c\,x^{2}-40A\,b^{3}cx+45b^{4}}{315\sqrt{c\,x^{2}+bx}\;b^{5}x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(128*A*c^4*x^4-144*B*b*c^3*x^4-64*A*b*c^3*x^3+72*B*b^2*c^2*x
^3+48*A*b^2*c^2*x^2-54*B*b^3*c*x^2-40*A*b^3*c*x+45*B*b^4*x+35*A*b^4)/x^4/b^
5/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.89, size = 198, normalized size = 1.24

$$\frac{32\sqrt{cx^{2}+bx}\,Bc^{3}}{35\,b^{4}x}-\frac{256\sqrt{cx^{2}+bx}\,Ac^{4}}{315\,b^{5}x}-\frac{16\sqrt{cx^{2}+bx}\,Bc^{2}}{35\,b^{3}x^{2}}+\frac{128\sqrt{cx^{2}+bx}\,Ac^{3}}{315\,b^{4}x^{2}}+\frac{12\sqrt{cx^{2}+bx}\,Bc}{35\,b^{2}x^{3}}-\frac{32\sqrt{cx^{2}+}}{105\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 32/35*sqrt(c*x^2 + b*x)*B*c^3/(b^4*x) - 256/315*sqrt(c*x^2 + b*x)*A*c^4/(b^
5*x) - 16/35*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x^2) + 128/315*sqrt(c*x^2 + b*x)*
A*c^3/(b^4*x^2) + 12/35*sqrt(c*x^2 + b*x)*B*c/(b^2*x^3) - 32/105*sqrt(c*x^2
 + b*x)*A*c^2/(b^3*x^3) - 2/7*sqrt(c*x^2 + b*x)*B/(b*x^4) + 16/63*sqrt(c*x^
2 + b*x)*A*c/(b^2*x^4) - 2/9*sqrt(c*x^2 + b*x)*A/(b*x^5)
```

mupad [B] time = 1.10, size = 146, normalized size = 0.91

$$\frac{\sqrt{c\,x^{2}+b\,x}\;\left(128\,A\,c^{3}-144\,B\,b\,c^{2}\right)}{315\,b^{4}\,x^{2}}-\frac{\sqrt{c\,x^{2}+b\,x}\;\left(256\,A\,c^{4}-288\,B\,b\,c^{3}\right)}{315\,b^{5}\,x}-\frac{\left(32\,A\,c^{2}-36\,B\,b\,c\right)\,\sqrt{c\,x^{2}+b\,x}}{105\,b^{3}\,x^{3}}-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(128*A*c^3 - 144*B*b*c^2))/(315*b^4*x^2) - ((b*x + c*x
^2)^(1/2)*(256*A*c^4 - 288*B*b*c^3))/(315*b^5*x) - ((32*A*c^2 - 36*B*b*c)*(
b*x + c*x^2)^(1/2))/(105*b^3*x^3) - (2*A*(b*x + c*x^2)^(1/2))/(9*b*x^5) + (
(b*x + c*x^2)^(1/2)*(16*A*c - 18*B*b))/(63*b^2*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{5}\sqrt{x\left(b+cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**5*sqrt(x*(b + c*x))), x)
```

3.119 $\int \frac{A+Bx}{x^6\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=195

$$-\frac{256c^4\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^6x}+\frac{128c^3\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^5x^2}-\frac{32c^2\sqrt{bx+cx^2}\,(11bB-10Ac)}{1155b^4x^3}+\frac{16c\sqrt{bx+cx}}{69}$$

```
[Out] -2/11*A*(c*x^2+b*x)^(1/2)/b/x^6-2/99*(-10*A*c+11*B*b)*(c*x^2+b*x)^(1/2)/b^2
/x^5+16/693*c*(-10*A*c+11*B*b)*(c*x^2+b*x)^(1/2)/b^3/x^4-32/1155*c^2*(-10*A
*c+11*B*b)*(c*x^2+b*x)^(1/2)/b^4/x^3+128/3465*c^3*(-10*A*c+11*B*b)*(c*x^2+b
*x)^(1/2)/b^5/x^2-256/3465*c^4*(-10*A*c+11*B*b)*(c*x^2+b*x)^(1/2)/b^6/x
```

Rubi [A] time = 0.18, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 650}

$$-\frac{256c^4\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^6x}+\frac{128c^3\sqrt{bx+cx^2}\,(11bB-10Ac)}{3465b^5x^2}-\frac{32c^2\sqrt{bx+cx^2}\,(11bB-10Ac)}{1155b^4x^3}+\frac{16c\sqrt{bx+cx}}{69}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[b*x + c*x^2])/(11*b*x^6) - (2*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2
])/(99*b^2*x^5) + (16*c*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(693*b^3*x^4)
- (32*c^2*(11*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(1155*b^4*x^3) + (128*c^3*(1
1*b*B - 10*A*c)*Sqrt[b*x + c*x^2])/(3465*b^5*x^2) - (256*c^4*(11*b*B - 10*A
*c)*Sqrt[b*x + c*x^2])/(3465*b^6*x)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^6\sqrt{bx+cx^2}}\,dx &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}+\frac{\left(2\left(-6(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{1}{x^5\sqrt{bx+cx^2}}\,dx}{11b}\\ &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}-\frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5}-\frac{(8c(11bB-10Ac))\int \frac{1}{x^4\sqrt{bx+cx^2}}\,dx}{99b^2}\\ &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}-\frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5}+\frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4}+\left(16c^2(1\right.\\ &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}-\frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5}+\frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4}-32c^2(11\\ &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}-\frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5}+\frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4}-32c^2(11\\ &= -\frac{2A\sqrt{bx+cx^2}}{11bx^6}-\frac{2(11bB-10Ac)\sqrt{bx+cx^2}}{99b^2x^5}+\frac{16c(11bB-10Ac)\sqrt{bx+cx^2}}{693b^3x^4}-32c^2(11\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 123, normalized size = 0.63

$$-\frac{2\sqrt{x(b+cx)}\left(5A\left(63b^5-70b^4cx+80b^3c^2x^2-96b^2c^3x^3+128bc^4x^4-256c^5x^5\right)+11bBx\left(35b^4-40b^3cx+4\right.\right.}{3465b^6x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(11*b*B*x*(35*b^4 - 40*b^3*c*x + 48*b^2*c^2*x^2 - 64*
b*c^3*x^3 + 128*c^4*x^4) + 5*A*(63*b^5 - 70*b^4*c*x + 80*b^3*c^2*x^2 - 96*b
^2*c^3*x^3 + 128*b*c^4*x^4 - 256*c^5*x^5)))/(3465*b^6*x^6)
```

fricas [**A**] time = 0.89, size = 130, normalized size = 0.67

$$-\frac{2\left(315\,Ab^5+128\left(11\,Bbc^4-10\,Ac^5\right)x^5-64\left(11\,Bb^2c^3-10\,Abc^4\right)x^4+48\left(11\,Bb^3c^2-10\,Ab^2c^3\right)x^3-40\left(11\,Bb\right.\right.}{3465\,b^6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3465*(315*A*b^5 + 128*(11*B*b*c^4 - 10*A*c^5)*x^5 - 64*(11*B*b^2*c^3 - 1
0*A*b*c^4)*x^4 + 48*(11*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 40*(11*B*b^4*c - 10
*A*b^3*c^2)*x^2 + 35*(11*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*x^6)
```

giac [**A**] time = 0.22, size = 311, normalized size = 1.59

$$2\left(11088\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^6Bc^2+18480\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Bbc^{\frac{3}{2}}+18480\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^5Ac^{\frac{5}{2}}+118\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(11088*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^2 + 18480*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*B*b*c^(3/2) + 18480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*c^(5/2) + 11880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c + 39600*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^4*A*b*c^2 + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*B*b^3*sqrt(c) + 34650*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2) + 38
5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4 + 15400*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^2*A*b^3*c + 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c) + 315
*A*b^5)/(sqrt(c)*x - sqrt(c*x^2 + b*x))^11
```

maple [A] time = 0.05, size = 134, normalized size = 0.69

$$-\frac{2\left(cx+b\right)\left(-1280A\,c^5x^5+1408Bb\,c^4x^5+640Ab\,c^4x^4-704B\,b^2c^3x^4-480A\,b^2c^3x^3+528B\,b^3c^2x^3+400A\,b^3c^2\right.}{3465\sqrt{c\,x^2+bx}\;b^6x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3465*(c*x+b)*(-1280*A*c^5*x^5+1408*B*b*c^4*x^5+640*A*b*c^4*x^4-704*B*b^2
*c^3*x^4-480*A*b^2*c^3*x^3+528*B*b^3*c^2*x^3+400*A*b^3*c^2*x^2-440*B*b^4*c*
x^2-350*A*b^4*c*x+385*B*b^5*x+315*A*b^5)/x^5/b^6/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.95, size = 244, normalized size = 1.25

$$-\frac{256\sqrt{cx^2+bx}\,Bc^4}{315\,b^5x}+\frac{512\sqrt{cx^2+bx}\,Ac^5}{693\,b^6x}+\frac{128\sqrt{cx^2+bx}\,Bc^3}{315\,b^4x^2}-\frac{256\sqrt{cx^2+bx}\,Ac^4}{693\,b^5x^2}-\frac{32\sqrt{cx^2+bx}\,Bc^2}{105\,b^3x^3}+\frac{64\sqrt{cx^2}}{231}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -256/315*sqrt(c*x^2 + b*x)*B*c^4/(b^5*x) + 512/693*sqrt(c*x^2 + b*x)*A*c^5/
(b^6*x) + 128/315*sqrt(c*x^2 + b*x)*B*c^3/(b^4*x^2) - 256/693*sqrt(c*x^2 +
b*x)*A*c^4/(b^5*x^2) - 32/105*sqrt(c*x^2 + b*x)*B*c^2/(b^3*x^3) + 64/231*sq
rt(c*x^2 + b*x)*A*c^3/(b^4*x^3) + 16/63*sqrt(c*x^2 + b*x)*B*c/(b^2*x^4) - 1
60/693*sqrt(c*x^2 + b*x)*A*c^2/(b^3*x^4) - 2/9*sqrt(c*x^2 + b*x)*B/(b*x^5)
+ 20/99*sqrt(c*x^2 + b*x)*A*c/(b^2*x^5) - 2/11*sqrt(c*x^2 + b*x)*A/(b*x^6)
```

mupad [B] time = 1.12, size = 177, normalized size = 0.91

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(320\,A\,c^3-352\,B\,b\,c^2\right)}{1155\,b^4\,x^3}-\frac{\sqrt{c\,x^2+b\,x}\,\left(1280\,A\,c^4-1408\,B\,b\,c^3\right)}{3465\,b^5\,x^2}-\frac{\left(160\,A\,c^2-176\,B\,b\,c\right)\,\sqrt{c\,x^2+b\,x}}{693\,b^3\,x^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(320*A*c^3 - 352*B*b*c^2))/(1155*b^4*x^3) - ((b*x + c*
x^2)^(1/2)*(1280*A*c^4 - 1408*B*b*c^3))/(3465*b^5*x^2) - ((160*A*c^2 - 176*
B*b*c)*(b*x + c*x^2)^(1/2))/(693*b^3*x^4) - (2*A*(b*x + c*x^2)^(1/2))/(11*b
*x^6) + ((b*x + c*x^2)^(1/2)*(20*A*c - 22*B*b))/(99*b^2*x^5) + (256*c^4*(b*
x + c*x^2)^(1/2)*(10*A*c - 11*B*b))/(3465*b^6*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^6\sqrt{x\left(b+cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**6*sqrt(x*(b + c*x))), x)
```

3.120 $\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{9/2}}+\frac{5b\sqrt{bx+cx^2}\,(7bB-6Ac)}{8c^4}-\frac{5x\sqrt{bx+cx^2}\,(7bB-6Ac)}{12c^3}+\frac{x^2\sqrt{bx+cx^2}\,(7b}{3bc^2}$$

```
[Out] -5/8*b^2*(-6*A*c+7*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-2*(-A*
c+B*b)*x^4/b/c/(c*x^2+b*x)^(1/2)+5/8*b*(-6*A*c+7*B*b)*(c*x^2+b*x)^(1/2)/c^4
-5/12*(-6*A*c+7*B*b)*x*(c*x^2+b*x)^(1/2)/c^3+1/3*(-6*A*c+7*B*b)*x^2*(c*x^2+
b*x)^(1/2)/b/c^2
```

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{788, 670, 640, 620, 206\}$

$$-\frac{5b^2(7bB-6Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{8c^{9/2}}+\frac{x^2\sqrt{bx+cx^2}\,(7bB-6Ac)}{3bc^2}-\frac{5x\sqrt{bx+cx^2}\,(7bB-6Ac)}{12c^3}+\frac{5b\sqrt{bx+cx^2}\,(7b}{8c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^4)/(b*c*Sqrt[b*x + c*x^2]) + (5*b*(7*b*B - 6*A*c)*Sqrt[b*
x + c*x^2])/(8*c^4) - (5*(7*b*B - 6*A*c)*x*Sqrt[b*x + c*x^2])/(12*c^3) + ((
7*b*B - 6*A*c)*x^2*Sqrt[b*x + c*x^2])/(3*b*c^2) - (5*b^2*(7*b*B - 6*A*c)*Ar
cTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} - \left(\frac{6A}{b}-\frac{7B}{c}\right)\int \frac{x^3}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{(7bB-6Ac)x^2\sqrt{bx+cx^2}}{3bc^2} - \frac{(5(7bB-6Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{6c^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2\sqrt{bx+cx^2}}{3bc^2} + \frac{(5b(7bB-6Ac}{8}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

$$= -\frac{2(bB-Ac)x^4}{bc\sqrt{bx+cx^2}} + \frac{5b(7bB-6Ac)\sqrt{bx+cx^2}}{8c^4} - \frac{5(7bB-6Ac)x\sqrt{bx+cx^2}}{12c^3} + \frac{(7bB-6Ac)x^2}{3bc^2}$$

Mathematica [A] time = 0.22, size = 137, normalized size = 0.81

$$\frac{\frac{(b+cx)(7bB-6Ac)\left(cx\sqrt{\frac{cx}{b}+1}\left(15b^2-10bcx+8c^2x^2\right)-15b^{5/2}\sqrt{c}\sqrt{x}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{3\sqrt{\frac{cx}{b}+1}}+16c^4x^4(Ac-bB)}{8bc^5\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (16*c^4*(-(b*B) + A*c)*x^4 + ((7*b*B - 6*A*c)*(b + c*x)*(c*x*Sqrt[1 + (c*x)
/b]*(15*b^2 - 10*b*c*x + 8*c^2*x^2) - 15*b^(5/2)*Sqrt[c]*Sqrt[x]*ArcSinh[(S
qrt[c]*Sqrt[x])/Sqrt[b]]))/(3*Sqrt[1 + (c*x)/b]))/(8*b*c^5*Sqrt[x*(b + c*x)
])
```

fricas [A] time = 1.12, size = 313, normalized size = 1.84

$$\Bigg[-\frac{15\left(7\,Bb^4-6\,Ab^3c+\left(7\,Bb^3c-6\,Ab^2c^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(8\,Bc^4x^3+105\,Bb^3c-90\,A}{48\left(c^6x+bc^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^3*c - 6*A*b^2*c^2)*x)*sqrt(c)*log(
2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(8*B*c^4*x^3 + 105*B*b^3*c - 9
0*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A*c^4)*x^2 + 5*(7*B*b^2*c^2 - 6*A*b*c^3)*x)*
sqrt(c*x^2 + b*x))/(c^6*x + b*c^5), 1/24*(15*(7*B*b^4 - 6*A*b^3*c + (7*B*b^
3*c - 6*A*b^2*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (
8*B*c^4*x^3 + 105*B*b^3*c - 90*A*b^2*c^2 - 2*(7*B*b*c^3 - 6*A*c^4)*x^2 + 5*
(7*B*b^2*c^2 - 6*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^6*x + b*c^5)]
```

giac [A]   time = 0.26, size = 163, normalized size = 0.96

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2x\left(\frac{4Bx}{c^2}-\frac{11Bbc^{10}-6Ac^{11}}{c^{13}}\right)+\frac{3\left(19Bb^2c^9-14Abc^{10}\right)}{c^{13}}\right)+\frac{5\left(7Bb^3-6Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}x\right.\right.\right.}{16c^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*x*(4*B*x/c^2 - (11*B*b*c^10 - 6*A*c^11)/c^13) + 3
*(19*B*b^2*c^9 - 14*A*b*c^10)/c^13) + 5/16*(7*B*b^3 - 6*A*b^2*c)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2) + 2*(B*b^4 - A*b^3*c
)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*c + b*sqrt(c))*c^4)
```

maple [A]   time = 0.06, size = 215, normalized size = 1.26

$$\frac{Bx^4}{3\sqrt{cx^2+bx}\,c}+\frac{Ax^3}{2\sqrt{cx^2+bx}\,c}-\frac{7Bbx^3}{12\sqrt{cx^2+bx}\,c^2}-\frac{5Abx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{35Bb^2x^2}{24\sqrt{cx^2+bx}\,c^3}-\frac{15Ab^2x}{4\sqrt{cx^2+bx}\,c^3}+\frac{35B}{8\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/3*B*x^4/c/(c*x^2+b*x)^(1/2)-7/12*B*b/c^2*x^3/(c*x^2+b*x)^(1/2)+35/24*B*b^
2/c^3*x^2/(c*x^2+b*x)^(1/2)+35/8*B*b^3/c^4/(c*x^2+b*x)^(1/2)*x-35/16*B*b^3/
c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/2*A*x^3/c/(c*x^2+b*x)^(
1/2)-5/4*A*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/4*A*b^2/c^3/(c*x^2+b*x)^(1/2)*x+1
5/8*A*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A]   time = 0.94, size = 212, normalized size = 1.25

$$\frac{Bx^4}{3\sqrt{cx^2+bx}\,c}-\frac{7Bbx^3}{12\sqrt{cx^2+bx}\,c^2}+\frac{Ax^3}{2\sqrt{cx^2+bx}\,c}+\frac{35Bb^2x^2}{24\sqrt{cx^2+bx}\,c^3}-\frac{5Abx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{35Bb^3x}{8\sqrt{cx^2+bx}\,c^4}-\frac{15Ab^2}{4\sqrt{cx^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(c*x^2 + b*x)*c) - 7/12*B*b*x^3/(sqrt(c*x^2 + b*x)*c^2) + 1/
2*A*x^3/(sqrt(c*x^2 + b*x)*c) + 35/24*B*b^2*x^2/(sqrt(c*x^2 + b*x)*c^3) - 5
/4*A*b*x^2/(sqrt(c*x^2 + b*x)*c^2) + 35/8*B*b^3*x/(sqrt(c*x^2 + b*x)*c^4) -
 15/4*A*b^2*x/(sqrt(c*x^2 + b*x)*c^3) - 35/16*B*b^3*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c))/c^(9/2) + 15/8*A*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(7/2)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{(x (b + cx))^{\frac{3}{2}}} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.121 $\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=135

$$\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{7/2}}-\frac{3\sqrt{bx+cx^2}\,(5bB-4Ac)}{4c^3}+\frac{x\sqrt{bx+cx^2}\,(5bB-4Ac)}{2bc^2}-\frac{2x^3(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] 3/4*b*(-4*A*c+5*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)-2*(-A*c+B
*b)*x^3/b/c/(c*x^2+b*x)^(1/2)-3/4*(-4*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/c^3+1/2*
(-4*A*c+5*B*b)*x*(c*x^2+b*x)^(1/2)/b/c^2
```

Rubi [A] time = 0.12, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {788, 670, 640, 620, 206}

$$\frac{x\sqrt{bx+cx^2}\,(5bB-4Ac)}{2bc^2}-\frac{3\sqrt{bx+cx^2}\,(5bB-4Ac)}{4c^3}+\frac{3b(5bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{4c^{7/2}}-\frac{2x^3(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^3)/(b*c*Sqrt[b*x + c*x^2]) - (3*(5*b*B - 4*A*c)*Sqrt[b*x
+ c*x^2])/(4*c^3) + ((5*b*B - 4*A*c)*x*Sqrt[b*x + c*x^2])/(2*b*c^2) + (3*b*
(5*b*B - 4*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
```

```
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\left(\frac{4A}{b}-\frac{5B}{c}\right)\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx\\
&= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}-\frac{(3(5bB-4Ac))\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{4c^2}\\
&= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{(3b(5bB-4Ac))}{8c^3}\\
&= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{(3b(5bB-4Ac))}{}\\
&= -\frac{2(bB-Ac)x^3}{bc\sqrt{bx+cx^2}}-\frac{3(5bB-4Ac)\sqrt{bx+cx^2}}{4c^3}+\frac{(5bB-4Ac)x\sqrt{bx+cx^2}}{2bc^2}+\frac{3b(5bB-4Ac)\,\mathrm{ta}}{4c^7}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 109, normalized size = 0.81

$$
\frac{3b^{3/2}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(5bB-4Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+\sqrt{c}\,x\left(bc(12A-5Bx)+2c^2x(2A+Bx)-15b^2B\right)}{4c^{7/2}\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*x*(-15*b^2*B + b*c*(12*A - 5*B*x) + 2*c^2*x*(2*A + B*x)) + 3*b^(3/
2)*(5*b*B - 4*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt
[b]])/(4*c^(7/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.95, size = 262, normalized size = 1.94

$$
\left[-\frac{3\left(5\,Bb^3-4\,Ab^2c+\left(5\,Bb^2c-4\,Abc^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(2\,Bc^3x^2-15\,Bb^2c+12\,Abc^2\right.}{8\left(c^5x+bc^4\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*(5*B*b^3 - 4*A*b^2*c + (5*B*b^2*c - 4*A*b*c^2)*x)*sqrt(c)*log(2*c*
x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(2*B*c^3*x^2 - 15*B*b^2*c + 12*A*b
*c^2 - (5*B*b*c^2 - 4*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^5*x + b*c^4), -1/4*(3
*(5*B*b^3 - 4*A*b^2*c + (5*B*b^2*c - 4*A*b*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x
^2 + b*x)*sqrt(-c)/(c*x)) - (2*B*c^3*x^2 - 15*B*b^2*c + 12*A*b*c^2 - (5*B*b
*c^2 - 4*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^5*x + b*c^4)]
```

giac [A] time = 0.31, size = 135, normalized size = 1.00

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2\,Bx}{c^2}-\frac{7\,Bbc^5-4\,Ac^6}{c^8}\right)-\frac{3\left(5\,Bb^2-4\,Abc\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8\,c^{\frac{7}{2}}}-\frac{2\left(B\right.}{\left(\left(\sqrt{c}\,x-\sqrt{c\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c^2 - (7*B*b*c^5 - 4*A*c^6)/c^8) - 3/8*(5*B*b^
2 - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/
2) - 2*(B*b^3 - A*b^2*c)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*c + b*sqrt(c))*c
^3)
```

maple [A] time = 0.05, size = 166, normalized size = 1.23

$$\frac{B\,x^3}{2\sqrt{c\,x^2+bx}\;c}+\frac{A\,x^2}{\sqrt{c\,x^2+bx}\;c}-\frac{5Bb\,x^2}{4\sqrt{c\,x^2+bx}\;c^2}+\frac{3Abx}{\sqrt{c\,x^2+bx}\;c^2}-\frac{15B\,b^2x}{4\sqrt{c\,x^2+bx}\;c^3}-\frac{3Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{5}{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/2*B*x^3/c/(c*x^2+b*x)^(1/2)-5/4*B*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/4*B*b^2/
c^3/(c*x^2+b*x)^(1/2)*x+15/8*B*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x)^(1/2))+A*x^2/c/(c*x^2+b*x)^(1/2)+3*A*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*A*b/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.94, size = 163, normalized size = 1.21

$$\frac{Bx^3}{2\sqrt{cx^2+bx}\,c}-\frac{5\,Bbx^2}{4\sqrt{cx^2+bx}\,c^2}+\frac{Ax^2}{\sqrt{cx^2+bx}\,c}-\frac{15\,Bb^2x}{4\sqrt{cx^2+bx}\,c^3}+\frac{3\,Abx}{\sqrt{cx^2+bx}\,c^2}+\frac{15\,Bb^2\log\left(2\,cx+b+2\sqrt{cx^2+\right.}{8\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(c*x^2 + b*x)*c) - 5/4*B*b*x^2/(sqrt(c*x^2 + b*x)*c^2) + A*x
^2/(sqrt(c*x^2 + b*x)*c) - 15/4*B*b^2*x/(sqrt(c*x^2 + b*x)*c^3) + 3*A*b*x/(
sqrt(c*x^2 + b*x)*c^2) + 15/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(7/2) - 3/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + B x\right)}{\left(x \left(b + c x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.122 $\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=99

$$-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}+\frac{\sqrt{bx+cx^2}\,(3bB-2Ac)}{bc^2}-\frac{2x^2(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] -(-2*A*c+3*B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)-2*(-A*c+B*b)*x
^2/b/c/(c*x^2+b*x)^(1/2)+(-2*A*c+3*B*b)*(c*x^2+b*x)^(1/2)/b/c^2
```

Rubi [A] time = 0.09, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {788, 640, 620, 206}

$$\frac{\sqrt{bx+cx^2}\,(3bB-2Ac)}{bc^2}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}-\frac{2x^2(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^2)/(b*c*Sqrt[b*x + c*x^2]) + ((3*b*B - 2*A*c)*Sqrt[b*x +
c*x^2])/(b*c^2) - ((3*b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/
c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}} - \left(\frac{2A}{b}-\frac{3B}{c}\right)\int \frac{x}{\sqrt{bx+cx^2}}\,dx \\ &= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}} + \frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2} - \frac{(3bB-2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c^2} \\ &= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}} + \frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2} - \frac{(3bB-2Ac)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c^2} \\ &= -\frac{2(bB-Ac)x^2}{bc\sqrt{bx+cx^2}} + \frac{(3bB-2Ac)\sqrt{bx+cx^2}}{bc^2} - \frac{(3bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.89

$$\frac{\sqrt{c}x(-2Ac+3bB+Bcx)-\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\,(3bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*x*(3*b*B - 2*A*c + B*c*x) - Sqrt[b]*(3*b*B - 2*A*c)*Sqrt[x]*Sqrt[1
 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(5/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.74, size = 202, normalized size = 2.04

$$\left[-\frac{\left(3\,Bb^2-2\,Abc+\left(3\,Bbc-2\,Ac^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\left(Bc^2x+3\,Bbc-2\,Ac^2\right)\sqrt{cx^2+bx}}{2\,\left(c^4x+bc^3\right)},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x)*sqrt(c)*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(B*c^2*x + 3*B*b*c - 2*A*c^2)*sqrt(c*x^2 +
 b*x))/(c^4*x + b*c^3), ((3*B*b^2 - 2*A*b*c + (3*B*b*c - 2*A*c^2)*x)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*c^2*x + 3*B*b*c - 2*A*c^2)
*sqrt(c*x^2 + b*x))/(c^4*x + b*c^3)]
```

giac [A] time = 0.28, size = 106, normalized size = 1.07

$$\frac{\sqrt{cx^2+bx}\,B}{c^2}+\frac{(3\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{5}{2}}}+\frac{2\left(Bb^2-Abc\right)}{\left(\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)c+b\sqrt{c}\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c^2 + 1/2*(3*B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(5/2) + 2*(B*b^2 - A*b*c)/(((sqrt(c)*x - sqrt
(c*x^2 + b*x))*c + b*sqrt(c))*c^2)
```

maple [A] time = 0.05, size = 118, normalized size = 1.19

$$\frac{B\,x^{2}}{\sqrt{c\,x^{2}+bx}\;c}-\frac{2Ax}{\sqrt{c\,x^{2}+bx}\;c}+\frac{3Bbx}{\sqrt{c\,x^{2}+bx}\;c^{2}}+\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{c^{\frac{3}{2}}}-\frac{3Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+b*x)^(1/2)+3*B*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*B*b/c^(5/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2*A/c/(c*x^2+b*x)^(1/2)*x+A/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.88, size = 115, normalized size = 1.16

$$\frac{Bx^{2}}{\sqrt{cx^{2}+bx}\,c}+\frac{3\,Bbx}{\sqrt{cx^{2}+bx}\,c^{2}}-\frac{2\,Ax}{\sqrt{cx^{2}+bx}\,c}-\frac{3\,Bb\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{2\,c^{\frac{5}{2}}}+\frac{A\log\left(2\,cx+b+2\,\sqrt{cx^{2}+}\right.}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(c*x^2 + b*x)*c) + 3*B*b*x/(sqrt(c*x^2 + b*x)*c^2) - 2*A*x/(sqrt
(c*x^2 + b*x)*c) - 3/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(
5/2) + A*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{2}\,\left(A+B\,x\right)}{{\left(c\,x^{2}+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^2*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2}\left(A+Bx\right)}{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.123 $\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=60

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2x(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] 2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)-2*(-A*c+B*b)*x/b/c/(c*x^2+
b*x)^(1/2)
```

Rubi **[A]** time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = $\{777, 620, 206\}$

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2x(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x)/(b*c*Sqrt[b*x + c*x^2]) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[
b*x + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{3/2}} \, dx &= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{B\int \frac{1}{\sqrt{bx+cx^2}} \, dx}{c}\\
&= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2} \, dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\
&= -\frac{2(bB-Ac)x}{bc\sqrt{bx+cx^2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}
\end{aligned}$$

Mathematica [**A**] time = 0.07, size = 79, normalized size = 1.32

$$\frac{2\sqrt{c}\,x(Ac-bB)+2b^{3/2}B\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{bc^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(-(b*B) + A*c)*x + 2*b^(3/2)*B*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b*c^(3/2)*Sqrt[x*(b + c*x)])
```

fricas [**A**] time = 0.86, size = 164, normalized size = 2.73

$$\left[\frac{\left(Bbcx+Bb^2\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(Bbc-Ac^2\right)\sqrt{cx^2+bx}}{bc^3x+b^2c^2},-\frac{2\left(\left(Bbcx+Bb^2\right)\sqrt{-c}\,\arctan\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((B*b*c*x + B*b^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) -
2*(B*b*c - A*c^2)*sqrt(c*x^2 + b*x))/(b*c^3*x + b^2*c^2), -2*((B*b*c*x + B*
b^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*b*c - A*c^2)*sq
rt(c*x^2 + b*x))/(b*c^3*x + b^2*c^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%%{1,[1]%%%},[2,2]%%%}+%%%{%%{[-2,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3]%
%%}+%%%{1,[0,4]%%%} / %%%{%%%{1,[2]%%%},[2,0]%%%}+%%%{%%{[%%%{-2,[1]%%%},0]
:[1,0,%%%{-1,[1]%%%}]%%},[1,1]%%%}+%%%{%%%{1,[1]%%%},[0,2]%%%} Error: Bad A
rgument Value
```

maple [**A**] time = 0.05, size = 67, normalized size = 1.12

$$\frac{2Ax}{\sqrt{c\,x^2+bx}\;b}-\frac{2Bx}{\sqrt{c\,x^2+bx}\;c}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B/c/(c*x^2+b*x)^(1/2)*x+B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/
2))+2*A/b/(c*x^2+b*x)^(1/2)*x
```

maxima [**A**] time = 0.87, size = 65, normalized size = 1.08

$$\frac{2\,Ax}{\sqrt{cx^2+bx}\,b}-\frac{2\,Bx}{\sqrt{cx^2+bx}\,c}+\frac{B\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*A*x/(sqrt(c*x^2 + b*x)*b) - 2*B*x/(sqrt(c*x^2 + b*x)*c) + B*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad [B] time = 1.33, size = 64, normalized size = 1.07

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{c^{3/2}}+\frac{2\,A\,x}{b\,\sqrt{x\,\left(b+c\,x\right)}}-\frac{2\,B\,x}{c\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(3/2) + (2*A*x)/(b*(x*
(b + c*x))^(1/2)) - (2*B*x)/(c*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.124 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=33

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

```
[Out] -2*(A*b-(-2*A*c+B*b)*x)/b^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {636}

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(b^2*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\left(bx+cx^2\right)^{3/2}}\,dx=-\frac{2(Ab-(bB-2Ac)x)}{b^2\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.91

$$\frac{2bBx-2A(b+2cx)}{b^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*b*B*x - 2*A*(b + 2*c*x))/(b^2*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.88, size = 44, normalized size = 1.33

$$-\frac{2\,\sqrt{cx^2+bx}\,(Ab-(Bb-2\,Ac)x)}{b^2cx^2+b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(c*x^2 + b*x)*(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x)
```

giac [A] time = 0.22, size = 33, normalized size = 1.00

$$-\frac{2\left(\frac{A}{b}-\frac{(Bb-2\,Ac)x}{b^2}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(A/b - (B*b - 2*A*c)*x/b^2)/sqrt(c*x^2 + b*x)
```

maple [A]   time = 0.05, size = 37, normalized size = 1.12

$$-\frac{2\,(cx+b)\,(2Acx-Bbx+Ab)\,x}{\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*(c*x+b)*x*(2*A*c*x-B*b*x+A*b)/b^2/(c*x^2+b*x)^(3/2)
```

maxima [A]   time = 0.90, size = 55, normalized size = 1.67

$$\frac{2\,Bx}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acx}{\sqrt{cx^2+bx}\,b^2}-\frac{2\,A}{\sqrt{cx^2+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*x/(sqrt(c*x^2 + b*x)*b^2) - 2*A/(sqrt(c
*x^2 + b*x)*b)
```

mupad [B]   time = 1.12, size = 31, normalized size = 0.94

$$-\frac{2\,A\,b+4\,A\,c\,x-2\,B\,b\,x}{b^2\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] -(2*A*b + 4*A*c*x - 2*B*b*x)/(b^2*(b*x + c*x^2)^(1/2))
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.125 $\int \frac{A+Bx}{x\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$-\frac{2(b+2cx)(3bB-4Ac)}{3b^3\sqrt{bx+cx^2}}-\frac{2A}{3bx\sqrt{bx+cx^2}}$$

```
[Out] -2/3*A/b/x/(c*x^2+b*x)^(1/2)-2/3*(-4*A*c+3*B*b)*(2*c*x+b)/b^3/(c*x^2+b*x)^(
1/2)
```

Rubi [A] time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 613}

$$-\frac{2(b+2cx)(3bB-4Ac)}{3b^3\sqrt{bx+cx^2}}-\frac{2A}{3bx\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(3*b*x*Sqrt[b*x + c*x^2]) - (2*(3*b*B - 4*A*c)*(b + 2*c*x))/(3*b^3*S
qrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(bx+cx^2\right)^{3/2}}\,dx&=-\frac{2A}{3bx\sqrt{bx+cx^2}}+\frac{\left(2\left(bB-Ac+\frac{1}{2}(bB-2Ac)\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b}\\&=-\frac{2A}{3bx\sqrt{bx+cx^2}}-\frac{2(3bB-4Ac)(b+2cx)}{3b^3\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.87

$$-\frac{2\left(A\left(b^2-4bcx-8c^2x^2\right)+3bBx(b+2cx)\right)}{3b^3x\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(3*b*B*x*(b + 2*c*x) + A*(b^2 - 4*b*c*x - 8*c^2*x^2)))/(3*b^3*x*Sqrt[x*
(b + c*x)])
```

fricas [A] time = 0.92, size = 68, normalized size = 1.13

$$-\frac{2 \left(A b^{2} + 2 \left(3 \, B b c - 4 \, A c^{2}\right) x^{2} + \left(3 \, B b^{2} - 4 \, A b c\right) x\right) \sqrt{c x^{2} + b x}}{3 \left(b^{3} c x^{3} + b^{4} x^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^2 + 2*(3*B*b*c - 4*A*c^2)*x^2 + (3*B*b^2 - 4*A*b*c)*x)*sqrt(c*x^2
 + b*x)/(b^3*c*x^3 + b^4*x^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{B x + A}{\left(c x^{2} + b x\right)^{\frac{3}{2}} x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x), x)
```

maple [A] time = 0.05, size = 58, normalized size = 0.97

$$-\frac{2 \left(c x + b\right) \left(-8 A \,c^{2} x^{2} + 6 B b c \,x^{2} - 4 A b c x + 3 B \,b^{2} x + A \,b^{2}\right)}{3 \left(c \,x^{2} + b x\right)^{\frac{3}{2}} b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/3*(c*x+b)*(-8*A*c^2*x^2+6*B*b*c*x^2-4*A*b*c*x+3*B*b^2*x+A*b^2)/b^3/(c*x^
2+b*x)^(3/2)
```

maxima [A] time = 0.91, size = 96, normalized size = 1.60

$$-\frac{4 \, B c x}{\sqrt{c x^{2} + b x} b^{2}} + \frac{16 \, A c^{2} x}{3 \, \sqrt{c x^{2} + b x} b^{3}} - \frac{2 \, B}{\sqrt{c x^{2} + b x} b} + \frac{8 \, A c}{3 \, \sqrt{c x^{2} + b x} b^{2}} - \frac{2 \, A}{3 \, \sqrt{c x^{2} + b x} b x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -4*B*c*x/(sqrt(c*x^2 + b*x)*b^2) + 16/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^3) - 2
*B/(sqrt(c*x^2 + b*x)*b) + 8/3*A*c/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/(sqrt(c*
x^2 + b*x)*b*x)
```

mupad [B] time = 1.16, size = 62, normalized size = 1.03

$$-\frac{2\,\sqrt{c\,x^2+b\,x}\,\left(3\,B\,b^2\,x+A\,b^2+6\,B\,b\,c\,x^2-4\,A\,b\,c\,x-8\,A\,c^2\,x^2\right)}{3\,b^3\,x^2\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(A*b^2 - 8*A*c^2*x^2 + 3*B*b^2*x + 6*B*b*c*x^2 - 4*
A*b*c*x))/(3*b^3*x^2*(b + c*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(x*(b + c*x))**(3/2)), x)
```

3.126 $\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=93

$$\frac{8c(b+2cx)(5bB-6Ac)}{15b^4\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{2A}{5bx^2\sqrt{bx+cx^2}}$$

```
[Out] -2/5*A/b/x^2/(c*x^2+b*x)^(1/2)-2/15*(-6*A*c+5*B*b)/b^2/x/(c*x^2+b*x)^(1/2)+
8/15*c*(-6*A*c+5*B*b)*(2*c*x+b)/b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$\frac{8c(b+2cx)(5bB-6Ac)}{15b^4\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{2A}{5bx^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(5*b*x^2*Sqrt[b*x + c*x^2]) - (2*(5*b*B - 6*A*c))/(15*b^2*x*Sqrt[b*x
 + c*x^2]) + (8*c*(5*b*B - 6*A*c)*(b + 2*c*x))/(15*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}+\frac{\left(2\left(\frac{1}{2}(bB-2Ac)-2(-bB+Ac)\right)\right)\int \frac{1}{x\left(bx+cx^2\right)^{3/2}}\,dx}{5b}\\ &= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}-\frac{(4c(5bB-6Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^2}\\ &= -\frac{2A}{5bx^2\sqrt{bx+cx^2}}-\frac{2(5bB-6Ac)}{15b^2x\sqrt{bx+cx^2}}+\frac{8c(5bB-6Ac)(b+2cx)}{15b^4\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 75, normalized size = 0.81

$$-\frac{2\left(3A\left(b^3-2b^2cx+8bc^2x^2+16c^3x^3\right)+5bBx\left(b^2-4bcx-8c^2x^2\right)\right)}{15b^4x^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(5*b*B*x*(b^2 - 4*b*c*x - 8*c^2*x^2) + 3*A*(b^3 - 2*b^2*c*x + 8*b*c^2*x
^2 + 16*c^3*x^3)))/(15*b^4*x^2*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.88, size = 93, normalized size = 1.00

$$-\frac{2\left(3\,Ab^3-8\left(5\,Bbc^2-6\,Ac^3\right)x^3-4\left(5\,Bb^2c-6\,Abc^2\right)x^2+\left(5\,Bb^3-6\,Ab^2c\right)x\right)\sqrt{cx^2+bx}}{15\left(b^4cx^4+b^5x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^3 - 8*(5*B*b*c^2 - 6*A*c^3)*x^3 - 4*(5*B*b^2*c - 6*A*b*c^2)*x^
2 + (5*B*b^3 - 6*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c*x^4 + b^5*x^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^2), x)
```

maple [A] time = 0.05, size = 86, normalized size = 0.92

$$-\frac{2\,(cx+b)\left(48A\,c^3x^3-40Bb\,c^2x^3+24Ab\,c^2x^2-20B\,b^2c\,x^2-6A\,b^2cx+5B\,b^3x+3A\,b^3\right)}{15\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/15*(c*x+b)*(48*A*c^3*x^3-40*B*b*c^2*x^3+24*A*b*c^2*x^2-20*B*b^2*c*x^2-6*
A*b^2*c*x+5*B*b^3*x+3*A*b^3)/x/b^4/(c*x^2+b*x)^(3/2)
```

maxima [**A**] time = 0.92, size = 142, normalized size = 1.53

$$\frac{16\,Bc^{2}x}{3\,\sqrt{cx^{2}+bx}\,b^{3}}-\frac{32\,Ac^{3}x}{5\,\sqrt{cx^{2}+bx}\,b^{4}}+\frac{8\,Bc}{3\,\sqrt{cx^{2}+bx}\,b^{2}}-\frac{16\,Ac^{2}}{5\,\sqrt{cx^{2}+bx}\,b^{3}}-\frac{2\,B}{3\,\sqrt{cx^{2}+bx}\,bx}+\frac{4\,Ac}{5\,\sqrt{cx^{2}+bx}\,b^{2}x}-\frac{2\,A}{5\,\sqrt{cx^{2}+b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 16/3*B*c^2*x/(sqrt(c*x^2 + b*x)*b^3) - 32/5*A*c^3*x/(sqrt(c*x^2 + b*x)*b^4)
 + 8/3*B*c/(sqrt(c*x^2 + b*x)*b^2) - 16/5*A*c^2/(sqrt(c*x^2 + b*x)*b^3) - 2
/3*B/(sqrt(c*x^2 + b*x)*b*x) + 4/5*A*c/(sqrt(c*x^2 + b*x)*b^2*x) - 2/5*A/(s
qrt(c*x^2 + b*x)*b*x^2)
```

mupad [**B**] time = 1.23, size = 87, normalized size = 0.94

$$-\frac{2\,\sqrt{c\,x^{2}+b\,x}\,\left(5\,B\,b^{3}\,x+3\,A\,b^{3}-20\,B\,b^{2}\,c\,x^{2}-6\,A\,b^{2}\,c\,x-40\,B\,b\,c^{2}\,x^{3}+24\,A\,b\,c^{2}\,x^{2}+48\,A\,c^{3}\,x^{3}\right)}{15\,b^{4}\,x^{3}\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^3 + 48*A*c^3*x^3 + 5*B*b^3*x - 6*A*b^2*c*x +
 24*A*b*c^2*x^2 - 20*B*b^2*c*x^2 - 40*B*b*c^2*x^3))/(15*b^4*x^3*(b + c*x))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{2}\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(x*(b + c*x))**(3/2)), x)
```

3.127 $\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=128

$$-\frac{16c^2(b+2cx)(7bB-8Ac)}{35b^5\sqrt{bx+cx^2}}+\frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}}-\frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}}-\frac{2A}{7bx^3\sqrt{bx+cx^2}}$$

```
[Out] -2/7*A/b/x^3/(c*x^2+b*x)^(1/2)-2/35*(-8*A*c+7*B*b)/b^2/x^2/(c*x^2+b*x)^(1/2
)+4/35*c*(-8*A*c+7*B*b)/b^3/x/(c*x^2+b*x)^(1/2)-16/35*c^2*(-8*A*c+7*B*b)*(2
*c*x+b)/b^5/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$-\frac{16c^2(b+2cx)(7bB-8Ac)}{35b^5\sqrt{bx+cx^2}}+\frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}}-\frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}}-\frac{2A}{7bx^3\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(7*b*x^3*Sqrt[b*x + c*x^2]) - (2*(7*b*B - 8*A*c))/(35*b^2*x^2*Sqrt[b
*x + c*x^2]) + (4*c*(7*b*B - 8*A*c))/(35*b^3*x*Sqrt[b*x + c*x^2]) - (16*c^2
*(7*b*B - 8*A*c)*(b + 2*c*x))/(35*b^5*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} + \frac{\left(2\left(\frac{1}{2}(bB-2Ac)-3(-bB+Ac)\right)\right)\int \frac{1}{x^2\left(bx+cx^2\right)^{3/2}}\,dx}{7b} \\ &= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} - \frac{(6c(7bB-8Ac))\int \frac{1}{x\left(bx+cx^2\right)^{3/2}}\,dx}{35b^2} \\ &= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} + \frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}} + \frac{\left(8c^2(7bB-8Ac)\right)\int \frac{1}{(bx+cx^2}}{35b^3} \\ &= -\frac{2A}{7bx^3\sqrt{bx+cx^2}} - \frac{2(7bB-8Ac)}{35b^2x^2\sqrt{bx+cx^2}} + \frac{4c(7bB-8Ac)}{35b^3x\sqrt{bx+cx^2}} - \frac{16c^2(7bB-8Ac)(b+2cx)}{35b^5\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 98, normalized size = 0.77

$$-\frac{2\left(A\left(5b^4-8b^3cx+16b^2c^2x^2-64bc^3x^3-128c^4x^4\right)+7bBx\left(b^3-2b^2cx+8bc^2x^2+16c^3x^3\right)\right)}{35b^5x^3\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(7*b*B*x*(b^3 - 2*b^2*c*x + 8*b*c^2*x^2 + 16*c^3*x^3) + A*(5*b^4 - 8*b^
3*c*x + 16*b^2*c^2*x^2 - 64*b*c^3*x^3 - 128*c^4*x^4)))/(35*b^5*x^3*Sqrt[x*(
b + c*x)])
```

fricas [A] time = 0.87, size = 117, normalized size = 0.91

$$-\frac{2\left(5\,Ab^4+16\left(7\,Bbc^3-8\,Ac^4\right)x^4+8\left(7\,Bb^2c^2-8\,Abc^3\right)x^3-2\left(7\,Bb^3c-8\,Ab^2c^2\right)x^2+\left(7\,Bb^4-8\,Ab^3c\right)x\right)\sqrt{cx^2}}{35\left(b^5cx^5+b^6x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/35*(5*A*b^4 + 16*(7*B*b*c^3 - 8*A*c^4)*x^4 + 8*(7*B*b^2*c^2 - 8*A*b*c^3)
*x^3 - 2*(7*B*b^3*c - 8*A*b^2*c^2)*x^2 + (7*B*b^4 - 8*A*b^3*c)*x)*sqrt(c*x^
2 + b*x)/(b^5*c*x^5 + b^6*x^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^3), x)
```

maple [A] time = 0.06, size = 110, normalized size = 0.86

$$-\frac{2\,(cx+b)\,\big(-128A\,c^4x^4+112Bb\,c^3x^4-64Ab\,c^3x^3+56B\,b^2c^2x^3+16A\,b^2c^2x^2-14B\,b^3c\,x^2-8A\,b^3cx+7b^4Bx+}{35\left(c\,x^2+bx\right)^{\frac{3}{2}}\,b^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/35*(c*x+b)*(-128*A*c^4*x^4+112*B*b*c^3*x^4-64*A*b*c^3*x^3+56*B*b^2*c^2*x
^3+16*A*b^2*c^2*x^2-14*B*b^3*c*x^2-8*A*b^3*c*x+7*B*b^4*x+5*A*b^4)/x^2/b^5/(
c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.92, size = 188, normalized size = 1.47

$$-\frac{32\,Bc^3x}{5\,\sqrt{cx^2+bx}\,b^4}+\frac{256\,Ac^4x}{35\,\sqrt{cx^2+bx}\,b^5}-\frac{16\,Bc^2}{5\,\sqrt{cx^2+bx}\,b^3}+\frac{128\,Ac^3}{35\,\sqrt{cx^2+bx}\,b^4}+\frac{4\,Bc}{5\,\sqrt{cx^2+bx}\,b^2x}-\frac{32\,Ac^2}{35\,\sqrt{cx^2+bx}\,b^3x}-\frac{}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -32/5*B*c^3*x/(sqrt(c*x^2 + b*x)*b^4) + 256/35*A*c^4*x/(sqrt(c*x^2 + b*x)*b
^5) - 16/5*B*c^2/(sqrt(c*x^2 + b*x)*b^3) + 128/35*A*c^3/(sqrt(c*x^2 + b*x)*
b^4) + 4/5*B*c/(sqrt(c*x^2 + b*x)*b^2*x) - 32/35*A*c^2/(sqrt(c*x^2 + b*x)*b
^3*x) - 2/5*B/(sqrt(c*x^2 + b*x)*b*x^2) + 16/35*A*c/(sqrt(c*x^2 + b*x)*b^2*
x^2) - 2/7*A/(sqrt(c*x^2 + b*x)*b*x^3)
```

mupad [B] time = 1.29, size = 161, normalized size = 1.26

$$-\frac{\left(14\,B\,b^2-26\,A\,b\,c\right)\,\sqrt{c\,x^2+b\,x}}{35\,b^4\,x^3}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{7\,b^2\,x^4}-\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{116\,A\,c^4-84\,B\,b\,c^3}{35\,b^5}-\frac{4\,c^3\,\left(93\,A\,c-77\,B\,b\right)}{35\,b^5}\right)-\frac{2\,c^2\,(9}{}\right.}{x\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] - ((14*B*b^2 - 26*A*b*c)*(b*x + c*x^2)^(1/2))/(35*b^4*x^3) - (2*A*(b*x + c*
x^2)^(1/2))/(7*b^2*x^4) - ((b*x + c*x^2)^(1/2)*(x*((116*A*c^4 - 84*B*b*c^3)
/(35*b^5) - (4*c^3*(93*A*c - 77*B*b))/(35*b^5)) - (2*c^2*(93*A*c - 77*B*b))
/(35*b^4)))/(x*(b + c*x)) - (2*c*(b*x + c*x^2)^(1/2)*(29*A*c - 21*B*b))/(35
*b^4*x^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\,(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(x*(b + c*x))**(3/2)), x)
```

3.128 $\int \frac{A+Bx}{x^4\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=163

$$\frac{128c^3(b+2cx)(9bB-10Ac)}{315b^6\sqrt{bx+cx^2}}-\frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}}+\frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}}-\frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}}-\frac{2A}{9bx^4\sqrt{bx+cx^2}}$$

```
[Out] -2/9*A/b/x^4/(c*x^2+b*x)^(1/2)-2/63*(-10*A*c+9*B*b)/b^2/x^3/(c*x^2+b*x)^(1/
2)+16/315*c*(-10*A*c+9*B*b)/b^3/x^2/(c*x^2+b*x)^(1/2)-32/315*c^2*(-10*A*c+9
*B*b)/b^4/x/(c*x^2+b*x)^(1/2)+128/315*c^3*(-10*A*c+9*B*b)*(2*c*x+b)/b^6/(c*
x^2+b*x)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 163, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 658, 613}

$$\frac{128c^3(b+2cx)(9bB-10Ac)}{315b^6\sqrt{bx+cx^2}}-\frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}}+\frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}}-\frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}}-\frac{2A}{9bx^4\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*A)/(9*b*x^4*Sqrt[b*x + c*x^2]) - (2*(9*b*B - 10*A*c))/(63*b^2*x^3*Sqrt[
b*x + c*x^2]) + (16*c*(9*b*B - 10*A*c))/(315*b^3*x^2*Sqrt[b*x + c*x^2]) - (
32*c^2*(9*b*B - 10*A*c))/(315*b^4*x*Sqrt[b*x + c*x^2]) + (128*c^3*(9*b*B -
10*A*c)*(b + 2*c*x))/(315*b^6*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^4\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2A}{9bx^4\sqrt{bx+cx^2}} + \frac{\left(2\left(\frac{1}{2}(bB-2Ac)-4(-bB+Ac)\right)\right)\int \frac{1}{x^3\left(bx+cx^2\right)^{3/2}}\,dx}{9b}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} - \frac{(8c(9bB-10Ac))\int \frac{1}{x^2\left(bx+cx^2\right)^{3/2}}\,dx}{63b^2}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} + \frac{\left(16c^2(9bB-10Ac)\right)\int}{105b^3}$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} - \frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}} -$$

$$= -\frac{2A}{9bx^4\sqrt{bx+cx^2}} - \frac{2(9bB-10Ac)}{63b^2x^3\sqrt{bx+cx^2}} + \frac{16c(9bB-10Ac)}{315b^3x^2\sqrt{bx+cx^2}} - \frac{32c^2(9bB-10Ac)}{315b^4x\sqrt{bx+cx^2}} +$$

Mathematica **[A]** time = 0.03, size = 123, normalized size = 0.75

$$-\frac{2\left(5A\left(7b^5-10b^4cx+16b^3c^2x^2-32b^2c^3x^3+128bc^4x^4+256c^5x^5\right)+9bBx\left(5b^4-8b^3cx+16b^2c^2x^2-64bc^3\right.}{315b^6x^4\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(9*b*B*x*(5*b^4 - 8*b^3*c*x + 16*b^2*c^2*x^2 - 64*b*c^3*x^3 - 128*c^4*x
^4) + 5*A*(7*b^5 - 10*b^4*c*x + 16*b^3*c^2*x^2 - 32*b^2*c^3*x^3 + 128*b*c^4
*x^4 + 256*c^5*x^5)))/(315*b^6*x^4*Sqrt[x*(b + c*x)])
```

fricas **[A]** time = 0.88, size = 142, normalized size = 0.87

$$-\frac{2\left(35\,Ab^5-128\left(9\,Bbc^4-10\,Ac^5\right)x^5-64\left(9\,Bb^2c^3-10\,Abc^4\right)x^4+16\left(9\,Bb^3c^2-10\,Ab^2c^3\right)x^3-8\left(9\,Bb^4c-1\right.\right.}{315\left(b^6cx^6+b^7x^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/315*(35*A*b^5 - 128*(9*B*b*c^4 - 10*A*c^5)*x^5 - 64*(9*B*b^2*c^3 - 10*A*
b*c^4)*x^4 + 16*(9*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 8*(9*B*b^4*c - 10*A*b^3*
c^2)*x^2 + 5*(9*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*c*x^6 + b^7*x
^5)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^4), x)
```

maple [A] time = 0.05, size = 134, normalized size = 0.82

$$-\frac{2\,(cx+b)\left(1280A\,c^5x^5-1152Bb\,c^4x^5+640Ab\,c^4x^4-576B\,b^2c^3x^4-160A\,b^2c^3x^3+144B\,b^3c^2x^3+80A\,b^3c^2x^2-\right.}{315\left(c\,x^2+bx\right)^{\frac{3}{2}}b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/315*(c*x+b)*(1280*A*c^5*x^5-1152*B*b*c^4*x^5+640*A*b*c^4*x^4-576*B*b^2*c
^3*x^4-160*A*b^2*c^3*x^3+144*B*b^3*c^2*x^3+80*A*b^3*c^2*x^2-72*B*b^4*c*x^2-
50*A*b^4*c*x+45*B*b^5*x+35*A*b^5)/x^3/b^6/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.52, size = 234, normalized size = 1.44

$$\frac{256\,Bc^4x}{35\,\sqrt{cx^2+bx}\,b^5}-\frac{512\,Ac^5x}{63\,\sqrt{cx^2+bx}\,b^6}+\frac{128\,Bc^3}{35\,\sqrt{cx^2+bx}\,b^4}-\frac{256\,Ac^4}{63\,\sqrt{cx^2+bx}\,b^5}-\frac{32\,Bc^2}{35\,\sqrt{cx^2+bx}\,b^3x}+\frac{64\,Ac^3}{63\,\sqrt{cx^2+bx}\,b^4x}+\frac{}{35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 256/35*B*c^4*x/(sqrt(c*x^2 + b*x)*b^5) - 512/63*A*c^5*x/(sqrt(c*x^2 + b*x)*
b^6) + 128/35*B*c^3/(sqrt(c*x^2 + b*x)*b^4) - 256/63*A*c^4/(sqrt(c*x^2 + b*
x)*b^5) - 32/35*B*c^2/(sqrt(c*x^2 + b*x)*b^3*x) + 64/63*A*c^3/(sqrt(c*x^2 +
 b*x)*b^4*x) + 16/35*B*c/(sqrt(c*x^2 + b*x)*b^2*x^2) - 32/63*A*c^2/(sqrt(c*
x^2 + b*x)*b^3*x^2) - 2/7*B/(sqrt(c*x^2 + b*x)*b*x^3) + 20/63*A*c/(sqrt(c*x
^2 + b*x)*b^2*x^3) - 2/9*A/(sqrt(c*x^2 + b*x)*b*x^4)
```

mupad [B] time = 1.36, size = 191, normalized size = 1.17

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{1300\,A\,c^5-1044\,B\,b\,c^4}{315\,b^6}-\frac{4\,c^4\,(965\,A\,c-837\,B\,b)}{315\,b^6}\right)-\frac{2\,c^3\,(965\,A\,c-837\,B\,b)}{315\,b^5}\right)}{x\,(b+c\,x)}-\frac{2\,A\,\sqrt{c\,x^2+b\,x}}{9\,b^2\,x^5}-\frac{\left(18\,B\,b^2-34\,A\,b\,c\right)}{63\,b^4\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(x*((1300*A*c^5 - 1044*B*b*c^4)/(315*b^6) - (4*c^4*(96
5*A*c - 837*B*b))/(315*b^6)) - (2*c^3*(965*A*c - 837*B*b))/(315*b^5)))/(x*(
b + c*x)) - (2*A*(b*x + c*x^2)^(1/2))/(9*b^2*x^5) - ((18*B*b^2 - 34*A*b*c)*
(b*x + c*x^2)^(1/2))/(63*b^4*x^4) - (2*c*(b*x + c*x^2)^(1/2)*(55*A*c - 39*B
*b))/(105*b^4*x^3) + (2*c^2*(b*x + c*x^2)^(1/2)*(325*A*c - 261*B*b))/(315*b
^5*x^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^4\,(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*(x*(b + c*x))**(3/2)), x)
```

3.129 $\int \frac{x^5(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=172

$$\frac{5b(7bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{9/2}}-\frac{5\sqrt{bx+cx^2}\,(7bB-4Ac)}{4c^4}+\frac{5x\sqrt{bx+cx^2}\,(7bB-4Ac)}{6bc^3}-\frac{2x^3(7bB-4Ac)}{3bc^2\sqrt{bx+cx^2}}-$$

```
[Out] -2/3*(-A*c+B*b)*x^5/b/c/(c*x^2+b*x)^(3/2)+5/4*b*(-4*A*c+7*B*b)*arctanh(x*c^
(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-2/3*(-4*A*c+7*B*b)*x^3/b/c^2/(c*x^2+b*x)^(
1/2)-5/4*(-4*A*c+7*B*b)*(c*x^2+b*x)^(1/2)/c^4+5/6*(-4*A*c+7*B*b)*x*(c*x^2+b
*x)^(1/2)/b/c^3
```

Rubi [A] time = 0.17, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {788, 668, 670, 640, 620, 206}

$$-\frac{2x^3(7bB-4Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{5x\sqrt{bx+cx^2}\,(7bB-4Ac)}{6bc^3}-\frac{5\sqrt{bx+cx^2}\,(7bB-4Ac)}{4c^4}+\frac{5b(7bB-4Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{4c^{9/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^5)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(7*b*B - 4*A*c)*x^3)/
(3*b*c^2*Sqrt[b*x + c*x^2]) - (5*(7*b*B - 4*A*c)*Sqrt[b*x + c*x^2])/(4*c^4)
 + (5*(7*b*B - 4*A*c)*x*Sqrt[b*x + c*x^2])/(6*b*c^3) + (5*b*(7*b*B - 4*A*c)
*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^5(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{1}{3}\left(\frac{4A}{b}-\frac{7B}{c}\right)\int \frac{x^4}{\left(bx+cx^2\right)^{3/2}}\,dx \\
&= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} + \frac{(5(7bB-4Ac))\int \frac{x^2}{\sqrt{bx+cx^2}}\,dx}{3bc^2} \\
&= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} + \frac{5(7bB-4Ac)x\sqrt{bx+cx^2}}{6bc^3} - \frac{(5(7bB-4Ac))\int \frac{}{\sqrt{bx}}}{4c^3} \\
&= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+}}{6bc^3} \\
&= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+}}{6bc^3} \\
&= -\frac{2(bB-Ac)x^5}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{2(7bB-4Ac)x^3}{3bc^2\sqrt{bx+cx^2}} - \frac{5(7bB-4Ac)\sqrt{bx+cx^2}}{4c^4} + \frac{5(7bB-4Ac)x\sqrt{bx+}}{6bc^3}
\end{aligned}
$$

Mathematica [C] time = 0.06, size = 80, normalized size = 0.47

$$\frac{2x^5\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(7bB-4Ac)\,{}_2F_1\left(\frac{3}{2},\frac{7}{2};\frac{9}{2};-\frac{cx}{b}\right)+7b(Ac-bB)\right)}{21b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^5*(7*b*(-(b*B) + A*c) + (7*b*B - 4*A*c)*(b + c*x)*Sqrt[1 + (c*x)/b]*Hy
pergeometric2F1[3/2, 7/2, 9/2, -((c*x)/b)]))/(21*b^2*c*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.79, size = 380, normalized size = 2.21

$$\left[-\frac{15\left(7\,Bb^4-4\,Ab^3c+\left(7\,Bb^2c^2-4\,Abc^3\right)x^2+2\left(7\,Bb^3c-4\,Ab^2c^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,(6}{24\left(c^7x^2+2\,bc^6x+b^2c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(15*(7*B*b^4 - 4*A*b^3*c + (7*B*b^2*c^2 - 4*A*b*c^3)*x^2 + 2*(7*B*b^
3*c - 4*A*b^2*c^2)*x)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c))
- 2*(6*B*c^4*x^3 - 105*B*b^3*c + 60*A*b^2*c^2 - 3*(7*B*b*c^3 - 4*A*c^4)*x^2
 - 20*(7*B*b^2*c^2 - 4*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^7*x^2 + 2*b*c^6*x
+ b^2*c^5), -1/12*(15*(7*B*b^4 - 4*A*b^3*c + (7*B*b^2*c^2 - 4*A*b*c^3)*x^2
+ 2*(7*B*b^3*c - 4*A*b^2*c^2)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)
/(c*x)) - (6*B*c^4*x^3 - 105*B*b^3*c + 60*A*b^2*c^2 - 3*(7*B*b*c^3 - 4*A*c^
4)*x^2 - 20*(7*B*b^2*c^2 - 4*A*b*c^3)*x)*sqrt(c*x^2 + b*x))/(c^7*x^2 + 2*b*
c^6*x + b^2*c^5)]
```

giac [A] time = 0.49, size = 253, normalized size = 1.47

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2Bx}{c^3}-\frac{11Bbc^7-4Ac^8}{c^{11}}\right)-\frac{5\left(7Bb^2-4Abc\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{8c^{\frac{9}{2}}}-\frac{2\left(12\left(\sqrt{c}x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x/c^3 - (11*B*b*c^7 - 4*A*c^8)/c^11) - 5/8*(7*B*
b^2 - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(
9/2) - 2/3*(12*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^(3/2) - 9*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(5/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^4*c - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^2 + 10*B*b^5*sqrt(c)
 - 7*A*b^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)^3*c^5)
```

maple [B] time = 0.05, size = 338, normalized size = 1.97

$$\frac{Bx^5}{2\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{Ax^4}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{7Bbx^4}{4\left(cx^2+bx\right)^{\frac{3}{2}}c^2}+\frac{5Abx^3}{6\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{35Bb^2x^3}{24\left(cx^2+bx\right)^{\frac{3}{2}}c^3}-\frac{5Ab^2x^2}{4\left(cx^2+bx\right)^{\frac{3}{2}}c^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/2*B*x^5/c/(c*x^2+b*x)^(3/2)-7/4*B*b/c^2*x^4/(c*x^2+b*x)^(3/2)-35/24*B*b^2
/c^3*x^3/(c*x^2+b*x)^(3/2)+35/16*B*b^3/c^4*x^2/(c*x^2+b*x)^(3/2)+35/48*B*b^
4/c^5/(c*x^2+b*x)^(3/2)*x-245/24*B*b^2/c^4/(c*x^2+b*x)^(1/2)*x-35/48*B*b^3/
c^5/(c*x^2+b*x)^(1/2)+35/8*B*b^2/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)
^(1/2))+A*x^4/c/(c*x^2+b*x)^(3/2)+5/6*A*b/c^2*x^3/(c*x^2+b*x)^(3/2)-5/4*A*b
^2/c^3*x^2/(c*x^2+b*x)^(3/2)-5/12*A*b^3/c^4/(c*x^2+b*x)^(3/2)*x+35/6*A*b/c^
3/(c*x^2+b*x)^(1/2)*x+5/12*A*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*A*b/c^(7/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.68, size = 362, normalized size = 2.10

$$\frac{Bx^5}{2\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{35Bb^2x\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{24c^2}+\frac{5Abx\left(\frac{3x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\right.}{6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^5/((c*x^2 + b*x)^(3/2)*c) - 35/24*B*b^2*x*(3*x^2/((c*x^2 + b*x)^(3/
2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sq
rt(c*x^2 + b*x)*c^2))/c^2 + 5/6*A*b*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/
((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b
*x)*c^2))/c - 7/4*B*b*x^4/((c*x^2 + b*x)^(3/2)*c^2) + A*x^4/((c*x^2 + b*x)^
(3/2)*c) - 35/6*B*b^2*x/(sqrt(c*x^2 + b*x)*c^4) + 10/3*A*b*x/(sqrt(c*x^2 +
b*x)*c^3) + 35/8*B*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2)
 - 5/2*A*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 35/12*sqr
t(c*x^2 + b*x)*B*b/c^4 + 5/3*sqrt(c*x^2 + b*x)*A/c^3
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^5\,(A+B\,x)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^5*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{5}\left(A + Bx\right)}{\left(x\left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**5*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.130 $\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=136

$$-\frac{(5bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{7/2}}+\frac{\sqrt{bx+cx^2}\,(5bB-2Ac)}{bc^3}-\frac{2x^2(5bB-2Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^4(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^4/b/c/(c*x^2+b*x)^(3/2)-(-2*A*c+5*B*b)*arctanh(x*c^(1/2)/
(c*x^2+b*x)^(1/2))/c^(7/2)-2/3*(-2*A*c+5*B*b)*x^2/b/c^2/(c*x^2+b*x)^(1/2)+(
-2*A*c+5*B*b)*(c*x^2+b*x)^(1/2)/b/c^3
```

Rubi [A] time = 0.12, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {788, 668, 640, 620, 206}

$$-\frac{2x^2(5bB-2Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{\sqrt{bx+cx^2}\,(5bB-2Ac)}{bc^3}-\frac{(5bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{7/2}}-\frac{2x^4(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^4)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(5*b*B - 2*A*c)*x^2)/
(3*b*c^2*Sqrt[b*x + c*x^2]) + ((5*b*B - 2*A*c)*Sqrt[b*x + c*x^2])/(b*c^3) -
 ((5*b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
```

```
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{1}{3}\left(\frac{2A}{b}-\frac{5B}{c}\right)\int \frac{x^3}{\left(bx+cx^2\right)^{3/2}}\,dx\\
&= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}}+\frac{(5bB-2Ac)\int \frac{x}{\sqrt{bx+cx^2}}\,dx}{bc^2}\\
&= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}}+\frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3}-\frac{(5bB-2Ac)\int \frac{1}{\sqrt{bx+cx^2}}}{2c^3}\\
&= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}}+\frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3}-\frac{(5bB-2Ac)\,\mathrm{Subst}\left(\int\right.}{c^3}\\
&= -\frac{2(bB-Ac)x^4}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-2Ac)x^2}{3bc^2\sqrt{bx+cx^2}}+\frac{(5bB-2Ac)\sqrt{bx+cx^2}}{bc^3}-\frac{(5bB-2Ac)\tanh^{-1}\left(\right.}{c^{7/2}}\end{aligned}$$

Mathematica [C] time = 0.06, size = 80, normalized size = 0.59

$$\frac{2x^4\left((b+cx)\sqrt{\frac{cx}{b}+1}\,(5bB-2Ac)\,{}_2F_1\left(\frac{3}{2},\frac{5}{2};\frac{7}{2};-\frac{cx}{b}\right)+5b(Ac-bB)\right)}{15b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^4*(5*b*(-(b*B) + A*c) + (5*b*B - 2*A*c)*(b + c*x)*Sqrt[1 + (c*x)/b]*Hy
pergeometric2F1[3/2, 5/2, 7/2, -((c*x)/b)]))/(15*b^2*c*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.85, size = 321, normalized size = 2.36

$$\left[-\frac{3\left(5\,Bb^3-2\,Ab^2c+\left(5\,Bbc^2-2\,Ac^3\right)x^2+2\left(5\,Bb^2c-2\,Abc^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(3\,Bc^3\right.}{6\left(c^6x^2+2\,bc^5x+b^2c^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*b^3 - 2*A*b^2*c + (5*B*b*c^2 - 2*A*c^3)*x^2 + 2*(5*B*b^2*c -
2*A*b*c^2)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(3*B
*c^3*x^2 + 15*B*b^2*c - 6*A*b*c^2 + 4*(5*B*b*c^2 - 2*A*c^3)*x)*sqrt(c*x^2 +
 b*x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4), 1/3*(3*(5*B*b^3 - 2*A*b^2*c + (5*B*
b*c^2 - 2*A*c^3)*x^2 + 2*(5*B*b^2*c - 2*A*b*c^2)*x)*sqrt(-c)*arctan(sqrt(c*
x^2 + b*x)*sqrt(-c)/(c*x)) + (3*B*c^3*x^2 + 15*B*b^2*c - 6*A*b*c^2 + 4*(5*B
*b*c^2 - 2*A*c^3)*x)*sqrt(c*x^2 + b*x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)]
```

giac [A] time = 0.29, size = 224, normalized size = 1.65

$$\frac{\sqrt{cx^2+bx}\,B}{c^3}+\frac{(5\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}\,-b\right|\right)}{2\,c^{\frac{7}{2}}}+\frac{2\left(9\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bb^2c^{\frac{3}{2}}-6\left(\sqrt{c}\,x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c^3 + 1/2*(5*B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*sqrt(c) - b))/c^(7/2) + 2/3*(9*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^2*c^(3/2) - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(5/2) + 15*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A
*b^2*c^2 + 7*B*b^4*sqrt(c) - 4*A*b^3*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b
*x))*sqrt(c) + b)^3*c^4)
```

maple [B] time = 0.05, size = 283, normalized size = 2.08

$$\frac{B\,x^4}{\left(c\,x^2+bx\right)^{\frac{3}{2}}c}-\frac{A\,x^3}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}c}+\frac{5Bb\,x^3}{6\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2}+\frac{Ab\,x^2}{2\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2}-\frac{5B\,b^2x^2}{4\left(c\,x^2+bx\right)^{\frac{3}{2}}c^3}+\frac{A\,b^2x}{6\left(c\,x^2+bx\right)^{\frac{3}{2}}c^3}-\frac{}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] B*x^4/c/(c*x^2+b*x)^(3/2)+5/6*B*b/c^2*x^3/(c*x^2+b*x)^(3/2)-5/4*B*b^2/c^3*x
^2/(c*x^2+b*x)^(3/2)-5/12*B*b^3/c^4/(c*x^2+b*x)^(3/2)*x+35/6*B*b/c^3/(c*x^2
+b*x)^(1/2)*x+5/12*B*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*B*b/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x)^(1/2))-1/3*A*x^3/c/(c*x^2+b*x)^(3/2)+1/2*A*b/c^2*x^2
/(c*x^2+b*x)^(3/2)+1/6*A*b^2/c^3/(c*x^2+b*x)^(3/2)*x-7/3*A/c^2/(c*x^2+b*x)^
(1/2)*x-1/6*A*b/c^3/(c*x^2+b*x)^(1/2)+A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))
```

maxima [B] time = 0.60, size = 310, normalized size = 2.28

$$-\frac{1}{3}\,Ax\left(\frac{3\,x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\,x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)+\frac{5\,Bbx\left(\frac{3\,x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2}{\sqrt{cx^2+}}\right.}{6\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2
*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) + 5/6*B*b*x*(3*x^2/
((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*x/(sqrt(c*x^2 +
 b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2))/c + B*x^4/((c*x^2 + b*x)^(3/2)*c) +
 10/3*B*b*x/(sqrt(c*x^2 + b*x)*c^3) - 4/3*A*x/(sqrt(c*x^2 + b*x)*c^2) - 5/2
*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + A*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 5/3*sqrt(c*x^2 + b*x)*B/c^3 - 2/3
*sqrt(c*x^2 + b*x)*A/(b*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^4 (A + Bx)}{(x (b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.131 $\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=84

$$-\frac{2x^3(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^3/b/c/(c*x^2+b*x)^(3/2)+2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)
^(1/2))/c^(5/2)-2*B*x/c^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {788, 652, 620, 206}

$$-\frac{2x^3(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^3)/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*B*x)/(c^2*Sqrt[b*x +
c*x^2]) + (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 652

```
Int[((d_.) + (e_.)*(x_))^2*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symb
ol] :> Simp[(e*(d + e*x)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[
(e^2*(p + 2))/(c*(p + 1)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{
a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{B\int \frac{x^2}{\left(bx+cx^2\right)^{3/2}}\,dx}{c} \\
&= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}+\frac{B\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{c^2} \\
&= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}+\frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c^2} \\
&= -\frac{2(bB-Ac)x^3}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2Bx}{c^2\sqrt{bx+cx^2}}+\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{5/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.09, size = 99, normalized size = 1.18

$$
\frac{x\left(2\sqrt{c}\,x\left(Ac^2x-3b^2B-4bBcx\right)+6b^{3/2}B\sqrt{x}\,(b+cx)\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\right)}{3bc^{5/2}(x(b+cx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(2*Sqrt[c]*x*(-3*b^2*B - 4*b*B*c*x + A*c^2*x) + 6*b^(3/2)*B*Sqrt[x]*(b +
 c*x)*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/(3*b*c^(5/2)*(
x*(b + c*x))^(3/2))
```

fricas [**A**] time = 0.63, size = 239, normalized size = 2.85

$$
\left[\frac{3\left(Bbc^2x^2+2\,Bb^2cx+Bb^3\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(3\,Bb^2c+\left(4\,Bbc^2-Ac^3\right)x\right)\sqrt{cx^2+bx}}{3\left(bc^5x^2+2\,b^2c^4x+b^3c^3\right)},-\frac{2\left(\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(B*b*c^2*x^2 + 2*B*b^2*c*x + B*b^3)*sqrt(c)*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 2*(3*B*b^2*c + (4*B*b*c^2 - A*c^3)*x)*sqrt(c*x^2 +
b*x))/(b*c^5*x^2 + 2*b^2*c^4*x + b^3*c^3), -2/3*(3*(B*b*c^2*x^2 + 2*B*b^2*c
*x + B*b^3)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (3*B*b^2*c
+ (4*B*b*c^2 - A*c^3)*x)*sqrt(c*x^2 + b*x))/(b*c^5*x^2 + 2*b^2*c^4*x + b^3*
c^3)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%%{1,[2]%%%},[4,4]%%%}+%%%{%%{[%%%{-4,[1]%%%},0]:[1,0,%%%{-1,[1]%%%
}]%%},[3,5]%%%}+%%%{%%%{6,[1]%%%},[2,6]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%
%}]%%},[1,7]%%%}+%%%{1,[0,8]%%%} / %%%{%%%{1,[4]%%%},[4,0]%%%}+%%%{%%{[%%%{
-4,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1]%%%}+%%%{%%%{6,[3]%%%},[2,2]%%%}
+%%%{%%{[%%%{-4,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3]%%%}+%%%{%%%{1,[2]%
%%},[0,4]%%%} Error: Bad Argument Value
```

maple [B] time = 0.05, size = 206, normalized size = 2.45

$$-\frac{B\,x^{3}}{3\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c}-\frac{A\,x^{2}}{\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c}+\frac{Bb\,x^{2}}{2\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c^{2}}-\frac{Abx}{3\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c^{2}}+\frac{B\,b^{2}x}{6\left(c\,x^{2}+bx\right)^{\frac{3}{2}}c^{3}}+\frac{2Ax}{3\sqrt{c\,x^{2}+bx}\;bc}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -1/3*B*x^3/c/(c*x^2+b*x)^(3/2)+1/2*B*b/c^2*x^2/(c*x^2+b*x)^(3/2)+1/6*B*b^2/
c^3/(c*x^2+b*x)^(3/2)*x-7/3*B*x/c^2/(c*x^2+b*x)^(1/2)-1/6*B*b/c^3/(c*x^2+b*
x)^(1/2)+B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-A*x^2/c/(c*x^2
+b*x)^(3/2)-1/3*A*b/c^2/(c*x^2+b*x)^(3/2)*x+2/3*A/b/c/(c*x^2+b*x)^(1/2)*x+1
/3*A/c^2/(c*x^2+b*x)^(1/2)
```

maxima [B] time = 0.67, size = 221, normalized size = 2.63

$$-\frac{1}{3}\,Bx\left(\frac{3\,x^{2}}{\left(cx^{2}+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^{2}+bx\right)^{\frac{3}{2}}c^{2}}-\frac{2\,x}{\sqrt{cx^{2}+bx}\,bc}-\frac{1}{\sqrt{cx^{2}+bx}\,c^{2}}\right)-\frac{Ax^{2}}{\left(cx^{2}+bx\right)^{\frac{3}{2}}c}-\frac{4\,Bx}{3\,\sqrt{cx^{2}+bx}\,c^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2
*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - A*x^2/((c*x^2 + b
*x)^(3/2)*c) - 4/3*B*x/(sqrt(c*x^2 + b*x)*c^2) - 1/3*A*b*x/((c*x^2 + b*x)^(
3/2)*c^2) + 2/3*A*x/(sqrt(c*x^2 + b*x)*b*c) + B*log(2*c*x + b + 2*sqrt(c*x^
2 + b*x)*sqrt(c))/c^(5/2) + 1/3*A/(sqrt(c*x^2 + b*x)*c^2) - 2/3*sqrt(c*x^2
+ b*x)*B/(b*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + Bx\right)}{\left(x \left(b + cx\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.132 $\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=67

$$\frac{2x(2Ac+bB)}{3b^2c\sqrt{bx+cx^2}}-\frac{2x^2(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^2/b/c/(c*x^2+b*x)^(3/2)+2/3*(2*A*c+B*b)*x/b^2/c/(c*x^2+b*
x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {788, 636}

$$\frac{2x(2Ac+bB)}{3b^2c\sqrt{bx+cx^2}}-\frac{2x^2(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^2)/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*(b*B + 2*A*c)*x)/(3*b
^2*c*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^2}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{(bB+2Ac)\int \frac{x}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}\\ &= -\frac{2(bB-Ac)x^2}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2(bB+2Ac)x}{3b^2c\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 35, normalized size = 0.52

$$\frac{2x^2(3Ab+2Acx+bBx)}{3b^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^2*(3*A*b + b*B*x + 2*A*c*x))/(3*b^2*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.80, size = 51, normalized size = 0.76

$$\frac{2\sqrt{cx^2+bx}\,(3\,Ab+(Bb+2\,Ac)x)}{3\left(b^2c^2x^2+2\,b^3cx+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*sqrt(c*x^2 + b*x)*(3*A*b + (B*b + 2*A*c)*x)/(b^2*c^2*x^2 + 2*b^3*c*x +
b^4)
```

giac [B] time = 0.23, size = 119, normalized size = 1.78

$$\frac{2\left(3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bc+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Bb\sqrt{c}+3\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)Ac^{\frac{3}{2}}+Bb^2+2\,Abc\right)}{3\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right)^3c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*c + 3*(sqrt(c)*x - sqrt(c*x^2 +
b*x))*B*b*sqrt(c) + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*c^(3/2) + B*b^2 + 2
*A*b*c)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)^3*c^(3/2))
```

maple [A] time = 0.05, size = 39, normalized size = 0.58

$$\frac{2\,(cx+b)\,(2Acx+Bbx+3Ab)\,x^3}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(c*x+b)*x^3*(2*A*c*x+B*b*x+3*A*b)/b^2/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.66, size = 134, normalized size = 2.00

$$-\frac{Bx^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{4\,Ax}{3\sqrt{cx^2+bx}\,b^2}-\frac{Bbx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\,Ax}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{2\,Bx}{3\sqrt{cx^2+bx}\,bc}+\frac{B}{3\sqrt{cx^2+bx}\,c^2}+\frac{2\,A}{3\sqrt{cx^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*x^2/((c*x^2 + b*x)^(3/2)*c) + 4/3*A*x/(sqrt(c*x^2 + b*x)*b^2) - 1/3*B*b*
x/((c*x^2 + b*x)^(3/2)*c^2) - 2/3*A*x/((c*x^2 + b*x)^(3/2)*c) + 2/3*B*x/(sq
rt(c*x^2 + b*x)*b*c) + 1/3*B/(sqrt(c*x^2 + b*x)*c^2) + 2/3*A/(sqrt(c*x^2 +
b*x)*b*c)
```

mupad [B] time = 1.16, size = 37, normalized size = 0.55

$$\frac{2\sqrt{c\,x^2+b\,x}\,\left(3\,A\,b+2\,A\,c\,x+B\,b\,x\right)}{3\,b^2\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(b*x + c*x^2)^(1/2)*(3*A*b + 2*A*c*x + B*b*x))/(3*b^2*(b + c*x)^2)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2 (A + Bx)}{(x (b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.133 $\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=70

$$\frac{2(b+2cx)(bB-4Ac)}{3b^3c\sqrt{bx+cx^2}}-\frac{2x(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x/b/c/(c*x^2+b*x)^(3/2)+2/3*(-4*A*c+B*b)*(2*c*x+b)/b^3/c/(c
*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = $\{777, 613\}$

$$\frac{2(b+2cx)(bB-4Ac)}{3b^3c\sqrt{bx+cx^2}}-\frac{2x(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x)/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*(b*B - 4*A*c)*(b + 2*c*
x))/(3*b^3*c*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{\left(2\left(-\frac{b^2B}{2}+2Abc\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2c}\\ &= -\frac{2(bB-Ac)x}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2(bB-4Ac)(b+2cx)}{3b^3c\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.79

$$\frac{x\left(2bBx(3b+2cx)-2A\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^3(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(2*b*B*x*(3*b + 2*c*x) - 2*A*(3*b^2 + 12*b*c*x + 8*c^2*x^2)))/(3*b^3*(x*
(b + c*x))^(3/2))
```

fricas [A] time = 0.93, size = 77, normalized size = 1.10

$$-\frac{2\left(3\,Ab^2-2\left(Bbc-4\,Ac^2\right)x^2-3\left(Bb^2-4\,Abc\right)x\right)\sqrt{cx^2+bx}}{3\left(b^3c^2x^3+2\,b^4cx^2+b^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(3*A*b^2 - 2*(B*b*c - 4*A*c^2)*x^2 - 3*(B*b^2 - 4*A*b*c)*x)*sqrt(c*x^2
 + b*x)/(b^3*c^2*x^3 + 2*b^4*c*x^2 + b^5*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*x/(c*x^2 + b*x)^(5/2), x)
```

maple [A] time = 0.05, size = 62, normalized size = 0.89

$$-\frac{2\,(cx+b)\left(8A\,c^2x^2-2Bbc\,x^2+12Abcx-3B\,b^2x+3A\,b^2\right)x^2}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x^2*(8*A*c^2*x^2-2*B*b*c*x^2+12*A*b*c*x-3*B*b^2*x+3*A*b^2)/b^3
/(c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.52, size = 111, normalized size = 1.59

$$\frac{4\,Bx}{3\,\sqrt{cx^2+bx}\,b^2}+\frac{2\,Ax}{3\left(cx^2+bx\right)^{\frac{3}{2}}b}-\frac{2\,Bx}{3\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{16\,Acx}{3\,\sqrt{cx^2+bx}\,b^3}-\frac{8\,A}{3\,\sqrt{cx^2+bx}\,b^2}+\frac{2\,B}{3\,\sqrt{cx^2+bx}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 4/3*B*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*A*x/((c*x^2 + b*x)^(3/2)*b) - 2/3*B*x
/((c*x^2 + b*x)^(3/2)*c) - 16/3*A*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*A/(sqrt
(c*x^2 + b*x)*b^2) + 2/3*B/(sqrt(c*x^2 + b*x)*b*c)
```

mupad [B] time = 1.18, size = 63, normalized size = 0.90

$$-\frac{2\,\sqrt{c\,x^2+b\,x}\,\left(-3\,B\,b^2\,x+3\,A\,b^2-2\,B\,b\,c\,x^2+12\,A\,b\,c\,x+8\,A\,c^2\,x^2\right)}{3\,b^3\,x\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^2 + 8*A*c^2*x^2 - 3*B*b^2*x - 2*B*b*c*x^2 +
12*A*b*c*x))/(3*b^3*x*(b + c*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\left(A+Bx\right)}{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.134 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=70

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b-(-2*A*c+B*b)*x)/b^2/(c*x^2+b*x)^(3/2)-8/3*(-2*A*c+B*b)*(2*c*x+b)/
b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(b*B - 2*A*c)
*(b + 2*c*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2}\\ &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3b^4\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 1.03

$$-\frac{2\left(A\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)+bBx\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2) + A*(b^3 - 6*b^2*c*x - 24*b*c^2*x
^2 - 16*c^3*x^3)))/(3*b^4*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.69, size = 101, normalized size = 1.44

$$-\frac{2\left(Ab^3 + 8\left(Bbc^2 - 2\,Ac^3\right)x^3 + 12\left(Bb^2c - 2\,Abc^2\right)x^2 + 3\left(Bb^3 - 2\,Ab^2c\right)x\right)\sqrt{cx^2 + bx}}{3\left(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c^2)*x^2 + 3*
(B*b^3 - 2*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)
```

giac [A] time = 0.24, size = 82, normalized size = 1.17

$$-\frac{2\left(\left(4\,x\left(\frac{2\left(Bbc^2-2\,Ac^3\right)x}{b^4} + \frac{3\left(Bb^2c-2\,Abc^2\right)}{b^4}\right) + \frac{3\left(Bb^3-2\,Ab^2c\right)}{b^4}\right)x + \frac{A}{b}\right)}{3\left(cx^2 + bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*x*(2*(B*b*c^2 - 2*A*c^3)*x/b^4 + 3*(B*b^2*c - 2*A*b*c^2)/b^4) + 3*
(B*b^3 - 2*A*b^2*c)/b^4)*x + A/b)/(c*x^2 + b*x)^(3/2)
```

maple [A] time = 0.05, size = 83, normalized size = 1.19

$$-\frac{2\,(cx + b)\left(-16A\,c^3x^3 + 8Bb\,c^2x^3 - 24Ab\,c^2x^2 + 12B\,b^2c\,x^2 - 6A\,b^2cx + 3B\,b^3x + A\,b^3\right)x}{3\left(c\,x^2 + bx\right)^{\frac{5}{2}}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-16*A*c^3*x^3+8*B*b*c^2*x^3-24*A*b*c^2*x^2+12*B*b^2*c*x^2-6
*A*b^2*c*x+3*B*b^3*x+A*b^3)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.57, size = 130, normalized size = 1.86

$$\frac{2\,Bx}{3\left(cx^2 + bx\right)^{\frac{3}{2}}b} - \frac{16\,Bcx}{3\,\sqrt{cx^2 + bx}\,b^3} - \frac{4\,Acx}{3\left(cx^2 + bx\right)^{\frac{3}{2}}b^2} + \frac{32\,Ac^2x}{3\,\sqrt{cx^2 + bx}\,b^4} - \frac{8\,B}{3\,\sqrt{cx^2 + bx}\,b^2} - \frac{2\,A}{3\left(cx^2 + bx\right)^{\frac{3}{2}}b} + \frac{16\,A}{3\,\sqrt{cx^2 +}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/((c*x^2 + b*x)^(3/2)*b) - 16/3*B*c*x/(sqrt(c*x^2 + b*x)*b^3) - 4/3*
A*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^4) - 8/
3*B/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c/(sqr
t(c*x^2 + b*x)*b^3)
```

mupad [B] time = 1.15, size = 76, normalized size = 1.09

$$-\frac{2\,\left(3\,B\,b^3\,x + A\,b^3 + 12\,B\,b^2\,c\,x^2 - 6\,A\,b^2\,c\,x + 8\,B\,b\,c^2\,x^3 - 24\,A\,b\,c^2\,x^2 - 16\,A\,c^3\,x^3\right)}{3\,b^4\,{\left(c\,x^2 + b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 3*B*b^3*x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B
*b^2*c*x^2 + 8*B*b*c^2*x^3))/(3*b^4*(b*x + c*x^2)^(3/2))
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.135 $\int \frac{A+Bx}{x\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=96

$$\frac{16c(b+2cx)(5bB-8Ac)}{15b^5\sqrt{bx+cx^2}}-\frac{2(b+2cx)(5bB-8Ac)}{15b^3\left(bx+cx^2\right)^{3/2}}-\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/5*A/b/x/(c*x^2+b*x)^(3/2)-2/15*(-8*A*c+5*B*b)*(2*c*x+b)/b^3/(c*x^2+b*x)^
(3/2)+16/15*c*(-8*A*c+5*B*b)*(2*c*x+b)/b^5/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 614, 613}

$$\frac{16c(b+2cx)(5bB-8Ac)}{15b^5\sqrt{bx+cx^2}}-\frac{2(b+2cx)(5bB-8Ac)}{15b^3\left(bx+cx^2\right)^{3/2}}-\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(5*b*x*(b*x + c*x^2)^(3/2)) - (2*(5*b*B - 8*A*c)*(b + 2*c*x))/(15*b^
3*(b*x + c*x^2)^(3/2)) + (16*c*(5*b*B - 8*A*c)*(b + 2*c*x))/(15*b^5*Sqrt[b*
x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}+\frac{\left(2\left(bB-Ac-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{5b}\\ &= -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-8Ac)(b+2cx)}{15b^3\left(bx+cx^2\right)^{3/2}}-\frac{(8c(5bB-8Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^3}\\ &= -\frac{2A}{5bx\left(bx+cx^2\right)^{3/2}}-\frac{2(5bB-8Ac)(b+2cx)}{15b^3\left(bx+cx^2\right)^{3/2}}+\frac{16c(5bB-8Ac)(b+2cx)}{15b^5\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 98, normalized size = 1.02

$$-\frac{2\left(A\left(3b^4-8b^3cx+48b^2c^2x^2+192bc^3x^3+128c^4x^4\right)+5bBx\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)\right)}{15b^5x(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(5*b*B*x*(b^3 - 6*b^2*c*x - 24*b*c^2*x^2 - 16*c^3*x^3) + A*(3*b^4 - 8*b
^3*c*x + 48*b^2*c^2*x^2 + 192*b*c^3*x^3 + 128*c^4*x^4)))/(15*b^5*x*(x*(b +
c*x))^(3/2))
```

fricas [A] time = 0.97, size = 128, normalized size = 1.33

$$-\frac{2\,\bigl(3\,Ab^4-16\left(5\,Bbc^3-8\,Ac^4\right)x^4-24\left(5\,Bb^2c^2-8\,Abc^3\right)x^3-6\left(5\,Bb^3c-8\,Ab^2c^2\right)x^2+\left(5\,Bb^4-8\,Ab^3c\right)x\bigr)\sqrt{cx^2}}{15\left(b^5c^2x^5+2\,b^6cx^4+b^7x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*A*b^4 - 16*(5*B*b*c^3 - 8*A*c^4)*x^4 - 24*(5*B*b^2*c^2 - 8*A*b*c^3
)*x^3 - 6*(5*B*b^3*c - 8*A*b^2*c^2)*x^2 + (5*B*b^4 - 8*A*b^3*c)*x)*sqrt(c*x
^2 + b*x)/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x), x)
```

maple [A] time = 0.05, size = 107, normalized size = 1.11

$$-\frac{2\,(cx+b)\,\bigl(128A\,c^4x^4-80Bb\,c^3x^4+192Ab\,c^3x^3-120B\,b^2c^2x^3+48A\,b^2c^2x^2-30B\,b^3c\,x^2-8A\,b^3cx+5b^4Bx+}{15\left(c\,x^2+bx\right)^{\frac{5}{2}}b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/15*(c*x+b)*(128*A*c^4*x^4-80*B*b*c^3*x^4+192*A*b*c^3*x^3-120*B*b^2*c^2*x
^3+48*A*b^2*c^2*x^2-30*B*b^3*c*x^2-8*A*b^3*c*x+5*B*b^4*x+3*A*b^4)/b^5/(c*x^
2+b*x)^(5/2)
```

maxima [**B**]   time = 0.71, size = 176, normalized size = 1.83

$$-\frac{4\,Bcx}{3\,\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Bc^2x}{3\,\sqrt{cx^2+bx}\,b^4}+\frac{32\,Ac^2x}{15\,\left(cx^2+bx\right)^{\frac{3}{2}}b^3}-\frac{256\,Ac^3x}{15\,\sqrt{cx^2+bx}\,b^5}-\frac{2\,B}{3\,\left(cx^2+bx\right)^{\frac{3}{2}}b}+\frac{16\,Bc}{3\,\sqrt{cx^2+bx}\,b^3}+\frac{\quad}{15\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/3*B*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*B*c^2*x/(sqrt(c*x^2 + b*x)*b^4)
 + 32/15*A*c^2*x/((c*x^2 + b*x)^(3/2)*b^3) - 256/15*A*c^3*x/(sqrt(c*x^2 + b
*x)*b^5) - 2/3*B/((c*x^2 + b*x)^(3/2)*b) + 16/3*B*c/(sqrt(c*x^2 + b*x)*b^3)
 + 16/15*A*c/((c*x^2 + b*x)^(3/2)*b^2) - 128/15*A*c^2/(sqrt(c*x^2 + b*x)*b^
4) - 2/5*A/((c*x^2 + b*x)^(3/2)*b*x)
```

mupad [**B**]   time = 1.25, size = 111, normalized size = 1.16

$$-\frac{2\,\sqrt{c\,x^2+b\,x}\,\left(5\,B\,b^4\,x+3\,A\,b^4-30\,B\,b^3\,c\,x^2-8\,A\,b^3\,c\,x-120\,B\,b^2\,c^2\,x^3+48\,A\,b^2\,c^2\,x^2-80\,B\,b\,c^3\,x^4+192\right.}{15\,b^5\,x^3\,{\left(b+c\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] -(2*(b*x + c*x^2)^(1/2)*(3*A*b^4 + 128*A*c^4*x^4 + 5*B*b^4*x - 8*A*b^3*c*x
+ 192*A*b*c^3*x^3 - 30*B*b^3*c*x^2 - 80*B*b*c^3*x^4 + 48*A*b^2*c^2*x^2 - 12
0*B*b^2*c^2*x^3))/(15*b^5*x^3*(b + c*x)^2)
```

sympy [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(x*(b + c*x))**(5/2)), x)
```

3.136 $\displaystyle\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=131

$$-\frac{128c^2(b+2cx)(7bB-10Ac)}{105b^6\sqrt{bx+cx^2}}+\frac{16c(b+2cx)(7bB-10Ac)}{105b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}-\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/7*A/b/x^2/(c*x^2+b*x)^(3/2)-2/35*(-10*A*c+7*B*b)/b^2/x/(c*x^2+b*x)^(3/2)
+16/105*c*(-10*A*c+7*B*b)*(2*c*x+b)/b^4/(c*x^2+b*x)^(3/2)-128/105*c^2*(-10*
A*c+7*B*b)*(2*c*x+b)/b^6/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 658, 614, 613}

$$-\frac{128c^2(b+2cx)(7bB-10Ac)}{105b^6\sqrt{bx+cx^2}}+\frac{16c(b+2cx)(7bB-10Ac)}{105b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}-\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(7*b*x^2*(b*x + c*x^2)^(3/2)) - (2*(7*b*B - 10*A*c))/(35*b^2*x*(b*x
+ c*x^2)^(3/2)) + (16*c*(7*b*B - 10*A*c)*(b + 2*c*x))/(105*b^4*(b*x + c*x^2
)^(3/2)) - (128*c^2*(7*b*B - 10*A*c)*(b + 2*c*x))/(105*b^6*Sqrt[b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}+\frac{\left(2\left(-2(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{1}{x\left(bx+cx^2\right)^{5/2}}\,dx}{7b}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}-\frac{(8c(7bB-10Ac))\int\frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{35b^2}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}+\frac{16c(7bB-10Ac)(b+2cx)}{105b^4\left(bx+cx^2\right)^{3/2}}+\frac{\left(64c^2(7bB}{}$$

$$= -\frac{2A}{7bx^2\left(bx+cx^2\right)^{3/2}}-\frac{2(7bB-10Ac)}{35b^2x\left(bx+cx^2\right)^{3/2}}+\frac{16c(7bB-10Ac)(b+2cx)}{105b^4\left(bx+cx^2\right)^{3/2}}-\frac{128c^2(7bB}{105b}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.94

$$-\frac{2\left(5A\left(3b^5-6b^4cx+16b^3c^2x^2-96b^2c^3x^3-384bc^4x^4-256c^5x^5\right)+7bBx\left(3b^4-8b^3cx+48b^2c^2x^2+192bc^3\right.}{105b^6x^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(7*b*B*x*(3*b^4 - 8*b^3*c*x + 48*b^2*c^2*x^2 + 192*b*c^3*x^3 + 128*c^4*
x^4) + 5*A*(3*b^5 - 6*b^4*c*x + 16*b^3*c^2*x^2 - 96*b^2*c^3*x^3 - 384*b*c^4
*x^4 - 256*c^5*x^5)))/(105*b^6*x^2*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.94, size = 153, normalized size = 1.17

$$-\frac{2\left(15\,Ab^5+128\left(7\,Bbc^4-10\,Ac^5\right)x^5+192\left(7\,Bb^2c^3-10\,Abc^4\right)x^4+48\left(7\,Bb^3c^2-10\,Ab^2c^3\right)x^3-8\left(7\,Bb^4c-\right.\right.}{105\left(b^6c^2x^6+2\,b^7cx^5+b^8x^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/105*(15*A*b^5 + 128*(7*B*b*c^4 - 10*A*c^5)*x^5 + 192*(7*B*b^2*c^3 - 10*A
*b*c^4)*x^4 + 48*(7*B*b^3*c^2 - 10*A*b^2*c^3)*x^3 - 8*(7*B*b^4*c - 10*A*b^3
*c^2)*x^2 + 3*(7*B*b^5 - 10*A*b^4*c)*x)*sqrt(c*x^2 + b*x)/(b^6*c^2*x^6 + 2*
b^7*c*x^5 + b^8*x^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^2), x)
```

maple [A] time = 0.05, size = 134, normalized size = 1.02

$$-\frac{2\,(cx+b)\left(-1280A\,c^5x^5+896Bb\,c^4x^5-1920Ab\,c^4x^4+1344B\,b^2c^3x^4-480A\,b^2c^3x^3+336B\,b^3c^2x^3+80A\,b^3c^2}{105\left(c\,x^2+bx\right)^{\frac{5}{2}}b^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/105*(c*x+b)*(-1280*A*c^5*x^5+896*B*b*c^4*x^5-1920*A*b*c^4*x^4+1344*B*b^2
*c^3*x^4-480*A*b^2*c^3*x^3+336*B*b^3*c^2*x^3+80*A*b^3*c^2*x^2-56*B*b^4*c*x^
2-30*A*b^4*c*x+21*B*b^5*x+15*A*b^5)/x/b^6/(c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.59, size = 224, normalized size = 1.71

$$\frac{32\,Bc^2x}{15\left(cx^2+bx\right)^{\frac{3}{2}}b^3}-\frac{256\,Bc^3x}{15\,\sqrt{cx^2+bx}\,b^5}-\frac{64\,Ac^3x}{21\left(cx^2+bx\right)^{\frac{3}{2}}b^4}+\frac{512\,Ac^4x}{21\,\sqrt{cx^2+bx}\,b^6}+\frac{16\,Bc}{15\left(cx^2+bx\right)^{\frac{3}{2}}b^2}-\frac{128\,Bc^2}{15\,\sqrt{cx^2+bx}\,b^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 32/15*B*c^2*x/((c*x^2 + b*x)^(3/2)*b^3) - 256/15*B*c^3*x/(sqrt(c*x^2 + b*x)
*b^5) - 64/21*A*c^3*x/((c*x^2 + b*x)^(3/2)*b^4) + 512/21*A*c^4*x/(sqrt(c*x^
2 + b*x)*b^6) + 16/15*B*c/((c*x^2 + b*x)^(3/2)*b^2) - 128/15*B*c^2/(sqrt(c*
x^2 + b*x)*b^4) - 32/21*A*c^2/((c*x^2 + b*x)^(3/2)*b^3) + 256/21*A*c^3/(sqr
t(c*x^2 + b*x)*b^5) - 2/5*B/((c*x^2 + b*x)^(3/2)*b*x) + 4/7*A*c/((c*x^2 + b
*x)^(3/2)*b^2*x) - 2/7*A/((c*x^2 + b*x)^(3/2)*b*x^2)
```

mupad [B] time = 1.33, size = 235, normalized size = 1.79

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(\frac{1280\,A\,c^3-896\,B\,b\,c^2}{105\,b^5}+\frac{2\,c\,x\,\left(1280\,A\,c^3-896\,B\,b\,c^2\right)}{105\,b^6}\right)}{x\,\left(b+c\,x\right)}-\frac{\sqrt{c\,x^2+b\,x}\,\left(14\,B\,b^3-40\,A\,b^2\,c\right)}{35\,b^6\,x^3}-\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{4\,c^2\,(1}{}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*((1280*A*c^3 - 896*B*b*c^2)/(105*b^5) + (2*c*x*(1280*A
*c^3 - 896*B*b*c^2))/(105*b^6)))/(x*(b + c*x)) - ((b*x + c*x^2)^(1/2)*(14*B
*b^3 - 40*A*b^2*c))/(35*b^6*x^3) - ((b*x + c*x^2)^(1/2)*(x*((4*c^2*(185*A*c
 - 98*B*b))/(105*b^4) + (2*c^2*(230*A*c - 91*B*b))/(105*b^4) + (b*((160*A*c
^4 - 56*B*b*c^3)/(105*b^5) - (4*c^3*(230*A*c - 91*B*b))/(105*b^5)))/c) + (2
*c*(185*A*c - 98*B*b))/(105*b^3)))/(x^2*(b + c*x)^2) - (2*A*(b*x + c*x^2)^(
1/2))/(7*b^3*x^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left(x\left(b+cx\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(x*(b + c*x))**(5/2)), x)
```

3.137 $\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=166

$$\frac{256c^3(b+2cx)(3bB-4Ac)}{63b^7\sqrt{bx+cx^2}}-\frac{32c^2(b+2cx)(3bB-4Ac)}{63b^5\left(bx+cx^2\right)^{3/2}}+\frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}}-\frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}}-\frac{2}{9bx^3 (bx}$$

```
[Out] -2/9*A/b/x^3/(c*x^2+b*x)^(3/2)-2/21*(-4*A*c+3*B*b)/b^2/x^2/(c*x^2+b*x)^(3/2
)+4/21*c*(-4*A*c+3*B*b)/b^3/x/(c*x^2+b*x)^(3/2)-32/63*c^2*(-4*A*c+3*B*b)*(2
*c*x+b)/b^5/(c*x^2+b*x)^(3/2)+256/63*c^3*(-4*A*c+3*B*b)*(2*c*x+b)/b^7/(c*x^
2+b*x)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {792, 658, 614, 613}

$$\frac{256c^3(b+2cx)(3bB-4Ac)}{63b^7\sqrt{bx+cx^2}}-\frac{32c^2(b+2cx)(3bB-4Ac)}{63b^5\left(bx+cx^2\right)^{3/2}}+\frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}}-\frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}}-\frac{2}{9bx^3 (bx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*A)/(9*b*x^3*(b*x + c*x^2)^(3/2)) - (2*(3*b*B - 4*A*c))/(21*b^2*x^2*(b*x
 + c*x^2)^(3/2)) + (4*c*(3*b*B - 4*A*c))/(21*b^3*x*(b*x + c*x^2)^(3/2)) - (
32*c^2*(3*b*B - 4*A*c)*(b + 2*c*x))/(63*b^5*(b*x + c*x^2)^(3/2)) + (256*c^3
*(3*b*B - 4*A*c)*(b + 2*c*x))/(63*b^7*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - -\frac{\left(2\left(-3(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int\frac{1}{x^2\left(bx+cx^2\right)^{5/2}}\,dx}{9b}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} - \frac{(10c(3bB-4Ac))\int\frac{1}{x\left(bx+cx^2\right)^{5/2}}\,dx}{21b^2}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} + \frac{\left(16c^2(3bB-4Ac)\right)}{21b^3}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} - \frac{32c^2(3bB-4Ac)(b}{63b^5\left(bx+cx^2\right)}$$

$$= -\frac{2A}{9bx^3\left(bx+cx^2\right)^{3/2}} - \frac{2(3bB-4Ac)}{21b^2x^2\left(bx+cx^2\right)^{3/2}} + \frac{4c(3bB-4Ac)}{21b^3x\left(bx+cx^2\right)^{3/2}} - \frac{32c^2(3bB-4Ac)(b}{63b^5\left(bx+cx^2\right)}$$

Mathematica [A] time = 0.05, size = 145, normalized size = 0.87

$$\frac{6bBx\left(-3b^5+6b^4cx-16b^3c^2x^2+96b^2c^3x^3+384bc^4x^4+256c^5x^5\right)-2A\left(7b^6-12b^5cx+24b^4c^2x^2-64b^3c^3x^3+\right.}{63b^7x^3(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (6*b*B*x*(-3*b^5 + 6*b^4*c*x - 16*b^3*c^2*x^2 + 96*b^2*c^3*x^3 + 384*b*c^4*
x^4 + 256*c^5*x^5) - 2*A*(7*b^6 - 12*b^5*c*x + 24*b^4*c^2*x^2 - 64*b^3*c^3*
x^3 + 384*b^2*c^4*x^4 + 1536*b*c^5*x^5 + 1024*c^6*x^6))/(63*b^7*x^3*(x*(b +
 c*x))^(3/2))
```

fricas [A] time = 0.65, size = 177, normalized size = 1.07

$$-\frac{2\left(7\,Ab^6-256\left(3\,Bbc^5-4\,Ac^6\right)x^6-384\left(3\,Bb^2c^4-4\,Abc^5\right)x^5-96\left(3\,Bb^3c^3-4\,Ab^2c^4\right)x^4+16\left(3\,Bb^4c^2-4\,Ab^3\right.\right.}{63\left(b^7c^2x^7+2\,b^8cx^6+b^9x^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/63*(7*A*b^6 - 256*(3*B*b*c^5 - 4*A*c^6)*x^6 - 384*(3*B*b^2*c^4 - 4*A*b*c
^5)*x^5 - 96*(3*B*b^3*c^3 - 4*A*b^2*c^4)*x^4 + 16*(3*B*b^4*c^2 - 4*A*b^3*c^
3)*x^3 - 6*(3*B*b^5*c - 4*A*b^4*c^2)*x^2 + 3*(3*B*b^6 - 4*A*b^5*c)*x)*sqrt(
c*x^2 + b*x)/(b^7*c^2*x^7 + 2*b^8*c*x^6 + b^9*x^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^3), x)
```

maple [A] time = 0.05, size = 158, normalized size = 0.95

$$-\frac{2\,(cx+b)\,(1024A\,c^6x^6-768Bb\,c^5x^6+1536Ab\,c^5x^5-1152B\,b^2c^4x^5+384A\,b^2c^4x^4-288B\,b^3c^3x^4-64A\,b^3c}{63\,(c\,x^2+bx)^{\frac{5}{2}}\,b^7x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/63*(c*x+b)*(1024*A*c^6*x^6-768*B*b*c^5*x^6+1536*A*b*c^5*x^5-1152*B*b^2*c
^4*x^5+384*A*b^2*c^4*x^4-288*B*b^3*c^3*x^4-64*A*b^3*c^3*x^3+48*B*b^4*c^2*x^
3+24*A*b^4*c^2*x^2-18*B*b^5*c*x^2-12*A*b^5*c*x+9*B*b^6*x+7*A*b^6)/x^2/b^7/(
c*x^2+b*x)^(5/2)
```

maxima [A] time = 0.51, size = 270, normalized size = 1.63

$$-\frac{64\,Bc^3x}{21\,(cx^2+bx)^{\frac{3}{2}}b^4}+\frac{512\,Bc^4x}{21\,\sqrt{cx^2+bx}\,b^6}+\frac{256\,Ac^4x}{63\,(cx^2+bx)^{\frac{3}{2}}b^5}-\frac{2048\,Ac^5x}{63\,\sqrt{cx^2+bx}\,b^7}-\frac{32\,Bc^2}{21\,(cx^2+bx)^{\frac{3}{2}}b^3}+\frac{256\,Bc^3}{21\,\sqrt{cx^2+bx}\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -64/21*B*c^3*x/((c*x^2 + b*x)^(3/2)*b^4) + 512/21*B*c^4*x/(sqrt(c*x^2 + b*x
)*b^6) + 256/63*A*c^4*x/((c*x^2 + b*x)^(3/2)*b^5) - 2048/63*A*c^5*x/(sqrt(c
*x^2 + b*x)*b^7) - 32/21*B*c^2/((c*x^2 + b*x)^(3/2)*b^3) + 256/21*B*c^3/(sq
rt(c*x^2 + b*x)*b^5) + 128/63*A*c^3/((c*x^2 + b*x)^(3/2)*b^4) - 1024/63*A*c
^4/(sqrt(c*x^2 + b*x)*b^6) + 4/7*B*c/((c*x^2 + b*x)^(3/2)*b^2*x) - 16/21*A*
c^2/((c*x^2 + b*x)^(3/2)*b^3*x) - 2/7*B/((c*x^2 + b*x)^(3/2)*b*x^2) + 8/21*
A*c/((c*x^2 + b*x)^(3/2)*b^2*x^2) - 2/9*A/((c*x^2 + b*x)^(3/2)*b*x^3)
```

mupad [B] time = 1.41, size = 266, normalized size = 1.60

$$\frac{\sqrt{c\,x^2+b\,x}\,\left(x\,\left(\frac{4\,c^3\,(176\,A\,c-111\,B\,b)}{63\,b^5}+\frac{2\,c^3\,(247\,A\,c-138\,B\,b)}{63\,b^5}+\frac{b\,\left(\frac{184\,A\,c^5-96\,B\,b\,c^4}{63\,b^6}-\frac{4\,c^4\,(247\,A\,c-138\,B\,b)}{63\,b^6}\right)}{c}\right)+\frac{2\,c^2\,(176\,A\,c-111\,B\,b)}{63\,b^4}\right)}{x^2\,(b+c\,x)^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] ((b*x + c*x^2)^(1/2)*(x*((4*c^3*(176*A*c - 111*B*b))/(63*b^5) + (2*c^3*(247
*A*c - 138*B*b))/(63*b^5) + (b*((184*A*c^5 - 96*B*b*c^4)/(63*b^6) - (4*c^4*
(247*A*c - 138*B*b))/(63*b^6)))/c) + (2*c^2*(176*A*c - 111*B*b))/(63*b^4)))
/(x^2*(b + c*x)^2) - ((b*x + c*x^2)^(1/2)*(18*B*b^3 - 52*A*b^2*c))/(63*b^6*
x^4) - ((b*x + c*x^2)^(1/2)*((1024*A*c^4 - 768*B*b*c^3)/(63*b^6) + (2*c*x*(
1024*A*c^4 - 768*B*b*c^3))/(63*b^7)))/(x*(b + c*x)) - (2*A*(b*x + c*x^2)^(1
/2))/(9*b^3*x^5) - (2*c*(b*x + c*x^2)^(1/2)*(23*A*c - 12*B*b))/(21*b^5*x^3)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\,(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(x*(b + c*x))**(5/2)), x)
```

3.138 $\int \frac{d+ex}{\left(bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{128c(b+2cx)(2cd-be)}{15b^6\sqrt{bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(x(2cd-be)+bd)}{5b^2\left(bx+cx^2\right)^{5/2}}$$

```
[Out] -2/5*(b*d+(-b*e+2*c*d)*x)/b^2/(c*x^2+b*x)^(5/2)+16/15*(-b*e+2*c*d)*(2*c*x+b
)/b^4/(c*x^2+b*x)^(3/2)-128/15*c*(-b*e+2*c*d)*(2*c*x+b)/b^6/(c*x^2+b*x)^(1/
2)
```

Rubi [A] time = 0.03, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {638, 614, 613}

$$-\frac{128c(b+2cx)(2cd-be)}{15b^6\sqrt{bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{2(x(2cd-be)+bd)}{5b^2\left(bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(b*d + (2*c*d - b*e)*x))/(5*b^2*(b*x + c*x^2)^(5/2)) + (16*(2*c*d - b*e
)*(b + 2*c*x))/(15*b^4*(b*x + c*x^2)^(3/2)) - (128*c*(2*c*d - b*e)*(b + 2*c
*x))/(15*b^6*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(bx+cx^2\right)^{7/2}}\,dx &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}-\frac{(8(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{5b^2}\\ &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15b^4\left(bx+cx^2\right)^{3/2}}+\frac{(64c(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{15b^4}\\ &= -\frac{2(bd+(2cd-be)x)}{5b^2\left(bx+cx^2\right)^{5/2}}+\frac{16(2cd-be)(b+2cx)}{15b^4\left(bx+cx^2\right)^{3/2}}-\frac{128c(2cd-be)(b+2cx)}{15b^6\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 105, normalized size = 0.98

$$-\frac{2\left(b^5(3d+5ex)-10b^4cx(d+4ex)+80b^3c^2x^2(d-3ex)+160b^2c^3x^3(3d-2ex)-128bc^4x^4(ex-5d)+256c^5dx^5\right)}{15b^6(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(256*c^5*d*x^5 + 80*b^3*c^2*x^2*(d - 3*e*x) + 160*b^2*c^3*x^3*(3*d - 2*
e*x) - 128*b*c^4*x^4*(-5*d + e*x) - 10*b^4*c*x*(d + 4*e*x) + b^5*(3*d + 5*e
*x)))/(15*b^6*(x*(b + c*x))^(5/2))
```

fricas [**A**] time = 0.96, size = 164, normalized size = 1.53

$$-\frac{2\,(3\,b^5d+128\left(2\,c^5d-bc^4e\right)x^5+320\left(2\,bc^4d-b^2c^3e\right)x^4+240\left(2\,b^2c^3d-b^3c^2e\right)x^3+40\left(2\,b^3c^2d-b^4ce\right)x^2-5\,(}{15\left(b^6c^3x^6+3\,b^7c^2x^5+3\,b^8cx^4+b^9x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(3*b^5*d + 128*(2*c^5*d - b*c^4*e)*x^5 + 320*(2*b*c^4*d - b^2*c^3*e)*
x^4 + 240*(2*b^2*c^3*d - b^3*c^2*e)*x^3 + 40*(2*b^3*c^2*d - b^4*c*e)*x^2 -
5*(2*b^4*c*d - b^5*e)*x)*sqrt(c*x^2 + b*x)/(b^6*c^3*x^6 + 3*b^7*c^2*x^5 + 3
*b^8*c*x^4 + b^9*x^3)
```

giac [**A**] time = 0.23, size = 147, normalized size = 1.37

$$-\frac{2\left(\left(8\left(2\left(4\,x\left(\frac{2\left(2\,c^5d-bc^4e\right)x}{b^6}+\frac{5\left(2\,bc^4d-b^2c^3e\right)}{b^6}\right)+\frac{15\left(2\,b^2c^3d-b^3c^2e\right)}{b^6}\right)x+\frac{5\left(2\,b^3c^2d-b^4ce\right)}{b^6}\right)x-\frac{5\left(2\,b^4cd-b^5e\right)}{b^6}\right)x+\frac{3\,d}{b}\right)}{15\left(cx^2+bx\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*((8*(2*(4*x*(2*(2*c^5*d - b*c^4*e)*x/b^6 + 5*(2*b*c^4*d - b^2*c^3*e)/
b^6) + 15*(2*b^2*c^3*d - b^3*c^2*e)/b^6)*x + 5*(2*b^3*c^2*d - b^4*c*e)/b^6)
*x - 5*(2*b^4*c*d - b^5*e)/b^6)*x + 3*d/b)/(c*x^2 + b*x)^(5/2)
```

maple [**A**] time = 0.04, size = 132, normalized size = 1.23

$$-\frac{2\,(cx+b)\,(-128b\,c^4e\,x^5+256c^5d\,x^5-320b^2c^3e\,x^4+640b\,c^4d\,x^4-240b^3c^2e\,x^3+480b^2c^3d\,x^3-40b^4ce\,x^2+80b}{15\left(c\,x^2+bx\right)^{\frac{7}{2}}b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^(7/2),x)
```

```
[Out] -2/15*(c*x+b)*x*(-128*b*c^4*e*x^5+256*c^5*d*x^5-320*b^2*c^3*e*x^4+640*b*c^4
*d*x^4-240*b^3*c^2*e*x^3+480*b^2*c^3*d*x^3-40*b^4*c*e*x^2+80*b^3*c^2*d*x^2+
5*b^5*e*x-10*b^4*c*d*x+3*b^5*d)/b^6/(c*x^2+b*x)^(7/2)
```

maxima [B] time = 0.61, size = 210, normalized size = 1.96

$$-\frac{4\,cdx}{5\,\left(cx^2+bx\right)^{\frac{5}{2}}b^2}+\frac{64\,c^2dx}{15\,\left(cx^2+bx\right)^{\frac{3}{2}}b^4}-\frac{512\,c^3dx}{15\,\sqrt{cx^2+bx}\,b^6}+\frac{2\,ex}{5\,\left(cx^2+bx\right)^{\frac{5}{2}}b}-\frac{32\,cex}{15\,\left(cx^2+bx\right)^{\frac{3}{2}}b^3}+\frac{256\,c^2ex}{15\,\sqrt{cx^2+bx}\,b^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -4/5*c*d*x/((c*x^2 + b*x)^(5/2)*b^2) + 64/15*c^2*d*x/((c*x^2 + b*x)^(3/2)*b
^4) - 512/15*c^3*d*x/(sqrt(c*x^2 + b*x)*b^6) + 2/5*e*x/((c*x^2 + b*x)^(5/2)
*b) - 32/15*c*e*x/((c*x^2 + b*x)^(3/2)*b^3) + 256/15*c^2*e*x/(sqrt(c*x^2 +
b*x)*b^5) - 2/5*d/((c*x^2 + b*x)^(5/2)*b) + 32/15*c*d/((c*x^2 + b*x)^(3/2)*
b^3) - 256/15*c^2*d/(sqrt(c*x^2 + b*x)*b^5) - 16/15*e/((c*x^2 + b*x)^(3/2)*
b^2) + 128/15*c*e/(sqrt(c*x^2 + b*x)*b^4)
```

mupad [B] time = 1.20, size = 125, normalized size = 1.17

$$-\frac{2\,(5\,e\,b^5\,x+3\,d\,b^5-40\,e\,b^4\,c\,x^2-10\,d\,b^4\,c\,x-240\,e\,b^3\,c^2\,x^3+80\,d\,b^3\,c^2\,x^2-320\,e\,b^2\,c^3\,x^4+480\,d\,b^2\,c^3\,x^3-}{15\,b^6\,\left(c\,x^2+b\,x\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^(7/2),x)
```

```
[Out] -(2*(3*b^5*d + 256*c^5*d*x^5 + 5*b^5*e*x + 80*b^3*c^2*d*x^2 + 480*b^2*c^3*d
*x^3 - 240*b^3*c^2*e*x^3 - 320*b^2*c^3*e*x^4 - 10*b^4*c*d*x + 640*b*c^4*d*x
^4 - 40*b^4*c*e*x^2 - 128*b*c^4*e*x^5))/(15*b^6*(b*x + c*x^2)^(5/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(x\left(b+cx\right)\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**(7/2),x)
```

```
[Out] Integral((d + e*x)/(x*(b + c*x))**(7/2), x)
```

3.139 $\int \frac{d+ex}{\left(bx+cx^2\right)^{9/2}}\,dx$

Optimal. Leaf size=145

$$\frac{1024c^2(b+2cx)(2cd-be)}{35b^8\sqrt{bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35b^6\left(bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35b^4\left(bx+cx^2\right)^{5/2}}-\frac{2(x(2cd-be)+bd)}{7b^2\left(bx+cx^2\right)^{7/2}}$$

```
[Out] -2/7*(b*d+(-b*e+2*c*d)*x)/b^2/(c*x^2+b*x)^(7/2)+24/35*(-b*e+2*c*d)*(2*c*x+b
)/b^4/(c*x^2+b*x)^(5/2)-128/35*c*(-b*e+2*c*d)*(2*c*x+b)/b^6/(c*x^2+b*x)^(3/
2)+1024/35*c^2*(-b*e+2*c*d)*(2*c*x+b)/b^8/(c*x^2+b*x)^(1/2)
```

Rubi [**A**] time = 0.04, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {638, 614, 613}

$$\frac{1024c^2(b+2cx)(2cd-be)}{35b^8\sqrt{bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35b^6\left(bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35b^4\left(bx+cx^2\right)^{5/2}}-\frac{2(x(2cd-be)+bd)}{7b^2\left(bx+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*(b*d + (2*c*d - b*e)*x))/(7*b^2*(b*x + c*x^2)^(7/2)) + (24*(2*c*d - b*e
)*(b + 2*c*x))/(35*b^4*(b*x + c*x^2)^(5/2)) - (128*c*(2*c*d - b*e)*(b + 2*c
*x))/(35*b^6*(b*x + c*x^2)^(3/2)) + (1024*c^2*(2*c*d - b*e)*(b + 2*c*x))/(3
5*b^8*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{\left(bx+cx^2\right)^{9/2}}\,dx = -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} - \frac{(12(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{7/2}}\,dx}{7b^2}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} + \frac{(192c(2cd-be))\int \frac{1}{\left(bx+cx^2\right)^{5/2}}\,dx}{35b^4}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} - \frac{128c(2cd-be)(b+2cx)}{35b^6\left(bx+cx^2\right)^{3/2}} - \frac{\left(512c^2(2cd\right.}{}$$

$$= -\frac{2(bd+(2cd-be)x)}{7b^2\left(bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35b^4\left(bx+cx^2\right)^{5/2}} - \frac{128c(2cd-be)(b+2cx)}{35b^6\left(bx+cx^2\right)^{3/2}} + \frac{1024c^2(2cd}{35b^8\sqrt{}}$$

Mathematica [A] time = 0.06, size = 150, normalized size = 1.03

$$-\frac{2\sqrt{x(b+cx)}\left(b^7(5d+7ex)-14b^6cx(d+2ex)+56b^5c^2x^2(d+5ex)-560b^4c^3x^3(d-4ex)+4480b^3c^4x^4(ex-\right.}{35b^8x^4(b+cx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*Sqrt[x*(b + c*x)]*(-2048*c^7*d*x^7 - 560*b^4*c^3*x^3*(d - 4*e*x) + 1024
*b*c^6*x^6*(-7*d + e*x) + 4480*b^3*c^4*x^4*(-d + e*x) + 1792*b^2*c^5*x^5*(-
5*d + 2*e*x) - 14*b^6*c*x*(d + 2*e*x) + 56*b^5*c^2*x^2*(d + 5*e*x) + b^7*(5
*d + 7*e*x)))/(35*b^8*x^4*(b + c*x)^4)
```

fricas [A] time = 0.99, size = 223, normalized size = 1.54

$$-\frac{2\left(5\,b^7d-1024\left(2\,c^7d-bc^6e\right)x^7-3584\left(2\,bc^6d-b^2c^5e\right)x^6-4480\left(2\,b^2c^5d-b^3c^4e\right)x^5-2240\left(2\,b^3c^4d-b^4c^3\right.\right.}{35\left(b^8c^4x^8+4\,b^9c^3x^7+6\,b^{10}c^2x^6+4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="fricas")
```

```
[Out] -2/35*(5*b^7*d - 1024*(2*c^7*d - b*c^6*e)*x^7 - 3584*(2*b*c^6*d - b^2*c^5*e
)*x^6 - 4480*(2*b^2*c^5*d - b^3*c^4*e)*x^5 - 2240*(2*b^3*c^4*d - b^4*c^3*e)
*x^4 - 280*(2*b^4*c^3*d - b^5*c^2*e)*x^3 + 28*(2*b^5*c^2*d - b^6*c*e)*x^2 -
 7*(2*b^6*c*d - b^7*e)*x)*sqrt(c*x^2 + b*x)/(b^8*c^4*x^8 + 4*b^9*c^3*x^7 +
6*b^10*c^2*x^6 + 4*b^11*c*x^5 + b^12*x^4)
```

giac [A] time = 0.33, size = 205, normalized size = 1.41

$$\frac{2\left(\left(\left(4\left(2\left(8\left(2\left(4\,x\left(\frac{2\left(2\,c^7d-bc^6e\right)x}{b^8}+\frac{7\left(2\,bc^6d-b^2c^5e\right)}{b^8}\right)+\frac{35\left(2\,b^2c^5d-b^3c^4e\right)}{b^8}\right)x+\frac{35\left(2\,b^3c^4d-b^4c^3e\right)}{b^8}\right)x+\frac{35\left(2\,b^4c^3d-b^5c^2e\right)}{b^8}\right)x-\right.\right.\right.\right.}{35\left(cx^2+bx\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="giac")
```

```
[Out] 2/35*((4*(2*(8*(2*(4*x*(2*(2*c^7*d - b*c^6*e)*x/b^8 + 7*(2*b*c^6*d - b^2*c^
5*e)/b^8) + 35*(2*b^2*c^5*d - b^3*c^4*e)/b^8)*x + 35*(2*b^3*c^4*d - b^4*c^3
*e)/b^8)*x + 35*(2*b^4*c^3*d - b^5*c^2*e)/b^8)*x - 7*(2*b^5*c^2*d - b^6*c*e
)/b^8)*x + 7*(2*b^6*c*d - b^7*e)/b^8)*x - 5*d/b)/(c*x^2 + b*x)^(7/2)
```

maple [A] time = 0.07, size = 180, normalized size = 1.24

$$-\frac{2\,(cx+b)\left(1024b\,c^6e\,x^7-2048c^7d\,x^7+3584b^2c^5e\,x^6-7168b\,c^6d\,x^6+4480b^3c^4e\,x^5-8960b^2c^5d\,x^5+2240b^4c^3e\right.}{35\left(c\,x^2+bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x)^(9/2),x)
```

```
[Out] -2/35*(c*x+b)*x*(1024*b*c^6*e*x^7-2048*c^7*d*x^7+3584*b^2*c^5*e*x^6-7168*b*
c^6*d*x^6+4480*b^3*c^4*e*x^5-8960*b^2*c^5*d*x^5+2240*b^4*c^3*e*x^4-4480*b^3
*c^4*d*x^4+280*b^5*c^2*e*x^3-560*b^4*c^3*d*x^3-28*b^6*c*e*x^2+56*b^5*c^2*d*
x^2+7*b^7*e*x-14*b^6*c*d*x+5*b^7*d)/b^8/(c*x^2+b*x)^(9/2)
```

maxima [B] time = 0.63, size = 292, normalized size = 2.01

$$-\frac{4\,cdx}{7\left(cx^2+bx\right)^{\frac{7}{2}}b^2}+\frac{96\,c^2dx}{35\left(cx^2+bx\right)^{\frac{5}{2}}b^4}-\frac{512\,c^3dx}{35\left(cx^2+bx\right)^{\frac{3}{2}}b^6}+\frac{4096\,c^4dx}{35\,\sqrt{cx^2+bx}\,b^8}+\frac{2\,ex}{7\left(cx^2+bx\right)^{\frac{7}{2}}b}-\frac{48\,cex}{35\left(cx^2+bx\right)^{\frac{5}{2}}b^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x)^(9/2),x, algorithm="maxima")
```

```
[Out] -4/7*c*d*x/((c*x^2 + b*x)^(7/2)*b^2) + 96/35*c^2*d*x/((c*x^2 + b*x)^(5/2)*b
^4) - 512/35*c^3*d*x/((c*x^2 + b*x)^(3/2)*b^6) + 4096/35*c^4*d*x/(sqrt(c*x^
2 + b*x)*b^8) + 2/7*e*x/((c*x^2 + b*x)^(7/2)*b) - 48/35*c*e*x/((c*x^2 + b*x
)^(5/2)*b^3) + 256/35*c^2*e*x/((c*x^2 + b*x)^(3/2)*b^5) - 2048/35*c^3*e*x/(
sqrt(c*x^2 + b*x)*b^7) - 2/7*d/((c*x^2 + b*x)^(7/2)*b) + 48/35*c*d/((c*x^2
+ b*x)^(5/2)*b^3) - 256/35*c^2*d/((c*x^2 + b*x)^(3/2)*b^5) + 2048/35*c^3*d/
(sqrt(c*x^2 + b*x)*b^7) - 24/35*e/((c*x^2 + b*x)^(5/2)*b^2) + 128/35*c*e/((
c*x^2 + b*x)^(3/2)*b^4) - 1024/35*c^2*e/(sqrt(c*x^2 + b*x)*b^6)
```

mupad [B] time = 1.20, size = 185, normalized size = 1.28

$$\frac{\frac{2048\,c^3\,d-1024\,b\,c^2\,e}{35\,b^7}+\frac{2\,c\,x\left(2048\,c^3\,d-1024\,b\,c^2\,e\right)}{35\,b^8}}{\sqrt{c\,x^2+b\,x}}-\frac{\frac{256\,c^2\,d-128\,b\,c\,e}{35\,b^5}+\frac{2\,c\,x\left(256\,c^2\,d-128\,b\,c\,e\right)}{35\,b^6}}{\left(c\,x^2+b\,x\right)^{3/2}}-\frac{\frac{2\,d}{7\,b}-x\left(\frac{2\,e}{7\,b}-\frac{4\,c\,d}{7\,b^2}\right)}{\left(c\,x^2+b\,x\right)^{7/2}}-\frac{\frac{24\,b\,e-48\,c\,d}{35\,b^3}+}{\left(c\,x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(b*x + c*x^2)^(9/2),x)
```

```
[Out] ((2048*c^3*d - 1024*b*c^2*e)/(35*b^7) + (2*c*x*(2048*c^3*d - 1024*b*c^2*e))
/(35*b^8))/(b*x + c*x^2)^(1/2) - ((256*c^2*d - 128*b*c*e)/(35*b^5) + (2*c*x
*(256*c^2*d - 128*b*c*e))/(35*b^6))/(b*x + c*x^2)^(3/2) - ((2*d)/(7*b) - x*
((2*e)/(7*b) - (4*c*d)/(7*b^2)))/(b*x + c*x^2)^(7/2) - ((24*b*e - 48*c*d)/(
35*b^3) + (2*c*x*(24*b*e - 48*c*d))/(35*b^4))/(b*x + c*x^2)^(5/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{d+ex}{\left(x\left(b+cx\right)\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x)**(9/2),x)
```

```
[Out] Integral((d + e*x)/(x*(b + c*x))**(9/2), x)
```

3.140 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{15}Bcx^{15/2}$$

```
[Out] 2/11*A*b*x^(11/2)+2/13*(A*c+B*b)*x^(13/2)+2/15*B*c*x^(15/2)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{11}Abx^{11/2}+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(11/2))/11 + (2*(b*B + A*c)*x^(13/2))/13 + (2*B*c*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^{9/2}+(bB+Ac)x^{11/2}+Bcx^{13/2}\right)\,dx\\ &= \frac{2}{11}Abx^{11/2}+\frac{2}{13}(bB+Ac)x^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2x^{11/2}(15A(13b+11cx)+11Bx(15b+13cx))}{2145}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(11/2)*(15*A*(13*b + 11*c*x) + 11*B*x*(15*b + 13*c*x)))/2145
```

fricas [A] time = 0.76, size = 32, normalized size = 0.82

$$\frac{2}{2145}\left(143\,Bcx^7+195\,Abx^5+165\,(Bb+Ac)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/2145*(143*B*c*x^7 + 195*A*b*x^5 + 165*(B*b + A*c)*x^6)*sqrt(x)
```

giac [A] time = 0.22, size = 29, normalized size = 0.74

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{13}\,Bbx^{\frac{13}{2}}+\frac{2}{13}\,Acx^{\frac{13}{2}}+\frac{2}{11}\,Abx^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*B*b*x^(13/2) + 2/13*A*c*x^(13/2) + 2/11*A*b*x^(11/
2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(143Bc\,x^{2}+165Acx+165Bbx+195Ab\right)x^{\frac{11}{2}}}{2145}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/2145*x^(11/2)*(143*B*c*x^2+165*A*c*x+165*B*b*x+195*A*b)
```

maxima [A] time = 0.47, size = 27, normalized size = 0.69

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{11}\,Abx^{\frac{11}{2}}+\frac{2}{13}\,(Bb+Ac)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/11*A*b*x^(11/2) + 2/13*(B*b + A*c)*x^(13/2)
```

mupad [B] time = 0.05, size = 27, normalized size = 0.69

$$\frac{2\,x^{11/2}\,\left(195\,A\,b+165\,A\,c\,x+165\,B\,b\,x+143\,B\,c\,x^2\right)}{2145}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(11/2)*(195*A*b + 165*A*c*x + 165*B*b*x + 143*B*c*x^2))/2145
```

sympy [A] time = 7.89, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{11}{2}}}{11}+\frac{2Acx^{\frac{13}{2}}}{13}+\frac{2Bbx^{\frac{13}{2}}}{13}+\frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(11/2)/11 + 2*A*c*x**(13/2)/13 + 2*B*b*x**(13/2)/13 + 2*B*c*x**(15
/2)/15
```

3.141 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{13}Bcx^{13/2}$$

```
[Out] 2/9*A*b*x^(9/2)+2/11*(A*c+B*b)*x^(11/2)+2/13*B*c*x^(13/2)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{9}Abx^{9/2}+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(9/2))/9 + (2*(b*B + A*c)*x^(11/2))/11 + (2*B*c*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^{7/2}+(bB+Ac)x^{9/2}+Bcx^{11/2}\right)\,dx\\&=\frac{2}{9}Abx^{9/2}+\frac{2}{11}(bB+Ac)x^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2x^{9/2}(13A(11b+9cx)+9Bx(13b+11cx))}{1287}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(13*A*(11*b + 9*c*x) + 9*B*x*(13*b + 11*c*x)))/1287
```

fricas [A] time = 1.01, size = 32, normalized size = 0.82

$$\frac{2}{1287}\left(99\,Bcx^6+143\,Abx^4+117\,(Bb+Ac)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*B*c*x^6 + 143*A*b*x^4 + 117*(B*b + A*c)*x^5)*sqrt(x)
```

giac [A] time = 0.19, size = 29, normalized size = 0.74

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,Bbx^{\frac{11}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{9}\,Abx^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*B*b*x^(11/2) + 2/11*A*c*x^(11/2) + 2/9*A*b*x^(9/2)
```

maple [A] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(99Bc\,x^{2}+117Acx+117Bbx+143Ab\right)x^{\frac{9}{2}}}{1287}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/1287*x^(9/2)*(99*B*c*x^2+117*A*c*x+117*B*b*x+143*A*b)
```

maxima [A] time = 0.56, size = 27, normalized size = 0.69

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{9}\,Abx^{\frac{9}{2}}+\frac{2}{11}\,(Bb+Ac)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/9*A*b*x^(9/2) + 2/11*(B*b + A*c)*x^(11/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{9/2}\,\left(143\,A\,b+117\,A\,c\,x+117\,B\,b\,x+99\,B\,c\,x^{2}\right)}{1287}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(9/2)*(143*A*b + 117*A*c*x + 117*B*b*x + 99*B*c*x^2))/1287
```

sympy [A] time = 3.86, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{9}{2}}}{9}+\frac{2Acx^{\frac{11}{2}}}{11}+\frac{2Bbx^{\frac{11}{2}}}{11}+\frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(9/2)/9 + 2*A*c*x**(11/2)/11 + 2*B*b*x**(11/2)/11 + 2*B*c*x**(13/2
)/13
```

3.142 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{11}Bcx^{11/2}$$

```
[Out] 2/7*A*b*x^(7/2)+2/9*(A*c+B*b)*x^(9/2)+2/11*B*c*x^(11/2)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{7}Abx^{7/2}+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(7/2))/7 + (2*(b*B + A*c)*x^(9/2))/9 + (2*B*c*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(bx+cx^2\right)\,dx&=\int\left(Abx^{5/2}+(bB+Ac)x^{7/2}+Bcx^{9/2}\right)\,dx\\&=\frac{2}{7}Abx^{7/2}+\frac{2}{9}(bB+Ac)x^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{693}x^{7/2}(11A(9b+7cx)+7Bx(11b+9cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(7/2)*(11*A*(9*b + 7*c*x) + 7*B*x*(11*b + 9*c*x)))/693
```

fricas [A] time = 0.73, size = 32, normalized size = 0.82

$$\frac{2}{693}\left(63\,Bcx^5+99\,Abx^3+77\,(Bb+Ac)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*c*x^5 + 99*A*b*x^3 + 77*(B*b + A*c)*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{9}\,Bbx^{\frac{9}{2}}+\frac{2}{9}\,Acx^{\frac{9}{2}}+\frac{2}{7}\,Abx^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*B*b*x^(9/2) + 2/9*A*c*x^(9/2) + 2/7*A*b*x^(7/2)
```

maple [A] time = 0.04, size = 28, normalized size = 0.72

$$\frac{2\left(63Bc\,x^{2}+77Acx+77Bbx+99Ab\right)x^{\frac{7}{2}}}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 2/693*x^(7/2)*(63*B*c*x^2+77*A*c*x+77*B*b*x+99*A*b)
```

maxima [A] time = 0.67, size = 27, normalized size = 0.69

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{7}\,Abx^{\frac{7}{2}}+\frac{2}{9}\,(Bb+Ac)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/7*A*b*x^(7/2) + 2/9*(B*b + A*c)*x^(9/2)
```

mupad [B] time = 1.02, size = 27, normalized size = 0.69

$$\frac{2\,x^{7/2}\,\left(99\,A\,b+77\,A\,c\,x+77\,B\,b\,x+63\,B\,c\,x^2\right)}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(7/2)*(99*A*b + 77*A*c*x + 77*B*b*x + 63*B*c*x^2))/693
```

sympy [A] time = 1.62, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{7}{2}}}{7}+\frac{2Acx^{\frac{9}{2}}}{9}+\frac{2Bbx^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*x**(7/2)/7 + 2*A*c*x**(9/2)/9 + 2*B*b*x**(9/2)/9 + 2*B*c*x**(11/2)/11
```

3.143 $\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=39

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{9}Bcx^{9/2}$$

```
[Out] 2/5*A*b*x^(5/2)+2/7*(A*c+B*b)*x^(7/2)+2/9*B*c*x^(9/2)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{5}Abx^{5/2}+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*A*b*x^(5/2))/5 + (2*(b*B + A*c)*x^(7/2))/7 + (2*B*c*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx^{3/2}+(bB+Ac)x^{5/2}+Bcx^{7/2}\right)\,dx\\ &= \frac{2}{5}Abx^{5/2}+\frac{2}{7}(bB+Ac)x^{7/2}+\frac{2}{9}Bcx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{315}x^{5/2}(9A(7b+5cx)+5Bx(9b+7cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (2*x^(5/2)*(9*A*(7*b + 5*c*x) + 5*B*x*(9*b + 7*c*x)))/315
```

fricas [A] time = 0.99, size = 32, normalized size = 0.82

$$\frac{2}{315}\left(35\,Bcx^4+63\,Abx^2+45\,(Bb+Ac)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*x^4 + 63*A*b*x^2 + 45*(B*b + A*c)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{9}\,Bcx^{\frac{9}{2}}+\frac{2}{7}\,Bbx^{\frac{7}{2}}+\frac{2}{7}\,Acx^{\frac{7}{2}}+\frac{2}{5}\,Abx^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*B*b*x^(7/2) + 2/7*A*c*x^(7/2) + 2/5*A*b*x^(5/2)
```

maple [A] time = 0.04, size = 28, normalized size = 0.72

$$\frac{2\left(35Bc\,x^{2}+45Acx+45Bbx+63Ab\right)x^{\frac{5}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)*x^(1/2),x)
```

```
[Out] 2/315*x^(5/2)*(35*B*c*x^2+45*A*c*x+45*B*b*x+63*A*b)
```

maxima [A] time = 0.58, size = 27, normalized size = 0.69

$$\frac{2}{9}Bcx^{\frac{9}{2}}+\frac{2}{5}Abx^{\frac{5}{2}}+\frac{2}{7}(Bb+Ac)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/5*A*b*x^(5/2) + 2/7*(B*b + A*c)*x^(7/2)
```

mupad [B] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{5/2}\,\left(63\,A\,b+45\,A\,c\,x+45\,B\,b\,x+35\,B\,c\,x^2\right)}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)*(A + B*x),x)
```

```
[Out] (2*x^(5/2)*(63*A*b + 45*A*c*x + 45*B*b*x + 35*B*c*x^2))/315
```

sympy [A] time = 2.33, size = 37, normalized size = 0.95

$$\frac{2Abx^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{9}{2}}}{9}+\frac{2x^{\frac{7}{2}}\left(Ac+Bb\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)*x**(1/2),x)
```

```
[Out] 2*A*b*x**(5/2)/5 + 2*B*c*x**(9/2)/9 + 2*x**(7/2)*(A*c + B*b)/7
```

3.144 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=39

$$\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{7}Bcx^{7/2}$$

```
[Out] 2/3*A*b*x^(3/2)+2/5*(A*c+B*b)*x^(5/2)+2/7*B*c*x^(7/2)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{3}Abx^{3/2}+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*A*b*x^(3/2))/3 + (2*(b*B + A*c)*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{x}}\,dx &= \int \left(Ab\sqrt{x}+(bB+Ac)x^{3/2}+Bcx^{5/2}\right)dx\\ &= \frac{2}{3}Abx^{3/2}+\frac{2}{5}(bB+Ac)x^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.85

$$\frac{2}{105}x^{3/2}(7A(5b+3cx)+3Bx(7b+5cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*x^(3/2)*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b + 5*c*x)))/105
```

fricas [A] time = 0.91, size = 30, normalized size = 0.77

$$\frac{2}{105}\left(15\,Bcx^3+35\,Abx+21\,(Bb+Ac)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*x^3 + 35*A*b*x + 21*(B*b + A*c)*x^2)*sqrt(x)
```

giac [**A**] time = 0.15, size = 29, normalized size = 0.74

$$\frac{2}{7}Bcx^{\frac{7}{2}}+\frac{2}{5}Bbx^{\frac{5}{2}}+\frac{2}{5}Acx^{\frac{5}{2}}+\frac{2}{3}Abx^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*B*b*x^(5/2) + 2/5*A*c*x^(5/2) + 2/3*A*b*x^(3/2)
```

maple [**A**] time = 0.05, size = 28, normalized size = 0.72

$$\frac{2\left(15Bc\,x^{2}+21Acx+21Bbx+35Ab\right)x^{\frac{3}{2}}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(1/2),x)
```

```
[Out] 2/105*x^(3/2)*(15*B*c*x^2+21*A*c*x+21*B*b*x+35*A*b)
```

maxima [**A**] time = 0.50, size = 27, normalized size = 0.69

$$\frac{2}{7}Bcx^{\frac{7}{2}}+\frac{2}{3}Abx^{\frac{3}{2}}+\frac{2}{5}(Bb+Ac)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/3*A*b*x^(3/2) + 2/5*(B*b + A*c)*x^(5/2)
```

mupad [**B**] time = 0.04, size = 27, normalized size = 0.69

$$\frac{2\,x^{3/2}\,\left(35\,A\,b+21\,A\,c\,x+21\,B\,b\,x+15\,B\,c\,x^2\right)}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(1/2),x)
```

```
[Out] (2*x^(3/2)*(35*A*b + 21*A*c*x + 21*B*b*x + 15*B*c*x^2))/105
```

sympy [**A**] time = 0.44, size = 46, normalized size = 1.18

$$\frac{2Abx^{\frac{3}{2}}}{3}+\frac{2Acx^{\frac{5}{2}}}{5}+\frac{2Bbx^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(1/2),x)
```

```
[Out] 2*A*b*x**(3/2)/3 + 2*A*c*x**(5/2)/5 + 2*B*b*x**(5/2)/5 + 2*B*c*x**(7/2)/7
```

3.145 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=37

$$\frac{2}{3}x^{3/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{5}Bcx^{5/2}$$

```
[Out] 2/3*(A*c+B*b)*x^(3/2)+2/5*B*c*x^(5/2)+2*A*b*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$\frac{2}{3}x^{3/2}(Ac+bB)+2Ab\sqrt{x}+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(3/2),x]
```

```
[Out] 2*A*b*Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{3/2}}\,dx &= \int \left(\frac{Ab}{\sqrt{x}}+(bB+Ac)\sqrt{x}+Bcx^{3/2}\right)dx\\ &= 2Ab\sqrt{x}+\frac{2}{3}(bB+Ac)x^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.84

$$\frac{2}{15}\sqrt{x}\,(5A(3b+cx)+Bx(5b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)))/15
```

fricas [A] time = 0.94, size = 27, normalized size = 0.73

$$\frac{2}{15}\left(3\,Bcx^2+15\,Ab+5\,(Bb+Ac)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*x^2 + 15*A*b + 5*(B*b + A*c)*x)*sqrt(x)
```

giac [**A**] time = 0.17, size = 29, normalized size = 0.78

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,Bbx^{\frac{3}{2}}+\frac{2}{3}\,Acx^{\frac{3}{2}}+2\,Ab\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*B*b*x^(3/2) + 2/3*A*c*x^(3/2) + 2*A*b*sqrt(x)
```

maple [**A**] time = 0.04, size = 28, normalized size = 0.76

$$\frac{2\left(3Bc\,x^{2}+5Acx+5Bbx+15Ab\right)\sqrt{x}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(3/2),x)
```

```
[Out] 2/15*x^(1/2)*(3*B*c*x^2+5*A*c*x+5*B*b*x+15*A*b)
```

maxima [**A**] time = 0.58, size = 27, normalized size = 0.73

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+2\,Ab\sqrt{x}+\frac{2}{3}\,(Bb+Ac)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c*x^(5/2) + 2*A*b*sqrt(x) + 2/3*(B*b + A*c)*x^(3/2)
```

mupad [**B**] time = 0.04, size = 27, normalized size = 0.73

$$\frac{2\,\sqrt{x}\,\left(15\,A\,b+5\,A\,c\,x+5\,B\,b\,x+3\,B\,c\,x^2\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(3/2),x)
```

```
[Out] (2*x^(1/2)*(15*A*b + 5*A*c*x + 5*B*b*x + 3*B*c*x^2))/15
```

sympy [**A**] time = 0.48, size = 44, normalized size = 1.19

$$2Ab\sqrt{x}+\frac{2Acx^{\frac{3}{2}}}{3}+\frac{2Bbx^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(3/2),x)
```

```
[Out] 2*A*b*sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*b*x**(3/2)/3 + 2*B*c*x**(5/2)/5
```

3.146 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=35

$$2\sqrt{x}\,(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{3}Bcx^{3/2}$$

```
[Out] 2/3*B*c*x^(3/2)-2*A*b/x^(1/2)+2*(A*c+B*b)*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$2\sqrt{x}\,(Ac+bB)-\frac{2Ab}{\sqrt{x}}+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*A*b)/Sqrt[x] + 2*(b*B + A*c)*Sqrt[x] + (2*B*c*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{5/2}}\,dx &= \int \left(\frac{Ab}{x^{3/2}}+\frac{bB+Ac}{\sqrt{x}}+Bc\sqrt{x}\right)dx\\ &= -\frac{2Ab}{\sqrt{x}}+2(bB+Ac)\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 0.83

$$\frac{2(Bx(3b+cx)-3A(b-cx))}{3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (2*(-3*A*(b - c*x) + B*x*(3*b + c*x)))/(3*Sqrt[x])
```

fricas [A] time = 0.80, size = 26, normalized size = 0.74

$$\frac{2\left(Bcx^2-3\,Ab+3\,(Bb+Ac)x\right)}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*x^2 - 3*A*b + 3*(B*b + A*c)*x)/sqrt(x)
```

giac [**A**] time = 0.15, size = 29, normalized size = 0.83

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Bb\sqrt{x} + 2\,Ac\sqrt{x} - \frac{2\,Ab}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*B*b*sqrt(x) + 2*A*c*sqrt(x) - 2*A*b/sqrt(x)
```

maple [**A**] time = 0.05, size = 28, normalized size = 0.80

$$-\frac{2\left(-Bc\,x^{2}-3Acx-3Bbx+3Ab\right)}{3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(5/2),x)
```

```
[Out] -2/3/x^(1/2)*(-B*c*x^2-3*A*c*x-3*B*b*x+3*A*b)
```

maxima [**A**] time = 0.71, size = 27, normalized size = 0.77

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} - \frac{2\,Ab}{\sqrt{x}} + 2\,(Bb + Ac)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c*x^(3/2) - 2*A*b/sqrt(x) + 2*(B*b + A*c)*sqrt(x)
```

mupad [**B**] time = 1.02, size = 27, normalized size = 0.77

$$\frac{6\,A\,c\,x-6\,A\,b+6\,B\,b\,x+2\,B\,c\,x^2}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(5/2),x)
```

```
[Out] (6*A*c*x - 6*A*b + 6*B*b*x + 2*B*c*x^2)/(3*x^(1/2))
```

sympy [**A**] time = 0.76, size = 41, normalized size = 1.17

$$-\frac{2Ab}{\sqrt{x}} + 2Ac\sqrt{x} + 2Bb\sqrt{x} + \frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(5/2),x)
```

```
[Out] -2*A*b/sqrt(x) + 2*A*c*sqrt(x) + 2*B*b*sqrt(x) + 2*B*c*x**(3/2)/3
```

3.147 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{7/2}}\,dx$

Optimal. Leaf size=35

$$-\frac{2(Ac+bB)}{\sqrt{x}}-\frac{2Ab}{3x^{3/2}}+2Bc\sqrt{x}$$

```
[Out] -2/3*A*b/x^(3/2)-2*(A*c+B*b)/x^(1/2)+2*B*c*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{2(Ac+bB)}{\sqrt{x}}-\frac{2Ab}{3x^{3/2}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*A*b)/(3*x^(3/2)) - (2*(b*B + A*c))/Sqrt[x] + 2*B*c*Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{7/2}}\,dx &= \int \left(\frac{Ab}{x^{5/2}}+\frac{bB+Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right)dx\\ &= -\frac{2Ab}{3x^{3/2}}-\frac{2(bB+Ac)}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.80

$$-\frac{2(A(b+3cx)+3Bx(b-cx))}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*(3*B*x*(b - c*x) + A*(b + 3*c*x)))/(3*x^(3/2))
```

fricas [A] time = 0.82, size = 27, normalized size = 0.77

$$\frac{2\left(3\,Bcx^2-Ab-3\,(Bb+Ac)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*c*x^2 - A*b - 3*(B*b + A*c)*x)/x^(3/2)
```

giac [A] time = 0.15, size = 27, normalized size = 0.77

$$2\,Bc\sqrt{x} - \frac{2\,(3\,Bbx + 3\,Acx + Ab)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*c*sqrt(x) - 2/3*(3*B*b*x + 3*A*c*x + A*b)/x^(3/2)
```

maple [A] time = 0.05, size = 27, normalized size = 0.77

$$-\frac{2\left(-3Bc\,x^{2}+3Acx+3Bbx+Ab\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(7/2),x)
```

```
[Out] -2/3/x^(3/2)*(-3*B*c*x^2+3*A*c*x+3*B*b*x+A*b)
```

maxima [A] time = 0.59, size = 27, normalized size = 0.77

$$2\,Bc\sqrt{x} - \frac{2\,(Ab + 3\,(Bb + Ac)x)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*c*sqrt(x) - 2/3*(A*b + 3*(B*b + A*c)*x)/x^(3/2)
```

mupad [B] time = 1.02, size = 27, normalized size = 0.77

$$-\frac{2\,A\,b+6\,A\,c\,x+6\,B\,b\,x-6\,B\,c\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(7/2),x)
```

```
[Out] -(2*A*b + 6*A*c*x + 6*B*b*x - 6*B*c*x^2)/(3*x^(3/2))
```

sympy [A] time = 1.34, size = 41, normalized size = 1.17

$$-\frac{2Ab}{3x^{\frac{3}{2}}} - \frac{2Ac}{\sqrt{x}} - \frac{2Bb}{\sqrt{x}} + 2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(7/2),x)
```

```
[Out] -2*A*b/(3*x**(3/2)) - 2*A*c/sqrt(x) - 2*B*b/sqrt(x) + 2*B*c*sqrt(x)
```

3.148 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{9/2}}\,dx$

Optimal. Leaf size=37

$$-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Ab}{5x^{5/2}}-\frac{2Bc}{\sqrt{x}}$$

```
[Out] -2/5*A*b/x^(5/2)-2/3*(A*c+B*b)/x^(3/2)-2*B*c/x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {765}

$$-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Ab}{5x^{5/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*A*b)/(5*x^(5/2)) - (2*(b*B + A*c))/(3*x^(3/2)) - (2*B*c)/Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{x^{9/2}}\,dx &= \int \left(\frac{Ab}{x^{7/2}}+\frac{bB+Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right)dx\\ &= -\frac{2Ab}{5x^{5/2}}-\frac{2(bB+Ac)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.81

$$-\frac{2(A(3b+5cx)+5Bx(b+3cx))}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)))/(15*x^(5/2))
```

fricas [A] time = 0.81, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^2+3\,Ab+5\,(Bb+Ac)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*B*c*x^2 + 3*A*b + 5*(B*b + A*c)*x)/x^(5/2)
```

giac [**A**] time = 0.15, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^{2}+5\,Bbx+5\,Acx+3\,Ab\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*B*c*x^2 + 5*B*b*x + 5*A*c*x + 3*A*b)/x^(5/2)
```

maple [**A**] time = 0.05, size = 28, normalized size = 0.76

$$-\frac{2\left(15Bc\,x^{2}+5Acx+5Bbx+3Ab\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/x^(9/2),x)
```

```
[Out] -2/15/x^(5/2)*(15*B*c*x^2+5*A*c*x+5*B*b*x+3*A*b)
```

maxima [**A**] time = 0.51, size = 27, normalized size = 0.73

$$-\frac{2\left(15\,Bcx^{2}+3\,Ab+5\,(Bb+Ac)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/15*(15*B*c*x^2 + 3*A*b + 5*(B*b + A*c)*x)/x^(5/2)
```

mupad [**B**] time = 0.03, size = 28, normalized size = 0.76

$$-\frac{2\,B\,c\,x^{2}+\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)\,x+\frac{2\,A\,b}{5}}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/x^(9/2),x)
```

```
[Out] -((2*A*b)/5 + x*((2*A*c)/3 + (2*B*b)/3) + 2*B*c*x^2)/x^(5/2)
```

sympy [**A**] time = 2.93, size = 46, normalized size = 1.24

$$-\frac{2Ab}{5x^{\frac{5}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Bb}{3x^{\frac{3}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/x**(9/2),x)
```

```
[Out] -2*A*b/(5*x**(5/2)) - 2*A*c/(3*x**(3/2)) - 2*B*b/(3*x**(3/2)) - 2*B*c/sqrt(
x)
```

3.149 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

```
[Out] 2/13*A*b^2*x^(13/2)+2/15*b*(2*A*c+B*b)*x^(15/2)+2/17*c*(A*c+2*B*b)*x^(17/2)
+2/19*B*c^2*x^(19/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{13}Ab^2x^{13/2}+\frac{2}{17}cx^{17/2}(Ac+2bB)+\frac{2}{15}bx^{15/2}(2Ac+bB)+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(13/2))/13 + (2*b*(b*B + 2*A*c)*x^(15/2))/15 + (2*c*(2*b*B + A*c
)*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{11/2}+b(bB+2Ac)x^{13/2}+c(2bB+Ac)x^{15/2}+Bc^2x^{17/2}\right)dx\\&=\frac{2}{13}Ab^2x^{13/2}+\frac{2}{15}b(bB+2Ac)x^{15/2}+\frac{2}{17}c(2bB+Ac)x^{17/2}+\frac{2}{19}Bc^2x^{19/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{13/2}\left(19A\left(255b^2+442bcx+195c^2x^2\right)+13Bx\left(323b^2+570bcx+255c^2x^2\right)\right)}{62985}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(13/2)*(19*A*(255*b^2 + 442*b*c*x + 195*c^2*x^2) + 13*B*x*(323*b^2 + 5
70*b*c*x + 255*c^2*x^2)))/62985
```

fricas [A] time = 0.73, size = 56, normalized size = 0.89

$$\frac{2}{62985}\left(3315\,Bc^2x^9+4845\,Ab^2x^6+3705\left(2\,Bbc+Ac^2\right)x^8+4199\left(Bb^2+2\,Abc\right)x^7\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/62985*(3315*B*c^2*x^9 + 4845*A*b^2*x^6 + 3705*(2*B*b*c + A*c^2)*x^8 + 419
9*(B*b^2 + 2*A*b*c)*x^7)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{19}\,Bc^{2}x^{\frac{19}{2}}+\frac{4}{17}\,Bbcx^{\frac{17}{2}}+\frac{2}{17}\,Ac^{2}x^{\frac{17}{2}}+\frac{2}{15}\,Bb^{2}x^{\frac{15}{2}}+\frac{4}{15}\,Abcx^{\frac{15}{2}}+\frac{2}{13}\,Ab^{2}x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 4/17*B*b*c*x^(17/2) + 2/17*A*c^2*x^(17/2) + 2/15*B*b^
2*x^(15/2) + 4/15*A*b*c*x^(15/2) + 2/13*A*b^2*x^(13/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(3315B\,c^{2}x^{3}+3705A\,c^{2}x^{2}+7410Bbc\,x^{2}+8398Abcx+4199B\,b^{2}x+4845A\,b^{2}\right)x^{\frac{13}{2}}}{62985}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/62985*x^(13/2)*(3315*B*c^2*x^3+3705*A*c^2*x^2+7410*B*b*c*x^2+8398*A*b*c*x
+4199*B*b^2*x+4845*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.81

$$\frac{2}{19}\,Bc^{2}x^{\frac{19}{2}}+\frac{2}{13}\,Ab^{2}x^{\frac{13}{2}}+\frac{2}{17}\left(2\,Bbc+Ac^{2}\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^{2}+2\,Abc\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/13*A*b^2*x^(13/2) + 2/17*(2*B*b*c + A*c^2)*x^(17/2)
 + 2/15*(B*b^2 + 2*A*b*c)*x^(15/2)
```

mupad [B] time = 1.03, size = 51, normalized size = 0.81

$$x^{15/2}\,\left(\frac{2\,B\,b^2}{15}+\frac{4\,A\,c\,b}{15}\right)+x^{17/2}\,\left(\frac{2\,A\,c^2}{17}+\frac{4\,B\,b\,c}{17}\right)+\frac{2\,A\,b^2\,x^{13/2}}{13}+\frac{2\,B\,c^2\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(15/2)*((2*B*b^2)/15 + (4*A*b*c)/15) + x^(17/2)*((2*A*c^2)/17 + (4*B*b*c)
/17) + (2*A*b^2*x^(13/2))/13 + (2*B*c^2*x^(19/2))/19
```

sympy [A] time = 14.98, size = 80, normalized size = 1.27

$$\frac{2Ab^{2}x^{\frac{13}{2}}}{13}+\frac{4Abcx^{\frac{15}{2}}}{15}+\frac{2Ac^{2}x^{\frac{17}{2}}}{17}+\frac{2Bb^{2}x^{\frac{15}{2}}}{15}+\frac{4Bbcx^{\frac{17}{2}}}{17}+\frac{2Bc^{2}x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(13/2)/13 + 4*A*b*c*x**(15/2)/15 + 2*A*c**2*x**(17/2)/17 + 2*B*
b**2*x**(15/2)/15 + 4*B*b*c*x**(17/2)/17 + 2*B*c**2*x**(19/2)/19
```

3.150 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{17}Bc^2x^{17/2}$$

```
[Out] 2/11*A*b^2*x^(11/2)+2/13*b*(2*A*c+B*b)*x^(13/2)+2/15*c*(A*c+2*B*b)*x^(15/2)
+2/17*B*c^2*x^(17/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{11}Ab^2x^{11/2}+\frac{2}{15}cx^{15/2}(Ac+2bB)+\frac{2}{13}bx^{13/2}(2Ac+bB)+\frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(11/2))/11 + (2*b*(b*B + 2*A*c)*x^(13/2))/13 + (2*c*(2*b*B + A*c
)*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{9/2}+b(bB+2Ac)x^{11/2}+c(2bB+Ac)x^{13/2}+Bc^2x^{15/2}\right)dx\\&=\frac{2}{11}Ab^2x^{11/2}+\frac{2}{13}b(bB+2Ac)x^{13/2}+\frac{2}{15}c(2bB+Ac)x^{15/2}+\frac{2}{17}Bc^2x^{17/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{11/2}\left(17A\left(195b^2+330bcx+143c^2x^2\right)+11Bx\left(255b^2+442bcx+195c^2x^2\right)\right)}{36465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(11/2)*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2) + 11*B*x*(255*b^2 + 4
42*b*c*x + 195*c^2*x^2)))/36465
```

fricas [A] time = 0.93, size = 56, normalized size = 0.89

$$\frac{2}{36465}\left(2145\,Bc^2x^8+3315\,Ab^2x^5+2431\left(2\,Bbc+Ac^2\right)x^7+2805\left(Bb^2+2\,Abc\right)x^6\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/36465*(2145*B*c^2*x^8 + 3315*A*b^2*x^5 + 2431*(2*B*b*c + A*c^2)*x^7 + 280
5*(B*b^2 + 2*A*b*c)*x^6)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{17}Bc^2x^{\frac{17}{2}} + \frac{4}{15}Bbcx^{\frac{15}{2}} + \frac{2}{15}Ac^2x^{\frac{15}{2}} + \frac{2}{13}Bb^2x^{\frac{13}{2}} + \frac{4}{13}Abcx^{\frac{13}{2}} + \frac{2}{11}Ab^2x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 4/15*B*b*c*x^(15/2) + 2/15*A*c^2*x^(15/2) + 2/13*B*b^
2*x^(13/2) + 4/13*A*b*c*x^(13/2) + 2/11*A*b^2*x^(11/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(2145Bc^2x^3 + 2431Ac^2x^2 + 4862Bbcx^2 + 5610Abcx + 2805Bb^2x + 3315Ab^2\right)x^{\frac{11}{2}}}{36465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/36465*x^(11/2)*(2145*B*c^2*x^3+2431*A*c^2*x^2+4862*B*b*c*x^2+5610*A*b*c*x
+2805*B*b^2*x+3315*A*b^2)
```

maxima [A] time = 0.57, size = 51, normalized size = 0.81

$$\frac{2}{17}Bc^2x^{\frac{17}{2}} + \frac{2}{11}Ab^2x^{\frac{11}{2}} + \frac{2}{15}\left(2Bbc + Ac^2\right)x^{\frac{15}{2}} + \frac{2}{13}\left(Bb^2 + 2Abc\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/11*A*b^2*x^(11/2) + 2/15*(2*B*b*c + A*c^2)*x^(15/2)
 + 2/13*(B*b^2 + 2*A*b*c)*x^(13/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{13/2}\left(\frac{2Bb^2}{13} + \frac{4Acb}{13}\right) + x^{15/2}\left(\frac{2Ac^2}{15} + \frac{4Bbc}{15}\right) + \frac{2Ab^2x^{11/2}}{11} + \frac{2Bc^2x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(13/2)*((2*B*b^2)/13 + (4*A*b*c)/13) + x^(15/2)*((2*A*c^2)/15 + (4*B*b*c)
/15) + (2*A*b^2*x^(11/2))/11 + (2*B*c^2*x^(17/2))/17
```

sympy [A] time = 8.36, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{11}{2}}}{11} + \frac{4Abcx^{\frac{13}{2}}}{13} + \frac{2Ac^2x^{\frac{15}{2}}}{15} + \frac{2Bb^2x^{\frac{13}{2}}}{13} + \frac{4Bbcx^{\frac{15}{2}}}{15} + \frac{2Bc^2x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(11/2)/11 + 4*A*b*c*x**(13/2)/13 + 2*A*c**2*x**(15/2)/15 + 2*B*
b**2*x**(13/2)/13 + 4*B*b*c*x**(15/2)/15 + 2*B*c**2*x**(17/2)/17
```

3.151 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

```
[Out] 2/9*A*b^2*x^(9/2)+2/11*b*(2*A*c+B*b)*x^(11/2)+2/13*c*(A*c+2*B*b)*x^(13/2)+2
/15*B*c^2*x^(15/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{9}Ab^2x^{9/2}+\frac{2}{13}cx^{13/2}(Ac+2bB)+\frac{2}{11}bx^{11/2}(2Ac+bB)+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(9/2))/9 + (2*b*(b*B + 2*A*c)*x^(11/2))/11 + (2*c*(2*b*B + A*c)*
x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{7/2}+b(bB+2Ac)x^{9/2}+c(2bB+Ac)x^{11/2}+Bc^2x^{13/2}\right)dx\\&=\frac{2}{9}Ab^2x^{9/2}+\frac{2}{11}b(bB+2Ac)x^{11/2}+\frac{2}{13}c(2bB+Ac)x^{13/2}+\frac{2}{15}Bc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{9/2}\left(5A\left(143b^2+234bcx+99c^2x^2\right)+3Bx\left(195b^2+330bcx+143c^2x^2\right)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(9/2)*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) + 3*B*x*(195*b^2 + 330*b
*c*x + 143*c^2*x^2)))/6435
```

fricas [A] time = 0.65, size = 56, normalized size = 0.89

$$\frac{2}{6435}\left(429\,Bc^2x^7+715\,Ab^2x^4+495\left(2\,Bbc+Ac^2\right)x^6+585\left(Bb^2+2\,Abc\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c^2*x^7 + 715*A*b^2*x^4 + 495*(2*B*b*c + A*c^2)*x^6 + 585*(B*
b^2 + 2*A*b*c)*x^5)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}}+\frac{4}{13}\,Bbcx^{\frac{13}{2}}+\frac{2}{13}\,Ac^2x^{\frac{13}{2}}+\frac{2}{11}\,Bb^2x^{\frac{11}{2}}+\frac{4}{11}\,Abcx^{\frac{11}{2}}+\frac{2}{9}\,Ab^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 4/13*B*b*c*x^(13/2) + 2/13*A*c^2*x^(13/2) + 2/11*B*b^
2*x^(11/2) + 4/11*A*b*c*x^(11/2) + 2/9*A*b^2*x^(9/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(429B\,c^2x^3+495A\,c^2x^2+990Bbc\,x^2+1170Abcx+585B\,b^2x+715A\,b^2\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c^2*x^3+495*A*c^2*x^2+990*B*b*c*x^2+1170*A*b*c*x+585*
B*b^2*x+715*A*b^2)
```

maxima [A] time = 0.54, size = 51, normalized size = 0.81

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}}+\frac{2}{9}\,Ab^2x^{\frac{9}{2}}+\frac{2}{13}\,\left(2\,Bbc+Ac^2\right)x^{\frac{13}{2}}+\frac{2}{11}\,\left(Bb^2+2\,Abc\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/9*A*b^2*x^(9/2) + 2/13*(2*B*b*c + A*c^2)*x^(13/2) +
 2/11*(B*b^2 + 2*A*b*c)*x^(11/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{11/2}\,\left(\frac{2\,B\,b^2}{11}+\frac{4\,A\,c\,b}{11}\right)+x^{13/2}\,\left(\frac{2\,A\,c^2}{13}+\frac{4\,B\,b\,c}{13}\right)+\frac{2\,A\,b^2\,x^{9/2}}{9}+\frac{2\,B\,c^2\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(11/2)*((2*B*b^2)/11 + (4*A*b*c)/11) + x^(13/2)*((2*A*c^2)/13 + (4*B*b*c)
/13) + (2*A*b^2*x^(9/2))/9 + (2*B*c^2*x^(15/2))/15
```

sympy [A] time = 4.49, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{4Abcx^{\frac{11}{2}}}{11}+\frac{2Ac^2x^{\frac{13}{2}}}{13}+\frac{2Bb^2x^{\frac{11}{2}}}{11}+\frac{4Bbcx^{\frac{13}{2}}}{13}+\frac{2Bc^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*x**(9/2)/9 + 4*A*b*c*x**(11/2)/11 + 2*A*c**2*x**(13/2)/13 + 2*B*b*
*2*x**(11/2)/11 + 4*B*b*c*x**(13/2)/13 + 2*B*c**2*x**(15/2)/15
```

3.152 $\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=63

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{9}bx^{9/2}(2Ac+bB)+\frac{2}{13}Bc^2x^{13/2}$$

```
[Out] 2/7*A*b^2*x^(7/2)+2/9*b*(2*A*c+B*b)*x^(9/2)+2/11*c*(A*c+2*B*b)*x^(11/2)+2/1
3*B*c^2*x^(13/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{7}Ab^2x^{7/2}+\frac{2}{11}cx^{11/2}(Ac+2bB)+\frac{2}{9}bx^{9/2}(2Ac+bB)+\frac{2}{13}Bc^2x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*A*b^2*x^(7/2))/7 + (2*b*(b*B + 2*A*c)*x^(9/2))/9 + (2*c*(2*b*B + A*c)*x^
(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(bx+cx^2\right)^2\,dx&=\int\left(Ab^2x^{5/2}+b(bB+2Ac)x^{7/2}+c(2bB+Ac)x^{9/2}+Bc^2x^{11/2}\right)dx\\&=\frac{2}{7}Ab^2x^{7/2}+\frac{2}{9}b(bB+2Ac)x^{9/2}+\frac{2}{11}c(2bB+Ac)x^{11/2}+\frac{2}{13}Bc^2x^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{7/2}\left(13A\left(99b^2+154bcx+63c^2x^2\right)+7Bx\left(143b^2+234bcx+99c^2x^2\right)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(7/2)*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x*(143*b^2 + 234*b
*c*x + 99*c^2*x^2)))/9009
```

fricas [A] time = 0.86, size = 56, normalized size = 0.89

$$\frac{2}{9009}\left(693\,Bc^2x^6+1287\,Ab^2x^3+819\left(2\,Bbc+Ac^2\right)x^5+1001\left(Bb^2+2\,Abc\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c^2*x^6 + 1287*A*b^2*x^3 + 819*(2*B*b*c + A*c^2)*x^5 + 1001*(
B*b^2 + 2*A*b*c)*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{13}\,Bc^{2}x^{\frac{13}{2}}+\frac{4}{11}\,Bbcx^{\frac{11}{2}}+\frac{2}{11}\,Ac^{2}x^{\frac{11}{2}}+\frac{2}{9}\,Bb^{2}x^{\frac{9}{2}}+\frac{4}{9}\,Abcx^{\frac{9}{2}}+\frac{2}{7}\,Ab^{2}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 4/11*B*b*c*x^(11/2) + 2/11*A*c^2*x^(11/2) + 2/9*B*b^2
*x^(9/2) + 4/9*A*b*c*x^(9/2) + 2/7*A*b^2*x^(7/2)
```

maple [A] time = 0.04, size = 52, normalized size = 0.83

$$\frac{2\left(693B\,c^{2}x^{3}+819A\,c^{2}x^{2}+1638Bbc\,x^{2}+2002Abcx+1001B\,b^{2}x+1287A\,b^{2}\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c^2*x^3+819*A*c^2*x^2+1638*B*b*c*x^2+2002*A*b*c*x+100
1*B*b^2*x+1287*A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.81

$$\frac{2}{13}\,Bc^{2}x^{\frac{13}{2}}+\frac{2}{7}\,Ab^{2}x^{\frac{7}{2}}+\frac{2}{11}\left(2\,Bbc+Ac^{2}\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Bb^{2}+2\,Abc\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/7*A*b^2*x^(7/2) + 2/11*(2*B*b*c + A*c^2)*x^(11/2) +
 2/9*(B*b^2 + 2*A*b*c)*x^(9/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{9/2}\left(\frac{2\,B\,b^2}{9}+\frac{4\,A\,c\,b}{9}\right)+x^{11/2}\left(\frac{2\,A\,c^2}{11}+\frac{4\,B\,b\,c}{11}\right)+\frac{2\,A\,b^2\,x^{7/2}}{7}+\frac{2\,B\,c^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^(9/2)*((2*B*b^2)/9 + (4*A*b*c)/9) + x^(11/2)*((2*A*c^2)/11 + (4*B*b*c)/11
) + (2*A*b^2*x^(7/2))/7 + (2*B*c^2*x^(13/2))/13
```

sympy [A] time = 3.24, size = 66, normalized size = 1.05

$$\frac{2Ab^{2}x^{\frac{7}{2}}}{7}+\frac{2Bc^{2}x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ac^{2}+2Bbc\right)}{11}+\frac{2x^{\frac{9}{2}}\left(2Abc+Bb^{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2*x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(7/2)/7 + 2*B*c**2*x**(13/2)/13 + 2*x**(11/2)*(A*c**2 + 2*B*b*c
)/11 + 2*x**(9/2)*(2*A*b*c + B*b**2)/9
```

3.153 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{5}Ab^2x^{5/2}+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{7}bx^{7/2}(2Ac+bB)+\frac{2}{11}Bc^2x^{11/2}$$

```
[Out] 2/5*A*b^2*x^(5/2)+2/7*b*(2*A*c+B*b)*x^(7/2)+2/9*c*(A*c+2*B*b)*x^(9/2)+2/11*
B*c^2*x^(11/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{5}Ab^2x^{5/2}+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{7}bx^{7/2}(2Ac+bB)+\frac{2}{11}Bc^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*A*b^2*x^(5/2))/5 + (2*b*(b*B + 2*A*c)*x^(7/2))/7 + (2*c*(2*b*B + A*c)*x^
(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{x}}\,dx &= \int \left(Ab^2x^{3/2}+b(bB+2Ac)x^{5/2}+c(2bB+Ac)x^{7/2}+Bc^2x^{9/2}\right)dx\\ &= \frac{2}{5}Ab^2x^{5/2}+\frac{2}{7}b(bB+2Ac)x^{7/2}+\frac{2}{9}c(2bB+Ac)x^{9/2}+\frac{2}{11}Bc^2x^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.87

$$\frac{2x^{5/2}\left(11A\left(63b^2+90bcx+35c^2x^2\right)+5Bx\left(99b^2+154bcx+63c^2x^2\right)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*x^(5/2)*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99*b^2 + 154*b*c
*x + 63*c^2*x^2)))/3465
```

fricas [A] time = 0.89, size = 56, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bc^2x^5+693\,Ab^2x^2+385\left(2\,Bbc+Ac^2\right)x^4+495\left(Bb^2+2\,Abc\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 693*A*b^2*x^2 + 385*(2*B*b*c + A*c^2)*x^4 + 495*(B*
b^2 + 2*A*b*c)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{11}Bc^2x^{\frac{11}{2}} + \frac{4}{9}Bbcx^{\frac{9}{2}} + \frac{2}{9}Ac^2x^{\frac{9}{2}} + \frac{2}{7}Bb^2x^{\frac{7}{2}} + \frac{4}{7}Abcx^{\frac{7}{2}} + \frac{2}{5}Ab^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 4/9*B*b*c*x^(9/2) + 2/9*A*c^2*x^(9/2) + 2/7*B*b^2*x^(
7/2) + 4/7*A*b*c*x^(7/2) + 2/5*A*b^2*x^(5/2)
```

maple [A] time = 0.06, size = 52, normalized size = 0.83

$$\frac{2\left(315B\,c^2x^3 + 385A\,c^2x^2 + 770Bbc\,x^2 + 990Abcx + 495B\,b^2x + 693A\,b^2\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c^2*x^3+385*A*c^2*x^2+770*B*b*c*x^2+990*A*b*c*x+495*B
*b^2*x+693*A*b^2)
```

maxima [A] time = 0.56, size = 51, normalized size = 0.81

$$\frac{2}{11}Bc^2x^{\frac{11}{2}} + \frac{2}{5}Ab^2x^{\frac{5}{2}} + \frac{2}{9}\left(2\,Bbc + Ac^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Bb^2 + 2\,Abc\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/5*A*b^2*x^(5/2) + 2/9*(2*B*b*c + A*c^2)*x^(9/2) + 2
/7*(B*b^2 + 2*A*b*c)*x^(7/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{7/2}\left(\frac{2\,B\,b^2}{7} + \frac{4\,A\,c\,b}{7}\right) + x^{9/2}\left(\frac{2\,A\,c^2}{9} + \frac{4\,B\,b\,c}{9}\right) + \frac{2\,A\,b^2\,x^{5/2}}{5} + \frac{2\,B\,c^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(1/2),x)
```

```
[Out] x^(7/2)*((2*B*b^2)/7 + (4*A*b*c)/7) + x^(9/2)*((2*A*c^2)/9 + (4*B*b*c)/9) +
 (2*A*b^2*x^(5/2))/5 + (2*B*c^2*x^(11/2))/11
```

sympy [A] time = 1.57, size = 80, normalized size = 1.27

$$\frac{2Ab^2x^{\frac{5}{2}}}{5} + \frac{4Abcx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{9}{2}}}{9} + \frac{2Bb^2x^{\frac{7}{2}}}{7} + \frac{4Bbcx^{\frac{9}{2}}}{9} + \frac{2Bc^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(1/2),x)
```

```
[Out] 2*A*b**2*x**(5/2)/5 + 4*A*b*c*x**(7/2)/7 + 2*A*c**2*x**(9/2)/9 + 2*B*b**2*x
**(7/2)/7 + 4*B*b*c*x**(9/2)/9 + 2*B*c**2*x**(11/2)/11
```

3.154 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=63

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{5}bx^{5/2}(2Ac+bB)+\frac{2}{9}Bc^2x^{9/2}$$

```
[Out] 2/3*A*b^2*x^(3/2)+2/5*b*(2*A*c+B*b)*x^(5/2)+2/7*c*(A*c+2*B*b)*x^(7/2)+2/9*B
*c^2*x^(9/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{3}Ab^2x^{3/2}+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{5}bx^{5/2}(2Ac+bB)+\frac{2}{9}Bc^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*A*b^2*x^(3/2))/3 + (2*b*(b*B + 2*A*c)*x^(5/2))/5 + (2*c*(2*b*B + A*c)*x^
(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{3/2}}\,dx &= \int \left(Ab^2\sqrt{x}+b(bB+2Ac)x^{3/2}+c(2bB+Ac)x^{5/2}+Bc^2x^{7/2}\right)dx\\ &= \frac{2}{3}Ab^2x^{3/2}+\frac{2}{5}b(bB+2Ac)x^{5/2}+\frac{2}{7}c(2bB+Ac)x^{7/2}+\frac{2}{9}Bc^2x^{9/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.86

$$\frac{2}{315}x^{3/2}\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx\left(63b^2+90bcx+35c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (2*x^(3/2)*(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x +
 35*c^2*x^2)))/315
```

fricas [A] time = 0.62, size = 54, normalized size = 0.86

$$\frac{2}{315}\left(35\,Bc^2x^4+105\,Ab^2x+45\left(2\,Bbc+Ac^2\right)x^3+63\left(Bb^2+2\,Abc\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*x^4 + 105*A*b^2*x + 45*(2*B*b*c + A*c^2)*x^3 + 63*(B*b^2 +
2*A*b*c)*x^2)*sqrt(x)
```

giac [A] time = 0.19, size = 53, normalized size = 0.84

$$\frac{2}{9}\,Bc^{2}x^{\frac{9}{2}} + \frac{4}{7}\,Bbcx^{\frac{7}{2}} + \frac{2}{7}\,Ac^{2}x^{\frac{7}{2}} + \frac{2}{5}\,Bb^{2}x^{\frac{5}{2}} + \frac{4}{5}\,Abcx^{\frac{5}{2}} + \frac{2}{3}\,Ab^{2}x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 4/7*B*b*c*x^(7/2) + 2/7*A*c^2*x^(7/2) + 2/5*B*b^2*x^(5/
2) + 4/5*A*b*c*x^(5/2) + 2/3*A*b^2*x^(3/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(35B\,c^{2}x^{3}+45A\,c^{2}x^{2}+90Bbc\,x^{2}+126Abcx+63B\,b^{2}x+105A\,b^{2}\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c^2*x^3+45*A*c^2*x^2+90*B*b*c*x^2+126*A*b*c*x+63*B*b^2*
x+105*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.81

$$\frac{2}{9}\,Bc^{2}x^{\frac{9}{2}} + \frac{2}{3}\,Ab^{2}x^{\frac{3}{2}} + \frac{2}{7}\left(2\,Bbc + Ac^{2}\right)x^{\frac{7}{2}} + \frac{2}{5}\left(Bb^{2} + 2\,Abc\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/3*A*b^2*x^(3/2) + 2/7*(2*B*b*c + A*c^2)*x^(7/2) + 2/5
*(B*b^2 + 2*A*b*c)*x^(5/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{5/2}\,\left(\frac{2\,B\,b^2}{5}+\frac{4\,A\,c\,b}{5}\right)+x^{7/2}\,\left(\frac{2\,A\,c^2}{7}+\frac{4\,B\,b\,c}{7}\right)+\frac{2\,A\,b^2\,x^{3/2}}{3}+\frac{2\,B\,c^2\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(3/2),x)
```

```
[Out] x^(5/2)*((2*B*b^2)/5 + (4*A*b*c)/5) + x^(7/2)*((2*A*c^2)/7 + (4*B*b*c)/7) +
 (2*A*b^2*x^(3/2))/3 + (2*B*c^2*x^(9/2))/9
```

sympy [A] time = 1.50, size = 80, normalized size = 1.27

$$\frac{2Ab^{2}x^{\frac{3}{2}}}{3} + \frac{4Abcx^{\frac{5}{2}}}{5} + \frac{2Ac^{2}x^{\frac{7}{2}}}{7} + \frac{2Bb^{2}x^{\frac{5}{2}}}{5} + \frac{4Bbcx^{\frac{7}{2}}}{7} + \frac{2Bc^{2}x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(3/2),x)
```

```
[Out] 2*A*b**2*x**(3/2)/3 + 4*A*b*c*x**(5/2)/5 + 2*A*c**2*x**(7/2)/7 + 2*B*b**2*x
**(5/2)/5 + 4*B*b*c*x**(7/2)/7 + 2*B*c**2*x**(9/2)/9
```

3.155 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=61

$$2Ab^2\sqrt{x}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{3}bx^{3/2}(2Ac+bB)+\frac{2}{7}Bc^2x^{7/2}$$

```
[Out] 2/3*b*(2*A*c+B*b)*x^(3/2)+2/5*c*(A*c+2*B*b)*x^(5/2)+2/7*B*c^2*x^(7/2)+2*A*b
^2*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$2Ab^2\sqrt{x}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{3}bx^{3/2}(2Ac+bB)+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] 2*A*b^2*Sqrt[x] + (2*b*(b*B + 2*A*c)*x^(3/2))/3 + (2*c*(2*b*B + A*c)*x^(5/2
))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{5/2}}\,dx &= \int \left(\frac{Ab^2}{\sqrt{x}}+b(bB+2Ac)\sqrt{x}+c(2bB+Ac)x^{3/2}+Bc^2x^{5/2}\right)dx\\ &= 2Ab^2\sqrt{x}+\frac{2}{3}b(bB+2Ac)x^{3/2}+\frac{2}{5}c(2bB+Ac)x^{5/2}+\frac{2}{7}Bc^2x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.89

$$\frac{2}{105}\sqrt{x}\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\left(35b^2+42bcx+15c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*Sqrt[x]*(7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x +
15*c^2*x^2)))/105
```

fricas [A] time = 0.81, size = 51, normalized size = 0.84

$$\frac{2}{105}\left(15\,Bc^2x^3+105\,Ab^2+21\left(2\,Bbc+Ac^2\right)x^2+35\left(Bb^2+2\,Abc\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^3 + 105*A*b^2 + 21*(2*B*b*c + A*c^2)*x^2 + 35*(B*b^2 + 2*
A*b*c)*x)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.87

$$\frac{2}{7}Bc^2x^{\frac{7}{2}} + \frac{4}{5}Bbcx^{\frac{5}{2}} + \frac{2}{5}Ac^2x^{\frac{5}{2}} + \frac{2}{3}Bb^2x^{\frac{3}{2}} + \frac{4}{3}Abcx^{\frac{3}{2}} + 2\,Ab^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 4/5*B*b*c*x^(5/2) + 2/5*A*c^2*x^(5/2) + 2/3*B*b^2*x^(3/
2) + 4/3*A*b*c*x^(3/2) + 2*A*b^2*sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.85

$$\frac{2\left(15B\,c^2x^3 + 21A\,c^2x^2 + 42Bbc\,x^2 + 70Abcx + 35B\,b^2x + 105A\,b^2\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x)
```

```
[Out] 2/105*x^(1/2)*(15*B*c^2*x^3+21*A*c^2*x^2+42*B*b*c*x^2+70*A*b*c*x+35*B*b^2*x
+105*A*b^2)
```

maxima [A] time = 0.51, size = 51, normalized size = 0.84

$$\frac{2}{7}Bc^2x^{\frac{7}{2}} + 2\,Ab^2\sqrt{x} + \frac{2}{5}\left(2\,Bbc + Ac^2\right)x^{\frac{5}{2}} + \frac{2}{3}\left(Bb^2 + 2\,Abc\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2*A*b^2*sqrt(x) + 2/5*(2*B*b*c + A*c^2)*x^(5/2) + 2/3*(
B*b^2 + 2*A*b*c)*x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,b^2}{3} + \frac{4\,A\,c\,b}{3}\right) + x^{5/2}\left(\frac{2\,A\,c^2}{5} + \frac{4\,B\,b\,c}{5}\right) + 2\,A\,b^2\,\sqrt{x} + \frac{2\,B\,c^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(5/2),x)
```

```
[Out] x^(3/2)*((2*B*b^2)/3 + (4*A*b*c)/3) + x^(5/2)*((2*A*c^2)/5 + (4*B*b*c)/5) +
 2*A*b^2*x^(1/2) + (2*B*c^2*x^(7/2))/7
```

sympy [A] time = 1.84, size = 78, normalized size = 1.28

$$2Ab^2\sqrt{x} + \frac{4Abcx^{\frac{3}{2}}}{3} + \frac{2Ac^2x^{\frac{5}{2}}}{5} + \frac{2Bb^2x^{\frac{3}{2}}}{3} + \frac{4Bbcx^{\frac{5}{2}}}{5} + \frac{2Bc^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(5/2),x)
```

```
[Out] 2*A*b**2*sqrt(x) + 4*A*b*c*x**(3/2)/3 + 2*A*c**2*x**(5/2)/5 + 2*B*b**2*x**(
3/2)/3 + 4*B*b*c*x**(5/2)/5 + 2*B*c**2*x**(7/2)/7
```

3.156 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2Ab^2}{\sqrt{x}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+2b\sqrt{x}\,(2Ac+bB)+\frac{2}{5}Bc^2x^{5/2}$$

```
[Out] 2/3*c*(A*c+2*B*b)*x^(3/2)+2/5*B*c^2*x^(5/2)-2*A*b^2/x^(1/2)+2*b*(2*A*c+B*b)
*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2Ab^2}{\sqrt{x}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+2b\sqrt{x}\,(2Ac+bB)+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*A*b^2)/Sqrt[x] + 2*b*(b*B + 2*A*c)*Sqrt[x] + (2*c*(2*b*B + A*c)*x^(3/2)
)/3 + (2*B*c^2*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{7/2}}\,dx &= \int \left(\frac{Ab^2}{x^{3/2}}+\frac{b(bB+2Ac)}{\sqrt{x}}+c(2bB+Ac)\sqrt{x}+Bc^2x^{3/2}\right)dx\\ &= -\frac{2Ab^2}{\sqrt{x}}+2b(bB+2Ac)\sqrt{x}+\frac{2}{3}c(2bB+Ac)x^{3/2}+\frac{2}{5}Bc^2x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.92

$$\frac{10A\left(-3b^2+6bcx+c^2x^2\right)+2Bx\left(15b^2+10bcx+3c^2x^2\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (10*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + 2*B*x*(15*b^2 + 10*b*c*x + 3*c^2*x^2))
/(15*Sqrt[x])
```

fricas [A] time = 0.98, size = 51, normalized size = 0.86

$$\frac{2\left(3\,Bc^2x^3-15\,Ab^2+5\left(2\,Bbc+Ac^2\right)x^2+15\left(Bb^2+2\,Abc\right)x\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^3 - 15*A*b^2 + 5*(2*B*b*c + A*c^2)*x^2 + 15*(B*b^2 + 2*A*b*
c)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.90

$$\frac{2}{5}Bc^2x^{\frac{5}{2}} + \frac{4}{3}Bbcx^{\frac{3}{2}} + \frac{2}{3}Ac^2x^{\frac{3}{2}} + 2Bb^2\sqrt{x} + 4Abc\sqrt{x} - \frac{2Ab^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 4/3*B*b*c*x^(3/2) + 2/3*A*c^2*x^(3/2) + 2*B*b^2*sqrt(x)
 + 4*A*b*c*sqrt(x) - 2*A*b^2/sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-3B\,c^2x^3 - 5A\,c^2x^2 - 10Bbc\,x^2 - 30Abcx - 15B\,b^2x + 15A\,b^2\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x)
```

```
[Out] -2/15/x^(1/2)*(-3*B*c^2*x^3-5*A*c^2*x^2-10*B*b*c*x^2-30*A*b*c*x-15*B*b^2*x+
15*A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{5}Bc^2x^{\frac{5}{2}} - \frac{2Ab^2}{\sqrt{x}} + \frac{2}{3}\left(2Bbc + Ac^2\right)x^{\frac{3}{2}} + 2\left(Bb^2 + 2Abc\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) - 2*A*b^2/sqrt(x) + 2/3*(2*B*b*c + A*c^2)*x^(3/2) + 2*(B*
b^2 + 2*A*b*c)*sqrt(x)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$\sqrt{x}\,\left(2\,B\,b^2 + 4\,A\,c\,b\right) + x^{3/2}\,\left(\frac{2\,A\,c^2}{3} + \frac{4\,B\,b\,c}{3}\right) - \frac{2\,A\,b^2}{\sqrt{x}} + \frac{2\,B\,c^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(7/2),x)
```

```
[Out] x^(1/2)*(2*B*b^2 + 4*A*b*c) + x^(3/2)*((2*A*c^2)/3 + (4*B*b*c)/3) - (2*A*b^
2)/x^(1/2) + (2*B*c^2*x^(5/2))/5
```

sympy [A] time = 2.90, size = 75, normalized size = 1.27

$$-\frac{2Ab^2}{\sqrt{x}} + 4Abc\sqrt{x} + \frac{2Ac^2x^{\frac{3}{2}}}{3} + 2Bb^2\sqrt{x} + \frac{4Bbcx^{\frac{3}{2}}}{3} + \frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(7/2),x)
```

```
[Out] -2*A*b**2/sqrt(x) + 4*A*b*c*sqrt(x) + 2*A*c**2*x**(3/2)/3 + 2*B*b**2*sqrt(x
) + 4*B*b*c*x**(3/2)/3 + 2*B*c**2*x**(5/2)/5
```

3.157 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2Ab^2}{3x^{3/2}}-\frac{2b(2Ac+bB)}{\sqrt{x}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

```
[Out] -2/3*A*b^2/x^(3/2)+2/3*B*c^2*x^(3/2)-2*b*(2*A*c+B*b)/x^(1/2)+2*c*(A*c+2*B*b
)*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2Ab^2}{3x^{3/2}}-\frac{2b(2Ac+bB)}{\sqrt{x}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*A*b^2)/(3*x^(3/2)) - (2*b*(b*B + 2*A*c))/Sqrt[x] + 2*c*(2*b*B + A*c)*Sq
rt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{x^{9/2}}\,dx &= \int \left(\frac{Ab^2}{x^{5/2}}+\frac{b(bB+2Ac)}{x^{3/2}}+\frac{c(2bB+Ac)}{\sqrt{x}}+Bc^2\sqrt{x}\right)dx\\ &= -\frac{2Ab^2}{3x^{3/2}}-\frac{2b(bB+2Ac)}{\sqrt{x}}+2c(2bB+Ac)\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.88

$$\frac{2Bx\left(-3b^2+6bcx+c^2x^2\right)-2A\left(b^2+6bcx-3c^2x^2\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*A*(b^2 + 6*b*c*x - 3*c^2*x^2) + 2*B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))/(3*
x^(3/2))
```

fricas [A] time = 1.21, size = 50, normalized size = 0.85

$$\frac{2\left(Bc^2x^3-Ab^2+3\left(2\,Bbc+Ac^2\right)x^2-3\left(Bb^2+2\,Abc\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^2*x^3 - A*b^2 + 3*(2*B*b*c + A*c^2)*x^2 - 3*(B*b^2 + 2*A*b*c)*x)/x
^(3/2)
```

giac [A] time = 0.20, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}}+4\,Bbc\sqrt{x}+2\,Ac^2\sqrt{x}-\frac{2\left(3\,Bb^2x+6\,Abcx+Ab^2\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 4*B*b*c*sqrt(x) + 2*A*c^2*sqrt(x) - 2/3*(3*B*b^2*x + 6*
A*b*c*x + A*b^2)/x^(3/2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{2\left(-B\,c^2x^3-3A\,c^2x^2-6Bbc\,x^2+6Abcx+3B\,b^2x+A\,b^2\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x)
```

```
[Out] -2/3/x^(3/2)*(-B*c^2*x^3-3*A*c^2*x^2-6*B*b*c*x^2+6*A*b*c*x+3*B*b^2*x+A*b^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}}+2\left(2\,Bbc+Ac^2\right)\sqrt{x}-\frac{2\left(Ab^2+3\left(Bb^2+2\,Abc\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*(2*B*b*c + A*c^2)*sqrt(x) - 2/3*(A*b^2 + 3*(B*b^2 + 2
*A*b*c)*x)/x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{6\,B\,b^2\,x+2\,A\,b^2-12\,B\,b\,c\,x^2+12\,A\,b\,c\,x-2\,B\,c^2\,x^3-6\,A\,c^2\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/x^(9/2),x)
```

```
[Out] -(2*A*b^2 - 6*A*c^2*x^2 - 2*B*c^2*x^3 + 6*B*b^2*x - 12*B*b*c*x^2 + 12*A*b*c
*x)/(3*x^(3/2))
```

sympy [A] time = 3.96, size = 73, normalized size = 1.24

$$-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{4Abc}{\sqrt{x}}+2Ac^2\sqrt{x}-\frac{2Bb^2}{\sqrt{x}}+4Bbc\sqrt{x}+\frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/x**(9/2),x)
```

```
[Out] -2*A*b**2/(3*x**(3/2)) - 4*A*b*c/sqrt(x) + 2*A*c**2*sqrt(x) - 2*B*b**2/sqrt
(x) + 4*B*b*c*sqrt(x) + 2*B*c**2*x**(3/2)/3
```

3.158 $\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{15}Ab^3x^{15/2}+\frac{2}{17}b^2x^{17/2}(3Ac+bB)+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

```
[Out] 2/15*A*b^3*x^(15/2)+2/17*b^2*(3*A*c+B*b)*x^(17/2)+6/19*b*c*(A*c+B*b)*x^(19/
2)+2/21*c^2*(A*c+3*B*b)*x^(21/2)+2/23*B*c^3*x^(23/2)
```

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{17}b^2x^{17/2}(3Ac+bB)+\frac{2}{15}Ab^3x^{15/2}+\frac{2}{21}c^2x^{21/2}(Ac+3bB)+\frac{6}{19}bcx^{19/2}(Ac+bB)+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(15/2))/15 + (2*b^2*(b*B + 3*A*c)*x^(17/2))/17 + (6*b*c*(b*B + A
*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21 + (2*B*c^3*x^(23/2))/2
3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^{13/2}+b^2(bB+3Ac)x^{15/2}+3bc(bB+Ac)x^{17/2}+c^2(3bB+Ac)x^{19/2}\right.\\&=\frac{2}{15}Ab^3x^{15/2}+\frac{2}{17}b^2(bB+3Ac)x^{17/2}+\frac{6}{19}bc(bB+Ac)x^{19/2}+\frac{2}{21}c^2(3bB+Ac\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{15/2}(b+cx)^4-\frac{x^{15/2}\left(2261b^3+5985b^2cx+5355bc^2x^2+1615c^3x^3\right)(15bB-23Ac)}{33915}\right)}{23c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(15/2)*(b + c*x)^4 - ((15*b*B - 23*A*c)*x^(15/2)*(2261*b^3 + 5985*b
^2*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3))/33915))/(23*c)
```

fricas [A] time = 0.99, size = 78, normalized size = 0.92

$$\frac{2}{780045}\left(33915\,Bc^3x^{11}+52003\,Ab^3x^7+37145\left(3\,Bbc^2+Ac^3\right)x^{10}+123165\left(Bb^2c+Abc^2\right)x^9+45885\left(Bb^3+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/780045*(33915*B*c^3*x^11 + 52003*A*b^3*x^7 + 37145*(3*B*b*c^2 + A*c^3)*x^
10 + 123165*(B*b^2*c + A*b*c^2)*x^9 + 45885*(B*b^3 + 3*A*b^2*c)*x^8)*sqrt(x
)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}} + \frac{2}{7}\,Bbc^2x^{\frac{21}{2}} + \frac{2}{21}\,Ac^3x^{\frac{21}{2}} + \frac{6}{19}\,Bb^2cx^{\frac{19}{2}} + \frac{6}{19}\,Abc^2x^{\frac{19}{2}} + \frac{2}{17}\,Bb^3x^{\frac{17}{2}} + \frac{6}{17}\,Ab^2cx^{\frac{17}{2}} + \frac{2}{15}\,Ab^3x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/7*B*b*c^2*x^(21/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*b
^2*c*x^(19/2) + 6/19*A*b*c^2*x^(19/2) + 2/17*B*b^3*x^(17/2) + 6/17*A*b^2*c*
x^(17/2) + 2/15*A*b^3*x^(15/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(33915B\,c^3x^4 + 37145A\,c^3x^3 + 111435Bb\,c^2x^3 + 123165Ab\,c^2x^2 + 123165B\,b^2c\,x^2 + 137655A\,b^2cx + 45885B\,b\right.}{780045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/780045*x^(15/2)*(33915*B*c^3*x^4+37145*A*c^3*x^3+111435*B*b*c^2*x^3+12316
5*A*b*c^2*x^2+123165*B*b^2*c*x^2+137655*A*b^2*c*x+45885*B*b^3*x+52003*A*b^3
)
```

maxima [A] time = 0.47, size = 73, normalized size = 0.86

$$\frac{2}{23}\,Bc^3x^{\frac{23}{2}} + \frac{2}{15}\,Ab^3x^{\frac{15}{2}} + \frac{2}{21}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{21}{2}} + \frac{6}{19}\left(Bb^2c + Abc^2\right)x^{\frac{19}{2}} + \frac{2}{17}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/15*A*b^3*x^(15/2) + 2/21*(3*B*b*c^2 + A*c^3)*x^(21/
2) + 6/19*(B*b^2*c + A*b*c^2)*x^(19/2) + 2/17*(B*b^3 + 3*A*b^2*c)*x^(17/2)
```

mupad [B] time = 1.01, size = 69, normalized size = 0.81

$$x^{17/2}\left(\frac{2\,B\,b^3}{17} + \frac{6\,A\,c\,b^2}{17}\right) + x^{21/2}\left(\frac{2\,A\,c^3}{21} + \frac{2\,B\,b\,c^2}{7}\right) + \frac{2\,A\,b^3\,x^{15/2}}{15} + \frac{2\,B\,c^3\,x^{23/2}}{23} + \frac{6\,b\,c\,x^{19/2}\,\left(A\,c + B\,b\right)}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(17/2)*((2*B*b^3)/17 + (6*A*b^2*c)/17) + x^(21/2)*((2*A*c^3)/21 + (2*B*b*
c^2)/7) + (2*A*b^3*x^(15/2))/15 + (2*B*c^3*x^(23/2))/23 + (6*b*c*x^(19/2)*(
A*c + B*b))/19
```

sympy [A] time = 26.59, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{15}{2}}}{15} + \frac{6Ab^2cx^{\frac{17}{2}}}{17} + \frac{6Abc^2x^{\frac{19}{2}}}{19} + \frac{2Ac^3x^{\frac{21}{2}}}{21} + \frac{2Bb^3x^{\frac{17}{2}}}{17} + \frac{6Bb^2cx^{\frac{19}{2}}}{19} + \frac{2Bbc^2x^{\frac{21}{2}}}{7} + \frac{2Bc^3x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(15/2)/15 + 6*A*b**2*c*x**(17/2)/17 + 6*A*b*c**2*x**(19/2)/19 +
 2*A*c**3*x**(21/2)/21 + 2*B*b**3*x**(17/2)/17 + 6*B*b**2*c*x**(19/2)/19 +
2*B*b*c**2*x**(21/2)/7 + 2*B*c**3*x**(23/2)/23
```

3.159 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{13}Ab^3x^{13/2}+\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{21}Bc^3x^{21/2}$$

```
[Out] 2/13*A*b^3*x^(13/2)+2/15*b^2*(3*A*c+B*b)*x^(15/2)+6/17*b*c*(A*c+B*b)*x^(17/
2)+2/19*c^2*(A*c+3*B*b)*x^(19/2)+2/21*B*c^3*x^(21/2)
```

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{15}b^2x^{15/2}(3Ac+bB)+\frac{2}{13}Ab^3x^{13/2}+\frac{2}{19}c^2x^{19/2}(Ac+3bB)+\frac{6}{17}bcx^{17/2}(Ac+bB)+\frac{2}{21}Bc^3x^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(13/2))/13 + (2*b^2*(b*B + 3*A*c)*x^(15/2))/15 + (6*b*c*(b*B + A
*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 + (2*B*c^3*x^(21/2))/2
1
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int\left(Ab^3x^{11/2}+b^2(bB+3Ac)x^{13/2}+3bc(bB+Ac)x^{15/2}+c^2(3bB+Ac)x^{17/2}+B\right.\\&=\frac{2}{13}Ab^3x^{13/2}+\frac{2}{15}b^2(bB+3Ac)x^{15/2}+\frac{6}{17}bc(bB+Ac)x^{17/2}+\frac{2}{19}c^2(3bB+Ac)x^{1}\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{13/2}(b+cx)^4-\frac{x^{13/2}\left(1615b^3+4199b^2cx+3705bc^2x^2+1105c^3x^3\right)(13bB-21Ac)}{20995}\right)}{21c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(13/2)*(b + c*x)^4 - ((13*b*B - 21*A*c)*x^(13/2)*(1615*b^3 + 4199*b
^2*c*x + 3705*b*c^2*x^2 + 1105*c^3*x^3))/20995))/(21*c)
```

fricas [A] time = 0.86, size = 78, normalized size = 0.92

$$\frac{2}{440895}\left(20995\,Bc^3x^{10}+33915\,Ab^3x^6+23205\left(3\,Bbc^2+Ac^3\right)x^9+77805\left(Bb^2c+Abc^2\right)x^8+29393\left(Bb^3+3\,Ab\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/440895*(20995*B*c^3*x^10 + 33915*A*b^3*x^6 + 23205*(3*B*b*c^2 + A*c^3)*x^
9 + 77805*(B*b^2*c + A*b*c^2)*x^8 + 29393*(B*b^3 + 3*A*b^2*c)*x^7)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{6}{19}\,Bbc^2x^{\frac{19}{2}}+\frac{2}{19}\,Ac^3x^{\frac{19}{2}}+\frac{6}{17}\,Bb^2cx^{\frac{17}{2}}+\frac{6}{17}\,Abc^2x^{\frac{17}{2}}+\frac{2}{15}\,Bb^3x^{\frac{15}{2}}+\frac{2}{5}\,Ab^2cx^{\frac{15}{2}}+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 6/19*B*b*c^2*x^(19/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*
b^2*c*x^(17/2) + 6/17*A*b*c^2*x^(17/2) + 2/15*B*b^3*x^(15/2) + 2/5*A*b^2*c*
x^(15/2) + 2/13*A*b^3*x^(13/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(20995B\,c^3x^4+23205A\,c^3x^3+69615Bb\,c^2x^3+77805Ab\,c^2x^2+77805B\,b^2c\,x^2+88179A\,b^2cx+29393B\,b^3}{440895}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/440895*x^(13/2)*(20995*B*c^3*x^4+23205*A*c^3*x^3+69615*B*b*c^2*x^3+77805*
A*b*c^2*x^2+77805*B*b^2*c*x^2+88179*A*b^2*c*x+29393*B*b^3*x+33915*A*b^3)
```

maxima [A] time = 0.49, size = 73, normalized size = 0.86

$$\frac{2}{21}\,Bc^3x^{\frac{21}{2}}+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}+\frac{2}{19}\left(3\,Bbc^2+Ac^3\right)x^{\frac{19}{2}}+\frac{6}{17}\left(Bb^2c+Abc^2\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^3+3\,Ab^2c\right)x^{\frac{15}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/13*A*b^3*x^(13/2) + 2/19*(3*B*b*c^2 + A*c^3)*x^(19/
2) + 6/17*(B*b^2*c + A*b*c^2)*x^(17/2) + 2/15*(B*b^3 + 3*A*b^2*c)*x^(15/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{15/2}\,\left(\frac{2\,B\,b^3}{15}+\frac{2\,A\,c\,b^2}{5}\right)+x^{19/2}\,\left(\frac{2\,A\,c^3}{19}+\frac{6\,B\,b\,c^2}{19}\right)+\frac{2\,A\,b^3\,x^{13/2}}{13}+\frac{2\,B\,c^3\,x^{21/2}}{21}+\frac{6\,b\,c\,x^{17/2}\,\left(A\,c+B\,b\right)}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(15/2)*((2*B*b^3)/15 + (2*A*b^2*c)/5) + x^(19/2)*((2*A*c^3)/19 + (6*B*b*c
^2)/19) + (2*A*b^3*x^(13/2))/13 + (2*B*c^3*x^(21/2))/21 + (6*b*c*x^(17/2)*(
A*c + B*b))/17
```

sympy [A] time = 15.92, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{13}{2}}}{13}+\frac{2Ab^2cx^{\frac{15}{2}}}{5}+\frac{6Abc^2x^{\frac{17}{2}}}{17}+\frac{2Ac^3x^{\frac{19}{2}}}{19}+\frac{2Bb^3x^{\frac{15}{2}}}{15}+\frac{6Bb^2cx^{\frac{17}{2}}}{17}+\frac{6Bbc^2x^{\frac{19}{2}}}{19}+\frac{2Bc^3x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(13/2)/13 + 2*A*b**2*c*x**(15/2)/5 + 6*A*b*c**2*x**(17/2)/17 +
2*A*c**3*x**(19/2)/19 + 2*B*b**3*x**(15/2)/15 + 6*B*b**2*c*x**(17/2)/17 + 6
*B*b*c**2*x**(19/2)/19 + 2*B*c**3*x**(21/2)/21
```

3.160 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{11}Ab^3x^{11/2}+\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{17}c^2x^{17/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{19}Bc^3x^{19/2}$$

```
[Out] 2/11*A*b^3*x^(11/2)+2/13*b^2*(3*A*c+B*b)*x^(13/2)+2/5*b*c*(A*c+B*b)*x^(15/2
)+2/17*c^2*(A*c+3*B*b)*x^(17/2)+2/19*B*c^3*x^(19/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{13}b^2x^{13/2}(3Ac+bB)+\frac{2}{11}Ab^3x^{11/2}+\frac{2}{17}c^2x^{17/2}(Ac+3bB)+\frac{2}{5}bcx^{15/2}(Ac+bB)+\frac{2}{19}Bc^3x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(11/2))/11 + (2*b^2*(b*B + 3*A*c)*x^(13/2))/13 + (2*b*c*(b*B + A
*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(17/2))/17 + (2*B*c^3*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^3\,dx&=\int \left(Ab^3x^{9/2}+b^2(bB+3Ac)x^{11/2}+3bc(bB+Ac)x^{13/2}+c^2(3bB+Ac)x^{15/2}+Bc\right.\\&=\frac{2}{11}Ab^3x^{11/2}+\frac{2}{13}b^2(bB+3Ac)x^{13/2}+\frac{2}{5}bc(bB+Ac)x^{15/2}+\frac{2}{17}c^2(3bB+Ac)x^{17/}\end{aligned}$$

Mathematica [A] time = 0.04, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{11/2}(b+cx)^4-\frac{x^{11/2}\left(1105b^3+2805b^2cx+2431bc^2x^2+715c^3x^3\right)(11bB-19Ac)}{12155}\right)}{19c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(11/2)*(b + c*x)^4 - ((11*b*B - 19*A*c)*x^(11/2)*(1105*b^3 + 2805*b
^2*c*x + 2431*b*c^2*x^2 + 715*c^3*x^3))/12155))/(19*c)
```

fricas [A] time = 1.11, size = 78, normalized size = 0.92

$$\frac{2}{230945}\left(12155\,Bc^3x^9+20995\,Ab^3x^5+13585\left(3\,Bbc^2+Ac^3\right)x^8+46189\left(Bb^2c+Abc^2\right)x^7+17765\left(Bb^3+3\,Ab^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 2/230945*(12155*B*c^3*x^9 + 20995*A*b^3*x^5 + 13585*(3*B*b*c^2 + A*c^3)*x^8
 + 46189*(B*b^2*c + A*b*c^2)*x^7 + 17765*(B*b^3 + 3*A*b^2*c)*x^6)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{19}Bc^3x^{\frac{19}{2}}+\frac{6}{17}Bbc^2x^{\frac{17}{2}}+\frac{2}{17}Ac^3x^{\frac{17}{2}}+\frac{2}{5}Bb^2cx^{\frac{15}{2}}+\frac{2}{5}Abc^2x^{\frac{15}{2}}+\frac{2}{13}Bb^3x^{\frac{13}{2}}+\frac{6}{13}Ab^2cx^{\frac{13}{2}}+\frac{2}{11}Ab^3x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 6/17*B*b*c^2*x^(17/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*b
^2*c*x^(15/2) + 2/5*A*b*c^2*x^(15/2) + 2/13*B*b^3*x^(13/2) + 6/13*A*b^2*c*x
^(13/2) + 2/11*A*b^3*x^(11/2)
```

maple [A] time = 0.06, size = 76, normalized size = 0.89

$$\frac{2\big(12155Bc^3x^4+13585Ac^3x^3+40755Bbc^2x^3+46189Abc^2x^2+46189Bb^2cx^2+53295Ab^2cx+17765Bb^3x}{230945}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 2/230945*x^(11/2)*(12155*B*c^3*x^4+13585*A*c^3*x^3+40755*B*b*c^2*x^3+46189*
A*b*c^2*x^2+46189*B*b^2*c*x^2+53295*A*b^2*c*x+17765*B*b^3*x+20995*A*b^3)
```

maxima [A] time = 0.57, size = 73, normalized size = 0.86

$$\frac{2}{19}Bc^3x^{\frac{19}{2}}+\frac{2}{11}Ab^3x^{\frac{11}{2}}+\frac{2}{17}\left(3Bbc^2+Ac^3\right)x^{\frac{17}{2}}+\frac{2}{5}\left(Bb^2c+Abc^2\right)x^{\frac{15}{2}}+\frac{2}{13}\left(Bb^3+3Ab^2c\right)x^{\frac{13}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/11*A*b^3*x^(11/2) + 2/17*(3*B*b*c^2 + A*c^3)*x^(17/
2) + 2/5*(B*b^2*c + A*b*c^2)*x^(15/2) + 2/13*(B*b^3 + 3*A*b^2*c)*x^(13/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{13/2}\left(\frac{2Bb^3}{13}+\frac{6Acb^2}{13}\right)+x^{17/2}\left(\frac{2Ac^3}{17}+\frac{6Bbc^2}{17}\right)+\frac{2Ab^3x^{11/2}}{11}+\frac{2Bc^3x^{19/2}}{19}+\frac{2bcx^{15/2}\left(Ac+Bb\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(13/2)*((2*B*b^3)/13 + (6*A*b^2*c)/13) + x^(17/2)*((2*A*c^3)/17 + (6*B*b*
c^2)/17) + (2*A*b^3*x^(11/2))/11 + (2*B*c^3*x^(19/2))/19 + (2*b*c*x^(15/2)*
(A*c + B*b))/5
```

sympy [A] time = 8.27, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{6Ab^2cx^{\frac{13}{2}}}{13}+\frac{2Abc^2x^{\frac{15}{2}}}{5}+\frac{2Ac^3x^{\frac{17}{2}}}{17}+\frac{2Bb^3x^{\frac{13}{2}}}{13}+\frac{2Bb^2cx^{\frac{15}{2}}}{5}+\frac{6Bbc^2x^{\frac{17}{2}}}{17}+\frac{2Bc^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] 2*A*b**3*x**(11/2)/11 + 6*A*b**2*c*x**(13/2)/13 + 2*A*b*c**2*x**(15/2)/5 +
2*A*c**3*x**(17/2)/17 + 2*B*b**3*x**(13/2)/13 + 2*B*b**2*c*x**(15/2)/5 + 6*
B*b*c**2*x**(17/2)/17 + 2*B*c**3*x**(19/2)/19
```

3.161 $\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=85

$$\frac{2}{9}Ab^3x^{9/2}+\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{15}c^2x^{15/2}(Ac+3bB)+\frac{6}{13}bcx^{13/2}(Ac+bB)+\frac{2}{17}Bc^3x^{17/2}$$

```
[Out] 2/9*A*b^3*x^(9/2)+2/11*b^2*(3*A*c+B*b)*x^(11/2)+6/13*b*c*(A*c+B*b)*x^(13/2)
+2/15*c^2*(A*c+3*B*b)*x^(15/2)+2/17*B*c^3*x^(17/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{11}b^2x^{11/2}(3Ac+bB)+\frac{2}{9}Ab^3x^{9/2}+\frac{2}{15}c^2x^{15/2}(Ac+3bB)+\frac{6}{13}bcx^{13/2}(Ac+bB)+\frac{2}{17}Bc^3x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*A*b^3*x^(9/2))/9 + (2*b^2*(b*B + 3*A*c)*x^(11/2))/11 + (6*b*c*(b*B + A*c
)*x^(13/2))/13 + (2*c^2*(3*b*B + A*c)*x^(15/2))/15 + (2*B*c^3*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^{7/2}+b^2(bB+3Ac)x^{9/2}+3bc(bB+Ac)x^{11/2}+c^2(3bB+Ac)x^{13/2}+Bc^3\right.\\ &=\frac{2}{9}Ab^3x^{9/2}+\frac{2}{11}b^2(bB+3Ac)x^{11/2}+\frac{6}{13}bc(bB+Ac)x^{13/2}+\frac{2}{15}c^2(3bB+Ac)x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{9/2}(b+cx)^4-\frac{x^{9/2}\left(715b^3+1755b^2cx+1485bc^2x^2+429c^3x^3\right)(9bB-17Ac)}{6435}\right)}{17c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (2*(B*x^(9/2)*(b + c*x)^4 - ((9*b*B - 17*A*c)*x^(9/2)*(715*b^3 + 1755*b^2*c
*x + 1485*b*c^2*x^2 + 429*c^3*x^3))/6435))/(17*c)
```

fricas [A] time = 1.13, size = 78, normalized size = 0.92

$$\frac{2}{109395}\left(6435\,Bc^3x^8+12155\,Ab^3x^4+7293\left(3\,Bbc^2+Ac^3\right)x^7+25245\left(Bb^2c+Abc^2\right)x^6+9945\left(Bb^3+3\,Ab^2c\right)x^5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/109395*(6435*B*c^3*x^8 + 12155*A*b^3*x^4 + 7293*(3*B*b*c^2 + A*c^3)*x^7 +
 25245*(B*b^2*c + A*b*c^2)*x^6 + 9945*(B*b^3 + 3*A*b^2*c)*x^5)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.91

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{5}\,Bbc^2x^{\frac{15}{2}}+\frac{2}{15}\,Ac^3x^{\frac{15}{2}}+\frac{6}{13}\,Bb^2cx^{\frac{13}{2}}+\frac{6}{13}\,Abc^2x^{\frac{13}{2}}+\frac{2}{11}\,Bb^3x^{\frac{11}{2}}+\frac{6}{11}\,Ab^2cx^{\frac{11}{2}}+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/5*B*b*c^2*x^(15/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*b
^2*c*x^(13/2) + 6/13*A*b*c^2*x^(13/2) + 2/11*B*b^3*x^(11/2) + 6/11*A*b^2*c*
x^(11/2) + 2/9*A*b^3*x^(9/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(6435B\,c^3x^4+7293A\,c^3x^3+21879Bb\,c^2x^3+25245Ab\,c^2x^2+25245B\,b^2c\,x^2+29835A\,b^2cx+9945B\,b^3x+\right.}{109395}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x)
```

```
[Out] 2/109395*x^(9/2)*(6435*B*c^3*x^4+7293*A*c^3*x^3+21879*B*b*c^2*x^3+25245*A*b
*c^2*x^2+25245*B*b^2*c*x^2+29835*A*b^2*c*x+9945*B*b^3*x+12155*A*b^3)
```

maxima [A] time = 0.68, size = 73, normalized size = 0.86

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}+\frac{2}{15}\left(3\,Bbc^2+Ac^3\right)x^{\frac{15}{2}}+\frac{6}{13}\left(Bb^2c+Abc^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Bb^3+3\,Ab^2c\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/9*A*b^3*x^(9/2) + 2/15*(3*B*b*c^2 + A*c^3)*x^(15/2)
 + 6/13*(B*b^2*c + A*b*c^2)*x^(13/2) + 2/11*(B*b^3 + 3*A*b^2*c)*x^(11/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{11/2}\left(\frac{2\,B\,b^3}{11}+\frac{6\,A\,c\,b^2}{11}\right)+x^{15/2}\left(\frac{2\,A\,c^3}{15}+\frac{2\,B\,b\,c^2}{5}\right)+\frac{2\,A\,b^3\,x^{9/2}}{9}+\frac{2\,B\,c^3\,x^{17/2}}{17}+\frac{6\,b\,c\,x^{13/2}\,\left(A\,c+B\,b\right)}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^(11/2)*((2*B*b^3)/11 + (6*A*b^2*c)/11) + x^(15/2)*((2*A*c^3)/15 + (2*B*b*
c^2)/5) + (2*A*b^3*x^(9/2))/9 + (2*B*c^3*x^(17/2))/17 + (6*b*c*x^(13/2)*(A*
c + B*b))/13
```

sympy [A] time = 3.76, size = 95, normalized size = 1.12

$$\frac{2Ab^3x^{\frac{9}{2}}}{9}+\frac{2Bc^3x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ac^3+3Bbc^2\right)}{15}+\frac{2x^{\frac{13}{2}}\left(3Abc^2+3Bb^2c\right)}{13}+\frac{2x^{\frac{11}{2}}\left(3Ab^2c+Bb^3\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3*x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(9/2)/9 + 2*B*c**3*x**(17/2)/17 + 2*x**(15/2)*(A*c**3 + 3*B*b*c
**2)/15 + 2*x**(13/2)*(3*A*b*c**2 + 3*B*b**2*c)/13 + 2*x**(11/2)*(3*A*b**2*
c + B*b**3)/11
```

3.162 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{7}Ab^3x^{7/2}+\frac{2}{9}b^2x^{9/2}(3Ac+bB)+\frac{2}{13}c^2x^{13/2}(Ac+3bB)+\frac{6}{11}bcx^{11/2}(Ac+bB)+\frac{2}{15}Bc^3x^{15/2}$$

```
[Out] 2/7*A*b^3*x^(7/2)+2/9*b^2*(3*A*c+B*b)*x^(9/2)+6/11*b*c*(A*c+B*b)*x^(11/2)+2
/13*c^2*(A*c+3*B*b)*x^(13/2)+2/15*B*c^3*x^(15/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{9}b^2x^{9/2}(3Ac+bB)+\frac{2}{7}Ab^3x^{7/2}+\frac{2}{13}c^2x^{13/2}(Ac+3bB)+\frac{6}{11}bcx^{11/2}(Ac+bB)+\frac{2}{15}Bc^3x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*A*b^3*x^(7/2))/7 + (2*b^2*(b*B + 3*A*c)*x^(9/2))/9 + (6*b*c*(b*B + A*c)*
x^(11/2))/11 + (2*c^2*(3*b*B + A*c)*x^(13/2))/13 + (2*B*c^3*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{\sqrt{x}}\,dx &= \int \left(Ab^3x^{5/2}+b^2(bB+3Ac)x^{7/2}+3bc(bB+Ac)x^{9/2}+c^2(3bB+Ac)x^{11/2}+Bc^3x^{13/2}\right. \\ &= \frac{2}{7}Ab^3x^{7/2}+\frac{2}{9}b^2(bB+3Ac)x^{9/2}+\frac{6}{11}bc(bB+Ac)x^{11/2}+\frac{2}{13}c^2(3bB+Ac)x^{13/2}+\frac{2}{15}\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{7/2}(b+cx)^4-\frac{x^{7/2}\left(429b^3+1001b^2cx+819bc^2x^2+231c^3x^3\right)(7bB-15Ac)}{3003}\right)}{15c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(B*x^(7/2)*(b + c*x)^4 - ((7*b*B - 15*A*c)*x^(7/2)*(429*b^3 + 1001*b^2*c
*x + 819*b*c^2*x^2 + 231*c^3*x^3))/3003))/(15*c)
```

fricas [A] time = 0.97, size = 78, normalized size = 0.92

$$\frac{2}{45045}\left(3003\,Bc^3x^7+6435\,Ab^3x^3+3465\left(3\,Bbc^2+Ac^3\right)x^6+12285\left(Bb^2c+Abc^2\right)x^5+5005\left(Bb^3+3\,Ab^2c\right)x^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^3*x^7 + 6435*A*b^3*x^3 + 3465*(3*B*b*c^2 + A*c^3)*x^6 + 1
2285*(B*b^2*c + A*b*c^2)*x^5 + 5005*(B*b^3 + 3*A*b^2*c)*x^4)*sqrt(x)
```

giac [A] time = 0.17, size = 77, normalized size = 0.91

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}}+\frac{6}{13}\,Bbc^2x^{\frac{13}{2}}+\frac{2}{13}\,Ac^3x^{\frac{13}{2}}+\frac{6}{11}\,Bb^2cx^{\frac{11}{2}}+\frac{6}{11}\,Abc^2x^{\frac{11}{2}}+\frac{2}{9}\,Bb^3x^{\frac{9}{2}}+\frac{2}{3}\,Ab^2cx^{\frac{9}{2}}+\frac{2}{7}\,Ab^3x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 6/13*B*b*c^2*x^(13/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*
b^2*c*x^(11/2) + 6/11*A*b*c^2*x^(11/2) + 2/9*B*b^3*x^(9/2) + 2/3*A*b^2*c*x^
(9/2) + 2/7*A*b^3*x^(7/2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(3003B\,c^3x^4+3465A\,c^3x^3+10395Bb\,c^2x^3+12285Ab\,c^2x^2+12285B\,b^2c\,x^2+15015A\,b^2cx+5005B\,b^3x+6\right.}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(7/2)*(3003*B*c^3*x^4+3465*A*c^3*x^3+10395*B*b*c^2*x^3+12285*A*b*
c^2*x^2+12285*B*b^2*c*x^2+15015*A*b^2*c*x+5005*B*b^3*x+6435*A*b^3)
```

maxima [A] time = 0.56, size = 73, normalized size = 0.86

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}}+\frac{2}{7}\,Ab^3x^{\frac{7}{2}}+\frac{2}{13}\,\left(3\,Bbc^2+Ac^3\right)x^{\frac{13}{2}}+\frac{6}{11}\,\left(Bb^2c+Abc^2\right)x^{\frac{11}{2}}+\frac{2}{9}\,\left(Bb^3+3\,Ab^2c\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/7*A*b^3*x^(7/2) + 2/13*(3*B*b*c^2 + A*c^3)*x^(13/2)
 + 6/11*(B*b^2*c + A*b*c^2)*x^(11/2) + 2/9*(B*b^3 + 3*A*b^2*c)*x^(9/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{9/2}\,\left(\frac{2\,B\,b^3}{9}+\frac{2\,A\,c\,b^2}{3}\right)+x^{13/2}\,\left(\frac{2\,A\,c^3}{13}+\frac{6\,B\,b\,c^2}{13}\right)+\frac{2\,A\,b^3\,x^{7/2}}{7}+\frac{2\,B\,c^3\,x^{15/2}}{15}+\frac{6\,b\,c\,x^{11/2}\,\left(A\,c+B\,b\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(1/2),x)
```

```
[Out] x^(9/2)*((2*B*b^3)/9 + (2*A*b^2*c)/3) + x^(13/2)*((2*A*c^3)/13 + (6*B*b*c^2
)/13) + (2*A*b^3*x^(7/2))/7 + (2*B*c^3*x^(15/2))/15 + (6*b*c*x^(11/2)*(A*c
+ B*b))/11
```

sympy [A] time = 3.51, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^2cx^{\frac{9}{2}}}{3}+\frac{6Abc^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{13}{2}}}{13}+\frac{2Bb^3x^{\frac{9}{2}}}{9}+\frac{6Bb^2cx^{\frac{11}{2}}}{11}+\frac{6Bbc^2x^{\frac{13}{2}}}{13}+\frac{2Bc^3x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(1/2),x)
```

```
[Out] 2*A*b**3*x**(7/2)/7 + 2*A*b**2*c*x**(9/2)/3 + 6*A*b*c**2*x**(11/2)/11 + 2*A
*c**3*x**(13/2)/13 + 2*B*b**3*x**(9/2)/9 + 6*B*b**2*c*x**(11/2)/11 + 6*B*b*
c**2*x**(13/2)/13 + 2*B*c**3*x**(15/2)/15
```

3.163 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{5}Ab^3x^{5/2}+\frac{2}{7}b^2x^{7/2}(3Ac+bB)+\frac{2}{11}c^2x^{11/2}(Ac+3bB)+\frac{2}{3}bcx^{9/2}(Ac+bB)+\frac{2}{13}Bc^3x^{13/2}$$

```
[Out] 2/5*A*b^3*x^(5/2)+2/7*b^2*(3*A*c+B*b)*x^(7/2)+2/3*b*c*(A*c+B*b)*x^(9/2)+2/1
1*c^2*(A*c+3*B*b)*x^(11/2)+2/13*B*c^3*x^(13/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{7}b^2x^{7/2}(3Ac+bB)+\frac{2}{5}Ab^3x^{5/2}+\frac{2}{11}c^2x^{11/2}(Ac+3bB)+\frac{2}{3}bcx^{9/2}(Ac+bB)+\frac{2}{13}Bc^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*A*b^3*x^(5/2))/5 + (2*b^2*(b*B + 3*A*c)*x^(7/2))/7 + (2*b*c*(b*B + A*c)*
x^(9/2))/3 + (2*c^2*(3*b*B + A*c)*x^(11/2))/11 + (2*B*c^3*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{3/2}}\,dx &= \int \left(Ab^3x^{3/2}+b^2(bB+3Ac)x^{5/2}+3bc(bB+Ac)x^{7/2}+c^2(3bB+Ac)x^{9/2}+Bc^3x^{11/2}\right.\\ &= \frac{2}{5}Ab^3x^{5/2}+\frac{2}{7}b^2(bB+3Ac)x^{7/2}+\frac{2}{3}bc(bB+Ac)x^{9/2}+\frac{2}{11}c^2(3bB+Ac)x^{11/2}+\frac{2}{13}Bc\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{5/2}(b+cx)^4-\frac{x^{5/2}\left(231b^3+495b^2cx+385bc^2x^2+105c^3x^3\right)(5bB-13Ac)}{1155}\right)}{13c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(B*x^(5/2)*(b + c*x)^4 - ((5*b*B - 13*A*c)*x^(5/2)*(231*b^3 + 495*b^2*c*
x + 385*b*c^2*x^2 + 105*c^3*x^3))/1155))/(13*c)
```

fricas [A] time = 0.96, size = 78, normalized size = 0.92

$$\frac{2}{15015}\left(1155\,Bc^3x^6+3003\,Ab^3x^2+1365\left(3\,Bbc^2+Ac^3\right)x^5+5005\left(Bb^2c+Abc^2\right)x^4+2145\left(Bb^3+3\,Ab^2c\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^6 + 3003*A*b^3*x^2 + 1365*(3*B*b*c^2 + A*c^3)*x^5 + 5
005*(B*b^2*c + A*b*c^2)*x^4 + 2145*(B*b^3 + 3*A*b^2*c)*x^3)*sqrt(x)
```

giac [A]   time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}} + \frac{6}{11}\,Bbc^2x^{\frac{11}{2}} + \frac{2}{11}\,Ac^3x^{\frac{11}{2}} + \frac{2}{3}\,Bb^2cx^{\frac{9}{2}} + \frac{2}{3}\,Abc^2x^{\frac{9}{2}} + \frac{2}{7}\,Bb^3x^{\frac{7}{2}} + \frac{6}{7}\,Ab^2cx^{\frac{7}{2}} + \frac{2}{5}\,Ab^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 6/11*B*b*c^2*x^(11/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*b
^2*c*x^(9/2) + 2/3*A*b*c^2*x^(9/2) + 2/7*B*b^3*x^(7/2) + 6/7*A*b^2*c*x^(7/2
) + 2/5*A*b^3*x^(5/2)
```

maple [A]   time = 0.05, size = 76, normalized size = 0.89

$$\frac{2\left(1155B\,c^3x^4+1365A\,c^3x^3+4095Bb\,c^2x^3+5005Ab\,c^2x^2+5005B\,b^2c\,x^2+6435A\,b^2cx+2145B\,b^3x+3003\right.}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x)
```

```
[Out] 2/15015*x^(5/2)*(1155*B*c^3*x^4+1365*A*c^3*x^3+4095*B*b*c^2*x^3+5005*A*b*c^
2*x^2+5005*B*b^2*c*x^2+6435*A*b^2*c*x+2145*B*b^3*x+3003*A*b^3)
```

maxima [A]   time = 0.47, size = 73, normalized size = 0.86

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}} + \frac{2}{5}\,Ab^3x^{\frac{5}{2}} + \frac{2}{11}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{11}{2}} + \frac{2}{3}\left(Bb^2c + Abc^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/5*A*b^3*x^(5/2) + 2/11*(3*B*b*c^2 + A*c^3)*x^(11/2)
 + 2/3*(B*b^2*c + A*b*c^2)*x^(9/2) + 2/7*(B*b^3 + 3*A*b^2*c)*x^(7/2)
```

mupad [B]   time = 0.03, size = 69, normalized size = 0.81

$$x^{7/2}\,\left(\frac{2\,B\,b^3}{7}+\frac{6\,A\,c\,b^2}{7}\right)+x^{11/2}\,\left(\frac{2\,A\,c^3}{11}+\frac{6\,B\,b\,c^2}{11}\right)+\frac{2\,A\,b^3\,x^{5/2}}{5}+\frac{2\,B\,c^3\,x^{13/2}}{13}+\frac{2\,b\,c\,x^{9/2}\,\left(A\,c+B\,b\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(3/2),x)
```

```
[Out] x^(7/2)*((2*B*b^3)/7 + (6*A*b^2*c)/7) + x^(11/2)*((2*A*c^3)/11 + (6*B*b*c^2
)/11) + (2*A*b^3*x^(5/2))/5 + (2*B*c^3*x^(13/2))/13 + (2*b*c*x^(9/2)*(A*c +
 B*b))/3
```

sympy [A]   time = 3.73, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{5}{2}}}{5} + \frac{6Ab^2cx^{\frac{7}{2}}}{7} + \frac{2Abc^2x^{\frac{9}{2}}}{3} + \frac{2Ac^3x^{\frac{11}{2}}}{11} + \frac{2Bb^3x^{\frac{7}{2}}}{7} + \frac{2Bb^2cx^{\frac{9}{2}}}{3} + \frac{6Bbc^2x^{\frac{11}{2}}}{11} + \frac{2Bc^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(3/2),x)
```

```
[Out] 2*A*b**3*x**(5/2)/5 + 6*A*b**2*c*x**(7/2)/7 + 2*A*b*c**2*x**(9/2)/3 + 2*A*c
**3*x**(11/2)/11 + 2*B*b**3*x**(7/2)/7 + 2*B*b**2*c*x**(9/2)/3 + 6*B*b*c**2
*x**(11/2)/11 + 2*B*c**3*x**(13/2)/13
```

3.164 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2}{3}Ab^3x^{3/2} + \frac{2}{5}b^2x^{5/2}(3Ac + bB) + \frac{2}{9}c^2x^{9/2}(Ac + 3bB) + \frac{6}{7}bcx^{7/2}(Ac + bB) + \frac{2}{11}Bc^3x^{11/2}$$

```
[Out] 2/3*A*b^3*x^(3/2)+2/5*b^2*(3*A*c+B*b)*x^(5/2)+6/7*b*c*(A*c+B*b)*x^(7/2)+2/9
*c^2*(A*c+3*B*b)*x^(9/2)+2/11*B*c^3*x^(11/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{5}b^2x^{5/2}(3Ac + bB) + \frac{2}{3}Ab^3x^{3/2} + \frac{2}{9}c^2x^{9/2}(Ac + 3bB) + \frac{6}{7}bcx^{7/2}(Ac + bB) + \frac{2}{11}Bc^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*A*b^3*x^(3/2))/3 + (2*b^2*(b*B + 3*A*c)*x^(5/2))/5 + (6*b*c*(b*B + A*c)*
x^(7/2))/7 + (2*c^2*(3*b*B + A*c)*x^(9/2))/9 + (2*B*c^3*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{5/2}}\,dx &= \int \left(Ab^3\sqrt{x} + b^2(bB+3Ac)x^{3/2} + 3bc(bB+Ac)x^{5/2} + c^2(3bB+Ac)x^{7/2} + Bc^3x^{9/2}\right)\\ &= \frac{2}{3}Ab^3x^{3/2} + \frac{2}{5}b^2(bB+3Ac)x^{5/2} + \frac{6}{7}bc(bB+Ac)x^{7/2} + \frac{2}{9}c^2(3bB+Ac)x^{9/2} + \frac{2}{11}Bc^3\end{aligned}$$

Mathematica [A] time = 0.04, size = 70, normalized size = 0.82

$$\frac{2\left(Bx^{3/2}(b+cx)^4 - \frac{1}{315}x^{3/2}\left(105b^3 + 189b^2cx + 135bc^2x^2 + 35c^3x^3\right)(3bB - 11Ac)\right)}{11c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(B*x^(3/2)*(b + c*x)^4 - ((3*b*B - 11*A*c)*x^(3/2)*(105*b^3 + 189*b^2*c*
x + 135*b*c^2*x^2 + 35*c^3*x^3))/315))/(11*c)
```

fricas [A] time = 0.60, size = 76, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bc^3x^5 + 1155\,Ab^3x + 385\left(3\,Bbc^2 + Ac^3\right)x^4 + 1485\left(Bb^2c + Abc^2\right)x^3 + 693\left(Bb^3 + 3\,Ab^2c\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^5 + 1155*A*b^3*x + 385*(3*B*b*c^2 + A*c^3)*x^4 + 1485*(
B*b^2*c + A*b*c^2)*x^3 + 693*(B*b^3 + 3*A*b^2*c)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.91

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{3}\,Bbc^2x^{\frac{9}{2}} + \frac{2}{9}\,Ac^3x^{\frac{9}{2}} + \frac{6}{7}\,Bb^2cx^{\frac{7}{2}} + \frac{6}{7}\,Abc^2x^{\frac{7}{2}} + \frac{2}{5}\,Bb^3x^{\frac{5}{2}} + \frac{6}{5}\,Ab^2cx^{\frac{5}{2}} + \frac{2}{3}\,Ab^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*B*b*c^2*x^(9/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*b^2*c
*x^(7/2) + 6/7*A*b*c^2*x^(7/2) + 2/5*B*b^3*x^(5/2) + 6/5*A*b^2*c*x^(5/2) +
2/3*A*b^3*x^(3/2)
```

maple [A] time = 0.04, size = 76, normalized size = 0.89

$$\frac{2\left(315B\,c^3x^4 + 385A\,c^3x^3 + 1155Bb\,c^2x^3 + 1485Ab\,c^2x^2 + 1485B\,b^2c\,x^2 + 2079A\,b^2cx + 693B\,b^3x + 1155A\,b^3\right.}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x)
```

```
[Out] 2/3465*x^(3/2)*(315*B*c^3*x^4+385*A*c^3*x^3+1155*B*b*c^2*x^3+1485*A*b*c^2*x
^2+1485*B*b^2*c*x^2+2079*A*b^2*c*x+693*B*b^3*x+1155*A*b^3)
```

maxima [A] time = 0.65, size = 73, normalized size = 0.86

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}} + \frac{2}{3}\,Ab^3x^{\frac{3}{2}} + \frac{2}{9}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{9}{2}} + \frac{6}{7}\left(Bb^2c + Abc^2\right)x^{\frac{7}{2}} + \frac{2}{5}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*A*b^3*x^(3/2) + 2/9*(3*B*b*c^2 + A*c^3)*x^(9/2) +
 6/7*(B*b^2*c + A*b*c^2)*x^(7/2) + 2/5*(B*b^3 + 3*A*b^2*c)*x^(5/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.81

$$x^{5/2}\left(\frac{2\,B\,b^3}{5} + \frac{6\,A\,c\,b^2}{5}\right)+x^{9/2}\left(\frac{2\,A\,c^3}{9} + \frac{2\,B\,b\,c^2}{3}\right)+\frac{2\,A\,b^3\,x^{3/2}}{3}+\frac{2\,B\,c^3\,x^{11/2}}{11}+\frac{6\,b\,c\,x^{7/2}\,\left(A\,c+B\,b\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*B*b^3)/5 + (6*A*b^2*c)/5) + x^(9/2)*((2*A*c^3)/9 + (2*B*b*c^2)/
3) + (2*A*b^3*x^(3/2))/3 + (2*B*c^3*x^(11/2))/11 + (6*b*c*x^(7/2)*(A*c + B*
b))/7
```

sympy [A] time = 4.35, size = 114, normalized size = 1.34

$$\frac{2Ab^3x^{\frac{3}{2}}}{3} + \frac{6Ab^2cx^{\frac{5}{2}}}{5} + \frac{6Abc^2x^{\frac{7}{2}}}{7} + \frac{2Ac^3x^{\frac{9}{2}}}{9} + \frac{2Bb^3x^{\frac{5}{2}}}{5} + \frac{6Bb^2cx^{\frac{7}{2}}}{7} + \frac{2Bbc^2x^{\frac{9}{2}}}{3} + \frac{2Bc^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(5/2),x)
```

```
[Out] 2*A*b**3*x**(3/2)/3 + 6*A*b**2*c*x**(5/2)/5 + 6*A*b*c**2*x**(7/2)/7 + 2*A*c
**3*x**(9/2)/9 + 2*B*b**3*x**(5/2)/5 + 6*B*b**2*c*x**(7/2)/7 + 2*B*b*c**2*x
**(9/2)/3 + 2*B*c**3*x**(11/2)/11
```

3.165 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=83

$$2Ab^3\sqrt{x}+\frac{2}{3}b^2x^{3/2}(3Ac+bB)+\frac{2}{7}c^2x^{7/2}(Ac+3bB)+\frac{6}{5}bcx^{5/2}(Ac+bB)+\frac{2}{9}Bc^3x^{9/2}$$

```
[Out] 2/3*b^2*(3*A*c+B*b)*x^(3/2)+6/5*b*c*(A*c+B*b)*x^(5/2)+2/7*c^2*(A*c+3*B*b)*x
^(7/2)+2/9*B*c^3*x^(9/2)+2*A*b^3*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$\frac{2}{3}b^2x^{3/2}(3Ac+bB)+2Ab^3\sqrt{x}+\frac{2}{7}c^2x^{7/2}(Ac+3bB)+\frac{6}{5}bcx^{5/2}(Ac+bB)+\frac{2}{9}Bc^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] 2*A*b^3*Sqrt[x] + (2*b^2*(b*B + 3*A*c)*x^(3/2))/3 + (6*b*c*(b*B + A*c)*x^(5
/2))/5 + (2*c^2*(3*b*B + A*c)*x^(7/2))/7 + (2*B*c^3*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{Ab^3}{\sqrt{x}}+b^2(bB+3Ac)\sqrt{x}+3bc(bB+Ac)x^{3/2}+c^2(3bB+Ac)x^{5/2}+Bc^3x^{7/2}\right)dx\\ &= 2Ab^3\sqrt{x}+\frac{2}{3}b^2(bB+3Ac)x^{3/2}+\frac{6}{5}bc(bB+Ac)x^{5/2}+\frac{2}{7}c^2(3bB+Ac)x^{7/2}+\frac{2}{9}Bc^3x^9\end{aligned}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.76

$$\frac{2\sqrt{x}\left(35B(b+cx)^4-\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)(bB-9Ac)\right)}{315c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*Sqrt[x]*(35*B*(b + c*x)^4 - (b*B - 9*A*c)*(35*b^3 + 35*b^2*c*x + 21*b*c^
2*x^2 + 5*c^3*x^3)))/(315*c)
```

fricas [A] time = 0.77, size = 73, normalized size = 0.88

$$\frac{2}{315}\left(35\,Bc^3x^4+315\,Ab^3+45\left(3\,Bbc^2+Ac^3\right)x^3+189\left(Bb^2c+Abc^2\right)x^2+105\left(Bb^3+3\,Ab^2c\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^4 + 315*A*b^3 + 45*(3*B*b*c^2 + A*c^3)*x^3 + 189*(B*b^2*c
 + A*b*c^2)*x^2 + 105*(B*b^3 + 3*A*b^2*c)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.93

$$\frac{2}{9}Bc^3x^{\frac{9}{2}} + \frac{6}{7}Bbc^2x^{\frac{7}{2}} + \frac{2}{7}Ac^3x^{\frac{7}{2}} + \frac{6}{5}Bb^2cx^{\frac{5}{2}} + \frac{6}{5}Abc^2x^{\frac{5}{2}} + \frac{2}{3}Bb^3x^{\frac{3}{2}} + 2\,Ab^2cx^{\frac{3}{2}} + 2\,Ab^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 6/7*B*b*c^2*x^(7/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*b^2*c*x
^(5/2) + 6/5*A*b*c^2*x^(5/2) + 2/3*B*b^3*x^(3/2) + 2*A*b^2*c*x^(3/2) + 2*A*
b^3*sqrt(x)
```

maple [A] time = 0.05, size = 76, normalized size = 0.92

$$\frac{2\left(35B\,c^3x^4 + 45A\,c^3x^3 + 135Bb\,c^2x^3 + 189Ab\,c^2x^2 + 189B\,b^2c\,x^2 + 315A\,b^2cx + 105B\,b^3x + 315A\,b^3\right)\sqrt{x}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x)
```

```
[Out] 2/315*x^(1/2)*(35*B*c^3*x^4+45*A*c^3*x^3+135*B*b*c^2*x^3+189*A*b*c^2*x^2+18
9*B*b^2*c*x^2+315*A*b^2*c*x+105*B*b^3*x+315*A*b^3)
```

maxima [A] time = 0.49, size = 73, normalized size = 0.88

$$\frac{2}{9}Bc^3x^{\frac{9}{2}} + 2\,Ab^3\sqrt{x} + \frac{2}{7}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{7}{2}} + \frac{6}{5}\left(Bb^2c + Abc^2\right)x^{\frac{5}{2}} + \frac{2}{3}\left(Bb^3 + 3\,Ab^2c\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2*A*b^3*sqrt(x) + 2/7*(3*B*b*c^2 + A*c^3)*x^(7/2) + 6/5
*(B*b^2*c + A*b*c^2)*x^(5/2) + 2/3*(B*b^3 + 3*A*b^2*c)*x^(3/2)
```

mupad [B] time = 0.03, size = 69, normalized size = 0.83

$$x^{3/2}\left(\frac{2\,B\,b^3}{3} + 2\,A\,c\,b^2\right) + x^{7/2}\left(\frac{2\,A\,c^3}{7} + \frac{6\,B\,b\,c^2}{7}\right) + 2\,A\,b^3\,\sqrt{x} + \frac{2\,B\,c^3\,x^{9/2}}{9} + \frac{6\,b\,c\,x^{5/2}\,\left(A\,c + B\,b\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*B*b^3)/3 + 2*A*b^2*c) + x^(7/2)*((2*A*c^3)/7 + (6*B*b*c^2)/7) +
 2*A*b^3*x^(1/2) + (2*B*c^3*x^(9/2))/9 + (6*b*c*x^(5/2)*(A*c + B*b))/5
```

sympy [A] time = 5.97, size = 110, normalized size = 1.33

$$2Ab^3\sqrt{x} + 2Ab^2cx^{\frac{3}{2}} + \frac{6Abc^2x^{\frac{5}{2}}}{5} + \frac{2Ac^3x^{\frac{7}{2}}}{7} + \frac{2Bb^3x^{\frac{3}{2}}}{3} + \frac{6Bb^2cx^{\frac{5}{2}}}{5} + \frac{6Bbc^2x^{\frac{7}{2}}}{7} + \frac{2Bc^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(7/2),x)
```

```
[Out] 2*A*b**3*sqrt(x) + 2*A*b**2*c*x**(3/2) + 6*A*b*c**2*x**(5/2)/5 + 2*A*c**3*x
**(7/2)/7 + 2*B*b**3*x**(3/2)/3 + 6*B*b**2*c*x**(5/2)/5 + 6*B*b*c**2*x**(7/
2)/7 + 2*B*c**3*x**(9/2)/9
```

3.166 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{9/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2Ab^3}{\sqrt{x}}+2b^2\sqrt{x}\,(3Ac+bB)+\frac{2}{5}c^2x^{5/2}(Ac+3bB)+2bcx^{3/2}(Ac+bB)+\frac{2}{7}Bc^3x^{7/2}$$

```
[Out] 2*b*c*(A*c+B*b)*x^(3/2)+2/5*c^2*(A*c+3*B*b)*x^(5/2)+2/7*B*c^3*x^(7/2)-2*A*b
^3/x^(1/2)+2*b^2*(3*A*c+B*b)*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$2b^2\sqrt{x}\,(3Ac+bB)-\frac{2Ab^3}{\sqrt{x}}+\frac{2}{5}c^2x^{5/2}(Ac+3bB)+2bcx^{3/2}(Ac+bB)+\frac{2}{7}Bc^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*A*b^3)/Sqrt[x] + 2*b^2*(b*B + 3*A*c)*Sqrt[x] + 2*b*c*(b*B + A*c)*x^(3/2
) + (2*c^2*(3*b*B + A*c)*x^(5/2))/5 + (2*B*c^3*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{9/2}}\,dx &= \int \left(\frac{Ab^3}{x^{3/2}}+\frac{b^2(bB+3Ac)}{\sqrt{x}}+3bc(bB+Ac)\sqrt{x}+c^2(3bB+Ac)x^{3/2}+Bc^3x^{5/2}\right)dx\\ &= -\frac{2Ab^3}{\sqrt{x}}+2b^2(bB+3Ac)\sqrt{x}+2bc(bB+Ac)x^{3/2}+\frac{2}{5}c^2(3bB+Ac)x^{5/2}+\frac{2}{7}Bc^3x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 0.95

$$\frac{2\left(7A\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)+Bx\left(35b^3+35b^2cx+21bc^2x^2+5c^3x^3\right)\right)}{35\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(7*A*(-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3) + B*x*(35*b^3 + 35*b^
2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3)))/(35*Sqrt[x])
```

fricas [A] time = 0.69, size = 73, normalized size = 0.92

$$\frac{2\left(5\,Bc^3x^4-35\,Ab^3+7\left(3\,Bbc^2+Ac^3\right)x^3+35\left(Bb^2c+Abc^2\right)x^2+35\left(Bb^3+3\,Ab^2c\right)x\right)}{35\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^4 - 35*A*b^3 + 7*(3*B*b*c^2 + A*c^3)*x^3 + 35*(B*b^2*c + A*
b*c^2)*x^2 + 35*(B*b^3 + 3*A*b^2*c)*x)/sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.97

$$\frac{2}{7}\,Bc^{3}x^{\frac{7}{2}}+\frac{6}{5}\,Bbc^{2}x^{\frac{5}{2}}+\frac{2}{5}\,Ac^{3}x^{\frac{5}{2}}+2\,Bb^{2}cx^{\frac{3}{2}}+2\,Abc^{2}x^{\frac{3}{2}}+2\,Bb^{3}\sqrt{x}+6\,Ab^{2}c\sqrt{x}-\frac{2\,Ab^{3}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 6/5*B*b*c^2*x^(5/2) + 2/5*A*c^3*x^(5/2) + 2*B*b^2*c*x^(
3/2) + 2*A*b*c^2*x^(3/2) + 2*B*b^3*sqrt(x) + 6*A*b^2*c*sqrt(x) - 2*A*b^3/sq
rt(x)
```

maple [A] time = 0.05, size = 76, normalized size = 0.96

$$-\frac{2\left(-5B\,c^{3}x^{4}-7A\,c^{3}x^{3}-21Bb\,c^{2}x^{3}-35Ab\,c^{2}x^{2}-35B\,b^{2}c\,x^{2}-105A\,b^{2}cx-35B\,b^{3}x+35A\,b^{3}\right)}{35\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x)
```

```
[Out] -2/35/x^(1/2)*(-5*B*c^3*x^4-7*A*c^3*x^3-21*B*b*c^2*x^3-35*A*b*c^2*x^2-35*B*
b^2*c*x^2-105*A*b^2*c*x-35*B*b^3*x+35*A*b^3)
```

maxima [A] time = 0.62, size = 73, normalized size = 0.92

$$\frac{2}{7}\,Bc^{3}x^{\frac{7}{2}}-\frac{2\,Ab^{3}}{\sqrt{x}}+\frac{2}{5}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{5}{2}}+2\left(Bb^{2}c+Abc^{2}\right)x^{\frac{3}{2}}+2\left(Bb^{3}+3\,Ab^{2}c\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) - 2*A*b^3/sqrt(x) + 2/5*(3*B*b*c^2 + A*c^3)*x^(5/2) + 2*(
B*b^2*c + A*b*c^2)*x^(3/2) + 2*(B*b^3 + 3*A*b^2*c)*sqrt(x)
```

mupad [B] time = 0.04, size = 69, normalized size = 0.87

$$\sqrt{x}\,\left(2\,B\,b^3+6\,A\,c\,b^2\right)+x^{5/2}\,\left(\frac{2\,A\,c^3}{5}+\frac{6\,B\,b\,c^2}{5}\right)-\frac{2\,A\,b^3}{\sqrt{x}}+\frac{2\,B\,c^3\,x^{7/2}}{7}+2\,b\,c\,x^{3/2}\,\left(A\,c+B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*B*b^3 + 6*A*b^2*c) + x^(5/2)*((2*A*c^3)/5 + (6*B*b*c^2)/5) - (2*
A*b^3)/x^(1/2) + (2*B*c^3*x^(7/2))/7 + 2*b*c*x^(3/2)*(A*c + B*b)
```

sympy [A] time = 7.85, size = 105, normalized size = 1.33

$$-\frac{2Ab^{3}}{\sqrt{x}}+6Ab^{2}c\sqrt{x}+2Abc^{2}x^{\frac{3}{2}}+\frac{2Ac^{3}x^{\frac{5}{2}}}{5}+2Bb^{3}\sqrt{x}+2Bb^{2}cx^{\frac{3}{2}}+\frac{6Bbc^{2}x^{\frac{5}{2}}}{5}+\frac{2Bc^{3}x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(9/2),x)
```

```
[Out] -2*A*b**3/sqrt(x) + 6*A*b**2*c*sqrt(x) + 2*A*b*c**2*x**(3/2) + 2*A*c**3*x**
(5/2)/5 + 2*B*b**3*sqrt(x) + 2*B*b**2*c*x**(3/2) + 6*B*b*c**2*x**(5/2)/5 +
2*B*c**3*x**(7/2)/7
```

3.167 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11/2}} \, dx$

Optimal. Leaf size=81

$$-\frac{2Ab^3}{3x^{3/2}}-\frac{2b^2(3Ac+bB)}{\sqrt{x}}+\frac{2}{3}c^2x^{3/2}(Ac+3bB)+6bc\sqrt{x}\,(Ac+bB)+\frac{2}{5}Bc^3x^{5/2}$$

```
[Out] -2/3*A*b^3/x^(3/2)+2/3*c^2*(A*c+3*B*b)*x^(3/2)+2/5*B*c^3*x^(5/2)-2*b^2*(3*A
*c+B*b)/x^(1/2)+6*b*c*(A*c+B*b)*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {765}

$$-\frac{2b^2(3Ac+bB)}{\sqrt{x}}-\frac{2Ab^3}{3x^{3/2}}+\frac{2}{3}c^2x^{3/2}(Ac+3bB)+6bc\sqrt{x}\,(Ac+bB)+\frac{2}{5}Bc^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*A*b^3)/(3*x^(3/2)) - (2*b^2*(b*B + 3*A*c))/Sqrt[x] + 6*b*c*(b*B + A*c)*
Sqrt[x] + (2*c^2*(3*b*B + A*c)*x^(3/2))/3 + (2*B*c^3*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{x^{11/2}}\,dx &= \int \left(\frac{Ab^3}{x^{5/2}}+\frac{b^2(bB+3Ac)}{x^{3/2}}+\frac{3bc(bB+Ac)}{\sqrt{x}}+c^2(3bB+Ac)\sqrt{x}+Bc^3x^{3/2}\right)dx\\ &= -\frac{2Ab^3}{3x^{3/2}}-\frac{2b^2(bB+3Ac)}{\sqrt{x}}+6bc(bB+Ac)\sqrt{x}+\frac{2}{3}c^2(3bB+Ac)x^{3/2}+\frac{2}{5}Bc^3x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 74, normalized size = 0.91

$$\frac{6Bx\left(-5b^3+15b^2cx+5bc^2x^2+c^3x^3\right)-10A\left(b^3+9b^2cx-9bc^2x^2-c^3x^3\right)}{15x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-10*A*(b^3 + 9*b^2*c*x - 9*b*c^2*x^2 - c^3*x^3) + 6*B*x*(-5*b^3 + 15*b^2*c
*x + 5*b*c^2*x^2 + c^3*x^3))/(15*x^(3/2))
```

fricas [A] time = 0.77, size = 73, normalized size = 0.90

$$\frac{2\left(3\,Bc^3x^4-5\,Ab^3+5\left(3\,Bbc^2+Ac^3\right)x^3+45\left(Bb^2c+Abc^2\right)x^2-15\left(Bb^3+3\,Ab^2c\right)x\right)}{15\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^3*x^4 - 5*A*b^3 + 5*(3*B*b*c^2 + A*c^3)*x^3 + 45*(B*b^2*c + A*b
*c^2)*x^2 - 15*(B*b^3 + 3*A*b^2*c)*x)/x^(3/2)
```

giac [**A**] time = 0.16, size = 75, normalized size = 0.93

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}} + 2\,Bbc^2x^{\frac{3}{2}} + \frac{2}{3}\,Ac^3x^{\frac{3}{2}} + 6\,Bb^2c\sqrt{x} + 6\,Abc^2\sqrt{x} - \frac{2\left(3\,Bb^3x + 9\,Ab^2cx + Ab^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2*B*b*c^2*x^(3/2) + 2/3*A*c^3*x^(3/2) + 6*B*b^2*c*sqrt(
x) + 6*A*b*c^2*sqrt(x) - 2/3*(3*B*b^3*x + 9*A*b^2*c*x + A*b^3)/x^(3/2)
```

maple [**A**] time = 0.05, size = 76, normalized size = 0.94

$$-\frac{2\left(-3B\,c^3x^4 - 5A\,c^3x^3 - 15Bb\,c^2x^3 - 45Ab\,c^2x^2 - 45B\,b^2c\,x^2 + 45A\,b^2cx + 15B\,b^3x + 5A\,b^3\right)}{15x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x)
```

```
[Out] -2/15/x^(3/2)*(-3*B*c^3*x^4-5*A*c^3*x^3-15*B*b*c^2*x^3-45*A*b*c^2*x^2-45*B*
b^2*c*x^2+45*A*b^2*c*x+15*B*b^3*x+5*A*b^3)
```

maxima [**A**] time = 0.57, size = 73, normalized size = 0.90

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}} + \frac{2}{3}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{3}{2}} + 6\left(Bb^2c + Abc^2\right)\sqrt{x} - \frac{2\left(Ab^3 + 3\left(Bb^3 + 3\,Ab^2c\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*(3*B*b*c^2 + A*c^3)*x^(3/2) + 6*(B*b^2*c + A*b*c^2)
*sqrt(x) - 2/3*(A*b^3 + 3*(B*b^3 + 3*A*b^2*c)*x)/x^(3/2)
```

mupad [**B**] time = 0.06, size = 70, normalized size = 0.86

$$x^{3/2}\left(\frac{2\,A\,c^3}{3} + 2\,B\,b\,c^2\right) - \frac{x\,\left(2\,B\,b^3 + 6\,A\,c\,b^2\right) + \frac{2\,A\,b^3}{3}}{x^{3/2}} + \frac{2\,B\,c^3\,x^{5/2}}{5} + 6\,b\,c\,\sqrt{x}\,\left(A\,c + B\,b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*c^3)/3 + 2*B*b*c^2) - (x*(2*B*b^3 + 6*A*b^2*c) + (2*A*b^3)/3)
/x^(3/2) + (2*B*c^3*x^(5/2))/5 + 6*b*c*x^(1/2)*(A*c + B*b)
```

sympy [**A**] time = 10.34, size = 105, normalized size = 1.30

$$-\frac{2Ab^3}{3x^{\frac{3}{2}}} - \frac{6Ab^2c}{\sqrt{x}} + 6Abc^2\sqrt{x} + \frac{2Ac^3x^{\frac{3}{2}}}{3} - \frac{2Bb^3}{\sqrt{x}} + 6Bb^2c\sqrt{x} + 2Bbc^2x^{\frac{3}{2}} + \frac{2Bc^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/x**(11/2),x)
```

```
[Out] -2*A*b**3/(3*x**(3/2)) - 6*A*b**2*c/sqrt(x) + 6*A*b*c**2*sqrt(x) + 2*A*c**3
*x**(3/2)/3 - 2*B*b**3/sqrt(x) + 6*B*b**2*c*sqrt(x) + 2*B*b*c**2*x**(3/2) +
 2*B*c**3*x**(5/2)/5
```

3.168 $\int \frac{x^{7/2}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=113

$$\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}-\frac{2b^2\sqrt{x}\,(bB-Ac)}{c^4}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2Bx^{7/2}}{7c}$$

```
[Out] 2/3*b*(-A*c+B*b)*x^(3/2)/c^3-2/5*(-A*c+B*b)*x^(5/2)/c^2+2/7*B*x^(7/2)/c+2*b
^(5/2)*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/c^(9/2)-2*b^2*(-A*c+B*b)*
x^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 80, 50, 63, 205}

$$-\frac{2b^2\sqrt{x}\,(bB-Ac)}{c^4}+\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}-\frac{2x^{5/2}(bB-Ac)}{5c^2}+\frac{2bx^{3/2}(bB-Ac)}{3c^3}+\frac{2Bx^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (-2*b^2*(b*B - A*c)*Sqrt[x])/c^4 + (2*b*(b*B - A*c)*x^(3/2))/(3*c^3) - (2*(
b*B - A*c)*x^(5/2))/(5*c^2) + (2*B*x^(7/2))/(7*c) + (2*b^(5/2)*(b*B - A*c)*
ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{bx+cx^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{b+cx}\,dx \\
&= \frac{2Bx^{7/2}}{7c} + \frac{\left(2\left(-\frac{7bB}{2}+\frac{7Ac}{2}\right)\right)\int \frac{x^{5/2}}{b+cx}\,dx}{7c} \\
&= -\frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{(b(bB-Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{c^2} \\
&= \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} - \frac{\left(b^2(bB-Ac)\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{c^3} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{\left(b^3(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+}}{c^4} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{\left(2b^3(bB-Ac)\right)\text{Subst}}{c^4} \\
&= -\frac{2b^2(bB-Ac)\sqrt{x}}{c^4} + \frac{2b(bB-Ac)x^{3/2}}{3c^3} - \frac{2(bB-Ac)x^{5/2}}{5c^2} + \frac{2Bx^{7/2}}{7c} + \frac{2b^{5/2}(bB-Ac)\tan^{-1}\Big(}{c^{9/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 101, normalized size = 0.89

$$
\frac{2b^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}} + \frac{2\sqrt{x}\left(35b^2c(3A+Bx)-7bc^2x(5A+3Bx)+3c^3x^2(7A+5Bx)-105b^3B\right)}{105c^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(-105*b^3*B + 35*b^2*c*(3*A + B*x) - 7*b*c^2*x*(5*A + 3*B*x) + 3
*c^3*x^2*(7*A + 5*B*x)))/(105*c^4) + (2*b^(5/2)*(b*B - A*c)*ArcTan[(Sqrt[c]
*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

fricas [A] time = 0.87, size = 229, normalized size = 2.03

$$
\Bigg[-\frac{105\left(Bb^3-Ab^2c\right)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx-2\,c\sqrt{x}\,\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(15\,Bc^3x^3-105\,Bb^3+105\,Ab^2c-21\left(Bbc^2-Ac^3\right)x^2+35\,\Big(Bb^2}{105\,c^4}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*b^3 - A*b^2*c)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c)
 - b)/(c*x + b)) - 2*(15*B*c^3*x^3 - 105*B*b^3 + 105*A*b^2*c - 21*(B*b*c^2
- A*c^3)*x^2 + 35*(B*b^2*c - A*b*c^2)*x)*sqrt(x))/c^4, 2/105*(105*(B*b^3 -
A*b^2*c)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (15*B*c^3*x^3 - 105*B*b^
3 + 105*A*b^2*c - 21*(B*b*c^2 - A*c^3)*x^2 + 35*(B*b^2*c - A*b*c^2)*x)*sqrt
(x))/c^4]
```

giac [A] time = 0.19, size = 115, normalized size = 1.02

$$\frac{2\,(Bb^4 - Ab^3c)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4} + \frac{2\,(15\,Bc^6x^{\frac{7}{2}} - 21\,Bbc^5x^{\frac{5}{2}} + 21\,Ac^6x^{\frac{5}{2}} + 35\,Bb^2c^4x^{\frac{3}{2}} - 35\,Abc^5x^{\frac{3}{2}} - 105\,Bb^3c^3\sqrt{x}}{105\,c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/105*(15
*B*c^6*x^(7/2) - 21*B*b*c^5*x^(5/2) + 21*A*c^6*x^(5/2) + 35*B*b^2*c^4*x^(3/
2) - 35*A*b*c^5*x^(3/2) - 105*B*b^3*c^3*sqrt(x) + 105*A*b^2*c^4*sqrt(x))/c^
7
```

maple [A] time = 0.05, size = 126, normalized size = 1.12

$$\frac{2B\,x^{\frac{7}{2}}}{7c} + \frac{2A\,x^{\frac{5}{2}}}{5c} - \frac{2Bb\,x^{\frac{5}{2}}}{5c^2} - \frac{2A\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^3} + \frac{2B\,b^4\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^4} - \frac{2Ab\,x^{\frac{3}{2}}}{3c^2} + \frac{2B\,b^2x^{\frac{3}{2}}}{3c^3} + \frac{2A\,b^2\sqrt{x}}{c^3} - \frac{2B\,b^3\sqrt{x}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/7*B/c*x^(7/2)+2/5/c*A*x^(5/2)-2/5/c^2*B*x^(5/2)*b-2/3/c^2*A*x^(3/2)*b+2/3
/c^3*B*x^(3/2)*b^2+2/c^3*A*b^2*x^(1/2)-2/c^4*b^3*B*x^(1/2)-2*b^3/c^3/(b*c)^
(1/2)*arctan(c*x^(1/2)/(b*c)^(1/2))*A+2*b^4/c^4/(b*c)^(1/2)*arctan(c*x^(1/2
)/(b*c)^(1/2))*B
```

maxima [A] time = 1.28, size = 105, normalized size = 0.93

$$\frac{2\,(Bb^4 - Ab^3c)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4} + \frac{2\,(15\,Bc^3x^{\frac{7}{2}} - 21\left(Bbc^2 - Ac^3\right)x^{\frac{5}{2}} + 35\left(Bb^2c - Abc^2\right)x^{\frac{3}{2}} - 105\left(Bb^3 - Ab^2c\right)\sqrt{x}}{105\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/105*(15
*B*c^3*x^(7/2) - 21*(B*b*c^2 - A*c^3)*x^(5/2) + 35*(B*b^2*c - A*b*c^2)*x^(3
/2) - 105*(B*b^3 - A*b^2*c)*sqrt(x))/c^4
```

mupad [B] time = 1.04, size = 125, normalized size = 1.11

$$x^{5/2}\left(\frac{2\,A}{5\,c} - \frac{2\,B\,b}{5\,c^2}\right) + \frac{2\,B\,x^{7/2}}{7\,c} + \frac{b^2\,\sqrt{x}\,\left(\frac{2\,A}{c} - \frac{2\,B\,b}{c^2}\right)}{c^2} + \frac{2\,b^{5/2}\,\mathrm{atan}\left(\frac{b^{5/2}\,\sqrt{c}\,\sqrt{x}\,(A\,c - B\,b)}{B\,b^4 - A\,b^3\,c}\right)\,(A\,c - B\,b)}{c^{9/2}} - \frac{b\,x^{3/2}\,(\frac{2\,A}{c} - \frac{2\,B}{c^2}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(5/2)*((2*A)/(5*c) - (2*B*b)/(5*c^2)) + (2*B*x^(7/2))/(7*c) + (b^2*x^(1/2
)*((2*A)/c - (2*B*b)/c^2))/c^2 + (2*b^(5/2)*atan((b^(5/2)*c^(1/2)*x^(1/2)*(
A*c - B*b))/(B*b^4 - A*b^3*c))*(A*c - B*b))/c^(9/2) - (b*x^(3/2)*((2*A)/c -
 (2*B*b)/c^2))/(3*c)
```

sympy [**A**] time = 45.39, size = 279, normalized size = 2.47

$$\begin{cases} \frac{iAb^{\frac{5}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} - \frac{iAb^{\frac{5}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}} + \frac{2Ab^2\sqrt{x}}{c^3} - \frac{2Abx^{\frac{3}{2}}}{3c^2} + \frac{2Ax^{\frac{5}{2}}}{5c} - \frac{iBb^{\frac{7}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^5\sqrt{\frac{1}{c}}} + \frac{iBb^{\frac{7}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\right.}{c^5\sqrt{\frac{1}{c}}} \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7}+\frac{2Bx^{\frac{9}{2}}}{9}}{b} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((I*A*b**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**4*sqrt(1/c)
) - I*A*b**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**4*sqrt(1/c)) + 2*A*
b**2*sqrt(x)/c**3 - 2*A*b*x**(3/2)/(3*c**2) + 2*A*x**(5/2)/(5*c) - I*B*b**(
7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**5*sqrt(1/c)) + I*B*b**(7/2)*lo
g(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**5*sqrt(1/c)) - 2*B*b**3*sqrt(x)/c**4 +
 2*B*b**2*x**(3/2)/(3*c**3) - 2*B*b*x**(5/2)/(5*c**2) + 2*B*x**(7/2)/(7*c),
 Ne(c, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/b, True))
```

3.169 $\int \frac{x^{5/2}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=90

$$-\frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}+\frac{2b\sqrt{x}\,(bB-Ac)}{c^3}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2Bx^{5/2}}{5c}$$

```
[Out] -2/3*(-A*c+B*b)*x^(3/2)/c^2+2/5*B*x^(5/2)/c-2*b^(3/2)*(-A*c+B*b)*arctan(c^(
1/2)*x^(1/2)/b^(1/2))/c^(7/2)+2*b*(-A*c+B*b)*x^(1/2)/c^3
```

Rubi [A] time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 80, 50, 63, 205}

$$-\frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{2x^{3/2}(bB-Ac)}{3c^2}+\frac{2b\sqrt{x}\,(bB-Ac)}{c^3}+\frac{2Bx^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*b*(b*B - A*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(3/2))/(3*c^2) + (2*B*x^(5
/2))/(5*c) - (2*b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7
/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{bx+cx^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{b+cx}\,dx\\
&= \frac{2Bx^{5/2}}{5c} + \frac{\left(2\left(-\frac{5bB}{2}+\frac{5Ac}{2}\right)\right)\int \frac{x^{3/2}}{b+cx}\,dx}{5c}\\
&= -\frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} + \frac{(b(bB-Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{c^2}\\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\left(b^2(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{c^3}\\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{\left(2b^2(bB-Ac)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c^3}\\
&= \frac{2b(bB-Ac)\sqrt{x}}{c^3} - \frac{2(bB-Ac)x^{3/2}}{3c^2} + \frac{2Bx^{5/2}}{5c} - \frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.90

$$\frac{2\sqrt{x}\left(-5bc(3A+Bx)+c^2x(5A+3Bx)+15b^2B\right)}{15c^3} - \frac{2b^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(15*b^2*B - 5*b*c*(3*A + B*x) + c^2*x*(5*A + 3*B*x)))/(15*c^3) -
 (2*b^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7/2)
```

fricas [A] time = 0.95, size = 180, normalized size = 2.00

$$\left[-\frac{15\left(Bb^2-Abc\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx+2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(3Bc^2x^2+15Bb^2-15Abc-5\left(Bbc-Ac^2\right)x\right)\sqrt{x}}{15c^3}, -\frac{2\left(15\left(Bb^2-\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*b^2 - A*b*c)*sqrt(-b/c)*log((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b
)/(c*x + b)) - 2*(3*B*c^2*x^2 + 15*B*b^2 - 15*A*b*c - 5*(B*b*c - A*c^2)*x)*
sqrt(x))/c^3, -2/15*(15*(B*b^2 - A*b*c)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c
)/b) - (3*B*c^2*x^2 + 15*B*b^2 - 15*A*b*c - 5*(B*b*c - A*c^2)*x)*sqrt(x))/c
^3]
```

giac [A] time = 0.17, size = 91, normalized size = 1.01

$$-\frac{2\left(Bb^3-Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^3}+\frac{2\left(3\,Bc^4x^{\frac{5}{2}}-5\,Bbc^3x^{\frac{3}{2}}+5\,Ac^4x^{\frac{3}{2}}+15\,Bb^2c^2\sqrt{x}-15\,Abc^3\sqrt{x}\right)}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/15*(3*
B*c^4*x^(5/2) - 5*B*b*c^3*x^(3/2) + 5*A*c^4*x^(3/2) + 15*B*b^2*c^2*sqrt(x)
- 15*A*b*c^3*sqrt(x))/c^5
```

maple [A] time = 0.06, size = 102, normalized size = 1.13

$$\frac{2B\,x^{\frac{5}{2}}}{5c}+\frac{2A\,b^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^2}-\frac{2B\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^3}+\frac{2A\,x^{\frac{3}{2}}}{3c}-\frac{2Bb\,x^{\frac{3}{2}}}{3c^2}-\frac{2Ab\sqrt{x}}{c^2}+\frac{2B\,b^2\sqrt{x}}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A*x^(3/2)/c-2/3/c^2*B*x^(3/2)*b-2/c^2*A*b*x^(1/2)+2/c^3
*b^2*B*x^(1/2)+2*b^2/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*b^
3/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.23, size = 82, normalized size = 0.91

$$-\frac{2\left(Bb^3-Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^3}+\frac{2\left(3\,Bc^2x^{\frac{5}{2}}-5\left(Bbc-Ac^2\right)x^{\frac{3}{2}}+15\left(Bb^2-Abc\right)\sqrt{x}\right)}{15\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/15*(3*
B*c^2*x^(5/2) - 5*(B*b*c - A*c^2)*x^(3/2) + 15*(B*b^2 - A*b*c)*sqrt(x))/c^3
```

mupad [B] time = 1.05, size = 101, normalized size = 1.12

$$x^{3/2}\left(\frac{2\,A}{3\,c}-\frac{2\,B\,b}{3\,c^2}\right)+\frac{2\,B\,x^{5/2}}{5\,c}-\frac{2\,b^{3/2}\,\mathrm{atan}\left(\frac{b^{3/2}\,\sqrt{c}\,\sqrt{x}\,(A\,c-B\,b)}{B\,b^3-A\,b^2\,c}\right)(A\,c-B\,b)}{c^{7/2}}-\frac{b\,\sqrt{x}\,\left(\frac{2\,A}{c}-\frac{2\,B\,b}{c^2}\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(3/2)*((2*A)/(3*c) - (2*B*b)/(3*c^2)) + (2*B*x^(5/2))/(5*c) - (2*b^(3/2)*
atan((b^(3/2)*c^(1/2)*x^(1/2)*(A*c - B*b))/(B*b^3 - A*b^2*c))*(A*c - B*b))/
c^(7/2) - (b*x^(1/2)*((2*A)/c - (2*B*b)/c^2))/c
```

sympy [A] time = 16.35, size = 245, normalized size = 2.72

$$\begin{cases} -\frac{iAb^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^3\sqrt{\frac{1}{c}}}+\frac{iAb^{\frac{3}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^3\sqrt{\frac{1}{c}}}-\frac{2Ab\sqrt{x}}{c^2}+\frac{2Ax^{\frac{3}{2}}}{3c}+\frac{iBb^{\frac{5}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}}-\frac{iBb^{\frac{5}{2}}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^4\sqrt{\frac{1}{c}}}+ \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5}+\frac{2Bx^{\frac{7}{2}}}{7}}{b} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((-I*A*b**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c
)) + I*A*b**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c)) - 2*A
*b*sqrt(x)/c**2 + 2*A*x**(3/2)/(3*c) + I*B*b**(5/2)*log(-I*sqrt(b)*sqrt(1/c
) + sqrt(x))/(c**4*sqrt(1/c)) - I*B*b**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(c**4*sqrt(1/c)) + 2*B*b**2*sqrt(x)/c**3 - 2*B*b*x**(3/2)/(3*c**2) + 2
*B*x**(5/2)/(5*c), Ne(c, 0)), ((2*A*x**(5/2)/5 + 2*B*x**(7/2)/7)/b, True))
```

3.170 $\int \frac{x^{3/2}(A+Bx)}{bx+cx^2} \, dx$

Optimal. Leaf size=69

$$\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}-\frac{2\sqrt{x}\,(bB-Ac)}{c^2}+\frac{2Bx^{3/2}}{3c}$$

```
[Out] 2/3*B*x^(3/2)/c+2*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))*b^(1/2)/c^(5/2
)-2*(-A*c+B*b)*x^(1/2)/c^2
```

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{781, 80, 50, 63, 205\}$

$$-\frac{2\sqrt{x}\,(bB-Ac)}{c^2}+\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}+\frac{2Bx^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(3/2))/(3*c) + (2*Sqrt[b]*(b*B - A*c)
*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(5/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{bx+cx^2}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{b+cx}\,dx\\
&= \frac{2Bx^{3/2}}{3c}+\frac{\left(2\left(-\frac{3bB}{2}+\frac{3Ac}{2}\right)\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{3c}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{(b(bB-Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{c^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{(2b(bB-Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{c^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}
\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 63, normalized size = 0.91

$$\frac{2\sqrt{b}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{5/2}}+\frac{2\sqrt{x}\,(3Ac-3bB+Bcx)}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[x]*(-3*b*B + 3*A*c + B*c*x))/(3*c^2) + (2*Sqrt[b]*(b*B - A*c)*ArcTa
n[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(5/2)
```

fricas [**A**] time = 0.97, size = 129, normalized size = 1.87

$$\left[-\frac{3\,(Bb-Ac)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx-2\,c\sqrt{x}\,\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\,(Bcx-3\,Bb+3\,Ac)\sqrt{x}}{3\,c^2},\ \frac{2\Big(3\,(Bb-Ac)\sqrt{\frac{b}{c}}\,\arctan\left(\frac{c\sqrt{x}\,\sqrt{\frac{b}{c}}}{b}\right)+(B}{3\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*b - A*c)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x
 + b)) - 2*(B*c*x - 3*B*b + 3*A*c)*sqrt(x))/c^2, 2/3*(3*(B*b - A*c)*sqrt(b/
c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (B*c*x - 3*B*b + 3*A*c)*sqrt(x))/c^2]
```

giac [**A**] time = 0.16, size = 64, normalized size = 0.93

$$\frac{2\left(Bb^2-Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^2}+\frac{2\left(Bc^2x^{\frac{3}{2}}-3\,Bbc\sqrt{x}+3\,Ac^2\sqrt{x}\right)}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b^2 - A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2) + 2/3*(B*c^2*
x^(3/2) - 3*B*b*c*sqrt(x) + 3*A*c^2*sqrt(x))/c^3
```

maple [A] time = 0.05, size = 78, normalized size = 1.13

$$-\frac{2Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}+\frac{2B\,b^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{2}}+\frac{2B\,x^{\frac{3}{2}}}{3c}+\frac{2A\sqrt{x}}{c}-\frac{2Bb\sqrt{x}}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A*x^(1/2)/c-2/c^2*b*B*x^(1/2)-2*b/c/(b*c)^(1/2)*arctan(1/
(b*c)^(1/2)*c*x^(1/2))*A+2*b^2/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/
2))*B
```

maxima [A] time = 1.51, size = 58, normalized size = 0.84

$$\frac{2\left(Bb^{2}-Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{2}}+\frac{2\left(Bcx^{\frac{3}{2}}-3\,(Bb-Ac)\sqrt{x}\right)}{3\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b^2 - A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2) + 2/3*(B*c*x^
(3/2) - 3*(B*b - A*c)*sqrt(x))/c^2
```

mupad [B] time = 0.08, size = 76, normalized size = 1.10

$$\sqrt{x}\,\left(\frac{2\,A}{c}-\frac{2\,B\,b}{c^{2}}\right)+\frac{2\,B\,x^{3/2}}{3\,c}+\frac{2\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{c}\,\sqrt{x}\,(A\,c-B\,b)}{B\,b^{2}-A\,b\,c}\right)\,(A\,c-B\,b)}{c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] x^(1/2)*((2*A)/c - (2*B*b)/c^2) + (2*B*x^(3/2))/(3*c) + (2*b^(1/2)*atan((b^
(1/2)*c^(1/2)*x^(1/2)*(A*c - B*b))/(B*b^2 - A*b*c))*(A*c - B*b))/c^(5/2)
```

sympy [A] time = 6.70, size = 212, normalized size = 3.07

$$\begin{cases}\frac{iA\sqrt{b}\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{2}\sqrt{\frac{1}{c}}}-\frac{iA\sqrt{b}\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{2}\sqrt{\frac{1}{c}}}+\frac{2A\sqrt{x}}{c}-\frac{iBb^{\frac{3}{2}}\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{3}\sqrt{\frac{1}{c}}}+\frac{iBb^{\frac{3}{2}}\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^{3}\sqrt{\frac{1}{c}}}-\frac{2Bb\sqrt{x}}{c^{2}}+\frac{2B}{3} \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{b}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((I*A*sqrt(b)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c))
 - I*A*sqrt(b)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*A*sq
rt(x)/c - I*B*b**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c))
 + I*B*b**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**3*sqrt(1/c)) - 2*B*b
*sqrt(x)/c**2 + 2*B*x**(3/2)/(3*c), Ne(c, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5
/2)/5)/b, True))
```

3.171 $\int \frac{\sqrt{x}(A+Bx)}{bx+cx^2}\,dx$

Optimal. Leaf size=49

$$\frac{2B\sqrt{x}}{c}-\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

```
[Out] -2*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/c^(3/2)/b^(1/2)+2*B*x^(1/2)/c
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {781, 80, 63, 205}

$$\frac{2B\sqrt{x}}{c}-\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b
]*c^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{\sqrt{x}(A+Bx)}{bx+cx^2}\,dx = \int \frac{A+Bx}{\sqrt{x}(b+cx)}\,dx$$
$$= \frac{2B\sqrt{x}}{c} + \frac{\left(2\left(-\frac{bB}{2}+\frac{Ac}{2}\right)\right)\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{c}$$
$$= \frac{2B\sqrt{x}}{c} + \frac{\left(4\left(-\frac{bB}{2}+\frac{Ac}{2}\right)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c}$$
$$= \frac{2B\sqrt{x}}{c} - \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 1.00

$$\frac{2B\sqrt{x}}{c} - \frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b
]*c^(3/2))
```

fricas [A] time = 0.90, size = 102, normalized size = 2.08

$$\left[\frac{2\,Bbc\sqrt{x} + (Bb-Ac)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)}{bc^2}, \frac{2\left(Bbc\sqrt{x} + (Bb-Ac)\sqrt{bc}\,\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)\right)}{bc^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(2*B*b*c*sqrt(x) + (B*b - A*c)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt
(x))/(c*x + b)))/(b*c^2), 2*(B*b*c*sqrt(x) + (B*b - A*c)*sqrt(b*c)*arctan(s
qrt(b*c)/(c*sqrt(x))))/(b*c^2)]
```

giac [A] time = 0.18, size = 39, normalized size = 0.80

$$\frac{2\,B\sqrt{x}}{c} - \frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c - 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c)
```

maple [A] time = 0.05, size = 53, normalized size = 1.08

$$\frac{2A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}} - \frac{2Bb\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c} + \frac{2B\sqrt{x}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x),x)
```

```
[Out] 2*B/c*x^(1/2)+2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2/c/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*b*B
```

maxima [**A**] time = 1.22, size = 39, normalized size = 0.80

$$\frac{2B\sqrt{x}}{c}-\frac{2(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*B*sqrt(x)/c - 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c)
```

mupad [**B**] time = 0.06, size = 37, normalized size = 0.76

$$\frac{2B\sqrt{x}}{c}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)(A\,c-B\,b)}{\sqrt{b}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2),x)
```

```
[Out] (2*B*x^(1/2))/c + (2*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/(b^(1/2)*
c^(3/2))
```

sympy [**A**] time = 2.19, size = 218, normalized size = 4.45

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}}+2B\sqrt{x}\right) & \text{for } b=0\wedge \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{c} & \text{for } b=0 \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b} & \text{for } c=0 \\ -\frac{iA\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}}+\frac{iA\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}}+\frac{iB\sqrt{b}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^2\sqrt{\frac{1}{c}}}-\frac{iB\sqrt{b}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{c^2\sqrt{\frac{1}{c}}}+\frac{2B\sqrt{x}}{c} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/b, Eq(c
, 0)), (-I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*
A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*sqrt(b)*lo
g(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) - I*B*sqrt(b)*log(I*sqrt
(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*B*sqrt(x)/c, True))
```

3.172 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=49

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{2A}{b\sqrt{x}}$$

```
[Out] 2*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(3/2)/c^(1/2)-2*A/b/x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {781, 78, 63, 205}

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) + (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(
3/2)*Sqrt[c])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{3/2}(b+cx)}\,dx\\ &= -\frac{2A}{b\sqrt{x}}+\frac{\left(2\left(\frac{bB}{2}-\frac{Ac}{2}\right)\right)\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{b}\\ &= -\frac{2A}{b\sqrt{x}}+\frac{\left(4\left(\frac{bB}{2}-\frac{Ac}{2}\right)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{b}\\ &= -\frac{2A}{b\sqrt{x}}+\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 1.00

$$\frac{2(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}\sqrt{c}}-\frac{2A}{b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(b*Sqrt[x]) + (2*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(
3/2)*Sqrt[c])
```

fricas [A] time = 0.89, size = 112, normalized size = 2.29

$$\left[-\frac{2\,Abc\sqrt{x}-(Bb-Ac)\sqrt{-bc}\,x\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)}{b^2cx},-\frac{2\left(Abc\sqrt{x}+(Bb-Ac)\sqrt{bc}\,x\arctan\left(\frac{\sqrt{bc}}{c\sqrt{x}}\right)\right)}{b^2cx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-(2*A*b*c*sqrt(x) - (B*b - A*c)*sqrt(-b*c)*x*log((c*x - b + 2*sqrt(-b*c)*s
qrt(x))/(c*x + b)))/(b^2*c*x), -2*(A*b*c*sqrt(x) + (B*b - A*c)*sqrt(b*c)*x*
arctan(sqrt(b*c)/(c*sqrt(x))))/(b^2*c*x)]
```

giac [A] time = 0.15, size = 39, normalized size = 0.80

$$\frac{2\,(Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b}-\frac{2\,A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b) - 2*A/(b*sqrt(x))
```

maple [A] time = 0.06, size = 53, normalized size = 1.08

$$-\frac{2Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b}+\frac{2B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}}-\frac{2A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)/x^(1/2),x)
```

```
[Out] -2/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A*c+2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*B-2*A/b/x^(1/2)
```

maxima [A] time = 1.19, size = 39, normalized size = 0.80

$$\frac{2\,(Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b} - \frac{2\,A}{b\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2*(B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b) - 2*A/(b*sqrt(x))
```

mupad [B] time = 0.07, size = 50, normalized size = 1.02

$$\frac{2\,B\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,\sqrt{c}} - \frac{2\,A\,\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}} - \frac{2\,A}{b\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*B*atan((c^(1/2)*x^(1/2))/b^(1/2)))/(b^(1/2)*c^(1/2)) - (2*A*c^(1/2)*atan
((c^(1/2)*x^(1/2))/b^(1/2)))/b^(3/2) - (2*A)/(b*x^(1/2))
```

sympy [A] time = 3.40, size = 216, normalized size = 4.41

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}} - \frac{2B}{\sqrt{x}}\right) & \text{for}\: b = 0 \wedge c = 0 \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}} - \frac{2B}{\sqrt{x}}}{c} & \text{for}\: b = 0 \\ \frac{-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}}{b} & \text{for}\: c = 0 \\ -\frac{2A}{b\sqrt{x}} + \frac{iA\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}} - \frac{iA\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}} - \frac{iB\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}} + \frac{iB\log\left(i\sqrt{b}\sqrt{\frac{1}{c}} + \sqrt{x}\right)}{\sqrt{b}c\sqrt{\frac{1}{c}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c, Eq(b, 0)), ((-2*A/sqrt(x) + 2*B*sqrt(x))
/b, Eq(c, 0)), (-2*A/(b*sqrt(x)) + I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/
(b**(3/2)*sqrt(1/c)) - I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqr
t(1/c)) - I*B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I
*B*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)), True))
```

3.173 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=69

$$-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2A}{3bx^{3/2}}$$

```
[Out] -2/3*A/b/x^(3/2)-2*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))*c^(1/2)/b^(5/
2)-2*(-A*c+B*b)/b^2/x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}-\frac{2A}{3bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(3*b*x^(3/2)) - (2*(b*B - A*c))/(b^2*Sqrt[x]) - (2*Sqrt[c]*(b*B - A*
c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(5/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)}\,dx \\
&= -\frac{2A}{3bx^{3/2}}+\frac{\left(2\left(\frac{3bB}{2}-\frac{3Ac}{2}\right)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{3b} \\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{(c(bB-Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b^2} \\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{(2c(bB-Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{b^2} \\
&= -\frac{2A}{3bx^{3/2}}-\frac{2(bB-Ac)}{b^2\sqrt{x}}-\frac{2\sqrt{c}\,(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}}
\end{aligned}$$

Mathematica [C] time = 0.01, size = 44, normalized size = 0.64

$$\frac{{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{cx}{b}\right)(6Acx-6bBx)-2Ab}{3b^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A*b + (-6*b*B*x + 6*A*c*x)*Hypergeometric2F1[-1/2, 1, 1/2, -((c*x)/b)])
/(3*b^2*x^(3/2))
```

fricas [A] time = 0.88, size = 146, normalized size = 2.12

$$\left[-\frac{3\,(Bb-Ac)x^2\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\,(Ab+3\,(Bb-Ac)x)\sqrt{x}}{3\,b^2x^2}, \frac{2\left(3\,(Bb-Ac)x^2\sqrt{\frac{c}{b}}\,\arctan\left(\frac{b\sqrt{\frac{c}{b}}}{c\sqrt{x}}\right)-(A\right.}{3\,b^2x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*b - A*c)*x^2*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/
(c*x + b)) + 2*(A*b + 3*(B*b - A*c)*x)*sqrt(x))/(b^2*x^2), 2/3*(3*(B*b - A*
c)*x^2*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (A*b + 3*(B*b - A*c)*x)*
sqrt(x))/(b^2*x^2)]
```

giac [A] time = 0.16, size = 55, normalized size = 0.80

$$-\frac{2\left(Bbc-Ac^2\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^2}-\frac{2\,(3\,Bbx-3\,Acx+Ab)}{3\,b^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b*c - A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) - 2/3*(3*B*b
*x - 3*A*c*x + A*b)/(b^2*x^(3/2))
```

maple [A] time = 0.06, size = 78, normalized size = 1.13

$$\frac{2A\,c^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^2}-\frac{2Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b}+\frac{2Ac}{b^2\sqrt{x}}-\frac{2B}{b\sqrt{x}}-\frac{2A}{3b\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2*c^2/b^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*c/b/(b*c)^(1/2)*a
rctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/3*A/b/x^(3/2)+2/b^2/x^(1/2)*A*c-2/b/x^(1
/2)*B
```

maxima [A] time = 1.28, size = 56, normalized size = 0.81

$$-\frac{2\left(Bbc-Ac^2\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^2}-\frac{2\,(Ab+3\,(Bb-Ac)x)}{3\,b^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b*c - A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) - 2/3*(A*b +
 3*(B*b - A*c)*x)/(b^2*x^(3/2))
```

mupad [B] time = 1.07, size = 54, normalized size = 0.78

$$\frac{2\,\sqrt{c}\,\operatorname{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{5/2}}-\frac{\frac{2\,A}{3\,b}-\frac{2\,x\,(A\,c-B\,b)}{b^2}}{x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(5/2) - ((2*A)/(3
*b) - (2*x*(A*c - B*b))/b^2)/x^(3/2)
```

sympy [A] time = 7.01, size = 248, normalized size = 3.59

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) & \text{fo} \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{b} & \text{fo} \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c} & \text{fo} \\ -\frac{2A}{3bx^{\frac{3}{2}}}+\frac{2Ac}{b^2\sqrt{x}}-\frac{iAc\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{iAc\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{b\sqrt{x}}+\frac{iB\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{iB\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{3}{2}}\sqrt{\frac{1}{c}}} & \text{ot} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(3*x**(3/2)) - 2*B/sqrt(x))/b, Eq(c, 0)), ((-2*A/(5*x**(5/2)) - 2*
B/(3*x**(3/2)))/c, Eq(b, 0)), (-2*A/(3*b*x**(3/2)) + 2*A*c/(b**2*sqrt(x)) -
 I*A*c*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) + I*A*c*log
(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) - 2*B/(b*sqrt(x)) + I*
B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c)) - I*B*log(I*sqrt
(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c)), True))
```

3.174 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=90

$$\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{2A}{5bx^{5/2}}$$

```
[Out] -2/5*A/b/x^(5/2)-2/3*(-A*c+B*b)/b^2/x^(3/2)+2*c^(3/2)*(-A*c+B*b)*arctan(c^(
1/2)*x^(1/2)/b^(1/2))/b^(7/2)+2*c*(-A*c+B*b)/b^3/x^(1/2)
```

Rubi **[A]** time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}-\frac{2A}{5bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(5*b*x^(5/2)) - (2*(b*B - A*c))/(3*b^2*x^(3/2)) + (2*c*(b*B - A*c))/
(b^3*Sqrt[x]) + (2*c^(3/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b
^(7/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)}\,dx \\
&= -\frac{2A}{5bx^{5/2}}+\frac{\left(2\left(\frac{5bB}{2}-\frac{5Ac}{2}\right)\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{5b} \\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}-\frac{(c(bB-Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^2} \\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{\left(c^2(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b^3} \\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{\left(2c^2(bB-Ac)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{b^3} \\
&= -\frac{2A}{5bx^{5/2}}-\frac{2(bB-Ac)}{3b^2x^{3/2}}+\frac{2c(bB-Ac)}{b^3\sqrt{x}}+\frac{2c^{3/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 43, normalized size = 0.48

$$\frac{-10x(bB-Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{cx}{b}\right)-6Ab}{15b^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (-6*A*b - 10*(b*B - A*c)*x*Hypergeometric2F1[-3/2, 1, -1/2, -((c*x)/b)])/(1
5*b^2*x^(5/2))
```

fricas [A] time = 0.78, size = 195, normalized size = 2.17

$$\left[-\frac{15\left(Bbc-Ac^2\right)x^3\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx-2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(3\,Ab^2-15\left(Bbc-Ac^2\right)x^2+5\left(Bb^2-Abc\right)x\right)\sqrt{x}}{15\,b^3x^3},\ -\frac{2\Big(15\,\big(Bbc}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*b*c - A*c^2)*x^3*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b)
 - b)/(c*x + b)) + 2*(3*A*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)*
x)*sqrt(x))/(b^3*x^3), -2/15*(15*(B*b*c - A*c^2)*x^3*sqrt(c/b)*arctan(b*sqr
t(c/b)/(c*sqrt(x))) + (3*A*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)
*x)*sqrt(x))/(b^3*x^3)]
```

giac [A] time = 0.16, size = 80, normalized size = 0.89

$$\frac{2\left(Bbc^2-Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^3}+\frac{2\left(15\,Bbcx^2-15\,Ac^2x^2-5\,Bb^2x+5\,Abcx-3\,Ab^2\right)}{15\,b^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) + 2/15*(15*
B*b*c*x^2 - 15*A*c^2*x^2 - 5*B*b^2*x + 5*A*b*c*x - 3*A*b^2)/(b^3*x^(5/2))
```

maple [A] time = 0.06, size = 102, normalized size = 1.13

$$-\frac{2A\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{3}}+\frac{2B\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{2}}-\frac{2A\,c^{2}}{b^{3}\sqrt{x}}+\frac{2Bc}{b^{2}\sqrt{x}}+\frac{2Ac}{3b^{2}x^{\frac{3}{2}}}-\frac{2B}{3b\,x^{\frac{3}{2}}}-\frac{2A}{5b\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x),x)
```

```
[Out] -2*c^3/b^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+2*c^2/b^2/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/5*A/b/x^(5/2)+2/3/b^2/x^(3/2)*A*c-2
/3/b/x^(3/2)*B-2*c^2/b^3/x^(1/2)*A+2*c/b^2/x^(1/2)*B
```

maxima [A] time = 1.36, size = 80, normalized size = 0.89

$$\frac{2\left(Bbc^{2}-Ac^{3}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}-\frac{2\left(3\,Ab^{2}-15\left(Bbc-Ac^{2}\right)x^{2}+5\left(Bb^{2}-Abc\right)x\right)}{15\,b^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - 2/15*(3*A
*b^2 - 15*(B*b*c - A*c^2)*x^2 + 5*(B*b^2 - A*b*c)*x)/(b^3*x^(5/2))
```

mupad [B] time = 1.09, size = 71, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,b}-\frac{2\,x\,(A\,c-B\,b)}{3\,b^{2}}+\frac{2\,c\,x^{2}\,(A\,c-B\,b)}{b^{3}}}{x^{5/2}}-\frac{2\,c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(A*c - B*b))/(3*b^2) + (2*c*x^2*(A*c - B*b))/b^3)/x^(
5/2) - (2*c^(3/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(7/2)
```

sympy [A] time = 18.37, size = 289, normalized size = 3.21

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c} \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{b} \\ -\frac{2A}{5bx^{\frac{5}{2}}}+\frac{2Ac}{3b^{2}x^{\frac{3}{2}}}-\frac{2Ac^{2}}{b^{3}\sqrt{x}}+\frac{iAc^{2}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}}-\frac{iAc^{2}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{7}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{3bx^{\frac{3}{2}}}+\frac{2Bc}{b^{2}\sqrt{x}}-\frac{iBc\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+iBc \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c, Eq(b, 0)), ((-2*A/(5*x**(5/2))
 - 2*B/(3*x**(3/2)))/b, Eq(c, 0)), (-2*A/(5*b*x**(5/2)) + 2*A*c/(3*b**2*x**
(3/2)) - 2*A*c**2/(b**3*sqrt(x)) + I*A*c**2*log(-I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(b**(7/2)*sqrt(1/c)) - I*A*c**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b*
*(7/2)*sqrt(1/c)) - 2*B/(3*b*x**(3/2)) + 2*B*c/(b**2*sqrt(x)) - I*B*c*log(-
I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)) + I*B*c*log(I*sqrt(b)*s
qrt(1/c) + sqrt(x))/(b**(5/2)*sqrt(1/c)), True))
```

3.175 $\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=113

$$-\frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{7bx^{7/2}}$$

```
[Out] -2/7*A/b/x^(7/2)-2/5*(-A*c+B*b)/b^2/x^(5/2)+2/3*c*(-A*c+B*b)/b^3/x^(3/2)-2*
c^(5/2)*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(9/2)-2*c^2*(-A*c+B*b)
/b^4/x^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = $\{781, 78, 51, 63, 205\}$

$$-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}-\frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{2A}{7bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(7*b*x^(7/2)) - (2*(b*B - A*c))/(5*b^2*x^(5/2)) + (2*c*(b*B - A*c))/
(3*b^3*x^(3/2)) - (2*c^2*(b*B - A*c))/(b^4*Sqrt[x]) - (2*c^(5/2)*(b*B - A*c
)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{9/2}(b+cx)}\,dx\\
&= -\frac{2A}{7bx^{7/2}}+\frac{\left(2\left(\frac{7bB}{2}-\frac{7Ac}{2}\right)\right)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{7b}\\
&= -\frac{2A}{7bx^{7/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}-\frac{(c(bB-Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{b^2}\\
&= -\frac{2A}{7bx^{7/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}+\frac{\left(c^2(bB-Ac)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^3}\\
&= -\frac{2A}{7bx^{7/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}-\frac{\left(c^3(bB-Ac)\right)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{b^4}\\
&= -\frac{2A}{7bx^{7/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}-\frac{\left(2c^3(bB-Ac)\right)\text{Subst}\left(\int \frac{1}{b+cx^2}\,d\right.}{b^4}\\
&= -\frac{2A}{7bx^{7/2}}-\frac{2(bB-Ac)}{5b^2x^{5/2}}+\frac{2c(bB-Ac)}{3b^3x^{3/2}}-\frac{2c^2(bB-Ac)}{b^4\sqrt{x}}-\frac{2c^{5/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 44, normalized size = 0.39

$$\frac{2\left({}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{cx}{b}\right)(7Acx-7bBx)-5Ab\right)}{35b^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(-5*A*b + (-7*b*B*x + 7*A*c*x)*Hypergeometric2F1[-5/2, 1, -3/2, -((c*x)/
b)]))/(35*b^2*x^(7/2))
```

fricas [A] time = 1.06, size = 246, normalized size = 2.18

$$\left[-\frac{105\left(Bbc^2-Ac^3\right)x^4\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(15\,Ab^3+105\left(Bbc^2-Ac^3\right)x^3-35\left(Bb^2c-Abc^2\right)x^2+21\left(B\right.\right.}{105\,b^4x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*b*c^2 - A*c^3)*x^4*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-
c/b) - b)/(c*x + b)) + 2*(15*A*b^3 + 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*
c - A*b*c^2)*x^2 + 21*(B*b^3 - A*b^2*c)*x)*sqrt(x))/(b^4*x^4), 2/105*(105*(
B*b*c^2 - A*c^3)*x^4*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (15*A*b^3
+ 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*c - A*b*c^2)*x^2 + 21*(B*b^3 - A*b^
2*c)*x)*sqrt(x))/(b^4*x^4)]
```

giac [A] time = 0.16, size = 104, normalized size = 0.92

$$-\frac{2\,(Bbc^{3}-Ac^{4})\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{4}}-\frac{2\,(105\,Bbc^{2}x^{3}-105\,Ac^{3}x^{3}-35\,Bb^{2}cx^{2}+35\,Abc^{2}x^{2}+21\,Bb^{3}x-21\,Ab^{2}cx+1}{105\,b^{4}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -2*(B*b*c^3 - A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/105*(1
05*B*b*c^2*x^3 - 105*A*c^3*x^3 - 35*B*b^2*c*x^2 + 35*A*b*c^2*x^2 + 21*B*b^3
*x - 21*A*b^2*c*x + 15*A*b^3)/(b^4*x^(7/2))
```

maple [A] time = 0.06, size = 126, normalized size = 1.12

$$\frac{2A\,c^{4}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{4}}-\frac{2B\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{3}}+\frac{2A\,c^{3}}{b^{4}\sqrt{x}}-\frac{2B\,c^{2}}{b^{3}\sqrt{x}}-\frac{2A\,c^{2}}{3b^{3}x^{\frac{3}{2}}}+\frac{2Bc}{3b^{2}x^{\frac{3}{2}}}+\frac{2Ac}{5b^{2}x^{\frac{5}{2}}}-\frac{2B}{5b\,x^{\frac{5}{2}}}-\frac{2A}{7b\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2*c^4/b^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-2*c^3/b^3/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/7*A/b/x^(7/2)+2/5/b^2/x^(5/2)*A*c-2/
5/b/x^(5/2)*B-2/3*c^2/b^3/x^(3/2)*A+2/3*c/b^2/x^(3/2)*B+2*c^3/b^4/x^(1/2)*A
-2*c^2/b^3/x^(1/2)*B
```

maxima [A] time = 1.32, size = 103, normalized size = 0.91

$$-\frac{2\left(Bbc^{3}-Ac^{4}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{4}}-\frac{2\left(15\,Ab^{3}+105\left(Bbc^{2}-Ac^{3}\right)x^{3}-35\left(Bb^{2}c-Abc^{2}\right)x^{2}+21\left(Bb^{3}-Ab^{2}c\right)x\right)}{105\,b^{4}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] -2*(B*b*c^3 - A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/105*(1
5*A*b^3 + 105*(B*b*c^2 - A*c^3)*x^3 - 35*(B*b^2*c - A*b*c^2)*x^2 + 21*(B*b^
3 - A*b^2*c)*x)/(b^4*x^(7/2))
```

mupad [B] time = 1.09, size = 90, normalized size = 0.80

$$\frac{2\,c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c-B\,b\right)}{b^{9/2}}-\frac{\frac{2\,A}{7\,b}-\frac{2\,x\,\left(A\,c-B\,b\right)}{5\,b^2}-\frac{2\,c^2\,x^3\,\left(A\,c-B\,b\right)}{b^4}+\frac{2\,c\,x^2\,\left(A\,c-B\,b\right)}{3\,b^3}}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)),x)
```

```
[Out] (2*c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(9/2) - ((2*A)/(7
*b) - (2*x*(A*c - B*b))/(5*b^2) - (2*c^2*x^3*(A*c - B*b))/b^4 + (2*c*x^2*(A
*c - B*b))/(3*b^3))/x^(7/2)
```

sympy [A] time = 52.05, size = 326, normalized size = 2.88

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{7x^{\frac{7}{2}}}\right) \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{b} \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{7x^{\frac{7}{2}}}}{c} \\ -\frac{2A}{7bx^{\frac{7}{2}}}+\frac{2Ac}{5b^{2}x^{\frac{5}{2}}}-\frac{2Ac^{2}}{3b^{3}x^{\frac{3}{2}}}+\frac{2Ac^{3}}{b^{4}\sqrt{x}}-\frac{iAc^{3}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}}+\frac{iAc^{3}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{9}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{5bx^{\frac{5}{2}}}+\frac{2Bc}{3b^{2}x^{\frac{3}{2}}}-\frac{2Bc^{2}}{b^{3}\sqrt{x}}+\frac{iBc^{2}\log\left(-i\sqrt{b}\right.}{b^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/b, Eq(c, 0)), ((-2*A/(9*x**(9/2))
 - 2*B/(7*x**(7/2)))/c, Eq(b, 0)), (-2*A/(7*b*x**(7/2)) + 2*A*c/(5*b**2*x**
(5/2)) - 2*A*c**2/(3*b**3*x**(3/2)) + 2*A*c**3/(b**4*sqrt(x)) - I*A*c**3*lo
g(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(9/2)*sqrt(1/c)) + I*A*c**3*log(I*sqr
t(b)*sqrt(1/c) + sqrt(x))/(b**(9/2)*sqrt(1/c)) - 2*B/(5*b*x**(5/2)) + 2*B*c
/(3*b**2*x**(3/2)) - 2*B*c**2/(b**3*sqrt(x)) + I*B*c**2*log(-I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(b**(7/2)*sqrt(1/c)) - I*B*c**2*log(I*sqrt(b)*sqrt(1/c) +
sqrt(x))/(b**(7/2)*sqrt(1/c)), True))
```

3.176 $\int \frac{A+Bx}{x^{9/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=136

$$\frac{2c^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{9bx^{9/2}}$$

```
[Out] -2/9*A/b/x^(9/2)-2/7*(-A*c+B*b)/b^2/x^(7/2)+2/5*c*(-A*c+B*b)/b^3/x^(5/2)-2/
3*c^2*(-A*c+B*b)/b^4/x^(3/2)+2*c^(7/2)*(-A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^
(1/2))/b^(11/2)+2*c^3*(-A*c+B*b)/b^5/x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}+\frac{2c^{7/2}(bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{2A}{9bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(9*b*x^(9/2)) - (2*(b*B - A*c))/(7*b^2*x^(7/2)) + (2*c*(b*B - A*c))/
(5*b^3*x^(5/2)) - (2*c^2*(b*B - A*c))/(3*b^4*x^(3/2)) + (2*c^3*(b*B - A*c))
/(b^5*Sqrt[x]) + (2*c^(7/2)*(b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/
b^(11/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{9/2}\left(bx+cx^2\right)}\,dx &= \int \frac{A+Bx}{x^{11/2}(b+cx)}\,dx\\
&= -\frac{2A}{9bx^{9/2}}+\frac{\left(2\left(\frac{9bB}{2}-\frac{9Ac}{2}\right)\right)\int \frac{1}{x^{9/2}(b+cx)}\,dx}{9b}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}-\frac{(c(bB-Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{b^2}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}+\frac{\left(c^2(bB-Ac)\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{b^3}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}-\frac{\left(c^3(bB-Ac)\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{b^4}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}+\frac{\left(c^4(bB-Ac)\right)\int}{b^5}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}+\frac{\left(2c^4(bB-Ac)\right)}{}\\
&= -\frac{2A}{9bx^{9/2}}-\frac{2(bB-Ac)}{7b^2x^{7/2}}+\frac{2c(bB-Ac)}{5b^3x^{5/2}}-\frac{2c^2(bB-Ac)}{3b^4x^{3/2}}+\frac{2c^3(bB-Ac)}{b^5\sqrt{x}}+\frac{2c^{7/2}(bB-Ac)\,\mathrm{t}}{b^{11/}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 44, normalized size = 0.32

$$\frac{2\left({}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{cx}{b}\right)(9Acx-9bBx)-7Ab\right)}{63b^2x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(-7*A*b + (-9*b*B*x + 9*A*c*x)*Hypergeometric2F1[-7/2, 1, -5/2, -((c*x)/
b)]))/(63*b^2*x^(9/2))
```

fricas [A] time = 0.98, size = 291, normalized size = 2.14

$$\left[-\frac{315\left(Bbc^3-Ac^4\right)x^5\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx-2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(35\,Ab^4-315\left(Bbc^3-Ac^4\right)x^4+105\left(Bb^2c^2-Abc^3\right)x^3-63}{315\,b^5x^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/315*(315*(B*b*c^3 - A*c^4)*x^5*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-
c/b) - b)/(c*x + b)) + 2*(35*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2
*c^2 - A*b*c^3)*x^3 - 63*(B*b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x
)*sqrt(x))/(b^5*x^5), -2/315*(315*(B*b*c^3 - A*c^4)*x^5*sqrt(c/b)*arctan(b*
sqrt(c/b)/(c*sqrt(x))) + (35*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2
*c^2 - A*b*c^3)*x^3 - 63*(B*b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x
)*sqrt(x))/(b^5*x^5)]
```

giac [A] time = 0.16, size = 128, normalized size = 0.94

$$\frac{2\left(Bbc^{4}-Ac^{5}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{5}}+\frac{2\,(315\,Bbc^{3}x^{4}-315\,Ac^{4}x^{4}-105\,Bb^{2}c^{2}x^{3}+105\,Abc^{3}x^{3}+63\,Bb^{3}cx^{2}-63\,Ab^{2}c}{315\,b^{5}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) + 2/315*(31
5*B*b*c^3*x^4 - 315*A*c^4*x^4 - 105*B*b^2*c^2*x^3 + 105*A*b*c^3*x^3 + 63*B*
b^3*c*x^2 - 63*A*b^2*c^2*x^2 - 45*B*b^4*x + 45*A*b^3*c*x - 35*A*b^4)/(b^5*x
^(9/2))
```

maple [A] time = 0.07, size = 150, normalized size = 1.10

$$-\frac{2A\,c^{5}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{5}}+\frac{2B\,c^{4}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{4}}-\frac{2A\,c^{4}}{b^{5}\sqrt{x}}+\frac{2B\,c^{3}}{b^{4}\sqrt{x}}+\frac{2A\,c^{3}}{3b^{4}x^{\frac{3}{2}}}-\frac{2B\,c^{2}}{3b^{3}x^{\frac{3}{2}}}-\frac{2A\,c^{2}}{5b^{3}x^{\frac{5}{2}}}+\frac{2Bc}{5b^{2}x^{\frac{5}{2}}}+\frac{2Ac}{7b^{2}x^{\frac{7}{2}}}-\frac{2B}{7b\,x^{\frac{7}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+b*x),x)
```

```
[Out] -2*c^5/b^5/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+2*c^4/b^4/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B-2/9*A/b/x^(9/2)+2/7/b^2/x^(7/2)*A*c-2
/7/b/x^(7/2)*B-2/5*c^2/b^3/x^(5/2)*A+2/5*c/b^2/x^(5/2)*B-2*c^4/b^5/x^(1/2)*
A+2*c^3/b^4/x^(1/2)*B+2/3*c^3/b^4/x^(3/2)*A-2/3*c^2/b^3/x^(3/2)*B
```

maxima [A] time = 1.16, size = 126, normalized size = 0.93

$$\frac{2\left(Bbc^{4}-Ac^{5}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{5}}-\frac{2\,(35\,Ab^{4}-315\left(Bbc^{3}-Ac^{4}\right)x^{4}+105\left(Bb^{2}c^{2}-Abc^{3}\right)x^{3}-63\left(Bb^{3}c-Ab^{2}c^{2}\right)x}{315\,b^{5}x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) - 2/315*(35
*A*b^4 - 315*(B*b*c^3 - A*c^4)*x^4 + 105*(B*b^2*c^2 - A*b*c^3)*x^3 - 63*(B*
b^3*c - A*b^2*c^2)*x^2 + 45*(B*b^4 - A*b^3*c)*x)/(b^5*x^(9/2))
```

mupad [B] time = 1.11, size = 109, normalized size = 0.80

$$-\frac{\frac{2\,A}{9\,b}-\frac{2\,x\,(A\,c-B\,b)}{7\,b^{2}}-\frac{2\,c^{2}\,x^{3}\,(A\,c-B\,b)}{3\,b^{4}}+\frac{2\,c^{3}\,x^{4}\,(A\,c-B\,b)}{b^{5}}+\frac{2\,c\,x^{2}\,(A\,c-B\,b)}{5\,b^{3}}}{x^{9/2}}-\frac{2\,c^{7/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c-B\,b)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(b*x + c*x^2)),x)
```

```
[Out] - ((2*A)/(9*b) - (2*x*(A*c - B*b))/(7*b^2) - (2*c^2*x^3*(A*c - B*b))/(3*b^4
) + (2*c^3*x^4*(A*c - B*b))/b^5 + (2*c*x^2*(A*c - B*b))/(5*b^3))/x^(9/2) -
(2*c^(7/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c - B*b))/b^(11/2)
```

sympy [**A**] time = 126.31, size = 360, normalized size = 2.65

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{11x^{\frac{11}{2}}}-\frac{2B}{9x^{\frac{9}{2}}}\right) \\ \frac{-\frac{2A}{11x^{\frac{11}{2}}}-\frac{2B}{9x^{\frac{9}{2}}}}{c} \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{7x^{\frac{7}{2}}}}{b} \\ -\frac{2A}{9bx^{\frac{9}{2}}}+\frac{2Ac}{7b^2x^{\frac{7}{2}}}-\frac{2Ac^2}{5b^3x^{\frac{5}{2}}}+\frac{2Ac^3}{3b^4x^{\frac{3}{2}}}-\frac{2Ac^4}{b^5\sqrt{x}}+\frac{iAc^4\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{11}{2}}\sqrt{\frac{1}{c}}}-\frac{iAc^4\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{b^{\frac{11}{2}}\sqrt{\frac{1}{c}}}-\frac{2B}{7bx^{\frac{7}{2}}}+\frac{2Bc}{5b^2x^{\frac{5}{2}}}-\frac{2Bc^2}{3b^3x^{\frac{3}{2}}}+\frac{2Bc}{b^4\sqrt{\;}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+b*x),x)
```

```
[Out] Piecewise((zoo*(-2*A/(11*x**(11/2)) - 2*B/(9*x**(9/2))), Eq(b, 0) & Eq(c, 0
)), ((-2*A/(11*x**(11/2)) - 2*B/(9*x**(9/2)))/c, Eq(b, 0)), ((-2*A/(9*x**(9
/2)) - 2*B/(7*x**(7/2)))/b, Eq(c, 0)), (-2*A/(9*b*x**(9/2)) + 2*A*c/(7*b**2
*x**(7/2)) - 2*A*c**2/(5*b**3*x**(5/2)) + 2*A*c**3/(3*b**4*x**(3/2)) - 2*A*
c**4/(b**5*sqrt(x)) + I*A*c**4*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(11/
2)*sqrt(1/c)) - I*A*c**4*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(11/2)*sqrt
(1/c)) - 2*B/(7*b*x**(7/2)) + 2*B*c/(5*b**2*x**(5/2)) - 2*B*c**2/(3*b**3*x*
*(3/2)) + 2*B*c**3/(b**4*sqrt(x)) - I*B*c**3*log(-I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(b**(9/2)*sqrt(1/c)) + I*B*c**3*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b
**(9/2)*sqrt(1/c)), True))
```

3.177 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=131

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}+\frac{b\sqrt{x}(7bB-5Ac)}{c^4}-\frac{x^{3/2}(7bB-5Ac)}{3c^3}+\frac{x^{5/2}(7bB-5Ac)}{5bc^2}-\frac{x^{7/2}(bB-Ac)}{bc(b+cx)}$$

```
[Out] -1/3*(-5*A*c+7*B*b)*x^(3/2)/c^3+1/5*(-5*A*c+7*B*b)*x^(5/2)/b/c^2-(-A*c+B*b)
*x^(7/2)/b/c/(c*x+b)-b^(3/2)*(-5*A*c+7*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))
/c^(9/2)+b*(-5*A*c+7*B*b)*x^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$-\frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}+\frac{x^{5/2}(7bB-5Ac)}{5bc^2}-\frac{x^{3/2}(7bB-5Ac)}{3c^3}+\frac{b\sqrt{x}(7bB-5Ac)}{c^4}-\frac{x^{7/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*(7*b*B - 5*A*c)*Sqrt[x])/c^4 - ((7*b*B - 5*A*c)*x^(3/2))/(3*c^3) + ((7*b
*B - 5*A*c)*x^(5/2))/(5*b*c^2) - ((b*B - A*c)*x^(7/2))/(b*c*(b + c*x)) - (b
^(3/2)*(7*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{(b+cx)^2}\,dx \\
&= -\frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\left(-\frac{7bB}{2}+\frac{5Ac}{2}\right)\int \frac{x^{5/2}}{b+cx}\,dx}{bc} \\
&= \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{(7bB-5Ac)\int \frac{x^{3/2}}{b+cx}\,dx}{2c^2} \\
&= -\frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} + \frac{(b(7bB-5Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{2c^3} \\
&= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\big(b^2(7bB-5Ac}{2c} \\
&= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{\big(b^2(7bB-5Ac}{} \\
&= \frac{b(7bB-5Ac)\sqrt{x}}{c^4} - \frac{(7bB-5Ac)x^{3/2}}{3c^3} + \frac{(7bB-5Ac)x^{5/2}}{5bc^2} - \frac{(bB-Ac)x^{7/2}}{bc(b+cx)} - \frac{b^{3/2}(7bB-5Ac}{c^9}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.84

$$
\frac{\sqrt{x}\left(b^2(70Bcx-75Ac)-2bc^2x(25A+7Bx)+2c^3x^2(5A+3Bx)+105b^3B\right)}{15c^4(b+cx)} - \frac{b^{3/2}(7bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{c^{9/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(105*b^3*B + 2*c^3*x^2*(5*A + 3*B*x) - 2*b*c^2*x*(25*A + 7*B*x) +
b^2*(-75*A*c + 70*B*c*x)))/(15*c^4*(b + c*x)) - (b^(3/2)*(7*b*B - 5*A*c)*Ar
cTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(9/2)
```

fricas [A] time = 0.64, size = 290, normalized size = 2.21

$$
\Bigg[-\frac{15\left(7Bb^3-5Ab^2c+\left(7Bb^2c-5Abc^2\right)x\right)\sqrt{-\frac{b}{c}}\log\left(\frac{cx+2c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\big(6Bc^3x^3+105Bb^3-75Ab^2c-2\big(7Bb}{30\left(c^5x+bc^4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/30*(15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*A*b*c^2)*x)*sqrt(-b/c)*log
((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)) - 2*(6*B*c^3*x^3 + 105*B*b^3
 - 75*A*b^2*c - 2*(7*B*b*c^2 - 5*A*c^3)*x^2 + 10*(7*B*b^2*c - 5*A*b*c^2)*x)
*sqrt(x))/(c^5*x + b*c^4), -1/15*(15*(7*B*b^3 - 5*A*b^2*c + (7*B*b^2*c - 5*
A*b*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) - (6*B*c^3*x^3 + 105*B*
b^3 - 75*A*b^2*c - 2*(7*B*b*c^2 - 5*A*c^3)*x^2 + 10*(7*B*b^2*c - 5*A*b*c^2)
*x)*sqrt(x))/(c^5*x + b*c^4)]
```

giac [A] time = 0.16, size = 122, normalized size = 0.93

$$-\frac{\left(7\,Bb^3-5\,Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4}+\frac{Bb^3\sqrt{x}-Ab^2c\sqrt{x}}{(cx+b)c^4}+\frac{2\left(3\,Bc^8x^{\frac{5}{2}}-10\,Bbc^7x^{\frac{3}{2}}+5\,Ac^8x^{\frac{3}{2}}+45\,Bb^2c^6\sqrt{x}-30\right.}{15\,c^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(7*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + (B*b^3
*sqrt(x) - A*b^2*c*sqrt(x))/((c*x + b)*c^4) + 2/15*(3*B*c^8*x^(5/2) - 10*B*
b*c^7*x^(3/2) + 5*A*c^8*x^(3/2) + 45*B*b^2*c^6*sqrt(x) - 30*A*b*c^7*sqrt(x)
)/c^10
```

maple [A] time = 0.07, size = 139, normalized size = 1.06

$$\frac{2B\,x^{\frac{5}{2}}}{5c^2}+\frac{5A\,b^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^3}-\frac{7B\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^4}-\frac{A\,b^2\sqrt{x}}{(cx+b)\,c^3}+\frac{2A\,x^{\frac{3}{2}}}{3c^2}+\frac{B\,b^3\sqrt{x}}{(cx+b)\,c^4}-\frac{4Bb\,x^{\frac{3}{2}}}{3c^3}-\frac{4Ab\sqrt{x}}{c^3}+\frac{6B\,b^2\sqrt{}}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/5/c^2*B*x^(5/2)+2/3/c^2*A*x^(3/2)-4/3/c^3*B*x^(3/2)*b-4/c^3*A*b*x^(1/2)+6
/c^4*b^2*B*x^(1/2)-b^2/c^3*x^(1/2)/(c*x+b)*A+b^3/c^4*x^(1/2)/(c*x+b)*B+5*b^
2/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-7*b^3/c^4/(b*c)^(1/2)*a
rctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.22, size = 115, normalized size = 0.88

$$\frac{\left(Bb^3-Ab^2c\right)\sqrt{x}}{c^5x+bc^4}-\frac{\left(7\,Bb^3-5\,Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^4}+\frac{2\left(3\,Bc^2x^{\frac{5}{2}}-5\left(2\,Bbc-Ac^2\right)x^{\frac{3}{2}}+15\left(3\,Bb^2-2\,Abc\right)\sqrt{x}\right)}{15\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (B*b^3 - A*b^2*c)*sqrt(x)/(c^5*x + b*c^4) - (7*B*b^3 - 5*A*b^2*c)*arctan(c*
sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) + 2/15*(3*B*c^2*x^(5/2) - 5*(2*B*b*c - A
*c^2)*x^(3/2) + 15*(3*B*b^2 - 2*A*b*c)*sqrt(x))/c^4
```

mupad [B] time = 1.04, size = 146, normalized size = 1.11

$$x^{3/2}\left(\frac{2\,A}{3\,c^2}-\frac{4\,B\,b}{3\,c^3}\right)-\sqrt{x}\,\left(\frac{2\,b\,\left(\frac{2\,A}{c^2}-\frac{4\,B\,b}{c^3}\right)}{c}+\frac{2\,B\,b^2}{c^4}\right)+\frac{2\,B\,x^{5/2}}{5\,c^2}+\frac{\sqrt{x}\,\left(B\,b^3-A\,b^2\,c\right)}{x\,c^5+b\,c^4}-\frac{b^{3/2}\,\mathrm{atan}\left(\frac{b^{3/2}\,\sqrt{c}\,\sqrt{x}\,(5\,A\,c-7}{7\,B\,b^3-5\,A\,b^2\,c}\right.}{c^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^(3/2)*((2*A)/(3*c^2) - (4*B*b)/(3*c^3)) - x^(1/2)*((2*b*((2*A)/c^2 - (4*B
*b)/c^3))/c + (2*B*b^2)/c^4) + (2*B*x^(5/2))/(5*c^2) + (x^(1/2)*(B*b^3 - A*
b^2*c))/(b*c^4 + c^5*x) - (b^(3/2)*atan((b^(3/2)*c^(1/2)*x^(1/2)*(5*A*c - 7
*B*b))/(7*B*b^3 - 5*A*b^2*c))*(5*A*c - 7*B*b))/c^(9/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.178 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=109

$$\frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{\sqrt{x}\,(5bB-3Ac)}{c^3}+\frac{x^{3/2}(5bB-3Ac)}{3bc^2}-\frac{x^{5/2}(bB-Ac)}{bc(b+cx)}$$

```
[Out] 1/3*(-3*A*c+5*B*b)*x^(3/2)/b/c^2-(-A*c+B*b)*x^(5/2)/b/c/(c*x+b)+(-3*A*c+5*B
*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))*b^(1/2)/c^(7/2)-(-3*A*c+5*B*b)*x^(1/2)/
c^3
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$\frac{x^{3/2}(5bB-3Ac)}{3bc^2}-\frac{\sqrt{x}\,(5bB-3Ac)}{c^3}+\frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}-\frac{x^{5/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((5*b*B - 3*A*c)*Sqrt[x])/c^3) + ((5*b*B - 3*A*c)*x^(3/2))/(3*b*c^2) - ((
b*B - A*c)*x^(5/2))/(b*c*(b + c*x)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt
[c]*Sqrt[x])/Sqrt[b]])/c^(7/2)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(b+cx)^2}\,dx \\
&= -\frac{(bB-Ac)x^{5/2}}{bc(b+cx)} - \frac{\left(-\frac{5bB}{2}+\frac{3Ac}{2}\right)\int \frac{x^{3/2}}{b+cx}\,dx}{bc} \\
&= \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} - \frac{(5bB-3Ac)\int \frac{\sqrt{x}}{b+cx}\,dx}{2c^2} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{(b(5bB-3Ac))\int \frac{1}{\sqrt{x}(b+cx)}\,dx}{2c^3} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{(b(5bB-3Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,\right.}{c^3} \\
&= -\frac{(5bB-3Ac)\sqrt{x}}{c^3} + \frac{(5bB-3Ac)x^{3/2}}{3bc^2} - \frac{(bB-Ac)x^{5/2}}{bc(b+cx)} + \frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.81

$$\frac{\sqrt{x}\,\left(bc(9A-10Bx)+2c^2x(3A+Bx)-15b^2B\right)}{3c^3(b+cx)} + \frac{\sqrt{b}\,(5bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(-15*b^2*B + b*c*(9*A - 10*B*x) + 2*c^2*x*(3*A + B*x)))/(3*c^3*(b
+ c*x)) + (Sqrt[b]*(5*b*B - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/c^(7/
2)
```

fricas [A] time = 0.97, size = 231, normalized size = 2.12

$$\left[-\frac{3\left(5Bb^2-3Abc+\left(5Bbc-3Ac^2\right)x\right)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx-2c\sqrt{x}\,\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(2Bc^2x^2-15Bb^2+9Abc-2\left(5Bbc-3A\right.\right.}{6\left(c^4x+bc^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*b^2 - 3*A*b*c + (5*B*b*c - 3*A*c^2)*x)*sqrt(-b/c)*log((c*x -
2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)) - 2*(2*B*c^2*x^2 - 15*B*b^2 + 9*A*b*
c - 2*(5*B*b*c - 3*A*c^2)*x)*sqrt(x))/(c^4*x + b*c^3), 1/3*(3*(5*B*b^2 - 3*
A*b*c + (5*B*b*c - 3*A*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (2
*B*c^2*x^2 - 15*B*b^2 + 9*A*b*c - 2*(5*B*b*c - 3*A*c^2)*x)*sqrt(x))/(c^4*x
+ b*c^3)]
```

giac [**A**] time = 0.16, size = 95, normalized size = 0.87

$$\frac{\left(5\,Bb^{2}-3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{3}}-\frac{Bb^{2}\sqrt{x}-Abc\sqrt{x}}{(cx+b)c^{3}}+\frac{2\left(Bc^{4}x^{\frac{3}{2}}-6\,Bbc^{3}\sqrt{x}+3\,Ac^{4}\sqrt{x}\right)}{3\,c^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (5*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^3) - (B*b^2*sq
rt(x) - A*b*c*sqrt(x))/((c*x + b)*c^3) + 2/3*(B*c^4*x^(3/2) - 6*B*b*c^3*sqr
t(x) + 3*A*c^4*sqrt(x))/c^6
```

maple [**A**] time = 0.07, size = 113, normalized size = 1.04

$$-\frac{3Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{2}}+\frac{5B\,b^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c^{3}}+\frac{Ab\sqrt{x}}{(cx+b)\,c^{2}}-\frac{B\,b^{2}\sqrt{x}}{(cx+b)\,c^{3}}+\frac{2B\,x^{\frac{3}{2}}}{3c^{2}}+\frac{2A\sqrt{x}}{c^{2}}-\frac{4Bb\sqrt{x}}{c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/3/c^2*B*x^(3/2)+2/c^2*A*x^(1/2)-4/c^3*b*B*x^(1/2)+b/c^2*x^(1/2)/(c*x+b)*A
-b^2/c^3*x^(1/2)/(c*x+b)*B-3*b/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/
2))*A+5*b^2/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [**A**] time = 1.20, size = 88, normalized size = 0.81

$$-\frac{\left(Bb^{2}-Abc\right)\sqrt{x}}{c^{4}x+bc^{3}}+\frac{\left(5\,Bb^{2}-3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{3}}+\frac{2\left(Bcx^{\frac{3}{2}}-3\,(2\,Bb-Ac)\sqrt{x}\right)}{3\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(B*b^2 - A*b*c)*sqrt(x)/(c^4*x + b*c^3) + (5*B*b^2 - 3*A*b*c)*arctan(c*sqr
t(x)/sqrt(b*c))/(sqrt(b*c)*c^3) + 2/3*(B*c*x^(3/2) - 3*(2*B*b - A*c)*sqrt(x
))/c^3
```

mupad [**B**] time = 1.09, size = 107, normalized size = 0.98

$$\sqrt{x}\,\left(\frac{2\,A}{c^{2}}-\frac{4\,B\,b}{c^{3}}\right)-\frac{\sqrt{x}\,\left(B\,b^{2}-A\,b\,c\right)}{x\,c^{4}+b\,c^{3}}+\frac{2\,B\,x^{3/2}}{3\,c^{2}}+\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{c}\,\sqrt{x}\,(3\,A\,c-5\,B\,b)}{5\,B\,b^{2}-3\,A\,b\,c}\right)\,(3\,A\,c-5\,B\,b)}{c^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] x^(1/2)*((2*A)/c^2 - (4*B*b)/c^3) - (x^(1/2)*(B*b^2 - A*b*c))/(b*c^3 + c^4*
x) + (2*B*x^(3/2))/(3*c^2) + (b^(1/2)*atan((b^(1/2)*c^(1/2)*x^(1/2)*(3*A*c
- 5*B*b))/(5*B*b^2 - 3*A*b*c))*(3*A*c - 5*B*b))/c^(7/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.179 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=88

$$-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}+\frac{\sqrt{x}\,(3bB-Ac)}{bc^2}-\frac{x^{3/2}(bB-Ac)}{bc(b+cx)}$$

```
[Out] -(-A*c+B*b)*x^(3/2)/b/c/(c*x+b)-(-A*c+3*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2)
)/c^(5/2)/b^(1/2)+(-A*c+3*B*b)*x^(1/2)/b/c^2
```

Rubi [A] time = 0.04, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 50, 63, 205}

$$\frac{\sqrt{x}\,(3bB-Ac)}{bc^2}-\frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}-\frac{x^{3/2}(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((3*b*B - A*c)*Sqrt[x])/(b*c^2) - ((b*B - A*c)*x^(3/2))/(b*c*(b + c*x)) - (
(3*b*B - A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*c^(5/2))
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(b+cx)^2}\,dx\\
&= -\frac{(bB-Ac)x^{3/2}}{bc(b+cx)} - \frac{\left(-\frac{3bB}{2}+\frac{Ac}{2}\right)\int \frac{\sqrt{x}}{b+cx}\,dx}{bc}\\
&= \frac{(3bB-Ac)\sqrt{x}}{bc^2} - \frac{(bB-Ac)x^{3/2}}{bc(b+cx)} - \frac{(3bB-Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2c^2}\\
&= \frac{(3bB-Ac)\sqrt{x}}{bc^2} - \frac{(bB-Ac)x^{3/2}}{bc(b+cx)} - \frac{(3bB-Ac)\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{c^2}\\
&= \frac{(3bB-Ac)\sqrt{x}}{bc^2} - \frac{(bB-Ac)x^{3/2}}{bc(b+cx)} - \frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 69, normalized size = 0.78

$$\frac{\sqrt{x}\,(-Ac+3bB+2Bcx)}{c^2(b+cx)} - \frac{(3bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{b}\,c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (Sqrt[x]*(3*b*B - A*c + 2*B*c*x))/(c^2*(b + c*x)) - ((3*b*B - A*c)*ArcTan[(
Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*c^(5/2))
```

fricas [A] time = 0.93, size = 198, normalized size = 2.25

$$\left[\frac{\left(3\,Bb^2-Abc+\left(3\,Bbc-Ac^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(2\,Bbc^2x+3\,Bb^2c-Abc^2\right)\sqrt{x}}{2\left(bc^4x+b^2c^3\right)}, \frac{\left(3\,Bb^2-Abc+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((3*B*b^2 - A*b*c + (3*B*b*c - A*c^2)*x)*sqrt(-b*c)*log((c*x - b - 2*s
qrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(2*B*b*c^2*x + 3*B*b^2*c - A*b*c^2)*sqrt(
x))/(b*c^4*x + b^2*c^3), ((3*B*b^2 - A*b*c + (3*B*b*c - A*c^2)*x)*sqrt(b*c)
*arctan(sqrt(b*c)/(c*sqrt(x))) + (2*B*b*c^2*x + 3*B*b^2*c - A*b*c^2)*sqrt(x
))/(b*c^4*x + b^2*c^3)]
```

giac [A] time = 0.16, size = 65, normalized size = 0.74

$$\frac{2\,B\sqrt{x}}{c^2} - \frac{(3\,Bb-Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^2} + \frac{Bb\sqrt{x}-Ac\sqrt{x}}{(cx+b)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 - (3*B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2)
 + (B*b*sqrt(x) - A*c*sqrt(x))/((c*x + b)*c^2)
```

maple [A] time = 0.07, size = 87, normalized size = 0.99

$$\frac{A \arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\ c} - \frac{3Bb \arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\ c^{2}} - \frac{A\sqrt{x}}{(cx+b)\, c} + \frac{Bb\sqrt{x}}{(cx+b)\, c^{2}} + \frac{2B\sqrt{x}}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*B*x^(1/2)/c^2-1/c*x^(1/2)/(c*x+b)*A+1/c^2*x^(1/2)/(c*x+b)*b*B+1/c/(b*c)^(
1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-3/c^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/
2)*c*x^(1/2))*b*B
```

maxima [A] time = 1.30, size = 65, normalized size = 0.74

$$\frac{(Bb - Ac)\sqrt{x}}{c^{3}x + bc^{2}} + \frac{2\,B\sqrt{x}}{c^{2}} - \frac{(3\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] (B*b - A*c)*sqrt(x)/(c^3*x + b*c^2) + 2*B*sqrt(x)/c^2 - (3*B*b - A*c)*arcta
n(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^2)
```

mupad [B] time = 0.09, size = 62, normalized size = 0.70

$$\frac{2\,B\,\sqrt{x}}{c^{2}} - \frac{\sqrt{x}\ \left(A\,c - B\,b\right)}{x\,c^{3} + b\,c^{2}} + \frac{\mathrm{atan}\left(\frac{\sqrt{c}\ \sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c - 3\,B\,b\right)}{\sqrt{b}\ c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (2*B*x^(1/2))/c^2 - (x^(1/2)*(A*c - B*b))/(b*c^2 + c^3*x) + (atan((c^(1/2)*
x^(1/2))/b^(1/2))*(A*c - 3*B*b))/(b^(1/2)*c^(5/2))
```

sympy [A] time = 107.25, size = 782, normalized size = 8.89

$$\begin{cases} \tilde{\infty} \left(- \frac{2 A}{\sqrt{x}} + 2 B \sqrt{x}\right) \\ \frac{- \frac{2 A}{\sqrt{x}} + 2 B \sqrt{x}}{c^{2}} \\ \frac{\frac{2 A x^{\frac{3}{2}}}{3} + \frac{2 B x^{\frac{5}{2}}}{5}}{b^{2}} \\ - \frac{2 i A \sqrt{b} c^{2} \sqrt{x} \sqrt{\frac{1}{c}}}{2 i b^{\frac{3}{2}} c^{3} \sqrt{\frac{1}{c}} + 2 i \sqrt{b} c^{4} x \sqrt{\frac{1}{c}}} + \frac{A b c \log{\left(- i \sqrt{b} \sqrt{\frac{1}{c}} + \sqrt{x} \right)}}{2 i b^{\frac{3}{2}} c^{3} \sqrt{\frac{1}{c}} + 2 i \sqrt{b} c^{4} x \sqrt{\frac{1}{c}}} - \frac{A b c \log{\left(i \sqrt{b} \sqrt{\frac{1}{c}} + \sqrt{x} \right)}}{2 i b^{\frac{3}{2}} c^{3} \sqrt{\frac{1}{c}} + 2 i \sqrt{b} c^{4} x \sqrt{\frac{1}{c}}} + \frac{A c^{2} x \log{\left(- i \sqrt{b} \sqrt{\frac{1}{c}} + \sqrt{x} \right)}}{2 i b^{\frac{3}{2}} c^{3} \sqrt{\frac{1}{c}} + 2 i \sqrt{b} c^{4} x \sqrt{\frac{1}{c}}} - \frac{A c^{2} x \log{\left(i \sqrt{b} \sqrt{\frac{1}{c}} + \sqrt{x} \right)}}{2 i b^{\frac{3}{2}} c^{3} \sqrt{\frac{1}{c}} + 2 i \sqrt{b} c^{4} x \sqrt{\frac{1}{c}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c**2, Eq(b, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/2)/5)/b
**2, Eq(c, 0)), (-2*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(3/2)*c**3*s
qrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) + A*b*c*log(-I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - A*
b*c*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*s
qrt(b)*c**4*x*sqrt(1/c)) + A*c**2*x*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*
I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - A*c**2*x*log(I*
sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**
4*x*sqrt(1/c)) + 6*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(3/2)*c**3*sqrt
(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) + 4*I*B*sqrt(b)*c**2*x**(3/2)*sqrt(1/
c)/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - 3*B*b**2*
log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt
(b)*c**4*x*sqrt(1/c)) + 3*B*b**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b*
*(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)) - 3*B*b*c*x*log(-I*sq
rt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*
x*sqrt(1/c)) + 3*B*b*c*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(3/2)*c
**3*sqrt(1/c) + 2*I*sqrt(b)*c**4*x*sqrt(1/c)), True))
```

3.180 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=64

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}-\frac{\sqrt{x}\,(bB-Ac)}{bc(b+cx)}$$

```
[Out] (A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(3/2)/c^(3/2)-(-A*c+B*b)*x^(1/2
)/b/c/(c*x+b)
```

Rubi [A] time = 0.03, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = $\{781, 78, 63, 205\}$

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}-\frac{\sqrt{x}\,(bB-Ac)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((b*B - A*c)*Sqrt[x])/(b*c*(b + c*x))) + ((b*B + A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(b^(3/2)*c^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{\sqrt{x}\,(b+cx)^2}\,dx \\
&= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2bc} \\
&= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{bc} \\
&= -\frac{(bB-Ac)\sqrt{x}}{bc(b+cx)} + \frac{(bB+Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.98

$$\frac{(Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{3/2}c^{3/2}} + \frac{\sqrt{x}\,(Ac-bB)}{bc(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] ((-(b*B) + A*c)*Sqrt[x])/(b*c*(b + c*x)) + ((b*B + A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(b^(3/2)*c^(3/2))
```

fricas [A] time = 0.70, size = 177, normalized size = 2.77

$$\left[-\frac{\left(Bb^2+Abc+\left(Bbc+Ac^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(Bb^2c-Abc^2\right)\sqrt{x}}{2\left(b^2c^3x+b^3c^2\right)}, -\frac{\left(Bb^2+Abc+\left(Bbc+Ac^2\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*((B*b^2 + A*b*c + (B*b*c + A*c^2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt
(-b*c)*sqrt(x))/(c*x + b)) + 2*(B*b^2*c - A*b*c^2)*sqrt(x))/(b^2*c^3*x + b^
3*c^2), -((B*b^2 + A*b*c + (B*b*c + A*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c
*sqrt(x))) + (B*b^2*c - A*b*c^2)*sqrt(x))/(b^2*c^3*x + b^3*c^2)]
```

giac [A] time = 0.16, size = 60, normalized size = 0.94

$$\frac{(Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,bc} - \frac{Bb\sqrt{x}-Ac\sqrt{x}}{(cx+b)bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b*c) - (B*b*sqrt(x) - A*
c*sqrt(x))/((c*x + b)*b*c)
```

maple [A] time = 0.07, size = 69, normalized size = 1.08

$$\frac{A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b} + \frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;c} + \frac{(Ac-bB)\sqrt{x}}{(cx+b)\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] (A*c-B*b)/b/c*x^(1/2)/(c*x+b)+1/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2
))*A+1/c/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.35, size = 58, normalized size = 0.91

$$-\frac{(Bb-Ac)\sqrt{x}}{bc^2x+b^2c}+\frac{(Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(B*b - A*c)*sqrt(x)/(b*c^2*x + b^2*c) + (B*b + A*c)*arctan(c*sqrt(x)/sqrt(
b*c))/(sqrt(b*c)*b*c)
```

mupad [B] time = 1.08, size = 51, normalized size = 0.80

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c+B\,b\right)}{b^{3/2}\,c^{3/2}}+\frac{\sqrt{x}\,\left(A\,c-B\,b\right)}{b\,c\,\left(b+c\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c + B*b))/(b^(3/2)*c^(3/2)) + (x^(1/2)*
(A*c - B*b))/(b*c*(b + c*x))
```

sympy [A] time = 55.27, size = 716, normalized size = 11.19

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{c^2} \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b^2} \\ \frac{2iA\sqrt{b}\,c^2\sqrt{x}\,\sqrt{\frac{1}{c}}}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Abc\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Abc\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}+\frac{Ac^2x\log\left(-i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}-\frac{Ac^2x\log\left(i\sqrt{b}\,\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{5}{2}}c^2\sqrt{\frac{1}{c}}+2ib^{\frac{3}{2}}c^3x\sqrt{\frac{1}{c}}}- \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(b, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c**2, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/
2)/3)/b**2, Eq(c, 0)), (2*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*
c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + A*b*c*log(-I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/
c)) - A*b*c*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c)
 + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + A*c**2*x*log(-I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) - A*c**
2*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b
**(3/2)*c**3*x*sqrt(1/c)) - 2*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2
)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + B*b**2*log(-I*sqrt(b)*s
qrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt
(1/c)) - B*b**2*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(
1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) + B*b*c*x*log(-I*sqrt(b)*sqrt(1/c) +
sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I*b**(3/2)*c**3*x*sqrt(1/c)) - B*
b*c*x*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(5/2)*c**2*sqrt(1/c) + 2*I
*b**(3/2)*c**3*x*sqrt(1/c)), True))
```

3.181 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=85

$$\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}+\frac{bB-3Ac}{b^2c\sqrt{x}}-\frac{bB-Ac}{bc\sqrt{x}\,(b+cx)}$$

```
[Out] (-3*A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(5/2)/c^(1/2)+(-3*A*c+B*b)/b
^2/c/x^(1/2)+(A*c-B*b)/b/c/(c*x+b)/x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = $\{781, 78, 51, 63, 205\}$

$$\frac{bB-3Ac}{b^2c\sqrt{x}}+\frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}-\frac{bB-Ac}{bc\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*B - 3*A*c)/(b^2*c*Sqrt[x]) - (b*B - A*c)/(b*c*Sqrt[x]*(b + c*x)) + ((b*B
 - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^(5/2)*Sqrt[c])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{3/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} - \frac{\left(\frac{bB}{2}-\frac{3Ac}{2}\right)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{bc}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2b^2}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{b^2}\\
&= \frac{bB-3Ac}{b^2c\sqrt{x}} - \frac{bB-Ac}{bc\sqrt{x}\,(b+cx)} + \frac{(bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{5/2}\sqrt{c}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.69

$$\frac{(b+cx)(bB-3Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{cx}{b}\right)+b(Ac-bB)}{b^2c\sqrt{x}\,(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^2,x]
```

```
[Out] (b*(-(b*B) + A*c) + (b*B - 3*A*c)*(b + c*x)*Hypergeometric2F1[-1/2, 1, 1/2,
 -((c*x)/b)])/(b^2*c*Sqrt[x]*(b + c*x))
```

fricas [A] time = 1.00, size = 215, normalized size = 2.53

$$\left[\frac{\left(\left(Bbc-3\,Ac^2\right)x^2+\left(Bb^2-3\,Abc\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)-2\left(2\,Ab^2c-\left(Bb^2c-3\,Abc^2\right)x\right)\sqrt{x}}{2\left(b^3c^2x^2+b^4cx\right)}, -\frac{\left(\left(Bbc\,-\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((B*b*c - 3*A*c^2)*x^2 + (B*b^2 - 3*A*b*c)*x)*sqrt(-b*c)*log((c*x - b
 + 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) - 2*(2*A*b^2*c - (B*b^2*c - 3*A*b*c^2)*
x)*sqrt(x))/(b^3*c^2*x^2 + b^4*c*x), -(((B*b*c - 3*A*c^2)*x^2 + (B*b^2 - 3*
A*b*c)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (2*A*b^2*c - (B*b^2*c -
 3*A*b*c^2)*x)*sqrt(x))/(b^3*c^2*x^2 + b^4*c*x)]
```

giac [A] time = 0.17, size = 60, normalized size = 0.71

$$\frac{(Bb-3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^2}+\frac{Bbx-3\,Acx-2\,Ab}{\left(cx^{\frac{3}{2}}+b\sqrt{x}\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b - 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2) + (B*b*x - 3*A*c*
x - 2*A*b)/((c*x^(3/2) + b*sqrt(x))*b^2)
```

maple [A] time = 0.07, size = 87, normalized size = 1.02

$$-\frac{3Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{2}}+\frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b}-\frac{Ac\sqrt{x}}{(cx+b)\,b^{2}}+\frac{B\sqrt{x}}{(cx+b)\,b}-\frac{2A}{b^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^2*x^(1/2)/(c*x+b)*A*c+1/b*x^(1/2)/(c*x+b)*B-3/b^2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*A*c+1/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))
*B-2*A/b^2/x^(1/2)
```

maxima [A] time = 1.35, size = 65, normalized size = 0.76

$$-\frac{2\,Ab-(Bb-3\,Ac)x}{b^{2}cx^{\frac{3}{2}}+b^{3}\sqrt{x}}+\frac{(Bb-3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(2*A*b - (B*b - 3*A*c)*x)/(b^2*c*x^(3/2) + b^3*sqrt(x)) + (B*b - 3*A*c)*ar
ctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2)
```

mupad [B] time = 1.08, size = 65, normalized size = 0.76

$$-\frac{\frac{2\,A}{b}+\frac{x\,(3\,A\,c-B\,b)}{b^{2}}}{b\,\sqrt{x}+c\,x^{3/2}}-\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(3\,A\,c-B\,b)}{b^{5/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - ((2*A)/b + (x*(3*A*c - B*b))/b^2)/(b*x^(1/2) + c*x^(3/2)) - (atan((c^(1/2
)*x^(1/2))/b^(1/2))*(3*A*c - B*b))/(b^(5/2)*c^(1/2))
```

sympy [A] time = 33.16, size = 884, normalized size = 10.40

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c^{2}} \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{b^{2}} \\ -\frac{4iAb^{\frac{3}{2}}c\sqrt{\frac{1}{c}}}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{6iA\sqrt{b}\,c^{2}x\sqrt{\frac{1}{c}}}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{3Abc\sqrt{x}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}+\frac{3Abc\sqrt{x}\log\left(i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{2ib^{\frac{7}{2}}c\sqrt{x}\sqrt{\frac{1}{c}}+2ib^{\frac{5}{2}}c^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}}-\frac{3Ac^{2}x^{\frac{3}{2}}\,\mathrm{lo}}{2ib^{\frac{7}{2}}c\sqrt{x}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c**2, Eq(b, 0)), ((-2*A/sqrt(x) +
 2*B*sqrt(x))/b**2, Eq(c, 0)), (-4*I*A*b**(3/2)*c*sqrt(1/c)/(2*I*b**(7/2)*c
*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - 6*I*A*sqrt(b)*
c**2*x*sqrt(1/c)/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(
3/2)*sqrt(1/c)) - 3*A*b*c*sqrt(x)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*
b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + 3*A*
b*c*sqrt(x)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt
(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - 3*A*c**2*x**(3/2)*log(-I*sq
rt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)
*c**2*x**(3/2)*sqrt(1/c)) + 3*A*c**2*x**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqr
t(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1
/c)) + 2*I*B*b**(3/2)*c*x*sqrt(1/c)/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I
*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + B*b**2*sqrt(x)*log(-I*sqrt(b)*sqrt(1/c
) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)
*sqrt(1/c)) - B*b**2*sqrt(x)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/
2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) + B*b*c*x**(
3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c)
+ 2*I*b**(5/2)*c**2*x**(3/2)*sqrt(1/c)) - B*b*c*x**(3/2)*log(I*sqrt(b)*sqrt
(1/c) + sqrt(x))/(2*I*b**(7/2)*c*sqrt(x)*sqrt(1/c) + 2*I*b**(5/2)*c**2*x**(
3/2)*sqrt(1/c)), True))
```

3.182 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=110

$$-\frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}+\frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}$$

```
[Out] 1/3*(-5*A*c+3*B*b)/b^2/c/x^(3/2)+(A*c-B*b)/b/c/x^(3/2)/(c*x+b)-(-5*A*c+3*B*
b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))*c^(1/2)/b^(7/2)+(5*A*c-3*B*b)/b^3/x^(1/2
)
```

Rubi [A] time = 0.06, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = $\{781, 78, 51, 63, 205\}$

$$\frac{3bB-5Ac}{3b^2cx^{3/2}}-\frac{3bB-5Ac}{b^3\sqrt{x}}-\frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}-\frac{bB-Ac}{bcx^{3/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^2),x]
```

```
[Out] (3*b*B - 5*A*c)/(3*b^2*c*x^(3/2)) - (3*b*B - 5*A*c)/(b^3*Sqrt[x]) - (b*B -
A*c)/(b*c*x^(3/2)*(b + c*x)) - (Sqrt[c]*(3*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/b^(7/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bcx^{3/2}(b+cx)} - \frac{\left(\frac{3bB}{2}-\frac{5Ac}{2}\right)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{bc}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}} - \frac{bB-Ac}{bcx^{3/2}(b+cx)} + \frac{(3bB-5Ac)\int \frac{1}{x^{3/2}(b+cx)}\,dx}{2b^2}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}} - \frac{3bB-5Ac}{b^3\sqrt{x}} - \frac{bB-Ac}{bcx^{3/2}(b+cx)} - \frac{(c(3bB-5Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{2b^3}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}} - \frac{3bB-5Ac}{b^3\sqrt{x}} - \frac{bB-Ac}{bcx^{3/2}(b+cx)} - \frac{(c(3bB-5Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x, \sqrt{x}\right)}{b^3}\\
&= \frac{3bB-5Ac}{3b^2cx^{3/2}} - \frac{3bB-5Ac}{b^3\sqrt{x}} - \frac{bB-Ac}{bcx^{3/2}(b+cx)} - \frac{\sqrt{c}\,(3bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.58

$$\frac{(b+cx)(3bB-5Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{cx}{b}\right)+3b(Ac-bB)}{3b^2cx^{3/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^2),x]
```

```
[Out] (3*b*(-(b*B) + A*c) + (3*b*B - 5*A*c)*(b + c*x)*Hypergeometric2F1[-3/2, 1,
-1/2, -((c*x)/b)])/(3*b^2*c*x^(3/2)*(b + c*x))
```

fricas [A] time = 0.98, size = 262, normalized size = 2.38

$$\left[-\frac{3\left(\left(3\,Bbc-5\,Ac^2\right)x^3+\left(3\,Bb^2-5\,Abc\right)x^2\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(2\,Ab^2+3\left(3\,Bbc-5\,Ac^2\right)x^2+2\left(\right.\right.}{6\left(b^3cx^3+b^4x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((3*B*b*c - 5*A*c^2)*x^3 + (3*B*b^2 - 5*A*b*c)*x^2)*sqrt(-c/b)*log
((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(2*A*b^2 + 3*(3*B*b*c -
5*A*c^2)*x^2 + 2*(3*B*b^2 - 5*A*b*c)*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2), 1/3
*(3*((3*B*b*c - 5*A*c^2)*x^3 + (3*B*b^2 - 5*A*b*c)*x^2)*sqrt(c/b)*arctan(b*
sqrt(c/b)/(c*sqrt(x))) - (2*A*b^2 + 3*(3*B*b*c - 5*A*c^2)*x^2 + 2*(3*B*b^2
- 5*A*b*c)*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2)]
```

giac [**A**] time = 0.26, size = 85, normalized size = 0.77

$$-\frac{\left(3\,Bbc-5\,Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}-\frac{Bbc\sqrt{x}\,-Ac^{2}\sqrt{x}}{(cx+b)b^{3}}-\frac{2\,(3\,Bbx-6\,Acx+Ab)}{3\,b^{3}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] -(3*B*b*c - 5*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - (B*b*c*s
qrt(x) - A*c^2*sqrt(x))/((c*x + b)*b^3) - 2/3*(3*B*b*x - 6*A*c*x + A*b)/(b^
3*x^(3/2))
```

maple [**A**] time = 0.07, size = 113, normalized size = 1.03

$$\frac{5A\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{3}}-\frac{3Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{2}}+\frac{A\,c^{2}\sqrt{x}}{(cx+b)\,b^{3}}-\frac{Bc\sqrt{x}}{(cx+b)\,b^{2}}+\frac{4Ac}{b^{3}\sqrt{x}}-\frac{2B}{b^{2}\sqrt{x}}-\frac{2A}{3b^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x)
```

```
[Out] 1/b^3*c^2*x^(1/2)/(c*x+b)*A-1/b^2*c*x^(1/2)/(c*x+b)*B+5/b^3*c^2/(b*c)^(1/2)
*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-3/b^2*c/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)
*c*x^(1/2))*B-2/3/b^2*A/x^(3/2)+4/b^3/x^(1/2)*A*c-2/b^2/x^(1/2)*B
```

maxima [**A**] time = 1.23, size = 93, normalized size = 0.85

$$-\frac{2\,Ab^{2}+3\left(3\,Bbc-5\,Ac^{2}\right)x^{2}+2\left(3\,Bb^{2}-5\,Abc\right)x}{3\left(b^{3}cx^{\frac{5}{2}}+b^{4}x^{\frac{3}{2}}\right)}-\frac{\left(3\,Bbc-5\,Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(2*A*b^2 + 3*(3*B*b*c - 5*A*c^2)*x^2 + 2*(3*B*b^2 - 5*A*b*c)*x)/(b^3*c
*x^(5/2) + b^4*x^(3/2)) - (3*B*b*c - 5*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(
sqrt(b*c)*b^3)
```

mupad [**B**] time = 1.09, size = 81, normalized size = 0.74

$$\frac{\frac{2\,x\,(5\,A\,c-3\,B\,b)}{3\,b^{2}}-\frac{2\,A}{3\,b}+\frac{c\,x^{2}\,(5\,A\,c-3\,B\,b)}{b^{3}}}{b\,x^{3/2}+c\,x^{5/2}}+\frac{\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(5\,A\,c-3\,B\,b)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^2),x)
```

```
[Out] ((2*x*(5*A*c - 3*B*b))/(3*b^2) - (2*A)/(3*b) + (c*x^2*(5*A*c - 3*B*b))/b^3)
/(b*x^(3/2) + c*x^(5/2)) + (c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(5*A*c
- 3*B*b))/b^(7/2)
```

sympy [A] time = 42.92, size = 983, normalized size = 8.94

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c^{2}} \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{b^{2}} \\ -\frac{4iAb^{\frac{5}{2}}\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}+6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{20iAb^{\frac{3}{2}}cx\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}+6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{30iA\sqrt{b}c^{2}x^{2}\sqrt{\frac{1}{c}}}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}+6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}}+\frac{15Abcx^{\frac{3}{2}}\log\left(-i\sqrt{b}\sqrt{\frac{1}{c}}+\sqrt{x}\right)}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}+6ib^{\frac{7}{2}}cx^{\frac{5}{2}}\sqrt{\frac{1}{c}}}-\frac{15Abcx^{\frac{3}{2}}\log}{6ib^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{c}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**2/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c**2, Eq(b, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/b**2, Eq(c, 0)), (-4*I*A*b**(5/2)*sqrt(1/c)/(6*I*b**(9/2
)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 20*I*A*b**(3/2)
*c*x*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*s
qrt(1/c)) + 30*I*A*sqrt(b)*c**2*x**2*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(
1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 15*A*b*c*x**(3/2)*log(-I*sqrt(b
)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x*
*(5/2)*sqrt(1/c)) - 15*A*b*c*x**(3/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6
*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 15*A*
c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sq
rt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) - 15*A*c**2*x**(5/2)*log(I*sqr
t(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c
*x**(5/2)*sqrt(1/c)) - 12*I*B*b**(5/2)*x*sqrt(1/c)/(6*I*b**(9/2)*x**(3/2)*s
qrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) - 18*I*B*b**(3/2)*c*x**2*sqrt
(1/c)/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c))
 - 9*B*b**2*x**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(
3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)) + 9*B*b**2*x**(3/2)*log
(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(
7/2)*c*x**(5/2)*sqrt(1/c)) - 9*B*b*c*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sq
rt(x))/(6*I*b**(9/2)*x**(3/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)
) + 9*B*b*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(6*I*b**(9/2)*x**(3
/2)*sqrt(1/c) + 6*I*b**(7/2)*c*x**(5/2)*sqrt(1/c)), True))
```

3.183 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}+\frac{c(5bB-7Ac)}{b^4\sqrt{x}}-\frac{5bB-7Ac}{3b^3x^{3/2}}+\frac{5bB-7Ac}{5b^2cx^{5/2}}-\frac{bB-Ac}{bcx^{5/2}(b+cx)}$$

```
[Out] 1/5*(-7*A*c+5*B*b)/b^2/c/x^(5/2)+1/3*(7*A*c-5*B*b)/b^3/x^(3/2)+(A*c-B*b)/b/
c/x^(5/2)/(c*x+b)+c^(3/2)*(-7*A*c+5*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^
(9/2)+c*(-7*A*c+5*B*b)/b^4/x^(1/2)
```

Rubi [**A**] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{781, 78, 51, 63, 205\}$

$$\frac{c^{3/2}(5bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{b^{9/2}}-\frac{5bB-7Ac}{3b^3x^{3/2}}+\frac{5bB-7Ac}{5b^2cx^{5/2}}+\frac{c(5bB-7Ac)}{b^4\sqrt{x}}-\frac{bB-Ac}{bcx^{5/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (5*b*B - 7*A*c)/(5*b^2*c*x^(5/2)) - (5*b*B - 7*A*c)/(3*b^3*x^(3/2)) + (c*(5
*b*B - 7*A*c))/(b^4*Sqrt[x]) - (b*B - A*c)/(b*c*x^(5/2)*(b + c*x)) + (c^(3/
2)*(5*b*B - 7*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/b^(9/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bcx^{5/2}(b+cx)} - \frac{\left(\frac{5bB}{2}-\frac{7Ac}{2}\right)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{bc}\\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{(5bB-7Ac)\int \frac{1}{x^{5/2}(b+cx)}\,dx}{2b^2}\\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} - \frac{(c(5bB-7Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{2b^3}\\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{\left(c^2(5bB-7Ac)\right)\int \frac{1}{\sqrt{x}(b}}{2b^4}\\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{\left(c^2(5bB-7Ac)\right)\text{Subst}}{b^4}\\
&= \frac{5bB-7Ac}{5b^2cx^{5/2}} - \frac{5bB-7Ac}{3b^3x^{3/2}} + \frac{c(5bB-7Ac)}{b^4\sqrt{x}} - \frac{bB-Ac}{bcx^{5/2}(b+cx)} + \frac{c^{3/2}(5bB-7Ac)\tan^{-1}(}{b^{9/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.49

$$\frac{(b+cx)(5bB-7Ac)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{cx}{b}\right)+5b(Ac-bB)}{5b^2cx^{5/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (5*b*(-(b*B) + A*c) + (5*b*B - 7*A*c)*(b + c*x)*Hypergeometric2F1[-5/2, 1,
-3/2, -((c*x)/b)])/(5*b^2*c*x^(5/2)*(b + c*x))
```

fricas [A] time = 0.67, size = 319, normalized size = 2.45

$$\left[-\frac{15\left(\left(5\,Bbc^2-7\,Ac^3\right)x^4+\left(5\,Bb^2c-7\,Abc^2\right)x^3\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx-2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(6\,Ab^3-15\left(5\,Bbc^2-7\,Ac^3\right)x^3\right.}{30\left(b^4cx^4+b^5x^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/30*(15*((5*B*b*c^2 - 7*A*c^3)*x^4 + (5*B*b^2*c - 7*A*b*c^2)*x^3)*sqrt(-
c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(6*A*b^3 - 15*(5
*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*x^2 + 2*(5*B*b^3 - 7*A
*b^2*c)*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3), -1/15*(15*((5*B*b*c^2 - 7*A*c^3)
*x^4 + (5*B*b^2*c - 7*A*b*c^2)*x^3)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x)
)) + (6*A*b^3 - 15*(5*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*x
^2 + 2*(5*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3)]
```

giac [A] time = 0.16, size = 110, normalized size = 0.85

$$\frac{\left(5\,Bbc^2-7\,Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4}+\frac{Bbc^2\sqrt{x}-Ac^3\sqrt{x}}{(cx+b)b^4}+\frac{2\left(30\,Bbcx^2-45\,Ac^2x^2-5\,Bb^2x+10\,Abcx-3\,Ab^2\right)}{15\,b^4x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (5*B*b*c^2 - 7*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) + (B*b*c^
2*sqrt(x) - A*c^3*sqrt(x))/((c*x + b)*b^4) + 2/15*(30*B*b*c*x^2 - 45*A*c^2*
x^2 - 5*B*b^2*x + 10*A*b*c*x - 3*A*b^2)/(b^4*x^(5/2))
```

maple [A] time = 0.06, size = 139, normalized size = 1.07

$$-\frac{7A\,c^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^4}+\frac{5B\,c^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^3}-\frac{A\,c^3\sqrt{x}}{(cx+b)\,b^4}+\frac{B\,c^2\sqrt{x}}{(cx+b)\,b^3}-\frac{6A\,c^2}{b^4\sqrt{x}}+\frac{4Bc}{b^3\sqrt{x}}+\frac{4Ac}{3b^3x^{\frac{3}{2}}}-\frac{2B}{3b^2x^{\frac{3}{2}}}-\frac{2A}{5b^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -1/b^4*c^3*x^(1/2)/(c*x+b)*A+1/b^3*c^2*x^(1/2)/(c*x+b)*B-7/b^4*c^3/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+5/b^3*c^2/(b*c)^(1/2)*arctan(1/(b*c)^
(1/2)*c*x^(1/2))*B-2/5/b^2*A/x^(5/2)+4/3/b^3/x^(3/2)*A*c-2/3/b^2/x^(3/2)*B-
6*c^2/b^4/x^(1/2)*A+4*c/b^3/x^(1/2)*B
```

maxima [A] time = 1.17, size = 118, normalized size = 0.91

$$-\frac{6\,Ab^3-15\left(5\,Bbc^2-7\,Ac^3\right)x^3-10\left(5\,Bb^2c-7\,Abc^2\right)x^2+2\left(5\,Bb^3-7\,Ab^2c\right)x}{15\left(b^4cx^{\frac{7}{2}}+b^5x^{\frac{5}{2}}\right)}+\frac{\left(5\,Bbc^2-7\,Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/15*(6*A*b^3 - 15*(5*B*b*c^2 - 7*A*c^3)*x^3 - 10*(5*B*b^2*c - 7*A*b*c^2)*
x^2 + 2*(5*B*b^3 - 7*A*b^2*c)*x)/(b^4*c*x^(7/2) + b^5*x^(5/2)) + (5*B*b*c^2
 - 7*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4)
```

mupad [B] time = 1.11, size = 103, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,b}-\frac{2\,x\,(7\,A\,c-5\,B\,b)}{15\,b^2}+\frac{c^2\,x^3\,(7\,A\,c-5\,B\,b)}{b^4}+\frac{2\,c\,x^2\,(7\,A\,c-5\,B\,b)}{3\,b^3}}{b\,x^{5/2}+c\,x^{7/2}}-\frac{c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(7\,A\,c-5\,B\,b)}{b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(7*A*c - 5*B*b))/(15*b^2) + (c^2*x^3*(7*A*c - 5*B*b))
/b^4 + (2*c*x^2*(7*A*c - 5*B*b))/(3*b^3))/(b*x^(5/2) + c*x^(7/2)) - (c^(3/2
)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(7*A*c - 5*B*b))/b^(9/2)
```

sympy [A] time = 81.93, size = 1127, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**2, Eq(b, 0)), ((-2*A/(5*x**(5/
2)) - 2*B/(3*x**(3/2)))/b**2, Eq(c, 0)), (-12*I*A*b**(7/2)*sqrt(1/c)/(30*I*
b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 28*I*A
*b**(5/2)*c*x*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*
c*x**(7/2)*sqrt(1/c)) - 140*I*A*b**(3/2)*c**2*x**2*sqrt(1/c)/(30*I*b**(11/2
)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 210*I*A*sqrt(b
)*c**3*x**3*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*
x**(7/2)*sqrt(1/c)) - 105*A*b*c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt
(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c
)) + 105*A*b*c**2*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/
2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 105*A*c**3*x*
*(7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/
c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 105*A*c**3*x**(7/2)*log(I*sqrt(b
)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c
*x**(7/2)*sqrt(1/c)) - 20*I*B*b**(7/2)*x*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)
*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 100*I*B*b**(5/2)*c*x**2*
sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqr
t(1/c)) + 150*I*B*b**(3/2)*c**2*x**3*sqrt(1/c)/(30*I*b**(11/2)*x**(5/2)*sqr
t(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) + 75*B*b**2*c*x**(5/2)*log(-I*
sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(
9/2)*c*x**(7/2)*sqrt(1/c)) - 75*B*b**2*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqr
t(1/c)) + 75*B*b*c**2*x**(7/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b*
*(11/2)*x**(5/2)*sqrt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)) - 75*B*b*c
**2*x**(7/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(30*I*b**(11/2)*x**(5/2)*sq
rt(1/c) + 30*I*b**(9/2)*c*x**(7/2)*sqrt(1/c)), True))
```

3.184 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=156

$$-\frac{c^{5/2}(7bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}$$

```
[Out] 1/7*(-9*A*c+7*B*b)/b^2/c/x^(7/2)+1/5*(9*A*c-7*B*b)/b^3/x^(5/2)+1/3*c*(-9*A*
c+7*B*b)/b^4/x^(3/2)+(A*c-B*b)/b/c/x^(7/2)/(c*x+b)-c^(5/2)*(-9*A*c+7*B*b)*a
rctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(11/2)-c^2*(-9*A*c+7*B*b)/b^5/x^(1/2)
```

Rubi [**A**] time = 0.08, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = $\{781, 78, 51, 63, 205\}$

$$-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}-\frac{c^{5/2}(7bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{b^{11/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (7*b*B - 9*A*c)/(7*b^2*c*x^(7/2)) - (7*b*B - 9*A*c)/(5*b^3*x^(5/2)) + (c*(7
*b*B - 9*A*c))/(3*b^4*x^(3/2)) - (c^2*(7*b*B - 9*A*c))/(b^5*Sqrt[x]) - (b*B
 - A*c)/(b*c*x^(7/2)*(b + c*x)) - (c^(5/2)*(7*b*B - 9*A*c)*ArcTan[(Sqrt[c]*
Sqrt[x])/Sqrt[b]])/b^(11/2)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^2}\,dx &= \int \frac{A+Bx}{x^{9/2}(b+cx)^2}\,dx\\
&= -\frac{bB-Ac}{bcx^{7/2}(b+cx)}-\frac{\left(\frac{7bB}{2}-\frac{9Ac}{2}\right)\int \frac{1}{x^{9/2}(b+cx)}\,dx}{bc}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}+\frac{(7bB-9Ac)\int \frac{1}{x^{7/2}(b+cx)}\,dx}{2b^2}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}-\frac{(c(7bB-9Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{2b^3}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}+\frac{\left(c^2(7bB-9Ac)\right)\int \frac{1}{x^{3/2}(b}}{2b^4}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}-\frac{\left(c^3(7b}{}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}-\frac{\left(c^3(7b}{}\\
&= \frac{7bB-9Ac}{7b^2cx^{7/2}}-\frac{7bB-9Ac}{5b^3x^{5/2}}+\frac{c(7bB-9Ac)}{3b^4x^{3/2}}-\frac{c^2(7bB-9Ac)}{b^5\sqrt{x}}-\frac{bB-Ac}{bcx^{7/2}(b+cx)}-\frac{c^{5/2}(7}{}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.41

$$\frac{(b+cx)(7bB-9Ac)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{cx}{b}\right)+7b(Ac-bB)}{7b^2cx^{7/2}(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (7*b*(-(b*B) + A*c) + (7*b*B - 9*A*c)*(b + c*x)*Hypergeometric2F1[-7/2, 1,
-5/2, -((c*x)/b)])/(7*b^2*c*x^(7/2)*(b + c*x))
```

fricas [A] time = 1.29, size = 372, normalized size = 2.38

$$\left[-\frac{105\left(\left(7\,Bbc^3-9\,Ac^4\right)x^5+\left(7\,Bb^2c^2-9\,Abc^3\right)x^4\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(30\,Ab^4+105\left(7\,Bbc^3-9\,A\right.\right.}{210\left(b^5cx^5+b^6x^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/210*(105*((7*B*b*c^3 - 9*A*c^4)*x^5 + (7*B*b^2*c^2 - 9*A*b*c^3)*x^4)*sq
rt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(c*x + b)) + 2*(30*A*b^4 +
105*(7*B*b*c^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 14*(7*B*
b^3*c - 9*A*b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c*x^5 +
 b^6*x^4), 1/105*(105*((7*B*b*c^3 - 9*A*c^4)*x^5 + (7*B*b^2*c^2 - 9*A*b*c^3
)*x^4)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (30*A*b^4 + 105*(7*B*b*c
^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 14*(7*B*b^3*c - 9*A*
b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^4)]
```

giac [A] time = 0.16, size = 136, normalized size = 0.87

$$-\frac{\left(7\,Bbc^{3}-9\,Ac^{4}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\,b^{5}}-\frac{Bbc^{3}\sqrt{x}-Ac^{4}\sqrt{x}}{(cx+b)b^{5}}-\frac{2\,\big(315\,Bbc^{2}x^{3}-420\,Ac^{3}x^{3}-70\,Bb^{2}cx^{2}+105\,Abc^{2}x^{2}+21}{105\,b^{5}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(7*B*b*c^3 - 9*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) - (B*b*c
^3*sqrt(x) - A*c^4*sqrt(x))/((c*x + b)*b^5) - 2/105*(315*B*b*c^2*x^3 - 420*
A*c^3*x^3 - 70*B*b^2*c*x^2 + 105*A*b*c^2*x^2 + 21*B*b^3*x - 42*A*b^2*c*x +
15*A*b^3)/(b^5*x^(7/2))
```

maple [A] time = 0.07, size = 163, normalized size = 1.04

$$\frac{9A\,c^{4}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{5}}-\frac{7B\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{\sqrt{bc}\;b^{4}}+\frac{A\,c^{4}\sqrt{x}}{(cx+b)\,b^{5}}-\frac{B\,c^{3}\sqrt{x}}{(cx+b)\,b^{4}}+\frac{8A\,c^{3}}{b^{5}\sqrt{x}}-\frac{6B\,c^{2}}{b^{4}\sqrt{x}}-\frac{2A\,c^{2}}{b^{4}x^{\frac{3}{2}}}+\frac{4Bc}{3b^{3}x^{\frac{3}{2}}}+\frac{4Ac}{5b^{3}x^{\frac{5}{2}}}-\frac{2B}{5b^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/b^5*c^4*x^(1/2)/(c*x+b)*A-1/b^4*c^3*x^(1/2)/(c*x+b)*B+9/b^5*c^4/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-7/b^4*c^3/(b*c)^(1/2)*arctan(1/(b*c)^(
1/2)*c*x^(1/2))*B-2/7/b^2*A/x^(7/2)+4/5/b^3/x^(5/2)*A*c-2/5/b^2/x^(5/2)*B-2
*c^2/b^4/x^(3/2)*A+4/3*c/b^3/x^(3/2)*B+8*c^3/b^5/x^(1/2)*A-6*c^2/b^4/x^(1/2
)*B
```

maxima [A] time = 1.19, size = 143, normalized size = 0.92

$$-\frac{30\,Ab^{4}+105\left(7\,Bbc^{3}-9\,Ac^{4}\right)x^{4}+70\left(7\,Bb^{2}c^{2}-9\,Abc^{3}\right)x^{3}-14\left(7\,Bb^{3}c-9\,Ab^{2}c^{2}\right)x^{2}+6\left(7\,Bb^{4}-9\,Ab^{3}c\right)x}{105\left(b^{5}cx^{\frac{9}{2}}+b^{6}x^{\frac{7}{2}}\right)}-\big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -1/105*(30*A*b^4 + 105*(7*B*b*c^3 - 9*A*c^4)*x^4 + 70*(7*B*b^2*c^2 - 9*A*b*
c^3)*x^3 - 14*(7*B*b^3*c - 9*A*b^2*c^2)*x^2 + 6*(7*B*b^4 - 9*A*b^3*c)*x)/(b
^5*c*x^(9/2) + b^6*x^(7/2)) - (7*B*b*c^3 - 9*A*c^4)*arctan(c*sqrt(x)/sqrt(b
*c))/(sqrt(b*c)*b^5)
```

mupad [B] time = 1.12, size = 121, normalized size = 0.78

$$\frac{\frac{2\,x\,(9\,A\,c-7\,B\,b)}{35\,b^{2}}-\frac{2\,A}{7\,b}+\frac{2\,c^{2}\,x^{3}\,(9\,A\,c-7\,B\,b)}{3\,b^{4}}+\frac{c^{3}\,x^{4}\,(9\,A\,c-7\,B\,b)}{b^{5}}-\frac{2\,c\,x^{2}\,(9\,A\,c-7\,B\,b)}{15\,b^{3}}}{b\,x^{7/2}+c\,x^{9/2}}+\frac{c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(9\,A\,c-7\,B\,b)}{b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^2),x)
```

```
[Out] ((2*x*(9*A*c - 7*B*b))/(35*b^2) - (2*A)/(7*b) + (2*c^2*x^3*(9*A*c - 7*B*b))
/(3*b^4) + (c^3*x^4*(9*A*c - 7*B*b))/b^5 - (2*c*x^2*(9*A*c - 7*B*b))/(15*b^
3))/(b*x^(7/2) + c*x^(9/2)) + (c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(9*A
*c - 7*B*b))/b^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.185 $\int \frac{x^{13/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=169

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{11/2}}+\frac{7b\sqrt{x}\,(9bB-5Ac)}{4c^5}-\frac{7x^{3/2}(9bB-5Ac)}{12c^4}+\frac{7x^{5/2}(9bB-5Ac)}{20bc^3}-\frac{x^{7/2}(9bB-5Ac)}{4bc^2(b+cx)}-$$

```
[Out] -7/12*(-5*A*c+9*B*b)*x^(3/2)/c^4+7/20*(-5*A*c+9*B*b)*x^(5/2)/b/c^3-1/2*(-A*
c+B*b)*x^(9/2)/b/c/(c*x+b)^2-1/4*(-5*A*c+9*B*b)*x^(7/2)/b/c^2/(c*x+b)-7/4*b
^(3/2)*(-5*A*c+9*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/c^(11/2)+7/4*b*(-5*A*
c+9*B*b)*x^(1/2)/c^5
```

Rubi [A] time = 0.09, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = $\{781, 78, 47, 50, 63, 205\}$

$$-\frac{7b^{3/2}(9bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4c^{11/2}}-\frac{x^{7/2}(9bB-5Ac)}{4bc^2(b+cx)}+\frac{7x^{5/2}(9bB-5Ac)}{20bc^3}-\frac{7x^{3/2}(9bB-5Ac)}{12c^4}+\frac{7b\sqrt{x}\,(9bB-5Ac)}{4c^5}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (7*b*(9*b*B - 5*A*c)*Sqrt[x])/(4*c^5) - (7*(9*b*B - 5*A*c)*x^(3/2))/(12*c^4
) + (7*(9*b*B - 5*A*c)*x^(5/2))/(20*b*c^3) - ((b*B - A*c)*x^(9/2))/(2*b*c*(
b + c*x)^2) - ((9*b*B - 5*A*c)*x^(7/2))/(4*b*c^2*(b + c*x)) - (7*b^(3/2)*(9
*b*B - 5*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*c^(11/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{13/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(b+cx)^3}\,dx \\
&= -\frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{9bB}{2}+\frac{5Ac}{2}\right)\int \frac{x^{7/2}}{(b+cx)^2}\,dx}{2bc} \\
&= -\frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} + \frac{(7(9bB-5Ac))\int \frac{x^{5/2}}{b+cx}\,dx}{8bc^2} \\
&= \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} - \frac{(7(9bB-5Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{8c^3} \\
&= -\frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-5Ac)x^{7/2}}{4bc^2(b+cx)} + \frac{(7b(9bB}{} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-}{4bc^2(} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-}{4bc^2(} \\
&= \frac{7b(9bB-5Ac)\sqrt{x}}{4c^5} - \frac{7(9bB-5Ac)x^{3/2}}{12c^4} + \frac{7(9bB-5Ac)x^{5/2}}{20bc^3} - \frac{(bB-Ac)x^{9/2}}{2bc(b+cx)^2} - \frac{(9bB-}{4bc^2(}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.36

$$
\frac{x^{9/2}\left(\frac{9b^2(Ac-bB)}{(b+cx)^2}+(9bB-5Ac)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{cx}{b}\right)\right)}{18b^3c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(9/2)*((9*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (9*b*B - 5*A*c)*Hypergeometr
ic2F1[2, 9/2, 11/2, -((c*x)/b)]))/(18*b^3*c)
```

fricas [A] time = 1.18, size = 408, normalized size = 2.41

$$\left[-\frac{105\left(9\,Bb^4-5\,Ab^3c+\left(9\,Bb^2c^2-5\,Abc^3\right)x^2+2\left(9\,Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx+2\,c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(24\,Bc^4x^4\right.}{120\left(c^7x^2+2\,bc^6\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/120*(105*(9*B*b^4 - 5*A*b^3*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 2*(9*B*
b^3*c - 5*A*b^2*c^2)*x)*sqrt(-b/c)*log((c*x + 2*c*sqrt(x)*sqrt(-b/c) - b)/(
c*x + b)) - 2*(24*B*c^4*x^4 + 945*B*b^4 - 525*A*b^3*c - 8*(9*B*b*c^3 - 5*A*
c^4)*x^3 + 56*(9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 175*(9*B*b^3*c - 5*A*b^2*c^2)
*x)*sqrt(x))/(c^7*x^2 + 2*b*c^6*x + b^2*c^5), -1/60*(105*(9*B*b^4 - 5*A*b^3
*c + (9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 2*(9*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(b/
c)*arctan(c*sqrt(x)*sqrt(b/c)/b) - (24*B*c^4*x^4 + 945*B*b^4 - 525*A*b^3*c
- 8*(9*B*b*c^3 - 5*A*c^4)*x^3 + 56*(9*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 175*(9*B
*b^3*c - 5*A*b^2*c^2)*x)*sqrt(x))/(c^7*x^2 + 2*b*c^6*x + b^2*c^5)]
```

giac [A] time = 0.21, size = 146, normalized size = 0.86

$$-\frac{7\left(9\,Bb^3-5\,Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^5}+\frac{17\,Bb^3cx^{\frac{3}{2}}-13\,Ab^2c^2x^{\frac{3}{2}}+15\,Bb^4\sqrt{x}-11\,Ab^3c\sqrt{x}}{4\,(cx+b)^2c^5}+\frac{2\left(3\,Bc^{12}x^{\frac{5}{2}}-15\,Bbc^{11}x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -7/4*(9*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^5) + 1/
4*(17*B*b^3*c*x^(3/2) - 13*A*b^2*c^2*x^(3/2) + 15*B*b^4*sqrt(x) - 11*A*b^3*
c*sqrt(x))/((c*x + b)^2*c^5) + 2/15*(3*B*c^12*x^(5/2) - 15*B*b*c^11*x^(3/2)
 + 5*A*c^12*x^(3/2) + 90*B*b^2*c^10*sqrt(x) - 45*A*b*c^11*sqrt(x))/c^15
```

maple [A] time = 0.07, size = 178, normalized size = 1.05

$$-\frac{13A\,b^2x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^3}+\frac{17B\,b^3x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^4}-\frac{11A\,b^3\sqrt{x}}{4\,(cx+b)^2\,c^4}+\frac{15B\,b^4\sqrt{x}}{4\,(cx+b)^2\,c^5}+\frac{2B\,x^{\frac{5}{2}}}{5c^3}+\frac{35A\,b^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^4}-\frac{63B\,b^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2/5/c^3*B*x^(5/2)+2/3/c^3*A*x^(3/2)-2/c^4*B*x^(3/2)*b-6/c^4*A*b*x^(1/2)+12/
c^5*b^2*B*x^(1/2)-13/4*b^2/c^3/(c*x+b)^2*A*x^(3/2)+17/4*b^3/c^4/(c*x+b)^2*B
*x^(3/2)-11/4*b^3/c^4/(c*x+b)^2*A*x^(1/2)+15/4*b^4/c^5/(c*x+b)^2*B*x^(1/2)+
35/4*b^2/c^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-63/4*b^3/c^5/(b*
c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.13, size = 151, normalized size = 0.89

$$\frac{\left(17\,Bb^3c-13\,Ab^2c^2\right)x^{\frac{3}{2}}+\left(15\,Bb^4-11\,Ab^3c\right)\sqrt{x}}{4\left(c^7x^2+2\,bc^6x+b^2c^5\right)}-\frac{7\left(9\,Bb^3-5\,Ab^2c\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^5}+\frac{2\left(3\,Bc^2x^{\frac{5}{2}}-5\left(3\,Bbc-Ac^2\right.\right.}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(13/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((17*B*b^3*c - 13*A*b^2*c^2)*x^(3/2) + (15*B*b^4 - 11*A*b^3*c)*sqrt(x))
/(c^7*x^2 + 2*b*c^6*x + b^2*c^5) - 7/4*(9*B*b^3 - 5*A*b^2*c)*arctan(c*sqrt(
x)/sqrt(b*c))/(sqrt(b*c)*c^5) + 2/15*(3*B*c^2*x^(5/2) - 5*(3*B*b*c - A*c^2)
*x^(3/2) + 45*(2*B*b^2 - A*b*c)*sqrt(x))/c^5
```

mupad [B] time = 1.07, size = 183, normalized size = 1.08

$$x^{3/2}\left(\frac{2A}{3c^3}-\frac{2Bb}{c^4}\right)-\frac{x^{3/2}\left(\frac{13Ab^2c^2}{4}-\frac{17Bb^3c}{4}\right)-\sqrt{x}\left(\frac{15Bb^4}{4}-\frac{11Ab^3c}{4}\right)}{b^2c^5+2bc^6x+c^7x^2}-\sqrt{x}\left(\frac{3b\left(\frac{2A}{c^3}-\frac{6Bb}{c^4}\right)}{c}+\frac{6Bb^2}{c^5}\right)+\frac{2Bx^5}{5c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(13/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] x^(3/2)*((2*A)/(3*c^3) - (2*B*b)/c^4) - (x^(3/2)*((13*A*b^2*c^2)/4 - (17*B*
b^3*c)/4) - x^(1/2)*((15*B*b^4)/4 - (11*A*b^3*c)/4))/(b^2*c^5 + c^7*x^2 + 2
*b*c^6*x) - x^(1/2)*((3*b*((2*A)/c^3 - (6*B*b)/c^4))/c + (6*B*b^2)/c^5) + (
2*B*x^(5/2))/(5*c^3) - (7*b^(3/2)*atan((b^(3/2)*c^(1/2)*x^(1/2)*(5*A*c - 9*
B*b))/(9*B*b^3 - 5*A*b^2*c))*(5*A*c - 9*B*b))/(4*c^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(13/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.186 $\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=147

$$\frac{5\sqrt{b}\,(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4c^{9/2}}-\frac{5\sqrt{x}\,(7bB-3Ac)}{4c^4}+\frac{5x^{3/2}(7bB-3Ac)}{12bc^3}-\frac{x^{5/2}(7bB-3Ac)}{4bc^2(b+cx)}-\frac{x^{7/2}(bB-Ac)}{2bc(b+cx)^2}$$

```
[Out] 5/12*(-3*A*c+7*B*b)*x^(3/2)/b/c^3-1/2*(-A*c+B*b)*x^(7/2)/b/c/(c*x+b)^2-1/4*
(-3*A*c+7*B*b)*x^(5/2)/b/c^2/(c*x+b)+5/4*(-3*A*c+7*B*b)*arctan(c^(1/2)*x^(1
/2)/b^(1/2))*b^(1/2)/c^(9/2)-5/4*(-3*A*c+7*B*b)*x^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = $\{781, 78, 47, 50, 63, 205\}$

$$-\frac{x^{5/2}(7bB-3Ac)}{4bc^2(b+cx)}+\frac{5x^{3/2}(7bB-3Ac)}{12bc^3}-\frac{5\sqrt{x}\,(7bB-3Ac)}{4c^4}+\frac{5\sqrt{b}\,(7bB-3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4c^{9/2}}-\frac{x^{7/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-5*(7*b*B - 3*A*c)*Sqrt[x])/(4*c^4) + (5*(7*b*B - 3*A*c)*x^(3/2))/(12*b*c^
3) - ((b*B - A*c)*x^(7/2))/(2*b*c*(b + c*x)^2) - ((7*b*B - 3*A*c)*x^(5/2))/
(4*b*c^2*(b + c*x)) + (5*Sqrt[b]*(7*b*B - 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/S
qrt[b]])/(4*c^(9/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx = \int \frac{x^{5/2}(A+Bx)}{(b+cx)^3}\,dx$$

$$= -\frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{7bB}{2}+\frac{3Ac}{2}\right)\int \frac{x^{5/2}}{(b+cx)^2}\,dx}{2bc}$$

$$= -\frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + \frac{(5(7bB-3Ac))\int \frac{x^{3/2}}{b+cx}\,dx}{8bc^2}$$

$$= \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} - \frac{(5(7bB-3Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{8c^3}$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + (5b(7bB$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + (5b(7bB$$

$$= -\frac{5(7bB-3Ac)\sqrt{x}}{4c^4} + \frac{5(7bB-3Ac)x^{3/2}}{12bc^3} - \frac{(bB-Ac)x^{7/2}}{2bc(b+cx)^2} - \frac{(7bB-3Ac)x^{5/2}}{4bc^2(b+cx)} + 5\sqrt{b}\,(7b$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.41

$$\frac{x^{7/2}\left(\frac{7b^2(Ac-bB)}{(b+cx)^2}+(7bB-3Ac)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{cx}{b}\right)\right)}{14b^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(7/2)*((7*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (7*b*B - 3*A*c)*Hypergeometr
ic2F1[2, 7/2, 9/2, -((c*x)/b)]))/(14*b^3*c)
```

fricas [A] time = 0.84, size = 349, normalized size = 2.37

$$\left[-\frac{15\left(7\,Bb^3-3\,Ab^2c+\left(7\,Bbc^2-3\,Ac^3\right)x^2+2\left(7\,Bb^2c-3\,Abc^2\right)x\right)\sqrt{-\frac{b}{c}}\,\log\left(\frac{cx-2\,c\sqrt{x}\sqrt{-\frac{b}{c}}-b}{cx+b}\right)-2\left(8\,Bc^3x^3-1\right.}{24\left(c^6x^2+2\,bc^5x+b^2c^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/24*(15*(7*B*b^3 - 3*A*b^2*c + (7*B*b*c^2 - 3*A*c^3)*x^2 + 2*(7*B*b^2*c
- 3*A*b*c^2)*x)*sqrt(-b/c)*log((c*x - 2*c*sqrt(x)*sqrt(-b/c) - b)/(c*x + b)
) - 2*(8*B*c^3*x^3 - 105*B*b^3 + 45*A*b^2*c - 8*(7*B*b*c^2 - 3*A*c^3)*x^2 -
 25*(7*B*b^2*c - 3*A*b*c^2)*x)*sqrt(x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4), 1/
12*(15*(7*B*b^3 - 3*A*b^2*c + (7*B*b*c^2 - 3*A*c^3)*x^2 + 2*(7*B*b^2*c - 3*
A*b*c^2)*x)*sqrt(b/c)*arctan(c*sqrt(x)*sqrt(b/c)/b) + (8*B*c^3*x^3 - 105*B*
b^3 + 45*A*b^2*c - 8*(7*B*b*c^2 - 3*A*c^3)*x^2 - 25*(7*B*b^2*c - 3*A*b*c^2)
*x)*sqrt(x))/(c^6*x^2 + 2*b*c^5*x + b^2*c^4)]
```

giac [A] time = 0.18, size = 119, normalized size = 0.81

$$\frac{5\left(7\,Bb^2 - 3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^4} - \frac{13\,Bb^2cx^{\frac{3}{2}} - 9\,Abc^2x^{\frac{3}{2}} + 11\,Bb^3\sqrt{x} - 7\,Ab^2c\sqrt{x}}{4\,(cx+b)^2c^4} + \frac{2\Big(Bc^6x^{\frac{3}{2}} - 9\,Bbc^5\sqrt{x} + 3\,Ac^6}{3\,c^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 5/4*(7*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*c^4) - 1/4*(
13*B*b^2*c*x^(3/2) - 9*A*b*c^2*x^(3/2) + 11*B*b^3*sqrt(x) - 7*A*b^2*c*sqrt(
x))/((c*x + b)^2*c^4) + 2/3*(B*c^6*x^(3/2) - 9*B*b*c^5*sqrt(x) + 3*A*c^6*sq
rt(x))/c^9
```

maple [A] time = 0.07, size = 152, normalized size = 1.03

$$\frac{9Ab\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^2} - \frac{13B\,b^2x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^3} + \frac{7A\,b^2\sqrt{x}}{4\,(cx+b)^2\,c^3} - \frac{11B\,b^3\sqrt{x}}{4\,(cx+b)^2\,c^4} - \frac{15Ab\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^3} + \frac{35B\,b^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;c^4} + \frac{2B\,x^{\frac{3}{2}}}{3c^3} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2/3/c^3*B*x^(3/2)+2/c^3*A*x^(1/2)-6/c^4*b*B*x^(1/2)+9/4*b/c^2/(c*x+b)^2*x^(
3/2)*A-13/4*b^2/c^3/(c*x+b)^2*x^(3/2)*B+7/4*b^2/c^3/(c*x+b)^2*A*x^(1/2)-11/
4*b^3/c^4/(c*x+b)^2*B*x^(1/2)-15/4*b/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c
*x^(1/2))*A+35/4*b^2/c^4/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.19, size = 124, normalized size = 0.84

$$-\frac{\left(13\,Bb^2c - 9\,Abc^2\right)x^{\frac{3}{2}} + \left(11\,Bb^3 - 7\,Ab^2c\right)\sqrt{x}}{4\left(c^6x^2 + 2\,bc^5x + b^2c^4\right)} + \frac{5\left(7\,Bb^2 - 3\,Abc\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^4} + \frac{2\left(Bcx^{\frac{3}{2}} - 3\,(3\,Bb - Ac)\sqrt{x}\right)}{3\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((13*B*b^2*c - 9*A*b*c^2)*x^(3/2) + (11*B*b^3 - 7*A*b^2*c)*sqrt(x))/(c
^6*x^2 + 2*b*c^5*x + b^2*c^4) + 5/4*(7*B*b^2 - 3*A*b*c)*arctan(c*sqrt(x)/sq
rt(b*c))/(sqrt(b*c)*c^4) + 2/3*(B*c*x^(3/2) - 3*(3*B*b - A*c)*sqrt(x))/c^4
```

mupad [B] time = 0.09, size = 143, normalized size = 0.97

$$\frac{x^{3/2}\,\left(\frac{9\,A\,b\,c^2}{4}-\frac{13\,B\,b^2\,c}{4}\right)-\sqrt{x}\,\left(\frac{11\,B\,b^3}{4}-\frac{7\,A\,b^2\,c}{4}\right)}{b^2\,c^4+2\,b\,c^5\,x+c^6\,x^2}+\sqrt{x}\,\left(\frac{2\,A}{c^3}-\frac{6\,B\,b}{c^4}\right)+\frac{2\,B\,x^{3/2}}{3\,c^3}+\frac{5\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{c}\,\sqrt{x}\,\left(3\,A\,c-7\,B\,b\right)}{7\,B\,b^2-3\,A\,b\,c}\right)\,(3}{4\,c^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (x^(3/2)*((9*A*b*c^2)/4 - (13*B*b^2*c)/4) - x^(1/2)*((11*B*b^3)/4 - (7*A*b^
2*c)/4))/(b^2*c^4 + c^6*x^2 + 2*b*c^5*x) + x^(1/2)*((2*A)/c^3 - (6*B*b)/c^4
) + (2*B*x^(3/2))/(3*c^3) + (5*b^(1/2)*atan((b^(1/2)*c^(1/2)*x^(1/2)*(3*A*c
 - 7*B*b))/(7*B*b^2 - 3*A*b*c))*(3*A*c - 7*B*b))/(4*c^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.187 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=126

$$-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}+\frac{3\sqrt{x}\,(5bB-Ac)}{4bc^3}-\frac{x^{3/2}(5bB-Ac)}{4bc^2(b+cx)}-\frac{x^{5/2}(bB-Ac)}{2bc(b+cx)^2}$$

```
[Out] -1/2*(-A*c+B*b)*x^(5/2)/b/c/(c*x+b)^2-1/4*(-A*c+5*B*b)*x^(3/2)/b/c^2/(c*x+b
)-3/4*(-A*c+5*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/c^(7/2)/b^(1/2)+3/4*(-A*
c+5*B*b)*x^(1/2)/b/c^3
```

Rubi [A] time = 0.06, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.273$, Rules used = $\{781, 78, 47, 50, 63, 205\}$

$$-\frac{x^{3/2}(5bB-Ac)}{4bc^2(b+cx)}+\frac{3\sqrt{x}\,(5bB-Ac)}{4bc^3}-\frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}-\frac{x^{5/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*(5*b*B - A*c)*Sqrt[x])/(4*b*c^3) - ((b*B - A*c)*x^(5/2))/(2*b*c*(b + c*x
)^2) - ((5*b*B - A*c)*x^(3/2))/(4*b*c^2*(b + c*x)) - (3*(5*b*B - A*c)*ArcTa
n[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*Sqrt[b]*c^(7/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(b+cx)^3}\,dx \\
&= -\frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{\left(-\frac{5bB}{2}+\frac{Ac}{2}\right)\int \frac{x^{3/2}}{(b+cx)^2}\,dx}{2bc} \\
&= -\frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} + \frac{(3(5bB-Ac))\int \frac{\sqrt{x}}{b+cx}\,dx}{8bc^2} \\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{(3(5bB-Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8c^3} \\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{(3(5bB-Ac))\,\mathrm{Subst}\bigl(\int \frac{1}{b+cx^2}\,dx, x}{4c^3} \\
&= \frac{3(5bB-Ac)\sqrt{x}}{4bc^3} - \frac{(bB-Ac)x^{5/2}}{2bc(b+cx)^2} - \frac{(5bB-Ac)x^{3/2}}{4bc^2(b+cx)} - \frac{3(5bB-Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4\sqrt{b}\,c^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.48

$$\frac{x^{5/2}\left(\frac{5b^2(Ac-bB)}{(b+cx)^2}+(5bB-Ac)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{cx}{b}\right)\right)}{10b^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (x^(5/2)*((5*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (5*b*B - A*c)*Hypergeometric
2F1[2, 5/2, 7/2, -((c*x)/b)]))/(10*b^3*c)
```

fricas [A] time = 0.98, size = 319, normalized size = 2.53

$$\Bigg[\frac{3\left(5\,Bb^3-Ab^2c+\left(5\,Bbc^2-Ac^3\right)x^2+2\left(5\,Bb^2c-Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\bigl(8\,Bbc^3x^2+15\,Bb^3c}{8\left(bc^6x^2+2\,b^2c^5x+b^3c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(5*B*b^3 - A*b^2*c + (5*B*b*c^2 - A*c^3)*x^2 + 2*(5*B*b^2*c - A*b*c
^2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(8*B*
b*c^3*x^2 + 15*B*b^3*c - 3*A*b^2*c^2 + 5*(5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x)
)/(b*c^6*x^2 + 2*b^2*c^5*x + b^3*c^4), 1/4*(3*(5*B*b^3 - A*b^2*c + (5*B*b*c
^2 - A*c^3)*x^2 + 2*(5*B*b^2*c - A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*
sqrt(x))) + (8*B*b*c^3*x^2 + 15*B*b^3*c - 3*A*b^2*c^2 + 5*(5*B*b^2*c^2 - A*
b*c^3)*x)*sqrt(x))/(b*c^6*x^2 + 2*b^2*c^5*x + b^3*c^4)]
```

giac [A] time = 0.16, size = 87, normalized size = 0.69

$$\frac{2\,B\sqrt{x}}{c^3} - \frac{3\,(5\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^3} + \frac{9\,Bbcx^{\frac{3}{2}} - 5\,Ac^2x^{\frac{3}{2}} + 7\,Bb^2\sqrt{x} - 3\,Abc\sqrt{x}}{4\,(cx+b)^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^3 - 3/4*(5*B*b - A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*
c^3) + 1/4*(9*B*b*c*x^(3/2) - 5*A*c^2*x^(3/2) + 7*B*b^2*sqrt(x) - 3*A*b*c*s
qrt(x))/((c*x + b)^2*c^3)
```

maple [A] time = 0.07, size = 125, normalized size = 0.99

$$-\frac{5A\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,c} + \frac{9Bb\,x^{\frac{3}{2}}}{4\,(cx+b)^2\,c^2} - \frac{3Ab\sqrt{x}}{4\,(cx+b)^2\,c^2} + \frac{7B\,b^2\sqrt{x}}{4\,(cx+b)^2\,c^3} + \frac{3A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^2} - \frac{15Bb\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,c^3} + \frac{2B\sqrt{x}}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*B/c^3*x^(1/2)-5/4/c/(c*x+b)^2*x^(3/2)*A+9/4/c^2/(c*x+b)^2*x^(3/2)*b*B-3/4
/c^2/(c*x+b)^2*A*x^(1/2)*b+7/4/c^3/(c*x+b)^2*B*x^(1/2)*b^2+3/4/c^2/(b*c)^(1
/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-15/4/c^3/(b*c)^(1/2)*arctan(1/(b*c)^(
1/2)*c*x^(1/2))*b*B
```

maxima [A] time = 1.46, size = 99, normalized size = 0.79

$$\frac{\left(9\,Bbc - 5\,Ac^2\right)x^{\frac{3}{2}} + \left(7\,Bb^2 - 3\,Abc\right)\sqrt{x}}{4\left(c^5x^2 + 2\,bc^4x + b^2c^3\right)} + \frac{2\,B\sqrt{x}}{c^3} - \frac{3\,(5\,Bb - Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((9*B*b*c - 5*A*c^2)*x^(3/2) + (7*B*b^2 - 3*A*b*c)*sqrt(x))/(c^5*x^2 +
2*b*c^4*x + b^2*c^3) + 2*B*sqrt(x)/c^3 - 3/4*(5*B*b - A*c)*arctan(c*sqrt(x)
/sqrt(b*c))/(sqrt(b*c)*c^3)
```

mupad [B] time = 0.11, size = 96, normalized size = 0.76

$$\frac{\sqrt{x}\,\left(\frac{7\,B\,b^2}{4} - \frac{3\,A\,b\,c}{4}\right) - x^{3/2}\,\left(\frac{5\,A\,c^2}{4} - \frac{9\,B\,b\,c}{4}\right)}{b^2\,c^3 + 2\,b\,c^4\,x + c^5\,x^2} + \frac{2\,B\,\sqrt{x}}{c^3} + \frac{3\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(A\,c - 5\,B\,b)}{4\,\sqrt{b}\,c^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (x^(1/2)*((7*B*b^2)/4 - (3*A*b*c)/4) - x^(3/2)*((5*A*c^2)/4 - (9*B*b*c)/4))
/(b^2*c^3 + c^5*x^2 + 2*b*c^4*x) + (2*B*x^(1/2))/c^3 + (3*atan((c^(1/2)*x^(
1/2))/b^(1/2))*(A*c - 5*B*b))/(4*b^(1/2)*c^(7/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.188 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=100

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}-\frac{\sqrt{x}\,(Ac+3bB)}{4bc^2(b+cx)}-\frac{x^{3/2}(bB-Ac)}{2bc(b+cx)^2}$$

```
[Out] -1/2*(-A*c+B*b)*x^(3/2)/b/c/(c*x+b)^2+1/4*(A*c+3*B*b)*arctan(c^(1/2)*x^(1/2
)/b^(1/2))/b^(3/2)/c^(5/2)-1/4*(A*c+3*B*b)*x^(1/2)/b/c^2/(c*x+b)
```

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 47, 63, 205}

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}-\frac{\sqrt{x}\,(Ac+3bB)}{4bc^2(b+cx)}-\frac{x^{3/2}(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -((b*B - A*c)*x^(3/2))/(2*b*c*(b + c*x)^2) - ((3*b*B + A*c)*Sqrt[x])/(4*b*c
^2*(b + c*x)) + ((3*b*B + A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(3/2
)*c^(5/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(b+cx)^3}\,dx \\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}+\frac{(3bB+Ac)\int \frac{\sqrt{x}}{(b+cx)^2}\,dx}{4bc} \\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8bc^2} \\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\,\mathrm{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{4bc^2} \\
&= -\frac{(bB-Ac)x^{3/2}}{2bc(b+cx)^2}-\frac{(3bB+Ac)\sqrt{x}}{4bc^2(b+cx)}+\frac{(3bB+Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 85, normalized size = 0.85

$$\frac{(Ac+3bB)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{3/2}c^{5/2}}+\frac{\sqrt{x}\left(-bc(A+5Bx)+Ac^2x-3b^2B\right)}{4bc^2(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*(-3*b^2*B + A*c^2*x - b*c*(A + 5*B*x)))/(4*b*c^2*(b + c*x)^2) + ((
3*b*B + A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(3/2)*c^(5/2))
```

fricas [A] time = 0.78, size = 291, normalized size = 2.91

$$\Bigg[-\frac{\left(3\,Bb^3+Ab^2c+\left(3\,Bbc^2+Ac^3\right)x^2+2\left(3\,Bb^2c+Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(3\,Bb^3c+Ab^2c^2+\right.}{8\left(b^2c^5x^2+2\,b^3c^4x+b^4c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((3*B*b^3 + A*b^2*c + (3*B*b*c^2 + A*c^3)*x^2 + 2*(3*B*b^2*c + A*b*c^
2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(3*B*b
^3*c + A*b^2*c^2 + (5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x))/(b^2*c^5*x^2 + 2*b^3
*c^4*x + b^4*c^3), -1/4*((3*B*b^3 + A*b^2*c + (3*B*b*c^2 + A*c^3)*x^2 + 2*(
3*B*b^2*c + A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (3*B*b^3*
c + A*b^2*c^2 + (5*B*b^2*c^2 - A*b*c^3)*x)*sqrt(x))/(b^2*c^5*x^2 + 2*b^3*c^
4*x + b^4*c^3)]
```

giac [A] time = 0.16, size = 82, normalized size = 0.82

$$\frac{(3\,Bb+Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,bc^2}-\frac{5\,Bbcx^{\frac{3}{2}}-Ac^2x^{\frac{3}{2}}+3\,Bb^2\sqrt{x}+Abc\sqrt{x}}{4\,(cx+b)^2bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(3*B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b*c^2) - 1/4*(5*B*
b*c*x^(3/2) - A*c^2*x^(3/2) + 3*B*b^2*sqrt(x) + A*b*c*sqrt(x))/((c*x + b)^2
*b*c^2)
```

maple [A] time = 0.06, size = 94, normalized size = 0.94

$$\frac{A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\; bc}+\frac{3B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\; c^{2}}+\frac{\frac{(Ac-5bB)x^{\frac{3}{2}}}{4bc}-\frac{(Ac+3bB)\sqrt{x}}{4c^{2}}}{(cx+b)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*(1/8*(A*c-5*B*b)/b/c*x^(3/2)-1/8*(A*c+3*B*b)/c^2*x^(1/2))/(c*x+b)^2+1/4/c
/b/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+3/4/c^2/(b*c)^(1/2)*arctan
(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.29, size = 94, normalized size = 0.94

$$-\frac{\left(5\,Bbc-Ac^{2}\right)x^{\frac{3}{2}}+\left(3\,Bb^{2}+Abc\right)\sqrt{x}}{4\left(bc^{4}x^{2}+2\,b^{2}c^{3}x+b^{3}c^{2}\right)}+\frac{\left(3\,Bb+Ac\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,bc^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((5*B*b*c - A*c^2)*x^(3/2) + (3*B*b^2 + A*b*c)*sqrt(x))/(b*c^4*x^2 + 2
*b^2*c^3*x + b^3*c^2) + 1/4*(3*B*b + A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt
(b*c)*b*c^2)
```

mupad [B] time = 1.10, size = 84, normalized size = 0.84

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,\left(A\,c+3\,B\,b\right)}{4\,b^{3/2}\,c^{5/2}}-\frac{\frac{\sqrt{x}\,\left(A\,c+3\,B\,b\right)}{4\,c^{2}}-\frac{x^{3/2}\,\left(A\,c-5\,B\,b\right)}{4\,b\,c}}{b^{2}+2\,b\,c\,x+c^{2}\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] (atan((c^(1/2)*x^(1/2))/b^(1/2))*(A*c + 3*B*b))/(4*b^(3/2)*c^(5/2)) - ((x^(
1/2)*(A*c + 3*B*b))/(4*c^2) - (x^(3/2)*(A*c - 5*B*b))/(4*b*c))/(b^2 + c^2*x
^2 + 2*b*c*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.189 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=100

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}+\frac{\sqrt{x}\,(3Ac+bB)}{4b^2c(b+cx)}-\frac{\sqrt{x}\,(bB-Ac)}{2bc(b+cx)^2}$$

```
[Out] 1/4*(3*A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(5/2)/c^(3/2)-1/2*(-A*c+B
*b)*x^(1/2)/b/c/(c*x+b)^2+1/4*(3*A*c+B*b)*x^(1/2)/b^2/c/(c*x+b)
```

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{(3Ac+bB)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}+\frac{\sqrt{x}\,(3Ac+bB)}{4b^2c(b+cx)}-\frac{\sqrt{x}\,(bB-Ac)}{2bc(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -((b*B - A*c)*Sqrt[x])/(2*b*c*(b + c*x)^2) + ((b*B + 3*A*c)*Sqrt[x])/(4*b^2
*c*(b + c*x)) + ((b*B + 3*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(5/2
)*c^(3/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{\sqrt{x}\,(b+cx)^3}\,dx\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)^2}\,dx}{4bc}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8b^2c}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx,x,\sqrt{x}\right)}{4b^2c}\\
&= -\frac{(bB-Ac)\sqrt{x}}{2bc(b+cx)^2}+\frac{(bB+3Ac)\sqrt{x}}{4b^2c(b+cx)}+\frac{(bB+3Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{5/2}c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 91, normalized size = 0.91

$$\frac{\sqrt{x}\left(\frac{b^2(Ac-bB)}{(b+cx)^2}-\frac{1}{2}(-3Ac-bB)\left(\frac{b}{b+cx}+\frac{\sqrt{b}\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}\,\sqrt{x}}\right)\right)}{2b^3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (Sqrt[x]*((b^2*(-(b*B) + A*c))/(b + c*x)^2 - ((-(b*B) - 3*A*c)*(b/(b + c*x)
 + (Sqrt[b]*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[c]*Sqrt[x])))/2))/(2*b
^3*c)
```

fricas [A] time = 0.94, size = 291, normalized size = 2.91

$$\left[-\frac{\left(Bb^3+3\,Ab^2c+\left(Bbc^2+3\,Ac^3\right)x^2+2\left(Bb^2c+3\,Abc^2\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b-2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)+2\left(Bb^3c-5\,Ab^2c^2-(Bb}{8\left(b^3c^4x^2+2\,b^4c^3x+b^5c^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*((B*b^3 + 3*A*b^2*c + (B*b*c^2 + 3*A*c^3)*x^2 + 2*(B*b^2*c + 3*A*b*c^
2)*x)*sqrt(-b*c)*log((c*x - b - 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) + 2*(B*b^3
*c - 5*A*b^2*c^2 - (B*b^2*c^2 + 3*A*b*c^3)*x)*sqrt(x))/(b^3*c^4*x^2 + 2*b^4
*c^3*x + b^5*c^2), -1/4*((B*b^3 + 3*A*b^2*c + (B*b*c^2 + 3*A*c^3)*x^2 + 2*(
B*b^2*c + 3*A*b*c^2)*x)*sqrt(b*c)*arctan(sqrt(b*c)/(c*sqrt(x))) + (B*b^3*c
- 5*A*b^2*c^2 - (B*b^2*c^2 + 3*A*b*c^3)*x)*sqrt(x))/(b^3*c^4*x^2 + 2*b^4*c^
3*x + b^5*c^2)]
```

giac [A] time = 0.16, size = 82, normalized size = 0.82

$$\frac{(Bb+3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^2c}+\frac{Bbcx^{\frac{3}{2}}+3\,Ac^2x^{\frac{3}{2}}-Bb^2\sqrt{x}+5\,Abc\sqrt{x}}{4\,(cx+b)^2b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(B*b + 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^2*c) + 1/4*(B*b*
c*x^(3/2) + 3*A*c^2*x^(3/2) - B*b^2*sqrt(x) + 5*A*b*c*sqrt(x))/((c*x + b)^2
*b^2*c)
```

maple [A] time = 0.07, size = 95, normalized size = 0.95

$$\frac{3A\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{2}}+\frac{B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,bc}+\frac{\frac{(3Ac+bB)x^{\frac{3}{2}}}{4b^{2}}+\frac{(5Ac-bB)\sqrt{x}}{4bc}}{(cx+b)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*(1/8*(3*A*c+B*b)/b^2*x^(3/2)+1/8*(5*A*c-B*b)/b/c*x^(1/2))/(c*x+b)^2+3/4/b
^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+1/4/b/c/(b*c)^(1/2)*arctan
(1/(b*c)^(1/2)*c*x^(1/2))*B
```

maxima [A] time = 1.23, size = 94, normalized size = 0.94

$$\frac{\left(Bbc+3\,Ac^{2}\right)x^{\frac{3}{2}}-\left(Bb^{2}-5\,Abc\right)\sqrt{x}}{4\left(b^{2}c^{3}x^{2}+2\,b^{3}c^{2}x+b^{4}c\right)}+\frac{(Bb+3\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{2}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/4*((B*b*c + 3*A*c^2)*x^(3/2) - (B*b^2 - 5*A*b*c)*sqrt(x))/(b^2*c^3*x^2 +
2*b^3*c^2*x + b^4*c) + 1/4*(B*b + 3*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(
b*c)*b^2*c)
```

mupad [B] time = 1.09, size = 84, normalized size = 0.84

$$\frac{\frac{x^{3/2}\,(3\,A\,c+B\,b)}{4\,b^{2}}+\frac{\sqrt{x}\,(5\,A\,c-B\,b)}{4\,b\,c}}{b^{2}+2\,b\,c\,x+c^{2}\,x^{2}}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)(3\,A\,c+B\,b)}{4\,b^{5/2}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((x^(3/2)*(3*A*c + B*b))/(4*b^2) + (x^(1/2)*(5*A*c - B*b))/(4*b*c))/(b^2 +
c^2*x^2 + 2*b*c*x) + (atan((c^(1/2)*x^(1/2))/b^(1/2))*(3*A*c + B*b))/(4*b^(
5/2)*c^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.190 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=123

$$\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}+\frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}$$

```
[Out] 3/4*(-5*A*c+B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(7/2)/c^(1/2)+3/4*(-5*A*
c+B*b)/b^3/c/x^(1/2)+1/2*(A*c-B*b)/b/c/(c*x+b)^2/x^(1/2)+1/4*(5*A*c-B*b)/b^
2/c/(c*x+b)/x^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{781, 78, 51, 63, 205\}$

$$\frac{3(bB-5Ac)}{4b^3c\sqrt{x}}-\frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)}+\frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}-\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (3*(b*B - 5*A*c))/(4*b^3*c*Sqrt[x]) - (b*B - A*c)/(2*b*c*Sqrt[x]*(b + c*x)^
2) - (b*B - 5*A*c)/(4*b^2*c*Sqrt[x]*(b + c*x)) + (3*(b*B - 5*A*c)*ArcTan[(S
qrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(7/2)*Sqrt[c])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{3/2}(b+cx)^3}\,dx \\
&= -\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2} - \frac{\left(\frac{bB}{2}-\frac{5Ac}{2}\right)\int \frac{1}{x^{3/2}(b+cx)^2}\,dx}{2bc} \\
&= -\frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2} - \frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)} - \frac{(3(bB-5Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{8b^2c} \\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}} - \frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2} - \frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)} + \frac{(3(bB-5Ac))\int \frac{1}{\sqrt{x}\,(b+cx)}\,dx}{8b^3} \\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}} - \frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2} - \frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)} + \frac{(3(bB-5Ac))\,\text{Subst}\left(\int \frac{1}{b+cx^2}\,dx, x\right.}{4b^3} \\
&= \frac{3(bB-5Ac)}{4b^3c\sqrt{x}} - \frac{bB-Ac}{2bc\sqrt{x}\,(b+cx)^2} - \frac{bB-5Ac}{4b^2c\sqrt{x}\,(b+cx)} + \frac{3(bB-5Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{7/2}\sqrt{c}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.48

$$\frac{\frac{b^2(Ac-bB)}{(b+cx)^2} + (bB-5Ac)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{cx}{b}\right)}{2b^3c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((b^2*(-(b*B) + A*c))/(b + c*x)^2 + (b*B - 5*A*c)*Hypergeometric2F1[-1/2, 2
, 1/2, -((c*x)/b)])/(2*b^3*c*Sqrt[x])
```

fricas [A] time = 1.00, size = 331, normalized size = 2.69

$$\Bigg[\frac{3\left(\left(Bbc^2-5\,Ac^3\right)x^3+2\left(Bb^2c-5\,Abc^2\right)x^2+\left(Bb^3-5\,Ab^2c\right)x\right)\sqrt{-bc}\,\log\left(\frac{cx-b+2\,\sqrt{-bc}\,\sqrt{x}}{cx+b}\right)-2\left(8\,Ab^3c-3\left(Bb\right.\right.}{8\left(b^4c^3x^3+2\,b^5c^2x^2+b^6cx\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*((B*b*c^2 - 5*A*c^3)*x^3 + 2*(B*b^2*c - 5*A*b*c^2)*x^2 + (B*b^3 - 5
*A*b^2*c)*x)*sqrt(-b*c)*log((c*x - b + 2*sqrt(-b*c)*sqrt(x))/(c*x + b)) - 2
*(8*A*b^3*c - 3*(B*b^2*c^2 - 5*A*b*c^3)*x^2 - 5*(B*b^3*c - 5*A*b^2*c^2)*x)*
sqrt(x))/(b^4*c^3*x^3 + 2*b^5*c^2*x^2 + b^6*c*x), -1/4*(3*((B*b*c^2 - 5*A*c
^3)*x^3 + 2*(B*b^2*c - 5*A*b*c^2)*x^2 + (B*b^3 - 5*A*b^2*c)*x)*sqrt(b*c)*ar
ctan(sqrt(b*c)/(c*sqrt(x))) + (8*A*b^3*c - 3*(B*b^2*c^2 - 5*A*b*c^3)*x^2 -
5*(B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(x))/(b^4*c^3*x^3 + 2*b^5*c^2*x^2 + b^6*c*
x)]
```

giac [**A**] time = 0.20, size = 86, normalized size = 0.70

$$\frac{3\,(Bb-5\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{3}}-\frac{2\,A}{b^{3}\sqrt{x}}+\frac{3\,Bbcx^{\frac{3}{2}}-7\,Ac^{2}x^{\frac{3}{2}}+5\,Bb^{2}\sqrt{x}-9\,Abc\sqrt{x}}{4\,(cx+b)^{2}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3/4*(B*b - 5*A*c)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^3) - 2*A/(b^3*sq
rt(x)) + 1/4*(3*B*b*c*x^(3/2) - 7*A*c^2*x^(3/2) + 5*B*b^2*sqrt(x) - 9*A*b*c
*sqrt(x))/((c*x + b)^2*b^3)
```

maple [**A**] time = 0.07, size = 125, normalized size = 1.02

$$-\frac{7Ac^{2}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{3}}+\frac{3Bc\,x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{2}}-\frac{9Ac\sqrt{x}}{4\,(cx+b)^{2}\,b^{2}}+\frac{5B\sqrt{x}}{4\,(cx+b)^{2}\,b}-\frac{15Ac\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{3}}+\frac{3B\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{2}}-\frac{2A}{b^{3}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] -7/4/b^3/(c*x+b)^2*x^(3/2)*A*c^2+3/4/b^2/(c*x+b)^2*x^(3/2)*B*c-9/4/b^2/(c*x
+b)^2*A*x^(1/2)*c+5/4/b/(c*x+b)^2*B*x^(1/2)-15/4/b^3/(b*c)^(1/2)*arctan(1/(
b*c)^(1/2)*c*x^(1/2))*A*c+3/4/b^2/(b*c)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2
))*B-2*A/b^3/x^(1/2)
```

maxima [**A**] time = 1.29, size = 98, normalized size = 0.80

$$-\frac{8\,Ab^{2}-3\left(Bbc-5\,Ac^{2}\right)x^{2}-5\left(Bb^{2}-5\,Abc\right)x}{4\left(b^{3}c^{2}x^{\frac{5}{2}}+2\,b^{4}cx^{\frac{3}{2}}+b^{5}\sqrt{x}\right)}+\frac{3\,(Bb-5\,Ac)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(8*A*b^2 - 3*(B*b*c - 5*A*c^2)*x^2 - 5*(B*b^2 - 5*A*b*c)*x)/(b^3*c^2*x
^(5/2) + 2*b^4*c*x^(3/2) + b^5*sqrt(x)) + 3/4*(B*b - 5*A*c)*arctan(c*sqrt(x
)/sqrt(b*c))/(sqrt(b*c)*b^3)
```

mupad [**B**] time = 1.12, size = 116, normalized size = 0.94

$$-\frac{\frac{2\,A}{b}+\frac{5\,x\,(5\,A\,c-B\,b)}{4\,b^{2}}+\frac{3\,c\,x^{2}\,(5\,A\,c-B\,b)}{4\,b^{3}}}{b^{2}\,\sqrt{x}+c^{2}\,x^{5/2}+2\,b\,c\,x^{3/2}}-\frac{3\,\mathrm{atan}\left(\frac{3\,\sqrt{c}\,\sqrt{x}\,(5\,A\,c-B\,b)}{\sqrt{b}\,(15\,A\,c-3\,B\,b)}\right)\,(5\,A\,c-B\,b)}{4\,b^{7/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((2*A)/b + (5*x*(5*A*c - B*b))/(4*b^2) + (3*c*x^2*(5*A*c - B*b))/(4*b^3))
/(b^2*x^(1/2) + c^2*x^(5/2) + 2*b*c*x^(3/2)) - (3*atan((3*c^(1/2)*x^(1/2)*(
5*A*c - B*b))/(b^(1/2)*(15*A*c - 3*B*b)))*(5*A*c - B*b))/(4*b^(7/2)*c^(1/2)
)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.191 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=147

$$-\frac{5\sqrt{c}\,(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{9/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}+\frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}$$

```
[Out] 5/12*(-7*A*c+3*B*b)/b^3/c/x^(3/2)+1/2*(A*c-B*b)/b/c/x^(3/2)/(c*x+b)^2+1/4*(
7*A*c-3*B*b)/b^2/c/x^(3/2)/(c*x+b)-5/4*(-7*A*c+3*B*b)*arctan(c^(1/2)*x^(1/2
)/b^(1/2))*c^(1/2)/b^(9/2)-5/4*(-7*A*c+3*B*b)/b^4/x^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{781, 78, 51, 63, 205\}$

$$-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}+\frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}-\frac{5\sqrt{c}\,(3bB-7Ac)\tan^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{4b^{9/2}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (5*(3*b*B - 7*A*c))/(12*b^3*c*x^(3/2)) - (5*(3*b*B - 7*A*c))/(4*b^4*Sqrt[x]
) - (b*B - A*c)/(2*b*c*x^(3/2)*(b + c*x)^2) - (3*b*B - 7*A*c)/(4*b^2*c*x^(3
/2)*(b + c*x)) - (5*Sqrt[c]*(3*b*B - 7*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(4*b^(9/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{5/2}(b+cx)^3}\,dx\\
&= -\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{\left(\frac{3bB}{2}-\frac{7Ac}{2}\right)\int \frac{1}{x^{5/2}(b+cx)^2}\,dx}{2bc}\\
&= -\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{(5(3bB-7Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{8b^2c}\\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}+\frac{(5(3bB-7Ac))\int \frac{1}{x^{3/2}(b+cx)}\,dx}{8b^3}\\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{(5c(3bB-7Ac))\int}{8b^4}\\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{(5c(3bB-7Ac))\,\mathrm{Su}}{}\\
&= \frac{5(3bB-7Ac)}{12b^3cx^{3/2}}-\frac{5(3bB-7Ac)}{4b^4\sqrt{x}}-\frac{bB-Ac}{2bcx^{3/2}(b+cx)^2}-\frac{3bB-7Ac}{4b^2cx^{3/2}(b+cx)}-\frac{5\sqrt{c}\,(3bB-7Ac)\,\mathrm{ta}}{4b^{9/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.41

$$\frac{\frac{3b^2(Ac-bB)}{(b+cx)^2}+(3bB-7Ac)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{cx}{b}\right)}{6b^3cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^3,x]
```

```
[Out] ((3*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (3*b*B - 7*A*c)*Hypergeometric2F1[-3/
2, 2, -1/2, -((c*x)/b)])/(6*b^3*c*x^(3/2))
```

fricas [A] time = 1.19, size = 380, normalized size = 2.59

$$\left[-\frac{15\left(\left(3\,Bbc^2-7\,Ac^3\right)x^4+2\left(3\,Bb^2c-7\,Abc^2\right)x^3+\left(3\,Bb^3-7\,Ab^2c\right)x^2\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(8\,Ab^3+\right.}{24\left(b^4c^2x^4+2\,b^5cx^3+b^6x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/24*(15*((3*B*b*c^2 - 7*A*c^3)*x^4 + 2*(3*B*b^2*c - 7*A*b*c^2)*x^3 + (3*
B*b^3 - 7*A*b^2*c)*x^2)*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt(-c/b) - b)/(
c*x + b)) + 2*(8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A
*b*c^2)*x^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^
3 + b^6*x^2), 1/12*(15*((3*B*b*c^2 - 7*A*c^3)*x^4 + 2*(3*B*b^2*c - 7*A*b*c^
2)*x^3 + (3*B*b^3 - 7*A*b^2*c)*x^2)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x)
)) - (8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A*b*c^2)*x
^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)]
```

giac [**A**] time = 0.16, size = 108, normalized size = 0.73

$$-\frac{5\left(3\,Bbc-7\,Ac^{2}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^{4}}-\frac{2\,(3\,Bbx-9\,Acx+Ab)}{3\,b^{4}x^{\frac{3}{2}}}-\frac{7\,Bbc^{2}x^{\frac{3}{2}}-11\,Ac^{3}x^{\frac{3}{2}}+9\,Bb^{2}c\sqrt{x}-13\,Abc^{2}\sqrt{x}}{4\,(cx+b)^{2}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -5/4*(3*B*b*c - 7*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^4) - 2/3*
(3*B*b*x - 9*A*c*x + A*b)/(b^4*x^(3/2)) - 1/4*(7*B*b*c^2*x^(3/2) - 11*A*c^3
*x^(3/2) + 9*B*b^2*c*sqrt(x) - 13*A*b*c^2*sqrt(x))/((c*x + b)^2*b^4)
```

maple [**A**] time = 0.09, size = 152, normalized size = 1.03

$$\frac{11A\,c^{3}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{4}}-\frac{7B\,c^{2}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{3}}+\frac{13A\,c^{2}\sqrt{x}}{4\,(cx+b)^{2}\,b^{3}}-\frac{9Bc\sqrt{x}}{4\,(cx+b)^{2}\,b^{2}}+\frac{35A\,c^{2}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^{4}}-\frac{15Bc\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^{3}}+\frac{6Ac}{b^{4}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 11/4/b^4*c^3/(c*x+b)^2*x^(3/2)*A-7/4/b^3*c^2/(c*x+b)^2*x^(3/2)*B+13/4/b^3*c
^2/(c*x+b)^2*A*x^(1/2)-9/4/b^2*c/(c*x+b)^2*B*x^(1/2)+35/4/b^4*c^2/(b*c)^(1/
2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-15/4/b^3*c/(b*c)^(1/2)*arctan(1/(b*c)^
(1/2)*c*x^(1/2))*B-2/3/b^3*A/x^(3/2)+6/b^4/x^(1/2)*A*c-2/b^3/x^(1/2)*B
```

maxima [**A**] time = 1.29, size = 128, normalized size = 0.87

$$-\frac{8\,Ab^{3}+15\left(3\,Bbc^{2}-7\,Ac^{3}\right)x^{3}+25\left(3\,Bb^{2}c-7\,Abc^{2}\right)x^{2}+8\left(3\,Bb^{3}-7\,Ab^{2}c\right)x}{12\left(b^{4}c^{2}x^{\frac{7}{2}}+2\,b^{5}cx^{\frac{5}{2}}+b^{6}x^{\frac{3}{2}}\right)}-\frac{5\left(3\,Bbc-7\,Ac^{2}\right)\arctan\left(\frac{c}{\sqrt{}}\right.}{4\,\sqrt{bc}\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(8*A*b^3 + 15*(3*B*b*c^2 - 7*A*c^3)*x^3 + 25*(3*B*b^2*c - 7*A*b*c^2)*
x^2 + 8*(3*B*b^3 - 7*A*b^2*c)*x)/(b^4*c^2*x^(7/2) + 2*b^5*c*x^(5/2) + b^6*x
^(3/2)) - 5/4*(3*B*b*c - 7*A*c^2)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^
4)
```

mupad [**B**] time = 1.11, size = 114, normalized size = 0.78

$$\frac{\frac{2\,x\,(7\,A\,c-3\,B\,b)}{3\,b^{2}}-\frac{2\,A}{3\,b}+\frac{5\,c^{2}\,x^{3}\,(7\,A\,c-3\,B\,b)}{4\,b^{4}}+\frac{25\,c\,x^{2}\,(7\,A\,c-3\,B\,b)}{12\,b^{3}}}{b^{2}\,x^{3/2}+c^{2}\,x^{7/2}+2\,b\,c\,x^{5/2}}+\frac{5\,\sqrt{c}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(7\,A\,c-3\,B\,b)}{4\,b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^3,x)
```

```
[Out] ((2*x*(7*A*c - 3*B*b))/(3*b^2) - (2*A)/(3*b) + (5*c^2*x^3*(7*A*c - 3*B*b))/
(4*b^4) + (25*c*x^2*(7*A*c - 3*B*b))/(12*b^3))/(b^2*x^(3/2) + c^2*x^(7/2) +
 2*b*c*x^(5/2)) + (5*c^(1/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(7*A*c - 3*B*b
))/(4*b^(9/2))
```

sympy [A] time = 165.44, size = 1880, normalized size = 12.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(b, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**3, Eq(b, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/b**3, Eq(c, 0)), (-16*I*A*b**(7/2)*sqrt(1/c)/(24*I*b**(1
3/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/
2)*c**2*x**(7/2)*sqrt(1/c)) + 112*I*A*b**(5/2)*c*x*sqrt(1/c)/(24*I*b**(13/2
)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*
c**2*x**(7/2)*sqrt(1/c)) + 350*I*A*b**(3/2)*c**2*x**2*sqrt(1/c)/(24*I*b**(1
3/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/
2)*c**2*x**(7/2)*sqrt(1/c)) + 210*I*A*sqrt(b)*c**3*x**3*sqrt(1/c)/(24*I*b**
(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(
9/2)*c**2*x**(7/2)*sqrt(1/c)) + 105*A*b**2*c*x**(3/2)*log(-I*sqrt(b)*sqrt(1
/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/
2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 105*A*b**2*c*x**(3/
2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) +
48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)
) + 210*A*b*c**2*x**(5/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/
2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)
*c**2*x**(7/2)*sqrt(1/c)) - 210*A*b*c**2*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) +
 sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sq
rt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 105*A*c**3*x**(7/2)*log(
-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b
**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 10
5*A*c**3*x**(7/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/
2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**
(7/2)*sqrt(1/c)) - 48*I*B*b**(7/2)*x*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*sqr
t(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*
sqrt(1/c)) - 150*I*B*b**(5/2)*c*x**2*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*sqr
t(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*
sqrt(1/c)) - 90*I*B*b**(3/2)*c**2*x**3*sqrt(1/c)/(24*I*b**(13/2)*x**(3/2)*s
qrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2
)*sqrt(1/c)) - 45*B*b**3*x**(3/2)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I
*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*
b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 45*B*b**3*x**(3/2)*log(I*sqrt(b)*sqrt(1
/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/
2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) - 90*B*b**2*c*x**(5/2
)*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) +
48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)
) + 90*B*b**2*c*x**(5/2)*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)
*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c
**2*x**(7/2)*sqrt(1/c)) - 45*B*b*c**2*x**(7/2)*log(-I*sqrt(b)*sqrt(1/c) + s
qrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**(11/2)*c*x**(5/2)*sqrt
(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)) + 45*B*b*c**2*x**(7/2)*log(I
*sqrt(b)*sqrt(1/c) + sqrt(x))/(24*I*b**(13/2)*x**(3/2)*sqrt(1/c) + 48*I*b**
(11/2)*c*x**(5/2)*sqrt(1/c) + 24*I*b**(9/2)*c**2*x**(7/2)*sqrt(1/c)), True)
)
```

3.192 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=169

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{11/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{bB-}{2bcx^{5/2}(b}$$

```
[Out] 7/20*(-9*A*c+5*B*b)/b^3/c/x^(5/2)-7/12*(-9*A*c+5*B*b)/b^4/x^(3/2)+1/2*(A*c-
B*b)/b/c/x^(5/2)/(c*x+b)^2+1/4*(9*A*c-5*B*b)/b^2/c/x^(5/2)/(c*x+b)+7/4*c^(3
/2)*(-9*A*c+5*B*b)*arctan(c^(1/2)*x^(1/2)/b^(1/2))/b^(11/2)+7/4*c*(-9*A*c+5
*B*b)/b^5/x^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {781, 78, 51, 63, 205}

$$\frac{7c^{3/2}(5bB-9Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{11/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}+\frac{7(5bB-9Ac)}{20b^3cx^{5/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-}{2bcx^{5/2}(b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^3),x]
```

```
[Out] (7*(5*b*B - 9*A*c))/(20*b^3*c*x^(5/2)) - (7*(5*b*B - 9*A*c))/(12*b^4*x^(3/2
)) + (7*c*(5*b*B - 9*A*c))/(4*b^5*Sqrt[x]) - (b*B - A*c)/(2*b*c*x^(5/2)*(b
+ c*x)^2) - (5*b*B - 9*A*c)/(4*b^2*c*x^(5/2)*(b + c*x)) + (7*c^(3/2)*(5*b*B
 - 9*A*c)*ArcTan[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^(11/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^3}\,dx &= \int \frac{A+Bx}{x^{7/2}(b+cx)^3}\,dx \\
&= -\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{\left(\frac{5bB}{2}-\frac{9Ac}{2}\right)\int \frac{1}{x^{7/2}(b+cx)^2}\,dx}{2bc} \\
&= -\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{(7(5bB-9Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{8b^2c} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}+\frac{(7(5bB-9Ac))\int \frac{1}{x^{5/2}(b+cx)}\,dx}{8b^3} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}-\frac{(7c(5bB-9Ac))}{8b} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)} \\
&= \frac{7(5bB-9Ac)}{20b^3cx^{5/2}}-\frac{7(5bB-9Ac)}{12b^4x^{3/2}}+\frac{7c(5bB-9Ac)}{4b^5\sqrt{x}}-\frac{bB-Ac}{2bcx^{5/2}(b+cx)^2}-\frac{5bB-9Ac}{4b^2cx^{5/2}(b+cx)}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.36

$$
\frac{\frac{5b^2(Ac-bB)}{(b+cx)^2}+(5bB-9Ac)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{cx}{b}\right)}{10b^3cx^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^3),x]
```

```
[Out] ((5*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (5*b*B - 9*A*c)*Hypergeometric2F1[-5/
2, 2, -3/2, -((c*x)/b)])/(10*b^3*c*x^(5/2))
```

fricas [A] time = 0.91, size = 437, normalized size = 2.59

$$
\left[-\frac{105\left(\left(5\,Bbc^3-9\,Ac^4\right)x^5+2\left(5\,Bb^2c^2-9\,Abc^3\right)x^4+\left(5\,Bb^3c-9\,Ab^2c^2\right)x^3\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx-2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\left(24\,A\right.}{120\left(b^5c^2x^5+2\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/120*(105*((5*B*b*c^3 - 9*A*c^4)*x^5 + 2*(5*B*b^2*c^2 - 9*A*b*c^3)*x^4 +
 (5*B*b^3*c - 9*A*b^2*c^2)*x^3)*sqrt(-c/b)*log((c*x - 2*b*sqrt(x)*sqrt(-c/b
) - b)/(c*x + b)) + 2*(24*A*b^4 - 105*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*
b^2*c^2 - 9*A*b*c^3)*x^3 - 56*(5*B*b^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 -
9*A*b^3*c)*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3), -1/60*(105*((
5*B*b*c^3 - 9*A*c^4)*x^5 + 2*(5*B*b^2*c^2 - 9*A*b*c^3)*x^4 + (5*B*b^3*c - 9
*A*b^2*c^2)*x^3)*sqrt(c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) + (24*A*b^4 - 10
5*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*b^2*c^2 - 9*A*b*c^3)*x^3 - 56*(5*B*b
^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 - 9*A*b^3*c)*x)*sqrt(x))/(b^5*c^2*x^5
+ 2*b^6*c*x^4 + b^7*x^3)]
```

giac [A] time = 0.17, size = 135, normalized size = 0.80

$$\frac{7\left(5\,Bbc^2 - 9\,Ac^3\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\,\sqrt{bc}\,b^5} + \frac{11\,Bbc^3x^{\frac{3}{2}} - 15\,Ac^4x^{\frac{3}{2}} + 13\,Bb^2c^2\sqrt{x} - 17\,Abc^3\sqrt{x}}{4\,(cx+b)^2b^5} + \frac{2\left(45\,Bbcx^2 - 90\,Ac^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 7/4*(5*B*b*c^2 - 9*A*c^3)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5) + 1/4
*(11*B*b*c^3*x^(3/2) - 15*A*c^4*x^(3/2) + 13*B*b^2*c^2*sqrt(x) - 17*A*b*c^3
*sqrt(x))/((c*x + b)^2*b^5) + 2/15*(45*B*b*c*x^2 - 90*A*c^2*x^2 - 5*B*b^2*x
 + 15*A*b*c*x - 3*A*b^2)/(b^5*x^(5/2))
```

maple [A] time = 0.08, size = 178, normalized size = 1.05

$$-\frac{15A\,c^4x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^5} + \frac{11B\,c^3x^{\frac{3}{2}}}{4\,(cx+b)^2\,b^4} - \frac{17A\,c^3\sqrt{x}}{4\,(cx+b)^2\,b^4} + \frac{13B\,c^2\sqrt{x}}{4\,(cx+b)^2\,b^3} - \frac{63A\,c^3\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,\,b^5} + \frac{35B\,c^2\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,\,b^4} - \frac{12}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x)
```

```
[Out] -15/4/b^5*c^4/(c*x+b)^2*x^(3/2)*A+11/4/b^4*c^3/(c*x+b)^2*x^(3/2)*B-17/4/b^4
*c^3/(c*x+b)^2*A*x^(1/2)+13/4/b^3*c^2/(c*x+b)^2*B*x^(1/2)-63/4/b^5*c^3/(b*c
)^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A+35/4/b^4*c^2/(b*c)^(1/2)*arctan(1
/(b*c)^(1/2)*c*x^(1/2))*B-2/5/b^3*A/x^(5/2)+2/b^4/x^(3/2)*A*c-2/3/b^3/x^(3/
2)*B-12*c^2/b^5/x^(1/2)*A+6*c/b^4/x^(1/2)*B
```

maxima [A] time = 1.56, size = 154, normalized size = 0.91

$$-\frac{24\,Ab^4 - 105\left(5\,Bbc^3 - 9\,Ac^4\right)x^4 - 175\left(5\,Bb^2c^2 - 9\,Abc^3\right)x^3 - 56\left(5\,Bb^3c - 9\,Ab^2c^2\right)x^2 + 8\left(5\,Bb^4 - 9\,Ab^3c\right)x}{60\left(b^5c^2x^{\frac{9}{2}} + 2\,b^6cx^{\frac{7}{2}} + b^7x^{\frac{5}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] -1/60*(24*A*b^4 - 105*(5*B*b*c^3 - 9*A*c^4)*x^4 - 175*(5*B*b^2*c^2 - 9*A*b*
c^3)*x^3 - 56*(5*B*b^3*c - 9*A*b^2*c^2)*x^2 + 8*(5*B*b^4 - 9*A*b^3*c)*x)/(b
^5*c^2*x^(9/2) + 2*b^6*c*x^(7/2) + b^7*x^(5/2)) + 7/4*(5*B*b*c^2 - 9*A*c^3)
*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^5)
```

mupad [B] time = 1.14, size = 135, normalized size = 0.80

$$-\frac{\frac{2\,A}{5\,b} - \frac{2\,x\,(9\,A\,c-5\,B\,b)}{15\,b^2} + \frac{35\,c^2\,x^3\,(9\,A\,c-5\,B\,b)}{12\,b^4} + \frac{7\,c^3\,x^4\,(9\,A\,c-5\,B\,b)}{4\,b^5} + \frac{14\,c\,x^2\,(9\,A\,c-5\,B\,b)}{15\,b^3}}{b^2\,x^{5/2} + c^2\,x^{9/2} + 2\,b\,c\,x^{7/2}} - \frac{7\,c^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)\,(9\,A\,c - 5\,B\,b)}{4\,b^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^3),x)
```

```
[Out] - ((2*A)/(5*b) - (2*x*(9*A*c - 5*B*b))/(15*b^2) + (35*c^2*x^3*(9*A*c - 5*B*
b))/(12*b^4) + (7*c^3*x^4*(9*A*c - 5*B*b))/(4*b^5) + (14*c*x^2*(9*A*c - 5*B
*b))/(15*b^3))/(b^2*x^(5/2) + c^2*x^(9/2) + 2*b*c*x^(7/2)) - (7*c^(3/2)*ata
n((c^(1/2)*x^(1/2))/b^(1/2))*(9*A*c - 5*B*b))/(4*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.193 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=193

$$-\frac{9c^{5/2}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{13/2}}-\frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}}+\frac{3c(7bB-11Ac)}{4b^5x^{3/2}}-\frac{9(7bB-11Ac)}{20b^4x^{5/2}}+\frac{9(7bB-11Ac)}{28b^3cx^{7/2}}-$$

```
[Out] 9/28*(-11*A*c+7*B*b)/b^3/c/x^(7/2)-9/20*(-11*A*c+7*B*b)/b^4/x^(5/2)+3/4*c*(
-11*A*c+7*B*b)/b^5/x^(3/2)+1/2*(A*c-B*b)/b/c/x^(7/2)/(c*x+b)^2+1/4*(11*A*c-
7*B*b)/b^2/c/x^(7/2)/(c*x+b)-9/4*c^(5/2)*(-11*A*c+7*B*b)*arctan(c^(1/2)*x^(
1/2)/b^(1/2))/b^(13/2)-9/4*c^2*(-11*A*c+7*B*b)/b^6/x^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = $\{781, 78, 51, 63, 205\}$

$$-\frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}}-\frac{9c^{5/2}(7bB-11Ac)\tan^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{4b^{13/2}}+\frac{3c(7bB-11Ac)}{4b^5x^{3/2}}-\frac{9(7bB-11Ac)}{20b^4x^{5/2}}-\frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (9*(7*b*B - 11*A*c))/(28*b^3*c*x^(7/2)) - (9*(7*b*B - 11*A*c))/(20*b^4*x^(5
/2)) + (3*c*(7*b*B - 11*A*c))/(4*b^5*x^(3/2)) - (9*c^2*(7*b*B - 11*A*c))/(4
*b^6*Sqrt[x]) - (b*B - A*c)/(2*b*c*x^(7/2)*(b + c*x)^2) - (7*b*B - 11*A*c)/
(4*b^2*c*x^(7/2)*(b + c*x)) - (9*c^(5/2)*(7*b*B - 11*A*c)*ArcTan[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(4*b^(13/2))
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 781

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_
.), x_Symbol] :> Dist[1/e^p, Int[(e*x)^(m + p)*(f + g*x)*(b + c*x)^p, x], x
] /; FreeQ[{b, c, e, f, g, m}, x] && IntegerQ[p]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^3}\,dx = \int \frac{A+Bx}{x^{9/2}(b+cx)^3}\,dx$$

$$= -\frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{\left(\frac{7bB}{2}-\frac{11Ac}{2}\right)\int \frac{1}{x^{9/2}(b+cx)^2}\,dx}{2bc}$$

$$= -\frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} - \frac{(9(7bB-11Ac))\int \frac{1}{x^{9/2}(b+cx)}\,dx}{8b^2c}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} + \frac{(9(7bB-11Ac))\int \frac{1}{x^{7/2}(b+cx)}\,dx}{8b^3}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+cx)} - \frac{(9c(7bB-11A}{8}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx)^2} - \frac{7bB-11Ac}{4b^2cx^{7/2}(b+c}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

$$= \frac{9(7bB-11Ac)}{28b^3cx^{7/2}} - \frac{9(7bB-11Ac)}{20b^4x^{5/2}} + \frac{3c(7bB-11Ac)}{4b^5x^{3/2}} - \frac{9c^2(7bB-11Ac)}{4b^6\sqrt{x}} - \frac{bB-Ac}{2bcx^{7/2}(b+cx}$$

Mathematica [C] time = 0.02, size = 61, normalized size = 0.32

$$\frac{\frac{7b^2(Ac-bB)}{(b+cx)^2} + (7bB-11Ac)\,{}_2F_1\left(-\frac{7}{2},2;-\frac{5}{2};-\frac{cx}{b}\right)}{14b^3cx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] ((7*b^2*(-(b*B) + A*c))/(b + c*x)^2 + (7*b*B - 11*A*c)*Hypergeometric2F1[-7
/2, 2, -5/2, -((c*x)/b)])/(14*b^3*c*x^(7/2))
```

fricas [A] time = 0.97, size = 490, normalized size = 2.54

$$\left[-\frac{315\left(\left(7\,Bbc^4-11\,Ac^5\right)x^6+2\left(7\,Bb^2c^3-11\,Abc^4\right)x^5+\left(7\,Bb^3c^2-11\,Ab^2c^3\right)x^4\right)\sqrt{-\frac{c}{b}}\,\log\left(\frac{cx+2\,b\sqrt{x}\,\sqrt{-\frac{c}{b}}-b}{cx+b}\right)+2\,(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/280*(315*((7*B*b*c^4 - 11*A*c^5)*x^6 + 2*(7*B*b^2*c^3 - 11*A*b*c^4)*x^5
 + (7*B*b^3*c^2 - 11*A*b^2*c^3)*x^4)*sqrt(-c/b)*log((c*x + 2*b*sqrt(x)*sqrt
(-c/b) - b)/(c*x + b)) + 2*(40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^5)*x^5 + 525
*(7*B*b^2*c^3 - 11*A*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c^3)*x^3 - 24
*(7*B*b^4*c - 11*A*b^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)*sqrt(x))/(b^6
*c^2*x^6 + 2*b^7*c*x^5 + b^8*x^4), 1/140*(315*((7*B*b*c^4 - 11*A*c^5)*x^6 +
 2*(7*B*b^2*c^3 - 11*A*b*c^4)*x^5 + (7*B*b^3*c^2 - 11*A*b^2*c^3)*x^4)*sqrt(
c/b)*arctan(b*sqrt(c/b)/(c*sqrt(x))) - (40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^
5)*x^5 + 525*(7*B*b^2*c^3 - 11*A*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c
^3)*x^3 - 24*(7*B*b^4*c - 11*A*b^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)*s
qrt(x))/(b^6*c^2*x^6 + 2*b^7*c*x^5 + b^8*x^4)]
```

giac [A] time = 0.17, size = 159, normalized size = 0.82

$$-\frac{9\left(7\,Bbc^{3}-11\,Ac^{4}\right)\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\,b^{6}}-\frac{15\,Bbc^{4}x^{\frac{3}{2}}-19\,Ac^{5}x^{\frac{3}{2}}+17\,Bb^{2}c^{3}\sqrt{x}-21\,Abc^{4}\sqrt{x}}{4\,(cx+b)^{2}b^{6}}-\frac{2\left(210\,Bbc^{2}x^{3}-350\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -9/4*(7*B*b*c^3 - 11*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/(sqrt(b*c)*b^6) - 1
/4*(15*B*b*c^4*x^(3/2) - 19*A*c^5*x^(3/2) + 17*B*b^2*c^3*sqrt(x) - 21*A*b*c
^4*sqrt(x))/((c*x + b)^2*b^6) - 2/35*(210*B*b*c^2*x^3 - 350*A*c^3*x^3 - 35*
B*b^2*c*x^2 + 70*A*b*c^2*x^2 + 7*B*b^3*x - 21*A*b^2*c*x + 5*A*b^3)/(b^6*x^(
7/2))
```

maple [A] time = 0.07, size = 202, normalized size = 1.05

$$\frac{19A\,c^{5}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{6}}-\frac{15B\,c^{4}x^{\frac{3}{2}}}{4\,(cx+b)^{2}\,b^{5}}+\frac{21A\,c^{4}\sqrt{x}}{4\,(cx+b)^{2}\,b^{5}}-\frac{17B\,c^{3}\sqrt{x}}{4\,(cx+b)^{2}\,b^{4}}+\frac{99A\,c^{4}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^{6}}-\frac{63B\,c^{3}\arctan\left(\frac{c\sqrt{x}}{\sqrt{bc}}\right)}{4\sqrt{bc}\;b^{5}}+\frac{20A}{b^{6}\sqrt{\ }}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 19/4/b^6*c^5/(c*x+b)^2*x^(3/2)*A-15/4/b^5*c^4/(c*x+b)^2*x^(3/2)*B+21/4/b^5*
c^4/(c*x+b)^2*A*x^(1/2)-17/4/b^4*c^3/(c*x+b)^2*B*x^(1/2)+99/4/b^6*c^4/(b*c)
^(1/2)*arctan(1/(b*c)^(1/2)*c*x^(1/2))*A-63/4/b^5*c^3/(b*c)^(1/2)*arctan(1/
(b*c)^(1/2)*c*x^(1/2))*B-2/7/b^3*A/x^(7/2)+6/5/b^4/x^(5/2)*A*c-2/5/b^3/x^(5
/2)*B-4*c^2/b^5/x^(3/2)*A+2*c/b^4/x^(3/2)*B+20*c^3/b^6/x^(1/2)*A-12*c^2/b^5
/x^(1/2)*B
```

maxima [A] time = 1.37, size = 178, normalized size = 0.92

$$-\frac{40\,Ab^{5}+315\left(7\,Bbc^{4}-11\,Ac^{5}\right)x^{5}+525\left(7\,Bb^{2}c^{3}-11\,Abc^{4}\right)x^{4}+168\left(7\,Bb^{3}c^{2}-11\,Ab^{2}c^{3}\right)x^{3}-24\left(7\,Bb^{4}c-1\right.}{140\left(b^{6}c^{2}x^{\frac{11}{2}}+2\,b^{7}cx^{\frac{9}{2}}+b^{8}x^{\frac{7}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/140*(40*A*b^5 + 315*(7*B*b*c^4 - 11*A*c^5)*x^5 + 525*(7*B*b^2*c^3 - 11*A
*b*c^4)*x^4 + 168*(7*B*b^3*c^2 - 11*A*b^2*c^3)*x^3 - 24*(7*B*b^4*c - 11*A*b
^3*c^2)*x^2 + 8*(7*B*b^5 - 11*A*b^4*c)*x)/(b^6*c^2*x^(11/2) + 2*b^7*c*x^(9/
2) + b^8*x^(7/2)) - 9/4*(7*B*b*c^3 - 11*A*c^4)*arctan(c*sqrt(x)/sqrt(b*c))/
(sqrt(b*c)*b^6)
```

mupad [B] time = 1.18, size = 154, normalized size = 0.80

$$\frac{\frac{2\,x\,(11\,A\,c-7\,B\,b)}{35\,b^2}-\frac{2\,A}{7\,b}+\frac{6\,c^2\,x^3\,(11\,A\,c-7\,B\,b)}{5\,b^4}+\frac{15\,c^3\,x^4\,(11\,A\,c-7\,B\,b)}{4\,b^5}+\frac{9\,c^4\,x^5\,(11\,A\,c-7\,B\,b)}{4\,b^6}-\frac{6\,c\,x^2\,(11\,A\,c-7\,B\,b)}{35\,b^3}}{b^2\,x^{7/2}+c^2\,x^{11/2}+2\,b\,c\,x^{9/2}}+\frac{9\,c^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c}}{\sqrt{b}}\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^3),x)
```

```
[Out] ((2*x*(11*A*c - 7*B*b))/(35*b^2) - (2*A)/(7*b) + (6*c^2*x^3*(11*A*c - 7*B*b
))/(5*b^4) + (15*c^3*x^4*(11*A*c - 7*B*b))/(4*b^5) + (9*c^4*x^5*(11*A*c - 7
*B*b))/(4*b^6) - (6*c*x^2*(11*A*c - 7*B*b))/(35*b^3))/(b^2*x^(7/2) + c^2*x^
(11/2) + 2*b*c*x^(9/2)) + (9*c^(5/2)*atan((c^(1/2)*x^(1/2))/b^(1/2))*(11*A*
c - 7*B*b))/(4*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.194 $\int x^{7/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{45045c^6x^{3/2}}+\frac{128b^3\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{15015c^5\sqrt{x}}-\frac{32b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}(10bB-13Ac}{3003c^4}$$

```
[Out] -256/45045*b^4*(-13*A*c+10*B*b)*(c*x^2+b*x)^(3/2)/c^6/x^(3/2)+16/1287*b*(-1
3*A*c+10*B*b)*x^(3/2)*(c*x^2+b*x)^(3/2)/c^3-2/143*(-13*A*c+10*B*b)*x^(5/2)*
(c*x^2+b*x)^(3/2)/c^2+2/13*B*x^(7/2)*(c*x^2+b*x)^(3/2)/c+128/15015*b^3*(-13
*A*c+10*B*b)*(c*x^2+b*x)^(3/2)/c^5/x^(1/2)-32/3003*b^2*(-13*A*c+10*B*b)*(c*
x^2+b*x)^(3/2)*x^(1/2)/c^4
```

Rubi [A] time = 0.19, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{45045c^6x^{3/2}}+\frac{128b^3\left(bx+cx^2\right)^{3/2}(10bB-13Ac)}{15015c^5\sqrt{x}}-\frac{32b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}(10bB-13Ac}{3003c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (-256*b^4*(10*b*B - 13*A*c)*(b*x + c*x^2)^(3/2))/(45045*c^6*x^(3/2)) + (128
*b^3*(10*b*B - 13*A*c)*(b*x + c*x^2)^(3/2))/(15015*c^5*Sqrt[x]) - (32*b^2*(
10*b*B - 13*A*c)*Sqrt[x]*(b*x + c*x^2)^(3/2))/(3003*c^4) + (16*b*(10*b*B -
13*A*c)*x^(3/2)*(b*x + c*x^2)^(3/2))/(1287*c^3) - (2*(10*b*B - 13*A*c)*x^(5
/2)*(b*x + c*x^2)^(3/2))/(143*c^2) + (2*B*x^(7/2)*(b*x + c*x^2)^(3/2))/(13*
c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{7/2}(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{2Bx^{7/2}\left(bx+cx^2\right)^{3/2}}{13c} + \frac{\left(2\left(\frac{7}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{7/2}\sqrt{bx+cx^2}\,dx}{13c}$$

$$= -\frac{2(10bB-13Ac)x^{5/2}\left(bx+cx^2\right)^{3/2}}{143c^2} + \frac{2Bx^{7/2}\left(bx+cx^2\right)^{3/2}}{13c} + (8b(10bB-13Ac))$$

$$= \frac{16b(10bB-13Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{1287c^3} - \frac{2(10bB-13Ac)x^{5/2}\left(bx+cx^2\right)^{3/2}}{143c^2} + 2Bx^{7/2}$$

$$= -\frac{32b^2(10bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{3003c^4} + \frac{16b(10bB-13Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{1287c^3} -$$

$$= \frac{128b^3(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{15015c^5\sqrt{x}} - \frac{32b^2(10bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{3003c^4} + 16b($$

$$= -\frac{256b^4(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{45045c^6x^{3/2}} + \frac{128b^3(10bB-13Ac)\left(bx+cx^2\right)^{3/2}}{15015c^5\sqrt{x}} - 32b^2$$

Mathematica [**A**] time = 0.09, size = 113, normalized size = 0.55

$$\frac{2(x(b+cx))^{3/2}\left(128b^4c(13A+15Bx)-96b^3c^2x(26A+25Bx)+80b^2c^3x^2(39A+35Bx)-70bc^4x^3(52A+45Bx)\right.}{45045c^6x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-1280*b^5*B + 315*c^5*x^4*(13*A + 11*B*x) + 128*b^4
*c*(13*A + 15*B*x) - 96*b^3*c^2*x*(26*A + 25*B*x) + 80*b^2*c^3*x^2*(39*A +
35*B*x) - 70*b*c^4*x^3*(52*A + 45*B*x)))/(45045*c^6*x^(3/2))
```

fricas [**A**] time = 0.76, size = 150, normalized size = 0.72

$$\frac{2\left(3465\,Bc^6x^6-1280\,Bb^6+1664\,Ab^5c+315\left(Bbc^5+13\,Ac^6\right)x^5-35\left(10\,Bb^2c^4-13\,Abc^5\right)x^4+40\left(10\,Bb^3c^3-13\right.\right.}{45045\,c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^6*x^6 - 1280*B*b^6 + 1664*A*b^5*c + 315*(B*b*c^5 + 13*A*c
^6)*x^5 - 35*(10*B*b^2*c^4 - 13*A*b*c^5)*x^4 + 40*(10*B*b^3*c^3 - 13*A*b^2*
c^4)*x^3 - 48*(10*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 + 64*(10*B*b^5*c - 13*A*b^4
*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [**A**] time = 0.22, size = 158, normalized size = 0.76

$$\frac{2}{9009}B\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b^4}{c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*
b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^
(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*A*(128*b^(11/2)/c^5 - (
315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 -
2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.05, size = 131, normalized size = 0.63

$$\frac{2 (cx+b) \big(3465B x^5c^5 + 4095A c^5x^4 - 3150Bb c^4x^4 - 3640Ab c^4x^3 + 2800B b^2c^3x^3 + 3120A b^2c^3x^2 - 2400B b}{45045c^6\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/45045*(c*x+b)*(3465*B*c^5*x^5+4095*A*c^5*x^4-3150*B*b*c^4*x^4-3640*A*b*c^
4*x^3+2800*B*b^2*c^3*x^3+3120*A*b^2*c^3*x^2-2400*B*b^3*c^2*x^2-2496*A*b^3*c
^2*x+1920*B*b^4*c*x+1664*A*b^4*c-1280*B*b^5)*(c*x^2+b*x)^(1/2)/c^6/x^(1/2)
```

maxima [A] time = 0.65, size = 142, normalized size = 0.69

$$\frac{2 \left(315 c^5x^5 + 35 bc^4x^4 - 40 b^2c^3x^3 + 48 b^3c^2x^2 - 64 b^4cx + 128 b^5\right)\sqrt{cx+b}\, A}{3465 c^5} + 2 \big(693 c^6x^6 + 63 bc^5x^5 - 70 b^2c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*b
^4*c*x + 128*b^5)*sqrt(c*x + b)*A/c^5 + 2/9009*(693*c^6*x^6 + 63*b*c^5*x^5
- 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)
*sqrt(c*x + b)*B/c^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(7/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{7}{2}} \sqrt{x \left(b + cx\right)} \left(A + Bx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(7/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.195 $\int x^{5/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{3465c^5x^{3/2}}-\frac{16b^2\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{1155c^4\sqrt{x}}+\frac{4b\sqrt{x}\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{231c^3}-2x^{3/2}\left(bx+\right.$$

```
[Out] 32/3465*b^3*(-11*A*c+8*B*b)*(c*x^2+b*x)^(3/2)/c^5/x^(3/2)-2/99*(-11*A*c+8*B
*b)*x^(3/2)*(c*x^2+b*x)^(3/2)/c^2+2/11*B*x^(5/2)*(c*x^2+b*x)^(3/2)/c-16/115
5*b^2*(-11*A*c+8*B*b)*(c*x^2+b*x)^(3/2)/c^4/x^(1/2)+4/231*b*(-11*A*c+8*B*b)
*(c*x^2+b*x)^(3/2)*x^(1/2)/c^3
```

Rubi [A] time = 0.16, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$\frac{32b^3\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{3465c^5x^{3/2}}-\frac{16b^2\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{1155c^4\sqrt{x}}+\frac{4b\sqrt{x}\left(bx+cx^2\right)^{3/2}(8bB-11Ac)}{231c^3}-2x^{3/2}\left(bx+\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (32*b^3*(8*b*B - 11*A*c)*(b*x + c*x^2)^(3/2))/(3465*c^5*x^(3/2)) - (16*b^2*
(8*b*B - 11*A*c)*(b*x + c*x^2)^(3/2))/(1155*c^4*Sqrt[x]) + (4*b*(8*b*B - 11
*A*c)*Sqrt[x]*(b*x + c*x^2)^(3/2))/(231*c^3) - (2*(8*b*B - 11*A*c)*x^(3/2)*
(b*x + c*x^2)^(3/2))/(99*c^2) + (2*B*x^(5/2)*(b*x + c*x^2)^(3/2))/(11*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{5/2}(A+Bx)\sqrt{bx+cx^2}\,dx = \frac{2Bx^{5/2}\left(bx+cx^2\right)^{3/2}}{11c} + \frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{5/2}\sqrt{bx+cx^2}}{11c}$$

$$= -\frac{2(8bB-11Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{99c^2} + \frac{2Bx^{5/2}\left(bx+cx^2\right)^{3/2}}{11c} + \frac{(2b(8bB-11Ac))}{3}$$

$$= \frac{4b(8bB-11Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{231c^3} - \frac{2(8bB-11Ac)x^{3/2}\left(bx+cx^2\right)^{3/2}}{99c^2} + \frac{2Bx^{5/2}}{}$$

$$= -\frac{16b^2(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{1155c^4\sqrt{x}} + \frac{4b(8bB-11Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{231c^3} - \frac{2(8b}{}$$

$$= \frac{32b^3(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{3465c^5x^{3/2}} - \frac{16b^2(8bB-11Ac)\left(bx+cx^2\right)^{3/2}}{1155c^4\sqrt{x}} + \frac{4b(8bB}{}$$

Mathematica [A] time = 0.07, size = 94, normalized size = 0.55

$$\frac{2(x(b+cx))^{3/2}\left(-16b^3c(11A+12Bx)+24b^2c^2x(11A+10Bx)-10bc^3x^2(33A+28Bx)+35c^4x^3(11A+9Bx)+\right.}{3465c^5x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(128*b^4*B + 35*c^4*x^3*(11*A + 9*B*x) + 24*b^2*c^2*
x*(11*A + 10*B*x) - 16*b^3*c*(11*A + 12*B*x) - 10*b*c^3*x^2*(33*A + 28*B*x)
))/(3465*c^5*x^(3/2))
```

fricas [A] time = 1.01, size = 126, normalized size = 0.74

$$\frac{2\left(315\,Bc^5x^5+128\,Bb^5-176\,Ab^4c+35\left(Bbc^4+11\,Ac^5\right)x^4-5\left(8\,Bb^2c^3-11\,Abc^4\right)x^3+6\left(8\,Bb^3c^2-11\,Ab^2c^3\right)\right.}{3465\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^5*x^5 + 128*B*b^5 - 176*A*b^4*c + 35*(B*b*c^4 + 11*A*c^5)*x
^4 - 5*(8*B*b^2*c^3 - 11*A*b*c^4)*x^3 + 6*(8*B*b^3*c^2 - 11*A*b^2*c^3)*x^2
- 8*(8*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [A] time = 0.19, size = 134, normalized size = 0.79

$$-\frac{2}{3465}\,B\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}b}{c^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*
b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3
/2)*b^4)/c^5) + 2/315*A*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x +
b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\,(cx+b)\left(-315B\,x^4c^4-385A\,c^4x^3+280Bb\,c^3x^3+330Ab\,c^3x^2-240B\,b^2c^2x^2-264A\,b^2c^2x+192B\,b^3cx+\right.}{3465c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3465*(c*x+b)*(-315*B*c^4*x^4-385*A*c^4*x^3+280*B*b*c^3*x^3+330*A*b*c^3*x
^2-240*B*b^2*c^2*x^2-264*A*b^2*c^2*x+192*B*b^3*c*x+176*A*b^3*c-128*B*b^4)*(
c*x^2+b*x)^(1/2)/c^5/x^(1/2)
```

maxima [A] time = 0.73, size = 120, normalized size = 0.71

$$\frac{2\left(35\,c^{4}x^{4}+5\,bc^{3}x^{3}-6\,b^{2}c^{2}x^{2}+8\,b^{3}cx-16\,b^{4}\right)\sqrt{cx+b}\,A}{315\,c^{4}}+\frac{2\left(315\,c^{5}x^{5}+35\,bc^{4}x^{4}-40\,b^{2}c^{3}x^{3}+48\,b^{3}c^{2}x^{2}-64\,b\right.}{3465\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*sqrt(
c*x + b)*A/c^4 + 2/3465*(315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b
^3*c^2*x^2 - 64*b^4*c*x + 128*b^5)*sqrt(c*x + b)*B/c^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{5/2}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{5}{2}}\sqrt{x\left(b+cx\right)}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(5/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.196 $\int x^{3/2}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{315c^4x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{105c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{2Bx^{3/2}(bx+}{9c}$$

```
[Out] -16/315*b^2*(-3*A*c+2*B*b)*(c*x^2+b*x)^(3/2)/c^4/x^(3/2)+2/9*B*x^(3/2)*(c*x
^2+b*x)^(3/2)/c+8/105*b*(-3*A*c+2*B*b)*(c*x^2+b*x)^(3/2)/c^3/x^(1/2)-2/21*(
-3*A*c+2*B*b)*(c*x^2+b*x)^(3/2)*x^(1/2)/c^2
```

Rubi [A] time = 0.09, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{315c^4x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{105c^3\sqrt{x}}-\frac{2\sqrt{x}\left(bx+cx^2\right)^{3/2}(2bB-3Ac)}{21c^2}+\frac{2Bx^{3/2}(bx+}{9c}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (-16*b^2*(2*b*B - 3*A*c)*(b*x + c*x^2)^(3/2))/(315*c^4*x^(3/2)) + (8*b*(2*b
*B - 3*A*c)*(b*x + c*x^2)^(3/2))/(105*c^3*Sqrt[x]) - (2*(2*b*B - 3*A*c)*Sqr
t[x]*(b*x + c*x^2)^(3/2))/(21*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(3/2))/(9*c
)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c} + \frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int x^{3/2}\sqrt{bx+cx^2}\,dx}{9c} \\ &= -\frac{2(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{21c^2} + \frac{2Bx^{3/2}\left(bx+cx^2\right)^{3/2}}{9c} + \frac{(4b(2bB-3Ac))\int\sqrt{x}}{21c^2} \\ &= \frac{8b(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{105c^3\sqrt{x}} - \frac{2(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{3/2}}{21c^2} + \frac{2Bx^{3/2}(bx+cx}{9c} \\ &= -\frac{16b^2(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{315c^4x^{3/2}} + \frac{8b(2bB-3Ac)\left(bx+cx^2\right)^{3/2}}{105c^3\sqrt{x}} - \frac{2(2bB-3Ac)}{2}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 72, normalized size = 0.54

$$\frac{2(x(b+cx))^{3/2}\left(24b^2c(A+Bx)-6bc^2x(6A+5Bx)+5c^3x^2(9A+7Bx)-16b^3B\right)}{315c^4x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-16*b^3*B + 24*b^2*c*(A + B*x) - 6*b*c^2*x*(6*A + 5
*B*x) + 5*c^3*x^2*(9*A + 7*B*x)))/(315*c^4*x^(3/2))
```

fricas [**A**] time = 0.83, size = 102, normalized size = 0.77

$$\frac{2\left(35\,Bc^4x^4-16\,Bb^4+24\,Ab^3c+5\left(Bbc^3+9\,Ac^4\right)x^3-3\left(2\,Bb^2c^2-3\,Abc^3\right)x^2+4\left(2\,Bb^3c-3\,Ab^2c^2\right)x\right)\sqrt{cx^2+b}}{315\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 - 16*B*b^4 + 24*A*b^3*c + 5*(B*b*c^3 + 9*A*c^4)*x^3 - 3
*(2*B*b^2*c^2 - 3*A*b*c^3)*x^2 + 4*(2*B*b^3*c - 3*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)/(c^4*sqrt(x))
```

giac [**A**] time = 0.19, size = 110, normalized size = 0.83

$$\frac{2}{315}\,B\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,A\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*B*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 189
*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*(8*b^(7/2)/c
^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c
^3)
```

maple [**A**] time = 0.08, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(35B\,c^3x^3+45A\,c^3x^2-30Bb\,c^2x^2-36Ab\,c^2x+24B\,b^2cx+24A\,b^2c-16b^3B\right)\sqrt{c\,x^2+bx}}{315c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/315*(c*x+b)*(35*B*c^3*x^3+45*A*c^3*x^2-30*B*b*c^2*x^2-36*A*b*c^2*x+24*B*b
^2*c*x+24*A*b^2*c-16*B*b^3)*(c*x^2+b*x)^(1/2)/c^4/x^(1/2)
```

maxima [A] time = 0.58, size = 98, normalized size = 0.74

$$\frac{2\left(15\,c^3x^3+3\,bc^2x^2-4\,b^2cx+8\,b^3\right)\sqrt{cx+b}\,A}{105\,c^3}+\frac{2\left(35\,c^4x^4+5\,bc^3x^3-6\,b^2c^2x^2+8\,b^3cx-16\,b^4\right)\sqrt{cx+b}\,B}{315\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*sqrt(c*x + b)*A/c^3 +
2/315*(35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*sqrt(
c*x + b)*B/c^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,\sqrt{c\,x^2+b\,x}\,\,(A+B\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}}\sqrt{x\,(b+cx)}\,\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(3/2)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.197 $\int \sqrt{x}(A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{105c^3x^{3/2}}-\frac{2\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}$$

```
[Out] 4/105*b*(-7*A*c+4*B*b)*(c*x^2+b*x)^(3/2)/c^3/x^(3/2)-2/35*(-7*A*c+4*B*b)*(c
*x^2+b*x)^(3/2)/c^2/x^(1/2)+2/7*B*(c*x^2+b*x)^(3/2)*x^(1/2)/c
```

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{35c^2\sqrt{x}}+\frac{4b\left(bx+cx^2\right)^{3/2}(4bB-7Ac)}{105c^3x^{3/2}}+\frac{2B\sqrt{x}\left(bx+cx^2\right)^{3/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (4*b*(4*b*B - 7*A*c)*(b*x + c*x^2)^(3/2))/(105*c^3*x^(3/2)) - (2*(4*b*B - 7
*A*c)*(b*x + c*x^2)^(3/2))/(35*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(3
/2))/(7*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\sqrt{bx+cx^2}\,dx &= \frac{2B\sqrt{x}\,\left(bx+cx^2\right)^{3/2}}{7c}+\frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\,\sqrt{bx+cx^2}\,d}{7c}\\ &= -\frac{2(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\,\left(bx+cx^2\right)^{3/2}}{7c}+\frac{(2b(4bB-7Ac))\int \frac{\sqrt{bx}}{\sqrt{}}}{35c^2}\\ &= \frac{4b(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{105c^3x^{3/2}}-\frac{2(4bB-7Ac)\left(bx+cx^2\right)^{3/2}}{35c^2\sqrt{x}}+\frac{2B\sqrt{x}\,\left(bx+cx^2\right.}{7c}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 56, normalized size = 0.58

$$\frac{2(x(b+cx))^{3/2}\left(-2bc(7A+6Bx)+3c^2x(7A+5Bx)+8b^2B\right)}{105c^3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(8*b^2*B + 3*c^2*x*(7*A + 5*B*x) - 2*b*c*(7*A + 6*B*
x)))/(105*c^3*x^(3/2))
```

fricas [**A**] time = 0.93, size = 78, normalized size = 0.81

$$\frac{2\left(15\,Bc^3x^3+8\,Bb^3-14\,Ab^2c+3\left(Bbc^2+7\,Ac^3\right)x^2-\left(4\,Bb^2c-7\,Abc^2\right)x\right)\sqrt{cx^2+bx}}{105\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^3*x^3 + 8*B*b^3 - 14*A*b^2*c + 3*(B*b*c^2 + 7*A*c^3)*x^2 - (4
*B*b^2*c - 7*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^3*sqrt(x))
```

giac [**A**] time = 0.24, size = 86, normalized size = 0.90

$$-\frac{2}{105}\,B\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}-42\,(cx+b)^{\frac{5}{2}}b+35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right)+\frac{2}{15}\,A\left(\frac{2\,b^{\frac{5}{2}}}{c^2}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2/105*B*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(
c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) - 5*(
c*x + b)^(3/2)*b)/c^2)
```

maple [**A**] time = 0.05, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-15B\,c^2x^2-21A\,c^2x+12Bbcx+14Abc-8b^2B\right)\sqrt{c\,x^2+bx}}{105c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/105*(c*x+b)*(-15*B*c^2*x^2-21*A*c^2*x+12*B*b*c*x+14*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(1/2)/c^3/x^(1/2)
```

maxima [A] time = 0.61, size = 75, normalized size = 0.78

$$\frac{2\left(3\,c^{2}x^{2}+bcx-2\,b^{2}\right)\sqrt{cx+b}\,A}{15\,c^{2}}+\frac{2\left(15\,c^{3}x^{3}+3\,bc^{2}x^{2}-4\,b^{2}cx+8\,b^{3}\right)\sqrt{cx+b}\,B}{105\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*c^2*x^2 + b*c*x - 2*b^2)*sqrt(c*x + b)*A/c^2 + 2/105*(15*c^3*x^3 +
3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*sqrt(c*x + b)*B/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,\sqrt{x\,(b+cx)}\,(A+Bx)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*sqrt(x*(b + c*x))*(A + B*x), x)
```

3.198 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}-\frac{2\left(bx+cx^2\right)^{3/2}(2bB-5Ac)}{15c^2x^{3/2}}$$

```
[Out] -2/15*(-5*A*c+2*B*b)*(c*x^2+b*x)^(3/2)/c^2/x^(3/2)+2/5*B*(c*x^2+b*x)^(3/2)/
c/x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}-\frac{2\left(bx+cx^2\right)^{3/2}(2bB-5Ac)}{15c^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] (-2*(2*b*B - 5*A*c)*(b*x + c*x^2)^(3/2))/(15*c^2*x^(3/2)) + (2*B*(b*x + c*x
^2)^(3/2))/(5*c*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{x}}\,dx&=\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}+\frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\,dx}{5c}\\&=-\frac{2(2bB-5Ac)\left(bx+cx^2\right)^{3/2}}{15c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{3/2}}{5c\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 37, normalized size = 0.61

$$\frac{2(x(b+cx))^{3/2}(5Ac-2bB+3Bcx)}{15c^2x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(-2*b*B + 5*A*c + 3*B*c*x))/(15*c^2*x^(3/2))
```

fricas [A] time = 1.10, size = 53, normalized size = 0.87

$$\frac{2\left(3\,Bc^{2}x^{2}-2\,Bb^{2}+5\,Abc+\left(Bbc+5\,Ac^{2}\right)x\right)\sqrt{cx^{2}+bx}}{15\,c^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^2 - 2*B*b^2 + 5*A*b*c + (B*b*c + 5*A*c^2)*x)*sqrt(c*x^2 + b
*x)/(c^2*sqrt(x))
```

giac [A] time = 0.17, size = 60, normalized size = 0.98

$$\frac{2}{15}\,B\left(\frac{2\,b^{\frac{5}{2}}}{c^{2}}+\frac{3\,(cx+b)^{\frac{5}{2}}-5\,(cx+b)^{\frac{3}{2}}b}{c^{2}}\right)+\frac{2}{3}\,A\left(\frac{(cx+b)^{\frac{3}{2}}}{c}-\frac{b^{\frac{3}{2}}}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 2/
3*A*((c*x + b)^(3/2)/c - b^(3/2)/c)
```

maple [A] time = 0.05, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(3Bcx+5Ac-2bB)\,\sqrt{c\,x^{2}+bx}}{15c^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x)
```

```
[Out] 2/15*(c*x+b)*(3*B*c*x+5*A*c-2*B*b)*(c*x^2+b*x)^(1/2)/c^2/x^(1/2)
```

maxima [A] time = 0.52, size = 45, normalized size = 0.74

$$\frac{2\,(cx+b)^{\frac{3}{2}}A}{3\,c}+\frac{2\left(3\,c^{2}x^{2}+bcx-2\,b^{2}\right)\sqrt{cx+b}\,B}{15\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(c*x + b)^(3/2)*A/c + 2/15*(3*c^2*x^2 + b*c*x - 2*b^2)*sqrt(c*x + b)*B/
c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{c\,x^{2}+b\,x}\,\,\left(A+B\,x\right)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/sqrt(x), x)
```

3.199 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=81

$$\frac{2A\sqrt{bx+cx^2}}{\sqrt{x}}-2A\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}}$$

```
[Out] 2/3*B*(c*x^2+b*x)^(3/2)/c/x^(3/2)-2*A*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(
1/2))*b^(1/2)+2*A*(c*x^2+b*x)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {794, 664, 660, 207}

$$\frac{2A\sqrt{bx+cx^2}}{\sqrt{x}}-2A\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (2*A*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*B*(b*x + c*x^2)^(3/2))/(3*c*x^(3/2)) -
 2*A*Sqrt[b]*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{3/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + A\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx\\ &= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + (Ab)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx\\ &= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} + (2Ab)\,\mathrm{Subst}\left(\int \frac{1}{-b+x^2}\,dx, x, \frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)\\ &= \frac{2A\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2B\left(bx+cx^2\right)^{3/2}}{3cx^{3/2}} - 2A\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)\end{aligned}$$

Mathematica [A] time = 0.06, size = 80, normalized size = 0.99

$$\frac{2\sqrt{x}\sqrt{b+cx}\left(\sqrt{b+cx}\,(3Ac+bB+Bcx)-3A\sqrt{b}\,c\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{3c\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (2*Sqrt[x]*Sqrt[b + c*x]*(Sqrt[b + c*x]*(b*B + 3*A*c + B*c*x) - 3*A*Sqrt[b]
*c*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(3*c*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.71, size = 148, normalized size = 1.83

$$\left[\frac{3\,A\sqrt{b}\,cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,(Bcx+Bb+3\,Ac)\sqrt{cx^2+bx}\,\sqrt{x}}{3\,cx}, \frac{2\left(3\,A\sqrt{-b}\,cx\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*A*sqrt(b)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqr
t(x))/x^2) + 2*(B*c*x + B*b + 3*A*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x), 2/3*
(3*A*sqrt(-b)*c*x*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (B*c*x + B*b
 + 3*A*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [A] time = 0.18, size = 103, normalized size = 1.27

$$\frac{2\,Ab\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{2\left(3\,Abc\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+B\sqrt{-b}\,b^{\frac{3}{2}}+3\,A\sqrt{-b}\,\sqrt{b}\,c\right)}{3\,\sqrt{-b}\,c}+\frac{2\left((cx+b)^{\frac{3}{2}}Bc^2+3\,\sqrt{cx+b}\,Ac^3\right)}{3\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2*A*b*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/3*(3*A*b*c*arctan(sqrt(b)
/sqrt(-b)) + B*sqrt(-b)*b^(3/2) + 3*A*sqrt(-b)*sqrt(b)*c)/(sqrt(-b)*c) + 2/
3*((c*x + b)^(3/2)*B*c^2 + 3*sqrt(c*x + b)*A*c^3)/c^3
```

maple [A] time = 0.06, size = 79, normalized size = 0.98

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(3A\sqrt{b}\,c\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\,Bcx-3\sqrt{cx+b}\,Ac-\sqrt{cx+b}\,Bb\right)}{3\sqrt{cx+b}\,c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x)
```

```
[Out] -2/3*((c*x+b)*x)^(1/2)*(3*A*b^(1/2)*c*arctanh((c*x+b)^(1/2)/b^(1/2))-B*x*c*
(c*x+b)^(1/2)-3*A*c*(c*x+b)^(1/2)-B*b*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/
c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$A \int \frac{\sqrt{cx+b}}{x}\,dx + \frac{2\,(Bcx+Bb)\sqrt{cx+b}}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] A*integrate(sqrt(c*x + b)/x, x) + 2/3*(B*c*x + B*b)*sqrt(c*x + b)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\,(A+B\,x)}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(3/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(3/2), x)
```

3.200 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=95

$$\frac{\sqrt{bx+cx^2}\,(Ac+2bB)}{b\sqrt{x}}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}$$

```
[Out] -A*(c*x^2+b*x)^(3/2)/b/x^(5/2)-(A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2
)/x^(1/2))/b^(1/2)+(A*c+2*B*b)*(c*x^2+b*x)^(1/2)/b/x^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 664, 660, 207}

$$\frac{\sqrt{bx+cx^2}\,(Ac+2bB)}{b\sqrt{x}}-\frac{(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(5/2),x]
```

```
[Out] ((2*b*B + A*c)*Sqrt[b*x + c*x^2])/(b*Sqrt[x]) - (A*(b*x + c*x^2)^(3/2))/(b*
x^(5/2)) - ((2*b*B + A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/Sqr
t[b]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{5/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}+\frac{\left(-\frac{5}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx}{b}\\
&= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}+\frac{1}{2}(2bB+Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx\\
&= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}+(2bB+Ac)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\right.\\
&= \frac{(2bB+Ac)\sqrt{bx+cx^2}}{b\sqrt{x}}-\frac{A\left(bx+cx^2\right)^{3/2}}{bx^{5/2}}-\frac{(2bB+Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{\sqrt{b}}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 80, normalized size = 0.84

$$
-\frac{\sqrt{x(b+cx)}\left(\sqrt{b}\,(A-2Bx)\sqrt{b+cx}+x(Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{\sqrt{b}\,x^{3/2}\sqrt{b+cx}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(5/2),x]
```

```
[Out] -((Sqrt[x*(b + c*x)]*(Sqrt[b]*(A - 2*B*x)*Sqrt[b + c*x] + (2*b*B + A*c)*x*A
rcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(Sqrt[b]*x^(3/2)*Sqrt[b + c*x]))
```

fricas [A] time = 0.99, size = 157, normalized size = 1.65

$$
\left[\frac{(2\,Bb+Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,(2\,Bbx-Ab)\sqrt{cx^2+bx}\,\sqrt{x}}{2\,bx^2},\ (2\,Bb+Ac)\sqrt{-b}\,x^2\arctan\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/2*((2*B*b + A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*s
qrt(b)*sqrt(x))/x^2) + 2*(2*B*b*x - A*b)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^2)
, ((2*B*b + A*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) +
(2*B*b*x - A*b)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^2)]
```

giac [A] time = 0.28, size = 61, normalized size = 0.64

$$
\frac{2\,\sqrt{cx+b}\,Bc-\frac{\sqrt{cx+b}\,Ac}{x}+\frac{\left(2\,Bbc+Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}}{c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] (2*sqrt(c*x + b)*B*c - sqrt(c*x + b)*A*c/x + (2*B*b*c + A*c^2)*arctan(sqrt(
c*x + b)/sqrt(-b))/sqrt(-b))/c
```

maple [A] time = 0.07, size = 86, normalized size = 0.91

$$\frac{\left(-Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+2\sqrt{cx+b}\;B\sqrt{b}\;x-\sqrt{cx+b}\;A\sqrt{b}\right)\sqrt{(cx+b)\,x}}{\sqrt{cx+b}\;\sqrt{b}\;x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x)
```

```
[Out] (-A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c+2*B*(c*x+b)^(1/2)*x*b^(1/2)-2*B*arct
anh((c*x+b)^(1/2)/b^(1/2))*x*b-A*(c*x+b)^(1/2)*b^(1/2))*((c*x+b)*x)^(1/2)/x
^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\;\;(A+B\,x)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\;\,(A+Bx)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(5/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(5/2), x)
```

3.201 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4b^{3/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-Ac)}{4bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}}$$

```
[Out] -1/2*A*(c*x^2+b*x)^(3/2)/b/x^(7/2)-1/4*c*(-A*c+4*B*b)*arctanh((c*x^2+b*x)^(
1/2)/b^(1/2)/x^(1/2))/b^(3/2)-1/4*(-A*c+4*B*b)*(c*x^2+b*x)^(1/2)/b/x^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {792, 662, 660, 207}

$$-\frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4b^{3/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-Ac)}{4bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(7/2),x]
```

```
[Out] -((4*b*B - A*c)*Sqrt[b*x + c*x^2])/(4*b*x^(3/2)) - (A*(b*x + c*x^2)^(3/2))/
(2*b*x^(7/2)) - (c*(4*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x]
)])/(4*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{7/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + \frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{bx+cx^2}}{x^{5/2}}\,dx}{2b} \\
&= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + \frac{(c(4bB-Ac))\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{8b} \\
&= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} + (c(4bB-Ac))\,\mathrm{Subst}\Bigg(\int \frac{1}{-b+x^2}\,dx, x, \\
&= -\frac{(4bB-Ac)\sqrt{bx+cx^2}}{4bx^{3/2}} - \frac{A\left(bx+cx^2\right)^{3/2}}{2bx^{7/2}} - \frac{c(4bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 83, normalized size = 0.79

$$
-\frac{cx^2\sqrt{\frac{cx}{b}+1}\,(4bB-Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)+(b+cx)(2Ab+Acx+4bBx)}{4bx^{3/2}\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(7/2),x]
```

```
[Out] -1/4*((b + c*x)*(2*A*b + 4*b*B*x + A*c*x) + c*(4*b*B - A*c)*x^2*Sqrt[1 + (c
*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b*x^(3/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.93, size = 187, normalized size = 1.78

$$
\Bigg[-\frac{\left(4\,Bbc-Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Ab^2+\left(4\,Bb^2+Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,b^2x^3}, \left(4\,Bbc-A
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((4*B*b*c - A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b
*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^2 + (4*B*b^2 + A*b*c)*x)*sqrt(c*x^2 +
b*x)*sqrt(x))/(b^2*x^3), 1/4*((4*B*b*c - A*c^2)*sqrt(-b)*x^3*arctan(sqrt(-b
)*sqrt(x)/sqrt(c*x^2 + b*x)) - (2*A*b^2 + (4*B*b^2 + A*b*c)*x)*sqrt(c*x^2 +
 b*x)*sqrt(x))/(b^2*x^3)]
```

giac [A] time = 0.27, size = 110, normalized size = 1.05

$$
\frac{\frac{\left(4\,Bbc^2-Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{4\,(cx+b)^{\frac{3}{2}}\,Bbc^2-4\,\sqrt{cx+b}\,Bb^2c^2+(cx+b)^{\frac{3}{2}}\,Ac^3+\sqrt{cx+b}\,Abc^3}{bc^2x^2}}{4\,c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/4*((4*B*b*c^2 - A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - (4*(
c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 + (c*x + b)^(3/2)*A*c^3
+ sqrt(c*x + b)*A*b*c^3)/(b*c^2*x^2))/c
```

maple [A] time = 0.07, size = 108, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(A\,c^{2}x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4Bbc\,x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\;A\sqrt{b}\;cx-4\sqrt{cx+b}\;B\,b^{\frac{3}{2}}x-2\sqrt{cx+\right.}{4\sqrt{cx+b}\;b^{\frac{3}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x)
```

```
[Out] 1/4*((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2-4*B
*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-A*x*c*b^(1/2)*(c*x+b)^(1/2)-4*B*x*b
^(3/2)*(c*x+b)^(1/2)-2*A*b^(3/2)*(c*x+b)^(1/2))/x^(5/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^{2}+bx}\,(Bx+A)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^{2}+b\,x}\;\left(A+B\,x\right)}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\;(A+Bx)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(7/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(7/2), x)
```

3.202 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{9/2}}\,dx$

Optimal. Leaf size=142

$$\frac{c^2(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{8b^2x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(2bB-Ac)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}$$

```
[Out] -1/3*A*(c*x^2+b*x)^(3/2)/b/x^(9/2)+1/8*c^2*(-A*c+2*B*b)*arctanh((c*x^2+b*x)
^(1/2)/b^(1/2)/x^(1/2))/b^(5/2)-1/4*(-A*c+2*B*b)*(c*x^2+b*x)^(1/2)/b/x^(5/2
)-1/8*c*(-A*c+2*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$\frac{c^2(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac)}{8b^2x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(2bB-Ac)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/x^(9/2),x]
```

```
[Out] -((2*b*B - A*c)*Sqrt[b*x + c*x^2])/(4*b*x^(5/2)) - (c*(2*b*B - A*c)*Sqrt[b*
x + c*x^2])/(8*b^2*x^(3/2)) - (A*(b*x + c*x^2)^(3/2))/(3*b*x^(9/2)) + (c^2*
(2*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{x^{9/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}+\frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{3}{2}(-bB+2Ac)\right)\int\frac{\sqrt{bx+cx^2}}{x^{7/2}}\,dx}{3b}\\
&= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}+\frac{(c(2bB-Ac))\int\frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{8b}\\
&= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}}-\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}-\left(c^2(2bB-A\right.\\
&= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}}-\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}-\left(c^2(2bB-A\right.\\
&= -\frac{(2bB-Ac)\sqrt{bx+cx^2}}{4bx^{5/2}}-\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{8b^2x^{3/2}}-\frac{A\left(bx+cx^2\right)^{3/2}}{3bx^{9/2}}+c^2(2bB-Ac
\end{aligned}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.43

$$-\frac{(x(b+cx))^{3/2}\left(Ab^3+c^2x^3(2bB-Ac)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx}{b}+1\right)\right)}{3b^4x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/x^(9/2),x]
```

```
[Out] -1/3*((x*(b + c*x))^(3/2)*(A*b^3 + c^2*(2*b*B - A*c)*x^3*Hypergeometric2F1[
3/2, 3, 5/2, 1 + (c*x)/b]))/(b^4*x^(9/2))
```

fricas [A] time = 0.98, size = 238, normalized size = 1.68

$$\left[-\frac{3\left(2\,Bbc^2-Ac^3\right)\sqrt{b}\,x^4\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Ab^3+3\left(2\,Bb^2c-Abc^2\right)x^2+2\left(6\,Bb^3+Ab^2c\right)x\right)\sqrt{}}{48\,b^3x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(2*B*b*c^2 - A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 + 3*(2*B*b^2*c - A*b*c^2)*x^2 +
 2*(6*B*b^3 + A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^4), -1/24*(3*(2
*B*b*c^2 - A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) +
 (8*A*b^3 + 3*(2*B*b^2*c - A*b*c^2)*x^2 + 2*(6*B*b^3 + A*b^2*c)*x)*sqrt(c*x
^2 + b*x)*sqrt(x))/(b^3*x^4)]
```

giac [A] time = 0.27, size = 128, normalized size = 0.90

$$-\frac{\frac{3\left(2\,Bbc^3-Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{6\,(cx+b)^{\frac{5}{2}}Bbc^3-6\,\sqrt{cx+b}\,Bb^3c^3-3\,(cx+b)^{\frac{5}{2}}Ac^4+8\,(cx+b)^{\frac{3}{2}}Abc^4+3\,\sqrt{cx+b}\,Ab^2c^4}{b^2c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -1/24*(3*(2*B*b*c^3 - A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2)
+ (6*(c*x + b)^(5/2)*B*b*c^3 - 6*sqrt(c*x + b)*B*b^3*c^3 - 3*(c*x + b)^(5/2
)*A*c^4 + 8*(c*x + b)^(3/2)*A*b*c^4 + 3*sqrt(c*x + b)*A*b^2*c^4)/(b^2*c^3*x
^3))/c
```

maple [A] time = 0.09, size = 147, normalized size = 1.04

$$-\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^3x^3\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-6Bb\,c^2x^3\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\,A\sqrt{b}\,c^2x^2+6\sqrt{cx+b}\,B\,b^{\frac{3}{2}}}{24\sqrt{cx+b}\,b^{\frac{5}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x)
```

```
[Out] -1/24*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3
-6*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-3*A*x^2*c^2*b^(1/2)*(c*x+b)^(
1/2)+6*B*x^2*b^(3/2)*c*(c*x+b)^(1/2)+2*A*x*b^(3/2)*c*(c*x+b)^(1/2)+12*B*x*b
^(5/2)*(c*x+b)^(1/2)+8*A*b^(5/2)*(c*x+b)^(1/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\left(A+Bx\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/x**(9/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/x**(9/2), x)
```

3.203 $\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{45045c^6x^{5/2}}+\frac{128b^3\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{9009c^5x^{3/2}}-\frac{32b^2\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{1287c^4\sqrt{x}}+16b\sqrt{x}\,(b$$

```
[Out] -256/45045*b^4*(-3*A*c+2*B*b)*(c*x^2+b*x)^(5/2)/c^6/x^(5/2)+128/9009*b^3*(-
3*A*c+2*B*b)*(c*x^2+b*x)^(5/2)/c^5/x^(3/2)-2/39*(-3*A*c+2*B*b)*x^(3/2)*(c*x
^2+b*x)^(5/2)/c^2+2/15*B*x^(5/2)*(c*x^2+b*x)^(5/2)/c-32/1287*b^2*(-3*A*c+2*
B*b)*(c*x^2+b*x)^(5/2)/c^4/x^(1/2)+16/429*b*(-3*A*c+2*B*b)*(c*x^2+b*x)^(5/2
)*x^(1/2)/c^3
```

Rubi [A] time = 0.15, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{45045c^6x^{5/2}}+\frac{128b^3\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{9009c^5x^{3/2}}-\frac{32b^2\left(bx+cx^2\right)^{5/2}(2bB-3Ac)}{1287c^4\sqrt{x}}+16b\sqrt{x}\,(b$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-256*b^4*(2*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(45045*c^6*x^(5/2)) + (128*b
^3*(2*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(9009*c^5*x^(3/2)) - (32*b^2*(2*b*B
 - 3*A*c)*(b*x + c*x^2)^(5/2))/(1287*c^4*Sqrt[x]) + (16*b*(2*b*B - 3*A*c)*S
qrt[x]*(b*x + c*x^2)^(5/2))/(429*c^3) - (2*(2*b*B - 3*A*c)*x^(3/2)*(b*x + c
*x^2)^(5/2))/(39*c^2) + (2*B*x^(5/2)*(b*x + c*x^2)^(5/2))/(15*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{5/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{2Bx^{5/2}\left(bx+cx^2\right)^{5/2}}{15c} + \frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int x^{5/2}\left(bx+cx\right.}{15c}$$

$$= -\frac{2(2bB-3Ac)x^{3/2}\left(bx+cx^2\right)^{5/2}}{39c^2} + \frac{2Bx^{5/2}\left(bx+cx^2\right)^{5/2}}{15c} + \frac{(8b(2bB-3Ac)}{}$$

$$= \frac{16b(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{429c^3} - \frac{2(2bB-3Ac)x^{3/2}\left(bx+cx^2\right)^{5/2}}{39c^2} + \frac{2Bx}{}$$

$$= -\frac{32b^2(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{1287c^4\sqrt{x}} + \frac{16b(2bB-3Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{429c^3} - \frac{2(2}{}$$

$$= \frac{128b^3(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{9009c^5x^{3/2}} - \frac{32b^2(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{1287c^4\sqrt{x}} + \frac{16b(2b}{}$$

$$= -\frac{256b^4(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{45045c^6x^{5/2}} + \frac{128b^3(2bB-3Ac)\left(bx+cx^2\right)^{5/2}}{9009c^5x^{3/2}} - \frac{32b}{}$$

Mathematica [**A**] time = 0.09, size = 110, normalized size = 0.53

$$\frac{2(x(b+cx))^{5/2}\left(128b^4c(3A+5Bx)-160b^3c^2x(6A+7Bx)+1680b^2c^3x^2(A+Bx)-210bc^4x^3(12A+11Bx)+2\right.}{45045c^6x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-256*b^5*B + 1680*b^2*c^3*x^2*(A + B*x) + 128*b^4*c
*(3*A + 5*B*x) - 160*b^3*c^2*x*(6*A + 7*B*x) - 210*b*c^4*x^3*(12*A + 11*B*x
) + 231*c^5*x^4*(15*A + 13*B*x)))/(45045*c^6*x^(5/2))
```

fricas [**A**] time = 0.81, size = 174, normalized size = 0.84

$$\frac{2\left(3003\,Bc^7x^7-256\,Bb^7+384\,Ab^6c+231\left(16\,Bbc^6+15\,Ac^7\right)x^6+63\left(Bb^2c^5+70\,Abc^6\right)x^5-35\left(2\,Bb^3c^4-3\right.\right.}{45045\,c^6\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^7*x^7 - 256*B*b^7 + 384*A*b^6*c + 231*(16*B*b*c^6 + 15*A*
c^7)*x^6 + 63*(B*b^2*c^5 + 70*A*b*c^6)*x^5 - 35*(2*B*b^3*c^4 - 3*A*b^2*c^5)
*x^4 + 40*(2*B*b^4*c^3 - 3*A*b^3*c^4)*x^3 - 48*(2*B*b^5*c^2 - 3*A*b^4*c^3)*
x^2 + 64*(2*B*b^6*c - 3*A*b^5*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [**B**] time = 0.25, size = 343, normalized size = 1.66

$$-\frac{2}{45045}\,Bc\left(\frac{1024\,b^{\frac{15}{2}}}{c^7}-\frac{3003\,(cx+b)^{\frac{15}{2}}-20790\,(cx+b)^{\frac{13}{2}}b+61425\,(cx+b)^{\frac{11}{2}}b^2-100100\,(cx+b)^{\frac{9}{2}}b^3+9652}{c^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2/45045*B*c*(1024*b^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^
(13/2)*b + 61425*(c*x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*
(c*x + b)^(7/2)*b^4 - 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6
)/c^7) + 2/9009*B*b*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x +
 b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009
*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 2/9009*A*c*(256*b^(
13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(c*x +
b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 - 3003*
(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*A*b*(128*b^(11/2)/c^5 - (315*(c*x + b)^(
11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^
(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.06, size = 131, normalized size = 0.63

$$\frac{2\left(cx+b\right)\left(3003B\,x^{5}c^{5}+3465A\,c^{5}x^{4}-2310Bb\,c^{4}x^{4}-2520Ab\,c^{4}x^{3}+1680B\,b^{2}c^{3}x^{3}+1680A\,b^{2}c^{3}x^{2}-1120B\,b^{3}c^{2}\right.}{45045c^{6}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/45045*(c*x+b)*(3003*B*c^5*x^5+3465*A*c^5*x^4-2310*B*b*c^4*x^4-2520*A*b*c^
4*x^3+1680*B*b^2*c^3*x^3+1680*A*b^2*c^3*x^2-1120*B*b^3*c^2*x^2-960*A*b^3*c^
2*x+640*B*b^4*c*x+384*A*b^4*c-256*B*b^5)*(c*x^2+b*x)^(3/2)/c^6/x^(3/2)
```

maxima [A] time = 0.61, size = 318, normalized size = 1.54

$$\frac{2\left(5\left(693\,c^{6}x^{6}+63\,bc^{5}x^{5}-70\,b^{2}c^{4}x^{4}+80\,b^{3}c^{3}x^{3}-96\,b^{4}c^{2}x^{2}+128\,b^{5}cx-256\,b^{6}\right)x^{5}+13\left(315\,bc^{5}x^{6}+35\,b^{2}c^{4}x^{5}\right.\right.}{45045\,c^{5}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(5*(693*c^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 -
96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)*x^5 + 13*(315*b*c^5*x^6 + 35*b^2*c^
4*x^5 - 40*b^3*c^3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4)*sq
rt(c*x + b)*A/(c^5*x^5) + 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6 - 252*b^2*
c^5*x^5 + 280*b^3*c^4*x^4 - 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 - 512*b^6*c*x
 + 1024*b^7)*x^6 + 5*(693*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c^4*x^5 + 80*
b^4*c^3*x^4 - 96*b^5*c^2*x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5)*sqrt(c*x + b
)*B/(c^6*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.204 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{15015c^5x^{5/2}}-\frac{16b^2\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{3003c^4x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{429c^3\sqrt{x}}-2\sqrt{x}\,\left(bx+\right.$$

```
[Out] 32/15015*b^3*(-13*A*c+8*B*b)*(c*x^2+b*x)^(5/2)/c^5/x^(5/2)-16/3003*b^2*(-13
*A*c+8*B*b)*(c*x^2+b*x)^(5/2)/c^4/x^(3/2)+2/13*B*x^(3/2)*(c*x^2+b*x)^(5/2)/
c+4/429*b*(-13*A*c+8*B*b)*(c*x^2+b*x)^(5/2)/c^3/x^(1/2)-2/143*(-13*A*c+8*B*
b)*(c*x^2+b*x)^(5/2)*x^(1/2)/c^2
```

Rubi [A] time = 0.16, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = $\{794, 656, 648\}$

$$\frac{32b^3\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{15015c^5x^{5/2}}-\frac{16b^2\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{3003c^4x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(8bB-13Ac)}{429c^3\sqrt{x}}-2\sqrt{x}\,\left(bx+\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (32*b^3*(8*b*B - 13*A*c)*(b*x + c*x^2)^(5/2))/(15015*c^5*x^(5/2)) - (16*b^2
*(8*b*B - 13*A*c)*(b*x + c*x^2)^(5/2))/(3003*c^4*x^(3/2)) + (4*b*(8*b*B - 1
3*A*c)*(b*x + c*x^2)^(5/2))/(429*c^3*Sqrt[x]) - (2*(8*b*B - 13*A*c)*Sqrt[x]
*(b*x + c*x^2)^(5/2))/(143*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(5/2))/(13*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx=\frac{2Bx^{3/2}\left(bx+cx^2\right)^{5/2}}{13c}+\frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int x^{3/2}\left(bx+cx^2\right)^{3/}}{13c}$$

$$=-\frac{2(8bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{143c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{5/2}}{13c}+\frac{(6b(8bB-13Ac))}{1}$$

$$=\frac{4b(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{429c^3\sqrt{x}}-\frac{2(8bB-13Ac)\sqrt{x}\left(bx+cx^2\right)^{5/2}}{143c^2}+\frac{2Bx^{3/2}\left(bx\right.}{13}$$

$$=-\frac{16b^2(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{3003c^4x^{3/2}}+\frac{4b(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{429c^3\sqrt{x}}-\frac{2(8bB-}{}$$

$$=\frac{32b^3(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{15015c^5x^{5/2}}-\frac{16b^2(8bB-13Ac)\left(bx+cx^2\right)^{5/2}}{3003c^4x^{3/2}}+\frac{4b(8bB-}{}$$

Mathematica [A] time = 0.08, size = 94, normalized size = 0.55

$$\frac{2(x(b+cx))^{5/2}\left(-16b^3c(13A+20Bx)+40b^2c^2x(13A+14Bx)-70bc^3x^2(13A+12Bx)+105c^4x^3(13A+11Bx)+\right.}{15015c^5x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(128*b^4*B + 105*c^4*x^3*(13*A + 11*B*x) - 70*b*c^3*
x^2*(13*A + 12*B*x) + 40*b^2*c^2*x*(13*A + 14*B*x) - 16*b^3*c*(13*A + 20*B*
x)))/(15015*c^5*x^(5/2))
```

fricas [A] time = 0.83, size = 150, normalized size = 0.88

$$\frac{2\left(1155\,Bc^6x^6+128\,Bb^6-208\,Ab^5c+105\left(14\,Bbc^5+13\,Ac^6\right)x^5+35\left(Bb^2c^4+52\,Abc^5\right)x^4-5\left(8\,Bb^3c^3-13\,Ab^2\right.\right.}{15015\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^6*x^6 + 128*B*b^6 - 208*A*b^5*c + 105*(14*B*b*c^5 + 13*A*
c^6)*x^5 + 35*(B*b^2*c^4 + 52*A*b*c^5)*x^4 - 5*(8*B*b^3*c^3 - 13*A*b^2*c^4)
*x^3 + 6*(8*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 - 8*(8*B*b^5*c - 13*A*b^4*c^2)*x)
*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [B] time = 0.29, size = 295, normalized size = 1.74

$$\frac{2}{9009}\,Bc\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}b}{c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*c*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2
)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b
)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*B*b*(128*b^(11/2)/c^5
 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^
2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 2/3465*A*c*
```

```
(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(
c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c
^5) + 2/315*A*b*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)
*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\,(cx+b)\,(-1155B\,x^4c^4 - 1365A\,c^4x^3 + 840Bb\,c^3x^3 + 910Ab\,c^3x^2 - 560B\,b^2c^2x^2 - 520A\,b^2c^2x + 320B\,b^3cx}{15015c^5x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/15015*(c*x+b)*(-1155*B*c^4*x^4-1365*A*c^4*x^3+840*B*b*c^3*x^3+910*A*b*c^
3*x^2-560*B*b^2*c^2*x^2-520*A*b^2*c^2*x+320*B*b^3*c*x+208*A*b^3*c-128*B*b^4
)*(c*x^2+b*x)^(3/2)/c^5/x^(3/2)
```

maxima [A] time = 0.59, size = 274, normalized size = 1.61

$$\frac{2\,((315\,c^5x^5 + 35\,bc^4x^4 - 40\,b^2c^3x^3 + 48\,b^3c^2x^2 - 64\,b^4cx + 128\,b^5)x^4 + 11\,(35\,bc^4x^5 + 5\,b^2c^3x^4 - 6\,b^3c^2x^3 + 8}{3465\,c^4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*
b^4*c*x + 128*b^5)*x^4 + 11*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 +
 8*b^4*c*x^2 - 16*b^5*x)*x^3)*sqrt(c*x + b)*A/(c^4*x^4) + 2/45045*(5*(693*c
^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 +
128*b^5*c*x - 256*b^6)*x^5 + 13*(315*b*c^5*x^6 + 35*b^2*c^4*x^5 - 40*b^3*c^
3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4)*sqrt(c*x + b)*B/(c^
5*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}} \left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(A + Bx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**(3/2)*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.205 $\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{3465c^4x^{5/2}}+\frac{8b\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{693c^3x^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{99c^2\sqrt{x}}+\frac{2B\sqrt{x}\left(bx+cx\right.}{11c}$$

```
[Out] -16/3465*b^2*(-11*A*c+6*B*b)*(c*x^2+b*x)^(5/2)/c^4/x^(5/2)+8/693*b*(-11*A*c
+6*B*b)*(c*x^2+b*x)^(5/2)/c^3/x^(3/2)-2/99*(-11*A*c+6*B*b)*(c*x^2+b*x)^(5/2
)/c^2/x^(1/2)+2/11*B*(c*x^2+b*x)^(5/2)*x^(1/2)/c
```

Rubi **[A]** time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{3465c^4x^{5/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{99c^2\sqrt{x}}+\frac{8b\left(bx+cx^2\right)^{5/2}(6bB-11Ac)}{693c^3x^{3/2}}+\frac{2B\sqrt{x}\left(bx+cx\right.}{11c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-16*b^2*(6*b*B - 11*A*c)*(b*x + c*x^2)^(5/2))/(3465*c^4*x^(5/2)) + (8*b*(6
*b*B - 11*A*c)*(b*x + c*x^2)^(5/2))/(693*c^3*x^(3/2)) - (2*(6*b*B - 11*A*c)
*(b*x + c*x^2)^(5/2))/(99*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(5/2))/
(11*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{3/2}\,dx = \frac{2B\sqrt{x}\,\left(bx+cx^2\right)^{5/2}}{11c} + \frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\,\left(bx+cx^2\right.}{11c}$$

$$= -\frac{2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{99c^2\sqrt{x}} + \frac{2B\sqrt{x}\,\left(bx+cx^2\right)^{5/2}}{11c} + \frac{(4b(6bB-11Ac))\int}{99c^2}$$

$$= \frac{8b(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{693c^3x^{3/2}} - \frac{2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{99c^2\sqrt{x}} + \frac{2B\sqrt{x}\,\left(bx\right.}{11c}$$

$$= -\frac{16b^2(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{3465c^4x^{5/2}} + \frac{8b(6bB-11Ac)\left(bx+cx^2\right)^{5/2}}{693c^3x^{3/2}} - \frac{2(6bB}{}$$

Mathematica [**A**] time = 0.06, size = 75, normalized size = 0.56

$$\frac{2(x(b+cx))^{5/2}\left(8b^2c(11A+15Bx)-10bc^2x(22A+21Bx)+35c^3x^2(11A+9Bx)-48b^3B\right)}{3465c^4x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-48*b^3*B + 35*c^3*x^2*(11*A + 9*B*x) + 8*b^2*c*(11
*A + 15*B*x) - 10*b*c^2*x*(22*A + 21*B*x)))/(3465*c^4*x^(5/2))
```

fricas [**A**] time = 1.13, size = 127, normalized size = 0.95

$$\frac{2\left(315\,Bc^5x^5-48\,Bb^5+88\,Ab^4c+35\left(12\,Bbc^4+11\,Ac^5\right)x^4+5\left(3\,Bb^2c^3+110\,Abc^4\right)x^3-3\left(6\,Bb^3c^2-11\,Ab^2c\right.\right.}{3465\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^5*x^5 - 48*B*b^5 + 88*A*b^4*c + 35*(12*B*b*c^4 + 11*A*c^5)*
x^4 + 5*(3*B*b^2*c^3 + 110*A*b*c^4)*x^3 - 3*(6*B*b^3*c^2 - 11*A*b^2*c^3)*x^
2 + 4*(6*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [**B**] time = 0.22, size = 247, normalized size = 1.86

$$-\frac{2}{3465}\,Bc\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)^{\frac{3}{2}}}{c^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*c*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2
)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^
(3/2)*b^4)/c^5) + 2/315*B*b*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*
x + b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) +
2/315*A*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 1
89*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*b*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
2)/c^3)
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(315B\,c^{3}x^{3}+385A\,c^{3}x^{2}-210Bb\,c^{2}x^{2}-220Ab\,c^{2}x+120B\,b^{2}cx+88A\,b^{2}c-48b^{3}B\right)\left(c\,x^{2}+bx\right)^{\frac{3}{2}}}{3465c^{4}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x)
```

```
[Out] 2/3465*(c*x+b)*(315*B*c^3*x^3+385*A*c^3*x^2-210*B*b*c^2*x^2-220*A*b*c^2*x+1
20*B*b^2*c*x+88*A*b^2*c-48*B*b^3)*(c*x^2+b*x)^(3/2)/c^4/x^(3/2)
```

maxima [B] time = 0.66, size = 229, normalized size = 1.72

$$\frac{2\left(\left(35\,c^{4}x^{4}+5\,bc^{3}x^{3}-6\,b^{2}c^{2}x^{2}+8\,b^{3}cx-16\,b^{4}\right)x^{3}+3\left(15\,bc^{3}x^{4}+3\,b^{2}c^{2}x^{3}-4\,b^{3}cx^{2}+8\,b^{4}x\right)x^{2}\right)\sqrt{cx+b}\,A}{315\,c^{3}x^{3}}+\frac{2\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3
+ 3*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2)*sqrt(c*x +
b)*A/(c^3*x^3) + 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*
b^3*c^2*x^2 - 64*b^4*c*x + 128*b^5)*x^4 + 11*(35*b*c^4*x^5 + 5*b^2*c^3*x^4
- 6*b^3*c^2*x^3 + 8*b^4*c*x^2 - 16*b^5*x)*x^3)*sqrt(c*x + b)*B/(c^4*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x} \left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.206 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{315c^3x^{5/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{63c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

```
[Out] 4/315*b*(-9*A*c+4*B*b)*(c*x^2+b*x)^(5/2)/c^3/x^(5/2)-2/63*(-9*A*c+4*B*b)*(c
*x^2+b*x)^(5/2)/c^2/x^(3/2)+2/9*B*(c*x^2+b*x)^(5/2)/c/x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{63c^2x^{3/2}}+\frac{4b\left(bx+cx^2\right)^{5/2}(4bB-9Ac)}{315c^3x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (4*b*(4*b*B - 9*A*c)*(b*x + c*x^2)^(5/2))/(315*c^3*x^(5/2)) - (2*(4*b*B - 9
*A*c)*(b*x + c*x^2)^(5/2))/(63*c^2*x^(3/2)) + (2*B*(b*x + c*x^2)^(5/2))/(9*
c*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx = \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}} + \frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{\sqrt{x}}\,dx}{9c}$$

$$= -\frac{2(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{63c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}} + \frac{(2b(4bB-9Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{3/2}}\,d}{63c^2}$$

$$= \frac{4b(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{315c^3x^{5/2}} - \frac{2(4bB-9Ac)\left(bx+cx^2\right)^{5/2}}{63c^2x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{9c\sqrt{x}}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.58

$$\frac{2(x(b+cx))^{5/2}\left(-2bc(9A+10Bx)+5c^2x(9A+7Bx)+8b^2B\right)}{315c^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(8*b^2*B + 5*c^2*x*(9*A + 7*B*x) - 2*b*c*(9*A + 10*B
*x)))/(315*c^3*x^(5/2))
```

fricas [A] time = 0.88, size = 102, normalized size = 1.06

$$\frac{2\left(35\,Bc^4x^4+8\,Bb^4-18\,Ab^3c+5\left(10\,Bbc^3+9\,Ac^4\right)x^3+3\left(Bb^2c^2+24\,Abc^3\right)x^2-\left(4\,Bb^3c-9\,Ab^2c^2\right)x\right)\sqrt{cx^2+b}}{315\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 + 8*B*b^4 - 18*A*b^3*c + 5*(10*B*b*c^3 + 9*A*c^4)*x^3 +
 3*(B*b^2*c^2 + 24*A*b*c^3)*x^2 - (4*B*b^3*c - 9*A*b^2*c^2)*x)*sqrt(c*x^2 +
 b*x)/(c^3*sqrt(x))
```

giac [B] time = 0.21, size = 199, normalized size = 2.07

$$\frac{2}{315}\,Bc\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{2}{105}\,Bb\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b)^{\frac{7}{2}}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*B*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 1
89*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*B*b*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
2)/c^3) - 2/105*A*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/
2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*b*(2*b^(5/2)/c^2 + (3*(c*x + b
)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2)
```

maple [A] time = 0.06, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-35B\,c^2x^2-45A\,c^2x+20Bbcx+18Abc-8b^2B\right)\left(c\,x^2+bx\right)^{\frac{3}{2}}}{315c^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(-35*B*c^2*x^2-45*A*c^2*x+20*B*b*c*x+18*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(3/2)/c^3/x^(3/2)
```

maxima [B] time = 0.63, size = 182, normalized size = 1.90

$$\frac{2\left(\left(15\,c^3x^3+3\,bc^2x^2-4\,b^2cx+8\,b^3\right)x^2+7\left(3\,bc^2x^3+b^2cx^2-2\,b^3x\right)x\right)\sqrt{cx+b}\,A}{105\,c^2x^2}+\frac{2\left(\left(35\,c^4x^4+5\,bc^3x^3-6\,b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*x^2 + 7*(3*b*c^2*x^3
+ b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*A/(c^2*x^2) + 2/315*((35*c^4*x^4 +
5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3 + 3*(15*b*c^3*x^4 + 3
*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2)*sqrt(c*x + b)*B/(c^3*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{\sqrt{x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/sqrt(x), x)
```

3.207 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(2bB-7Ac)}{35c^2x^{5/2}}$$

```
[Out] -2/35*(-7*A*c+2*B*b)*(c*x^2+b*x)^(5/2)/c^2/x^(5/2)+2/7*B*(c*x^2+b*x)^(5/2)/
c/x^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}-\frac{2\left(bx+cx^2\right)^{5/2}(2bB-7Ac)}{35c^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (-2*(2*b*B - 7*A*c)*(b*x + c*x^2)^(5/2))/(35*c^2*x^(5/2)) + (2*B*(b*x + c*x
^2)^(5/2))/(7*c*x^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{3/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}+\frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{3/2}}\,dx}{7c}\\ &= -\frac{2(2bB-7Ac)\left(bx+cx^2\right)^{5/2}}{35c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{7cx^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 37, normalized size = 0.61

$$\frac{2(x(b+cx))^{5/2}(7Ac-2bB+5Bcx)}{35c^2x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(5/2)*(-2*b*B + 7*A*c + 5*B*c*x))/(35*c^2*x^(5/2))
```

fricas [**A**] time = 0.86, size = 76, normalized size = 1.25

$$\frac{2\left(5\,Bc^3x^3 - 2\,Bb^3 + 7\,Ab^2c + \left(8\,Bbc^2 + 7\,Ac^3\right)x^2 + \left(Bb^2c + 14\,Abc^2\right)x\right)\sqrt{cx^2 + bx}}{35\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^3 - 2*B*b^3 + 7*A*b^2*c + (8*B*b*c^2 + 7*A*c^3)*x^2 + (B*b^
2*c + 14*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^2*sqrt(x))
```

giac [**B**] time = 0.19, size = 149, normalized size = 2.44

$$-\frac{2}{105}\,Bc\left(\frac{8\,b^{\frac{7}{2}}}{c^3} - \frac{15\,(cx+b)^{\frac{7}{2}} - 42\,(cx+b)^{\frac{5}{2}}b + 35\,(cx+b)^{\frac{3}{2}}b^2}{c^3}\right) + \frac{2}{15}\,Bb\left(\frac{2\,b^{\frac{5}{2}}}{c^2} + \frac{3\,(cx+b)^{\frac{5}{2}} - 5\,(cx+b)^{\frac{3}{2}}b}{c^2}\right) +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] -2/105*B*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35
*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*B*b*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) -
 5*(c*x + b)^(3/2)*b)/c^2) + 2/15*A*c*(2*b^(5/2)/c^2 + (3*(c*x + b)^(5/2) -
 5*(c*x + b)^(3/2)*b)/c^2) + 2/3*A*b*((c*x + b)^(3/2)/c - b^(3/2)/c)
```

maple [**A**] time = 0.05, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(5Bcx + 7Ac - 2bB)\left(c\,x^2 + bx\right)^{\frac{3}{2}}}{35c^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x)
```

```
[Out] 2/35*(c*x+b)*(5*B*c*x+7*A*c-2*B*b)*(c*x^2+b*x)^(3/2)/c^2/x^(3/2)
```

maxima [**B**] time = 0.62, size = 129, normalized size = 2.11

$$\frac{2\left(5\,bcx^2 + 5\,b^2x + \left(3\,c^2x^2 + bcx - 2\,b^2\right)x\right)\sqrt{cx+b}\,A}{15\,cx} + \frac{2\left(\left(15\,c^3x^3 + 3\,bc^2x^2 - 4\,b^2cx + 8\,b^3\right)x^2 + 7\left(3\,bc^2x^3 + \right.\right.}{105\,c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*(5*b*c*x^2 + 5*b^2*x + (3*c^2*x^2 + b*c*x - 2*b^2)*x)*sqrt(c*x + b)*A/
(c*x) + 2/105*((15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x + 8*b^3)*x^2 + 7*(3*b*
c^2*x^3 + b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*B/(c^2*x^2)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(c\,x^2 + b\,x\right)^{3/2}\,\left(A + B\,x\right)}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(3/2), x)
```

3.208 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=105

$$-2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}}$$

```
[Out] 2/3*A*(c*x^2+b*x)^(3/2)/x^(3/2)+2/5*B*(c*x^2+b*x)^(5/2)/c/x^(5/2)-2*A*b^(3/
2)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))+2*A*b*(c*x^2+b*x)^(1/2)/x^(1/
2)
```

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {794, 664, 660, 207}

$$-2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*A*b*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*A*(b*x + c*x^2)^(3/2))/(3*x^(3/2)) +
 (2*B*(b*x + c*x^2)^(5/2))/(5*c*x^(5/2)) - 2*A*b^(3/2)*ArcTanh[Sqrt[b*x + c
*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + A\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx \\ &= \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + (Ab)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx \\ &= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + \left(Ab^2\right)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}} \\ &= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} + \left(2Ab^2\right)\text{Subst}\left(\int \frac{1}{-b+} \right. \\ &= \frac{2Ab\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2A\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2B\left(bx+cx^2\right)^{5/2}}{5cx^{5/2}} - 2Ab^{3/2}\tanh^{-1}\left(\frac{\sqrt{bx+c}}{\sqrt{b}\sqrt{x}} \right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 100, normalized size = 0.95

$$\frac{2\sqrt{x}\sqrt{b+cx}\left(\sqrt{b+cx}\left(b(20Ac+6Bcx)+c^2x(5A+3Bx)+3b^2B\right)-15Ab^{3/2}c\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{15c\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (2*Sqrt[x]*Sqrt[b + c*x]*(Sqrt[b + c*x]*(3*b^2*B + c^2*x*(5*A + 3*B*x) + b*
(20*A*c + 6*B*c*x)) - 15*A*b^(3/2)*c*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(15*c
*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.84, size = 195, normalized size = 1.86

$$\left[\frac{15\,Ab^{\frac{3}{2}}cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(3\,Bc^2x^2+3\,Bb^2+20\,Abc+\left(6\,Bbc+5\,Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{15\,cx},\ \frac{2\left(15\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] [1/15*(15*A*b^(3/2)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*s
qrt(x))/x^2) + 2*(3*B*c^2*x^2 + 3*B*b^2 + 20*A*b*c + (6*B*b*c + 5*A*c^2)*x)
*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x), 2/15*(15*A*sqrt(-b)*b*c*x*arctan(sqrt(-b
)*sqrt(x)/sqrt(c*x^2 + b*x)) + (3*B*c^2*x^2 + 3*B*b^2 + 20*A*b*c + (6*B*b*c
 + 5*A*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [A] time = 0.20, size = 123, normalized size = 1.17

$$\frac{2\,Ab^2\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{2\left(15\,Ab^2c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)+3\,B\sqrt{-b}\,b^{\frac{5}{2}}+20\,A\sqrt{-b}\,b^{\frac{3}{2}}c\right)}{15\,\sqrt{-b}\,c}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}Bc^4+5\,(cx+b)^{\frac{3}{2}}\right.}{15\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2*A*b^2*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/15*(15*A*b^2*c*arctan(s
qrt(b)/sqrt(-b)) + 3*B*sqrt(-b)*b^(5/2) + 20*A*sqrt(-b)*b^(3/2)*c)/(sqrt(-b
)*c) + 2/15*(3*(c*x + b)^(5/2)*B*c^4 + 5*(c*x + b)^(3/2)*A*c^5 + 15*sqrt(c*
x + b)*A*b*c^5)/c^5
```

maple [A] time = 0.06, size = 113, normalized size = 1.08

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(-3\sqrt{cx+b}\;B\,c^2x^2+15A\,b^{\frac{3}{2}}c\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-5\sqrt{cx+b}\;A\,c^2x-6\sqrt{cx+b}\;Bbcx-20\sqrt{cx+}\right.}{15\sqrt{cx+b}\;c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x)
```

```
[Out] -2/15*((c*x+b)*x)^(1/2)*(-3*B*x^2*c^2*(c*x+b)^(1/2)+15*A*b^(3/2)*c*arctanh(
(c*x+b)^(1/2)/b^(1/2))-5*A*x*c^2*(c*x+b)^(1/2)-6*B*x*b*c*(c*x+b)^(1/2)-20*A
*b*c*(c*x+b)^(1/2)-3*B*b^2*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$Ab\int\frac{\sqrt{cx+b}}{x}\,dx+\frac{2\left(5\left(Bbc+Ac^2\right)x^2+\left(3\,Bc^2x^2+Bbcx-2\,Bb^2\right)x+5\left(Bb^2+Abc\right)x\right)\sqrt{cx+b}}{15\,cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] A*b*integrate(sqrt(c*x + b)/x, x) + 2/15*(5*(B*b*c + A*c^2)*x^2 + (3*B*c^2*
x^2 + B*b*c*x - 2*B*b^2)*x + 5*(B*b^2 + A*b*c)*x)*sqrt(c*x + b)/(c*x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(5/2), x)
```

3.209 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=128

$$\frac{\sqrt{bx+cx^2}\,(3Ac+2bB)}{\sqrt{x}}-\sqrt{b}\,(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{\left(bx+cx^2\right)^{3/2}(3Ac+2bB)}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}$$

```
[Out] 1/3*(3*A*c+2*B*b)*(c*x^2+b*x)^(3/2)/b/x^(3/2)-A*(c*x^2+b*x)^(5/2)/b/x^(7/2)
-(3*A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))*b^(1/2)+(3*A*c+2*
B*b)*(c*x^2+b*x)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {792, 664, 660, 207}

$$\frac{\left(bx+cx^2\right)^{3/2}(3Ac+2bB)}{3bx^{3/2}}+\frac{\sqrt{bx+cx^2}\,(3Ac+2bB)}{\sqrt{x}}-\sqrt{b}\,(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] ((2*b*B + 3*A*c)*Sqrt[b*x + c*x^2])/Sqrt[x] + ((2*b*B + 3*A*c)*(b*x + c*x^2
)^(3/2))/(3*b*x^(3/2)) - (A*(b*x + c*x^2)^(5/2))/(b*x^(7/2)) - Sqrt[b]*(2*b
*B + 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}+\frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx}{b}\\
&= \frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}+\frac{1}{2}(2bB+3Ac)\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,d\\
&= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}+\frac{1}{2}(b(\\
&= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}+(b(2\\
&= \frac{(2bB+3Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+3Ac)\left(bx+cx^2\right)^{3/2}}{3bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{bx^{7/2}}-\sqrt{b}(
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 94, normalized size = 0.73

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{b+cx}\,(2Bx(4b+cx)-3A(b-2cx))-3\sqrt{b}\,x(3Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{3x^{3/2}\sqrt{b+cx}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[b + c*x]*(-3*A*(b - 2*c*x) + 2*B*x*(4*b + c*x)) -
3*Sqrt[b]*(2*b*B + 3*A*c)*x*ArcTanh[Sqrt[b + c*x]/Sqrt[b]]))/(3*x^(3/2)*Sqr
t[b + c*x])
```

fricas [A] time = 1.08, size = 184, normalized size = 1.44

$$
\left[\frac{3\,(2\,Bb+3\,Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Bcx^2-3\,Ab+2\,(4\,Bb+3\,Ac)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{6\,x^2},\ 3(
\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(2*B*b + 3*A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*
x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*B*c*x^2 - 3*A*b + 2*(4*B*b + 3*A*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/x^2, 1/3*(3*(2*B*b + 3*A*c)*sqrt(-b)*x^2*arctan(sqrt
(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (2*B*c*x^2 - 3*A*b + 2*(4*B*b + 3*A*c)*x)
*sqrt(c*x^2 + b*x)*sqrt(x))/x^2]
```

giac [A] time = 0.27, size = 93, normalized size = 0.73

$$
\frac{2\,(cx+b)^{\frac{3}{2}}Bc+6\,\sqrt{cx+b}\,Bbc+6\,\sqrt{cx+b}\,Ac^2-\frac{3\,\sqrt{cx+b}\,Abc}{x}+\frac{3\left(2\,Bb^2c+3\,Abc^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}}{3\,c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 1/3*(2*(c*x + b)^(3/2)*B*c + 6*sqrt(c*x + b)*B*b*c + 6*sqrt(c*x + b)*A*c^2
- 3*sqrt(c*x + b)*A*b*c/x + 3*(2*B*b^2*c + 3*A*b*c^2)*arctan(sqrt(c*x + b)/
sqrt(-b))/sqrt(-b))/c
```

maple [A] time = 0.07, size = 122, normalized size = 0.95

$$-\frac{\sqrt{(cx+b)\,x}\;\Bigg(9Abcx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+6B\,b^{2}x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2\sqrt{cx+b}\;B\sqrt{b}\;c\,x^{2}-6\sqrt{cx+b}\;A\sqrt{b}\;cx-8}{3\sqrt{cx+b}\;\sqrt{b}\;x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x)
```

```
[Out] -1/3*((c*x+b)*x)^(1/2)*(-2*B*x^2*c*b^(1/2)*(c*x+b)^(1/2)+9*A*arctanh((c*x+b
)^(1/2)/b^(1/2))*x*b*c-6*A*x*c*b^(1/2)*(c*x+b)^(1/2)+6*B*arctanh((c*x+b)^(1
/2)/b^(1/2))*x*b^2-8*B*x*b^(3/2)*(c*x+b)^(1/2)+3*A*b^(3/2)*(c*x+b)^(1/2))/x
^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2}{3}\,(Bcx+Bb)\sqrt{cx+b}\;+\int\frac{(Ab+(Bb+Ac)x)\sqrt{cx+b}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b) + integrate((A*b + (B*b + A*c)*x)*sqrt(c*x
+ b)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^{2}+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(x\,(b+cx))^{\frac{3}{2}}\,(A+Bx)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(7/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(7/2), x)
```

3.210 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=137

$$\frac{3c\sqrt{bx+cx^2}\,(Ac+4bB)}{4b\sqrt{x}}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4\sqrt{b}}-\frac{\left(bx+cx^2\right)^{3/2}(Ac+4bB)}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}$$

```
[Out] -1/4*(A*c+4*B*b)*(c*x^2+b*x)^(3/2)/b/x^(5/2)-1/2*A*(c*x^2+b*x)^(5/2)/b/x^(9
/2)-3/4*c*(A*c+4*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(1/2)+3/
4*c*(A*c+4*B*b)*(c*x^2+b*x)^(1/2)/b/x^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$-\frac{\left(bx+cx^2\right)^{3/2}(Ac+4bB)}{4bx^{5/2}}+\frac{3c\sqrt{bx+cx^2}\,(Ac+4bB)}{4b\sqrt{x}}-\frac{3c(Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{4\sqrt{b}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (3*c*(4*b*B + A*c)*Sqrt[b*x + c*x^2])/(4*b*Sqrt[x]) - ((4*b*B + A*c)*(b*x +
 c*x^2)^(3/2))/(4*b*x^(5/2)) - (A*(b*x + c*x^2)^(5/2))/(2*b*x^(9/2)) - (3*c
*(4*b*B + A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*Sqrt[b])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}+\frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx}{2b}\\
&= -\frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}+\frac{(3c(4bB+Ac))\int \frac{\sqrt{bx+cx^2}}{x^{3/2}}\,dx}{8b}\\
&= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}}-\frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}+\frac{1}{8}(3c(4\\
&= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}}-\frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}+\frac{1}{4}(3c(4\\
&= \frac{3c(4bB+Ac)\sqrt{bx+cx^2}}{4b\sqrt{x}}-\frac{(4bB+Ac)\left(bx+cx^2\right)^{3/2}}{4bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{2bx^{9/2}}-\frac{3c(4bB}{}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.43

$$\frac{(x(b+cx))^{5/2}\left(cx^2(Ac+4bB)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx}{b}+1\right)-5Ab^2\right)}{10b^3x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*(-5*A*b^2 + c*(4*b*B + A*c)*x^2*Hypergeometric2F1[2, 5
/2, 7/2, 1 + (c*x)/b]))/(10*b^3*x^(9/2))
```

fricas [A] time = 1.05, size = 206, normalized size = 1.50

$$\left[\frac{3\left(4\,Bbc+Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Bbcx^2-2\,Ab^2-\left(4\,Bb^2+5\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,bx^3},\ 3\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [1/8*(3*(4*B*b*c + A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*B*b*c*x^2 - 2*A*b^2 - (4*B*b^2 + 5*A*b*c)
*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^3), 1/4*(3*(4*B*b*c + A*c^2)*sqrt(-b)*x
^3*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (8*B*b*c*x^2 - 2*A*b^2 - (4
*B*b^2 + 5*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^3)]
```

giac [A] time = 0.42, size = 119, normalized size = 0.87

$$\frac{8\sqrt{cx+b}\,Bc^2 + \frac{3\left(4\,Bbc^2+Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{4\,(cx+b)^{\frac{3}{2}}Bbc^2-4\,\sqrt{cx+b}\,Bb^2c^2+5\,(cx+b)^{\frac{3}{2}}Ac^3-3\,\sqrt{cx+b}\,Abc^3}{c^2x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/4*(8*sqrt(c*x + b)*B*c^2 + 3*(4*B*b*c^2 + A*c^3)*arctan(sqrt(c*x + b)/sqr
t(-b))/sqrt(-b) - (4*(c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 +
5*(c*x + b)^(3/2)*A*c^3 - 3*sqrt(c*x + b)*A*b*c^3)/(c^2*x^2))/c
```

maple [A] time = 0.07, size = 126, normalized size = 0.92

$$-\frac{\sqrt{(cx+b)\,x}\ \Big(3A\,c^2x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+12Bbc\,x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-8\sqrt{cx+b}\ B\sqrt{b}\ c\,x^2+5\sqrt{cx+b}\ A\sqrt{b}}{4\sqrt{cx+b}\ \sqrt{b}\ x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x)
```

```
[Out] -1/4*((c*x+b)*x)^(1/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2+12*B*arc
tanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-8*(c*x+b)^(1/2)*B*b^(1/2)*c*x^2+5*(c*x+
b)^(1/2)*A*b^(1/2)*c*x+4*(c*x+b)^(1/2)*B*b^(3/2)*x+2*(c*x+b)^(1/2)*A*b^(3/2
))/x^(5/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\,(b+cx)\right)^{\frac{3}{2}}\,(A+Bx)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(9/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(9/2), x)
```

3.211 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx$

Optimal. Leaf size=142

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8b^{3/2}}-\frac{\left(bx+cx^2\right)^{3/2}(6bB-Ac)}{12bx^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(6bB-Ac)}{8bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}$$

```
[Out] -1/12*(-A*c+6*B*b)*(c*x^2+b*x)^(3/2)/b/x^(7/2)-1/3*A*(c*x^2+b*x)^(5/2)/b/x^
(11/2)-1/8*c^2*(-A*c+6*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(3
/2)-1/8*c*(-A*c+6*B*b)*(c*x^2+b*x)^(1/2)/b/x^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {792, 662, 660, 207}

$$-\frac{c^2(6bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8b^{3/2}}-\frac{\left(bx+cx^2\right)^{3/2}(6bB-Ac)}{12bx^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(6bB-Ac)}{8bx^{3/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] -(c*(6*b*B - A*c)*Sqrt[b*x + c*x^2])/(8*b*x^(3/2)) - ((6*b*B - A*c)*(b*x +
c*x^2)^(3/2))/(12*b*x^(7/2)) - (A*(b*x + c*x^2)^(5/2))/(3*b*x^(11/2)) - (c^
2*(6*b*B - A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}+\frac{\left(-\frac{11}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx}{3b}\\
&= -\frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}+\frac{(c(6bB-Ac))\int\frac{\sqrt{bx+cx^2}}{x^{5/2}}\,dx}{8b}\\
&= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}}-\frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}+\left(c^2(6\right.\\
&= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}}-\frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}+\left(c^2(6\right.\\
&= -\frac{c(6bB-Ac)\sqrt{bx+cx^2}}{8bx^{3/2}}-\frac{(6bB-Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{3bx^{11/2}}-c^2(6b
\end{aligned}
$$

Mathematica [A] time = 0.12, size = 107, normalized size = 0.75

$$
-\frac{(b+cx)\left(A\left(8b^2+14bcx+3c^2x^2\right)+6bBx(2b+5cx)\right)+3c^2x^3\sqrt{\frac{cx}{b}+1}\,(6bB-Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)}{24bx^{5/2}\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] -1/24*((b + c*x)*(6*b*B*x*(2*b + 5*c*x) + A*(8*b^2 + 14*b*c*x + 3*c^2*x^2))
 + 3*c^2*(6*b*B - A*c)*x^3*Sqrt[1 + (c*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b
*x^(5/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.91, size = 239, normalized size = 1.68

$$
\left[-\frac{3\left(6\,Bbc^2-Ac^3\right)\sqrt{b}\,x^4\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Ab^3+3\left(10\,Bb^2c+Abc^2\right)x^2+2\left(6\,Bb^3+7\,Ab^2\right.\right.}{48\,b^2x^4}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(6*B*b*c^2 - A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 + 3*(10*B*b^2*c + A*b*c^2)*x^2
+ 2*(6*B*b^3 + 7*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^4), 1/24*(3*
(6*B*b*c^2 - A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x))
 - (8*A*b^3 + 3*(10*B*b^2*c + A*b*c^2)*x^2 + 2*(6*B*b^3 + 7*A*b^2*c)*x)*sqr
t(c*x^2 + b*x)*sqrt(x))/(b^2*x^4)]
```

giac [A] time = 0.32, size = 145, normalized size = 1.02

$$
\frac{\frac{3\left(6\,Bbc^3-Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{30\,(cx+b)^{\frac{5}{2}}\,Bbc^3-48\,(cx+b)^{\frac{3}{2}}\,Bb^2c^3+18\,\sqrt{cx+b}\,Bb^3c^3+3\,(cx+b)^{\frac{5}{2}}\,Ac^4+8\,(cx+b)^{\frac{3}{2}}\,Abc^4-3\,\sqrt{cx+b}\,Ab^2c^4}{bc^3x^3}}{24\,c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] 1/24*(3*(6*B*b*c^3 - A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - (
30*(c*x + b)^(5/2)*B*b*c^3 - 48*(c*x + b)^(3/2)*B*b^2*c^3 + 18*sqrt(c*x + b
)*B*b^3*c^3 + 3*(c*x + b)^(5/2)*A*c^4 + 8*(c*x + b)^(3/2)*A*b*c^4 - 3*sqrt(
c*x + b)*A*b^2*c^4)/(b*c^3*x^3))/c
```

maple [A] time = 0.07, size = 147, normalized size = 1.04

$$\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^{3}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-18Bb\,c^{2}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\;A\sqrt{b}\;c^{2}x^{2}-30\sqrt{cx+b}\;B\,b^{\frac{3}{2}}c\,x}{24\sqrt{cx+b}\;b^{\frac{3}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)/b^(3/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3-
18*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-3*(c*x+b)^(1/2)*A*b^(1/2)*c^2
*x^2-30*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2-14*(c*x+b)^(1/2)*A*b^(3/2)*c*x-12*(c*
x+b)^(1/2)*B*b^(5/2)*x-8*(c*x+b)^(1/2)*A*b^(5/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(11/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(11/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(11/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/x**(11/2), x)
```

3.212 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=179

$$\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{5/2}}-\frac{c^2\sqrt{bx+cx^2}\,(8bB-3Ac)}{64b^2x^{3/2}}-\frac{c\sqrt{bx+cx^2}\,(8bB-3Ac)}{32bx^{5/2}}-\frac{\left(bx+cx^2\right)^{3/2}(8bB-3}{24bx^{9/2}}$$

```
[Out] -1/24*(-3*A*c+8*B*b)*(c*x^2+b*x)^(3/2)/b/x^(9/2)-1/4*A*(c*x^2+b*x)^(5/2)/b/
x^(13/2)+1/64*c^3*(-3*A*c+8*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))
/b^(5/2)-1/32*c*(-3*A*c+8*B*b)*(c*x^2+b*x)^(1/2)/b/x^(5/2)-1/64*c^2*(-3*A*c
+8*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^(3/2)
```

Rubi [**A**] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$-\frac{c^2\sqrt{bx+cx^2}\,(8bB-3Ac)}{64b^2x^{3/2}}+\frac{c^3(8bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(8bB-3Ac)}{32bx^{5/2}}-\frac{\left(bx+cx^2\right)^{3/2}(8bB-}{24bx^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] -(c*(8*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(32*b*x^(5/2)) - (c^2*(8*b*B - 3*A*c
)*Sqrt[b*x + c*x^2])/(64*b^2*x^(3/2)) - ((8*b*B - 3*A*c)*(b*x + c*x^2)^(3/2
))/(24*b*x^(9/2)) - (A*(b*x + c*x^2)^(5/2))/(4*b*x^(13/2)) + (c^3*(8*b*B -
3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
```

```
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\frac{\left(-\frac{13}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int\frac{\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx}{4b}\\
&= -\frac{(8bB-3Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{9/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\frac{(c(8bB-3Ac))\int\frac{\sqrt{bx+cx^2}}{x^{7/2}}\,dx}{16b}\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{(8bB-3Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{9/2}}-\frac{A\left(bx+cx^2\right)^{5/2}}{4bx^{13/2}}+\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-\\
&= -\frac{c(8bB-3Ac)\sqrt{bx+cx^2}}{32bx^{5/2}}-\frac{c^2(8bB-3Ac)\sqrt{bx+cx^2}}{64b^2x^{3/2}}-
\end{aligned}$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.35

$$\frac{(x(b+cx))^{5/2}\left(c^3x^4(8bB-3Ac)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx}{b}+1\right)-5Ab^4\right)}{20b^5x^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*(-5*A*b^4 + c^3*(8*b*B - 3*A*c)*x^4*Hypergeometric2F1[
5/2, 4, 7/2, 1 + (c*x)/b]))/(20*b^5*x^(13/2))
```

fricas [A] time = 1.02, size = 288, normalized size = 1.61

$$\left[-\frac{3\left(8\,Bbc^3-3\,Ac^4\right)\sqrt{b}\,x^5\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(48\,Ab^4+3\left(8\,Bb^2c^2-3\,Abc^3\right)x^3+2\left(56\,Bb^3c+3\right.\right.}{384\,b^3x^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(b)*x^5*log(-(c*x^2 + 2*b*x - 2*sqrt(c
*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*A*b^4 + 3*(8*B*b^2*c^2 - 3*A*b*c^
3)*x^3 + 2*(56*B*b^3*c + 3*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 9*A*b^3*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/(b^3*x^5), -1/192*(3*(8*B*b*c^3 - 3*A*c^4)*sqrt(-b)*
x^5*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (48*A*b^4 + 3*(8*B*b^2*c^2
 - 3*A*b*c^3)*x^3 + 2*(56*B*b^3*c + 3*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 9*A*b^3
*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^5)]
```

giac [A] time = 0.32, size = 176, normalized size = 0.98

$$-\frac{\frac{3\left(8\,Bbc^4-3\,Ac^5\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{24\,(cx+b)^{\frac{7}{2}}\,Bbc^4+40\,(cx+b)^{\frac{5}{2}}\,Bb^2c^4-88\,(cx+b)^{\frac{3}{2}}\,Bb^3c^4+24\,\sqrt{cx+b}\,Bb^4c^4-9\,(cx+b)^{\frac{7}{2}}\,Ac^5+33\,(cx+b)^{\frac{5}{2}}\,Abc^5+3}{b^2c^4x^4}}{192\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="giac")
```

```
[Out] -1/192*(3*(8*B*b*c^4 - 3*A*c^5)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^
2) + (24*(c*x + b)^(7/2)*B*b*c^4 + 40*(c*x + b)^(5/2)*B*b^2*c^4 - 88*(c*x +
 b)^(3/2)*B*b^3*c^4 + 24*sqrt(c*x + b)*B*b^4*c^4 - 9*(c*x + b)^(7/2)*A*c^5
+ 33*(c*x + b)^(5/2)*A*b*c^5 + 33*(c*x + b)^(3/2)*A*b^2*c^5 - 9*sqrt(c*x +
b)*A*b^3*c^5)/(b^2*c^4*x^4))/c
```

maple [A] time = 0.08, size = 185, normalized size = 1.03

$$-\frac{\sqrt{(cx+b)\,x}\,\left(9A\,c^4x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-24Bb\,c^3x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-9\sqrt{cx+b}\,\,A\sqrt{b}\,\,c^3x^3+24\sqrt{cx+b}\,\,B\,b\right.}{192\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x)
```

```
[Out] -1/192*((c*x+b)*x)^(1/2)/b^(5/2)*(9*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*c^
4-24*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*b*c^3-9*A*x^3*c^3*b^(1/2)*(c*x+b)
^(1/2)+24*B*x^3*b^(3/2)*c^2*(c*x+b)^(1/2)+6*A*x^2*b^(3/2)*c^2*(c*x+b)^(1/2)
+112*B*x^2*b^(5/2)*c*(c*x+b)^(1/2)+72*A*x*b^(5/2)*c*(c*x+b)^(1/2)+64*B*x*b^
(7/2)*(c*x+b)^(1/2)+48*A*b^(7/2)*(c*x+b)^(1/2))/x^(9/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(13/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(13/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(13/2),x)
```

```
[Out] Timed out
```

3.213 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{15/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{7/2}}+\frac{3c^3\sqrt{bx+cx^2}\,(2bB-Ac)}{128b^3x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(2bB-Ac)}{64b^2x^{5/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-A}{16bx^{7/2}}$$

```
[Out] -1/8*(-A*c+2*B*b)*(c*x^2+b*x)^(3/2)/b/x^(11/2)-1/5*A*(c*x^2+b*x)^(5/2)/b/x^
(15/2)-3/128*c^4*(-A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^
(7/2)-1/16*c*(-A*c+2*B*b)*(c*x^2+b*x)^(1/2)/b/x^(7/2)-1/64*c^2*(-A*c+2*B*b)
*(c*x^2+b*x)^(1/2)/b^2/x^(5/2)+3/128*c^3*(-A*c+2*B*b)*(c*x^2+b*x)^(1/2)/b^3
/x^(3/2)
```

Rubi [A] time = 0.19, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {792, 662, 672, 660, 207}

$$\frac{3c^3\sqrt{bx+cx^2}\,(2bB-Ac)}{128b^3x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(2bB-Ac)}{64b^2x^{5/2}}-\frac{3c^4(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{7/2}}-\frac{c\sqrt{bx+cx^2}\,(2bB-Ac}{16bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] -(c*(2*b*B - A*c)*Sqrt[b*x + c*x^2])/(16*b*x^(7/2)) - (c^2*(2*b*B - A*c)*Sq
rt[b*x + c*x^2])/(64*b^2*x^(5/2)) + (3*c^3*(2*b*B - A*c)*Sqrt[b*x + c*x^2])
/(128*b^3*x^(3/2)) - ((2*b*B - A*c)*(b*x + c*x^2)^(3/2))/(8*b*x^(11/2)) - (
A*(b*x + c*x^2)^(5/2))/(5*b*x^(15/2)) - (3*c^4*(2*b*B - A*c)*ArcTanh[Sqrt[b
*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(128*b^(7/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
```

```
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{x^{15/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \frac{\left(-\frac{15}{2}(-bB+Ac)+\frac{5}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{13/2}}\,dx}{5b}$$

$$= -\frac{(2bB-Ac)\left(bx+cx^2\right)^{3/2}}{8bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \frac{(3c(2bB-Ac))\int \frac{\sqrt{bx+cx^2}}{x^{9/2}}\,dx}{16b}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{(2bB-Ac)\left(bx+cx^2\right)^{3/2}}{8bx^{11/2}} - \frac{A\left(bx+cx^2\right)^{5/2}}{5bx^{15/2}} + \left(c^2(2bB\right.$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} - \frac{(2bB-Ac)\left(bx+cx^2\right)^{3/2}}{8bx^{11/2}} -$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx^2}}{128b^3x^{3/2}}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx^2}}{128b^3x^{3/2}}$$

$$= -\frac{c(2bB-Ac)\sqrt{bx+cx^2}}{16bx^{7/2}} - \frac{c^2(2bB-Ac)\sqrt{bx+cx^2}}{64b^2x^{5/2}} + \frac{3c^3(2bB-Ac)\sqrt{bx+cx^2}}{128b^3x^{3/2}}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.28

$$-\frac{(x(b+cx))^{5/2}\left(Ab^5+c^4x^5(2bB-Ac)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};\frac{cx}{b}+1\right)\right)}{5b^6x^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] -1/5*((x*(b + c*x))^(5/2)*(A*b^5 + c^4*(2*b*B - A*c)*x^5*Hypergeometric2F1[
5/2, 5, 7/2, 1 + (c*x)/b]))/(b^6*x^(15/2))
```

fricas [A] time = 0.83, size = 335, normalized size = 1.55

$$\left[-\frac{15\left(2\,Bbc^4-Ac^5\right)\sqrt{b}\,x^6\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(128\,Ab^5-15\left(2\,Bb^2c^3-Abc^4\right)x^4+10\left(2\,Bb^3c^2-A\right.\right.}{1280\,b^4x^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(2*B*b*c^4 - A*c^5)*sqrt(b)*x^6*log(-(c*x^2 + 2*b*x + 2*sqrt(c
*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(128*A*b^5 - 15*(2*B*b^2*c^3 - A*b*c^
4)*x^4 + 10*(2*B*b^3*c^2 - A*b^2*c^3)*x^3 + 8*(30*B*b^4*c + A*b^3*c^2)*x^2
+ 16*(10*B*b^5 + 11*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^6), 1/640
*(15*(2*B*b*c^4 - A*c^5)*sqrt(-b)*x^6*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (128*A*b^5 - 15*(2*B*b^2*c^3 - A*b*c^4)*x^4 + 10*(2*B*b^3*c^2 - A*b
^2*c^3)*x^3 + 8*(30*B*b^4*c + A*b^3*c^2)*x^2 + 16*(10*B*b^5 + 11*A*b^4*c)*x
)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^6)]
```

giac [A] time = 0.35, size = 192, normalized size = 0.89

$$\frac{\frac{15\left(2\,Bbc^{5}-Ac^{6}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^{3}}+\frac{30\,(cx+b)^{\frac{9}{2}}\,Bbc^{5}-140\,(cx+b)^{\frac{7}{2}}\,Bb^{2}c^{5}+140\,(cx+b)^{\frac{3}{2}}\,Bb^{4}c^{5}-30\,\sqrt{cx+b}\,Bb^{5}c^{5}-15\,(cx+b)^{\frac{9}{2}}\,Ac^{6}+70\,(cx+b)^{\frac{7}{2}}\,Abc^{6}-}{b^{3}c^{5}x^{5}}}{640\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="giac")
```

```
[Out] 1/640*(15*(2*B*b*c^5 - A*c^6)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3)
 + (30*(c*x + b)^(9/2)*B*b*c^5 - 140*(c*x + b)^(7/2)*B*b^2*c^5 + 140*(c*x +
 b)^(3/2)*B*b^4*c^5 - 30*sqrt(c*x + b)*B*b^5*c^5 - 15*(c*x + b)^(9/2)*A*c^6
 + 70*(c*x + b)^(7/2)*A*b*c^6 - 128*(c*x + b)^(5/2)*A*b^2*c^6 - 70*(c*x + b
)^(3/2)*A*b^3*c^6 + 15*sqrt(c*x + b)*A*b^4*c^6)/(b^3*c^5*x^5))/c
```

maple [A] time = 0.07, size = 223, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^{5}x^{5}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-30Bb\,c^{4}x^{5}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15\sqrt{cx+b}\,\,A\sqrt{b}\,\,c^{4}x^{4}+30\sqrt{cx+b}\,\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x)
```

```
[Out] 1/640*((c*x+b)*x)^(1/2)/b^(7/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*c^
5-30*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*b*c^4-15*A*x^4*c^4*b^(1/2)*(c*x+b
)^(1/2)+30*B*x^4*b^(3/2)*c^3*(c*x+b)^(1/2)+10*A*x^3*b^(3/2)*c^3*(c*x+b)^(1/
2)-20*B*x^3*b^(5/2)*c^2*(c*x+b)^(1/2)-8*A*x^2*b^(5/2)*c^2*(c*x+b)^(1/2)-240
*B*x^2*b^(7/2)*c*(c*x+b)^(1/2)-176*A*x*b^(7/2)*c*(c*x+b)^(1/2)-160*B*x*b^(9
/2)*(c*x+b)^(1/2)-128*A*b^(9/2)*(c*x+b)^(1/2))/x^(11/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}(Bx+A)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/x^(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{x^{15/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(15/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/x^(15/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/x**(15/2),x)
```

```
[Out] Timed out
```

3.214 $\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=207

$$-\frac{256b^4\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{765765c^6x^{7/2}}+\frac{128b^3\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{109395c^5x^{5/2}}-\frac{32b^2\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{12155c^4x^{3/2}}+$$

```
[Out] -256/765765*b^4*(-17*A*c+10*B*b)*(c*x^2+b*x)^(7/2)/c^6/x^(7/2)+128/109395*b
^3*(-17*A*c+10*B*b)*(c*x^2+b*x)^(7/2)/c^5/x^(5/2)-32/12155*b^2*(-17*A*c+10*
B*b)*(c*x^2+b*x)^(7/2)/c^4/x^(3/2)+2/17*B*x^(3/2)*(c*x^2+b*x)^(7/2)/c+16/33
15*b*(-17*A*c+10*B*b)*(c*x^2+b*x)^(7/2)/c^3/x^(1/2)-2/255*(-17*A*c+10*B*b)*
(c*x^2+b*x)^(7/2)*x^(1/2)/c^2
```

Rubi [A] time = 0.20, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{256b^4\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{765765c^6x^{7/2}}+\frac{128b^3\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{109395c^5x^{5/2}}-\frac{32b^2\left(bx+cx^2\right)^{7/2}(10bB-17Ac)}{12155c^4x^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-256*b^4*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(765765*c^6*x^(7/2)) + (12
8*b^3*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(109395*c^5*x^(5/2)) - (32*b^2
*(10*b*B - 17*A*c)*(b*x + c*x^2)^(7/2))/(12155*c^4*x^(3/2)) + (16*b*(10*b*B
 - 17*A*c)*(b*x + c*x^2)^(7/2))/(3315*c^3*Sqrt[x]) - (2*(10*b*B - 17*A*c)*S
qrt[x]*(b*x + c*x^2)^(7/2))/(255*c^2) + (2*B*x^(3/2)*(b*x + c*x^2)^(7/2))/(
17*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int x^{3/2}(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx=\frac{2Bx^{3/2}\left(bx+cx^2\right)^{7/2}}{17c}+\frac{(2(\frac{3}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)))\int x^{3/2}(bx+cx^2)}{17c}$$

$$=-\frac{2(10bB-17Ac)\sqrt{x}\left(bx+cx^2\right)^{7/2}}{255c^2}+\frac{2Bx^{3/2}\left(bx+cx^2\right)^{7/2}}{17c}+\frac{(8b(10bB-17A}{}$$

$$=\frac{16b(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{3315c^3\sqrt{x}}-\frac{2(10bB-17Ac)\sqrt{x}\left(bx+cx^2\right)^{7/2}}{255c^2}+\frac{2Bx^{3/2}}{}$$

$$=-\frac{32b^2(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{12155c^4x^{3/2}}+\frac{16b(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{3315c^3\sqrt{x}}-\frac{2(10}{}$$

$$=\frac{128b^3(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{109395c^5x^{5/2}}-\frac{32b^2(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{12155c^4x^{3/2}}+\frac{16b(}{}$$

$$=-\frac{256b^4(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{765765c^6x^{7/2}}+\frac{128b^3(10bB-17Ac)\left(bx+cx^2\right)^{7/2}}{109395c^5x^{5/2}}-$$

Mathematica [A] time = 0.09, size = 120, normalized size = 0.58

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\,(128b^4c(17A+35Bx)-224b^3c^2x(34A+45Bx)+336b^2c^3x^2(51A+55Bx)-462bc^4x^3(68}{765765c^6\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-1280*b^5*B + 3003*c^5*x^4*(17*A + 15*B*x
) + 128*b^4*c*(17*A + 35*B*x) - 224*b^3*c^2*x*(34*A + 45*B*x) + 336*b^2*c^3
*x^2*(51*A + 55*B*x) - 462*b*c^4*x^3*(68*A + 65*B*x)))/(765765*c^6*Sqrt[x])
```

fricas [A] time = 0.89, size = 199, normalized size = 0.96

$$\frac{2\,(45045\,Bc^8x^8-1280\,Bb^8+2176\,Ab^7c+3003\,(35\,Bbc^7+17\,Ac^8)x^7+231\,(275\,Bb^2c^6+527\,Abc^7)x^6+63\,(5\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^8*x^8 - 1280*B*b^8 + 2176*A*b^7*c + 3003*(35*B*b*c^7 +
17*A*c^8)*x^7 + 231*(275*B*b^2*c^6 + 527*A*b*c^7)*x^6 + 63*(5*B*b^3*c^5 + 1
207*A*b^2*c^6)*x^5 - 35*(10*B*b^4*c^4 - 17*A*b^3*c^5)*x^4 + 40*(10*B*b^5*c^
3 - 17*A*b^4*c^4)*x^3 - 48*(10*B*b^6*c^2 - 17*A*b^5*c^3)*x^2 + 64*(10*B*b^7
*c - 17*A*b^6*c^2)*x)*sqrt(c*x^2 + b*x)/(c^6*sqrt(x))
```

giac [B] time = 0.31, size = 560, normalized size = 2.71

$$\frac{2}{109395}\,Bc^2(\frac{2048\,b^{\frac{17}{2}}}{c^8}+\frac{6435\,(cx+b)^{\frac{17}{2}}-51051\,(cx+b)^{\frac{15}{2}}b+176715\,(cx+b)^{\frac{13}{2}}b^2-348075\,(cx+b)^{\frac{11}{2}}b^3+425}{c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2/109395*B*c^2*(2048*b^(17/2)/c^8 + (6435*(c*x + b)^(17/2) - 51051*(c*x + b
)^(15/2)*b + 176715*(c*x + b)^(13/2)*b^2 - 348075*(c*x + b)^(11/2)*b^3 + 42
5425*(c*x + b)^(9/2)*b^4 - 328185*(c*x + b)^(7/2)*b^5 + 153153*(c*x + b)^(5
/2)*b^6 - 36465*(c*x + b)^(3/2)*b^7)/c^8) - 4/45045*B*b*c*(1024*b^(15/2)/c^
7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^(13/2)*b + 61425*(c*x + b)^(11
/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*(c*x + b)^(7/2)*b^4 - 54054*(c
*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6)/c^7) - 2/45045*A*c^2*(1024*b
^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b)^(13/2)*b + 61425*(c*
x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 96525*(c*x + b)^(7/2)*b^4
- 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b^6)/c^7) + 2/9009*B*b^
2*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 100
10*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b
^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 4/9009*A*b*c*(256*b^(13/2)/c^6 + (693
*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 1
2870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*
b^5)/c^6) - 2/3465*A*b^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(
c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 11
55*(c*x + b)^(3/2)*b^4)/c^5)
```

maple [A] time = 0.05, size = 131, normalized size = 0.63

$$\frac{2\left(cx+b\right)\left(45045B\,x^{5}c^{5}+51051A\,c^{5}x^{4}-30030Bb\,c^{4}x^{4}-31416Ab\,c^{4}x^{3}+18480B\,b^{2}c^{3}x^{3}+17136A\,b^{2}c^{3}x^{2}-1\right.}{765765c^{6}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/765765*(c*x+b)*(45045*B*c^5*x^5+51051*A*c^5*x^4-30030*B*b*c^4*x^4-31416*A
*b*c^4*x^3+18480*B*b^2*c^3*x^3+17136*A*b^2*c^3*x^2-10080*B*b^3*c^2*x^2-7616
*A*b^3*c^2*x+4480*B*b^4*c*x+2176*A*b^4*c-1280*B*b^5)*(c*x^2+b*x)^(5/2)/c^6/
x^(5/2)
```

maxima [B] time = 0.85, size = 507, normalized size = 2.45

$$2\left(\left(3003\,c^{7}x^{7}+231\,bc^{6}x^{6}-252\,b^{2}c^{5}x^{5}+280\,b^{3}c^{4}x^{4}-320\,b^{4}c^{3}x^{3}+384\,b^{5}c^{2}x^{2}-512\,b^{6}cx+1024\,b^{7}\right)x^{6}+10\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6 - 252*b^2*c^5*x^5 + 280*b^3*c^4*x^4
- 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 - 512*b^6*c*x + 1024*b^7)*x^6 + 10*(693
*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c^4*x^5 + 80*b^4*c^3*x^4 - 96*b^5*c^2*
x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5 + 13*(315*b^2*c^5*x^7 + 35*b^3*c^4*x^6
 - 40*b^4*c^3*x^5 + 48*b^5*c^2*x^4 - 64*b^6*c*x^3 + 128*b^7*x^2)*x^4)*sqrt(
c*x + b)*A/(c^5*x^6) + 2/765765*(7*(6435*c^8*x^8 + 429*b*c^7*x^7 - 462*b^2*
c^6*x^6 + 504*b^3*c^5*x^5 - 560*b^4*c^4*x^4 + 640*b^5*c^3*x^3 - 768*b^6*c^2
*x^2 + 1024*b^7*c*x - 2048*b^8)*x^7 + 34*(3003*b*c^7*x^8 + 231*b^2*c^6*x^7
- 252*b^3*c^5*x^6 + 280*b^4*c^4*x^5 - 320*b^5*c^3*x^4 + 384*b^6*c^2*x^3 - 5
12*b^7*c*x^2 + 1024*b^8*x)*x^6 + 85*(693*b^2*c^6*x^8 + 63*b^3*c^5*x^7 - 70*
b^4*c^4*x^6 + 80*b^5*c^3*x^5 - 96*b^6*c^2*x^4 + 128*b^7*c*x^3 - 256*b^8*x^2
)*x^5)*sqrt(c*x + b)*B/(c^6*x^7)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.215 $\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{45045c^5x^{7/2}}-\frac{16b^2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{6435c^4x^{5/2}}+\frac{4b\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{715c^3x^{3/2}}-\frac{2\left(bx+cx\right.}{1}$$

```
[Out] 32/45045*b^3*(-15*A*c+8*B*b)*(c*x^2+b*x)^(7/2)/c^5/x^(7/2)-16/6435*b^2*(-15
*A*c+8*B*b)*(c*x^2+b*x)^(7/2)/c^4/x^(5/2)+4/715*b*(-15*A*c+8*B*b)*(c*x^2+b*
x)^(7/2)/c^3/x^(3/2)-2/195*(-15*A*c+8*B*b)*(c*x^2+b*x)^(7/2)/c^2/x^(1/2)+2/
15*B*(c*x^2+b*x)^(7/2)*x^(1/2)/c
```

Rubi [A] time = 0.14, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = $\{794, 656, 648\}$

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{6435c^4x^{5/2}}+\frac{32b^3\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{45045c^5x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(8bB-15Ac)}{195c^2\sqrt{x}}+\frac{4b\left(bx+c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (32*b^3*(8*b*B - 15*A*c)*(b*x + c*x^2)^(7/2))/(45045*c^5*x^(7/2)) - (16*b^2
*(8*b*B - 15*A*c)*(b*x + c*x^2)^(7/2))/(6435*c^4*x^(5/2)) + (4*b*(8*b*B - 1
5*A*c)*(b*x + c*x^2)^(7/2))/(715*c^3*x^(3/2)) - (2*(8*b*B - 15*A*c)*(b*x +
c*x^2)^(7/2))/(195*c^2*Sqrt[x]) + (2*B*Sqrt[x]*(b*x + c*x^2)^(7/2))/(15*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{x}\,(A+Bx)\left(bx+cx^2\right)^{5/2}\,dx = \frac{2B\sqrt{x}\left(bx+cx^2\right)^{7/2}}{15c} + \frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \sqrt{x}\left(bx+cx^2\right)^{5/}}{15c}$$

$$= -\frac{2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{195c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx+cx^2\right)^{7/2}}{15c} + \frac{(2b(8bB-15Ac))\int}{65c^2}$$

$$= \frac{4b(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{715c^3x^{3/2}} - \frac{2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{195c^2\sqrt{x}} + \frac{2B\sqrt{x}\left(bx+c\right.}{15c}$$

$$= -\frac{16b^2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{6435c^4x^{5/2}} + \frac{4b(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{715c^3x^{3/2}} - 2(8bB-$$

$$= \frac{32b^3(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{45045c^5x^{7/2}} - \frac{16b^2(8bB-15Ac)\left(bx+cx^2\right)^{7/2}}{6435c^4x^{5/2}} + 4b(8bB$$

Mathematica [**A**]   time = 0.07, size = 101, normalized size = 0.59

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(-16b^3c(15A+28Bx)+168b^2c^2x(5A+6Bx)-42bc^3x^2(45A+44Bx)+231c^4x^3(15A+13\right.}{45045c^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(128*b^4*B + 168*b^2*c^2*x*(5*A + 6*B*x) +
 231*c^4*x^3*(15*A + 13*B*x) - 16*b^3*c*(15*A + 28*B*x) - 42*b*c^3*x^2*(45*
A + 44*B*x)))/(45045*c^5*Sqrt[x])
```

fricas [**A**]   time = 0.55, size = 174, normalized size = 1.02

$$\frac{2\left(3003\,Bc^7x^7+128\,Bb^7-240\,Ab^6c+231\left(31\,Bbc^6+15\,Ac^7\right)x^6+63\left(71\,Bb^2c^5+135\,Abc^6\right)x^5+35\left(Bb^3c^4+159\right.\right.}{45045\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^7*x^7 + 128*B*b^7 - 240*A*b^6*c + 231*(31*B*b*c^6 + 15*A*
c^7)*x^6 + 63*(71*B*b^2*c^5 + 135*A*b*c^6)*x^5 + 35*(B*b^3*c^4 + 159*A*b^2*
c^5)*x^4 - 5*(8*B*b^4*c^3 - 15*A*b^3*c^4)*x^3 + 6*(8*B*b^5*c^2 - 15*A*b^4*c
^3)*x^2 - 8*(8*B*b^6*c - 15*A*b^5*c^2)*x)*sqrt(c*x^2 + b*x)/(c^5*sqrt(x))
```

giac [**B**]   time = 0.28, size = 488, normalized size = 2.87

$$-\frac{2}{45045}\,Bc^2\left(\frac{1024\,b^{\frac{15}{2}}}{c^7} - \frac{3003\,(cx+b)^{\frac{15}{2}} - 20790\,(cx+b)^{\frac{13}{2}}b + 61425\,(cx+b)^{\frac{11}{2}}b^2 - 100100\,(cx+b)^{\frac{9}{2}}b^3 + 96525}{c^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] -2/45045*B*c^2*(1024*b^(15/2)/c^7 - (3003*(c*x + b)^(15/2) - 20790*(c*x + b
)^(13/2)*b + 61425*(c*x + b)^(11/2)*b^2 - 100100*(c*x + b)^(9/2)*b^3 + 9652
5*(c*x + b)^(7/2)*b^4 - 54054*(c*x + b)^(5/2)*b^5 + 15015*(c*x + b)^(3/2)*b
^6)/c^7) + 4/9009*B*b*c*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c
*x + b)^(11/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 +
9009*(c*x + b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) + 2/9009*A*c^2*(2
56*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11/2)*b + 10010*(
c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x + b)^(5/2)*b^4 -
 3003*(c*x + b)^(3/2)*b^5)/c^6) - 2/3465*B*b^2*(128*b^(11/2)/c^5 - (315*(c*
x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c
*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 4/3465*A*b*c*(128*b^(1
1/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^
(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) + 2/3
15*A*b^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 18
9*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4)
```

maple [A] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2(cx+b)(-3003Bx^4c^4 - 3465Ac^4x^3 + 1848Bbc^3x^3 + 1890Abc^3x^2 - 1008Bb^2c^2x^2 - 840Ab^2c^2x + 448Bb}{45045c^5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x)
```

```
[Out] -2/45045*(c*x+b)*(-3003*B*c^4*x^4-3465*A*c^4*x^3+1848*B*b*c^3*x^3+1890*A*b*
c^3*x^2-1008*B*b^2*c^2*x^2-840*A*b^2*c^2*x+448*B*b^3*c*x+240*A*b^3*c-128*B*
b^4)*(c*x^2+b*x)^(5/2)/c^5/x^(5/2)
```

maxima [B] time = 0.82, size = 441, normalized size = 2.59

$$\frac{2(5(693c^6x^6 + 63bc^5x^5 - 70b^2c^4x^4 + 80b^3c^3x^3 - 96b^4c^2x^2 + 128b^5cx - 256b^6)x^5 + 26(315bc^5x^6 + 35b^2c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(5*(693*c^6*x^6 + 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 -
96*b^4*c^2*x^2 + 128*b^5*c*x - 256*b^6)*x^5 + 26*(315*b*c^5*x^6 + 35*b^2*c^
4*x^5 - 40*b^3*c^3*x^4 + 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4 + 1
43*(35*b^2*c^4*x^6 + 5*b^3*c^3*x^5 - 6*b^4*c^2*x^4 + 8*b^5*c*x^3 - 16*b^6*x
^2)*x^3)*sqrt(c*x + b)*A/(c^4*x^5) + 2/45045*((3003*c^7*x^7 + 231*b*c^6*x^6
 - 252*b^2*c^5*x^5 + 280*b^3*c^4*x^4 - 320*b^4*c^3*x^3 + 384*b^5*c^2*x^2 -
512*b^6*c*x + 1024*b^7)*x^6 + 10*(693*b*c^6*x^7 + 63*b^2*c^5*x^6 - 70*b^3*c
^4*x^5 + 80*b^4*c^3*x^4 - 96*b^5*c^2*x^3 + 128*b^6*c*x^2 - 256*b^7*x)*x^5 +
 13*(315*b^2*c^5*x^7 + 35*b^3*c^4*x^6 - 40*b^4*c^3*x^5 + 48*b^5*c^2*x^4 - 6
4*b^6*c*x^3 + 128*b^7*x^2)*x^4)*sqrt(c*x + b)*B/(c^5*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*(b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x} \left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.216 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{9009c^4x^{7/2}}+\frac{8b\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{1287c^3x^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{143c^2x^{3/2}}+\frac{2B\left(bx+cx\right.}{13c\sqrt{x}}$$

```
[Out] -16/9009*b^2*(-13*A*c+6*B*b)*(c*x^2+b*x)^(7/2)/c^4/x^(7/2)+8/1287*b*(-13*A*
c+6*B*b)*(c*x^2+b*x)^(7/2)/c^3/x^(5/2)-2/143*(-13*A*c+6*B*b)*(c*x^2+b*x)^(7
/2)/c^2/x^(3/2)+2/13*B*(c*x^2+b*x)^(7/2)/c/x^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {794, 656, 648}

$$-\frac{16b^2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{9009c^4x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{143c^2x^{3/2}}+\frac{8b\left(bx+cx^2\right)^{7/2}(6bB-13Ac)}{1287c^3x^{5/2}}+\frac{2B\left(bx+cx\right.}{13c\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (-16*b^2*(6*b*B - 13*A*c)*(b*x + c*x^2)^(7/2))/(9009*c^4*x^(7/2)) + (8*b*(6
*b*B - 13*A*c)*(b*x + c*x^2)^(7/2))/(1287*c^3*x^(5/2)) - (2*(6*b*B - 13*A*c
)*(b*x + c*x^2)^(7/2))/(143*c^2*x^(3/2)) + (2*B*(b*x + c*x^2)^(7/2))/(13*c*
Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx=\frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}}+\frac{\left(2\left(\frac{1}{2}(bB-Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{\sqrt{x}}\,dx}{13c}$$

$$=-\frac{2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{143c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}}+\frac{(4b(6bB-13Ac))\int\frac{\left(bx+cx^2\right)^{5/}}{x^{3/2}}}{143c^2}$$

$$=\frac{8b(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{1287c^3x^{5/2}}-\frac{2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{143c^2x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{13c\sqrt{x}}$$

$$=-\frac{16b^2(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{9009c^4x^{7/2}}+\frac{8b(6bB-13Ac)\left(bx+cx^2\right)^{7/2}}{1287c^3x^{5/2}}-\frac{2(6bB-13A}{143}$$

Mathematica [**A**]   time = 0.06, size = 82, normalized size = 0.62

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(8b^2c(13A+21Bx)-14bc^2x(26A+27Bx)+63c^3x^2(13A+11Bx)-48b^3B\right)}{9009c^4\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-48*b^3*B + 63*c^3*x^2*(13*A + 11*B*x) +
8*b^2*c*(13*A + 21*B*x) - 14*b*c^2*x*(26*A + 27*B*x)))/(9009*c^4*Sqrt[x])
```

fricas [**A**]   time = 0.63, size = 150, normalized size = 1.13

$$\frac{2\left(693\,Bc^6x^6-48\,Bb^6+104\,Ab^5c+63\left(27\,Bbc^5+13\,Ac^6\right)x^5+7\left(159\,Bb^2c^4+299\,Abc^5\right)x^4+\left(15\,Bb^3c^3+1469\,A\right.}{9009\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c^6*x^6 - 48*B*b^6 + 104*A*b^5*c + 63*(27*B*b*c^5 + 13*A*c^6)
*x^5 + 7*(159*B*b^2*c^4 + 299*A*b*c^5)*x^4 + (15*B*b^3*c^3 + 1469*A*b^2*c^4
)*x^3 - 3*(6*B*b^4*c^2 - 13*A*b^3*c^3)*x^2 + 4*(6*B*b^5*c - 13*A*b^4*c^2)*x
)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [**B**]   time = 0.27, size = 416, normalized size = 3.13

$$\frac{2}{9009}\,Bc^2\left(\frac{256\,b^{\frac{13}{2}}}{c^6}+\frac{693\,(cx+b)^{\frac{13}{2}}-4095\,(cx+b)^{\frac{11}{2}}b+10010\,(cx+b)^{\frac{9}{2}}b^2-12870\,(cx+b)^{\frac{7}{2}}b^3+9009\,(cx+b)^{\frac{5}{2}}}{c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9009*B*c^2*(256*b^(13/2)/c^6 + (693*(c*x + b)^(13/2) - 4095*(c*x + b)^(11
/2)*b + 10010*(c*x + b)^(9/2)*b^2 - 12870*(c*x + b)^(7/2)*b^3 + 9009*(c*x +
 b)^(5/2)*b^4 - 3003*(c*x + b)^(3/2)*b^5)/c^6) - 4/3465*B*b*c*(128*b^(11/2)
/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b + 2970*(c*x + b)^(7/2
)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*b^4)/c^5) - 2/3465*
A*c^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9/2)*b +
2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b)^(3/2)*
b^4)/c^5) + 2/315*B*b^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x +
b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) + 4/31
5*A*b*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b + 189
*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*A*b^2*(8*b^(7/
2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^
2)/c^3)
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\left(cx+b\right)\left(693Bc^3x^3+819Ac^3x^2-378Bbc^2x^2-364Abc^2x+168Bb^2cx+104Ab^2c-48b^3B\right)\left(cx^2+bx\right)^{\frac{5}{2}}}{9009c^4x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x)
```

```
[Out] 2/9009*(c*x+b)*(693*B*c^3*x^3+819*A*c^3*x^2-378*B*b*c^2*x^2-364*A*b*c^2*x+1
68*B*b^2*c*x+104*A*b^2*c-48*B*b^3)*(c*x^2+b*x)^(5/2)/c^4/x^(5/2)
```

maxima [B] time = 0.71, size = 375, normalized size = 2.82

$$\frac{2\left(\left(315\,c^5x^5+35\,bc^4x^4-40\,b^2c^3x^3+48\,b^3c^2x^2-64\,b^4cx+128\,b^5\right)x^4+22\left(35\,bc^4x^5+5\,b^2c^3x^4-6\,b^3c^2x^3+8\right.\right.}{3465\,c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*
b^4*c*x + 128*b^5)*x^4 + 22*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 +
 8*b^4*c*x^2 - 16*b^5*x)*x^3 + 33*(15*b^2*c^3*x^5 + 3*b^3*c^2*x^4 - 4*b^4*c
*x^3 + 8*b^5*x^2)*x^2)*sqrt(c*x + b)*A/(c^3*x^4) + 2/45045*(5*(693*c^6*x^6
+ 63*b*c^5*x^5 - 70*b^2*c^4*x^4 + 80*b^3*c^3*x^3 - 96*b^4*c^2*x^2 + 128*b^5
*c*x - 256*b^6)*x^5 + 26*(315*b*c^5*x^6 + 35*b^2*c^4*x^5 - 40*b^3*c^3*x^4 +
 48*b^4*c^2*x^3 - 64*b^5*c*x^2 + 128*b^6*x)*x^4 + 143*(35*b^2*c^4*x^6 + 5*b
^3*c^3*x^5 - 6*b^4*c^2*x^4 + 8*b^5*c*x^3 - 16*b^6*x^2)*x^3)*sqrt(c*x + b)*B
/(c^4*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{\sqrt{x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{\sqrt{x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(1/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/sqrt(x), x)
```

3.217 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{693c^3x^{7/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{99c^2x^{5/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}$$

```
[Out] 4/693*b*(-11*A*c+4*B*b)*(c*x^2+b*x)^(7/2)/c^3/x^(7/2)-2/99*(-11*A*c+4*B*b)*
(c*x^2+b*x)^(7/2)/c^2/x^(5/2)+2/11*B*(c*x^2+b*x)^(7/2)/c/x^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{99c^2x^{5/2}}+\frac{4b\left(bx+cx^2\right)^{7/2}(4bB-11Ac)}{693c^3x^{7/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (4*b*(4*b*B - 11*A*c)*(b*x + c*x^2)^(7/2))/(693*c^3*x^(7/2)) - (2*(4*b*B -
11*A*c)*(b*x + c*x^2)^(7/2))/(99*c^2*x^(5/2)) + (2*B*(b*x + c*x^2)^(7/2))/(
11*c*x^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx = \frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}} + \frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{3/2}}\,dx}{11c}$$

$$= -\frac{2(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{99c^2x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{11cx^{3/2}} + \frac{(2b(4bB-11Ac))\int \frac{(bx+cx}{x^{5/2}}}{99c^2}$$

$$= \frac{4b(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{693c^3x^{7/2}} - \frac{2(4bB-11Ac)\left(bx+cx^2\right)^{7/2}}{99c^2x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7}}{11cx^{3/2}}$$

Mathematica [**A**] time = 0.05, size = 63, normalized size = 0.66

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\left(-2bc(11A+14Bx)+7c^2x(11A+9Bx)+8b^2B\right)}{693c^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(8*b^2*B + 7*c^2*x*(11*A + 9*B*x) - 2*b*c*
(11*A + 14*B*x)))/(693*c^3*Sqrt[x])
```

fricas [**A**] time = 0.89, size = 125, normalized size = 1.30

$$\frac{2\left(63\,Bc^5x^5+8\,Bb^5-22\,Ab^4c+7\left(23\,Bbc^4+11\,Ac^5\right)x^4+\left(113\,Bb^2c^3+209\,Abc^4\right)x^3+3\left(Bb^3c^2+55\,Ab^2c^3\right)x}{693\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*c^5*x^5 + 8*B*b^5 - 22*A*b^4*c + 7*(23*B*b*c^4 + 11*A*c^5)*x^4
+ (113*B*b^2*c^3 + 209*A*b*c^4)*x^3 + 3*(B*b^3*c^2 + 55*A*b^2*c^3)*x^2 - (4
*B*b^4*c - 11*A*b^3*c^2)*x)*sqrt(c*x^2 + b*x)/(c^3*sqrt(x))
```

giac [**B**] time = 0.28, size = 344, normalized size = 3.58

$$-\frac{2}{3465}\,Bc^2\left(\frac{128\,b^{\frac{11}{2}}}{c^5}-\frac{315\,(cx+b)^{\frac{11}{2}}-1540\,(cx+b)^{\frac{9}{2}}b+2970\,(cx+b)^{\frac{7}{2}}b^2-2772\,(cx+b)^{\frac{5}{2}}b^3+1155\,(cx+b)}{c^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] -2/3465*B*c^2*(128*b^(11/2)/c^5 - (315*(c*x + b)^(11/2) - 1540*(c*x + b)^(9
/2)*b + 2970*(c*x + b)^(7/2)*b^2 - 2772*(c*x + b)^(5/2)*b^3 + 1155*(c*x + b
)^(3/2)*b^4)/c^5) + 4/315*B*b*c*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135
*(c*x + b)^(7/2)*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4
) + 2/315*A*c^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)
*b + 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 2/105*B*b^2*
(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^
(3/2)*b^2)/c^3) - 4/105*A*b*c*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*
x + b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*A*b^2*(2*b^(5/2)/c^2 +
 (3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2)
```

maple [**A**] time = 0.05, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-63B\,c^2x^2-77A\,c^2x+28Bbcx+22Abc-8b^2B\right)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{693c^3x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x)
```

```
[Out] -2/693*(c*x+b)*(-63*B*c^2*x^2-77*A*c^2*x+28*B*b*c*x+22*A*b*c-8*B*b^2)*(c*x^
2+b*x)^(5/2)/c^3/x^(5/2)
```

maxima [B] time = 0.86, size = 305, normalized size = 3.18

$$\frac{2\,\big(\big(35\,c^4x^4+5\,bc^3x^3-6\,b^2c^2x^2+8\,b^3cx-16\,b^4\big)x^3+6\,\big(15\,bc^3x^4+3\,b^2c^2x^3-4\,b^3cx^2+8\,b^4x\big)x^2+21\,\big(3\,b^2c^2x^4+}{315\,c^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4)*x^3
+ 6*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2 + 21*(3*b^2*
c^2*x^4 + b^3*c*x^3 - 2*b^4*x^2)*x)*sqrt(c*x + b)*A/(c^2*x^3) + 2/3465*((31
5*c^5*x^5 + 35*b*c^4*x^4 - 40*b^2*c^3*x^3 + 48*b^3*c^2*x^2 - 64*b^4*c*x + 1
28*b^5)*x^4 + 22*(35*b*c^4*x^5 + 5*b^2*c^3*x^4 - 6*b^3*c^2*x^3 + 8*b^4*c*x^
2 - 16*b^5*x)*x^3 + 33*(15*b^2*c^3*x^5 + 3*b^3*c^2*x^4 - 4*b^4*c*x^3 + 8*b^
5*x^2)*x^2)*sqrt(c*x + b)*B/(c^3*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{x^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(3/2), x)
```

3.218 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(2bB-9Ac)}{63c^2x^{7/2}}$$

```
[Out] -2/63*(-9*A*c+2*B*b)*(c*x^2+b*x)^(7/2)/c^2/x^(7/2)+2/9*B*(c*x^2+b*x)^(7/2)/
c/x^(5/2)
```

Rubi [A] time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}-\frac{2\left(bx+cx^2\right)^{7/2}(2bB-9Ac)}{63c^2x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*(2*b*B - 9*A*c)*(b*x + c*x^2)^(7/2))/(63*c^2*x^(7/2)) + (2*B*(b*x + c*x
^2)^(7/2))/(9*c*x^(5/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}+\frac{\left(2\left(-\frac{5}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{5/2}}\,dx}{9c}\\ &= -\frac{2(2bB-9Ac)\left(bx+cx^2\right)^{7/2}}{63c^2x^{7/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{9cx^{5/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 44, normalized size = 0.72

$$\frac{2(b+cx)^3\sqrt{x(b+cx)}\,(9Ac-2bB+7Bcx)}{63c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (2*(b + c*x)^3*Sqrt[x*(b + c*x)]*(-2*b*B + 9*A*c + 7*B*c*x))/(63*c^2*Sqrt[x
])
```

fricas [B] time = 0.82, size = 100, normalized size = 1.64

$$\frac{2\left(7\,Bc^4x^4-2\,Bb^4+9\,Ab^3c+\left(19\,Bbc^3+9\,Ac^4\right)x^3+3\left(5\,Bb^2c^2+9\,Abc^3\right)x^2+\left(Bb^3c+27\,Ab^2c^2\right)x\right)\sqrt{cx^2+bx}}{63\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/63*(7*B*c^4*x^4 - 2*B*b^4 + 9*A*b^3*c + (19*B*b*c^3 + 9*A*c^4)*x^3 + 3*(5
*B*b^2*c^2 + 9*A*b*c^3)*x^2 + (B*b^3*c + 27*A*b^2*c^2)*x)*sqrt(c*x^2 + b*x)
/(c^2*sqrt(x))
```

giac [B] time = 0.24, size = 270, normalized size = 4.43

$$\frac{2}{315}\,Bc^2\left(\frac{16\,b^{\frac{9}{2}}}{c^4}+\frac{35\,(cx+b)^{\frac{9}{2}}-135\,(cx+b)^{\frac{7}{2}}b+189\,(cx+b)^{\frac{5}{2}}b^2-105\,(cx+b)^{\frac{3}{2}}b^3}{c^4}\right)-\frac{4}{105}\,Bbc\left(\frac{8\,b^{\frac{7}{2}}}{c^3}-\frac{15\,(cx+b}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/315*B*c^2*(16*b^(9/2)/c^4 + (35*(c*x + b)^(9/2) - 135*(c*x + b)^(7/2)*b +
 189*(c*x + b)^(5/2)*b^2 - 105*(c*x + b)^(3/2)*b^3)/c^4) - 4/105*B*b*c*(8*b
^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x + b)^(5/2)*b + 35*(c*x + b)^(3/2
)*b^2)/c^3) - 2/105*A*c^2*(8*b^(7/2)/c^3 - (15*(c*x + b)^(7/2) - 42*(c*x +
b)^(5/2)*b + 35*(c*x + b)^(3/2)*b^2)/c^3) + 2/15*B*b^2*(2*b^(5/2)/c^2 + (3*
(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 4/15*A*b*c*(2*b^(5/2)/c^2 + (
3*(c*x + b)^(5/2) - 5*(c*x + b)^(3/2)*b)/c^2) + 2/3*A*b^2*((c*x + b)^(3/2)/
c - b^(3/2)/c)
```

maple [A] time = 0.04, size = 39, normalized size = 0.64

$$\frac{2\,(cx+b)\,(7Bcx+9Ac-2bB)\left(c\,x^2+bx\right)^{\frac{5}{2}}}{63c^2x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x)
```

```
[Out] 2/63*(c*x+b)*(7*B*c*x+9*A*c-2*B*b)*(c*x^2+b*x)^(5/2)/c^2/x^(5/2)
```

maxima [B] time = 0.61, size = 230, normalized size = 3.77

$$\frac{2\left(35\,b^2cx^3+35\,b^3x^2+\left(15\,c^3x^3+3\,bc^2x^2-4\,b^2cx+8\,b^3\right)x^2+14\left(3\,bc^2x^3+b^2cx^2-2\,b^3x\right)x\right)\sqrt{cx+b}\,A}{105\,cx^2}+\frac{2\left(\left(35\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*(35*b^2*c*x^3 + 35*b^3*x^2 + (15*c^3*x^3 + 3*b*c^2*x^2 - 4*b^2*c*x +
8*b^3)*x^2 + 14*(3*b*c^2*x^3 + b^2*c*x^2 - 2*b^3*x)*x)*sqrt(c*x + b)*A/(c*x
^2) + 2/315*((35*c^4*x^4 + 5*b*c^3*x^3 - 6*b^2*c^2*x^2 + 8*b^3*c*x - 16*b^4
)*x^3 + 6*(15*b*c^3*x^4 + 3*b^2*c^2*x^3 - 4*b^3*c*x^2 + 8*b^4*x)*x^2 + 21*(
3*b^2*c^2*x^4 + b^3*c*x^3 - 2*b^4*x^2)*x)*sqrt(c*x + b)*B/(c^2*x^3)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(5/2), x)
```

3.219 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=131

$$-2Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}}+\frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}}$$

```
[Out] 2/3*A*b*(c*x^2+b*x)^(3/2)/x^(3/2)+2/5*A*(c*x^2+b*x)^(5/2)/x^(5/2)+2/7*B*(c*
x^2+b*x)^(7/2)/c/x^(7/2)-2*A*b^(5/2)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1
/2))+2*A*b^2*(c*x^2+b*x)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {794, 664, 660, 207}

$$\frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}}-2Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)+\frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}}+\frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (2*A*b^2*Sqrt[b*x + c*x^2])/Sqrt[x] + (2*A*b*(b*x + c*x^2)^(3/2))/(3*x^(3/2
)) + (2*A*(b*x + c*x^2)^(5/2))/(5*x^(5/2)) + (2*B*(b*x + c*x^2)^(7/2))/(7*c
*x^(7/2)) - 2*A*b^(5/2)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx &= \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + A\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx \\
&= \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + (Ab)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx \\
&= \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \left(Ab^2\right)\int \frac{\sqrt{bx+c}}{x^{3/2}} \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} + \\
&= \frac{2Ab^2\sqrt{bx+cx^2}}{\sqrt{x}} + \frac{2Ab\left(bx+cx^2\right)^{3/2}}{3x^{3/2}} + \frac{2A\left(bx+cx^2\right)^{5/2}}{5x^{5/2}} + \frac{2B\left(bx+cx^2\right)^{7/2}}{7cx^{7/2}} -
\end{aligned}
$$

Mathematica [**A**] time = 0.21, size = 95, normalized size = 0.73

$$
\frac{(x(b+cx))^{5/2}\left(-\frac{14Ab^{5/2}\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)}{(b+cx)^{5/2}} + A\left(\frac{14b^2}{(b+cx)^2} + \frac{14b}{3(b+cx)} + \frac{14}{5}\right) + \frac{2B(b+cx)}{c}\right)}{7x^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] ((x*(b + c*x))^(5/2)*((2*B*(b + c*x))/c + A*(14/5 + (14*b^2)/(b + c*x)^2 +
(14*b)/(3*(b + c*x))) - (14*A*b^(5/2)*ArcTanh[Sqrt[b + c*x]/Sqrt[b]])/(b +
c*x)^(5/2)))/(7*x^(5/2))
```

fricas [**A**] time = 0.78, size = 245, normalized size = 1.87

$$
\left[\frac{105\,Ab^{\frac{5}{2}}cx\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right) + 2\left(15\,Bc^3x^3 + 15\,Bb^3 + 161\,Ab^2c + 3\left(15\,Bbc^2 + 7\,Ac^3\right)x^2 + \left(45\,B\right.\right.}{105\,cx}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*A*b^(5/2)*c*x*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)
*sqrt(x))/x^2) + 2*(15*B*c^3*x^3 + 15*B*b^3 + 161*A*b^2*c + 3*(15*B*b*c^2 +
 7*A*c^3)*x^2 + (45*B*b^2*c + 77*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*
x), 2/105*(105*A*sqrt(-b)*b^2*c*x*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)
) + (15*B*c^3*x^3 + 15*B*b^3 + 161*A*b^2*c + 3*(15*B*b*c^2 + 7*A*c^3)*x^2 +
 (45*B*b^2*c + 77*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(c*x)]
```

giac [**A**] time = 0.22, size = 139, normalized size = 1.06

$$
\frac{2\,Ab^3\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}} - \frac{2\left(105\,Ab^3c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right) + 15\,B\sqrt{-b}\,b^{\frac{7}{2}} + 161\,A\sqrt{-b}\,b^{\frac{5}{2}}c\right)}{105\,\sqrt{-b}\,c} + \frac{2\left(15\,(cx+b)^{\frac{7}{2}}Bc^6 + 21\,(c\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*A*b^3*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-b) - 2/105*(105*A*b^3*c*arctan
(sqrt(b)/sqrt(-b)) + 15*B*sqrt(-b)*b^(7/2) + 161*A*sqrt(-b)*b^(5/2)*c)/(sqr
t(-b)*c) + 2/105*(15*(c*x + b)^(7/2)*B*c^6 + 21*(c*x + b)^(5/2)*A*c^7 + 35*
(c*x + b)^(3/2)*A*b*c^7 + 105*sqrt(c*x + b)*A*b^2*c^7)/c^7
```

maple [**A**] time = 0.06, size = 151, normalized size = 1.15

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(-15\sqrt{cx+b}\;Bc^{3}x^{3}-21\sqrt{cx+b}\;Ac^{3}x^{2}-45\sqrt{cx+b}\;Bbc^{2}x^{2}+105Ab^{\frac{5}{2}}c\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-77}{105\sqrt{cx+b}\;c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x)
```

```
[Out] -2/105*((c*x+b)*x)^(1/2)*(-15*B*x^3*c^3*(c*x+b)^(1/2)-21*A*x^2*c^3*(c*x+b)^
(1/2)-45*B*x^2*b*c^2*(c*x+b)^(1/2)+105*A*b^(5/2)*c*arctanh((c*x+b)^(1/2)/b^
(1/2))-77*A*x*b*c^2*(c*x+b)^(1/2)-45*B*x*b^2*c*(c*x+b)^(1/2)-161*A*b^2*c*(c
*x+b)^(1/2)-15*B*b^3*(c*x+b)^(1/2))/x^(1/2)/(c*x+b)^(1/2)/c
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$Ab^{2}\int\frac{\sqrt{cx+b}}{x}\,dx+\frac{2\left(35\left(Bb^{2}c+2\,Abc^{2}\right)x^{3}+\left(15\,Bc^{3}x^{3}+3\,Bbc^{2}x^{2}-4\,Bb^{2}cx+8\,Bb^{3}\right)x^{2}+35\left(Bb^{3}+2\,Ab^{2}c\right)x}{105\,cx^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] A*b^2*integrate(sqrt(c*x + b)/x, x) + 2/105*(35*(B*b^2*c + 2*A*b*c^2)*x^3 +
 (15*B*c^3*x^3 + 3*B*b*c^2*x^2 - 4*B*b^2*c*x + 8*B*b^3)*x^2 + 35*(B*b^3 + 2
*A*b^2*c)*x^2 + 7*(3*(2*B*b*c^2 + A*c^3)*x^3 + (2*B*b^2*c + A*b*c^2)*x^2 -
2*(2*B*b^3 + A*b^2*c)*x)*x)*sqrt(c*x + b)/(c*x^2)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(7/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(7/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(7/2), x)
```

3.220 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=160

$$-b^{3/2}(5Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{b\sqrt{bx+cx^2}\,(5Ac+2bB)}{\sqrt{x}}+\frac{\left(bx+cx^2\right)^{5/2}(5Ac+2bB)}{5bx^{5/2}}+\frac{\left(bx+cx^2\right)^{3/2}(5}{3x^{3/2}}$$

```
[Out] 1/3*(5*A*c+2*B*b)*(c*x^2+b*x)^(3/2)/x^(3/2)+1/5*(5*A*c+2*B*b)*(c*x^2+b*x)^(
5/2)/b/x^(5/2)-A*(c*x^2+b*x)^(7/2)/b/x^(9/2)-b^(3/2)*(5*A*c+2*B*b)*arctanh(
(c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))+b*(5*A*c+2*B*b)*(c*x^2+b*x)^(1/2)/x^(1/2
)
```

Rubi [A] time = 0.16, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {792, 664, 660, 207}

$$-b^{3/2}(5Ac+2bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)+\frac{\left(bx+cx^2\right)^{5/2}(5Ac+2bB)}{5bx^{5/2}}+\frac{\left(bx+cx^2\right)^{3/2}(5Ac+2bB)}{3x^{3/2}}+\frac{b\sqrt{bx+cx^2}\,(5}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (b*(2*b*B + 5*A*c)*Sqrt[b*x + c*x^2])/Sqrt[x] + ((2*b*B + 5*A*c)*(b*x + c*x
^2)^(3/2))/(3*x^(3/2)) + ((2*b*B + 5*A*c)*(b*x + c*x^2)^(5/2))/(5*b*x^(5/2)
) - (A*(b*x + c*x^2)^(7/2))/(b*x^(9/2)) - b^(3/2)*(2*b*B + 5*A*c)*ArcTanh[S
qrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}}+\frac{\left(-\frac{9}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{7/2}}\,dx}{b}\\
&= \frac{(2bB+5Ac)\left(bx+cx^2\right)^{5/2}}{5bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}}+\frac{1}{2}(2bB+5Ac)\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}\,dx\\
&= \frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{5/2}}{5bx^{5/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{bx^{9/2}}+\frac{1}{2}(b(\\
&= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}\\
&= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}\\
&= \frac{b(2bB+5Ac)\sqrt{bx+cx^2}}{\sqrt{x}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{3/2}}{3x^{3/2}}+\frac{(2bB+5Ac)\left(bx+cx^2\right)^{5}}{5bx^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.74

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{b+cx}\left(A\left(-15b^2+70bcx+10c^2x^2\right)+2Bx\left(23b^2+11bcx+3c^2x^2\right)\right)-15b^{3/2}x(5Ac+2bB)\tanh^{-1}\right.}{15x^{3/2}\sqrt{b+cx}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[b + c*x]*(2*B*x*(23*b^2 + 11*b*c*x + 3*c^2*x^2) +
A*(-15*b^2 + 70*b*c*x + 10*c^2*x^2)) - 15*b^(3/2)*(2*b*B + 5*A*c)*x*ArcTanh
[Sqrt[b + c*x]/Sqrt[b]]))/(15*x^(3/2)*Sqrt[b + c*x])
```

fricas [A] time = 1.01, size = 238, normalized size = 1.49

$$\left[\frac{15\left(2\,Bb^2+5\,Abc\right)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(6\,Bc^2x^3-15\,Ab^2+2\left(11\,Bbc+5\,Ac^2\right)x^2+2\left(23\,Bb^2\right.\right.}{30\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] [1/30*(15*(2*B*b^2 + 5*A*b*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(6*B*c^2*x^3 - 15*A*b^2 + 2*(11*B*b*c +
5*A*c^2)*x^2 + 2*(23*B*b^2 + 35*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^2, 1
/15*(15*(2*B*b^2 + 5*A*b*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2
 + b*x)) + (6*B*c^2*x^3 - 15*A*b^2 + 2*(11*B*b*c + 5*A*c^2)*x^2 + 2*(23*B*b
^2 + 35*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^2]
```

giac [A] time = 0.35, size = 125, normalized size = 0.78

$$\frac{6\,(cx+b)^{\frac{5}{2}}Bc+10\,(cx+b)^{\frac{3}{2}}Bbc+30\,\sqrt{cx+b}\,Bb^2c+10\,(cx+b)^{\frac{3}{2}}Ac^2+60\,\sqrt{cx+b}\,Abc^2-\frac{15\,\sqrt{cx+b}\,Ab^2c}{x}+\frac{15\left(2\,Bb^3\right.}{}}{15\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 1/15*(6*(c*x + b)^(5/2)*B*c + 10*(c*x + b)^(3/2)*B*b*c + 30*sqrt(c*x + b)*B
*b^2*c + 10*(c*x + b)^(3/2)*A*c^2 + 60*sqrt(c*x + b)*A*b*c^2 - 15*sqrt(c*x
+ b)*A*b^2*c/x + 15*(2*B*b^3*c + 5*A*b^2*c^2)*arctan(sqrt(c*x + b)/sqrt(-b)
)/sqrt(-b))/c
```

maple [A] time = 0.07, size = 162, normalized size = 1.01

$$-\frac{\sqrt{(cx+b)\,x}\,\left(-6\sqrt{cx+b}\;B\sqrt{b}\;c^{2}x^{3}+75A\,b^{2}cx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+30B\,b^{3}x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-10\sqrt{cx+b}\;A}{15\sqrt{cx+b}\;\sqrt{b}\;x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x)
```

```
[Out] -1/15*((c*x+b)*x)^(1/2)*(-6*B*x^3*c^2*(c*x+b)^(1/2)*b^(1/2)-10*(c*x+b)^(1/2
)*A*b^(1/2)*c^2*x^2-22*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+75*A*arctanh((c*x+b)^(
1/2)/b^(1/2))*x*b^2*c-70*(c*x+b)^(1/2)*A*b^(3/2)*c*x+30*B*arctanh((c*x+b)^(
1/2)/b^(1/2))*x*b^3-46*(c*x+b)^(1/2)*B*b^(5/2)*x+15*(c*x+b)^(1/2)*A*b^(5/2)
)/x^(3/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(5\left(2\,Bbc+Ac^{2}\right)x^{2}+\left(3\,Bc^{2}x^{2}+Bbcx-2\,Bb^{2}\right)x+5\left(2\,Bb^{2}+Abc\right)x\right)\sqrt{cx+b}}{15\,x}+\int\frac{\left(Ab^{2}+\left(Bb^{2}+2\,Abc\right)x\right)}{x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/15*(5*(2*B*b*c + A*c^2)*x^2 + (3*B*c^2*x^2 + B*b*c*x - 2*B*b^2)*x + 5*(2*
B*b^2 + A*b*c)*x)*sqrt(c*x + b)/x + integrate((A*b^2 + (B*b^2 + 2*A*b*c)*x)
*sqrt(c*x + b)/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(9/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(9/2), x)
```

3.221 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx$

Optimal. Leaf size=172

$$\frac{5c\sqrt{bx+cx^2}\,(3Ac+4bB)}{4\sqrt{x}}-\frac{5}{4}\sqrt{b}\,c(3Ac+4bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)-\frac{\left(bx+cx^2\right)^{5/2}(3Ac+4bB)}{4bx^{7/2}}+\frac{5c\left(bx+cx^2\right)^{3/2}(}{12bx^{3/}}$$

```
[Out] 5/12*c*(3*A*c+4*B*b)*(c*x^2+b*x)^(3/2)/b/x^(3/2)-1/4*(3*A*c+4*B*b)*(c*x^2+b
*x)^(5/2)/b/x^(7/2)-1/2*A*(c*x^2+b*x)^(7/2)/b/x^(11/2)-5/4*c*(3*A*c+4*B*b)*
arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))*b^(1/2)+5/4*c*(3*A*c+4*B*b)*(c*x
^2+b*x)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$-\frac{\left(bx+cx^2\right)^{5/2}(3Ac+4bB)}{4bx^{7/2}}+\frac{5c\left(bx+cx^2\right)^{3/2}(3Ac+4bB)}{12bx^{3/2}}+\frac{5c\sqrt{bx+cx^2}\,(3Ac+4bB)}{4\sqrt{x}}-\frac{5}{4}\sqrt{b}\,c(3Ac+4bB)\tanh^{-1}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(11/2),x]
```

```
[Out] (5*c*(4*b*B + 3*A*c)*Sqrt[b*x + c*x^2])/(4*Sqrt[x]) + (5*c*(4*b*B + 3*A*c)*
(b*x + c*x^2)^(3/2))/(12*b*x^(3/2)) - ((4*b*B + 3*A*c)*(b*x + c*x^2)^(5/2))
/(4*b*x^(7/2)) - (A*(b*x + c*x^2)^(7/2))/(2*b*x^(11/2)) - (5*Sqrt[b]*c*(4*b
*B + 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/4
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\frac{\left(-\frac{11}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{9/2}}\,dx}{2b}\\
&= -\frac{(4bB+3Ac)\left(bx+cx^2\right)^{5/2}}{4bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\frac{(5c(4bB+3Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{5/2}}}{8b}\\
&= \frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+cx^2\right)^{5/2}}{4bx^{7/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{2bx^{11/2}}+\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}\\
&= \frac{5c(4bB+3Ac)\sqrt{bx+cx^2}}{4\sqrt{x}}+\frac{5c(4bB+3Ac)\left(bx+cx^2\right)^{3/2}}{12bx^{3/2}}-\frac{(4bB+3Ac)\left(bx+\right.}{4bx^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 67, normalized size = 0.39

$$\frac{(b+cx)^3\sqrt{x(b+cx)}\left(cx^2(3Ac+4bB)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx}{b}+1\right)-7Ab^2\right)}{14b^3x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(11/2),x]
```

```
[Out] ((b + c*x)^3*Sqrt[x*(b + c*x)]*(-7*A*b^2 + c*(4*b*B + 3*A*c)*x^2*Hypergeome
tric2F1[2, 7/2, 9/2, 1 + (c*x)/b]))/(14*b^3*x^(5/2))
```

fricas [A] time = 0.73, size = 238, normalized size = 1.38

$$\left[\frac{15\left(4\,Bbc+3\,Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Bc^2x^3-6\,Ab^2+8\left(7\,Bbc+3\,Ac^2\right)x^2-3\left(4\,Bb^2\right.\right.}{24\,x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] [1/24*(15*(4*B*b*c + 3*A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*B*c^2*x^3 - 6*A*b^2 + 8*(7*B*b*c + 3*
A*c^2)*x^2 - 3*(4*B*b^2 + 9*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^3, 1/12*
(15*(4*B*b*c + 3*A*c^2)*sqrt(-b)*x^3*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b
*x)) + (8*B*c^2*x^3 - 6*A*b^2 + 8*(7*B*b*c + 3*A*c^2)*x^2 - 3*(4*B*b^2 + 9*
A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/x^3]
```

giac [A] time = 0.32, size = 155, normalized size = 0.90

$$\frac{8\,(cx+b)^{\frac{3}{2}}Bc^2+48\,\sqrt{cx+b}\,Bbc^2+24\,\sqrt{cx+b}\,Ac^3+\frac{15\left(4\,Bb^2c^2+3\,Abc^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{3\left(4\,(cx+b)^{\frac{3}{2}}Bb^2c^2-4\,\sqrt{cx+b}\,Bb^3c^2+}{c^2x^2}}{12\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] 1/12*(8*(c*x + b)^(3/2)*B*c^2 + 48*sqrt(c*x + b)*B*b*c^2 + 24*sqrt(c*x + b)
*A*c^3 + 15*(4*B*b^2*c^2 + 3*A*b*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/sqrt(-
b) - 3*(4*(c*x + b)^(3/2)*B*b^2*c^2 - 4*sqrt(c*x + b)*B*b^3*c^2 + 9*(c*x +
b)^(3/2)*A*b*c^3 - 7*sqrt(c*x + b)*A*b^2*c^3)/(c^2*x^2))/c
```

maple [A] time = 0.06, size = 167, normalized size = 0.97

$$-\frac{\sqrt{(cx+b)\,x}\,\left(45Ab\,c^2x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+60B\,b^2c\,x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-8\sqrt{cx+b}\,\,B\sqrt{b}\,\,c^2x^3-24\sqrt{cx+b}\,\,A}{12\sqrt{cx+b}\,\,\sqrt{b}\,\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x)
```

```
[Out] -1/12*((c*x+b)*x)^(1/2)*(-8*(c*x+b)^(1/2)*B*b^(1/2)*c^2*x^3+45*A*arctanh((c
*x+b)^(1/2)/b^(1/2))*x^2*b*c^2-24*(c*x+b)^(1/2)*A*b^(1/2)*c^2*x^2+60*B*arct
anh((c*x+b)^(1/2)/b^(1/2))*x^2*b^2*c-56*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+27*(c
*x+b)^(1/2)*A*b^(3/2)*c*x+12*(c*x+b)^(1/2)*B*b^(5/2)*x+6*(c*x+b)^(1/2)*A*b^
(5/2))/x^(5/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2}{3}\left(Bc^2x+Bbc\right)\sqrt{cx+b}+\int\frac{\left(Ab^2+\left(2\,Bbc+Ac^2\right)x^2+\left(Bb^2+2\,Abc\right)x\right)\sqrt{cx+b}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c^2*x + B*b*c)*sqrt(c*x + b) + integrate((A*b^2 + (2*B*b*c + A*c^2)*
x^2 + (B*b^2 + 2*A*b*c)*x)*sqrt(c*x + b)/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(11/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(11/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{5}{2}}(A+Bx)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(11/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/x**(11/2), x)
```

3.222 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=175

$$\frac{5c^2\sqrt{bx+cx^2}\,(Ac+6bB)}{8b\sqrt{x}}-\frac{5c^2(Ac+6bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8\sqrt{b}}-\frac{\left(bx+cx^2\right)^{5/2}(Ac+6bB)}{12bx^{9/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(Ac+6}{24bx^{5/2}}$$

```
[Out] -5/24*c*(A*c+6*B*b)*(c*x^2+b*x)^(3/2)/b/x^(5/2)-1/12*(A*c+6*B*b)*(c*x^2+b*x
)^(5/2)/b/x^(9/2)-1/3*A*(c*x^2+b*x)^(7/2)/b/x^(13/2)-5/8*c^2*(A*c+6*B*b)*ar
ctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(1/2)+5/8*c^2*(A*c+6*B*b)*(c*x^2
+b*x)^(1/2)/b/x^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 664, 660, 207}

$$\frac{5c^2\sqrt{bx+cx^2}\,(Ac+6bB)}{8b\sqrt{x}}-\frac{5c^2(Ac+6bB)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{8\sqrt{b}}-\frac{\left(bx+cx^2\right)^{5/2}(Ac+6bB)}{12bx^{9/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(Ac+6}{24bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(13/2),x]
```

```
[Out] (5*c^2*(6*b*B + A*c)*Sqrt[b*x + c*x^2])/(8*b*Sqrt[x]) - (5*c*(6*b*B + A*c)*
(b*x + c*x^2)^(3/2))/(24*b*x^(5/2)) - ((6*b*B + A*c)*(b*x + c*x^2)^(5/2))/(
12*b*x^(9/2)) - (A*(b*x + c*x^2)^(7/2))/(3*b*x^(13/2)) - (5*c^2*(6*b*B + A*
c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*Sqrt[b])
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx = -\frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} + \frac{\left(-\frac{13}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{11/2}}\,dx}{3b}$$

$$= -\frac{(6bB+Ac)\left(bx+cx^2\right)^{5/2}}{12bx^{9/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} + \frac{(5c(6bB+Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{7/2}}\,dx}{24b}$$

$$= -\frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+cx^2\right)^{5/2}}{12bx^{9/2}} - \frac{A\left(bx+cx^2\right)^{7/2}}{3bx^{13/2}} +$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+c\right.}{12bx^{9/2}}$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+c\right.}{12bx^{9/2}}$$

$$= \frac{5c^2(6bB+Ac)\sqrt{bx+cx^2}}{8b\sqrt{x}} - \frac{5c(6bB+Ac)\left(bx+cx^2\right)^{3/2}}{24bx^{5/2}} - \frac{(6bB+Ac)\left(bx+c\right.}{12bx^{9/2}}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.39

$$-\frac{(b+cx)^3\sqrt{x(b+cx)}\left(7Ab^3+c^2x^3(Ac+6bB)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx}{b}+1\right)\right)}{21b^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(13/2),x]
```

```
[Out] -1/21*((b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b^3 + c^2*(6*b*B + A*c)*x^3*Hyper
geometric2F1[3, 7/2, 9/2, 1 + (c*x)/b]))/(b^4*x^(7/2))
```

fricas [A] time = 1.00, size = 258, normalized size = 1.47

$$\left[\frac{15\left(6\,Bbc^2+Ac^3\right)\sqrt{b}\,x^4\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(48\,Bbc^2x^3-8\,Ab^3-3\left(18\,Bb^2c+11\,Abc^2\right)x^2-2\right.}{48\,bx^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="fricas")
```

```
[Out] [1/48*(15*(6*B*b*c^2 + A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^
2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*B*b*c^2*x^3 - 8*A*b^3 - 3*(18*B*b^2*
c + 11*A*b*c^2)*x^2 - 2*(6*B*b^3 + 13*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x)
)/(b*x^4), 1/24*(15*(6*B*b*c^2 + A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x
)/sqrt(c*x^2 + b*x)) + (48*B*b*c^2*x^3 - 8*A*b^3 - 3*(18*B*b^2*c + 11*A*b*c
^2)*x^2 - 2*(6*B*b^3 + 13*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b*x^4)]
```

giac [A]   time = 0.35, size = 151, normalized size = 0.86

$$\frac{48\sqrt{cx+b}\,Bc^3+\frac{15\left(6\,Bbc^3+Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}}-\frac{54\,(cx+b)^{\frac{5}{2}}\,Bbc^3-96\,(cx+b)^{\frac{3}{2}}\,Bb^2c^3+42\,\sqrt{cx+b}\,Bb^3c^3+33\,(cx+b)^{\frac{5}{2}}\,Ac^4-40\,(cx+b)^{\frac{3}{2}}\,Abc^4+1}{c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="giac")
```

```
[Out] 1/24*(48*sqrt(c*x + b)*B*c^3 + 15*(6*B*b*c^3 + A*c^4)*arctan(sqrt(c*x + b)/
sqrt(-b))/sqrt(-b) - (54*(c*x + b)^(5/2)*B*b*c^3 - 96*(c*x + b)^(3/2)*B*b^2
*c^3 + 42*sqrt(c*x + b)*B*b^3*c^3 + 33*(c*x + b)^(5/2)*A*c^4 - 40*(c*x + b)
^(3/2)*A*b*c^4 + 15*sqrt(c*x + b)*A*b^2*c^4)/(c^3*x^3))/c
```

maple [A]   time = 0.07, size = 166, normalized size = 0.95

$$-\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)+90Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-48\sqrt{cx+b}\;B\sqrt{b}\;c^2x^3+33\sqrt{cx+b}\;A\right.}{24\sqrt{cx+b}\;\sqrt{b}\;x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x)
```

```
[Out] -1/24*((c*x+b)*x)^(1/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3+90*B*a
rctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-48*(c*x+b)^(1/2)*B*b^(1/2)*c^2*x^3+
33*(c*x+b)^(1/2)*A*b^(1/2)*c^2*x^2+54*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+26*(c*x
+b)^(1/2)*A*b^(3/2)*c*x+12*(c*x+b)^(1/2)*B*b^(5/2)*x+8*(c*x+b)^(1/2)*A*b^(5
/2))/x^(7/2)/(c*x+b)^(1/2)/b^(1/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(13/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(13/2), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{13/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(13/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(13/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(13/2),x)
```

```
[Out] Timed out
```

3.223 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{5c^3(8bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{3/2}}-\frac{5c^2\sqrt{bx+cx^2}\,(8bB-Ac)}{64bx^{3/2}}-\frac{\left(bx+cx^2\right)^{5/2}(8bB-Ac)}{24bx^{11/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(8bB-}{96bx^{7/2}}$$

```
[Out] -5/96*c*(-A*c+8*B*b)*(c*x^2+b*x)^(3/2)/b/x^(7/2)-1/24*(-A*c+8*B*b)*(c*x^2+b
*x)^(5/2)/b/x^(11/2)-1/4*A*(c*x^2+b*x)^(7/2)/b/x^(15/2)-5/64*c^3*(-A*c+8*B*
b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(3/2)-5/64*c^2*(-A*c+8*B*b)
*(c*x^2+b*x)^(1/2)/b/x^(3/2)
```

Rubi [A] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 662, 660, 207}

$$-\frac{5c^3(8bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{3/2}}-\frac{5c^2\sqrt{bx+cx^2}\,(8bB-Ac)}{64bx^{3/2}}-\frac{\left(bx+cx^2\right)^{5/2}(8bB-Ac)}{24bx^{11/2}}-\frac{5c\left(bx+cx^2\right)^{3/2}(8bB-}{96bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(15/2),x]
```

```
[Out] (-5*c^2*(8*b*B - A*c)*Sqrt[b*x + c*x^2])/(64*b*x^(3/2)) - (5*c*(8*b*B - A*c
)*(b*x + c*x^2)^(3/2))/(96*b*x^(7/2)) - ((8*b*B - A*c)*(b*x + c*x^2)^(5/2))
/(24*b*x^(11/2)) - (A*(b*x + c*x^2)^(7/2))/(4*b*x^(15/2)) - (5*c^3*(8*b*B -
 A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(3/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}}+\frac{\left(-\frac{15}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int \frac{\left(bx+cx^2\right)^{5/2}}{x^{13/2}}\,dx}{4b}\\ &= -\frac{(8bB-Ac)\left(bx+cx^2\right)^{5/2}}{24bx^{11/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}}+\frac{(5c(8bB-Ac))\int \frac{\left(bx+cx^2\right)^{3/2}}{x^{9/2}}\,dx}{48b}\\ &= -\frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}}-\frac{(8bB-Ac)\left(bx+cx^2\right)^{5/2}}{24bx^{11/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{4bx^{15/2}}+\\ &= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}}-\frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}}-\frac{(8bB-Ac)\left(bx+c\right.}{24bx^{11/2}}\\ &= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}}-\frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}}-\frac{(8bB-Ac)\left(bx+c\right.}{24bx^{11/2}}\\ &= -\frac{5c^2(8bB-Ac)\sqrt{bx+cx^2}}{64bx^{3/2}}-\frac{5c(8bB-Ac)\left(bx+cx^2\right)^{3/2}}{96bx^{7/2}}-\frac{(8bB-Ac)\left(bx+c\right.}{24bx^{11/2}}\end{aligned}$$

Mathematica [A] time = 0.14, size = 129, normalized size = 0.72

$$-\frac{(b+cx)\left(A\left(48b^3+136b^2cx+118bc^2x^2+15c^3x^3\right)+8bBx\left(8b^2+26bcx+33c^2x^2\right)\right)+15c^3x^4\sqrt{\frac{cx}{b}+1}\,(8bB-}{192bx^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(15/2),x]
```

```
[Out] -1/192*((b + c*x)*(8*b*B*x*(8*b^2 + 26*b*c*x + 33*c^2*x^2) + A*(48*b^3 + 13
6*b^2*c*x + 118*b*c^2*x^2 + 15*c^3*x^3)) + 15*c^3*(8*b*B - A*c)*x^4*Sqrt[1
+ (c*x)/b]*ArcTanh[Sqrt[1 + (c*x)/b]])/(b*x^(7/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.75, size = 289, normalized size = 1.61

$$\left[-\frac{15\left(8\,Bbc^3-Ac^4\right)\sqrt{b}\,x^5\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(48\,Ab^4+3\left(88\,Bb^2c^2+5\,Abc^3\right)x^3+2\left(104\,Bb^3c\right.\right.}{384\,b^2x^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(8*B*b*c^3 - A*c^4)*sqrt(b)*x^5*log(-(c*x^2 + 2*b*x + 2*sqrt(c*
x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(48*A*b^4 + 3*(88*B*b^2*c^2 + 5*A*b*c^
3)*x^3 + 2*(104*B*b^3*c + 59*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 17*A*b^3*c)*x)*s
qrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^5), 1/192*(15*(8*B*b*c^3 - A*c^4)*sqrt(-b)
*x^5*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (48*A*b^4 + 3*(88*B*b^2*c
^2 + 5*A*b*c^3)*x^3 + 2*(104*B*b^3*c + 59*A*b^2*c^2)*x^2 + 8*(8*B*b^4 + 17*
A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*x^5)]
```

giac [**A**] time = 0.34, size = 177, normalized size = 0.99

$$\frac{\frac{15\left(8\,Bbc^{4}-Ac^{5}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{264\,(cx+b)^{\frac{7}{2}}\,Bbc^{4}-584\,(cx+b)^{\frac{5}{2}}\,Bb^{2}c^{4}+440\,(cx+b)^{\frac{3}{2}}\,Bb^{3}c^{4}-120\,\sqrt{cx+b}\,Bb^{4}c^{4}+15\,(cx+b)^{\frac{7}{2}}\,Ac^{5}+73\,(cx+b)^{\frac{5}{2}}\,Abc^{5}-55}{bc^{4}x^{4}}}{192\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="giac")
```

```
[Out] 1/192*(15*(8*B*b*c^4 - A*c^5)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) -
 (264*(c*x + b)^(7/2)*B*b*c^4 - 584*(c*x + b)^(5/2)*B*b^2*c^4 + 440*(c*x +
b)^(3/2)*B*b^3*c^4 - 120*sqrt(c*x + b)*B*b^4*c^4 + 15*(c*x + b)^(7/2)*A*c^5
 + 73*(c*x + b)^(5/2)*A*b*c^5 - 55*(c*x + b)^(3/2)*A*b^2*c^5 + 15*sqrt(c*x
+ b)*A*b^3*c^5)/(b*c^4*x^4))/c
```

maple [**A**] time = 0.07, size = 185, normalized size = 1.03

$$\frac{\sqrt{(cx+b)\,x}\,\left(15A\,c^{4}x^{4}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-120Bb\,c^{3}x^{4}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15\sqrt{cx+b}\;A\sqrt{b}\;c^{3}x^{3}-264\sqrt{cx+b}\;B\,b\right.}{192\sqrt{cx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x)
```

```
[Out] 1/192*((c*x+b)*x)^(1/2)/b^(3/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*c^
4-120*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^4*b*c^3-15*(c*x+b)^(1/2)*A*b^(1/2)
*c^3*x^3-264*(c*x+b)^(1/2)*B*b^(3/2)*c^2*x^3-118*(c*x+b)^(1/2)*A*b^(3/2)*c^
2*x^2-208*(c*x+b)^(1/2)*B*b^(5/2)*c*x^2-136*(c*x+b)^(1/2)*A*b^(5/2)*c*x-64*
(c*x+b)^(1/2)*B*b^(7/2)*x-48*(c*x+b)^(1/2)*A*b^(7/2))/x^(9/2)/(c*x+b)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(15/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(15/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{15/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(15/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(15/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(15/2),x)
```

```
[Out] Timed out
```

3.224 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{17/2}}\,dx$

Optimal. Leaf size=216

$$\frac{c^4(10bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{5/2}}-\frac{c^3\sqrt{bx+cx^2}\,(10bB-3Ac)}{128b^2x^{3/2}}-\frac{c^2\sqrt{bx+cx^2}\,(10bB-3Ac)}{64bx^{5/2}}-\frac{c\left(bx+cx^2\right)^{3/2}(10}{48bx^{9/2}}$$

```
[Out] -1/48*c*(-3*A*c+10*B*b)*(c*x^2+b*x)^(3/2)/b/x^(9/2)-1/40*(-3*A*c+10*B*b)*(c
*x^2+b*x)^(5/2)/b/x^(13/2)-1/5*A*(c*x^2+b*x)^(7/2)/b/x^(17/2)+1/128*c^4*(-3
*A*c+10*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(5/2)-1/64*c^2*(-
3*A*c+10*B*b)*(c*x^2+b*x)^(1/2)/b/x^(5/2)-1/128*c^3*(-3*A*c+10*B*b)*(c*x^2+
b*x)^(1/2)/b^2/x^(3/2)
```

Rubi [A] time = 0.21, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 662, 672, 660, 207}

$$-\frac{c^3\sqrt{bx+cx^2}\,(10bB-3Ac)}{128b^2x^{3/2}}+\frac{c^4(10bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{128b^{5/2}}-\frac{c^2\sqrt{bx+cx^2}\,(10bB-3Ac)}{64bx^{5/2}}-\frac{c\left(bx+cx^2\right)^{3/2}(}{48bx^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(17/2),x]
```

```
[Out] -(c^2*(10*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(64*b*x^(5/2)) - (c^3*(10*b*B - 3
*A*c)*Sqrt[b*x + c*x^2])/(128*b^2*x^(3/2)) - (c*(10*b*B - 3*A*c)*(b*x + c*x
^2)^(3/2))/(48*b*x^(9/2)) - ((10*b*B - 3*A*c)*(b*x + c*x^2)^(5/2))/(40*b*x^
(13/2)) - (A*(b*x + c*x^2)^(7/2))/(5*b*x^(17/2)) + (c^4*(10*b*B - 3*A*c)*Ar
cTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(128*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
```

```
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{x^{17/2}}\,dx &= -\frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}}+\frac{\left(-\frac{17}{2}(-bB+Ac)+\frac{7}{2}(-bB+2Ac)\right)\int\frac{\left(bx+cx^2\right)^{5/2}}{x^{15/2}}\,dx}{5b}\\
&= -\frac{(10bB-3Ac)\left(bx+cx^2\right)^{5/2}}{40bx^{13/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}}+\frac{(c(10bB-3Ac))\int\frac{\left(bx+cx^2\right)^{3/2}}{x^{11/2}}\,dx}{16b}\\
&= -\frac{c(10bB-3Ac)\left(bx+cx^2\right)^{3/2}}{48bx^{9/2}}-\frac{(10bB-3Ac)\left(bx+cx^2\right)^{5/2}}{40bx^{13/2}}-\frac{A\left(bx+cx^2\right)^{7/2}}{5bx^{17/2}}+\\
&= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}}-\frac{c(10bB-3Ac)\left(bx+cx^2\right)^{3/2}}{48bx^{9/2}}-\frac{(10bB-3Ac)(bx+}{40bx^{13/2}}\\
&= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}}-\frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}}-\frac{c(10bB-3Ac)(bx+}{48bx^{9/2}}\\
&= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}}-\frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}}-\frac{c(10bB-3Ac)(bx+}{48bx^{9/2}}\\
&= -\frac{c^2(10bB-3Ac)\sqrt{bx+cx^2}}{64bx^{5/2}}-\frac{c^3(10bB-3Ac)\sqrt{bx+cx^2}}{128b^2x^{3/2}}-\frac{c(10bB-3Ac)(bx+}{48bx^{9/2}}
\end{aligned}$$

<u>Mathematica</u> [C] time = 0.04, size = 69, normalized size = 0.32

$$-\frac{(b+cx)^3\sqrt{x(b+cx)}\left(7Ab^5+c^4x^5(10bB-3Ac)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx}{b}+1\right)\right)}{35b^6x^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/x^(17/2),x]
```

```
[Out] -1/35*((b + c*x)^3*Sqrt[x*(b + c*x)]*(7*A*b^5 + c^4*(10*b*B - 3*A*c)*x^5*Hy
pergeometric2F1[7/2, 5, 9/2, 1 + (c*x)/b]))/(b^6*x^(11/2))
```

<u>fricas</u> [A] time = 0.94, size = 336, normalized size = 1.56

$$\left[-\frac{15\left(10\,Bbc^4-3\,Ac^5\right)\sqrt{b}\,x^6\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(384\,Ab^5+15\left(10\,Bb^2c^3-3\,Abc^4\right)x^4+10\,(118\,Bb\right.}{3840\,b^3x^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(10*B*b*c^4 - 3*A*c^5)*sqrt(b)*x^6*log(-(c*x^2 + 2*b*x - 2*sqr
t(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(384*A*b^5 + 15*(10*B*b^2*c^3 - 3*
A*b*c^4)*x^4 + 10*(118*B*b^3*c^2 + 3*A*b^2*c^3)*x^3 + 8*(170*B*b^4*c + 93*A
*b^3*c^2)*x^2 + 48*(10*B*b^5 + 21*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b
^3*x^6), -1/1920*(15*(10*B*b*c^4 - 3*A*c^5)*sqrt(-b)*x^6*arctan(sqrt(-b)*sq
rt(x)/sqrt(c*x^2 + b*x)) + (384*A*b^5 + 15*(10*B*b^2*c^3 - 3*A*b*c^4)*x^4 +
 10*(118*B*b^3*c^2 + 3*A*b^2*c^3)*x^3 + 8*(170*B*b^4*c + 93*A*b^3*c^2)*x^2
+ 48*(10*B*b^5 + 21*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*x^6)]
```

giac [A] time = 0.44, size = 208, normalized size = 0.96

$$-\frac{\frac{15\left(10\,Bbc^{5}-3\,Ac^{6}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^{2}}+\frac{150\,(cx+b)^{\frac{9}{2}}Bbc^{5}+580\,(cx+b)^{\frac{7}{2}}Bb^{2}c^{5}-1280\,(cx+b)^{\frac{5}{2}}Bb^{3}c^{5}+700\,(cx+b)^{\frac{3}{2}}Bb^{4}c^{5}-150\,\sqrt{cx+b}\,Bb^{5}c^{5}-45\,(cx}{b^{2}c^{5}x^{5}}}{1920\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="giac")
```

```
[Out] -1/1920*(15*(10*B*b*c^5 - 3*A*c^6)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)
*b^2) + (150*(c*x + b)^(9/2)*B*b*c^5 + 580*(c*x + b)^(7/2)*B*b^2*c^5 - 1280
*(c*x + b)^(5/2)*B*b^3*c^5 + 700*(c*x + b)^(3/2)*B*b^4*c^5 - 150*sqrt(c*x +
 b)*B*b^5*c^5 - 45*(c*x + b)^(9/2)*A*c^6 + 210*(c*x + b)^(7/2)*A*b*c^6 + 38
4*(c*x + b)^(5/2)*A*b^2*c^6 - 210*(c*x + b)^(3/2)*A*b^3*c^6 + 45*sqrt(c*x +
 b)*A*b^4*c^6)/(b^2*c^5*x^5))/c
```

maple [A] time = 0.07, size = 223, normalized size = 1.03

$$-\frac{\sqrt{(cx+b)\,x}\,\left(45A\,c^{5}x^{5}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-150Bb\,c^{4}x^{5}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-45\sqrt{cx+b}\,A\sqrt{b}\,c^{4}x^{4}+150\sqrt{cx+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x)
```

```
[Out] -1/1920*((c*x+b)*x)^(1/2)/b^(5/2)*(45*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*
c^5-150*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^5*b*c^4-45*(c*x+b)^(1/2)*A*b^(1/
2)*c^4*x^4+150*(c*x+b)^(1/2)*B*b^(3/2)*c^3*x^4+30*(c*x+b)^(1/2)*A*b^(3/2)*c
^3*x^3+1180*(c*x+b)^(1/2)*B*b^(5/2)*c^2*x^3+744*(c*x+b)^(1/2)*A*b^(5/2)*c^2
*x^2+1360*(c*x+b)^(1/2)*B*b^(7/2)*c*x^2+1008*(c*x+b)^(1/2)*A*b^(7/2)*c*x+48
0*(c*x+b)^(1/2)*B*b^(9/2)*x+384*(c*x+b)^(1/2)*A*b^(9/2))/x^(11/2)/(c*x+b)^(
1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}(Bx+A)}{x^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/x^(17/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(5/2)*(B*x + A)/x^(17/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^{2}+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{x^{17/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(17/2),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/x^(17/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/x**(17/2),x)
```

```
[Out] Timed out
```

3.225 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=170

$$\frac{32b^3\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^5\sqrt{x}}-\frac{16b^2\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^4}+\frac{4bx^{3/2}\sqrt{bx+cx^2}\,(8bB-9Ac)}{105c^3}-\frac{2x^{5/2}\sqrt{bx+cx^2}}{63c}$$

```
[Out] 4/105*b*(-9*A*c+8*B*b)*x^(3/2)*(c*x^2+b*x)^(1/2)/c^3-2/63*(-9*A*c+8*B*b)*x^
(5/2)*(c*x^2+b*x)^(1/2)/c^2+2/9*B*x^(7/2)*(c*x^2+b*x)^(1/2)/c+32/315*b^3*(-
9*A*c+8*B*b)*(c*x^2+b*x)^(1/2)/c^5/x^(1/2)-16/315*b^2*(-9*A*c+8*B*b)*x^(1/2
)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^4}+\frac{32b^3\sqrt{bx+cx^2}\,(8bB-9Ac)}{315c^5\sqrt{x}}-\frac{2x^{5/2}\sqrt{bx+cx^2}\,(8bB-9Ac)}{63c^2}+\frac{4bx^{3/2}\sqrt{bx+c}}{10}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (32*b^3*(8*b*B - 9*A*c)*Sqrt[b*x + c*x^2])/(315*c^5*Sqrt[x]) - (16*b^2*(8*b
*B - 9*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(315*c^4) + (4*b*(8*b*B - 9*A*c)*x^(
3/2)*Sqrt[b*x + c*x^2])/(105*c^3) - (2*(8*b*B - 9*A*c)*x^(5/2)*Sqrt[b*x + c
*x^2])/(63*c^2) + (2*B*x^(7/2)*Sqrt[b*x + c*x^2])/(9*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx = \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} + \frac{\left(2\left(\frac{7}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{7/2}}{\sqrt{bx+cx^2}}\,dx}{9c}$$

$$= -\frac{2(8bB-9Ac)x^{5/2}\sqrt{bx+cx^2}}{63c^2} + \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} + \frac{(2b(8bB-9Ac))\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{21c^2}$$

$$= \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+cx^2}}{105c^3} - \frac{2(8bB-9Ac)x^{5/2}\sqrt{bx+cx^2}}{63c^2} + \frac{2Bx^{7/2}\sqrt{bx+cx^2}}{9c} - \left(8b^2(8\right.$$

$$= -\frac{16b^2(8bB-9Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{315c^4} + \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+cx^2}}{105c^3} - \frac{2(8bB-9Ac)x^{5/2}\sqrt{bx}}{63c^2}$$

$$= \frac{32b^3(8bB-9Ac)\sqrt{bx+cx^2}}{315c^5\sqrt{x}} - \frac{16b^2(8bB-9Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{315c^4} + \frac{4b(8bB-9Ac)x^{3/2}\sqrt{bx+}}{105c^3}$$

Mathematica [**A**] time = 0.07, size = 94, normalized size = 0.55

$$\frac{2\sqrt{x(b+cx)}\left(-16b^3c(9A+4Bx)+24b^2c^2x(3A+2Bx)-2bc^3x^2(27A+20Bx)+5c^4x^3(9A+7Bx)+128b^4B\right)}{315c^5\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(128*b^4*B + 24*b^2*c^2*x*(3*A + 2*B*x) - 16*b^3*c*(9*
A + 4*B*x) + 5*c^4*x^3*(9*A + 7*B*x) - 2*b*c^3*x^2*(27*A + 20*B*x)))/(315*c
^5*Sqrt[x])
```

fricas [**A**] time = 0.63, size = 103, normalized size = 0.61

$$\frac{2\left(35\,Bc^4x^4+128\,Bb^4-144\,Ab^3c-5\left(8\,Bbc^3-9\,Ac^4\right)x^3+6\left(8\,Bb^2c^2-9\,Abc^3\right)x^2-8\left(8\,Bb^3c-9\,Ab^2c^2\right)x\right)\sqrt{cx^2}}{315\,c^5\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^4*x^4 + 128*B*b^4 - 144*A*b^3*c - 5*(8*B*b*c^3 - 9*A*c^4)*x^3
 + 6*(8*B*b^2*c^2 - 9*A*b*c^3)*x^2 - 8*(8*B*b^3*c - 9*A*b^2*c^2)*x)*sqrt(c*
x^2 + b*x)/(c^5*sqrt(x))
```

giac [**A**] time = 0.19, size = 135, normalized size = 0.79

$$\frac{2\left(Bb^4-Ab^3c\right)\sqrt{cx+b}}{c^5}+\frac{2\left(35\,(cx+b)^{\frac{9}{2}}B-180\,(cx+b)^{\frac{7}{2}}Bb+378\,(cx+b)^{\frac{5}{2}}Bb^2-420\,(cx+b)^{\frac{3}{2}}Bb^3+45\,(cx+b\right.}{315\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^4 - A*b^3*c)*sqrt(c*x + b)/c^5 + 2/315*(35*(c*x + b)^(9/2)*B - 180*(
c*x + b)^(7/2)*B*b + 378*(c*x + b)^(5/2)*B*b^2 - 420*(c*x + b)^(3/2)*B*b^3
+ 45*(c*x + b)^(7/2)*A*c - 189*(c*x + b)^(5/2)*A*b*c + 315*(c*x + b)^(3/2)*
A*b^2*c)/c^5 - 32/315*(8*B*b^(9/2) - 9*A*b^(7/2)*c)/c^5
```

maple [**A**] time = 0.05, size = 107, normalized size = 0.63

$$-\frac{2\,(cx+b)\left(-35B\,x^4c^4-45A\,c^4x^3+40Bb\,c^3x^3+54Ab\,c^3x^2-48B\,b^2c^2x^2-72A\,b^2c^2x+64B\,b^3cx+144A\,b^3c-\right.}{315\sqrt{c\,x^2+bx}\;c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/315*(c*x+b)*(-35*B*c^4*x^4-45*A*c^4*x^3+40*B*b*c^3*x^3+54*A*b*c^3*x^2-48
*B*b^2*c^2*x^2-72*A*b^2*c^2*x+64*B*b^3*c*x+144*A*b^3*c-128*B*b^4)*x^(1/2)/c
^5/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.70, size = 120, normalized size = 0.71

$$\frac{2\big(5\,c^{4}x^{4} - bc^{3}x^{3} + 2\,b^{2}c^{2}x^{2} - 8\,b^{3}cx - 16\,b^{4}\big)A}{35\,\sqrt{cx+b}\,c^{4}} + \frac{2\big(35\,c^{5}x^{5} - 5\,bc^{4}x^{4} + 8\,b^{2}c^{3}x^{3} - 16\,b^{3}c^{2}x^{2} + 64\,b^{4}cx + 128\,b}{315\,\sqrt{cx+b}\,c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*c^4*x^4 - b*c^3*x^3 + 2*b^2*c^2*x^2 - 8*b^3*c*x - 16*b^4)*A/(sqrt(c
*x + b)*c^4) + 2/315*(35*c^5*x^5 - 5*b*c^4*x^4 + 8*b^2*c^3*x^3 - 16*b^3*c^2
*x^2 + 64*b^4*c*x + 128*b^5)*B/(sqrt(c*x + b)*c^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{7}{2}}\left(A + Bx\right)}{\sqrt{x\left(b + cx\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(7/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.226 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=133

$$-\frac{16b^2\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^4\sqrt{x}}+\frac{8b\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^3}-\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-7Ac)}{35c^2}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}$$

```
[Out] -2/35*(-7*A*c+6*B*b)*x^(3/2)*(c*x^2+b*x)^(1/2)/c^2+2/7*B*x^(5/2)*(c*x^2+b*x
)^(1/2)/c-16/105*b^2*(-7*A*c+6*B*b)*(c*x^2+b*x)^(1/2)/c^4/x^(1/2)+8/105*b*(
-7*A*c+6*B*b)*x^(1/2)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{16b^2\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^4\sqrt{x}}-\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-7Ac)}{35c^2}+\frac{8b\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-7Ac)}{105c^3}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-16*b^2*(6*b*B - 7*A*c)*Sqrt[b*x + c*x^2])/(105*c^4*Sqrt[x]) + (8*b*(6*b*B
 - 7*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(105*c^3) - (2*(6*b*B - 7*A*c)*x^(3/2)
*Sqrt[b*x + c*x^2])/(35*c^2) + (2*B*x^(5/2)*Sqrt[b*x + c*x^2])/(7*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^{5/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}+\frac{\left(2\left(\frac{5}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{7c}\\ &= -\frac{2(6bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^2}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}+\frac{(4b(6bB-7Ac))\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{35c^2}\\ &= \frac{8b(6bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{105c^3}-\frac{2(6bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^2}+\frac{2Bx^{5/2}\sqrt{bx+cx^2}}{7c}-\frac{\big(8b}{}\\ &= -\frac{16b^2(6bB-7Ac)\sqrt{bx+cx^2}}{105c^4\sqrt{x}}+\frac{8b(6bB-7Ac)\sqrt{x}\sqrt{bx+cx^2}}{105c^3}-\frac{2(6bB-7Ac)x^{3/2}\sqrt{bx\,-}}{35c^2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 75, normalized size = 0.56

$$\frac{2\sqrt{x(b+cx)}\left(8b^2c(7A+3Bx)-2bc^2x(14A+9Bx)+3c^3x^2(7A+5Bx)-48b^3B\right)}{105c^4\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-48*b^3*B + 8*b^2*c*(7*A + 3*B*x) + 3*c^3*x^2*(7*A +
5*B*x) - 2*b*c^2*x*(14*A + 9*B*x)))/(105*c^4*Sqrt[x])
```

fricas [A] time = 0.99, size = 79, normalized size = 0.59

$$\frac{2\left(15\,Bc^3x^3-48\,Bb^3+56\,Ab^2c-3\left(6\,Bbc^2-7\,Ac^3\right)x^2+4\left(6\,Bb^2c-7\,Abc^2\right)x\right)\sqrt{cx^2+bx}}{105\,c^4\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^3*x^3 - 48*B*b^3 + 56*A*b^2*c - 3*(6*B*b*c^2 - 7*A*c^3)*x^2 +
 4*(6*B*b^2*c - 7*A*b*c^2)*x)*sqrt(c*x^2 + b*x)/(c^4*sqrt(x))
```

giac [A] time = 0.25, size = 108, normalized size = 0.81

$$-\frac{2\left(Bb^3-Ab^2c\right)\sqrt{cx+b}}{c^4}+\frac{2\Big(15\,(cx+b)^{\frac{7}{2}}B-63\,(cx+b)^{\frac{5}{2}}Bb+105\,(cx+b)^{\frac{3}{2}}Bb^2+21\,(cx+b)^{\frac{5}{2}}Ac-70\,(cx+}{105\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^3 - A*b^2*c)*sqrt(c*x + b)/c^4 + 2/105*(15*(c*x + b)^(7/2)*B - 63*(
c*x + b)^(5/2)*B*b + 105*(c*x + b)^(3/2)*B*b^2 + 21*(c*x + b)^(5/2)*A*c - 7
0*(c*x + b)^(3/2)*A*b*c)/c^4 + 16/105*(6*B*b^(7/2) - 7*A*b^(5/2)*c)/c^4
```

maple [A] time = 0.05, size = 83, normalized size = 0.62

$$\frac{2\,(cx+b)\left(15B\,c^3x^3+21A\,c^3x^2-18Bb\,c^2x^2-28Ab\,c^2x+24B\,b^2cx+56A\,b^2c-48b^3B\right)\sqrt{x}}{105\sqrt{c\,x^2+bx}\;c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/105*(c*x+b)*(15*B*c^3*x^3+21*A*c^3*x^2-18*B*b*c^2*x^2-28*A*b*c^2*x+24*B*b
^2*c*x+56*A*b^2*c-48*B*b^3)*x^(1/2)/c^4/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.64, size = 98, normalized size = 0.74

$$\frac{2\left(3\,c^3x^3 - bc^2x^2 + 4\,b^2cx + 8\,b^3\right)A}{15\,\sqrt{cx+b}\,c^3} + \frac{2\left(5\,c^4x^4 - bc^3x^3 + 2\,b^2c^2x^2 - 8\,b^3cx - 16\,b^4\right)B}{35\,\sqrt{cx+b}\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*c^3*x^3 - b*c^2*x^2 + 4*b^2*c*x + 8*b^3)*A/(sqrt(c*x + b)*c^3) + 2/
35*(5*c^4*x^4 - b*c^3*x^3 + 2*b^2*c^2*x^2 - 8*b^3*c*x - 16*b^4)*B/(sqrt(c*x
 + b)*c^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{5}{2}}\,(A+Bx)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(5/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.227 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=96

$$\frac{4b\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^3\sqrt{x}}-\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}$$

```
[Out] 2/5*B*x^(3/2)*(c*x^2+b*x)^(1/2)/c+4/15*b*(-5*A*c+4*B*b)*(c*x^2+b*x)^(1/2)/c
^3/x^(1/2)-2/15*(-5*A*c+4*B*b)*x^(1/2)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {794, 656, 648}

$$-\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^2}+\frac{4b\sqrt{bx+cx^2}\,(4bB-5Ac)}{15c^3\sqrt{x}}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (4*b*(4*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/(15*c^3*Sqrt[x]) - (2*(4*b*B - 5*A*
c)*Sqrt[x]*Sqrt[b*x + c*x^2])/(15*c^2) + (2*B*x^(3/2)*Sqrt[b*x + c*x^2])/(5
*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^{3/2}(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}+\frac{\left(2\left(\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{5c}\\ &= -\frac{2(4bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}+\frac{(2b(4bB-5Ac))\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{15c^2}\\ &= \frac{4b(4bB-5Ac)\sqrt{bx+cx^2}}{15c^3\sqrt{x}}-\frac{2(4bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2Bx^{3/2}\sqrt{bx+cx^2}}{5c}\end{aligned}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 0.57

$$\frac{2\sqrt{x(b+cx)}\left(-2bc(5A+2Bx)+c^2x(5A+3Bx)+8b^2B\right)}{15c^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(8*b^2*B - 2*b*c*(5*A + 2*B*x) + c^2*x*(5*A + 3*B*x)))
/(15*c^3*Sqrt[x])
```

fricas [A] time = 0.90, size = 55, normalized size = 0.57

$$\frac{2\left(3\,Bc^2x^2+8\,Bb^2-10\,Abc-\left(4\,Bbc-5\,Ac^2\right)x\right)\sqrt{cx^2+bx}}{15\,c^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^2 + 8*B*b^2 - 10*A*b*c - (4*B*b*c - 5*A*c^2)*x)*sqrt(c*x^2
+ b*x)/(c^3*sqrt(x))
```

giac [A] time = 0.18, size = 81, normalized size = 0.84

$$\frac{2\left(Bb^2-Abc\right)\sqrt{cx+b}}{c^3}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}B-10\,(cx+b)^{\frac{3}{2}}Bb+5\,(cx+b)^{\frac{3}{2}}Ac\right)}{15\,c^3}-\frac{4\left(4\,Bb^{\frac{5}{2}}-5\,Ab^{\frac{3}{2}}c\right)}{15\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^2 - A*b*c)*sqrt(c*x + b)/c^3 + 2/15*(3*(c*x + b)^(5/2)*B - 10*(c*x +
 b)^(3/2)*B*b + 5*(c*x + b)^(3/2)*A*c)/c^3 - 4/15*(4*B*b^(5/2) - 5*A*b^(3/2
)*c)/c^3
```

maple [A] time = 0.06, size = 59, normalized size = 0.61

$$-\frac{2\,(cx+b)\left(-3B\,c^2x^2-5A\,c^2x+4Bbcx+10Abc-8b^2B\right)\sqrt{x}}{15\sqrt{c\,x^2+bx}\;c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^2*x^2-5*A*c^2*x+4*B*b*c*x+10*A*b*c-8*B*b^2)*x^(1/2)/c
^3/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.57, size = 75, normalized size = 0.78

$$\frac{2\left(c^{2}x^{2}-bcx-2\,b^{2}\right)A}{3\,\sqrt{cx+b}\,c^{2}}+\frac{2\left(3\,c^{3}x^{3}-bc^{2}x^{2}+4\,b^{2}cx+8\,b^{3}\right)B}{15\,\sqrt{cx+b}\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(c^2*x^2 - b*c*x - 2*b^2)*A/(sqrt(c*x + b)*c^2) + 2/15*(3*c^3*x^3 - b*c
^2*x^2 + 4*b^2*c*x + 8*b^3)*B/(sqrt(c*x + b)*c^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{3}{2}}\left(A+Bx\right)}{\sqrt{x\left(b+cx\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.228 $\int \frac{\sqrt{x}(A+Bx)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=61

$$\frac{2B\sqrt{x}\,\sqrt{bx+cx^2}}{3c}-\frac{2\sqrt{bx+cx^2}\,(2bB-3Ac)}{3c^2\sqrt{x}}$$

```
[Out] -2/3*(-3*A*c+2*B*b)*(c*x^2+b*x)^(1/2)/c^2/x^(1/2)+2/3*B*x^(1/2)*(c*x^2+b*x)
^(1/2)/c
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {794, 648}

$$\frac{2B\sqrt{x}\,\sqrt{bx+cx^2}}{3c}-\frac{2\sqrt{bx+cx^2}\,(2bB-3Ac)}{3c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (-2*(2*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/(3*c^2*Sqrt[x]) + (2*B*Sqrt[x]*Sqrt[
b*x + c*x^2])/(3*c)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{x}(A+Bx)}{\sqrt{bx+cx^2}}\,dx &= \frac{2B\sqrt{x}\,\sqrt{bx+cx^2}}{3c}+\frac{\left(2\left(\frac{1}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{3c}\\ &= -\frac{2(2bB-3Ac)\sqrt{bx+cx^2}}{3c^2\sqrt{x}}+\frac{2B\sqrt{x}\,\sqrt{bx+cx^2}}{3c}\end{aligned}$$

Mathematica [A] time = 0.03, size = 36, normalized size = 0.59

$$\frac{2\sqrt{x(b+cx)}\,(3Ac-2bB+Bcx)}{3c^2\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x*(b + c*x)]*(-2*b*B + 3*A*c + B*c*x))/(3*c^2*Sqrt[x])
```

fricas [A] time = 0.85, size = 32, normalized size = 0.52

$$\frac{2\,(Bcx - 2\,Bb + 3\,Ac)\sqrt{cx^2 + bx}}{3\,c^2\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*x - 2*B*b + 3*A*c)*sqrt(c*x^2 + b*x)/(c^2*sqrt(x))
```

giac [A] time = 0.18, size = 53, normalized size = 0.87

$$\frac{2\,(cx + b)^{\frac{3}{2}}B}{3\,c^2} - \frac{2\,(Bb - Ac)\sqrt{cx + b}}{c^2} + \frac{2\left(2\,Bb^{\frac{3}{2}} - 3\,A\sqrt{b}\,c\right)}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*(c*x + b)^(3/2)*B/c^2 - 2*(B*b - A*c)*sqrt(c*x + b)/c^2 + 2/3*(2*B*b^(3
/2) - 3*A*sqrt(b)*c)/c^2
```

maple [A] time = 0.05, size = 38, normalized size = 0.62

$$\frac{2\,(cx + b)\,(Bcx + 3Ac - 2bB)\,\sqrt{x}}{3\sqrt{c\,x^2 + bx}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/3*(c*x+b)*(B*c*x+3*A*c-2*B*b)*x^(1/2)/c^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.62, size = 45, normalized size = 0.74

$$\frac{2\,\sqrt{cx + b}\,A}{c} + \frac{2\left(c^2x^2 - bcx - 2\,b^2\right)B}{3\,\sqrt{cx + b}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(c*x + b)*A/c + 2/3*(c^2*x^2 - b*c*x - 2*b^2)*B/(sqrt(c*x + b)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\sqrt{x}\,\,(A + B\,x)}{\sqrt{c\,x^2 + b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A + Bx)}{\sqrt{x\,(b + cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/sqrt(x*(b + c*x)), x)
```

3.229 $\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{ex}}\right)}{\sqrt{b}\,\sqrt{e}}$$

```
[Out] -2*A*arctanh(e^(1/2)*(c*x^2+b*x)^(1/2)/b^(1/2)/(e*x)^(1/2))/b^(1/2)/e^(1/2)
+2*B*(c*x^2+b*x)^(1/2)/c/(e*x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {794, 660, 208}

$$\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{ex}}\right)}{\sqrt{b}\,\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*B*Sqrt[b*x + c*x^2])/(c*Sqrt[e*x]) - (2*A*ArcTanh[(Sqrt[e]*Sqrt[b*x + c*
x^2])/(Sqrt[b]*Sqrt[e*x])])/(Sqrt[b]*Sqrt[e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{bx+cx^2}}\,dx&=\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}+A\int \frac{1}{\sqrt{ex}\,\sqrt{bx+cx^2}}\,dx\\&=\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}+(2Ae)\,\text{Subst}\left(\int \frac{1}{-be+e^2x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{ex}}\right)\\&=\frac{2B\sqrt{bx+cx^2}}{c\sqrt{ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{e}\,\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{ex}}\right)}{\sqrt{b}\,\sqrt{e}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 71, normalized size = 0.99

$$\frac{2x\left(\sqrt{b}\,B(b+cx)-Ac\sqrt{b+cx}\,\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{\sqrt{b}\,c\sqrt{ex}\,\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*x*(Sqrt[b]*B*(b + c*x) - A*c*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*x]/Sqrt[b]
]))/(Sqrt[b]*c*Sqrt[e*x]*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.81, size = 166, normalized size = 2.31

$$\left[\frac{\sqrt{be}\,Acx\log\left(-\frac{cex^2+2\,bex-2\,\sqrt{cx^2+bx}\,\sqrt{be}\,\sqrt{ex}}{x^2}\right)+2\,\sqrt{cx^2+bx}\,\sqrt{ex}\,Bb}{bcex},\ \frac{2\left(\sqrt{-be}\,Acx\arctan\left(\frac{\sqrt{cx^2+bx}\,\sqrt{-be}\,\sqrt{ex}}{cex^2+bex}\right)+\sqrt{cx^2}\right.}{bcex}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(b*e)*A*c*x*log(-(c*e*x^2 + 2*b*e*x - 2*sqrt(c*x^2 + b*x)*sqrt(b*e)*s
qrt(e*x))/x^2) + 2*sqrt(c*x^2 + b*x)*sqrt(e*x)*B*b)/(b*c*e*x), 2*(sqrt(-b*e
)*A*c*x*arctan(sqrt(c*x^2 + b*x)*sqrt(-b*e)*sqrt(e*x)/(c*e*x^2 + b*e*x)) +
sqrt(c*x^2 + b*x)*sqrt(e*x)*B*b)/(b*c*e*x)]
```

giac [A] time = 0.21, size = 103, normalized size = 1.43

$$2\left(\frac{A\arctan\left(\frac{\sqrt{cxe+be}}{\sqrt{-be}}\right)e}{\sqrt{-be}}+\frac{\sqrt{cxe+be}\,B}{c}\right)e^{(-1)}-\frac{2\left(Ac\arctan\left(\frac{\sqrt{b}\,e^{\frac{1}{2}}}{\sqrt{-be}}\right)e+\sqrt{-be}\,B\sqrt{b}\,e^{\frac{1}{2}}\right)e^{(-1)}}{\sqrt{-be}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(A*arctan(sqrt(c*x*e + b*e)/sqrt(-b*e))*e/sqrt(-b*e) + sqrt(c*x*e + b*e)*
B/c)*e^(-1) - 2*(A*c*arctan(sqrt(b)*e^(1/2)/sqrt(-b*e))*e + sqrt(-b*e)*B*sq
rt(b)*e^(1/2))*e^(-1)/(sqrt(-b*e)*c)
```

maple [A] time = 0.08, size = 72, normalized size = 1.00

$$-\frac{2\sqrt{(cx+b)\,x}\,\left(Ace\,\mathrm{arctanh}\left(\frac{\sqrt{(cx+b)e}}{\sqrt{be}}\right)-\sqrt{(cx+b)\,e}\,\sqrt{be}\,B\right)}{\sqrt{ex}\,\sqrt{(cx+b)\,e}\,\sqrt{be}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/(e*x)^(1/2)*((c*x+b)*x)^(1/2)*(A*c*e*arctanh((e*(c*x+b))^(1/2)/(b*e)^(1/
2))-B*(e*(c*x+b))^(1/2)*(b*e)^(1/2))/(e*(c*x+b))^(1/2)/c/(b*e)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*sqrt(e*x)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+Bx}{\sqrt{cx^2+bx}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(e*x)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(e*x)*sqrt(x*(b + c*x))), x)
```

3.230 $\int \frac{A+Bx}{x^{3/2}\sqrt{bx+cx^2}}\,dx$

<u>**Optimal**</u>. Leaf size=66

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}$$

```
[Out] -(-A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(3/2)-A*(c*x^2+b
*x)^(1/2)/b/x^(3/2)
```

<u>**Rubi**</u> **[A]** time = 0.05, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {792, 660, 207}

$$-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[b*x + c*x^2])/(b*x^(3/2))) - ((2*b*B - A*c)*ArcTanh[Sqrt[b*x + c*
x^2]/(Sqrt[b]*Sqrt[x])])/b^(3/2)
```

<u>Rule 207</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

<u>Rule 660</u>

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

<u>Rule 792</u>

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

<u>Rubi steps</u>

$$\begin{aligned}\int \frac{A+Bx}{x^{3/2}\sqrt{bx+cx^2}}\,dx &= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}+\frac{\left(-\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{\sqrt{x}\,\sqrt{bx+cx^2}}\,dx}{b}\\ &= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}+\frac{\left(2\left(-\frac{3}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\right)\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b}\\ &= -\frac{A\sqrt{bx+cx^2}}{bx^{3/2}}-\frac{(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{b^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.11

$$\frac{-x\sqrt{b+cx}\,(2bB-Ac)\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)-A\sqrt{b}\,(b+cx)}{b^{3/2}\sqrt{x}\,\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-(A*Sqrt[b]*(b + c*x)) - (2*b*B - A*c)*x*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*
x]/Sqrt[b]])/(b^(3/2)*Sqrt[x]*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.75, size = 144, normalized size = 2.18

$$\left[-\frac{(2\,Bb-Ac)\sqrt{b}\,x^2\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,\sqrt{cx^2+bx}\,Ab\sqrt{x}}{2\,b^2x^2},\frac{(2\,Bb-Ac)\sqrt{-b}\,x^2\arctan\left(\frac{\sqrt{-b}\,\sqrt{x}}{\sqrt{cx^2+bx}}\right)}{b^2x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((2*B*b - A*c)*sqrt(b)*x^2*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*
sqrt(b)*sqrt(x))/x^2) + 2*sqrt(c*x^2 + b*x)*A*b*sqrt(x))/(b^2*x^2), ((2*B*b
 - A*c)*sqrt(-b)*x^2*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - sqrt(c*x^
2 + b*x)*A*b*sqrt(x))/(b^2*x^2)]
```

giac [A] time = 0.23, size = 58, normalized size = 0.88

$$-\frac{\frac{\sqrt{cx+b}\,Ac}{bx}-\frac{\left(2\,Bbc-Ac^2\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -(sqrt(c*x + b)*A*c/(b*x) - (2*B*b*c - A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b)
)/(sqrt(-b)*b))/c
```

maple [A] time = 0.06, size = 71, normalized size = 1.08

$$\frac{\sqrt{(cx+b)\,x}\,\left(Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-\sqrt{cx+b}\,A\sqrt{b}\right)}{\sqrt{cx+b}\,b^{\frac{3}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] ((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c-2*B*arctanh
((c*x+b)^(1/2)/b^(1/2))*x*b-(c*x+b)^(1/2)*A*b^(1/2))/x^(3/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\, x^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{A + B\,x}{x^{3/2}\,\sqrt{c\,x^2 + b\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{3}{2}}\sqrt{x\,(b + cx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*sqrt(x*(b + c*x))), x)
```

3.231 $\int \frac{A+Bx}{x^{5/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=105

$$\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}-\frac{\sqrt{bx+cx^2}\,(4bB-3Ac)}{4b^2x^{3/2}}-\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}$$

```
[Out] 1/4*c*(-3*A*c+4*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(5/2)-1/2
*A*(c*x^2+b*x)^(1/2)/b/x^(5/2)-1/4*(-3*A*c+4*B*b)*(c*x^2+b*x)^(1/2)/b^2/x^(
3/2)
```

Rubi [A] time = 0.09, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {792, 672, 660, 207}

$$-\frac{\sqrt{bx+cx^2}\,(4bB-3Ac)}{4b^2x^{3/2}}+\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}-\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[b*x + c*x^2])/(2*b*x^(5/2)) - ((4*b*B - 3*A*c)*Sqrt[b*x + c*x^2])/
(4*b^2*x^(3/2)) + (c*(4*b*B - 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqr
t[x])])/(4*b^(5/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\sqrt{bx+cx^2}}\,dx &= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}+\frac{\left(-\frac{5}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{2b}\\
&= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}-\frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}}-\frac{(c(4bB-3Ac))\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{8b^2}\\
&= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}-\frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}}-\frac{(c(4bB-3Ac))\,\mathrm{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{4b^2}\\
&= -\frac{A\sqrt{bx+cx^2}}{2bx^{5/2}}-\frac{(4bB-3Ac)\sqrt{bx+cx^2}}{4b^2x^{3/2}}+\frac{c(4bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 92, normalized size = 0.88

$$\frac{\sqrt{x(b+cx)}\left(cx^2(4bB-3Ac)\tanh^{-1}\left(\sqrt{\frac{cx}{b}+1}\right)+b\sqrt{\frac{cx}{b}+1}\,(-2Ab+3Acx-4bBx)\right)}{4b^3x^{5/2}\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(b*(-2*A*b - 4*b*B*x + 3*A*c*x)*Sqrt[1 + (c*x)/b] + c*(4
*b*B - 3*A*c)*x^2*ArcTanh[Sqrt[1 + (c*x)/b]]))/(4*b^3*x^(5/2)*Sqrt[1 + (c*x
)/b])
```

fricas [A] time = 1.01, size = 188, normalized size = 1.79

$$\left[-\frac{\left(4\,Bbc-3\,Ac^2\right)\sqrt{b}\,x^3\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Ab^2+\left(4\,Bb^2-3\,Abc\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{8\,b^3x^3},-\frac{\left(4\,Bbc-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((4*B*b*c - 3*A*c^2)*sqrt(b)*x^3*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
 b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^2 + (4*B*b^2 - 3*A*b*c)*x)*sqrt(c*x^
2 + b*x)*sqrt(x))/(b^3*x^3), -1/4*((4*B*b*c - 3*A*c^2)*sqrt(-b)*x^3*arctan(
sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (2*A*b^2 + (4*B*b^2 - 3*A*b*c)*x)*sqr
t(c*x^2 + b*x)*sqrt(x))/(b^3*x^3)]
```

giac [A] time = 0.26, size = 111, normalized size = 1.06

$$-\frac{\frac{\left(4\,Bbc^2-3\,Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{4\,(cx+b)^{\frac{3}{2}}\,Bbc^2-4\,\sqrt{cx+b}\,Bb^2c^2-3\,(cx+b)^{\frac{3}{2}}\,Ac^3+5\,\sqrt{cx+b}\,Abc^3}{b^2c^2x^2}}{4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*((4*B*b*c^2 - 3*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) +
 (4*(c*x + b)^(3/2)*B*b*c^2 - 4*sqrt(c*x + b)*B*b^2*c^2 - 3*(c*x + b)^(3/2)
*A*c^3 + 5*sqrt(c*x + b)*A*b*c^3)/(b^2*c^2*x^2))/c
```

maple [A] time = 0.07, size = 109, normalized size = 1.04

$$-\frac{\sqrt{(cx+b)\,x}\,\left(3A\,c^{2}x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4Bbc\,x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3\sqrt{cx+b}\;A\sqrt{b}\;cx+4\sqrt{cx+b}\;B\,b^{\frac{3}{2}}x+\right.}{4\sqrt{cx+b}\;b^{\frac{5}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -1/4*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*c^2-
4*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c-3*(c*x+b)^(1/2)*A*b^(1/2)*c*x+4*
(c*x+b)^(1/2)*B*b^(3/2)*x+2*(c*x+b)^(1/2)*A*b^(3/2))/x^(5/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^{2}+bx}\,x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{5/2}\,\sqrt{c\,x^{2}+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{5}{2}}\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(5/2)*sqrt(x*(b + c*x))), x)
```

3.232 $\int \frac{A+Bx}{x^{7/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=142

$$-\frac{c^2(6bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{7/2}}+\frac{c\sqrt{bx+cx^2}\,(6bB-5Ac)}{8b^3x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(6bB-5Ac)}{12b^2x^{5/2}}-\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}$$

```
[Out] -1/8*c^2*(-5*A*c+6*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(7/2)-
1/3*A*(c*x^2+b*x)^(1/2)/b/x^(7/2)-1/12*(-5*A*c+6*B*b)*(c*x^2+b*x)^(1/2)/b^2
/x^(5/2)+1/8*c*(-5*A*c+6*B*b)*(c*x^2+b*x)^(1/2)/b^3/x^(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 672, 660, 207}

$$-\frac{c^2(6bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{7/2}}+\frac{c\sqrt{bx+cx^2}\,(6bB-5Ac)}{8b^3x^{3/2}}-\frac{\sqrt{bx+cx^2}\,(6bB-5Ac)}{12b^2x^{5/2}}-\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[b*x + c*x^2])/(3*b*x^(7/2)) - ((6*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/
(12*b^2*x^(5/2)) + (c*(6*b*B - 5*A*c)*Sqrt[b*x + c*x^2])/(8*b^3*x^(3/2)) -
(c^2*(6*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(7/
2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^{7/2}\sqrt{bx+cx^2}}\,dx &= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}+\frac{\left(-\frac{7}{2}(-bB+Ac)+\frac{1}{2}(-bB+2Ac)\right)\int \frac{1}{x^{5/2}\sqrt{bx+cx^2}}\,dx}{3b}\\
&= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}-\frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}}-\frac{(c(6bB-5Ac))\int \frac{1}{x^{3/2}\sqrt{bx+cx^2}}\,dx}{8b^2}\\
&= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}-\frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}}+\frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}}+\frac{\left(c^2(6bB-5Ac\right.}{1}\\
&= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}-\frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}}+\frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}}+\frac{\left(c^2(6bB-5Ac\right.}{}\\
&= -\frac{A\sqrt{bx+cx^2}}{3bx^{7/2}}-\frac{(6bB-5Ac)\sqrt{bx+cx^2}}{12b^2x^{5/2}}+\frac{c(6bB-5Ac)\sqrt{bx+cx^2}}{8b^3x^{3/2}}-\frac{c^2(6bB-5Ac)}{8}\end{aligned}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.43

$$-\frac{\sqrt{x(b+cx)}\left(Ab^3+c^2x^3(6bB-5Ac)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx}{b}+1\right)\right)}{3b^4x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -1/3*(Sqrt[x*(b + c*x)]*(A*b^3 + c^2*(6*b*B - 5*A*c)*x^3*Hypergeometric2F1[
1/2, 3, 3/2, 1 + (c*x)/b]))/(b^4*x^(7/2))
```

fricas [A] time = 0.88, size = 241, normalized size = 1.70

$$\left[-\frac{3\left(6\,Bbc^2-5\,Ac^3\right)\sqrt{b}\,x^4\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(8\,Ab^3-3\left(6\,Bb^2c-5\,Abc^2\right)x^2+2\left(6\,Bb^3-5\,A\right.\right.}{48\,b^4x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(6*B*b*c^2 - 5*A*c^3)*sqrt(b)*x^4*log(-(c*x^2 + 2*b*x + 2*sqrt(c*
x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^3 - 3*(6*B*b^2*c - 5*A*b*c^2)*x
^2 + 2*(6*B*b^3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^4), 1/24*
(3*(6*B*b*c^2 - 5*A*c^3)*sqrt(-b)*x^4*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (8*A*b^3 - 3*(6*B*b^2*c - 5*A*b*c^2)*x^2 + 2*(6*B*b^3 - 5*A*b^2*c)*
x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*x^4)]
```

giac [A] time = 0.28, size = 144, normalized size = 1.01

$$\frac{\frac{3\left(6\,Bbc^3-5\,Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^3}+\frac{18\,(cx+b)^{\frac{5}{2}}Bbc^3-48\,(cx+b)^{\frac{3}{2}}Bb^2c^3+30\,\sqrt{cx+b}\,Bb^3c^3-15\,(cx+b)^{\frac{5}{2}}Ac^4+40\,(cx+b)^{\frac{3}{2}}Abc^4-33\,\sqrt{cx+b}\,Ab^2c^4}{b^3c^3x^3}}{24\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*(3*(6*B*b*c^3 - 5*A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3)
 + (18*(c*x + b)^(5/2)*B*b*c^3 - 48*(c*x + b)^(3/2)*B*b^2*c^3 + 30*sqrt(c*x
 + b)*B*b^3*c^3 - 15*(c*x + b)^(5/2)*A*c^4 + 40*(c*x + b)^(3/2)*A*b*c^4 - 3
3*sqrt(c*x + b)*A*b^2*c^4)/(b^3*c^3*x^3))/c
```

maple [A] time = 0.06, size = 147, normalized size = 1.04

$$\frac{\sqrt{(cx+b)\,x}\;\Bigl(15A\,c^{3}x^{3}\operatorname{arctanh}\Bigl(\frac{\sqrt{cx+b}}{\sqrt{b}}\Bigr)-18Bb\,c^{2}x^{3}\operatorname{arctanh}\Bigl(\frac{\sqrt{cx+b}}{\sqrt{b}}\Bigr)-15\sqrt{cx+b}\;A\sqrt{b}\;c^{2}x^{2}+18\sqrt{cx+b}\;B\,b^{\frac{3}{2}}}{24\sqrt{cx+b}\;b^{\frac{7}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)/b^(7/2)*(15*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*c^3
-18*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2-15*(c*x+b)^(1/2)*A*b^(1/2)*c
^2*x^2+18*(c*x+b)^(1/2)*B*b^(3/2)*c*x^2+10*(c*x+b)^(1/2)*A*b^(3/2)*c*x-12*(
c*x+b)^(1/2)*B*b^(5/2)*x-8*(c*x+b)^(1/2)*A*b^(5/2))/x^(7/2)/(c*x+b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^{2}+bx}\,x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{7/2}\,\sqrt{c\,x^{2}+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{7}{2}}\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(7/2)*sqrt(x*(b + c*x))), x)
```

3.233 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{32b^2\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^5\sqrt{x}}+\frac{16b\sqrt{x}\,\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^4}-\frac{12x^{3/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^3}+\frac{2x^{5/2}\sqrt{bx+cx}}{7b}$$

```
[Out] -2*(-A*c+B*b)*x^(9/2)/b/c/(c*x^2+b*x)^(1/2)-12/35*(-7*A*c+8*B*b)*x^(3/2)*(c
*x^2+b*x)^(1/2)/c^3+2/7*(-7*A*c+8*B*b)*x^(5/2)*(c*x^2+b*x)^(1/2)/b/c^2-32/3
5*b^2*(-7*A*c+8*B*b)*(c*x^2+b*x)^(1/2)/c^5/x^(1/2)+16/35*b*(-7*A*c+8*B*b)*x
^(1/2)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi **[A]** time = 0.15, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$-\frac{32b^2\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^5\sqrt{x}}+\frac{2x^{5/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{7bc^2}-\frac{12x^{3/2}\sqrt{bx+cx^2}\,(8bB-7Ac)}{35c^3}+\frac{16b\sqrt{x}\,\sqrt{bx+cx}}{35c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(9/2))/(b*c*Sqrt[b*x + c*x^2]) - (32*b^2*(8*b*B - 7*A*c)*
Sqrt[b*x + c*x^2])/(35*c^5*Sqrt[x]) + (16*b*(8*b*B - 7*A*c)*Sqrt[x]*Sqrt[b*
x + c*x^2])/(35*c^4) - (12*(8*b*B - 7*A*c)*x^(3/2)*Sqrt[b*x + c*x^2])/(35*c
^3) + (2*(8*b*B - 7*A*c)*x^(5/2)*Sqrt[b*x + c*x^2])/(7*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \left(\frac{7A}{b}-\frac{8B}{c}\right)\int \frac{x^{7/2}}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} + \frac{2(8bB-7Ac)x^{5/2}\sqrt{bx+cx^2}}{7bc^2} - \frac{(6(8bB-7Ac))\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx}{7c^2}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \frac{12(8bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^3} + \frac{2(8bB-7Ac)x^{5/2}\sqrt{bx+cx^2}}{7bc^2} + \frac{(24b(8b}{}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} + \frac{16b(8bB-7Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{35c^4} - \frac{12(8bB-7Ac)x^{3/2}\sqrt{bx+cx^2}}{35c^3} + \frac{2(8b}{}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{bc\sqrt{bx+cx^2}} - \frac{32b^2(8bB-7Ac)\sqrt{bx+cx^2}}{35c^5\sqrt{x}} + \frac{16b(8bB-7Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{35c^4} - \frac{12(8b}{}$$

Mathematica [**A**] time = 0.06, size = 93, normalized size = 0.52

$$\frac{2\sqrt{x}\,\left(16b^3c(7A-4Bx)+8b^2c^2x(7A+2Bx)-2bc^3x^2(7A+4Bx)+c^4x^3(7A+5Bx)-128b^4B\right)}{35c^5\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(-128*b^4*B + 16*b^3*c*(7*A - 4*B*x) + 8*b^2*c^2*x*(7*A + 2*B*x)
 - 2*b*c^3*x^2*(7*A + 4*B*x) + c^4*x^3*(7*A + 5*B*x)))/(35*c^5*Sqrt[x*(b +
c*x)])
```

fricas [**A**] time = 1.29, size = 116, normalized size = 0.65

$$\frac{2\left(5\,Bc^4x^4-128\,Bb^4+112\,Ab^3c-\left(8\,Bbc^3-7\,Ac^4\right)x^3+2\left(8\,Bb^2c^2-7\,Abc^3\right)x^2-8\left(8\,Bb^3c-7\,Ab^2c^2\right)x\right)\sqrt{cx^2+}}{35\left(c^6x^2+bc^5x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^4*x^4 - 128*B*b^4 + 112*A*b^3*c - (8*B*b*c^3 - 7*A*c^4)*x^3 + 2
*(8*B*b^2*c^2 - 7*A*b*c^3)*x^2 - 8*(8*B*b^3*c - 7*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)*sqrt(x)/(c^6*x^2 + b*c^5*x)
```

giac [**A**] time = 0.21, size = 156, normalized size = 0.88

$$-\frac{2\left(Bb^4-Ab^3c\right)}{\sqrt{cx+b}\,c^5}+\frac{32\left(8\,Bb^4-7\,Ab^3c\right)}{35\sqrt{b}\,c^5}+\frac{2\left(5\,(cx+b)^{\frac{7}{2}}Bc^{30}-28\,(cx+b)^{\frac{5}{2}}Bbc^{30}+70\,(cx+b)^{\frac{3}{2}}Bb^2c^{30}-140\,\sqrt{cx+}\right.}{35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^4 - A*b^3*c)/(sqrt(c*x + b)*c^5) + 32/35*(8*B*b^4 - 7*A*b^3*c)/(sqr
t(b)*c^5) + 2/35*(5*(c*x + b)^(7/2)*B*c^30 - 28*(c*x + b)^(5/2)*B*b*c^30 +
70*(c*x + b)^(3/2)*B*b^2*c^30 - 140*sqrt(c*x + b)*B*b^3*c^30 + 7*(c*x + b)^
(5/2)*A*c^31 - 35*(c*x + b)^(3/2)*A*b*c^31 + 105*sqrt(c*x + b)*A*b^2*c^31)/
c^35
```

maple [A] time = 0.05, size = 107, normalized size = 0.60

$$\frac{2 (cx+b) \big(5B\,x^{4}c^{4}+7A\,c^{4}x^{3}-8Bb\,c^{3}x^{3}-14Ab\,c^{3}x^{2}+16B\,b^{2}c^{2}x^{2}+56A\,b^{2}c^{2}x-64B\,b^{3}cx+112A\,b^{3}c-128}{35 \left(c\,x^{2}+bx\right)^{\frac{3}{2}} c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/35*(c*x+b)*(5*B*c^4*x^4+7*A*c^4*x^3-8*B*b*c^3*x^3-14*A*b*c^3*x^2+16*B*b^2
*c^2*x^2+56*A*b^2*c^2*x-64*B*b^3*c*x+112*A*b^3*c-128*B*b^4)*x^(3/2)/c^5/(c*
x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2 \big(\big(15\,Bc^{5}x^{3}+3\,Bbc^{4}x^{2}-4\,Bb^{2}c^{3}x+8\,Bb^{3}c^{2}\big)x^{4}+\big(16\,Bb^{4}c-3\left(4\,Bbc^{4}-7\,Ac^{5}\right)x^{3}-\left(8\,Bb^{2}c^{3}-7\,Abc^{4}\right)x^{2}+}{105 \big(c^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*B*c^5*x^3 + 3*B*b*c^4*x^2 - 4*B*b^2*c^3*x + 8*B*b^3*c^2)*x^4 + (
16*B*b^4*c - 3*(4*B*b*c^4 - 7*A*c^5)*x^3 - (8*B*b^2*c^3 - 7*A*b*c^4)*x^2 +
2*(10*B*b^3*c^2 - 7*A*b^2*c^3)*x)*x^3 + 4*(2*B*b^5 + (9*B*b^2*c^3 - 7*A*b*c
^4)*x^3 + 2*(10*B*b^3*c^2 - 7*A*b^2*c^3)*x^2 + (13*B*b^4*c - 7*A*b^3*c^2)*x
)*x^2)*sqrt(c*x + b)/(c^7*x^4 + 2*b*c^6*x^3 + b^2*c^5*x^2) + integrate(-4/1
5*(4*B*b^5 - 2*A*b^4*c + (9*B*b^3*c^2 - 7*A*b^2*c^3)*x^2 + (13*B*b^4*c - 9*
A*b^3*c^2)*x)*sqrt(c*x + b)*x^2/(c^7*x^5 + 3*b*c^6*x^4 + 3*b^2*c^5*x^3 + b^
3*c^4*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.234 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=141

$$\frac{16b\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^4\sqrt{x}}-\frac{8\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^3}+\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-5Ac)}{5bc^2}-\frac{2x^{7/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] -2*(-A*c+B*b)*x^(7/2)/b/c/(c*x^2+b*x)^(1/2)+2/5*(-5*A*c+6*B*b)*x^(3/2)*(c*x
^2+b*x)^(1/2)/b/c^2+16/15*b*(-5*A*c+6*B*b)*(c*x^2+b*x)^(1/2)/c^4/x^(1/2)-8/
15*(-5*A*c+6*B*b)*x^(1/2)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.11, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{3/2}\sqrt{bx+cx^2}\,(6bB-5Ac)}{5bc^2}-\frac{8\sqrt{x}\,\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^3}+\frac{16b\sqrt{bx+cx^2}\,(6bB-5Ac)}{15c^4\sqrt{x}}-\frac{2x^{7/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(7/2))/(b*c*Sqrt[b*x + c*x^2]) + (16*b*(6*b*B - 5*A*c)*Sq
rt[b*x + c*x^2])/(15*c^4*Sqrt[x]) - (8*(6*b*B - 5*A*c)*Sqrt[x]*Sqrt[b*x + c
*x^2])/(15*c^3) + (2*(6*b*B - 5*A*c)*x^(3/2)*Sqrt[b*x + c*x^2])/(5*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} - \left(\frac{5A}{b}-\frac{6B}{c}\right)\int \frac{x^{5/2}}{\sqrt{bx+cx^2}}\,dx$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} + \frac{2(6bB-5Ac)x^{3/2}\sqrt{bx+cx^2}}{5bc^2} - \frac{(4(6bB-5Ac))\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx}{5c^2}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} - \frac{8(6bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^3} + \frac{2(6bB-5Ac)x^{3/2}\sqrt{bx+cx^2}}{5bc^2} + \frac{(8b(6}{\,}$$

$$= -\frac{2(bB-Ac)x^{7/2}}{bc\sqrt{bx+cx^2}} + \frac{16b(6bB-5Ac)\sqrt{bx+cx^2}}{15c^4\sqrt{x}} - \frac{8(6bB-5Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{15c^3} + \frac{2(6bB}{\,}$$

Mathematica [**A**] time = 0.05, size = 74, normalized size = 0.52

$$\frac{2\sqrt{x}\left(-8b^2c(5A-3Bx)-2bc^2x(10A+3Bx)+c^3x^2(5A+3Bx)+48b^3B\right)}{15c^4\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(48*b^3*B - 8*b^2*c*(5*A - 3*B*x) + c^3*x^2*(5*A + 3*B*x) - 2*b*
c^2*x*(10*A + 3*B*x)))/(15*c^4*Sqrt[x*(b + c*x)])
```

fricas [**A**] time = 0.97, size = 92, normalized size = 0.65

$$\frac{2\left(3\,Bc^3x^3+48\,Bb^3-40\,Ab^2c-\left(6\,Bbc^2-5\,Ac^3\right)x^2+4\left(6\,Bb^2c-5\,Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{15\left(c^5x^2+bc^4x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^3*x^3 + 48*B*b^3 - 40*A*b^2*c - (6*B*b*c^2 - 5*A*c^3)*x^2 + 4*(
6*B*b^2*c - 5*A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^5*x^2 + b*c^4*x)
```

giac [**A**] time = 0.19, size = 124, normalized size = 0.88

$$\frac{2\left(Bb^3-Ab^2c\right)}{\sqrt{cx+b}\,c^4}-\frac{16\left(6\,Bb^3-5\,Ab^2c\right)}{15\,\sqrt{b}\,c^4}+\frac{2\bigl(3\,(cx+b)^{\frac{5}{2}}Bc^{16}-15\,(cx+b)^{\frac{3}{2}}Bbc^{16}+45\,\sqrt{cx+b}\,Bb^2c^{16}+5\,(cx+b}{15\,c^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(B*b^3 - A*b^2*c)/(sqrt(c*x + b)*c^4) - 16/15*(6*B*b^3 - 5*A*b^2*c)/(sqrt
(b)*c^4) + 2/15*(3*(c*x + b)^(5/2)*B*c^16 - 15*(c*x + b)^(3/2)*B*b*c^16 + 4
5*sqrt(c*x + b)*B*b^2*c^16 + 5*(c*x + b)^(3/2)*A*c^17 - 30*sqrt(c*x + b)*A*
b*c^17)/c^20
```

maple [**A**] time = 0.05, size = 83, normalized size = 0.59

$$-\frac{2\,(cx+b)\left(-3B\,c^3x^3-5A\,c^3x^2+6Bb\,c^2x^2+20Ab\,c^2x-24B\,b^2cx+40A\,b^2c-48b^3B\right)x^{\frac{3}{2}}}{15\left(c\,x^2+bx\right)^{\frac{3}{2}}c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^3*x^3-5*A*c^3*x^2+6*B*b*c^2*x^2+20*A*b*c^2*x-24*B*b^2
*c*x+40*A*b^2*c-48*B*b^3)*x^(3/2)/c^4/(c*x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(\left(3\,Bc^{3}x^{2}+Bbc^{2}x-2\,Bb^{2}c\right)x^{3}-\left(4\,Bb^{3}+\left(4\,Bbc^{2}-5\,Ac^{3}\right)x^{2}+\left(8\,Bb^{2}c-5\,Abc^{2}\right)x\right)x^{2}\right)\sqrt{cx+b}}{15\left(c^{5}x^{3}+2\,bc^{4}x^{2}+b^{2}c^{3}x\right)}-\int-\frac{4\left(2\,Bb^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*B*c^3*x^2 + B*b*c^2*x - 2*B*b^2*c)*x^3 - (4*B*b^3 + (4*B*b*c^2 - 5
*A*c^3)*x^2 + (8*B*b^2*c - 5*A*b*c^2)*x)*x^2)*sqrt(c*x + b)/(c^5*x^3 + 2*b*
c^4*x^2 + b^2*c^3*x) - integrate(-4/15*(2*B*b^4 + (7*B*b^2*c^2 - 5*A*b*c^3)
*x^2 + (9*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x + b)*x^2/(c^6*x^5 + 3*b*c^5*x^
4 + 3*b^2*c^4*x^3 + b^3*c^3*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.235 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{4\sqrt{bx+cx^2}\,(4bB-3Ac)}{3c^3\sqrt{x}}+\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-3Ac)}{3bc^2}-\frac{2x^{5/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] -2*(-A*c+B*b)*x^(5/2)/b/c/(c*x^2+b*x)^(1/2)-4/3*(-3*A*c+4*B*b)*(c*x^2+b*x)^
(1/2)/c^3/x^(1/2)+2/3*(-3*A*c+4*B*b)*x^(1/2)*(c*x^2+b*x)^(1/2)/b/c^2
```

Rubi [A] time = 0.08, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2\sqrt{x}\,\sqrt{bx+cx^2}\,(4bB-3Ac)}{3bc^2}-\frac{4\sqrt{bx+cx^2}\,(4bB-3Ac)}{3c^3\sqrt{x}}-\frac{2x^{5/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(5/2))/(b*c*Sqrt[b*x + c*x^2]) - (4*(4*b*B - 3*A*c)*Sqrt[
b*x + c*x^2])/(3*c^3*Sqrt[x]) + (2*(4*b*B - 3*A*c)*Sqrt[x]*Sqrt[b*x + c*x^2
])/(3*b*c^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}}-\left(\frac{3A}{b}-\frac{4B}{c}\right)\int \frac{x^{3/2}}{\sqrt{bx+cx^2}}\,dx\\
&= -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}}+\frac{2(4bB-3Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{3bc^2}-\frac{(2(4bB-3Ac))\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{3c^2}\\
&= -\frac{2(bB-Ac)x^{5/2}}{bc\sqrt{bx+cx^2}}-\frac{4(4bB-3Ac)\sqrt{bx+cx^2}}{3c^3\sqrt{x}}+\frac{2(4bB-3Ac)\sqrt{x}\,\sqrt{bx+cx^2}}{3bc^2}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 54, normalized size = 0.51

$$
\frac{2\sqrt{x}\left(b(6Ac-4Bcx)+c^2x(3A+Bx)-8b^2B\right)}{3c^3\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(-8*b^2*B + c^2*x*(3*A + B*x) + b*(6*A*c - 4*B*c*x)))/(3*c^3*Sqr
t[x*(b + c*x)])
```

fricas [**A**] time = 0.76, size = 67, normalized size = 0.63

$$
\frac{2\left(Bc^2x^2-8\,Bb^2+6\,Abc-\left(4\,Bbc-3\,Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^4x^2+bc^3x\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^2*x^2 - 8*B*b^2 + 6*A*b*c - (4*B*b*c - 3*A*c^2)*x)*sqrt(c*x^2 + b*
x)*sqrt(x)/(c^4*x^2 + b*c^3*x)
```

giac [**A**] time = 0.19, size = 89, normalized size = 0.84

$$
-\frac{2\left(Bb^2-Abc\right)}{\sqrt{cx+b}\,c^3}+\frac{4\left(4\,Bb^2-3\,Abc\right)}{3\,\sqrt{b}\,c^3}+\frac{2\left((cx+b)^{\frac{3}{2}}Bc^6-6\,\sqrt{cx+b}\,Bbc^6+3\,\sqrt{cx+b}\,Ac^7\right)}{3\,c^9}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(B*b^2 - A*b*c)/(sqrt(c*x + b)*c^3) + 4/3*(4*B*b^2 - 3*A*b*c)/(sqrt(b)*c
^3) + 2/3*((c*x + b)^(3/2)*B*c^6 - 6*sqrt(c*x + b)*B*b*c^6 + 3*sqrt(c*x + b
)*A*c^7)/c^9
```

maple [**A**] time = 0.04, size = 58, normalized size = 0.55

$$
\frac{2\,(cx+b)\left(B\,c^2x^2+3A\,c^2x-4Bbcx+6Abc-8b^2B\right)x^{\frac{3}{2}}}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}\,c^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/3*(c*x+b)*(B*c^2*x^2+3*A*c^2*x-4*B*b*c*x+6*A*b*c-8*B*b^2)*x^(3/2)/c^3/(c*
x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,(Bcx+Bb)\sqrt{cx+b}\,x^2}{3\,\left(c^3x^2+2\,bc^2x+b^2c\right)}+\int\frac{\left(3\,Abcx^2-\left(4\,Bb^2+\left(4\,Bbc-3\,Ac^2\right)x\right)x^2\right)\sqrt{cx+b}}{3\,\left(c^4x^4+3\,bc^3x^3+3\,b^2c^2x^2+b^3cx\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b)*x^2/(c^3*x^2 + 2*b*c^2*x + b^2*c) + integra
te(1/3*(3*A*b*c*x^2 - (4*B*b^2 + (4*B*b*c - 3*A*c^2)*x)*x^2)*sqrt(c*x + b)/
(c^4*x^4 + 3*b*c^3*x^3 + 3*b^2*c^2*x^2 + b^3*c*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{5/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^{\frac{5}{2}}\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**(5/2)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.236 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=70

$$\frac{2\sqrt{bx+cx^2}\,(2bB-Ac)}{bc^2\sqrt{x}}-\frac{2x^{3/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] -2*(-A*c+B*b)*x^(3/2)/b/c/(c*x^2+b*x)^(1/2)+2*(-A*c+2*B*b)*(c*x^2+b*x)^(1/2
)/b/c^2/x^(1/2)
```

Rubi **[A]** time = 0.05, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {788, 648}

$$\frac{2\sqrt{bx+cx^2}\,(2bB-Ac)}{bc^2\sqrt{x}}-\frac{2x^{3/2}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(b*c*Sqrt[b*x + c*x^2]) + (2*(2*b*B - A*c)*Sqrt[b*
x + c*x^2])/(b*c^2*Sqrt[x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)x^{3/2}}{bc\sqrt{bx+cx^2}}-\frac{\left(2\left(\frac{1}{2}(bB-2Ac)+\frac{3}{2}(-bB+Ac)\right)\right)\int \frac{\sqrt{x}}{\sqrt{bx+cx^2}}\,dx}{bc}\\ &= -\frac{2(bB-Ac)x^{3/2}}{bc\sqrt{bx+cx^2}}+\frac{2(2bB-Ac)\sqrt{bx+cx^2}}{bc^2\sqrt{x}}\end{aligned}$$

Mathematica **[A]** time = 0.02, size = 34, normalized size = 0.49

$$\frac{2\sqrt{x}\,(-Ac+2bB+Bcx)}{c^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[x]*(2*b*B - A*c + B*c*x))/(c^2*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.87, size = 45, normalized size = 0.64

$$\frac{2\,(Bcx + 2\,Bb - Ac)\sqrt{cx^2 + bx}\,\sqrt{x}}{c^3x^2 + bc^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*(B*c*x + 2*B*b - A*c)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^3*x^2 + b*c^2*x)
```

giac [A] time = 0.20, size = 51, normalized size = 0.73

$$\frac{2\,\sqrt{cx+b}\,B}{c^2} + \frac{2\,(Bb - Ac)}{\sqrt{cx+b}\,c^2} - \frac{2\,(2\,Bb - Ac)}{\sqrt{b}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(c*x + b)*B/c^2 + 2*(B*b - A*c)/(sqrt(c*x + b)*c^2) - 2*(2*B*b - A*c)
/(sqrt(b)*c^2)
```

maple [A] time = 0.05, size = 38, normalized size = 0.54

$$-\frac{2\,(cx+b)\,(-Bcx + Ac - 2bB)\,x^{\frac{3}{2}}}{\left(c\,x^2+bx\right)^{\frac{3}{2}}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*(c*x+b)*(-B*c*x+A*c-2*B*b)*x^(3/2)/c^2/(c*x^2+b*x)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(3/2)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{3}{2}}\left(A + Bx\right)}{\left(x\left(b + cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.237 $\int \frac{\sqrt{x}(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{2\sqrt{x}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

```
[Out] -2*A*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(3/2)-2*(-A*c+B*b)*x^(1/2
)/b/c/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 660, 207}

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{3/2}}-\frac{2\sqrt{x}(bB-Ac)}{bc\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/(b*c*Sqrt[b*x + c*x^2]) - (2*A*ArcTanh[Sqrt[b*x +
c*x^2]/(Sqrt[b]*Sqrt[x])])/b^(3/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}+\frac{A\int \frac{1}{\sqrt{x}\,\sqrt{bx+cx^2}}\,dx}{b}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}+\frac{(2A)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{bc\sqrt{bx+cx^2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\,\sqrt{x}}\right)}{b^{3/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 69, normalized size = 1.01

$$
-\frac{2\sqrt{x}\left(\sqrt{b}\,(bB-Ac)+Ac\sqrt{b+cx}\,\tanh^{-1}\left(\frac{\sqrt{b+cx}}{\sqrt{b}}\right)\right)}{b^{3/2}c\sqrt{x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[x]*(Sqrt[b]*(b*B - A*c) + A*c*Sqrt[b + c*x]*ArcTanh[Sqrt[b + c*x]/
Sqrt[b]]))/(b^(3/2)*c*Sqrt[x*(b + c*x)])
```

fricas [**A**] time = 0.61, size = 192, normalized size = 2.82

$$
\left[\frac{\left(Ac^2x^2+Abcx\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)-2\left(Bb^2-Abc\right)\sqrt{cx^2+bx}\,\sqrt{x}}{b^2c^2x^2+b^3cx},\ 2\left(\left(Ac^2x^2+Abcx\right)\sqrt{-b}\ \mathrm{arcta}\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((A*c^2*x^2 + A*b*c*x)*sqrt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*s
qrt(b)*sqrt(x))/x^2) - 2*(B*b^2 - A*b*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*c^
2*x^2 + b^3*c*x), 2*((A*c^2*x^2 + A*b*c*x)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)
/sqrt(c*x^2 + b*x)) - (B*b^2 - A*b*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^2*c^2*x
^2 + b^3*c*x)]
```

giac [**A**] time = 0.21, size = 96, normalized size = 1.41

$$
\frac{2\,A\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b}-\frac{2\,(Bb-Ac)}{\sqrt{cx+b}\,bc}-\frac{2\left(A\sqrt{b}\,c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)-B\sqrt{-b}\,b+A\sqrt{-b}\,c\right)}{\sqrt{-b}\,b^{\frac{3}{2}}c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b) - 2*(B*b - A*c)/(sqrt(c*x +
 b)*b*c) - 2*(A*sqrt(b)*c*arctan(sqrt(b)/sqrt(-b)) - B*sqrt(-b)*b + A*sqrt(
-b)*c)/(sqrt(-b)*b^(3/2)*c)
```

maple [**A**] time = 0.06, size = 63, normalized size = 0.93

$$
-\frac{2\sqrt{(cx+b)\,x}\,\left(\sqrt{cx+b}\ Ac\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-A\sqrt{b}\ c+B\,b^{\frac{3}{2}}\right)}{(cx+b)\,b^{\frac{3}{2}}c\sqrt{x}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*((c*x+b)*x)^(1/2)/b^(3/2)*(A*arctanh((c*x+b)^(1/2)/b^(1/2))*c*(c*x+b)^(1
/2)-A*c*b^(1/2)+B*b^(3/2))/x^(1/2)/(c*x+b)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{x}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.238 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=97

$$-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}+\frac{\sqrt{x}\,(2bB-3Ac)}{b^2\sqrt{bx+cx^2}}-\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}$$

```
[Out] -(-3*A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(5/2)-A/b/x^(1
/2)/(c*x^2+b*x)^(1/2)+(-3*A*c+2*B*b)*x^(1/2)/b^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {792, 666, 660, 207}

$$\frac{\sqrt{x}\,(2bB-3Ac)}{b^2\sqrt{bx+cx^2}}-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}-\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -(A/(b*Sqrt[x]*Sqrt[b*x + c*x^2])) + ((2*b*B - 3*A*c)*Sqrt[x])/(b^2*Sqrt[b*
x + c*x^2]) - ((2*b*B - 3*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])]
)/b^(5/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}+\frac{\left(\frac{1}{2}(bB-2Ac)+\frac{1}{2}(bB-Ac)\right)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{b}\\
&= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}+\frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}}+\frac{(2bB-3Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{2b^2}\\
&= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}+\frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}}+\frac{(2bB-3Ac)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b^2}\\
&= -\frac{A}{b\sqrt{x}\sqrt{bx+cx^2}}+\frac{(2bB-3Ac)\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.54

$$\frac{x(2bB-3Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{cx}{b}+1\right)-Ab}{b^2\sqrt{x}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b) + (2*b*B - 3*A*c)*x*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (c*x)/b])/(
b^2*Sqrt[x]*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.98, size = 248, normalized size = 2.56

$$\left[-\frac{\left(\left(2\,Bbc-3\,Ac^2\right)x^3+\left(2\,Bb^2-3\,Abc\right)x^2\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(Ab^2-\left(2\,Bb^2-3\,Abc\right)x\right)\sqrt{c}}{2\left(b^3cx^3+b^4x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(((2*B*b*c - 3*A*c^2)*x^3 + (2*B*b^2 - 3*A*b*c)*x^2)*sqrt(b)*log(-(c*
x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(A*b^2 - (2*B*b
^2 - 3*A*b*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*c*x^3 + b^4*x^2), (((2*B*b
*c - 3*A*c^2)*x^3 + (2*B*b^2 - 3*A*b*c)*x^2)*sqrt(-b)*arctan(sqrt(-b)*sqrt(
x)/sqrt(c*x^2 + b*x)) - (A*b^2 - (2*B*b^2 - 3*A*b*c)*x)*sqrt(c*x^2 + b*x)*s
qrt(x))/(b^3*c*x^3 + b^4*x^2)]
```

giac [A] time = 0.24, size = 87, normalized size = 0.90

$$\frac{(2\,Bb-3\,Ac)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}+\frac{2\,(cx+b)Bb-2\,Bb^2-3\,(cx+b)Ac+2\,Abc}{\left((cx+b)^{\frac{3}{2}}-\sqrt{cx+b}\,b\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*b - 3*A*c)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) + (2*(c*x + b
)*B*b - 2*B*b^2 - 3*(c*x + b)*A*c + 2*A*b*c)/(((c*x + b)^(3/2) - sqrt(c*x +
 b)*b)*b^2)
```

maple [A]   time = 0.09, size = 94, normalized size = 0.97

$$\frac{\sqrt{(cx+b)\,x}\,\left(3\sqrt{cx+b}\;Acx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-2\sqrt{cx+b}\;Bbx\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3A\sqrt{b}\;cx+2B\,b^{\frac{3}{2}}x-A\,b^{\frac{3}{2}}\right)}{(cx+b)\,b^{\frac{5}{2}}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x)
```

```
[Out] ((c*x+b)*x)^(1/2)/x^(3/2)*(3*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))
*x*c-2*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x*b+2*B*b^(3/2)*x-3*A
*b^(1/2)*x*c-A*b^(3/2))/(c*x+b)/b^(5/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*sqrt(x)), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,\left(c\,x^2+b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x}\,\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x)*(x*(b + c*x))**(3/2)), x)
```

3.239 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{7/2}}-\frac{3c\sqrt{x}\,(4bB-5Ac)}{4b^3\sqrt{bx+cx^2}}-\frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}}-\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}}$$

```
[Out] 3/4*c*(-5*A*c+4*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(7/2)-1/2
*A/b/x^(3/2)/(c*x^2+b*x)^(1/2)+1/4*(5*A*c-4*B*b)/b^2/x^(1/2)/(c*x^2+b*x)^(1
/2)-3/4*c*(-5*A*c+4*B*b)*x^(1/2)/b^3/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$-\frac{3c\sqrt{x}\,(4bB-5Ac)}{4b^3\sqrt{bx+cx^2}}-\frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}}+\frac{3c(4bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{7/2}}-\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(2*b*x^(3/2)*Sqrt[b*x + c*x^2]) - (4*b*B - 5*A*c)/(4*b^2*Sqrt[x]*Sqrt[b*
x + c*x^2]) - (3*c*(4*b*B - 5*A*c)*Sqrt[x])/(4*b^3*Sqrt[b*x + c*x^2]) + (3*
c*(4*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*b^(7/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} + \frac{\left(\frac{1}{2}(bB-2Ac)-\frac{3}{2}(-bB+Ac)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{2b}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{8b^2}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\int \frac{}{\sqrt{x}\,\sqrt{}}}{8b^3}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} - \frac{(3c(4bB-5Ac))\,\mathrm{Subst}}{4}$$

$$= -\frac{A}{2bx^{3/2}\sqrt{bx+cx^2}} - \frac{4bB-5Ac}{4b^2\sqrt{x}\sqrt{bx+cx^2}} - \frac{3c(4bB-5Ac)\sqrt{x}}{4b^3\sqrt{bx+cx^2}} + \frac{3c(4bB-5Ac)\tanh^{-1}}{4b^{7/2}}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.43

$$\frac{cx^2(5Ac-4bB)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^2}{2b^3x^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^2) + c*(-4*b*B + 5*A*c)*x^2*Hypergeometric2F1[-1/2, 2, 1/2, 1 + (c*x
)/b])/(2*b^3*x^(3/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.80, size = 304, normalized size = 2.17

$$\left[-\frac{3\left(\left(4\,Bbc^2-5\,Ac^3\right)x^4+\left(4\,Bb^2c-5\,Abc^2\right)x^3\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(2\,Ab^3+3\left(4\,Bb^2c-5\,Abc\right.\right.}{8\left(b^4cx^4+b^5x^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*((4*B*b*c^2 - 5*A*c^3)*x^4 + (4*B*b^2*c - 5*A*b*c^2)*x^3)*sqrt(b)*
log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(2*A*b^
3 + 3*(4*B*b^2*c - 5*A*b*c^2)*x^2 + (4*B*b^3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b
*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3), -1/4*(3*((4*B*b*c^2 - 5*A*c^3)*x^4 + (4
*B*b^2*c - 5*A*b*c^2)*x^3)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*
x)) + (2*A*b^3 + 3*(4*B*b^2*c - 5*A*b*c^2)*x^2 + (4*B*b^3 - 5*A*b^2*c)*x)*s
qrt(c*x^2 + b*x)*sqrt(x))/(b^4*c*x^4 + b^5*x^3)]
```

giac [A] time = 0.28, size = 125, normalized size = 0.89

$$-\frac{3\left(4\,Bbc-5\,Ac^{2}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{4\,\sqrt{-b}\,b^{3}}-\frac{2\left(Bbc-Ac^{2}\right)}{\sqrt{cx+b}\,b^{3}}-\frac{4\,(cx+b)^{\frac{3}{2}}Bbc-4\,\sqrt{cx+b}\,Bb^{2}c-7\,(cx+b)^{\frac{3}{2}}Ac^{2}+9\,\sqrt{c}}{4\,b^{3}c^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -3/4*(4*B*b*c - 5*A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3) - 2*
(B*b*c - A*c^2)/(sqrt(c*x + b)*b^3) - 1/4*(4*(c*x + b)^(3/2)*B*b*c - 4*sqrt
(c*x + b)*B*b^2*c - 7*(c*x + b)^(3/2)*A*c^2 + 9*sqrt(c*x + b)*A*b*c^2)/(b^3
*c^2*x^2)
```

maple [A] time = 0.09, size = 124, normalized size = 0.89

$$-\frac{\sqrt{(cx+b)\,x}\;\left(15\sqrt{cx+b}\;A\,c^{2}x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-12\sqrt{cx+b}\;Bbc\,x^{2}\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15A\sqrt{b}\;c^{2}x^{2}+12B\right.}{4\,(cx+b)\,b^{\frac{7}{2}}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/4/x^(5/2)*((c*x+b)*x)^(1/2)*(15*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^
(1/2))*x^2*c^2-12*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c+4*
B*b^(5/2)*x+12*B*b^(3/2)*x^2*c+2*A*b^(5/2)-5*A*b^(3/2)*x*c-15*A*b^(1/2)*x^2
*c^2)/(c*x+b)/b^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^{2}+bx\right)^{\frac{3}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{3}{2}}\,\left(x\left(b+cx\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*(x*(b + c*x))**(3/2)), x)
```

3.240 $\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{5c^2(6bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{9/2}}+\frac{5c^2\sqrt{x}\,(6bB-7Ac)}{8b^4\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}-\frac{A}{3bx^{5/2}\sqrt{b}}$$

```
[Out] -5/8*c^2*(-7*A*c+6*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(9/2)-
1/3*A/b/x^(5/2)/(c*x^2+b*x)^(1/2)+1/12*(7*A*c-6*B*b)/b^2/x^(3/2)/(c*x^2+b*x
)^(1/2)+5/24*c*(-7*A*c+6*B*b)/b^3/x^(1/2)/(c*x^2+b*x)^(1/2)+5/8*c^2*(-7*A*c
+6*B*b)*x^(1/2)/b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$\frac{5c^2\sqrt{x}\,(6bB-7Ac)}{8b^4\sqrt{bx+cx^2}}-\frac{5c^2(6bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{9/2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}-\frac{A}{3bx^{5/2}\sqrt{bx}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(3*b*x^(5/2)*Sqrt[b*x + c*x^2]) - (6*b*B - 7*A*c)/(12*b^2*x^(3/2)*Sqrt[b
*x + c*x^2]) + (5*c*(6*b*B - 7*A*c))/(24*b^3*Sqrt[x]*Sqrt[b*x + c*x^2]) + (
5*c^2*(6*b*B - 7*A*c)*Sqrt[x])/(8*b^4*Sqrt[b*x + c*x^2]) - (5*c^2*(6*b*B -
7*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(9/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
```

```
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}+\frac{\left(\frac{1}{2}(bB-2Ac)-\frac{5}{2}(-bB+Ac)\right)\int\frac{1}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}-\frac{(5c(6bB-7Ac))\int\frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{24b^2}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{\left(5c^2(6bB-7Ac)\right)\int}{16b^3}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

$$= -\frac{A}{3bx^{5/2}\sqrt{bx+cx^2}}-\frac{6bB-7Ac}{12b^2x^{3/2}\sqrt{bx+cx^2}}+\frac{5c(6bB-7Ac)}{24b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{5c^2(6bB-7Ac)\sqrt{x}}{8b^4\sqrt{bx+cx^2}}$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.35

$$\frac{c^2x^3(6bB-7Ac)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^3}{3b^4x^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^3) + c^2*(6*b*B - 7*A*c)*x^3*Hypergeometric2F1[-1/2, 3, 1/2, 1 + (c*
x)/b])/(3*b^4*x^(5/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.65, size = 359, normalized size = 2.01

$$\left[-\frac{15\left(\left(6\,Bbc^3-7\,Ac^4\right)x^5+\left(6\,Bb^2c^2-7\,Abc^3\right)x^4\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,(8\,Ab^4-15\,(6\,Bb^2c^2-7}{48\left(b^5cx^5+b^6x^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(15*((6*B*b*c^3 - 7*A*c^4)*x^5 + (6*B*b^2*c^2 - 7*A*b*c^3)*x^4)*sqrt
(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*
A*b^4 - 15*(6*B*b^2*c^2 - 7*A*b*c^3)*x^3 - 5*(6*B*b^3*c - 7*A*b^2*c^2)*x^2
+ 2*(6*B*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^
4), 1/24*(15*((6*B*b*c^3 - 7*A*c^4)*x^5 + (6*B*b^2*c^2 - 7*A*b*c^3)*x^4)*sq
rt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (8*A*b^4 - 15*(6*B*b^2*
c^2 - 7*A*b*c^3)*x^3 - 5*(6*B*b^3*c - 7*A*b^2*c^2)*x^2 + 2*(6*B*b^4 - 7*A*b
^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c*x^5 + b^6*x^4)]
```

giac [A] time = 0.33, size = 165, normalized size = 0.92

$$\frac{5\left(6\,Bbc^2 - 7\,Ac^3\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{8\,\sqrt{-b}\,b^4} + \frac{2\left(Bbc^2 - Ac^3\right)}{\sqrt{cx+b}\,b^4} + \frac{42\,(cx+b)^{\frac{5}{2}}Bbc^2 - 96\,(cx+b)^{\frac{3}{2}}Bb^2c^2 + 54\,\sqrt{cx+b}\,Bb^3}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 5/8*(6*B*b*c^2 - 7*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^4) + 2
*(B*b*c^2 - A*c^3)/(sqrt(c*x + b)*b^4) + 1/24*(42*(c*x + b)^(5/2)*B*b*c^2 -
 96*(c*x + b)^(3/2)*B*b^2*c^2 + 54*sqrt(c*x + b)*B*b^3*c^2 - 57*(c*x + b)^(
5/2)*A*c^3 + 136*(c*x + b)^(3/2)*A*b*c^3 - 87*sqrt(c*x + b)*A*b^2*c^3)/(b^4
*c^3*x^3)
```

maple [A] time = 0.11, size = 150, normalized size = 0.84

$$\frac{\sqrt{(cx+b)\,x}\,\left(105\sqrt{cx+b}\;A\,c^3x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 90\sqrt{cx+b}\;Bb\,c^2x^3\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right) - 105A\sqrt{b}\;c^3x^3 +\right.}{24\,(cx+b)\,b^{\frac{9}{2}}x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/24/x^(7/2)*((c*x+b)*x)^(1/2)*(105*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b
^(1/2))*x^3*c^3-90*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2
-12*B*b^(7/2)*x+30*B*b^(5/2)*x^2*c+90*B*b^(3/2)*x^3*c^2-8*A*b^(7/2)+14*A*b^
(5/2)*x*c-35*A*b^(3/2)*x^2*c^2-105*A*b^(1/2)*x^3*c^3)/(c*x+b)/b^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{3}{2}} x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B\,x}{x^{5/2}\,\left(c\,x^2 + b\,x\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{5}{2}} \left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**(5/2)*(x*(b + c*x))**(3/2)), x)
```

3.241 $\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=216

$$\frac{35c^3(8bB-9Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{11/2}}-\frac{35c^3\sqrt{x}\,(8bB-9Ac)}{64b^5\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{8b}{24b^2x^{5}}$$

```
[Out] 35/64*c^3*(-9*A*c+8*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(11/2
)-1/4*A/b/x^(7/2)/(c*x^2+b*x)^(1/2)+1/24*(9*A*c-8*B*b)/b^2/x^(5/2)/(c*x^2+b
*x)^(1/2)+7/96*c*(-9*A*c+8*B*b)/b^3/x^(3/2)/(c*x^2+b*x)^(1/2)-35/192*c^2*(-
9*A*c+8*B*b)/b^4/x^(1/2)/(c*x^2+b*x)^(1/2)-35/64*c^3*(-9*A*c+8*B*b)*x^(1/2)
/b^5/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {792, 672, 666, 660, 207}

$$-\frac{35c^3\sqrt{x}\,(8bB-9Ac)}{64b^5\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}+\frac{35c^3(8bB-9Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{64b^{11/2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{8}{24b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] -A/(4*b*x^(7/2)*Sqrt[b*x + c*x^2]) - (8*b*B - 9*A*c)/(24*b^2*x^(5/2)*Sqrt[b
*x + c*x^2]) + (7*c*(8*b*B - 9*A*c))/(96*b^3*x^(3/2)*Sqrt[b*x + c*x^2]) - (
35*c^2*(8*b*B - 9*A*c))/(192*b^4*Sqrt[x]*Sqrt[b*x + c*x^2]) - (35*c^3*(8*b*
B - 9*A*c)*Sqrt[x])/(64*b^5*Sqrt[b*x + c*x^2]) + (35*c^3*(8*b*B - 9*A*c)*Ar
cTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(64*b^(11/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
```

```
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{7/2}\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}+\frac{\left(\frac{1}{2}(bB-2Ac)-\frac{7}{2}(-bB+Ac)\right)\int \frac{1}{x^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx}{4b}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}-\frac{(7c(8bB-9Ac))\int \frac{1}{x^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx}{48b^2}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}+\frac{\left(35c^2(8bB-9Ac)\right)}{192b}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}\\
&= -\frac{A}{4bx^{7/2}\sqrt{bx+cx^2}}-\frac{8bB-9Ac}{24b^2x^{5/2}\sqrt{bx+cx^2}}+\frac{7c(8bB-9Ac)}{96b^3x^{3/2}\sqrt{bx+cx^2}}-\frac{35c^2(8bB-9Ac)}{192b^4\sqrt{x}\sqrt{bx+cx^2}}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.29

$$\frac{c^3x^4(9Ac-8bB)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};\frac{cx}{b}+1\right)-Ab^4}{4b^5x^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-(A*b^4) + c^3*(-8*b*B + 9*A*c)*x^4*Hypergeometric2F1[-1/2, 4, 1/2, 1 + (c
*x)/b])/(4*b^5*x^(7/2)*Sqrt[x*(b + c*x)])
```

fricas [**A**] time = 1.34, size = 406, normalized size = 1.88

$$\left[-\frac{105\,\left(\left(8\,Bbc^4-9\,Ac^5\right)x^6+\left(8\,Bb^2c^3-9\,Abc^4\right)x^5\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,\left(48\,Ab^5+105\,\left(8\,Bb\right.\right.}{384\,\left(b^6cx\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/384*(105*((8*B*b*c^4 - 9*A*c^5)*x^6 + (8*B*b^2*c^3 - 9*A*b*c^4)*x^5)*sq
rt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(
48*A*b^5 + 105*(8*B*b^2*c^3 - 9*A*b*c^4)*x^4 + 35*(8*B*b^3*c^2 - 9*A*b^2*c^
3)*x^3 - 14*(8*B*b^4*c - 9*A*b^3*c^2)*x^2 + 8*(8*B*b^5 - 9*A*b^4*c)*x)*sqrt
(c*x^2 + b*x)*sqrt(x))/(b^6*c*x^6 + b^7*x^5), -1/192*(105*((8*B*b*c^4 - 9*A
*c^5)*x^6 + (8*B*b^2*c^3 - 9*A*b*c^4)*x^5)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)
/sqrt(c*x^2 + b*x)) + (48*A*b^5 + 105*(8*B*b^2*c^3 - 9*A*b*c^4)*x^4 + 35*(8
*B*b^3*c^2 - 9*A*b^2*c^3)*x^3 - 14*(8*B*b^4*c - 9*A*b^3*c^2)*x^2 + 8*(8*B*b
^5 - 9*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c*x^6 + b^7*x^5)]
```

giac [**A**] time = 0.34, size = 197, normalized size = 0.91

$$-\frac{35\,\left(8\,Bbc^3-9\,Ac^4\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{64\,\sqrt{-b}\,b^5}-\frac{2\,\left(Bbc^3-Ac^4\right)}{\sqrt{cx+b}\,b^5}-\frac{456\,(cx+b)^{\frac{7}{2}}Bbc^3-1544\,(cx+b)^{\frac{5}{2}}Bb^2c^3+1784\,(cx+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -35/64*(8*B*b*c^3 - 9*A*c^4)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^5)
- 2*(B*b*c^3 - A*c^4)/(sqrt(c*x + b)*b^5) - 1/192*(456*(c*x + b)^(7/2)*B*b*
c^3 - 1544*(c*x + b)^(5/2)*B*b^2*c^3 + 1784*(c*x + b)^(3/2)*B*b^3*c^3 - 696
*sqrt(c*x + b)*B*b^4*c^3 - 561*(c*x + b)^(7/2)*A*c^4 + 1929*(c*x + b)^(5/2)
*A*b*c^4 - 2295*(c*x + b)^(3/2)*A*b^2*c^4 + 975*sqrt(c*x + b)*A*b^3*c^4)/(b
^5*c^4*x^4)
```

maple [**A**] time = 0.09, size = 174, normalized size = 0.81

$$-\frac{\sqrt{(cx+b)\,x}\,\left(945\sqrt{cx+b}\,A\,c^4x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-840\sqrt{cx+b}\,Bb\,c^3x^4\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-945A\sqrt{b}\,c^4x^4+\right.}{192\,(cx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/192/x^(9/2)*((c*x+b)*x)^(1/2)*(945*A*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x
+b)^(1/2)*x^4*c^4+64*B*b^(9/2)*x-112*B*b^(7/2)*x^2*c+280*B*b^(5/2)*x^3*c^2+
840*B*b^(3/2)*x^4*c^3-840*B*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*x^
4*b*c^3+48*A*b^(9/2)-72*A*b^(7/2)*x*c+126*A*b^(5/2)*x^2*c^2-315*A*b^(3/2)*x
^3*c^3-945*A*b^(1/2)*x^4*c^4)/(c*x+b)/b^(11/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.242 $\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=180

$$\frac{32b^2\sqrt{x}\,(8bB-5Ac)}{15c^5\sqrt{bx+cx^2}}+\frac{16bx^{3/2}(8bB-5Ac)}{15c^4\sqrt{bx+cx^2}}-\frac{4x^{5/2}(8bB-5Ac)}{15c^3\sqrt{bx+cx^2}}+\frac{2x^{7/2}(8bB-5Ac)}{15bc^2\sqrt{bx+cx^2}}-\frac{2x^{11/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^(11/2)/b/c/(c*x^2+b*x)^(3/2)+16/15*b*(-5*A*c+8*B*b)*x^(3/
2)/c^4/(c*x^2+b*x)^(1/2)-4/15*(-5*A*c+8*B*b)*x^(5/2)/c^3/(c*x^2+b*x)^(1/2)+
2/15*(-5*A*c+8*B*b)*x^(7/2)/b/c^2/(c*x^2+b*x)^(1/2)+32/15*b^2*(-5*A*c+8*B*b
)*x^(1/2)/c^5/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {788, 656, 648}

$$\frac{32b^2\sqrt{x}\,(8bB-5Ac)}{15c^5\sqrt{bx+cx^2}}+\frac{2x^{7/2}(8bB-5Ac)}{15bc^2\sqrt{bx+cx^2}}-\frac{4x^{5/2}(8bB-5Ac)}{15c^3\sqrt{bx+cx^2}}+\frac{16bx^{3/2}(8bB-5Ac)}{15c^4\sqrt{bx+cx^2}}-\frac{2x^{11/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(11/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (32*b^2*(8*b*B - 5*
A*c)*Sqrt[x])/(15*c^5*Sqrt[b*x + c*x^2]) + (16*b*(8*b*B - 5*A*c)*x^(3/2))/(
15*c^4*Sqrt[b*x + c*x^2]) - (4*(8*b*B - 5*A*c)*x^(5/2))/(15*c^3*Sqrt[b*x +
c*x^2]) + (2*(8*b*B - 5*A*c)*x^(7/2))/(15*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{11/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{1}{3}\left(\frac{5A}{b}-\frac{8B}{c}\right)\int \frac{x^{9/2}}{\left(bx+cx^2\right)^{3/2}}\,dx \\
&= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} - \frac{(2(8bB-5Ac))\int \frac{x^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{5c^2} \\
&= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} + \frac{(8b(8bB-5Ac))\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/}}}{15c^3} \\
&= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{16b(8bB-5Ac)x^{3/2}}{15c^4\sqrt{bx+cx^2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2(8bB-5Ac)x^{7/2}}{15bc^2\sqrt{bx+cx^2}} - \frac{(16b}{} \\
&= -\frac{2(bB-Ac)x^{11/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{32b^2(8bB-5Ac)\sqrt{x}}{15c^5\sqrt{bx+cx^2}} + \frac{16b(8bB-5Ac)x^{3/2}}{15c^4\sqrt{bx+cx^2}} - \frac{4(8bB-5Ac)x^{5/2}}{15c^3\sqrt{bx+cx^2}} + \frac{2}{1}
\end{aligned}
$$

Mathematica [**A**] time = 0.07, size = 93, normalized size = 0.52

$$
\frac{2x^{3/2}\left(b^3(192Bcx-80Ac)+24b^2c^2x(2Bx-5A)-2bc^3x^2(15A+4Bx)+c^4x^3(5A+3Bx)+128b^4B\right)}{15c^5(x(b+cx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(128*b^4*B + 24*b^2*c^2*x*(-5*A + 2*B*x) + c^4*x^3*(5*A + 3*B*x)
 - 2*b*c^3*x^2*(15*A + 4*B*x) + b^3*(-80*A*c + 192*B*c*x)))/(15*c^5*(x*(b +
 c*x))^(3/2))
```

fricas [**A**] time = 0.69, size = 127, normalized size = 0.71

$$
\frac{2\left(3\,Bc^4x^4+128\,Bb^4-80\,Ab^3c-\left(8\,Bbc^3-5\,Ac^4\right)x^3+6\left(8\,Bb^2c^2-5\,Abc^3\right)x^2+24\left(8\,Bb^3c-5\,Ab^2c^2\right)x\right)\sqrt{cx^2+}}{15\left(c^7x^3+2\,bc^6x^2+b^2c^5x\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^4*x^4 + 128*B*b^4 - 80*A*b^3*c - (8*B*b*c^3 - 5*A*c^4)*x^3 + 6*
(8*B*b^2*c^2 - 5*A*b*c^3)*x^2 + 24*(8*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x^2
+ b*x)*sqrt(x)/(c^7*x^3 + 2*b*c^6*x^2 + b^2*c^5*x)
```

giac [**A**] time = 0.21, size = 147, normalized size = 0.82

$$
-\frac{32\left(8\,Bb^3-5\,Ab^2c\right)}{15\,\sqrt{b}\,c^5}+\frac{2\left(12\,(cx+b)Bb^3-Bb^4-9\,(cx+b)Ab^2c+Ab^3c\right)}{3\,(cx+b)^{\frac{3}{2}}c^5}+\frac{2\left(3\,(cx+b)^{\frac{5}{2}}Bc^{20}-20\,(cx+b)^{\frac{3}{2}}Bbc^{2}\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -32/15*(8*B*b^3 - 5*A*b^2*c)/(sqrt(b)*c^5) + 2/3*(12*(c*x + b)*B*b^3 - B*b^
4 - 9*(c*x + b)*A*b^2*c + A*b^3*c)/((c*x + b)^(3/2)*c^5) + 2/15*(3*(c*x + b
)^(5/2)*B*c^20 - 20*(c*x + b)^(3/2)*B*b*c^20 + 90*sqrt(c*x + b)*B*b^2*c^20
+ 5*(c*x + b)^(3/2)*A*c^21 - 45*sqrt(c*x + b)*A*b*c^21)/c^25
```

maple [A] time = 0.05, size = 107, normalized size = 0.59

$$-\frac{2\,(cx+b)\left(-3B\,x^{4}c^{4}-5A\,c^{4}x^{3}+8Bb\,c^{3}x^{3}+30Ab\,c^{3}x^{2}-48B\,b^{2}c^{2}x^{2}+120A\,b^{2}c^{2}x-192B\,b^{3}cx+80A\,b^{3}c-\right.}{15\left(c\,x^{2}+bx\right)^{\frac{5}{2}}c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/15*(c*x+b)*(-3*B*c^4*x^4-5*A*c^4*x^3+8*B*b*c^3*x^3+30*A*b*c^3*x^2-48*B*b
^2*c^2*x^2+120*A*b^2*c^2*x-192*B*b^3*c*x+80*A*b^3*c-128*B*b^4)*x^(5/2)/c^5/
(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(\left(3\,Bc^{3}x^{2}+Bbc^{2}x-2\,Bb^{2}c\right)x^{4}-\left(6\,Bb^{3}+\left(6\,Bbc^{2}-5\,Ac^{3}\right)x^{2}+\left(12\,Bb^{2}c-5\,Abc^{2}\right)x\right)x^{3}\right)\sqrt{cx+b}}{15\left(c^{6}x^{4}+3\,bc^{5}x^{3}+3\,b^{2}c^{4}x^{2}+b^{3}c^{3}x\right)}-\int-\frac{2\left(4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*B*c^3*x^2 + B*b*c^2*x - 2*B*b^2*c)*x^4 - (6*B*b^3 + (6*B*b*c^2 - 5
*A*c^3)*x^2 + (12*B*b^2*c - 5*A*b*c^2)*x)*x^3)*sqrt(c*x + b)/(c^6*x^4 + 3*b
*c^5*x^3 + 3*b^2*c^4*x^2 + b^3*c^3*x) - integrate(-2/5*(4*B*b^4 + (9*B*b^2*
c^2 - 5*A*b*c^3)*x^2 + (13*B*b^3*c - 5*A*b^2*c^2)*x)*sqrt(c*x + b)*x^3/(c^7
*x^6 + 4*b*c^6*x^5 + 6*b^2*c^5*x^4 + 4*b^3*c^4*x^3 + b^4*c^3*x^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{11/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(11/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.243 $\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=143

$$-\frac{16b\sqrt{x}\,(2bB-Ac)}{3c^4\sqrt{bx+cx^2}}-\frac{8x^{3/2}(2bB-Ac)}{3c^3\sqrt{bx+cx^2}}+\frac{2x^{5/2}(2bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{9/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^(9/2)/b/c/(c*x^2+b*x)^(3/2)-8/3*(-A*c+2*B*b)*x^(3/2)/c^3/
(c*x^2+b*x)^(1/2)+2/3*(-A*c+2*B*b)*x^(5/2)/b/c^2/(c*x^2+b*x)^(1/2)-16/3*b*(
-A*c+2*B*b)*x^(1/2)/c^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{5/2}(2bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{8x^{3/2}(2bB-Ac)}{3c^3\sqrt{bx+cx^2}}-\frac{16b\sqrt{x}\,(2bB-Ac)}{3c^4\sqrt{bx+cx^2}}-\frac{2x^{9/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(9/2))/(3*b*c*(b*x + c*x^2)^(3/2)) - (16*b*(2*b*B - A*c)*
Sqrt[x])/(3*c^4*Sqrt[b*x + c*x^2]) - (8*(2*b*B - A*c)*x^(3/2))/(3*c^3*Sqrt[
b*x + c*x^2]) + (2*(2*b*B - A*c)*x^(5/2))/(3*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{9}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{x^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}} - \frac{(4(2bB-Ac))\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3c^2}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{8(2bB-Ac)x^{3/2}}{3c^3\sqrt{bx+cx^2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}} + \frac{(8b(2bB-Ac))\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}}}{3c^3}$$

$$= -\frac{2(bB-Ac)x^{9/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{16b(2bB-Ac)\sqrt{x}}{3c^4\sqrt{bx+cx^2}} - \frac{8(2bB-Ac)x^{3/2}}{3c^3\sqrt{bx+cx^2}} + \frac{2(2bB-Ac)x^{5/2}}{3bc^2\sqrt{bx+cx^2}}$$

Mathematica [**A**] time = 0.05, size = 70, normalized size = 0.49

$$\frac{2x^{3/2}\left(8b^2c(A-3Bx)-6bc^2x(Bx-2A)+c^3x^2(3A+Bx)-16b^3B\right)}{3c^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(-16*b^3*B + 8*b^2*c*(A - 3*B*x) - 6*b*c^2*x*(-2*A + B*x) + c^3*
x^2*(3*A + B*x)))/(3*c^4*(x*(b + c*x))^(3/2))
```

fricas [**A**] time = 0.89, size = 102, normalized size = 0.71

$$\frac{2\left(Bc^3x^3-16\,Bb^3+8\,Ab^2c-3\left(2\,Bbc^2-Ac^3\right)x^2-12\left(2\,Bb^2c-Abc^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^6x^3+2\,bc^5x^2+b^2c^4x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c^3*x^3 - 16*B*b^3 + 8*A*b^2*c - 3*(2*B*b*c^2 - A*c^3)*x^2 - 12*(2*B
*b^2*c - A*b*c^2)*x)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^6*x^3 + 2*b*c^5*x^2 + b^2
*c^4*x)
```

giac [**A**] time = 0.20, size = 112, normalized size = 0.78

$$\frac{16\left(2\,Bb^2-Abc\right)}{3\,\sqrt{b}\,c^4}-\frac{2\left(9\,(cx+b)Bb^2-Bb^3-6\,(cx+b)Abc+Ab^2c\right)}{3\,(cx+b)^{\frac{3}{2}}c^4}+\frac{2\left((cx+b)^{\frac{3}{2}}Bc^8-9\,\sqrt{cx+b}\,Bbc^8+3\,\sqrt{cx}\right.}{3\,c^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 16/3*(2*B*b^2 - A*b*c)/(sqrt(b)*c^4) - 2/3*(9*(c*x + b)*B*b^2 - B*b^3 - 6*(
c*x + b)*A*b*c + A*b^2*c)/((c*x + b)^(3/2)*c^4) + 2/3*((c*x + b)^(3/2)*B*c^
8 - 9*sqrt(c*x + b)*B*b*c^8 + 3*sqrt(c*x + b)*A*c^9)/c^12
```

maple [**A**] time = 0.05, size = 82, normalized size = 0.57

$$\frac{2\,(cx+b)\left(B\,c^3x^3+3A\,c^3x^2-6Bb\,c^2x^2+12Ab\,c^2x-24B\,b^2cx+8A\,b^2c-16b^3B\right)x^{\frac{5}{2}}}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(c*x+b)*(B*c^3*x^3+3*A*c^3*x^2-6*B*b*c^2*x^2+12*A*b*c^2*x-24*B*b^2*c*x+
8*A*b^2*c-16*B*b^3)*x^(5/2)/c^4/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,(Bcx+Bb)\sqrt{cx+b}\,x^3}{3\left(c^4x^3+3\,bc^3x^2+3\,b^2c^2x+b^3c\right)}+\int\frac{\left(Abcx^3-\left(2\,Bb^2+\left(2\,Bbc-Ac^2\right)x\right)x^3\right)\sqrt{cx+b}}{c^5x^5+4\,bc^4x^4+6\,b^2c^3x^3+4\,b^3c^2x^2+b^4cx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(B*c*x + B*b)*sqrt(c*x + b)*x^3/(c^4*x^3 + 3*b*c^3*x^2 + 3*b^2*c^2*x +
b^3*c) + integrate((A*b*c*x^3 - (2*B*b^2 + (2*B*b*c - A*c^2)*x)*x^3)*sqrt(c
*x + b)/(c^5*x^5 + 4*b*c^4*x^4 + 6*b^2*c^3*x^3 + 4*b^3*c^2*x^2 + b^4*c*x),
x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.244 $\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=108

$$\frac{4\sqrt{x}\,(4bB-Ac)}{3c^3\sqrt{bx+cx^2}}+\frac{2x^{3/2}(4bB-Ac)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{7/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^(7/2)/b/c/(c*x^2+b*x)^(3/2)+2/3*(-A*c+4*B*b)*x^(3/2)/b/c^
2/(c*x^2+b*x)^(1/2)+4/3*(-A*c+4*B*b)*x^(1/2)/c^3/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {788, 656, 648}

$$\frac{2x^{3/2}(4bB-Ac)}{3bc^2\sqrt{bx+cx^2}}+\frac{4\sqrt{x}\,(4bB-Ac)}{3c^3\sqrt{bx+cx^2}}-\frac{2x^{7/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(7/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (4*(4*b*B - A*c)*Sqr
t[x])/(3*c^3*Sqrt[b*x + c*x^2]) + (2*(4*b*B - A*c)*x^(3/2))/(3*b*c^2*Sqrt[b
*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{7}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{x^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3bc} \\
&= -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2(4bB-Ac)x^{3/2}}{3bc^2\sqrt{bx+cx^2}} - \frac{(2(4bB-Ac))\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx}{3c^2} \\
&= -\frac{2(bB-Ac)x^{7/2}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{4(4bB-Ac)\sqrt{x}}{3c^3\sqrt{bx+cx^2}} + \frac{2(4bB-Ac)x^{3/2}}{3bc^2\sqrt{bx+cx^2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 53, normalized size = 0.49

$$
\frac{2x^{3/2}\left(-2bc(A-6Bx)+3c^2x(Bx-A)+8b^2B\right)}{3c^3(x(b+cx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(8*b^2*B - 2*b*c*(A - 6*B*x) + 3*c^2*x*(-A + B*x)))/(3*c^3*(x*(b
 + c*x))^(3/2))
```

fricas [**A**] time = 0.65, size = 79, normalized size = 0.73

$$
\frac{2\left(3\,Bc^2x^2+8\,Bb^2-2\,Abc+3\left(4\,Bbc-Ac^2\right)x\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(c^5x^3+2\,bc^4x^2+b^2c^3x\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*c^2*x^2 + 8*B*b^2 - 2*A*b*c + 3*(4*B*b*c - A*c^2)*x)*sqrt(c*x^2 +
b*x)*sqrt(x)/(c^5*x^3 + 2*b*c^4*x^2 + b^2*c^3*x)
```

giac [**A**] time = 0.22, size = 72, normalized size = 0.67

$$
\frac{2\sqrt{cx+b}\,B}{c^3} - \frac{4\,(4\,Bb-Ac)}{3\,\sqrt{b}\,c^3} + \frac{2\left(6\,(cx+b)Bb-Bb^2-3\,(cx+b)Ac+Abc\right)}{3\,(cx+b)^{\frac{3}{2}}c^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(c*x + b)*B/c^3 - 4/3*(4*B*b - A*c)/(sqrt(b)*c^3) + 2/3*(6*(c*x + b)*
B*b - B*b^2 - 3*(c*x + b)*A*c + A*b*c)/((c*x + b)^(3/2)*c^3)
```

maple [**A**] time = 0.04, size = 59, normalized size = 0.55

$$
-\frac{2\,(cx+b)\left(-3B\,c^2x^2+3A\,c^2x-12Bbcx+2Abc-8b^2B\right)x^{\frac{5}{2}}}{3\left(c\,x^2+bx\right)^{\frac{5}{2}}c^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*(-3*B*c^2*x^2+3*A*c^2*x-12*B*b*c*x+2*A*b*c-8*B*b^2)*x^(5/2)/c^
3/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^{\frac{7}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(7/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.245 $\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=73

$$-\frac{2\sqrt{x}\,(Ac+2bB)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{5/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^(5/2)/b/c/(c*x^2+b*x)^(3/2)-2/3*(A*c+2*B*b)*x^(1/2)/b/c^2
/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {788, 648}

$$-\frac{2\sqrt{x}\,(Ac+2bB)}{3bc^2\sqrt{bx+cx^2}}-\frac{2x^{5/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(5/2))/(3*b*c*(b*x + c*x^2)^(3/2)) - (2*(2*b*B + A*c)*Sqr
t[x])/(3*b*c^2*Sqrt[b*x + c*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^{5/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}} \, dx &= -\frac{2(bB-Ac)x^{5/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{(2bB+Ac)\int \frac{x^{3/2}}{\left(bx+cx^2\right)^{3/2}} \, dx}{3bc}\\ &= -\frac{2(bB-Ac)x^{5/2}}{3bc\left(bx+cx^2\right)^{3/2}}-\frac{2(2bB+Ac)\sqrt{x}}{3bc^2\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 0.49

$$-\frac{2x^{3/2}(c(A+3Bx)+2bB)}{3c^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^(3/2)*(2*b*B + c*(A + 3*B*x)))/(3*c^2*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.80, size = 56, normalized size = 0.77

$$-\frac{2\,(3\,Bcx + 2\,Bb + Ac)\sqrt{cx^2 + bx}\,\sqrt{x}}{3\left(c^4x^3 + 2\,bc^3x^2 + b^2c^2x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(3*B*c*x + 2*B*b + A*c)*sqrt(c*x^2 + b*x)*sqrt(x)/(c^4*x^3 + 2*b*c^3*x
^2 + b^2*c^2*x)
```

giac [A] time = 0.19, size = 45, normalized size = 0.62

$$-\frac{2\,(3\,(cx + b)B - Bb + Ac)}{3\,(cx + b)^{\frac{3}{2}}c^2} + \frac{2\,(2\,Bb + Ac)}{3\,b^{\frac{3}{2}}c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(3*(c*x + b)*B - B*b + A*c)/((c*x + b)^(3/2)*c^2) + 2/3*(2*B*b + A*c)/
(b^(3/2)*c^2)
```

maple [A] time = 0.05, size = 38, normalized size = 0.52

$$-\frac{2\,(cx + b)\,(3Bcx + Ac + 2bB)\,x^{\frac{5}{2}}}{3\left(c\,x^2 + bx\right)^{\frac{5}{2}}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*(3*B*c*x+A*c+2*B*b)*x^(5/2)/c^2/(c*x^2+b*x)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)x^{\frac{5}{2}}}{\left(cx^2 + bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(5/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{5/2}\,\left(A + B\,x\right)}{{\left(c\,x^2 + b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{5}{2}} (A + Bx)}{(x (b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**(5/2)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.246 $\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}+\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{2x^{3/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(-A*c+B*b)*x^(3/2)/b/c/(c*x^2+b*x)^(3/2)-2*A*arctanh((c*x^2+b*x)^(1/2)
/b^(1/2)/x^(1/2))/b^(5/2)+2*A*x^(1/2)/b^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {788, 666, 660, 207}

$$\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}-\frac{2x^{3/2}(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*x^(3/2))/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*A*Sqrt[x])/(b^2*S
qrt[b*x + c*x^2]) - (2*A*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/b^(5
/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^{3/2}(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{A\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{b}\\ &= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}+\frac{A\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}\,dx}{b^2}\\ &= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}+\frac{(2A)\,\text{Subst}\left(\int \frac{1}{-b+x^2}\,dx,x,\frac{\sqrt{bx+cx^2}}{\sqrt{x}}\right)}{b^2}\\ &= -\frac{2(bB-Ac)x^{3/2}}{3bc\left(bx+cx^2\right)^{3/2}}+\frac{2A\sqrt{x}}{b^2\sqrt{bx+cx^2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{5/2}}\end{aligned}$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.66

$$\frac{2x^{3/2}\left(b(Ac-bB)+3Ac(b+cx)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{cx}{b}+1\right)\right)}{3b^2c(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(b*(-(b*B) + A*c) + 3*A*c*(b + c*x)*Hypergeometric2F1[-1/2, 1, 1
/2, 1 + (c*x)/b]))/(3*b^2*c*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.92, size = 262, normalized size = 2.79

$$\left[\frac{3\left(Ac^3x^3+2\,Abc^2x^2+Ab^2cx\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\left(3\,Abc^2x-Bb^3+4\,Ab^2c\right)\sqrt{cx^2+bx}\,\sqrt{x}}{3\left(b^3c^3x^3+2\,b^4c^2x^2+b^5cx\right)},-\frac{2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(A*c^3*x^3 + 2*A*b*c^2*x^2 + A*b^2*c*x)*sqrt(b)*log(-(c*x^2 + 2*b*x
 - 2*sqrt(c*x^2 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(3*A*b*c^2*x - B*b^3 + 4*A
*b^2*c)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^3*c^3*x^3 + 2*b^4*c^2*x^2 + b^5*c*x),
 2/3*(3*(A*c^3*x^3 + 2*A*b*c^2*x^2 + A*b^2*c*x)*sqrt(-b)*arctan(sqrt(-b)*sq
rt(x)/sqrt(c*x^2 + b*x)) + (3*A*b*c^2*x - B*b^3 + 4*A*b^2*c)*sqrt(c*x^2 + b
*x)*sqrt(x))/(b^3*c^3*x^3 + 2*b^4*c^2*x^2 + b^5*c*x)]
```

giac [A] time = 0.29, size = 110, normalized size = 1.17

$$\frac{2\,A\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^2}-\frac{2\left(3\,A\sqrt{b}\,c\arctan\left(\frac{\sqrt{b}}{\sqrt{-b}}\right)-B\sqrt{-b}\,b+4\,A\sqrt{-b}\,c\right)}{3\,\sqrt{-b}\,b^{\frac{5}{2}}c}-\frac{2\left(Bb^2-3\,(cx+b)Ac-Abc\right)}{3\,(cx+b)^{\frac{3}{2}}b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^2) - 2/3*(3*A*sqrt(b)*c*arct
an(sqrt(b)/sqrt(-b)) - B*sqrt(-b)*b + 4*A*sqrt(-b)*c)/(sqrt(-b)*b^(5/2)*c)
- 2/3*(B*b^2 - 3*(c*x + b)*A*c - A*b*c)/((c*x + b)^(3/2)*b^2*c)
```

maple [A] time = 0.07, size = 101, normalized size = 1.07

$$-\frac{2\sqrt{(cx+b)\,x}\,\Big(3\sqrt{cx+b}\,A\,c^{2}x\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-3A\sqrt{b}\,c^{2}x+3\sqrt{cx+b}\,Abc\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-4A\,b^{\frac{3}{2}}c+}{3\,(cx+b)^{2}\,b^{\frac{5}{2}}c\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*((c*x+b)*x)^(1/2)/b^(5/2)*(3*A*arctanh((c*x+b)^(1/2)/b^(1/2))*x*c^2*(c
*x+b)^(1/2)+3*A*c*arctanh((c*x+b)^(1/2)/b^(1/2))*b*(c*x+b)^(1/2)-3*A*b^(1/2
)*x*c^2-4*A*b^(3/2)*c+B*b^(5/2))/x^(1/2)/(c*x+b)^2/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^{\frac{3}{2}}}{\left(cx^{2}+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^(3/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{\frac{3}{2}}\,(A+Bx)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.247 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=146

$$-\frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{7/2}}+\frac{\sqrt{x}\,(2bB-5Ac)}{b^3\sqrt{bx+cx^2}}+\frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}}-\frac{2\sqrt{x}\,(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -(-5*A*c+2*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(7/2)-2/3*(-A*
c+B*b)*x^(1/2)/b/c/(c*x^2+b*x)^(3/2)+1/3*(-5*A*c+2*B*b)/b^2/c/x^(1/2)/(c*x^
2+b*x)^(1/2)+(-5*A*c+2*B*b)*x^(1/2)/b^3/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {788, 672, 666, 660, 207}

$$\frac{\sqrt{x}\,(2bB-5Ac)}{b^3\sqrt{bx+cx^2}}+\frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}}-\frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{b^{7/2}}-\frac{2\sqrt{x}\,(bB-Ac)}{3bc\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/(3*b*c*(b*x + c*x^2)^(3/2)) + (2*b*B - 5*A*c)/(3*b
^2*c*Sqrt[x]*Sqrt[b*x + c*x^2]) + ((2*b*B - 5*A*c)*Sqrt[x])/(b^3*Sqrt[b*x +
 c*x^2]) - ((2*b*B - 5*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/b
^(7/2)
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
```

```
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} - \frac{\left(2\left(\frac{1}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{3bc}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{3/2}}\,dx}{2b^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\int \frac{1}{\sqrt{x}\sqrt{bx+cx^2}}}{2b^3}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\,\text{Subst}\left(\int \frac{}{-b}\right.}{b^3}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{3bc\left(bx+cx^2\right)^{3/2}} + \frac{2bB-5Ac}{3b^2c\sqrt{x}\sqrt{bx+cx^2}} + \frac{(2bB-5Ac)\sqrt{x}}{b^3\sqrt{bx+cx^2}} - \frac{(2bB-5Ac)\tanh^{-1}\left(\frac{\sqrt{bx}}{\sqrt{b}}\right.}{b^{7/2}}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 55, normalized size = 0.38

$$\frac{\sqrt{x}\left(x(2bB-5Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{cx}{b}+1\right)-3Ab\right)}{3b^2(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[x]*(-3*A*b + (2*b*B - 5*A*c)*x*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (
c*x)/b]))/(3*b^2*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.89, size = 367, normalized size = 2.51

$$\left[-\frac{3\left(\left(2\,Bbc^2-5\,Ac^3\right)x^4+2\left(2\,Bb^2c-5\,Abc^2\right)x^3+\left(2\,Bb^3-5\,Ab^2c\right)x^2\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx+2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)+2\,(}{6\left(b^4c^2x^4+2\,b^5cx^3+b^6x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((2*B*b*c^2 - 5*A*c^3)*x^4 + 2*(2*B*b^2*c - 5*A*b*c^2)*x^3 + (2*B*
b^3 - 5*A*b^2*c)*x^2)*sqrt(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2 + b*x)*sqr
t(b)*sqrt(x))/x^2) + 2*(3*A*b^3 - 3*(2*B*b^2*c - 5*A*b*c^2)*x^2 - 4*(2*B*b^
3 - 5*A*b^2*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b
^6*x^2), 1/3*(3*((2*B*b*c^2 - 5*A*c^3)*x^4 + 2*(2*B*b^2*c - 5*A*b*c^2)*x^3
+ (2*B*b^3 - 5*A*b^2*c)*x^2)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 +
b*x)) - (3*A*b^3 - 3*(2*B*b^2*c - 5*A*b*c^2)*x^2 - 4*(2*B*b^3 - 5*A*b^2*c)*
x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2)]
```

giac [**A**] time = 0.30, size = 90, normalized size = 0.62

$$\frac{(2\,Bb-5\,Ac)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{\sqrt{-b}\,b^3}-\frac{\sqrt{cx+b}\,A}{b^3x}+\frac{2\left(3\,(cx+b)Bb+Bb^2-6\,(cx+b)Ac-Abc\right)}{3\,(cx+b)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] (2*B*b - 5*A*c)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^3) - sqrt(c*x +
b)*A/(b^3*x) + 2/3*(3*(c*x + b)*B*b + B*b^2 - 6*(c*x + b)*A*c - A*b*c)/((c*
x + b)^(3/2)*b^3)
```

maple [**A**] time = 0.08, size = 175, normalized size = 1.20

$$\frac{\sqrt{(cx+b)\,x}\,\left(15\sqrt{cx+b}\,A\,c^2x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-6\sqrt{cx+b}\,Bbc\,x^2\operatorname{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-15A\sqrt{b}\,c^2x^2+6B\,b^{\frac{3}{2}}c\,x^2}{3\,(cx+b)^2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/3*((c*x+b)*x)^(1/2)*(15*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^
2*c^2-6*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c+15*A*arctanh
((c*x+b)^(1/2)/b^(1/2))*x*b*c*(c*x+b)^(1/2)-15*A*b^(1/2)*c^2*x^2-6*B*arctan
h((c*x+b)^(1/2)/b^(1/2))*x*b^2*(c*x+b)^(1/2)+6*B*b^(3/2)*c*x^2-20*A*b^(3/2)
*c*x+8*B*b^(5/2)*x-3*A*b^(5/2))/x^(3/2)/(c*x+b)^2/b^(7/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{x}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x)^(5/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.248 $\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=174

$$\frac{5c(4bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{9/2}}-\frac{5c\sqrt{x}\,(4bB-7Ac)}{4b^4\sqrt{bx+cx^2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{\sqrt{x}\,(4bB-7Ac)}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/}}$$

```
[Out] 5/4*c*(-7*A*c+4*B*b)*arctanh((c*x^2+b*x)^(1/2)/b^(1/2)/x^(1/2))/b^(9/2)-1/2
*A/b/(c*x^2+b*x)^(3/2)/x^(1/2)+1/6*(-7*A*c+4*B*b)*x^(1/2)/b^2/(c*x^2+b*x)^(
3/2)-5/12*(-7*A*c+4*B*b)/b^3/x^(1/2)/(c*x^2+b*x)^(1/2)-5/4*c*(-7*A*c+4*B*b)
*x^(1/2)/b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 666, 672, 660, 207}

$$-\frac{5c\sqrt{x}\,(4bB-7Ac)}{4b^4\sqrt{bx+cx^2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}+\frac{\sqrt{x}\,(4bB-7Ac)}{6b^2\left(bx+cx^2\right)^{3/2}}+\frac{5c(4bB-7Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{4b^{9/2}}-\frac{A}{2b\sqrt{x}\left(bx+cx^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] -A/(2*b*Sqrt[x]*(b*x + c*x^2)^(3/2)) + ((4*b*B - 7*A*c)*Sqrt[x])/(6*b^2*(b*
x + c*x^2)^(3/2)) - (5*(4*b*B - 7*A*c))/(12*b^3*Sqrt[x]*Sqrt[b*x + c*x^2])
- (5*c*(4*b*B - 7*A*c)*Sqrt[x])/(4*b^4*Sqrt[b*x + c*x^2]) + (5*c*(4*b*B - 7
*A*c)*ArcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(4*b^(9/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{\left(\frac{1}{2}(bB-Ac)-\frac{3}{2}(-bB+2Ac)\right)\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{5/2}}\,dx}{2b}\\
&= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}+\frac{(5(4bB-7Ac))\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{3/2}}\,dx}{12b^2}\\
&= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{(5c(4bB-7Ac))\int}{8b^3}\\
&= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}\\
&= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}\\
&= -\frac{A}{2b\sqrt{x}\left(bx+cx^2\right)^{3/2}}+\frac{(4bB-7Ac)\sqrt{x}}{6b^2\left(bx+cx^2\right)^{3/2}}-\frac{5(4bB-7Ac)}{12b^3\sqrt{x}\sqrt{bx+cx^2}}-\frac{5c(4bB-7Ac)\sqrt{x}}{4b^4\sqrt{bx+cx^2}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 60, normalized size = 0.34

$$
\frac{cx^2(7Ac-4bB)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{cx}{b}+1\right)-3Ab^2}{6b^3\sqrt{x}\,(x(b+cx))^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-3*A*b^2 + c*(-4*b*B + 7*A*c)*x^2*Hypergeometric2F1[-3/2, 2, -1/2, 1 + (c*
x)/b])/(6*b^3*Sqrt[x]*(x*(b + c*x))^(3/2))
```

fricas [A] time = 1.08, size = 424, normalized size = 2.44

$$
\left[-\frac{15\left(\left(4\,Bbc^3-7\,Ac^4\right)x^5+2\left(4\,Bb^2c^2-7\,Abc^3\right)x^4+\left(4\,Bb^3c-7\,Ab^2c^2\right)x^3\right)\sqrt{b}\,\log\left(-\frac{cx^2+2\,bx-2\,\sqrt{cx^2+bx}\,\sqrt{b}\,\sqrt{x}}{x^2}\right)}{24\left(b^5c^2x^5+2\,b^6\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/24*(15*((4*B*b*c^3 - 7*A*c^4)*x^5 + 2*(4*B*b^2*c^2 - 7*A*b*c^3)*x^4 + (
4*B*b^3*c - 7*A*b^2*c^2)*x^3)*sqrt(b)*log(-(c*x^2 + 2*b*x - 2*sqrt(c*x^2 +
b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(6*A*b^4 + 15*(4*B*b^2*c^2 - 7*A*b*c^3)*x^3
+ 20*(4*B*b^3*c - 7*A*b^2*c^2)*x^2 + 3*(4*B*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2
+ b*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4 + b^7*x^3), -1/12*(15*((4*B*b*c^
3 - 7*A*c^4)*x^5 + 2*(4*B*b^2*c^2 - 7*A*b*c^3)*x^4 + (4*B*b^3*c - 7*A*b^2*c
^2)*x^3)*sqrt(-b)*arctan(sqrt(-b)*sqrt(x)/sqrt(c*x^2 + b*x)) + (6*A*b^4 + 1
5*(4*B*b^2*c^2 - 7*A*b*c^3)*x^3 + 20*(4*B*b^3*c - 7*A*b^2*c^2)*x^2 + 3*(4*B
*b^4 - 7*A*b^3*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^5*c^2*x^5 + 2*b^6*c*x^4
+ b^7*x^3)]
```

giac [**A**] time = 0.30, size = 149, normalized size = 0.86

$$-\frac{5\left(4\,Bbc-7\,Ac^{2}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{4\,\sqrt{-b}\,b^{4}}-\frac{2\left(6\,(cx+b)Bbc+Bb^{2}c-9\,(cx+b)Ac^{2}-Abc^{2}\right)}{3\,(cx+b)^{\frac{3}{2}}b^{4}}-\frac{4\,(cx+b)^{\frac{3}{2}}Bbc-4\,\sqrt{cx+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] -5/4*(4*B*b*c - 7*A*c^2)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^4) - 2/
3*(6*(c*x + b)*B*b*c + B*b^2*c - 9*(c*x + b)*A*c^2 - A*b*c^2)/((c*x + b)^(3
/2)*b^4) - 1/4*(4*(c*x + b)^(3/2)*B*b*c - 4*sqrt(c*x + b)*B*b^2*c - 11*(c*x
 + b)^(3/2)*A*c^2 + 13*sqrt(c*x + b)*A*b*c^2)/(b^4*c^2*x^2)
```

maple [**A**] time = 0.08, size = 208, normalized size = 1.20

$$-\frac{\sqrt{(cx+b)\,x}\,\left(105\sqrt{cx+b}\,\,A\,c^{3}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-60\sqrt{cx+b}\,\,Bb\,c^{2}x^{3}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-105A\sqrt{b}\,\,c^{3}x^{3}+60}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x)
```

```
[Out] -1/12*((c*x+b)*x)^(1/2)*(105*A*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))
*x^3*c^3-60*B*(c*x+b)^(1/2)*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^2+105*A*
arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b*c^2*(c*x+b)^(1/2)-105*A*b^(1/2)*c^3*x^
3-60*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^2*b^2*c*(c*x+b)^(1/2)+60*B*b^(3/2)*
c^2*x^3-140*A*b^(3/2)*c^2*x^2+80*B*b^(5/2)*c*x^2-21*A*b^(5/2)*c*x+12*B*b^(7
/2)*x+6*A*b^(7/2))/x^(5/2)/(c*x+b)^2/b^(9/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^{2}+bx\right)^{\frac{5}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*sqrt(x)), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2)/x**(1/2),x)
```

```
[Out] Timed out
```

3.249 $\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{35c^2(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{11/2}}+\frac{35c^2\sqrt{x}\,(2bB-3Ac)}{8b^5\sqrt{bx+cx^2}}+\frac{35c(2bB-3Ac)}{24b^4\sqrt{x}\sqrt{bx+cx^2}}-\frac{7c\sqrt{x}\,(2bB-3Ac)}{12b^3\left(bx+cx^2\right)^{3/2}}-\frac{2bB-}{4b^2\sqrt{x}\,(bx}$$

```
[Out] -1/3*A/b/x^(3/2)/(c*x^2+b*x)^(3/2)-35/8*c^2*(-3*A*c+2*B*b)*arctanh((c*x^2+b
*x)^(1/2)/b^(1/2)/x^(1/2))/b^(11/2)+1/4*(3*A*c-2*B*b)/b^2/(c*x^2+b*x)^(3/2)
/x^(1/2)-7/12*c*(-3*A*c+2*B*b)*x^(1/2)/b^3/(c*x^2+b*x)^(3/2)+35/24*c*(-3*A*
c+2*B*b)/b^4/x^(1/2)/(c*x^2+b*x)^(1/2)+35/8*c^2*(-3*A*c+2*B*b)*x^(1/2)/b^5/
(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {792, 672, 666, 660, 207}

$$\frac{35c^2\sqrt{x}\,(2bB-3Ac)}{8b^5\sqrt{bx+cx^2}}-\frac{35c^2(2bB-3Ac)\tanh^{-1}\left(\frac{\sqrt{bx+cx^2}}{\sqrt{b}\sqrt{x}}\right)}{8b^{11/2}}+\frac{35c(2bB-3Ac)}{24b^4\sqrt{x}\sqrt{bx+cx^2}}-\frac{7c\sqrt{x}\,(2bB-3Ac)}{12b^3\left(bx+cx^2\right)^{3/2}}-\frac{2bB-3}{4b^2\sqrt{x}\,(bx-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] -A/(3*b*x^(3/2)*(b*x + c*x^2)^(3/2)) - (2*b*B - 3*A*c)/(4*b^2*Sqrt[x]*(b*x
+ c*x^2)^(3/2)) - (7*c*(2*b*B - 3*A*c)*Sqrt[x])/(12*b^3*(b*x + c*x^2)^(3/2)
) + (35*c*(2*b*B - 3*A*c))/(24*b^4*Sqrt[x]*Sqrt[b*x + c*x^2]) + (35*c^2*(2*
b*B - 3*A*c)*Sqrt[x])/(8*b^5*Sqrt[b*x + c*x^2]) - (35*c^2*(2*b*B - 3*A*c)*A
rcTanh[Sqrt[b*x + c*x^2]/(Sqrt[b]*Sqrt[x])])/(8*b^(11/2))
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - -\frac{\left(-\frac{3}{2}(-bB+Ac)-\frac{3}{2}(-bB+2Ac)\right)\int \frac{1}{\sqrt{x}\left(bx+cx^2\right)^{5/2}}\,dx}{3b}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{(7c(2bB-3Ac))\int \frac{\sqrt{x}}{\left(bx+cx^2\right)^{5/2}}\,dx}{8b^2}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} - \frac{(35c(2bB-3A}{}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3}{24b^4\sqrt{x}\sqrt{bx+}}$$

$$= -\frac{A}{3bx^{3/2}\left(bx+cx^2\right)^{3/2}} - \frac{2bB-3Ac}{4b^2\sqrt{x}\left(bx+cx^2\right)^{3/2}} - \frac{7c(2bB-3Ac)\sqrt{x}}{12b^3\left(bx+cx^2\right)^{3/2}} + \frac{35c(2bB-3}{24b^4\sqrt{x}\sqrt{bx+}}$$

Mathematica [C] time = 0.03, size = 62, normalized size = 0.29

$$\frac{c^2x^3(2bB-3Ac)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{cx}{b}+1\right)-Ab^3}{3b^4x^{3/2}(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-(A*b^3) + c^2*(2*b*B - 3*A*c)*x^3*Hypergeometric2F1[-3/2, 3, -1/2, 1 + (c
*x)/b])/(3*b^4*x^(3/2)*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.65, size = 477, normalized size = 2.23

$$\left[-\frac{105\left(\left(2\,Bbc^{4}-3\,Ac^{5}\right)x^{6}+2\left(2\,Bb^{2}c^{3}-3\,Abc^{4}\right)x^{5}+\left(2\,Bb^{3}c^{2}-3\,Ab^{2}c^{3}\right)x^{4}\right)\sqrt{b}\,\log\left(-\frac{cx^{2}+2\,bx+2\,\sqrt{cx^{2}+bx}\,\sqrt{b}\,\sqrt{x}}{x^{2}}\right)+}{48\,(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(105*((2*B*b*c^4 - 3*A*c^5)*x^6 + 2*(2*B*b^2*c^3 - 3*A*b*c^4)*x^5 +
(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^4)*sqrt(b)*log(-(c*x^2 + 2*b*x + 2*sqrt(c*x^2
 + b*x)*sqrt(b)*sqrt(x))/x^2) + 2*(8*A*b^5 - 105*(2*B*b^2*c^3 - 3*A*b*c^4)*
x^4 - 140*(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^3 - 21*(2*B*b^4*c - 3*A*b^3*c^2)*x^
2 + 6*(2*B*b^5 - 3*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c^2*x^6 + 2*
b^7*c*x^5 + b^8*x^4), 1/24*(105*((2*B*b*c^4 - 3*A*c^5)*x^6 + 2*(2*B*b^2*c^3
 - 3*A*b*c^4)*x^5 + (2*B*b^3*c^2 - 3*A*b^2*c^3)*x^4)*sqrt(-b)*arctan(sqrt(-
b)*sqrt(x)/sqrt(c*x^2 + b*x)) - (8*A*b^5 - 105*(2*B*b^2*c^3 - 3*A*b*c^4)*x^
4 - 140*(2*B*b^3*c^2 - 3*A*b^2*c^3)*x^3 - 21*(2*B*b^4*c - 3*A*b^3*c^2)*x^2
+ 6*(2*B*b^5 - 3*A*b^4*c)*x)*sqrt(c*x^2 + b*x)*sqrt(x))/(b^6*c^2*x^6 + 2*b^
7*c*x^5 + b^8*x^4)]
```

giac [A] time = 0.31, size = 200, normalized size = 0.93

$$\frac{35\left(2\,Bbc^{2}-3\,Ac^{3}\right)\arctan\left(\frac{\sqrt{cx+b}}{\sqrt{-b}}\right)}{8\,\sqrt{-b}\,b^{5}}+\frac{210\,(cx+b)^{4}Bbc^{2}-560\,(cx+b)^{3}Bb^{2}c^{2}+462\,(cx+b)^{2}Bb^{3}c^{2}-96\,(cx+b)B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 35/8*(2*B*b*c^2 - 3*A*c^3)*arctan(sqrt(c*x + b)/sqrt(-b))/(sqrt(-b)*b^5) +
1/24*(210*(c*x + b)^4*B*b*c^2 - 560*(c*x + b)^3*B*b^2*c^2 + 462*(c*x + b)^2
*B*b^3*c^2 - 96*(c*x + b)*B*b^4*c^2 - 16*B*b^5*c^2 - 315*(c*x + b)^4*A*c^3
+ 840*(c*x + b)^3*A*b*c^3 - 693*(c*x + b)^2*A*b^2*c^3 + 144*(c*x + b)*A*b^3
*c^3 + 16*A*b^4*c^3)/(((c*x + b)^(3/2) - sqrt(c*x + b)*b)^3*b^5)
```

maple [A] time = 0.07, size = 234, normalized size = 1.09

$$\frac{\sqrt{(cx+b)\,x}\,\left(315\sqrt{cx+b}\;A\,c^{4}x^{4}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-210\sqrt{cx+b}\;Bb\,c^{3}x^{4}\,\mathrm{arctanh}\left(\frac{\sqrt{cx+b}}{\sqrt{b}}\right)-315A\sqrt{b}\;c^{4}x^{4}+210\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/24*((c*x+b)*x)^(1/2)*(315*A*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*
x^4*c^4-210*B*arctanh((c*x+b)^(1/2)/b^(1/2))*(c*x+b)^(1/2)*x^4*b*c^3+315*A*
arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b*c^3*(c*x+b)^(1/2)-315*A*b^(1/2)*c^4*x^
4-210*B*arctanh((c*x+b)^(1/2)/b^(1/2))*x^3*b^2*c^2*(c*x+b)^(1/2)+210*B*b^(3
/2)*c^3*x^4-420*A*b^(3/2)*c^3*x^3+280*B*b^(5/2)*c^2*x^3-63*A*b^(5/2)*c^2*x^
2+42*B*b^(7/2)*c*x^2+18*A*b^(7/2)*c*x-12*B*b^(9/2)*x-8*A*b^(9/2))/x^(7/2)/(
c*x+b)^2/b^(11/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{5}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*x^(3/2)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(c\,x^2+b\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(b*x + c*x^2)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.250 $\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p\,dx$

Optimal. Leaf size=24

$$\frac{x^{p+1}\left(bx+cx^2\right)^{p+1}}{p+1}$$

```
[Out] x^(1+p)*(c*x^2+b*x)^(1+p)/(1+p)
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {763}

$$\frac{x^{p+1}\left(bx+cx^2\right)^{p+1}}{p+1}$$

Antiderivative was successfully verified.

```
[In] Int[x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p,x]
```

```
[Out] (x^(1 + p)*(b*x + c*x^2)^(1 + p))/(1 + p)
```

Rule 763

```
Int[((e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((b_.)*(x_) + (c_.)*(x_)^2)^(p_.
), x_Symbol] :> Simp[(g*(e*x)^m*(b*x + c*x^2)^(p + 1))/(c*(m + 2*p + 2)), x
] /; FreeQ[{b, c, e, f, g, m, p}, x] && EqQ[b*g*(m + p + 1) - c*f*(m + 2*p
+ 2), 0] && NeQ[m + 2*p + 2, 0]
```

Rubi steps

$$\int x^{1+p}(2b+3cx)\left(bx+cx^2\right)^p\,dx=\frac{x^{1+p}\left(bx+cx^2\right)^{1+p}}{1+p}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 0.92

$$\frac{x^{p+1}(x(b+cx))^{p+1}}{p+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(1 + p)*(2*b + 3*c*x)*(b*x + c*x^2)^p,x]
```

```
[Out] (x^(1 + p)*(x*(b + c*x))^(1 + p))/(1 + p)
```

fricas [A] time = 0.87, size = 31, normalized size = 1.29

$$\frac{\left(cx^2+bx\right)\left(cx^2+bx\right)^p x^{p+1}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="fricas")
```

```
[Out] (c*x^2 + b*x)*(c*x^2 + b*x)^p*x^(p + 1)/(p + 1)
```

giac [B] time = 0.27, size = 49, normalized size = 2.04

$$\frac{cx^2e^{\left(p\log(cx+b)+2\,p\log(x)+\log(x)\right)} + bxe^{\left(p\log(cx+b)+2\,p\log(x)+\log(x)\right)}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="giac")
```

```
[Out] (c*x^2*e^(p*log(c*x + b) + 2*p*log(x) + log(x)) + b*x*e^(p*log(c*x + b) + 2
*p*log(x) + log(x)))/(p + 1)
```

maple [A] time = 0.04, size = 28, normalized size = 1.17

$$\frac{(cx+b)\,x^{p+2}\left(c\,x^2+bx\right)^p}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(p+1)*(3*c*x+2*b)*(c*x^2+b*x)^p,x)
```

```
[Out] (c*x+b)*x^(p+2)/(p+1)*(c*x^2+b*x)^p
```

maxima [A] time = 0.80, size = 32, normalized size = 1.33

$$\frac{\left(cx^3+bx^2\right)e^{\left(p\log(cx+b)+2\,p\log(x)\right)}}{p+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1+p)*(3*c*x+2*b)*(c*x^2+b*x)^p,x, algorithm="maxima")
```

```
[Out] (c*x^3 + b*x^2)*e^(p*log(c*x + b) + 2*p*log(x))/(p + 1)
```

mupad [B] time = 1.17, size = 41, normalized size = 1.71

$$\left(c\,x^2+b\,x\right)^p\,\left(\frac{b\,x\,x^{p+1}}{p+1}+\frac{c\,x^{p+1}\,x^2}{p+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(p + 1)*(b*x + c*x^2)^p*(2*b + 3*c*x),x)
```

```
[Out] (b*x + c*x^2)^p*((b*x*x^(p + 1))/(p + 1) + (c*x^(p + 1)*x^2)/(p + 1))
```

sympy [A] time = 43.34, size = 56, normalized size = 2.33

$$\begin{cases} \frac{bx^2x^p\left(bx+cx^2\right)^p}{p+1}+\frac{cx^3x^p\left(bx+cx^2\right)^p}{p+1} & \text{for}\ p\neq -1\\ 2\log\left(x\right)+\log\left(\frac{b}{c}+x\right) & \text{otherwise}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1+p)*(3*c*x+2*b)*(c*x**2+b*x)**p,x)
```

```
[Out] Piecewise((b*x**2*x**p*(b*x + c*x**2)**p/(p + 1) + c*x**3*x**p*(b*x + c*x**
2)**p/(p + 1), Ne(p, -1)), (2*log(x) + log(b/c + x), True))
```

3.251 $\int x^3(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

```
[Out] 1/4*a*A*x^4+1/5*a*B*x^5+1/6*A*c*x^6+1/7*B*c*x^7
```

Rubi [A] time = 0.04, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + (a*B*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^3+aBx^4+Acx^5+Bcx^6\right)\,dx\\&=\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{4}aAx^4+\frac{1}{5}aBx^5+\frac{1}{6}Acx^6+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + (a*B*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

fricas [A] time = 0.65, size = 29, normalized size = 0.78

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6cA+\frac{1}{5}x^5aB+\frac{1}{4}x^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c*B + 1/6*x^6*c*A + 1/5*x^5*a*B + 1/4*x^4*a*A
```

giac [A] time = 0.16, size = 29, normalized size = 0.78

$$\frac{1}{7}\,Bcx^7+\frac{1}{6}\,Acx^6+\frac{1}{5}\,Bax^5+\frac{1}{4}\,Aax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/4*A*a*x^4
```

maple [**A**] time = 0.06, size = 30, normalized size = 0.81

$$\frac{1}{7}Bc\,x^{7}+\frac{1}{6}Ac\,x^{6}+\frac{1}{5}Ba\,x^{5}+\frac{1}{4}Aa\,x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/4*A*a*x^4+1/5*B*a*x^5+1/6*A*c*x^6+1/7*B*c*x^7
```

maxima [**A**] time = 0.61, size = 29, normalized size = 0.78

$$\frac{1}{7}\,Bcx^{7}+\frac{1}{6}\,Acx^{6}+\frac{1}{5}\,Bax^{5}+\frac{1}{4}\,Aax^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*x^7 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/4*A*a*x^4
```

mupad [**B**] time = 0.05, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^{7}}{7}+\frac{A\,c\,x^{6}}{6}+\frac{B\,a\,x^{5}}{5}+\frac{A\,a\,x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (A*a*x^4)/4 + (B*a*x^5)/5 + (A*c*x^6)/6 + (B*c*x^7)/7
```

sympy [**A**] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^{4}}{4}+\frac{Acx^{6}}{6}+\frac{Bax^{5}}{5}+\frac{Bcx^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x**4/4 + A*c*x**6/6 + B*a*x**5/5 + B*c*x**7/7
```

3.252 $\int x^2(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

```
[Out] 1/3*a*A*x^3+1/4*a*B*x^4+1/5*A*c*x^5+1/6*B*c*x^6
```

Rubi [A] time = 0.03, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}=0.062$, Rules used = {766}

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^3)/3 + (a*B*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^2+aBx^3+Acx^4+Bcx^5\right)\,dx\\&=\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{3}aAx^3+\frac{1}{4}aBx^4+\frac{1}{5}Acx^5+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^3)/3 + (a*B*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

fricas [A] time = 0.74, size = 29, normalized size = 0.78

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5cA+\frac{1}{4}x^4aB+\frac{1}{3}x^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c*B + 1/5*x^5*c*A + 1/4*x^4*a*B + 1/3*x^3*a*A
```

giac [A] time = 0.17, size = 29, normalized size = 0.78

$$\frac{1}{6}\,Bcx^6+\frac{1}{5}\,Acx^5+\frac{1}{4}\,Bax^4+\frac{1}{3}\,Aax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/3*A*a*x^3
```

maple [**A**] time = 0.05, size = 30, normalized size = 0.81

$$\frac{1}{6}Bc\,x^{6}+\frac{1}{5}Ac\,x^{5}+\frac{1}{4}Ba\,x^{4}+\frac{1}{3}Aa\,x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/3*A*a*x^3+1/4*B*a*x^4+1/5*A*c*x^5+1/6*B*c*x^6
```

maxima [**A**] time = 0.50, size = 29, normalized size = 0.78

$$\frac{1}{6}\,Bcx^{6}+\frac{1}{5}\,Acx^{5}+\frac{1}{4}\,Bax^{4}+\frac{1}{3}\,Aax^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/3*A*a*x^3
```

mupad [**B**] time = 0.04, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^6}{6}+\frac{A\,c\,x^5}{5}+\frac{B\,a\,x^4}{4}+\frac{A\,a\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (A*a*x^3)/3 + (B*a*x^4)/4 + (A*c*x^5)/5 + (B*c*x^6)/6
```

sympy [**A**] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^{3}}{3}+\frac{Acx^{5}}{5}+\frac{Bax^{4}}{4}+\frac{Bcx^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x**3/3 + A*c*x**5/5 + B*a*x**4/4 + B*c*x**6/6
```

3.253 $\int x(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=37

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

```
[Out] 1/2*a*A*x^2+1/3*a*B*x^3+1/4*A*c*x^4+1/5*B*c*x^5
```

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {766}

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^2)/2 + (a*B*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx+aBx^2+Acx^3+Bcx^4\right)\,dx\\&=\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.00, size = 37, normalized size = 1.00

$$\frac{1}{2}aAx^2+\frac{1}{3}aBx^3+\frac{1}{4}Acx^4+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*x^2)/2 + (a*B*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

fricas [A] time = 0.50, size = 29, normalized size = 0.78

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4cA+\frac{1}{3}x^3aB+\frac{1}{2}x^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c*B + 1/4*x^4*c*A + 1/3*x^3*a*B + 1/2*x^2*a*A
```

giac [A] time = 0.14, size = 29, normalized size = 0.78

$$\frac{1}{5}\,Bcx^5+\frac{1}{4}\,Acx^4+\frac{1}{3}\,Bax^3+\frac{1}{2}\,Aax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/2*A*a*x^2
```

maple [**A**] time = 0.04, size = 30, normalized size = 0.81

$$\frac{1}{5}Bc\,x^{5}+\frac{1}{4}Ac\,x^{4}+\frac{1}{3}Ba\,x^{3}+\frac{1}{2}Aa\,x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/2*A*a*x^2+1/3*B*a*x^3+1/4*A*c*x^4+1/5*B*c*x^5
```

maxima [**A**] time = 0.53, size = 29, normalized size = 0.78

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{4}\,Acx^{4}+\frac{1}{3}\,Bax^{3}+\frac{1}{2}\,Aax^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/2*A*a*x^2
```

mupad [**B**] time = 0.04, size = 29, normalized size = 0.78

$$\frac{B\,c\,x^{5}}{5}+\frac{A\,c\,x^{4}}{4}+\frac{B\,a\,x^{3}}{3}+\frac{A\,a\,x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (A*a*x^2)/2 + (B*a*x^3)/3 + (A*c*x^4)/4 + (B*c*x^5)/5
```

sympy [**A**] time = 0.07, size = 32, normalized size = 0.86

$$\frac{Aax^{2}}{2}+\frac{Acx^{4}}{4}+\frac{Bax^{3}}{3}+\frac{Bcx^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x**2/2 + A*c*x**4/4 + B*a*x**3/3 + B*c*x**5/5
```

3.254 $\int (A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=31

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

```
[Out] a*A*x+1/3*A*c*x^3+1/4*B*(c*x^2+a)^2/c
```

Rubi **[A]** time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {641}

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2),x]
```

```
[Out] a*A*x + (A*c*x^3)/3 + (B*(a + c*x^2)^2)/(4*c)
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)\,dx&=\frac{B\left(a+cx^2\right)^2}{4c}+A\int \left(a+cx^2\right)\,dx\\&=aAx+\frac{1}{3}Acx^3+\frac{B\left(a+cx^2\right)^2}{4c}\end{aligned}$$

Mathematica **[A]** time = 0.00, size = 32, normalized size = 1.03

$$aAx+\frac{1}{2}aBx^2+\frac{1}{3}Acx^3+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2),x]
```

```
[Out] a*A*x + (a*B*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

fricas **[A]** time = 0.50, size = 26, normalized size = 0.84

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*c*A + 1/2*x^2*a*B + x*a*A
```

giac **[A]** time = 0.17, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4+\frac{1}{3}\,Acx^3+\frac{1}{2}\,Bax^2+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

maple [**A**] time = 0.05, size = 27, normalized size = 0.87

$$\frac{1}{4}Bc\,x^{4}+\frac{1}{3}Ac\,x^{3}+\frac{1}{2}Ba\,x^{2}+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/4*B*c*x^4+1/3*A*c*x^3+1/2*B*a*x^2+A*a*x
```

maxima [**A**] time = 0.56, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^{4}+\frac{1}{3}\,Acx^{3}+\frac{1}{2}\,Bax^{2}+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

mupad [**B**] time = 0.05, size = 26, normalized size = 0.84

$$\frac{B\,c\,x^4}{4}+\frac{A\,c\,x^3}{3}+\frac{B\,a\,x^2}{2}+A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x),x)
```

```
[Out] A*a*x + (B*a*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

sympy [**A**] time = 0.07, size = 29, normalized size = 0.94

$$Aax+\frac{Acx^{3}}{3}+\frac{Bax^{2}}{2}+\frac{Bcx^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4
```

3.255 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x}\,dx$

Optimal. Leaf size=28

$$aA\log(x)+aBx+\frac{1}{2}Acx^2+\frac{1}{3}Bcx^3$$

```
[Out] a*B*x+1/2*A*c*x^2+1/3*B*c*x^3+a*A*ln(x)
```

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$aA\log(x)+aBx+\frac{1}{2}Acx^2+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x,x]
```

```
[Out] a*B*x + (A*c*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x}\,dx &= \int \left(aB+\frac{aA}{x}+Acx+Bcx^2\right)dx\\ &= aBx+\frac{1}{2}Acx^2+\frac{1}{3}Bcx^3+aA\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$aA\log(x)+aBx+\frac{1}{2}Acx^2+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x,x]
```

```
[Out] a*B*x + (A*c*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

fricas [A] time = 0.89, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^3+\frac{1}{2}\,Acx^2+Bax+Aa\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(x)
```

giac [A] time = 0.17, size = 25, normalized size = 0.89

$$\frac{1}{3}\,Bcx^3+\frac{1}{2}\,Acx^2+Bax+Aa\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(abs(x))
```

maple [A] time = 0.04, size = 25, normalized size = 0.89

$$\frac{Bc\,x^{3}}{3}+\frac{Ac\,x^{2}}{2}+Aa\ln(x)+Bax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x,x)
```

```
[Out] B*a*x+1/2*A*c*x^2+1/3*B*c*x^3+A*a*ln(x)
```

maxima [A] time = 0.57, size = 24, normalized size = 0.86

$$\frac{1}{3}\,Bcx^{3}+\frac{1}{2}\,Acx^{2}+Bax+Aa\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + 1/2*A*c*x^2 + B*a*x + A*a*log(x)
```

mupad [B] time = 0.04, size = 24, normalized size = 0.86

$$B\,a\,x+\frac{A\,c\,x^2}{2}+\frac{B\,c\,x^3}{3}+A\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x,x)
```

```
[Out] B*a*x + (A*c*x^2)/2 + (B*c*x^3)/3 + A*a*log(x)
```

sympy [A] time = 0.11, size = 27, normalized size = 0.96

$$Aa\log{\left(x \right)}+\frac{Acx^{2}}{2}+Bax+\frac{Bcx^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x,x)
```

```
[Out] A*a*log(x) + A*c*x**2/2 + B*a*x + B*c*x**3/3
```

3.256 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^2} dx$

Optimal. Leaf size=26

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

```
[Out] -a*A/x+A*c*x+1/2*B*c*x^2+a*B*ln(x)
```

Rubi [A] time = 0.01, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + A*c*x + (B*c*x^2)/2 + a*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^2}\,dx &= \int \left(Ac+\frac{aA}{x^2}+\frac{aB}{x}+Bcx\right)dx\\ &= -\frac{aA}{x}+Acx+\frac{1}{2}Bcx^2+aB\log(x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 26, normalized size = 1.00

$$-\frac{aA}{x}+aB\log(x)+Acx+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + A*c*x + (B*c*x^2)/2 + a*B*Log[x]
```

fricas [A] time = 0.87, size = 30, normalized size = 1.15

$$\frac{Bcx^3+2\,Acx^2+2\,Bax\log(x)-2\,Aa}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*x^3 + 2*A*c*x^2 + 2*B*a*x*log(x) - 2*A*a)/x
```

giac [A] time = 0.16, size = 25, normalized size = 0.96

$$\frac{1}{2}\,Bcx^2+Acx+Ba\log\left(|x|\right)-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="giac")
[Out] 1/2*B*c*x^2 + A*c*x + B*a*log(abs(x)) - A*a/x
```

maple [**A**] time = 0.05, size = 25, normalized size = 0.96

$$\frac{Bc\,x^2}{2}+Acx+Ba\ln(x)-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^2,x)
[Out] -A*a/x+A*c*x+1/2*B*c*x^2+B*a*ln(x)
```

maxima [**A**] time = 0.60, size = 24, normalized size = 0.92

$$\frac{1}{2}Bcx^2+Acx+Ba\log(x)-\frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^2,x, algorithm="maxima")
[Out] 1/2*B*c*x^2 + A*c*x + B*a*log(x) - A*a/x
```

mupad [**B**] time = 0.04, size = 24, normalized size = 0.92

$$A\,c\,x-\frac{A\,a}{x}+\frac{B\,c\,x^2}{2}+B\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^2,x)
[Out] A*c*x - (A*a)/x + (B*c*x^2)/2 + B*a*log(x)
```

sympy [**A**] time = 0.14, size = 24, normalized size = 0.92

$$-\frac{Aa}{x}+Acx+Ba\log{(x)}+\frac{Bcx^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**2,x)
[Out] -A*a/x + A*c*x + B*a*log(x) + B*c*x**2/2
```

3.257 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^3}\,dx$

Optimal. Leaf size=26

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

```
[Out] -1/2*a*A/x^2-a*B/x+B*c*x+A*c*ln(x)
```

Rubi **[A]** time = 0.01, antiderivative size = 26, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^3,x]
```

```
[Out] -(a*A)/(2*x^2) - (a*B)/x + B*c*x + A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^3}\,dx &= \int \left(Bc+\frac{aA}{x^3}+\frac{aB}{x^2}+\frac{Ac}{x}\right)dx\\ &= -\frac{aA}{2x^2}-\frac{aB}{x}+Bcx+Ac\log(x)\end{aligned}$$

Mathematica **[A]** time = 0.00, size = 26, normalized size = 1.00

$$-\frac{aA}{2x^2}-\frac{aB}{x}+Ac\log(x)+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^3,x]
```

```
[Out] -1/2*(a*A)/x^2 - (a*B)/x + B*c*x + A*c*Log[x]
```

fricas **[A]** time = 0.57, size = 31, normalized size = 1.19

$$\frac{2\,Bcx^3+2\,Acx^2\log(x)-2\,Bax-Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*x^3 + 2*A*c*x^2*log(x) - 2*B*a*x - A*a)/x^2
```

giac **[A]** time = 0.15, size = 25, normalized size = 0.96

$$Bcx+Ac\log\left(|x|\right)-\frac{2\,Bax+Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="giac")
```

```
[Out] B*c*x + A*c*log(abs(x)) - 1/2*(2*B*a*x + A*a)/x^2
```

maple [A] time = 0.05, size = 25, normalized size = 0.96

$$Ac\ln(x)+Bcx-\frac{Ba}{x}-\frac{Aa}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^3,x)
```

```
[Out] -1/2*A*a/x^2-B*a/x+B*c*x+A*c*ln(x)
```

maxima [A] time = 0.64, size = 24, normalized size = 0.92

$$Bcx+Ac\log(x)-\frac{2\,Bax+Aa}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^3,x, algorithm="maxima")
```

```
[Out] B*c*x + A*c*log(x) - 1/2*(2*B*a*x + A*a)/x^2
```

mupad [B] time = 1.03, size = 24, normalized size = 0.92

$$B\,c\,x-\frac{\frac{A\,a}{2}+B\,a\,x}{x^2}+A\,c\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^3,x)
```

```
[Out] B*c*x - ((A*a)/2 + B*a*x)/x^2 + A*c*log(x)
```

sympy [A] time = 0.21, size = 27, normalized size = 1.04

$$Ac\log{(x)}+Bcx+\frac{-Aa-2Bax}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**3,x)
```

```
[Out] A*c*log(x) + B*c*x + (-A*a - 2*B*a*x)/(2*x**2)
```

3.258 $\int x^3(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

```
[Out] 1/4*a^2*A*x^4+1/5*a^2*B*x^5+1/3*a*A*c*x^6+2/7*a*B*c*x^7+1/8*A*c^2*x^8+1/9*B
*c^2*x^9
```

Rubi [A] time = 0.06, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}=0.056$, Rules used = $\{766\}$

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^4)/4 + (a^2*B*x^5)/5 + (a*A*c*x^6)/3 + (2*a*B*c*x^7)/7 + (A*c^2*x^
8)/8 + (B*c^2*x^9)/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)^2\,dx&=\int\left(a^2Ax^3+a^2Bx^4+2aAcx^5+2aBcx^6+Ac^2x^7+Bc^2x^8\right)dx\\&=\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{4}a^2Ax^4+\frac{1}{5}a^2Bx^5+\frac{1}{3}aAcx^6+\frac{2}{7}aBcx^7+\frac{1}{8}Ac^2x^8+\frac{1}{9}Bc^2x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^4)/4 + (a^2*B*x^5)/5 + (a*A*c*x^6)/3 + (2*a*B*c*x^7)/7 + (A*c^2*x^
8)/8 + (B*c^2*x^9)/9
```

fricas [A] time = 0.83, size = 53, normalized size = 0.82

$$\frac{1}{9}x^9c^2B+\frac{1}{8}x^8c^2A+\frac{2}{7}x^7caB+\frac{1}{3}x^6caA+\frac{1}{5}x^5a^2B+\frac{1}{4}x^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^2*B + 1/8*x^8*c^2*A + 2/7*x^7*c*a*B + 1/3*x^6*c*a*A + 1/5*x^5*a^2
*B + 1/4*x^4*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.82

$$\frac{1}{9}\,Bc^{2}x^{9}+\frac{1}{8}\,Ac^{2}x^{8}+\frac{2}{7}\,Bacx^{7}+\frac{1}{3}\,Aacx^{6}+\frac{1}{5}\,Ba^{2}x^{5}+\frac{1}{4}\,Aa^{2}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9 + 1/8*A*c^2*x^8 + 2/7*B*a*c*x^7 + 1/3*A*a*c*x^6 + 1/5*B*a^2*x
^5 + 1/4*A*a^2*x^4
```

maple [A] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{9}B\,c^{2}x^{9}+\frac{1}{8}A\,c^{2}x^{8}+\frac{2}{7}Bac\,x^{7}+\frac{1}{3}Aac\,x^{6}+\frac{1}{5}B\,a^{2}x^{5}+\frac{1}{4}A\,a^{2}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/4*A*a^2*x^4+1/5*B*a^2*x^5+1/3*a*A*c*x^6+2/7*a*B*c*x^7+1/8*A*c^2*x^8+1/9*B
*c^2*x^9
```

maxima [A] time = 0.55, size = 53, normalized size = 0.82

$$\frac{1}{9}\,Bc^{2}x^{9}+\frac{1}{8}\,Ac^{2}x^{8}+\frac{2}{7}\,Bacx^{7}+\frac{1}{3}\,Aacx^{6}+\frac{1}{5}\,Ba^{2}x^{5}+\frac{1}{4}\,Aa^{2}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*x^9 + 1/8*A*c^2*x^8 + 2/7*B*a*c*x^7 + 1/3*A*a*c*x^6 + 1/5*B*a^2*x
^5 + 1/4*A*a^2*x^4
```

mupad [B] time = 0.03, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^5}{5}+\frac{A\,a^2\,x^4}{4}+\frac{2\,B\,a\,c\,x^7}{7}+\frac{A\,a\,c\,x^6}{3}+\frac{B\,c^2\,x^9}{9}+\frac{A\,c^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^4)/4 + (B*a^2*x^5)/5 + (A*c^2*x^8)/8 + (B*c^2*x^9)/9 + (A*a*c*x^6)
/3 + (2*B*a*c*x^7)/7
```

sympy [A] time = 0.08, size = 61, normalized size = 0.94

$$\frac{Aa^{2}x^{4}}{4}+\frac{Aacx^{6}}{3}+\frac{Ac^{2}x^{8}}{8}+\frac{Ba^{2}x^{5}}{5}+\frac{2Bacx^{7}}{7}+\frac{Bc^{2}x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**4/4 + A*a*c*x**6/3 + A*c**2*x**8/8 + B*a**2*x**5/5 + 2*B*a*c*x**7
/7 + B*c**2*x**9/9
```

3.259 $\int x^2(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

```
[Out] 1/3*a^2*A*x^3+1/4*a^2*B*x^4+2/5*a*A*c*x^5+1/3*a*B*c*x^6+1/7*A*c^2*x^7+1/8*B
*c^2*x^8
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a^2*B*x^4)/4 + (2*a*A*c*x^5)/5 + (a*B*c*x^6)/3 + (A*c^2*x^
7)/7 + (B*c^2*x^8)/8
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^2\,dx &= \int\left(a^2Ax^2+a^2Bx^3+2aAcx^4+2aBcx^5+Ac^2x^6+Bc^2x^7\right)dx\\ &= \frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{3}a^2Ax^3+\frac{1}{4}a^2Bx^4+\frac{2}{5}aAcx^5+\frac{1}{3}aBcx^6+\frac{1}{7}Ac^2x^7+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a^2*B*x^4)/4 + (2*a*A*c*x^5)/5 + (a*B*c*x^6)/3 + (A*c^2*x^
7)/7 + (B*c^2*x^8)/8
```

fricas [A] time = 0.55, size = 53, normalized size = 0.82

$$\frac{1}{8}x^8c^2B+\frac{1}{7}x^7c^2A+\frac{1}{3}x^6caB+\frac{2}{5}x^5caA+\frac{1}{4}x^4a^2B+\frac{1}{3}x^3a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 1/7*x^7*c^2*A + 1/3*x^6*c*a*B + 2/5*x^5*c*a*A + 1/4*x^4*a^2
*B + 1/3*x^3*a^2*A
```

giac [**A**] time = 0.18, size = 53, normalized size = 0.82

$$\frac{1}{8}Bc^2x^8 + \frac{1}{7}Ac^2x^7 + \frac{1}{3}Bacx^6 + \frac{2}{5}Aacx^5 + \frac{1}{4}Ba^2x^4 + \frac{1}{3}Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*A*c^2*x^7 + 1/3*B*a*c*x^6 + 2/5*A*a*c*x^5 + 1/4*B*a^2*x
^4 + 1/3*A*a^2*x^3
```

maple [**A**] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{8}B\,c^2x^8 + \frac{1}{7}A\,c^2x^7 + \frac{1}{3}Bac\,x^6 + \frac{2}{5}Aac\,x^5 + \frac{1}{4}B\,a^2x^4 + \frac{1}{3}A\,a^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/3*A*a^2*x^3+1/4*B*a^2*x^4+2/5*a*A*c*x^5+1/3*a*B*c*x^6+1/7*A*c^2*x^7+1/8*B
*c^2*x^8
```

maxima [**A**] time = 0.57, size = 53, normalized size = 0.82

$$\frac{1}{8}Bc^2x^8 + \frac{1}{7}Ac^2x^7 + \frac{1}{3}Bacx^6 + \frac{2}{5}Aacx^5 + \frac{1}{4}Ba^2x^4 + \frac{1}{3}Aa^2x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*A*c^2*x^7 + 1/3*B*a*c*x^6 + 2/5*A*a*c*x^5 + 1/4*B*a^2*x
^4 + 1/3*A*a^2*x^3
```

mupad [**B**] time = 0.02, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^4}{4} + \frac{A\,a^2\,x^3}{3} + \frac{B\,a\,c\,x^6}{3} + \frac{2\,A\,a\,c\,x^5}{5} + \frac{B\,c^2\,x^8}{8} + \frac{A\,c^2\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^3)/3 + (B*a^2*x^4)/4 + (A*c^2*x^7)/7 + (B*c^2*x^8)/8 + (2*A*a*c*x^
5)/5 + (B*a*c*x^6)/3
```

sympy [**A**] time = 0.08, size = 61, normalized size = 0.94

$$\frac{Aa^2x^3}{3} + \frac{2Aacx^5}{5} + \frac{Ac^2x^7}{7} + \frac{Ba^2x^4}{4} + \frac{Bacx^6}{3} + \frac{Bc^2x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**3/3 + 2*A*a*c*x**5/5 + A*c**2*x**7/7 + B*a**2*x**4/4 + B*a*c*x**6
/3 + B*c**2*x**8/8
```

3.260 $\int x(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

```
[Out] 1/2*a^2*A*x^2+1/3*a^2*B*x^3+1/2*a*A*c*x^4+2/5*a*B*c*x^5+1/6*A*c^2*x^6+1/7*B
*c^2*x^7
```

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a^2*B*x^3)/3 + (a*A*c*x^4)/2 + (2*a*B*c*x^5)/5 + (A*c^2*x^
6)/6 + (B*c^2*x^7)/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)^2\,dx &= \int\left(a^2Ax+a^2Bx^2+2aAcx^3+2aBcx^4+Ac^2x^5+Bc^2x^6\right)dx\\ &= \frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7\end{aligned}$$

Mathematica [A] time = 0.00, size = 65, normalized size = 1.00

$$\frac{1}{2}a^2Ax^2+\frac{1}{3}a^2Bx^3+\frac{1}{2}aAcx^4+\frac{2}{5}aBcx^5+\frac{1}{6}Ac^2x^6+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a^2*B*x^3)/3 + (a*A*c*x^4)/2 + (2*a*B*c*x^5)/5 + (A*c^2*x^
6)/6 + (B*c^2*x^7)/7
```

fricas [A] time = 0.71, size = 53, normalized size = 0.82

$$\frac{1}{7}x^7c^2B+\frac{1}{6}x^6c^2A+\frac{2}{5}x^5caB+\frac{1}{2}x^4caA+\frac{1}{3}x^3a^2B+\frac{1}{2}x^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/6*x^6*c^2*A + 2/5*x^5*c*a*B + 1/2*x^4*c*a*A + 1/3*x^3*a^2
*B + 1/2*x^2*a^2*A
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.82

$$\frac{1}{7}\,Bc^2x^7+\frac{1}{6}\,Ac^2x^6+\frac{2}{5}\,Bacx^5+\frac{1}{2}\,Aacx^4+\frac{1}{3}\,Ba^2x^3+\frac{1}{2}\,Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*A*c^2*x^6 + 2/5*B*a*c*x^5 + 1/2*A*a*c*x^4 + 1/3*B*a^2*x
^3 + 1/2*A*a^2*x^2
```

maple [**A**] time = 0.04, size = 54, normalized size = 0.83

$$\frac{1}{7}B\,c^2x^7+\frac{1}{6}A\,c^2x^6+\frac{2}{5}Bac\,x^5+\frac{1}{2}Aac\,x^4+\frac{1}{3}B\,a^2x^3+\frac{1}{2}A\,a^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/2*A*a^2*x^2+1/3*B*a^2*x^3+1/2*a*A*c*x^4+2/5*a*B*c*x^5+1/6*A*c^2*x^6+1/7*B
*c^2*x^7
```

maxima [**A**] time = 0.78, size = 53, normalized size = 0.82

$$\frac{1}{7}\,Bc^2x^7+\frac{1}{6}\,Ac^2x^6+\frac{2}{5}\,Bacx^5+\frac{1}{2}\,Aacx^4+\frac{1}{3}\,Ba^2x^3+\frac{1}{2}\,Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*A*c^2*x^6 + 2/5*B*a*c*x^5 + 1/2*A*a*c*x^4 + 1/3*B*a^2*x
^3 + 1/2*A*a^2*x^2
```

mupad [**B**] time = 0.02, size = 53, normalized size = 0.82

$$\frac{B\,a^2\,x^3}{3}+\frac{A\,a^2\,x^2}{2}+\frac{2\,B\,a\,c\,x^5}{5}+\frac{A\,a\,c\,x^4}{2}+\frac{B\,c^2\,x^7}{7}+\frac{A\,c^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (A*a^2*x^2)/2 + (B*a^2*x^3)/3 + (A*c^2*x^6)/6 + (B*c^2*x^7)/7 + (A*a*c*x^4)
/2 + (2*B*a*c*x^5)/5
```

sympy [**A**] time = 0.07, size = 61, normalized size = 0.94

$$\frac{Aa^2x^2}{2}+\frac{Aacx^4}{2}+\frac{Ac^2x^6}{6}+\frac{Ba^2x^3}{3}+\frac{2Bacx^5}{5}+\frac{Bc^2x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x**2/2 + A*a*c*x**4/2 + A*c**2*x**6/6 + B*a**2*x**3/3 + 2*B*a*c*x**5
/5 + B*c**2*x**7/7
```

3.261 $\int (A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=45

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

```
[Out] a^2*A*x+2/3*a*A*c*x^3+1/5*A*c^2*x^5+1/6*B*(c*x^2+a)^3/c
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (2*a*A*c*x^3)/3 + (A*c^2*x^5)/5 + (B*(a + c*x^2)^3)/(6*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^2\,dx &= \frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a+cx^2\right)^2\,dx\\ &= \frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a^2+2acx^2+c^2x^4\right)\,dx\\ &= a^2Ax+\frac{2}{3}aAcx^3+\frac{1}{5}Ac^2x^5+\frac{B\left(a+cx^2\right)^3}{6c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.33

$$a^2Ax+\frac{1}{2}a^2Bx^2+\frac{2}{3}aAcx^3+\frac{1}{2}aBcx^4+\frac{1}{5}Ac^2x^5+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a^2*B*x^2)/2 + (2*a*A*c*x^3)/3 + (a*B*c*x^4)/2 + (A*c^2*x^5)/5 +
 (B*c^2*x^6)/6
```

fricas [A] time = 0.78, size = 50, normalized size = 1.11

$$\frac{1}{6}x^6c^2B+\frac{1}{5}x^5c^2A+\frac{1}{2}x^4caB+\frac{2}{3}x^3caA+\frac{1}{2}x^2a^2B+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 1/5*x^5*c^2*A + 1/2*x^4*c*a*B + 2/3*x^3*c*a*A + 1/2*x^2*a^2
*B + x*a^2*A
```

giac [**A**] time = 0.18, size = 50, normalized size = 1.11

$$\frac{1}{6}\,Bc^2x^6 + \frac{1}{5}\,Ac^2x^5 + \frac{1}{2}\,Bacx^4 + \frac{2}{3}\,Aacx^3 + \frac{1}{2}\,Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

maple [**A**] time = 0.04, size = 51, normalized size = 1.13

$$\frac{1}{6}B\,c^2x^6 + \frac{1}{5}A\,c^2x^5 + \frac{1}{2}Bac\,x^4 + \frac{2}{3}Aac\,x^3 + \frac{1}{2}B\,a^2x^2 + A\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*A*c^2*x^5+1/2*a*B*c*x^4+2/3*a*A*c*x^3+1/2*B*a^2*x^2+A*a^2
*x
```

maxima [**A**] time = 0.67, size = 50, normalized size = 1.11

$$\frac{1}{6}\,Bc^2x^6 + \frac{1}{5}\,Ac^2x^5 + \frac{1}{2}\,Bacx^4 + \frac{2}{3}\,Aacx^3 + \frac{1}{2}\,Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

mupad [**B**] time = 0.02, size = 50, normalized size = 1.11

$$\frac{B\,a^2\,x^2}{2} + A\,a^2\,x + \frac{B\,a\,c\,x^4}{2} + \frac{2\,A\,a\,c\,x^3}{3} + \frac{B\,c^2\,x^6}{6} + \frac{A\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (B*a^2*x^2)/2 + (A*c^2*x^5)/5 + (B*c^2*x^6)/6 + A*a^2*x + (2*A*a*c*x^3)/3 +
 (B*a*c*x^4)/2
```

sympy [**A**] time = 0.08, size = 58, normalized size = 1.29

$$Aa^2x + \frac{2Aacx^3}{3} + \frac{Ac^2x^5}{5} + \frac{Ba^2x^2}{2} + \frac{Bacx^4}{2} + \frac{Bc^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 +
B*c**2*x**6/6
```

3.262 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x}\,dx$

Optimal. Leaf size=53

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

```
[Out] a^2*B*x+a*A*c*x^2+2/3*a*B*c*x^3+1/4*A*c^2*x^4+1/5*B*c^2*x^5+a^2*A*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x,x]
```

```
[Out] a^2*B*x + a*A*c*x^2 + (2*a*B*c*x^3)/3 + (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + a^2
*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x}\,dx &= \int \left(a^2B+\frac{a^2A}{x}+2aAcx+2aBcx^2+Ac^2x^3+Bc^2x^4\right)dx\\ &= a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5+a^2A\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 53, normalized size = 1.00

$$a^2A\log(x)+a^2Bx+aAcx^2+\frac{2}{3}aBcx^3+\frac{1}{4}Ac^2x^4+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x,x]
```

```
[Out] a^2*B*x + a*A*c*x^2 + (2*a*B*c*x^3)/3 + (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + a^2
*A*Log[x]
```

fricas [A] time = 0.87, size = 47, normalized size = 0.89

$$\frac{1}{5}\,Bc^2x^5+\frac{1}{4}\,Ac^2x^4+\frac{2}{3}\,Bacx^3+Aacx^2+Ba^2x+Aa^2\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(x)
```

giac [A] time = 0.15, size = 48, normalized size = 0.91

$$\frac{1}{5}Bc^2x^5+\frac{1}{4}Ac^2x^4+\frac{2}{3}Bacx^3+Aacx^2+Ba^2x+Aa^2\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(abs(x))
```

maple [A] time = 0.05, size = 48, normalized size = 0.91

$$\frac{Bc^2x^5}{5}+\frac{Ac^2x^4}{4}+\frac{2Bacx^3}{3}+Aacx^2+Aa^2\ln(x)+Ba^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x,x)
```

```
[Out] B*a^2*x+a*A*c*x^2+2/3*a*B*c*x^3+1/4*A*c^2*x^4+1/5*B*c^2*x^5+A*a^2*ln(x)
```

maxima [A] time = 0.56, size = 47, normalized size = 0.89

$$\frac{1}{5}Bc^2x^5+\frac{1}{4}Ac^2x^4+\frac{2}{3}Bacx^3+Aacx^2+Ba^2x+Aa^2\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*A*c^2*x^4 + 2/3*B*a*c*x^3 + A*a*c*x^2 + B*a^2*x + A*a^2
*log(x)
```

mupad [B] time = 0.03, size = 47, normalized size = 0.89

$$\frac{A\,c^2\,x^4}{4}+\frac{B\,c^2\,x^5}{5}+A\,a^2\,\ln(x)+B\,a^2\,x+A\,a\,c\,x^2+\frac{2\,B\,a\,c\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x,x)
```

```
[Out] (A*c^2*x^4)/4 + (B*c^2*x^5)/5 + A*a^2*log(x) + B*a^2*x + A*a*c*x^2 + (2*B*a
*c*x^3)/3
```

sympy [A] time = 0.15, size = 54, normalized size = 1.02

$$Aa^2\log\left(x\right)+Aacx^2+\frac{Ac^2x^4}{4}+Ba^2x+\frac{2Bacx^3}{3}+\frac{Bc^2x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x,x)
```

```
[Out] A*a**2*log(x) + A*a*c*x**2 + A*c**2*x**4/4 + B*a**2*x + 2*B*a*c*x**3/3 + B*
c**2*x**5/5
```

3.263 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=52

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

```
[Out] -a^2*A/x+2*a*A*c*x+a*B*c*x^2+1/3*A*c^2*x^3+1/4*B*c^2*x^4+a^2*B*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*A*c*x + a*B*c*x^2 + (A*c^2*x^3)/3 + (B*c^2*x^4)/4 + a^2*
B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^2}\,dx &= \int \left(2aAc+\frac{a^2A}{x^2}+\frac{a^2B}{x}+2aBcx+Ac^2x^2+Bc^2x^3\right)dx\\ &= -\frac{a^2A}{x}+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4+a^2B\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 52, normalized size = 1.00

$$-\frac{a^2A}{x}+a^2B\log(x)+2aAcx+aBcx^2+\frac{1}{3}Ac^2x^3+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*A*c*x + a*B*c*x^2 + (A*c^2*x^3)/3 + (B*c^2*x^4)/4 + a^2*
B*Log[x]
```

fricas [A] time = 0.83, size = 55, normalized size = 1.06

$$\frac{3\,Bc^2x^5+4\,Ac^2x^4+12\,Bacx^3+24\,Aacx^2+12\,Ba^2x\log(x)-12\,Aa^2}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*x^5 + 4*A*c^2*x^4 + 12*B*a*c*x^3 + 24*A*a*c*x^2 + 12*B*a^2*x*
log(x) - 12*A*a^2)/x
```

giac [A] time = 0.22, size = 49, normalized size = 0.94

$$\frac{1}{4}\,Bc^2x^4 + \frac{1}{3}\,Ac^2x^3 + Bacx^2 + 2\,Aacx + Ba^2\log\left(|x|\right) - \frac{Aa^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*A*c^2*x^3 + B*a*c*x^2 + 2*A*a*c*x + B*a^2*log(abs(x)) -
 A*a^2/x
```

maple [A] time = 0.06, size = 49, normalized size = 0.94

$$\frac{B\,c^2x^4}{4} + \frac{A\,c^2x^3}{3} + Bac\,x^2 + 2Aacx + B\,a^2\ln(x) - \frac{A\,a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^2,x)
```

```
[Out] -A*a^2/x+2*a*A*c*x+a*B*c*x^2+1/3*A*c^2*x^3+1/4*B*c^2*x^4+B*a^2*ln(x)
```

maxima [A] time = 0.51, size = 48, normalized size = 0.92

$$\frac{1}{4}\,Bc^2x^4 + \frac{1}{3}\,Ac^2x^3 + Bacx^2 + 2\,Aacx + Ba^2\log(x) - \frac{Aa^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*A*c^2*x^3 + B*a*c*x^2 + 2*A*a*c*x + B*a^2*log(x) - A*a^
2/x
```

mupad [B] time = 0.03, size = 48, normalized size = 0.92

$$\frac{A\,c^2\,x^3}{3} - \frac{A\,a^2}{x} + \frac{B\,c^2\,x^4}{4} + B\,a^2\,\ln(x) + B\,a\,c\,x^2 + 2\,A\,a\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^2,x)
```

```
[Out] (A*c^2*x^3)/3 - (A*a^2)/x + (B*c^2*x^4)/4 + B*a^2*log(x) + B*a*c*x^2 + 2*A*
a*c*x
```

sympy [A] time = 0.17, size = 51, normalized size = 0.98

$$-\frac{Aa^2}{x} + 2Aacx + \frac{Ac^2x^3}{3} + Ba^2\log\left(x\right) + Bacx^2 + \frac{Bc^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**2,x)
```

```
[Out] -A*a**2/x + 2*A*a*c*x + A*c**2*x**3/3 + B*a**2*log(x) + B*a*c*x**2 + B*c**2
*x**4/4
```

3.264 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3} \, dx$

Optimal. Leaf size=56

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

```
[Out] -1/2*a^2*A/x^2-a^2*B/x+2*a*B*c*x+1/2*A*c^2*x^2+1/3*B*c^2*x^3+2*a*A*c*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^3,x]
```

```
[Out] -(a^2*A)/(2*x^2) - (a^2*B)/x + 2*a*B*c*x + (A*c^2*x^2)/2 + (B*c^2*x^3)/3 +
2*a*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^3} \, dx &= \int \left(2aBc+\frac{a^2A}{x^3}+\frac{a^2B}{x^2}+\frac{2aAc}{x}+Ac^2x+Bc^2x^2\right) \, dx\\ &= -\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3+2aAc\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 56, normalized size = 1.00

$$-\frac{a^2A}{2x^2}-\frac{a^2B}{x}+2aAc\log(x)+2aBcx+\frac{1}{2}Ac^2x^2+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^3,x]
```

```
[Out] -1/2*(a^2*A)/x^2 - (a^2*B)/x + 2*a*B*c*x + (A*c^2*x^2)/2 + (B*c^2*x^3)/3 +
2*a*A*c*Log[x]
```

fricas [A] time = 0.90, size = 55, normalized size = 0.98

$$\frac{2\,Bc^2x^5+3\,Ac^2x^4+12\,Bacx^3+12\,Aacx^2\log(x)-6\,Ba^2x-3\,Aa^2}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 12*B*a*c*x^3 + 12*A*a*c*x^2*log(x) - 6*B*a
^2*x - 3*A*a^2)/x^2
```

giac [A] time = 0.17, size = 51, normalized size = 0.91

$$\frac{1}{3}Bc^2x^3 + \frac{1}{2}Ac^2x^2 + 2\,Bacx + 2\,Aac\log\left(|x|\right) - \frac{2\,Ba^2x + Aa^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*A*c^2*x^2 + 2*B*a*c*x + 2*A*a*c*log(abs(x)) - 1/2*(2*B*
a^2*x + A*a^2)/x^2
```

maple [A] time = 0.06, size = 51, normalized size = 0.91

$$\frac{B\,c^2x^3}{3} + \frac{A\,c^2x^2}{2} + 2Aac\ln(x) + 2Bacx - \frac{B\,a^2}{x} - \frac{A\,a^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^3,x)
```

```
[Out] -1/2*A*a^2/x^2-B*a^2/x+2*a*B*c*x+1/2*A*c^2*x^2+1/3*B*c^2*x^3+2*a*A*c*ln(x)
```

maxima [A] time = 0.62, size = 50, normalized size = 0.89

$$\frac{1}{3}Bc^2x^3 + \frac{1}{2}Ac^2x^2 + 2\,Bacx + 2\,Aac\log(x) - \frac{2\,Ba^2x + Aa^2}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*A*c^2*x^2 + 2*B*a*c*x + 2*A*a*c*log(x) - 1/2*(2*B*a^2*x
 + A*a^2)/x^2
```

mupad [B] time = 0.03, size = 50, normalized size = 0.89

$$\frac{A\,c^2\,x^2}{2} - \frac{\frac{A\,a^2}{2} + B\,a^2\,x}{x^2} + \frac{B\,c^2\,x^3}{3} + 2\,A\,a\,c\,\ln(x) + 2\,B\,a\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^3,x)
```

```
[Out] (A*c^2*x^2)/2 - ((A*a^2)/2 + B*a^2*x)/x^2 + (B*c^2*x^3)/3 + 2*A*a*c*log(x)
+ 2*B*a*c*x
```

sympy [A] time = 0.25, size = 58, normalized size = 1.04

$$2Aac\log\left(x\right) + \frac{Ac^2x^2}{2} + 2Bacx + \frac{Bc^2x^3}{3} + \frac{-Aa^2 - 2Ba^2x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**3,x)
```

```
[Out] 2*A*a*c*log(x) + A*c**2*x**2/2 + 2*B*a*c*x + B*c**2*x**3/3 + (-A*a**2 - 2*B
*a**2*x)/(2*x**2)
```

3.265 $\int x^3(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=93

$$\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

```
[Out] 1/4*a^3*A*x^4+1/5*a^3*B*x^5+1/2*a^2*A*c*x^6+3/7*a^2*B*c*x^7+3/8*a*A*c^2*x^8
+1/3*a*B*c^2*x^9+1/10*A*c^3*x^10+1/11*B*c^3*x^11
```

Rubi [A] time = 0.10, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{1}{2}a^2Acx^6+\frac{1}{4}a^3Ax^4+\frac{3}{7}a^2Bcx^7+\frac{1}{5}a^3Bx^5+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^4)/4 + (a^3*B*x^5)/5 + (a^2*A*c*x^6)/2 + (3*a^2*B*c*x^7)/7 + (3*a*
A*c^2*x^8)/8 + (a*B*c^2*x^9)/3 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)^3\,dx&=\int\left(a^3Ax^3+a^3Bx^4+3a^2Acx^5+3a^2Bcx^6+3aAc^2x^7+3aBc^2x^8+Ac^3x^9+Bc^3x^{1}\right.\\&=\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{4}a^3Ax^4+\frac{1}{5}a^3Bx^5+\frac{1}{2}a^2Acx^6+\frac{3}{7}a^2Bcx^7+\frac{3}{8}aAc^2x^8+\frac{1}{3}aBc^2x^9+\frac{1}{10}Ac^3x^{10}+\frac{1}{11}Bc^3x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^4)/4 + (a^3*B*x^5)/5 + (a^2*A*c*x^6)/2 + (3*a^2*B*c*x^7)/7 + (3*a*
A*c^2*x^8)/8 + (a*B*c^2*x^9)/3 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11
```

fricas [A] time = 0.81, size = 77, normalized size = 0.83

$$\frac{1}{11}x^{11}c^3B+\frac{1}{10}x^{10}c^3A+\frac{1}{3}x^9c^2aB+\frac{3}{8}x^8c^2aA+\frac{3}{7}x^7ca^2B+\frac{1}{2}x^6ca^2A+\frac{1}{5}x^5a^3B+\frac{1}{4}x^4a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^3*B + 1/10*x^10*c^3*A + 1/3*x^9*c^2*a*B + 3/8*x^8*c^2*a*A + 3/7
*x^7*c*a^2*B + 1/2*x^6*c*a^2*A + 1/5*x^5*a^3*B + 1/4*x^4*a^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{11}\,Bc^{3}x^{11}+\frac{1}{10}\,Ac^{3}x^{10}+\frac{1}{3}\,Bac^{2}x^{9}+\frac{3}{8}\,Aac^{2}x^{8}+\frac{3}{7}\,Ba^{2}cx^{7}+\frac{1}{2}\,Aa^{2}cx^{6}+\frac{1}{5}\,Ba^{3}x^{5}+\frac{1}{4}\,Aa^{3}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11 + 1/10*A*c^3*x^10 + 1/3*B*a*c^2*x^9 + 3/8*A*a*c^2*x^8 + 3/7
*B*a^2*c*x^7 + 1/2*A*a^2*c*x^6 + 1/5*B*a^3*x^5 + 1/4*A*a^3*x^4
```

maple [A] time = 0.04, size = 78, normalized size = 0.84

$$\frac{1}{11}B\,c^{3}x^{11}+\frac{1}{10}A\,c^{3}x^{10}+\frac{1}{3}Ba\,c^{2}x^{9}+\frac{3}{8}Aa\,c^{2}x^{8}+\frac{3}{7}B\,a^{2}c\,x^{7}+\frac{1}{2}A\,a^{2}c\,x^{6}+\frac{1}{5}B\,a^{3}x^{5}+\frac{1}{4}A\,a^{3}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/4*A*a^3*x^4+1/5*B*a^3*x^5+1/2*a^2*A*c*x^6+3/7*a^2*B*c*x^7+3/8*a*A*c^2*x^8
+1/3*a*B*c^2*x^9+1/10*A*c^3*x^10+1/11*B*c^3*x^11
```

maxima [A] time = 0.57, size = 77, normalized size = 0.83

$$\frac{1}{11}\,Bc^{3}x^{11}+\frac{1}{10}\,Ac^{3}x^{10}+\frac{1}{3}\,Bac^{2}x^{9}+\frac{3}{8}\,Aac^{2}x^{8}+\frac{3}{7}\,Ba^{2}cx^{7}+\frac{1}{2}\,Aa^{2}cx^{6}+\frac{1}{5}\,Ba^{3}x^{5}+\frac{1}{4}\,Aa^{3}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*x^11 + 1/10*A*c^3*x^10 + 1/3*B*a*c^2*x^9 + 3/8*A*a*c^2*x^8 + 3/7
*B*a^2*c*x^7 + 1/2*A*a^2*c*x^6 + 1/5*B*a^3*x^5 + 1/4*A*a^3*x^4
```

mupad [B] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^5}{5}+\frac{A\,a^3\,x^4}{4}+\frac{3\,B\,a^2\,c\,x^7}{7}+\frac{A\,a^2\,c\,x^6}{2}+\frac{B\,a\,c^2\,x^9}{3}+\frac{3\,A\,a\,c^2\,x^8}{8}+\frac{B\,c^3\,x^{11}}{11}+\frac{A\,c^3\,x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^4)/4 + (B*a^3*x^5)/5 + (A*c^3*x^10)/10 + (B*c^3*x^11)/11 + (A*a^2*
c*x^6)/2 + (3*A*a*c^2*x^8)/8 + (3*B*a^2*c*x^7)/7 + (B*a*c^2*x^9)/3
```

sympy [A] time = 0.08, size = 90, normalized size = 0.97

$$\frac{Aa^{3}x^{4}}{4}+\frac{Aa^{2}cx^{6}}{2}+\frac{3Aac^{2}x^{8}}{8}+\frac{Ac^{3}x^{10}}{10}+\frac{Ba^{3}x^{5}}{5}+\frac{3Ba^{2}cx^{7}}{7}+\frac{Bac^{2}x^{9}}{3}+\frac{Bc^{3}x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**4/4 + A*a**2*c*x**6/2 + 3*A*a*c**2*x**8/8 + A*c**3*x**10/10 + B*a
**3*x**5/5 + 3*B*a**2*c*x**7/7 + B*a*c**2*x**9/3 + B*c**3*x**11/11
```

3.266 $\int x^2(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=93

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

```
[Out] 1/3*a^3*A*x^3+1/4*a^3*B*x^4+3/5*a^2*A*c*x^5+1/2*a^2*B*c*x^6+3/7*a*A*c^2*x^7
+3/8*a*B*c^2*x^8+1/9*A*c^3*x^9+1/10*B*c^3*x^10
```

Rubi [A] time = 0.09, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{5}a^2Acx^5+\frac{1}{3}a^3Ax^3+\frac{1}{2}a^2Bcx^6+\frac{1}{4}a^3Bx^4+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^3*B*x^4)/4 + (3*a^2*A*c*x^5)/5 + (a^2*B*c*x^6)/2 + (3*a*
A*c^2*x^7)/7 + (3*a*B*c^2*x^8)/8 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ax^2+a^3Bx^3+3a^2Acx^4+3a^2Bcx^5+3aAc^2x^6+3aBc^2x^7+Ac^3x^8+Bc^3x^9\right.\\ &= \frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}\end{aligned}$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^3Bx^4+\frac{3}{5}a^2Acx^5+\frac{1}{2}a^2Bcx^6+\frac{3}{7}aAc^2x^7+\frac{3}{8}aBc^2x^8+\frac{1}{9}Ac^3x^9+\frac{1}{10}Bc^3x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^3*B*x^4)/4 + (3*a^2*A*c*x^5)/5 + (a^2*B*c*x^6)/2 + (3*a*
A*c^2*x^7)/7 + (3*a*B*c^2*x^8)/8 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10
```

fricas [A] time = 0.72, size = 77, normalized size = 0.83

$$\frac{1}{10}x^{10}c^3B+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8c^2aB+\frac{3}{7}x^7c^2aA+\frac{1}{2}x^6ca^2B+\frac{3}{5}x^5ca^2A+\frac{1}{4}x^4a^3B+\frac{1}{3}x^3a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/9*x^9*c^3*A + 3/8*x^8*c^2*a*B + 3/7*x^7*c^2*a*A + 1/2*x
^6*c*a^2*B + 3/5*x^5*c*a^2*A + 1/4*x^4*a^3*B + 1/3*x^3*a^3*A
```

giac [**A**] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{10}\,Bc^3x^{10}+\frac{1}{9}\,Ac^3x^9+\frac{3}{8}\,Bac^2x^8+\frac{3}{7}\,Aac^2x^7+\frac{1}{2}\,Ba^2cx^6+\frac{3}{5}\,Aa^2cx^5+\frac{1}{4}\,Ba^3x^4+\frac{1}{3}\,Aa^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*A*c^3*x^9 + 3/8*B*a*c^2*x^8 + 3/7*A*a*c^2*x^7 + 1/2*B
*a^2*c*x^6 + 3/5*A*a^2*c*x^5 + 1/4*B*a^3*x^4 + 1/3*A*a^3*x^3
```

maple [**A**] time = 0.04, size = 78, normalized size = 0.84

$$\frac{1}{10}B\,c^3x^{10}+\frac{1}{9}A\,c^3x^9+\frac{3}{8}Ba\,c^2x^8+\frac{3}{7}Aa\,c^2x^7+\frac{1}{2}B\,a^2c\,x^6+\frac{3}{5}A\,a^2c\,x^5+\frac{1}{4}B\,a^3x^4+\frac{1}{3}A\,a^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/3*A*a^3*x^3+1/4*B*a^3*x^4+3/5*a^2*A*c*x^5+1/2*a^2*B*c*x^6+3/7*a*A*c^2*x^7
+3/8*a*B*c^2*x^8+1/9*A*c^3*x^9+1/10*B*c^3*x^10
```

maxima [**A**] time = 0.51, size = 77, normalized size = 0.83

$$\frac{1}{10}\,Bc^3x^{10}+\frac{1}{9}\,Ac^3x^9+\frac{3}{8}\,Bac^2x^8+\frac{3}{7}\,Aac^2x^7+\frac{1}{2}\,Ba^2cx^6+\frac{3}{5}\,Aa^2cx^5+\frac{1}{4}\,Ba^3x^4+\frac{1}{3}\,Aa^3x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*A*c^3*x^9 + 3/8*B*a*c^2*x^8 + 3/7*A*a*c^2*x^7 + 1/2*B
*a^2*c*x^6 + 3/5*A*a^2*c*x^5 + 1/4*B*a^3*x^4 + 1/3*A*a^3*x^3
```

mupad [**B**] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^4}{4}+\frac{A\,a^3\,x^3}{3}+\frac{B\,a^2\,c\,x^6}{2}+\frac{3\,A\,a^2\,c\,x^5}{5}+\frac{3\,B\,a\,c^2\,x^8}{8}+\frac{3\,A\,a\,c^2\,x^7}{7}+\frac{B\,c^3\,x^{10}}{10}+\frac{A\,c^3\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^3)/3 + (B*a^3*x^4)/4 + (A*c^3*x^9)/9 + (B*c^3*x^10)/10 + (3*A*a^2*
c*x^5)/5 + (3*A*a*c^2*x^7)/7 + (B*a^2*c*x^6)/2 + (3*B*a*c^2*x^8)/8
```

sympy [**A**] time = 0.08, size = 92, normalized size = 0.99

$$\frac{Aa^3x^3}{3}+\frac{3Aa^2cx^5}{5}+\frac{3Aac^2x^7}{7}+\frac{Ac^3x^9}{9}+\frac{Ba^3x^4}{4}+\frac{Ba^2cx^6}{2}+\frac{3Bac^2x^8}{8}+\frac{Bc^3x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**3/3 + 3*A*a**2*c*x**5/5 + 3*A*a*c**2*x**7/7 + A*c**3*x**9/9 + B*a
**3*x**4/4 + B*a**2*c*x**6/2 + 3*B*a*c**2*x**8/8 + B*c**3*x**10/10
```

3.267 $\int x(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=93

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

```
[Out] 1/2*a^3*A*x^2+1/3*a^3*B*x^3+3/4*a^2*A*c*x^4+3/5*a^2*B*c*x^5+1/2*a*A*c^2*x^6
+3/7*a*B*c^2*x^7+1/8*A*c^3*x^8+1/9*B*c^3*x^9
```

Rubi [A] time = 0.08, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$\frac{3}{4}a^2Acx^4+\frac{1}{2}a^3Ax^2+\frac{3}{5}a^2Bcx^5+\frac{1}{3}a^3Bx^3+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^3*B*x^3)/3 + (3*a^2*A*c*x^4)/4 + (3*a^2*B*c*x^5)/5 + (a*
A*c^2*x^6)/2 + (3*a*B*c^2*x^7)/7 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)^3\,dx&=\int\left(a^3Ax+a^3Bx^2+3a^2Acx^3+3a^2Bcx^4+3aAc^2x^5+3aBc^2x^6+Ac^3x^7+Bc^3x^8\right)\\&=\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}\end{aligned}$$

Mathematica [A] time = 0.00, size = 93, normalized size = 1.00

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^3Bx^3+\frac{3}{4}a^2Acx^4+\frac{3}{5}a^2Bcx^5+\frac{1}{2}aAc^2x^6+\frac{3}{7}aBc^2x^7+\frac{1}{8}Ac^3x^8+\frac{1}{9}Bc^3x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^3*B*x^3)/3 + (3*a^2*A*c*x^4)/4 + (3*a^2*B*c*x^5)/5 + (a*
A*c^2*x^6)/2 + (3*a*B*c^2*x^7)/7 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9
```

fricas [A] time = 0.52, size = 77, normalized size = 0.83

$$\frac{1}{9}x^9c^3B+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7c^2aB+\frac{1}{2}x^6c^2aA+\frac{3}{5}x^5ca^2B+\frac{3}{4}x^4ca^2A+\frac{1}{3}x^3a^3B+\frac{1}{2}x^2a^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 1/8*x^8*c^3*A + 3/7*x^7*c^2*a*B + 1/2*x^6*c^2*a*A + 3/5*x^5
*c*a^2*B + 3/4*x^4*c*a^2*A + 1/3*x^3*a^3*B + 1/2*x^2*a^3*A
```

giac [**A**] time = 0.15, size = 77, normalized size = 0.83

$$\frac{1}{9}Bc^3x^9 + \frac{1}{8}Ac^3x^8 + \frac{3}{7}Bac^2x^7 + \frac{1}{2}Aac^2x^6 + \frac{3}{5}Ba^2cx^5 + \frac{3}{4}Aa^2cx^4 + \frac{1}{3}Ba^3x^3 + \frac{1}{2}Aa^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*A*c^3*x^8 + 3/7*B*a*c^2*x^7 + 1/2*A*a*c^2*x^6 + 3/5*B*a
^2*c*x^5 + 3/4*A*a^2*c*x^4 + 1/3*B*a^3*x^3 + 1/2*A*a^3*x^2
```

maple [**A**] time = 0.05, size = 78, normalized size = 0.84

$$\frac{1}{9}B\,c^3x^9 + \frac{1}{8}A\,c^3x^8 + \frac{3}{7}Ba\,c^2x^7 + \frac{1}{2}Aa\,c^2x^6 + \frac{3}{5}B\,a^2c\,x^5 + \frac{3}{4}A\,a^2c\,x^4 + \frac{1}{3}B\,a^3x^3 + \frac{1}{2}A\,a^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/2*a^3*A*x^2+1/3*B*a^3*x^3+3/4*a^2*A*c*x^4+3/5*a^2*B*c*x^5+1/2*a*A*c^2*x^6
+3/7*a*B*c^2*x^7+1/8*A*c^3*x^8+1/9*B*c^3*x^9
```

maxima [**A**] time = 0.56, size = 77, normalized size = 0.83

$$\frac{1}{9}Bc^3x^9 + \frac{1}{8}Ac^3x^8 + \frac{3}{7}Bac^2x^7 + \frac{1}{2}Aac^2x^6 + \frac{3}{5}Ba^2cx^5 + \frac{3}{4}Aa^2cx^4 + \frac{1}{3}Ba^3x^3 + \frac{1}{2}Aa^3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*A*c^3*x^8 + 3/7*B*a*c^2*x^7 + 1/2*A*a*c^2*x^6 + 3/5*B*a
^2*c*x^5 + 3/4*A*a^2*c*x^4 + 1/3*B*a^3*x^3 + 1/2*A*a^3*x^2
```

mupad [**B**] time = 0.03, size = 77, normalized size = 0.83

$$\frac{B\,a^3\,x^3}{3} + \frac{A\,a^3\,x^2}{2} + \frac{3\,B\,a^2\,c\,x^5}{5} + \frac{3\,A\,a^2\,c\,x^4}{4} + \frac{3\,B\,a\,c^2\,x^7}{7} + \frac{A\,a\,c^2\,x^6}{2} + \frac{B\,c^3\,x^9}{9} + \frac{A\,c^3\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x^2)/2 + (B*a^3*x^3)/3 + (A*c^3*x^8)/8 + (B*c^3*x^9)/9 + (3*A*a^2*c*
x^4)/4 + (A*a*c^2*x^6)/2 + (3*B*a^2*c*x^5)/5 + (3*B*a*c^2*x^7)/7
```

sympy [**A**] time = 0.08, size = 92, normalized size = 0.99

$$\frac{Aa^3x^2}{2} + \frac{3Aa^2cx^4}{4} + \frac{Aac^2x^6}{2} + \frac{Ac^3x^8}{8} + \frac{Ba^3x^3}{3} + \frac{3Ba^2cx^5}{5} + \frac{3Bac^2x^7}{7} + \frac{Bc^3x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x**2/2 + 3*A*a**2*c*x**4/4 + A*a*c**2*x**6/2 + A*c**3*x**8/8 + B*a**
3*x**3/3 + 3*B*a**2*c*x**5/5 + 3*B*a*c**2*x**7/7 + B*c**3*x**9/9
```

3.268 $\int (A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=56

$$a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

```
[Out] a^3*A*x+a^2*A*c*x^3+3/5*a*A*c^2*x^5+1/7*A*c^3*x^7+1/8*B*(c*x^2+a)^4/c
```

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Acx^3+a^3Ax+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + a^2*A*c*x^3 + (3*a*A*c^2*x^5)/5 + (A*c^3*x^7)/7 + (B*(a + c*x^2)^
4)/(8*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^3\,dx &= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a+cx^2\right)^3\,dx\\ &= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a^3+3a^2cx^2+3ac^2x^4+c^3x^6\right)\,dx\\ &= a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{1}{7}Ac^3x^7+\frac{B\left(a+cx^2\right)^4}{8c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 85, normalized size = 1.52

$$a^3Ax+\frac{1}{2}a^3Bx^2+a^2Acx^3+\frac{3}{4}a^2Bcx^4+\frac{3}{5}aAc^2x^5+\frac{1}{2}aBc^2x^6+\frac{1}{7}Ac^3x^7+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^3*B*x^2)/2 + a^2*A*c*x^3 + (3*a^2*B*c*x^4)/4 + (3*a*A*c^2*x^5)
/5 + (a*B*c^2*x^6)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8
```

fricas [**A**] time = 0.74, size = 73, normalized size = 1.30

$$\frac{1}{8}x^8c^3B+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6c^2aB+\frac{3}{5}x^5c^2aA+\frac{3}{4}x^4ca^2B+x^3ca^2A+\frac{1}{2}x^2a^3B+xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 1/7*x^7*c^3*A + 1/2*x^6*c^2*a*B + 3/5*x^5*c^2*a*A + 3/4*x^4
*c*a^2*B + x^3*c*a^2*A + 1/2*x^2*a^3*B + x*a^3*A
```

giac [**A**] time = 0.15, size = 73, normalized size = 1.30

$$\frac{1}{8}\,Bc^3x^8+\frac{1}{7}\,Ac^3x^7+\frac{1}{2}\,Bac^2x^6+\frac{3}{5}\,Aac^2x^5+\frac{3}{4}\,Ba^2cx^4+Aa^2cx^3+\frac{1}{2}\,Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

maple [**A**] time = 0.04, size = 74, normalized size = 1.32

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bac^2x^6+\frac{3}{5}Aac^2x^5+\frac{3}{4}Ba^2cx^4+Aa^2cx^3+\frac{1}{2}Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*A*c^3*x^7+1/2*a*B*c^2*x^6+3/5*a*A*c^2*x^5+3/4*a^2*B*c*x^4
+a^2*A*c*x^3+1/2*B*a^3*x^2+A*a^3*x
```

maxima [**A**] time = 0.51, size = 73, normalized size = 1.30

$$\frac{1}{8}\,Bc^3x^8+\frac{1}{7}\,Ac^3x^7+\frac{1}{2}\,Bac^2x^6+\frac{3}{5}\,Aac^2x^5+\frac{3}{4}\,Ba^2cx^4+Aa^2cx^3+\frac{1}{2}\,Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

mupad [**B**] time = 0.03, size = 73, normalized size = 1.30

$$\frac{B\,a^3\,x^2}{2}+A\,a^3\,x+\frac{3\,B\,a^2\,c\,x^4}{4}+A\,a^2\,c\,x^3+\frac{B\,a\,c^2\,x^6}{2}+\frac{3\,A\,a\,c^2\,x^5}{5}+\frac{B\,c^3\,x^8}{8}+\frac{A\,c^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (B*a^3*x^2)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8 + A*a^3*x + A*a^2*c*x^3 + (3*
A*a*c^2*x^5)/5 + (3*B*a^2*c*x^4)/4 + (B*a*c^2*x^6)/2
```

sympy [**A**] time = 0.08, size = 85, normalized size = 1.52

$$Aa^3x+Aa^2cx^3+\frac{3Aac^2x^5}{5}+\frac{Ac^3x^7}{7}+\frac{Ba^3x^2}{2}+\frac{3Ba^2cx^4}{4}+\frac{Bac^2x^6}{2}+\frac{Bc^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*x**2/
2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8
```

3.269 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x}\,dx$

Optimal. Leaf size=81

$$a^3A\log(x)+a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

```
[Out] a^3*B*x+3/2*a^2*A*c*x^2+a^2*B*c*x^3+3/4*a*A*c^2*x^4+3/5*a*B*c^2*x^5+1/6*A*c
^3*x^6+1/7*B*c^3*x^7+a^3*A*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{2}a^2Acx^2+a^3A\log(x)+a^2Bcx^3+a^3Bx+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x,x]
```

```
[Out] a^3*B*x + (3*a^2*A*c*x^2)/2 + a^2*B*c*x^3 + (3*a*A*c^2*x^4)/4 + (3*a*B*c^2*
x^5)/5 + (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x}\,dx&=\int \left(a^3B+\frac{a^3A}{x}+3a^2Acx+3a^2Bcx^2+3aAc^2x^3+3aBc^2x^4+Ac^3x^5+Bc^3x^6\right)dx\\&=a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7+a^3A\,\mathrm{lo}\end{aligned}$$

Mathematica [A] time = 0.01, size = 81, normalized size = 1.00

$$a^3A\log(x)+a^3Bx+\frac{3}{2}a^2Acx^2+a^2Bcx^3+\frac{3}{4}aAc^2x^4+\frac{3}{5}aBc^2x^5+\frac{1}{6}Ac^3x^6+\frac{1}{7}Bc^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x,x]
```

```
[Out] a^3*B*x + (3*a^2*A*c*x^2)/2 + a^2*B*c*x^3 + (3*a*A*c^2*x^4)/4 + (3*a*B*c^2*
x^5)/5 + (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

fricas [A] time = 0.97, size = 71, normalized size = 0.88

$$\frac{1}{7}\,Bc^3x^7+\frac{1}{6}\,Ac^3x^6+\frac{3}{5}\,Bac^2x^5+\frac{3}{4}\,Aac^2x^4+Ba^2cx^3+\frac{3}{2}\,Aa^2cx^2+Ba^3x+Aa^3\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(x)
```

giac [A] time = 0.15, size = 72, normalized size = 0.89

$$\frac{1}{7}Bc^3x^7 + \frac{1}{6}Ac^3x^6 + \frac{3}{5}Bac^2x^5 + \frac{3}{4}Aac^2x^4 + Ba^2cx^3 + \frac{3}{2}Aa^2cx^2 + Ba^3x + Aa^3\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(abs(x))
```

maple [A] time = 0.05, size = 72, normalized size = 0.89

$$\frac{B c^3x^7}{7} + \frac{A c^3x^6}{6} + \frac{3Ba c^2x^5}{5} + \frac{3Aa c^2x^4}{4} + B a^2c x^3 + \frac{3A a^2c x^2}{2} + A a^3\ln(x) + B a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x,x)
```

```
[Out] B*a^3*x+3/2*a^2*A*c*x^2+a^2*B*c*x^3+3/4*a*A*c^2*x^4+3/5*a*B*c^2*x^5+1/6*A*c
^3*x^6+1/7*B*c^3*x^7+A*a^3*ln(x)
```

maxima [A] time = 0.52, size = 71, normalized size = 0.88

$$\frac{1}{7}Bc^3x^7 + \frac{1}{6}Ac^3x^6 + \frac{3}{5}Bac^2x^5 + \frac{3}{4}Aac^2x^4 + Ba^2cx^3 + \frac{3}{2}Aa^2cx^2 + Ba^3x + Aa^3\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*A*c^3*x^6 + 3/5*B*a*c^2*x^5 + 3/4*A*a*c^2*x^4 + B*a^2*c
*x^3 + 3/2*A*a^2*c*x^2 + B*a^3*x + A*a^3*log(x)
```

mupad [B] time = 0.04, size = 71, normalized size = 0.88

$$\frac{A\,c^3\,x^6}{6} + \frac{B\,c^3\,x^7}{7} + A\,a^3\,\ln(x) + B\,a^3\,x + \frac{3\,A\,a^2\,c\,x^2}{2} + \frac{3\,A\,a\,c^2\,x^4}{4} + B\,a^2\,c\,x^3 + \frac{3\,B\,a\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x,x)
```

```
[Out] (A*c^3*x^6)/6 + (B*c^3*x^7)/7 + A*a^3*log(x) + B*a^3*x + (3*A*a^2*c*x^2)/2
+ (3*A*a*c^2*x^4)/4 + B*a^2*c*x^3 + (3*B*a*c^2*x^5)/5
```

sympy [A] time = 0.18, size = 85, normalized size = 1.05

$$Aa^3\log(x) + \frac{3Aa^2cx^2}{2} + \frac{3Aac^2x^4}{4} + \frac{Ac^3x^6}{6} + Ba^3x + Ba^2cx^3 + \frac{3Bac^2x^5}{5} + \frac{Bc^3x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x,x)
```

```
[Out] A*a**3*log(x) + 3*A*a**2*c*x**2/2 + 3*A*a*c**2*x**4/4 + A*c**3*x**6/6 + B*a
**3*x + B*a**2*c*x**3 + 3*B*a*c**2*x**5/5 + B*c**3*x**7/7
```

3.270 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=80

$$-\frac{a^3A}{x}+a^3B\log(x)+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

```
[Out] -a^3*A/x+3*a^2*A*c*x+3/2*a^2*B*c*x^2+a*A*c^2*x^3+3/4*a*B*c^2*x^4+1/5*A*c^3*
x^5+1/6*B*c^3*x^6+a^3*B*ln(x)
```

Rubi **[A]** time = 0.04, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$3a^2Acx-\frac{a^3A}{x}+\frac{3}{2}a^2Bcx^2+a^3B\log(x)+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a^2*A*c*x + (3*a^2*B*c*x^2)/2 + a*A*c^2*x^3 + (3*a*B*c^2*x
^4)/4 + (A*c^3*x^5)/5 + (B*c^3*x^6)/6 + a^3*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^2}\,dx&=\int \left(3a^2Ac+\frac{a^3A}{x^2}+\frac{a^3B}{x}+3a^2Bcx+3aAc^2x^2+3aBc^2x^3+Ac^3x^4+Bc^3x^5\right)dx\\&=-\frac{a^3A}{x}+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6+a^3B\log\end{aligned}$$

Mathematica **[A]** time = 0.01, size = 80, normalized size = 1.00

$$-\frac{a^3A}{x}+a^3B\log(x)+3a^2Acx+\frac{3}{2}a^2Bcx^2+aAc^2x^3+\frac{3}{4}aBc^2x^4+\frac{1}{5}Ac^3x^5+\frac{1}{6}Bc^3x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a^2*A*c*x + (3*a^2*B*c*x^2)/2 + a*A*c^2*x^3 + (3*a*B*c^2*x
^4)/4 + (A*c^3*x^5)/5 + (B*c^3*x^6)/6 + a^3*B*Log[x]
```

fricas **[A]** time = 0.83, size = 79, normalized size = 0.99

$$\frac{10\,Bc^3x^7+12\,Ac^3x^6+45\,Bac^2x^5+60\,Aac^2x^4+90\,Ba^2cx^3+180\,Aa^2cx^2+60\,Ba^3x\log(x)-60\,Aa^3}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*x^7 + 12*A*c^3*x^6 + 45*B*a*c^2*x^5 + 60*A*a*c^2*x^4 + 90*B*
a^2*c*x^3 + 180*A*a^2*c*x^2 + 60*B*a^3*x*log(x) - 60*A*a^3)/x
```

giac [A] time = 0.18, size = 73, normalized size = 0.91

$$\frac{1}{6}\,Bc^3x^6+\frac{1}{5}\,Ac^3x^5+\frac{3}{4}\,Bac^2x^4+Aac^2x^3+\frac{3}{2}\,Ba^2cx^2+3\,Aa^2cx+Ba^3\log\left(|x|\right)-\frac{Aa^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*A*c^3*x^5 + 3/4*B*a*c^2*x^4 + A*a*c^2*x^3 + 3/2*B*a^2*c
*x^2 + 3*A*a^2*c*x + B*a^3*log(abs(x)) - A*a^3/x
```

maple [A] time = 0.05, size = 73, normalized size = 0.91

$$\frac{B\,c^3x^6}{6}+\frac{A\,c^3x^5}{5}+\frac{3Ba\,c^2x^4}{4}+Aa\,c^2x^3+\frac{3B\,a^2c\,x^2}{2}+3A\,a^2cx+B\,a^3\ln(x)-\frac{A\,a^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^2,x)
```

```
[Out] -A*a^3/x+3*a^2*A*c*x+3/2*a^2*B*c*x^2+a*A*c^2*x^3+3/4*a*B*c^2*x^4+1/5*A*c^3*
x^5+1/6*B*c^3*x^6+B*a^3*ln(x)
```

maxima [A] time = 0.55, size = 72, normalized size = 0.90

$$\frac{1}{6}\,Bc^3x^6+\frac{1}{5}\,Ac^3x^5+\frac{3}{4}\,Bac^2x^4+Aac^2x^3+\frac{3}{2}\,Ba^2cx^2+3\,Aa^2cx+Ba^3\log(x)-\frac{Aa^3}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*A*c^3*x^5 + 3/4*B*a*c^2*x^4 + A*a*c^2*x^3 + 3/2*B*a^2*c
*x^2 + 3*A*a^2*c*x + B*a^3*log(x) - A*a^3/x
```

mupad [B] time = 0.04, size = 72, normalized size = 0.90

$$\frac{A\,c^3\,x^5}{5}-\frac{A\,a^3}{x}+\frac{B\,c^3\,x^6}{6}+B\,a^3\,\ln(x)+3\,A\,a^2\,c\,x+A\,a\,c^2\,x^3+\frac{3\,B\,a^2\,c\,x^2}{2}+\frac{3\,B\,a\,c^2\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^2,x)
```

```
[Out] (A*c^3*x^5)/5 - (A*a^3)/x + (B*c^3*x^6)/6 + B*a^3*log(x) + 3*A*a^2*c*x + A*
a*c^2*x^3 + (3*B*a^2*c*x^2)/2 + (3*B*a*c^2*x^4)/4
```

sympy [A] time = 0.20, size = 82, normalized size = 1.02

$$-\frac{Aa^3}{x}+3Aa^2cx+Aac^2x^3+\frac{Ac^3x^5}{5}+Ba^3\log\left(x\right)+\frac{3Ba^2cx^2}{2}+\frac{3Bac^2x^4}{4}+\frac{Bc^3x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**2,x)
```

```
[Out] -A*a**3/x + 3*A*a**2*c*x + A*a*c**2*x**3 + A*c**3*x**5/5 + B*a**3*log(x) +
3*B*a**2*c*x**2/2 + 3*B*a*c**2*x**4/4 + B*c**3*x**6/6
```

3.271 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=81

$$-\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Ac\log(x)+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

```
[Out] -1/2*a^3*A/x^2-a^3*B/x+3*a^2*B*c*x+3/2*a*A*c^2*x^2+a*B*c^2*x^3+1/4*A*c^3*x^
4+1/5*B*c^3*x^5+3*a^2*A*c*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$3a^2Ac\log(x)-\frac{a^3A}{2x^2}+3a^2Bcx-\frac{a^3B}{x}+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^3,x]
```

```
[Out] -(a^3*A)/(2*x^2) - (a^3*B)/x + 3*a^2*B*c*x + (3*a*A*c^2*x^2)/2 + a*B*c^2*x^
3 + (A*c^3*x^4)/4 + (B*c^3*x^5)/5 + 3*a^2*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^3}\,dx &= \int \left(3a^2Bc+\frac{a^3A}{x^3}+\frac{a^3B}{x^2}+\frac{3a^2Ac}{x}+3aAc^2x+3aBc^2x^2+Ac^3x^3+Bc^3x^4\right)dx\\ &= -\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5+3a^2Ac\log(x\end{aligned}$$

Mathematica [A] time = 0.01, size = 81, normalized size = 1.00

$$-\frac{a^3A}{2x^2}-\frac{a^3B}{x}+3a^2Ac\log(x)+3a^2Bcx+\frac{3}{2}aAc^2x^2+aBc^2x^3+\frac{1}{4}Ac^3x^4+\frac{1}{5}Bc^3x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^3,x]
```

```
[Out] -1/2*(a^3*A)/x^2 - (a^3*B)/x + 3*a^2*B*c*x + (3*a*A*c^2*x^2)/2 + a*B*c^2*x^
3 + (A*c^3*x^4)/4 + (B*c^3*x^5)/5 + 3*a^2*A*c*Log[x]
```

fricas [A] time = 1.00, size = 79, normalized size = 0.98

$$\frac{4\,Bc^3x^7+5\,Ac^3x^6+20\,Bac^2x^5+30\,Aac^2x^4+60\,Ba^2cx^3+60\,Aa^2cx^2\log(x)-20\,Ba^3x-10\,Aa^3}{20\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*x^7 + 5*A*c^3*x^6 + 20*B*a*c^2*x^5 + 30*A*a*c^2*x^4 + 60*B*a^
2*c*x^3 + 60*A*a^2*c*x^2*log(x) - 20*B*a^3*x - 10*A*a^3)/x^2
```

giac [A] time = 0.16, size = 74, normalized size = 0.91

$$\frac{1}{5}Bc^3x^5+\frac{1}{4}Ac^3x^4+Bac^2x^3+\frac{3}{2}Aac^2x^2+3Ba^2cx+3Aa^2c\log\left(|x|\right)-\frac{2Ba^3x+Aa^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*A*c^3*x^4 + B*a*c^2*x^3 + 3/2*A*a*c^2*x^2 + 3*B*a^2*c*x
 + 3*A*a^2*c*log(abs(x)) - 1/2*(2*B*a^3*x + A*a^3)/x^2
```

maple [A] time = 0.05, size = 74, normalized size = 0.91

$$\frac{Bc^3x^5}{5}+\frac{Ac^3x^4}{4}+Bac^2x^3+\frac{3Aac^2x^2}{2}+3Aa^2c\ln(x)+3Ba^2cx-\frac{Ba^3}{x}-\frac{Aa^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^3,x)
```

```
[Out] -1/2*A*a^3/x^2-B*a^3/x+3*a^2*B*c*x+3/2*a*A*c^2*x^2+a*B*c^2*x^3+1/4*A*c^3*x^
4+1/5*B*c^3*x^5+3*a^2*A*c*ln(x)
```

maxima [A] time = 0.62, size = 73, normalized size = 0.90

$$\frac{1}{5}Bc^3x^5+\frac{1}{4}Ac^3x^4+Bac^2x^3+\frac{3}{2}Aac^2x^2+3Ba^2cx+3Aa^2c\log(x)-\frac{2Ba^3x+Aa^3}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*A*c^3*x^4 + B*a*c^2*x^3 + 3/2*A*a*c^2*x^2 + 3*B*a^2*c*x
 + 3*A*a^2*c*log(x) - 1/2*(2*B*a^3*x + A*a^3)/x^2
```

mupad [B] time = 0.03, size = 73, normalized size = 0.90

$$\frac{Ac^3x^4}{4}-\frac{\frac{Aa^3}{2}+Ba^3x}{x^2}+\frac{Bc^3x^5}{5}+3Ba^2cx+\frac{3Aac^2x^2}{2}+Bac^2x^3+3Aa^2c\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^3,x)
```

```
[Out] (A*c^3*x^4)/4 - ((A*a^3)/2 + B*a^3*x)/x^2 + (B*c^3*x^5)/5 + 3*B*a^2*c*x + (
3*A*a*c^2*x^2)/2 + B*a*c^2*x^3 + 3*A*a^2*c*log(x)
```

sympy [A] time = 0.29, size = 85, normalized size = 1.05

$$3Aa^2c\log(x)+\frac{3Aac^2x^2}{2}+\frac{Ac^3x^4}{4}+3Ba^2cx+Bac^2x^3+\frac{Bc^3x^5}{5}+\frac{-Aa^3-2Ba^3x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**3,x)
```

```
[Out] 3*A*a**2*c*log(x) + 3*A*a*c**2*x**2/2 + A*c**3*x**4/4 + 3*B*a**2*c*x + B*a*
c**2*x**3 + B*c**3*x**5/5 + (-A*a**3 - 2*B*a**3*x)/(2*x**2)
```

3.272 $\int x^3(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=121

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

```
[Out] 1/4*a^4*A*x^4+1/5*a^4*B*x^5+2/3*a^3*A*c*x^6+4/7*a^3*B*c*x^7+3/4*a^2*A*c^2*x
^8+2/3*a^2*B*c^2*x^9+2/5*a*A*c^3*x^10+4/11*a*B*c^3*x^11+1/12*A*c^4*x^12+1/1
3*B*c^4*x^13
```

Rubi [A] time = 0.14, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {766}

$$\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^3Acx^6+\frac{1}{4}a^4Ax^4+\frac{2}{3}a^2Bc^2x^9+\frac{4}{7}a^3Bcx^7+\frac{1}{5}a^4Bx^5+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^4*B*x^5)/5 + (2*a^3*A*c*x^6)/3 + (4*a^3*B*c*x^7)/7 + (3*
a^2*A*c^2*x^8)/4 + (2*a^2*B*c^2*x^9)/3 + (2*a*A*c^3*x^10)/5 + (4*a*B*c^3*x^
11)/11 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+cx^2\right)^4\,dx &= \int\left(a^4Ax^3+a^4Bx^4+4a^3Acx^5+4a^3Bcx^6+6a^2Ac^2x^7+6a^2Bc^2x^8+4aAc^3x^9\right.\\ &= \frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x\end{aligned}$$

Mathematica [A] time = 0.00, size = 121, normalized size = 1.00

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^4Bx^5+\frac{2}{3}a^3Acx^6+\frac{4}{7}a^3Bcx^7+\frac{3}{4}a^2Ac^2x^8+\frac{2}{3}a^2Bc^2x^9+\frac{2}{5}aAc^3x^{10}+\frac{4}{11}aBc^3x^{11}+\frac{1}{12}Ac^4x^{12}+\frac{1}{13}Bc^4x^{13}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^4*B*x^5)/5 + (2*a^3*A*c*x^6)/3 + (4*a^3*B*c*x^7)/7 + (3*
a^2*A*c^2*x^8)/4 + (2*a^2*B*c^2*x^9)/3 + (2*a*A*c^3*x^10)/5 + (4*a*B*c^3*x^
11)/11 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13
```

fricas [A] time = 0.75, size = 101, normalized size = 0.83

$$\frac{1}{13}x^{13}c^4B+\frac{1}{12}x^{12}c^4A+\frac{4}{11}x^{11}c^3aB+\frac{2}{5}x^{10}c^3aA+\frac{2}{3}x^9c^2a^2B+\frac{3}{4}x^8c^2a^2A+\frac{4}{7}x^7ca^3B+\frac{2}{3}x^6ca^3A+\frac{1}{5}x^5a^4B+\frac{1}{4}x^4a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*c^4*B + 1/12*x^12*c^4*A + 4/11*x^11*c^3*a*B + 2/5*x^10*c^3*a*A +
2/3*x^9*c^2*a^2*B + 3/4*x^8*c^2*a^2*A + 4/7*x^7*c*a^3*B + 2/3*x^6*c*a^3*A +
 1/5*x^5*a^4*B + 1/4*x^4*a^4*A
```

giac [A] time = 0.18, size = 101, normalized size = 0.83

$$\frac{1}{13}\,Bc^{4}x^{13}+\frac{1}{12}\,Ac^{4}x^{12}+\frac{4}{11}\,Bac^{3}x^{11}+\frac{2}{5}\,Aac^{3}x^{10}+\frac{2}{3}\,Ba^{2}c^{2}x^{9}+\frac{3}{4}\,Aa^{2}c^{2}x^{8}+\frac{4}{7}\,Ba^{3}cx^{7}+\frac{2}{3}\,Aa^{3}cx^{6}+\frac{1}{5}\,Ba^{4}x^{5}+\frac{1}{4}\,Aa^{4}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/13*B*c^4*x^13 + 1/12*A*c^4*x^12 + 4/11*B*a*c^3*x^11 + 2/5*A*a*c^3*x^10 +
2/3*B*a^2*c^2*x^9 + 3/4*A*a^2*c^2*x^8 + 4/7*B*a^3*c*x^7 + 2/3*A*a^3*c*x^6 +
 1/5*B*a^4*x^5 + 1/4*A*a^4*x^4
```

maple [A] time = 0.04, size = 102, normalized size = 0.84

$$\frac{1}{13}B\,c^{4}x^{13}+\frac{1}{12}A\,c^{4}x^{12}+\frac{4}{11}Ba\,c^{3}x^{11}+\frac{2}{5}Aa\,c^{3}x^{10}+\frac{2}{3}B\,a^{2}c^{2}x^{9}+\frac{3}{4}A\,a^{2}c^{2}x^{8}+\frac{4}{7}B\,a^{3}c\,x^{7}+\frac{2}{3}A\,a^{3}c\,x^{6}+\frac{1}{5}B\,a^{4}x^{5}+\frac{1}{4}A\,a^{4}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/4*a^4*A*x^4+1/5*a^4*B*x^5+2/3*a^3*A*c*x^6+4/7*a^3*B*c*x^7+3/4*a^2*A*c^2*x
^8+2/3*a^2*B*c^2*x^9+2/5*a*A*c^3*x^10+4/11*a*B*c^3*x^11+1/12*A*c^4*x^12+1/1
3*B*c^4*x^13
```

maxima [A] time = 0.49, size = 101, normalized size = 0.83

$$\frac{1}{13}\,Bc^{4}x^{13}+\frac{1}{12}\,Ac^{4}x^{12}+\frac{4}{11}\,Bac^{3}x^{11}+\frac{2}{5}\,Aac^{3}x^{10}+\frac{2}{3}\,Ba^{2}c^{2}x^{9}+\frac{3}{4}\,Aa^{2}c^{2}x^{8}+\frac{4}{7}\,Ba^{3}cx^{7}+\frac{2}{3}\,Aa^{3}cx^{6}+\frac{1}{5}\,Ba^{4}x^{5}+\frac{1}{4}\,Aa^{4}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^4*x^13 + 1/12*A*c^4*x^12 + 4/11*B*a*c^3*x^11 + 2/5*A*a*c^3*x^10 +
2/3*B*a^2*c^2*x^9 + 3/4*A*a^2*c^2*x^8 + 4/7*B*a^3*c*x^7 + 2/3*A*a^3*c*x^6 +
 1/5*B*a^4*x^5 + 1/4*A*a^4*x^4
```

mupad [B] time = 0.05, size = 101, normalized size = 0.83

$$\frac{B\,a^4\,x^5}{5}+\frac{A\,a^4\,x^4}{4}+\frac{4\,B\,a^3\,c\,x^7}{7}+\frac{2\,A\,a^3\,c\,x^6}{3}+\frac{2\,B\,a^2\,c^2\,x^9}{3}+\frac{3\,A\,a^2\,c^2\,x^8}{4}+\frac{4\,B\,a\,c^3\,x^{11}}{11}+\frac{2\,A\,a\,c^3\,x^{10}}{5}+\frac{B\,c^4\,x^{13}}{13}+\frac{A\,c^4\,x^{1}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^4)/4 + (B*a^4*x^5)/5 + (A*c^4*x^12)/12 + (B*c^4*x^13)/13 + (2*A*a^
3*c*x^6)/3 + (2*A*a*c^3*x^10)/5 + (4*B*a^3*c*x^7)/7 + (4*B*a*c^3*x^11)/11 +
 (3*A*a^2*c^2*x^8)/4 + (2*B*a^2*c^2*x^9)/3
```

sympy [A] time = 0.09, size = 124, normalized size = 1.02

$$\frac{Aa^{4}x^{4}}{4}+\frac{2Aa^{3}cx^{6}}{3}+\frac{3Aa^{2}c^{2}x^{8}}{4}+\frac{2Aac^{3}x^{10}}{5}+\frac{Ac^{4}x^{12}}{12}+\frac{Ba^{4}x^{5}}{5}+\frac{4Ba^{3}cx^{7}}{7}+\frac{2Ba^{2}c^{2}x^{9}}{3}+\frac{4Bac^{3}x^{11}}{11}+\frac{Bc^{4}x^{13}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**4/4 + 2*A*a**3*c*x**6/3 + 3*A*a**2*c**2*x**8/4 + 2*A*a*c**3*x**10
/5 + A*c**4*x**12/12 + B*a**4*x**5/5 + 4*B*a**3*c*x**7/7 + 2*B*a**2*c**2*x*
*9/3 + 4*B*a*c**3*x**11/11 + B*c**4*x**13/13
```

3.273 $\int x^2(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=121

$$\frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

```
[Out] 1/3*a^4*A*x^3+1/4*a^4*B*x^4+4/5*a^3*A*c*x^5+2/3*a^3*B*c*x^6+6/7*a^2*A*c^2*x
^7+3/4*a^2*B*c^2*x^8+4/9*a*A*c^3*x^9+2/5*a*B*c^3*x^10+1/11*A*c^4*x^11+1/12*
B*c^4*x^12
```

Rubi [A] time = 0.12, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{6}{7}a^2Ac^2x^7+\frac{4}{5}a^3Acx^5+\frac{1}{3}a^4Ax^3+\frac{3}{4}a^2Bc^2x^8+\frac{2}{3}a^3Bcx^6+\frac{1}{4}a^4Bx^4+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^3)/3 + (a^4*B*x^4)/4 + (4*a^3*A*c*x^5)/5 + (2*a^3*B*c*x^6)/3 + (6*
a^2*A*c^2*x^7)/7 + (3*a^2*B*c^2*x^8)/4 + (4*a*A*c^3*x^9)/9 + (2*a*B*c^3*x^1
0)/5 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^4\,dx&=\int \left(a^4Ax^2+a^4Bx^3+4a^3Acx^4+4a^3Bcx^5+6a^2Ac^2x^6+6a^2Bc^2x^7+4aAc^3x^8\right.\\&=\frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x\end{aligned}$$

Mathematica [A] time = 0.00, size = 121, normalized size = 1.00

$$\frac{1}{3}a^4Ax^3+\frac{1}{4}a^4Bx^4+\frac{4}{5}a^3Acx^5+\frac{2}{3}a^3Bcx^6+\frac{6}{7}a^2Ac^2x^7+\frac{3}{4}a^2Bc^2x^8+\frac{4}{9}aAc^3x^9+\frac{2}{5}aBc^3x^{10}+\frac{1}{11}Ac^4x^{11}+\frac{1}{12}Bc^4x^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^3)/3 + (a^4*B*x^4)/4 + (4*a^3*A*c*x^5)/5 + (2*a^3*B*c*x^6)/3 + (6*
a^2*A*c^2*x^7)/7 + (3*a^2*B*c^2*x^8)/4 + (4*a*A*c^3*x^9)/9 + (2*a*B*c^3*x^1
0)/5 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12
```

fricas [A] time = 1.04, size = 101, normalized size = 0.83

$$\frac{1}{12}x^{12}c^4B+\frac{1}{11}x^{11}c^4A+\frac{2}{5}x^{10}c^3aB+\frac{4}{9}x^9c^3aA+\frac{3}{4}x^8c^2a^2B+\frac{6}{7}x^7c^2a^2A+\frac{2}{3}x^6ca^3B+\frac{4}{5}x^5ca^3A+\frac{1}{4}x^4a^4B+\frac{1}{3}x^3a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*c^4*B + 1/11*x^11*c^4*A + 2/5*x^10*c^3*a*B + 4/9*x^9*c^3*a*A + 3/
4*x^8*c^2*a^2*B + 6/7*x^7*c^2*a^2*A + 2/3*x^6*c*a^3*B + 4/5*x^5*c*a^3*A + 1
/4*x^4*a^4*B + 1/3*x^3*a^4*A
```

giac [A] time = 0.15, size = 101, normalized size = 0.83

$$\frac{1}{12}\,Bc^4x^{12}+\frac{1}{11}\,Ac^4x^{11}+\frac{2}{5}\,Bac^3x^{10}+\frac{4}{9}\,Aac^3x^9+\frac{3}{4}\,Ba^2c^2x^8+\frac{6}{7}\,Aa^2c^2x^7+\frac{2}{3}\,Ba^3cx^6+\frac{4}{5}\,Aa^3cx^5+\frac{1}{4}\,Ba^4x^4+\frac{1}{3}\,Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/12*B*c^4*x^12 + 1/11*A*c^4*x^11 + 2/5*B*a*c^3*x^10 + 4/9*A*a*c^3*x^9 + 3/
4*B*a^2*c^2*x^8 + 6/7*A*a^2*c^2*x^7 + 2/3*B*a^3*c*x^6 + 4/5*A*a^3*c*x^5 + 1
/4*B*a^4*x^4 + 1/3*A*a^4*x^3
```

maple [A] time = 0.05, size = 102, normalized size = 0.84

$$\frac{1}{12}B\,c^4x^{12}+\frac{1}{11}A\,c^4x^{11}+\frac{2}{5}Ba\,c^3x^{10}+\frac{4}{9}Aa\,c^3x^9+\frac{3}{4}B\,a^2c^2x^8+\frac{6}{7}A\,a^2c^2x^7+\frac{2}{3}B\,a^3c\,x^6+\frac{4}{5}A\,a^3c\,x^5+\frac{1}{4}B\,a^4x^4+\frac{1}{3}A\,a^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/3*a^4*A*x^3+1/4*a^4*B*x^4+4/5*a^3*A*c*x^5+2/3*a^3*B*c*x^6+6/7*a^2*A*c^2*x
^7+3/4*a^2*B*c^2*x^8+4/9*a*A*c^3*x^9+2/5*a*B*c^3*x^10+1/11*A*c^4*x^11+1/12*
B*c^4*x^12
```

maxima [A] time = 0.48, size = 101, normalized size = 0.83

$$\frac{1}{12}\,Bc^4x^{12}+\frac{1}{11}\,Ac^4x^{11}+\frac{2}{5}\,Bac^3x^{10}+\frac{4}{9}\,Aac^3x^9+\frac{3}{4}\,Ba^2c^2x^8+\frac{6}{7}\,Aa^2c^2x^7+\frac{2}{3}\,Ba^3cx^6+\frac{4}{5}\,Aa^3cx^5+\frac{1}{4}\,Ba^4x^4+\frac{1}{3}\,Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^4*x^12 + 1/11*A*c^4*x^11 + 2/5*B*a*c^3*x^10 + 4/9*A*a*c^3*x^9 + 3/
4*B*a^2*c^2*x^8 + 6/7*A*a^2*c^2*x^7 + 2/3*B*a^3*c*x^6 + 4/5*A*a^3*c*x^5 + 1
/4*B*a^4*x^4 + 1/3*A*a^4*x^3
```

mupad [B] time = 0.05, size = 101, normalized size = 0.83

$$\frac{B\,a^4\,x^4}{4}+\frac{A\,a^4\,x^3}{3}+\frac{2\,B\,a^3\,c\,x^6}{3}+\frac{4\,A\,a^3\,c\,x^5}{5}+\frac{3\,B\,a^2\,c^2\,x^8}{4}+\frac{6\,A\,a^2\,c^2\,x^7}{7}+\frac{2\,B\,a\,c^3\,x^{10}}{5}+\frac{4\,A\,a\,c^3\,x^9}{9}+\frac{B\,c^4\,x^{12}}{12}+\frac{A\,c^4\,x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^3)/3 + (B*a^4*x^4)/4 + (A*c^4*x^11)/11 + (B*c^4*x^12)/12 + (4*A*a^
3*c*x^5)/5 + (4*A*a*c^3*x^9)/9 + (2*B*a^3*c*x^6)/3 + (2*B*a*c^3*x^10)/5 + (
6*A*a^2*c^2*x^7)/7 + (3*B*a^2*c^2*x^8)/4
```

sympy [A] time = 0.09, size = 124, normalized size = 1.02

$$\frac{Aa^4x^3}{3}+\frac{4Aa^3cx^5}{5}+\frac{6Aa^2c^2x^7}{7}+\frac{4Aac^3x^9}{9}+\frac{Ac^4x^{11}}{11}+\frac{Ba^4x^4}{4}+\frac{2Ba^3cx^6}{3}+\frac{3Ba^2c^2x^8}{4}+\frac{2Bac^3x^{10}}{5}+\frac{Bc^4x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**3/3 + 4*A*a**3*c*x**5/5 + 6*A*a**2*c**2*x**7/7 + 4*A*a*c**3*x**9/
9 + A*c**4*x**11/11 + B*a**4*x**4/4 + 2*B*a**3*c*x**6/3 + 3*B*a**2*c**2*x**
8/4 + 2*B*a*c**3*x**10/5 + B*c**4*x**12/12
```

3.274 $\int x(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=115

$$\frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

```
[Out] 1/2*a^4*A*x^2+1/3*a^4*B*x^3+a^3*A*c*x^4+4/5*a^3*B*c*x^5+a^2*A*c^2*x^6+6/7*a
^2*B*c^2*x^7+1/2*a*A*c^3*x^8+4/9*a*B*c^3*x^9+1/10*A*c^4*x^10+1/11*B*c^4*x^1
1
```

Rubi [A] time = 0.12, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {766}

$$a^2Ac^2x^6+a^3Acx^4+\frac{1}{2}a^4Ax^2+\frac{6}{7}a^2Bc^2x^7+\frac{4}{5}a^3Bcx^5+\frac{1}{3}a^4Bx^3+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^2)/2 + (a^4*B*x^3)/3 + a^3*A*c*x^4 + (4*a^3*B*c*x^5)/5 + a^2*A*c^2
*x^6 + (6*a^2*B*c^2*x^7)/7 + (a*A*c^3*x^8)/2 + (4*a*B*c^3*x^9)/9 + (A*c^4*x
^10)/10 + (B*c^4*x^11)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)^4\,dx &= \int \left(a^4Ax+a^4Bx^2+4a^3Acx^3+4a^3Bcx^4+6a^2Ac^2x^5+6a^2Bc^2x^6+4aAc^3x^7+\right.\\ &= \frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+\end{aligned}$$

Mathematica [A] time = 0.00, size = 115, normalized size = 1.00

$$\frac{1}{2}a^4Ax^2+\frac{1}{3}a^4Bx^3+a^3Acx^4+\frac{4}{5}a^3Bcx^5+a^2Ac^2x^6+\frac{6}{7}a^2Bc^2x^7+\frac{1}{2}aAc^3x^8+\frac{4}{9}aBc^3x^9+\frac{1}{10}Ac^4x^{10}+\frac{1}{11}Bc^4x^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*x^2)/2 + (a^4*B*x^3)/3 + a^3*A*c*x^4 + (4*a^3*B*c*x^5)/5 + a^2*A*c^2
*x^6 + (6*a^2*B*c^2*x^7)/7 + (a*A*c^3*x^8)/2 + (4*a*B*c^3*x^9)/9 + (A*c^4*x
^10)/10 + (B*c^4*x^11)/11
```

fricas [A] time = 0.84, size = 99, normalized size = 0.86

$$\frac{1}{11}x^{11}c^4B+\frac{1}{10}x^{10}c^4A+\frac{4}{9}x^9c^3aB+\frac{1}{2}x^8c^3aA+\frac{6}{7}x^7c^2a^2B+x^6c^2a^2A+\frac{4}{5}x^5ca^3B+x^4ca^3A+\frac{1}{3}x^3a^4B+\frac{1}{2}x^2a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*c^4*B + 1/10*x^10*c^4*A + 4/9*x^9*c^3*a*B + 1/2*x^8*c^3*a*A + 6/7
*x^7*c^2*a^2*B + x^6*c^2*a^2*A + 4/5*x^5*c*a^3*B + x^4*c*a^3*A + 1/3*x^3*a^
4*B + 1/2*x^2*a^4*A
```

giac [A] time = 0.19, size = 99, normalized size = 0.86

$$\frac{1}{11}\,Bc^4x^{11}+\frac{1}{10}\,Ac^4x^{10}+\frac{4}{9}\,Bac^3x^9+\frac{1}{2}\,Aac^3x^8+\frac{6}{7}\,Ba^2c^2x^7+Aa^2c^2x^6+\frac{4}{5}\,Ba^3cx^5+Aa^3cx^4+\frac{1}{3}\,Ba^4x^3+\frac{1}{2}\,Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/11*B*c^4*x^11 + 1/10*A*c^4*x^10 + 4/9*B*a*c^3*x^9 + 1/2*A*a*c^3*x^8 + 6/7
*B*a^2*c^2*x^7 + A*a^2*c^2*x^6 + 4/5*B*a^3*c*x^5 + A*a^3*c*x^4 + 1/3*B*a^4*
x^3 + 1/2*A*a^4*x^2
```

maple [A] time = 0.05, size = 100, normalized size = 0.87

$$\frac{1}{11}B\,c^4x^{11}+\frac{1}{10}A\,c^4x^{10}+\frac{4}{9}Ba\,c^3x^9+\frac{1}{2}Aa\,c^3x^8+\frac{6}{7}B\,a^2c^2x^7+A\,a^2c^2x^6+\frac{4}{5}B\,a^3c\,x^5+A\,a^3c\,x^4+\frac{1}{3}B\,a^4x^3+\frac{1}{2}A\,a^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/2*a^4*A*x^2+1/3*a^4*B*x^3+a^3*A*c*x^4+4/5*a^3*B*c*x^5+a^2*A*c^2*x^6+6/7*a
^2*B*c^2*x^7+1/2*a*A*c^3*x^8+4/9*a*B*c^3*x^9+1/10*A*c^4*x^10+1/11*B*c^4*x^1
1
```

maxima [A] time = 0.60, size = 99, normalized size = 0.86

$$\frac{1}{11}\,Bc^4x^{11}+\frac{1}{10}\,Ac^4x^{10}+\frac{4}{9}\,Bac^3x^9+\frac{1}{2}\,Aac^3x^8+\frac{6}{7}\,Ba^2c^2x^7+Aa^2c^2x^6+\frac{4}{5}\,Ba^3cx^5+Aa^3cx^4+\frac{1}{3}\,Ba^4x^3+\frac{1}{2}\,Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^4*x^11 + 1/10*A*c^4*x^10 + 4/9*B*a*c^3*x^9 + 1/2*A*a*c^3*x^8 + 6/7
*B*a^2*c^2*x^7 + A*a^2*c^2*x^6 + 4/5*B*a^3*c*x^5 + A*a^3*c*x^4 + 1/3*B*a^4*
x^3 + 1/2*A*a^4*x^2
```

mupad [B] time = 0.05, size = 99, normalized size = 0.86

$$\frac{B\,a^4\,x^3}{3}+\frac{A\,a^4\,x^2}{2}+\frac{4\,B\,a^3\,c\,x^5}{5}+A\,a^3\,c\,x^4+\frac{6\,B\,a^2\,c^2\,x^7}{7}+A\,a^2\,c^2\,x^6+\frac{4\,B\,a\,c^3\,x^9}{9}+\frac{A\,a\,c^3\,x^8}{2}+\frac{B\,c^4\,x^{11}}{11}+\frac{A\,c^4\,x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (A*a^4*x^2)/2 + (B*a^4*x^3)/3 + (A*c^4*x^10)/10 + (B*c^4*x^11)/11 + A*a^3*c
*x^4 + (A*a*c^3*x^8)/2 + (4*B*a^3*c*x^5)/5 + (4*B*a*c^3*x^9)/9 + A*a^2*c^2*
x^6 + (6*B*a^2*c^2*x^7)/7
```

sympy [A] time = 0.09, size = 116, normalized size = 1.01

$$\frac{Aa^4x^2}{2}+Aa^3cx^4+Aa^2c^2x^6+\frac{Aac^3x^8}{2}+\frac{Ac^4x^{10}}{10}+\frac{Ba^4x^3}{3}+\frac{4Ba^3cx^5}{5}+\frac{6Ba^2c^2x^7}{7}+\frac{4Bac^3x^9}{9}+\frac{Bc^4x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x**2/2 + A*a**3*c*x**4 + A*a**2*c**2*x**6 + A*a*c**3*x**8/2 + A*c**4
*x**10/10 + B*a**4*x**3/3 + 4*B*a**3*c*x**5/5 + 6*B*a**2*c**2*x**7/7 + 4*B*
a*c**3*x**9/9 + B*c**4*x**11/11
```

3.275 $\int (A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=73

$$a^4Ax+\frac{4}{3}a^3Acx^3+\frac{6}{5}a^2Ac^2x^5+\frac{4}{7}aAc^3x^7+\frac{B\left(a+cx^2\right)^5}{10c}+\frac{1}{9}Ac^4x^9$$

```
[Out] a^4*A*x+4/3*a^3*A*c*x^3+6/5*a^2*A*c^2*x^5+4/7*a*A*c^3*x^7+1/9*A*c^4*x^9+1/1
0*B*(c*x^2+a)^5/c
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$\frac{6}{5}a^2Ac^2x^5+\frac{4}{3}a^3Acx^3+a^4Ax+\frac{4}{7}aAc^3x^7+\frac{B\left(a+cx^2\right)^5}{10c}+\frac{1}{9}Ac^4x^9$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] a^4*A*x + (4*a^3*A*c*x^3)/3 + (6*a^2*A*c^2*x^5)/5 + (4*a*A*c^3*x^7)/7 + (A*
c^4*x^9)/9 + (B*(a + c*x^2)^5)/(10*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^4\,dx&=\frac{B\left(a+cx^2\right)^5}{10c}+A\int \left(a+cx^2\right)^4\,dx\\&=\frac{B\left(a+cx^2\right)^5}{10c}+A\int \left(a^4+4a^3cx^2+6a^2c^2x^4+4ac^3x^6+c^4x^8\right)\,dx\\&=a^4Ax+\frac{4}{3}a^3Acx^3+\frac{6}{5}a^2Ac^2x^5+\frac{4}{7}aAc^3x^7+\frac{1}{9}Ac^4x^9+\frac{B\left(a+cx^2\right)^5}{10c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 110, normalized size = 1.51

$$a^4Ax+\frac{1}{2}a^4Bx^2+\frac{4}{3}a^3Acx^3+a^3Bcx^4+\frac{6}{5}a^2Ac^2x^5+a^2Bc^2x^6+\frac{4}{7}aAc^3x^7+\frac{1}{2}aBc^3x^8+\frac{1}{9}Ac^4x^9+\frac{1}{10}Bc^4x^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] a^4*A*x + (a^4*B*x^2)/2 + (4*a^3*A*c*x^3)/3 + a^3*B*c*x^4 + (6*a^2*A*c^2*x^
5)/5 + a^2*B*c^2*x^6 + (4*a*A*c^3*x^7)/7 + (a*B*c^3*x^8)/2 + (A*c^4*x^9)/9
+ (B*c^4*x^10)/10
```

fricas [A] time = 0.81, size = 96, normalized size = 1.32

$$\frac{1}{10}x^{10}c^4B+\frac{1}{9}x^9c^4A+\frac{1}{2}x^8c^3aB+\frac{4}{7}x^7c^3aA+x^6c^2a^2B+\frac{6}{5}x^5c^2a^2A+x^4ca^3B+\frac{4}{3}x^3ca^3A+\frac{1}{2}x^2a^4B+xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^4*B + 1/9*x^9*c^4*A + 1/2*x^8*c^3*a*B + 4/7*x^7*c^3*a*A + x^6*c
^2*a^2*B + 6/5*x^5*c^2*a^2*A + x^4*c*a^3*B + 4/3*x^3*c*a^3*A + 1/2*x^2*a^4*
B + x*a^4*A
```

giac [A] time = 0.15, size = 96, normalized size = 1.32

$$\frac{1}{10}Bc^4x^{10}+\frac{1}{9}Ac^4x^9+\frac{1}{2}Bac^3x^8+\frac{4}{7}Aac^3x^7+Ba^2c^2x^6+\frac{6}{5}Aa^2c^2x^5+Ba^3cx^4+\frac{4}{3}Aa^3cx^3+\frac{1}{2}Ba^4x^2+Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] 1/10*B*c^4*x^10 + 1/9*A*c^4*x^9 + 1/2*B*a*c^3*x^8 + 4/7*A*a*c^3*x^7 + B*a^2
*c^2*x^6 + 6/5*A*a^2*c^2*x^5 + B*a^3*c*x^4 + 4/3*A*a^3*c*x^3 + 1/2*B*a^4*x^
2 + A*a^4*x
```

maple [A] time = 0.04, size = 97, normalized size = 1.33

$$\frac{1}{10}Bc^4x^{10}+\frac{1}{9}Ac^4x^9+\frac{1}{2}Bac^3x^8+\frac{4}{7}Aac^3x^7+Ba^2c^2x^6+\frac{6}{5}Aa^2c^2x^5+Ba^3cx^4+\frac{4}{3}Aa^3cx^3+\frac{1}{2}Ba^4x^2+Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] 1/10*B*c^4*x^10+1/9*A*c^4*x^9+1/2*a*B*c^3*x^8+4/7*a*A*c^3*x^7+a^2*B*c^2*x^6
+6/5*a^2*A*c^2*x^5+a^3*B*c*x^4+4/3*a^3*A*c*x^3+1/2*a^4*B*x^2+a^4*A*x
```

maxima [A] time = 0.52, size = 96, normalized size = 1.32

$$\frac{1}{10}Bc^4x^{10}+\frac{1}{9}Ac^4x^9+\frac{1}{2}Bac^3x^8+\frac{4}{7}Aac^3x^7+Ba^2c^2x^6+\frac{6}{5}Aa^2c^2x^5+Ba^3cx^4+\frac{4}{3}Aa^3cx^3+\frac{1}{2}Ba^4x^2+Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^4*x^10 + 1/9*A*c^4*x^9 + 1/2*B*a*c^3*x^8 + 4/7*A*a*c^3*x^7 + B*a^2
*c^2*x^6 + 6/5*A*a^2*c^2*x^5 + B*a^3*c*x^4 + 4/3*A*a^3*c*x^3 + 1/2*B*a^4*x^
2 + A*a^4*x
```

mupad [B] time = 0.05, size = 96, normalized size = 1.32

$$\frac{B\,a^4\,x^2}{2}+A\,a^4\,x+B\,a^3\,c\,x^4+\frac{4\,A\,a^3\,c\,x^3}{3}+B\,a^2\,c^2\,x^6+\frac{6\,A\,a^2\,c^2\,x^5}{5}+\frac{B\,a\,c^3\,x^8}{2}+\frac{4\,A\,a\,c^3\,x^7}{7}+\frac{B\,c^4\,x^{10}}{10}+\frac{A\,c^4\,x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (B*a^4*x^2)/2 + (A*c^4*x^9)/9 + (B*c^4*x^10)/10 + A*a^4*x + (4*A*a^3*c*x^3)
/3 + (4*A*a*c^3*x^7)/7 + B*a^3*c*x^4 + (B*a*c^3*x^8)/2 + (6*A*a^2*c^2*x^5)/
5 + B*a^2*c^2*x^6
```

sympy [A] time = 0.09, size = 112, normalized size = 1.53

$$Aa^4x+\frac{4Aa^3cx^3}{3}+\frac{6Aa^2c^2x^5}{5}+\frac{4Aac^3x^7}{7}+\frac{Ac^4x^9}{9}+\frac{Ba^4x^2}{2}+Ba^3cx^4+Ba^2c^2x^6+\frac{Bac^3x^8}{2}+\frac{Bc^4x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] A*a**4*x + 4*A*a**3*c*x**3/3 + 6*A*a**2*c**2*x**5/5 + 4*A*a*c**3*x**7/7 + A
*c**4*x**9/9 + B*a**4*x**2/2 + B*a**3*c*x**4 + B*a**2*c**2*x**6 + B*a*c**3*
x**8/2 + B*c**4*x**10/10
```

3.276 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x}\,dx$

Optimal. Leaf size=110

$$a^4A\log(x)+a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

```
[Out] a^4*B*x+2*a^3*A*c*x^2+4/3*a^3*B*c*x^3+3/2*a^2*A*c^2*x^4+6/5*a^2*B*c^2*x^5+2
/3*a*A*c^3*x^6+4/7*a*B*c^3*x^7+1/8*A*c^4*x^8+1/9*B*c^4*x^9+a^4*A*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{3}{2}a^2Ac^2x^4+2a^3Acx^2+a^4A\log(x)+\frac{6}{5}a^2Bc^2x^5+\frac{4}{3}a^3Bcx^3+a^4Bx+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*A*c*x^2 + (4*a^3*B*c*x^3)/3 + (3*a^2*A*c^2*x^4)/2 + (6*a^2*
B*c^2*x^5)/5 + (2*a*A*c^3*x^6)/3 + (4*a*B*c^3*x^7)/7 + (A*c^4*x^8)/8 + (B*c
^4*x^9)/9 + a^4*A*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x}\,dx &= \int \Bigg(a^4B+\frac{a^4A}{x}+4a^3Acx+4a^3Bcx^2+6a^2Ac^2x^3+6a^2Bc^2x^4+4aAc^3x^5+4aBc^3x^6\\ &= a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac\end{aligned}$$

Mathematica [A] time = 0.01, size = 110, normalized size = 1.00

$$a^4A\log(x)+a^4Bx+2a^3Acx^2+\frac{4}{3}a^3Bcx^3+\frac{3}{2}a^2Ac^2x^4+\frac{6}{5}a^2Bc^2x^5+\frac{2}{3}aAc^3x^6+\frac{4}{7}aBc^3x^7+\frac{1}{8}Ac^4x^8+\frac{1}{9}Bc^4x^9$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*A*c*x^2 + (4*a^3*B*c*x^3)/3 + (3*a^2*A*c^2*x^4)/2 + (6*a^2*
B*c^2*x^5)/5 + (2*a*A*c^3*x^6)/3 + (4*a*B*c^3*x^7)/7 + (A*c^4*x^8)/8 + (B*c
^4*x^9)/9 + a^4*A*Log[x]
```

fricas [A] time = 1.01, size = 96, normalized size = 0.87

$$\frac{1}{9}\,Bc^4x^9+\frac{1}{8}\,Ac^4x^8+\frac{4}{7}\,Bac^3x^7+\frac{2}{3}\,Aac^3x^6+\frac{6}{5}\,Ba^2c^2x^5+\frac{3}{2}\,Aa^2c^2x^4+\frac{4}{3}\,Ba^3cx^3+2\,Aa^3cx^2+Ba^4x+Aa^4\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="fricas")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(x)
```

giac [A] time = 0.15, size = 97, normalized size = 0.88

$$\frac{1}{9}\,Bc^4x^9+\frac{1}{8}\,Ac^4x^8+\frac{4}{7}\,Bac^3x^7+\frac{2}{3}\,Aac^3x^6+\frac{6}{5}\,Ba^2c^2x^5+\frac{3}{2}\,Aa^2c^2x^4+\frac{4}{3}\,Ba^3cx^3+2\,Aa^3cx^2+Ba^4x+Aa^4\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="giac")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(abs(x))
```

maple [A] time = 0.04, size = 97, normalized size = 0.88

$$\frac{B\,c^4x^9}{9}+\frac{A\,c^4x^8}{8}+\frac{4Ba\,c^3x^7}{7}+\frac{2Aa\,c^3x^6}{3}+\frac{6B\,a^2c^2x^5}{5}+\frac{3A\,a^2c^2x^4}{2}+\frac{4B\,a^3c\,x^3}{3}+2A\,a^3c\,x^2+A\,a^4\ln(x)+B\,a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4/x,x)
```

```
[Out] a^4*B*x+2*a^3*A*c*x^2+4/3*a^3*B*c*x^3+3/2*a^2*A*c^2*x^4+6/5*a^2*B*c^2*x^5+2
/3*a*A*c^3*x^6+4/7*a*B*c^3*x^7+1/8*A*c^4*x^8+1/9*B*c^4*x^9+a^4*A*ln(x)
```

maxima [A] time = 0.48, size = 96, normalized size = 0.87

$$\frac{1}{9}\,Bc^4x^9+\frac{1}{8}\,Ac^4x^8+\frac{4}{7}\,Bac^3x^7+\frac{2}{3}\,Aac^3x^6+\frac{6}{5}\,Ba^2c^2x^5+\frac{3}{2}\,Aa^2c^2x^4+\frac{4}{3}\,Ba^3cx^3+2\,Aa^3cx^2+Ba^4x+Aa^4\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^4*x^9 + 1/8*A*c^4*x^8 + 4/7*B*a*c^3*x^7 + 2/3*A*a*c^3*x^6 + 6/5*B*a
^2*c^2*x^5 + 3/2*A*a^2*c^2*x^4 + 4/3*B*a^3*c*x^3 + 2*A*a^3*c*x^2 + B*a^4*x
+ A*a^4*log(x)
```

mupad [B] time = 0.05, size = 96, normalized size = 0.87

$$\frac{A\,c^4\,x^8}{8}+\frac{B\,c^4\,x^9}{9}+A\,a^4\,\ln(x)+B\,a^4\,x+2\,A\,a^3\,c\,x^2+\frac{2\,A\,a\,c^3\,x^6}{3}+\frac{4\,B\,a^3\,c\,x^3}{3}+\frac{4\,B\,a\,c^3\,x^7}{7}+\frac{3\,A\,a^2\,c^2\,x^4}{2}+\frac{6\,B\,a^2\,c^2\,x}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^4*(A + B*x))/x,x)
```

```
[Out] (A*c^4*x^8)/8 + (B*c^4*x^9)/9 + A*a^4*log(x) + B*a^4*x + 2*A*a^3*c*x^2 + (2
*A*a*c^3*x^6)/3 + (4*B*a^3*c*x^3)/3 + (4*B*a*c^3*x^7)/7 + (3*A*a^2*c^2*x^4)
/2 + (6*B*a^2*c^2*x^5)/5
```

sympy [A] time = 0.22, size = 117, normalized size = 1.06

$$Aa^4\log(x)+2Aa^3cx^2+\frac{3Aa^2c^2x^4}{2}+\frac{2Aac^3x^6}{3}+\frac{Ac^4x^8}{8}+Ba^4x+\frac{4Ba^3cx^3}{3}+\frac{6Ba^2c^2x^5}{5}+\frac{4Bac^3x^7}{7}+\frac{Bc^4x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x,x)
```

```
[Out] A*a**4*log(x) + 2*A*a**3*c*x**2 + 3*A*a**2*c**2*x**4/2 + 2*A*a*c**3*x**6/3
+ A*c**4*x**8/8 + B*a**4*x + 4*B*a**3*c*x**3/3 + 6*B*a**2*c**2*x**5/5 + 4*B
*a*c**3*x**7/7 + B*c**4*x**9/9
```

3.277 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2}\,dx$

Optimal. Leaf size=107

$$-\frac{a^4A}{x}+a^4B\log(x)+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

```
[Out] -a^4*A/x+4*a^3*A*c*x+2*a^3*B*c*x^2+2*a^2*A*c^2*x^3+3/2*a^2*B*c^2*x^4+4/5*a*
A*c^3*x^5+2/3*a*B*c^3*x^6+1/7*A*c^4*x^7+1/8*B*c^4*x^8+a^4*B*ln(x)
```

Rubi [A] time = 0.06, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$2a^2Ac^2x^3+4a^3Acx-\frac{a^4A}{x}+\frac{3}{2}a^2Bc^2x^4+2a^3Bcx^2+a^4B\log(x)+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*A*c*x + 2*a^3*B*c*x^2 + 2*a^2*A*c^2*x^3 + (3*a^2*B*c^2
*x^4)/2 + (4*a*A*c^3*x^5)/5 + (2*a*B*c^3*x^6)/3 + (A*c^4*x^7)/7 + (B*c^4*x^
8)/8 + a^4*B*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^2}\,dx &= \int \left(4a^3Ac+\frac{a^4A}{x^2}+\frac{a^4B}{x}+4a^3Bcx+6a^2Ac^2x^2+6a^2Bc^2x^3+4aAc^3x^4+4aBc^3x^5+\right.\\ &= -\frac{a^4A}{x}+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac\end{aligned}$$

Mathematica [A] time = 0.01, size = 107, normalized size = 1.00

$$-\frac{a^4A}{x}+a^4B\log(x)+4a^3Acx+2a^3Bcx^2+2a^2Ac^2x^3+\frac{3}{2}a^2Bc^2x^4+\frac{4}{5}aAc^3x^5+\frac{2}{3}aBc^3x^6+\frac{1}{7}Ac^4x^7+\frac{1}{8}Bc^4x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*A*c*x + 2*a^3*B*c*x^2 + 2*a^2*A*c^2*x^3 + (3*a^2*B*c^2
*x^4)/2 + (4*a*A*c^3*x^5)/5 + (2*a*B*c^3*x^6)/3 + (A*c^4*x^7)/7 + (B*c^4*x^
8)/8 + a^4*B*Log[x]
```

fricas [A] time = 0.90, size = 103, normalized size = 0.96

$$\frac{105\,Bc^4x^9+120\,Ac^4x^8+560\,Bac^3x^7+672\,Aac^3x^6+1260\,Ba^2c^2x^5+1680\,Aa^2c^2x^4+1680\,Ba^3cx^3+3360\,Aa^3cx}{840\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="fricas")
```

```
[Out] 1/840*(105*B*c^4*x^9 + 120*A*c^4*x^8 + 560*B*a*c^3*x^7 + 672*A*a*c^3*x^6 +
1260*B*a^2*c^2*x^5 + 1680*A*a^2*c^2*x^4 + 1680*B*a^3*c*x^3 + 3360*A*a^3*c*x
^2 + 840*B*a^4*x*log(x) - 840*A*a^4)/x
```

giac [A] time = 0.17, size = 98, normalized size = 0.92

$$\frac{1}{8}\,Bc^4x^8+\frac{1}{7}\,Ac^4x^7+\frac{2}{3}\,Bac^3x^6+\frac{4}{5}\,Aac^3x^5+\frac{3}{2}\,Ba^2c^2x^4+2\,Aa^2c^2x^3+2\,Ba^3cx^2+4\,Aa^3cx+Ba^4\log\left(|x|\right)-\frac{Aa^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^4*x^8 + 1/7*A*c^4*x^7 + 2/3*B*a*c^3*x^6 + 4/5*A*a*c^3*x^5 + 3/2*B*a
^2*c^2*x^4 + 2*A*a^2*c^2*x^3 + 2*B*a^3*c*x^2 + 4*A*a^3*c*x + B*a^4*log(abs(
x)) - A*a^4/x
```

maple [A] time = 0.05, size = 98, normalized size = 0.92

$$\frac{B\,c^4x^8}{8}+\frac{A\,c^4x^7}{7}+\frac{2Ba\,c^3x^6}{3}+\frac{4Aa\,c^3x^5}{5}+\frac{3B\,a^2c^2x^4}{2}+2A\,a^2c^2x^3+2B\,a^3c\,x^2+4A\,a^3cx+B\,a^4\ln(x)-\frac{A\,a^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4/x^2,x)
```

```
[Out] -a^4*A/x+4*a^3*A*c*x+2*a^3*B*c*x^2+2*a^2*A*c^2*x^3+3/2*a^2*B*c^2*x^4+4/5*a*
A*c^3*x^5+2/3*a*B*c^3*x^6+1/7*A*c^4*x^7+1/8*B*c^4*x^8+a^4*B*ln(x)
```

maxima [A] time = 0.52, size = 97, normalized size = 0.91

$$\frac{1}{8}\,Bc^4x^8+\frac{1}{7}\,Ac^4x^7+\frac{2}{3}\,Bac^3x^6+\frac{4}{5}\,Aac^3x^5+\frac{3}{2}\,Ba^2c^2x^4+2\,Aa^2c^2x^3+2\,Ba^3cx^2+4\,Aa^3cx+Ba^4\log(x)-\frac{Aa^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^4*x^8 + 1/7*A*c^4*x^7 + 2/3*B*a*c^3*x^6 + 4/5*A*a*c^3*x^5 + 3/2*B*a
^2*c^2*x^4 + 2*A*a^2*c^2*x^3 + 2*B*a^3*c*x^2 + 4*A*a^3*c*x + B*a^4*log(x) -
 A*a^4/x
```

mupad [B] time = 0.05, size = 97, normalized size = 0.91

$$\frac{A\,c^4\,x^7}{7}-\frac{A\,a^4}{x}+\frac{B\,c^4\,x^8}{8}+B\,a^4\,\ln(x)+4\,A\,a^3\,c\,x+\frac{4\,A\,a\,c^3\,x^5}{5}+2\,B\,a^3\,c\,x^2+\frac{2\,B\,a\,c^3\,x^6}{3}+2\,A\,a^2\,c^2\,x^3+\frac{3\,B\,a^2\,c^2\,x^4}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^4*(A + B*x))/x^2,x)
```

```
[Out] (A*c^4*x^7)/7 - (A*a^4)/x + (B*c^4*x^8)/8 + B*a^4*log(x) + 4*A*a^3*c*x + (4
*A*a*c^3*x^5)/5 + 2*B*a^3*c*x^2 + (2*B*a*c^3*x^6)/3 + 2*A*a^2*c^2*x^3 + (3*
B*a^2*c^2*x^4)/2
```

sympy [A] time = 0.25, size = 112, normalized size = 1.05

$$-\frac{Aa^4}{x}+4Aa^3cx+2Aa^2c^2x^3+\frac{4Aac^3x^5}{5}+\frac{Ac^4x^7}{7}+Ba^4\log\left(x\right)+2Ba^3cx^2+\frac{3Ba^2c^2x^4}{2}+\frac{2Bac^3x^6}{3}+\frac{Bc^4x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x**2,x)
```

```
[Out] -A*a**4/x + 4*A*a**3*c*x + 2*A*a**2*c**2*x**3 + 4*A*a*c**3*x**5/5 + A*c**4*
x**7/7 + B*a**4*log(x) + 2*B*a**3*c*x**2 + 3*B*a**2*c**2*x**4/2 + 2*B*a*c**
3*x**6/3 + B*c**4*x**8/8
```

3.278 $\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3}\,dx$

Optimal. Leaf size=105

$$-\frac{a^4A}{2x^2}-\frac{a^4B}{x}+4a^3Ac\log(x)+4a^3Bcx+3a^2Ac^2x^2+2a^2Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

```
[Out] -1/2*a^4*A/x^2-a^4*B/x+4*a^3*B*c*x+3*a^2*A*c^2*x^2+2*a^2*B*c^2*x^3+a*A*c^3*
x^4+4/5*a*B*c^3*x^5+1/6*A*c^4*x^6+1/7*B*c^4*x^7+4*a^3*A*c*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {766}

$$3a^2Ac^2x^2+4a^3Ac\log(x)-\frac{a^4A}{2x^2}+2a^2Bc^2x^3+4a^3Bcx-\frac{a^4B}{x}+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^4)/x^3,x]
```

```
[Out] -(a^4*A)/(2*x^2) - (a^4*B)/x + 4*a^3*B*c*x + 3*a^2*A*c^2*x^2 + 2*a^2*B*c^2*
x^3 + a*A*c^3*x^4 + (4*a*B*c^3*x^5)/5 + (A*c^4*x^6)/6 + (B*c^4*x^7)/7 + 4*a
^3*A*c*Log[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^4}{x^3}\,dx &= \int \left(4a^3Bc+\frac{a^4A}{x^3}+\frac{a^4B}{x^2}+\frac{4a^3Ac}{x}+6a^2Ac^2x+6a^2Bc^2x^2+4aAc^3x^3+4aBc^3x^4+\right.\\ &= -\frac{a^4A}{2x^2}-\frac{a^4B}{x}+4a^3Bcx+3a^2Ac^2x^2+2a^2Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\end{aligned}$$

Mathematica [A] time = 0.01, size = 105, normalized size = 1.00

$$-\frac{a^4A}{2x^2}-\frac{a^4B}{x}+4a^3Ac\log(x)+4a^3Bcx+3a^2Ac^2x^2+2a^2Bc^2x^3+aAc^3x^4+\frac{4}{5}aBc^3x^5+\frac{1}{6}Ac^4x^6+\frac{1}{7}Bc^4x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^4)/x^3,x]
```

```
[Out] -1/2*(a^4*A)/x^2 - (a^4*B)/x + 4*a^3*B*c*x + 3*a^2*A*c^2*x^2 + 2*a^2*B*c^2*
x^3 + a*A*c^3*x^4 + (4*a*B*c^3*x^5)/5 + (A*c^4*x^6)/6 + (B*c^4*x^7)/7 + 4*a
^3*A*c*Log[x]
```

fricas [A] time = 0.88, size = 103, normalized size = 0.98

$$\frac{30\,Bc^4x^9+35\,Ac^4x^8+168\,Bac^3x^7+210\,Aac^3x^6+420\,Ba^2c^2x^5+630\,Aa^2c^2x^4+840\,Ba^3cx^3+840\,Aa^3cx^2\log(}{210\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="fricas")
```

```
[Out] 1/210*(30*B*c^4*x^9 + 35*A*c^4*x^8 + 168*B*a*c^3*x^7 + 210*A*a*c^3*x^6 + 42
0*B*a^2*c^2*x^5 + 630*A*a^2*c^2*x^4 + 840*B*a^3*c*x^3 + 840*A*a^3*c*x^2*log
(x) - 210*B*a^4*x - 105*A*a^4)/x^2
```

giac [A] time = 0.17, size = 98, normalized size = 0.93

$$\frac{1}{7}\,Bc^4x^7+\frac{1}{6}\,Ac^4x^6+\frac{4}{5}\,Bac^3x^5+Aac^3x^4+2\,Ba^2c^2x^3+3\,Aa^2c^2x^2+4\,Ba^3cx+4\,Aa^3c\log\left(|x|\right)-\frac{2\,Ba^4x+Aa^4}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="giac")
```

```
[Out] 1/7*B*c^4*x^7 + 1/6*A*c^4*x^6 + 4/5*B*a*c^3*x^5 + A*a*c^3*x^4 + 2*B*a^2*c^2
*x^3 + 3*A*a^2*c^2*x^2 + 4*B*a^3*c*x + 4*A*a^3*c*log(abs(x)) - 1/2*(2*B*a^4
*x + A*a^4)/x^2
```

maple [A] time = 0.05, size = 98, normalized size = 0.93

$$\frac{B\,c^4x^7}{7}+\frac{A\,c^4x^6}{6}+\frac{4Ba\,c^3x^5}{5}+Aa\,c^3x^4+2B\,a^2c^2x^3+3A\,a^2c^2x^2+4A\,a^3c\ln(x)+4B\,a^3cx-\frac{B\,a^4}{x}-\frac{A\,a^4}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^4/x^3,x)
```

```
[Out] -1/2*a^4*A/x^2-a^4*B/x+4*a^3*B*c*x+3*a^2*A*c^2*x^2+2*a^2*B*c^2*x^3+a*A*c^3*
x^4+4/5*a*B*c^3*x^5+1/6*A*c^4*x^6+1/7*B*c^4*x^7+4*a^3*A*c*ln(x)
```

maxima [A] time = 0.49, size = 97, normalized size = 0.92

$$\frac{1}{7}\,Bc^4x^7+\frac{1}{6}\,Ac^4x^6+\frac{4}{5}\,Bac^3x^5+Aac^3x^4+2\,Ba^2c^2x^3+3\,Aa^2c^2x^2+4\,Ba^3cx+4\,Aa^3c\log\left(x\right)-\frac{2\,Ba^4x+Aa^4}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^4/x^3,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^4*x^7 + 1/6*A*c^4*x^6 + 4/5*B*a*c^3*x^5 + A*a*c^3*x^4 + 2*B*a^2*c^2
*x^3 + 3*A*a^2*c^2*x^2 + 4*B*a^3*c*x + 4*A*a^3*c*log(x) - 1/2*(2*B*a^4*x +
A*a^4)/x^2
```

mupad [B] time = 0.05, size = 97, normalized size = 0.92

$$\frac{A\,c^4\,x^6}{6}-\frac{\frac{A\,a^4}{2}+B\,a^4\,x}{x^2}+\frac{B\,c^4\,x^7}{7}+4\,B\,a^3\,c\,x+A\,a\,c^3\,x^4+\frac{4\,B\,a\,c^3\,x^5}{5}+4\,A\,a^3\,c\,\ln(x)+3\,A\,a^2\,c^2\,x^2+2\,B\,a^2\,c^2\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^4*(A + B*x))/x^3,x)
```

```
[Out] (A*c^4*x^6)/6 - ((A*a^4)/2 + B*a^4*x)/x^2 + (B*c^4*x^7)/7 + 4*B*a^3*c*x + A
*a*c^3*x^4 + (4*B*a*c^3*x^5)/5 + 4*A*a^3*c*log(x) + 3*A*a^2*c^2*x^2 + 2*B*a
^2*c^2*x^3
```

sympy [A] time = 0.33, size = 112, normalized size = 1.07

$$4Aa^3c\log\left(x\right)+3Aa^2c^2x^2+Aac^3x^4+\frac{Ac^4x^6}{6}+4Ba^3cx+2Ba^2c^2x^3+\frac{4Bac^3x^5}{5}+\frac{Bc^4x^7}{7}+\frac{-Aa^4-2Ba^4x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**4/x**3,x)
```

```
[Out] 4*A*a**3*c*log(x) + 3*A*a**2*c**2*x**2 + A*a*c**3*x**4 + A*c**4*x**6/6 + 4*
B*a**3*c*x + 2*B*a**2*c**2*x**3 + 4*B*a*c**3*x**5/5 + B*c**4*x**7/7 + (-A*a
**4 - 2*B*a**4*x)/(2*x**2)
```

3.279 $\int \frac{x^4(d+ex)}{a+cx^2} dx$

Optimal. Leaf size=87

$$\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}-\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}$$

```
[Out] -a*d*x/c^2-1/2*a*e*x^2/c^2+1/3*d*x^3/c+1/4*e*x^4/c+a^(3/2)*d*arctan(x*c^(1/
2)/a^(1/2))/c^(5/2)+1/2*a^2*e*ln(c*x^2+a)/c^3
```

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}-\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + c*x^2),x]
```

```
[Out] -((a*d*x)/c^2) - (a*e*x^2)/(2*c^2) + (d*x^3)/(3*c) + (e*x^4)/(4*c) + (a^(3/
2)*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(5/2) + (a^2*e*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{a+cx^2}\,dx &= \int \left(-\frac{ad}{c^2}-\frac{aex}{c^2}+\frac{dx^2}{c}+\frac{ex^3}{c}+\frac{a^2d+a^2ex}{c^2\left(a+cx^2\right)}\right)dx\\ &= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{\int \frac{a^2d+a^2ex}{a+cx^2}\,dx}{c^2}\\ &= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{\left(a^2d\right)\int \frac{1}{a+cx^2}\,dx}{c^2}+\frac{\left(a^2e\right)\int \frac{x}{a+cx^2}\,dx}{c^2}\\ &= -\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\frac{dx^3}{3c}+\frac{ex^4}{4c}+\frac{a^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2e\log\left(a+cx^2\right)}{2c^3}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 75, normalized size = 0.86

$$\frac{12a^{3/2}\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)+6a^2e\log\left(a+cx^2\right)+cx\left(cx^2(4d+3ex)-6a(2d+ex)\right)}{12c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (c*x*(-6*a*(2*d + e*x) + c*x^2*(4*d + 3*e*x)) + 12*a^(3/2)*Sqrt[c]*d*ArcTan
[(Sqrt[c]*x)/Sqrt[a]] + 6*a^2*e*Log[a + c*x^2])/(12*c^3)
```

fricas [**A**] time = 0.80, size = 176, normalized size = 2.02

$$\left[\frac{3\,c^2ex^4+4\,c^2dx^3-6\,acex^2+6\,acd\sqrt{-\frac{a}{c}}\,\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)-12\,acdx+6\,a^2e\log\left(cx^2+a\right)}{12\,c^3},\ \frac{3\,c^2ex^4+4\,c^2dx^3-}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 - 6*a*c*e*x^2 + 6*a*c*d*sqrt(-a/c)*log((c*
x^2 + 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a)) - 12*a*c*d*x + 6*a^2*e*log(c*x^2 +
 a))/c^3, 1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 - 6*a*c*e*x^2 + 12*a*c*d*sqrt(a/c
)*arctan(c*x*sqrt(a/c)/a) - 12*a*c*d*x + 6*a^2*e*log(c*x^2 + a))/c^3]
```

giac [**A**] time = 0.15, size = 85, normalized size = 0.98

$$\frac{a^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}+\frac{a^2e\log\left(cx^2+a\right)}{2\,c^3}+\frac{3\,c^3x^4e+4\,c^3dx^3-6\,ac^2x^2e-12\,ac^2dx}{12\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] a^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*a^2*e*log(c*x^2 + a)/c^3
+ 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 6*a*c^2*x^2*e - 12*a*c^2*d*x)/c^4
```

maple [**A**] time = 0.05, size = 77, normalized size = 0.89

$$\frac{e\,x^4}{4c}+\frac{d\,x^3}{3c}+\frac{a^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c^2}-\frac{ae\,x^2}{2c^2}+\frac{a^2e\ln\left(c\,x^2+a\right)}{2c^3}-\frac{adx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/4/c*e*x^4+1/3/c*d*x^3-1/2*a*e*x^2/c^2-a*d*x/c^2+1/2*a^2*e*ln(c*x^2+a)/c^3
+a^2/c^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.19, size = 72, normalized size = 0.83

$$\frac{a^2 d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}+\frac{a^2 e \log\left(cx^2+a\right)}{2\,c^3}+\frac{3\,cex^4+4\,cdx^3-6\,aex^2-12\,adx}{12\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] a^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*a^2*e*log(c*x^2 + a)/c^3
+ 1/12*(3*c*e*x^4 + 4*c*d*x^3 - 6*a*e*x^2 - 12*a*d*x)/c^2
```

mupad [B] time = 0.06, size = 71, normalized size = 0.82

$$\frac{d\,x^3}{3\,c}+\frac{e\,x^4}{4\,c}+\frac{a^{3/2}\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{a^2\,e\,\ln\left(c\,x^2+a\right)}{2\,c^3}-\frac{a\,d\,x}{c^2}-\frac{a\,e\,x^2}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*x^3)/(3*c) + (e*x^4)/(4*c) + (a^(3/2)*d*atan((c^(1/2)*x)/a^(1/2)))/c^(5/
2) + (a^2*e*log(a + c*x^2))/(2*c^3) - (a*d*x)/c^2 - (a*e*x^2)/(2*c^2)
```

sympy [B] time = 0.38, size = 189, normalized size = 2.17

$$-\frac{adx}{c^2}-\frac{aex^2}{2c^2}+\left(\frac{a^2e}{2c^3}-\frac{d\sqrt{-a^3c^7}}{2c^6}\right)\log\left(x+\frac{-a^2e+2c^3\left(\frac{a^2e}{2c^3}-\frac{d\sqrt{-a^3c^7}}{2c^6}\right)}{acd}\right)+\left(\frac{a^2e}{2c^3}+\frac{d\sqrt{-a^3c^7}}{2c^6}\right)\log\left(x+\frac{-a^2e+2c^3}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+a),x)
```

```
[Out] -a*d*x/c**2 - a*e*x**2/(2*c**2) + (a**2*e/(2*c**3) - d*sqrt(-a**3*c**7)/(2*
c**6))*log(x + (-a**2*e + 2*c**3*(a**2*e/(2*c**3) - d*sqrt(-a**3*c**7)/(2*c
**6)))/(a*c*d)) + (a**2*e/(2*c**3) + d*sqrt(-a**3*c**7)/(2*c**6))*log(x + (
-a**2*e + 2*c**3*(a**2*e/(2*c**3) + d*sqrt(-a**3*c**7)/(2*c**6)))/(a*c*d))
+ d*x**3/(3*c) + e*x**4/(4*c)
```

3.280 $\int \frac{x^3(d+ex)}{a+cx^2} \, dx$

Optimal. Leaf size=73

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}-\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}$$

```
[Out] -a*e*x/c^2+1/2*d*x^2/c+1/3*e*x^3/c+a^(3/2)*e*arctan(x*c^(1/2)/a^(1/2))/c^(5
/2)-1/2*a*d*ln(c*x^2+a)/c^2
```

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}-\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + c*x^2),x]
```

```
[Out] -((a*e*x)/c^2) + (d*x^2)/(2*c) + (e*x^3)/(3*c) + (a^(3/2)*e*ArcTan[(Sqrt[c]
*x)/Sqrt[a]])/c^(5/2) - (a*d*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(d+ex)}{a+cx^2}\,dx &= \int \left(-\frac{ae}{c^2}+\frac{dx}{c}+\frac{ex^2}{c}+\frac{a^2e-acdx}{c^2\left(a+cx^2\right)}\right)dx\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}+\frac{\int \frac{a^2e-acdx}{a+cx^2}\,dx}{c^2}\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}-\frac{(ad)\int \frac{x}{a+cx^2}\,dx}{c}+\frac{\left(a^2e\right)\int \frac{1}{a+cx^2}\,dx}{c^2}\\
&= -\frac{aex}{c^2}+\frac{dx^2}{2c}+\frac{ex^3}{3c}+\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{ad\log\left(a+cx^2\right)}{2c^2}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.88

$$\frac{a^{3/2}e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}+\frac{x(cx(3d+2ex)-6ae)-3ad\log\left(a+cx^2\right)}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (a^(3/2)*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(5/2) + (x*(-6*a*e + c*x*(3*d + 2
*e*x)) - 3*a*d*Log[a + c*x^2])/(6*c^2)
```

fricas [A] time = 0.91, size = 144, normalized size = 1.97

$$\left[\frac{2\,cex^3+3\,cdx^2+3\,ae\sqrt{-\frac{a}{c}}\,\log\left(\frac{cx^2+2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)-6\,aex-3\,ad\log\left(cx^2+a\right)}{6\,c^2},\ \frac{2\,cex^3+3\,cdx^2+6\,ae\sqrt{\frac{a}{c}}\,\arctan$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*c*e*x^3 + 3*c*d*x^2 + 3*a*e*sqrt(-a/c)*log((c*x^2 + 2*c*x*sqrt(-a/c
) - a)/(c*x^2 + a)) - 6*a*e*x - 3*a*d*log(c*x^2 + a))/c^2, 1/6*(2*c*e*x^3 +
 3*c*d*x^2 + 6*a*e*sqrt(a/c)*arctan(c*x*sqrt(a/c)/a) - 6*a*e*x - 3*a*d*log(
c*x^2 + a))/c^2]
```

giac [A] time = 0.16, size = 71, normalized size = 0.97

$$\frac{a^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,c^2}-\frac{ad\log\left(cx^2+a\right)}{2\,c^2}+\frac{2\,c^2x^3e+3\,c^2dx^2-6\,acxe}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] a^2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c^2) - 1/2*a*d*log(c*x^2 + a)/c^2 +
1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 6*a*c*x*e)/c^3
```

maple [A] time = 0.05, size = 65, normalized size = 0.89

$$\frac{e\,x^3}{3c}+\frac{a^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c^2}+\frac{d\,x^2}{2c}-\frac{ad\ln\left(c\,x^2+a\right)}{2c^2}-\frac{aex}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/3/c*e*x^3+1/2/c*d*x^2-a*e*x/c^2-1/2*a*d*ln(c*x^2+a)/c^2+a^2/c^2*e/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [**A**] time = 1.26, size = 63, normalized size = 0.86

$$\frac{a^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}-\frac{ad\log\left(cx^2+a\right)}{2\,c^2}+\frac{2\,cex^3+3\,cdx^2-6\,aex}{6\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] a^2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) - 1/2*a*d*log(c*x^2 + a)/c^2 +
1/6*(2*c*e*x^3 + 3*c*d*x^2 - 6*a*e*x)/c^2
```

mupad [**B**] time = 0.05, size = 59, normalized size = 0.81

$$\frac{d\,x^2}{2\,c}+\frac{e\,x^3}{3\,c}+\frac{a^{3/2}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{5/2}}-\frac{a\,e\,x}{c^2}-\frac{a\,d\,\ln\left(c\,x^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*x^2)/(2*c) + (e*x^3)/(3*c) + (a^(3/2)*e*atan((c^(1/2)*x)/a^(1/2)))/c^(5/
2) - (a*e*x)/c^2 - (a*d*log(a + c*x^2))/(2*c^2)
```

sympy [**B**] time = 0.36, size = 167, normalized size = 2.29

$$-\frac{aex}{c^2}+\left(-\frac{ad}{2c^2}-\frac{e\sqrt{-a^3c^5}}{2c^5}\right)\log\left(x+\frac{ad+2c^2\left(-\frac{ad}{2c^2}-\frac{e\sqrt{-a^3c^5}}{2c^5}\right)}{ae}\right)+\left(-\frac{ad}{2c^2}+\frac{e\sqrt{-a^3c^5}}{2c^5}\right)\log\left(x+\frac{ad+2c^2\left(-\frac{ad}{2c^2}+\right.}{ae}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+a),x)
```

```
[Out] -a*e*x/c**2 + (-a*d/(2*c**2) - e*sqrt(-a**3*c**5)/(2*c**5))*log(x + (a*d +
2*c**2*(-a*d/(2*c**2) - e*sqrt(-a**3*c**5)/(2*c**5)))/(a*e)) + (-a*d/(2*c**
2) + e*sqrt(-a**3*c**5)/(2*c**5))*log(x + (a*d + 2*c**2*(-a*d/(2*c**2) + e*
sqrt(-a**3*c**5)/(2*c**5)))/(a*e)) + d*x**2/(2*c) + e*x**3/(3*c)
```

3.281 $\int \frac{x^2(d+ex)}{a+cx^2} \, dx$

Optimal. Leaf size=61

$$-\frac{\sqrt{a}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae \log\left(a+cx^2\right)}{2c^2}+\frac{dx}{c}+\frac{ex^2}{2c}$$

```
[Out] d*x/c+1/2*e*x^2/c-1/2*a*e*ln(c*x^2+a)/c^2-d*arctan(x*c^(1/2)/a^(1/2))*a^(1/
2)/c^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = $\{801, 635, 205, 260\}$

$$-\frac{\sqrt{a}\, d \tan^{-1}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae \log\left(a+cx^2\right)}{2c^2}+\frac{dx}{c}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (d*x)/c + (e*x^2)/(2*c) - (Sqrt[a]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) -
 (a*e*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(d+ex)}{a+cx^2}\,dx &= \int \left(\frac{d}{c}+\frac{ex}{c}-\frac{ad+aex}{c\left(a+cx^2\right)}\right)dx \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{\int \frac{ad+aex}{a+cx^2}\,dx}{c} \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{(ad)\int \frac{1}{a+cx^2}\,dx}{c}-\frac{(ae)\int \frac{x}{a+cx^2}\,dx}{c} \\
&= \frac{dx}{c}+\frac{ex^2}{2c}-\frac{\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{ae\log\left(a+cx^2\right)}{2c^2}
\end{aligned}
$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.92

$$
\frac{-2\sqrt{a}\,\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-ae\log\left(a+cx^2\right)+cx(2d+ex)}{2c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (c*x*(2*d + e*x) - 2*Sqrt[a]*Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - a*e*Lo
g[a + c*x^2])/(2*c^2)
```

fricas [A] time = 0.92, size = 127, normalized size = 2.08

$$
\left[\frac{cex^2+cd\sqrt{-\frac{a}{c}}\,\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2\,cdx-ae\log\left(cx^2+a\right)}{2\,c^2},\ \frac{cex^2-2\,cd\sqrt{\frac{a}{c}}\,\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)+2\,cdx-ae\log (c}{2\,c^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(c*e*x^2 + c*d*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 +
a)) + 2*c*d*x - a*e*log(c*x^2 + a))/c^2, 1/2*(c*e*x^2 - 2*c*d*sqrt(a/c)*arc
tan(c*x*sqrt(a/c)/a) + 2*c*d*x - a*e*log(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 56, normalized size = 0.92

$$
-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}-\frac{ae\log\left(cx^2+a\right)}{2\,c^2}+\frac{cx^2e+2\,cdx}{2\,c^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*a*e*log(c*x^2 + a)/c^2 + 1/2
*(c*x^2*e + 2*c*d*x)/c^2
```

maple [A] time = 0.05, size = 53, normalized size = 0.87

$$
-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{e\,x^2}{2c}-\frac{ae\ln\left(c\,x^2+a\right)}{2c^2}+\frac{dx}{c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/2/c*e*x^2+1/c*d*x-1/2*a*e*ln(c*x^2+a)/c^2-a/c*d/(a*c)^(1/2)*arctan(1/(a*c
)^(1/2)*c*x)
```

maxima [**A**] time = 1.16, size = 52, normalized size = 0.85

$$-\frac{ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}-\frac{ae\log\left(cx^2+a\right)}{2\,c^2}+\frac{ex^2+2\,dx}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*a*e*log(c*x^2 + a)/c^2 + 1/2
*(e*x^2 + 2*d*x)/c
```

mupad [**B**] time = 1.06, size = 49, normalized size = 0.80

$$\frac{e\,x^2}{2\,c}+\frac{d\,x}{c}-\frac{\sqrt{a}\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}-\frac{a\,e\,\ln\left(c\,x^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (e*x^2)/(2*c) + (d*x)/c - (a^(1/2)*d*atan((c^(1/2)*x)/a^(1/2)))/c^(3/2) - (
a*e*log(a + c*x^2))/(2*c^2)
```

sympy [**B**] time = 0.45, size = 151, normalized size = 2.48

$$\left(-\frac{ae}{2c^2}-\frac{d\sqrt{-ac^5}}{2c^4}\right)\log\left(x+\frac{-ae-2c^2\left(-\frac{ae}{2c^2}-\frac{d\sqrt{-ac^5}}{2c^4}\right)}{cd}\right)+\left(-\frac{ae}{2c^2}+\frac{d\sqrt{-ac^5}}{2c^4}\right)\log\left(x+\frac{-ae-2c^2\left(-\frac{ae}{2c^2}+\frac{d\sqrt{-ac}}{2c^4}\right.}{cd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+a),x)
```

```
[Out] (-a*e/(2*c**2) - d*sqrt(-a*c**5)/(2*c**4))*log(x + (-a*e - 2*c**2*(-a*e/(2*
c**2) - d*sqrt(-a*c**5)/(2*c**4)))/(c*d)) + (-a*e/(2*c**2) + d*sqrt(-a*c**5
)/(2*c**4))*log(x + (-a*e - 2*c**2*(-a*e/(2*c**2) + d*sqrt(-a*c**5)/(2*c**4
)))/(c*d)) + d*x/c + e*x**2/(2*c)
```

3.282 $\int \frac{x(d+ex)}{a+cx^2}\,dx$

Optimal. Leaf size=49

$$-\frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d\log\left(a+cx^2\right)}{2c}+\frac{ex}{c}$$

```
[Out] e*x/c+1/2*d*ln(c*x^2+a)/c-e*arctan(x*c^(1/2)/a^(1/2))*a^(1/2)/c^(3/2)
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {774, 635, 205, 260}

$$-\frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d\log\left(a+cx^2\right)}{2c}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (e*x)/c - (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) + (d*Log[a + c*x^
2])/(2*c)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{a+cx^2}\,dx &= \frac{ex}{c}+\frac{\int \frac{-ae+cdx}{a+cx^2}\,dx}{c}\\ &= \frac{ex}{c}+d\int \frac{x}{a+cx^2}\,dx-\frac{(ae)\int \frac{1}{a+cx^2}\,dx}{c}\\ &= \frac{ex}{c}-\frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 49, normalized size = 1.00

$$-\frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}+\frac{d\log\left(a+cx^2\right)}{2c}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (e*x)/c - (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/c^(3/2) + (d*Log[a + c*x^
2])/(2*c)
```

fricas [**A**] time = 0.84, size = 108, normalized size = 2.20

$$\left[\frac{e\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2\,ex+d\log\left(cx^2+a\right)}{2\,c},\,-\frac{2\,e\sqrt{\frac{a}{c}}\arctan\left(\frac{cx\sqrt{\frac{a}{c}}}{a}\right)-2\,ex-d\log\left(cx^2+a\right)}{2\,c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(e*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a)) + 2*e*x
+ d*log(c*x^2 + a))/c, -1/2*(2*e*sqrt(a/c)*arctan(c*x*sqrt(a/c)/a) - 2*e*x
- d*log(c*x^2 + a))/c]
```

giac [**A**] time = 0.15, size = 44, normalized size = 0.90

$$-\frac{a\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,c}+\frac{xe}{c}+\frac{d\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -a*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c) + x*e/c + 1/2*d*log(c*x^2 + a)/c
```

maple [**A**] time = 0.04, size = 43, normalized size = 0.88

$$-\frac{ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{d\ln\left(c\,x^2+a\right)}{2c}+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/c*e*x+1/2*d*ln(c*x^2+a)/c-1/c*a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [**A**] time = 1.15, size = 42, normalized size = 0.86

$$-\frac{ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{ex}{c}+\frac{d\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -a*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + e*x/c + 1/2*d*log(c*x^2 + a)/c
```

mupad [**B**] time = 1.07, size = 39, normalized size = 0.80

$$\frac{d\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{e\,x}{c}-\frac{\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (d*log(a + c*x^2))/(2*c) + (e*x)/c - (a^(1/2)*e*atan((c^(1/2)*x)/a^(1/2)))/
c^(3/2)
```

sympy [**B**] time = 0.30, size = 112, normalized size = 2.29

$$\left(\frac{d}{2c}-\frac{e\sqrt{-ac^3}}{2c^3}\right)\log\left(x+\frac{-2c\left(\frac{d}{2c}-\frac{e\sqrt{-ac^3}}{2c^3}\right)+d}{e}\right)+\left(\frac{d}{2c}+\frac{e\sqrt{-ac^3}}{2c^3}\right)\log\left(x+\frac{-2c\left(\frac{d}{2c}+\frac{e\sqrt{-ac^3}}{2c^3}\right)+d}{e}\right)+\frac{ex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+a),x)
```

```
[Out] (d/(2*c) - e*sqrt(-a*c**3)/(2*c**3))*log(x + (-2*c*(d/(2*c) - e*sqrt(-a*c**
3)/(2*c**3)) + d)/e) + (d/(2*c) + e*sqrt(-a*c**3)/(2*c**3))*log(x + (-2*c*(
d/(2*c) + e*sqrt(-a*c**3)/(2*c**3)) + d)/e) + e*x/c
```

3.283 $\int \frac{d+ex}{a+cx^2}\,dx$

Optimal. Leaf size=42

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

```
[Out] 1/2*e*ln(c*x^2+a)/c+d*arctan(x*c^(1/2)/a^(1/2))/a^(1/2)/c^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {635, 205, 260}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2),x]
```

```
[Out] (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (e*Log[a + c*x^2])/(2*c
)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a+cx^2}\,dx &= d\int \frac{1}{a+cx^2}\,dx+e\int \frac{x}{a+cx^2}\,dx\\ &= \frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{e\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2),x]
```

```
[Out] (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (e*Log[a + c*x^2])/(2*c
)
```

fricas [A] time = 0.88, size = 98, normalized size = 2.33

$$\left[\frac{ae\log\left(cx^2+a\right)-\sqrt{-ac}\,d\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac}, \frac{ae\log\left(cx^2+a\right)+2\sqrt{ac}\,d\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*e*log(c*x^2 + a) - sqrt(-a*c)*d*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c
*x^2 + a)))/(a*c), 1/2*(a*e*log(c*x^2 + a) + 2*sqrt(a*c)*d*arctan(sqrt(a*c)
*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 32, normalized size = 0.76

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] d*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*e*log(c*x^2 + a)/c
```

maple [A] time = 0.04, size = 32, normalized size = 0.76

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\ln\left(c\,x^2+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a),x)
```

```
[Out] 1/2/c*e*ln(c*x^2+a)+d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.19, size = 31, normalized size = 0.74

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{e\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] d*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*e*log(c*x^2 + a)/c
```

mupad [B] time = 0.05, size = 32, normalized size = 0.76

$$\frac{e\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2),x)
```

```
[Out] (e*log(a + c*x^2))/(2*c) + (d*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2))
```

sympy [**B**] time = 0.27, size = 124, normalized size = 2.95

$$\left(\frac{e}{2c}-\frac{d\sqrt{-ac^{3}}}{2ac^{2}}\right)\log\left(x+\frac{2ac\left(\frac{e}{2c}-\frac{d\sqrt{-ac^{3}}}{2ac^{2}}\right)-ae}{cd}\right)+\left(\frac{e}{2c}+\frac{d\sqrt{-ac^{3}}}{2ac^{2}}\right)\log\left(x+\frac{2ac\left(\frac{e}{2c}+\frac{d\sqrt{-ac^{3}}}{2ac^{2}}\right)-ae}{cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a),x)
```

```
[Out] (e/(2*c) - d*sqrt(-a*c**3)/(2*a*c**2))*log(x + (2*a*c*(e/(2*c) - d*sqrt(-a*
c**3)/(2*a*c**2)) - a*e)/(c*d)) + (e/(2*c) + d*sqrt(-a*c**3)/(2*a*c**2))*lo
g(x + (2*a*c*(e/(2*c) + d*sqrt(-a*c**3)/(2*a*c**2)) - a*e)/(c*d))
```

3.284 $\int \frac{d+ex}{x\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=49

$$-\frac{d\log\left(a+cx^2\right)}{2a}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{d\log(x)}{a}$$

```
[Out] d*ln(x)/a-1/2*d*ln(c*x^2+a)/a+e*arctan(x*c^(1/2)/a^(1/2))/a^(1/2)/c^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = $\{801, 635, 205, 260\}$

$$-\frac{d\log\left(a+cx^2\right)}{2a}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{d\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + c*x^2)),x]
```

```
[Out] (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (d*Log[x])/a - (d*Log[a
 + c*x^2])/(2*a)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax}+\frac{ae-cdx}{a\left(a+cx^2\right)}\right)dx\\ &= \frac{d\log(x)}{a}+\frac{\int \frac{ae-cdx}{a+cx^2}\,dx}{a}\\ &= \frac{d\log(x)}{a}-\frac{(cd)\int \frac{x}{a+cx^2}\,dx}{a}+e\int \frac{1}{a+cx^2}\,dx\\ &= \frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{d\log(x)}{a}-\frac{d\log\left(a+cx^2\right)}{2a}\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 49, normalized size = 1.00

$$-\frac{d\log\left(a+cx^2\right)}{2a}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{d\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + c*x^2)),x]
```

```
[Out] (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (d*Log[x])/a - (d*Log[a
 + c*x^2])/(2*a)
```

fricas [**A**] time = 0.92, size = 109, normalized size = 2.22

$$\left[-\frac{cd\log\left(cx^2+a\right)-2\,cd\log(x)+\sqrt{-ac}\,e\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac},-\frac{cd\log\left(cx^2+a\right)-2\,cd\log(x)-2\,\sqrt{ac}\,e\arctan}{2\,ac}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*(c*d*log(c*x^2 + a) - 2*c*d*log(x) + sqrt(-a*c)*e*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)))/(a*c), -1/2*(c*d*log(c*x^2 + a) - 2*c*d*log(x)
- 2*sqrt(a*c)*e*arctan(sqrt(a*c)*x/a))/(a*c)]
```

giac [**A**] time = 0.15, size = 40, normalized size = 0.82

$$\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}}-\frac{d\log\left(cx^2+a\right)}{2\,a}+\frac{d\log\left(|x|\right)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="giac")
```

```
[Out] arctan(c*x/sqrt(a*c))*e/sqrt(a*c) - 1/2*d*log(c*x^2 + a)/a + d*log(abs(x))/
a
```

maple [**A**] time = 0.06, size = 39, normalized size = 0.80

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{d\ln(x)}{a}-\frac{d\ln\left(c\,x^2+a\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+a),x)
```

```
[Out] -1/2*d*ln(c*x^2+a)/a+e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a*d*ln(x)
```

maxima [A] time = 1.25, size = 38, normalized size = 0.78

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}} - \frac{d\log\left(cx^2+a\right)}{2a} + \frac{d\log(x)}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] e*arctan(c*x/sqrt(a*c))/sqrt(a*c) - 1/2*d*log(c*x^2 + a)/a + d*log(x)/a
```

mupad [B] time = 1.41, size = 216, normalized size = 4.41

$$\frac{d\,\ln(x)}{a} - \frac{d\,\ln\left(a\,e\,\sqrt{-a^3\,c}\,+3\,a^2\,c\,d-a^2\,c\,e\,x+3\,c\,d\,x\,\sqrt{-a^3\,c}\right)}{2\,a} - \frac{d\,\ln\left(a\,e\,\sqrt{-a^3\,c}\,-3\,a^2\,c\,d+a^2\,c\,e\,x+3\,c\,d\,x\,\sqrt{-}\right.}{2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + c*x^2)),x)
```

```
[Out] (d*log(x))/a - (d*log(a*e*(-a^3*c)^(1/2) + 3*a^2*c*d - a^2*c*e*x + 3*c*d*x*
(-a^3*c)^(1/2)))/(2*a) - (d*log(a*e*(-a^3*c)^(1/2) - 3*a^2*c*d + a^2*c*e*x
+ 3*c*d*x*(-a^3*c)^(1/2)))/(2*a) + (e*log(a*e*(-a^3*c)^(1/2) - 3*a^2*c*d +
a^2*c*e*x + 3*c*d*x*(-a^3*c)^(1/2))*(-a^3*c)^(1/2))/(2*a^2*c) - (e*log(a*e*
(-a^3*c)^(1/2) + 3*a^2*c*d - a^2*c*e*x + 3*c*d*x*(-a^3*c)^(1/2))*(-a^3*c)^(
1/2))/(2*a^2*c)
```

sympy [B] time = 1.47, size = 321, normalized size = 6.55

$$\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right)\log\left(x + \frac{-12a^2cd\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right)^2 + 2a^2e^2\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right) + 6acd^2\left(-\frac{d}{2a} - \frac{e\sqrt{-a^3c}}{2a^2c}\right) - 2ade^2 + 6}{ae^3 + 9cd^2e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+a),x)
```

```
[Out] (-d/(2*a) - e*sqrt(-a**3*c)/(2*a**2*c))*log(x + (-12*a**2*c*d*(-d/(2*a) - e
*sqrt(-a**3*c)/(2*a**2*c))**2 + 2*a**2*e**2*(-d/(2*a) - e*sqrt(-a**3*c)/(2*
a**2*c)) + 6*a*c*d**2*(-d/(2*a) - e*sqrt(-a**3*c)/(2*a**2*c)) - 2*a*d*e**2
+ 6*c*d**3)/(a*e**3 + 9*c*d**2*e)) + (-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c)
)*log(x + (-12*a**2*c*d*(-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c))**2 + 2*a**2
*e**2*(-d/(2*a) + e*sqrt(-a**3*c)/(2*a**2*c)) + 6*a*c*d**2*(-d/(2*a) + e*sq
rt(-a**3*c)/(2*a**2*c)) - 2*a*d*e**2 + 6*c*d**3)/(a*e**3 + 9*c*d**2*e)) + d
*log(x)/a
```

3.285 $\int \frac{d+ex}{x^2(a+cx^2)}\,dx$

Optimal. Leaf size=59

$$-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e\log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}$$

```
[Out] -d/a/x+e*ln(x)/a-1/2*e*ln(c*x^2+a)/a-d*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/a^
(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e\log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + c*x^2)),x]
```

```
[Out] -(d/(a*x)) - (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + (e*Log[x])/a
 - (e*Log[a + c*x^2])/(2*a)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x^2\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^2}+\frac{e}{ax}-\frac{c(d+ex)}{a\left(a+cx^2\right)}\right)dx\\
&= -\frac{d}{ax}+\frac{e\log(x)}{a}-\frac{c\int \frac{d+ex}{a+cx^2}\,dx}{a}\\
&= -\frac{d}{ax}+\frac{e\log(x)}{a}-\frac{(cd)\int \frac{1}{a+cx^2}\,dx}{a}-\frac{(ce)\int \frac{x}{a+cx^2}\,dx}{a}\\
&= -\frac{d}{ax}-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{e\log(x)}{a}-\frac{e\log\left(a+cx^2\right)}{2a}
\end{aligned}
$$

Mathematica [A]   time = 0.03, size = 59, normalized size = 1.00

$$
-\frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{e\log\left(a+cx^2\right)}{2a}-\frac{d}{ax}+\frac{e\log(x)}{a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + c*x^2)),x]
```

```
[Out] -(d/(a*x)) - (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + (e*Log[x])/a
 - (e*Log[a + c*x^2])/(2*a)
```

fricas [A]   time = 0.82, size = 124, normalized size = 2.10

$$
\left[\frac{dx\sqrt{-\frac{c}{a}}\,\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)-ex\log\left(cx^2+a\right)+2\,ex\log(x)-2\,d}{2\,ax},-\frac{2\,dx\sqrt{\frac{c}{a}}\,\arctan\left(x\sqrt{\frac{c}{a}}\right)+ex\log\left(cx^2+a\right)-}{2\,ax}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(d*x*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) - e*x*
log(c*x^2 + a) + 2*e*x*log(x) - 2*d)/(a*x), -1/2*(2*d*x*sqrt(c/a)*arctan(x*
sqrt(c/a)) + e*x*log(c*x^2 + a) - 2*e*x*log(x) + 2*d)/(a*x)]
```

giac [A]   time = 0.15, size = 55, normalized size = 0.93

$$
-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}-\frac{e\log\left(cx^2+a\right)}{2\,a}+\frac{e\log\left(|x|\right)}{a}-\frac{d}{ax}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) - 1/2*e*log(c*x^2 + a)/a + e*log(a
bs(x))/a - d/(a*x)
```

maple [A]   time = 0.06, size = 53, normalized size = 0.90

$$
-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a}+\frac{e\ln(x)}{a}-\frac{e\ln\left(c\,x^2+a\right)}{2a}-\frac{d}{ax}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+a),x)
```

```
[Out] -1/2*e*ln(c*x^2+a)/a-c/a*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a*e*ln(x
)-1/a*d/x
```

maxima [A] time = 1.26, size = 52, normalized size = 0.88

$$-\frac{cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}-\frac{e\log\left(cx^2+a\right)}{2\,a}+\frac{e\log(x)}{a}-\frac{d}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) - 1/2*e*log(c*x^2 + a)/a + e*log(x
)/a - d/(a*x)
```

mupad [B] time = 1.21, size = 131, normalized size = 2.22

$$\frac{e\,\ln(x)}{a}-\frac{d}{a\,x}-\frac{\ln\left(3\,a^2\,e+d\,\sqrt{-a^3\,c}-3\,e\,x\,\sqrt{-a^3\,c}+a\,c\,d\,x\right)\,\left(a^2\,e+d\,\sqrt{-a^3\,c}\right)}{2\,a^3}-\ln\left(3\,a^2\,e-d\,\sqrt{-a^3\,c}+3\,e\,x\,\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + c*x^2)),x)
```

```
[Out] (e*log(x))/a - d/(a*x) - (log(3*a^2*e + d*(-a^3*c)^(1/2) - 3*e*x*(-a^3*c)^(
1/2) + a*c*d*x)*(a^2*e + d*(-a^3*c)^(1/2)))/(2*a^3) - (log(3*a^2*e - d*(-a^
3*c)^(1/2) + 3*e*x*(-a^3*c)^(1/2) + a*c*d*x)*(a^2*e - d*(-a^3*c)^(1/2)))/(2
*a^3)
```

sympy [B] time = 1.62, size = 326, normalized size = 5.53

$$\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)\log\left(x+\frac{12a^4e\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)^2-6a^3e^2\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)-2a^2cd^2\left(-\frac{e}{2a}-\frac{d\sqrt{-a^3c}}{2a^3}\right)-6a^2e^3+}{9acde^2+c^2d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+a),x)
```

```
[Out] (-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3))*log(x + (12*a**4*e*(-e/(2*a) - d*sqrt
(-a**3*c)/(2*a**3))**2 - 6*a**3*e**2*(-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3))
- 2*a**2*c*d**2*(-e/(2*a) - d*sqrt(-a**3*c)/(2*a**3)) - 6*a**2*e**3 + 2*a*c
*d**2*e)/(9*a*c*d*e**2 + c**2*d**3)) + (-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3)
)*log(x + (12*a**4*e*(-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3))**2 - 6*a**3*e**2
*(-e/(2*a) + d*sqrt(-a**3*c)/(2*a**3)) - 2*a**2*c*d**2*(-e/(2*a) + d*sqrt(-
a**3*c)/(2*a**3)) - 6*a**2*e**3 + 2*a*c*d**2*e)/(9*a*c*d*e**2 + c**2*d**3))
 - d/(a*x) + e*log(x)/a
```

3.286 $\int \frac{d+ex}{x^3\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=73

$$-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{d}{2ax^2}-\frac{e}{ax}$$

```
[Out] -1/2*d/a/x^2-e/a/x-c*d*ln(x)/a^2+1/2*c*d*ln(c*x^2+a)/a^2-e*arctan(x*c^(1/2)
/a^(1/2))*c^(1/2)/a^(3/2)
```

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{d}{2ax^2}-\frac{e}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + c*x^2)),x]
```

```
[Out] -d/(2*a*x^2) - e/(a*x) - (Sqrt[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) -
(c*d*Log[x])/a^2 + (c*d*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x^3\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^3}+\frac{e}{ax^2}-\frac{cd}{a^2x}-\frac{c(ae-cdx)}{a^2\left(a+cx^2\right)}\right)dx \\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{cd\log(x)}{a^2}-\frac{c\int \frac{ae-cdx}{a+cx^2}\,dx}{a^2} \\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{cd\log(x)}{a^2}+\frac{\left(c^2d\right)\int \frac{x}{a+cx^2}\,dx}{a^2}-\frac{(ce)\int \frac{1}{a+cx^2}\,dx}{a} \\
&= -\frac{d}{2ax^2}-\frac{e}{ax}-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}-\frac{cd\log(x)}{a^2}+\frac{cd\log\left(a+cx^2\right)}{2a^2}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.00

$$
-\frac{\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{3/2}}+\frac{cd\log\left(a+cx^2\right)}{2a^2}-\frac{cd\log(x)}{a^2}-\frac{d}{2ax^2}-\frac{e}{ax}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + c*x^2)),x]
```

```
[Out] -1/2*d/(a*x^2) - e/(a*x) - (Sqrt[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2)
- (c*d*Log[x])/a^2 + (c*d*Log[a + c*x^2])/(2*a^2)
```

fricas [A] time = 0.97, size = 153, normalized size = 2.10

$$
\left[\frac{aex^2\sqrt{-\frac{c}{a}}\,\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+cdx^2\log\left(cx^2+a\right)-2\,cdx^2\log(x)-2\,aex-ad}{2\,a^2x^2},\ -\frac{2\,aex^2\sqrt{\frac{c}{a}}\,\arctan\left(x\sqrt{\frac{c}{a}}\right)-}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(a*e*x^2*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) +
c*d*x^2*log(c*x^2 + a) - 2*c*d*x^2*log(x) - 2*a*e*x - a*d)/(a^2*x^2), -1/2*
(2*a*e*x^2*sqrt(c/a)*arctan(x*sqrt(c/a)) - c*d*x^2*log(c*x^2 + a) + 2*c*d*x
^2*log(x) + 2*a*e*x + a*d)/(a^2*x^2)]
```

giac [A] time = 0.15, size = 66, normalized size = 0.90

$$
-\frac{c\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{\sqrt{ac}\,a}+\frac{cd\log\left(cx^2+a\right)}{2\,a^2}-\frac{cd\log\left(|x|\right)}{a^2}-\frac{2\,axe+ad}{2\,a^2x^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -c*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a) + 1/2*c*d*log(c*x^2 + a)/a^2 - c*d
*log(abs(x))/a^2 - 1/2*(2*a*x*e + a*d)/(a^2*x^2)
```

maple [A] time = 0.05, size = 65, normalized size = 0.89

$$
-\frac{ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a}-\frac{cd\ln(x)}{a^2}+\frac{cd\ln\left(c\,x^2+a\right)}{2a^2}-\frac{e}{ax}-\frac{d}{2a\,x^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+a),x)
```

```
[Out] 1/2*c*d*ln(c*x^2+a)/a^2-c/a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/a*e/x
-1/2/a*d/x^2-c*d*ln(x)/a^2
```

maxima [A] time = 1.37, size = 60, normalized size = 0.82

$$-\frac{ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a}+\frac{cd\log\left(cx^2+a\right)}{2\,a^2}-\frac{cd\log(x)}{a^2}-\frac{2\,ex+d}{2\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -c*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*c*d*log(c*x^2 + a)/a^2 - c*d
*log(x)/a^2 - 1/2*(2*e*x + d)/(a*x^2)
```

mupad [B] time = 1.25, size = 154, normalized size = 2.11

$$\frac{\ln\left(a\,e\,\sqrt{-a^5\,c}+3\,a^3\,c\,d-a^3\,c\,e\,x+3\,c\,d\,x\,\sqrt{-a^5\,c}\right)\,\left(e\,\sqrt{-a^5\,c}+a^2\,c\,d\right)}{2\,a^4}-\frac{\ln\left(a\,e\,\sqrt{-a^5\,c}-3\,a^3\,c\,d+a^3\,c\,e\,x+3\,c}{2\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + c*x^2)),x)
```

```
[Out] (log(a*e*(-a^5*c)^(1/2) + 3*a^3*c*d - a^3*c*e*x + 3*c*d*x*(-a^5*c)^(1/2))*(
e*(-a^5*c)^(1/2) + a^2*c*d))/(2*a^4) - (log(a*e*(-a^5*c)^(1/2) - 3*a^3*c*d
+ a^3*c*e*x + 3*c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) - a^2*c*d))/(2*a^4)
 - (d/(2*a) + (e*x)/a)/x^2 - (c*d*log(x))/a^2
```

sympy [B] time = 1.70, size = 360, normalized size = 4.93

$$\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)\log\left(x+\frac{-12a^4d\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)^2-2a^3e^2\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)-6a^2cd^2\left(\frac{cd}{2a^2}-\frac{e\sqrt{-a^5c}}{2a^4}\right)-2acde^2+6c^2}{ace^3+9c^2d^2e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+a),x)
```

```
[Out] (c*d/(2*a**2) - e*sqrt(-a**5*c)/(2*a**4))*log(x + (-12*a**4*d*(c*d/(2*a**2)
 - e*sqrt(-a**5*c)/(2*a**4))**2 - 2*a**3*e**2*(c*d/(2*a**2) - e*sqrt(-a**5*
c)/(2*a**4)) - 6*a**2*c*d**2*(c*d/(2*a**2) - e*sqrt(-a**5*c)/(2*a**4)) - 2*
a*c*d*e**2 + 6*c**2*d**3)/(a*c*e**3 + 9*c**2*d**2*e)) + (c*d/(2*a**2) + e*s
qrt(-a**5*c)/(2*a**4))*log(x + (-12*a**4*d*(c*d/(2*a**2) + e*sqrt(-a**5*c)/
(2*a**4))**2 - 2*a**3*e**2*(c*d/(2*a**2) + e*sqrt(-a**5*c)/(2*a**4)) - 6*a*
*2*c*d**2*(c*d/(2*a**2) + e*sqrt(-a**5*c)/(2*a**4)) - 2*a*c*d*e**2 + 6*c**2
*d**3)/(a*c*e**3 + 9*c**2*d**2*e)) + (-d - 2*e*x)/(2*a*x**2) - c*d*log(x)/a
**2
```

3.287 $\int \frac{d+ex}{x^4\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=83

$$\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}+\frac{cd}{a^2x}+\frac{ce\log\left(a+cx^2\right)}{2a^2}-\frac{ce\log(x)}{a^2}-\frac{d}{3ax^3}-\frac{e}{2ax^2}$$

```
[Out] -1/3*d/a/x^3-1/2*e/a/x^2+c*d/a^2/x+c^(3/2)*d*arctan(x*c^(1/2)/a^(1/2))/a^(5
/2)-c*e*ln(x)/a^2+1/2*c*e*ln(c*x^2+a)/a^2
```

Rubi [A] time = 0.06, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {801, 635, 205, 260}

$$\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}+\frac{cd}{a^2x}+\frac{ce\log\left(a+cx^2\right)}{2a^2}-\frac{ce\log(x)}{a^2}-\frac{d}{3ax^3}-\frac{e}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a + c*x^2)),x]
```

```
[Out] -d/(3*a*x^3) - e/(2*a*x^2) + (c*d)/(a^2*x) + (c^(3/2)*d*ArcTan[(Sqrt[c]*x)/
Sqrt[a]])/a^(5/2) - (c*e*Log[x])/a^2 + (c*e*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^4\left(a+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^4}+\frac{e}{ax^3}-\frac{cd}{a^2x^2}-\frac{ce}{a^2x}+\frac{c^2(d+ex)}{a^2\left(a+cx^2\right)}\right)dx \\ &= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}-\frac{ce\log(x)}{a^2}+\frac{c^2\int\frac{d+ex}{a+cx^2}\,dx}{a^2} \\ &= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}-\frac{ce\log(x)}{a^2}+\frac{\left(c^2d\right)\int\frac{1}{a+cx^2}\,dx}{a^2}+\frac{\left(c^2e\right)\int\frac{x}{a+cx^2}\,dx}{a^2} \\ &= -\frac{d}{3ax^3}-\frac{e}{2ax^2}+\frac{cd}{a^2x}+\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}-\frac{ce\log(x)}{a^2}+\frac{ce\log\left(a+cx^2\right)}{2a^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.93

$$\frac{c^{3/2}d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{a^{5/2}}-\frac{-3cex^3\log\left(a+cx^2\right)+2ad+3aex-6cdx^2+6cex^3\log(x)}{6a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a + c*x^2)),x]
```

```
[Out] (c^(3/2)*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) - (2*a*d + 3*a*e*x - 6*c*d*
x^2 + 6*c*e*x^3*Log[x] - 3*c*e*x^3*Log[a + c*x^2])/(6*a^2*x^3)
```

fricas [A] time = 0.94, size = 170, normalized size = 2.05

$$\left[\frac{3\,cdx^3\sqrt{-\frac{c}{a}}\,\log\left(\frac{cx^2+2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+3\,cex^3\log\left(cx^2+a\right)-6\,cex^3\log(x)+6\,cdx^2-3\,aex-2\,ad}{6\,a^2x^3},\ 6\,cdx^3\sqrt{\frac{c}{a}}\,\arctan\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*c*d*x^3*sqrt(-c/a)*log((c*x^2 + 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a))
+ 3*c*e*x^3*log(c*x^2 + a) - 6*c*e*x^3*log(x) + 6*c*d*x^2 - 3*a*e*x - 2*a*d
)/(a^2*x^3), 1/6*(6*c*d*x^3*sqrt(c/a)*arctan(x*sqrt(c/a)) + 3*c*e*x^3*log(c
*x^2 + a) - 6*c*e*x^3*log(x) + 6*c*d*x^2 - 3*a*e*x - 2*a*d)/(a^2*x^3)]
```

giac [A] time = 0.15, size = 76, normalized size = 0.92

$$\frac{c^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,a^2}+\frac{ce\log\left(cx^2+a\right)}{2\,a^2}-\frac{ce\log\left(|x|\right)}{a^2}+\frac{6\,cdx^2-3\,axe-2\,ad}{6\,a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="giac")
```

```
[Out] c^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/2*c*e*log(c*x^2 + a)/a^2 -
c*e*log(abs(x))/a^2 + 1/6*(6*c*d*x^2 - 3*a*x*e - 2*a*d)/(a^2*x^3)
```

maple [A] time = 0.06, size = 75, normalized size = 0.90

$$\frac{c^2d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;a^2}-\frac{ce\ln(x)}{a^2}+\frac{ce\ln\left(c\,x^2+a\right)}{2a^2}+\frac{cd}{a^2x}-\frac{e}{2a\,x^2}-\frac{d}{3a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(c*x^2+a),x)
```

```
[Out] 1/2*c*e*ln(c*x^2+a)/a^2+c^2/a^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/2
*e/a/x^2-1/3*d/a/x^3-c*e*ln(x)/a^2+c*d/a^2/x
```

maxima [**A**] time = 1.37, size = 72, normalized size = 0.87

$$\frac{c^2 d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\, a^2} + \frac{ce \log\left(cx^2 + a\right)}{2\, a^2} - \frac{ce \log(x)}{a^2} + \frac{6\, cdx^2 - 3\, aex - 2\, ad}{6\, a^2 x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] c^2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/2*c*e*log(c*x^2 + a)/a^2 -
c*e*log(x)/a^2 + 1/6*(6*c*d*x^2 - 3*a*e*x - 2*a*d)/(a^2*x^3)
```

mupad [**B**] time = 0.26, size = 177, normalized size = 2.13

$$\frac{\ln\left(d\,\sqrt{-a^5\,c^3}\,-3\,e\,x\,\sqrt{-a^5\,c^3}\,+3\,a^3\,c\,e+a^2\,c^2\,d\,x\right)\,\left(d\,\sqrt{-a^5\,c^3}\,+a^3\,c\,e\right)}{2\,a^5}-\frac{\frac{d}{3\,a}+\frac{e\,x}{2\,a}-\frac{c\,d\,x^2}{a^2}}{x^3}-\frac{\ln\left(3\,e\,x\,\sqrt{-a^5\,c^3}\,-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a + c*x^2)),x)
```

```
[Out] (log(d*(-a^5*c^3)^(1/2) - 3*e*x*(-a^5*c^3)^(1/2) + 3*a^3*c*e + a^2*c^2*d*x)
*(d*(-a^5*c^3)^(1/2) + a^3*c*e))/(2*a^5) - (d/(3*a) + (e*x)/(2*a) - (c*d*x^
2)/a^2)/x^3 - (log(3*e*x*(-a^5*c^3)^(1/2) - d*(-a^5*c^3)^(1/2) + 3*a^3*c*e
+ a^2*c^2*d*x)*(d*(-a^5*c^3)^(1/2) - a^3*c*e))/(2*a^5) - (c*e*log(x))/a^2
```

sympy [**B**] time = 1.77, size = 408, normalized size = 4.92

$$\left(\frac{ce}{2a^2} - \frac{d\sqrt{-a^5c^3}}{2a^5}\right)\log\left(x + \frac{12a^6e\left(\frac{ce}{2a^2} - \frac{d\sqrt{-a^5c^3}}{2a^5}\right)^2 + 6a^4ce^2\left(\frac{ce}{2a^2} - \frac{d\sqrt{-a^5c^3}}{2a^5}\right) + 2a^3c^2d^2\left(\frac{ce}{2a^2} - \frac{d\sqrt{-a^5c^3}}{2a^5}\right) - 6a^2c^2}{9ac^3de^2 + c^4d^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(c*x**2+a),x)
```

```
[Out] (c*e/(2*a**2) - d*sqrt(-a**5*c**3)/(2*a**5))*log(x + (12*a**6*e*(c*e/(2*a**
2) - d*sqrt(-a**5*c**3)/(2*a**5))**2 + 6*a**4*c*e**2*(c*e/(2*a**2) - d*sqrt
(-a**5*c**3)/(2*a**5)) + 2*a**3*c**2*d**2*(c*e/(2*a**2) - d*sqrt(-a**5*c**3
)/(2*a**5)) - 6*a**2*c**2*e**3 + 2*a*c**3*d**2*e)/(9*a*c**3*d*e**2 + c**4*d
**3)) + (c*e/(2*a**2) + d*sqrt(-a**5*c**3)/(2*a**5))*log(x + (12*a**6*e*(c*
e/(2*a**2) + d*sqrt(-a**5*c**3)/(2*a**5))**2 + 6*a**4*c*e**2*(c*e/(2*a**2)
+ d*sqrt(-a**5*c**3)/(2*a**5)) + 2*a**3*c**2*d**2*(c*e/(2*a**2) + d*sqrt(-a
**5*c**3)/(2*a**5)) - 6*a**2*c**2*e**3 + 2*a*c**3*d**2*e)/(9*a*c**3*d*e**2
+ c**4*d**3)) - c*e*log(x)/a**2 + (-2*a*d - 3*a*e*x + 6*c*d*x**2)/(6*a**2*x
**3)
```

3.288 $\int \frac{d+ex}{a-cx^2} \, dx$

Optimal. Leaf size=43

$$\frac{d \tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e \log\left(a-cx^2\right)}{2c}$$

```
[Out] -1/2*e*ln(-c*x^2+a)/c+d*arctanh(x*c^(1/2)/a^(1/2))/a^(1/2)/c^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.188, Rules used = $\{635, 208, 260\}$

$$\frac{d \tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e \log\left(a-cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a - c*x^2),x]
```

```
[Out] (d*ArcTanh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) - (e*Log[a - c*x^2])/(2*
c)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a-cx^2} \, dx &= d \int \frac{1}{a-cx^2} \, dx + e \int \frac{x}{a-cx^2} \, dx\\ &= \frac{d \tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e \log\left(a-cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 43, normalized size = 1.00

$$\frac{d \tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{e \log\left(a-cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a - c*x^2),x]
```

```
[Out] (d*ArcTanh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) - (e*Log[a - c*x^2])/(2*
c)
```

fricas [A] time = 0.88, size = 102, normalized size = 2.37

$$\left[-\frac{ae\log\left(cx^2-a\right)-\sqrt{ac}\,d\log\left(\frac{cx^2+2\sqrt{ac}\,x+a}{cx^2-a}\right)}{2\,ac},-\frac{ae\log\left(cx^2-a\right)+2\sqrt{-ac}\,d\arctan\left(\frac{\sqrt{-ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*(a*e*log(c*x^2 - a) - sqrt(a*c)*d*log((c*x^2 + 2*sqrt(a*c)*x + a)/(c*
x^2 - a)))/(a*c), -1/2*(a*e*log(c*x^2 - a) + 2*sqrt(-a*c)*d*arctan(sqrt(-a*
c)*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 37, normalized size = 0.86

$$-\frac{d\arctan\left(\frac{cx}{\sqrt{-ac}}\right)}{\sqrt{-ac}}-\frac{e\log\left(cx^2-a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -d*arctan(c*x/sqrt(-a*c))/sqrt(-a*c) - 1/2*e*log(c*x^2 - a)/c
```

maple [A] time = 0.04, size = 34, normalized size = 0.79

$$\frac{d\,\mathrm{arctanh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{e\ln\left(c\,x^2-a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c*x^2+a),x)
```

```
[Out] -1/2*e/c*ln(c*x^2-a)+d/(a*c)^(1/2)*arctanh(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.28, size = 49, normalized size = 1.14

$$-\frac{d\log\left(\frac{cx-\sqrt{ac}}{cx+\sqrt{ac}}\right)}{2\sqrt{ac}}-\frac{e\log\left(cx^2-a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/2*d*log((c*x - sqrt(a*c))/(c*x + sqrt(a*c)))/sqrt(a*c) - 1/2*e*log(c*x^2
 - a)/c
```

mupad [B] time = 0.21, size = 103, normalized size = 2.40

$$\frac{d\,\ln\left(a\,c+x\,\sqrt{a\,c^3}\right)\sqrt{a\,c^3}}{2\,a\,c^2}-\frac{e\,\ln\left(x\,\sqrt{a\,c^3}-a\,c\right)}{2\,c}-\frac{e\,\ln\left(a\,c+x\,\sqrt{a\,c^3}\right)}{2\,c}-\frac{d\,\ln\left(x\,\sqrt{a\,c^3}-a\,c\right)\sqrt{a\,c^3}}{2\,a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a - c*x^2),x)
```

```
[Out] (d*log(a*c + x*(a*c^3)^(1/2))*(a*c^3)^(1/2))/(2*a*c^2) - (e*log(x*(a*c^3)^(
1/2) - a*c))/(2*c) - (e*log(a*c + x*(a*c^3)^(1/2)))/(2*c) - (d*log(x*(a*c^3
)^(1/2) - a*c)*(a*c^3)^(1/2))/(2*a*c^2)
```

sympy [B] time = 0.28, size = 119, normalized size = 2.77

$$-\left(\frac{e}{2c}-\frac{d\sqrt{ac^3}}{2ac^2}\right)\log\left(x+\frac{-2ac\left(\frac{e}{2c}-\frac{d\sqrt{ac^3}}{2ac^2}\right)+ae}{cd}\right)-\left(\frac{e}{2c}+\frac{d\sqrt{ac^3}}{2ac^2}\right)\log\left(x+\frac{-2ac\left(\frac{e}{2c}+\frac{d\sqrt{ac^3}}{2ac^2}\right)+ae}{cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c*x**2+a),x)
```

```
[Out] -(e/(2*c) - d*sqrt(a*c**3)/(2*a*c**2))*log(x + (-2*a*c*(e/(2*c) - d*sqrt(a*
c**3)/(2*a*c**2)) + a*e)/(c*d)) - (e/(2*c) + d*sqrt(a*c**3)/(2*a*c**2))*log
(x + (-2*a*c*(e/(2*c) + d*sqrt(a*c**3)/(2*a*c**2)) + a*e)/(c*d))
```

3.289 $\int \frac{x^4(d+ex)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=85

$$-\frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{ae\log\left(a+cx^2\right)}{c^3}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}+\frac{3dx}{2c^2}+\frac{ex^2}{c^2}$$

```
[Out] 3/2*d*x/c^2+e*x^2/c^2-1/2*x^3*(e*x+d)/c/(c*x^2+a)-a*e*ln(c*x^2+a)/c^3-3/2*d
*arctan(x*c^(1/2)/a^(1/2))*a^(1/2)/c^(5/2)
```

Rubi [A] time = 0.07, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {819, 801, 635, 205, 260}

$$-\frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{ae\log\left(a+cx^2\right)}{c^3}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}+\frac{3dx}{2c^2}+\frac{ex^2}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (3*d*x)/(2*c^2) + (e*x^2)/c^2 - (x^3*(d + e*x))/(2*c*(a + c*x^2)) - (3*Sqrt
[a]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*c^(5/2)) - (a*e*Log[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^4(d+ex)}{\left(a+cx^2\right)^2}\,dx = -\frac{x^3(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \frac{x^2(3ad+4aex)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{x^3(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \left(\frac{3ad}{c}+\frac{4aex}{c}-\frac{3a^2d+4a^2ex}{c\left(a+cx^2\right)}\right)dx}{2ac}$$

$$= \frac{3dx}{2c^2}+\frac{ex^2}{c^2}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}-\frac{\int \frac{3a^2d+4a^2ex}{a+cx^2}\,dx}{2ac^2}$$

$$= \frac{3dx}{2c^2}+\frac{ex^2}{c^2}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}-\frac{(3ad)\int \frac{1}{a+cx^2}\,dx}{2c^2}-\frac{(2ae)\int \frac{x}{a+cx^2}\,dx}{c^2}$$

$$= \frac{3dx}{2c^2}+\frac{ex^2}{c^2}-\frac{x^3(d+ex)}{2c\left(a+cx^2\right)}-\frac{3\sqrt{a}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{ae\log\left(a+cx^2\right)}{c^3}$$

Mathematica [A] time = 0.06, size = 77, normalized size = 0.91

$$\frac{\frac{a(cdx-ae)}{a+cx^2}-3\sqrt{a}\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-2ae\log\left(a+cx^2\right)+2cdx+cex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (2*c*d*x + c*e*x^2 + (a*(-(a*e) + c*d*x))/(a + c*x^2) - 3*Sqrt[a]*Sqrt[c]*d
*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - 2*a*e*Log[a + c*x^2])/(2*c^3)
```

fricas [A] time = 0.97, size = 248, normalized size = 2.92

$$\left[\frac{2\,c^2ex^4+4\,c^2dx^3+2\,acex^2+6\,acdx-2\,a^2e+3\left(c^2dx^2+acd\right)\sqrt{-\frac{a}{c}}\,\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)-4\left(acex^2+a^2e\right)\log\left(cx\right.}{4\left(c^4x^2+ac^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*c^2*e*x^4 + 4*c^2*d*x^3 + 2*a*c*e*x^2 + 6*a*c*d*x - 2*a^2*e + 3*(c^
2*d*x^2 + a*c*d)*sqrt(-a/c)*log((c*x^2 - 2*c*x*sqrt(-a/c) - a)/(c*x^2 + a))
 - 4*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(c^4*x^2 + a*c^3), 1/2*(c^2*e*x^4
+ 2*c^2*d*x^3 + a*c*e*x^2 + 3*a*c*d*x - a^2*e - 3*(c^2*d*x^2 + a*c*d)*sqrt(
a/c)*arctan(c*x*sqrt(a/c)/a) - 2*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(c^4*x
^2 + a*c^3)]
```

giac [A] time = 0.20, size = 87, normalized size = 1.02

$$-\frac{3\,ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^2}-\frac{ae\log\left(cx^2+a\right)}{c^3}+\frac{c^2x^2e+2\,c^2dx}{2\,c^4}+\frac{acdx-a^2e}{2\left(cx^2+a\right)c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) - a*e*log(c*x^2 + a)/c^3 + 1
/2*(c^2*x^2*e + 2*c^2*d*x)/c^4 + 1/2*(a*c*d*x - a^2*e)/((c*x^2 + a)*c^3)
```

maple [A] time = 0.05, size = 88, normalized size = 1.04

$$\frac{adx}{2\left(c\,x^2+a\right)c^2}-\frac{3ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^2}+\frac{e\,x^2}{2c^2}-\frac{a^2e}{2\left(c\,x^2+a\right)c^3}-\frac{ae\ln\left(c\,x^2+a\right)}{c^3}+\frac{dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/2/c^2*e*x^2+1/c^2*d*x+1/2*a/c^2/(c*x^2+a)*d*x-1/2*a^2/c^3/(c*x^2+a)*e-a*e
*ln(c*x^2+a)/c^3-3/2*a/c^2*d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.22, size = 81, normalized size = 0.95

$$-\frac{3\,ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^2}+\frac{acdx-a^2e}{2\left(c^4x^2+ac^3\right)}-\frac{ae\log\left(cx^2+a\right)}{c^3}+\frac{ex^2+2\,dx}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*a*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(a*c*d*x - a^2*e)/(c^4
*x^2 + a*c^3) - a*e*log(c*x^2 + a)/c^3 + 1/2*(e*x^2 + 2*d*x)/c^2
```

mupad [B] time = 0.06, size = 81, normalized size = 0.95

$$\frac{e\,x^2}{2\,c^2}-\frac{\frac{a^2\,e}{2\,c}-\frac{a\,d\,x}{2}}{c^3\,x^2+a\,c^2}+\frac{d\,x}{c^2}-\frac{3\,\sqrt{a}\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,c^{5/2}}-\frac{a\,e\,\ln\left(c\,x^2+a\right)}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*x^2)/(2*c^2) - ((a^2*e)/(2*c) - (a*d*x)/2)/(a*c^2 + c^3*x^2) + (d*x)/c^2
 - (3*a^(1/2)*d*atan((c^(1/2)*x)/a^(1/2)))/(2*c^(5/2)) - (a*e*log(a + c*x^2
))/c^3
```

sympy [B] time = 0.72, size = 189, normalized size = 2.22

$$\left(-\frac{ae}{c^3}-\frac{3d\sqrt{-ac^7}}{4c^6}\right)\log\left(x+\frac{-4ae-4c^3\left(-\frac{ae}{c^3}-\frac{3d\sqrt{-ac^7}}{4c^6}\right)}{3cd}\right)+\left(-\frac{ae}{c^3}+\frac{3d\sqrt{-ac^7}}{4c^6}\right)\log\left(x+\frac{-4ae-4c^3\left(-\frac{ae}{c^3}+\frac{3d\sqrt{}}{4}\right.}{3cd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (-a*e/c**3 - 3*d*sqrt(-a*c**7)/(4*c**6))*log(x + (-4*a*e - 4*c**3*(-a*e/c**
3 - 3*d*sqrt(-a*c**7)/(4*c**6)))/(3*c*d)) + (-a*e/c**3 + 3*d*sqrt(-a*c**7)/
(4*c**6))*log(x + (-4*a*e - 4*c**3*(-a*e/c**3 + 3*d*sqrt(-a*c**7)/(4*c**6))
)/(3*c*d)) + (-a**2*e + a*c*d*x)/(2*a*c**3 + 2*c**4*x**2) + d*x/c**2 + e*x*
*2/(2*c**2)
```

3.290 $\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=78

$$-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{d\log\left(a+cx^2\right)}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{3ex}{2c^2}$$

```
[Out] 3/2*e*x/c^2-1/2*x^2*(e*x+d)/c/(c*x^2+a)+1/2*d*ln(c*x^2+a)/c^2-3/2*e*arctan(
x*c^(1/2)/a^(1/2))*a^(1/2)/c^(5/2)
```

Rubi [A] time = 0.04, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {819, 774, 635, 205, 260}

$$\frac{d\log\left(a+cx^2\right)}{2c^2}-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{3ex}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (3*e*x)/(2*c^2) - (x^2*(d + e*x))/(2*c*(a + c*x^2)) - (3*Sqrt[a]*e*ArcTan[(
Sqrt[c]*x)/Sqrt[a]])/(2*c^(5/2)) + (d*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(d+ex)}{\left(a+cx^2\right)^2}\,dx &= -\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{\int \frac{x(2ad+3aex)}{a+cx^2}\,dx}{2ac}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{\int \frac{-3a^2e+2acdx}{a+cx^2}\,dx}{2ac^2}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}+\frac{d\int \frac{x}{a+cx^2}\,dx}{c}-\frac{(3ae)\int \frac{1}{a+cx^2}\,dx}{2c^2}\\
&= \frac{3ex}{2c^2}-\frac{x^2(d+ex)}{2c\left(a+cx^2\right)}-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{d\log\left(a+cx^2\right)}{2c^2}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 75, normalized size = 0.96

$$-\frac{3\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{5/2}}+\frac{ad+aex}{2c^2\left(a+cx^2\right)}+\frac{d\log\left(a+cx^2\right)}{2c^2}+\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (e*x)/c^2 + (a*d + a*e*x)/(2*c^2*(a + c*x^2)) - (3*Sqrt[a]*e*ArcTan[(Sqrt[c
]*x)/Sqrt[a]])/(2*c^(5/2)) + (d*Log[a + c*x^2])/(2*c^2)
```

fricas [A] time = 0.77, size = 192, normalized size = 2.46

$$\left[\frac{4\,cex^3+6\,aex+3\left(cex^2+ae\right)\sqrt{-\frac{a}{c}}\log\left(\frac{cx^2-2\,cx\sqrt{-\frac{a}{c}}-a}{cx^2+a}\right)+2\,ad+2\left(cdx^2+ad\right)\log\left(cx^2+a\right)}{4\left(c^3x^2+ac^2\right)},\ \frac{2\,cex^3+3\,aex-}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(4*c*e*x^3 + 6*a*e*x + 3*(c*e*x^2 + a*e)*sqrt(-a/c)*log((c*x^2 - 2*c*x
*sqrt(-a/c) - a)/(c*x^2 + a)) + 2*a*d + 2*(c*d*x^2 + a*d)*log(c*x^2 + a))/(
c^3*x^2 + a*c^2), 1/2*(2*c*e*x^3 + 3*a*e*x - 3*(c*e*x^2 + a*e)*sqrt(a/c)*ar
ctan(c*x*sqrt(a/c)/a) + a*d + (c*d*x^2 + a*d)*log(c*x^2 + a))/(c^3*x^2 + a*
c^2)]
```

giac [A] time = 0.15, size = 67, normalized size = 0.86

$$-\frac{3\,a\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,c^2}+\frac{xe}{c^2}+\frac{d\log\left(cx^2+a\right)}{2\,c^2}+\frac{axe+ad}{2\left(cx^2+a\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*a*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c^2) + x*e/c^2 + 1/2*d*log(c*x^2
 + a)/c^2 + 1/2*(a*x*e + a*d)/((c*x^2 + a)*c^2)
```

maple [A] time = 0.05, size = 76, normalized size = 0.97

$$\frac{aex}{2\left(c\,x^{2}+a\right)c^{2}}-\frac{3ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^{2}}+\frac{ad}{2\left(c\,x^{2}+a\right)c^{2}}+\frac{d\ln\left(c\,x^{2}+a\right)}{2c^{2}}+\frac{ex}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/c^2*e*x+1/2/c^2/(c*x^2+a)*a*e*x+1/2/c^2/(c*x^2+a)*a*d+1/2*d*ln(c*x^2+a)/c
^2-3/2/c^2*a*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 67, normalized size = 0.86

$$-\frac{3\,ae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c^{2}}+\frac{aex+ad}{2\left(c^{3}x^{2}+ac^{2}\right)}+\frac{ex}{c^{2}}+\frac{d\log\left(cx^{2}+a\right)}{2\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*a*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(a*e*x + a*d)/(c^3*x^2
 + a*c^2) + e*x/c^2 + 1/2*d*log(c*x^2 + a)/c^2
```

mupad [B] time = 1.08, size = 65, normalized size = 0.83

$$\frac{\frac{a\,d}{2}+\frac{a\,e\,x}{2}}{c^{3}\,x^{2}+a\,c^{2}}+\frac{d\,\ln\left(c\,x^{2}+a\right)}{2\,c^{2}}+\frac{e\,x}{c^{2}}-\frac{3\,\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] ((a*d)/2 + (a*e*x)/2)/(a*c^2 + c^3*x^2) + (d*log(a + c*x^2))/(2*c^2) + (e*x
)/c^2 - (3*a^(1/2)*e*atan((c^(1/2)*x)/a^(1/2)))/(2*c^(5/2))
```

sympy [B] time = 0.67, size = 162, normalized size = 2.08

$$\left(\frac{d}{2c^{2}}-\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)\log\left(x+\frac{-4c^{2}\left(\frac{d}{2c^{2}}-\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)+2d}{3e}\right)+\left(\frac{d}{2c^{2}}+\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)\log\left(x+\frac{-4c^{2}\left(\frac{d}{2c^{2}}+\frac{3e\sqrt{-ac^{5}}}{4c^{5}}\right)+2d}{3e}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (d/(2*c**2) - 3*e*sqrt(-a*c**5)/(4*c**5))*log(x + (-4*c**2*(d/(2*c**2) - 3*
e*sqrt(-a*c**5)/(4*c**5)) + 2*d)/(3*e)) + (d/(2*c**2) + 3*e*sqrt(-a*c**5)/(
4*c**5))*log(x + (-4*c**2*(d/(2*c**2) + 3*e*sqrt(-a*c**5)/(4*c**5)) + 2*d)/
(3*e)) + (a*d + a*e*x)/(2*a*c**2 + 2*c**3*x**2) + e*x/c**2
```

3.291 $\int \frac{x^2(d+ex)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=67

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{e\log\left(a+cx^2\right)}{2c^2}-\frac{x(d+ex)}{2c\left(a+cx^2\right)}$$

```
[Out] -1/2*x*(e*x+d)/c/(c*x^2+a)+1/2*e*ln(c*x^2+a)/c^2+1/2*d*arctan(x*c^(1/2)/a^(
1/2))/c^(3/2)/a^(1/2)
```

Rubi **[A]** time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {819, 635, 205, 260}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{e\log\left(a+cx^2\right)}{2c^2}-\frac{x(d+ex)}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(x*(d + e*x))/(2*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[
a]*c^(3/2)) + (e*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^2(d+ex)}{\left(a+cx^2\right)^2}\,dx = -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{\int \frac{ad+2aex}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{d\int \frac{1}{a+cx^2}\,dx}{2c} + \frac{e\int \frac{x}{a+cx^2}\,dx}{c}$$

$$= -\frac{x(d+ex)}{2c\left(a+cx^2\right)} + \frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}} + \frac{e\log\left(a+cx^2\right)}{2c^2}$$

Mathematica [A] time = 0.04, size = 62, normalized size = 0.93

$$\frac{\frac{ae-cdx}{a+cx^2} + \frac{\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}} + e\log\left(a+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] ((a*e - c*d*x)/(a + c*x^2) + (Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a
] + e*Log[a + c*x^2])/(2*c^2)
```

fricas [A] time = 1.15, size = 186, normalized size = 2.78

$$\left[-\frac{2\,acdx - 2\,a^2e + \left(cdx^2 + ad\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\,\sqrt{-ac}\,x - a}{cx^2 + a}\right) - 2\,\left(acex^2 + a^2e\right)\log\left(cx^2 + a\right)}{4\,\left(ac^3x^2 + a^2c^2\right)}, -\frac{acdx - a^2e - \left(cdx^2 + a\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*c*d*x - 2*a^2*e + (c*d*x^2 + a*d)*sqrt(-a*c)*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)) - 2*(a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(a*c^3*x
^2 + a^2*c^2), -1/2*(a*c*d*x - a^2*e - (c*d*x^2 + a*d)*sqrt(a*c)*arctan(sqr
t(a*c)*x/a) - (a*c*e*x^2 + a^2*e)*log(c*x^2 + a))/(a*c^3*x^2 + a^2*c^2)]
```

giac [A] time = 0.19, size = 62, normalized size = 0.93

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c} + \frac{e\log\left(cx^2 + a\right)}{2\,c^2} - \frac{dx - \frac{ae}{c}}{2\,\left(cx^2 + a\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*e*log(c*x^2 + a)/c^2 - 1/2*
(d*x - a*e/c)/((c*x^2 + a)*c)
```

maple [A] time = 0.05, size = 61, normalized size = 0.91

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c} + \frac{e\ln\left(c\,x^2 + a\right)}{2c^2} + \frac{-\frac{dx}{2c} + \frac{ae}{2c^2}}{c\,x^2 + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (-1/2/c*d*x+1/2*a*e/c^2)/(c*x^2+a)+1/2*e*ln(c*x^2+a)/c^2+1/2/c*d/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [**A**] time = 1.16, size = 61, normalized size = 0.91

$$\frac{d\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,c}-\frac{cdx-ae}{2\left(c^3x^2+ac^2\right)}+\frac{e\log\left(cx^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*(c*d*x - a*e)/(c^3*x^2 + a*
c^2) + 1/2*e*log(c*x^2 + a)/c^2
```

mupad [**B**] time = 1.04, size = 72, normalized size = 1.07

$$\frac{e\,\ln\left(c\,x^2+a\right)}{2\,c^2}-\frac{d\,x}{2\,\left(c^2\,x^2+a\,c\right)}+\frac{a\,e}{2\,\left(c^3\,x^2+a\,c^2\right)}+\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,\sqrt{a}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*log(a + c*x^2))/(2*c^2) - (d*x)/(2*(a*c + c^2*x^2)) + (a*e)/(2*(a*c^2 +
c^3*x^2)) + (d*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2))
```

sympy [**B**] time = 0.58, size = 162, normalized size = 2.42

$$\left(\frac{e}{2c^2}-\frac{d\sqrt{-ac^5}}{4ac^4}\right)\log\left(x+\frac{4ac^2\left(\frac{e}{2c^2}-\frac{d\sqrt{-ac^5}}{4ac^4}\right)-2ae}{cd}\right)+\left(\frac{e}{2c^2}+\frac{d\sqrt{-ac^5}}{4ac^4}\right)\log\left(x+\frac{4ac^2\left(\frac{e}{2c^2}+\frac{d\sqrt{-ac^5}}{4ac^4}\right)-2ae}{cd}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] (e/(2*c**2) - d*sqrt(-a*c**5)/(4*a*c**4))*log(x + (4*a*c**2*(e/(2*c**2) - d
*sqrt(-a*c**5)/(4*a*c**4)) - 2*a*e)/(c*d)) + (e/(2*c**2) + d*sqrt(-a*c**5)/
(4*a*c**4))*log(x + (4*a*c**2*(e/(2*c**2) + d*sqrt(-a*c**5)/(4*a*c**4)) - 2
*a*e)/(c*d)) + (a*e - c*d*x)/(2*a*c**2 + 2*c**3*x**2)
```

3.292 $\int \frac{x(d+ex)}{\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=50

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}-\frac{d+ex}{2c\left(a+cx^2\right)}$$

```
[Out] 1/2*(-e*x-d)/c/(c*x^2+a)+1/2*e*arctan(x*c^(1/2)/a^(1/2))/c^(3/2)/a^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {778, 205}

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}-\frac{d+ex}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(d + e*x)/(2*c*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[a]*c
^(3/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(a+cx^2\right)^2} \, dx &= -\frac{d+ex}{2c\left(a+cx^2\right)}+\frac{e\int \frac{1}{a+cx^2} \, dx}{2c}\\ &= -\frac{d+ex}{2c\left(a+cx^2\right)}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 53, normalized size = 1.06

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{a}\,c^{3/2}}+\frac{-d-ex}{2c\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (-d - e*x)/(2*c*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*Sqrt[a]*c
^(3/2))
```

fricas [A] time = 0.87, size = 137, normalized size = 2.74

$$\left[-\frac{2\,acex+2\,acd+\left(cex^2+ae\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{4\left(ac^3x^2+a^2c^2\right)},-\frac{acex+acd-\left(cex^2+ae\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\left(ac^3x^2+a^2c^2\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*a*c*e*x + 2*a*c*d + (c*e*x^2 + a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt
(-a*c)*x - a)/(c*x^2 + a)))/(a*c^3*x^2 + a^2*c^2), -1/2*(a*c*e*x + a*c*d -
(c*e*x^2 + a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a*c^3*x^2 + a^2*c^2)]
```

giac [A] time = 0.17, size = 42, normalized size = 0.84

$$\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,c}-\frac{xe+d}{2\left(cx^2+a\right)c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*c) - 1/2*(x*e + d)/((c*x^2 + a)*c)
```

maple [A] time = 0.05, size = 46, normalized size = 0.92

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c}+\frac{-\frac{ex}{2c}-\frac{d}{2c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (-1/2/c*e*x-1/2/c*d)/(c*x^2+a)+1/2/c*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x
)
```

maxima [A] time = 1.21, size = 41, normalized size = 0.82

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,c}-\frac{ex+d}{2\left(c^2x^2+ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) - 1/2*(e*x + d)/(c^2*x^2 + a*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.88

$$\frac{e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,\sqrt{a}\,c^{3/2}}-\frac{\frac{d}{2\,c}+\frac{e\,x}{2\,c}}{c\,x^2+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (e*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2)) - (d/(2*c) + (e*x)/(2*c))
/(a + c*x^2)
```

sympy [**A**] time = 0.36, size = 85, normalized size = 1.70

$$e\left(-\frac{\sqrt{-\frac{1}{ac^3}}\log\left(-ac\sqrt{-\frac{1}{ac^3}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{ac^3}}\log\left(ac\sqrt{-\frac{1}{ac^3}}+x\right)}{4}\right)+\frac{-d-ex}{2ac+2c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] e*(-sqrt(-1/(a*c**3))*log(-a*c*sqrt(-1/(a*c**3)) + x)/4 + sqrt(-1/(a*c**3))
*log(a*c*sqrt(-1/(a*c**3)) + x)/4) + (-d - e*x)/(2*a*c + 2*c**2*x**2)
```

3.293 $\int \frac{d+ex}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=57

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{ae-cdx}{2ac\left(a+cx^2\right)}$$

```
[Out] 1/2*(c*d*x-a*e)/a/c/(c*x^2+a)+1/2*d*arctan(x*c^(1/2)/a^(1/2))/a^(3/2)/c^(1/
2)
```

Rubi [A] time = 0.01, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {639, 205}

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{ae-cdx}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^2,x]
```

```
[Out] -(a*e - c*d*x)/(2*a*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(
3/2)*Sqrt[c])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a+cx^2\right)^2}\,dx &= -\frac{ae-cdx}{2ac\left(a+cx^2\right)}+\frac{d\int \frac{1}{a+cx^2}\,dx}{2a}\\ &= -\frac{ae-cdx}{2ac\left(a+cx^2\right)}+\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 57, normalized size = 1.00

$$\frac{d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{cdx-ae}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^2,x]
```

```
[Out] (-(a*e) + c*d*x)/(2*a*c*(a + c*x^2)) + (d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*Sqrt[c])
```

fricas [A] time = 0.89, size = 140, normalized size = 2.46

$$\left[\frac{2\,acdx - 2\,a^{2}e - \left(cdx^{2} + ad\right)\sqrt{-ac}\,\log\left(\frac{cx^{2} - 2\,\sqrt{-ac}\,x - a}{cx^{2} + a}\right)}{4\,\left(a^{2}c^{2}x^{2} + a^{3}c\right)}, \frac{acdx - a^{2}e + \left(cdx^{2} + ad\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,\left(a^{2}c^{2}x^{2} + a^{3}c\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*a*c*d*x - 2*a^2*e - (c*d*x^2 + a*d)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)))/(a^2*c^2*x^2 + a^3*c), 1/2*(a*c*d*x - a^2*e + (c
*d*x^2 + a*d)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.15, size = 48, normalized size = 0.84

$$\frac{d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a} + \frac{cdx - ae}{2\,\left(cx^{2} + a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(c*d*x - a*e)/((c*x^2 + a)*
a*c)
```

maple [A] time = 0.06, size = 49, normalized size = 0.86

$$\frac{d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,a} + \frac{2cdx - 2ae}{4\left(c\,x^{2} + a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/4*(2*c*d*x-2*a*e)/a/c/(c*x^2+a)+1/2*d/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)
```

maxima [A] time = 1.26, size = 48, normalized size = 0.84

$$\frac{d \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a} + \frac{cdx - ae}{2\,\left(ac^{2}x^{2} + a^{2}c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(c*d*x - a*e)/(a*c^2*x^2 +
a^2*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.77

$$\frac{d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,a^{3/2}\,\sqrt{c}} - \frac{\frac{e}{2\,c} - \frac{d\,x}{2\,a}}{c\,x^{2} + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^2,x)
```

```
[Out] (d*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(3/2)*c^(1/2)) - (e/(2*c) - (d*x)/(2*a))
/(a + c*x^2)
```

sympy [**A**] time = 0.36, size = 90, normalized size = 1.58

$$d\left(-\frac{\sqrt{-\frac{1}{a^3c}}\log\left(-a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^3c}}\log\left(a^2\sqrt{-\frac{1}{a^3c}}+x\right)}{4}\right)+\frac{-ae+cdx}{2a^2c+2ac^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] d*(-sqrt(-1/(a**3*c))*log(-a**2*sqrt(-1/(a**3*c)) + x)/4 + sqrt(-1/(a**3*c)
)*log(a**2*sqrt(-1/(a**3*c)) + x)/4) + (-a*e + c*d*x)/(2*a**2*c + 2*a*c**2*
x**2)
```

3.294 $\int \frac{d+ex}{x\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=73

$$\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{d\log\left(a+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{d+ex}{2a\left(a+cx^2\right)}$$

```
[Out] 1/2*(e*x+d)/a/(c*x^2+a)+d*ln(x)/a^2-1/2*d*ln(c*x^2+a)/a^2+1/2*e*arctan(x*c^
(1/2)/a^(1/2))/a^(3/2)/c^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$-\frac{d\log\left(a+cx^2\right)}{2a^2}+\frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{d\log(x)}{a^2}+\frac{d+ex}{2a\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + c*x^2)^2),x]
```

```
[Out] (d + e*x)/(2*a*(a + c*x^2)) + (e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*Sq
rt[c]) + (d*Log[x])/a^2 - (d*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x\left(a+cx^2\right)^2}\,dx &= \frac{d+ex}{2a\left(a+cx^2\right)} - \frac{\int \frac{-2acd-acex}{x\left(a+cx^2\right)}\,dx}{2a^2c} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} - \frac{\int \left(-\frac{2cd}{x} + \frac{c(-ae+2cdx)}{a+cx^2}\right)dx}{2a^2c} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{\int \frac{-ae+2cdx}{a+cx^2}\,dx}{2a^2} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{(cd)\int \frac{x}{a+cx^2}\,dx}{a^2} + \frac{e\int \frac{1}{a+cx^2}\,dx}{2a} \\
&= \frac{d+ex}{2a\left(a+cx^2\right)} + \frac{e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}} + \frac{d\log(x)}{a^2} - \frac{d\log\left(a+cx^2\right)}{2a^2}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 65, normalized size = 0.89

$$
\frac{\frac{a(d+ex)}{a+cx^2} - d\log\left(a+cx^2\right) + \frac{\sqrt{a}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{c}} + 2d\log(x)}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + c*x^2)^2),x]
```

```
[Out] ((a*(d + e*x))/(a + c*x^2) + (Sqrt[a]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[c
] + 2*d*Log[x] - d*Log[a + c*x^2])/(2*a^2)
```

fricas [A] time = 0.85, size = 217, normalized size = 2.97

$$
\Bigg[\frac{2\,acex + 2\,acd - \left(cex^2 + ae\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\,\sqrt{-ac}\,x - a}{cx^2 + a}\right) - 2\left(c^2dx^2 + acd\right)\log\left(cx^2 + a\right) + 4\left(c^2dx^2 + acd\right)\log(x}{4\left(a^2c^2x^2 + a^3c\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*a*c*e*x + 2*a*c*d - (c*e*x^2 + a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)) - 2*(c^2*d*x^2 + a*c*d)*log(c*x^2 + a) + 4*(c^2*d
*x^2 + a*c*d)*log(x))/(a^2*c^2*x^2 + a^3*c), 1/2*(a*c*e*x + a*c*d + (c*e*x^
2 + a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (c^2*d*x^2 + a*c*d)*log(c*x^2 +
a) + 2*(c^2*d*x^2 + a*c*d)*log(x))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.15, size = 67, normalized size = 0.92

$$
\frac{\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,a} - \frac{d\log\left(cx^2 + a\right)}{2\,a^2} + \frac{d\log\left(|x|\right)}{a^2} + \frac{axe + ad}{2\left(cx^2 + a\right)a^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a) - 1/2*d*log(c*x^2 + a)/a^2 + d*lo
g(abs(x))/a^2 + 1/2*(a*x*e + a*d)/((c*x^2 + a)*a^2)
```

maple [A] time = 0.05, size = 74, normalized size = 1.01

$$\frac{ex}{2\left(c\,x^{2}+a\right)a}+\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{d}{2\left(c\,x^{2}+a\right)a}+\frac{d\ln(x)}{a^{2}}-\frac{d\ln\left(c\,x^{2}+a\right)}{2a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+a)^2,x)
```

```
[Out] 1/2/a/(c*x^2+a)*e*x+1/2/a/(c*x^2+a)*d-1/2*d*ln(c*x^2+a)/a^2+1/2/a*e/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a^2*d*ln(x)
```

maxima [A] time = 1.28, size = 61, normalized size = 0.84

$$\frac{e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\,a}+\frac{ex+d}{2\left(acx^{2}+a^{2}\right)}-\frac{d\log\left(cx^{2}+a\right)}{2\,a^{2}}+\frac{d\log(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(e*x + d)/(a*c*x^2 + a^2) -
 1/2*d*log(c*x^2 + a)/a^2 + d*log(x)/a^2
```

mupad [B] time = 1.26, size = 165, normalized size = 2.26

$$\frac{\frac{d}{2\,a}+\frac{e\,x}{2\,a}}{c\,x^{2}+a}+\frac{d\,\ln(x)}{a^{2}}+\frac{\ln\left(a\,e\,\sqrt{-a^{5}\,c}-6\,a^{3}\,c\,d+a^{3}\,c\,e\,x+6\,c\,d\,x\,\sqrt{-a^{5}\,c}\right)\left(e\,\sqrt{-a^{5}\,c}-2\,a^{2}\,c\,d\right)}{4\,a^{4}\,c}-\ln\left(a\,e\,\sqrt{-a^{5}\,c}+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + c*x^2)^2),x)
```

```
[Out] (d/(2*a) + (e*x)/(2*a))/(a + c*x^2) + (d*log(x))/a^2 + (log(a*e*(-a^5*c)^(1
/2) - 6*a^3*c*d + a^3*c*e*x + 6*c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) - 2
*a^2*c*d))/(4*a^4*c) - (log(a*e*(-a^5*c)^(1/2) + 6*a^3*c*d - a^3*c*e*x + 6*
c*d*x*(-a^5*c)^(1/2))*(e*(-a^5*c)^(1/2) + 2*a^2*c*d))/(4*a^4*c)
```

sympy [B] time = 1.71, size = 359, normalized size = 4.92

$$\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)\log\left(x+\frac{-96a^{4}cd\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)^{2}+4a^{3}e^{2}\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)+48a^{2}cd^{2}\left(-\frac{d}{2a^{2}}-\frac{e\sqrt{-a^{5}c}}{4a^{4}c}\right)-4ade}{ae^{3}+36cd^{2}e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+a)**2,x)
```

```
[Out] (-d/(2*a**2) - e*sqrt(-a**5*c)/(4*a**4*c))*log(x + (-96*a**4*c*d*(-d/(2*a**
2) - e*sqrt(-a**5*c)/(4*a**4*c))**2 + 4*a**3*e**2*(-d/(2*a**2) - e*sqrt(-a*
*5*c)/(4*a**4*c)) + 48*a**2*c*d**2*(-d/(2*a**2) - e*sqrt(-a**5*c)/(4*a**4*c
)) - 4*a*d*e**2 + 48*c*d**3)/(a*e**3 + 36*c*d**2*e)) + (-d/(2*a**2) + e*sqr
t(-a**5*c)/(4*a**4*c))*log(x + (-96*a**4*c*d*(-d/(2*a**2) + e*sqrt(-a**5*c)
/(4*a**4*c))**2 + 4*a**3*e**2*(-d/(2*a**2) + e*sqrt(-a**5*c)/(4*a**4*c)) +
48*a**2*c*d**2*(-d/(2*a**2) + e*sqrt(-a**5*c)/(4*a**4*c)) - 4*a*d*e**2 + 48
*c*d**3)/(a*e**3 + 36*c*d**2*e)) + (d + e*x)/(2*a**2 + 2*a*c*x**2) + d*log(
x)/a**2
```

3.295 $\int \frac{d+ex}{x^2\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=87

$$-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{e\log\left(a+cx^2\right)}{2a^2}-\frac{3d}{2a^2x}+\frac{e\log(x)}{a^2}+\frac{d+ex}{2ax\left(a+cx^2\right)}$$

```
[Out] -3/2*d/a^2/x+1/2*(e*x+d)/a/x/(c*x^2+a)+e*ln(x)/a^2-1/2*e*ln(c*x^2+a)/a^2-3/
2*d*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/a^(5/2)
```

Rubi [A] time = 0.07, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{e\log\left(a+cx^2\right)}{2a^2}-\frac{3d}{2a^2x}+\frac{e\log(x)}{a^2}+\frac{d+ex}{2ax\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + c*x^2)^2),x]
```

```
[Out] (-3*d)/(2*a^2*x) + (d + e*x)/(2*a*x*(a + c*x^2)) - (3*Sqrt[c]*d*ArcTan[(Sqr
t[c]*x)/Sqrt[a]])/(2*a^(5/2)) + (e*Log[x])/a^2 - (e*Log[a + c*x^2])/(2*a^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x^2\left(a+cx^2\right)^2}\,dx &= \frac{d+ex}{2ax\left(a+cx^2\right)}-\frac{\int \frac{-3acd-2acex}{x^2\left(a+cx^2\right)}\,dx}{2a^2c}\\
&= \frac{d+ex}{2ax\left(a+cx^2\right)}-\frac{\int \left(-\frac{3cd}{x^2}-\frac{2ce}{x}+\frac{c^2(3d+2ex)}{a+cx^2}\right)dx}{2a^2c}\\
&= -\frac{3d}{2a^2x}+\frac{d+ex}{2ax\left(a+cx^2\right)}+\frac{e\log(x)}{a^2}-\frac{c\int \frac{3d+2ex}{a+cx^2}\,dx}{2a^2}\\
&= -\frac{3d}{2a^2x}+\frac{d+ex}{2ax\left(a+cx^2\right)}+\frac{e\log(x)}{a^2}-\frac{(3cd)\int \frac{1}{a+cx^2}\,dx}{2a^2}-\frac{(ce)\int \frac{x}{a+cx^2}\,dx}{a^2}\\
&= -\frac{3d}{2a^2x}+\frac{d+ex}{2ax\left(a+cx^2\right)}-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{e\log(x)}{a^2}-\frac{e\log\left(a+cx^2\right)}{2a^2}
\end{aligned}
$$

Mathematica [**A**] time = 0.12, size = 81, normalized size = 0.93

$$
-\frac{3\sqrt{c}\,d\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{\frac{2ad-aex+3cdx^2}{ax+cx^3}+e\log\left(a+cx^2\right)-2e\log(x)}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + c*x^2)^2),x]
```

```
[Out] (-3*Sqrt[c]*d*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(5/2)) - ((2*a*d - a*e*x +
3*c*d*x^2)/(a*x + c*x^3) - 2*e*Log[x] + e*Log[a + c*x^2])/(2*a^2)
```

fricas [**A**] time = 0.54, size = 225, normalized size = 2.59

$$
\left[-\frac{6\,cdx^2-2\,aex-3\left(cdx^3+adx\right)\sqrt{-\frac{c}{a}}\,\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)+4\,ad+2\left(cex^3+aex\right)\log\left(cx^2+a\right)-4\left(cex^3+aex\right)}{4\left(a^2cx^3+a^3x\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(6*c*d*x^2 - 2*a*e*x - 3*(c*d*x^3 + a*d*x)*sqrt(-c/a)*log((c*x^2 - 2*
a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + 4*a*d + 2*(c*e*x^3 + a*e*x)*log(c*x^2 +
a) - 4*(c*e*x^3 + a*e*x)*log(x))/(a^2*c*x^3 + a^3*x), -1/2*(3*c*d*x^2 - a*e
*x + 3*(c*d*x^3 + a*d*x)*sqrt(c/a)*arctan(x*sqrt(c/a)) + 2*a*d + (c*e*x^3 +
 a*e*x)*log(c*x^2 + a) - 2*(c*e*x^3 + a*e*x)*log(x))/(a^2*c*x^3 + a^3*x)]
```

giac [**A**] time = 0.16, size = 80, normalized size = 0.92

$$
-\frac{3\,cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^2}-\frac{e\log\left(cx^2+a\right)}{2\,a^2}+\frac{e\log\left(|x|\right)}{a^2}-\frac{3\,cdx^2-axe+2\,ad}{2\left(cx^3+ax\right)a^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*e*log(c*x^2 + a)/a^2 +
 e*log(abs(x))/a^2 - 1/2*(3*c*d*x^2 - a*x*e + 2*a*d)/((c*x^3 + a*x)*a^2)
```

maple [**A**] time = 0.08, size = 85, normalized size = 0.98

$$-\frac{cdx}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{3cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a^{2}}+\frac{e}{2\left(c\,x^{2}+a\right)a}+\frac{e\ln(x)}{a^{2}}-\frac{e\ln\left(c\,x^{2}+a\right)}{2a^{2}}-\frac{d}{a^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*d*x+1/2/a/(c*x^2+a)*e-1/2*e*ln(c*x^2+a)/a^2-3/2*c/a^2*
d/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)+1/a^2*e*ln(x)-1/a^2*d/x
```

maxima [**A**] time = 1.12, size = 78, normalized size = 0.90

$$-\frac{3\,cd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^{2}}-\frac{3\,cdx^{2}-aex+2\,ad}{2\left(a^{2}cx^{3}+a^{3}x\right)}-\frac{e\log\left(cx^{2}+a\right)}{2\,a^{2}}+\frac{e\log(x)}{a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*c*d*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*(3*c*d*x^2 - a*e*x + 2
*a*d)/(a^2*c*x^3 + a^3*x) - 1/2*e*log(c*x^2 + a)/a^2 + e*log(x)/a^2
```

mupad [**B**] time = 1.22, size = 165, normalized size = 1.90

$$\frac{e\,\ln(x)}{a^{2}}-\frac{\ln\left(2\,a^{3}\,e+d\,\sqrt{-a^{5}\,c}\,-2\,e\,x\,\sqrt{-a^{5}\,c}\,+a^{2}\,c\,d\,x\right)\left(2\,a^{3}\,e+3\,d\,\sqrt{-a^{5}\,c}\right)}{4\,a^{5}}-\ln\left(2\,a^{3}\,e-d\,\sqrt{-a^{5}\,c}\,+2\,e\,x\,\sqrt{\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + c*x^2)^2),x)
```

```
[Out] (e*log(x))/a^2 - (log(2*a^3*e + d*(-a^5*c)^(1/2) - 2*e*x*(-a^5*c)^(1/2) + a
^2*c*d*x)*(2*a^3*e + 3*d*(-a^5*c)^(1/2)))/(4*a^5) - (log(2*a^3*e - d*(-a^5*
c)^(1/2) + 2*e*x*(-a^5*c)^(1/2) + a^2*c*d*x)*(2*a^3*e - 3*d*(-a^5*c)^(1/2))
)/(4*a^5) - (d/a - (e*x)/(2*a) + (3*c*d*x^2)/(2*a^2))/(a*x + c*x^3)
```

sympy [**B**] time = 1.81, size = 389, normalized size = 4.47

$$\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)\log\left(x+\frac{32a^{6}e\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)^{2}-16a^{4}e^{2}\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-12a^{3}cd^{2}\left(-\frac{e}{2a^{2}}-\frac{3d\sqrt{-a^{5}c}}{4a^{5}}\right)-}{36acde^{2}+9c^{2}d^{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+a)**2,x)
```

```
[Out] (-e/(2*a**2) - 3*d*sqrt(-a**5*c)/(4*a**5))*log(x + (32*a**6*e*(-e/(2*a**2)
- 3*d*sqrt(-a**5*c)/(4*a**5))**2 - 16*a**4*e**2*(-e/(2*a**2) - 3*d*sqrt(-a*
*5*c)/(4*a**5)) - 12*a**3*c*d**2*(-e/(2*a**2) - 3*d*sqrt(-a**5*c)/(4*a**5))
 - 16*a**2*e**3 + 12*a*c*d**2*e)/(36*a*c*d*e**2 + 9*c**2*d**3)) + (-e/(2*a*
*2) + 3*d*sqrt(-a**5*c)/(4*a**5))*log(x + (32*a**6*e*(-e/(2*a**2) + 3*d*sqr
t(-a**5*c)/(4*a**5))**2 - 16*a**4*e**2*(-e/(2*a**2) + 3*d*sqrt(-a**5*c)/(4*
a**5)) - 12*a**3*c*d**2*(-e/(2*a**2) + 3*d*sqrt(-a**5*c)/(4*a**5)) - 16*a**
2*e**3 + 12*a*c*d**2*e)/(36*a*c*d*e**2 + 9*c**2*d**3)) + (-2*a*d + a*e*x -
3*c*d*x**2)/(2*a**3*x + 2*a**2*c*x**3) + e*log(x)/a**2
```

3.296 $\int \frac{d+ex}{x^3\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=96

$$-\frac{3\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{cd\log\left(a+cx^2\right)}{a^3}-\frac{2cd\log(x)}{a^3}-\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}$$

```
[Out] -d/a^2/x^2-3/2*e/a^2/x+1/2*(e*x+d)/a/x^2/(c*x^2+a)-2*c*d*ln(x)/a^3+c*d*ln(c
*x^2+a)/a^3-3/2*e*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/a^(5/2)
```

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {823, 801, 635, 205, 260}

$$\frac{cd\log\left(a+cx^2\right)}{a^3}-\frac{2cd\log(x)}{a^3}-\frac{3\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + c*x^2)^2),x]
```

```
[Out] -(d/(a^2*x^2)) - (3*e)/(2*a^2*x) + (d + e*x)/(2*a*x^2*(a + c*x^2)) - (3*Sqr
t[c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(5/2)) - (2*c*d*Log[x])/a^3 + (c*d
*Log[a + c*x^2])/a^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x^3\left(a+cx^2\right)^2}\,dx &= \frac{d+ex}{2ax^2\left(a+cx^2\right)}-\frac{\int \frac{-4acd-3acex}{x^3\left(a+cx^2\right)}\,dx}{2a^2c}\\
&= \frac{d+ex}{2ax^2\left(a+cx^2\right)}-\frac{\int \left(-\frac{4cd}{x^3}-\frac{3ce}{x^2}+\frac{4c^2d}{ax}+\frac{c^2(3ae-4cdx)}{a\left(a+cx^2\right)}\right)dx}{2a^2c}\\
&= -\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}-\frac{2cd\log(x)}{a^3}-\frac{c\int \frac{3ae-4cdx}{a+cx^2}\,dx}{2a^3}\\
&= -\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}-\frac{2cd\log(x)}{a^3}+\frac{\left(2c^2d\right)\int \frac{x}{a+cx^2}\,dx}{a^3}-\frac{(3ce)\int \frac{1}{a+cx^2}\,dx}{2a^2}\\
&= -\frac{d}{a^2x^2}-\frac{3e}{2a^2x}+\frac{d+ex}{2ax^2\left(a+cx^2\right)}-\frac{3\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{2cd\log(x)}{a^3}+\frac{cd\log\left(a+cx^2\right)}{a^3}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 82, normalized size = 0.85

$$-\frac{\frac{ac(d+ex)}{a+cx^2}-2cd\log\left(a+cx^2\right)+3\sqrt{a}\sqrt{c}\,e\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)+\frac{ad}{x^2}+\frac{2ae}{x}+4cd\log(x)}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + c*x^2)^2),x]
```

```
[Out] -1/2*((a*d)/x^2 + (2*a*e)/x + (a*c*(d + e*x))/(a + c*x^2) + 3*Sqrt[a]*Sqrt[
c]*e*ArcTan[(Sqrt[c]*x)/Sqrt[a]] + 4*c*d*Log[x] - 2*c*d*Log[a + c*x^2])/a^3
```

fricas [A] time = 1.05, size = 285, normalized size = 2.97

$$\left[-\frac{6\,acex^3+4\,acdx^2+4\,a^2ex+2\,a^2d-3\left(acex^4+a^2ex^2\right)\sqrt{-\frac{c}{a}}\,\log\left(\frac{cx^2-2\,ax\sqrt{-\frac{c}{a}}-a}{cx^2+a}\right)-4\left(c^2dx^4+acdx^2\right)\log\left(cx\right.}{4\left(a^3cx^4+a^4x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(6*a*c*e*x^3 + 4*a*c*d*x^2 + 4*a^2*e*x + 2*a^2*d - 3*(a*c*e*x^4 + a^2
*e*x^2)*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) - 4*(c^2
*d*x^4 + a*c*d*x^2)*log(c*x^2 + a) + 8*(c^2*d*x^4 + a*c*d*x^2)*log(x))/(a^3
*c*x^4 + a^4*x^2), -1/2*(3*a*c*e*x^3 + 2*a*c*d*x^2 + 2*a^2*e*x + a^2*d + 3*
(a*c*e*x^4 + a^2*e*x^2)*sqrt(c/a)*arctan(x*sqrt(c/a)) - 2*(c^2*d*x^4 + a*c*
d*x^2)*log(c*x^2 + a) + 4*(c^2*d*x^4 + a*c*d*x^2)*log(x))/(a^3*c*x^4 + a^4*
x^2)]
```

giac [A] time = 0.16, size = 95, normalized size = 0.99

$$-\frac{3\,c\arctan\left(\frac{cx}{\sqrt{ac}}\right)e}{2\,\sqrt{ac}\,a^2}+\frac{cd\log\left(cx^2+a\right)}{a^3}-\frac{2\,cd\log\left(|x|\right)}{a^3}-\frac{3\,acx^3e+2\,acdx^2+2\,a^2xe+a^2d}{2\left(cx^2+a\right)a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -3/2*c*arctan(c*x/sqrt(a*c))*e/(sqrt(a*c)*a^2) + c*d*log(c*x^2 + a)/a^3 - 2
*c*d*log(abs(x))/a^3 - 1/2*(3*a*c*x^3*e + 2*a*c*d*x^2 + 2*a^2*x*e + a^2*d)/
((c*x^2 + a)*a^3*x^2)
```

maple [A]   time = 0.06, size = 97, normalized size = 1.01

$$-\frac{cex}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{3ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a^{2}}-\frac{cd}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{2cd\ln(x)}{a^{3}}+\frac{cd\ln\left(c\,x^{2}+a\right)}{a^{3}}-\frac{e}{a^{2}x}-\frac{d}{2a^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*e*x-1/2*c/a^2/(c*x^2+a)*d+c*d*ln(c*x^2+a)/a^3-3/2*c/a^
2*e/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)-1/a^2*e/x-1/2/a^2*d/x^2-2*c*d*ln(
x)/a^3
```

maxima [A]   time = 1.18, size = 88, normalized size = 0.92

$$-\frac{3\,ce\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a^{2}}-\frac{3\,cex^{3}+2\,cdx^{2}+2\,aex+ad}{2\left(a^{2}cx^{4}+a^{3}x^{2}\right)}+\frac{cd\log\left(cx^{2}+a\right)}{a^{3}}-\frac{2\,cd\log(x)}{a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -3/2*c*e*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) - 1/2*(3*c*e*x^3 + 2*c*d*x^2
 + 2*a*e*x + a*d)/(a^2*c*x^4 + a^3*x^2) + c*d*log(c*x^2 + a)/a^3 - 2*c*d*lo
g(x)/a^3
```

mupad [B]   time = 1.26, size = 186, normalized size = 1.94

$$\frac{\ln\left(a\,e\,\sqrt{-a^{7}\,c}\,+4\,a^{4}\,c\,d-a^{4}\,c\,e\,x+4\,c\,d\,x\,\sqrt{-a^{7}\,c}\right)\left(3\,e\,\sqrt{-a^{7}\,c}\,+4\,a^{3}\,c\,d\right)}{4\,a^{6}}-\frac{\ln\left(a\,e\,\sqrt{-a^{7}\,c}\,-4\,a^{4}\,c\,d+a^{4}\,c\,e\,x+\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + c*x^2)^2),x)
```

```
[Out] (log(a*e*(-a^7*c)^(1/2) + 4*a^4*c*d - a^4*c*e*x + 4*c*d*x*(-a^7*c)^(1/2))*(
3*e*(-a^7*c)^(1/2) + 4*a^3*c*d))/(4*a^6) - (log(a*e*(-a^7*c)^(1/2) - 4*a^4*
c*d + a^4*c*e*x + 4*c*d*x*(-a^7*c)^(1/2))*(3*e*(-a^7*c)^(1/2) - 4*a^3*c*d))
/(4*a^6) - (d/(2*a) + (e*x)/a + (c*d*x^2)/a^2 + (3*c*e*x^3)/(2*a^2))/(a*x^2
 + c*x^4) - (2*c*d*log(x))/a^3
```

sympy [B]   time = 2.04, size = 398, normalized size = 4.15

$$\left(\frac{cd}{a^{3}}-\frac{3e\sqrt{-a^{7}c}}{4a^{6}}\right)\log\left(x+\frac{-64a^{6}d\left(\frac{cd}{a^{3}}-\frac{3e\sqrt{-a^{7}c}}{4a^{6}}\right)^{2}-12a^{4}e^{2}\left(\frac{cd}{a^{3}}-\frac{3e\sqrt{-a^{7}c}}{4a^{6}}\right)-64a^{3}cd^{2}\left(\frac{cd}{a^{3}}-\frac{3e\sqrt{-a^{7}c}}{4a^{6}}\right)-24acde^{2}+}{9ace^{3}+144c^{2}d^{2}e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+a)**2,x)
```

```
[Out] (c*d/a**3 - 3*e*sqrt(-a**7*c)/(4*a**6))*log(x + (-64*a**6*d*(c*d/a**3 - 3*e
*sqrt(-a**7*c)/(4*a**6))**2 - 12*a**4*e**2*(c*d/a**3 - 3*e*sqrt(-a**7*c)/(4
*a**6)) - 64*a**3*c*d**2*(c*d/a**3 - 3*e*sqrt(-a**7*c)/(4*a**6)) - 24*a*c*d
*e**2 + 128*c**2*d**3)/(9*a*c*e**3 + 144*c**2*d**2*e)) + (c*d/a**3 + 3*e*sq
rt(-a**7*c)/(4*a**6))*log(x + (-64*a**6*d*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*
a**6))**2 - 12*a**4*e**2*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*a**6)) - 64*a**3*
c*d**2*(c*d/a**3 + 3*e*sqrt(-a**7*c)/(4*a**6)) - 24*a*c*d*e**2 + 128*c**2*d
**3)/(9*a*c*e**3 + 144*c**2*d**2*e)) + (-a*d - 2*a*e*x - 2*c*d*x**2 - 3*c*e
*x**3)/(2*a**3*x**2 + 2*a**2*c*x**4) - 2*c*d*log(x)/a**3
```

3.297 $\int \frac{x^4(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=95

$$-\frac{a^3(ae+cd)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

```
[Out] -a^2*d*x/c^4-1/2*a^2*e*x^2/c^4-1/3*d*x^3/c^2-1/4*e*x^4/c^2-1/2*a^3*(a*e+c*d
)*ln(-c*x+a)/c^6+1/2*a^3*(-a*e+c*d)*ln(c*x+a)/c^6
```

Rubi [A] time = 0.07, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {801, 633, 31}

$$-\frac{a^3(ae+cd)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*d*x)/c^4) - (a^2*e*x^2)/(2*c^4) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2)
- (a^3*(c*d + a*e)*Log[a - c*x])/(2*c^6) + (a^3*(c*d - a*e)*Log[a + c*x])/(
2*c^6)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^4(d+ex)}{a^2-c^2x^2}\,dx &= \int \left(-\frac{a^2d}{c^4}-\frac{a^2ex}{c^4}-\frac{dx^2}{c^2}-\frac{ex^3}{c^2}+\frac{a^4d+a^4ex}{c^4\left(a^2-c^2x^2\right)}\right)dx\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}+\frac{\int \frac{a^4d+a^4ex}{a^2-c^2x^2}\,dx}{c^4}\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}-\frac{\left(a^3(cd-ae)\right)\int \frac{1}{-ac-c^2x}\,dx}{2c^4}+\frac{\left(a^3(cd+ae)\right)\int \frac{1}{ac-c^2x}\,dx}{2c^4}\\
&= -\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}-\frac{a^3(cd+ae)\log(a-cx)}{2c^6}+\frac{a^3(cd-ae)\log(a+cx)}{2c^6}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 86, normalized size = 0.91

$$\frac{a^3d\tanh^{-1}\left(\frac{cx}{a}\right)}{c^5}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{a^4e\log\left(a^2-c^2x^2\right)}{2c^6}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*d*x)/c^4) - (a^2*e*x^2)/(2*c^4) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2)
+ (a^3*d*ArcTanh[(c*x)/a])/c^5 - (a^4*e*Log[a^2 - c^2*x^2])/(2*c^6)
```

fricas [A] time = 0.92, size = 89, normalized size = 0.94

$$-\frac{3\,c^4ex^4+4\,c^4dx^3+6\,a^2c^2ex^2+12\,a^2c^2dx-6\left(a^3cd-a^4e\right)\log\left(cx+a\right)+6\left(a^3cd+a^4e\right)\log\left(cx-a\right)}{12\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/12*(3*c^4*e*x^4 + 4*c^4*d*x^3 + 6*a^2*c^2*e*x^2 + 12*a^2*c^2*d*x - 6*(a^
3*c*d - a^4*e)*log(c*x + a) + 6*(a^3*c*d + a^4*e)*log(c*x - a))/c^6
```

giac [A] time = 0.17, size = 102, normalized size = 1.07

$$\frac{\left(a^3cd-a^4e\right)\log\left(|cx+a|\right)}{2\,c^6}-\frac{\left(a^3cd+a^4e\right)\log\left(|cx-a|\right)}{2\,c^6}-\frac{3\,c^6x^4e+4\,c^6dx^3+6\,a^2c^4x^2e+12\,a^2c^4dx}{12\,c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(a^3*c*d - a^4*e)*log(abs(c*x + a))/c^6 - 1/2*(a^3*c*d + a^4*e)*log(abs
(c*x - a))/c^6 - 1/12*(3*c^6*x^4*e + 4*c^6*d*x^3 + 6*a^2*c^4*x^2*e + 12*a^2
*c^4*d*x)/c^8
```

maple [A] time = 0.05, size = 106, normalized size = 1.12

$$-\frac{e\,x^4}{4c^2}-\frac{d\,x^3}{3c^2}-\frac{a^2e\,x^2}{2c^4}-\frac{a^4e\ln\left(cx-a\right)}{2c^6}-\frac{a^4e\ln\left(cx+a\right)}{2c^6}-\frac{a^3d\ln\left(cx-a\right)}{2c^5}+\frac{a^3d\ln\left(cx+a\right)}{2c^5}-\frac{a^2dx}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/4*e*x^4/c^2-1/3*d*x^3/c^2-1/2*a^2*e*x^2/c^4-a^2*d*x/c^4-1/2/c^6*a^4*ln(c
*x+a)*e+1/2/c^5*a^3*ln(c*x+a)*d-1/2/c^6*a^4*ln(c*x-a)*e-1/2/c^5*a^3*ln(c*x-
a)*d
```

maxima [A] time = 0.54, size = 90, normalized size = 0.95

$$-\frac{3\,c^2ex^4+4\,c^2dx^3+6\,a^2ex^2+12\,a^2dx}{12\,c^4}+\frac{\left(a^3cd-a^4e\right)\log\left(cx+a\right)}{2\,c^6}-\frac{\left(a^3cd+a^4e\right)\log\left(cx-a\right)}{2\,c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*c^2*e*x^4 + 4*c^2*d*x^3 + 6*a^2*e*x^2 + 12*a^2*d*x)/c^4 + 1/2*(a^3
*c*d - a^4*e)*log(c*x + a)/c^6 - 1/2*(a^3*c*d + a^4*e)*log(c*x - a)/c^6
```

mupad [**B**] time = 0.10, size = 89, normalized size = 0.94

$$-\frac{\ln\left(a+c\,x\right)\,\left(a^4\,e-a^3\,c\,d\right)}{2\,c^6}-\frac{\ln\left(a-c\,x\right)\,\left(e\,a^4+c\,d\,a^3\right)}{2\,c^6}-\frac{d\,x^3}{3\,c^2}-\frac{e\,x^4}{4\,c^2}-\frac{a^2\,e\,x^2}{2\,c^4}-\frac{a^2\,d\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] - (log(a + c*x)*(a^4*e - a^3*c*d))/(2*c^6) - (log(a - c*x)*(a^4*e + a^3*c*d
))/(2*c^6) - (d*x^3)/(3*c^2) - (e*x^4)/(4*c^2) - (a^2*e*x^2)/(2*c^4) - (a^2
*d*x)/c^4
```

sympy [**A**] time = 0.47, size = 129, normalized size = 1.36

$$-\frac{a^3\left(ae-cd\right)\log\left(x+\frac{a^4e-a^3(ae-cd)}{a^2c^2d}\right)}{2c^6}-\frac{a^3\left(ae+cd\right)\log\left(x+\frac{a^4e-a^3(ae+cd)}{a^2c^2d}\right)}{2c^6}-\frac{a^2dx}{c^4}-\frac{a^2ex^2}{2c^4}-\frac{dx^3}{3c^2}-\frac{ex^4}{4c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a**3*(a*e - c*d)*log(x + (a**4*e - a**3*(a*e - c*d))/(a**2*c**2*d))/(2*c**
6) - a**3*(a*e + c*d)*log(x + (a**4*e - a**3*(a*e + c*d))/(a**2*c**2*d))/(2
*c**6) - a**2*d*x/c**4 - a**2*e*x**2/(2*c**4) - d*x**3/(3*c**2) - e*x**4/(4
*c**2)
```

3.298 $\int \frac{x^3(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=81

$$-\frac{a^2(ae+cd)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}-\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

```
[Out] -a^2*e*x/c^4-1/2*d*x^2/c^2-1/3*e*x^3/c^2-1/2*a^2*(a*e+c*d)*ln(-c*x+a)/c^5-1
/2*a^2*(-a*e+c*d)*ln(c*x+a)/c^5
```

Rubi [A] time = 0.07, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {801, 633, 31}

$$-\frac{a^2(ae+cd)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}-\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*e*x)/c^4) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) - (a^2*(c*d + a*e)*Log
[a - c*x])/(2*c^5) - (a^2*(c*d - a*e)*Log[a + c*x])/(2*c^5)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{a^2-c^2x^2}\,dx &= \int \left(-\frac{a^2e}{c^4}-\frac{dx}{c^2}-\frac{ex^2}{c^2}+\frac{a^4e+a^2c^2dx}{c^4\left(a^2-c^2x^2\right)}\right)dx\\ &= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}+\frac{\int \frac{a^4e+a^2c^2dx}{a^2-c^2x^2}\,dx}{c^4}\\ &= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}+\frac{\left(a^2(cd-ae)\right)\int \frac{1}{-ac-c^2x}\,dx}{2c^3}+\frac{\left(a^2(cd+ae)\right)\int \frac{1}{ac-c^2x}\,dx}{2c^3}\\ &= -\frac{a^2ex}{c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}-\frac{a^2(cd+ae)\log(a-cx)}{2c^5}-\frac{a^2(cd-ae)\log(a+cx)}{2c^5}\end{aligned}$$

Mathematica [A] time = 0.01, size = 72, normalized size = 0.89

$$\frac{a^3e\tanh^{-1}\left(\frac{cx}{a}\right)}{c^5}-\frac{a^2ex}{c^4}-\frac{a^2d\log\left(a^2-c^2x^2\right)}{2c^4}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((a^2*e*x)/c^4) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) + (a^3*e*ArcTanh[(c*x)
/a])/c^5 - (a^2*d*Log[a^2 - c^2*x^2])/(2*c^4)
```

fricas [A] time = 0.83, size = 75, normalized size = 0.93

$$-\frac{2 c^3 e x^3 + 3 c^3 d x^2 + 6 a^2 c e x + 3 \left(a^2 c d - a^3 e\right) \log\left(c x + a\right) + 3 \left(a^2 c d + a^3 e\right) \log\left(c x - a\right)}{6 c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*c^3*e*x^3 + 3*c^3*d*x^2 + 6*a^2*c*e*x + 3*(a^2*c*d - a^3*e)*log(c*x
 + a) + 3*(a^2*c*d + a^3*e)*log(c*x - a))/c^5
```

giac [A] time = 0.17, size = 90, normalized size = 1.11

$$-\frac{\left(a^2 c d - a^3 e\right) \log\left(|c x + a|\right)}{2 c^5} - \frac{\left(a^2 c d + a^3 e\right) \log\left(|c x - a|\right)}{2 c^5} - \frac{2 c^4 x^3 e + 3 c^4 d x^2 + 6 a^2 c^2 x e}{6 c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] -1/2*(a^2*c*d - a^3*e)*log(abs(c*x + a))/c^5 - 1/2*(a^2*c*d + a^3*e)*log(ab
s(c*x - a))/c^5 - 1/6*(2*c^4*x^3*e + 3*c^4*d*x^2 + 6*a^2*c^2*x*e)/c^6
```

maple [A] time = 0.06, size = 94, normalized size = 1.16

$$-\frac{e x^3}{3c^2} - \frac{d x^2}{2c^2} - \frac{a^3 e \ln\left(c x - a\right)}{2c^5} + \frac{a^3 e \ln\left(c x + a\right)}{2c^5} - \frac{a^2 d \ln\left(c x - a\right)}{2c^4} - \frac{a^2 d \ln\left(c x + a\right)}{2c^4} - \frac{a^2 e x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/3/c^2*e*x^3-1/2/c^2*d*x^2-a^2*e*x/c^4+1/2/c^5*a^3*ln(c*x+a)*e-1/2/c^4*a^
2*ln(c*x+a)*d-1/2/c^5*a^3*ln(c*x-a)*e-1/2/c^4*a^2*ln(c*x-a)*d
```

maxima [A] time = 0.55, size = 81, normalized size = 1.00

$$-\frac{2 c^2 e x^3 + 3 c^2 d x^2 + 6 a^2 e x}{6 c^4} - \frac{\left(a^2 c d - a^3 e\right) \log\left(c x + a\right)}{2 c^5} - \frac{\left(a^2 c d + a^3 e\right) \log\left(c x - a\right)}{2 c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/6*(2*c^2*e*x^3 + 3*c^2*d*x^2 + 6*a^2*e*x)/c^4 - 1/2*(a^2*c*d - a^3*e)*lo
g(c*x + a)/c^5 - 1/2*(a^2*c*d + a^3*e)*log(c*x - a)/c^5
```

mupad [B] time = 1.09, size = 77, normalized size = 0.95

$$\frac{\ln\left(a + c\,x\right)\,\left(a^3\,e - a^2\,c\,d\right)}{2\,c^5} - \frac{\ln\left(a - c\,x\right)\,\left(e\,a^3 + c\,d\,a^2\right)}{2\,c^5} - \frac{d\,x^2}{2\,c^2} - \frac{e\,x^3}{3\,c^2} - \frac{a^2\,e\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] (log(a + c*x)*(a^3*e - a^2*c*d))/(2*c^5) - (log(a - c*x)*(a^3*e + a^2*c*d))
/(2*c^5) - (d*x^2)/(2*c^2) - (e*x^3)/(3*c^2) - (a^2*e*x)/c^4
```

sympy [A] time = 0.44, size = 110, normalized size = 1.36

$$-\frac{a^2ex}{c^4}+\frac{a^2\left(ae-cd\right)\log\left(x+\frac{a^2d+\frac{a^2(ae-cd)}{c}}{a^2e}\right)}{2c^5}-\frac{a^2\left(ae+cd\right)\log\left(x+\frac{a^2d-\frac{a^2(ae+cd)}{c}}{a^2e}\right)}{2c^5}-\frac{dx^2}{2c^2}-\frac{ex^3}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a**2*e*x/c**4 + a**2*(a*e - c*d)*log(x + (a**2*d + a**2*(a*e - c*d)/c)/(a*
*2*e))/(2*c**5) - a**2*(a*e + c*d)*log(x + (a**2*d - a**2*(a*e + c*d)/c)/(a
**2*e))/(2*c**5) - d*x**2/(2*c**2) - e*x**3/(3*c**2)
```

3.299 $\int \frac{x^2(d+ex)}{a^2-c^2x^2} \, dx$

Optimal. Leaf size=63

$$-\frac{a(ae+cd)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

```
[Out] -d*x/c^2-1/2*e*x^2/c^2-1/2*a*(a*e+c*d)*ln(-c*x+a)/c^4+1/2*a*(-a*e+c*d)*ln(c
*x+a)/c^4
```

Rubi [A] time = 0.06, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {801, 633, 31}

$$-\frac{a(ae+cd)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((d*x)/c^2) - (e*x^2)/(2*c^2) - (a*(c*d + a*e)*Log[a - c*x])/(2*c^4) + (a*
(c*d - a*e)*Log[a + c*x])/(2*c^4)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(d+ex)}{a^2-c^2x^2} \, dx &= \int \left(-\frac{d}{c^2}-\frac{ex}{c^2}+\frac{a^2d+a^2ex}{c^2\left(a^2-c^2x^2\right)}\right) dx \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}+\frac{\int \frac{a^2d+a^2ex}{a^2-c^2x^2} \, dx}{c^2} \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}-\frac{(a(cd-ae)) \int \frac{1}{-ac-c^2x} \, dx}{2c^2}+\frac{(a(cd+ae)) \int \frac{1}{ac-c^2x} \, dx}{2c^2} \\
&= -\frac{dx}{c^2}-\frac{ex^2}{2c^2}-\frac{a(cd+ae)\log(a-cx)}{2c^4}+\frac{a(cd-ae)\log(a+cx)}{2c^4}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 56, normalized size = 0.89

$$-\frac{a^2e\log\left(a^2-c^2x^2\right)}{2c^4}+\frac{ad\tanh^{-1}\left(\frac{cx}{a}\right)}{c^3}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((d*x)/c^2) - (e*x^2)/(2*c^2) + (a*d*ArcTanh[(c*x)/a])/c^3 - (a^2*e*Log[a^
2 - c^2*x^2])/(2*c^4)
```

fricas [A] time = 0.81, size = 59, normalized size = 0.94

$$-\frac{c^2ex^2+2\,c^2dx-\left(acd-a^2e\right)\log\left(cx+a\right)+\left(acd+a^2e\right)\log\left(cx-a\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(c^2*e*x^2 + 2*c^2*d*x - (a*c*d - a^2*e)*log(c*x + a) + (a*c*d + a^2*e
)*log(c*x - a))/c^4
```

giac [A] time = 0.16, size = 72, normalized size = 1.14

$$\frac{\left(acd-a^2e\right)\log\left(|cx+a|\right)}{2\,c^4}-\frac{\left(acd+a^2e\right)\log\left(|cx-a|\right)}{2\,c^4}-\frac{c^2x^2e+2\,c^2dx}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(a*c*d - a^2*e)*log(abs(c*x + a))/c^4 - 1/2*(a*c*d + a^2*e)*log(abs(c*x
 - a))/c^4 - 1/2*(c^2*x^2*e + 2*c^2*d*x)/c^4
```

maple [A] time = 0.06, size = 78, normalized size = 1.24

$$-\frac{e\,x^2}{2c^2}-\frac{a^2e\ln\left(cx-a\right)}{2c^4}-\frac{a^2e\ln\left(cx+a\right)}{2c^4}-\frac{ad\ln\left(cx-a\right)}{2c^3}+\frac{ad\ln\left(cx+a\right)}{2c^3}-\frac{dx}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2/c^2*e*x^2-1/c^2*d*x-1/2/c^4*a^2*ln(c*x+a)*e+1/2/c^3*a*ln(c*x+a)*d-1/2/
c^4*a^2*ln(c*x-a)*e-1/2/c^3*a*ln(c*x-a)*d
```

maxima [A] time = 0.53, size = 61, normalized size = 0.97

$$-\frac{ex^2+2\,dx}{2\,c^2}+\frac{\left(acd-a^2e\right)\log\left(cx+a\right)}{2\,c^4}-\frac{\left(acd+a^2e\right)\log\left(cx-a\right)}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -1/2*(e*x^2 + 2*d*x)/c^2 + 1/2*(a*c*d - a^2*e)*log(c*x + a)/c^4 - 1/2*(a*c*
d + a^2*e)*log(c*x - a)/c^4
```

mupad [B] time = 0.08, size = 61, normalized size = 0.97

$$-\frac{e\,x^2}{2\,c^2}-\frac{\ln\left(a+c\,x\right)\,\left(a^2\,e-a\,c\,d\right)}{2\,c^4}-\frac{\ln\left(a-c\,x\right)\,\left(e\,a^2+c\,d\,a\right)}{2\,c^4}-\frac{d\,x}{c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] - (e*x^2)/(2*c^2) - (log(a + c*x)*(a^2*e - a*c*d))/(2*c^4) - (log(a - c*x)*
(a^2*e + a*c*d))/(2*c^4) - (d*x)/c^2
```

sympy **[A]** time = 0.47, size = 88, normalized size = 1.40

$$-\frac{a\left(ae-cd\right)\log\left(x+\frac{a^2e-a(ae-cd)}{c^2d}\right)}{2c^4}-\frac{a\left(ae+cd\right)\log\left(x+\frac{a^2e-a(ae+cd)}{c^2d}\right)}{2c^4}-\frac{dx}{c^2}-\frac{ex^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -a*(a*e - c*d)*log(x + (a**2*e - a*(a*e - c*d))/(c**2*d))/(2*c**4) - a*(a*e
 + c*d)*log(x + (a**2*e - a*(a*e + c*d))/(c**2*d))/(2*c**4) - d*x/c**2 - e*
x**2/(2*c**2)
```

3.300 $\int \frac{x(d+ex)}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=50

$$-\frac{(ae+cd)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}-\frac{ex}{c^2}$$

```
[Out] -e*x/c^2-1/2*(a*e+c*d)*ln(-c*x+a)/c^3-1/2*(-a*e+c*d)*ln(c*x+a)/c^3
```

Rubi [A] time = 0.04, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {774, 633, 31}

$$-\frac{(ae+cd)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}-\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((e*x)/c^2) - ((c*d + a*e)*Log[a - c*x])/(2*c^3) - ((c*d - a*e)*Log[a + c*
x])/(2*c^3)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{a^2-c^2x^2}\,dx &= -\frac{ex}{c^2}-\frac{\int \frac{-a^2e-c^2dx}{a^2-c^2x^2}\,dx}{c^2}\\ &= -\frac{ex}{c^2}+\frac{(cd-ae)\int \frac{1}{-ac-c^2x}\,dx}{2c}+\frac{(cd+ae)\int \frac{1}{ac-c^2x}\,dx}{2c}\\ &= -\frac{ex}{c^2}-\frac{(cd+ae)\log(a-cx)}{2c^3}-\frac{(cd-ae)\log(a+cx)}{2c^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 0.84

$$-\frac{d\log\left(a^2-c^2x^2\right)}{2c^2}+\frac{ae\tanh^{-1}\left(\frac{cx}{a}\right)}{c^3}-\frac{ex}{c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a^2 - c^2*x^2),x]
```

```
[Out] -((e*x)/c^2) + (a*e*ArcTanh[(c*x)/a])/c^3 - (d*Log[a^2 - c^2*x^2])/(2*c^2)
```

fricas [A] time = 0.66, size = 42, normalized size = 0.84

$$-\frac{2\,cex + (cd - ae)\log\left(cx + a\right) + (cd + ae)\log\left(cx - a\right)}{2\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*c*e*x + (c*d - a*e)*log(c*x + a) + (c*d + a*e)*log(c*x - a))/c^3
```

giac [A] time = 0.15, size = 52, normalized size = 1.04

$$-\frac{xe}{c^{2}} - \frac{(cd - ae)\log\left(|cx + a|\right)}{2\,c^{3}} - \frac{(cd + ae)\log\left(|cx - a|\right)}{2\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] -x*e/c^2 - 1/2*(c*d - a*e)*log(abs(c*x + a))/c^3 - 1/2*(c*d + a*e)*log(abs(
c*x - a))/c^3
```

maple [A] time = 0.05, size = 63, normalized size = 1.26

$$-\frac{ae\ln\left(cx-a\right)}{2c^{3}} + \frac{ae\ln\left(cx+a\right)}{2c^{3}} - \frac{d\ln\left(cx-a\right)}{2c^{2}} - \frac{d\ln\left(cx+a\right)}{2c^{2}} - \frac{ex}{c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/c^2*e*x+1/2/c^3*ln(c*x+a)*a*e-1/2/c^2*ln(c*x+a)*d-1/2/c^3*ln(c*x-a)*a*e-
1/2/c^2*ln(c*x-a)*d
```

maxima [A] time = 0.50, size = 47, normalized size = 0.94

$$-\frac{ex}{c^{2}} - \frac{(cd - ae)\log\left(cx + a\right)}{2\,c^{3}} - \frac{(cd + ae)\log\left(cx - a\right)}{2\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] -e*x/c^2 - 1/2*(c*d - a*e)*log(c*x + a)/c^3 - 1/2*(c*d + a*e)*log(c*x - a)/
c^3
```

mupad [B] time = 1.10, size = 60, normalized size = 1.20

$$\frac{a\,e\,\ln\left(a+c\,x\right)}{2\,c^{3}} - \frac{d\,\ln\left(a-c\,x\right)}{2\,c^{2}} - \frac{e\,x}{c^{2}} - \frac{d\,\ln\left(a+c\,x\right)}{2\,c^{2}} - \frac{a\,e\,\ln\left(a-c\,x\right)}{2\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a^2 - c^2*x^2),x)
```

```
[Out] (a*e*log(a + c*x))/(2*c^3) - (d*log(a - c*x))/(2*c^2) - (e*x)/c^2 - (d*log(
a + c*x))/(2*c^2) - (a*e*log(a - c*x))/(2*c^3)
```

sympy [A] time = 0.35, size = 60, normalized size = 1.20

$$-\frac{ex}{c^{2}} + \frac{(ae - cd)\log\left(x + \frac{d+\frac{ae-cd}{c}}{e}\right)}{2c^{3}} - \frac{(ae + cd)\log\left(x + \frac{d-\frac{ae+cd}{c}}{e}\right)}{2c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -e*x/c**2 + (a*e - c*d)*log(x + (d + (a*e - c*d)/c)/e)/(2*c**3) - (a*e + c*
d)*log(x + (d - (a*e + c*d)/c)/e)/(2*c**3)
```

3.301 $\int \frac{d+ex}{a^2-c^2x^2}\,dx$

Optimal. Leaf size=46

$$\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}-\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}$$

```
[Out] -1/2*(c*d/a+e)*ln(-c*x+a)/c^2+1/2*(c*d/a-e)*ln(c*x+a)/c^2
```

Rubi [A] time = 0.02, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {633, 31}

$$\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}-\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a^2 - c^2*x^2),x]
```

```
[Out] -(((c*d)/a + e)*Log[a - c*x])/(2*c^2) + (((c*d)/a - e)*Log[a + c*x])/(2*c^2
)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a^2-c^2x^2}\,dx &= \frac{1}{2}\left(-\frac{cd}{a}+e\right)\int \frac{1}{-ac-c^2x}\,dx+\frac{1}{2}\left(\frac{cd}{a}+e\right)\int \frac{1}{ac-c^2x}\,dx\\ &= -\frac{\left(\frac{cd}{a}+e\right)\log(a-cx)}{2c^2}+\frac{\left(\frac{cd}{a}-e\right)\log(a+cx)}{2c^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 37, normalized size = 0.80

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{ac}-\frac{e\log\left(a^2-c^2x^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a^2 - c^2*x^2),x]
```

```
[Out] (d*ArcTanh[(c*x)/a])/(a*c) - (e*Log[a^2 - c^2*x^2])/(2*c^2)
```

fricas [A] time = 0.77, size = 41, normalized size = 0.89

$$\frac{(cd-ae)\log(cx+a)-(cd+ae)\log(cx-a)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*((c*d - a*e)*log(c*x + a) - (c*d + a*e)*log(c*x - a))/(a*c^2)
```

giac [A] time = 0.15, size = 50, normalized size = 1.09

$$\frac{(cd-ae)\log(|cx+a|)}{2\,ac^2}-\frac{(cd+ae)\log(|cx-a|)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(c*d - a*e)*log(abs(c*x + a))/(a*c^2) - 1/2*(c*d + a*e)*log(abs(c*x - a
))/(a*c^2)
```

maple [A] time = 0.05, size = 60, normalized size = 1.30

$$-\frac{d\ln(cx-a)}{2ac}+\frac{d\ln(cx+a)}{2ac}-\frac{e\ln(cx-a)}{2c^2}-\frac{e\ln(cx+a)}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2/c^2*ln(c*x+a)*e+1/2/a/c*ln(c*x+a)*d-1/2/c^2*ln(c*x-a)*e-1/2/a/c*ln(c*x
-a)*d
```

maxima [A] time = 0.54, size = 46, normalized size = 1.00

$$\frac{(cd-ae)\log(cx+a)}{2\,ac^2}-\frac{(cd+ae)\log(cx-a)}{2\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*(c*d - a*e)*log(c*x + a)/(a*c^2) - 1/2*(c*d + a*e)*log(c*x - a)/(a*c^2)
```

mupad [B] time = 0.09, size = 45, normalized size = 0.98

$$-\frac{\ln(a+c\,x)\,(a\,e-c\,d)}{2\,a\,c^2}-\frac{\ln(a-c\,x)\,(a\,e+c\,d)}{2\,a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a^2 - c^2*x^2),x)
```

```
[Out] - (log(a + c*x)*(a*e - c*d))/(2*a*c^2) - (log(a - c*x)*(a*e + c*d))/(2*a*c^
2)
```

sympy [A] time = 0.33, size = 71, normalized size = 1.54

$$-\frac{(ae-cd)\log\left(x+\frac{a^2e-a(ae-cd)}{c^2d}\right)}{2ac^2}-\frac{(ae+cd)\log\left(x+\frac{a^2e-a(ae+cd)}{c^2d}\right)}{2ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c**2*x**2+a**2),x)
```

```
[Out] -(a*e - c*d)*log(x + (a**2*e - a*(a*e - c*d))/(c**2*d))/(2*a*c**2) - (a*e +
 c*d)*log(x + (a**2*e - a*(a*e + c*d))/(c**2*d))/(2*a*c**2)
```

3.302 $\int \frac{d+ex}{x\left(a^2-c^2x^2\right)}\,dx$

Optimal. Leaf size=56

$$-\frac{(ae+cd)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}+\frac{d\log(x)}{a^2}$$

```
[Out] d*ln(x)/a^2-1/2*(a*e+c*d)*ln(-c*x+a)/a^2/c-1/2*(-a*e+c*d)*ln(c*x+a)/a^2/c
```

Rubi [A] time = 0.05, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$-\frac{(ae+cd)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}+\frac{d\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a^2 - c^2*x^2)),x]
```

```
[Out] (d*Log[x])/a^2 - ((c*d + a*e)*Log[a - c*x])/(2*a^2*c) - ((c*d - a*e)*Log[a
+ c*x])/(2*a^2*c)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(a^2-c^2x^2\right)}\,dx&=\int \left(\frac{d}{a^2x}-\frac{-cd-ae}{2a^2(a-cx)}+\frac{-cd+ae}{2a^2(a+cx)}\right)dx\\&=\frac{d\log(x)}{a^2}-\frac{(cd+ae)\log(a-cx)}{2a^2c}-\frac{(cd-ae)\log(a+cx)}{2a^2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 44, normalized size = 0.79

$$-\frac{d\log\left(a^2-c^2x^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a^2 - c^2*x^2)),x]
```

```
[Out] (e*ArcTanh[(c*x)/a])/(a*c) + (d*Log[x])/a^2 - (d*Log[a^2 - c^2*x^2])/(2*a^2
)
```

fricas [A] time = 0.91, size = 48, normalized size = 0.86

$$\frac{2\,cd\log(x)-(cd-ae)\log\left(cx+a\right)-(cd+ae)\log\left(cx-a\right)}{2\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*c*d*log(x) - (c*d - a*e)*log(c*x + a) - (c*d + a*e)*log(c*x - a))/(a
^2*c)
```

giac [**A**] time = 0.17, size = 64, normalized size = 1.14

$$\frac{d\log(|x|)}{a^2}-\frac{\left(c^2d-ace\right)\log(|cx+a|)}{2\,a^2c^2}-\frac{\left(c^2d+ace\right)\log(|cx-a|)}{2\,a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] d*log(abs(x))/a^2 - 1/2*(c^2*d - a*c*e)*log(abs(c*x + a))/(a^2*c^2) - 1/2*(
c^2*d + a*c*e)*log(abs(c*x - a))/(a^2*c^2)
```

maple [**A**] time = 0.05, size = 67, normalized size = 1.20

$$-\frac{e\ln(cx-a)}{2ac}+\frac{e\ln(cx+a)}{2ac}+\frac{d\ln(x)}{a^2}-\frac{d\ln(cx-a)}{2a^2}-\frac{d\ln(cx+a)}{2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(-c^2*x^2+a^2),x)
```

```
[Out] 1/2/a/c*ln(c*x+a)*e-1/2/a^2*ln(c*x+a)*d-1/2/a/c*ln(c*x-a)*e-1/2/a^2*ln(c*x-
a)*d+1/a^2*d*ln(x)
```

maxima [**A**] time = 0.55, size = 53, normalized size = 0.95

$$\frac{d\log(x)}{a^2}-\frac{(cd-ae)\log(cx+a)}{2\,a^2c}-\frac{(cd+ae)\log(cx-a)}{2\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] d*log(x)/a^2 - 1/2*(c*d - a*e)*log(c*x + a)/(a^2*c) - 1/2*(c*d + a*e)*log(c
*x - a)/(a^2*c)
```

mupad [**B**] time = 1.15, size = 52, normalized size = 0.93

$$\frac{d\,\ln(x)}{a^2}+\frac{\ln(a+c\,x)\,\left(a\,e-c\,d\right)}{2\,a^2\,c}-\frac{\ln(a-c\,x)\,\left(a\,e+c\,d\right)}{2\,a^2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a^2 - c^2*x^2)),x)
```

```
[Out] (d*log(x))/a^2 + (log(a + c*x)*(a*e - c*d))/(2*a^2*c) - (log(a - c*x)*(a*e
+ c*d))/(2*a^2*c)
```

sympy [**B**] time = 1.59, size = 194, normalized size = 3.46

$$\frac{d\log(x)}{a^2}+\frac{(ae-cd)\log\left(x+\frac{-2a^2de^2+\frac{a^2e^2(ae-cd)}{c}-6c^2d^3-3cd^2(ae-cd)+3d(ae-cd)^2}{a^2e^3-9c^2d^2e}\right)}{2a^2c}-\frac{(ae+cd)\log\Bigg(x+\frac{-2a^2de^2-\frac{a^2e^2(ae+cd)}{c}-6c^2}{a^2e^3}}{2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c**2*x**2+a**2),x)
```

```
[Out] d*log(x)/a**2 + (a*e - c*d)*log(x + (-2*a**2*d*e**2 + a**2*e**2*(a*e - c*d)
/c - 6*c**2*d**3 - 3*c*d**2*(a*e - c*d) + 3*d*(a*e - c*d)**2)/(a**2*e**3 -
9*c**2*d**2*e))/(2*a**2*c) - (a*e + c*d)*log(x + (-2*a**2*d*e**2 - a**2*e**
2*(a*e + c*d)/c - 6*c**2*d**3 + 3*c*d**2*(a*e + c*d) + 3*d*(a*e + c*d)**2)/
(a**2*e**3 - 9*c**2*d**2*e))/(2*a**2*c)
```

3.303 $\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)}\,dx$

Optimal. Leaf size=59

$$-\frac{(ae+cd)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

```
[Out] -d/a^2/x+e*ln(x)/a^2-1/2*(a*e+c*d)*ln(-c*x+a)/a^3+1/2*(-a*e+c*d)*ln(c*x+a)/
a^3
```

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = $\{801\}$

$$-\frac{(ae+cd)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a^2 - c^2*x^2)),x]
```

```
[Out] -(d/(a^2*x)) + (e*Log[x])/a^2 - ((c*d + a*e)*Log[a - c*x])/(2*a^3) + ((c*d
- a*e)*Log[a + c*x])/(2*a^3)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x^2}+\frac{e}{a^2x}+\frac{c(cd+ae)}{2a^3(a-cx)}-\frac{c(-cd+ae)}{2a^3(a+cx)}\right)dx\\ &= -\frac{d}{a^2x}+\frac{e\log(x)}{a^2}-\frac{(cd+ae)\log(a-cx)}{2a^3}+\frac{(cd-ae)\log(a+cx)}{2a^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 51, normalized size = 0.86

$$\frac{cd\tanh^{-1}\left(\frac{cx}{a}\right)}{a^3}-\frac{e\log\left(a^2-c^2x^2\right)}{2a^2}-\frac{d}{a^2x}+\frac{e\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a^2 - c^2*x^2)),x]
```

```
[Out] -(d/(a^2*x)) + (c*d*ArcTanh[(c*x)/a])/a^3 + (e*Log[x])/a^2 - (e*Log[a^2 - c
^2*x^2])/(2*a^2)
```

fricas [A] time = 1.12, size = 54, normalized size = 0.92

$$\frac{2\,aex\log(x)+(cd-ae)x\log\left(cx+a\right)-(cd+ae)x\log\left(cx-a\right)-2\,ad}{2\,a^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*a*e*x*log(x) + (c*d - a*e)*x*log(c*x + a) - (c*d + a*e)*x*log(c*x -
a) - 2*a*d)/(a^3*x)
```

giac [A] time = 0.15, size = 74, normalized size = 1.25

$$\frac{e\log(|x|)}{a^2} - \frac{d}{a^2x} + \frac{\left(c^2d - ace\right)\log(|cx + a|)}{2\,a^3c} - \frac{\left(c^2d + ace\right)\log(|cx - a|)}{2\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] e*log(abs(x))/a^2 - d/(a^2*x) + 1/2*(c^2*d - a*c*e)*log(abs(c*x + a))/(a^3*
c) - 1/2*(c^2*d + a*c*e)*log(abs(c*x - a))/(a^3*c)
```

maple [A] time = 0.06, size = 72, normalized size = 1.22

$$\frac{e\ln(x)}{a^2} - \frac{e\ln(cx - a)}{2a^2} - \frac{e\ln(cx + a)}{2a^2} - \frac{cd\ln(cx - a)}{2a^3} + \frac{cd\ln(cx + a)}{2a^3} - \frac{d}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2/a^2*ln(c*x+a)*e+1/2/a^3*ln(c*x+a)*c*d-1/2/a^2*ln(c*x-a)*e-1/2/a^3*ln(c
*x-a)*c*d+1/a^2*e*ln(x)-1/a^2*d/x
```

maxima [A] time = 0.54, size = 56, normalized size = 0.95

$$\frac{e\log(x)}{a^2} + \frac{(cd - ae)\log(cx + a)}{2\,a^3} - \frac{(cd + ae)\log(cx - a)}{2\,a^3} - \frac{d}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] e*log(x)/a^2 + 1/2*(c*d - a*e)*log(c*x + a)/a^3 - 1/2*(c*d + a*e)*log(c*x -
 a)/a^3 - d/(a^2*x)
```

mupad [B] time = 0.09, size = 55, normalized size = 0.93

$$\frac{e\,\ln(x)}{a^2} - \frac{\ln(a - c\,x)\,(a\,e + c\,d)}{2\,a^3} - \frac{d}{a^2\,x} - \frac{\ln(a + c\,x)\,(a\,e - c\,d)}{2\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a^2 - c^2*x^2)),x)
```

```
[Out] (e*log(x))/a^2 - (log(a - c*x)*(a*e + c*d))/(2*a^3) - d/(a^2*x) - (log(a +
c*x)*(a*e - c*d))/(2*a^3)
```

sympy [B] time = 1.70, size = 221, normalized size = 3.75

$$-\frac{d}{a^2x} + \frac{e\log(x)}{a^2} - \frac{(ae - cd)\log\left(x + \frac{6a^4e^3 - 3a^3e^2(ae-cd) + 2a^2c^2d^2e - 3a^2e(ae-cd)^2 + ac^2d^2(ae-cd)}{9a^2c^2de^2 - c^4d^3}\right)}{2a^3} - \frac{(ae + cd)\log\Big(x + \frac{6a^4e^3 - 3a^3}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(-c**2*x**2+a**2),x)
```

```
[Out] -d/(a**2*x) + e*log(x)/a**2 - (a*e - c*d)*log(x + (6*a**4*e**3 - 3*a**3*e**
2*(a*e - c*d) + 2*a**2*c**2*d**2*e - 3*a**2*e*(a*e - c*d)**2 + a*c**2*d**2*
(a*e - c*d))/(9*a**2*c**2*d*e**2 - c**4*d**3))/(2*a**3) - (a*e + c*d)*log(x
 + (6*a**4*e**3 - 3*a**3*e**2*(a*e + c*d) + 2*a**2*c**2*d**2*e - 3*a**2*e*(
a*e + c*d)**2 + a*c**2*d**2*(a*e + c*d))/(9*a**2*c**2*d*e**2 - c**4*d**3))/
(2*a**3)
```

3.304 $\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)}\,dx$

Optimal. Leaf size=75

$$\frac{c^2d\log(x)}{a^4}-\frac{c(ae+cd)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}$$

```
[Out] -1/2*d/a^2/x^2-e/a^2/x+c^2*d*ln(x)/a^4-1/2*c*(a*e+c*d)*ln(-c*x+a)/a^4-1/2*c
*(-a*e+c*d)*ln(c*x+a)/a^4
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$\frac{c^2d\log(x)}{a^4}-\frac{c(ae+cd)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a^2 - c^2*x^2)),x]
```

```
[Out] -d/(2*a^2*x^2) - e/(a^2*x) + (c^2*d*Log[x])/a^4 - (c*(c*d + a*e)*Log[a - c*
x])/(2*a^4) - (c*(c*d - a*e)*Log[a + c*x])/(2*a^4)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)}\,dx&=\int\left(\frac{d}{a^2x^3}+\frac{e}{a^2x^2}+\frac{c^2d}{a^4x}+\frac{c^2(cd+ae)}{2a^4(a-cx)}+\frac{c^2(-cd+ae)}{2a^4(a+cx)}\right)dx\\&=-\frac{d}{2a^2x^2}-\frac{e}{a^2x}+\frac{c^2d\log(x)}{a^4}-\frac{c(cd+ae)\log(a-cx)}{2a^4}-\frac{c(cd-ae)\log(a+cx)}{2a^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 68, normalized size = 0.91

$$\frac{c^2d\log(x)}{a^4}+\frac{ce\tanh^{-1}\left(\frac{cx}{a}\right)}{a^3}-\frac{d}{2a^2x^2}-\frac{e}{a^2x}-\frac{c^2d\log\left(a^2-c^2x^2\right)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a^2 - c^2*x^2)),x]
```

```
[Out] -1/2*d/(a^2*x^2) - e/(a^2*x) + (c*e*ArcTanh[(c*x)/a])/a^3 + (c^2*d*Log[x])/
a^4 - (c^2*d*Log[a^2 - c^2*x^2])/(2*a^4)
```

fricas [A] time = 0.79, size = 78, normalized size = 1.04

$$\frac{2\,c^2dx^2\log(x)-2\,a^2ex-\left(c^2d-ace\right)x^2\log\left(cx+a\right)-\left(c^2d+ace\right)x^2\log\left(cx-a\right)-a^2d}{2\,a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*c^2*d*x^2*log(x) - 2*a^2*e*x - (c^2*d - a*c*e)*x^2*log(c*x + a) - (c
^2*d + a*c*e)*x^2*log(c*x - a) - a^2*d)/(a^4*x^2)
```

giac [A] time = 0.15, size = 93, normalized size = 1.24

$$\frac{c^2d\log\left(|x|\right)}{a^4}-\frac{\left(c^3d-ac^2e\right)\log\left(|cx+a|\right)}{2\,a^4c}-\frac{\left(c^3d+ac^2e\right)\log\left(|cx-a|\right)}{2\,a^4c}-\frac{2\,a^2xe+a^2d}{2\,a^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] c^2*d*log(abs(x))/a^4 - 1/2*(c^3*d - a*c^2*e)*log(abs(c*x + a))/(a^4*c) - 1
/2*(c^3*d + a*c^2*e)*log(abs(c*x - a))/(a^4*c) - 1/2*(2*a^2*x*e + a^2*d)/(a
^4*x^2)
```

maple [A] time = 0.06, size = 90, normalized size = 1.20

$$-\frac{ce\ln\left(cx-a\right)}{2a^3}+\frac{ce\ln\left(cx+a\right)}{2a^3}+\frac{c^2d\ln(x)}{a^4}-\frac{c^2d\ln\left(cx-a\right)}{2a^4}-\frac{c^2d\ln\left(cx+a\right)}{2a^4}-\frac{e}{a^2x}-\frac{d}{2a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(-c^2*x^2+a^2),x)
```

```
[Out] 1/2*c/a^3*ln(c*x+a)*e-1/2*c^2/a^4*ln(c*x+a)*d-1/2*c/a^3*ln(c*x-a)*e-1/2*c^2
/a^4*ln(c*x-a)*d-1/a^2*e/x-1/2/a^2*d/x^2+c^2*d*ln(x)/a^4
```

maxima [A] time = 0.56, size = 70, normalized size = 0.93

$$\frac{c^2d\log(x)}{a^4}-\frac{\left(c^2d-ace\right)\log\left(cx+a\right)}{2\,a^4}-\frac{\left(c^2d+ace\right)\log\left(cx-a\right)}{2\,a^4}-\frac{2\,ex+d}{2\,a^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] c^2*d*log(x)/a^4 - 1/2*(c^2*d - a*c*e)*log(c*x + a)/a^4 - 1/2*(c^2*d + a*c*
e)*log(c*x - a)/a^4 - 1/2*(2*e*x + d)/(a^2*x^2)
```

mupad [B] time = 0.11, size = 73, normalized size = 0.97

$$\frac{c^2\,d\,\ln(x)}{a^4}-\frac{\ln\left(a+c\,x\right)\,\left(c^2\,d-a\,c\,e\right)}{2\,a^4}-\frac{\ln\left(a-c\,x\right)\,\left(d\,c^2+a\,e\,c\right)}{2\,a^4}-\frac{\frac{d}{2\,a^2}+\frac{e\,x}{a^2}}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a^2 - c^2*x^2)),x)
```

```
[Out] (c^2*d*log(x))/a^4 - (log(a + c*x)*(c^2*d - a*c*e))/(2*a^4) - (log(a - c*x)
*(c^2*d + a*c*e))/(2*a^4) - (d/(2*a^2) + (e*x)/a^2)/x^2
```

sympy [B] time = 1.86, size = 236, normalized size = 3.15

$$-\frac{d+2ex}{2a^2x^2}+\frac{c^2d\log\left(x\right)}{a^4}+\frac{c\left(ae-cd\right)\log\left(x+\frac{-2a^2c^2de^2+a^2ce^2(ae-cd)-6c^4d^3-3c^3d^2(ae-cd)+3c^2d(ae-cd)^2}{a^2c^2e^3-9c^4d^2e}\right)}{2a^4}-\frac{c\left(ae+cd\right)\log\left(x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(-c**2*x**2+a**2),x)
```

```
[Out] -(d + 2*e*x)/(2*a**2*x**2) + c**2*d*log(x)/a**4 + c*(a*e - c*d)*log(x + (-2
*a**2*c**2*d*e**2 + a**2*c*e**2*(a*e - c*d) - 6*c**4*d**3 - 3*c**3*d**2*(a*
e - c*d) + 3*c**2*d*(a*e - c*d)**2)/(a**2*c**2*e**3 - 9*c**4*d**2*e))/(2*a*
*4) - c*(a*e + c*d)*log(x + (-2*a**2*c**2*d*e**2 - a**2*c*e**2*(a*e + c*d)
- 6*c**4*d**3 + 3*c**3*d**2*(a*e + c*d) + 3*c**2*d*(a*e + c*d)**2)/(a**2*c*
*2*e**3 - 9*c**4*d**2*e))/(2*a**4)
```

3.305 $\int \frac{d+ex}{x^4\left(a^2-c^2x^2\right)}\,dx$

Optimal. Leaf size=93

$$-\frac{c^2(ae+cd)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx)}{2a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}$$

```
[Out] -1/3*d/a^2/x^3-1/2*e/a^2/x^2-c^2*d/a^4/x+c^2*e*ln(x)/a^4-1/2*c^2*(a*e+c*d)*
ln(-c*x+a)/a^5+1/2*c^2*(-a*e+c*d)*ln(c*x+a)/a^5
```

Rubi [A] time = 0.07, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {801}

$$-\frac{c^2(ae+cd)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx)}{2a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a^2 - c^2*x^2)),x]
```

```
[Out] -d/(3*a^2*x^3) - e/(2*a^2*x^2) - (c^2*d)/(a^4*x) + (c^2*e*Log[x])/a^4 - (c^
2*(c*d + a*e)*Log[a - c*x])/(2*a^5) + (c^2*(c*d - a*e)*Log[a + c*x])/(2*a^5
)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^4\left(a^2-c^2x^2\right)}\,dx &= \int \left(\frac{d}{a^2x^4}+\frac{e}{a^2x^3}+\frac{c^2d}{a^4x^2}+\frac{c^2e}{a^4x}+\frac{c^3(cd+ae)}{2a^5(a-cx)}-\frac{c^3(-cd+ae)}{2a^5(a+cx)}\right)dx\\ &= -\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{c^2(cd+ae)\log(a-cx)}{2a^5}+\frac{c^2(cd-ae)\log(a+cx}{2a^5}\end{aligned}$$

Mathematica [A] time = 0.02, size = 84, normalized size = 0.90

$$\frac{c^3d\tanh^{-1}\left(\frac{cx}{a}\right)}{a^5}-\frac{c^2d}{a^4x}+\frac{c^2e\log(x)}{a^4}-\frac{d}{3a^2x^3}-\frac{e}{2a^2x^2}-\frac{c^2e\log\left(a^2-c^2x^2\right)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a^2 - c^2*x^2)),x]
```

```
[Out] -1/3*d/(a^2*x^3) - e/(2*a^2*x^2) - (c^2*d)/(a^4*x) + (c^3*d*ArcTanh[(c*x)/a
])/a^5 + (c^2*e*Log[x])/a^4 - (c^2*e*Log[a^2 - c^2*x^2])/(2*a^4)
```

fricas [A] time = 1.31, size = 93, normalized size = 1.00

$$\frac{6\,ac^2ex^3\log(x)-6\,ac^2dx^2-3\,a^3ex+3\left(c^3d-ac^2e\right)x^3\log\left(cx+a\right)-3\left(c^3d+ac^2e\right)x^3\log\left(cx-a\right)-2\,a^3d}{6\,a^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(6*a*c^2*e*x^3*log(x) - 6*a*c^2*d*x^2 - 3*a^3*e*x + 3*(c^3*d - a*c^2*e)
*x^3*log(c*x + a) - 3*(c^3*d + a*c^2*e)*x^3*log(c*x - a) - 2*a^3*d)/(a^5*x^
3)
```

giac [A] time = 0.17, size = 104, normalized size = 1.12

$$\frac{c^2e\log\left(|x|\right)}{a^4}+\frac{\left(c^4d-ac^3e\right)\log\left(|cx+a|\right)}{2\,a^5c}-\frac{\left(c^4d+ac^3e\right)\log\left(|cx-a|\right)}{2\,a^5c}-\frac{6\,c^2dx^2+3\,a^2xe+2\,a^2d}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="giac")
```

```
[Out] c^2*e*log(abs(x))/a^4 + 1/2*(c^4*d - a*c^3*e)*log(abs(c*x + a))/(a^5*c) - 1
/2*(c^4*d + a*c^3*e)*log(abs(c*x - a))/(a^5*c) - 1/6*(6*c^2*d*x^2 + 3*a^2*x
*e + 2*a^2*d)/(a^4*x^3)
```

maple [A] time = 0.06, size = 106, normalized size = 1.14

$$\frac{c^2e\ln(x)}{a^4}-\frac{c^2e\ln\left(cx-a\right)}{2a^4}-\frac{c^2e\ln\left(cx+a\right)}{2a^4}-\frac{c^3d\ln\left(cx-a\right)}{2a^5}+\frac{c^3d\ln\left(cx+a\right)}{2a^5}-\frac{c^2d}{a^4x}-\frac{e}{2a^2x^2}-\frac{d}{3a^2x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(-c^2*x^2+a^2),x)
```

```
[Out] -1/2*c^2/a^4*ln(c*x+a)*e+1/2*c^3/a^5*ln(c*x+a)*d-1/2*c^2/a^4*ln(c*x-a)*e-1/
2*c^3/a^5*ln(c*x-a)*d-1/2*e/a^2/x^2-1/3*d/a^2/x^3+c^2*e*ln(x)/a^4-c^2*d/a^4
/x
```

maxima [A] time = 0.50, size = 91, normalized size = 0.98

$$\frac{c^2e\log(x)}{a^4}+\frac{\left(c^3d-ac^2e\right)\log\left(cx+a\right)}{2\,a^5}-\frac{\left(c^3d+ac^2e\right)\log\left(cx-a\right)}{2\,a^5}-\frac{6\,c^2dx^2+3\,a^2ex+2\,a^2d}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(-c^2*x^2+a^2),x, algorithm="maxima")
```

```
[Out] c^2*e*log(x)/a^4 + 1/2*(c^3*d - a*c^2*e)*log(c*x + a)/a^5 - 1/2*(c^3*d + a*
c^2*e)*log(c*x - a)/a^5 - 1/6*(6*c^2*d*x^2 + 3*a^2*e*x + 2*a^2*d)/(a^4*x^3)
```

mupad [B] time = 1.11, size = 89, normalized size = 0.96

$$\frac{\ln\left(a+c\,x\right)\,\left(c^3\,d-a\,c^2\,e\right)}{2\,a^5}-\frac{\frac{d}{3\,a^2}+\frac{e\,x}{2\,a^2}+\frac{c^2\,d\,x^2}{a^4}}{x^3}-\frac{\ln\left(a-c\,x\right)\,\left(d\,c^3+a\,e\,c^2\right)}{2\,a^5}+\frac{c^2\,e\,\ln(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a^2 - c^2*x^2)),x)
```

```
[Out] (log(a + c*x)*(c^3*d - a*c^2*e))/(2*a^5) - (d/(3*a^2) + (e*x)/(2*a^2) + (c^
2*d*x^2)/a^4)/x^3 - (log(a - c*x)*(c^3*d + a*c^2*e))/(2*a^5) + (c^2*e*log(x
))/a^4
```

sympy [B] time = 2.00, size = 279, normalized size = 3.00

$$\frac{c^2e\log\left(x\right)}{a^4}-\frac{2a^2d+3a^2ex+6c^2dx^2}{6a^4x^3}-\frac{c^2\left(ae-cd\right)\log\left(x+\frac{6a^4c^4e^3-3a^3c^4e^2(ae-cd)+2a^2c^6d^2e-3a^2c^4e(ae-cd)^2+ac^6d^2(ae-cd)}{9a^2c^6de^2-c^8d^3}\right)}{2a^5}-\frac{c^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(-c**2*x**2+a**2),x)
```

```
[Out] c**2*e*log(x)/a**4 - (2*a**2*d + 3*a**2*e*x + 6*c**2*d*x**2)/(6*a**4*x**3)
- c**2*(a*e - c*d)*log(x + (6*a**4*c**4*e**3 - 3*a**3*c**4*e**2*(a*e - c*d)
 + 2*a**2*c**6*d**2*e - 3*a**2*c**4*e*(a*e - c*d)**2 + a*c**6*d**2*(a*e - c
*d))/(9*a**2*c**6*d*e**2 - c**8*d**3))/(2*a**5) - c**2*(a*e + c*d)*log(x +
(6*a**4*c**4*e**3 - 3*a**3*c**4*e**2*(a*e + c*d) + 2*a**2*c**6*d**2*e - 3*a
**2*c**4*e*(a*e + c*d)**2 + a*c**6*d**2*(a*e + c*d))/(9*a**2*c**6*d*e**2 -
c**8*d**3))/(2*a**5)
```

3.306 $\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=94

$$\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{a(4ae+3cd)\log(a-cx)}{4c^6}-\frac{a(3cd-4ae)\log(a+cx)}{4c^6}+\frac{3dx}{2c^4}+\frac{ex^2}{c^4}$$

```
[Out] 3/2*d*x/c^4+e*x^2/c^4+1/2*x^3*(e*x+d)/c^2/(-c^2*x^2+a^2)+1/4*a*(4*a*e+3*c*d
)*ln(-c*x+a)/c^6-1/4*a*(-4*a*e+3*c*d)*ln(c*x+a)/c^6
```

Rubi **[A]** time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {819, 801, 633, 31}

$$\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{a(4ae+3cd)\log(a-cx)}{4c^6}-\frac{a(3cd-4ae)\log(a+cx)}{4c^6}+\frac{3dx}{2c^4}+\frac{ex^2}{c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (3*d*x)/(2*c^4) + (e*x^2)/c^4 + (x^3*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + (
a*(3*c*d + 4*a*e)*Log[a - c*x])/(4*c^6) - (a*(3*c*d - 4*a*e)*Log[a + c*x])/
(4*c^6)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^4(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx &= \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \frac{x^2\left(3a^2d+4a^2ex\right)}{a^2-c^2x^2}\,dx}{2a^2c^2} \\
&= \frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \left(-\frac{3a^2d}{c^2}-\frac{4a^2ex}{c^2}+\frac{3a^4d+4a^4ex}{c^2\left(a^2-c^2x^2\right)}\right)dx}{2a^2c^2} \\
&= \frac{3dx}{2c^4}+\frac{ex^2}{c^4}+\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} - \frac{\int \frac{3a^4d+4a^4ex}{a^2-c^2x^2}\,dx}{2a^2c^4} \\
&= \frac{3dx}{2c^4}+\frac{ex^2}{c^4}+\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{(a(3cd-4ae))\int \frac{1}{-ac-c^2x}\,dx}{4c^4} - \frac{(a(3cd+4ae))\int \frac{1}{ac-c^2x}\,dx}{4c^4} \\
&= \frac{3dx}{2c^4}+\frac{ex^2}{c^4}+\frac{x^3(d+ex)}{2c^2\left(a^2-c^2x^2\right)} + \frac{a(3cd+4ae)\log(a-cx)}{4c^6} - \frac{a(3cd-4ae)\log(a+cx)}{4c^6}
\end{aligned}
$$

Mathematica [**A**] time = 0.05, size = 84, normalized size = 0.89

$$
\frac{2a^2e\log\left(a^2-c^2x^2\right)+\frac{a^4e+a^2c^2dx}{a^2-c^2x^2}-3acd\tanh^{-1}\left(\frac{cx}{a}\right)+2c^2dx+c^2ex^2}{2c^6}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (2*c^2*d*x + c^2*e*x^2 + (a^4*e + a^2*c^2*d*x)/(a^2 - c^2*x^2) - 3*a*c*d*Ar
cTanh[(c*x)/a] + 2*a^2*e*Log[a^2 - c^2*x^2])/(2*c^6)
```

fricas [**A**] time = 0.98, size = 156, normalized size = 1.66

$$
\frac{2\,c^4ex^4+4\,c^4dx^3-2\,a^2c^2ex^2-6\,a^2c^2dx-2\,a^4e+\left(3\,a^3cd-4\,a^4e-\left(3\,ac^3d-4\,a^2c^2e\right)x^2\right)\log\left(cx+a\right)-\left(3\,a^3c\right.}{4\left(c^8x^2-a^2c^6\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(2*c^4*e*x^4 + 4*c^4*d*x^3 - 2*a^2*c^2*e*x^2 - 6*a^2*c^2*d*x - 2*a^4*e
+ (3*a^3*c*d - 4*a^4*e - (3*a*c^3*d - 4*a^2*c^2*e)*x^2)*log(c*x + a) - (3*a
^3*c*d + 4*a^4*e - (3*a*c^3*d + 4*a^2*c^2*e)*x^2)*log(c*x - a))/(c^8*x^2 -
a^2*c^6)
```

giac [**A**] time = 0.16, size = 112, normalized size = 1.19

$$
-\frac{\left(3\,acd-4\,a^2e\right)\log\left(|cx+a|\right)}{4\,c^6}+\frac{\left(3\,acd+4\,a^2e\right)\log\left(|cx-a|\right)}{4\,c^6}+\frac{c^4x^2e+2\,c^4dx}{2\,c^8}-\frac{a^2c^2dx+a^4e}{2\,(cx+a)(cx-a)c^6}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/4*(3*a*c*d - 4*a^2*e)*log(abs(c*x + a))/c^6 + 1/4*(3*a*c*d + 4*a^2*e)*lo
g(abs(c*x - a))/c^6 + 1/2*(c^4*x^2*e + 2*c^4*d*x)/c^8 - 1/2*(a^2*c^2*d*x +
a^4*e)/((c*x + a)*(c*x - a)*c^6)
```

maple [A] time = 0.06, size = 143, normalized size = 1.52

$$\frac{e\,x^{2}}{2c^{4}}+\frac{a^{3}e}{4\left(cx+a\right)c^{6}}-\frac{a^{3}e}{4\left(cx-a\right)c^{6}}-\frac{a^{2}d}{4\left(cx+a\right)c^{5}}-\frac{a^{2}d}{4\left(cx-a\right)c^{5}}+\frac{a^{2}e\ln\left(cx-a\right)}{c^{6}}+\frac{a^{2}e\ln\left(cx+a\right)}{c^{6}}+\frac{3ad\ln\left(cx-a\right)}{4c^{5}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/2*e*x^2/c^4+d*x/c^4+1/c^6*a^2*ln(c*x+a)*e-3/4/c^5*a*ln(c*x+a)*d+1/4/c^6*a
^3/(c*x+a)*e-1/4/c^5*a^2/(c*x+a)*d+1/c^6*a^2*ln(c*x-a)*e+3/4/c^5*a*ln(c*x-a
)*d-1/4/c^6*a^3/(c*x-a)*e-1/4/c^5*a^2/(c*x-a)*d
```

maxima [A] time = 0.54, size = 99, normalized size = 1.05

$$-\frac{a^{2}c^{2}dx+a^{4}e}{2\left(c^{8}x^{2}-a^{2}c^{6}\right)}+\frac{ex^{2}+2\,dx}{2\,c^{4}}-\frac{\left(3\,acd-4\,a^{2}e\right)\log\left(cx+a\right)}{4\,c^{6}}+\frac{\left(3\,acd+4\,a^{2}e\right)\log\left(cx-a\right)}{4\,c^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(a^2*c^2*d*x + a^4*e)/(c^8*x^2 - a^2*c^6) + 1/2*(e*x^2 + 2*d*x)/c^4 -
1/4*(3*a*c*d - 4*a^2*e)*log(c*x + a)/c^6 + 1/4*(3*a*c*d + 4*a^2*e)*log(c*x
- a)/c^6
```

mupad [B] time = 1.09, size = 99, normalized size = 1.05

$$\frac{\frac{a^{4}\,e}{2\,c^{2}}+\frac{a^{2}\,d\,x}{2}}{a^{2}\,c^{4}-c^{6}\,x^{2}}+\frac{e\,x^{2}}{2\,c^{4}}+\frac{\ln\left(a+c\,x\right)\,\left(4\,a^{2}\,e-3\,a\,c\,d\right)}{4\,c^{6}}+\frac{\ln\left(a-c\,x\right)\,\left(4\,e\,a^{2}+3\,c\,d\,a\right)}{4\,c^{6}}+\frac{d\,x}{c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] ((a^4*e)/(2*c^2) + (a^2*d*x)/2)/(a^2*c^4 - c^6*x^2) + (e*x^2)/(2*c^4) + (lo
g(a + c*x)*(4*a^2*e - 3*a*c*d))/(4*c^6) + (log(a - c*x)*(4*a^2*e + 3*a*c*d)
)/(4*c^6) + (d*x)/c^4
```

sympy [A] time = 0.80, size = 141, normalized size = 1.50

$$\frac{a\left(4ae-3cd\right)\log\left(x+\frac{4a^{2}e-a\left(4ae-3cd\right)}{3c^{2}d}\right)}{4c^{6}}+\frac{a\left(4ae+3cd\right)\log\left(x+\frac{4a^{2}e-a\left(4ae+3cd\right)}{3c^{2}d}\right)}{4c^{6}}+\frac{-a^{4}e-a^{2}c^{2}dx}{-2a^{2}c^{6}+2c^{8}x^{2}}+\frac{dx}{c^{4}}+\frac{ex^{2}}{2c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] a*(4*a*e - 3*c*d)*log(x + (4*a**2*e - a*(4*a*e - 3*c*d))/(3*c**2*d))/(4*c**
6) + a*(4*a*e + 3*c*d)*log(x + (4*a**2*e - a*(4*a*e + 3*c*d))/(3*c**2*d))/(
4*c**6) + (-a**4*e - a**2*c**2*d*x)/(-2*a**2*c**6 + 2*c**8*x**2) + d*x/c**4
 + e*x**2/(2*c**4)
```

3.307 $\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=84

$$\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(3ae+2cd)\log(a-cx)}{4c^5}+\frac{(2cd-3ae)\log(a+cx)}{4c^5}+\frac{3ex}{2c^4}$$

```
[Out] 3/2*e*x/c^4+1/2*x^2*(e*x+d)/c^2/(-c^2*x^2+a^2)+1/4*(3*a*e+2*c*d)*ln(-c*x+a)
/c^5+1/4*(-3*a*e+2*c*d)*ln(c*x+a)/c^5
```

Rubi [A] time = 0.07, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{819, 774, 633, 31\}$

$$\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(3ae+2cd)\log(a-cx)}{4c^5}+\frac{(2cd-3ae)\log(a+cx)}{4c^5}+\frac{3ex}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (3*e*x)/(2*c^4) + (x^2*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + ((2*c*d + 3*a*e
)*Log[a - c*x])/(4*c^5) + ((2*c*d - 3*a*e)*Log[a + c*x])/(4*c^5)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx &= \frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}-\frac{\int \frac{x\left(2a^2d+3a^2ex\right)}{a^2-c^2x^2}\,dx}{2a^2c^2}\\
&= \frac{3ex}{2c^4}+\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{\int \frac{-3a^4e-2a^2c^2dx}{a^2-c^2x^2}\,dx}{2a^2c^4}\\
&= \frac{3ex}{2c^4}+\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}-\frac{(2cd-3ae)\int \frac{1}{-ac-c^2x}\,dx}{4c^3}-\frac{(2cd+3ae)\int \frac{1}{ac-c^2x}\,dx}{4c^3}\\
&= \frac{3ex}{2c^4}+\frac{x^2(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(2cd+3ae)\log(a-cx)}{4c^5}+\frac{(2cd-3ae)\log(a+cx)}{4c^5}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 64, normalized size = 0.76

$$\frac{\frac{a^2c(d+ex)}{a^2-c^2x^2}+cd\log\left(a^2-c^2x^2\right)-3ae\tanh^{-1}\left(\frac{cx}{a}\right)+2cex}{2c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (2*c*e*x + (a^2*c*(d + e*x))/(a^2 - c^2*x^2) - 3*a*e*ArcTanh[(c*x)/a] + c*d
*Log[a^2 - c^2*x^2])/(2*c^5)
```

fricas [A] time = 0.83, size = 129, normalized size = 1.54

$$\frac{4\,c^3ex^3-6\,a^2cex-2\,a^2cd-\left(2\,a^2cd-3\,a^3e-\left(2\,c^3d-3\,ac^2e\right)x^2\right)\log\left(cx+a\right)-(2\,a^2cd+3\,a^3e-\left(2\,c^3d+3\,ac^2e\right)x}{4\left(c^7x^2-a^2c^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/4*(4*c^3*e*x^3 - 6*a^2*c*e*x - 2*a^2*c*d - (2*a^2*c*d - 3*a^3*e - (2*c^3*
d - 3*a*c^2*e)*x^2)*log(c*x + a) - (2*a^2*c*d + 3*a^3*e - (2*c^3*d + 3*a*c^
2*e)*x^2)*log(c*x - a))/(c^7*x^2 - a^2*c^5)
```

giac [A] time = 0.16, size = 88, normalized size = 1.05

$$\frac{xe}{c^4}+\frac{(2\,cd-3\,ae)\log\left(|cx+a|\right)}{4\,c^5}+\frac{(2\,cd+3\,ae)\log\left(|cx-a|\right)}{4\,c^5}-\frac{a^2xe+a^2d}{2\,(cx+a)(cx-a)c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] x*e/c^4 + 1/4*(2*c*d - 3*a*e)*log(abs(c*x + a))/c^5 + 1/4*(2*c*d + 3*a*e)*l
og(abs(c*x - a))/c^5 - 1/2*(a^2*x*e + a^2*d)/((c*x + a)*(c*x - a)*c^4)
```

maple [A] time = 0.06, size = 126, normalized size = 1.50

$$-\frac{a^2e}{4\,(cx+a)\,c^5}-\frac{a^2e}{4\,(cx-a)\,c^5}+\frac{ad}{4\,(cx+a)\,c^4}-\frac{ad}{4\,(cx-a)\,c^4}+\frac{3ae\ln\left(cx-a\right)}{4c^5}-\frac{3ae\ln\left(cx+a\right)}{4c^5}+\frac{d\ln\left(cx-a\right)}{2c^4}+\frac{d\ln(cx}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] e*x/c^4-3/4/c^5*ln(c*x+a)*a*e+1/2/c^4*ln(c*x+a)*d-1/4/c^5*a^2/(c*x+a)*e+1/4
/c^4*a/(c*x+a)*d+3/4/c^5*ln(c*x-a)*a*e+1/2/c^4*ln(c*x-a)*d-1/4/c^5*a^2/(c*x
-a)*e-1/4/c^4*a/(c*x-a)*d
```

maxima [A] time = 0.69, size = 81, normalized size = 0.96

$$-\frac{a^{2} e x + a^{2} d}{2 \left(c^{6} x^{2} - a^{2} c^{4}\right)} + \frac{e x}{c^{4}} + \frac{(2 \, c d - 3 \, a e) \log \left(c x + a\right)}{4 \, c^{5}} + \frac{(2 \, c d + 3 \, a e) \log \left(c x - a\right)}{4 \, c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(a^2*e*x + a^2*d)/(c^6*x^2 - a^2*c^4) + e*x/c^4 + 1/4*(2*c*d - 3*a*e)*
log(c*x + a)/c^5 + 1/4*(2*c*d + 3*a*e)*log(c*x - a)/c^5
```

mupad [B] time = 1.08, size = 81, normalized size = 0.96

$$\frac{\frac{a^2\,d}{2}+\frac{a^2\,e\,x}{2}}{a^2\,c^4-c^6\,x^2}-\frac{\ln\left(a+c\,x\right)\,\left(3\,a\,e-2\,c\,d\right)}{4\,c^5}+\frac{\ln\left(a-c\,x\right)\,\left(3\,a\,e+2\,c\,d\right)}{4\,c^5}+\frac{e\,x}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] ((a^2*d)/2 + (a^2*e*x)/2)/(a^2*c^4 - c^6*x^2) - (log(a + c*x)*(3*a*e - 2*c*
d))/(4*c^5) + (log(a - c*x)*(3*a*e + 2*c*d))/(4*c^5) + (e*x)/c^4
```

sympy [A] time = 0.74, size = 110, normalized size = 1.31

$$\frac{-a^{2} d - a^{2} e x}{-2 a^{2} c^{4} + 2 c^{6} x^{2}} + \frac{e x}{c^{4}} - \frac{(3 a e - 2 c d) \log{\left(x + \frac{2 d + \frac{3 a e - 2 c d}{c}}{3 e} \right)}}{4 c^{5}} + \frac{(3 a e + 2 c d) \log{\left(x + \frac{2 d - \frac{3 a e + 2 c d}{c}}{3 e} \right)}}{4 c^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*d - a**2*e*x)/(-2*a**2*c**4 + 2*c**6*x**2) + e*x/c**4 - (3*a*e - 2*c
*d)*log(x + (2*d + (3*a*e - 2*c*d)/c)/(3*e))/(4*c**5) + (3*a*e + 2*c*d)*log
(x + (2*d - (3*a*e + 2*c*d)/c)/(3*e))/(4*c**5)
```

3.308 $\int \frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=77

$$\frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(2ae+cd)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}$$

```
[Out] 1/2*x*(e*x+d)/c^2/(-c^2*x^2+a^2)+1/4*(2*a*e+c*d)*ln(-c*x+a)/a/c^4-1/4*(-2*a
*e+c*d)*ln(c*x+a)/a/c^4
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {819, 633, 31}

$$\frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(2ae+cd)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (x*(d + e*x))/(2*c^2*(a^2 - c^2*x^2)) + ((c*d + 2*a*e)*Log[a - c*x])/(4*a*c
^4) - ((c*d - 2*a*e)*Log[a + c*x])/(4*a*c^4)
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 633

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> With[{q = Rt[-(
a*c), 2]}, Dist[e/2 + (c*d)/(2*q), Int[1/(-q + c*x), x], x] + Dist[e/2 - (c
*d)/(2*q), Int[1/(q + c*x), x], x]] /; FreeQ[{a, c, d, e}, x] && NiceSqrtQ[
-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(d+ex)}{\left(a^2-c^2x^2\right)^2}\,dx &= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}-\frac{\int \frac{a^2d+2a^2ex}{a^2-c^2x^2}\,dx}{2a^2c^2}\\
&= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(cd-2ae)\int \frac{1}{-ac-c^2x}\,dx}{4ac^2}-\frac{(cd+2ae)\int \frac{1}{ac-c^2x}\,dx}{4ac^2}\\
&= \frac{x(d+ex)}{2c^2\left(a^2-c^2x^2\right)}+\frac{(cd+2ae)\log(a-cx)}{4ac^4}-\frac{(cd-2ae)\log(a+cx)}{4ac^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.83

$$\frac{\frac{a^2e+c^2dx}{a^2-c^2x^2}+e\log\left(a^2-c^2x^2\right)-\frac{cd\tanh^{-1}\left(\frac{cx}{a}\right)}{a}}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] ((a^2*e + c^2*d*x)/(a^2 - c^2*x^2) - (c*d*ArcTanh[(c*x)/a])/a + e*Log[a^2 -
 c^2*x^2])/(2*c^4)
```

fricas [A] time = 1.03, size = 115, normalized size = 1.49

$$-\frac{2\,ac^2dx+2\,a^3e-(a^2cd-2\,a^3e-(c^3d-2\,ac^2e)x^2)\log(cx+a)+(a^2cd+2\,a^3e-(c^3d+2\,ac^2e)x^2)\log(cx-}{4\left(ac^6x^2-a^3c^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*c^2*d*x + 2*a^3*e - (a^2*c*d - 2*a^3*e - (c^3*d - 2*a*c^2*e)*x^2)
*log(c*x + a) + (a^2*c*d + 2*a^3*e - (c^3*d + 2*a*c^2*e)*x^2)*log(c*x - a))
/(a*c^6*x^2 - a^3*c^4)
```

giac [A] time = 0.18, size = 85, normalized size = 1.10

$$-\frac{dx+\frac{a^2e}{c^2}}{2\,(cx+a)(cx-a)c^2}-\frac{(cd-2\,ae)\log(|cx+a|)}{4\,ac^4}+\frac{(cd+2\,ae)\log(|cx-a|)}{4\,ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(d*x + a^2*e/c^2)/((c*x + a)*(c*x - a)*c^2) - 1/4*(c*d - 2*a*e)*log(ab
s(c*x + a))/(a*c^4) + 1/4*(c*d + 2*a*e)*log(abs(c*x - a))/(a*c^4)
```

maple [A] time = 0.05, size = 118, normalized size = 1.53

$$\frac{ae}{4\,(cx+a)\,c^4}-\frac{ae}{4\,(cx-a)\,c^4}+\frac{d\ln(cx-a)}{4a\,c^3}-\frac{d\ln(cx+a)}{4a\,c^3}-\frac{d}{4\,(cx+a)\,c^3}-\frac{d}{4\,(cx-a)\,c^3}+\frac{e\ln(cx-a)}{2c^4}+\frac{e\ln(cx+a}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/4/c^4/(c*x+a)*a*e-1/4/c^3/(c*x+a)*d+1/2/c^4*ln(c*x+a)*e-1/4/a/c^3*ln(c*x+
a)*d-1/4/c^4/(c*x-a)*a*e-1/4/c^3/(c*x-a)*d+1/2/c^4*ln(c*x-a)*e+1/4/a/c^3*ln
(c*x-a)*d
```

maxima [A] time = 0.58, size = 79, normalized size = 1.03

$$-\frac{c^2dx+a^2e}{2\left(c^6x^2-a^2c^4\right)}-\frac{(cd-2\,ae)\log(cx+a)}{4\,ac^4}+\frac{(cd+2\,ae)\log(cx-a)}{4\,ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*d*x + a^2*e)/(c^6*x^2 - a^2*c^4) - 1/4*(c*d - 2*a*e)*log(c*x + a)
/(a*c^4) + 1/4*(c*d + 2*a*e)*log(c*x - a)/(a*c^4)
```

mupad [B] time = 0.11, size = 103, normalized size = 1.34

$$\frac{a^2\,e}{2\,\left(a^2\,c^4-c^6\,x^2\right)}+\frac{d\,x}{2\,\left(a^2\,c^2-c^4\,x^2\right)}+\frac{e\,\ln\left(a+c\,x\right)}{2\,c^4}+\frac{e\,\ln\left(a-c\,x\right)}{2\,c^4}-\frac{d\,\ln\left(a+c\,x\right)}{4\,a\,c^3}+\frac{d\,\ln\left(a-c\,x\right)}{4\,a\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (a^2*e)/(2*(a^2*c^4 - c^6*x^2)) + (d*x)/(2*(a^2*c^2 - c^4*x^2)) + (e*log(a
+ c*x))/(2*c^4) + (e*log(a - c*x))/(2*c^4) - (d*log(a + c*x))/(4*a*c^3) + (
d*log(a - c*x))/(4*a*c^3)
```

sympy [A] time = 0.63, size = 110, normalized size = 1.43

$$\frac{-a^2e-c^2dx}{-2a^2c^4+2c^6x^2}+\frac{(2ae-cd)\log\left(x+\frac{2a^2e-a(2ae-cd)}{c^2d}\right)}{4ac^4}+\frac{(2ae+cd)\log\left(x+\frac{2a^2e-a(2ae+cd)}{c^2d}\right)}{4ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*e - c**2*d*x)/(-2*a**2*c**4 + 2*c**6*x**2) + (2*a*e - c*d)*log(x + (
2*a**2*e - a*(2*a*e - c*d))/(c**2*d))/(4*a*c**4) + (2*a*e + c*d)*log(x + (2
*a**2*e - a*(2*a*e + c*d))/(c**2*d))/(4*a*c**4)
```

3.309 $\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2} \, dx$

Optimal. Leaf size=45

$$\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}$$

```
[Out] 1/2*(e*x+d)/c^2/(-c^2*x^2+a^2)-1/2*e*arctanh(c*x/a)/a/c^3
```

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {778, 208}

$$\frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (d + e*x)/(2*c^2*(a^2 - c^2*x^2)) - (e*ArcTanh[(c*x)/a])/(2*a*c^3)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{\left(a^2-c^2x^2\right)^2} \, dx &= \frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\int \frac{1}{a^2-c^2x^2} \, dx}{2c^2}\\ &= \frac{d+ex}{2c^2\left(a^2-c^2x^2\right)}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{2ac^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.93

$$\frac{\frac{c(d+ex)}{a^2-c^2x^2}-\frac{e\tanh^{-1}\left(\frac{cx}{a}\right)}{a}}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a^2 - c^2*x^2)^2,x]
```

```
[Out] ((c*(d + e*x))/(a^2 - c^2*x^2) - (e*ArcTanh[(c*x)/a])/a)/(2*c^3)
```

fricas [A] time = 0.87, size = 80, normalized size = 1.78

$$-\frac{2\,acex+2\,acd+\left(c^2ex^2-a^2e\right)\log\left(cx+a\right)-\left(c^2ex^2-a^2e\right)\log\left(cx-a\right)}{4\left(ac^5x^2-a^3c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*c*e*x + 2*a*c*d + (c^2*e*x^2 - a^2*e)*log(c*x + a) - (c^2*e*x^2 -
 a^2*e)*log(c*x - a))/(a*c^5*x^2 - a^3*c^3)
```

giac [A] time = 0.16, size = 63, normalized size = 1.40

$$-\frac{xe+d}{2\left(c^2x^2-a^2\right)c^2}-\frac{e\log\left(|cx+a|\right)}{4\,ac^3}+\frac{e\log\left(|cx-a|\right)}{4\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(x*e + d)/((c^2*x^2 - a^2)*c^2) - 1/4*e*log(abs(c*x + a))/(a*c^3) + 1/
4*e*log(abs(c*x - a))/(a*c^3)
```

maple [B] time = 0.05, size = 96, normalized size = 2.13

$$\frac{d}{4\,(cx+a)\,a\,c^2}-\frac{d}{4\,(cx-a)\,a\,c^2}+\frac{e\ln\left(cx-a\right)}{4a\,c^3}-\frac{e\ln\left(cx+a\right)}{4a\,c^3}-\frac{e}{4\,(cx+a)\,c^3}-\frac{e}{4\,(cx-a)\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] -1/4*e/a/c^3*ln(c*x+a)-1/4/c^3/(c*x+a)*e+1/4/a/c^2/(c*x+a)*d+1/4*e/a/c^3*ln
(c*x-a)-1/4/c^3/(c*x-a)*e-1/4/a/c^2/(c*x-a)*d
```

maxima [A] time = 0.51, size = 58, normalized size = 1.29

$$-\frac{ex+d}{2\left(c^4x^2-a^2c^2\right)}-\frac{e\log\left(cx+a\right)}{4\,ac^3}+\frac{e\log\left(cx-a\right)}{4\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(e*x + d)/(c^4*x^2 - a^2*c^2) - 1/4*e*log(c*x + a)/(a*c^3) + 1/4*e*log
(c*x - a)/(a*c^3)
```

mupad [B] time = 0.06, size = 46, normalized size = 1.02

$$\frac{\frac{d}{2\,c^2}+\frac{e\,x}{2\,c^2}}{a^2-c^2\,x^2}-\frac{e\,\mathrm{atanh}\left(\frac{c\,x}{a}\right)}{2\,a\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (d/(2*c^2) + (e*x)/(2*c^2))/(a^2 - c^2*x^2) - (e*atanh((c*x)/a))/(2*a*c^3)
```

sympy [A] time = 0.36, size = 46, normalized size = 1.02

$$\frac{-d-ex}{-2a^2c^2+2c^4x^2}+\frac{e\left(\frac{\log\left(-\frac{a}{c}+x\right)}{4}-\frac{\log\left(\frac{a}{c}+x\right)}{4}\right)}{ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-d - e*x)/(-2*a**2*c**2 + 2*c**4*x**2) + e*(log(-a/c + x)/4 - log(a/c + x)
/4)/(a*c**3)
```

3.310 $\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=55

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}+\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}$$

```
[Out] 1/2*(c^2*d*x+a^2*e)/a^2/c^2/(-c^2*x^2+a^2)+1/2*d*arctanh(c*x/a)/a^3/c
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {639, 208}

$$\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (a^2*e + c^2*d*x)/(2*a^2*c^2*(a^2 - c^2*x^2)) + (d*ArcTanh[(c*x)/a])/(2*a^3
*c)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a^2-c^2x^2\right)^2}\,dx&=\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\int \frac{1}{a^2-c^2x^2}\,dx}{2a^2}\\&=\frac{a^2e+c^2dx}{2a^2c^2\left(a^2-c^2x^2\right)}+\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 58, normalized size = 1.05

$$\frac{d\tanh^{-1}\left(\frac{cx}{a}\right)}{2a^3c}+\frac{a^2(-e)-c^2dx}{2a^2c^2\left(c^2x^2-a^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a^2 - c^2*x^2)^2,x]
```

```
[Out] (-(a^2*e) - c^2*d*x)/(2*a^2*c^2*(-a^2 + c^2*x^2)) + (d*ArcTanh[(c*x)/a])/(2
*a^3*c)
```

fricas [A] time = 0.85, size = 87, normalized size = 1.58

$$-\frac{2\,ac^2dx+2\,a^3e-\left(c^3dx^2-a^2cd\right)\log\left(cx+a\right)+\left(c^3dx^2-a^2cd\right)\log\left(cx-a\right)}{4\left(a^3c^4x^2-a^5c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a*c^2*d*x + 2*a^3*e - (c^3*d*x^2 - a^2*c*d)*log(c*x + a) + (c^3*d*x
^2 - a^2*c*d)*log(c*x - a))/(a^3*c^4*x^2 - a^5*c^2)
```

giac [A] time = 0.16, size = 71, normalized size = 1.29

$$\frac{d\log\left(|cx+a|\right)}{4\,a^3c}-\frac{d\log\left(|cx-a|\right)}{4\,a^3c}-\frac{c^2dx+a^2e}{2\left(c^2x^2-a^2\right)a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/4*d*log(abs(c*x + a))/(a^3*c) - 1/4*d*log(abs(c*x - a))/(a^3*c) - 1/2*(c^
2*d*x + a^2*e)/((c^2*x^2 - a^2)*a^2*c^2)
```

maple [A] time = 0.05, size = 102, normalized size = 1.85

$$\frac{e}{4\left(cx+a\right)a\,c^2}-\frac{e}{4\left(cx-a\right)a\,c^2}-\frac{d}{4\left(cx+a\right)a^2c}-\frac{d}{4\left(cx-a\right)a^2c}-\frac{d\ln\left(cx-a\right)}{4a^3c}+\frac{d\ln\left(cx+a\right)}{4a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/4*d/a^3/c*ln(c*x+a)+1/4/c^2/a/(c*x+a)*e-1/4/c/a^2/(c*x+a)*d-1/4*d/a^3/c*l
n(c*x-a)-1/4/c^2/a/(c*x-a)*e-1/4/c/a^2/(c*x-a)*d
```

maxima [A] time = 0.57, size = 68, normalized size = 1.24

$$-\frac{c^2dx+a^2e}{2\left(a^2c^4x^2-a^4c^2\right)}+\frac{d\log\left(cx+a\right)}{4\,a^3c}-\frac{d\log\left(cx-a\right)}{4\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(c^2*d*x + a^2*e)/(a^2*c^4*x^2 - a^4*c^2) + 1/4*d*log(c*x + a)/(a^3*c)
 - 1/4*d*log(c*x - a)/(a^3*c)
```

mupad [B] time = 1.07, size = 46, normalized size = 0.84

$$\frac{\frac{e}{2\,c^2}+\frac{d\,x}{2\,a^2}}{a^2-c^2\,x^2}+\frac{d\,\mathrm{atanh}\left(\frac{c\,x}{a}\right)}{2\,a^3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a^2 - c^2*x^2)^2,x)
```

```
[Out] (e/(2*c^2) + (d*x)/(2*a^2))/(a^2 - c^2*x^2) + (d*atanh((c*x)/a))/(2*a^3*c)
```

sympy [A] time = 0.33, size = 56, normalized size = 1.02

$$\frac{-a^2e-c^2dx}{-2a^4c^2+2a^2c^4x^2}+\frac{d\left(-\frac{\log\left(-\frac{a}{c}+x\right)}{4}+\frac{\log\left(\frac{a}{c}+x\right)}{4}\right)}{a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-a**2*e - c**2*d*x)/(-2*a**4*c**2 + 2*a**2*c**4*x**2) + d*(-log(-a/c + x)/
4 + log(a/c + x)/4)/(a**3*c)
```

3.311 $\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=84

$$-\frac{(ae+2cd)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}+\frac{d\log(x)}{a^4}+\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}$$

```
[Out] 1/2*(e*x+d)/a^2/(-c^2*x^2+a^2)+d*ln(x)/a^4-1/4*(a*e+2*c*d)*ln(-c*x+a)/a^4/c
-1/4*(-a*e+2*c*d)*ln(c*x+a)/a^4/c
```

Rubi [A] time = 0.07, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}-\frac{(ae+2cd)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}+\frac{d\log(x)}{a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (d + e*x)/(2*a^2*(a^2 - c^2*x^2)) + (d*Log[x])/a^4 - ((2*c*d + a*e)*Log[a -
 c*x])/(4*a^4*c) - ((2*c*d - a*e)*Log[a + c*x])/(4*a^4*c)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x\left(a^2-c^2x^2\right)^2}\,dx&=\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{\int \frac{2a^2c^2d+a^2c^2ex}{x\left(a^2-c^2x^2\right)}\,dx}{2a^4c^2}\\&=\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{2c^2d}{x}+\frac{c^2(2cd+ae)}{2(a-cx)}-\frac{c^2(2cd-ae)}{2(a+cx)}\right)dx}{2a^4c^2}\\&=\frac{d+ex}{2a^2\left(a^2-c^2x^2\right)}+\frac{d\log(x)}{a^4}-\frac{(2cd+ae)\log(a-cx)}{4a^4c}-\frac{(2cd-ae)\log(a+cx)}{4a^4c}\end{aligned}$$

Mathematica [A] time = 0.06, size = 65, normalized size = 0.77

$$\frac{\frac{a^2(d+ex)}{a^2-c^2x^2}-d\log\left(a^2-c^2x^2\right)+\frac{ae\tanh^{-1}\left(\frac{cx}{a}\right)}{c}+2d\log(x)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a^2 - c^2*x^2)^2),x]
```

```
[Out] ((a^2*(d + e*x))/(a^2 - c^2*x^2) + (a*e*ArcTanh[(c*x)/a])/c + 2*d*Log[x] -
d*Log[a^2 - c^2*x^2])/(2*a^4)
```

fricas [A] time = 1.00, size = 139, normalized size = 1.65

$$-\frac{2\,a^2cex + 2\,a^2cd - \left(2\,a^2cd - a^3e - \left(2\,c^3d - ac^2e\right)x^2\right)\log\left(cx + a\right) - \left(2\,a^2cd + a^3e - \left(2\,c^3d + ac^2e\right)x^2\right)\log\left(cx -\right.}{4\left(a^4c^3x^2 - a^6c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(2*a^2*c*e*x + 2*a^2*c*d - (2*a^2*c*d - a^3*e - (2*c^3*d - a*c^2*e)*x^
2)*log(c*x + a) - (2*a^2*c*d + a^3*e - (2*c^3*d + a*c^2*e)*x^2)*log(c*x - a
) - 4*(c^3*d*x^2 - a^2*c*d)*log(x))/(a^4*c^3*x^2 - a^6*c)
```

giac [A] time = 0.16, size = 94, normalized size = 1.12

$$\frac{d\log\left(|x|\right)}{a^4} - \frac{(2\,cd - ae)\log\left(|cx + a|\right)}{4\,a^4c} - \frac{(2\,cd + ae)\log\left(|cx - a|\right)}{4\,a^4c} - \frac{a^2xe + a^2d}{2\,(cx + a)(cx - a)a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] d*log(abs(x))/a^4 - 1/4*(2*c*d - a*e)*log(abs(c*x + a))/(a^4*c) - 1/4*(2*c*
d + a*e)*log(abs(c*x - a))/(a^4*c) - 1/2*(a^2*x*e + a^2*d)/((c*x + a)*(c*x
- a)*a^4)
```

maple [A] time = 0.06, size = 129, normalized size = 1.54

$$-\frac{e}{4\left(cx + a\right)a^2c} - \frac{e}{4\left(cx - a\right)a^2c} - \frac{e\ln\left(cx - a\right)}{4a^3c} + \frac{e\ln\left(cx + a\right)}{4a^3c} + \frac{d}{4\left(cx + a\right)a^3} - \frac{d}{4\left(cx - a\right)a^3} + \frac{d\ln(x)}{a^4} - \frac{d\ln\left(cx - a\right)}{2a^4} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 1/4/a^3/c*ln(c*x+a)*e-1/2/a^4*ln(c*x+a)*d-1/4/a^2/c/(c*x+a)*e+1/4/a^3/(c*x+
a)*d-1/4/a^3/c*ln(c*x-a)*e-1/2/a^4*ln(c*x-a)*d-1/4/a^2/c/(c*x-a)*e-1/4/a^3/
(c*x-a)*d+1/a^4*d*ln(x)
```

maxima [A] time = 0.69, size = 80, normalized size = 0.95

$$-\frac{ex + d}{2\left(a^2c^2x^2 - a^4\right)} + \frac{d\log(x)}{a^4} - \frac{(2\,cd - ae)\log\left(cx + a\right)}{4\,a^4c} - \frac{(2\,cd + ae)\log\left(cx - a\right)}{4\,a^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(e*x + d)/(a^2*c^2*x^2 - a^4) + d*log(x)/a^4 - 1/4*(2*c*d - a*e)*log(c
*x + a)/(a^4*c) - 1/4*(2*c*d + a*e)*log(c*x - a)/(a^4*c)
```

mupad [B] time = 0.11, size = 82, normalized size = 0.98

$$\frac{\frac{d}{2\,a^2} + \frac{e\,x}{2\,a^2}}{a^2 - c^2\,x^2} + \frac{d\,\ln(x)}{a^4} + \frac{\ln\left(a + c\,x\right)\,\left(a\,e - 2\,c\,d\right)}{4\,a^4\,c} - \frac{\ln\left(a - c\,x\right)\,\left(a\,e + 2\,c\,d\right)}{4\,a^4\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a^2 - c^2*x^2)^2),x)
```

```
[Out] (d/(2*a^2) + (e*x)/(2*a^2))/(a^2 - c^2*x^2) + (d*log(x))/a^4 + (log(a + c*x
)*(a*e - 2*c*d))/(4*a^4*c) - (log(a - c*x)*(a*e + 2*c*d))/(4*a^4*c)
```

sympy [B] time = 1.83, size = 231, normalized size = 2.75

$$\frac{-d-ex}{-2a^4+2a^2c^2x^2}+\frac{d\log\left(x\right)}{a^4}+\frac{(ae-2cd)\log\left(x+\frac{-4a^2de^2+\frac{a^2e^2(ae-2cd)}{c}-48c^2d^3-12cd^2(ae-2cd)+6d(ae-2cd)^2}{a^2e^3-36c^2d^2e}\right)}{4a^4c}-\frac{(ae+2cd)\log\left(x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (-d - e*x)/(-2*a**4 + 2*a**2*c**2*x**2) + d*log(x)/a**4 + (a*e - 2*c*d)*log
(x + (-4*a**2*d*e**2 + a**2*e**2*(a*e - 2*c*d)/c - 48*c**2*d**3 - 12*c*d**2
*(a*e - 2*c*d) + 6*d*(a*e - 2*c*d)**2)/(a**2*e**3 - 36*c**2*d**2*e))/(4*a**
4*c) - (a*e + 2*c*d)*log(x + (-4*a**2*d*e**2 - a**2*e**2*(a*e + 2*c*d)/c -
48*c**2*d**3 + 12*c*d**2*(a*e + 2*c*d) + 6*d*(a*e + 2*c*d)**2)/(a**2*e**3 -
 36*c**2*d**2*e))/(4*a**4*c)
```

3.312 $\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=93

$$-\frac{(2ae+3cd)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+cx)}{4a^5}-\frac{3d}{2a^4x}+\frac{e\log(x)}{a^4}+\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}$$

```
[Out] -3/2*d/a^4/x+1/2*(e*x+d)/a^2/x/(-c^2*x^2+a^2)+e*ln(x)/a^4-1/4*(2*a*e+3*c*d)
*ln(-c*x+a)/a^5+1/4*(-2*a*e+3*c*d)*ln(c*x+a)/a^5
```

Rubi [A] time = 0.09, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}-\frac{(2ae+3cd)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+cx)}{4a^5}-\frac{3d}{2a^4x}+\frac{e\log(x)}{a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (-3*d)/(2*a^4*x) + (d + e*x)/(2*a^2*x*(a^2 - c^2*x^2)) + (e*Log[x])/a^4 - (
(3*c*d + 2*a*e)*Log[a - c*x])/(4*a^5) + ((3*c*d - 2*a*e)*Log[a + c*x])/(4*a
^5)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^2\left(a^2-c^2x^2\right)^2}\,dx &= \frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{\int \frac{3a^2c^2d+2a^2c^2ex}{x^2\left(a^2-c^2x^2\right)}\,dx}{2a^4c^2}\\ &= \frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{3c^2d}{x^2}+\frac{2c^2e}{x}+\frac{c^3(3cd+2ae)}{2a(a-cx)}-\frac{c^3(-3cd+2ae)}{2a(a+cx)}\right)dx}{2a^4c^2}\\ &= -\frac{3d}{2a^4x}+\frac{d+ex}{2a^2x\left(a^2-c^2x^2\right)}+\frac{e\log(x)}{a^4}-\frac{(3cd+2ae)\log(a-cx)}{4a^5}+\frac{(3cd-2ae)\log(a+}{4a^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 77, normalized size = 0.83

$$\frac{-ae\log\left(a^2-c^2x^2\right)+\frac{a^3e+ac^2dx}{a^2-c^2x^2}+3cd\tanh^{-1}\left(\frac{cx}{a}\right)-\frac{2ad}{x}+2ae\log(x)}{2a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x]
```

```
[Out] ((-2*a*d)/x + (a^3*e + a*c^2*d*x)/(a^2 - c^2*x^2) + 3*c*d*ArcTanh[(c*x)/a]
+ 2*a*e*Log[x] - a*e*Log[a^2 - c^2*x^2])/(2*a^5)
```

fricas [A] time = 0.94, size = 155, normalized size = 1.67

$$-\frac{6\,ac^2dx^2 + 2\,a^3ex - 4\,a^3d - \left(\left(3\,c^3d - 2\,ac^2e\right)x^3 - \left(3\,a^2cd - 2\,a^3e\right)x\right)\log\left(cx + a\right) + \left(\left(3\,c^3d + 2\,ac^2e\right)x^3 - \left(3\,a^2cd}{4\left(a^5c^2x^3 - a^7x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(6*a*c^2*d*x^2 + 2*a^3*e*x - 4*a^3*d - ((3*c^3*d - 2*a*c^2*e)*x^3 - (3
*a^2*c*d - 2*a^3*e)*x)*log(c*x + a) + ((3*c^3*d + 2*a*c^2*e)*x^3 - (3*a^2*c
*d + 2*a^3*e)*x)*log(c*x - a) - 4*(a*c^2*e*x^3 - a^3*e*x)*log(x))/(a^5*c^2*
x^3 - a^7*x)
```

giac [A] time = 0.16, size = 112, normalized size = 1.20

$$\frac{e\log\left(|x|\right)}{a^4} - \frac{3\,c^2dx^2 + a^2xe - 2\,a^2d}{2\left(c^2x^3 - a^2x\right)a^4} + \frac{\left(3\,c^2d - 2\,ace\right)\log\left(|cx + a|\right)}{4\,a^5c} - \frac{\left(3\,c^2d + 2\,ace\right)\log\left(|cx - a|\right)}{4\,a^5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] e*log(abs(x))/a^4 - 1/2*(3*c^2*d*x^2 + a^2*x*e - 2*a^2*d)/((c^2*x^3 - a^2*x
)*a^4) + 1/4*(3*c^2*d - 2*a*c*e)*log(abs(c*x + a))/(a^5*c) - 1/4*(3*c^2*d +
 2*a*c*e)*log(abs(c*x - a))/(a^5*c)
```

maple [A] time = 0.06, size = 130, normalized size = 1.40

$$\frac{e}{4\left(cx + a\right)a^3} - \frac{e}{4\left(cx - a\right)a^3} - \frac{cd}{4\left(cx + a\right)a^4} - \frac{cd}{4\left(cx - a\right)a^4} + \frac{e\ln(x)}{a^4} - \frac{e\ln\left(cx - a\right)}{2a^4} - \frac{e\ln\left(cx + a\right)}{2a^4} - \frac{3cd\ln\left(cx - a\right)}{4a^5} + 3cd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x)
```

```
[Out] -1/2/a^4*ln(c*x+a)*e+3/4/a^5*ln(c*x+a)*c*d+1/4/a^3/(c*x+a)*e-1/4/a^4/(c*x+a
)*c*d-1/2/a^4*ln(c*x-a)*e-3/4/a^5*ln(c*x-a)*c*d-1/4/a^3/(c*x-a)*e-1/4/a^4/(
c*x-a)*c*d+1/a^4*e*ln(x)-1/a^4*d/x
```

maxima [A] time = 0.47, size = 93, normalized size = 1.00

$$-\frac{3\,c^2dx^2 + a^2ex - 2\,a^2d}{2\left(a^4c^2x^3 - a^6x\right)} + \frac{e\log(x)}{a^4} + \frac{\left(3\,cd - 2\,ae\right)\log\left(cx + a\right)}{4\,a^5} - \frac{\left(3\,cd + 2\,ae\right)\log\left(cx - a\right)}{4\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(3*c^2*d*x^2 + a^2*e*x - 2*a^2*d)/(a^4*c^2*x^3 - a^6*x) + e*log(x)/a^4
 + 1/4*(3*c*d - 2*a*e)*log(c*x + a)/a^5 - 1/4*(3*c*d + 2*a*e)*log(c*x - a)/
a^5
```

mupad [B] time = 1.11, size = 92, normalized size = 0.99

$$\frac{\frac{e\,x}{2\,a^2} - \frac{d}{a^2} + \frac{3\,c^2\,d\,x^2}{2\,a^4}}{a^2\,x - c^2\,x^3} - \frac{\ln\left(a + c\,x\right)\,\left(2\,a\,e - 3\,c\,d\right)}{4\,a^5} - \frac{\ln\left(a - c\,x\right)\,\left(2\,a\,e + 3\,c\,d\right)}{4\,a^5} + \frac{e\,\ln(x)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a^2 - c^2*x^2)^2),x)
```

```
[Out] ((e*x)/(2*a^2) - d/a^2 + (3*c^2*d*x^2)/(2*a^4))/(a^2*x - c^2*x^3) - (log(a
+ c*x)*(2*a*e - 3*c*d))/(4*a^5) - (log(a - c*x)*(2*a*e + 3*c*d))/(4*a^5) +
(e*log(x))/a^4
```

sympy [B] time = 1.95, size = 291, normalized size = 3.13

$$\frac{2a^2d - a^2ex - 3c^2dx^2}{-2a^6x + 2a^4c^2x^3} + \frac{e\log(x)}{a^4} - \frac{(2ae - 3cd)\log\left(x + \frac{16a^4e^3 - 4a^3e^2(2ae-3cd) + 12a^2c^2d^2e - 2a^2e(2ae-3cd)^2 + 3ac^2d^2(2ae-3cd)}{36a^2c^2de^2 - 9c^4d^3}\right)}{4a^5} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (2*a**2*d - a**2*e*x - 3*c**2*d*x**2)/(-2*a**6*x + 2*a**4*c**2*x**3) + e*lo
g(x)/a**4 - (2*a*e - 3*c*d)*log(x + (16*a**4*e**3 - 4*a**3*e**2*(2*a*e - 3*
c*d) + 12*a**2*c**2*d**2*e - 2*a**2*e*(2*a*e - 3*c*d)**2 + 3*a*c**2*d**2*(2
*a*e - 3*c*d))/(36*a**2*c**2*d*e**2 - 9*c**4*d**3))/(4*a**5) - (2*a*e + 3*c
*d)*log(x + (16*a**4*e**3 - 4*a**3*e**2*(2*a*e + 3*c*d) + 12*a**2*c**2*d**2
*e - 2*a**2*e*(2*a*e + 3*c*d)**2 + 3*a*c**2*d**2*(2*a*e + 3*c*d))/(36*a**2*
c**2*d*e**2 - 9*c**4*d**3))/(4*a**5)
```

3.313 $\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2}\,dx$

Optimal. Leaf size=108

$$\frac{2c^2d\log(x)}{a^6}-\frac{c(3ae+4cd)\log(a-cx)}{4a^6}-\frac{c(4cd-3ae)\log(a+cx)}{4a^6}-\frac{d}{a^4x^2}-\frac{3e}{2a^4x}+\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}$$

```
[Out] -d/a^4/x^2-3/2*e/a^4/x+1/2*(e*x+d)/a^2/x^2/(-c^2*x^2+a^2)+2*c^2*d*ln(x)/a^6
-1/4*c*(3*a*e+4*c*d)*ln(-c*x+a)/a^6-1/4*c*(-3*a*e+4*c*d)*ln(c*x+a)/a^6
```

Rubi [A] time = 0.11, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {823, 801}

$$\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{2c^2d\log(x)}{a^6}-\frac{c(3ae+4cd)\log(a-cx)}{4a^6}-\frac{c(4cd-3ae)\log(a+cx)}{4a^6}-\frac{d}{a^4x^2}-\frac{3e}{2a^4x}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x]
```

```
[Out] -(d/(a^4*x^2)) - (3*e)/(2*a^4*x) + (d + e*x)/(2*a^2*x^2*(a^2 - c^2*x^2)) +
(2*c^2*d*Log[x])/a^6 - (c*(4*c*d + 3*a*e)*Log[a - c*x])/(4*a^6) - (c*(4*c*d
 - 3*a*e)*Log[a + c*x])/(4*a^6)
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{x^3\left(a^2-c^2x^2\right)^2}\,dx &= \frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{\int \frac{4a^2c^2d+3a^2c^2ex}{x^3\left(a^2-c^2x^2\right)}\,dx}{2a^4c^2}\\ &= \frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{\int \left(\frac{4c^2d}{x^3}+\frac{3c^2e}{x^2}+\frac{4c^4d}{a^2x}+\frac{c^4(4cd+3ae)}{2a^2(a-cx)}+\frac{c^4(-4cd+3ae)}{2a^2(a+cx)}\right)dx}{2a^4c^2}\\ &= -\frac{d}{a^4x^2}-\frac{3e}{2a^4x}+\frac{d+ex}{2a^2x^2\left(a^2-c^2x^2\right)}+\frac{2c^2d\log(x)}{a^6}-\frac{c(4cd+3ae)\log(a-cx)}{4a^6}-\frac{c(4cd-3}{}\end{aligned}$$

Mathematica [A] time = 0.07, size = 91, normalized size = 0.84

$$\frac{\frac{a^2c^2(d+ex)}{a^2-c^2x^2} - 2c^2d\log\left(a^2-c^2x^2\right) - \frac{a^2d}{x^2} - \frac{2a^2e}{x} + 3ace\tanh^{-1}\left(\frac{cx}{a}\right) + 4c^2d\log(x)}{2a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x]
```

```
[Out] (-((a^2*d)/x^2) - (2*a^2*e)/x + (a^2*c^2*(d + e*x))/(a^2 - c^2*x^2) + 3*a*c
*e*ArcTanh[(c*x)/a] + 4*c^2*d*Log[x] - 2*c^2*d*Log[a^2 - c^2*x^2])/(2*a^6)
```

fricas [A] time = 1.25, size = 184, normalized size = 1.70

$$-\frac{6\,a^2c^2ex^3 + 4\,a^2c^2dx^2 - 4\,a^4ex - 2\,a^4d + \left(\left(4\,c^4d - 3\,ac^3e\right)x^4 - \left(4\,a^2c^2d - 3\,a^3ce\right)x^2\right)\log\left(cx+a\right) + \left(\left(4\,c^4d + 3\right.\right.}{4\left(a^6c^2x^4 - a^8x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/4*(6*a^2*c^2*e*x^3 + 4*a^2*c^2*d*x^2 - 4*a^4*e*x - 2*a^4*d + ((4*c^4*d -
 3*a*c^3*e)*x^4 - (4*a^2*c^2*d - 3*a^3*c*e)*x^2)*log(c*x + a) + ((4*c^4*d +
 3*a*c^3*e)*x^4 - (4*a^2*c^2*d + 3*a^3*c*e)*x^2)*log(c*x - a) - 8*(c^4*d*x^
4 - a^2*c^2*d*x^2)*log(x))/(a^6*c^2*x^4 - a^8*x^2)
```

giac [A] time = 0.19, size = 139, normalized size = 1.29

$$\frac{2\,c^2d\log\left(|x|\right)}{a^6} - \frac{\left(4\,c^3d - 3\,ac^2e\right)\log\left(|cx+a|\right)}{4\,a^6c} - \frac{\left(4\,c^3d + 3\,ac^2e\right)\log\left(|cx-a|\right)}{4\,a^6c} - \frac{3\,a^2c^2x^3e + 2\,a^2c^2dx^2 - 2\,a^4xe -}{2\,(cx+a)(cx-a)a^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*c^2*d*log(abs(x))/a^6 - 1/4*(4*c^3*d - 3*a*c^2*e)*log(abs(c*x + a))/(a^6*
c) - 1/4*(4*c^3*d + 3*a*c^2*e)*log(abs(c*x - a))/(a^6*c) - 1/2*(3*a^2*c^2*x
^3*e + 2*a^2*c^2*d*x^2 - 2*a^4*x*e - a^4*d)/((c*x + a)*(c*x - a)*a^6*x^2)
```

maple [A] time = 0.06, size = 155, normalized size = 1.44

$$-\frac{ce}{4\,(cx+a)\,a^4} - \frac{ce}{4\,(cx-a)\,a^4} + \frac{c^2d}{4\,(cx+a)\,a^5} - \frac{c^2d}{4\,(cx-a)\,a^5} - \frac{3ce\ln\left(cx-a\right)}{4a^5} + \frac{3ce\ln\left(cx+a\right)}{4a^5} + \frac{2c^2d\ln(x)}{a^6} - \frac{c^2d\ln(}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x)
```

```
[Out] 3/4*c/a^5*ln(c*x+a)*e-c^2/a^6*ln(c*x+a)*d-1/4*c/a^4/(c*x+a)*e+1/4*c^2/a^5/(
c*x+a)*d-3/4*c/a^5*ln(c*x-a)*e-c^2/a^6*ln(c*x-a)*d-1/4*c/a^4/(c*x-a)*e-1/4*
c^2/a^5/(c*x-a)*d-1/a^4*e/x-1/2/a^4*d/x^2+2*c^2*d*ln(x)/a^6
```

maxima [A] time = 0.53, size = 115, normalized size = 1.06

$$-\frac{3\,c^2ex^3 + 2\,c^2dx^2 - 2\,a^2ex - a^2d}{2\left(a^4c^2x^4 - a^6x^2\right)} + \frac{2\,c^2d\log(x)}{a^6} - \frac{\left(4\,c^2d - 3\,ace\right)\log\left(cx+a\right)}{4\,a^6} - \frac{\left(4\,c^2d + 3\,ace\right)\log\left(cx-a\right)}{4\,a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(-c^2*x^2+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(3*c^2*e*x^3 + 2*c^2*d*x^2 - 2*a^2*e*x - a^2*d)/(a^4*c^2*x^4 - a^6*x^2
) + 2*c^2*d*log(x)/a^6 - 1/4*(4*c^2*d - 3*a*c*e)*log(c*x + a)/a^6 - 1/4*(4*
c^2*d + 3*a*c*e)*log(c*x - a)/a^6
```

mupad [B] time = 1.11, size = 116, normalized size = 1.07

$$\frac{2\,c^2\,d\,\ln(x)}{a^6}-\frac{\ln\left(a+c\,x\right)\,\left(4\,c^2\,d-3\,a\,c\,e\right)}{4\,a^6}-\frac{\ln\left(a-c\,x\right)\,\left(4\,d\,c^2+3\,a\,e\,c\right)}{4\,a^6}-\frac{\frac{d}{2\,a^2}+\frac{e\,x}{a^2}-\frac{c^2\,d\,x^2}{a^4}-\frac{3\,c^2\,e\,x^3}{2\,a^4}}{a^2\,x^2-c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a^2 - c^2*x^2)^2),x)
```

```
[Out] (2*c^2*d*log(x))/a^6 - (log(a + c*x)*(4*c^2*d - 3*a*c*e))/(4*a^6) - (log(a
- c*x)*(4*c^2*d + 3*a*c*e))/(4*a^6) - (d/(2*a^2) + (e*x)/a^2 - (c^2*d*x^2)/
a^4 - (3*c^2*e*x^3)/(2*a^4))/(a^2*x^2 - c^2*x^4)
```

sympy [B] time = 2.30, size = 311, normalized size = 2.88

$$\frac{a^2d+2a^2ex-2c^2dx^2-3c^2ex^3}{-2a^6x^2+2a^4c^2x^4}+\frac{2c^2d\log\left(x\right)}{a^6}+\frac{c\left(3ae-4cd\right)\log\left(x+\frac{-24a^2c^2de^2+3a^2ce^2(3ae-4cd)-128c^4d^3-16c^3d^2(3ae-4cd)+}{9a^2c^2e^3-144c^4d^2e}\right.}{4a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(-c**2*x**2+a**2)**2,x)
```

```
[Out] (a**2*d + 2*a**2*e*x - 2*c**2*d*x**2 - 3*c**2*e*x**3)/(-2*a**6*x**2 + 2*a**
4*c**2*x**4) + 2*c**2*d*log(x)/a**6 + c*(3*a*e - 4*c*d)*log(x + (-24*a**2*c
**2*d*e**2 + 3*a**2*c*e**2*(3*a*e - 4*c*d) - 128*c**4*d**3 - 16*c**3*d**2*(
3*a*e - 4*c*d) + 4*c**2*d*(3*a*e - 4*c*d)**2)/(9*a**2*c**2*e**3 - 144*c**4*
d**2*e))/(4*a**6) - c*(3*a*e + 4*c*d)*log(x + (-24*a**2*c**2*d*e**2 - 3*a**
2*c*e**2*(3*a*e + 4*c*d) - 128*c**4*d**3 + 16*c**3*d**2*(3*a*e + 4*c*d) + 4
*c**2*d*(3*a*e + 4*c*d)**2)/(9*a**2*c**2*e**3 - 144*c**4*d**2*e))/(4*a**6)
```

3.314 $\int x^4(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=152

$$\frac{a^3 A \tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a^2 Ax\sqrt{a+cx^2}}{16c^2}+\frac{a\left(a+cx^2\right)^{3/2}(64aB-105Acx)}{840c^3}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}$$

```
[Out] -4/35*a*B*x^2*(c*x^2+a)^(3/2)/c^2+1/6*A*x^3*(c*x^2+a)^(3/2)/c+1/7*B*x^4*(c*
x^2+a)^(3/2)/c+1/840*a*(-105*A*c*x+64*B*a)*(c*x^2+a)^(3/2)/c^3+1/16*a^3*A*a
rctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)+1/16*a^2*A*x*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.13, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = $\{833, 780, 195, 217, 206\}$

$$\frac{a^2 Ax\sqrt{a+cx^2}}{16c^2}+\frac{a^3 A \tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a\left(a+cx^2\right)^{3/2}(64aB-105Acx)}{840c^3}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (a^2*A*x*Sqrt[a + c*x^2])/(16*c^2) - (4*a*B*x^2*(a + c*x^2)^(3/2))/(35*c^2)
 + (A*x^3*(a + c*x^2)^(3/2))/(6*c) + (B*x^4*(a + c*x^2)^(3/2))/(7*c) + (a*(
64*a*B - 105*A*c*x)*(a + c*x^2)^(3/2))/(840*c^3) + (a^3*A*ArcTanh[(Sqrt[c]*
x)/Sqrt[a + c*x^2]])/(16*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^4(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{\int x^3(-4aB+7Acx)\sqrt{a+cx^2}\,dx}{7c}\\
&= \frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{\int x^2(-21aAc-24aBcx)\sqrt{a+cx^2}\,dx}{42c^2}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{\int x\left(48a^2Bc-105aA\right.}{210c}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{a(64aB-105Acx)\left(a\right.}{840c^3}\\
&= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{a(64}{}\\
&= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{a(64}{}\\
&= \frac{a^2Ax\sqrt{a+cx^2}}{16c^2}-\frac{4aBx^2\left(a+cx^2\right)^{3/2}}{35c^2}+\frac{Ax^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{Bx^4\left(a+cx^2\right)^{3/2}}{7c}+\frac{a(64}{}
\end{aligned}$$

Mathematica [A] time = 0.21, size = 113, normalized size = 0.74

$$\frac{\sqrt{a+cx^2}\left(\frac{105a^{5/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+128a^3B-a^2cx(105A+64Bx)+2ac^2x^3(35A+24Bx)+40c^3x^5(7A+6Bx)\right)}{1680c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(128*a^3*B + 40*c^3*x^5*(7*A + 6*B*x) + 2*a*c^2*x^3*(35*A
+ 24*B*x) - a^2*c*x*(105*A + 64*B*x) + (105*a^(5/2)*A*Sqrt[c]*ArcSinh[(Sqrt
[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(1680*c^3)
```

fricas [A] time = 0.87, size = 224, normalized size = 1.47

$$\left[\frac{105\,Aa^3\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(240\,Bc^3x^6+280\,Ac^3x^5+48\,Bac^2x^4+70\,Aac^2x^3-64\,Ba^2c\right.}{3360\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/3360*(105*A*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(240*B*c^3*x^6 + 280*A*c^3*x^5 + 48*B*a*c^2*x^4 + 70*A*a*c^2*x^3 - 64*B
*a^2*c*x^2 - 105*A*a^2*c*x + 128*B*a^3)*sqrt(c*x^2 + a))/c^3, -1/1680*(105*
A*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (240*B*c^3*x^6 + 280*A*
c^3*x^5 + 48*B*a*c^2*x^4 + 70*A*a*c^2*x^3 - 64*B*a^2*c*x^2 - 105*A*a^2*c*x
+ 128*B*a^3)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.19, size = 106, normalized size = 0.70

$$-\frac{Aa^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{5}{2}}}+\frac{1}{1680}\,\sqrt{cx^2+a}\left(\left(2\left(\left(4\left(5\,(6\,Bx+7\,A)x+\frac{6\,Ba}{c}\right)x+\frac{35\,Aa}{c}\right)x-\frac{32\,Ba^2}{c^2}\right)x-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/1680*sqrt(c*
x^2 + a)*((2*((4*(5*(6*B*x + 7*A)*x + 6*B*a/c)*x + 35*A*a/c)*x - 32*B*a^2/c
^2)*x - 105*A*a^2/c^2)*x + 128*B*a^3/c^3)
```

maple [A] time = 0.06, size = 136, normalized size = 0.89

$$\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,x^4}{7c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A\,x^3}{6c}+\frac{A\,a^3\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{16c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+a}\;A\,a^2x}{16c^2}-\frac{4\left(c\,x^2+a\right)^{\frac{3}{2}}Ba\,x^2}{35c^2}-\frac{\left(c\,x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/7*B*x^4*(c*x^2+a)^(3/2)/c-4/35*a*B*x^2*(c*x^2+a)^(3/2)/c^2+8/105*B*a^2/c^
3*(c*x^2+a)^(3/2)+1/6*A*x^3*(c*x^2+a)^(3/2)/c-1/8*A*a/c^2*x*(c*x^2+a)^(3/2)
+1/16*a^2*A*x*(c*x^2+a)^(1/2)/c^2+1/16*A*a^3/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)
^(1/2))
```

maxima [A] time = 0.56, size = 128, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bx^4}{7\,c}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ax^3}{6\,c}-\frac{4\left(cx^2+a\right)^{\frac{3}{2}}Bax^2}{35\,c^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Aax}{8\,c^2}+\frac{\sqrt{cx^2+a}\,Aa^2x}{16\,c^2}+\frac{Aa^3\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{5}{2}}}+\frac{8\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + a)^(3/2)*B*x^4/c + 1/6*(c*x^2 + a)^(3/2)*A*x^3/c - 4/35*(c*x^2
 + a)^(3/2)*B*a*x^2/c^2 - 1/8*(c*x^2 + a)^(3/2)*A*a*x/c^2 + 1/16*sqrt(c*x^2
 + a)*A*a^2*x/c^2 + 1/16*A*a^3*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/105*(c*x^
2 + a)^(3/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,\sqrt{c\,x^2+a}\;\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 8.36, size = 216, normalized size = 1.42

$$-\frac{Aa^{\frac{5}{2}}x}{16c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^{\frac{3}{2}}x^3}{48c\sqrt{1+\frac{cx^2}{a}}}+\frac{5A\sqrt{a}\,x^5}{24\sqrt{1+\frac{cx^2}{a}}}+\frac{Aa^3\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16c^{\frac{5}{2}}}+\frac{Acx^7}{6\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}+B\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}\\ \frac{\sqrt{a}\,x^6}{6}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] -A*a**(5/2)*x/(16*c**2*sqrt(1 + c*x**2/a)) - A*a**(3/2)*x**3/(48*c*sqrt(1 +
 c*x**2/a)) + 5*A*sqrt(a)*x**5/(24*sqrt(1 + c*x**2/a)) + A*a**3*asinh(sqrt(
c)*x/sqrt(a))/(16*c**(5/2)) + A*c*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) + B*P
iecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)
/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(
c, 0)), (sqrt(a)*x**6/6, True))
```

3.315 $\int x^3(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=127

$$\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}+\frac{a^2Bx\sqrt{a+cx^2}}{16c^2}-\frac{a\left(a+cx^2\right)^{3/2}(16A+15Bx)}{120c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}$$

```
[Out] 1/5*A*x^2*(c*x^2+a)^(3/2)/c+1/6*B*x^3*(c*x^2+a)^(3/2)/c-1/120*a*(15*B*x+16*
A)*(c*x^2+a)^(3/2)/c^2+1/16*a^3*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2
)+1/16*a^2*B*x*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.08, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = $\{833, 780, 195, 217, 206\}$

$$\frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{5/2}}-\frac{a\left(a+cx^2\right)^{3/2}(16A+15Bx)}{120c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (a^2*B*x*Sqrt[a + c*x^2])/(16*c^2) + (A*x^2*(a + c*x^2)^(3/2))/(5*c) + (B*x
^3*(a + c*x^2)^(3/2))/(6*c) - (a*(16*A + 15*B*x)*(a + c*x^2)^(3/2))/(120*c^
2) + (a^3*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(16*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
```

```
/; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^3(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{\int x^2(-3aB+6Acx)\sqrt{a+cx^2}\,dx}{6c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}+\frac{\int x(-12aAc-15aBcx)\sqrt{a+cx^2}\,dx}{30c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}+\frac{\left(a^2B\right)\int\sqrt{a+}{8c^2}\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}\\
&= \frac{a^2Bx\sqrt{a+cx^2}}{16c^2}+\frac{Ax^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{Bx^3\left(a+cx^2\right)^{3/2}}{6c}-\frac{a(16A+15Bx)\left(a+cx^2\right)^{3/2}}{120c^2}
\end{aligned}$$

Mathematica [A] time = 0.18, size = 107, normalized size = 0.84

$$\frac{\sqrt{a+cx^2}\left(\frac{15a^{5/2}B\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\left(-a^2(32A+15Bx)+2acx^2(8A+5Bx)+8c^2x^4(6A+5Bx)\right)\right)}{240c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*c^2*x^4*(6*A + 5*B*x) + 2*a*c*x^2*(8*A + 5*B*x
) - a^2*(32*A + 15*B*x)) + (15*a^(5/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt
[1 + (c*x^2)/a]))/(240*c^(5/2))
```

fricas [A] time = 0.82, size = 206, normalized size = 1.62

$$\left[\frac{15\,Ba^3\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(40\,Bc^3x^5+48\,Ac^3x^4+10\,Bac^2x^3+16\,Aac^2x^2-15\,Ba^2cx-3}{480\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/480*(15*B*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(40*B*c^3*x^5 + 48*A*c^3*x^4 + 10*B*a*c^2*x^3 + 16*A*a*c^2*x^2 - 15*B*a^2
*c*x - 32*A*a^2*c)*sqrt(c*x^2 + a))/c^3, -1/240*(15*B*a^3*sqrt(-c)*arctan(s
qrt(-c)*x/sqrt(c*x^2 + a)) - (40*B*c^3*x^5 + 48*A*c^3*x^4 + 10*B*a*c^2*x^3
+ 16*A*a*c^2*x^2 - 15*B*a^2*c*x - 32*A*a^2*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.20, size = 93, normalized size = 0.73

$$-\frac{Ba^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{5}{2}}}+\frac{1}{240}\,\sqrt{cx^2+a}\left(\left(2\left(\left(4\,(5\,Bx+6\,A)x+\frac{5\,Ba}{c}\right)x+\frac{8\,Aa}{c}\right)x-\frac{15\,Ba^2}{c^2}\right)x-\frac{32\,Aa^2}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/16*B*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/240*sqrt(c*x
^2 + a)*((2*((4*(5*B*x + 6*A)*x + 5*B*a/c)*x + 8*A*a/c)*x - 15*B*a^2/c^2)*x
 - 32*A*a^2/c^2)
```

maple [A] time = 0.06, size = 115, normalized size = 0.91

$$\frac{\left(c x^2+a\right)^{\frac{3}{2}} B x^3}{6c}+\frac{B a^3 \ln\left(\sqrt{c}\, x+\sqrt{c x^2+a}\right)}{16 c^{\frac{5}{2}}}+\frac{\left(c x^2+a\right)^{\frac{3}{2}} A x^2}{5c}+\frac{\sqrt{c x^2+a}\, B a^2 x}{16 c^2}-\frac{\left(c x^2+a\right)^{\frac{3}{2}} B a x}{8 c^2}-\frac{2\left(c x^2+\right.}{15c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/6*B*x^3*(c*x^2+a)^(3/2)/c-1/8*B*a/c^2*x*(c*x^2+a)^(3/2)+1/16*a^2*B*x*(c*x
^2+a)^(1/2)/c^2+1/16*B*a^3/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*x^2*
(c*x^2+a)^(3/2)/c-2/15*A*a/c^2*(c*x^2+a)^(3/2)
```

maxima [A] time = 0.48, size = 107, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{3}{2}} B x^3}{6\,c}+\frac{\left(cx^2+a\right)^{\frac{3}{2}} A x^2}{5\,c}-\frac{\left(cx^2+a\right)^{\frac{3}{2}} B a x}{8\,c^2}+\frac{\sqrt{cx^2+a}\, B a^2 x}{16\,c^2}+\frac{B a^3 \operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{5}{2}}}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}} A a}{15\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(3/2)*B*x^3/c + 1/5*(c*x^2 + a)^(3/2)*A*x^2/c - 1/8*(c*x^2
+ a)^(3/2)*B*a*x/c^2 + 1/16*sqrt(c*x^2 + a)*B*a^2*x/c^2 + 1/16*B*a^3*arcsin
h(c*x/sqrt(a*c))/c^(5/2) - 2/15*(c*x^2 + a)^(3/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 7.86, size = 192, normalized size = 1.51

$$A\left(\begin{cases} -\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for } c\neq 0 \\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise} \end{cases}\right)-\frac{Ba^{\frac{5}{2}}x}{16c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba^{\frac{3}{2}}x^3}{48c\sqrt{1+\frac{cx^2}{a}}}+\frac{5B\sqrt{a}\,x^5}{24\sqrt{1+\frac{cx^2}{a}}}+\frac{Ba^3\,\mathrm{asin}}{16c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(
15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) - B*a**
(5/2)*x/(16*c**2*sqrt(1 + c*x**2/a)) - B*a**(3/2)*x**3/(48*c*sqrt(1 + c*x**
2/a)) + 5*B*sqrt(a)*x**5/(24*sqrt(1 + c*x**2/a)) + B*a**3*asinh(sqrt(c)*x/s
qrt(a))/(16*c**(5/2)) + B*c*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.316 $\int x^2(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=104

$$-\frac{a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}-\frac{\left(a+cx^2\right)^{3/2}(8aB-15Acx)}{60c^2}-\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}$$

```
[Out] 1/5*B*x^2*(c*x^2+a)^(3/2)/c-1/60*(-15*A*c*x+8*B*a)*(c*x^2+a)^(3/2)/c^2-1/8*
a^2*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)-1/8*a*A*x*(c*x^2+a)^(1/2)/
c
```

Rubi [A] time = 0.05, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = $\{833, 780, 195, 217, 206\}$

$$-\frac{a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}-\frac{\left(a+cx^2\right)^{3/2}(8aB-15Acx)}{60c^2}-\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] -(a*A*x*Sqrt[a + c*x^2])/(8*c) + (B*x^2*(a + c*x^2)^(3/2))/(5*c) - ((8*a*B
 - 15*A*c*x)*(a + c*x^2)^(3/2))/(60*c^2) - (a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a
 + c*x^2]])/(8*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
```

```
/; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^2(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}+\frac{\int x(-2aB+5Acx)\sqrt{a+cx^2}\,dx}{5c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{(aA)\int\sqrt{a+cx^2}\,dx}{4c}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{\left(a^2A\right)\int\frac{1}{\sqrt{a+}}}{8c}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\left(a^2A\right)\text{Subst}\\
&= -\frac{aAx\sqrt{a+cx^2}}{8c}+\frac{Bx^2\left(a+cx^2\right)^{3/2}}{5c}-\frac{(8aB-15Acx)\left(a+cx^2\right)^{3/2}}{60c^2}-\frac{a^2A\tanh^{-1}}{8c^{3/}}
\end{aligned}
$$

Mathematica [A] time = 0.17, size = 93, normalized size = 0.89

$$\frac{\sqrt{a+cx^2}\left(-\frac{15a^{3/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-16a^2B+acx(15A+8Bx)+6c^2x^3(5A+4Bx)\right)}{120c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-16*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) + a*c*x*(15*A + 8*B*x
) - (15*a^(3/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(120*c^2)
```

fricas [A] time = 1.06, size = 175, normalized size = 1.68

$$\left[\frac{15\,Aa^2\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(24\,Bc^2x^4+30\,Ac^2x^3+8\,Bacx^2+15\,Aacx-16\,Ba^2\right)\sqrt{cx^2}}{240\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(15*A*a^2*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(24*B*c^2*x^4 + 30*A*c^2*x^3 + 8*B*a*c*x^2 + 15*A*a*c*x - 16*B*a^2)*sqrt(
c*x^2 + a))/c^2, 1/120*(15*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)
) + (24*B*c^2*x^4 + 30*A*c^2*x^3 + 8*B*a*c*x^2 + 15*A*a*c*x - 16*B*a^2)*sqr
t(c*x^2 + a))/c^2]
```

giac [A] time = 0.53, size = 81, normalized size = 0.78

$$\frac{Aa^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{3}{2}}}+\frac{1}{120}\,\sqrt{cx^2+a}\left(\left(2\left(3\,(4\,Bx+5\,A)x+\frac{4\,Ba}{c}\right)x+\frac{15\,Aa}{c}\right)x-\frac{16\,Ba^2}{c^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/120*sqrt(c*x^2
 + a)*((2*(3*(4*B*x + 5*A)*x + 4*B*a/c)*x + 15*A*a/c)*x - 16*B*a^2/c^2)
```

maple [A] time = 0.06, size = 94, normalized size = 0.90

$$-\frac{A a^{2} \ln\left(\sqrt{c}\, x+\sqrt{c x^{2}+a}\right)}{8 c^{\frac{3}{2}}}-\frac{\sqrt{c x^{2}+a}\, A a x}{8 c}+\frac{\left(c x^{2}+a\right)^{\frac{3}{2}} B x^{2}}{5 c}+\frac{\left(c x^{2}+a\right)^{\frac{3}{2}} A x}{4 c}-\frac{2 \left(c x^{2}+a\right)^{\frac{3}{2}} B a}{15 c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+a)^(3/2)/c-2/15*B*a/c^2*(c*x^2+a)^(3/2)+1/4*A*x*(c*x^2+a)^
(3/2)/c-1/8*a*A*x*(c*x^2+a)^(1/2)/c-1/8*A*a^2/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a
)^(1/2))
```

maxima [A] time = 0.48, size = 86, normalized size = 0.83

$$\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Bx^{2}}{5\,c}+\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Ax}{4\,c}-\frac{\sqrt{cx^{2}+a}\,Aax}{8\,c}-\frac{Aa^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{3}{2}}}-\frac{2\left(cx^{2}+a\right)^{\frac{3}{2}}Ba}{15\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + a)^(3/2)*B*x^2/c + 1/4*(c*x^2 + a)^(3/2)*A*x/c - 1/8*sqrt(c*x^
2 + a)*A*a*x/c - 1/8*A*a^2*arcsinh(c*x/sqrt(a*c))/c^(3/2) - 2/15*(c*x^2 + a
)^(3/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{2}\,\sqrt{c\,x^{2}+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 5.46, size = 165, normalized size = 1.59

$$\frac{Aa^{\frac{3}{2}}x}{8c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3A\sqrt{a}\,x^{3}}{8\sqrt{1+\frac{cx^{2}}{a}}}-\frac{Aa^{2}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{3}{2}}}+\frac{Acx^{5}}{4\sqrt{a}\sqrt{1+\frac{cx^{2}}{a}}}+B\left(\begin{cases}-\frac{2a^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2}\sqrt{a+cx^{2}}}{15c}+\frac{x^{4}\sqrt{a+cx^{2}}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^{4}}{4} & \text{otherwis}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*a**(3/2)*x/(8*c*sqrt(1 + c*x**2/a)) + 3*A*sqrt(a)*x**3/(8*sqrt(1 + c*x**2
/a)) - A*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(3/2)) + A*c*x**5/(4*sqrt(a)*s
qrt(1 + c*x**2/a)) + B*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x*
*2*sqrt(a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x
**4/4, True))
```

3.317 $\int x(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=80

$$-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}+\frac{\left(a+cx^2\right)^{3/2}(4A+3Bx)}{12c}-\frac{aBx\sqrt{a+cx^2}}{8c}$$

```
[Out] 1/12*(3*B*x+4*A)*(c*x^2+a)^(3/2)/c-1/8*a^2*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1
/2))/c^(3/2)-1/8*a*B*x*(c*x^2+a)^(1/2)/c
```

Rubi [A] time = 0.03, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = $\{780, 195, 217, 206\}$

$$-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}+\frac{\left(a+cx^2\right)^{3/2}(4A+3Bx)}{12c}-\frac{aBx\sqrt{a+cx^2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] -(a*B*x*Sqrt[a + c*x^2])/(8*c) + ((4*A + 3*B*x)*(a + c*x^2)^(3/2))/(12*c) -
 (a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] && !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && !Le
Q[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int x(A+Bx)\sqrt{a+cx^2}\,dx &= \frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{(aB)\int\sqrt{a+cx^2}\,dx}{4c}\\
&=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{\left(a^2B\right)\int\frac{1}{\sqrt{a+cx^2}}\,dx}{8c}\\
&=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{\left(a^2B\right)\text{Subst}\left(\int\frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{8c}\\
&=-\frac{aBx\sqrt{a+cx^2}}{8c}+\frac{(4A+3Bx)\left(a+cx^2\right)^{3/2}}{12c}-\frac{a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.14, size = 86, normalized size = 1.08

$$
\frac{\sqrt{a+cx^2}\left(\sqrt{c}\left(8aA+3aBx+8Acx^2+6Bcx^3\right)-\frac{3a^{3/2}B\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{24c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*a*A + 3*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) - (3*a^
(3/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(24*c^(3/2))
```

fricas [A] time = 0.68, size = 157, normalized size = 1.96

$$
\left[\frac{3\,Ba^2\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(6\,Bc^2x^3+8\,Ac^2x^2+3\,Bacx+8\,Aac\right)\sqrt{cx^2+a}}{48\,c^2},\frac{3\,Ba^2\sqrt{-c}\ \mathrm{arc}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(3*B*a^2*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*
(6*B*c^2*x^3 + 8*A*c^2*x^2 + 3*B*a*c*x + 8*A*a*c)*sqrt(c*x^2 + a))/c^2, 1/2
4*(3*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (6*B*c^2*x^3 + 8*A
*c^2*x^2 + 3*B*a*c*x + 8*A*a*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.18, size = 68, normalized size = 0.85

$$
\frac{Ba^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{3}{2}}}+\frac{1}{24}\,\sqrt{cx^2+a}\left(\left(2\,(3\,Bx+4\,A)x+\frac{3\,Ba}{c}\right)x+\frac{8\,Aa}{c}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*B*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/24*sqrt(c*x^2
+ a)*((2*(3*B*x + 4*A)*x + 3*B*a/c)*x + 8*A*a/c)
```

maple [A] time = 0.05, size = 75, normalized size = 0.94

$$
-\frac{B\,a^2\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{8c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\,Bax}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bx}{4c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{3c}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+a)^(3/2)/c-1/8*a*B*x*(c*x^2+a)^(1/2)/c-1/8*B*a^2/c^(3/2)*ln(
c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*A*(c*x^2+a)^(3/2)/c
```

maxima [A] time = 0.47, size = 67, normalized size = 0.84

$$\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Bx}{4\,c}-\frac{\sqrt{cx^{2}+a}\,Bax}{8\,c}-\frac{Ba^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{3}{2}}}+\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}A}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*B*x/c - 1/8*sqrt(c*x^2 + a)*B*a*x/c - 1/8*B*a^2*arcsi
nh(c*x/sqrt(a*c))/c^(3/2) + 1/3*(c*x^2 + a)^(3/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\sqrt{c\,x^2+a}\,\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [A] time = 5.41, size = 124, normalized size = 1.55

$$A\left(\begin{cases}\frac{\sqrt{a}x^{2}}{2} & \text{for}\: c=0\\\frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{3}{2}}x}{8c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3B\sqrt{a}x^{3}}{8\sqrt{1+\frac{cx^{2}}{a}}}-\frac{Ba^{2}\operatorname{asinh}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{8c^{\frac{3}{2}}}+\frac{Bcx^{5}}{4\sqrt{a}\sqrt{1+\frac{cx^{2}}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
+ B*a**(3/2)*x/(8*c*sqrt(1 + c*x**2/a)) + 3*B*sqrt(a)*x**3/(8*sqrt(1 + c*x*
*2/a)) - B*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(3/2)) + B*c*x**5/(4*sqrt(a)
*sqrt(1 + c*x**2/a))
```

3.318 $\int (A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=67

$$\frac{1}{2}Ax\sqrt{a+cx^2}+\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}$$

```
[Out] 1/3*B*(c*x^2+a)^(3/2)/c+1/2*a*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(1/2)+
1/2*A*x*(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = $\{641, 195, 217, 206\}$

$$\frac{1}{2}Ax\sqrt{a+cx^2}+\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (A*x*Sqrt[a + c*x^2])/2 + (B*(a + c*x^2)^(3/2))/(3*c) + (a*A*ArcTanh[(Sqrt[
c]*x)/Sqrt[a + c*x^2]])/(2*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)\sqrt{a+cx^2}\,dx &= \frac{B\left(a+cx^2\right)^{3/2}}{3c}+A\int \sqrt{a+cx^2}\,dx\\
&= \frac{1}{2}Ax\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}+\frac{1}{2}(aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= \frac{1}{2}Ax\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}+\frac{1}{2}(aA)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)\\
&= \frac{1}{2}Ax\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{3/2}}{3c}+\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 67, normalized size = 1.00

$$\frac{\sqrt{a+cx^2}\,(2aB+cx(3A+2Bx))+3aA\sqrt{c}\,\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{6c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(2*a*B + c*x*(3*A + 2*B*x)) + 3*a*A*Sqrt[c]*Log[c*x + Sqrt
[c]*Sqrt[a + c*x^2]])/(6*c)
```

fricas [A] time = 0.67, size = 128, normalized size = 1.91

$$\left[\frac{3\,Aa\sqrt{c}\,\log\left(-2\,cx^{2}-2\,\sqrt{cx^{2}+a}\,\sqrt{c}\,x-a\right)+2\left(2\,Bcx^{2}+3\,Acx+2\,Ba\right)\sqrt{cx^{2}+a}}{12\,c},-\frac{3\,Aa\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^{2}+}}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*A*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2
*B*c*x^2 + 3*A*c*x + 2*B*a)*sqrt(c*x^2 + a))/c, -1/6*(3*A*a*sqrt(-c)*arctan
(sqrt(-c)*x/sqrt(c*x^2 + a)) - (2*B*c*x^2 + 3*A*c*x + 2*B*a)*sqrt(c*x^2 + a
))/c]
```

giac [A] time = 0.20, size = 55, normalized size = 0.82

$$-\frac{Aa\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^{2}+a}\right|\right)}{2\,\sqrt{c}}+\frac{1}{6}\,\sqrt{cx^{2}+a}\left((2\,Bx+3\,A)x+\frac{2\,Ba}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*A*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/6*sqrt(c*x^2 +
a)*((2*B*x + 3*A)*x + 2*B*a/c)
```

maple [A] time = 0.05, size = 53, normalized size = 0.79

$$\frac{Aa\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{2\sqrt{c}}+\frac{\sqrt{c\,x^{2}+a}\;Ax}{2}+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}B}{3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 1/3*B*(c*x^2+a)^(3/2)/c+1/2*A*x*(c*x^2+a)^(1/2)+1/2*A*a/c^(1/2)*ln(c^(1/2)*
x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.57, size = 45, normalized size = 0.67

$$\frac{1}{2}\,\sqrt{cx^2+a}\,Ax+\frac{Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{c}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{3\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*A*x + 1/2*A*a*arcsinh(c*x/sqrt(a*c))/sqrt(c) + 1/3*(c*x
^2 + a)^(3/2)*B/c
```

mupad [B] time = 1.28, size = 52, normalized size = 0.78

$$\frac{B\left(c\,x^2+a\right)^{3/2}}{3\,c}+\frac{A\,x\,\sqrt{c\,x^2+a}}{2}+\frac{A\,a\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(3/2))/(3*c) + (A*x*(a + c*x^2)^(1/2))/2 + (A*a*log(c^(1/2)*
x + (a + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [A] time = 3.38, size = 70, normalized size = 1.04

$$\frac{A\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Aa\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{c}}+B\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for } c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*x*sqrt(1 + c*x**2/a)/2 + A*a*asinh(sqrt(c)*x/sqrt(a))/(2*sqrt(c))
 + B*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True
))
```

3.319 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x}\,dx$

Optimal. Leaf size=79

$$\frac{1}{2}\sqrt{a+cx^2}\,(2A+Bx)-\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}$$

```
[Out] -A*arctanh((c*x^2+a)^(1/2)/a^(1/2))*a^(1/2)+1/2*a*B*arctanh(x*c^(1/2)/(c*x^
2+a)^(1/2))/c^(1/2)+1/2*(B*x+2*A)*(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$\frac{1}{2}\sqrt{a+cx^2}\,(2A+Bx)-\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x,x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/2 + (a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]]
)/(2*Sqrt[c]) - Sqrt[a]*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x}\,dx &= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{\int \frac{2aAc+aBcx}{x\sqrt{a+cx^2}}\,dx}{2c}\\
&= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+(aA)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\frac{1}{2}(aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{1}{2}(aA)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+\frac{1}{2}(aB)\,\text{Subst}\Bigg(\int \frac{}{1-}\\
&= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}+\frac{(aA)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{c}\\
&= \frac{1}{2}(2A+Bx)\sqrt{a+cx^2}+\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2\sqrt{c}}-\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 100, normalized size = 1.27

$$
\frac{1}{2}\left(\frac{a^{3/2}B\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{c}\,\sqrt{a+cx^2}}+\sqrt{a+cx^2}\,(2A+Bx)-2\sqrt{a}\,A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x,x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2] + (a^(3/2)*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt
[c]*x)/Sqrt[a]])/(Sqrt[c]*Sqrt[a + c*x^2]) - 2*Sqrt[a]*A*ArcTanh[Sqrt[a + c
*x^2]/Sqrt[a]])/2
```

fricas [A] time = 0.97, size = 341, normalized size = 4.32

$$
\left[\frac{Ba\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,A\sqrt{a}\,c\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,(Bcx+2\,Ac)\sqrt{cx^2+a}}{4\,c},-\frac{Ba\sqrt{}}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [1/4*(B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*A*sqr
t(a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(B*c*x + 2*A
*c)*sqrt(c*x^2 + a))/c, -1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a
)) - A*sqrt(a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (B*c
*x + 2*A*c)*sqrt(c*x^2 + a))/c, 1/4*(4*A*sqrt(-a)*c*arctan(sqrt(-a)/sqrt(c*
x^2 + a)) + B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2
*(B*c*x + 2*A*c)*sqrt(c*x^2 + a))/c, -1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/s
qrt(c*x^2 + a)) - 2*A*sqrt(-a)*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (B*c*x
+ 2*A*c)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 78, normalized size = 0.99

$$\frac{2\,Aa\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{Ba\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)}{2\sqrt{c}}+\frac{1}{2}\sqrt{cx^2+a}\,(Bx+2A)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 1/2*B*a*lo
g(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/2*sqrt(c*x^2 + a)*(B*x + 2
*A)
```

maple [A] time = 0.05, size = 78, normalized size = 0.99

$$-A\sqrt{a}\,\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{Ba\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2\sqrt{c}}+\frac{\sqrt{c\,x^2+a}\,Bx}{2}+\sqrt{c\,x^2+a}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+a)^(1/2)+1/2*B*a/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-A*a^(
1/2)*ln((2*a+2*a^(1/2)*(c*x^2+a)^(1/2))/x)+A*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.53, size = 59, normalized size = 0.75

$$\frac{1}{2}\sqrt{cx^2+a}\,Bx+\frac{Ba\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{c}}-A\sqrt{a}\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\sqrt{cx^2+a}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*B*x + 1/2*B*a*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*sqrt(a
)*arcsinh(a/(sqrt(a*c)*abs(x))) + sqrt(c*x^2 + a)*A
```

mupad [B] time = 1.36, size = 68, normalized size = 0.86

$$A\sqrt{c\,x^2+a}-A\sqrt{a}\,\operatorname{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)+\frac{B\,x\sqrt{c\,x^2+a}}{2}+\frac{B\,a\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(a + c*x^2)^(1/2) - A*a^(1/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + (B*x*(a
+ c*x^2)^(1/2))/2 + (B*a*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/(2*c^(1/2))
```

sympy [**A**] time = 6.74, size = 107, normalized size = 1.35

$$-A\sqrt{a}\ \operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Aa}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{A\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+\frac{B\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Ba\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x,x)
```

```
[Out] -A*sqrt(a)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)
) + A*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + B*sqrt(a)*x*sqrt(1 + c*x**2/a)/2 + B
*a*asinh(sqrt(c)*x/sqrt(a))/(2*sqrt(c))
```

3.320 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^2}\,dx$

Optimal. Leaf size=75

$$-\frac{\sqrt{a+cx^2}\,(A-Bx)}{x}+A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

```
[Out] -B*arctanh((c*x^2+a)^(1/2)/a^(1/2))*a^(1/2)+A*arctanh(x*c^(1/2)/(c*x^2+a)^(
1/2))*c^(1/2)-(-B*x+A)*(c*x^2+a)^(1/2)/x
```

Rubi [**A**] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{\sqrt{a+cx^2}\,(A-Bx)}{x}+A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^2,x]
```

```
[Out] -(((A - B*x)*Sqrt[a + c*x^2])/x) + A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c
*x^2]] - Sqrt[a]*B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^2}\,dx &= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}-\frac{1}{2}\int \frac{-2aB-2Acx}{x\sqrt{a+cx^2}}\,dx\\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+(aB)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+(Ac)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+\frac{1}{2}(aB)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+(Ac)\,\text{Subst}\left(\int \frac{1}{1-cx}\right.\\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{(aB)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+}\right.}{c}\\
&= -\frac{(A-Bx)\sqrt{a+cx^2}}{x}+A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
\end{aligned}
$$

Mathematica [A] time = 0.15, size = 99, normalized size = 1.32

$$
\frac{\sqrt{a+cx^2}\,(Bx-A)}{x}+\frac{\sqrt{a}\,A\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a+cx^2}}-\sqrt{a}\,B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + c*x^2])/x + (Sqrt[a]*A*Sqrt[c]*Sqrt[1 + (c*x^2)/a]*Arc
Sinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a + c*x^2] - Sqrt[a]*B*ArcTanh[Sqrt[a + c*x
^2]/Sqrt[a]]
```

fricas [A] time = 0.86, size = 333, normalized size = 4.44

$$
\left[\frac{A\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+B\sqrt{a}\,x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,\sqrt{cx^2+a}\,(Bx-A)}{2\,x},-\frac{2\,A\sqrt{-c}\,x}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/2*(A*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + B*sqrt(
a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*sqrt(c*x^2 + a
)*(B*x - A))/x, -1/2*(2*A*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - B
*sqrt(a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*sqrt(c*x
^2 + a)*(B*x - A))/x, 1/2*(2*B*sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a))
+ A*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*sqrt(c*x^
2 + a)*(B*x - A))/x, -(A*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - B*
sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - sqrt(c*x^2 + a)*(B*x - A))/x]
```

giac [A] time = 0.19, size = 102, normalized size = 1.36

$$\frac{2\,Ba\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-A\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,B+\frac{2\,Aa\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] 2*B*a*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*sqrt(c)*
log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B + 2*A*a*sqrt(c)/
((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
```

maple [A] time = 0.06, size = 97, normalized size = 1.29

$$A\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)-B\sqrt{a}\,\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{\sqrt{c\,x^2+a}\,Acx}{a}+\sqrt{c\,x^2+a}\,B-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+a)^(3/2)+A*c/a*x*(c*x^2+a)^(1/2)+A*c^(1/2)*ln(c^(1/2)*x+(c*x^
2+a)^(1/2))-B*a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/
2)
```

maxima [A] time = 0.54, size = 59, normalized size = 0.79

$$A\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-B\sqrt{a}\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\sqrt{cx^2+a}\,B-\frac{\sqrt{cx^2+a}\,A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] A*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - B*sqrt(a)*arcsinh(a/(sqrt(a*c)*abs(x)))
+ sqrt(c*x^2 + a)*B - sqrt(c*x^2 + a)*A/x
```

mupad [B] time = 1.80, size = 89, normalized size = 1.19

$$B\,\sqrt{c\,x^2+a}-\frac{A\,\sqrt{c\,x^2+a}}{x}-B\,\sqrt{a}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)-\frac{A\,\sqrt{c}\,\mathrm{asin}\left(\frac{\sqrt{c}\,x\,1\mathrm{i}}{\sqrt{a}}\right)\,\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}\,\sqrt{\frac{c\,x^2}{a}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] B*(a + c*x^2)^(1/2) - (A*(a + c*x^2)^(1/2))/x - B*a^(1/2)*atanh((a + c*x^2)
^(1/2)/a^(1/2)) - (A*c^(1/2)*asin((c^(1/2)*x*1i)/a^(1/2))*(a + c*x^2)^(1/2)
*1i)/(a^(1/2)*((c*x^2)/a + 1)^(1/2))
```

sympy [A] time = 4.56, size = 124, normalized size = 1.65

$$-\frac{A\sqrt{a}}{x\sqrt{1+\frac{cx^2}{a}}}+A\sqrt{c}\ \operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Acx}{\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}-B\sqrt{a}\ \operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Ba}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{B\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**2,x)
```

```
[Out] -A*sqrt(a)/(x*sqrt(1 + c*x**2/a)) + A*sqrt(c)*asinh(sqrt(c)*x/sqrt(a)) - A*
c*x/(sqrt(a)*sqrt(1 + c*x**2/a)) - B*sqrt(a)*asinh(sqrt(a)/(sqrt(c)*x)) + B
*a/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)) + B*sqrt(c)*x/sqrt(a/(c*x**2) + 1)
```

3.321 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^3}\,dx$

Optimal. Leaf size=80

$$-\frac{\sqrt{a+cx^2}\,(A+2Bx)}{2x^2}-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

```
[Out] -1/2*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/2)+B*arctanh(x*c^(1/2)/(c*x^
2+a)^(1/2))*c^(1/2)-1/2*(2*B*x+A)*(c*x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.06, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{\sqrt{a+cx^2}\,(A+2Bx)}{2x^2}-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}+B\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^3,x]
```

```
[Out] -((A + 2*B*x)*Sqrt[a + c*x^2])/(2*x^2) + B*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt
[a + c*x^2]] - (A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^3}\,dx &= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}-\frac{\int \frac{-2aAc-4aBcx}{x\sqrt{a+cx^2}}\,dx}{4a}\\
&= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+\frac{1}{2}(Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+(Bc)\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+\frac{1}{4}(Ac)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)+(Bc)\,\mathrm{Subst}\left(\int \frac{1}{1-c}\right.\\
&= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{1}{2}A\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a}\right.\\
&= -\frac{(A+2Bx)\sqrt{a+cx^2}}{2x^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 108, normalized size = 1.35

$$-\frac{\sqrt{a+cx^2}\left(a\sqrt{\frac{cx^2}{a}+1}\,(A+2Bx)+Acx^2\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)-2\sqrt{a}\,B\sqrt{c}\,x^2\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\right)}{2ax^2\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^3,x]
```

```
[Out] -1/2*(Sqrt[a + c*x^2]*(a*(A + 2*B*x)*Sqrt[1 + (c*x^2)/a] - 2*Sqrt[a]*B*Sqrt
[c]*x^2*ArcSinh[(Sqrt[c]*x)/Sqrt[a]] + A*c*x^2*ArcTanh[Sqrt[1 + (c*x^2)/a]]
))/(a*x^2*Sqrt[1 + (c*x^2)/a])
```

fricas [A] time = 1.03, size = 377, normalized size = 4.71

$$\left[\frac{2\,Ba\sqrt{c}\,x^2\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+A\sqrt{a}\,cx^2\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\,(2\,Bax+Aa)\sqrt{cx^2+a}}{4\,ax^2},-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/4*(2*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + A
*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(2*B
*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^2), -1/4*(4*B*a*sqrt(-c)*x^2*arctan(sqrt(
-c)*x/sqrt(c*x^2 + a)) - A*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sq
rt(a) + 2*a)/x^2) + 2*(2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^2), 1/2*(A*sqrt
(-a)*c*x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + B*a*sqrt(c)*x^2*log(-2*c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) - (2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a*x^
2), -1/2*(2*B*a*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqrt(-a
)*c*x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*x + A*a)*sqrt(c*x^2 + a))
/(a*x^2)]
```

giac [**B**]   time = 0.20, size = 163, normalized size = 2.04

$$\frac{Ac\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-B\sqrt{c}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\frac{\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2B}{\left(\left(\sqrt{c}x-\sqrt{cx^2+}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*sqrt(c)*lo
g(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c
 + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2
+ a))*A*a*c - 2*B*a^2*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2
```

maple [**A**]   time = 0.06, size = 121, normalized size = 1.51

$$-\frac{Ac\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+B\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{cx^2+a}\right)+\frac{\sqrt{cx^2+a}\,Bcx}{a}+\frac{\sqrt{cx^2+a}\,Ac}{2a}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{ax}-\frac{\left(cx^2+\right.}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(3/2)-1/2*A*c/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1
/2))/x)+1/2*A*c/a*(c*x^2+a)^(1/2)-B/a/x*(c*x^2+a)^(3/2)+B*c/a*x*(c*x^2+a)^(
1/2)+B*c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [**A**]   time = 0.53, size = 83, normalized size = 1.04

$$B\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{Ac\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\sqrt{a}}+\frac{\sqrt{cx^2+a}\,Ac}{2a}-\frac{\sqrt{cx^2+a}\,B}{x}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{2ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] B*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - 1/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/sq
rt(a) + 1/2*sqrt(c*x^2 + a)*A*c/a - sqrt(c*x^2 + a)*B/x - 1/2*(c*x^2 + a)^(
3/2)*A/(a*x^2)
```

mupad [**B**]   time = 1.87, size = 94, normalized size = 1.18

$$-\frac{A\sqrt{cx^2+a}}{2x^2}-\frac{B\sqrt{cx^2+a}}{x}-\frac{Ac\,\mathrm{atanh}\left(\frac{\sqrt{cx^2+a}}{\sqrt{a}}\right)}{2\sqrt{a}}-\frac{B\sqrt{c}\,\mathrm{asin}\left(\frac{\sqrt{c}\,x\,1\mathrm{i}}{\sqrt{a}}\right)\sqrt{cx^2+a}\,1\mathrm{i}}{\sqrt{a}\,\sqrt{\frac{cx^2}{a}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] - (A*(a + c*x^2)^(1/2))/(2*x^2) - (B*(a + c*x^2)^(1/2))/x - (A*c*atanh((a +
 c*x^2)^(1/2)/a^(1/2)))/(2*a^(1/2)) - (B*c^(1/2)*asin((c^(1/2)*x*1i)/a^(1/2
))*(a + c*x^2)^(1/2)*1i)/(a^(1/2)*((c*x^2)/a + 1)^(1/2))
```

sympy [A] time = 4.84, size = 107, normalized size = 1.34

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{Ac\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2\sqrt{a}}-\frac{B\sqrt{a}}{x\sqrt{1+\frac{cx^2}{a}}}+B\sqrt{c}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Bcx}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**3,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) - A*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*s
qrt(a)) - B*sqrt(a)/(x*sqrt(1 + c*x**2/a)) + B*sqrt(c)*asinh(sqrt(c)*x/sqrt
(a)) - B*c*x/(sqrt(a)*sqrt(1 + c*x**2/a))
```

3.322 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^4}\,dx$

Optimal. Leaf size=71

$$-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}$$

```
[Out] -1/3*A*(c*x^2+a)^(3/2)/a/x^3-1/2*B*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/
2)-1/2*B*(c*x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^4,x]
```

```
[Out] -(B*Sqrt[a + c*x^2])/(2*x^2) - (A*(a + c*x^2)^(3/2))/(3*a*x^3) - (B*c*ArcTa
nh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*Sqrt[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^4}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+B\int \frac{\sqrt{a+cx^2}}{x^3}\,dx\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{2}B\,\mathrm{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right)\\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{4}(Bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)\\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{1}{2}B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)\\
&= -\frac{B\sqrt{a+cx^2}}{2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2\sqrt{a}}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 85, normalized size = 1.20

$$
\frac{-\left(a+cx^2\right)\left(2aA+3aBx+2Acx^2\right)-3aBcx^3\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{6ax^3\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^4,x]
```

```
[Out] (-((a + c*x^2)*(2*a*A + 3*a*B*x + 2*A*c*x^2)) - 3*a*B*c*x^3*Sqrt[1 + (c*x^2
)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(6*a*x^3*Sqrt[a + c*x^2])
```

fricas [A] time = 0.95, size = 142, normalized size = 2.00

$$
\left[\frac{3\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(2\,Acx^2+3\,Bax+2\,Aa\right)\sqrt{cx^2+a}}{12\,ax^3},\ \frac{3\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\left(2\,Ac\right.}{6\,ax^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*sqrt(a)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2
) - 2*(2*A*c*x^2 + 3*B*a*x + 2*A*a)*sqrt(c*x^2 + a))/(a*x^3), 1/6*(3*B*sqrt
(-a)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (2*A*c*x^2 + 3*B*a*x + 2*A*a)
*sqrt(c*x^2 + a))/(a*x^3)]
```

giac [B] time = 0.22, size = 143, normalized size = 2.01

$$
\frac{Bc\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}+\frac{3\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^5Bc+6\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^4Ac^{\frac{3}{2}}-3\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)Ba^2c+2}{3\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] B*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/3*(3*(sqrt
(c)*x - sqrt(c*x^2 + a))^5*B*c + 6*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*c^(3/2
) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c + 2*A*a^2*c^(3/2))/((sqrt(c)*x
- sqrt(c*x^2 + a))^2 - a)^3
```

maple [**A**] time = 0.07, size = 84, normalized size = 1.18

$$-\frac{Bc\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{\sqrt{c\,x^{2}+a}\;Bc}{2a}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}B}{2a\,x^{2}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A}{3a\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^4,x)
```

```
[Out] -1/3*A*(c*x^2+a)^(3/2)/a/x^3-1/2*B/a/x^2*(c*x^2+a)^(3/2)-1/2*B*c/a^(1/2)*ln
((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+1/2*B*c/a*(c*x^2+a)^(1/2)
```

maxima [**A**] time = 0.59, size = 72, normalized size = 1.01

$$-\frac{Bc\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\sqrt{a}}+\frac{\sqrt{cx^{2}+a}\,Bc}{2\,a}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}B}{2\,ax^{2}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}A}{3\,ax^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] -1/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/2*sqrt(c*x^2 + a)*B*c/a
- 1/2*(c*x^2 + a)^(3/2)*B/(a*x^2) - 1/3*(c*x^2 + a)^(3/2)*A/(a*x^3)
```

mupad [**B**] time = 1.89, size = 55, normalized size = 0.77

$$-\frac{B\,\sqrt{c\,x^{2}+a}}{2\,x^{2}}-\frac{A\,\left(c\,x^{2}+a\right)^{3/2}}{3\,a\,x^{3}}-\frac{B\,c\,\operatorname{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{2\,\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^4,x)
```

```
[Out] - (B*(a + c*x^2)^(1/2))/(2*x^2) - (A*(a + c*x^2)^(3/2))/(3*a*x^3) - (B*c*at
anh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(1/2))
```

sympy [**A**] time = 4.21, size = 92, normalized size = 1.30

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^{2}}+1}}{3x^{2}}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{3a}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^{2}}+1}}{2x}-\frac{Bc\,\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**4,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/
(3*a) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) - B*c*asinh(sqrt(a)/(sqrt(c)*x
))/(2*sqrt(a))
```

3.323 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^5}\,dx$

Optimal. Leaf size=99

$$\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}$$

```
[Out] -1/4*A*(c*x^2+a)^(3/2)/a/x^4-1/3*B*(c*x^2+a)^(3/2)/a/x^3+1/8*A*c^2*arctanh(
(c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+1/8*A*c*(c*x^2+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^5,x]
```

```
[Out] (A*c*Sqrt[a + c*x^2])/(8*a*x^2) - (A*(a + c*x^2)^(3/2))/(4*a*x^4) - (B*(a +
 c*x^2)^(3/2))/(3*a*x^3) + (A*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3
/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^5}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{\int \frac{(-4aB+Acx)\sqrt{a+cx^2}}{x^4}\,dx}{4a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\int \frac{\sqrt{a+cx^2}}{x^3}\,dx}{4a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\,\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right)}{8a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{\left(Ac^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{16a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}-\frac{(Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+}\right.}{8a}\\
&= \frac{Ac\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{4ax^4}-\frac{B\left(a+cx^2\right)^{3/2}}{3ax^3}+\frac{Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 53, normalized size = 0.54

$$
-\frac{\left(a+cx^2\right)^{3/2}\left(a^2B+Ac^2x^3\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{3a^3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^5,x]
```

```
[Out] -1/3*((a + c*x^2)^(3/2)*(a^2*B + A*c^2*x^3*Hypergeometric2F1[3/2, 3, 5/2, 1
 + (c*x^2)/a]))/(a^3*x^3)
```

fricas [A] time = 1.01, size = 171, normalized size = 1.73

$$
\left[\frac{3\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(8\,Bacx^3+3\,Aacx^2+8\,Ba^2x+6\,Aa^2\right)\sqrt{cx^2+a}}{48\,a^2x^4},-\frac{3\,A\sqrt{-a}\,c^2x^4\,\text{arc}}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(3*A*sqrt(a)*c^2*x^4*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x
^2) - 2*(8*B*a*c*x^3 + 3*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/
(a^2*x^4), -1/24*(3*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (
8*B*a*c*x^3 + 3*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a^2*x^4)
]
```

giac [B] time = 0.19, size = 267, normalized size = 2.70

$$-\frac{Ac^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}\,a}+\frac{3\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^7Ac^2+24\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^6Bac^{\frac{3}{2}}+21\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] -1/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/12*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*c^2 + 24*(sqrt(c)*x - sqrt(c*x^2 +
 a))^6*B*a*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a*c^2 - 24*(sqrt(
c)*x - sqrt(c*x^2 + a))^4*B*a^2*c^(3/2) + 21*(sqrt(c)*x - sqrt(c*x^2 + a))^
3*A*a^2*c^2 + 8*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^3*c^(3/2) + 3*(sqrt(c)*
x - sqrt(c*x^2 + a))*A*a^3*c^2 - 8*B*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2
 + a))^2 - a)^4*a)
```

maple [A] time = 0.06, size = 107, normalized size = 1.08

$$\frac{Ac^2\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,Ac^2}{8a^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{8a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{3a\,x^3}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{4a\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^5,x)
```

```
[Out] -1/4*A*(c*x^2+a)^(3/2)/a/x^4+1/8*A*c/a^2/x^2*(c*x^2+a)^(3/2)+1/8*A*c^2/a^(3
/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/8*A*c^2/a^2*(c*x^2+a)^(1/2)-1/3
*B*(c*x^2+a)^(3/2)/a/x^3
```

maxima [A] time = 0.69, size = 95, normalized size = 0.96

$$\frac{Ac^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,Ac^2}{8\,a^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{8\,a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{3\,ax^3}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{4\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] 1/8*A*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/8*sqrt(c*x^2 + a)*A*c^2
/a^2 + 1/8*(c*x^2 + a)^(3/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(3/2)*B/(a*x^3
) - 1/4*(c*x^2 + a)^(3/2)*A/(a*x^4)
```

mupad [B] time = 2.09, size = 75, normalized size = 0.76

$$\frac{A\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{3/2}}-\frac{A\,\sqrt{c\,x^2+a}}{8\,x^4}-\frac{A\,\left(c\,x^2+a\right)^{3/2}}{8\,a\,x^4}-\frac{B\,\left(c\,x^2+a\right)^{3/2}}{3\,a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] (A*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(3/2)) - (A*(a + c*x^2)^(1/2)
)/(8*x^4) - (A*(a + c*x^2)^(3/2))/(8*a*x^4) - (B*(a + c*x^2)^(3/2))/(3*a*x^
3)
```

sympy [**A**] time = 5.94, size = 144, normalized size = 1.45

$$-\frac{Aa}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3A\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{3}{2}}}{8ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8a^{\frac{3}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**5,x)
```

```
[Out] -A*a/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*A*sqrt(c)/(8*x**3*sqrt(a/(c*
x**2) + 1)) - A*c**(3/2)/(8*a*x*sqrt(a/(c*x**2) + 1)) + A*c**2*asinh(sqrt(a
)/(sqrt(c)*x))/(8*a**(3/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - B*c
**(3/2)*sqrt(a/(c*x**2) + 1)/(3*a)
```

3.324 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^6}\,dx$

Optimal. Leaf size=122

$$\frac{Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}$$

```
[Out] -1/5*A*(c*x^2+a)^(3/2)/a/x^5-1/4*B*(c*x^2+a)^(3/2)/a/x^4+2/15*A*c*(c*x^2+a)
^(3/2)/a^2/x^3+1/8*B*c^2*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+1/8*B*c*(
c*x^2+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}+\frac{Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{3/2}}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^6,x]
```

```
[Out] (B*c*Sqrt[a + c*x^2])/(8*a*x^2) - (A*(a + c*x^2)^(3/2))/(5*a*x^5) - (B*(a +
 c*x^2)^(3/2))/(4*a*x^4) + (2*A*c*(a + c*x^2)^(3/2))/(15*a^2*x^3) + (B*c^2*
ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^6}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{\int \frac{(-5aB+2Acx)\sqrt{a+cx^2}}{x^5}\,dx}{5a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{\int \frac{(-8aAc-5aBcx)\sqrt{a+cx^2}}{x^4}\,dx}{20a^2}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{(Bc)\int \frac{\sqrt{a+cx^2}}{x^3}\,dx}{4a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{(Bc)\,\mathrm{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,\right.}{8a}\\
&= \frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{\left(Bc^2\right)\mathrm{Subst}\left(\right.}{}\\
&= \frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{(Bc)\,\mathrm{Subst}\left(\int\right.}{}\\
&= \frac{Bc\sqrt{a+cx^2}}{8ax^2}-\frac{A\left(a+cx^2\right)^{3/2}}{5ax^5}-\frac{B\left(a+cx^2\right)^{3/2}}{4ax^4}+\frac{2Ac\left(a+cx^2\right)^{3/2}}{15a^2x^3}+\frac{Bc^2\tanh^{-1}\left(\right.}{8a^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 62, normalized size = 0.51

$$
-\frac{\left(a+cx^2\right)^{3/2}\left(aA\left(3a-2cx^2\right)+5Bc^2x^5\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{15a^3x^5}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^6,x]
```

```
[Out] -1/15*((a + c*x^2)^(3/2)*(a*A*(3*a - 2*c*x^2) + 5*B*c^2*x^5*Hypergeometric2
F1[3/2, 3, 5/2, 1 + (c*x^2)/a]))/(a^3*x^5)
```

fricas [A] time = 0.68, size = 190, normalized size = 1.56

$$
\left[\frac{15\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(16\,Ac^2x^4-15\,Bacx^3-8\,Aacx^2-30\,Ba^2x-24\,Aa^2\right)\sqrt{cx^2+a}}{240\,a^2x^5},-\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/240*(15*B*sqrt(a)*c^2*x^5*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) + 2*(16*A*c^2*x^4 - 15*B*a*c*x^3 - 8*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^
2)*sqrt(c*x^2 + a))/(a^2*x^5), -1/120*(15*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a
)/sqrt(c*x^2 + a)) - (16*A*c^2*x^4 - 15*B*a*c*x^3 - 8*A*a*c*x^2 - 30*B*a^2*
x - 24*A*a^2)*sqrt(c*x^2 + a))/(a^2*x^5)]
```

giac [**B**] time = 0.19, size = 267, normalized size = 2.19

$$-\frac{Bc^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}\,a}+\frac{15\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^9Bc^2+90\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^7Bac^2+240\left(\sqrt{c}x-\sqrt{cx^2+a}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/60*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 + 90*(sqrt(c)*x - sqrt(c*x^2
+ a))^7*B*a*c^2 + 240*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a*c^(5/2) + 80*(sqr
t(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) - 90*(sqrt(c)*x - sqrt(c*x^2 + a)
)^3*B*a^3*c^2 + 80*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^3*c^(5/2) - 15*(sqrt
(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 - 16*A*a^4*c^(5/2))/(((sqrt(c)*x - sqrt(
c*x^2 + a))^2 - a)^5*a)
```

maple [**A**] time = 0.06, size = 126, normalized size = 1.03

$$\frac{B\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\;B\,c^2}{8a^2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Bc}{8a^2x^2}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}Ac}{15a^2x^3}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B}{4a\,x^4}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^6,x)
```

```
[Out] -1/5*A*(c*x^2+a)^(3/2)/a/x^5+2/15*A*c*(c*x^2+a)^(3/2)/a^2/x^3-1/4*B*(c*x^2+
a)^(3/2)/a/x^4+1/8*B*c/a^2/x^2*(c*x^2+a)^(3/2)+1/8*B*c^2/a^(3/2)*ln((2*a+2*
(c*x^2+a)^(1/2)*a^(1/2))/x)-1/8*B*c^2/a^2*(c*x^2+a)^(1/2)
```

maxima [**A**] time = 0.75, size = 114, normalized size = 0.93

$$\frac{Bc^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,Bc^2}{8\,a^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bc}{8\,a^2x^2}+\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Ac}{15\,a^2x^3}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{4\,ax^4}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/8*sqrt(c*x^2 + a)*B*c^2
/a^2 + 1/8*(c*x^2 + a)^(3/2)*B*c/(a^2*x^2) + 2/15*(c*x^2 + a)^(3/2)*A*c/(a^
2*x^3) - 1/4*(c*x^2 + a)^(3/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(3/2)*A/(a*x^5)
```

mupad [**B**] time = 2.37, size = 95, normalized size = 0.78

$$\frac{B\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}}{8\,x^4}-\frac{B\,{\left(c\,x^2+a\right)}^{3/2}}{8\,a\,x^4}-\frac{A\,\sqrt{c\,x^2+a}\,\left(3\,a^2+a\,c\,x^2-2\,c^2\,x^4\right)}{15\,a^2\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] (B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(3/2)) - (B*(a + c*x^2)^(1/2)
)/(8*x^4) - (B*(a + c*x^2)^(3/2))/(8*a*x^4) - (A*(a + c*x^2)^(1/2)*(3*a^2 -
 2*c^2*x^4 + a*c*x^2))/(15*a^2*x^5)
```

sympy [A] time = 6.25, size = 173, normalized size = 1.42

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{15ax^2}+\frac{2Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{15a^2}-\frac{Ba}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3B\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Bc^{\frac{3}{2}}}{8ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Bc^2\operatorname{asinh}}{8a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**6,x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/
(15*a*x**2) + 2*A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a**2) - B*a/(4*sqrt(c)*
x**5*sqrt(a/(c*x**2) + 1)) - 3*B*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - B*
c**(3/2)/(8*a*x*sqrt(a/(c*x**2) + 1)) + B*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(
8*a**(3/2))
```

3.325 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^7}\,dx$

Optimal. Leaf size=147

$$-\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{5/2}}-\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}$$

```
[Out] -1/6*A*(c*x^2+a)^(3/2)/a/x^6-1/5*B*(c*x^2+a)^(3/2)/a/x^5+1/8*A*c*(c*x^2+a)^
(3/2)/a^2/x^4+2/15*B*c*(c*x^2+a)^(3/2)/a^2/x^3-1/16*A*c^3*arctanh((c*x^2+a)
^(1/2)/a^(1/2))/a^(5/2)-1/16*A*c^2*(c*x^2+a)^(1/2)/a^2/x^2
```

Rubi [**A**] time = 0.12, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {835, 807, 266, 47, 63, 208}

$$-\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}-\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{5/2}}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/x^7,x]
```

```
[Out] -(A*c^2*Sqrt[a + c*x^2])/(16*a^2*x^2) - (A*(a + c*x^2)^(3/2))/(6*a*x^6) - (
B*(a + c*x^2)^(3/2))/(5*a*x^5) + (A*c*(a + c*x^2)^(3/2))/(8*a^2*x^4) + (2*B
*c*(a + c*x^2)^(3/2))/(15*a^2*x^3) - (A*c^3*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]
])/(16*a^(5/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{x^7}\,dx &= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{\int \frac{(-6aB+3Acx)\sqrt{a+cx^2}}{x^6}\,dx}{6a}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{\int \frac{(-15aAc-12aBcx)\sqrt{a+cx^2}}{x^5}\,dx}{30a^2}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}-\frac{\int \frac{\left(48a^2Bc-15aAc^2x\right)\sqrt{a+cx^2}}{x^4}\,dx}{120a^3}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}+\frac{\left(Ac^2\right)\int}{8}\\
&= -\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\left(a+cx^2\right)^{3/2}}{15a^2x^3}+\frac{\left(Ac^2\right)\text{Su}}{}\\
&= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\,(a+cx}{15a^2x^3}\\
&= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\,(a+cx}{15a^2x^3}\\
&= -\frac{Ac^2\sqrt{a+cx^2}}{16a^2x^2}-\frac{A\left(a+cx^2\right)^{3/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{3/2}}{5ax^5}+\frac{Ac\left(a+cx^2\right)^{3/2}}{8a^2x^4}+\frac{2Bc\,(a+cx}{15a^2x^3}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 64, normalized size = 0.44

$$\frac{\left(a+cx^2\right)^{3/2}\left(a^2B\left(2cx^2-3a\right)+5Ac^3x^5\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{cx^2}{a}+1\right)\right)}{15a^4x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/x^7,x]
```

```
[Out] ((a + c*x^2)^(3/2)*(a^2*B*(-3*a + 2*c*x^2) + 5*A*c^3*x^5*Hypergeometric2F1[
3/2, 4, 5/2, 1 + (c*x^2)/a]))/(15*a^4*x^5)
```

fricas [A] time = 1.32, size = 219, normalized size = 1.49

$$\left[\frac{15\,A\sqrt{a}\,c^3x^6\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(32\,Bac^2x^5+15\,Aac^2x^4-16\,Ba^2cx^3-10\,Aa^2cx^2-48\,Ba^3x-40\,Aa^3\right.}{480\,a^3x^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(15*A*sqrt(a)*c^3*x^6*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) + 2*(32*B*a*c^2*x^5 + 15*A*a*c^2*x^4 - 16*B*a^2*c*x^3 - 10*A*a^2*c*x^
2 - 48*B*a^3*x - 40*A*a^3)*sqrt(c*x^2 + a))/(a^3*x^6), 1/240*(15*A*sqrt(-a)
*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (32*B*a*c^2*x^5 + 15*A*a*c^2*x^
4 - 16*B*a^2*c*x^3 - 10*A*a^2*c*x^2 - 48*B*a^3*x - 40*A*a^3)*sqrt(c*x^2 + a
))/(a^3*x^6)]
```

giac [B] time = 0.23, size = 325, normalized size = 2.21

$$\frac{Ac^3\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}\,a^2}-\frac{15\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{11}Ac^3-85\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{9}Aac^3-480\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/120*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^11*A*c^3 - 85*(sqrt(c)*x - sqrt(c*x
^2 + a))^9*A*a*c^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + a))^8*B*a^2*c^(5/2) - 57
0*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a^2*c^3 + 320*(sqrt(c)*x - sqrt(c*x^2 +
 a))^6*B*a^3*c^(5/2) - 570*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^3*c^3 - 85*(
sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 192*(sqrt(c)*x - sqrt(c*x^2 + a)
)^2*B*a^5*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^5*c^3 - 32*B*a^6*c
^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^6*a^2)
```

maple [A] time = 0.06, size = 147, normalized size = 1.00

$$-\frac{A\,c^3\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+a}\,A\,c^3}{16a^3}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^2}{16a^3x^2}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}Bc}{15a^2x^3}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}Ac}{8a^2x^4}-\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B}{5a\,x^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/x^7,x)
```

```
[Out] -1/5*B*(c*x^2+a)^(3/2)/a/x^5+2/15*B*c*(c*x^2+a)^(3/2)/a^2/x^3-1/6*A*(c*x^2+
a)^(3/2)/a/x^6+1/8*A*c*(c*x^2+a)^(3/2)/a^2/x^4-1/16*A*c^2/a^3/x^2*(c*x^2+a)
^(3/2)-1/16*A*c^3/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+1/16*A*c^3/
a^3*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.59, size = 135, normalized size = 0.92

$$-\frac{Ac^3\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,a^{\frac{5}{2}}}+\frac{\sqrt{cx^2+a}\,Ac^3}{16\,a^3}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{16\,a^3x^2}+\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc}{15\,a^2x^3}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{8\,a^2x^4}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}B}{5\,ax^5}-\frac{\left(cx^2+a\right)^{\frac{3}{2}}}{6\,ax^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + 1/16*sqrt(c*x^2 + a)*A*
c^3/a^3 - 1/16*(c*x^2 + a)^(3/2)*A*c^2/(a^3*x^2) + 2/15*(c*x^2 + a)^(3/2)*B
*c/(a^2*x^3) + 1/8*(c*x^2 + a)^(3/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(3/2)*
B/(a*x^5) - 1/6*(c*x^2 + a)^(3/2)*A/(a*x^6)
```

mupad [**B**] time = 2.70, size = 116, normalized size = 0.79

$$\frac{A\left(c\,x^2+a\right)^{5/2}}{16\,a^2\,x^6}-\frac{A\left(c\,x^2+a\right)^{3/2}}{6\,a\,x^6}-\frac{A\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{B\,\sqrt{c\,x^2+a}\,\left(3\,a^2+a\,c\,x^2-2\,c^2\,x^4\right)}{15\,a^2\,x^5}+\frac{A\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1{}\mathrm{i}}{\sqrt{a}}\right)\,1{}\mathrm{i}}{16\,a^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] (A*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*1i)/(16*a^(5/2)) - (A*(a + c*x^
2)^(1/2))/(16*x^6) - (A*(a + c*x^2)^(3/2))/(6*a*x^6) + (A*(a + c*x^2)^(5/2)
)/(16*a^2*x^6) - (B*(a + c*x^2)^(1/2)*(3*a^2 - 2*c^2*x^4 + a*c*x^2))/(15*a^
2*x^5)
```

sympy [**A**] time = 8.57, size = 201, normalized size = 1.37

$$-\frac{Aa}{6\sqrt{c}\,x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{5A\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{3}{2}}}{48ax^3\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{5}{2}}}{16a^2x\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^3\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{16a^{\frac{5}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-Bc^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/x**7,x)
```

```
[Out] -A*a/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 5*A*sqrt(c)/(24*x**5*sqrt(a/(c
*x**2) + 1)) + A*c**(3/2)/(48*a*x**3*sqrt(a/(c*x**2) + 1)) + A*c**(5/2)/(16
*a**2*x*sqrt(a/(c*x**2) + 1)) - A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a**(5
/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - B*c**(3/2)*sqrt(a/(c*x**2)
 + 1)/(15*a*x**2) + 2*B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a**2)
```

3.326 $\int x^4(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=175

$$\frac{3a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{a\left(a+cx^2\right)^{5/2}(128aB-315Acx)}{5040c^3}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}$$

```
[Out] 1/64*a^2*A*x*(c*x^2+a)^(3/2)/c^2-4/63*a*B*x^2*(c*x^2+a)^(5/2)/c^2+1/8*A*x^3
*(c*x^2+a)^(5/2)/c+1/9*B*x^4*(c*x^2+a)^(5/2)/c+1/5040*a*(-315*A*c*x+128*B*a
)*(c*x^2+a)^(5/2)/c^3+3/128*a^4*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2
)+3/128*a^3*A*x*(c*x^2+a)^(1/2)/c^2
```

Rubi **[A]** time = 0.14, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{3a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{a\left(a+cx^2\right)^{5/2}(128aB-315Acx)}{5040c^3}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a^3*A*x*Sqrt[a + c*x^2])/(128*c^2) + (a^2*A*x*(a + c*x^2)^(3/2))/(64*c^2
) - (4*a*B*x^2*(a + c*x^2)^(5/2))/(63*c^2) + (A*x^3*(a + c*x^2)^(5/2))/(8*c
) + (B*x^4*(a + c*x^2)^(5/2))/(9*c) + (a*(128*a*B - 315*A*c*x)*(a + c*x^2)^
(5/2))/(5040*c^3) + (3*a^4*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(128*c^(
5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^4(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}+\frac{\int x^3(-4aB+9Acx)\left(a+cx^2\right)^{3/2}\,dx}{9c}\\
&= \frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}+\frac{\int x^2(-27aAc-32aBcx)\left(a+cx^2\right)^{3/2}\,d}{72c^2}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}+\frac{\int x\left(64a^2Bc-\right.}{}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}+\frac{a(128aB-315}{50}\\
&= \frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{Bx^4\left(a+cx^2\right)^{5/2}}{9c}\\
&= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5}}{8c}\\
&= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5}}{8c}\\
&= \frac{3a^3Ax\sqrt{a+cx^2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{4aBx^2\left(a+cx^2\right)^{5/2}}{63c^2}+\frac{Ax^3\left(a+cx^2\right)^{5}}{8c}
\end{aligned}
$$

Mathematica [A] time = 0.25, size = 132, normalized size = 0.75

$$
\frac{\sqrt{a+cx^2}\left(\frac{945a^{7/2}A\sqrt{c}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+1024a^4B-a^3cx(945A+512Bx)+6a^2c^2x^3(105A+64Bx)+40ac^3x^5(189A\right.}{40320c^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(1024*a^4*B + 560*c^4*x^7*(9*A + 8*B*x) + 6*a^2*c^2*x^3*(1
05*A + 64*B*x) + 40*a*c^3*x^5*(189*A + 160*B*x) - a^3*c*x*(945*A + 512*B*x)
 + (945*a^(7/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(40320*c^3)
```

fricas [A] time = 0.98, size = 272, normalized size = 1.55

$$
\left[\frac{945\,Aa^4\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(4480\,Bc^4x^8+5040\,Ac^4x^7+6400\,Bac^3x^6+7560\,Aac^3x^5\right.}{80640\,c^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/80640*(945*A*a^4*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 2*(4480*B*c^4*x^8 + 5040*A*c^4*x^7 + 6400*B*a*c^3*x^6 + 7560*A*a*c^3*x^5
 + 384*B*a^2*c^2*x^4 + 630*A*a^2*c^2*x^3 - 512*B*a^3*c*x^2 - 945*A*a^3*c*x
+ 1024*B*a^4)*sqrt(c*x^2 + a))/c^3, -1/40320*(945*A*a^4*sqrt(-c)*arctan(sqr
t(-c)*x/sqrt(c*x^2 + a)) - (4480*B*c^4*x^8 + 5040*A*c^4*x^7 + 6400*B*a*c^3*
x^6 + 7560*A*a*c^3*x^5 + 384*B*a^2*c^2*x^4 + 630*A*a^2*c^2*x^3 - 512*B*a^3*
c*x^2 - 945*A*a^3*c*x + 1024*B*a^4)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 130, normalized size = 0.74

$$-\frac{3\,Aa^4\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{5}{2}}}+\frac{1}{40320}\,\sqrt{cx^2+a}\,\Bigg(\frac{1024\,Ba^4}{c^3}-\Bigg(\frac{945\,Aa^3}{c^2}+2\,\Bigg(\frac{256\,Ba^3}{c^2}-\Bigg(\frac{315\,Aa^2}{c}+4\,\Bigg(\frac{48\,Ba}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/128*A*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/40320*sqrt(
c*x^2 + a)*(1024*B*a^4/c^3 - (945*A*a^3/c^2 + 2*(256*B*a^3/c^2 - (315*A*a^2
/c + 4*(48*B*a^2/c + 5*(189*A*a + 2*(80*B*a + 7*(8*B*c*x + 9*A*c)*x)*x)*x)*
x)*x)*x)*x)
```

maple [A] time = 0.06, size = 155, normalized size = 0.89

$$\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,x^4}{9c}+\frac{3A\,a^4\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\;A\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A\,x^3}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A\,a^2x}{64c^2}-4\,\Big(c\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/9*B*x^4*(c*x^2+a)^(5/2)/c-4/63*a*B*x^2*(c*x^2+a)^(5/2)/c^2+8/315*B*a^2/c^
3*(c*x^2+a)^(5/2)+1/8*A*x^3*(c*x^2+a)^(5/2)/c-1/16*A*a/c^2*x*(c*x^2+a)^(5/2
)+1/64*a^2*A*x*(c*x^2+a)^(3/2)/c^2+3/128*a^3*A*x*(c*x^2+a)^(1/2)/c^2+3/128*
A*a^4/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.67, size = 147, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx^4}{9\,c}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ax^3}{8\,c}-\frac{4\left(cx^2+a\right)^{\frac{5}{2}}Bax^2}{63\,c^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Aax}{16\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Aa^2x}{64\,c^2}+\frac{3\,\sqrt{cx^2+a}\,Aa^3x}{128\,c^2}+3\,Aa^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + a)^(5/2)*B*x^4/c + 1/8*(c*x^2 + a)^(5/2)*A*x^3/c - 4/63*(c*x^2
 + a)^(5/2)*B*a*x^2/c^2 - 1/16*(c*x^2 + a)^(5/2)*A*a*x/c^2 + 1/64*(c*x^2 +
a)^(3/2)*A*a^2*x/c^2 + 3/128*sqrt(c*x^2 + a)*A*a^3*x/c^2 + 3/128*A*a^4*arcs
inh(c*x/sqrt(a*c))/c^(5/2) + 8/315*(c*x^2 + a)^(5/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\,\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 19.24, size = 366, normalized size = 2.09

$$-\frac{3Aa^{\frac{7}{2}}x}{128c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^{\frac{5}{2}}x^3}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{13Aa^{\frac{3}{2}}x^5}{64\sqrt{1+\frac{cx^2}{a}}}+\frac{5A\sqrt{a}\,cx^7}{16\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa^4\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{128c^{\frac{5}{2}}}+\frac{Ac^2x^9}{8\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}+Ba\left(\begin{cases}\frac{8a^3\sqrt{}}{10} \\ \frac{\sqrt{a}\,x^6}{6}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] -3*A*a**(7/2)*x/(128*c**2*sqrt(1 + c*x**2/a)) - A*a**(5/2)*x**3/(128*c*sqrt
(1 + c*x**2/a)) + 13*A*a**(3/2)*x**5/(64*sqrt(1 + c*x**2/a)) + 5*A*sqrt(a)*
c*x**7/(16*sqrt(1 + c*x**2/a)) + 3*A*a**4*asinh(sqrt(c)*x/sqrt(a))/(128*c**
(5/2)) + A*c**2*x**9/(8*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a*Piecewise((8*a**3
*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*
x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)
*x**6/6, True)) + B*c*Piecewise((-16*a**4*sqrt(a + c*x**2)/(315*c**4) + 8*a
**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*x**2)/(105*c*
*2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9, Ne(c, 0)),
(sqrt(a)*x**8/8, True))
```

3.327 $\int x^3(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=150

$$\frac{3a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}+\frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}-\frac{a\left(a+cx^2\right)^{5/2}(32A+35Bx)}{560c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+$$

```
[Out] 1/64*a^2*B*x*(c*x^2+a)^(3/2)/c^2+1/7*A*x^2*(c*x^2+a)^(5/2)/c+1/8*B*x^3*(c*x
^2+a)^(5/2)/c-1/560*a*(35*B*x+32*A)*(c*x^2+a)^(5/2)/c^2+3/128*a^4*B*arctanh
(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)+3/128*a^3*B*x*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.09, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{3a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{5/2}}-\frac{a\left(a+cx^2\right)^{5/2}(32A+35Bx)}{560c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a^3*B*x*Sqrt[a + c*x^2])/(128*c^2) + (a^2*B*x*(a + c*x^2)^(3/2))/(64*c^2
) + (A*x^2*(a + c*x^2)^(5/2))/(7*c) + (B*x^3*(a + c*x^2)^(5/2))/(8*c) - (a*
(32*A + 35*B*x)*(a + c*x^2)^(5/2))/(560*c^2) + (3*a^4*B*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(128*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{\int x^2(-3aB+8Acx)\left(a+cx^2\right)^{3/2}\,dx}{8c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}+\frac{\int x(-16aAc-21aBcx)\left(a+cx^2\right)^{3/2}\,dx}{56c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\frac{a(32A+35Bx)\left(a+cx^2\right)^{5/2}}{560c^2}+\frac{\left(a^2B\right)\int}{}\\
&= \frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\frac{a(32A+35Bx)\left(a\right.}{560c^2}\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-\\
&= \frac{3a^3Bx\sqrt{a+cx^2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{3/2}}{64c^2}+\frac{Ax^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{Bx^3\left(a+cx^2\right)^{5/2}}{8c}-
\end{aligned}
$$

Mathematica [A] time = 0.22, size = 126, normalized size = 0.84

$$
\frac{\sqrt{a+cx^2}\left(\frac{105a^{7/2}B\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\,\left(-a^3(256A+105Bx)+2a^2cx^2(64A+35Bx)+8ac^2x^4(128A+105Bx)+8\right.\right.}{4480c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(80*c^3*x^6*(8*A + 7*B*x) + 2*a^2*c*x^2*(64*A + 3
5*B*x) + 8*a*c^2*x^4*(128*A + 105*B*x) - a^3*(256*A + 105*B*x)) + (105*a^(7
/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(4480*c^(5/2))
```

fricas [A] time = 0.83, size = 254, normalized size = 1.69

$$
\left[\frac{105\,Ba^4\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\left(560\,Bc^4x^7+640\,Ac^4x^6+840\,Bac^3x^5+1024\,Aac^3x^4+7\right.}{8960\,c^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8960*(105*B*a^4*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(560*B*c^4*x^7 + 640*A*c^4*x^6 + 840*B*a*c^3*x^5 + 1024*A*a*c^3*x^4 + 7
0*B*a^2*c^2*x^3 + 128*A*a^2*c^2*x^2 - 105*B*a^3*c*x - 256*A*a^3*c)*sqrt(c*x
^2 + a))/c^3, -1/4480*(105*B*a^4*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)
) - (560*B*c^4*x^7 + 640*A*c^4*x^6 + 840*B*a*c^3*x^5 + 1024*A*a*c^3*x^4 + 7
0*B*a^2*c^2*x^3 + 128*A*a^2*c^2*x^2 - 105*B*a^3*c*x - 256*A*a^3*c)*sqrt(c*x
^2 + a))/c^3]
```

giac [A] time = 0.20, size = 115, normalized size = 0.77

$$-\frac{3\,Ba^4\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{5}{2}}}-\frac{1}{4480}\sqrt{cx^2+a}\Bigg(\frac{256\,Aa^3}{c^2}+\Bigg(\frac{105\,Ba^3}{c^2}-2\Bigg(\frac{64\,Aa^2}{c}+\Bigg(\frac{35\,Ba^2}{c}+4\,(128\,Aa+5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/128*B*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) - 1/4480*sqrt(c
*x^2 + a)*(256*A*a^3/c^2 + (105*B*a^3/c^2 - 2*(64*A*a^2/c + (35*B*a^2/c + 4
*(128*A*a + 5*(21*B*a + 2*(7*B*c*x + 8*A*c)*x)*x)*x)*x)*x)*x)
```

maple [A] time = 0.06, size = 134, normalized size = 0.89

$$\frac{3B\,a^4\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\;B\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,x^3}{8c}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A\,x^2}{7c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,a^2x}{64c^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/8*B*x^3*(c*x^2+a)^(5/2)/c-1/16*B*a/c^2*x*(c*x^2+a)^(5/2)+1/64*a^2*B*x*(c*
x^2+a)^(3/2)/c^2+3/128*a^3*B*x*(c*x^2+a)^(1/2)/c^2+3/128*B*a^4/c^(5/2)*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))+1/7*A*x^2*(c*x^2+a)^(5/2)/c-2/35*A*a/c^2*(c*x^2+a
)^(5/2)
```

maxima [A] time = 0.60, size = 126, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bx^3}{8\,c}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ax^2}{7\,c}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bax}{16\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ba^2x}{64\,c^2}+\frac{3\,\sqrt{cx^2+a}\,Ba^3x}{128\,c^2}+\frac{3\,Ba^4\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{5}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + a)^(5/2)*B*x^3/c + 1/7*(c*x^2 + a)^(5/2)*A*x^2/c - 1/16*(c*x^2
 + a)^(5/2)*B*a*x/c^2 + 1/64*(c*x^2 + a)^(3/2)*B*a^2*x/c^2 + 3/128*sqrt(c*x
^2 + a)*B*a^3*x/c^2 + 3/128*B*a^4*arcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/35*(c*
x^2 + a)^(5/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\left(c\,x^2+a\right)^{3/2}\,(A+B\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 18.14, size = 318, normalized size = 2.12

$$Aa\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for}\ c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right)+Ac\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7} & \text{f}\\ \frac{\sqrt{a}\,x^6}{6} & \text{o}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)
/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + A*c
*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**
2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, N
e(c, 0)), (sqrt(a)*x**6/6, True)) - 3*B*a**(7/2)*x/(128*c**2*sqrt(1 + c*x**
2/a)) - B*a**(5/2)*x**3/(128*c*sqrt(1 + c*x**2/a)) + 13*B*a**(3/2)*x**5/(64
*sqrt(1 + c*x**2/a)) + 5*B*sqrt(a)*c*x**7/(16*sqrt(1 + c*x**2/a)) + 3*B*a**
4*asinh(sqrt(c)*x/sqrt(a))/(128*c**(5/2)) + B*c**2*x**9/(8*sqrt(a)*sqrt(1 +
 c*x**2/a))
```

3.328 $\int x^2(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=127

$$-\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{\left(a+cx^2\right)^{5/2}(12aB-35Acx)}{210c^2}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}$$

```
[Out] -1/24*a*A*x*(c*x^2+a)^(3/2)/c+1/7*B*x^2*(c*x^2+a)^(5/2)/c-1/210*(-35*A*c*x+
12*B*a)*(c*x^2+a)^(5/2)/c^2-1/16*a^3*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c
^(3/2)-1/16*a^2*A*x*(c*x^2+a)^(1/2)/c
```

Rubi **[A]** time = 0.06, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = $\{833, 780, 195, 217, 206\}$

$$-\frac{a^3A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{\left(a+cx^2\right)^{5/2}(12aB-35Acx)}{210c^2}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] -(a^2*A*x*Sqrt[a + c*x^2])/(16*c) - (a*A*x*(a + c*x^2)^(3/2))/(24*c) + (B*x
^2*(a + c*x^2)^(5/2))/(7*c) - ((12*a*B - 35*A*c*x)*(a + c*x^2)^(5/2))/(210*
c^2) - (a^3*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(16*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
```

```
/; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}+\frac{\int x(-2aB+7Acx)\left(a+cx^2\right)^{3/2}\,dx}{7c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a+cx^2\right)^{5/2}}{210c^2}-\frac{(aA)\int\left(a+cx^2\right)^{3/2}\,dx}{6c}\\
&= -\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a+cx^2\right)^{5/2}}{210c^2}-\frac{\left(a^2A\right.}{}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}\\
&= -\frac{a^2Ax\sqrt{a+cx^2}}{16c}-\frac{aAx\left(a+cx^2\right)^{3/2}}{24c}+\frac{Bx^2\left(a+cx^2\right)^{5/2}}{7c}-\frac{(12aB-35Acx)\left(a\right.}{210c^2}\end{aligned}$$

Mathematica [A] time = 0.21, size = 113, normalized size = 0.89

$$\frac{\sqrt{a+cx^2}\left(-\frac{105a^{5/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-96a^3B+3a^2cx(35A+16Bx)+2ac^2x^3(245A+192Bx)+40c^3x^5(7A+6B\right.}{1680c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-96*a^3*B + 40*c^3*x^5*(7*A + 6*B*x) + 3*a^2*c*x*(35*A +
16*B*x) + 2*a*c^2*x^3*(245*A + 192*B*x) - (105*a^(5/2)*A*Sqrt[c]*ArcSinh[(S
qrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(1680*c^2)
```

fricas [A] time = 0.71, size = 223, normalized size = 1.76

$$\left[\frac{105\,Aa^3\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(240\,Bc^3x^6+280\,Ac^3x^5+384\,Bac^2x^4+490\,Aac^2x^3+48\right.}{3360\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/3360*(105*A*a^3*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(240*B*c^3*x^6 + 280*A*c^3*x^5 + 384*B*a*c^2*x^4 + 490*A*a*c^2*x^3 + 48
*B*a^2*c*x^2 + 105*A*a^2*c*x - 96*B*a^3)*sqrt(c*x^2 + a))/c^2, 1/1680*(105*
A*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (240*B*c^3*x^6 + 280*A*
c^3*x^5 + 384*B*a*c^2*x^4 + 490*A*a*c^2*x^3 + 48*B*a^2*c*x^2 + 105*A*a^2*c*
x - 96*B*a^3)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 103, normalized size = 0.81

$$\frac{Aa^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{3}{2}}}-\frac{1}{1680}\,\sqrt{cx^2+a}\left(\frac{96\,Ba^3}{c^2}-\left(\frac{105\,Aa^2}{c}+2\left(\frac{24\,Ba^2}{c}+(245\,Aa+4\,(48\,Ba+5\,(6\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) - 1/1680*sqrt(c*x
^2 + a)*(96*B*a^3/c^2 - (105*A*a^2/c + 2*(24*B*a^2/c + (245*A*a + 4*(48*B*a
 + 5*(6*B*c*x + 7*A*c)*x)*x)*x)*x)*x)
```

maple [A] time = 0.05, size = 113, normalized size = 0.89

$$-\frac{A\,a^{3}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{16c^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\;A\,a^{2}x}{16c}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}Aax}{24c}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}B\,x^{2}}{7c}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Ax}{6c}-\frac{2\left(c\,x^{2}+a\right)}{35c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/7*B*x^2*(c*x^2+a)^(5/2)/c-2/35*B*a/c^2*(c*x^2+a)^(5/2)+1/6*A*x*(c*x^2+a)^
(5/2)/c-1/24*a*A*x*(c*x^2+a)^(3/2)/c-1/16*a^2*A*x*(c*x^2+a)^(1/2)/c-1/16*A*
a^3/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.50, size = 105, normalized size = 0.83

$$\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Bx^{2}}{7\,c}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ax}{6\,c}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Aax}{24\,c}-\frac{\sqrt{cx^{2}+a}\,Aa^{2}x}{16\,c}-\frac{Aa^{3}\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{3}{2}}}-\frac{2\left(cx^{2}+a\right)^{\frac{5}{2}}Ba}{35\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + a)^(5/2)*B*x^2/c + 1/6*(c*x^2 + a)^(5/2)*A*x/c - 1/24*(c*x^2 +
 a)^(3/2)*A*a*x/c - 1/16*sqrt(c*x^2 + a)*A*a^2*x/c - 1/16*A*a^3*arcsinh(c*x
/sqrt(a*c))/c^(3/2) - 2/35*(c*x^2 + a)^(5/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{2}\left(c\,x^{2}+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 12.45, size = 287, normalized size = 2.26

$$\frac{Aa^{\frac{5}{2}}x}{16c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{17Aa^{\frac{3}{2}}x^{3}}{48\sqrt{1+\frac{cx^{2}}{a}}}+\frac{11A\sqrt{a}\,cx^{5}}{24\sqrt{1+\frac{cx^{2}}{a}}}-\frac{Aa^{3}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16c^{\frac{3}{2}}}+\frac{Ac^{2}x^{7}}{6\sqrt{a}\,\sqrt{1+\frac{cx^{2}}{a}}}+Ba\left(\begin{cases}-\frac{2a^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2}\sqrt{a+cx^{2}}}{15c}+\frac{x^{4}}{} \\ \frac{\sqrt{a}\,x^{4}}{4}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(5/2)*x/(16*c*sqrt(1 + c*x**2/a)) + 17*A*a**(3/2)*x**3/(48*sqrt(1 + c*
x**2/a)) + 11*A*sqrt(a)*c*x**5/(24*sqrt(1 + c*x**2/a)) - A*a**3*asinh(sqrt(
c)*x/sqrt(a))/(16*c**(3/2)) + A*c**2*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) +
B*a*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)
/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*c
*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**
2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, N
e(c, 0)), (sqrt(a)*x**6/6, True))
```

3.329 $\int x(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=103

$$-\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Bx\sqrt{a+cx^2}}{16c}+\frac{\left(a+cx^2\right)^{5/2}(6A+5Bx)}{30c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}$$

```
[Out] -1/24*a*B*x*(c*x^2+a)^(3/2)/c+1/30*(5*B*x+6*A)*(c*x^2+a)^(5/2)/c-1/16*a^3*B
*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)-1/16*a^2*B*x*(c*x^2+a)^(1/2)/c
```

Rubi [A] time = 0.03, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = $\{780, 195, 217, 206\}$

$$-\frac{a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16c^{3/2}}-\frac{a^2Bx\sqrt{a+cx^2}}{16c}+\frac{\left(a+cx^2\right)^{5/2}(6A+5Bx)}{30c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] -(a^2*B*x*Sqrt[a + c*x^2])/(16*c) - (a*B*x*(a + c*x^2)^(3/2))/(24*c) + ((6*
A + 5*B*x)*(a + c*x^2)^(5/2))/(30*c) - (a^3*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a +
c*x^2]])/(16*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c}-\frac{(aB)\int\left(a+cx^2\right)^{3/2}\,dx}{6c}\\ &=-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}+\frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c}-\frac{\left(a^2B\right)\int\sqrt{a+cx^2}\,dx}{8c}\\ &=-\frac{a^2Bx\sqrt{a+cx^2}}{16c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}+\frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c}-\frac{\left(a^3B\right)\int\frac{1}{\sqrt{a+cx^2}}}{16c}\\ &=-\frac{a^2Bx\sqrt{a+cx^2}}{16c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}+\frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c}-\frac{\left(a^3B\right)\text{Subst}\left(\int\right.}{}\\ &=-\frac{a^2Bx\sqrt{a+cx^2}}{16c}-\frac{aBx\left(a+cx^2\right)^{3/2}}{24c}+\frac{(6A+5Bx)\left(a+cx^2\right)^{5/2}}{30c}-\frac{a^3B\tanh^{-1}\left(\frac{}{\sqrt{a}}\right.}{16c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.18, size = 107, normalized size = 1.04

$$\frac{\sqrt{a+cx^2}\left(\sqrt{c}\left(3a^2(16A+5Bx)+2acx^2(48A+35Bx)+8c^2x^4(6A+5Bx)\right)-\frac{15a^{5/2}B\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{240c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(8*c^2*x^4*(6*A + 5*B*x) + 3*a^2*(16*A + 5*B*x) +
 2*a*c*x^2*(48*A + 35*B*x)) - (15*a^(5/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/S
qrt[1 + (c*x^2)/a]))/(240*c^(3/2))
```

fricas [A] time = 0.95, size = 205, normalized size = 1.99

$$\left[\frac{15\,Ba^3\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(40\,Bc^3x^5+48\,Ac^3x^4+70\,Bac^2x^3+96\,Aac^2x^2+15\,Ba^2cx+\right.}{480\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/480*(15*B*a^3*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(40*B*c^3*x^5 + 48*A*c^3*x^4 + 70*B*a*c^2*x^3 + 96*A*a*c^2*x^2 + 15*B*a^2
*c*x + 48*A*a^2*c)*sqrt(c*x^2 + a))/c^2, 1/240*(15*B*a^3*sqrt(-c)*arctan(sq
rt(-c)*x/sqrt(c*x^2 + a)) + (40*B*c^3*x^5 + 48*A*c^3*x^4 + 70*B*a*c^2*x^3 +
 96*A*a*c^2*x^2 + 15*B*a^2*c*x + 48*A*a^2*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.24, size = 89, normalized size = 0.86

$$\frac{Ba^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,c^{\frac{3}{2}}}+\frac{1}{240}\,\sqrt{cx^2+a}\left(\frac{48\,Aa^2}{c}+\left(\frac{15\,Ba^2}{c}+2\,(48\,Aa+(35\,Ba+4\,(5\,Bcx+6\,Ac)x)x)x\right)x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/16*B*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/240*sqrt(c*x^
2 + a)*(48*A*a^2/c + (15*B*a^2/c + 2*(48*A*a + (35*B*a + 4*(5*B*c*x + 6*A*c
)*x)*x)*x)*x)
```

maple [A] time = 0.05, size = 94, normalized size = 0.91

$$-\frac{B a^{3} \ln\left(\sqrt{c}\, x+\sqrt{c x^{2}+a}\right)}{16 c^{\frac{3}{2}}}-\frac{\sqrt{c x^{2}+a}\, B a^{2} x}{16 c}-\frac{\left(c x^{2}+a\right)^{\frac{3}{2}} B a x}{24 c}+\frac{\left(c x^{2}+a\right)^{\frac{5}{2}} B x}{6 c}+\frac{\left(c x^{2}+a\right)^{\frac{5}{2}} A}{5 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/6*B*x*(c*x^2+a)^(5/2)/c-1/24*a*B*x*(c*x^2+a)^(3/2)/c-1/16*a^2*B*x*(c*x^2+
a)^(1/2)/c-1/16*B*a^3/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*(c*x^2+a)
^(5/2)/c
```

maxima [A] time = 0.49, size = 86, normalized size = 0.83

$$\frac{\left(cx^{2}+a\right)^{\frac{5}{2}} Bx}{6\,c}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}} Bax}{24\,c}-\frac{\sqrt{cx^{2}+a}\, Ba^{2}x}{16\,c}-\frac{Ba^{3} \operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,c^{\frac{3}{2}}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}} A}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*B*x/c - 1/24*(c*x^2 + a)^(3/2)*B*a*x/c - 1/16*sqrt(c*
x^2 + a)*B*a^2*x/c - 1/16*B*a^3*arcsinh(c*x/sqrt(a*c))/c^(3/2) + 1/5*(c*x^2
 + a)^(5/2)*A/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^{2}+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [A] time = 12.11, size = 223, normalized size = 2.17

$$Aa\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2} & \text{for}\: c = 0\\\frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Ac\left(\begin{cases}-\frac{2a^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2}\sqrt{a+cx^{2}}}{15c}+\frac{x^{4}\sqrt{a+cx^{2}}}{5} & \text{for}\: c \neq 0\\\frac{\sqrt{a}\,x^{4}}{4} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{5}{2}}x}{16c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{17Ba^{\frac{3}{2}}}{48\sqrt{1+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)
) + A*c*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x
**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) +
 B*a**(5/2)*x/(16*c*sqrt(1 + c*x**2/a)) + 17*B*a**(3/2)*x**3/(48*sqrt(1 + c
*x**2/a)) + 11*B*sqrt(a)*c*x**5/(24*sqrt(1 + c*x**2/a)) - B*a**3*asinh(sqrt
(c)*x/sqrt(a))/(16*c**(3/2)) + B*c**2*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.330 $\int (A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=87

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{3}{8}aAx\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}$$

```
[Out] 1/4*A*x*(c*x^2+a)^(3/2)+1/5*B*(c*x^2+a)^(5/2)/c+3/8*a^2*A*arctanh(x*c^(1/2)
/(c*x^2+a)^(1/2))/c^(1/2)+3/8*a*A*x*(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = $\{641, 195, 217, 206\}$

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{3}{8}aAx\sqrt{a+cx^2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (3*a*A*x*Sqrt[a + c*x^2])/8 + (A*x*(a + c*x^2)^(3/2))/4 + (B*(a + c*x^2)^(5
/2))/(5*c) + (3*a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= \frac{B\left(a+cx^2\right)^{5/2}}{5c}+A\int \left(a+cx^2\right)^{3/2}\,dx\\ &= \frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{4}(3aA)\int \sqrt{a+cx^2}\,dx\\ &= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{8}\left(3a^2A\right)\int \frac{1}{\sqrt{a+cx^2}}\,d\\ &= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{1}{8}\left(3a^2A\right)\text{Subst}\left(\int \frac{1}{1-}\right.\\ &= \frac{3}{8}aAx\sqrt{a+cx^2}+\frac{1}{4}Ax\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{5/2}}{5c}+\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 88, normalized size = 1.01

$$\frac{\sqrt{a+cx^2}\left(8a^2B+acx(25A+16Bx)+2c^2x^3(5A+4Bx)\right)+15a^2A\sqrt{c}\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{40c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*a^2*B + 2*c^2*x^3*(5*A + 4*B*x) + a*c*x*(25*A + 16*B*x)
) + 15*a^2*A*Sqrt[c]*Log[c*x + Sqrt[c]*Sqrt[a + c*x^2]])/(40*c)
```

fricas [A] time = 0.99, size = 176, normalized size = 2.02

$$\left[\frac{15\,Aa^2\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(8\,Bc^2x^4+10\,Ac^2x^3+16\,Bacx^2+25\,Aacx+8\,Ba^2\right)\sqrt{cx^2+}}{80\,c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/80*(15*A*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2
*(8*B*c^2*x^4 + 10*A*c^2*x^3 + 16*B*a*c*x^2 + 25*A*a*c*x + 8*B*a^2)*sqrt(c*
x^2 + a))/c, -1/40*(15*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) -
(8*B*c^2*x^4 + 10*A*c^2*x^3 + 16*B*a*c*x^2 + 25*A*a*c*x + 8*B*a^2)*sqrt(c*x
^2 + a))/c]
```

giac [A] time = 0.19, size = 76, normalized size = 0.87

$$-\frac{3\,Aa^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,\sqrt{c}}+\frac{1}{40}\,\sqrt{cx^2+a}\left(\frac{8\,Ba^2}{c}+(25\,Aa+2\,(8\,Ba+(4\,Bcx+5\,Ac)x)x)x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -3/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/40*sqrt(c*x^2
 + a)*(8*B*a^2/c + (25*A*a + 2*(8*B*a + (4*B*c*x + 5*A*c)*x)*x)*x)
```

maple [A] time = 0.05, size = 69, normalized size = 0.79

$$\frac{3 A a^{2} \ln\left(\sqrt{c}\, x+\sqrt{c x^{2}+a}\right)}{8\sqrt{c}}+\frac{3\sqrt{c x^{2}+a}\; A a x}{8}+\frac{\left(c x^{2}+a\right)^{\frac{3}{2}} A x}{4}+\frac{\left(c x^{2}+a\right)^{\frac{5}{2}} B}{5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+a)^(5/2)/c+1/4*A*x*(c*x^2+a)^(3/2)+3/8*a*A*x*(c*x^2+a)^(1/2)+3
/8*A*a^2/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.49, size = 61, normalized size = 0.70

$$\frac{1}{4}\left(cx^{2}+a\right)^{\frac{3}{2}} Ax+\frac{3}{8}\sqrt{cx^{2}+a}\,Aax+\frac{3\,Aa^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{c}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}} B}{5\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*A*x + 3/8*sqrt(c*x^2 + a)*A*a*x + 3/8*A*a^2*arcsinh(c
*x/sqrt(a*c))/sqrt(c) + 1/5*(c*x^2 + a)^(5/2)*B/c
```

mupad [B] time = 1.28, size = 54, normalized size = 0.62

$$\frac{B\left(c\,x^{2}+a\right)^{5/2}}{5\,c}+\frac{A\,x\left(c\,x^{2}+a\right)^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},\frac{1}{2};\,\frac{3}{2};\,-\frac{c\,x^{2}}{a}\right)}{\left(\frac{c\,x^{2}}{a}+1\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(5/2))/(5*c) + (A*x*(a + c*x^2)^(3/2)*hypergeom([-3/2, 1/2],
 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(3/2)
```

sympy [A] time = 7.62, size = 219, normalized size = 2.52

$$\frac{Aa^{\frac{3}{2}}x\sqrt{1+\frac{cx^{2}}{a}}}{2}+\frac{Aa^{\frac{3}{2}}x}{8\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3A\sqrt{a}\,cx^{3}}{8\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3Aa^{2}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8\sqrt{c}}+\frac{Ac^{2}x^{5}}{4\sqrt{a}\,\sqrt{1+\frac{cx^{2}}{a}}}+Ba\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Bc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*x*sqrt(1 + c*x**2/a)/2 + A*a**(3/2)*x/(8*sqrt(1 + c*x**2/a)) + 3
*A*sqrt(a)*c*x**3/(8*sqrt(1 + c*x**2/a)) + 3*A*a**2*asinh(sqrt(c)*x/sqrt(a)
)/(8*sqrt(c)) + A*c**2*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a*Piecewise(
(sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + B*c*Piecew
ise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) +
x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True))
```

3.331 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=106

$$-a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{8}a\sqrt{a+cx^2}\,(8A+3Bx)+\frac{1}{12}\left(a+cx^2\right)^{3/2}(4A+3Bx)$$

```
[Out] 1/12*(3*B*x+4*A)*(c*x^2+a)^(3/2)-a^(3/2)*A*arctanh((c*x^2+a)^(1/2)/a^(1/2))
+3/8*a^2*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(1/2)+1/8*a*(3*B*x+8*A)*(c*
x^2+a)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$-a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\frac{1}{8}a\sqrt{a+cx^2}\,(8A+3Bx)+\frac{1}{12}\left(a+cx^2\right)^{3/2}(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x,x]
```

```
[Out] (a*(8*A + 3*B*x)*Sqrt[a + c*x^2])/8 + ((4*A + 3*B*x)*(a + c*x^2)^(3/2))/12
+ (3*a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*Sqrt[c]) - a^(3/2)*A*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x}\,dx &= \frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{\int \frac{(4aAc+3aBcx)\sqrt{a+cx^2}}{x}\,dx}{4c}\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{\int \frac{8a^2Ac^2+3a^2Bc^2x}{x\sqrt{a+cx^2}}\,dx}{8c^2}\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\left(a^2A\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{1}{2}\left(a^2A\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+}}\right.\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}+\\
&= \frac{1}{8}a(8A+3Bx)\sqrt{a+cx^2}+\frac{1}{12}(4A+3Bx)\left(a+cx^2\right)^{3/2}+\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8\sqrt{c}}-a
\end{aligned}
$$

Mathematica [A] time = 0.25, size = 118, normalized size = 1.11

$$\frac{1}{24}\left(-24a^{3/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{9a^{5/2}B\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{c}\sqrt{a+cx^2}}+\sqrt{a+cx^2}\left(32aA+15aBx+8Acx^2+6Bcx^3\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(32*a*A + 15*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + (9*a^(5/2)*B
*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[c]*Sqrt[a + c*x^2]
) - 24*a^(3/2)*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/24
```

fricas [A] time = 1.15, size = 439, normalized size = 4.14

$$\left[\frac{9\,Ba^2\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+24\,Aa^{\frac{3}{2}}c\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(6\,Bc^2x^3+8\,Ac^2x^2+15\,B\right.}{48\,c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [1/48*(9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 24
*A*a^(3/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(6*B*c
^2*x^3 + 8*A*c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c, -1/24*(9*
B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 12*A*a^(3/2)*c*log(-(c*
x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (6*B*c^2*x^3 + 8*A*c^2*x^2 +
15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c, 1/48*(48*A*sqrt(-a)*a*c*arctan(s
qrt(-a)/sqrt(c*x^2 + a)) + 9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)
*sqrt(c)*x - a) + 2*(6*B*c^2*x^3 + 8*A*c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqr
t(c*x^2 + a))/c, -1/24*(9*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a))
 - 24*A*sqrt(-a)*a*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c^2*x^3 + 8*A*
c^2*x^2 + 15*B*a*c*x + 32*A*a*c)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 100, normalized size = 0.94

$$\frac{2\,Aa^{2}\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3\,Ba^{2}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^{2}+a}\right|\right)}{8\,\sqrt{c}}+\frac{1}{24}\,\sqrt{cx^{2}+a}\,(32\,Aa+(15\,Ba+2\,(3\,Bcx+4\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/8*B*a^
2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/24*sqrt(c*x^2 + a)*(32
*A*a + (15*B*a + 2*(3*B*c*x + 4*A*c)*x)*x)
```

maple [A] time = 0.05, size = 107, normalized size = 1.01

$$-A\,a^{\frac{3}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)+\frac{3B\,a^{2}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{8\sqrt{c}}+\frac{3\sqrt{c\,x^{2}+a}\,Bax}{8}+\sqrt{c\,x^{2}+a}\,Aa+\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+a)^(3/2)+3/8*B*a*x*(c*x^2+a)^(1/2)+3/8*B*a^2/c^(1/2)*ln(c^(1
/2)*x+(c*x^2+a)^(1/2))+1/3*A*(c*x^2+a)^(3/2)-A*a^(3/2)*ln((2*a+2*(c*x^2+a)^
(1/2)*a^(1/2))/x)+A*(c*x^2+a)^(1/2)*a
```

maxima [A] time = 0.48, size = 88, normalized size = 0.83

$$\frac{1}{4}\left(cx^{2}+a\right)^{\frac{3}{2}}Bx+\frac{3}{8}\,\sqrt{cx^{2}+a}\,Bax+\frac{3\,Ba^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{c}}-Aa^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{3}\left(cx^{2}+a\right)^{\frac{3}{2}}A+\sqrt{cx^{2}+a}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + a)^(3/2)*B*x + 3/8*sqrt(c*x^2 + a)*B*a*x + 3/8*B*a^2*arcsinh(c
*x/sqrt(a*c))/sqrt(c) - A*a^(3/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/3*(c*x^
2 + a)^(3/2)*A + sqrt(c*x^2 + a)*A*a
```

mupad [B] time = 1.40, size = 83, normalized size = 0.78

$$\frac{A\left(c\,x^{2}+a\right)^{3/2}}{3}-A\,a^{3/2}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)+A\,a\,\sqrt{c\,x^{2}+a}+\frac{B\,x\left(c\,x^{2}+a\right)^{3/2}{}_{2}\mathrm{F}_{1}\left(-\frac{3}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^{2}}{a}\right)}{\left(\frac{c\,x^{2}}{a}+1\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x,x)
```

```
[Out] (A*(a + c*x^2)^(3/2))/3 - A*a^(3/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + A*a*
(a + c*x^2)^(1/2) + (B*x*(a + c*x^2)^(3/2)*hypergeom([-3/2, 1/2], 3/2, -(c*
x^2)/a))/((c*x^2)/a + 1)^(3/2)
```

sympy [**A**] time = 17.92, size = 218, normalized size = 2.06

$$-Aa^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Aa^2}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{Aa\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+Ac\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+\frac{Ba^{\frac{3}{2}}x\sqrt{1+\frac{cx^2}{a}}}{2}+\frac{Ba^{\frac{3}{2}}x}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3B}{8\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x,x)
```

```
[Out] -A*a**(3/2)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a**2/(sqrt(c)*x*sqrt(a/(c*x**2)
+ 1)) + A*a*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + A*c*Piecewise((sqrt(a)*x**2/2,
 Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + B*a**(3/2)*x*sqrt(1 + c*x*
*2/a)/2 + B*a**(3/2)*x/(8*sqrt(1 + c*x**2/a)) + 3*B*sqrt(a)*c*x**3/(8*sqrt(
1 + c*x**2/a)) + 3*B*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*sqrt(c)) + B*c**2*x**
5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.332 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=108

$$a^{3/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{3/2}(3A-Bx)}{3x}+\frac{1}{2}\sqrt{a+cx^2}\,(2aB+3Acx)+\frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

```
[Out] -1/3*(-B*x+3*A)*(c*x^2+a)^(3/2)/x-a^(3/2)*B*arctanh((c*x^2+a)^(1/2)/a^(1/2)
)+3/2*a*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))*c^(1/2)+1/2*(3*A*c*x+2*B*a)*(c
*x^2+a)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$a^{3/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{3/2}(3A-Bx)}{3x}+\frac{1}{2}\sqrt{a+cx^2}\,(2aB+3Acx)+\frac{3}{2}aA\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((2*a*B + 3*A*c*x)*Sqrt[a + c*x^2])/2 - ((3*A - B*x)*(a + c*x^2)^(3/2))/(3*
x) + (3*a*A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - a^(3/2)*B*Arc
Tanh[Sqrt[a + c*x^2]/Sqrt[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx &= -\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}-\frac{1}{2}\int \frac{(-2aB-6Acx)\sqrt{a+cx^2}}{x}\,dx\\
&= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2}-\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}-\frac{\int \frac{-4a^2Bc-6aAc^2x}{x\sqrt{a+cx^2}}\,dx}{4c}\\
&= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2}-\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}+\left(a^2B\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\frac{1}{2}(\\
&= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2}-\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}+\frac{1}{2}\left(a^2B\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.\\
&= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2}-\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}+\frac{3}{2}aA\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)\\
&= \frac{1}{2}(2aB+3Acx)\sqrt{a+cx^2}-\frac{(3A-Bx)\left(a+cx^2\right)^{3/2}}{3x}+\frac{3}{2}aA\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)
\end{aligned}
$$

Mathematica [C]   time = 0.16, size = 105, normalized size = 0.97

$$
-a^{3/2}B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{a^2A\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{a+cx^2}}+\frac{1}{3}B\sqrt{a+cx^2}\,\left(4a+cx^2\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^2,x]
```

```
[Out] (B*Sqrt[a + c*x^2]*(4*a + c*x^2))/3 - a^(3/2)*B*ArcTanh[Sqrt[a + c*x^2]/Sqr
t[a]] - (a^2*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*
x^2)/a)])/(x*Sqrt[a + c*x^2])
```

fricas [A] time = 1.02, size = 411, normalized size = 3.81

$$\left[\frac{9\,Aa\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+6\,Ba^{\frac{3}{2}}x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,\left(2\,Bcx^3+3\,Acx^2+8\,Ba\right.}{12\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/12*(9*A*a*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 6*
B*a^(3/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(2*B*c*
x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x, -1/6*(9*A*a*sqrt(-c)
*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*B*a^(3/2)*x*log(-(c*x^2 - 2*sqrt(
c*x^2 + a)*sqrt(a) + 2*a)/x^2) - (2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*
sqrt(c*x^2 + a))/x, 1/12*(12*B*sqrt(-a)*a*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)
) + 9*A*a*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2*
B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 + a))/x, -1/6*(9*A*a*sqrt
(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 6*B*sqrt(-a)*a*x*arctan(sqrt(-a
)/sqrt(c*x^2 + a)) - (2*B*c*x^3 + 3*A*c*x^2 + 8*B*a*x - 6*A*a)*sqrt(c*x^2 +
 a))/x]
```

giac [A] time = 0.20, size = 124, normalized size = 1.15

$$\frac{2\,Ba^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3}{2}\,Aa\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{2\,Aa^2\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}+\frac{1}{6}\,\sqrt{cx^2+a}\,(8\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] 2*B*a^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/2*A*a*
sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 2*A*a^2*sqrt(c)/((sqrt(c)*
x - sqrt(c*x^2 + a))^2 - a) + 1/6*sqrt(c*x^2 + a)*(8*B*a + (2*B*c*x + 3*A*c
)*x)
```

maple [A] time = 0.06, size = 126, normalized size = 1.17

$$\frac{3Aa\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2}-B\,a^{\frac{3}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{3\sqrt{c\,x^2+a}\,Acx}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}\,Acx}{a}+\sqrt{c\,x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+a)^(5/2)+A*c/a*x*(c*x^2+a)^(3/2)+3/2*A*c*x*(c*x^2+a)^(1/2)+3/
2*A*c^(1/2)*a*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*B*(c*x^2+a)^(3/2)-B*a^(3/2)
*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/2)*a
```

maxima [A] time = 0.55, size = 88, normalized size = 0.81

$$\frac{3}{2}\,\sqrt{cx^2+a}\,Acx+\frac{3}{2}\,Aa\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-Ba^{\frac{3}{2}}\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{3}\,\left(cx^2+a\right)^{\frac{3}{2}}B+\sqrt{cx^2+a}\,Ba-\frac{\left(cx^2+a\right)^{\frac{3}{2}}A}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] 3/2*sqrt(c*x^2 + a)*A*c*x + 3/2*A*a*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - B*a^(3
/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/3*(c*x^2 + a)^(3/2)*B + sqrt(c*x^2 +
a)*B*a - (c*x^2 + a)^(3/2)*A/x
```

mupad [B] time = 1.98, size = 86, normalized size = 0.80

$$\frac{B\left(c\,x^2+a\right)^{3/2}}{3}-B\,a^{3/2}\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)+B\,a\,\sqrt{c\,x^2+a}-\frac{A\left(c\,x^2+a\right)^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\left(\frac{c\,x^2}{a}+1\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^2,x)
```

```
[Out] (B*(a + c*x^2)^(3/2))/3 - B*a^(3/2)*atanh((a + c*x^2)^(1/2)/a^(1/2)) + B*a*
(a + c*x^2)^(1/2) - (A*(a + c*x^2)^(3/2)*hypergeom([-3/2, -1/2], 1/2, -(c*x
^2)/a))/(x*((c*x^2)/a + 1)^(3/2))
```

sympy [A] time = 7.07, size = 184, normalized size = 1.70

$$-\frac{Aa^{\frac{3}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{A\sqrt{a}\,cx\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{A\sqrt{a}\,cx}{\sqrt{1+\frac{cx^2}{a}}}+\frac{3Aa\sqrt{c}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2}-Ba^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Ba^2}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ba\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**2,x)
```

```
[Out] -A*a**(3/2)/(x*sqrt(1 + c*x**2/a)) + A*sqrt(a)*c*x*sqrt(1 + c*x**2/a)/2 - A
*sqrt(a)*c*x/sqrt(1 + c*x**2/a) + 3*A*a*sqrt(c)*asinh(sqrt(c)*x/sqrt(a))/2
- B*a**(3/2)*asinh(sqrt(a)/(sqrt(c)*x)) + B*a**2/(sqrt(c)*x*sqrt(a/(c*x**2)
 + 1)) + B*a*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + B*c*Piecewise((sqrt(a)*x**2/2
, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
```

3.333 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=111

$$-\frac{\left(a+cx^2\right)^{3/2}(A-Bx)}{2x^2}-\frac{3\sqrt{a+cx^2}\,(aB-Acx)}{2x}-\frac{3}{2}\sqrt{a}\,Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

```
[Out] -1/2*(-B*x+A)*(c*x^2+a)^(3/2)/x^2-3/2*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))*
a^(1/2)+3/2*a*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))*c^(1/2)-3/2*(-A*c*x+B*a)
*(c*x^2+a)^(1/2)/x
```

Rubi [A] time = 0.08, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{\left(a+cx^2\right)^{3/2}(A-Bx)}{2x^2}-\frac{3\sqrt{a+cx^2}\,(aB-Acx)}{2x}-\frac{3}{2}\sqrt{a}\,Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (-3*(a*B - A*c*x)*Sqrt[a + c*x^2])/(2*x) - ((A - B*x)*(a + c*x^2)^(3/2))/(2
*x^2) + (3*a*B*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (3*Sqrt[a]
*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx &= -\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}-\frac{3}{8}\int \frac{(-4aB-4Acx)\sqrt{a+cx^2}}{x^2}\,dx \\
&= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x}-\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}+\frac{3}{16}\int \frac{8aAc+8aBcx}{x\sqrt{a+cx^2}}\,dx \\
&= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x}-\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}+\frac{1}{2}(3aAc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\frac{1}{2}(\\
&= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x}-\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}+\frac{1}{4}(3aAc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,d \right. \\
&= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x}-\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+ \\
&= -\frac{3(aB-Acx)\sqrt{a+cx^2}}{2x}-\frac{(A-Bx)\left(a+cx^2\right)^{3/2}}{2x^2}+\frac{3}{2}aB\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-
\end{aligned}$$

Mathematica [C] time = 0.04, size = 90, normalized size = 0.81

$$\frac{Ac\left(a+cx^2\right)^{5/2}{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx^2}{a}+1\right)}{5a^2}-\frac{aB\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^3,x]
```

```
[Out] -((a*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-3/2, -1/2, 1/2, -((c*x^2)/a)])/(x
*Sqrt[1 + (c*x^2)/a])) + (A*c*(a + c*x^2)^(5/2)*Hypergeometric2F1[2, 5/2, 7
/2, 1 + (c*x^2)/a])/(5*a^2)
```

fricas [A] time = 1.08, size = 425, normalized size = 3.83

$$\left[\frac{3\,Ba\sqrt{c}\,x^2\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+3\,A\sqrt{a}\,cx^2\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,(Bcx^3+2\,Acx^2-2\,Bax}{4\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/4*(3*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 3
*A*sqrt(a)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(B
*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqrt(c*x^2 + a))/x^2, -1/4*(6*B*a*sqrt(
-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*A*sqrt(a)*c*x^2*log(-(c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(B*c*x^3 + 2*A*c*x^2 - 2*B*a*x
- A*a)*sqrt(c*x^2 + a))/x^2, 1/4*(6*A*sqrt(-a)*c*x^2*arctan(sqrt(-a)/sqrt(c
*x^2 + a)) + 3*B*a*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
 a) + 2*(B*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqrt(c*x^2 + a))/x^2, -1/2*(3
*B*a*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 3*A*sqrt(-a)*c*x^2*a
rctan(sqrt(-a)/sqrt(c*x^2 + a)) - (B*c*x^3 + 2*A*c*x^2 - 2*B*a*x - A*a)*sqr
t(c*x^2 + a))/x^2]
```

giac [B] time = 0.25, size = 191, normalized size = 1.72

$$\frac{3\,Aac\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{3}{2}\,Ba\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{1}{2}\,(Bcx+2\,Ac)\sqrt{cx^2+a}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 3*A*a*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 3/2*B*a*
sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/2*(B*c*x + 2*A*c)*sqrt(c
*x^2 + a) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a*c + 2*(sqrt(c)*x - sqrt(c*
x^2 + a))^2*B*a^2*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a^2*c - 2*B*a^3
*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2
```

maple [A] time = 0.06, size = 150, normalized size = 1.35

$$-\frac{3A\sqrt{a}\;c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{2}+\frac{3Ba\sqrt{c}\;\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2}+\frac{3\sqrt{c\,x^2+a}\;Bcx}{2}+\frac{3\sqrt{c\,x^2+a}\;Ac}{2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(5/2)+1/2*A*c/a*(c*x^2+a)^(3/2)-3/2*A*c*a^(1/2)*ln((
2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/2*A*c*(c*x^2+a)^(1/2)-B/a/x*(c*x^2+a)^(
5/2)+B*c/a*x*(c*x^2+a)^(3/2)+3/2*B*c*x*(c*x^2+a)^(1/2)+3/2*B*c^(1/2)*a*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.56, size = 112, normalized size = 1.01

$$\frac{3}{2}\,\sqrt{cx^2+a}\,Bcx+\frac{3}{2}\,Ba\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3}{2}\,A\sqrt{a}\,c\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{3}{2}\,\sqrt{cx^2+a}\,Ac+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac}{2\,a}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3/2*sqrt(c*x^2 + a)*B*c*x + 3/2*B*a*sqrt(c)*arcsinh(c*x/sqrt(a*c)) - 3/2*A*
sqrt(a)*c*arcsinh(a/(sqrt(a*c)*abs(x))) + 3/2*sqrt(c*x^2 + a)*A*c + 1/2*(c*
x^2 + a)^(3/2)*A*c/a - (c*x^2 + a)^(3/2)*B/x - 1/2*(c*x^2 + a)^(5/2)*A/(a*x
^2)
```

mupad [B] time = 2.20, size = 91, normalized size = 0.82

$$A\,c\,\sqrt{c\,x^2+a}-\frac{A\,a\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{3\,A\,\sqrt{a}\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2}-\frac{B\,{\left(c\,x^2+a\right)}^{3/2}\,{}_2\mathrm{F}_1\left(-\frac{3}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\,{\left(\frac{c\,x^2}{a}+1\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^3,x)
```

```
[Out] A*c*(a + c*x^2)^(1/2) - (A*a*(a + c*x^2)^(1/2))/(2*x^2) - (3*A*a^(1/2)*c*at
anh((a + c*x^2)^(1/2)/a^(1/2)))/2 - (B*(a + c*x^2)^(3/2)*hypergeom([-3/2, -
1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/a + 1)^(3/2))
```

sympy [A] time = 8.19, size = 182, normalized size = 1.64

$$-\frac{3A\sqrt{a}\,c\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2}-\frac{Aa\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{2x}+\frac{Aa\sqrt{c}}{x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}-\frac{Ba^{\frac{3}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{B\sqrt{a}\,cx\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{B\sqrt{a}\,cx}{\sqrt{1+\frac{cx^2}{a}}}+3B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**3,x)
```

```
[Out] -3*A*sqrt(a)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - A*a*sqrt(c)*sqrt(a/(c*x**2) +
 1)/(2*x) + A*a*sqrt(c)/(x*sqrt(a/(c*x**2) + 1)) + A*c**(3/2)*x/sqrt(a/(c*x
**2) + 1) - B*a**(3/2)/(x*sqrt(1 + c*x**2/a)) + B*sqrt(a)*c*x*sqrt(1 + c*x*
*2/a)/2 - B*sqrt(a)*c*x/sqrt(1 + c*x**2/a) + 3*B*a*sqrt(c)*asinh(sqrt(c)*x/
sqrt(a))/2
```

3.334 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx$

Optimal. Leaf size=109

$$-\frac{c\sqrt{a+cx^2}\,(2A-3Bx)}{2x}-\frac{\left(a+cx^2\right)^{3/2}(2A+3Bx)}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{3}{2}\sqrt{a}\,Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

```
[Out] -1/6*(3*B*x+2*A)*(c*x^2+a)^(3/2)/x^3+A*c^(3/2)*arctanh(x*c^(1/2)/(c*x^2+a)^
(1/2))-3/2*B*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))*a^(1/2)-1/2*c*(-3*B*x+2*A)*
(c*x^2+a)^(1/2)/x
```

Rubi [A] time = 0.09, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {811, 813, 844, 217, 206, 266, 63, 208}

$$-\frac{c\sqrt{a+cx^2}\,(2A-3Bx)}{2x}-\frac{\left(a+cx^2\right)^{3/2}(2A+3Bx)}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{3}{2}\sqrt{a}\,Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^4,x]
```

```
[Out] -(c*(2*A - 3*B*x)*Sqrt[a + c*x^2])/(2*x) - ((2*A + 3*B*x)*(a + c*x^2)^(3/2)
)/(6*x^3) + A*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (3*Sqrt[a]*B*c
*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx &= -\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}-\frac{\int \frac{(-4aAc-6aBcx)\sqrt{a+cx^2}}{x^2}\,dx}{4a}\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{\int \frac{12a^2Bc+8aAc^2x}{x\sqrt{a+cx^2}}\,dx}{8a}\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{1}{2}(3aBc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx+\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+\frac{1}{4}(3aBc)\,\text{Subst}\Bigg(\int \frac{1}{x\sqrt{a+cx}}\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\\
&= -\frac{c(2A-3Bx)\sqrt{a+cx^2}}{2x}-\frac{(2A+3Bx)\left(a+cx^2\right)^{3/2}}{6x^3}+Ac^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-
\end{aligned}
$$

Mathematica [C] time = 0.04, size = 92, normalized size = 0.84

$$
\frac{Bc\left(a+cx^2\right)^{5/2}\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{cx^2}{a}+1\right)}{5a^2}-\frac{aA\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^4,x]
```

```
[Out] -1/3*(a*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-3/2, -3/2, -1/2, -((c*x^2)/a)]
)/(x^3*Sqrt[1 + (c*x^2)/a]) + (B*c*(a + c*x^2)^(5/2)*Hypergeometric2F1[2, 5
/2, 7/2, 1 + (c*x^2)/a])/(5*a^2)
```

fricas [A] time = 1.10, size = 426, normalized size = 3.91

$$\left[\frac{6\,Ac^{\frac{3}{2}}x^3\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+9\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(6\,Bcx^3-8\,Acx^2-3\,B\right.}{12\,x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(6*A*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 9*
B*sqrt(a)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(6*
B*c*x^3 - 8*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3, -1/12*(12*A*sq
rt(-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*B*sqrt(a)*c*x^3*log(-(c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(6*B*c*x^3 - 8*A*c*x^2 - 3
*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3, 1/6*(9*B*sqrt(-a)*c*x^3*arctan(sqrt(-
a)/sqrt(c*x^2 + a)) + 3*A*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt
(c)*x - a) + (6*B*c*x^3 - 8*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/x^3
, -1/6*(6*A*sqrt(-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*B*sqrt(-a
)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c*x^3 - 8*A*c*x^2 - 3*B*a*x
 - 2*A*a)*sqrt(c*x^2 + a))/x^3]
```

giac [B] time = 0.22, size = 211, normalized size = 1.94

$$\frac{3\,Bac\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-Ac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,Bc+\frac{3\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^5Bac+12\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] 3*B*a*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*c^(3/2
)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B*c + 1/3*(3*(sq
rt(c)*x - sqrt(c*x^2 + a))^5*B*a*c + 12*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a
*c^(3/2) - 12*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^2*c^(3/2) - 3*(sqrt(c)*x
- sqrt(c*x^2 + a))*B*a^3*c + 8*A*a^3*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a)
)^2 - a)^3
```

maple [A] time = 0.06, size = 174, normalized size = 1.60

$$A\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)-\frac{3B\sqrt{a}\;c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{2}+\frac{\sqrt{c\,x^2+a}\;A\,c^2x}{a}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^2x}{3a^2}+\frac{3\sqrt{c\,x^2+a}\;B}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^4,x)
```

```
[Out] -1/3*A/a/x^3*(c*x^2+a)^(5/2)-2/3*A*c/a^2/x*(c*x^2+a)^(5/2)+2/3*A*c^2/a^2*x*
(c*x^2+a)^(3/2)+A*c^2/a*x*(c*x^2+a)^(1/2)+A*c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^
(1/2))-1/2*B/a/x^2*(c*x^2+a)^(5/2)+1/2*B*c/a*(c*x^2+a)^(3/2)-3/2*B*c*a^(1/2
)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/2*B*c*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.53, size = 136, normalized size = 1.25

$$\frac{\sqrt{cx^2+a}\,Ac^2x}{a}+Ac^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3}{2}\,B\sqrt{a}\,c\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{3}{2}\,\sqrt{cx^2+a}\,Bc+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bc}{2\,a}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Ac}{3\,ax}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] sqrt(c*x^2 + a)*A*c^2*x/a + A*c^(3/2)*arcsinh(c*x/sqrt(a*c)) - 3/2*B*sqrt(a
)*c*arcsinh(a/(sqrt(a*c)*abs(x))) + 3/2*sqrt(c*x^2 + a)*B*c + 1/2*(c*x^2 +
a)^(3/2)*B*c/a - 2/3*(c*x^2 + a)^(3/2)*A*c/(a*x) - 1/2*(c*x^2 + a)^(5/2)*B/
(a*x^2) - 1/3*(c*x^2 + a)^(5/2)*A/(a*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/x^4, x)
```

sympy [B] time = 7.33, size = 202, normalized size = 1.85

$$-\frac{A\sqrt{a}\,c}{x\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3}+Ac^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Ac^2x}{\sqrt{a}\sqrt{1+\frac{cx^2}{a}}}-\frac{3B\sqrt{a}\,c\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**4,x)
```

```
[Out] -A*sqrt(a)*c/(x*sqrt(1 + c*x**2/a)) - A*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x
**2) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + A*c**(3/2)*asinh(sqrt(c)*x/sqrt(
a)) - A*c**2*x/(sqrt(a)*sqrt(1 + c*x**2/a)) - 3*B*sqrt(a)*c*asinh(sqrt(a)/(
sqrt(c)*x))/2 - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) + B*a*sqrt(c)/(x*sqr
t(a/(c*x**2) + 1)) + B*c**(3/2)*x/sqrt(a/(c*x**2) + 1)
```

3.335 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^5} \, dx$

Optimal. Leaf size=111

$$-\frac{c\sqrt{a+cx^2}\,(3A+8Bx)}{8x^2}-\frac{\left(a+cx^2\right)^{3/2}(3A+4Bx)}{12x^4}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

```
[Out] -1/12*(4*B*x+3*A)*(c*x^2+a)^(3/2)/x^4+B*c^(3/2)*arctanh(x*c^(1/2)/(c*x^2+a)
^(1/2))-3/8*A*c^2*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/2)-1/8*c*(8*B*x+3*A
)*(c*x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{c\sqrt{a+cx^2}\,(3A+8Bx)}{8x^2}-\frac{\left(a+cx^2\right)^{3/2}(3A+4Bx)}{12x^4}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}+Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -(c*(3*A + 8*B*x)*Sqrt[a + c*x^2])/(8*x^2) - ((3*A + 4*B*x)*(a + c*x^2)^(3/
2))/(12*x^4) + B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (3*A*c^2*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^5}\,dx &= -\frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} - \frac{\int \frac{(-6aAc-8aBcx)\sqrt{a+cx^2}}{x^3}\,dx}{8a}\\
&= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{\int \frac{12a^2Ac^2+32a^2Bc^2x}{x\sqrt{a+cx^2}}\,dx}{32a^2}\\
&= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{1}{8}\left(3Ac^2\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx +\\
&= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + \frac{1}{16}\left(3Ac^2\right)\mathrm{Subst}\Bigg(\int \frac{1}{x\sqrt{a+}}\\
&= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) +\\
&= -\frac{c(3A+8Bx)\sqrt{a+cx^2}}{8x^2} - \frac{(3A+4Bx)\left(a+cx^2\right)^{3/2}}{12x^4} + Bc^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right) -
\end{aligned}$$

Mathematica [C] time = 0.08, size = 114, normalized size = 1.03

$$-\frac{\sqrt{a+cx^2}\left(8a^2Bx\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)+9Ac^2x^4\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)+3aA\left(2a+5cx^2\right)\sqrt{\frac{cx^2}{a}+1}\right)}{24ax^4\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/24*(Sqrt[a + c*x^2]*(3*a*A*(2*a + 5*c*x^2)*Sqrt[1 + (c*x^2)/a] + 9*A*c^2
*x^4*ArcTanh[Sqrt[1 + (c*x^2)/a]] + 8*a^2*B*x*Hypergeometric2F1[-3/2, -3/2,
 -1/2, -((c*x^2)/a)]))/(a*x^4*Sqrt[1 + (c*x^2)/a])
```

fricas [A] time = 1.07, size = 474, normalized size = 4.27

$$\Bigg[\frac{24\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+9\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\,\big(32\,Bacx^3+15\,Aacx^2}{48\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(24*B*a*c^(3/2)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 9*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) -
2*(32*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x
^4), -1/48*(48*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*A*
sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(32
*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x^4),
1/24*(9*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 12*B*a*c^(3/2
)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) - (32*B*a*c*x^3 + 15*
A*a*c*x^2 + 8*B*a^2*x + 6*A*a^2)*sqrt(c*x^2 + a))/(a*x^4), -1/24*(24*B*a*sq
rt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 9*A*sqrt(-a)*c^2*x^4*arct
an(sqrt(-a)/sqrt(c*x^2 + a)) + (32*B*a*c*x^3 + 15*A*a*c*x^2 + 8*B*a^2*x + 6
*A*a^2)*sqrt(c*x^2 + a))/(a*x^4)]
```

giac [B] time = 0.22, size = 285, normalized size = 2.57

$$\frac{3\,Ac^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}-Bc^{\frac{3}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{15\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^7Ac^2+48\left(\sqrt{c}\,x-\sqrt{cx^2+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] 3/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*c^(3
/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/12*(15*(sqrt(c)*x - sqrt(c*x
^2 + a))^7*A*c^2 + 48*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a*c^(3/2) + 9*(sqrt
(c)*x - sqrt(c*x^2 + a))^5*A*a*c^2 - 96*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a
^2*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^2*c^2 + 80*(sqrt(c)*x -
sqrt(c*x^2 + a))^2*B*a^3*c^(3/2) + 15*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c
^2 - 32*B*a^4*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4
```

maple [B] time = 0.05, size = 202, normalized size = 1.82

$$-\frac{3A\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+B\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)+\frac{\sqrt{c\,x^2+a}\,B\,c^2x}{a}+\frac{3\sqrt{c\,x^2+a}\,A\,c^2}{8a}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c}{3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^5,x)
```

```
[Out] -1/4*A/a/x^4*(c*x^2+a)^(5/2)-1/8*A*c/a^2/x^2*(c*x^2+a)^(5/2)+1/8*A*c^2/a^2*
(c*x^2+a)^(3/2)-3/8*A*c^2/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+3/8
*A*c^2/a*(c*x^2+a)^(1/2)-1/3*B/a/x^3*(c*x^2+a)^(5/2)-2/3*B*c/a^2/x*(c*x^2+a
)^(5/2)+2/3*B*c^2/a^2*x*(c*x^2+a)^(3/2)+B*c^2/a*x*(c*x^2+a)^(1/2)+B*c^(3/2)
*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.56, size = 164, normalized size = 1.48

$$\frac{\sqrt{cx^2+a}\,Bc^2x}{a}+Bc^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{3\,Ac^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ac^2}{8\,a^2}+\frac{3\sqrt{cx^2+a}\,Ac^2}{8\,a}-\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc}{3\,ax}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] sqrt(c*x^2 + a)*B*c^2*x/a + B*c^(3/2)*arcsinh(c*x/sqrt(a*c)) - 3/8*A*c^2*ar
csinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/8*(c*x^2 + a)^(3/2)*A*c^2/a^2 + 3/8
*sqrt(c*x^2 + a)*A*c^2/a - 2/3*(c*x^2 + a)^(3/2)*B*c/(a*x) - 1/8*(c*x^2 + a
)^(5/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(5/2)*B/(a*x^3) - 1/4*(c*x^2 + a)^(
5/2)*A/(a*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{x^5} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/x^5, x)
```

sympy [B] time = 9.34, size = 236, normalized size = 2.13

$$-\frac{Aa^2}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3Aa\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{Ac^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}}-\frac{3Ac^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8\sqrt{a}}-\frac{B\sqrt{a}\,c}{x\sqrt{1+\frac{cx^2}{a}}}-\frac{Ba\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3x^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**5,x)
```

```
[Out] -A*a**2/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*A*a*sqrt(c)/(8*x**3*sqrt(
a/(c*x**2) + 1)) - A*c**(3/2)*sqrt(a/(c*x**2) + 1)/(2*x) - A*c**(3/2)/(8*x*
sqrt(a/(c*x**2) + 1)) - 3*A*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(8*sqrt(a)) - B
*sqrt(a)*c/(x*sqrt(1 + c*x**2/a)) - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**
2) - B*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + B*c**(3/2)*asinh(sqrt(c)*x/sqrt(a)
) - B*c**2*x/(sqrt(a)*sqrt(1 + c*x**2/a))
```

3.336 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=93

$$-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}$$

```
[Out] -1/4*B*(c*x^2+a)^(3/2)/x^4-1/5*A*(c*x^2+a)^(5/2)/a/x^5-3/8*B*c^2*arctanh((c
*x^2+a)^(1/2)/a^(1/2))/a^(1/2)-3/8*B*c*(c*x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.06, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{3Bc\sqrt{a+cx^2}}{8x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-3*B*c*Sqrt[a + c*x^2])/(8*x^2) - (B*(a + c*x^2)^(3/2))/(4*x^4) - (A*(a +
c*x^2)^(5/2))/(5*a*x^5) - (3*B*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*Sqr
t[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx &= -\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+B\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{2}B\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x,x^2\right)\\
&= -\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{8}(3Bc)\,\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right)\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{16}\left(3Bc^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{1}{8}(3Bc)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,\right.\\
&= -\frac{3Bc\sqrt{a+cx^2}}{8x^2}-\frac{B\left(a+cx^2\right)^{3/2}}{4x^4}-\frac{A\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8\sqrt{a}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 103, normalized size = 1.11

$$
\frac{-\frac{\left(a+cx^2\right)\left(2a^2(4A+5Bx)+acx^2(16A+25Bx)+8Ac^2x^4\right)}{ax^5}-15Bc^2\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{40\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-(((a + c*x^2)*(8*A*c^2*x^4 + 2*a^2*(4*A + 5*B*x) + a*c*x^2*(16*A + 25*B*x
)))/(a*x^5)) - 15*B*c^2*Sqrt[1 + (c*x^2)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(
40*Sqrt[a + c*x^2])
```

fricas [A] time = 0.87, size = 190, normalized size = 2.04

$$
\left[\frac{15\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(8\,Ac^2x^4+25\,Bacx^3+16\,Aacx^2+10\,Ba^2x+8\,Aa^2\right)\sqrt{cx^2+a}}{80\,ax^5},\ 15\,B\sqrt{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/80*(15*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/
x^2) - 2*(8*A*c^2*x^4 + 25*B*a*c*x^3 + 16*A*a*c*x^2 + 10*B*a^2*x + 8*A*a^2)
*sqrt(c*x^2 + a))/(a*x^5), 1/40*(15*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt
(c*x^2 + a)) - (8*A*c^2*x^4 + 25*B*a*c*x^3 + 16*A*a*c*x^2 + 10*B*a^2*x + 8*
A*a^2)*sqrt(c*x^2 + a))/(a*x^5)]
```

giac [B] time = 0.22, size = 232, normalized size = 2.49

$$\frac{3\,Bc^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}}+\frac{25\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^9Bc^2+40\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^8Ac^{\frac{5}{2}}-10\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 3/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/20*(
25*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + a))
^8*A*c^(5/2) - 10*(sqrt(c)*x - sqrt(c*x^2 + a))^7*B*a*c^2 + 80*(sqrt(c)*x -
 sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) + 10*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^
3*c^2 - 25*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 + 8*A*a^4*c^(5/2))/((sqr
t(c)*x - sqrt(c*x^2 + a))^2 - a)^5
```

maple [A] time = 0.06, size = 125, normalized size = 1.34

$$-\frac{3B\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3\sqrt{c\,x^2+a}\,B\,c^2}{8a}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^2}{8a^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Bc}{8a^2x^2}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B}{4a\,x^4}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^6,x)
```

```
[Out] -1/5*A*(c*x^2+a)^(5/2)/a/x^5-1/4*B/a/x^4*(c*x^2+a)^(5/2)-1/8*B*c/a^2/x^2*(c
*x^2+a)^(5/2)+1/8*B*c^2/a^2*(c*x^2+a)^(3/2)-3/8*B*c^2/a^(1/2)*ln((2*a+2*(c*
x^2+a)^(1/2)*a^(1/2))/x)+3/8*B*c^2/a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.65, size = 113, normalized size = 1.22

$$-\frac{3\,Bc^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Bc^2}{8\,a^2}+\frac{3\,\sqrt{cx^2+a}\,Bc^2}{8\,a}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc}{8\,a^2x^2}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}B}{4\,ax^4}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] -3/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/8*(c*x^2 + a)^(3/2)*B*
c^2/a^2 + 3/8*sqrt(c*x^2 + a)*B*c^2/a - 1/8*(c*x^2 + a)^(5/2)*B*c/(a^2*x^2)
 - 1/4*(c*x^2 + a)^(5/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(5/2)*A/(a*x^5)
```

mupad [B] time = 2.76, size = 73, normalized size = 0.78

$$\frac{3\,B\,a\,\sqrt{c\,x^2+a}}{8\,x^4}-\frac{3\,B\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,\sqrt{a}}-\frac{5\,B\left(c\,x^2+a\right)^{3/2}}{8\,x^4}-\frac{A\left(c\,x^2+a\right)^{5/2}}{5\,a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^6,x)
```

```
[Out] (3*B*a*(a + c*x^2)^(1/2))/(8*x^4) - (3*B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2
)))/(8*a^(1/2)) - (5*B*(a + c*x^2)^(3/2))/(8*x^4) - (A*(a + c*x^2)^(5/2))/(
5*a*x^5)
```

sympy [**B**] time = 8.95, size = 199, normalized size = 2.14

$$-\frac{Aa\sqrt{c}\sqrt{\frac{a}{cx^{2}}+1}}{5x^{4}}-\frac{2Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{5x^{2}}-\frac{Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{5a}-\frac{Ba^{2}}{4\sqrt{c}\,x^{5}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{3Ba\sqrt{c}}{8x^{3}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{2x}-\frac{Bc^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^{2}}+1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**6,x)
```

```
[Out] -A*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 2*A*c**(3/2)*sqrt(a/(c*x**2) +
 1)/(5*x**2) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(5*a) - B*a**2/(4*sqrt(c)*x*
*5*sqrt(a/(c*x**2) + 1)) - 3*B*a*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - B*
c**(3/2)*sqrt(a/(c*x**2) + 1)/(2*x) - B*c**(3/2)/(8*x*sqrt(a/(c*x**2) + 1))
 - 3*B*c**2*asinh(sqrt(a)/(sqrt(c)*x))/(8*sqrt(a))
```

3.337 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=124

$$\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{Ac^2\sqrt{a+cx^2}}{16ax^2}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}$$

```
[Out] 1/24*A*c*(c*x^2+a)^(3/2)/a/x^4-1/6*A*(c*x^2+a)^(5/2)/a/x^6-1/5*B*(c*x^2+a)^
(5/2)/a/x^5+1/16*A*c^3*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+1/16*A*c^2*
(c*x^2+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{Ac^2\sqrt{a+cx^2}}{16ax^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^7,x]
```

```
[Out] (A*c^2*Sqrt[a + c*x^2])/(16*a*x^2) + (A*c*(a + c*x^2)^(3/2))/(24*a*x^4) - (
A*(a + c*x^2)^(5/2))/(6*a*x^6) - (B*(a + c*x^2)^(5/2))/(5*a*x^5) + (A*c^3*A
rcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(16*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx &= -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{\int \frac{(-6aB+Acx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx}{6a}\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{(Ac)\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{6a}\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{(Ac)\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x,x^2\right)}{12a}\\
&= \frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{\left(Ac^2\right)\text{Subst}\left(\int \frac{\sqrt{a+cx}}{x^2}\,dx,x,x^2\right.}{16a}\\
&= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{\left(Ac^3\right)\text{Subst}\left(\right.}{}\\
&= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}-\frac{\left(Ac^2\right)\text{Subst}\left(\right.}{}\\
&= \frac{Ac^2\sqrt{a+cx^2}}{16ax^2}+\frac{Ac\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{6ax^6}-\frac{B\left(a+cx^2\right)^{5/2}}{5ax^5}+\frac{Ac^3\tanh^{-1}\left(\right.}{16a^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 54, normalized size = 0.44

$$\frac{\left(a+cx^2\right)^{5/2}\left(Ac^3x^5\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx^2}{a}+1\right)-a^3B\right)}{5a^4x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((a + c*x^2)^(5/2)*(-(a^3*B) + A*c^3*x^5*Hypergeometric2F1[5/2, 4, 7/2, 1 +
 (c*x^2)/a]))/(5*a^4*x^5)
```

fricas [A] time = 1.09, size = 219, normalized size = 1.77

$$\left[\frac{15\,A\sqrt{a}\,c^3x^6\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(48\,Bac^2x^5+15\,Aac^2x^4+96\,Ba^2cx^3+70\,Aa^2cx^2+48\,Ba^3x+40\,Aa\right.}{480\,a^2x^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(15*A*sqrt(a)*c^3*x^6*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) - 2*(48*B*a*c^2*x^5 + 15*A*a*c^2*x^4 + 96*B*a^2*c*x^3 + 70*A*a^2*c*x^
2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^6), -1/240*(15*A*sqrt(-a
)*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (48*B*a*c^2*x^5 + 15*A*a*c^2*x
^4 + 96*B*a^2*c*x^3 + 70*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 +
a))/(a^2*x^6)]
```

giac [B] time = 0.27, size = 379, normalized size = 3.06

$$-\frac{Ac^{3}\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}\,a}+\frac{15\left(\sqrt{c}\,x-\sqrt{cx^{2}+a}\right)^{11}Ac^{3}+240\left(\sqrt{c}\,x-\sqrt{cx^{2}+a}\right)^{10}Bac^{\frac{5}{2}}+235\left(\sqrt{c}\,x-\sqrt{cx}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] -1/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/120*(15*(sqrt(c)*x - sqrt(c*x^2 + a))^11*A*c^3 + 240*(sqrt(c)*x - sqrt(c*x
^2 + a))^10*B*a*c^(5/2) + 235*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a*c^3 - 240
*(sqrt(c)*x - sqrt(c*x^2 + a))^8*B*a^2*c^(5/2) + 390*(sqrt(c)*x - sqrt(c*x^
2 + a))^7*A*a^2*c^3 + 480*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^3*c^(5/2) + 3
90*(sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^3*c^3 - 480*(sqrt(c)*x - sqrt(c*x^2
+ a))^4*B*a^4*c^(5/2) + 235*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 48*
(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^5*c^(5/2) + 15*(sqrt(c)*x - sqrt(c*x^2
+ a))*A*a^5*c^3 - 48*B*a^6*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^
6*a)
```

maple [A] time = 0.07, size = 146, normalized size = 1.18

$$\frac{A\,c^{3}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\,A\,c^{3}}{16a^{2}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}A\,c^{3}}{48a^{3}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}A\,c^{2}}{48a^{3}x^{2}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Ac}{24a^{2}x^{4}}-\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}B}{5a\,x^{5}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^7,x)
```

```
[Out] -1/5*B*(c*x^2+a)^(5/2)/a/x^5-1/6*A*(c*x^2+a)^(5/2)/a/x^6+1/24*A*c/a^2/x^4*(
c*x^2+a)^(5/2)+1/48*A*c^2/a^3/x^2*(c*x^2+a)^(5/2)-1/48*A*c^3/a^3*(c*x^2+a)^
(3/2)+1/16*A*c^3/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/16*A*c^3/a
^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.58, size = 134, normalized size = 1.08

$$\frac{Ac^{3}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,a^{\frac{3}{2}}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{3}}{48\,a^{3}}-\frac{\sqrt{cx^{2}+a}\,Ac^{3}}{16\,a^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac^{2}}{48\,a^{3}x^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac}{24\,a^{2}x^{4}}-\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}B}{5\,ax^{5}}-\frac{\left(cx^{2}+a\right)}{6\,ax^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] 1/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/48*(c*x^2 + a)^(3/2)*A
*c^3/a^3 - 1/16*sqrt(c*x^2 + a)*A*c^3/a^2 + 1/48*(c*x^2 + a)^(5/2)*A*c^2/(a
^3*x^2) + 1/24*(c*x^2 + a)^(5/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(5/2)*B/(a
*x^5) - 1/6*(c*x^2 + a)^(5/2)*A/(a*x^6)
```

mupad [**B**] time = 3.21, size = 94, normalized size = 0.76

$$\frac{A\,a\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{A\,{\left(c\,x^2+a\right)}^{3/2}}{6\,x^6}-\frac{A\,{\left(c\,x^2+a\right)}^{5/2}}{16\,a\,x^6}-\frac{B\,{\left(c\,x^2+a\right)}^{5/2}}{5\,a\,x^5}-\frac{A\,c^3\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}\,1\mathrm{i}}{\sqrt{a}}\right)\,1\mathrm{i}}{16\,a^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^7,x)
```

```
[Out] (A*a*(a + c*x^2)^(1/2))/(16*x^6) - (A*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/
2))*1i)/(16*a^(3/2)) - (A*(a + c*x^2)^(3/2))/(6*x^6) - (A*(a + c*x^2)^(5/2)
)/(16*a*x^6) - (B*(a + c*x^2)^(5/2))/(5*a*x^5)
```

sympy [**A**] time = 13.39, size = 201, normalized size = 1.62

$$-\frac{Aa^2}{6\sqrt{c}\,x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{11Aa\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{17Ac^{\frac{3}{2}}}{48x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{5}{2}}}{16ax\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^3\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{16a^{\frac{3}{2}}}-\frac{Ba\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{5x^4}-\frac{2Bc^{\frac{3}{2}}\sqrt{}}{5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**7,x)
```

```
[Out] -A*a**2/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 11*A*a*sqrt(c)/(24*x**5*sqr
t(a/(c*x**2) + 1)) - 17*A*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - A*c**(5
/2)/(16*a*x*sqrt(a/(c*x**2) + 1)) + A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a
**(3/2)) - B*a*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 2*B*c**(3/2)*sqrt(a/
(c*x**2) + 1)/(5*x**2) - B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(5*a)
```

3.338 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=147

$$\frac{Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}+\frac{Bc^2\sqrt{a+cx^2}}{16ax^2}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}$$

```
[Out] 1/24*B*c*(c*x^2+a)^(3/2)/a/x^4-1/7*A*(c*x^2+a)^(5/2)/a/x^7-1/6*B*(c*x^2+a)^
(5/2)/a/x^6+2/35*A*c*(c*x^2+a)^(5/2)/a^2/x^5+1/16*B*c^3*arctanh((c*x^2+a)^(
1/2)/a^(1/2))/a^(3/2)+1/16*B*c^2*(c*x^2+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.11, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = $\{835, 807, 266, 47, 63, 208\}$

$$\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}+\frac{Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16a^{3/2}}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}+\frac{Bc^2\sqrt{a+cx^2}}{16ax^2}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/x^8,x]
```

```
[Out] (B*c^2*Sqrt[a + c*x^2])/(16*a*x^2) + (B*c*(a + c*x^2)^(3/2))/(24*a*x^4) - (
A*(a + c*x^2)^(5/2))/(7*a*x^7) - (B*(a + c*x^2)^(5/2))/(6*a*x^6) + (2*A*c*(
a + c*x^2)^(5/2))/(35*a^2*x^5) + (B*c^3*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(
16*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{x^8}\,dx &= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{\int \frac{(-7aB+2Acx)\left(a+cx^2\right)^{3/2}}{x^7}\,dx}{7a}\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{\int \frac{(-12aAc-7aBcx)\left(a+cx^2\right)^{3/2}}{x^6}\,dx}{42a^2}\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}-\frac{(Bc)\int \frac{\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{6a}\\
&= -\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}-\frac{(Bc)\,\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x\right.}{12a}\\
&= \frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)^{5/2}}{35a^2x^5}-\frac{\left(Bc^2\right)\text{Subs}}{}\\
&= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)}{35a^2x^5}\\
&= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)}{35a^2x^5}\\
&= \frac{Bc^2\sqrt{a+cx^2}}{16ax^2}+\frac{Bc\left(a+cx^2\right)^{3/2}}{24ax^4}-\frac{A\left(a+cx^2\right)^{5/2}}{7ax^7}-\frac{B\left(a+cx^2\right)^{5/2}}{6ax^6}+\frac{2Ac\left(a+cx^2\right)}{35a^2x^5}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 64, normalized size = 0.44

$$
\frac{\left(a+cx^2\right)^{5/2}\left(a^2A\left(2cx^2-5a\right)+7Bc^3x^7\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{cx^2}{a}+1\right)\right)}{35a^4x^7}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/x^8,x]
```

```
[Out] ((a + c*x^2)^(5/2)*(a^2*A*(-5*a + 2*c*x^2) + 7*B*c^3*x^7*Hypergeometric2F1[
5/2, 4, 7/2, 1 + (c*x^2)/a]))/(35*a^4*x^7)
```

fricas [A] time = 1.01, size = 238, normalized size = 1.62

$$\left[\frac{105\,B\sqrt{a}\,c^{3}x^{7}\log\left(-\frac{cx^{2}+2\,\sqrt{cx^{2}+a}\,\sqrt{a}+2\,a}{x^{2}}\right)+2\left(96\,Ac^{3}x^{6}-105\,Bac^{2}x^{5}-48\,Aac^{2}x^{4}-490\,Ba^{2}cx^{3}-384\,Aa^{2}cx^{2}}{3360\,a^{2}x^{7}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/3360*(105*B*sqrt(a)*c^3*x^7*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*
a)/x^2) + 2*(96*A*c^3*x^6 - 105*B*a*c^2*x^5 - 48*A*a*c^2*x^4 - 490*B*a^2*c*
x^3 - 384*A*a^2*c*x^2 - 280*B*a^3*x - 240*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^7)
, -1/1680*(105*B*sqrt(-a)*c^3*x^7*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (96*A*
c^3*x^6 - 105*B*a*c^2*x^5 - 48*A*a*c^2*x^4 - 490*B*a^2*c*x^3 - 384*A*a^2*c*
x^2 - 280*B*a^3*x - 240*A*a^3)*sqrt(c*x^2 + a))/(a^2*x^7)]
```

giac [B] time = 0.22, size = 379, normalized size = 2.58

$$-\frac{Bc^{3}\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}\,a}+\frac{105\left(\sqrt{c}\,x-\sqrt{cx^{2}+a}\right)^{13}Bc^{3}+1540\left(\sqrt{c}\,x-\sqrt{cx^{2}+a}\right)^{11}Bac^{3}+3360\left(\sqrt{c}\,x-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/8*B*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1
/840*(105*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*c^3 + 1540*(sqrt(c)*x - sqrt(c
*x^2 + a))^11*B*a*c^3 + 3360*(sqrt(c)*x - sqrt(c*x^2 + a))^10*A*a*c^(7/2) +
 1085*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*a^2*c^3 + 3360*(sqrt(c)*x - sqrt(c*
x^2 + a))^8*A*a^2*c^(7/2) + 6720*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^3*c^(7
/2) - 1085*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^4*c^3 + 1344*(sqrt(c)*x - sq
rt(c*x^2 + a))^4*A*a^4*c^(7/2) - 1540*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^5
*c^3 + 672*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^5*c^(7/2) - 105*(sqrt(c)*x -
 sqrt(c*x^2 + a))*B*a^6*c^3 - 96*A*a^6*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 +
 a))^2 - a)^7*a)
```

maple [A] time = 0.07, size = 165, normalized size = 1.12

$$\frac{B\,c^{3}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^{2}+a}\,B\,c^{3}}{16a^{2}}-\frac{\left(c\,x^{2}+a\right)^{\frac{3}{2}}B\,c^{3}}{48a^{3}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}B\,c^{2}}{48a^{3}x^{2}}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Bc}{24a^{2}x^{4}}+\frac{2\left(c\,x^{2}+a\right)^{\frac{5}{2}}Ac}{35a^{2}x^{5}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/x^8,x)
```

```
[Out] -1/7*A*(c*x^2+a)^(5/2)/a/x^7+2/35*A*c*(c*x^2+a)^(5/2)/a^2/x^5-1/6*B*(c*x^2+
a)^(5/2)/a/x^6+1/24*B*c/a^2/x^4*(c*x^2+a)^(5/2)+1/48*B*c^2/a^3/x^2*(c*x^2+a
)^(5/2)-1/48*B*c^3/a^3*(c*x^2+a)^(3/2)+1/16*B*c^3/a^(3/2)*ln((2*a+2*(c*x^2+
a)^(1/2)*a^(1/2))/x)-1/16*B*c^3/a^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.49, size = 153, normalized size = 1.04

$$\frac{Bc^{3}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,a^{\frac{3}{2}}}-\frac{\left(cx^{2}+a\right)^{\frac{3}{2}}Bc^{3}}{48\,a^{3}}-\frac{\sqrt{cx^{2}+a}\,Bc^{3}}{16\,a^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Bc^{2}}{48\,a^{3}x^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Bc}{24\,a^{2}x^{4}}+\frac{2\left(cx^{2}+a\right)^{\frac{5}{2}}Ac}{35\,a^{2}x^{5}}-\frac{\left(cx^{2}+a\right.}{6\,ax^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/16*B*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/48*(c*x^2 + a)^(3/2)*B
*c^3/a^3 - 1/16*sqrt(c*x^2 + a)*B*c^3/a^2 + 1/48*(c*x^2 + a)^(5/2)*B*c^2/(a
^3*x^2) + 1/24*(c*x^2 + a)^(5/2)*B*c/(a^2*x^4) + 2/35*(c*x^2 + a)^(5/2)*A*c
/(a^2*x^5) - 1/6*(c*x^2 + a)^(5/2)*B/(a*x^6) - 1/7*(c*x^2 + a)^(5/2)*A/(a*x
^7)
```

mupad [B] time = 3.77, size = 150, normalized size = 1.02

$$\frac{B\,a\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{A\,a\,\sqrt{c\,x^2+a}}{7\,x^7}-\frac{B\,\left(c\,x^2+a\right)^{3/2}}{6\,x^6}-\frac{8\,A\,c\,\sqrt{c\,x^2+a}}{35\,x^5}-\frac{B\,\left(c\,x^2+a\right)^{5/2}}{16\,a\,x^6}-\frac{A\,c^2\,\sqrt{c\,x^2+a}}{35\,a\,x^3}+\frac{2\,A\,c^3\,\sqrt{c\,x^2+}}{35\,a^2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/x^8,x)
```

```
[Out] (B*a*(a + c*x^2)^(1/2))/(16*x^6) - (B*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/
2))*1i)/(16*a^(3/2)) - (A*a*(a + c*x^2)^(1/2))/(7*x^7) - (B*(a + c*x^2)^(3/
2))/(6*x^6) - (8*A*c*(a + c*x^2)^(1/2))/(35*x^5) - (B*(a + c*x^2)^(5/2))/(1
6*a*x^6) - (A*c^2*(a + c*x^2)^(1/2))/(35*a*x^3) + (2*A*c^3*(a + c*x^2)^(1/2
))/(35*a^2*x)
```

sympy [B] time = 13.99, size = 575, normalized size = 3.91

$$-\frac{15Aa^6c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{33Aa^5c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{17Aa^4c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/x**8,x)
```

```
[Out] -15*A*a**6*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) - 33*A*a**5*c**(11/2)*x**2*sqrt(a/(c*x**2) +
1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*A*a
**4*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5
*x**8 + 105*a**3*c**6*x**10) - 3*A*a**3*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)
/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*A*a**
2*c**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 8*A*a*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/(10
5*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - A*c**(3/2)*s
qrt(a/(c*x**2) + 1)/(5*x**4) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*a*x**2)
+ 2*A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a**2) - B*a**2/(6*sqrt(c)*x**7*sqrt
(a/(c*x**2) + 1)) - 11*B*a*sqrt(c)/(24*x**5*sqrt(a/(c*x**2) + 1)) - 17*B*c*
*(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - B*c**(5/2)/(16*a*x*sqrt(a/(c*x**2)
+ 1)) + B*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*a**(3/2))
```

3.339 $\int x^4(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=198

$$\frac{3a^5A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{a\left(a+cx^2\right)^{7/2}(640aB-2079}{55440c^3}$$

```
[Out] 1/128*a^3*A*x*(c*x^2+a)^(3/2)/c^2+1/160*a^2*A*x*(c*x^2+a)^(5/2)/c^2-4/99*a*
B*x^2*(c*x^2+a)^(7/2)/c^2+1/10*A*x^3*(c*x^2+a)^(7/2)/c+1/11*B*x^4*(c*x^2+a)
^(7/2)/c+1/55440*a*(-2079*A*c*x+640*B*a)*(c*x^2+a)^(7/2)/c^3+3/256*a^5*A*ar
ctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)+3/256*a^4*A*x*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.15, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$\frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{3a^5A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{a\left(a+cx^2\right)^{7/2}(640aB-2079}{55440c^3}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (3*a^4*A*x*Sqrt[a + c*x^2])/(256*c^2) + (a^3*A*x*(a + c*x^2)^(3/2))/(128*c^
2) + (a^2*A*x*(a + c*x^2)^(5/2))/(160*c^2) - (4*a*B*x^2*(a + c*x^2)^(7/2))/
(99*c^2) + (A*x^3*(a + c*x^2)^(7/2))/(10*c) + (B*x^4*(a + c*x^2)^(7/2))/(11
*c) + (a*(640*a*B - 2079*A*c*x)*(a + c*x^2)^(7/2))/(55440*c^3) + (3*a^5*A*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(256*c^(5/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^4(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x^3(-4aB+11Acx)\left(a+cx^2\right)^{5/2}\,dx}{11c}\\
&= \frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x^2(-33aAc-40aBcx)\left(a+cx^2\right)^{5/2}\,dx}{110c^2}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{\int x\left(80a^2Bc-297\right.}{}\\
&= -\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\frac{a(640aB-2079A}{55440}\\
&= \frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{Bx^4\left(a+cx^2\right)^{7/2}}{11c}+\\
&= \frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}+\frac{Ax^3\left(a+cx^2\right)^{7/2}}{10c}\\
&= \frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}\\
&= \frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}\\
&= \frac{3a^4Ax\sqrt{a+cx^2}}{256c^2}+\frac{a^3Ax\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Ax\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{4aBx^2\left(a+cx^2\right)^{7/2}}{99c^2}
\end{aligned}$$

Mathematica [A] time = 0.29, size = 151, normalized size = 0.76

$$\frac{\sqrt{a+cx^2}\left(\frac{10395a^{9/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+10240a^5B-5a^4cx(2079A+1024Bx)+30a^3c^2x^3(231A+128Bx)+8a^2c^3x^5(\right.}{887040c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(10240*a^5*B + 8064*c^5*x^9*(11*A + 10*B*x) + 30*a^3*c^2*x
^3*(231*A + 128*B*x) - 5*a^4*c*x*(2079*A + 1024*B*x) + 112*a*c^4*x^7*(2079*
A + 1840*B*x) + 8*a^2*c^3*x^5*(21483*A + 18080*B*x) + (10395*a^(9/2)*A*Sqrt
[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]))/(887040*c^3)
```

fricas [A] time = 1.00, size = 320, normalized size = 1.62

$$\left[\frac{10395\,Aa^5\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(80640\,Bc^5x^{10}+88704\,Ac^5x^9+206080\,Bac^4x^8+232848\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1774080*(10395*A*a^5*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x
- a) + 2*(80640*B*c^5*x^10 + 88704*A*c^5*x^9 + 206080*B*a*c^4*x^8 + 232848*
A*a*c^4*x^7 + 144640*B*a^2*c^3*x^6 + 171864*A*a^2*c^3*x^5 + 3840*B*a^3*c^2*
x^4 + 6930*A*a^3*c^2*x^3 - 5120*B*a^4*c*x^2 - 10395*A*a^4*c*x + 10240*B*a^5
)*sqrt(c*x^2 + a))/c^3, -1/887040*(10395*A*a^5*sqrt(-c)*arctan(sqrt(-c)*x/s
qrt(c*x^2 + a)) - (80640*B*c^5*x^10 + 88704*A*c^5*x^9 + 206080*B*a*c^4*x^8
+ 232848*A*a*c^4*x^7 + 144640*B*a^2*c^3*x^6 + 171864*A*a^2*c^3*x^5 + 3840*B
*a^3*c^2*x^4 + 6930*A*a^3*c^2*x^3 - 5120*B*a^4*c*x^2 - 10395*A*a^4*c*x + 10
240*B*a^5)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.21, size = 155, normalized size = 0.78

$$-\frac{3\,Aa^5\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{256\,c^{\frac{5}{2}}}+\frac{1}{887040}\,(\frac{10240\,Ba^5}{c^3}-(\frac{10395\,Aa^4}{c^2}+2\,(\frac{2560\,Ba^4}{c^2}-(\frac{3465\,Aa^3}{c}+4\,(\frac{480}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -3/256*A*a^5*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) + 1/887040*(102
40*B*a^5/c^3 - (10395*A*a^4/c^2 + 2*(2560*B*a^4/c^2 - (3465*A*a^3/c + 4*(48
0*B*a^3/c + (21483*A*a^2 + 2*(9040*B*a^2 + 7*(2079*A*a*c + 8*(230*B*a*c + 9
*(10*B*c^2*x + 11*A*c^2)*x)*x)*x)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 174, normalized size = 0.88

$$\frac{3A\,a^5\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{256c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\;A\,a^4x}{256c^2}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,x^4}{11c}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}A\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A\,x^3}{10c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/11*B*x^4*(c*x^2+a)^(7/2)/c-4/99*a*B*x^2*(c*x^2+a)^(7/2)/c^2+8/693*B*a^2/c
^3*(c*x^2+a)^(7/2)+1/10*A*x^3*(c*x^2+a)^(7/2)/c-3/80*A*a/c^2*x*(c*x^2+a)^(7
/2)+1/160*a^2*A*x*(c*x^2+a)^(5/2)/c^2+1/128*a^3*A*x*(c*x^2+a)^(3/2)/c^2+3/2
56*a^4*A*x*(c*x^2+a)^(1/2)/c^2+3/256*A*a^5/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(
1/2))
```

maxima [A] time = 0.53, size = 166, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx^4}{11\,c}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ax^3}{10\,c}-\frac{4\left(cx^2+a\right)^{\frac{7}{2}}Bax^2}{99\,c^2}-\frac{3\left(cx^2+a\right)^{\frac{7}{2}}Aax}{80\,c^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Aa^2x}{160\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Aa^3x}{128\,c^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/11*(c*x^2 + a)^(7/2)*B*x^4/c + 1/10*(c*x^2 + a)^(7/2)*A*x^3/c - 4/99*(c*x
^2 + a)^(7/2)*B*a*x^2/c^2 - 3/80*(c*x^2 + a)^(7/2)*A*a*x/c^2 + 1/160*(c*x^2
 + a)^(5/2)*A*a^2*x/c^2 + 1/128*(c*x^2 + a)^(3/2)*A*a^3*x/c^2 + 3/256*sqrt(
c*x^2 + a)*A*a^4*x/c^2 + 3/256*A*a^5*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/693
*(c*x^2 + a)^(7/2)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^4\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^4*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [**A**] time = 37.23, size = 541, normalized size = 2.73

$$-\frac{3Aa^{\frac{9}{2}}x}{256c^{2}\sqrt{1+\frac{cx^{2}}{a}}}-\frac{Aa^{\frac{7}{2}}x^{3}}{256c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{129Aa^{\frac{5}{2}}x^{5}}{640\sqrt{1+\frac{cx^{2}}{a}}}+\frac{73Aa^{\frac{3}{2}}cx^{7}}{160\sqrt{1+\frac{cx^{2}}{a}}}+\frac{29A\sqrt{a}\,c^{2}x^{9}}{80\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3Aa^{5}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{256c^{\frac{5}{2}}}+\frac{Ac^{3}x^{11}}{10\sqrt{a}\,\sqrt{1+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] -3*A*a**(9/2)*x/(256*c**2*sqrt(1 + c*x**2/a)) - A*a**(7/2)*x**3/(256*c*sqrt
(1 + c*x**2/a)) + 129*A*a**(5/2)*x**5/(640*sqrt(1 + c*x**2/a)) + 73*A*a**(3
/2)*c*x**7/(160*sqrt(1 + c*x**2/a)) + 29*A*sqrt(a)*c**2*x**9/(80*sqrt(1 + c
*x**2/a)) + 3*A*a**5*asinh(sqrt(c)*x/sqrt(a))/(256*c**(5/2)) + A*c**3*x**11
/(10*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewise((8*a**3*sqrt(a + c*x**2
)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*
x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True))
+ 2*B*a*c*Piecewise((-16*a**4*sqrt(a + c*x**2)/(315*c**4) + 8*a**3*x**2*sqr
t(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*x**2)/(105*c**2) + a*x**6
*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9, Ne(c, 0)), (sqrt(a)*x**
8/8, True)) + B*c**2*Piecewise((128*a**5*sqrt(a + c*x**2)/(3465*c**5) - 64*
a**4*x**2*sqrt(a + c*x**2)/(3465*c**4) + 16*a**3*x**4*sqrt(a + c*x**2)/(115
5*c**3) - 8*a**2*x**6*sqrt(a + c*x**2)/(693*c**2) + a*x**8*sqrt(a + c*x**2)
/(99*c) + x**10*sqrt(a + c*x**2)/11, Ne(c, 0)), (sqrt(a)*x**10/10, True))
```

3.340 $\int x^3(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=173

$$\frac{3a^5B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}+\frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}-\frac{a\left(a+cx^2\right)^{7/2}(160A+189Bx}{5040c^2}$$

```
[Out] 1/128*a^3*B*x*(c*x^2+a)^(3/2)/c^2+1/160*a^2*B*x*(c*x^2+a)^(5/2)/c^2+1/9*A*x
^2*(c*x^2+a)^(7/2)/c+1/10*B*x^3*(c*x^2+a)^(7/2)/c-1/5040*a*(189*B*x+160*A)*
(c*x^2+a)^(7/2)/c^2+3/256*a^5*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)+
3/256*a^4*B*x*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = $\{833, 780, 195, 217, 206\}$

$$\frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{3a^5B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{256c^{5/2}}-\frac{a\left(a+cx^2\right)^{7/2}(160A+189Bx}{5040c^2}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (3*a^4*B*x*Sqrt[a + c*x^2])/(256*c^2) + (a^3*B*x*(a + c*x^2)^(3/2))/(128*c^
2) + (a^2*B*x*(a + c*x^2)^(5/2))/(160*c^2) + (A*x^2*(a + c*x^2)^(7/2))/(9*c
) + (B*x^3*(a + c*x^2)^(7/2))/(10*c) - (a*(160*A + 189*B*x)*(a + c*x^2)^(7/
2))/(5040*c^2) + (3*a^5*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(256*c^(5/2
))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{\int x^2(-3aB+10Acx)\left(a+cx^2\right)^{5/2}\,dx}{10c}\\
&= \frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}+\frac{\int x(-20aAc-27aBcx)\left(a+cx^2\right)^{5/2}\,dx}{90c^2}\\
&= \frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\frac{a(160A+189Bx)\left(a+cx^2\right)^{7/2}}{5040c^2}+\frac{\left(3a^2B\right)\int}{}\\
&= \frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\frac{a(160A+189Bx)(a}{5040c^2}\\
&= \frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{Bx^3\left(a+cx^2\right)^{7/2}}{10c}-\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+\\
&= \frac{3a^4Bx\sqrt{a+cx^2}}{256c^2}+\frac{a^3Bx\left(a+cx^2\right)^{3/2}}{128c^2}+\frac{a^2Bx\left(a+cx^2\right)^{5/2}}{160c^2}+\frac{Ax^2\left(a+cx^2\right)^{7/2}}{9c}+
\end{aligned}
$$

Mathematica [**A**] time = 0.27, size = 145, normalized size = 0.84

$$
\frac{\sqrt{a+cx^2}\left(\frac{945a^{9/2}B\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}+\sqrt{c}\,\left(-5a^4(512A+189Bx)+10a^3cx^2(128A+63Bx)+24a^2c^2x^4(800A+651Bx)\right.\right.}{80640c^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(Sqrt[c]*(896*c^4*x^8*(10*A + 9*B*x) + 10*a^3*c*x^2*(128*A
 + 63*B*x) - 5*a^4*(512*A + 189*B*x) + 24*a^2*c^2*x^4*(800*A + 651*B*x) + 1
6*a*c^3*x^6*(1520*A + 1323*B*x)) + (945*a^(9/2)*B*ArcSinh[(Sqrt[c]*x)/Sqrt[
a]])/Sqrt[1 + (c*x^2)/a]))/(80640*c^(5/2))
```

fricas [**A**] time = 1.01, size = 302, normalized size = 1.75

$$
\left[\frac{945\,Ba^5\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(8064\,Bc^5x^9+8960\,Ac^5x^8+21168\,Bac^4x^7+24320\,Aac^4x^6\right.}{161280\,c^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/161280*(945*B*a^5*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a
) + 2*(8064*B*c^5*x^9 + 8960*A*c^5*x^8 + 21168*B*a*c^4*x^7 + 24320*A*a*c^4*
x^6 + 15624*B*a^2*c^3*x^5 + 19200*A*a^2*c^3*x^4 + 630*B*a^3*c^2*x^3 + 1280*
A*a^3*c^2*x^2 - 945*B*a^4*c*x - 2560*A*a^4*c)*sqrt(c*x^2 + a))/c^3, -1/8064
0*(945*B*a^5*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (8064*B*c^5*x^9
+ 8960*A*c^5*x^8 + 21168*B*a*c^4*x^7 + 24320*A*a*c^4*x^6 + 15624*B*a^2*c^3*
x^5 + 19200*A*a^2*c^3*x^4 + 630*B*a^3*c^2*x^3 + 1280*A*a^3*c^2*x^2 - 945*B*
a^4*c*x - 2560*A*a^4*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 140, normalized size = 0.81

$$-\frac{3 Ba^5 \log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{256\,c^{\frac{5}{2}}}-\frac{1}{80640}\left(\frac{2560\,Aa^4}{c^2}+\left(\frac{945\,Ba^4}{c^2}-2\left(\frac{640\,Aa^3}{c}+\left(\frac{315\,Ba^3}{c}+4\left(2400\,Aa^2+\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -3/256*B*a^5*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2) - 1/80640*(2560
*A*a^4/c^2 + (945*B*a^4/c^2 - 2*(640*A*a^3/c + (315*B*a^3/c + 4*(2400*A*a^2
 + (1953*B*a^2 + 2*(1520*A*a*c + 7*(189*B*a*c + 8*(9*B*c^2*x + 10*A*c^2)*x)
*x)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 153, normalized size = 0.88

$$\frac{3B\,a^5\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{256c^{\frac{5}{2}}}+\frac{3\sqrt{c\,x^2+a}\;B\,a^4x}{256c^2}+\frac{\left(c\,x^2+a\right)^{\frac{3}{2}}B\,a^3x}{128c^2}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,x^3}{10c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A\,x^2}{9c}+\left(c\,x^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/10*B*x^3*(c*x^2+a)^(7/2)/c-3/80*B*a/c^2*x*(c*x^2+a)^(7/2)+1/160*a^2*B*x*(
c*x^2+a)^(5/2)/c^2+1/128*a^3*B*x*(c*x^2+a)^(3/2)/c^2+3/256*a^4*B*x*(c*x^2+a
)^(1/2)/c^2+3/256*B*a^5/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/9*A*x^2*(c*
x^2+a)^(7/2)/c-2/63*A*a/c^2*(c*x^2+a)^(7/2)
```

maxima [A] time = 0.59, size = 145, normalized size = 0.84

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx^3}{10\,c}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ax^2}{9\,c}-\frac{3\left(cx^2+a\right)^{\frac{7}{2}}Bax}{80\,c^2}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ba^2x}{160\,c^2}+\frac{\left(cx^2+a\right)^{\frac{3}{2}}Ba^3x}{128\,c^2}+\frac{3\sqrt{cx^2+a}\,Ba^4x}{256\,c^2}+3\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(c*x^2 + a)^(7/2)*B*x^3/c + 1/9*(c*x^2 + a)^(7/2)*A*x^2/c - 3/80*(c*x^
2 + a)^(7/2)*B*a*x/c^2 + 1/160*(c*x^2 + a)^(5/2)*B*a^2*x/c^2 + 1/128*(c*x^2
 + a)^(3/2)*B*a^3*x/c^2 + 3/256*sqrt(c*x^2 + a)*B*a^4*x/c^2 + 3/256*B*a^5*a
rcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/63*(c*x^2 + a)^(7/2)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [**A**] time = 34.72, size = 469, normalized size = 2.71

$$Aa^2\left(\left(\begin{cases} -\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c}+\frac{x^4\sqrt{a+cx^2}}{5} & \text{for } c\neq 0\\ \frac{\sqrt{a}\,x^4}{4} & \text{otherwise}\end{cases}\right.\right)+2Aac\left(\left(\begin{cases}\frac{8a^3\sqrt{a+cx^2}}{105c^3}-\frac{4a^2x^2\sqrt{a+cx^2}}{105c^2}+\frac{ax^4\sqrt{a+cx^2}}{35c}+\frac{x^6\sqrt{a+cx^2}}{7}\\ \frac{\sqrt{a}\,x^6}{6}\end{cases}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**2*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x*
*2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) +
2*A*a*c*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a
+ c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**
2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True)) + A*c**2*Piecewise((-16*a**4*sqrt(
a + c*x**2)/(315*c**4) + 8*a**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x
**4*sqrt(a + c*x**2)/(105*c**2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqr
t(a + c*x**2)/9, Ne(c, 0)), (sqrt(a)*x**8/8, True)) - 3*B*a**(9/2)*x/(256*c
**2*sqrt(1 + c*x**2/a)) - B*a**(7/2)*x**3/(256*c*sqrt(1 + c*x**2/a)) + 129*
B*a**(5/2)*x**5/(640*sqrt(1 + c*x**2/a)) + 73*B*a**(3/2)*c*x**7/(160*sqrt(1
 + c*x**2/a)) + 29*B*sqrt(a)*c**2*x**9/(80*sqrt(1 + c*x**2/a)) + 3*B*a**5*a
sinh(sqrt(c)*x/sqrt(a))/(256*c**(5/2)) + B*c**3*x**11/(10*sqrt(a)*sqrt(1 +
c*x**2/a))
```

3.341 $\int x^2(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=150

$$-\frac{5a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{\left(a+cx^2\right)^{7/2}(16aB-63Acx)}{504c^2}-\frac{aAx\left(a+cx^2\right)^{5}}{48c}$$

```
[Out] -5/192*a^2*A*x*(c*x^2+a)^(3/2)/c-1/48*a*A*x*(c*x^2+a)^(5/2)/c+1/9*B*x^2*(c*
x^2+a)^(7/2)/c-1/504*(-63*A*c*x+16*B*a)*(c*x^2+a)^(7/2)/c^2-5/128*a^4*A*arc
tanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)-5/128*a^3*A*x*(c*x^2+a)^(1/2)/c
```

Rubi [A] time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 780, 195, 217, 206}

$$-\frac{5a^4A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{\left(a+cx^2\right)^{7/2}(16aB-63Acx)}{504c^2}-\frac{aAx\left(a+cx^2\right)^{5}}{48c}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (-5*a^3*A*x*Sqrt[a + c*x^2])/(128*c) - (5*a^2*A*x*(a + c*x^2)^(3/2))/(192*c
) - (a*A*x*(a + c*x^2)^(5/2))/(48*c) + (B*x^2*(a + c*x^2)^(7/2))/(9*c) - ((
16*a*B - 63*A*c*x)*(a + c*x^2)^(7/2))/(504*c^2) - (5*a^4*A*ArcTanh[(Sqrt[c]
*x)/Sqrt[a + c*x^2]])/(128*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^2(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}+\frac{\int x(-2aB+9Acx)\left(a+cx^2\right)^{5/2}\,dx}{9c}\\
&= \frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\left(a+cx^2\right)^{7/2}}{504c^2}-\frac{(aA)\int\left(a+cx^2\right)^{5/2}\,dx}{8c}\\
&= -\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\left(a+cx^2\right)^{7/2}}{504c^2}-\frac{\left(5a^2A\right)}{}\\
&= -\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\frac{(16aB-63Acx)\,(}{504c^2}\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-\\
&= -\frac{5a^3Ax\sqrt{a+cx^2}}{128c}-\frac{5a^2Ax\left(a+cx^2\right)^{3/2}}{192c}-\frac{aAx\left(a+cx^2\right)^{5/2}}{48c}+\frac{Bx^2\left(a+cx^2\right)^{7/2}}{9c}-
\end{aligned}$$

Mathematica [A] time = 0.26, size = 131, normalized size = 0.87

$$\frac{\sqrt{a+cx^2}\left(-\frac{315a^{7/2}A\sqrt{c}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{\frac{cx^2}{a}+1}}-256a^4B+a^3cx(315A+128Bx)+6a^2c^2x^3(413A+320Bx)+8ac^3x^5(357A+\right.}{8064c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-256*a^4*B + 112*c^4*x^7*(9*A + 8*B*x) + a^3*c*x*(315*A +
 128*B*x) + 8*a*c^3*x^5*(357*A + 304*B*x) + 6*a^2*c^2*x^3*(413*A + 320*B*x)
 - (315*a^(7/2)*A*Sqrt[c]*ArcSinh[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[1 + (c*x^2)/a]
))/(8064*c^2)
```

fricas [A] time = 1.12, size = 271, normalized size = 1.81

$$\left[\frac{315\,Aa^4\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(896\,Bc^4x^8+1008\,Ac^4x^7+2432\,Bac^3x^6+2856\,Aac^3x^5+19\right.}{16128\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/16128*(315*A*a^4*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 2*(896*B*c^4*x^8 + 1008*A*c^4*x^7 + 2432*B*a*c^3*x^6 + 2856*A*a*c^3*x^5
+ 1920*B*a^2*c^2*x^4 + 2478*A*a^2*c^2*x^3 + 128*B*a^3*c*x^2 + 315*A*a^3*c*x
 - 256*B*a^4)*sqrt(c*x^2 + a))/c^2, 1/8064*(315*A*a^4*sqrt(-c)*arctan(sqrt(
-c)*x/sqrt(c*x^2 + a)) + (896*B*c^4*x^8 + 1008*A*c^4*x^7 + 2432*B*a*c^3*x^6
 + 2856*A*a*c^3*x^5 + 1920*B*a^2*c^2*x^4 + 2478*A*a^2*c^2*x^3 + 128*B*a^3*c
*x^2 + 315*A*a^3*c*x - 256*B*a^4)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.21, size = 128, normalized size = 0.85

$$\frac{5\,Aa^4\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{3}{2}}}-\frac{1}{8064}\left(\frac{256\,Ba^4}{c^2}-\left(\frac{315\,Aa^3}{c}+2\left(\frac{64\,Ba^3}{c}+\left(1239\,Aa^2+4\left(240\,Ba^2+\left(357\,A\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 5/128*A*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) - 1/8064*(256*B*
a^4/c^2 - (315*A*a^3/c + 2*(64*B*a^3/c + (1239*A*a^2 + 4*(240*B*a^2 + (357*
A*a*c + 2*(152*B*a*c + 7*(8*B*c^2*x + 9*A*c^2)*x)*x)*x)*x)*x)*x)*x)*sqrt(c*
x^2 + a)
```

maple [A] time = 0.06, size = 132, normalized size = 0.88

$$-\frac{5A\,a^4\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+a}\;A\,a^3x}{128c}-\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}A\,a^2x}{192c}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}Aax}{48c}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,x^2}{9c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/9*B*x^2*(c*x^2+a)^(7/2)/c-2/63*B*a/c^2*(c*x^2+a)^(7/2)+1/8*A*x*(c*x^2+a)^
(7/2)/c-1/48*a*A*x*(c*x^2+a)^(5/2)/c-5/192*a^2*A*x*(c*x^2+a)^(3/2)/c-5/128*
a^3*A*x*(c*x^2+a)^(1/2)/c-5/128*A*a^4/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.67, size = 124, normalized size = 0.83

$$\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bx^2}{9\,c}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Ax}{8\,c}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Aax}{48\,c}-\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Aa^2x}{192\,c}-\frac{5\sqrt{cx^2+a}\,Aa^3x}{128\,c}-\frac{5\,Aa^4\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + a)^(7/2)*B*x^2/c + 1/8*(c*x^2 + a)^(7/2)*A*x/c - 1/48*(c*x^2 +
 a)^(5/2)*A*a*x/c - 5/192*(c*x^2 + a)^(3/2)*A*a^2*x/c - 5/128*sqrt(c*x^2 +
a)*A*a^3*x/c - 5/128*A*a^4*arcsinh(c*x/sqrt(a*c))/c^(3/2) - 2/63*(c*x^2 + a
)^(7/2)*B*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [A] time = 24.06, size = 442, normalized size = 2.95

$$\frac{5Aa^{\frac{7}{2}}x}{128c\sqrt{1+\frac{cx^2}{a}}}+\frac{133Aa^{\frac{5}{2}}x^3}{384\sqrt{1+\frac{cx^2}{a}}}+\frac{127Aa^{\frac{3}{2}}cx^5}{192\sqrt{1+\frac{cx^2}{a}}}+\frac{23A\sqrt{a}\,c^2x^7}{48\sqrt{1+\frac{cx^2}{a}}}-\frac{5Aa^4\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{128c^{\frac{3}{2}}}+\frac{Ac^3x^9}{8\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}+Ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] 5*A*a**(7/2)*x/(128*c*sqrt(1 + c*x**2/a)) + 133*A*a**(5/2)*x**3/(384*sqrt(1
 + c*x**2/a)) + 127*A*a**(3/2)*c*x**5/(192*sqrt(1 + c*x**2/a)) + 23*A*sqrt(
a)*c**2*x**7/(48*sqrt(1 + c*x**2/a)) - 5*A*a**4*asinh(sqrt(c)*x/sqrt(a))/(1
28*c**(3/2)) + A*c**3*x**9/(8*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewis
e((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x*
*4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + 2*B*a*c*Piecewi
se((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*
c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0))
, (sqrt(a)*x**6/6, True)) + B*c**2*Piecewise((-16*a**4*sqrt(a + c*x**2)/(31
5*c**4) + 8*a**3*x**2*sqrt(a + c*x**2)/(315*c**3) - 2*a**2*x**4*sqrt(a + c*
x**2)/(105*c**2) + a*x**6*sqrt(a + c*x**2)/(63*c) + x**8*sqrt(a + c*x**2)/9
, Ne(c, 0)), (sqrt(a)*x**8/8, True))
```

3.342 $\int x(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=126

$$-\frac{5a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}+\frac{\left(a+cx^2\right)^{7/2}(8A+7Bx)}{56c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}$$

```
[Out] -5/192*a^2*B*x*(c*x^2+a)^(3/2)/c-1/48*a*B*x*(c*x^2+a)^(5/2)/c+1/56*(7*B*x+8
*A)*(c*x^2+a)^(7/2)/c-5/128*a^4*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2
)-5/128*a^3*B*x*(c*x^2+a)^(1/2)/c
```

Rubi [A] time = 0.04, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {780, 195, 217, 206}

$$-\frac{5a^4B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{128c^{3/2}}-\frac{5a^3Bx\sqrt{a+cx^2}}{128c}-\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c}+\frac{\left(a+cx^2\right)^{7/2}(8A+7Bx)}{56c}-\frac{aBx\left(a+cx^2\right)^{5/2}}{48c}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (-5*a^3*B*x*Sqrt[a + c*x^2])/(128*c) - (5*a^2*B*x*(a + c*x^2)^(3/2))/(192*c
) - (a*B*x*(a + c*x^2)^(5/2))/(48*c) + ((8*A + 7*B*x)*(a + c*x^2)^(7/2))/(5
6*c) - (5*a^4*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(128*c^(3/2))
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+cx^2\right)^{5/2}dx = \frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c} - \frac{(aB)\int \left(a+cx^2\right)^{5/2}dx}{8c}$$

$$= -\frac{aBx\left(a+cx^2\right)^{5/2}}{48c} + \frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c} - \frac{\left(5a^2B\right)\int \left(a+cx^2\right)^{3/2}dx}{48c}$$

$$= -\frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c} - \frac{aBx\left(a+cx^2\right)^{5/2}}{48c} + \frac{(8A+7Bx)\left(a+cx^2\right)^{7/2}}{56c} - \frac{\left(5a^3B\right)\int \sqrt{}}{64}$$

$$= -\frac{5a^3Bx\sqrt{a+cx^2}}{128c} - \frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c} - \frac{aBx\left(a+cx^2\right)^{5/2}}{48c} + \frac{(8A+7Bx)\left(a+cx\right.}{56c}$$

$$= -\frac{5a^3Bx\sqrt{a+cx^2}}{128c} - \frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c} - \frac{aBx\left(a+cx^2\right)^{5/2}}{48c} + \frac{(8A+7Bx)\left(a+cx\right.}{56c}$$

$$= -\frac{5a^3Bx\sqrt{a+cx^2}}{128c} - \frac{5a^2Bx\left(a+cx^2\right)^{3/2}}{192c} - \frac{aBx\left(a+cx^2\right)^{5/2}}{48c} + \frac{(8A+7Bx)\left(a+cx\right.}{56c}$$

Mathematica [**A**] time = 0.49, size = 112, normalized size = 0.89

$$\frac{\left(a+cx^2\right)^{7/2}\left(-\frac{7aBx\left(\frac{15a^{7/2}\sqrt{\frac{cx^2}{a}+1}\sinh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{c}x}+\left(a+cx^2\right)\left(33a^2+26acx^2+8c^2x^4\right)\right)}{\left(a+cx^2\right)^4}+384A+336Bx\right)}{2688c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] ((a + c*x^2)^(7/2)*(384*A + 336*B*x - (7*a*B*x*((a + c*x^2)*(33*a^2 + 26*a*
c*x^2 + 8*c^2*x^4) + (15*a^(7/2)*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/Sq
rt[a]])/(Sqrt[c]*x)))/(a + c*x^2)^4))/(2688*c)
```

fricas [**A**] time = 0.78, size = 253, normalized size = 2.01

$$\left[\frac{105\,Ba^4\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(336\,Bc^4x^7+384\,Ac^4x^6+952\,Bac^3x^5+1152\,Aac^3x^4+826\,B\right.}{5376\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/5376*(105*B*a^4*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
+ 2*(336*B*c^4*x^7 + 384*A*c^4*x^6 + 952*B*a*c^3*x^5 + 1152*A*a*c^3*x^4 + 8
26*B*a^2*c^2*x^3 + 1152*A*a^2*c^2*x^2 + 105*B*a^3*c*x + 384*A*a^3*c)*sqrt(c
*x^2 + a))/c^2, 1/2688*(105*B*a^4*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a
)) + (336*B*c^4*x^7 + 384*A*c^4*x^6 + 952*B*a*c^3*x^5 + 1152*A*a*c^3*x^4 +
826*B*a^2*c^2*x^3 + 1152*A*a^2*c^2*x^2 + 105*B*a^3*c*x + 384*A*a^3*c)*sqrt(
c*x^2 + a))/c^2]
```

giac [**A**] time = 0.20, size = 114, normalized size = 0.90

$$\frac{5\,Ba^4\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{128\,c^{\frac{3}{2}}}+\frac{1}{2688}\left(\frac{384\,Aa^3}{c}+\left(\frac{105\,Ba^3}{c}+2\left(576\,Aa^2+\left(413\,Ba^2+4\left(144\,Aac+\left(119\,Bac\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 5/128*B*a^4*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(3/2) + 1/2688*(384*A*
a^3/c + (105*B*a^3/c + 2*(576*A*a^2 + (413*B*a^2 + 4*(144*A*a*c + (119*B*a*
c + 6*(7*B*c^2*x + 8*A*c^2)*x)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [**A**] time = 0.05, size = 113, normalized size = 0.90

$$-\frac{5B\,a^{4}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{128c^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^{2}+a}\;B\,a^{3}x}{128c}-\frac{5\left(c\,x^{2}+a\right)^{\frac{3}{2}}B\,a^{2}x}{192c}-\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Bax}{48c}+\frac{\left(c\,x^{2}+a\right)^{\frac{7}{2}}Bx}{8c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/8*B*x*(c*x^2+a)^(7/2)/c-1/48*a*B*x*(c*x^2+a)^(5/2)/c-5/192*a^2*B*x*(c*x^2
+a)^(3/2)/c-5/128*a^3*B*x*(c*x^2+a)^(1/2)/c-5/128*B*a^4/c^(3/2)*ln(c^(1/2)*
x+(c*x^2+a)^(1/2))+1/7*A*(c*x^2+a)^(7/2)/c
```

maxima [**A**] time = 0.56, size = 105, normalized size = 0.83

$$\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}Bx}{8\,c}-\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Bax}{48\,c}-\frac{5\left(cx^{2}+a\right)^{\frac{3}{2}}Ba^{2}x}{192\,c}-\frac{5\,\sqrt{cx^{2}+a}\,Ba^{3}x}{128\,c}-\frac{5\,Ba^{4}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{128\,c^{\frac{3}{2}}}+\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}A}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/8*(c*x^2 + a)^(7/2)*B*x/c - 1/48*(c*x^2 + a)^(5/2)*B*a*x/c - 5/192*(c*x^2
 + a)^(3/2)*B*a^2*x/c - 5/128*sqrt(c*x^2 + a)*B*a^3*x/c - 5/128*B*a^4*arcsi
nh(c*x/sqrt(a*c))/c^(3/2) + 1/7*(c*x^2 + a)^(7/2)*A/c
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^{2}+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int(x*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [**A**] time = 22.22, size = 354, normalized size = 2.81

$$Aa^{2}\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2} & \text{for}\: c = 0\\\frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+2Aac\left(\begin{cases}-\frac{2a^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{ax^{2}\sqrt{a+cx^{2}}}{15c}+\frac{x^{4}\sqrt{a+cx^{2}}}{5} & \text{for}\: c \neq 0\\\frac{\sqrt{a}\,x^{4}}{4} & \text{otherwise}\end{cases}\right)+Ac^{2}\left(\begin{cases}\frac{8a^{3}\sqrt{a+cx^{2}}}{105c^{3}}- \\\frac{\sqrt{a}\,x^{6}}{6}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**2*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), Tr
ue)) + 2*A*a*c*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(
a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, T
rue)) + A*c**2*Piecewise((8*a**3*sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*
sqrt(a + c*x**2)/(105*c**2) + a*x**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a
+ c*x**2)/7, Ne(c, 0)), (sqrt(a)*x**6/6, True)) + 5*B*a**(7/2)*x/(128*c*sqr
t(1 + c*x**2/a)) + 133*B*a**(5/2)*x**3/(384*sqrt(1 + c*x**2/a)) + 127*B*a**
(3/2)*c*x**5/(192*sqrt(1 + c*x**2/a)) + 23*B*sqrt(a)*c**2*x**7/(48*sqrt(1 +
 c*x**2/a)) - 5*B*a**4*asinh(sqrt(c)*x/sqrt(a))/(128*c**(3/2)) + B*c**3*x**
9/(8*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.343 $\int (A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=107

$$\frac{5a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}$$

```
[Out] 5/24*a*A*x*(c*x^2+a)^(3/2)+1/6*A*x*(c*x^2+a)^(5/2)+1/7*B*(c*x^2+a)^(7/2)/c+
5/16*a^3*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(1/2)+5/16*a^2*A*x*(c*x^2+a
)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.235, Rules used = {641, 195, 217, 206}

$$\frac{5}{16}a^2Ax\sqrt{a+cx^2}+\frac{5a^3A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{6}Ax\left(a+cx^2\right)^{5/2}+\frac{5}{24}aAx\left(a+cx^2\right)^{3/2}+\frac{B\left(a+cx^2\right)^{7/2}}{7c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (5*a^2*A*x*Sqrt[a + c*x^2])/16 + (5*a*A*x*(a + c*x^2)^(3/2))/24 + (A*x*(a +
 c*x^2)^(5/2))/6 + (B*(a + c*x^2)^(7/2))/(7*c) + (5*a^3*A*ArcTanh[(Sqrt[c]*
x)/Sqrt[a + c*x^2]])/(16*Sqrt[c])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{B\left(a+cx^2\right)^{7/2}}{7c} + A\int \left(a+cx^2\right)^{5/2}\,dx \\
&= \frac{1}{6}Ax\left(a+cx^2\right)^{5/2} + \frac{B\left(a+cx^2\right)^{7/2}}{7c} + \frac{1}{6}(5aA)\int \left(a+cx^2\right)^{3/2}\,dx \\
&= \frac{5}{24}aAx\left(a+cx^2\right)^{3/2} + \frac{1}{6}Ax\left(a+cx^2\right)^{5/2} + \frac{B\left(a+cx^2\right)^{7/2}}{7c} + \frac{1}{8}\left(5a^2A\right)\int \sqrt{a+cx^2}\,d \\
&= \frac{5}{16}a^2Ax\sqrt{a+cx^2} + \frac{5}{24}aAx\left(a+cx^2\right)^{3/2} + \frac{1}{6}Ax\left(a+cx^2\right)^{5/2} + \frac{B\left(a+cx^2\right)^{7/2}}{7c} + \frac{1}{16} \\
&= \frac{5}{16}a^2Ax\sqrt{a+cx^2} + \frac{5}{24}aAx\left(a+cx^2\right)^{3/2} + \frac{1}{6}Ax\left(a+cx^2\right)^{5/2} + \frac{B\left(a+cx^2\right)^{7/2}}{7c} + \frac{1}{16} \\
&= \frac{5}{16}a^2Ax\sqrt{a+cx^2} + \frac{5}{24}aAx\left(a+cx^2\right)^{3/2} + \frac{1}{6}Ax\left(a+cx^2\right)^{5/2} + \frac{B\left(a+cx^2\right)^{7/2}}{7c} + \frac{5a^3}{}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 108, normalized size = 1.01

$$\frac{105a^3A\sqrt{c}\,\log\left(\sqrt{c}\,\sqrt{a+cx^2}+cx\right)+\sqrt{a+cx^2}\,(48a^3B+3a^2cx(77A+48Bx)+2ac^2x^3(91A+72Bx)+8c^3x^5(7}{336c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[a + c*x^2]*(48*a^3*B + 8*c^3*x^5*(7*A + 6*B*x) + 3*a^2*c*x*(77*A + 48
*B*x) + 2*a*c^2*x^3*(91*A + 72*B*x)) + 105*a^3*A*Sqrt[c]*Log[c*x + Sqrt[c]*
Sqrt[a + c*x^2]])/(336*c)
```

fricas [A] time = 1.09, size = 224, normalized size = 2.09

$$\left[\frac{105\,Aa^3\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,(48\,Bc^3x^6+56\,Ac^3x^5+144\,Bac^2x^4+182\,Aac^2x^3+144\,Ba^2c}{672\,c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/672*(105*A*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 2*(48*B*c^3*x^6 + 56*A*c^3*x^5 + 144*B*a*c^2*x^4 + 182*A*a*c^2*x^3 + 144*B
*a^2*c*x^2 + 231*A*a^2*c*x + 48*B*a^3)*sqrt(c*x^2 + a))/c, -1/336*(105*A*a^
3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (48*B*c^3*x^6 + 56*A*c^3*x^
5 + 144*B*a*c^2*x^4 + 182*A*a*c^2*x^3 + 144*B*a^2*c*x^2 + 231*A*a^2*c*x + 4
8*B*a^3)*sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.20, size = 101, normalized size = 0.94

$$-\frac{5\,Aa^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,\sqrt{c}}+\frac{1}{336}\,(\frac{48\,Ba^3}{c}+(231\,Aa^2+2\,(72\,Ba^2+(91\,Aac+4\,(18\,Bac+(6\,Bc^2x+7\,Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -5/16*A*a^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/336*(48*B*a^
3/c + (231*A*a^2 + 2*(72*B*a^2 + (91*A*a*c + 4*(18*B*a*c + (6*B*c^2*x + 7*A
*c^2)*x)*x)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.05, size = 85, normalized size = 0.79

$$\frac{5Aa^{3}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{16\sqrt{c}}+\frac{5\sqrt{c\,x^{2}+a}\;A\,a^{2}x}{16}+\frac{5\left(c\,x^{2}+a\right)^{\frac{3}{2}}Aax}{24}+\frac{\left(c\,x^{2}+a\right)^{\frac{5}{2}}Ax}{6}+\frac{\left(c\,x^{2}+a\right)^{\frac{7}{2}}B}{7c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] 1/7*B*(c*x^2+a)^(7/2)/c+1/6*A*x*(c*x^2+a)^(5/2)+5/24*a*A*x*(c*x^2+a)^(3/2)+
5/16*a^2*A*x*(c*x^2+a)^(1/2)+5/16*A*a^3/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2
))
```

maxima [A] time = 0.46, size = 77, normalized size = 0.72

$$\frac{1}{6}\left(cx^{2}+a\right)^{\frac{5}{2}}Ax+\frac{5}{24}\left(cx^{2}+a\right)^{\frac{3}{2}}Aax+\frac{5}{16}\sqrt{cx^{2}+a}\,Aa^{2}x+\frac{5\,Aa^{3}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,\sqrt{c}}+\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}B}{7\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*A*x + 5/24*(c*x^2 + a)^(3/2)*A*a*x + 5/16*sqrt(c*x^2
+ a)*A*a^2*x + 5/16*A*a^3*arcsinh(c*x/sqrt(a*c))/sqrt(c) + 1/7*(c*x^2 + a)^
(7/2)*B/c
```

mupad [B] time = 1.34, size = 54, normalized size = 0.50

$$\frac{B\left(c\,x^{2}+a\right)^{7/2}}{7\,c}+\frac{A\,x\left(c\,x^{2}+a\right)^{5/2}{}_{2}\mathrm{F}_{1}\left(-\frac{5}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^{2}}{a}\right)}{\left(\frac{c\,x^{2}}{a}+1\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] (B*(a + c*x^2)^(7/2))/(7*c) + (A*x*(a + c*x^2)^(5/2)*hypergeom([-5/2, 1/2],
 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(5/2)
```

sympy [A] time = 14.70, size = 348, normalized size = 3.25

$$\frac{Aa^{\frac{5}{2}}x\sqrt{1+\frac{cx^{2}}{a}}}{2}+\frac{3Aa^{\frac{5}{2}}x}{16\sqrt{1+\frac{cx^{2}}{a}}}+\frac{35Aa^{\frac{3}{2}}cx^{3}}{48\sqrt{1+\frac{cx^{2}}{a}}}+\frac{17A\sqrt{a}\,c^{2}x^{5}}{24\sqrt{1+\frac{cx^{2}}{a}}}+\frac{5Aa^{3}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16\sqrt{c}}+\frac{Ac^{3}x^{7}}{6\sqrt{a}\sqrt{1+\frac{cx^{2}}{a}}}+Ba^{2}\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2}\\ \frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**(5/2)*x*sqrt(1 + c*x**2/a)/2 + 3*A*a**(5/2)*x/(16*sqrt(1 + c*x**2/a))
+ 35*A*a**(3/2)*c*x**3/(48*sqrt(1 + c*x**2/a)) + 17*A*sqrt(a)*c**2*x**5/(24
*sqrt(1 + c*x**2/a)) + 5*A*a**3*asinh(sqrt(c)*x/sqrt(a))/(16*sqrt(c)) + A*c
**3*x**7/(6*sqrt(a)*sqrt(1 + c*x**2/a)) + B*a**2*Piecewise((sqrt(a)*x**2/2,
 Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + 2*B*a*c*Piecewise((-2*a**2
*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x**4*sqrt(a
+ c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*c**2*Piecewise((8*a**3*
sqrt(a + c*x**2)/(105*c**3) - 4*a**2*x**2*sqrt(a + c*x**2)/(105*c**2) + a*x
**4*sqrt(a + c*x**2)/(35*c) + x**6*sqrt(a + c*x**2)/7, Ne(c, 0)), (sqrt(a)*
x**6/6, True))
```

3.344 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=132

$$-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{16}a^2\sqrt{a+cx^2}\,(16A+5Bx)+\frac{1}{24}a\left(a+cx^2\right)^{3/2}(8A+5Bx)+$$

```
[Out] 1/24*a*(5*B*x+8*A)*(c*x^2+a)^(3/2)+1/30*(5*B*x+6*A)*(c*x^2+a)^(5/2)-a^(5/2)
*A*arctanh((c*x^2+a)^(1/2)/a^(1/2))+5/16*a^3*B*arctanh(x*c^(1/2)/(c*x^2+a)^
(1/2))/c^(1/2)+1/16*a^2*(5*B*x+16*A)*(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {815, 844, 217, 206, 266, 63, 208}

$$\frac{1}{16}a^2\sqrt{a+cx^2}\,(16A+5Bx)-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^3B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{16\sqrt{c}}+\frac{1}{24}a\left(a+cx^2\right)^{3/2}(8A+5Bx)+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x,x]
```

```
[Out] (a^2*(16*A + 5*B*x)*Sqrt[a + c*x^2])/16 + (a*(8*A + 5*B*x)*(a + c*x^2)^(3/2
))/24 + ((6*A + 5*B*x)*(a + c*x^2)^(5/2))/30 + (5*a^3*B*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(16*Sqrt[c]) - a^(5/2)*A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]
]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x}\,dx = \frac{1}{30}(6A+5Bx)\left(a+cx^2\right)^{5/2} + \frac{\int \frac{(6aAc+5aBcx)\left(a+cx^2\right)^{3/2}}{x}\,dx}{6c}$$

$$= \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\left(a+cx^2\right)^{5/2} + \frac{\int \frac{\left(24a^2Ac^2+15a^2Bc^2x\right)\sqrt{a+}}{x}}{24c^2}$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\bigl(a+c$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\bigl(a+c$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\bigl(a+c$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\bigl(a+c$$

$$= \frac{1}{16}a^2(16A+5Bx)\sqrt{a+cx^2} + \frac{1}{24}a(8A+5Bx)\left(a+cx^2\right)^{3/2} + \frac{1}{30}(6A+5Bx)\bigl(a+c$$

Mathematica [A] time = 0.33, size = 139, normalized size = 1.05

$$-a^{5/2}A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{5a^{7/2}B\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{16\sqrt{c}\,\sqrt{a+cx^2}}+\frac{1}{240}\sqrt{a+cx^2}\,\bigl(a^2(368A+165Bx)+2acx^2(88A+65$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[a + c*x^2]*(8*c^2*x^4*(6*A + 5*B*x) + 2*a*c*x^2*(88*A + 65*B*x) + a^2
*(368*A + 165*B*x)))/240 + (5*a^(7/2)*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c
]*x)/Sqrt[a]])/(16*Sqrt[c]*Sqrt[a + c*x^2]) - a^(5/2)*A*ArcTanh[Sqrt[a + c*
x^2]/Sqrt[a]]
```

fricas [A] time = 1.33, size = 539, normalized size = 4.08

$$\left[\frac{75\,Ba^3\sqrt{c}\,\log\left(-2\,cx^2 - 2\,\sqrt{cx^2+a}\,\sqrt{c}\,x - a\right) + 240\,Aa^{\frac{5}{2}}c\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right) + 2\,\left(40\,Bc^3x^5 + 48\,Ac^3x^4}{480\,c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [1/480*(75*B*a^3*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
240*A*a^(5/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(40
*B*c^3*x^5 + 48*A*c^3*x^4 + 130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c
*x + 368*A*a^2*c)*sqrt(c*x^2 + a))/c, -1/240*(75*B*a^3*sqrt(-c)*arctan(sqrt
(-c)*x/sqrt(c*x^2 + a)) - 120*A*a^(5/2)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*s
qrt(a) + 2*a)/x^2) - (40*B*c^3*x^5 + 48*A*c^3*x^4 + 130*B*a*c^2*x^3 + 176*A
*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*sqrt(c*x^2 + a))/c, 1/480*(480*A*
sqrt(-a)*a^2*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 75*B*a^3*sqrt(c)*log(-2*c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(40*B*c^3*x^5 + 48*A*c^3*x^4 +
130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*sqrt(c*x^2
 + a))/c, -1/240*(75*B*a^3*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 24
0*A*sqrt(-a)*a^2*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (40*B*c^3*x^5 + 48*A*
c^3*x^4 + 130*B*a*c^2*x^3 + 176*A*a*c^2*x^2 + 165*B*a^2*c*x + 368*A*a^2*c)*
sqrt(c*x^2 + a))/c]
```

giac [A] time = 0.21, size = 125, normalized size = 0.95

$$\frac{2\,Aa^3\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} - \frac{5\,Ba^3\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{16\,\sqrt{c}} + \frac{1}{240}\left(368\,Aa^2 + \left(165\,Ba^2 + 2\left(88\,Aac + \left(65\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 2*A*a^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/16*B*a
^3*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + 1/240*(368*A*a^2 + (165
*B*a^2 + 2*(88*A*a*c + (65*B*a*c + 4*(5*B*c^2*x + 6*A*c^2)*x)*x)*x)*x)*sqrt
(c*x^2 + a)
```

maple [A] time = 0.05, size = 138, normalized size = 1.05

$$-A\,a^{\frac{5}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)+\frac{5B\,a^3\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{16\sqrt{c}}+\frac{5\sqrt{c\,x^2+a}\,B\,a^2x}{16}+\sqrt{c\,x^2+a}\,A\,a^2+\frac{5\left(c\,x^2+\right.}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x,x)
```

```
[Out] 1/6*B*x*(c*x^2+a)^(5/2)+5/24*B*a*x*(c*x^2+a)^(3/2)+5/16*B*a^2*x*(c*x^2+a)^(
1/2)+5/16*B*a^3/c^(1/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/5*A*(c*x^2+a)^(5/2)
+1/3*A*a*(c*x^2+a)^(3/2)-A*a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+A*
(c*x^2+a)^(1/2)*a^2
```

maxima [A] time = 0.58, size = 119, normalized size = 0.90

$$\frac{1}{6}\left(cx^2+a\right)^{\frac{5}{2}}Bx+\frac{5}{24}\left(cx^2+a\right)^{\frac{3}{2}}Bax+\frac{5}{16}\sqrt{cx^2+a}\,Ba^2x+\frac{5\,Ba^3\,\text{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{16\,\sqrt{c}}-Aa^{\frac{5}{2}}\,\text{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{5}\left(cx^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + a)^(5/2)*B*x + 5/24*(c*x^2 + a)^(3/2)*B*a*x + 5/16*sqrt(c*x^2
+ a)*B*a^2*x + 5/16*B*a^3*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*a^(5/2)*arcsin
h(a/(sqrt(a*c)*abs(x))) + 1/5*(c*x^2 + a)^(5/2)*A + 1/3*(c*x^2 + a)^(3/2)*A
*a + sqrt(c*x^2 + a)*A*a^2
```

mupad [B] time = 1.43, size = 101, normalized size = 0.77

$$\frac{A\left(c\,x^2+a\right)^{5/2}}{5}+A\,a^2\,\sqrt{c\,x^2+a}+\frac{A\,a\left(c\,x^2+a\right)^{3/2}}{3}+\frac{B\,x\left(c\,x^2+a\right)^{5/2}\,{}_2\mathrm{F}_1\left(-\frac{5}{2},\frac{1}{2};\ \frac{3}{2};\ -\frac{c\,x^2}{a}\right)}{\left(\frac{c\,x^2}{a}+1\right)^{5/2}}+A\,a^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x,x)
```

```
[Out] (A*(a + c*x^2)^(5/2))/5 + A*a^2*(a + c*x^2)^(1/2) + A*a^(5/2)*atan(((a + c*
x^2)^(1/2)*1i)/a^(1/2))*1i + (A*a*(a + c*x^2)^(3/2))/3 + (B*x*(a + c*x^2)^(
5/2)*hypergeom([-5/2, 1/2], 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^(5/2)
```

sympy [A] time = 29.89, size = 323, normalized size = 2.45

$$-Aa^{\frac{5}{2}}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)+\frac{Aa^3}{\sqrt{c}\,x\sqrt{\frac{a}{cx^2}+1}}+\frac{Aa^2\sqrt{c}\,x}{\sqrt{\frac{a}{cx^2}+1}}+2Aac\left(\begin{cases}\frac{\sqrt{a}\,x^2}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^2\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)+Ac^2\left(\begin{cases}-\frac{2a^2\sqrt{a+cx^2}}{15c^2}+\frac{ax^2\sqrt{a+cx^2}}{15c} \\ \frac{\sqrt{a}\,x^4}{4} \end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x,x)
```

```
[Out] -A*a**(5/2)*asinh(sqrt(a)/(sqrt(c)*x)) + A*a**3/(sqrt(c)*x*sqrt(a/(c*x**2)
+ 1)) + A*a**2*sqrt(c)*x/sqrt(a/(c*x**2) + 1) + 2*A*a*c*Piecewise((sqrt(a)*
x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True)) + A*c**2*Piecewise((-
2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt(a + c*x**2)/(15*c) + x**4*s
qrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4, True)) + B*a**(5/2)*x*sqrt(1
 + c*x**2/a)/2 + 3*B*a**(5/2)*x/(16*sqrt(1 + c*x**2/a)) + 35*B*a**(3/2)*c*x
**3/(48*sqrt(1 + c*x**2/a)) + 17*B*sqrt(a)*c**2*x**5/(24*sqrt(1 + c*x**2/a)
) + 5*B*a**3*asinh(sqrt(c)*x/sqrt(a))/(16*sqrt(c)) + B*c**3*x**7/(6*sqrt(a)
*sqrt(1 + c*x**2/a))
```

3.345 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=136

$$a^{5/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+\frac{1}{8}a\sqrt{a+cx^2}\,(8aB+15Acx)-\frac{\left(a+cx^2\right)^{5/2}(5A-}{5x}$$

```
[Out] 1/12*(15*A*c*x+4*B*a)*(c*x^2+a)^(3/2)-1/5*(-B*x+5*A)*(c*x^2+a)^(5/2)/x-a^(5
/2)*B*arctanh((c*x^2+a)^(1/2)/a^(1/2))+15/8*a^2*A*arctanh(x*c^(1/2)/(c*x^2+
a)^(1/2))*c^(1/2)+1/8*a*(15*A*c*x+8*B*a)*(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$\frac{15}{8}a^2A\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+a^{5/2}(-B)\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{1}{8}a\sqrt{a+cx^2}\,(8aB+15Acx)-\frac{\left(a+cx^2\right)^{5/2}(5A-}{5x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (a*(8*a*B + 15*A*c*x)*Sqrt[a + c*x^2])/8 + ((4*a*B + 15*A*c*x)*(a + c*x^2)^
(3/2))/12 - ((5*A - B*x)*(a + c*x^2)^(5/2))/(5*x) + (15*a^2*A*Sqrt[c]*ArcTa
nh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/8 - a^(5/2)*B*ArcTanh[Sqrt[a + c*x^2]/Sqrt
[a]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^2}\,dx = -\frac{(5A-Bx)\left(a+cx^2\right)^{5/2}}{5x} - \frac{1}{2}\int \frac{(-2aB-10Acx)\left(a+cx^2\right)^{3/2}}{x}\,dx$$

$$= \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)^{5/2}}{5x} - \frac{\int \frac{\left(-8a^2Bc-30aAc^2x\right)\sqrt{a+cx^2}}{x}}{8c}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2} + \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2} + \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2} + \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2} + \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

$$= \frac{1}{8}a(8aB+15Acx)\sqrt{a+cx^2} + \frac{1}{12}(4aB+15Acx)\left(a+cx^2\right)^{3/2} - \frac{(5A-Bx)\left(a+cx^2\right)}{5x}$$

Mathematica [C] time = 0.21, size = 117, normalized size = 0.86

$$-a^{5/2}B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{a^3A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{a+cx^2}}+\frac{1}{15}B\sqrt{a+cx^2}\left(23a^2+11acx^2+3c^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (B*Sqrt[a + c*x^2]*(23*a^2 + 11*a*c*x^2 + 3*c^2*x^4))/15 - a^(5/2)*B*ArcTan
h[Sqrt[a + c*x^2]/Sqrt[a]] - (a^3*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-
5/2, -1/2, 1/2, -((c*x^2)/a)])/(x*Sqrt[a + c*x^2])
```

fricas [A] time = 1.39, size = 519, normalized size = 3.82

$$\left[\frac{225\,Aa^2\sqrt{c}\,x\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+120\,Ba^{\frac{5}{2}}x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(24\,Bc^2x^5+30\,Ac\right.}{240\,x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/240*(225*A*a^2*sqrt(c)*x*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 120*B*a^(5/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*
(24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x^3 + 135*A*a*c*x^2 + 184*B*a^2*x -
 120*A*a^2)*sqrt(c*x^2 + a))/x, -1/120*(225*A*a^2*sqrt(-c)*x*arctan(sqrt(-c
)*x/sqrt(c*x^2 + a)) - 60*B*a^(5/2)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
a) + 2*a)/x^2) - (24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x^3 + 135*A*a*c*x^
2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x, 1/240*(240*B*sqrt(-a)*a^2*
x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 225*A*a^2*sqrt(c)*x*log(-2*c*x^2 - 2*s
qrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a*c*x
^3 + 135*A*a*c*x^2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x, -1/120*(2
25*A*a^2*sqrt(-c)*x*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 120*B*sqrt(-a)*a^2
*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (24*B*c^2*x^5 + 30*A*c^2*x^4 + 88*B*a
*c*x^3 + 135*A*a*c*x^2 + 184*B*a^2*x - 120*A*a^2)*sqrt(c*x^2 + a))/x]
```

giac [A] time = 0.26, size = 150, normalized size = 1.10

$$\frac{2\,Ba^3\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{15}{8}\,Aa^2\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{2\,Aa^3\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a}+\frac{1}{120}\left(184\,Ba^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 2*B*a^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 15/8*A*a
^2*sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 2*A*a^3*sqrt(c)/((sqrt(
c)*x - sqrt(c*x^2 + a))^2 - a) + 1/120*(184*B*a^2 + (135*A*a*c + 2*(44*B*a*
c + 3*(4*B*c^2*x + 5*A*c^2)*x)*x)*x)*sqrt(c*x^2 + a)
```

maple [A] time = 0.06, size = 158, normalized size = 1.16

$$\frac{15A\,a^2\sqrt{c}\;\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{8}-B\,a^{\frac{5}{2}}\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)+\frac{15\sqrt{c\,x^2+a}\;Aacx}{8}+\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}Acx}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+a)^(7/2)+A*c/a*x*(c*x^2+a)^(5/2)+5/4*A*c*x*(c*x^2+a)^(3/2)+15
/8*A*c*a*x*(c*x^2+a)^(1/2)+15/8*A*c^(1/2)*a^2*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
+1/5*B*(c*x^2+a)^(5/2)+1/3*B*a*(c*x^2+a)^(3/2)-B*a^(5/2)*ln((2*a+2*(c*x^2+a
)^(1/2)*a^(1/2))/x)+B*(c*x^2+a)^(1/2)*a^2
```

maxima [A] time = 0.53, size = 120, normalized size = 0.88

$$\frac{5}{4}\left(cx^2+a\right)^{\frac{3}{2}}Acx+\frac{15}{8}\sqrt{cx^2+a}\,Aacx+\frac{15}{8}Aa^2\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-Ba^{\frac{5}{2}}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{1}{5}\left(cx^2+a\right)^{\frac{5}{2}}B+\frac{1}{3}\left(cx^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] 5/4*(c*x^2 + a)^(3/2)*A*c*x + 15/8*sqrt(c*x^2 + a)*A*a*c*x + 15/8*A*a^2*sqr
t(c)*arcsinh(c*x/sqrt(a*c)) - B*a^(5/2)*arcsinh(a/(sqrt(a*c)*abs(x))) + 1/5
*(c*x^2 + a)^(5/2)*B + 1/3*(c*x^2 + a)^(3/2)*B*a + sqrt(c*x^2 + a)*B*a^2 -
(c*x^2 + a)^(5/2)*A/x
```

mupad [B] time = 2.23, size = 104, normalized size = 0.76

$$\frac{B\left(c\,x^2+a\right)^{5/2}}{5}+B\,a^2\,\sqrt{c\,x^2+a}+\frac{B\,a\left(c\,x^2+a\right)^{3/2}}{3}-\frac{A\left(c\,x^2+a\right)^{5/2}\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\,\frac{1}{2};\,-\frac{c\,x^2}{a}\right)}{x\left(\frac{c\,x^2}{a}+1\right)^{5/2}}+B\,a^{5/2}\,\operatorname{atan}\left(\frac{\sqrt{c\,x^2+a}\,1}{\sqrt{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^2,x)
```

```
[Out] (B*(a + c*x^2)^(5/2))/5 + B*a^2*(a + c*x^2)^(1/2) + B*a^(5/2)*atan(((a + c*
x^2)^(1/2)*1i)/a^(1/2))*1i + (B*a*(a + c*x^2)^(3/2))/3 - (A*(a + c*x^2)^(5/
2)*hypergeom([-5/2, -1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/a + 1)^(5/2))
```

sympy [A] time = 11.72, size = 318, normalized size = 2.34

$$-\frac{Aa^{\frac{5}{2}}}{x\sqrt{1+\frac{cx^2}{a}}}+Aa^{\frac{3}{2}}cx\sqrt{1+\frac{cx^2}{a}}-\frac{7Aa^{\frac{3}{2}}cx}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{3A\sqrt{a}\,c^2x^3}{8\sqrt{1+\frac{cx^2}{a}}}+\frac{15Aa^2\sqrt{c}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8}+\frac{Ac^3x^5}{4\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}-Ba^{\frac{5}{2}}\operatorname{asinh}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**2,x)
```

```
[Out] -A*a**(5/2)/(x*sqrt(1 + c*x**2/a)) + A*a**(3/2)*c*x*sqrt(1 + c*x**2/a) - 7*
A*a**(3/2)*c*x/(8*sqrt(1 + c*x**2/a)) + 3*A*sqrt(a)*c**2*x**3/(8*sqrt(1 + c
*x**2/a)) + 15*A*a**2*sqrt(c)*asinh(sqrt(c)*x/sqrt(a))/8 + A*c**3*x**5/(4*s
qrt(a)*sqrt(1 + c*x**2/a)) - B*a**(5/2)*asinh(sqrt(a)/(sqrt(c)*x)) + B*a**3
/(sqrt(c)*x*sqrt(a/(c*x**2) + 1)) + B*a**2*sqrt(c)*x/sqrt(a/(c*x**2) + 1) +
 2*B*a*c*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c),
True)) + B*c**2*Piecewise((-2*a**2*sqrt(a + c*x**2)/(15*c**2) + a*x**2*sqrt
(a + c*x**2)/(15*c) + x**4*sqrt(a + c*x**2)/5, Ne(c, 0)), (sqrt(a)*x**4/4,
True))
```

3.346 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=141

$$-\frac{5}{2}a^{3/2}Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{\left(a+cx^2\right)^{5/2}(2A-Bx)}{4x^2}-\frac{5\left(a+cx^2\right)^{3/2}(3aB-2}{12x}$$

```
[Out] -5/12*(-2*A*c*x+3*B*a)*(c*x^2+a)^(3/2)/x-1/4*(-B*x+2*A)*(c*x^2+a)^(5/2)/x^2
-5/2*a^(3/2)*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))+15/8*a^2*B*arctanh(x*c^(1
/2)/(c*x^2+a)^(1/2))*c^(1/2)+5/8*a*c*(3*B*x+4*A)*(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {813, 815, 844, 217, 206, 266, 63, 208}

$$-\frac{5}{2}a^{3/2}Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+\frac{15}{8}a^2B\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-\frac{\left(a+cx^2\right)^{5/2}(2A-Bx)}{4x^2}-\frac{5\left(a+cx^2\right)^{3/2}(3aB-2}{12x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*a*c*(4*A + 3*B*x)*Sqrt[a + c*x^2])/8 - (5*(3*a*B - 2*A*c*x)*(a + c*x^2)^
(3/2))/(12*x) - ((2*A - B*x)*(a + c*x^2)^(5/2))/(4*x^2) + (15*a^2*B*Sqrt[c]
*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/8 - (5*a^(3/2)*A*c*ArcTanh[Sqrt[a +
c*x^2]/Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^3}\,dx = -\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}-\frac{5}{16}\int \frac{(-4aB-8Acx)\left(a+cx^2\right)^{3/2}}{x^2}\,dx$$

$$= -\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+\frac{5}{32}\int \frac{(16aAc+24aBcx)}{x}$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2}-\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2}-\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2}-\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2}-\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+$$

$$= \frac{5}{8}ac(4A+3Bx)\sqrt{a+cx^2}-\frac{5(3aB-2Acx)\left(a+cx^2\right)^{3/2}}{12x}-\frac{(2A-Bx)\left(a+cx^2\right)^{5/2}}{4x^2}+$$

Mathematica [C] time = 0.03, size = 92, normalized size = 0.65

$$\frac{Ac\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^2}-\frac{a^2B\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};-\frac{cx^2}{a}\right)}{x\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^3,x]
```

```
[Out] -((a^2*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -1/2, 1/2, -((c*x^2)/a)])/
(x*Sqrt[1 + (c*x^2)/a])) + (A*c*(a + c*x^2)^(7/2)*Hypergeometric2F1[2, 7/2,
 9/2, 1 + (c*x^2)/a])/(7*a^2)
```

fricas [A] time = 1.18, size = 535, normalized size = 3.79

$$\left[\frac{45\,Ba^2\sqrt{c}\,x^2\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+60\,Aa^{\frac{3}{2}}cx^2\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(6\,Bc^2x^5+8\,Ac^2x\right.}{48\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/48*(45*B*a^2*sqrt(c)*x^2*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 60*A*a^(3/2)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) +
 2*(6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*x^3 + 56*A*a*c*x^2 - 24*B*a^2*x -
12*A*a^2)*sqrt(c*x^2 + a))/x^2, -1/24*(45*B*a^2*sqrt(-c)*x^2*arctan(sqrt(-c
)*x/sqrt(c*x^2 + a)) - 30*A*a^(3/2)*c*x^2*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*s
qrt(a) + 2*a)/x^2) - (6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*x^3 + 56*A*a*c*x
^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2, 1/48*(120*A*sqrt(-a)*a*c*
x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 45*B*a^2*sqrt(c)*x^2*log(-2*c*x^2 -
2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*c*
x^3 + 56*A*a*c*x^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2, -1/24*(45
*B*a^2*sqrt(-c)*x^2*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 60*A*sqrt(-a)*a*c*
x^2*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (6*B*c^2*x^5 + 8*A*c^2*x^4 + 27*B*a*
c*x^3 + 56*A*a*c*x^2 - 24*B*a^2*x - 12*A*a^2)*sqrt(c*x^2 + a))/x^2]
```

giac [A] time = 0.22, size = 219, normalized size = 1.55

$$\frac{5\,Aa^2c\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{15}{8}\,Ba^2\sqrt{c}\,\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{1}{24}\left(56\,Aac+\left(27\,Bac+2\left(3\,Bc^2x+4\,A\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 5*A*a^2*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 15/8*B
*a^2*sqrt(c)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/24*(56*A*a*c + (27*
B*a*c + 2*(3*B*c^2*x + 4*A*c^2)*x)*x)*sqrt(c*x^2 + a) + ((sqrt(c)*x - sqrt(
c*x^2 + a))^3*A*a^2*c + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^3*sqrt(c) + (
sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c - 2*B*a^4*sqrt(c))/((sqrt(c)*x - sqrt(
c*x^2 + a))^2 - a)^2
```

maple [A] time = 0.06, size = 181, normalized size = 1.28

$$-\frac{5A\,a^{\frac{3}{2}}c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2}+\frac{15B\,a^2\sqrt{c}\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{8}+\frac{15\sqrt{c\,x^2+a}\,Bacx}{8}+\frac{5\sqrt{c\,x^2+a}\,Aac}{2}+\frac{5\left(c\,x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+a)^(7/2)+1/2*A*c/a*(c*x^2+a)^(5/2)+5/6*A*c*(c*x^2+a)^(3
/2)-5/2*A*c*a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+5/2*A*c*a*(c*x^2+
a)^(1/2)-B/a/x*(c*x^2+a)^(7/2)+B*c/a*x*(c*x^2+a)^(5/2)+5/4*B*c*x*(c*x^2+a)^
(3/2)+15/8*B*c*a*x*(c*x^2+a)^(1/2)+15/8*B*c^(1/2)*a^2*ln(c^(1/2)*x+(c*x^2+a
)^(1/2))
```

maxima [**A**] time = 0.69, size = 143, normalized size = 1.01

$$\frac{5}{4}\left(cx^{2}+a\right)^{\frac{3}{2}}Bcx+\frac{15}{8}\sqrt{cx^{2}+a}\,Bacx+\frac{15}{8}Ba^{2}\sqrt{c}\,\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5}{2}Aa^{\frac{3}{2}}c\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{5}{6}\left(cx^{2}+a\right)^{\frac{3}{2}}Ac+\frac{\left(cx^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5/4*(c*x^2 + a)^(3/2)*B*c*x + 15/8*sqrt(c*x^2 + a)*B*a*c*x + 15/8*B*a^2*sqr
t(c)*arcsinh(c*x/sqrt(a*c)) - 5/2*A*a^(3/2)*c*arcsinh(a/(sqrt(a*c)*abs(x)))
 + 5/6*(c*x^2 + a)^(3/2)*A*c + 1/2*(c*x^2 + a)^(5/2)*A*c/a + 5/2*sqrt(c*x^2
 + a)*A*a*c - (c*x^2 + a)^(5/2)*B/x - 1/2*(c*x^2 + a)^(7/2)*A/(a*x^2)
```

mupad [**B**] time = 2.51, size = 111, normalized size = 0.79

$$\frac{A\,c\,\left(c\,x^2+a\right)^{3/2}}{3}+2\,A\,a\,c\,\sqrt{c\,x^2+a}-\frac{A\,a^2\,\sqrt{c\,x^2+a}}{2\,x^2}-\frac{B\,\left(c\,x^2+a\right)^{5/2}\,{}_2\mathrm{F}_1\left(-\frac{5}{2},-\frac{1}{2};\ \frac{1}{2};\ -\frac{c\,x^2}{a}\right)}{x\,\left(\frac{c\,x^2}{a}+1\right)^{5/2}}+\frac{A\,a^{3/2}\,c\,\mathrm{atan}\left(\frac{\sqrt{c\,x^2+}}{\sqrt{a}}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^3,x)
```

```
[Out] (A*c*(a + c*x^2)^(3/2))/3 + 2*A*a*c*(a + c*x^2)^(1/2) - (A*a^2*(a + c*x^2)^
(1/2))/(2*x^2) + (A*a^(3/2)*c*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*5i)/2 -
(B*(a + c*x^2)^(5/2)*hypergeom([-5/2, -1/2], 1/2, -(c*x^2)/a))/(x*((c*x^2)/
a + 1)^(5/2))
```

sympy [**A**] time = 12.58, size = 279, normalized size = 1.98

$$-\frac{5Aa^{\frac{3}{2}}c\,\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2}-\frac{Aa^{2}\sqrt{c}\sqrt{\frac{a}{cx^{2}}+1}}{2x}+\frac{2Aa^{2}\sqrt{c}}{x\sqrt{\frac{a}{cx^{2}}+1}}+\frac{2Aac^{\frac{3}{2}}x}{\sqrt{\frac{a}{cx^{2}}+1}}+Ac^{2}\left(\begin{cases}\frac{\sqrt{a}\,x^{2}}{2} & \text{for}\ c=0\\ \frac{\left(a+cx^{2}\right)^{\frac{3}{2}}}{3c} & \text{otherwise}\end{cases}\right)-\frac{Ba^{\frac{5}{2}}}{x\sqrt{1+\frac{cx^{2}}{a}}}+Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**3,x)
```

```
[Out] -5*A*a**(3/2)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - A*a**2*sqrt(c)*sqrt(a/(c*x**
2) + 1)/(2*x) + 2*A*a**2*sqrt(c)/(x*sqrt(a/(c*x**2) + 1)) + 2*A*a*c**(3/2)*
x/sqrt(a/(c*x**2) + 1) + A*c**2*Piecewise((sqrt(a)*x**2/2, Eq(c, 0)), ((a +
 c*x**2)**(3/2)/(3*c), True)) - B*a**(5/2)/(x*sqrt(1 + c*x**2/a)) + B*a**(3
/2)*c*x*sqrt(1 + c*x**2/a) - 7*B*a**(3/2)*c*x/(8*sqrt(1 + c*x**2/a)) + 3*B*
sqrt(a)*c**2*x**3/(8*sqrt(1 + c*x**2/a)) + 15*B*a**2*sqrt(c)*asinh(sqrt(c)*
x/sqrt(a))/8 + B*c**3*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.347 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=137

$$-\frac{5}{2}a^{3/2}Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{5\left(a+cx^2\right)^{3/2}(aB-Acx)}{6x^2}-\frac{5ac\sqrt{a+cx^2}\,(A-Bx)}{2x}-\frac{\left(a+cx^2\right)^{5/2}(A-Bx)}{3x^3}+\frac{5}{2}aA$$

```
[Out] -5/6*(-A*c*x+B*a)*(c*x^2+a)^(3/2)/x^2-1/3*(-B*x+A)*(c*x^2+a)^(5/2)/x^3+5/2*
a*A*c^(3/2)*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))-5/2*a^(3/2)*B*c*arctanh((c*x
^2+a)^(1/2)/a^(1/2))-5/2*a*c*(-B*x+A)*(c*x^2+a)^(1/2)/x
```

Rubi [A] time = 0.11, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.350$, Rules used = {813, 844, 217, 206, 266, 63, 208}

$$-\frac{5}{2}a^{3/2}Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-\frac{\left(a+cx^2\right)^{5/2}(A-Bx)}{3x^3}-\frac{5\left(a+cx^2\right)^{3/2}(aB-Acx)}{6x^2}-\frac{5ac\sqrt{a+cx^2}\,(A-Bx)}{2x}+\frac{5}{2}aA$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*a*c*(A - B*x)*Sqrt[a + c*x^2])/(2*x) - (5*(a*B - A*c*x)*(a + c*x^2)^(3/
2))/(6*x^2) - ((A - B*x)*(a + c*x^2)^(5/2))/(3*x^3) + (5*a*A*c^(3/2)*ArcTan
h[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (5*a^(3/2)*B*c*ArcTanh[Sqrt[a + c*x^2]/
Sqrt[a]])/2
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^4}\,dx = -\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}-\frac{5}{18}\int \frac{(-6aB-6Acx)\left(a+cx^2\right)^{3/2}}{x^3}\,dx$$

$$= -\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}+\frac{5}{48}\int \frac{(24aAc+24aBcx)\sqrt{a}}{x^2}$$

$$= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x}-\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}-\frac{5}{96}$$

$$= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x}-\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}+\frac{1}{2}$$

$$= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x}-\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}+\frac{1}{4}$$

$$= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x}-\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}+\frac{5}{2}a$$

$$= -\frac{5ac(A-Bx)\sqrt{a+cx^2}}{2x}-\frac{5(aB-Acx)\left(a+cx^2\right)^{3/2}}{6x^2}-\frac{(A-Bx)\left(a+cx^2\right)^{5/2}}{3x^3}+\frac{5}{2}a$$

Mathematica [C] time = 0.03, size = 94, normalized size = 0.69

$$\frac{Bc\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^2}-\frac{a^2A\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^4,x]
```

```
[Out] -1/3*(a^2*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x^2)/a
)])/(x^3*Sqrt[1 + (c*x^2)/a]) + (B*c*(a + c*x^2)^(7/2)*Hypergeometric2F1[2,
 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^2)
```

fricas [A] time = 0.99, size = 529, normalized size = 3.86

$$\left[\frac{15\,Aac^{\frac{3}{2}}x^3\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+15\,Ba^{\frac{3}{2}}cx^3\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,(2\,Bc^2x^5+3\,Ac^2x^4}{12\,x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/12*(15*A*a*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 15*B*a^(3/2)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2
*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14*A*a*c*x^2 - 3*B*a^2*x - 2*A
*a^2)*sqrt(c*x^2 + a))/x^3, -1/12*(30*A*a*sqrt(-c)*c*x^3*arctan(sqrt(-c)*x/
sqrt(c*x^2 + a)) - 15*B*a^(3/2)*c*x^3*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
a) + 2*a)/x^2) - 2*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14*A*a*c*x^2
 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3, 1/12*(30*B*sqrt(-a)*a*c*x^3*a
rctan(sqrt(-a)/sqrt(c*x^2 + a)) + 15*A*a*c^(3/2)*x^3*log(-2*c*x^2 - 2*sqrt(
c*x^2 + a)*sqrt(c)*x - a) + 2*(2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 1
4*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3, -1/6*(15*A*a*sqrt(
-c)*c*x^3*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 15*B*sqrt(-a)*a*c*x^3*arctan
(sqrt(-a)/sqrt(c*x^2 + a)) - (2*B*c^2*x^5 + 3*A*c^2*x^4 + 14*B*a*c*x^3 - 14
*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/x^3]
```

giac [B] time = 0.23, size = 239, normalized size = 1.74

$$\frac{5\,Ba^2c\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}}-\frac{5}{2}\,Aac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{1}{6}\left(14\,Bac+\left(2\,Bc^2x+3\,Ac^2\right)x\right)\sqrt{cx^2+a}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 5*B*a^2*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/2*A*
a*c^(3/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/6*(14*B*a*c + (2*B*c^2
*x + 3*A*c^2)*x)*sqrt(c*x^2 + a) + 1/3*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B
*a^2*c + 18*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(3/2) - 24*(sqrt(c)*x -
 sqrt(c*x^2 + a))^2*A*a^3*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c
 + 14*A*a^4*c^(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3
```

maple [A] time = 0.06, size = 207, normalized size = 1.51

$$\frac{5Aa\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2}-\frac{5B\,a^{\frac{3}{2}}c\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2}+\frac{5\sqrt{c\,x^2+a}\,A\,c^2x}{2}+\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^2x}{3a}+\frac{5\sqrt{c\,x^2+}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^4,x)
```

```
[Out] -1/3*A/a/x^3*(c*x^2+a)^(7/2)-4/3*A*c/a^2/x*(c*x^2+a)^(7/2)+4/3*A*c^2/a^2*x*
(c*x^2+a)^(5/2)+5/3*A*c^2/a*x*(c*x^2+a)^(3/2)+5/2*A*c^2*x*(c*x^2+a)^(1/2)+5
/2*A*c^(3/2)*a*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-1/2*B/a/x^2*(c*x^2+a)^(7/2)+1/
2*B*c/a*(c*x^2+a)^(5/2)+5/6*B*c*(c*x^2+a)^(3/2)-5/2*B*c*a^(3/2)*ln((2*a+2*(
c*x^2+a)^(1/2)*a^(1/2))/x)+5/2*B*c*a*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.66, size = 169, normalized size = 1.23

$$\frac{5}{2}\sqrt{cx^2+a}\,Ac^2x+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac^2x}{3\,a}+\frac{5}{2}\,Aac^{\frac{3}{2}}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5}{2}\,Ba^{\frac{3}{2}}c\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{5}{6}\left(cx^2+a\right)^{\frac{3}{2}}Bc+(cx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 5/2*sqrt(c*x^2 + a)*A*c^2*x + 5/3*(c*x^2 + a)^(3/2)*A*c^2*x/a + 5/2*A*a*c^(
3/2)*arcsinh(c*x/sqrt(a*c)) - 5/2*B*a^(3/2)*c*arcsinh(a/(sqrt(a*c)*abs(x)))
 + 5/6*(c*x^2 + a)^(3/2)*B*c + 1/2*(c*x^2 + a)^(5/2)*B*c/a + 5/2*sqrt(c*x^2
 + a)*B*a*c - 4/3*(c*x^2 + a)^(5/2)*A*c/(a*x) - 1/2*(c*x^2 + a)^(7/2)*B/(a*
x^2) - 1/3*(c*x^2 + a)^(7/2)*A/(a*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^4} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^4,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^4, x)
```

sympy [A] time = 9.68, size = 277, normalized size = 2.02

$$-\frac{2Aa^{\frac{3}{2}}c}{x\sqrt{1+\frac{cx^2}{a}}}+\frac{A\sqrt{a}\,c^2x\sqrt{1+\frac{cx^2}{a}}}{2}-\frac{2A\sqrt{a}\,c^2x}{\sqrt{1+\frac{cx^2}{a}}}-\frac{Aa^2\sqrt{c}\,\sqrt{\frac{a}{cx^2}+1}}{3x^2}-\frac{Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3}+\frac{5Aac^{\frac{3}{2}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2}-\frac{5Ba^{\frac{3}{2}}c\,\mathrm{as}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**4,x)
```

```
[Out] -2*A*a**(3/2)*c/(x*sqrt(1 + c*x**2/a)) + A*sqrt(a)*c**2*x*sqrt(1 + c*x**2/a
)/2 - 2*A*sqrt(a)*c**2*x/sqrt(1 + c*x**2/a) - A*a**2*sqrt(c)*sqrt(a/(c*x**2
) + 1)/(3*x**2) - A*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/3 + 5*A*a*c**(3/2)*asin
h(sqrt(c)*x/sqrt(a))/2 - 5*B*a**(3/2)*c*asinh(sqrt(a)/(sqrt(c)*x))/2 - B*a*
*2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*x) + 2*B*a**2*sqrt(c)/(x*sqrt(a/(c*x**2)
 + 1)) + 2*B*a*c**(3/2)*x/sqrt(a/(c*x**2) + 1) + B*c**2*Piecewise((sqrt(a)*
x**2/2, Eq(c, 0)), ((a + c*x**2)**(3/2)/(3*c), True))
```

3.348 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^5} \, dx$

Optimal. Leaf size=143

$$-\frac{5c\sqrt{a+cx^2}\,(4aB-3Acx)}{8x}-\frac{\left(a+cx^2\right)^{5/2}(A-2Bx)}{4x^4}-\frac{5\left(a+cx^2\right)^{3/2}(4aB+3Acx)}{24x^3}-\frac{15}{8}\sqrt{a}\,Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx}}{\sqrt{a}}\right.$$

```
[Out] -5/24*(3*A*c*x+4*B*a)*(c*x^2+a)^(3/2)/x^3-1/4*(-2*B*x+A)*(c*x^2+a)^(5/2)/x^
4+5/2*a*B*c^(3/2)*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))-15/8*A*c^2*arctanh((c*
x^2+a)^(1/2)/a^(1/2))*a^(1/2)-5/8*c*(-3*A*c*x+4*B*a)*(c*x^2+a)^(1/2)/x
```

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {813, 811, 844, 217, 206, 266, 63, 208}

$$-\frac{\left(a+cx^2\right)^{5/2}(A-2Bx)}{4x^4}-\frac{5\left(a+cx^2\right)^{3/2}(4aB+3Acx)}{24x^3}-\frac{5c\sqrt{a+cx^2}\,(4aB-3Acx)}{8x}-\frac{15}{8}\sqrt{a}\,Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx}}{\sqrt{a}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-5*c*(4*a*B - 3*A*c*x)*Sqrt[a + c*x^2])/(8*x) - (5*(4*a*B + 3*A*c*x)*(a +
c*x^2)^(3/2))/(24*x^3) - ((A - 2*B*x)*(a + c*x^2)^(5/2))/(4*x^4) + (5*a*B*c
^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/2 - (15*Sqrt[a]*A*c^2*ArcTanh[
Sqrt[a + c*x^2]/Sqrt[a]])/8
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^5}\,dx = -\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}-\frac{5}{16}\int \frac{(-8aB-4Acx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx$$

$$= -\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}+\frac{5\int \frac{\left(32a^2Bc+24aAc^2x\right)\sqrt{a+cx^2}}{x^2}}{64a}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x}-\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x}-\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x}-\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x}-\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

$$= -\frac{5c(4aB-3Acx)\sqrt{a+cx^2}}{8x}-\frac{5(4aB+3Acx)\left(a+cx^2\right)^{3/2}}{24x^3}-\frac{(A-2Bx)\left(a+cx^2\right)^{5/2}}{4x^4}$$

Mathematica [C] time = 0.03, size = 96, normalized size = 0.67

$$-\frac{Ac^2\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^3}-\frac{a^2B\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};-\frac{cx^2}{a}\right)}{3x^3\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/3*(a^2*B*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -3/2, -1/2, -((c*x^2)/a
)])/(x^3*Sqrt[1 + (c*x^2)/a]) - (A*c^2*(a + c*x^2)^(7/2)*Hypergeometric2F1[
3, 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^3)
```

fricas [A] time = 0.76, size = 534, normalized size = 3.73

$$\left[\frac{60\,Bac^{\frac{3}{2}}x^4\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}x-a\right)+45\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(12\,Bc^2x^5+24\,Ac\right.}{48\,x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/48*(60*B*a*c^(3/2)*x^4*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 45*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) +
 2*(12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x -
 6*A*a^2)*sqrt(c*x^2 + a))/x^4, -1/48*(120*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-
c)*x/sqrt(c*x^2 + a)) - 45*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a
)*sqrt(a) + 2*a)/x^2) - 2*(12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*c*x^3 - 27*
A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4, 1/24*(45*A*sqrt(-a)*
c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 30*B*a*c^(3/2)*x^4*log(-2*c*x^2
- 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + (12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*a*
c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4, -1/24*(60
*B*a*sqrt(-c)*c*x^4*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 45*A*sqrt(-a)*c^2*
x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (12*B*c^2*x^5 + 24*A*c^2*x^4 - 56*B*
a*c*x^3 - 27*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/x^4]
```

giac [B] time = 0.24, size = 316, normalized size = 2.21

$$\frac{15\,Aac^2\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}-\frac{5}{2}\,Bac^{\frac{3}{2}}\log\left(\left|-\sqrt{c}x+\sqrt{cx^2+a}\right|\right)+\frac{1}{2}\left(Bc^2x+2\,Ac^2\right)\sqrt{cx^2+a}+\frac{27\left(\sqrt{c}x-\sqrt{\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 15/4*A*a*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - 5/2
*B*a*c^(3/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/2*(B*c^2*x + 2*A*c^
2)*sqrt(c*x^2 + a) + 1/12*(27*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a*c^2 + 72*
(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^2*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 +
 a))^5*A*a^2*c^2 - 168*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^3*c^(3/2) - 3*(s
qrt(c)*x - sqrt(c*x^2 + a))^3*A*a^3*c^2 + 152*(sqrt(c)*x - sqrt(c*x^2 + a))
^2*B*a^4*c^(3/2) + 27*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^4*c^2 - 56*B*a^5*c^
(3/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4
```

maple [B] time = 0.06, size = 236, normalized size = 1.65

$$-\frac{15A\sqrt{a}\,c^2\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{8}+\frac{5Ba\,c^{\frac{3}{2}}\ln\left(\sqrt{c}\,x+\sqrt{cx^2+a}\right)}{2}+\frac{5\sqrt{cx^2+a}\,Bc^2x}{2}+\frac{15\sqrt{cx^2+a}\,Ac^2}{8}+\frac{5\left(cx^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^5,x)
```

```
[Out] -1/4*A/a/x^4*(c*x^2+a)^(7/2)-3/8*A*c/a^2/x^2*(c*x^2+a)^(7/2)+3/8*A*c^2/a^2*
(c*x^2+a)^(5/2)+5/8*A*c^2/a*(c*x^2+a)^(3/2)-15/8*A*c^2*a^(1/2)*ln((2*a+2*(c
*x^2+a)^(1/2)*a^(1/2))/x)+15/8*A*c^2*(c*x^2+a)^(1/2)-1/3*B/a/x^3*(c*x^2+a)^
(7/2)-4/3*B*c/a^2/x*(c*x^2+a)^(7/2)+4/3*B*c^2/a^2*x*(c*x^2+a)^(5/2)+5/3*B*c
^2/a*x*(c*x^2+a)^(3/2)+5/2*B*c^2*x*(c*x^2+a)^(1/2)+5/2*B*c^(3/2)*a*ln(c^(1/
2)*x+(c*x^2+a)^(1/2))
```

maxima [A]   time = 0.65, size = 198, normalized size = 1.38

$$\frac{5}{2}\sqrt{cx^2+a}\,Bc^2x+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^2x}{3\,a}+\frac{5}{2}\,Bac^{\frac{3}{2}}\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{15}{8}\,A\sqrt{a}\,c^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{15}{8}\sqrt{cx^2+a}\,Ac^2+3(c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 5/2*sqrt(c*x^2 + a)*B*c^2*x + 5/3*(c*x^2 + a)^(3/2)*B*c^2*x/a + 5/2*B*a*c^(
3/2)*arcsinh(c*x/sqrt(a*c)) - 15/8*A*sqrt(a)*c^2*arcsinh(a/(sqrt(a*c)*abs(x
))) + 15/8*sqrt(c*x^2 + a)*A*c^2 + 3/8*(c*x^2 + a)^(5/2)*A*c^2/a^2 + 5/8*(c
*x^2 + a)^(3/2)*A*c^2/a - 4/3*(c*x^2 + a)^(5/2)*B*c/(a*x) - 3/8*(c*x^2 + a)
^(7/2)*A*c/(a^2*x^2) - 1/3*(c*x^2 + a)^(7/2)*B/(a*x^3) - 1/4*(c*x^2 + a)^(7
/2)*A/(a*x^4)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^5,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^5, x)
```

sympy [B]   time = 12.86, size = 299, normalized size = 2.09

$$-\frac{15A\sqrt{a}\,c^2\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8}-\frac{Aa^3}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{3Aa^2\sqrt{c}}{8x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{x}+\frac{7Aac^{\frac{3}{2}}}{8x\sqrt{\frac{a}{cx^2}+1}}+\frac{Ac^{\frac{5}{2}}x}{\sqrt{\frac{a}{cx^2}+1}}-\frac{2Ba^{\frac{3}{2}}c}{x\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**5,x)
```

```
[Out] -15*A*sqrt(a)*c**2*asinh(sqrt(a)/(sqrt(c)*x))/8 - A*a**3/(4*sqrt(c)*x**5*sq
rt(a/(c*x**2) + 1)) - 3*A*a**2*sqrt(c)/(8*x**3*sqrt(a/(c*x**2) + 1)) - A*a*
c**(3/2)*sqrt(a/(c*x**2) + 1)/x + 7*A*a*c**(3/2)/(8*x*sqrt(a/(c*x**2) + 1))
 + A*c**(5/2)*x/sqrt(a/(c*x**2) + 1) - 2*B*a**(3/2)*c/(x*sqrt(1 + c*x**2/a)
) + B*sqrt(a)*c**2*x*sqrt(1 + c*x**2/a)/2 - 2*B*sqrt(a)*c**2*x/sqrt(1 + c*x
**2/a) - B*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*x**2) - B*a*c**(3/2)*sqrt(a
/(c*x**2) + 1)/3 + 5*B*a*c**(3/2)*asinh(sqrt(c)*x/sqrt(a))/2
```

3.349 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=140

$$-\frac{c^2\sqrt{a+cx^2}\,(8A-15Bx)}{8x}-\frac{\left(a+cx^2\right)^{5/2}(4A+5Bx)}{20x^5}-\frac{c\left(a+cx^2\right)^{3/2}(8A+15Bx)}{24x^3}+Ac^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-$$

```
[Out] -1/24*c*(15*B*x+8*A)*(c*x^2+a)^(3/2)/x^3-1/20*(5*B*x+4*A)*(c*x^2+a)^(5/2)/x
^5+A*c^(5/2)*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))-15/8*B*c^2*arctanh((c*x^2+a
)^(1/2)/a^(1/2))*a^(1/2)-1/8*c^2*(-15*B*x+8*A)*(c*x^2+a)^(1/2)/x
```

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = $\{811, 813, 844, 217, 206, 266, 63, 208\}$

$$-\frac{c^2\sqrt{a+cx^2}\,(8A-15Bx)}{8x}-\frac{c\left(a+cx^2\right)^{3/2}(8A+15Bx)}{24x^3}-\frac{\left(a+cx^2\right)^{5/2}(4A+5Bx)}{20x^5}+Ac^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^6,x]
```

```
[Out] -(c^2*(8*A - 15*B*x)*Sqrt[a + c*x^2])/(8*x) - (c*(8*A + 15*B*x)*(a + c*x^2)
^(3/2))/(24*x^3) - ((4*A + 5*B*x)*(a + c*x^2)^(5/2))/(20*x^5) + A*c^(5/2)*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (15*Sqrt[a]*B*c^2*ArcTanh[Sqrt[a + c*
x^2]/Sqrt[a]])/8
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^6}\,dx = -\frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5} - \frac{\int \frac{(-8aAc-10aBcx)\left(a+cx^2\right)^{3/2}}{x^4}\,dx}{8a}$$

$$= -\frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5} + \frac{\int \frac{\left(32a^2Ac^2+60a^2Bc^2x\right)\sqrt{a+cx^2}}{x^2}}{32a^2}$$

$$= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x} - \frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}$$

$$= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x} - \frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}$$

$$= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x} - \frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}$$

$$= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x} - \frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}$$

$$= -\frac{c^2(8A-15Bx)\sqrt{a+cx^2}}{8x} - \frac{c(8A+15Bx)\left(a+cx^2\right)^{3/2}}{24x^3} - \frac{(4A+5Bx)\left(a+cx^2\right)^{5/2}}{20x^5}$$

Mathematica [C] time = 0.03, size = 96, normalized size = 0.69

$$-\frac{Bc^2\left(a+cx^2\right)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{cx^2}{a}+1\right)}{7a^3}-\frac{a^2A\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx^2}{a}\right)}{5x^5\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^6,x]
```

```
[Out] -1/5*(a^2*A*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, -5/2, -3/2, -((c*x^2)/a
)])/(x^5*Sqrt[1 + (c*x^2)/a]) - (B*c^2*(a + c*x^2)^(7/2)*Hypergeometric2F1[
3, 7/2, 9/2, 1 + (c*x^2)/a])/(7*a^3)
```

fricas [A] time = 0.66, size = 534, normalized size = 3.81

$$\left[\frac{120\,Ac^{\frac{5}{2}}x^5\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+225\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(120\,Bc^2x^5-184\right.}{240\,x^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/240*(120*A*c^(5/2)*x^5*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
 225*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2)
+ 2*(120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^
2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5, -1/240*(240*A*sqrt(-c)*c^2*x^5*arctan
(sqrt(-c)*x/sqrt(c*x^2 + a)) - 225*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c
*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(120*B*c^2*x^5 - 184*A*c^2*x^4 - 135*B*a*
c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 + a))/x^5, 1/120*(
225*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + 60*A*c^(5/2)*x^5*
log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + (120*B*c^2*x^5 - 184*A*c^
2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqrt(c*x^2 +
a))/x^5, -1/120*(120*A*sqrt(-c)*c^2*x^5*arctan(sqrt(-c)*x/sqrt(c*x^2 + a))
- 225*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (120*B*c^2*x^5
- 184*A*c^2*x^4 - 135*B*a*c*x^3 - 88*A*a*c*x^2 - 30*B*a^2*x - 24*A*a^2)*sqr
t(c*x^2 + a))/x^5]
```

giac [B] time = 0.26, size = 331, normalized size = 2.36

$$\frac{15\,Bac^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}}-Ac^{\frac{5}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\sqrt{cx^2+a}\,Bc^2+\frac{135\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^9Bac^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] 15/4*B*a*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - A*c
^(5/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + sqrt(c*x^2 + a)*B*c^2 + 1/6
0*(135*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*a*c^2 + 360*(sqrt(c)*x - sqrt(c*x^
2 + a))^8*A*a*c^(5/2) - 150*(sqrt(c)*x - sqrt(c*x^2 + a))^7*B*a^2*c^2 - 720
*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^2*c^(5/2) + 1120*(sqrt(c)*x - sqrt(c*x
^2 + a))^4*A*a^3*c^(5/2) + 150*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^4*c^2 -
560*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^4*c^(5/2) - 135*(sqrt(c)*x - sqrt(c
*x^2 + a))*B*a^5*c^2 + 184*A*a^5*c^(5/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2
- a)^5
```

maple [B] time = 0.06, size = 257, normalized size = 1.84

$$A\,c^{\frac{5}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)-\frac{15B\sqrt{a}\,c^{2}\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{8}+\frac{\sqrt{c\,x^{2}+a}\,A\,c^{3}x}{a}+\frac{2\left(c\,x^{2}+a\right)^{\frac{3}{2}}A\,c^{3}x}{3a^{2}}+\frac{15\sqrt{c\,x^{2}+a}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^6,x)
```

```
[Out] -1/5*A/a/x^5*(c*x^2+a)^(7/2)-2/15*A*c/a^2/x^3*(c*x^2+a)^(7/2)-8/15*A*c^2/a^
3/x*(c*x^2+a)^(7/2)+8/15*A*c^3/a^3*x*(c*x^2+a)^(5/2)+2/3*A*c^3/a^2*x*(c*x^2
+a)^(3/2)+A*c^3/a*x*(c*x^2+a)^(1/2)+A*c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
-1/4*B/a/x^4*(c*x^2+a)^(7/2)-3/8*B*c/a^2/x^2*(c*x^2+a)^(7/2)+3/8*B*c^2/a^2*
(c*x^2+a)^(5/2)+5/8*B*c^2/a*(c*x^2+a)^(3/2)-15/8*B*c^2*a^(1/2)*ln((2*a+2*(c
*x^2+a)^(1/2)*a^(1/2))/x)+15/8*B*c^2*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.69, size = 219, normalized size = 1.56

$$\frac{2\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{3}x}{3\,a^{2}}+\frac{\sqrt{cx^{2}+a}\,Ac^{3}x}{a}+Ac^{\frac{5}{2}}\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{15}{8}\,B\sqrt{a}\,c^{2}\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)+\frac{15}{8}\sqrt{cx^{2}+a}\,Bc^{2}+\frac{3\left(cx^{2}+\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 2/3*(c*x^2 + a)^(3/2)*A*c^3*x/a^2 + sqrt(c*x^2 + a)*A*c^3*x/a + A*c^(5/2)*a
rcsinh(c*x/sqrt(a*c)) - 15/8*B*sqrt(a)*c^2*arcsinh(a/(sqrt(a*c)*abs(x))) +
15/8*sqrt(c*x^2 + a)*B*c^2 + 3/8*(c*x^2 + a)^(5/2)*B*c^2/a^2 + 5/8*(c*x^2 +
 a)^(3/2)*B*c^2/a - 8/15*(c*x^2 + a)^(5/2)*A*c^2/(a^2*x) - 3/8*(c*x^2 + a)^
(7/2)*B*c/(a^2*x^2) - 2/15*(c*x^2 + a)^(7/2)*A*c/(a^2*x^3) - 1/4*(c*x^2 + a
)^(7/2)*B/(a*x^4) - 1/5*(c*x^2 + a)^(7/2)*A/(a*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^{2}+a\right)^{5/2}\,\left(A+B\,x\right)}{x^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^6,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^6, x)
```

sympy [B] time = 12.22, size = 294, normalized size = 2.10

$$-\frac{A\sqrt{a}\,c^{2}}{x\sqrt{1+\frac{cx^{2}}{a}}}-\frac{Aa^{2}\sqrt{c}\,\sqrt{\frac{a}{cx^{2}}+1}}{5x^{4}}-\frac{11Aac^{\frac{3}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{15x^{2}}-\frac{8Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{15}+Ac^{\frac{5}{2}}\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\frac{Ac^{3}x}{\sqrt{a}\,\sqrt{1+\frac{cx^{2}}{a}}}-\frac{15B\sqrt{a}\,c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**6,x)
```

```
[Out] -A*sqrt(a)*c**2/(x*sqrt(1 + c*x**2/a)) - A*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1
)/(5*x**4) - 11*A*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/(15*x**2) - 8*A*c**(5/2)*
sqrt(a/(c*x**2) + 1)/15 + A*c**(5/2)*asinh(sqrt(c)*x/sqrt(a)) - A*c**3*x/(s
qrt(a)*sqrt(1 + c*x**2/a)) - 15*B*sqrt(a)*c**2*asinh(sqrt(a)/(sqrt(c)*x))/8
 - B*a**3/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) - 3*B*a**2*sqrt(c)/(8*x**3*
sqrt(a/(c*x**2) + 1)) - B*a*c**(3/2)*sqrt(a/(c*x**2) + 1)/x + 7*B*a*c**(3/2
)/(8*x*sqrt(a/(c*x**2) + 1)) + B*c**(5/2)*x/sqrt(a/(c*x**2) + 1)
```

3.350 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=140

$$-\frac{c^2\sqrt{a+cx^2}\,(5A+16Bx)}{16x^2}-\frac{\left(a+cx^2\right)^{5/2}(5A+6Bx)}{30x^6}-\frac{c\left(a+cx^2\right)^{3/2}(5A+8Bx)}{24x^4}-\frac{5Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}+Bc^{5/2}$$

```
[Out] -1/24*c*(8*B*x+5*A)*(c*x^2+a)^(3/2)/x^4-1/30*(6*B*x+5*A)*(c*x^2+a)^(5/2)/x^
6+B*c^(5/2)*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))-5/16*A*c^3*arctanh((c*x^2+a)
^(1/2)/a^(1/2))/a^(1/2)-1/16*c^2*(16*B*x+5*A)*(c*x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {811, 844, 217, 206, 266, 63, 208}

$$-\frac{c^2\sqrt{a+cx^2}\,(5A+16Bx)}{16x^2}-\frac{c\left(a+cx^2\right)^{3/2}(5A+8Bx)}{24x^4}-\frac{\left(a+cx^2\right)^{5/2}(5A+6Bx)}{30x^6}-\frac{5Ac^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}+Bc^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -(c^2*(5*A + 16*B*x)*Sqrt[a + c*x^2])/(16*x^2) - (c*(5*A + 8*B*x)*(a + c*x^
2)^(3/2))/(24*x^4) - ((5*A + 6*B*x)*(a + c*x^2)^(5/2))/(30*x^6) + B*c^(5/2)
*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]] - (5*A*c^3*ArcTanh[Sqrt[a + c*x^2]/Sq
rt[a]])/(16*Sqrt[a])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^7}\,dx = -\frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} - \frac{\int \frac{(-10aAc-12aBcx)\left(a+cx^2\right)^{3/2}}{x^5}\,dx}{12a}$$

$$= -\frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} + \frac{\int \frac{\left(60a^2Ac^2+96a^2Bc^2x\right)\sqrt{a+cx^2}}{x^3}}{96a^2}$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} -$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

$$= -\frac{c^2(5A+16Bx)\sqrt{a+cx^2}}{16x^2} - \frac{c(5A+8Bx)\left(a+cx^2\right)^{3/2}}{24x^4} - \frac{(5A+6Bx)\left(a+cx^2\right)^{5/2}}{30x^6} +$$

Mathematica [C] time = 0.12, size = 125, normalized size = 0.89

$$-\frac{\sqrt{a+cx^2}\,\left(48a^3Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};-\frac{cx^2}{a}\right)+5aA\sqrt{\frac{cx^2}{a}+1}\,\left(8a^2+26acx^2+33c^2x^4\right)+75Ac^3x^6\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+\right.\right.}{240ax^6\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/240*(Sqrt[a + c*x^2]*(5*a*A*Sqrt[1 + (c*x^2)/a]*(8*a^2 + 26*a*c*x^2 + 33
*c^2*x^4) + 75*A*c^3*x^6*ArcTanh[Sqrt[1 + (c*x^2)/a]] + 48*a^3*B*x*Hypergeo
metric2F1[-5/2, -5/2, -3/2, -((c*x^2)/a)]))/(a*x^6*Sqrt[1 + (c*x^2)/a])
```

fricas [A] time = 1.08, size = 574, normalized size = 4.10

$$\left[\frac{240\,Bac^{\frac{5}{2}}x^6\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+75\,A\sqrt{a}\,c^3x^6\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(368\,Bac^2x^5+16\right.}{480\,ax^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/480*(240*B*a*c^(5/2)*x^6*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a)
 + 75*A*sqrt(a)*c^3*x^6*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2)
 - 2*(368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2
 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6), -1/480*(480*B*a*sqrt(-c
)*c^2*x^6*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 75*A*sqrt(a)*c^3*x^6*log(-(c
*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) + 2*(368*B*a*c^2*x^5 + 165*A*a
*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(
c*x^2 + a))/(a*x^6), 1/240*(75*A*sqrt(-a)*c^3*x^6*arctan(sqrt(-a)/sqrt(c*x^
2 + a)) + 120*B*a*c^(5/2)*x^6*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) - (368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2*c*x^3 + 130*A*a^2*c*x^2
 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6), -1/240*(240*B*a*sqrt(-c
)*c^2*x^6*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - 75*A*sqrt(-a)*c^3*x^6*arctan
(sqrt(-a)/sqrt(c*x^2 + a)) + (368*B*a*c^2*x^5 + 165*A*a*c^2*x^4 + 176*B*a^2
*c*x^3 + 130*A*a^2*c*x^2 + 48*B*a^3*x + 40*A*a^3)*sqrt(c*x^2 + a))/(a*x^6)]
```

giac [B] time = 0.26, size = 397, normalized size = 2.84

$$\frac{5\,Ac^3\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}}-Bc^{\frac{5}{2}}\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)+\frac{165\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{11}Ac^3+720\left(\sqrt{c}\,x-\sqrt{c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] 5/8*A*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*c^(5
/2)*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a))) + 1/120*(165*(sqrt(c)*x - sqrt(c
*x^2 + a))^11*A*c^3 + 720*(sqrt(c)*x - sqrt(c*x^2 + a))^10*B*a*c^(5/2) + 25
*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a*c^3 - 2160*(sqrt(c)*x - sqrt(c*x^2 + a
))^8*B*a^2*c^(5/2) + 450*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*a^2*c^3 + 3680*(
sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^3*c^(5/2) + 450*(sqrt(c)*x - sqrt(c*x^2
+ a))^5*A*a^3*c^3 - 3360*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^4*c^(5/2) + 25
*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^4*c^3 + 1488*(sqrt(c)*x - sqrt(c*x^2 +
 a))^2*B*a^5*c^(5/2) + 165*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^5*c^3 - 368*B*
a^6*c^(5/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^6
```

maple [B] time = 0.07, size = 281, normalized size = 2.01

$$-\frac{5A\,c^3\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{16\sqrt{a}}+B\,c^{\frac{5}{2}}\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)+\frac{\sqrt{c\,x^2+a}\,B\,c^3x}{a}+\frac{5\sqrt{c\,x^2+a}\,A\,c^3}{16a}+\frac{2\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c}{3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^7,x)
```

```
[Out] -1/5*B/a/x^5*(c*x^2+a)^(7/2)-2/15*B*c/a^2/x^3*(c*x^2+a)^(7/2)-8/15*B*c^2/a^
3/x*(c*x^2+a)^(7/2)+8/15*B*c^3/a^3*x*(c*x^2+a)^(5/2)+2/3*B*c^3/a^2*x*(c*x^2
+a)^(3/2)+B*c^3/a*x*(c*x^2+a)^(1/2)+B*c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
-1/6*A/a/x^6*(c*x^2+a)^(7/2)-1/24*A*c/a^2/x^4*(c*x^2+a)^(7/2)-1/16*A*c^2/a^
3/x^2*(c*x^2+a)^(7/2)+1/16*A*c^3/a^3*(c*x^2+a)^(5/2)+5/48*A*c^3/a^2*(c*x^2+
a)^(3/2)-5/16*A*c^3/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)+5/16*A*c^
3/a*(c*x^2+a)^(1/2)
```

maxima [B] time = 0.76, size = 243, normalized size = 1.74

$$\frac{2\left(cx^2+a\right)^{\frac{3}{2}}Bc^3x}{3\,a^2}+\frac{\sqrt{cx^2+a}\,Bc^3x}{a}+Bc^{\frac{5}{2}}\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)-\frac{5\,Ac^3\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Ac^3}{16\,a^3}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Ac^3}{48\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] 2/3*(c*x^2 + a)^(3/2)*B*c^3*x/a^2 + sqrt(c*x^2 + a)*B*c^3*x/a + B*c^(5/2)*a
rcsinh(c*x/sqrt(a*c)) - 5/16*A*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) +
1/16*(c*x^2 + a)^(5/2)*A*c^3/a^3 + 5/48*(c*x^2 + a)^(3/2)*A*c^3/a^2 + 5/16*
sqrt(c*x^2 + a)*A*c^3/a - 8/15*(c*x^2 + a)^(5/2)*B*c^2/(a^2*x) - 1/16*(c*x^
2 + a)^(7/2)*A*c^2/(a^3*x^2) - 2/15*(c*x^2 + a)^(7/2)*B*c/(a^2*x^3) - 1/24*
(c*x^2 + a)^(7/2)*A*c/(a^2*x^4) - 1/5*(c*x^2 + a)^(7/2)*B/(a*x^5) - 1/6*(c*
x^2 + a)^(7/2)*A/(a*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^7,x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/x^7, x)
```

sympy [B] time = 17.16, size = 299, normalized size = 2.14

$$-\frac{Aa^3}{6\sqrt{c}\,x^7\sqrt{\frac{a}{cx^2}+1}}-\frac{17Aa^2\sqrt{c}}{24x^5\sqrt{\frac{a}{cx^2}+1}}-\frac{35Aac^{\frac{3}{2}}}{48x^3\sqrt{\frac{a}{cx^2}+1}}-\frac{Ac^{\frac{5}{2}}\sqrt{\frac{a}{cx^2}+1}}{2x}-\frac{3Ac^{\frac{5}{2}}}{16x\sqrt{\frac{a}{cx^2}+1}}-\frac{5Ac^3\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{16\sqrt{a}}-\frac{B\sqrt{a}\,c^2}{x\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**7,x)
```

```
[Out] -A*a**3/(6*sqrt(c)*x**7*sqrt(a/(c*x**2) + 1)) - 17*A*a**2*sqrt(c)/(24*x**5*
sqrt(a/(c*x**2) + 1)) - 35*A*a*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - A*
c**(5/2)*sqrt(a/(c*x**2) + 1)/(2*x) - 3*A*c**(5/2)/(16*x*sqrt(a/(c*x**2) +
1)) - 5*A*c**3*asinh(sqrt(a)/(sqrt(c)*x))/(16*sqrt(a)) - B*sqrt(a)*c**2/(x*
sqrt(1 + c*x**2/a)) - B*a**2*sqrt(c)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 11*B*a
*c**(3/2)*sqrt(a/(c*x**2) + 1)/(15*x**2) - 8*B*c**(5/2)*sqrt(a/(c*x**2) + 1
)/15 + B*c**(5/2)*asinh(sqrt(c)*x/sqrt(a)) - B*c**3*x/(sqrt(a)*sqrt(1 + c*x
**2/a))
```

3.351 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=115

$$-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{5Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}-\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}$$

```
[Out] -5/24*B*c*(c*x^2+a)^(3/2)/x^4-1/6*B*(c*x^2+a)^(5/2)/x^6-1/7*A*(c*x^2+a)^(7/
2)/a/x^7-5/16*B*c^3*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/2)-5/16*B*c^2*(c*
x^2+a)^(1/2)/x^2
```

Rubi [A] time = 0.07, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {807, 266, 47, 63, 208}

$$-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{5Bc^3\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{16\sqrt{a}}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-5*B*c^2*Sqrt[a + c*x^2])/(16*x^2) - (5*B*c*(a + c*x^2)^(3/2))/(24*x^4) -
(B*(a + c*x^2)^(5/2))/(6*x^6) - (A*(a + c*x^2)^(7/2))/(7*a*x^7) - (5*B*c^3*
ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(16*Sqrt[a])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx &= -\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+B\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx\\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+\frac{1}{2}B\,\mathrm{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx,x,x^2\right)\\
&= -\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+\frac{1}{12}(5Bc)\,\mathrm{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x,x^2\right)\\
&= -\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+\frac{1}{16}\left(5Bc^2\right)\mathrm{Subst}\left(\int \frac{\sqrt{a+c}}{x^2}\right.\\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+\frac{1}{32}\left(5Bc^3\right)\\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}+\frac{1}{16}\left(5Bc^2\right)\\
&= -\frac{5Bc^2\sqrt{a+cx^2}}{16x^2}-\frac{5Bc\left(a+cx^2\right)^{3/2}}{24x^4}-\frac{B\left(a+cx^2\right)^{5/2}}{6x^6}-\frac{A\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{5Bc^3\tanh}{16}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 1.07

$$\frac{-\frac{\left(a+cx^2\right)\left(8a^3(6A+7Bx)+2a^2cx^2(72A+91Bx)+3ac^2x^4(48A+77Bx)+48Ac^3x^6\right)}{ax^7}-105Bc^3\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{336\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (-(((a + c*x^2)*(48*A*c^3*x^6 + 8*a^3*(6*A + 7*B*x) + 3*a*c^2*x^4*(48*A + 7
7*B*x) + 2*a^2*c*x^2*(72*A + 91*B*x)))/(a*x^7)) - 105*B*c^3*Sqrt[1 + (c*x^2
)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(336*Sqrt[a + c*x^2])
```

fricas [A] time = 1.05, size = 238, normalized size = 2.07

$$\left[\frac{105\,B\sqrt{a}\,c^3x^7\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(48\,Ac^3x^6+231\,Bac^2x^5+144\,Aac^2x^4+182\,Ba^2cx^3+144\,Aa^2cx^2+\right.}{672\,ax^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/672*(105*B*sqrt(a)*c^3*x^7*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a
)/x^2) - 2*(48*A*c^3*x^6 + 231*B*a*c^2*x^5 + 144*A*a*c^2*x^4 + 182*B*a^2*c*
x^3 + 144*A*a^2*c*x^2 + 56*B*a^3*x + 48*A*a^3)*sqrt(c*x^2 + a))/(a*x^7), 1/
336*(105*B*sqrt(-a)*c^3*x^7*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (48*A*c^3*x^
6 + 231*B*a*c^2*x^5 + 144*A*a*c^2*x^4 + 182*B*a^2*c*x^3 + 144*A*a^2*c*x^2 +
 56*B*a^3*x + 48*A*a^3)*sqrt(c*x^2 + a))/(a*x^7)]
```

giac [**B**] time = 0.24, size = 316, normalized size = 2.75

$$\frac{5\,Bc^3\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}}+\frac{231\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{13}Bc^3+336\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{12}Ac^{\frac{7}{2}}-196\left(\sqrt{c}\,x-\sqrt{cx}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] 5/8*B*c^3*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 1/168*
(231*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*c^3 + 336*(sqrt(c)*x - sqrt(c*x^2 +
 a))^12*A*c^(7/2) - 196*(sqrt(c)*x - sqrt(c*x^2 + a))^11*B*a*c^3 + 595*(sqr
t(c)*x - sqrt(c*x^2 + a))^9*B*a^2*c^3 + 1680*(sqrt(c)*x - sqrt(c*x^2 + a))^
8*A*a^2*c^(7/2) - 595*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^4*c^3 + 1008*(sqr
t(c)*x - sqrt(c*x^2 + a))^4*A*a^4*c^(7/2) + 196*(sqrt(c)*x - sqrt(c*x^2 + a
))^3*B*a^5*c^3 - 231*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^6*c^3 + 48*A*a^6*c^(
7/2))/((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^7
```

maple [**A**] time = 0.08, size = 164, normalized size = 1.43

$$-\frac{5B\,c^3\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{16\sqrt{a}}+\frac{5\sqrt{c\,x^2+a}\,B\,c^3}{16a}+\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^3}{48a^2}+\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,c^3}{16a^3}-\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,c^2}{16a^3x^2}-\frac{\left(c\,x^2+a\right)}{24a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^8,x)
```

```
[Out] -1/7*A*(c*x^2+a)^(7/2)/a/x^7-1/6*B/a/x^6*(c*x^2+a)^(7/2)-1/24*B*c/a^2/x^4*(
c*x^2+a)^(7/2)-1/16*B*c^2/a^3/x^2*(c*x^2+a)^(7/2)+1/16*B*c^3/a^3*(c*x^2+a)^
(5/2)+5/48*B*c^3/a^2*(c*x^2+a)^(3/2)-5/16*B*c^3/a^(1/2)*ln((2*a+2*(c*x^2+a)
^(1/2)*a^(1/2))/x)+5/16*B*c^3/a*(c*x^2+a)^(1/2)
```

maxima [**A**] time = 0.63, size = 152, normalized size = 1.32

$$-\frac{5\,Bc^3\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{16\,\sqrt{a}}+\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^3}{16\,a^3}+\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^3}{48\,a^2}+\frac{5\,\sqrt{cx^2+a}\,Bc^3}{16\,a}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^2}{16\,a^3x^2}-\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc}{24\,a^2x^4}-\frac{(cx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] -5/16*B*c^3*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) + 1/16*(c*x^2 + a)^(5/2)*
B*c^3/a^3 + 5/48*(c*x^2 + a)^(3/2)*B*c^3/a^2 + 5/16*sqrt(c*x^2 + a)*B*c^3/a
 - 1/16*(c*x^2 + a)^(7/2)*B*c^2/(a^3*x^2) - 1/24*(c*x^2 + a)^(7/2)*B*c/(a^2
*x^4) - 1/6*(c*x^2 + a)^(7/2)*B/(a*x^6) - 1/7*(c*x^2 + a)^(7/2)*A/(a*x^7)
```

mupad [**B**] time = 4.39, size = 150, normalized size = 1.30

$$\frac{5\,B\,a\left(c\,x^2+a\right)^{3/2}}{6\,x^6}-\frac{11\,B\left(c\,x^2+a\right)^{5/2}}{16\,x^6}-\frac{A\,a^2\,\sqrt{c\,x^2+a}}{7\,x^7}-\frac{5\,B\,a^2\,\sqrt{c\,x^2+a}}{16\,x^6}-\frac{3\,A\,c^2\,\sqrt{c\,x^2+a}}{7\,x^3}-\frac{A\,c^3\,\sqrt{c\,x^2+a}}{7\,a\,x}-\frac{3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^8,x)
```

```
[Out] (B*c^3*atan(((a + c*x^2)^(1/2)*1i)/a^(1/2))*5i)/(16*a^(1/2)) - (11*B*(a + c
*x^2)^(5/2))/(16*x^6) + (5*B*a*(a + c*x^2)^(3/2))/(6*x^6) - (A*a^2*(a + c*x
^2)^(1/2))/(7*x^7) - (5*B*a^2*(a + c*x^2)^(1/2))/(16*x^6) - (3*A*c^2*(a + c
*x^2)^(1/2))/(7*x^3) - (A*c^3*(a + c*x^2)^(1/2))/(7*a*x) - (3*A*a*c*(a + c*
x^2)^(1/2))/(7*x^5)
```

sympy [B] time = 16.82, size = 605, normalized size = 5.26

$$-\frac{15Aa^7c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{33Aa^6c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6x^{10}}-\frac{17Aa^5c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{105a^5c^4x^6+210a^4c^5x^8+105a^3c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**8,x)
```

```
[Out] -15*A*a**7*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) - 33*A*a**6*c**(11/2)*x**2*sqrt(a/(c*x**2) +
1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*A*a
**5*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5
*x**8 + 105*a**3*c**6*x**10) - 3*A*a**4*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)
/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*A*a**
3*c**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 8*A*a**2*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/
(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 2*A*a*c**
(3/2)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 7*A*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15
*x**2) - A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a) - B*a**3/(6*sqrt(c)*x**7*sq
rt(a/(c*x**2) + 1)) - 17*B*a**2*sqrt(c)/(24*x**5*sqrt(a/(c*x**2) + 1)) - 35
*B*a*c**(3/2)/(48*x**3*sqrt(a/(c*x**2) + 1)) - B*c**(5/2)*sqrt(a/(c*x**2) +
 1)/(2*x) - 3*B*c**(5/2)/(16*x*sqrt(a/(c*x**2) + 1)) - 5*B*c**3*asinh(sqrt(
a)/(sqrt(c)*x))/(16*sqrt(a))
```

3.352 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=149

$$\frac{5Ac^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}$$

```
[Out] 5/192*A*c^2*(c*x^2+a)^(3/2)/a/x^4+1/48*A*c*(c*x^2+a)^(5/2)/a/x^6-1/8*A*(c*x
^2+a)^(7/2)/a/x^8-1/7*B*(c*x^2+a)^(7/2)/a/x^7+5/128*A*c^4*arctanh((c*x^2+a)
^(1/2)/a^(1/2))/a^(3/2)+5/128*A*c^3*(c*x^2+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.10, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = $\{835, 807, 266, 47, 63, 208\}$

$$\frac{5Ac^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (5*A*c^3*Sqrt[a + c*x^2])/(128*a*x^2) + (5*A*c^2*(a + c*x^2)^(3/2))/(192*a*
x^4) + (A*c*(a + c*x^2)^(5/2))/(48*a*x^6) - (A*(a + c*x^2)^(7/2))/(8*a*x^8)
 - (B*(a + c*x^2)^(7/2))/(7*a*x^7) + (5*A*c^4*ArcTanh[Sqrt[a + c*x^2]/Sqrt[
a]])/(128*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx &= -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{\int \frac{(-8aB+Acx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx}{8a}\\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{(Ac)\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx}{8a}\\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{(Ac)\,\text{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx,x,x^2\right)}{16a}\\
&= \frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\frac{\left(5Ac^2\right)\text{Subst}\left(\int \frac{(a+cx)^{3/2}}{x^3}\,dx,x,}{96a}\\
&= \frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B\left(a+cx^2\right)^{7/2}}{7ax^7}-\left(5Ac^3\right)\text{Su}\\
&= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B(a+c}{7ax}\\
&= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B(a+c}{7ax}\\
&= \frac{5Ac^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Ac^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Ac\left(a+cx^2\right)^{5/2}}{48ax^6}-\frac{A\left(a+cx^2\right)^{7/2}}{8ax^8}-\frac{B(a+c}{7ax}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 53, normalized size = 0.36

$$-\frac{\left(a+cx^2\right)^{7/2}\left(a^4B+Ac^4x^7\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx^2}{a}+1\right)\right)}{7a^5x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/7*((a + c*x^2)^(7/2)*(a^4*B + A*c^4*x^7*Hypergeometric2F1[7/2, 5, 9/2, 1
 + (c*x^2)/a]))/(a^5*x^7)
```

fricas [**A**] time = 1.04, size = 267, normalized size = 1.79

$$\left[\frac{105\,A\sqrt{a}\,c^4x^8\log\left(-\frac{cx^2+2\sqrt{cx^2+a}\sqrt{a}+2a}{x^2}\right)-2\left(384\,Bac^3x^7+105\,Aac^3x^6+1152\,Ba^2c^2x^5+826\,Aa^2c^2x^4+1152\right.}{5376\,a^2x^8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] [1/5376*(105*A*sqrt(a)*c^4*x^8*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*
a)/x^2) - 2*(384*B*a*c^3*x^7 + 105*A*a*c^3*x^6 + 1152*B*a^2*c^2*x^5 + 826*A
*a^2*c^2*x^4 + 1152*B*a^3*c*x^3 + 952*A*a^3*c*x^2 + 384*B*a^4*x + 336*A*a^4
)*sqrt(c*x^2 + a))/(a^2*x^8), -1/2688*(105*A*sqrt(-a)*c^4*x^8*arctan(sqrt(-
a)/sqrt(c*x^2 + a)) + (384*B*a*c^3*x^7 + 105*A*a*c^3*x^6 + 1152*B*a^2*c^2*x
^5 + 826*A*a^2*c^2*x^4 + 1152*B*a^3*c*x^3 + 952*A*a^3*c*x^2 + 384*B*a^4*x +
 336*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^8)]
```

giac [**B**] time = 0.24, size = 491, normalized size = 3.30

$$-\frac{5\,Ac^4\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{64\sqrt{-a}\,a}+\frac{105\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{15}Ac^4+2688\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{14}Bac^{\frac{7}{2}}+2779\left(\sqrt{c}\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] -5/64*A*c^4*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) +
1/1344*(105*(sqrt(c)*x - sqrt(c*x^2 + a))^15*A*c^4 + 2688*(sqrt(c)*x - sqrt
(c*x^2 + a))^14*B*a*c^(7/2) + 2779*(sqrt(c)*x - sqrt(c*x^2 + a))^13*A*a*c^4
 - 2688*(sqrt(c)*x - sqrt(c*x^2 + a))^12*B*a^2*c^(7/2) + 6265*(sqrt(c)*x -
sqrt(c*x^2 + a))^11*A*a^2*c^4 + 13440*(sqrt(c)*x - sqrt(c*x^2 + a))^10*B*a^
3*c^(7/2) + 12355*(sqrt(c)*x - sqrt(c*x^2 + a))^9*A*a^3*c^4 - 13440*(sqrt(c
)*x - sqrt(c*x^2 + a))^8*B*a^4*c^(7/2) + 12355*(sqrt(c)*x - sqrt(c*x^2 + a)
)^7*A*a^4*c^4 + 8064*(sqrt(c)*x - sqrt(c*x^2 + a))^6*B*a^5*c^(7/2) + 6265*(
sqrt(c)*x - sqrt(c*x^2 + a))^5*A*a^5*c^4 - 8064*(sqrt(c)*x - sqrt(c*x^2 + a
))^4*B*a^6*c^(7/2) + 2779*(sqrt(c)*x - sqrt(c*x^2 + a))^3*A*a^6*c^4 + 384*(
sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a^7*c^(7/2) + 105*(sqrt(c)*x - sqrt(c*x^2
+ a))*A*a^7*c^4 - 384*B*a^8*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
^8*a)
```

maple [**A**] time = 0.13, size = 185, normalized size = 1.24

$$\frac{5A\,c^4\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+a}\;A\,c^4}{128a^2}-\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}A\,c^4}{384a^3}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}A\,c^4}{128a^4}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}A\,c^3}{128a^4x^2}+\frac{\left(c\,x^2+a\right)}{192a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^9,x)
```

```
[Out] -1/8*A*(c*x^2+a)^(7/2)/a/x^8+1/48*A*c/a^2/x^6*(c*x^2+a)^(7/2)+1/192*A*c^2/a
^3/x^4*(c*x^2+a)^(7/2)+1/128*A*c^3/a^4/x^2*(c*x^2+a)^(7/2)-1/128*A*c^4/a^4*
(c*x^2+a)^(5/2)-5/384*A*c^4/a^3*(c*x^2+a)^(3/2)+5/128*A*c^4/a^(3/2)*ln((2*a
+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-5/128*A*c^4/a^2*(c*x^2+a)^(1/2)-1/7*B*(c*x^2
+a)^(7/2)/a/x^7
```

maxima [A] time = 0.51, size = 173, normalized size = 1.16

$$\frac{5\,Ac^{4}\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{128\,a^{\frac{3}{2}}}-\frac{\left(cx^{2}+a\right)^{\frac{5}{2}}Ac^{4}}{128\,a^{4}}-\frac{5\left(cx^{2}+a\right)^{\frac{3}{2}}Ac^{4}}{384\,a^{3}}-\frac{5\sqrt{cx^{2}+a}\,Ac^{4}}{128\,a^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}Ac^{3}}{128\,a^{4}x^{2}}+\frac{\left(cx^{2}+a\right)^{\frac{7}{2}}Ac^{2}}{192\,a^{3}x^{4}}+\frac{\left(cx^{2}\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] 5/128*A*c^4*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/128*(c*x^2 + a)^(5/2)
*A*c^4/a^4 - 5/384*(c*x^2 + a)^(3/2)*A*c^4/a^3 - 5/128*sqrt(c*x^2 + a)*A*c^
4/a^2 + 1/128*(c*x^2 + a)^(7/2)*A*c^3/(a^4*x^2) + 1/192*(c*x^2 + a)^(7/2)*A
*c^2/(a^3*x^4) + 1/48*(c*x^2 + a)^(7/2)*A*c/(a^2*x^6) - 1/7*(c*x^2 + a)^(7/
2)*B/(a*x^7) - 1/8*(c*x^2 + a)^(7/2)*A/(a*x^8)
```

mupad [B] time = 5.35, size = 168, normalized size = 1.13

$$\frac{55\,A\,a\left(c\,x^{2}+a\right)^{3/2}}{384\,x^{8}}-\frac{73\,A\left(c\,x^{2}+a\right)^{5/2}}{384\,x^{8}}-\frac{5\,A\,a^{2}\sqrt{c\,x^{2}+a}}{128\,x^{8}}-\frac{5\,A\left(c\,x^{2}+a\right)^{7/2}}{128\,a\,x^{8}}-\frac{B\,a^{2}\sqrt{c\,x^{2}+a}}{7\,x^{7}}-\frac{3\,B\,c^{2}\sqrt{c\,x^{2}+a}}{7\,x^{3}}-B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^9,x)
```

```
[Out] (55*A*a*(a + c*x^2)^(3/2))/(384*x^8) - (A*c^4*atan(((a + c*x^2)^(1/2)*1i)/a
^(1/2))*5i)/(128*a^(3/2)) - (73*A*(a + c*x^2)^(5/2))/(384*x^8) - (5*A*a^2*(
a + c*x^2)^(1/2))/(128*x^8) - (5*A*(a + c*x^2)^(7/2))/(128*a*x^8) - (B*a^2*
(a + c*x^2)^(1/2))/(7*x^7) - (3*B*c^2*(a + c*x^2)^(1/2))/(7*x^3) - (B*c^3*(
a + c*x^2)^(1/2))/(7*a*x) - (3*B*a*c*(a + c*x^2)^(1/2))/(7*x^5)
```

sympy [B] time = 25.77, size = 609, normalized size = 4.09

$$-\frac{Aa^{3}}{8\sqrt{c}\,x^{9}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{23Aa^{2}\sqrt{c}}{48x^{7}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{127Aac^{\frac{3}{2}}}{192x^{5}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{133Ac^{\frac{5}{2}}}{384x^{3}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{5Ac^{\frac{7}{2}}}{128ax\sqrt{\frac{a}{cx^{2}}+1}}+\frac{5Ac^{4}\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{128a^{\frac{3}{2}}}-\frac{}{105a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**9,x)
```

```
[Out] -A*a**3/(8*sqrt(c)*x**9*sqrt(a/(c*x**2) + 1)) - 23*A*a**2*sqrt(c)/(48*x**7*
sqrt(a/(c*x**2) + 1)) - 127*A*a*c**(3/2)/(192*x**5*sqrt(a/(c*x**2) + 1)) -
133*A*c**(5/2)/(384*x**3*sqrt(a/(c*x**2) + 1)) - 5*A*c**(7/2)/(128*a*x*sqrt
(a/(c*x**2) + 1)) + 5*A*c**4*asinh(sqrt(a)/(sqrt(c)*x))/(128*a**(3/2)) - 15
*B*a**7*c**(9/2)*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x
**8 + 105*a**3*c**6*x**10) - 33*B*a**6*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/
(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 17*B*a**5
*c**(13/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x*
*8 + 105*a**3*c**6*x**10) - 3*B*a**4*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(1
05*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 12*B*a**3*c
**(17/2)*x**8*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8
 + 105*a**3*c**6*x**10) - 8*B*a**2*c**(19/2)*x**10*sqrt(a/(c*x**2) + 1)/(10
5*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - 2*B*a*c**(3/
2)*sqrt(a/(c*x**2) + 1)/(5*x**4) - 7*B*c**(5/2)*sqrt(a/(c*x**2) + 1)/(15*x*
*2) - B*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a)
```

3.353 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=172

$$\frac{5Bc^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}+\frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7}-\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9}+\frac{5Bc^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4}-\frac{B\left(a+cx^2\right)^{7/2}}{8ax^8}+$$

```
[Out] 5/192*B*c^2*(c*x^2+a)^(3/2)/a/x^4+1/48*B*c*(c*x^2+a)^(5/2)/a/x^6-1/9*A*(c*x
^2+a)^(7/2)/a/x^9-1/8*B*(c*x^2+a)^(7/2)/a/x^8+2/63*A*c*(c*x^2+a)^(7/2)/a^2/
x^7+5/128*B*c^4*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+5/128*B*c^3*(c*x^2
+a)^(1/2)/a/x^2
```

Rubi [A] time = 0.12, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.300$, Rules used = {835, 807, 266, 47, 63, 208}

$$\frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7}+\frac{5Bc^4\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{128a^{3/2}}-\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9}+\frac{5Bc^3\sqrt{a+cx^2}}{128ax^2}+\frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4}+\frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (5*B*c^3*Sqrt[a + c*x^2])/(128*a*x^2) + (5*B*c^2*(a + c*x^2)^(3/2))/(192*a*
x^4) + (B*c*(a + c*x^2)^(5/2))/(48*a*x^6) - (A*(a + c*x^2)^(7/2))/(9*a*x^9)
 - (B*(a + c*x^2)^(7/2))/(8*a*x^8) + (2*A*c*(a + c*x^2)^(7/2))/(63*a^2*x^7)
 + (5*B*c^4*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(128*a^(3/2))
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{x^{10}}\,dx &= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{\int \frac{(-9aB+2Acx)\left(a+cx^2\right)^{5/2}}{x^9}\,dx}{9a} \\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{\int \frac{(-16aAc-9aBcx)\left(a+cx^2\right)^{5/2}}{x^8}\,dx}{72a^2} \\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \frac{(Bc)\int \frac{\left(a+cx^2\right)^{5/2}}{x^7}\,dx}{8a} \\
&= -\frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \frac{(Bc)\,\text{Subst}\left(\int \frac{(a+cx)^{5/2}}{x^4}\,dx, x\right.}{16a} \\
&= \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+cx^2\right)^{7/2}}{63a^2x^7} - \left(5Bc^2\right)\text{Sub} \\
&= \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx^2\right)^{7/2}}{8ax^8} + \frac{2Ac\left(a+\right.}{63a^2x} \\
&= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\right.}{8ax^8} \\
&= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\right.}{8ax^8} \\
&= \frac{5Bc^3\sqrt{a+cx^2}}{128ax^2} + \frac{5Bc^2\left(a+cx^2\right)^{3/2}}{192ax^4} + \frac{Bc\left(a+cx^2\right)^{5/2}}{48ax^6} - \frac{A\left(a+cx^2\right)^{7/2}}{9ax^9} - \frac{B\left(a+cx\right.}{8ax^8}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.37

$$
-\frac{\left(a+cx^2\right)^{7/2}\left(a^3A\left(7a-2cx^2\right)+9Bc^4x^9\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{cx^2}{a}+1\right)\right)}{63a^5x^9}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/x^10,x]
```

```
[Out] -1/63*((a + c*x^2)^(7/2)*(a^3*A*(7*a - 2*c*x^2) + 9*B*c^4*x^9*Hypergeometri
c2F1[7/2, 5, 9/2, 1 + (c*x^2)/a]))/(a^5*x^9)
```

fricas [A] time = 1.02, size = 286, normalized size = 1.66

$$\left[\frac{315\,B\sqrt{a}\,c^4x^9\log\left(-\frac{cx^2+2\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(256\,Ac^4x^8-315\,Bac^3x^7-128\,Aac^3x^6-2478\,Ba^2c^2x^5-1920\,A\right.}{16128\,a^2x^9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] [1/16128*(315*B*sqrt(a)*c^4*x^9*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2
*a)/x^2) + 2*(256*A*c^4*x^8 - 315*B*a*c^3*x^7 - 128*A*a*c^3*x^6 - 2478*B*a^
2*c^2*x^5 - 1920*A*a^2*c^2*x^4 - 2856*B*a^3*c*x^3 - 2432*A*a^3*c*x^2 - 1008
*B*a^4*x - 896*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^9), -1/8064*(315*B*sqrt(-a)*c
^4*x^9*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (256*A*c^4*x^8 - 315*B*a*c^3*x^7
- 128*A*a*c^3*x^6 - 2478*B*a^2*c^2*x^5 - 1920*A*a^2*c^2*x^4 - 2856*B*a^3*c*
x^3 - 2432*A*a^3*c*x^2 - 1008*B*a^4*x - 896*A*a^4)*sqrt(c*x^2 + a))/(a^2*x^
9)]
```

giac [B] time = 0.25, size = 491, normalized size = 2.85

$$-\frac{5\,Bc^4\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{64\,\sqrt{-a}\,a}+\frac{315\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{17}Bc^4+8022\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^{15}Bac^4+16128\left(\sqrt{c}\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -5/64*B*c^4*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) +
1/4032*(315*(sqrt(c)*x - sqrt(c*x^2 + a))^17*B*c^4 + 8022*(sqrt(c)*x - sqrt
(c*x^2 + a))^15*B*a*c^4 + 16128*(sqrt(c)*x - sqrt(c*x^2 + a))^14*A*a*c^(9/2
) + 10458*(sqrt(c)*x - sqrt(c*x^2 + a))^13*B*a^2*c^4 + 26880*(sqrt(c)*x - s
qrt(c*x^2 + a))^12*A*a^2*c^(9/2) + 18270*(sqrt(c)*x - sqrt(c*x^2 + a))^11*B
*a^3*c^4 + 80640*(sqrt(c)*x - sqrt(c*x^2 + a))^10*A*a^3*c^(9/2) + 48384*(sq
rt(c)*x - sqrt(c*x^2 + a))^8*A*a^4*c^(9/2) - 18270*(sqrt(c)*x - sqrt(c*x^2
+ a))^7*B*a^5*c^4 + 48384*(sqrt(c)*x - sqrt(c*x^2 + a))^6*A*a^5*c^(9/2) - 1
0458*(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*a^6*c^4 + 6912*(sqrt(c)*x - sqrt(c*x
^2 + a))^4*A*a^6*c^(9/2) - 8022*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^7*c^4 +
 2304*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*a^7*c^(9/2) - 315*(sqrt(c)*x - sqrt
(c*x^2 + a))*B*a^8*c^4 - 256*A*a^8*c^(9/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))
^2 - a)^9*a)
```

maple [A] time = 0.09, size = 204, normalized size = 1.19

$$\frac{5B\,c^4\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{3}{2}}}-\frac{5\sqrt{c\,x^2+a}\,B\,c^4}{128a^2}-\frac{5\left(c\,x^2+a\right)^{\frac{3}{2}}B\,c^4}{384a^3}-\frac{\left(c\,x^2+a\right)^{\frac{5}{2}}B\,c^4}{128a^4}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}B\,c^3}{128a^4x^2}+\frac{\left(c\,x^2+a\right)^{\frac{7}{2}}}{192a^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/x^10,x)
```

```
[Out] -1/8*B*(c*x^2+a)^(7/2)/a/x^8+1/48*B*c/a^2/x^6*(c*x^2+a)^(7/2)+1/192*B*c^2/a
^3/x^4*(c*x^2+a)^(7/2)+1/128*B*c^3/a^4/x^2*(c*x^2+a)^(7/2)-1/128*B*c^4/a^4*
```

```
(c*x^2+a)^(5/2)-5/384*B*c^4/a^3*(c*x^2+a)^(3/2)+5/128*B*c^4/a^(3/2)*ln((2*a
+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-5/128*B*c^4/a^2*(c*x^2+a)^(1/2)-1/9*A*(c*x^2
+a)^(7/2)/a/x^9+2/63*A*c*(c*x^2+a)^(7/2)/a^2/x^7
```

maxima [A] time = 0.59, size = 192, normalized size = 1.12

$$\frac{5\,Bc^4\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{128\,a^{\frac{3}{2}}}-\frac{\left(cx^2+a\right)^{\frac{5}{2}}Bc^4}{128\,a^4}-\frac{5\left(cx^2+a\right)^{\frac{3}{2}}Bc^4}{384\,a^3}-\frac{5\sqrt{cx^2+a}\,Bc^4}{128\,a^2}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^3}{128\,a^4x^2}+\frac{\left(cx^2+a\right)^{\frac{7}{2}}Bc^2}{192\,a^3x^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] 5/128*B*c^4*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - 1/128*(c*x^2 + a)^(5/2)
*B*c^4/a^4 - 5/384*(c*x^2 + a)^(3/2)*B*c^4/a^3 - 5/128*sqrt(c*x^2 + a)*B*c^
4/a^2 + 1/128*(c*x^2 + a)^(7/2)*B*c^3/(a^4*x^2) + 1/192*(c*x^2 + a)^(7/2)*B
*c^2/(a^3*x^4) + 1/48*(c*x^2 + a)^(7/2)*B*c/(a^2*x^6) + 2/63*(c*x^2 + a)^(7
/2)*A*c/(a^2*x^7) - 1/8*(c*x^2 + a)^(7/2)*B/(a*x^8) - 1/9*(c*x^2 + a)^(7/2)
*A/(a*x^9)
```

mupad [B] time = 6.34, size = 189, normalized size = 1.10

$$\frac{55\,B\,a\left(c\,x^2+a\right)^{3/2}}{384\,x^8}-\frac{73\,B\left(c\,x^2+a\right)^{5/2}}{384\,x^8}-\frac{A\,a^2\sqrt{c\,x^2+a}}{9\,x^9}-\frac{5\,B\,a^2\sqrt{c\,x^2+a}}{128\,x^8}-\frac{5\,B\left(c\,x^2+a\right)^{7/2}}{128\,a\,x^8}-\frac{5\,A\,c^2\sqrt{c\,x^2+a}}{21\,x^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/x^10,x)
```

```
[Out] (55*B*a*(a + c*x^2)^(3/2))/(384*x^8) - (B*c^4*atan(((a + c*x^2)^(1/2)*1i)/a
^(1/2))*5i)/(128*a^(3/2)) - (73*B*(a + c*x^2)^(5/2))/(384*x^8) - (A*a^2*(a
+ c*x^2)^(1/2))/(9*x^9) - (5*B*a^2*(a + c*x^2)^(1/2))/(128*x^8) - (5*B*(a +
 c*x^2)^(7/2))/(128*a*x^8) - (5*A*c^2*(a + c*x^2)^(1/2))/(21*x^5) - (A*c^3*
(a + c*x^2)^(1/2))/(63*a*x^3) + (2*A*c^4*(a + c*x^2)^(1/2))/(63*a^2*x) - (1
9*A*a*c*(a + c*x^2)^(1/2))/(63*x^7)
```

sympy [B] time = 25.67, size = 1202, normalized size = 6.99

$$-\frac{35Aa^9c^{\frac{19}{2}}\sqrt{\frac{a}{cx^2}+1}}{315a^7c^9x^8+945a^6c^{10}x^{10}+945a^5c^{11}x^{12}+315a^4c^{12}x^{14}}-\frac{110Aa^8c^{\frac{21}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{315a^7c^9x^8+945a^6c^{10}x^{10}+945a^5c^{11}x^{12}+315a^4c^{12}x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/x**10,x)
```

```
[Out] -35*A*a**9*c**(19/2)*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c*
*10*x**10 + 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 110*A*a**8*c**(2
1/2)*x**2*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 +
 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 114*A*a**7*c**(23/2)*x**4*s
qrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c
**11*x**12 + 315*a**4*c**12*x**14) - 40*A*a**6*c**(25/2)*x**6*sqrt(a/(c*x**
2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 +
 315*a**4*c**12*x**14) - 30*A*a**6*c**(11/2)*sqrt(a/(c*x**2) + 1)/(105*a**5
*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) + 5*A*a**5*c**(27/2)
*x**8*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945
*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 66*A*a**5*c**(13/2)*x**2*sqrt(a
/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**
10) + 30*A*a**4*c**(29/2)*x**10*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 +
945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 34*A*
a**4*c**(15/2)*x**4*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**
5*x**8 + 105*a**3*c**6*x**10) + 40*A*a**3*c**(31/2)*x**12*sqrt(a/(c*x**2) +
 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 945*a**5*c**11*x**12 + 315
*a**4*c**12*x**14) - 6*A*a**3*c**(17/2)*x**6*sqrt(a/(c*x**2) + 1)/(105*a**5
*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x**10) + 16*A*a**2*c**(33/2
)*x**14*sqrt(a/(c*x**2) + 1)/(315*a**7*c**9*x**8 + 945*a**6*c**10*x**10 + 9
45*a**5*c**11*x**12 + 315*a**4*c**12*x**14) - 24*A*a**2*c**(19/2)*x**8*sqrt
(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 210*a**4*c**5*x**8 + 105*a**3*c**6*x
**10) - 16*A*a*c**(21/2)*x**10*sqrt(a/(c*x**2) + 1)/(105*a**5*c**4*x**6 + 2
10*a**4*c**5*x**8 + 105*a**3*c**6*x**10) - A*c**(5/2)*sqrt(a/(c*x**2) + 1)/
(5*x**4) - A*c**(7/2)*sqrt(a/(c*x**2) + 1)/(15*a*x**2) + 2*A*c**(9/2)*sqrt(
a/(c*x**2) + 1)/(15*a**2) - B*a**3/(8*sqrt(c)*x**9*sqrt(a/(c*x**2) + 1)) -
23*B*a**2*sqrt(c)/(48*x**7*sqrt(a/(c*x**2) + 1)) - 127*B*a*c**(3/2)/(192*x*
*5*sqrt(a/(c*x**2) + 1)) - 133*B*c**(5/2)/(384*x**3*sqrt(a/(c*x**2) + 1)) -
 5*B*c**(7/2)/(128*a*x*sqrt(a/(c*x**2) + 1)) + 5*B*c**4*asinh(sqrt(a)/(sqrt
(c)*x))/(128*a**(3/2))
```

3.354 $\int \frac{x^4(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=129

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}+\frac{a\sqrt{a+cx^2}\,(64aB-45Acx)}{120c^3}+\frac{Ax^3\sqrt{a+cx^2}}{4c}-\frac{4aBx^2\sqrt{a+cx^2}}{15c^2}+\frac{Bx^4\sqrt{a+cx^2}}{5c}$$

```
[Out] 3/8*a^2*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)-4/15*a*B*x^2*(c*x^2+a)
^(1/2)/c^2+1/4*A*x^3*(c*x^2+a)^(1/2)/c+1/5*B*x^4*(c*x^2+a)^(1/2)/c+1/120*a*
(-45*A*c*x+64*B*a)*(c*x^2+a)^(1/2)/c^3
```

Rubi [A] time = 0.11, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$\frac{3a^2A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}+\frac{a\sqrt{a+cx^2}\,(64aB-45Acx)}{120c^3}+\frac{Ax^3\sqrt{a+cx^2}}{4c}-\frac{4aBx^2\sqrt{a+cx^2}}{15c^2}+\frac{Bx^4\sqrt{a+cx^2}}{5c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (-4*a*B*x^2*Sqrt[a + c*x^2])/(15*c^2) + (A*x^3*Sqrt[a + c*x^2])/(4*c) + (B*
x^4*Sqrt[a + c*x^2])/(5*c) + (a*(64*a*B - 45*A*c*x)*Sqrt[a + c*x^2])/(120*c
^3) + (3*a^2*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^4(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x^3(-4aB+5Acx)}{\sqrt{a+cx^2}}\,dx}{5c} \\
&= \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x^2(-15aAc-16aBcx)}{\sqrt{a+cx^2}}\,dx}{20c^2} \\
&= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{\int \frac{x\left(32a^2Bc-45aAc^2x\right)}{\sqrt{a+cx^2}}\,dx}{60c^3} \\
&= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{\left(3a^2\right.}{} \\
&= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{\left(3a^2\right.}{} \\
&= -\frac{4aBx^2\sqrt{a+cx^2}}{15c^2} + \frac{Ax^3\sqrt{a+cx^2}}{4c} + \frac{Bx^4\sqrt{a+cx^2}}{5c} + \frac{a(64aB-45Acx)\sqrt{a+cx^2}}{120c^3} + \frac{3a^2}{}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.67

$$
\frac{\sqrt{a+cx^2}\left(64a^2B-acx(45A+32Bx)+6c^2x^3(5A+4Bx)\right)+45a^2A\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{120c^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(64*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) - a*c*x*(45*A + 32*B*x
)) + 45*a^2*A*Sqrt[c]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(120*c^3)
```

fricas [A] time = 0.97, size = 176, normalized size = 1.36

$$
\left[\frac{45\,Aa^2\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(24\,Bc^2x^4+30\,Ac^2x^3-32\,Bacx^2-45\,Aacx+64\,Ba^2\right)\sqrt{cx^2}}{240\,c^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(45*A*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) +
2*(24*B*c^2*x^4 + 30*A*c^2*x^3 - 32*B*a*c*x^2 - 45*A*a*c*x + 64*B*a^2)*sqrt
(c*x^2 + a))/c^3, -1/120*(45*A*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 +
a)) - (24*B*c^2*x^4 + 30*A*c^2*x^3 - 32*B*a*c*x^2 - 45*A*a*c*x + 64*B*a^2)*
sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.19, size = 87, normalized size = 0.67

$$
\frac{1}{120}\,\sqrt{cx^2+a}\left(\left(2\left(3\left(\frac{4\,Bx}{c}+\frac{5\,A}{c}\right)x-\frac{16\,Ba}{c^2}\right)x-\frac{45\,Aa}{c^2}\right)x+\frac{64\,Ba^2}{c^3}\right)-\frac{3\,Aa^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{5}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/120*sqrt(c*x^2 + a)*((2*(3*(4*B*x/c + 5*A/c)*x - 16*B*a/c^2)*x - 45*A*a/c
^2)*x + 64*B*a^2/c^3) - 3/8*A*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^
(5/2)
```

maple [A] time = 0.05, size = 117, normalized size = 0.91

$$\frac{\sqrt{c\,x^{2}+a}\;B\,x^{4}}{5c}+\frac{\sqrt{c\,x^{2}+a}\;A\,x^{3}}{4c}-\frac{4\sqrt{c\,x^{2}+a}\;Ba\,x^{2}}{15c^{2}}+\frac{3A\,a^{2}\ln\left(\sqrt{c}\;x+\sqrt{c\,x^{2}+a}\right)}{8c^{\frac{5}{2}}}-\frac{3\sqrt{c\,x^{2}+a}\;Aax}{8c^{2}}+\frac{8\sqrt{c\,x^{2}+a}}{15c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+a)^(1/2)/c-4/15*a*B*x^2*(c*x^2+a)^(1/2)/c^2+8/15*B*a^2/c^3
*(c*x^2+a)^(1/2)+1/4*A*x^3*(c*x^2+a)^(1/2)/c-3/8*A*a/c^2*x*(c*x^2+a)^(1/2)+
3/8*A*a^2/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.57, size = 109, normalized size = 0.84

$$\frac{\sqrt{cx^{2}+a}\,Bx^{4}}{5\,c}+\frac{\sqrt{cx^{2}+a}\,Ax^{3}}{4\,c}-\frac{4\,\sqrt{cx^{2}+a}\,Bax^{2}}{15\,c^{2}}-\frac{3\,\sqrt{cx^{2}+a}\,Aax}{8\,c^{2}}+\frac{3\,Aa^{2}\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{5}{2}}}+\frac{8\,\sqrt{cx^{2}+a}\,Ba^{2}}{15\,c^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(c*x^2 + a)*B*x^4/c + 1/4*sqrt(c*x^2 + a)*A*x^3/c - 4/15*sqrt(c*x^2
 + a)*B*a*x^2/c^2 - 3/8*sqrt(c*x^2 + a)*A*a*x/c^2 + 3/8*A*a^2*arcsinh(c*x/s
qrt(a*c))/c^(5/2) + 8/15*sqrt(c*x^2 + a)*B*a^2/c^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{4}\,\left(A+B\,x\right)}{\sqrt{c\,x^{2}+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [A] time = 6.58, size = 173, normalized size = 1.34

$$-\frac{3Aa^{\frac{3}{2}}x}{8c^{2}\sqrt{1+\frac{cx^{2}}{a}}}-\frac{A\sqrt{a}\,x^{3}}{8c\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3Aa^{2}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{5}{2}}}+\frac{Ax^{5}}{4\sqrt{a}\sqrt{1+\frac{cx^{2}}{a}}}+B\left(\begin{cases}\frac{8a^{2}\sqrt{a+cx^{2}}}{15c^{3}}-\frac{4ax^{2}\sqrt{a+cx^{2}}}{15c^{2}}+\frac{x^{4}\sqrt{a+cx^{2}}}{5c} & \text{for } c \\ \frac{x^{6}}{6\sqrt{a}} & \text{other}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] -3*A*a**(3/2)*x/(8*c**2*sqrt(1 + c*x**2/a)) - A*sqrt(a)*x**3/(8*c*sqrt(1 +
c*x**2/a)) + 3*A*a**2*asinh(sqrt(c)*x/sqrt(a))/(8*c**(5/2)) + A*x**5/(4*sqr
t(a)*sqrt(1 + c*x**2/a)) + B*Piecewise((8*a**2*sqrt(a + c*x**2)/(15*c**3) -
 4*a*x**2*sqrt(a + c*x**2)/(15*c**2) + x**4*sqrt(a + c*x**2)/(5*c), Ne(c, 0
)), (x**6/(6*sqrt(a)), True))
```

3.355 $\int \frac{x^3(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=104

$$\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}-\frac{a\sqrt{a+cx^2}\,(16A+9Bx)}{24c^2}+\frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}$$

```
[Out] 3/8*a^2*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)+1/3*A*x^2*(c*x^2+a)^(1
/2)/c+1/4*B*x^3*(c*x^2+a)^(1/2)/c-1/24*a*(9*B*x+16*A)*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.07, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$\frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}-\frac{a\sqrt{a+cx^2}\,(16A+9Bx)}{24c^2}+\frac{Ax^2\sqrt{a+cx^2}}{3c}+\frac{Bx^3\sqrt{a+cx^2}}{4c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (A*x^2*Sqrt[a + c*x^2])/(3*c) + (B*x^3*Sqrt[a + c*x^2])/(4*c) - (a*(16*A +
9*B*x)*Sqrt[a + c*x^2])/(24*c^2) + (3*a^2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*
x^2]])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^3(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{Bx^3\sqrt{a+cx^2}}{4c} + \frac{\int \frac{x^2(-3aB+4Acx)}{\sqrt{a+cx^2}}\,dx}{4c} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c} + \frac{Bx^3\sqrt{a+cx^2}}{4c} + \frac{\int \frac{x(-8aAc-9aBcx)}{\sqrt{a+cx^2}}\,dx}{12c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c} + \frac{Bx^3\sqrt{a+cx^2}}{4c} - \frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2} + \frac{\left(3a^2B\right)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{8c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c} + \frac{Bx^3\sqrt{a+cx^2}}{4c} - \frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2} + \frac{\left(3a^2B\right)\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+}}\right.}{8c^2} \\
&= \frac{Ax^2\sqrt{a+cx^2}}{3c} + \frac{Bx^3\sqrt{a+cx^2}}{4c} - \frac{a(16A+9Bx)\sqrt{a+cx^2}}{24c^2} + \frac{3a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{8c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 76, normalized size = 0.73

$$\frac{9a^2B\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)+\sqrt{c}\sqrt{a+cx^2}\left(-16aA-9aBx+8Acx^2+6Bcx^3\right)}{24c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[c]*Sqrt[a + c*x^2]*(-16*a*A - 9*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 9*a^
2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(24*c^(5/2))
```

fricas [A] time = 1.11, size = 158, normalized size = 1.52

$$\left[\frac{9\,Ba^2\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\left(6\,Bc^2x^3+8\,Ac^2x^2-9\,Bacx-16\,Aac\right)\sqrt{cx^2+a}}{48\,c^3},-\frac{9\,Ba^2\sqrt{-c}\,a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(9*B*a^2*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*
(6*B*c^2*x^3 + 8*A*c^2*x^2 - 9*B*a*c*x - 16*A*a*c)*sqrt(c*x^2 + a))/c^3, -1
/24*(9*B*a^2*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (6*B*c^2*x^3 + 8
*A*c^2*x^2 - 9*B*a*c*x - 16*A*a*c)*sqrt(c*x^2 + a))/c^3]
```

giac [A] time = 0.22, size = 74, normalized size = 0.71

$$\frac{1}{24}\sqrt{cx^2+a}\left(\left(2\left(\frac{3\,Bx}{c}+\frac{4\,A}{c}\right)x-\frac{9\,Ba}{c^2}\right)x-\frac{16\,Aa}{c^2}\right)-\frac{3\,Ba^2\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + a)*((2*(3*B*x/c + 4*A/c)*x - 9*B*a/c^2)*x - 16*A*a/c^2) -
 3/8*B*a^2*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.06, size = 96, normalized size = 0.92

$$\frac{\sqrt{c\,x^2+a}\;B\,x^3}{4c}+\frac{\sqrt{c\,x^2+a}\;A\,x^2}{3c}+\frac{3B\,a^2\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{8c^{\frac{5}{2}}}-\frac{3\sqrt{c\,x^2+a}\;Bax}{8c^2}-\frac{2\sqrt{c\,x^2+a}\;Aa}{3c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+a)^(1/2)/c-3/8*B*a/c^2*x*(c*x^2+a)^(1/2)+3/8*B*a^2/c^(5/2)
*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+1/3*A*x^2*(c*x^2+a)^(1/2)/c-2/3*A*a/c^2*(c*x
^2+a)^(1/2)
```

maxima [A] time = 0.48, size = 88, normalized size = 0.85

$$\frac{\sqrt{cx^2+a}\,Bx^3}{4\,c}+\frac{\sqrt{cx^2+a}\,Ax^2}{3\,c}-\frac{3\,\sqrt{cx^2+a}\,Bax}{8\,c^2}+\frac{3\,Ba^2\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{8\,c^{\frac{5}{2}}}-\frac{2\,\sqrt{cx^2+a}\,Aa}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + a)*B*x^3/c + 1/3*sqrt(c*x^2 + a)*A*x^2/c - 3/8*sqrt(c*x^2
+ a)*B*a*x/c^2 + 3/8*B*a^2*arcsinh(c*x/sqrt(a*c))/c^(5/2) - 2/3*sqrt(c*x^2
+ a)*A*a/c^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [A] time = 6.23, size = 150, normalized size = 1.44

$$A\left(\begin{cases}-\frac{2a\sqrt{a+cx^2}}{3c^2}+\frac{x^2\sqrt{a+cx^2}}{3c} & \text{for}\ c\neq 0\\ \frac{x^4}{4\sqrt{a}} & \text{otherwise}\end{cases}\right)-\frac{3Ba^{\frac{3}{2}}x}{8c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{B\sqrt{a}\,x^3}{8c\sqrt{1+\frac{cx^2}{a}}}+\frac{3Ba^2\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8c^{\frac{5}{2}}}+\frac{Bx^5}{4\sqrt{a}\,\sqrt{1+\frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((-2*a*sqrt(a + c*x**2)/(3*c**2) + x**2*sqrt(a + c*x**2)/(3*c),
Ne(c, 0)), (x**4/(4*sqrt(a)), True)) - 3*B*a**(3/2)*x/(8*c**2*sqrt(1 + c*x*
*2/a)) - B*sqrt(a)*x**3/(8*c*sqrt(1 + c*x**2/a)) + 3*B*a**2*asinh(sqrt(c)*x
/sqrt(a))/(8*c**(5/2)) + B*x**5/(4*sqrt(a)*sqrt(1 + c*x**2/a))
```

3.356 $\int \frac{x^2(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=81

$$-\frac{\sqrt{a+cx^2}\,(4aB-3Acx)}{6c^2}-\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}+\frac{Bx^2\sqrt{a+cx^2}}{3c}$$

```
[Out] -1/2*a*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)+1/3*B*x^2*(c*x^2+a)^(1/
2)/c-1/6*(-3*A*c*x+4*B*a)*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {833, 780, 217, 206}

$$-\frac{\sqrt{a+cx^2}\,(4aB-3Acx)}{6c^2}-\frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}+\frac{Bx^2\sqrt{a+cx^2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (B*x^2*Sqrt[a + c*x^2])/(3*c) - ((4*a*B - 3*A*c*x)*Sqrt[a + c*x^2])/(6*c^2)
 - (a*A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{Bx^2\sqrt{a+cx^2}}{3c} + \frac{\int \frac{x(-2aB+3Acx)}{\sqrt{a+cx^2}}\,dx}{3c} \\
&= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{(aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c} \\
&= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{(aA)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{2c} \\
&= \frac{Bx^2\sqrt{a+cx^2}}{3c} - \frac{(4aB-3Acx)\sqrt{a+cx^2}}{6c^2} - \frac{aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 64, normalized size = 0.79

$$
\frac{\sqrt{a+cx^2}\,(cx(3A+2Bx)-4aB)-3aA\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{6c^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[a + c*x^2]*(-4*a*B + c*x*(3*A + 2*B*x)) - 3*a*A*Sqrt[c]*ArcTanh[(Sqrt
[c]*x)/Sqrt[a + c*x^2]])/(6*c^2)
```

fricas [A] time = 1.01, size = 127, normalized size = 1.57

$$
\Bigg[\frac{3\,Aa\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\left(2\,Bcx^2+3\,Acx-4\,Ba\right)\sqrt{cx^2+a}}{12\,c^2}, \; 3\,Aa\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*A*a*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(2
*B*c*x^2 + 3*A*c*x - 4*B*a)*sqrt(c*x^2 + a))/c^2, 1/6*(3*A*a*sqrt(-c)*arcta
n(sqrt(-c)*x/sqrt(c*x^2 + a)) + (2*B*c*x^2 + 3*A*c*x - 4*B*a)*sqrt(c*x^2 +
a))/c^2]
```

giac [A] time = 0.19, size = 61, normalized size = 0.75

$$
\frac{1}{6}\,\sqrt{cx^2+a}\left(\left(\frac{2\,Bx}{c}+\frac{3\,A}{c}\right)x-\frac{4\,Ba}{c^2}\right)+\frac{Aa\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2 + a)*((2*B*x/c + 3*A/c)*x - 4*B*a/c^2) + 1/2*A*a*log(abs(-sq
rt(c)*x + sqrt(c*x^2 + a)))/c^(3/2)
```

maple [A] time = 0.06, size = 75, normalized size = 0.93

$$
\frac{\sqrt{c\,x^2+a}\;B\,x^2}{3c}-\frac{Aa\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+a}\;Ax}{2c}-\frac{2\sqrt{c\,x^2+a}\;Ba}{3c^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+a)^(1/2)/c-2/3*B*a/c^2*(c*x^2+a)^(1/2)+1/2*A*x/c*(c*x^2+a)
^(1/2)-1/2*A*a/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.48, size = 67, normalized size = 0.83

$$\frac{\sqrt{cx^2+a}\,Bx^2}{3\,c}+\frac{\sqrt{cx^2+a}\,Ax}{2\,c}-\frac{Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{3}{2}}}-\frac{2\,\sqrt{cx^2+a}\,Ba}{3\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + a)*B*x^2/c + 1/2*sqrt(c*x^2 + a)*A*x/c - 1/2*A*a*arcsinh(c
*x/sqrt(a*c))/c^(3/2) - 2/3*sqrt(c*x^2 + a)*B*a/c^2
```

mupad [B] time = 1.64, size = 93, normalized size = 1.15

$$\begin{cases} \frac{3\,B\,x^4+4\,A\,x^3}{12\,\sqrt{a}} & \text{if } c=0 \\ \frac{A\,x\,\sqrt{c\,x^2+a}}{2\,c}-\frac{A\,a\,\ln\left(2\,\sqrt{c}\,x+2\,\sqrt{c\,x^2+a}\right)}{2\,c^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}\,\left(2\,a-c\,x^2\right)}{3\,c^2} & \text{if } c\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] piecewise(c == 0, (4*A*x^3 + 3*B*x^4)/(12*a^(1/2)), c ~= 0, - (A*a*log(2*c^
(1/2)*x + 2*(a + c*x^2)^(1/2)))/(2*c^(3/2)) + (A*x*(a + c*x^2)^(1/2))/(2*c)
 - (B*(a + c*x^2)^(1/2)*(2*a - c*x^2))/(3*c^2))
```

sympy [A] time = 4.27, size = 94, normalized size = 1.16

$$\frac{A\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2c}-\frac{Aa\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{3}{2}}}+B\left(\begin{cases} -\frac{2a\sqrt{a+cx^2}}{3c^2}+\frac{x^2\sqrt{a+cx^2}}{3c} & \text{for } c\neq 0 \\ \frac{x^4}{4\sqrt{a}} & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*x*sqrt(1 + c*x**2/a)/(2*c) - A*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(
3/2)) + B*Piecewise((-2*a*sqrt(a + c*x**2)/(3*c**2) + x**2*sqrt(a + c*x**2)
/(3*c), Ne(c, 0)), (x**4/(4*sqrt(a)), True))
```

3.357 $\int \frac{x(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=56

$$\frac{\sqrt{a+cx^2}\,(2A+Bx)}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

```
[Out] -1/2*a*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)+1/2*(B*x+2*A)*(c*x^2+a)
^(1/2)/c
```

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {780, 217, 206}

$$\frac{\sqrt{a+cx^2}\,(2A+Bx)}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] ((2*A + B*x)*Sqrt[a + c*x^2])/(2*c) - (a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x
^2]])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{(aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c}\\ &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{(aB)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{2c}\\ &= \frac{(2A+Bx)\sqrt{a+cx^2}}{2c}-\frac{aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 1.02

$$\frac{\sqrt{c}\sqrt{a+cx^2}\,(2A+Bx)-aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[c]*(2*A + B*x)*Sqrt[a + c*x^2] - a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x
^2]])/(2*c^(3/2))
```

fricas [A] time = 0.92, size = 109, normalized size = 1.95

$$[\frac{Ba\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,(Bcx+2\,Ac)\sqrt{cx^2+a}}{4\,c^2}, \frac{Ba\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)+(Bcx+2\,Ac)\sqrt{}}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(B*a*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*(B*c*
x + 2*A*c)*sqrt(c*x^2 + a))/c^2, 1/2*(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c
*x^2 + a)) + (B*c*x + 2*A*c)*sqrt(c*x^2 + a))/c^2]
```

giac [A] time = 0.20, size = 50, normalized size = 0.89

$$\frac{1}{2}\,\sqrt{cx^2+a}\left(\frac{Bx}{c}+\frac{2\,A}{c}\right)+\frac{Ba\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*(B*x/c + 2*A/c) + 1/2*B*a*log(abs(-sqrt(c)*x + sqrt(c*x
^2 + a)))/c^(3/2)
```

maple [A] time = 0.05, size = 55, normalized size = 0.98

$$-\frac{Ba\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+a}\,Bx}{2c}+\frac{\sqrt{c\,x^2+a}\,A}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+a)^(1/2)-1/2*B*a/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))+A/c
*(c*x^2+a)^(1/2)
```

maxima [A] time = 0.49, size = 47, normalized size = 0.84

$$\frac{\sqrt{cx^2+a}\,Bx}{2\,c}-\frac{Ba\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+a}\,A}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + a)*B*x/c - 1/2*B*a*arcsinh(c*x/sqrt(a*c))/c^(3/2) + sqrt(c
*x^2 + a)*A/c
```

mupad [B] time = 1.43, size = 82, normalized size = 1.46

$$\begin{cases} \frac{2\,B\,x^3+3\,A\,x^2}{6\,\sqrt{a}} & \text{if } c=0 \\ \frac{A\,\sqrt{c\,x^2+a}}{c}-\frac{B\,a\,\ln\left(2\,\sqrt{c}\,x+2\,\sqrt{c\,x^2+a}\right)}{2\,c^{3/2}}+\frac{B\,x\,\sqrt{c\,x^2+a}}{2\,c} & \text{if } c\neq 0 \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] piecewise(c == 0, (3*A*x^2 + 2*B*x^3)/(6*a^(1/2)), c ~= 0, (A*(a + c*x^2)^(
1/2))/c - (B*a*log(2*c^(1/2)*x + 2*(a + c*x^2)^(1/2)))/(2*c^(3/2)) + (B*x*(
a + c*x^2)^(1/2))/(2*c))
```

sympy [A] time = 4.20, size = 70, normalized size = 1.25

$$A\left(\begin{cases} \frac{x^2}{2\sqrt{a}} & \text{for } c=0 \\ \frac{\sqrt{a+cx^2}}{c} & \text{otherwise} \end{cases}\right)+\frac{B\sqrt{a}\,x\sqrt{1+\frac{cx^2}{a}}}{2c}-\frac{Ba\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((x**2/(2*sqrt(a)), Eq(c, 0)), (sqrt(a + c*x**2)/c, True)) + B*s
qrt(a)*x*sqrt(1 + c*x**2/a)/(2*c) - B*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(3/2
))
```

3.358 $\int \frac{A+Bx}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=43

$$\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

```
[Out] A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(1/2)+B*(c*x^2+a)^(1/2)/c
```

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = $\{641, 217, 206\}$

$$\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + c*x^2],x]
```

```
[Out] (B*Sqrt[a + c*x^2])/c + (A*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a+cx^2}}\,dx &= \frac{B\sqrt{a+cx^2}}{c}+A\int \frac{1}{\sqrt{a+cx^2}}\,dx\\ &= \frac{B\sqrt{a+cx^2}}{c}+A\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)\\ &= \frac{B\sqrt{a+cx^2}}{c}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 46, normalized size = 1.07

$$\frac{A\log\left(\sqrt{c}\sqrt{a+cx^2}+cx\right)}{\sqrt{c}}+\frac{B\sqrt{a+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + c*x^2],x]
```

```
[Out] (B*Sqrt[a + c*x^2])/c + (A*Log[c*x + Sqrt[c]*Sqrt[a + c*x^2]])/Sqrt[c]
```

fricas [A] time = 0.79, size = 92, normalized size = 2.14

$$\left[\frac{A\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\,\sqrt{cx^2+a}\,B}{2\,c},\,-\frac{A\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-\sqrt{cx^2+a}\,B}{c}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(A*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + 2*sqrt(c*
x^2 + a)*B)/c, -(A*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - sqrt(c*x^2
 + a)*B)/c]
```

giac [A] time = 0.19, size = 39, normalized size = 0.91

$$-\frac{A\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -A*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c) + sqrt(c*x^2 + a)*B/c
```

maple [A] time = 0.05, size = 37, normalized size = 0.86

$$\frac{A\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}+\frac{\sqrt{c\,x^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] B*(c*x^2+a)^(1/2)/c+A*ln(c^(1/2)*x+(c*x^2+a)^(1/2))/c^(1/2)
```

maxima [A] time = 0.57, size = 29, normalized size = 0.67

$$\frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] A*arcsinh(c*x/sqrt(a*c))/sqrt(c) + sqrt(c*x^2 + a)*B/c
```

mupad [B] time = 1.33, size = 36, normalized size = 0.84

$$\frac{B\,\sqrt{c\,x^2+a}}{c}+\frac{A\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^(1/2),x)
```

```
[Out] (B*(a + c*x^2)^(1/2))/c + (A*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(1/2)
```

sympy [B] time = 1.49, size = 102, normalized size = 2.37

$$A\left(\begin{cases}\frac{\sqrt{-\frac{a}{c}}\operatorname{asin}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{a}} & \text{for } a>0\wedge c<0\\ \frac{\sqrt{\frac{a}{c}}\operatorname{asinh}\left(x\sqrt{\frac{c}{a}}\right)}{\sqrt{a}} & \text{for } a>0\wedge c>0\\ \frac{\sqrt{-\frac{a}{c}}\operatorname{acosh}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{-a}} & \text{for } c>0\wedge a<0\end{cases}\right)+B\left(\begin{cases}\frac{x^2}{2\sqrt{a}} & \text{for } c=0\\ \frac{\sqrt{a+cx^2}}{c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*Piecewise((sqrt(-a/c)*asin(x*sqrt(-c/a))/sqrt(a), (a > 0) & (c < 0)), (sq
rt(a/c)*asinh(x*sqrt(c/a))/sqrt(a), (a > 0) & (c > 0)), (sqrt(-a/c)*acosh(x
*sqrt(-c/a))/sqrt(-a), (c > 0) & (a < 0))) + B*Piecewise((x**2/(2*sqrt(a)),
 Eq(c, 0)), (sqrt(a + c*x**2)/c, True))
```

3.359 $\int \frac{A+Bx}{x\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=53

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

```
[Out] -A*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/2)+B*arctanh(x*c^(1/2)/(c*x^2+a)^(
1/2))/c^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {844, 217, 206, 266, 63, 208}

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c] - (A*ArcTanh[Sqrt[a + c*x^
2]/Sqrt[a]])/Sqrt[a]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
```

```
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x\sqrt{a+cx^2}}\,dx &= A\int \frac{1}{x\sqrt{a+cx^2}}\,dx + B\int \frac{1}{\sqrt{a+cx^2}}\,dx\\
&= \frac{1}{2}A\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right) + B\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)\\
&= \frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} + \frac{A\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{c}\\
&= \frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
\end{aligned}
$$

Mathematica [**A**] time = 0.01, size = 53, normalized size = 1.00

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/Sqrt[c] - (A*ArcTanh[Sqrt[a + c*x^
2]/Sqrt[a]])/Sqrt[a]
```

fricas [**A**] time = 0.93, size = 273, normalized size = 5.15

$$\left[\frac{Ba\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+A\sqrt{a}\,c\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)}{2\,ac}, -\frac{2\,Ba\sqrt{-c}\,\arctan\left(\frac{\sqrt{-c}\,x}{\sqrt{cx^2+a}}\right)-A}{2\,ac}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x - a) + A*sqrt(
a)*c*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2))/(a*c), -1/2*(2*B*
a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqrt(a)*c*log(-(c*x^2 - 2
*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2))/(a*c), 1/2*(2*A*sqrt(-a)*c*arctan(sqr
t(-a)/sqrt(c*x^2 + a)) + B*a*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(
c)*x - a))/(a*c), -(B*a*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - A*sqr
t(-a)*c*arctan(sqrt(-a)/sqrt(c*x^2 + a)))/(a*c)]
```

giac [**A**] time = 0.21, size = 58, normalized size = 1.09

$$\frac{2\,A\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} - \frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) - B*log(abs(-s
qrt(c)*x + sqrt(c*x^2 + a)))/sqrt(c)
```

maple [A] time = 0.05, size = 52, normalized size = 0.98

$$-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}+\frac{B\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+a)^(1/2),x)
```

```
[Out] B*ln(c^(1/2)*x+(c*x^2+a)^(1/2))/c^(1/2)-A/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)
*a^(1/2))/x)
```

maxima [A] time = 0.54, size = 33, normalized size = 0.62

$$\frac{B\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{c}}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] B*arcsinh(c*x/sqrt(a*c))/sqrt(c) - A*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a)
```

mupad [B] time = 1.51, size = 42, normalized size = 0.79

$$\frac{B\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^{2}+a}\right)}{\sqrt{c}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(1/2)),x)
```

```
[Out] (B*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(1/2) - (A*atanh((a + c*x^2)^(1/2)
/a^(1/2)))/a^(1/2)
```

sympy [A] time = 3.33, size = 99, normalized size = 1.87

$$-\frac{A\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{\sqrt{a}}+B\left(\begin{cases}\frac{\sqrt{-\frac{a}{c}}\,\mathrm{asin}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\ a>0\wedge c<0\\ \frac{\sqrt{\frac{a}{c}}\,\mathrm{asinh}\left(x\sqrt{\frac{c}{a}}\right)}{\sqrt{a}} & \text{for}\ a>0\wedge c>0\\ \frac{\sqrt{-\frac{a}{c}}\,\mathrm{acosh}\left(x\sqrt{-\frac{c}{a}}\right)}{\sqrt{-a}} & \text{for}\ c>0\wedge a<0\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*asinh(sqrt(a)/(sqrt(c)*x))/sqrt(a) + B*Piecewise((sqrt(-a/c)*asin(x*sqrt
(-c/a))/sqrt(a), (a > 0) & (c < 0)), (sqrt(a/c)*asinh(x*sqrt(c/a))/sqrt(a),
 (a > 0) & (c > 0)), (sqrt(-a/c)*acosh(x*sqrt(-c/a))/sqrt(-a), (c > 0) & (a
 < 0)))
```

3.360 $\int \frac{A+Bx}{x^2\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=47

$$-\frac{A\sqrt{a+cx^2}}{ax}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

```
[Out] -B*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(1/2)-A*(c*x^2+a)^(1/2)/a/x
```

Rubi [A] time = 0.03, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {807, 266, 63, 208}

$$-\frac{A\sqrt{a+cx^2}}{ax}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + c*x^2])/(a*x)) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^2\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{ax} + B\int \frac{1}{x\sqrt{a+cx^2}}\,dx \\
&= -\frac{A\sqrt{a+cx^2}}{ax} + \frac{1}{2}B\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx, x, x^2\right) \\
&= -\frac{A\sqrt{a+cx^2}}{ax} + \frac{B\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx, x, \sqrt{a+cx^2}\right)}{c} \\
&= -\frac{A\sqrt{a+cx^2}}{ax} - \frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
\end{aligned}
$$

Mathematica [**A**] time = 0.02, size = 47, normalized size = 1.00

$$
-\frac{A\sqrt{a+cx^2}}{ax} - \frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{\sqrt{a}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + c*x^2])/(a*x)) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/Sqrt[a]
```

fricas [**A**] time = 0.92, size = 101, normalized size = 2.15

$$
\left[\frac{B\sqrt{a}\,x\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right) - 2\,\sqrt{cx^2+a}\,A}{2\,ax}, \frac{B\sqrt{-a}\,x\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right) - \sqrt{cx^2+a}\,A}{ax}\right]
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*sqrt(a)*x*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*s
qrt(c*x^2 + a)*A)/(a*x), (B*sqrt(-a)*x*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - s
qrt(c*x^2 + a)*A)/(a*x)]
```

giac [**A**] time = 0.19, size = 65, normalized size = 1.38

$$
\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}} + \frac{2\,A\sqrt{c}}{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2 - a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/sqrt(-a) + 2*A*sqrt(c)/
((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)
```

maple [**A**] time = 0.05, size = 49, normalized size = 1.04

$$
-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}} - \frac{\sqrt{c\,x^2+a}\,A}{ax}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(1/2),x)
```

```
[Out] -A*(c*x^2+a)^(1/2)/a/x-B/a^(1/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.57, size = 37, normalized size = 0.79

$$-\frac{B \operatorname{arsinh}\left(\frac{a}{\sqrt{ac}|x|}\right)}{\sqrt{a}} - \frac{\sqrt{cx^2 + a}\,A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*arcsinh(a/(sqrt(a*c)*abs(x)))/sqrt(a) - sqrt(c*x^2 + a)*A/(a*x)
```

mupad [B] time = 1.37, size = 39, normalized size = 0.83

$$-\frac{B \operatorname{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{\sqrt{a}} - \frac{A\,\sqrt{c\,x^2 + a}}{a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(1/2)),x)
```

```
[Out] - (B*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(1/2) - (A*(a + c*x^2)^(1/2))/(a*x
)
```

sympy [A] time = 2.64, size = 41, normalized size = 0.87

$$-\frac{A\sqrt{c}\,\sqrt{\frac{a}{cx^2} + 1}}{a} - \frac{B \operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/a - B*asinh(sqrt(a)/(sqrt(c)*x))/sqrt(a)
```

3.361 $\int \frac{A+Bx}{x^3\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}$$

```
[Out] 1/2*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)-1/2*A*(c*x^2+a)^(1/2)/a/x^
2-B*(c*x^2+a)^(1/2)/a/x
```

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = $\{835, 807, 266, 63, 208\}$

$$\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(2*a*x^2) - (B*Sqrt[a + c*x^2])/(a*x) + (A*c*ArcTanh[S
qrt[a + c*x^2]/Sqrt[a]])/(2*a^(3/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^3\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{\int \frac{-2aB+Acx}{x^2\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{(Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{(Ac)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}-\frac{A\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{2ax^2}-\frac{B\sqrt{a+cx^2}}{ax}+\frac{Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 63, normalized size = 0.88

$$
\frac{\sqrt{a+cx^2}\left(\frac{Ac\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}-\frac{a(A+2Bx)}{x^2}\right)}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*(-((a*(A + 2*B*x))/x^2) + (A*c*ArcTanh[Sqrt[1 + (c*x^2)/a]
])/Sqrt[1 + (c*x^2)/a]))/(2*a^2)
```

fricas [A] time = 0.97, size = 123, normalized size = 1.71

$$
\left[\frac{A\sqrt{a}\,cx^2\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\,(2\,Bax+Aa)\sqrt{cx^2+a}}{4\,a^2x^2},\;-\frac{A\sqrt{-a}\,cx^2\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+(2\,Bax+Aa)}{2\,a^2x^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(A*sqrt(a)*c*x^2*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) -
 2*(2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*x^2), -1/2*(A*sqrt(-a)*c*x^2*arcta
n(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*x^2)]
```

giac [B] time = 0.20, size = 146, normalized size = 2.03

$$
-\frac{Ac\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2Ba\sqrt{c}+\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)Aac-2}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)^2a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + ((sqrt(
c)*x - sqrt(c*x^2 + a))^3*A*c + 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(
c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a*c - 2*B*a^2*sqrt(c))/(((sqrt(c)*x -
sqrt(c*x^2 + a))^2 - a)^2*a)
```

maple [A] time = 0.06, size = 68, normalized size = 0.94

$$\frac{Ac\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{\sqrt{c\,x^2+a}\,B}{ax}-\frac{\sqrt{c\,x^2+a}\,A}{2a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/2*A*(c*x^2+a)^(1/2)/a/x^2+1/2*A*c/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1
/2))/x)-B*(c*x^2+a)^(1/2)/a/x
```

maxima [A] time = 0.65, size = 56, normalized size = 0.78

$$\frac{Ac\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{3}{2}}}-\frac{\sqrt{cx^2+a}\,B}{ax}-\frac{\sqrt{cx^2+a}\,A}{2\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) - sqrt(c*x^2 + a)*B/(a*x) - 1
/2*sqrt(c*x^2 + a)*A/(a*x^2)
```

mupad [B] time = 1.49, size = 58, normalized size = 0.81

$$\frac{A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}}{a\,x}-\frac{A\,\sqrt{c\,x^2+a}}{2\,a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(1/2)),x)
```

```
[Out] (A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(3/2)) - (B*(a + c*x^2)^(1/2))/
(a*x) - (A*(a + c*x^2)^(1/2))/(2*a*x^2)
```

sympy [A] time = 3.66, size = 66, normalized size = 0.92

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2ax}+\frac{Ac\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2a^{\frac{3}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*a*x) + A*c*asinh(sqrt(a)/(sqrt(c)*x))/(2
*a**(3/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/a
```

3.362 $\int \frac{A+Bx}{x^4\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=97

$$\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}$$

```
[Out] 1/2*B*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)-1/3*A*(c*x^2+a)^(1/2)/a/x^
3-1/2*B*(c*x^2+a)^(1/2)/a/x^2+2/3*A*c*(c*x^2+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.07, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$\frac{2Ac\sqrt{a+cx^2}}{3a^2x}+\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(3*a*x^3) - (B*Sqrt[a + c*x^2])/(2*a*x^2) + (2*A*c*Sqr
t[a + c*x^2])/(3*a^2*x) + (B*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(3/2)
)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^4\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{\int \frac{-3aB+2Acx}{x^3\sqrt{a+cx^2}}\,dx}{3a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{\int \frac{-4aAc-3aBcx}{x^2\sqrt{a+cx^2}}\,dx}{6a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{(Bc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{(Bc)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}-\frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a}\\
&= -\frac{A\sqrt{a+cx^2}}{3ax^3}-\frac{B\sqrt{a+cx^2}}{2ax^2}+\frac{2Ac\sqrt{a+cx^2}}{3a^2x}+\frac{Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 73, normalized size = 0.75

$$\frac{\sqrt{a+cx^2}\left(\frac{-2aA-3aBx+4Acx^2}{x^3}+\frac{3Bc\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}\right)}{6a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[a + c*x^2]),x]
```

```
[Out] (Sqrt[a + c*x^2]*((-2*a*A - 3*a*B*x + 4*A*c*x^2)/x^3 + (3*B*c*ArcTanh[Sqrt[
1 + (c*x^2)/a]])/Sqrt[1 + (c*x^2)/a]))/(6*a^2)
```

fricas [A] time = 0.87, size = 142, normalized size = 1.46

$$\Bigg[\frac{3\,B\sqrt{a}\,cx^3\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(4\,Acx^2-3\,Bax-2\,Aa\right)\sqrt{cx^2+a}}{12\,a^2x^3},\,-\frac{3\,B\sqrt{-a}\,cx^3\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)-\Big(}{6\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*sqrt(a)*c*x^3*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2
) + 2*(4*A*c*x^2 - 3*B*a*x - 2*A*a)*sqrt(c*x^2 + a))/(a^2*x^3), -1/6*(3*B*s
qrt(-a)*c*x^3*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (4*A*c*x^2 - 3*B*a*x - 2*A
*a)*sqrt(c*x^2 + a))/(a^2*x^3)]
```

giac [A] time = 0.22, size = 151, normalized size = 1.56

$$-\frac{Bc\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^5Bc+12\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2Aac^{\frac{3}{2}}-3\left(\sqrt{c}x-\sqrt{cx^2+a}\right)Ba^2c}{3\left(\left(\sqrt{c}x-\sqrt{cx^2+a}\right)^2-a\right)^3a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] -B*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a) + 1/3*(3*
(sqrt(c)*x - sqrt(c*x^2 + a))^5*B*c + 12*(sqrt(c)*x - sqrt(c*x^2 + a))^2*A*
a*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c - 4*A*a^2*c^(3/2))/(((s
qrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3*a)
```

maple [A] time = 0.06, size = 87, normalized size = 0.90

$$\frac{Bc\ln\left(\frac{2a+2\sqrt{cx^2+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}+\frac{2\sqrt{cx^2+a}\,Ac}{3a^2x}-\frac{\sqrt{cx^2+a}\,B}{2ax^2}-\frac{\sqrt{cx^2+a}\,A}{3ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/3*A*(c*x^2+a)^(1/2)/a/x^3+2/3*A*c*(c*x^2+a)^(1/2)/a^2/x-1/2*B*(c*x^2+a)^
(1/2)/a/x^2+1/2*B*c/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.52, size = 75, normalized size = 0.77

$$\frac{Bc\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}|x|}\right)}{2\,a^{\frac{3}{2}}}+\frac{2\,\sqrt{cx^2+a}\,Ac}{3\,a^2x}-\frac{\sqrt{cx^2+a}\,B}{2\,ax^2}-\frac{\sqrt{cx^2+a}\,A}{3\,ax^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) + 2/3*sqrt(c*x^2 + a)*A*c/(a^
2*x) - 1/2*sqrt(c*x^2 + a)*B/(a*x^2) - 1/3*sqrt(c*x^2 + a)*A/(a*x^3)
```

mupad [B] time = 1.64, size = 66, normalized size = 0.68

$$\frac{B\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{3/2}}-\frac{B\,\sqrt{c\,x^2+a}}{2\,a\,x^2}-\frac{A\,\sqrt{c\,x^2+a}\,\left(a-2\,c\,x^2\right)}{3\,a^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + c*x^2)^(1/2)),x)
```

```
[Out] (B*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(3/2)) - (B*(a + c*x^2)^(1/2))/
(2*a*x^2) - (A*(a + c*x^2)^(1/2)*(a - 2*c*x^2))/(3*a^2*x^3)
```

sympy [A] time = 3.79, size = 97, normalized size = 1.00

$$-\frac{A\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3ax^2}+\frac{2Ac^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^2}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{2ax}+\frac{Bc\,\mathrm{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}x}\right)}{2a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+a)**(1/2),x)
```

```
[Out] -A*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*a*x**2) + 2*A*c**(3/2)*sqrt(a/(c*x**2) +
 1)/(3*a**2) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(2*a*x) + B*c*asinh(sqrt(a)/(
sqrt(c)*x))/(2*a**(3/2))
```

3.363 $\int \frac{A+Bx}{x^5\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=122

$$-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}$$

```
[Out] -3/8*A*c^2*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)-1/4*A*(c*x^2+a)^(1/2)/a
/x^4-1/3*B*(c*x^2+a)^(1/2)/a/x^3+3/8*A*c*(c*x^2+a)^(1/2)/a^2/x^2+2/3*B*c*(c
*x^2+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.10, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(4*a*x^4) - (B*Sqrt[a + c*x^2])/(3*a*x^3) + (3*A*c*Sqr
t[a + c*x^2])/(8*a^2*x^2) + (2*B*c*Sqrt[a + c*x^2])/(3*a^2*x) - (3*A*c^2*Ar
cTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(8*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^5\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{\int \frac{-4aB+3Acx}{x^4\sqrt{a+cx^2}}\,dx}{4a}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{\int \frac{-9aAc-8aBcx}{x^3\sqrt{a+cx^2}}\,dx}{12a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}-\frac{\int \frac{16a^2Bc-9aAc^2x}{x^2\sqrt{a+cx^2}}\,dx}{24a^3}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{\left(3Ac^2\right)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{8a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{\left(3Ac^2\right)\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\right.}{16a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}+\frac{(3Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx\right.}{8a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{4ax^4}-\frac{B\sqrt{a+cx^2}}{3ax^3}+\frac{3Ac\sqrt{a+cx^2}}{8a^2x^2}+\frac{2Bc\sqrt{a+cx^2}}{3a^2x}-\frac{3Ac^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.49

$$
-\frac{\sqrt{a+cx^2}\left(3Ac^2x^3\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx^2}{a}+1\right)+aB\left(a-2cx^2\right)\right)}{3a^3x^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a + c*x^2]),x]
```

```
[Out] -1/3*(Sqrt[a + c*x^2]*(a*B*(a - 2*c*x^2) + 3*A*c^2*x^3*Hypergeometric2F1[1/
2, 3, 3/2, 1 + (c*x^2)/a]))/(a^3*x^3)
```

fricas [A] time = 0.80, size = 171, normalized size = 1.40

$$
\left[\frac{9\,A\sqrt{a}\,c^2x^4\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(16\,Bacx^3+9\,Aacx^2-8\,Ba^2x-6\,Aa^2\right)\sqrt{cx^2+a}}{48\,a^3x^4},\ 9\,A\sqrt{-a}\,c^2x^4\,\text{arc}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/48*(9*A*sqrt(a)*c^2*x^4*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x
^2) + 2*(16*B*a*c*x^3 + 9*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))
/(a^3*x^4), 1/24*(9*A*sqrt(-a)*c^2*x^4*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (
16*B*a*c*x^3 + 9*A*a*c*x^2 - 8*B*a^2*x - 6*A*a^2)*sqrt(c*x^2 + a))/(a^3*x^4
)]
```

giac [**B**] time = 0.21, size = 241, normalized size = 1.98

$$\frac{3\,Ac^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^2}-\frac{9\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^7Ac^2-33\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^5Aac^2-48\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^4}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 3/4*A*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/12*(9*(sqrt(c)*x - sqrt(c*x^2 + a))^7*A*c^2 - 33*(sqrt(c)*x - sqrt(c*x^2
+ a))^5*A*a*c^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + a))^4*B*a^2*c^(3/2) - 33*(sq
rt(c)*x - sqrt(c*x^2 + a))^3*A*a^2*c^2 + 64*(sqrt(c)*x - sqrt(c*x^2 + a))^2
*B*a^3*c^(3/2) + 9*(sqrt(c)*x - sqrt(c*x^2 + a))*A*a^3*c^2 - 16*B*a^4*c^(3/
2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^4*a^2)
```

maple [**A**] time = 0.06, size = 108, normalized size = 0.89

$$-\frac{3A\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{2\sqrt{c\,x^2+a}\;Bc}{3a^2x}+\frac{3\sqrt{c\,x^2+a}\;Ac}{8a^2x^2}-\frac{\sqrt{c\,x^2+a}\;B}{3a\,x^3}-\frac{\sqrt{c\,x^2+a}\;A}{4a\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/4*A*(c*x^2+a)^(1/2)/a/x^4+3/8*A*c*(c*x^2+a)^(1/2)/a^2/x^2-3/8*A*c^2/a^(5
/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-1/3*B*(c*x^2+a)^(1/2)/a/x^3+2/3*B
*c*(c*x^2+a)^(1/2)/a^2/x
```

maxima [**A**] time = 0.64, size = 96, normalized size = 0.79

$$-\frac{3\,Ac^2\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{5}{2}}}+\frac{2\,\sqrt{cx^2+a}\,Bc}{3\,a^2x}+\frac{3\,\sqrt{cx^2+a}\,Ac}{8\,a^2x^2}-\frac{\sqrt{cx^2+a}\,B}{3\,ax^3}-\frac{\sqrt{cx^2+a}\,A}{4\,ax^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -3/8*A*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + 2/3*sqrt(c*x^2 + a)*B*c/
(a^2*x) + 3/8*sqrt(c*x^2 + a)*A*c/(a^2*x^2) - 1/3*sqrt(c*x^2 + a)*B/(a*x^3)
 - 1/4*sqrt(c*x^2 + a)*A/(a*x^4)
```

mupad [**B**] time = 1.72, size = 86, normalized size = 0.70

$$\frac{3\,A\left(c\,x^2+a\right)^{3/2}}{8\,a^2\,x^4}-\frac{5\,A\,\sqrt{c\,x^2+a}}{8\,a\,x^4}-\frac{3\,A\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{5/2}}-\frac{B\,\sqrt{c\,x^2+a}\,\left(a-2\,c\,x^2\right)}{3\,a^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a + c*x^2)^(1/2)),x)
```

```
[Out] (3*A*(a + c*x^2)^(3/2))/(8*a^2*x^4) - (5*A*(a + c*x^2)^(1/2))/(8*a*x^4) - (
3*A*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(5/2)) - (B*(a + c*x^2)^(1/2
)*(a - 2*c*x^2))/(3*a^2*x^3)
```

sympy [A] time = 5.71, size = 153, normalized size = 1.25

$$-\frac{A}{4\sqrt{c}\,x^5\sqrt{\frac{a}{cx^2}+1}}+\frac{A\sqrt{c}}{8ax^3\sqrt{\frac{a}{cx^2}+1}}+\frac{3Ac^{\frac{3}{2}}}{8a^2x\sqrt{\frac{a}{cx^2}+1}}-\frac{3Ac^2\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{8a^{\frac{5}{2}}}-\frac{B\sqrt{c}\sqrt{\frac{a}{cx^2}+1}}{3ax^2}+\frac{2Bc^{\frac{3}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+a)**(1/2),x)
```

```
[Out] -A/(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) + A*sqrt(c)/(8*a*x**3*sqrt(a/(c*x*
*2) + 1)) + 3*A*c**(3/2)/(8*a**2*x*sqrt(a/(c*x**2) + 1)) - 3*A*c**2*asinh(s
qrt(a)/(sqrt(c)*x))/(8*a**(5/2)) - B*sqrt(c)*sqrt(a/(c*x**2) + 1)/(3*a*x**2
) + 2*B*c**(3/2)*sqrt(a/(c*x**2) + 1)/(3*a**2)
```

3.364 $\int \frac{A+Bx}{x^6\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=147

$$-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}$$

```
[Out] -3/8*B*c^2*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)-1/5*A*(c*x^2+a)^(1/2)/a
/x^5-1/4*B*(c*x^2+a)^(1/2)/a/x^4+4/15*A*c*(c*x^2+a)^(1/2)/a^2/x^3+3/8*B*c*(
c*x^2+a)^(1/2)/a^2/x^2-8/15*A*c^2*(c*x^2+a)^(1/2)/a^3/x
```

Rubi [A] time = 0.13, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 807, 266, 63, 208}

$$-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}-\frac{3Bc^2\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{8a^{5/2}}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[a + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + c*x^2])/(5*a*x^5) - (B*Sqrt[a + c*x^2])/(4*a*x^4) + (4*A*c*Sqr
t[a + c*x^2])/(15*a^2*x^3) + (3*B*c*Sqrt[a + c*x^2])/(8*a^2*x^2) - (8*A*c^2
*Sqrt[a + c*x^2])/(15*a^3*x) - (3*B*c^2*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(
8*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^6\sqrt{a+cx^2}}\,dx &= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{\int \frac{-5aB+4Acx}{x^5\sqrt{a+cx^2}}\,dx}{5a}\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{\int \frac{-16aAc-15aBcx}{x^4\sqrt{a+cx^2}}\,dx}{20a^2}\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}-\frac{\int \frac{45a^2Bc-32aAc^2x}{x^3\sqrt{a+cx^2}}\,dx}{60a^3}\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}+\frac{\int \frac{64a^2Ac^2+45a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{120a^4}\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\left(3Bc^2\right)\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+\left(3Bc^2\right)\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}+(3Bc)\\
&= -\frac{A\sqrt{a+cx^2}}{5ax^5}-\frac{B\sqrt{a+cx^2}}{4ax^4}+\frac{4Ac\sqrt{a+cx^2}}{15a^2x^3}+\frac{3Bc\sqrt{a+cx^2}}{8a^2x^2}-\frac{8Ac^2\sqrt{a+cx^2}}{15a^3x}-3Bc^2
\end{aligned}$$

Mathematica [C] time = 0.02, size = 72, normalized size = 0.49

$$-\frac{\sqrt{a+cx^2}\left(A\left(3a^2-4acx^2+8c^2x^4\right)+15Bc^2x^5\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{cx^2}{a}+1\right)\right)}{15a^3x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[a + c*x^2]),x]
```

```
[Out] -1/15*(Sqrt[a + c*x^2]*(A*(3*a^2 - 4*a*c*x^2 + 8*c^2*x^4) + 15*B*c^2*x^5*Hy
pergeometric2F1[1/2, 3, 3/2, 1 + (c*x^2)/a]))/(a^3*x^5)
```

fricas [A] time = 0.63, size = 190, normalized size = 1.29

$$\left[\frac{45\,B\sqrt{a}\,c^2x^5\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(64\,Ac^2x^4-45\,Bacx^3-32\,Aacx^2+30\,Ba^2x+24\,Aa^2\right)\sqrt{cx^2+a}}{240\,a^3x^5},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/240*(45*B*sqrt(a)*c^2*x^5*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a)
/x^2) - 2*(64*A*c^2*x^4 - 45*B*a*c*x^3 - 32*A*a*c*x^2 + 30*B*a^2*x + 24*A*a
^2)*sqrt(c*x^2 + a))/(a^3*x^5), 1/120*(45*B*sqrt(-a)*c^2*x^5*arctan(sqrt(-a
)/sqrt(c*x^2 + a)) - (64*A*c^2*x^4 - 45*B*a*c*x^3 - 32*A*a*c*x^2 + 30*B*a^2
*x + 24*A*a^2)*sqrt(c*x^2 + a))/(a^3*x^5)]
```

giac [B] time = 0.21, size = 241, normalized size = 1.64

$$\frac{3\,Bc^2\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^2}-\frac{45\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^9 Bc^2-210\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^7 Bac^2-640\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] 3/4*B*c^2*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) -
1/60*(45*(sqrt(c)*x - sqrt(c*x^2 + a))^9*B*c^2 - 210*(sqrt(c)*x - sqrt(c*x^
2 + a))^7*B*a*c^2 - 640*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*a^2*c^(5/2) + 210
*(sqrt(c)*x - sqrt(c*x^2 + a))^3*B*a^3*c^2 + 320*(sqrt(c)*x - sqrt(c*x^2 +
a))^2*A*a^3*c^(5/2) - 45*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^4*c^2 - 64*A*a^4
*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^5*a^2)
```

maple [A] time = 0.06, size = 129, normalized size = 0.88

$$-\frac{3B\,c^2\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}-\frac{8\sqrt{c\,x^2+a}\,A\,c^2}{15a^3x}+\frac{3\sqrt{c\,x^2+a}\,Bc}{8a^2x^2}+\frac{4\sqrt{c\,x^2+a}\,Ac}{15a^2x^3}-\frac{\sqrt{c\,x^2+a}\,B}{4a\,x^4}-\frac{\sqrt{c\,x^2+a}\,A}{5a\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/5*A*(c*x^2+a)^(1/2)/a/x^5+4/15*A*c*(c*x^2+a)^(1/2)/a^2/x^3-8/15*A*c^2*(c
*x^2+a)^(1/2)/a^3/x-1/4*B*(c*x^2+a)^(1/2)/a/x^4+3/8*B*c*(c*x^2+a)^(1/2)/a^2
/x^2-3/8*B*c^2/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.48, size = 117, normalized size = 0.80

$$-\frac{3\,Bc^2\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{8\,a^{\frac{5}{2}}}-\frac{8\,\sqrt{cx^2+a}\,Ac^2}{15\,a^3x}+\frac{3\,\sqrt{cx^2+a}\,Bc}{8\,a^2x^2}+\frac{4\,\sqrt{cx^2+a}\,Ac}{15\,a^2x^3}-\frac{\sqrt{cx^2+a}\,B}{4\,ax^4}-\frac{\sqrt{cx^2+a}\,A}{5\,ax^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] -3/8*B*c^2*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) - 8/15*sqrt(c*x^2 + a)*A*c
^2/(a^3*x) + 3/8*sqrt(c*x^2 + a)*B*c/(a^2*x^2) + 4/15*sqrt(c*x^2 + a)*A*c/(
a^2*x^3) - 1/4*sqrt(c*x^2 + a)*B/(a*x^4) - 1/5*sqrt(c*x^2 + a)*A/(a*x^5)
```

mupad [B] time = 1.79, size = 99, normalized size = 0.67

$$\frac{3\,B\left(c\,x^2+a\right)^{3/2}}{8\,a^2\,x^4}-\frac{5\,B\,\sqrt{c\,x^2+a}}{8\,a\,x^4}-\frac{3\,B\,c^2\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{8\,a^{5/2}}-\frac{A\,\sqrt{c\,x^2+a}\,\left(3\,a^2-4\,a\,c\,x^2+8\,c^2\,x^4\right)}{15\,a^3\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(a + c*x^2)^(1/2)),x)
```

```
[Out] (3*B*(a + c*x^2)^(3/2))/(8*a^2*x^4) - (5*B*(a + c*x^2)^(1/2))/(8*a*x^4) - (
3*B*c^2*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(8*a^(5/2)) - (A*(a + c*x^2)^(1/2
)*(3*a^2 + 8*c^2*x^4 - 4*a*c*x^2))/(15*a^3*x^5)
```

sympy [B] time = 6.46, size = 408, normalized size = 2.78

$$-\frac{3Aa^{4}c^{\frac{9}{2}}\sqrt{\frac{a}{cx^{2}}+1}}{15a^{5}c^{4}x^{4}+30a^{4}c^{5}x^{6}+15a^{3}c^{6}x^{8}}-\frac{2Aa^{3}c^{\frac{11}{2}}x^{2}\sqrt{\frac{a}{cx^{2}}+1}}{15a^{5}c^{4}x^{4}+30a^{4}c^{5}x^{6}+15a^{3}c^{6}x^{8}}-\frac{3Aa^{2}c^{\frac{13}{2}}x^{4}\sqrt{\frac{a}{cx^{2}}+1}}{15a^{5}c^{4}x^{4}+30a^{4}c^{5}x^{6}+15a^{3}c^{6}x^{8}}-\frac{}{15a^{5}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+a)**(1/2),x)
```

```
[Out] -3*A*a**4*c**(9/2)*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x
**6 + 15*a**3*c**6*x**8) - 2*A*a**3*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(15
*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - 3*A*a**2*c**(13/
2)*x**4*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a*
*3*c**6*x**8) - 12*A*a*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(15*a**5*c**4*x*
*4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - 8*A*c**(17/2)*x**8*sqrt(a/(c*
x**2) + 1)/(15*a**5*c**4*x**4 + 30*a**4*c**5*x**6 + 15*a**3*c**6*x**8) - B/
(4*sqrt(c)*x**5*sqrt(a/(c*x**2) + 1)) + B*sqrt(c)/(8*a*x**3*sqrt(a/(c*x**2)
 + 1)) + 3*B*c**(3/2)/(8*a**2*x*sqrt(a/(c*x**2) + 1)) - 3*B*c**2*asinh(sqrt
(a)/(sqrt(c)*x))/(8*a**(5/2))
```

3.365 $\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{\sqrt{a+cx^2}\,(16aB-9Acx)}{6c^3}-\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}$$

```
[Out] -3/2*a*A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)-x^3*(B*x+A)/c/(c*x^2+a)
^(1/2)+4/3*B*x^2*(c*x^2+a)^(1/2)/c^2-1/6*(-9*A*c*x+16*B*a)*(c*x^2+a)^(1/2)/
c^3
```

Rubi [A] time = 0.07, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {819, 833, 780, 217, 206}

$$-\frac{\sqrt{a+cx^2}\,(16aB-9Acx)}{6c^3}-\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x^3*(A + B*x))/(c*Sqrt[a + c*x^2])) + (4*B*x^2*Sqrt[a + c*x^2])/(3*c^2)
- ((16*a*B - 9*A*c*x)*Sqrt[a + c*x^2])/(6*c^3) - (3*a*A*ArcTanh[(Sqrt[c]*x)
/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{\int \frac{x^2(3aA+4aBx)}{\sqrt{a+cx^2}}\,dx}{ac}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}+\frac{\int \frac{x\left(-8a^2B+9aAcx\right)}{\sqrt{a+cx^2}}\,dx}{3ac^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{(3aA)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{(3aA)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x,\right.}{2c^2}\\
&= -\frac{x^3(A+Bx)}{c\sqrt{a+cx^2}}+\frac{4Bx^2\sqrt{a+cx^2}}{3c^2}-\frac{(16aB-9Acx)\sqrt{a+cx^2}}{6c^3}-\frac{3aA\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 91, normalized size = 0.87

$$\frac{-16a^2B+acx(9A-8Bx)-9aA\sqrt{c}\,\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+c^2x^3(3A+2Bx)}{6c^3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-16*a^2*B + a*c*x*(9*A - 8*B*x) + c^2*x^3*(3*A + 2*B*x) - 9*a*A*Sqrt[c]*Sq
rt[a + c*x^2]*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(6*c^3*Sqrt[a + c*x^2])
```

fricas [A] time = 0.61, size = 217, normalized size = 2.07

$$\left[\frac{9\left(Aacx^2+Aa^2\right)\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(2\,Bc^2x^4+3\,Ac^2x^3-8\,Bacx^2+9\,Aacx-16\,Ba^2\right.}{12\left(c^4x^2+ac^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(9*(A*a*c*x^2 + A*a^2)*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(
c)*x - a) + 2*(2*B*c^2*x^4 + 3*A*c^2*x^3 - 8*B*a*c*x^2 + 9*A*a*c*x - 16*B*a
^2)*sqrt(c*x^2 + a))/(c^4*x^2 + a*c^3), 1/6*(9*(A*a*c*x^2 + A*a^2)*sqrt(-c)
*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (2*B*c^2*x^4 + 3*A*c^2*x^3 - 8*B*a*c*
x^2 + 9*A*a*c*x - 16*B*a^2)*sqrt(c*x^2 + a))/(c^4*x^2 + a*c^3)]
```

giac [A] time = 0.20, size = 83, normalized size = 0.79

$$\frac{\left(\left(\left(\frac{2\,Bx}{c}+\frac{3\,A}{c}\right)x-\frac{8\,Ba}{c^2}\right)x+\frac{9\,Aa}{c^2}\right)x-\frac{16\,Ba^2}{c^3}}{6\,\sqrt{cx^2+a}}+\frac{3\,Aa\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*((((2*B*x/c + 3*A/c)*x - 8*B*a/c^2)*x + 9*A*a/c^2)*x - 16*B*a^2/c^3)/sq
rt(c*x^2 + a) + 3/2*A*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.10

$$\frac{B\,x^4}{3\sqrt{c\,x^2+a}\;c}+\frac{A\,x^3}{2\sqrt{c\,x^2+a}\;c}-\frac{4Ba\,x^2}{3\sqrt{c\,x^2+a}\;c^2}+\frac{3Aax}{2\sqrt{c\,x^2+a}\;c^2}-\frac{3Aa\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{5}{2}}}-\frac{8B\,a^2}{3\sqrt{c\,x^2+a}\;c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/3*B*x^4/c/(c*x^2+a)^(1/2)-4/3*B*a/c^2*x^2/(c*x^2+a)^(1/2)-8/3*B*a^2/c^3/(
c*x^2+a)^(1/2)+1/2*A*x^3/c/(c*x^2+a)^(1/2)+3/2*A*a/c^2*x/(c*x^2+a)^(1/2)-3/
2*A*a/c^(5/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.49, size = 107, normalized size = 1.02

$$\frac{Bx^4}{3\,\sqrt{cx^2+a}\,c}+\frac{Ax^3}{2\,\sqrt{cx^2+a}\,c}-\frac{4\,Bax^2}{3\,\sqrt{cx^2+a}\,c^2}+\frac{3\,Aax}{2\,\sqrt{cx^2+a}\,c^2}-\frac{3\,Aa\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{5}{2}}}-\frac{8\,Ba^2}{3\,\sqrt{cx^2+a}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(c*x^2 + a)*c) + 1/2*A*x^3/(sqrt(c*x^2 + a)*c) - 4/3*B*a*x^2
/(sqrt(c*x^2 + a)*c^2) + 3/2*A*a*x/(sqrt(c*x^2 + a)*c^2) - 3/2*A*a*arcsinh(
c*x/sqrt(a*c))/c^(5/2) - 8/3*B*a^2/(sqrt(c*x^2 + a)*c^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [A] time = 12.31, size = 144, normalized size = 1.37

$$A\left(\frac{3\sqrt{a}\,x}{2c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{3a\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{5}{2}}}+\frac{x^3}{2\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)+B\left(\begin{cases}-\frac{8a^2}{3c^3\sqrt{a+cx^2}}-\frac{4ax^2}{3c^2\sqrt{a+cx^2}}+\frac{x^4}{3c\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^6}{6a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(3*sqrt(a)*x/(2*c**2*sqrt(1 + c*x**2/a)) - 3*a*asinh(sqrt(c)*x/sqrt(a))/(
2*c**(5/2)) + x**3/(2*sqrt(a)*c*sqrt(1 + c*x**2/a))) + B*Piecewise((-8*a**2
/(3*c**3*sqrt(a + c*x**2)) - 4*a*x**2/(3*c**2*sqrt(a + c*x**2)) + x**4/(3*c
*sqrt(a + c*x**2)), Ne(c, 0)), (x**6/(6*a**(3/2)), True))
```

3.366 $\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=81

$$\frac{\sqrt{a+cx^2}\,(4A+3Bx)}{2c^2}-\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

```
[Out] -3/2*a*B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(5/2)-x^2*(B*x+A)/c/(c*x^2+a)
^(1/2)+1/2*(3*B*x+4*A)*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.04, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = $\{819, 780, 217, 206\}$

$$\frac{\sqrt{a+cx^2}\,(4A+3Bx)}{2c^2}-\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}}-\frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x^2*(A + B*x))/(c*Sqrt[a + c*x^2])) + ((4*A + 3*B*x)*Sqrt[a + c*x^2])/(2
*c^2) - (3*a*B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{x(2aA+3aBx)}{\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{(3aB)\int \frac{1}{\sqrt{a+cx^2}}\,dx}{2c^2}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{(3aB)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{2c^2}$$

$$= -\frac{x^2(A+Bx)}{c\sqrt{a+cx^2}} + \frac{(4A+3Bx)\sqrt{a+cx^2}}{2c^2} - \frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.89

$$\frac{a(4A+3Bx)+cx^2(2A+Bx)}{2c^2\sqrt{a+cx^2}} - \frac{3aB\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (c*x^2*(2*A + B*x) + a*(4*A + 3*B*x))/(2*c^2*Sqrt[a + c*x^2]) - (3*a*B*ArcT
anh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(2*c^(5/2))
```

fricas [A] time = 0.80, size = 197, normalized size = 2.43

$$\left[\frac{3\left(Bacx^2+Ba^2\right)\sqrt{c}\,\log\left(-2\,cx^2+2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(Bc^2x^3+2\,Ac^2x^2+3\,Bacx+4\,Aac\right)\sqrt{cx^2+a}}{4\left(c^4x^2+ac^3\right)},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(3*(B*a*c*x^2 + B*a^2)*sqrt(c)*log(-2*c*x^2 + 2*sqrt(c*x^2 + a)*sqrt(c
)*x - a) + 2*(B*c^2*x^3 + 2*A*c^2*x^2 + 3*B*a*c*x + 4*A*a*c)*sqrt(c*x^2 + a
))/(c^4*x^2 + a*c^3), 1/2*(3*(B*a*c*x^2 + B*a^2)*sqrt(-c)*arctan(sqrt(-c)*x
/sqrt(c*x^2 + a)) + (B*c^2*x^3 + 2*A*c^2*x^2 + 3*B*a*c*x + 4*A*a*c)*sqrt(c*
x^2 + a))/(c^4*x^2 + a*c^3)]
```

giac [A] time = 0.21, size = 70, normalized size = 0.86

$$\frac{\left(\left(\frac{Bx}{c}+\frac{2\,A}{c}\right)x+\frac{3\,Ba}{c^2}\right)x+\frac{4\,Aa}{c^2}}{2\,\sqrt{cx^2+a}} + \frac{3\,Ba\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(((B*x/c + 2*A/c)*x + 3*B*a/c^2)*x + 4*A*a/c^2)/sqrt(c*x^2 + a) + 3/2*B
*a*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.10, size = 93, normalized size = 1.15

$$\frac{B\,x^3}{2\sqrt{c\,x^2+a}\;c} + \frac{A\,x^2}{\sqrt{c\,x^2+a}\;c} + \frac{3Bax}{2\sqrt{c\,x^2+a}\;c^2} - \frac{3Ba\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{2c^{\frac{5}{2}}} + \frac{2Aa}{\sqrt{c\,x^2+a}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/2*B*x^3/c/(c*x^2+a)^(1/2)+3/2*B*a/c^2*x/(c*x^2+a)^(1/2)-3/2*B*a/c^(5/2)*l
n(c^(1/2)*x+(c*x^2+a)^(1/2))+A*x^2/c/(c*x^2+a)^(1/2)+2*A*a/c^2/(c*x^2+a)^(1
/2)
```

maxima [A] time = 0.67, size = 85, normalized size = 1.05

$$\frac{Bx^3}{2\sqrt{cx^2+a}\,c}+\frac{Ax^2}{\sqrt{cx^2+a}\,c}+\frac{3\,Bax}{2\sqrt{cx^2+a}\,c^2}-\frac{3\,Ba\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{2\,c^{\frac{5}{2}}}+\frac{2\,Aa}{\sqrt{cx^2+a}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(c*x^2 + a)*c) + A*x^2/(sqrt(c*x^2 + a)*c) + 3/2*B*a*x/(sqrt
(c*x^2 + a)*c^2) - 3/2*B*a*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 2*A*a/(sqrt(c*x
^2 + a)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [A] time = 10.93, size = 117, normalized size = 1.44

$$A\left(\begin{cases}\frac{2a}{c^2\sqrt{a+cx^2}}+\frac{x^2}{c\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^4}{4a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{3\sqrt{a}\,x}{2c^2\sqrt{1+\frac{cx^2}{a}}}-\frac{3a\,\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2c^{\frac{5}{2}}}+\frac{x^3}{2\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*Piecewise((2*a/(c**2*sqrt(a + c*x**2)) + x**2/(c*sqrt(a + c*x**2)), Ne(c,
 0)), (x**4/(4*a**(3/2)), True)) + B*(3*sqrt(a)*x/(2*c**2*sqrt(1 + c*x**2/a
)) - 3*a*asinh(sqrt(c)*x/sqrt(a))/(2*c**(5/2)) + x**3/(2*sqrt(a)*c*sqrt(1 +
 c*x**2/a))
```

3.367 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=66

$$-\frac{x(A+Bx)}{c\sqrt{a+cx^2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}+\frac{2B\sqrt{a+cx^2}}{c^2}$$

```
[Out] A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)-x*(B*x+A)/c/(c*x^2+a)^(1/2)+2*
B*(c*x^2+a)^(1/2)/c^2
```

Rubi [A] time = 0.03, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = $\{819, 641, 217, 206\}$

$$-\frac{x(A+Bx)}{c\sqrt{a+cx^2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}+\frac{2B\sqrt{a+cx^2}}{c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((x*(A + B*x))/(c*Sqrt[a + c*x^2])) + (2*B*Sqrt[a + c*x^2])/c^2 + (A*ArcTa
nh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{aA+2aBx}{\sqrt{a+cx^2}}\,dx}{ac} \\
&= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c} \\
&= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{a+cx^2}}\right)}{c} \\
&= -\frac{x(A+Bx)}{c\sqrt{a+cx^2}} + \frac{2B\sqrt{a+cx^2}}{c^2} + \frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 67, normalized size = 1.02

$$\frac{A\sqrt{c}\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+2aB+cx(Bx-A)}{c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (2*a*B + c*x*(-A + B*x) + A*Sqrt[c]*Sqrt[a + c*x^2]*ArcTanh[(Sqrt[c]*x)/Sqr
t[a + c*x^2]])/(c^2*Sqrt[a + c*x^2])
```

fricas [**A**] time = 0.56, size = 164, normalized size = 2.48

$$\left[\frac{\left(Acx^2+Aa\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(Bcx^2-Acx+2\,Ba\right)\sqrt{cx^2+a}}{2\left(c^3x^2+ac^2\right)}, -\frac{\left(Acx^2+Aa\right)\sqrt{-c}\,\mathrm{arct}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*c*x^2 + A*a)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) + 2*(B*c*x^2 - A*c*x + 2*B*a)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2), -((A*c
*x^2 + A*a)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) - (B*c*x^2 - A*c*x
+ 2*B*a)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2)]
```

giac [**A**] time = 0.21, size = 58, normalized size = 0.88

$$\frac{\left(\frac{Bx}{c}-\frac{A}{c}\right)x+\frac{2\,Ba}{c^2}}{\sqrt{cx^2+a}}-\frac{A\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] ((B*x/c - A/c)*x + 2*B*a/c^2)/sqrt(c*x^2 + a) - A*log(abs(-sqrt(c)*x + sqrt
(c*x^2 + a)))/c^(3/2)
```

maple [**A**] time = 0.05, size = 72, normalized size = 1.09

$$\frac{B\,x^2}{\sqrt{c\,x^2+a}\;c}-\frac{Ax}{\sqrt{c\,x^2+a}\;c}+\frac{A\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{c^{\frac{3}{2}}}+\frac{2Ba}{\sqrt{c\,x^2+a}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+a)^(1/2)+2*B*a/c^2/(c*x^2+a)^(1/2)-A*x/c/(c*x^2+a)^(1/2)+A/c
^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [A] time = 0.53, size = 64, normalized size = 0.97

$$\frac{Bx^2}{\sqrt{cx^2+a}\,c}-\frac{Ax}{\sqrt{cx^2+a}\,c}+\frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{3}{2}}}+\frac{2\,Ba}{\sqrt{cx^2+a}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(c*x^2 + a)*c) - A*x/(sqrt(c*x^2 + a)*c) + A*arcsinh(c*x/sqrt(a*
c))/c^(3/2) + 2*B*a/(sqrt(c*x^2 + a)*c^2)
```

mupad [B] time = 1.47, size = 61, normalized size = 0.92

$$\frac{A\,\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{c^{3/2}}-\frac{A\,x}{c\,\sqrt{c\,x^2+a}}+\frac{B\,\left(c\,x^2+2\,a\right)}{c^2\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] (A*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(3/2) - (A*x)/(c*(a + c*x^2)^(1/2)
) + (B*(2*a + c*x^2))/(c^2*(a + c*x^2)^(1/2))
```

sympy [A] time = 8.87, size = 83, normalized size = 1.26

$$A\left(\frac{\mathrm{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{\frac{3}{2}}}-\frac{x}{\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)+B\left(\begin{cases}\frac{2a}{c^2\sqrt{a+cx^2}}+\frac{x^2}{c\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^4}{4a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(asinh(sqrt(c)*x/sqrt(a))/c**(3/2) - x/(sqrt(a)*c*sqrt(1 + c*x**2/a))) +
B*Piecewise((2*a/(c**2*sqrt(a + c*x**2)) + x**2/(c*sqrt(a + c*x**2)), Ne(c,
 0)), (x**4/(4*a**(3/2)), True))
```

3.368 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=48

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}-\frac{A+Bx}{c\sqrt{a+cx^2}}$$

```
[Out] B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(3/2)+(-B*x-A)/c/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.02, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {778, 217, 206}

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}-\frac{A+Bx}{c\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((A + B*x)/(c*Sqrt[a + c*x^2])) + (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])
/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c}\\
&= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{c}\\
&= -\frac{A+Bx}{c\sqrt{a+cx^2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 64, normalized size = 1.33

$$\frac{\sqrt{a}\,B\sqrt{\frac{cx^2}{a}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)-\sqrt{c}\,(A+Bx)}{c^{3/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[c]*(A + B*x)) + Sqrt[a]*B*Sqrt[1 + (c*x^2)/a]*ArcSinh[(Sqrt[c]*x)/S
qrt[a]])/(c^(3/2)*Sqrt[a + c*x^2])
```

fricas [A] time = 0.75, size = 147, normalized size = 3.06

$$\left[\frac{\left(Bcx^2+Ba\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)-2\,(Bcx+Ac)\sqrt{cx^2+a}}{2\left(c^3x^2+ac^2\right)},-\frac{\left(Bcx^2+Ba\right)\sqrt{-c}\,\arctan\left(\frac{\sqrt{-}}{\sqrt{cx^2}}\right.}{c^3x^2+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*x^2 + B*a)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(c)*x -
a) - 2*(B*c*x + A*c)*sqrt(c*x^2 + a))/(c^3*x^2 + a*c^2), -((B*c*x^2 + B*a)*
sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (B*c*x + A*c)*sqrt(c*x^2 + a)
)/(c^3*x^2 + a*c^2)]
```

giac [A] time = 0.24, size = 48, normalized size = 1.00

$$-\frac{\frac{Bx}{c}+\frac{A}{c}}{\sqrt{cx^2+a}}-\frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(B*x/c + A/c)/sqrt(c*x^2 + a) - B*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c
^(3/2)
```

maple [A] time = 0.05, size = 54, normalized size = 1.12

$$-\frac{Bx}{\sqrt{c\,x^2+a}\;c}+\frac{B\ln\left(\sqrt{c}\;x+\sqrt{c\,x^2+a}\right)}{c^{\frac{3}{2}}}-\frac{A}{\sqrt{c\,x^2+a}\;c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] -B*x/c/(c*x^2+a)^(1/2)+B/c^(3/2)*ln(c^(1/2)*x+(c*x^2+a)^(1/2))-A/c/(c*x^2+a
)^(1/2)
```

maxima [A] time = 0.48, size = 46, normalized size = 0.96

$$-\frac{Bx}{\sqrt{cx^2+a}\,c}+\frac{B\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{3}{2}}}-\frac{A}{\sqrt{cx^2+a}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -B*x/(sqrt(c*x^2 + a)*c) + B*arcsinh(c*x/sqrt(a*c))/c^(3/2) - A/(sqrt(c*x^2
 + a)*c)
```

mupad [B] time = 1.22, size = 53, normalized size = 1.10

$$\frac{B\ln\left(\sqrt{c}\,x+\sqrt{c\,x^2+a}\right)}{c^{3/2}}-\frac{A}{c\,\sqrt{c\,x^2+a}}-\frac{B\,x}{c\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] (B*log(c^(1/2)*x + (a + c*x^2)^(1/2)))/c^(3/2) - A/(c*(a + c*x^2)^(1/2)) -
(B*x)/(c*(a + c*x^2)^(1/2))
```

sympy [A] time = 8.03, size = 66, normalized size = 1.38

$$A\left(\begin{cases}-\frac{1}{c\sqrt{a+cx^2}} & \text{for}\ c\neq 0\\ \frac{x^2}{2a^{\frac{3}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{\frac{3}{2}}}-\frac{x}{\sqrt{a}\,c\sqrt{1+\frac{cx^2}{a}}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*Piecewise((-1/(c*sqrt(a + c*x**2)), Ne(c, 0)), (x**2/(2*a**(3/2)), True))
 + B*(asinh(sqrt(c)*x/sqrt(a))/c**(3/2) - x/(sqrt(a)*c*sqrt(1 + c*x**2/a)))
```

3.369 $\int \frac{A+Bx}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=28

$$-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

```
[Out] (A*c*x-B*a)/a/c/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {637}

$$-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^(3/2),x]
```

```
[Out] -((a*B - A*c*x)/(a*c*Sqrt[a + c*x^2]))
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+cx^2\right)^{3/2}}\,dx=-\frac{aB-Acx}{ac\sqrt{a+cx^2}}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.96

$$\frac{Acx-aB}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^(3/2),x]
```

```
[Out] (-(a*B) + A*c*x)/(a*c*Sqrt[a + c*x^2])
```

fricas [A] time = 1.01, size = 35, normalized size = 1.25

$$\frac{(Acx-Ba)\sqrt{cx^2+a}}{ac^2x^2+a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] (A*c*x - B*a)*sqrt(c*x^2 + a)/(a*c^2*x^2 + a^2*c)
```

giac [A] time = 0.20, size = 23, normalized size = 0.82

$$\frac{\frac{Ax}{a}-\frac{B}{c}}{\sqrt{cx^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (A*x/a - B/c)/sqrt(c*x^2 + a)
```

maple [A] time = 0.05, size = 26, normalized size = 0.93

$$\frac{Acx - Ba}{\sqrt{c\,x^2 + a}\;ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] (A*c*x-B*a)/a/c/(c*x^2+a)^(1/2)
```

maxima [A] time = 0.47, size = 31, normalized size = 1.11

$$\frac{Ax}{\sqrt{cx^2 + a}\,a} - \frac{B}{\sqrt{cx^2 + a}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] A*x/(sqrt(c*x^2 + a)*a) - B/(sqrt(c*x^2 + a)*c)
```

mupad [B] time = 1.08, size = 24, normalized size = 0.86

$$-\frac{\frac{B}{c} - \frac{A\,x}{a}}{\sqrt{c\,x^2 + a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^(3/2),x)
```

```
[Out] -(B/c - (A*x)/a)/(a + c*x^2)^(1/2)
```

sympy [A] time = 7.23, size = 46, normalized size = 1.64

$$\frac{Ax}{a^{\frac{3}{2}}\sqrt{1 + \frac{cx^2}{a}}} + B\left(\begin{cases} -\frac{1}{c\sqrt{a+cx^2}} & \text{for}\ c \neq 0 \\ \frac{x^2}{2a^{\frac{3}{2}}} & \text{otherwise} \end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*x/(a**(3/2)*sqrt(1 + c*x**2/a)) + B*Piecewise((-1/(c*sqrt(a + c*x**2)), N
e(c, 0)), (x**2/(2*a**(3/2)), True))
```

3.370 $\int \frac{A+Bx}{x\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=47

$$\frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

```
[Out] -A*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+(B*x+A)/a/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 12, 266, 63, 208}

$$\frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*Sqrt[a + c*x^2]) - (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2
)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{a\sqrt{a+cx^2}}+\frac{\int \frac{aAc}{x\sqrt{a+cx^2}}\,dx}{a^2c}\\
&= \frac{A+Bx}{a\sqrt{a+cx^2}}+\frac{A\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a}\\
&= \frac{A+Bx}{a\sqrt{a+cx^2}}+\frac{A\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a}\\
&= \frac{A+Bx}{a\sqrt{a+cx^2}}+\frac{A\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{ac}\\
&= \frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 47, normalized size = 1.00

$$
\frac{A+Bx}{a\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*Sqrt[a + c*x^2]) - (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2
)
```

fricas [**A**] time = 1.00, size = 146, normalized size = 3.11

$$
\left[\frac{\left(Acx^2+Aa\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\,(Bax+Aa)\sqrt{cx^2+a}}{2\left(a^2cx^2+a^3\right)},\ \frac{\left(Acx^2+Aa\right)\sqrt{-a}\,\arctan\left(\frac{\sqrt{-a}}{\sqrt{cx^2+a}}\right)+(Bax}{a^2cx^2+a^3}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*c*x^2 + A*a)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2*a
)/x^2) + 2*(B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^2 + a^3), ((A*c*x^2 + A*
a)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (B*a*x + A*a)*sqrt(c*x^2 + a
))/(a^2*c*x^2 + a^3)]
```

giac [**A**] time = 0.19, size = 59, normalized size = 1.26

$$
\frac{\frac{Bx}{a}+\frac{A}{a}}{\sqrt{cx^2+a}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (B*x/a + A/a)/sqrt(c*x^2 + a) + 2*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/s
qrt(-a))/(sqrt(-a)*a)
```

maple [A] time = 0.05, size = 60, normalized size = 1.28

$$\frac{Bx}{\sqrt{c\,x^2+a}\;a}-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}+\frac{A}{\sqrt{c\,x^2+a}\;a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(3/2)/x,x)
```

```
[Out] B*x/a/(c*x^2+a)^(1/2)+A/a/(c*x^2+a)^(1/2)-A/a^(3/2)*ln((2*a+2*(c*x^2+a)^(1/
2)*a^(1/2))/x)
```

maxima [A] time = 0.47, size = 48, normalized size = 1.02

$$\frac{Bx}{\sqrt{cx^2+a}\,a}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{3}{2}}}+\frac{A}{\sqrt{cx^2+a}\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x/(sqrt(c*x^2 + a)*a) - A*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) + A/(sqrt
(c*x^2 + a)*a)
```

mupad [B] time = 1.43, size = 50, normalized size = 1.06

$$\frac{A}{a\,\sqrt{c\,x^2+a}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{B\,x}{a\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(3/2)),x)
```

```
[Out] A/(a*(a + c*x^2)^(1/2)) - (A*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(3/2) + (B
*x)/(a*(a + c*x^2)^(1/2))
```

sympy [B] time = 9.57, size = 206, normalized size = 4.38

$$A\left(\frac{2a^3\sqrt{1+\frac{cx^2}{a}}}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^3\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^3\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}+\frac{a^2cx^2\log\left(\frac{cx^2}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}-\frac{2a^2cx^2\log\left(\sqrt{1+\frac{cx^2}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(2*a**3*sqrt(1 + c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**3*log(c*
x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**3*log(sqrt(1 + c*x**2/a) +
1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**2*c*x**2*log(c*x**2/a)/(2*a**(9/2)
 + 2*a**(7/2)*c*x**2) - 2*a**2*c*x**2*log(sqrt(1 + c*x**2/a) + 1)/(2*a**(9/
2) + 2*a**(7/2)*c*x**2)) + B*x/(a**(3/2)*sqrt(1 + c*x**2/a))
```

3.371 $\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=70

$$-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{2A\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax\sqrt{a+cx^2}}$$

```
[Out] -B*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(3/2)+(B*x+A)/a/x/(c*x^2+a)^(1/2)-2*A
*(c*x^2+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.05, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 807, 266, 63, 208}

$$-\frac{2A\sqrt{a+cx^2}}{a^2x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}+\frac{A+Bx}{ax\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x*Sqrt[a + c*x^2]) - (2*A*Sqrt[a + c*x^2])/(a^2*x) - (B*ArcTan
h[Sqrt[a + c*x^2]/Sqrt[a]])/a^(3/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax\sqrt{a+cx^2}} - \frac{\int \frac{-2aAc-aBcx}{x^2\sqrt{a+cx^2}}\,dx}{a^2c} \\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}} - \frac{2A\sqrt{a+cx^2}}{a^2x} + \frac{B\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a} \\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}} - \frac{2A\sqrt{a+cx^2}}{a^2x} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx, x, x^2\right)}{2a} \\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}} - \frac{2A\sqrt{a+cx^2}}{a^2x} + \frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx, x, \sqrt{a+cx^2}\right)}{ac} \\
&= \frac{A+Bx}{ax\sqrt{a+cx^2}} - \frac{2A\sqrt{a+cx^2}}{a^2x} - \frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{3/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.04, size = 72, normalized size = 1.03

$$
-\frac{a(A-Bx)+\sqrt{a}\,Bx\sqrt{a+cx^2}\,\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)+2Acx^2}{a^2x\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + c*x^2)^(3/2)),x]
```

```
[Out] -((2*A*c*x^2 + a*(A - B*x) + Sqrt[a]*B*x*Sqrt[a + c*x^2]*ArcTanh[Sqrt[a + c
*x^2]/Sqrt[a]])/(a^2*x*Sqrt[a + c*x^2]))
```

fricas [**A**] time = 1.28, size = 169, normalized size = 2.41

$$
\left[\frac{\left(Bcx^3+Bax\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(2\,Acx^2-Bax+Aa\right)\sqrt{cx^2+a}}{2\left(a^2cx^3+a^3x\right)},\ \left(Bcx^3+Bax\right)\sqrt{-a}\,\arctan\left(\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*x^3 + B*a*x)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^2 + a)*sqrt(a) + 2
*a)/x^2) - 2*(2*A*c*x^2 - B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^3 + a^3*x)
, ((B*c*x^3 + B*a*x)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (2*A*c*x^2
 - B*a*x + A*a)*sqrt(c*x^2 + a))/(a^2*c*x^3 + a^3*x)]
```

giac [**A**] time = 0.21, size = 96, normalized size = 1.37

$$
-\frac{\frac{Acx}{a^2}-\frac{B}{a}}{\sqrt{cx^2+a}}+\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{2\,A\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(A*c*x/a^2 - B/a)/sqrt(c*x^2 + a) + 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
a))/sqrt(-a))/(sqrt(-a)*a) + 2*A*sqrt(c)/(((sqrt(c)*x - sqrt(c*x^2 + a))^2
- a)*a)
```

maple [A] time = 0.06, size = 80, normalized size = 1.14

$$-\frac{2Acx}{\sqrt{c\,x^{2}+a}\;a^{2}}-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\;\sqrt{a}}{x}\right)}{a^{\frac{3}{2}}}+\frac{B}{\sqrt{c\,x^{2}+a}\;a}-\frac{A}{\sqrt{c\,x^{2}+a}\;ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(3/2),x)
```

```
[Out] -A/a/x/(c*x^2+a)^(1/2)-2*A*c/a^2*x/(c*x^2+a)^(1/2)+B/a/(c*x^2+a)^(1/2)-B/a^
(3/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.61, size = 68, normalized size = 0.97

$$-\frac{2\,Acx}{\sqrt{cx^{2}+a}\,a^{2}}-\frac{B\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{3}{2}}}+\frac{B}{\sqrt{cx^{2}+a}\,a}-\frac{A}{\sqrt{cx^{2}+a}\,ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*A*c*x/(sqrt(c*x^2 + a)*a^2) - B*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(3/2) +
B/(sqrt(c*x^2 + a)*a) - A/(sqrt(c*x^2 + a)*a*x)
```

mupad [B] time = 1.58, size = 70, normalized size = 1.00

$$\frac{B}{a\,\sqrt{c\,x^{2}+a}}-\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^{2}+a}}{\sqrt{a}}\right)}{a^{3/2}}-\frac{A}{a\,x\,\sqrt{c\,x^{2}+a}}-\frac{2\,A\,c\,x}{a^{2}\,\sqrt{c\,x^{2}+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(3/2)),x)
```

```
[Out] B/(a*(a + c*x^2)^(1/2)) - (B*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(3/2) - A/
(a*x*(a + c*x^2)^(1/2)) - (2*A*c*x)/(a^2*(a + c*x^2)^(1/2))
```

sympy [B] time = 13.93, size = 235, normalized size = 3.36

$$A\left(-\frac{1}{a\sqrt{c}\,x^{2}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{2\sqrt{c}}{a^{2}\sqrt{\frac{a}{cx^{2}}+1}}\right)+B\left(\frac{2a^{3}\sqrt{1+\frac{cx^{2}}{a}}}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^{2}}+\frac{a^{3}\log\left(\frac{cx^{2}}{a}\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^{2}}-\frac{2a^{3}\log\left(\sqrt{1+\frac{cx^{2}}{a}}+1\right)}{2a^{\frac{9}{2}}+2a^{\frac{7}{2}}cx^{2}}+\frac{a^{2}cx^{2}\log\left(\right.}{2a^{\frac{9}{2}}+2a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-1/(a*sqrt(c)*x**2*sqrt(a/(c*x**2) + 1)) - 2*sqrt(c)/(a**2*sqrt(a/(c*x**
2) + 1))) + B*(2*a**3*sqrt(1 + c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) +
 a**3*log(c*x**2/a)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**3*log(sqrt(1 +
c*x**2/a) + 1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2) + a**2*c*x**2*log(c*x**2/a)
/(2*a**(9/2) + 2*a**(7/2)*c*x**2) - 2*a**2*c*x**2*log(sqrt(1 + c*x**2/a) +
1)/(2*a**(9/2) + 2*a**(7/2)*c*x**2))
```

3.372 $\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=95

$$\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax^2\sqrt{a+cx^2}}$$

```
[Out] 3/2*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)+(B*x+A)/a/x^2/(c*x^2+a)^(1
/2)-3/2*A*(c*x^2+a)^(1/2)/a^2/x^2-2*B*(c*x^2+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.08, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}+\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{A+Bx}{ax^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x^2*Sqrt[a + c*x^2]) - (3*A*Sqrt[a + c*x^2])/(2*a^2*x^2) - (2*
B*Sqrt[a + c*x^2])/(a^2*x) + (3*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^
(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{\int \frac{-3aAc-2aBcx}{x^3\sqrt{a+cx^2}}\,dx}{a^2c}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}+\frac{\int \frac{4a^2Bc-3aAc^2x}{x^2\sqrt{a+cx^2}}\,dx}{2a^3c}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3Ac)\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{4a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}-\frac{(3A)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{2a^2}\\
&= \frac{A+Bx}{ax^2\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{2a^2x^2}-\frac{2B\sqrt{a+cx^2}}{a^2x}+\frac{3Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 75, normalized size = 0.79

$$\frac{-\frac{a(A+2Bx)}{x^2}+3Ac\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)-c(3A+4Bx)}{2a^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + c*x^2)^(3/2)),x]
```

```
[Out] (-((a*(A + 2*B*x))/x^2) - c*(3*A + 4*B*x) + 3*A*c*Sqrt[1 + (c*x^2)/a]*ArcTa
nh[Sqrt[1 + (c*x^2)/a]])/(2*a^2*Sqrt[a + c*x^2])
```

fricas [A] time = 0.73, size = 211, normalized size = 2.22

$$\left[\frac{3\left(Ac^2x^4+Aacx^2\right)\sqrt{a}\,\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(4\,Bacx^3+3\,Aacx^2+2\,Ba^2x+Aa^2\right)\sqrt{cx^2+a}}{4\left(a^3cx^4+a^4x^2\right)},-\frac{3\left(Ac^2x^4\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(3*(A*c^2*x^4 + A*a*c*x^2)*sqrt(a)*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sqr
t(a) + 2*a)/x^2) - 2*(4*B*a*c*x^3 + 3*A*a*c*x^2 + 2*B*a^2*x + A*a^2)*sqrt(c
*x^2 + a))/(a^3*c*x^4 + a^4*x^2), -1/2*(3*(A*c^2*x^4 + A*a*c*x^2)*sqrt(-a)*
arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (4*B*a*c*x^3 + 3*A*a*c*x^2 + 2*B*a^2*x +
 A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^4 + a^4*x^2)]
```

giac [**B**] time = 0.20, size = 171, normalized size = 1.80

$$-\frac{\frac{Bcx}{a^2}+\frac{Ac}{a^2}}{\sqrt{cx^2+a}}-\frac{3\,Ac\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2Ba\sqrt{c}+\left(\sqrt{c}\,x-\sqrt{c}\right.}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)^2a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] -(B*c*x/a^2 + A*c/a^2)/sqrt(c*x^2 + a) - 3*A*c*arctan(-(sqrt(c)*x - sqrt(c*
x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c +
 2*(sqrt(c)*x - sqrt(c*x^2 + a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 +
a))*A*a*c - 2*B*a^2*sqrt(c))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2*a^2)
```

maple [**A**] time = 0.06, size = 101, normalized size = 1.06

$$-\frac{2Bcx}{\sqrt{c\,x^2+a}\;a^2}+\frac{3Ac\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{2a^{\frac{5}{2}}}-\frac{3Ac}{2\sqrt{c\,x^2+a}\;a^2}-\frac{B}{\sqrt{c\,x^2+a}\;ax}-\frac{A}{2\sqrt{c\,x^2+a}\;a\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+a)^(1/2)-3/2*A*c/a^2/(c*x^2+a)^(1/2)+3/2*A*c/a^(5/2)*ln
((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^2+a)^(1/2)-2*B*c/a^2*x/(c*x^
2+a)^(1/2)
```

maxima [**A**] time = 0.58, size = 89, normalized size = 0.94

$$-\frac{2\,Bcx}{\sqrt{cx^2+a}\,a^2}+\frac{3\,Ac\,\operatorname{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{5}{2}}}-\frac{3\,Ac}{2\,\sqrt{cx^2+a}\,a^2}-\frac{B}{\sqrt{cx^2+a}\,ax}-\frac{A}{2\,\sqrt{cx^2+a}\,ax^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -2*B*c*x/(sqrt(c*x^2 + a)*a^2) + 3/2*A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(5
/2) - 3/2*A*c/(sqrt(c*x^2 + a)*a^2) - B/(sqrt(c*x^2 + a)*a*x) - 1/2*A/(sqrt
(c*x^2 + a)*a*x^2)
```

mupad [**B**] time = 1.73, size = 94, normalized size = 0.99

$$\frac{3\,A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{5/2}}-\frac{3\,A\,c}{2\,a^2\,\sqrt{c\,x^2+a}}-\frac{A}{2\,a\,x^2\,\sqrt{c\,x^2+a}}-\frac{\sqrt{c\,x^2+a}\,\left(\frac{B}{a}+\frac{2\,B\,c\,x^2}{a^2}\right)}{c\,x^3+a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(3/2)),x)
```

```
[Out] (3*A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(5/2)) - (3*A*c)/(2*a^2*(a +
c*x^2)^(1/2)) - A/(2*a*x^2*(a + c*x^2)^(1/2)) - ((a + c*x^2)^(1/2)*(B/a + (
2*B*c*x^2)/a^2))/(a*x + c*x^3)
```

sympy [**A**] time = 10.37, size = 124, normalized size = 1.31

$$A\left(-\frac{1}{2a\sqrt{c}\,x^{3}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{3\sqrt{c}}{2a^{2}x\sqrt{\frac{a}{cx^{2}}+1}}+\frac{3c\operatorname{asinh}\left(\frac{\sqrt{a}}{\sqrt{c}\,x}\right)}{2a^{\frac{5}{2}}}\right)+B\left(-\frac{1}{a\sqrt{c}\,x^{2}\sqrt{\frac{a}{cx^{2}}+1}}-\frac{2\sqrt{c}}{a^{2}\sqrt{\frac{a}{cx^{2}}+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-1/(2*a*sqrt(c)*x**3*sqrt(a/(c*x**2) + 1)) - 3*sqrt(c)/(2*a**2*x*sqrt(a/
(c*x**2) + 1)) + 3*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*a**(5/2))) + B*(-1/(a*sq
rt(c)*x**2*sqrt(a/(c*x**2) + 1)) - 2*sqrt(c)/(a**2*sqrt(a/(c*x**2) + 1)))
```

3.373 $\int \frac{A+Bx}{x^4(a+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=120

$$\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{A+Bx}{ax^3\sqrt{a+cx^2}}$$

```
[Out] 3/2*B*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)+(B*x+A)/a/x^3/(c*x^2+a)^(1
/2)-4/3*A*(c*x^2+a)^(1/2)/a^2/x^3-3/2*B*(c*x^2+a)^(1/2)/a^2/x^2+8/3*A*c*(c*
x^2+a)^(1/2)/a^3/x
```

Rubi [A] time = 0.11, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}+\frac{A+Bx}{ax^3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*x^3*Sqrt[a + c*x^2]) - (4*A*Sqrt[a + c*x^2])/(3*a^2*x^3) - (3*
B*Sqrt[a + c*x^2])/(2*a^2*x^2) + (8*A*c*Sqrt[a + c*x^2])/(3*a^3*x) + (3*B*c
*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(5/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^4\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{\int \frac{-4aAc-3aBcx}{x^4\sqrt{a+cx^2}}\,dx}{a^2c}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}+\frac{\int \frac{9a^2Bc-8aAc^2x}{x^3\sqrt{a+cx^2}}\,dx}{3a^3c}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}-\frac{\int \frac{16a^2Ac^2+9a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{6a^4c}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{(3Bc)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^2}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{(3Bc)\,\text{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,d}{4a^2}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}-\frac{(3B)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,}{2a^2}\\
&= \frac{A+Bx}{ax^3\sqrt{a+cx^2}}-\frac{4A\sqrt{a+cx^2}}{3a^2x^3}-\frac{3B\sqrt{a+cx^2}}{2a^2x^2}+\frac{8Ac\sqrt{a+cx^2}}{3a^3x}+\frac{3Bc\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.14, size = 90, normalized size = 0.75

$$\frac{-\frac{a^2(2A+3Bx)}{x^3}+a\left(\frac{8Ac}{x}-9Bc\right)+9aBc\sqrt{\frac{cx^2}{a}+1}\,\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)+16Ac^2x}{6a^3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a + c*x^2)^(3/2)),x]
```

```
[Out] (a*(-9*B*c + (8*A*c)/x) + 16*A*c^2*x - (a^2*(2*A + 3*B*x))/x^3 + 9*a*B*c*Sq
rt[1 + (c*x^2)/a]*ArcTanh[Sqrt[1 + (c*x^2)/a]])/(6*a^3*Sqrt[a + c*x^2])
```

fricas [A] time = 0.76, size = 232, normalized size = 1.93

$$\left[\frac{9\left(Bc^{2}x^{5}+Bacx^{3}\right)\sqrt{a}\log\left(-\frac{cx^{2}+2\sqrt{cx^{2}+a}\sqrt{a}+2a}{x^{2}}\right)+2\left(16Ac^{2}x^{4}-9Bacx^{3}+8Aacx^{2}-3Ba^{2}x-2Aa^{2}\right)\sqrt{cx^{2}+}}{12\left(a^{3}cx^{5}+a^{4}x^{3}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(9*(B*c^2*x^5 + B*a*c*x^3)*sqrt(a)*log(-(c*x^2 + 2*sqrt(c*x^2 + a)*sq
rt(a) + 2*a)/x^2) + 2*(16*A*c^2*x^4 - 9*B*a*c*x^3 + 8*A*a*c*x^2 - 3*B*a^2*x
 - 2*A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^5 + a^4*x^3), -1/6*(9*(B*c^2*x^5 + B*
a*c*x^3)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) - (16*A*c^2*x^4 - 9*B*a*
c*x^3 + 8*A*a*c*x^2 - 3*B*a^2*x - 2*A*a^2)*sqrt(c*x^2 + a))/(a^3*c*x^5 + a^
4*x^3)]
```

giac [B] time = 0.21, size = 203, normalized size = 1.69

$$\frac{\frac{Ac^{2}x}{a^{3}}-\frac{Bc}{a^{2}}}{\sqrt{cx^{2}+a}}-\frac{3\,Bc\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^{2}+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^{2}}+\frac{3\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{5}Bc-6\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{4}Ac^{\frac{3}{2}}+24\left(\sqrt{c}x-\sqrt{}\right.}{3\left(\left(\sqrt{c}x-\sqrt{cx^{2}+a}\right)^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] (A*c^2*x/a^3 - B*c/a^2)/sqrt(c*x^2 + a) - 3*B*c*arctan(-(sqrt(c)*x - sqrt(c
*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/3*(3*(sqrt(c)*x - sqrt(c*x^2 + a))^
5*B*c - 6*(sqrt(c)*x - sqrt(c*x^2 + a))^4*A*c^(3/2) + 24*(sqrt(c)*x - sqrt(
c*x^2 + a))^2*A*a*c^(3/2) - 3*(sqrt(c)*x - sqrt(c*x^2 + a))*B*a^2*c - 10*A*
a^2*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^3*a^2)
```

maple [A] time = 0.05, size = 122, normalized size = 1.02

$$\frac{8A\,c^{2}x}{3\sqrt{c\,x^{2}+a}\;a^{3}}+\frac{3Bc\ln\left(\frac{2a+2\sqrt{c\,x^{2}+a}\;\sqrt{a}}{x}\right)}{2a^{\frac{5}{2}}}-\frac{3Bc}{2\sqrt{c\,x^{2}+a}\;a^{2}}+\frac{4Ac}{3\sqrt{c\,x^{2}+a}\;a^{2}x}-\frac{B}{2\sqrt{c\,x^{2}+a}\;a\,x^{2}}-\frac{A}{3\sqrt{c\,x^{2}+a}\;a\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/3*A/a/x^3/(c*x^2+a)^(1/2)+4/3*A*c/a^2/x/(c*x^2+a)^(1/2)+8/3*A*c^2/a^3*x/
(c*x^2+a)^(1/2)-1/2*B/a/x^2/(c*x^2+a)^(1/2)-3/2*B*c/a^2/(c*x^2+a)^(1/2)+3/2
*B*c/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.50, size = 110, normalized size = 0.92

$$\frac{8\,Ac^{2}x}{3\,\sqrt{cx^{2}+a}\,a^{3}}+\frac{3\,Bc\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{5}{2}}}-\frac{3\,Bc}{2\,\sqrt{cx^{2}+a}\,a^{2}}+\frac{4\,Ac}{3\,\sqrt{cx^{2}+a}\,a^{2}x}-\frac{B}{2\,\sqrt{cx^{2}+a}\,ax^{2}}-\frac{A}{3\,\sqrt{cx^{2}+a}\,ax^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 8/3*A*c^2*x/(sqrt(c*x^2 + a)*a^3) + 3/2*B*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a
^(5/2) - 3/2*B*c/(sqrt(c*x^2 + a)*a^2) + 4/3*A*c/(sqrt(c*x^2 + a)*a^2*x) -
1/2*B/(sqrt(c*x^2 + a)*a*x^2) - 1/3*A/(sqrt(c*x^2 + a)*a*x^3)
```

mupad [B] time = 1.85, size = 95, normalized size = 0.79

$$\frac{3\,B\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{5/2}}-\frac{B}{2\,a\,x^2\,\sqrt{c\,x^2+a}}-\frac{3\,B\,c}{2\,a^2\,\sqrt{c\,x^2+a}}+\frac{A\,\left(-a^2+4\,a\,c\,x^2+8\,c^2\,x^4\right)}{3\,a^3\,x^3\,\sqrt{c\,x^2+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + c*x^2)^(3/2)),x)
```

```
[Out] (3*B*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(5/2)) - B/(2*a*x^2*(a + c*x^
2)^(1/2)) - (3*B*c)/(2*a^2*(a + c*x^2)^(1/2)) + (A*(8*c^2*x^4 - a^2 + 4*a*c
*x^2))/(3*a^3*x^3*(a + c*x^2)^(1/2))
```

sympy [B] time = 28.08, size = 311, normalized size = 2.59

$$A\left(-\frac{a^3c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{3a^2c^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{12ac^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4x^2+6a^4c^5x^4+3a^3c^6x^6}+\frac{8c^{\frac{15}{2}}x}{3a^5c^4x^2+6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+a)**(3/2),x)
```

```
[Out] A*(-a**3*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4
 + 3*a**3*c**6*x**6) + 3*a**2*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a**5*c
**4*x**2 + 6*a**4*c**5*x**4 + 3*a**3*c**6*x**6) + 12*a*c**(13/2)*x**4*sqrt(
a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4 + 3*a**3*c**6*x**6) +
8*c**(15/2)*x**6*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4*x**2 + 6*a**4*c**5*x**4
+ 3*a**3*c**6*x**6)) + B*(-1/(2*a*sqrt(c)*x**3*sqrt(a/(c*x**2) + 1)) - 3*sq
rt(c)/(2*a**2*x*sqrt(a/(c*x**2) + 1)) + 3*c*asinh(sqrt(a)/(sqrt(c)*x))/(2*a
**(5/2)))
```

3.374 $\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=99

$$-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}-\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}$$

```
[Out] -1/3*x^3*(B*x+A)/c/(c*x^2+a)^(3/2)+A*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(
5/2)-1/3*x*(4*B*x+3*A)/c^2/(c*x^2+a)^(1/2)+8/3*B*(c*x^2+a)^(1/2)/c^3
```

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 641, 217, 206}

$$-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}-\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^3*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (x*(3*A + 4*B*x))/(3*c^2*Sqrt[a
+ c*x^2]) + (8*B*Sqrt[a + c*x^2])/(3*c^3) + (A*ArcTanh[(Sqrt[c]*x)/Sqrt[a +
 c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^4(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{\int \frac{x^2(3aA+4aBx)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}\\
&= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{\int \frac{3a^2A+8a^2Bx}{\sqrt{a+cx^2}}\,dx}{3a^2c^2}\\
&= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c^2}\\
&= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{c^2}\\
&= -\frac{x^3(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{x(3A+4Bx)}{3c^2\sqrt{a+cx^2}}+\frac{8B\sqrt{a+cx^2}}{3c^3}+\frac{A\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.90

$$
\frac{8a^2B-3acx(A-4Bx)+3A\sqrt{c}\left(a+cx^2\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)+c^2x^3(3Bx-4A)}{3c^3\left(a+cx^2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (8*a^2*B - 3*a*c*x*(A - 4*B*x) + c^2*x^3*(-4*A + 3*B*x) + 3*A*Sqrt[c]*(a +
c*x^2)^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/(3*c^3*(a + c*x^2)^(3/2)
)
```

fricas [A] time = 1.31, size = 258, normalized size = 2.61

$$
\left[\frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)+2\left(3\,Bc^2x^4-4\,Ac^2x^3+12\,Bacx^2-3\,Aacx\right.}{6\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x
^2 + a)*sqrt(c)*x - a) + 2*(3*B*c^2*x^4 - 4*A*c^2*x^3 + 12*B*a*c*x^2 - 3*A*
a*c*x + 8*B*a^2)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3), -1/3*(
3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 +
 a)) - (3*B*c^2*x^4 - 4*A*c^2*x^3 + 12*B*a*c*x^2 - 3*A*a*c*x + 8*B*a^2)*sqr
t(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3)]
```

giac [A] time = 0.21, size = 82, normalized size = 0.83

$$
\frac{\left(\left(\left(\frac{3\,Bx}{c}-\frac{4\,A}{c}\right)x+\frac{12\,Ba}{c^2}\right)x-\frac{3\,Aa}{c^2}\right)x+\frac{8\,Ba^2}{c^3}}{3\left(cx^2+a\right)^{\frac{3}{2}}}-\frac{A\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{5}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*B*x/c - 4*A/c)*x + 12*B*a/c^2)*x - 3*A*a/c^2)*x + 8*B*a^2/c^3)/(c
*x^2 + a)^(3/2) - A*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [**A**] time = 0.05, size = 111, normalized size = 1.12

$$\frac{B\,x^{4}}{\left(c\,x^{2}+a\right)^{\frac{3}{2}}\,c}-\frac{A\,x^{3}}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}\,c}+\frac{4B a\,x^{2}}{\left(c\,x^{2}+a\right)^{\frac{3}{2}}\,c^{2}}-\frac{A x}{\sqrt{c\,x^{2}+a}\;c^{2}}+\frac{8B\,a^{2}}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}\,c^{3}}+\frac{A\ln\left(\sqrt{c}\;x+\sqrt{c\,x^{2}+a}\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] B*x^4/c/(c*x^2+a)^(3/2)+4*B*a/c^2*x^2/(c*x^2+a)^(3/2)+8/3*B*a^2/c^3/(c*x^2+
a)^(3/2)-1/3*A*x^3/c/(c*x^2+a)^(3/2)-A/c^2*x/(c*x^2+a)^(1/2)+A/c^(5/2)*ln(c
^(1/2)*x+(c*x^2+a)^(1/2))
```

maxima [**A**] time = 0.62, size = 122, normalized size = 1.23

$$-\frac{1}{3}\,Ax\left(\frac{3\,x^{2}}{\left(cx^{2}+a\right)^{\frac{3}{2}}c}+\frac{2\,a}{\left(cx^{2}+a\right)^{\frac{3}{2}}c^{2}}\right)+\frac{Bx^{4}}{\left(cx^{2}+a\right)^{\frac{3}{2}}c}+\frac{4\,Bax^{2}}{\left(cx^{2}+a\right)^{\frac{3}{2}}c^{2}}-\frac{Ax}{3\,\sqrt{cx^{2}+a}\,c^{2}}+\frac{A\,\mathrm{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{5}{2}}}+\frac{8\,Ba^{2}}{3\,(cx^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A*x*(3*x^2/((c*x^2 + a)^(3/2)*c) + 2*a/((c*x^2 + a)^(3/2)*c^2)) + B*x^
4/((c*x^2 + a)^(3/2)*c) + 4*B*a*x^2/((c*x^2 + a)^(3/2)*c^2) - 1/3*A*x/(sqrt
(c*x^2 + a)*c^2) + A*arcsinh(c*x/sqrt(a*c))/c^(5/2) + 8/3*B*a^2/((c*x^2 + a
)^(3/2)*c^3)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{4}\,\left(A+B\,x\right)}{\left(c\,x^{2}+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [**B**] time = 29.11, size = 445, normalized size = 4.49

$$A\left(\frac{3a^{\frac{39}{2}}c^{11}\sqrt{1+\frac{cx^{2}}{a}}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^{2}}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^{2}\sqrt{1+\frac{cx^{2}}{a}}}+\frac{3a^{\frac{37}{2}}c^{12}x^{2}\sqrt{1+\frac{cx^{2}}{a}}\,\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^{2}}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^{2}\sqrt{1+\frac{cx^{2}}{a}}}-\frac{3a^{19}c}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^{2}}{a}}+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(3*a**(39/2)*c**11*sqrt(1 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/
2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**
2/a)) + 3*a**(37/2)*c**12*x**2*sqrt(1 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/
(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt
(1 + c*x**2/a)) - 3*a**19*c**(23/2)*x/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**
2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) - 4*a**18*c**(25/2)*x
**3/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*
sqrt(1 + c*x**2/a))) + B*Piecewise((8*a**2/(3*a*c**3*sqrt(a + c*x**2) + 3*c
**4*x**2*sqrt(a + c*x**2)) + 12*a*c*x**2/(3*a*c**3*sqrt(a + c*x**2) + 3*c**
4*x**2*sqrt(a + c*x**2)) + 3*c**2*x**4/(3*a*c**3*sqrt(a + c*x**2) + 3*c**4*
x**2*sqrt(a + c*x**2)), Ne(c, 0)), (x**6/(6*a**(5/2)), True))
```

3.375 $\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}-\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

```
[Out] -1/3*x^2*(B*x+A)/c/(c*x^2+a)^(3/2)+B*arctanh(x*c^(1/2)/(c*x^2+a)^(1/2))/c^(
5/2)+1/3*(-3*B*x-2*A)/c^2/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 778, 217, 206}

$$-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}-\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^2*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (2*A + 3*B*x)/(3*c^2*Sqrt[a + c*
x^2]) + (B*ArcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 217

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Subst[Int[1/(1 - b*x^2), x],
x, x/Sqrt[a + b*x^2]] /; FreeQ[{a, b}, x] &&  !GtQ[a, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{\int \frac{x(2aA+3aBx)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}\\ &= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}+\frac{B\int \frac{1}{\sqrt{a+cx^2}}\,dx}{c^2}\\ &= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}+\frac{B\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{a+cx^2}}\right)}{c^2}\\ &= -\frac{x^2(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}-\frac{2A+3Bx}{3c^2\sqrt{a+cx^2}}+\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}\end{aligned}$$

Mathematica [A]   time = 0.07, size = 69, normalized size = 0.87

$$\frac{B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a+cx^2}}\right)}{c^{5/2}}-\frac{a(2A+3Bx)+cx^2(3A+4Bx)}{3c^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -1/3*(a*(2*A + 3*B*x) + c*x^2*(3*A + 4*B*x))/(c^2*(a + c*x^2)^(3/2)) + (B*A
rcTanh[(Sqrt[c]*x)/Sqrt[a + c*x^2]])/c^(5/2)
```

fricas [A]   time = 0.85, size = 239, normalized size = 3.03

$$\left[\frac{3\left(Bc^2x^4+2\,Bacx^2+Ba^2\right)\sqrt{c}\,\log\left(-2\,cx^2-2\,\sqrt{cx^2+a}\,\sqrt{c}\,x-a\right)-2\left(4\,Bc^2x^3+3\,Ac^2x^2+3\,Bacx+2\,Aac\right)\sqrt{cx^2}}{6\left(c^5x^4+2\,ac^4x^2+a^2c^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(B*c^2*x^4 + 2*B*a*c*x^2 + B*a^2)*sqrt(c)*log(-2*c*x^2 - 2*sqrt(c*x
^2 + a)*sqrt(c)*x - a) - 2*(4*B*c^2*x^3 + 3*A*c^2*x^2 + 3*B*a*c*x + 2*A*a*c
)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c^4*x^2 + a^2*c^3), -1/3*(3*(B*c^2*x^4 +
2*B*a*c*x^2 + B*a^2)*sqrt(-c)*arctan(sqrt(-c)*x/sqrt(c*x^2 + a)) + (4*B*c^2
*x^3 + 3*A*c^2*x^2 + 3*B*a*c*x + 2*A*a*c)*sqrt(c*x^2 + a))/(c^5*x^4 + 2*a*c
^4*x^2 + a^2*c^3)]
```

giac [A]   time = 0.22, size = 70, normalized size = 0.89

$$-\frac{\left(\left(\frac{4\,Bx}{c}+\frac{3\,A}{c}\right)x+\frac{3\,Ba}{c^2}\right)x+\frac{2\,Aa}{c^2}}{3\left(cx^2+a\right)^{\frac{3}{2}}}-\frac{B\log\left(\left|-\sqrt{c}\,x+\sqrt{cx^2+a}\right|\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((4*B*x/c + 3*A/c)*x + 3*B*a/c^2)*x + 2*A*a/c^2)/(c*x^2 + a)^(3/2) -
B*log(abs(-sqrt(c)*x + sqrt(c*x^2 + a)))/c^(5/2)
```

maple [A] time = 0.05, size = 91, normalized size = 1.15

$$-\frac{B\,x^{3}}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}c}-\frac{A\,x^{2}}{\left(c\,x^{2}+a\right)^{\frac{3}{2}}c}-\frac{2Aa}{3\left(c\,x^{2}+a\right)^{\frac{3}{2}}c^{2}}-\frac{Bx}{\sqrt{c\,x^{2}+a}\;c^{2}}+\frac{B\ln\left(\sqrt{c}\;x+\sqrt{c\,x^{2}+a}\right)}{c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/3*B*x^3/c/(c*x^2+a)^(3/2)-B/c^2*x/(c*x^2+a)^(1/2)+B/c^(5/2)*ln(c^(1/2)*x
+(c*x^2+a)^(1/2))-A*x^2/c/(c*x^2+a)^(3/2)-2/3*A*a/c^2/(c*x^2+a)^(3/2)
```

maxima [A] time = 0.62, size = 102, normalized size = 1.29

$$-\frac{1}{3}\,Bx\left(\frac{3\,x^{2}}{\left(cx^{2}+a\right)^{\frac{3}{2}}c}+\frac{2\,a}{\left(cx^{2}+a\right)^{\frac{3}{2}}c^{2}}\right)-\frac{Ax^{2}}{\left(cx^{2}+a\right)^{\frac{3}{2}}c}-\frac{Bx}{3\,\sqrt{cx^{2}+a}\,c^{2}}+\frac{B\operatorname{arsinh}\left(\frac{cx}{\sqrt{ac}}\right)}{c^{\frac{5}{2}}}-\frac{2\,Aa}{3\left(cx^{2}+a\right)^{\frac{3}{2}}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x*(3*x^2/((c*x^2 + a)^(3/2)*c) + 2*a/((c*x^2 + a)^(3/2)*c^2)) - A*x^
2/((c*x^2 + a)^(3/2)*c) - 1/3*B*x/(sqrt(c*x^2 + a)*c^2) + B*arcsinh(c*x/sqr
t(a*c))/c^(5/2) - 2/3*A*a/((c*x^2 + a)^(3/2)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3}\,\left(A+B\,x\right)}{{\left(c\,x^{2}+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [A] time = 15.98, size = 400, normalized size = 5.06

$$A\left(\begin{cases}-\frac{2a}{3ac^{2}\sqrt{a+cx^{2}}+3c^{3}x^{2}\sqrt{a+cx^{2}}}-\frac{3cx^{2}}{3ac^{2}\sqrt{a+cx^{2}}+3c^{3}x^{2}\sqrt{a+cx^{2}}} & \text{for}\ c\neq 0\\ \frac{x^{4}}{4a^{\frac{5}{2}}} & \text{otherwise}\end{cases}\right)+B\left(\frac{3a^{\frac{39}{2}}c^{11}\sqrt{1+\frac{cx^{2}}{a}}\operatorname{asinh}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{3a^{\frac{39}{2}}c^{\frac{27}{2}}\sqrt{1+\frac{cx^{2}}{a}}+3a^{\frac{37}{2}}c^{\frac{29}{2}}x^{2}\sqrt{1+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*Piecewise((-2*a/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)
) - 3*c*x**2/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)), Ne
(c, 0)), (x**4/(4*a**(5/2)), True)) + B*(3*a**(39/2)*c**11*sqrt(1 + c*x**2/
a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a
**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) + 3*a**(37/2)*c**12*x**2*sqrt(1
 + c*x**2/a)*asinh(sqrt(c)*x/sqrt(a))/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**
2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)) - 3*a**19*c**(23/2)*x
/(3*a**(39/2)*c**(27/2)*sqrt(1 + c*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqr
t(1 + c*x**2/a)) - 4*a**18*c**(25/2)*x**3/(3*a**(39/2)*c**(27/2)*sqrt(1 + c
*x**2/a) + 3*a**(37/2)*c**(29/2)*x**2*sqrt(1 + c*x**2/a)))
```

3.376 $\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}$$

```
[Out] -1/3*x^2*(-A*c*x+B*a)/a/c/(c*x^2+a)^(3/2)-2/3*B/c^2/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {805, 261}

$$-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(x^2*(a*B - A*c*x))/(3*a*c*(a + c*x^2)^(3/2)) - (2*B)/(3*c^2*Sqrt[a + c*x^
2])
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx&=-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{(2B)\int \frac{x}{\left(a+cx^2\right)^{3/2}}\,dx}{3c}\\&=-\frac{x^2(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}-\frac{2B}{3c^2\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.83

$$\frac{-2a^2B-3aBcx^2+Ac^2x^3}{3ac^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-2*a^2*B - 3*a*B*c*x^2 + A*c^2*x^3)/(3*a*c^2*(a + c*x^2)^(3/2))
```

fricas [A] time = 0.81, size = 63, normalized size = 1.19

$$\frac{\left(Ac^{2}x^{3} - 3\,Bacx^{2} - 2\,Ba^{2}\right)\sqrt{cx^{2} + a}}{3\,\left(ac^{4}x^{4} + 2\,a^{2}c^{3}x^{2} + a^{3}c^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(A*c^2*x^3 - 3*B*a*c*x^2 - 2*B*a^2)*sqrt(c*x^2 + a)/(a*c^4*x^4 + 2*a^2*
c^3*x^2 + a^3*c^2)
```

giac [A] time = 0.20, size = 36, normalized size = 0.68

$$\frac{\left(\frac{Ax}{a} - \frac{3\,B}{c}\right)x^{2} - \frac{2\,Ba}{c^{2}}}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((A*x/a - 3*B/c)*x^2 - 2*B*a/c^2)/(c*x^2 + a)^(3/2)
```

maple [A] time = 0.06, size = 41, normalized size = 0.77

$$\frac{A\,c^{2}x^{3} - 3Bac\,x^{2} - 2B\,a^{2}}{3\left(c\,x^{2} + a\right)^{\frac{3}{2}}\,a\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/3*(A*c^2*x^3-3*B*a*c*x^2-2*B*a^2)/(c*x^2+a)^(3/2)/a/c^2
```

maxima [A] time = 0.58, size = 70, normalized size = 1.32

$$-\frac{Bx^{2}}{\left(cx^{2} + a\right)^{\frac{3}{2}}c} - \frac{Ax}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}c} + \frac{Ax}{3\,\sqrt{cx^{2} + a}\,ac} - \frac{2\,Ba}{3\,\left(cx^{2} + a\right)^{\frac{3}{2}}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*x^2/((c*x^2 + a)^(3/2)*c) - 1/3*A*x/((c*x^2 + a)^(3/2)*c) + 1/3*A*x/(sqr
t(c*x^2 + a)*a*c) - 2/3*B*a/((c*x^2 + a)^(3/2)*c^2)
```

mupad [B] time = 1.13, size = 51, normalized size = 0.96

$$\frac{B\,a^{2} - 3\,B\,a\,\left(c\,x^{2} + a\right) + A\,c\,x\,\left(c\,x^{2} + a\right) - A\,a\,c\,x}{3\,a\,c^{2}\,\left(c\,x^{2} + a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] (B*a^2 - 3*B*a*(a + c*x^2) + A*c*x*(a + c*x^2) - A*a*c*x)/(3*a*c^2*(a + c*x
^2)^(3/2))
```

sympy [B] time = 13.69, size = 141, normalized size = 2.66

$$\frac{Ax^3}{3a^{\frac{5}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{3}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}+B\left(\begin{cases}-\frac{2a}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}}-\frac{3cx^2}{3ac^2\sqrt{a+cx^2}+3c^3x^2\sqrt{a+cx^2}} & \text{for } c\neq 0\\ \frac{x^4}{4a^{\frac{5}{2}}} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*x**3/(3*a**(5/2)*sqrt(1 + c*x**2/a) + 3*a**(3/2)*c*x**2*sqrt(1 + c*x**2/a
)) + B*Piecewise((-2*a/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*
x**2)) - 3*c*x**2/(3*a*c**2*sqrt(a + c*x**2) + 3*c**3*x**2*sqrt(a + c*x**2)
), Ne(c, 0)), (x**4/(4*a**(5/2)), True))
```

3.377 $\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=50

$$\frac{-A-Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{Bx}{3ac\sqrt{a+cx^2}}$$

```
[Out] 1/3*(-B*x-A)/c/(c*x^2+a)^(3/2)+1/3*B*x/a/c/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 47, normalized size of antiderivative = 0.94, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {778, 191}

$$\frac{Bx}{3ac\sqrt{a+cx^2}}-\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(A + B*x)/(3*c*(a + c*x^2)^(3/2)) + (B*x)/(3*a*c*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{B\int \frac{1}{\left(a+cx^2\right)^{3/2}}\,dx}{3c}\\ &= -\frac{A+Bx}{3c\left(a+cx^2\right)^{3/2}}+\frac{Bx}{3ac\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.64

$$\frac{Bcx^3-aA}{3ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a*A) + B*c*x^3)/(3*a*c*(a + c*x^2)^(3/2))
```

fricas [A] time = 0.89, size = 49, normalized size = 0.98

$$\frac{\left(Bcx^3-Aa\right)\sqrt{cx^2+a}}{3\left(ac^3x^4+2\,a^2c^2x^2+a^3c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(B*c*x^3 - A*a)*sqrt(c*x^2 + a)/(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)
```

giac [A] time = 0.24, size = 26, normalized size = 0.52

$$\frac{\frac{Bx^3}{a} - \frac{A}{c}}{3\left(cx^2 + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(B*x^3/a - A/c)/(c*x^2 + a)^(3/2)
```

maple [A] time = 0.05, size = 29, normalized size = 0.58

$$-\frac{-Bc\,x^3 + aA}{3\left(c\,x^2 + a\right)^{\frac{3}{2}} ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/3*(-B*c*x^3+A*a)/(c*x^2+a)^(3/2)/a/c
```

maxima [A] time = 0.55, size = 51, normalized size = 1.02

$$-\frac{Bx}{3\left(cx^2 + a\right)^{\frac{3}{2}}c} + \frac{Bx}{3\sqrt{cx^2 + a}\,ac} - \frac{A}{3\left(cx^2 + a\right)^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*x/((c*x^2 + a)^(3/2)*c) + 1/3*B*x/(sqrt(c*x^2 + a)*a*c) - 1/3*A/((c*
x^2 + a)^(3/2)*c)
```

mupad [B] time = 1.09, size = 34, normalized size = 0.68

$$\frac{B\,x^3}{3\,a\,\left(c\,x^2 + a\right)^{3/2}} - \frac{A}{3\,c\,\left(c\,x^2 + a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] (B*x^3)/(3*a*(a + c*x^2)^(3/2)) - A/(3*c*(a + c*x^2)^(3/2))
```

sympy [A] time = 13.25, size = 95, normalized size = 1.90

$$A\left(\begin{cases} -\frac{1}{3ac\sqrt{a+cx^2} + 3c^2x^2\sqrt{a+cx^2}} & \text{for}\ c \neq 0 \\ \frac{x^2}{2a^{\frac{5}{2}}} & \text{otherwise} \end{cases}\right) + \frac{Bx^3}{3a^{\frac{5}{2}}\sqrt{1 + \frac{cx^2}{a}} + 3a^{\frac{3}{2}}cx^2\sqrt{1 + \frac{cx^2}{a}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*Piecewise((-1/(3*a*c*sqrt(a + c*x**2) + 3*c**2*x**2*sqrt(a + c*x**2)), Ne
(c, 0)), (x**2/(2*a**(5/2)), True)) + B*x**3/(3*a**(5/2)*sqrt(1 + c*x**2/a)
 + 3*a**(3/2)*c*x**2*sqrt(1 + c*x**2/a))
```

3.378 $\int \frac{A+Bx}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=51

$$\frac{2Ax}{3a^2\sqrt{a+cx^2}}+\frac{Acx-aB}{3ac\left(a+cx^2\right)^{3/2}}$$

```
[Out] 1/3*(A*c*x-B*a)/a/c/(c*x^2+a)^(3/2)+2/3*A*x/a^2/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {639, 191}

$$\frac{2Ax}{3a^2\sqrt{a+cx^2}}-\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^(5/2),x]
```

```
[Out] -(a*B - A*c*x)/(3*a*c*(a + c*x^2)^(3/2)) + (2*A*x)/(3*a^2*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+cx^2\right)^{5/2}}\,dx &= -\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}+\frac{(2A)\int \frac{1}{\left(a+cx^2\right)^{3/2}}\,dx}{3a}\\ &= -\frac{aB-Acx}{3ac\left(a+cx^2\right)^{3/2}}+\frac{2Ax}{3a^2\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.84

$$\frac{-a^2B+3aAcx+2Ac^2x^3}{3a^2c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^(5/2),x]
```

```
[Out] (-(a^2*B) + 3*a*A*c*x + 2*A*c^2*x^3)/(3*a^2*c*(a + c*x^2)^(3/2))
```

fricas [A] time = 0.95, size = 62, normalized size = 1.22

$$\frac{\left(2\,Ac^2x^3+3\,Aacx-Ba^2\right)\sqrt{cx^2+a}}{3\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3*(2*A*c^2*x^3 + 3*A*a*c*x - B*a^2)*sqrt(c*x^2 + a)/(a^2*c^3*x^4 + 2*a^3*
c^2*x^2 + a^4*c)
```

giac [A] time = 0.22, size = 37, normalized size = 0.73

$$\frac{\left(\frac{2\,Acx^2}{a^2}+\frac{3\,A}{a}\right)x-\frac{B}{c}}{3\left(cx^2+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((2*A*c*x^2/a^2 + 3*A/a)*x - B/c)/(c*x^2 + a)^(3/2)
```

maple [A] time = 0.04, size = 40, normalized size = 0.78

$$\frac{2A\,c^2x^3+3Aacx-B\,a^2}{3\left(c\,x^2+a\right)^{\frac{3}{2}}\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/3*(2*A*c^2*x^3+3*A*a*c*x-B*a^2)/(c*x^2+a)^(3/2)/a^2/c
```

maxima [A] time = 0.66, size = 48, normalized size = 0.94

$$\frac{2\,Ax}{3\,\sqrt{cx^2+a}\,a^2}+\frac{Ax}{3\left(cx^2+a\right)^{\frac{3}{2}}a}-\frac{B}{3\left(cx^2+a\right)^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*A*x/(sqrt(c*x^2 + a)*a^2) + 1/3*A*x/((c*x^2 + a)^(3/2)*a) - 1/3*B/((c*x
^2 + a)^(3/2)*c)
```

mupad [B] time = 1.09, size = 41, normalized size = 0.80

$$\frac{2\,A\,c\,x\,\left(c\,x^2+a\right)-B\,a^2+A\,a\,c\,x}{3\,a^2\,c\,{\left(c\,x^2+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^(5/2),x)
```

```
[Out] (2*A*c*x*(a + c*x^2) - B*a^2 + A*a*c*x)/(3*a^2*c*(a + c*x^2)^(3/2))
```

sympy [B] time = 12.46, size = 146, normalized size = 2.86

$$A\left(\frac{3ax}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}+\frac{2cx^3}{3a^{\frac{7}{2}}\sqrt{1+\frac{cx^2}{a}}+3a^{\frac{5}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}}\right)+B\left(\begin{cases}-\frac{1}{3ac\sqrt{a+cx^2}+3c^2x^2\sqrt{a+cx^2}} & \text{for } c\\ \frac{x^2}{2a^{\frac{5}{2}}} & \text{other}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(3*a*x/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2
/a)) + 2*c*x**3/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 +
 c*x**2/a))) + B*Piecewise((-1/(3*a*c*sqrt(a + c*x**2) + 3*c**2*x**2*sqrt(a
 + c*x**2)), Ne(c, 0)), (x**2/(2*a**(5/2)), True))
```

3.379 $\int \frac{A+Bx}{x\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=76

$$-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}$$

```
[Out] 1/3*(B*x+A)/a/(c*x^2+a)^(3/2)-A*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)+1/
3*(2*B*x+3*A)/a^2/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 12, 266, 63, 208}

$$\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*(a + c*x^2)^(3/2)) + (3*A + 2*B*x)/(3*a^2*Sqrt[a + c*x^2]) -
 (A*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x\left(a+cx^2\right)^{5/2}}\,dx &= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}-\frac{\int \frac{-3aAc-2aBcx}{x\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{\int \frac{3a^2Ac^2}{x\sqrt{a+cx^2}}\,dx}{3a^4c^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a^2}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}+\frac{A\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{a^2c}\\
&= \frac{A+Bx}{3a\left(a+cx^2\right)^{3/2}}+\frac{3A+2Bx}{3a^2\sqrt{a+cx^2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 69, normalized size = 0.91

$$\frac{a(4A+3Bx)+cx^2(3A+2Bx)}{3a^2\left(a+cx^2\right)^{3/2}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + c*x^2)^(5/2)),x]
```

```
[Out] (c*x^2*(3*A + 2*B*x) + a*(4*A + 3*B*x))/(3*a^2*(a + c*x^2)^(3/2)) - (A*ArcT
anh[Sqrt[a + c*x^2]/Sqrt[a]])/a^(5/2)
```

fricas [A] time = 0.92, size = 239, normalized size = 3.14

$$\left[\frac{3\left(Ac^2x^4+2\,Aacx^2+Aa^2\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)+2\left(2\,Bacx^3+3\,Aacx^2+3\,Ba^2x+4\,Aa^2\right)\sqrt{cx^2+a}}{6\left(a^3c^2x^4+2\,a^4cx^2+a^5\right)},-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*x^
2 + a)*sqrt(a) + 2*a)/x^2) + 2*(2*B*a*c*x^3 + 3*A*a*c*x^2 + 3*B*a^2*x + 4*A
*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^4 + 2*a^4*c*x^2 + a^5), 1/3*(3*(A*c^2*x^4
 + 2*A*a*c*x^2 + A*a^2)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (2*B*a*
c*x^3 + 3*A*a*c*x^2 + 3*B*a^2*x + 4*A*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^4 +
2*a^4*c*x^2 + a^5)]
```

giac [A]   time = 0.20, size = 82, normalized size = 1.08

$$\frac{\left(\left(\frac{2\,Bcx}{a^2}+\frac{3\,Ac}{a^2}\right)x+\frac{3\,B}{a}\right)x+\frac{4\,A}{a}}{3\,\left(cx^2+a\right)^{\frac{3}{2}}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*(((2*B*c*x/a^2 + 3*A*c/a^2)*x + 3*B/a)*x + 4*A/a)/(c*x^2 + a)^(3/2) + 2
*A*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2)
```

maple [A]   time = 0.05, size = 92, normalized size = 1.21

$$\frac{Bx}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a}+\frac{A}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a}+\frac{2Bx}{3\sqrt{c\,x^2+a}\;a^2}-\frac{A\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\,\sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}+\frac{A}{\sqrt{c\,x^2+a}\;a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(5/2)/x,x)
```

```
[Out] 1/3*B*x/a/(c*x^2+a)^(3/2)+2/3*B/a^2*x/(c*x^2+a)^(1/2)+1/3*A/a/(c*x^2+a)^(3/
2)+A/a^2/(c*x^2+a)^(1/2)-A/a^(5/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A]   time = 0.60, size = 80, normalized size = 1.05

$$\frac{2\,Bx}{3\,\sqrt{cx^2+a}\,a^2}+\frac{Bx}{3\left(cx^2+a\right)^{\frac{3}{2}}a}-\frac{A\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{5}{2}}}+\frac{A}{\sqrt{cx^2+a}\,a^2}+\frac{A}{3\left(cx^2+a\right)^{\frac{3}{2}}a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/(sqrt(c*x^2 + a)*a^2) + 1/3*B*x/((c*x^2 + a)^(3/2)*a) - A*arcsinh(a
/(sqrt(a*c)*abs(x)))/a^(5/2) + A/(sqrt(c*x^2 + a)*a^2) + 1/3*A/((c*x^2 + a)
^(3/2)*a)
```

mupad [B]   time = 1.51, size = 80, normalized size = 1.05

$$\frac{\frac{A}{3\,a}+\frac{A\left(c\,x^2+a\right)}{a^2}}{\left(c\,x^2+a\right)^{3/2}}+\frac{2\,B\,x\left(c\,x^2+a\right)+B\,a\,x}{3\,a^2\left(c\,x^2+a\right)^{3/2}}-\frac{A\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + c*x^2)^(5/2)),x)
```

```
[Out] (A/(3*a) + (A*(a + c*x^2))/a^2)/(a + c*x^2)^(3/2) + (2*B*x*(a + c*x^2) + B*
a*x)/(3*a^2*(a + c*x^2)^(3/2)) - (A*atanh((a + c*x^2)^(1/2)/a^(1/2)))/a^(5/
2)
```

sympy [**B**]   time = 25.67, size = 840, normalized size = 11.05

$$A\left(\frac{8a^7\sqrt{1+\frac{cx^2}{a}}}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}+\frac{3a^7\log\left(\frac{cx^2}{a}\right)}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18a^{\frac{15}{2}}c^2x^4+6a^{\frac{13}{2}}c^3x^6}-\frac{6a^7\log\left(\sqrt{1}\right.}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2+18}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(8*a**7*sqrt(1 + c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15
/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 3*a**7*log(c*x**2/a)/(6*a**(19/2)
+ 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6
*a**7*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a
**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 14*a**6*c*x**2*sqrt(1 + c*x**
2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13
/2)*c**3*x**6) + 9*a**6*c*x**2*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*
x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**6*c*x**2*log
(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*
c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 6*a**5*c**2*x**4*sqrt(1 + c*x**2/a)/(6
*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**
3*x**6) + 9*a**5*c**2*x**4*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2
 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**5*c**2*x**4*log(
sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c
**2*x**4 + 6*a**(13/2)*c**3*x**6) + 3*a**4*c**3*x**6*log(c*x**2/a)/(6*a**(1
9/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6
) - 6*a**4*c**3*x**6*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2
)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6)) + B*(3*a*x/(3*a
**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2/a)) + 2*c*x*
*3/(3*a**(7/2)*sqrt(1 + c*x**2/a) + 3*a**(5/2)*c*x**2*sqrt(1 + c*x**2/a)))
```

3.380 $\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=104

$$-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}+\frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}$$

```
[Out] 1/3*(B*x+A)/a/x/(c*x^2+a)^(3/2)-B*arctanh((c*x^2+a)^(1/2)/a^(1/2))/a^(5/2)+
1/3*(3*B*x+4*A)/a^2/x/(c*x^2+a)^(1/2)-8/3*A*(c*x^2+a)^(1/2)/a^3/x
```

Rubi [A] time = 0.08, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 807, 266, 63, 208}

$$\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*x*(a + c*x^2)^(3/2)) + (4*A + 3*B*x)/(3*a^2*x*Sqrt[a + c*x^2
]) - (8*A*Sqrt[a + c*x^2])/(3*a^3*x) - (B*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])
/a^(5/2)
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^2\left(a+cx^2\right)^{5/2}}\,dx &= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}-\frac{\int \frac{-4aAc-3aBcx}{x^2\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}+\frac{\int \frac{8a^2Ac^2+3a^2Bc^2x}{x^2\sqrt{a+cx^2}}\,dx}{3a^4c^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{a^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\,\mathrm{Subst}\left(\int \frac{1}{x\sqrt{a+cx}}\,dx,x,x^2\right)}{2a^2}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}+\frac{B\,\mathrm{Subst}\left(\int \frac{1}{-\frac{a}{c}+\frac{x^2}{c}}\,dx,x,\sqrt{a+cx^2}\right)}{a^2c}\\
&= \frac{A+Bx}{3ax\left(a+cx^2\right)^{3/2}}+\frac{4A+3Bx}{3a^2x\sqrt{a+cx^2}}-\frac{8A\sqrt{a+cx^2}}{3a^3x}-\frac{B\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{a^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 95, normalized size = 0.91

$$\frac{a^2(4Bx-3A)+3acx^2(Bx-4A)-3\sqrt{a}\,Bx\left(a+cx^2\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)-8Ac^2x^4}{3a^3x\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + c*x^2)^(5/2)),x]
```

```
[Out] (-8*A*c^2*x^4 + 3*a*c*x^2*(-4*A + B*x) + a^2*(-3*A + 4*B*x) - 3*Sqrt[a]*B*x
*(a + c*x^2)^(3/2)*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(3*a^3*x*(a + c*x^2)^(
3/2))
```

fricas [A] time = 0.99, size = 264, normalized size = 2.54

$$\left[\frac{3\left(Bc^2x^5+2\,Bacx^3+Ba^2x\right)\sqrt{a}\,\log\left(-\frac{cx^2-2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(8\,Ac^2x^4-3\,Bacx^3+12\,Aacx^2-4\,Ba^2x+3\,Aa^2\right)}{6\left(a^3c^2x^5+2\,a^4cx^3+a^5x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(B*c^2*x^5 + 2*B*a*c*x^3 + B*a^2*x)*sqrt(a)*log(-(c*x^2 - 2*sqrt(c*
x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(8*A*c^2*x^4 - 3*B*a*c*x^3 + 12*A*a*c*x^2
- 4*B*a^2*x + 3*A*a^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)
, 1/3*(3*(B*c^2*x^5 + 2*B*a*c*x^3 + B*a^2*x)*sqrt(-a)*arctan(sqrt(-a)/sqrt(
c*x^2 + a)) - (8*A*c^2*x^4 - 3*B*a*c*x^3 + 12*A*a*c*x^2 - 4*B*a^2*x + 3*A*a
^2)*sqrt(c*x^2 + a))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)]
```

giac [A] time = 0.21, size = 119, normalized size = 1.14

$$-\frac{\left(\left(\frac{5\,Ac^2x}{a^3}-\frac{3\,Bc}{a^2}\right)x+\frac{6\,Ac}{a^2}\right)x-\frac{4\,B}{a}}{3\left(cx^2+a\right)^{\frac{3}{2}}}+\frac{2\,B\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}+\frac{2\,A\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^2-a\right)a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((5*A*c^2*x/a^3 - 3*B*c/a^2)*x + 6*A*c/a^2)*x - 4*B/a)/(c*x^2 + a)^(3
/2) + 2*B*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)*a^2) +
2*A*sqrt(c)/(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)*a^2)
```

maple [A] time = 0.06, size = 112, normalized size = 1.08

$$-\frac{4Acx}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a^2}-\frac{8Acx}{3\sqrt{c\,x^2+a}\;a^3}+\frac{B}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a}-\frac{B\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{a^{\frac{5}{2}}}-\frac{A}{\left(c\,x^2+a\right)^{\frac{3}{2}}ax}+\frac{B}{\sqrt{c\,x^2+a}\;a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+a)^(5/2),x)
```

```
[Out] -A/a/x/(c*x^2+a)^(3/2)-4/3*A*c/a^2*x/(c*x^2+a)^(3/2)-8/3*A*c/a^3*x/(c*x^2+a
)^(1/2)+1/3*B/a/(c*x^2+a)^(3/2)+B/a^2/(c*x^2+a)^(1/2)-B/a^(5/2)*ln((2*a+2*(
c*x^2+a)^(1/2)*a^(1/2))/x)
```

maxima [A] time = 0.57, size = 100, normalized size = 0.96

$$-\frac{8\,Acx}{3\,\sqrt{cx^2+a}\,a^3}-\frac{4\,Acx}{3\left(cx^2+a\right)^{\frac{3}{2}}a^2}-\frac{B\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{a^{\frac{5}{2}}}+\frac{B}{\sqrt{cx^2+a}\,a^2}+\frac{B}{3\left(cx^2+a\right)^{\frac{3}{2}}a}-\frac{A}{\left(cx^2+a\right)^{\frac{3}{2}}ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -8/3*A*c*x/(sqrt(c*x^2 + a)*a^3) - 4/3*A*c*x/((c*x^2 + a)^(3/2)*a^2) - B*ar
csinh(a/(sqrt(a*c)*abs(x)))/a^(5/2) + B/(sqrt(c*x^2 + a)*a^2) + 1/3*B/((c*x
^2 + a)^(3/2)*a) - A/((c*x^2 + a)^(3/2)*a*x)
```

mupad [B] time = 1.69, size = 96, normalized size = 0.92

$$\frac{\frac{B}{3\,a}+\frac{B\left(c\,x^2+a\right)}{a^2}}{\left(c\,x^2+a\right)^{3/2}}-\frac{B\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{a^{5/2}}+\frac{A\,a^2-8\,A\left(c\,x^2+a\right)^2+4\,A\,a\,\left(c\,x^2+a\right)}{3\,a^3\,x\left(c\,x^2+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + c*x^2)^(5/2)),x)
```

```
[Out] (B/(3*a) + (B*(a + c*x^2))/a^2)/(a + c*x^2)^(3/2) - (B*atanh((a + c*x^2)^(1
/2)/a^(1/2)))/a^(5/2) + (A*a^2 - 8*A*(a + c*x^2)^2 + 4*A*a*(a + c*x^2))/(3*
a^3*x*(a + c*x^2)^(3/2))
```

sympy [B] time = 22.26, size = 910, normalized size = 8.75

$$A\left(-\frac{3a^2c^{\frac{9}{2}}\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}-\frac{12ac^{\frac{11}{2}}x^2\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}-\frac{8c^{\frac{13}{2}}x^4\sqrt{\frac{a}{cx^2}+1}}{3a^5c^4+6a^4c^5x^2+3a^3c^6x^4}\right)+B\left(\frac{8a}{6a^{\frac{19}{2}}+18a^{\frac{17}{2}}cx^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(-3*a**2*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 +
3*a**3*c**6*x**4) - 12*a*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 +
 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4) - 8*c**(13/2)*x**4*sqrt(a/(c*x**2) +
1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4)) + B*(8*a**7*sqrt(1
+ c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6
*a**(13/2)*c**3*x**6) + 3*a**7*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*
x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6*a**7*log(sqrt(1
+ c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**
4 + 6*a**(13/2)*c**3*x**6) + 14*a**6*c*x**2*sqrt(1 + c*x**2/a)/(6*a**(19/2)
 + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) +
9*a**6*c*x**2*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/
2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**6*c*x**2*log(sqrt(1 + c*x**2/
a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**
(13/2)*c**3*x**6) + 6*a**5*c**2*x**4*sqrt(1 + c*x**2/a)/(6*a**(19/2) + 18*a
**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) + 9*a**5*
c**2*x**4*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c
**2*x**4 + 6*a**(13/2)*c**3*x**6) - 18*a**5*c**2*x**4*log(sqrt(1 + c*x**2/a
) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(
13/2)*c**3*x**6) + 3*a**4*c**3*x**6*log(c*x**2/a)/(6*a**(19/2) + 18*a**(17/
2)*c*x**2 + 18*a**(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6) - 6*a**4*c**3*x
**6*log(sqrt(1 + c*x**2/a) + 1)/(6*a**(19/2) + 18*a**(17/2)*c*x**2 + 18*a**
(15/2)*c**2*x**4 + 6*a**(13/2)*c**3*x**6))
```

3.381 $\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=129

$$\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{7/2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}+\frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}$$

```
[Out] 1/3*(B*x+A)/a/x^2/(c*x^2+a)^(3/2)+5/2*A*c*arctanh((c*x^2+a)^(1/2)/a^(1/2))/
a^(7/2)+1/3*(4*B*x+5*A)/a^2/x^2/(c*x^2+a)^(1/2)-5/2*A*(c*x^2+a)^(1/2)/a^3/x
^2-8/3*B*(c*x^2+a)^(1/2)/a^3/x
```

Rubi [A] time = 0.11, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.300, Rules used = {823, 835, 807, 266, 63, 208}

$$\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}+\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx^2}}{\sqrt{a}}\right)}{2a^{7/2}}-\frac{8B\sqrt{a+cx^2}}{3a^3x}+\frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*x^2*(a + c*x^2)^(3/2)) + (5*A + 4*B*x)/(3*a^2*x^2*Sqrt[a + c
*x^2]) - (5*A*Sqrt[a + c*x^2])/(2*a^3*x^2) - (8*B*Sqrt[a + c*x^2])/(3*a^3*x
) + (5*A*c*ArcTanh[Sqrt[a + c*x^2]/Sqrt[a]])/(2*a^(7/2))
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^3\left(a+cx^2\right)^{5/2}}\,dx &= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}-\frac{\int \frac{-5aAc-4aBcx}{x^3\left(a+cx^2\right)^{3/2}}\,dx}{3a^2c}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}+\frac{\int \frac{15a^2Ac^2+8a^2Bc^2x}{x^3\sqrt{a+cx^2}}\,dx}{3a^4c^2}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{\int \frac{-16a^3Bc^2+15a^2Ac^3x}{x^2\sqrt{a+cx^2}}\,dx}{6a^5c^2}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}-\frac{(5Ac)\int \frac{1}{x\sqrt{a+cx^2}}\,dx}{2a^3}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}-\frac{(5Ac)\,\text{Subst}\left(\int \frac{}{x\sqrt{a}}\right.}{4a^3}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}-\frac{(5A)\,\text{Subst}\left(\int \frac{1}{-\frac{a}{c}+}\right.}{2a}\\
&= \frac{A+Bx}{3ax^2\left(a+cx^2\right)^{3/2}}+\frac{5A+4Bx}{3a^2x^2\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3x^2}-\frac{8B\sqrt{a+cx^2}}{3a^3x}+\frac{5Ac\tanh^{-1}\left(\frac{\sqrt{a+cx}}{\sqrt{a}}\right.}{2a^{7/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.14, size = 106, normalized size = 0.82

$$
\frac{-\frac{3a^3(A+2Bx)}{x^2}-4a^2c(5A+6Bx)-ac^2x^2(15A+16Bx)+\frac{15Ac\left(a+cx^2\right)^2\tanh^{-1}\left(\sqrt{\frac{cx^2}{a}+1}\right)}{\sqrt{\frac{cx^2}{a}+1}}}{6a^4\left(a+cx^2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + c*x^2)^(5/2)),x]
```

```
[Out] ((-3*a^3*(A + 2*B*x))/x^2 - 4*a^2*c*(5*A + 6*B*x) - a*c^2*x^2*(15*A + 16*B*
x) + (15*A*c*(a + c*x^2)^2*ArcTanh[Sqrt[1 + (c*x^2)/a]])/Sqrt[1 + (c*x^2)/a
])/(6*a^4*(a + c*x^2)^(3/2))
```

fricas [A] time = 1.02, size = 307, normalized size = 2.38

$$\left[\frac{15\left(Ac^3x^6+2\,Aac^2x^4+Aa^2cx^2\right)\sqrt{a}\,\log\left(-\frac{cx^2+2\,\sqrt{cx^2+a}\,\sqrt{a}+2\,a}{x^2}\right)-2\left(16\,Bac^2x^5+15\,Aac^2x^4+24\,Ba^2cx^3+20\right.}{12\left(a^4c^2x^6+2\,a^5cx^4+a^6x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(15*(A*c^3*x^6 + 2*A*a*c^2*x^4 + A*a^2*c*x^2)*sqrt(a)*log(-(c*x^2 + 2
*sqrt(c*x^2 + a)*sqrt(a) + 2*a)/x^2) - 2*(16*B*a*c^2*x^5 + 15*A*a*c^2*x^4 +
 24*B*a^2*c*x^3 + 20*A*a^2*c*x^2 + 6*B*a^3*x + 3*A*a^3)*sqrt(c*x^2 + a))/(a
^4*c^2*x^6 + 2*a^5*c*x^4 + a^6*x^2), -1/6*(15*(A*c^3*x^6 + 2*A*a*c^2*x^4 +
A*a^2*c*x^2)*sqrt(-a)*arctan(sqrt(-a)/sqrt(c*x^2 + a)) + (16*B*a*c^2*x^5 +
15*A*a*c^2*x^4 + 24*B*a^2*c*x^3 + 20*A*a^2*c*x^2 + 6*B*a^3*x + 3*A*a^3)*sqr
t(c*x^2 + a))/(a^4*c^2*x^6 + 2*a^5*c*x^4 + a^6*x^2)]
```

giac [A] time = 0.22, size = 197, normalized size = 1.53

$$-\frac{\left(\left(\frac{5\,Bc^2x}{a^3}+\frac{6\,Ac^2}{a^3}\right)x+\frac{6\,Bc}{a^2}\right)x+\frac{7\,Ac}{a^2}}{3\left(cx^2+a\right)^{\frac{3}{2}}}-\frac{5\,Ac\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^3}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+a}\right)^3Ac+2\left(\sqrt{c}\,x-\sqrt{cx^2+\right.}{\left(\left(\sqrt{c}\,x-\sqrt{cx\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(((5*B*c^2*x/a^3 + 6*A*c^2/a^3)*x + 6*B*c/a^2)*x + 7*A*c/a^2)/(c*x^2 +
 a)^(3/2) - 5*A*c*arctan(-(sqrt(c)*x - sqrt(c*x^2 + a))/sqrt(-a))/(sqrt(-a)
*a^3) + ((sqrt(c)*x - sqrt(c*x^2 + a))^3*A*c + 2*(sqrt(c)*x - sqrt(c*x^2 +
a))^2*B*a*sqrt(c) + (sqrt(c)*x - sqrt(c*x^2 + a))*A*a*c - 2*B*a^2*sqrt(c))/
(((sqrt(c)*x - sqrt(c*x^2 + a))^2 - a)^2*a^3)
```

maple [A] time = 0.06, size = 134, normalized size = 1.04

$$-\frac{4Bcx}{3\left(c\,x^2+a\right)^{\frac{3}{2}}a^2}-\frac{5Ac}{6\left(c\,x^2+a\right)^{\frac{3}{2}}a^2}-\frac{8Bcx}{3\sqrt{c\,x^2+a}\;a^3}+\frac{5Ac\ln\left(\frac{2a+2\sqrt{c\,x^2+a}\;\sqrt{a}}{x}\right)}{2a^{\frac{7}{2}}}-\frac{5Ac}{2\sqrt{c\,x^2+a}\;a^3}-\frac{B}{\left(c\,x^2+a\right)^{\frac{3}{2}}ax}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+a)^(3/2)-5/6*A*c/a^2/(c*x^2+a)^(3/2)-5/2*A*c/a^3/(c*x^2
+a)^(1/2)+5/2*A*c/a^(7/2)*ln((2*a+2*(c*x^2+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^
2+a)^(3/2)-4/3*B*c/a^2*x/(c*x^2+a)^(3/2)-8/3*B*c/a^3*x/(c*x^2+a)^(1/2)
```

maxima [A] time = 0.56, size = 122, normalized size = 0.95

$$-\frac{8\,Bcx}{3\,\sqrt{cx^2+a}\,a^3}-\frac{4\,Bcx}{3\left(cx^2+a\right)^{\frac{3}{2}}a^2}+\frac{5\,Ac\,\mathrm{arsinh}\left(\frac{a}{\sqrt{ac}\,|x|}\right)}{2\,a^{\frac{7}{2}}}-\frac{5\,Ac}{2\,\sqrt{cx^2+a}\,a^3}-\frac{5\,Ac}{6\left(cx^2+a\right)^{\frac{3}{2}}a^2}-\frac{B}{\left(cx^2+a\right)^{\frac{3}{2}}ax}-\frac{}{2\left(cx^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] -8/3*B*c*x/(sqrt(c*x^2 + a)*a^3) - 4/3*B*c*x/((c*x^2 + a)^(3/2)*a^2) + 5/2*
A*c*arcsinh(a/(sqrt(a*c)*abs(x)))/a^(7/2) - 5/2*A*c/(sqrt(c*x^2 + a)*a^3) -
 5/6*A*c/((c*x^2 + a)^(3/2)*a^2) - B/((c*x^2 + a)^(3/2)*a*x) - 1/2*A/((c*x^
2 + a)^(3/2)*a*x^2)
```

mupad [B] time = 1.73, size = 123, normalized size = 0.95

$$\frac{B\,a^2-8\,B\,{\left(c\,x^2+a\right)}^2+4\,B\,a\,\left(c\,x^2+a\right)}{3\,a^3\,x\,{\left(c\,x^2+a\right)}^{3/2}}-\frac{10\,A\,c}{3\,a^2\,{\left(c\,x^2+a\right)}^{3/2}}-\frac{A}{2\,a\,x^2\,{\left(c\,x^2+a\right)}^{3/2}}+\frac{5\,A\,c\,\mathrm{atanh}\left(\frac{\sqrt{c\,x^2+a}}{\sqrt{a}}\right)}{2\,a^{7/2}}-\frac{5\,A\,c^2}{2\,a^3\,(c\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + c*x^2)^(5/2)),x)
```

```
[Out] (B*a^2 - 8*B*(a + c*x^2)^2 + 4*B*a*(a + c*x^2))/(3*a^3*x*(a + c*x^2)^(3/2))
 - (10*A*c)/(3*a^2*(a + c*x^2)^(3/2)) - A/(2*a*x^2*(a + c*x^2)^(3/2)) + (5*
A*c*atanh((a + c*x^2)^(1/2)/a^(1/2)))/(2*a^(7/2)) - (5*A*c^2*x^2)/(2*a^3*(a
 + c*x^2)^(3/2))
```

sympy [B] time = 22.82, size = 1034, normalized size = 8.02

$$A\left(-\frac{6a^{17}\sqrt{1+\frac{cx^2}{a}}}{12a^{\frac{39}{2}}x^2+36a^{\frac{37}{2}}cx^4+36a^{\frac{35}{2}}c^2x^6+12a^{\frac{33}{2}}c^3x^8}-\frac{46a^{16}cx^2\sqrt{1+\frac{cx^2}{a}}}{12a^{\frac{39}{2}}x^2+36a^{\frac{37}{2}}cx^4+36a^{\frac{35}{2}}c^2x^6+12a^{\frac{33}{2}}c^3x^8}-\frac{}{12a^{\frac{39}{2}}x^2+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+a)**(5/2),x)
```

```
[Out] A*(-6*a**17*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 3
6*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 46*a**16*c*x**2*sqrt(1 +
c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6
 + 12*a**(33/2)*c**3*x**8) - 15*a**16*c*x**2*log(c*x**2/a)/(12*a**(39/2)*x*
*2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8)
 + 30*a**16*c*x**2*log(sqrt(1 + c*x**2/a) + 1)/(12*a**(39/2)*x**2 + 36*a**(
37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 70*a**15*
c**2*x**4*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*
a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 45*a**15*c**2*x**4*log(c*x*
*2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 1
2*a**(33/2)*c**3*x**8) + 90*a**15*c**2*x**4*log(sqrt(1 + c*x**2/a) + 1)/(12
*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/
2)*c**3*x**8) - 30*a**14*c**3*x**6*sqrt(1 + c*x**2/a)/(12*a**(39/2)*x**2 +
36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 45
*a**14*c**3*x**6*log(c*x**2/a)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 3
6*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) + 90*a**14*c**3*x**6*log(sq
rt(1 + c*x**2/a) + 1)/(12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/
2)*c**2*x**6 + 12*a**(33/2)*c**3*x**8) - 15*a**13*c**4*x**8*log(c*x**2/a)/(
12*a**(39/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(3
3/2)*c**3*x**8) + 30*a**13*c**4*x**8*log(sqrt(1 + c*x**2/a) + 1)/(12*a**(39
/2)*x**2 + 36*a**(37/2)*c*x**4 + 36*a**(35/2)*c**2*x**6 + 12*a**(33/2)*c**3
*x**8)) + B*(-3*a**2*c**(9/2)*sqrt(a/(c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c*
*5*x**2 + 3*a**3*c**6*x**4) - 12*a*c**(11/2)*x**2*sqrt(a/(c*x**2) + 1)/(3*a
**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4) - 8*c**(13/2)*x**4*sqrt(a/(
c*x**2) + 1)/(3*a**5*c**4 + 6*a**4*c**5*x**2 + 3*a**3*c**6*x**4))
```

3.382 $\int \frac{d+ex}{(a+cx^2)^{7/2}} dx$

Optimal. Leaf size=71

$$\frac{8dx}{15a^3\sqrt{a+cx^2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{cdx-ae}{5ac\left(a+cx^2\right)^{5/2}}$$

```
[Out] 1/5*(c*d*x-a*e)/a/c/(c*x^2+a)^(5/2)+4/15*d*x/a^2/(c*x^2+a)^(3/2)+8/15*d*x/a
^3/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {639, 192, 191}

$$\frac{8dx}{15a^3\sqrt{a+cx^2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}-\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^(7/2),x]
```

```
[Out] -(a*e - c*d*x)/(5*a*c*(a + c*x^2)^(5/2)) + (4*d*x)/(15*a^2*(a + c*x^2)^(3/2
)) + (8*d*x)/(15*a^3*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a+cx^2\right)^{7/2}}dx&=-\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{(4d)\int \frac{1}{\left(a+cx^2\right)^{5/2}}dx}{5a}\\&=-\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{(8d)\int \frac{1}{\left(a+cx^2\right)^{3/2}}dx}{15a^2}\\&=-\frac{ae-cdx}{5ac\left(a+cx^2\right)^{5/2}}+\frac{4dx}{15a^2\left(a+cx^2\right)^{3/2}}+\frac{8dx}{15a^3\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 55, normalized size = 0.77

$$\frac{-3a^3e+15a^2cdx+20ac^2dx^3+8c^3dx^5}{15a^3c\left(a+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^(7/2),x]
```

```
[Out] (-3*a^3*e + 15*a^2*c*d*x + 20*a*c^2*d*x^3 + 8*c^3*d*x^5)/(15*a^3*c*(a + c*x
^2)^(5/2))
```

fricas [A] time = 0.90, size = 85, normalized size = 1.20

$$\frac{\left(8\,c^3dx^5+20\,ac^2dx^3+15\,a^2cdx-3\,a^3e\right)\sqrt{cx^2+a}}{15\,\left(a^3c^4x^6+3\,a^4c^3x^4+3\,a^5c^2x^2+a^6c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 1/15*(8*c^3*d*x^5 + 20*a*c^2*d*x^3 + 15*a^2*c*d*x - 3*a^3*e)*sqrt(c*x^2 + a
)/(a^3*c^4*x^6 + 3*a^4*c^3*x^4 + 3*a^5*c^2*x^2 + a^6*c)
```

giac [A] time = 0.25, size = 53, normalized size = 0.75

$$\frac{\left(4\left(\frac{2\,c^2dx^2}{a^3}+\frac{5\,cd}{a^2}\right)x^2+\frac{15\,d}{a}\right)x-\frac{3\,e}{c}}{15\,\left(cx^2+a\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((4*(2*c^2*d*x^2/a^3 + 5*c*d/a^2)*x^2 + 15*d/a)*x - 3*e/c)/(c*x^2 + a)
^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.73

$$-\frac{-8c^3d\,x^5-20c^2d\,x^3a-15dx\,a^2c+3a^3e}{15\,\left(c\,x^2+a\right)^{\frac{5}{2}}\,a^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^(7/2),x)
```

```
[Out] -1/15*(-8*c^3*d*x^5-20*a*c^2*d*x^3-15*a^2*c*d*x+3*a^3*e)/(c*x^2+a)^(5/2)/a^
3/c
```

maxima [A] time = 0.53, size = 64, normalized size = 0.90

$$\frac{8\,dx}{15\,\sqrt{cx^2+a}\,a^3}+\frac{4\,dx}{15\,\left(cx^2+a\right)^{\frac{3}{2}}a^2}+\frac{dx}{5\,\left(cx^2+a\right)^{\frac{5}{2}}a}-\frac{e}{5\,\left(cx^2+a\right)^{\frac{5}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(7/2),x, algorithm="maxima")
```

```
[Out] 8/15*d*x/(sqrt(c*x^2 + a)*a^3) + 4/15*d*x/((c*x^2 + a)^(3/2)*a^2) + 1/5*d*x
/((c*x^2 + a)^(5/2)*a) - 1/5*e/((c*x^2 + a)^(5/2)*c)
```

mupad [B] time = 1.18, size = 59, normalized size = 0.83

$$\frac{8\,c\,d\,x\,{\left(c\,x^2+a\right)}^2-3\,a^3\,e+3\,a^2\,c\,d\,x+4\,a\,c\,d\,x\,\left(c\,x^2+a\right)}{15\,a^3\,c\,{\left(c\,x^2+a\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^(7/2),x)
```

```
[Out] (8*c*d*x*(a + c*x^2)^2 - 3*a^3*e + 3*a^2*c*d*x + 4*a*c*d*x*(a + c*x^2))/(15
*a^3*c*(a + c*x^2)^(5/2))
```

sympy [B] time = 23.37, size = 486, normalized size = 6.85

$$d\left(\frac{15a^5x}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}cx^2\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{13}{2}}c^2x^4\sqrt{1+\frac{cx^2}{a}}+15a^{\frac{11}{2}}c^3x^6\sqrt{1+\frac{cx^2}{a}}}+\frac{}{15a^{\frac{17}{2}}\sqrt{1+\frac{cx^2}{a}}+45a^{\frac{15}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**(7/2),x)
```

```
[Out] d*(15*a**5*x/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(15/2)*c*x**2*sqrt(1
+ c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 15*a**(11/2)*c**3
*x**6*sqrt(1 + c*x**2/a)) + 35*a**4*c*x**3/(15*a**(17/2)*sqrt(1 + c*x**2/a)
 + 45*a**(15/2)*c*x**2*sqrt(1 + c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 +
 c*x**2/a) + 15*a**(11/2)*c**3*x**6*sqrt(1 + c*x**2/a)) + 28*a**3*c**2*x**5
/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(15/2)*c*x**2*sqrt(1 + c*x**2/a)
+ 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 15*a**(11/2)*c**3*x**6*sqrt(1
 + c*x**2/a)) + 8*a**2*c**3*x**7/(15*a**(17/2)*sqrt(1 + c*x**2/a) + 45*a**(
15/2)*c*x**2*sqrt(1 + c*x**2/a) + 45*a**(13/2)*c**2*x**4*sqrt(1 + c*x**2/a)
 + 15*a**(11/2)*c**3*x**6*sqrt(1 + c*x**2/a))) + e*Piecewise((-1/(5*a**2*c*
sqrt(a + c*x**2) + 10*a*c**2*x**2*sqrt(a + c*x**2) + 5*c**3*x**4*sqrt(a + c
*x**2)), Ne(c, 0)), (x**2/(2*a**(7/2)), True))
```

3.383 $\int \frac{d+ex}{\left(a+cx^2\right)^{9/2}}\,dx$

Optimal. Leaf size=91

$$\frac{16dx}{35a^4\sqrt{a+cx^2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{cdx-ae}{7ac\left(a+cx^2\right)^{7/2}}$$

```
[Out] 1/7*(c*d*x-a*e)/a/c/(c*x^2+a)^(7/2)+6/35*d*x/a^2/(c*x^2+a)^(5/2)+8/35*d*x/a
^3/(c*x^2+a)^(3/2)+16/35*d*x/a^4/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {639, 192, 191}

$$\frac{16dx}{35a^4\sqrt{a+cx^2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}-\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + c*x^2)^(9/2),x]
```

```
[Out] -(a*e - c*d*x)/(7*a*c*(a + c*x^2)^(7/2)) + (6*d*x)/(35*a^2*(a + c*x^2)^(5/2
)) + (8*d*x)/(35*a^3*(a + c*x^2)^(3/2)) + (16*d*x)/(35*a^4*Sqrt[a + c*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 192

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b, n, p}, x] && ILtQ[Simplify[1/n + p + 1], 0]
 && NeQ[p, -1]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{\left(a+cx^2\right)^{9/2}}\,dx &= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{(6d)\int \frac{1}{\left(a+cx^2\right)^{7/2}}\,dx}{7a}\\ &= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{(24d)\int \frac{1}{\left(a+cx^2\right)^{5/2}}\,dx}{35a^2}\\ &= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{(16d)\int \frac{1}{\left(a+cx^2\right)^{3/2}}\,dx}{35a^3}\\ &= -\frac{ae-cdx}{7ac\left(a+cx^2\right)^{7/2}}+\frac{6dx}{35a^2\left(a+cx^2\right)^{5/2}}+\frac{8dx}{35a^3\left(a+cx^2\right)^{3/2}}+\frac{16dx}{35a^4\sqrt{a+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.74

$$\frac{-5a^4e+35a^3cdx+70a^2c^2dx^3+56ac^3dx^5+16c^4dx^7}{35a^4c\left(a+cx^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + c*x^2)^(9/2),x]
```

```
[Out] (-5*a^4*e + 35*a^3*c*d*x + 70*a^2*c^2*d*x^3 + 56*a*c^3*d*x^5 + 16*c^4*d*x^7
)/(35*a^4*c*(a + c*x^2)^(7/2))
```

fricas [A] time = 0.84, size = 108, normalized size = 1.19

$$\frac{\left(16\,c^4dx^7+56\,ac^3dx^5+70\,a^2c^2dx^3+35\,a^3cdx-5\,a^4e\right)\sqrt{cx^2+a}}{35\left(a^4c^5x^8+4\,a^5c^4x^6+6\,a^6c^3x^4+4\,a^7c^2x^2+a^8c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="fricas")
```

```
[Out] 1/35*(16*c^4*d*x^7 + 56*a*c^3*d*x^5 + 70*a^2*c^2*d*x^3 + 35*a^3*c*d*x - 5*a
^4*e)*sqrt(c*x^2 + a)/(a^4*c^5*x^8 + 4*a^5*c^4*x^6 + 6*a^6*c^3*x^4 + 4*a^7*
c^2*x^2 + a^8*c)
```

giac [A] time = 0.23, size = 68, normalized size = 0.75

$$\frac{\left(2\left(4\left(\frac{2\,c^3dx^2}{a^4}+\frac{7\,c^2d}{a^3}\right)x^2+\frac{35\,cd}{a^2}\right)x^2+\frac{35\,d}{a}\right)x-\frac{5\,e}{c}}{35\left(cx^2+a\right)^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="giac")
```

```
[Out] 1/35*((2*(4*(2*c^3*d*x^2/a^4 + 7*c^2*d/a^3)*x^2 + 35*c*d/a^2)*x^2 + 35*d/a)
*x - 5*e/c)/(c*x^2 + a)^(7/2)
```

maple [A] time = 0.05, size = 64, normalized size = 0.70

$$-\frac{-16c^4d\,x^7-56c^3d\,x^5a-70c^2d\,x^3a^2-35dx\,a^3c+5e\,a^4}{35\left(c\,x^2+a\right)^{\frac{7}{2}}a^4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+a)^(9/2),x)
```

```
[Out] -1/35*(-16*c^4*d*x^7-56*a*c^3*d*x^5-70*a^2*c^2*d*x^3-35*a^3*c*d*x+5*a^4*e)/
(c*x^2+a)^(7/2)/a^4/c
```

maxima [**A**]   time = 0.61, size = 80, normalized size = 0.88

$$\frac{16\,dx}{35\,\sqrt{cx^2+a}\,a^4}+\frac{8\,dx}{35\left(cx^2+a\right)^{\frac{3}{2}}a^3}+\frac{6\,dx}{35\left(cx^2+a\right)^{\frac{5}{2}}a^2}+\frac{dx}{7\left(cx^2+a\right)^{\frac{7}{2}}a}-\frac{e}{7\left(cx^2+a\right)^{\frac{7}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+a)^(9/2),x, algorithm="maxima")
```

```
[Out] 16/35*d*x/(sqrt(c*x^2 + a)*a^4) + 8/35*d*x/((c*x^2 + a)^(3/2)*a^3) + 6/35*d
*x/((c*x^2 + a)^(5/2)*a^2) + 1/7*d*x/((c*x^2 + a)^(7/2)*a) - 1/7*e/((c*x^2
+ a)^(7/2)*c)
```

mupad [**B**]   time = 1.18, size = 74, normalized size = 0.81

$$\frac{16\,d\,x}{35\,a^4\,\sqrt{c\,x^2+a}}-\frac{\frac{e}{7\,c}-\frac{d\,x}{7\,a}}{\left(c\,x^2+a\right)^{7/2}}+\frac{8\,d\,x}{35\,a^3\,\left(c\,x^2+a\right)^{3/2}}+\frac{6\,d\,x}{35\,a^2\,\left(c\,x^2+a\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + c*x^2)^(9/2),x)
```

```
[Out] (16*d*x)/(35*a^4*(a + c*x^2)^(1/2)) - (e/(7*c) - (d*x)/(7*a))/(a + c*x^2)^(
7/2) + (8*d*x)/(35*a^3*(a + c*x^2)^(3/2)) + (6*d*x)/(35*a^2*(a + c*x^2)^(5/
2))
```

sympy [**B**]   time = 39.86, size = 1360, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+a)**(9/2),x)
```

```
[Out] d*(35*a**14*x/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(
1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*
c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) +
 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt
(1 + c*x**2/a)) + 175*a**13*c*x**3/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a
**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**
2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8
*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(
25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 371*a**12*c**2*x**5/(35*a**(37/2)*sq
rt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*
c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) +
 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt
(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 429*a**11*c*
*3*x**7/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*
x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x
**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a
**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c
*x**2/a)) + 286*a**10*c**4*x**9/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(
35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a
) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sq
rt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/
2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 104*a**9*c**5*x**11/(35*a**(37/2)*sqrt(
1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2/a) + 525*a**(33/2)*c**
2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*sqrt(1 + c*x**2/a) + 52
5*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(27/2)*c**5*x**10*sqrt(1
+ c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**2/a)) + 16*a**8*c**6*x*
*13/(35*a**(37/2)*sqrt(1 + c*x**2/a) + 210*a**(35/2)*c*x**2*sqrt(1 + c*x**2
/a) + 525*a**(33/2)*c**2*x**4*sqrt(1 + c*x**2/a) + 700*a**(31/2)*c**3*x**6*
sqrt(1 + c*x**2/a) + 525*a**(29/2)*c**4*x**8*sqrt(1 + c*x**2/a) + 210*a**(2
7/2)*c**5*x**10*sqrt(1 + c*x**2/a) + 35*a**(25/2)*c**6*x**12*sqrt(1 + c*x**
2/a))) + e*Piecewise((-1/(7*a**3*c*sqrt(a + c*x**2) + 21*a**2*c**2*x**2*sqr
t(a + c*x**2) + 21*a*c**3*x**4*sqrt(a + c*x**2) + 7*c**4*x**6*sqrt(a + c*x*
*2)), Ne(c, 0)), (x**2/(2*a**(9/2)), True))
```

3.384 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}$$

```
[Out] 2/9*a*A*x^(9/2)+2/11*a*B*x^(11/2)+2/13*A*c*x^(13/2)+2/15*B*c*x^(15/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(9/2))/9 + (2*a*B*x^(11/2))/11 + (2*A*c*x^(13/2))/13 + (2*B*c*x^(1
5/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+cx^2\right)\,dx &= \int \left(aAx^{7/2}+aBx^{9/2}+Acx^{11/2}+Bcx^{13/2}\right)\,dx\\ &= \frac{2}{9}aAx^{9/2}+\frac{2}{11}aBx^{11/2}+\frac{2}{13}Acx^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2x^{9/2}\left(65a(11A+9Bx)+33cx^2(15A+13Bx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a*(11*A + 9*B*x) + 33*c*x^2*(15*A + 13*B*x)))/6435
```

fricas [A] time = 0.83, size = 34, normalized size = 0.76

$$\frac{2}{6435}\left(429\,Bcx^7+495\,Acx^6+585\,Bax^5+715\,Aax^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*x^7 + 495*A*c*x^6 + 585*B*a*x^5 + 715*A*a*x^4)*sqrt(x)
```

giac [A] time = 0.23, size = 29, normalized size = 0.64

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{13}\,Acx^{\frac{13}{2}}+\frac{2}{11}\,Bax^{\frac{11}{2}}+\frac{2}{9}\,Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/2) + 2/9*A*a*x^(9/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.67

$$\frac{2\left(429Bc\,x^{3}+495Ac\,x^{2}+585Bax+715aA\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c*x^3+495*A*c*x^2+585*B*a*x+715*A*a)
```

maxima [A] time = 0.46, size = 29, normalized size = 0.64

$$\frac{2}{15}\,Bcx^{\frac{15}{2}}+\frac{2}{13}\,Acx^{\frac{13}{2}}+\frac{2}{11}\,Bax^{\frac{11}{2}}+\frac{2}{9}\,Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/2) + 2/9*A*a*x^(9/2)
```

mupad [B] time = 0.05, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{9/2}}{9}+\frac{2\,B\,a\,x^{11/2}}{11}+\frac{2\,A\,c\,x^{13/2}}{13}+\frac{2\,B\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(9/2))/9 + (2*B*a*x^(11/2))/11 + (2*A*c*x^(13/2))/13 + (2*B*c*x^(1
5/2))/15
```

sympy [A] time = 8.22, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{9}{2}}}{9}+\frac{2Acx^{\frac{13}{2}}}{13}+\frac{2Bax^{\frac{11}{2}}}{11}+\frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(9/2)/9 + 2*A*c*x**(13/2)/13 + 2*B*a*x**(11/2)/11 + 2*B*c*x**(15/2
)/15
```

3.385 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}$$

```
[Out] 2/7*a*A*x^(7/2)+2/9*a*B*x^(9/2)+2/11*A*c*x^(11/2)+2/13*B*c*x^(13/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(7/2))/7 + (2*a*B*x^(9/2))/9 + (2*A*c*x^(11/2))/11 + (2*B*c*x^(13/
2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^{5/2}+aBx^{7/2}+Acx^{9/2}+Bcx^{11/2}\right)\,dx\\&=\frac{2}{7}aAx^{7/2}+\frac{2}{9}aBx^{9/2}+\frac{2}{11}Acx^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2x^{7/2}\left(143a(9A+7Bx)+63cx^2(13A+11Bx)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a*(9*A + 7*B*x) + 63*c*x^2*(13*A + 11*B*x)))/9009
```

fricas [A] time = 1.11, size = 34, normalized size = 0.76

$$\frac{2}{9009}\left(693\,Bcx^6+819\,Acx^5+1001\,Bax^4+1287\,Aax^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*x^6 + 819*A*c*x^5 + 1001*B*a*x^4 + 1287*A*a*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{9}\,Bax^{\frac{9}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2) + 2/7*A*a*x^(7/2)
```

maple [A] time = 0.06, size = 30, normalized size = 0.67

$$\frac{2\left(693Bc\,x^{3}+819Ac\,x^{2}+1001Bax+1287aA\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c*x^3+819*A*c*x^2+1001*B*a*x+1287*A*a)
```

maxima [A] time = 0.62, size = 29, normalized size = 0.64

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{9}\,Bax^{\frac{9}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2) + 2/7*A*a*x^(7/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{7/2}}{7}+\frac{2\,B\,a\,x^{9/2}}{9}+\frac{2\,A\,c\,x^{11/2}}{11}+\frac{2\,B\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(7/2))/7 + (2*B*a*x^(9/2))/9 + (2*A*c*x^(11/2))/11 + (2*B*c*x^(13/
2))/13
```

sympy [A] time = 3.76, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{7}{2}}}{7}+\frac{2Acx^{\frac{11}{2}}}{11}+\frac{2Bax^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(7/2)/7 + 2*A*c*x**(11/2)/11 + 2*B*a*x**(9/2)/9 + 2*B*c*x**(13/2)/
13
```

3.386 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=45

$$\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}$$

```
[Out] 2/5*a*A*x^(5/2)+2/7*a*B*x^(7/2)+2/9*A*c*x^(9/2)+2/11*B*c*x^(11/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = $\{766\}$

$$\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(5/2))/5 + (2*a*B*x^(7/2))/7 + (2*A*c*x^(9/2))/9 + (2*B*c*x^(11/2)
)/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)\,dx&=\int\left(aAx^{3/2}+aBx^{5/2}+Acx^{7/2}+Bcx^{9/2}\right)\,dx\\&=\frac{2}{5}aAx^{5/2}+\frac{2}{7}aBx^{7/2}+\frac{2}{9}Acx^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 37, normalized size = 0.82

$$\frac{2}{35}ax^{5/2}(7A+5Bx)+\frac{2}{99}cx^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*x^(5/2)*(7*A + 5*B*x))/35 + (2*c*x^(9/2)*(11*A + 9*B*x))/99
```

fricas [A] time = 0.63, size = 34, normalized size = 0.76

$$\frac{2}{3465}\left(315\,Bcx^5+385\,Acx^4+495\,Bax^3+693\,Aax^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*x^5 + 385*A*c*x^4 + 495*B*a*x^3 + 693*A*a*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{9}\,Acx^{\frac{9}{2}}+\frac{2}{7}\,Bax^{\frac{7}{2}}+\frac{2}{5}\,Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2/5*A*a*x^(5/2)
```

maple [A] time = 0.06, size = 30, normalized size = 0.67

$$\frac{2\left(315Bc\,x^{3}+385Ac\,x^{2}+495Bax+693aA\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c*x^3+385*A*c*x^2+495*B*a*x+693*A*a)
```

maxima [A] time = 0.49, size = 29, normalized size = 0.64

$$\frac{2}{11}\,Bcx^{\frac{11}{2}}+\frac{2}{9}\,Acx^{\frac{9}{2}}+\frac{2}{7}\,Bax^{\frac{7}{2}}+\frac{2}{5}\,Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2/5*A*a*x^(5/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{5/2}}{5}+\frac{2\,B\,a\,x^{7/2}}{7}+\frac{2\,A\,c\,x^{9/2}}{9}+\frac{2\,B\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(5/2))/5 + (2*B*a*x^(7/2))/7 + (2*A*c*x^(9/2))/9 + (2*B*c*x^(11/2)
)/11
```

sympy [A] time = 1.66, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{5}{2}}}{5}+\frac{2Acx^{\frac{9}{2}}}{9}+\frac{2Bax^{\frac{7}{2}}}{7}+\frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a),x)
```

```
[Out] 2*A*a*x**(5/2)/5 + 2*A*c*x**(9/2)/9 + 2*B*a*x**(7/2)/7 + 2*B*c*x**(11/2)/11
```

3.387 $\int \sqrt{x} (A+Bx) \left(a+cx^2\right) \, dx$

Optimal. Leaf size=45

$$\frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2}$$

```
[Out] 2/3*a*A*x^(3/2)+2/5*a*B*x^(5/2)+2/7*A*c*x^(7/2)+2/9*B*c*x^(9/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*a*A*x^(3/2))/3 + (2*a*B*x^(5/2))/5 + (2*A*c*x^(7/2))/7 + (2*B*c*x^(9/2))
/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned} \int \sqrt{x} (A+Bx) \left(a+cx^2\right) \, dx &= \int \left(aA\sqrt{x}+aBx^{3/2}+Acx^{5/2}+Bcx^{7/2}\right) \, dx \\ &= \frac{2}{3}aAx^{3/2}+\frac{2}{5}aBx^{5/2}+\frac{2}{7}Acx^{7/2}+\frac{2}{9}Bcx^{9/2} \end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.78

$$\frac{2}{315}x^{3/2}\left(21a(5A+3Bx)+5cx^2(9A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a*(5*A + 3*B*x) + 5*c*x^2*(9*A + 7*B*x)))/315
```

fricas [A] time = 0.84, size = 32, normalized size = 0.71

$$\frac{2}{315}\left(35\,Bcx^4+45\,Acx^3+63\,Bax^2+105\,Aax\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*x^4 + 45*A*c*x^3 + 63*B*a*x^2 + 105*A*a*x)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.64

$$\frac{2}{9}\,Bcx^{\frac{9}{2}}+\frac{2}{7}\,Acx^{\frac{7}{2}}+\frac{2}{5}\,Bax^{\frac{5}{2}}+\frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/3*A*a*x^(3/2)
```

maple [A] time = 0.05, size = 30, normalized size = 0.67

$$\frac{2\left(35Bc\,x^{3}+45Ac\,x^{2}+63Bax+105aA\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c*x^3+45*A*c*x^2+63*B*a*x+105*A*a)
```

maxima [A] time = 0.60, size = 29, normalized size = 0.64

$$\frac{2}{9}\,Bcx^{\frac{9}{2}}+\frac{2}{7}\,Acx^{\frac{7}{2}}+\frac{2}{5}\,Bax^{\frac{5}{2}}+\frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/3*A*a*x^(3/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.64

$$\frac{2\,A\,a\,x^{3/2}}{3}+\frac{2\,B\,a\,x^{5/2}}{5}+\frac{2\,A\,c\,x^{7/2}}{7}+\frac{2\,B\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (2*A*a*x^(3/2))/3 + (2*B*a*x^(5/2))/5 + (2*A*c*x^(7/2))/7 + (2*B*c*x^(9/2))
/9
```

sympy [A] time = 2.38, size = 46, normalized size = 1.02

$$\frac{2Aax^{\frac{3}{2}}}{3}+\frac{2Acx^{\frac{7}{2}}}{7}+\frac{2Bax^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)*x**(1/2),x)
```

```
[Out] 2*A*a*x**(3/2)/3 + 2*A*c*x**(7/2)/7 + 2*B*a*x**(5/2)/5 + 2*B*c*x**(9/2)/9
```

3.388 $\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=43

$$2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}$$

```
[Out] 2/3*a*B*x^(3/2)+2/5*A*c*x^(5/2)+2/7*B*c*x^(7/2)+2*a*A*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/Sqrt[x],x]
```

```
[Out] 2*a*A*Sqrt[x] + (2*a*B*x^(3/2))/3 + (2*A*c*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{x}}\,dx&=\int \left(\frac{aA}{\sqrt{x}}+aB\sqrt{x}+Acx^{3/2}+Bcx^{5/2}\right)dx\\&=2aA\sqrt{x}+\frac{2}{3}aBx^{3/2}+\frac{2}{5}Acx^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 0.79

$$\frac{2}{105}\sqrt{x}\left(35a(3A+Bx)+3cx^2(7A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a*(3*A + B*x) + 3*c*x^2*(7*A + 5*B*x)))/105
```

fricas [A] time = 0.64, size = 29, normalized size = 0.67

$$\frac{2}{105}\left(15\,Bcx^3+21\,Acx^2+35\,Bax+105\,Aa\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*x^3 + 21*A*c*x^2 + 35*B*a*x + 105*A*a)*sqrt(x)
```

giac [A] time = 0.15, size = 29, normalized size = 0.67

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,Acx^{\frac{5}{2}}+\frac{2}{3}\,Bax^{\frac{3}{2}}+2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="giac")
[Out] 2/7*B*c*x^(7/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2*A*a*sqrt(x)
```

maple [A] time = 0.04, size = 30, normalized size = 0.70

$$\frac{2\left(15Bc\,x^{3}+21Ac\,x^{2}+35Bax+105aA\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(1/2),x)
[Out] 2/105*x^(1/2)*(15*B*c*x^3+21*A*c*x^2+35*B*a*x+105*A*a)
```

maxima [A] time = 0.49, size = 29, normalized size = 0.67

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,Acx^{\frac{5}{2}}+\frac{2}{3}\,Bax^{\frac{3}{2}}+2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(1/2),x, algorithm="maxima")
[Out] 2/7*B*c*x^(7/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2*A*a*sqrt(x)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.67

$$2\,A\,a\,\sqrt{x}+\frac{2\,B\,a\,x^{3/2}}{3}+\frac{2\,A\,c\,x^{5/2}}{5}+\frac{2\,B\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(1/2),x)
[Out] 2*A*a*x^(1/2) + (2*B*a*x^(3/2))/3 + (2*A*c*x^(5/2))/5 + (2*B*c*x^(7/2))/7
```

sympy [A] time = 0.45, size = 44, normalized size = 1.02

$$2Aa\sqrt{x}+\frac{2Acx^{\frac{5}{2}}}{5}+\frac{2Bax^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(1/2),x)
[Out] 2*A*a*sqrt(x) + 2*A*c*x**(5/2)/5 + 2*B*a*x**(3/2)/3 + 2*B*c*x**(7/2)/7
```

3.389 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}$$

```
[Out] 2/3*A*c*x^(3/2)+2/5*B*c*x^(5/2)-2*a*A/x^(1/2)+2*a*B*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(3/2),x]
```

```
[Out] (-2*a*A)/Sqrt[x] + 2*a*B*Sqrt[x] + (2*A*c*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{3/2}}\,dx &= \int \left(\frac{aA}{x^{3/2}}+\frac{aB}{\sqrt{x}}+Ac\sqrt{x}+Bcx^{3/2}\right)dx\\ &= -\frac{2aA}{\sqrt{x}}+2aB\sqrt{x}+\frac{2}{3}Acx^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2\left(cx^2(5A+3Bx)-15a(A-Bx)\right)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(3/2),x]
```

```
[Out] (2*(-15*a*(A - B*x) + c*x^2*(5*A + 3*B*x)))/(15*Sqrt[x])
```

fricas [A] time = 1.26, size = 29, normalized size = 0.71

$$\frac{2\left(3\,Bcx^3+5\,Acx^2+15\,Bax-15\,Aa\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*x^3 + 5*A*c*x^2 + 15*B*a*x - 15*A*a)/sqrt(x)
```

giac [A]   time = 0.15, size = 29, normalized size = 0.71

$$\frac{2}{5}\,Bcx^{\frac{5}{2}} + \frac{2}{3}\,Acx^{\frac{3}{2}} + 2\,Ba\sqrt{x} - \frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) - 2*A*a/sqrt(x)
```

maple [A]   time = 0.04, size = 30, normalized size = 0.73

$$-\frac{2\left(-3Bc\,x^{3}-5Ac\,x^{2}-15Bax+15aA\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(3/2),x)
```

```
[Out] -2/15*(-3*B*c*x^3-5*A*c*x^2-15*B*a*x+15*A*a)/x^(1/2)
```

maxima [A]   time = 0.51, size = 29, normalized size = 0.71

$$\frac{2}{5}\,Bcx^{\frac{5}{2}} + \frac{2}{3}\,Acx^{\frac{3}{2}} + 2\,Ba\sqrt{x} - \frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) - 2*A*a/sqrt(x)
```

mupad [B]   time = 0.05, size = 29, normalized size = 0.71

$$2\,B\,a\,\sqrt{x} - \frac{2\,A\,a}{\sqrt{x}} + \frac{2\,A\,c\,x^{3/2}}{3} + \frac{2\,B\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(3/2),x)
```

```
[Out] 2*B*a*x^(1/2) - (2*A*a)/x^(1/2) + (2*A*c*x^(3/2))/3 + (2*B*c*x^(5/2))/5
```

sympy [A]   time = 0.62, size = 42, normalized size = 1.02

$$-\frac{2Aa}{\sqrt{x}} + \frac{2Acx^{\frac{3}{2}}}{3} + 2Ba\sqrt{x} + \frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(3/2),x)
```

```
[Out] -2*A*a/sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*a*sqrt(x) + 2*B*c*x**(5/2)/5
```

3.390 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}$$

```
[Out] -2/3*a*A/x^(3/2)+2/3*B*c*x^(3/2)-2*a*B/x^(1/2)+2*A*c*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*a*A)/(3*x^(3/2)) - (2*a*B)/Sqrt[x] + 2*A*c*Sqrt[x] + (2*B*c*x^(3/2))/3
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{5/2}}\,dx &= \int \left(\frac{aA}{x^{5/2}}+\frac{aB}{x^{3/2}}+\frac{Ac}{\sqrt{x}}+Bc\sqrt{x}\right)dx\\ &= -\frac{2aA}{3x^{3/2}}-\frac{2aB}{\sqrt{x}}+2Ac\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2cx^2(3A+Bx)-2a(A+3Bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(5/2),x]
```

```
[Out] (2*c*x^2*(3*A + B*x) - 2*a*(A + 3*B*x))/(3*x^(3/2))
```

fricas [A] time = 0.85, size = 28, normalized size = 0.68

$$\frac{2\left(Bcx^3+3\,Acx^2-3\,Bax-Aa\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*x^3 + 3*A*c*x^2 - 3*B*a*x - A*a)/x^(3/2)
```

giac [A] time = 0.15, size = 29, normalized size = 0.71

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Ac\sqrt{x} - \frac{2\,(3\,Bax + Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + A*a)/x^(3/2)
```

maple [A] time = 0.05, size = 29, normalized size = 0.71

$$-\frac{2\left(-Bc\,x^{3}-3Ac\,x^{2}+3Bax+aA\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(5/2),x)
```

```
[Out] -2/3*(-B*c*x^3-3*A*c*x^2+3*B*a*x+A*a)/x^(3/2)
```

maxima [A] time = 0.71, size = 29, normalized size = 0.71

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Ac\sqrt{x} - \frac{2\,(3\,Bax + Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + A*a)/x^(3/2)
```

mupad [B] time = 1.05, size = 29, normalized size = 0.71

$$-\frac{-2\,B\,c\,x^3-6\,A\,c\,x^2+6\,B\,a\,x+2\,A\,a}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(5/2),x)
```

```
[Out] -(2*A*a + 6*B*a*x - 6*A*c*x^2 - 2*B*c*x^3)/(3*x^(3/2))
```

sympy [A] time = 0.85, size = 42, normalized size = 1.02

$$-\frac{2Aa}{3x^{\frac{3}{2}}} + 2Ac\sqrt{x} - \frac{2Ba}{\sqrt{x}} + \frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(5/2),x)
```

```
[Out] -2*A*a/(3*x**(3/2)) + 2*A*c*sqrt(x) - 2*B*a/sqrt(x) + 2*B*c*x**(3/2)/3
```

3.391 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{7/2}} \, dx$

Optimal. Leaf size=41

$$-\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}$$

```
[Out] -2/5*a*A/x^(5/2)-2/3*a*B/x^(3/2)-2*A*c/x^(1/2)+2*B*c*x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*a*A)/(5*x^(5/2)) - (2*a*B)/(3*x^(3/2)) - (2*A*c)/Sqrt[x] + 2*B*c*Sqrt[x
]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{7/2}} \, dx &= \int \left(\frac{aA}{x^{7/2}}+\frac{aB}{x^{5/2}}+\frac{Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right) dx\\ &= -\frac{2aA}{5x^{5/2}}-\frac{2aB}{3x^{3/2}}-\frac{2Ac}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$-\frac{2\left(a(3A+5Bx)+15cx^2(A-Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*(15*c*x^2*(A - B*x) + a*(3*A + 5*B*x)))/(15*x^(5/2))
```

fricas [A] time = 0.87, size = 29, normalized size = 0.71

$$\frac{2\left(15\,Bcx^3-15\,Acx^2-5\,Bax-3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*x^3 - 15*A*c*x^2 - 5*B*a*x - 3*A*a)/x^(5/2)
```

giac [A] time = 0.15, size = 30, normalized size = 0.73

$$2\,Bc\sqrt{x} - \frac{2\left(15\,Acx^2 + 5\,Bax + 3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*c*sqrt(x) - 2/15*(15*A*c*x^2 + 5*B*a*x + 3*A*a)/x^(5/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.73

$$-\frac{2\left(-15Bc\,x^3 + 15Ac\,x^2 + 5Bax + 3aA\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(7/2),x)
```

```
[Out] -2/15*(-15*B*c*x^3+15*A*c*x^2+5*B*a*x+3*A*a)/x^(5/2)
```

maxima [A] time = 0.51, size = 30, normalized size = 0.73

$$2\,Bc\sqrt{x} - \frac{2\left(15\,Acx^2 + 5\,Bax + 3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*c*sqrt(x) - 2/15*(15*A*c*x^2 + 5*B*a*x + 3*A*a)/x^(5/2)
```

mupad [B] time = 0.04, size = 29, normalized size = 0.71

$$-\frac{-30\,B\,c\,x^3 + 30\,A\,c\,x^2 + 10\,B\,a\,x + 6\,A\,a}{15\,x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(7/2),x)
```

```
[Out] -(6*A*a + 10*B*a*x + 30*A*c*x^2 - 30*B*c*x^3)/(15*x^(5/2))
```

sympy [A] time = 1.44, size = 42, normalized size = 1.02

$$-\frac{2Aa}{5x^{\frac{5}{2}}} - \frac{2Ac}{\sqrt{x}} - \frac{2Ba}{3x^{\frac{3}{2}}} + 2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(7/2),x)
```

```
[Out] -2*A*a/(5*x**(5/2)) - 2*A*c/sqrt(x) - 2*B*a/(3*x**(3/2)) + 2*B*c*sqrt(x)
```

3.392 $\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{9/2}}\,dx$

Optimal. Leaf size=43

$$-\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

```
[Out] -2/7*a*A/x^(7/2)-2/5*a*B/x^(5/2)-2/3*A*c/x^(3/2)-2*B*c/x^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$-\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*a*A)/(7*x^(7/2)) - (2*a*B)/(5*x^(5/2)) - (2*A*c)/(3*x^(3/2)) - (2*B*c)/
Sqrt[x]
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{x^{9/2}}\,dx &= \int \left(\frac{aA}{x^{9/2}}+\frac{aB}{x^{7/2}}+\frac{Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right)dx\\ &= -\frac{2aA}{7x^{7/2}}-\frac{2aB}{5x^{5/2}}-\frac{2Ac}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.77

$$\frac{-6a(5A+7Bx)-70cx^2(A+3Bx)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/x^(9/2),x]
```

```
[Out] (-70*c*x^2*(A + 3*B*x) - 6*a*(5*A + 7*B*x))/(105*x^(7/2))
```

fricas [A] time = 0.59, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^3+35\,Acx^2+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

giac [A] time = 0.16, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^{3}+35\,Acx^{2}+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

maple [A] time = 0.04, size = 30, normalized size = 0.70

$$-\frac{2\left(105Bc\,x^{3}+35Ac\,x^{2}+21Bax+15aA\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*c*x^3+35*A*c*x^2+21*B*a*x+15*A*a)/x^(7/2)
```

maxima [A] time = 0.59, size = 29, normalized size = 0.67

$$-\frac{2\left(105\,Bcx^{3}+35\,Acx^{2}+21\,Bax+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*A*c*x^2 + 21*B*a*x + 15*A*a)/x^(7/2)
```

mupad [B] time = 1.05, size = 29, normalized size = 0.67

$$-\frac{210\,B\,c\,x^{3}+70\,A\,c\,x^{2}+42\,B\,a\,x+30\,A\,a}{105\,x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/x^(9/2),x)
```

```
[Out] -(30*A*a + 42*B*a*x + 70*A*c*x^2 + 210*B*c*x^3)/(105*x^(7/2))
```

sympy [A] time = 3.16, size = 46, normalized size = 1.07

$$-\frac{2Aa}{7x^{\frac{7}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Ba}{5x^{\frac{5}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/x**(9/2),x)
```

```
[Out] -2*A*a/(7*x**(7/2)) - 2*A*c/(3*x**(3/2)) - 2*B*a/(5*x**(5/2)) - 2*B*c/sqrt(
x)
```

3.393 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}$$

```
[Out] 2/9*a^2*A*x^(9/2)+2/11*a^2*B*x^(11/2)+4/13*a*A*c*x^(13/2)+4/15*a*B*c*x^(15/
2)+2/17*A*c^2*x^(17/2)+2/19*B*c^2*x^(19/2)
```

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a^2*B*x^(11/2))/11 + (4*a*A*c*x^(13/2))/13 + (4*a*
B*c*x^(15/2))/15 + (2*A*c^2*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+cx^2\right)^2\,dx&=\int\left(a^2Ax^{7/2}+a^2Bx^{9/2}+2aAcx^{11/2}+2aBcx^{13/2}+Ac^2x^{15/2}+Bc^2x^{17/2}\right)dx\\&=\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a^2Bx^{11/2}+\frac{4}{13}aAcx^{13/2}+\frac{4}{15}aBcx^{15/2}+\frac{2}{17}Ac^2x^{17/2}+\frac{2}{19}Bc^2x^{19/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{99}a^2x^{9/2}(11A+9Bx)+\frac{4}{195}acx^{13/2}(15A+13Bx)+\frac{2}{323}c^2x^{17/2}(19A+17Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(9/2)*(11*A + 9*B*x))/99 + (4*a*c*x^(13/2)*(15*A + 13*B*x))/195 +
(2*c^2*x^(17/2)*(19*A + 17*B*x))/323
```

fricas [A] time = 1.00, size = 58, normalized size = 0.75

$$\frac{2}{2078505}\left(109395\,Bc^2x^9+122265\,Ac^2x^8+277134\,Bacx^7+319770\,Aacx^6+188955\,Ba^2x^5+230945\,Aa^2x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*x^9 + 122265*A*c^2*x^8 + 277134*B*a*c*x^7 + 319770*
A*a*c*x^6 + 188955*B*a^2*x^5 + 230945*A*a^2*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.69

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{2}{17}\,Ac^2x^{\frac{17}{2}}+\frac{4}{15}\,Bacx^{\frac{15}{2}}+\frac{4}{13}\,Aacx^{\frac{13}{2}}+\frac{2}{11}\,Ba^2x^{\frac{11}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*A*c^2*x^(17/2) + 4/15*B*a*c*x^(15/2) + 4/13*A*a*
c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(109395B\,c^2x^5+122265A\,c^2x^4+277134Bac\,x^3+319770Aac\,x^2+188955B\,a^2x+230945A\,a^2\right)x^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*c^2*x^5+122265*A*c^2*x^4+277134*B*a*c*x^3+31977
0*A*a*c*x^2+188955*B*a^2*x+230945*A*a^2)
```

maxima [A] time = 0.59, size = 53, normalized size = 0.69

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{2}{17}\,Ac^2x^{\frac{17}{2}}+\frac{4}{15}\,Bacx^{\frac{15}{2}}+\frac{4}{13}\,Aacx^{\frac{13}{2}}+\frac{2}{11}\,Ba^2x^{\frac{11}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*A*c^2*x^(17/2) + 4/15*B*a*c*x^(15/2) + 4/13*A*a*
c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{9/2}}{9}+\frac{2\,B\,a^2\,x^{11/2}}{11}+\frac{2\,A\,c^2\,x^{17/2}}{17}+\frac{2\,B\,c^2\,x^{19/2}}{19}+\frac{4\,A\,a\,c\,x^{13/2}}{13}+\frac{4\,B\,a\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(9/2))/9 + (2*B*a^2*x^(11/2))/11 + (2*A*c^2*x^(17/2))/17 + (2*B*
c^2*x^(19/2))/19 + (4*A*a*c*x^(13/2))/13 + (4*B*a*c*x^(15/2))/15
```

sympy [A] time = 16.12, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{9}{2}}}{9}+\frac{4Aacx^{\frac{13}{2}}}{13}+\frac{2Ac^2x^{\frac{17}{2}}}{17}+\frac{2Ba^2x^{\frac{11}{2}}}{11}+\frac{4Bacx^{\frac{15}{2}}}{15}+\frac{2Bc^2x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*c*x**(13/2)/13 + 2*A*c**2*x**(17/2)/17 + 2*B*a*
*2*x**(11/2)/11 + 4*B*a*c*x**(15/2)/15 + 2*B*c**2*x**(19/2)/19
```

3.394 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}$$

```
[Out] 2/7*a^2*A*x^(7/2)+2/9*a^2*B*x^(9/2)+4/11*a*A*c*x^(11/2)+4/13*a*B*c*x^(13/2)
+2/15*A*c^2*x^(15/2)+2/17*B*c^2*x^(17/2)
```

Rubi [A] time = 0.03, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a^2*B*x^(9/2))/9 + (4*a*A*c*x^(11/2))/11 + (4*a*B*
c*x^(13/2))/13 + (2*A*c^2*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ax^{5/2}+a^2Bx^{7/2}+2aAcx^{9/2}+2aBcx^{11/2}+Ac^2x^{13/2}+Bc^2x^{15/2}\right)\,dx\\ &= \frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a^2Bx^{9/2}+\frac{4}{11}aAcx^{11/2}+\frac{4}{13}aBcx^{13/2}+\frac{2}{15}Ac^2x^{15/2}+\frac{2}{17}Bc^2x^{17/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{63}a^2x^{7/2}(9A+7Bx)+\frac{4}{143}acx^{11/2}(13A+11Bx)+\frac{2}{255}c^2x^{15/2}(17A+15Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(7/2)*(9*A + 7*B*x))/63 + (4*a*c*x^(11/2)*(13*A + 11*B*x))/143 + (
2*c^2*x^(15/2)*(17*A + 15*B*x))/255
```

fricas [A] time = 0.78, size = 58, normalized size = 0.75

$$\frac{2}{765765}\left(45045\,Bc^2x^8+51051\,Ac^2x^7+117810\,Bacx^6+139230\,Aacx^5+85085\,Ba^2x^4+109395\,Aa^2x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*x^8 + 51051*A*c^2*x^7 + 117810*B*a*c*x^6 + 139230*A*a
*c*x^5 + 85085*B*a^2*x^4 + 109395*A*a^2*x^3)*sqrt(x)
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{17} Bc^2x^{\frac{17}{2}} + \frac{2}{15} Ac^2x^{\frac{15}{2}} + \frac{4}{13} Bacx^{\frac{13}{2}} + \frac{4}{11} Aacx^{\frac{11}{2}} + \frac{2}{9} Ba^2x^{\frac{9}{2}} + \frac{2}{7} Aa^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*A*c^2*x^(15/2) + 4/13*B*a*c*x^(13/2) + 4/11*A*a*
c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [**A**] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(45045B\,c^2x^5+51051A\,c^2x^4+117810Bac\,x^3+139230Aac\,x^2+85085B\,a^2x+109395A\,a^2\right)x^{\frac{7}{2}}}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*c^2*x^5+51051*A*c^2*x^4+117810*B*a*c*x^3+139230*A
*a*c*x^2+85085*B*a^2*x+109395*A*a^2)
```

maxima [**A**] time = 0.53, size = 53, normalized size = 0.69

$$\frac{2}{17} Bc^2x^{\frac{17}{2}} + \frac{2}{15} Ac^2x^{\frac{15}{2}} + \frac{4}{13} Bacx^{\frac{13}{2}} + \frac{4}{11} Aacx^{\frac{11}{2}} + \frac{2}{9} Ba^2x^{\frac{9}{2}} + \frac{2}{7} Aa^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*A*c^2*x^(15/2) + 4/13*B*a*c*x^(13/2) + 4/11*A*a*
c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

mupad [**B**] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{7/2}}{7}+\frac{2\,B\,a^2\,x^{9/2}}{9}+\frac{2\,A\,c^2\,x^{15/2}}{15}+\frac{2\,B\,c^2\,x^{17/2}}{17}+\frac{4\,A\,a\,c\,x^{11/2}}{11}+\frac{4\,B\,a\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(7/2))/7 + (2*B*a^2*x^(9/2))/9 + (2*A*c^2*x^(15/2))/15 + (2*B*c^
2*x^(17/2))/17 + (4*A*a*c*x^(11/2))/11 + (4*B*a*c*x^(13/2))/13
```

sympy [**A**] time = 8.50, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{7}{2}}}{7}+\frac{4Aacx^{\frac{11}{2}}}{11}+\frac{2Ac^2x^{\frac{15}{2}}}{15}+\frac{2Ba^2x^{\frac{9}{2}}}{9}+\frac{4Bacx^{\frac{13}{2}}}{13}+\frac{2Bc^2x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*c*x**(11/2)/11 + 2*A*c**2*x**(15/2)/15 + 2*B*a*
*2*x**(9/2)/9 + 4*B*a*c*x**(13/2)/13 + 2*B*c**2*x**(17/2)/17
```

3.395 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}$$

```
[Out] 2/5*a^2*A*x^(5/2)+2/7*a^2*B*x^(7/2)+4/9*a*A*c*x^(9/2)+4/11*a*B*c*x^(11/2)+2
/13*A*c^2*x^(13/2)+2/15*B*c^2*x^(15/2)
```

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a^2*B*x^(7/2))/7 + (4*a*A*c*x^(9/2))/9 + (4*a*B*c*
x^(11/2))/11 + (2*A*c^2*x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ax^{3/2}+a^2Bx^{5/2}+2aAcx^{7/2}+2aBcx^{9/2}+Ac^2x^{11/2}+Bc^2x^{13/2}\right)dx\\ &= \frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a^2Bx^{7/2}+\frac{4}{9}aAcx^{9/2}+\frac{4}{11}aBcx^{11/2}+\frac{2}{13}Ac^2x^{13/2}+\frac{2}{15}Bc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 54, normalized size = 0.70

$$\frac{2x^{5/2}\left(1287a^2(7A+5Bx)+910acx^2(11A+9Bx)+231c^2x^4(15A+13Bx)\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*x^(5/2)*(1287*a^2*(7*A + 5*B*x) + 910*a*c*x^2*(11*A + 9*B*x) + 231*c^2*x
^4*(15*A + 13*B*x)))/45045
```

fricas [A] time = 0.92, size = 58, normalized size = 0.75

$$\frac{2}{45045}\left(3003\,Bc^2x^7+3465\,Ac^2x^6+8190\,Bacx^5+10010\,Aacx^4+6435\,Ba^2x^3+9009\,Aa^2x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*x^7 + 3465*A*c^2*x^6 + 8190*B*a*c*x^5 + 10010*A*a*c*x^4
 + 6435*B*a^2*x^3 + 9009*A*a^2*x^2)*sqrt(x)
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}}+\frac{2}{13}\,Ac^2x^{\frac{13}{2}}+\frac{4}{11}\,Bacx^{\frac{11}{2}}+\frac{4}{9}\,Aacx^{\frac{9}{2}}+\frac{2}{7}\,Ba^2x^{\frac{7}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*A*c^2*x^(13/2) + 4/11*B*a*c*x^(11/2) + 4/9*A*a*c
*x^(9/2) + 2/7*B*a^2*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

maple [**A**] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(3003B\,c^2x^5+3465A\,c^2x^4+8190Bac\,x^3+10010Aac\,x^2+6435B\,a^2x+9009A\,a^2\right)x^{\frac{5}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*c^2*x^5+3465*A*c^2*x^4+8190*B*a*c*x^3+10010*A*a*c*x
^2+6435*B*a^2*x+9009*A*a^2)
```

maxima [**A**] time = 0.51, size = 53, normalized size = 0.69

$$\frac{2}{15}\,Bc^2x^{\frac{15}{2}}+\frac{2}{13}\,Ac^2x^{\frac{13}{2}}+\frac{4}{11}\,Bacx^{\frac{11}{2}}+\frac{4}{9}\,Aacx^{\frac{9}{2}}+\frac{2}{7}\,Ba^2x^{\frac{7}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*A*c^2*x^(13/2) + 4/11*B*a*c*x^(11/2) + 4/9*A*a*c
*x^(9/2) + 2/7*B*a^2*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

mupad [**B**] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{5/2}}{5}+\frac{2\,B\,a^2\,x^{7/2}}{7}+\frac{2\,A\,c^2\,x^{13/2}}{13}+\frac{2\,B\,c^2\,x^{15/2}}{15}+\frac{4\,A\,a\,c\,x^{9/2}}{9}+\frac{4\,B\,a\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(5/2))/5 + (2*B*a^2*x^(7/2))/7 + (2*A*c^2*x^(13/2))/13 + (2*B*c^
2*x^(15/2))/15 + (4*A*a*c*x^(9/2))/9 + (4*B*a*c*x^(11/2))/11
```

sympy [**A**] time = 4.26, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{5}{2}}}{5}+\frac{4Aacx^{\frac{9}{2}}}{9}+\frac{2Ac^2x^{\frac{13}{2}}}{13}+\frac{2Ba^2x^{\frac{7}{2}}}{7}+\frac{4Bacx^{\frac{11}{2}}}{11}+\frac{2Bc^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*c*x**(9/2)/9 + 2*A*c**2*x**(13/2)/13 + 2*B*a**2
*x**(7/2)/7 + 4*B*a*c*x**(11/2)/11 + 2*B*c**2*x**(15/2)/15
```

3.396 $\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=77

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}$$

```
[Out] 2/3*a^2*A*x^(3/2)+2/5*a^2*B*x^(5/2)+4/7*a*A*c*x^(7/2)+4/9*a*B*c*x^(9/2)+2/1
1*A*c^2*x^(11/2)+2/13*B*c^2*x^(13/2)
```

Rubi [A] time = 0.02, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}=0.050$, Rules used = {766}

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a^2*B*x^(5/2))/5 + (4*a*A*c*x^(7/2))/7 + (4*a*B*c*
x^(9/2))/9 + (2*A*c^2*x^(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+cx^2\right)^2\,dx&=\int \left(a^2A\sqrt{x}+a^2Bx^{3/2}+2aAcx^{5/2}+2aBcx^{7/2}+Ac^2x^{9/2}+Bc^2x^{11/2}\right)dx\\&=\frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a^2Bx^{5/2}+\frac{4}{7}aAcx^{7/2}+\frac{4}{9}aBcx^{9/2}+\frac{2}{11}Ac^2x^{11/2}+\frac{2}{13}Bc^2x^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 60, normalized size = 0.78

$$\frac{2}{15}a^2x^{3/2}(5A+3Bx)+\frac{4}{63}acx^{7/2}(9A+7Bx)+\frac{2}{143}c^2x^{11/2}(13A+11Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (2*a^2*x^(3/2)*(5*A + 3*B*x))/15 + (4*a*c*x^(7/2)*(9*A + 7*B*x))/63 + (2*c^
2*x^(11/2)*(13*A + 11*B*x))/143
```

fricas [A] time = 0.85, size = 56, normalized size = 0.73

$$\frac{2}{45045}\left(3465\,Bc^2x^6+4095\,Ac^2x^5+10010\,Bacx^4+12870\,Aacx^3+9009\,Ba^2x^2+15015\,Aa^2x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*x^6 + 4095*A*c^2*x^5 + 10010*B*a*c*x^4 + 12870*A*a*c*x^
3 + 9009*B*a^2*x^2 + 15015*A*a^2*x)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.69

$$\frac{2}{13}Bc^2x^{\frac{13}{2}} + \frac{2}{11}Ac^2x^{\frac{11}{2}} + \frac{4}{9}Bacx^{\frac{9}{2}} + \frac{4}{7}Aacx^{\frac{7}{2}} + \frac{2}{5}Ba^2x^{\frac{5}{2}} + \frac{2}{3}Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*A*c^2*x^(11/2) + 4/9*B*a*c*x^(9/2) + 4/7*A*a*c*x
^(7/2) + 2/5*B*a^2*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.70

$$\frac{2\left(3465B\,c^2x^5+4095A\,c^2x^4+10010Bac\,x^3+12870Aac\,x^2+9009B\,a^2x+15015A\,a^2\right)x^{\frac{3}{2}}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*c^2*x^5+4095*A*c^2*x^4+10010*B*a*c*x^3+12870*A*a*c*
x^2+9009*B*a^2*x+15015*A*a^2)
```

maxima [A] time = 0.48, size = 53, normalized size = 0.69

$$\frac{2}{13}Bc^2x^{\frac{13}{2}} + \frac{2}{11}Ac^2x^{\frac{11}{2}} + \frac{4}{9}Bacx^{\frac{9}{2}} + \frac{4}{7}Aacx^{\frac{7}{2}} + \frac{2}{5}Ba^2x^{\frac{5}{2}} + \frac{2}{3}Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*A*c^2*x^(11/2) + 4/9*B*a*c*x^(9/2) + 4/7*A*a*c*x
^(7/2) + 2/5*B*a^2*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.69

$$\frac{2\,A\,a^2\,x^{3/2}}{3}+\frac{2\,B\,a^2\,x^{5/2}}{5}+\frac{2\,A\,c^2\,x^{11/2}}{11}+\frac{2\,B\,c^2\,x^{13/2}}{13}+\frac{4\,A\,a\,c\,x^{7/2}}{7}+\frac{4\,B\,a\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (2*A*a^2*x^(3/2))/3 + (2*B*a^2*x^(5/2))/5 + (2*A*c^2*x^(11/2))/11 + (2*B*c^
2*x^(13/2))/13 + (4*A*a*c*x^(7/2))/7 + (4*B*a*c*x^(9/2))/9
```

sympy [A] time = 3.08, size = 80, normalized size = 1.04

$$\frac{2Aa^2x^{\frac{3}{2}}}{3} + \frac{4Aacx^{\frac{7}{2}}}{7} + \frac{2Ac^2x^{\frac{11}{2}}}{11} + \frac{2Ba^2x^{\frac{5}{2}}}{5} + \frac{4Bacx^{\frac{9}{2}}}{9} + \frac{2Bc^2x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 4*A*a*c*x**(7/2)/7 + 2*A*c**2*x**(11/2)/11 + 2*B*a**2
*x**(5/2)/5 + 4*B*a*c*x**(9/2)/9 + 2*B*c**2*x**(13/2)/13
```

3.397 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=75

$$2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}$$

```
[Out] 2/3*a^2*B*x^(3/2)+4/5*a*A*c*x^(5/2)+4/7*a*B*c*x^(7/2)+2/9*A*c^2*x^(9/2)+2/1
1*B*c^2*x^(11/2)+2*a^2*A*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a^2*B*x^(3/2))/3 + (4*a*A*c*x^(5/2))/5 + (4*a*B*c*x^(7
/2))/7 + (2*A*c^2*x^(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{x}}\,dx&=\int \left(\frac{a^2A}{\sqrt{x}}+a^2B\sqrt{x}+2aAcx^{3/2}+2aBcx^{5/2}+Ac^2x^{7/2}+Bc^2x^{9/2}\right)dx\\&=2a^2A\sqrt{x}+\frac{2}{3}a^2Bx^{3/2}+\frac{4}{5}aAcx^{5/2}+\frac{4}{7}aBcx^{7/2}+\frac{2}{9}Ac^2x^{9/2}+\frac{2}{11}Bc^2x^{11/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 59, normalized size = 0.79

$$\frac{2}{3}a^2\sqrt{x}(3A+Bx)+\frac{4}{35}acx^{5/2}(7A+5Bx)+\frac{2}{99}c^2x^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*a^2*Sqrt[x]*(3*A + B*x))/3 + (4*a*c*x^(5/2)*(7*A + 5*B*x))/35 + (2*c^2*x
^(9/2)*(11*A + 9*B*x))/99
```

fricas [A] time = 0.93, size = 53, normalized size = 0.71

$$\frac{2}{3465}\left(315\,Bc^2x^5+385\,Ac^2x^4+990\,Bacx^3+1386\,Aacx^2+1155\,Ba^2x+3465\,Aa^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 385*A*c^2*x^4 + 990*B*a*c*x^3 + 1386*A*a*c*x^2 + 11
55*B*a^2*x + 3465*A*a^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.71

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{2}{9}\,Ac^2x^{\frac{9}{2}} + \frac{4}{7}\,Bacx^{\frac{7}{2}} + \frac{4}{5}\,Aacx^{\frac{5}{2}} + \frac{2}{3}\,Ba^2x^{\frac{3}{2}} + 2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*A*c^2*x^(9/2) + 4/7*B*a*c*x^(7/2) + 4/5*A*a*c*x^(
5/2) + 2/3*B*a^2*x^(3/2) + 2*A*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 54, normalized size = 0.72

$$\frac{2\left(315B\,c^2x^5 + 385A\,c^2x^4 + 990Bac\,x^3 + 1386Aac\,x^2 + 1155B\,a^2x + 3465A\,a^2\right)\sqrt{x}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*c^2*x^5+385*A*c^2*x^4+990*B*a*c*x^3+1386*A*a*c*x^2+11
55*B*a^2*x+3465*A*a^2)
```

maxima [A] time = 0.53, size = 53, normalized size = 0.71

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}} + \frac{2}{9}\,Ac^2x^{\frac{9}{2}} + \frac{4}{7}\,Bacx^{\frac{7}{2}} + \frac{4}{5}\,Aacx^{\frac{5}{2}} + \frac{2}{3}\,Ba^2x^{\frac{3}{2}} + 2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*A*c^2*x^(9/2) + 4/7*B*a*c*x^(7/2) + 4/5*A*a*c*x^(
5/2) + 2/3*B*a^2*x^(3/2) + 2*A*a^2*sqrt(x)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.71

$$2\,A\,a^2\,\sqrt{x} + \frac{2\,B\,a^2\,x^{3/2}}{3} + \frac{2\,A\,c^2\,x^{9/2}}{9} + \frac{2\,B\,c^2\,x^{11/2}}{11} + \frac{4\,A\,a\,c\,x^{5/2}}{5} + \frac{4\,B\,a\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(1/2),x)
```

```
[Out] 2*A*a^2*x^(1/2) + (2*B*a^2*x^(3/2))/3 + (2*A*c^2*x^(9/2))/9 + (2*B*c^2*x^(1
1/2))/11 + (4*A*a*c*x^(5/2))/5 + (4*B*a*c*x^(7/2))/7
```

sympy [A] time = 1.44, size = 78, normalized size = 1.04

$$2Aa^2\sqrt{x} + \frac{4Aacx^{\frac{5}{2}}}{5} + \frac{2Ac^2x^{\frac{9}{2}}}{9} + \frac{2Ba^2x^{\frac{3}{2}}}{3} + \frac{4Bacx^{\frac{7}{2}}}{7} + \frac{2Bc^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*c*x**(5/2)/5 + 2*A*c**2*x**(9/2)/9 + 2*B*a**2*x**(
3/2)/3 + 4*B*a*c*x**(7/2)/7 + 2*B*c**2*x**(11/2)/11
```

3.398 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}$$

```
[Out] 4/3*a*A*c*x^(3/2)+4/5*a*B*c*x^(5/2)+2/7*A*c^2*x^(7/2)+2/9*B*c^2*x^(9/2)-2*a
^2*A/x^(1/2)+2*a^2*B*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a^2*B*Sqrt[x] + (4*a*A*c*x^(3/2))/3 + (4*a*B*c*x^(5/
2))/5 + (2*A*c^2*x^(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{3/2}}\,dx&=\int \left(\frac{a^2A}{x^{3/2}}+\frac{a^2B}{\sqrt{x}}+2aAc\sqrt{x}+2aBcx^{3/2}+Ac^2x^{5/2}+Bc^2x^{7/2}\right)dx\\&=-\frac{2a^2A}{\sqrt{x}}+2a^2B\sqrt{x}+\frac{4}{3}aAcx^{3/2}+\frac{4}{5}aBcx^{5/2}+\frac{2}{7}Ac^2x^{7/2}+\frac{2}{9}Bc^2x^{9/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.71

$$\frac{-630a^2(A-Bx)+84acx^2(5A+3Bx)+10c^2x^4(9A+7Bx)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-630*a^2*(A - B*x) + 84*a*c*x^2*(5*A + 3*B*x) + 10*c^2*x^4*(9*A + 7*B*x))/
(315*Sqrt[x])
```

fricas [A] time = 0.78, size = 53, normalized size = 0.73

$$\frac{2\left(35\,Bc^2x^5+45\,Ac^2x^4+126\,Bacx^3+210\,Aacx^2+315\,Ba^2x-315\,Aa^2\right)}{315\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*x^5 + 45*A*c^2*x^4 + 126*B*a*c*x^3 + 210*A*a*c*x^2 + 315*B*
a^2*x - 315*A*a^2)/sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.73

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}} + \frac{2}{7}\,Ac^2x^{\frac{7}{2}} + \frac{4}{5}\,Bacx^{\frac{5}{2}} + \frac{4}{3}\,Aacx^{\frac{3}{2}} + 2\,Ba^2\sqrt{x} - \frac{2\,Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/7*A*c^2*x^(7/2) + 4/5*B*a*c*x^(5/2) + 4/3*A*a*c*x^(3/
2) + 2*B*a^2*sqrt(x) - 2*A*a^2/sqrt(x)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-35B\,c^2x^5 - 45A\,c^2x^4 - 126Bac\,x^3 - 210Aac\,x^2 - 315B\,a^2x + 315A\,a^2\right)}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(3/2),x)
```

```
[Out] -2/315*(-35*B*c^2*x^5-45*A*c^2*x^4-126*B*a*c*x^3-210*A*a*c*x^2-315*B*a^2*x+
315*A*a^2)/x^(1/2)
```

maxima [A] time = 0.66, size = 53, normalized size = 0.73

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}} + \frac{2}{7}\,Ac^2x^{\frac{7}{2}} + \frac{4}{5}\,Bacx^{\frac{5}{2}} + \frac{4}{3}\,Aacx^{\frac{3}{2}} + 2\,Ba^2\sqrt{x} - \frac{2\,Aa^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/7*A*c^2*x^(7/2) + 4/5*B*a*c*x^(5/2) + 4/3*A*a*c*x^(3/
2) + 2*B*a^2*sqrt(x) - 2*A*a^2/sqrt(x)
```

mupad [B] time = 0.03, size = 53, normalized size = 0.73

$$2\,B\,a^2\,\sqrt{x} - \frac{2\,A\,a^2}{\sqrt{x}} + \frac{2\,A\,c^2\,x^{7/2}}{7} + \frac{2\,B\,c^2\,x^{9/2}}{9} + \frac{4\,A\,a\,c\,x^{3/2}}{3} + \frac{4\,B\,a\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(3/2),x)
```

```
[Out] 2*B*a^2*x^(1/2) - (2*A*a^2)/x^(1/2) + (2*A*c^2*x^(7/2))/7 + (2*B*c^2*x^(9/2
))/9 + (4*A*a*c*x^(3/2))/3 + (4*B*a*c*x^(5/2))/5
```

sympy [A] time = 1.68, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{\sqrt{x}} + \frac{4Aacx^{\frac{3}{2}}}{3} + \frac{2Ac^2x^{\frac{7}{2}}}{7} + 2Ba^2\sqrt{x} + \frac{4Bacx^{\frac{5}{2}}}{5} + \frac{2Bc^2x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*c*x**(3/2)/3 + 2*A*c**2*x**(7/2)/7 + 2*B*a**2*sqr
t(x) + 4*B*a*c*x**(5/2)/5 + 2*B*c**2*x**(9/2)/9
```

3.399 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}$$

```
[Out] -2/3*a^2*A/x^(3/2)+4/3*a*B*c*x^(3/2)+2/5*A*c^2*x^(5/2)+2/7*B*c^2*x^(7/2)-2*
a^2*B/x^(1/2)+4*a*A*c*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a^2*B)/Sqrt[x] + 4*a*A*c*Sqrt[x] + (4*a*B*c*x^(
3/2))/3 + (2*A*c^2*x^(5/2))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{5/2}}\,dx&=\int \left(\frac{a^2A}{x^{5/2}}+\frac{a^2B}{x^{3/2}}+\frac{2aAc}{\sqrt{x}}+2aBc\sqrt{x}+Ac^2x^{3/2}+Bc^2x^{5/2}\right)dx\\&=-\frac{2a^2A}{3x^{3/2}}-\frac{2a^2B}{\sqrt{x}}+4aAc\sqrt{x}+\frac{4}{3}aBcx^{3/2}+\frac{2}{5}Ac^2x^{5/2}+\frac{2}{7}Bc^2x^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.70

$$\frac{-70a^2(A+3Bx)+140acx^2(3A+Bx)+6c^2x^4(7A+5Bx)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (140*a*c*x^2*(3*A + B*x) - 70*a^2*(A + 3*B*x) + 6*c^2*x^4*(7*A + 5*B*x))/(1
05*x^(3/2))
```

fricas [A] time = 0.93, size = 53, normalized size = 0.73

$$\frac{2\left(15\,Bc^2x^5+21\,Ac^2x^4+70\,Bacx^3+210\,Aacx^2-105\,Ba^2x-35\,Aa^2\right)}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^5 + 21*A*c^2*x^4 + 70*B*a*c*x^3 + 210*A*a*c*x^2 - 105*B*a
^2*x - 35*A*a^2)/x^(3/2)
```

giac [A]   time = 0.17, size = 53, normalized size = 0.73

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Bacx^{\frac{3}{2}}+4\,Aac\sqrt{x}-\frac{2\left(3\,Ba^{2}x+Aa^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*A*c^2*x^(5/2) + 4/3*B*a*c*x^(3/2) + 4*A*a*c*sqrt(x)
 - 2/3*(3*B*a^2*x + A*a^2)/x^(3/2)
```

maple [A]   time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-15B\,c^{2}x^{5}-21A\,c^{2}x^{4}-70Bac\,x^{3}-210Aac\,x^{2}+105B\,a^{2}x+35A\,a^{2}\right)}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(5/2),x)
```

```
[Out] -2/105*(-15*B*c^2*x^5-21*A*c^2*x^4-70*B*a*c*x^3-210*A*a*c*x^2+105*B*a^2*x+3
5*A*a^2)/x^(3/2)
```

maxima [A]   time = 0.53, size = 53, normalized size = 0.73

$$\frac{2}{7}\,Bc^{2}x^{\frac{7}{2}}+\frac{2}{5}\,Ac^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Bacx^{\frac{3}{2}}+4\,Aac\sqrt{x}-\frac{2\left(3\,Ba^{2}x+Aa^{2}\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*A*c^2*x^(5/2) + 4/3*B*a*c*x^(3/2) + 4*A*a*c*sqrt(x)
 - 2/3*(3*B*a^2*x + A*a^2)/x^(3/2)
```

mupad [B]   time = 0.03, size = 54, normalized size = 0.74

$$\frac{2\,A\,c^2\,x^{5/2}}{5}-\frac{\frac{2\,A\,a^2}{3}+2\,B\,a^2\,x}{x^{3/2}}+\frac{2\,B\,c^2\,x^{7/2}}{7}+4\,A\,a\,c\,\sqrt{x}+\frac{4\,B\,a\,c\,x^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(5/2),x)
```

```
[Out] (2*A*c^2*x^(5/2))/5 - ((2*A*a^2)/3 + 2*B*a^2*x)/x^(3/2) + (2*B*c^2*x^(7/2))
/7 + 4*A*a*c*x^(1/2) + (4*B*a*c*x^(3/2))/3
```

sympy [A]   time = 2.12, size = 76, normalized size = 1.04

$$-\frac{2Aa^{2}}{3x^{\frac{3}{2}}}+4Aac\sqrt{x}+\frac{2Ac^{2}x^{\frac{5}{2}}}{5}-\frac{2Ba^{2}}{\sqrt{x}}+\frac{4Bacx^{\frac{3}{2}}}{3}+\frac{2Bc^{2}x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) + 4*A*a*c*sqrt(x) + 2*A*c**2*x**(5/2)/5 - 2*B*a**2/s
qrt(x) + 4*B*a*c*x**(3/2)/3 + 2*B*c**2*x**(7/2)/7
```

3.400 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}$$

```
[Out] -2/5*a^2*A/x^(5/2)-2/3*a^2*B/x^(3/2)+2/3*A*c^2*x^(3/2)+2/5*B*c^2*x^(5/2)-4*
a*A*c/x^(1/2)+4*a*B*c*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a^2*B)/(3*x^(3/2)) - (4*a*A*c)/Sqrt[x] + 4*a*B*
c*Sqrt[x] + (2*A*c^2*x^(3/2))/3 + (2*B*c^2*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{7/2}}\,dx &= \int \left(\frac{a^2A}{x^{7/2}}+\frac{a^2B}{x^{5/2}}+\frac{2aAc}{x^{3/2}}+\frac{2aBc}{\sqrt{x}}+Ac^2\sqrt{x}+Bc^2x^{3/2}\right)dx\\ &= -\frac{2a^2A}{5x^{5/2}}-\frac{2a^2B}{3x^{3/2}}-\frac{4aAc}{\sqrt{x}}+4aBc\sqrt{x}+\frac{2}{3}Ac^2x^{3/2}+\frac{2}{5}Bc^2x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 53, normalized size = 0.73

$$\frac{-2a^2(3A+5Bx)+60acx^2(Bx-A)+2c^2x^4(5A+3Bx)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (60*a*c*x^2*(-A + B*x) + 2*c^2*x^4*(5*A + 3*B*x) - 2*a^2*(3*A + 5*B*x))/(15
*x^(5/2))
```

fricas [A] time = 0.54, size = 53, normalized size = 0.73

$$\frac{2\left(3\,Bc^2x^5+5\,Ac^2x^4+30\,Bacx^3-30\,Aacx^2-5\,Ba^2x-3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^5 + 5*A*c^2*x^4 + 30*B*a*c*x^3 - 30*A*a*c*x^2 - 5*B*a^2*x -
 3*A*a^2)/x^(5/2)
```

giac [A] time = 0.15, size = 54, normalized size = 0.74

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}} + \frac{2}{3}\,Ac^2x^{\frac{3}{2}} + 4\,Bac\sqrt{x} - \frac{2\left(30\,Aacx^2 + 5\,Ba^2x + 3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*A*c^2*x^(3/2) + 4*B*a*c*sqrt(x) - 2/15*(30*A*a*c*x^
2 + 5*B*a^2*x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-3B\,c^2x^5 - 5A\,c^2x^4 - 30Bac\,x^3 + 30Aac\,x^2 + 5B\,a^2x + 3A\,a^2\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*x^5-5*A*c^2*x^4-30*B*a*c*x^3+30*A*a*c*x^2+5*B*a^2*x+3*A*a^2
)/x^(5/2)
```

maxima [A] time = 0.49, size = 54, normalized size = 0.74

$$\frac{2}{5}\,Bc^2x^{\frac{5}{2}} + \frac{2}{3}\,Ac^2x^{\frac{3}{2}} + 4\,Bac\sqrt{x} - \frac{2\left(30\,Aacx^2 + 5\,Ba^2x + 3\,Aa^2\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*A*c^2*x^(3/2) + 4*B*a*c*sqrt(x) - 2/15*(30*A*a*c*x^
2 + 5*B*a^2*x + 3*A*a^2)/x^(5/2)
```

mupad [B] time = 0.05, size = 54, normalized size = 0.74

$$\frac{2\,A\,c^2\,x^{3/2}}{3} - \frac{\frac{2\,B\,a^2\,x}{3} + \frac{2\,A\,a^2}{5} + 4\,A\,c\,a\,x^2}{x^{5/2}} + \frac{2\,B\,c^2\,x^{5/2}}{5} + 4\,B\,a\,c\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(7/2),x)
```

```
[Out] (2*A*c^2*x^(3/2))/3 - ((2*A*a^2)/5 + (2*B*a^2*x)/3 + 4*A*a*c*x^2)/x^(5/2) +
 (2*B*c^2*x^(5/2))/5 + 4*B*a*c*x^(1/2)
```

sympy [A] time = 2.90, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}} - \frac{4Aac}{\sqrt{x}} + \frac{2Ac^2x^{\frac{3}{2}}}{3} - \frac{2Ba^2}{3x^{\frac{3}{2}}} + 4Bac\sqrt{x} + \frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*c/sqrt(x) + 2*A*c**2*x**(3/2)/3 - 2*B*a**2/(
3*x**(3/2)) + 4*B*a*c*sqrt(x) + 2*B*c**2*x**(5/2)/5
```

3.401 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=73

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}$$

```
[Out] -2/7*a^2*A/x^(7/2)-2/5*a^2*B/x^(5/2)-4/3*a*A*c/x^(3/2)+2/3*B*c^2*x^(3/2)-4*
a*B*c/x^(1/2)+2*A*c^2*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a^2*B)/(5*x^(5/2)) - (4*a*A*c)/(3*x^(3/2)) - (4
*a*B*c)/Sqrt[x] + 2*A*c^2*Sqrt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{x^{9/2}}\,dx&=\int\left(\frac{a^2A}{x^{9/2}}+\frac{a^2B}{x^{7/2}}+\frac{2aAc}{x^{5/2}}+\frac{2aBc}{x^{3/2}}+\frac{Ac^2}{\sqrt{x}}+Bc^2\sqrt{x}\right)dx\\&=-\frac{2a^2A}{7x^{7/2}}-\frac{2a^2B}{5x^{5/2}}-\frac{4aAc}{3x^{3/2}}-\frac{4aBc}{\sqrt{x}}+2Ac^2\sqrt{x}+\frac{2}{3}Bc^2x^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.70

$$\frac{-6a^2(5A+7Bx)-140acx^2(A+3Bx)+70c^2x^4(3A+Bx)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (70*c^2*x^4*(3*A + B*x) - 140*a*c*x^2*(A + 3*B*x) - 6*a^2*(5*A + 7*B*x))/(1
05*x^(7/2))
```

fricas [A] time = 0.74, size = 53, normalized size = 0.73

$$\frac{2\left(35\,Bc^2x^5+105\,Ac^2x^4-210\,Bacx^3-70\,Aacx^2-21\,Ba^2x-15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*x^5 + 105*A*c^2*x^4 - 210*B*a*c*x^3 - 70*A*a*c*x^2 - 21*B*a
^2*x - 15*A*a^2)/x^(7/2)
```

giac [A] time = 0.15, size = 54, normalized size = 0.74

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}} + 2\,Ac^2\sqrt{x} - \frac{2\left(210\,Bacx^3 + 70\,Aacx^2 + 21\,Ba^2x + 15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*A*c^2*sqrt(x) - 2/105*(210*B*a*c*x^3 + 70*A*a*c*x^2 +
 21*B*a^2*x + 15*A*a^2)/x^(7/2)
```

maple [A] time = 0.05, size = 54, normalized size = 0.74

$$-\frac{2\left(-35B\,c^2x^5 - 105A\,c^2x^4 + 210Bac\,x^3 + 70Aac\,x^2 + 21B\,a^2x + 15A\,a^2\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/x^(9/2),x)
```

```
[Out] -2/105*(-35*B*c^2*x^5-105*A*c^2*x^4+210*B*a*c*x^3+70*A*a*c*x^2+21*B*a^2*x+1
5*A*a^2)/x^(7/2)
```

maxima [A] time = 0.48, size = 54, normalized size = 0.74

$$\frac{2}{3}\,Bc^2x^{\frac{3}{2}} + 2\,Ac^2\sqrt{x} - \frac{2\left(210\,Bacx^3 + 70\,Aacx^2 + 21\,Ba^2x + 15\,Aa^2\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*A*c^2*sqrt(x) - 2/105*(210*B*a*c*x^3 + 70*A*a*c*x^2 +
 21*B*a^2*x + 15*A*a^2)/x^(7/2)
```

mupad [B] time = 0.05, size = 53, normalized size = 0.73

$$-\frac{42\,B\,a^2\,x + 30\,A\,a^2 + 420\,B\,a\,c\,x^3 + 140\,A\,a\,c\,x^2 - 70\,B\,c^2\,x^5 - 210\,A\,c^2\,x^4}{105\,x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/x^(9/2),x)
```

```
[Out] -(30*A*a^2 - 210*A*c^2*x^4 - 70*B*c^2*x^5 + 42*B*a^2*x + 140*A*a*c*x^2 + 42
0*B*a*c*x^3)/(105*x^(7/2))
```

sympy [A] time = 4.02, size = 76, normalized size = 1.04

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}} - \frac{4Aac}{3x^{\frac{3}{2}}} + 2Ac^2\sqrt{x} - \frac{2Ba^2}{5x^{\frac{5}{2}}} - \frac{4Bac}{\sqrt{x}} + \frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*c/(3*x**(3/2)) + 2*A*c**2*sqrt(x) - 2*B*a**2
/(5*x**(5/2)) - 4*B*a*c/sqrt(x) + 2*B*c**2*x**(3/2)/3
```

3.402 $\int x^{7/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{13}a^2Acx^{13/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x^{19/2}+\frac{2}{21}Ac^3x^{21/2}+\frac{2}{23}Bc^3x^{23/2}$$

```
[Out] 2/9*a^3*A*x^(9/2)+2/11*a^3*B*x^(11/2)+6/13*a^2*A*c*x^(13/2)+2/5*a^2*B*c*x^(
15/2)+6/17*a*A*c^2*x^(17/2)+6/19*a*B*c^2*x^(19/2)+2/21*A*c^3*x^(21/2)+2/23*
B*c^3*x^(23/2)
```

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{13}a^2Acx^{13/2}+\frac{2}{9}a^3Ax^{9/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x^{19/2}+\frac{2}{21}Ac^3x^{21/2}+\frac{2}{23}Bc^3x^{23/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(9/2))/9 + (2*a^3*B*x^(11/2))/11 + (6*a^2*A*c*x^(13/2))/13 + (2*
a^2*B*c*x^(15/2))/5 + (6*a*A*c^2*x^(17/2))/17 + (6*a*B*c^2*x^(19/2))/19 + (
2*A*c^3*x^(21/2))/21 + (2*B*c^3*x^(23/2))/23
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+cx^2\right)^3\,dx&=\int\left(a^3Ax^{7/2}+a^3Bx^{9/2}+3a^2Acx^{11/2}+3a^2Bcx^{13/2}+3aAc^2x^{15/2}+3aBc^2x^{17/2}+\right.\\&=\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^3Bx^{11/2}+\frac{6}{13}a^2Acx^{13/2}+\frac{2}{5}a^2Bcx^{15/2}+\frac{6}{17}aAc^2x^{17/2}+\frac{6}{19}aBc^2x\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{99}a^3x^{9/2}(11A+9Bx)+\frac{2}{65}a^2cx^{13/2}(15A+13Bx)+\frac{6}{323}ac^2x^{17/2}(19A+17Bx)+\frac{2}{483}c^3x^{21/2}(23A+21Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(9/2)*(11*A + 9*B*x))/99 + (2*a^2*c*x^(13/2)*(15*A + 13*B*x))/65 +
 (6*a*c^2*x^(17/2)*(19*A + 17*B*x))/323 + (2*c^3*x^(21/2)*(23*A + 21*B*x))/
483
```

fricas [A] time = 0.92, size = 82, normalized size = 0.75

$$\frac{2}{334639305}\big(14549535\,Bc^3x^{11}+15935205\,Ac^3x^{10}+52837785\,Bac^2x^9+59053995\,Aac^2x^8+66927861\,Ba^2cx^7+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/334639305*(14549535*B*c^3*x^11 + 15935205*A*c^3*x^10 + 52837785*B*a*c^2*x
^9 + 59053995*A*a*c^2*x^8 + 66927861*B*a^2*c*x^7 + 77224455*A*a^2*c*x^6 + 3
0421755*B*a^3*x^5 + 37182145*A*a^3*x^4)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{21}\,Ac^{3}x^{\frac{21}{2}}+\frac{6}{19}\,Bac^{2}x^{\frac{19}{2}}+\frac{6}{17}\,Aac^{2}x^{\frac{17}{2}}+\frac{2}{5}\,Ba^{2}cx^{\frac{15}{2}}+\frac{6}{13}\,Aa^{2}cx^{\frac{13}{2}}+\frac{2}{11}\,Ba^{3}x^{\frac{11}{2}}+\frac{2}{9}\,Aa^{3}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*a*c^2*x^(19/2) + 6/17*A*
a*c^2*x^(17/2) + 2/5*B*a^2*c*x^(15/2) + 6/13*A*a^2*c*x^(13/2) + 2/11*B*a^3*
x^(11/2) + 2/9*A*a^3*x^(9/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(14549535B\,c^{3}x^{7}+15935205A\,c^{3}x^{6}+52837785Ba\,c^{2}x^{5}+59053995Aa\,c^{2}x^{4}+66927861B\,a^{2}c\,x^{3}+772244\right.}{334639305}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/334639305*x^(9/2)*(14549535*B*c^3*x^7+15935205*A*c^3*x^6+52837785*B*a*c^2
*x^5+59053995*A*a*c^2*x^4+66927861*B*a^2*c*x^3+77224455*A*a^2*c*x^2+3042175
5*B*a^3*x+37182145*A*a^3)
```

maxima [A] time = 0.52, size = 77, normalized size = 0.71

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{21}\,Ac^{3}x^{\frac{21}{2}}+\frac{6}{19}\,Bac^{2}x^{\frac{19}{2}}+\frac{6}{17}\,Aac^{2}x^{\frac{17}{2}}+\frac{2}{5}\,Ba^{2}cx^{\frac{15}{2}}+\frac{6}{13}\,Aa^{2}cx^{\frac{13}{2}}+\frac{2}{11}\,Ba^{3}x^{\frac{11}{2}}+\frac{2}{9}\,Aa^{3}x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*a*c^2*x^(19/2) + 6/17*A*
a*c^2*x^(17/2) + 2/5*B*a^2*c*x^(15/2) + 6/13*A*a^2*c*x^(13/2) + 2/11*B*a^3*
x^(11/2) + 2/9*A*a^3*x^(9/2)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{9/2}}{9}+\frac{2\,B\,a^3\,x^{11/2}}{11}+\frac{2\,A\,c^3\,x^{21/2}}{21}+\frac{2\,B\,c^3\,x^{23/2}}{23}+\frac{6\,A\,a^2\,c\,x^{13/2}}{13}+\frac{6\,A\,a\,c^2\,x^{17/2}}{17}+\frac{2\,B\,a^2\,c\,x^{15/2}}{5}+\frac{6\,B\,a\,c^2\,x^{19/2}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(9/2))/9 + (2*B*a^3*x^(11/2))/11 + (2*A*c^3*x^(21/2))/21 + (2*B*
c^3*x^(23/2))/23 + (6*A*a^2*c*x^(13/2))/13 + (6*A*a*c^2*x^(17/2))/17 + (2*B
*a^2*c*x^(15/2))/5 + (6*B*a*c^2*x^(19/2))/19
```

sympy [A] time = 27.94, size = 114, normalized size = 1.05

$$\frac{2Aa^{3}x^{\frac{9}{2}}}{9}+\frac{6Aa^{2}cx^{\frac{13}{2}}}{13}+\frac{6Aac^{2}x^{\frac{17}{2}}}{17}+\frac{2Ac^{3}x^{\frac{21}{2}}}{21}+\frac{2Ba^{3}x^{\frac{11}{2}}}{11}+\frac{2Ba^{2}cx^{\frac{15}{2}}}{5}+\frac{6Bac^{2}x^{\frac{19}{2}}}{19}+\frac{2Bc^{3}x^{\frac{23}{2}}}{23}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(9/2)/9 + 6*A*a**2*c*x**(13/2)/13 + 6*A*a*c**2*x**(17/2)/17 + 2
*A*c**3*x**(21/2)/21 + 2*B*a**3*x**(11/2)/11 + 2*B*a**2*c*x**(15/2)/5 + 6*B
*a*c**2*x**(19/2)/19 + 2*B*c**3*x**(23/2)/23
```

3.403 $\int x^{5/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{6}{11}a^2Acx^{11/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x^{17/2}+\frac{2}{19}Ac^3x^{19/2}+\frac{2}{21}Bc^3x^{21/2}$$

```
[Out] 2/7*a^3*A*x^(7/2)+2/9*a^3*B*x^(9/2)+6/11*a^2*A*c*x^(11/2)+6/13*a^2*B*c*x^(1
3/2)+2/5*a*A*c^2*x^(15/2)+6/17*a*B*c^2*x^(17/2)+2/19*A*c^3*x^(19/2)+2/21*B*
c^3*x^(21/2)
```

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {766}

$$\frac{6}{11}a^2Acx^{11/2}+\frac{2}{7}a^3Ax^{7/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x^{17/2}+\frac{2}{19}Ac^3x^{19/2}+\frac{2}{21}Bc^3x^{21/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(7/2))/7 + (2*a^3*B*x^(9/2))/9 + (6*a^2*A*c*x^(11/2))/11 + (6*a^
2*B*c*x^(13/2))/13 + (2*a*A*c^2*x^(15/2))/5 + (6*a*B*c^2*x^(17/2))/17 + (2*
A*c^3*x^(19/2))/19 + (2*B*c^3*x^(21/2))/21
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ax^{5/2}+a^3Bx^{7/2}+3a^2Acx^{9/2}+3a^2Bcx^{11/2}+3aAc^2x^{13/2}+3aBc^2x^{15/2}+\right.\\ &= \frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^3Bx^{9/2}+\frac{6}{11}a^2Acx^{11/2}+\frac{6}{13}a^2Bcx^{13/2}+\frac{2}{5}aAc^2x^{15/2}+\frac{6}{17}aBc^2x\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{63}a^3x^{7/2}(9A+7Bx)+\frac{6}{143}a^2cx^{11/2}(13A+11Bx)+\frac{2}{85}ac^2x^{15/2}(17A+15Bx)+\frac{2}{399}c^3x^{19/2}(21A+19Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(7/2)*(9*A + 7*B*x))/63 + (6*a^2*c*x^(11/2)*(13*A + 11*B*x))/143 +
 (2*a*c^2*x^(15/2)*(17*A + 15*B*x))/85 + (2*c^3*x^(19/2)*(21*A + 19*B*x))/3
99
```

fricas [A] time = 0.99, size = 82, normalized size = 0.75

$$\frac{2}{14549535}\left(692835\,Bc^3x^{10}+765765\,Ac^3x^9+2567565\,Bac^2x^8+2909907\,Aac^2x^7+3357585\,Ba^2cx^6+396805\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/14549535*(692835*B*c^3*x^10 + 765765*A*c^3*x^9 + 2567565*B*a*c^2*x^8 + 29
09907*A*a*c^2*x^7 + 3357585*B*a^2*c*x^6 + 3968055*A*a^2*c*x^5 + 1616615*B*a
^3*x^4 + 2078505*A*a^3*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{21}\,Bc^{3}x^{\frac{21}{2}}+\frac{2}{19}\,Ac^{3}x^{\frac{19}{2}}+\frac{6}{17}\,Bac^{2}x^{\frac{17}{2}}+\frac{2}{5}\,Aac^{2}x^{\frac{15}{2}}+\frac{6}{13}\,Ba^{2}cx^{\frac{13}{2}}+\frac{6}{11}\,Aa^{2}cx^{\frac{11}{2}}+\frac{2}{9}\,Ba^{3}x^{\frac{9}{2}}+\frac{2}{7}\,Aa^{3}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*a*c^2*x^(17/2) + 2/5*A*a
*c^2*x^(15/2) + 6/13*B*a^2*c*x^(13/2) + 6/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x
^(9/2) + 2/7*A*a^3*x^(7/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\left(692835B\,c^{3}x^{7}+765765A\,c^{3}x^{6}+2567565Ba\,c^{2}x^{5}+2909907Aa\,c^{2}x^{4}+3357585B\,a^{2}c\,x^{3}+3968055A\,a^{2}c\,x^{2}+\right.}{14549535}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/14549535*x^(7/2)*(692835*B*c^3*x^7+765765*A*c^3*x^6+2567565*B*a*c^2*x^5+2
909907*A*a*c^2*x^4+3357585*B*a^2*c*x^3+3968055*A*a^2*c*x^2+1616615*B*a^3*x+
2078505*A*a^3)
```

maxima [A] time = 0.60, size = 77, normalized size = 0.71

$$\frac{2}{21}\,Bc^{3}x^{\frac{21}{2}}+\frac{2}{19}\,Ac^{3}x^{\frac{19}{2}}+\frac{6}{17}\,Bac^{2}x^{\frac{17}{2}}+\frac{2}{5}\,Aac^{2}x^{\frac{15}{2}}+\frac{6}{13}\,Ba^{2}cx^{\frac{13}{2}}+\frac{6}{11}\,Aa^{2}cx^{\frac{11}{2}}+\frac{2}{9}\,Ba^{3}x^{\frac{9}{2}}+\frac{2}{7}\,Aa^{3}x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*a*c^2*x^(17/2) + 2/5*A*a
*c^2*x^(15/2) + 6/13*B*a^2*c*x^(13/2) + 6/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x
^(9/2) + 2/7*A*a^3*x^(7/2)
```

mupad [B] time = 0.03, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^{3}\,x^{7/2}}{7}+\frac{2\,B\,a^{3}\,x^{9/2}}{9}+\frac{2\,A\,c^{3}\,x^{19/2}}{19}+\frac{2\,B\,c^{3}\,x^{21/2}}{21}+\frac{6\,A\,a^{2}\,c\,x^{11/2}}{11}+\frac{2\,A\,a\,c^{2}\,x^{15/2}}{5}+\frac{6\,B\,a^{2}\,c\,x^{13/2}}{13}+\frac{6\,B\,a\,c^{2}\,x^{17/2}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(7/2))/7 + (2*B*a^3*x^(9/2))/9 + (2*A*c^3*x^(19/2))/19 + (2*B*c^
3*x^(21/2))/21 + (6*A*a^2*c*x^(11/2))/11 + (2*A*a*c^2*x^(15/2))/5 + (6*B*a^
2*c*x^(13/2))/13 + (6*B*a*c^2*x^(17/2))/17
```

sympy [A] time = 16.45, size = 114, normalized size = 1.05

$$\frac{2Aa^{3}x^{\frac{7}{2}}}{7}+\frac{6Aa^{2}cx^{\frac{11}{2}}}{11}+\frac{2Aac^{2}x^{\frac{15}{2}}}{5}+\frac{2Ac^{3}x^{\frac{19}{2}}}{19}+\frac{2Ba^{3}x^{\frac{9}{2}}}{9}+\frac{6Ba^{2}cx^{\frac{13}{2}}}{13}+\frac{6Bac^{2}x^{\frac{17}{2}}}{17}+\frac{2Bc^{3}x^{\frac{21}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(7/2)/7 + 6*A*a**2*c*x**(11/2)/11 + 2*A*a*c**2*x**(15/2)/5 + 2*
A*c**3*x**(19/2)/19 + 2*B*a**3*x**(9/2)/9 + 6*B*a**2*c*x**(13/2)/13 + 6*B*a
*c**2*x**(17/2)/17 + 2*B*c**3*x**(21/2)/21
```

3.404 $\int x^{3/2}(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{2}{3}a^2Acx^{9/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}+\frac{2}{17}Ac^3x^{17/2}+\frac{2}{19}Bc^3x^{19/2}$$

```
[Out] 2/5*a^3*A*x^(5/2)+2/7*a^3*B*x^(7/2)+2/3*a^2*A*c*x^(9/2)+6/11*a^2*B*c*x^(11/
2)+6/13*a*A*c^2*x^(13/2)+2/5*a*B*c^2*x^(15/2)+2/17*A*c^3*x^(17/2)+2/19*B*c^
3*x^(19/2)
```

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{2}{3}a^2Acx^{9/2}+\frac{2}{5}a^3Ax^{5/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}+\frac{2}{17}Ac^3x^{17/2}+\frac{2}{19}Bc^3x^{19/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(5/2))/5 + (2*a^3*B*x^(7/2))/7 + (2*a^2*A*c*x^(9/2))/3 + (6*a^2*
B*c*x^(11/2))/11 + (6*a*A*c^2*x^(13/2))/13 + (2*a*B*c^2*x^(15/2))/5 + (2*A*
c^3*x^(17/2))/17 + (2*B*c^3*x^(19/2))/19
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ax^{3/2}+a^3Bx^{5/2}+3a^2Acx^{7/2}+3a^2Bcx^{9/2}+3aAc^2x^{11/2}+3aBc^2x^{13/2}+Ac\right.\\ &= \frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^3Bx^{7/2}+\frac{2}{3}a^2Acx^{9/2}+\frac{6}{11}a^2Bcx^{11/2}+\frac{6}{13}aAc^2x^{13/2}+\frac{2}{5}aBc^2x^{15/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{35}a^3x^{5/2}(7A+5Bx)+\frac{2}{33}a^2cx^{9/2}(11A+9Bx)+\frac{2}{65}ac^2x^{13/2}(15A+13Bx)+\frac{2}{323}c^3x^{17/2}(19A+17Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(5/2)*(7*A + 5*B*x))/35 + (2*a^2*c*x^(9/2)*(11*A + 9*B*x))/33 + (2
*a*c^2*x^(13/2)*(15*A + 13*B*x))/65 + (2*c^3*x^(17/2)*(19*A + 17*B*x))/323
```

fricas [A] time = 0.88, size = 82, normalized size = 0.75

$$\frac{2}{4849845}\left(255255\,Bc^3x^9+285285\,Ac^3x^8+969969\,Bac^2x^7+1119195\,Aac^2x^6+1322685\,Ba^2cx^5+1616615\,Aa^2c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*c^3*x^9 + 285285*A*c^3*x^8 + 969969*B*a*c^2*x^7 + 11191
95*A*a*c^2*x^6 + 1322685*B*a^2*c*x^5 + 1616615*A*a^2*c*x^4 + 692835*B*a^3*x
^3 + 969969*A*a^3*x^2)*sqrt(x)
```

giac [**A**] time = 0.15, size = 77, normalized size = 0.71

$$\frac{2}{19}Bc^3x^{\frac{19}{2}} + \frac{2}{17}Ac^3x^{\frac{17}{2}} + \frac{2}{5}Bac^2x^{\frac{15}{2}} + \frac{6}{13}Aac^2x^{\frac{13}{2}} + \frac{6}{11}Ba^2cx^{\frac{11}{2}} + \frac{2}{3}Aa^2cx^{\frac{9}{2}} + \frac{2}{7}Ba^3x^{\frac{7}{2}} + \frac{2}{5}Aa^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*a*c^2*x^(15/2) + 6/13*A*a
*c^2*x^(13/2) + 6/11*B*a^2*c*x^(11/2) + 2/3*A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(
7/2) + 2/5*A*a^3*x^(5/2)
```

maple [**A**] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2 (255255B c^3x^7 + 285285A c^3x^6 + 969969Ba c^2x^5 + 1119195Aa c^2x^4 + 1322685B a^2c x^3 + 1616615A a^2c x^2 +}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*c^3*x^7+285285*A*c^3*x^6+969969*B*a*c^2*x^5+111
9195*A*a*c^2*x^4+1322685*B*a^2*c*x^3+1616615*A*a^2*c*x^2+692835*B*a^3*x+969
969*A*a^3)
```

maxima [**A**] time = 0.59, size = 77, normalized size = 0.71

$$\frac{2}{19}Bc^3x^{\frac{19}{2}} + \frac{2}{17}Ac^3x^{\frac{17}{2}} + \frac{2}{5}Bac^2x^{\frac{15}{2}} + \frac{6}{13}Aac^2x^{\frac{13}{2}} + \frac{6}{11}Ba^2cx^{\frac{11}{2}} + \frac{2}{3}Aa^2cx^{\frac{9}{2}} + \frac{2}{7}Ba^3x^{\frac{7}{2}} + \frac{2}{5}Aa^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*a*c^2*x^(15/2) + 6/13*A*a
*c^2*x^(13/2) + 6/11*B*a^2*c*x^(11/2) + 2/3*A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(
7/2) + 2/5*A*a^3*x^(5/2)
```

mupad [**B**] time = 0.03, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{5/2}}{5} + \frac{2\,B\,a^3\,x^{7/2}}{7} + \frac{2\,A\,c^3\,x^{17/2}}{17} + \frac{2\,B\,c^3\,x^{19/2}}{19} + \frac{2\,A\,a^2\,c\,x^{9/2}}{3} + \frac{6\,A\,a\,c^2\,x^{13/2}}{13} + \frac{6\,B\,a^2\,c\,x^{11/2}}{11} + \frac{2\,B\,a\,c^2\,x^{15/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(5/2))/5 + (2*B*a^3*x^(7/2))/7 + (2*A*c^3*x^(17/2))/17 + (2*B*c^
3*x^(19/2))/19 + (2*A*a^2*c*x^(9/2))/3 + (6*A*a*c^2*x^(13/2))/13 + (6*B*a^2
*c*x^(11/2))/11 + (2*B*a*c^2*x^(15/2))/5
```

sympy [**A**] time = 9.82, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{5}{2}}}{5} + \frac{2Aa^2cx^{\frac{9}{2}}}{3} + \frac{6Aac^2x^{\frac{13}{2}}}{13} + \frac{2Ac^3x^{\frac{17}{2}}}{17} + \frac{2Ba^3x^{\frac{7}{2}}}{7} + \frac{6Ba^2cx^{\frac{11}{2}}}{11} + \frac{2Bac^2x^{\frac{15}{2}}}{5} + \frac{2Bc^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] 2*A*a**3*x**(5/2)/5 + 2*A*a**2*c*x**(9/2)/3 + 6*A*a*c**2*x**(13/2)/13 + 2*A
*c**3*x**(17/2)/17 + 2*B*a**3*x**(7/2)/7 + 6*B*a**2*c*x**(11/2)/11 + 2*B*a*
c**2*x**(15/2)/5 + 2*B*c**3*x**(19/2)/19
```

3.405 $\int \sqrt{x}\,(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=109

$$\frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}+\frac{2}{15}Ac^3x^{15/2}+\frac{2}{17}Bc^3x^{17/2}$$

```
[Out] 2/3*a^3*A*x^(3/2)+2/5*a^3*B*x^(5/2)+6/7*a^2*A*c*x^(7/2)+2/3*a^2*B*c*x^(9/2)
+6/11*a*A*c^2*x^(11/2)+6/13*a*B*c^2*x^(13/2)+2/15*A*c^3*x^(15/2)+2/17*B*c^3
*x^(17/2)
```

Rubi [A] time = 0.04, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {766}

$$\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^3Ax^{3/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}+\frac{2}{15}Ac^3x^{15/2}+\frac{2}{17}Bc^3x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(3/2))/3 + (2*a^3*B*x^(5/2))/5 + (6*a^2*A*c*x^(7/2))/7 + (2*a^2*
B*c*x^(9/2))/3 + (6*a*A*c^2*x^(11/2))/11 + (6*a*B*c^2*x^(13/2))/13 + (2*A*c
^3*x^(15/2))/15 + (2*B*c^3*x^(17/2))/17
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \big(a^3A\sqrt{x}+a^3Bx^{3/2}+3a^2Acx^{5/2}+3a^2Bcx^{7/2}+3aAc^2x^{9/2}+3aBc^2x^{11/2}+A\\ &= \frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^3Bx^{5/2}+\frac{6}{7}a^2Acx^{7/2}+\frac{2}{3}a^2Bcx^{9/2}+\frac{6}{11}aAc^2x^{11/2}+\frac{6}{13}aBc^2x^{13/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.76

$$\frac{2}{15}a^3x^{3/2}(5A+3Bx)+\frac{2}{21}a^2cx^{7/2}(9A+7Bx)+\frac{6}{143}ac^2x^{11/2}(13A+11Bx)+\frac{2}{255}c^3x^{15/2}(17A+15Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (2*a^3*x^(3/2)*(5*A + 3*B*x))/15 + (2*a^2*c*x^(7/2)*(9*A + 7*B*x))/21 + (6*
a*c^2*x^(11/2)*(13*A + 11*B*x))/143 + (2*c^3*x^(15/2)*(17*A + 15*B*x))/255
```

fricas [A] time = 0.96, size = 80, normalized size = 0.73

$$\frac{2}{255255}\big(15015\,Bc^3x^8+17017\,Ac^3x^7+58905\,Bac^2x^6+69615\,Aac^2x^5+85085\,Ba^2cx^4+109395\,Aa^2cx^3+51$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/255255*(15015*B*c^3*x^8 + 17017*A*c^3*x^7 + 58905*B*a*c^2*x^6 + 69615*A*a
*c^2*x^5 + 85085*B*a^2*c*x^4 + 109395*A*a^2*c*x^3 + 51051*B*a^3*x^2 + 85085
*A*a^3*x)*sqrt(x)
```

giac [A] time = 0.16, size = 77, normalized size = 0.71

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{15}\,Ac^3x^{\frac{15}{2}}+\frac{6}{13}\,Bac^2x^{\frac{13}{2}}+\frac{6}{11}\,Aac^2x^{\frac{11}{2}}+\frac{2}{3}\,Ba^2cx^{\frac{9}{2}}+\frac{6}{7}\,Aa^2cx^{\frac{7}{2}}+\frac{2}{5}\,Ba^3x^{\frac{5}{2}}+\frac{2}{3}\,Aa^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*a*c^2*x^(13/2) + 6/11*A*
a*c^2*x^(11/2) + 2/3*B*a^2*c*x^(9/2) + 6/7*A*a^2*c*x^(7/2) + 2/5*B*a^3*x^(5
/2) + 2/3*A*a^3*x^(3/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.72

$$\frac{2\Big(15015B\,c^3x^7+17017A\,c^3x^6+58905Ba\,c^2x^5+69615Aa\,c^2x^4+85085B\,a^2c\,x^3+109395A\,a^2c\,x^2+51051B\,a^3x}{255255}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3*x^(1/2),x)
```

```
[Out] 2/255255*x^(3/2)*(15015*B*c^3*x^7+17017*A*c^3*x^6+58905*B*a*c^2*x^5+69615*A
*a*c^2*x^4+85085*B*a^2*c*x^3+109395*A*a^2*c*x^2+51051*B*a^3*x+85085*A*a^3)
```

maxima [A] time = 0.52, size = 77, normalized size = 0.71

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{15}\,Ac^3x^{\frac{15}{2}}+\frac{6}{13}\,Bac^2x^{\frac{13}{2}}+\frac{6}{11}\,Aac^2x^{\frac{11}{2}}+\frac{2}{3}\,Ba^2cx^{\frac{9}{2}}+\frac{6}{7}\,Aa^2cx^{\frac{7}{2}}+\frac{2}{5}\,Ba^3x^{\frac{5}{2}}+\frac{2}{3}\,Aa^3x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*a*c^2*x^(13/2) + 6/11*A*
a*c^2*x^(11/2) + 2/3*B*a^2*c*x^(9/2) + 6/7*A*a^2*c*x^(7/2) + 2/5*B*a^3*x^(5
/2) + 2/3*A*a^3*x^(3/2)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.71

$$\frac{2\,A\,a^3\,x^{3/2}}{3}+\frac{2\,B\,a^3\,x^{5/2}}{5}+\frac{2\,A\,c^3\,x^{15/2}}{15}+\frac{2\,B\,c^3\,x^{17/2}}{17}+\frac{6\,A\,a^2\,c\,x^{7/2}}{7}+\frac{6\,A\,a\,c^2\,x^{11/2}}{11}+\frac{2\,B\,a^2\,c\,x^{9/2}}{3}+\frac{6\,B\,a\,c^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (2*A*a^3*x^(3/2))/3 + (2*B*a^3*x^(5/2))/5 + (2*A*c^3*x^(15/2))/15 + (2*B*c^
3*x^(17/2))/17 + (6*A*a^2*c*x^(7/2))/7 + (6*A*a*c^2*x^(11/2))/11 + (2*B*a^2
*c*x^(9/2))/3 + (6*B*a*c^2*x^(13/2))/13
```

sympy [A] time = 4.41, size = 114, normalized size = 1.05

$$\frac{2Aa^3x^{\frac{3}{2}}}{3}+\frac{6Aa^2cx^{\frac{7}{2}}}{7}+\frac{6Aac^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{15}{2}}}{15}+\frac{2Ba^3x^{\frac{5}{2}}}{5}+\frac{2Ba^2cx^{\frac{9}{2}}}{3}+\frac{6Bac^2x^{\frac{13}{2}}}{13}+\frac{2Bc^3x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3*x**(1/2),x)
```

```
[Out] 2*A*a**3*x**(3/2)/3 + 6*A*a**2*c*x**(7/2)/7 + 6*A*a*c**2*x**(11/2)/11 + 2*A
*c**3*x**(15/2)/15 + 2*B*a**3*x**(5/2)/5 + 2*B*a**2*c*x**(9/2)/3 + 6*B*a*c*
*2*x**(13/2)/13 + 2*B*c**3*x**(17/2)/17
```

3.406 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=107

$$2a^3A\sqrt{x}+\frac{2}{3}a^3Bx^{3/2}+\frac{6}{5}a^2Acx^{5/2}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}Ac^3x^{13/2}+\frac{2}{15}Bc^3x^{15/2}$$

```
[Out] 2/3*a^3*B*x^(3/2)+6/5*a^2*A*c*x^(5/2)+6/7*a^2*B*c*x^(7/2)+2/3*a*A*c^2*x^(9/
2)+6/11*a*B*c^2*x^(11/2)+2/13*A*c^3*x^(13/2)+2/15*B*c^3*x^(15/2)+2*a^3*A*x^
(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{6}{5}a^2Acx^{5/2}+2a^3A\sqrt{x}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}a^3Bx^{3/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}Ac^3x^{13/2}+\frac{2}{15}Bc^3x^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^3*A*Sqrt[x] + (2*a^3*B*x^(3/2))/3 + (6*a^2*A*c*x^(5/2))/5 + (6*a^2*B*c*
x^(7/2))/7 + (2*a*A*c^2*x^(9/2))/3 + (6*a*B*c^2*x^(11/2))/11 + (2*A*c^3*x^(
13/2))/13 + (2*B*c^3*x^(15/2))/15
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{x}}\,dx &= \int \Bigg(\frac{a^3A}{\sqrt{x}}+a^3B\sqrt{x}+3a^2Acx^{3/2}+3a^2Bcx^{5/2}+3aAc^2x^{7/2}+3aBc^2x^{9/2}+Ac^3x^{11/2}\\ &= 2a^3A\sqrt{x}+\frac{2}{3}a^3Bx^{3/2}+\frac{6}{5}a^2Acx^{5/2}+\frac{6}{7}a^2Bcx^{7/2}+\frac{2}{3}aAc^2x^{9/2}+\frac{6}{11}aBc^2x^{11/2}+\frac{2}{13}\end{aligned}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.67

$$\frac{2\sqrt{x}\left(5005a^3(3A+Bx)+1287a^2cx^2(7A+5Bx)+455ac^2x^4(11A+9Bx)+77c^3x^6(15A+13Bx)\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(5005*a^3*(3*A + B*x) + 1287*a^2*c*x^2*(7*A + 5*B*x) + 455*a*c^2
*x^4*(11*A + 9*B*x) + 77*c^3*x^6*(15*A + 13*B*x)))/15015
```

fricas [A] time = 0.94, size = 77, normalized size = 0.72

$$\frac{2}{15015}\big(1001\,Bc^3x^7+1155\,Ac^3x^6+4095\,Bac^2x^5+5005\,Aac^2x^4+6435\,Ba^2cx^3+9009\,Aa^2cx^2+5005\,Ba^3x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1001*B*c^3*x^7 + 1155*A*c^3*x^6 + 4095*B*a*c^2*x^5 + 5005*A*a*c^2*
x^4 + 6435*B*a^2*c*x^3 + 9009*A*a^2*c*x^2 + 5005*B*a^3*x + 15015*A*a^3)*sqr
t(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.72

$$\frac{2}{15} Bc^3x^{\frac{15}{2}} + \frac{2}{13} Ac^3x^{\frac{13}{2}} + \frac{6}{11} Bac^2x^{\frac{11}{2}} + \frac{2}{3} Aac^2x^{\frac{9}{2}} + \frac{6}{7} Ba^2cx^{\frac{7}{2}} + \frac{6}{5} Aa^2cx^{\frac{5}{2}} + \frac{2}{3} Ba^3x^{\frac{3}{2}} + 2 Aa^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*a*c^2*x^(11/2) + 2/3*A*a
*c^2*x^(9/2) + 6/7*B*a^2*c*x^(7/2) + 6/5*A*a^2*c*x^(5/2) + 2/3*B*a^3*x^(3/2
) + 2*A*a^3*sqrt(x)
```

maple [A] time = 0.05, size = 78, normalized size = 0.73

$$\frac{2\left(1001B\,c^3x^7 + 1155A\,c^3x^6 + 4095Ba\,c^2x^5 + 5005Aa\,c^2x^4 + 6435B\,a^2c\,x^3 + 9009A\,a^2c\,x^2 + 5005B\,a^3x + 15015\right.}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(1/2),x)
```

```
[Out] 2/15015*x^(1/2)*(1001*B*c^3*x^7+1155*A*c^3*x^6+4095*B*a*c^2*x^5+5005*A*a*c^
2*x^4+6435*B*a^2*c*x^3+9009*A*a^2*c*x^2+5005*B*a^3*x+15015*A*a^3)
```

maxima [A] time = 0.51, size = 77, normalized size = 0.72

$$\frac{2}{15} Bc^3x^{\frac{15}{2}} + \frac{2}{13} Ac^3x^{\frac{13}{2}} + \frac{6}{11} Bac^2x^{\frac{11}{2}} + \frac{2}{3} Aac^2x^{\frac{9}{2}} + \frac{6}{7} Ba^2cx^{\frac{7}{2}} + \frac{6}{5} Aa^2cx^{\frac{5}{2}} + \frac{2}{3} Ba^3x^{\frac{3}{2}} + 2 Aa^3\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*a*c^2*x^(11/2) + 2/3*A*a
*c^2*x^(9/2) + 6/7*B*a^2*c*x^(7/2) + 6/5*A*a^2*c*x^(5/2) + 2/3*B*a^3*x^(3/2
) + 2*A*a^3*sqrt(x)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.72

$$2\,A\,a^3\,\sqrt{x}+\frac{2\,B\,a^3\,x^{3/2}}{3}+\frac{2\,A\,c^3\,x^{13/2}}{13}+\frac{2\,B\,c^3\,x^{15/2}}{15}+\frac{6\,A\,a^2\,c\,x^{5/2}}{5}+\frac{2\,A\,a\,c^2\,x^{9/2}}{3}+\frac{6\,B\,a^2\,c\,x^{7/2}}{7}+\frac{6\,B\,a\,c^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(1/2),x)
```

```
[Out] 2*A*a^3*x^(1/2) + (2*B*a^3*x^(3/2))/3 + (2*A*c^3*x^(13/2))/13 + (2*B*c^3*x^
(15/2))/15 + (6*A*a^2*c*x^(5/2))/5 + (2*A*a*c^2*x^(9/2))/3 + (6*B*a^2*c*x^(
7/2))/7 + (6*B*a*c^2*x^(11/2))/11
```

sympy [A] time = 3.87, size = 112, normalized size = 1.05

$$2Aa^3\sqrt{x} + \frac{6Aa^2cx^{\frac{5}{2}}}{5} + \frac{2Aac^2x^{\frac{9}{2}}}{3} + \frac{2Ac^3x^{\frac{13}{2}}}{13} + \frac{2Ba^3x^{\frac{3}{2}}}{3} + \frac{6Ba^2cx^{\frac{7}{2}}}{7} + \frac{6Bac^2x^{\frac{11}{2}}}{11} + \frac{2Bc^3x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(1/2),x)
```

```
[Out] 2*A*a**3*sqrt(x) + 6*A*a**2*c*x**(5/2)/5 + 2*A*a*c**2*x**(9/2)/3 + 2*A*c**3
*x**(13/2)/13 + 2*B*a**3*x**(3/2)/3 + 6*B*a**2*c*x**(7/2)/7 + 6*B*a*c**2*x*
*(11/2)/11 + 2*B*c**3*x**(15/2)/15
```

3.407 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{\sqrt{x}}+2a^3B\sqrt{x}+2a^2Acx^{3/2}+\frac{6}{5}a^2Bcx^{5/2}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3x^{11/2}+\frac{2}{13}Bc^3x^{13/2}$$

```
[Out] 2*a^2*A*c*x^(3/2)+6/5*a^2*B*c*x^(5/2)+6/7*a*A*c^2*x^(7/2)+2/3*a*B*c^2*x^(9/
2)+2/11*A*c^3*x^(11/2)+2/13*B*c^3*x^(13/2)-2*a^3*A/x^(1/2)+2*a^3*B*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$2a^2Acx^{3/2}-\frac{2a^3A}{\sqrt{x}}+\frac{6}{5}a^2Bcx^{5/2}+2a^3B\sqrt{x}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3x^{11/2}+\frac{2}{13}Bc^3x^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^3*A)/Sqrt[x] + 2*a^3*B*Sqrt[x] + 2*a^2*A*c*x^(3/2) + (6*a^2*B*c*x^(5/
2))/5 + (6*a*A*c^2*x^(7/2))/7 + (2*a*B*c^2*x^(9/2))/3 + (2*A*c^3*x^(11/2))/
11 + (2*B*c^3*x^(13/2))/13
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{3/2}}\,dx &= \int \left(\frac{a^3A}{x^{3/2}}+\frac{a^3B}{\sqrt{x}}+3a^2Ac\sqrt{x}+3a^2Bcx^{3/2}+3aAc^2x^{5/2}+3aBc^2x^{7/2}+Ac^3x^{9/2}+Bc^3x\right.\\ &= -\frac{2a^3A}{\sqrt{x}}+2a^3B\sqrt{x}+2a^2Acx^{3/2}+\frac{6}{5}a^2Bcx^{5/2}+\frac{6}{7}aAc^2x^{7/2}+\frac{2}{3}aBc^2x^{9/2}+\frac{2}{11}Ac^3x^{11/}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.78

$$\frac{2a^3(Bx-A)}{\sqrt{x}}+\frac{2}{5}a^2cx^{3/2}(5A+3Bx)+\frac{2}{21}ac^2x^{7/2}(9A+7Bx)+\frac{2}{143}c^3x^{11/2}(13A+11Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*a^3*(-A + B*x))/Sqrt[x] + (2*a^2*c*x^(3/2)*(5*A + 3*B*x))/5 + (2*a*c^2*x
^(7/2)*(9*A + 7*B*x))/21 + (2*c^3*x^(11/2)*(13*A + 11*B*x))/143
```

fricas [A] time = 0.63, size = 77, normalized size = 0.75

$$\frac{2\left(1155\,Bc^3x^7+1365\,Ac^3x^6+5005\,Bac^2x^5+6435\,Aac^2x^4+9009\,Ba^2cx^3+15015\,Aa^2cx^2+15015\,Ba^3x-15015\right.}{15015\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^7 + 1365*A*c^3*x^6 + 5005*B*a*c^2*x^5 + 6435*A*a*c^2*
x^4 + 9009*B*a^2*c*x^3 + 15015*A*a^2*c*x^2 + 15015*B*a^3*x - 15015*A*a^3)/s
qrt(x)
```

giac [A] time = 0.15, size = 77, normalized size = 0.75

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{2}{11}\,Ac^3x^{\frac{11}{2}}+\frac{2}{3}\,Bac^2x^{\frac{9}{2}}+\frac{6}{7}\,Aac^2x^{\frac{7}{2}}+\frac{6}{5}\,Ba^2cx^{\frac{5}{2}}+2\,Aa^2cx^{\frac{3}{2}}+2\,Ba^3\sqrt{x}-\frac{2\,Aa^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*a*c^2*x^(9/2) + 6/7*A*a*c
^2*x^(7/2) + 6/5*B*a^2*c*x^(5/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3*sqrt(x) - 2*
A*a^3/sqrt(x)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-1155B\,c^3x^7-1365A\,c^3x^6-5005Ba\,c^2x^5-6435Aa\,c^2x^4-9009B\,a^2c\,x^3-15015A\,a^2c\,x^2-15015B\,a^3x+\right.}{15015\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(3/2),x)
```

```
[Out] -2/15015*(-1155*B*c^3*x^7-1365*A*c^3*x^6-5005*B*a*c^2*x^5-6435*A*a*c^2*x^4-
9009*B*a^2*c*x^3-15015*A*a^2*c*x^2-15015*B*a^3*x+15015*A*a^3)/x^(1/2)
```

maxima [A] time = 0.51, size = 77, normalized size = 0.75

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}}+\frac{2}{11}\,Ac^3x^{\frac{11}{2}}+\frac{2}{3}\,Bac^2x^{\frac{9}{2}}+\frac{6}{7}\,Aac^2x^{\frac{7}{2}}+\frac{6}{5}\,Ba^2cx^{\frac{5}{2}}+2\,Aa^2cx^{\frac{3}{2}}+2\,Ba^3\sqrt{x}-\frac{2\,Aa^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*a*c^2*x^(9/2) + 6/7*A*a*c
^2*x^(7/2) + 6/5*B*a^2*c*x^(5/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3*sqrt(x) - 2*
A*a^3/sqrt(x)
```

mupad [B] time = 0.04, size = 77, normalized size = 0.75

$$2\,B\,a^3\,\sqrt{x}-\frac{2\,A\,a^3}{\sqrt{x}}+\frac{2\,A\,c^3\,x^{11/2}}{11}+\frac{2\,B\,c^3\,x^{13/2}}{13}+2\,A\,a^2\,c\,x^{3/2}+\frac{6\,A\,a\,c^2\,x^{7/2}}{7}+\frac{6\,B\,a^2\,c\,x^{5/2}}{5}+\frac{2\,B\,a\,c^2\,x^{9/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(3/2),x)
```

```
[Out] 2*B*a^3*x^(1/2) - (2*A*a^3)/x^(1/2) + (2*A*c^3*x^(11/2))/11 + (2*B*c^3*x^(1
3/2))/13 + 2*A*a^2*c*x^(3/2) + (6*A*a*c^2*x^(7/2))/7 + (6*B*a^2*c*x^(5/2))/
5 + (2*B*a*c^2*x^(9/2))/3
```

sympy [A] time = 4.26, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{\sqrt{x}}+2Aa^2cx^{\frac{3}{2}}+\frac{6Aac^2x^{\frac{7}{2}}}{7}+\frac{2Ac^3x^{\frac{11}{2}}}{11}+2Ba^3\sqrt{x}+\frac{6Ba^2cx^{\frac{5}{2}}}{5}+\frac{2Bac^2x^{\frac{9}{2}}}{3}+\frac{2Bc^3x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(3/2),x)
```

```
[Out] -2*A*a**3/sqrt(x) + 2*A*a**2*c*x**(3/2) + 6*A*a*c**2*x**(7/2)/7 + 2*A*c**3*
x**(11/2)/11 + 2*B*a**3*sqrt(x) + 6*B*a**2*c*x**(5/2)/5 + 2*B*a*c**2*x**(9/
2)/3 + 2*B*c**3*x**(13/2)/13
```

3.408 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{3x^{3/2}}-\frac{2a^3B}{\sqrt{x}}+6a^2Ac\sqrt{x}+2a^2Bcx^{3/2}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\frac{2}{11}Bc^3x^{11/2}$$

```
[Out] -2/3*a^3*A/x^(3/2)+2*a^2*B*c*x^(3/2)+6/5*a*A*c^2*x^(5/2)+6/7*a*B*c^2*x^(7/2
)+2/9*A*c^3*x^(9/2)+2/11*B*c^3*x^(11/2)-2*a^3*B/x^(1/2)+6*a^2*A*c*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$6a^2Ac\sqrt{x}-\frac{2a^3A}{3x^{3/2}}+2a^2Bcx^{3/2}-\frac{2a^3B}{\sqrt{x}}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\frac{2}{11}Bc^3x^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^3*A)/(3*x^(3/2)) - (2*a^3*B)/Sqrt[x] + 6*a^2*A*c*Sqrt[x] + 2*a^2*B*c*
x^(3/2) + (6*a*A*c^2*x^(5/2))/5 + (6*a*B*c^2*x^(7/2))/7 + (2*A*c^3*x^(9/2))
/9 + (2*B*c^3*x^(11/2))/11
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{5/2}}\,dx &= \int \left(\frac{a^3A}{x^{5/2}}+\frac{a^3B}{x^{3/2}}+\frac{3a^2Ac}{\sqrt{x}}+3a^2Bc\sqrt{x}+3aAc^2x^{3/2}+3aBc^2x^{5/2}+Ac^3x^{7/2}+Bc^3x\\ &= -\frac{2a^3A}{3x^{3/2}}-\frac{2a^3B}{\sqrt{x}}+6a^2Ac\sqrt{x}+2a^2Bcx^{3/2}+\frac{6}{5}aAc^2x^{5/2}+\frac{6}{7}aBc^2x^{7/2}+\frac{2}{9}Ac^3x^{9/2}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 78, normalized size = 0.76

$$-\frac{2a^3(A+3Bx)}{3x^{3/2}}+2a^2c\sqrt{x}\,(3A+Bx)+\frac{6}{35}ac^2x^{5/2}(7A+5Bx)+\frac{2}{99}c^3x^{9/2}(11A+9Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(5/2),x]
```

```
[Out] 2*a^2*c*Sqrt[x]*(3*A + B*x) - (2*a^3*(A + 3*B*x))/(3*x^(3/2)) + (6*a*c^2*x^
(5/2)*(7*A + 5*B*x))/35 + (2*c^3*x^(9/2)*(11*A + 9*B*x))/99
```

fricas [A] time = 0.92, size = 77, normalized size = 0.75

$$\frac{2\big(315\,Bc^3x^7+385\,Ac^3x^6+1485\,Bac^2x^5+2079\,Aac^2x^4+3465\,Ba^2cx^3+10395\,Aa^2cx^2-3465\,Ba^3x-1155}{3465\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^7 + 385*A*c^3*x^6 + 1485*B*a*c^2*x^5 + 2079*A*a*c^2*x^4
 + 3465*B*a^2*c*x^3 + 10395*A*a^2*c*x^2 - 3465*B*a^3*x - 1155*A*a^3)/x^(3/2
)
```

giac [A] time = 0.20, size = 77, normalized size = 0.75

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{9}\,Ac^3x^{\frac{9}{2}}+\frac{6}{7}\,Bac^2x^{\frac{7}{2}}+\frac{6}{5}\,Aac^2x^{\frac{5}{2}}+2\,Ba^2cx^{\frac{3}{2}}+6\,Aa^2c\sqrt{x}-\frac{2\left(3\,Ba^3x+Aa^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*a*c^2*x^(7/2) + 6/5*A*a*c^2
*x^(5/2) + 2*B*a^2*c*x^(3/2) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + A*a^3)/
x^(3/2)
```

maple [A] time = 0.07, size = 78, normalized size = 0.76

$$-\frac{2\bigl(-315B\,c^3x^7-385A\,c^3x^6-1485Ba\,c^2x^5-2079Aa\,c^2x^4-3465B\,a^2c\,x^3-10395A\,a^2c\,x^2+3465B\,a^3x+1155}{3465x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(5/2),x)
```

```
[Out] -2/3465*(-315*B*c^3*x^7-385*A*c^3*x^6-1485*B*a*c^2*x^5-2079*A*a*c^2*x^4-346
5*B*a^2*c*x^3-10395*A*a^2*c*x^2+3465*B*a^3*x+1155*A*a^3)/x^(3/2)
```

maxima [A] time = 0.54, size = 77, normalized size = 0.75

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{9}\,Ac^3x^{\frac{9}{2}}+\frac{6}{7}\,Bac^2x^{\frac{7}{2}}+\frac{6}{5}\,Aac^2x^{\frac{5}{2}}+2\,Ba^2cx^{\frac{3}{2}}+6\,Aa^2c\sqrt{x}-\frac{2\left(3\,Ba^3x+Aa^3\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*a*c^2*x^(7/2) + 6/5*A*a*c^2
*x^(5/2) + 2*B*a^2*c*x^(3/2) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + A*a^3)/
x^(3/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{9/2}}{9}-\frac{\frac{2\,A\,a^3}{3}+2\,B\,a^3\,x}{x^{3/2}}+\frac{2\,B\,c^3\,x^{11/2}}{11}+6\,A\,a^2\,c\,\sqrt{x}+\frac{6\,A\,a\,c^2\,x^{5/2}}{5}+2\,B\,a^2\,c\,x^{3/2}+\frac{6\,B\,a\,c^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(5/2),x)
```

```
[Out] (2*A*c^3*x^(9/2))/9 - ((2*A*a^3)/3 + 2*B*a^3*x)/x^(3/2) + (2*B*c^3*x^(11/2)
)/11 + 6*A*a^2*c*x^(1/2) + (6*A*a*c^2*x^(5/2))/5 + 2*B*a^2*c*x^(3/2) + (6*B
*a*c^2*x^(7/2))/7
```

sympy [A] time = 4.83, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{3x^{\frac{3}{2}}}+6Aa^2c\sqrt{x}+\frac{6Aac^2x^{\frac{5}{2}}}{5}+\frac{2Ac^3x^{\frac{9}{2}}}{9}-\frac{2Ba^3}{\sqrt{x}}+2Ba^2cx^{\frac{3}{2}}+\frac{6Bac^2x^{\frac{7}{2}}}{7}+\frac{2Bc^3x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(5/2),x)
```

```
[Out] -2*A*a**3/(3*x**(3/2)) + 6*A*a**2*c*sqrt(x) + 6*A*a*c**2*x**(5/2)/5 + 2*A*c
**3*x**(9/2)/9 - 2*B*a**3/sqrt(x) + 2*B*a**2*c*x**(3/2) + 6*B*a*c**2*x**(7/
2)/7 + 2*B*c**3*x**(11/2)/11
```

3.409 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{5x^{5/2}}-\frac{2a^3B}{3x^{3/2}}-\frac{6a^2Ac}{\sqrt{x}}+6a^2Bc\sqrt{x}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}Bc^3x^{9/2}$$

```
[Out] -2/5*a^3*A/x^(5/2)-2/3*a^3*B/x^(3/2)+2*a*A*c^2*x^(3/2)+6/5*a*B*c^2*x^(5/2)+
2/7*A*c^3*x^(7/2)+2/9*B*c^3*x^(9/2)-6*a^2*A*c/x^(1/2)+6*a^2*B*c*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{6a^2Ac}{\sqrt{x}}-\frac{2a^3A}{5x^{5/2}}+6a^2Bc\sqrt{x}-\frac{2a^3B}{3x^{3/2}}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}Bc^3x^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^3*A)/(5*x^(5/2)) - (2*a^3*B)/(3*x^(3/2)) - (6*a^2*A*c)/Sqrt[x] + 6*a^
2*B*c*Sqrt[x] + 2*a*A*c^2*x^(3/2) + (6*a*B*c^2*x^(5/2))/5 + (2*A*c^3*x^(7/2
))/7 + (2*B*c^3*x^(9/2))/9
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{a^3A}{x^{7/2}}+\frac{a^3B}{x^{5/2}}+\frac{3a^2Ac}{x^{3/2}}+\frac{3a^2Bc}{\sqrt{x}}+3aAc^2\sqrt{x}+3aBc^2x^{3/2}+Ac^3x^{5/2}+Bc^3x^{7/2}\right) d\\ &= -\frac{2a^3A}{5x^{5/2}}-\frac{2a^3B}{3x^{3/2}}-\frac{6a^2Ac}{\sqrt{x}}+6a^2Bc\sqrt{x}+2aAc^2x^{3/2}+\frac{6}{5}aBc^2x^{5/2}+\frac{2}{7}Ac^3x^{7/2}+\frac{2}{9}Bc^3\end{aligned}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.70

$$\frac{2\left(-21a^3(3A+5Bx)+945a^2cx^2(Bx-A)+63ac^2x^4(5A+3Bx)+5c^3x^6(9A+7Bx)\right)}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(945*a^2*c*x^2*(-A + B*x) + 63*a*c^2*x^4*(5*A + 3*B*x) - 21*a^3*(3*A + 5
*B*x) + 5*c^3*x^6*(9*A + 7*B*x)))/(315*x^(5/2))
```

fricas [A] time = 0.93, size = 77, normalized size = 0.75

$$\frac{2\left(35\,Bc^3x^7+45\,Ac^3x^6+189\,Bac^2x^5+315\,Aac^2x^4+945\,Ba^2cx^3-945\,Aa^2cx^2-105\,Ba^3x-63\,Aa^3\right)}{315\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^7 + 45*A*c^3*x^6 + 189*B*a*c^2*x^5 + 315*A*a*c^2*x^4 + 94
5*B*a^2*c*x^3 - 945*A*a^2*c*x^2 - 105*B*a^3*x - 63*A*a^3)/x^(5/2)
```

giac [A] time = 0.16, size = 78, normalized size = 0.76

$$\frac{2}{9}Bc^3x^{\frac{9}{2}} + \frac{2}{7}Ac^3x^{\frac{7}{2}} + \frac{6}{5}Bac^2x^{\frac{5}{2}} + 2\,Aac^2x^{\frac{3}{2}} + 6\,Ba^2c\sqrt{x} - \frac{2\left(45\,Aa^2cx^2 + 5\,Ba^3x + 3\,Aa^3\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*a*c^2*x^(5/2) + 2*A*a*c^2*x^(
3/2) + 6*B*a^2*c*sqrt(x) - 2/15*(45*A*a^2*c*x^2 + 5*B*a^3*x + 3*A*a^3)/x^(5
/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-35B\,c^3x^7 - 45A\,c^3x^6 - 189Ba\,c^2x^5 - 315Aa\,c^2x^4 - 945B\,a^2c\,x^3 + 945A\,a^2c\,x^2 + 105B\,a^3x + 63A\,a^3\right)}{315x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*c^3*x^7-45*A*c^3*x^6-189*B*a*c^2*x^5-315*A*a*c^2*x^4-945*B*a^
2*c*x^3+945*A*a^2*c*x^2+105*B*a^3*x+63*A*a^3)/x^(5/2)
```

maxima [A] time = 0.53, size = 78, normalized size = 0.76

$$\frac{2}{9}Bc^3x^{\frac{9}{2}} + \frac{2}{7}Ac^3x^{\frac{7}{2}} + \frac{6}{5}Bac^2x^{\frac{5}{2}} + 2\,Aac^2x^{\frac{3}{2}} + 6\,Ba^2c\sqrt{x} - \frac{2\left(45\,Aa^2cx^2 + 5\,Ba^3x + 3\,Aa^3\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*a*c^2*x^(5/2) + 2*A*a*c^2*x^(
3/2) + 6*B*a^2*c*sqrt(x) - 2/15*(45*A*a^2*c*x^2 + 5*B*a^3*x + 3*A*a^3)/x^(5
/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{7/2}}{7} - \frac{\frac{2\,B\,a^3\,x}{3} + \frac{2\,A\,a^3}{5} + 6\,A\,c\,a^2\,x^2}{x^{5/2}} + \frac{2\,B\,c^3\,x^{9/2}}{9} + 2\,A\,a\,c^2\,x^{3/2} + 6\,B\,a^2\,c\,\sqrt{x} + \frac{6\,B\,a\,c^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(7/2),x)
```

```
[Out] (2*A*c^3*x^(7/2))/7 - ((2*A*a^3)/5 + (2*B*a^3*x)/3 + 6*A*a^2*c*x^2)/x^(5/2)
 + (2*B*c^3*x^(9/2))/9 + 2*A*a*c^2*x^(3/2) + 6*B*a^2*c*x^(1/2) + (6*B*a*c^2
*x^(5/2))/5
```

sympy [A] time = 6.49, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{5x^{\frac{5}{2}}} - \frac{6Aa^2c}{\sqrt{x}} + 2Aac^2x^{\frac{3}{2}} + \frac{2Ac^3x^{\frac{7}{2}}}{7} - \frac{2Ba^3}{3x^{\frac{3}{2}}} + 6Ba^2c\sqrt{x} + \frac{6Bac^2x^{\frac{5}{2}}}{5} + \frac{2Bc^3x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(7/2),x)
```

```
[Out] -2*A*a**3/(5*x**(5/2)) - 6*A*a**2*c/sqrt(x) + 2*A*a*c**2*x**(3/2) + 2*A*c**
3*x**(7/2)/7 - 2*B*a**3/(3*x**(3/2)) + 6*B*a**2*c*sqrt(x) + 6*B*a*c**2*x**(
5/2)/5 + 2*B*c**3*x**(9/2)/9
```

3.410 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{9/2}} \, dx$

Optimal. Leaf size=101

$$-\frac{2a^3A}{7x^{7/2}}-\frac{2a^3B}{5x^{5/2}}-\frac{2a^2Ac}{x^{3/2}}-\frac{6a^2Bc}{\sqrt{x}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x^{7/2}$$

```
[Out] -2/7*a^3*A/x^(7/2)-2/5*a^3*B/x^(5/2)-2*a^2*A*c/x^(3/2)+2*a*B*c^2*x^(3/2)+2/
5*A*c^3*x^(5/2)+2/7*B*c^3*x^(7/2)-6*a^2*B*c/x^(1/2)+6*a*A*c^2*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{2a^2Ac}{x^{3/2}}-\frac{2a^3A}{7x^{7/2}}-\frac{6a^2Bc}{\sqrt{x}}-\frac{2a^3B}{5x^{5/2}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^3*A)/(7*x^(7/2)) - (2*a^3*B)/(5*x^(5/2)) - (2*a^2*A*c)/x^(3/2) - (6*a
^2*B*c)/Sqrt[x] + 6*a*A*c^2*Sqrt[x] + 2*a*B*c^2*x^(3/2) + (2*A*c^3*x^(5/2))
/5 + (2*B*c^3*x^(7/2))/7
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{9/2}} \, dx &= \int \left(\frac{a^3A}{x^{9/2}}+\frac{a^3B}{x^{7/2}}+\frac{3a^2Ac}{x^{5/2}}+\frac{3a^2Bc}{x^{3/2}}+\frac{3aAc^2}{\sqrt{x}}+3aBc^2\sqrt{x}+Ac^3x^{3/2}+Bc^3x^{5/2}\right) d\\ &= -\frac{2a^3A}{7x^{7/2}}-\frac{2a^3B}{5x^{5/2}}-\frac{2a^2Ac}{x^{3/2}}-\frac{6a^2Bc}{\sqrt{x}}+6aAc^2\sqrt{x}+2aBc^2x^{3/2}+\frac{2}{5}Ac^3x^{5/2}+\frac{2}{7}Bc^3x\end{aligned}$$

Mathematica [A] time = 0.03, size = 70, normalized size = 0.69

$$\frac{-2a^3(5A+7Bx)-70a^2cx^2(A+3Bx)+70ac^2x^4(3A+Bx)+2c^3x^6(7A+5Bx)}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (70*a*c^2*x^4*(3*A + B*x) - 70*a^2*c*x^2*(A + 3*B*x) + 2*c^3*x^6*(7*A + 5*B
*x) - 2*a^3*(5*A + 7*B*x))/(35*x^(7/2))
```

fricas [A] time = 1.06, size = 77, normalized size = 0.76

$$\frac{2\left(5\,Bc^3x^7+7\,Ac^3x^6+35\,Bac^2x^5+105\,Aac^2x^4-105\,Ba^2cx^3-35\,Aa^2cx^2-7\,Ba^3x-5\,Aa^3\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^7 + 7*A*c^3*x^6 + 35*B*a*c^2*x^5 + 105*A*a*c^2*x^4 - 105*B*
a^2*c*x^3 - 35*A*a^2*c*x^2 - 7*B*a^3*x - 5*A*a^3)/x^(7/2)
```

giac [A] time = 0.19, size = 78, normalized size = 0.77

$$\frac{2}{7} B c^{3} x^{\frac{7}{2}} + \frac{2}{5} A c^{3} x^{\frac{5}{2}} + 2 B a c^{2} x^{\frac{3}{2}} + 6 A a c^{2} \sqrt{x} - \frac{2 \left(105 B a^{2} c x^{3} + 35 A a^{2} c x^{2} + 7 B a^{3} x + 5 A a^{3}\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*A*c^3*x^(5/2) + 2*B*a*c^2*x^(3/2) + 6*A*a*c^2*sqrt(
x) - 2/35*(105*B*a^2*c*x^3 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 5*A*a^3)/x^(7/2)
```

maple [A] time = 0.05, size = 78, normalized size = 0.77

$$-\frac{2 \left(-5 B c^{3} x^{7} - 7 A c^{3} x^{6} - 35 B a c^{2} x^{5} - 105 A a c^{2} x^{4} + 105 B a^{2} c x^{3} + 35 A a^{2} c x^{2} + 7 B a^{3} x + 5 A a^{3}\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*c^3*x^7-7*A*c^3*x^6-35*B*a*c^2*x^5-105*A*a*c^2*x^4+105*B*a^2*c*
x^3+35*A*a^2*c*x^2+7*B*a^3*x+5*A*a^3)/x^(7/2)
```

maxima [A] time = 0.52, size = 78, normalized size = 0.77

$$\frac{2}{7} B c^{3} x^{\frac{7}{2}} + \frac{2}{5} A c^{3} x^{\frac{5}{2}} + 2 B a c^{2} x^{\frac{3}{2}} + 6 A a c^{2} \sqrt{x} - \frac{2 \left(105 B a^{2} c x^{3} + 35 A a^{2} c x^{2} + 7 B a^{3} x + 5 A a^{3}\right)}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*A*c^3*x^(5/2) + 2*B*a*c^2*x^(3/2) + 6*A*a*c^2*sqrt(
x) - 2/35*(105*B*a^2*c*x^3 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 5*A*a^3)/x^(7/2)
```

mupad [B] time = 0.03, size = 78, normalized size = 0.77

$$\frac{2 A c^3 x^{5/2}}{5} - \frac{\frac{2 B a^3 x}{5} + \frac{2 A a^3}{7} + 6 B c a^2 x^3 + 2 A c a^2 x^2}{x^{7/2}} + \frac{2 B c^3 x^{7/2}}{7} + 6 A a c^2 \sqrt{x} + 2 B a c^2 x^{3/2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(9/2),x)
```

```
[Out] (2*A*c^3*x^(5/2))/5 - ((2*A*a^3)/7 + (2*B*a^3*x)/5 + 2*A*a^2*c*x^2 + 6*B*a^
2*c*x^3)/x^(7/2) + (2*B*c^3*x^(7/2))/7 + 6*A*a*c^2*x^(1/2) + 2*B*a*c^2*x^(3
/2)
```

sympy [A] time = 8.61, size = 107, normalized size = 1.06

$$-\frac{2 A a^{3}}{7 x^{\frac{7}{2}}} - \frac{2 A a^{2} c}{x^{\frac{3}{2}}} + 6 A a c^{2} \sqrt{x} + \frac{2 A c^{3} x^{\frac{5}{2}}}{5} - \frac{2 B a^{3}}{5 x^{\frac{5}{2}}} - \frac{6 B a^{2} c}{\sqrt{x}} + 2 B a c^{2} x^{\frac{3}{2}} + \frac{2 B c^{3} x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(9/2),x)
```

```
[Out] -2*A*a**3/(7*x**(7/2)) - 2*A*a**2*c/x**(3/2) + 6*A*a*c**2*sqrt(x) + 2*A*c**
3*x**(5/2)/5 - 2*B*a**3/(5*x**(5/2)) - 6*B*a**2*c/sqrt(x) + 2*B*a*c**2*x**(
3/2) + 2*B*c**3*x**(7/2)/7
```

3.411 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=103

$$-\frac{2a^3A}{9x^{9/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}$$

```
[Out] -2/9*a^3*A/x^(9/2)-2/7*a^3*B/x^(7/2)-6/5*a^2*A*c/x^(5/2)-2*a^2*B*c/x^(3/2)+
2/3*A*c^3*x^(3/2)+2/5*B*c^3*x^(5/2)-6*a*A*c^2/x^(1/2)+6*a*B*c^2*x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^3A}{9x^{9/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^3*A)/(9*x^(9/2)) - (2*a^3*B)/(7*x^(7/2)) - (6*a^2*A*c)/(5*x^(5/2)) -
(2*a^2*B*c)/x^(3/2) - (6*a*A*c^2)/Sqrt[x] + 6*a*B*c^2*Sqrt[x] + (2*A*c^3*x^
(3/2))/3 + (2*B*c^3*x^(5/2))/5
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{x^{11/2}}\,dx&=\int \left(\frac{a^3A}{x^{11/2}}+\frac{a^3B}{x^{9/2}}+\frac{3a^2Ac}{x^{7/2}}+\frac{3a^2Bc}{x^{5/2}}+\frac{3aAc^2}{x^{3/2}}+\frac{3aBc^2}{\sqrt{x}}+Ac^3\sqrt{x}+Bc^3x^{3/2}\right)dx\\&=-\frac{2a^3A}{9x^{9/2}}-\frac{2a^3B}{7x^{7/2}}-\frac{6a^2Ac}{5x^{5/2}}-\frac{2a^2Bc}{x^{3/2}}-\frac{6aAc^2}{\sqrt{x}}+6aBc^2\sqrt{x}+\frac{2}{3}Ac^3x^{3/2}+\frac{2}{5}Bc^3x^{5/2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 0.69

$$-\frac{2\left(5a^3(7A+9Bx)+63a^2cx^2(3A+5Bx)+945ac^2x^4(A-Bx)-21c^3x^6(5A+3Bx)\right)}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(945*a*c^2*x^4*(A - B*x) - 21*c^3*x^6*(5*A + 3*B*x) + 63*a^2*c*x^2*(3*A
 + 5*B*x) + 5*a^3*(7*A + 9*B*x)))/(315*x^(9/2))
```

fricas [A] time = 0.83, size = 77, normalized size = 0.75

$$\frac{2\left(63\,Bc^3x^7+105\,Ac^3x^6+945\,Bac^2x^5-945\,Aac^2x^4-315\,Ba^2cx^3-189\,Aa^2cx^2-45\,Ba^3x-35\,Aa^3\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*x^7 + 105*A*c^3*x^6 + 945*B*a*c^2*x^5 - 945*A*a*c^2*x^4 - 3
15*B*a^2*c*x^3 - 189*A*a^2*c*x^2 - 45*B*a^3*x - 35*A*a^3)/x^(9/2)
```

giac [A] time = 0.19, size = 78, normalized size = 0.76

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}}+\frac{2}{3}\,Ac^3x^{\frac{3}{2}}+6\,Bac^2\sqrt{x}-\frac{2\left(945\,Aac^2x^4+315\,Ba^2cx^3+189\,Aa^2cx^2+45\,Ba^3x+35\,Aa^3\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*A*c^3*x^(3/2) + 6*B*a*c^2*sqrt(x) - 2/315*(945*A*a*
c^2*x^4 + 315*B*a^2*c*x^3 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 35*A*a^3)/x^(9/2
)
```

maple [A] time = 0.05, size = 78, normalized size = 0.76

$$-\frac{2\left(-63B\,c^3x^7-105A\,c^3x^6-945Ba\,c^2x^5+945Aa\,c^2x^4+315B\,a^2c\,x^3+189A\,a^2c\,x^2+45B\,a^3x+35A\,a^3\right)}{315x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*c^3*x^7-105*A*c^3*x^6-945*B*a*c^2*x^5+945*A*a*c^2*x^4+315*B*a
^2*c*x^3+189*A*a^2*c*x^2+45*B*a^3*x+35*A*a^3)/x^(9/2)
```

maxima [A] time = 0.52, size = 78, normalized size = 0.76

$$\frac{2}{5}\,Bc^3x^{\frac{5}{2}}+\frac{2}{3}\,Ac^3x^{\frac{3}{2}}+6\,Bac^2\sqrt{x}-\frac{2\left(945\,Aac^2x^4+315\,Ba^2cx^3+189\,Aa^2cx^2+45\,Ba^3x+35\,Aa^3\right)}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*A*c^3*x^(3/2) + 6*B*a*c^2*sqrt(x) - 2/315*(945*A*a*
c^2*x^4 + 315*B*a^2*c*x^3 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 35*A*a^3)/x^(9/2
)
```

mupad [B] time = 0.06, size = 78, normalized size = 0.76

$$\frac{2\,A\,c^3\,x^{3/2}}{3}-\frac{\frac{2\,B\,a^3\,x}{7}+\frac{2\,A\,a^3}{9}+2\,B\,a^2\,c\,x^3+\frac{6\,A\,a^2\,c\,x^2}{5}+6\,A\,a\,c^2\,x^4}{x^{9/2}}+\frac{2\,B\,c^3\,x^{5/2}}{5}+6\,B\,a\,c^2\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/x^(11/2),x)
```

```
[Out] (2*A*c^3*x^(3/2))/3 - ((2*A*a^3)/9 + (2*B*a^3*x)/7 + (6*A*a^2*c*x^2)/5 + 6*
A*a*c^2*x^4 + 2*B*a^2*c*x^3)/x^(9/2) + (2*B*c^3*x^(5/2))/5 + 6*B*a*c^2*x^(1
/2)
```

sympy [A] time = 11.24, size = 109, normalized size = 1.06

$$-\frac{2Aa^3}{9x^{\frac{9}{2}}}-\frac{6Aa^2c}{5x^{\frac{5}{2}}}-\frac{6Aac^2}{\sqrt{x}}+\frac{2Ac^3x^{\frac{3}{2}}}{3}-\frac{2Ba^3}{7x^{\frac{7}{2}}}-\frac{2Ba^2c}{x^{\frac{3}{2}}}+6Bac^2\sqrt{x}+\frac{2Bc^3x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/x**(11/2),x)
```

```
[Out] -2*A*a**3/(9*x**(9/2)) - 6*A*a**2*c/(5*x**(5/2)) - 6*A*a*c**2/sqrt(x) + 2*A
*c**3*x**(3/2)/3 - 2*B*a**3/(7*x**(7/2)) - 2*B*a**2*c/x**(3/2) + 6*B*a*c**2
*sqrt(x) + 2*B*c**3*x**(5/2)/5
```

3.412 $\int \frac{x^{5/2}(A+Bx)}{a+cx^2}\,dx$

Optimal. Leaf size=292

$$-\frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}}{2\sqrt{2}\,c^{9/4}}$$

```
[Out] 2/3*A*x^(3/2)/c+2/5*B*x^(5/2)/c-1/2*a^(3/4)*arctan(1-c^(1/4)*2^(1/2)*x^(1/2
)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/c^(9/4)*2^(1/2)+1/2*a^(3/4)*arctan(1+c^(1/
4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/c^(9/4)*2^(1/2)-1/4*a^(3/
4)*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1/
2))/c^(9/4)*2^(1/2)+1/4*a^(3/4)*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2
)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/c^(9/4)*2^(1/2)-2*a*B*x^(1/2)/c^2
```

Rubi [A] time = 0.34, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{9/4}}+\frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}}{2\sqrt{2}\,c^{9/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (-2*a*B*Sqrt[x])/c^2 + (2*A*x^(3/2))/(3*c) + (2*B*x^(5/2))/(5*c) - (a^(3/4)
*(Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sq
rt[2]*c^(9/4)) + (a^(3/4)*(Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/
4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(9/4)) - (a^(3/4)*(Sqrt[a]*B + A*Sqrt[c])*
Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9
/4)) + (a^(3/4)*(Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{a+cx^2}\,dx &= \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{x^{3/2}(-aB+Acx)}{a+cx^2}\,dx}{c} \\
&= \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{\sqrt{x}\,(-aAc-aBcx)}{a+cx^2}\,dx}{c^2} \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} + \frac{\int \frac{a^2Bc-aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{c^3} \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} + \frac{2\,\mathrm{Subst}\left(\int \frac{a^2Bc-aAc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c^3} \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} + \frac{\left(a\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{c^{5/2}} + \frac{(a\,(}{} \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} + \frac{\left(a\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{2c^{5/2}} + \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} - \frac{a^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{9/4}} + \\
&= -\frac{2aB\sqrt{x}}{c^2} + \frac{2Ax^{3/2}}{3c} + \frac{2Bx^{5/2}}{5c} - \frac{a^{3/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,c^{9/4}} + \frac{a^{3/4}\left(\sqrt{a}\,B-\right.}{}
\end{aligned}$$

Mathematica [A] time = 0.10, size = 290, normalized size = 0.99

$$\frac{-15\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)+15\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)-30\sqrt{2}\,a^{5/4}B}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (-120*a*B*c^(1/4)*Sqrt[x] + 40*A*c^(5/4)*x^(3/2) + 24*B*c^(5/4)*x^(5/2) - 3
0*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 30*Sqrt
[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 60*(-a)^(3/4)
*A*Sqrt[c]*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - 60*(-a)^(3/4)*A*Sqrt[c]*A
rcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - 15*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] - S
qrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + 15*Sqrt[2]*a^(5/4)*B*Log[Sqrt
[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(60*c^(9/4))
```

fricas [B] time = 1.02, size = 862, normalized size = 2.95

$$-\frac{15\,c^2\sqrt{\frac{c^4\sqrt{-\frac{B^4a^5-2\,A^2B^2a^4c+A^4a^3c^2}{c^9}}+2\,ABa^2}{c^4}}\,\log\left(-\left(B^4a^4-A^4a^2c^2\right)\sqrt{x}+\left(Ac^7\sqrt{-\frac{B^4a^5-2\,A^2B^2a^4c+A^4a^3c^2}{c^9}}+B^3a^3c^2-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/30*(15*c^2*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9
) + 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) + (A*c^7*sqrt(-(B^
4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + B^3*a^3*c^2 - A^2*B*a^2*c^3)*
sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + 2*A*B*a^2)
/c^4)) - 15*c^2*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c
^9) + 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) - (A*c^7*sqrt(-(
B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + B^3*a^3*c^2 - A^2*B*a^2*c^3
)*sqrt((c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) + 2*A*B*a^
2)/c^4)) - 15*c^2*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2
)/c^9) - 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) + (A*c^7*sqrt
(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - B^3*a^3*c^2 + A^2*B*a^2*
c^3)*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - 2*A*
B*a^2)/c^4)) + 15*c^2*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3
*c^2)/c^9) - 2*A*B*a^2)/c^4)*log(-(B^4*a^4 - A^4*a^2*c^2)*sqrt(x) - (A*c^7*
sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) - B^3*a^3*c^2 + A^2*B*
a^2*c^3)*sqrt(-(c^4*sqrt(-(B^4*a^5 - 2*A^2*B^2*a^4*c + A^4*a^3*c^2)/c^9) -
2*A*B*a^2)/c^4)) - 4*(3*B*c*x^2 + 5*A*c*x - 15*B*a)*sqrt(x))/c^2
```

giac [A] time = 0.20, size = 262, normalized size = 0.90

$$\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/c^4 + 1/2*sqrt(2)*((a*c^3)^(1/4)
*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt
(x))/(a/c)^(1/4))/c^4 + 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)
*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/c^4 - 1/4*sqrt(2)*((a*c^3
)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqr
t(a/c))/c^4 + 2/15*(3*B*c^4*x^(5/2) + 5*A*c^4*x^(3/2) - 15*B*a*c^3*sqrt(x))
/c^5
```

maple [A] time = 0.06, size = 302, normalized size = 1.03

$$\frac{2Bx^{\frac{5}{2}}}{5c}+\frac{2Ax^{\frac{3}{2}}}{3c}-\frac{\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}-\frac{\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}-\frac{\sqrt{2}\,Aa\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A/c*x^(3/2)-2*a*B*x^(1/2)/c^2+1/2*a/c^2*B*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*a/c^2*B*(a/c)^(1/4)*2^(1/2
)*ln((x+(a/c)^(1/4)*x^(1/2)*2^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*x^(1/2)*2^(
1/2)+(a/c)^(1/2)))+1/2*a/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/
4)*x^(1/2)+1)-1/4*a/c^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*x^(1/2)*2^(
1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*x^(1/2)*2^(1/2)+(a/c)^(1/2)))-1/2*a/c^2*A/
(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*a/c^2*A/(a/c)
^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.31, size = 265, normalized size = 0.91

$$\frac{a\left(\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\log\left(\sqrt{2}\right.}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right.}{4c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*a*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^
(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqr
t(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2*
sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c))
)/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(a
)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^
(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*s
qrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c^2 + 2/15*(3*B*c*x^(5/2)
+ 5*A*c*x^(3/2) - 15*B*a*sqrt(x))/c^2
```

mupad [B] time = 1.26, size = 665, normalized size = 2.28

$$\frac{2\,A\,x^{3/2}}{3\,c}+\frac{2\,B\,x^{5/2}}{5\,c}-\frac{2\,B\,a\,\sqrt{x}}{c^2}-\mathrm{atan}\left(\frac{A^2\,a^3\,\sqrt{x}\,\sqrt{\frac{A\,B\,a^2}{2\,c^4}-\frac{A^2\,\sqrt{-a^3\,c^9}}{4\,c^8}+\frac{B^2\,a\,\sqrt{-a^3\,c^9}}{4\,c^9}}\,32\mathrm{i}}{\frac{16\,A^3\,a^4}{c^2}-\frac{16\,A\,B^2\,a^5}{c^3}-\frac{16\,B^3\,a^4\,\sqrt{-a^3\,c^9}}{c^8}+\frac{16\,A^2\,B\,a^3\,\sqrt{-a^3\,c^9}}{c^7}}-\frac{B^2\,a^4\,\sqrt{x}\,\sqrt{\frac{A\,B\,a^2}{2\,c^4}}}{\frac{16\,A^3\,a^4}{c}-\frac{16\,A\,B^2\,a^5}{c^2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] (2*A*x^(3/2))/(3*c) - atan((A^2*a^3*x^(1/2)*((A^2*(-a^3*c^9)^(1/2))/(4*c^8)
 + (A*B*a^2)/(2*c^4) - (B^2*a*(-a^3*c^9)^(1/2))/(4*c^9))^(1/2)*32i)/((16*A^
3*a^4)/c^2 - (16*A*B^2*a^5)/c^3 + (16*B^3*a^4*(-a^3*c^9)^(1/2))/c^8 - (16*A
^2*B*a^3*(-a^3*c^9)^(1/2))/c^7) - (B^2*a^4*x^(1/2)*((A^2*(-a^3*c^9)^(1/2))/
(4*c^8) + (A*B*a^2)/(2*c^4) - (B^2*a*(-a^3*c^9)^(1/2))/(4*c^9))^(1/2)*32i)/
((16*A^3*a^4)/c - (16*A*B^2*a^5)/c^2 + (16*B^3*a^4*(-a^3*c^9)^(1/2))/c^7 -
(16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^6))*((A^2*c*(-a^3*c^9)^(1/2) - B^2*a*(-a^
3*c^9)^(1/2) + 2*A*B*a^2*c^5)/(4*c^9))^(1/2)*2i - atan((A^2*a^3*x^(1/2)*((A
*B*a^2)/(2*c^4) - (A^2*(-a^3*c^9)^(1/2))/(4*c^8) + (B^2*a*(-a^3*c^9)^(1/2))
/(4*c^9))^(1/2)*32i)/((16*A^3*a^4)/c^2 - (16*A*B^2*a^5)/c^3 - (16*B^3*a^4*(
-a^3*c^9)^(1/2))/c^8 + (16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^7) - (B^2*a^4*x^(1
/2)*((A*B*a^2)/(2*c^4) - (A^2*(-a^3*c^9)^(1/2))/(4*c^8) + (B^2*a*(-a^3*c^9)
^(1/2))/(4*c^9))^(1/2)*32i)/((16*A^3*a^4)/c - (16*A*B^2*a^5)/c^2 - (16*B^3*
a^4*(-a^3*c^9)^(1/2))/c^7 + (16*A^2*B*a^3*(-a^3*c^9)^(1/2))/c^6))*((B^2*a*(
-a^3*c^9)^(1/2) - A^2*c*(-a^3*c^9)^(1/2) + 2*A*B*a^2*c^5)/(4*c^9))^(1/2)*2i
 + (2*B*x^(5/2))/(5*c) - (2*B*a*x^(1/2))/c^2
```

sympy [A] time = 33.96, size = 403, normalized size = 1.38

$$\begin{cases} \tilde{\infty}\left(\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}\right) \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7}+\frac{2Bx^{\frac{9}{2}}}{9}}{a} \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{c} \\ \frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^{2}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c^{2}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}Aa^{\frac{3}{4}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c^{2}\sqrt[4]{\frac{1}{c}}}+\frac{2Ax^{\frac{3}{2}}}{3c}-\frac{\sqrt[4]{-1}Ba^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-}\right.}{2c^{2}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(3/2)/3 + 2*B*x**(5/2)/5), Eq(a, 0) & Eq(c, 0)), ((2
*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a, Eq(c, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/
2)/5)/c, Eq(a, 0)), ((-1)**(3/4)*A*a**(3/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*A*a**(3/4)*log((-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)
*A*a**(3/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(c**2*(1/c)**
(1/4)) + 2*A*x**(3/2)/(3*c) - (-1)**(1/4)*B*a**(5/4)*(1/c)**(1/4)*log(-(-1)
**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2) + (-1)**(1/4)*B*a**(5/4)*
(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c**2) - (-
1)**(1/4)*B*a**(5/4)*(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)*
*(1/4)))/c**2 - 2*B*a*sqrt(x)/c**2 + 2*B*x**(5/2)/(5*c), True))
```

3.413 $\int \frac{x^{3/2}(A+Bx)}{a+cx^2}\,dx$

Optimal. Leaf size=278

$$-\frac{\sqrt[4]{a}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{7/4}}+\frac{\sqrt[4]{a}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right.}{2\sqrt{2}\,c^{7/4}}$$

```
[Out] 2/3*B*x^(3/2)/c-1/4*a^(1/4)*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^
(1/2))*(B*a^(1/2)-A*c^(1/2))/c^(7/4)*2^(1/2)+1/4*a^(1/4)*ln(a^(1/2)+x*c^(1/
2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/c^(7/4)*2^(1/2)+1
/2*a^(1/4)*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/
c^(7/4)*2^(1/2)-1/2*a^(1/4)*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^
(1/2)+A*c^(1/2))/c^(7/4)*2^(1/2)+2*A*x^(1/2)/c
```

Rubi [A] time = 0.27, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{a}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{7/4}}+\frac{\sqrt[4]{a}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right.}{2\sqrt{2}\,c^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*A*Sqrt[x])/c + (2*B*x^(3/2))/(3*c) + (a^(1/4)*(Sqrt[a]*B + A*Sqrt[c])*Ar
cTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(7/4)) - (a^(1/4)*(
Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt
[2]*c^(7/4)) - (a^(1/4)*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/
4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(7/4)) + (a^(1/4)*(Sqrt[a]*B
- A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2
*Sqrt[2]*c^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{a+cx^2}\,dx &= \frac{2Bx^{3/2}}{3c}+\frac{\int \frac{\sqrt{x}\,(-aB+Acx)}{a+cx^2}\,dx}{c}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}+\frac{\int \frac{-aAc-aBcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{c^2}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}+\frac{2\,\mathrm{Subst}\left(\int \frac{-aAc-aBcx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c^2}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}+\frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c^2}-\frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B+A\right.\right.}{}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}-\frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B+A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2c^2}-\frac{\left(\sqrt{a}\,\left(\sqrt{a}\,B+\right.\right.}{}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}-\frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{7/4}}+\frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B-A\right.}{}\\
&= \frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}+\frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,c^{7/4}}-\frac{\sqrt[4]{a}\,\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1\right.}{\sqrt{2}\,c^{7/4}}
\end{aligned}
$$

Mathematica [**A**] time = 0.06, size = 287, normalized size = 1.03

$$\frac{\sqrt[4]{a}\,A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{5/4}}-\frac{\sqrt[4]{a}\,A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,c^{5/4}}+\frac{\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right.}{\sqrt{2}\,c^{5/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*A*Sqrt[x])/c + (2*B*x^(3/2))/(3*c) + (a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1
/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(5/4)) - (a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c
^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*c^(5/4)) + ((-a)^(3/4)*B*ArcTan[(c^(1/4)
*Sqrt[x])/(-a)^(1/4)])/c^(7/4) - ((-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-
a)^(1/4)])/c^(7/4) + (a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[
x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(5/4)) - (a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(
1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*c^(5/4))
```

fricas [**B**] time = 1.08, size = 772, normalized size = 2.78

$$-\frac{3\,c\sqrt{-\frac{c^{3}\sqrt{-\frac{B^{4}a^{3}-2\,A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}+2\,ABa}{c^{3}}}\,\log\left(-\left(B^{4}a^{2}-A^{4}c^{2}\right)\sqrt{x}+\left(Bc^{5}\sqrt{-\frac{B^{4}a^{3}-2\,A^{2}B^{2}a^{2}c+A^{4}ac^{2}}{c^{7}}}-AB^{2}ac^{2}+A^{3}c^{3}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/6*(3*c*sqrt(-(c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2
*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (B*c^5*sqrt(-(B^4*a^3 - 2*A
^2*B^2*a^2*c + A^4*a*c^2)/c^7) - A*B^2*a*c^2 + A^3*c^3)*sqrt(-(c^3*sqrt(-(B
^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)) - 3*c*sqrt(-(c^
3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)*log(-(
B^4*a^2 - A^4*c^2)*sqrt(x) - (B*c^5*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*
a*c^2)/c^7) - A*B^2*a*c^2 + A^3*c^3)*sqrt(-(c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*
a^2*c + A^4*a*c^2)/c^7) + 2*A*B*a)/c^3)) - 3*c*sqrt((c^3*sqrt(-(B^4*a^3 - 2
*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) - 2*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*s
qrt(x) + (B*c^5*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + A*B^2*
a*c^2 - A^3*c^3)*sqrt((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^
7) - 2*A*B*a)/c^3)) + 3*c*sqrt((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*
a*c^2)/c^7) - 2*A*B*a)/c^3)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (B*c^5*sqrt(
-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) + A*B^2*a*c^2 - A^3*c^3)*sqrt
((c^3*sqrt(-(B^4*a^3 - 2*A^2*B^2*a^2*c + A^4*a*c^2)/c^7) - 2*A*B*a)/c^3)) -
 4*(B*x + 3*A)*sqrt(x))/c
```

giac [**A**] time = 0.19, size = 255, normalized size = 0.92

$$-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,c^{4}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\right.}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right.}{2\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sq
rt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/c^4 - 1/2*sqrt(2)*((a*c^3)^(1/4
)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqr
t(x))/(a/c)^(1/4))/c^4 - 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B
)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/c^4 + 1/4*sqrt(2)*((a*c^
3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sq
rt(a/c))/c^4 + 2/3*(B*c^2*x^(3/2) + 3*A*c^2*sqrt(x))/c^3
```

maple [A] time = 0.05, size = 289, normalized size = 1.04

$$\frac{2B x^{\frac{3}{2}}}{3c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4c}-\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A/c*x^(1/2)-1/4/c*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)
*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-
1/2/c*A*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2/c*A*(
a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4*a/c^2*B/(a/c)^
(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)
*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2*a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/
2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a
/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.29, size = 247, normalized size = 0.89

$$-\frac{a\left(\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\right.}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right.}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*a*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)
*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt
(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sq
rt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c
)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c + 2/3*(B*x^(3/2) + 3*A*sqrt(x))/c
```

mupad [B] time = 0.25, size = 601, normalized size = 2.16

$$\frac{2A\sqrt{x}}{c}+\frac{2Bx^{3/2}}{3c}-\mathrm{atan}\left(\frac{B^2a^3\sqrt{x}\,\sqrt{\frac{B^2a\sqrt{-ac^7}}{4c^7}-\frac{ABa}{2c^3}-\frac{A^2\sqrt{-ac^7}}{4c^6}}\,32\mathrm{i}}{\frac{16B^3a^4}{c^2}-\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}+\frac{16AB^2a^3\sqrt{-ac^7}}{c^5}}-\frac{A^2a^2c\sqrt{x}\,\sqrt{\frac{B^2a\sqrt{-ac^7}}{4c^7}-\frac{ABa}{2c^3}-}}{\frac{16B^3a^4}{c^2}-\frac{16A^3a^2\sqrt{-ac^7}}{c^4}-\frac{16A^2Ba^3}{c}+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] (2*A*x^(1/2))/c - atan((B^2*a^3*x^(1/2)*((A^2*(-a*c^7)^(1/2))/(4*c^6) - (A*
B*a)/(2*c^3) - (B^2*a*(-a*c^7)^(1/2))/(4*c^7))^(1/2)*32i)/((16*B^3*a^4)/c^2
 + (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c - (16*A*B^2*a^3*(-a*c
^7)^(1/2))/c^5) - (A^2*a^2*c*x^(1/2)*((A^2*(-a*c^7)^(1/2))/(4*c^6) - (A*B*a
)/(2*c^3) - (B^2*a*(-a*c^7)^(1/2))/(4*c^7))^(1/2)*32i)/((16*B^3*a^4)/c^2 +
(16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c - (16*A*B^2*a^3*(-a*c^7)
^(1/2))/c^5))*(-(B^2*a*(-a*c^7)^(1/2) - A^2*c*(-a*c^7)^(1/2) + 2*A*B*a*c^4)
/(4*c^7))^(1/2)*2i - atan((B^2*a^3*x^(1/2)*((B^2*a*(-a*c^7)^(1/2))/(4*c^7)
- (A*B*a)/(2*c^3) - (A^2*(-a*c^7)^(1/2))/(4*c^6))^(1/2)*32i)/((16*B^3*a^4)/
c^2 - (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c + (16*A*B^2*a^3*(-
a*c^7)^(1/2))/c^5) - (A^2*a^2*c*x^(1/2)*((B^2*a*(-a*c^7)^(1/2))/(4*c^7) - (
A*B*a)/(2*c^3) - (A^2*(-a*c^7)^(1/2))/(4*c^6))^(1/2)*32i)/((16*B^3*a^4)/c^2
 - (16*A^3*a^2*(-a*c^7)^(1/2))/c^4 - (16*A^2*B*a^3)/c + (16*A*B^2*a^3*(-a*c
^7)^(1/2))/c^5))*(-(A^2*c*(-a*c^7)^(1/2) - B^2*a*(-a*c^7)^(1/2) + 2*A*B*a*c
^4)/(4*c^7))^(1/2)*2i + (2*B*x^(3/2))/(3*c)
```

sympy [A] time = 10.06, size = 379, normalized size = 1.36

$$\begin{cases} \tilde{\infty}\left(2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}\right) \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5}+\frac{2Bx^{\frac{7}{2}}}{7}}{a} \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{c} \\ \frac{\sqrt[4]{-1}\,A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}-\frac{\sqrt[4]{-1}\,A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c}+\frac{\sqrt[4]{-1}\,A\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{c}+\frac{2A\sqrt{x}}{c}+(-1)^{\frac{3}{4}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(2*A*sqrt(x) + 2*B*x**(3/2)/3), Eq(a, 0) & Eq(c, 0)), ((2*A*
x**(5/2)/5 + 2*B*x**(7/2)/7)/a, Eq(c, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/
c, Eq(a, 0)), ((-1)**(1/4)*A*a**(1/4)*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4
)*(1/c)**(1/4) + sqrt(x))/(2*c) - (-1)**(1/4)*A*a**(1/4)*(1/c)**(1/4)*log((
-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*c) + (-1)**(1/4)*A*a**(1/4)*
(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/c + 2*A*sqrt
(x)/c + (-1)**(3/4)*B*a**(3/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqr
t(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*B*a**(3/4)*log((-1)**(1/4)*a**(1/
4)*(1/c)**(1/4) + sqrt(x))/(2*c**2*(1/c)**(1/4)) - (-1)**(3/4)*B*a**(3/4)*a
tan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(c**2*(1/c)**(1/4)) + 2*B*
x**(3/2)/(3*c), True))
```

3.414 $\int \frac{\sqrt{x}\,(A+Bx)}{a+cx^2}\,dx$

Optimal. Leaf size=265

$$\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}+\left(\sqrt{a}\,B-\right.$$

```
[Out] 1/2*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/a^(1/4)
/c^(5/4)*2^(1/2)-1/2*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-A
*c^(1/2))/a^(1/4)/c^(5/4)*2^(1/2)+1/4*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*
2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(1/4)/c^(5/4)*2^(1/2)-1/4*ln(a^(1/
2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(1/4)
/c^(5/4)*2^(1/2)+2*B*x^(1/2)/c
```

Rubi [A] time = 0.23, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}+\left(\sqrt{a}\,B-\right.$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c + ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt
[x])/a^(1/4)])/(Sqrt[2]*a^(1/4)*c^(5/4)) - ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[
1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(1/4)*c^(5/4)) + ((Sqrt[
a]*B + A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(2*Sqrt[2]*a^(1/4)*c^(5/4)) - ((Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] + Sqr
t[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(1/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{a+cx^2}\,dx &= \frac{2B\sqrt{x}}{c}+\frac{\int \frac{-aB+Acx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{2\,\text{Subst}\left(\int \frac{-aB+Acx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}-\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx\right.}{c}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\text{Subst}\left(\int \frac{\frac{\sqrt{2}\,\sqrt[4]{a}}{\sqrt[4]{c}}+2x}{-\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}-x^2}\,dx,x,\sqrt{x}\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\text{Subst}\left(\int\right.}{2\sqrt{2}}\\
&= \frac{2B\sqrt{x}}{c}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,\sqrt[4]{a}\,c^{5/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{a}+\right.}{2\sqrt{2}\,\sqrt[4]{}}\\
&= \frac{2B\sqrt{x}}{c}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,\sqrt[4]{a}\,c^{3/4}}+\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,\sqrt[4]{a}\,c^{3/4}}+\left(\sqrt{a}\,B+\right.
\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 266, normalized size = 1.00

$$\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)-\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)+2\sqrt{2}\,a^{5/4}B\tan^{-1}\left(1-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (8*a*B*c^(1/4)*Sqrt[x] + 2*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/a^(1/4)] - 2*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/
a^(1/4)] - 4*(-a)^(3/4)*A*Sqrt[c]*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + 4*
(-a)^(3/4)*A*Sqrt[c]*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + Sqrt[2]*a^(5/4
)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] - Sqrt[2]*a^
(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(4*a*c^
(5/4))
```

fricas [**B**] time = 0.69, size = 764, normalized size = 2.88

$$c\sqrt{\frac{c^2\sqrt{-\frac{B^4a^2-2\,A^2B^2ac+A^4c^2}{ac^5}}+2\,AB}{c^2}}\,\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aac^4\sqrt{-\frac{B^4a^2-2\,A^2B^2ac+A^4c^2}{ac^5}}+B^3a^2c-A^2Bac^2\right)\sqrt{\frac{c^2\sqrt{-\frac{B^4}{}}}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*(c*sqrt((c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B
)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B
^2*a*c + A^4*c^2)/(a*c^5)) + B^3*a^2*c - A^2*B*a*c^2)*sqrt((c^2*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B)/c^2)) - c*sqrt((c^2*sqrt(-
(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) + 2*A*B)/c^2)*log(-(B^4*a^2 -
A^4*c^2)*sqrt(x) - (A*a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^
5)) + B^3*a^2*c - A^2*B*a*c^2)*sqrt((c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a*c^5)) + 2*A*B)/c^2)) - c*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a
*c + A^4*c^2)/(a*c^5)) - 2*A*B)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*
a*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - B^3*a^2*c + A^2*
B*a*c^2)*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - 2*
A*B)/c^2)) + c*sqrt(-(c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)
) - 2*A*B)/c^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (A*a*c^4*sqrt(-(B^4*a^2
- 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - B^3*a^2*c + A^2*B*a*c^2)*sqrt(-(c^2*s
qrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a*c^5)) - 2*A*B)/c^2)) + 4*B*sqrt
(x))/c
```

giac [**A**] time = 0.19, size = 249, normalized size = 0.94

$$\frac{2\,B\sqrt{x}}{c}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,ac^3}-\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac-\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)\right.}{2\left(\frac{a}{c}\right)}\right.}{2\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c - 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(
1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) - 1/2*sq
rt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*
(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) - 1/4*sqrt(2)*((a*c^3)^(1/4)*
B*a*c + (a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(
a*c^3) + 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*s
qrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^3)
```

maple [A] time = 0.05, size = 277, normalized size = 1.05

$$\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}c}+\frac{\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}c}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\frac{\sqrt{2}\,\sqrt{}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right.}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a),x)
```

```
[Out] 2*B/c*x^(1/2)-1/4/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)
+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2/c*B*(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/2/c*B*(a/c)^(1/4)*2^(1/
2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/4/c*A/(a/c)^(1/4)*2^(1/2)*ln((x-
(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/
c)^(1/2)))+1/2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1
)+1/2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.45, size = 246, normalized size = 0.93

$$\frac{2B\sqrt{x}}{c}-\frac{\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}\,c\right.}{}}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2*B*sqrt(x)/c - 1/4*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(
2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sq
rt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c
)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sq
rt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt
(c) + A*sqrt(a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a
))/(a^(3/4)*c^(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(
1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c
```

mupad [B] time = 1.26, size = 566, normalized size = 2.14

$$2\,\mathrm{atanh}\left(\frac{32A^2a\,c^2\sqrt{x}\,\sqrt{\frac{AB}{2c^2}-\frac{B^2\sqrt{-a\,c^5}}{4c^5}+\frac{A^2\sqrt{-a\,c^5}}{4a\,c^4}}}{16AB^2a^2-16A^3a\,c-\frac{16B^3a^2\sqrt{-a\,c^5}}{c^3}+\frac{16A^2Ba\sqrt{-a\,c^5}}{c^2}}-\frac{32B^2a^2c\sqrt{x}\,\sqrt{\frac{AB}{2c^2}-\frac{B^2\sqrt{-a\,c^5}}{4c^5}+\frac{A^2\sqrt{-}}{4a\,c}}}{16AB^2a^2-16A^3a\,c-\frac{16B^3a^2\sqrt{-a\,c^5}}{c^3}+\frac{16A^2}{}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2),x)
```

```
[Out] 2*atanh((32*A^2*a*c^2*x^(1/2)*((A*B)/(2*c^2) - (B^2*(-a*c^5)^(1/2))/(4*c^5)
 + (A^2*(-a*c^5)^(1/2))/(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c - (16*
B^3*a^2*(-a*c^5)^(1/2))/c^3 + (16*A^2*B*a*(-a*c^5)^(1/2))/c^2) - (32*B^2*a^
2*c*x^(1/2)*((A*B)/(2*c^2) - (B^2*(-a*c^5)^(1/2))/(4*c^5) + (A^2*(-a*c^5)^(
1/2))/(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c - (16*B^3*a^2*(-a*c^5)^(
1/2))/c^3 + (16*A^2*B*a*(-a*c^5)^(1/2))/c^2))*((A^2*c*(-a*c^5)^(1/2) - B^2*
a*(-a*c^5)^(1/2) + 2*A*B*a*c^3)/(4*a*c^5))^(1/2) + 2*atanh((32*A^2*a*c^2*x^
(1/2)*((A*B)/(2*c^2) + (B^2*(-a*c^5)^(1/2))/(4*c^5) - (A^2*(-a*c^5)^(1/2))/
(4*a*c^4))^(1/2))/(16*A*B^2*a^2 - 16*A^3*a*c + (16*B^3*a^2*(-a*c^5)^(1/2))/
c^3 - (16*A^2*B*a*(-a*c^5)^(1/2))/c^2) - (32*B^2*a^2*c*x^(1/2)*((A*B)/(2*c^
2) + (B^2*(-a*c^5)^(1/2))/(4*c^5) - (A^2*(-a*c^5)^(1/2))/(4*a*c^4))^(1/2))/
(16*A*B^2*a^2 - 16*A^3*a*c + (16*B^3*a^2*(-a*c^5)^(1/2))/c^3 - (16*A^2*B*a*
(-a*c^5)^(1/2))/c^2))*((B^2*a*(-a*c^5)^(1/2) - A^2*c*(-a*c^5)^(1/2) + 2*A*B
*a*c^3)/(4*a*c^5))^(1/2) + (2*B*x^(1/2))/c
```

sympy [A] time = 6.48, size = 359, normalized size = 1.35

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{\sqrt{x}} + 2B\sqrt{x}\right) \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{c} \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{a} \\ -\frac{(-1)^{\frac{3}{4}}A\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}\,c\sqrt[4]{\frac{1}{c}}} + \frac{(-1)^{\frac{3}{4}}A\log\left(\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2\sqrt[4]{a}\,c\sqrt[4]{\frac{1}{c}}} + \frac{(-1)^{\frac{3}{4}}A\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}}\right)}{\sqrt[4]{a}\,c\sqrt[4]{\frac{1}{c}}} + \frac{\sqrt[4]{-1}\,B\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}\,\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2c} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c, Eq(a, 0)), ((2*A*x**(3/2)/3 + 2*B*x**(5/2)/5)/a, E
q(c, 0)), (-(-1)**(3/4)*A*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))
/(2*a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*A*log((-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(2*a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*A*atan((-1)**(
3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(1/4)*c*(1/c)**(1/4)) + (-1)**(1/
4)*B*a**(1/4)*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x)
)/(2*c) - (-1)**(1/4)*B*a**(1/4)*(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c
)**(1/4) + sqrt(x))/(2*c) + (-1)**(1/4)*B*a**(1/4)*(1/c)**(1/4)*atan((-1)**
(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/c + 2*B*sqrt(x)/c, True))
```

3.415 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=254

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{3/4}c^{3/4}}-(\sqrt{a}B$$

```
[Out] 1/4*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1
/2))/a^(3/4)/c^(3/4)*2^(1/2)-1/4*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/
2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(3/4)/c^(3/4)*2^(1/2)-1/2*arctan(1-c^(1
/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(3/4)/c^(3/4)*2^(1/2)+
1/2*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(3/4)
/c^(3/4)*2^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.350, Rules used = {827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{2\sqrt{2}a^{3/4}c^{3/4}}-(\sqrt{a}B$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)),x]
```

```
[Out] -(((Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(
Sqrt[2]*a^(3/4)*c^(3/4))) + ((Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^
(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(3/4)*c^(3/4)) + ((Sqrt[a]*B - A*Sqrt[c
])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a
^(3/4)*c^(3/4)) - ((Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(3/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{A+Bx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)\\
&= -\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}+\frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{c}\\
&= \frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2c}+\frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}+\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{}\right.}{2c}\\
&= \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{3/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}+\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{}\right.}{2\sqrt{2}\,a^{3/4}c^{3/4}}\\
&= -\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{3/4}c^{3/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{3/4}c^{3/4}}+\frac{\left(\sqrt{a}\,B-A\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 262, normalized size = 1.03

$$
\frac{-\sqrt{2}\,\sqrt[4]{a}\,A\sqrt{c}\,\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)+\sqrt{2}\,\sqrt[4]{a}\,A\sqrt{c}\,\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)-2\sqrt{2}\,\sqrt[4]{a}\,A\sqrt{}}{4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)),x]
```

```
[Out] (-2*Sqrt[2]*a^(1/4)*A*Sqrt[c]*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)]
 + 2*Sqrt[2]*a^(1/4)*A*Sqrt[c]*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)
] - 4*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] + 4*(-a)^(3/4)*B*Ar
cTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)] - Sqrt[2]*a^(1/4)*A*Sqrt[c]*Log[Sqrt[a]
 - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x] + Sqrt[2]*a^(1/4)*A*Sqrt[c]
*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(4*a*c^(3/4))
```

fricas [B] time = 1.16, size = 775, normalized size = 3.05

$$\frac{1}{2}\sqrt{-\frac{ac\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}+2AB}{ac}}\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Ba^3c^2\sqrt{-\frac{B^4a^2-2A^2B^2ac+A^4c^2}{a^3c^3}}-AB^2a\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(-(a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B
)/(a*c))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A
^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - A*B^2*a^2*c + A^3*a*c^2)*sqrt(-(a*c*sqrt
(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c))) - 1/2*sqr
t(-(a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c)
)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*
a*c + A^4*c^2)/(a^3*c^3)) - A*B^2*a^2*c + A^3*a*c^2)*sqrt(-(a*c*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) + 2*A*B)/(a*c))) - 1/2*sqrt((a*c*
sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))*log(-(
B^4*a^2 - A^4*c^2)*sqrt(x) + (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^
4*c^2)/(a^3*c^3)) + A*B^2*a^2*c - A^3*a*c^2)*sqrt((a*c*sqrt(-(B^4*a^2 - 2*A
^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))) + 1/2*sqrt((a*c*sqrt(-(B^
4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c))*log(-(B^4*a^2 -
 A^4*c^2)*sqrt(x) - (B*a^3*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a
^3*c^3)) + A*B^2*a^2*c - A^3*a*c^2)*sqrt((a*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*
c + A^4*c^2)/(a^3*c^3)) - 2*A*B)/(a*c)))
```

giac [A] time = 0.18, size = 244, normalized size = 0.96

$$\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2ac^3}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right.}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right.}{2ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^3) + 1/2*sqrt(2)*((a*c^3)^(
1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a*c^3) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^
(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^3) - 1/4*sqr
t(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a*c^3)
```

maple [A] time = 0.07, size = 268, normalized size = 1.06

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a}+\sqrt{2}\,B\,\mathrm{ar}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a),x)
```

```
[Out] 1/4*A*(a/c)^(1/4)/a*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2*A*(a/c)^(1/4)/a*2^(1/2)*ar
```

```
ctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*B/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2
*B/c/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*B/c/(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.15, size = 224, normalized size = 0.88

$$\frac{\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{2\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{2\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(
1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt
(c))*sqrt(c)) + 1/2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)*(sq
rt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*
sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - 1/4*sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + 1/
4*sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sq
rt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4))
```

mupad [B] time = 1.27, size = 607, normalized size = 2.39

$$-2\,\mathrm{atanh}\left(\frac{32\,A^2\,c^3\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^3\,c^3}}{4\,a^2\,c^3}-\frac{A^2\,\sqrt{-a^3\,c^3}}{4\,a^3\,c^2}-\frac{A\,B}{2\,a\,c}}}{16\,A^2\,B\,c^2-16\,B^3\,a\,c-\frac{16\,A\,B^2\,\sqrt{-a^3\,c^3}}{a}+\frac{16\,A^3\,c\,\sqrt{-a^3\,c^3}}{a^2}}-\frac{32\,B^2\,a\,c^2\,\sqrt{x}\,\sqrt{\frac{B^2\,\sqrt{-a^3\,c^3}}{4\,a^2\,c^3}-\frac{A^2\,\sqrt{-a^3\,c^3}}{4\,a^3\,c^2}-\frac{A}{2\,a}}}{16\,A^2\,B\,c^2-16\,B^3\,a\,c-\frac{16\,A\,B^2\,\sqrt{-a^3\,c^3}}{a}+\frac{16\,A^3\,c}{a^2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*c^3*x^(1/2)*((B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3) - (A^2*(-
a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2*a*c))^(1/2))/(16*A^2*B*c^2 - 16*B^3*
a*c - (16*A*B^2*(-a^3*c^3)^(1/2))/a + (16*A^3*c*(-a^3*c^3)^(1/2))/a^2) - (3
2*B^2*a*c^2*x^(1/2)*((B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3) - (A^2*(-a^3*c^3)^(
1/2))/(4*a^3*c^2) - (A*B)/(2*a*c))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a*c - (16*
A*B^2*(-a^3*c^3)^(1/2))/a + (16*A^3*c*(-a^3*c^3)^(1/2))/a^2))*(-(A^2*c*(-a^
3*c^3)^(1/2) - B^2*a*(-a^3*c^3)^(1/2) + 2*A*B*a^2*c^2)/(4*a^3*c^3))^(1/2) -
 2*atanh((32*A^2*c^3*x^(1/2)*((A^2*(-a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2
*a*c) - (B^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a
*c + (16*A*B^2*(-a^3*c^3)^(1/2))/a - (16*A^3*c*(-a^3*c^3)^(1/2))/a^2) - (32
*B^2*a*c^2*x^(1/2)*((A^2*(-a^3*c^3)^(1/2))/(4*a^3*c^2) - (A*B)/(2*a*c) - (B
^2*(-a^3*c^3)^(1/2))/(4*a^2*c^3))^(1/2))/(16*A^2*B*c^2 - 16*B^3*a*c + (16*A
*B^2*(-a^3*c^3)^(1/2))/a - (16*A^3*c*(-a^3*c^3)^(1/2))/a^2))*(-(B^2*a*(-a^3
*c^3)^(1/2) - A^2*c*(-a^3*c^3)^(1/2) + 2*A*B*a^2*c^2)/(4*a^3*c^3))^(1/2)
```

sympy [A] time = 7.03, size = 348, normalized size = 1.37

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{c} \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{a} \\ -\frac{\sqrt[4]{-1}\,A\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}+\frac{\sqrt[4]{-1}\,A\sqrt[4]{\frac{1}{c}}\log\left(\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{3}{4}}}-\frac{\sqrt[4]{-1}\,A\sqrt[4]{\frac{1}{c}}\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{3}{4}}}-\frac{(-1)^{\frac{3}{4}}B\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\right.}{2\sqrt[4]{a}\,c\sqrt[4]{\frac{1}{c}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c, Eq(a, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/
3)/a, Eq(c, 0)), (-(-1)**(1/4)*A*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/
c)**(1/4) + sqrt(x))/(2*a**(3/4)) + (-1)**(1/4)*A*(1/c)**(1/4)*log((-1)**(1
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(3/4)) - (-1)**(1/4)*A*(1/c)**(1
/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(3/4) - (-1)**(3/4
)*B*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(1/4)*c*(1/c)**
(1/4)) + (-1)**(3/4)*B*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*
a**(1/4)*c*(1/c)**(1/4)) + (-1)**(3/4)*B*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)
*(1/c)**(1/4)))/(a**(1/4)*c*(1/c)**(1/4)), True))
```

3.416 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=265

$$-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}-\left(\sqrt{a}\,B\right.$$

```
[Out] -1/2*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/a^(5/4
)/c^(1/4)*2^(1/2)+1/2*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-
A*c^(1/2))/a^(5/4)/c^(1/4)*2^(1/2)-1/4*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)
*2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(5/4)/c^(1/4)*2^(1/2)+1/4*ln(a^(1
/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(5/4
)/c^(1/4)*2^(1/2)-2*A/a/x^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}\sqrt[4]{c}}-\left(\sqrt{a}\,B\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - ((Sqrt[a]*B - A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*S
qrt[x])/a^(1/4)])/(Sqrt[2]*a^(5/4)*c^(1/4)) + ((Sqrt[a]*B - A*Sqrt[c])*ArcT
an[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(5/4)*c^(1/4)) - ((Sq
rt[a]*B + A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/(2*Sqrt[2]*a^(5/4)*c^(1/4)) + ((Sqrt[a]*B + A*Sqrt[c])*Log[Sqrt[a] +
Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(5/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)}\,dx &= -\frac{2A}{a\sqrt{x}}+\frac{\int \frac{aB-Acx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{aB-Acx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{\left(-A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}}{a}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2a}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}+\frac{\sqrt{2}}{\sqrt[4]{c}}}\right.}{2a}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{5/4}}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}\,+\right.}{2\sqrt{2}}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{5/4}}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt[4]{c}\,\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{5/4}}-
\end{aligned}
$$

Mathematica [C] time = 0.08, size = 177, normalized size = 0.67

$$\frac{\frac{\sqrt{2}\sqrt[4]{a}B\left(-\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)+\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)-2\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)+2\tan^{-1}\left(\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}+1\right)\right)}{\sqrt[4]{c}}-\frac{8A\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx}{a}\right.}{\sqrt{x}}}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)),x]
```

```
[Out] ((-8*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + (Sqrt[2]*a^
(1/4)*B*(-2*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] + 2*ArcTan[1 + (S
qrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)] - Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sq
rt[x] + Sqrt[c]*x] + Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x]))/c^(1/4))/(4*a)
```

fricas [B] time = 1.03, size = 767, normalized size = 2.89

$$-\frac{ax\sqrt{\frac{a^{2}\sqrt{-\frac{B^{4}a^{2}-2A^{2}B^{2}ac+A^{4}c^{2}}{a^{5}c}}+2AB}{a^{2}}}\log\left(-\left(B^{4}a^{2}-A^{4}c^{2}\right)\sqrt{x}+\left(Aa^{4}c\sqrt{-\frac{B^{4}a^{2}-2A^{2}B^{2}ac+A^{4}c^{2}}{a^{5}c}}+B^{3}a^{3}-A^{2}Ba^{2}c\right)\sqrt{\frac{a^{2}\sqrt{-}}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/2*(a*x*sqrt((a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*
A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a^4*c*sqrt(-(B^4*a^2 - 2*A^
2*B^2*a*c + A^4*c^2)/(a^5*c)) + B^3*a^3 - A^2*B*a^2*c)*sqrt((a^2*sqrt(-(B^4
*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)) - a*x*sqrt((a^2*sqr
t(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)*log(-(B^4*a^2
 - A^4*c^2)*sqrt(x) - (A*a^4*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a
^5*c)) + B^3*a^3 - A^2*B*a^2*c)*sqrt((a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c +
A^4*c^2)/(a^5*c)) + 2*A*B)/a^2)) - a*x*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^
2*a*c + A^4*c^2)/(a^5*c)) - 2*A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) +
(A*a^4*c*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - B^3*a^3 + A^2
*B*a^2*c)*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - 2
*A*B)/a^2)) + a*x*sqrt(-(a^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5
*c)) - 2*A*B)/a^2)*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) - (A*a^4*c*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - B^3*a^3 + A^2*B*a^2*c)*sqrt(-(a^2*
sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c)) - 2*A*B)/a^2)) + 4*A*sqr
t(x))/(a*x)
```

giac [A] time = 0.19, size = 249, normalized size = 0.94

$$-\frac{2A}{a\sqrt{x}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2a^{2}c^{2}}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)\right.}{2\left(\frac{a}{c}\right)}\right.}{2a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*A/(a*sqrt(x)) + 1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arct
an(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) + 1
/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) + 1/4*sqrt(2)*((a*c^3)
^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(
a/c))/(a^2*c^2) - 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-
sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^2)
```

maple [A] time = 0.06, size = 277, normalized size = 1.05

$$-\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a}-\frac{\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a}-\frac{\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}a}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan\left(\sqrt{2}\right.}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a),x)
```

```
[Out] 1/4/a*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2/a*B*(a/c)^(1/4)*2^(1/2)*ar
ctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2/a*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4/a*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2
/a*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2/a*A/(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a/x^(1/2)
```

maxima [A] time = 1.19, size = 246, normalized size = 0.93

$$\frac{\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\,\sqrt{x}\right)}{2\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}\,c\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}\right.}{a^{\frac{3}{4}}c^{\frac{3}{4}}}}{4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1
/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(
a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2*sq
rt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/
(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*
c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3
/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqr
t(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a - 2*A/(a*sqrt(x))
```

mupad [B] time = 0.24, size = 602, normalized size = 2.27

$$2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^4\,c^4\,\sqrt{x}\,\sqrt{\frac{A\,B}{2\,a^2}-\frac{A^2\,\sqrt{-a^5\,c}}{4\,a^5}+\frac{B^2\,\sqrt{-a^5\,c}}{4\,a^4\,c}}}{16\,A^3\,a^3\,c^4-16\,B^3\,a^2\,c^2\,\sqrt{-a^5\,c}-16\,A\,B^2\,a^4\,c^3+16\,A^2\,B\,a\,c^3\,\sqrt{-a^5\,c}}-\frac{32\,B^2\,a^5\,c^3\,\sqrt{x}}{16\,A^3\,a^3\,c^4-16\,B^3\,a^2\,c^2\,\sqrt{-}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)),x)
```

```
[Out] 2*atanh((32*A^2*a^4*c^4*x^(1/2)*((A*B)/(2*a^2) - (A^2*(-a^5*c)^(1/2))/(4*a^
5) + (B^2*(-a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 - 16*B^3*a^2*c^
2*(-a^5*c)^(1/2) - 16*A*B^2*a^4*c^3 + 16*A^2*B*a*c^3*(-a^5*c)^(1/2)) - (32*
B^2*a^5*c^3*x^(1/2)*((A*B)/(2*a^2) - (A^2*(-a^5*c)^(1/2))/(4*a^5) + (B^2*(-
a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 - 16*B^3*a^2*c^2*(-a^5*c)^(
1/2) - 16*A*B^2*a^4*c^3 + 16*A^2*B*a*c^3*(-a^5*c)^(1/2)))*((B^2*a*(-a^5*c)^
(1/2) - A^2*c*(-a^5*c)^(1/2) + 2*A*B*a^3*c)/(4*a^5*c))^(1/2) + 2*atanh((32*
A^2*a^4*c^4*x^(1/2)*((A^2*(-a^5*c)^(1/2))/(4*a^5) + (A*B)/(2*a^2) - (B^2*(-
a^5*c)^(1/2))/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 + 16*B^3*a^2*c^2*(-a^5*c)^(
1/2) - 16*A*B^2*a^4*c^3 - 16*A^2*B*a*c^3*(-a^5*c)^(1/2)) - (32*B^2*a^5*c^3*
x^(1/2)*((A^2*(-a^5*c)^(1/2))/(4*a^5) + (A*B)/(2*a^2) - (B^2*(-a^5*c)^(1/2)
)/(4*a^4*c))^(1/2))/(16*A^3*a^3*c^4 + 16*B^3*a^2*c^2*(-a^5*c)^(1/2) - 16*A*
B^2*a^4*c^3 - 16*A^2*B*a*c^3*(-a^5*c)^(1/2)))*((A^2*c*(-a^5*c)^(1/2) - B^2*
a*(-a^5*c)^(1/2) + 2*A*B*a^3*c)/(4*a^5*c))^(1/2) - (2*A)/(a*x^(1/2))
```

sympy [A] time = 14.43, size = 355, normalized size = 1.34

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right) \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{c} \\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{a} \\ -\frac{2A}{a\sqrt{x}}+\frac{(-1)^{\frac{3}{4}}A\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}A\log\left(\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{(-1)^{\frac{3}{4}}A\operatorname{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{5}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{\sqrt[4]{-1}\,B\sqrt[4]{\frac{1}{c}}\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\right.}{2a^{\frac{3}{4}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c, Eq(a, 0)), ((-2*A/sqrt(x) + 2*
B*sqrt(x))/a, Eq(c, 0)), (-2*A/(a*sqrt(x)) + (-1)**(3/4)*A*log(-(-1)**(1/4)
*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4)) - (-1)**(3/4)*A
*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4))
 - (-1)**(3/4)*A*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(5/4
)*(1/c)**(1/4)) - (-1)**(1/4)*B*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c
)**(1/4) + sqrt(x))/(2*a**(3/4)) + (-1)**(1/4)*B*(1/c)**(1/4)*log((-1)**(1/
4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(3/4)) - (-1)**(1/4)*B*(1/c)**(1/
4)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(3/4), True))
```

3.417 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=278

$$-\frac{\sqrt[4]{c}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{7/4}}+\frac{\sqrt[4]{c}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\bigl(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x}{2\sqrt{2}\,a^{7/4}}$$

```
[Out] -2/3*A/a/x^(3/2)-1/4*c^(1/4)*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x
^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(7/4)*2^(1/2)+1/4*c^(1/4)*ln(a^(1/2)+x*c^(1
/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(7/4)*2^(1/2)+
1/2*c^(1/4)*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))
/a^(7/4)*2^(1/2)-1/2*c^(1/4)*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a
^(1/2)+A*c^(1/2))/a^(7/4)*2^(1/2)-2*B/a/x^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{c}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{7/4}}+\frac{\sqrt[4]{c}\,\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\bigl(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x}{2\sqrt{2}\,a^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(3*a*x^(3/2)) - (2*B)/(a*Sqrt[x]) + ((Sqrt[a]*B + A*Sqrt[c])*c^(1/4)
*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(7/4)) - ((Sqrt[
a]*B + A*Sqrt[c])*c^(1/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(S
qrt[2]*a^(7/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(1/4)*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(7/4)) + ((Sqrt[a]*B - A*S
qrt[c])*c^(1/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(2*Sqrt[2]*a^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
```

```
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)}\,dx &= -\frac{2A}{3ax^{3/2}}+\frac{\int \frac{aB-Acx}{x^{3/2}\left(a+cx^2\right)}\,dx}{a}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\int \frac{-aAc-aBcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^2}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{2\,\mathrm{Subst}\left(\int \frac{-aAc-aBcx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^2}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\mathrm{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^{3/2}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\mathrm{Subs}}{}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\mathrm{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{2a^{3/2}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)}{}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{7/4}}+\frac{\left(\sqrt{a}\,B-A\sqrt{}\right.}{}\\
&= -\frac{2A}{3ax^{3/2}}-\frac{2B}{a\sqrt{x}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{7/4}}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}}{\sqrt{2}\,a^{7/4}}
\end{aligned}$$

Mathematica $[\mathbf{C}]$ time = 0.01, size = 53, normalized size = 0.19

$$-\frac{2\left(A\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(A*Hypergeometric2F1[-3/4, 1, 1/4, -((c*x^2)/a)] + 3*B*x*Hypergeometric
2F1[-1/4, 1, 3/4, -((c*x^2)/a)]))/(3*a*x^(3/2))
```

fricas $[\mathbf{B}]$ time = 0.99, size = 802, normalized size = 2.88

$$-\frac{3\,ax^2\sqrt{-\frac{a^3\sqrt{-\frac{B^4a^2c-2\,A^2B^2ac^2+A^4c^3}{a^7}}+2\,ABc}{a^3}}\,\log\left(-\left(B^4a^2c-A^4c^3\right)\sqrt{x}+\left(Ba^6\sqrt{-\frac{B^4a^2c-2\,A^2B^2ac^2+A^4c^3}{a^7}}-AB^2a^3c+A\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/6*(3*a*x^2*sqrt(-(a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7)
 + 2*A*B*c)/a^3)*log(-(B^4*a^2*c - A^4*c^3)*sqrt(x) + (B*a^6*sqrt(-(B^4*a^2
*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - A*B^2*a^3*c + A^3*a^2*c^2)*sqrt(-(a^
3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*c)/a^3)) - 3*a
*x^2*sqrt(-(a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*
c)/a^3)*log(-(B^4*a^2*c - A^4*c^3)*sqrt(x) - (B*a^6*sqrt(-(B^4*a^2*c - 2*A^
2*B^2*a*c^2 + A^4*c^3)/a^7) - A*B^2*a^3*c + A^3*a^2*c^2)*sqrt(-(a^3*sqrt(-(
B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) + 2*A*B*c)/a^3)) - 3*a*x^2*sqrt
((a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)*lo
g(-(B^4*a^2*c - A^4*c^3)*sqrt(x) + (B*a^6*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^
2 + A^4*c^3)/a^7) + A*B^2*a^3*c - A^3*a^2*c^2)*sqrt((a^3*sqrt(-(B^4*a^2*c -
 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)) + 3*a*x^2*sqrt((a^3*sqrt(
-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)*log(-(B^4*a^2
*c - A^4*c^3)*sqrt(x) - (B*a^6*sqrt(-(B^4*a^2*c - 2*A^2*B^2*a*c^2 + A^4*c^3
)/a^7) + A*B^2*a^3*c - A^3*a^2*c^2)*sqrt((a^3*sqrt(-(B^4*a^2*c - 2*A^2*B^2*
a*c^2 + A^4*c^3)/a^7) - 2*A*B*c)/a^3)) + 4*(3*B*x + A)*sqrt(x))/(a*x^2)
```

giac [A] time = 0.24, size = 258, normalized size = 0.93

$$-\frac{2\,(3\,Bx+A)}{3\,ax^{\frac{3}{2}}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,a^{2}c^{2}}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\right.}{2\,a^{2}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -2/3*(3*B*x + A)/(a*x^(3/2)) - 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(
3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(
a^2*c^2) - 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*
sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^2) - 1/4*sqrt
(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4)
 + x + sqrt(a/c))/(a^2*c^2) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3
/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^2)
```

maple [A] time = 0.05, size = 289, normalized size = 1.04

$$-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a^{2}}-\frac{\sqrt{2}\,B\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+a),x)
```

```
[Out] -1/4*c/a^2*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1
/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-1/2*c/a^2*A*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*c/a^2*A*(a/c)^(1/4)*2^(1/2
)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4/a*B/(a/c)^(1/4)*2^(1/2)*ln((x-(
a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c
)^(1/2)))-1/2/a*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)
-1/2/a*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2/3*A/a/
x^(3/2)-2*B/a/x^(1/2)
```

maxima [A] time = 1.23, size = 244, normalized size = 0.88

$$-\frac{c\left(\frac{2\,\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\sqrt{}\right.}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right.}{4\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*c*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)
*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt
(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(sq
rt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sq
rt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c
)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a - 2/3*(3*B*x + A)/(a*x^(3/2))
```

mupad [**B**] time = 1.25, size = 606, normalized size = 2.18

$$-2\,\mathrm{atanh}\left(\frac{32\,A^2\,a^3\,c^5\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-\frac{B^2\,\sqrt{-a^7\,c}}{4\,a^6}-\frac{A\,B\,c}{2\,a^3}}}{16\,B^3\,a^3\,c^4+\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a^2\,c^5-\frac{16\,A\,B^2\,c^4\,\sqrt{-a^7\,c}}{a}}-\frac{32\,B^2\,a^4\,c^4\,\sqrt{x}\,\sqrt{\frac{A^2\,c\,\sqrt{-a^7\,c}}{4\,a^7}-B^2}}{16\,B^3\,a^3\,c^4+\frac{16\,A^3\,c^5\,\sqrt{-a^7\,c}}{a^2}-16\,A^2\,B\,a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*a^3*c^5*x^(1/2)*((A^2*c*(-a^7*c)^(1/2))/(4*a^7) - (B^2*(-
a^7*c)^(1/2))/(4*a^6) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 + (16*A^3*c
^5*(-a^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 - (16*A*B^2*c^4*(-a^7*c)^(1/2))/a
) - (32*B^2*a^4*c^4*x^(1/2)*((A^2*c*(-a^7*c)^(1/2))/(4*a^7) - (B^2*(-a^7*c)
^(1/2))/(4*a^6) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 + (16*A^3*c^5*(-a
^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 - (16*A*B^2*c^4*(-a^7*c)^(1/2))/a))*(-(
B^2*a*(-a^7*c)^(1/2) - A^2*c*(-a^7*c)^(1/2) + 2*A*B*a^4*c)/(4*a^7))^(1/2) -
 2*atanh((32*A^2*a^3*c^5*x^(1/2)*((B^2*(-a^7*c)^(1/2))/(4*a^6) - (A^2*c*(-a
^7*c)^(1/2))/(4*a^7) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 - (16*A^3*c^
5*(-a^7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 + (16*A*B^2*c^4*(-a^7*c)^(1/2))/a)
 - (32*B^2*a^4*c^4*x^(1/2)*((B^2*(-a^7*c)^(1/2))/(4*a^6) - (A^2*c*(-a^7*c)^
(1/2))/(4*a^7) - (A*B*c)/(2*a^3))^(1/2))/(16*B^3*a^3*c^4 - (16*A^3*c^5*(-a^
7*c)^(1/2))/a^2 - 16*A^2*B*a^2*c^5 + (16*A*B^2*c^4*(-a^7*c)^(1/2))/a))*(-(A
^2*c*(-a^7*c)^(1/2) - B^2*a*(-a^7*c)^(1/2) + 2*A*B*a^4*c)/(4*a^7))^(1/2) -
((2*A)/(3*a) + (2*B*x)/a)/x^(3/2)
```

sympy [**A**] time = 34.45, size = 376, normalized size = 1.35

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{a} \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{c} \\ -\frac{2A}{3ax^{\frac{3}{2}}}+\frac{\sqrt[4]{-1}\,Ac\sqrt[4]{\frac{1}{c}}\,\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{7}{4}}}-\frac{\sqrt[4]{-1}\,Ac\sqrt[4]{\frac{1}{c}}\,\log\left(\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{7}{4}}}+\frac{\sqrt[4]{-1}\,Ac\sqrt[4]{\frac{1}{c}}\,\mathrm{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{7}{4}}}-\frac{2B}{a\sqrt{x}}+(-1) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(3*x**(3/2)) - 2*B/sqrt(x))/a, Eq(c, 0)), ((-2*A/(7*x**(7/2)) - 2*
B/(5*x**(5/2)))/c, Eq(a, 0)), (-2*A/(3*a*x**(3/2)) + (-1)**(1/4)*A*c*(1/c)*
*(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(7/4)) - (-1
)**(1/4)*A*c*(1/c)**(1/4)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/
(2*a**(7/4)) + (-1)**(1/4)*A*c*(1/c)**(1/4)*atan((-1)**(3/4)*sqrt(x)/(a**(1
/4)*(1/c)**(1/4)))/a**(7/4) - 2*B/(a*sqrt(x)) + (-1)**(3/4)*B*log(-(-1)**(1
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/4)) - (-1)**(3/4
)*B*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(5/4)*(1/c)**(1/
4)) - (-1)**(3/4)*B*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(
5/4)*(1/c)**(1/4)), True))
```

3.418 $\int \frac{A+Bx}{x^{7/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=292

$$\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}-\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}$$

```
[Out] -2/5*A/a/x^(5/2)-2/3*B/a/x^(3/2)+1/2*c^(3/4)*arctan(1-c^(1/4)*2^(1/2)*x^(1/
2)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/a^(9/4)*2^(1/2)-1/2*c^(3/4)*arctan(1+c^(1
/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)-A*c^(1/2))/a^(9/4)*2^(1/2)+1/4*c^(3
/4)*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)+A*c^(1
/2))/a^(9/4)*2^(1/2)-1/4*c^(3/4)*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/
2)*x^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(9/4)*2^(1/2)+2*A*c/a^2/x^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.400$, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}-\frac{c^{3/4}\left(\sqrt{a}\,B+A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(5*a*x^(5/2)) - (2*B)/(3*a*x^(3/2)) + (2*A*c)/(a^2*Sqrt[x]) + ((Sqrt
[a]*B - A*Sqrt[c])*c^(3/4)*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(
Sqrt[2]*a^(9/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(3/4)*ArcTan[1 + (Sqrt[2]*c^(
1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(9/4)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(3/4
)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^
(9/4)) - ((Sqrt[a]*B + A*Sqrt[c])*c^(3/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(
1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
```

```
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a+cx^2\right)}\,dx = -\frac{2A}{5ax^{5/2}} + \frac{\int \frac{aB-Acx}{x^{5/2}\left(a+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{\int \frac{-aAc-aBcx}{x^{3/2}\left(a+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} + \frac{\int \frac{-a^2Bc+aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} + \frac{2\,\text{Subst}\left(\int \frac{-a^2Bc+aAc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^3}$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} - \frac{\left(\left(\sqrt{a}\,B - A\sqrt{c}\right)\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}+cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^2} -$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} - \frac{\left(\left(\sqrt{a}\,B - A\sqrt{c}\right)\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}} - \frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}} + x^2}\,dx, x, \sqrt{x}\right)}{2a^2} -$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} + \frac{\left(\sqrt{a}\,B + A\sqrt{c}\right)c^{3/4}\log\left(\sqrt{a} - \sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x} + \sqrt{c}\,x\right)}{2\sqrt{2}\,a^{9/4}} -$$

$$= -\frac{2A}{5ax^{5/2}} - \frac{2B}{3ax^{3/2}} + \frac{2Ac}{a^2\sqrt{x}} + \frac{\left(\sqrt{a}\,B - A\sqrt{c}\right)c^{3/4}\tan^{-1}\left(1 - \frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{9/4}} -$$

Mathematica [**C**] time = 0.01, size = 54, normalized size = 0.18

$$-\frac{2\left(3A\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\frac{cx^2}{a}\right) + 5Bx\,{}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15ax^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(3*A*Hypergeometric2F1[-5/4, 1, -1/4, -((c*x^2)/a)] + 5*B*x*Hypergeomet
ric2F1[-3/4, 1, 1/4, -((c*x^2)/a)]))/(15*a*x^(5/2))
```

fricas [**B**] time = 0.90, size = 869, normalized size = 2.98

$$15\,a^2x^3\sqrt{\frac{a^4\sqrt{-\frac{B^4a^2c^3-2\,A^2B^2ac^4+A^4c^5}{a^9}}+2\,ABc^2}{a^4}}\,\log\left(-\left(B^4a^2c^2 - A^4c^4\right)\sqrt{x} + \left(Aa^7\sqrt{-\frac{B^4a^2c^3-2\,A^2B^2ac^4+A^4c^5}{a^9}} + B^3a^4c -\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*a^2*x^3*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/
a^9) + 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) + (A*a^7*sqrt(-
(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + B^3*a^4*c - A^2*B*a^3*c^2)
*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + 2*A*B*c^2
)/a^4)) - 15*a^2*x^3*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c
^5)/a^9) + 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) - (A*a^7*sq
rt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + B^3*a^4*c - A^2*B*a^3*
c^2)*sqrt((a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) + 2*A*B
*c^2)/a^4)) - 15*a^2*x^3*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 +
A^4*c^5)/a^9) - 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x) + (A*a
^7*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) - B^3*a^4*c + A^2*B
*a^3*c^2)*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) -
 2*A*B*c^2)/a^4)) + 15*a^2*x^3*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*
c^4 + A^4*c^5)/a^9) - 2*A*B*c^2)/a^4)*log(-(B^4*a^2*c^2 - A^4*c^4)*sqrt(x)
- (A*a^7*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/a^9) - B^3*a^4*c +
 A^2*B*a^3*c^2)*sqrt(-(a^4*sqrt(-(B^4*a^2*c^3 - 2*A^2*B^2*a*c^4 + A^4*c^5)/
a^9) - 2*A*B*c^2)/a^4)) + 4*(15*A*c*x^2 - 5*B*a*x - 3*A*a)*sqrt(x))/(a^2*x^
3)
```

giac [A] time = 0.19, size = 265, normalized size = 0.91

$$-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,a^{3}c}-\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Bac-\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right.}{2\,a^{3}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] -1/2*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sq
rt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c) - 1/2*sqrt(2)*((a*c^3)^
(1/4)*B*a*c - (a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2
*sqrt(x))/(a/c)^(1/4))/(a^3*c) - 1/4*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)
^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c) + 1/4*sq
rt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1
/4) + x + sqrt(a/c))/(a^3*c) + 2/15*(15*A*c*x^2 - 5*B*a*x - 3*A*a)/(a^2*x^(
5/2))
```

maple [A] time = 0.06, size = 302, normalized size = 1.03

$$\frac{\sqrt{2}\;Ac\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\;Ac\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}+\frac{\sqrt{2}\;Ac\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4\left(\frac{a}{c}\right)^{\frac{1}{4}}a^{2}}-\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;Bc\arctan\left(\frac{\sqrt{2}}{\left(\frac{a}{c}\right)}\right.}{2a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+a),x)
```

```
[Out] -1/2*c/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-1/2*
c/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-1/4*c/a^2
*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a
/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/4*c/a^2*A/(a/c)^(1/4)*2^(1/2)*ln(
(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+
(a/c)^(1/2)))+1/2*c/a^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)+1)+1/2*c/a^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)
-1)-2/5*A/a/x^(5/2)-2/3*B/a/x^(3/2)+2*A*c/a^2/x^(1/2)
```

maxima [**A**] time = 1.28, size = 263, normalized size = 0.90

$$-\frac{c\left(\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(Ba\sqrt{c}-A\sqrt{a}\,c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}\,c\right)\log(}{a^{\frac{3}{4}}}\right.}{4a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] -1/4*c*(2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a
^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sq
rt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*arctan(-1/2
*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)
))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) + A*sqrt(
a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)) - sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*
sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2 + 2/15*(15*A*c*x^2 -
5*B*a*x - 3*A*a)/(a^2*x^(5/2))
```

mupad [**B**] time = 1.25, size = 664, normalized size = 2.27

$$-2\,\mathrm{atanh}\left(\frac{32A^{2}a^{7}c^{6}\sqrt{x}\sqrt{\frac{A^{2}c\sqrt{-a^{9}c^{3}}}{4a^{9}}-\frac{B^{2}\sqrt{-a^{9}c^{3}}}{4a^{8}}+\frac{ABc^{2}}{2a^{4}}}}{16A^{3}a^{5}c^{7}-16AB^{2}a^{6}c^{6}+16B^{3}a^{2}c^{4}\sqrt{-a^{9}c^{3}}-16A^{2}Bac^{5}\sqrt{-a^{9}c^{3}}}-\frac{32B^{2}a^{8}c^{5}\sqrt{}}{16A^{3}a^{5}c^{7}-16AB^{2}a^{6}c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a + c*x^2)),x)
```

```
[Out] - 2*atanh((32*A^2*a^7*c^6*x^(1/2)*((A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) - (B^2*
(-a^9*c^3)^(1/2))/(4*a^8) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A^3*a^5*c^7 - 16*
A*B^2*a^6*c^6 + 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) - 16*A^2*B*a*c^5*(-a^9*c^3)
^(1/2)) - (32*B^2*a^8*c^5*x^(1/2)*((A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) - (B^2*
(-a^9*c^3)^(1/2))/(4*a^8) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A^3*a^5*c^7 - 16*
A*B^2*a^6*c^6 + 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) - 16*A^2*B*a*c^5*(-a^9*c^3)
^(1/2)))*((A^2*c*(-a^9*c^3)^(1/2) - B^2*a*(-a^9*c^3)^(1/2) + 2*A*B*a^5*c^2)
/(4*a^9))^(1/2) - 2*atanh((32*A^2*a^7*c^6*x^(1/2)*((B^2*(-a^9*c^3)^(1/2))/(
4*a^8) - (A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A
^3*a^5*c^7 - 16*A*B^2*a^6*c^6 - 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) + 16*A^2*B*
a*c^5*(-a^9*c^3)^(1/2)) - (32*B^2*a^8*c^5*x^(1/2)*((B^2*(-a^9*c^3)^(1/2))/(
4*a^8) - (A^2*c*(-a^9*c^3)^(1/2))/(4*a^9) + (A*B*c^2)/(2*a^4))^(1/2))/(16*A
^3*a^5*c^7 - 16*A*B^2*a^6*c^6 - 16*B^3*a^2*c^4*(-a^9*c^3)^(1/2) + 16*A^2*B*
a*c^5*(-a^9*c^3)^(1/2)))*((B^2*a*(-a^9*c^3)^(1/2) - A^2*c*(-a^9*c^3)^(1/2)
+ 2*A*B*a^5*c^2)/(4*a^9))^(1/2) - ((2*A)/(5*a) + (2*B*x)/(3*a) - (2*A*c*x^2
)/a^2)/x^(5/2)
```

sympy [A] time = 108.65, size = 398, normalized size = 1.36

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{7x^{\frac{7}{2}}}\right) \\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{a} \\ \frac{-\frac{2A}{9x^{\frac{9}{2}}}-\frac{2B}{7x^{\frac{7}{2}}}}{c} \\ -\frac{2A}{5ax^{\frac{5}{2}}}+\frac{2Ac}{a^{2}\sqrt{x}}-\frac{(-1)^{\frac{3}{4}}Ac\log\left(-\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{9}{4}}\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}Ac\log\left(\sqrt[4]{-1}\,\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}+\sqrt{x}\right)}{2a^{\frac{9}{4}}\sqrt[4]{\frac{1}{c}}}+\frac{(-1)^{\frac{3}{4}}Ac\,\mathrm{atan}\left(\frac{(-1)^{\frac{3}{4}}\sqrt{x}}{\sqrt[4]{a}\,\sqrt[4]{\frac{1}{c}}}\right)}{a^{\frac{9}{4}}\sqrt[4]{\frac{1}{c}}}-\frac{2B}{3ax^{\frac{3}{2}}}+\sqrt[4]{-1}\,Bc \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+a),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/a, Eq(c, 0)), ((-2*A/(9*x**(9/2))
 - 2*B/(7*x**(7/2)))/c, Eq(a, 0)), (-2*A/(5*a*x**(5/2)) + 2*A*c/(a**2*sqrt(
x)) - (-1)**(3/4)*A*c*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(2*
a**(9/4)*(1/c)**(1/4)) + (-1)**(3/4)*A*c*log((-1)**(1/4)*a**(1/4)*(1/c)**(1
/4) + sqrt(x))/(2*a**(9/4)*(1/c)**(1/4)) + (-1)**(3/4)*A*c*atan((-1)**(3/4)
*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(a**(9/4)*(1/c)**(1/4)) - 2*B/(3*a*x**(3/
2)) + (-1)**(1/4)*B*c*(1/c)**(1/4)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(2*a**(7/4)) - (-1)**(1/4)*B*c*(1/c)**(1/4)*log((-1)**(1/4)*a**(1
/4)*(1/c)**(1/4) + sqrt(x))/(2*a**(7/4)) + (-1)**(1/4)*B*c*(1/c)**(1/4)*ata
n((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/a**(7/4), True))
```

3.419 $\int \frac{A+Bx}{x^{9/2}\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=306

$$\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}-\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}$$

```
[Out] -2/7*A/a/x^(7/2)-2/5*B/a/x^(5/2)+2/3*A*c/a^2/x^(3/2)+1/4*c^(5/4)*ln(a^(1/2)
+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(11/4)*
2^(1/2)-1/4*c^(5/4)*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(
B*a^(1/2)-A*c^(1/2))/a^(11/4)*2^(1/2)-1/2*c^(5/4)*arctan(1-c^(1/4)*2^(1/2)*
x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(11/4)*2^(1/2)+1/2*c^(5/4)*arctan(
1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(11/4)*2^(1/2)+2
*B*c/a^2/x^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 14, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}-\frac{c^{5/4}\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{2\sqrt{2}\,a^{11/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a + c*x^2)),x]
```

```
[Out] (-2*A)/(7*a*x^(7/2)) - (2*B)/(5*a*x^(5/2)) + (2*A*c)/(3*a^2*x^(3/2)) + (2*B
*c)/(a^2*Sqrt[x]) - ((Sqrt[a]*B + A*Sqrt[c])*c^(5/4)*ArcTan[1 - (Sqrt[2]*c^
(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(11/4)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(5
/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(Sqrt[2]*a^(11/4)) + ((S
qrt[a]*B - A*Sqrt[c])*c^(5/4)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x]
 + Sqrt[c]*x])/(2*Sqrt[2]*a^(11/4)) - ((Sqrt[a]*B - A*Sqrt[c])*c^(5/4)*Log[
Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(2*Sqrt[2]*a^(11/4)
)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(a+cx^2\right)}\,dx = -\frac{2A}{7ax^{7/2}} + \frac{\int \frac{aB-Acx}{x^{7/2}\left(a+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{\int \frac{-aAc-aBcx}{x^{5/2}\left(a+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{\int \frac{-a^2Bc+aAc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{a^3}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} + \frac{\int \frac{a^2Ac^2+a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{a^4}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} + \frac{2\,\text{Subst}\left(\int \frac{a^2Ac^2+a^2Bc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^4}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} - \frac{\left(\left(\sqrt{a}\,B - A\sqrt{c}\right)c\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}}{a^{5/2}}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} + \frac{\left(\left(\sqrt{a}\,B + A\sqrt{c}\right)c\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x\right.}{2a^{5/2}}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} + \frac{\left(\sqrt{a}\,B - A\sqrt{c}\right)c^{5/4}\log\left(\sqrt{a} - \sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x} + \right.}{2\sqrt{2}\,a^{11/4}}$$

$$= -\frac{2A}{7ax^{7/2}} - \frac{2B}{5ax^{5/2}} + \frac{2Ac}{3a^2x^{3/2}} + \frac{2Bc}{a^2\sqrt{x}} - \frac{\left(\sqrt{a}\,B + A\sqrt{c}\right)c^{5/4}\tan^{-1}\left(1 - \frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt{2}\,a^{11/4}} + \frac{\left(\sqrt{a}\right.}{}$$

Mathematica [**C**]   time = 0.01, size = 54, normalized size = 0.18

$$-\frac{2\left(5A\,{}_2F_1\left(-\frac{7}{4},1;-\frac{3}{4};-\frac{cx^2}{a}\right)+7Bx\,{}_2F_1\left(-\frac{5}{4},1;-\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{35ax^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a + c*x^2)),x]
```

```
[Out] (-2*(5*A*Hypergeometric2F1[-7/4, 1, -3/4, -((c*x^2)/a)] + 7*B*x*Hypergeomet
ric2F1[-5/4, 1, -1/4, -((c*x^2)/a)]))/(35*a*x^(7/2))
```

fricas [**B**]   time = 1.02, size = 884, normalized size = 2.89

$$\frac{105\,a^2x^4\sqrt{-\frac{a^5\sqrt{-\frac{B^4a^2c^5-2\,A^2B^2ac^6+A^4c^7}{a^{11}}}+2\,ABc^3}{a^5}}\,\log\left(-\left(B^4a^2c^4-A^4c^6\right)\sqrt{x}+\left(Ba^9\sqrt{-\frac{B^4a^2c^5-2\,A^2B^2ac^6+A^4c^7}{a^{11}}}-AB^2a^4\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/210*(105*a^2*x^4*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^
7)/a^11) + 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c^6)*sqrt(x) + (B*a^9*sq
rt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - A*B^2*a^4*c^3 + A^3*a
^3*c^4)*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) +
2*A*B*c^3)/a^5)) - 105*a^2*x^4*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*
c^6 + A^4*c^7)/a^11) + 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c^6)*sqrt(x)
 - (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - A*B^2*a^4
*c^3 + A^3*a^3*c^4)*sqrt(-(a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c
^7)/a^11) + 2*A*B*c^3)/a^5)) - 105*a^2*x^4*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2
*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c^4 - A^4*c
^6)*sqrt(x) + (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11)
+ A*B^2*a^4*c^3 - A^3*a^3*c^4)*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c
^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)) + 105*a^2*x^4*sqrt((a^5*sqrt(-(B^4*a
^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)*log(-(B^4*a^2*c
^4 - A^4*c^6)*sqrt(x) - (B*a^9*sqrt(-(B^4*a^2*c^5 - 2*A^2*B^2*a*c^6 + A^4*c
^7)/a^11) + A*B^2*a^4*c^3 - A^3*a^3*c^4)*sqrt((a^5*sqrt(-(B^4*a^2*c^5 - 2*A
^2*B^2*a*c^6 + A^4*c^7)/a^11) - 2*A*B*c^3)/a^5)) + 4*(105*B*c*x^3 + 35*A*c*
x^2 - 21*B*a*x - 15*A*a)*sqrt(x))/(a^2*x^4)
```

giac [**A**]   time = 0.22, size = 276, normalized size = 0.90

$$\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,a^{3}c}+\frac{\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}-2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{2\,a^{3}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqr
t(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c) + 1/2*sqrt(2)*((a*c^3)^(
1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a^3*c) + 1/4*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^
(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c) - 1/4*sqr
t(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a^3*c) + 2/105*(105*B*c*x^3 + 35*A*c*x^2 - 21*B*a*x -
15*A*a)/(a^2*x^(7/2))
```

maple [**A**]   time = 0.07, size = 318, normalized size = 1.04

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{2a^{3}}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{2a^{3}}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\,c^{2}\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{4a^{3}}+\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+a),x)
```

```
[Out] 1/4*c^2/a^3*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(
1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/2*c^2/a^3*A*(a/c)^(1/4
)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/2*c^2/a^3*A*(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/4*c/a^2*B/(a/c)^(1/4)*2^(1/2
)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(
1/2)+(a/c)^(1/2)))+1/2*c/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/
4)*x^(1/2)+1)+1/2*c/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)-2/7*A/a/x^(7/2)-2/5*B/a/x^(5/2)+2/3*A*c/a^2/x^(3/2)+2*B*c/a^2/x^(1
/2)
```

maxima [**A**] time = 1.24, size = 264, normalized size = 0.86

$$\frac{c^{2}\left(\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\sqrt{2}\left(B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}-\frac{\sqrt{2}\left(B\sqrt{a}-A\sqrt{c}\right)\log\left(\sqrt{2}a^{\frac{1}{4}}c\right.}{a^{\frac{3}{4}}c^{\frac{3}{4}}}\right.}{4a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*c^2*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1
/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(
a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2
)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqr
t(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(s
qrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + s
qrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(
c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2 + 2/105*(105*B*c*x^3 + 35*A*c*x^2 -
21*B*a*x - 15*A*a)/(a^2*x^(7/2))
```

mupad [**B**] time = 1.27, size = 678, normalized size = 2.22

$$2\,\mathrm{atanh}\left(\frac{32A^{2}a^{6}c^{7}\sqrt{x}\sqrt{\frac{A^{2}c\sqrt{-a^{11}c^{5}}}{4a^{11}}-\frac{B^{2}\sqrt{-a^{11}c^{5}}}{4a^{10}}-\frac{A\,B\,c^{3}}{2a^{5}}}}{16B^{3}a^{5}c^{7}+\frac{16A^{3}c^{6}\sqrt{-a^{11}c^{5}}}{a^{2}}-16A^{2}B\,a^{4}c^{8}-\frac{16A\,B^{2}c^{5}\sqrt{-a^{11}c^{5}}}{a}}-\frac{32B^{2}a^{7}c^{6}\sqrt{x}\sqrt{\frac{A^{2}c\sqrt{-a^{11}c^{5}}}{4a^{11}}-}}{16B^{3}a^{5}c^{7}+\frac{16A^{3}c^{6}\sqrt{-a^{11}c^{5}}}{a^{2}}-16A^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a + c*x^2)),x)
```

```
[Out] 2*atanh((32*A^2*a^6*c^7*x^(1/2)*((A^2*c*(-a^11*c^5)^(1/2))/(4*a^11) - (B^2*
(-a^11*c^5)^(1/2))/(4*a^10) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 + (
16*A^3*c^6*(-a^11*c^5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 - (16*A*B^2*c^5*(-a^11
*c^5)^(1/2))/a) - (32*B^2*a^7*c^6*x^(1/2)*((A^2*c*(-a^11*c^5)^(1/2))/(4*a^1
1) - (B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a
^5*c^7 + (16*A^3*c^6*(-a^11*c^5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 - (16*A*B^2*
c^5*(-a^11*c^5)^(1/2))/a))*(-(B^2*a*(-a^11*c^5)^(1/2) - A^2*c*(-a^11*c^5)^(
1/2) + 2*A*B*a^6*c^3)/(4*a^11))^(1/2) - ((2*A)/(7*a) + (2*B*x)/(5*a) - (2*A
*c*x^2)/(3*a^2) - (2*B*c*x^3)/a^2)/x^(7/2) + 2*atanh((32*A^2*a^6*c^7*x^(1/2
)*((B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A^2*c*(-a^11*c^5)^(1/2))/(4*a^11) -
(A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 - (16*A^3*c^6*(-a^11*c^5)^(1/2))/
a^2 - 16*A^2*B*a^4*c^8 + (16*A*B^2*c^5*(-a^11*c^5)^(1/2))/a) - (32*B^2*a^7*
c^6*x^(1/2)*((B^2*(-a^11*c^5)^(1/2))/(4*a^10) - (A^2*c*(-a^11*c^5)^(1/2))/(
4*a^11) - (A*B*c^3)/(2*a^5))^(1/2))/(16*B^3*a^5*c^7 - (16*A^3*c^6*(-a^11*c^
5)^(1/2))/a^2 - 16*A^2*B*a^4*c^8 + (16*A*B^2*c^5*(-a^11*c^5)^(1/2))/a))*(-(
A^2*c*(-a^11*c^5)^(1/2) - B^2*a*(-a^11*c^5)^(1/2) + 2*A*B*a^6*c^3)/(4*a^11)
)^(1/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.420 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}+$$

```
[Out] -1/2*x^(3/2)*(B*x+A)/c/(c*x^2+a)+1/8*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/
4))*(5*B*a^(1/2)-3*A*c^(1/2))/a^(1/4)/c^(9/4)*2^(1/2)-1/8*arctan(1+c^(1/4)*
2^(1/2)*x^(1/2)/a^(1/4))*(5*B*a^(1/2)-3*A*c^(1/2))/a^(1/4)/c^(9/4)*2^(1/2)+
1/16*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)+3*A
*c^(1/2))/a^(1/4)/c^(9/4)*2^(1/2)-1/16*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)
*2^(1/2)*x^(1/2))*(5*B*a^(1/2)+3*A*c^(1/2))/a^(1/4)/c^(9/4)*2^(1/2)+5/2*B*x
^(1/2)/c^2
```

Rubi [A] time = 0.31, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 825, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}-\frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,\sqrt[4]{a}\,c^{9/4}}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (5*B*Sqrt[x])/(2*c^2) - (x^(3/2)*(A + B*x))/(2*c*(a + c*x^2)) + ((5*Sqrt[a]
*B - 3*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]
*a^(1/4)*c^(9/4)) - ((5*Sqrt[a]*B - 3*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4
)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(1/4)*c^(9/4)) + ((5*Sqrt[a]*B + 3*A*Sqrt
[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]
*a^(1/4)*c^(9/4)) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1
/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(1/4)*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx = -\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\int \frac{\sqrt{x}\left(\frac{3aA}{2}+\frac{5aBx}{2}\right)}{a+cx^2}\,dx}{2ac}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\int \frac{-\frac{5a^2B}{2}+\frac{3}{2}aAcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac^2}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\text{Subst}\left(\int \frac{-\frac{5a^2B}{2}+\frac{3}{2}aAcx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{ac^2}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4c^2}-\frac{\left(3A+\frac{5\sqrt{a}B}{\sqrt{c}}\right)\text{Subs}}{}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt[4]{a}}{\sqrt[4]{c}}+2x}{-\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}-x^2}\,dx,x,\sqrt{x}\right)}{8\sqrt{2}\sqrt[4]{a}c^{9/4}}+\frac{\left(5\sqrt{a}B+\right.}{}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(5\sqrt{a}B+3A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{8\sqrt{2}\sqrt[4]{a}c^{9/4}}-\frac{\left(5\sqrt{a}B+\right.}{}$$

$$= \frac{5B\sqrt{x}}{2c^2}-\frac{x^{3/2}(A+Bx)}{2c\left(a+cx^2\right)}-\frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\sqrt[4]{a}c^{7/4}}+\frac{\left(3A-\frac{5\sqrt{a}B}{\sqrt{c}}\right)\tan^{-1}\left(1+\frac{\sqrt{2}}{}\right.}{4\sqrt{2}\sqrt[4]{a}c^{7/4}}$$

Mathematica [A] time = 0.52, size = 344, normalized size = 1.13

$$\frac{1}{16}\left(\frac{8Ax^{7/2}}{a^2+acx^2}+\frac{8Bx^{9/2}}{a^2+acx^2}+\frac{12A\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{\sqrt[4]{-a}c^{7/4}}-\frac{12A\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{-a}}\right)}{\sqrt[4]{-a}c^{7/4}}-\frac{8Ax^{3/2}}{ac}+\frac{5\sqrt{2}\sqrt[4]{a}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\right.}{c^{9/4}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((40*B*Sqrt[x])/c^2 - (8*A*x^(3/2))/(a*c) - (8*B*x^(5/2))/(a*c) + (8*A*x^(7
/2))/(a^2 + a*c*x^2) + (8*B*x^(9/2))/(a^2 + a*c*x^2) + (10*Sqrt[2]*a^(1/4)*
B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) - (10*Sqrt[2]*a^(1
/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (12*A*ArcTan
[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/((-a)^(1/4)*c^(7/4)) - (12*A*ArcTanh[(c^(1/
4)*Sqrt[x])/(-a)^(1/4)])/((-a)^(1/4)*c^(7/4)) + (5*Sqrt[2]*a^(1/4)*B*Log[Sq
rt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) - (5*Sqrt[2]*
a^(1/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/
4))/16
```

fricas [B] time = 1.04, size = 884, normalized size = 2.91

$$\frac{\left(c^3x^2+ac^2\right)\sqrt{\frac{c^4\sqrt{-\frac{625B^4a^2-450A^2B^2ac+81A^4c^2}{ac^9}}+30AB}{c^4}}\log\left(-\left(625B^4a^2-81A^4c^2\right)\sqrt{x}+\left(3Aac^7\sqrt{-\frac{625B^4a^2-450A^2B^2ac+81}{ac^9}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((c^3*x^2 + a*c^2)*sqrt((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*
A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) +
(3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 12
5*B^3*a^2*c^2 - 45*A^2*B*a*c^3)*sqrt((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*
a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)) - (c^3*x^2 + a*c^2)*sqrt((c^4*sq
rt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B)/c^4)*lo
g(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450
*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 125*B^3*a^2*c^2 - 45*A^2*B*a*c^3)*sqr
t((c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) + 30*A*B
)/c^4)) - (c^3*x^2 + a*c^2)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c
 + 81*A^4*c^2)/(a*c^9)) - 30*A*B)/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt
(x) + (3*A*a*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)
) - 125*B^3*a^2*c^2 + 45*A^2*B*a*c^3)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A
^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 30*A*B)/c^4)) + (c^3*x^2 + a*c^2)*sqrt(
-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 30*A*B)
/c^4)*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a*c^7*sqrt(-(625*B^4*a
^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9)) - 125*B^3*a^2*c^2 + 45*A^2*B*a*
c^3)*sqrt(-(c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a*c^9))
 - 30*A*B)/c^4)) + 4*(4*B*c*x^2 - A*c*x + 5*B*a)*sqrt(x))/(c^3*x^2 + a*c^2)
```

giac [A] time = 0.20, size = 283, normalized size = 0.93

$$\frac{2B\sqrt{x}}{c^{2}}-\frac{Acx^{\frac{3}{2}}-Ba\sqrt{x}}{2\left(cx^{2}+a\right)c^{2}}-\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac-3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8ac^{4}}-\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac-3\left(a\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 - 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/((c*x^2 + a)*c^2) - 1/8*s
qrt(2)*(5*(a*c^3)^(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt
(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^4) - 1/8*sqrt(2)*(5*(a*c^3)^
(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) -
 2*sqrt(x))/(a/c)^(1/4))/(a*c^4) - 1/16*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*
(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4) +
 1/16*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt
(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4)
```

maple [A] time = 0.08, size = 314, normalized size = 1.03

$$-\frac{Ax^{\frac{3}{2}}}{2\left(cx^{2}+a\right)c}+\frac{Ba\sqrt{x}}{2\left(cx^{2}+a\right)c^{2}}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}+\frac{3\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{}}\right.}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*B/c^2*x^(1/2)-1/2/c/(c*x^2+a)*A*x^(3/2)+1/2/c^2/(c*x^2+a)*B*a*x^(1/2)-5/8
/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-5/16/c^2*B
*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c
)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5/8/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(
2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/16/c^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(
1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2
)))+3/8/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8
/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [**A**] time = 1.36, size = 283, normalized size = 0.93

$$-\frac{Acx^{\frac{3}{2}} - Ba\sqrt{x}}{2\left(c^3x^2 + ac^2\right)} + \frac{2B\sqrt{x}}{c^2} - \frac{\frac{2\sqrt{2}\left(5Ba\sqrt{c}-3A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(5Ba\sqrt{c}-3A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\right.}{2\sqrt{\sqrt{a}\sqrt{c}}}\right.}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(A*c*x^(3/2) - B*a*sqrt(x))/(c^3*x^2 + a*c^2) + 2*B*sqrt(x)/c^2 - 1/16
*(2*sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(
1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt
(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*arctan(-1
/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(
c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(5*B*a*sqrt(c) + 3*A
*sqrt(a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(
3/4)*c^(3/4)) - sqrt(2)*(5*B*a*sqrt(c) + 3*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4
)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/c^2
```

mupad [**B**] time = 1.27, size = 617, normalized size = 2.03

$$\frac{\frac{B\,a\,\sqrt{x}}{2}-\frac{A\,c\,x^{3/2}}{2}}{c^3\,x^2+a\,c^2}+\frac{2\,B\,\sqrt{x}}{c^2}-\mathrm{atan}\left(\frac{B^2\,a^2\,\sqrt{x}\,\sqrt{\frac{15\,A\,B}{32\,c^4}-\frac{25\,B^2\,\sqrt{-a\,c^9}}{64\,c^9}+\frac{9\,A^2\,\sqrt{-a\,c^9}}{64\,a\,c^8}}\,50\mathrm{i}}{\frac{27\,A^3\,a}{4\,c}+\frac{125\,B^3\,a^2\,\sqrt{-a\,c^9}}{4\,c^7}-\frac{75\,A\,B^2\,a^2}{4\,c^2}-\frac{45\,A^2\,B\,a\,\sqrt{-a\,c^9}}{4\,c^6}}-\frac{A^2\,a\,\sqrt{x}\,\sqrt{\frac{15\,A\,B}{32\,c^4}-\frac{25\,B^2\,\sqrt{-}}{64\,c^9}}}{\frac{27\,A^3\,a}{4\,c^2}+\frac{125\,B^3\,a^2\,\sqrt{-a\,c^9}}{4\,c^8}-\frac{75\,A}{4}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] ((B*a*x^(1/2))/2 - (A*c*x^(3/2))/2)/(a*c^2 + c^3*x^2) - atan((B^2*a^2*x^(1/
2)*((15*A*B)/(32*c^4) + (25*B^2*(-a*c^9)^(1/2))/(64*c^9) - (9*A^2*(-a*c^9)^
(1/2))/(64*a*c^8))^(1/2)*50i)/((27*A^3*a)/(4*c) - (125*B^3*a^2*(-a*c^9)^(1/
2))/(4*c^7) - (75*A*B^2*a^2)/(4*c^2) + (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^6))
 - (A^2*a*x^(1/2)*((15*A*B)/(32*c^4) + (25*B^2*(-a*c^9)^(1/2))/(64*c^9) - (
9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/2)*18i)/((27*A^3*a)/(4*c^2) - (125*B^3
*a^2*(-a*c^9)^(1/2))/(4*c^8) - (75*A*B^2*a^2)/(4*c^3) + (45*A^2*B*a*(-a*c^9
)^(1/2))/(4*c^7)))*((25*B^2*a*(-a*c^9)^(1/2) - 9*A^2*c*(-a*c^9)^(1/2) + 30*
A*B*a*c^5)/(64*a*c^9))^(1/2)*2i - atan((B^2*a^2*x^(1/2)*((15*A*B)/(32*c^4)
- (25*B^2*(-a*c^9)^(1/2))/(64*c^9) + (9*A^2*(-a*c^9)^(1/2))/(64*a*c^8))^(1/
2)*50i)/((27*A^3*a)/(4*c) + (125*B^3*a^2*(-a*c^9)^(1/2))/(4*c^7) - (75*A*B^
2*a^2)/(4*c^2) - (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^6)) - (A^2*a*x^(1/2)*((15
*A*B)/(32*c^4) - (25*B^2*(-a*c^9)^(1/2))/(64*c^9) + (9*A^2*(-a*c^9)^(1/2))/
(64*a*c^8))^(1/2)*18i)/((27*A^3*a)/(4*c^2) + (125*B^3*a^2*(-a*c^9)^(1/2))/(
4*c^8) - (75*A*B^2*a^2)/(4*c^3) - (45*A^2*B*a*(-a*c^9)^(1/2))/(4*c^7)))*((9
*A^2*c*(-a*c^9)^(1/2) - 25*B^2*a*(-a*c^9)^(1/2) + 30*A*B*a*c^5)/(64*a*c^9))
^(1/2)*2i + (2*B*x^(1/2))/c^2
```

sympy [**A**] time = 170.57, size = 1374, normalized size = 4.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/c**2, Eq(a, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a
**2, Eq(c, 0)), (-4*(-1)**(1/4)*A*a**(1/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)*
*(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)*
*(1/4)) + 3*A*a*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**
(1/4)) - 3*A*a*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1
/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1
/4)) - 6*A*a*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/
4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/
4)) + 3*A*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)*
*(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)*
*(1/4)) - 3*A*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-
1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/
c)**(1/4)) - 6*A*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(
8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2
*(1/c)**(1/4)) + 20*(-1)**(1/4)*B*a**(5/4)*sqrt(x)*(1/c)**(1/4)/(8*(-1)**(1
/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1
/4)) + 16*(-1)**(1/4)*B*a**(1/4)*c*x**(5/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**
(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)) +
5*I*B*a**(3/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/
(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**
2*(1/c)**(1/4)) - 5*I*B*a**(3/2)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**
(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*
a**(1/4)*c**3*x**2*(1/c)**(1/4)) + 10*I*B*a**(3/2)*sqrt(1/c)*atan((-1)**(3/
4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/
4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)) + 5*I*B*sqrt(a)*c*x**2*
sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*
a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4))
 - 5*I*B*sqrt(a)*c*x**2*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + s
qrt(x))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(1/4)*
c**3*x**2*(1/c)**(1/4)) + 10*I*B*sqrt(a)*c*x**2*sqrt(1/c)*atan((-1)**(3/4)*
sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(5/4)*c**2*(1/c)**(1/4)
+ 8*(-1)**(1/4)*a**(1/4)*c**3*x**2*(1/c)**(1/4)), True))
```

3.421 $\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=289

$$\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-(3\sqrt{a}$$

```
[Out] 1/16*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(3*B*a^(1/2)-A*c
^(1/2))/a^(3/4)/c^(7/4)*2^(1/2)-1/16*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2
^(1/2)*x^(1/2))*(3*B*a^(1/2)-A*c^(1/2))/a^(3/4)/c^(7/4)*2^(1/2)-1/8*arctan(
1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^(1/2)+A*c^(1/2))/a^(3/4)/c^(7/4)*
2^(1/2)+1/8*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^(1/2)+A*c^(1/2
))/a^(3/4)/c^(7/4)*2^(1/2)-1/2*(B*x+A)*x^(1/2)/c/(c*x^2+a)
```

Rubi [A] time = 0.24, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {819, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-(3\sqrt{a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] -(Sqrt[x]*(A + B*x))/(2*c*(a + c*x^2)) - ((3*Sqrt[a]*B + A*Sqrt[c])*ArcTan[
1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(3/4)*c^(7/4)) + ((3*S
qrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqr
t[2]*a^(3/4)*c^(7/4)) + ((3*Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(3/4)*c^(7/4)) - ((3*Sqrt[
a]*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x
])/(8*Sqrt[2]*a^(3/4)*c^(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\int \frac{\frac{aA}{2}+\frac{3aBx}{2}}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\text{Subst}\left(\int \frac{\frac{aA}{2}+\frac{3}{2}aBx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}-\frac{\left(3B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4c^2}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}}{a+c}\right.}{4c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{8c^2}+\frac{\left(3B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int -\right.}{8c}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}+\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{3/4}c^{7/4}}-\frac{\left(3\sqrt{a}\,B-A\sqrt{c}\right)\log}{8}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{2c\left(a+cx^2\right)}-\frac{\left(3\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{3/4}c^{7/4}}+\frac{\left(3\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}}{\sqrt[4]{a}}\right.}{4\sqrt{2}\,a^{3/4}c^{7/4}}$$

Mathematica [A] time = 0.23, size = 323, normalized size = 1.12

$$\frac{-\frac{\sqrt{2}\,\sqrt[4]{a}\,A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}+\frac{\sqrt{2}\,\sqrt[4]{a}\,A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}-\frac{2\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{2\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(\sqrt{2}\right.}{c^{5/4}}}{16a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((-8*A*Sqrt[x])/c - (8*B*x^(3/2))/c + (8*A*x^(5/2))/(a + c*x^2) + (8*B*x^(7
/2))/(a + c*x^2) - (2*Sqrt[2]*a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/a^(1/4)])/c^(5/4) + (2*Sqrt[2]*a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt
[x])/a^(1/4)])/c^(5/4) - (12*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/
4)])/c^(7/4) + (12*(-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(7
/4) - (Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/c^(5/4) + (Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/c^(5/4))/(16*a)
```

fricas [B] time = 1.03, size = 888, normalized size = 3.07

$$\frac{\left(c^2x^2+ac\right)\sqrt{-\frac{ac^3\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}+6AB}{ac^3}}\log\left(-\left(81B^4a^2-A^4c^2\right)\sqrt{x}+\left(3Ba^3c^5\sqrt{-\frac{81B^4a^2-18A^2B^2ac+A^4c^2}{a^3c^7}}-9A\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((c^2*x^2 + a*c)*sqrt(-(a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*
c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))*log(-(81*B^4*a^2 - A^4*c^2)*sqrt(x) + (3*
B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 9*A*B^
2*a^2*c^2 + A^3*a*c^3)*sqrt(-(a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^
4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))) - (c^2*x^2 + a*c)*sqrt(-(a*c^3*sqrt(-(
81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))*log(-(8
1*B^4*a^2 - A^4*c^2)*sqrt(x) - (3*B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*
a*c + A^4*c^2)/(a^3*c^7)) - 9*A*B^2*a^2*c^2 + A^3*a*c^3)*sqrt(-(a*c^3*sqrt(
-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 6*A*B)/(a*c^3))) - (c
^2*x^2 + a*c)*sqrt((a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^
3*c^7)) - 6*A*B)/(a*c^3))*log(-(81*B^4*a^2 - A^4*c^2)*sqrt(x) + (3*B*a^3*c^
5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) + 9*A*B^2*a^2*c^
2 - A^3*a*c^3)*sqrt((a*c^3*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*c^2)/(a
^3*c^7)) - 6*A*B)/(a*c^3))) + (c^2*x^2 + a*c)*sqrt((a*c^3*sqrt(-(81*B^4*a^2
 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 6*A*B)/(a*c^3))*log(-(81*B^4*a^2
- A^4*c^2)*sqrt(x) - (3*B*a^3*c^5*sqrt(-(81*B^4*a^2 - 18*A^2*B^2*a*c + A^4*
c^2)/(a^3*c^7)) + 9*A*B^2*a^2*c^2 - A^3*a*c^3)*sqrt((a*c^3*sqrt(-(81*B^4*a^
2 - 18*A^2*B^2*a*c + A^4*c^2)/(a^3*c^7)) - 6*A*B)/(a*c^3))) - 4*(B*x + A)*s
qrt(x))/(c^2*x^2 + a*c)
```

giac **[A]** time = 0.20, size = 271, normalized size = 0.94

$$-\frac{Bx^{\frac{3}{2}}+A\sqrt{x}}{2\left(cx^2+a\right)c}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+3\left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,ac^4}+\frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Ac^2+3\left(ac^3\right)^{\frac{3}{4}}B\right)\mathrm{arcta}}{8\,ac^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*x^(3/2) + A*sqrt(x))/((c*x^2 + a)*c) + 1/8*sqrt(2)*((a*c^3)^(1/4)*A
*c^2 + 3*(a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(
x))/(a/c)^(1/4))/(a*c^4) + 1/8*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + 3*(a*c^3)^(3/
4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a
*c^4) + 1/16*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - 3*(a*c^3)^(3/4)*B)*log(sqrt(2)*
sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^4) - 1/16*sqrt(2)*((a*c^3)^(1/4)*
A*c^2 - 3*(a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c)
)/(a*c^4)
```

maple **[A]** time = 0.08, size = 307, normalized size = 1.06

$$\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8ac}+\frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16ac}+3\sqrt{2}\,B\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*(-1/4*B/c*x^(3/2)-1/4*A/c*x^(1/2))/(c*x^2+a)+1/16/c*A*(a/c)^(1/4)/a*2^(1/
2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^
(1/2)+(a/c)^(1/2)))+1/8/c*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4
)*x^(1/2)+1)+1/8/c*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/
2)-1)+3/16/c^2*B/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c
)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/8/c^2*B/(a/c)^(1/4)
*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8/c^2*B/(a/c)^(1/4)*2^(1/2
)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.21, size = 259, normalized size = 0.90

$$-\frac{Bx^{\frac{3}{2}} + A\sqrt{x}}{2\left(c^2x^2 + ac\right)} + \frac{\frac{2\sqrt{2}\left(3B\sqrt{a}+A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(3B\sqrt{a}+A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} - \sqrt{2}\left(3B\sqrt{a}-\right.}{16c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*x^(3/2) + A*sqrt(x))/(c^2*x^2 + a*c) + 1/16*(2*sqrt(2)*(3*B*sqrt(a)
 + A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(3*B*sqrt(a) + A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4)
- 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*
sqrt(c)) - sqrt(2)*(3*B*sqrt(a) - A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sq
rt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(3*B*sqrt(a) - A*s
qrt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4
)*c^(3/4)))/c
```

mupad [B] time = 1.29, size = 656, normalized size = 2.27

$$2\,\mathrm{atanh}\left(\frac{18\,B^2\,a\,\sqrt{x}\,\sqrt{\frac{9\,B^2\,\sqrt{-a^3\,c^7}}{64\,a^2\,c^7}-\frac{A^2\,\sqrt{-a^3\,c^7}}{64\,a^3\,c^6}-\frac{3\,A\,B}{32\,a\,c^3}}}{\frac{3\,A^2\,B}{4\,c}-\frac{27\,B^3\,a}{4\,c^2}+\frac{A^3\,\sqrt{-a^3\,c^7}}{4\,a^2\,c^4}-\frac{9\,A\,B^2\,\sqrt{-a^3\,c^7}}{4\,a\,c^5}}-\frac{2\,A^2\,c\,\sqrt{x}\,\sqrt{\frac{9\,B^2\,\sqrt{-a^3\,c^7}}{64\,a^2\,c^7}-\frac{A^2\,\sqrt{-a^3\,c^7}}{64\,a^3\,c^6}-\frac{3\,A\,B}{32\,a\,c^3}}}{\frac{3\,A^2\,B}{4\,c}-\frac{27\,B^3\,a}{4\,c^2}+\frac{A^3\,\sqrt{-a^3\,c^7}}{4\,a^2\,c^4}-\frac{9\,A\,B^2\,\sqrt{-a^3\,c^7}}{4\,a\,c^5}}\right)\sqrt{-\frac{A^2\,c}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] 2*atanh((18*B^2*a*x^(1/2)*((9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*c^7) - (A^2*(-a
^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c^3))^(1/2))/((3*A^2*B)/(4*c) -
 (27*B^3*a)/(4*c^2) + (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) - (9*A*B^2*(-a^3*c
^7)^(1/2))/(4*a*c^5)) - (2*A^2*c*x^(1/2)*((9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*
c^7) - (A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c^3))^(1/2))/((3
*A^2*B)/(4*c) - (27*B^3*a)/(4*c^2) + (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) - (
9*A*B^2*(-a^3*c^7)^(1/2))/(4*a*c^5)))*(-(A^2*c*(-a^3*c^7)^(1/2) - 9*B^2*a*(
-a^3*c^7)^(1/2) + 6*A*B*a^2*c^4)/(64*a^3*c^7))^(1/2) + 2*atanh((18*B^2*a*x^
(1/2)*((A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c^3) - (9*B^2*(-
a^3*c^7)^(1/2))/(64*a^2*c^7))^(1/2))/((3*A^2*B)/(4*c) - (27*B^3*a)/(4*c^2)
- (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) + (9*A*B^2*(-a^3*c^7)^(1/2))/(4*a*c^5)
) - (2*A^2*c*x^(1/2)*((A^2*(-a^3*c^7)^(1/2))/(64*a^3*c^6) - (3*A*B)/(32*a*c
^3) - (9*B^2*(-a^3*c^7)^(1/2))/(64*a^2*c^7))^(1/2))/((3*A^2*B)/(4*c) - (27*
B^3*a)/(4*c^2) - (A^3*(-a^3*c^7)^(1/2))/(4*a^2*c^4) + (9*A*B^2*(-a^3*c^7)^(
1/2))/(4*a*c^5)))*(-(9*B^2*a*(-a^3*c^7)^(1/2) - A^2*c*(-a^3*c^7)^(1/2) + 6*
A*B*a^2*c^4)/(64*a^3*c^7))^(1/2) - ((A*x^(1/2))/(2*c) + (B*x^(3/2))/(2*c))/
(a + c*x^2)
```

sympy [A] time = 90.99, size = 1316, normalized size = 4.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(c, 0)), ((-
2*A/(3*x**(3/2)) - 2*B/sqrt(x))/c**2, Eq(a, 0)), ((2*A*x**(5/2)/5 + 2*B*x**
(7/2)/7)/a**2, Eq(c, 0)), (-4*(-1)**(1/4)*A*a**(5/4)*c*sqrt(x)*(1/c)**(1/4)
/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x*
*2*(1/c)**(1/4)) - I*A*a**(3/2)*c*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)
**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4
)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + I*A*a**(3/2)*c*sqrt(1/c)*log((-1)**(1/
4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/
4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 2*I*A*a**(3/2)*c*sqrt
(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(
9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - I
*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqr
t(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c*
*3*x**2*(1/c)**(1/4)) + I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log((-1)**(1/4)*a**
(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8
*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 2*I*A*sqrt(a)*c**2*x**2*sqr
t(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**
(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) -
4*(-1)**(1/4)*B*a**(5/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4)*c*
*2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + 3*B*a**2
*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*
c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 3*B*a*
*2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)
*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) - 6*B*a
**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(9/
4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4)) + 3*B
*a*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*
a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(1/4))
 - 3*B*a*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(
1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1/c)**(
1/4)) - 6*B*a*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(
-1)**(1/4)*a**(9/4)*c**2*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**3*x**2*(1
/c)**(1/4)), True))
```

3.422 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=292

$$-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{5/4}c^{5/4}}-\frac{\left(\sqrt{a}\,B+\right.}{}$$

```
[Out] -1/16*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^
(1/2))/a^(5/4)/c^(5/4)*2^(1/2)+1/16*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^
(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(5/4)/c^(5/4)*2^(1/2)-1/8*arctan(1-c
^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(5/4)/c^(5/4)*2^(1/
2)+1/8*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(5
/4)/c^(5/4)*2^(1/2)-1/2*(-A*c*x+B*a)*x^(1/2)/a/c/(c*x^2+a)
```

Rubi [A] time = 0.23, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {821, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{5/4}c^{5/4}}-\frac{\left(\sqrt{a}\,B+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] -(Sqrt[x]*(a*B - A*c*x))/(2*a*c*(a + c*x^2)) - ((Sqrt[a]*B + A*Sqrt[c])*Arc
Tan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(5/4)*c^(5/4)) + (
(Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*S
qrt[2]*a^(5/4)*c^(5/4)) - ((Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^
(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(5/4)*c^(5/4)) + ((Sqrt[a]
*B - A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])
/(8*Sqrt[2]*a^(5/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+cx^2\right)^2}\,dx &= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}+\frac{\int \frac{\frac{aB}{2}+\frac{Acx}{2}}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2ac} \\
&= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}+\frac{\text{Subst}\left(\int \frac{\frac{aB}{2}+\frac{1}{2}Acx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{ac} \\
&= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4ac}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}}{a+c}\right.}{4ac} \\
&= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{8ac}+\frac{\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int\right.}{8} \\
&= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}+\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{5/4}c^{3/4}}-\frac{\left(A-\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\log\left(\sqrt{a}+\right.}{8\sqrt{2}\,a^5} \\
&= -\frac{\sqrt{x}\,(aB-Acx)}{2ac\left(a+cx^2\right)}-\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{5/4}c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}}{\sqrt[4]{a}}\right.}{4\sqrt{2}\,a^{5/4}c^{5/4}}
\end{aligned}
$$

Mathematica [**A**] time = 0.23, size = 315, normalized size = 1.08

$$
\frac{-\frac{\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}+\frac{\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}-\frac{2\sqrt{2}\,a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{2\sqrt{2}\,a^{5/4}B\tan^{-1}\left(\sqrt{2}\right.}{c^{5/4}}}{16a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] ((-8*a*B*Sqrt[x])/c + (8*a*A*x^(3/2))/(a + c*x^2) + (8*a*B*x^(5/2))/(a + c*
x^2) - (2*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/
c^(5/4) + (2*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)
])/c^(5/4) - (4*(-a)^(3/4)*A*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4)
+ (4*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (Sqrt[2]
*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(5
/4) + (Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/c^(5/4))/(16*a^2)
```

fricas [**B**] time = 0.93, size = 901, normalized size = 3.09

$$
-\frac{\left(ac^2x^2+a^2c\right)\sqrt{-\frac{a^2c^2\sqrt{-\frac{B^4a^2-2\,A^2B^2ac+A^4c^2}{a^5c^5}}+2\,AB}{a^2c^2}}\,\log\left(-\left(B^4a^2-A^4c^2\right)\sqrt{x}+\left(Aa^4c^4\sqrt{-\frac{B^4a^2-2\,A^2B^2ac+A^4c^2}{a^5c^5}}+B^3a^3c-\right.\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a*c^2*x^2 + a^2*c)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (
A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + B^3*a^3*c
- A^2*B*a^2*c^2)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(
a^5*c^5)) + 2*A*B)/(a^2*c^2))) - (a*c^2*x^2 + a^2*c)*sqrt(-(a^2*c^2*sqrt(-(
B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))*log(-(B^4
*a^2 - A^4*c^2)*sqrt(x) - (A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c
^2)/(a^5*c^5)) + B^3*a^3*c - A^2*B*a^2*c^2)*sqrt(-(a^2*c^2*sqrt(-(B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) + 2*A*B)/(a^2*c^2))) - (a*c^2*x^2 + a^
2*c)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - 2
*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x) + (A*a^4*c^4*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - B^3*a^3*c + A^2*B*a^2*c^2)*sqrt(
(a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - 2*A*B)/(a^2
*c^2))) + (a*c^2*x^2 + a^2*c)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c
+ A^4*c^2)/(a^5*c^5)) - 2*A*B)/(a^2*c^2))*log(-(B^4*a^2 - A^4*c^2)*sqrt(x)
- (A*a^4*c^4*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^5*c^5)) - B^3*a^3
*c + A^2*B*a^2*c^2)*sqrt((a^2*c^2*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^5*c^5)) - 2*A*B)/(a^2*c^2))) - 4*(A*c*x - B*a)*sqrt(x))/(a*c^2*x^2 + a^
2*c)
```

giac [A] time = 0.19, size = 271, normalized size = 0.93

$$\frac{Acx^{\frac{3}{2}} - Ba\sqrt{x}}{2\left(cx^2+a\right)ac} + \frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac + \left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^2c^3} + \frac{\sqrt{2}\left(\left(ac^3\right)^{\frac{1}{4}}Bac + \left(ac^3\right)^{\frac{3}{4}}A\right)\arctan}{8\,a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/((c*x^2 + a)*a*c) + 1/8*sqrt(2)*((a*c^3)^(1
/4)*B*a*c + (a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sq
rt(x))/(a/c)^(1/4))/(a^2*c^3) + 1/8*sqrt(2)*((a*c^3)^(1/4)*B*a*c + (a*c^3)^
(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))
/(a^2*c^3) + 1/16*sqrt(2)*((a*c^3)^(1/4)*B*a*c - (a*c^3)^(3/4)*A)*log(sqrt(
2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^3) - 1/16*sqrt(2)*((a*c^3)^(
1/4)*B*a*c - (a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a
/c))/(a^2*c^3)
```

maple [A] time = 0.05, size = 316, normalized size = 1.08

$$\frac{\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}ac} + \frac{\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}ac} + \frac{\sqrt{2}\;A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{16\left(\frac{a}{c}\right)^{\frac{1}{4}}ac} + \frac{\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;B\arctan}{8ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 2*(1/4*A/a*x^(3/2)-1/4*B/c*x^(1/2))/(c*x^2+a)+1/8/a/c*B*(a/c)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8/a/c*B*(a/c)^(1/4)*2^(1/2)*arctan
(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/16/a/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^
(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/
2)))+1/16/a/c*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)
^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/8/a/c*A/(a/c)^(1/4)*
2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8/a/c*A/(a/c)^(1/4)*2^(1/2)
*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A]   time = 1.24, size = 272, normalized size = 0.93

$$\frac{Acx^{\frac{3}{2}} - Ba\sqrt{x}}{2\left(ac^2x^2 + a^2c\right)} + \frac{\frac{2\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(Ba\sqrt{c}+A\sqrt{a}c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}-2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{\sqrt{2}\left(Ba\sqrt{c}\right.}{}}{16\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(A*c*x^(3/2) - B*a*sqrt(x))/(a*c^2*x^2 + a^2*c) + 1/16*(2*sqrt(2)*(B*a*
sqrt(c) + A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt
(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
 + 2*sqrt(2)*(B*a*sqrt(c) + A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/
4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a
)*sqrt(c))*sqrt(c)) + sqrt(2)*(B*a*sqrt(c) - A*sqrt(a)*c)*log(sqrt(2)*a^(1/
4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(B*a*
sqrt(c) - A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + s
qrt(a))/(a^(3/4)*c^(3/4)))/(a*c)
```

mupad [B]   time = 1.28, size = 652, normalized size = 2.23

$$2\,\mathrm{atanh}\left(\frac{2A^2c^2\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^5c^5}}{64a^4c^5} - \frac{A^2\sqrt{-a^5c^5}}{64a^5c^4} - \frac{AB}{32a^2c^2}}}{\frac{AB^2}{4} - \frac{A^3c}{4a} - \frac{B^3\sqrt{-a^5c^5}}{4a^2c^3} + \frac{A^2B\sqrt{-a^5c^5}}{4a^3c^2}} - \frac{2B^2c\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^5c^5}}{64a^4c^5} - \frac{A^2\sqrt{-a^5c^5}}{64a^5c^4} - \frac{AB}{32a^2c^2}}}{\frac{AB^2}{4a} - \frac{A^3c}{4a^2} - \frac{B^3\sqrt{-a^5c^5}}{4a^3c^3} + \frac{A^2B\sqrt{-a^5c^5}}{4a^4c^2}}\right)\sqrt{-\frac{A^2c\sqrt{}}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] 2*atanh((2*A^2*c^2*x^(1/2)*((B^2*(-a^5*c^5)^(1/2))/(64*a^4*c^5) - (A^2*(-a^
5*c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2))^(1/2))/((A*B^2)/4 - (A^3*c
)/(4*a) - (B^3*(-a^5*c^5)^(1/2))/(4*a^2*c^3) + (A^2*B*(-a^5*c^5)^(1/2))/(4*
a^3*c^2)) - (2*B^2*c*x^(1/2)*((B^2*(-a^5*c^5)^(1/2))/(64*a^4*c^5) - (A^2*(-
a^5*c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2))^(1/2))/((A*B^2)/(4*a) -
(A^3*c)/(4*a^2) - (B^3*(-a^5*c^5)^(1/2))/(4*a^3*c^3) + (A^2*B*(-a^5*c^5)^(1
/2))/(4*a^4*c^2)))*(-(A^2*c*(-a^5*c^5)^(1/2) - B^2*a*(-a^5*c^5)^(1/2) + 2*A
*B*a^3*c^3)/(64*a^5*c^5))^(1/2) + 2*atanh((2*A^2*c^2*x^(1/2)*((A^2*(-a^5*c^
5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2) - (B^2*(-a^5*c^5)^(1/2))/(64*a^
4*c^5))^(1/2))/((A*B^2)/4 - (A^3*c)/(4*a) + (B^3*(-a^5*c^5)^(1/2))/(4*a^2*c
^3) - (A^2*B*(-a^5*c^5)^(1/2))/(4*a^3*c^2)) - (2*B^2*c*x^(1/2)*((A^2*(-a^5*
c^5)^(1/2))/(64*a^5*c^4) - (A*B)/(32*a^2*c^2) - (B^2*(-a^5*c^5)^(1/2))/(64*
a^4*c^5))^(1/2))/((A*B^2)/(4*a) - (A^3*c)/(4*a^2) + (B^3*(-a^5*c^5)^(1/2))/
(4*a^3*c^3) - (A^2*B*(-a^5*c^5)^(1/2))/(4*a^4*c^2)))*(-(B^2*a*(-a^5*c^5)^(1
/2) - A^2*c*(-a^5*c^5)^(1/2) + 2*A*B*a^3*c^3)/(64*a^5*c^5))^(1/2) + ((A*x^(
3/2))/(2*a) - (B*x^(1/2))/(2*c))/(a + c*x^2)
```

sympy [A]   time = 52.79, size = 1266, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/c**2, Eq(a, 0)), ((2*A*x**(3/2)/3
 + 2*B*x**(5/2)/5)/a**2, Eq(c, 0)), (4*(-1)**(1/4)*A*a**(1/4)*c*x**(3/2)*(1
/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*
c**2*x**2*(1/c)**(1/4)) + A*a*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt
(x))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x
**2*(1/c)**(1/4)) - A*a*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8
*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/
c)**(1/4)) - 2*A*a*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1
)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**
(1/4)) + A*c*x**2*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)
**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(
1/4)) - A*c*x**2*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/
4)) - 2*A*c*x**2*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)*
*(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1
/4)) - 4*(-1)**(1/4)*B*a**(5/4)*sqrt(x)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(9/4
)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) - I*B*a**
(3/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**
(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/
4)) + I*B*a**(3/2)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x
))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**
2*(1/c)**(1/4)) - 2*I*B*a**(3/2)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/
4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a*
*(5/4)*c**2*x**2*(1/c)**(1/4)) - I*B*sqrt(a)*c*x**2*sqrt(1/c)*log(-(-1)**(1
/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4)
 + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) + I*B*sqrt(a)*c*x**2*sqrt
(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(9
/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*(1/c)**(1/4)) - 2*I*B
*sqrt(a)*c*x**2*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))
/(8*(-1)**(1/4)*a**(9/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(5/4)*c**2*x**2*
(1/c)**(1/4)), True))
```

3.423 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=287

$$\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\left(\sqrt{a}\,B\right.$$

```
[Out] 1/16*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-3*A*c
^(1/2))/a^(7/4)/c^(3/4)*2^(1/2)-1/16*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2
^(1/2)*x^(1/2))*(B*a^(1/2)-3*A*c^(1/2))/a^(7/4)/c^(3/4)*2^(1/2)-1/8*arctan(
1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+3*A*c^(1/2))/a^(7/4)/c^(3/4)*
2^(1/2)+1/8*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+3*A*c^(1/2
))/a^(7/4)/c^(3/4)*2^(1/2)+1/2*(B*x+A)*x^(1/2)/a/(c*x^2+a)
```

Rubi [A] time = 0.25, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}}-\left(\sqrt{a}\,B\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)^2),x]
```

```
[Out] (Sqrt[x]*(A + B*x))/(2*a*(a + c*x^2)) - ((Sqrt[a]*B + 3*A*Sqrt[c])*ArcTan[1
 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(7/4)*c^(3/4)) + ((Sqrt
[a]*B + 3*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt
[2]*a^(7/4)*c^(3/4)) + ((Sqrt[a]*B - 3*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(
1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(7/4)*c^(3/4)) - ((Sqrt[a]*
B - 3*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x]
)/(8*Sqrt[2]*a^(7/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^2}\,dx &= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\int \frac{-\frac{3}{2}aAc-\frac{1}{2}aBcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^2c} \\
&= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{-\frac{3}{2}aAc-\frac{1}{2}aBcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^2c} \\
&= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^{3/2}c} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\text{Subst}\left(\right.}{4a^{3}} \\
&= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{8a^{3/2}c} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\text{Su}}{} \\
&= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} + \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{7/4}c^{3/4}} - \frac{\left(\sqrt{a}\,B-3A\sqrt{c}\right)\log}{8} \\
&= \frac{\sqrt{x}\,(A+Bx)}{2a\left(a+cx^2\right)} - \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{7/4}c^{3/4}} + \frac{\left(\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1+\frac{\sqrt{2}\,\sqrt[4]{c}}{\sqrt[4]{a}}\right.}{4\sqrt{2}\,a^{7/4}c^{3/4}}
\end{aligned}$$

Mathematica [A] time = 0.22, size = 304, normalized size = 1.06

$$\frac{\frac{8aA\sqrt{x}}{a+cx^2} - \frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{\sqrt[4]{c}} + \frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{\sqrt[4]{c}} - \frac{6\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{\sqrt[4]{c}} + \frac{6\sqrt{2}\,\sqrt[4]{a}}{}}{16a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)^2),x]
```

```
[Out] ((8*a*A*Sqrt[x])/(a + c*x^2) + (8*a*B*x^(3/2))/(a + c*x^2) - (6*Sqrt[2]*a^(
1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (6*Sqrt[2]*
a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (4*(-a)^
(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) + (4*(-a)^(3/4)*B*Arc
Tanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (3*Sqrt[2]*a^(1/4)*A*Log[Sqrt
[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (3*Sqrt[2]*a^
(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4)
)/(16*a^2)
```

fricas [B] time = 1.05, size = 877, normalized size = 3.06

$$\frac{\left(acx^2+a^2\right)\sqrt{-\frac{a^3c\sqrt{-\frac{B^4a^2-18\,A^2B^2ac+81\,A^4c^2}{a^7c^3}}+6\,AB}{a^3c}}\,\log\left(-\left(B^4a^2-81\,A^4c^2\right)\sqrt{x}+\left(Ba^6c^2\sqrt{-\frac{B^4a^2-18\,A^2B^2ac+81\,A^4c^2}{a^7c^3}}-3\,A\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c*x^2 + a^2)*sqrt(-(a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*
c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))*log(-(B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (B*
a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 3*A*B^2*
a^3*c + 27*A^3*a^2*c^2)*sqrt(-(a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A
^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))) - (a*c*x^2 + a^2)*sqrt(-(a^3*c*sqrt(-
(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))*log(-(
B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (B*a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c
+ 81*A^4*c^2)/(a^7*c^3)) - 3*A*B^2*a^3*c + 27*A^3*a^2*c^2)*sqrt(-(a^3*c*sqr
t(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 6*A*B)/(a^3*c))) -
(a*c*x^2 + a^2)*sqrt((a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(
a^7*c^3)) - 6*A*B)/(a^3*c))*log(-(B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (B*a^6*c^
2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) + 3*A*B^2*a^3*c
- 27*A^3*a^2*c^2)*sqrt((a^3*c*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)
/(a^7*c^3)) - 6*A*B)/(a^3*c))) + (a*c*x^2 + a^2)*sqrt((a^3*c*sqrt(-(B^4*a^2
 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 6*A*B)/(a^3*c))*log(-(B^4*a^2
- 81*A^4*c^2)*sqrt(x) - (B*a^6*c^2*sqrt(-(B^4*a^2 - 18*A^2*B^2*a*c + 81*A^4
*c^2)/(a^7*c^3)) + 3*A*B^2*a^3*c - 27*A^3*a^2*c^2)*sqrt((a^3*c*sqrt(-(B^4*a
^2 - 18*A^2*B^2*a*c + 81*A^4*c^2)/(a^7*c^3)) - 6*A*B)/(a^3*c))) + 4*(B*x +
A)*sqrt(x))/(a*c*x^2 + a^2)
```

giac [A] time = 0.22, size = 273, normalized size = 0.95

$$\frac{Bx^{\frac{3}{2}} + A\sqrt{x}}{2\left(cx^2 + a\right)a} + \frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2 + \left(ac^3\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}} + 2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^2c^3} + \frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Ac^2 + \left(ac^3\right)^{\frac{3}{4}}B\right)\arctan}{8\,a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*x^(3/2) + A*sqrt(x))/((c*x^2 + a)*a) + 1/8*sqrt(2)*(3*(a*c^3)^(1/4)*
A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x
))/(a/c)^(1/4))/(a^2*c^3) + 1/8*sqrt(2)*(3*(a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3
/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(
a^2*c^3) + 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(
2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^3) - 1/16*sqrt(2)*(3*(a*c^3)
^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt
(a/c))/(a^2*c^3)
```

maple [A] time = 0.07, size = 313, normalized size = 1.09

$$\frac{B\,x^{\frac{3}{2}}}{2\left(c\,x^2 + a\right)a} + \frac{A\sqrt{x}}{2\left(c\,x^2 + a\right)a} + \frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} - 1\right)}{8a^2} + \frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}} + 1\right)}{8a^2} + \frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a)^2,x)
```

```
[Out] 1/2*A*x^(1/2)/a/(c*x^2+a)+3/16*A/a^2*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3
/8*A/a^2*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/8*A/a^
2*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+1/2*B*x^(3/2)/a
/(c*x^2+a)+1/16*B/a/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)
+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+1/8*B/a/c/(a/c)^
(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+1/8*B/a/c/(a/c)^(1/4)*2
^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.14, size = 256, normalized size = 0.89

$$\frac{Bx^{\frac{3}{2}} + A\sqrt{x}}{2\left(acx^2 + a^2\right)} + \frac{\frac{2\sqrt{2}\left(B\sqrt{a} + 3A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} + \frac{2\sqrt{2}\left(B\sqrt{a} + 3A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}} - 2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}} - \frac{\sqrt{2}\left(B\sqrt{a} - 3A\right.}{}}{16a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*x^(3/2) + A*sqrt(x))/(a*c*x^2 + a^2) + 1/16*(2*sqrt(2)*(B*sqrt(a) +
3*A*sqrt(c))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x
))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(
2)*(B*sqrt(a) + 3*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) -
 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*s
qrt(c)) - sqrt(2)*(B*sqrt(a) - 3*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqr
t(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(B*sqrt(a) - 3*A*sq
rt(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)
*c^(3/4)))/a
```

mupad [B] time = 1.28, size = 649, normalized size = 2.26

$$\frac{\frac{A\sqrt{x}}{2a} + \frac{Bx^{3/2}}{2a}}{cx^2 + a} - 2\,\mathrm{atanh}\left(\frac{2B^2c^2\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^7c^3}}{64a^6c^3} - \frac{9A^2\sqrt{-a^7c^3}}{64a^7c^2} - \frac{3AB}{32a^3c}}}{\frac{B^3c}{4a} + \frac{3AB^2\sqrt{-a^7c^3}}{4a^5} - \frac{27A^3c\sqrt{-a^7c^3}}{4a^6} - \frac{9A^2Bc^2}{4a^2}} - \frac{18A^2c^3\sqrt{x}\sqrt{\frac{B^2\sqrt{-a^7c^3}}{64a^6c^3} - \frac{9A^2\sqrt{-a^7c^3}}{64a^7c^2} - \cdots}}{\frac{B^3c}{4} + \frac{3AB^2\sqrt{-a^7c^3}}{4a^4} - \frac{27A^3c\sqrt{-a^7c^3}}{4a^5} - \frac{9A^2}{4}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)^2),x)
```

```
[Out] ((A*x^(1/2))/(2*a) + (B*x^(3/2))/(2*a))/(a + c*x^2) - 2*atanh((2*B^2*c^2*x^
(1/2)*((B^2*(-a^7*c^3)^(1/2))/(64*a^6*c^3) - (9*A^2*(-a^7*c^3)^(1/2))/(64*a
^7*c^2) - (3*A*B)/(32*a^3*c))^(1/2))/((B^3*c)/(4*a) + (3*A*B^2*(-a^7*c^3)^(
1/2))/(4*a^5) - (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^6) - (9*A^2*B*c^2)/(4*a^2)
) - (18*A^2*c^3*x^(1/2)*((B^2*(-a^7*c^3)^(1/2))/(64*a^6*c^3) - (9*A^2*(-a^7
*c^3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c))^(1/2))/((B^3*c)/4 + (3*A*B^
2*(-a^7*c^3)^(1/2))/(4*a^4) - (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^5) - (9*A^2*
B*c^2)/(4*a)))*(-(9*A^2*c*(-a^7*c^3)^(1/2) - B^2*a*(-a^7*c^3)^(1/2) + 6*A*B
*a^4*c^2)/(64*a^7*c^3))^(1/2) - 2*atanh((2*B^2*c^2*x^(1/2)*((9*A^2*(-a^7*c^
3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c) - (B^2*(-a^7*c^3)^(1/2))/(64*a^
6*c^3))^(1/2))/((B^3*c)/(4*a) - (3*A*B^2*(-a^7*c^3)^(1/2))/(4*a^5) + (27*A^
3*c*(-a^7*c^3)^(1/2))/(4*a^6) - (9*A^2*B*c^2)/(4*a^2)) - (18*A^2*c^3*x^(1/2
)*((9*A^2*(-a^7*c^3)^(1/2))/(64*a^7*c^2) - (3*A*B)/(32*a^3*c) - (B^2*(-a^7*
c^3)^(1/2))/(64*a^6*c^3))^(1/2))/((B^3*c)/4 - (3*A*B^2*(-a^7*c^3)^(1/2))/(4
*a^4) + (27*A^3*c*(-a^7*c^3)^(1/2))/(4*a^5) - (9*A^2*B*c^2)/(4*a)))*(-(B^2*
a*(-a^7*c^3)^(1/2) - 9*A^2*c*(-a^7*c^3)^(1/2) + 6*A*B*a^4*c^2)/(64*a^7*c^3)
)^(1/2)
```

sympy [A] time = 77.78, size = 1294, normalized size = 4.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/c**2, Eq(a, 0)), ((2*A*sqrt(x) +
2*B*x**(3/2)/3)/a**2, Eq(c, 0)), (4*(-1)**(1/4)*A*a**(5/4)*c*sqrt(x)*(1/c)*
*(1/4)/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**
2*x**2*(1/c)**(1/4)) - 3*I*A*a**(3/2)*c*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)
*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**
(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + 3*I*A*a**(3/2)*c*sqrt(1/c)*log((-1
)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)*
*(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 6*I*A*a**(3/2)*c*
sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*
a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) -
 3*I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*
c**2*x**2*(1/c)**(1/4)) + 3*I*A*sqrt(a)*c**2*x**2*sqrt(1/c)*log((-1)**(1/4)
*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c)**(1/4) +
 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 6*I*A*sqrt(a)*c**2*x**2*s
qrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a
**(13/4)*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) +
4*(-1)**(1/4)*B*a**(5/4)*c*x**(3/2)*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(13/4)*c
*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + B*a**2*log
(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(
1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - B*a**2*log((
-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c
)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 2*B*a**2*atan((
-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*c*(1/c
)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) + B*a*c*x**2*log(
-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - B*a*c*x**2*lo
g((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*c*(
1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)) - 2*B*a*c*x**2
*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)
*c*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c**2*x**2*(1/c)**(1/4)), True))
```

3.424 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$-\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}-\frac{(3}{}$$

```
[Out] -1/8*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^(1/2)-5*A*c^(1/2))/a^
(9/4)/c^(1/4)*2^(1/2)+1/8*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^
(1/2)-5*A*c^(1/2))/a^(9/4)/c^(1/4)*2^(1/2)-1/16*ln(a^(1/2)+x*c^(1/2)-a^(1/4
)*c^(1/4)*2^(1/2)*x^(1/2))*(3*B*a^(1/2)+5*A*c^(1/2))/a^(9/4)/c^(1/4)*2^(1/2
)+1/16*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(3*B*a^(1/2)+5
*A*c^(1/2))/a^(9/4)/c^(1/4)*2^(1/2)-5/2*A/a^2/x^(1/2)+1/2*(B*x+A)/a/(c*x^2+
a)/x^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}+\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{8\sqrt{2}\,a^{9/4}\sqrt[4]{c}}-\frac{(3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)^2),x]
```

```
[Out] (-5*A)/(2*a^2*Sqrt[x]) + (A + B*x)/(2*a*Sqrt[x]*(a + c*x^2)) - ((3*Sqrt[a]*
B - 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*
a^(9/4)*c^(1/4)) + ((3*Sqrt[a]*B - 5*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)
*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(9/4)*c^(1/4)) - ((3*Sqrt[a]*B + 5*A*Sqrt[
c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*
a^(9/4)*c^(1/4)) + ((3*Sqrt[a]*B + 5*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/
4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(9/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^2}\,dx &= \frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\int \frac{-\frac{5}{2}aAc-\frac{3}{2}aBcx}{x^{3/2}\left(a+cx^2\right)}\,dx}{2a^2c}\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\int \frac{-\frac{3}{2}a^2Bc+\frac{5}{2}aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^3c}\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\text{Subst}\left(\int \frac{-\frac{3}{2}a^2Bc+\frac{5}{2}aAc^2x^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{a^3c}\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}+cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4a^2}+\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right)}{8a^2}-\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}-\frac{\left(3\sqrt{a}B+5A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{8\sqrt{2}a^{9/4}\sqrt[4]{c}}+\\
&= -\frac{5A}{2a^2\sqrt{x}}+\frac{A+Bx}{2a\sqrt{x}\left(a+cx^2\right)}+\frac{\left(5A-\frac{3\sqrt{a}B}{\sqrt{c}}\right)\sqrt[4]{c}\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}a^{9/4}}-
\end{aligned}$$

Mathematica [**C**] time = 0.46, size = 256, normalized size = 0.84

$$\frac{\sqrt[4]{a}\left(\frac{8a^{3/4}A}{\sqrt{x}\left(a+cx^2\right)}+\frac{8a^{3/4}B\sqrt{x}}{a+cx^2}-\frac{3\sqrt{2}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{3\sqrt{2}B\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}-\right.}{16a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)^2),x]
```

```
[Out] ((-40*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + a^(1/4)*((
8*a^(3/4)*A)/(Sqrt[x]*(a + c*x^2)) + (8*a^(3/4)*B*Sqrt[x])/(a + c*x^2) - (6
*Sqrt[2]*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (6*Sqrt
[2]*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (3*Sqrt[2]*B
*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (3*S
qrt[2]*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4
)))/(16*a^2)
```

fricas [**B**] time = 1.28, size = 877, normalized size = 2.88

$$-\frac{\left(a^2cx^3+a^3x\right)\sqrt{\frac{a^4\sqrt{-\frac{81B^4a^2-450A^2B^2ac+625A^4c^2}{a^9c}}+30AB}{a^4}}\log\left(-\left(81B^4a^2-625A^4c^2\right)\sqrt{x}+\left(5Aa^7c\sqrt{-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a^2*c*x^3 + a^3*x)*sqrt((a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x)
 + (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) +
 27*B^3*a^4 - 75*A^2*B*a^3*c)*sqrt((a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c
 + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)) - (a^2*c*x^3 + a^3*x)*sqrt((a^4*sq
rt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4)*lo
g(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*
A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 27*B^3*a^4 - 75*A^2*B*a^3*c)*sqrt((a^
4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) + 30*A*B)/a^4
)) - (a^2*c*x^3 + a^3*x)*sqrt(-(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x)
 + (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) -
 27*B^3*a^4 + 75*A^2*B*a^3*c)*sqrt(-(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*
c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)) + (a^2*c*x^3 + a^3*x)*sqrt(-(a^4*
sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/a^4)*
log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c*sqrt(-(81*B^4*a^2 - 45
0*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 27*B^3*a^4 + 75*A^2*B*a^3*c)*sqrt(-
(a^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c)) - 30*A*B)/
a^4)) + 4*(5*A*c*x^2 - B*a*x + 4*A*a)*sqrt(x))/(a^2*c*x^3 + a^3*x)
```

giac [**A**]   time = 0.22, size = 281, normalized size = 0.92

$$-\frac{5\,Acx^2-Bax+4\,Aa}{2\left(cx^{\frac{5}{2}}+a\sqrt{x}\right)a^2}+\frac{\sqrt{2}\left(3\,\left(ac^3\right)^{\frac{1}{4}}Bac-5\,\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^3c^2}+\sqrt{2}\Big(3\,\left(ac^3\right)^{\frac{1}{4}}Bac-5\,\big(a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(5*A*c*x^2 - B*a*x + 4*A*a)/((c*x^(5/2) + a*sqrt(x))*a^2) + 1/8*sqrt(2
)*(3*(a*c^3)^(1/4)*B*a*c - 5*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(
a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) + 1/8*sqrt(2)*(3*(a*c^3)^(1/
4)*B*a*c - 5*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*
sqrt(x))/(a/c)^(1/4))/(a^3*c^2) + 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(
a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
 - 1/16*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqr
t(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
```

maple [**A**]   time = 0.08, size = 314, normalized size = 1.03

$$-\frac{Ac\,x^{\frac{3}{2}}}{2\left(c\,x^2+a\right)a^2}+\frac{B\sqrt{x}}{2\left(c\,x^2+a\right)a}-\frac{5\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2}-\frac{5\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2}-5\sqrt{2}\;A\ln\Bigg(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\surd}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\surd}\;\;16\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a)^2,x)
```

```
[Out] -1/2/a^2/(c*x^2+a)*A*x^(3/2)*c+1/2/a/(c*x^2+a)*B*x^(1/2)+3/8/a^2*B*(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+3/16/a^2*B*(a/c)^(1/4)*2^
(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)
*x^(1/2)+(a/c)^(1/2)))+3/8/a^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(
1/4)*x^(1/2)+1)-5/16/a^2*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^
(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5/8/a^2*A/(
a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-5/8/a^2*A/(a/c)^(1
/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a^2/x^(1/2)
```

maxima [A] time = 1.19, size = 280, normalized size = 0.92

$$-\frac{5\,Acx^{2}-Bax+4\,Aa}{2\left(a^{2}cx^{\frac{5}{2}}+a^{3}\sqrt{x}\right)}+\frac{\frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c}-5\,A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c}-5\,A\sqrt{a}\,c\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}-2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(5*A*c*x^2 - B*a*x + 4*A*a)/(a^2*c*x^(5/2) + a^3*sqrt(x)) + 1/16*(2*sq
rt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c
^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sq
rt(c))*sqrt(c)) + 2*sqrt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*arctan(-1/2*sqr
t(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(
sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(3*B*a*sqrt(c) + 5*A*sqrt(
a)*c)*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)) - sqrt(2)*(3*B*a*sqrt(c) + 5*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1
/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2
```

mupad [B] time = 0.25, size = 634, normalized size = 2.09

$$2\,\mathrm{atanh}\left(\frac{1600\,A^{2}\,a^{7}\,c^{4}\,\sqrt{x}\,\sqrt{\frac{15\,A\,B}{32\,a^{4}}-\frac{25\,A^{2}\,\sqrt{-a^{9}\,c}}{64\,a^{9}}+\frac{9\,B^{2}\,\sqrt{-a^{9}\,c}}{64\,a^{8}\,c}}}{1000\,A^{3}\,a^{5}\,c^{4}-216\,B^{3}\,a^{2}\,c^{2}\,\sqrt{-a^{9}\,c}-360\,A\,B^{2}\,a^{6}\,c^{3}+600\,A^{2}\,B\,a\,c^{3}\,\sqrt{-a^{9}\,c}}-\frac{576\,B^{2}\,a^{8}\,c^{3}}{1000\,A^{3}\,a^{5}\,c^{4}-216\,B^{3}\,a^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)^2),x)
```

```
[Out] 2*atanh((1600*A^2*a^7*c^4*x^(1/2)*((15*A*B)/(32*a^4) - (25*A^2*(-a^9*c)^(1/
2))/(64*a^9) + (9*B^2*(-a^9*c)^(1/2))/(64*a^8*c))^(1/2))/(1000*A^3*a^5*c^4
- 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*a^6*c^3 + 600*A^2*B*a*c^3*(-a^
9*c)^(1/2)) - (576*B^2*a^8*c^3*x^(1/2)*((15*A*B)/(32*a^4) - (25*A^2*(-a^9*c
)^(1/2))/(64*a^9) + (9*B^2*(-a^9*c)^(1/2))/(64*a^8*c))^(1/2))/(1000*A^3*a^5
*c^4 - 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*a^6*c^3 + 600*A^2*B*a*c^3
*(-a^9*c)^(1/2)))*((9*B^2*a*(-a^9*c)^(1/2) - 25*A^2*c*(-a^9*c)^(1/2) + 30*A
*B*a^5*c)/(64*a^9*c))^(1/2) + 2*atanh((1600*A^2*a^7*c^4*x^(1/2)*((25*A^2*(-
a^9*c)^(1/2))/(64*a^9) + (15*A*B)/(32*a^4) - (9*B^2*(-a^9*c)^(1/2))/(64*a^8
*c))^(1/2))/(1000*A^3*a^5*c^4 + 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A*B^2*
a^6*c^3 - 600*A^2*B*a*c^3*(-a^9*c)^(1/2)) - (576*B^2*a^8*c^3*x^(1/2)*((25*A
^2*(-a^9*c)^(1/2))/(64*a^9) + (15*A*B)/(32*a^4) - (9*B^2*(-a^9*c)^(1/2))/(6
4*a^8*c))^(1/2))/(1000*A^3*a^5*c^4 + 216*B^3*a^2*c^2*(-a^9*c)^(1/2) - 360*A
*B^2*a^6*c^3 - 600*A^2*B*a*c^3*(-a^9*c)^(1/2)))*((25*A^2*c*(-a^9*c)^(1/2) -
 9*B^2*a*(-a^9*c)^(1/2) + 30*A*B*a^5*c)/(64*a^9*c))^(1/2) - ((2*A)/a - (B*x
)/(2*a) + (5*A*c*x^2)/(2*a^2))/(a*x^(1/2) + c*x^(5/2))
```

sympy [A] time = 149.46, size = 1435, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(c, 0))
, ((-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2)))/c**2, Eq(a, 0)), ((-2*A/sqrt(x) +
 2*B*sqrt(x))/a**2, Eq(c, 0)), (-16*(-1)**(1/4)*A*a**(5/4)*(1/c)**(1/4)/(8*
(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5
/2)*(1/c)**(1/4)) - 20*(-1)**(1/4)*A*a**(1/4)*c*x**2*(1/c)**(1/4)/(8*(-1)**
(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1
/c)**(1/4)) - 5*A*a*sqrt(x)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x
))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c
*x**(5/2)*(1/c)**(1/4)) + 5*A*a*sqrt(x)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/
4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)
*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 10*A*a*sqrt(x)*atan((-1)**(3/4)*sqrt(x
)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) +
8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) - 5*A*c*x**(5/2)*log(-(-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 5*A*c*x**(5/
2)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4
)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) +
10*A*c*x**(5/2)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(-1)**
(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1
/c)**(1/4)) + 4*(-1)**(1/4)*B*a**(5/4)*x*(1/c)**(1/4)/(8*(-1)**(1/4)*a**(13
/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4))
- 3*I*B*a**(3/2)*sqrt(x)*sqrt(1/c)*log(-(-1)**(1/4)*a**(1/4)*(1/c)**(1/4) +
 sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**
(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 3*I*B*a**(3/2)*sqrt(x)*sqrt(1/c)*log((-1)*
*(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1
/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) - 6*I*B*a**(3/
2)*sqrt(x)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1/4)*(1/c)**(1/4)))/(8*(
-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/
2)*(1/c)**(1/4)) - 3*I*B*sqrt(a)*c*x**(5/2)*sqrt(1/c)*log(-(-1)**(1/4)*a**(
1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4)
+ 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)) + 3*I*B*sqrt(a)*c*x**(5/2
)*sqrt(1/c)*log((-1)**(1/4)*a**(1/4)*(1/c)**(1/4) + sqrt(x))/(8*(-1)**(1/4)
*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**
(1/4)) - 6*I*B*sqrt(a)*c*x**(5/2)*sqrt(1/c)*atan((-1)**(3/4)*sqrt(x)/(a**(1
/4)*(1/c)**(1/4)))/(8*(-1)**(1/4)*a**(13/4)*sqrt(x)*(1/c)**(1/4) + 8*(-1)**
(1/4)*a**(9/4)*c*x**(5/2)*(1/c)**(1/4)), True))
```

3.425 $\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=317

$$-\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{11/4}}+\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\right.}{8\sqrt{2}a^{11/4}}$$

```
[Out] -7/6*A/a^2/x^(3/2)+1/2*(B*x+A)/a/x^(3/2)/(c*x^2+a)-1/16*c^(1/4)*ln(a^(1/2)+
x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)-7*A*c^(1/2))/a^(11/
4)*2^(1/2)+1/16*c^(1/4)*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2
))*(5*B*a^(1/2)-7*A*c^(1/2))/a^(11/4)*2^(1/2)+1/8*c^(1/4)*arctan(1-c^(1/4)*
2^(1/2)*x^(1/2)/a^(1/4))*(5*B*a^(1/2)+7*A*c^(1/2))/a^(11/4)*2^(1/2)-1/8*c^(
1/4)*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(5*B*a^(1/2)+7*A*c^(1/2))/a^
(11/4)*2^(1/2)-5/2*B/a^2/x^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{8\sqrt{2}a^{11/4}}+\frac{\sqrt[4]{c}\left(5\sqrt{a}B-7A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\right.}{8\sqrt{2}a^{11/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + c*x^2)^2),x]
```

```
[Out] (-7*A)/(6*a^2*x^(3/2)) - (5*B)/(2*a^2*Sqrt[x]) + (A + B*x)/(2*a*x^(3/2)*(a
+ c*x^2)) + ((5*Sqrt[a]*B + 7*A*Sqrt[c])*c^(1/4)*ArcTan[1 - (Sqrt[2]*c^(1/4
)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(11/4)) - ((5*Sqrt[a]*B + 7*A*Sqrt[c])*c^
(1/4)*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(4*Sqrt[2]*a^(11/4)) -
 ((5*Sqrt[a]*B - 7*A*Sqrt[c])*c^(1/4)*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt[2]*a^(11/4)) + ((5*Sqrt[a]*B - 7*A*Sqrt[c])*
c^(1/4)*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(8*Sqrt
[2]*a^(11/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+cx^2\right)^2}\,dx = \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{7}{2}aAc-\frac{5}{2}aBcx}{x^{5/2}\left(a+cx^2\right)}\,dx}{2a^2c}$$

$$= -\frac{7A}{6a^2x^{3/2}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{-\frac{5}{2}a^2Bc+\frac{7}{2}aAc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{2a^3c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\int \frac{\frac{7}{2}a^2Ac^2+\frac{5}{2}a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{2a^4c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{7}{2}a^2Ac^2+\frac{5}{2}a^2Bc^2x^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{a^4c}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B-7A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^{5/2}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B+7A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x,\right.}{8a^{5/2}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B-7A\sqrt{c}\right)\sqrt[4]{c}\,\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}\right.}{8\sqrt{2}\,a^{11/4}}$$

$$= -\frac{7A}{6a^2x^{3/2}} - \frac{5B}{2a^2\sqrt{x}} + \frac{A+Bx}{2ax^{3/2}\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}\,B+7A\sqrt{c}\right)\sqrt[4]{c}\,\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{4\sqrt{2}\,a^{11/4}} - \frac{(5}{}$$

Mathematica [**C**] time = 0.03, size = 85, normalized size = 0.27

$$\frac{3a(A+Bx)-7A\left(a+cx^2\right){}_2F_1\left(-\frac{3}{4},1;\frac{1}{4};-\frac{cx^2}{a}\right)-15Bx\left(a+cx^2\right){}_2F_1\left(-\frac{1}{4},1;\frac{3}{4};-\frac{cx^2}{a}\right)}{6a^2x^{3/2}\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + c*x^2)^2),x]
```

```
[Out] (3*a*(A + B*x) - 7*A*(a + c*x^2)*Hypergeometric2F1[-3/4, 1, 1/4, -((c*x^2)/
a)] - 15*B*x*(a + c*x^2)*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/(6*
a^2*x^(3/2)*(a + c*x^2))
```

fricas [**B**] time = 1.03, size = 916, normalized size = 2.89

$$-\frac{3\left(a^2cx^4+a^3x^2\right)\sqrt{-\frac{a^5\sqrt{-\frac{625\,B^4a^2c-2450\,A^2B^2ac^2+2401\,A^4c^3}{a^{11}}}+70\,ABc}{a^5}}\,\log\left(-\left(625\,B^4a^2c-2401\,A^4c^3\right)\sqrt{x}+\left(5\,Ba^9\sqrt{-\frac{625\,B^4a}{}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/24*(3*(a^2*c*x^4 + a^3*x^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B
^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*
A^4*c^3)*sqrt(x) + (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 240
1*A^4*c^3)/a^11) - 175*A*B^2*a^4*c + 343*A^3*a^3*c^2)*sqrt(-(a^5*sqrt(-(625
*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)) - 3
*(a^2*c*x^4 + a^3*x^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2
 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)
*sqrt(x) - (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^
3)/a^11) - 175*A*B^2*a^4*c + 343*A^3*a^3*c^2)*sqrt(-(a^5*sqrt(-(625*B^4*a^2
*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 70*A*B*c)/a^5)) - 3*(a^2*c*
x^4 + a^3*x^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A
^4*c^3)/a^11) - 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)*sqrt(x)
+ (5*B*a^9*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11)
+ 175*A*B^2*a^4*c - 343*A^3*a^3*c^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*
A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) - 70*A*B*c)/a^5)) + 3*(a^2*c*x^4 + a^3*
x^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^
11) - 70*A*B*c)/a^5)*log(-(625*B^4*a^2*c - 2401*A^4*c^3)*sqrt(x) - (5*B*a^9
*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*c^2 + 2401*A^4*c^3)/a^11) + 175*A*B^
2*a^4*c - 343*A^3*a^3*c^2)*sqrt((a^5*sqrt(-(625*B^4*a^2*c - 2450*A^2*B^2*a*
c^2 + 2401*A^4*c^3)/a^11) - 70*A*B*c)/a^5)) + 4*(15*B*c*x^3 + 7*A*c*x^2 + 1
2*B*a*x + 4*A*a)*sqrt(x))/(a^2*c*x^4 + a^3*x^2)
```

giac [A] time = 0.23, size = 291, normalized size = 0.92

$$-\frac{Bcx^{\frac{3}{2}}+Ac\sqrt{x}}{2\left(cx^{2}+a\right)a^{2}}-\frac{2\left(3\,Bx+A\right)}{3\,a^{2}x^{\frac{3}{2}}}-\frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+5\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{8\,a^{3}c^{2}}-\frac{\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/2*(B*c*x^(3/2) + A*c*sqrt(x))/((c*x^2 + a)*a^2) - 2/3*(3*B*x + A)/(a^2*x
^(3/2)) - 1/8*sqrt(2)*(7*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(1/
2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) - 1/8*sq
rt(2)*(7*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt
(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^2) - 1/16*sqrt(2)*(7*(a*c^
3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + s
qrt(a/c))/(a^3*c^2) + 1/16*sqrt(2)*(7*(a*c^3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)
*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^2)
```

maple [A] time = 0.11, size = 327, normalized size = 1.03

$$-\frac{Bc\,x^{\frac{3}{2}}}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{Ac\sqrt{x}}{2\left(c\,x^{2}+a\right)a^{2}}-\frac{7\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{8a^{3}}-\frac{7\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{8a^{3}}-\frac{7\left(\frac{a}{c}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/a^2/(c*x^2+a)*B*x^(3/2)-1/2*c/a^2/(c*x^2+a)*A*x^(1/2)-7/16*c/a^3*A*(
a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^
(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-7/8*c/a^3*A*(a/c)^(1/4)*2^(1/2)*arctan(
2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-7/8*c/a^3*A*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/
2)/(a/c)^(1/4)*x^(1/2)-1)-5/16/a^2*B/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-5
```

```
/8/a^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-5/8/a^2*
B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2/3*A/a^2/x^(3/
2)-2*B/a^2/x^(1/2)
```

maxima [A] time = 1.24, size = 280, normalized size = 0.88

$$-\frac{15\,Bcx^3+7\,Acx^2+12\,Bax+4\,Aa}{6\left(a^2cx^{\frac{7}{2}}+a^3x^{\frac{3}{2}}\right)}-\frac{c\left(\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+7\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+7\,A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\right.}{}\right.}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(15*B*c*x^3 + 7*A*c*x^2 + 12*B*a*x + 4*A*a)/(a^2*c*x^(7/2) + a^3*x^(3/
2)) - 1/16*c*(2*sqrt(2)*(5*B*sqrt(a) + 7*A*sqrt(c))*arctan(1/2*sqrt(2)*(sqr
t(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*s
qrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*sqrt(a) + 7*A*sqrt(c))*arcta
n(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*s
qrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(5*B*sqrt(a) - 7
*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(
3/4)*c^(3/4)) + sqrt(2)*(5*B*sqrt(a) - 7*A*sqrt(c))*log(-sqrt(2)*a^(1/4)*c^
(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^2
```

mupad [B] time = 0.25, size = 638, normalized size = 2.01

$$-\frac{\frac{2\,A}{3\,a}+\frac{2\,B\,x}{a}+\frac{7\,A\,c\,x^2}{6\,a^2}+\frac{5\,B\,c\,x^3}{2\,a^2}}{a\,x^{3/2}+c\,x^{7/2}}-2\,\mathrm{atanh}\left(\frac{3136\,A^2\,a^6\,c^5\,\sqrt{x}\,\sqrt{\frac{49\,A^2\,c\,\sqrt{-a^{11}\,c}}{64\,a^{11}}-\frac{25\,B^2\,\sqrt{-a^{11}\,c}}{64\,a^{10}}-\frac{35\,A\,B\,c}{32\,a^5}}}{1000\,B^3\,a^5\,c^4+\frac{2744\,A^3\,c^5\,\sqrt{-a^{11}\,c}}{a^2}-1960\,A^2\,B\,a^4\,c^5-\frac{1400\,A\,B^2\,c^4\,\sqrt{-a^{11}\,c}}{a}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(3*a) + (2*B*x)/a + (7*A*c*x^2)/(6*a^2) + (5*B*c*x^3)/(2*a^2))/(a*
x^(3/2) + c*x^(7/2)) - 2*atanh((3136*A^2*a^6*c^5*x^(1/2)*((49*A^2*c*(-a^11*
c)^(1/2))/(64*a^11) - (25*B^2*(-a^11*c)^(1/2))/(64*a^10) - (35*A*B*c)/(32*a
^5))^(1/2))/(1000*B^3*a^5*c^4 + (2744*A^3*c^5*(-a^11*c)^(1/2))/a^2 - 1960*A
^2*B*a^4*c^5 - (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a) - (1600*B^2*a^7*c^4*x^(1
/2)*((49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (25*B^2*(-a^11*c)^(1/2))/(64*a^
10) - (35*A*B*c)/(32*a^5))^(1/2))/(1000*B^3*a^5*c^4 + (2744*A^3*c^5*(-a^11*
c)^(1/2))/a^2 - 1960*A^2*B*a^4*c^5 - (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a))*(
-(25*B^2*a*(-a^11*c)^(1/2) - 49*A^2*c*(-a^11*c)^(1/2) + 70*A*B*a^6*c)/(64*a
^11))^(1/2) - 2*atanh((3136*A^2*a^6*c^5*x^(1/2)*((25*B^2*(-a^11*c)^(1/2))/(
64*a^10) - (49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (35*A*B*c)/(32*a^5))^(1/2
))/(1000*B^3*a^5*c^4 - (2744*A^3*c^5*(-a^11*c)^(1/2))/a^2 - 1960*A^2*B*a^4*
c^5 + (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a) - (1600*B^2*a^7*c^4*x^(1/2)*((25*
B^2*(-a^11*c)^(1/2))/(64*a^10) - (49*A^2*c*(-a^11*c)^(1/2))/(64*a^11) - (35
*A*B*c)/(32*a^5))^(1/2))/(1000*B^3*a^5*c^4 - (2744*A^3*c^5*(-a^11*c)^(1/2))
/a^2 - 1960*A^2*B*a^4*c^5 + (1400*A*B^2*c^4*(-a^11*c)^(1/2))/a))*(-(49*A^2*
c*(-a^11*c)^(1/2) - 25*B^2*a*(-a^11*c)^(1/2) + 70*A*B*a^6*c)/(64*a^11))^(1/
2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.426 $\int \frac{x^{7/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=320

$$\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-(2$$

```
[Out] -1/4*x^(5/2)*(B*x+A)/c/(c*x^2+a)^2+1/128*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/
4)*2^(1/2)*x^(1/2))*(21*B*a^(1/2)-5*A*c^(1/2))/a^(3/4)/c^(11/4)*2^(1/2)-1/1
28*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(21*B*a^(1/2)-5*A*
c^(1/2))/a^(3/4)/c^(11/4)*2^(1/2)-1/64*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(
1/4))*(21*B*a^(1/2)+5*A*c^(1/2))/a^(3/4)/c^(11/4)*2^(1/2)+1/64*arctan(1+c^(
1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(21*B*a^(1/2)+5*A*c^(1/2))/a^(3/4)/c^(11/4)*2
^(1/2)-1/16*(7*B*x+5*A)*x^(1/2)/c^2/(c*x^2+a)
```

Rubi [A] time = 0.31, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {819, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-\frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}}-(2$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(x^(5/2)*(A + B*x))/(4*c*(a + c*x^2)^2) - (Sqrt[x]*(5*A + 7*B*x))/(16*c^2*
(a + c*x^2)) - ((21*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sq
rt[x])/a^(1/4)])/(32*Sqrt[2]*a^(3/4)*c^(11/4)) + ((21*Sqrt[a]*B + 5*A*Sqrt[
c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(3/4)*c^(1
1/4)) + ((21*Sqrt[a]*B - 5*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)
*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(3/4)*c^(11/4)) - ((21*Sqrt[a]*B - 5*A
*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*S
qrt[2]*a^(3/4)*c^(11/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\int \frac{x^{3/2}\left(\frac{5aA}{2}+\frac{7aBx}{2}\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{5a^2A}{4}+\frac{21}{4}a^2Bx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^2c^2}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{5a^2A}{4}+\frac{21}{4}a^2Bx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^2c^2}$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} - \frac{\left(21B-\frac{5A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32c^3} + \left(21B +\right.$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\left(21B+\frac{5A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{64c^3} + \left(21\right.$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} + \frac{\left(21\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{3/4}c^{11/4}} -$$

$$= -\frac{x^{5/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5A+7Bx)}{16c^2\left(a+cx^2\right)} - \frac{\left(21\sqrt{a}\,B+5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{3/4}c^{11/4}} + \left(21\sqrt{a}\,B+5\right.$$

Mathematica [**A**] time = 0.48, size = 385, normalized size = 1.20

$$-\frac{5\sqrt{2}\,a^{5/4}A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}} + \frac{5\sqrt{2}\,a^{5/4}A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}} - \frac{10\sqrt{2}\,a^{5/4}A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{9/4}} + 10\sqrt{2}\,a^{5/4}A\tan$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-40*a*A*Sqrt[x])/c^2 - (56*a*B*x^(3/2))/c^2 + (8*A*x^(5/2))/c + (24*B*x^(
7/2))/c + (32*a*A*x^(9/2))/(a + c*x^2)^2 + (32*a*B*x^(11/2))/(a + c*x^2)^2
- (8*A*x^(9/2))/(a + c*x^2) - (24*B*x^(11/2))/(a + c*x^2) - (10*Sqrt[2]*a^(
5/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (10*Sqrt[2]
*a^(5/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (84*(-a
)^(7/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(11/4) + (84*(-a)^(3/4)*a
*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(11/4) - (5*Sqrt[2]*a^(5/4)*A*L
og[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) + (5*Sqr
t[2]*a^(5/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/
c^(9/4))/(128*a^2)
```

fricas [**B**] time = 0.96, size = 986, normalized size = 3.08

$$\left(c^4x^4+2\,ac^3x^2+a^2c^2\right)\sqrt{-\frac{ac^5\sqrt{-\frac{194481\,B^4a^2-22050\,A^2B^2ac+625\,A^4c^2}{a^3c^{11}}}+210\,AB}{ac^5}}\,\log\left(-\left(194481\,B^4a^2-625\,A^4c^2\right)\sqrt{x}+\left(21\,Ba^3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^2
- 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))*log(-(19
4481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (21*B*a^3*c^8*sqrt(-(194481*B^4*a^2 -
 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 2205*A*B^2*a^2*c^3 + 125*A^
3*a*c^4)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c
^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))) - (c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sq
rt(-(a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^
11)) + 210*A*B)/(a*c^5))*log(-(194481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (21*
B*a^3*c^8*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^1
1)) - 2205*A*B^2*a^2*c^3 + 125*A^3*a*c^4)*sqrt(-(a*c^5*sqrt(-(194481*B^4*a^
2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 210*A*B)/(a*c^5))) - (c^
4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^
2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A*B)/(a*c^5))*log(-(194481*B^4*a
^2 - 625*A^4*c^2)*sqrt(x) + (21*B*a^3*c^8*sqrt(-(194481*B^4*a^2 - 22050*A^2
*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 2205*A*B^2*a^2*c^3 - 125*A^3*a*c^4)*s
qrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^
11)) - 210*A*B)/(a*c^5))) + (c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)*sqrt((a*c^5*s
qrt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A
*B)/(a*c^5))*log(-(194481*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (21*B*a^3*c^8*sq
rt(-(194481*B^4*a^2 - 22050*A^2*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) + 2205*A
*B^2*a^2*c^3 - 125*A^3*a*c^4)*sqrt((a*c^5*sqrt(-(194481*B^4*a^2 - 22050*A^2
*B^2*a*c + 625*A^4*c^2)/(a^3*c^11)) - 210*A*B)/(a*c^5))) - 4*(11*B*c*x^3 +
9*A*c*x^2 + 7*B*a*x + 5*A*a)*sqrt(x))/(c^4*x^4 + 2*a*c^3*x^2 + a^2*c^2)
```

giac [A] time = 0.22, size = 293, normalized size = 0.92

$$-\frac{11\,Bcx^{\frac{7}{2}}+9\,Acx^{\frac{5}{2}}+7\,Bax^{\frac{3}{2}}+5\,Aa\sqrt{x}}{16\,\left(cx^{2}+a\right)^{2}c^{2}}+\frac{\sqrt{2}\left(5\,\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2}+21\,\left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,ac^{5}}+\sqrt{2}\Bigl(5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -1/16*(11*B*c*x^(7/2) + 9*A*c*x^(5/2) + 7*B*a*x^(3/2) + 5*A*a*sqrt(x))/((c*
x^2 + a)^2*c^2) + 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 + 21*(a*c^3)^(3/4)*B)
*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a*c^5)
+ 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 + 21*(a*c^3)^(3/4)*B)*arctan(-1/2*sqr
t(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a*c^5) + 1/128*sqrt(2)
*(5*(a*c^3)^(1/4)*A*c^2 - 21*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/
4) + x + sqrt(a/c))/(a*c^5) - 1/128*sqrt(2)*(5*(a*c^3)^(1/4)*A*c^2 - 21*(a*
c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a*c^5)
```

maple [A] time = 0.06, size = 327, normalized size = 1.02

$$\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a\,c^{2}}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a\,c^{2}}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a\,c^{2}}+21$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(-11/32*B/c*x^(7/2)-9/32*A/c*x^(5/2)-7/32*B*a/c^2*x^(3/2)-5/32*a*A/c^2*x^
(1/2))/(c*x^2+a)^2+5/128/c^2*A*(a/c)^(1/4)/a*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1
/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/
c^2*A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64/c^2*
A*(a/c)^(1/4)/a*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+21/128/c^3*B/
(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)
^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+21/64/c^3*B/(a/c)^(1/4)*2^(1/2)*arctan
(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64/c^3*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A]   time = 1.33, size = 292, normalized size = 0.91

$$-\frac{11\,Bcx^{\frac{7}{2}}+9\,Acx^{\frac{5}{2}}+7\,Bax^{\frac{3}{2}}+5\,Aa\sqrt{x}}{16\,\left(c^{4}x^{4}+2\,ac^{3}x^{2}+a^{2}c^{2}\right)}+\frac{\frac{2\,\sqrt{2}\left(21\,B\sqrt{a}+5\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+\frac{2\,\sqrt{2}\left(21\,B\sqrt{a}+5\,A\sqrt{c}\right)\arctan\left(-\right.}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/16*(11*B*c*x^(7/2) + 9*A*c*x^(5/2) + 7*B*a*x^(3/2) + 5*A*a*sqrt(x))/(c^4
*x^4 + 2*a*c^3*x^2 + a^2*c^2) + 1/128*(2*sqrt(2)*(21*B*sqrt(a) + 5*A*sqrt(c
))*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sq
rt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(21*B*s
qrt(a) + 5*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt
(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
 - sqrt(2)*(21*B*sqrt(a) - 5*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x)
 + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(21*B*sqrt(a) - 5*A*sqr
t(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*
c^(3/4)))/c^2
```

mupad [B]   time = 1.29, size = 686, normalized size = 2.14

$$-2\,\mathrm{atanh}\left(\frac{25\,A^{2}\sqrt{x}\,\sqrt{\frac{441\,B^{2}\sqrt{-a^{3}c^{11}}}{4096\,a^{2}c^{11}}-\frac{25\,A^{2}\sqrt{-a^{3}c^{11}}}{4096\,a^{3}c^{10}}-\frac{105\,A\,B}{2048\,a\,c^{5}}}}{32\left(\frac{525\,A^{2}B}{2048\,c^{3}}-\frac{9261\,B^{3}a}{2048\,c^{4}}+\frac{125\,A^{3}\sqrt{-a^{3}c^{11}}}{2048\,a^{2}c^{8}}-\frac{2205\,A\,B^{2}\sqrt{-a^{3}c^{11}}}{2048\,a\,c^{9}}\right)}-\frac{441\,B^{2}a\sqrt{x}\,\sqrt{\frac{441\,B^{2}\sqrt{-a^{3}c^{11}}}{4096\,a^{2}c^{11}}-\frac{25\,A^{2}\sqrt{-a^{3}}}{4096\,a^{3}c}}}{32\left(\frac{525\,A^{2}B}{2048\,c^{2}}-\frac{9261\,B^{3}a}{2048\,c^{3}}+\frac{125\,A^{3}\sqrt{-a^{3}c^{11}}}{2048\,a^{2}c^{7}}-2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] - 2*atanh((25*A^2*x^(1/2)*((441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11) - (2
5*A^2*(-a^3*c^11)^(1/2))/(4096*a^3*c^10) - (105*A*B)/(2048*a*c^5))^(1/2))/(
32*((525*A^2*B)/(2048*c^3) - (9261*B^3*a)/(2048*c^4) + (125*A^3*(-a^3*c^11)
^(1/2))/(2048*a^2*c^8) - (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^9))) - (4
41*B^2*a*x^(1/2)*((441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11) - (25*A^2*(-a
^3*c^11)^(1/2))/(4096*a^3*c^10) - (105*A*B)/(2048*a*c^5))^(1/2))/(32*((525*
A^2*B)/(2048*c^2) - (9261*B^3*a)/(2048*c^3) + (125*A^3*(-a^3*c^11)^(1/2))/(
2048*a^2*c^7) - (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^8))))*(-(25*A^2*c*
(-a^3*c^11)^(1/2) - 441*B^2*a*(-a^3*c^11)^(1/2) + 210*A*B*a^2*c^6)/(4096*a^
3*c^11))^(1/2) - 2*atanh((25*A^2*x^(1/2)*((25*A^2*(-a^3*c^11)^(1/2))/(4096*
a^3*c^10) - (105*A*B)/(2048*a*c^5) - (441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*
c^11))^(1/2))/(32*((525*A^2*B)/(2048*c^3) - (9261*B^3*a)/(2048*c^4) - (125*
A^3*(-a^3*c^11)^(1/2))/(2048*a^2*c^8) + (2205*A*B^2*(-a^3*c^11)^(1/2))/(204
8*a*c^9))) - (441*B^2*a*x^(1/2)*((25*A^2*(-a^3*c^11)^(1/2))/(4096*a^3*c^10)
 - (105*A*B)/(2048*a*c^5) - (441*B^2*(-a^3*c^11)^(1/2))/(4096*a^2*c^11))^(1
/2))/(32*((525*A^2*B)/(2048*c^2) - (9261*B^3*a)/(2048*c^3) - (125*A^3*(-a^3
*c^11)^(1/2))/(2048*a^2*c^7) + (2205*A*B^2*(-a^3*c^11)^(1/2))/(2048*a*c^8))
))*(-(441*B^2*a*(-a^3*c^11)^(1/2) - 25*A^2*c*(-a^3*c^11)^(1/2) + 210*A*B*a^
2*c^6)/(4096*a^3*c^11))^(1/2) - ((9*A*x^(5/2))/(16*c) + (11*B*x^(7/2))/(16*
c) + (5*A*a*x^(1/2))/(16*c^2) + (7*B*a*x^(3/2))/(16*c^2))/(a^2 + c^2*x^4 +
2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.427 $\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=325

$$-\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{9/4}}-(5$$

```
[Out] -1/4*x^(3/2)*(B*x+A)/c/(c*x^2+a)^2-1/128*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/
4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)-3*A*c^(1/2))/a^(5/4)/c^(9/4)*2^(1/2)+1/128
*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)-3*A*c^(
1/2))/a^(5/4)/c^(9/4)*2^(1/2)-1/64*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4)
)*(5*B*a^(1/2)+3*A*c^(1/2))/a^(5/4)/c^(9/4)*2^(1/2)+1/64*arctan(1+c^(1/4)*2
^(1/2)*x^(1/2)/a^(1/4))*(5*B*a^(1/2)+3*A*c^(1/2))/a^(5/4)/c^(9/4)*2^(1/2)-1
/16*(-3*A*c*x+5*B*a)*x^(1/2)/a/c^2/(c*x^2+a)
```

Rubi [A] time = 0.28, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 821, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{9/4}}+\frac{\left(5\sqrt{a}\,B-3A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{9/4}}-(5$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(x^(3/2)*(A + B*x))/(4*c*(a + c*x^2)^2) - (Sqrt[x]*(5*a*B - 3*A*c*x))/(16*
a*c^2*(a + c*x^2)) - ((5*Sqrt[a]*B + 3*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/
4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(5/4)*c^(9/4)) + ((5*Sqrt[a]*B + 3*A*Sq
rt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(5/4)*c
^(9/4)) - ((5*Sqrt[a]*B - 3*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4
)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(5/4)*c^(9/4)) + ((5*Sqrt[a]*B - 3*A*
Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sq
rt[2]*a^(5/4)*c^(9/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\int \frac{\sqrt{x}\left(\frac{3aA}{2}+\frac{5aBx}{2}\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{5a^2B}{4}+\frac{3}{4}aAcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^2c^2}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{5a^2B}{4}+\frac{3}{4}aAcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^2c^2}$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} - \frac{\left(3A-\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32ac^2} +$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\left(3A+\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{64ac^2} +$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} + \frac{\left(3A-\frac{5\sqrt{a}\,B}{\sqrt{c}}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{5/4}c^{7/4}} -$$

$$= -\frac{x^{3/2}(A+Bx)}{4c\left(a+cx^2\right)^2} - \frac{\sqrt{x}\,(5aB-3Acx)}{16ac^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}\,B+3A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{5/4}c^{9/4}} +$$

Mathematica [A] time = 0.34, size = 372, normalized size = 1.14

$$-\frac{5\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}} + \frac{5\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{9/4}} - \frac{10\sqrt{2}\,a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{9/4}} +$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-40*a*B*Sqrt[x])/c^2 - (8*A*x^(3/2))/c + (8*B*x^(5/2))/c + (32*a*A*x^(7/2
))/(a + c*x^2)^2 + (32*a*B*x^(9/2))/(a + c*x^2)^2 + (8*A*x^(7/2))/(a + c*x^
2) - (8*B*x^(9/2))/(a + c*x^2) - (10*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*
c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) + (10*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt
[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(9/4) - (12*(-a)^(3/4)*A*ArcTan[(c^(1/4)*S
qrt[x])/(-a)^(1/4)])/c^(7/4) + (12*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(
-a)^(1/4)])/c^(7/4) - (5*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4) + (5*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sq
rt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(9/4))/(128*a^2)
```

fricas [B] time = 0.81, size = 1031, normalized size = 3.17

$$-\left(ac^4x^4+2\,a^2c^3x^2+a^3c^2\right)\sqrt{-\frac{a^2c^4\sqrt{-\frac{625\,B^4a^2-450\,A^2B^2ac+81\,A^4c^2}{a^5c^9}}+30\,AB}{a^2c^4}}\,\log\left(-\left(625\,B^4a^2-81\,A^4c^2\right)\sqrt{x}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2)*sqrt(-(a^2*c^4*sqrt(-(625*B^4*
a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 30*A*B)/(a^2*c^4))*log(-(6
25*B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (3*A*a^4*c^7*sqrt(-(625*B^4*a^2 - 450*A^
2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 125*B^3*a^3*c^2 - 45*A^2*B*a^2*c^3)*sq
rt(-(a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9))
+ 30*A*B)/(a^2*c^4))) - (a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2)*sqrt(-(a^2*c^
4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 30*A*B)/(
a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) - (3*A*a^4*c^7*sqrt(-(625
*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) + 125*B^3*a^3*c^2 - 45*
A^2*B*a^2*c^3)*sqrt(-(a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4
*c^2)/(a^5*c^9)) + 30*A*B)/(a^2*c^4))) - (a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c
^2)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c
^9)) - 30*A*B)/(a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sqrt(x) + (3*A*a^
4*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 125*B
^3*a^3*c^2 + 45*A^2*B*a^2*c^3)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B
^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))) + (a*c^4*x^4 + 2*a^2*
c^3*x^2 + a^3*c^2)*sqrt((a^2*c^4*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*
A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))*log(-(625*B^4*a^2 - 81*A^4*c^2)*sq
rt(x) - (3*A*a^4*c^7*sqrt(-(625*B^4*a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^
5*c^9)) - 125*B^3*a^3*c^2 + 45*A^2*B*a^2*c^3)*sqrt((a^2*c^4*sqrt(-(625*B^4*
a^2 - 450*A^2*B^2*a*c + 81*A^4*c^2)/(a^5*c^9)) - 30*A*B)/(a^2*c^4))) - 4*(3
*A*c^2*x^3 - 9*B*a*c*x^2 - A*a*c*x - 5*B*a^2)*sqrt(x))/(a*c^4*x^4 + 2*a^2*c
^3*x^2 + a^3*c^2)
```

giac [A]   time = 0.20, size = 298, normalized size = 0.92

$$\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac+3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{2}c^{4}}+\frac{\sqrt{2}\left(5\left(ac^{3}\right)^{\frac{1}{4}}Bac+3\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\right.}{2}\right.}{64\,a^{2}c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/64*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)
*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 1/64*sqrt(2)*(5
*(a*c^3)^(1/4)*B*a*c + 3*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c
)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 1/128*sqrt(2)*(5*(a*c^3)^(1/4
)*B*a*c - 3*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^2*c^4) - 1/128*sqrt(2)*(5*(a*c^3)^(1/4)*B*a*c - 3*(a*c^3)^(3/4)*A)*lo
g(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^4) + 1/16*(3*A*c^2*x
^(7/2) - 9*B*a*c*x^(5/2) - A*a*c*x^(3/2) - 5*B*a^2*sqrt(x))/((c*x^2 + a)^2*
a*c^2)
```

maple [A]   time = 0.06, size = 335, normalized size = 1.03

$$\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{3\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{3\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a\,c^{2}}+\frac{5\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan}{64a\,c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(3/32*A/a*x^(7/2)-9/32*B/c*x^(5/2)-1/32*A/c*x^(3/2)-5/32*B*a/c^2*x^(1/2))
/(c*x^2+a)^2+5/64/a/c^2*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)+5/128/a/c^2*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/a/c^2*B*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/128/a/c^2*A/(a/c)
^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(
1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/64/a/c^2*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.22, size = 312, normalized size = 0.96

$$\frac{3\,Ac^2x^{\frac{7}{2}} - 9\,Bacx^{\frac{5}{2}} - Aacx^{\frac{3}{2}} - 5\,Ba^2\sqrt{x}}{16\left(ac^4x^4 + 2\,a^2c^3x^2 + a^3c^2\right)} + \frac{\frac{2\sqrt{2}\left(5\,Ba\sqrt{c} + 3\,A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}} + \frac{2\sqrt{2}\left(5\,Ba\sqrt{c} + 3\,A\sqrt{a}\,c\right)\arctan}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(3*A*c^2*x^(7/2) - 9*B*a*c*x^(5/2) - A*a*c*x^(3/2) - 5*B*a^2*sqrt(x))/
(a*c^4*x^4 + 2*a^2*c^3*x^2 + a^3*c^2) + 1/128*(2*sqrt(2)*(5*B*a*sqrt(c) + 3
*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(5*B*a*sqrt(c) + 3*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^
(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqr
t(c))*sqrt(c)) + sqrt(2)*(5*B*a*sqrt(c) - 3*A*sqrt(a)*c)*log(sqrt(2)*a^(1/4
)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(5*B*a
*sqrt(c) - 3*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x
+ sqrt(a))/(a^(3/4)*c^(3/4)))/(a*c^2)
```

mupad [B] time = 1.29, size = 697, normalized size = 2.14

$$2\,\mathrm{atanh}\left(\frac{25\,B^2\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^5\,c^9}}{4096\,a^4\,c^9} - \frac{9\,A^2\,\sqrt{-a^5\,c^9}}{4096\,a^5\,c^8} - \frac{15\,A\,B}{2048\,a^2\,c^4}}}{32\left(\frac{27\,A^3}{2048\,a^2\,c} - \frac{75\,A\,B^2}{2048\,a\,c^2} + \frac{125\,B^3\,\sqrt{-a^5\,c^9}}{2048\,a^3\,c^7} - \frac{45\,A^2\,B\,\sqrt{-a^5\,c^9}}{2048\,a^4\,c^6}\right)} + \frac{9\,A^2\,\sqrt{x}\,\sqrt{\frac{25\,B^2\,\sqrt{-a^5\,c^9}}{4096\,a^4\,c^9} - \frac{9\,A^2\,\sqrt{-a^5\,c^9}}{4096\,a^5\,c^8} - \frac{15\,A}{2048\,a^2}}}{32\left(\frac{75\,A\,B^2}{2048\,c^3} - \frac{27\,A^3}{2048\,a\,c^2} - \frac{125\,B^3\,\sqrt{-a^5\,c^9}}{2048\,a^2\,c^8} + \frac{45\,A^2\,B\,\sqrt{-}}{2048\,a^3}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] 2*atanh((25*B^2*x^(1/2)*((25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9) - (9*A^2*
(-a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^4))^(1/2))/(32*((27
*A^3)/(2048*a^2*c) - (75*A*B^2)/(2048*a*c^2) + (125*B^3*(-a^5*c^9)^(1/2))/(
2048*a^3*c^7) - (45*A^2*B*(-a^5*c^9)^(1/2))/(2048*a^4*c^6))) + (9*A^2*x^(1/
2)*((25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9) - (9*A^2*(-a^5*c^9)^(1/2))/(40
96*a^5*c^8) - (15*A*B)/(2048*a^2*c^4))^(1/2))/(32*((75*A*B^2)/(2048*c^3) -
(27*A^3)/(2048*a*c^2) - (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^2*c^8) + (45*A^2
*B*(-a^5*c^9)^(1/2))/(2048*a^3*c^7))))*(-(9*A^2*c*(-a^5*c^9)^(1/2) - 25*B^2
*a*(-a^5*c^9)^(1/2) + 30*A*B*a^3*c^5)/(4096*a^5*c^9))^(1/2) + 2*atanh((25*B
^2*x^(1/2)*((9*A^2*(-a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^
4) - (25*B^2*(-a^5*c^9)^(1/2))/(4096*a^4*c^9))^(1/2))/(32*((27*A^3)/(2048*a
^2*c) - (75*A*B^2)/(2048*a*c^2) - (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^3*c^7)
 + (45*A^2*B*(-a^5*c^9)^(1/2))/(2048*a^4*c^6))) + (9*A^2*x^(1/2)*((9*A^2*(-
a^5*c^9)^(1/2))/(4096*a^5*c^8) - (15*A*B)/(2048*a^2*c^4) - (25*B^2*(-a^5*c^
9)^(1/2))/(4096*a^4*c^9))^(1/2))/(32*((75*A*B^2)/(2048*c^3) - (27*A^3)/(204
8*a*c^2) + (125*B^3*(-a^5*c^9)^(1/2))/(2048*a^2*c^8) - (45*A^2*B*(-a^5*c^9)
^(1/2))/(2048*a^3*c^7))))*(-(25*B^2*a*(-a^5*c^9)^(1/2) - 9*A^2*c*(-a^5*c^9)
^(1/2) + 30*A*B*a^3*c^5)/(4096*a^5*c^9))^(1/2) - ((A*x^(3/2))/(16*c) - (3*A
*x^(7/2))/(16*a) + (9*B*x^(5/2))/(16*c) + (5*B*a*x^(1/2))/(16*c^2))/(a^2 +
c^2*x^4 + 2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.428 $\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=315

$$\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-3(\sqrt{a}$$

```
[Out] 3/128*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^
(1/2))/a^(7/4)/c^(7/4)*2^(1/2)-3/128*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2
^(1/2)*x^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(7/4)/c^(7/4)*2^(1/2)-3/64*arctan(1
-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a^(7/4)/c^(7/4)*2^(
1/2)+3/64*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(B*a^(1/2)+A*c^(1/2))/a
^(7/4)/c^(7/4)*2^(1/2)-1/4*(B*x+A)*x^(1/2)/c/(c*x^2+a)^2+1/16*(3*B*x+A)*x^(
1/2)/a/c/(c*x^2+a)
```

Rubi [A] time = 0.28, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {819, 823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-\frac{3\left(\sqrt{a}B-A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{7/4}c^{7/4}}-3(\sqrt{a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(A + B*x))/(4*c*(a + c*x^2)^2) + (Sqrt[x]*(A + 3*B*x))/(16*a*c*(a
 + c*x^2)) - (3*(Sqrt[a]*B + A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x]
)/a^(1/4)])/(32*Sqrt[2]*a^(7/4)*c^(7/4)) + (3*(Sqrt[a]*B + A*Sqrt[c])*ArcTa
n[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(7/4)*c^(7/4)) + (3
*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sq
rt[c]*x])/(64*Sqrt[2]*a^(7/4)*c^(7/4)) - (3*(Sqrt[a]*B - A*Sqrt[c])*Log[Sqr
t[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(7/4)*c^
(7/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+cx^2\right)^3}\,dx = -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\int \frac{\frac{aA}{2}+\frac{3aBx}{2}}{\sqrt{x}\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} - \frac{\int \frac{-\frac{3}{4}a^2Ac-\frac{3}{4}a^2Bcx}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^3c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} - \frac{\text{Subst}\left(\int \frac{-\frac{3}{4}a^2Ac-\frac{3}{4}a^2Bcx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{4a^3c^2}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} - \frac{\left(3\left(\sqrt{a}\,B-A\sqrt{c}\right)\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx, x, \sqrt{x}\right)}{32a^{3/2}c^2} + \frac{(3(}{}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} + \frac{\left(3\left(\sqrt{a}\,B+A\sqrt{c}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx, x, \sqrt{x}\right)}{64a^{3/2}c^2} +$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} + \frac{3\left(\sqrt{a}\,B-A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{7/4}c^{7/4}} - \frac{3}{}$$

$$= -\frac{\sqrt{x}\,(A+Bx)}{4c\left(a+cx^2\right)^2} + \frac{\sqrt{x}\,(A+3Bx)}{16ac\left(a+cx^2\right)} - \frac{3\left(\sqrt{a}\,B+A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{7/4}c^{7/4}} + \frac{3\left(\sqrt{a}\,B+A\sqrt{\right.}}{32}$$

Mathematica [**A**] time = 0.17, size = 360, normalized size = 1.14

$$\frac{-\frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}} + \frac{3\sqrt{2}\,\sqrt[4]{a}\,A\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}} - \frac{6\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}} + \frac{6\sqrt{2}\,\sqrt[4]{a}\,A\tan^{-1}(}{c^{5/4}}}{128}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-24*A*Sqrt[x])/c - (8*B*x^(3/2))/c + (32*a*A*x^(5/2))/(a + c*x^2)^2 + (32
*a*B*x^(7/2))/(a + c*x^2)^2 + (24*A*x^(5/2))/(a + c*x^2) + (8*B*x^(7/2))/(a
 + c*x^2) - (6*Sqrt[2]*a^(1/4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/
4)])/c^(5/4) + (6*Sqrt[2]*a^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^
(1/4)])/c^(5/4) - (12*(-a)^(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^
(7/4) + (12*(-a)^(3/4)*B*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(7/4) - (
3*Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]
*x])/c^(5/4) + (3*Sqrt[2]*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*S
qrt[x] + Sqrt[c]*x])/c^(5/4))/(128*a^2)
```

fricas [**B**] time = 0.96, size = 982, normalized size = 3.12

$$\frac{3\left(ac^3x^4+2\,a^2c^2x^2+a^3c\right)\sqrt{-\frac{a^3c^3\sqrt{-\frac{B^4a^2-2\,A^2B^2ac+A^4c^2}{a^7c^7}}+2\,AB}{a^3c^3}}\,\log\left(-27\left(B^4a^2-A^4c^2\right)\sqrt{x}+27\left(Ba^6c^5\sqrt{-\frac{B^4a^2-2\,A^2B^2a}{a^7c^7}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*(3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))*log(-27*(B^4*a^2 -
 A^4*c^2)*sqrt(x) + 27*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^7*c^7)) - A*B^2*a^3*c^2 + A^3*a^2*c^3)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 -
2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))) - 3*(a*c^3*x^4 + 2
*a^2*c^2*x^2 + a^3*c)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c
^2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))*log(-27*(B^4*a^2 - A^4*c^2)*sqrt(x) - 27
*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - A*B^2*a^
3*c^2 + A^3*a^2*c^3)*sqrt(-(a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^
2)/(a^7*c^7)) + 2*A*B)/(a^3*c^3))) - 3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*
sqrt((a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)
/(a^3*c^3))*log(-27*(B^4*a^2 - A^4*c^2)*sqrt(x) + 27*(B*a^6*c^5*sqrt(-(B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) + A*B^2*a^3*c^2 - A^3*a^2*c^3)*sq
rt((a^3*c^3*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(
a^3*c^3))) + 3*(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)*sqrt((a^3*c^3*sqrt(-(B^4
*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(a^3*c^3))*log(-27*(B^4
*a^2 - A^4*c^2)*sqrt(x) - 27*(B*a^6*c^5*sqrt(-(B^4*a^2 - 2*A^2*B^2*a*c + A^
4*c^2)/(a^7*c^7)) + A*B^2*a^3*c^2 - A^3*a^2*c^3)*sqrt((a^3*c^3*sqrt(-(B^4*a
^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^7*c^7)) - 2*A*B)/(a^3*c^3))) + 4*(3*B*c*x^
3 + A*c*x^2 - B*a*x - 3*A*a)*sqrt(x))/(a*c^3*x^4 + 2*a^2*c^2*x^2 + a^3*c)
```

giac [A] time = 0.22, size = 289, normalized size = 0.92

$$\frac{3\,Bcx^{\frac{7}{2}} + Acx^{\frac{5}{2}} - Bax^{\frac{3}{2}} - 3\,Aa\sqrt{x}}{16\,\left(cx^{2}+a\right)^{2}ac} + \frac{3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}Ac^{2} + \left(ac^{3}\right)^{\frac{3}{4}}B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{2}c^{4}} + 3\,\sqrt{2}\left(\left(ac^{3}\right)^{\frac{1}{4}}A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*(3*B*c*x^(7/2) + A*c*x^(5/2) - B*a*x^(3/2) - 3*A*a*sqrt(x))/((c*x^2 +
a)^2*a*c) + 3/64*sqrt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(1/2
*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 3/64*sq
rt(2)*((a*c^3)^(1/4)*A*c^2 + (a*c^3)^(3/4)*B)*arctan(-1/2*sqrt(2)*(sqrt(2)*
(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^2*c^4) + 3/128*sqrt(2)*((a*c^3)^(1
/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^2*c^4) - 3/128*sqrt(2)*((a*c^3)^(1/4)*A*c^2 - (a*c^3)^(3/4)*B)*log(-s
qrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^2*c^4)
```

maple [A] time = 0.06, size = 334, normalized size = 1.06

$$\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^{2}c} + \frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64a^{2}c} + \frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,A\ln\left(\frac{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128a^{2}c} + 3\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(3/32*B/a*x^(7/2)+1/32*A/a*x^(5/2)-1/32*B/c*x^(3/2)-3/32*A/c*x^(1/2))/(c*
x^2+a)^2+3/128/a^2/c*A*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a^2/c*A*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+3/64/a^2/c*A*(a/c)^
(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+3/128/a/c^2*B/(a/c)^(1/
4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^
(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)+1)+3/64/a/c^2*B/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/
c)^(1/4)*x^(1/2)-1)
```

maxima [A] time = 1.35, size = 289, normalized size = 0.92

$$\frac{3\,Bcx^{\frac{7}{2}} + Acx^{\frac{5}{2}} - Bax^{\frac{3}{2}} - 3\,Aa\sqrt{x}}{16\left(ac^{3}x^{4} + 2\,a^{2}c^{2}x^{2} + a^{3}c\right)} + \frac{3\left(\frac{2\,\sqrt{2}\left(B\sqrt{a} + A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}} + \frac{2\,\sqrt{2}\left(B\sqrt{a} + A\sqrt{c}\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}\right.}{2\,\sqrt{\sqrt{a}}}\right.}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(3*B*c*x^(7/2) + A*c*x^(5/2) - B*a*x^(3/2) - 3*A*a*sqrt(x))/(a*c^3*x^4
 + 2*a^2*c^2*x^2 + a^3*c) + 3/128*(2*sqrt(2)*(B*sqrt(a) + A*sqrt(c))*arctan
(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqr
t(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(B*sqrt(a) + A*s
qrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/s
qrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) - sqrt(2)*(B*
sqrt(a) - A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt
(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(B*sqrt(a) - A*sqrt(c))*log(-sqrt(2)*a^(1/
4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/(a*c)
```

mupad [B] time = 1.29, size = 695, normalized size = 2.21

$$\frac{\frac{A\,x^{5/2}}{16\,a} + \frac{3\,B\,x^{7/2}}{16\,a} - \frac{3\,A\,\sqrt{x}}{16\,c} - \frac{B\,x^{3/2}}{16\,c}}{a^2 + 2\,a\,c\,x^2 + c^2\,x^4} - 2\,\mathrm{atanh}\left(\frac{9\,B^2\,\sqrt{x}\,\sqrt{\frac{9\,B^2\,\sqrt{-a^7\,c^7}}{4096\,a^6\,c^7} - \frac{9\,A^2\,\sqrt{-a^7\,c^7}}{4096\,a^7\,c^6} - \frac{9\,A\,B}{2048\,a^3\,c^3}}}{32\left(\frac{27\,B^3}{2048\,a\,c^2} - \frac{27\,A^3\,\sqrt{-a^7\,c^7}}{2048\,a^6\,c^4} - \frac{27\,A^2\,B}{2048\,a^2\,c} + \frac{27\,A\,B^2\,\sqrt{-a^7\,c^7}}{2048\,a^5\,c^5}\right)} - \frac{9\,A^2\,c\,\sqrt{x}\,\sqrt{}}{32\left(\frac{27\,B^3}{2048\,c^2} - \right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] ((A*x^(5/2))/(16*a) + (3*B*x^(7/2))/(16*a) - (3*A*x^(1/2))/(16*c) - (B*x^(3
/2))/(16*c))/(a^2 + c^2*x^4 + 2*a*c*x^2) - 2*atanh((9*B^2*x^(1/2)*((9*B^2*(
-a^7*c^7)^(1/2))/(4096*a^6*c^7) - (9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) -
 (9*A*B)/(2048*a^3*c^3))^(1/2))/(32*((27*B^3)/(2048*a*c^2) - (27*A^3*(-a^7*
c^7)^(1/2))/(2048*a^6*c^4) - (27*A^2*B)/(2048*a^2*c) + (27*A*B^2*(-a^7*c^7)
^(1/2))/(2048*a^5*c^5))) - (9*A^2*c*x^(1/2)*((9*B^2*(-a^7*c^7)^(1/2))/(4096
*a^6*c^7) - (9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) - (9*A*B)/(2048*a^3*c^3
))^(1/2))/(32*((27*B^3)/(2048*c^2) - (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^5*c^
4) - (27*A^2*B)/(2048*a*c) + (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^4*c^5))))*
(-(9*(A^2*c*(-a^7*c^7)^(1/2) - B^2*a*(-a^7*c^7)^(1/2) + 2*A*B*a^4*c^4))/(40
96*a^7*c^7))^(1/2) - 2*atanh((9*B^2*x^(1/2)*((9*A^2*(-a^7*c^7)^(1/2))/(4096
*a^7*c^6) - (9*A*B)/(2048*a^3*c^3) - (9*B^2*(-a^7*c^7)^(1/2))/(4096*a^6*c^7
))^(1/2))/(32*((27*B^3)/(2048*a*c^2) + (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^6*
c^4) - (27*A^2*B)/(2048*a^2*c) - (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^5*c^5)
)) - (9*A^2*c*x^(1/2)*((9*A^2*(-a^7*c^7)^(1/2))/(4096*a^7*c^6) - (9*A*B)/(2
048*a^3*c^3) - (9*B^2*(-a^7*c^7)^(1/2))/(4096*a^6*c^7))^(1/2))/(32*((27*B^3
)/(2048*c^2) + (27*A^3*(-a^7*c^7)^(1/2))/(2048*a^5*c^4) - (27*A^2*B)/(2048*
a*c) - (27*A*B^2*(-a^7*c^7)^(1/2))/(2048*a^4*c^5))))*(-(9*(B^2*a*(-a^7*c^7)
^(1/2) - A^2*c*(-a^7*c^7)^(1/2) + 2*A*B*a^4*c^4))/(4096*a^7*c^7))^(1/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.429 $\int \frac{\sqrt{x}(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=331

$$-\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}-(3$$

```
[Out] -1/128*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(3*B*a^(1/2)-5
*A*c^(1/2))/a^(9/4)/c^(5/4)*2^(1/2)+1/128*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1
/4)*2^(1/2)*x^(1/2))*(3*B*a^(1/2)-5*A*c^(1/2))/a^(9/4)/c^(5/4)*2^(1/2)-1/64
*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^(1/2)+5*A*c^(1/2))/a^(9/4
)/c^(5/4)*2^(1/2)+1/64*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(3*B*a^(1/
2)+5*A*c^(1/2))/a^(9/4)/c^(5/4)*2^(1/2)-1/4*(-A*c*x+B*a)*x^(1/2)/a/c/(c*x^2
+a)^2+1/16*(5*A*c*x+B*a)*x^(1/2)/a^2/c/(c*x^2+a)
```

Rubi [A] time = 0.29, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {821, 823, 827, 1168, 1162, 617, 204, 1165, 628}

$$-\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}B-5A\sqrt{c}\right)\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{64\sqrt{2}a^{9/4}c^{5/4}}-(3$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(a*B - A*c*x))/(4*a*c*(a + c*x^2)^2) + (Sqrt[x]*(a*B + 5*A*c*x))/
(16*a^2*c*(a + c*x^2)) - ((3*Sqrt[a]*B + 5*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c
^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(9/4)*c^(5/4)) + ((3*Sqrt[a]*B + 5*
A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(9/
4)*c^(5/4)) - ((3*Sqrt[a]*B - 5*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^
(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(9/4)*c^(5/4)) + ((3*Sqrt[a]*B -
5*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(6
4*Sqrt[2]*a^(9/4)*c^(5/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+cx^2\right)^3}\,dx &= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\int \frac{\frac{aB}{2}+\frac{5Acx}{2}}{\sqrt{x}\left(a+cx^2\right)^2}\,dx}{4ac}\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}-\frac{\int \frac{-\frac{3}{4}a^2Bc-\frac{5}{4}aAc^2x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^3c^2}\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}-\frac{\text{Subst}\left(\int \frac{-\frac{3}{4}a^2Bc-\frac{5}{4}aAc^2x^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{4a^3c^2}\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}+\frac{\left(3\sqrt{a}\,B-5A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\,\sqrt{c}-cx^2}{a+cx^4}\,dx,x,\sqrt{x}\right)}{32a^2c^{3/2}}+\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}+\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\,\sqrt[4]{a}\,x}{\sqrt[4]{c}}+x^2}\,dx,x,\sqrt{x}\right.}{64a^2c^{3/2}}\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}-\frac{\left(3\sqrt{a}\,B-5A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{9/4}c^{5/4}}\\
&= -\frac{\sqrt{x}\,(aB-Acx)}{4ac\left(a+cx^2\right)^2}+\frac{\sqrt{x}\,(aB+5Acx)}{16a^2c\left(a+cx^2\right)}-\frac{\left(3\sqrt{a}\,B+5A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}\,a^{9/4}c^{5/4}}+\frac{\left(3\sqrt{a}\,B+\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 356, normalized size = 1.08

$$
\frac{-\frac{3\sqrt{2}\,a^{5/4}B\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}+\frac{3\sqrt{2}\,a^{5/4}B\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{c^{5/4}}-\frac{6\sqrt{2}\,a^{5/4}B\tan^{-1}\left(1-\frac{\sqrt{2}\,\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)}{c^{5/4}}+\frac{6\sqrt{2}\,a^{5/4}B\tan^{-1}\left(\right.}{c^{5/4}}}{128a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] ((-24*a*B*Sqrt[x])/c + (32*a^2*A*x^(3/2))/(a + c*x^2)^2 + (32*a^2*B*x^(5/2)
)/(a + c*x^2)^2 + (40*a*A*x^(3/2))/(a + c*x^2) + (24*a*B*x^(5/2))/(a + c*x^
2) - (6*Sqrt[2]*a^(5/4)*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^
(5/4) + (6*Sqrt[2]*a^(5/4)*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])
/c^(5/4) - (20*(-a)^(3/4)*A*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) +
 (20*(-a)^(3/4)*A*ArcTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (3*Sqrt[
2]*a^(5/4)*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^
(5/4) + (3*Sqrt[2]*a^(5/4)*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x]
+ Sqrt[c]*x])/c^(5/4))/(128*a^3)
```

fricas [B] time = 0.80, size = 1022, normalized size = 3.09

$$
-\frac{\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)\sqrt{-\frac{a^4c^2\sqrt{-\frac{81\,B^4a^2-450\,A^2B^2ac+625\,A^4c^2}{a^9c^5}}+30\,AB}{a^4c^2}}\,\log\left(-\left(81\,B^4a^2-625\,A^4c^2\right)\sqrt{x}+\left(5\,Aa^7c^4\sqrt{-}\right.\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sqrt(-(a^4*c^2*sqrt(-(81*B^4*a
^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 30*A*B)/(a^4*c^2))*log(-(8
1*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (5*A*a^7*c^4*sqrt(-(81*B^4*a^2 - 450*A^2
*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 27*B^3*a^4*c - 75*A^2*B*a^3*c^2)*sqrt(
-(a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 3
0*A*B)/(a^4*c^2))) - (a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sqrt(-(a^4*c^2*s
qrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 30*A*B)/(a^4
*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (5*A*a^7*c^4*sqrt(-(81*B^4
*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) + 27*B^3*a^4*c - 75*A^2*B*
a^3*c^2)*sqrt(-(a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/
(a^9*c^5)) + 30*A*B)/(a^4*c^2))) - (a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c)*sq
rt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) -
 30*A*B)/(a^4*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) + (5*A*a^7*c^4*
sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) - 27*B^3*a^4*
c + 75*A^2*B*a^3*c^2)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 6
25*A^4*c^2)/(a^9*c^5)) - 30*A*B)/(a^4*c^2))) + (a^2*c^3*x^4 + 2*a^3*c^2*x^2
 + a^4*c)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/
(a^9*c^5)) - 30*A*B)/(a^4*c^2))*log(-(81*B^4*a^2 - 625*A^4*c^2)*sqrt(x) - (
5*A*a^7*c^4*sqrt(-(81*B^4*a^2 - 450*A^2*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) -
 27*B^3*a^4*c + 75*A^2*B*a^3*c^2)*sqrt((a^4*c^2*sqrt(-(81*B^4*a^2 - 450*A^2
*B^2*a*c + 625*A^4*c^2)/(a^9*c^5)) - 30*A*B)/(a^4*c^2))) - 4*(5*A*c^2*x^3 +
 B*a*c*x^2 + 9*A*a*c*x - 3*B*a^2)*sqrt(x))/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a
^4*c)
```

giac [A] time = 0.21, size = 297, normalized size = 0.90

$$\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac+5\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^3c^3}+\frac{\sqrt{2}\left(3\left(ac^3\right)^{\frac{1}{4}}Bac+5\left(ac^3\right)^{\frac{3}{4}}A\right)\arctan\left(-\frac{\sqrt{2}\left(\sqrt{2}\right.}{2}\right.}{64\,a^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/64*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*arctan(1/2*sqrt(2)
*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/64*sqrt(2)*(3
*(a*c^3)^(1/4)*B*a*c + 5*(a*c^3)^(3/4)*A)*arctan(-1/2*sqrt(2)*(sqrt(2)*(a/c
)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/128*sqrt(2)*(3*(a*c^3)^(1/4
)*B*a*c - 5*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c
))/(a^3*c^3) - 1/128*sqrt(2)*(3*(a*c^3)^(1/4)*B*a*c - 5*(a*c^3)^(3/4)*A)*lo
g(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c^3) + 1/16*(5*A*c^2*x
^(7/2) + B*a*c*x^(5/2) + 9*A*a*c*x^(3/2) - 3*B*a^2*sqrt(x))/((c*x^2 + a)^2*
a^2*c)
```

maple [A] time = 0.07, size = 335, normalized size = 1.01

$$\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}+\frac{5\sqrt{2}\,A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}+1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}+\frac{5\sqrt{2}\,A\ln\left(\frac{x-\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}{x+\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,\sqrt{x}+\sqrt{\frac{a}{c}}}\right)}{128\left(\frac{a}{c}\right)^{\frac{1}{4}}a^2c}+\frac{3\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\,B\arctan}{64a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 2*(5/32*A*c/a^2*x^(7/2)+1/32*B/a*x^(5/2)+9/32*A/a*x^(3/2)-3/32*B/c*x^(1/2))
/(c*x^2+a)^2+3/64/a^2/c*B*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^
(1/2)-1)+3/128/a^2/c*B*(a/c)^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2
)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+3/64/a^2/c*B*(a
/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/128/a^2/c*A/(a/c)
^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64/a^2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(
1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64/a^2/c*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)
/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [**A**] time = 1.29, size = 311, normalized size = 0.94

$$\frac{5\,Ac^2x^{\frac{7}{2}} + Bacx^{\frac{5}{2}} + 9\,Aacx^{\frac{3}{2}} - 3\,Ba^2\sqrt{x}}{16\left(a^2c^3x^4 + 2\,a^3c^2x^2 + a^4c\right)} + \frac{\frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c} + 5\,A\sqrt{a}\,c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}} + 2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}} + \frac{2\,\sqrt{2}\left(3\,Ba\sqrt{c} + 5\,A\sqrt{a}\,c\right)\arctan}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(1/2)*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(5*A*c^2*x^(7/2) + B*a*c*x^(5/2) + 9*A*a*c*x^(3/2) - 3*B*a^2*sqrt(x))/
(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c) + 1/128*(2*sqrt(2)*(3*B*a*sqrt(c) + 5
*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(
x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt
(2)*(3*B*a*sqrt(c) + 5*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^
(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqr
t(c))*sqrt(c)) + sqrt(2)*(3*B*a*sqrt(c) - 5*A*sqrt(a)*c)*log(sqrt(2)*a^(1/4
)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) - sqrt(2)*(3*B*a
*sqrt(c) - 5*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x
+ sqrt(a))/(a^(3/4)*c^(3/4)))/(a^2*c)
```

mupad [**B**] time = 1.29, size = 690, normalized size = 2.08

$$\frac{\frac{9\,A\,x^{3/2}}{16\,a} + \frac{B\,x^{5/2}}{16\,a} - \frac{3\,B\,\sqrt{x}}{16\,c} + \frac{5\,A\,c\,x^{7/2}}{16\,a^2}}{a^2 + 2\,a\,c\,x^2 + c^2\,x^4} - 2\,\mathrm{atanh}\left(\frac{9\,B^2\,c\,\sqrt{x}\,\sqrt{\frac{25\,A^2\,\sqrt{-a^9\,c^5}}{4096\,a^9\,c^4} - \frac{15\,A\,B}{2048\,a^4\,c^2} - \frac{9\,B^2\,\sqrt{-a^9\,c^5}}{4096\,a^8\,c^5}}}{32\left(\frac{45\,A\,B^2}{2048\,a^2} - \frac{125\,A^3\,c}{2048\,a^3} + \frac{27\,B^3\,\sqrt{-a^9\,c^5}}{2048\,a^6\,c^3} - \frac{75\,A^2\,B\,\sqrt{-a^9\,c^5}}{2048\,a^7\,c^2}\right)} - \frac{25\,A^2\,c^2\,\sqrt{x}\,\sqrt{}}{32\left(\frac{45\,A\,B^2}{2048\,a} - \right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] ((9*A*x^(3/2))/(16*a) + (B*x^(5/2))/(16*a) - (3*B*x^(1/2))/(16*c) + (5*A*c*
x^(7/2))/(16*a^2))/(a^2 + c^2*x^4 + 2*a*c*x^2) - 2*atanh((9*B^2*c*x^(1/2)*(
(25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*c^2) - (9*B^2
*(-a^9*c^5)^(1/2))/(4096*a^8*c^5))^(1/2))/(32*((45*A*B^2)/(2048*a^2) - (125
*A^3*c)/(2048*a^3) + (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^6*c^3) - (75*A^2*B*(
-a^9*c^5)^(1/2))/(2048*a^7*c^2))) - (25*A^2*c^2*x^(1/2)*((25*A^2*(-a^9*c^5)
^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*c^2) - (9*B^2*(-a^9*c^5)^(1/2))
/(4096*a^8*c^5))^(1/2))/(32*((45*A*B^2)/(2048*a) - (125*A^3*c)/(2048*a^2) +
 (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^5*c^3) - (75*A^2*B*(-a^9*c^5)^(1/2))/(20
48*a^6*c^2))))*(-(9*B^2*a*(-a^9*c^5)^(1/2) - 25*A^2*c*(-a^9*c^5)^(1/2) + 30
*A*B*a^5*c^3)/(4096*a^9*c^5))^(1/2) - 2*atanh((9*B^2*c*x^(1/2)*((9*B^2*(-a^
9*c^5)^(1/2))/(4096*a^8*c^5) - (25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (
15*A*B)/(2048*a^4*c^2))^(1/2))/(32*((45*A*B^2)/(2048*a^2) - (125*A^3*c)/(20
48*a^3) - (27*B^3*(-a^9*c^5)^(1/2))/(2048*a^6*c^3) + (75*A^2*B*(-a^9*c^5)^(
1/2))/(2048*a^7*c^2))) - (25*A^2*c^2*x^(1/2)*((9*B^2*(-a^9*c^5)^(1/2))/(409
6*a^8*c^5) - (25*A^2*(-a^9*c^5)^(1/2))/(4096*a^9*c^4) - (15*A*B)/(2048*a^4*
c^2))^(1/2))/(32*((45*A*B^2)/(2048*a) - (125*A^3*c)/(2048*a^2) - (27*B^3*(-
a^9*c^5)^(1/2))/(2048*a^5*c^3) + (75*A^2*B*(-a^9*c^5)^(1/2))/(2048*a^6*c^2)
)))*(-(25*A^2*c*(-a^9*c^5)^(1/2) - 9*B^2*a*(-a^9*c^5)^(1/2) + 30*A*B*a^5*c^
3)/(4096*a^9*c^5))^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(1/2)*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.430 $\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=320

$$\frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{11/4}c^{3/4}}-\frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{11/4}c^{3/4}}-\Big(5$$

```
[Out] 1/128*ln(a^(1/2)+x*c^(1/2)-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)-21
*A*c^(1/2))/a^(11/4)/c^(3/4)*2^(1/2)-1/128*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(
1/4)*2^(1/2)*x^(1/2))*(5*B*a^(1/2)-21*A*c^(1/2))/a^(11/4)/c^(3/4)*2^(1/2)-1
/64*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(5*B*a^(1/2)+21*A*c^(1/2))/a^
(11/4)/c^(3/4)*2^(1/2)+1/64*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(5*B*
a^(1/2)+21*A*c^(1/2))/a^(11/4)/c^(3/4)*2^(1/2)+1/4*(B*x+A)*x^(1/2)/a/(c*x^2
+a)^2+1/16*(5*B*x+7*A)*x^(1/2)/a^2/(c*x^2+a)
```

Rubi [A] time = 0.31, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {823, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{11/4}c^{3/4}}-\frac{\left(5\sqrt{a}\,B-21A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{11/4}c^{3/4}}-\Big(5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + c*x^2)^3),x]
```

```
[Out] (Sqrt[x]*(A + B*x))/(4*a*(a + c*x^2)^2) + (Sqrt[x]*(7*A + 5*B*x))/(16*a^2*(
a + c*x^2)) - ((5*Sqrt[a]*B + 21*A*Sqrt[c])*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqr
t[x])/a^(1/4)])/(32*Sqrt[2]*a^(11/4)*c^(3/4)) + ((5*Sqrt[a]*B + 21*A*Sqrt[c
])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(11/4)*c^(3
/4)) + ((5*Sqrt[a]*B - 21*A*Sqrt[c])*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*
Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(11/4)*c^(3/4)) - ((5*Sqrt[a]*B - 21*A*
Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sq
rt[2]*a^(11/4)*c^(3/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+cx^2\right)^3}dx = \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} - \frac{\int \frac{-\frac{7}{2}aAc-\frac{5}{2}aBcx}{\sqrt{x}\left(a+cx^2\right)^2}dx}{4a^2c}$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\int \frac{\frac{21}{4}a^2Ac^2+\frac{5}{4}a^2Bc^2x}{\sqrt{x}\left(a+cx^2\right)}dx}{8a^4c^2}$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\text{Subst}\left(\int \frac{\frac{21}{4}a^2Ac^2+\frac{5}{4}a^2Bc^2x^2}{a+cx^4}dx, x, \sqrt{x}\right)}{4a^4c^2}$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\text{Subst}\left(\int \frac{\sqrt{a}\sqrt{c}-cx^2}{a+cx^4}dx, x, \sqrt{x}\right)}{32a^{5/2}c} + \left(5\right.$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}B+21A\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}\sqrt[4]{a}x}{\sqrt[4]{c}}+x^2}dx, x, \sqrt{x}\right)}{64a^{5/2}c}$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} + \frac{\left(5\sqrt{a}B-21A\sqrt{c}\right)\log\left(\sqrt{a}-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{c}x\right)}{64\sqrt{2}a^{11/4}c^{3/4}}$$

$$= \frac{\sqrt{x}(A+Bx)}{4a\left(a+cx^2\right)^2} + \frac{\sqrt{x}(7A+5Bx)}{16a^2\left(a+cx^2\right)} - \frac{\left(5\sqrt{a}B+21A\sqrt{c}\right)\tan^{-1}\left(1-\frac{\sqrt{2}\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)}{32\sqrt{2}a^{11/4}c^{3/4}} + \left(5\sqrt{a}B+2\right.$$

Mathematica [A] time = 0.17, size = 344, normalized size = 1.08

$$\frac{\frac{32a^2A\sqrt{x}}{\left(a+cx^2\right)^2}+\frac{32a^2Bx^{3/2}}{\left(a+cx^2\right)^2}+\frac{56aA\sqrt{x}}{a+cx^2}-\frac{21\sqrt{2}\sqrt[4]{a}A\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{21\sqrt{2}\sqrt[4]{a}A\log\left(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}-42\sqrt{2}\sqrt[4]{a}A}{128a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + c*x^2)^3),x]
```

```
[Out] ((32*a^2*A*Sqrt[x])/(a + c*x^2)^2 + (32*a^2*B*x^(3/2))/(a + c*x^2)^2 + (56*
a*A*Sqrt[x])/(a + c*x^2) + (40*a*B*x^(3/2))/(a + c*x^2) - (42*Sqrt[2]*a^(1/
4)*A*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) + (42*Sqrt[2]*a
^(1/4)*A*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (20*(-a)^
(3/4)*B*ArcTan[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) + (20*(-a)^(3/4)*B*Ar
cTanh[(c^(1/4)*Sqrt[x])/(-a)^(1/4)])/c^(3/4) - (21*Sqrt[2]*a^(1/4)*A*Log[Sq
rt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1/4) + (21*Sqrt[2]
*a^(1/4)*A*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(1
/4))/(128*a^3)
```

fricas [B] time = 0.99, size = 981, normalized size = 3.07

$$\left(a^2c^2x^4+2a^3cx^2+a^4\right)\sqrt{-\frac{a^5c\sqrt{-\frac{625B^4a^2-22050A^2B^2ac+194481A^4c^2}{a^{11}c^3}}+210AB}{a^5c}}\log\left(-\left(625B^4a^2-194481A^4c^2\right)\sqrt{x}+\left(5Ba^9c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 2
2050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 210*A*B)/(a^5*c))*log(-(62
5*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) + (5*B*a^9*c^2*sqrt(-(625*B^4*a^2 - 220
50*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 525*A*B^2*a^4*c + 9261*A^3*a
^3*c^2)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^
2)/(a^11*c^3)) + 210*A*B)/(a^5*c))) - (a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqr
t(-(a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^
3)) + 210*A*B)/(a^5*c))*log(-(625*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) - (5*B*
a^9*c^2*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)
) - 525*A*B^2*a^4*c + 9261*A^3*a^3*c^2)*sqrt(-(a^5*c*sqrt(-(625*B^4*a^2 - 2
2050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 210*A*B)/(a^5*c))) - (a^2*
c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2
*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)/(a^5*c))*log(-(625*B^4*a^2 -
194481*A^4*c^2)*sqrt(x) + (5*B*a^9*c^2*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a
*c + 194481*A^4*c^2)/(a^11*c^3)) + 525*A*B^2*a^4*c - 9261*A^3*a^3*c^2)*sqrt
((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)
) - 210*A*B)/(a^5*c))) + (a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)*sqrt((a^5*c*sqrt
(-(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)
/(a^5*c))*log(-(625*B^4*a^2 - 194481*A^4*c^2)*sqrt(x) - (5*B*a^9*c^2*sqrt(-
(625*B^4*a^2 - 22050*A^2*B^2*a*c + 194481*A^4*c^2)/(a^11*c^3)) + 525*A*B^2*
a^4*c - 9261*A^3*a^3*c^2)*sqrt((a^5*c*sqrt(-(625*B^4*a^2 - 22050*A^2*B^2*a*
c + 194481*A^4*c^2)/(a^11*c^3)) - 210*A*B)/(a^5*c))) + 4*(5*B*c*x^3 + 7*A*c
*x^2 + 9*B*a*x + 11*A*a)*sqrt(x))/(a^2*c^2*x^4 + 2*a^3*c*x^2 + a^4)
```

giac [A] time = 0.23, size = 293, normalized size = 0.92

$$\frac{5\,Bcx^{\frac{7}{2}} + 7\,Acx^{\frac{5}{2}} + 9\,Bax^{\frac{3}{2}} + 11\,Aa\sqrt{x}}{16\left(cx^2+a\right)^2 a^2} + \frac{\sqrt{2}\left(21\,\left(ac^3\right)^{\frac{1}{4}} Ac^2 + 5\,\left(ac^3\right)^{\frac{3}{4}} B\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^3c^3} + \sqrt{2}\left(21\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*(5*B*c*x^(7/2) + 7*A*c*x^(5/2) + 9*B*a*x^(3/2) + 11*A*a*sqrt(x))/((c*x
^2 + a)^2*a^2) + 1/64*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*
arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3)
 + 1/64*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 + 5*(a*c^3)^(3/4)*B)*arctan(-1/2*sq
rt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^3*c^3) + 1/128*sqrt
(2)*(21*(a*c^3)^(1/4)*A*c^2 - 5*(a*c^3)^(3/4)*B)*log(sqrt(2)*sqrt(x)*(a/c)^
(1/4) + x + sqrt(a/c))/(a^3*c^3) - 1/128*sqrt(2)*(21*(a*c^3)^(1/4)*A*c^2 -
5*(a*c^3)^(3/4)*B)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a^3*c
^3)
```

maple [A] time = 0.06, size = 349, normalized size = 1.09

$$\frac{B\,x^{\frac{3}{2}}}{4\left(c\,x^2+a\right)^2 a} + \frac{A\sqrt{x}}{4\left(c\,x^2+a\right)^2 a} + \frac{5B\,x^{\frac{3}{2}}}{16\left(c\,x^2+a\right)a^2} + \frac{7A\sqrt{x}}{16\left(c\,x^2+a\right)a^2} + \frac{21\left(\frac{a}{c}\right)^{\frac{1}{4}}\sqrt{2}\;A\arctan\left(\frac{\sqrt{2}\;\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64a^3} + 21\left(\frac{a}{c}\right)^{\frac{1}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/(c*x^2+a)^3,x)
```

```
[Out] 1/4*A*x^(1/2)/a/(c*x^2+a)^2+7/16*A/a^2*x^(1/2)/(c*x^2+a)+21/128*A/a^3*(a/c)
^(1/4)*2^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4
)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+21/64*A/a^3*(a/c)^(1/4)*2^(1/2)*arctan(2^(1
/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64*A/a^3*(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(
a/c)^(1/4)*x^(1/2)-1)+1/4*B*x^(3/2)/a/(c*x^2+a)^2+5/16*B/a^2*x^(3/2)/(c*x^2
+a)+5/128*B/a^2/c/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/
c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))+5/64*B/a^2/c/(a/c)^(
1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+5/64*B/a^2/c/(a/c)^(1/4)
*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)
```

maxima [**A**]   time = 1.50, size = 291, normalized size = 0.91

$$\frac{5\,Bcx^{\frac{7}{2}}+7\,Acx^{\frac{5}{2}}+9\,Bax^{\frac{3}{2}}+11\,Aa\sqrt{x}}{16\,\left(a^{2}c^{2}x^{4}+2\,a^{3}cx^{2}+a^{4}\right)}+\frac{\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+21\,A\sqrt{c}\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\,a^{\frac{1}{4}}c^{\frac{1}{4}}+2\,\sqrt{c}\,\sqrt{x}\right)}{2\,\sqrt{\sqrt{a}\,\sqrt{c}}}\right)}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}+\frac{2\,\sqrt{2}\left(5\,B\sqrt{a}+21\,A\sqrt{c}\right)\arctan}{\sqrt{a}\,\sqrt{\sqrt{a}\,\sqrt{c}}\,\sqrt{c}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/16*(5*B*c*x^(7/2) + 7*A*c*x^(5/2) + 9*B*a*x^(3/2) + 11*A*a*sqrt(x))/(a^2*
c^2*x^4 + 2*a^3*c*x^2 + a^4) + 1/128*(2*sqrt(2)*(5*B*sqrt(a) + 21*A*sqrt(c)
)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*sqrt(c)*sqrt(x))/sqrt(sqr
t(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c)) + 2*sqrt(2)*(5*B*sqr
t(a) + 21*A*sqrt(c))*arctan(-1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) - 2*sqrt(
c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(c))
- sqrt(2)*(5*B*sqrt(a) - 21*A*sqrt(c))*log(sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x)
+ sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) + sqrt(2)*(5*B*sqrt(a) - 21*A*sqrt
(c))*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c
^(3/4)))/a^2
```

mupad [**B**]   time = 1.28, size = 687, normalized size = 2.15

$$2\,\mathrm{atanh}\left(\frac{441\,A^{2}\,c^{3}\,\sqrt{x}\,\sqrt{\frac{25\,B^{2}\,\sqrt{-a^{11}\,c^{3}}}{4096\,a^{10}\,c^{3}}-\frac{441\,A^{2}\,\sqrt{-a^{11}\,c^{3}}}{4096\,a^{11}\,c^{2}}-\frac{105\,A\,B}{2048\,a^{5}\,c}}}{32\,\left(\frac{125\,B^{3}\,c}{2048\,a}+\frac{525\,A\,B^{2}\,\sqrt{-a^{11}\,c^{3}}}{2048\,a^{7}}-\frac{9261\,A^{3}\,c\,\sqrt{-a^{11}\,c^{3}}}{2048\,a^{8}}-\frac{2205\,A^{2}\,B\,c^{2}}{2048\,a^{2}}\right)}-\frac{25\,B^{2}\,c^{2}\,\sqrt{x}\,\sqrt{\frac{25\,B^{2}\,\sqrt{-a^{11}\,c^{3}}}{4096\,a^{10}\,c^{3}}-\frac{441\,A^{2}\,\sqrt{}}{4096\,a}}}{32\,\left(\frac{125\,B^{3}\,c}{2048\,a^{2}}+\frac{525\,A\,B^{2}\,\sqrt{-a^{11}\,c^{3}}}{2048\,a^{8}}-\frac{9261\,A^{3}\,c\,\sqrt{}}{2048}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + c*x^2)^3),x)
```

```
[Out] 2*atanh((441*A^2*c^3*x^(1/2)*((25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^3) -
(441*A^2*(-a^11*c^3)^(1/2))/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c))^(1/2)
)/(32*((125*B^3*c)/(2048*a) + (525*A*B^2*(-a^11*c^3)^(1/2))/(2048*a^7) - (9
261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^8) - (2205*A^2*B*c^2)/(2048*a^2))) - (
25*B^2*c^2*x^(1/2)*((25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^3) - (441*A^2*(
-a^11*c^3)^(1/2))/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c))^(1/2))/(32*((12
5*B^3*c)/(2048*a^2) + (525*A*B^2*(-a^11*c^3)^(1/2))/(2048*a^8) - (9261*A^3*
c*(-a^11*c^3)^(1/2))/(2048*a^9) - (2205*A^2*B*c^2)/(2048*a^3))))*(-(441*A^2
*c*(-a^11*c^3)^(1/2) - 25*B^2*a*(-a^11*c^3)^(1/2) + 210*A*B*a^6*c^2)/(4096*
a^11*c^3))^(1/2) + 2*atanh((441*A^2*c^3*x^(1/2)*((441*A^2*(-a^11*c^3)^(1/2)
)/(4096*a^11*c^2) - (105*A*B)/(2048*a^5*c) - (25*B^2*(-a^11*c^3)^(1/2))/(40
96*a^10*c^3))^(1/2))/(32*((125*B^3*c)/(2048*a) - (525*A*B^2*(-a^11*c^3)^(1/
2))/(2048*a^7) + (9261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^8) - (2205*A^2*B*c^
2)/(2048*a^2))) - (25*B^2*c^2*x^(1/2)*((441*A^2*(-a^11*c^3)^(1/2))/(4096*a^
11*c^2) - (105*A*B)/(2048*a^5*c) - (25*B^2*(-a^11*c^3)^(1/2))/(4096*a^10*c^
3))^(1/2))/(32*((125*B^3*c)/(2048*a^2) - (525*A*B^2*(-a^11*c^3)^(1/2))/(204
8*a^8) + (9261*A^3*c*(-a^11*c^3)^(1/2))/(2048*a^9) - (2205*A^2*B*c^2)/(2048
*a^3))))*(-(25*B^2*a*(-a^11*c^3)^(1/2) - 441*A^2*c*(-a^11*c^3)^(1/2) + 210*
A*B*a^6*c^2)/(4096*a^11*c^3))^(1/2) + ((11*A*x^(1/2))/(16*a) + (9*B*x^(3/2)
)/(16*a) + (7*A*c*x^(5/2))/(16*a^2) + (5*B*c*x^(7/2))/(16*a^2))/(a^2 + c^2*
x^4 + 2*a*c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.431 $\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=333

$$-\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right.}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}$$

```
[Out] -3/64*arctan(1-c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(7*B*a^(1/2)-15*A*c^(1/2))/
a^(13/4)/c^(1/4)*2^(1/2)+3/64*arctan(1+c^(1/4)*2^(1/2)*x^(1/2)/a^(1/4))*(7*
B*a^(1/2)-15*A*c^(1/2))/a^(13/4)/c^(1/4)*2^(1/2)-3/128*ln(a^(1/2)+x*c^(1/2)
-a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(7*B*a^(1/2)+15*A*c^(1/2))/a^(13/4)/c^(1/
4)*2^(1/2)+3/128*ln(a^(1/2)+x*c^(1/2)+a^(1/4)*c^(1/4)*2^(1/2)*x^(1/2))*(7*B
*a^(1/2)+15*A*c^(1/2))/a^(13/4)/c^(1/4)*2^(1/2)-45/16*A/a^3/x^(1/2)+1/4*(B*
x+A)/a/(c*x^2+a)^2/x^(1/2)+1/16*(7*B*x+9*A)/a^2/(c*x^2+a)/x^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 13, number of rules used = 9, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.450, Rules used = {823, 829, 827, 1168, 1162, 617, 204, 1165, 628}

$$\frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)}-\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(-\sqrt{2}\,\sqrt[4]{a}\,\sqrt[4]{c}\,\sqrt{x}+\sqrt{a}+\sqrt{c}\,x\right)}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}+\frac{3\left(7\sqrt{a}\,B+15A\sqrt{c}\right)\log\left(\sqrt{2}\,\sqrt[4]{a}\right.}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + c*x^2)^3),x]
```

```
[Out] (-45*A)/(16*a^3*Sqrt[x]) + (A + B*x)/(4*a*Sqrt[x]*(a + c*x^2)^2) + (9*A + 7
*B*x)/(16*a^2*Sqrt[x]*(a + c*x^2)) - (3*(7*Sqrt[a]*B - 15*A*Sqrt[c])*ArcTan
[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/(32*Sqrt[2]*a^(13/4)*c^(1/4)) + (3
*(7*Sqrt[a]*B - 15*A*Sqrt[c])*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)]
)/(32*Sqrt[2]*a^(13/4)*c^(1/4)) - (3*(7*Sqrt[a]*B + 15*A*Sqrt[c])*Log[Sqrt[
a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(13/4)*c^(
1/4)) + (3*(7*Sqrt[a]*B + 15*A*Sqrt[c])*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/
4)*Sqrt[x] + Sqrt[c]*x])/(64*Sqrt[2]*a^(13/4)*c^(1/4))
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 617

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = 1 - 4*S
implify[(a*c)/b^2]}, Dist[-2/b, Subst[Int[1/(q - x^2), x], x, 1 + (2*c*x)/b
], x] /; RationalQ[q] && (EqQ[q^2, 1] ||  !RationalQ[b^2 - 4*a*c])] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1162

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(2*d)/e, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2, x], x], x] + Dist[e
/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; FreeQ[{a, c, d, e}, x] &
& EqQ[c*d^2 - a*e^2, 0] && PosQ[d*e]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rule 1168

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
a*c, 2]}, Dist[(d*q + a*e)/(2*a*c), Int[(q + c*x^2)/(a + c*x^4), x], x] + D
ist[(d*q - a*e)/(2*a*c), Int[(q - c*x^2)/(a + c*x^4), x], x]] /; FreeQ[{a,
c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && NeQ[c*d^2 - a*e^2, 0] && NegQ[-(a*
c)]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+cx^2\right)^3}\,dx = \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} - \frac{\int \frac{-\frac{9}{2}aAc-\frac{7}{2}aBcx}{x^{3/2}\left(a+cx^2\right)^2}\,dx}{4a^2c}$$

$$= \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\int \frac{\frac{45}{4}a^2Ac^2+\frac{21}{4}a^2Bc^2x}{x^{3/2}\left(a+cx^2\right)}\,dx}{8a^4c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\int \frac{\frac{21}{4}a^3Bc^2-\frac{45}{4}a^2Ac^3x}{\sqrt{x}\left(a+cx^2\right)}\,dx}{8a^5c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{\mathrm{Subst}\Big(\int \frac{\frac{21}{4}a^3Bc^2-\frac{45}{4}a^2Ac^3x^2}{a+cx^4}\,dx, x, \sqrt{}}{4a^5c^2}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{\left(3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\right)\mathrm{Subst}\Big(\int \frac{\sqrt{a}\sqrt{c}+}{a+cx^4}}{32a^3}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{\left(3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\right)\mathrm{Subst}\Bigg(\int \frac{1}{\frac{\sqrt{a}}{\sqrt{c}}-\frac{\sqrt{2}}{}}}{64a^3}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} - \frac{3\left(7\sqrt{a}B+15A\sqrt{c}\right)\log\big(\sqrt{a}-\sqrt{2}}{64\sqrt{2}\,a^{13/4}\sqrt[4]{c}}$$

$$= -\frac{45A}{16a^3\sqrt{x}} + \frac{A+Bx}{4a\sqrt{x}\left(a+cx^2\right)^2} + \frac{9A+7Bx}{16a^2\sqrt{x}\left(a+cx^2\right)} + \frac{3\left(15A-\frac{7\sqrt{a}B}{\sqrt{c}}\right)\sqrt[4]{c}\,\tan^{-1}\big(1-\frac{\sqrt{2}}{}}{32\sqrt{2}\,a^{13/4}}$$

Mathematica [C] time = 0.29, size = 300, normalized size = 0.90

$$\frac{\sqrt[4]{a}\Bigg(\frac{32a^{7/4}A}{\sqrt{x}\left(a+cx^2\right)^2}+\frac{72a^{3/4}A}{\sqrt{x}\left(a+cx^2\right)}+\frac{32a^{7/4}B\sqrt{x}}{\left(a+cx^2\right)^2}+\frac{56a^{3/4}B\sqrt{x}}{a+cx^2}-\frac{21\sqrt{2}B\log\left(-\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+\sqrt{c}x\right)}{\sqrt[4]{c}}+\frac{21\sqrt{2}B\log\big(\sqrt{2}\sqrt[4]{a}\sqrt[4]{c}\sqrt{x}+\sqrt{a}+}{\sqrt[4]{c}}}{128a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + c*x^2)^3),x]
```

```
[Out] ((-360*A*Hypergeometric2F1[-1/4, 1, 3/4, -((c*x^2)/a)])/Sqrt[x] + a^(1/4)*(
(32*a^(7/4)*A)/(Sqrt[x]*(a + c*x^2)^2) + (32*a^(7/4)*B*Sqrt[x])/(a + c*x^2)
^2 + (72*a^(3/4)*A)/(Sqrt[x]*(a + c*x^2)) + (56*a^(3/4)*B*Sqrt[x])/(a + c*x
^2) - (42*Sqrt[2]*B*ArcTan[1 - (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4)
+ (42*Sqrt[2]*B*ArcTan[1 + (Sqrt[2]*c^(1/4)*Sqrt[x])/a^(1/4)])/c^(1/4) - (2
1*Sqrt[2]*B*Log[Sqrt[a] - Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c]*x])/c^(
1/4) + (21*Sqrt[2]*B*Log[Sqrt[a] + Sqrt[2]*a^(1/4)*c^(1/4)*Sqrt[x] + Sqrt[c
]*x])/c^(1/4)))/(128*a^3)
```

fricas [B] time = 0.62, size = 958, normalized size = 2.88

$$-\frac{3\left(a^{3}c^{2}x^{5}+2\,a^{4}cx^{3}+a^{5}x\right)\sqrt{\frac{a^{6}\sqrt{-\frac{2401\,B^{4}a^{2}-22050\,A^{2}B^{2}ac+50625\,A^{4}c^{2}}{a^{13}c}}+210\,AB}{a^{6}}}\,\log\left(-9\left(2401\,B^{4}a^{2}-50625\,A^{4}c^{2}\right)\sqrt{x}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)*sqrt((a^6*sqrt(-(2401*B^4*a^2
- 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 210*A*B)/a^6)*log(-9*(2401
*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) + 9*(15*A*a^10*c*sqrt(-(2401*B^4*a^2 - 22
050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 343*B^3*a^5 - 1575*A^2*B*a^4*c
)*sqrt((a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*
c)) + 210*A*B)/a^6)) - 3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)*sqrt((a^6*sqrt
(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 210*A*B)/a
^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) - 9*(15*A*a^10*c*sqrt(-(2
401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) + 343*B^3*a^5 -
1575*A^2*B*a^4*c)*sqrt((a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625
*A^4*c^2)/(a^13*c)) + 210*A*B)/a^6)) - 3*(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x
)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13
*c)) - 210*A*B)/a^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2)*sqrt(x) + 9*(15*
A*a^10*c*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c))
 - 343*B^3*a^5 + 1575*A^2*B*a^4*c)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A
^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)) + 3*(a^3*c^2*x^5 + 2
*a^4*c*x^3 + a^5*x)*sqrt(-(a^6*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50
625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)*log(-9*(2401*B^4*a^2 - 50625*A^4*c^2
)*sqrt(x) - 9*(15*A*a^10*c*sqrt(-(2401*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*
A^4*c^2)/(a^13*c)) - 343*B^3*a^5 + 1575*A^2*B*a^4*c)*sqrt(-(a^6*sqrt(-(2401
*B^4*a^2 - 22050*A^2*B^2*a*c + 50625*A^4*c^2)/(a^13*c)) - 210*A*B)/a^6)) +
4*(45*A*c^2*x^4 - 7*B*a*c*x^3 + 81*A*a*c*x^2 - 11*B*a^2*x + 32*A*a^2)*sqrt(
x))/(a^3*c^2*x^5 + 2*a^4*c*x^3 + a^5*x)
```

giac [A] time = 0.21, size = 304, normalized size = 0.91

$$-\frac{2\,A}{a^{3}\sqrt{x}}+\frac{3\,\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Bac-15\,\left(ac^{3}\right)^{\frac{3}{4}}A\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}\left(\frac{a}{c}\right)^{\frac{1}{4}}+2\,\sqrt{x}\right)}{2\left(\frac{a}{c}\right)^{\frac{1}{4}}}\right)}{64\,a^{4}c^{2}}+\frac{3\,\sqrt{2}\left(7\,\left(ac^{3}\right)^{\frac{1}{4}}Bac-15\,\left(ac^{3}\right)^{\frac{3}{4}}A\right)}{64\,a^{4}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -2*A/(a^3*sqrt(x)) + 3/64*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c - 15*(a*c^3)^(3/4)
*A)*arctan(1/2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) + 2*sqrt(x))/(a/c)^(1/4))/(a^4*
c^2) + 3/64*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c - 15*(a*c^3)^(3/4)*A)*arctan(-1/
2*sqrt(2)*(sqrt(2)*(a/c)^(1/4) - 2*sqrt(x))/(a/c)^(1/4))/(a^4*c^2) + 3/128*
sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c + 15*(a*c^3)^(3/4)*A)*log(sqrt(2)*sqrt(x)*(a
/c)^(1/4) + x + sqrt(a/c))/(a^4*c^2) - 3/128*sqrt(2)*(7*(a*c^3)^(1/4)*B*a*c
 + 15*(a*c^3)^(3/4)*A)*log(-sqrt(2)*sqrt(x)*(a/c)^(1/4) + x + sqrt(a/c))/(a
^4*c^2) - 1/16*(13*A*c^2*x^(7/2) - 7*B*a*c*x^(5/2) + 17*A*a*c*x^(3/2) - 11*
B*a^2*sqrt(x))/((c*x^2 + a)^2*a^3)
```

maple [A] time = 0.06, size = 354, normalized size = 1.06

$$-\frac{13 A c^2 x^{\frac{7}{2}}}{16\left(c x^2+a\right)^2 a^3}+\frac{7 B c x^{\frac{5}{2}}}{16\left(c x^2+a\right)^2 a^2}-\frac{17 A c x^{\frac{3}{2}}}{16\left(c x^2+a\right)^2 a^2}+\frac{11 B\sqrt{x}}{16\left(c x^2+a\right)^2 a}-\frac{45\sqrt{2}\, A\arctan\left(\frac{\sqrt{2}\,\sqrt{x}}{\left(\frac{a}{c}\right)^{\frac{1}{4}}}-1\right)}{64\left(\frac{a}{c}\right)^{\frac{1}{4}} a^3}-45\sqrt{2}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+a)^3,x)
```

```
[Out] -13/16/a^3/(c*x^2+a)^2*A*x^(7/2)*c^2+7/16/a^2/(c*x^2+a)^2*B*x^(5/2)*c-17/16
/a^2/(c*x^2+a)^2*A*x^(3/2)*c+11/16/a/(c*x^2+a)^2*B*x^(1/2)+21/64/a^3*B*(a/c
)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)+21/64/a^3*B*(a/c)^(1/
4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)+21/128/a^3*B*(a/c)^(1/4)*2
^(1/2)*ln((x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x-(a/c)^(1/4)*2^(1/2
)*x^(1/2)+(a/c)^(1/2)))-45/128/a^3*A/(a/c)^(1/4)*2^(1/2)*ln((x-(a/c)^(1/4)*
2^(1/2)*x^(1/2)+(a/c)^(1/2))/(x+(a/c)^(1/4)*2^(1/2)*x^(1/2)+(a/c)^(1/2)))-4
5/64/a^3*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)+1)-45/64/
a^3*A/(a/c)^(1/4)*2^(1/2)*arctan(2^(1/2)/(a/c)^(1/4)*x^(1/2)-1)-2*A/a^3/x^(
1/2)
```

maxima [A] time = 1.38, size = 313, normalized size = 0.94

$$-\frac{45 Ac^2x^4-7 Bacx^3+81 Aacx^2-11 Ba^2x+32 Aa^2}{16\left(a^3c^2x^{\frac{9}{2}}+2 a^4cx^{\frac{5}{2}}+a^5\sqrt{x}\right)}+3\left(\frac{2\sqrt{2}\left(7 Ba\sqrt{c}-15 A\sqrt{a}c\right)\arctan\left(\frac{\sqrt{2}\left(\sqrt{2}a^{\frac{1}{4}}c^{\frac{1}{4}}+2\sqrt{c}\sqrt{x}\right)}{2\sqrt{\sqrt{a}\sqrt{c}}}\right)}{\sqrt{a}\sqrt{\sqrt{a}\sqrt{c}}\sqrt{c}}+2\sqrt{2}\left(7 Ba\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/16*(45*A*c^2*x^4 - 7*B*a*c*x^3 + 81*A*a*c*x^2 - 11*B*a^2*x + 32*A*a^2)/(
a^3*c^2*x^(9/2) + 2*a^4*c*x^(5/2) + a^5*sqrt(x)) + 3/128*(2*sqrt(2)*(7*B*a*
sqrt(c) - 15*A*sqrt(a)*c)*arctan(1/2*sqrt(2)*(sqrt(2)*a^(1/4)*c^(1/4) + 2*s
qrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqrt(sqrt(a)*sqrt(c))*sqrt(
c)) + 2*sqrt(2)*(7*B*a*sqrt(c) - 15*A*sqrt(a)*c)*arctan(-1/2*sqrt(2)*(sqrt(
2)*a^(1/4)*c^(1/4) - 2*sqrt(c)*sqrt(x))/sqrt(sqrt(a)*sqrt(c)))/(sqrt(a)*sqr
t(sqrt(a)*sqrt(c))*sqrt(c)) + sqrt(2)*(7*B*a*sqrt(c) + 15*A*sqrt(a)*c)*log(
sqrt(2)*a^(1/4)*c^(1/4)*sqrt(x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)) -
sqrt(2)*(7*B*a*sqrt(c) + 15*A*sqrt(a)*c)*log(-sqrt(2)*a^(1/4)*c^(1/4)*sqrt(
x) + sqrt(c)*x + sqrt(a))/(a^(3/4)*c^(3/4)))/a^3
```

mupad [B] time = 0.28, size = 673, normalized size = 2.02

$$2\,\mathrm{atanh}\left(\frac{66355200\,A^2\,a^{10}\,c^4\,\sqrt{x}\,\sqrt{\frac{945\,A\,B}{2048\,a^6}-\frac{2025\,A^2\,\sqrt{-a^{13}\,c}}{4096\,a^{13}}+\frac{441\,B^2\,\sqrt{-a^{13}\,c}}{4096\,a^{12}\,c}}}{46656000\,A^3\,a^7\,c^4-4741632\,B^3\,a^2\,c^2\,\sqrt{-a^{13}\,c}-10160640\,A\,B^2\,a^8\,c^3+21772800\,A^2\,B\,a\,c^3\,\sqrt{-a^{13}\,c}}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + c*x^2)^3),x)
```

```
[Out] 2*atanh((66355200*A^2*a^10*c^4*x^(1/2)*((945*A*B)/(2048*a^6) - (2025*A^2*(-
a^13*c)^(1/2))/(4096*a^13) + (441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2)
)/(46656000*A^3*a^7*c^4 - 4741632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*
B^2*a^8*c^3 + 21772800*A^2*B*a*c^3*(-a^13*c)^(1/2)) - (14450688*B^2*a^11*c^
3*x^(1/2)*((945*A*B)/(2048*a^6) - (2025*A^2*(-a^13*c)^(1/2))/(4096*a^13) +
(441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 - 474
1632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*B^2*a^8*c^3 + 21772800*A^2*B*
a*c^3*(-a^13*c)^(1/2)))*((9*(49*B^2*a*(-a^13*c)^(1/2) - 225*A^2*c*(-a^13*c)
^(1/2) + 210*A*B*a^7*c))/(4096*a^13*c))^(1/2) + 2*atanh((66355200*A^2*a^10*
c^4*x^(1/2)*((2025*A^2*(-a^13*c)^(1/2))/(4096*a^13) + (945*A*B)/(2048*a^6)
- (441*B^2*(-a^13*c)^(1/2))/(4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 + 4
741632*B^3*a^2*c^2*(-a^13*c)^(1/2) - 10160640*A*B^2*a^8*c^3 - 21772800*A^2*
B*a*c^3*(-a^13*c)^(1/2)) - (14450688*B^2*a^11*c^3*x^(1/2)*((2025*A^2*(-a^13
*c)^(1/2))/(4096*a^13) + (945*A*B)/(2048*a^6) - (441*B^2*(-a^13*c)^(1/2))/(
4096*a^12*c))^(1/2))/(46656000*A^3*a^7*c^4 + 4741632*B^3*a^2*c^2*(-a^13*c)^
(1/2) - 10160640*A*B^2*a^8*c^3 - 21772800*A^2*B*a*c^3*(-a^13*c)^(1/2)))*((9
*(225*A^2*c*(-a^13*c)^(1/2) - 49*B^2*a*(-a^13*c)^(1/2) + 210*A*B*a^7*c))/(4
096*a^13*c))^(1/2) - ((2*A)/a - (11*B*x)/(16*a) + (81*A*c*x^2)/(16*a^2) - (
7*B*c*x^3)/(16*a^2) + (45*A*c^2*x^4)/(16*a^3))/(a^2*x^(1/2) + c^2*x^(9/2) +
 2*a*c*x^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.432 $\int \frac{1-x}{\sqrt{x}\left(1+x^2\right)} dx$

Optimal. Leaf size=45

$$\frac{\log\left(x+\sqrt{2}\sqrt{x}+1\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{x}+1\right)}{\sqrt{2}}$$

```
[Out] -1/2*ln(1+x-2^(1/2)*x^(1/2))*2^(1/2)+1/2*ln(1+x+2^(1/2)*x^(1/2))*2^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {827, 1165, 628}

$$\frac{\log\left(x+\sqrt{2}\sqrt{x}+1\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{x}+1\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)/(Sqrt[x]*(1 + x^2)),x]
```

```
[Out] -(Log[1 - Sqrt[2]*Sqrt[x] + x]/Sqrt[2]) + Log[1 + Sqrt[2]*Sqrt[x] + x]/Sqrt
[2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1165

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (c_.)*(x_)^4), x_Symbol] :> With[{q = Rt[
(-2*d)/e, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e + q*x - x^2, x], x],
x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^2, x], x], x]] /; Fre
eQ[{a, c, d, e}, x] && EqQ[c*d^2 - a*e^2, 0] && NegQ[d*e]
```

Rubi steps

$$\begin{aligned}
\int \frac{1-x}{\sqrt{x}\left(1+x^2\right)} dx &= 2\,\text{Subst}\left(\int \frac{1-x^2}{1+x^4} dx, x, \sqrt{x}\right)\\
&= -\frac{\text{Subst}\left(\int \frac{\sqrt{2}+2x}{-1-\sqrt{2}x-x^2} dx, x, \sqrt{x}\right)}{\sqrt{2}}-\frac{\text{Subst}\left(\int \frac{\sqrt{2}-2x}{-1+\sqrt{2}x-x^2} dx, x, \sqrt{x}\right)}{\sqrt{2}}\\
&= -\frac{\log\left(1-\sqrt{2}\sqrt{x}+x\right)}{\sqrt{2}}+\frac{\log\left(1+\sqrt{2}\sqrt{x}+x\right)}{\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.04, size = 99, normalized size = 2.20

$$\frac{1}{12}\left(3\sqrt{2}\left(-\log\left(x-\sqrt{2}\sqrt{x}+1\right)+\log\left(x+\sqrt{2}\sqrt{x}+1\right)-2\tan^{-1}\left(1-\sqrt{2}\sqrt{x}\right)+2\tan^{-1}\left(\sqrt{2}\sqrt{x}+1\right)\right)-8x^{3/2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - x)/(Sqrt[x]*(1 + x^2)),x]
```

```
[Out] (-8*x^(3/2)*Hypergeometric2F1[3/4, 1, 7/4, -x^2] + 3*Sqrt[2]*(-2*ArcTan[1 -
 Sqrt[2]*Sqrt[x]] + 2*ArcTan[1 + Sqrt[2]*Sqrt[x]] - Log[1 - Sqrt[2]*Sqrt[x]
 + x] + Log[1 + Sqrt[2]*Sqrt[x] + x]))/12
```

fricas [**A**] time = 0.80, size = 33, normalized size = 0.73

$$\frac{1}{2}\sqrt{2}\log\left(\frac{2\sqrt{2}(x+1)\sqrt{x}+x^2+4x+1}{x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log((2*sqrt(2)*(x + 1)*sqrt(x) + x^2 + 4*x + 1)/(x^2 + 1))
```

giac [**A**] time = 0.15, size = 34, normalized size = 0.76

$$\frac{1}{2}\sqrt{2}\log\left(\sqrt{2}\sqrt{x}+x+1\right)-\frac{1}{2}\sqrt{2}\log\left(-\sqrt{2}\sqrt{x}+x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*log(sqrt(2)*sqrt(x) + x + 1) - 1/2*sqrt(2)*log(-sqrt(2)*sqrt(x)
 + x + 1)
```

maple [**A**] time = 0.05, size = 62, normalized size = 1.38

$$-\frac{\sqrt{2}\,\ln\left(\frac{x-\sqrt{2}\,\sqrt{x}+1}{x+\sqrt{2}\,\sqrt{x}+1}\right)}{4}+\frac{\sqrt{2}\,\ln\left(\frac{x+\sqrt{2}\,\sqrt{x}+1}{x-\sqrt{2}\,\sqrt{x}+1}\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)/(x^2+1)/x^(1/2),x)
```

```
[Out] 1/4*2^(1/2)*ln((1+x+2^(1/2)*x^(1/2))/(1+x-2^(1/2)*x^(1/2)))-1/4*2^(1/2)*ln(
(1+x-2^(1/2)*x^(1/2))/(1+x+2^(1/2)*x^(1/2)))
```

maxima [**A**] time = 1.25, size = 34, normalized size = 0.76

$$\frac{1}{2}\sqrt{2}\log\left(\sqrt{2}\sqrt{x}+x+1\right)-\frac{1}{2}\sqrt{2}\log\left(-\sqrt{2}\sqrt{x}+x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x^2+1)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(2)*log(sqrt(2)*sqrt(x) + x + 1) - 1/2*sqrt(2)*log(-sqrt(2)*sqrt(x)
 + x + 1)
```

mupad [**B**] time = 0.13, size = 20, normalized size = 0.44

$$\sqrt{2}\,\mathrm{atanh}\left(\frac{8\sqrt{2}\,\sqrt{x}}{8x+8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 1)/(x^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*atanh((8*2^(1/2)*x^(1/2))/(8*x + 8))
```

sympy [**A**] time = 0.69, size = 49, normalized size = 1.09

$$-\frac{\sqrt{2}\log\left(-4\sqrt{2}\sqrt{x}+4x+4\right)}{2}+\frac{\sqrt{2}\log\left(4\sqrt{2}\sqrt{x}+4x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/(x**2+1)/x**(1/2),x)
```

```
[Out] -sqrt(2)*log(-4*sqrt(2)*sqrt(x) + 4*x + 4)/2 + sqrt(2)*log(4*sqrt(2)*sqrt(x
) + 4*x + 4)/2
```

3.433 $\int (ex)^{7/2}(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=427

$$\frac{2a^{11/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(539\sqrt{a}\,B+325A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15015c^{11/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{28a^{13/4}Be^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\right.}{195}$$

```
[Out] -14/117*a*B*e^2*(e*x)^(3/2)*(c*x^2+a)^(3/2)/c^2+2/11*A*e*(e*x)^(5/2)*(c*x^2
+a)^(3/2)/c+2/13*B*(e*x)^(7/2)*(c*x^2+a)^(3/2)/c-10/77*a*A*e^3*(c*x^2+a)^(3
/2)*(e*x)^(1/2)/c^2+28/195*a^3*B*e^4*x*(c*x^2+a)^(1/2)/c^(5/2)/(a^(1/2)+x*c
^(1/2))/(e*x)^(1/2)+2/15015*a^2*e^3*(539*B*x+325*A)*(e*x)^(1/2)*(c*x^2+a)^(
1/2)/c^2-28/195*a^(13/4)*B*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(
1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1
/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+2/15015*a^(11/
4)*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^
(1/2))*(539*B*a^(1/2)+325*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)
/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$\frac{2a^2e^3\sqrt{ex}\sqrt{a+cx^2}\,(325A+539Bx)}{15015c^2}+\frac{2a^{11/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(539\sqrt{a}\,B+325A\sqrt{c}\right)F\left(2\tan^{-1}\right.}{15015c^{11/4}\sqrt{ex}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(7/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (2*a^2*e^3*Sqrt[e*x]*(325*A + 539*B*x)*Sqrt[a + c*x^2])/(15015*c^2) + (28*a
^3*B*e^4*x*Sqrt[a + c*x^2])/(195*c^(5/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) -
 (10*a*A*e^3*Sqrt[e*x]*(a + c*x^2)^(3/2))/(77*c^2) - (14*a*B*e^2*(e*x)^(3/2
)*(a + c*x^2)^(3/2))/(117*c^2) + (2*A*e*(e*x)^(5/2)*(a + c*x^2)^(3/2))/(11*
c) + (2*B*(e*x)^(7/2)*(a + c*x^2)^(3/2))/(13*c) - (28*a^(13/4)*B*e^4*Sqrt[x
]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE
[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(195*c^(11/4)*Sqrt[e*x]*Sqrt[a
+ c*x^2]) + (2*a^(11/4)*(539*Sqrt[a]*B + 325*A*Sqrt[c])*e^4*Sqrt[x]*(Sqrt[a
] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan
[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15015*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2
])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{7/2}(A+Bx)\sqrt{a+cx^2}\,dx = \frac{2B(ex)^{7/2}\left(a+cx^2\right)^{3/2}}{13c} + \frac{2\int (ex)^{5/2}\left(-\frac{7}{2}aBe+\frac{13}{2}Acex\right)\sqrt{a+cx^2}\,dx}{13c}$$

$$= \frac{2Ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}}{11c} + \frac{2B(ex)^{7/2}\left(a+cx^2\right)^{3/2}}{13c} + \frac{4\int (ex)^{3/2}\left(-\frac{65}{4}aAce^2-\frac{77}{4}\right.}{143c^2}$$

$$= -\frac{14aBe^2(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{117c^2} + \frac{2Ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}}{11c} + \frac{2B(ex)^{7/2}\left(a+cx^2\right)^{3/}}{13c}$$

$$= -\frac{10aAe^3\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} - \frac{14aBe^2(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{117c^2} + \frac{2Ae(ex)^{5/2}\left(a+cx^2\right.}{11c}$$

$$= \frac{2a^2e^3\sqrt{ex}\,(325A+539Bx)\sqrt{a+cx^2}}{15015c^2} - \frac{10aAe^3\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} - 14aBe^2(ex$$

$$= \frac{2a^2e^3\sqrt{ex}\,(325A+539Bx)\sqrt{a+cx^2}}{15015c^2} - \frac{10aAe^3\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} - 14aBe^2(ex$$

$$= \frac{2a^2e^3\sqrt{ex}\,(325A+539Bx)\sqrt{a+cx^2}}{15015c^2} - \frac{10aAe^3\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} - 14aBe^2(ex$$

$$= \frac{2a^2e^3\sqrt{ex}\,(325A+539Bx)\sqrt{a+cx^2}}{15015c^2} - \frac{10aAe^3\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} - 14aBe^2(ex$$

$$= \frac{2a^2e^3\sqrt{ex}\,(325A+539Bx)\sqrt{a+cx^2}}{15015c^2} + \frac{28a^3Be^4x\sqrt{a+cx^2}}{195c^{5/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - 10aAe^3\sqrt{}$$

Mathematica [C] time = 0.13, size = 142, normalized size = 0.33

$$\frac{2e^3\sqrt{ex}\,\sqrt{a+cx^2}\left(585a^2A\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+539a^2Bx\,{}_2F_1\left(-\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,\left(a(585A\right.\right.}{9009c^2\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(7/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (2*e^3*Sqrt[e*x]*Sqrt[a + c*x^2]*(-((a + c*x^2)*Sqrt[1 + (c*x^2)/a]*(-63*c*
x^2*(13*A + 11*B*x) + a*(585*A + 539*B*x))) + 585*a^2*A*Hypergeometric2F1[-
1/2, 1/4, 5/4, -((c*x^2)/a)] + 539*a^2*B*x*Hypergeometric2F1[-1/2, 3/4, 7/4
, -((c*x^2)/a)]))/(9009*c^2*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(Be^3x^4+Ae^3x^3\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*e^3*x^3)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(7/2), x)
```

maple [A] time = 0.24, size = 368, normalized size = 0.86

$$\frac{2\sqrt{ex}\left(3465B\,c^4x^8+4095A\,c^4x^7+4235Ba\,c^3x^6+5265Aa\,c^3x^5-308B\,a^2c^2x^4-780A\,a^2c^2x^3-1078B\,a^3c\,x^2-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(7/2)*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 2/45045*e^3/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^3*(3465*B*c^4*x^8+4095*A*c^4*x^
7+4235*B*a*c^3*x^6+975*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-x*c/(-a*c)^(1/2))^(1/
2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3+5265*
A*a*c^3*x^5+3234*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-x*c/(-a*c)^(1/2))^(1/2)*EllipticE(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4-1617*B*2^(1/2)*((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-x
*c/(-a*c)^(1/2))^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/
2*2^(1/2))*a^4-308*B*a^2*c^2*x^4-780*A*a^2*c^2*x^3-1078*B*a^3*c*x^2-1950*A*
a^3*c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^{7/2}\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(7/2)*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(7/2)*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [C] time = 77.12, size = 97, normalized size = 0.23

$$\frac{A\sqrt{a}\,e^{\frac{7}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{13}{4}\right)}+\frac{B\sqrt{a}\,e^{\frac{7}{2}}x^{\frac{11}{2}}\Gamma\left(\frac{11}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{11}{4}\\ \frac{15}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{15}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(7/2)*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*e**(7/2)*x**(9/2)*gamma(9/4)*hyper((-1/2, 9/4), (13/4,), c*x**2*e
xp_polar(I*pi)/a)/(2*gamma(13/4)) + B*sqrt(a)*e**(7/2)*x**(11/2)*gamma(11/4
)*hyper((-1/2, 11/4), (15/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(15/4))
```

3.434 $\int (ex)^{5/2}(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=397

$$\frac{2a^{9/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{1155c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{4a^{9/4}Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{15c^{7/4}\sqrt{ex}}$$

```
[Out] 2/9*A*e*(e*x)^(3/2)*(c*x^2+a)^(3/2)/c+2/11*B*(e*x)^(5/2)*(c*x^2+a)^(3/2)/c-
10/77*a*B*e^2*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c^2-4/15*a^2*A*e^3*x*(c*x^2+a)^(1
/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+2/1155*a*e^2*(-77*A*c*x+25*B*a)
*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c^2+4/15*a^(9/4)*A*e^3*(cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(
sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(
1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^
(1/2)+2/1155*a^(9/4)*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/c
os(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4))),1/2*2^(1/2))*(25*B*a^(1/2)-77*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^
(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(9/4)/(e*x)^(1/2)/(c*x^2+a)
^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$\frac{2a^{9/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{1155c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{4a^2Ae^3x\sqrt{a+cx^2}}{15c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{4a^{9/4}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(5/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (-4*a^2*A*e^3*x*Sqrt[a + c*x^2])/(15*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x
)) + (2*a*e^2*Sqrt[e*x]*(25*a*B - 77*A*c*x)*Sqrt[a + c*x^2])/(1155*c^2) - (
10*a*B*e^2*Sqrt[e*x]*(a + c*x^2)^(3/2))/(77*c^2) + (2*A*e*(e*x)^(3/2)*(a +
c*x^2)^(3/2))/(9*c) + (2*B*(e*x)^(5/2)*(a + c*x^2)^(3/2))/(11*c) + (4*a^(9/
4)*A*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*
x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15*c^(7/4)*Sqrt
[e*x]*Sqrt[a + c*x^2]) + (2*a^(9/4)*(25*Sqrt[a]*B - 77*A*Sqrt[c])*e^3*Sqrt[
x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Elliptic
F[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(1155*c^(9/4)*Sqrt[e*x]*Sqrt[a
 + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{5/2}(A+Bx)\sqrt{a+cx^2}\,dx = \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{3/2}}{11c} + \frac{2\int (ex)^{3/2}\left(-\frac{5}{2}aBe+\frac{11}{2}Acex\right)\sqrt{a+cx^2}\,dx}{11c}$$

$$= \frac{2Ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c} + \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{3/2}}{11c} + \frac{4\int\sqrt{ex}\left(-\frac{33}{4}aAce^2-\frac{45}{4}aBc}{99c^2}$$

$$= -\frac{10aBe^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} + \frac{2Ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c} + \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{3/2}}{11c} +$$

$$= \frac{2ae^2\sqrt{ex}\,(25aB-77Acx)\sqrt{a+cx^2}}{1155c^2} - \frac{10aBe^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} + \frac{2Ae(ex)^{3/2}(a+}{9c}$$

$$= \frac{2ae^2\sqrt{ex}\,(25aB-77Acx)\sqrt{a+cx^2}}{1155c^2} - \frac{10aBe^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} + \frac{2Ae(ex)^{3/2}(a+}{9c}$$

$$= \frac{2ae^2\sqrt{ex}\,(25aB-77Acx)\sqrt{a+cx^2}}{1155c^2} - \frac{10aBe^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} + \frac{2Ae(ex)^{3/2}(a+}{9c}$$

$$= \frac{2ae^2\sqrt{ex}\,(25aB-77Acx)\sqrt{a+cx^2}}{1155c^2} - \frac{10aBe^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}{77c^2} + \frac{2Ae(ex)^{3/2}(a+}{9c}$$

$$= -\frac{4a^2Ae^3x\sqrt{a+cx^2}}{15c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{2ae^2\sqrt{ex}\,(25aB-77Acx)\sqrt{a+cx^2}}{1155c^2} - \frac{10aBe^2\sqrt{ex}\,(}{77c}$$

Mathematica [C] time = 0.11, size = 133, normalized size = 0.34

$$\frac{2e^2\sqrt{ex}\sqrt{a+cx^2}\left(45a^2B\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,(45aB-7cx(11A+9Bx))-77aAcx\,{}_2F_1\left(-\frac{1}{2},\right.\right.}{693c^2\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(5/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (2*e^2*Sqrt[e*x]*Sqrt[a + c*x^2]*(-((a + c*x^2)*Sqrt[1 + (c*x^2)/a]*(45*a*B
 - 7*c*x*(11*A + 9*B*x))) + 45*a^2*B*Hypergeometric2F1[-1/2, 1/4, 5/4, -((c
*x^2)/a)] - 77*a*A*c*x*Hypergeometric2F1[-1/2, 3/4, 7/4, -((c*x^2)/a)]))/(6
93*c^2*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Be^2x^3+Ae^2x^2\right)\sqrt{cx^2+a}\,\sqrt{ex}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*e^2*x^2)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(5/2), x)
```

maple [A]   time = 0.10, size = 360, normalized size = 0.91

$$\frac{2\sqrt{ex}\left(315B c^4x^7+385A c^4x^6+405Ba c^3x^5+539Aa c^3x^4-60B a^2c^2x^3+154A a^2c^2x^2-462\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] 2/3465/x*e^2*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(315*B*c^4*x^7+385*A*c^4*x^6+231*A
*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3*c-462*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c
*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^
3*c+75*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a^3+405*B*a*c^3*x^5+539
*A*a*c^3*x^4-60*B*a^2*c^2*x^3+154*A*a^2*c^2*x^2-150*B*a^3*c*x)/c^3
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(5/2), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^{5/2}\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(5/2)*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [C]   time = 27.58, size = 97, normalized size = 0.24

$$\frac{A\sqrt{a}\,e^{\frac{5}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{11}{4}\right)}+\frac{B\sqrt{a}\,e^{\frac{5}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{13}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(5/2)*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*e**(5/2)*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*e
xp_polar(I*pi)/a)/(2*gamma(11/4)) + B*sqrt(a)*e**(5/2)*x**(9/2)*gamma(9/4)*
hyper((-1/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(13/4))
```

3.435 $\int (ex)^{3/2}(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=363

$$-\frac{2a^{7/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{4a^{9/4}Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a}{(\sqrt{a}}}}{15c^{7/4}\sqrt{ex}}$$

```
[Out] 2/9*B*(e*x)^(3/2)*(c*x^2+a)^(3/2)/c+2/7*A*e*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c-4
/15*a^2*B*e^2*x*(c*x^2+a)^(1/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-2/1
05*a*e*(7*B*x+5*A)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c+4/15*a^(9/4)*B*e^2*(cos(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2
)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^
(1/2)/(c*x^2+a)^(1/2)-2/105*a^(7/4)*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan
(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(7*B*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+
x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1
/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 363, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{2a^{7/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4a^2Be^2x\sqrt{a+cx^2}}{15c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+4a^{9/4}B$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(3/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (-2*a*e*Sqrt[e*x]*(5*A + 7*B*x)*Sqrt[a + c*x^2])/(105*c) - (4*a^2*B*e^2*x*S
qrt[a + c*x^2])/(15*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (2*A*e*Sqrt[
e*x]*(a + c*x^2)^(3/2))/(7*c) + (2*B*(e*x)^(3/2)*(a + c*x^2)^(3/2))/(9*c) +
 (4*a^(9/4)*B*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] +
 Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15*c^(
7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (2*a^(7/4)*(7*Sqrt[a]*B + 5*A*Sqrt[c])*e^
2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*E
llipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(105*c^(7/4)*Sqrt[e*x]*
Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
```

```
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{3/2}(A+Bx)\sqrt{a+cx^2}\,dx = \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c} + \frac{2\int \sqrt{ex}\left(-\frac{3}{2}aBe+\frac{9}{2}Acex\right)\sqrt{a+cx^2}\,dx}{9c}$$

$$= \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c} + \frac{4\int \frac{\left(-\frac{9}{4}aAce^2-\frac{21}{4}aBce^2x\right)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx}{63c^2}$$

$$= -\frac{2ae\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{105c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c}$$

$$= -\frac{2ae\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{105c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c}$$

$$= -\frac{2ae\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{105c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c}$$

$$= -\frac{2ae\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{105c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{3/2}}{9c}$$

$$= -\frac{2ae\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{105c} - \frac{4a^2Be^2x\sqrt{a+cx^2}}{15c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)}{7c}$$

Mathematica [C] time = 0.09, size = 118, normalized size = 0.33

$$\frac{2e\sqrt{ex}\sqrt{a+cx^2}\left(\sqrt{\frac{cx^2}{a}+1}\left(a+cx^2\right)(9A+7Bx)-9aA\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-7aBx\,{}_2F_1\left(-\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{63c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(3/2)*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (2*e*Sqrt[e*x]*Sqrt[a + c*x^2]*((9*A + 7*B*x)*(a + c*x^2)*Sqrt[1 + (c*x^2)/
a] - 9*a*A*Hypergeometric2F1[-1/2, 1/4, 5/4, -((c*x^2)/a)] - 7*a*B*x*Hyperg
eometric2F1[-1/2, 3/4, 7/4, -((c*x^2)/a)]))/(63*c*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\left(Bex^2+Aex\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*e*x)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(3/2), x)
```

maple [A] time = 0.11, size = 342, normalized size = 0.94

$$-\frac{2\sqrt{ex}\left(-35Bc^3x^6-45Ac^3x^5-49Bac^2x^4-75Aac^2x^3-14Ba^2cx^2-30Aa^2cx+42\sqrt{2}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] -2/315*e/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^2*(-35*B*c^3*x^6+15*A*2^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2)*(-a*c)^(1/2)*a^2-45*A*c^3*x^5+42*B*2^(1/2)*((-c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2)*a^3-21*B*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c
)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^
(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^3-49*B*a*c^2*x^4-75*A*a*c^
2*x^3-14*B*a^2*c*x^2-30*A*a^2*c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^{3/2}\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(3/2)*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [C] time = 8.75, size = 97, normalized size = 0.27

$$\frac{A\sqrt{a}\,e^{\frac{3}{2}}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\left.\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{9}{4}\right)}+\frac{B\sqrt{a}\,e^{\frac{3}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_2F_1\left(\left.\begin{matrix}-\frac{1}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*e**(3/2)*x**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*ex
p_polar(I*pi)/a)/(2*gamma(9/4)) + B*sqrt(a)*e**(3/2)*x**(7/2)*gamma(7/4)*hy
per((-1/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(11/4))
```

3.436 $\int \sqrt{ex}\,(A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=328

$$-\frac{2a^{5/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}B-21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{5/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{4a^{5/4}Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+}{(\sqrt{a}+}}}{5c^{3/4}\sqrt{ex}\sqrt{}}$$

```
[Out] 2/7*B*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c+4/5*a*A*e*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^
(1/2)+x*c^(1/2))/(e*x)^(1/2)-2/105*(-21*A*c*x+5*B*a)*(e*x)^(1/2)*(c*x^2+a)^
(1/2)/c-4/5*a^(5/4)*A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/co
s(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)
/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c
^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-2/105*a^(5/4)*e*(cos(2
*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(
1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a
^(1/2)-21*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1
/2))^2)^(1/2)/c^(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.33, antiderivative size = 328, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{2a^{5/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}B-21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{5/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{4a^{5/4}Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+}{(\sqrt{a}+}}}{5c^{3/4}\sqrt{ex}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[e*x]*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (4*a*A*e*x*Sqrt[a + c*x^2])/(5*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (
2*Sqrt[e*x]*(5*a*B - 21*A*c*x)*Sqrt[a + c*x^2])/(105*c) + (2*B*Sqrt[e*x]*(a
 + c*x^2)^(3/2))/(7*c) - (4*a^(5/4)*A*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[
(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a
^(1/4)], 1/2])/(5*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (2*a^(5/4)*(5*Sqrt[a
]*B - 21*A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[
a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(10
5*c^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \sqrt{ex}\,(A+Bx)\sqrt{a+cx^2}\,dx = \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{2\int \frac{\left(-\frac{1}{2}aBe+\frac{7}{2}Acex\right)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx}{7c}$$

$$= -\frac{2\sqrt{ex}\,(5aB-21Acx)\sqrt{a+cx^2}}{105c} + \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{8\int \frac{-\frac{5}{4}a^2Bce^3+\frac{21}{4}aAc^2e^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,d}{105c^2e^2}$$

$$= -\frac{2\sqrt{ex}\,(5aB-21Acx)\sqrt{a+cx^2}}{105c} + \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{\left(8\sqrt{x}\right)\int \frac{-\frac{5}{4}a^2Bce^3+\frac{21}{4}aAc}{\sqrt{x}\,\sqrt{a+cx^2}}}{105c^2e^2\sqrt{ex}}$$

$$= -\frac{2\sqrt{ex}\,(5aB-21Acx)\sqrt{a+cx^2}}{105c} + \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} + \frac{\left(16\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{5}{4}a^2B}{}\right.}{105c^2}$$

$$= -\frac{2\sqrt{ex}\,(5aB-21Acx)\sqrt{a+cx^2}}{105c} + \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} - \left(4a^{3/2}\left(5\sqrt{a}\,B-21A\sqrt{c}\right.\right.$$

$$= \frac{4aAex\sqrt{a+cx^2}}{5\sqrt{c}\,\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{2\sqrt{ex}\,(5aB-21Acx)\sqrt{a+cx^2}}{105c} + \frac{2B\sqrt{ex}\left(a+cx^2\right)^{3/2}}{7c} -$$

Mathematica [C] time = 0.06, size = 111, normalized size = 0.34

$$\frac{2\sqrt{ex}\,\sqrt{a+cx^2}\left(7Acx\,{}_2F_1\left(-\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-3aB\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+3B\sqrt{\frac{cx^2}{a}+1}\left(a+cx^2\right)\right)}{21c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[e*x]*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (2*Sqrt[e*x]*Sqrt[a + c*x^2]*(3*B*(a + c*x^2)*Sqrt[1 + (c*x^2)/a] - 3*a*B*H
ypergeometric2F1[-1/2, 1/4, 5/4, -((c*x^2)/a)] + 7*A*c*x*Hypergeometric2F1[
-1/2, 3/4, 7/4, -((c*x^2)/a)]))/(21*c*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x), x)
```

maple [A] time = 0.08, size = 333, normalized size = 1.02

$$-\frac{2\sqrt{ex}\left(-15B\,c^3x^5-21A\,c^3x^4-25Ba\,c^2x^3-21Aa\,c^2x^2-42\sqrt{2}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\;A\,a^2c\,\mathrm{Ellip}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] -2/105*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(21*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2
)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*
c-42*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c+5*B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a
*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*
2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*a^2-15*B*c^3*x^5-21*A*c^3*x^4-25*B*a*c^2*x^3-21*A*a*c^2*x^2-
10*B*a^2*c*x)/x/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{e\,x}\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(1/2)*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [C] time = 3.70, size = 95, normalized size = 0.29

$$\frac{A\sqrt{a}\,(ex)^{\frac{3}{2}}\,\Gamma\left(\frac{3}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e\Gamma\left(\frac{7}{4}\right)}+\frac{B\sqrt{a}\,(ex)^{\frac{5}{2}}\,\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^2\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*(e*x)**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_pol
ar(I*pi)/a)/(2*e*gamma(7/4)) + B*sqrt(a)*(e*x)**(5/2)*gamma(5/4)*hyper((-1/
2, 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**2*gamma(9/4))
```

3.437 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx$

Optimal. Leaf size=297

$$\frac{2a^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4a^{5/4}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)}}}{5c^{3/4}\sqrt{ex}\,\sqrt{a+}}$$

```
[Out] 4/5*a*B*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+2/15*(3*B
*x+5*A)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/e-4/5*a^(5/4)*B*(cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(
sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(
1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^
(1/2)+2/15*a^(3/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*a
rctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4))),1/2*2^(1/2))*(3*B*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((
c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {815, 842, 840, 1198, 220, 1196}

$$\frac{2a^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4a^{5/4}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)}}}{5c^{3/4}\sqrt{ex}\,\sqrt{a+}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/Sqrt[e*x],x]
```

```
[Out] (2*Sqrt[e*x]*(5*A + 3*B*x)*Sqrt[a + c*x^2])/(15*e) + (4*a*B*x*Sqrt[a + c*x^
2])/(5*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4*a^(5/4)*B*Sqrt[x]*(Sqr
t[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*Arc
Tan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
 + (2*a^(3/4)*(3*Sqrt[a]*B + 5*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqr
t[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])
/a^(1/4)], 1/2])/(15*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx &= \frac{2\sqrt{ex}\,(5A+3Bx)\sqrt{a+cx^2}}{15e} + \frac{4\int \frac{\frac{5}{2}aAce^2+\frac{3}{2}aBce^2x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{15ce^2} \\
&= \frac{2\sqrt{ex}\,(5A+3Bx)\sqrt{a+cx^2}}{15e} + \frac{\left(4\sqrt{x}\right)\int \frac{\frac{5}{2}aAce^2+\frac{3}{2}aBce^2x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{15ce^2\sqrt{ex}} \\
&= \frac{2\sqrt{ex}\,(5A+3Bx)\sqrt{a+cx^2}}{15e} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{5}{2}aAce^2+\frac{3}{2}aBce^2x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{15ce^2\sqrt{ex}} \\
&= \frac{2\sqrt{ex}\,(5A+3Bx)\sqrt{a+cx^2}}{15e} - \frac{\left(4a^{3/2}B\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{5\sqrt{c}\,\sqrt{ex}} + (4a\,(3\surd \\
&= \frac{2\sqrt{ex}\,(5A+3Bx)\sqrt{a+cx^2}}{15e} + \frac{4aBx\sqrt{a+cx^2}}{5\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4a^{5/4}B\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\surd}{5c^{3/4}\surd}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 82, normalized size = 0.28

$$\frac{2x\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+Bx\,{}_2F_1\left(-\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{3\sqrt{ex}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/Sqrt[e*x],x]
```

```
[Out] (2*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-1/2, 1/4, 5/4, -((c*x^2)/a)] +
 B*x*Hypergeometric2F1[-1/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*Sqrt[e*x]*Sqrt[1
+ (c*x^2)/a])
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/sqrt(e*x), x)
```

maple [A] time = 0.09, size = 312, normalized size = 1.05

$$\frac{\frac{2Bc^2x^4}{5}+\frac{2Ac^2x^3}{3}+\frac{2Bacx^2}{5}+\frac{2Aacx}{3}+\frac{4\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Ba^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{5}-\frac{2\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+}{}}}{}}{\sqrt{cx^2+a}\,\sqrt{ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(1/2),x)
```

```
[Out] 2/15/(c*x^2+a)^(1/2)/c*(5*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ellip
ticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a+6*
B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2-3*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)
^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2+3
*B*c^2*x^4+5*A*c^2*x^3+3*B*a*c*x^2+5*A*a*c*x)/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\,\left(A+B\,x\right)}{\sqrt{e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(1/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(1/2), x)
```

sympy **[C]** time = 3.56, size = 97, normalized size = 0.33

$$\frac{A\sqrt{a}\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)}+\frac{B\sqrt{a}\,x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x)**(1/2),x)
```

```
[Out] A*sqrt(a)*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_polar(I*
pi)/a)/(2*sqrt(e)*gamma(5/4)) + B*sqrt(a)*x**(3/2)*gamma(3/4)*hyper((-1/2,
3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(e)*gamma(7/4))
```

3.438 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{3/2}}\,dx$

Optimal. Leaf size=300

$$-\frac{2\sqrt{a+cx^2}\,(3A-Bx)}{3e\sqrt{ex}}+\frac{2\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}+\frac{4A\sqrt{c}\,x\sqrt{a}}{e\sqrt{ex}\left(\sqrt{a}\right.}$$

```
[Out] -2/3*(-B*x+3*A)*(c*x^2+a)^(1/2)/e/(e*x)^(1/2)+4*A*x*c^(1/2)*(c*x^2+a)^(1/2)
/e/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-4*a^(1/4)*A*c^(1/4)*(cos(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ellipti
cE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*
x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e/(e*x)^(1/2)/(c*x^2+a)^(1/
2)+2/3*a^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arcta
n(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))
),1/2*2^(1/2))*(B*a^(1/2)+3*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+
a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(1/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {813, 842, 840, 1198, 220, 1196}

$$-\frac{2\sqrt{a+cx^2}\,(3A-Bx)}{3e\sqrt{ex}}+\frac{2\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}+\frac{4A\sqrt{c}\,x\sqrt{a}}{e\sqrt{ex}\left(\sqrt{a}\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(3/2),x]
```

```
[Out] (-2*(3*A - B*x)*Sqrt[a + c*x^2])/(3*e*Sqrt[e*x]) + (4*A*Sqrt[c]*x*Sqrt[a +
c*x^2])/(e*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4*a^(1/4)*A*c^(1/4)*Sqrt[x]*
(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2
*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(e*Sqrt[e*x]*Sqrt[a + c*x^2]) + (
2*a^(1/4)*(Sqrt[a]*B + 3*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a +
 c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/
4)], 1/2])/(3*c^(1/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{3/2}}\,dx &= -\frac{2(3A-Bx)\sqrt{a+cx^2}}{3e\sqrt{ex}}-\frac{2\int \frac{-aBe-3Acex}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3e^2}\\
&= -\frac{2(3A-Bx)\sqrt{a+cx^2}}{3e\sqrt{ex}}-\frac{\left(2\sqrt{x}\right)\int \frac{-aBe-3Acex}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3e^2\sqrt{ex}}\\
&= -\frac{2(3A-Bx)\sqrt{a+cx^2}}{3e\sqrt{ex}}-\frac{\left(4\sqrt{x}\right)\text{Subst}\left(\int \frac{-aBe-3Acex^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3e^2\sqrt{ex}}\\
&= -\frac{2(3A-Bx)\sqrt{a+cx^2}}{3e\sqrt{ex}}+\frac{\left(4\sqrt{a}\left(\sqrt{a}\,B+3A\sqrt{c}\right)\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3e\sqrt{ex}}\\
&= -\frac{2(3A-Bx)\sqrt{a+cx^2}}{3e\sqrt{ex}}+\frac{4A\sqrt{c}\,x\sqrt{a+cx^2}}{e\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{4\sqrt[4]{a}\,A\sqrt[4]{c}\,\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a}{(\sqrt{a}}}}{e\sqrt{ex}\,\sqrt{a}}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.27

$$\frac{2x\sqrt{a+cx^2}\left(Bx\,{}_2F_1\left(-\frac{1}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-A\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{(ex)^{3/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(3/2),x]
```

```
[Out] (2*x*Sqrt[a + c*x^2]*(-(A*Hypergeometric2F1[-1/2, -1/4, 3/4, -((c*x^2)/a)])
 + B*x*Hypergeometric2F1[-1/2, 1/4, 5/4, -((c*x^2)/a)]))/((e*x)^(3/2)*Sqrt[
1 + (c*x^2)/a])
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{e^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(3/2), x)
```

maple [A] time = 0.12, size = 307, normalized size = 1.02

$$\frac{\frac{2Bc^2x^3}{3} - 2Ac^2x^2 + 4\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\text{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right) - 2\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{}}{\sqrt{-a}}}}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(3/2),x)
```

```
[Out] 2/3*(6*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c-3*A*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^
(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2
)*a*c+B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a+B*c^2*x^3-3*A*c^2*x^2+
B*a*c*x-3*A*a*c)/(c*x^2+a)^(1/2)/e/(e*x)^(1/2)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(3/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(3/2), x)
```

sympy **[C]** time = 4.14, size = 100, normalized size = 0.33

$$\frac{A\sqrt{a}\,\Gamma\left(-\frac{1}{4}\right){}_2F_1\left(\left.\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\ \frac{3}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{B\sqrt{a}\,\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_2F_1\left(\left.\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x)**(3/2),x)
```

```
[Out] A*sqrt(a)*gamma(-1/4)*hyper((-1/2, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a)
/(2*e**(3/2)*sqrt(x)*gamma(3/4)) + B*sqrt(a)*sqrt(x)*gamma(1/4)*hyper((-1/2
, 1/4), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(3/2)*gamma(5/4))
```

3.439 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{5/2}}\,dx$

Optimal. Leaf size=298

$$\frac{2\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}\left(3\sqrt{a}B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{a}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{2\sqrt{a+cx^2}\,(A+3Bx)}{3e(ex)^{3/2}}+\frac{4B\sqrt{c}\,x\sqrt{a+}}{e^2\sqrt{ex}\,\left(\sqrt{a}+\right.}$$

```
[Out] -2/3*(3*B*x+A)*(c*x^2+a)^(1/2)/e/(e*x)^(3/2)+4*B*x*c^(1/2)*(c*x^2+a)^(1/2)/
e^2/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-4*a^(1/4)*B*c^(1/4)*(cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ellipt
icE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))
*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^2/(e*x)^(1/2)/(c*x^2+a)^
(1/2)+2/3*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*ar
ctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4))),1/2*2^(1/2))*(3*B*a^(1/2)+A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x
^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(1/4)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = $\{811, 842, 840, 1198, 220, 1196\}$

$$\frac{2\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}\left(3\sqrt{a}B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3\sqrt[4]{a}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{2\sqrt{a+cx^2}\,(A+3Bx)}{3e(ex)^{3/2}}+\frac{4B\sqrt{c}\,x\sqrt{a+}}{e^2\sqrt{ex}\,\left(\sqrt{a}+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(5/2),x]
```

```
[Out] (-2*(A + 3*B*x)*Sqrt[a + c*x^2])/(3*e*(e*x)^(3/2)) + (4*B*Sqrt[c]*x*Sqrt[a
+ c*x^2])/(e^2*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4*a^(1/4)*B*c^(1/4)*Sqrt
[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Ellipti
cE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(e^2*Sqrt[e*x]*Sqrt[a + c*x^2
]) + (2*(3*Sqrt[a]*B + A*Sqrt[c])*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqr
t[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])
/a^(1/4)], 1/2])/(3*a^(1/4)*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{5/2}}\,dx &= -\frac{2(A+3Bx)\sqrt{a+cx^2}}{3e(ex)^{3/2}} - \frac{2\int \frac{-aAce^2-3aBce^2x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{3ae^4} \\
&= -\frac{2(A+3Bx)\sqrt{a+cx^2}}{3e(ex)^{3/2}} - \frac{\left(2\sqrt{x}\right)\int \frac{-aAce^2-3aBce^2x}{\sqrt{x}\sqrt{a+cx^2}}\,dx}{3ae^4\sqrt{ex}} \\
&= -\frac{2(A+3Bx)\sqrt{a+cx^2}}{3e(ex)^{3/2}} - \frac{\left(4\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{-aAce^2-3aBce^2x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3ae^4\sqrt{ex}} \\
&= -\frac{2(A+3Bx)\sqrt{a+cx^2}}{3e(ex)^{3/2}} - \frac{\left(4\sqrt{a}B\sqrt{c}\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{1-\frac{\sqrt{c}x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{e^2\sqrt{ex}} + \frac{\left(4\left(3\sqrt{a}B\right.\right.}{} \\
&= -\frac{2(A+3Bx)\sqrt{a+cx^2}}{3e(ex)^{3/2}} + \frac{4B\sqrt{c}x\sqrt{a+cx^2}}{e^2\sqrt{ex}\left(\sqrt{a}+\sqrt{c}x\right)} - \frac{4\sqrt[4]{a}B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a}{(\sqrt{a}}}}{e^2\sqrt{ex}\sqrt{a}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 82, normalized size = 0.28

$$
-\frac{2x\sqrt{a+cx^2}\left(A\,{}_2F_1\left(-\frac{3}{4},-\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{1}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3(ex)^{5/2}\sqrt{\frac{cx^2}{a}+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(5/2),x]
```

```
[Out] (-2*x*Sqrt[a + c*x^2]*(A*Hypergeometric2F1[-3/4, -1/2, 1/4, -((c*x^2)/a)] +
 3*B*x*Hypergeometric2F1[-1/2, -1/4, 3/4, -((c*x^2)/a)]))/(3*(e*x)^(5/2)*Sq
rt[1 + (c*x^2)/a])
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{e^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(e^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(5/2), x)
```

maple [A] time = 0.10, size = 303, normalized size = 1.02

$$\frac{-2Bc\,x^3-\frac{2Ac\,x^2}{3}+4\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bax\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-2\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(5/2),x)
```

```
[Out] 2/3/x*(A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*x-3*B*2^(1/2)*((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1
/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),
1/2*2^(1/2))*x*a+6*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x
+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((
c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x*a-3*B*c*x^3-A*c*x^2-3*
B*a*x-a*A)/(c*x^2+a)^(1/2)/e^2/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(5/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(5/2), x)
```

sympy **[C]** time = 7.50, size = 104, normalized size = 0.35

$$\frac{A\sqrt{a}\,\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\ \frac{1}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{B\sqrt{a}\,\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\ \frac{3}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x)**(5/2),x)
```

```
[Out] A*sqrt(a)*gamma(-3/4)*hyper((-3/4, -1/2), (1/4,), c*x**2*exp_polar(I*pi)/a)
/(2*e**(5/2)*x**(3/2)*gamma(1/4)) + B*sqrt(a)*gamma(-1/4)*hyper((-1/2, -1/4
), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(5/2)*sqrt(x)*gamma(3/4))
```

3.440 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{7/2}}\,dx$

Optimal. Leaf size=338

$$\frac{2c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15a^{3/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)}}}{5a^{3/4}e^3\sqrt{ex}\,\sqrt{a+}}$$

```
[Out] -2/15*(5*B*x+3*A)*(c*x^2+a)^(1/2)/e/(e*x)^(5/2)-4/5*A*c*(c*x^2+a)^(1/2)/a/e
^3/(e*x)^(1/2)+4/5*A*c^(3/2)*x*(c*x^2+a)^(1/2)/a/e^3/(a^(1/2)+x*c^(1/2))/(e
*x)^(1/2)-4/5*A*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/co
s(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)
/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c
^(1/2))^2)^(1/2)/a^(3/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)+2/15*c^(3/4)*(cos(
2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^
(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*
a^(1/2)+3*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1
/2))^2)^(1/2)/a^(3/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.35, antiderivative size = 338, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {811, 835, 842, 840, 1198, 220, 1196}

$$\frac{2c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15a^{3/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)}}}{5a^{3/4}e^3\sqrt{ex}\,\sqrt{a+}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(7/2),x]
```

```
[Out] (-4*A*c*Sqrt[a + c*x^2])/(5*a*e^3*Sqrt[e*x]) - (2*(3*A + 5*B*x)*Sqrt[a + c*
x^2])/(15*e*(e*x)^(5/2)) + (4*A*c^(3/2)*x*Sqrt[a + c*x^2])/(5*a*e^3*Sqrt[e*
x]*(Sqrt[a] + Sqrt[c]*x)) - (4*A*c^(5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt
[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/
a^(1/4)], 1/2])/(5*a^(3/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2]) + (2*(5*Sqrt[a]*B
 + 3*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqr
t[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(
15*a^(3/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{7/2}}\,dx = -\frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} - \frac{2\int \frac{-3aAce^2-5aBce^2x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{15ae^4}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}} - \frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} + \frac{4\int \frac{\frac{5}{2}a^2Bce^3+\frac{3}{2}aAc^2e^3x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{15a^2e^6}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}} - \frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} + \frac{\left(4\sqrt{x}\right)\int \frac{\frac{5}{2}a^2Bce^3+\frac{3}{2}aAc^2e^3x}{\sqrt{x}\sqrt{a+cx^2}}\,dx}{15a^2e^6\sqrt{ex}}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}} - \frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} + \frac{\left(8\sqrt{x}\right)\text{Subst}\Bigg(\int \frac{\frac{5}{2}a^2Bce^3+\frac{3}{2}aAc^2e^3x^2}{\sqrt{a+cx^4}}\,dx, x,}{15a^2e^6\sqrt{ex}}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}} - \frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} + \frac{\left(4\left(5\sqrt{a}\,B+3A\sqrt{c}\right)c\sqrt{x}\right)\text{Subst}\Bigg(\int \frac{1}{}}{15\sqrt{a}\,e^3\sqrt{ex}}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{5ae^3\sqrt{ex}} - \frac{2(3A+5Bx)\sqrt{a+cx^2}}{15e(ex)^{5/2}} + \frac{4Ac^{3/2}x\sqrt{a+cx^2}}{5ae^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4Ac^{5/4}\sqrt{x}\,\Big(\sqrt{a}}{}$$

Mathematica [C] time = 0.03, size = 83, normalized size = 0.25

$$-\frac{2x\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{5}{4},-\frac{1}{2};-\frac{1}{4};-\frac{cx^2}{a}\right)+5Bx\,{}_2F_1\left(-\frac{3}{4},-\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15(ex)^{7/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(7/2),x]
```

```
[Out] (-2*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-5/4, -1/2, -1/4, -((c*x^2)/a)
] + 5*B*x*Hypergeometric2F1[-3/4, -1/2, 1/4, -((c*x^2)/a)]))/(15*(e*x)^(7/2
)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{e^4x^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(e^4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(7/2), x)
```

maple [A] time = 0.10, size = 331, normalized size = 0.98

$$\frac{-\frac{4Ac^2x^4}{5}+\frac{4\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac\,x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{5}-\frac{2\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac\,x^2\,\mathrm{El}}{5}}{\sqrt{c\,x^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(7/2),x)
```

```
[Out] 2/15/x^2*(6*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c-3*A*2^(1/2)*((c*x+(-a*c
)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(
-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/
2*2^(1/2))*x^2*a*c+5*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/
2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a-6*A
*c^2*x^4-5*B*a*c*x^3-9*A*a*c*x^2-5*B*a^2*x-3*A*a^2)/(c*x^2+a)^(1/2)/e^3/(e*
x)^(1/2)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\;\left(A+B\,x\right)}{{\left(e\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(7/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(7/2), x)
```

sympy [C] time = 22.46, size = 107, normalized size = 0.32

$$\frac{A\sqrt{a}\,\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{5}{4},-\frac{1}{2}\\-\frac{1}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)}+\frac{B\sqrt{a}\,\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\\frac{1}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x)**(7/2),x)
```

```
[Out] A*sqrt(a)*gamma(-5/4)*hyper((-5/4, -1/2), (-1/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(7/2)*x**(5/2)*gamma(-1/4)) + B*sqrt(a)*gamma(-3/4)*hyper((-3/4, -1
/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(7/2)*x**(3/2)*gamma(1/4))
```

3.441 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{9/2}}\,dx$

Optimal. Leaf size=368

$$\frac{2c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105a^{5/4}e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4Bc^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right.}}}{5a^{3/4}e^4\sqrt{ex}\,\sqrt{a}}$$

```
[Out] -4/21*A*c*(c*x^2+a)^(1/2)/a/e^3/(e*x)^(3/2)-2/35*(7*B*x+5*A)*(c*x^2+a)^(1/2
)/e/(e*x)^(7/2)-4/5*B*c*(c*x^2+a)^(1/2)/a/e^4/(e*x)^(1/2)+4/5*B*c^(3/2)*x*(
c*x^2+a)^(1/2)/a/e^4/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-4/5*B*c^(5/4)*(cos(2*a
rctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)
+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(3/4)/e^4/(e*
x)^(1/2)/(c*x^2+a)^(1/2)+2/105*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4
)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(
c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(21*B*a^(1/2)-5*A*c^(1/2))*(a^(1/2)+
x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(5/4)/e^4/(e*x
)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.41, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {811, 835, 842, 840, 1198, 220, 1196}

$$\frac{2c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105a^{5/4}e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4Bc^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right.}}}{5a^{3/4}e^4\sqrt{ex}\,\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(9/2),x]
```

```
[Out] (-4*A*c*Sqrt[a + c*x^2])/(21*a*e^3*(e*x)^(3/2)) - (4*B*c*Sqrt[a + c*x^2])/(
5*a*e^4*Sqrt[e*x]) - (2*(5*A + 7*B*x)*Sqrt[a + c*x^2])/(35*e*(e*x)^(7/2)) +
 (4*B*c^(3/2)*x*Sqrt[a + c*x^2])/(5*a*e^4*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
- (4*B*c^(5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sq
rt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*a^(3/4)
*e^4*Sqrt[e*x]*Sqrt[a + c*x^2]) + (2*(21*Sqrt[a]*B - 5*A*Sqrt[c])*c^(5/4)*S
qrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(105*a^(5/4)*e^4*Sqrt[e*x]
*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
```

```
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{(ex)^{9/2}}\,dx = -\frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} - \frac{2\int \frac{-5aAce^2-7aBce^2x}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx}{35ae^4}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} + \frac{4\int \frac{\frac{21}{2}a^2Bce^3-\frac{5}{2}aAc^2e^3x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{105a^2e^6}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} - \frac{8\int \frac{\frac{5}{4}a^2Ac^2e^4-\frac{21}{4}a^2Bc^2e^4x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{105a^3e^8}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} - \frac{\left(8\sqrt{x}\right)\int \frac{\frac{5}{4}a^2Ac^2e^4-\frac{21}{4}a^2Bc^2}{\sqrt{x}\sqrt{a+cx^2}}}{105a^3e^8\sqrt{ex}}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} - \frac{\left(16\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{5}{4}a^2Ac^2}{}\right.}{105a^3e}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} - \frac{\left(4Bc^{3/2}\sqrt{x}\right)\text{Subst}\left(\int \frac{1-}{\sqrt{a}}\right.}{5\sqrt{a}\,e^4\sqrt{e}}$$

$$= -\frac{4Ac\sqrt{a+cx^2}}{21ae^3(ex)^{3/2}} - \frac{4Bc\sqrt{a+cx^2}}{5ae^4\sqrt{ex}} - \frac{2(5A+7Bx)\sqrt{a+cx^2}}{35e(ex)^{7/2}} + \frac{4Bc^{3/2}x\sqrt{a+cx^2}}{5ae^4\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} -$$

Mathematica [C] time = 0.03, size = 88, normalized size = 0.24

$$-\frac{2\sqrt{ex}\sqrt{a+cx^2}\left(5A\,{}_2F_1\left(-\frac{7}{4},-\frac{1}{2};-\frac{3}{4};-\frac{cx^2}{a}\right)+7Bx\,{}_2F_1\left(-\frac{5}{4},-\frac{1}{2};-\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{35e^5x^4\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[e*x]*Sqrt[a + c*x^2]*(5*A*Hypergeometric2F1[-7/4, -1/2, -3/4, -((c
*x^2)/a)] + 7*B*x*Hypergeometric2F1[-5/4, -1/2, -1/4, -((c*x^2)/a)]))/(35*e
^5*x^4*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{e^5x^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(e^5*x^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(9/2), x)
```

maple [A] time = 0.13, size = 340, normalized size = 0.92

$$-\frac{2\left(42Bc^{2}x^{5}+10Ac^{2}x^{4}-42\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bacx^{3}\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+21\sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(9/2),x)
```

```
[Out] -2/105/x^3*(5*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Elli
pticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*c+21*B*2^(1/
2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2),1/2*2^(1/2))*x^3*a*c-42*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(
1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*a*c
+42*B*c^2*x^5+10*A*c^2*x^4+63*B*a*c*x^3+25*A*a*c*x^2+21*B*a^2*x+15*A*a^2)/(
c*x^2+a)^(1/2)/e^4/(e*x)^(1/2)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^{2}+a}\,(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x)^(9/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^{2}+a}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(9/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(e*x)^(9/2), x)
```

sympy [C] time = 66.63, size = 110, normalized size = 0.30

$$\frac{A\sqrt{a}\,\Gamma\left(-\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{7}{4},-\frac{1}{2}\\-\frac{3}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{9}{2}}x^{\frac{7}{2}}\Gamma\left(-\frac{3}{4}\right)}+\frac{B\sqrt{a}\,\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{5}{4},-\frac{1}{2}\\-\frac{1}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{9}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x)**(9/2),x)
```

```
[Out] A*sqrt(a)*gamma(-7/4)*hyper((-7/4, -1/2), (-3/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(9/2)*x**(7/2)*gamma(-3/4)) + B*sqrt(a)*gamma(-5/4)*hyper((-5/4, -1
/2), (-1/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(9/2)*x**(5/2)*gamma(-1/4))
```

3.442 $\int (ex)^{5/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=438

$$\frac{4a^{13/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(65\sqrt{a}\,B-231A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15015c^{9/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{8a^{13/4}Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{65c^{7/4}}$$

```
[Out] 2/13*A*e*(e*x)^(3/2)*(c*x^2+a)^(5/2)/c+2/15*B*(e*x)^(5/2)*(c*x^2+a)^(5/2)/c
+2/3003*a*e^2*(-77*A*c*x+13*B*a)*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c^2-2/33*a*B*e
^2*(c*x^2+a)^(5/2)*(e*x)^(1/2)/c^2-8/65*a^3*A*e^3*x*(c*x^2+a)^(1/2)/c^(3/2)
/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+4/15015*a^2*e^2*(-231*A*c*x+65*B*a)*(e*x)^
(1/2)*(c*x^2+a)^(1/2)/c^2+8/65*a^(13/4)*A*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)
/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*(
(c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+
4/15015*a^(13/4)*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2
*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^
(1/4))),1/2*2^(1/2))*(65*B*a^(1/2)-231*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/
2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(9/4)/(e*x)^(1/2)/(c*x^2+a)^(1
/2)
```

Rubi [A] time = 0.58, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$\frac{4a^2e^2\sqrt{ex}\,\sqrt{a+cx^2}\,(65aB-231Acx)}{15015c^2}+\frac{4a^{13/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(65\sqrt{a}\,B-231A\sqrt{c}\right)F(2\tan^{-1}(}{15015c^{9/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(5/2)*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (-8*a^3*A*e^3*x*Sqrt[a + c*x^2])/(65*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x
)) + (4*a^2*e^2*Sqrt[e*x]*(65*a*B - 231*A*c*x)*Sqrt[a + c*x^2])/(15015*c^2)
 + (2*a*e^2*Sqrt[e*x]*(13*a*B - 77*A*c*x)*(a + c*x^2)^(3/2))/(3003*c^2) - (
2*a*B*e^2*Sqrt[e*x]*(a + c*x^2)^(5/2))/(33*c^2) + (2*A*e*(e*x)^(3/2)*(a + c
*x^2)^(5/2))/(13*c) + (2*B*(e*x)^(5/2)*(a + c*x^2)^(5/2))/(15*c) + (8*a^(13
/4)*A*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]
*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(65*c^(7/4)*Sqr
t[e*x]*Sqrt[a + c*x^2]) + (4*a^(13/4)*(65*Sqrt[a]*B - 231*A*Sqrt[c])*e^3*Sq
rt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Ellip
ticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15015*c^(9/4)*Sqrt[e*x]*Sq
rt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{5/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx = \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{5/2}}{15c} + \frac{2\int (ex)^{3/2}\left(-\frac{5}{2}aBe+\frac{15}{2}Acex\right)\left(a+cx^2\right)^{3/2}\,dx}{15c}$$

$$= \frac{2Ae(ex)^{3/2}\left(a+cx^2\right)^{5/2}}{13c} + \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{5/2}}{15c} + \frac{4\int \sqrt{ex}\left(-\frac{45}{4}aAce^2-\frac{65}{4}a\right.}{195c}$$

$$= -\frac{2aBe^2\sqrt{ex}\left(a+cx^2\right)^{5/2}}{33c^2} + \frac{2Ae(ex)^{3/2}\left(a+cx^2\right)^{5/2}}{13c} + \frac{2B(ex)^{5/2}\left(a+cx^2\right)^{5/2}}{15c} +$$

$$= \frac{2ae^2\sqrt{ex}\,(13aB-77Acx)\left(a+cx^2\right)^{3/2}}{3003c^2} - \frac{2aBe^2\sqrt{ex}\left(a+cx^2\right)^{5/2}}{33c^2} + \frac{2Ae(ex)^{3/2}}{1}$$

$$= \frac{4a^2e^2\sqrt{ex}\,(65aB-231Acx)\sqrt{a+cx^2}}{15015c^2} + \frac{2ae^2\sqrt{ex}\,(13aB-77Acx)\left(a+cx^2\right)^{3/}}{3003c^2}$$

$$= \frac{4a^2e^2\sqrt{ex}\,(65aB-231Acx)\sqrt{a+cx^2}}{15015c^2} + \frac{2ae^2\sqrt{ex}\,(13aB-77Acx)\left(a+cx^2\right)^{3/}}{3003c^2}$$

$$= \frac{4a^2e^2\sqrt{ex}\,(65aB-231Acx)\sqrt{a+cx^2}}{15015c^2} + \frac{2ae^2\sqrt{ex}\,(13aB-77Acx)\left(a+cx^2\right)^{3/}}{3003c^2}$$

$$= \frac{4a^2e^2\sqrt{ex}\,(65aB-231Acx)\sqrt{a+cx^2}}{15015c^2} + \frac{2ae^2\sqrt{ex}\,(13aB-77Acx)\left(a+cx^2\right)^{3/}}{3003c^2}$$

$$= -\frac{8a^3Ae^3x\sqrt{a+cx^2}}{65c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{4a^2e^2\sqrt{ex}\,(65aB-231Acx)\sqrt{a+cx^2}}{15015c^2} + \frac{2ae^2\sqrt{e}}{}$$

Mathematica [C] time = 0.15, size = 137, normalized size = 0.31

$$\frac{2e^2\sqrt{ex}\sqrt{a+cx^2}\left(65a^3B\,{}_2F_1\left(-\frac{3}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-165a^2Acx\,{}_2F_1\left(-\frac{3}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-\left(a+cx^2\right)^2\sqrt{\frac{cx^2}{a}+1}\,(65aB-11cx\right.}{2145c^2\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(5/2)*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (2*e^2*Sqrt[e*x]*Sqrt[a + c*x^2]*(-((a + c*x^2)^2*Sqrt[1 + (c*x^2)/a]*(65*a
*B - 11*c*x*(15*A + 13*B*x))) + 65*a^3*B*Hypergeometric2F1[-3/2, 1/4, 5/4,
-((c*x^2)/a)] - 165*a^2*A*c*x*Hypergeometric2F1[-3/2, 3/4, 7/4, -((c*x^2)/a
)]))/(2145*c^2*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.05, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(Bce^2x^5+Ace^2x^4+Bae^2x^3+Aae^2x^2\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*e^2*x^5 + A*c*e^2*x^4 + B*a*e^2*x^3 + A*a*e^2*x^2)*sqrt(c*x^2
 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^(5/2), x)
```

maple [A] time = 0.10, size = 384, normalized size = 0.88

$$2\sqrt{ex}\,\Big(1001B\,c^5x^9+1155A\,c^5x^8+2548Ba\,c^4x^7+3080Aa\,c^4x^6+1703B\,a^2c^3x^5+2233A\,a^2c^3x^4-104B\,a^3c^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] 2/15015/x*e^2*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(1001*B*x^9*c^5+1155*A*x^8*c^5+25
48*B*x^7*a*c^4+3080*A*x^6*a*c^4+462*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(
1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4*c-9
24*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4*c+130*B*2^(1/2)*((c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/
2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2)
)*(-a*c)^(1/2)*a^4+1703*B*x^5*a^2*c^3+2233*A*x^4*a^2*c^3-104*B*x^3*a^3*c^2+
308*A*x^2*a^3*c^2-260*B*x*a^4*c)/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int {(e\,x)}^{5/2}\,{\left(c\,x^2+a\right)}^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(5/2)*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [C] time = 68.10, size = 199, normalized size = 0.45

$$\frac{Aa^{\frac{3}{2}}e^{\frac{5}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{7}{4}\\\frac{11}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{11}{4}\right)}+\frac{A\sqrt{a}\,ce^{\frac{5}{2}}x^{\frac{11}{2}}\Gamma\left(\frac{11}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{11}{4}\\\frac{15}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{15}{4}\right)}+\frac{Ba^{\frac{3}{2}}e^{\frac{5}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{9}{4}\\\frac{13}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{13}{4}\right)}+B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(5/2)*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*e**(5/2)*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*
exp_polar(I*pi)/a)/(2*gamma(11/4)) + A*sqrt(a)*c*e**(5/2)*x**(11/2)*gamma(1
1/4)*hyper((-1/2, 11/4), (15/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(15/4))
 + B*a**(3/2)*e**(5/2)*x**(9/2)*gamma(9/4)*hyper((-1/2, 9/4), (13/4,), c*x*
*2*exp_polar(I*pi)/a)/(2*gamma(13/4)) + B*sqrt(a)*c*e**(5/2)*x**(13/2)*gamm
a(13/4)*hyper((-1/2, 13/4), (17/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(17/
4))
```

3.443 $\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=400

$$-\frac{4a^{11/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+65A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{5005c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{8a^{13/4}Be^2\sqrt{x}\,\big(\sqrt{a}+\sqrt{c}\,x}{65c^7}$$

```
[Out] 2/13*B*(e*x)^(3/2)*(c*x^2+a)^(5/2)/c-2/3003*a*e*(77*B*x+39*A)*(c*x^2+a)^(3/
2)*(e*x)^(1/2)/c+2/11*A*e*(c*x^2+a)^(5/2)*(e*x)^(1/2)/c-8/65*a^3*B*e^2*x*(c
*x^2+a)^(1/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-4/5005*a^2*e*(77*B*x+
65*A)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c+8/65*a^(13/4)*B*e^2*(cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ellipt
icE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))
*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2
+a)^(1/2)-4/5005*a^(11/4)*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(77*B*a^(1/2)+65*A*c^(1/2))*(a^(1/2)+x*c^(1/2
))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x
^2+a)^(1/2)
```

Rubi [A] time = 0.50, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{4a^{11/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+65A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{5005c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4a^2e\sqrt{ex}\,\sqrt{a+cx^2}\,\big(65A+}{5005c}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(3/2)*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (-4*a^2*e*Sqrt[e*x]*(65*A + 77*B*x)*Sqrt[a + c*x^2])/(5005*c) - (8*a^3*B*e^
2*x*Sqrt[a + c*x^2])/(65*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*a*e*
Sqrt[e*x]*(39*A + 77*B*x)*(a + c*x^2)^(3/2))/(3003*c) + (2*A*e*Sqrt[e*x]*(a
 + c*x^2)^(5/2))/(11*c) + (2*B*(e*x)^(3/2)*(a + c*x^2)^(5/2))/(13*c) + (8*a
^(13/4)*B*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqr
t[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(65*c^(7/4)
*Sqrt[e*x]*Sqrt[a + c*x^2]) - (4*a^(11/4)*(77*Sqrt[a]*B + 65*A*Sqrt[c])*e^2
*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5005*c^(7/4)*Sqrt[e*x]*
Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{3/2}\,dx = \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{5/2}}{13c} + \frac{2\int \sqrt{ex}\left(-\frac{3}{2}aBe+\frac{13}{2}Acex\right)\left(a+cx^2\right)^{3/2}\,dx}{13c}$$

$$= \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{5/2}}{11c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{5/2}}{13c} + \frac{4\int \frac{\left(-\frac{13}{4}aAce^2-\frac{33}{4}aBce^2x\right)(a+}{\sqrt{ex}}}{143c^2}$$

$$= -\frac{2ae\sqrt{ex}\,(39A+77Bx)\left(a+cx^2\right)^{3/2}}{3003c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{5/2}}{11c} + \frac{2B(ex)^{3/2}}{}$$

$$= -\frac{4a^2e\sqrt{ex}\,(65A+77Bx)\sqrt{a+cx^2}}{5005c} - \frac{2ae\sqrt{ex}\,(39A+77Bx)\left(a+cx^2\right)^{3/2}}{3003c} +$$

$$= -\frac{4a^2e\sqrt{ex}\,(65A+77Bx)\sqrt{a+cx^2}}{5005c} - \frac{2ae\sqrt{ex}\,(39A+77Bx)\left(a+cx^2\right)^{3/2}}{3003c} +$$

$$= -\frac{4a^2e\sqrt{ex}\,(65A+77Bx)\sqrt{a+cx^2}}{5005c} - \frac{2ae\sqrt{ex}\,(39A+77Bx)\left(a+cx^2\right)^{3/2}}{3003c} +$$

$$= -\frac{4a^2e\sqrt{ex}\,(65A+77Bx)\sqrt{a+cx^2}}{5005c} - \frac{2ae\sqrt{ex}\,(39A+77Bx)\left(a+cx^2\right)^{3/2}}{3003c} +$$

$$= -\frac{4a^2e\sqrt{ex}\,(65A+77Bx)\sqrt{a+cx^2}}{5005c} - \frac{8a^3Be^2x\sqrt{a+cx^2}}{65c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{2ae\sqrt{ex}\,(}{}$$

Mathematica **[C]** time = 0.12, size = 124, normalized size = 0.31

$$\frac{2e\sqrt{ex}\,\sqrt{a+cx^2}\left(-13a^2A\,{}_2F_1\left(-\frac{3}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-11a^2Bx\,{}_2F_1\left(-\frac{3}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+\left(a+cx^2\right)^2\sqrt{\frac{cx^2}{a}+1}\,(13A+11B\right.}{143c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(3/2)*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (2*e*Sqrt[e*x]*Sqrt[a + c*x^2]*((13*A + 11*B*x)*(a + c*x^2)^2*Sqrt[1 + (c*x
^2)/a] - 13*a^2*A*Hypergeometric2F1[-3/2, 1/4, 5/4, -((c*x^2)/a)] - 11*a^2*
B*x*Hypergeometric2F1[-3/2, 3/4, 7/4, -((c*x^2)/a)]))/(143*c*Sqrt[1 + (c*x^
2)/a])
```

fricas **[F]** time = 0.93, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\left(Bcex^4+Acex^3+Baex^2+Aaex\right)\sqrt{cx^2+a}\,\sqrt{ex}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*e*x^4 + A*c*e*x^3 + B*a*e*x^2 + A*a*e*x)*sqrt(c*x^2 + a)*sqrt
(e*x), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^(3/2), x)
```

maple **[A]** time = 0.08, size = 366, normalized size = 0.92

$$-\frac{2\sqrt{ex}\,\left(-1155B\,c^4x^8-1365A\,c^4x^7-3080Ba\,c^3x^6-3900Aa\,c^3x^5-2233B\,a^2c^2x^4-3315A\,a^2c^2x^3-308B\,a^3c\,x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] -2/15015*e/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^2*(-1155*B*c^4*x^8-1365*A*c^4*x^
7-3080*B*a*c^3*x^6+390*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(
1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3-390
0*A*a*c^3*x^5+924*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4-462*B*2^(1/2)*((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(
-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
),1/2*2^(1/2))*a^4-2233*B*a^2*c^2*x^4-3315*A*a^2*c^2*x^3-308*B*a^3*c*x^2-78
0*A*a^3*c*x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(e\,x\right)}^{3/2}\,{\left(c\,x^2+a\right)}^{3/2}\,\left(A+B\,x\right) \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(3/2)*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy **[C]** time = 22.27, size = 199, normalized size = 0.50

$$\frac{Aa^{\frac{3}{2}}e^{\frac{3}{2}}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\\frac{9}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{9}{4}\right)}+\frac{A\sqrt{a}\,ce^{\frac{3}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{9}{4}\\\frac{13}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{13}{4}\right)}+\frac{Ba^{\frac{3}{2}}e^{\frac{3}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{7}{4}\\\frac{11}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{11}{4}\right)}+\frac{B\sqrt{a}\,ce}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*e**(3/2)*x**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*e
xp_polar(I*pi)/a)/(2*gamma(9/4)) + A*sqrt(a)*c*e**(3/2)*x**(9/2)*gamma(9/4)
*hyper((-1/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(13/4)) + B*
a**(3/2)*e**(3/2)*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*ex
p_polar(I*pi)/a)/(2*gamma(11/4)) + B*sqrt(a)*c*e**(3/2)*x**(11/2)*gamma(11/
4)*hyper((-1/2, 11/4), (15/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(15/4))
```

3.444 $\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=366

$$-\frac{4a^{9/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(15\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{1155c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^{9/4}Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{15c^{3/4}\sqrt{ex}}$$

```
[Out] -2/693*(-77*A*c*x+9*B*a)*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c+2/11*B*(c*x^2+a)^(5/
2)*(e*x)^(1/2)/c+8/15*a^2*A*e*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))
/(e*x)^(1/2)-4/1155*a*(-77*A*c*x+15*B*a)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c-8/15
*a^(9/4)*A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(
c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),
1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^
(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-4/1155*a^(9/4)*e*(cos(2*arctan(c^
(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ell
ipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(15*B*a^(1/2)-77
*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(
1/2)/c^(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 366, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{4a^{9/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(15\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{1155c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^{9/4}Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{15c^{3/4}\sqrt{ex}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[e*x]*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (8*a^2*A*e*x*Sqrt[a + c*x^2])/(15*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
- (4*a*Sqrt[e*x]*(15*a*B - 77*A*c*x)*Sqrt[a + c*x^2])/(1155*c) - (2*Sqrt[e*
x]*(9*a*B - 77*A*c*x)*(a + c*x^2)^(3/2))/(693*c) + (2*B*Sqrt[e*x]*(a + c*x^
2)^(5/2))/(11*c) - (8*a^(9/4)*A*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c
*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)
], 1/2])/(15*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (4*a^(9/4)*(15*Sqrt[a]*B
- 77*A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] +
 Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(1155*c
^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
```

```
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{3/2}\,dx = \frac{2B\sqrt{ex}\,\left(a+cx^2\right)^{5/2}}{11c} + \frac{2\int \frac{\left(-\frac{1}{2}aBe+\frac{11}{2}Acex\right)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx}{11c}$$

$$= -\frac{2\sqrt{ex}\,(9aB-77Acx)\left(a+cx^2\right)^{3/2}}{693c} + \frac{2B\sqrt{ex}\,\left(a+cx^2\right)^{5/2}}{11c} + \frac{8\int \frac{\left(-\frac{9}{4}a^2Bce^3+\frac{77}{4}aA}{\sqrt{e}}}{231c^2}$$

$$= -\frac{4a\sqrt{ex}\,(15aB-77Acx)\sqrt{a+cx^2}}{1155c} - \frac{2\sqrt{ex}\,(9aB-77Acx)\left(a+cx^2\right)^{3/2}}{693c} + 2B\sqrt{}$$

$$= -\frac{4a\sqrt{ex}\,(15aB-77Acx)\sqrt{a+cx^2}}{1155c} - \frac{2\sqrt{ex}\,(9aB-77Acx)\left(a+cx^2\right)^{3/2}}{693c} + 2B\sqrt{}$$

$$= -\frac{4a\sqrt{ex}\,(15aB-77Acx)\sqrt{a+cx^2}}{1155c} - \frac{2\sqrt{ex}\,(9aB-77Acx)\left(a+cx^2\right)^{3/2}}{693c} + 2B\sqrt{}$$

$$= -\frac{4a\sqrt{ex}\,(15aB-77Acx)\sqrt{a+cx^2}}{1155c} - \frac{2\sqrt{ex}\,(9aB-77Acx)\left(a+cx^2\right)^{3/2}}{693c} + 2B\sqrt{}$$

$$= \frac{8a^2Aex\sqrt{a+cx^2}}{15\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4a\sqrt{ex}\,(15aB-77Acx)\sqrt{a+cx^2}}{1155c} - \frac{2\sqrt{ex}\,(9aB-77}{6}$$

Mathematica [C] time = 0.08, size = 116, normalized size = 0.32

$$\frac{2\sqrt{ex}\,\sqrt{a+cx^2}\left(-3a^2B\,{}_2F_1\left(-\frac{3}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+11aAcx\,{}_2F_1\left(-\frac{3}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+3B\left(a+cx^2\right)^2\sqrt{\frac{cx^2}{a}+1}\right)}{33c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[e*x]*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[e*x]*Sqrt[a + c*x^2]*(3*B*(a + c*x^2)^2*Sqrt[1 + (c*x^2)/a] - 3*a^2
*B*Hypergeometric2F1[-3/2, 1/4, 5/4, -((c*x^2)/a)] + 11*a*A*c*x*Hypergeomet
ric2F1[-3/2, 3/4, 7/4, -((c*x^2)/a)]))/(33*c*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\sqrt{ex}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*sqrt(e*x), x)
```

maple [A] time = 0.07, size = 357, normalized size = 0.98

$$-\frac{2\sqrt{ex}\left(-315B\,c^4x^7-385A\,c^4x^6-900Ba\,c^3x^5-1232Aa\,c^3x^4-765B\,a^2c^2x^3-847A\,a^2c^2x^2-924\sqrt{2}\,\sqrt{\frac{cx+}{\sqrt{-}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] -2/3465*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(-315*B*c^4*x^7-385*A*c^4*x^6+462*A*2^(
1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2),1/2*2^(1/2))*a^3*c-924*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^
(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3*c+
90*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a^3-900*B*a*c^3*x^5-1232*A*
a*c^3*x^4-765*B*a^2*c^2*x^3-847*A*a^2*c^2*x^2-180*B*a^3*c*x)/c^2/x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\sqrt{ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{e\,x}\,\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(1/2)*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [C] time = 7.51, size = 197, normalized size = 0.54

$$\frac{Aa^{\frac{3}{2}}(ex)^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e\Gamma\left(\frac{7}{4}\right)}+\frac{A\sqrt{a}\,c\,(ex)^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^3\Gamma\left(\frac{11}{4}\right)}+\frac{Ba^{\frac{3}{2}}(ex)^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^2\Gamma\left(\frac{9}{4}\right)}+\frac{B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*(e*x)**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_po
lar(I*pi)/a)/(2*e*gamma(7/4)) + A*sqrt(a)*c*(e*x)**(7/2)*gamma(7/4)*hyper((
-1/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**3*gamma(11/4)) + B*a**
(3/2)*(e*x)**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*exp_polar(I
*pi)/a)/(2*e**2*gamma(9/4)) + B*sqrt(a)*c*(e*x)**(9/2)*gamma(9/4)*hyper((-1
/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**4*gamma(13/4))
```

3.445 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx$

Optimal. Leaf size=333

$$\frac{4a^{7/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B+15A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^{9/4}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right.}}}{15c^{3/4}\sqrt{ex}\,\sqrt{a\,-}}$$

```
[Out] 2/63*(7*B*x+9*A)*(c*x^2+a)^(3/2)*(e*x)^(1/2)/e+8/15*a^2*B*x*(c*x^2+a)^(1/2)
/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+4/105*a*(7*B*x+15*A)*(e*x)^(1/2)*(
c*x^2+a)^(1/2)/e-8/15*a^(9/4)*B*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^
(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)
*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(
1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+4/105*a^(7/4)*
(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/
2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*
(7*B*a^(1/2)+15*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+
x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {815, 842, 840, 1198, 220, 1196}

$$\frac{4a^{7/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B+15A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^{9/4}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right.}}}{15c^{3/4}\sqrt{ex}\,\sqrt{a\,-}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/Sqrt[e*x],x]
```

```
[Out] (4*a*Sqrt[e*x]*(15*A + 7*B*x)*Sqrt[a + c*x^2])/(105*e) + (8*a^2*B*x*Sqrt[a
+ c*x^2])/(15*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (2*Sqrt[e*x]*(9*A
+ 7*B*x)*(a + c*x^2)^(3/2))/(63*e) - (8*a^(9/4)*B*Sqrt[x]*(Sqrt[a] + Sqrt[c
]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*
Sqrt[x])/a^(1/4)], 1/2])/(15*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + (4*a^(7/4
)*(7*Sqrt[a]*B + 15*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^
2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)],
1/2])/(105*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
```

```
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx &= \frac{2\sqrt{ex}\,(9A+7Bx)\left(a+cx^2\right)^{3/2}}{63e}+\frac{4\int \frac{\left(\frac{9}{2}aAce^2+\frac{7}{2}aBce^2x\right)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx}{21ce^2}\\
&= \frac{4a\sqrt{ex}\,(15A+7Bx)\sqrt{a+cx^2}}{105e}+\frac{2\sqrt{ex}\,(9A+7Bx)\left(a+cx^2\right)^{3/2}}{63e}+\frac{16\int \frac{\frac{45}{4}a^2Ac^2e^4}{\sqrt{ex}\,\sqrt{}}}{315c}\\
&= \frac{4a\sqrt{ex}\,(15A+7Bx)\sqrt{a+cx^2}}{105e}+\frac{2\sqrt{ex}\,(9A+7Bx)\left(a+cx^2\right)^{3/2}}{63e}+\frac{\left(16\sqrt{x}\right)\int \frac{\frac{45}{4}a}{}}{315}\\
&= \frac{4a\sqrt{ex}\,(15A+7Bx)\sqrt{a+cx^2}}{105e}+\frac{2\sqrt{ex}\,(9A+7Bx)\left(a+cx^2\right)^{3/2}}{63e}+\frac{\left(32\sqrt{x}\right)\mathrm{Subs}}{}\\
&= \frac{4a\sqrt{ex}\,(15A+7Bx)\sqrt{a+cx^2}}{105e}+\frac{2\sqrt{ex}\,(9A+7Bx)\left(a+cx^2\right)^{3/2}}{63e}-\frac{\left(8a^{5/2}B\sqrt{x}\right)\mathrm{S}}{}\\
&= \frac{4a\sqrt{ex}\,(15A+7Bx)\sqrt{a+cx^2}}{105e}+\frac{8a^2Bx\sqrt{a+cx^2}}{15\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{2\sqrt{ex}\,(9A+7Bx)\left(a\right.}{63e}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 83, normalized size = 0.25

$$\frac{2ax\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{3}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+Bx\,{}_2F_1\left(-\frac{3}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{3\sqrt{ex}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/Sqrt[e*x],x]
```

```
[Out] (2*a*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-3/2, 1/4, 5/4, -((c*x^2)/a)]
 + B*x*Hypergeometric2F1[-3/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*Sqrt[e*x]*Sqrt[
1 + (c*x^2)/a])
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex}}{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x)/(e*x),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/sqrt(e*x), x)
```

maple [A] time = 0.07, size = 338, normalized size = 1.02

$$\frac{\frac{2Bc^3x^6}{9}+\frac{2Ac^3x^5}{7}+\frac{32Bac^2x^4}{45}+\frac{8Aac^2x^3}{7}+\frac{22Ba^2cx^2}{45}+\frac{6Aa^2cx}{7}+\frac{8\sqrt{2}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-ac}}}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,Ba^3\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\right.}{15}}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(1/2),x)
```

```
[Out] 2/315/(c*x^2+a)^(1/2)/c*(35*B*c^3*x^6+90*A*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a
*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-
a*c)^(1/2)*a^2+45*A*c^3*x^5+84*B*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^3-42*B*2^(
1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*E
llipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*a^3+112*B*a*c^2*x^4+180*A*a*c^2*x^3+77*B*a^2*c*x
^2+135*A*a^2*c*x)/(e*x)^(1/2)
```

maimaxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,(A+B\,x)}{\sqrt{e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(1/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(1/2), x)
```

sympy [C] time = 8.35, size = 199, normalized size = 0.60

$$\frac{Aa^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)}+\frac{A\sqrt{a}\,cx^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{9}{4}\right)}+\frac{Ba^{\frac{3}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{7}{4}\right)}+\frac{B\sqrt{a}\,cx^{\frac{7}{2}}\Gamma}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x)**(1/2),x)
```

```
[Out] A*a**(3/2)*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_polar(I
*pi)/a)/(2*sqrt(e)*gamma(5/4)) + A*sqrt(a)*c*x**(5/2)*gamma(5/4)*hyper((-1/
2, 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(e)*gamma(9/4)) + B*a**(3
/2)*x**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a
)/(2*sqrt(e)*gamma(7/4)) + B*sqrt(a)*c*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4
), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(e)*gamma(11/4))
```

3.446 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{3/2}}\,dx$

Optimal. Leaf size=341

$$\frac{4a^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{35\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}-\frac{24a^{5/4}A\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{}{(\sqrt{a}}}}{5e\sqrt{ex}\sqrt{a}}$$

```
[Out] -2/7*(-B*x+7*A)*(c*x^2+a)^(3/2)/e/(e*x)^(1/2)+24/5*a*A*x*c^(1/2)*(c*x^2+a)^
(1/2)/e/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+4/35*(21*A*c*x+5*B*a)*(e*x)^(1/2)*(
c*x^2+a)^(1/2)/e^2-24/5*a^(5/4)*A*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(
1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arct
an(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x
^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)+4/35*a^(5/
4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2
))*(5*B*a^(1/2)+21*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/
2)+x*c^(1/2))^2)^(1/2)/c^(1/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {813, 815, 842, 840, 1198, 220, 1196}

$$\frac{4a^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{35\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}-\frac{24a^{5/4}A\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{}{(\sqrt{a}}}}{5e\sqrt{ex}\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(3/2),x]
```

```
[Out] (24*a*A*Sqrt[c]*x*Sqrt[a + c*x^2])/(5*e*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) +
(4*Sqrt[e*x]*(5*a*B + 21*A*c*x)*Sqrt[a + c*x^2])/(35*e^2) - (2*(7*A - B*x)*
(a + c*x^2)^(3/2))/(7*e*Sqrt[e*x]) - (24*a^(5/4)*A*c^(1/4)*Sqrt[x]*(Sqrt[a]
 + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[
(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e*Sqrt[e*x]*Sqrt[a + c*x^2]) + (4*a^(5
/4)*(5*Sqrt[a]*B + 21*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*
x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)]
, 1/2])/(35*c^(1/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] && !Rational
Q[m])) && NeQ[m, -1] && !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{3/2}}\,dx = -\frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} - \frac{6\int \frac{(-aBe-7Acex)\sqrt{a+cx^2}}{\sqrt{ex}}\,dx}{7e^2}$$

$$= \frac{4\sqrt{ex}\,(5aB+21Acx)\sqrt{a+cx^2}}{35e^2} - \frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} - \frac{8\int \frac{-\frac{5}{2}a^2Bce^3-\frac{21}{2}aAc^2e^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}}{35ce^4}$$

$$= \frac{4\sqrt{ex}\,(5aB+21Acx)\sqrt{a+cx^2}}{35e^2} - \frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} - \frac{\left(8\sqrt{x}\right)\int \frac{-\frac{5}{2}a^2Bce^3-\frac{21}{2}aA}{\sqrt{x}\,\sqrt{a+cx^2}}}{35ce^4\sqrt{ex}}$$

$$= \frac{4\sqrt{ex}\,(5aB+21Acx)\sqrt{a+cx^2}}{35e^2} - \frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} - \frac{\left(16\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{5}{2}a^2}{}\right.}{35c}$$

$$= \frac{4\sqrt{ex}\,(5aB+21Acx)\sqrt{a+cx^2}}{35e^2} - \frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} + \frac{\left(8a^{3/2}\left(5\sqrt{a}\,B+21A\right.\right.}{}$$

$$= \frac{24aA\sqrt{c}\,x\sqrt{a+cx^2}}{5e\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{4\sqrt{ex}\,(5aB+21Acx)\sqrt{a+cx^2}}{35e^2} - \frac{2(7A-Bx)\left(a+cx^2\right)^{3/2}}{7e\sqrt{ex}} -$$

Mathematica [C] time = 0.03, size = 81, normalized size = 0.24

$$\frac{2ax\sqrt{a+cx^2}\left(Bx\,{}_2F_1\left(-\frac{3}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-A\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{(ex)^{3/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(3/2),x]
```

```
[Out] (2*a*x*Sqrt[a + c*x^2]*(-(A*Hypergeometric2F1[-3/2, -1/4, 3/4, -((c*x^2)/a)
]) + B*x*Hypergeometric2F1[-3/2, 1/4, 5/4, -((c*x^2)/a)]))/((e*x)^(3/2)*Sqr
t[1 + (c*x^2)/a])
```

fricas [F] time = 1.05, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^2*x
^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(3/2), x)
```

maple [A] time = 0.07, size = 340, normalized size = 1.00

$$-\frac{2\left(-5Bc^3x^5-7Ac^3x^4-20Bac^2x^3+28Aac^2x^2-84\sqrt{2}\sqrt{-\frac{cx}{\sqrt{-ac}}}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,Aa^2c\,\mathrm{EllipticE}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(3/2),x)
```

```
[Out] -2/35*(42*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c-84*A*2^(1/2)*(-1/(-a*c)^(1/
2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2)
)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2)*a^2*c-10*B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ellipti
cF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))
/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2-5*B*c^3*x
^5-7*A*c^3*x^4-20*B*a*c^2*x^3+28*A*a*c^2*x^2-15*B*a^2*c*x+35*A*a^2*c)/(c*x^
2+a)^(1/2)/c/e/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(3/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(3/2), x)
```

sympy [C] time = 8.62, size = 202, normalized size = 0.59

$$\frac{Aa^{\frac{3}{2}}\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\ \frac{3}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{A\sqrt{a}\,cx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\Gamma\left(\frac{7}{4}\right)}+\frac{Ba^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)}+\frac{B\sqrt{a}\,cx^{\frac{5}{2}}\Gamma}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x)**(3/2),x)
```

```
[Out] A*a**(3/2)*gamma(-1/4)*hyper((-1/2, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(3/2)*sqrt(x)*gamma(3/4)) + A*sqrt(a)*c*x**(3/2)*gamma(3/4)*hyper((
-1/2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(3/2)*gamma(7/4)) + B*a
**(3/2)*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_polar(I*pi
)/a)/(2*e**(3/2)*gamma(5/4)) + B*sqrt(a)*c*x**(5/2)*gamma(5/4)*hyper((-1/2,
 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(3/2)*gamma(9/4))
```

3.447 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{5/2}}\,dx$

Optimal. Leaf size=341

$$\frac{4a^{3/4}\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{24a^{5/4}B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5e^2\sqrt{e}}$$

```
[Out] -2/15*(-3*B*x+5*A)*(c*x^2+a)^(3/2)/e/(e*x)^(3/2)-4/15*(-5*A*c*x+9*B*a)*(c*x
^2+a)^(1/2)/e^2/(e*x)^(1/2)+24/5*a*B*x*c^(1/2)*(c*x^2+a)^(1/2)/e^2/(a^(1/2)
+x*c^(1/2))/(e*x)^(1/2)-24/5*a^(5/4)*B*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2
*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*
((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)+4/1
5*a^(3/4)*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*ar
ctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4))),1/2*2^(1/2))*(9*B*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c
*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 842, 840, 1198, 220, 1196}

$$\frac{4a^{3/4}\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{24a^{5/4}B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5e^2\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(5/2),x]
```

```
[Out] (24*a*B*Sqrt[c]*x*Sqrt[a + c*x^2])/(5*e^2*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
- (4*(9*a*B - 5*A*c*x)*Sqrt[a + c*x^2])/(15*e^2*Sqrt[e*x]) - (2*(5*A - 3*B*
x)*(a + c*x^2)^(3/2))/(15*e*(e*x)^(3/2)) - (24*a^(5/4)*B*c^(1/4)*Sqrt[x]*(S
qrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*A
rcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e^2*Sqrt[e*x]*Sqrt[a + c*x^2]) +
 (4*a^(3/4)*(9*Sqrt[a]*B + 5*A*Sqrt[c])*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*
x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sq
rt[x])/a^(1/4)], 1/2])/(15*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{5/2}}\,dx = -\frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} - \frac{2\int \frac{(-3aBe-5Acex)\sqrt{a+cx^2}}{(ex)^{3/2}}\,dx}{5e^2}$$

$$= -\frac{4(9aB-5Acx)\sqrt{a+cx^2}}{15e^2\sqrt{ex}} - \frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} + \frac{4\int \frac{5aAce^2+9aBce^2x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{15e^4}$$

$$= -\frac{4(9aB-5Acx)\sqrt{a+cx^2}}{15e^2\sqrt{ex}} - \frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} + \frac{\left(4\sqrt{x}\right)\int \frac{5aAce^2+9aBce^2x}{\sqrt{x}\,\sqrt{a+cx^2}}\,d}{15e^4\sqrt{ex}}$$

$$= -\frac{4(9aB-5Acx)\sqrt{a+cx^2}}{15e^2\sqrt{ex}} - \frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int \frac{5aAce^2+9}{\sqrt{a+c}}\right.}{15e^4\sqrt{ex}}$$

$$= -\frac{4(9aB-5Acx)\sqrt{a+cx^2}}{15e^2\sqrt{ex}} - \frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} - \frac{\left(24a^{3/2}B\sqrt{c}\,\sqrt{x}\right)\text{Subst}\left(\right.}{5e^2\sqrt{ex}}$$

$$= \frac{24aB\sqrt{c}\,x\sqrt{a+cx^2}}{5e^2\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4(9aB-5Acx)\sqrt{a+cx^2}}{15e^2\sqrt{ex}} - \frac{2(5A-3Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{3/2}} - \frac{24}{}$$

Mathematica [C] time = 0.03, size = 83, normalized size = 0.24

$$-\frac{2ax\sqrt{a+cx^2}\left(A\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{4};\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3(ex)^{5/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(5/2),x]
```

```
[Out] (-2*a*x*Sqrt[a + c*x^2]*(A*Hypergeometric2F1[-3/2, -3/4, 1/4, -((c*x^2)/a)]
 + 3*B*x*Hypergeometric2F1[-3/2, -1/4, 3/4, -((c*x^2)/a)]))/(3*(e*x)^(5/2)*
Sqrt[1 + (c*x^2)/a])
```

fricas [F]   time = 0.98, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bcx^3 + Acx^2 + Bax + Aa\right)\sqrt{cx^2 + a}\,\sqrt{ex}}{e^3x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^3*x
^3), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + a\right)^{\frac{3}{2}}(Bx + A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(5/2), x)
```

maple [A]   time = 0.08, size = 325, normalized size = 0.95

$$\frac{\frac{2B\,c^2x^5}{5} + \frac{2A\,c^2x^4}{3} - \frac{8Bac\,x^3}{5} + \frac{24\sqrt{2}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,B\,a^2x\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right)}{5} - 12\sqrt{2}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{\sqrt{c\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(5/2),x)
```

```
[Out] 2/15/x*(10*A*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x*a+36*B*2^(1/2)*(-
1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
,1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*x*a^2-18*B*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Elliptic
F(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x*a^2+3*B*c^2*
x^5+5*A*c^2*x^4-12*B*a*c*x^3-15*B*a^2*x-5*A*a^2)/(c*x^2+a)^(1/2)/e^2/(e*x)^
(1/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + a\right)^{\frac{3}{2}}(Bx + A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{\left(e\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(5/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(5/2), x)
```

sympy [C] time = 13.70, size = 206, normalized size = 0.60

$$\frac{Aa^{\frac{3}{2}}\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\ \frac{1}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{A\sqrt{a}\,c\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right)}+\frac{Ba^{\frac{3}{2}}\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\ \frac{3}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{B\sqrt{a}\,cx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x)**(5/2),x)
```

```
[Out] A*a**(3/2)*gamma(-3/4)*hyper((-3/4, -1/2), (1/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(5/2)*x**(3/2)*gamma(1/4)) + A*sqrt(a)*c*sqrt(x)*gamma(1/4)*hyper((
-1/2, 1/4), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(5/2)*gamma(5/4)) + B*a
**(3/2)*gamma(-1/4)*hyper((-1/2, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a)/(
2*e**(5/2)*sqrt(x)*gamma(3/4)) + B*sqrt(a)*c*x**(3/2)*gamma(3/4)*hyper((-1/
2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(5/2)*gamma(7/4))
```

3.448 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{7/2}}\,dx$

Optimal. Leaf size=339

$$\frac{4\sqrt[4]{a}\,c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15e^3\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4c\sqrt{a+cx^2}\,(9A-5Bx)}{15e^3\sqrt{ex}}-\frac{2(a}{}$$

```
[Out] -2/15*(5*B*x+3*A)*(c*x^2+a)^(3/2)/e/(e*x)^(5/2)-4/15*c*(-5*B*x+9*A)*(c*x^2+
a)^(1/2)/e^3/(e*x)^(1/2)+24/5*A*c^(3/2)*x*(c*x^2+a)^(1/2)/e^3/(a^(1/2)+x*c^
(1/2))/(e*x)^(1/2)-24/5*a^(1/4)*A*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(
1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arct
an(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x
^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)+4/15*a^(
1/4)*c^(3/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(
c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),
1/2*2^(1/2))*(5*B*a^(1/2)+9*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+
a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {811, 813, 842, 840, 1198, 220, 1196}

$$\frac{4\sqrt[4]{a}\,c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15e^3\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4c\sqrt{a+cx^2}\,(9A-5Bx)}{15e^3\sqrt{ex}}-\frac{2(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(7/2),x]
```

```
[Out] (-4*c*(9*A - 5*B*x)*Sqrt[a + c*x^2])/(15*e^3*Sqrt[e*x]) + (24*A*c^(3/2)*x*S
qrt[a + c*x^2])/(5*e^3*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*(3*A + 5*B*x)*
(a + c*x^2)^(3/2))/(15*e*(e*x)^(5/2)) - (24*a^(1/4)*A*c^(5/4)*Sqrt[x]*(Sqrt
[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcT
an[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e^3*Sqrt[e*x]*Sqrt[a + c*x^2]) + (4
*a^(1/4)*(5*Sqrt[a]*B + 9*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*
Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[
x])/a^(1/4)], 1/2])/(15*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{7/2}}\,dx = -\frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} - \frac{2\int \frac{\left(-3aAce^2-5aBce^2x\right)\sqrt{a+cx^2}}{(ex)^{3/2}}\,dx}{5ae^4}$$

$$= -\frac{4c(9A-5Bx)\sqrt{a+cx^2}}{15e^3\sqrt{ex}} - \frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} + \frac{4\int \frac{5a^2Bce^3+9aAc^2e^3x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{15ae^6}$$

$$= -\frac{4c(9A-5Bx)\sqrt{a+cx^2}}{15e^3\sqrt{ex}} - \frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} + \frac{\left(4\sqrt{x}\right)\int \frac{5a^2Bce^3+9aAc^2e^3}{\sqrt{x}\sqrt{a+cx^2}}}{15ae^6\sqrt{ex}}$$

$$= -\frac{4c(9A-5Bx)\sqrt{a+cx^2}}{15e^3\sqrt{ex}} - \frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int \frac{5a^2Bce^3}{\sqrt{}}\right.}{15ae^6}$$

$$= -\frac{4c(9A-5Bx)\sqrt{a+cx^2}}{15e^3\sqrt{ex}} - \frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} + \frac{\left(8\sqrt{a}\left(5\sqrt{a}B+9A\sqrt{c}\right.\right.}{}$$

$$= -\frac{4c(9A-5Bx)\sqrt{a+cx^2}}{15e^3\sqrt{ex}} + \frac{24Ac^{3/2}x\sqrt{a+cx^2}}{5e^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{2(3A+5Bx)\left(a+cx^2\right)^{3/2}}{15e(ex)^{5/2}} -$$

Mathematica [C] time = 0.03, size = 84, normalized size = 0.25

$$-\frac{2ax\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{3}{2},-\frac{5}{4};-\frac{1}{4};-\frac{cx^2}{a}\right)+5Bx\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{4};\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15(ex)^{7/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(7/2),x]
```

```
[Out] (-2*a*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-3/2, -5/4, -1/4, -((c*x^2)/
a)] + 5*B*x*Hypergeometric2F1[-3/2, -3/4, 1/4, -((c*x^2)/a)]))/(15*(e*x)^(7
/2)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^4x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^4*x
^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(7/2), x)
```

maple [A] time = 0.08, size = 329, normalized size = 0.97

$$\frac{\frac{2B\,c^{2}x^{5}}{3}-\frac{14A\,c^{2}x^{4}}{5}+\frac{24\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac\,x^{2}\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{5}-\frac{12\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}}{5}}{\sqrt{c\,x^{2}+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(7/2),x)
```

```
[Out] 2/15/x^2*(36*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c
)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c-18*A*2^(1/2)*((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1
/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),
1/2*2^(1/2))*x^2*a*c+10*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^
(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a+
5*B*c^2*x^5-21*A*c^2*x^4-24*A*a*c*x^2-5*B*a^2*x-3*A*a^2)/(c*x^2+a)^(1/2)/e^
3/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(7/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(7/2), x)
```

sympy [C] time = 37.89, size = 212, normalized size = 0.63

$$\frac{Aa^{\frac{3}{2}}\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{5}{4},-\frac{1}{2}\\-\frac{1}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)}+\frac{A\sqrt{a}\,c\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\\frac{3}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{Ba^{\frac{3}{2}}\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\\frac{1}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{B\sqrt{a}\,c\sqrt{x}\,\Gamma\left(\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x)**(7/2),x)
```

```
[Out] A*a**(3/2)*gamma(-5/4)*hyper((-5/4, -1/2), (-1/4,), c*x**2*exp_polar(I*pi)/
a)/(2*e**(7/2)*x**(5/2)*gamma(-1/4)) + A*sqrt(a)*c*gamma(-1/4)*hyper((-1/2,
 -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(7/2)*sqrt(x)*gamma(3/4)) +
 B*a**(3/2)*gamma(-3/4)*hyper((-3/4, -1/2), (1/4,), c*x**2*exp_polar(I*pi)/
a)/(2*e**(7/2)*x**(3/2)*gamma(1/4)) + B*sqrt(a)*c*sqrt(x)*gamma(1/4)*hyper(
(-1/2, 1/4), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(7/2)*gamma(5/4))
```

3.449 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{9/2}}\,dx$

Optimal. Leaf size=339

$$\frac{4c^{5/4}\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{35\sqrt[4]{a}\,e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4c\sqrt{a+cx^2}\,(5A+21Bx)}{35e^3(ex)^{3/2}}-2\,(a+c$$

```
[Out] -2/35*(7*B*x+5*A)*(c*x^2+a)^(3/2)/e/(e*x)^(7/2)-4/35*c*(21*B*x+5*A)*(c*x^2+
a)^(1/2)/e^3/(e*x)^(3/2)+24/5*B*c^(3/2)*x*(c*x^2+a)^(1/2)/e^4/(a^(1/2)+x*c^
(1/2))/(e*x)^(1/2)-24/5*a^(1/4)*B*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(
1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arct
an(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x
^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/e^4/(e*x)^(1/2)/(c*x^2+a)^(1/2)+4/35*c^(
5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1
/2))*(21*B*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(
1/2)+x*c^(1/2))^2)^(1/2)/a^(1/4)/e^4/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {811, 842, 840, 1198, 220, 1196}

$$\frac{4c^{5/4}\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{35\sqrt[4]{a}\,e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{4c\sqrt{a+cx^2}\,(5A+21Bx)}{35e^3(ex)^{3/2}}-2\,(a+c$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(9/2),x]
```

```
[Out] (-4*c*(5*A + 21*B*x)*Sqrt[a + c*x^2])/(35*e^3*(e*x)^(3/2)) + (24*B*c^(3/2)*
x*Sqrt[a + c*x^2])/(5*e^4*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*(5*A + 7*B*
x)*(a + c*x^2)^(3/2))/(35*e*(e*x)^(7/2)) - (24*a^(1/4)*B*c^(5/4)*Sqrt[x]*(S
qrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*A
rcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e^4*Sqrt[e*x]*Sqrt[a + c*x^2]) +
 (4*(21*Sqrt[a]*B + 5*A*Sqrt[c])*c^(5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt
[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
a^(1/4)], 1/2])/(35*a^(1/4)*e^4*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(ex)^{9/2}}\,dx = -\frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}} - \frac{6\int \frac{\left(-5aAce^2-7aBce^2x\right)\sqrt{a+cx^2}}{(ex)^{5/2}}\,dx}{35ae^4}$$

$$= -\frac{4c(5A+21Bx)\sqrt{a+cx^2}}{35e^3(ex)^{3/2}} - \frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}} + \frac{4\int \frac{5a^2Ac^2e^4+21a^2Bc^2e^4x}{\sqrt{ex}\,\sqrt{a+cx^2}}}{35a^2e^8}$$

$$= -\frac{4c(5A+21Bx)\sqrt{a+cx^2}}{35e^3(ex)^{3/2}} - \frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}} + \frac{\left(4\sqrt{x}\right)\int \frac{5a^2Ac^2e^4+21a^2}{\sqrt{x}\,\sqrt{a+cx}}}{35a^2e^8\sqrt{ex}}$$

$$= -\frac{4c(5A+21Bx)\sqrt{a+cx^2}}{35e^3(ex)^{3/2}} - \frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int \frac{5a^2Ac}{}\right.}{35a^2}$$

$$= -\frac{4c(5A+21Bx)\sqrt{a+cx^2}}{35e^3(ex)^{3/2}} - \frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}} - \frac{\left(24\sqrt{a}\,Bc^{3/2}\sqrt{x}\right)\text{Subs}}{5e^4}$$

$$= -\frac{4c(5A+21Bx)\sqrt{a+cx^2}}{35e^3(ex)^{3/2}} + \frac{24Bc^{3/2}x\sqrt{a+cx^2}}{5e^4\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{2(5A+7Bx)\left(a+cx^2\right)^{3/2}}{35e(ex)^{7/2}}$$

Mathematica [C] time = 0.03, size = 89, normalized size = 0.26

$$-\frac{2a\sqrt{ex}\,\sqrt{a+cx^2}\left(5A\,{}_2F_1\left(-\frac{7}{4},-\frac{3}{2};-\frac{3}{4};-\frac{cx^2}{a}\right)+7Bx\,{}_2F_1\left(-\frac{3}{2},-\frac{5}{4};-\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{35e^5x^4\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(e*x)^(9/2),x]
```

```
[Out] (-2*a*Sqrt[e*x]*Sqrt[a + c*x^2]*(5*A*Hypergeometric2F1[-7/4, -3/2, -3/4, -(
(c*x^2)/a)] + 7*B*x*Hypergeometric2F1[-3/2, -5/4, -1/4, -((c*x^2)/a)]))/(35
*e^5*x^4*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^5x^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^5*x
^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(9/2), x)
```

maple [A] time = 0.08, size = 337, normalized size = 0.99

$$\frac{-\frac{14Bc^2x^5}{5}-\frac{6Ac^2x^4}{7}+\frac{24\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bacx^3\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{5}-\frac{12\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}}{5}}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(9/2),x)
```

```
[Out] 2/35/x^3*(10*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ellip
ticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*c-42*B*2^(1/2
)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2),1/2*2^(1/2))*x^3*a*c+84*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1
/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*a*c-
49*B*c^2*x^5-15*A*c^2*x^4-56*B*a*c*x^3-20*A*a*c*x^2-7*B*a^2*x-5*A*a^2)/(c*x
^2+a)^(1/2)/e^4/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x)^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(9/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(e*x)^(9/2), x)
```

sympy [C] time = 115.63, size = 219, normalized size = 0.65

$$\frac{Aa^{\frac{3}{2}}\Gamma\left(-\frac{7}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{7}{4}, -\frac{1}{2}\\ -\frac{3}{4}\end{matrix}\middle|{\frac{cx^{2}e^{i\pi}}{a}}\right)}{2e^{\frac{9}{2}}x^{\frac{7}{2}}\Gamma\left(-\frac{3}{4}\right)} + \frac{A\sqrt{a}c\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4}, -\frac{1}{2}\\ \frac{1}{4}\end{matrix}\middle|{\frac{cx^{2}e^{i\pi}}{a}}\right)}{2e^{\frac{9}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)} + \frac{Ba^{\frac{3}{2}}\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{5}{4}, -\frac{1}{2}\\ -\frac{1}{4}\end{matrix}\middle|{\frac{cx^{2}e^{i\pi}}{a}}\right)}{2e^{\frac{9}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)} + \frac{B\sqrt{a}c\Gamma(-}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x)**(9/2),x)
```

```
[Out] A*a**(3/2)*gamma(-7/4)*hyper((-7/4, -1/2), (-3/4,), c*x**2*exp_polar(I*pi)/
a)/(2*e**(9/2)*x**(7/2)*gamma(-3/4)) + A*sqrt(a)*c*gamma(-3/4)*hyper((-3/4,
 -1/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(9/2)*x**(3/2)*gamma(1/4))
+ B*a**(3/2)*gamma(-5/4)*hyper((-5/4, -1/2), (-1/4,), c*x**2*exp_polar(I*pi
)/a)/(2*e**(9/2)*x**(5/2)*gamma(-1/4)) + B*sqrt(a)*c*gamma(-1/4)*hyper((-1/
2, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(9/2)*sqrt(x)*gamma(3/4))
```

3.450 $\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=437

$$-\frac{8a^{15/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(231\sqrt{a}\,B+221A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{51051c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{16a^{17/4}Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right.}{221c^{7}}$$

```
[Out] 2/17*B*(e*x)^(3/2)*(c*x^2+a)^(7/2)/c-4/51051*a^2*e*(385*B*x+221*A)*(c*x^2+a
)^(3/2)*(e*x)^(1/2)/c-2/36465*a*e*(495*B*x+221*A)*(c*x^2+a)^(5/2)*(e*x)^(1/
2)/c+2/15*A*e*(c*x^2+a)^(7/2)*(e*x)^(1/2)/c-16/221*a^4*B*e^2*x*(c*x^2+a)^(1
/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-8/51051*a^3*e*(231*B*x+221*A)*(
e*x)^(1/2)*(c*x^2+a)^(1/2)/c+16/221*a^(17/4)*B*e^2*(cos(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(s
in(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1
/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(
1/2)-8/51051*a^(15/4)*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/
cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/
2)/a^(1/4))),1/2*2^(1/2))*(231*B*a^(1/2)+221*A*c^(1/2))*(a^(1/2)+x*c^(1/2))
*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2
+a)^(1/2)
```

Rubi [A] time = 0.57, antiderivative size = 437, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{8a^{15/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(231\sqrt{a}\,B+221A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{51051c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^3e\sqrt{ex}\,\sqrt{a+cx^2}\,(221A}{51051c}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^(3/2)*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (-8*a^3*e*Sqrt[e*x]*(221*A + 231*B*x)*Sqrt[a + c*x^2])/(51051*c) - (16*a^4*
B*e^2*x*Sqrt[a + c*x^2])/(221*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4
*a^2*e*Sqrt[e*x]*(221*A + 385*B*x)*(a + c*x^2)^(3/2))/(51051*c) - (2*a*e*Sq
rt[e*x]*(221*A + 495*B*x)*(a + c*x^2)^(5/2))/(36465*c) + (2*A*e*Sqrt[e*x]*(
a + c*x^2)^(7/2))/(15*c) + (2*B*(e*x)^(3/2)*(a + c*x^2)^(7/2))/(17*c) + (16
*a^(17/4)*B*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + S
qrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(221*c^(7
/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (8*a^(15/4)*(231*Sqrt[a]*B + 221*A*Sqrt[c]
)*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^
2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(51051*c^(7/4)*Sqrt
[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int (ex)^{3/2}(A+Bx)\left(a+cx^2\right)^{5/2}\,dx = \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{7/2}}{17c} + \frac{2\int \sqrt{ex}\left(-\frac{3}{2}aBe+\frac{17}{2}Acex\right)\left(a+cx^2\right)^{5/2}\,dx}{17c}$$

$$= \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{7/2}}{15c} + \frac{2B(ex)^{3/2}\left(a+cx^2\right)^{7/2}}{17c} + \frac{4\int \frac{\left(-\frac{17}{4}aAce^2-\frac{45}{4}aBce^2x\right)\left(a+cx^2\right)}{\sqrt{ex}}}{255c^2}$$

$$= -\frac{2ae\sqrt{ex}\,(221A+495Bx)\left(a+cx^2\right)^{5/2}}{36465c} + \frac{2Ae\sqrt{ex}\left(a+cx^2\right)^{7/2}}{15c} + \frac{2B(ex)^{3/2}\,(}{17}$$

$$= -\frac{4a^2e\sqrt{ex}\,(221A+385Bx)\left(a+cx^2\right)^{3/2}}{51051c} - \frac{2ae\sqrt{ex}\,(221A+495Bx)\left(a+cx^2\right)}{36465c}$$

$$= -\frac{8a^3e\sqrt{ex}\,(221A+231Bx)\sqrt{a+cx^2}}{51051c} - \frac{4a^2e\sqrt{ex}\,(221A+385Bx)\left(a+cx^2\right)^{3/}}{51051c}$$

$$= -\frac{8a^3e\sqrt{ex}\,(221A+231Bx)\sqrt{a+cx^2}}{51051c} - \frac{4a^2e\sqrt{ex}\,(221A+385Bx)\left(a+cx^2\right)^{3/}}{51051c}$$

$$= -\frac{8a^3e\sqrt{ex}\,(221A+231Bx)\sqrt{a+cx^2}}{51051c} - \frac{4a^2e\sqrt{ex}\,(221A+385Bx)\left(a+cx^2\right)^{3/}}{51051c}$$

$$= -\frac{8a^3e\sqrt{ex}\,(221A+231Bx)\sqrt{a+cx^2}}{51051c} - \frac{4a^2e\sqrt{ex}\,(221A+385Bx)\left(a+cx^2\right)^{3/}}{51051c}$$

$$= -\frac{8a^3e\sqrt{ex}\,(221A+231Bx)\sqrt{a+cx^2}}{51051c} - \frac{16a^4Be^2x\sqrt{a+cx^2}}{221c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - 4a^2e\sqrt{ex}$$

Mathematica [C] time = 0.14, size = 124, normalized size = 0.28

$$\frac{2e\sqrt{ex}\sqrt{a+cx^2}\left(-17a^3A\,{}_2F_1\left(-\frac{5}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-15a^3Bx\,{}_2F_1\left(-\frac{5}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+\left(a+cx^2\right)^3\sqrt{\frac{cx^2}{a}+1}\,(17A+15Bx)\right)}{255c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^(3/2)*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (2*e*Sqrt[e*x]*Sqrt[a + c*x^2]*((17*A + 15*B*x)*(a + c*x^2)^3*Sqrt[1 + (c*x
^2)/a] - 17*a^3*A*Hypergeometric2F1[-5/2, 1/4, 5/4, -((c*x^2)/a)] - 15*a^3*
B*x*Hypergeometric2F1[-5/2, 3/4, 7/4, -((c*x^2)/a)]))/(255*c*Sqrt[1 + (c*x^
2)/a])
```

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bc^2ex^6+Ac^2ex^5+2\,Bacex^4+2\,Aacex^3+Ba^2ex^2+Aa^2ex\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*e*x^6 + A*c^2*e*x^5 + 2*B*a*c*e*x^4 + 2*A*a*c*e*x^3 + B*a^2
*e*x^2 + A*a^2*e*x)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*(e*x)^(3/2), x)
```

maple [A] time = 0.10, size = 390, normalized size = 0.89

$$-\frac{2\sqrt{ex}\,\left(-15015B\,c^5x^{10}-17017A\,c^5x^9-56595Ba\,c^4x^8-66521Aa\,c^4x^7-75845B\,a^2c^3x^6-95251A\,a^2c^3x^5-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] -2/255255*e/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^2*(-15015*B*x^10*c^5-17017*A*x^
9*c^5-56595*B*x^8*a*c^4-66521*A*x^7*a*c^4-75845*B*x^6*a^2*c^3+4420*A*2^(1/2
)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a^4-95251*A*x^5*a^2*c^3+9240*B*2^(1/2)
*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2),1/2*2^(1/2))*a^5-4620*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)
*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^5-37345*B
*x^4*a^3*c^2-54587*A*x^3*a^3*c^2-3080*B*x^2*a^4*c-8840*A*x*a^4*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*(e*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^{3/2}\,\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(3/2)*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [C] time = 53.61, size = 301, normalized size = 0.69

$$\frac{Aa^{\frac{5}{2}}e^{\frac{3}{2}}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{9}{4}\right)}+\frac{Aa^{\frac{3}{2}}ce^{\frac{3}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{\Gamma\left(\frac{13}{4}\right)}+\frac{A\sqrt{a}\,c^{2}e^{\frac{3}{2}}x^{\frac{13}{2}}\Gamma\left(\frac{13}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{13}{4}\\ \frac{17}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{17}{4}\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**(5/2)*e**(3/2)*x**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*e
xp_polar(I*pi)/a)/(2*gamma(9/4)) + A*a**(3/2)*c*e**(3/2)*x**(9/2)*gamma(9/4
)*hyper((-1/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/gamma(13/4) + A*sqr
t(a)*c**2*e**(3/2)*x**(13/2)*gamma(13/4)*hyper((-1/2, 13/4), (17/4,), c*x**
2*exp_polar(I*pi)/a)/(2*gamma(17/4)) + B*a**(5/2)*e**(3/2)*x**(7/2)*gamma(7
/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(11/4)) +
 B*a**(3/2)*c*e**(3/2)*x**(11/2)*gamma(11/4)*hyper((-1/2, 11/4), (15/4,), c
*x**2*exp_polar(I*pi)/a)/gamma(15/4) + B*sqrt(a)*c**2*e**(3/2)*x**(15/2)*ga
mma(15/4)*hyper((-1/2, 15/4), (19/4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(1
9/4))
```

3.451 $\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=404

$$-\frac{8a^{13/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(13\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3003c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{16a^{13/4}Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{39c^{3/4}}$$

```
[Out] -4/9009*a*(-385*A*c*x+39*B*a)*(c*x^2+a)^(3/2)*(e*x)^(1/2)/c-2/2145*(-165*A*
c*x+13*B*a)*(c*x^2+a)^(5/2)*(e*x)^(1/2)/c+2/15*B*(c*x^2+a)^(7/2)*(e*x)^(1/2
)/c+16/39*a^3*A*e*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)
-8/3003*a^2*(-77*A*c*x+13*B*a)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c-16/39*a^(13/4)
*A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1
/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^
(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-8/3003*a^(13/4)*e*(cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(
sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(13*B*a^(1/2)-77*A*c^(1
/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^
(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {833, 815, 842, 840, 1198, 220, 1196}

$$-\frac{8a^{13/4}e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(13\sqrt{a}\,B-77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3003c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8a^2\sqrt{ex}\,\sqrt{a+cx^2}\,(13aB-}{3003c}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[e*x]*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (16*a^3*A*e*x*Sqrt[a + c*x^2])/(39*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
 - (8*a^2*Sqrt[e*x]*(13*a*B - 77*A*c*x)*Sqrt[a + c*x^2])/(3003*c) - (4*a*Sq
rt[e*x]*(39*a*B - 385*A*c*x)*(a + c*x^2)^(3/2))/(9009*c) - (2*Sqrt[e*x]*(13
*a*B - 165*A*c*x)*(a + c*x^2)^(5/2))/(2145*c) + (2*B*Sqrt[e*x]*(a + c*x^2)^
(7/2))/(15*c) - (16*a^(13/4)*A*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*
x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)]
, 1/2])/(39*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (8*a^(13/4)*(13*Sqrt[a]*B
- 77*A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] +
 Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(3003*c
^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{ex}\,(A+Bx)\left(a+cx^2\right)^{5/2}\,dx &= \frac{2B\sqrt{ex}\,\left(a+cx^2\right)^{7/2}}{15c} + \frac{2\int \frac{\left(-\frac{1}{2}aBe+\frac{15}{2}Acex\right)\left(a+cx^2\right)^{5/2}}{\sqrt{ex}}\,dx}{15c} \\
&= -\frac{2\sqrt{ex}\,(13aB-165Acx)\left(a+cx^2\right)^{5/2}}{2145c} + \frac{2B\sqrt{ex}\,\left(a+cx^2\right)^{7/2}}{15c} + 8\int \left(-\frac{13}{4}a^2Bce \right. \\
&= -\frac{4a\sqrt{ex}\,(39aB-385Acx)\left(a+cx^2\right)^{3/2}}{9009c} - \frac{2\sqrt{ex}\,(13aB-165Acx)\left(a+cx^2\right)^{5}}{2145c} \\
&= -\frac{8a^2\sqrt{ex}\,(13aB-77Acx)\sqrt{a+cx^2}}{3003c} - \frac{4a\sqrt{ex}\,(39aB-385Acx)\left(a+cx^2\right)^{3/2}}{9009c} \\
&= -\frac{8a^2\sqrt{ex}\,(13aB-77Acx)\sqrt{a+cx^2}}{3003c} - \frac{4a\sqrt{ex}\,(39aB-385Acx)\left(a+cx^2\right)^{3/2}}{9009c} \\
&= -\frac{8a^2\sqrt{ex}\,(13aB-77Acx)\sqrt{a+cx^2}}{3003c} - \frac{4a\sqrt{ex}\,(39aB-385Acx)\left(a+cx^2\right)^{3/2}}{9009c} \\
&= -\frac{8a^2\sqrt{ex}\,(13aB-77Acx)\sqrt{a+cx^2}}{3003c} - \frac{4a\sqrt{ex}\,(39aB-385Acx)\left(a+cx^2\right)^{3/2}}{9009c} \\
&= \frac{16a^3Aex\sqrt{a+cx^2}}{39\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{8a^2\sqrt{ex}\,(13aB-77Acx)\sqrt{a+cx^2}}{3003c} - 4a\sqrt{ex}\,(39a
\end{aligned}$$

Mathematica [C] time = 0.09, size = 117, normalized size = 0.29

$$\frac{2\sqrt{ex}\,\sqrt{a+cx^2}\left(a^3(-B)\,{}_2F_1\left(-\frac{5}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+5a^2Acx\,{}_2F_1\left(-\frac{5}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+B\left(a+cx^2\right)^3\sqrt{\frac{cx^2}{a}+1}\right)}{15c\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[e*x]*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[e*x]*Sqrt[a + c*x^2]*(B*(a + c*x^2)^3*Sqrt[1 + (c*x^2)/a] - a^3*B*H
ypergeometric2F1[-5/2, 1/4, 5/4, -((c*x^2)/a)] + 5*a^2*A*c*x*Hypergeometric
2F1[-5/2, 3/4, 7/4, -((c*x^2)/a)]))/(15*c*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.33, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\sqrt{ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*sqrt(e*x), x)
```

maple [A] time = 0.07, size = 381, normalized size = 0.94

$$-\frac{2\sqrt{ex}\,\left(-3003B\,c^{5}x^{9}-3465A\,c^{5}x^{8}-11739Ba\,c^{4}x^{7}-14245Aa\,c^{4}x^{6}-16809B\,a^{2}c^{3}x^{5}-22715A\,a^{2}c^{3}x^{4}-9633B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] -2/45045*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(-3003*B*c^5*x^9-3465*A*c^5*x^8-11739*
B*a*c^4*x^7-14245*A*a*c^4*x^6+4620*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1
/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4*c-92
40*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4*c+780*B*2^(1/2)*((c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/
2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2)
)*(-a*c)^(1/2)*a^4-16809*B*a^2*c^3*x^5-22715*A*a^2*c^3*x^4-9633*B*a^3*c^2*x
^3-11935*A*a^3*c^2*x^2-1560*B*a^4*c*x)/c^2/x
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\sqrt{ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{e\,x}\,\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((e*x)^(1/2)*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [C] time = 15.28, size = 299, normalized size = 0.74

$$\frac{Aa^{\frac{5}{2}}\left(ex\right)^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\ \frac{3}{4}\\ \frac{7}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e\Gamma\left(\frac{7}{4}\right)}+\frac{Aa^{\frac{3}{2}}c\left(ex\right)^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\ \frac{7}{4}\\ \frac{11}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{e^{3}\Gamma\left(\frac{11}{4}\right)}+\frac{A\sqrt{a}c^{2}\left(ex\right)^{\frac{11}{2}}\Gamma\left(\frac{11}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\ \frac{11}{4}\\ \frac{15}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{5}\Gamma\left(\frac{15}{4}\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**(5/2)*(e*x)**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_po
lar(I*pi)/a)/(2*e*gamma(7/4)) + A*a**(3/2)*c*(e*x)**(7/2)*gamma(7/4)*hyper(
(-1/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(e**3*gamma(11/4)) + A*sqrt
(a)*c**2*(e*x)**(11/2)*gamma(11/4)*hyper((-1/2, 11/4), (15/4,), c*x**2*exp_
polar(I*pi)/a)/(2*e**5*gamma(15/4)) + B*a**(5/2)*(e*x)**(5/2)*gamma(5/4)*hy
per((-1/2, 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**2*gamma(9/4)) + B*
a**(3/2)*c*(e*x)**(9/2)*gamma(9/4)*hyper((-1/2, 9/4), (13/4,), c*x**2*exp_p
olar(I*pi)/a)/(e**4*gamma(13/4)) + B*sqrt(a)*c**2*(e*x)**(13/2)*gamma(13/4)
*hyper((-1/2, 13/4), (17/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**6*gamma(17/4)
)
```

3.452 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{\sqrt{ex}}\,dx$

Optimal. Leaf size=369

$$\frac{8a^{11/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+195A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3003c^{3/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{16a^{13/4}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{39c^{3/4}\sqrt{ex}}$$

```
[Out] 20/9009*a*(77*B*x+117*A)*(c*x^2+a)^(3/2)*(e*x)^(1/2)/e+2/143*(11*B*x+13*A)*
(c*x^2+a)^(5/2)*(e*x)^(1/2)/e+16/39*a^3*B*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2
)+x*c^(1/2))/(e*x)^(1/2)+8/3003*a^2*(77*B*x+195*A)*(e*x)^(1/2)*(c*x^2+a)^(1
/2)/e-16/39*a^(13/4)*B*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos
(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/
a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^
(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/3003*a^(11/4)*(cos(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(77*B*a
^(1/2)+195*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(
1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {815, 842, 840, 1198, 220, 1196}

$$\frac{8a^{11/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+195A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3003c^{3/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{8a^2\sqrt{ex}\sqrt{a+cx^2}\,(195A+77B}{3003e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/Sqrt[e*x],x]
```

```
[Out] (8*a^2*Sqrt[e*x]*(195*A + 77*B*x)*Sqrt[a + c*x^2])/(3003*e) + (16*a^3*B*x*S
qrt[a + c*x^2])/(39*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (20*a*Sqrt[e
*x]*(117*A + 77*B*x)*(a + c*x^2)^(3/2))/(9009*e) + (2*Sqrt[e*x]*(13*A + 11*
B*x)*(a + c*x^2)^(5/2))/(143*e) - (16*a^(13/4)*B*Sqrt[x]*(Sqrt[a] + Sqrt[c]
*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*S
qrt[x])/a^(1/4)], 1/2])/(39*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*a^(11/4
)*(77*Sqrt[a]*B + 195*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*
x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)]
, 1/2])/(3003*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{\sqrt{ex}}\,dx = \frac{2\sqrt{ex}\,(13A+11Bx)\left(a+cx^2\right)^{5/2}}{143e} + \frac{20\int \frac{\left(\frac{13}{2}aAce^2+\frac{11}{2}aBce^2x\right)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx}{143ce^2}$$

$$= \frac{20a\sqrt{ex}\,(117A+77Bx)\left(a+cx^2\right)^{3/2}}{9009e} + \frac{2\sqrt{ex}\,(13A+11Bx)\left(a+cx^2\right)^{5/2}}{143e} + \frac{80\int \left(\frac{117}{4}\right.}{}$$

$$= \frac{8a^2\sqrt{ex}\,(195A+77Bx)\sqrt{a+cx^2}}{3003e} + \frac{20a\sqrt{ex}\,(117A+77Bx)\left(a+cx^2\right)^{3/2}}{9009e} + \frac{2\sqrt{ex}\,(1}{}$$

$$= \frac{8a^2\sqrt{ex}\,(195A+77Bx)\sqrt{a+cx^2}}{3003e} + \frac{20a\sqrt{ex}\,(117A+77Bx)\left(a+cx^2\right)^{3/2}}{9009e} + \frac{2\sqrt{ex}\,(1}{}$$

$$= \frac{8a^2\sqrt{ex}\,(195A+77Bx)\sqrt{a+cx^2}}{3003e} + \frac{20a\sqrt{ex}\,(117A+77Bx)\left(a+cx^2\right)^{3/2}}{9009e} + \frac{2\sqrt{ex}\,(1}{}$$

$$= \frac{8a^2\sqrt{ex}\,(195A+77Bx)\sqrt{a+cx^2}}{3003e} + \frac{20a\sqrt{ex}\,(117A+77Bx)\left(a+cx^2\right)^{3/2}}{9009e} + \frac{2\sqrt{ex}\,(1}{}$$

$$= \frac{8a^2\sqrt{ex}\,(195A+77Bx)\sqrt{a+cx^2}}{3003e} + \frac{16a^3Bx\sqrt{a+cx^2}}{39\sqrt{c}\,\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{20a\sqrt{ex}\,(117A+77}{900}$$

Mathematica [C] time = 0.03, size = 85, normalized size = 0.23

$$\frac{2a^2x\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{5}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)+Bx\,{}_2F_1\left(-\frac{5}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{3\sqrt{ex}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/Sqrt[e*x],x]
```

```
[Out] (2*a^2*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-5/2, 1/4, 5/4, -((c*x^2)/a
)] + B*x*Hypergeometric2F1[-5/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*Sqrt[e*x]*Sqr
t[1 + (c*x^2)/a])
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/sqrt(e*x), x)
```

maple [A] time = 0.09, size = 362, normalized size = 0.98

$$\frac{\frac{2Bc^4x^8}{13}+\frac{2Ac^4x^7}{11}+\frac{74Bac^3x^6}{117}+\frac{62Aac^3x^5}{77}+\frac{118Ba^2c^2x^4}{117}+\frac{122Aa^2c^2x^3}{77}+\frac{62Ba^3cx^2}{117}+\frac{74Aa^3cx}{77}+\frac{16\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(1/2),x)
```

```
[Out] 2/9009/(c*x^2+a)^(1/2)/c*(693*B*c^4*x^8+819*A*c^4*x^7+2849*B*a*c^3*x^6+2340
*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3+3627*A*a*c^3*x^5+1848*B*2
^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2),1/2*2^(1/2))*a^4-924*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^
(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^4+45
43*B*a^2*c^2*x^4+7137*A*a^2*c^2*x^3+2387*B*a^3*c*x^2+4329*A*a^3*c*x)/(e*x)^
(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/sqrt(e*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{\sqrt{e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(1/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(1/2), x)
```

sympy [C] time = 18.20, size = 301, normalized size = 0.82

$$\frac{Aa^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)}+\frac{Aa^{\frac{3}{2}}cx^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{\sqrt{e}\,\Gamma\left(\frac{9}{4}\right)}+\frac{A\sqrt{a}\,c^{2}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{e}\,\Gamma\left(\frac{13}{4}\right)}+\frac{Ba^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(1/2),x)
```

```
[Out] A*a**(5/2)*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_polar(I
*pi)/a)/(2*sqrt(e)*gamma(5/4)) + A*a**(3/2)*c*x**(5/2)*gamma(5/4)*hyper((-1
/2, 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(sqrt(e)*gamma(9/4)) + A*sqrt(a
)*c**2*x**(9/2)*gamma(9/4)*hyper((-1/2, 9/4), (13/4,), c*x**2*exp_polar(I*p
i)/a)/(2*sqrt(e)*gamma(13/4)) + B*a**(5/2)*x**(3/2)*gamma(3/4)*hyper((-1/2,
 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(e)*gamma(7/4)) + B*a**(3/2
)*c*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/
a)/(sqrt(e)*gamma(11/4)) + B*sqrt(a)*c**2*x**(11/2)*gamma(11/4)*hyper((-1/2
, 11/4), (15/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(e)*gamma(15/4))
```

3.453 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{3/2}}\,dx$

Optimal. Leaf size=379

$$\frac{8a^{9/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(15\sqrt{a}\,B+77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{231\sqrt[4]{c}\,e\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{16a^{9/4}A\sqrt[4]{c}\,\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{3e\sqrt{ex}}$$

```
[Out] -2/11*(-B*x+11*A)*(c*x^2+a)^(5/2)/e/(e*x)^(1/2)+20/693*(77*A*c*x+9*B*a)*(c*
x^2+a)^(3/2)*(e*x)^(1/2)/e^2+16/3*a^2*A*x*c^(1/2)*(c*x^2+a)^(1/2)/e/(a^(1/2
)+x*c^(1/2))/(e*x)^(1/2)+8/231*a*(77*A*c*x+15*B*a)*(e*x)^(1/2)*(c*x^2+a)^(1
/2)/e^2-16/3*a^(9/4)*A*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(
1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1
/2)+x*c^(1/2))^2)^(1/2)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/231*a^(9/4)*(cos(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(15*B*a
^(1/2)+77*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1
/2))^2)^(1/2)/c^(1/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 379, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {813, 815, 842, 840, 1198, 220, 1196}

$$\frac{8a^{9/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(15\sqrt{a}\,B+77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{231\sqrt[4]{c}\,e\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{16a^2A\sqrt{c}\,x\sqrt{a+cx^2}}{3e\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{16a^{9/4}A}{\ }$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(3/2),x]
```

```
[Out] (16*a^2*A*Sqrt[c]*x*Sqrt[a + c*x^2])/(3*e*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
+ (8*a*Sqrt[e*x]*(15*a*B + 77*A*c*x)*Sqrt[a + c*x^2])/(231*e^2) + (20*Sqrt[
e*x]*(9*a*B + 77*A*c*x)*(a + c*x^2)^(3/2))/(693*e^2) - (2*(11*A - B*x)*(a +
 c*x^2)^(5/2))/(11*e*Sqrt[e*x]) - (16*a^(9/4)*A*c^(1/4)*Sqrt[x]*(Sqrt[a] +
Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^
(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(3*e*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*a^(9/4)
*(15*Sqrt[a]*B + 77*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^
2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)],
1/2])/(231*c^(1/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{3/2}}\,dx = -\frac{2(11A-Bx)\left(a+cx^2\right)^{5/2}}{11e\sqrt{ex}} - \frac{10\int \frac{(-aBe-11Acex)\left(a+cx^2\right)^{3/2}}{\sqrt{ex}}\,dx}{11e^2}$$

$$= \frac{20\sqrt{ex}\,(9aB+77Acx)\left(a+cx^2\right)^{3/2}}{693e^2} - \frac{2(11A-Bx)\left(a+cx^2\right)^{5/2}}{11e\sqrt{ex}} - \frac{40\int \frac{\left(-\frac{9}{2}a^2Bce^3-\right.}{}}{2}$$

$$= \frac{8a\sqrt{ex}\,(15aB+77Acx)\sqrt{a+cx^2}}{231e^2} + \frac{20\sqrt{ex}\,(9aB+77Acx)\left(a+cx^2\right)^{3/2}}{693e^2} - 2(11A$$

$$= \frac{8a\sqrt{ex}\,(15aB+77Acx)\sqrt{a+cx^2}}{231e^2} + \frac{20\sqrt{ex}\,(9aB+77Acx)\left(a+cx^2\right)^{3/2}}{693e^2} - 2(11A$$

$$= \frac{8a\sqrt{ex}\,(15aB+77Acx)\sqrt{a+cx^2}}{231e^2} + \frac{20\sqrt{ex}\,(9aB+77Acx)\left(a+cx^2\right)^{3/2}}{693e^2} - 2(11A$$

$$= \frac{8a\sqrt{ex}\,(15aB+77Acx)\sqrt{a+cx^2}}{231e^2} + \frac{20\sqrt{ex}\,(9aB+77Acx)\left(a+cx^2\right)^{3/2}}{693e^2} - 2(11A$$

$$= \frac{16a^2A\sqrt{c}\,x\sqrt{a+cx^2}}{3e\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{8a\sqrt{ex}\,(15aB+77Acx)\sqrt{a+cx^2}}{231e^2} + \frac{20\sqrt{ex}\,(9aB+77A}{693e}$$

Mathematica [C] time = 0.03, size = 83, normalized size = 0.22

$$\frac{2a^2x\sqrt{a+cx^2}\left(Bx\,{}_2F_1\left(-\frac{5}{2},\frac{1}{4};\frac{5}{4};-\frac{cx^2}{a}\right)-A\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{(ex)^{3/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(3/2),x]
```

```
[Out] (2*a^2*x*Sqrt[a + c*x^2]*(-(A*Hypergeometric2F1[-5/2, -1/4, 3/4, -((c*x^2)/
a)]) + B*x*Hypergeometric2F1[-5/2, 1/4, 5/4, -((c*x^2)/a)]))/((e*x)^(3/2)*S
qrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(3/2), x)
```

maple [A] time = 0.08, size = 364, normalized size = 0.96

$$-\frac{2\left(-63B\,c^4x^7-77A\,c^4x^6-279Ba\,c^3x^5-385Aa\,c^3x^4-549B\,a^2c^2x^3+385A\,a^2c^2x^2-1848\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(3/2),x)
```

```
[Out] -2/693*(-63*B*c^4*x^7-77*A*c^4*x^6+924*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x
)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3*
c-1848*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3*c-180*B*2^(1/2)*((c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)
^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(
1/2))*(-a*c)^(1/2)*a^3-279*B*a*c^3*x^5-385*A*a*c^3*x^4-549*B*a^2*c^2*x^3+38
5*A*a^2*c^2*x^2-333*B*a^3*c*x+693*a^3*A*c)/(c*x^2+a)^(1/2)/c/e/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(3/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(3/2), x)
```

sympy [C] time = 18.55, size = 304, normalized size = 0.80

$$\frac{Aa^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\ \frac{3}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{Aa^{\frac{3}{2}}cx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{e^{\frac{3}{2}}\Gamma\left(\frac{7}{4}\right)}+\frac{A\sqrt{a}\,c^2x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{3}{2}}\Gamma\left(\frac{11}{4}\right)}+\frac{Ba^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{1}{4}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(3/2),x)
```

```
[Out] A*a**(5/2)*gamma(-1/4)*hyper((-1/2, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(3/2)*sqrt(x)*gamma(3/4)) + A*a**(3/2)*c*x**(3/2)*gamma(3/4)*hyper(
(-1/2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(e**(3/2)*gamma(7/4)) + A*sq
rt(a)*c**2*x**(7/2)*gamma(7/4)*hyper((-1/2, 7/4), (11/4,), c*x**2*exp_polar
(I*pi)/a)/(2*e**(3/2)*gamma(11/4)) + B*a**(5/2)*sqrt(x)*gamma(1/4)*hyper((-
1/2, 1/4), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(3/2)*gamma(5/4)) + B*a*
*(3/2)*c*x**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*exp_polar(I*
pi)/a)/(e**(3/2)*gamma(9/4)) + B*sqrt(a)*c**2*x**(9/2)*gamma(9/4)*hyper((-1
/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(3/2)*gamma(13/4))
```

3.454 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{5/2}}\,dx$

Optimal. Leaf size=378

$$\frac{8a^{7/4}\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{21e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{16a^{9/4}B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{3e^2\sqrt{ex}}$$

```
[Out] -2/9*(-B*x+3*A)*(c*x^2+a)^(5/2)/e/(e*x)^(3/2)-20/63*(-3*A*c*x+7*B*a)*(c*x^2
+a)^(3/2)/e^2/(e*x)^(1/2)+16/3*a^2*B*x*c^(1/2)*(c*x^2+a)^(1/2)/e^2/(a^(1/2)
+x*c^(1/2))/(e*x)^(1/2)+8/21*a*c*(7*B*x+5*A)*(e*x)^(1/2)*(c*x^2+a)^(1/2)/e^
3-16/3*a^(9/4)*B*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/c
os(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*
c^(1/2))^2)^(1/2)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/21*a^(7/4)*c^(1/4)*(cos
(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a
^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(7*B
*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(
1/2))^2)^(1/2)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 378, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {813, 815, 842, 840, 1198, 220, 1196}

$$\frac{8a^{7/4}\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{21e^2\sqrt{ex}\sqrt{a+cx^2}}+\frac{16a^2B\sqrt{c}\,x\sqrt{a+cx^2}}{3e^2\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{16a^{9/4}B}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(5/2),x]
```

```
[Out] (8*a*c*Sqrt[e*x]*(5*A + 7*B*x)*Sqrt[a + c*x^2])/(21*e^3) + (16*a^2*B*Sqrt[c
]*x*Sqrt[a + c*x^2])/(3*e^2*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (20*(7*a*B -
 3*A*c*x)*(a + c*x^2)^(3/2))/(63*e^2*Sqrt[e*x]) - (2*(3*A - B*x)*(a + c*x^2
)^(5/2))/(9*e*(e*x)^(3/2)) - (16*a^(9/4)*B*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[
c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)
*Sqrt[x])/a^(1/4)], 1/2])/(3*e^2*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*a^(7/4)*(7
*Sqrt[a]*B + 5*A*Sqrt[c])*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c
*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)
], 1/2])/(21*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{5/2}}\,dx = -\frac{2(3A-Bx)\left(a+cx^2\right)^{5/2}}{9e(ex)^{3/2}} - \frac{10\int \frac{(-3aBe-9Acex)\left(a+cx^2\right)^{3/2}}{(ex)^{3/2}}\,dx}{27e^2}$$

$$= -\frac{20(7aB-3Acx)\left(a+cx^2\right)^{3/2}}{63e^2\sqrt{ex}} - \frac{2(3A-Bx)\left(a+cx^2\right)^{5/2}}{9e(ex)^{3/2}} + \frac{20\int \frac{\left(9aAce^2+21aBce^2x\right)\sqrt{a}}{\sqrt{ex}}}{63e^4}$$

$$= \frac{8ac\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{21e^3} - \frac{20(7aB-3Acx)\left(a+cx^2\right)^{3/2}}{63e^2\sqrt{ex}} - \frac{2(3A-Bx)\left(a+c\right.}{9e(ex)^{3/2}}$$

$$= \frac{8ac\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{21e^3} - \frac{20(7aB-3Acx)\left(a+cx^2\right)^{3/2}}{63e^2\sqrt{ex}} - \frac{2(3A-Bx)\left(a+c\right.}{9e(ex)^{3/2}}$$

$$= \frac{8ac\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{21e^3} - \frac{20(7aB-3Acx)\left(a+cx^2\right)^{3/2}}{63e^2\sqrt{ex}} - \frac{2(3A-Bx)\left(a+c\right.}{9e(ex)^{3/2}}$$

$$= \frac{8ac\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{21e^3} - \frac{20(7aB-3Acx)\left(a+cx^2\right)^{3/2}}{63e^2\sqrt{ex}} - \frac{2(3A-Bx)\left(a+c\right.}{9e(ex)^{3/2}}$$

$$= \frac{8ac\sqrt{ex}\,(5A+7Bx)\sqrt{a+cx^2}}{21e^3} + \frac{16a^2B\sqrt{c}\,x\sqrt{a+cx^2}}{3e^2\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{20(7aB-3Acx)\left(a+cx^2\right)}{63e^2\sqrt{ex}}$$

Mathematica [C] time = 0.03, size = 85, normalized size = 0.22

$$-\frac{2a^2x\sqrt{a+cx^2}\left(A\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{4};\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{4};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3(ex)^{5/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(5/2),x]
```

```
[Out] (-2*a^2*x*Sqrt[a + c*x^2]*(A*Hypergeometric2F1[-5/2, -3/4, 1/4, -((c*x^2)/a
)] + 3*B*x*Hypergeometric2F1[-5/2, -1/4, 3/4, -((c*x^2)/a)]))/(3*(e*x)^(5/2
)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(5/2), x)
```

maple [A] time = 0.08, size = 359, normalized size = 0.95

$$\frac{2Bc^3x^7}{9}+\frac{2Ac^3x^6}{7}+\frac{10Bac^2x^5}{9}+\frac{38Aac^2x^4}{21}-\frac{10Ba^2cx^3}{9}+\frac{6Aa^2cx^2}{7}+\frac{16\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-ac}}}\sqrt{2}\,Ba^3x\,\mathrm{EllipticE}\left(\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(5/2),x)
```

```
[Out] 2/63/x*(7*B*c^3*x^7+60*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*(-a*c)^(1/2)*x*a^2+9
*A*c^3*x^6+168*B*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*x*a^3-84*B*((c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^
(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1
/2))*2^(1/2)*x*a^3+35*B*a*c^2*x^5+57*A*a*c^2*x^4-35*B*a^2*c*x^3+27*A*a^2*c*
x^2-63*B*a^3*x-21*A*a^3)/(c*x^2+a)^(1/2)/e^2/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(5/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(5/2), x)
```

sympy [C] time = 24.28, size = 308, normalized size = 0.81

$$\frac{Aa^{\frac{5}{2}}\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\ \frac{1}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{Aa^{\frac{3}{2}}c\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{1}{4}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{e^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right)}+\frac{A\sqrt{a}\,c^2x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{5}{2}}\Gamma\left(\frac{9}{4}\right)}+\frac{Ba^{\frac{5}{2}}\Gamma\left(-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(5/2),x)
```

```
[Out] A*a**(5/2)*gamma(-3/4)*hyper((-3/4, -1/2), (1/4,), c*x**2*exp_polar(I*pi)/a
)/(2*e**(5/2)*x**(3/2)*gamma(1/4)) + A*a**(3/2)*c*sqrt(x)*gamma(1/4)*hyper(
(-1/2, 1/4), (5/4,), c*x**2*exp_polar(I*pi)/a)/(e**(5/2)*gamma(5/4)) + A*sq
rt(a)*c**2*x**(5/2)*gamma(5/4)*hyper((-1/2, 5/4), (9/4,), c*x**2*exp_polar(
I*pi)/a)/(2*e**(5/2)*gamma(9/4)) + B*a**(5/2)*gamma(-1/4)*hyper((-1/2, -1/4
), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(5/2)*sqrt(x)*gamma(3/4)) + B*a*
*(3/2)*c*x**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_polar(I*
pi)/a)/(e**(5/2)*gamma(7/4)) + B*sqrt(a)*c**2*x**(7/2)*gamma(7/4)*hyper((-1
/2, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(5/2)*gamma(11/4))
```

3.455 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{7/2}}\,dx$

Optimal. Leaf size=376

$$\frac{8a^{5/4}c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105e^3\sqrt{ex}\sqrt{a+cx^2}}-\frac{48a^{5/4}Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\right.}{5e^3}$$

```
[Out] -4/105*(-21*A*c*x+25*B*a)*(c*x^2+a)^(3/2)/e^2/(e*x)^(3/2)-2/35*(-5*B*x+7*A)
*(c*x^2+a)^(5/2)/e/(e*x)^(5/2)-8/105*a*c*(-25*B*x+63*A)*(c*x^2+a)^(1/2)/e^3
/(e*x)^(1/2)+48/5*a*A*c^(3/2)*x*(c*x^2+a)^(1/2)/e^3/(a^(1/2)+x*c^(1/2))/(e*
x)^(1/2)-48/5*a^(5/4)*A*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^
(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)
*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(
1/2)+x*c^(1/2))^2)^(1/2)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/105*a^(5/4)*c^(3
/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/
2))*(25*B*a^(1/2)+63*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(
1/2)+x*c^(1/2))^2)^(1/2)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.41, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {813, 842, 840, 1198, 220, 1196}

$$\frac{8a^{5/4}c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105e^3\sqrt{ex}\sqrt{a+cx^2}}-\frac{48a^{5/4}Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\right.}{5e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(7/2),x]
```

```
[Out] (-8*a*c*(63*A - 25*B*x)*Sqrt[a + c*x^2])/(105*e^3*Sqrt[e*x]) + (48*a*A*c^(3
/2)*x*Sqrt[a + c*x^2])/(5*e^3*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4*(25*a*B
 - 21*A*c*x)*(a + c*x^2)^(3/2))/(105*e^2*(e*x)^(3/2)) - (2*(7*A - 5*B*x)*(a
 + c*x^2)^(5/2))/(35*e*(e*x)^(5/2)) - (48*a^(5/4)*A*c^(5/4)*Sqrt[x]*(Sqrt[a
] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan
[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e^3*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*a
^(5/4)*(25*Sqrt[a]*B + 63*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*
Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[
x])/a^(1/4)], 1/2])/(105*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{7/2}}\,dx = -\frac{2(7A-5Bx)\left(a+cx^2\right)^{5/2}}{35e(ex)^{5/2}} - \frac{2\int \frac{(-5aBe-7Acex)\left(a+cx^2\right)^{3/2}}{(ex)^{5/2}}\,dx}{7e^2}$$

$$= -\frac{4(25aB-21Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{3/2}} - \frac{2(7A-5Bx)\left(a+cx^2\right)^{5/2}}{35e(ex)^{5/2}} + \frac{4\int \frac{\left(21aAce^2+25aBce^2x\right)}{(ex)^{3/2}}}{35e^4}$$

$$= -\frac{8ac(63A-25Bx)\sqrt{a+cx^2}}{105e^3\sqrt{ex}} - \frac{4(25aB-21Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{3/2}} - \frac{2(7A-5Bx)\left(a+\right.}{35e(ex)^{5/2}}$$

$$= -\frac{8ac(63A-25Bx)\sqrt{a+cx^2}}{105e^3\sqrt{ex}} - \frac{4(25aB-21Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{3/2}} - \frac{2(7A-5Bx)\left(a+\right.}{35e(ex)^{5/2}}$$

$$= -\frac{8ac(63A-25Bx)\sqrt{a+cx^2}}{105e^3\sqrt{ex}} - \frac{4(25aB-21Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{3/2}} - \frac{2(7A-5Bx)\left(a+\right.}{35e(ex)^{5/2}}$$

$$= -\frac{8ac(63A-25Bx)\sqrt{a+cx^2}}{105e^3\sqrt{ex}} - \frac{4(25aB-21Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{3/2}} - \frac{2(7A-5Bx)\left(a+\right.}{35e(ex)^{5/2}}$$

$$= -\frac{8ac(63A-25Bx)\sqrt{a+cx^2}}{105e^3\sqrt{ex}} + \frac{48aAc^{3/2}x\sqrt{a+cx^2}}{5e^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4(25aB-21Acx)\left(a+cx^2\right.}{105e^2(ex)^{3/2}}$$

Mathematica [C] time = 0.03, size = 86, normalized size = 0.23

$$-\frac{2a^2x\sqrt{a+cx^2}\left(3A\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{4};-\frac{1}{4};-\frac{cx^2}{a}\right)+5Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{4};\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15(ex)^{7/2}\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(7/2),x]
```

```
[Out] (-2*a^2*x*Sqrt[a + c*x^2]*(3*A*Hypergeometric2F1[-5/2, -5/4, -1/4, -((c*x^2
)/a)] + 5*B*x*Hypergeometric2F1[-5/2, -3/4, 1/4, -((c*x^2)/a)]))/(15*(e*x)^
(7/2)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^4x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(7/2), x)
```

maple [A] time = 0.09, size = 367, normalized size = 0.98

$$-\frac{2\left(-15B\,c^3x^7-21A\,c^3x^6-95Ba\,c^2x^5+231Aa\,c^2x^4-504\sqrt{2}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,A\,a^2c\,x^2\,\mathrm{Ellip}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(7/2),x)
```

```
[Out] -2/105/x^2*(252*A*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*
c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2
^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x^2*a^2*c-504*A*2^(1/2)*((-
c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE
(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*x^2*a^2*c-100*B*(-a*c)^(1/2)*2^(1/2)*((-c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1
/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*x^2*a^2-15*B*c^3*x^7-21*A*c^3*x^6-95*B*a*c^2*x^5+231*A*a*c^2*x^4-45*B*a^
2*c*x^3+273*A*a^2*c*x^2+35*B*a^3*x+21*A*a^3)/(c*x^2+a)^(1/2)/e^3/(e*x)^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(7/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(7/2), x)
```

sympy [C] time = 56.59, size = 314, normalized size = 0.84

$$\frac{Aa^{\frac{5}{2}}\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{5}{4},-\frac{1}{2}\\-\frac{1}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)}+\frac{Aa^{\frac{3}{2}}c\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},-\frac{1}{4}\\\frac{3}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{e^{\frac{7}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{A\sqrt{a}\,c^{2}x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{3}{4}\\\frac{7}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2e^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right)}+\frac{Ba^{\frac{5}{2}}\Gamma\left(-\frac{3}{4}\right)}{2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(7/2),x)
```

```
[Out] A*a**(5/2)*gamma(-5/4)*hyper((-5/4, -1/2), (-1/4,), c*x**2*exp_polar(I*pi)/
a)/(2*e**(7/2)*x**(5/2)*gamma(-1/4)) + A*a**(3/2)*c*gamma(-1/4)*hyper((-1/2
, -1/4), (3/4,), c*x**2*exp_polar(I*pi)/a)/(e**(7/2)*sqrt(x)*gamma(3/4)) +
A*sqrt(a)*c**2*x**(3/2)*gamma(3/4)*hyper((-1/2, 3/4), (7/4,), c*x**2*exp_po
lar(I*pi)/a)/(2*e**(7/2)*gamma(7/4)) + B*a**(5/2)*gamma(-3/4)*hyper((-3/4,
-1/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(7/2)*x**(3/2)*gamma(1/4)) +
 B*a**(3/2)*c*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_pola
r(I*pi)/a)/(e**(7/2)*gamma(5/4)) + B*sqrt(a)*c**2*x**(5/2)*gamma(5/4)*hyper
((-1/2, 5/4), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(7/2)*gamma(9/4))
```

3.456 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{9/2}}\,dx$

Optimal. Leaf size=377

$$\frac{8a^{3/4}c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(63\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{48a^{5/4}Bc^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\right.}{5e^4}$$

```
[Out] -4/105*(25*A*c*x+21*B*a)*(c*x^2+a)^(3/2)/e^2/(e*x)^(5/2)-2/35*(-7*B*x+5*A)*
(c*x^2+a)^(5/2)/e/(e*x)^(7/2)-8/105*c*(-25*A*c*x+63*B*a)*(c*x^2+a)^(1/2)/e^
4/(e*x)^(1/2)+48/5*a*B*c^(3/2)*x*(c*x^2+a)^(1/2)/e^4/(a^(1/2)+x*c^(1/2))/(e
*x)^(1/2)-48/5*a^(5/4)*B*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)
^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^
(1/2)+x*c^(1/2))^2)^(1/2)/e^4/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/105*a^(3/4)*c^(
5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1
/2))*(63*B*a^(1/2)+25*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^
(1/2)+x*c^(1/2))^2)^(1/2)/e^4/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 377, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {813, 811, 842, 840, 1198, 220, 1196}

$$\frac{8a^{3/4}c^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(63\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105e^4\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{48a^{5/4}Bc^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\right.}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(9/2),x]
```

```
[Out] (48*a*B*c^(3/2)*x*Sqrt[a + c*x^2])/(5*e^4*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x))
- (8*c*(63*a*B - 25*A*c*x)*Sqrt[a + c*x^2])/(105*e^4*Sqrt[e*x]) - (4*(21*a*
B + 25*A*c*x)*(a + c*x^2)^(3/2))/(105*e^2*(e*x)^(5/2)) - (2*(5*A - 7*B*x)*(
a + c*x^2)^(5/2))/(35*e*(e*x)^(7/2)) - (48*a^(5/4)*B*c^(5/4)*Sqrt[x]*(Sqrt[
a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTa
n[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*e^4*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*
a^(3/4)*(63*Sqrt[a]*B + 25*A*Sqrt[c])*c^(5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)
*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt
[x])/a^(1/4)], 1/2])/(105*e^4*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{9/2}}\,dx = -\frac{2(5A-7Bx)\left(a+cx^2\right)^{5/2}}{35e(ex)^{7/2}} - \frac{2\int \frac{(-7aBe-5Acex)\left(a+cx^2\right)^{3/2}}{(ex)^{7/2}}\,dx}{7e^2}$$

$$= -\frac{4(21aB+25Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{5/2}} - \frac{2(5A-7Bx)\left(a+cx^2\right)^{5/2}}{35e(ex)^{7/2}} + \frac{4\int \frac{\left(21a^2Bce^3+25aA\right.}{(ex)^3}}{35a}$$

$$= -\frac{8c(63aB-25Acx)\sqrt{a+cx^2}}{105e^4\sqrt{ex}} - \frac{4(21aB+25Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{5/2}} - \frac{2(5A-7Bx)\left(\right.}{35e(ex}$$

$$= -\frac{8c(63aB-25Acx)\sqrt{a+cx^2}}{105e^4\sqrt{ex}} - \frac{4(21aB+25Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{5/2}} - \frac{2(5A-7Bx)\left(\right.}{35e(ex}$$

$$= -\frac{8c(63aB-25Acx)\sqrt{a+cx^2}}{105e^4\sqrt{ex}} - \frac{4(21aB+25Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{5/2}} - \frac{2(5A-7Bx)\left(\right.}{35e(ex}$$

$$= -\frac{8c(63aB-25Acx)\sqrt{a+cx^2}}{105e^4\sqrt{ex}} - \frac{4(21aB+25Acx)\left(a+cx^2\right)^{3/2}}{105e^2(ex)^{5/2}} - \frac{2(5A-7Bx)\left(\right.}{35e(ex}$$

$$= \frac{48aBc^{3/2}x\sqrt{a+cx^2}}{5e^4\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{8c(63aB-25Acx)\sqrt{a+cx^2}}{105e^4\sqrt{ex}} - \frac{4(21aB+25Acx)\left(a+c\right.}{105e^2(ex)^{5/2}}$$

Mathematica [C] time = 0.03, size = 91, normalized size = 0.24

$$-\frac{2a^2\sqrt{ex}\,\sqrt{a+cx^2}\left(5A\,{}_2F_1\left(-\frac{5}{2},-\frac{7}{4};-\frac{3}{4};-\frac{cx^2}{a}\right)+7Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{4};-\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{35e^5x^4\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(9/2),x]
```

```
[Out] (-2*a^2*Sqrt[e*x]*Sqrt[a + c*x^2]*(5*A*Hypergeometric2F1[-5/2, -7/4, -3/4,
-((c*x^2)/a)] + 7*B*x*Hypergeometric2F1[-5/2, -5/4, -1/4, -((c*x^2)/a)]))/(
35*e^5*x^4*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.14, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^5x^5}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^5*x^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(9/2), x)
```

maple [A] time = 0.08, size = 366, normalized size = 0.97

$$\frac{2Bc^3x^7}{5}+\frac{2Ac^3x^6}{3}-\frac{22Bac^2x^5}{5}-\frac{6Aac^2x^4}{7}+\frac{48\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Ba^2cx^3\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(9/2),x)
```

```
[Out] 2/105/x^3*(100*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*x^3*a*c+504*B*2
^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*a^2*c-252*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)
*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*
x^3*a^2*c+21*B*c^3*x^7+35*A*c^3*x^6-231*B*a*c^2*x^5-45*A*a*c^2*x^4-273*B*a^
2*c*x^3-95*A*a^2*c*x^2-21*B*a^3*x-15*A*a^3)/(c*x^2+a)^(1/2)/e^4/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(9/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(9/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(9/2), x)
```

sympy [C] time = 163.47, size = 321, normalized size = 0.85

$$\frac{Aa^{\frac{5}{2}}\Gamma\left(-\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{7}{4},-\frac{1}{2}\\-\frac{3}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{9}{2}}x^{\frac{7}{2}}\Gamma\left(-\frac{3}{4}\right)}+\frac{Aa^{\frac{3}{2}}c\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{3}{4},-\frac{1}{2}\\\frac{1}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{e^{\frac{9}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{A\sqrt{a}c^2\sqrt{x}\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{2},\frac{1}{4}\\\frac{5}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2e^{\frac{9}{2}}\Gamma\left(\frac{5}{4}\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(9/2),x)
```

```
[Out] A*a**(5/2)*gamma(-7/4)*hyper((-7/4, -1/2), (-3/4,), c*x**2*exp_polar(I*pi)/
a)/(2*e**(9/2)*x**(7/2)*gamma(-3/4)) + A*a**(3/2)*c*gamma(-3/4)*hyper((-3/4
, -1/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(e**(9/2)*x**(3/2)*gamma(1/4)) +
 A*sqrt(a)*c**2*sqrt(x)*gamma(1/4)*hyper((-1/2, 1/4), (5/4,), c*x**2*exp_po
lar(I*pi)/a)/(2*e**(9/2)*gamma(5/4)) + B*a**(5/2)*gamma(-5/4)*hyper((-5/4,
-1/2), (-1/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(9/2)*x**(5/2)*gamma(-1/4))
 + B*a**(3/2)*c*gamma(-1/4)*hyper((-1/2, -1/4), (3/4,), c*x**2*exp_polar(I*
pi)/a)/(e**(9/2)*sqrt(x)*gamma(3/4)) + B*sqrt(a)*c**2*x**(3/2)*gamma(3/4)*h
yper((-1/2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/a)/(2*e**(9/2)*gamma(7/4))
```

3.457 $\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{11/2}}\,dx$

Optimal. Leaf size=375

$$\frac{8\sqrt[4]{a}\,c^{7/4}\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B+7A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{21e^5\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{8c^2\sqrt{a+cx^2}\,(7A-5Bx)}{21e^5\sqrt{ex}}-4c\,(a$$

```
[Out] -4/63*c*(15*B*x+7*A)*(c*x^2+a)^(3/2)/e^3/(e*x)^(5/2)-2/63*(9*B*x+7*A)*(c*x^
2+a)^(5/2)/e/(e*x)^(9/2)-8/21*c^2*(-5*B*x+7*A)*(c*x^2+a)^(1/2)/e^5/(e*x)^(1
/2)+16/3*A*c^(5/2)*x*(c*x^2+a)^(1/2)/e^5/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-16
/3*a^(1/4)*A*c^(9/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2
*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^
(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1
/2))^2)^(1/2)/e^5/(e*x)^(1/2)/(c*x^2+a)^(1/2)+8/21*a^(1/4)*c^(7/4)*(cos(2*a
rctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a^(
1/2)+7*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2)
)^2)^(1/2)/e^5/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 375, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {811, 813, 842, 840, 1198, 220, 1196}

$$-\frac{8c^2\sqrt{a+cx^2}\,(7A-5Bx)}{21e^5\sqrt{ex}}+\frac{8\sqrt[4]{a}\,c^{7/4}\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B+7A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{21e^5\sqrt{ex}\,\sqrt{a+cx^2}}-4c\,($$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(11/2),x]
```

```
[Out] (-8*c^2*(7*A - 5*B*x)*Sqrt[a + c*x^2])/(21*e^5*Sqrt[e*x]) + (16*A*c^(5/2)*x
*Sqrt[a + c*x^2])/(3*e^5*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (4*c*(7*A + 15*
B*x)*(a + c*x^2)^(3/2))/(63*e^3*(e*x)^(5/2)) - (2*(7*A + 9*B*x)*(a + c*x^2)
^(5/2))/(63*e*(e*x)^(9/2)) - (16*a^(1/4)*A*c^(9/4)*Sqrt[x]*(Sqrt[a] + Sqrt[
c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)
*Sqrt[x])/a^(1/4)], 1/2])/(3*e^5*Sqrt[e*x]*Sqrt[a + c*x^2]) + (8*a^(1/4)*(5
*Sqrt[a]*B + 7*A*Sqrt[c])*c^(7/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c
*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)
], 1/2])/(21*e^5*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{5/2}}{(ex)^{11/2}}\,dx = -\frac{2(7A+9Bx)\left(a+cx^2\right)^{5/2}}{63e(ex)^{9/2}} - \frac{10\int \frac{\left(-7aAce^2-9aBce^2x\right)\left(a+cx^2\right)^{3/2}}{(ex)^{7/2}}\,dx}{63ae^4}$$

$$= -\frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} - \frac{2(7A+9Bx)\left(a+cx^2\right)^{5/2}}{63e(ex)^{9/2}} + \frac{4\int \frac{\left(21a^2Ac^2e^4+45a^2Bc^2e^4x\right.}{(ex)^{3/2}}}{63a^2e^8}$$

$$= -\frac{8c^2(7A-5Bx)\sqrt{a+cx^2}}{21e^5\sqrt{ex}} - \frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} - \frac{2(7A+9Bx)\left(a+cx^2\right)^{5}}{63e(ex)^{9/2}}$$

$$= -\frac{8c^2(7A-5Bx)\sqrt{a+cx^2}}{21e^5\sqrt{ex}} - \frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} - \frac{2(7A+9Bx)\left(a+cx^2\right)^{5}}{63e(ex)^{9/2}}$$

$$= -\frac{8c^2(7A-5Bx)\sqrt{a+cx^2}}{21e^5\sqrt{ex}} - \frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} - \frac{2(7A+9Bx)\left(a+cx^2\right)^{5}}{63e(ex)^{9/2}}$$

$$= -\frac{8c^2(7A-5Bx)\sqrt{a+cx^2}}{21e^5\sqrt{ex}} - \frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} - \frac{2(7A+9Bx)\left(a+cx^2\right)^{5}}{63e(ex)^{9/2}}$$

$$= -\frac{8c^2(7A-5Bx)\sqrt{a+cx^2}}{21e^5\sqrt{ex}} + \frac{16Ac^{5/2}x\sqrt{a+cx^2}}{3e^5\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{4c(7A+15Bx)\left(a+cx^2\right)^{3/2}}{63e^3(ex)^{5/2}} -$$

Mathematica [C] time = 0.04, size = 91, normalized size = 0.24

$$-\frac{2a^2\sqrt{ex}\,\sqrt{a+cx^2}\left(7A\,{}_2F_1\left(-\frac{5}{2},-\frac{9}{4};-\frac{5}{4};-\frac{cx^2}{a}\right)+9Bx\,{}_2F_1\left(-\frac{5}{2},-\frac{7}{4};-\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{63e^6x^5\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(5/2))/(e*x)^(11/2),x]
```

```
[Out] (-2*a^2*Sqrt[e*x]*Sqrt[a + c*x^2]*(7*A*Hypergeometric2F1[-5/2, -9/4, -5/4,
-((c*x^2)/a)] + 9*B*x*Hypergeometric2F1[-5/2, -7/4, -3/4, -((c*x^2)/a)]))/(
63*e^6*x^5*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bc^2x^5+Ac^2x^4+2\,Bacx^3+2\,Aacx^2+Ba^2x+Aa^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{e^6x^6},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(11/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(e^6*x^6), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(11/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(11/2), x)
```

maple [A] time = 0.11, size = 366, normalized size = 0.98

$$\frac{\frac{2Bc^3x^7}{3}-\frac{10Ac^3x^6}{3}+\frac{16\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac^2x^4\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)}{3}-\frac{8\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{c}{\sqrt{-}}}}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(11/2),x)
```

```
[Out] 2/63/x^4*(168*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*a*c^2-84*A*2^(1/2)*((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*
(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2),1/2*2^(1/2))*x^4*a*c^2+60*B*(-a*c)^(1/2)*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a
*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*
c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x
^4*a*c+21*B*c^3*x^7-105*A*c^3*x^6-27*B*a*c^2*x^5-133*A*a*c^2*x^4-57*B*a^2*c
*x^3-35*A*a^2*c*x^2-9*B*a^3*x-7*A*a^3)/(c*x^2+a)^(1/2)/e^5/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)}{(ex)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(5/2)/(e*x)^(11/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)/(e*x)^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(e\,x\right)}^{11/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(11/2),x)
```

```
[Out] int(((a + c*x^2)^(5/2)*(A + B*x))/(e*x)^(11/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(5/2)/(e*x)**(11/2),x)
```

```
[Out] Timed out
```

3.458 $\int \frac{(ex)^{7/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=388

$$\frac{a^{7/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(49\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{14a^{9/4}Be^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{}{(\sqrt{}}}}{15c^{11/4}\sqrt{ex}}$$

```
[Out] -14/45*a*B*e^2*(e*x)^(3/2)*(c*x^2+a)^(1/2)/c^2+2/7*A*e*(e*x)^(5/2)*(c*x^2+a
)^(1/2)/c+2/9*B*(e*x)^(7/2)*(c*x^2+a)^(1/2)/c+14/15*a^2*B*e^4*x*(c*x^2+a)^(
1/2)/c^(5/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-10/21*a*A*e^3*(e*x)^(1/2)*(c*x
^2+a)^(1/2)/c^2-14/15*a^(9/4)*B*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))
^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(
1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/
(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/105*a^(
7/4)*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1
/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*
2^(1/2))*(49*B*a^(1/2)+25*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)
/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.48, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 842, 840, 1198, 220, 1196}

$$\frac{a^{7/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(49\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{14a^2Be^4x\sqrt{a+cx^2}}{15c^{5/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{14a^{9/4}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(7/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (-10*a*A*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])/(21*c^2) - (14*a*B*e^2*(e*x)^(3/2)*
Sqrt[a + c*x^2])/(45*c^2) + (2*A*e*(e*x)^(5/2)*Sqrt[a + c*x^2])/(7*c) + (2*
B*(e*x)^(7/2)*Sqrt[a + c*x^2])/(9*c) + (14*a^2*B*e^4*x*Sqrt[a + c*x^2])/(15
*c^(5/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (14*a^(9/4)*B*e^4*Sqrt[x]*(Sqrt
[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcT
an[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2]
) + (a^(7/4)*(49*Sqrt[a]*B + 25*A*Sqrt[c])*e^4*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x
)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqr
t[x])/a^(1/4)], 1/2])/(105*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{7/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx = \frac{2B(ex)^{7/2}\sqrt{a+cx^2}}{9c} + \frac{2\int \frac{(ex)^{5/2}\left(-\frac{7}{2}aBe+\frac{9}{2}Acex\right)}{\sqrt{a+cx^2}}\,dx}{9c}$$

$$= \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a+cx^2}}{9c} + \frac{4\int \frac{(ex)^{3/2}\left(-\frac{45}{4}aAce^2-\frac{49}{4}aBce^2x\right)}{\sqrt{a+cx^2}}\,dx}{63c^2}$$

$$= -\frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a+cx^2}}{9c} + \frac{8\int \frac{\sqrt{ex}\left(\frac{147}{8}a^2Bc}{\sqrt{a}}}{315}$$

$$= -\frac{10aAe^3\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} - \frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a}}{9c}$$

$$= -\frac{10aAe^3\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} - \frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a}}{9c}$$

$$= -\frac{10aAe^3\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} - \frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a}}{9c}$$

$$= -\frac{10aAe^3\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} - \frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a}}{9c}$$

$$= -\frac{10aAe^3\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} - \frac{14aBe^2(ex)^{3/2}\sqrt{a+cx^2}}{45c^2} + \frac{2Ae(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2B(ex)^{7/2}\sqrt{a}}{9c}$$

Mathematica [C] time = 0.07, size = 142, normalized size = 0.37

$$\frac{2e^3\sqrt{ex}\left(75a^2A\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+49a^2Bx\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-\left(a+cx^2\right)\left(a(75A+49Bx)-\right.\right.}{315c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(7/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*e^3*Sqrt[e*x]*(-((a + c*x^2)*(-5*c*x^2*(9*A + 7*B*x) + a*(75*A + 49*B*x)
)) + 75*a^2*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2
)/a)] + 49*a^2*B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((
c*x^2)/a)]))/(315*c^2*Sqrt[a + c*x^2])
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^3x^4+Ae^3x^3\right)\sqrt{ex}}{\sqrt{cx^2+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*e^3*x^3)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{7}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(7/2)/sqrt(c*x^2 + a), x)
```

maple [A] time = 0.10, size = 344, normalized size = 0.89

$$\sqrt{ex}\left(70B\,c^3x^6+90A\,c^3x^5-28Ba\,c^2x^4-60Aa\,c^2x^3-98B\,a^2c\,x^2-150A\,a^2cx+294\sqrt{2}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/315*e^3/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^3*(70*B*c^3*x^6+75*A*2^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2)*(-a*c)^(1/2)*a^2+90*A*c^3*x^5+294*B*2^(1/2)*((-c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*a^3-147*B*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a
*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*
2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^3-28*B*a*c^2*x^4-60*A*a*
c^2*x^3-98*B*a^2*c*x^2-150*A*a^2*c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{7}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(7/2)/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{7/2}\,(A+B\,x)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [C] time = 55.52, size = 94, normalized size = 0.24

$$\frac{Ae^{\frac{7}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_2F_1\left(\left.\begin{matrix}\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{13}{4}\right)}+\frac{Be^{\frac{7}{2}}x^{\frac{11}{2}}\Gamma\left(\frac{11}{4}\right){}_2F_1\left(\left.\begin{matrix}\frac{1}{2},\frac{11}{4}\\ \frac{15}{4}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{15}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(7/2)*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*e**(7/2)*x**(9/2)*gamma(9/4)*hyper((1/2, 9/4), (13/4,), c*x**2*exp_polar(
I*pi)/a)/(2*sqrt(a)*gamma(13/4)) + B*e**(7/2)*x**(11/2)*gamma(11/4)*hyper((
1/2, 11/4), (15/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*gamma(15/4))
```

3.459 $\int \frac{(ex)^{5/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=356

$$\frac{a^{5/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}B-63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{6a^{5/4}Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5c^{7/4}}$$

```
[Out] 2/5*A*e*(e*x)^(3/2)*(c*x^2+a)^(1/2)/c+2/7*B*(e*x)^(5/2)*(c*x^2+a)^(1/2)/c-6
/5*a*A*e^3*x*(c*x^2+a)^(1/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-10/21*
a*B*e^2*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c^2+6/5*a^(5/4)*A*e^3*(cos(2*arctan(c^(
1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Elli
pticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2
))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x
^2+a)^(1/2)+1/105*a^(5/4)*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(25*B*a^(1/2)-63*A*c^(1/2))*(a^(1/2)+x*c^(1/2
))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(9/4)/(e*x)^(1/2)/(c*x
^2+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 842, 840, 1198, 220, 1196}

$$\frac{a^{5/4}e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}B-63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{105c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{6a^{5/4}Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5c^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(5/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (-10*a*B*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])/(21*c^2) + (2*A*e*(e*x)^(3/2)*Sqrt[
a + c*x^2])/(5*c) + (2*B*(e*x)^(5/2)*Sqrt[a + c*x^2])/(7*c) - (6*a*A*e^3*x*
Sqrt[a + c*x^2])/(5*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (6*a^(5/4)*A
*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2
]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*c^(7/4)*Sqrt[e*x]
*Sqrt[a + c*x^2]) + (a^(5/4)*(25*Sqrt[a]*B - 63*A*Sqrt[c])*e^3*Sqrt[x]*(Sqr
t[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*Arc
Tan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(105*c^(9/4)*Sqrt[e*x]*Sqrt[a + c*x^2
])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{5/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx = \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{2\int \frac{(ex)^{3/2}\left(-\frac{5}{2}aBe+\frac{7}{2}Acex\right)}{\sqrt{a+cx^2}}\,dx}{7c}$$

$$= \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{4\int \frac{\sqrt{ex}\left(-\frac{21}{4}aAce^2-\frac{25}{4}aBce^2x\right)}{\sqrt{a+cx^2}}\,dx}{35c^2}$$

$$= -\frac{10aBe^2\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} + \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{8\int \frac{\frac{25}{8}a^2Bce^3-\frac{63}{8}aA}{\sqrt{ex}\,\sqrt{a+cx^2}}}{105c^3}$$

$$= -\frac{10aBe^2\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} + \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{\left(8\sqrt{x}\right)\int \frac{\frac{25}{8}a^2Bce^3}{\sqrt{x}}}{105c^3}$$

$$= -\frac{10aBe^2\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} + \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{\left(16\sqrt{x}\right)\text{Subst}}{}$$

$$= -\frac{10aBe^2\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} + \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} + \frac{\left(2a^{3/2}\left(25\sqrt{a}\,B-\right.\right.}{}$$

$$= -\frac{10aBe^2\sqrt{ex}\,\sqrt{a+cx^2}}{21c^2} + \frac{2Ae(ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2B(ex)^{5/2}\sqrt{a+cx^2}}{7c} - \frac{6aAe^3x\sqrt{a+c}}{5c^{3/2}\sqrt{ex}\left(\sqrt{a}+\right.}$$

Mathematica [C] time = 0.06, size = 133, normalized size = 0.37

$$\frac{2e^2\sqrt{ex}\left(25a^2B\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-\left(a+cx^2\right)(25aB-3cx(7A+5Bx))-21aAcx\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\right.\right.}{105c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(5/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*e^2*Sqrt[e*x]*(-((a + c*x^2)*(25*a*B - 3*c*x*(7*A + 5*B*x))) + 25*a^2*B*
Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - 21*a*A
*c*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(
105*c^2*Sqrt[a + c*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^2x^3+Ae^2x^2\right)\sqrt{ex}}{\sqrt{cx^2+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*e^2*x^2)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/sqrt(c*x^2 + a), x)
```

maple [A] time = 0.14, size = 336, normalized size = 0.94

$$\sqrt{ex}\,\left(30B\,c^3x^5+42A\,c^3x^4-20Ba\,c^2x^3+42Aa\,c^2x^2-126\sqrt{2}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,A\,a^2c\,\mathrm{Elliptic}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/105/x*e^2*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(63*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)
^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x
+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
*a^2*c-126*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c+25*B*(-a*c)^(1/2)*2^(1/2)*
(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*a^2+30*B*c^3*x^5+42*A*c^3*x^4-20*B*a*c^2*x^3+42*A*a*c
^2*x^2-50*B*a^2*c*x)/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{5/2}\,\left(A+B\,x\right)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [C] time = 20.01, size = 94, normalized size = 0.26

$$\frac{Ae^{\frac{5}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{11}{4}\right)}+\frac{Be^{\frac{5}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{13}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(5/2)*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*e**(5/2)*x**(7/2)*gamma(7/4)*hyper((1/2, 7/4), (11/4,), c*x**2*exp_polar(
I*pi)/a)/(2*sqrt(a)*gamma(11/4)) + B*e**(5/2)*x**(9/2)*gamma(9/4)*hyper((1/
2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*gamma(13/4))
```

3.460 $\int \frac{(ex)^{3/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=326

$$-\frac{a^{3/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{6a^{5/4}Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5c^{7/4}\sqrt{ex}}$$

```
[Out] 2/5*B*(e*x)^(3/2)*(c*x^2+a)^(1/2)/c-6/5*a*B*e^2*x*(c*x^2+a)^(1/2)/c^(3/2)/(
a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+2/3*A*e*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c+6/5*a^
(5/4)*B*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c
^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1
/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(
1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/15*a^(3/4)*e^2*(cos(2*arctan(c^(
1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Elli
pticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(9*B*a^(1/2)+5*A*
c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2
)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 842, 840, 1198, 220, 1196}

$$-\frac{a^{3/4}e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{6a^{5/4}Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{5c^{7/4}\sqrt{ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(3/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*A*e*Sqrt[e*x]*Sqrt[a + c*x^2])/(3*c) + (2*B*(e*x)^(3/2)*Sqrt[a + c*x^2])
/(5*c) - (6*a*B*e^2*x*Sqrt[a + c*x^2])/(5*c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt
[c]*x)) + (6*a^(5/4)*B*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(
Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2]
)/(5*c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (a^(3/4)*(9*Sqrt[a]*B + 5*A*Sqrt[
c])*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x
)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15*c^(7/4)*Sqrt[
e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ex)^{3/2}(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}+\frac{2\int \frac{\sqrt{ex}\left(-\frac{3}{2}aBe+\frac{5}{2}Acex\right)}{\sqrt{a+cx^2}}\,dx}{5c}\\
&= \frac{2Ae\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}+\frac{4\int \frac{-\frac{5}{4}aAce^2-\frac{9}{4}aBce^2x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{15c^2}\\
&= \frac{2Ae\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}+\frac{\left(4\sqrt{x}\right)\int \frac{-\frac{5}{4}aAce^2-\frac{9}{4}aBce^2x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{15c^2\sqrt{ex}}\\
&= \frac{2Ae\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}+\frac{\left(8\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{-\frac{5}{4}aAce^2-\frac{9}{4}aBce^2x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{15c^2\sqrt{ex}}\\
&= \frac{2Ae\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}+\frac{\left(6a^{3/2}Be^2\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{5c^{3/2}\sqrt{ex}}-\\
&= \frac{2Ae\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2B(ex)^{3/2}\sqrt{a+cx^2}}{5c}-\frac{6aBe^2x\sqrt{a+cx^2}}{5c^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{6a^{5/4}Be^2\sqrt{x}\,(\sqrt{a}\,+}{}
\end{aligned}$$

Mathematica [C] time = 0.05, size = 118, normalized size = 0.36

$$\frac{2e\sqrt{ex}\left(\left(a+cx^2\right)(5A+3Bx)-5aA\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-3aBx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{15c\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(3/2)*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*e*Sqrt[e*x]*((5*A + 3*B*x)*(a + c*x^2) - 5*a*A*Sqrt[1 + (c*x^2)/a]*Hyper
geometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - 3*a*B*x*Sqrt[1 + (c*x^2)/a]*Hyp
ergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(15*c*Sqrt[a + c*x^2])
```

fricas [F] time = 1.00, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^2 + Aex\right)\sqrt{ex}}{\sqrt{cx^2 + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*e*x)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\,(ex)^{\frac{3}{2}}}{\sqrt{cx^2 + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/sqrt(c*x^2 + a), x)
```

maple [A] time = 0.09, size = 316, normalized size = 0.97

$$-\frac{\sqrt{ex}\,\left(-6Bc^2x^4 - 10Ac^2x^3 - 6Bacx^2 - 10Aacx + 18\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,B\,a^2\,\mathrm{EllipticE}\left(\sqrt{\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/15*e/x*(e*x)^(1/2)/(c*x^2+a)^(1/2)/c^2*(5*A*2^(1/2)*((c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/
2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2)
)*(-a*c)^(1/2)*a+18*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*
x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE((
(c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2-9*B*2^(1/2)*((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(
-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
),1/2*2^(1/2))*a^2-6*B*c^2*x^4-10*A*c^2*x^3-6*B*a*c*x^2-10*A*a*c*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\,(ex)^{\frac{3}{2}}}{\sqrt{cx^2 + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{3/2}\,(A+B\,x)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [C] time = 6.71, size = 94, normalized size = 0.29

$$\frac{Ae^{\frac{3}{2}}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{1}{2},\frac{5}{4}\\\frac{9}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{9}{4}\right)}+\frac{Be^{\frac{3}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{1}{2},\frac{7}{4}\\\frac{11}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*e**(3/2)*x**(5/2)*gamma(5/4)*hyper((1/2, 5/4), (9/4,), c*x**2*exp_polar(I
*pi)/a)/(2*sqrt(a)*gamma(9/4)) + B*e**(3/2)*x**(7/2)*gamma(7/4)*hyper((1/2,
 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*gamma(11/4))
```

3.461 $\int \frac{\sqrt{ex}\,(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=287

$$-\frac{\sqrt[4]{a}\,e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{2\sqrt[4]{a}\,Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c}{\left(\sqrt{a}+\right.}}}{c^{3/4}\sqrt{ex}\,\sqrt{a}}$$

```
[Out] 2*A*e*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+2/3*B*(e*x)
^(1/2)*(c*x^2+a)^(1/2)/c-2*a^(1/4)*A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4
)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(
c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+
a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/3*a^(
1/4)*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^
(1/2))*(B*a^(1/2)-3*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1
/2)+x*c^(1/2))^2)^(1/2)/c^(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {833, 842, 840, 1198, 220, 1196}

$$-\frac{\sqrt[4]{a}\,e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{2\sqrt[4]{a}\,Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c}{\left(\sqrt{a}+\right.}}}{c^{3/4}\sqrt{ex}\,\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e*x]*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*B*Sqrt[e*x]*Sqrt[a + c*x^2])/(3*c) + (2*A*e*x*Sqrt[a + c*x^2])/(Sqrt[c]*
Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*a^(1/4)*A*e*Sqrt[x]*(Sqrt[a] + Sqrt[c
]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*
Sqrt[x])/a^(1/4)], 1/2])/(c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (a^(1/4)*(Sq
rt[a]*B - 3*A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sq
rt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/
(3*c^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
```

```
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{ex}\,(A+Bx)}{\sqrt{a+cx^2}}\,dx &= \frac{2B\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2\int \frac{-\frac{1}{2}aBe+\frac{3}{2}Acex}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3c}\\
&= \frac{2B\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{\left(2\sqrt{x}\right)\int \frac{-\frac{1}{2}aBe+\frac{3}{2}Acex}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3c\sqrt{ex}}\\
&= \frac{2B\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{\left(4\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{-\frac{1}{2}aBe+\frac{3}{2}Acex^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3c\sqrt{ex}}\\
&= \frac{2B\sqrt{ex}\,\sqrt{a+cx^2}}{3c}-\frac{\left(2\sqrt{a}\left(\sqrt{a}\,B-3A\sqrt{c}\right)e\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3c\sqrt{ex}}-\frac{\left(2\sqrt{a}\,Ae\sqrt{}\right.}{}\\
&= \frac{2B\sqrt{ex}\,\sqrt{a+cx^2}}{3c}+\frac{2Aex\sqrt{a+cx^2}}{\sqrt{c}\,\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\sqrt[4]{a}\,Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\,\mathrm{tan}\right.}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}
\end{aligned}$$

Mathematica [C] time = 0.04, size = 109, normalized size = 0.38

$$\frac{2\sqrt{ex}\left(Acx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-aB\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+B\left(a+cx^2\right)\right)}{3c\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[e*x]*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*Sqrt[e*x]*(B*(a + c*x^2) - a*B*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4
, 1/2, 5/4, -((c*x^2)/a)] + A*c*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2
, 3/4, 7/4, -((c*x^2)/a)]))/(3*c*Sqrt[a + c*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx + A)\sqrt{ex}}{\sqrt{cx^2 + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex}}{\sqrt{cx^2 + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

maple [A] time = 0.06, size = 295, normalized size = 1.03

$$-\frac{\sqrt{ex}\,\left(-2B\,c^2x^3 - 6\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right) + 3\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-c}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/3*(e*x)^(1/2)/(c*x^2+a)^(1/2)*(3*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ell
ipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c-6*A
*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c+B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*
x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(
1/2)*a-2*B*c^2*x^3-2*B*a*c*x)/x/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex}}{\sqrt{cx^2 + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{e\,x}\,\left(A + B\,x\right)}{\sqrt{c\,x^2 + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [**C**] time = 3.75, size = 92, normalized size = 0.32

$$\frac{A\left(ex\right)^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,e\Gamma\left(\frac{7}{4}\right)}+\frac{B\left(ex\right)^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{1}{2},\frac{5}{4}\\ \frac{9}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}\,e^{2}\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*(e*x)**(3/2)*gamma(3/4)*hyper((1/2, 3/4), (7/4,), c*x**2*exp_polar(I*pi)/
a)/(2*sqrt(a)*e*gamma(7/4)) + B*(e*x)**(5/2)*gamma(5/4)*hyper((1/2, 5/4), (
9/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*e**2*gamma(9/4))
```

3.462 $\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=253

$$\frac{\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{2\sqrt[4]{a}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E(2}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

```
[Out] 2*B*x*(c*x^2+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-2*a^(1/4)*B*(
cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(
a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/
(e*x)^(1/2)/(c*x^2+a)^(1/2)+a^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))
^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(
1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*(B+A*c^(1/2)/a^(1/2
))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x
^2+a)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {842, 840, 1198, 220, 1196}

$$\frac{\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{2\sqrt[4]{a}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E(2}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*B*x*Sqrt[a + c*x^2])/(Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*a^(1
/4)*B*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^
2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(c^(3/4)*Sqrt[e*x]*
Sqrt[a + c*x^2]) + (a^(1/4)*(B + (A*Sqrt[c])/Sqrt[a])*Sqrt[x]*(Sqrt[a] + Sq
rt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1
/4)*Sqrt[x])/a^(1/4)], 1/2])/(c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx &= \frac{\sqrt{x}\int \frac{A+Bx}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{\sqrt{ex}}\\
&= \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{A+Bx^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{\sqrt{ex}}\\
&= \frac{\left(2\left(A+\frac{\sqrt{a}\,B}{\sqrt{c}}\right)\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{\sqrt{ex}}-\frac{\left(2\sqrt{a}\,B\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right.}{\sqrt{c}\,\sqrt{ex}}\\
&= \frac{2Bx\sqrt{a+cx^2}}{\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\sqrt[4]{a}\,B\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}+
\end{aligned}$$

Mathematica [C] time = 0.03, size = 82, normalized size = 0.32

$$\frac{2x\sqrt{\frac{cx^2}{a}+1}\left(3A\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+Bx\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)\right)}{3\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*x*Sqrt[1 + (c*x^2)/a]*(3*A*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)
] + B*x*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*Sqrt[e*x]*Sqrt[
a + c*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{cex^3+aex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c*e*x^3 + a*e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*sqrt(e*x)), x)
```

maple [A] time = 0.08, size = 175, normalized size = 0.69

$$\frac{\sqrt{2}\,\sqrt{-ac}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\left(Ac\,\mathrm{EllipticF}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-2\sqrt{-ac}\,B\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\right.\right.}{\sqrt{c\,x^2+a}\,\sqrt{ex}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] 1/(c*x^2+a)^(1/2)*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1
/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*(A
*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*c+B*(-a*c)^
(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))-2*B*(-
a*c)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2)))/
(e*x)^(1/2)/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*sqrt(e*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{e\,x}\,\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(1/2)), x)
```

sympy [C] time = 2.99, size = 94, normalized size = 0.37

$$\frac{A\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{4},\frac{1}{2}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)}+\frac{Bx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{2},\frac{3}{4}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,\sqrt{e}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(x)*gamma(1/4)*hyper((1/4, 1/2), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2
*sqrt(a)*sqrt(e)*gamma(5/4)) + B*x**(3/2)*gamma(3/4)*hyper((1/2, 3/4), (7/4
,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*sqrt(e)*gamma(7/4))
```

3.463 $\int \frac{A+Bx}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=293

$$\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{a^{3/4}\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}-\frac{2A\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\Big(2\,\mathrm{ta}}{a^{3/4}e\sqrt{ex}\sqrt{a+cx^2}}$$

```
[Out] -2*A*(c*x^2+a)^(1/2)/a/e/(e*x)^(1/2)+2*A*x*c^(1/2)*(c*x^2+a)^(1/2)/a/e/(a^(
1/2)+x*c^(1/2))/(e*x)^(1/2)-2*A*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan
(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2
+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(3/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)+(cos
(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a
^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(B*a
^(1/2)+A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2)
)^2)^(1/2)/a^(3/4)/c^(1/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 842, 840, 1198, 220, 1196}

$$\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{a^{3/4}\sqrt[4]{c}\,e\sqrt{ex}\sqrt{a+cx^2}}-\frac{2A\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\Big(2\,\mathrm{ta}}{a^{3/4}e\sqrt{ex}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(3/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[a + c*x^2])/(a*e*Sqrt[e*x]) + (2*A*Sqrt[c]*x*Sqrt[a + c*x^2])/(a
*e*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (2*A*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[
c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)
*Sqrt[x])/a^(1/4)], 1/2])/(a^(3/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((Sqrt[a]
*B + A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + S
qrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(a^(3/4)*
c^(1/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
```

```
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx &= -\frac{2A\sqrt{a+cx^2}}{ae\sqrt{ex}}-\frac{2\int \frac{-\frac{1}{2}aBe-\frac{1}{2}Acex}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{ae^2}\\
&= -\frac{2A\sqrt{a+cx^2}}{ae\sqrt{ex}}-\frac{\left(2\sqrt{x}\right)\int \frac{-\frac{1}{2}aBe-\frac{1}{2}Acex}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{ae^2\sqrt{ex}}\\
&= -\frac{2A\sqrt{a+cx^2}}{ae\sqrt{ex}}-\frac{\left(4\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{-\frac{1}{2}aBe-\frac{1}{2}Acex^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{ae^2\sqrt{ex}}\\
&= -\frac{2A\sqrt{a+cx^2}}{ae\sqrt{ex}}+\frac{\left(2\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{x}\right)\mathrm{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{\sqrt{a}\,e\sqrt{ex}}-\frac{\left(2A\sqrt{c}\,\sqrt{x}\right)\mathrm{S}}{}\\
&= -\frac{2A\sqrt{a+cx^2}}{ae\sqrt{ex}}+\frac{2A\sqrt{c}\,x\sqrt{a+cx^2}}{ae\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2A\sqrt[4]{c}\,\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\,\mathrm{ta}\right.}{a^{3/4}e\sqrt{ex}\,\sqrt{a+cx^2}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.27

$$\frac{2x\sqrt{\frac{cx^2}{a}+1}\left(Bx\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-A\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{(ex)^{3/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(3/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*x*Sqrt[1 + (c*x^2)/a]*(-(A*Hypergeometric2F1[-1/4, 1/2, 3/4, -((c*x^2)/a
)]) + B*x*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)]))/((e*x)^(3/2)*Sqr
t[a + c*x^2])
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{ce^2x^4+ae^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c*e^2*x^4 + a*e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(3/2)), x)
```

maple [A] time = 0.08, size = 296, normalized size = 1.01

$$\frac{-2Ac^2x^2+2\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-}}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] (-A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c+2*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)
*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c
+B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1
/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a-2*A*c^2*x^2-2*A*a*c)/(c*x^2
+a)^(1/2)/c/e/(e*x)^(1/2)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{(e\,x)}^{3/2}\,\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(1/2)), x)
```

sympy **[C]** time = 4.21, size = 97, normalized size = 0.33

$$\frac{A\Gamma\left(-\frac{1}{4}\right){}_2F_1\left(\begin{matrix}-\frac{1}{4},\frac{1}{2}\\ \frac{3}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,e^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{B\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_2F_1\left(\begin{matrix}\frac{1}{4},\frac{1}{2}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\sqrt{a}\,e^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(3/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*gamma(-1/4)*hyper((-1/4, 1/2), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(
a)*e**(3/2)*sqrt(x)*gamma(3/4)) + B*sqrt(x)*gamma(1/4)*hyper((1/4, 1/2), (5
/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*e**(3/2)*gamma(5/4))
```

3.464 $\int \frac{A+Bx}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=327

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3a^{5/4}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{2B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E}{a^{3/4}e^2\sqrt{ex}\sqrt{a+cx^2}}$$

```
[Out] -2/3*A*(c*x^2+a)^(1/2)/a/e/(e*x)^(3/2)-2*B*(c*x^2+a)^(1/2)/a/e^2/(e*x)^(1/2
)+2*B*x*c^(1/2)*(c*x^2+a)^(1/2)/a/e^2/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-2*B*c
^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^
(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/
a^(3/4)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/3*c^(1/4)*(cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(
sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(3*B*a^(1/2)-A*c^(1/2))
*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(5/4
)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {835, 842, 840, 1198, 220, 1196}

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{3a^{5/4}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{2B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E}{a^{3/4}e^2\sqrt{ex}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(5/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[a + c*x^2])/(3*a*e*(e*x)^(3/2)) - (2*B*Sqrt[a + c*x^2])/(a*e^2*S
qrt[e*x]) + (2*B*Sqrt[c]*x*Sqrt[a + c*x^2])/(a*e^2*Sqrt[e*x]*(Sqrt[a] + Sqr
t[c]*x)) - (2*B*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqr
t[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(
a^(3/4)*e^2*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((3*Sqrt[a]*B - A*Sqrt[c])*c^(1/4)
*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*El
lipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(3*a^(5/4)*e^2*Sqrt[e*x]
*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx &= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2\int \frac{-\frac{3}{2}aBe+\frac{1}{2}Acex}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{3ae^2} \\
&= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2B\sqrt{a+cx^2}}{ae^2\sqrt{ex}} + \frac{4\int \frac{-\frac{1}{4}aAce^2+\frac{3}{4}aBce^2x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{3a^2e^4} \\
&= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2B\sqrt{a+cx^2}}{ae^2\sqrt{ex}} + \frac{\left(4\sqrt{x}\right)\int \frac{-\frac{1}{4}aAce^2+\frac{3}{4}aBce^2x}{\sqrt{x}\sqrt{a+cx^2}}\,dx}{3a^2e^4\sqrt{ex}} \\
&= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2B\sqrt{a+cx^2}}{ae^2\sqrt{ex}} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{1}{4}aAce^2+\frac{3}{4}aBce^2x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{3a^2e^4\sqrt{ex}} \\
&= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2B\sqrt{a+cx^2}}{ae^2\sqrt{ex}} - \frac{\left(2B\sqrt{c}\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{\sqrt{a}\,e^2\sqrt{ex}} + \\
&= -\frac{2A\sqrt{a+cx^2}}{3ae(ex)^{3/2}} - \frac{2B\sqrt{a+cx^2}}{ae^2\sqrt{ex}} + \frac{2B\sqrt{c}\,x\sqrt{a+cx^2}}{ae^2\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} -
\end{aligned}
$$

Mathematica [**C**]   time = 0.03, size = 82, normalized size = 0.25

$$
-\frac{2x\sqrt{\frac{cx^2}{a}+1}\left(A\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)+3Bx\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)\right)}{3(ex)^{5/2}\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(5/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*x*Sqrt[1 + (c*x^2)/a]*(A*Hypergeometric2F1[-3/4, 1/2, 1/4, -((c*x^2)/a)
] + 3*B*x*Hypergeometric2F1[-1/4, 1/2, 3/4, -((c*x^2)/a)]))/(3*(e*x)^(5/2)*
Sqrt[a + c*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{ce^3x^5+ae^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c*e^3*x^5 + a*e^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(5/2)), x)
```

maple [A] time = 0.07, size = 306, normalized size = 0.94

$$-\frac{6Bc\,x^3+2Ac\,x^2-6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bax\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/3/x*(A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*x+3*B*2^(1/2)*((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-
1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
,1/2*2^(1/2))*x*a-6*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*
x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE((
(c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x*a+6*B*c*x^3+2*A*c*x^2
+6*B*a*x+2*A*a)/(c*x^2+a)^(1/2)/a/e^2/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(5/2)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(e\,x\right)}^{5/2}\,\sqrt{c\,x^2+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(1/2)), x)
```

sympy **[C]** time = 9.10, size = 100, normalized size = 0.31

$$\frac{A\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{3}{4},\frac{1}{2}\\\frac{1}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}e^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{B\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{4},\frac{1}{2}\\\frac{3}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2\sqrt{a}e^{\frac{5}{2}}\sqrt{x}\Gamma\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(5/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*gamma(-3/4)*hyper((-3/4, 1/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(
a)*e**(5/2)*x**(3/2)*gamma(1/4)) + B*gamma(-1/4)*hyper((-1/4, 1/2), (3/4,),
 c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*e**(5/2)*sqrt(x)*gamma(3/4))
```

3.465 $\int \frac{A+Bx}{(ex)^{7/2}\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=363

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15a^{7/4}e^3\sqrt{ex}\sqrt{a+cx^2}}+\frac{6Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)}}}{5a^{7/4}e^3\sqrt{ex}\sqrt{a+}}$$

```
[Out] -2/5*A*(c*x^2+a)^(1/2)/a/e/(e*x)^(5/2)-2/3*B*(c*x^2+a)^(1/2)/a/e^2/(e*x)^(3
/2)+6/5*A*c*(c*x^2+a)^(1/2)/a^2/e^3/(e*x)^(1/2)-6/5*A*c^(3/2)*x*(c*x^2+a)^(
1/2)/a^2/e^3/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+6/5*A*c^(5/4)*(cos(2*arctan(c^
(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ell
ipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/
2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/e^3/(e*x)^(1/2)
/(c*x^2+a)^(1/2)-1/15*c^(3/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a^(1/2)+9*A*c^(1/2))*(a^(1/2)+x*c^(1/2))
*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/e^3/(e*x)^(1/2)/(c
*x^2+a)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 363, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {835, 842, 840, 1198, 220, 1196}

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}\,B+9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{15a^{7/4}e^3\sqrt{ex}\sqrt{a+cx^2}}-\frac{6Ac^{3/2}x\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{6Ac^{5/4}\sqrt{x}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(7/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*A*Sqrt[a + c*x^2])/(5*a*e*(e*x)^(5/2)) - (2*B*Sqrt[a + c*x^2])/(3*a*e^2
*(e*x)^(3/2)) + (6*A*c*Sqrt[a + c*x^2])/(5*a^2*e^3*Sqrt[e*x]) - (6*A*c^(3/2
)*x*Sqrt[a + c*x^2])/(5*a^2*e^3*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (6*A*c^(
5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2
]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*a^(7/4)*e^3*Sqrt[
e*x]*Sqrt[a + c*x^2]) - ((5*Sqrt[a]*B + 9*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[
a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTa
n[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(15*a^(7/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^
2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{7/2}\sqrt{a+cx^2}}\,dx = -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2\int \frac{-\frac{5}{2}aBe+\frac{3}{2}Acex}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx}{5ae^2}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{4\int \frac{-\frac{9}{4}aAce^2-\frac{5}{4}aBce^2x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{15a^2e^4}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{6Ac\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}} - \frac{8\int \frac{\frac{5}{8}a^2Bce^3+\frac{9}{8}aAc^2e^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{15a^3e^6}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{6Ac\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}} - \frac{\left(8\sqrt{x}\right)\int \frac{\frac{5}{8}a^2Bce^3+\frac{9}{8}aAc^2e^3x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{15a^3e^6\sqrt{ex}}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{6Ac\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}} - \frac{\left(16\sqrt{x}\right)\operatorname{Subst}\Bigg(\int \frac{\frac{5}{8}a^2Bce^3+\frac{9}{8}aAc^2e^3x^2}{\sqrt{a+cx^4}}}{15a^3e^6\sqrt{ex}}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{6Ac\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}} - \frac{\left(2\left(5\sqrt{a}\,B+9A\sqrt{c}\right)c\sqrt{x}\right)\operatorname{Subst}\Bigg(}{15a^{3/2}e^3\sqrt{ex}}$$

$$= -\frac{2A\sqrt{a+cx^2}}{5ae(ex)^{5/2}} - \frac{2B\sqrt{a+cx^2}}{3ae^2(ex)^{3/2}} + \frac{6Ac\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}} - \frac{6Ac^{3/2}x\sqrt{a+cx^2}}{5a^2e^3\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{6Ac^{5/4}\surd}{}$$

Mathematica [C] time = 0.03, size = 83, normalized size = 0.23

$$-\frac{2x\sqrt{\frac{cx^2}{a}+1}\left(3A\,{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};-\frac{cx^2}{a}\right)+5Bx\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{15(ex)^{7/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(7/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*x*Sqrt[1 + (c*x^2)/a]*(3*A*Hypergeometric2F1[-5/4, 1/2, -1/4, -((c*x^2)
/a)] + 5*B*x*Hypergeometric2F1[-3/4, 1/2, 1/4, -((c*x^2)/a)]))/(15*(e*x)^(7
/2)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{ce^4x^6+ae^4x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c*e^4*x^6 + a*e^4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(7/2)), x)
```

maple [A] time = 0.09, size = 331, normalized size = 0.91

$$-\frac{-18Ac^2x^4+18\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac\,x^2\,\text{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-9\sqrt{2}\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] -1/15/x^2*(18*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c-9*A*2^(1/2)*((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1
/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),
1/2*2^(1/2))*x^2*a*c+5*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(
1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a-1
8*A*c^2*x^4+10*B*a*c*x^3-12*A*a*c*x^2+10*B*a^2*x+6*A*a^2)/(c*x^2+a)^(1/2)/e
^3/(e*x)^(1/2)/a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(e\,x\right)}^{7/2}\,\sqrt{c\,x^2+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(1/2)), x)
```

sympy [C] time = 29.24, size = 104, normalized size = 0.29

$$\frac{A\Gamma\left(-\frac{5}{4}\right){}_{2}F_{1}\left(\begin{matrix} -\frac{5}{4}, \frac{1}{2} \\ -\frac{1}{4} \end{matrix}\middle| {\frac{cx^{2}e^{i\pi}}{a}} \right)}{2\sqrt{a}e^{\frac{7}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)} + \frac{B\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix} -\frac{3}{4}, \frac{1}{2} \\ \frac{1}{4} \end{matrix}\middle| {\frac{cx^{2}e^{i\pi}}{a}} \right)}{2\sqrt{a}e^{\frac{7}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(7/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*gamma(-5/4)*hyper((-5/4, 1/2), (-1/4,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt
(a)*e**(7/2)*x**(5/2)*gamma(-1/4)) + B*gamma(-3/4)*hyper((-3/4, 1/2), (1/4,
), c*x**2*exp_polar(I*pi)/a)/(2*sqrt(a)*e**(7/2)*x**(3/2)*gamma(1/4))
```

3.466 $\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=360

$$-\frac{a^{3/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(63\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{30c^{11/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{21a^{5/4}Be^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{5c^{11/4}\sqrt{e}}$$

```
[Out] -e*(e*x)^(5/2)*(B*x+A)/c/(c*x^2+a)^(1/2)+7/5*B*e^2*(e*x)^(3/2)*(c*x^2+a)^(1
/2)/c^2-21/5*a*B*e^4*x*(c*x^2+a)^(1/2)/c^(5/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1
/2)+5/3*A*e^3*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c^2+21/5*a^(5/4)*B*e^4*(cos(2*arc
tan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)
))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x
*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1
/2)/(c*x^2+a)^(1/2)-1/30*a^(3/4)*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))
)^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^
(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(63*B*a^(1/2)+25*A*c^(1/2))*(a^(1/2)+x
*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1
/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {819, 833, 842, 840, 1198, 220, 1196}

$$-\frac{a^{3/4}e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(63\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{30c^{11/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{21a^{5/4}Be^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{5c^{11/4}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((e*(e*x)^(5/2)*(A + B*x))/(c*Sqrt[a + c*x^2])) + (5*A*e^3*Sqrt[e*x]*Sqrt[
a + c*x^2])/(3*c^2) + (7*B*e^2*(e*x)^(3/2)*Sqrt[a + c*x^2])/(5*c^2) - (21*a
*B*e^4*x*Sqrt[a + c*x^2])/(5*c^(5/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (21
*a^(5/4)*B*e^4*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sq
rt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*c^(11/4
)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (a^(3/4)*(63*Sqrt[a]*B + 25*A*Sqrt[c])*e^4*S
qrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Elli
pticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(30*c^(11/4)*Sqrt[e*x]*Sqr
t[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{(ex)^{3/2}\left(\frac{5}{2}aAe^2+\frac{7}{2}aBe^2x\right)}{\sqrt{a+cx^2}}\,dx}{ac} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} + \frac{2\int \frac{\sqrt{ex}\left(-\frac{21}{4}a^2Be^3+\frac{25}{4}aAce^3x\right)}{\sqrt{a+cx^2}}\,dx}{5ac^2} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Ae^3\sqrt{ex}\sqrt{a+cx^2}}{3c^2} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} + \frac{4\int \frac{-\frac{25}{8}a^2Ace^4-\frac{63}{8}a^2Bce^4}{\sqrt{ex}\sqrt{a+cx^2}}}{15ac^3} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Ae^3\sqrt{ex}\sqrt{a+cx^2}}{3c^2} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} + \frac{\left(4\sqrt{x}\right)\int \frac{-\frac{25}{8}a^2Ace^4-}{\sqrt{x}\sqrt{a+}}}{15ac^3\sqrt{ex}} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Ae^3\sqrt{ex}\sqrt{a+cx^2}}{3c^2} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} + \frac{\left(8\sqrt{x}\right)\text{Subst}\left(\int -\frac{25}{8}\right.}{15} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Ae^3\sqrt{ex}\sqrt{a+cx^2}}{3c^2} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} + \frac{\left(21a^{3/2}Be^4\sqrt{x}\right)\text{Subs}}{5c^{5/}} \\
&= -\frac{e(ex)^{5/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Ae^3\sqrt{ex}\sqrt{a+cx^2}}{3c^2} + \frac{7Be^2(ex)^{3/2}\sqrt{a+cx^2}}{5c^2} - \frac{21aBe^4x\sqrt{a+cx^2}}{5c^{5/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\right.}
\end{aligned}
$$

Mathematica [C] time = 0.07, size = 127, normalized size = 0.35

$$\frac{e^3\sqrt{ex}\left(-25aA\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+25aA-21aBx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+21aBx+10Acx^2+6B\right.}{15c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (e^3*Sqrt[e*x]*(25*a*A + 21*a*B*x + 10*A*c*x^2 + 6*B*c*x^3 - 25*a*A*Sqrt[1
+ (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - 21*a*B*x*Sqrt
[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(15*c^2*Sq
rt[a + c*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Be^3x^4+Ae^3x^3\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^2x^4+2\,acx^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*e^3*x^3)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^2*x^4 + 2*a*c
*x^2 + a^2), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{7}{2}}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
[Out] integrate((B*x + A)*(e*x)^(7/2)/(c*x^2 + a)^(3/2), x)
```

maple [**A**] time = 0.13, size = 318, normalized size = 0.88

$$-\frac{\sqrt{ex}\,\left(-12Bc^2x^4-20Ac^2x^3-42Bacx^2-50Aacx+126\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,B\,a^2\,\mathrm{EllipticE}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(3/2),x)
[Out] -1/30*e^3/x*(e*x)^(1/2)*(25*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ell
ipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a+
126*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/
(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2-63*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)
*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*
a^2-12*B*c^2*x^4-20*A*c^2*x^3-42*B*a*c*x^2-50*A*a*c*x)/(c*x^2+a)^(1/2)/c^3
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{7}{2}}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
[Out] integrate((B*x + A)*(e*x)^(7/2)/(c*x^2 + a)^(3/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e\,x\right)}^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(3/2),x)
[Out] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(7/2)*(B*x+A)/(c*x**2+a)**(3/2),x)
[Out] Timed out
```

3.467 $\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=326

$$-\frac{\sqrt[4]{a}\,e^3\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B-9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{6c^{9/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}}+\frac{3Ae^3x\sqrt{a+}}{c^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\right.}$$

```
[Out] -e*(e*x)^(3/2)*(B*x+A)/c/(c*x^2+a)^(1/2)+3*A*e^3*x*(c*x^2+a)^(1/2)/c^(3/2)/
(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+5/3*B*e^2*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c^2-3
*a^(1/4)*A*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arcta
n(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))
),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2
)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/6*a^(1/4)*e^3*(cos(2*arctan(c
^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*El
lipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a^(1/2)-9*
A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1
/2)/c^(9/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {819, 833, 842, 840, 1198, 220, 1196}

$$-\frac{\sqrt[4]{a}\,e^3\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B-9A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{6c^{9/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}}+\frac{3Ae^3x\sqrt{a+}}{c^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((e*(e*x)^(3/2)*(A + B*x))/(c*Sqrt[a + c*x^2])) + (5*B*e^2*Sqrt[e*x]*Sqrt[
a + c*x^2])/(3*c^2) + (3*A*e^3*x*Sqrt[a + c*x^2])/(c^(3/2)*Sqrt[e*x]*(Sqrt[
a] + Sqrt[c]*x)) - (3*a^(1/4)*A*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a +
 c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/
4)], 1/2])/(c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (a^(1/4)*(5*Sqrt[a]*B - 9*
A*Sqrt[c])*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sq
rt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(6*c^(9/4)
*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{\int \frac{\sqrt{ex}\left(\frac{3}{2}aAe^2+\frac{5}{2}aBe^2x\right)}{\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Be^2\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2} + \frac{2\int \frac{-\frac{5}{4}a^2Be^3+\frac{9}{4}aAce^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3ac^2}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Be^2\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2} + \frac{\left(2\sqrt{x}\right)\int \frac{-\frac{5}{4}a^2Be^3+\frac{9}{4}aAce^3x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3ac^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Be^2\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2} + \frac{\left(4\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{5}{4}a^2Be^3+\frac{9}{4}aAce^3x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{3ac^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Be^2\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2} - \frac{\left(\sqrt{a}\,\left(5\sqrt{a}\,B-9A\sqrt{c}\right)e^3\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx}}\right.}{3c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{c\sqrt{a+cx^2}} + \frac{5Be^2\sqrt{ex}\,\sqrt{a+cx^2}}{3c^2} + \frac{3Ae^3x\sqrt{a+cx^2}}{c^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{3\sqrt[4]{a}\,Ae^3\sqrt{x}\,\left(\sqrt{a}+\right.}{}$$

Mathematica [C] time = 0.06, size = 120, normalized size = 0.37

$$\frac{e^2\sqrt{ex}\left(3Acx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-5aB\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+5aB-3Acx+2Bcx^2\right)}{3c^2\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (e^2*Sqrt[e*x]*(5*a*B - 3*A*c*x + 2*B*c*x^2 - 5*a*B*Sqrt[1 + (c*x^2)/a]*Hyp
ergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] + 3*A*c*x*Sqrt[1 + (c*x^2)/a]*H
ypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*c^2*Sqrt[a + c*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Be^2x^3+Ae^2x^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^2x^4+2\,acx^2+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*e^2*x^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^2*x^4 + 2*a*c
*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/(c*x^2 + a)^(3/2), x)
```

maple [A] time = 0.16, size = 308, normalized size = 0.94

$$-\frac{\sqrt{ex}\left(-4B\,c^2x^3+6A\,c^2x^2-18\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+9\sqrt{\frac{cx}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/6/x*e^2*(e*x)^(1/2)*(9*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c-18*A*((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-
1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
,1/2*2^(1/2))*2^(1/2)*a*c+5*B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2
)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a-
4*B*c^2*x^3+6*A*c^2*x^2-10*B*a*c*x)/(c*x^2+a)^(1/2)/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/(c*x^2 + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{5/2}\,\left(A+B\,x\right)}{\left(c\,x^2+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [C] time = 141.57, size = 94, normalized size = 0.29

$$\frac{Ae^{\frac{5}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_2F_1\left(\begin{matrix}\frac{3}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{11}{4}\right)}+\frac{Be^{\frac{5}{2}}x^{\frac{9}{2}}\Gamma\left(\frac{9}{4}\right){}_2F_1\left(\begin{matrix}\frac{3}{2},\frac{9}{4}\\ \frac{13}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{13}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(5/2)*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*e**(5/2)*x**(7/2)*gamma(7/4)*hyper((3/2, 7/4), (11/4,), c*x**2*exp_polar(
I*pi)/a)/(2*a**(3/2)*gamma(11/4)) + B*e**(5/2)*x**(9/2)*gamma(9/4)*hyper((3
/2, 9/4), (13/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*gamma(13/4))
```

3.468 $\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=296

$$\frac{e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2\sqrt[4]{a}\,c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{3Be^2x\sqrt{a+cx^2}}{c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

```
[Out] -e*(B*x+A)*(e*x)^(1/2)/c/(c*x^2+a)^(1/2)+3*B*e^2*x*(c*x^2+a)^(1/2)/c^(3/2)/
(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-3*a^(1/4)*B*e^2*(cos(2*arctan(c^(1/4)*x^(1/
2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(
2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)
*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2
)+1/2*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(
1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2
*2^(1/2))*(3*B*a^(1/2)+A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a
^(1/2)+x*c^(1/2))^2)^(1/2)/a^(1/4)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {819, 842, 840, 1198, 220, 1196}

$$\frac{e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}\,B+A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2\sqrt[4]{a}\,c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}-\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{3Be^2x\sqrt{a+cx^2}}{c^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((e*Sqrt[e*x]*(A + B*x))/(c*Sqrt[a + c*x^2])) + (3*B*e^2*x*Sqrt[a + c*x^2]
)/(c^(3/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (3*a^(1/4)*B*e^2*Sqrt[x]*(Sqr
t[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*Arc
Tan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) +
 ((3*Sqrt[a]*B + A*Sqrt[c])*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x
^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)],
 1/2])/(2*a^(1/4)*c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx &= -\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{\int \frac{\frac{1}{2}aAe^2+\frac{3}{2}aBe^2x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{ac}\\
&= -\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{\sqrt{x}\int \frac{\frac{1}{2}aAe^2+\frac{3}{2}aBe^2x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{ac\sqrt{ex}}\\
&= -\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{1}{2}aAe^2+\frac{3}{2}aBe^2x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{ac\sqrt{ex}}\\
&= -\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}-\frac{\left(3\sqrt{a}\,Be^2\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{c^{3/2}\sqrt{ex}}+\frac{\left(2\left(\frac{3}{2}aBe^2+\frac{1}{2}\sqrt{a}\,A\right.\right.}{}\\
&= -\frac{e\sqrt{ex}\,(A+Bx)}{c\sqrt{a+cx^2}}+\frac{3Be^2x\sqrt{a+cx^2}}{c^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{3\sqrt[4]{a}\,Be^2\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(\right.}{c^{7/4}\sqrt{ex}\,\sqrt{a+cx^2}}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 102, normalized size = 0.34

$$
\frac{e\sqrt{ex}\left(A\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+Bx\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-A-Bx\right)}{c\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (e*Sqrt[e*x]*(-A - B*x + A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2,
5/4, -((c*x^2)/a)] + B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/
4, -((c*x^2)/a)]))/(c*Sqrt[a + c*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bex^{2}+Aex\right)\sqrt{cx^{2}+a}\,\sqrt{ex}}{c^{2}x^{4}+2\,acx^{2}+a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*e*x)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^2*x^4 + 2*a*c*x^2 +
 a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{3}{2}}}{\left(cx^{2}+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/(c*x^2 + a)^(3/2), x)
```

maple [A] time = 0.10, size = 290, normalized size = 0.98

$$\frac{\sqrt{ex}\,\left(-2Bc\,x^{2}-2Acx+6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Ba\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/2*e/x*(e*x)^(1/2)*(A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)+6*B*2^(1/
2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2),1/2*2^(1/2))*a-3*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1
/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*El
lipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a-2*B*c*x^2-2*
A*c*x)/(c*x^2+a)^(1/2)/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{3}{2}}}{\left(cx^{2}+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/(c*x^2 + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{3/2}\,(A+B\,x)}{{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [C] time = 28.55, size = 94, normalized size = 0.32

$$\frac{Ae^{\frac{3}{2}}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{5}{4},\frac{3}{2}\\ \frac{9}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{9}{4}\right)}+\frac{Be^{\frac{3}{2}}x^{\frac{7}{2}}\Gamma\left(\frac{7}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{3}{2},\frac{7}{4}\\ \frac{11}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{11}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*e**(3/2)*x**(5/2)*gamma(5/4)*hyper((5/4, 3/2), (9/4,), c*x**2*exp_polar(I
*pi)/a)/(2*a**(3/2)*gamma(9/4)) + B*e**(3/2)*x**(7/2)*gamma(7/4)*hyper((3/2
, 7/4), (11/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*gamma(11/4))
```

3.469 $\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=298

$$\frac{e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{3/4}c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan\right.}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

```
[Out] -(-A*c*x+B*a)*(e*x)^(1/2)/a/c/(c*x^2+a)^(1/2)-A*e*x*(c*x^2+a)^(1/2)/a/c^(1/
2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4
)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(
c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+
a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
+1/2*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^
(1/2))*(B*a^(1/2)-A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2
)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.24, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {821, 842, 840, 1198, 220, 1196}

$$\frac{e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{3/4}c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan\right.}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e*x]*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((Sqrt[e*x]*(a*B - A*c*x))/(a*c*Sqrt[a + c*x^2])) - (A*e*x*Sqrt[a + c*x^2]
)/(a*Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (A*e*Sqrt[x]*(Sqrt[a] + Sqr
t[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/
4)*Sqrt[x])/a^(1/4)], 1/2])/(a^(3/4)*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + (
(Sqrt[a]*B - A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(S
qrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])
/(2*a^(3/4)*c^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
```

```
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{\sqrt{ex}\,(aB-Acx)}{ac\sqrt{a+cx^2}}+\frac{\int \frac{\frac{aBe}{2}-\frac{1}{2}Acex}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{ac\sqrt{a+cx^2}}+\frac{\sqrt{x}\,\int \frac{\frac{aBe}{2}-\frac{1}{2}Acex}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{ac\sqrt{ex}}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{ac\sqrt{a+cx^2}}+\frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{aBe}{2}-\frac{1}{2}Acex^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{ac\sqrt{ex}}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{ac\sqrt{a+cx^2}}+\frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)e\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{\sqrt{a}\,c\sqrt{ex}}+\frac{\left(Ae\sqrt{x}\right)\text{Subs}}{}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{ac\sqrt{a+cx^2}}-\frac{Aex\sqrt{a+cx^2}}{a\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{Ae\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\,\mathrm{ta}\right.}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

Mathematica [C] time = 0.06, size = 113, normalized size = 0.38

$$\frac{\sqrt{ex}\left(-Acx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+3aB\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-3aB+3Acx\right)}{3ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[e*x]*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[e*x]*(-3*a*B + 3*A*c*x + 3*a*B*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[
1/4, 1/2, 5/4, -((c*x^2)/a)] - A*c*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[
1/2, 3/4, 7/4, -((c*x^2)/a)]))/(3*a*c*Sqrt[a + c*x^2])
```

fricas **[F]** time = 1.18, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^2x^4+2\,acx^2+a^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^2*x^4 + 2*a*c*x^2 + a^2), x
)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/(c*x^2 + a)^(3/2), x)
```

maple **[A]** time = 0.09, size = 297, normalized size = 1.00

$$\sqrt{ex}\,\left(2A\,c^2x^2-2\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\text{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right)+\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/2*(e*x)^(1/2)*(A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1
/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c-2*A*((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(
1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/
2))*2^(1/2)*a*c+B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a+2*A*c^2*x^2-
2*B*a*c*x)/(c*x^2+a)^(1/2)/x/a/c^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/(c*x^2 + a)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{e\,x}\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy **[C]** time = 13.19, size = 94, normalized size = 0.32

$$\frac{A\sqrt{e}x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_2F_1\left(\begin{matrix}\frac{3}{4},\frac{3}{2}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{7}{4}\right)}+\frac{B\sqrt{e}x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_2F_1\left(\begin{matrix}\frac{5}{4},\frac{3}{2}\\ \frac{9}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*sqrt(e)*x**(3/2)*gamma(3/4)*hyper((3/4, 3/2), (7/4,), c*x**2*exp_polar(I*
pi)/a)/(2*a**(3/2)*gamma(7/4)) + B*sqrt(e)*x**(5/2)*gamma(5/4)*hyper((5/4,
3/2), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*gamma(9/4))
```

3.470 $\int \frac{A+Bx}{\sqrt{ex}\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=290

$$-\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{5/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan^{-}\right.}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

```
[Out] (B*x+A)*(e*x)^(1/2)/a/e/(c*x^2+a)^(1/2)-B*x*(c*x^2+a)^(1/2)/a/c^(1/2)/(a^(1
/2)+x*c^(1/2))/(e*x)^(1/2)+B*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/
2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2
)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/2*(cos(
2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^
(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(B*a^
(1/2)-A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))
^2)^(1/2)/a^(5/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.27, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {823, 842, 840, 1198, 220, 1196}

$$-\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{5/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan^{-}\right.}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*(a + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[e*x]*(A + B*x))/(a*e*Sqrt[a + c*x^2]) - (B*x*Sqrt[a + c*x^2])/(a*Sqrt
[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (B*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqr
t[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])
/a^(1/4)], 1/2])/(a^(3/4)*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - ((Sqrt[a]*B
- A*Sqrt[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt
[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(2*a^(5/4)*c
^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{ex}\left(a+cx^2\right)^{3/2}}\,dx &= \frac{\sqrt{ex}\,(A+Bx)}{ae\sqrt{a+cx^2}} - \frac{\int \frac{-\frac{1}{2}aAce^2+\frac{1}{2}aBce^2x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{a^2ce^2}\\
&= \frac{\sqrt{ex}\,(A+Bx)}{ae\sqrt{a+cx^2}} - \frac{\sqrt{x}\int \frac{-\frac{1}{2}aAce^2+\frac{1}{2}aBce^2x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{a^2ce^2\sqrt{ex}}\\
&= \frac{\sqrt{ex}\,(A+Bx)}{ae\sqrt{a+cx^2}} - \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{1}{2}aAce^2+\frac{1}{2}aBce^2x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{a^2ce^2\sqrt{ex}}\\
&= \frac{\sqrt{ex}\,(A+Bx)}{ae\sqrt{a+cx^2}} + \frac{\left(B\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{\sqrt{a}\,\sqrt{c}\,\sqrt{ex}} - \frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{x}\right)\text{Subst}\Bigg(}{a\sqrt{c}\,\sqrt{ex}}\\
&= \frac{\sqrt{ex}\,(A+Bx)}{ae\sqrt{a+cx^2}} - \frac{Bx\sqrt{a+cx^2}}{a\sqrt{c}\,\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\Big(2\tan^{-}}{a^{3/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}
\end{aligned}$$

Mathematica [C] time = 0.05, size = 107, normalized size = 0.37

$$\frac{x\left(3A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-Bx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+3(A+Bx)\right)}{3a\sqrt{ex}\,\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*(a + c*x^2)^(3/2)),x]
```

```
[Out] (x*(3*(A + B*x) + 3*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4,
-((c*x^2)/a)] - B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -(
(c*x^2)/a)]))/(3*a*Sqrt[e*x]*Sqrt[a + c*x^2])
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^2ex^5+2\,acex^3+a^2ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^2*e*x^5 + 2*a*c*e*x^3 + a^2
*e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*sqrt(e*x)), x)
```

maple [A] time = 0.13, size = 288, normalized size = 0.99

$$\frac{2Bc\,x^2+2Acx-2\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Ba\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}}{2\sqrt{c\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] 1/2*(A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))
/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)+B*2^(1/2)*((c*x+(-a*c)^(1
/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c
)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^
(1/2))*a-2*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a+2*B*c*x^2+2*A*c*x)/(c*x^2+a)^(
1/2)/c/a/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*sqrt(e*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{e\,x}\,{\left(c\,x^2+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(3/2)), x)
```

sympy [C] time = 14.74, size = 94, normalized size = 0.32

$$\frac{A\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{1}{4},\frac{3}{2}\\ \frac{5}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)}+\frac{Bx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}\frac{3}{4},\frac{3}{2}\\ \frac{7}{4}\end{matrix}\middle|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\sqrt{e}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*sqrt(x)*gamma(1/4)*hyper((1/4, 3/2), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2
*a**(3/2)*sqrt(e)*gamma(5/4)) + B*x**(3/2)*gamma(3/4)*hyper((3/4, 3/2), (7/
4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*sqrt(e)*gamma(7/4))
```

3.471 $\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=327

$$\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{7/4}\sqrt[4]{c}\,e\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{3A\sqrt[4]{c}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\right.}{a^{7/4}e\sqrt{ex}\,\sqrt{a+cx^2}}$$

```
[Out] (B*x+A)/a/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)-3*A*(c*x^2+a)^(1/2)/a^2/e/(e*x)^(1/
2)+3*A*x*c^(1/2)*(c*x^2+a)^(1/2)/a^2/e/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-3*A*
c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2
^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)
/a^(7/4)/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^
(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arc
tan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(B*a^(1/2)+3*A*c^(1/2))*(a^(1/2)
+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/c^(1/4)
/e/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [**A**] time = 0.34, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B+3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{2a^{7/4}\sqrt[4]{c}\,e\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}}+\frac{3A\sqrt{c}\,x\sqrt{a+cx^2}}{a^2e\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{3A}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*e*Sqrt[e*x]*Sqrt[a + c*x^2]) - (3*A*Sqrt[a + c*x^2])/(a^2*e*Sq
rt[e*x]) + (3*A*Sqrt[c]*x*Sqrt[a + c*x^2])/(a^2*e*Sqrt[e*x]*(Sqrt[a] + Sqrt
[c]*x)) - (3*A*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt
[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(a
^(7/4)*e*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((Sqrt[a]*B + 3*A*Sqrt[c])*Sqrt[x]*(S
qrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*A
rcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(2*a^(7/4)*c^(1/4)*e*Sqrt[e*x]*Sqrt
[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{3/2}}\,dx = \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{\int \frac{-\frac{3}{2}aAce^2-\frac{1}{2}aBce^2x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{a^2ce^2}$$

$$= \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}} + \frac{2\int \frac{\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{a^3ce^4}$$

$$= \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}} + \frac{\left(2\sqrt{x}\right)\int \frac{\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{a^3ce^4\sqrt{ex}}$$

$$= \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}} + \frac{\left(4\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{a^3ce^4\sqrt{ex}}$$

$$= \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}} + \frac{\left(\left(\sqrt{a}\,B+3A\sqrt{c}\right)\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right.}{a^{3/2}e\sqrt{ex}}$$

$$= \frac{A+Bx}{ae\sqrt{ex}\,\sqrt{a+cx^2}} - \frac{3A\sqrt{a+cx^2}}{a^2e\sqrt{ex}} + \frac{3A\sqrt{c}\,x\sqrt{a+cx^2}}{a^2e\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{3A\sqrt[4]{c}\,\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}{a^{7/4}e}$$

Mathematica [C] time = 0.05, size = 100, normalized size = 0.31

$$\frac{x\left(-3A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)+Bx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+A+Bx\right)}{a(ex)^{3/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (x*(A + B*x - 3*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-1/4, 1/2, 3/4, -((
c*x^2)/a)] + B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*
x^2)/a)]))/(a*(e*x)^(3/2)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^2e^2x^6+2\,ace^2x^4+a^2e^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^2*e^2*x^6 + 2*a*c*e^2*x^4 +
 a^2*e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(3/2)), x)
```

maple [A] time = 0.09, size = 304, normalized size = 0.93

$$-\frac{6A\,c^{2}x^{2}-6\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,Aac\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/2*(3*A*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a*c-6*A*((c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)
^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/
2)*a*c-B*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*a+6*A*c^2*x^2-2*B*a*c*x
+4*A*a*c)/(c*x^2+a)^(1/2)/c/e/(e*x)^(1/2)/a^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^{2}+a\right)^{\frac{3}{2}}(ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{(e\,x)}^{3/2}\,{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(3/2)), x)
```

sympy [C] time = 29.21, size = 97, normalized size = 0.30

$$\frac{A\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}-\frac{1}{4},\frac{3}{2}\\ \frac{3}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{3}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}+\frac{B\sqrt{x}\,\Gamma\left(\frac{1}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{1}{4},\frac{3}{2}\\ \frac{5}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{3}{2}}\Gamma\left(\frac{5}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(3/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*gamma(-1/4)*hyper((-1/4, 3/2), (3/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3
/2)*e**(3/2)*sqrt(x)*gamma(3/4)) + B*sqrt(x)*gamma(1/4)*hyper((1/4, 3/2), (
5/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*e**(3/2)*gamma(5/4))
```

3.472 $\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=357

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{6a^{9/4}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{3B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}}{a^{7/4}e^2\sqrt{ex}\sqrt{a+c}}$$

```
[Out] (B*x+A)/a/e/(e*x)^(3/2)/(c*x^2+a)^(1/2)-5/3*A*(c*x^2+a)^(1/2)/a^2/e/(e*x)^(
3/2)-3*B*(c*x^2+a)^(1/2)/a^2/e^2/(e*x)^(1/2)+3*B*x*c^(1/2)*(c*x^2+a)^(1/2)/
a^2/e^2/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-3*B*c^(1/4)*(cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(
sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(
1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/e^2/(e*x)^(1/2)/(c*x^2
+a)^(1/2)+1/6*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(
2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a
^(1/4))),1/2*2^(1/2))*(9*B*a^(1/2)-5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)
*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(9/4)/e^2/(e*x)^(1/2)/(c*x^2+a)^
(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(9\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{6a^{9/4}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}}-\frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}}+\frac{3B\sqrt{c}}{a^2e^2\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*e*(e*x)^(3/2)*Sqrt[a + c*x^2]) - (5*A*Sqrt[a + c*x^2])/(3*a^2*
e*(e*x)^(3/2)) - (3*B*Sqrt[a + c*x^2])/(a^2*e^2*Sqrt[e*x]) + (3*B*Sqrt[c]*x
*Sqrt[a + c*x^2])/(a^2*e^2*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (3*B*c^(1/4)*
Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*Ell
ipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(a^(7/4)*e^2*Sqrt[e*x]*Sq
rt[a + c*x^2]) + ((9*Sqrt[a]*B - 5*A*Sqrt[c])*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sq
rt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1
/4)*Sqrt[x])/a^(1/4)], 1/2])/(6*a^(9/4)*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{3/2}}\,dx = \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{\int \frac{-\frac{5}{2}aAce^2-\frac{3}{2}aBce^2x}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx}{a^2ce^2}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} + \frac{2\int \frac{\frac{9}{4}a^2Bce^3-\frac{5}{4}aAc^2e^3x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{3a^3ce^4}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} - \frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}} - \frac{4\int \frac{\frac{5}{8}a^2Ac^2e^4-\frac{9}{8}a^2Bc^2e^4x}{\sqrt{ex}\sqrt{a+cx^2}}\,dx}{3a^4ce^6}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} - \frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}} - \frac{\left(4\sqrt{x}\right)\int \frac{\frac{5}{8}a^2Ac^2e^4-\frac{9}{8}a^2Bc^2e^4x}{\sqrt{x}\sqrt{a+cx^2}}\,dx}{3a^4ce^6\sqrt{ex}}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} - \frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}} - \frac{\left(8\sqrt{x}\right)\text{Subst}\Bigg(\int \frac{\frac{5}{8}a^2Ac^2e^4-\frac{9}{8}a^2Bc^2e^4}{\sqrt{a+cx^4}}}{3a^4ce^6\sqrt{ex}}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} - \frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}} - \frac{\left(3B\sqrt{c}\sqrt{x}\right)\text{Subst}\Bigg(\int \frac{1-\frac{\sqrt{c}x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,}{a^{3/2}e^2\sqrt{ex}}$$

$$= \frac{A+Bx}{ae(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{3a^2e(ex)^{3/2}} - \frac{3B\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}} + \frac{3B\sqrt{c}\,x\sqrt{a+cx^2}}{a^2e^2\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{3B\sqrt[4]{c}}{}$$

Mathematica [C] time = 0.06, size = 107, normalized size = 0.30

$$\frac{x\left(3\left(-3Bx\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)+A+Bx\right)-5A\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)\right)}{3a(ex)^{5/2}\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (x*(-5*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-3/4, 1/2, 1/4, -((c*x^2)/a)
] + 3*(A + B*x - 3*B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-1/4, 1/2, 3/4
, -((c*x^2)/a)])))/(3*a*(e*x)^(5/2)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^2e^3x^7+2\,ace^3x^5+a^2e^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^2*e^3*x^7 + 2*a*c*e^3*x^5 +
 a^2*e^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}(ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(5/2)), x)
```

maple [A] time = 0.11, size = 307, normalized size = 0.86

$$-\frac{18Bc\,x^3+10Ac\,x^2-18\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bax\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+9\sqrt{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/6/x*(5*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c
)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*x+9*B*2^(1/2)*((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*
(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2),1/2*2^(1/2))*x*a-18*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((
-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Elliptic
E(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x*a+18*B*c*x^3+10*A*
c*x^2+12*B*a*x+4*A*a)/(c*x^2+a)^(1/2)/a^2/e^2/(e*x)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}\left(ex\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(e\,x\right)}^{5/2}\,{\left(c\,x^2+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(3/2)), x)
```

sympy [C] time = 65.58, size = 100, normalized size = 0.28

$$\frac{A\Gamma\left(-\frac{3}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{3}{4},\frac{3}{2}\\ \frac{1}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{5}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}+\frac{B\Gamma\left(-\frac{1}{4}\right){}_{2}F_{1}\left(\begin{matrix}-\frac{1}{4},\frac{3}{2}\\ \frac{3}{4}\end{matrix}\middle|\,\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{5}{2}}\sqrt{x}\,\Gamma\left(\frac{3}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(5/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*gamma(-3/4)*hyper((-3/4, 3/2), (1/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3
/2)*e**(5/2)*x**(3/2)*gamma(1/4)) + B*gamma(-1/4)*hyper((-1/4, 3/2), (3/4,)
, c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*e**(5/2)*sqrt(x)*gamma(3/4))
```

3.473 $\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=393

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{30a^{11/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{21Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+c}{(\sqrt{a}+}}}{5a^{11/4}e^3\sqrt{ex}}$$

```
[Out] (B*x+A)/a/e/(e*x)^(5/2)/(c*x^2+a)^(1/2)-7/5*A*(c*x^2+a)^(1/2)/a^2/e/(e*x)^(
5/2)-5/3*B*(c*x^2+a)^(1/2)/a^2/e^2/(e*x)^(3/2)+21/5*A*c*(c*x^2+a)^(1/2)/a^3
/e^3/(e*x)^(1/2)-21/5*A*c^(3/2)*x*(c*x^2+a)^(1/2)/a^3/e^3/(a^(1/2)+x*c^(1/2
))/(e*x)^(1/2)+21/5*A*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/
2)+x*c^(1/2))^2)^(1/2)/a^(11/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/30*c^(3/4
)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(
1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2)
)*(25*B*a^(1/2)+63*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/
2)+x*c^(1/2))^2)^(1/2)/a^(11/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.50, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+63A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{30a^{11/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{21Ac^{3/2}x\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{21Ac^{5/4}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (A + B*x)/(a*e*(e*x)^(5/2)*Sqrt[a + c*x^2]) - (7*A*Sqrt[a + c*x^2])/(5*a^2*
e*(e*x)^(5/2)) - (5*B*Sqrt[a + c*x^2])/(3*a^2*e^2*(e*x)^(3/2)) + (21*A*c*Sq
rt[a + c*x^2])/(5*a^3*e^3*Sqrt[e*x]) - (21*A*c^(3/2)*x*Sqrt[a + c*x^2])/(5*
a^3*e^3*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (21*A*c^(5/4)*Sqrt[x]*(Sqrt[a] +
 Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c
^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(5*a^(11/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
- ((25*Sqrt[a]*B + 63*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt
[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/
a^(1/4)], 1/2])/(30*a^(11/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{3/2}}\,dx &= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{\int \frac{-\frac{7}{2}aAce^2-\frac{5}{2}aBce^2x}{(ex)^{7/2}\sqrt{a+cx^2}}\,dx}{a^2ce^2}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}+\frac{2\int \frac{\frac{25}{4}a^2Bce^3-\frac{21}{4}aAc^2e^3x}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx}{5a^3ce^4}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}-\frac{4\int \frac{\frac{63}{8}a^2Ac^2e^4+\frac{25}{8}a^2Bc^2e^4x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{15a^4ce^6}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}+\frac{8\int \frac{-\frac{25}{16}a^3Bc^2e^5-}{\sqrt{ex}\,\sqrt{a}}}{15a^5}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}+\frac{\left(8\sqrt{x}\right)\int \frac{-\frac{25}{16}a^3}{}}{15a^5}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}+\frac{\left(16\sqrt{x}\right)\text{Subst}}{}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}-\frac{\left(\left(25\sqrt{a}\,B+63\right.\right.}{}\\
&= \frac{A+Bx}{ae(ex)^{5/2}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{5a^2e(ex)^{5/2}}-\frac{5B\sqrt{a+cx^2}}{3a^2e^2(ex)^{3/2}}+\frac{21Ac\sqrt{a+cx^2}}{5a^3e^3\sqrt{ex}}-\frac{21Ac^{3/2}x\sqrt{a}}{5a^3e^3\sqrt{ex}\left(\sqrt{a}\right.}
\end{aligned}
$$

Mathematica [C] time = 0.06, size = 107, normalized size = 0.27

$$
\frac{x\left(-21A\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};-\frac{cx^2}{a}\right)-25Bx\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)+15(A+Bx)\right)}{15a(ex)^{7/2}\sqrt{a+cx^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(3/2)),x]
```

```
[Out] (x*(15*(A + B*x) - 21*A*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-5/4, 1/2, -1
/4, -((c*x^2)/a)] - 25*B*x*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-3/4, 1/2,
 1/4, -((c*x^2)/a)]))/(15*a*(e*x)^(7/2)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^2e^4x^8+2\,ace^4x^6+a^2e^4x^4},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^2*e^4*x^8 + 2*a*c*e^4*x^6 +
 a^2*e^4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(7/2)), x)
```

maple [A] time = 0.08, size = 331, normalized size = 0.84

$$-\frac{-126A c^2x^4+126\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aacx^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-63\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] -1/30/x^2*(126*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c-63*A*2^(1/2)*((c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(
-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
),1/2*2^(1/2))*x^2*a*c+25*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x
)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*
a-126*A*c^2*x^4+50*B*a*c*x^3-84*A*a*c*x^2+20*B*a^2*x+12*A*a^2)/(c*x^2+a)^(1
/2)/e^3/(e*x)^(1/2)/a^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}(ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*(e*x)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(e\,x\right)}^{7/2}\,{\left(c\,x^2+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(3/2)), x)
```

sympy [C] time = 150.96, size = 104, normalized size = 0.26

$$\frac{A\Gamma\left(-\frac{5}{4}\right){}_2F_1\left(\begin{matrix}-\frac{5}{4},\frac{3}{2}\\-\frac{1}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{7}{2}}x^{\frac{5}{2}}\Gamma\left(-\frac{1}{4}\right)}+\frac{B\Gamma\left(-\frac{3}{4}\right){}_2F_1\left(\begin{matrix}-\frac{3}{4},\frac{3}{2}\\\frac{1}{4}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}e^{\frac{7}{2}}x^{\frac{3}{2}}\Gamma\left(\frac{1}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(7/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*gamma(-5/4)*hyper((-5/4, 3/2), (-1/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(
3/2)*e**(7/2)*x**(5/2)*gamma(-1/4)) + B*gamma(-3/4)*hyper((-3/4, 3/2), (1/4
,), c*x**2*exp_polar(I*pi)/a)/(2*a**(3/2)*e**(7/2)*x**(3/2)*gamma(1/4))
```

3.474 $\int \frac{(ex)^{13/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=428

$$\frac{a^{5/4}e^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(325\sqrt{a}\,B-539A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{140c^{17/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{77a^{5/4}Ae^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{10c^{15/}}$$

```
[Out] -1/3*e*(e*x)^(11/2)*(B*x+A)/c/(c*x^2+a)^(3/2)-1/6*e^3*(e*x)^(7/2)*(13*B*x+1
1*A)/c^2/(c*x^2+a)^(1/2)+77/30*A*e^5*(e*x)^(3/2)*(c*x^2+a)^(1/2)/c^3+39/14*
B*e^4*(e*x)^(5/2)*(c*x^2+a)^(1/2)/c^3-77/10*a*A*e^7*x*(c*x^2+a)^(1/2)/c^(7/
2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-65/14*a*B*e^6*(e*x)^(1/2)*(c*x^2+a)^(1/2
)/c^4+77/10*a^(5/4)*A*e^7*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/
cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/
2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x
*c^(1/2))^2)^(1/2)/c^(15/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/140*a^(5/4)*e^7*(
cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(
325*B*a^(1/2)-539*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2
)+x*c^(1/2))^2)^(1/2)/c^(17/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 428, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {819, 833, 842, 840, 1198, 220, 1196}

$$\frac{a^{5/4}e^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(325\sqrt{a}\,B-539A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{140c^{17/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{77a^{5/4}Ae^7\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{10c^{15/}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(13/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*(e*x)^(11/2)*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (e^3*(e*x)^(7/2)*(11*
A + 13*B*x))/(6*c^2*Sqrt[a + c*x^2]) - (65*a*B*e^6*Sqrt[e*x]*Sqrt[a + c*x^2
])/(14*c^4) + (77*A*e^5*(e*x)^(3/2)*Sqrt[a + c*x^2])/(30*c^3) + (39*B*e^4*(
e*x)^(5/2)*Sqrt[a + c*x^2])/(14*c^3) - (77*a*A*e^7*x*Sqrt[a + c*x^2])/(10*c
^(7/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (77*a^(5/4)*A*e^7*Sqrt[x]*(Sqrt[a
] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan
[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(10*c^(15/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
+ (a^(5/4)*(325*Sqrt[a]*B - 539*A*Sqrt[c])*e^7*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x
)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqr
t[x])/a^(1/4)], 1/2])/(140*c^(17/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{13/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{(ex)^{9/2}\left(\frac{11}{2}aAe^2+\frac{13}{2}aBe^2x\right)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\int \frac{(ex)^{5/2}\left(\frac{77}{4}a^2Ae^4+\frac{117}{4}a^2Be^4x\right)}{\sqrt{a+cx^2}}\,dx}{3a^2c^2}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} + \frac{39Be^4(ex)^{5/2}\sqrt{a+cx^2}}{14c^3} + \frac{2\int \frac{(ex)^{3/2}(-5}{}}{}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} + \frac{77Ae^5(ex)^{3/2}\sqrt{a+cx^2}}{30c^3} + \frac{39Be^4(ex)^{5/}}{14}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} - \frac{65aBe^6\sqrt{ex}\sqrt{a+cx^2}}{14c^4} + \frac{77Ae^5(ex)^{3/2}}{30c}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} - \frac{65aBe^6\sqrt{ex}\sqrt{a+cx^2}}{14c^4} + \frac{77Ae^5(ex)^{3/2}}{30c}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} - \frac{65aBe^6\sqrt{ex}\sqrt{a+cx^2}}{14c^4} + \frac{77Ae^5(ex)^{3/2}}{30c}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} - \frac{65aBe^6\sqrt{ex}\sqrt{a+cx^2}}{14c^4} + \frac{77Ae^5(ex)^{3/2}}{30c}$$

$$= -\frac{e(ex)^{11/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{7/2}(11A+13Bx)}{6c^2\sqrt{a+cx^2}} - \frac{65aBe^6\sqrt{ex}\sqrt{a+cx^2}}{14c^4} + \frac{77Ae^5(ex)^{3/2}}{30c}$$

Mathematica [C] time = 0.14, size = 183, normalized size = 0.43

$$\frac{e^6\sqrt{ex}\left(-975a^3B+539a^2Acx+975a^2B\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-1365a^2Bcx^2+693aAc^2x^3-5\right.}{210c^4\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(13/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e^6*Sqrt[e*x]*(-975*a^3*B + 539*a^2*A*c*x - 1365*a^2*B*c*x^2 + 693*a*A*c^2
*x^3 - 260*a*B*c^2*x^4 + 84*A*c^3*x^5 + 60*B*c^3*x^6 + 975*a^2*B*(a + c*x^2
)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - 539*
a*A*c*x*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -(
(c*x^2)/a)]))/(210*c^4*(a + c*x^2)^(3/2))
```

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(Be^{6}x^{7}+Ae^{6}x^{6}\right)\sqrt{cx^{2}+a}\,\sqrt{ex}}{c^{3}x^{6}+3\,ac^{2}x^{4}+3\,a^{2}cx^{2}+a^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(13/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^6*x^7 + A*e^6*x^6)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c
^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{13}{2}}}{\left(cx^{2}+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(13/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(13/2)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.12, size = 637, normalized size = 1.49

$$\Bigg(120B\,c^{4}x^{7}+168A\,c^{4}x^{6}-520Ba\,c^{3}x^{5}+1386Aa\,c^{3}x^{4}-3234\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,A\,a^{2}c^{2}x^{2}\,\mathrm{Ellipt}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(13/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/420*(1617*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a^2*c^2-3234*A*2^(1/2)*((c*
x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(
1/2),1/2*2^(1/2))*x^2*a^2*c^2+975*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(
1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/
2))*x^2*a^2*c+120*B*c^4*x^7+168*A*c^4*x^6+1617*A*2^(1/2)*((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(
1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/
2))*a^3*c-3234*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^3*c+975*B*2^(1/2)*((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-
1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
,1/2*2^(1/2))*(-a*c)^(1/2)*a^3-520*B*a*c^3*x^5+1386*A*a*c^3*x^4-2730*B*a^2*
c^2*x^3+1078*A*a^2*c^2*x^2-1950*B*a^3*c*x)*e^6/x*(e*x)^(1/2)/c^5/(c*x^2+a)^
(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{13}{2}}}{\left(cx^{2}+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(13/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
[Out] integrate((B*x + A)*(e*x)^(13/2)/(c*x^2 + a)^(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{13/2}\,(A+B\,x)}{{\left(c\,x^2+a\right)}^{5/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(13/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
[Out] int(((e*x)^(13/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(13/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
[Out] Timed out
```

3.475 $\int \frac{(ex)^{11/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=398

$$-\frac{a^{3/4}e^6\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{20c^{15/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{77a^{5/4}Be^6\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{10c^{15/4}\sqrt{e}}$$

```
[Out] -1/3*e*(e*x)^(9/2)*(B*x+A)/c/(c*x^2+a)^(3/2)-1/6*e^3*(e*x)^(5/2)*(11*B*x+9*
A)/c^2/(c*x^2+a)^(1/2)+77/30*B*e^4*(e*x)^(3/2)*(c*x^2+a)^(1/2)/c^3-77/10*a*
B*e^6*x*(c*x^2+a)^(1/2)/c^(7/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+5/2*A*e^5*(
e*x)^(1/2)*(c*x^2+a)^(1/2)/c^3+77/10*a^(5/4)*B*e^6*(cos(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(s
in(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1
/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(15/4)/(e*x)^(1/2)/(c*x^2+a)^
(1/2)-1/20*a^(3/4)*e^6*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos
(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/
a^(1/4))),1/2*2^(1/2))*(77*B*a^(1/2)+25*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1
/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(15/4)/(e*x)^(1/2)/(c*x^2+a)^
(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.292$, Rules used = {819, 833, 842, 840, 1198, 220, 1196}

$$-\frac{a^{3/4}e^6\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(77\sqrt{a}\,B+25A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{20c^{15/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{77a^{5/4}Be^6\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{10c^{15/4}\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(11/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*(e*x)^(9/2)*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (e^3*(e*x)^(5/2)*(9*A
+ 11*B*x))/(6*c^2*Sqrt[a + c*x^2]) + (5*A*e^5*Sqrt[e*x]*Sqrt[a + c*x^2])/(2
*c^3) + (77*B*e^4*(e*x)^(3/2)*Sqrt[a + c*x^2])/(30*c^3) - (77*a*B*e^6*x*Sqr
t[a + c*x^2])/(10*c^(7/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (77*a^(5/4)*B*
e^6*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]
*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(10*c^(15/4)*Sqrt[e*x
]*Sqrt[a + c*x^2]) - (a^(3/4)*(77*Sqrt[a]*B + 25*A*Sqrt[c])*e^6*Sqrt[x]*(Sq
rt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*Ar
cTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(20*c^(15/4)*Sqrt[e*x]*Sqrt[a + c*x^
2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{11/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{(ex)^{7/2}\left(\frac{9}{2}aAe^2+\frac{11}{2}aBe^2x\right)}{\left(a+cx^2\right)^{3/2}}dx}{3ac}$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\int \frac{(ex)^{3/2}\left(\frac{45}{4}a^2Ae^4+\frac{77}{4}a^2Be^4x\right)}{\sqrt{a+cx^2}}dx}{3a^2c^2}$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{77Be^4(ex)^{3/2}\sqrt{a+cx^2}}{30c^3} +$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Ae^5\sqrt{ex}\sqrt{a+cx^2}}{2c^3} +$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Ae^5\sqrt{ex}\sqrt{a+cx^2}}{2c^3} +$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Ae^5\sqrt{ex}\sqrt{a+cx^2}}{2c^3} +$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Ae^5\sqrt{ex}\sqrt{a+cx^2}}{2c^3} +$$

$$= -\frac{e(ex)^{9/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{5/2}(9A+11Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Ae^5\sqrt{ex}\sqrt{a+cx^2}}{2c^3} +$$

Mathematica [C] time = 0.13, size = 165, normalized size = 0.41

$$e^5\sqrt{ex}\left(75a^2A+77a^2Bx-75aA\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+105aAcx^2-77aBx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\right.$$

$$30c^3\left(a+cx^2\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(11/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e^5*Sqrt[e*x]*(75*a^2*A + 77*a^2*B*x + 105*a*A*c*x^2 + 99*a*B*c*x^3 + 20*A
*c^2*x^4 + 12*B*c^2*x^5 - 75*a*A*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeome
tric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - 77*a*B*x*(a + c*x^2)*Sqrt[1 + (c*x^2
)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(30*c^3*(a + c*x^2)^(
3/2))
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(Be^5x^6+Ae^5x^5\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(11/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^5*x^6 + A*e^5*x^5)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c
^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^{\frac{11}{2}}}{\left(cx^2 + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(11/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(11/2)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.13, size = 615, normalized size = 1.55

$$-\frac{\left(-24B\,c^3x^6 - 40A\,c^3x^5 - 198Ba\,c^2x^4 - 210Aa\,c^2x^3 + 462\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,\sqrt{2}\,B\,a^2c\,x^2\,\mathrm{Ellipt}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(11/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/60*(75*A*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*x^2*a*c+462*B*((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*
(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2),1/2*2^(1/2))*2^(1/2)*x^2*a^2*c-231*B*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(
1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*E
llipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*2^(1/2)*x^2*a
^2*c-24*B*c^3*x^6+75*A*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1
/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),
1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-a*c)^(1/2)*a^2-40*A*
c^3*x^5+462*B*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(
1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/
2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^3-231*B*2^(1/2)*((-c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*a^3-198*B*a*c^2*x^4-210*A*a*c^2*x^3-154*B*a^2*c*x^2-150*A*a^2*c*x)
*e^5/x*(e*x)^(1/2)/c^4/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^{\frac{11}{2}}}{\left(cx^2 + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(11/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(11/2)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{11/2}\,(A+B\,x)}{\left(c\,x^2+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(11/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
[Out] int(((e*x)^(11/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(11/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
[Out] Timed out
```

3.476 $\int \frac{(ex)^{9/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{\sqrt[4]{a}\,e^5\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B-7A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{4c^{13/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}}-\frac{e(ex)^{7/2}(}{3c\left(a+\right.}$$

```
[Out] -1/3*e*(e*x)^(7/2)*(B*x+A)/c/(c*x^2+a)^(3/2)-1/6*e^3*(e*x)^(3/2)*(9*B*x+7*A
)/c^2/(c*x^2+a)^(1/2)+7/2*A*e^5*x*(c*x^2+a)^(1/2)/c^(5/2)/(a^(1/2)+x*c^(1/2
))/(e*x)^(1/2)+5/2*B*e^4*(e*x)^(1/2)*(c*x^2+a)^(1/2)/c^3-7/2*a^(1/4)*A*e^5*
(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/
2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*
(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4
)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/4*a^(1/4)*e^5*(cos(2*arctan(c^(1/4)*x^(1/2)
/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a^(1/2)-7*A*c^(1/2))*(a^
(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(13/4)/(
e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {819, 833, 842, 840, 1198, 220, 1196}

$$-\frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}}-\frac{\sqrt[4]{a}\,e^5\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,\left(5\sqrt{a}\,B-7A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{4c^{13/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e(ex)^{7/2}(}{3c\left(a+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(9/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*(e*x)^(7/2)*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (e^3*(e*x)^(3/2)*(7*A
+ 9*B*x))/(6*c^2*Sqrt[a + c*x^2]) + (5*B*e^4*Sqrt[e*x]*Sqrt[a + c*x^2])/(2*
c^3) + (7*A*e^5*x*Sqrt[a + c*x^2])/(2*c^(5/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*
x)) - (7*a^(1/4)*A*e^5*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt
[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(2
*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - (a^(1/4)*(5*Sqrt[a]*B - 7*A*Sqrt[c])
*e^5*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2
]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(4*c^(13/4)*Sqrt[e*x
]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{9/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{(ex)^{5/2}\left(\frac{7}{2}aAe^2+\frac{9}{2}aBe^2x\right)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\int \frac{\sqrt{ex}\left(\frac{21}{4}a^2Ae^4+\frac{45}{4}a^2Be^4x\right)}{\sqrt{a+cx^2}}\,dx}{3a^2c^2}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Be^4\sqrt{ex}\sqrt{a+cx^2}}{2c^3} + \frac{2\int \frac{-\frac{45}{8}a^3Be^5+\frac{63}{8}a^2Ac}{\sqrt{ex}\sqrt{a+cx^2}}}{9a^2c^3}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Be^4\sqrt{ex}\sqrt{a+cx^2}}{2c^3} + \frac{\left(2\sqrt{x}\right)\int \frac{-\frac{45}{8}a^3Be^5+}{\sqrt{x}\sqrt{a}}}{9a^2c^3\sqrt{e}}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Be^4\sqrt{ex}\sqrt{a+cx^2}}{2c^3} + \frac{\left(4\sqrt{x}\right)\text{Subst}\Bigg(\int -}{9}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Be^4\sqrt{ex}\sqrt{a+cx^2}}{2c^3} - \frac{\Big(\sqrt{a}\,\Big(5\sqrt{a}B-7A}{}$$

$$= -\frac{e(ex)^{7/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3(ex)^{3/2}(7A+9Bx)}{6c^2\sqrt{a+cx^2}} + \frac{5Be^4\sqrt{ex}\sqrt{a+cx^2}}{2c^3} + \frac{7Ae^5x\sqrt{a+cx^2}}{2c^{5/2}\sqrt{ex}\,\Big(\sqrt{a}+}$$

Mathematica [**C**] time = 0.12, size = 156, normalized size = 0.42

$$\frac{e^4\sqrt{ex}\,\Bigg(15a^2B+7Acx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-7aAcx-15aB\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\Big(\frac{1}{4},\frac{1}{2};\frac{5}{4};-}{6c^3\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(9/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e^4*Sqrt[e*x]*(15*a^2*B - 7*a*A*c*x + 21*a*B*c*x^2 - 9*A*c^2*x^3 + 4*B*c^2
*x^4 - 15*a*B*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5
/4, -((c*x^2)/a)] + 7*A*c*x*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2
F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(6*c^3*(a + c*x^2)^(3/2))
```

fricas [**F**] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Be^4x^5+Ae^4x^4\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(9/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^4*x^5 + A*e^4*x^4)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c
^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{9}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(9/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(9/2)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.09, size = 607, normalized size = 1.65

$$-\frac{\left(-8Bc^3x^5+18Ac^3x^4-42\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac^2x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+21\sqrt{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(9/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/12*(21*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c
)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c^2-42*A*2^(1/2)*((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/
(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1
/2*2^(1/2))*x^2*a*c^2+15*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)
^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a
*c+21*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-
c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c-42*A*2^(1/2)*(-1/(-a*c)^(1/2)*c
*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((
c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1
/2)*a^2*c+15*B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF((
(c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a
*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2-8*B*c^3*x^5+1
8*A*c^3*x^4-42*B*a*c^2*x^3+14*A*a*c^2*x^2-30*B*a^2*c*x)*e^4/x*(e*x)^(1/2)/c
^4/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{\frac{9}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(9/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(9/2)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{9/2}\,(A+B\,x)}{\left(c\,x^2+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(9/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^(9/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(9/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.477 $\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=339

$$\frac{e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12\sqrt[4]{a}\,c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}}-\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}$$

```
[Out] -1/3*e*(e*x)^(5/2)*(B*x+A)/c/(c*x^2+a)^(3/2)-1/6*e^3*(7*B*x+5*A)*(e*x)^(1/2
)/c^2/(c*x^2+a)^(1/2)+7/2*B*e^4*x*(c*x^2+a)^(1/2)/c^(5/2)/(a^(1/2)+x*c^(1/2
))/(e*x)^(1/2)-7/2*a^(1/4)*B*e^4*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)
^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^
(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/12*e^4*(co
s(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/
a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(21
*B*a^(1/2)+5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c
^(1/2))^2)^(1/2)/a^(1/4)/c^(11/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {819, 842, 840, 1198, 220, 1196}

$$-\frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}}+\frac{e^4\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(21\sqrt{a}\,B+5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12\sqrt[4]{a}\,c^{11/4}\sqrt{ex}\,\sqrt{a+cx^2}}-\frac{e(ex)^{5/2}(A+Bx}{3c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*(e*x)^(5/2)*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (e^3*Sqrt[e*x]*(5*A +
7*B*x))/(6*c^2*Sqrt[a + c*x^2]) + (7*B*e^4*x*Sqrt[a + c*x^2])/(2*c^(5/2)*Sq
rt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (7*a^(1/4)*B*e^4*Sqrt[x]*(Sqrt[a] + Sqrt[c
]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*
Sqrt[x])/a^(1/4)], 1/2])/(2*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((21*Sqrt
[a]*B + 5*A*Sqrt[c])*e^4*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sq
rt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/
(12*a^(1/4)*c^(11/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{7/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{(ex)^{3/2}\left(\frac{5}{2}aAe^2+\frac{7}{2}aBe^2x\right)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\int \frac{\frac{5}{4}a^2Ae^4+\frac{21}{4}a^2Be^4x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3a^2c^2}$$

$$= -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\sqrt{x}\,\int \frac{\frac{5}{4}a^2Ae^4+\frac{21}{4}a^2Be^4x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3a^2c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}} + \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{5}{4}a^2Ae^4+\frac{21}{4}a^2Be^4x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right.}{3a^2c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}} - \frac{\left(7\sqrt{a}\,Be^4\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{2c^{5/2}\sqrt{ex}}$$

$$= -\frac{e(ex)^{5/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^3\sqrt{ex}\,(5A+7Bx)}{6c^2\sqrt{a+cx^2}} + \frac{7Be^4x\sqrt{a+cx^2}}{2c^{5/2}\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{7\sqrt[4]{a}\,Be^4\sqrt{x}\,\left(\sqrt{a}\right.}{}$$

Mathematica [C]   time = 0.11, size = 139, normalized size = 0.41

$$\frac{e^3\sqrt{ex}\left(5A\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-5aA+7Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)-7aBx-7\right.}{6c^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e^3*Sqrt[e*x]*(-5*a*A - 7*a*B*x - 7*A*c*x^2 - 9*B*c*x^3 + 5*A*(a + c*x^2)*
Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] + 7*B*x*
(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/
a)]))/(6*c^2*(a + c*x^2)^(3/2))
```

fricas [F]   time = 0.87, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^3x^4+Ae^3x^3\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*e^3*x^3)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c
^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)\,(ex)^{\frac{7}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(7/2)/(c*x^2 + a)^(5/2), x)
```

maple [A]   time = 0.12, size = 584, normalized size = 1.72

$$\left(-18B\,c^2x^4-14A\,c^2x^3+42\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bac\,x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)-21\sqrt{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/12*(5*A*(-a*c)^(1/2)*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*c+42*B*2^(1/2)*((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^
(1/2),1/2*2^(1/2))*x^2*a*c-21*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(
1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*E
llipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c+5*A*2
^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^
(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*
c)^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a+42*B*2^(1/2)*((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(
1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/
2))*a^2-21*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2-18*B*c^2*x^4-14*A*c^2*x^3-14
*B*a*c*x^2-10*A*a*c*x)*e^3/x*(e*x)^(1/2)/c^3/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{7}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(7/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(7/2)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(e\,x\right)}^{7/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^(7/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(7/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.478 $\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=347

$$\frac{e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{3/4}c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E(2}{2a^{3/4}c^{7/4}\sqrt{ex}\sqrt{a+cx}}$$

```
[Out] -1/3*e*(e*x)^(3/2)*(B*x+A)/c/(c*x^2+a)^(3/2)-1/6*e^2*(-3*A*c*x+5*B*a)*(e*x)
^(1/2)/a/c^2/(c*x^2+a)^(1/2)-1/2*A*e^3*x*(c*x^2+a)^(1/2)/a/c^(3/2)/(a^(1/2)
+x*c^(1/2))/(e*x)^(1/2)+1/2*A*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2
)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a
^(1/2)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/12
*e^3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1
/2))*(5*B*a^(1/2)-3*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1
/2)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(9/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {819, 821, 842, 840, 1198, 220, 1196}

$$\frac{e^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5\sqrt{a}B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{3/4}c^{9/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{Ae^3\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E(2}{2a^{3/4}c^{7/4}\sqrt{ex}\sqrt{a+cx}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*(e*x)^(3/2)*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) - (e^2*Sqrt[e*x]*(5*a*B
- 3*A*c*x))/(6*a*c^2*Sqrt[a + c*x^2]) - (A*e^3*x*Sqrt[a + c*x^2])/(2*a*c^(3
/2)*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (A*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)
*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt
[x])/a^(1/4)], 1/2])/(2*a^(3/4)*c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((5*Sq
rt[a]*B - 3*A*Sqrt[c])*e^3*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(
Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2]
)/(12*a^(3/4)*c^(9/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{5/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} + \frac{\int \frac{\sqrt{ex}\left(\frac{3}{2}aAe^2+\frac{5}{2}aBe^2x\right)}{\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^2\sqrt{ex}\,(5aB-3Acx)}{6ac^2\sqrt{a+cx^2}} + \frac{\int \frac{\frac{5}{4}a^2Be^3-\frac{3}{4}aAce^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3a^2c^2}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^2\sqrt{ex}\,(5aB-3Acx)}{6ac^2\sqrt{a+cx^2}} + \frac{\sqrt{x}\,\int \frac{\frac{5}{4}a^2Be^3-\frac{3}{4}aAce^3x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3a^2c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^2\sqrt{ex}\,(5aB-3Acx)}{6ac^2\sqrt{a+cx^2}} + \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{5}{4}a^2Be^3-\frac{3}{4}aAce^3x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3a^2c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^2\sqrt{ex}\,(5aB-3Acx)}{6ac^2\sqrt{a+cx^2}} + \frac{\left(\left(5\sqrt{a}\,B-3A\sqrt{c}\right)e^3\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\right.}{6\sqrt{a}\,c^2\sqrt{ex}}$$

$$= -\frac{e(ex)^{3/2}(A+Bx)}{3c\left(a+cx^2\right)^{3/2}} - \frac{e^2\sqrt{ex}\,(5aB-3Acx)}{6ac^2\sqrt{a+cx^2}} - \frac{Ae^3x\sqrt{a+cx^2}}{2ac^{3/2}\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{Ae^3\sqrt{x}\,\left(\sqrt{a}+\right.}{}$$

Mathematica [C] time = 0.16, size = 149, normalized size = 0.43

$$\frac{e^2\sqrt{ex}\left(-5a^2B-Acx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+aAcx+5aB\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)\right.}{6ac^2\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e^2*Sqrt[e*x]*(-5*a^2*B + a*A*c*x - 7*a*B*c*x^2 + 3*A*c^2*x^3 + 5*a*B*(a +
 c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)]
- A*c*x*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -(
(c*x^2)/a)]))/(6*a*c^2*(a + c*x^2)^(3/2))
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Be^2x^3+Ae^2x^2\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*e^2*x^2)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c
^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.10, size = 601, normalized size = 1.73

$$\Bigg(6Ac^3x^4-6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aac^2x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/12*(3*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c^2-6*A*2^(1/2)*((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a
*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*
2^(1/2))*x^2*a*c^2+5*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/
2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c+3
*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(
-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c-6*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1
/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^
2*c+5*B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2+6*A*c^3*x^4-14*B*a*c
^2*x^3+2*A*a*c^2*x^2-10*B*a^2*c*x)/x*e^2*(e*x)^(1/2)/c^3/a/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{5}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(5/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(5/2)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{5/2}\,(A+B\,x)}{\left(c\,x^2+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^(5/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(5/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.479 $\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{5/4}c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E}{2a^{3/4}c^{7/4}\sqrt{ex}\sqrt{a+}}$$

```
[Out] -1/3*e*(B*x+A)*(e*x)^(1/2)/c/(c*x^2+a)^(3/2)+1/6*e*(3*B*x+A)*(e*x)^(1/2)/a/
c/(c*x^2+a)^(1/2)-1/2*B*e^2*x*(c*x^2+a)^(1/2)/a/c^(3/2)/(a^(1/2)+x*c^(1/2))
/(e*x)^(1/2)+1/2*B*e^2*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos
(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/
a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^
(1/2))^2)^(1/2)/a^(3/4)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/12*e^2*(cos(2
*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(
1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(3*B*a
^(1/2)-A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2)
)^2)^(1/2)/a^(5/4)/c^(7/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {819, 823, 842, 840, 1198, 220, 1196}

$$-\frac{e^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}B-A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{5/4}c^{7/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{Be^2\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E}{2a^{3/4}c^{7/4}\sqrt{ex}\sqrt{a+}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(e*Sqrt[e*x]*(A + B*x))/(3*c*(a + c*x^2)^(3/2)) + (e*Sqrt[e*x]*(A + 3*B*x)
)/(6*a*c*Sqrt[a + c*x^2]) - (B*e^2*x*Sqrt[a + c*x^2])/(2*a*c^(3/2)*Sqrt[e*x
]*(Sqrt[a] + Sqrt[c]*x)) + (B*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c
*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)
], 1/2])/(2*a^(3/4)*c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - ((3*Sqrt[a]*B - A*
Sqrt[c])*e^2*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt
[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(12*a^(5/4)*
c^(7/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{(ex)^{3/2}(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{\int \frac{\frac{1}{2}aAe^2+\frac{3}{2}aBe^2x}{\sqrt{ex}\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{e\sqrt{ex}\,(A+3Bx)}{6ac\sqrt{a+cx^2}}-\frac{\int \frac{-\frac{1}{4}a^2Ace^4+\frac{3}{4}a^2Bce^4x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3a^3c^2e^2}$$

$$= -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{e\sqrt{ex}\,(A+3Bx)}{6ac\sqrt{a+cx^2}}-\frac{\sqrt{x}\,\int \frac{-\frac{1}{4}a^2Ace^4+\frac{3}{4}a^2Bce^4x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3a^3c^2e^2\sqrt{ex}}$$

$$= -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{e\sqrt{ex}\,(A+3Bx)}{6ac\sqrt{a+cx^2}}-\frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{1}{4}a^2Ace^4+\frac{3}{4}a^2Bce^4x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3a^3c^2e^2\sqrt{ex}}$$

$$= -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{e\sqrt{ex}\,(A+3Bx)}{6ac\sqrt{a+cx^2}}+\frac{\left(Be^2\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{2\sqrt{a}\,c^{3/2}\sqrt{ex}}-\frac{((3\sqrt{a}}{}$$

$$= -\frac{e\sqrt{ex}\,(A+Bx)}{3c\left(a+cx^2\right)^{3/2}}+\frac{e\sqrt{ex}\,(A+3Bx)}{6ac\sqrt{a+cx^2}}-\frac{Be^2x\sqrt{a+cx^2}}{2ac^{3/2}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{Be^2\sqrt{x}\,(\sqrt{a}+\sqrt{c}\,x}{2a}$$

Mathematica [C] time = 0.15, size = 137, normalized size = 0.40

$$\frac{e\sqrt{ex}\left(A\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)-aA-Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+aBx+Acx^2\right.}{6ac\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (e*Sqrt[e*x]*(-(a*A) + a*B*x + A*c*x^2 + 3*B*c*x^3 + A*(a + c*x^2)*Sqrt[1 +
 (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - B*x*(a + c*x^2
)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(6*a
*c*(a + c*x^2)^(3/2))
```

fricas [F] time = 1.14, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^2+Aex\right)\sqrt{cx^2+a}\,\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*e*x)*sqrt(c*x^2 + a)*sqrt(e*x)/(c^3*x^6 + 3*a*c^2*x^4
 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{\frac{3}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.10, size = 583, normalized size = 1.71

$$\left(6B\,c^2x^4+2A\,c^2x^3-6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bac\,x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/12*(A*(-a*c)^(1/2)*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x
+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((
c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*c-6*B*2^(1/2)*((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*
(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2),1/2*2^(1/2))*x^2*a*c+3*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ellip
ticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c+A*2^(1/2)
*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/
2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a-6*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*
x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2
+3*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2)
)/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2+6*B*c^2*x^4+2*A*c^2*x^3+2*B*a*c*x^2-
2*A*a*c*x)*e/x*(e*x)^(1/2)/c^2/a/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)\,(ex)^{\frac{3}{2}}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(3/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^(3/2)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int\frac{{(e\,x)}^{3/2}\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^(3/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(3/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.480 $\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=342

$$\frac{e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{7/4}c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\left(2\tan\right.}{2a^{7/4}c^{3/4}\sqrt{ex}\,\sqrt{a+cx^2}}$$

```
[Out] -1/3*(-A*c*x+B*a)*(e*x)^(1/2)/a/c/(c*x^2+a)^(3/2)+1/6*(3*A*c*x+B*a)*(e*x)^(
1/2)/a^2/c/(c*x^2+a)^(1/2)-1/2*A*e*x*(c*x^2+a)^(1/2)/a^2/c^(1/2)/(a^(1/2)+x
*c^(1/2))/(e*x)^(1/2)+1/2*A*e*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/
2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/12*e*(
cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2
)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(
B*a^(1/2)-3*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^
(1/2))^2)^(1/2)/a^(7/4)/c^(5/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {821, 823, 842, 840, 1198, 220, 1196}

$$\frac{e\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{a}\,B-3A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{7/4}c^{5/4}\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}+\frac{Ae\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{2a^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[e*x]*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] -(Sqrt[e*x]*(a*B - A*c*x))/(3*a*c*(a + c*x^2)^(3/2)) + (Sqrt[e*x]*(a*B + 3*
A*c*x))/(6*a^2*c*Sqrt[a + c*x^2]) - (A*e*x*Sqrt[a + c*x^2])/(2*a^2*Sqrt[c]*
Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (A*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[
(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a
^(1/4)], 1/2])/(2*a^(7/4)*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) + ((Sqrt[a]*B
- 3*A*Sqrt[c])*e*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] +
Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(12*a^(7
/4)*c^(5/4)*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{\sqrt{ex}\,(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\int \frac{\frac{aBe}{2}+\frac{3}{2}Acex}{\sqrt{ex}\left(a+cx^2\right)^{3/2}}\,dx}{3ac}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}-\frac{\int \frac{-\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3a^3c^2e^2}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}-\frac{\sqrt{x}\,\int \frac{-\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3a^3c^2e^2\sqrt{ex}}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}-\frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{1}{4}a^2Bce^3+\frac{3}{4}aAc^2e^3x^2}{\sqrt{a+cx^4}}\,dx,x,\sqrt{x}\right)}{3a^3c^2e^2\sqrt{ex}}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}+\frac{\left(\left(\sqrt{a}\,B-3A\sqrt{c}\right)e\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+cx^4}}\,dx,x,\sqrt{\right.}{6a^{3/2}c\sqrt{ex}}$$

$$= -\frac{\sqrt{ex}\,(aB-Acx)}{3ac\left(a+cx^2\right)^{3/2}}+\frac{\sqrt{ex}\,(aB+3Acx)}{6a^2c\sqrt{a+cx^2}}-\frac{Aex\sqrt{a+cx^2}}{2a^2\sqrt{c}\,\sqrt{ex}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{Ae\sqrt{x}\,\left(\sqrt{a}+\sqrt{c}\,x\right)}{2a^{7/4}}$$

Mathematica [C] time = 0.13, size = 145, normalized size = 0.42

$$\frac{\sqrt{ex}\left(-a^2B-Acx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+5aAcx+aB\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+a\right.}{6a^2c\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[e*x]*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[e*x]*(-(a^2*B) + 5*a*A*c*x + a*B*c*x^2 + 3*A*c^2*x^3 + a*B*(a + c*x^2
)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)] - A*c*
x*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2
)/a)]))/(6*a^2*c*(a + c*x^2)^(3/2))
```

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^3*x^6 + 3*a*c^2*x^4 + 3*a^2
*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/(c*x^2 + a)^(5/2), x)
```

maple [A] time = 0.07, size = 596, normalized size = 1.74

$$\frac{\left(6A\,c^3x^4-6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aa\,c^2x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/12*(3*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/
2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c^2-6*A*2^(1/2)*((c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a
*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*
2^(1/2))*x^2*a*c^2+B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)
*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c+3*A
*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c-6*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2
)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*
c+B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)
^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^
(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2+6*A*c^3*x^4+2*B*a*c^2*x^
3+10*A*a*c^2*x^2-2*B*a^2*c*x)*(e*x)^(1/2)/a^2/x/c^2/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex}}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^(1/2)*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x)/(c*x^2 + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{e\,x}\,\left(A+B\,x\right)}{{\left(c\,x^2+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^(1/2)*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy [C] time = 64.64, size = 94, normalized size = 0.27

$$\frac{A\sqrt{e}\,x^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{3}{4},\frac{5}{2}\\ \frac{7}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\Gamma\left(\frac{7}{4}\right)}+\frac{B\sqrt{e}\,x^{\frac{5}{2}}\Gamma\left(\frac{5}{4}\right){}_{2}F_{1}\left(\left.\begin{matrix}\frac{5}{4},\frac{5}{2}\\ \frac{9}{4}\end{matrix}\right|\frac{cx^{2}e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\Gamma\left(\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**(1/2)*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*sqrt(e)*x**(3/2)*gamma(3/4)*hyper((3/4, 5/2), (7/4,), c*x**2*exp_polar(I*
pi)/a)/(2*a**(5/2)*gamma(7/4)) + B*sqrt(e)*x**(5/2)*gamma(5/4)*hyper((5/4,
5/2), (9/4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(5/2)*gamma(9/4))
```

3.481 $\int \frac{A+Bx}{\sqrt{ex}\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=335

$$-\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{9/4}c^{3/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,E\Big(2}{2a^{7/4}c^{3/4}\sqrt{ex}\sqrt{a+c}}$$

```
[Out] 1/3*(B*x+A)*(e*x)^(1/2)/a/e/(c*x^2+a)^(3/2)+1/6*(3*B*x+5*A)*(e*x)^(1/2)/a^2
/e/(c*x^2+a)^(1/2)-1/2*B*x*(c*x^2+a)^(1/2)/a^2/c^(1/2)/(a^(1/2)+x*c^(1/2))/
(e*x)^(1/2)+1/2*B*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*ar
ctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/
4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2)
)^2)^(1/2)/a^(7/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/12*(cos(2*arctan(c
^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*El
lipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(3*B*a^(1/2)-5*
A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1
/2)/a^(9/4)/c^(3/4)/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 335, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {823, 842, 840, 1198, 220, 1196}

$$-\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(3\sqrt{a}B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{9/4}c^{3/4}\sqrt{ex}\sqrt{a+cx^2}}+\frac{\sqrt{ex}(5A+3Bx)}{6a^2e\sqrt{a+cx^2}}+\frac{B\sqrt{x}\Big(\sqrt{a}+\sqrt{c}\,x}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*(a + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[e*x]*(A + B*x))/(3*a*e*(a + c*x^2)^(3/2)) + (Sqrt[e*x]*(5*A + 3*B*x))
/(6*a^2*e*Sqrt[a + c*x^2]) - (B*x*Sqrt[a + c*x^2])/(2*a^2*Sqrt[c]*Sqrt[e*x]
*(Sqrt[a] + Sqrt[c]*x)) + (B*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)
/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/
2])/(2*a^(7/4)*c^(3/4)*Sqrt[e*x]*Sqrt[a + c*x^2]) - ((3*Sqrt[a]*B - 5*A*Sqr
t[c])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^
2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(12*a^(9/4)*c^(3/4)
*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{ex}\left(a+cx^2\right)^{5/2}}\,dx &= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} - \frac{\int \frac{-\frac{5}{2}aAce^2-\frac{3}{2}aBce^2x}{\sqrt{ex}\left(a+cx^2\right)^{3/2}}\,dx}{3a^2ce^2} \\
&= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} + \frac{\sqrt{ex}\,(5A+3Bx)}{6a^2e\sqrt{a+cx^2}} + \frac{\int \frac{\frac{5}{4}a^2Ac^2e^4-\frac{3}{4}a^2Bc^2e^4x}{\sqrt{ex}\,\sqrt{a+cx^2}}\,dx}{3a^4c^2e^4} \\
&= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} + \frac{\sqrt{ex}\,(5A+3Bx)}{6a^2e\sqrt{a+cx^2}} + \frac{\sqrt{x}\int \frac{\frac{5}{4}a^2Ac^2e^4-\frac{3}{4}a^2Bc^2e^4x}{\sqrt{x}\,\sqrt{a+cx^2}}\,dx}{3a^4c^2e^4\sqrt{ex}} \\
&= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} + \frac{\sqrt{ex}\,(5A+3Bx)}{6a^2e\sqrt{a+cx^2}} + \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{\frac{5}{4}a^2Ac^2e^4-\frac{3}{4}a^2Bc^2e^4x^2}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{3a^4c^2e^4\sqrt{ex}} \\
&= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} + \frac{\sqrt{ex}\,(5A+3Bx)}{6a^2e\sqrt{a+cx^2}} + \frac{\left(B\sqrt{x}\right)\text{Subst}\left(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+cx^4}}\,dx, x, \sqrt{x}\right)}{2a^{3/2}\sqrt{c}\,\sqrt{ex}} - \frac{\left(\left(3\sqrt{a}\,B -\right.\right.}{} \\
&= \frac{\sqrt{ex}\,(A+Bx)}{3ae\left(a+cx^2\right)^{3/2}} + \frac{\sqrt{ex}\,(5A+3Bx)}{6a^2e\sqrt{a+cx^2}} - \frac{Bx\sqrt{a+cx^2}}{2a^2\sqrt{c}\,\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{}}{2a^{7/4}}
\end{aligned}
$$

Mathematica [C] time = 0.11, size = 140, normalized size = 0.42

$$\frac{x\left(7aA-Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\frac{1}{2},\frac{3}{4};\frac{7}{4};-\frac{cx^2}{a}\right)+5aBx+5Acx^2+3Bcx^3\right)+5Ax\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(\right.}{6a^2\sqrt{ex}\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*(a + c*x^2)^(5/2)),x]
```

```
[Out] (5*A*x*(a + c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((
c*x^2)/a)] + x*(7*a*A + 5*a*B*x + 5*A*c*x^2 + 3*B*c*x^3 - B*x*(a + c*x^2)*S
qrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, 3/4, 7/4, -((c*x^2)/a)]))/(6*a^2*
Sqrt[e*x]*(a + c*x^2)^(3/2))
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^3ex^7+3\,ac^2ex^5+3\,a^2cex^3+a^3ex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^3*e*x^7 + 3*a*c^2*e*x^5 + 3
*a^2*c*e*x^3 + a^3*e*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{5}{2}}\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*sqrt(e*x)), x)
```

maple [A] time = 0.10, size = 581, normalized size = 1.73

$$\frac{6B\,c^2x^4+10A\,c^2x^3-6\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bac\,x^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}},\frac{\sqrt{2}}{2}\right)+3\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-}}{\sqrt{-a}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(5/2),x)
```

```
[Out] 1/12*(5*A*(-a*c)^(1/2)*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(
((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*c+3*B*2^(1/2)*((c*
x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2
)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(
1/2),1/2*2^(1/2))*x^2*a*c-6*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Ell
ipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c+5*A*2^(
1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1
/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2),1/2*2^(1/2))*(-a*c)^(1/2)*a+3*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(
-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2
)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))
*a^2-6*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2
))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*a^2+6*B*c^2*x^4+10*A*c^2*x^3+10*B*a*
c*x^2+14*A*a*c*x)/c/(e*x)^(1/2)/a^2/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} \sqrt{ex}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*sqrt(e*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{e\,x}\,\left(c\,x^2 + a\right)^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(1/2)*(a + c*x^2)^(5/2)), x)
```

sympy [C] time = 130.85, size = 94, normalized size = 0.28

$$\frac{A\sqrt{x}\,\Gamma\left(\frac{1}{4}\right) {}_{2}F_{1}\left(\left.\begin{matrix} \frac{1}{4}, \frac{5}{2} \\ \frac{5}{4} \end{matrix}\right| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\sqrt{e}\,\Gamma\left(\frac{5}{4}\right)} + \frac{Bx^{\frac{3}{2}}\Gamma\left(\frac{3}{4}\right) {}_{2}F_{1}\left(\left.\begin{matrix} \frac{3}{4}, \frac{5}{2} \\ \frac{7}{4} \end{matrix}\right| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\sqrt{e}\,\Gamma\left(\frac{7}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*sqrt(x)*gamma(1/4)*hyper((1/4, 5/2), (5/4,), c*x**2*exp_polar(I*pi)/a)/(2
*a**(5/2)*sqrt(e)*gamma(5/4)) + B*x**(3/2)*gamma(3/4)*hyper((3/4, 5/2), (7/
4,), c*x**2*exp_polar(I*pi)/a)/(2*a**(5/2)*sqrt(e)*gamma(7/4))
```

3.482 $\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=373

$$\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}\left(5\sqrt{a}B+21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{11/4}\sqrt[4]{c}e\sqrt{ex}\sqrt{a+cx^2}}-\frac{7A\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}}{2a^{11/4}e\sqrt{ex}\sqrt{a+}}$$

```
[Out] 1/3*(B*x+A)/a/e/(c*x^2+a)^(3/2)/(e*x)^(1/2)+1/6*(5*B*x+7*A)/a^2/e/(e*x)^(1/
2)/(c*x^2+a)^(1/2)-7/2*A*(c*x^2+a)^(1/2)/a^3/e/(e*x)^(1/2)+7/2*A*x*c^(1/2)*
(c*x^2+a)^(1/2)/a^3/e/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-7/2*A*c^(1/4)*(cos(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2
)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(11/4)/e/(e*
x)^(1/2)/(c*x^2+a)^(1/2)+1/12*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1
/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4))),1/2*2^(1/2))*(5*B*a^(1/2)+21*A*c^(1/2))*(a^(1/2)+x*c^(1/2)
)*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(11/4)/c^(1/4)/e/(e*x)^
(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 373, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$\frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}}+\frac{\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}\left(5\sqrt{a}B+21A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{12a^{11/4}\sqrt[4]{c}e\sqrt{ex}\sqrt{a+cx^2}}-\frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*e*Sqrt[e*x]*(a + c*x^2)^(3/2)) + (7*A + 5*B*x)/(6*a^2*e*Sqrt
[e*x]*Sqrt[a + c*x^2]) - (7*A*Sqrt[a + c*x^2])/(2*a^3*e*Sqrt[e*x]) + (7*A*S
qrt[c]*x*Sqrt[a + c*x^2])/(2*a^3*e*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (7*A*
c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x
)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(2*a^(11/4)*e*Sqr
t[e*x]*Sqrt[a + c*x^2]) + ((5*Sqrt[a]*B + 21*A*Sqrt[c])*Sqrt[x]*(Sqrt[a] +
Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^
(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(12*a^(11/4)*c^(1/4)*e*Sqrt[e*x]*Sqrt[a + c*
x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{3/2}\left(a+cx^2\right)^{5/2}}\,dx = \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} - \frac{\int \frac{-\frac{7}{2}aAce^2-\frac{5}{2}aBce^2x}{(ex)^{3/2}\left(a+cx^2\right)^{3/2}}\,dx}{3a^2ce^2}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} + \frac{\int \frac{\frac{21}{4}a^2Ac^2e^4+\frac{5}{4}a^2Bc^2e^4x}{(ex)^{3/2}\sqrt{a+cx^2}}\,dx}{3a^4c^2e^4}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} - \frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}} - \frac{2\int \frac{-\frac{5}{8}a^3Bc^2e^5-\frac{21}{8}a^2Ac^3e}{\sqrt{ex}\sqrt{a+cx^2}}}{3a^5c^2e^6}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} - \frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}} - \frac{\left(2\sqrt{x}\right)\int \frac{-\frac{5}{8}a^3Bc^2e^5-\frac{21}{8}}{\sqrt{x}\sqrt{a+c}}}{3a^5c^2e^6\sqrt{ex}}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} - \frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}} - \frac{\left(4\sqrt{x}\right)\text{Subst}\left(\int \frac{-\frac{5}{8}a^3}{}\right.}{3a^5}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} - \frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}} + \frac{\left(\left(5\sqrt{a}B+21A\sqrt{c}\right)\right.}{}$$

$$= \frac{A+Bx}{3ae\sqrt{ex}\left(a+cx^2\right)^{3/2}} + \frac{7A+5Bx}{6a^2e\sqrt{ex}\sqrt{a+cx^2}} - \frac{7A\sqrt{a+cx^2}}{2a^3e\sqrt{ex}} + \frac{7A\sqrt{c}\,x\sqrt{a+cx^2}}{2a^3e\sqrt{ex}\left(\sqrt{a}+\sqrt{c}\,x\right.}$$

Mathematica [C] time = 0.09, size = 137, normalized size = 0.37

$$\frac{x\left(-21A\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)+9aA+5Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\,{}_2F_1\left(\frac{1}{4},\frac{1}{2};\frac{5}{4};-\frac{cx^2}{a}\right)+7aBx+\right.}{6a^2(ex)^{3/2}\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (x*(9*a*A + 7*a*B*x + 7*A*c*x^2 + 5*B*c*x^3 - 21*A*(a + c*x^2)*Sqrt[1 + (c*
x^2)/a]*Hypergeometric2F1[-1/4, 1/2, 3/4, -((c*x^2)/a)] + 5*B*x*(a + c*x^2)
*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/4, 1/2, 5/4, -((c*x^2)/a)]))/(6*a^
2*(e*x)^(3/2)*(a + c*x^2)^(3/2))
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^3e^2x^8+3\,ac^2e^2x^6+3\,a^2ce^2x^4+a^3e^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^3*e^2*x^8 + 3*a*c^2*e^2*x^6
 + 3*a^2*c*e^2*x^4 + a^3*e^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(3/2)), x)
```

maple [A] time = 0.09, size = 605, normalized size = 1.62

$$-\frac{42 A c^3 x^4 - 42\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,A a c^2 x^2\, \mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right) + 21\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/12*(21*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c
)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*c^2-42*A*2^(1/2)*((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/
(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1
/2*2^(1/2))*x^2*a*c^2-5*B*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^
(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^2*a*
c+21*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-
a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2*c-42*A*2^(1/2)*(-1/(-a*c)^(1/2)*c*
x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/
2)*a^2*c-5*B*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c
*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*a^2+42*A*c^3*x^4-10
*B*a*c^2*x^3+70*A*a*c^2*x^2-14*B*a^2*c*x+24*A*a^2*c)/a^3/e/(e*x)^(1/2)/c/(c
*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(3/2)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(e\,x\right)}^{3/2}\,{\left(c\,x^2 + a\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(3/2)*(a + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(3/2)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.483 $\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=402

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{4a^{13/4}e^2\sqrt{ex}\sqrt{a+cx^2}}-\frac{7B\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}}{2a^{11/4}e^2\sqrt{ex}\sqrt{a+}}$$

```
[Out] 1/3*(B*x+A)/a/e/(e*x)^(3/2)/(c*x^2+a)^(3/2)+1/6*(7*B*x+9*A)/a^2/e/(e*x)^(3/
2)/(c*x^2+a)^(1/2)-5/2*A*(c*x^2+a)^(1/2)/a^3/e/(e*x)^(3/2)-7/2*B*(c*x^2+a)^
(1/2)/a^3/e^2/(e*x)^(1/2)+7/2*B*x*c^(1/2)*(c*x^2+a)^(1/2)/a^3/e^2/(a^(1/2)+
x*c^(1/2))/(e*x)^(1/2)-7/2*B*c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))
)^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^
(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)
/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(11/4)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)+1/4*
c^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2
^(1/2))*(7*B*a^(1/2)-5*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a
^(1/2)+x*c^(1/2))^2)^(1/2)/a^(13/4)/e^2/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.50, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$\frac{\sqrt[4]{c}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(7\sqrt{a}\,B-5A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{4a^{13/4}e^2\sqrt{ex}\sqrt{a+cx^2}}+\frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}}-\frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*e*(e*x)^(3/2)*(a + c*x^2)^(3/2)) + (9*A + 7*B*x)/(6*a^2*e*(e
*x)^(3/2)*Sqrt[a + c*x^2]) - (5*A*Sqrt[a + c*x^2])/(2*a^3*e*(e*x)^(3/2)) -
(7*B*Sqrt[a + c*x^2])/(2*a^3*e^2*Sqrt[e*x]) + (7*B*Sqrt[c]*x*Sqrt[a + c*x^2
])/(2*a^3*e^2*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (7*B*c^(1/4)*Sqrt[x]*(Sqrt
[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcT
an[(c^(1/4)*Sqrt[x])/a^(1/4)], 1/2])/(2*a^(11/4)*e^2*Sqrt[e*x]*Sqrt[a + c*x
^2]) + ((7*Sqrt[a]*B - 5*A*Sqrt[c])*c^(1/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*S
qrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x
])/a^(1/4)], 1/2])/(4*a^(13/4)*e^2*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{5/2}\left(a+cx^2\right)^{5/2}}\,dx = \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} - \frac{\int \frac{-\frac{9}{2}aAce^2-\frac{7}{2}aBce^2x}{(ex)^{5/2}\left(a+cx^2\right)^{3/2}}\,dx}{3a^2ce^2}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} + \frac{\int \frac{\frac{45}{4}a^2Ac^2e^4+\frac{21}{4}a^2Bc^2e^4x}{(ex)^{5/2}\sqrt{a+cx^2}}\,dx}{3a^4c^2e^4}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{2\int \frac{-\frac{63}{8}a^3Bc^2e^5+\frac{45}{8}a^2Ac}{(ex)^{3/2}\sqrt{a+cx^2}}}{9a^5c^2e^6}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{7B\sqrt{a+cx^2}}{2a^3e^2\sqrt{ex}} + \frac{4\int}{}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{7B\sqrt{a+cx^2}}{2a^3e^2\sqrt{ex}} + \frac{(4\sqrt{}}{}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{7B\sqrt{a+cx^2}}{2a^3e^2\sqrt{ex}} + \frac{(8\sqrt{}}{}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{7B\sqrt{a+cx^2}}{2a^3e^2\sqrt{ex}} - \frac{(7B\sqrt{}}{}$$

$$= \frac{A+Bx}{3ae(ex)^{3/2}\left(a+cx^2\right)^{3/2}} + \frac{9A+7Bx}{6a^2e(ex)^{3/2}\sqrt{a+cx^2}} - \frac{5A\sqrt{a+cx^2}}{2a^3e(ex)^{3/2}} - \frac{7B\sqrt{a+cx^2}}{2a^3e^2\sqrt{ex}} + \frac{7}{2a^3e}$$

Mathematica [C] time = 0.09, size = 137, normalized size = 0.34

$$\frac{x\left(-15A\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)+11aA-21Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{1}{4},\frac{1}{2};\frac{3}{4};-\frac{cx^2}{a}\right)+9aBx+\right.}{6a^2(ex)^{5/2}\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (x*(11*a*A + 9*a*B*x + 9*A*c*x^2 + 7*B*c*x^3 - 15*A*(a + c*x^2)*Sqrt[1 + (c
*x^2)/a]*Hypergeometric2F1[-3/4, 1/2, 1/4, -((c*x^2)/a)] - 21*B*x*(a + c*x^
2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-1/4, 1/2, 3/4, -((c*x^2)/a)]))/(6
*a^2*(e*x)^(5/2)*(a + c*x^2)^(3/2))
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^3e^3x^9+3\,ac^2e^3x^7+3\,a^2ce^3x^5+a^3e^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^3*e^3*x^9 + 3*a*c^2*e^3*x^7
 + 3*a^2*c*e^3*x^5 + a^3*e^3*x^3), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(5/2)), x)
```

maple [**A**] time = 0.12, size = 602, normalized size = 1.50

$$-\frac{42B\,c^2x^5 + 30A\,c^2x^4 - 42\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Bac\,x^3\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right) + 21\sqrt{2}\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/12*(15*A*2^(1/2)*(-a*c)^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((
-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*Elliptic
F(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*c+21*B*2^(1/2)*(
(c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(
1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2)
)^(1/2),1/2*2^(1/2))*x^3*a*c-42*B*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))
^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)
*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^3*a*c+15*
A*(-a*c)^(1/2)*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(
1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1
/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x*a+21*B*2^(1/2)*(-1/(-a*c)^(1
/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2
))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*x*a^2-42*B*2^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2
))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x*a^2+42*B*c^2*x^5+30*A*c
^2*x^4+70*B*a*c*x^3+42*A*a*c*x^2+24*B*a^2*x+8*A*a^2)/x/e^2/(e*x)^(1/2)/a^3/
(c*x^2+a)^(3/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(5/2)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(5/2)), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(e\,x\right)}^{5/2}\,{\left(c\,x^2 + a\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(5/2)*(a + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(5/2)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.484 $\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=432

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{20a^{15/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{77Ac^{5/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)}{10a^{15/4}e^3}$$

```
[Out] 1/3*(B*x+A)/a/e/(e*x)^(5/2)/(c*x^2+a)^(3/2)+1/6*(9*B*x+11*A)/a^2/e/(e*x)^(5
/2)/(c*x^2+a)^(1/2)-77/30*A*(c*x^2+a)^(1/2)/a^3/e/(e*x)^(5/2)-5/2*B*(c*x^2+
a)^(1/2)/a^3/e^2/(e*x)^(3/2)+77/10*A*c*(c*x^2+a)^(1/2)/a^4/e^3/(e*x)^(1/2)-
77/10*A*c^(3/2)*x*(c*x^2+a)^(1/2)/a^4/e^3/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)+7
7/10*A*c^(5/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arcta
n(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))
),1/2*2^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2
)^(1/2)/a^(15/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)-1/20*c^(3/4)*(cos(2*arctan
(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*
EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*2^(1/2))*(25*B*a^(1/2)
+77*A*c^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+a)/(a^(1/2)+x*c^(1/2))^2
)^(1/2)/a^(15/4)/e^3/(e*x)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.292, Rules used = {823, 835, 842, 840, 1198, 220, 1196}

$$-\frac{c^{3/4}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(25\sqrt{a}\,B+77A\sqrt{c}\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{2}\right)}{20a^{15/4}e^3\sqrt{ex}\,\sqrt{a+cx^2}}+\frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}}-\frac{77A}{10a^4e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (A + B*x)/(3*a*e*(e*x)^(5/2)*(a + c*x^2)^(3/2)) + (11*A + 9*B*x)/(6*a^2*e*(
e*x)^(5/2)*Sqrt[a + c*x^2]) - (77*A*Sqrt[a + c*x^2])/(30*a^3*e*(e*x)^(5/2))
 - (5*B*Sqrt[a + c*x^2])/(2*a^3*e^2*(e*x)^(3/2)) + (77*A*c*Sqrt[a + c*x^2])
/(10*a^4*e^3*Sqrt[e*x]) - (77*A*c^(3/2)*x*Sqrt[a + c*x^2])/(10*a^4*e^3*Sqrt
[e*x]*(Sqrt[a] + Sqrt[c]*x)) + (77*A*c^(5/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*
Sqrt[(a + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[
x])/a^(1/4)], 1/2])/(10*a^(15/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2]) - ((25*Sqrt
[a]*B + 77*A*Sqrt[c])*c^(3/4)*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + c*x^2
)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], 1
/2])/(20*a^(15/4)*e^3*Sqrt[e*x]*Sqrt[a + c*x^2])
```

Rule 220

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b/a, 4]}, Simp[(
(1 + q^2*x^2)*Sqrt[(a + b*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticF[2*ArcTan[q*x]
, 1/2])/(2*q*Sqrt[a + b*x^4]), x]] /; FreeQ[{a, b}, x] && PosQ[b/a]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 840

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :>
Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + c*x^4], x], x, Sqrt[x]], x] /; FreeQ
[{a, c, f, g}, x]
```

Rule 842

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symb
ol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a + c*x^2]), x],
 x] /; FreeQ[{a, c, e, f, g}, x]
```

Rule 1196

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + c*x^4])/(a*(1 + q^2*x^2)), x] + Simp[(d*(
1 + q^2*x^2)*Sqrt[(a + c*x^4)/(a*(1 + q^2*x^2)^2)]*EllipticE[2*ArcTan[q*x],
 1/2])/(q*Sqrt[a + c*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, c, d, e},
 x] && PosQ[c/a]
```

Rule 1198

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + c*x^4], x], x] - Dist[e/q, I
nt[(1 - q*x^2)/Sqrt[a + c*x^4], x], x] /; NeQ[e + d*q, 0]] /; FreeQ[{a, c,
d, e}, x] && PosQ[c/a]
```

Rubi steps

$$\int \frac{A+Bx}{(ex)^{7/2}\left(a+cx^2\right)^{5/2}}\,dx = \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} - \frac{\int \frac{-\frac{11}{2}aAce^2-\frac{9}{2}aBce^2x}{(ex)^{7/2}\left(a+cx^2\right)^{3/2}}\,dx}{3a^2ce^2}$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} + \frac{\int \frac{\frac{77}{4}a^2Ac^2e^4+\frac{45}{4}a^2Bc^2e^4x}{(ex)^{7/2}\sqrt{a+cx^2}}\,dx}{3a^4c^2e^4}$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{2\int \frac{-\frac{225}{8}a^3Bc^2e^5+}{(ex)^{5/2}\sqrt{a}}}{15a^5c^2}$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

$$= \frac{A+Bx}{3ae(ex)^{5/2}\left(a+cx^2\right)^{3/2}} + \frac{11A+9Bx}{6a^2e(ex)^{5/2}\sqrt{a+cx^2}} - \frac{77A\sqrt{a+cx^2}}{30a^3e(ex)^{5/2}} - \frac{5B\sqrt{a+cx^2}}{2a^3e^2(ex)^{3/2}} +$$

Mathematica [C] time = 0.09, size = 137, normalized size = 0.32

$$\frac{x\left(-77A\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{5}{4},\frac{1}{2};-\frac{1}{4};-\frac{cx^2}{a}\right)+65aA-75Bx\left(a+cx^2\right)\sqrt{\frac{cx^2}{a}+1}\;{}_2F_1\left(-\frac{3}{4},\frac{1}{2};\frac{1}{4};-\frac{cx^2}{a}\right)+55\right.}{30a^2(ex)^{7/2}\left(a+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(5/2)),x]
```

```
[Out] (x*(65*a*A + 55*a*B*x + 55*A*c*x^2 + 45*B*c*x^3 - 77*A*(a + c*x^2)*Sqrt[1 +
 (c*x^2)/a]*Hypergeometric2F1[-5/4, 1/2, -1/4, -((c*x^2)/a)] - 75*B*x*(a +
c*x^2)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[-3/4, 1/2, 1/4, -((c*x^2)/a)])
)/(30*a^2*(e*x)^(7/2)*(a + c*x^2)^(3/2))
```

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex}}{c^3e^4x^{10}+3\,ac^2e^4x^8+3\,a^2ce^4x^6+a^3e^4x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x)/(c^3*e^4*x^10 + 3*a*c^2*e^4*x^
8 + 3*a^2*c*e^4*x^6 + a^3*e^4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(7/2)), x)
```

maple [A] time = 0.26, size = 632, normalized size = 1.46

$$-\frac{-462A\,c^3x^6 + 462\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{\frac{-cx+\sqrt{-ac}}{\sqrt{-ac}}}\,\sqrt{-\frac{cx}{\sqrt{-ac}}}\,Aa\,c^2x^4\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}, \frac{\sqrt{2}}{2}\right) - 231\sqrt{2}\,\sqrt{\frac{cx+\sqrt{-ac}}{\sqrt{-ac}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(5/2),x)
```

```
[Out] -1/60*(462*A*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^
(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticE(((c*x+(-a*
c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4*a*c^2-231*A*2^(1/2)*((c*x+(-
a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-
1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)
,1/2*2^(1/2))*x^4*a*c^2+75*B*(-a*c)^(1/2)*2^(1/2)*((c*x+(-a*c)^(1/2))/(-a*c
)^(1/2))^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*
x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*x^4
*a*c+462*A*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2
)*c*x)^(1/2)*EllipticE(((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))
*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x^2*a^2*c-231*A*2^(1/2)*((-c*x+(-a
*c)^(1/2))/(-a*c)^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+
(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(
1/2))^(1/2)*x^2*a^2*c+75*B*(-a*c)^(1/2)*2^(1/2)*((-c*x+(-a*c)^(1/2))/(-a*c)
^(1/2))^(1/2)*(-1/(-a*c)^(1/2)*c*x)^(1/2)*EllipticF(((c*x+(-a*c)^(1/2))/(-a
*c)^(1/2))^(1/2),1/2*2^(1/2))*((c*x+(-a*c)^(1/2))/(-a*c)^(1/2))^(1/2)*x^2*a
^2-462*A*c^3*x^6+150*B*a*c^2*x^5-770*A*a*c^2*x^4+210*B*a^2*c*x^3-264*A*a^2*
c*x^2+40*B*a^3*x+24*A*a^3)/x^2/a^4/e^3/(e*x)^(1/2)/(c*x^2+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{5}{2}} (ex)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(7/2)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(5/2)*(e*x)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{(e\,x)}^{7/2}\,{\left(c\,x^2 + a\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((e*x)^(7/2)*(a + c*x^2)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(7/2)/(c*x**2+a)**(5/2),x)
```

```
[Out] Timed out
```

3.485 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx$

Optimal. Leaf size=217

$$\frac{a^4A(ex)^{m+1}}{e(m+1)}+\frac{a^4B(ex)^{m+2}}{e^2(m+2)}+\frac{4a^3Ac(ex)^{m+3}}{e^3(m+3)}+\frac{4a^3Bc(ex)^{m+4}}{e^4(m+4)}+\frac{6a^2Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{6a^2Bc^2(ex)^{m+6}}{e^6(m+6)}+\frac{4aAc^3(ex)^{m+7}}{e^7(m+7)}+\frac{4aB}{e^8}$$

```
[Out] a^4*A*(e*x)^(1+m)/e/(1+m)+a^4*B*(e*x)^(2+m)/e^2/(2+m)+4*a^3*A*c*(e*x)^(3+m)
/e^3/(3+m)+4*a^3*B*c*(e*x)^(4+m)/e^4/(4+m)+6*a^2*A*c^2*(e*x)^(5+m)/e^5/(5+m
)+6*a^2*B*c^2*(e*x)^(6+m)/e^6/(6+m)+4*a*A*c^3*(e*x)^(7+m)/e^7/(7+m)+4*a*B*c
^3*(e*x)^(8+m)/e^8/(8+m)+A*c^4*(e*x)^(9+m)/e^9/(9+m)+B*c^4*(e*x)^(10+m)/e^1
0/(10+m)
```

Rubi [A] time = 0.17, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {766}

$$\frac{6a^2Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{4a^3Ac(ex)^{m+3}}{e^3(m+3)}+\frac{a^4A(ex)^{m+1}}{e(m+1)}+\frac{6a^2Bc^2(ex)^{m+6}}{e^6(m+6)}+\frac{4a^3Bc(ex)^{m+4}}{e^4(m+4)}+\frac{a^4B(ex)^{m+2}}{e^2(m+2)}+\frac{4aAc^3(ex)^{m+7}}{e^7(m+7)}+\frac{4aB}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] (a^4*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^4*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
4*a^3*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (4*a^3*B*c*(e*x)^(4 + m))/(e^4*(4
+ m)) + (6*a^2*A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (6*a^2*B*c^2*(e*x)^(6 +
 m))/(e^6*(6 + m)) + (4*a*A*c^3*(e*x)^(7 + m))/(e^7*(7 + m)) + (4*a*B*c^3*(
e*x)^(8 + m))/(e^8*(8 + m)) + (A*c^4*(e*x)^(9 + m))/(e^9*(9 + m)) + (B*c^4*
(e*x)^(10 + m))/(e^10*(10 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^4\,dx&=\int \left(a^4A(ex)^m+\frac{a^4B(ex)^{1+m}}{e}+\frac{4a^3Ac(ex)^{2+m}}{e^2}+\frac{4a^3Bc(ex)^{3+m}}{e^3}+\frac{6a^2Ac^2(ex)^{4+}}{e^4}\right.\\&=\frac{a^4A(ex)^{1+m}}{e(1+m)}+\frac{a^4B(ex)^{2+m}}{e^2(2+m)}+\frac{4a^3Ac(ex)^{3+m}}{e^3(3+m)}+\frac{4a^3Bc(ex)^{4+m}}{e^4(4+m)}+\frac{6a^2Ac^2(ex)^{5+m}}{e^5(5+m)}\end{aligned}$$

Mathematica [A] time = 0.30, size = 128, normalized size = 0.59

$$x(ex)^m\left(a^4\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+4a^3cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+6a^2c^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)+4ac^3x^6\left(\frac{A}{m+7}+\frac{Bx}{m+8}\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^4,x]
```

```
[Out] x*(e*x)^m*(a^4*(A/(1 + m) + (B*x)/(2 + m)) + 4*a^3*c*x^2*(A/(3 + m) + (B*x)
/(4 + m)) + 6*a^2*c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)) + 4*a*c^3*x^6*(A/(7 +
 m) + (B*x)/(8 + m)) + c^4*x^8*(A/(9 + m) + (B*x)/(10 + m)))
```

fricas [B] time = 0.94, size = 1051, normalized size = 4.84

$$\left(\left(Bc^4m^9 + 45\,Bc^4m^8 + 870\,Bc^4m^7 + 9450\,Bc^4m^6 + 63273\,Bc^4m^5 + 269325\,Bc^4m^4 + 723680\,Bc^4m^3 + 117270\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="fricas")
```

```
[Out] ((B*c^4*m^9 + 45*B*c^4*m^8 + 870*B*c^4*m^7 + 9450*B*c^4*m^6 + 63273*B*c^4*m
^5 + 269325*B*c^4*m^4 + 723680*B*c^4*m^3 + 1172700*B*c^4*m^2 + 1026576*B*c^
4*m + 362880*B*c^4)*x^10 + (A*c^4*m^9 + 46*A*c^4*m^8 + 906*A*c^4*m^7 + 9996
*A*c^4*m^6 + 67809*A*c^4*m^5 + 291774*A*c^4*m^4 + 790964*A*c^4*m^3 + 129082
4*A*c^4*m^2 + 1136160*A*c^4*m + 403200*A*c^4)*x^9 + 4*(B*a*c^3*m^9 + 47*B*a
*c^3*m^8 + 944*B*a*c^3*m^7 + 10598*B*a*c^3*m^6 + 72989*B*a*c^3*m^5 + 318143
*B*a*c^3*m^4 + 871786*B*a*c^3*m^3 + 1435212*B*a*c^3*m^2 + 1271880*B*a*c^3*m
 + 453600*B*a*c^3)*x^8 + 4*(A*a*c^3*m^9 + 48*A*a*c^3*m^8 + 984*A*a*c^3*m^7
+ 11262*A*a*c^3*m^6 + 78939*A*a*c^3*m^5 + 349482*A*a*c^3*m^4 + 970556*A*a*c
^3*m^3 + 1615608*A*a*c^3*m^2 + 1444320*A*a*c^3*m + 518400*A*a*c^3)*x^7 + 6*
(B*a^2*c^2*m^9 + 49*B*a^2*c^2*m^8 + 1026*B*a^2*c^2*m^7 + 11994*B*a^2*c^2*m^
6 + 85809*B*a^2*c^2*m^5 + 387201*B*a^2*c^2*m^4 + 1093724*B*a^2*c^2*m^3 + 18
47156*B*a^2*c^2*m^2 + 1670640*B*a^2*c^2*m + 604800*B*a^2*c^2)*x^6 + 6*(A*a^
2*c^2*m^9 + 50*A*a^2*c^2*m^8 + 1070*A*a^2*c^2*m^7 + 12800*A*a^2*c^2*m^6 + 9
3773*A*a^2*c^2*m^5 + 433190*A*a^2*c^2*m^4 + 1250980*A*a^2*c^2*m^3 + 2154600
*A*a^2*c^2*m^2 + 1980576*A*a^2*c^2*m + 725760*A*a^2*c^2)*x^5 + 4*(B*a^3*c*m
^9 + 51*B*a^3*c*m^8 + 1116*B*a^3*c*m^7 + 13686*B*a^3*c*m^6 + 103029*B*a^3*c
*m^5 + 489939*B*a^3*c*m^4 + 1457174*B*a^3*c*m^3 + 2580804*B*a^3*c*m^2 + 243
0360*B*a^3*c*m + 907200*B*a^3*c)*x^4 + 4*(A*a^3*c*m^9 + 52*A*a^3*c*m^8 + 11
64*A*a^3*c*m^7 + 14658*A*a^3*c*m^6 + 113799*A*a^3*c*m^5 + 560658*A*a^3*c*m^
4 + 1734956*A*a^3*c*m^3 + 3204632*A*a^3*c*m^2 + 3139680*A*a^3*c*m + 1209600
*A*a^3*c)*x^3 + (B*a^4*m^9 + 53*B*a^4*m^8 + 1214*B*a^4*m^7 + 15722*B*a^4*m^
6 + 126329*B*a^4*m^5 + 649397*B*a^4*m^4 + 2118136*B*a^4*m^3 + 4173228*B*a^4
*m^2 + 4407120*B*a^4*m + 1814400*B*a^4)*x^2 + (A*a^4*m^9 + 54*A*a^4*m^8 + 1
266*A*a^4*m^7 + 16884*A*a^4*m^6 + 140889*A*a^4*m^5 + 761166*A*a^4*m^4 + 265
5764*A*a^4*m^3 + 5753736*A*a^4*m^2 + 6999840*A*a^4*m + 3628800*A*a^4)*x)*(e
*x)^m/(m^10 + 55*m^9 + 1320*m^8 + 18150*m^7 + 157773*m^6 + 902055*m^5 + 341
6930*m^4 + 8409500*m^3 + 12753576*m^2 + 10628640*m + 3628800)
```

giac [B] time = 0.24, size = 1778, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="giac")
```

```
[Out] (B*c^4*m^9*x^10*x^m*e^m + A*c^4*m^9*x^9*x^m*e^m + 45*B*c^4*m^8*x^10*x^m*e^m
 + 4*B*a*c^3*m^9*x^8*x^m*e^m + 46*A*c^4*m^8*x^9*x^m*e^m + 870*B*c^4*m^7*x^1
0*x^m*e^m + 4*A*a*c^3*m^9*x^7*x^m*e^m + 188*B*a*c^3*m^8*x^8*x^m*e^m + 906*A
*c^4*m^7*x^9*x^m*e^m + 9450*B*c^4*m^6*x^10*x^m*e^m + 6*B*a^2*c^2*m^9*x^6*x^
m*e^m + 192*A*a*c^3*m^8*x^7*x^m*e^m + 3776*B*a*c^3*m^7*x^8*x^m*e^m + 9996*A
*c^4*m^6*x^9*x^m*e^m + 63273*B*c^4*m^5*x^10*x^m*e^m + 6*A*a^2*c^2*m^9*x^5*x
^m*e^m + 294*B*a^2*c^2*m^8*x^6*x^m*e^m + 3936*A*a*c^3*m^7*x^7*x^m*e^m + 423
92*B*a*c^3*m^6*x^8*x^m*e^m + 67809*A*c^4*m^5*x^9*x^m*e^m + 269325*B*c^4*m^4
*x^10*x^m*e^m + 4*B*a^3*c*m^9*x^4*x^m*e^m + 300*A*a^2*c^2*m^8*x^5*x^m*e^m +
 6156*B*a^2*c^2*m^7*x^6*x^m*e^m + 45048*A*a*c^3*m^6*x^7*x^m*e^m + 291956*B*
a*c^3*m^5*x^8*x^m*e^m + 291774*A*c^4*m^4*x^9*x^m*e^m + 723680*B*c^4*m^3*x^1
0*x^m*e^m + 4*A*a^3*c*m^9*x^3*x^m*e^m + 204*B*a^3*c*m^8*x^4*x^m*e^m + 6420*
A*a^2*c^2*m^7*x^5*x^m*e^m + 71964*B*a^2*c^2*m^6*x^6*x^m*e^m + 315756*A*a*c^
3*m^5*x^7*x^m*e^m + 1272572*B*a*c^3*m^4*x^8*x^m*e^m + 790964*A*c^4*m^3*x^9*
x^m*e^m + 1172700*B*c^4*m^2*x^10*x^m*e^m + B*a^4*m^9*x^2*x^m*e^m + 208*A*a^
3*c*m^8*x^3*x^m*e^m + 4464*B*a^3*c*m^7*x^4*x^m*e^m + 76800*A*a^2*c^2*m^6*x^
5*x^m*e^m + 514854*B*a^2*c^2*m^5*x^6*x^m*e^m + 1397928*A*a*c^3*m^4*x^7*x^m*
e^m + 3487144*B*a*c^3*m^3*x^8*x^m*e^m + 1290824*A*c^4*m^2*x^9*x^m*e^m + 102
6576*B*c^4*m*x^10*x^m*e^m + A*a^4*m^9*x*x^m*e^m + 53*B*a^4*m^8*x^2*x^m*e^m
+ 4656*A*a^3*c*m^7*x^3*x^m*e^m + 54744*B*a^3*c*m^6*x^4*x^m*e^m + 562638*A*a
^2*c^2*m^5*x^5*x^m*e^m + 2323206*B*a^2*c^2*m^4*x^6*x^m*e^m + 3882224*A*a*c^
3*m^3*x^7*x^m*e^m + 5740848*B*a*c^3*m^2*x^8*x^m*e^m + 1136160*A*c^4*m*x^9*x
^m*e^m + 362880*B*c^4*x^10*x^m*e^m + 54*A*a^4*m^8*x*x^m*e^m + 1214*B*a^4*m^
7*x^2*x^m*e^m + 58632*A*a^3*c*m^6*x^3*x^m*e^m + 412116*B*a^3*c*m^5*x^4*x^m*
e^m + 2599140*A*a^2*c^2*m^4*x^5*x^m*e^m + 6562344*B*a^2*c^2*m^3*x^6*x^m*e^m
 + 6462432*A*a*c^3*m^2*x^7*x^m*e^m + 5087520*B*a*c^3*m*x^8*x^m*e^m + 403200
*A*c^4*x^9*x^m*e^m + 1266*A*a^4*m^7*x*x^m*e^m + 15722*B*a^4*m^6*x^2*x^m*e^m
 + 455196*A*a^3*c*m^5*x^3*x^m*e^m + 1959756*B*a^3*c*m^4*x^4*x^m*e^m + 75058
80*A*a^2*c^2*m^3*x^5*x^m*e^m + 11082936*B*a^2*c^2*m^2*x^6*x^m*e^m + 5777280
*A*a*c^3*m*x^7*x^m*e^m + 1814400*B*a*c^3*x^8*x^m*e^m + 16884*A*a^4*m^6*x*x^
m*e^m + 126329*B*a^4*m^5*x^2*x^m*e^m + 2242632*A*a^3*c*m^4*x^3*x^m*e^m + 58
28696*B*a^3*c*m^3*x^4*x^m*e^m + 12927600*A*a^2*c^2*m^2*x^5*x^m*e^m + 100238
40*B*a^2*c^2*m*x^6*x^m*e^m + 2073600*A*a*c^3*x^7*x^m*e^m + 140889*A*a^4*m^5
*x*x^m*e^m + 649397*B*a^4*m^4*x^2*x^m*e^m + 6939824*A*a^3*c*m^3*x^3*x^m*e^m
 + 10323216*B*a^3*c*m^2*x^4*x^m*e^m + 11883456*A*a^2*c^2*m*x^5*x^m*e^m + 36
28800*B*a^2*c^2*x^6*x^m*e^m + 761166*A*a^4*m^4*x*x^m*e^m + 2118136*B*a^4*m^
3*x^2*x^m*e^m + 12818528*A*a^3*c*m^2*x^3*x^m*e^m + 9721440*B*a^3*c*m*x^4*x^
m*e^m + 4354560*A*a^2*c^2*x^5*x^m*e^m + 2655764*A*a^4*m^3*x*x^m*e^m + 41732
28*B*a^4*m^2*x^2*x^m*e^m + 12558720*A*a^3*c*m*x^3*x^m*e^m + 3628800*B*a^3*c
*x^4*x^m*e^m + 5753736*A*a^4*m^2*x*x^m*e^m + 4407120*B*a^4*m*x^2*x^m*e^m +
4838400*A*a^3*c*x^3*x^m*e^m + 6999840*A*a^4*m*x*x^m*e^m + 1814400*B*a^4*x^2
*x^m*e^m + 3628800*A*a^4*x*x^m*e^m)/(m^10 + 55*m^9 + 1320*m^8 + 18150*m^7 +
 157773*m^6 + 902055*m^5 + 3416930*m^4 + 8409500*m^3 + 12753576*m^2 + 10628
640*m + 3628800)
```

maple [B] time = 0.05, size = 1255, normalized size = 5.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^4,x)
```

```
[Out] x*(B*c^4*m^9*x^9+A*c^4*m^9*x^8+45*B*c^4*m^8*x^9+46*A*c^4*m^8*x^8+4*B*a*c^3*
m^9*x^7+870*B*c^4*m^7*x^9+4*A*a*c^3*m^9*x^6+906*A*c^4*m^7*x^8+188*B*a*c^3*m
^8*x^7+9450*B*c^4*m^6*x^9+192*A*a*c^3*m^8*x^6+9996*A*c^4*m^6*x^8+6*B*a^2*c^
2*m^9*x^5+3776*B*a*c^3*m^7*x^7+63273*B*c^4*m^5*x^9+6*A*a^2*c^2*m^9*x^4+3936
*A*a*c^3*m^7*x^6+67809*A*c^4*m^5*x^8+294*B*a^2*c^2*m^8*x^5+42392*B*a*c^3*m^
6*x^7+269325*B*c^4*m^4*x^9+300*A*a^2*c^2*m^8*x^4+45048*A*a*c^3*m^6*x^6+2917
74*A*c^4*m^4*x^8+4*B*a^3*c*m^9*x^3+6156*B*a^2*c^2*m^7*x^5+291956*B*a*c^3*m^
5*x^7+723680*B*c^4*m^3*x^9+4*A*a^3*c*m^9*x^2+6420*A*a^2*c^2*m^7*x^4+315756*
A*a*c^3*m^5*x^6+790964*A*c^4*m^3*x^8+204*B*a^3*c*m^8*x^3+71964*B*a^2*c^2*m^
6*x^5+1272572*B*a*c^3*m^4*x^7+1172700*B*c^4*m^2*x^9+208*A*a^3*c*m^8*x^2+768
00*A*a^2*c^2*m^6*x^4+1397928*A*a*c^3*m^4*x^6+1290824*A*c^4*m^2*x^8+B*a^4*m^
9*x+4464*B*a^3*c*m^7*x^3+514854*B*a^2*c^2*m^5*x^5+3487144*B*a*c^3*m^3*x^7+1
026576*B*c^4*m*x^9+A*a^4*m^9+4656*A*a^3*c*m^7*x^2+562638*A*a^2*c^2*m^5*x^4+
3882224*A*a*c^3*m^3*x^6+1136160*A*c^4*m*x^8+53*B*a^4*m^8*x+54744*B*a^3*c*m^
6*x^3+2323206*B*a^2*c^2*m^4*x^5+5740848*B*a*c^3*m^2*x^7+362880*B*c^4*x^9+54
*A*a^4*m^8+58632*A*a^3*c*m^6*x^2+2599140*A*a^2*c^2*m^4*x^4+6462432*A*a*c^3*
m^2*x^6+403200*A*c^4*x^8+1214*B*a^4*m^7*x+412116*B*a^3*c*m^5*x^3+6562344*B*
a^2*c^2*m^3*x^5+5087520*B*a*c^3*m*x^7+1266*A*a^4*m^7+455196*A*a^3*c*m^5*x^2
+7505880*A*a^2*c^2*m^3*x^4+5777280*A*a*c^3*m*x^6+15722*B*a^4*m^6*x+1959756*
B*a^3*c*m^4*x^3+11082936*B*a^2*c^2*m^2*x^5+1814400*B*a*c^3*x^7+16884*A*a^4*
m^6+2242632*A*a^3*c*m^4*x^2+12927600*A*a^2*c^2*m^2*x^4+2073600*A*a*c^3*x^6+
126329*B*a^4*m^5*x+5828696*B*a^3*c*m^3*x^3+10023840*B*a^2*c^2*m*x^5+140889*
A*a^4*m^5+6939824*A*a^3*c*m^3*x^2+11883456*A*a^2*c^2*m*x^4+649397*B*a^4*m^4
*x+10323216*B*a^3*c*m^2*x^3+3628800*B*a^2*c^2*x^5+761166*A*a^4*m^4+12818528
*A*a^3*c*m^2*x^2+4354560*A*a^2*c^2*x^4+2118136*B*a^4*m^3*x+9721440*B*a^3*c*
m*x^3+2655764*A*a^4*m^3+12558720*A*a^3*c*m*x^2+4173228*B*a^4*m^2*x+3628800*
B*a^3*c*x^3+5753736*A*a^4*m^2+4838400*A*a^3*c*x^2+4407120*B*a^4*m*x+6999840
*A*a^4*m+1814400*B*a^4*x+3628800*A*a^4)*(e*x)^m/(m+10)/(m+9)/(m+8)/(m+7)/(m
+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.78, size = 208, normalized size = 0.96

$$\frac{Bc^4e^mx^{10}x^m}{m+10}+\frac{Ac^4e^mx^9x^m}{m+9}+\frac{4\,Bac^3e^mx^8x^m}{m+8}+\frac{4\,Aac^3e^mx^7x^m}{m+7}+\frac{6\,Ba^2c^2e^mx^6x^m}{m+6}+\frac{6\,Aa^2c^2e^mx^5x^m}{m+5}+\frac{4\,Ba^3ce^mx^4x^m}{m+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^4,x, algorithm="maxima")
```

```
[Out] B*c^4*e^m*x^10*x^m/(m + 10) + A*c^4*e^m*x^9*x^m/(m + 9) + 4*B*a*c^3*e^m*x^8
*x^m/(m + 8) + 4*A*a*c^3*e^m*x^7*x^m/(m + 7) + 6*B*a^2*c^2*e^m*x^6*x^m/(m +
 6) + 6*A*a^2*c^2*e^m*x^5*x^m/(m + 5) + 4*B*a^3*c*e^m*x^4*x^m/(m + 4) + 4*A
*a^3*c*e^m*x^3*x^m/(m + 3) + B*a^4*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a^
4/(e*(m + 1))
```

mupad [B] time = 1.79, size = 1075, normalized size = 4.95

$$\frac{B\,a^4\,x^2\,{\left(e\,x\right)}^m\,\left(m^9+53\,m^8+1214\,m^7+15722\,m^6+126329\,m^5+649397\,m^4+2118136\,m^3+4173228\,m^2+\right.}{m^{10}+55\,m^9+1320\,m^8+18150\,m^7+157773\,m^6+902055\,m^5+3416930\,m^4+8409500\,m^3+12753576\,m^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^4*(A + B*x),x)
```

```
[Out] (B*a^4*x^2*(e*x)^m*(4407120*m + 4173228*m^2 + 2118136*m^3 + 649397*m^4 + 12
6329*m^5 + 15722*m^6 + 1214*m^7 + 53*m^8 + m^9 + 1814400))/(10628640*m + 12
753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^
7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (A*c^4*x^9*(e*x)^m*(1136160*m + 1
290824*m^2 + 790964*m^3 + 291774*m^4 + 67809*m^5 + 9996*m^6 + 906*m^7 + 46*
m^8 + m^9 + 403200))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4
 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800
) + (B*c^4*x^10*(e*x)^m*(1026576*m + 1172700*m^2 + 723680*m^3 + 269325*m^4
+ 63273*m^5 + 9450*m^6 + 870*m^7 + 45*m^8 + m^9 + 362880))/(10628640*m + 12
753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^
7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (A*a^4*x*(e*x)^m*(6999840*m + 575
3736*m^2 + 2655764*m^3 + 761166*m^4 + 140889*m^5 + 16884*m^6 + 1266*m^7 + 5
4*m^8 + m^9 + 3628800))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*
m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628
800) + (4*A*a*c^3*x^7*(e*x)^m*(1444320*m + 1615608*m^2 + 970556*m^3 + 34948
2*m^4 + 78939*m^5 + 11262*m^6 + 984*m^7 + 48*m^8 + m^9 + 518400))/(10628640
*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 1
8150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (4*A*a^3*c*x^3*(e*x)^m*(31
39680*m + 3204632*m^2 + 1734956*m^3 + 560658*m^4 + 113799*m^5 + 14658*m^6 +
 1164*m^7 + 52*m^8 + m^9 + 1209600))/(10628640*m + 12753576*m^2 + 8409500*m
^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9
+ m^10 + 3628800) + (4*B*a*c^3*x^8*(e*x)^m*(1271880*m + 1435212*m^2 + 87178
6*m^3 + 318143*m^4 + 72989*m^5 + 10598*m^6 + 944*m^7 + 47*m^8 + m^9 + 45360
0))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 1
57773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800) + (4*B*a^3*c*x^
4*(e*x)^m*(2430360*m + 2580804*m^2 + 1457174*m^3 + 489939*m^4 + 103029*m^5
+ 13686*m^6 + 1116*m^7 + 51*m^8 + m^9 + 907200))/(10628640*m + 12753576*m^2
 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m
^8 + 55*m^9 + m^10 + 3628800) + (6*A*a^2*c^2*x^5*(e*x)^m*(1980576*m + 21546
00*m^2 + 1250980*m^3 + 433190*m^4 + 93773*m^5 + 12800*m^6 + 1070*m^7 + 50*m
^8 + m^9 + 725760))/(10628640*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4
+ 902055*m^5 + 157773*m^6 + 18150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800)
 + (6*B*a^2*c^2*x^6*(e*x)^m*(1670640*m + 1847156*m^2 + 1093724*m^3 + 387201
*m^4 + 85809*m^5 + 11994*m^6 + 1026*m^7 + 49*m^8 + m^9 + 604800))/(10628640
*m + 12753576*m^2 + 8409500*m^3 + 3416930*m^4 + 902055*m^5 + 157773*m^6 + 1
8150*m^7 + 1320*m^8 + 55*m^9 + m^10 + 3628800)
```

sympy [**A**] time = 5.17, size = 8202, normalized size = 37.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**4,x)
```

```
[Out] Piecewise(((-A*a**4/(9*x**9) - 4*A*a**3*c/(7*x**7) - 6*A*a**2*c**2/(5*x**5)
 - 4*A*a*c**3/(3*x**3) - A*c**4/x - B*a**4/(8*x**8) - 2*B*a**3*c/(3*x**6) -
 3*B*a**2*c**2/(2*x**4) - 2*B*a*c**3/x**2 + B*c**4*log(x))/e**10, Eq(m, -10
)), ((-A*a**4/(8*x**8) - 2*A*a**3*c/(3*x**6) - 3*A*a**2*c**2/(2*x**4) - 2*A
*a*c**3/x**2 + A*c**4*log(x) - B*a**4/(7*x**7) - 4*B*a**3*c/(5*x**5) - 2*B*
a**2*c**2/x**3 - 4*B*a*c**3/x + B*c**4*x)/e**9, Eq(m, -9)), ((-A*a**4/(7*x*
*7) - 4*A*a**3*c/(5*x**5) - 2*A*a**2*c**2/x**3 - 4*A*a*c**3/x + A*c**4*x -
B*a**4/(6*x**6) - B*a**3*c/x**4 - 3*B*a**2*c**2/x**2 + 4*B*a*c**3*log(x) +
B*c**4*x**2/2)/e**8, Eq(m, -8)), ((-A*a**4/(6*x**6) - A*a**3*c/x**4 - 3*A*a
**2*c**2/x**2 + 4*A*a*c**3*log(x) + A*c**4*x**2/2 - B*a**4/(5*x**5) - 4*B*a
**3*c/(3*x**3) - 6*B*a**2*c**2/x + 4*B*a*c**3*x + B*c**4*x**3/3)/e**7, Eq(m
, -7)), ((-A*a**4/(5*x**5) - 4*A*a**3*c/(3*x**3) - 6*A*a**2*c**2/x + 4*A*a*
c**3*x + A*c**4*x**3/3 - B*a**4/(4*x**4) - 2*B*a**3*c/x**2 + 6*B*a**2*c**2*
log(x) + 2*B*a*c**3*x**2 + B*c**4*x**4/4)/e**6, Eq(m, -6)), ((-A*a**4/(4*x*
*4) - 2*A*a**3*c/x**2 + 6*A*a**2*c**2*log(x) + 2*A*a*c**3*x**2 + A*c**4*x**
4/4 - B*a**4/(3*x**3) - 4*B*a**3*c/x + 6*B*a**2*c**2*x + 4*B*a*c**3*x**3/3
+ B*c**4*x**5/5)/e**5, Eq(m, -5)), ((-A*a**4/(3*x**3) - 4*A*a**3*c/x + 6*A*
a**2*c**2*x + 4*A*a*c**3*x**3/3 + A*c**4*x**5/5 - B*a**4/(2*x**2) + 4*B*a**
3*c*log(x) + 3*B*a**2*c**2*x**2 + B*a*c**3*x**4 + B*c**4*x**6/6)/e**4, Eq(m
, -4)), ((-A*a**4/(2*x**2) + 4*A*a**3*c*log(x) + 3*A*a**2*c**2*x**2 + A*a*c
**3*x**4 + A*c**4*x**6/6 - B*a**4/x + 4*B*a**3*c*x + 2*B*a**2*c**2*x**3 + 4
*B*a*c**3*x**5/5 + B*c**4*x**7/7)/e**3, Eq(m, -3)), ((-A*a**4/x + 4*A*a**3*
c*x + 2*A*a**2*c**2*x**3 + 4*A*a*c**3*x**5/5 + A*c**4*x**7/7 + B*a**4*log(x
) + 2*B*a**3*c*x**2 + 3*B*a**2*c**2*x**4/2 + 2*B*a*c**3*x**6/3 + B*c**4*x**
8/8)/e**2, Eq(m, -2)), ((A*a**4*log(x) + 2*A*a**3*c*x**2 + 3*A*a**2*c**2*x*
*4/2 + 2*A*a*c**3*x**6/3 + A*c**4*x**8/8 + B*a**4*x + 4*B*a**3*c*x**3/3 + 6
*B*a**2*c**2*x**5/5 + 4*B*a*c**3*x**7/7 + B*c**4*x**9/9)/e, Eq(m, -1)), (A*
a**4*e**m*m**9*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 54*A*a**4*e**m*m**8*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 1266*A*a**4*e**m*m**7*x*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 16884*A*a**4*e**m*m**
6*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m
**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) +
 140889*A*a**4*e**m*m**5*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 +
10628640*m + 3628800) + 761166*A*a**4*e**m*m**4*x*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2655764*A*a**4*e**m*m**3*x*x
**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 5753
736*A*a**4*e**m*m**2*x*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157
773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062
8640*m + 3628800) + 6999840*A*a**4*e**m*m*x*x**m/(m**10 + 55*m**9 + 1320*m*
```

```
*8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 +
 12753576*m**2 + 10628640*m + 3628800) + 3628800*A*a**4*e**m*x*x**m/(m**10
+ 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m*
*4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4*A*a**3*c*e**m
*m**9*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9
02055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362
8800) + 208*A*a**3*c*e**m*m**8*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 4656*A*a**3*c*e**m*m**7*x**3*x**m/(m**10 +
 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**
4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 58632*A*a**3*c*e
**m*m**6*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
+ 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 455196*A*a**3*c*e**m*m**5*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8
 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1
2753576*m**2 + 10628640*m + 3628800) + 2242632*A*a**3*c*e**m*m**4*x**3*x**m
/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 34
16930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6939824
*A*a**3*c*e**m*m**3*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 12818528*A*a**3*c*e**m*m**2*x**3*x**m/(m**10 + 55*m**
9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 12558720*A*a**3*c*e**m*
m*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + 4838400*A*a**3*c*e**m*x**3*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m*
*7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**
2 + 10628640*m + 3628800) + 6*A*a**2*c**2*e**m*m**9*x**5*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 300*A*a**2*c**2*e**m*
m**8*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90
2055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628
800) + 6420*A*a**2*c**2*e**m*m**7*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 +
18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275
3576*m**2 + 10628640*m + 3628800) + 76800*A*a**2*c**2*e**m*m**6*x**5*x**m/(
m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416
930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 562638*A*
a**2*c**2*e**m*m**5*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 2599140*A*a**2*c**2*e**m*m**4*x**5*x**m/(m**10 + 55*m
**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8
409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 7505880*A*a**2*c**2*e
**m*m**3*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
+ 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 12927600*A*a**2*c**2*e**m*m**2*x**5*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 11883456*A*a**2*c**2*e**m*m*x**
5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4
354560*A*a**2*c**2*e**m*x**5*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
+ 10628640*m + 3628800) + 4*A*a*c**3*e**m*m**9*x**7*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 192*A*a*c**3*e**m*m**8*x**
7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 3
936*A*a*c**3*e**m*m**7*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
+ 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 +
 10628640*m + 3628800) + 45048*A*a*c**3*e**m*m**6*x**7*x**m/(m**10 + 55*m**
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9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 315756*A*a*c**3*e**m*m*
*5*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9020
55*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362880
0) + 1397928*A*a*c**3*e**m*m**4*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3882224*A*a*c**3*e**m*m**3*x**7*x**m/(m**
10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930
*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6462432*A*a*
c**3*e**m*m**2*x**7*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773
*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062864
0*m + 3628800) + 5777280*A*a*c**3*e**m*m*x**7*x**m/(m**10 + 55*m**9 + 1320*
m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3
 + 12753576*m**2 + 10628640*m + 3628800) + 2073600*A*a*c**3*e**m*x**7*x**m/
(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 341
6930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + A*c**4*e
**m*m**9*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
3628800) + 46*A*c**4*e**m*m**8*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 181
50*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1275357
6*m**2 + 10628640*m + 3628800) + 906*A*c**4*e**m*m**7*x**9*x**m/(m**10 + 55
*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 +
 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 9996*A*c**4*e**m*m*
*6*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 9020
55*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 362880
0) + 67809*A*c**4*e**m*m**5*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*
m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m
**2 + 10628640*m + 3628800) + 291774*A*c**4*e**m*m**4*x**9*x**m/(m**10 + 55
*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 +
 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 790964*A*c**4*e**m*
m**3*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90
2055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628
800) + 1290824*A*c**4*e**m*m**2*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 1136160*A*c**4*e**m*m*x**9*x**m/(m**10 +
55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 403200*A*c**4*e**
m*x**9*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + B*a**4*e**m*m**9*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 53*B*a**4*e**m*m**8*x**2*x**m/(m**10 + 55*m**9 + 132
0*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m*
*3 + 12753576*m**2 + 10628640*m + 3628800) + 1214*B*a**4*e**m*m**7*x**2*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 15722*
B*a**4*e**m*m**6*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1577
73*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628
640*m + 3628800) + 126329*B*a**4*e**m*m**5*x**2*x**m/(m**10 + 55*m**9 + 132
0*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m*
*3 + 12753576*m**2 + 10628640*m + 3628800) + 649397*B*a**4*e**m*m**4*x**2*x
**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2118
136*B*a**4*e**m*m**3*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 4173228*B*a**4*e**m*m**2*x**2*x**m/(m**10 + 55*m**9
+ 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 84095
00*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4407120*B*a**4*e**m*m*x**
2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**
5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 1
814400*B*a**4*e**m*x**2*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 15
7773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 106
28640*m + 3628800) + 4*B*a**3*c*e**m*m**9*x**4*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 204*B*a**3*c*e**m*m**8*x**4*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4464*B
*a**3*c*e**m*m**7*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157
773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1062
8640*m + 3628800) + 54744*B*a**3*c*e**m*m**6*x**4*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 412116*B*a**3*c*e**m*m**5*x*
*4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m*
*5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) +
1959756*B*a**3*c*e**m*m**4*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m
**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m*
*2 + 10628640*m + 3628800) + 5828696*B*a**3*c*e**m*m**3*x**4*x**m/(m**10 +
55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 10323216*B*a**3*c
*e**m*m**2*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**
6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
+ 3628800) + 9721440*B*a**3*c*e**m*m*x**4*x**m/(m**10 + 55*m**9 + 1320*m**8
 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 1
2753576*m**2 + 10628640*m + 3628800) + 3628800*B*a**3*c*e**m*x**4*x**m/(m**
10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930
*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 6*B*a**2*c**
2*e**m*m**9*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 294*B*a**2*c**2*e**m*m**8*x**6*x**m/(m**10 + 55*m**9 + 1320*m
**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3
+ 12753576*m**2 + 10628640*m + 3628800) + 6156*B*a**2*c**2*e**m*m**7*x**6*x
**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 7196
4*B*a**2*c**2*e**m*m**6*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7
 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
+ 10628640*m + 3628800) + 514854*B*a**2*c**2*e**m*m**5*x**6*x**m/(m**10 + 5
5*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4
+ 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 2323206*B*a**2*c**
2*e**m*m**4*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m*
*6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m
 + 3628800) + 6562344*B*a**2*c**2*e**m*m**3*x**6*x**m/(m**10 + 55*m**9 + 13
20*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m
**3 + 12753576*m**2 + 10628640*m + 3628800) + 11082936*B*a**2*c**2*e**m*m**
2*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 90205
5*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800
) + 10023840*B*a**2*c**2*e**m*m*x**6*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3628800*B*a**2*c**2*e**m*x**6*x**m/(m**10
 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m
**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 4*B*a*c**3*e**
m*m**9*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 +
902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 36
28800) + 188*B*a*c**3*e**m*m**8*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18
150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 127535
76*m**2 + 10628640*m + 3628800) + 3776*B*a*c**3*e**m*m**7*x**8*x**m/(m**10
+ 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m*
*4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 42392*B*a*c**3*
e**m*m**6*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6
 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m +
 3628800) + 291956*B*a*c**3*e**m*m**5*x**8*x**m/(m**10 + 55*m**9 + 1320*m**
8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 +
12753576*m**2 + 10628640*m + 3628800) + 1272572*B*a*c**3*e**m*m**4*x**8*x**
m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3
416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 348714
4*B*a*c**3*e**m*m**3*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 +
157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 1
0628640*m + 3628800) + 5740848*B*a*c**3*e**m*m**2*x**8*x**m/(m**10 + 55*m**
9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840
9500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 5087520*B*a*c**3*e**m*m
*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055
*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800)
 + 1814400*B*a*c**3*e**m*x**8*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**
7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
 + 10628640*m + 3628800) + B*c**4*e**m*m**9*x**10*x**m/(m**10 + 55*m**9 + 1
320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*
m**3 + 12753576*m**2 + 10628640*m + 3628800) + 45*B*c**4*e**m*m**8*x**10*x*
*m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 870*B
*c**4*e**m*m**7*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1577
73*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628
640*m + 3628800) + 9450*B*c**4*e**m*m**6*x**10*x**m/(m**10 + 55*m**9 + 1320
*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**
3 + 12753576*m**2 + 10628640*m + 3628800) + 63273*B*c**4*e**m*m**5*x**10*x*
*m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 +
3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 26932
5*B*c**4*e**m*m**4*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 1
57773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10
628640*m + 3628800) + 723680*B*c**4*e**m*m**3*x**10*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800) + 1172700*B*c**4*e**m*m**2*x
**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*
m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2 + 10628640*m + 3628800)
+ 1026576*B*c**4*e**m*m*x**10*x**m/(m**10 + 55*m**9 + 1320*m**8 + 18150*m**
7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 8409500*m**3 + 12753576*m**2
 + 10628640*m + 3628800) + 362880*B*c**4*e**m*x**10*x**m/(m**10 + 55*m**9 +
 1320*m**8 + 18150*m**7 + 157773*m**6 + 902055*m**5 + 3416930*m**4 + 840950
0*m**3 + 12753576*m**2 + 10628640*m + 3628800), True))
```

3.486 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=169

$$\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{a^3B(ex)^{m+2}}{e^2(m+2)}+\frac{3a^2Ac(ex)^{m+3}}{e^3(m+3)}+\frac{3a^2Bc(ex)^{m+4}}{e^4(m+4)}+\frac{3aAc^2(ex)^{m+5}}{e^5(m+5)}+\frac{3aBc^2(ex)^{m+6}}{e^6(m+6)}+\frac{Ac^3(ex)^{m+7}}{e^7(m+7)}+\frac{Bc^3(e}{e^8(m}$$

```
[Out] a^3*A*(e*x)^(1+m)/e/(1+m)+a^3*B*(e*x)^(2+m)/e^2/(2+m)+3*a^2*A*c*(e*x)^(3+m)
/e^3/(3+m)+3*a^2*B*c*(e*x)^(4+m)/e^4/(4+m)+3*a*A*c^2*(e*x)^(5+m)/e^5/(5+m)+
3*a*B*c^2*(e*x)^(6+m)/e^6/(6+m)+A*c^3*(e*x)^(7+m)/e^7/(7+m)+B*c^3*(e*x)^(8+
m)/e^8/(8+m)
```

Rubi [A] time = 0.10, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{3a^2Ac(ex)^{m+3}}{e^3(m+3)}+\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{3a^2Bc(ex)^{m+4}}{e^4(m+4)}+\frac{a^3B(ex)^{m+2}}{e^2(m+2)}+\frac{3aAc^2(ex)^{m+5}}{e^5(m+5)}+\frac{3aBc^2(ex)^{m+6}}{e^6(m+6)}+\frac{Ac^3(ex)^{m+7}}{e^7(m+7)}+\frac{Bc^3(e}{e^8(m}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^3*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
3*a^2*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (3*a^2*B*c*(e*x)^(4 + m))/(e^4*(4
+ m)) + (3*a*A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (3*a*B*c^2*(e*x)^(6 + m))
/(e^6*(6 + m)) + (A*c^3*(e*x)^(7 + m))/(e^7*(7 + m)) + (B*c^3*(e*x)^(8 + m)
)/(e^8*(8 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^3\,dx &= \int \left(a^3A(ex)^m+\frac{a^3B(ex)^{1+m}}{e}+\frac{3a^2Ac(ex)^{2+m}}{e^2}+\frac{3a^2Bc(ex)^{3+m}}{e^3}+\frac{3aAc^2(ex)^4}{e^4}\right.\\ &= \frac{a^3A(ex)^{1+m}}{e(1+m)}+\frac{a^3B(ex)^{2+m}}{e^2(2+m)}+\frac{3a^2Ac(ex)^{3+m}}{e^3(3+m)}+\frac{3a^2Bc(ex)^{4+m}}{e^4(4+m)}+\frac{3aAc^2(ex)^{5+}}{e^5(5+m)}\end{aligned}$$

Mathematica [A] time = 0.22, size = 101, normalized size = 0.60

$$x(ex)^m\left(a^3\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+3a^2cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+3ac^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)+c^3x^6\left(\frac{A}{m+7}+\frac{Bx}{m+8}\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] x*(e*x)^m*(a^3*(A/(1 + m) + (B*x)/(2 + m)) + 3*a^2*c*x^2*(A/(3 + m) + (B*x)
/(4 + m)) + 3*a*c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)) + c^3*x^6*(A/(7 + m) +
(B*x)/(8 + m)))
```

fricas [B] time = 0.92, size = 649, normalized size = 3.84

$$\frac{\left(\left(Bc^3m^7+28\,Bc^3m^6+322\,Bc^3m^5+1960\,Bc^3m^4+6769\,Bc^3m^3+13132\,Bc^3m^2+13068\,Bc^3m+5040\,Bc^3\right)x^8\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^7 + 28*B*c^3*m^6 + 322*B*c^3*m^5 + 1960*B*c^3*m^4 + 6769*B*c^3*m^
3 + 13132*B*c^3*m^2 + 13068*B*c^3*m + 5040*B*c^3)*x^8 + (A*c^3*m^7 + 29*A*c
^3*m^6 + 343*A*c^3*m^5 + 2135*A*c^3*m^4 + 7504*A*c^3*m^3 + 14756*A*c^3*m^2
+ 14832*A*c^3*m + 5760*A*c^3)*x^7 + 3*(B*a*c^2*m^7 + 30*B*a*c^2*m^6 + 366*B
*a*c^2*m^5 + 2340*B*a*c^2*m^4 + 8409*B*a*c^2*m^3 + 16830*B*a*c^2*m^2 + 1714
4*B*a*c^2*m + 6720*B*a*c^2)*x^6 + 3*(A*a*c^2*m^7 + 31*A*a*c^2*m^6 + 391*A*a
*c^2*m^5 + 2581*A*a*c^2*m^4 + 9544*A*a*c^2*m^3 + 19564*A*a*c^2*m^2 + 20304*
A*a*c^2*m + 8064*A*a*c^2)*x^5 + 3*(B*a^2*c*m^7 + 32*B*a^2*c*m^6 + 418*B*a^2
*c*m^5 + 2864*B*a^2*c*m^4 + 10993*B*a^2*c*m^3 + 23312*B*a^2*c*m^2 + 24876*B
*a^2*c*m + 10080*B*a^2*c)*x^4 + 3*(A*a^2*c*m^7 + 33*A*a^2*c*m^6 + 447*A*a^2
*c*m^5 + 3195*A*a^2*c*m^4 + 12864*A*a^2*c*m^3 + 28692*A*a^2*c*m^2 + 32048*A
*a^2*c*m + 13440*A*a^2*c)*x^3 + (B*a^3*m^7 + 34*B*a^3*m^6 + 478*B*a^3*m^5 +
 3580*B*a^3*m^4 + 15289*B*a^3*m^3 + 36706*B*a^3*m^2 + 44712*B*a^3*m + 20160
*B*a^3)*x^2 + (A*a^3*m^7 + 35*A*a^3*m^6 + 511*A*a^3*m^5 + 4025*A*a^3*m^4 +
18424*A*a^3*m^3 + 48860*A*a^3*m^2 + 69264*A*a^3*m + 40320*A*a^3)*x)*(e*x)^m
/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 +
109584*m + 40320)
```

giac **[B]** time = 0.20, size = 1102, normalized size = 6.52

$$Bc^3m^7x^8x^me^m + Ac^3m^7x^7x^me^m + 28\,Bc^3m^6x^8x^me^m + 3\,Bac^2m^7x^6x^me^m + 29\,Ac^3m^6x^7x^me^m + 322\,Bc^3m^5x^8x^me^m$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] (B*c^3*m^7*x^8*x^m*e^m + A*c^3*m^7*x^7*x^m*e^m + 28*B*c^3*m^6*x^8*x^m*e^m +
 3*B*a*c^2*m^7*x^6*x^m*e^m + 29*A*c^3*m^6*x^7*x^m*e^m + 322*B*c^3*m^5*x^8*x
^m*e^m + 3*A*a*c^2*m^7*x^5*x^m*e^m + 90*B*a*c^2*m^6*x^6*x^m*e^m + 343*A*c^3
*m^5*x^7*x^m*e^m + 1960*B*c^3*m^4*x^8*x^m*e^m + 3*B*a^2*c*m^7*x^4*x^m*e^m +
 93*A*a*c^2*m^6*x^5*x^m*e^m + 1098*B*a*c^2*m^5*x^6*x^m*e^m + 2135*A*c^3*m^4
*x^7*x^m*e^m + 6769*B*c^3*m^3*x^8*x^m*e^m + 3*A*a^2*c*m^7*x^3*x^m*e^m + 96*
B*a^2*c*m^6*x^4*x^m*e^m + 1173*A*a*c^2*m^5*x^5*x^m*e^m + 7020*B*a*c^2*m^4*x
^6*x^m*e^m + 7504*A*c^3*m^3*x^7*x^m*e^m + 13132*B*c^3*m^2*x^8*x^m*e^m + B*a
^3*m^7*x^2*x^m*e^m + 99*A*a^2*c*m^6*x^3*x^m*e^m + 1254*B*a^2*c*m^5*x^4*x^m*
e^m + 7743*A*a*c^2*m^4*x^5*x^m*e^m + 25227*B*a*c^2*m^3*x^6*x^m*e^m + 14756*
A*c^3*m^2*x^7*x^m*e^m + 13068*B*c^3*m*x^8*x^m*e^m + A*a^3*m^7*x*x^m*e^m + 3
4*B*a^3*m^6*x^2*x^m*e^m + 1341*A*a^2*c*m^5*x^3*x^m*e^m + 8592*B*a^2*c*m^4*x
^4*x^m*e^m + 28632*A*a*c^2*m^3*x^5*x^m*e^m + 50490*B*a*c^2*m^2*x^6*x^m*e^m
+ 14832*A*c^3*m*x^7*x^m*e^m + 5040*B*c^3*x^8*x^m*e^m + 35*A*a^3*m^6*x*x^m*e
^m + 478*B*a^3*m^5*x^2*x^m*e^m + 9585*A*a^2*c*m^4*x^3*x^m*e^m + 32979*B*a^2
*c*m^3*x^4*x^m*e^m + 58692*A*a*c^2*m^2*x^5*x^m*e^m + 51432*B*a*c^2*m*x^6*x^
m*e^m + 5760*A*c^3*x^7*x^m*e^m + 511*A*a^3*m^5*x*x^m*e^m + 3580*B*a^3*m^4*x
^2*x^m*e^m + 38592*A*a^2*c*m^3*x^3*x^m*e^m + 69936*B*a^2*c*m^2*x^4*x^m*e^m
+ 60912*A*a*c^2*m*x^5*x^m*e^m + 20160*B*a*c^2*x^6*x^m*e^m + 4025*A*a^3*m^4*
x*x^m*e^m + 15289*B*a^3*m^3*x^2*x^m*e^m + 86076*A*a^2*c*m^2*x^3*x^m*e^m + 7
4628*B*a^2*c*m*x^4*x^m*e^m + 24192*A*a*c^2*x^5*x^m*e^m + 18424*A*a^3*m^3*x*
x^m*e^m + 36706*B*a^3*m^2*x^2*x^m*e^m + 96144*A*a^2*c*m*x^3*x^m*e^m + 30240
*B*a^2*c*x^4*x^m*e^m + 48860*A*a^3*m^2*x*x^m*e^m + 44712*B*a^3*m*x^2*x^m*e^
m + 40320*A*a^2*c*x^3*x^m*e^m + 69264*A*a^3*m*x*x^m*e^m + 20160*B*a^3*x^2*x
^m*e^m + 40320*A*a^3*x*x^m*e^m)/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*
m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple **[B]** time = 0.06, size = 765, normalized size = 4.53

$$\big(Bc^3m^7x^7 + Ac^3m^7x^6 + 28Bc^3m^6x^7 + 29Ac^3m^6x^6 + 3Bac^2m^7x^5 + 322Bc^3m^5x^7 + 3Aac^2m^7x^4 + 343Ac^3m^5x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] x*(B*c^3*m^7*x^7+A*c^3*m^7*x^6+28*B*c^3*m^6*x^7+29*A*c^3*m^6*x^6+3*B*a*c^2*
m^7*x^5+322*B*c^3*m^5*x^7+3*A*a*c^2*m^7*x^4+343*A*c^3*m^5*x^6+90*B*a*c^2*m^
6*x^5+1960*B*c^3*m^4*x^7+93*A*a*c^2*m^6*x^4+2135*A*c^3*m^4*x^6+3*B*a^2*c*m^
7*x^3+1098*B*a*c^2*m^5*x^5+6769*B*c^3*m^3*x^7+3*A*a^2*c*m^7*x^2+1173*A*a*c^
2*m^5*x^4+7504*A*c^3*m^3*x^6+96*B*a^2*c*m^6*x^3+7020*B*a*c^2*m^4*x^5+13132*
B*c^3*m^2*x^7+99*A*a^2*c*m^6*x^2+7743*A*a*c^2*m^4*x^4+14756*A*c^3*m^2*x^6+B
*a^3*m^7*x+1254*B*a^2*c*m^5*x^3+25227*B*a*c^2*m^3*x^5+13068*B*c^3*m*x^7+A*a
^3*m^7+1341*A*a^2*c*m^5*x^2+28632*A*a*c^2*m^3*x^4+14832*A*c^3*m*x^6+34*B*a^
3*m^6*x+8592*B*a^2*c*m^4*x^3+50490*B*a*c^2*m^2*x^5+5040*B*c^3*x^7+35*A*a^3*
m^6+9585*A*a^2*c*m^4*x^2+58692*A*a*c^2*m^2*x^4+5760*A*c^3*x^6+478*B*a^3*m^5
*x+32979*B*a^2*c*m^3*x^3+51432*B*a*c^2*m*x^5+511*A*a^3*m^5+38592*A*a^2*c*m^
3*x^2+60912*A*a*c^2*m*x^4+3580*B*a^3*m^4*x+69936*B*a^2*c*m^2*x^3+20160*B*a*
c^2*x^5+4025*A*a^3*m^4+86076*A*a^2*c*m^2*x^2+24192*A*a*c^2*x^4+15289*B*a^3*
m^3*x+74628*B*a^2*c*m*x^3+18424*A*a^3*m^3+96144*A*a^2*c*m*x^2+36706*B*a^3*m
^2*x+30240*B*a^2*c*x^3+48860*A*a^3*m^2+40320*A*a^2*c*x^2+44712*B*a^3*m*x+69
264*A*a^3*m+20160*B*a^3*x+40320*A*a^3)*(e*x)^m/(m+8)/(m+7)/(m+6)/(m+5)/(m+4
)/(m+3)/(m+2)/(m+1)
```

maxima [**A**] time = 0.62, size = 162, normalized size = 0.96

$$\frac{Bc^3e^mx^8x^m}{m+8}+\frac{Ac^3e^mx^7x^m}{m+7}+\frac{3\,Bac^2e^mx^6x^m}{m+6}+\frac{3\,Aac^2e^mx^5x^m}{m+5}+\frac{3\,Ba^2ce^mx^4x^m}{m+4}+\frac{3\,Aa^2ce^mx^3x^m}{m+3}+\frac{Ba^3e^mx^2x^m}{m+2}+\frac{(ex)}{e(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*e^m*x^8*x^m/(m + 8) + A*c^3*e^m*x^7*x^m/(m + 7) + 3*B*a*c^2*e^m*x^6*x
^m/(m + 6) + 3*A*a*c^2*e^m*x^5*x^m/(m + 5) + 3*B*a^2*c*e^m*x^4*x^m/(m + 4)
+ 3*A*a^2*c*e^m*x^3*x^m/(m + 3) + B*a^3*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)
*A*a^3/(e*(m + 1))
```

mupad [**B**] time = 1.48, size = 695, normalized size = 4.11

$$\frac{A\,a^3\,x\,{\left(e\,x\right)}^m\,\left(m^7+35\,m^6+511\,m^5+4025\,m^4+18424\,m^3+48860\,m^2+69264\,m+40320\right)}{m^8+36\,m^7+546\,m^6+4536\,m^5+22449\,m^4+67284\,m^3+118124\,m^2+109584\,m+40320}+\frac{B\,a^3\,x^2\,{\left(e\,x\right)}^m\,\Big(}{m^8+36\,m^7+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (A*a^3*x*(e*x)^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*m^5 + 35
*m^6 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*
m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (B*a^3*x^2*(e*x)^m*(44712*m + 36706
*m^2 + 15289*m^3 + 3580*m^4 + 478*m^5 + 34*m^6 + m^7 + 20160))/(109584*m +
118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40
320) + (A*c^3*x^7*(e*x)^m*(14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*
m^5 + 29*m^6 + m^7 + 5760))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
+ 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (B*c^3*x^8*(e*x)^m*(13068*m
+ 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584
*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8
 + 40320) + (3*A*a*c^2*x^5*(e*x)^m*(20304*m + 19564*m^2 + 9544*m^3 + 2581*m
^4 + 391*m^5 + 31*m^6 + m^7 + 8064))/(109584*m + 118124*m^2 + 67284*m^3 + 2
2449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*A*a^2*c*x^3*(e*x
)^m*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4 + 447*m^5 + 33*m^6 + m^7 +
13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6
 + 36*m^7 + m^8 + 40320) + (3*B*a*c^2*x^6*(e*x)^m*(17144*m + 16830*m^2 + 84
09*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 6720))/(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*B
*a^2*c*x^4*(e*x)^m*(24876*m + 23312*m^2 + 10993*m^3 + 2864*m^4 + 418*m^5 +
32*m^6 + m^7 + 10080))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 453
6*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)
```

sympy [**A**] time = 3.18, size = 4507, normalized size = 26.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**3,x)

[Out] Piecewise(((-A*a**3/(7*x**7) - 3*A*a**2*c/(5*x**5) - A*a*c**2/x**3 - A*c**3
/x - B*a**3/(6*x**6) - 3*B*a**2*c/(4*x**4) - 3*B*a*c**2/(2*x**2) + B*c**3*l
og(x))/e**8, Eq(m, -8)), ((-A*a**3/(6*x**6) - 3*A*a**2*c/(4*x**4) - 3*A*a*c
**2/(2*x**2) + A*c**3*log(x) - B*a**3/(5*x**5) - B*a**2*c/x**3 - 3*B*a*c**2
/x + B*c**3*x)/e**7, Eq(m, -7)), ((-A*a**3/(5*x**5) - A*a**2*c/x**3 - 3*A*a
*c**2/x + A*c**3*x - B*a**3/(4*x**4) - 3*B*a**2*c/(2*x**2) + 3*B*a*c**2*log
(x) + B*c**3*x**2/2)/e**6, Eq(m, -6)), ((-A*a**3/(4*x**4) - 3*A*a**2*c/(2*x
**2) + 3*A*a*c**2*log(x) + A*c**3*x**2/2 - B*a**3/(3*x**3) - 3*B*a**2*c/x +
 3*B*a*c**2*x + B*c**3*x**3/3)/e**5, Eq(m, -5)), ((-A*a**3/(3*x**3) - 3*A*a
**2*c/x + 3*A*a*c**2*x + A*c**3*x**3/3 - B*a**3/(2*x**2) + 3*B*a**2*c*log(x
) + 3*B*a*c**2*x**2/2 + B*c**3*x**4/4)/e**4, Eq(m, -4)), ((-A*a**3/(2*x**2)
 + 3*A*a**2*c*log(x) + 3*A*a*c**2*x**2/2 + A*c**3*x**4/4 - B*a**3/x + 3*B*a
**2*c*x + B*a*c**2*x**3 + B*c**3*x**5/5)/e**3, Eq(m, -3)), ((-A*a**3/x + 3*
A*a**2*c*x + A*a*c**2*x**3 + A*c**3*x**5/5 + B*a**3*log(x) + 3*B*a**2*c*x**
2/2 + 3*B*a*c**2*x**4/4 + B*c**3*x**6/6)/e**2, Eq(m, -2)), ((A*a**3*log(x)
+ 3*A*a**2*c*x**2/2 + 3*A*a*c**2*x**4/4 + A*c**3*x**6/6 + B*a**3*x + B*a**2
*c*x**3 + 3*B*a*c**2*x**5/5 + B*c**3*x**7/7)/e, Eq(m, -1)), (A*a**3*e**m*m*
*7*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 35*A*a**3*e**m*m**6*x*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 511*A*a**3*e**m*m**5*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 4025*A*
a**3*e**m*m**4*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 18424*A*a**3*e**m*m**3*x*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 48860*A*a**3*e**m*m**2*x*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 69264*A*a**3*e**m*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**3
*e**m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 3*A*a**2*c*e**m*m**7*x**3*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 99*A*a**2*c*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 1341*A*a**2*c*e**m*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*A*a**2
*c*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38592*A*a**2*c*e**m*m**3*x
**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
 118124*m**2 + 109584*m + 40320) + 86076*A*a**2*c*e**m*m**2*x**3*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 96144*A*a**2*c*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 40320*A*a**2*c*e**m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a*c**2*e**m
*m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 93*A*a*c**2*e**m*m**6*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 1173*A*a*c**2*e**m*m**5*x**5*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 7743*A*a*c**2*e**m*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28632
*A*a*c**2*e**m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 58692*A*a*c**2*e**m
*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 60912*A*a*c**2*e**m*m*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 24192*A*a*c**2*e**m*x**5*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + A*c**3*e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 29*A*c**3*e**m*m
**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 343*A*c**3*e**m*m**5*x**7*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 2135*A*c**3*e**m*m**4*x**7*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 7504*A*c**3*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14756*A*c**3
*e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*c**3*e**m*m*x**7*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 5760*A*c**3*e**m*x**7*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + B*a**3*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a**3*e**m*m
**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 478*B*a**3*e**m*m**5*x**2*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 3580*B*a**3*e**m*m**4*x**2*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 15289*B*a**3*e**m*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 36706*B*a**
3*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44712*B*a**3*e**m*m*x**2*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 20160*B*a**3*e**m*x**2*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 3*B*a**2*c*e**m*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 96*B*a**2*
c*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1254*B*a**2*c*e**m*m**5*x**
4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1
18124*m**2 + 109584*m + 40320) + 8592*B*a**2*c*e**m*m**4*x**4*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 32979*B*a**2*c*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 69936*B*a**2*c*e**m*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 74628*B*a*
*2*c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 30240*B*a**2*c*e**m*x**4*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 3*B*a*c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 90*B*a*c**2*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1098*B
*a*c**2*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*
m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*a*c**2*e**m*m*
```

```
*4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 25227*B*a*c**2*e**m*m**3*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 50490*B*a*c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 51432*B*a*c**2*e**m*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*
B*a*c**2*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + B*c**3*e**m*m**7*x**8*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 28*B*c**3*e**m*m**6*x**8*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 322*B*c**3*e**m*m**5*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1960*B*c*
*3*e**m*m**4*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6769*B*c**3*e**m*m**3*x**8
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 13132*B*c**3*e**m*m**2*x**8*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 13068*B*c**3*e**m*m*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 504
0*B*c**3*e**m*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320), True))
```

3.487 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=121

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{a^2B(ex)^{m+2}}{e^2(m+2)}+\frac{2aAc(ex)^{m+3}}{e^3(m+3)}+\frac{2aBc(ex)^{m+4}}{e^4(m+4)}+\frac{Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{Bc^2(ex)^{m+6}}{e^6(m+6)}$$

```
[Out] a^2*A*(e*x)^(1+m)/e/(1+m)+a^2*B*(e*x)^(2+m)/e^2/(2+m)+2*a*A*c*(e*x)^(3+m)/e
^3/(3+m)+2*a*B*c*(e*x)^(4+m)/e^4/(4+m)+A*c^2*(e*x)^(5+m)/e^5/(5+m)+B*c^2*(e
*x)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.06, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {766}

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{a^2B(ex)^{m+2}}{e^2(m+2)}+\frac{2aAc(ex)^{m+3}}{e^3(m+3)}+\frac{2aBc(ex)^{m+4}}{e^4(m+4)}+\frac{Ac^2(ex)^{m+5}}{e^5(m+5)}+\frac{Bc^2(ex)^{m+6}}{e^6(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] (a^2*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^2*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (
2*a*A*c*(e*x)^(3 + m))/(e^3*(3 + m)) + (2*a*B*c*(e*x)^(4 + m))/(e^4*(4 + m)
) + (A*c^2*(e*x)^(5 + m))/(e^5*(5 + m)) + (B*c^2*(e*x)^(6 + m))/(e^6*(6 + m
))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^2\,dx &= \int \left(a^2A(ex)^m+\frac{a^2B(ex)^{1+m}}{e}+\frac{2aAc(ex)^{2+m}}{e^2}+\frac{2aBc(ex)^{3+m}}{e^3}+\frac{Ac^2(ex)^{4+m}}{e^4}\right.\\ &= \frac{a^2A(ex)^{1+m}}{e(1+m)}+\frac{a^2B(ex)^{2+m}}{e^2(2+m)}+\frac{2aAc(ex)^{3+m}}{e^3(3+m)}+\frac{2aBc(ex)^{4+m}}{e^4(4+m)}+\frac{Ac^2(ex)^{5+m}}{e^5(5+m)}+\end{aligned}$$

Mathematica [A] time = 0.07, size = 74, normalized size = 0.61

$$x(ex)^m\left(a^2\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+2acx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)+c^2x^4\left(\frac{A}{m+5}+\frac{Bx}{m+6}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] x*(e*x)^m*(a^2*(A/(1 + m) + (B*x)/(2 + m)) + 2*a*c*x^2*(A/(3 + m) + (B*x)/(
4 + m)) + c^2*x^4*(A/(5 + m) + (B*x)/(6 + m)))
```

fricas [B] time = 0.84, size = 343, normalized size = 2.83

$$\frac{\left(\left(Bc^2m^5+15\,Bc^2m^4+85\,Bc^2m^3+225\,Bc^2m^2+274\,Bc^2m+120\,Bc^2\right)x^6+\left(Ac^2m^5+16\,Ac^2m^4+95\,Ac^2m^3+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^5 + 15*B*c^2*m^4 + 85*B*c^2*m^3 + 225*B*c^2*m^2 + 274*B*c^2*m + 1
20*B*c^2)*x^6 + (A*c^2*m^5 + 16*A*c^2*m^4 + 95*A*c^2*m^3 + 260*A*c^2*m^2 +
324*A*c^2*m + 144*A*c^2)*x^5 + 2*(B*a*c*m^5 + 17*B*a*c*m^4 + 107*B*a*c*m^3
+ 307*B*a*c*m^2 + 396*B*a*c*m + 180*B*a*c)*x^4 + 2*(A*a*c*m^5 + 18*A*a*c*m^
4 + 121*A*a*c*m^3 + 372*A*a*c*m^2 + 508*A*a*c*m + 240*A*a*c)*x^3 + (B*a^2*m
^5 + 19*B*a^2*m^4 + 137*B*a^2*m^3 + 461*B*a^2*m^2 + 702*B*a^2*m + 360*B*a^2
)*x^2 + (A*a^2*m^5 + 20*A*a^2*m^4 + 155*A*a^2*m^3 + 580*A*a^2*m^2 + 1044*A*
a^2*m + 720*A*a^2)*x)*(e*x)^m/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2
+ 1764*m + 720)
```

giac [**B**] time = 0.18, size = 586, normalized size = 4.84

$$Bc^2m^5x^6x^me^m + Ac^2m^5x^5x^me^m + 15\,Bc^2m^4x^6x^me^m + 2\,Bacm^5x^4x^me^m + 16\,Ac^2m^4x^5x^me^m + 85\,Bc^2m^3x^6x^me^m + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^5*x^6*x^m*e^m + A*c^2*m^5*x^5*x^m*e^m + 15*B*c^2*m^4*x^6*x^m*e^m +
 2*B*a*c*m^5*x^4*x^m*e^m + 16*A*c^2*m^4*x^5*x^m*e^m + 85*B*c^2*m^3*x^6*x^m*
e^m + 2*A*a*c*m^5*x^3*x^m*e^m + 34*B*a*c*m^4*x^4*x^m*e^m + 95*A*c^2*m^3*x^5
*x^m*e^m + 225*B*c^2*m^2*x^6*x^m*e^m + B*a^2*m^5*x^2*x^m*e^m + 36*A*a*c*m^4
*x^3*x^m*e^m + 214*B*a*c*m^3*x^4*x^m*e^m + 260*A*c^2*m^2*x^5*x^m*e^m + 274*
B*c^2*m*x^6*x^m*e^m + A*a^2*m^5*x*x^m*e^m + 19*B*a^2*m^4*x^2*x^m*e^m + 242*
A*a*c*m^3*x^3*x^m*e^m + 614*B*a*c*m^2*x^4*x^m*e^m + 324*A*c^2*m*x^5*x^m*e^m
 + 120*B*c^2*x^6*x^m*e^m + 20*A*a^2*m^4*x*x^m*e^m + 137*B*a^2*m^3*x^2*x^m*e
^m + 744*A*a*c*m^2*x^3*x^m*e^m + 792*B*a*c*m*x^4*x^m*e^m + 144*A*c^2*x^5*x^
m*e^m + 155*A*a^2*m^3*x*x^m*e^m + 461*B*a^2*m^2*x^2*x^m*e^m + 1016*A*a*c*m*
x^3*x^m*e^m + 360*B*a*c*x^4*x^m*e^m + 580*A*a^2*m^2*x*x^m*e^m + 702*B*a^2*m
*x^2*x^m*e^m + 480*A*a*c*x^3*x^m*e^m + 1044*A*a^2*m*x*x^m*e^m + 360*B*a^2*x
^2*x^m*e^m + 720*A*a^2*x*x^m*e^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)
```

maple [**B**] time = 0.05, size = 395, normalized size = 3.26

$$\Big(B\,c^2m^5x^5 + A\,c^2m^5x^4 + 15B\,c^2m^4x^5 + 16A\,c^2m^4x^4 + 2Bac\,m^5x^3 + 85B\,c^2m^3x^5 + 2Aac\,m^5x^2 + 95A\,c^2m^3x^4 + 34$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] x*(B*c^2*m^5*x^5+A*c^2*m^5*x^4+15*B*c^2*m^4*x^5+16*A*c^2*m^4*x^4+2*B*a*c*m^
5*x^3+85*B*c^2*m^3*x^5+2*A*a*c*m^5*x^2+95*A*c^2*m^3*x^4+34*B*a*c*m^4*x^3+22
5*B*c^2*m^2*x^5+36*A*a*c*m^4*x^2+260*A*c^2*m^2*x^4+B*a^2*m^5*x+214*B*a*c*m^
3*x^3+274*B*c^2*m*x^5+A*a^2*m^5+242*A*a*c*m^3*x^2+324*A*c^2*m*x^4+19*B*a^2*
m^4*x+614*B*a*c*m^2*x^3+120*B*c^2*x^5+20*A*a^2*m^4+744*A*a*c*m^2*x^2+144*A*
c^2*x^4+137*B*a^2*m^3*x+792*B*a*c*m*x^3+155*A*a^2*m^3+1016*A*a*c*m*x^2+461*
B*a^2*m^2*x+360*B*a*c*x^3+580*A*a^2*m^2+480*A*a*c*x^2+702*B*a^2*m*x+1044*A*
a^2*m+360*B*a^2*x+720*A*a^2)*(e*x)^m/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [**A**] time = 0.61, size = 116, normalized size = 0.96

$$\frac{Bc^2e^mx^6x^m}{m+6} + \frac{Ac^2e^mx^5x^m}{m+5} + \frac{2\,Bace^mx^4x^m}{m+4} + \frac{2\,Aace^mx^3x^m}{m+3} + \frac{Ba^2e^mx^2x^m}{m+2} + \frac{(ex)^{m+1}\,Aa^2}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*e^m*x^6*x^m/(m + 6) + A*c^2*e^m*x^5*x^m/(m + 5) + 2*B*a*c*e^m*x^4*x^m
/(m + 4) + 2*A*a*c*e^m*x^3*x^m/(m + 3) + B*a^2*e^m*x^2*x^m/(m + 2) + (e*x)^
(m + 1)*A*a^2/(e*(m + 1))
```

mupad [B] time = 1.28, size = 371, normalized size = 3.07

$$(e\,x)^m\left(\frac{A\,a^2\,x\,\left(m^5+20\,m^4+155\,m^3+580\,m^2+1044\,m+720\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{B\,a^2\,x^2\,\left(m^5+19\,m^4+137\,m^3+461\,m\right.}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (e*x)^m*((A*a^2*x*(1044*m + 580*m^2 + 155*m^3 + 20*m^4 + m^5 + 720))/(1764*
m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (B*a^2*x^2*(702*m
+ 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 + 735*m^3 + 1
75*m^4 + 21*m^5 + m^6 + 720) + (A*c^2*x^5*(324*m + 260*m^2 + 95*m^3 + 16*m^
4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
) + (B*c^2*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (2*A*a*c*x^3*(508*m + 3
72*m^2 + 121*m^3 + 18*m^4 + m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*
m^4 + 21*m^5 + m^6 + 720) + (2*B*a*c*x^4*(396*m + 307*m^2 + 107*m^3 + 17*m^
4 + m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
))
```

sympy [A] time = 1.73, size = 2076, normalized size = 17.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] Piecewise(((-A*a**2/(5*x**5) - 2*A*a*c/(3*x**3) - A*c**2/x - B*a**2/(4*x**4
) - B*a*c/x**2 + B*c**2*log(x))/e**6, Eq(m, -6)), ((-A*a**2/(4*x**4) - A*a*
c/x**2 + A*c**2*log(x) - B*a**2/(3*x**3) - 2*B*a*c/x + B*c**2*x)/e**5, Eq(m
, -5)), ((-A*a**2/(3*x**3) - 2*A*a*c/x + A*c**2*x - B*a**2/(2*x**2) + 2*B*a
*c*log(x) + B*c**2*x**2/2)/e**4, Eq(m, -4)), ((-A*a**2/(2*x**2) + 2*A*a*c*l
og(x) + A*c**2*x**2/2 - B*a**2/x + 2*B*a*c*x + B*c**2*x**3/3)/e**3, Eq(m, -
3)), ((-A*a**2/x + 2*A*a*c*x + A*c**2*x**3/3 + B*a**2*log(x) + B*a*c*x**2 +
 B*c**2*x**4/4)/e**2, Eq(m, -2)), ((A*a**2*log(x) + A*a*c*x**2 + A*c**2*x**
4/4 + B*a**2*x + 2*B*a*c*x**3/3 + B*c**2*x**5/5)/e, Eq(m, -1)), (A*a**2*e**
m*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 20*A*a**2*e**m*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 155*A*a**2*e**m*m**3*x*x**m/(m**6 + 21*m**5 + 17
5*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**2*e**m*m**2*x*x**m
/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A
*a**2*e**m*m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 720*A*a**2*e**m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
 1624*m**2 + 1764*m + 720) + 2*A*a*c*e**m*m**5*x**3*x**m/(m**6 + 21*m**5 +
175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 36*A*a*c*e**m*m**4*x**3*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 242
*A*a*c*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 744*A*a*c*e**m*m**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1016*A*a*c*e**m*m*x**3*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 480*A*a*c*e
**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + A*c**2*e**m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 16*A*c**2*e**m*m**4*x**5*x**m/(m**6 + 21*m**5 +
175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*c**2*e**m*m**3*x**5*
x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 26
0*A*c**2*e**m*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 324*A*c**2*e**m*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 144*A*c**2*e**m*x**5*x**m/(m**6
+ 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*a**2*e**m*m
**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 19*B*a**2*e**m*m**4*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
+ 1624*m**2 + 1764*m + 720) + 137*B*a**2*e**m*m**3*x**2*x**m/(m**6 + 21*m**
5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 461*B*a**2*e**m*m**2*
x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
 + 702*B*a**2*e**m*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624
*m**2 + 1764*m + 720) + 360*B*a**2*e**m*x**2*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*a*c*e**m*m**5*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*B*a*c*e*
*m*m**4*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 214*B*a*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 614*B*a*c*e**m*m**2*x**4*x**m/(m**6 + 21*
m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*B*a*c*e**m*m*x
**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 360*B*a*c*e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + B*c**2*e**m*m**5*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*c**2*e**m*m**4*x**6*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 85*B*c**2*e*
*m*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 225*B*c**2*e**m*m**2*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*
m**3 + 1624*m**2 + 1764*m + 720) + 274*B*c**2*e**m*m*x**6*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 120*B*c**2*e**m*x**
6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720), T
rue))
```

3.488 $\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=73

$$\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{aB(ex)^{m+2}}{e^2(m+2)}+\frac{Ac(ex)^{m+3}}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

```
[Out] a*A*(e*x)^(1+m)/e/(1+m)+a*B*(e*x)^(2+m)/e^2/(2+m)+A*c*(e*x)^(3+m)/e^3/(3+m)
+B*c*(e*x)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {766}

$$\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{aB(ex)^{m+2}}{e^2(m+2)}+\frac{Ac(ex)^{m+3}}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2),x]
```

```
[Out] (a*A*(e*x)^(1 + m))/(e*(1 + m)) + (a*B*(e*x)^(2 + m))/(e^2*(2 + m)) + (A*c*
(e*x)^(3 + m))/(e^3*(3 + m)) + (B*c*(e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 766

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_
Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + c*x^2)^p, x], x] /; F
reeQ[{a, c, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)\,dx&=\int \left(aA(ex)^m+\frac{aB(ex)^{1+m}}{e}+\frac{Ac(ex)^{2+m}}{e^2}+\frac{Bc(ex)^{3+m}}{e^3}\right)\,dx\\&=\frac{aA(ex)^{1+m}}{e(1+m)}+\frac{aB(ex)^{2+m}}{e^2(2+m)}+\frac{Ac(ex)^{3+m}}{e^3(3+m)}+\frac{Bc(ex)^{4+m}}{e^4(4+m)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 47, normalized size = 0.64

$$x(ex)^m\left(a\left(\frac{A}{m+1}+\frac{Bx}{m+2}\right)+cx^2\left(\frac{A}{m+3}+\frac{Bx}{m+4}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2),x]
```

```
[Out] x*(e*x)^m*(a*(A/(1 + m) + (B*x)/(2 + m)) + c*x^2*(A/(3 + m) + (B*x)/(4 + m)
))
```

fricas [A] time = 0.86, size = 133, normalized size = 1.82

$$\frac{\Big(\big(Bcm^3+6\,Bcm^2+11\,Bcm+6\,Bc\big)x^4+\big(Acm^3+7\,Acm^2+14\,Acm+8\,Ac\big)x^3+\big(Bam^3+8\,Bam^2+19\,Bam+}{m^4+10\,m^3+35\,m^2+50\,m+24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] ((B*c*m^3 + 6*B*c*m^2 + 11*B*c*m + 6*B*c)*x^4 + (A*c*m^3 + 7*A*c*m^2 + 14*A
*c*m + 8*A*c)*x^3 + (B*a*m^3 + 8*B*a*m^2 + 19*B*a*m + 12*B*a)*x^2 + (A*a*m^
3 + 9*A*a*m^2 + 26*A*a*m + 24*A*a)*x)*(e*x)^m/(m^4 + 10*m^3 + 35*m^2 + 50*m
 + 24)
```

giac [B] time = 0.16, size = 230, normalized size = 3.15

$$\frac{Bcm^3x^4x^me^m + Acm^3x^3x^me^m + 6\,Bcm^2x^4x^me^m + Bam^3x^2x^me^m + 7\,Acm^2x^3x^me^m + 11\,Bcmx^4x^me^m + Aam^3xx^me^m}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] (B*c*m^3*x^4*x^m*e^m + A*c*m^3*x^3*x^m*e^m + 6*B*c*m^2*x^4*x^m*e^m + B*a*m^
3*x^2*x^m*e^m + 7*A*c*m^2*x^3*x^m*e^m + 11*B*c*m*x^4*x^m*e^m + A*a*m^3*x*x^
m*e^m + 8*B*a*m^2*x^2*x^m*e^m + 14*A*c*m*x^3*x^m*e^m + 6*B*c*x^4*x^m*e^m +
9*A*a*m^2*x*x^m*e^m + 19*B*a*m*x^2*x^m*e^m + 8*A*c*x^3*x^m*e^m + 26*A*a*m*x
*x^m*e^m + 12*B*a*x^2*x^m*e^m + 24*A*a*x*x^m*e^m)/(m^4 + 10*m^3 + 35*m^2 +
50*m + 24)
```

maple [A] time = 0.05, size = 145, normalized size = 1.99

$$\frac{\left(Bc\,m^3x^3 + Ac\,m^3x^2 + 6Bc\,m^2x^3 + 7Ac\,m^2x^2 + Ba\,m^3x + 11Bcm\,x^3 + Aa\,m^3 + 14Acm\,x^2 + 8Ba\,m^2x + 6Bc\,x^3 + \right.}{(m+4)\,(m+3)\,(m+2)\,(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a),x)
```

```
[Out] x*(B*c*m^3*x^3+A*c*m^3*x^2+6*B*c*m^2*x^3+7*A*c*m^2*x^2+B*a*m^3*x+11*B*c*m*x
^3+A*a*m^3+14*A*c*m*x^2+8*B*a*m^2*x+6*B*c*x^3+9*A*a*m^2+8*A*c*x^2+19*B*a*m*
x+26*A*a*m+12*B*a*x+24*A*a)*(e*x)^m/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.61, size = 70, normalized size = 0.96

$$\frac{Bce^mx^4x^m}{m+4} + \frac{Ace^mx^3x^m}{m+3} + \frac{Bae^mx^2x^m}{m+2} + \frac{(ex)^{m+1}\,Aa}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] B*c*e^m*x^4*x^m/(m + 4) + A*c*e^m*x^3*x^m/(m + 3) + B*a*e^m*x^2*x^m/(m + 2)
 + (e*x)^(m + 1)*A*a/(e*(m + 1))
```

mupad [B] time = 1.15, size = 161, normalized size = 2.21

$$(e\,x)^m\left(\frac{A\,a\,x\,\left(m^3+9\,m^2+26\,m+24\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{B\,a\,x^2\,\left(m^3+8\,m^2+19\,m+12\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{A\,c\,x^3\,\left(m^3+7\,m^2+14\,m+8\right)}{m^4+10\,m^3+35\,m^2+50\,m+2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)*(A + B*x),x)
```

```
[Out] (e*x)^m*((A*a*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10*m^3 + m^4 +
24) + (B*a*x^2*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (A*c*x^3*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24)
 + (B*c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 0.86, size = 685, normalized size = 9.38

$$\begin{cases} \frac{-\frac{Aa}{3x^{3}}-\frac{Ac}{x}-\frac{Ba}{2x^{2}}+Bc\log{(x)}}{e^{4}} \\ \frac{-\frac{Aa}{2x^{2}}+Ac\log{(x)}-\frac{Ba}{x}+Bcx}{e^{3}} \\ \frac{-\frac{Aa}{x}+Acx+Ba\log{(x)}+\frac{Bcx^{2}}{2}}{e^{2}} \\ \frac{Aa\log{(x)}+\frac{Acx^{2}}{2}+Bax+\frac{Bcx^{3}}{3}}{e} \\ \frac{Aae^{m}m^{3}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{9Aae^{m}m^{2}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{26Aae^{m}mxx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{24Aae^{m}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{Ace^{m}m^{3}x^{3}x}{m^{4}+10m^{3}+35m^{2}+} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a),x)
```

```
[Out] Piecewise(((-A*a/(3*x**3) - A*c/x - B*a/(2*x**2) + B*c*log(x))/e**4, Eq(m,
-4)), ((-A*a/(2*x**2) + A*c*log(x) - B*a/x + B*c*x)/e**3, Eq(m, -3)), ((-A*
a/x + A*c*x + B*a*log(x) + B*c*x**2/2)/e**2, Eq(m, -2)), ((A*a*log(x) + A*c
*x**2/2 + B*a*x + B*c*x**3/3)/e, Eq(m, -1)), (A*a*e**m*m**3*x*x**m/(m**4 +
10*m**3 + 35*m**2 + 50*m + 24) + 9*A*a*e**m*m**2*x*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 26*A*a*e**m*m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m
 + 24) + 24*A*a*e**m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*c*e*
*m*m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 7*A*c*e**m*m**2*
x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 14*A*c*e**m*m*x**3*x**m/
(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*c*e**m*x**3*x**m/(m**4 + 10*m*
*3 + 35*m**2 + 50*m + 24) + B*a*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m*
*2 + 50*m + 24) + 8*B*a*e**m*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*
m + 24) + 19*B*a*e**m*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) +
12*B*a*e**m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*c*e**m*m**
3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*m**2*x**4*x
**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*c*e**m*m*x**4*x**m/(m**4
+ 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*x**4*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24), True))
```

3.489 $\int \frac{(ex)^m(A+Bx)}{a+cx^2}\,dx$

Optimal. Leaf size=91

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{ae(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{ae^2(m+2)}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([1, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)/a/e/(1+m)+B*(e
*x)^(2+m)*hypergeom([1, 1+1/2*m],[2+1/2*m],-c*x^2/a)/a/e^2/(2+m)
```

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {808, 364}

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{ae(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(1,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{ae^2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (A*(e*x)^(1 + m)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)])/
(a*e*(1 + m)) + (B*(e*x)^(2 + m)*Hypergeometric2F1[1, (2 + m)/2, (4 + m)/2,
 -((c*x^2)/a)])/(a*e^2*(2 + m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(ex)^m(A+Bx)}{a+cx^2}\,dx &= A\int \frac{(ex)^m}{a+cx^2}\,dx+\frac{B\int \frac{(ex)^{1+m}}{a+cx^2}\,dx}{e}\\ &= \frac{A(ex)^{1+m}\,{}_2F_1\left(1,\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{ae(1+m)}+\frac{B(ex)^{2+m}\,{}_2F_1\left(1,\frac{2+m}{2};\frac{4+m}{2};-\frac{cx^2}{a}\right)}{ae^2(2+m)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 82, normalized size = 0.90

$$\frac{x(ex)^m\left(A(m+2)\,{}_2F_1\left(1,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(1,\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{a(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + c*x^2),x]
```

```
[Out] (x*(e*x)^m*(B*(1 + m)*x*Hypergeometric2F1[1, 1 + m/2, 2 + m/2, -((c*x^2)/a)
] + A*(2 + m)*Hypergeometric2F1[1, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)]))/(a
*(1 + m)*(2 + m))
```

fricas [F] time = 1.14, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex)^m}{cx^2+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^m}{cx^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a), x)
```

maple [F] time = 0.71, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^m}{c\,x^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^m}{cx^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^m\,(A+B\,x)}{c\,x^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2), x)
```

sympy [C] time = 4.21, size = 192, normalized size = 2.11

$$\frac{Ae^m mxx^m\Phi\left(\frac{cx^2e^{i\pi}}{a},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{4a\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{Ae^m xx^m\Phi\left(\frac{cx^2e^{i\pi}}{a},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{4a\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{Be^m mx^2x^m\Phi\Big(\frac{cx^2e^{i\pi}}{a},1,\frac{m}{2}+1}{4a\Gamma\left(\frac{m}{2}+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a),x)
```

```
[Out] A*e**m*m*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2
+ 1/2)/(4*a*gamma(m/2 + 3/2)) + A*e**m*x*x**m*lerchphi(c*x**2*exp_polar(I*p
i)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(4*a*gamma(m/2 + 3/2)) + B*e**m*m*x**2
*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(4*a*ga
mma(m/2 + 2)) + B*e**m*x**2*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2
+ 1)*gamma(m/2 + 1)/(2*a*gamma(m/2 + 2))
```

3.490 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=91

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^2e(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^2e^2(m+2)}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)/a^2/e/(1+m)+B*
(e*x)^(2+m)*hypergeom([2, 1+1/2*m],[2+1/2*m],-c*x^2/a)/a^2/e^2/(2+m)
```

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = $\{808, 364\}$

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^2e(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^2e^2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (A*(e*x)^(1 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)])/
(a^2*e*(1 + m)) + (B*(e*x)^(2 + m)*Hypergeometric2F1[2, (2 + m)/2, (4 + m)/
2, -((c*x^2)/a)])/(a^2*e^2*(2 + m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^2}\,dx &= A\int \frac{(ex)^m}{\left(a+cx^2\right)^2}\,dx+\frac{B\int \frac{(ex)^{1+m}}{\left(a+cx^2\right)^2}\,dx}{e}\\ &= \frac{A(ex)^{1+m}\,{}_2F_1\left(2,\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{a^2e(1+m)}+\frac{B(ex)^{2+m}\,{}_2F_1\left(2,\frac{2+m}{2};\frac{4+m}{2};-\frac{cx^2}{a}\right)}{a^2e^2(2+m)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 82, normalized size = 0.90

$$\frac{x(ex)^m\left(A(m+2)\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(2,\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{a^2(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + c*x^2)^2,x]
```

```
[Out] (x*(e*x)^m*(B*(1 + m)*x*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, -((c*x^2)/a)
] + A*(2 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)]))/(a
^2*(1 + m)*(2 + m))
```

fricas [F] time = 1.16, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{(Bx+A)\,(ex)^{m}}{c^{2}x^{4}+2\,acx^{2}+a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/(c^2*x^4 + 2*a*c*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{m}}{\left(cx^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^2, x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{m}}{\left(c\,x^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^{m}}{\left(cx^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^{m}\,\left(A+B\,x\right)}{\left(c\,x^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2)^2,x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2)^2, x)
```

sympy [C] time = 34.16, size = 770, normalized size = 8.46

$$A\left(-\frac{ae^{m}m^{2}xx^{m}\Phi\left(\frac{cx^{2}e^{i\pi}}{a},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^{3}\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)+8a^{2}cx^{2}\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{2ae^{m}mxx^{m}\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^{3}\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)+8a^{2}cx^{2}\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{ae^{m}xx^{m}\Phi(\frac{cx^{2}e^{i\pi}}{a},1,\frac{m}{2}+1}{8a^{3}\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)+8a^{2}cx^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] A*(-a*e**m*m**2*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gam
ma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a**2*c*x**2*gamma(m/2 + 3/2)) +
2*a*e**m*m*x*x**m*gamma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a**2*c*x**2
*gamma(m/2 + 3/2)) + a*e**m*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/
2 + 1/2)*gamma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a**2*c*x**2*gamma(m/
2 + 3/2)) + 2*a*e**m*x*x**m*gamma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a
**2*c*x**2*gamma(m/2 + 3/2)) - c*e**m*m**2*x**3*x**m*lerchphi(c*x**2*exp_po
lar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a*
*2*c*x**2*gamma(m/2 + 3/2)) + c*e**m*x**3*x**m*lerchphi(c*x**2*exp_polar(I*
pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(8*a**3*gamma(m/2 + 3/2) + 8*a**2*c*x
**2*gamma(m/2 + 3/2))) + B*(-a*e**m*m**2*x**2*x**m*lerchphi(c*x**2*exp_pola
r(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**3*gamma(m/2 + 2) + 8*a**2*c*x**
2*gamma(m/2 + 2)) - 2*a*e**m*m*x**2*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a,
 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**3*gamma(m/2 + 2) + 8*a**2*c*x**2*gamma(m/
2 + 2)) + 2*a*e**m*m*x**2*x**m*gamma(m/2 + 1)/(8*a**3*gamma(m/2 + 2) + 8*a*
*2*c*x**2*gamma(m/2 + 2)) + 4*a*e**m*x**2*x**m*gamma(m/2 + 1)/(8*a**3*gamma
(m/2 + 2) + 8*a**2*c*x**2*gamma(m/2 + 2)) - c*e**m*m**2*x**4*x**m*lerchphi(
c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**3*gamma(m/2 + 2)
 + 8*a**2*c*x**2*gamma(m/2 + 2)) - 2*c*e**m*m*x**4*x**m*lerchphi(c*x**2*exp
_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**3*gamma(m/2 + 2) + 8*a**2*
c*x**2*gamma(m/2 + 2)))
```

3.491 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=91

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(3,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^3e(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(3,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^3e^2(m+2)}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([3, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)/a^3/e/(1+m)+B*
(e*x)^(2+m)*hypergeom([3, 1+1/2*m],[2+1/2*m],-c*x^2/a)/a^3/e^2/(2+m)
```

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {808, 364}

$$\frac{A(ex)^{m+1}\,{}_2F_1\left(3,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^3e(m+1)}+\frac{B(ex)^{m+2}\,{}_2F_1\left(3,\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^3e^2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] (A*(e*x)^(1 + m)*Hypergeometric2F1[3, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)])/
(a^3*e*(1 + m)) + (B*(e*x)^(2 + m)*Hypergeometric2F1[3, (2 + m)/2, (4 + m)/
2, -((c*x^2)/a)])/(a^3*e^2*(2 + m))
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^3}\,dx &= A\int \frac{(ex)^m}{\left(a+cx^2\right)^3}\,dx+\frac{B\int \frac{(ex)^{1+m}}{\left(a+cx^2\right)^3}\,dx}{e}\\ &= \frac{A(ex)^{1+m}\,{}_2F_1\left(3,\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{a^3e(1+m)}+\frac{B(ex)^{2+m}\,{}_2F_1\left(3,\frac{2+m}{2};\frac{4+m}{2};-\frac{cx^2}{a}\right)}{a^3e^2(2+m)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 82, normalized size = 0.90

$$\frac{x(ex)^m\left(A(m+2)\,{}_2F_1\left(3,\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(3,\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{a^3(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + c*x^2)^3,x]
```

```
[Out] (x*(e*x)^m*(B*(1 + m)*x*Hypergeometric2F1[3, 1 + m/2, 2 + m/2, -((c*x^2)/a)
] + A*(2 + m)*Hypergeometric2F1[3, (1 + m)/2, (3 + m)/2, -((c*x^2)/a)]))/(a
^3*(1 + m)*(2 + m))
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx + A)\,(ex)^{m}}{c^{3}x^{6} + 3\,ac^{2}x^{4} + 3\,a^{2}cx^{2} + a^{3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/(c^3*x^6 + 3*a*c^2*x^4 + 3*a^2*c*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\,(ex)^{m}}{\left(cx^{2} + a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^3, x)
```

maple [F] time = 0.73, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\,(ex)^{m}}{\left(c\,x^{2} + a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a)^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\,(ex)^{m}}{\left(cx^{2} + a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^{m}\,\left(A + B\,x\right)}{\left(c\,x^{2} + a\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2)^3,x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2)^3, x)
```

sympy [C] time = 117.12, size = 2509, normalized size = 27.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] A*(a**2*e**m*m**3*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*g
amma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2)
 + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) - 3*a**2*e**m*m**2*x*x**m*lerchphi(c
*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2
+ 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/
2)) - 2*a**2*e**m*m**2*x*x**m*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) +
64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) - a**
2*e**m*m*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2
+ 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**
3*c**2*x**4*gamma(m/2 + 3/2)) + 8*a**2*e**m*m*x*x**m*gamma(m/2 + 1/2)/(32*a
**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*
gamma(m/2 + 3/2)) + 3*a**2*e**m*x*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1
, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*ga
mma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) + 10*a**2*e**m*x*x**m*
gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2
) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) + 2*a*c*e**m*m**3*x**3*x**m*lerchph
i(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m
/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 +
 3/2)) - 6*a*c*e**m*m**2*x**3*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/
2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(
m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) - 2*a*c*e**m*m**2*x**3*x**
m*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3
/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) - 2*a*c*e**m*m*x**3*x**m*lerchphi
(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/
2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 +
3/2)) + 4*a*c*e**m*m*x**3*x**m*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) +
 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) + 6*
a*c*e**m*x**3*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m
/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*
a**3*c**2*x**4*gamma(m/2 + 3/2)) + 6*a*c*e**m*x**3*x**m*gamma(m/2 + 1/2)/(3
2*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x*
*4*gamma(m/2 + 3/2)) + c**2*e**m*m**3*x**5*x**m*lerchphi(c*x**2*exp_polar(I
*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*
c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) - 3*c**2*e**m
*m**2*x**5*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2
+ 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**
3*c**2*x**4*gamma(m/2 + 3/2)) - c**2*e**m*m*x**5*x**m*lerchphi(c*x**2*exp_p
olar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64
*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a**3*c**2*x**4*gamma(m/2 + 3/2)) + 3*c**
2*e**m*x**5*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1/2)*gamma(m/2
 + 1/2)/(32*a**5*gamma(m/2 + 3/2) + 64*a**4*c*x**2*gamma(m/2 + 3/2) + 32*a*
*3*c**2*x**4*gamma(m/2 + 3/2))) + B*(a**2*e**m*m**3*x**2*x**m*lerchphi(c*x*
*2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) +
64*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) - 2*a**2*
e**m*m**2*x**2*x**m*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 64*a**4*c*x**2
*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) - 4*a**2*e**m*m*x**2*x*
*m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(32*a**5*g
amma(m/2 + 2) + 64*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2
 + 2)) + 4*a**2*e**m*m*x**2*x**m*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 6
4*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) + 16*a**2*
e**m*x**2*x**m*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 64*a**4*c*x**2*gamm
a(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) + 2*a*c*e**m*m**3*x**4*x**m*
lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(32*a**5*gamm
a(m/2 + 2) + 64*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 +
2)) - 2*a*c*e**m*m**2*x**4*x**m*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 64
*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) - 8*a*c*e**
m*m*x**4*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)
/(32*a**5*gamma(m/2 + 2) + 64*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**
4*gamma(m/2 + 2)) + 8*a*c*e**m*x**4*x**m*gamma(m/2 + 1)/(32*a**5*gamma(m/2
+ 2) + 64*a**4*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)) +
c**2*e**m*m**3*x**6*x**m*lerchphi(c*x**2*exp_polar(I*pi)/a, 1, m/2 + 1)*gam
ma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 64*a**4*c*x**2*gamma(m/2 + 2) + 32*a*
*3*c**2*x**4*gamma(m/2 + 2)) - 4*c**2*e**m*m*x**6*x**m*lerchphi(c*x**2*exp_
polar(I*pi)/a, 1, m/2 + 1)*gamma(m/2 + 1)/(32*a**5*gamma(m/2 + 2) + 64*a**4
*c*x**2*gamma(m/2 + 2) + 32*a**3*c**2*x**4*gamma(m/2 + 2)))
```

3.492 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=145

$$\frac{a^2A\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{a^2B\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{5}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

```
[Out] a^2*A*(e*x)^(1+m)*hypergeom([-5/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2+
a)^(1/2)/e/(1+m)/(c*x^2/a+1)^(1/2)+a^2*B*(e*x)^(2+m)*hypergeom([-5/2, 1+1/2
*m],[2+1/2*m],-c*x^2/a)*(c*x^2+a)^(1/2)/e^2/(2+m)/(c*x^2/a+1)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {808, 365, 364}

$$\frac{a^2A\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{a^2B\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{5}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (a^2*A*(e*x)^(1 + m)*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, (1 + m)/2, (3
+ m)/2, -((c*x^2)/a)])/(e*(1 + m)*Sqrt[1 + (c*x^2)/a]) + (a^2*B*(e*x)^(2 +
m)*Sqrt[a + c*x^2]*Hypergeometric2F1[-5/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/
a)])/(e^2*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\int (ex)^m(A+Bx)\left(a+cx^2\right)^{5/2}dx = A\int (ex)^m\left(a+cx^2\right)^{5/2}dx + \frac{B\int (ex)^{1+m}\left(a+cx^2\right)^{5/2}dx}{e}$$

$$= \frac{\left(a^2A\sqrt{a+cx^2}\right)\int (ex)^m\left(1+\frac{cx^2}{a}\right)^{5/2}dx}{\sqrt{1+\frac{cx^2}{a}}} + \frac{\left(a^2B\sqrt{a+cx^2}\right)\int (ex)^{1+m}\left(1+\frac{cx}{a}\right.}{e\sqrt{1+\frac{cx^2}{a}}}$$

$$= \frac{a^2A(ex)^{1+m}\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{5}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{e(1+m)\sqrt{1+\frac{cx^2}{a}}} + \frac{a^2B(ex)^{2+m}\sqrt{a+cx^2}\,{}_2F_1}{e^2(2+m)\sqrt{}}$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.77

$$\frac{a^2x\sqrt{a+cx^2}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(-\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(-\frac{5}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{(m+1)(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^(5/2),x]
```

```
[Out] (a^2*x*(e*x)^m*Sqrt[a + c*x^2]*(B*(1 + m)*x*Hypergeometric2F1[-5/2, 1 + m/2
, 2 + m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[-5/2, (1 + m)/2, (3
+ m)/2, -((c*x^2)/a)]))/((1 + m)*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bc^2x^5 + Ac^2x^4 + 2\,Bacx^3 + 2\,Aacx^2 + Ba^2x + Aa^2\right)\sqrt{cx^2+a}\,(ex)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + A*c^2*x^4 + 2*B*a*c*x^3 + 2*A*a*c*x^2 + B*a^2*x + A*a
^2)*sqrt(c*x^2 + a)*(e*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*(e*x)^m, x)
```

maple [F] time = 0.70, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(c\,x^2+a\right)^{\frac{5}{2}}(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^(5/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(5/2)*(B*x + A)*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (e\,x)^m\,\left(c\,x^2+a\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((e*x)^m*(a + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [C] time = 21.12, size = 360, normalized size = 2.48

$$\frac{Aa^{\frac{5}{2}}e^m x x^m\Gamma\left(\frac{m}{2}+\frac{1}{2}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{m}{2}+\frac{1}{2}\\ \frac{m}{2}+\frac{3}{2}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{Aa^{\frac{3}{2}}ce^m x^3 x^m\Gamma\left(\frac{m}{2}+\frac{3}{2}\right){}_2F_1\left(\begin{matrix}-\frac{1}{2},\frac{m}{2}+\frac{3}{2}\\ \frac{m}{2}+\frac{5}{2}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{\Gamma\left(\frac{m}{2}+\frac{5}{2}\right)}+\frac{A\sqrt{a}\,c^2e^m x^5 x^m\Gamma\left(\frac{m}{2}\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**(5/2),x)
```

```
[Out] A*a**(5/2)*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((-1/2, m/2 + 1/2), (m/2 + 3/2
,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 3/2)) + A*a**(3/2)*c*e**m*x**3
*x**m*gamma(m/2 + 3/2)*hyper((-1/2, m/2 + 3/2), (m/2 + 5/2,), c*x**2*exp_po
lar(I*pi)/a)/gamma(m/2 + 5/2) + A*sqrt(a)*c**2*e**m*x**5*x**m*gamma(m/2 + 5
/2)*hyper((-1/2, m/2 + 5/2), (m/2 + 7/2,), c*x**2*exp_polar(I*pi)/a)/(2*gam
ma(m/2 + 7/2)) + B*a**(5/2)*e**m*x**2*x**m*gamma(m/2 + 1)*hyper((-1/2, m/2
+ 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 2)) + B*a**(3/2)
*c*e**m*x**4*x**m*gamma(m/2 + 2)*hyper((-1/2, m/2 + 2), (m/2 + 3,), c*x**2*
exp_polar(I*pi)/a)/gamma(m/2 + 3) + B*sqrt(a)*c**2*e**m*x**6*x**m*gamma(m/2
 + 3)*hyper((-1/2, m/2 + 3), (m/2 + 4,), c*x**2*exp_polar(I*pi)/a)/(2*gamma
(m/2 + 4))
```

3.493 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=141

$$\frac{aA\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{aB\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{3}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

```
[Out] a*A*(e*x)^(1+m)*hypergeom([-3/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2+a)
^(1/2)/e/(1+m)/(c*x^2/a+1)^(1/2)+a*B*(e*x)^(2+m)*hypergeom([-3/2, 1+1/2*m],
[2+1/2*m],-c*x^2/a)*(c*x^2+a)^(1/2)/e^2/(2+m)/(c*x^2/a+1)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = $\{808, 365, 364\}$

$$\frac{aA\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{aB\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{3}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (a*A*(e*x)^(1 + m)*Sqrt[a + c*x^2]*Hypergeometric2F1[-3/2, (1 + m)/2, (3 +
m)/2, -((c*x^2)/a)])/(e*(1 + m)*Sqrt[1 + (c*x^2)/a]) + (a*B*(e*x)^(2 + m)*S
qrt[a + c*x^2]*Hypergeometric2F1[-3/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/a)])
/(e^2*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^{3/2}\,dx &= A\int (ex)^m\left(a+cx^2\right)^{3/2}\,dx+\frac{B\int (ex)^{1+m}\left(a+cx^2\right)^{3/2}\,dx}{e}\\ &= \frac{\left(aA\sqrt{a+cx^2}\right)\int (ex)^m\left(1+\frac{cx^2}{a}\right)^{3/2}\,dx}{\sqrt{1+\frac{cx^2}{a}}}+\frac{\left(aB\sqrt{a+cx^2}\right)\int (ex)^{1+m}\left(1+\frac{cx^2}{a}\right)^{3/2}}{e\sqrt{1+\frac{cx^2}{a}}}\\ &= \frac{aA(ex)^{1+m}\sqrt{a+cx^2}\;{}_2F_1\left(-\frac{3}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{e(1+m)\sqrt{1+\frac{cx^2}{a}}}+\frac{aB(ex)^{2+m}\sqrt{a+cx^2}\;{}_2F_1\left(-\frac{3}{2},\right.}{e^2(2+m)\sqrt{1+}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 109, normalized size = 0.77

$$\frac{ax\sqrt{a+cx^2}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(-\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(-\frac{3}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{(m+1)(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^(3/2),x]
```

```
[Out] (a*x*(e*x)^m*Sqrt[a + c*x^2]*(B*(1 + m)*x*Hypergeometric2F1[-3/2, 1 + m/2,
2 + m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[-3/2, (1 + m)/2, (3 +
m)/2, -((c*x^2)/a)]))/((1 + m)*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,(ex)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*(e*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^m, x)
```

maple [F] time = 1.15, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(c\,x^2+a\right)^{\frac{3}{2}}(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^(3/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+a\right)^{\frac{3}{2}} (Bx+A)\,(ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (e\,x)^m \left(c\,x^2+a\right)^{3/2} (A+B\,x)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] int((e*x)^m*(a + c*x^2)^(3/2)*(A + B*x), x)
```

sympy [C] time = 9.55, size = 238, normalized size = 1.69

$$\frac{Aa^{\frac{3}{2}}e^m x x^m \Gamma\left(\frac{m}{2}+\frac{1}{2}\right) {}_2F_1\left(\begin{matrix} -\frac{1}{2}, \frac{m}{2}+\frac{1}{2} \\ \frac{m}{2}+\frac{3}{2} \end{matrix}\middle| \frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)} + \frac{A\sqrt{a}\,ce^m x^3 x^m \Gamma\left(\frac{m}{2}+\frac{3}{2}\right) {}_2F_1\left(\begin{matrix} -\frac{1}{2}, \frac{m}{2}+\frac{3}{2} \\ \frac{m}{2}+\frac{5}{2} \end{matrix}\middle| \frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+\frac{5}{2}\right)} + \frac{Ba^{\frac{3}{2}}e^m x^2 x^m \Gamma\left(\frac{m}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**(3/2),x)
```

```
[Out] A*a**(3/2)*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((-1/2, m/2 + 1/2), (m/2 + 3/2
,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 3/2)) + A*sqrt(a)*c*e**m*x**3*
x**m*gamma(m/2 + 3/2)*hyper((-1/2, m/2 + 3/2), (m/2 + 5/2,), c*x**2*exp_pol
ar(I*pi)/a)/(2*gamma(m/2 + 5/2)) + B*a**(3/2)*e**m*x**2*x**m*gamma(m/2 + 1)
*hyper((-1/2, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2
+ 2)) + B*sqrt(a)*c*e**m*x**4*x**m*gamma(m/2 + 2)*hyper((-1/2, m/2 + 2), (m
/2 + 3,), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 3))
```

3.494 $\int (ex)^m (A+Bx)\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=139

$$\frac{A\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{B\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([-1/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2+a)^(
1/2)/e/(1+m)/(c*x^2/a+1)^(1/2)+B*(e*x)^(2+m)*hypergeom([-1/2, 1+1/2*m],[2+1
/2*m],-c*x^2/a)*(c*x^2+a)^(1/2)/e^2/(2+m)/(c*x^2/a+1)^(1/2)
```

Rubi **[A]** time = 0.06, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {808, 365, 364}

$$\frac{A\sqrt{a+cx^2}\,(ex)^{m+1}\,{}_2F_1\left(-\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{\frac{cx^2}{a}+1}}+\frac{B\sqrt{a+cx^2}\,(ex)^{m+2}\,{}_2F_1\left(-\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[a + c*x^2]*Hypergeometric2F1[-1/2, (1 + m)/2, (3 + m)
/2, -((c*x^2)/a)])/(e*(1 + m)*Sqrt[1 + (c*x^2)/a]) + (B*(e*x)^(2 + m)*Sqrt[
a + c*x^2]*Hypergeometric2F1[-1/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/a)])/(e^
2*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\sqrt{a+cx^2}\,dx &= A\int (ex)^m\sqrt{a+cx^2}\,dx+\frac{B\int (ex)^{1+m}\sqrt{a+cx^2}\,dx}{e}\\ &= \frac{\left(A\sqrt{a+cx^2}\right)\int (ex)^m\sqrt{1+\frac{cx^2}{a}}\,dx}{\sqrt{1+\frac{cx^2}{a}}}+\frac{\left(B\sqrt{a+cx^2}\right)\int (ex)^{1+m}\sqrt{1+\frac{cx^2}{a}}\,dx}{e\sqrt{1+\frac{cx^2}{a}}}\\ &= \frac{A(ex)^{1+m}\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{1}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{e(1+m)\sqrt{1+\frac{cx^2}{a}}}+\frac{B(ex)^{2+m}\sqrt{a+cx^2}\,{}_2F_1\left(-\frac{1}{2},\frac{2+}{}\right.}{e^2(2+m)\sqrt{1+\frac{cx}{a}}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 108, normalized size = 0.78

$$\frac{x\sqrt{a+cx^2}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(-\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(-\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{(m+1)(m+2)\sqrt{\frac{cx^2}{a}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*Sqrt[a + c*x^2],x]
```

```
[Out] (x*(e*x)^m*Sqrt[a + c*x^2]*(B*(1 + m)*x*Hypergeometric2F1[-1/2, 1 + m/2, 2
+ m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[-1/2, (1 + m)/2, (3 + m)
/2, -((c*x^2)/a)]))/((1 + m)*(2 + m)*Sqrt[1 + (c*x^2)/a])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+a}\,(Bx+A)\,(ex)^m\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^m, x)
```

maple [F] time = 0.69, size = 0, normalized size = 0.00

$$\int (Bx+A)\,\sqrt{c\,x^2+a}\,\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^(1/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (e\,x)^m\,\sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] int((e*x)^m*(a + c*x^2)^(1/2)*(A + B*x), x)
```

sympy [C] time = 3.86, size = 116, normalized size = 0.83

$$\frac{A\sqrt{a}e^m x x^m \Gamma\left(\frac{m}{2}+\frac{1}{2}\right) {}_2F_1\left(\begin{matrix} -\frac{1}{2}, \frac{m}{2}+\frac{1}{2} \\ \frac{m}{2}+\frac{3}{2} \end{matrix}\middle| \frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)} + \frac{B\sqrt{a}e^m x^2 x^m \Gamma\left(\frac{m}{2}+1\right) {}_2F_1\left(\begin{matrix} -\frac{1}{2}, \frac{m}{2}+1 \\ \frac{m}{2}+2 \end{matrix}\middle| \frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**(1/2),x)
```

```
[Out] A*sqrt(a)*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((-1/2, m/2 + 1/2), (m/2 + 3/2,
), c*x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 3/2)) + B*sqrt(a)*e**m*x**2*x**
m*gamma(m/2 + 1)*hyper((-1/2, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/
a)/(2*gamma(m/2 + 2))
```

3.495 $\int \frac{(ex)^m(A+Bx)}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=139

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{a+cx^2}}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([1/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2/a+1)^
(1/2)/e/(1+m)/(c*x^2+a)^(1/2)+B*(e*x)^(2+m)*hypergeom([1/2, 1+1/2*m],[2+1/2
*m],-c*x^2/a)*(c*x^2/a+1)^(1/2)/e^2/(2+m)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {808, 365, 364}

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{1}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{e^2(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[1/2, (1 + m)/2, (3 +
 m)/2, -((c*x^2)/a)])/(e*(1 + m)*Sqrt[a + c*x^2]) + (B*(e*x)^(2 + m)*Sqrt[1
 + (c*x^2)/a]*Hypergeometric2F1[1/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/a)])/(
e^2*(2 + m)*Sqrt[a + c*x^2])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0]
 && !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] && !RationalQ[m
] && !IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\sqrt{a+cx^2}}\,dx = A\int \frac{(ex)^m}{\sqrt{a+cx^2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\sqrt{a+cx^2}}\,dx}{e}$$

$$= \frac{\left(A\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^m}{\sqrt{1+\frac{cx^2}{a}}}\,dx}{\sqrt{a+cx^2}} + \frac{\left(B\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^{1+m}}{\sqrt{1+\frac{cx^2}{a}}}\,dx}{e\sqrt{a+cx^2}}$$

$$= \frac{A(ex)^{1+m}\sqrt{1+\frac{cx^2}{a}}\ {}_2F_1\left(\frac{1}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{e(1+m)\sqrt{a+cx^2}} + \frac{B(ex)^{2+m}\sqrt{1+\frac{cx^2}{a}}\ {}_2F_1\left(\frac{1}{2},\frac{2+m}{2};\frac{4+m}{2};-\frac{cx^2}{a}\right)}{e^2(2+m)\sqrt{a+cx^2}}$$

Mathematica [A] time = 0.05, size = 108, normalized size = 0.78

$$\frac{x\sqrt{\frac{cx^2}{a}+1}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(\frac{1}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(\frac{1}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{(m+1)(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/Sqrt[a + c*x^2],x]
```

```
[Out] (x*(e*x)^m*Sqrt[1 + (c*x^2)/a]*(B*(1 + m)*x*Hypergeometric2F1[1/2, 1 + m/2,
 2 + m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[1/2, (1 + m)/2, (3 +
m)/2, -((c*x^2)/a)]))/((1 + m)*(2 + m)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\,(ex)^m}{\sqrt{cx^2+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/sqrt(c*x^2 + a), x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a)^(1/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^m\,(A+B\,x)}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(1/2), x)
```

sympy [C] time = 3.65, size = 112, normalized size = 0.81

$$\frac{Ae^m x x^m \Gamma\left(\frac{m}{2}+\frac{1}{2}\right) {}_2F_1\left(\left.\begin{matrix}\frac{1}{2}, \frac{m}{2}+\frac{1}{2}\\ \frac{m}{2}+\frac{3}{2}\end{matrix}\right|\frac{cx^2 e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{Be^m x^2 x^m \Gamma\left(\frac{m}{2}+1\right) {}_2F_1\left(\left.\begin{matrix}\frac{1}{2}, \frac{m}{2}+1\\ \frac{m}{2}+2\end{matrix}\right|\frac{cx^2 e^{i\pi}}{a}\right)}{2\sqrt{a}\,\Gamma\left(\frac{m}{2}+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a)**(1/2),x)
```

```
[Out] A*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((1/2, m/2 + 1/2), (m/2 + 3/2,), c*x**2
*exp_polar(I*pi)/a)/(2*sqrt(a)*gamma(m/2 + 3/2)) + B*e**m*x**2*x**m*gamma(m
/2 + 1)*hyper((1/2, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*sqrt
(a)*gamma(m/2 + 2))
```

3.496 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=145

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{ae(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{3}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{ae^2(m+2)\sqrt{a+cx^2}}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([3/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2/a+1)^
(1/2)/a/e/(1+m)/(c*x^2+a)^(1/2)+B*(e*x)^(2+m)*hypergeom([3/2, 1+1/2*m],[2+1
/2*m],-c*x^2/a)*(c*x^2/a+1)^(1/2)/a/e^2/(2+m)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {808, 365, 364}

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{ae(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{3}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{ae^2(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[3/2, (1 + m)/2, (3 +
 m)/2, -((c*x^2)/a)])/(a*e*(1 + m)*Sqrt[a + c*x^2]) + (B*(e*x)^(2 + m)*Sqrt
[1 + (c*x^2)/a]*Hypergeometric2F1[3/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/a)])
/(a*e^2*(2 + m)*Sqrt[a + c*x^2])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{3/2}}\,dx = A\int \frac{(ex)^m}{\left(a+cx^2\right)^{3/2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\left(a+cx^2\right)^{3/2}}\,dx}{e}$$

$$= \frac{\left(A\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^m}{\left(1+\frac{cx^2}{a}\right)^{3/2}}\,dx}{a\sqrt{a+cx^2}} + \frac{\left(B\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^{1+m}}{\left(1+\frac{cx^2}{a}\right)^{3/2}}\,dx}{ae\sqrt{a+cx^2}}$$

$$= \frac{A(ex)^{1+m}\sqrt{1+\frac{cx^2}{a}}\,{}_2F_1\left(\frac{3}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{ae(1+m)\sqrt{a+cx^2}} + \frac{B(ex)^{2+m}\sqrt{1+\frac{cx^2}{a}}\,{}_2F_1\big(\frac{3}{2},\frac{2+m}{2};\frac{4+m}{2};-\frac{cx}{a}}{ae^2(2+m)\sqrt{a+cx^2}}$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.77

$$\frac{x\sqrt{\frac{cx^2}{a}+1}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(\frac{3}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(\frac{3}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{a(m+1)(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + c*x^2)^(3/2),x]
```

```
[Out] (x*(e*x)^m*Sqrt[1 + (c*x^2)/a]*(B*(1 + m)*x*Hypergeometric2F1[3/2, 1 + m/2,
 2 + m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[3/2, (1 + m)/2, (3 +
m)/2, -((c*x^2)/a)]))/(a*(1 + m)*(2 + m)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\,(ex)^m}{c^2x^4+2\,acx^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^m/(c^2*x^4 + 2*a*c*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^(3/2), x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(c\,x^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a)^(3/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^m}{\left(cx^2 + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^m\,(A + B\,x)}{\left(c\,x^2 + a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(3/2), x)
```

sympy [C] time = 12.66, size = 112, normalized size = 0.77

$$\frac{Ae^m xx^m \Gamma\left(\frac{m}{2} + \frac{1}{2}\right) {}_2F_1\left(\left.\begin{matrix}\frac{3}{2}, \frac{m}{2} + \frac{1}{2}\\ \frac{m}{2} + \frac{3}{2}\end{matrix}\right| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{m}{2} + \frac{3}{2}\right)} + \frac{Be^m x^2 x^m \Gamma\left(\frac{m}{2} + 1\right) {}_2F_1\left(\left.\begin{matrix}\frac{3}{2}, \frac{m}{2} + 1\\ \frac{m}{2} + 2\end{matrix}\right| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{3}{2}}\Gamma\left(\frac{m}{2} + 2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a)**(3/2),x)
```

```
[Out] A*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((3/2, m/2 + 1/2), (m/2 + 3/2,), c*x**2
*exp_polar(I*pi)/a)/(2*a**(3/2)*gamma(m/2 + 3/2)) + B*e**m*x**2*x**m*gamma(
m/2 + 1)*hyper((3/2, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*a**
(3/2)*gamma(m/2 + 2))
```

3.497 $\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=145

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^2e(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{5}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^2e^2(m+2)\sqrt{a+cx^2}}$$

```
[Out] A*(e*x)^(1+m)*hypergeom([5/2, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)*(c*x^2/a+1)^
(1/2)/a^2/e/(1+m)/(c*x^2+a)^(1/2)+B*(e*x)^(2+m)*hypergeom([5/2, 1+1/2*m],[2
+1/2*m],-c*x^2/a)*(c*x^2/a+1)^(1/2)/a^2/e^2/(2+m)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {808, 365, 364}

$$\frac{A\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+1}\,{}_2F_1\left(\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)}{a^2e(m+1)\sqrt{a+cx^2}}+\frac{B\sqrt{\frac{cx^2}{a}+1}\,(ex)^{m+2}\,{}_2F_1\left(\frac{5}{2},\frac{m+2}{2};\frac{m+4}{2};-\frac{cx^2}{a}\right)}{a^2e^2(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[1 + (c*x^2)/a]*Hypergeometric2F1[5/2, (1 + m)/2, (3 +
 m)/2, -((c*x^2)/a)])/(a^2*e*(1 + m)*Sqrt[a + c*x^2]) + (B*(e*x)^(2 + m)*Sq
rt[1 + (c*x^2)/a]*Hypergeometric2F1[5/2, (2 + m)/2, (4 + m)/2, -((c*x^2)/a)
])/(a^2*e^2*(2 + m)*Sqrt[a + c*x^2])
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\left(a+cx^2\right)^{5/2}}\,dx = A\int \frac{(ex)^m}{\left(a+cx^2\right)^{5/2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\left(a+cx^2\right)^{5/2}}\,dx}{e}$$
$$= \frac{\left(A\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^m}{\left(1+\frac{cx^2}{a}\right)^{5/2}}\,dx}{a^2\sqrt{a+cx^2}} + \frac{\left(B\sqrt{1+\frac{cx^2}{a}}\right)\int \frac{(ex)^{1+m}}{\left(1+\frac{cx^2}{a}\right)^{5/2}}\,dx}{a^2e\sqrt{a+cx^2}}$$
$$= \frac{A(ex)^{1+m}\sqrt{1+\frac{cx^2}{a}}\,{}_2F_1\left(\frac{5}{2},\frac{1+m}{2};\frac{3+m}{2};-\frac{cx^2}{a}\right)}{a^2e(1+m)\sqrt{a+cx^2}} + \frac{B(ex)^{2+m}\sqrt{1+\frac{cx^2}{a}}\,{}_2F_1\left(\frac{5}{2},\frac{2+m}{2};\frac{4+m}{2};-\frac{cx^2}{a}\right)}{a^2e^2(2+m)\sqrt{a+cx^2}}$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.77

$$\frac{x\sqrt{\frac{cx^2}{a}+1}\,(ex)^m\left(A(m+2)\,{}_2F_1\left(\frac{5}{2},\frac{m+1}{2};\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(\frac{5}{2},\frac{m}{2}+1;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{a^2(m+1)(m+2)\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + c*x^2)^(5/2),x]
```

```
[Out] (x*(e*x)^m*Sqrt[1 + (c*x^2)/a]*(B*(1 + m)*x*Hypergeometric2F1[5/2, 1 + m/2,
 2 + m/2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[5/2, (1 + m)/2, (3 +
m)/2, -((c*x^2)/a)]))/(a^2*(1 + m)*(2 + m)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\,(ex)^m}{c^3x^6+3\,ac^2x^4+3\,a^2cx^2+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*(e*x)^m/(c^3*x^6 + 3*a*c^2*x^4 + 3*a^2*c
*x^2 + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(cx^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^(5/2), x)
```

maple [F] time = 0.67, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(c\,x^2+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+a)^(5/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+a)^(5/2),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^m}{\left(cx^2 + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + a)^(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^m\,(A + B\,x)}{\left(c\,x^2 + a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + c*x^2)^(5/2), x)
```

sympy **[C]** time = 159.10, size = 112, normalized size = 0.77

$$\frac{Ae^m x x^m \Gamma\left(\frac{m}{2} + \frac{1}{2}\right) {}_2F_1\left(\begin{matrix} \frac{5}{2}, \frac{m}{2} + \frac{1}{2} \\ \frac{m}{2} + \frac{3}{2} \end{matrix}\middle| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\Gamma\left(\frac{m}{2} + \frac{3}{2}\right)} + \frac{Be^m x^2 x^m \Gamma\left(\frac{m}{2} + 1\right) {}_2F_1\left(\begin{matrix} \frac{5}{2}, \frac{m}{2} + 1 \\ \frac{m}{2} + 2 \end{matrix}\middle| \frac{cx^2 e^{i\pi}}{a}\right)}{2a^{\frac{5}{2}}\Gamma\left(\frac{m}{2} + 2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+a)**(5/2),x)
```

```
[Out] A*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((5/2, m/2 + 1/2), (m/2 + 3/2,), c*x**2
*exp_polar(I*pi)/a)/(2*a**(5/2)*gamma(m/2 + 3/2)) + B*e**m*x**2*x**m*gamma(
m/2 + 1)*hyper((5/2, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*a**
(5/2)*gamma(m/2 + 2))
```

3.498 $\int \frac{x^m(1+ax)}{\left(1-a^2x^2\right)^2}\,dx$

Optimal. Leaf size=70

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

```
[Out] x^(1+m)*hypergeom([2, 1/2+1/2*m],[3/2+1/2*m],a^2*x^2)/(1+m)+a*x^(2+m)*hyper
geom([2, 1+1/2*m],[2+1/2*m],a^2*x^2)/(2+m)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {808, 364}

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(1 + a*x))/(1 - a^2*x^2)^2,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2])/(1 + m) + (
a*x^(2 + m)*Hypergeometric2F1[2, (2 + m)/2, (4 + m)/2, a^2*x^2])/(2 + m)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^m(1+ax)}{\left(1-a^2x^2\right)^2}\,dx &= a\int \frac{x^{1+m}}{\left(1-a^2x^2\right)^2}\,dx+\int \frac{x^m}{\left(1-a^2x^2\right)^2}\,dx\\ &= \frac{x^{1+m}\,{}_2F_1\left(2,\frac{1+m}{2};\frac{3+m}{2};a^2x^2\right)}{1+m}+\frac{ax^{2+m}\,{}_2F_1\left(2,\frac{2+m}{2};\frac{4+m}{2};a^2x^2\right)}{2+m}\end{aligned}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.96

$$x^{m+1}\left(\frac{ax\,{}_2F_1\left(2,\frac{m}{2}+1;\frac{m}{2}+2;a^2x^2\right)}{m+2}+\frac{{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(1 + a*x))/(1 - a^2*x^2)^2,x]
```

```
[Out] x^(1 + m)*((a*x*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, a^2*x^2])/(2 + m) +
Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2]/(1 + m))
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^m}{a^3x^3-a^2x^2-ax+1}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a*x+1)/(-a^2*x^2+1)^2,x, algorithm="fricas")
```

```
[Out] integral(x^m/(a^3*x^3 - a^2*x^2 - a*x + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ax+1)x^m}{\left(a^2x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a*x+1)/(-a^2*x^2+1)^2,x, algorithm="giac")
```

```
[Out] integrate((a*x + 1)*x^m/(a^2*x^2 - 1)^2, x)
```

maple [C] time = 0.72, size = 177, normalized size = 2.53

$$\frac{\left(\frac{2\left(-\frac{m^2}{4}+\frac{1}{4}\right)x^{m+1}\left(-a^2\right)^{\frac{m}{2}+\frac{1}{2}}\Phi\left(a^2x^2,1,\frac{m}{2}+\frac{1}{2}\right)}{m+1}-\frac{2(-m-1)x^{m+1}\left(-a^2\right)^{\frac{m}{2}+\frac{1}{2}}}{(m+1)\left(-2a^2x^2+2\right)}\right)\left(-a^2\right)^{-\frac{m}{2}-\frac{1}{2}}}{2}-\frac{\left(\frac{m\,x^m\left(-a^2\right)^{\frac{m}{2}}\Phi\left(a^2x^2,1,\frac{m}{2}\right)}{2}+\frac{(-m-2)x^m\left(-a^2\right)^{\frac{m}{2}}}{(m+2)\left(-a^2x^2+1\right)}\right.}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(a*x+1)/(-a^2*x^2+1)^2,x)
```

```
[Out] -1/2*(-a^2)^(-1/2*m)/a*(1/(m+2)*x^m*(-a^2)^(1/2*m)*(-m-2)/(-a^2*x^2+1)+1/2*
x^m*(-a^2)^(1/2*m)*m*LerchPhi(a^2*x^2,1,1/2*m))+1/2*(-a^2)^(-1/2-1/2*m)*(-2
/(m+1)*x^(m+1)*(-a^2)^(1/2+1/2*m)*(-1-m)/(-2*a^2*x^2+2)+2/(m+1)*x^(m+1)*(-a
^2)^(1/2+1/2*m)*(-1/4*m^2+1/4)*LerchPhi(a^2*x^2,1,1/2+1/2*m))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ax+1)x^m}{\left(a^2x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(a*x+1)/(-a^2*x^2+1)^2,x, algorithm="maxima")
```

```
[Out] integrate((a*x + 1)*x^m/(a^2*x^2 - 1)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m\,\left(a\,x+1\right)}{\left(a^2\,x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(a*x + 1))/(a^2*x^2 - 1)^2,x)
```

```
[Out] int((x^m*(a*x + 1))/(a^2*x^2 - 1)^2, x)
```

sympy [C]   time = 6.37, size = 673, normalized size = 9.61

$$-\frac{a^2m^2x^3x^m\Phi\left(a^2x^2e^{2i\pi},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^2x^2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)-8\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{a^2x^3x^m\Phi\left(a^2x^2e^{2i\pi},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^2x^2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)-8\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+a\left(-\frac{a^2m^2x^4x^m\Phi\left(a^2x^2e^{2i}\right.}{8a^2x^2\Gamma\left(\frac{m}{2}+2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(a*x+1)/(-a**2*x**2+1)**2,x)
```

```
[Out] -a**2*m**2*x**3*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*ga
mma(m/2 + 1/2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) + a**2*x
**3*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/
2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) + a*(-a**2*m**2*x**4
*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a
**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 2*a**2*m*x**4*x**m*lerchphi(a
**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m
/2 + 2) - 8*gamma(m/2 + 2)) + m**2*x**2*x**m*lerchphi(a**2*x**2*exp_polar(2
*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/
2 + 2)) + 2*m*x**2*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*g
amma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 2*m*x**2*x*
*m*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 4*x**2*
x**m*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2))) + m**2
*x*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/2
)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - 2*m*x*x**m*gamma(m/
2 + 1/2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - x*x**m*lerch
phi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(8*a**2*x**
2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - 2*x*x**m*gamma(m/2 + 1/2)/(8*a**
2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2))
```

3.499 $\int \frac{x^m}{(1-ax)^2(1+ax)}\,dx$

Optimal. Leaf size=70

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

```
[Out] x^(1+m)*hypergeom([2, 1/2+1/2*m],[3/2+1/2*m],a^2*x^2)/(1+m)+a*x^(2+m)*hyper
geom([2, 1+1/2*m],[2+1/2*m],a^2*x^2)/(2+m)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {82, 73, 364}

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In] Int[x^m/((1 - a*x)^2*(1 + a*x)),x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2])/(1 + m) + (
a*x^(2 + m)*Hypergeometric2F1[2, (2 + m)/2, (4 + m)/2, a^2*x^2])/(2 + m)
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 82

```
Int[((f_.)*(x_))^(p_.)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.
), x_Symbol] :> Dist[a, Int[(a + b*x)^n*(c + d*x)^n*(f*x)^p, x], x] + Dist[
b/f, Int[(a + b*x)^n*(c + d*x)^n*(f*x)^(p + 1), x], x] /; FreeQ[{a, b, c, d
, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[m - n - 1, 0] &&  !RationalQ[
p] &&  !IGtQ[m, 0] && NeQ[m + n + p + 2, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^m}{(1-ax)^2(1+ax)}\,dx &= a\int \frac{x^{1+m}}{(1-ax)^2(1+ax)^2}\,dx+\int \frac{x^m}{(1-ax)^2(1+ax)^2}\,dx\\ &= a\int \frac{x^{1+m}}{\left(1-a^2x^2\right)^2}\,dx+\int \frac{x^m}{\left(1-a^2x^2\right)^2}\,dx\\ &= \frac{x^{1+m}\,{}_2F_1\left(2,\frac{1+m}{2};\frac{3+m}{2};a^2x^2\right)}{1+m}+\frac{ax^{2+m}\,{}_2F_1\left(2,\frac{2+m}{2};\frac{4+m}{2};a^2x^2\right)}{2+m}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 0.96

$$x^{m+1}\left(\frac{ax\,{}_2F_1\left(2,\frac{m}{2}+1;\frac{m}{2}+2;a^2x^2\right)}{m+2}+\frac{{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m/((1 - a*x)^2*(1 + a*x)),x]
```

```
[Out] x^(1 + m)*((a*x*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, a^2*x^2])/(2 + m) +
Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2]/(1 + m))
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^m}{a^3x^3-a^2x^2-ax+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)^2/(a*x+1),x, algorithm="fricas")
```

```
[Out] integral(x^m/(a^3*x^3 - a^2*x^2 - a*x + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(ax+1)(ax-1)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)^2/(a*x+1),x, algorithm="giac")
```

```
[Out] integrate(x^m/((a*x + 1)*(a*x - 1)^2), x)
```

maple [F] time = 0.87, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(-ax+1)^2\,(ax+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-a*x+1)^2/(a*x+1),x)
```

```
[Out] int(x^m/(-a*x+1)^2/(a*x+1),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(ax+1)(ax-1)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)^2/(a*x+1),x, algorithm="maxima")
```

```
[Out] integrate(x^m/((a*x + 1)*(a*x - 1)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m}{(a\,x-1)^2\,(a\,x+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a*x - 1)^2*(a*x + 1)),x)
```

```
[Out] int(x^m/((a*x - 1)^2*(a*x + 1)), x)
```

sympy [C] time = 2.32, size = 313, normalized size = 4.47

$$\frac{2am^2xx^m\Phi\left(\frac{1}{ax},1,me^{i\pi}\right)\Gamma(-m)}{4a^2x\Gamma(1-m)-4a\Gamma(1-m)}-\frac{amxx^m\Phi\left(\frac{1}{ax},1,me^{i\pi}\right)\Gamma(-m)}{4a^2x\Gamma(1-m)-4a\Gamma(1-m)}+\frac{amxx^m\Phi\left(\frac{e^{i\pi}}{ax},1,me^{i\pi}\right)\Gamma(-m)}{4a^2x\Gamma(1-m)-4a\Gamma(1-m)}+\frac{2amxx}{4a^2x\Gamma(1-m}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-a*x+1)**2/(a*x+1),x)
```

```
[Out] 2*a*m**2*x*x**m*lerchphi(1/(a*x), 1, m*exp_polar(I*pi))*gamma(-m)/(4*a**2*x
*gamma(1 - m) - 4*a*gamma(1 - m)) - a*m*x*x**m*lerchphi(1/(a*x), 1, m*exp_p
olar(I*pi))*gamma(-m)/(4*a**2*x*gamma(1 - m) - 4*a*gamma(1 - m)) + a*m*x*x*
*m*lerchphi(exp_polar(I*pi)/(a*x), 1, m*exp_polar(I*pi))*gamma(-m)/(4*a**2*
x*gamma(1 - m) - 4*a*gamma(1 - m)) + 2*a*m*x*x**m*gamma(-m)/(4*a**2*x*gamma
(1 - m) - 4*a*gamma(1 - m)) - 2*m**2*x**m*lerchphi(1/(a*x), 1, m*exp_polar(
I*pi))*gamma(-m)/(4*a**2*x*gamma(1 - m) - 4*a*gamma(1 - m)) + m*x**m*lerchp
hi(1/(a*x), 1, m*exp_polar(I*pi))*gamma(-m)/(4*a**2*x*gamma(1 - m) - 4*a*ga
mma(1 - m)) - m*x**m*lerchphi(exp_polar(I*pi)/(a*x), 1, m*exp_polar(I*pi))*
gamma(-m)/(4*a**2*x*gamma(1 - m) - 4*a*gamma(1 - m))
```

3.500 $\int \left(\frac{x^m}{\left(1-a^2x^2\right)^2}+\frac{ax^{1+m}}{\left(1-a^2x^2\right)^2}\right) dx$

Optimal. Leaf size=70

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

```
[Out] x^(1+m)*hypergeom([2, 1/2+1/2*m],[3/2+1/2*m],a^2*x^2)/(1+m)+a*x^(2+m)*hyper
geom([2, 1+1/2*m],[2+1/2*m],a^2*x^2)/(2+m)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 1, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.028, Rules used = {364}

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In] Int[x^m/(1 - a^2*x^2)^2 + (a*x^(1 + m))/(1 - a^2*x^2)^2,x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2])/(1 + m) + (
a*x^(2 + m)*Hypergeometric2F1[2, (2 + m)/2, (4 + m)/2, a^2*x^2])/(2 + m)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rubi steps

$$\begin{aligned}\int\left(\frac{x^m}{\left(1-a^2x^2\right)^2}+\frac{ax^{1+m}}{\left(1-a^2x^2\right)^2}\right)dx &= a\int\frac{x^{1+m}}{\left(1-a^2x^2\right)^2}\,dx+\int\frac{x^m}{\left(1-a^2x^2\right)^2}\,dx\\ &= \frac{x^{1+m}\,{}_2F_1\left(2,\frac{1+m}{2};\frac{3+m}{2};a^2x^2\right)}{1+m}+\frac{ax^{2+m}\,{}_2F_1\left(2,\frac{2+m}{2};\frac{4+m}{2};a^2x^2\right)}{2+m}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 0.96

$$x^{m+1}\left(\frac{ax\,{}_2F_1\left(2,\frac{m}{2}+1;\frac{m}{2}+2;a^2x^2\right)}{m+2}+\frac{{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m/(1 - a^2*x^2)^2 + (a*x^(1 + m))/(1 - a^2*x^2)^2,x]
```

```
[Out] x^(1 + m)*((a*x*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, a^2*x^2])/(2 + m) +
Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2]/(1 + m))
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{ax^{m+1}+x^m}{a^4x^4-2\,a^2x^2+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a^2*x^2+1)^2+a*x^(1+m)/(-a^2*x^2+1)^2,x, algorithm="fricas"
)
```

```
[Out] integral((a*x^(m + 1) + x^m)/(a^4*x^4 - 2*a^2*x^2 + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ax^{m+1}}{\left(a^2x^2-1\right)^2} + \frac{x^m}{\left(a^2x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a^2*x^2+1)^2+a*x^(1+m)/(-a^2*x^2+1)^2,x, algorithm="giac")
```

```
[Out] integrate(a*x^(m + 1)/(a^2*x^2 - 1)^2 + x^m/(a^2*x^2 - 1)^2, x)
```

maple [C] time = 0.84, size = 177, normalized size = 2.53

$$\frac{\left(\frac{2\left(-\frac{m^2}{4}+\frac{1}{4}\right)x^{m+1}\left(-a^2\right)^{\frac{m}{2}+\frac{1}{2}}\Phi\left(a^2x^2,1,\frac{m}{2}+\frac{1}{2}\right)}{m+1}-\frac{2(-m-1)x^{m+1}\left(-a^2\right)^{\frac{m}{2}+\frac{1}{2}}}{(m+1)\left(-2a^2x^2+2\right)}\right)\left(-a^2\right)^{-\frac{m}{2}-\frac{1}{2}}}{2}-\frac{\left(\frac{m\,x^m\left(-a^2\right)^{\frac{m}{2}}\Phi\left(a^2x^2,1,\frac{m}{2}\right)}{2}+\frac{(-m-2)x^m\left(-a^2\right)^{\frac{m}{2}}}{(m+2)\left(-a^2x^2+1\right)}}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-a^2*x^2+1)^2+a*x^(m+1)/(-a^2*x^2+1)^2,x)
```

```
[Out] 1/2*(2/(m+1)*(-1/4*m^2+1/4)*x^(m+1)*(-a^2)^(1/2*m+1/2)*LerchPhi(a^2*x^2,1,1
/2*m+1/2)-2/(m+1)*(-m-1)/(-2*a^2*x^2+2)*x^(m+1)*(-a^2)^(1/2*m+1/2))*(-a^2)^
(-1/2*m-1/2)-1/2*(1/2*m*x^m*(-a^2)^(1/2*m)*LerchPhi(a^2*x^2,1,1/2*m)+1/(m+2
)*(-m-2)/(-a^2*x^2+1)*x^m*(-a^2)^(1/2*m))/a*(-a^2)^(-1/2*m)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{ax^{m+1}}{\left(a^2x^2-1\right)^2} + \frac{x^m}{\left(a^2x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a^2*x^2+1)^2+a*x^(1+m)/(-a^2*x^2+1)^2,x, algorithm="maxima"
)
```

```
[Out] integrate(a*x^(m + 1)/(a^2*x^2 - 1)^2 + x^m/(a^2*x^2 - 1)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m}{\left(a^2\,x^2-1\right)^2} + \frac{a\,x^{m+1}}{\left(a^2\,x^2-1\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(a^2*x^2 - 1)^2 + (a*x^(m + 1))/(a^2*x^2 - 1)^2,x)
```

```
[Out] int(x^m/(a^2*x^2 - 1)^2 + (a*x^(m + 1))/(a^2*x^2 - 1)^2, x)
```

sympy [C] time = 2.79, size = 673, normalized size = 9.61

$$-\frac{a^2m^2x^3x^m\Phi\left(a^2x^2e^{2i\pi},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^2x^2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)-8\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{a^2x^3x^m\Phi\left(a^2x^2e^{2i\pi},1,\frac{m}{2}+\frac{1}{2}\right)\Gamma\left(\frac{m}{2}+\frac{1}{2}\right)}{8a^2x^2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)-8\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+a\left(-\frac{a^2m^2x^4x^m\Phi\left(a^2x^2}{8a^2x^2\Gamma\left(\frac{m}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-a**2*x**2+1)**2+a*x**(1+m)/(-a**2*x**2+1)**2,x)
```

```
[Out] -a**2*m**2*x**3*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*ga
mma(m/2 + 1/2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) + a**2*x
**3*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/
2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) + a*(-a**2*m**2*x**4
*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a
**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 2*a**2*m*x**4*x**m*lerchphi(a
**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m
/2 + 2) - 8*gamma(m/2 + 2)) + m**2*x**2*x**m*lerchphi(a**2*x**2*exp_polar(2
*I*pi), 1, m/2 + 1)*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/
2 + 2)) + 2*m*x**2*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1)*g
amma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 2*m*x**2*x*
*m*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2)) - 4*x**2*
x**m*gamma(m/2 + 1)/(8*a**2*x**2*gamma(m/2 + 2) - 8*gamma(m/2 + 2))) + m**2
*x*x**m*lerchphi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/2
)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - 2*m*x*x**m*gamma(m/
2 + 1/2)/(8*a**2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - x*x**m*lerch
phi(a**2*x**2*exp_polar(2*I*pi), 1, m/2 + 1/2)*gamma(m/2 + 1/2)/(8*a**2*x**
2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2)) - 2*x*x**m*gamma(m/2 + 1/2)/(8*a**
2*x**2*gamma(m/2 + 3/2) - 8*gamma(m/2 + 3/2))
```

3.501 $\int \frac{x^m}{(1-ax)\left(1-a^2x^2\right)}\,dx$

Optimal. Leaf size=70

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

```
[Out] x^(1+m)*hypergeom([2, 1/2+1/2*m],[3/2+1/2*m],a^2*x^2)/(1+m)+a*x^(2+m)*hyper
geom([2, 1+1/2*m],[2+1/2*m],a^2*x^2)/(2+m)
```

Rubi [A] time = 0.03, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{848, 82, 73, 364\}$

$$\frac{x^{m+1}\,{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}+\frac{ax^{m+2}\,{}_2F_1\left(2,\frac{m+2}{2};\frac{m+4}{2};a^2x^2\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In] Int[x^m/((1 - a*x)*(1 - a^2*x^2)),x]
```

```
[Out] (x^(1 + m)*Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2])/(1 + m) + (
a*x^(2 + m)*Hypergeometric2F1[2, (2 + m)/2, (4 + m)/2, a^2*x^2])/(2 + m)
```

Rule 73

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_)
)^(p_.), x_Symbol] :> Int[(a*c + b*d*x^2)^m*(e + f*x)^p, x] /; FreeQ[{a, b,
 c, d, e, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[n, m] && IntegerQ[m]
```

Rule 82

```
Int[((f_.)*(x_))^(p_.)*((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.
), x_Symbol] :> Dist[a, Int[(a + b*x)^n*(c + d*x)^n*(f*x)^p, x], x] + Dist[
b/f, Int[(a + b*x)^n*(c + d*x)^n*(f*x)^(p + 1), x], x] /; FreeQ[{a, b, c, d
, f, m, n, p}, x] && EqQ[b*c + a*d, 0] && EqQ[m - n - 1, 0] &&  !RationalQ[
p] &&  !IGtQ[m, 0] && NeQ[m + n + p + 2, 0]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 848

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))^(n_)*((a_) + (c_.)*(x_)^2
)^(p_.), x_Symbol] :> Int[(d + e*x)^(m + p)*(f + g*x)^n*(a/d + (c*x)/e)^p,
x] /; FreeQ[{a, c, d, e, f, g, m, n}, x] && NeQ[e*f - d*g, 0] && EqQ[c*d^2
+ a*e^2, 0] && (IntegerQ[p] || (GtQ[a, 0] && GtQ[d, 0] && EqQ[m + p, 0]))
```

Rubi steps

$$\begin{aligned}\int \frac{x^m}{(1-ax)\left(1-a^2x^2\right)}\,dx &= \int \frac{x^m}{(1-ax)^2(1+ax)}\,dx\\ &= a\int \frac{x^{1+m}}{(1-ax)^2(1+ax)^2}\,dx + \int \frac{x^m}{(1-ax)^2(1+ax)^2}\,dx\\ &= a\int \frac{x^{1+m}}{\left(1-a^2x^2\right)^2}\,dx + \int \frac{x^m}{\left(1-a^2x^2\right)^2}\,dx\\ &= \frac{x^{1+m}\,{}_2F_1\left(2,\frac{1+m}{2};\frac{3+m}{2};a^2x^2\right)}{1+m} + \frac{ax^{2+m}\,{}_2F_1\left(2,\frac{2+m}{2};\frac{4+m}{2};a^2x^2\right)}{2+m}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 0.96

$$x^{m+1}\left(\frac{ax\,{}_2F_1\left(2,\frac{m}{2}+1;\frac{m}{2}+2;a^2x^2\right)}{m+2}+\frac{{}_2F_1\left(2,\frac{m+1}{2};\frac{m+3}{2};a^2x^2\right)}{m+1}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m/((1 - a*x)*(1 - a^2*x^2)),x]
```

```
[Out] x^(1 + m)*((a*x*Hypergeometric2F1[2, 1 + m/2, 2 + m/2, a^2*x^2])/(2 + m) +
Hypergeometric2F1[2, (1 + m)/2, (3 + m)/2, a^2*x^2]/(1 + m))
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{x^m}{a^3x^3-a^2x^2-ax+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)/(-a^2*x^2+1),x, algorithm="fricas")
```

```
[Out] integral(x^m/(a^3*x^3 - a^2*x^2 - a*x + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(a^2x^2-1\right)(ax-1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)/(-a^2*x^2+1),x, algorithm="giac")
```

```
[Out] integrate(x^m/((a^2*x^2 - 1)*(a*x - 1)), x)
```

maple [F] time = 0.81, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(-ax+1)\left(-a^2x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/(-a*x+1)/(-a^2*x^2+1),x)
```

```
[Out] int(x^m/(-a*x+1)/(-a^2*x^2+1),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{\left(a^2x^2-1\right)(ax-1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m/(-a*x+1)/(-a^2*x^2+1),x, algorithm="maxima")
[Out] integrate(x^m/((a^2*x^2 - 1)*(a*x - 1)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m}{\left(a^2\,x^2-1\right)\,\left(a\,x-1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m/((a^2*x^2 - 1)*(a*x - 1)),x)
[Out] int(x^m/((a^2*x^2 - 1)*(a*x - 1)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m}{(ax-1)^2\,(ax+1)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m/(-a*x+1)/(-a**2*x**2+1),x)
[Out] Integral(x**m/((a*x - 1)**2*(a*x + 1)), x)
```

3.502 $\int (ex)^m(A+Bx)\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=135

$$\frac{A(ex)^{m+1}\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(\frac{m+1}{2},-p;\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)}+\frac{B(ex)^{m+2}\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(\frac{m+2}{2},-p;\frac{m+4}{2};-\right.}{e^2(m+2)}$$

```
[Out] A*(e*x)^(1+m)*(c*x^2+a)^p*hypergeom([-p, 1/2+1/2*m],[3/2+1/2*m],-c*x^2/a)/e
/(1+m)/((c*x^2/a+1)^p)+B*(e*x)^(2+m)*(c*x^2+a)^p*hypergeom([-p, 1+1/2*m],[2
+1/2*m],-c*x^2/a)/e^2/(2+m)/((c*x^2/a+1)^p)
```

Rubi [A] time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.150$, Rules used = {808, 365, 364}

$$\frac{A(ex)^{m+1}\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(\frac{m+1}{2},-p;\frac{m+3}{2};-\frac{cx^2}{a}\right)}{e(m+1)}+\frac{B(ex)^{m+2}\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(\frac{m+2}{2},-p;\frac{m+4}{2};-\right.}{e^2(m+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + c*x^2)^p,x]
```

```
[Out] (A*(e*x)^(1 + m)*(a + c*x^2)^p*Hypergeometric2F1[(1 + m)/2, -p, (3 + m)/2,
-((c*x^2)/a)])/(e*(1 + m)*(1 + (c*x^2)/a)^p) + (B*(e*x)^(2 + m)*(a + c*x^2)
^p*Hypergeometric2F1[(2 + m)/2, -p, (4 + m)/2, -((c*x^2)/a)])/(e^2*(2 + m)*
(1 + (c*x^2)/a)^p)
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 808

```
Int[((e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[f, Int[(e*x)^m*(a + c*x^2)^p, x], x] + Dist[g/e, Int[(e*x)^(m
+ 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, e, f, g, p}, x] &&  !RationalQ[m
] &&  !IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+cx^2\right)^p\,dx &= A\int (ex)^m\left(a+cx^2\right)^p\,dx+\frac{B\int (ex)^{1+m}\left(a+cx^2\right)^p\,dx}{e}\\ &= \left(A\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int (ex)^m\left(1+\frac{cx^2}{a}\right)^p\,dx+\frac{\left(B\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)}{}\\ &= \frac{A(ex)^{1+m}\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{1+m}{2},-p;\frac{3+m}{2};-\frac{cx^2}{a}\right)}{e(1+m)}+\frac{B(ex)^{2+m}\left(a+c\right.}{}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 106, normalized size = 0.79

$$\frac{x(ex)^m\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\left(A(m+2)\,{}_2F_1\left(\frac{m+1}{2},-p;\frac{m+3}{2};-\frac{cx^2}{a}\right)+B(m+1)x\,{}_2F_1\left(\frac{m}{2}+1,-p;\frac{m}{2}+2;-\frac{cx^2}{a}\right)\right)}{(m+1)(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + c*x^2)^p,x]
```

```
[Out] (x*(e*x)^m*(a + c*x^2)^p*(B*(1 + m)*x*Hypergeometric2F1[1 + m/2, -p, 2 + m/
2, -((c*x^2)/a)] + A*(2 + m)*Hypergeometric2F1[(1 + m)/2, -p, (3 + m)/2, -(
(c*x^2)/a)]))/((1 + m)*(2 + m)*(1 + (c*x^2)/a)^p)
```

fricas [**F**] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left((Bx+A)\left(cx^2+a\right)^p(ex)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + a)^p*(e*x)^m, x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+a\right)^p(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + a)^p*(e*x)^m, x)
```

maple [**F**] time = 0.78, size = 0, normalized size = 0.00

$$\int (Bx+A)\,(ex)^m\left(c\,x^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+a)^p,x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+a)^p,x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+a\right)^p(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + a)^p*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (e\,x)^m\,\left(c\,x^2+a\right)^p\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(a + c*x^2)^p*(A + B*x),x)
```

```
[Out] int((e*x)^m*(a + c*x^2)^p*(A + B*x), x)
```

sympy [C] time = 83.44, size = 109, normalized size = 0.81

$$\frac{Aa^pe^mxx^m\Gamma\left(\frac{m}{2}+\frac{1}{2}\right){}_2F_1\left(\left.\begin{matrix}-p,\frac{m}{2}+\frac{1}{2}\\ \frac{m}{2}+\frac{3}{2}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+\frac{3}{2}\right)}+\frac{Ba^pe^mx^2x^m\Gamma\left(\frac{m}{2}+1\right){}_2F_1\left(\left.\begin{matrix}-p,\frac{m}{2}+1\\ \frac{m}{2}+2\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{2\Gamma\left(\frac{m}{2}+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+a)**p,x)
```

```
[Out] A*a**p*e**m*x*x**m*gamma(m/2 + 1/2)*hyper((-p, m/2 + 1/2), (m/2 + 3/2,), c*
x**2*exp_polar(I*pi)/a)/(2*gamma(m/2 + 3/2)) + B*a**p*e**m*x**2*x**m*gamma(
m/2 + 1)*hyper((-p, m/2 + 1), (m/2 + 2,), c*x**2*exp_polar(I*pi)/a)/(2*gamm
a(m/2 + 2))
```

3.503 $\int x^3(d+ex)\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=100

$$-\frac{ad\left(a+cx^2\right)^{p+1}}{2c^2(p+1)}+\frac{d\left(a+cx^2\right)^{p+2}}{2c^2(p+2)}+\frac{1}{5}ex^5\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{5}{2},-p;\frac{7}{2};-\frac{cx^2}{a}\right)$$

```
[Out] -1/2*a*d*(c*x^2+a)^(1+p)/c^2/(1+p)+1/2*d*(c*x^2+a)^(2+p)/c^2/(2+p)+1/5*e*x^
5*(c*x^2+a)^p*hypergeom([5/2, -p],[7/2],-c*x^2/a)/((c*x^2/a+1)^p)
```

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {764, 266, 43, 365, 364}

$$-\frac{ad\left(a+cx^2\right)^{p+1}}{2c^2(p+1)}+\frac{d\left(a+cx^2\right)^{p+2}}{2c^2(p+2)}+\frac{1}{5}ex^5\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{5}{2},-p;\frac{7}{2};-\frac{cx^2}{a}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] -(a*d*(a + c*x^2)^(1 + p))/(2*c^2*(1 + p)) + (d*(a + c*x^2)^(2 + p))/(2*c^2
*(2 + p)) + (e*x^5*(a + c*x^2)^p*Hypergeometric2F1[5/2, -p, 7/2, -((c*x^2)/
a)])/(5*(1 + (c*x^2)/a)^p)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] &&  !IntegerQ[2*p]
```

Rubi steps

$$
\begin{aligned}
\int x^3(d+ex)\left(a+cx^2\right)^p\,dx &= d\int x^3\left(a+cx^2\right)^p\,dx+e\int x^4\left(a+cx^2\right)^p\,dx\\
&= \frac{1}{2}d\,\text{Subst}\left(\int x(a+cx)^p\,dx,x,x^2\right)+\left(e\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int x^4\left(1+\frac{cx^2}{a}\right)^p\,dx\\
&= \frac{1}{5}ex^5\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{5}{2},-p;\frac{7}{2};-\frac{cx^2}{a}\right)+\frac{1}{2}d\,\text{Subst}\left(\int\left(-\frac{a(a+cx)^p}{c}+\right.\right.\\
&= -\frac{ad\left(a+cx^2\right)^{1+p}}{2c^2(1+p)}+\frac{d\left(a+cx^2\right)^{2+p}}{2c^2(2+p)}+\frac{1}{5}ex^5\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{5}{2},-p;\frac{7}{2};-\right.
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 87, normalized size = 0.87

$$\frac{1}{10}\left(a+cx^2\right)^p\left(2ex^5\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{5}{2},-p;\frac{7}{2};-\frac{cx^2}{a}\right)-\frac{5d\left(a+cx^2\right)\left(a-c(p+1)x^2\right)}{c^2(p+1)(p+2)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x)*(a + c*x^2)^p,x]
[Out] ((a + c*x^2)^p*((-5*d*(a + c*x^2)*(a - c*(1 + p)*x^2))/(c^2*(1 + p)*(2 + p)
) + (2*e*x^5*Hypergeometric2F1[5/2, -p, 7/2, -((c*x^2)/a)])/(1 + (c*x^2)/a)
^p))/10
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ex^4+dx^3\right)\left(cx^2+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(c*x^2+a)^p,x, algorithm="fricas")
[Out] integral((e*x^4 + d*x^3)*(c*x^2 + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int(ex+d)\left(cx^2+a\right)^px^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(c*x^2+a)^p,x, algorithm="giac")
[Out] integrate((e*x + d)*(c*x^2 + a)^p*x^3, x)
```

maple [F] time = 0.77, size = 0, normalized size = 0.00

$$\int(ex+d)\,x^3\left(c\,x^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)*(c*x^2+a)^p,x)
[Out] int(x^3*(e*x+d)*(c*x^2+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e\int\left(cx^2+a\right)^px^4\,dx+\frac{\left(c^2(p+1)x^4+acpx^2-a^2\right)\left(cx^2+a\right)^pd}{2\left(p^2+3p+2\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] e*integrate((c*x^2 + a)^p*x^4, x) + 1/2*(c^2*(p + 1)*x^4 + a*c*p*x^2 - a^2)
*(c*x^2 + a)^p*d/((p^2 + 3*p + 2)*c^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^3 \left(c\,x^2+a\right)^p\,\left(d+e\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(a + c*x^2)^p*(d + e*x),x)
```

```
[Out] int(x^3*(a + c*x^2)^p*(d + e*x), x)
```

sympy [C] time = 15.85, size = 394, normalized size = 3.94

$$\frac{a^p e x^5 {}_2F_1\left(\begin{matrix} \frac{5}{2}, -p \\ \frac{7}{2} \end{matrix}\middle| \frac{cx^2 e^{i\pi}}{a}\right)}{5} + d\left(\begin{cases} \frac{a^p x^4}{4} \\ \frac{a\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2} + \frac{a\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2} + \frac{a}{2ac^2+2c^3x^2} + \frac{cx^2\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2} + \frac{cx^2\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}\right.}{2ac^2+2c^3x^2} \\ -\frac{a\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2c^2} - \frac{a\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2c^2} + \frac{x^2}{2c} \\ -\frac{a^2\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2} + \frac{acpx^2\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2} + \frac{c^2px^4\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2} + \frac{c^2x^4\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2} \end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)*(c*x**2+a)**p,x)
```

```
[Out] a**p*e*x**5*hyper((5/2, -p), (7/2,), c*x**2*exp_polar(I*pi)/a)/5 + d*Piecew
ise((a**p*x**4/4, Eq(c, 0)), (a*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2
*c**3*x**2) + a*log(I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2*c**3*x**2) + a/(
2*a*c**2 + 2*c**3*x**2) + c*x**2*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 +
2*c**3*x**2) + c*x**2*log(I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2*c**3*x**2)
, Eq(p, -2)), (-a*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*c**2) - a*log(I*sqrt(a)*
sqrt(1/c) + x)/(2*c**2) + x**2/(2*c), Eq(p, -1)), (-a**2*(a + c*x**2)**p/(2
*c**2*p**2 + 6*c**2*p + 4*c**2) + a*c*p*x**2*(a + c*x**2)**p/(2*c**2*p**2 +
 6*c**2*p + 4*c**2) + c**2*p*x**4*(a + c*x**2)**p/(2*c**2*p**2 + 6*c**2*p +
 4*c**2) + c**2*x**4*(a + c*x**2)**p/(2*c**2*p**2 + 6*c**2*p + 4*c**2), Tru
e))
```

3.504 $\int x^2(d+ex)\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=100

$$-\frac{ae\left(a+cx^2\right)^{p+1}}{2c^2(p+1)}+\frac{e\left(a+cx^2\right)^{p+2}}{2c^2(p+2)}+\frac{1}{3}dx^3\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)$$

```
[Out] -1/2*a*e*(c*x^2+a)^(1+p)/c^2/(1+p)+1/2*e*(c*x^2+a)^(2+p)/c^2/(2+p)+1/3*d*x^
3*(c*x^2+a)^p*hypergeom([3/2, -p],[5/2],-c*x^2/a)/((c*x^2/a+1)^p)
```

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {764, 365, 364, 266, 43}

$$-\frac{ae\left(a+cx^2\right)^{p+1}}{2c^2(p+1)}+\frac{e\left(a+cx^2\right)^{p+2}}{2c^2(p+2)}+\frac{1}{3}dx^3\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] -(a*e*(a + c*x^2)^(1 + p))/(2*c^2*(1 + p)) + (e*(a + c*x^2)^(2 + p))/(2*c^2
*(2 + p)) + (d*x^3*(a + c*x^2)^p*Hypergeometric2F1[3/2, -p, 5/2, -((c*x^2)/
a)])/(3*(1 + (c*x^2)/a)^p)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] &&  !IntegerQ[2*p]
```

Rubi steps

$$\begin{aligned}\int x^2(d+ex)\left(a+cx^2\right)^p\,dx &= d\int x^2\left(a+cx^2\right)^p\,dx+e\int x^3\left(a+cx^2\right)^p\,dx\\ &= \frac{1}{2}e\,\text{Subst}\left(\int x(a+cx)^p\,dx,x,x^2\right)+\left(d\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int x^2\left(1+\frac{cx^2}{a}\right)^p\\ &= \frac{1}{3}dx^3\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)+\frac{1}{2}e\,\text{Subst}\bigg(\int\bigg(-\frac{a(a+cx)^p}{c}\\ &= -\frac{ae\left(a+cx^2\right)^{1+p}}{2c^2(1+p)}+\frac{e\left(a+cx^2\right)^{2+p}}{2c^2(2+p)}+\frac{1}{3}dx^3\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\bigg(\frac{3}{2},-p;\frac{5}{2};\end{aligned}$$

Mathematica [A] time = 0.07, size = 87, normalized size = 0.87

$$\frac{1}{6}\left(a+cx^2\right)^p\left(2dx^3\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)-\frac{3e\left(a+cx^2\right)\left(a-c(p+1)x^2\right)}{c^2(p+1)(p+2)}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] ((a + c*x^2)^p*((-3*e*(a + c*x^2)*(a - c*(1 + p)*x^2))/(c^2*(1 + p)*(2 + p)
) + (2*d*x^3*Hypergeometric2F1[3/2, -p, 5/2, -((c*x^2)/a)])/(1 + (c*x^2)/a)
^p))/6
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ex^3+dx^2\right)\left(cx^2+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] integral((e*x^3 + d*x^2)*(c*x^2 + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex+d)\left(cx^2+a\right)^p x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p*x^2, x)
```

maple [F] time = 1.07, size = 0, normalized size = 0.00

$$\int (ex+d)\,x^2\left(c\,x^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)*(c*x^2+a)^p,x)
```

```
[Out] int(x^2*(e*x+d)*(c*x^2+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex+d)\left(cx^2+a\right)^p x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p*x^2, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int x^2 \left(c\,x^2+a\right)^p\,\left(d+e\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(a + c*x^2)^p*(d + e*x),x)
```

```
[Out] int(x^2*(a + c*x^2)^p*(d + e*x), x)
```

sympy **[C]** time = 11.46, size = 394, normalized size = 3.94

$$\frac{a^p d x^3 {}_2F_1\left(\begin{matrix}\frac{3}{2},-p\\ \frac{5}{2}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{3}+e\left(\begin{cases}\frac{a^px^4}{4}\\ \frac{a\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2}+\frac{a\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2}+\frac{a}{2ac^2+2c^3x^2}+\frac{cx^2\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2}+\frac{cx^2\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2ac^2+2c^3x^2}\\ -\frac{a\log\left(-i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2c^2}-\frac{a\log\left(i\sqrt{a}\sqrt{\frac{1}{c}}+x\right)}{2c^2}+\frac{x^2}{2c}\\ -\frac{a^2\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2}+\frac{acpx^2\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2}+\frac{c^2px^4\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2}+\frac{c^2x^4\left(a+cx^2\right)^p}{2c^2p^2+6c^2p+4c^2}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)*(c*x**2+a)**p,x)
```

```
[Out] a**p*d*x**3*hyper((3/2, -p), (5/2,), c*x**2*exp_polar(I*pi)/a)/3 + e*Piecew
ise((a**p*x**4/4, Eq(c, 0)), (a*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2
*c**3*x**2) + a*log(I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2*c**3*x**2) + a/(
2*a*c**2 + 2*c**3*x**2) + c*x**2*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 +
2*c**3*x**2) + c*x**2*log(I*sqrt(a)*sqrt(1/c) + x)/(2*a*c**2 + 2*c**3*x**2)
, Eq(p, -2)), (-a*log(-I*sqrt(a)*sqrt(1/c) + x)/(2*c**2) - a*log(I*sqrt(a)*
sqrt(1/c) + x)/(2*c**2) + x**2/(2*c), Eq(p, -1)), (-a**2*(a + c*x**2)**p/(2
*c**2*p**2 + 6*c**2*p + 4*c**2) + a*c*p*x**2*(a + c*x**2)**p/(2*c**2*p**2 +
 6*c**2*p + 4*c**2) + c**2*p*x**4*(a + c*x**2)**p/(2*c**2*p**2 + 6*c**2*p +
 4*c**2) + c**2*x**4*(a + c*x**2)**p/(2*c**2*p**2 + 6*c**2*p + 4*c**2), Tru
e))
```

3.505 $\int x(d+ex)\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=75

$$\frac{d\left(a+cx^2\right)^{p+1}}{2c(p+1)}+\frac{1}{3}ex^3\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)$$

```
[Out] 1/2*d*(c*x^2+a)^(1+p)/c/(1+p)+1/3*e*x^3*(c*x^2+a)^p*hypergeom([3/2, -p],[5/
2],-c*x^2/a)/((c*x^2/a+1)^p)
```

Rubi **[A]** time = 0.03, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {764, 261, 365, 364}

$$\frac{d\left(a+cx^2\right)^{p+1}}{2c(p+1)}+\frac{1}{3}ex^3\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] (d*(a + c*x^2)^(1 + p))/(2*c*(1 + p)) + (e*x^3*(a + c*x^2)^p*Hypergeometric
2F1[3/2, -p, 5/2, -((c*x^2)/a)])/(3*(1 + (c*x^2)/a)^p)
```

Rule 261

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a + b*x^n)
^(p + 1)/(b*n*(p + 1)), x] /; FreeQ[{a, b, m, n, p}, x] && EqQ[m, n - 1] &&
 NeQ[p, -1]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0]
 && !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] && !IntegerQ[2*p]
```

Rubi steps

$$\begin{aligned}\int x(d+ex)\left(a+cx^2\right)^p\,dx &= d\int x\left(a+cx^2\right)^p\,dx + e\int x^2\left(a+cx^2\right)^p\,dx\\ &= \frac{d\left(a+cx^2\right)^{1+p}}{2c(1+p)} + \left(e\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int x^2\left(1+\frac{cx^2}{a}\right)^p\,dx\\ &= \frac{d\left(a+cx^2\right)^{1+p}}{2c(1+p)} + \frac{1}{3}ex^3\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 0.95

$$\frac{1}{6}\left(a+cx^2\right)^p\left(\frac{3d\left(a+cx^2\right)}{c(p+1)}+2ex^3\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{3}{2},-p;\frac{5}{2};-\frac{cx^2}{a}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] ((a + c*x^2)^p*((3*d*(a + c*x^2))/(c*(1 + p)) + (2*e*x^3*Hypergeometric2F1[
3/2, -p, 5/2, -((c*x^2)/a)])/(1 + (c*x^2)/a)^p))/6
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(ex^2+dx\right)\left(cx^2+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] integral((e*x^2 + d*x)*(c*x^2 + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex+d)\left(cx^2+a\right)^p x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p*x, x)
```

maple [F] time = 0.86, size = 0, normalized size = 0.00

$$\int (ex+d)\,x\left(c\,x^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)*(c*x^2+a)^p,x)
```

```
[Out] int(x*(e*x+d)*(c*x^2+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$e\int\left(cx^2+a\right)^p x^2\,dx+\frac{\left(cx^2+a\right)^{p+1}d}{2\,c\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] e*integrate((c*x^2 + a)^p*x^2, x) + 1/2*(c*x^2 + a)^(p + 1)*d/(c*(p + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\left(c\,x^2+a\right)^p\,\left(d+e\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + c*x^2)^p*(d + e*x),x)
```

```
[Out] int(x*(a + c*x^2)^p*(d + e*x), x)
```

sympy [A] time = 8.82, size = 65, normalized size = 0.87

$$\frac{a^p e x^3 {}_2F_1\left(\begin{matrix}\frac{3}{2}, -p\\ \frac{5}{2}\end{matrix}\middle| \frac{cx^2 e^{i\pi}}{a}\right)}{3}+d\left(\begin{cases}\frac{a^p x^2}{2} & \text{for}\: c=0\\ \frac{\begin{cases}\frac{\left(a+cx^2\right)^{p+1}}{p+1} & \text{for}\: p\neq -1\\ \log\left(a+cx^2\right) & \text{otherwise}\end{cases}}{2c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x**2+a)**p,x)
```

```
[Out] a**p*e*x**3*hyper((3/2, -p), (5/2,), c*x**2*exp_polar(I*pi)/a)/3 + d*Piecew
ise((a**p*x**2/2, Eq(c, 0)), (Piecewise(((a + c*x**2)**(p + 1)/(p + 1), Ne(
p, -1)), (log(a + c*x**2), True))/(2*c), True))
```

3.506 $\int (d+ex)\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=70

$$dx\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)+\frac{e\left(a+cx^2\right)^{p+1}}{2c(p+1)}$$

```
[Out] 1/2*e*(c*x^2+a)^(1+p)/c/(1+p)+d*x*(c*x^2+a)^p*hypergeom([1/2, -p],[3/2],-c*
x^2/a)/((c*x^2/a+1)^p)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {641, 246, 245}

$$dx\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)+\frac{e\left(a+cx^2\right)^{p+1}}{2c(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] (e*(a + c*x^2)^(1 + p))/(2*c*(1 + p)) + (d*x*(a + c*x^2)^p*Hypergeometric2F
1[1/2, -p, 3/2, -((c*x^2)/a)])/(1 + (c*x^2)/a)^p
```

Rule 245

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p*x*Hypergeometric2F
1[-p, 1/n, 1/n + 1, -((b*x^n)/a)], x] /; FreeQ[{a, b, n, p}, x] && !IGtQ[p
, 0] && !IntegerQ[1/n] && !ILtQ[Simplify[1/n + p], 0] && (IntegerQ[p] ||
GtQ[a, 0])
```

Rule 246

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x
^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(1 + (b*x^n)/a)^p, x], x]
 /; FreeQ[{a, b, n, p}, x] && !IGtQ[p, 0] && !IntegerQ[1/n] && !ILtQ[Sim
plify[1/n + p], 0] && !(IntegerQ[p] || GtQ[a, 0])
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (d+ex)\left(a+cx^2\right)^p\,dx &= \frac{e\left(a+cx^2\right)^{1+p}}{2c(1+p)}+d\int \left(a+cx^2\right)^p\,dx\\
&= \frac{e\left(a+cx^2\right)^{1+p}}{2c(1+p)}+\left(d\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int \left(1+\frac{cx^2}{a}\right)^p\,dx\\
&= \frac{e\left(a+cx^2\right)^{1+p}}{2c(1+p)}+dx\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)
\end{aligned}$$

Mathematica **[A]** time = 0.05, size = 98, normalized size = 1.40

$$\frac{\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\left(2cd(p+1)x\,{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)+cex^2\left(\frac{cx^2}{a}+1\right)^p+ae\left(\left(\frac{cx^2}{a}+1\right)^p-1\right)\right)}{2c(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(a + c*x^2)^p,x]
```

```
[Out] ((a + c*x^2)^p*(c*e*x^2*(1 + (c*x^2)/a)^p + a*e*(-1 + (1 + (c*x^2)/a)^p) +
2*c*d*(1 + p)*x*Hypergeometric2F1[1/2, -p, 3/2, -((c*x^2)/a)]))/(2*c*(1 + p
)*(1 + (c*x^2)/a)^p)
```

fricas **[F]** time = 0.79, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((ex+d)\left(cx^2+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] integral((e*x + d)*(c*x^2 + a)^p, x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (ex+d)\left(cx^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p, x)
```

maple **[F]** time = 0.05, size = 0, normalized size = 0.00

$$\int (ex+d)\left(c\,x^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(c*x^2+a)^p,x)
```

```
[Out] int((e*x+d)*(c*x^2+a)^p,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (ex+d)\left(cx^2+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p, x)
```

mupad **[B]** time = 1.70, size = 65, normalized size = 0.93

$$\frac{e\left(c\,x^2+a\right)^{p+1}}{2\,c\,\left(p+1\right)}+\frac{d\,x\left(c\,x^2+a\right)^p\,{}_2\mathrm{F}_1\left(\frac{1}{2},-p;\,\frac{3}{2};\,-\frac{c\,x^2}{a}\right)}{\left(\frac{c\,x^2}{a}+1\right)^p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^p*(d + e*x),x)
```

```
[Out] (e*(a + c*x^2)^(p + 1))/(2*c*(p + 1)) + (d*x*(a + c*x^2)^p*hypergeom([1/2,
-p], 3/2, -(c*x^2)/a))/((c*x^2)/a + 1)^p
```

sympy [**A**] time = 6.19, size = 61, normalized size = 0.87

$$a^p d x {}_2F_1\left(\begin{matrix}\frac{1}{2}, -p\\ \frac{3}{2}\end{matrix}\middle| \frac{cx^2 e^{i\pi}}{a}\right) + e\left(\begin{cases}\frac{a^p x^2}{2} & \text{for}\ c = 0\\ \frac{\begin{cases}\frac{\left(a+cx^2\right)^{p+1}}{p+1} & \text{for}\ p \neq -1\\ \log\left(a+cx^2\right) & \text{otherwise}\end{cases}}{2c} & \text{otherwise}\end{cases}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x**2+a)**p,x)
```

```
[Out] a**p*d*x*hyper((1/2, -p), (3/2,), c*x**2*exp_polar(I*pi)/a) + e*Piecewise((
a**p*x**2/2, Eq(c, 0)), (Piecewise(((a + c*x**2)**(p + 1)/(p + 1), Ne(p, -1
)), (log(a + c*x**2), True))/(2*c), True))
```

3.507 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x}\,dx$

Optimal. Leaf size=88

$$ex\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)-\frac{d\left(a+cx^2\right)^{p+1}{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}$$

```
[Out] e*x*(c*x^2+a)^p*hypergeom([1/2, -p],[3/2],-c*x^2/a)/((c*x^2/a+1)^p)-1/2*d*(
c*x^2+a)^(1+p)*hypergeom([1, 1+p],[2+p],c*x^2/a+1)/a/(1+p)
```

Rubi [A] time = 0.05, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {764, 266, 65, 246, 245}

$$ex\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right)-\frac{d\left(a+cx^2\right)^{p+1}{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(a + c*x^2)^p)/x,x]
```

```
[Out] (e*x*(a + c*x^2)^p*Hypergeometric2F1[1/2, -p, 3/2, -((c*x^2)/a)])/(1 + (c*x
^2)/a)^p - (d*(a + c*x^2)^(1 + p)*Hypergeometric2F1[1, 1 + p, 2 + p, 1 + (c
*x^2)/a])/(2*a*(1 + p))
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 245

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[a^p*x*Hypergeometric2F
1[-p, 1/n, 1/n + 1, -((b*x^n)/a)], x] /; FreeQ[{a, b, n, p}, x] && !IGtQ[p
, 0] && !IntegerQ[1/n] && !ILtQ[Simplify[1/n + p], 0] && (IntegerQ[p] ||
GtQ[a, 0])
```

Rule 246

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^IntPart[p]*(a + b*x
^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(1 + (b*x^n)/a)^p, x], x]
 /; FreeQ[{a, b, n, p}, x] && !IGtQ[p, 0] && !IntegerQ[1/n] && !ILtQ[Sim
plify[1/n + p], 0] && !(IntegerQ[p] || GtQ[a, 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] && !IntegerQ[2*p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)\left(a+cx^2\right)^p}{x}\,dx &= d\int \frac{\left(a+cx^2\right)^p}{x}\,dx + e\int \left(a+cx^2\right)^p\,dx \\
&= \frac{1}{2}d\,\mathrm{Subst}\left(\int \frac{(a+cx)^p}{x}\,dx, x, x^2\right) + \left(e\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int \left(1+\frac{cx^2}{a}\right)^p\,dx \\
&= ex\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\,{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right) - \frac{d\left(a+cx^2\right)^{1+p}\,{}_2F_1\left(1,1+p;2+p;1\right.}{2a(1+p)}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 88, normalized size = 1.00

$$
ex\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(\frac{1}{2},-p;\frac{3}{2};-\frac{cx^2}{a}\right) - \frac{d\left(a+cx^2\right)^{p+1}\,{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(a + c*x^2)^p)/x,x]
```

```
[Out] (e*x*(a + c*x^2)^p*Hypergeometric2F1[1/2, -p, 3/2, -((c*x^2)/a)])/(1 + (c*x
^2)/a)^p - (d*(a + c*x^2)^(1 + p)*Hypergeometric2F1[1, 1 + p, 2 + p, 1 + (c
*x^2)/a])/(2*a*(1 + p))
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(\frac{(ex+d)\left(cx^2+a\right)^p}{x}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x,x, algorithm="fricas")
```

```
[Out] integral((e*x + d)*(c*x^2 + a)^p/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(ex+d)\left(cx^2+a\right)^p}{x}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x, x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$
\int \frac{(ex+d)\left(c\,x^2+a\right)^p}{x}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(c*x^2+a)^p/x,x)
```

```
[Out] int((e*x+d)*(c*x^2+a)^p/x,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)\left(cx^2+a\right)^p}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x,x, algorithm="maxima")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^p\,\left(d+e\,x\right)}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^p*(d + e*x))/x,x)
```

```
[Out] int(((a + c*x^2)^p*(d + e*x))/x, x)
```

sympy [C] time = 9.45, size = 65, normalized size = 0.74

$$a^p e x {}_2F_1\left(\left.\begin{matrix}\frac{1}{2}, -p\\ \frac{3}{2}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)-\frac{c^p d x^{2p}\Gamma\left(-p\right){}_2F_1\left(\left.\begin{matrix}-p, -p\\ 1-p\end{matrix}\right|\frac{ae^{i\pi}}{cx^2}\right)}{2\Gamma\left(1-p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x**2+a)**p/x,x)
```

```
[Out] a**p*e*x*hyper((1/2, -p), (3/2,), c*x**2*exp_polar(I*pi)/a) - c**p*d*x**(2*
p)*gamma(-p)*hyper((-p, -p), (1 - p,), a*exp_polar(I*pi)/(c*x**2))/(2*gamma
(1 - p))
```

3.508 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^2} \, dx$

Optimal. Leaf size=91

$$-\frac{d\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x}-\frac{e\left(a+cx^2\right)^{p+1}{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}$$

```
[Out] -d*(c*x^2+a)^p*hypergeom([-1/2, -p],[1/2],-c*x^2/a)/x/((c*x^2/a+1)^p)-1/2*e
*(c*x^2+a)^(1+p)*hypergeom([1, 1+p],[2+p],c*x^2/a+1)/a/(1+p)
```

Rubi [A] time = 0.05, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.278$, Rules used = {764, 365, 364, 266, 65}

$$-\frac{d\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x}-\frac{e\left(a+cx^2\right)^{p+1}{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(a + c*x^2)^p)/x^2,x]
```

```
[Out] -((d*(a + c*x^2)^p*Hypergeometric2F1[-1/2, -p, 1/2, -((c*x^2)/a)])/(x*(1 +
(c*x^2)/a)^p)) - (e*(a + c*x^2)^(1 + p)*Hypergeometric2F1[1, 1 + p, 2 + p,
1 + (c*x^2)/a])/(2*a*(1 + p))
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] &&  !IGtQ[p, 0]
 &&  !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] &&  !IntegerQ[2*p]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^2}\,dx &= d\int \frac{\left(a+cx^2\right)^p}{x^2}\,dx + e\int \frac{\left(a+cx^2\right)^p}{x}\,dx\\
&= \frac{1}{2}e\,\text{Subst}\left(\int \frac{(a+cx)^p}{x}\,dx, x, x^2\right) + \left(d\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int \frac{\left(1+\frac{cx^2}{a}\right)^p}{x^2}\,dx\\
&= -\frac{d\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x} - \frac{e\left(a+cx^2\right)^{1+p}\,{}_2F_1\left(1,1+p;2+\right.}{2a(1+p)}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 91, normalized size = 1.00

$$
-\frac{d\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x} - \frac{e\left(a+cx^2\right)^{p+1}\,{}_2F_1\left(1,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a(p+1)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(a + c*x^2)^p)/x^2,x]
```

```
[Out] -((d*(a + c*x^2)^p*Hypergeometric2F1[-1/2, -p, 1/2, -((c*x^2)/a)])/(x*(1 +
(c*x^2)/a)^p)) - (e*(a + c*x^2)^(1 + p)*Hypergeometric2F1[1, 1 + p, 2 + p,
1 + (c*x^2)/a])/(2*a*(1 + p))
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$
\text{integral}\left(\frac{(ex+d)\left(cx^2+a\right)^p}{x^2}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^2,x, algorithm="fricas")
```

```
[Out] integral((e*x + d)*(c*x^2 + a)^p/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int \frac{(ex+d)\left(cx^2+a\right)^p}{x^2}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^2,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x^2, x)
```

maple [F] time = 0.66, size = 0, normalized size = 0.00

$$
\int \frac{(ex+d)\left(c\,x^2+a\right)^p}{x^2}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(c*x^2+a)^p/x^2,x)
```

```
[Out] int((e*x+d)*(c*x^2+a)^p/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)\left(cx^2+a\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^2,x, algorithm="maxima")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^p\,\left(d+e\,x\right)}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^p*(d + e*x))/x^2,x)
```

```
[Out] int(((a + c*x^2)^p*(d + e*x))/x^2, x)
```

sympy [C] time = 9.89, size = 68, normalized size = 0.75

$$-\frac{a^p d\,{}_2F_1\left(\begin{matrix}-\frac{1}{2},-p\\ \frac{1}{2}\end{matrix}\middle|\frac{cx^2e^{i\pi}}{a}\right)}{x}-\frac{c^p e x^{2p}\Gamma\left(-p\right){}_2F_1\left(\begin{matrix}-p,-p\\ 1-p\end{matrix}\middle|\frac{ae^{i\pi}}{cx^2}\right)}{2\Gamma\left(1-p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x**2+a)**p/x**2,x)
```

```
[Out] -a**p*d*hyper((-1/2, -p), (1/2,), c*x**2*exp_polar(I*pi)/a)/x - c**p*e*x**(
2*p)*gamma(-p)*hyper((-p, -p), (1 - p,), a*exp_polar(I*pi)/(c*x**2))/(2*gam
ma(1 - p))
```

3.509 $\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^3}\,dx$

Optimal. Leaf size=92

$$\frac{cd\left(a+cx^2\right)^{p+1}\,{}_2F_1\left(2,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a^2(p+1)}-\frac{e\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x}$$

```
[Out] -e*(c*x^2+a)^p*hypergeom([-1/2, -p],[1/2],-c*x^2/a)/x/((c*x^2/a+1)^p)+1/2*c
*d*(c*x^2+a)^(1+p)*hypergeom([2, 1+p],[2+p],c*x^2/a+1)/a^2/(1+p)
```

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.278, Rules used = {764, 266, 65, 365, 364}

$$\frac{cd\left(a+cx^2\right)^{p+1}\,{}_2F_1\left(2,p+1;p+2;\frac{cx^2}{a}+1\right)}{2a^2(p+1)}-\frac{e\left(a+cx^2\right)^p\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(a + c*x^2)^p)/x^3,x]
```

```
[Out] -((e*(a + c*x^2)^p*Hypergeometric2F1[-1/2, -p, 1/2, -((c*x^2)/a)])/(x*(1 +
(c*x^2)/a)^p)) + (c*d*(a + c*x^2)^(1 + p)*Hypergeometric2F1[2, 1 + p, 2 + p
, 1 + (c*x^2)/a])/(2*a^2*(1 + p))
```

Rule 65

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((c + d*x
)^(n + 1)*Hypergeometric2F1[-m, n + 1, n + 2, 1 + (d*x)/c])/(d*(n + 1)*(-(d
/(b*c)))^m), x] /; FreeQ[{b, c, d, m, n}, x] && !IntegerQ[n] && (IntegerQ[
m] || GtQ[-(d/(b*c)), 0])
```

Rule 266

```
Int[(x_)^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[1/n, Subst[
Int[x^(Simplify[(m + 1)/n] - 1)*(a + b*x)^p, x], x, x^n], x] /; FreeQ[{a, b
, m, n, p}, x] && IntegerQ[Simplify[(m + 1)/n]]
```

Rule 364

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(a^
p*(c*x)^(m + 1)*Hypergeometric2F1[-p, (m + 1)/n, (m + 1)/n + 1, -((b*x^n)/a
)])/(c*(m + 1)), x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0] && (ILt
Q[p, 0] || GtQ[a, 0])
```

Rule 365

```
Int[((c_.)*(x_))^(m_.)*((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Dist[(a^
IntPart[p]*(a + b*x^n)^FracPart[p])/(1 + (b*x^n)/a)^FracPart[p], Int[(c*x)^
m*(1 + (b*x^n)/a)^p, x], x] /; FreeQ[{a, b, c, m, n, p}, x] && !IGtQ[p, 0]
 && !(ILtQ[p, 0] || GtQ[a, 0])
```

Rule 764

```
Int[(x_)^(m_.)*((f_) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :
> Dist[f, Int[x^m*(a + c*x^2)^p, x], x] + Dist[g, Int[x^(m + 1)*(a + c*x^2)
^p, x], x] /; FreeQ[{a, c, f, g, p}, x] && IntegerQ[m] && !IntegerQ[2*p]
```

Rubi steps

$$\int \frac{(d+ex)\left(a+cx^2\right)^p}{x^3}\,dx = d\int \frac{\left(a+cx^2\right)^p}{x^3}\,dx + e\int \frac{\left(a+cx^2\right)^p}{x^2}\,dx$$

$$= \frac{1}{2}d\,\mathrm{Subst}\left(\int \frac{(a+cx)^p}{x^2}\,dx, x, x^2\right) + \left(e\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\right)\int \frac{\left(1+\frac{cx^2}{a}\right)^p}{x^2}\,dx$$

$$= -\frac{e\left(a+cx^2\right)^p\left(1+\frac{cx^2}{a}\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x} + \frac{cd\left(a+cx^2\right)^{1+p}\,{}_2F_1\left(2,1+p;2+p;\right.}{2a^2(1+p)}$$

Mathematica [**A**] time = 0.04, size = 89, normalized size = 0.97

$$\frac{1}{2}\left(a+cx^2\right)^p\left(\frac{cd\left(a+cx^2\right)\,{}_2F_1\left(2,p+1;p+2;\frac{cx^2}{a}+1\right)}{a^2(p+1)} - \frac{2e\left(\frac{cx^2}{a}+1\right)^{-p}\,{}_2F_1\left(-\frac{1}{2},-p;\frac{1}{2};-\frac{cx^2}{a}\right)}{x}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(a + c*x^2)^p)/x^3,x]
```

```
[Out] ((a + c*x^2)^p*((-2*e*Hypergeometric2F1[-1/2, -p, 1/2, -((c*x^2)/a)])/(x*(1
 + (c*x^2)/a)^p) + (c*d*(a + c*x^2)*Hypergeometric2F1[2, 1 + p, 2 + p, 1 +
(c*x^2)/a])/(a^2*(1 + p))))/2
```

fricas [**F**] time = 0.85, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(ex+d)\left(cx^2+a\right)^p}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^3,x, algorithm="fricas")
```

```
[Out] integral((e*x + d)*(c*x^2 + a)^p/x^3, x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)\left(cx^2+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^3,x, algorithm="giac")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x^3, x)
```

maple [**F**] time = 0.62, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)\left(c\,x^2+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(c*x^2+a)^p/x^3,x)
```

```
[Out] int((e*x+d)*(c*x^2+a)^p/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)\left(cx^2+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x^2+a)^p/x^3,x, algorithm="maxima")
```

```
[Out] integrate((e*x + d)*(c*x^2 + a)^p/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(c\,x^2+a\right)^p\,\left(d+e\,x\right)}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^p*(d + e*x))/x^3,x)
```

```
[Out] int(((a + c*x^2)^p*(d + e*x))/x^3, x)
```

sympy [C] time = 13.60, size = 71, normalized size = 0.77

$$-\frac{a^p e\,{}_2F_1\left(\left.\begin{matrix}-\frac{1}{2},-p\\ \frac{1}{2}\end{matrix}\right|\frac{cx^2e^{i\pi}}{a}\right)}{x}-\frac{c^p d x^{2p}\Gamma\left(1-p\right){}_2F_1\left(\left.\begin{matrix}-p,1-p\\ 2-p\end{matrix}\right|\frac{ae^{i\pi}}{cx^2}\right)}{2x^2\Gamma\left(2-p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(c*x**2+a)**p/x**3,x)
```

```
[Out] -a**p*e*hyper((-1/2, -p), (1/2,), c*x**2*exp_polar(I*pi)/a)/x - c**p*d*x**(
2*p)*gamma(1 - p)*hyper((-p, 1 - p), (2 - p,), a*exp_polar(I*pi)/(c*x**2))/
(2*x**2*gamma(2 - p))
```

3.510 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

```
[Out] 1/5*a^2*A*x^5+1/6*a*(2*A*b+B*a)*x^6+1/7*b*(A*b+2*B*a)*x^7+1/8*b^2*B*x^8
```

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^5)/5 + (a*(2*A*b + a*B)*x^6)/6 + (b*(A*b + 2*a*B)*x^7)/7 + (b^2*B*
x^8)/8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x^4(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^4+a(2Ab+aB)x^5+b(Ab+2aB)x^6+b^2Bx^7\right)\,dx\\&=\frac{1}{5}a^2Ax^5+\frac{1}{6}a(2Ab+aB)x^6+\frac{1}{7}b(Ab+2aB)x^7+\frac{1}{8}b^2Bx^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{5}a^2Ax^5+\frac{1}{7}bx^7(2aB+Ab)+\frac{1}{6}ax^6(aB+2Ab)+\frac{1}{8}b^2Bx^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^5)/5 + (a*(2*A*b + a*B)*x^6)/6 + (b*(A*b + 2*a*B)*x^7)/7 + (b^2*B*
x^8)/8
```

fricas [**A**] time = 0.82, size = 53, normalized size = 0.96

$$\frac{1}{8}x^8b^2B+\frac{2}{7}x^7baB+\frac{1}{7}x^7b^2A+\frac{1}{6}x^6a^2B+\frac{1}{3}x^6baA+\frac{1}{5}x^5a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^2*B + 2/7*x^7*b*a*B + 1/7*x^7*b^2*A + 1/6*x^6*a^2*B + 1/3*x^6*b*a
*A + 1/5*x^5*a^2*A
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{8}\,Bb^2x^8+\frac{2}{7}\,Babx^7+\frac{1}{7}\,Ab^2x^7+\frac{1}{6}\,Ba^2x^6+\frac{1}{3}\,Aabx^6+\frac{1}{5}\,Aa^2x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^2*x^8 + 2/7*B*a*b*x^7 + 1/7*A*b^2*x^7 + 1/6*B*a^2*x^6 + 1/3*A*a*b*x
^6 + 1/5*A*a^2*x^5
```

maple [**A**] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^8}{8}+\frac{A\,a^2x^5}{5}+\frac{\left(A\,b^2+2abB\right)x^7}{7}+\frac{\left(2Aab+a^2B\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*B*b^2*x^8+1/7*(A*b^2+2*B*a*b)*x^7+1/6*(2*A*a*b+B*a^2)*x^6+1/5*a^2*A*x^5
```

maxima [**A**] time = 0.58, size = 51, normalized size = 0.93

$$\frac{1}{8}\,Bb^2x^8+\frac{1}{5}\,Aa^2x^5+\frac{1}{7}\left(2\,Bab+Ab^2\right)x^7+\frac{1}{6}\left(Ba^2+2\,Aab\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*B*b^2*x^8 + 1/5*A*a^2*x^5 + 1/7*(2*B*a*b + A*b^2)*x^7 + 1/6*(B*a^2 + 2*
A*a*b)*x^6
```

mupad [**B**] time = 1.06, size = 51, normalized size = 0.93

$$x^6\left(\frac{B\,a^2}{6}+\frac{A\,b\,a}{3}\right)+x^7\left(\frac{A\,b^2}{7}+\frac{2\,B\,a\,b}{7}\right)+\frac{A\,a^2\,x^5}{5}+\frac{B\,b^2\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^6*((B*a^2)/6 + (A*a*b)/3) + x^7*((A*b^2)/7 + (2*B*a*b)/7) + (A*a^2*x^5)/5
 + (B*b^2*x^8)/8
```

sympy [**A**] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^5}{5}+\frac{Bb^2x^8}{8}+x^7\left(\frac{Ab^2}{7}+\frac{2Bab}{7}\right)+x^6\left(\frac{Aab}{3}+\frac{Ba^2}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**5/5 + B*b**2*x**8/8 + x**7*(A*b**2/7 + 2*B*a*b/7) + x**6*(A*a*b/3
 + B*a**2/6)
```

3.511 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

```
[Out] 1/4*a^2*A*x^4+1/5*a*(2*A*b+B*a)*x^5+1/6*b*(A*b+2*B*a)*x^6+1/7*b^2*B*x^7
```

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^4)/4 + (a*(2*A*b + a*B)*x^5)/5 + (b*(A*b + 2*a*B)*x^6)/6 + (b^2*B*
x^7)/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x^3(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^3+a(2Ab+aB)x^4+b(Ab+2aB)x^5+b^2Bx^6\right)\,dx\\&=\frac{1}{4}a^2Ax^4+\frac{1}{5}a(2Ab+aB)x^5+\frac{1}{6}b(Ab+2aB)x^6+\frac{1}{7}b^2Bx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 55, normalized size = 1.00

$$\frac{1}{4}a^2Ax^4+\frac{1}{6}bx^6(2aB+Ab)+\frac{1}{5}ax^5(aB+2Ab)+\frac{1}{7}b^2Bx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^4)/4 + (a*(2*A*b + a*B)*x^5)/5 + (b*(A*b + 2*a*B)*x^6)/6 + (b^2*B*
x^7)/7
```

fricas [A] time = 0.49, size = 53, normalized size = 0.96

$$\frac{1}{7}x^7b^2B+\frac{1}{3}x^6baB+\frac{1}{6}x^6b^2A+\frac{1}{5}x^5a^2B+\frac{2}{5}x^5baA+\frac{1}{4}x^4a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^2*B + 1/3*x^6*b*a*B + 1/6*x^6*b^2*A + 1/5*x^5*a^2*B + 2/5*x^5*b*a
*A + 1/4*x^4*a^2*A
```

giac [A] time = 0.21, size = 53, normalized size = 0.96

$$\frac{1}{7}Bb^2x^7+\frac{1}{3}Babx^6+\frac{1}{6}Ab^2x^6+\frac{1}{5}Ba^2x^5+\frac{2}{5}Aabx^5+\frac{1}{4}Aa^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^2*x^7 + 1/3*B*a*b*x^6 + 1/6*A*b^2*x^6 + 1/5*B*a^2*x^5 + 2/5*A*a*b*x
^5 + 1/4*A*a^2*x^4
```

maple [A] time = 0.05, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^7}{7}+\frac{A\,a^2x^4}{4}+\frac{\left(A\,b^2+2abB\right)x^6}{6}+\frac{\left(2Aab+a^2B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*B*b^2*x^7+1/6*(A*b^2+2*B*a*b)*x^6+1/5*(2*A*a*b+B*a^2)*x^5+1/4*A*a^2*x^4
```

maxima [A] time = 0.56, size = 51, normalized size = 0.93

$$\frac{1}{7}Bb^2x^7+\frac{1}{4}Aa^2x^4+\frac{1}{6}\left(2\,Bab+Ab^2\right)x^6+\frac{1}{5}\left(Ba^2+2\,Aab\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*B*b^2*x^7 + 1/4*A*a^2*x^4 + 1/6*(2*B*a*b + A*b^2)*x^6 + 1/5*(B*a^2 + 2*
A*a*b)*x^5
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^5\left(\frac{B\,a^2}{5}+\frac{2\,A\,b\,a}{5}\right)+x^6\left(\frac{A\,b^2}{6}+\frac{B\,a\,b}{3}\right)+\frac{A\,a^2\,x^4}{4}+\frac{B\,b^2\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*((B*a^2)/5 + (2*A*a*b)/5) + x^6*((A*b^2)/6 + (B*a*b)/3) + (A*a^2*x^4)/4
 + (B*b^2*x^7)/7
```

sympy [A] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^4}{4}+\frac{Bb^2x^7}{7}+x^6\left(\frac{Ab^2}{6}+\frac{Bab}{3}\right)+x^5\left(\frac{2Aab}{5}+\frac{Ba^2}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**4/4 + B*b**2*x**7/7 + x**6*(A*b**2/6 + B*a*b/3) + x**5*(2*A*a*b/5
 + B*a**2/5)
```

3.512 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}a^2Ax^3+\frac{1}{5}bx^5(2aB+Ab)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{6}b^2Bx^6$$

```
[Out] 1/3*a^2*A*x^3+1/4*a*(2*A*b+B*a)*x^4+1/5*b*(A*b+2*B*a)*x^5+1/6*b^2*B*x^6
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$\frac{1}{3}a^2Ax^3+\frac{1}{5}bx^5(2aB+Ab)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{6}b^2Bx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + (b*(A*b + 2*a*B)*x^5)/5 + (b^2*B*
x^6)/6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x^2(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax^2+a(2Ab+aB)x^3+b(Ab+2aB)x^4+b^2Bx^5\right)\,dx\\ &= \frac{1}{3}a^2Ax^3+\frac{1}{4}a(2Ab+aB)x^4+\frac{1}{5}b(Ab+2aB)x^5+\frac{1}{6}b^2Bx^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.91

$$\frac{1}{60}x^3\left(5a^2(4A+3Bx)+6abx(5A+4Bx)+2b^2x^2(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^3*(5*a^2*(4*A + 3*B*x) + 6*a*b*x*(5*A + 4*B*x) + 2*b^2*x^2*(6*A + 5*B*x)
))/60
```

fricas [A] time = 0.65, size = 53, normalized size = 0.96

$$\frac{1}{6}x^{6}b^{2}B+\frac{2}{5}x^{5}baB+\frac{1}{5}x^{5}b^{2}A+\frac{1}{4}x^{4}a^{2}B+\frac{1}{2}x^{4}baA+\frac{1}{3}x^{3}a^{2}A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^2*B + 2/5*x^5*b*a*B + 1/5*x^5*b^2*A + 1/4*x^4*a^2*B + 1/2*x^4*b*a
*A + 1/3*x^3*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{6}Bb^{2}x^{6}+\frac{2}{5}Babx^{5}+\frac{1}{5}Ab^{2}x^{5}+\frac{1}{4}Ba^{2}x^{4}+\frac{1}{2}Aabx^{4}+\frac{1}{3}Aa^{2}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^2*x^6 + 2/5*B*a*b*x^5 + 1/5*A*b^2*x^5 + 1/4*B*a^2*x^4 + 1/2*A*a*b*x
^4 + 1/3*A*a^2*x^3
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{Bb^{2}x^{6}}{6}+\frac{Aa^{2}x^{3}}{3}+\frac{\left(Ab^{2}+2abB\right)x^{5}}{5}+\frac{\left(2Aab+a^{2}B\right)x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*B*b^2*x^6+1/5*(A*b^2+2*B*a*b)*x^5+1/4*(2*A*a*b+B*a^2)*x^4+1/3*A*a^2*x^3
```

maxima [A] time = 0.56, size = 51, normalized size = 0.93

$$\frac{1}{6}Bb^{2}x^{6}+\frac{1}{3}Aa^{2}x^{3}+\frac{1}{5}\left(2\,Bab+Ab^{2}\right)x^{5}+\frac{1}{4}\left(Ba^{2}+2\,Aab\right)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*B*b^2*x^6 + 1/3*A*a^2*x^3 + 1/5*(2*B*a*b + A*b^2)*x^5 + 1/4*(B*a^2 + 2*
A*a*b)*x^4
```

mupad [B] time = 0.05, size = 51, normalized size = 0.93

$$x^{4}\left(\frac{B\,a^{2}}{4}+\frac{A\,b\,a}{2}\right)+x^{5}\left(\frac{A\,b^{2}}{5}+\frac{2\,B\,a\,b}{5}\right)+\frac{A\,a^{2}\,x^{3}}{3}+\frac{B\,b^{2}\,x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((B*a^2)/4 + (A*a*b)/2) + x^5*((A*b^2)/5 + (2*B*a*b)/5) + (A*a^2*x^3)/3
 + (B*b^2*x^6)/6
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Aa^{2}x^{3}}{3}+\frac{Bb^{2}x^{6}}{6}+x^{5}\left(\frac{Ab^{2}}{5}+\frac{2Bab}{5}\right)+x^{4}\left(\frac{Aab}{2}+\frac{Ba^{2}}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**3/3 + B*b**2*x**6/6 + x**5*(A*b**2/5 + 2*B*a*b/5) + x**4*(A*a*b/2
 + B*a**2/4)
```

3.513 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{1}{2}a^2Ax^2+\frac{1}{4}bx^4(2aB+Ab)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{5}b^2Bx^5$$

```
[Out] 1/2*a^2*A*x^2+1/3*a*(2*A*b+B*a)*x^3+1/4*b*(A*b+2*B*a)*x^4+1/5*b^2*B*x^5
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = $\{27, 76\}$

$$\frac{1}{2}a^2Ax^2+\frac{1}{4}bx^4(2aB+Ab)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{5}b^2Bx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + (b*(A*b + 2*a*B)*x^4)/4 + (b^2*B*
x^5)/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int x(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2Ax+a(2Ab+aB)x^2+b(Ab+2aB)x^3+b^2Bx^4\right)\,dx\\ &= \frac{1}{2}a^2Ax^2+\frac{1}{3}a(2Ab+aB)x^3+\frac{1}{4}b(Ab+2aB)x^4+\frac{1}{5}b^2Bx^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 50, normalized size = 0.91

$$\frac{1}{60}x^2\left(10a^2(3A+2Bx)+10abx(4A+3Bx)+3b^2x^2(5A+4Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^2*(10*a^2*(3*A + 2*B*x) + 10*a*b*x*(4*A + 3*B*x) + 3*b^2*x^2*(5*A + 4*B*
x)))/60
```

fricas [A] time = 0.72, size = 53, normalized size = 0.96

$$\frac{1}{5}x^5b^2B+\frac{1}{2}x^4baB+\frac{1}{4}x^4b^2A+\frac{1}{3}x^3a^2B+\frac{2}{3}x^3baA+\frac{1}{2}x^2a^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b^2*B + 1/2*x^4*b*a*B + 1/4*x^4*b^2*A + 1/3*x^3*a^2*B + 2/3*x^3*b*a
*A + 1/2*x^2*a^2*A
```

giac [A] time = 0.15, size = 53, normalized size = 0.96

$$\frac{1}{5}\,Bb^2x^5+\frac{1}{2}\,Babx^4+\frac{1}{4}\,Ab^2x^4+\frac{1}{3}\,Ba^2x^3+\frac{2}{3}\,Aabx^3+\frac{1}{2}\,Aa^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^2*x^5 + 1/2*B*a*b*x^4 + 1/4*A*b^2*x^4 + 1/3*B*a^2*x^3 + 2/3*A*a*b*x
^3 + 1/2*A*a^2*x^2
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,b^2x^5}{5}+\frac{A\,a^2x^2}{2}+\frac{\left(A\,b^2+2abB\right)x^4}{4}+\frac{\left(2Aab+a^2B\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*b^2*x^5+1/4*(A*b^2+2*B*a*b)*x^4+1/3*(2*A*a*b+B*a^2)*x^3+1/2*A*a^2*x^2
```

maxima [A] time = 0.52, size = 51, normalized size = 0.93

$$\frac{1}{5}\,Bb^2x^5+\frac{1}{2}\,Aa^2x^2+\frac{1}{4}\,\left(2\,Bab+Ab^2\right)x^4+\frac{1}{3}\,\left(Ba^2+2\,Aab\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*B*b^2*x^5 + 1/2*A*a^2*x^2 + 1/4*(2*B*a*b + A*b^2)*x^4 + 1/3*(B*a^2 + 2*
A*a*b)*x^3
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$x^3\left(\frac{B\,a^2}{3}+\frac{2\,A\,b\,a}{3}\right)+x^4\left(\frac{A\,b^2}{4}+\frac{B\,a\,b}{2}\right)+\frac{A\,a^2\,x^2}{2}+\frac{B\,b^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((B*a^2)/3 + (2*A*a*b)/3) + x^4*((A*b^2)/4 + (B*a*b)/2) + (A*a^2*x^2)/2
 + (B*b^2*x^5)/5
```

sympy [A] time = 0.07, size = 54, normalized size = 0.98

$$\frac{Aa^2x^2}{2}+\frac{Bb^2x^5}{5}+x^4\left(\frac{Ab^2}{4}+\frac{Bab}{2}\right)+x^3\left(\frac{2Aab}{3}+\frac{Ba^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x**2/2 + B*b**2*x**5/5 + x**4*(A*b**2/4 + B*a*b/2) + x**3*(2*A*a*b/3
 + B*a**2/3)
```

3.514 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

```
[Out] 1/3*(A*b-B*a)*(b*x+a)^3/b^2+1/4*B*(b*x+a)^4/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {27, 43}

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3)/(3*b^2) + (B*(a + b*x)^4)/(4*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int (a+bx)^2(A+Bx)\,dx\\&=\int \left(\frac{(Ab-aB)(a+bx)^2}{b}+\frac{B(a+bx)^3}{b}\right)dx\\&=\frac{(Ab-aB)(a+bx)^3}{3b^2}+\frac{B(a+bx)^4}{4b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 46, normalized size = 1.21

$$\frac{1}{12}x\left(6a^2(2A+Bx)+4abx(3A+2Bx)+b^2x^2(4A+3Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x*(6*a^2*(2*A + B*x) + 4*a*b*x*(3*A + 2*B*x) + b^2*x^2*(4*A + 3*B*x)))/12
```

fricas [A] time = 0.70, size = 49, normalized size = 1.29

$$\frac{1}{4}x^4b^2B+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b^2*B + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 1/2*x^2*a^2*B + x^2*b*a*A +
 x*a^2*A
```

giac [A] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}\,Bb^2x^4+\frac{2}{3}\,Babx^3+\frac{1}{3}\,Ab^2x^3+\frac{1}{2}\,Ba^2x^2+Aabx^2+Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/4*B*b^2*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 1/2*B*a^2*x^2 + A*a*b*x^2 +
 A*a^2*x
```

maple [A] time = 0.04, size = 49, normalized size = 1.29

$$\frac{B\,b^2x^4}{4}+A\,a^2x+\frac{\left(A\,b^2+2abB\right)x^3}{3}+\frac{\left(2Aab+a^2B\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*B*b^2*x^4+1/3*(A*b^2+2*B*a*b)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.47, size = 48, normalized size = 1.26

$$\frac{1}{4}\,Bb^2x^4+Aa^2x+\frac{1}{3}\,\left(2\,Bab+Ab^2\right)x^3+\frac{1}{2}\,\left(Ba^2+2\,Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*B*b^2*x^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2)*x^3 + 1/2*(B*a^2 + 2*A*a*b)
*x^2
```

mupad [B] time = 0.04, size = 47, normalized size = 1.24

$$x^2\,\left(\frac{B\,a^2}{2}+A\,b\,a\right)+x^3\,\left(\frac{A\,b^2}{3}+\frac{2\,B\,a\,b}{3}\right)+\frac{B\,b^2\,x^4}{4}+A\,a^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^3*((A*b^2)/3 + (2*B*a*b)/3) + (B*b^2*x^4)/4 + A
*a^2*x
```

sympy [A] time = 0.07, size = 49, normalized size = 1.29

$$Aa^2x+\frac{Bb^2x^4}{4}+x^3\left(\frac{Ab^2}{3}+\frac{2Bab}{3}\right)+x^2\left(Aab+\frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x + B*b**2*x**4/4 + x**3*(A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b + B*a*
*2/2)
```

3.515 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x}\,dx$

Optimal. Leaf size=40

$$a^2A\log(x)+2aAbx+\frac{B(a+bx)^3}{3b}+\frac{1}{2}Ab^2x^2$$

```
[Out] 2*a*A*b*x+1/2*A*b^2*x^2+1/3*B*(b*x+a)^3/b+a^2*A*ln(x)
```

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = $\{27, 80, 43\}$

$$a^2A\log(x)+2aAbx+\frac{B(a+bx)^3}{3b}+\frac{1}{2}Ab^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x,x]
```

```
[Out] 2*a*A*b*x + (A*b^2*x^2)/2 + (B*(a + b*x)^3)/(3*b) + a^2*A*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x}\,dx\\ &= \frac{B(a+bx)^3}{3b}+A\int \frac{(a+bx)^2}{x}\,dx\\ &= \frac{B(a+bx)^3}{3b}+A\int \left(2ab+\frac{a^2}{x}+b^2x\right)dx\\ &= 2aAbx+\frac{1}{2}Ab^2x^2+\frac{B(a+bx)^3}{3b}+a^2A\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 1.08

$$a^2A\log(x)+a^2Bx+abx(2A+Bx)+\frac{1}{6}b^2x^2(3A+2Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x,x]
```

```
[Out] a^2*B*x + a*b*x*(2*A + B*x) + (b^2*x^2*(3*A + 2*B*x))/6 + a^2*A*Log[x]
```

fricas [A] time = 1.05, size = 46, normalized size = 1.15

$$\frac{1}{3}\,Bb^2x^3 + Aa^2\log(x) + \frac{1}{2}\left(2\,Bab + Ab^2\right)x^2 + \left(Ba^2 + 2\,Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*b^2*x^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2)*x^2 + (B*a^2 + 2*A*a*b
)*x
```

giac [A] time = 0.15, size = 46, normalized size = 1.15

$$\frac{1}{3}\,Bb^2x^3 + Babx^2 + \frac{1}{2}\,Ab^2x^2 + Ba^2x + 2\,Aabx + Aa^2\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*b^2*x^3 + B*a*b*x^2 + 1/2*A*b^2*x^2 + B*a^2*x + 2*A*a*b*x + A*a^2*log
(abs(x))
```

maple [A] time = 0.06, size = 46, normalized size = 1.15

$$\frac{B\,b^2x^3}{3} + \frac{A\,b^2x^2}{2} + Bab\,x^2 + A\,a^2\ln(x) + 2Aabx + B\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x)
```

```
[Out] 1/3*B*b^2*x^3+1/2*A*b^2*x^2+B*a*b*x^2+2*a*A*b*x+B*a^2*x+A*a^2*ln(x)
```

maxima [A] time = 0.60, size = 46, normalized size = 1.15

$$\frac{1}{3}\,Bb^2x^3 + Aa^2\log(x) + \frac{1}{2}\left(2\,Bab + Ab^2\right)x^2 + \left(Ba^2 + 2\,Aab\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^2*x^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2)*x^2 + (B*a^2 + 2*A*a*b
)*x
```

mupad [B] time = 0.04, size = 45, normalized size = 1.12

$$x^2\left(\frac{A\,b^2}{2} + B\,a\,b\right) + x\,\left(B\,a^2 + 2\,A\,b\,a\right) + \frac{B\,b^2\,x^3}{3} + A\,a^2\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x,x)
```

```
[Out] x^2*((A*b^2)/2 + B*a*b) + x*(B*a^2 + 2*A*a*b) + (B*b^2*x^3)/3 + A*a^2*log(x
)
```

sympy [A] time = 0.14, size = 46, normalized size = 1.15

$$Aa^2\log(x) + \frac{Bb^2x^3}{3} + x^2\left(\frac{Ab^2}{2} + Bab\right) + x\left(2Aab + Ba^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x,x)
```

```
[Out] A*a**2*log(x) + B*b**2*x**3/3 + x**2*(A*b**2/2 + B*a*b) + x*(2*A*a*b + B*a*
*2)
```

3.516 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2}\,dx$

Optimal. Leaf size=44

$$-\frac{a^2A}{x}+bx(2aB+Ab)+a\log(x)(aB+2Ab)+\frac{1}{2}b^2Bx^2$$

```
[Out] -a^2*A/x+b*(A*b+2*B*a)*x+1/2*b^2*B*x^2+a*(2*A*b+B*a)*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$-\frac{a^2A}{x}+bx(2aB+Ab)+a\log(x)(aB+2Ab)+\frac{1}{2}b^2Bx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2,x]
```

```
[Out] -((a^2*A)/x) + b*(A*b + 2*a*B)*x + (b^2*B*x^2)/2 + a*(2*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^2}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^2}\,dx\\ &= \int \left(b(Ab+2aB)+\frac{a^2A}{x^2}+\frac{a(2Ab+aB)}{x}+b^2Bx\right)dx\\ &= -\frac{a^2A}{x}+b(Ab+2aB)x+\frac{1}{2}b^2Bx^2+a(2Ab+aB)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.98

$$-\frac{a^2A}{x}+a\log(x)(aB+2Ab)+2abBx+\frac{1}{2}b^2x(2A+Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^2,x]
```

```
[Out] -((a^2*A)/x) + 2*a*b*B*x + (b^2*x*(2*A + B*x))/2 + a*(2*A*b + a*B)*Log[x]
```

fricas [**A**] time = 0.95, size = 52, normalized size = 1.18

$$\frac{Bb^2x^3 - 2\,Aa^2 + 2\left(2\,Bab + Ab^2\right)x^2 + 2\left(Ba^2 + 2\,Aab\right)x\log(x)}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*x^3 - 2*A*a^2 + 2*(2*B*a*b + A*b^2)*x^2 + 2*(B*a^2 + 2*A*a*b)*x*
log(x))/x
```

giac [**A**] time = 0.15, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bb^2x^2 + 2\,Babx + Ab^2x - \frac{Aa^2}{x} + \left(Ba^2 + 2\,Aab\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="giac")
```

```
[Out] 1/2*B*b^2*x^2 + 2*B*a*b*x + A*b^2*x - A*a^2/x + (B*a^2 + 2*A*a*b)*log(abs(x
))
```

maple [**A**] time = 0.06, size = 46, normalized size = 1.05

$$\frac{B\,b^2x^2}{2} + 2Aab\ln(x) + A\,b^2x + B\,a^2\ln(x) + 2Babx - \frac{A\,a^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x)
```

```
[Out] 1/2*B*b^2*x^2+A*b^2*x+2*a*b*B*x-A*a^2/x+2*A*ln(x)*a*b+B*a^2*ln(x)
```

maxima [**A**] time = 0.60, size = 46, normalized size = 1.05

$$\frac{1}{2}\,Bb^2x^2 - \frac{Aa^2}{x} + \left(2\,Bab + Ab^2\right)x + \left(Ba^2 + 2\,Aab\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*b^2*x^2 - A*a^2/x + (2*B*a*b + A*b^2)*x + (B*a^2 + 2*A*a*b)*log(x)
```

mupad [**B**] time = 0.04, size = 46, normalized size = 1.05

$$\ln(x)\,\left(B\,a^2 + 2\,A\,b\,a\right) + x\,\left(A\,b^2 + 2\,B\,a\,b\right) - \frac{A\,a^2}{x} + \frac{B\,b^2\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^2,x)
```

```
[Out] log(x)*(B*a^2 + 2*A*a*b) + x*(A*b^2 + 2*B*a*b) - (A*a^2)/x + (B*b^2*x^2)/2
```

sympy [**A**] time = 0.18, size = 42, normalized size = 0.95

$$-\frac{Aa^2}{x} + \frac{Bb^2x^2}{2} + a\left(2Ab + Ba\right)\log\left(x\right) + x\left(Ab^2 + 2Bab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**2,x)
```

```
[Out] -A*a**2/x + B*b**2*x**2/2 + a*(2*A*b + B*a)*log(x) + x*(A*b**2 + 2*B*a*b)
```

3.517 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx$

Optimal. Leaf size=44

$$-\frac{a^2A}{2x^2}-\frac{a(aB+2Ab)}{x}+b\log(x)(2aB+Ab)+b^2Bx$$

```
[Out] -1/2*a^2*A/x^2-a*(2*A*b+B*a)/x+b^2*B*x+b*(A*b+2*B*a)*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 76\}$

$$-\frac{a^2A}{2x^2}-\frac{a(aB+2Ab)}{x}+b\log(x)(2aB+Ab)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3,x]
```

```
[Out] -(a^2*A)/(2*x^2) - (a*(2*A*b + a*B))/x + b^2*B*x + b*(A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^3}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^3}\,dx\\ &= \int \left(b^2B+\frac{a^2A}{x^3}+\frac{a(2Ab+aB)}{x^2}+\frac{b(Ab+2aB)}{x}\right)dx\\ &= -\frac{a^2A}{2x^2}-\frac{a(2Ab+aB)}{x}+b^2Bx+b(Ab+2aB)\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 0.98

$$-\frac{a^2(A+2Bx)}{2x^2}+b\log(x)(2aB+Ab)-\frac{2aAb}{x}+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^3,x]
```

```
[Out] (-2*a*A*b)/x + b^2*B*x - (a^2*(A + 2*B*x))/(2*x^2) + b*(A*b + 2*a*B)*Log[x]
```

fricas [A] time = 0.97, size = 53, normalized size = 1.20

$$\frac{2\,Bb^{2}x^{3}+2\left(2\,Bab+Ab^{2}\right)x^{2}\log(x)-Aa^{2}-2\left(Ba^{2}+2\,Aab\right)x}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^2*x^3 + 2*(2*B*a*b + A*b^2)*x^2*log(x) - A*a^2 - 2*(B*a^2 + 2*A*
a*b)*x)/x^2
```

giac [A] time = 0.15, size = 47, normalized size = 1.07

$$Bb^{2}x+\left(2\,Bab+Ab^{2}\right)\log\left(|x|\right)-\frac{Aa^{2}+2\left(Ba^{2}+2\,Aab\right)x}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="giac")
```

```
[Out] B*b^2*x + (2*B*a*b + A*b^2)*log(abs(x)) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*
x)/x^2
```

maple [A] time = 0.05, size = 48, normalized size = 1.09

$$A\,b^{2}\ln(x)+2Bab\ln(x)+B\,b^{2}x-\frac{2Aab}{x}-\frac{B\,a^{2}}{x}-\frac{A\,a^{2}}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x)
```

```
[Out] B*b^2*x-1/2*A*a^2/x^2-2*a/x*A*b-B*a^2/x+A*b^2*ln(x)+2*B*ln(x)*a*b
```

maxima [A] time = 0.56, size = 46, normalized size = 1.05

$$Bb^{2}x+\left(2\,Bab+Ab^{2}\right)\log(x)-\frac{Aa^{2}+2\left(Ba^{2}+2\,Aab\right)x}{2\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^3,x, algorithm="maxima")
```

```
[Out] B*b^2*x + (2*B*a*b + A*b^2)*log(x) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*x)/x^
2
```

mupad [B] time = 1.07, size = 46, normalized size = 1.05

$$\ln(x)\,\left(A\,b^{2}+2\,B\,a\,b\right)-\frac{\frac{A\,a^{2}}{2}+x\,\left(B\,a^{2}+2\,A\,b\,a\right)}{x^{2}}+B\,b^{2}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^3,x)
```

```
[Out] log(x)*(A*b^2 + 2*B*a*b) - ((A*a^2)/2 + x*(B*a^2 + 2*A*a*b))/x^2 + B*b^2*x
```

sympy [A] time = 0.33, size = 46, normalized size = 1.05

$$Bb^{2}x+b\left(Ab+2Ba\right)\log\left(x\right)+\frac{-Aa^{2}+x\left(-4Aab-2Ba^{2}\right)}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**3,x)
```

```
[Out] B*b**2*x + b*(A*b + 2*B*a)*log(x) + (-A*a**2 + x*(-4*A*a*b - 2*B*a**2))/(2*
x**2)
```

3.518 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4} \, dx$

Optimal. Leaf size=49

$$-\frac{a^2A}{3x^3}-\frac{a(aB+2Ab)}{2x^2}-\frac{b(2aB+Ab)}{x}+b^2B\log(x)$$

```
[Out] -1/3*a^2*A/x^3-1/2*a*(2*A*b+B*a)/x^2-b*(A*b+2*B*a)/x+b^2*B*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{3x^3}-\frac{a(aB+2Ab)}{2x^2}-\frac{b(2aB+Ab)}{x}+b^2B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4,x]
```

```
[Out] -(a^2*A)/(3*x^3) - (a*(2*A*b + a*B))/(2*x^2) - (b*(A*b + 2*a*B))/x + b^2*B*
Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^4} \, dx &= \int \frac{(a+bx)^2(A+Bx)}{x^4} \, dx\\
&= \int \left(\frac{a^2A}{x^4}+\frac{a(2Ab+aB)}{x^3}+\frac{b(Ab+2aB)}{x^2}+\frac{b^2B}{x}\right) \, dx\\
&= -\frac{a^2A}{3x^3}-\frac{a(2Ab+aB)}{2x^2}-\frac{b(Ab+2aB)}{x}+b^2B\log(x)
\end{aligned}$$

Mathematica [A] time = 0.03, size = 48, normalized size = 0.98

$$b^2B\log(x)-\frac{a^2(2A+3Bx)+6abx(A+2Bx)+6Ab^2x^2}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^4,x]
```

```
[Out] -1/6*(6*A*b^2*x^2 + 6*a*b*x*(A + 2*B*x) + a^2*(2*A + 3*B*x))/x^3 + b^2*B*Lo
g[x]
```

fricas [**A**] time = 0.75, size = 53, normalized size = 1.08

$$\frac{6\,Bb^2x^3\log(x) - 2\,Aa^2 - 6\left(2\,Bab + Ab^2\right)x^2 - 3\left(Ba^2 + 2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^2*x^3*log(x) - 2*A*a^2 - 6*(2*B*a*b + A*b^2)*x^2 - 3*(B*a^2 + 2*
A*a*b)*x)/x^3
```

giac [**A**] time = 0.16, size = 51, normalized size = 1.04

$$Bb^2\log\left(|x|\right) - \frac{2\,Aa^2 + 6\left(2\,Bab + Ab^2\right)x^2 + 3\left(Ba^2 + 2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="giac")
```

```
[Out] B*b^2*log(abs(x)) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 3*(B*a^2 + 2*A
*a*b)*x)/x^3
```

maple [**A**] time = 0.05, size = 52, normalized size = 1.06

$$B\,b^2\ln(x) - \frac{A\,b^2}{x} - \frac{2Bab}{x} - \frac{Aab}{x^2} - \frac{B\,a^2}{2x^2} - \frac{A\,a^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x)
```

```
[Out] -1/3*A*a^2/x^3-a/x^2*A*b-1/2*B*a^2/x^2-A*b^2/x-2*b/x*B*a+B*b^2*ln(x)
```

maxima [**A**] time = 0.55, size = 50, normalized size = 1.02

$$Bb^2\log(x) - \frac{2\,Aa^2 + 6\left(2\,Bab + Ab^2\right)x^2 + 3\left(Ba^2 + 2\,Aab\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^4,x, algorithm="maxima")
```

```
[Out] B*b^2*log(x) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 3*(B*a^2 + 2*A*a*b)
*x)/x^3
```

mupad [**B**] time = 0.05, size = 48, normalized size = 0.98

$$B\,b^2\,\ln(x) - \frac{x^2\,\left(A\,b^2 + 2\,B\,a\,b\right) + \frac{A\,a^2}{3} + x\,\left(\frac{B\,a^2}{2} + A\,b\,a\right)}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^4,x)
```

```
[Out] B*b^2*log(x) - (x^2*(A*b^2 + 2*B*a*b) + (A*a^2)/3 + x*((B*a^2)/2 + A*a*b))/
x^3
```

sympy [A] time = 0.52, size = 54, normalized size = 1.10

$$Bb^2\log(x)+\frac{-2Aa^2+x^2\left(-6Ab^2-12Bab\right)+x\left(-6Aab-3Ba^2\right)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**4,x)
```

```
[Out] B*b**2*log(x) + (-2*A*a**2 + x**2*(-6*A*b**2 - 12*B*a*b) + x*(-6*A*a*b - 3*
B*a**2))/(6*x**3)
```

3.519 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^3(Ab-4aB)}{12a^2x^3}-\frac{A(a+bx)^3}{4ax^4}$$

```
[Out] -1/4*A*(b*x+a)^3/a/x^4+1/12*(A*b-4*B*a)*(b*x+a)^3/a^2/x^3
```

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {27, 78, 37}

$$\frac{(a+bx)^3(Ab-4aB)}{12a^2x^3}-\frac{A(a+bx)^3}{4ax^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5,x]
```

```
[Out] -(A*(a + b*x)^3)/(4*a*x^4) + ((A*b - 4*a*B)*(a + b*x)^3)/(12*a^2*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^5}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^5}\,dx\\ &= -\frac{A(a+bx)^3}{4ax^4}+\frac{(-Ab+4aB)\int \frac{(a+bx)^2}{x^4}\,dx}{4a}\\ &= -\frac{A(a+bx)^3}{4ax^4}+\frac{(Ab-4aB)(a+bx)^3}{12a^2x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 1.07

$$-\frac{a^2(3A+4Bx)+4abx(2A+3Bx)+6b^2x^2(A+2Bx)}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^5,x]
```

```
[Out] -1/12*(6*b^2*x^2*(A + 2*B*x) + 4*a*b*x*(2*A + 3*B*x) + a^2*(3*A + 4*B*x))/x
^4
```

fricas [**A**] time = 0.98, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+3\,Aa^2+6\left(2\,Bab+Ab^2\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 4*(B*a^2 + 2*A*a*
b)*x)/x^4
```

giac [**A**] time = 0.15, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+12\,Babx^2+6\,Ab^2x^2+4\,Ba^2x+8\,Aabx+3\,Aa^2}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 12*B*a*b*x^2 + 6*A*b^2*x^2 + 4*B*a^2*x + 8*A*a*b*x +
3*A*a^2)/x^4
```

maple [**A**] time = 0.05, size = 48, normalized size = 1.09

$$-\frac{B\,b^2}{x}-\frac{A\,a^2}{4x^4}-\frac{(Ab+2Ba)\,b}{2x^2}-\frac{(2Ab+Ba)\,a}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x)
```

```
[Out] -1/4*A*a^2/x^4-1/3*a*(2*A*b+B*a)/x^3-1/2*(A*b+2*B*a)*b/x^2-b^2*B/x
```

maxima [**A**] time = 0.57, size = 51, normalized size = 1.16

$$-\frac{12\,Bb^2x^3+3\,Aa^2+6\left(2\,Bab+Ab^2\right)x^2+4\left(Ba^2+2\,Aab\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*b^2*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2)*x^2 + 4*(B*a^2 + 2*A*a*
b)*x)/x^4
```

mupad [**B**] time = 0.04, size = 49, normalized size = 1.11

$$-\frac{x^2\left(\frac{A\,b^2}{2}+B\,a\,b\right)+\frac{A\,a^2}{4}+x\left(\frac{B\,a^2}{3}+\frac{2\,A\,b\,a}{3}\right)+B\,b^2\,x^3}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^5,x)
```

```
[Out] -(x^2*((A*b^2)/2 + B*a*b) + (A*a^2)/4 + x*((B*a^2)/3 + (2*A*a*b)/3) + B*b^2
*x^3)/x^4
```

sympy [A] time = 0.66, size = 56, normalized size = 1.27

$$\frac{-3Aa^2 - 12Bb^2x^3 + x^2\left(-6Ab^2 - 12Bab\right) + x\left(-8Aab - 4Ba^2\right)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**5,x)
```

```
[Out] (-3*A*a**2 - 12*B*b**2*x**3 + x**2*(-6*A*b**2 - 12*B*a*b) + x*(-8*A*a*b - 4
*B*a**2))/(12*x**4)
```

3.520 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^6}\,dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{5x^5}-\frac{a(aB+2Ab)}{4x^4}-\frac{b(2aB+Ab)}{3x^3}-\frac{b^2B}{2x^2}$$

```
[Out] -1/5*a^2*A/x^5-1/4*a*(2*A*b+B*a)/x^4-1/3*b*(A*b+2*B*a)/x^3-1/2*b^2*B/x^2
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{5x^5}-\frac{a(aB+2Ab)}{4x^4}-\frac{b(2aB+Ab)}{3x^3}-\frac{b^2B}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6,x]
```

```
[Out] -(a^2*A)/(5*x^5) - (a*(2*A*b + a*B))/(4*x^4) - (b*(A*b + 2*a*B))/(3*x^3) -
(b^2*B)/(2*x^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^6}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^6}\,dx\\
&= \int \left(\frac{a^2A}{x^6}+\frac{a(2Ab+aB)}{x^5}+\frac{b(Ab+2aB)}{x^4}+\frac{b^2B}{x^3}\right)dx\\
&= -\frac{a^2A}{5x^5}-\frac{a(2Ab+aB)}{4x^4}-\frac{b(Ab+2aB)}{3x^3}-\frac{b^2B}{2x^2}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{3a^2(4A+5Bx)+10abx(3A+4Bx)+10b^2x^2(2A+3Bx)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^6,x]
```

```
[Out] -1/60*(10*b^2*x^2*(2*A + 3*B*x) + 10*a*b*x*(3*A + 4*B*x) + 3*a^2*(4*A + 5*B
*x))/x^5
```

fricas [A] time = 0.91, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3 + 12\,Aa^2 + 20\left(2\,Bab + Ab^2\right)x^2 + 15\left(Ba^2 + 2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^2*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A
*a*b)*x)/x^5
```

giac [A] time = 0.15, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3 + 40\,Babx^2 + 20\,Ab^2x^2 + 15\,Ba^2x + 30\,Aabx + 12\,Aa^2}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*b^2*x^3 + 40*B*a*b*x^2 + 20*A*b^2*x^2 + 15*B*a^2*x + 30*A*a*b*x
 + 12*A*a^2)/x^5
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{2x^2} - \frac{A\,a^2}{5x^5} - \frac{(Ab + 2Ba)\,b}{3x^3} - \frac{(2Ab + Ba)\,a}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x)
```

```
[Out] -1/5*A*a^2/x^5-1/4*(2*A*b+B*a)*a/x^4-1/3*b*(A*b+2*B*a)/x^3-1/2*B*b^2/x^2
```

maxima [A] time = 0.52, size = 51, normalized size = 0.93

$$-\frac{30\,Bb^2x^3 + 12\,Aa^2 + 20\left(2\,Bab + Ab^2\right)x^2 + 15\left(Ba^2 + 2\,Aab\right)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*b^2*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A
*a*b)*x)/x^5
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\left(\frac{A\,b^2}{3} + \frac{2\,B\,a\,b}{3}\right) + \frac{A\,a^2}{5} + x\left(\frac{B\,a^2}{4} + \frac{A\,b\,a}{2}\right) + \frac{B\,b^2\,x^3}{2}}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^6,x)
```

```
[Out] -(x^2*((A*b^2)/3 + (2*B*a*b)/3) + (A*a^2)/5 + x*((B*a^2)/4 + (A*a*b)/2) + (
B*b^2*x^3)/2)/x^5
```

sympy [A] time = 0.86, size = 56, normalized size = 1.02

$$\frac{-12Aa^2 - 30Bb^2x^3 + x^2\left(-20Ab^2 - 40Bab\right) + x\left(-30Aab - 15Ba^2\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**6,x)
```

```
[Out] (-12*A*a**2 - 30*B*b**2*x**3 + x**2*(-20*A*b**2 - 40*B*a*b) + x*(-30*A*a*b
- 15*B*a**2))/(60*x**5)
```

3.521 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{6x^6}-\frac{a(aB+2Ab)}{5x^5}-\frac{b(2aB+Ab)}{4x^4}-\frac{b^2B}{3x^3}$$

```
[Out] -1/6*a^2*A/x^6-1/5*a*(2*A*b+B*a)/x^5-1/4*b*(A*b+2*B*a)/x^4-1/3*b^2*B/x^3
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{6x^6}-\frac{a(aB+2Ab)}{5x^5}-\frac{b(2aB+Ab)}{4x^4}-\frac{b^2B}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7,x]
```

```
[Out] -(a^2*A)/(6*x^6) - (a*(2*A*b + a*B))/(5*x^5) - (b*(A*b + 2*a*B))/(4*x^4) -
(b^2*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^7}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^7}\,dx\\ &= \int \left(\frac{a^2A}{x^7}+\frac{a(2Ab+aB)}{x^6}+\frac{b(Ab+2aB)}{x^5}+\frac{b^2B}{x^4}\right)dx\\ &= -\frac{a^2A}{6x^6}-\frac{a(2Ab+aB)}{5x^5}-\frac{b(Ab+2aB)}{4x^4}-\frac{b^2B}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{2a^2(5A+6Bx)+6abx(4A+5Bx)+5b^2x^2(3A+4Bx)}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^7,x]
```

```
[Out] -1/60*(5*b^2*x^2*(3*A + 4*B*x) + 6*a*b*x*(4*A + 5*B*x) + 2*a^2*(5*A + 6*B*x
))/x^6
```

fricas [A] time = 0.91, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+10\,Aa^2+15\left(2\,Bab+Ab^2\right)x^2+12\left(Ba^2+2\,Aab\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 12*(B*a^2 + 2*A
*a*b)*x)/x^6
```

giac [A] time = 0.19, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+30\,Babx^2+15\,Ab^2x^2+12\,Ba^2x+24\,Aabx+10\,Aa^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 30*B*a*b*x^2 + 15*A*b^2*x^2 + 12*B*a^2*x + 24*A*a*b*x
 + 10*A*a^2)/x^6
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{3x^3}-\frac{A\,a^2}{6x^6}-\frac{(Ab+2Ba)\,b}{4x^4}-\frac{(2Ab+Ba)\,a}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x)
```

```
[Out] -1/6*A*a^2/x^6-1/5*(2*A*b+B*a)*a/x^5-1/4*b*(A*b+2*B*a)/x^4-1/3*b^2*B/x^3
```

maxima [A] time = 0.59, size = 51, normalized size = 0.93

$$-\frac{20\,Bb^2x^3+10\,Aa^2+15\left(2\,Bab+Ab^2\right)x^2+12\left(Ba^2+2\,Aab\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*b^2*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 12*(B*a^2 + 2*A
*a*b)*x)/x^6
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\,\left(\frac{A\,b^2}{4}+\frac{B\,a\,b}{2}\right)+\frac{A\,a^2}{6}+x\,\left(\frac{B\,a^2}{5}+\frac{2\,A\,b\,a}{5}\right)+\frac{B\,b^2\,x^3}{3}}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^7,x)
```

```
[Out] -(x^2*((A*b^2)/4 + (B*a*b)/2) + (A*a^2)/6 + x*((B*a^2)/5 + (2*A*a*b)/5) + (
B*b^2*x^3)/3)/x^6
```

sympy [**A**] time = 1.01, size = 56, normalized size = 1.02

$$\frac{-10Aa^2-20Bb^2x^3+x^2\left(-15Ab^2-30Bab\right)+x\left(-24Aab-12Ba^2\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**7,x)
```

```
[Out] (-10*A*a**2 - 20*B*b**2*x**3 + x**2*(-15*A*b**2 - 30*B*a*b) + x*(-24*A*a*b
- 12*B*a**2))/(60*x**6)
```

3.522 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^8}\,dx$

Optimal. Leaf size=55

$$-\frac{a^2A}{7x^7}-\frac{a(aB+2Ab)}{6x^6}-\frac{b(2aB+Ab)}{5x^5}-\frac{b^2B}{4x^4}$$

```
[Out] -1/7*a^2*A/x^7-1/6*a*(2*A*b+B*a)/x^6-1/5*b*(A*b+2*B*a)/x^5-1/4*b^2*B/x^4
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$-\frac{a^2A}{7x^7}-\frac{a(aB+2Ab)}{6x^6}-\frac{b(2aB+Ab)}{5x^5}-\frac{b^2B}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8,x]
```

```
[Out] -(a^2*A)/(7*x^7) - (a*(2*A*b + a*B))/(6*x^6) - (b*(A*b + 2*a*B))/(5*x^5) -
(b^2*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^8}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^8}\,dx\\ &= \int \left(\frac{a^2A}{x^8}+\frac{a(2Ab+aB)}{x^7}+\frac{b(Ab+2aB)}{x^6}+\frac{b^2B}{x^5}\right)dx\\ &= -\frac{a^2A}{7x^7}-\frac{a(2Ab+aB)}{6x^6}-\frac{b(Ab+2aB)}{5x^5}-\frac{b^2B}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.91

$$-\frac{10a^2(6A+7Bx)+28abx(5A+6Bx)+21b^2x^2(4A+5Bx)}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^8,x]
```

```
[Out] -1/420*(21*b^2*x^2*(4*A + 5*B*x) + 28*a*b*x*(5*A + 6*B*x) + 10*a^2*(6*A + 7
*B*x))/x^7
```

fricas [A] time = 0.90, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+60\,Aa^2+84\,\left(2\,Bab+Ab^2\right)x^2+70\,\left(Ba^2+2\,Aab\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2)*x^2 + 70*(B*a^2 + 2
*A*a*b)*x)/x^7
```

giac [A] time = 0.16, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+168\,Babx^2+84\,Ab^2x^2+70\,Ba^2x+140\,Aabx+60\,Aa^2}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 168*B*a*b*x^2 + 84*A*b^2*x^2 + 70*B*a^2*x + 140*A*a
*b*x + 60*A*a^2)/x^7
```

maple [A] time = 0.05, size = 48, normalized size = 0.87

$$-\frac{B\,b^2}{4x^4}-\frac{A\,a^2}{7x^7}-\frac{(Ab+2Ba)\,b}{5x^5}-\frac{(2Ab+Ba)\,a}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x)
```

```
[Out] -1/7*A*a^2/x^7-1/6*a*(2*A*b+B*a)/x^6-1/5*b*(A*b+2*B*a)/x^5-1/4*b^2*B/x^4
```

maxima [A] time = 0.47, size = 51, normalized size = 0.93

$$-\frac{105\,Bb^2x^3+60\,Aa^2+84\,\left(2\,Bab+Ab^2\right)x^2+70\,\left(Ba^2+2\,Aab\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*b^2*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2)*x^2 + 70*(B*a^2 + 2
*A*a*b)*x)/x^7
```

mupad [B] time = 0.04, size = 51, normalized size = 0.93

$$-\frac{x^2\,\left(\frac{A\,b^2}{5}+\frac{2\,B\,a\,b}{5}\right)+\frac{A\,a^2}{7}+x\,\left(\frac{B\,a^2}{6}+\frac{A\,b\,a}{3}\right)+\frac{B\,b^2\,x^3}{4}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^8,x)
```

```
[Out] -(x^2*((A*b^2)/5 + (2*B*a*b)/5) + (A*a^2)/7 + x*((B*a^2)/6 + (A*a*b)/3) + (
B*b^2*x^3)/4)/x^7
```

sympy [**A**] time = 1.24, size = 56, normalized size = 1.02

$$\frac{-60Aa^2 - 105Bb^2x^3 + x^2\left(-84Ab^2 - 168Bab\right) + x\left(-140Aab - 70Ba^2\right)}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**8,x)
```

```
[Out] (-60*A*a**2 - 105*B*b**2*x**3 + x**2*(-84*A*b**2 - 168*B*a*b) + x*(-140*A*a
*b - 70*B*a**2))/(420*x**7)
```

3.523 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=99

$$\frac{1}{5}a^4Ax^5+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

```
[Out] 1/5*a^4*A*x^5+1/6*a^3*(4*A*b+B*a)*x^6+2/7*a^2*b*(3*A*b+2*B*a)*x^7+1/4*a*b^2
*(2*A*b+3*B*a)*x^8+1/9*b^3*(A*b+4*B*a)*x^9+1/10*b^4*B*x^10
```

Rubi [A] time = 0.08, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{1}{5}a^4Ax^5+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^5)/5 + (a^3*(4*A*b + a*B)*x^6)/6 + (2*a^2*b*(3*A*b + 2*a*B)*x^7)/7
 + (a*b^2*(2*A*b + 3*a*B)*x^8)/4 + (b^3*(A*b + 4*a*B)*x^9)/9 + (b^4*B*x^10)
/10
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^4(a+bx)^4(A+Bx)\,dx\\ &= \int \big(a^4Ax^4+a^3(4Ab+aB)x^5+2a^2b(3Ab+2aB)x^6+2ab^2(2Ab+3a\\ &= \frac{1}{5}a^4Ax^5+\frac{1}{6}a^3(4Ab+aB)x^6+\frac{2}{7}a^2b(3Ab+2aB)x^7+\frac{1}{4}ab^2(2Ab+3\end{aligned}$$

Mathematica [A] time = 0.01, size = 99, normalized size = 1.00

$$\frac{1}{5}a^4Ax^5+\frac{1}{6}a^3x^6(aB+4Ab)+\frac{2}{7}a^2bx^7(2aB+3Ab)+\frac{1}{9}b^3x^9(4aB+Ab)+\frac{1}{4}ab^2x^8(3aB+2Ab)+\frac{1}{10}b^4Bx^{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^5)/5 + (a^3*(4*A*b + a*B)*x^6)/6 + (2*a^2*b*(3*A*b + 2*a*B)*x^7)/7
 + (a*b^2*(2*A*b + 3*a*B)*x^8)/4 + (b^3*(A*b + 4*a*B)*x^9)/9 + (b^4*B*x^10)
/10
```

fricas [A] time = 0.67, size = 101, normalized size = 1.02

$$\frac{1}{10}x^{10}b^4B+\frac{4}{9}x^9b^3aB+\frac{1}{9}x^9b^4A+\frac{3}{4}x^8b^2a^2B+\frac{1}{2}x^8b^3aA+\frac{4}{7}x^7ba^3B+\frac{6}{7}x^7b^2a^2A+\frac{1}{6}x^6a^4B+\frac{2}{3}x^6ba^3A+\frac{1}{5}x^5a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^4*B + 4/9*x^9*b^3*a*B + 1/9*x^9*b^4*A + 3/4*x^8*b^2*a^2*B + 1/2
*x^8*b^3*a*A + 4/7*x^7*b*a^3*B + 6/7*x^7*b^2*a^2*A + 1/6*x^6*a^4*B + 2/3*x^
6*b*a^3*A + 1/5*x^5*a^4*A
```

giac [A] time = 0.16, size = 101, normalized size = 1.02

$$\frac{1}{10}Bb^4x^{10}+\frac{4}{9}Bab^3x^9+\frac{1}{9}Ab^4x^9+\frac{3}{4}Ba^2b^2x^8+\frac{1}{2}Aab^3x^8+\frac{4}{7}Ba^3bx^7+\frac{6}{7}Aa^2b^2x^7+\frac{1}{6}Ba^4x^6+\frac{2}{3}Aa^3bx^6+\frac{1}{5}Aa^4x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*b^4*x^10 + 4/9*B*a*b^3*x^9 + 1/9*A*b^4*x^9 + 3/4*B*a^2*b^2*x^8 + 1/2
*A*a*b^3*x^8 + 4/7*B*a^3*b*x^7 + 6/7*A*a^2*b^2*x^7 + 1/6*B*a^4*x^6 + 2/3*A*
a^3*b*x^6 + 1/5*A*a^4*x^5
```

maple [A] time = 0.04, size = 100, normalized size = 1.01

$$\frac{B\,b^4x^{10}}{10}+\frac{A\,a^4x^5}{5}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^9}{9}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^8}{8}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^7}{7}+\frac{\left(4A\,a^3b+B\,a^4\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*b^4*B*x^10+1/9*(A*b^4+4*B*a*b^3)*x^9+1/8*(4*A*a*b^3+6*B*a^2*b^2)*x^8+1
/7*(6*A*a^2*b^2+4*B*a^3*b)*x^7+1/6*(4*A*a^3*b+B*a^4)*x^6+1/5*a^4*A*x^5
```

maxima [A] time = 0.48, size = 99, normalized size = 1.00

$$\frac{1}{10}Bb^4x^{10}+\frac{1}{5}Aa^4x^5+\frac{1}{9}\left(4\,Bab^3+Ab^4\right)x^9+\frac{1}{4}\left(3\,Ba^2b^2+2\,Aab^3\right)x^8+\frac{2}{7}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^7+\frac{1}{6}\left(Ba^4+4\,Aa^3b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^4*x^10 + 1/5*A*a^4*x^5 + 1/9*(4*B*a*b^3 + A*b^4)*x^9 + 1/4*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^8 + 2/7*(2*B*a^3*b + 3*A*a^2*b^2)*x^7 + 1/6*(B*a^4 + 4
*A*a^3*b)*x^6
```

mupad [B] time = 0.05, size = 91, normalized size = 0.92

$$x^6\,\left(\frac{B\,a^4}{6}+\frac{2\,A\,b\,a^3}{3}\right)+x^9\,\left(\frac{A\,b^4}{9}+\frac{4\,B\,a\,b^3}{9}\right)+\frac{A\,a^4\,x^5}{5}+\frac{B\,b^4\,x^{10}}{10}+\frac{2\,a^2\,b\,x^7\,\left(3\,A\,b+2\,B\,a\right)}{7}+\frac{a\,b^2\,x^8\,\left(2\,A\,b+3\,B\,a\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^6*((B*a^4)/6 + (2*A*a^3*b)/3) + x^9*((A*b^4)/9 + (4*B*a*b^3)/9) + (A*a^4*
x^5)/5 + (B*b^4*x^10)/10 + (2*a^2*b*x^7*(3*A*b + 2*B*a))/7 + (a*b^2*x^8*(2*
A*b + 3*B*a))/4
```

sympy [A] time = 0.09, size = 109, normalized size = 1.10

$$\frac{Aa^4x^5}{5}+\frac{Bb^4x^{10}}{10}+x^9\left(\frac{Ab^4}{9}+\frac{4Bab^3}{9}\right)+x^8\left(\frac{Aab^3}{2}+\frac{3Ba^2b^2}{4}\right)+x^7\left(\frac{6Aa^2b^2}{7}+\frac{4Ba^3b}{7}\right)+x^6\left(\frac{2Aa^3b}{3}+\frac{Ba^4}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**5/5 + B*b**4*x**10/10 + x**9*(A*b**4/9 + 4*B*a*b**3/9) + x**8*(A*
a*b**3/2 + 3*B*a**2*b**2/4) + x**7*(6*A*a**2*b**2/7 + 4*B*a**3*b/7) + x**6*
(2*A*a**3*b/3 + B*a**4/6)
```

3.524 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=99

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

```
[Out] 1/4*a^4*A*x^4+1/5*a^3*(4*A*b+B*a)*x^5+1/3*a^2*b*(3*A*b+2*B*a)*x^6+2/7*a*b^2
*(2*A*b+3*B*a)*x^7+1/8*b^3*(A*b+4*B*a)*x^8+1/9*b^4*B*x^9
```

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{4}a^4Ax^4+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^3*(4*A*b + a*B)*x^5)/5 + (a^2*b*(3*A*b + 2*a*B)*x^6)/3 +
 (2*a*b^2*(2*A*b + 3*a*B)*x^7)/7 + (b^3*(A*b + 4*a*B)*x^8)/8 + (b^4*B*x^9)/
9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^3(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^3+a^3(4Ab+aB)x^4+2a^2b(3Ab+2aB)x^5+2ab^2(2Ab+3aB)\right.\\ &= \frac{1}{4}a^4Ax^4+\frac{1}{5}a^3(4Ab+aB)x^5+\frac{1}{3}a^2b(3Ab+2aB)x^6+\frac{2}{7}ab^2(2Ab+3aB)\end{aligned}$$

Mathematica [A] time = 0.01, size = 99, normalized size = 1.00

$$\frac{1}{4}a^4Ax^4+\frac{1}{5}a^3x^5(aB+4Ab)+\frac{1}{3}a^2bx^6(2aB+3Ab)+\frac{1}{8}b^3x^8(4aB+Ab)+\frac{2}{7}ab^2x^7(3aB+2Ab)+\frac{1}{9}b^4Bx^9$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^4)/4 + (a^3*(4*A*b + a*B)*x^5)/5 + (a^2*b*(3*A*b + 2*a*B)*x^6)/3 +
 (2*a*b^2*(2*A*b + 3*a*B)*x^7)/7 + (b^3*(A*b + 4*a*B)*x^8)/8 + (b^4*B*x^9)/
9
```

fricas [**A**] time = 0.74, size = 100, normalized size = 1.01

$$\frac{1}{9}x^9b^4B+\frac{1}{2}x^8b^3aB+\frac{1}{8}x^8b^4A+\frac{6}{7}x^7b^2a^2B+\frac{4}{7}x^7b^3aA+\frac{2}{3}x^6ba^3B+x^6b^2a^2A+\frac{1}{5}x^5a^4B+\frac{4}{5}x^5ba^3A+\frac{1}{4}x^4a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^4*B + 1/2*x^8*b^3*a*B + 1/8*x^8*b^4*A + 6/7*x^7*b^2*a^2*B + 4/7*x
^7*b^3*a*A + 2/3*x^6*b*a^3*B + x^6*b^2*a^2*A + 1/5*x^5*a^4*B + 4/5*x^5*b*a^
3*A + 1/4*x^4*a^4*A
```

giac [**A**] time = 0.15, size = 100, normalized size = 1.01

$$\frac{1}{9}\,Bb^4x^9+\frac{1}{2}\,Bab^3x^8+\frac{1}{8}\,Ab^4x^8+\frac{6}{7}\,Ba^2b^2x^7+\frac{4}{7}\,Aab^3x^7+\frac{2}{3}\,Ba^3bx^6+Aa^2b^2x^6+\frac{1}{5}\,Ba^4x^5+\frac{4}{5}\,Aa^3bx^5+\frac{1}{4}\,Aa^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*b^4*x^9 + 1/2*B*a*b^3*x^8 + 1/8*A*b^4*x^8 + 6/7*B*a^2*b^2*x^7 + 4/7*A
*a*b^3*x^7 + 2/3*B*a^3*b*x^6 + A*a^2*b^2*x^6 + 1/5*B*a^4*x^5 + 4/5*A*a^3*b*
x^5 + 1/4*A*a^4*x^4
```

maple [**A**] time = 0.07, size = 100, normalized size = 1.01

$$\frac{B\,b^4x^9}{9}+\frac{A\,a^4x^4}{4}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^8}{8}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^7}{7}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^6}{6}+\frac{\left(4A\,a^3b+B\,a^4\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^4*B*x^9+1/8*(A*b^4+4*B*a*b^3)*x^8+1/7*(4*A*a*b^3+6*B*a^2*b^2)*x^7+1/6
*(6*A*a^2*b^2+4*B*a^3*b)*x^6+1/5*(4*A*a^3*b+B*a^4)*x^5+1/4*A*a^4*x^4
```

maxima [**A**] time = 0.57, size = 99, normalized size = 1.00

$$\frac{1}{9}\,Bb^4x^9+\frac{1}{4}\,Aa^4x^4+\frac{1}{8}\,\left(4\,Bab^3+Ab^4\right)x^8+\frac{2}{7}\,\left(3\,Ba^2b^2+2\,Aab^3\right)x^7+\frac{1}{3}\,\left(2\,Ba^3b+3\,Aa^2b^2\right)x^6+\frac{1}{5}\,\left(Ba^4+4\,Aa^3b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^4*x^9 + 1/4*A*a^4*x^4 + 1/8*(4*B*a*b^3 + A*b^4)*x^8 + 2/7*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^7 + 1/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^6 + 1/5*(B*a^4 + 4*A
*a^3*b)*x^5
```

mupad [**B**] time = 1.04, size = 91, normalized size = 0.92

$$x^5\,\left(\frac{B\,a^4}{5}+\frac{4\,A\,b\,a^3}{5}\right)+x^8\,\left(\frac{A\,b^4}{8}+\frac{B\,a\,b^3}{2}\right)+\frac{A\,a^4\,x^4}{4}+\frac{B\,b^4\,x^9}{9}+\frac{a^2\,b\,x^6\,\left(3\,A\,b+2\,B\,a\right)}{3}+\frac{2\,a\,b^2\,x^7\,\left(2\,A\,b+3\,B\,a\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((B*a^4)/5 + (4*A*a^3*b)/5) + x^8*((A*b^4)/8 + (B*a*b^3)/2) + (A*a^4*x^
4)/4 + (B*b^4*x^9)/9 + (a^2*b*x^6*(3*A*b + 2*B*a))/3 + (2*a*b^2*x^7*(2*A*b
+ 3*B*a))/7
```

sympy [A] time = 0.09, size = 105, normalized size = 1.06

$$\frac{Aa^4x^4}{4}+\frac{Bb^4x^9}{9}+x^8\left(\frac{Ab^4}{8}+\frac{Bab^3}{2}\right)+x^7\left(\frac{4Aab^3}{7}+\frac{6Ba^2b^2}{7}\right)+x^6\left(Aa^2b^2+\frac{2Ba^3b}{3}\right)+x^5\left(\frac{4Aa^3b}{5}+\frac{Ba^4}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**4/4 + B*b**4*x**9/9 + x**8*(A*b**4/8 + B*a*b**3/2) + x**7*(4*A*a*
b**3/7 + 6*B*a**2*b**2/7) + x**6*(A*a**2*b**2 + 2*B*a**3*b/3) + x**5*(4*A*a
**3*b/5 + B*a**4/5)
```

3.525 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=87

$$\frac{a^2(a+bx)^5(Ab-aB)}{5b^4}+\frac{(a+bx)^7(Ab-3aB)}{7b^4}-\frac{a(a+bx)^6(2Ab-3aB)}{6b^4}+\frac{B(a+bx)^8}{8b^4}$$

```
[Out] 1/5*a^2*(A*b-B*a)*(b*x+a)^5/b^4-1/6*a*(2*A*b-3*B*a)*(b*x+a)^6/b^4+1/7*(A*b-
3*B*a)*(b*x+a)^7/b^4+1/8*B*(b*x+a)^8/b^4
```

Rubi [A] time = 0.05, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$\frac{a^2(a+bx)^5(Ab-aB)}{5b^4}+\frac{(a+bx)^7(Ab-3aB)}{7b^4}-\frac{a(a+bx)^6(2Ab-3aB)}{6b^4}+\frac{B(a+bx)^8}{8b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^5)/(5*b^4) - (a*(2*A*b - 3*a*B)*(a + b*x)^6)/(6*
b^4) + ((A*b - 3*a*B)*(a + b*x)^7)/(7*b^4) + (B*(a + b*x)^8)/(8*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^2(a+bx)^4(A+Bx)\,dx\\ &= \int \Bigg(-\frac{a^2(-Ab+aB)(a+bx)^4}{b^3}+\frac{a(-2Ab+3aB)(a+bx)^5}{b^3}+\frac{(Ab-3a}{}\\ &= \frac{a^2(Ab-aB)(a+bx)^5}{5b^4}-\frac{a(2Ab-3aB)(a+bx)^6}{6b^4}+\frac{(Ab-3aB)(a+bx}{7b^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 1.01

$$\frac{1}{840}x^3\Big(70a^4(4A+3Bx)+168a^3bx(5A+4Bx)+168a^2b^2x^2(6A+5Bx)+80ab^3x^3(7A+6Bx)+15b^4x^4(8A+$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^3*(70*a^4*(4*A + 3*B*x) + 168*a^3*b*x*(5*A + 4*B*x) + 168*a^2*b^2*x^2*(6
*A + 5*B*x) + 80*a*b^3*x^3*(7*A + 6*B*x) + 15*b^4*x^4*(8*A + 7*B*x)))/840
```

fricas [A] time = 0.79, size = 99, normalized size = 1.14

$$\frac{1}{8}x^8b^4B+\frac{4}{7}x^7b^3aB+\frac{1}{7}x^7b^4A+x^6b^2a^2B+\frac{2}{3}x^6b^3aA+\frac{4}{5}x^5ba^3B+\frac{6}{5}x^5b^2a^2A+\frac{1}{4}x^4a^4B+x^4ba^3A+\frac{1}{3}x^3a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^4*B + 4/7*x^7*b^3*a*B + 1/7*x^7*b^4*A + x^6*b^2*a^2*B + 2/3*x^6*b
^3*a*A + 4/5*x^5*b*a^3*B + 6/5*x^5*b^2*a^2*A + 1/4*x^4*a^4*B + x^4*b*a^3*A
+ 1/3*x^3*a^4*A
```

giac [A] time = 0.17, size = 99, normalized size = 1.14

$$\frac{1}{8}\,Bb^4x^8+\frac{4}{7}\,Bab^3x^7+\frac{1}{7}\,Ab^4x^7+Ba^2b^2x^6+\frac{2}{3}\,Aab^3x^6+\frac{4}{5}\,Ba^3bx^5+\frac{6}{5}\,Aa^2b^2x^5+\frac{1}{4}\,Ba^4x^4+Aa^3bx^4+\frac{1}{3}\,Aa^4x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*b^4*x^8 + 4/7*B*a*b^3*x^7 + 1/7*A*b^4*x^7 + B*a^2*b^2*x^6 + 2/3*A*a*b
^3*x^6 + 4/5*B*a^3*b*x^5 + 6/5*A*a^2*b^2*x^5 + 1/4*B*a^4*x^4 + A*a^3*b*x^4
+ 1/3*A*a^4*x^3
```

maple [A] time = 0.05, size = 100, normalized size = 1.15

$$\frac{B\,b^4x^8}{8}+\frac{A\,a^4x^3}{3}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^7}{7}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^6}{6}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^5}{5}+\frac{\left(4A\,a^3b+B\,a^4\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*b^4*B*x^8+1/7*(A*b^4+4*B*a*b^3)*x^7+1/6*(4*A*a*b^3+6*B*a^2*b^2)*x^6+1/5
*(6*A*a^2*b^2+4*B*a^3*b)*x^5+1/4*(4*A*a^3*b+B*a^4)*x^4+1/3*A*a^4*x^3
```

maxima [A] time = 0.52, size = 99, normalized size = 1.14

$$\frac{1}{8}\,Bb^4x^8+\frac{1}{3}\,Aa^4x^3+\frac{1}{7}\,\left(4\,Bab^3+Ab^4\right)x^7+\frac{1}{3}\,\left(3\,Ba^2b^2+2\,Aab^3\right)x^6+\frac{2}{5}\,\left(2\,Ba^3b+3\,Aa^2b^2\right)x^5+\frac{1}{4}\,\left(Ba^4+4\,Aa^3b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^4*x^8 + 1/3*A*a^4*x^3 + 1/7*(4*B*a*b^3 + A*b^4)*x^7 + 1/3*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^6 + 2/5*(2*B*a^3*b + 3*A*a^2*b^2)*x^5 + 1/4*(B*a^4 + 4*A
*a^3*b)*x^4
```

mupad [B] time = 0.04, size = 90, normalized size = 1.03

$$x^4\,\left(\frac{B\,a^4}{4}+A\,b\,a^3\right)+x^7\,\left(\frac{A\,b^4}{7}+\frac{4\,B\,a\,b^3}{7}\right)+\frac{A\,a^4\,x^3}{3}+\frac{B\,b^4\,x^8}{8}+\frac{2\,a^2\,b\,x^5\,\left(3\,A\,b+2\,B\,a\right)}{5}+\frac{a\,b^2\,x^6\,\left(2\,A\,b+3\,B\,a\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*((B*a^4)/4 + A*a^3*b) + x^7*((A*b^4)/7 + (4*B*a*b^3)/7) + (A*a^4*x^3)/3
 + (B*b^4*x^8)/8 + (2*a^2*b*x^5*(3*A*b + 2*B*a))/5 + (a*b^2*x^6*(2*A*b + 3*
B*a))/3
```

sympy [A] time = 0.09, size = 104, normalized size = 1.20

$$\frac{Aa^4x^3}{3}+\frac{Bb^4x^8}{8}+x^7\left(\frac{Ab^4}{7}+\frac{4Bab^3}{7}\right)+x^6\left(\frac{2Aab^3}{3}+Ba^2b^2\right)+x^5\left(\frac{6Aa^2b^2}{5}+\frac{4Ba^3b}{5}\right)+x^4\left(Aa^3b+\frac{Ba^4}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**3/3 + B*b**4*x**8/8 + x**7*(A*b**4/7 + 4*B*a*b**3/7) + x**6*(2*A*
a*b**3/3 + B*a**2*b**2) + x**5*(6*A*a**2*b**2/5 + 4*B*a**3*b/5) + x**4*(A*a
**3*b + B*a**4/4)
```

3.526 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=61

$$\frac{(a+bx)^6(Ab-2aB)}{6b^3}-\frac{a(a+bx)^5(Ab-aB)}{5b^3}+\frac{B(a+bx)^7}{7b^3}$$

```
[Out] -1/5*a*(A*b-B*a)*(b*x+a)^5/b^3+1/6*(A*b-2*B*a)*(b*x+a)^6/b^3+1/7*B*(b*x+a)^
7/b^3
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {27, 76}

$$\frac{(a+bx)^6(Ab-2aB)}{6b^3}-\frac{a(a+bx)^5(Ab-aB)}{5b^3}+\frac{B(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^5)/(5*b^3) + ((A*b - 2*a*B)*(a + b*x)^6)/(6*b^3)
+ (B*(a + b*x)^7)/(7*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx&=\int x(a+bx)^4(A+Bx)\,dx\\&=\int\left(\frac{a(-Ab+aB)(a+bx)^4}{b^2}+\frac{(Ab-2aB)(a+bx)^5}{b^2}+\frac{B(a+bx)^6}{b^2}\right)dx\\&=-\frac{a(Ab-aB)(a+bx)^5}{5b^3}+\frac{(Ab-2aB)(a+bx)^6}{6b^3}+\frac{B(a+bx)^7}{7b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 88, normalized size = 1.44

$$\frac{1}{210}x^2\left(35a^4(3A+2Bx)+70a^3bx(4A+3Bx)+63a^2b^2x^2(5A+4Bx)+28ab^3x^3(6A+5Bx)+5b^4x^4(7A+6Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^2*(35*a^4*(3*A + 2*B*x) + 70*a^3*b*x*(4*A + 3*B*x) + 63*a^2*b^2*x^2*(5*A
 + 4*B*x) + 28*a*b^3*x^3*(6*A + 5*B*x) + 5*b^4*x^4*(7*A + 6*B*x)))/210
```

fricas [**A**] time = 0.59, size = 100, normalized size = 1.64

$$\frac{1}{7}x^7b^4B+\frac{2}{3}x^6b^3aB+\frac{1}{6}x^6b^4A+\frac{6}{5}x^5b^2a^2B+\frac{4}{5}x^5b^3aA+x^4ba^3B+\frac{3}{2}x^4b^2a^2A+\frac{1}{3}x^3a^4B+\frac{4}{3}x^3ba^3A+\frac{1}{2}x^2a^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*b^4*B + 2/3*x^6*b^3*a*B + 1/6*x^6*b^4*A + 6/5*x^5*b^2*a^2*B + 4/5*x
^5*b^3*a*A + x^4*b*a^3*B + 3/2*x^4*b^2*a^2*A + 1/3*x^3*a^4*B + 4/3*x^3*b*a^
3*A + 1/2*x^2*a^4*A
```

giac [**A**] time = 0.15, size = 100, normalized size = 1.64

$$\frac{1}{7}\,Bb^4x^7+\frac{2}{3}\,Bab^3x^6+\frac{1}{6}\,Ab^4x^6+\frac{6}{5}\,Ba^2b^2x^5+\frac{4}{5}\,Aab^3x^5+Ba^3bx^4+\frac{3}{2}\,Aa^2b^2x^4+\frac{1}{3}\,Ba^4x^3+\frac{4}{3}\,Aa^3bx^3+\frac{1}{2}\,Aa^4x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*b^4*x^7 + 2/3*B*a*b^3*x^6 + 1/6*A*b^4*x^6 + 6/5*B*a^2*b^2*x^5 + 4/5*A
*a*b^3*x^5 + B*a^3*b*x^4 + 3/2*A*a^2*b^2*x^4 + 1/3*B*a^4*x^3 + 4/3*A*a^3*b*
x^3 + 1/2*A*a^4*x^2
```

maple [**A**] time = 0.05, size = 100, normalized size = 1.64

$$\frac{B\,b^4x^7}{7}+\frac{A\,a^4x^2}{2}+\frac{\left(A\,b^4+4Ba\,b^3\right)x^6}{6}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^5}{5}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^4}{4}+\frac{\left(4A\,a^3b+B\,a^4\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*b^4*B*x^7+1/6*(A*b^4+4*B*a*b^3)*x^6+1/5*(4*A*a*b^3+6*B*a^2*b^2)*x^5+1/4
*(6*A*a^2*b^2+4*B*a^3*b)*x^4+1/3*(4*A*a^3*b+B*a^4)*x^3+1/2*A*a^4*x^2
```

maxima [**A**] time = 0.46, size = 99, normalized size = 1.62

$$\frac{1}{7}\,Bb^4x^7+\frac{1}{2}\,Aa^4x^2+\frac{1}{6}\left(4\,Bab^3+Ab^4\right)x^6+\frac{2}{5}\left(3\,Ba^2b^2+2\,Aab^3\right)x^5+\frac{1}{2}\left(2\,Ba^3b+3\,Aa^2b^2\right)x^4+\frac{1}{3}\left(Ba^4+4\,Aa^3b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^4*x^7 + 1/2*A*a^4*x^2 + 1/6*(4*B*a*b^3 + A*b^4)*x^6 + 2/5*(3*B*a^2*
b^2 + 2*A*a*b^3)*x^5 + 1/2*(2*B*a^3*b + 3*A*a^2*b^2)*x^4 + 1/3*(B*a^4 + 4*A
*a^3*b)*x^3
```

mupad [**B**] time = 0.03, size = 91, normalized size = 1.49

$$x^3\,\left(\frac{B\,a^4}{3}+\frac{4\,A\,b\,a^3}{3}\right)+x^6\,\left(\frac{A\,b^4}{6}+\frac{2\,B\,a\,b^3}{3}\right)+\frac{A\,a^4\,x^2}{2}+\frac{B\,b^4\,x^7}{7}+\frac{a^2\,b\,x^4\,\left(3\,A\,b+2\,B\,a\right)}{2}+\frac{2\,a\,b^2\,x^5\,(2\,A\,b+3\,B\,a}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((B*a^4)/3 + (4*A*a^3*b)/3) + x^6*((A*b^4)/6 + (2*B*a*b^3)/3) + (A*a^4*
x^2)/2 + (B*b^4*x^7)/7 + (a^2*b*x^4*(3*A*b + 2*B*a))/2 + (2*a*b^2*x^5*(2*A*
b + 3*B*a))/5
```

sympy [B] time = 0.09, size = 107, normalized size = 1.75

$$\frac{Aa^4x^2}{2}+\frac{Bb^4x^7}{7}+x^6\left(\frac{Ab^4}{6}+\frac{2Bab^3}{3}\right)+x^5\left(\frac{4Aab^3}{5}+\frac{6Ba^2b^2}{5}\right)+x^4\left(\frac{3Aa^2b^2}{2}+Ba^3b\right)+x^3\left(\frac{4Aa^3b}{3}+\frac{Ba^4}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x**2/2 + B*b**4*x**7/7 + x**6*(A*b**4/6 + 2*B*a*b**3/3) + x**5*(4*A*
a*b**3/5 + 6*B*a**2*b**2/5) + x**4*(3*A*a**2*b**2/2 + B*a**3*b) + x**3*(4*A
*a**3*b/3 + B*a**4/3)
```

3.527 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

```
[Out] 1/5*(A*b-B*a)*(b*x+a)^5/b^2+1/6*B*(b*x+a)^6/b^2
```

Rubi [A] time = 0.01, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5)/(5*b^2) + (B*(a + b*x)^6)/(6*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)\,dx\\ &= \int \left(\frac{(Ab-aB)(a+bx)^4}{b}+\frac{B(a+bx)^5}{b}\right)dx\\ &= \frac{(Ab-aB)(a+bx)^5}{5b^2}+\frac{B(a+bx)^6}{6b^2}\end{aligned}$$

Mathematica [B] time = 0.01, size = 84, normalized size = 2.21

$$\frac{1}{30}x\left(15a^4(2A+Bx)+20a^3bx(3A+2Bx)+15a^2b^2x^2(4A+3Bx)+6ab^3x^3(5A+4Bx)+b^4x^4(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(15*a^4*(2*A + B*x) + 20*a^3*b*x*(3*A + 2*B*x) + 15*a^2*b^2*x^2*(4*A + 3
*B*x) + 6*a*b^3*x^3*(5*A + 4*B*x) + b^4*x^4*(6*A + 5*B*x)))/30
```

fricas [B] time = 0.71, size = 97, normalized size = 2.55

$$\frac{1}{6}x^6b^4B+\frac{4}{5}x^5b^3aB+\frac{1}{5}x^5b^4A+\frac{3}{2}x^4b^2a^2B+x^4b^3aA+\frac{4}{3}x^3ba^3B+2x^3b^2a^2A+\frac{1}{2}x^2a^4B+2x^2ba^3A+xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^4*B + 4/5*x^5*b^3*a*B + 1/5*x^5*b^4*A + 3/2*x^4*b^2*a^2*B + x^4*b
^3*a*A + 4/3*x^3*b*a^3*B + 2*x^3*b^2*a^2*A + 1/2*x^2*a^4*B + 2*x^2*b*a^3*A
+ x*a^4*A
```

giac [B] time = 0.18, size = 97, normalized size = 2.55

$$\frac{1}{6}Bb^4x^6+\frac{4}{5}Bab^3x^5+\frac{1}{5}Ab^4x^5+\frac{3}{2}Ba^2b^2x^4+Aab^3x^4+\frac{4}{3}Ba^3bx^3+2Aa^2b^2x^3+\frac{1}{2}Ba^4x^2+2Aa^3bx^2+Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^4*x^6 + 4/5*B*a*b^3*x^5 + 1/5*A*b^4*x^5 + 3/2*B*a^2*b^2*x^4 + A*a*b
^3*x^4 + 4/3*B*a^3*b*x^3 + 2*A*a^2*b^2*x^3 + 1/2*B*a^4*x^2 + 2*A*a^3*b*x^2
+ A*a^4*x
```

maple [B] time = 0.04, size = 97, normalized size = 2.55

$$\frac{B\,b^4x^6}{6}+A\,a^4x+\frac{\left(A\,b^4+4Ba\,b^3\right)x^5}{5}+\frac{\left(4Aa\,b^3+6B\,a^2b^2\right)x^4}{4}+\frac{\left(6A\,a^2b^2+4B\,a^3b\right)x^3}{3}+\frac{\left(4A\,a^3b+B\,a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^4*B*x^6+1/5*(A*b^4+4*B*a*b^3)*x^5+1/4*(4*A*a*b^3+6*B*a^2*b^2)*x^4+1/3
*(6*A*a^2*b^2+4*B*a^3*b)*x^3+1/2*(4*A*a^3*b+B*a^4)*x^2+A*a^4*x
```

maxima [B] time = 0.48, size = 96, normalized size = 2.53

$$\frac{1}{6}Bb^4x^6+Aa^4x+\frac{1}{5}\left(4Bab^3+Ab^4\right)x^5+\frac{1}{2}\left(3Ba^2b^2+2Aab^3\right)x^4+\frac{2}{3}\left(2Ba^3b+3Aa^2b^2\right)x^3+\frac{1}{2}\left(Ba^4+4Aa^3b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^4*x^6 + A*a^4*x + 1/5*(4*B*a*b^3 + A*b^4)*x^5 + 1/2*(3*B*a^2*b^2 +
2*A*a*b^3)*x^4 + 2/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 1/2*(B*a^4 + 4*A*a^3*b
)*x^2
```

mupad [B] time = 0.03, size = 88, normalized size = 2.32

$$x^2\left(\frac{B\,a^4}{2}+2\,A\,b\,a^3\right)+x^5\left(\frac{A\,b^4}{5}+\frac{4\,B\,a\,b^3}{5}\right)+\frac{B\,b^4\,x^6}{6}+A\,a^4\,x+\frac{2\,a^2\,b\,x^3\,\left(3\,A\,b+2\,B\,a\right)}{3}+\frac{a\,b^2\,x^4\,\left(2\,A\,b+3\,B\,a\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((B*a^4)/2 + 2*A*a^3*b) + x^5*((A*b^4)/5 + (4*B*a*b^3)/5) + (B*b^4*x^6)
/6 + A*a^4*x + (2*a^2*b*x^3*(3*A*b + 2*B*a))/3 + (a*b^2*x^4*(2*A*b + 3*B*a)
)/2
```

sympy [B] time = 0.09, size = 100, normalized size = 2.63

$$Aa^4x+\frac{Bb^4x^6}{6}+x^5\left(\frac{Ab^4}{5}+\frac{4Bab^3}{5}\right)+x^4\left(Aab^3+\frac{3Ba^2b^2}{2}\right)+x^3\left(2Aa^2b^2+\frac{4Ba^3b}{3}\right)+x^2\left(2Aa^3b+\frac{Ba^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4/5 + 4*B*a*b**3/5) + x**4*(A*a*b**3
+ 3*B*a**2*b**2/2) + x**3*(2*A*a**2*b**2 + 4*B*a**3*b/3) + x**2*(2*A*a**3*b
 + B*a**4/2)
```

3.528 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx$

Optimal. Leaf size=66

$$a^4A\log(x)+4a^3Abx+3a^2Ab^2x^2+\frac{4}{3}aAb^3x^3+\frac{B(a+bx)^5}{5b}+\frac{1}{4}Ab^4x^4$$

```
[Out] 4*a^3*A*b*x+3*a^2*A*b^2*x^2+4/3*a*A*b^3*x^3+1/4*A*b^4*x^4+1/5*B*(b*x+a)^5/b
+a^4*A*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = $\{27, 80, 43\}$

$$3a^2Ab^2x^2+4a^3Abx+a^4A\log(x)+\frac{4}{3}aAb^3x^3+\frac{B(a+bx)^5}{5b}+\frac{1}{4}Ab^4x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x,x]
```

```
[Out] 4*a^3*A*b*x + 3*a^2*A*b^2*x^2 + (4*a*A*b^3*x^3)/3 + (A*b^4*x^4)/4 + (B*(a +
 b*x)^5)/(5*b) + a^4*A*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x}\,dx\\ &= \frac{B(a+bx)^5}{5b}+A\int \frac{(a+bx)^4}{x}\,dx\\ &= \frac{B(a+bx)^5}{5b}+A\int \left(4a^3b+\frac{a^4}{x}+6a^2b^2x+4ab^3x^2+b^4x^3\right)dx\\ &= 4a^3Abx+3a^2Ab^2x^2+\frac{4}{3}aAb^3x^3+\frac{1}{4}Ab^4x^4+\frac{B(a+bx)^5}{5b}+a^4A\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 83, normalized size = 1.26

$$a^4A\log(x)+a^4Bx+2a^3bx(2A+Bx)+a^2b^2x^2(3A+2Bx)+\frac{1}{3}ab^3x^3(4A+3Bx)+\frac{1}{20}b^4x^4(5A+4Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x,x]
```

```
[Out] a^4*B*x + 2*a^3*b*x*(2*A + B*x) + a^2*b^2*x^2*(3*A + 2*B*x) + (a*b^3*x^3*(4
*A + 3*B*x))/3 + (b^4*x^4*(5*A + 4*B*x))/20 + a^4*A*Log[x]
```

fricas [A] time = 0.76, size = 93, normalized size = 1.41

$$\frac{1}{5}Bb^4x^5+Aa^4\log(x)+\frac{1}{4}\left(4Bab^3+Ab^4\right)x^4+\frac{2}{3}\left(3Ba^2b^2+2Aab^3\right)x^3+\left(2Ba^3b+3Aa^2b^2\right)x^2+\left(Ba^4+4Aa^3b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*b^4*x^5 + A*a^4*log(x) + 1/4*(4*B*a*b^3 + A*b^4)*x^4 + 2/3*(3*B*a^2*b
^2 + 2*A*a*b^3)*x^3 + (2*B*a^3*b + 3*A*a^2*b^2)*x^2 + (B*a^4 + 4*A*a^3*b)*x
```

giac [A] time = 0.17, size = 94, normalized size = 1.42

$$\frac{1}{5}Bb^4x^5+Bab^3x^4+\frac{1}{4}Ab^4x^4+2Ba^2b^2x^3+\frac{4}{3}Aab^3x^3+2Ba^3bx^2+3Aa^2b^2x^2+Ba^4x+4Aa^3bx+Aa^4\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*b^4*x^5 + B*a*b^3*x^4 + 1/4*A*b^4*x^4 + 2*B*a^2*b^2*x^3 + 4/3*A*a*b^3
*x^3 + 2*B*a^3*b*x^2 + 3*A*a^2*b^2*x^2 + B*a^4*x + 4*A*a^3*b*x + A*a^4*log(
abs(x))
```

maple [A] time = 0.05, size = 94, normalized size = 1.42

$$\frac{Bb^4x^5}{5}+\frac{Ab^4x^4}{4}+Bab^3x^4+\frac{4Aab^3x^3}{3}+2Ba^2b^2x^3+3Aa^2b^2x^2+2Ba^3bx^2+Aa^4\ln(x)+4Aa^3bx+Ba^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x)
```

```
[Out] 1/5*b^4*B*x^5+1/4*A*b^4*x^4+B*x^4*a*b^3+4/3*a*A*b^3*x^3+2*B*x^3*a^2*b^2+3*a
^2*A*b^2*x^2+2*B*x^2*a^3*b+4*a^3*A*b*x+B*a^4*x+A*a^4*ln(x)
```

maxima [A] time = 0.49, size = 93, normalized size = 1.41

$$\frac{1}{5}Bb^4x^5+Aa^4\log(x)+\frac{1}{4}\left(4Bab^3+Ab^4\right)x^4+\frac{2}{3}\left(3Ba^2b^2+2Aab^3\right)x^3+\left(2Ba^3b+3Aa^2b^2\right)x^2+\left(Ba^4+4Aa^3b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*b^4*x^5 + A*a^4*log(x) + 1/4*(4*B*a*b^3 + A*b^4)*x^4 + 2/3*(3*B*a^2*b
^2 + 2*A*a*b^3)*x^3 + (2*B*a^3*b + 3*A*a^2*b^2)*x^2 + (B*a^4 + 4*A*a^3*b)*x
```

mupad [B] time = 0.04, size = 84, normalized size = 1.27

$$x\left(Ba^4+4Aba^3\right)+x^4\left(\frac{Ab^4}{4}+Bab^3\right)+\frac{Bb^4x^5}{5}+Aa^4\ln(x)+a^2bx^2\left(3Ab+2Ba\right)+\frac{2ab^2x^3\left(2Ab+3Ba\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x,x)
```

```
[Out] x*(B*a^4 + 4*A*a^3*b) + x^4*((A*b^4)/4 + B*a*b^3) + (B*b^4*x^5)/5 + A*a^4*l
og(x) + a^2*b*x^2*(3*A*b + 2*B*a) + (2*a*b^2*x^3*(2*A*b + 3*B*a))/3
```

sympy [A] time = 0.21, size = 95, normalized size = 1.44

$$Aa^4\log(x)+\frac{Bb^4x^5}{5}+x^4\left(\frac{Ab^4}{4}+Bab^3\right)+x^3\left(\frac{4Aab^3}{3}+2Ba^2b^2\right)+x^2\left(3Aa^2b^2+2Ba^3b\right)+x\left(4Aa^3b+Ba^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x,x)
```

```
[Out] A*a**4*log(x) + B*b**4*x**5/5 + x**4*(A*b**4/4 + B*a*b**3) + x**3*(4*A*a*b*
*3/3 + 2*B*a**2*b**2) + x**2*(3*A*a**2*b**2 + 2*B*a**3*b) + x*(4*A*a**3*b +
 B*a**4)
```

3.529 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=86

$$-\frac{a^4A}{x}+a^3\log(x)(aB+4Ab)+2a^2bx(2aB+3Ab)+\frac{1}{3}b^3x^3(4aB+Ab)+ab^2x^2(3aB+2Ab)+\frac{1}{4}b^4Bx^4$$

```
[Out] -a^4*A/x+2*a^2*b*(3*A*b+2*B*a)*x+a*b^2*(2*A*b+3*B*a)*x^2+1/3*b^3*(A*b+4*B*a
)*x^3+1/4*b^4*B*x^4+a^3*(4*A*b+B*a)*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$2a^2bx(2aB+3Ab)+a^3\log(x)(aB+4Ab)-\frac{a^4A}{x}+ab^2x^2(3aB+2Ab)+\frac{1}{3}b^3x^3(4aB+Ab)+\frac{1}{4}b^4Bx^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 2*a^2*b*(3*A*b + 2*a*B)*x + a*b^2*(2*A*b + 3*a*B)*x^2 + (b^3
*(A*b + 4*a*B)*x^3)/3 + (b^4*B*x^4)/4 + a^3*(4*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^2}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^2}\,dx\\ &= \int \left(2a^2b(3Ab+2aB)+\frac{a^4A}{x^2}+\frac{a^3(4Ab+aB)}{x}+2ab^2(2Ab+3aB)x+b\right.\\ &= -\frac{a^4A}{x}+2a^2b(3Ab+2aB)x+ab^2(2Ab+3aB)x^2+\frac{1}{3}b^3(Ab+4aB)x^3+\end{aligned}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.99

$$-\frac{a^4A}{x}+a^3\log(x)(aB+4Ab)+4a^3bBx+3a^2b^2x(2A+Bx)+\frac{2}{3}ab^3x^2(3A+2Bx)+\frac{1}{12}b^4x^3(4A+3Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^2,x]
```

```
[Out] -((a^4*A)/x) + 4*a^3*b*B*x + 3*a^2*b^2*x*(2*A + B*x) + (2*a*b^3*x^2*(3*A +
2*B*x))/3 + (b^4*x^3*(4*A + 3*B*x))/12 + a^3*(4*A*b + a*B)*Log[x]
```

fricas [A]   time = 1.21, size = 101, normalized size = 1.17

$$\frac{3 Bb^4x^5 - 12 Aa^4 + 4 (4 Bab^3 + Ab^4)x^4 + 12 (3 Ba^2b^2 + 2 Aab^3)x^3 + 24 (2 Ba^3b + 3 Aa^2b^2)x^2 + 12 (Ba^4 + 4 Aa^3}{12 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*x^5 - 12*A*a^4 + 4*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2
+ 2*A*a*b^3)*x^3 + 24*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 12*(B*a^4 + 4*A*a^3*b
)*x*log(x))/x
```

giac [A]   time = 0.16, size = 95, normalized size = 1.10

$$\frac{1}{4} Bb^4x^4+\frac{4}{3} Bab^3x^3+\frac{1}{3} Ab^4x^3+3 Ba^2b^2x^2+2 Aab^3x^2+4 Ba^3bx+6 Aa^2b^2x-\frac{Aa^4}{x}+\left(Ba^4 + 4 Aa^3b\right) \log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*b^4*x^4 + 4/3*B*a*b^3*x^3 + 1/3*A*b^4*x^3 + 3*B*a^2*b^2*x^2 + 2*A*a*b
^3*x^2 + 4*B*a^3*b*x + 6*A*a^2*b^2*x - A*a^4/x + (B*a^4 + 4*A*a^3*b)*log(ab
s(x))
```

maple [A]   time = 0.05, size = 95, normalized size = 1.10

$$\frac{B b^4x^4}{4}+\frac{A b^4x^3}{3}+\frac{4Ba b^3x^3}{3}+2Aa b^3x^2+3B a^2b^2x^2+4A a^3b \ln(x)+6A a^2b^2x+B a^4 \ln(x)+4B a^3bx-\frac{A a^4}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x)
```

```
[Out] 1/4*b^4*B*x^4+1/3*A*x^3*b^4+4/3*B*x^3*a*b^3+2*A*x^2*a*b^3+3*B*x^2*a^2*b^2+6
*A*a^2*b^2*x+4*B*a^3*b*x-A*a^4/x+4*A*ln(x)*a^3*b+B*a^4*ln(x)
```

maxima [A]   time = 0.53, size = 94, normalized size = 1.09

$$\frac{1}{4} Bb^4x^4-\frac{Aa^4}{x}+\frac{1}{3} \left(4 Bab^3 + Ab^4\right)x^3+\left(3 Ba^2b^2 + 2 Aab^3\right)x^2+2 \left(2 Ba^3b + 3 Aa^2b^2\right)x+\left(Ba^4 + 4 Aa^3b\right) \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*b^4*x^4 - A*a^4/x + 1/3*(4*B*a*b^3 + A*b^4)*x^3 + (3*B*a^2*b^2 + 2*A*
a*b^3)*x^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*x + (B*a^4 + 4*A*a^3*b)*log(x)
```

mupad [B]   time = 0.04, size = 86, normalized size = 1.00

$$x^3 \left(\frac{A b^4}{3} + \frac{4 B a b^3}{3}\right)+\ln(x) \left(B a^4 + 4 A b a^3\right)-\frac{A a^4}{x}+\frac{B b^4 x^4}{4}+2 a^2 b x (3 A b + 2 B a)+a b^2 x^2 (2 A b + 3 B a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^2,x)
```

```
[Out] x^3*((A*b^4)/3 + (4*B*a*b^3)/3) + log(x)*(B*a^4 + 4*A*a^3*b) - (A*a^4)/x +
(B*b^4*x^4)/4 + 2*a^2*b*x*(3*A*b + 2*B*a) + a*b^2*x^2*(2*A*b + 3*B*a)
```

sympy **[A]** time = 0.26, size = 94, normalized size = 1.09

$$-\frac{Aa^4}{x}+\frac{Bb^4x^4}{4}+a^3\left(4Ab+Ba\right)\log\left(x\right)+x^3\left(\frac{Ab^4}{3}+\frac{4Bab^3}{3}\right)+x^2\left(2Aab^3+3Ba^2b^2\right)+x\left(6Aa^2b^2+4Ba^3b\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**2,x)
```

```
[Out] -A*a**4/x + B*b**4*x**4/4 + a**3*(4*A*b + B*a)*log(x) + x**3*(A*b**4/3 + 4*
B*a*b**3/3) + x**2*(2*A*a*b**3 + 3*B*a**2*b**2) + x*(6*A*a**2*b**2 + 4*B*a*
*3*b)
```

3.530 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx$

Optimal. Leaf size=90

$$-\frac{a^4A}{2x^2}-\frac{a^3(aB+4Ab)}{x}+2a^2b\log(x)(2aB+3Ab)+\frac{1}{2}b^3x^2(4aB+Ab)+2ab^2x(3aB+2Ab)+\frac{1}{3}b^4Bx^3$$

```
[Out] -1/2*a^4*A/x^2-a^3*(4*A*b+B*a)/x+2*a*b^2*(2*A*b+3*B*a)*x+1/2*b^3*(A*b+4*B*a
)*x^2+1/3*b^4*B*x^3+2*a^2*b*(3*A*b+2*B*a)*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{x}+2a^2b\log(x)(2aB+3Ab)-\frac{a^4A}{2x^2}+\frac{1}{2}b^3x^2(4aB+Ab)+2ab^2x(3aB+2Ab)+\frac{1}{3}b^4Bx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3,x]
```

```
[Out] -(a^4*A)/(2*x^2) - (a^3*(4*A*b + a*B))/x + 2*a*b^2*(2*A*b + 3*a*B)*x + (b^3
*(A*b + 4*a*B)*x^2)/2 + (b^4*B*x^3)/3 + 2*a^2*b*(3*A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^3}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^3}\,dx\\ &= \int \left(2ab^2(2Ab+3aB)+\frac{a^4A}{x^3}+\frac{a^3(4Ab+aB)}{x^2}+\frac{2a^2b(3Ab+2aB)}{x}+b^3(A\right.\\ &= -\frac{a^4A}{2x^2}-\frac{a^3(4Ab+aB)}{x}+2ab^2(2Ab+3aB)x+\frac{1}{2}b^3(Ab+4aB)x^2+\frac{1}{3}b^4Bx\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.96

$$-\frac{a^4(A+2Bx)}{2x^2}-\frac{4a^3Ab}{x}+2a^2b\log(x)(2aB+3Ab)+6a^2b^2Bx+2ab^3x(2A+Bx)+\frac{1}{6}b^4x^2(3A+2Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^3,x]
```

```
[Out] (-4*a^3*A*b)/x + 6*a^2*b^2*B*x + 2*a*b^3*x*(2*A + B*x) - (a^4*(A + 2*B*x))/
(2*x^2) + (b^4*x^2*(3*A + 2*B*x))/6 + 2*a^2*b*(3*A*b + 2*a*B)*Log[x]
```

fricas [A] time = 0.94, size = 101, normalized size = 1.12

$$\frac{2\,Bb^4x^5-3\,Aa^4+3\left(4\,Bab^3+Ab^4\right)x^4+12\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+12\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2\log(x)-6\left(Ba^4+\right.}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*x^5 - 3*A*a^4 + 3*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2 +
2*A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2*log(x) - 6*(B*a^4 + 4*A*a
^3*b)*x)/x^2
```

giac [A] time = 0.15, size = 96, normalized size = 1.07

$$\frac{1}{3}\,Bb^4x^3+2\,Bab^3x^2+\frac{1}{2}\,Ab^4x^2+6\,Ba^2b^2x+4\,Aab^3x+2\left(2\,Ba^3b+3\,Aa^2b^2\right)\log\left(|x|\right)-\frac{Aa^4+2\left(Ba^4+4\,Aa^3b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*b^4*x^3 + 2*B*a*b^3*x^2 + 1/2*A*b^4*x^2 + 6*B*a^2*b^2*x + 4*A*a*b^3*x
 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*log(abs(x)) - 1/2*(A*a^4 + 2*(B*a^4 + 4*A*a^
3*b)*x)/x^2
```

maple [A] time = 0.06, size = 96, normalized size = 1.07

$$\frac{B\,b^4x^3}{3}+\frac{A\,b^4x^2}{2}+2Ba\,b^3x^2+6A\,a^2b^2\ln(x)+4Aa\,b^3x+4B\,a^3b\ln(x)+6B\,a^2b^2x-\frac{4A\,a^3b}{x}-\frac{B\,a^4}{x}-\frac{A\,a^4}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x)
```

```
[Out] 1/3*b^4*B*x^3+1/2*A*x^2*b^4+2*B*x^2*a*b^3+4*A*a*b^3*x+6*B*a^2*b^2*x-1/2*A*a
^4/x^2-4*a^3/x*A*b-B*a^4/x+6*A*ln(x)*a^2*b^2+4*B*ln(x)*a^3*b
```

maxima [A] time = 0.55, size = 96, normalized size = 1.07

$$\frac{1}{3}\,Bb^4x^3+\frac{1}{2}\left(4\,Bab^3+Ab^4\right)x^2+2\left(3\,Ba^2b^2+2\,Aab^3\right)x+2\left(2\,Ba^3b+3\,Aa^2b^2\right)\log(x)-\frac{Aa^4+2\left(Ba^4+4\,Aa^3b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^4*x^3 + 1/2*(4*B*a*b^3 + A*b^4)*x^2 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*x
 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*log(x) - 1/2*(A*a^4 + 2*(B*a^4 + 4*A*a^3*b)*
x)/x^2
```

mupad [B] time = 1.07, size = 91, normalized size = 1.01

$$\ln(x)\,\left(4\,B\,a^3\,b+6\,A\,a^2\,b^2\right)-\frac{x\,\left(B\,a^4+4\,A\,b\,a^3\right)+\frac{A\,a^4}{2}}{x^2}+x^2\,\left(\frac{A\,b^4}{2}+2\,B\,a\,b^3\right)+\frac{B\,b^4\,x^3}{3}+2\,a\,b^2\,x\,\left(2\,A\,b+3\,B\,a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^3,x)
```

```
[Out] log(x)*(6*A*a^2*b^2 + 4*B*a^3*b) - (x*(B*a^4 + 4*A*a^3*b) + (A*a^4)/2)/x^2
+ x^2*((A*b^4)/2 + 2*B*a*b^3) + (B*b^4*x^3)/3 + 2*a*b^2*x*(2*A*b + 3*B*a)
```

sympy [A] time = 0.42, size = 97, normalized size = 1.08

$$\frac{Bb^4x^3}{3}+2a^2b\left(3Ab+2Ba\right)\log\left(x\right)+x^2\left(\frac{Ab^4}{2}+2Bab^3\right)+x\left(4Aab^3+6Ba^2b^2\right)+\frac{-Aa^4+x\left(-8Aa^3b-2Ba^4\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**3,x)
```

```
[Out] B*b**4*x**3/3 + 2*a**2*b*(3*A*b + 2*B*a)*log(x) + x**2*(A*b**4/2 + 2*B*a*b*
*3) + x*(4*A*a*b**3 + 6*B*a**2*b**2) + (-A*a**4 + x*(-8*A*a**3*b - 2*B*a**4
))/(2*x**2)
```

3.531 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx$

Optimal. Leaf size=89

$$-\frac{a^4A}{3x^3}-\frac{a^3(aB+4Ab)}{2x^2}-\frac{2a^2b(2aB+3Ab)}{x}+b^3x(4aB+Ab)+2ab^2\log(x)(3aB+2Ab)+\frac{1}{2}b^4Bx^2$$

```
[Out] -1/3*a^4*A/x^3-1/2*a^3*(4*A*b+B*a)/x^2-2*a^2*b*(3*A*b+2*B*a)/x+b^3*(A*b+4*B
*a)*x+1/2*b^4*B*x^2+2*a*b^2*(2*A*b+3*B*a)*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$-\frac{a^3(aB+4Ab)}{2x^2}-\frac{2a^2b(2aB+3Ab)}{x}-\frac{a^4A}{3x^3}+b^3x(4aB+Ab)+2ab^2\log(x)(3aB+2Ab)+\frac{1}{2}b^4Bx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4,x]
```

```
[Out] -(a^4*A)/(3*x^3) - (a^3*(4*A*b + a*B))/(2*x^2) - (2*a^2*b*(3*A*b + 2*a*B))/
x + b^3*(A*b + 4*a*B)*x + (b^4*B*x^2)/2 + 2*a*b^2*(2*A*b + 3*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^4}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^4}\,dx\\ &= \int \left(b^3(Ab+4aB)+\frac{a^4A}{x^4}+\frac{a^3(4Ab+aB)}{x^3}+\frac{2a^2b(3Ab+2aB)}{x^2}+\frac{2ab^2(}{}\right.\\ &= -\frac{a^4A}{3x^3}-\frac{a^3(4Ab+aB)}{2x^2}-\frac{2a^2b(3Ab+2aB)}{x}+b^3(Ab+4aB)x+\frac{1}{2}b^4Bx^2\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.97

$$-\frac{a^4(2A+3Bx)}{6x^3}-\frac{2a^3b(A+2Bx)}{x^2}-\frac{6a^2Ab^2}{x}+2ab^2\log(x)(3aB+2Ab)+4ab^3Bx+\frac{1}{2}b^4x(2A+Bx)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^4,x]
```

```
[Out] (-6*a^2*A*b^2)/x + 4*a*b^3*B*x + (b^4*x*(2*A + B*x))/2 - (2*a^3*b*(A + 2*B*
x))/x^2 - (a^4*(2*A + 3*B*x))/(6*x^3) + 2*a*b^2*(2*A*b + 3*a*B)*Log[x]
```

fricas [A] time = 0.61, size = 101, normalized size = 1.13

$$\frac{3\,Bb^4x^5 - 2\,Aa^4 + 6\left(4\,Bab^3 + Ab^4\right)x^4 + 12\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3\log(x) - 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 - 3\left(Ba^4 + 4\right.}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^4*x^5 - 2*A*a^4 + 6*(4*B*a*b^3 + A*b^4)*x^4 + 12*(3*B*a^2*b^2 +
2*A*a*b^3)*x^3*log(x) - 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 3*(B*a^4 + 4*A*a
^3*b)*x)/x^3
```

giac [A] time = 0.16, size = 96, normalized size = 1.08

$$\frac{1}{2}\,Bb^4x^2 + 4\,Bab^3x + Ab^4x + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)\log\left(|x|\right) - \frac{2\,Aa^4 + 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 3\left(Ba^4 + 4\,Aa^3b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*b^4*x^2 + 4*B*a*b^3*x + A*b^4*x + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*log(abs
(x)) - 1/6*(2*A*a^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 3*(B*a^4 + 4*A*a^3
*b)*x)/x^3
```

maple [A] time = 0.05, size = 95, normalized size = 1.07

$$\frac{B\,b^4x^2}{2} + 4Aa\,b^3\ln(x) + A\,b^4x + 6B\,a^2b^2\ln(x) + 4Ba\,b^3x - \frac{6A\,a^2b^2}{x} - \frac{4B\,a^3b}{x} - \frac{2A\,a^3b}{x^2} - \frac{B\,a^4}{2x^2} - \frac{A\,a^4}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x)
```

```
[Out] 1/2*b^4*B*x^2+A*b^4*x+4*B*a*b^3*x-1/3*a^4*A/x^3-2*a^3/x^2*A*b-1/2*a^4/x^2*B
-6*a^2*b^2/x*A-4*a^3*b/x*B+4*A*ln(x)*a*b^3+6*B*ln(x)*a^2*b^2
```

maxima [A] time = 0.49, size = 96, normalized size = 1.08

$$\frac{1}{2}\,Bb^4x^2 + \left(4\,Bab^3 + Ab^4\right)x + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)\log(x) - \frac{2\,Aa^4 + 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 3\left(Ba^4 + 4\,Aa^3b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*b^4*x^2 + (4*B*a*b^3 + A*b^4)*x + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*log(x)
- 1/6*(2*A*a^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 3*(B*a^4 + 4*A*a^3*b)*x
)/x^3
```

mupad [B] time = 1.08, size = 94, normalized size = 1.06

$$x\,\left(A\,b^4 + 4\,B\,a\,b^3\right) + \ln(x)\,\left(6\,B\,a^2\,b^2 + 4\,A\,a\,b^3\right) - \frac{x\,\left(\frac{B\,a^4}{2} + 2\,A\,b\,a^3\right) + \frac{A\,a^4}{3} + x^2\,\left(4\,B\,a^3\,b + 6\,A\,a^2\,b^2\right)}{x^3} + \frac{B\,b^4\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^4,x)
```

```
[Out] x*(A*b^4 + 4*B*a*b^3) + log(x)*(6*B*a^2*b^2 + 4*A*a*b^3) - (x*((B*a^4)/2 +
2*A*a^3*b) + (A*a^4)/3 + x^2*(6*A*a^2*b^2 + 4*B*a^3*b))/x^3 + (B*b^4*x^2)/2
```

sympy [A] time = 0.73, size = 99, normalized size = 1.11

$$\frac{Bb^4x^2}{2}+2ab^2\left(2Ab+3Ba\right)\log\left(x\right)+x\left(Ab^4+4Bab^3\right)+\frac{-2Aa^4+x^2\left(-36Aa^2b^2-24Ba^3b\right)+x\left(-12Aa^3b-3Ba^4}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**4,x)
```

```
[Out] B*b**4*x**2/2 + 2*a*b**2*(2*A*b + 3*B*a)*log(x) + x*(A*b**4 + 4*B*a*b**3) +
 (-2*A*a**4 + x**2*(-36*A*a**2*b**2 - 24*B*a**3*b) + x*(-12*A*a**3*b - 3*B*
a**4))/(6*x**3)
```

3.532 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx$

Optimal. Leaf size=86

$$-\frac{a^4A}{4x^4}-\frac{a^3(aB+4Ab)}{3x^3}-\frac{a^2b(2aB+3Ab)}{x^2}+b^3\log(x)(4aB+Ab)-\frac{2ab^2(3aB+2Ab)}{x}+b^4Bx$$

```
[Out] -1/4*a^4*A/x^4-1/3*a^3*(4*A*b+B*a)/x^3-a^2*b*(3*A*b+2*B*a)/x^2-2*a*b^2*(2*A
*b+3*B*a)/x+b^4*B*x+b^3*(A*b+4*B*a)*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$-\frac{a^3(aB+4Ab)}{3x^3}-\frac{a^2b(2aB+3Ab)}{x^2}-\frac{a^4A}{4x^4}-\frac{2ab^2(3aB+2Ab)}{x}+b^3\log(x)(4aB+Ab)+b^4Bx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5,x]
```

```
[Out] -(a^4*A)/(4*x^4) - (a^3*(4*A*b + a*B))/(3*x^3) - (a^2*b*(3*A*b + 2*a*B))/x^
2 - (2*a*b^2*(2*A*b + 3*a*B))/x + b^4*B*x + b^3*(A*b + 4*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^5}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^5}\,dx\\
&= \int \left(b^4B+\frac{a^4A}{x^5}+\frac{a^3(4Ab+aB)}{x^4}+\frac{2a^2b(3Ab+2aB)}{x^3}+\frac{2ab^2(2Ab+3aB)}{x^2}\right.\\
&= -\frac{a^4A}{4x^4}-\frac{a^3(4Ab+aB)}{3x^3}-\frac{a^2b(3Ab+2aB)}{x^2}-\frac{2ab^2(2Ab+3aB)}{x}+b^4Bx+b
\end{aligned}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.99

$$-\frac{a^4(3A+4Bx)}{12x^4}-\frac{2a^3b(2A+3Bx)}{3x^3}-\frac{3a^2b^2(A+2Bx)}{x^2}+b^3\log(x)(4aB+Ab)-\frac{4aAb^3}{x}+b^4Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^5,x]
```

```
[Out] (-4*a*A*b^3)/x + b^4*B*x - (3*a^2*b^2*(A + 2*B*x))/x^2 - (2*a^3*b*(2*A + 3*
B*x))/(3*x^3) - (a^4*(3*A + 4*B*x))/(12*x^4) + b^3*(A*b + 4*a*B)*Log[x]
```

fricas [A] time = 0.69, size = 101, normalized size = 1.17

$$\frac{12\,Bb^4x^5 + 12\left(4\,Bab^3 + Ab^4\right)x^4\log(x) - 3\,Aa^4 - 24\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 - 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 - 4\,(Ba^4}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^4*x^5 + 12*(4*B*a*b^3 + A*b^4)*x^4*log(x) - 3*A*a^4 - 24*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 - 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 4*(B*a^4 + 4*
A*a^3*b)*x)/x^4
```

giac [A] time = 0.17, size = 96, normalized size = 1.12

$$Bb^4x + \left(4\,Bab^3 + Ab^4\right)\log\left(|x|\right) - \frac{3\,Aa^4 + 24\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 4\,(Ba^4 + 4\,Aa^3}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="giac")
```

```
[Out] B*b^4*x + (4*B*a*b^3 + A*b^4)*log(abs(x)) - 1/12*(3*A*a^4 + 24*(3*B*a^2*b^2
 + 2*A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 4*(B*a^4 + 4*A*a^3*b
)*x)/x^4
```

maple [A] time = 0.05, size = 96, normalized size = 1.12

$$A\,b^4\ln(x) + 4Ba\,b^3\ln(x) + B\,b^4x - \frac{4Aa\,b^3}{x} - \frac{6B\,a^2b^2}{x} - \frac{3A\,a^2b^2}{x^2} - \frac{2B\,a^3b}{x^2} - \frac{4A\,a^3b}{3x^3} - \frac{B\,a^4}{3x^3} - \frac{A\,a^4}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x)
```

```
[Out] b^4*B*x-1/4*a^4*A/x^4-4/3*a^3/x^3*A*b-1/3*a^4/x^3*B-3*a^2*b^2/x^2*A-2*a^3*b
/x^2*B-4*a*b^3/x*A-6*a^2*b^2/x*B+A*ln(x)*b^4+4*B*ln(x)*a*b^3
```

maxima [A] time = 0.46, size = 95, normalized size = 1.10

$$Bb^4x + \left(4\,Bab^3 + Ab^4\right)\log(x) - \frac{3\,Aa^4 + 24\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 12\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 4\left(Ba^4 + 4\,Aa^3b\right)}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*b^4*x + (4*B*a*b^3 + A*b^4)*log(x) - 1/12*(3*A*a^4 + 24*(3*B*a^2*b^2 + 2*
A*a*b^3)*x^3 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 4*(B*a^4 + 4*A*a^3*b)*x)/
x^4
```

mupad [B] time = 1.09, size = 93, normalized size = 1.08

$$\ln(x)\,\left(A\,b^4 + 4\,B\,a\,b^3\right) - \frac{x\,\left(\frac{B\,a^4}{3} + \frac{4\,A\,b\,a^3}{3}\right) + \frac{A\,a^4}{4} + x^2\,\left(2\,B\,a^3\,b + 3\,A\,a^2\,b^2\right) + x^3\,\left(6\,B\,a^2\,b^2 + 4\,A\,a\,b^3\right)}{x^4} + B\,b^4\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^5,x)
```

```
[Out] log(x)*(A*b^4 + 4*B*a*b^3) - (x*((B*a^4)/3 + (4*A*a^3*b)/3) + (A*a^4)/4 + x
^2*(3*A*a^2*b^2 + 2*B*a^3*b) + x^3*(6*B*a^2*b^2 + 4*A*a*b^3))/x^4 + B*b^4*x
```

sympy [A] time = 1.22, size = 99, normalized size = 1.15

$$Bb^4x+b^3\left(Ab+4Ba\right)\log\left(x\right)+\frac{-3Aa^4+x^3\left(-48Aab^3-72Ba^2b^2\right)+x^2\left(-36Aa^2b^2-24Ba^3b\right)+x\big(-16Aa^3b-4Ba}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**5,x)
```

```
[Out] B*b**4*x + b**3*(A*b + 4*B*a)*log(x) + (-3*A*a**4 + x**3*(-48*A*a*b**3 - 72
*B*a**2*b**2) + x**2*(-36*A*a**2*b**2 - 24*B*a**3*b) + x*(-16*A*a**3*b - 4*
B*a**4))/(12*x**4)
```

3.533 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx$

Optimal. Leaf size=71

$$-\frac{a^4B}{4x^4}-\frac{4a^3bB}{3x^3}-\frac{3a^2b^2B}{x^2}-\frac{A(a+bx)^5}{5ax^5}-\frac{4ab^3B}{x}+b^4B\log(x)$$

```
[Out] -1/4*a^4*B/x^4-4/3*a^3*b*B/x^3-3*a^2*b^2*B/x^2-4*a*b^3*B/x-1/5*A*(b*x+a)^5/
a/x^5+b^4*B*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{3a^2b^2B}{x^2}-\frac{4a^3bB}{3x^3}-\frac{a^4B}{4x^4}-\frac{A(a+bx)^5}{5ax^5}-\frac{4ab^3B}{x}+b^4B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6,x]
```

```
[Out] -(a^4*B)/(4*x^4) - (4*a^3*b*B)/(3*x^3) - (3*a^2*b^2*B)/x^2 - (4*a*b^3*B)/x
- (A*(a + b*x)^5)/(5*a*x^5) + b^4*B*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^6}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^6}\,dx\\
&= -\frac{A(a+bx)^5}{5ax^5}+B\int \frac{(a+bx)^4}{x^5}\,dx\\
&= -\frac{A(a+bx)^5}{5ax^5}+B\int \left(\frac{a^4}{x^5}+\frac{4a^3b}{x^4}+\frac{6a^2b^2}{x^3}+\frac{4ab^3}{x^2}+\frac{b^4}{x}\right)dx\\
&= -\frac{a^4B}{4x^4}-\frac{4a^3bB}{3x^3}-\frac{3a^2b^2B}{x^2}-\frac{4ab^3B}{x}-\frac{A(a+bx)^5}{5ax^5}+b^4B\log(x)
\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 1.23

$$b^4B\log(x)-\frac{3a^4(4A+5Bx)+20a^3bx(3A+4Bx)+60a^2b^2x^2(2A+3Bx)+120ab^3x^3(A+2Bx)+60Ab^4x^4}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^6,x]
```

```
[Out] -1/60*(60*A*b^4*x^4 + 120*a*b^3*x^3*(A + 2*B*x) + 60*a^2*b^2*x^2*(2*A + 3*B
*x) + 20*a^3*b*x*(3*A + 4*B*x) + 3*a^4*(4*A + 5*B*x))/x^5 + b^4*B*Log[x]
```

fricas [A] time = 0.84, size = 101, normalized size = 1.42

$$\frac{60\,Bb^4x^5\log(x)-12\,Aa^4-60\,\big(4\,Bab^3+Ab^4\big)x^4-60\,\big(3\,Ba^2b^2+2\,Aab^3\big)x^3-40\,\big(2\,Ba^3b+3\,Aa^2b^2\big)x^2-15\,\big(Ba^4}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^4*x^5*log(x) - 12*A*a^4 - 60*(4*B*a*b^3 + A*b^4)*x^4 - 60*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 15*(B*a^4 +
4*A*a^3*b)*x)/x^5
```

giac [A] time = 0.17, size = 99, normalized size = 1.39

$$Bb^4\log\left(|x|\right)-\frac{12\,Aa^4+60\,\big(4\,Bab^3+Ab^4\big)x^4+60\,\big(3\,Ba^2b^2+2\,Aab^3\big)x^3+40\,\big(2\,Ba^3b+3\,Aa^2b^2\big)x^2+15\,\big(Ba^4+4}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="giac")
```

```
[Out] B*b^4*log(abs(x)) - 1/60*(12*A*a^4 + 60*(4*B*a*b^3 + A*b^4)*x^4 + 60*(3*B*a
^2*b^2 + 2*A*a*b^3)*x^3 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 15*(B*a^4 + 4*
A*a^3*b)*x)/x^5
```

maple [A] time = 0.06, size = 100, normalized size = 1.41

$$B\,b^4\ln(x)-\frac{A\,b^4}{x}-\frac{4Ba\,b^3}{x}-\frac{2Aa\,b^3}{x^2}-\frac{3B\,a^2b^2}{x^2}-\frac{2A\,a^2b^2}{x^3}-\frac{4B\,a^3b}{3x^3}-\frac{A\,a^3b}{x^4}-\frac{B\,a^4}{4x^4}-\frac{A\,a^4}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x)
```

```
[Out] -1/5*A*a^4/x^5-a^3/x^4*A*b-1/4*a^4*B/x^4-2*a^2*b^2/x^3*A-4/3*a^3*b*B/x^3-2*
a*b^3/x^2*A-3*a^2*b^2*B/x^2-b^4/x*A-4*a*b^3*B/x+b^4*B*ln(x)
```

maxima [A] time = 0.46, size = 98, normalized size = 1.38

$$Bb^4\log(x)-\frac{12\,Aa^4+60\,\big(4\,Bab^3+Ab^4\big)x^4+60\,\big(3\,Ba^2b^2+2\,Aab^3\big)x^3+40\,\big(2\,Ba^3b+3\,Aa^2b^2\big)x^2+15\,\big(Ba^4+4\,A}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^6,x, algorithm="maxima")
```

```
[Out] B*b^4*log(x) - 1/60*(12*A*a^4 + 60*(4*B*a*b^3 + A*b^4)*x^4 + 60*(3*B*a^2*b^
2 + 2*A*a*b^3)*x^3 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 15*(B*a^4 + 4*A*a^3
*b)*x)/x^5
```

mupad [B] time = 1.09, size = 94, normalized size = 1.32

$$B\,b^4\,\ln(x)-\frac{x\left(\frac{B\,a^4}{4}+A\,b\,a^3\right)+\frac{A\,a^4}{5}+x^3\left(3\,B\,a^2\,b^2+2\,A\,a\,b^3\right)+x^2\left(\frac{4\,B\,a^3\,b}{3}+2\,A\,a^2\,b^2\right)+x^4\left(A\,b^4+4\,B\,a\,b^3\right)}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^6,x)
```

```
[Out] B*b^4*log(x) - (x*((B*a^4)/4 + A*a^3*b) + (A*a^4)/5 + x^3*(3*B*a^2*b^2 + 2*
A*a*b^3) + x^2*(2*A*a^2*b^2 + (4*B*a^3*b)/3) + x^4*(A*b^4 + 4*B*a*b^3))/x^5
```

sympy [A] time = 1.75, size = 105, normalized size = 1.48

$$Bb^4\log(x)+\frac{-12Aa^4+x^4\left(-60Ab^4-240Bab^3\right)+x^3\left(-120Aab^3-180Ba^2b^2\right)+x^2\left(-120Aa^2b^2-80Ba^3b\right)+x}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**6,x)
```

```
[Out] B*b**4*log(x) + (-12*A*a**4 + x**4*(-60*A*b**4 - 240*B*a*b**3) + x**3*(-120
*A*a*b**3 - 180*B*a**2*b**2) + x**2*(-120*A*a**2*b**2 - 80*B*a**3*b) + x*(-
60*A*a**3*b - 15*B*a**4))/(60*x**5)
```

3.534 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^5(Ab-6aB)}{30a^2x^5}-\frac{A(a+bx)^5}{6ax^6}$$

```
[Out] -1/6*A*(b*x+a)^5/a/x^6+1/30*(A*b-6*B*a)*(b*x+a)^5/a^2/x^5
```

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 37}

$$\frac{(a+bx)^5(Ab-6aB)}{30a^2x^5}-\frac{A(a+bx)^5}{6ax^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7,x]
```

```
[Out] -(A*(a + b*x)^5)/(6*a*x^6) + ((A*b - 6*a*B)*(a + b*x)^5)/(30*a^2*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^7}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^7}\,dx\\ &= -\frac{A(a+bx)^5}{6ax^6}+\frac{(-Ab+6aB)\int \frac{(a+bx)^4}{x^6}\,dx}{6a}\\ &= -\frac{A(a+bx)^5}{6ax^6}+\frac{(Ab-6aB)(a+bx)^5}{30a^2x^5}\end{aligned}$$

Mathematica [A] time = 0.02, size = 85, normalized size = 1.93

$$-\frac{a^4(5A+6Bx)+6a^3bx(4A+5Bx)+15a^2b^2x^2(3A+4Bx)+20ab^3x^3(2A+3Bx)+15b^4x^4(A+2Bx)}{30x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^7,x]
```

```
[Out] -1/30*(15*b^4*x^4*(A + 2*B*x) + 20*a*b^3*x^3*(2*A + 3*B*x) + 15*a^2*b^2*x^2
*(3*A + 4*B*x) + 6*a^3*b*x*(4*A + 5*B*x) + a^4*(5*A + 6*B*x))/x^6
```

fricas [B] time = 0.87, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+5\,Aa^4+15\left(4\,Bab^3+Ab^4\right)x^4+20\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+15\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+6\left(Ba^4+4\right.}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 5*A*a^4 + 15*(4*B*a*b^3 + A*b^4)*x^4 + 20*(3*B*a^2*b^
2 + 2*A*a*b^3)*x^3 + 15*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 6*(B*a^4 + 4*A*a^3*
b)*x)/x^6
```

giac [B] time = 0.17, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+60\,Bab^3x^4+15\,Ab^4x^4+60\,Ba^2b^2x^3+40\,Aab^3x^3+30\,Ba^3bx^2+45\,Aa^2b^2x^2+6\,Ba^4x+24\,Aa^3b}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="giac")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 60*B*a*b^3*x^4 + 15*A*b^4*x^4 + 60*B*a^2*b^2*x^3 + 40
*A*a*b^3*x^3 + 30*B*a^3*b*x^2 + 45*A*a^2*b^2*x^2 + 6*B*a^4*x + 24*A*a^3*b*x
 + 5*A*a^4)/x^6
```

maple [B] time = 0.06, size = 88, normalized size = 2.00

$$-\frac{B\,b^4}{x}-\frac{(Ab+4Ba)\,b^3}{2x^2}-\frac{2\,(2Ab+3Ba)\,a\,b^2}{3x^3}-\frac{A\,a^4}{6x^6}-\frac{(3Ab+2Ba)\,a^2b}{2x^4}-\frac{(4Ab+Ba)\,a^3}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x)
```

```
[Out] -1/5*a^3*(4*A*b+B*a)/x^5-1/2*a^2*b*(3*A*b+2*B*a)/x^4-2/3*a*b^2*(2*A*b+3*B*a
)/x^3-1/2*b^3*(A*b+4*B*a)/x^2-1/6*A*a^4/x^6-b^4*B/x
```

maxima [B] time = 0.58, size = 99, normalized size = 2.25

$$-\frac{30\,Bb^4x^5+5\,Aa^4+15\left(4\,Bab^3+Ab^4\right)x^4+20\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+15\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+6\left(Ba^4+4\right.}{30\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*b^4*x^5 + 5*A*a^4 + 15*(4*B*a*b^3 + A*b^4)*x^4 + 20*(3*B*a^2*b^
2 + 2*A*a*b^3)*x^3 + 15*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 6*(B*a^4 + 4*A*a^3*
b)*x)/x^6
```

mupad [B] time = 0.05, size = 95, normalized size = 2.16

$$-\frac{x\,\left(\frac{B\,a^4}{5}+\frac{4\,A\,b\,a^3}{5}\right)+\frac{A\,a^4}{6}+x^2\,\left(B\,a^3\,b+\frac{3\,A\,a^2\,b^2}{2}\right)+x^3\,\left(2\,B\,a^2\,b^2+\frac{4\,A\,a\,b^3}{3}\right)+x^4\,\left(\frac{A\,b^4}{2}+2\,B\,a\,b^3\right)+B\,b^4\,x^5}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^7,x)
```

```
[Out] -(x*((B*a^4)/5 + (4*A*a^3*b)/5) + (A*a^4)/6 + x^2*((3*A*a^2*b^2)/2 + B*a^3*
b) + x^3*(2*B*a^2*b^2 + (4*A*a*b^3)/3) + x^4*((A*b^4)/2 + 2*B*a*b^3) + B*b^
4*x^5)/x^6
```

sympy [B] time = 2.35, size = 107, normalized size = 2.43

$$\frac{-5Aa^{4} - 30Bb^{4}x^{5} + x^{4}\left(-15Ab^{4} - 60Bab^{3}\right) + x^{3}\left(-40Aab^{3} - 60Ba^{2}b^{2}\right) + x^{2}\left(-45Aa^{2}b^{2} - 30Ba^{3}b\right) + x\left(-24Aa^{3}\right.}{30x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**7,x)
```

```
[Out] (-5*A*a**4 - 30*B*b**4*x**5 + x**4*(-15*A*b**4 - 60*B*a*b**3) + x**3*(-40*A
*a*b**3 - 60*B*a**2*b**2) + x**2*(-45*A*a**2*b**2 - 30*B*a**3*b) + x*(-24*A
*a**3*b - 6*B*a**4))/(30*x**6)
```

3.535 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{7x^7}-\frac{a^3(aB+4Ab)}{6x^6}-\frac{2a^2b(2aB+3Ab)}{5x^5}-\frac{b^3(4aB+Ab)}{3x^3}-\frac{ab^2(3aB+2Ab)}{2x^4}-\frac{b^4B}{2x^2}$$

```
[Out] -1/7*a^4*A/x^7-1/6*a^3*(4*A*b+B*a)/x^6-2/5*a^2*b*(3*A*b+2*B*a)/x^5-1/2*a*b^
2*(2*A*b+3*B*a)/x^4-1/3*b^3*(A*b+4*B*a)/x^3-1/2*b^4*B/x^2
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{6x^6}-\frac{2a^2b(2aB+3Ab)}{5x^5}-\frac{a^4A}{7x^7}-\frac{ab^2(3aB+2Ab)}{2x^4}-\frac{b^3(4aB+Ab)}{3x^3}-\frac{b^4B}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8,x]
```

```
[Out] -(a^4*A)/(7*x^7) - (a^3*(4*A*b + a*B))/(6*x^6) - (2*a^2*b*(3*A*b + 2*a*B))/
(5*x^5) - (a*b^2*(2*A*b + 3*a*B))/(2*x^4) - (b^3*(A*b + 4*a*B))/(3*x^3) - (
b^4*B)/(2*x^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^8}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^8}\,dx\\ &= \int \left(\frac{a^4A}{x^8}+\frac{a^3(4Ab+aB)}{x^7}+\frac{2a^2b(3Ab+2aB)}{x^6}+\frac{2ab^2(2Ab+3aB)}{x^5}+\right.\\ &= -\frac{a^4A}{7x^7}-\frac{a^3(4Ab+aB)}{6x^6}-\frac{2a^2b(3Ab+2aB)}{5x^5}-\frac{ab^2(2Ab+3aB)}{2x^4}-\end{aligned}$$

Mathematica [A] time = 0.02, size = 88, normalized size = 0.89

$$-\frac{5a^4(6A+7Bx)+28a^3bx(5A+6Bx)+63a^2b^2x^2(4A+5Bx)+70ab^3x^3(3A+4Bx)+35b^4x^4(2A+3Bx)}{210x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^8,x]
```

```
[Out] -1/210*(35*b^4*x^4*(2*A + 3*B*x) + 70*a*b^3*x^3*(3*A + 4*B*x) + 63*a^2*b^2*
x^2*(4*A + 5*B*x) + 28*a^3*b*x*(5*A + 6*B*x) + 5*a^4*(6*A + 7*B*x))/x^7
```

fricas [A] time = 0.84, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5 + 30\,Aa^4 + 70\,\left(4\,Bab^3 + Ab^4\right)x^4 + 105\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 84\,\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 35\,\left(Ba^4 +\right.}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 30*A*a^4 + 70*(4*B*a*b^3 + A*b^4)*x^4 + 105*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^3 + 84*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 35*(B*a^4 + 4*A
*a^3*b)*x)/x^7
```

giac [A] time = 0.16, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5 + 280\,Bab^3x^4 + 70\,Ab^4x^4 + 315\,Ba^2b^2x^3 + 210\,Aab^3x^3 + 168\,Ba^3bx^2 + 252\,Aa^2b^2x^2 + 35\,Ba^4x + 14}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 280*B*a*b^3*x^4 + 70*A*b^4*x^4 + 315*B*a^2*b^2*x^3
+ 210*A*a*b^3*x^3 + 168*B*a^3*b*x^2 + 252*A*a^2*b^2*x^2 + 35*B*a^4*x + 140*
A*a^3*b*x + 30*A*a^4)/x^7
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{2x^2} - \frac{(Ab + 4Ba)\,b^3}{3x^3} - \frac{(2Ab + 3Ba)\,a\,b^2}{2x^4} - \frac{A\,a^4}{7x^7} - \frac{2\,(3Ab + 2Ba)\,a^2b}{5x^5} - \frac{(4Ab + Ba)\,a^3}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x)
```

```
[Out] -1/7*a^4*A/x^7-1/6*a^3*(4*A*b+B*a)/x^6-2/5*a^2*b*(3*A*b+2*B*a)/x^5-1/2*a*b^
2*(2*A*b+3*B*a)/x^4-1/3*b^3*(A*b+4*B*a)/x^3-1/2*b^4*B/x^2
```

maxima [A] time = 0.59, size = 99, normalized size = 1.00

$$-\frac{105\,Bb^4x^5 + 30\,Aa^4 + 70\,\left(4\,Bab^3 + Ab^4\right)x^4 + 105\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 84\,\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 35\,\left(Ba^4 +\right.}{210\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*b^4*x^5 + 30*A*a^4 + 70*(4*B*a*b^3 + A*b^4)*x^4 + 105*(3*B*a^
2*b^2 + 2*A*a*b^3)*x^3 + 84*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 35*(B*a^4 + 4*A
*a^3*b)*x)/x^7
```

mupad [B] time = 1.08, size = 96, normalized size = 0.97

$$-\frac{x\,\left(\frac{B\,a^4}{6}+\frac{2\,A\,b\,a^3}{3}\right)+\frac{A\,a^4}{7}+x^3\,\left(\frac{3\,B\,a^2\,b^2}{2}+A\,a\,b^3\right)+x^2\,\left(\frac{4\,B\,a^3\,b}{5}+\frac{6\,A\,a^2\,b^2}{5}\right)+x^4\,\left(\frac{A\,b^4}{3}+\frac{4\,B\,a\,b^3}{3}\right)+\frac{B\,b^4\,x^5}{2}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^8,x)
```

```
[Out] -(x*((B*a^4)/6 + (2*A*a^3*b)/3) + (A*a^4)/7 + x^3*((3*B*a^2*b^2)/2 + A*a*b^
3) + x^2*((6*A*a^2*b^2)/5 + (4*B*a^3*b)/5) + x^4*((A*b^4)/3 + (4*B*a*b^3)/3
) + (B*b^4*x^5)/2)/x^7
```

sympy [A] time = 2.85, size = 107, normalized size = 1.08

$$\frac{-30Aa^4 - 105Bb^4x^5 + x^4\left(-70Ab^4 - 280Bab^3\right) + x^3\left(-210Aab^3 - 315Ba^2b^2\right) + x^2\left(-252Aa^2b^2 - 168Ba^3b\right) +}{210x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**8,x)
```

```
[Out] (-30*A*a**4 - 105*B*b**4*x**5 + x**4*(-70*A*b**4 - 280*B*a*b**3) + x**3*(-2
10*A*a*b**3 - 315*B*a**2*b**2) + x**2*(-252*A*a**2*b**2 - 168*B*a**3*b) + x
*(-140*A*a**3*b - 35*B*a**4))/(210*x**7)
```

3.536 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{8x^8}-\frac{a^3(aB+4Ab)}{7x^7}-\frac{a^2b(2aB+3Ab)}{3x^6}-\frac{b^3(4aB+Ab)}{4x^4}-\frac{2ab^2(3aB+2Ab)}{5x^5}-\frac{b^4B}{3x^3}$$

```
[Out] -1/8*a^4*A/x^8-1/7*a^3*(4*A*b+B*a)/x^7-1/3*a^2*b*(3*A*b+2*B*a)/x^6-2/5*a*b^
2*(2*A*b+3*B*a)/x^5-1/4*b^3*(A*b+4*B*a)/x^4-1/3*b^4*B/x^3
```

Rubi **[A]** time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$-\frac{a^3(aB+4Ab)}{7x^7}-\frac{a^2b(2aB+3Ab)}{3x^6}-\frac{a^4A}{8x^8}-\frac{2ab^2(3aB+2Ab)}{5x^5}-\frac{b^3(4aB+Ab)}{4x^4}-\frac{b^4B}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9,x]
```

```
[Out] -(a^4*A)/(8*x^8) - (a^3*(4*A*b + a*B))/(7*x^7) - (a^2*b*(3*A*b + 2*a*B))/(3
*x^6) - (2*a*b^2*(2*A*b + 3*a*B))/(5*x^5) - (b^3*(A*b + 4*a*B))/(4*x^4) - (
b^4*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^9}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^9}\,dx\\ &= \int \left(\frac{a^4A}{x^9}+\frac{a^3(4Ab+aB)}{x^8}+\frac{2a^2b(3Ab+2aB)}{x^7}+\frac{2ab^2(2Ab+3aB)}{x^6}+\frac{b^3(A\\ &= -\frac{a^4A}{8x^8}-\frac{a^3(4Ab+aB)}{7x^7}-\frac{a^2b(3Ab+2aB)}{3x^6}-\frac{2ab^2(2Ab+3aB)}{5x^5}-\frac{b^3(Ab+}{4x^4}\end{aligned}$$

Mathematica **[A]** time = 0.03, size = 88, normalized size = 0.89

$$-\frac{15a^4(7A+8Bx)+80a^3bx(6A+7Bx)+168a^2b^2x^2(5A+6Bx)+168ab^3x^3(4A+5Bx)+70b^4x^4(3A+4Bx)}{840x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^9,x]
```

```
[Out] -1/840*(70*b^4*x^4*(3*A + 4*B*x) + 168*a*b^3*x^3*(4*A + 5*B*x) + 168*a^2*b^
2*x^2*(5*A + 6*B*x) + 80*a^3*b*x*(6*A + 7*B*x) + 15*a^4*(7*A + 8*B*x))/x^8
```

fricas [A] time = 0.92, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5 + 105\,Aa^4 + 210\left(4\,Bab^3 + Ab^4\right)x^4 + 336\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 280\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 12}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*b^4*x^5 + 105*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 336*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 + 280*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 120*(B*a^4 +
 4*A*a^3*b)*x)/x^8
```

giac [A] time = 0.16, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5 + 840\,Bab^3x^4 + 210\,Ab^4x^4 + 1008\,Ba^2b^2x^3 + 672\,Aab^3x^3 + 560\,Ba^3bx^2 + 840\,Aa^2b^2x^2 + 120\,Ba^4}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*b^4*x^5 + 840*B*a*b^3*x^4 + 210*A*b^4*x^4 + 1008*B*a^2*b^2*x^
3 + 672*A*a*b^3*x^3 + 560*B*a^3*b*x^2 + 840*A*a^2*b^2*x^2 + 120*B*a^4*x + 4
80*A*a^3*b*x + 105*A*a^4)/x^8
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{3x^3} - \frac{(Ab + 4Ba)\,b^3}{4x^4} - \frac{2\,(2Ab + 3Ba)\,a\,b^2}{5x^5} - \frac{A\,a^4}{8x^8} - \frac{(3Ab + 2Ba)\,a^2b}{3x^6} - \frac{(4Ab + Ba)\,a^3}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x)
```

```
[Out] -1/8*a^4*A/x^8-1/7*a^3*(4*A*b+B*a)/x^7-1/3*a^2*b*(3*A*b+2*B*a)/x^6-2/5*a*b^
2*(2*A*b+3*B*a)/x^5-1/4*b^3*(A*b+4*B*a)/x^4-1/3*b^4*B/x^3
```

maxima [A] time = 0.52, size = 99, normalized size = 1.00

$$-\frac{280\,Bb^4x^5 + 105\,Aa^4 + 210\left(4\,Bab^3 + Ab^4\right)x^4 + 336\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 280\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 12}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*b^4*x^5 + 105*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 336*(3*B*
a^2*b^2 + 2*A*a*b^3)*x^3 + 280*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 120*(B*a^4 +
 4*A*a^3*b)*x)/x^8
```

mupad [B] time = 1.07, size = 95, normalized size = 0.96

$$-\frac{x\,\left(\frac{B\,a^4}{7}+\frac{4\,A\,b\,a^3}{7}\right)+\frac{A\,a^4}{8}+x^2\,\left(\frac{2\,B\,a^3\,b}{3}+A\,a^2\,b^2\right)+x^3\,\left(\frac{6\,B\,a^2\,b^2}{5}+\frac{4\,A\,a\,b^3}{5}\right)+x^4\,\left(\frac{A\,b^4}{4}+B\,a\,b^3\right)+\frac{B\,b^4\,x^5}{3}}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^9,x)
```

```
[Out] -(x*((B*a^4)/7 + (4*A*a^3*b)/7) + (A*a^4)/8 + x^2*(A*a^2*b^2 + (2*B*a^3*b)/
3) + x^3*((6*B*a^2*b^2)/5 + (4*A*a*b^3)/5) + x^4*((A*b^4)/4 + B*a*b^3) + (B
*b^4*x^5)/3)/x^8
```

sympy [A] time = 3.71, size = 107, normalized size = 1.08

$$\frac{-105Aa^4 - 280Bb^4x^5 + x^4\left(-210Ab^4 - 840Bab^3\right) + x^3\left(-672Aab^3 - 1008Ba^2b^2\right) + x^2\left(-840Aa^2b^2 - 560Ba^3b\right) +}{840x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**9,x)
```

```
[Out] (-105*A*a**4 - 280*B*b**4*x**5 + x**4*(-210*A*b**4 - 840*B*a*b**3) + x**3*(
-672*A*a*b**3 - 1008*B*a**2*b**2) + x**2*(-840*A*a**2*b**2 - 560*B*a**3*b)
+ x*(-480*A*a**3*b - 120*B*a**4))/(840*x**8)
```

3.537 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{9x^9}-\frac{a^3(aB+4Ab)}{8x^8}-\frac{2a^2b(2aB+3Ab)}{7x^7}-\frac{b^3(4aB+Ab)}{5x^5}-\frac{ab^2(3aB+2Ab)}{3x^6}-\frac{b^4B}{4x^4}$$

```
[Out] -1/9*a^4*A/x^9-1/8*a^3*(4*A*b+B*a)/x^8-2/7*a^2*b*(3*A*b+2*B*a)/x^7-1/3*a*b^
2*(2*A*b+3*B*a)/x^6-1/5*b^3*(A*b+4*B*a)/x^5-1/4*b^4*B/x^4
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{8x^8}-\frac{2a^2b(2aB+3Ab)}{7x^7}-\frac{a^4A}{9x^9}-\frac{ab^2(3aB+2Ab)}{3x^6}-\frac{b^3(4aB+Ab)}{5x^5}-\frac{b^4B}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10,x]
```

```
[Out] -(a^4*A)/(9*x^9) - (a^3*(4*A*b + a*B))/(8*x^8) - (2*a^2*b*(3*A*b + 2*a*B))/
(7*x^7) - (a*b^2*(2*A*b + 3*a*B))/(3*x^6) - (b^3*(A*b + 4*a*B))/(5*x^5) - (
b^4*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{10}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{10}}\,dx\\ &= \int \left(\frac{a^4A}{x^{10}}+\frac{a^3(4Ab+aB)}{x^9}+\frac{2a^2b(3Ab+2aB)}{x^8}+\frac{2ab^2(2Ab+3aB)}{x^7}+\right.\\ &= -\frac{a^4A}{9x^9}-\frac{a^3(4Ab+aB)}{8x^8}-\frac{2a^2b(3Ab+2aB)}{7x^7}-\frac{ab^2(2Ab+3aB)}{3x^6}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.89

$$-\frac{35a^4(8A+9Bx)+180a^3bx(7A+8Bx)+360a^2b^2x^2(6A+7Bx)+336ab^3x^3(5A+6Bx)+126b^4x^4(4A+5B}{2520x^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^10,x]
```

```
[Out] -1/2520*(126*b^4*x^4*(4*A + 5*B*x) + 336*a*b^3*x^3*(5*A + 6*B*x) + 360*a^2*
b^2*x^2*(6*A + 7*B*x) + 180*a^3*b*x*(7*A + 8*B*x) + 35*a^4*(8*A + 9*B*x))/x
^9
```

fricas [A] time = 0.93, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5 + 280\,Aa^4 + 504\,\left(4\,Bab^3 + Ab^4\right)x^4 + 840\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 720\,\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 315\,(}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*b^4*x^5 + 280*A*a^4 + 504*(4*B*a*b^3 + A*b^4)*x^4 + 840*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 720*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4
+ 4*A*a^3*b)*x)/x^9
```

giac [A] time = 0.18, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5 + 2016\,Bab^3x^4 + 504\,Ab^4x^4 + 2520\,Ba^2b^2x^3 + 1680\,Aab^3x^3 + 1440\,Ba^3bx^2 + 2160\,Aa^2b^2x^2 + 315\,B}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="giac")
```

```
[Out] -1/2520*(630*B*b^4*x^5 + 2016*B*a*b^3*x^4 + 504*A*b^4*x^4 + 2520*B*a^2*b^2*
x^3 + 1680*A*a*b^3*x^3 + 1440*B*a^3*b*x^2 + 2160*A*a^2*b^2*x^2 + 315*B*a^4*
x + 1260*A*a^3*b*x + 280*A*a^4)/x^9
```

maple [A] time = 0.05, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{4x^4} - \frac{(Ab + 4Ba)\,b^3}{5x^5} - \frac{(2Ab + 3Ba)\,a\,b^2}{3x^6} - \frac{A\,a^4}{9x^9} - \frac{2\,(3Ab + 2Ba)\,a^2b}{7x^7} - \frac{(4Ab + Ba)\,a^3}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x)
```

```
[Out] -1/9*a^4*A/x^9-1/8*a^3*(4*A*b+B*a)/x^8-2/7*a^2*b*(3*A*b+2*B*a)/x^7-1/3*a*b^
2*(2*A*b+3*B*a)/x^6-1/5*b^3*(A*b+4*B*a)/x^5-1/4*b^4*B/x^4
```

maxima [A] time = 0.47, size = 99, normalized size = 1.00

$$-\frac{630\,Bb^4x^5 + 280\,Aa^4 + 504\,\left(4\,Bab^3 + Ab^4\right)x^4 + 840\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 720\,\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 315\,(}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(630*B*b^4*x^5 + 280*A*a^4 + 504*(4*B*a*b^3 + A*b^4)*x^4 + 840*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 720*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4
+ 4*A*a^3*b)*x)/x^9
```

mupad [B] time = 0.05, size = 96, normalized size = 0.97

$$-\frac{x\,\left(\frac{B\,a^4}{8}+\frac{A\,b\,a^3}{2}\right)+\frac{A\,a^4}{9}+x^3\,\left(B\,a^2\,b^2+\frac{2\,A\,a\,b^3}{3}\right)+x^2\,\left(\frac{4\,B\,a^3\,b}{7}+\frac{6\,A\,a^2\,b^2}{7}\right)+x^4\,\left(\frac{A\,b^4}{5}+\frac{4\,B\,a\,b^3}{5}\right)+\frac{B\,b^4\,x^5}{4}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^10,x)
```

```
[Out] -(x*((B*a^4)/8 + (A*a^3*b)/2) + (A*a^4)/9 + x^3*(B*a^2*b^2 + (2*A*a*b^3)/3)
 + x^2*((6*A*a^2*b^2)/7 + (4*B*a^3*b)/7) + x^4*((A*b^4)/5 + (4*B*a*b^3)/5)
+ (B*b^4*x^5)/4)/x^9
```

sympy [A] time = 4.55, size = 107, normalized size = 1.08

$$\frac{-280Aa^4 - 630Bb^4x^5 + x^4\left(-504Ab^4 - 2016Bab^3\right) + x^3\left(-1680Aab^3 - 2520Ba^2b^2\right) + x^2\left(-2160Aa^2b^2 - 1440\right.}{2520x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**10,x)
```

```
[Out] (-280*A*a**4 - 630*B*b**4*x**5 + x**4*(-504*A*b**4 - 2016*B*a*b**3) + x**3*
(-1680*A*a*b**3 - 2520*B*a**2*b**2) + x**2*(-2160*A*a**2*b**2 - 1440*B*a**3
*b) + x*(-1260*A*a**3*b - 315*B*a**4))/(2520*x**9)
```

3.538 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}}\,dx$

Optimal. Leaf size=99

$$-\frac{a^4A}{10x^{10}}-\frac{a^3(aB+4Ab)}{9x^9}-\frac{a^2b(2aB+3Ab)}{4x^8}-\frac{b^3(4aB+Ab)}{6x^6}-\frac{2ab^2(3aB+2Ab)}{7x^7}-\frac{b^4B}{5x^5}$$

```
[Out] -1/10*a^4*A/x^10-1/9*a^3*(4*A*b+B*a)/x^9-1/4*a^2*b*(3*A*b+2*B*a)/x^8-2/7*a*
b^2*(2*A*b+3*B*a)/x^7-1/6*b^3*(A*b+4*B*a)/x^6-1/5*b^4*B/x^5
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3(aB+4Ab)}{9x^9}-\frac{a^2b(2aB+3Ab)}{4x^8}-\frac{a^4A}{10x^{10}}-\frac{2ab^2(3aB+2Ab)}{7x^7}-\frac{b^3(4aB+Ab)}{6x^6}-\frac{b^4B}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11,x]
```

```
[Out] -(a^4*A)/(10*x^10) - (a^3*(4*A*b + a*B))/(9*x^9) - (a^2*b*(3*A*b + 2*a*B))/
(4*x^8) - (2*a*b^2*(2*A*b + 3*a*B))/(7*x^7) - (b^3*(A*b + 4*a*B))/(6*x^6) -
 (b^4*B)/(5*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{11}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{11}}\,dx\\ &= \int \left(\frac{a^4A}{x^{11}}+\frac{a^3(4Ab+aB)}{x^{10}}+\frac{2a^2b(3Ab+2aB)}{x^9}+\frac{2ab^2(2Ab+3aB)}{x^8}+\frac{b^3(A}{}\right.\\ &= -\frac{a^4A}{10x^{10}}-\frac{a^3(4Ab+aB)}{9x^9}-\frac{a^2b(3Ab+2aB)}{4x^8}-\frac{2ab^2(2Ab+3aB)}{7x^7}-\frac{b^3(Ab-}{6x}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.89

$$-\frac{14a^4(9A+10Bx)+70a^3bx(8A+9Bx)+135a^2b^2x^2(7A+8Bx)+120ab^3x^3(6A+7Bx)+42b^4x^4(5A+6Bx)}{1260x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^11,x]
```

```
[Out] -1/1260*(42*b^4*x^4*(5*A + 6*B*x) + 120*a*b^3*x^3*(6*A + 7*B*x) + 135*a^2*b
^2*x^2*(7*A + 8*B*x) + 70*a^3*b*x*(8*A + 9*B*x) + 14*a^4*(9*A + 10*B*x))/x^
10
```

fricas [A] time = 0.91, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5 + 126\,Aa^4 + 210\left(4\,Bab^3 + Ab^4\right)x^4 + 360\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 315\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 140}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="fricas")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 126*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 360*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 315*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 140*(B*a^4
+ 4*A*a^3*b)*x)/x^10
```

giac [A] time = 0.15, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5 + 840\,Bab^3x^4 + 210\,Ab^4x^4 + 1080\,Ba^2b^2x^3 + 720\,Aab^3x^3 + 630\,Ba^3bx^2 + 945\,Aa^2b^2x^2 + 140\,Ba^4}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="giac")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 840*B*a*b^3*x^4 + 210*A*b^4*x^4 + 1080*B*a^2*b^2*x
^3 + 720*A*a*b^3*x^3 + 630*B*a^3*b*x^2 + 945*A*a^2*b^2*x^2 + 140*B*a^4*x +
560*A*a^3*b*x + 126*A*a^4)/x^10
```

maple [A] time = 0.06, size = 88, normalized size = 0.89

$$-\frac{B\,b^4}{5x^5} - \frac{(Ab + 4Ba)\,b^3}{6x^6} - \frac{2\,(2Ab + 3Ba)\,a\,b^2}{7x^7} - \frac{A\,a^4}{10x^{10}} - \frac{(3Ab + 2Ba)\,a^2b}{4x^8} - \frac{(4Ab + Ba)\,a^3}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x)
```

```
[Out] -1/10*a^4*A/x^10-1/9*a^3*(4*A*b+B*a)/x^9-1/4*a^2*b*(3*A*b+2*B*a)/x^8-2/7*a*
b^2*(2*A*b+3*B*a)/x^7-1/6*b^3*(A*b+4*B*a)/x^6-1/5*b^4*B/x^5
```

maxima [A] time = 0.45, size = 99, normalized size = 1.00

$$-\frac{252\,Bb^4x^5 + 126\,Aa^4 + 210\left(4\,Bab^3 + Ab^4\right)x^4 + 360\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^3 + 315\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^2 + 140}{1260\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^11,x, algorithm="maxima")
```

```
[Out] -1/1260*(252*B*b^4*x^5 + 126*A*a^4 + 210*(4*B*a*b^3 + A*b^4)*x^4 + 360*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 315*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 140*(B*a^4
+ 4*A*a^3*b)*x)/x^10
```

mupad [B] time = 1.06, size = 97, normalized size = 0.98

$$-\frac{x\left(\frac{B\,a^4}{9}+\frac{4\,A\,b\,a^3}{9}\right)+\frac{A\,a^4}{10}+x^2\left(\frac{B\,a^3\,b}{2}+\frac{3\,A\,a^2\,b^2}{4}\right)+x^3\left(\frac{6\,B\,a^2\,b^2}{7}+\frac{4\,A\,a\,b^3}{7}\right)+x^4\left(\frac{A\,b^4}{6}+\frac{2\,B\,a\,b^3}{3}\right)+\frac{B\,b^4\,x^5}{5}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^11,x)
```

```
[Out] -(x*((B*a^4)/9 + (4*A*a^3*b)/9) + (A*a^4)/10 + x^2*((3*A*a^2*b^2)/4 + (B*a^
3*b)/2) + x^3*((6*B*a^2*b^2)/7 + (4*A*a*b^3)/7) + x^4*((A*b^4)/6 + (2*B*a*b
^3)/3) + (B*b^4*x^5)/5)/x^10
```

sympy [A] time = 5.45, size = 107, normalized size = 1.08

$$\frac{-126Aa^4 - 252Bb^4x^5 + x^4\left(-210Ab^4 - 840Bab^3\right) + x^3\left(-720Aab^3 - 1080Ba^2b^2\right) + x^2\left(-945Aa^2b^2 - 630Ba^3b\right) +}{1260x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**11,x)
```

```
[Out] (-126*A*a**4 - 252*B*b**4*x**5 + x**4*(-210*A*b**4 - 840*B*a*b**3) + x**3*(
-720*A*a*b**3 - 1080*B*a**2*b**2) + x**2*(-945*A*a**2*b**2 - 630*B*a**3*b)
+ x*(-560*A*a**3*b - 140*B*a**4))/(1260*x**10)
```

3.539 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=143

$$\frac{1}{6}a^6Ax^6+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{1}{12}b^5x^{12}(6aB+A$$

```
[Out] 1/6*a^6*A*x^6+1/7*a^5*(6*A*b+B*a)*x^7+3/8*a^4*b*(5*A*b+2*B*a)*x^8+5/9*a^3*b
^2*(4*A*b+3*B*a)*x^9+1/2*a^2*b^3*(3*A*b+4*B*a)*x^10+3/11*a*b^4*(2*A*b+5*B*a
)*x^11+1/12*b^5*(A*b+6*B*a)*x^12+1/13*b^6*B*x^13
```

Rubi [A] time = 0.14, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{1}{6}a^6Ax^6+\frac{1}{12}b^5x^{12}(6aB+A$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^6)/6 + (a^5*(6*A*b + a*B)*x^7)/7 + (3*a^4*b*(5*A*b + 2*a*B)*x^8)/8
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^9)/9 + (a^2*b^3*(3*A*b + 4*a*B)*x^10)/2 + (
3*a*b^4*(2*A*b + 5*a*B)*x^11)/11 + (b^5*(A*b + 6*a*B)*x^12)/12 + (b^6*B*x^1
3)/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^5(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6Ax^5+a^5(6Ab+aB)x^6+3a^4b(5Ab+2aB)x^7+5a^3b^2(4Ab+3\right.\\ &= \frac{1}{6}a^6Ax^6+\frac{1}{7}a^5(6Ab+aB)x^7+\frac{3}{8}a^4b(5Ab+2aB)x^8+\frac{5}{9}a^3b^2(4Ab+\end{aligned}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.00

$$\frac{1}{6}a^6Ax^6+\frac{1}{7}a^5x^7(aB+6Ab)+\frac{3}{8}a^4bx^8(2aB+5Ab)+\frac{5}{9}a^3b^2x^9(3aB+4Ab)+\frac{1}{2}a^2b^3x^{10}(4aB+3Ab)+\frac{1}{12}b^5x^{12}(6aB+A$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^6)/6 + (a^5*(6*A*b + a*B)*x^7)/7 + (3*a^4*b*(5*A*b + 2*a*B)*x^8)/8
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^9)/9 + (a^2*b^3*(3*A*b + 4*a*B)*x^10)/2 + (
3*a*b^4*(2*A*b + 5*a*B)*x^11)/11 + (b^5*(A*b + 6*a*B)*x^12)/12 + (b^6*B*x^1
3)/13
```

fricas [A] time = 0.82, size = 149, normalized size = 1.04

$$\frac{1}{13}x^{13}b^6B+\frac{1}{2}x^{12}b^5aB+\frac{1}{12}x^{12}b^6A+\frac{15}{11}x^{11}b^4a^2B+\frac{6}{11}x^{11}b^5aA+2x^{10}b^3a^3B+\frac{3}{2}x^{10}b^4a^2A+\frac{5}{3}x^9b^2a^4B+\frac{20}{9}x^9b^3a^3A+\frac{3}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*b^6*B + 1/2*x^12*b^5*a*B + 1/12*x^12*b^6*A + 15/11*x^11*b^4*a^2*B
 + 6/11*x^11*b^5*a*A + 2*x^10*b^3*a^3*B + 3/2*x^10*b^4*a^2*A + 5/3*x^9*b^2*
a^4*B + 20/9*x^9*b^3*a^3*A + 3/4*x^8*b*a^5*B + 15/8*x^8*b^2*a^4*A + 1/7*x^7
*a^6*B + 6/7*x^7*b*a^5*A + 1/6*x^6*a^6*A
```

giac [A] time = 0.17, size = 149, normalized size = 1.04

$$\frac{1}{13}Bb^6x^{13}+\frac{1}{2}Bab^5x^{12}+\frac{1}{12}Ab^6x^{12}+\frac{15}{11}Ba^2b^4x^{11}+\frac{6}{11}Aab^5x^{11}+2Ba^3b^3x^{10}+\frac{3}{2}Aa^2b^4x^{10}+\frac{5}{3}Ba^4b^2x^9+\frac{20}{9}Aa^3b^3x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/13*B*b^6*x^13 + 1/2*B*a*b^5*x^12 + 1/12*A*b^6*x^12 + 15/11*B*a^2*b^4*x^11
 + 6/11*A*a*b^5*x^11 + 2*B*a^3*b^3*x^10 + 3/2*A*a^2*b^4*x^10 + 5/3*B*a^4*b^
2*x^9 + 20/9*A*a^3*b^3*x^9 + 3/4*B*a^5*b*x^8 + 15/8*A*a^4*b^2*x^8 + 1/7*B*a
^6*x^7 + 6/7*A*a^5*b*x^7 + 1/6*A*a^6*x^6
```

maple [A] time = 0.05, size = 148, normalized size = 1.03

$$\frac{Bb^6x^{13}}{13}+\frac{Aa^6x^6}{6}+\frac{\left(Ab^6+6Bab^5\right)x^{12}}{12}+\frac{\left(6Aab^5+15Ba^2b^4\right)x^{11}}{11}+\frac{\left(15Aa^2b^4+20Ba^3b^3\right)x^{10}}{10}+\frac{\left(20Aa^3b^3+15Ba\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/13*b^6*B*x^13+1/12*(A*b^6+6*B*a*b^5)*x^12+1/11*(6*A*a*b^5+15*B*a^2*b^4)*x
^11+1/10*(15*A*a^2*b^4+20*B*a^3*b^3)*x^10+1/9*(20*A*a^3*b^3+15*B*a^4*b^2)*x
^9+1/8*(15*A*a^4*b^2+6*B*a^5*b)*x^8+1/7*(6*A*a^5*b+B*a^6)*x^7+1/6*a^6*A*x^6
```

maxima [A] time = 0.48, size = 147, normalized size = 1.03

$$\frac{1}{13}Bb^6x^{13}+\frac{1}{6}Aa^6x^6+\frac{1}{12}\left(6Bab^5+Ab^6\right)x^{12}+\frac{3}{11}\left(5Ba^2b^4+2Aab^5\right)x^{11}+\frac{1}{2}\left(4Ba^3b^3+3Aa^2b^4\right)x^{10}+\frac{5}{9}\left(3Ba^4b^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/13*B*b^6*x^13 + 1/6*A*a^6*x^6 + 1/12*(6*B*a*b^5 + A*b^6)*x^12 + 3/11*(5*B
*a^2*b^4 + 2*A*a*b^5)*x^11 + 1/2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^10 + 5/9*(3*
B*a^4*b^2 + 4*A*a^3*b^3)*x^9 + 3/8*(2*B*a^5*b + 5*A*a^4*b^2)*x^8 + 1/7*(B*a
^6 + 6*A*a^5*b)*x^7
```

mupad [B] time = 0.06, size = 131, normalized size = 0.92

$$x^7\left(\frac{Ba^6}{7}+\frac{6Aba^5}{7}\right)+x^{12}\left(\frac{Ab^6}{12}+\frac{Bab^5}{2}\right)+\frac{Aa^6x^6}{6}+\frac{Bb^6x^{13}}{13}+\frac{5a^3b^2x^9\,\left(4Ab+3Ba\right)}{9}+\frac{a^2b^3x^{10}\,\left(3Ab+4Ba\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^7*((B*a^6)/7 + (6*A*a^5*b)/7) + x^12*((A*b^6)/12 + (B*a*b^5)/2) + (A*a^6*
x^6)/6 + (B*b^6*x^13)/13 + (5*a^3*b^2*x^9*(4*A*b + 3*B*a))/9 + (a^2*b^3*x^1
0*(3*A*b + 4*B*a))/2 + (3*a^4*b*x^8*(5*A*b + 2*B*a))/8 + (3*a*b^4*x^11*(2*A
*b + 5*B*a))/11
```

sympy [A] time = 0.10, size = 162, normalized size = 1.13

$$\frac{Aa^6x^6}{6}+\frac{Bb^6x^{13}}{13}+x^{12}\Bigg(\frac{Ab^6}{12}+\frac{Bab^5}{2}\Bigg)+x^{11}\Bigg(\frac{6Aab^5}{11}+\frac{15Ba^2b^4}{11}\Bigg)+x^{10}\Bigg(\frac{3Aa^2b^4}{2}+2Ba^3b^3\Bigg)+x^9\Bigg(\frac{20Aa^3b^3}{9}+\frac{5Ba^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**6/6 + B*b**6*x**13/13 + x**12*(A*b**6/12 + B*a*b**5/2) + x**11*(6
*A*a*b**5/11 + 15*B*a**2*b**4/11) + x**10*(3*A*a**2*b**4/2 + 2*B*a**3*b**3)
 + x**9*(20*A*a**3*b**3/9 + 5*B*a**4*b**2/3) + x**8*(15*A*a**4*b**2/8 + 3*B
*a**5*b/4) + x**7*(6*A*a**5*b/7 + B*a**6/7)
```

3.540 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=139

$$\frac{a^4(a+bx)^7(Ab-aB)}{7b^6}-\frac{a^3(a+bx)^8(4Ab-5aB)}{8b^6}+\frac{2a^2(a+bx)^9(3Ab-5aB)}{9b^6}+\frac{(a+bx)^{11}(Ab-5aB)}{11b^6}-\frac{a(a+bx)^{10}(2}{5b^6}$$

```
[Out] 1/7*a^4*(A*b-B*a)*(b*x+a)^7/b^6-1/8*a^3*(4*A*b-5*B*a)*(b*x+a)^8/b^6+2/9*a^2
*(3*A*b-5*B*a)*(b*x+a)^9/b^6-1/5*a*(2*A*b-5*B*a)*(b*x+a)^10/b^6+1/11*(A*b-5
*B*a)*(b*x+a)^11/b^6+1/12*B*(b*x+a)^12/b^6
```

Rubi [A] time = 0.10, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2a^2(a+bx)^9(3Ab-5aB)}{9b^6}-\frac{a^3(a+bx)^8(4Ab-5aB)}{8b^6}+\frac{a^4(a+bx)^7(Ab-aB)}{7b^6}+\frac{(a+bx)^{11}(Ab-5aB)}{11b^6}-\frac{a(a+bx)^{10}(2}{5b^6}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^4*(A*b - a*B)*(a + b*x)^7)/(7*b^6) - (a^3*(4*A*b - 5*a*B)*(a + b*x)^8)/(
8*b^6) + (2*a^2*(3*A*b - 5*a*B)*(a + b*x)^9)/(9*b^6) - (a*(2*A*b - 5*a*B)*(
a + b*x)^10)/(5*b^6) + ((A*b - 5*a*B)*(a + b*x)^11)/(11*b^6) + (B*(a + b*x)
^12)/(12*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^4(a+bx)^6(A+Bx)\,dx\\&=\int\left(-\frac{a^4(-Ab+aB)(a+bx)^6}{b^5}+\frac{a^3(-4Ab+5aB)(a+bx)^7}{b^5}-\frac{2a^2(-3Ab}{}\right.\\&=\frac{a^4(Ab-aB)(a+bx)^7}{7b^6}-\frac{a^3(4Ab-5aB)(a+bx)^8}{8b^6}+\frac{2a^2(3Ab-5aB)(a+}{9b^6}\end{aligned}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.03

$$\frac{1}{5}a^6Ax^5+\frac{1}{6}a^5x^6(aB+6Ab)+\frac{3}{7}a^4bx^7(2aB+5Ab)+\frac{5}{8}a^3b^2x^8(3aB+4Ab)+\frac{5}{9}a^2b^3x^9(4aB+3Ab)+\frac{1}{11}b^5x^{11}(6aB+Ab)+$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^5)/5 + (a^5*(6*A*b + a*B)*x^6)/6 + (3*a^4*b*(5*A*b + 2*a*B)*x^7)/7
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^8)/8 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^9)/9 +
(3*a*b^4*(2*A*b + 5*a*B)*x^10)/10 + (b^5*(A*b + 6*a*B)*x^11)/11 + (b^6*B*x^
12)/12
```

fricas [**A**] time = 0.50, size = 148, normalized size = 1.06

$$\frac{1}{12}x^{12}b^6B+\frac{6}{11}x^{11}b^5aB+\frac{1}{11}x^{11}b^6A+\frac{3}{2}x^{10}b^4a^2B+\frac{3}{5}x^{10}b^5aA+\frac{20}{9}x^9b^3a^3B+\frac{5}{3}x^9b^4a^2A+\frac{15}{8}x^8b^2a^4B+\frac{5}{2}x^8b^3a^3A+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*b^6*B + 6/11*x^11*b^5*a*B + 1/11*x^11*b^6*A + 3/2*x^10*b^4*a^2*B
+ 3/5*x^10*b^5*a*A + 20/9*x^9*b^3*a^3*B + 5/3*x^9*b^4*a^2*A + 15/8*x^8*b^2*
a^4*B + 5/2*x^8*b^3*a^3*A + 6/7*x^7*b*a^5*B + 15/7*x^7*b^2*a^4*A + 1/6*x^6*
a^6*B + x^6*b*a^5*A + 1/5*x^5*a^6*A
```

giac [**A**] time = 0.16, size = 148, normalized size = 1.06

$$\frac{1}{12}\,Bb^6x^{12}+\frac{6}{11}\,Bab^5x^{11}+\frac{1}{11}\,Ab^6x^{11}+\frac{3}{2}\,Ba^2b^4x^{10}+\frac{3}{5}\,Aab^5x^{10}+\frac{20}{9}\,Ba^3b^3x^9+\frac{5}{3}\,Aa^2b^4x^9+\frac{15}{8}\,Ba^4b^2x^8+\frac{5}{2}\,Aa^3b^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*b^6*x^12 + 6/11*B*a*b^5*x^11 + 1/11*A*b^6*x^11 + 3/2*B*a^2*b^4*x^10
+ 3/5*A*a*b^5*x^10 + 20/9*B*a^3*b^3*x^9 + 5/3*A*a^2*b^4*x^9 + 15/8*B*a^4*b^
2*x^8 + 5/2*A*a^3*b^3*x^8 + 6/7*B*a^5*b*x^7 + 15/7*A*a^4*b^2*x^7 + 1/6*B*a^
6*x^6 + A*a^5*b*x^6 + 1/5*A*a^6*x^5
```

maple [**A**] time = 0.04, size = 148, normalized size = 1.06

$$\frac{B\,b^6x^{12}}{12}+\frac{A\,a^6x^5}{5}+\frac{\left(A\,b^6+6Ba\,b^5\right)x^{11}}{11}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^{10}}{10}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^9}{9}+\frac{\left(20A\,a^3b^3+15B\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/12*B*b^6*x^12+1/11*(A*b^6+6*B*a*b^5)*x^11+1/10*(6*A*a*b^5+15*B*a^2*b^4)*x
^10+1/9*(15*A*a^2*b^4+20*B*a^3*b^3)*x^9+1/8*(20*A*a^3*b^3+15*B*a^4*b^2)*x^8
+1/7*(15*A*a^4*b^2+6*B*a^5*b)*x^7+1/6*(6*A*a^5*b+B*a^6)*x^6+1/5*A*a^6*x^5
```

maxima [**A**] time = 0.50, size = 147, normalized size = 1.06

$$\frac{1}{12}\,Bb^6x^{12}+\frac{1}{5}\,Aa^6x^5+\frac{1}{11}\,\left(6\,Bab^5+Ab^6\right)x^{11}+\frac{3}{10}\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^{10}+\frac{5}{9}\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^9+\frac{5}{8}\,\left(3\,Ba^4b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*b^6*x^12 + 1/5*A*a^6*x^5 + 1/11*(6*B*a*b^5 + A*b^6)*x^11 + 3/10*(5*B
*a^2*b^4 + 2*A*a*b^5)*x^10 + 5/9*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^9 + 5/8*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^8 + 3/7*(2*B*a^5*b + 5*A*a^4*b^2)*x^7 + 1/6*(B*a^
6 + 6*A*a^5*b)*x^6
```

mupad [**B**] time = 1.07, size = 130, normalized size = 0.94

$$x^6\,\left(\frac{B\,a^6}{6}+A\,b\,a^5\right)+x^{11}\,\left(\frac{A\,b^6}{11}+\frac{6\,B\,a\,b^5}{11}\right)+\frac{A\,a^6\,x^5}{5}+\frac{B\,b^6\,x^{12}}{12}+\frac{5\,a^3\,b^2\,x^8\,\left(4\,A\,b+3\,B\,a\right)}{8}+\frac{5\,a^2\,b^3\,x^9\,\left(3\,A\,b+4\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^6*((B*a^6)/6 + A*a^5*b) + x^11*((A*b^6)/11 + (6*B*a*b^5)/11) + (A*a^6*x^5
)/5 + (B*b^6*x^12)/12 + (5*a^3*b^2*x^8*(4*A*b + 3*B*a))/8 + (5*a^2*b^3*x^9*
(3*A*b + 4*B*a))/9 + (3*a^4*b*x^7*(5*A*b + 2*B*a))/7 + (3*a*b^4*x^10*(2*A*b
 + 5*B*a))/10
```

sympy [A] time = 0.10, size = 162, normalized size = 1.17

$$\frac{Aa^6x^5}{5}+\frac{Bb^6x^{12}}{12}+x^{11}\left(\frac{Ab^6}{11}+\frac{6Bab^5}{11}\right)+x^{10}\left(\frac{3Aab^5}{5}+\frac{3Ba^2b^4}{2}\right)+x^9\left(\frac{5Aa^2b^4}{3}+\frac{20Ba^3b^3}{9}\right)+x^8\Bigg(\frac{5Aa^3b^3}{2}+\frac{15Ba^4b^2}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**5/5 + B*b**6*x**12/12 + x**11*(A*b**6/11 + 6*B*a*b**5/11) + x**10
*(3*A*a*b**5/5 + 3*B*a**2*b**4/2) + x**9*(5*A*a**2*b**4/3 + 20*B*a**3*b**3/
9) + x**8*(5*A*a**3*b**3/2 + 15*B*a**4*b**2/8) + x**7*(15*A*a**4*b**2/7 + 6
*B*a**5*b/7) + x**6*(A*a**5*b + B*a**6/6)
```

3.541 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=112

$$-\frac{a^3(a+bx)^7(Ab-aB)}{7b^5}+\frac{a^2(a+bx)^8(3Ab-4aB)}{8b^5}+\frac{(a+bx)^{10}(Ab-4aB)}{10b^5}-\frac{a(a+bx)^9(Ab-2aB)}{3b^5}+\frac{B(a+bx)^{11}}{11b^5}$$

```
[Out] -1/7*a^3*(A*b-B*a)*(b*x+a)^7/b^5+1/8*a^2*(3*A*b-4*B*a)*(b*x+a)^8/b^5-1/3*a*
(A*b-2*B*a)*(b*x+a)^9/b^5+1/10*(A*b-4*B*a)*(b*x+a)^10/b^5+1/11*B*(b*x+a)^11
/b^5
```

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$\frac{a^2(a+bx)^8(3Ab-4aB)}{8b^5}-\frac{a^3(a+bx)^7(Ab-aB)}{7b^5}+\frac{(a+bx)^{10}(Ab-4aB)}{10b^5}-\frac{a(a+bx)^9(Ab-2aB)}{3b^5}+\frac{B(a+bx)^{11}}{11b^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a^3*(A*b - a*B)*(a + b*x)^7)/(7*b^5) + (a^2*(3*A*b - 4*a*B)*(a + b*x)^8)/
(8*b^5) - (a*(A*b - 2*a*B)*(a + b*x)^9)/(3*b^5) + ((A*b - 4*a*B)*(a + b*x)^
10)/(10*b^5) + (B*(a + b*x)^11)/(11*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx=\int x^3(a+bx)^6(A+Bx)\,dx$$

$$=\int\left(\frac{a^3(-Ab+aB)(a+bx)^6}{b^4}-\frac{a^2(-3Ab+4aB)(a+bx)^7}{b^4}+\frac{3a(-Ab+$$

$$=-\frac{a^3(Ab-aB)(a+bx)^7}{7b^5}+\frac{a^2(3Ab-4aB)(a+bx)^8}{8b^5}-\frac{a(Ab-2aB)(a+}{3b^5}$$

Mathematica [A] time = 0.02, size = 143, normalized size = 1.28

$$\frac{1}{4}a^6Ax^4+\frac{1}{5}a^5x^5(aB+6Ab)+\frac{1}{2}a^4bx^6(2aB+5Ab)+\frac{5}{7}a^3b^2x^7(3aB+4Ab)+\frac{5}{8}a^2b^3x^8(4aB+3Ab)+\frac{1}{10}b^5x^{10}(6aB+Ab$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^4)/4 + (a^5*(6*A*b + a*B)*x^5)/5 + (a^4*b*(5*A*b + 2*a*B)*x^6)/2 +
 (5*a^3*b^2*(4*A*b + 3*a*B)*x^7)/7 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^8)/8 + (a
*b^4*(2*A*b + 5*a*B)*x^9)/3 + (b^5*(A*b + 6*a*B)*x^10)/10 + (b^6*B*x^11)/11
```

fricas [A] time = 0.72, size = 148, normalized size = 1.32

$$\frac{1}{11}x^{11}b^6B+\frac{3}{5}x^{10}b^5aB+\frac{1}{10}x^{10}b^6A+\frac{5}{3}x^9b^4a^2B+\frac{2}{3}x^9b^5aA+\frac{5}{2}x^8b^3a^3B+\frac{15}{8}x^8b^4a^2A+\frac{15}{7}x^7b^2a^4B+\frac{20}{7}x^7b^3a^3A+x^6ba^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b^6*B + 3/5*x^10*b^5*a*B + 1/10*x^10*b^6*A + 5/3*x^9*b^4*a^2*B +
2/3*x^9*b^5*a*A + 5/2*x^8*b^3*a^3*B + 15/8*x^8*b^4*a^2*A + 15/7*x^7*b^2*a^4
*B + 20/7*x^7*b^3*a^3*A + x^6*b*a^5*B + 5/2*x^6*b^2*a^4*A + 1/5*x^5*a^6*B +
 6/5*x^5*b*a^5*A + 1/4*x^4*a^6*A
```

giac [A] time = 0.20, size = 148, normalized size = 1.32

$$\frac{1}{11}\,Bb^6x^{11}+\frac{3}{5}\,Bab^5x^{10}+\frac{1}{10}\,Ab^6x^{10}+\frac{5}{3}\,Ba^2b^4x^9+\frac{2}{3}\,Aab^5x^9+\frac{5}{2}\,Ba^3b^3x^8+\frac{15}{8}\,Aa^2b^4x^8+\frac{15}{7}\,Ba^4b^2x^7+\frac{20}{7}\,Aa^3b^3x^7+B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*b^6*x^11 + 3/5*B*a*b^5*x^10 + 1/10*A*b^6*x^10 + 5/3*B*a^2*b^4*x^9 +
2/3*A*a*b^5*x^9 + 5/2*B*a^3*b^3*x^8 + 15/8*A*a^2*b^4*x^8 + 15/7*B*a^4*b^2*x
^7 + 20/7*A*a^3*b^3*x^7 + B*a^5*b*x^6 + 5/2*A*a^4*b^2*x^6 + 1/5*B*a^6*x^5 +
 6/5*A*a^5*b*x^5 + 1/4*A*a^6*x^4
```

maple [A] time = 0.04, size = 148, normalized size = 1.32

$$\frac{B\,b^6x^{11}}{11}+\frac{A\,a^6x^4}{4}+\frac{\left(A\,b^6+6Ba\,b^5\right)x^{10}}{10}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^9}{9}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^8}{8}+\frac{\big(20A\,a^3b^3+15B\,a^4b}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/11*B*b^6*x^11+1/10*(A*b^6+6*B*a*b^5)*x^10+1/9*(6*A*a*b^5+15*B*a^2*b^4)*x^
9+1/8*(15*A*a^2*b^4+20*B*a^3*b^3)*x^8+1/7*(20*A*a^3*b^3+15*B*a^4*b^2)*x^7+1
/6*(15*A*a^4*b^2+6*B*a^5*b)*x^6+1/5*(6*A*a^5*b+B*a^6)*x^5+1/4*A*a^6*x^4
```

maxima [A] time = 0.53, size = 147, normalized size = 1.31

$$\frac{1}{11}\,Bb^6x^{11}+\frac{1}{4}\,Aa^6x^4+\frac{1}{10}\,\left(6\,Bab^5+Ab^6\right)x^{10}+\frac{1}{3}\,\left(5\,Ba^2b^4+2\,Aab^5\right)x^9+\frac{5}{8}\,\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^8+\frac{5}{7}\,\big(3\,Ba^4b^2+4\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*b^6*x^11 + 1/4*A*a^6*x^4 + 1/10*(6*B*a*b^5 + A*b^6)*x^10 + 1/3*(5*B*
a^2*b^4 + 2*A*a*b^5)*x^9 + 5/8*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^8 + 5/7*(3*B*a
^4*b^2 + 4*A*a^3*b^3)*x^7 + 1/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^6 + 1/5*(B*a^6
+ 6*A*a^5*b)*x^5
```

mupad [B] time = 0.05, size = 131, normalized size = 1.17

$$x^5\,\left(\frac{B\,a^6}{5}+\frac{6\,A\,b\,a^5}{5}\right)+x^{10}\,\left(\frac{A\,b^6}{10}+\frac{3\,B\,a\,b^5}{5}\right)+\frac{A\,a^6\,x^4}{4}+\frac{B\,b^6\,x^{11}}{11}+\frac{5\,a^3\,b^2\,x^7\,\left(4\,A\,b+3\,B\,a\right)}{7}+\frac{5\,a^2\,b^3\,x^8\,\big(3\,A\,b+4\,B}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*((B*a^6)/5 + (6*A*a^5*b)/5) + x^10*((A*b^6)/10 + (3*B*a*b^5)/5) + (A*a^
6*x^4)/4 + (B*b^6*x^11)/11 + (5*a^3*b^2*x^7*(4*A*b + 3*B*a))/7 + (5*a^2*b^3
*x^8*(3*A*b + 4*B*a))/8 + (a^4*b*x^6*(5*A*b + 2*B*a))/2 + (a*b^4*x^9*(2*A*b
 + 5*B*a))/3
```

sympy [A] time = 0.10, size = 162, normalized size = 1.45

$$\frac{Aa^6x^4}{4}+\frac{Bb^6x^{11}}{11}+x^{10}\left(\frac{Ab^6}{10}+\frac{3Bab^5}{5}\right)+x^9\left(\frac{2Aab^5}{3}+\frac{5Ba^2b^4}{3}\right)+x^8\left(\frac{15Aa^2b^4}{8}+\frac{5Ba^3b^3}{2}\right)+x^7\left(\frac{20Aa^3b^3}{7}+\frac{15Ba}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**4/4 + B*b**6*x**11/11 + x**10*(A*b**6/10 + 3*B*a*b**5/5) + x**9*(
2*A*a*b**5/3 + 5*B*a**2*b**4/3) + x**8*(15*A*a**2*b**4/8 + 5*B*a**3*b**3/2)
 + x**7*(20*A*a**3*b**3/7 + 15*B*a**4*b**2/7) + x**6*(5*A*a**4*b**2/2 + B*a
**5*b) + x**5*(6*A*a**5*b/5 + B*a**6/5)
```

3.542 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=87

$$\frac{a^2(a+bx)^7(Ab-aB)}{7b^4}+\frac{(a+bx)^9(Ab-3aB)}{9b^4}-\frac{a(a+bx)^8(2Ab-3aB)}{8b^4}+\frac{B(a+bx)^{10}}{10b^4}$$

```
[Out] 1/7*a^2*(A*b-B*a)*(b*x+a)^7/b^4-1/8*a*(2*A*b-3*B*a)*(b*x+a)^8/b^4+1/9*(A*b-
3*B*a)*(b*x+a)^9/b^4+1/10*B*(b*x+a)^10/b^4
```

Rubi **[A]** time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$\frac{a^2(a+bx)^7(Ab-aB)}{7b^4}+\frac{(a+bx)^9(Ab-3aB)}{9b^4}-\frac{a(a+bx)^8(2Ab-3aB)}{8b^4}+\frac{B(a+bx)^{10}}{10b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^7)/(7*b^4) - (a*(2*A*b - 3*a*B)*(a + b*x)^8)/(8*
b^4) + ((A*b - 3*a*B)*(a + b*x)^9)/(9*b^4) + (B*(a + b*x)^10)/(10*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^2(a+bx)^6(A+Bx)\,dx\\&=\int\left(-\frac{a^2(-Ab+aB)(a+bx)^6}{b^3}+\frac{a(-2Ab+3aB)(a+bx)^7}{b^3}+\frac{(Ab-3aB)(}{b^3}\right.\\&=\frac{a^2(Ab-aB)(a+bx)^7}{7b^4}-\frac{a(2Ab-3aB)(a+bx)^8}{8b^4}+\frac{(Ab-3aB)(a+bx)^9}{9b^4}\end{aligned}$$

Mathematica **[A]** time = 0.02, size = 143, normalized size = 1.64

$$\frac{1}{3}a^6Ax^3+\frac{1}{4}a^5x^4(aB+6Ab)+\frac{3}{5}a^4bx^5(2aB+5Ab)+\frac{5}{6}a^3b^2x^6(3aB+4Ab)+\frac{5}{7}a^2b^3x^7(4aB+3Ab)+\frac{1}{9}b^5x^9(6aB+Ab)+\frac{3}{8}a$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^3)/3 + (a^5*(6*A*b + a*B)*x^4)/4 + (3*a^4*b*(5*A*b + 2*a*B)*x^5)/5
 + (5*a^3*b^2*(4*A*b + 3*a*B)*x^6)/6 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^7)/7 +
(3*a*b^4*(2*A*b + 5*a*B)*x^8)/8 + (b^5*(A*b + 6*a*B)*x^9)/9 + (b^6*B*x^10)/
10
```

fricas [A] time = 0.83, size = 149, normalized size = 1.71

$$\frac{1}{10}x^{10}b^6B+\frac{2}{3}x^9b^5aB+\frac{1}{9}x^9b^6A+\frac{15}{8}x^8b^4a^2B+\frac{3}{4}x^8b^5aA+\frac{20}{7}x^7b^3a^3B+\frac{15}{7}x^7b^4a^2A+\frac{5}{2}x^6b^2a^4B+\frac{10}{3}x^6b^3a^3A+\frac{6}{5}x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*b^6*B + 2/3*x^9*b^5*a*B + 1/9*x^9*b^6*A + 15/8*x^8*b^4*a^2*B + 3/
4*x^8*b^5*a*A + 20/7*x^7*b^3*a^3*B + 15/7*x^7*b^4*a^2*A + 5/2*x^6*b^2*a^4*B
 + 10/3*x^6*b^3*a^3*A + 6/5*x^5*b*a^5*B + 3*x^5*b^2*a^4*A + 1/4*x^4*a^6*B +
 3/2*x^4*b*a^5*A + 1/3*x^3*a^6*A
```

giac [A] time = 0.19, size = 149, normalized size = 1.71

$$\frac{1}{10}Bb^6x^{10}+\frac{2}{3}Bab^5x^9+\frac{1}{9}Ab^6x^9+\frac{15}{8}Ba^2b^4x^8+\frac{3}{4}Aab^5x^8+\frac{20}{7}Ba^3b^3x^7+\frac{15}{7}Aa^2b^4x^7+\frac{5}{2}Ba^4b^2x^6+\frac{10}{3}Aa^3b^3x^6+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*b^6*x^10 + 2/3*B*a*b^5*x^9 + 1/9*A*b^6*x^9 + 15/8*B*a^2*b^4*x^8 + 3/
4*A*a*b^5*x^8 + 20/7*B*a^3*b^3*x^7 + 15/7*A*a^2*b^4*x^7 + 5/2*B*a^4*b^2*x^6
 + 10/3*A*a^3*b^3*x^6 + 6/5*B*a^5*b*x^5 + 3*A*a^4*b^2*x^5 + 1/4*B*a^6*x^4 +
 3/2*A*a^5*b*x^4 + 1/3*A*a^6*x^3
```

maple [A] time = 0.04, size = 148, normalized size = 1.70

$$\frac{B\,b^6x^{10}}{10}+\frac{A\,a^6x^3}{3}+\frac{\left(A\,b^6+6Ba\,b^5\right)x^9}{9}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^8}{8}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^7}{7}+\frac{\left(20A\,a^3b^3+15B\,a\right.}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/10*B*b^6*x^10+1/9*(A*b^6+6*B*a*b^5)*x^9+1/8*(6*A*a*b^5+15*B*a^2*b^4)*x^8+
1/7*(15*A*a^2*b^4+20*B*a^3*b^3)*x^7+1/6*(20*A*a^3*b^3+15*B*a^4*b^2)*x^6+1/5
*(15*A*a^4*b^2+6*B*a^5*b)*x^5+1/4*(6*A*a^5*b+B*a^6)*x^4+1/3*A*a^6*x^3
```

maxima [A] time = 0.50, size = 147, normalized size = 1.69

$$\frac{1}{10}Bb^6x^{10}+\frac{1}{3}Aa^6x^3+\frac{1}{9}\left(6\,Bab^5+Ab^6\right)x^9+\frac{3}{8}\left(5\,Ba^2b^4+2\,Aab^5\right)x^8+\frac{5}{7}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^7+\frac{5}{6}\left(3\,Ba^4b^2+4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^6*x^10 + 1/3*A*a^6*x^3 + 1/9*(6*B*a*b^5 + A*b^6)*x^9 + 3/8*(5*B*a^
2*b^4 + 2*A*a*b^5)*x^8 + 5/7*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^7 + 5/6*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^6 + 3/5*(2*B*a^5*b + 5*A*a^4*b^2)*x^5 + 1/4*(B*a^6 +
6*A*a^5*b)*x^4
```

mupad [B] time = 0.05, size = 131, normalized size = 1.51

$$x^4\,\left(\frac{B\,a^6}{4}+\frac{3\,A\,b\,a^5}{2}\right)+x^9\,\left(\frac{A\,b^6}{9}+\frac{2\,B\,a\,b^5}{3}\right)+\frac{A\,a^6\,x^3}{3}+\frac{B\,b^6\,x^{10}}{10}+\frac{5\,a^3\,b^2\,x^6\,\left(4\,A\,b+3\,B\,a\right)}{6}+\frac{5\,a^2\,b^3\,x^7\,\left(3\,A\,b+\right.}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^4*((B*a^6)/4 + (3*A*a^5*b)/2) + x^9*((A*b^6)/9 + (2*B*a*b^5)/3) + (A*a^6*
x^3)/3 + (B*b^6*x^10)/10 + (5*a^3*b^2*x^6*(4*A*b + 3*B*a))/6 + (5*a^2*b^3*x
^7*(3*A*b + 4*B*a))/7 + (3*a^4*b*x^5*(5*A*b + 2*B*a))/5 + (3*a*b^4*x^8*(2*A
*b + 5*B*a))/8
```

sympy [B] time = 0.10, size = 163, normalized size = 1.87

$$\frac{Aa^6x^3}{3}+\frac{Bb^6x^{10}}{10}+x^9\left(\frac{Ab^6}{9}+\frac{2Bab^5}{3}\right)+x^8\left(\frac{3Aab^5}{4}+\frac{15Ba^2b^4}{8}\right)+x^7\left(\frac{15Aa^2b^4}{7}+\frac{20Ba^3b^3}{7}\right)+x^6\left(\frac{10Aa^3b^3}{3}+\frac{5Ba^4b}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**3/3 + B*b**6*x**10/10 + x**9*(A*b**6/9 + 2*B*a*b**5/3) + x**8*(3*
A*a*b**5/4 + 15*B*a**2*b**4/8) + x**7*(15*A*a**2*b**4/7 + 20*B*a**3*b**3/7)
 + x**6*(10*A*a**3*b**3/3 + 5*B*a**4*b**2/2) + x**5*(3*A*a**4*b**2 + 6*B*a*
*5*b/5) + x**4*(3*A*a**5*b/2 + B*a**6/4)
```

3.543 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=61

$$\frac{(a+bx)^8(Ab-2aB)}{8b^3}-\frac{a(a+bx)^7(Ab-aB)}{7b^3}+\frac{B(a+bx)^9}{9b^3}$$

```
[Out] -1/7*a*(A*b-B*a)*(b*x+a)^7/b^3+1/8*(A*b-2*B*a)*(b*x+a)^8/b^3+1/9*B*(b*x+a)^
9/b^3
```

Rubi **[A]** time = 0.05, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}=0.080$, Rules used = $\{27,76\}$

$$\frac{(a+bx)^8(Ab-2aB)}{8b^3}-\frac{a(a+bx)^7(Ab-aB)}{7b^3}+\frac{B(a+bx)^9}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^7)/(7*b^3) + ((A*b - 2*a*B)*(a + b*x)^8)/(8*b^3)
+ (B*(a + b*x)^9)/(9*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x(a+bx)^6(A+Bx)\,dx\\&=\int\left(\frac{a(-Ab+aB)(a+bx)^6}{b^2}+\frac{(Ab-2aB)(a+bx)^7}{b^2}+\frac{B(a+bx)^8}{b^2}\right)dx\\&=-\frac{a(Ab-aB)(a+bx)^7}{7b^3}+\frac{(Ab-2aB)(a+bx)^8}{8b^3}+\frac{B(a+bx)^9}{9b^3}\end{aligned}$$

Mathematica **[B]** time = 0.02, size = 140, normalized size = 2.30

$$\frac{1}{2}a^6Ax^2+\frac{1}{3}a^5x^3(aB+6Ab)+\frac{3}{4}a^4bx^4(2aB+5Ab)+a^3b^2x^5(3aB+4Ab)+\frac{5}{6}a^2b^3x^6(4aB+3Ab)+\frac{1}{8}b^5x^8(6aB+Ab)+\frac{3}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^2)/2 + (a^5*(6*A*b + a*B)*x^3)/3 + (3*a^4*b*(5*A*b + 2*a*B)*x^4)/4
 + a^3*b^2*(4*A*b + 3*a*B)*x^5 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^6)/6 + (3*a*b
^4*(2*A*b + 5*a*B)*x^7)/7 + (b^5*(A*b + 6*a*B)*x^8)/8 + (b^6*B*x^9)/9
```

fricas [B] time = 0.71, size = 149, normalized size = 2.44

$$\frac{1}{9}x^9b^6B+\frac{3}{4}x^8b^5aB+\frac{1}{8}x^8b^6A+\frac{15}{7}x^7b^4a^2B+\frac{6}{7}x^7b^5aA+\frac{10}{3}x^6b^3a^3B+\frac{5}{2}x^6b^4a^2A+3x^5b^2a^4B+4x^5b^3a^3A+\frac{3}{2}x^4ba^5B+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*b^6*B + 3/4*x^8*b^5*a*B + 1/8*x^8*b^6*A + 15/7*x^7*b^4*a^2*B + 6/7*
x^7*b^5*a*A + 10/3*x^6*b^3*a^3*B + 5/2*x^6*b^4*a^2*A + 3*x^5*b^2*a^4*B + 4*
x^5*b^3*a^3*A + 3/2*x^4*b*a^5*B + 15/4*x^4*b^2*a^4*A + 1/3*x^3*a^6*B + 2*x^
3*b*a^5*A + 1/2*x^2*a^6*A
```

giac [B] time = 0.15, size = 149, normalized size = 2.44

$$\frac{1}{9}\,Bb^6x^9+\frac{3}{4}\,Bab^5x^8+\frac{1}{8}\,Ab^6x^8+\frac{15}{7}\,Ba^2b^4x^7+\frac{6}{7}\,Aab^5x^7+\frac{10}{3}\,Ba^3b^3x^6+\frac{5}{2}\,Aa^2b^4x^6+3\,Ba^4b^2x^5+4\,Aa^3b^3x^5+\frac{3}{2}\,Ba^5bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*b^6*x^9 + 3/4*B*a*b^5*x^8 + 1/8*A*b^6*x^8 + 15/7*B*a^2*b^4*x^7 + 6/7*
A*a*b^5*x^7 + 10/3*B*a^3*b^3*x^6 + 5/2*A*a^2*b^4*x^6 + 3*B*a^4*b^2*x^5 + 4*
A*a^3*b^3*x^5 + 3/2*B*a^5*b*x^4 + 15/4*A*a^4*b^2*x^4 + 1/3*B*a^6*x^3 + 2*A*
a^5*b*x^3 + 1/2*A*a^6*x^2
```

maple [B] time = 0.04, size = 148, normalized size = 2.43

$$\frac{B\,b^6x^9}{9}+\frac{A\,a^6x^2}{2}+\frac{\left(A\,b^6+6Ba\,b^5\right)x^8}{8}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^7}{7}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^6}{6}+\frac{(20A\,a^3b^3+15B\,a^4b^2}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/9*B*b^6*x^9+1/8*(A*b^6+6*B*a*b^5)*x^8+1/7*(6*A*a*b^5+15*B*a^2*b^4)*x^7+1/
6*(15*A*a^2*b^4+20*B*a^3*b^3)*x^6+1/5*(20*A*a^3*b^3+15*B*a^4*b^2)*x^5+1/4*(
15*A*a^4*b^2+6*B*a^5*b)*x^4+1/3*(6*A*a^5*b+B*a^6)*x^3+1/2*A*a^6*x^2
```

maxima [B] time = 0.46, size = 146, normalized size = 2.39

$$\frac{1}{9}\,Bb^6x^9+\frac{1}{2}\,Aa^6x^2+\frac{1}{8}\left(6\,Bab^5+Ab^6\right)x^8+\frac{3}{7}\left(5\,Ba^2b^4+2\,Aab^5\right)x^7+\frac{5}{6}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^6+(3\,Ba^4b^2+4\,Aa^3b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^6*x^9 + 1/2*A*a^6*x^2 + 1/8*(6*B*a*b^5 + A*b^6)*x^8 + 3/7*(5*B*a^2*
b^4 + 2*A*a*b^5)*x^7 + 5/6*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^6 + (3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^5 + 3/4*(2*B*a^5*b + 5*A*a^4*b^2)*x^4 + 1/3*(B*a^6 + 6*A*a^
5*b)*x^3
```

mupad [B] time = 0.05, size = 130, normalized size = 2.13

$$x^3\,\left(\frac{B\,a^6}{3}+2\,A\,b\,a^5\right)+x^8\,\left(\frac{A\,b^6}{8}+\frac{3\,B\,a\,b^5}{4}\right)+\frac{A\,a^6\,x^2}{2}+\frac{B\,b^6\,x^9}{9}+a^3\,b^2\,x^5\,\left(4\,A\,b+3\,B\,a\right)+\frac{5\,a^2\,b^3\,x^6\,\left(3\,A\,b+4\,B\,a\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^3*((B*a^6)/3 + 2*A*a^5*b) + x^8*((A*b^6)/8 + (3*B*a*b^5)/4) + (A*a^6*x^2)
/2 + (B*b^6*x^9)/9 + a^3*b^2*x^5*(4*A*b + 3*B*a) + (5*a^2*b^3*x^6*(3*A*b +
4*B*a))/6 + (3*a^4*b*x^4*(5*A*b + 2*B*a))/4 + (3*a*b^4*x^7*(2*A*b + 5*B*a))
/7
```

sympy [B] time = 0.10, size = 160, normalized size = 2.62

$$\frac{Aa^6x^2}{2}+\frac{Bb^6x^9}{9}+x^8\left(\frac{Ab^6}{8}+\frac{3Bab^5}{4}\right)+x^7\left(\frac{6Aab^5}{7}+\frac{15Ba^2b^4}{7}\right)+x^6\left(\frac{5Aa^2b^4}{2}+\frac{10Ba^3b^3}{3}\right)+x^5\left(4Aa^3b^3+3Ba^4b^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x**2/2 + B*b**6*x**9/9 + x**8*(A*b**6/8 + 3*B*a*b**5/4) + x**7*(6*A*
a*b**5/7 + 15*B*a**2*b**4/7) + x**6*(5*A*a**2*b**4/2 + 10*B*a**3*b**3/3) +
x**5*(4*A*a**3*b**3 + 3*B*a**4*b**2) + x**4*(15*A*a**4*b**2/4 + 3*B*a**5*b/
2) + x**3*(2*A*a**5*b + B*a**6/3)
```

3.544 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^7(Ab-aB)}{7b^2}+\frac{B(a+bx)^8}{8b^2}$$

```
[Out] 1/7*(A*b-B*a)*(b*x+a)^7/b^2+1/8*B*(b*x+a)^8/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^7(Ab-aB)}{7b^2}+\frac{B(a+bx)^8}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^7)/(7*b^2) + (B*(a + b*x)^8)/(8*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)\,dx\\ &= \int \left(\frac{(Ab-aB)(a+bx)^6}{b}+\frac{B(a+bx)^7}{b}\right)dx\\ &= \frac{(Ab-aB)(a+bx)^7}{7b^2}+\frac{B(a+bx)^8}{8b^2}\end{aligned}$$

Mathematica [B] time = 0.03, size = 122, normalized size = 3.21

$$\frac{1}{56}x\left(28a^6(2A+Bx)+56a^5bx(3A+2Bx)+70a^4b^2x^2(4A+3Bx)+56a^3b^3x^3(5A+4Bx)+28a^2b^4x^4(6A+5Bx)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(28*a^6*(2*A + B*x) + 56*a^5*b*x*(3*A + 2*B*x) + 70*a^4*b^2*x^2*(4*A + 3
*B*x) + 56*a^3*b^3*x^3*(5*A + 4*B*x) + 28*a^2*b^4*x^4*(6*A + 5*B*x) + 8*a*b
^5*x^5*(7*A + 6*B*x) + b^6*x^6*(8*A + 7*B*x)))/56
```

fricas [B] time = 0.67, size = 145, normalized size = 3.82

$$\frac{1}{8}x^8b^6B+\frac{6}{7}x^7b^5aB+\frac{1}{7}x^7b^6A+\frac{5}{2}x^6b^4a^2B+x^6b^5aA+4x^5b^3a^3B+3x^5b^4a^2A+\frac{15}{4}x^4b^2a^4B+5x^4b^3a^3A+2x^3ba^5B+5x^3b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^6*B + 6/7*x^7*b^5*a*B + 1/7*x^7*b^6*A + 5/2*x^6*b^4*a^2*B + x^6*b
^5*a*A + 4*x^5*b^3*a^3*B + 3*x^5*b^4*a^2*A + 15/4*x^4*b^2*a^4*B + 5*x^4*b^3
*a^3*A + 2*x^3*b*a^5*B + 5*x^3*b^2*a^4*A + 1/2*x^2*a^6*B + 3*x^2*b*a^5*A +
x*a^6*A
```

giac [B] time = 0.15, size = 145, normalized size = 3.82

$$\frac{1}{8}\,Bb^6x^8+\frac{6}{7}\,Bab^5x^7+\frac{1}{7}\,Ab^6x^7+\frac{5}{2}\,Ba^2b^4x^6+Aab^5x^6+4\,Ba^3b^3x^5+3\,Aa^2b^4x^5+\frac{15}{4}\,Ba^4b^2x^4+5\,Aa^3b^3x^4+2\,Ba^5bx^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*b^6*x^8 + 6/7*B*a*b^5*x^7 + 1/7*A*b^6*x^7 + 5/2*B*a^2*b^4*x^6 + A*a*b
^5*x^6 + 4*B*a^3*b^3*x^5 + 3*A*a^2*b^4*x^5 + 15/4*B*a^4*b^2*x^4 + 5*A*a^3*b
^3*x^4 + 2*B*a^5*b*x^3 + 5*A*a^4*b^2*x^3 + 1/2*B*a^6*x^2 + 3*A*a^5*b*x^2 +
A*a^6*x
```

maple [B] time = 0.04, size = 145, normalized size = 3.82

$$\frac{B\,b^6x^8}{8}+A\,a^6x+\frac{\left(A\,b^6+6Ba\,b^5\right)x^7}{7}+\frac{\left(6Aa\,b^5+15B\,a^2b^4\right)x^6}{6}+\frac{\left(15A\,a^2b^4+20B\,a^3b^3\right)x^5}{5}+\frac{(20A\,a^3b^3+15B\,a^4b}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/8*B*b^6*x^8+1/7*(A*b^6+6*B*a*b^5)*x^7+1/6*(6*A*a*b^5+15*B*a^2*b^4)*x^6+1/
5*(15*A*a^2*b^4+20*B*a^3*b^3)*x^5+1/4*(20*A*a^3*b^3+15*B*a^4*b^2)*x^4+1/3*(
15*A*a^4*b^2+6*B*a^5*b)*x^3+1/2*(6*A*a^5*b+B*a^6)*x^2+A*a^6*x
```

maxima [B] time = 0.67, size = 142, normalized size = 3.74

$$\frac{1}{8}\,Bb^6x^8+Aa^6x+\frac{1}{7}\left(6\,Bab^5+Ab^6\right)x^7+\frac{1}{2}\left(5\,Ba^2b^4+2\,Aab^5\right)x^6+\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^5+\frac{5}{4}\left(3\,Ba^4b^2+4\,Aa^3b^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^6*x^8 + A*a^6*x + 1/7*(6*B*a*b^5 + A*b^6)*x^7 + 1/2*(5*B*a^2*b^4 +
2*A*a*b^5)*x^6 + (4*B*a^3*b^3 + 3*A*a^2*b^4)*x^5 + 5/4*(3*B*a^4*b^2 + 4*A*a
^3*b^3)*x^4 + (2*B*a^5*b + 5*A*a^4*b^2)*x^3 + 1/2*(B*a^6 + 6*A*a^5*b)*x^2
```

mupad [B] time = 0.05, size = 126, normalized size = 3.32

$$x^2\,\left(\frac{B\,a^6}{2}+3\,A\,b\,a^5\right)+x^7\,\left(\frac{A\,b^6}{7}+\frac{6\,B\,a\,b^5}{7}\right)+\frac{B\,b^6\,x^8}{8}+A\,a^6\,x+\frac{5\,a^3\,b^2\,x^4\,\left(4\,A\,b+3\,B\,a\right)}{4}+a^2\,b^3\,x^5\,(3\,A\,b+4\,B\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^2*((B*a^6)/2 + 3*A*a^5*b) + x^7*((A*b^6)/7 + (6*B*a*b^5)/7) + (B*b^6*x^8)
/8 + A*a^6*x + (5*a^3*b^2*x^4*(4*A*b + 3*B*a))/4 + a^2*b^3*x^5*(3*A*b + 4*B
*a) + a^4*b*x^3*(5*A*b + 2*B*a) + (a*b^4*x^6*(2*A*b + 5*B*a))/2
```

sympy [B] time = 0.10, size = 148, normalized size = 3.89

$$Aa^6x+\frac{Bb^6x^8}{8}+x^7\left(\frac{Ab^6}{7}+\frac{6Bab^5}{7}\right)+x^6\left(Aab^5+\frac{5Ba^2b^4}{2}\right)+x^5\left(3Aa^2b^4+4Ba^3b^3\right)+x^4\left(5Aa^3b^3+\frac{15Ba^4b^2}{4}\right)+x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*x + B*b**6*x**8/8 + x**7*(A*b**6/7 + 6*B*a*b**5/7) + x**6*(A*a*b**5
+ 5*B*a**2*b**4/2) + x**5*(3*A*a**2*b**4 + 4*B*a**3*b**3) + x**4*(5*A*a**3*
b**3 + 15*B*a**4*b**2/4) + x**3*(5*A*a**4*b**2 + 2*B*a**5*b) + x**2*(3*A*a*
*5*b + B*a**6/2)
```

3.545 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x}\,dx$

Optimal. Leaf size=96

$$a^6A\log(x)+6a^5Abx+\frac{15}{2}a^4Ab^2x^2+\frac{20}{3}a^3Ab^3x^3+\frac{15}{4}a^2Ab^4x^4+\frac{6}{5}aAb^5x^5+\frac{B(a+bx)^7}{7b}+\frac{1}{6}Ab^6x^6$$

```
[Out] 6*a^5*A*b*x+15/2*a^4*A*b^2*x^2+20/3*a^3*A*b^3*x^3+15/4*a^2*A*b^4*x^4+6/5*a*
A*b^5*x^5+1/6*A*b^6*x^6+1/7*B*(b*x+a)^7/b+a^6*A*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 80, 43}

$$\frac{15}{4}a^2Ab^4x^4+\frac{20}{3}a^3Ab^3x^3+\frac{15}{2}a^4Ab^2x^2+6a^5Abx+a^6A\log(x)+\frac{6}{5}aAb^5x^5+\frac{B(a+bx)^7}{7b}+\frac{1}{6}Ab^6x^6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x,x]
```

```
[Out] 6*a^5*A*b*x + (15*a^4*A*b^2*x^2)/2 + (20*a^3*A*b^3*x^3)/3 + (15*a^2*A*b^4*x
^4)/4 + (6*a*A*b^5*x^5)/5 + (A*b^6*x^6)/6 + (B*(a + b*x)^7)/(7*b) + a^6*A*L
og[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x}\,dx\\
&= \frac{B(a+bx)^7}{7b}+A\int \frac{(a+bx)^6}{x}\,dx\\
&= \frac{B(a+bx)^7}{7b}+A\int \left(6a^5b+\frac{a^6}{x}+15a^4b^2x+20a^3b^3x^2+15a^2b^4x^3+6ab\right.\\
&= 6a^5Abx+\frac{15}{2}a^4Ab^2x^2+\frac{20}{3}a^3Ab^3x^3+\frac{15}{4}a^2Ab^4x^4+\frac{6}{5}aAb^5x^5+\frac{1}{6}Ab^6
\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 1.33

$$a^6A\log(x)+a^6Bx+3a^5bx(2A+Bx)+\frac{5}{2}a^4b^2x^2(3A+2Bx)+\frac{5}{3}a^3b^3x^3(4A+3Bx)+\frac{3}{4}a^2b^4x^4(5A+4Bx)+\frac{1}{5}ab^5x^5(6A+5B$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x,x]
```

```
[Out] a^6*B*x + 3*a^5*b*x*(2*A + B*x) + (5*a^4*b^2*x^2*(3*A + 2*B*x))/2 + (5*a^3*
b^3*x^3*(4*A + 3*B*x))/3 + (3*a^2*b^4*x^4*(5*A + 4*B*x))/4 + (a*b^5*x^5*(6*
A + 5*B*x))/5 + (b^6*x^6*(7*A + 6*B*x))/42 + a^6*A*Log[x]
```

fricas [A] time = 0.71, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7+Aa^6\log(x)+\frac{1}{6}\left(6\,Bab^5+Ab^6\right)x^6+\frac{3}{5}\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+\frac{5}{4}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+\frac{5}{3}\left(3\,Ba^4b^2+4\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*b^6*x^7 + A*a^6*log(x) + 1/6*(6*B*a*b^5 + A*b^6)*x^6 + 3/5*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 5/4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5/3*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 3/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + (B*a^6 + 6*A*a^5
*b)*x
```

giac [A] time = 0.17, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7+Bab^5x^6+\frac{1}{6}Ab^6x^6+3\,Ba^2b^4x^5+\frac{6}{5}Aab^5x^5+5\,Ba^3b^3x^4+\frac{15}{4}Aa^2b^4x^4+5\,Ba^4b^2x^3+\frac{20}{3}Aa^3b^3x^3+3\,Ba^5bx^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*b^6*x^7 + B*a*b^5*x^6 + 1/6*A*b^6*x^6 + 3*B*a^2*b^4*x^5 + 6/5*A*a*b^5
*x^5 + 5*B*a^3*b^3*x^4 + 15/4*A*a^2*b^4*x^4 + 5*B*a^4*b^2*x^3 + 20/3*A*a^3*
b^3*x^3 + 3*B*a^5*b*x^2 + 15/2*A*a^4*b^2*x^2 + B*a^6*x + 6*A*a^5*b*x + A*a^
6*log(abs(x))
```

maple [A] time = 0.04, size = 142, normalized size = 1.48

$$\frac{B\,b^6x^7}{7}+\frac{A\,b^6x^6}{6}+Ba\,b^5x^6+\frac{6Aa\,b^5x^5}{5}+3B\,a^2b^4x^5+\frac{15A\,a^2b^4x^4}{4}+5B\,a^3b^3x^4+\frac{20A\,a^3b^3x^3}{3}+5B\,a^4b^2x^3+\frac{15A\,a^4b^2x^2}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x)
```

```
[Out] 1/7*B*b^6*x^7+1/6*A*b^6*x^6+B*x^6*a*b^5+6/5*a*A*b^5*x^5+3*B*x^5*a^2*b^4+15/
4*a^2*A*b^4*x^4+5*B*x^4*a^3*b^3+20/3*a^3*A*b^3*x^3+5*B*x^3*a^4*b^2+15/2*a^4
*A*b^2*x^2+3*B*x^2*a^5*b+6*a^5*A*b*x+B*a^6*x+a^6*A*ln(x)
```

maxima [A] time = 0.51, size = 142, normalized size = 1.48

$$\frac{1}{7}Bb^6x^7+Aa^6\log(x)+\frac{1}{6}\left(6\,Bab^5+Ab^6\right)x^6+\frac{3}{5}\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+\frac{5}{4}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+\frac{5}{3}\left(3\,Ba^4b^2+4\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^6*x^7 + A*a^6*log(x) + 1/6*(6*B*a*b^5 + A*b^6)*x^6 + 3/5*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 5/4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5/3*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 3/2*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + (B*a^6 + 6*A*a^5
*b)*x
```

mupad [B] time = 1.08, size = 125, normalized size = 1.30

$$x\,\left(B\,a^6+6\,A\,b\,a^5\right)+x^6\,\left(\frac{A\,b^6}{6}+B\,a\,b^5\right)+\frac{B\,b^6\,x^7}{7}+A\,a^6\,\ln(x)+\frac{5\,a^3\,b^2\,x^3\,(4\,A\,b+3\,B\,a)}{3}+\frac{5\,a^2\,b^3\,x^4\,(3\,A\,b+4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x,x)
```

```
[Out] x*(B*a^6 + 6*A*a^5*b) + x^6*((A*b^6)/6 + B*a*b^5) + (B*b^6*x^7)/7 + A*a^6*l
og(x) + (5*a^3*b^2*x^3*(4*A*b + 3*B*a))/3 + (5*a^2*b^3*x^4*(3*A*b + 4*B*a))
/4 + (3*a^4*b*x^2*(5*A*b + 2*B*a))/2 + (3*a*b^4*x^5*(2*A*b + 5*B*a))/5
```

sympy [A] time = 0.28, size = 148, normalized size = 1.54

$$Aa^6\log{(x)}+\frac{Bb^6x^7}{7}+x^6\left(\frac{Ab^6}{6}+Bab^5\right)+x^5\left(\frac{6Aab^5}{5}+3Ba^2b^4\right)+x^4\left(\frac{15Aa^2b^4}{4}+5Ba^3b^3\right)+x^3\Bigg(\frac{20Aa^3b^3}{3}+5Ba^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x,x)
```

```
[Out] A*a**6*log(x) + B*b**6*x**7/7 + x**6*(A*b**6/6 + B*a*b**5) + x**5*(6*A*a*b*
*5/5 + 3*B*a**2*b**4) + x**4*(15*A*a**2*b**4/4 + 5*B*a**3*b**3) + x**3*(20*
A*a**3*b**3/3 + 5*B*a**4*b**2) + x**2*(15*A*a**4*b**2/2 + 3*B*a**5*b) + x*(
6*A*a**5*b + B*a**6)
```

3.546 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=133

$$-\frac{a^6A}{x}+a^5\log(x)(aB+6Ab)+3a^4bx(2aB+5Ab)+\frac{5}{2}a^3b^2x^2(3aB+4Ab)+\frac{5}{3}a^2b^3x^3(4aB+3Ab)+\frac{1}{5}b^5x^5(6aB+Ab)+\frac{3}{4}a$$

```
[Out] -a^6*A/x+3*a^4*b*(5*A*b+2*B*a)*x+5/2*a^3*b^2*(4*A*b+3*B*a)*x^2+5/3*a^2*b^3*
(3*A*b+4*B*a)*x^3+3/4*a*b^4*(2*A*b+5*B*a)*x^4+1/5*b^5*(A*b+6*B*a)*x^5+1/6*b
^6*B*x^6+a^5*(6*A*b+B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 76}

$$\frac{5}{2}a^3b^2x^2(3aB+4Ab)+\frac{5}{3}a^2b^3x^3(4aB+3Ab)+3a^4bx(2aB+5Ab)+a^5\log(x)(aB+6Ab)-\frac{a^6A}{x}+\frac{3}{4}ab^4x^4(5aB+2Ab)+\frac{1}{5}b$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2,x]
```

```
[Out] -((a^6*A)/x) + 3*a^4*b*(5*A*b + 2*a*B)*x + (5*a^3*b^2*(4*A*b + 3*a*B)*x^2)/
2 + (5*a^2*b^3*(3*A*b + 4*a*B)*x^3)/3 + (3*a*b^4*(2*A*b + 5*a*B)*x^4)/4 + (
b^5*(A*b + 6*a*B)*x^5)/5 + (b^6*B*x^6)/6 + a^5*(6*A*b + a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^2}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^2}\,dx\\ &= \int \left(3a^4b(5Ab+2aB)+\frac{a^6A}{x^2}+\frac{a^5(6Ab+aB)}{x}+5a^3b^2(4Ab+3aB)x+5a^2\right.\\ &= -\frac{a^6A}{x}+3a^4b(5Ab+2aB)x+\frac{5}{2}a^3b^2(4Ab+3aB)x^2+\frac{5}{3}a^2b^3(3Ab+4aB)x\end{aligned}$$

Mathematica [A] time = 0.05, size = 129, normalized size = 0.97

$$-\frac{a^6A}{x}+a^5\log(x)(aB+6Ab)+6a^5bBx+\frac{15}{2}a^4b^2x(2A+Bx)+\frac{10}{3}a^3b^3x^2(3A+2Bx)+\frac{5}{4}a^2b^4x^3(4A+3Bx)+\frac{3}{10}ab^5x^4(5A+$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^2,x]
```

```
[Out] -((a^6*A)/x) + 6*a^5*b*B*x + (15*a^4*b^2*x*(2*A + B*x))/2 + (10*a^3*b^3*x^2
*(3*A + 2*B*x))/3 + (5*a^2*b^4*x^3*(4*A + 3*B*x))/4 + (3*a*b^5*x^4*(5*A + 4
*B*x))/10 + (b^6*x^5*(6*A + 5*B*x))/30 + a^5*(6*A*b + a*B)*Log[x]
```

fricas [A] time = 0.92, size = 149, normalized size = 1.12

$$\frac{10\,Bb^6x^7 - 60\,Aa^6 + 12\left(6\,Bab^5 + Ab^6\right)x^6 + 45\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 100\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^4 + 150\,(3\,B}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*b^6*x^7 - 60*A*a^6 + 12*(6*B*a*b^5 + A*b^6)*x^6 + 45*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 150*(3*B*a^4*b^2
 + 4*A*a^3*b^3)*x^3 + 180*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 60*(B*a^6 + 6*A*a
^5*b)*x*log(x))/x
```

giac [A] time = 0.16, size = 143, normalized size = 1.08

$$\frac{1}{6}\,Bb^6x^6+\frac{6}{5}\,Bab^5x^5+\frac{1}{5}\,Ab^6x^5+\frac{15}{4}\,Ba^2b^4x^4+\frac{3}{2}\,Aab^5x^4+\frac{20}{3}\,Ba^3b^3x^3+5\,Aa^2b^4x^3+\frac{15}{2}\,Ba^4b^2x^2+10\,Aa^3b^3x^2+6\,B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^6*x^6 + 6/5*B*a*b^5*x^5 + 1/5*A*b^6*x^5 + 15/4*B*a^2*b^4*x^4 + 3/2*
A*a*b^5*x^4 + 20/3*B*a^3*b^3*x^3 + 5*A*a^2*b^4*x^3 + 15/2*B*a^4*b^2*x^2 + 1
0*A*a^3*b^3*x^2 + 6*B*a^5*b*x + 15*A*a^4*b^2*x - A*a^6/x + (B*a^6 + 6*A*a^5
*b)*log(abs(x))
```

maple [A] time = 0.05, size = 143, normalized size = 1.08

$$\frac{B\,b^6x^6}{6}+\frac{A\,b^6x^5}{5}+\frac{6Ba\,b^5x^5}{5}+\frac{3Aa\,b^5x^4}{2}+\frac{15B\,a^2b^4x^4}{4}+5A\,a^2b^4x^3+\frac{20B\,a^3b^3x^3}{3}+10A\,a^3b^3x^2+\frac{15B\,a^4b^2x^2}{2}+6A\,a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x)
```

```
[Out] 1/6*b^6*B*x^6+1/5*A*x^5*b^6+6/5*B*x^5*a*b^5+3/2*A*x^4*a*b^5+15/4*B*x^4*a^2*
b^4+5*A*x^3*a^2*b^4+20/3*B*x^3*a^3*b^3+10*A*x^2*a^3*b^3+15/2*B*x^2*a^4*b^2+
15*A*a^4*b^2*x+6*B*a^5*b*x-a^6*A/x+6*A*ln(x)*a^5*b+B*ln(x)*a^6
```

maxima [A] time = 0.62, size = 143, normalized size = 1.08

$$\frac{1}{6}\,Bb^6x^6-\frac{Aa^6}{x}+\frac{1}{5}\left(6\,Bab^5 + Ab^6\right)x^5+\frac{3}{4}\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^4+\frac{5}{3}\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^3+\frac{5}{2}\,(3\,Ba^4b^2 + 4\,Aa^3b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^6*x^6 - A*a^6/x + 1/5*(6*B*a*b^5 + A*b^6)*x^5 + 3/4*(5*B*a^2*b^4 +
2*A*a*b^5)*x^4 + 5/3*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 + 5/2*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^2 + 3*(2*B*a^5*b + 5*A*a^4*b^2)*x + (B*a^6 + 6*A*a^5*b)*log(x
)
```

mupad [B] time = 0.06, size = 127, normalized size = 0.95

$$x^5\,\left(\frac{A\,b^6}{5}+\frac{6\,B\,a\,b^5}{5}\right)+\ln(x)\,\left(B\,a^6+6\,A\,b\,a^5\right)-\frac{A\,a^6}{x}+\frac{B\,b^6\,x^6}{6}+\frac{5\,a^3\,b^2\,x^2\,\left(4\,A\,b+3\,B\,a\right)}{2}+\frac{5\,a^2\,b^3\,x^3\,(3\,A\,b+4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^2,x)
```

```
[Out] x^5*((A*b^6)/5 + (6*B*a*b^5)/5) + log(x)*(B*a^6 + 6*A*a^5*b) - (A*a^6)/x +
(B*b^6*x^6)/6 + (5*a^3*b^2*x^2*(4*A*b + 3*B*a))/2 + (5*a^2*b^3*x^3*(3*A*b +
 4*B*a))/3 + 3*a^4*b*x*(5*A*b + 2*B*a) + (3*a*b^4*x^4*(2*A*b + 5*B*a))/4
```

sympy [A] time = 0.33, size = 148, normalized size = 1.11

$$-\frac{Aa^6}{x}+\frac{Bb^6x^6}{6}+a^5\left(6Ab+Ba\right)\log\left(x\right)+x^5\left(\frac{Ab^6}{5}+\frac{6Bab^5}{5}\right)+x^4\left(\frac{3Aab^5}{2}+\frac{15Ba^2b^4}{4}\right)+x^3\left(5Aa^2b^4+\frac{20Ba^3b^3}{3}\right)+x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**2,x)
```

```
[Out] -A*a**6/x + B*b**6*x**6/6 + a**5*(6*A*b + B*a)*log(x) + x**5*(A*b**6/5 + 6*
B*a*b**5/5) + x**4*(3*A*a*b**5/2 + 15*B*a**2*b**4/4) + x**3*(5*A*a**2*b**4
+ 20*B*a**3*b**3/3) + x**2*(10*A*a**3*b**3 + 15*B*a**4*b**2/2) + x*(15*A*a*
*4*b**2 + 6*B*a**5*b)
```

3.547 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=131

$$-\frac{a^6A}{2x^2}-\frac{a^5(aB+6Ab)}{x}+3a^4b\log(x)(2aB+5Ab)+5a^3b^2x(3aB+4Ab)+\frac{5}{2}a^2b^3x^2(4aB+3Ab)+\frac{1}{4}b^5x^4(6aB+Ab)+a$$

```
[Out] -1/2*a^6*A/x^2-a^5*(6*A*b+B*a)/x+5*a^3*b^2*(4*A*b+3*B*a)*x+5/2*a^2*b^3*(3*A
*b+4*B*a)*x^2+a*b^4*(2*A*b+5*B*a)*x^3+1/4*b^5*(A*b+6*B*a)*x^4+1/5*b^6*B*x^5
+3*a^4*b*(5*A*b+2*B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{5}{2}a^2b^3x^2(4aB+3Ab)+5a^3b^2x(3aB+4Ab)-\frac{a^5(aB+6Ab)}{x}+3a^4b\log(x)(2aB+5Ab)-\frac{a^6A}{2x^2}+ab^4x^3(5aB+2Ab)+\frac{1}{4}b$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3,x]
```

```
[Out] -(a^6*A)/(2*x^2) - (a^5*(6*A*b + a*B))/x + 5*a^3*b^2*(4*A*b + 3*a*B)*x + (5
*a^2*b^3*(3*A*b + 4*a*B)*x^2)/2 + a*b^4*(2*A*b + 5*a*B)*x^3 + (b^5*(A*b + 6
*a*B)*x^4)/4 + (b^6*B*x^5)/5 + 3*a^4*b*(5*A*b + 2*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^3}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^3}\,dx\\ &= \int \left(5a^3b^2(4Ab+3aB)+\frac{a^6A}{x^3}+\frac{a^5(6Ab+aB)}{x^2}+\frac{3a^4b(5Ab+2aB)}{x}+5\right.\\ &= -\frac{a^6A}{2x^2}-\frac{a^5(6Ab+aB)}{x}+5a^3b^2(4Ab+3aB)x+\frac{5}{2}a^2b^3(3Ab+4aB)x^2+\end{aligned}$$

Mathematica [A] time = 0.06, size = 128, normalized size = 0.98

$$-\frac{a^6(A+2Bx)}{2x^2}-\frac{6a^5Ab}{x}+3a^4b\log(x)(2aB+5Ab)+15a^4b^2Bx+10a^3b^3x(2A+Bx)+\frac{5}{2}a^2b^4x^2(3A+2Bx)+\frac{1}{2}ab^5x^3(4$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^3,x]
```

```
[Out] (-6*a^5*A*b)/x + 15*a^4*b^2*B*x + 10*a^3*b^3*x*(2*A + B*x) - (a^6*(A + 2*B*
x))/(2*x^2) + (5*a^2*b^4*x^2*(3*A + 2*B*x))/2 + (a*b^5*x^3*(4*A + 3*B*x))/2
 + (b^6*x^4*(5*A + 4*B*x))/20 + 3*a^4*b*(5*A*b + 2*a*B)*Log[x]
```

fricas [A] time = 0.80, size = 149, normalized size = 1.14

$$\frac{4 Bb^6x^7 - 10 Aa^6 + 5 (6 Bab^5 + Ab^6)x^6 + 20 (5 Ba^2b^4 + 2 Aab^5)x^5 + 50 (4 Ba^3b^3 + 3 Aa^2b^4)x^4 + 100 (3 Ba^4b^2 +}{20 x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*b^6*x^7 - 10*A*a^6 + 5*(6*B*a*b^5 + A*b^6)*x^6 + 20*(5*B*a^2*b^4
+ 2*A*a*b^5)*x^5 + 50*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^2 +
4*A*a^3*b^3)*x^3 + 60*(2*B*a^5*b + 5*A*a^4*b^2)*x^2*log(x) - 20*(B*a^6 + 6*
A*a^5*b)*x)/x^2
```

giac [A] time = 0.17, size = 144, normalized size = 1.10

$$\frac{1}{5} Bb^6x^5+\frac{3}{2} Bab^5x^4+\frac{1}{4} Ab^6x^4+5 Ba^2b^4x^3+2 Aab^5x^3+10 Ba^3b^3x^2+\frac{15}{2} Aa^2b^4x^2+15 Ba^4b^2x+20 Aa^3b^3x+3 (2 Ba^5b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*b^6*x^5 + 3/2*B*a*b^5*x^4 + 1/4*A*b^6*x^4 + 5*B*a^2*b^4*x^3 + 2*A*a*b
^5*x^3 + 10*B*a^3*b^3*x^2 + 15/2*A*a^2*b^4*x^2 + 15*B*a^4*b^2*x + 20*A*a^3*
b^3*x + 3*(2*B*a^5*b + 5*A*a^4*b^2)*log(abs(x)) - 1/2*(A*a^6 + 2*(B*a^6 + 6
*A*a^5*b)*x)/x^2
```

maple [A] time = 0.06, size = 144, normalized size = 1.10

$$\frac{B b^6x^5}{5}+\frac{A b^6x^4}{4}+\frac{3Ba b^5x^4}{2}+2Aa b^5x^3+5B a^2b^4x^3+\frac{15A a^2b^4x^2}{2}+10B a^3b^3x^2+15A a^4b^2 \ln(x)+20A a^3b^3x+6B a^5b \mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x)
```

```
[Out] 1/5*b^6*B*x^5+1/4*A*x^4*b^6+3/2*B*x^4*a*b^5+2*A*x^3*a*b^5+5*B*x^3*a^2*b^4+1
5/2*A*x^2*a^2*b^4+10*B*x^2*a^3*b^3+20*A*a^3*b^3*x+15*B*a^4*b^2*x-1/2*a^6*A/
x^2-6*a^5/x*A*b-a^6/x*B+15*A*ln(x)*a^4*b^2+6*B*ln(x)*a^5*b
```

maxima [A] time = 0.56, size = 143, normalized size = 1.09

$$\frac{1}{5} Bb^6x^5+\frac{1}{4} (6 Bab^5 + Ab^6)x^4+(5 Ba^2b^4 + 2 Aab^5)x^3+\frac{5}{2} (4 Ba^3b^3 + 3 Aa^2b^4)x^2+5 (3 Ba^4b^2 + 4 Aa^3b^3)x+3 (2 Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*b^6*x^5 + 1/4*(6*B*a*b^5 + A*b^6)*x^4 + (5*B*a^2*b^4 + 2*A*a*b^5)*x^3
 + 5/2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^2 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x +
3*(2*B*a^5*b + 5*A*a^4*b^2)*log(x) - 1/2*(A*a^6 + 2*(B*a^6 + 6*A*a^5*b)*x)/
x^2
```

mupad [B] time = 1.08, size = 130, normalized size = 0.99

$$\ln(x) \left(6 B a^5 b + 15 A a^4 b^2\right)-\frac{x \left(B a^6 + 6 A b a^5\right) + \frac{A a^6}{2}}{x^2}+x^4 \left(\frac{A b^6}{4} + \frac{3 B a b^5}{2}\right)+\frac{B b^6 x^5}{5}+\frac{5 a^2 b^3 x^2 (3 A b + 4 B a)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^3,x)
```

```
[Out] log(x)*(15*A*a^4*b^2 + 6*B*a^5*b) - (x*(B*a^6 + 6*A*a^5*b) + (A*a^6)/2)/x^2
 + x^4*((A*b^6)/4 + (3*B*a*b^5)/2) + (B*b^6*x^5)/5 + (5*a^2*b^3*x^2*(3*A*b
+ 4*B*a))/2 + 5*a^3*b^2*x*(4*A*b + 3*B*a) + a*b^4*x^3*(2*A*b + 5*B*a)
```

sympy **[A]** time = 0.51, size = 148, normalized size = 1.13

$$\frac{Bb^6x^5}{5}+3a^4b\left(5Ab+2Ba\right)\log\left(x\right)+x^4\left(\frac{Ab^6}{4}+\frac{3Bab^5}{2}\right)+x^3\left(2Aab^5+5Ba^2b^4\right)+x^2\left(\frac{15Aa^2b^4}{2}+10Ba^3b^3\right)+x\Big(20$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**3,x)
```

```
[Out] B*b**6*x**5/5 + 3*a**4*b*(5*A*b + 2*B*a)*log(x) + x**4*(A*b**6/4 + 3*B*a*b*
*5/2) + x**3*(2*A*a*b**5 + 5*B*a**2*b**4) + x**2*(15*A*a**2*b**4/2 + 10*B*a
**3*b**3) + x*(20*A*a**3*b**3 + 15*B*a**4*b**2) + (-A*a**6 + x*(-12*A*a**5*
b - 2*B*a**6))/(2*x**2)
```

3.548 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^4}\,dx$

Optimal. Leaf size=134

$$-\frac{a^6A}{3x^3}-\frac{a^5(aB+6Ab)}{2x^2}-\frac{3a^4b(2aB+5Ab)}{x}+5a^3b^2\log(x)(3aB+4Ab)+5a^2b^3x(4aB+3Ab)+\frac{1}{3}b^5x^3(6aB+Ab)+\frac{3}{2}ab^4x$$

```
[Out] -1/3*a^6*A/x^3-1/2*a^5*(6*A*b+B*a)/x^2-3*a^4*b*(5*A*b+2*B*a)/x+5*a^2*b^3*(3
*A*b+4*B*a)*x+3/2*a*b^4*(2*A*b+5*B*a)*x^2+1/3*b^5*(A*b+6*B*a)*x^3+1/4*b^6*B
*x^4+5*a^3*b^2*(4*A*b+3*B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$5a^2b^3x(4aB+3Ab)+5a^3b^2\log(x)(3aB+4Ab)-\frac{a^5(aB+6Ab)}{2x^2}-\frac{3a^4b(2aB+5Ab)}{x}-\frac{a^6A}{3x^3}+\frac{3}{2}ab^4x^2(5aB+2Ab)+\frac{1}{3}b^5x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4,x]
```

```
[Out] -(a^6*A)/(3*x^3) - (a^5*(6*A*b + a*B))/(2*x^2) - (3*a^4*b*(5*A*b + 2*a*B))/
x + 5*a^2*b^3*(3*A*b + 4*a*B)*x + (3*a*b^4*(2*A*b + 5*a*B)*x^2)/2 + (b^5*(A
*b + 6*a*B)*x^3)/3 + (b^6*B*x^4)/4 + 5*a^3*b^2*(4*A*b + 3*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^4}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^4}\,dx\\ &= \int \left(5a^2b^3(3Ab+4aB)+\frac{a^6A}{x^4}+\frac{a^5(6Ab+aB)}{x^3}+\frac{3a^4b(5Ab+2aB)}{x^2}+\frac{5a^3}{}\right.\\ &= -\frac{a^6A}{3x^3}-\frac{a^5(6Ab+aB)}{2x^2}-\frac{3a^4b(5Ab+2aB)}{x}+5a^2b^3(3Ab+4aB)x+\frac{3}{2}ab^4(\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.95

$$-\frac{a^6(2A+3Bx)}{6x^3}-\frac{3a^5b(A+2Bx)}{x^2}-\frac{15a^4Ab^2}{x}+5a^3b^2\log(x)(3aB+4Ab)+20a^3b^3Bx+\frac{15}{2}a^2b^4x(2A+Bx)+ab^5x^2(3A+$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^4,x]
```

```
[Out] (-15*a^4*A*b^2)/x + 20*a^3*b^3*B*x + (15*a^2*b^4*x*(2*A + B*x))/2 - (3*a^5*
b*(A + 2*B*x))/x^2 + a*b^5*x^2*(3*A + 2*B*x) - (a^6*(2*A + 3*B*x))/(6*x^3)
+ (b^6*x^3*(4*A + 3*B*x))/12 + 5*a^3*b^2*(4*A*b + 3*a*B)*Log[x]
```

fricas [A] time = 0.73, size = 149, normalized size = 1.11

$$\frac{3\,Bb^6x^7 - 4\,Aa^6 + 4\left(6\,Bab^5 + Ab^6\right)x^6 + 18\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 60\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^4 + 60\left(3\,Ba^4b^2 +\right.}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^6*x^7 - 4*A*a^6 + 4*(6*B*a*b^5 + A*b^6)*x^6 + 18*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 60*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 60*(3*B*a^4*b^2 + 4*
A*a^3*b^3)*x^3*log(x) - 36*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 6*(B*a^6 + 6*A*a
^5*b)*x)/x^3
```

giac [A] time = 0.17, size = 145, normalized size = 1.08

$$\frac{1}{4}\,Bb^6x^4+2\,Bab^5x^3+\frac{1}{3}\,Ab^6x^3+\frac{15}{2}\,Ba^2b^4x^2+3\,Aab^5x^2+20\,Ba^3b^3x+15\,Aa^2b^4x+5\left(3\,Ba^4b^2 + 4\,Aa^3b^3\right)\log\left(|x|\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="giac")
```

```
[Out] 1/4*B*b^6*x^4 + 2*B*a*b^5*x^3 + 1/3*A*b^6*x^3 + 15/2*B*a^2*b^4*x^2 + 3*A*a*
b^5*x^2 + 20*B*a^3*b^3*x + 15*A*a^2*b^4*x + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*l
og(abs(x)) - 1/6*(2*A*a^6 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3*(B*a^6 + 6
*A*a^5*b)*x)/x^3
```

maple [A] time = 0.05, size = 144, normalized size = 1.07

$$\frac{B\,b^6x^4}{4}+\frac{A\,b^6x^3}{3}+2Ba\,b^5x^3+3Aa\,b^5x^2+\frac{15B\,a^2b^4x^2}{2}+20A\,a^3b^3\ln(x)+15A\,a^2b^4x+15B\,a^4b^2\ln(x)+20B\,a^3b^3x-\frac{15}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x)
```

```
[Out] 1/4*b^6*B*x^4+1/3*A*x^3*b^6+2*B*x^3*a*b^5+3*A*x^2*a*b^5+15/2*B*x^2*a^2*b^4+
15*A*a^2*b^4*x+20*B*a^3*b^3*x-1/3*a^6*A/x^3-3*a^5/x^2*A*b-1/2*a^6/x^2*B-15*
a^4*b^2/x*A-6*a^5*b/x*B+20*A*ln(x)*a^3*b^3+15*B*ln(x)*a^4*b^2
```

maxima [A] time = 0.52, size = 145, normalized size = 1.08

$$\frac{1}{4}\,Bb^6x^4+\frac{1}{3}\left(6\,Bab^5 + Ab^6\right)x^3+\frac{3}{2}\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^2+5\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x+5\left(3\,Ba^4b^2 + 4\,Aa^3b^3\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*B*b^6*x^4 + 1/3*(6*B*a*b^5 + A*b^6)*x^3 + 3/2*(5*B*a^2*b^4 + 2*A*a*b^5)
*x^2 + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*log(
x) - 1/6*(2*A*a^6 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3*(B*a^6 + 6*A*a^5*b
)*x)/x^3
```

mupad [B] time = 0.06, size = 135, normalized size = 1.01

$$x^3\,\left(\frac{A\,b^6}{3}+2\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{2}+3\,A\,b\,a^5\right)+\frac{A\,a^6}{3}+x^2\,\left(6\,B\,a^5\,b+15\,A\,a^4\,b^2\right)}{x^3}+\ln(x)\,\left(15\,B\,a^4\,b^2+20\,A\,a^3\,b^3\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^4,x)
```

```
[Out] x^3*((A*b^6)/3 + 2*B*a*b^5) - (x*((B*a^6)/2 + 3*A*a^5*b) + (A*a^6)/3 + x^2*
(15*A*a^4*b^2 + 6*B*a^5*b))/x^3 + log(x)*(20*A*a^3*b^3 + 15*B*a^4*b^2) + (B
*b^6*x^4)/4 + 5*a^2*b^3*x*(3*A*b + 4*B*a) + (3*a*b^4*x^2*(2*A*b + 5*B*a))/2
```

sympy [A] time = 0.83, size = 150, normalized size = 1.12

$$\frac{Bb^6x^4}{4}+5a^3b^2\left(4Ab+3Ba\right)\log\left(x\right)+x^3\left(\frac{Ab^6}{3}+2Bab^5\right)+x^2\left(3Aab^5+\frac{15Ba^2b^4}{2}\right)+x\left(15Aa^2b^4+20Ba^3b^3\right)+\frac{-2Aa^6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**4,x)
```

```
[Out] B*b**6*x**4/4 + 5*a**3*b**2*(4*A*b + 3*B*a)*log(x) + x**3*(A*b**6/3 + 2*B*a
*b**5) + x**2*(3*A*a*b**5 + 15*B*a**2*b**4/2) + x*(15*A*a**2*b**4 + 20*B*a*
*3*b**3) + (-2*A*a**6 + x**2*(-90*A*a**4*b**2 - 36*B*a**5*b) + x*(-18*A*a**
5*b - 3*B*a**6))/(6*x**3)
```

3.549 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx$

Optimal. Leaf size=134

$$-\frac{a^6A}{4x^4}-\frac{a^5(aB+6Ab)}{3x^3}-\frac{3a^4b(2aB+5Ab)}{2x^2}-\frac{5a^3b^2(3aB+4Ab)}{x}+5a^2b^3\log(x)(4aB+3Ab)+\frac{1}{2}b^5x^2(6aB+Ab)+3a$$

```
[Out] -1/4*a^6*A/x^4-1/3*a^5*(6*A*b+B*a)/x^3-3/2*a^4*b*(5*A*b+2*B*a)/x^2-5*a^3*b^
2*(4*A*b+3*B*a)/x+3*a*b^4*(2*A*b+5*B*a)*x+1/2*b^5*(A*b+6*B*a)*x^2+1/3*b^6*B
*x^3+5*a^2*b^3*(3*A*b+4*B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{x}+5a^2b^3\log(x)(4aB+3Ab)-\frac{a^5(aB+6Ab)}{3x^3}-\frac{3a^4b(2aB+5Ab)}{2x^2}-\frac{a^6A}{4x^4}+\frac{1}{2}b^5x^2(6aB+Ab)+3a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5,x]
```

```
[Out] -(a^6*A)/(4*x^4) - (a^5*(6*A*b + a*B))/(3*x^3) - (3*a^4*b*(5*A*b + 2*a*B))/
(2*x^2) - (5*a^3*b^2*(4*A*b + 3*a*B))/x + 3*a*b^4*(2*A*b + 5*a*B)*x + (b^5*
(A*b + 6*a*B)*x^2)/2 + (b^6*B*x^3)/3 + 5*a^2*b^3*(3*A*b + 4*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^5}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^5}\,dx\\ &= \int \left(3ab^4(2Ab+5aB)+\frac{a^6A}{x^5}+\frac{a^5(6Ab+aB)}{x^4}+\frac{3a^4b(5Ab+2aB)}{x^3}+\right.\\ &= -\frac{a^6A}{4x^4}-\frac{a^5(6Ab+aB)}{3x^3}-\frac{3a^4b(5Ab+2aB)}{2x^2}-\frac{5a^3b^2(4Ab+3aB)}{x}+3ab\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 0.96

$$-\frac{a^6(3A+4Bx)}{12x^4}-\frac{a^5b(2A+3Bx)}{x^3}-\frac{15a^4b^2(A+2Bx)}{2x^2}-\frac{20a^3Ab^3}{x}+5a^2b^3\log(x)(4aB+3Ab)+15a^2b^4Bx+3ab^5x(2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^5,x]
```

```
[Out] (-20*a^3*A*b^3)/x + 15*a^2*b^4*B*x + 3*a*b^5*x*(2*A + B*x) - (15*a^4*b^2*(A
 + 2*B*x))/(2*x^2) + (b^6*x^2*(3*A + 2*B*x))/6 - (a^5*b*(2*A + 3*B*x))/x^3
- (a^6*(3*A + 4*B*x))/(12*x^4) + 5*a^2*b^3*(3*A*b + 4*a*B)*Log[x]
```

fricas [A] time = 0.56, size = 149, normalized size = 1.11

$$\frac{4\,Bb^{6}x^{7}-3\,Aa^{6}+6\,(6\,Bab^{5}+Ab^{6})x^{6}+36\,(5\,Ba^{2}b^{4}+2\,Aab^{5})x^{5}+60\,(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4})x^{4}\log(x)-60\,(3\,Ba^{4}}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*b^6*x^7 - 3*A*a^6 + 6*(6*B*a*b^5 + A*b^6)*x^6 + 36*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 60*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4*log(x) - 60*(3*B*a^4*b
^2 + 4*A*a^3*b^3)*x^3 - 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 4*(B*a^6 + 6*A*a
^5*b)*x)/x^4
```

giac [A] time = 0.19, size = 145, normalized size = 1.08

$$\frac{1}{3}\,Bb^{6}x^{3}+3\,Bab^{5}x^{2}+\frac{1}{2}\,Ab^{6}x^{2}+15\,Ba^{2}b^{4}x+6\,Aab^{5}x+5\,(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4})\log(|x|)-\frac{3\,Aa^{6}+60\,(3\,Ba^{4}b^{2}+4\,Aa^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*b^6*x^3 + 3*B*a*b^5*x^2 + 1/2*A*b^6*x^2 + 15*B*a^2*b^4*x + 6*A*a*b^5*
x + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*log(abs(x)) - 1/12*(3*A*a^6 + 60*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 4*(B*a^6 + 6*A
*a^5*b)*x)/x^4
```

maple [A] time = 0.06, size = 144, normalized size = 1.07

$$\frac{B\,b^{6}x^{3}}{3}+\frac{A\,b^{6}x^{2}}{2}+3Ba\,b^{5}x^{2}+15A\,a^{2}b^{4}\ln(x)+6Aa\,b^{5}x+20B\,a^{3}b^{3}\ln(x)+15B\,a^{2}b^{4}x-\frac{20A\,a^{3}b^{3}}{x}-\frac{15B\,a^{4}b^{2}}{x}-\frac{15A\,a^{4}b^{2}}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x)
```

```
[Out] 1/3*b^6*B*x^3+1/2*A*x^2*b^6+3*B*x^2*a*b^5+6*A*a*b^5*x+15*B*a^2*b^4*x-1/4*a^
6*A/x^4-2*a^5/x^3*A*b-1/3*a^6/x^3*B-15/2*a^4*b^2/x^2*A-3*a^5*b/x^2*B-20*a^3
*b^3/x*A-15*a^4*b^2/x*B+15*A*ln(x)*a^2*b^4+20*B*ln(x)*a^3*b^3
```

maxima [A] time = 0.55, size = 145, normalized size = 1.08

$$\frac{1}{3}\,Bb^{6}x^{3}+\frac{1}{2}\,(6\,Bab^{5}+Ab^{6})x^{2}+3\,(5\,Ba^{2}b^{4}+2\,Aab^{5})x+5\,(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4})\log(x)-\frac{3\,Aa^{6}+60\,(3\,Ba^{4}b^{2}+4\,Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*b^6*x^3 + 1/2*(6*B*a*b^5 + A*b^6)*x^2 + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*x
 + 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*log(x) - 1/12*(3*A*a^6 + 60*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 18*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 4*(B*a^6 + 6*A*a^5*b
)*x)/x^4
```

mupad [B] time = 0.06, size = 138, normalized size = 1.03

$$x^{2}\,\left(\frac{A\,b^{6}}{2}+3\,B\,a\,b^{5}\right)-\frac{x\,\left(\frac{B\,a^{6}}{3}+2\,A\,b\,a^{5}\right)+\frac{A\,a^{6}}{4}+x^{2}\,\left(3\,B\,a^{5}\,b+\frac{15\,A\,a^{4}\,b^{2}}{2}\right)+x^{3}\,\left(15\,B\,a^{4}\,b^{2}+20\,A\,a^{3}\,b^{3}\right)}{x^{4}}+\ln(x)\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^5,x)
```

```
[Out] x^2*((A*b^6)/2 + 3*B*a*b^5) - (x*((B*a^6)/3 + 2*A*a^5*b) + (A*a^6)/4 + x^2*
((15*A*a^4*b^2)/2 + 3*B*a^5*b) + x^3*(20*A*a^3*b^3 + 15*B*a^4*b^2))/x^4 + l
og(x)*(15*A*a^2*b^4 + 20*B*a^3*b^3) + (B*b^6*x^3)/3 + 3*a*b^4*x*(2*A*b + 5*
B*a)
```

sympy [A] time = 1.35, size = 150, normalized size = 1.12

$$\frac{Bb^6x^3}{3}+5a^2b^3\left(3Ab+4Ba\right)\log\left(x\right)+x^2\left(\frac{Ab^6}{2}+3Bab^5\right)+x\left(6Aab^5+15Ba^2b^4\right)+\frac{-3Aa^6+x^3\left(-240Aa^3b^3-180\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**5,x)
```

```
[Out] B*b**6*x**3/3 + 5*a**2*b**3*(3*A*b + 4*B*a)*log(x) + x**2*(A*b**6/2 + 3*B*a
*b**5) + x*(6*A*a*b**5 + 15*B*a**2*b**4) + (-3*A*a**6 + x**3*(-240*A*a**3*b
**3 - 180*B*a**4*b**2) + x**2*(-90*A*a**4*b**2 - 36*B*a**5*b) + x*(-24*A*a*
*5*b - 4*B*a**6))/(12*x**4)
```

3.550 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx$

Optimal. Leaf size=131

$$-\frac{a^6A}{5x^5}-\frac{a^5(aB+6Ab)}{4x^4}-\frac{a^4b(2aB+5Ab)}{x^3}-\frac{5a^3b^2(3aB+4Ab)}{2x^2}-\frac{5a^2b^3(4aB+3Ab)}{x}+b^5x(6aB+Ab)+3ab^4\log(x)(5a$$

```
[Out] -1/5*a^6*A/x^5-1/4*a^5*(6*A*b+B*a)/x^4-a^4*b*(5*A*b+2*B*a)/x^3-5/2*a^3*b^2*
(4*A*b+3*B*a)/x^2-5*a^2*b^3*(3*A*b+4*B*a)/x+b^5*(A*b+6*B*a)*x+1/2*b^6*B*x^2
+3*a*b^4*(2*A*b+5*B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$-\frac{5a^3b^2(3aB+4Ab)}{2x^2}-\frac{5a^2b^3(4aB+3Ab)}{x}-\frac{a^5(aB+6Ab)}{4x^4}-\frac{a^4b(2aB+5Ab)}{x^3}-\frac{a^6A}{5x^5}+b^5x(6aB+Ab)+3ab^4\log(x)(5a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6,x]
```

```
[Out] -(a^6*A)/(5*x^5) - (a^5*(6*A*b + a*B))/(4*x^4) - (a^4*b*(5*A*b + 2*a*B))/x^
3 - (5*a^3*b^2*(4*A*b + 3*a*B))/(2*x^2) - (5*a^2*b^3*(3*A*b + 4*a*B))/x + b
^5*(A*b + 6*a*B)*x + (b^6*B*x^2)/2 + 3*a*b^4*(2*A*b + 5*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^6}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^6}\,dx\\ &= \int \left(b^5(Ab+6aB)+\frac{a^6A}{x^6}+\frac{a^5(6Ab+aB)}{x^5}+\frac{3a^4b(5Ab+2aB)}{x^4}+\frac{5a^3b^2(4\right.\\ &= -\frac{a^6A}{5x^5}-\frac{a^5(6Ab+aB)}{4x^4}-\frac{a^4b(5Ab+2aB)}{x^3}-\frac{5a^3b^2(4Ab+3aB)}{2x^2}-\frac{5a^2b^3(3\end{aligned}$$

Mathematica [A] time = 0.05, size = 128, normalized size = 0.98

$$-\frac{a^6(4A+5Bx)}{20x^5}-\frac{a^5b(3A+4Bx)}{2x^4}-\frac{5a^4b^2(2A+3Bx)}{2x^3}-\frac{10a^3b^3(A+2Bx)}{x^2}-\frac{15a^2Ab^4}{x}+3ab^4\log(x)(5aB+2Ab)+6ab^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^6,x]
```

```
[Out] (-15*a^2*A*b^4)/x + 6*a*b^5*B*x + (b^6*x*(2*A + B*x))/2 - (10*a^3*b^3*(A +
2*B*x))/x^2 - (5*a^4*b^2*(2*A + 3*B*x))/(2*x^3) - (a^5*b*(3*A + 4*B*x))/(2*
x^4) - (a^6*(4*A + 5*B*x))/(20*x^5) + 3*a*b^4*(2*A*b + 5*a*B)*Log[x]
```

fricas [**A**] time = 0.84, size = 149, normalized size = 1.14

$$\frac{10\,Bb^{6}x^{7}-4\,Aa^{6}+20\left(6\,Bab^{5}+Ab^{6}\right)x^{6}+60\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{5}\log(x)-100\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{4}-50}{20\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*b^6*x^7 - 4*A*a^6 + 20*(6*B*a*b^5 + A*b^6)*x^6 + 60*(5*B*a^2*b^4
 + 2*A*a*b^5)*x^5*log(x) - 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 50*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 - 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 5*(B*a^6 + 6*
A*a^5*b)*x)/x^5
```

giac [**A**] time = 0.18, size = 144, normalized size = 1.10

$$\frac{1}{2}\,Bb^{6}x^{2}+6\,Bab^{5}x+Ab^{6}x+3\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)\log\left(|x|\right)-\frac{4\,Aa^{6}+100\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{4}+50\left(3\,Ba^{4}b^{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="giac")
```

```
[Out] 1/2*B*b^6*x^2 + 6*B*a*b^5*x + A*b^6*x + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*log(abs
(x)) - 1/20*(4*A*a^6 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 50*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 5*(B*a^6 + 6*A*a^
5*b)*x)/x^5
```

maple [**A**] time = 0.06, size = 143, normalized size = 1.09

$$\frac{B\,b^{6}x^{2}}{2}+6Aa\,b^{5}\ln(x)+A\,b^{6}x+15B\,a^{2}b^{4}\ln(x)+6Ba\,b^{5}x-\frac{15A\,a^{2}b^{4}}{x}-\frac{20B\,a^{3}b^{3}}{x}-\frac{10A\,a^{3}b^{3}}{x^{2}}-\frac{15B\,a^{4}b^{2}}{2x^{2}}-\frac{5A\,a^{4}b^{2}}{x^{3}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x)
```

```
[Out] 1/2*b^6*B*x^2+A*b^6*x+6*B*a*b^5*x-1/5*a^6*A/x^5-3/2*a^5/x^4*A*b-1/4*a^6/x^4
*B-5*a^4*b^2/x^3*A-2*a^5*b/x^3*B-10*a^3*b^3/x^2*A-15/2*a^4*b^2/x^2*B-15*a^2
*b^4/x*A-20*a^3*b^3/x*B+6*A*ln(x)*a*b^5+15*B*ln(x)*a^2*b^4
```

maxima [**A**] time = 0.61, size = 144, normalized size = 1.10

$$\frac{1}{2}\,Bb^{6}x^{2}+\left(6\,Bab^{5}+Ab^{6}\right)x+3\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)\log(x)-\frac{4\,Aa^{6}+100\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{4}+50\left(3\,Ba^{4}b^{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*B*b^6*x^2 + (6*B*a*b^5 + A*b^6)*x + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*log(x)
- 1/20*(4*A*a^6 + 100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 50*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^3 + 20*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 5*(B*a^6 + 6*A*a^5*b)*
x)/x^5
```

mupad [**B**] time = 1.09, size = 140, normalized size = 1.07

$$x\,\left(A\,b^6+6\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{4}+\frac{3\,A\,b\,a^5}{2}\right)+\frac{A\,a^6}{5}+x^2\,\left(2\,B\,a^5\,b+5\,A\,a^4\,b^2\right)+x^3\,\left(\frac{15\,B\,a^4\,b^2}{2}+10\,A\,a^3\,b^3\right)+x^4\,\left(20\,B\right.}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^6,x)
```

```
[Out] x*(A*b^6 + 6*B*a*b^5) - (x*((B*a^6)/4 + (3*A*a^5*b)/2) + (A*a^6)/5 + x^2*(5
*A*a^4*b^2 + 2*B*a^5*b) + x^3*(10*A*a^3*b^3 + (15*B*a^4*b^2)/2) + x^4*(15*A
*a^2*b^4 + 20*B*a^3*b^3))/x^5 + log(x)*(15*B*a^2*b^4 + 6*A*a*b^5) + (B*b^6*
x^2)/2
```

sympy [A] time = 2.09, size = 150, normalized size = 1.15

$$\frac{Bb^6x^2}{2}+3ab^4\left(2Ab+5Ba\right)\log\left(x\right)+x\left(Ab^6+6Bab^5\right)+\frac{-4Aa^6+x^4\left(-300Aa^2b^4-400Ba^3b^3\right)+x^3\left(-200Aa^3b^3-1\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**6,x)
```

```
[Out] B*b**6*x**2/2 + 3*a*b**4*(2*A*b + 5*B*a)*log(x) + x*(A*b**6 + 6*B*a*b**5) +
 (-4*A*a**6 + x**4*(-300*A*a**2*b**4 - 400*B*a**3*b**3) + x**3*(-200*A*a**3
*b**3 - 150*B*a**4*b**2) + x**2*(-100*A*a**4*b**2 - 40*B*a**5*b) + x*(-30*A
*a**5*b - 5*B*a**6))/(20*x**5)
```

3.551 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx$

Optimal. Leaf size=132

$$-\frac{a^6A}{6x^6}-\frac{a^5(aB+6Ab)}{5x^5}-\frac{3a^4b(2aB+5Ab)}{4x^4}-\frac{5a^3b^2(3aB+4Ab)}{3x^3}-\frac{5a^2b^3(4aB+3Ab)}{2x^2}+b^5\log(x)(6aB+Ab)-\frac{3ab^4(}{}$$

```
[Out] -1/6*a^6*A/x^6-1/5*a^5*(6*A*b+B*a)/x^5-3/4*a^4*b*(5*A*b+2*B*a)/x^4-5/3*a^3*
b^2*(4*A*b+3*B*a)/x^3-5/2*a^2*b^3*(3*A*b+4*B*a)/x^2-3*a*b^4*(2*A*b+5*B*a)/x
+b^6*B*x+b^5*(A*b+6*B*a)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$-\frac{5a^3b^2(3aB+4Ab)}{3x^3}-\frac{5a^2b^3(4aB+3Ab)}{2x^2}-\frac{a^5(aB+6Ab)}{5x^5}-\frac{3a^4b(2aB+5Ab)}{4x^4}-\frac{a^6A}{6x^6}-\frac{3ab^4(5aB+2Ab)}{x}+b^5\log($$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7,x]
```

```
[Out] -(a^6*A)/(6*x^6) - (a^5*(6*A*b + a*B))/(5*x^5) - (3*a^4*b*(5*A*b + 2*a*B))/
(4*x^4) - (5*a^3*b^2*(4*A*b + 3*a*B))/(3*x^3) - (5*a^2*b^3*(3*A*b + 4*a*B))
/(2*x^2) - (3*a*b^4*(2*A*b + 5*a*B))/x + b^6*B*x + b^5*(A*b + 6*a*B)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^7}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^7}\,dx\\ &= \int \left(b^6B+\frac{a^6A}{x^7}+\frac{a^5(6Ab+aB)}{x^6}+\frac{3a^4b(5Ab+2aB)}{x^5}+\frac{5a^3b^2(4Ab+3a}{x^4}\right.\\ &= -\frac{a^6A}{6x^6}-\frac{a^5(6Ab+aB)}{5x^5}-\frac{3a^4b(5Ab+2aB)}{4x^4}-\frac{5a^3b^2(4Ab+3aB)}{3x^3}-\frac{5a^2}{}\end{aligned}$$

Mathematica [A] time = 0.07, size = 125, normalized size = 0.95

$$b^5\log(x)(6aB+Ab)-\frac{2a^6(5A+6Bx)+18a^5bx(4A+5Bx)+75a^4b^2x^2(3A+4Bx)+200a^3b^3x^3(2A+3Bx)+4}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^7,x]
```

```
[Out] -1/60*(360*a*A*b^5*x^5 - 60*b^6*B*x^7 + 450*a^2*b^4*x^4*(A + 2*B*x) + 200*a
^3*b^3*x^3*(2*A + 3*B*x) + 75*a^4*b^2*x^2*(3*A + 4*B*x) + 18*a^5*b*x*(4*A +
 5*B*x) + 2*a^6*(5*A + 6*B*x))/x^6 + b^5*(A*b + 6*a*B)*Log[x]
```

fricas [A] time = 1.03, size = 149, normalized size = 1.13

$$\frac{60\,Bb^6x^7 + 60\,(6\,Bab^5 + Ab^6)x^6\log(x) - 10\,Aa^6 - 180\,(5\,Ba^2b^4 + 2\,Aab^5)x^5 - 150\,(4\,Ba^3b^3 + 3\,Aa^2b^4)x^4 - 100}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^6*x^7 + 60*(6*B*a*b^5 + A*b^6)*x^6*log(x) - 10*A*a^6 - 180*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 - 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 100*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^3 - 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 12*(B*a^6
+ 6*A*a^5*b)*x)/x^6
```

giac [A] time = 0.16, size = 144, normalized size = 1.09

$$Bb^6x+(6\,Bab^5 + Ab^6)\log(|x|)-\frac{10\,Aa^6 + 180\,(5\,Ba^2b^4 + 2\,Aab^5)x^5 + 150\,(4\,Ba^3b^3 + 3\,Aa^2b^4)x^4 + 100\,(3\,Ba^4b^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="giac")
```

```
[Out] B*b^6*x + (6*B*a*b^5 + A*b^6)*log(abs(x)) - 1/60*(10*A*a^6 + 180*(5*B*a^2*b
^4 + 2*A*a*b^5)*x^5 + 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^
2 + 4*A*a^3*b^3)*x^3 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 12*(B*a^6 + 6*A*a
^5*b)*x)/x^6
```

maple [A] time = 0.05, size = 144, normalized size = 1.09

$$A\,b^6\ln(x)+6Ba\,b^5\ln(x)+B\,b^6x-\frac{6Aa\,b^5}{x}-\frac{15B\,a^2b^4}{x}-\frac{15A\,a^2b^4}{2x^2}-\frac{10B\,a^3b^3}{x^2}-\frac{20A\,a^3b^3}{3x^3}-\frac{5B\,a^4b^2}{x^3}-\frac{15A\,a^4b^2}{4x^4}-\frac{3B\,a^5b}{2x^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x)
```

```
[Out] b^6*B*x-6/5*a^5/x^5*A*b-1/5*a^6/x^5*B-15/4*a^4*b^2/x^4*A-3/2*a^5*b/x^4*B-20
/3*a^3*b^3/x^3*A-5*a^4*b^2/x^3*B-15/2*a^2*b^4/x^2*A-10*a^3*b^3/x^2*B-1/6*a^
6*A/x^6-6*a*b^5/x*A-15*a^2*b^4/x*B+A*ln(x)*b^6+6*B*ln(x)*a*b^5
```

maxima [A] time = 0.47, size = 143, normalized size = 1.08

$$Bb^6x+(6\,Bab^5 + Ab^6)\log(x)-\frac{10\,Aa^6 + 180\,(5\,Ba^2b^4 + 2\,Aab^5)x^5 + 150\,(4\,Ba^3b^3 + 3\,Aa^2b^4)x^4 + 100\,(3\,Ba^4b^2 +}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^7,x, algorithm="maxima")
```

```
[Out] B*b^6*x + (6*B*a*b^5 + A*b^6)*log(x) - 1/60*(10*A*a^6 + 180*(5*B*a^2*b^4 +
2*A*a*b^5)*x^5 + 150*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 100*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*x^3 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 12*(B*a^6 + 6*A*a^5*b)
*x)/x^6
```

mupad [B] time = 0.08, size = 139, normalized size = 1.05

$$\ln(x)\,\left(A\,b^6 + 6\,B\,a\,b^5\right)-\frac{x\,\left(\frac{B\,a^6}{5} + \frac{6\,A\,b\,a^5}{5}\right) + \frac{A\,a^6}{6} + x^2\,\left(\frac{3\,B\,a^5\,b}{2} + \frac{15\,A\,a^4\,b^2}{4}\right) + x^5\,\left(15\,B\,a^2\,b^4 + 6\,A\,a\,b^5\right) + x^3\,(5\,B\,a^4}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^7,x)
```

```
[Out] log(x)*(A*b^6 + 6*B*a*b^5) - (x*((B*a^6)/5 + (6*A*a^5*b)/5) + (A*a^6)/6 + x
^2*((15*A*a^4*b^2)/4 + (3*B*a^5*b)/2) + x^5*(15*B*a^2*b^4 + 6*A*a*b^5) + x^
3*((20*A*a^3*b^3)/3 + 5*B*a^4*b^2) + x^4*((15*A*a^2*b^4)/2 + 10*B*a^3*b^3))
/x^6 + B*b^6*x
```

sympy [A] time = 3.16, size = 150, normalized size = 1.14

$$Bb^6x+b^5\left(Ab+6Ba\right)\log\left(x\right)+\frac{-10Aa^6+x^5\left(-360Aab^5-900Ba^2b^4\right)+x^4\left(-450Aa^2b^4-600Ba^3b^3\right)+x^3\left(-40\right.}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**7,x)
```

```
[Out] B*b**6*x + b**5*(A*b + 6*B*a)*log(x) + (-10*A*a**6 + x**5*(-360*A*a*b**5 -
900*B*a**2*b**4) + x**4*(-450*A*a**2*b**4 - 600*B*a**3*b**3) + x**3*(-400*A
*a**3*b**3 - 300*B*a**4*b**2) + x**2*(-225*A*a**4*b**2 - 90*B*a**5*b) + x*(
-72*A*a**5*b - 12*B*a**6))/(60*x**6)
```

3.552 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx$

Optimal. Leaf size=101

$$-\frac{a^6B}{6x^6}-\frac{6a^5bB}{5x^5}-\frac{15a^4b^2B}{4x^4}-\frac{20a^3b^3B}{3x^3}-\frac{15a^2b^4B}{2x^2}-\frac{A(a+bx)^7}{7ax^7}-\frac{6ab^5B}{x}+b^6B\log(x)$$

```
[Out] -1/6*a^6*B/x^6-6/5*a^5*b*B/x^5-15/4*a^4*b^2*B/x^4-20/3*a^3*b^3*B/x^3-15/2*a
^2*b^4*B/x^2-6*a*b^5*B/x-1/7*A*(b*x+a)^7/a/x^7+b^6*B*ln(x)
```

Rubi [A] time = 0.04, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 43}

$$-\frac{15a^2b^4B}{2x^2}-\frac{20a^3b^3B}{3x^3}-\frac{15a^4b^2B}{4x^4}-\frac{6a^5bB}{5x^5}-\frac{a^6B}{6x^6}-\frac{A(a+bx)^7}{7ax^7}-\frac{6ab^5B}{x}+b^6B\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8,x]
```

```
[Out] -(a^6*B)/(6*x^6) - (6*a^5*b*B)/(5*x^5) - (15*a^4*b^2*B)/(4*x^4) - (20*a^3*b
^3*B)/(3*x^3) - (15*a^2*b^4*B)/(2*x^2) - (6*a*b^5*B)/x - (A*(a + b*x)^7)/(7
*a*x^7) + b^6*B*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^8}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^8}\,dx\\
&= -\frac{A(a+bx)^7}{7ax^7}+B\int \frac{(a+bx)^6}{x^7}\,dx\\
&= -\frac{A(a+bx)^7}{7ax^7}+B\int \left(\frac{a^6}{x^7}+\frac{6a^5b}{x^6}+\frac{15a^4b^2}{x^5}+\frac{20a^3b^3}{x^4}+\frac{15a^2b^4}{x^3}+\frac{6ab^5}{x^2}+\right.\\
&= -\frac{a^6B}{6x^6}-\frac{6a^5bB}{5x^5}-\frac{15a^4b^2B}{4x^4}-\frac{20a^3b^3B}{3x^3}-\frac{15a^2b^4B}{2x^2}-\frac{6ab^5B}{x}-\frac{A(a+bx)^7}{7ax^7}+
\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 132, normalized size = 1.31

$$-\frac{a^6(6A+7Bx)}{42x^7}-\frac{a^5b(5A+6Bx)}{5x^6}-\frac{3a^4b^2(4A+5Bx)}{4x^5}-\frac{5a^3b^3(3A+4Bx)}{3x^4}-\frac{5a^2b^4(2A+3Bx)}{2x^3}-\frac{3ab^5(A+2Bx)}{x^2}-$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^8,x]
```

```
[Out] -((A*b^6)/x) - (3*a*b^5*(A + 2*B*x))/x^2 - (5*a^2*b^4*(2*A + 3*B*x))/(2*x^3
) - (5*a^3*b^3*(3*A + 4*B*x))/(3*x^4) - (3*a^4*b^2*(4*A + 5*B*x))/(4*x^5) -
 (a^5*b*(5*A + 6*B*x))/(5*x^6) - (a^6*(6*A + 7*B*x))/(42*x^7) + b^6*B*Log[x
]
```

fricas [**A**] time = 0.64, size = 149, normalized size = 1.48

$$\frac{420\,Bb^6x^7\log(x)-60\,Aa^6-420\left(6\,Bab^5+Ab^6\right)x^6-630\left(5\,Ba^2b^4+2\,Aab^5\right)x^5-700\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4-}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/420*(420*B*b^6*x^7*log(x) - 60*A*a^6 - 420*(6*B*a*b^5 + A*b^6)*x^6 - 630*
(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 - 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 525*(
3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 - 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 70*(B*
a^6 + 6*A*a^5*b)*x)/x^7
```

giac [**A**] time = 0.17, size = 147, normalized size = 1.46

$$Bb^6\log\left(|x|\right)-\frac{60\,Aa^6+420\left(6\,Bab^5+Ab^6\right)x^6+630\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+700\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+525}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="giac")
```

```
[Out] B*b^6*log(abs(x)) - 1/420*(60*A*a^6 + 420*(6*B*a*b^5 + A*b^6)*x^6 + 630*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 525*(3*B
*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 70*(B*a^6
 + 6*A*a^5*b)*x)/x^7
```

maple [**A**] time = 0.06, size = 148, normalized size = 1.47

$$B\,b^6\ln(x)-\frac{A\,b^6}{x}-\frac{6Ba\,b^5}{x}-\frac{3Aa\,b^5}{x^2}-\frac{15B\,a^2b^4}{2x^2}-\frac{5A\,a^2b^4}{x^3}-\frac{20B\,a^3b^3}{3x^3}-\frac{5A\,a^3b^3}{x^4}-\frac{15B\,a^4b^2}{4x^4}-\frac{3A\,a^4b^2}{x^5}-\frac{6B\,a^5b}{5x^5}-\frac{A\,a^5}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x)
```

```
[Out] -3*a^4*b^2/x^5*A-6/5*a^5*b*B/x^5-5*a^3*b^3/x^4*A-15/4*a^4*b^2*B/x^4-5*a^2*b
^4/x^3*A-20/3*a^3*b^3*B/x^3-3*a*b^5/x^2*A-15/2*a^2*b^4*B/x^2-1/7*A*a^6/x^7-
a^5/x^6*A*b-1/6*a^6*B/x^6-b^6/x*A-6*a*b^5*B/x+b^6*B*ln(x)
```

maxima [**A**] time = 0.65, size = 146, normalized size = 1.45

$$Bb^6\log(x)-\frac{60\,Aa^6+420\left(6\,Bab^5+Ab^6\right)x^6+630\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+700\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+525}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*b^6*log(x) - 1/420*(60*A*a^6 + 420*(6*B*a*b^5 + A*b^6)*x^6 + 630*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 + 700*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 525*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^3 + 252*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 70*(B*a^6 + 6*
A*a^5*b)*x)/x^7
```

mupad [B] time = 1.10, size = 140, normalized size = 1.39

$$B\,b^6\,\ln(x)-\frac{x\,\left(\frac{B\,a^6}{6}+A\,b\,a^5\right)+\frac{A\,a^6}{7}+x^2\,\left(\frac{6\,B\,a^5\,b}{5}+3\,A\,a^4\,b^2\right)+x^5\,\left(\frac{15\,B\,a^2\,b^4}{2}+3\,A\,a\,b^5\right)+x^6\,\left(A\,b^6+6\,B\,a\,b^5\right)+x}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^8,x)
```

```
[Out] B*b^6*log(x) - (x*((B*a^6)/6 + A*a^5*b) + (A*a^6)/7 + x^2*(3*A*a^4*b^2 + (6
*B*a^5*b)/5) + x^5*((15*B*a^2*b^4)/2 + 3*A*a*b^5) + x^6*(A*b^6 + 6*B*a*b^5)
 + x^3*(5*A*a^3*b^3 + (15*B*a^4*b^2)/4) + x^4*(5*A*a^2*b^4 + (20*B*a^3*b^3)
/3))/x^7
```

sympy [A] time = 4.37, size = 156, normalized size = 1.54

$$Bb^6\log{(x)}+\frac{-60Aa^6+x^6\left(-420Ab^6-2520Bab^5\right)+x^5\left(-1260Aab^5-3150Ba^2b^4\right)+x^4\left(-2100Aa^2b^4-2800Ba^3\right.}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**8,x)
```

```
[Out] B*b**6*log(x) + (-60*A*a**6 + x**6*(-420*A*b**6 - 2520*B*a*b**5) + x**5*(-1
260*A*a*b**5 - 3150*B*a**2*b**4) + x**4*(-2100*A*a**2*b**4 - 2800*B*a**3*b*
*3) + x**3*(-2100*A*a**3*b**3 - 1575*B*a**4*b**2) + x**2*(-1260*A*a**4*b**2
 - 504*B*a**5*b) + x*(-420*A*a**5*b - 70*B*a**6))/(420*x**7)
```

3.553 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=44

$$\frac{(a+bx)^7(Ab-8aB)}{56a^2x^7}-\frac{A(a+bx)^7}{8ax^8}$$

```
[Out] -1/8*A*(b*x+a)^7/a/x^8+1/56*(A*b-8*B*a)*(b*x+a)^7/a^2/x^7
```

Rubi [A] time = 0.01, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = $\{27, 78, 37\}$

$$\frac{(a+bx)^7(Ab-8aB)}{56a^2x^7}-\frac{A(a+bx)^7}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9,x]
```

```
[Out] -(A*(a + b*x)^7)/(8*a*x^8) + ((A*b - 8*a*B)*(a + b*x)^7)/(56*a^2*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^9}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^9}\,dx\\
&= -\frac{A(a+bx)^7}{8ax^8}+\frac{(-Ab+8aB)\int \frac{(a+bx)^6}{x^8}\,dx}{8a}\\
&= -\frac{A(a+bx)^7}{8ax^8}+\frac{(Ab-8aB)(a+bx)^7}{56a^2x^7}
\end{aligned}$$

Mathematica [B] time = 0.03, size = 123, normalized size = 2.80

$$-\frac{a^6(7A+8Bx)+8a^5bx(6A+7Bx)+28a^4b^2x^2(5A+6Bx)+56a^3b^3x^3(4A+5Bx)+70a^2b^4x^4(3A+4Bx)+5}{56x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^9,x]
```

```
[Out] -1/56*(28*b^6*x^6*(A + 2*B*x) + 56*a*b^5*x^5*(2*A + 3*B*x) + 70*a^2*b^4*x^4
*(3*A + 4*B*x) + 56*a^3*b^3*x^3*(4*A + 5*B*x) + 28*a^4*b^2*x^2*(5*A + 6*B*x
) + 8*a^5*b*x*(6*A + 7*B*x) + a^6*(7*A + 8*B*x))/x^8
```

fricas [B] time = 0.45, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+7\,Aa^6+28\,(6\,Bab^5+Ab^6)x^6+56\,(5\,Ba^2b^4+2\,Aab^5)x^5+70\,(4\,Ba^3b^3+3\,Aa^2b^4)x^4+56\,(3\,Ba^4b^2}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 7*A*a^6 + 28*(6*B*a*b^5 + A*b^6)*x^6 + 56*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 70*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 56*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 28*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 8*(B*a^6 + 6*A*a^5*b
)*x)/x^8
```

giac [B] time = 0.15, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+168\,Bab^5x^6+28\,Ab^6x^6+280\,Ba^2b^4x^5+112\,Aab^5x^5+280\,Ba^3b^3x^4+210\,Aa^2b^4x^4+168\,Ba^4b^2x^3+}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 168*B*a*b^5*x^6 + 28*A*b^6*x^6 + 280*B*a^2*b^4*x^5 +
112*A*a*b^5*x^5 + 280*B*a^3*b^3*x^4 + 210*A*a^2*b^4*x^4 + 168*B*a^4*b^2*x^3
 + 224*A*a^3*b^3*x^3 + 56*B*a^5*b*x^2 + 140*A*a^4*b^2*x^2 + 8*B*a^6*x + 48*
A*a^5*b*x + 7*A*a^6)/x^8
```

maple [B] time = 0.05, size = 128, normalized size = 2.91

$$-\frac{B\,b^6}{x}-\frac{(Ab+6Ba)\,b^5}{2x^2}-\frac{(2Ab+5Ba)\,a\,b^4}{x^3}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{4x^4}-\frac{(4Ab+3Ba)\,a^3b^2}{x^5}-\frac{A\,a^6}{8x^8}-\frac{(5Ab+2Ba)\,a^4b}{2x^6}-(6A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x)
```

```
[Out] -a^3*b^2*(4*A*b+3*B*a)/x^5-5/4*a^2*b^3*(3*A*b+4*B*a)/x^4-a*b^4*(2*A*b+5*B*a
)/x^3-1/8*A*a^6/x^8-1/2*b^5*(A*b+6*B*a)/x^2-1/7*a^5*(6*A*b+B*a)/x^7-1/2*a^4
*b*(5*A*b+2*B*a)/x^6-B*b^6/x
```

maxima [B] time = 0.54, size = 147, normalized size = 3.34

$$-\frac{56\,Bb^6x^7+7\,Aa^6+28\,(6\,Bab^5+Ab^6)x^6+56\,(5\,Ba^2b^4+2\,Aab^5)x^5+70\,(4\,Ba^3b^3+3\,Aa^2b^4)x^4+56\,(3\,Ba^4b^2}{56\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/56*(56*B*b^6*x^7 + 7*A*a^6 + 28*(6*B*a*b^5 + A*b^6)*x^6 + 56*(5*B*a^2*b^
4 + 2*A*a*b^5)*x^5 + 70*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 56*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*x^3 + 28*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 8*(B*a^6 + 6*A*a^5*b
)*x)/x^8
```

mupad [B] time = 1.09, size = 141, normalized size = 3.20

$$-\frac{x\left(\frac{B\,a^6}{7}+\frac{6\,A\,b\,a^5}{7}\right)+\frac{A\,a^6}{8}+x^2\left(B\,a^5\,b+\frac{5\,A\,a^4\,b^2}{2}\right)+x^5\left(5\,B\,a^2\,b^4+2\,A\,a\,b^5\right)+x^6\left(\frac{A\,b^6}{2}+3\,B\,a\,b^5\right)+x^3\left(3\,B\,a^4\right.}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^9,x)
```

```
[Out] -(x*((B*a^6)/7 + (6*A*a^5*b)/7) + (A*a^6)/8 + x^2*((5*A*a^4*b^2)/2 + B*a^5*
b) + x^5*(5*B*a^2*b^4 + 2*A*a*b^5) + x^6*((A*b^6)/2 + 3*B*a*b^5) + x^3*(4*A
*a^3*b^3 + 3*B*a^4*b^2) + x^4*((15*A*a^2*b^4)/4 + 5*B*a^3*b^3) + B*b^6*x^7)
/x^8
```

sympy [B] time = 5.52, size = 158, normalized size = 3.59

$$\frac{-7Aa^6-56Bb^6x^7+x^6\left(-28Ab^6-168Bab^5\right)+x^5\left(-112Aab^5-280Ba^2b^4\right)+x^4\left(-210Aa^2b^4-280Ba^3b^3\right)+x}{56x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**9,x)
```

```
[Out] (-7*A*a**6 - 56*B*b**6*x**7 + x**6*(-28*A*b**6 - 168*B*a*b**5) + x**5*(-112
*A*a*b**5 - 280*B*a**2*b**4) + x**4*(-210*A*a**2*b**4 - 280*B*a**3*b**3) +
x**3*(-224*A*a**3*b**3 - 168*B*a**4*b**2) + x**2*(-140*A*a**4*b**2 - 56*B*a
**5*b) + x*(-48*A*a**5*b - 8*B*a**6))/(56*x**8)
```

3.554 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx$

Optimal. Leaf size=72

$$-\frac{b(a+bx)^7(2Ab-9aB)}{504a^3x^7}+\frac{(a+bx)^7(2Ab-9aB)}{72a^2x^8}-\frac{A(a+bx)^7}{9ax^9}$$

```
[Out] -1/9*A*(b*x+a)^7/a/x^9+1/72*(2*A*b-9*B*a)*(b*x+a)^7/a^2/x^8-1/504*b*(2*A*b-
9*B*a)*(b*x+a)^7/a^3/x^7
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{27, 78, 45, 37\}$

$$-\frac{b(a+bx)^7(2Ab-9aB)}{504a^3x^7}+\frac{(a+bx)^7(2Ab-9aB)}{72a^2x^8}-\frac{A(a+bx)^7}{9ax^9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10,x]
```

```
[Out] -(A*(a + b*x)^7)/(9*a*x^9) + ((2*A*b - 9*a*B)*(a + b*x)^7)/(72*a^2*x^8) - (
b*(2*A*b - 9*a*B)*(a + b*x)^7)/(504*a^3*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{10}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{10}}\,dx \\
&= -\frac{A(a+bx)^7}{9ax^9}+\frac{(-2Ab+9aB)\int \frac{(a+bx)^6}{x^9}\,dx}{9a} \\
&= -\frac{A(a+bx)^7}{9ax^9}+\frac{(2Ab-9aB)(a+bx)^7}{72a^2x^8}+\frac{(b(2Ab-9aB))\int \frac{(a+bx)^6}{x^8}\,dx}{72a^2} \\
&= -\frac{A(a+bx)^7}{9ax^9}+\frac{(2Ab-9aB)(a+bx)^7}{72a^2x^8}-\frac{b(2Ab-9aB)(a+bx)^7}{504a^3x^7}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 126, normalized size = 1.75

$$
-\frac{7a^6(8A+9Bx)+54a^5bx(7A+8Bx)+180a^4b^2x^2(6A+7Bx)+336a^3b^3x^3(5A+6Bx)+378a^2b^4x^4(4A+5B}{504x^9}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^10,x]
```

```
[Out] -1/504*(84*b^6*x^6*(2*A + 3*B*x) + 252*a*b^5*x^5*(3*A + 4*B*x) + 378*a^2*b^
4*x^4*(4*A + 5*B*x) + 336*a^3*b^3*x^3*(5*A + 6*B*x) + 180*a^4*b^2*x^2*(6*A
+ 7*B*x) + 54*a^5*b*x*(7*A + 8*B*x) + 7*a^6*(8*A + 9*B*x))/x^9
```

fricas [**B**] time = 0.79, size = 147, normalized size = 2.04

$$
-\frac{252\,Bb^6x^7+56\,Aa^6+168\left(6\,Bab^5+Ab^6\right)x^6+378\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+504\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+420}{504\,x^9}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 56*A*a^6 + 168*(6*B*a*b^5 + A*b^6)*x^6 + 378*(5*B*a
^2*b^4 + 2*A*a*b^5)*x^5 + 504*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 420*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 + 216*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 63*(B*a^6 +
6*A*a^5*b)*x)/x^9
```

giac [**B**] time = 0.18, size = 147, normalized size = 2.04

$$
-\frac{252\,Bb^6x^7+1008\,Bab^5x^6+168\,Ab^6x^6+1890\,Ba^2b^4x^5+756\,Aab^5x^5+2016\,Ba^3b^3x^4+1512\,Aa^2b^4x^4+126}{504\,x^9}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 1008*B*a*b^5*x^6 + 168*A*b^6*x^6 + 1890*B*a^2*b^4*x
^5 + 756*A*a*b^5*x^5 + 2016*B*a^3*b^3*x^4 + 1512*A*a^2*b^4*x^4 + 1260*B*a^4
*b^2*x^3 + 1680*A*a^3*b^3*x^3 + 432*B*a^5*b*x^2 + 1080*A*a^4*b^2*x^2 + 63*B
*a^6*x + 378*A*a^5*b*x + 56*A*a^6)/x^9
```

maple [**A**] time = 0.06, size = 128, normalized size = 1.78

$$
-\frac{B\,b^6}{2x^2}-\frac{(Ab+6Ba)\,b^5}{3x^3}-\frac{3\,(2Ab+5Ba)\,a\,b^4}{4x^4}-\frac{(3Ab+4Ba)\,a^2b^3}{x^5}-\frac{5\,(4Ab+3Ba)\,a^3b^2}{6x^6}-\frac{A\,a^6}{9x^9}-\frac{3\,(5Ab+2Ba)\,a^4b}{7x^7}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x)
```

```
[Out] -a^2*b^3*(3*A*b+4*B*a)/x^5-3/4*a*b^4*(2*A*b+5*B*a)/x^4-1/3*b^5*(A*b+6*B*a)/
x^3-1/8*a^5*(6*A*b+B*a)/x^8-1/2*B*b^6/x^2-1/9*A*a^6/x^9-3/7*a^4*b*(5*A*b+2*
B*a)/x^7-5/6*a^3*b^2*(4*A*b+3*B*a)/x^6
```

maxima [B] time = 0.56, size = 147, normalized size = 2.04

$$-\frac{252\,Bb^{6}x^{7}+56\,Aa^{6}+168\left(6\,Bab^{5}+Ab^{6}\right)x^{6}+378\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{5}+504\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{4}+420\,(3}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/504*(252*B*b^6*x^7 + 56*A*a^6 + 168*(6*B*a*b^5 + A*b^6)*x^6 + 378*(5*B*a
^2*b^4 + 2*A*a*b^5)*x^5 + 504*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 420*(3*B*a^
4*b^2 + 4*A*a^3*b^3)*x^3 + 216*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 63*(B*a^6 +
6*A*a^5*b)*x)/x^9
```

mupad [B] time = 0.07, size = 143, normalized size = 1.99

$$-\frac{x\,\left(\frac{B\,a^{6}}{8}+\frac{3\,A\,b\,a^{5}}{4}\right)+\frac{A\,a^{6}}{9}+x^{5}\,\left(\frac{15\,B\,a^{2}\,b^{4}}{4}+\frac{3\,A\,a\,b^{5}}{2}\right)+x^{2}\,\left(\frac{6\,B\,a^{5}\,b}{7}+\frac{15\,A\,a^{4}\,b^{2}}{7}\right)+x^{6}\,\left(\frac{A\,b^{6}}{3}+2\,B\,a\,b^{5}\right)+x^{4}\,\left(4\,B\,a^{3}\,b^{3}\right.}{x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^10,x)
```

```
[Out] -(x*((B*a^6)/8 + (3*A*a^5*b)/4) + (A*a^6)/9 + x^5*((15*B*a^2*b^4)/4 + (3*A*
a*b^5)/2) + x^2*((15*A*a^4*b^2)/7 + (6*B*a^5*b)/7) + x^6*((A*b^6)/3 + 2*B*a
*b^5) + x^4*(3*A*a^2*b^4 + 4*B*a^3*b^3) + x^3*((10*A*a^3*b^3)/3 + (5*B*a^4*
b^2)/2) + (B*b^6*x^7)/2)/x^9
```

sympy [B] time = 6.88, size = 158, normalized size = 2.19

$$\frac{-56Aa^{6}-252Bb^{6}x^{7}+x^{6}\left(-168Ab^{6}-1008Bab^{5}\right)+x^{5}\left(-756Aab^{5}-1890Ba^{2}b^{4}\right)+x^{4}\left(-1512Aa^{2}b^{4}-2016Ba^{3}b^{3}\right.}{504x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**10,x)
```

```
[Out] (-56*A*a**6 - 252*B*b**6*x**7 + x**6*(-168*A*b**6 - 1008*B*a*b**5) + x**5*(
-756*A*a*b**5 - 1890*B*a**2*b**4) + x**4*(-1512*A*a**2*b**4 - 2016*B*a**3*b
**3) + x**3*(-1680*A*a**3*b**3 - 1260*B*a**4*b**2) + x**2*(-1080*A*a**4*b**
2 - 432*B*a**5*b) + x*(-378*A*a**5*b - 63*B*a**6))/(504*x**9)
```

3.555 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{10x^{10}}-\frac{a^5(aB+6Ab)}{9x^9}-\frac{3a^4b(2aB+5Ab)}{8x^8}-\frac{5a^3b^2(3aB+4Ab)}{7x^7}-\frac{5a^2b^3(4aB+3Ab)}{6x^6}-\frac{b^5(6aB+Ab)}{4x^4}-\frac{3ab^4(5aB}{5x}$$

```
[Out] -1/10*a^6*A/x^10-1/9*a^5*(6*A*b+B*a)/x^9-3/8*a^4*b*(5*A*b+2*B*a)/x^8-5/7*a^
3*b^2*(4*A*b+3*B*a)/x^7-5/6*a^2*b^3*(3*A*b+4*B*a)/x^6-3/5*a*b^4*(2*A*b+5*B*
a)/x^5-1/4*b^5*(A*b+6*B*a)/x^4-1/3*b^6*B/x^3
```

Rubi [A] time = 0.08, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$-\frac{5a^3b^2(3aB+4Ab)}{7x^7}-\frac{5a^2b^3(4aB+3Ab)}{6x^6}-\frac{a^5(aB+6Ab)}{9x^9}-\frac{3a^4b(2aB+5Ab)}{8x^8}-\frac{a^6A}{10x^{10}}-\frac{3ab^4(5aB+2Ab)}{5x^5}-\frac{b^5(6a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11,x]
```

```
[Out] -(a^6*A)/(10*x^10) - (a^5*(6*A*b + a*B))/(9*x^9) - (3*a^4*b*(5*A*b + 2*a*B)
)/(8*x^8) - (5*a^3*b^2*(4*A*b + 3*a*B))/(7*x^7) - (5*a^2*b^3*(3*A*b + 4*a*B
))/(6*x^6) - (3*a*b^4*(2*A*b + 5*a*B))/(5*x^5) - (b^5*(A*b + 6*a*B))/(4*x^4
) - (b^6*B)/(3*x^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{11}}\,dx\\ &= \int \left(\frac{a^6A}{x^{11}}+\frac{a^5(6Ab+aB)}{x^{10}}+\frac{3a^4b(5Ab+2aB)}{x^9}+\frac{5a^3b^2(4Ab+3aB)}{x^8}+\right.\\ &= -\frac{a^6A}{10x^{10}}-\frac{a^5(6Ab+aB)}{9x^9}-\frac{3a^4b(5Ab+2aB)}{8x^8}-\frac{5a^3b^2(4Ab+3aB)}{7x^7}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{28a^6(9A+10Bx)+210a^5bx(8A+9Bx)+675a^4b^2x^2(7A+8Bx)+1200a^3b^3x^3(6A+7Bx)+1260a^2b^4x^4(5A}{2520x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^11,x]
```

```
[Out] -1/2520*(210*b^6*x^6*(3*A + 4*B*x) + 756*a*b^5*x^5*(4*A + 5*B*x) + 1260*a^2
*b^4*x^4*(5*A + 6*B*x) + 1200*a^3*b^3*x^3*(6*A + 7*B*x) + 675*a^4*b^2*x^2*(
7*A + 8*B*x) + 210*a^5*b*x*(8*A + 9*B*x) + 28*a^6*(9*A + 10*B*x))/x^10
```

fricas [A] time = 0.94, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7 + 252\,Aa^6 + 630\left(6\,Bab^5 + Ab^6\right)x^6 + 1512\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 2100\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^4 + 18}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 252*A*a^6 + 630*(6*B*a*b^5 + A*b^6)*x^6 + 1512*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1800*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 280*(B*
a^6 + 6*A*a^5*b)*x)/x^10
```

giac [A] time = 0.16, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7 + 3780\,Bab^5x^6 + 630\,Ab^6x^6 + 7560\,Ba^2b^4x^5 + 3024\,Aab^5x^5 + 8400\,Ba^3b^3x^4 + 6300\,Aa^2b^4x^4 + 5400}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 3780*B*a*b^5*x^6 + 630*A*b^6*x^6 + 7560*B*a^2*b^4*
x^5 + 3024*A*a*b^5*x^5 + 8400*B*a^3*b^3*x^4 + 6300*A*a^2*b^4*x^4 + 5400*B*a
^4*b^2*x^3 + 7200*A*a^3*b^3*x^3 + 1890*B*a^5*b*x^2 + 4725*A*a^4*b^2*x^2 + 2
80*B*a^6*x + 1680*A*a^5*b*x + 252*A*a^6)/x^10
```

maple [A] time = 0.06, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{3x^3} - \frac{(Ab+6Ba)\,b^5}{4x^4} - \frac{3\,(2Ab+5Ba)\,a\,b^4}{5x^5} - \frac{5\,(3Ab+4Ba)\,a^2b^3}{6x^6} - \frac{5\,(4Ab+3Ba)\,a^3b^2}{7x^7} - \frac{A\,a^6}{10x^{10}} - \frac{3\,(5Ab+2Ba)\,a^4b}{8x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x)
```

```
[Out] -1/10*a^6*A/x^10-1/9*a^5*(6*A*b+B*a)/x^9-3/8*a^4*b*(5*A*b+2*B*a)/x^8-5/7*a^
3*b^2*(4*A*b+3*B*a)/x^7-5/6*a^2*b^3*(3*A*b+4*B*a)/x^6-3/5*a*b^4*(2*A*b+5*B*
a)/x^5-1/4*b^5*(A*b+6*B*a)/x^4-1/3*b^6*B/x^3
```

maxima [A] time = 0.58, size = 147, normalized size = 1.03

$$-\frac{840\,Bb^6x^7 + 252\,Aa^6 + 630\left(6\,Bab^5 + Ab^6\right)x^6 + 1512\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 2100\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^4 + 18}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*b^6*x^7 + 252*A*a^6 + 630*(6*B*a*b^5 + A*b^6)*x^6 + 1512*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2100*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1800*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 280*(B*
a^6 + 6*A*a^5*b)*x)/x^10
```

mupad [B] time = 0.07, size = 143, normalized size = 1.00

$$-\frac{x\left(\frac{B\,a^6}{9}+\frac{2\,A\,b\,a^5}{3}\right)+\frac{A\,a^6}{10}+x^5\left(3\,B\,a^2\,b^4+\frac{6\,A\,a\,b^5}{5}\right)+x^2\left(\frac{3\,B\,a^5\,b}{4}+\frac{15\,A\,a^4\,b^2}{8}\right)+x^6\left(\frac{A\,b^6}{4}+\frac{3\,B\,a\,b^5}{2}\right)+x^4\left(\frac{10\,B\,a^3\,b}{3}\right.}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^11,x)
```

```
[Out] -(x*((B*a^6)/9 + (2*A*a^5*b)/3) + (A*a^6)/10 + x^5*(3*B*a^2*b^4 + (6*A*a*b^
5)/5) + x^2*((15*A*a^4*b^2)/8 + (3*B*a^5*b)/4) + x^6*((A*b^6)/4 + (3*B*a*b^
5)/2) + x^4*((5*A*a^2*b^4)/2 + (10*B*a^3*b^3)/3) + x^3*((20*A*a^3*b^3)/7 +
(15*B*a^4*b^2)/7) + (B*b^6*x^7)/3)/x^10
```

sympy [A] time = 9.00, size = 158, normalized size = 1.10

$$\frac{-252Aa^6-840Bb^6x^7+x^6\left(-630Ab^6-3780Bab^5\right)+x^5\left(-3024Aab^5-7560Ba^2b^4\right)+x^4\left(-6300Aa^2b^4-8400\right.}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**11,x)
```

```
[Out] (-252*A*a**6 - 840*B*b**6*x**7 + x**6*(-630*A*b**6 - 3780*B*a*b**5) + x**5*
(-3024*A*a*b**5 - 7560*B*a**2*b**4) + x**4*(-6300*A*a**2*b**4 - 8400*B*a**3
*b**3) + x**3*(-7200*A*a**3*b**3 - 5400*B*a**4*b**2) + x**2*(-4725*A*a**4*b
**2 - 1890*B*a**5*b) + x*(-1680*A*a**5*b - 280*B*a**6))/(2520*x**10)
```

3.556 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}} \, dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{11x^{11}}-\frac{a^5(aB+6Ab)}{10x^{10}}-\frac{a^4b(2aB+5Ab)}{3x^9}-\frac{5a^3b^2(3aB+4Ab)}{8x^8}-\frac{5a^2b^3(4aB+3Ab)}{7x^7}-\frac{b^5(6aB+Ab)}{5x^5}-\frac{ab^4(5aB+2A}{2x^6}$$

```
[Out] -1/11*a^6*A/x^11-1/10*a^5*(6*A*b+B*a)/x^10-1/3*a^4*b*(5*A*b+2*B*a)/x^9-5/8*
a^3*b^2*(4*A*b+3*B*a)/x^8-5/7*a^2*b^3*(3*A*b+4*B*a)/x^7-1/2*a*b^4*(2*A*b+5*
B*a)/x^6-1/5*b^5*(A*b+6*B*a)/x^5-1/4*b^6*B/x^4
```

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{5a^3b^2(3aB+4Ab)}{8x^8}-\frac{5a^2b^3(4aB+3Ab)}{7x^7}-\frac{a^5(aB+6Ab)}{10x^{10}}-\frac{a^4b(2aB+5Ab)}{3x^9}-\frac{a^6A}{11x^{11}}-\frac{ab^4(5aB+2Ab)}{2x^6}-\frac{b^5(6aB+A}{5x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12,x]
```

```
[Out] -(a^6*A)/(11*x^11) - (a^5*(6*A*b + a*B))/(10*x^10) - (a^4*b*(5*A*b + 2*a*B)
)/(3*x^9) - (5*a^3*b^2*(4*A*b + 3*a*B))/(8*x^8) - (5*a^2*b^3*(3*A*b + 4*a*B
))/(7*x^7) - (a*b^4*(2*A*b + 5*a*B))/(2*x^6) - (b^5*(A*b + 6*a*B))/(5*x^5)
- (b^6*B)/(4*x^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{12}} \, dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{12}} \, dx \\
&= \int \left(\frac{a^6A}{x^{12}}+\frac{a^5(6Ab+aB)}{x^{11}}+\frac{3a^4b(5Ab+2aB)}{x^{10}}+\frac{5a^3b^2(4Ab+3aB)}{x^9}+\frac{5a^2}{} \right. \\
&= -\frac{a^6A}{11x^{11}}-\frac{a^5(6Ab+aB)}{10x^{10}}-\frac{a^4b(5Ab+2aB)}{3x^9}-\frac{5a^3b^2(4Ab+3aB)}{8x^8}-\frac{5a^2b^3(}{}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{84a^6(10A+11Bx)+616a^5bx(9A+10Bx)+1925a^4b^2x^2(8A+9Bx)+3300a^3b^3x^3(7A+8Bx)+3300a^2b^4x^4(6}{9240x^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^12,x]
```

```
[Out] -1/9240*(462*b^6*x^6*(4*A + 5*B*x) + 1848*a*b^5*x^5*(5*A + 6*B*x) + 3300*a^
2*b^4*x^4*(6*A + 7*B*x) + 3300*a^3*b^3*x^3*(7*A + 8*B*x) + 1925*a^4*b^2*x^2
*(8*A + 9*B*x) + 616*a^5*b*x*(9*A + 10*B*x) + 84*a^6*(10*A + 11*B*x))/x^11
```

fricas [A] time = 0.91, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^{6}x^{7} + 840\,Aa^{6} + 1848\left(6\,Bab^{5} + Ab^{6}\right)x^{6} + 4620\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x^{5} + 6600\left(4\,Ba^{3}b^{3} + 3\,Aa^{2}b^{4}\right)x^{4}}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="fricas")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 840*A*a^6 + 1848*(6*B*a*b^5 + A*b^6)*x^6 + 4620*(
5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 6600*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5775*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3080*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 924*
(B*a^6 + 6*A*a^5*b)*x)/x^11
```

giac [A] time = 0.19, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^{6}x^{7} + 11088\,Bab^{5}x^{6} + 1848\,Ab^{6}x^{6} + 23100\,Ba^{2}b^{4}x^{5} + 9240\,Aab^{5}x^{5} + 26400\,Ba^{3}b^{3}x^{4} + 19800\,Aa^{2}b^{4}}{9240}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="giac")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 11088*B*a*b^5*x^6 + 1848*A*b^6*x^6 + 23100*B*a^2*
b^4*x^5 + 9240*A*a*b^5*x^5 + 26400*B*a^3*b^3*x^4 + 19800*A*a^2*b^4*x^4 + 17
325*B*a^4*b^2*x^3 + 23100*A*a^3*b^3*x^3 + 6160*B*a^5*b*x^2 + 15400*A*a^4*b^
2*x^2 + 924*B*a^6*x + 5544*A*a^5*b*x + 840*A*a^6)/x^11
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^{6}}{4x^{4}}-\frac{(Ab+6Ba)\,b^{5}}{5x^{5}}-\frac{(2Ab+5Ba)\,a\,b^{4}}{2x^{6}}-\frac{5\,(3Ab+4Ba)\,a^{2}b^{3}}{7x^{7}}-\frac{5\,(4Ab+3Ba)\,a^{3}b^{2}}{8x^{8}}-\frac{A\,a^{6}}{11x^{11}}-\frac{(5Ab+2Ba)\,a^{4}b}{3x^{9}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x)
```

```
[Out] -1/11*a^6*A/x^11-1/10*a^5*(6*A*b+B*a)/x^10-1/3*a^4*b*(5*A*b+2*B*a)/x^9-5/8*
a^3*b^2*(4*A*b+3*B*a)/x^8-5/7*a^2*b^3*(3*A*b+4*B*a)/x^7-1/2*a*b^4*(2*A*b+5*
B*a)/x^6-1/5*b^5*(A*b+6*B*a)/x^5-1/4*b^6*B/x^4
```

maxima [A] time = 0.57, size = 147, normalized size = 1.03

$$-\frac{2310\,Bb^{6}x^{7} + 840\,Aa^{6} + 1848\left(6\,Bab^{5} + Ab^{6}\right)x^{6} + 4620\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x^{5} + 6600\left(4\,Ba^{3}b^{3} + 3\,Aa^{2}b^{4}\right)x^{4}}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^12,x, algorithm="maxima")
```

```
[Out] -1/9240*(2310*B*b^6*x^7 + 840*A*a^6 + 1848*(6*B*a*b^5 + A*b^6)*x^6 + 4620*(
5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 6600*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5775*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3080*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 924*
(B*a^6 + 6*A*a^5*b)*x)/x^11
```

mupad [B] time = 1.08, size = 142, normalized size = 0.99

$$-\frac{x\left(\frac{B a^6}{10}+\frac{3 A b a^5}{5}\right)+\frac{A a^6}{11}+x^5\left(\frac{5 B a^2 b^4}{2}+A a b^5\right)+x^2\left(\frac{2 B a^5 b}{3}+\frac{5 A a^4 b^2}{3}\right)+x^6\left(\frac{A b^6}{5}+\frac{6 B a b^5}{5}\right)+x^3\left(\frac{15 B a^4 b^2}{8}+\right.}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^12,x)
```

```
[Out] -(x*((B*a^6)/10 + (3*A*a^5*b)/5) + (A*a^6)/11 + x^5*((5*B*a^2*b^4)/2 + A*a*
b^5) + x^2*((5*A*a^4*b^2)/3 + (2*B*a^5*b)/3) + x^6*((A*b^6)/5 + (6*B*a*b^5)
/5) + x^3*((5*A*a^3*b^3)/2 + (15*B*a^4*b^2)/8) + x^4*((15*A*a^2*b^4)/7 + (2
0*B*a^3*b^3)/7) + (B*b^6*x^7)/4)/x^11
```

sympy [A] time = 11.11, size = 158, normalized size = 1.10

$$\frac{-840Aa^6-2310Bb^6x^7+x^6\left(-1848Ab^6-11088Bab^5\right)+x^5\left(-9240Aab^5-23100Ba^2b^4\right)+x^4\left(-19800Aa^2b^4-2\right.}{9240}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**12,x)
```

```
[Out] (-840*A*a**6 - 2310*B*b**6*x**7 + x**6*(-1848*A*b**6 - 11088*B*a*b**5) + x*
*5*(-9240*A*a*b**5 - 23100*B*a**2*b**4) + x**4*(-19800*A*a**2*b**4 - 26400*
B*a**3*b**3) + x**3*(-23100*A*a**3*b**3 - 17325*B*a**4*b**2) + x**2*(-15400
*A*a**4*b**2 - 6160*B*a**5*b) + x*(-5544*A*a**5*b - 924*B*a**6))/(9240*x**1
1)
```

3.557 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{12x^{12}}-\frac{a^5(aB+6Ab)}{11x^{11}}-\frac{3a^4b(2aB+5Ab)}{10x^{10}}-\frac{5a^3b^2(3aB+4Ab)}{9x^9}-\frac{5a^2b^3(4aB+3Ab)}{8x^8}-\frac{b^5(6aB+Ab)}{6x^6}-\frac{3ab^4(5aB}{7x}$$

```
[Out] -1/12*a^6*A/x^12-1/11*a^5*(6*A*b+B*a)/x^11-3/10*a^4*b*(5*A*b+2*B*a)/x^10-5/
9*a^3*b^2*(4*A*b+3*B*a)/x^9-5/8*a^2*b^3*(3*A*b+4*B*a)/x^8-3/7*a*b^4*(2*A*b+
5*B*a)/x^7-1/6*b^5*(A*b+6*B*a)/x^6-1/5*b^6*B/x^5
```

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$-\frac{5a^3b^2(3aB+4Ab)}{9x^9}-\frac{5a^2b^3(4aB+3Ab)}{8x^8}-\frac{a^5(aB+6Ab)}{11x^{11}}-\frac{3a^4b(2aB+5Ab)}{10x^{10}}-\frac{a^6A}{12x^{12}}-\frac{3ab^4(5aB+2Ab)}{7x^7}-\frac{b^5(6a}{6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13,x]
```

```
[Out] -(a^6*A)/(12*x^12) - (a^5*(6*A*b + a*B))/(11*x^11) - (3*a^4*b*(5*A*b + 2*a*
B))/(10*x^10) - (5*a^3*b^2*(4*A*b + 3*a*B))/(9*x^9) - (5*a^2*b^3*(3*A*b + 4
*a*B))/(8*x^8) - (3*a*b^4*(2*A*b + 5*a*B))/(7*x^7) - (b^5*(A*b + 6*a*B))/(6
*x^6) - (b^6*B)/(5*x^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{13}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{13}}\,dx\\ &= \int \left(\frac{a^6A}{x^{13}}+\frac{a^5(6Ab+aB)}{x^{12}}+\frac{3a^4b(5Ab+2aB)}{x^{11}}+\frac{5a^3b^2(4Ab+3aB)}{x^{10}}+\right.\\ &= -\frac{a^6A}{12x^{12}}-\frac{a^5(6Ab+aB)}{11x^{11}}-\frac{3a^4b(5Ab+2aB)}{10x^{10}}-\frac{5a^3b^2(4Ab+3aB)}{9x^9}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{210a^6(11A+12Bx)+1512a^5bx(10A+11Bx)+4620a^4b^2x^2(9A+10Bx)+7700a^3b^3x^3(8A+9Bx)+7425a^2}{27720x^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^13,x]
```

```
[Out] -1/27720*(924*b^6*x^6*(5*A + 6*B*x) + 3960*a*b^5*x^5*(6*A + 7*B*x) + 7425*a
^2*b^4*x^4*(7*A + 8*B*x) + 7700*a^3*b^3*x^3*(8*A + 9*B*x) + 4620*a^4*b^2*x^
2*(9*A + 10*B*x) + 1512*a^5*b*x*(10*A + 11*B*x) + 210*a^6*(11*A + 12*B*x))/
x^12
```

fricas [A] time = 0.85, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^{6}x^{7} + 2310\,Aa^{6} + 4620\left(6\,Bab^{5} + Ab^{6}\right)x^{6} + 11880\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x^{5} + 17325\left(4\,Ba^{3}b^{3} + 3\,Aa^{2}b^{4}\right)x}{27720\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="fricas")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 2310*A*a^6 + 4620*(6*B*a*b^5 + A*b^6)*x^6 + 1188
0*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 17325*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1
5400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 8316*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 +
 2520*(B*a^6 + 6*A*a^5*b)*x)/x^12
```

giac [A] time = 0.16, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^{6}x^{7} + 27720\,Bab^{5}x^{6} + 4620\,Ab^{6}x^{6} + 59400\,Ba^{2}b^{4}x^{5} + 23760\,Aab^{5}x^{5} + 69300\,Ba^{3}b^{3}x^{4} + 51975\,Aa^{2}b^{4}x}{2772}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="giac")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 27720*B*a*b^5*x^6 + 4620*A*b^6*x^6 + 59400*B*a^2
*b^4*x^5 + 23760*A*a*b^5*x^5 + 69300*B*a^3*b^3*x^4 + 51975*A*a^2*b^4*x^4 +
46200*B*a^4*b^2*x^3 + 61600*A*a^3*b^3*x^3 + 16632*B*a^5*b*x^2 + 41580*A*a^4
*b^2*x^2 + 2520*B*a^6*x + 15120*A*a^5*b*x + 2310*A*a^6)/x^12
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^{6}}{5x^{5}}-\frac{\left(Ab+6Ba\right)b^{5}}{6x^{6}}-\frac{3\left(2Ab+5Ba\right)a\,b^{4}}{7x^{7}}-\frac{5\left(3Ab+4Ba\right)a^{2}b^{3}}{8x^{8}}-\frac{5\left(4Ab+3Ba\right)a^{3}b^{2}}{9x^{9}}-\frac{A\,a^{6}}{12x^{12}}-\frac{3\left(5Ab+2Ba\right)a^{4}b}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x)
```

```
[Out] -1/12*a^6*A/x^12-1/11*a^5*(6*A*b+B*a)/x^11-3/10*a^4*b*(5*A*b+2*B*a)/x^10-5/
9*a^3*b^2*(4*A*b+3*B*a)/x^9-5/8*a^2*b^3*(3*A*b+4*B*a)/x^8-3/7*a*b^4*(2*A*b+
5*B*a)/x^7-1/6*b^5*(A*b+6*B*a)/x^6-1/5*b^6*B/x^5
```

maxima [A] time = 0.58, size = 147, normalized size = 1.03

$$-\frac{5544\,Bb^{6}x^{7} + 2310\,Aa^{6} + 4620\left(6\,Bab^{5} + Ab^{6}\right)x^{6} + 11880\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x^{5} + 17325\left(4\,Ba^{3}b^{3} + 3\,Aa^{2}b^{4}\right)x}{27720\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^13,x, algorithm="maxima")
```

```
[Out] -1/27720*(5544*B*b^6*x^7 + 2310*A*a^6 + 4620*(6*B*a*b^5 + A*b^6)*x^6 + 1188
0*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 17325*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1
5400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 8316*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 +
 2520*(B*a^6 + 6*A*a^5*b)*x)/x^12
```

mupad [B] time = 0.07, size = 142, normalized size = 0.99

$$-\frac{x\left(\frac{B\,a^6}{11}+\frac{6\,A\,b\,a^5}{11}\right)+\frac{A\,a^6}{12}+x^2\left(\frac{3\,B\,a^5\,b}{5}+\frac{3\,A\,a^4\,b^2}{2}\right)+x^5\left(\frac{15\,B\,a^2\,b^4}{7}+\frac{6\,A\,a\,b^5}{7}\right)+x^6\left(\frac{A\,b^6}{6}+B\,a\,b^5\right)+x^4\left(\frac{5\,B\,a^3\,b^3}{2}+\right.}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^13,x)
```

```
[Out] -(x*((B*a^6)/11 + (6*A*a^5*b)/11) + (A*a^6)/12 + x^2*((3*A*a^4*b^2)/2 + (3*
B*a^5*b)/5) + x^5*((15*B*a^2*b^4)/7 + (6*A*a*b^5)/7) + x^6*((A*b^6)/6 + B*a
*b^5) + x^4*((15*A*a^2*b^4)/8 + (5*B*a^3*b^3)/2) + x^3*((20*A*a^3*b^3)/9 +
(5*B*a^4*b^2)/3) + (B*b^6*x^7)/5)/x^12
```

sympy [A] time = 13.84, size = 158, normalized size = 1.10

$$-2310Aa^6-5544Bb^6x^7+x^6\left(-4620Ab^6-27720Bab^5\right)+x^5\left(-23760Aab^5-59400Ba^2b^4\right)+x^4\left(-51975Aa^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**13,x)
```

```
[Out] (-2310*A*a**6 - 5544*B*b**6*x**7 + x**6*(-4620*A*b**6 - 27720*B*a*b**5) + x
**5*(-23760*A*a*b**5 - 59400*B*a**2*b**4) + x**4*(-51975*A*a**2*b**4 - 6930
0*B*a**3*b**3) + x**3*(-61600*A*a**3*b**3 - 46200*B*a**4*b**2) + x**2*(-415
80*A*a**4*b**2 - 16632*B*a**5*b) + x*(-15120*A*a**5*b - 2520*B*a**6))/(2772
0*x**12)
```

3.558 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx$

Optimal. Leaf size=143

$$-\frac{a^6A}{13x^{13}}-\frac{a^5(aB+6Ab)}{12x^{12}}-\frac{3a^4b(2aB+5Ab)}{11x^{11}}-\frac{a^3b^2(3aB+4Ab)}{2x^{10}}-\frac{5a^2b^3(4aB+3Ab)}{9x^9}-\frac{b^5(6aB+Ab)}{7x^7}-\frac{3ab^4(5aB+2}{8x^8}$$

```
[Out] -1/13*a^6*A/x^13-1/12*a^5*(6*A*b+B*a)/x^12-3/11*a^4*b*(5*A*b+2*B*a)/x^11-1/
2*a^3*b^2*(4*A*b+3*B*a)/x^10-5/9*a^2*b^3*(3*A*b+4*B*a)/x^9-3/8*a*b^4*(2*A*b
+5*B*a)/x^8-1/7*b^5*(A*b+6*B*a)/x^7-1/6*b^6*B/x^6
```

Rubi [A] time = 0.07, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{a^3b^2(3aB+4Ab)}{2x^{10}}-\frac{5a^2b^3(4aB+3Ab)}{9x^9}-\frac{a^5(aB+6Ab)}{12x^{12}}-\frac{3a^4b(2aB+5Ab)}{11x^{11}}-\frac{a^6A}{13x^{13}}-\frac{3ab^4(5aB+2Ab)}{8x^8}-\frac{b^5(6aB+}{7x^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14,x]
```

```
[Out] -(a^6*A)/(13*x^13) - (a^5*(6*A*b + a*B))/(12*x^12) - (3*a^4*b*(5*A*b + 2*a*
B))/(11*x^11) - (a^3*b^2*(4*A*b + 3*a*B))/(2*x^10) - (5*a^2*b^3*(3*A*b + 4*
a*B))/(9*x^9) - (3*a*b^4*(2*A*b + 5*a*B))/(8*x^8) - (b^5*(A*b + 6*a*B))/(7*
x^7) - (b^6*B)/(6*x^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{14}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{14}}\,dx\\ &= \int \left(\frac{a^6A}{x^{14}}+\frac{a^5(6Ab+aB)}{x^{13}}+\frac{3a^4b(5Ab+2aB)}{x^{12}}+\frac{5a^3b^2(4Ab+3aB)}{x^{11}}+\frac{5a^2}{}\right.\\ &= -\frac{a^6A}{13x^{13}}-\frac{a^5(6Ab+aB)}{12x^{12}}-\frac{3a^4b(5Ab+2aB)}{11x^{11}}-\frac{a^3b^2(4Ab+3aB)}{2x^{10}}-\frac{5a^2b^3(}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 126, normalized size = 0.88

$$-\frac{462a^6(12A+13Bx)+3276a^5bx(11A+12Bx)+9828a^4b^2x^2(10A+11Bx)+16016a^3b^3x^3(9A+10Bx)+15015}{72072x^{13}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^14,x]
```

```
[Out] -1/72072*(1716*b^6*x^6*(6*A + 7*B*x) + 7722*a*b^5*x^5*(7*A + 8*B*x) + 15015
*a^2*b^4*x^4*(8*A + 9*B*x) + 16016*a^3*b^3*x^3*(9*A + 10*B*x) + 9828*a^4*b^
2*x^2*(10*A + 11*B*x) + 3276*a^5*b*x*(11*A + 12*B*x) + 462*a^6*(12*A + 13*B
*x))/x^13
```

fricas [A] time = 0.72, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7 + 5544\,Aa^6 + 10296\left(6\,Bab^5 + Ab^6\right)x^6 + 27027\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 40040\left(4\,Ba^3b^3 + 3\,Aa}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="fricas")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 5544*A*a^6 + 10296*(6*B*a*b^5 + A*b^6)*x^6 + 27
027*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 40040*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 +
 36036*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 19656*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 6006*(B*a^6 + 6*A*a^5*b)*x)/x^13
```

giac [A] time = 0.15, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7 + 61776\,Bab^5x^6 + 10296\,Ab^6x^6 + 135135\,Ba^2b^4x^5 + 54054\,Aab^5x^5 + 160160\,Ba^3b^3x^4 + 120120}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="giac")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 61776*B*a*b^5*x^6 + 10296*A*b^6*x^6 + 135135*B*
a^2*b^4*x^5 + 54054*A*a*b^5*x^5 + 160160*B*a^3*b^3*x^4 + 120120*A*a^2*b^4*x
^4 + 108108*B*a^4*b^2*x^3 + 144144*A*a^3*b^3*x^3 + 39312*B*a^5*b*x^2 + 9828
0*A*a^4*b^2*x^2 + 6006*B*a^6*x + 36036*A*a^5*b*x + 5544*A*a^6)/x^13
```

maple [A] time = 0.05, size = 128, normalized size = 0.90

$$-\frac{B\,b^6}{6x^6}-\frac{(Ab+6Ba)\,b^5}{7x^7}-\frac{3\,(2Ab+5Ba)\,a\,b^4}{8x^8}-\frac{5\,(3Ab+4Ba)\,a^2b^3}{9x^9}-\frac{(4Ab+3Ba)\,a^3b^2}{2x^{10}}-\frac{A\,a^6}{13x^{13}}-\frac{3\,(5Ab+2Ba)\,a^4}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x)
```

```
[Out] -1/13*a^6*A/x^13-1/12*a^5*(6*A*b+B*a)/x^12-3/11*a^4*b*(5*A*b+2*B*a)/x^11-1/
2*a^3*b^2*(4*A*b+3*B*a)/x^10-5/9*a^2*b^3*(3*A*b+4*B*a)/x^9-3/8*a*b^4*(2*A*b
+5*B*a)/x^8-1/7*b^5*(A*b+6*B*a)/x^7-1/6*b^6*B/x^6
```

maxima [A] time = 0.59, size = 147, normalized size = 1.03

$$-\frac{12012\,Bb^6x^7 + 5544\,Aa^6 + 10296\left(6\,Bab^5 + Ab^6\right)x^6 + 27027\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 40040\left(4\,Ba^3b^3 + 3\,Aa}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^14,x, algorithm="maxima")
```

```
[Out] -1/72072*(12012*B*b^6*x^7 + 5544*A*a^6 + 10296*(6*B*a*b^5 + A*b^6)*x^6 + 27
027*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 40040*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 +
 36036*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 19656*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 6006*(B*a^6 + 6*A*a^5*b)*x)/x^13
```

mupad [B] time = 1.10, size = 143, normalized size = 1.00

$$-\frac{x\bigg(\frac{B\,a^6}{12}+\frac{A\,b\,a^5}{2}\bigg)+\frac{A\,a^6}{13}+x^5\bigg(\frac{15\,B\,a^2\,b^4}{8}+\frac{3\,A\,a\,b^5}{4}\bigg)+x^2\bigg(\frac{6\,B\,a^5\,b}{11}+\frac{15\,A\,a^4\,b^2}{11}\bigg)+x^6\bigg(\frac{A\,b^6}{7}+\frac{6\,B\,a\,b^5}{7}\bigg)+x^3\bigg(\frac{3\,B\,a^4\,b^2}{2}+2}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^14,x)
```

```
[Out] -(x*((B*a^6)/12 + (A*a^5*b)/2) + (A*a^6)/13 + x^5*((15*B*a^2*b^4)/8 + (3*A*
a*b^5)/4) + x^2*((15*A*a^4*b^2)/11 + (6*B*a^5*b)/11) + x^6*((A*b^6)/7 + (6*
B*a*b^5)/7) + x^3*(2*A*a^3*b^3 + (3*B*a^4*b^2)/2) + x^4*((5*A*a^2*b^4)/3 +
(20*B*a^3*b^3)/9) + (B*b^6*x^7)/6)/x^13
```

sympy [A] time = 17.51, size = 158, normalized size = 1.10

$$\frac{-5544Aa^6-12012Bb^6x^7+x^6\left(-10296Ab^6-61776Bab^5\right)+x^5\left(-54054Aab^5-135135Ba^2b^4\right)+x^4\big(-120120Aa^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**14,x)
```

```
[Out] (-5544*A*a**6 - 12012*B*b**6*x**7 + x**6*(-10296*A*b**6 - 61776*B*a*b**5) +
 x**5*(-54054*A*a*b**5 - 135135*B*a**2*b**4) + x**4*(-120120*A*a**2*b**4 -
160160*B*a**3*b**3) + x**3*(-144144*A*a**3*b**3 - 108108*B*a**4*b**2) + x**
2*(-98280*A*a**4*b**2 - 39312*B*a**5*b) + x*(-36036*A*a**5*b - 6006*B*a**6)
)/(72072*x**13)
```

3.559 $\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=131

$$\frac{1}{18}(x+1)^{18}(d-8e)-\frac{7}{17}(x+1)^{17}(d-4e)+\frac{7}{16}(x+1)^{16}(3d-8e)-\frac{7}{3}(x+1)^{15}(d-2e)+\frac{1}{2}(x+1)^{14}(5d-8e)-\frac{7}{13}(x+1)^{13}(3d-4$$

```
[Out] -1/11*(d-e)*(1+x)^11+1/12*(7*d-8*e)*(1+x)^12-7/13*(3*d-4*e)*(1+x)^13+1/2*(5
*d-8*e)*(1+x)^14-7/3*(d-2*e)*(1+x)^15+7/16*(3*d-8*e)*(1+x)^16-7/17*(d-4*e)*
(1+x)^17+1/18*(d-8*e)*(1+x)^18+1/19*e*(1+x)^19
```

Rubi [A] time = 0.13, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{18}(x+1)^{18}(d-8e)-\frac{7}{17}(x+1)^{17}(d-4e)+\frac{7}{16}(x+1)^{16}(3d-8e)-\frac{7}{3}(x+1)^{15}(d-2e)+\frac{1}{2}(x+1)^{14}(5d-8e)-\frac{7}{13}(x+1)^{13}(3d-4$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((7*d - 8*e)*(1 + x)^12)/12 - (7*(3*d - 4*e)*(1
+ x)^13)/13 + ((5*d - 8*e)*(1 + x)^14)/2 - (7*(d - 2*e)*(1 + x)^15)/3 + (7*
(3*d - 8*e)*(1 + x)^16)/16 - (7*(d - 4*e)*(1 + x)^17)/17 + ((d - 8*e)*(1 +
x)^18)/18 + (e*(1 + x)^19)/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^7(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^7(1+x)^{10}(d+ex)\,dx\\ &= \int \Big((-d+e)(1+x)^{10}+(7d-8e)(1+x)^{11}-7(3d-4e)(1+x)^{12}+7(5d-8e)\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(7d-8e)(1+x)^{12}-\frac{7}{13}(3d-4e)(1+x)^{13}+\frac{1}{2}(5d-\end{aligned}$$

Mathematica [A] time = 0.03, size = 149, normalized size = 1.14

$$\frac{1}{18}x^{18}(d+10e)+\frac{5}{17}x^{17}(2d+9e)+\frac{15}{16}x^{16}(3d+8e)+2x^{15}(4d+7e)+3x^{14}(5d+6e)+\frac{42}{13}x^{13}(6d+5e)+\frac{5}{2}x^{12}(7d+4e)+\frac{15}{11}x$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^8)/8 + ((10*d + e)*x^9)/9 + ((9*d + 2*e)*x^10)/2 + (15*(8*d + 3*e)*x^1
1)/11 + (5*(7*d + 4*e)*x^12)/2 + (42*(6*d + 5*e)*x^13)/13 + 3*(5*d + 6*e)*x
^14 + 2*(4*d + 7*e)*x^15 + (15*(3*d + 8*e)*x^16)/16 + (5*(2*d + 9*e)*x^17)/
17 + ((d + 10*e)*x^18)/18 + (e*x^19)/19
```

fricas [A] time = 0.76, size = 132, normalized size = 1.01

$$\frac{1}{19}x^{19}e+\frac{5}{9}x^{18}e+\frac{1}{18}x^{18}d+\frac{45}{17}x^{17}e+\frac{10}{17}x^{17}d+\frac{15}{2}x^{16}e+\frac{45}{16}x^{16}d+14x^{15}e+8x^{15}d+18x^{14}e+15x^{14}d+\frac{210}{13}x^{13}e+\frac{252}{13}x^{13}d+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/19*x^19*e + 5/9*x^18*e + 1/18*x^18*d + 45/17*x^17*e + 10/17*x^17*d + 15/2
*x^16*e + 45/16*x^16*d + 14*x^15*e + 8*x^15*d + 18*x^14*e + 15*x^14*d + 210
/13*x^13*e + 252/13*x^13*d + 10*x^12*e + 35/2*x^12*d + 45/11*x^11*e + 120/1
1*x^11*d + x^10*e + 9/2*x^10*d + 1/9*x^9*e + 10/9*x^9*d + 1/8*x^8*d
```

giac [A] time = 0.17, size = 143, normalized size = 1.09

$$\frac{1}{19}\,x^{19}e+\frac{1}{18}\,dx^{18}+\frac{5}{9}\,x^{18}e+\frac{10}{17}\,dx^{17}+\frac{45}{17}\,x^{17}e+\frac{45}{16}\,dx^{16}+\frac{15}{2}\,x^{16}e+8\,dx^{15}+14\,x^{15}e+15\,dx^{14}+18\,x^{14}e+\frac{252}{13}\,dx^{13}+\frac{210}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/19*x^19*e + 1/18*d*x^18 + 5/9*x^18*e + 10/17*d*x^17 + 45/17*x^17*e + 45/1
6*d*x^16 + 15/2*x^16*e + 8*d*x^15 + 14*x^15*e + 15*d*x^14 + 18*x^14*e + 252
/13*d*x^13 + 210/13*x^13*e + 35/2*d*x^12 + 10*x^12*e + 120/11*d*x^11 + 45/1
1*x^11*e + 9/2*d*x^10 + x^10*e + 10/9*d*x^9 + 1/9*x^9*e + 1/8*d*x^8
```

maple [A] time = 0.05, size = 130, normalized size = 0.99

$$\frac{e\,x^{19}}{19}+\frac{(d+10e)\,x^{18}}{18}+\frac{(10d+45e)\,x^{17}}{17}+\frac{(45d+120e)\,x^{16}}{16}+\frac{(120d+210e)\,x^{15}}{15}+\frac{(210d+252e)\,x^{14}}{14}+\frac{(252d+210e)\,x}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/19*e*x^19+1/18*(d+10*e)*x^18+1/17*(10*d+45*e)*x^17+1/16*(45*d+120*e)*x^16
+1/15*(120*d+210*e)*x^15+1/14*(210*d+252*e)*x^14+1/13*(252*d+210*e)*x^13+1/
12*(210*d+120*e)*x^12+1/11*(120*d+45*e)*x^11+1/10*(45*d+10*e)*x^10+1/9*(10*
d+e)*x^9+1/8*d*x^8
```

maxima [A] time = 0.48, size = 129, normalized size = 0.98

$$\frac{1}{19}\,ex^{19}+\frac{1}{18}\,(d+10\,e)x^{18}+\frac{5}{17}\,(2\,d+9\,e)x^{17}+\frac{15}{16}\,(3\,d+8\,e)x^{16}+2\,(4\,d+7\,e)x^{15}+3\,(5\,d+6\,e)x^{14}+\frac{42}{13}\,(6\,d+5\,e)x^{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/19*e*x^19 + 1/18*(d + 10*e)*x^18 + 5/17*(2*d + 9*e)*x^17 + 15/16*(3*d + 8
*e)*x^16 + 2*(4*d + 7*e)*x^15 + 3*(5*d + 6*e)*x^14 + 42/13*(6*d + 5*e)*x^13
 + 5/2*(7*d + 4*e)*x^12 + 15/11*(8*d + 3*e)*x^11 + 1/2*(9*d + 2*e)*x^10 + 1
/9*(10*d + e)*x^9 + 1/8*d*x^8
```

mupad [B] time = 1.12, size = 121, normalized size = 0.92

$$\frac{e\,x^{19}}{19}+\left(\frac{d}{18}+\frac{5\,e}{9}\right)\,x^{18}+\left(\frac{10\,d}{17}+\frac{45\,e}{17}\right)\,x^{17}+\left(\frac{45\,d}{16}+\frac{15\,e}{2}\right)\,x^{16}+(8\,d+14\,e)\,x^{15}+(15\,d+18\,e)\,x^{14}+\Bigg(\frac{252\,d}{13}+\frac{21}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^15*(8*d + 14*e) + x^9*((10*d)/9 + e/9) + x^14*(15*d + 18*e) + x^18*(d/18
+ (5*e)/9) + x^12*((35*d)/2 + 10*e) + x^16*((45*d)/16 + (15*e)/2) + x^17*((
10*d)/17 + (45*e)/17) + x^11*((120*d)/11 + (45*e)/11) + x^13*((252*d)/13 +
(210*e)/13) + (d*x^8)/8 + (e*x^19)/19 + x^10*((9*d)/2 + e)
```

sympy [A] time = 0.10, size = 133, normalized size = 1.02

$$\frac{dx^{8}}{8}+\frac{ex^{19}}{19}+x^{18}\left(\frac{d}{18}+\frac{5e}{9}\right)+x^{17}\left(\frac{10d}{17}+\frac{45e}{17}\right)+x^{16}\left(\frac{45d}{16}+\frac{15e}{2}\right)+x^{15}\left(8d+14e\right)+x^{14}\left(15d+18e\right)+x^{13}\Bigg(\frac{252d}{13}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**8/8 + e*x**19/19 + x**18*(d/18 + 5*e/9) + x**17*(10*d/17 + 45*e/17) +
x**16*(45*d/16 + 15*e/2) + x**15*(8*d + 14*e) + x**14*(15*d + 18*e) + x**13
*(252*d/13 + 210*e/13) + x**12*(35*d/2 + 10*e) + x**11*(120*d/11 + 45*e/11)
 + x**10*(9*d/2 + e) + x**9*(10*d/9 + e/9)
```

3.560 $\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=119

$$\frac{1}{17}(x+1)^{17}(d-7e)-\frac{3}{16}(x+1)^{16}(2d-7e)+\frac{1}{3}(x+1)^{15}(3d-7e)-\frac{5}{14}(x+1)^{14}(4d-7e)+\frac{3}{13}(x+1)^{13}(5d-7e)-\frac{1}{12}(x+1)^{12}(6d-$$

```
[Out] 1/11*(d-e)*(1+x)^11-1/12*(6*d-7*e)*(1+x)^12+3/13*(5*d-7*e)*(1+x)^13-5/14*(4
*d-7*e)*(1+x)^14+1/3*(3*d-7*e)*(1+x)^15-3/16*(2*d-7*e)*(1+x)^16+1/17*(d-7*e
)*(1+x)^17+1/18*e*(1+x)^18
```

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{17}(x+1)^{17}(d-7e)-\frac{3}{16}(x+1)^{16}(2d-7e)+\frac{1}{3}(x+1)^{15}(3d-7e)-\frac{5}{14}(x+1)^{14}(4d-7e)+\frac{3}{13}(x+1)^{13}(5d-7e)-\frac{1}{12}(x+1)^{12}(6d-$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((6*d - 7*e)*(1 + x)^12)/12 + (3*(5*d - 7*e)*(1 +
 x)^13)/13 - (5*(4*d - 7*e)*(1 + x)^14)/14 + ((3*d - 7*e)*(1 + x)^15)/3 - (
3*(2*d - 7*e)*(1 + x)^16)/16 + ((d - 7*e)*(1 + x)^17)/17 + (e*(1 + x)^18)/1
8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^6(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^6(1+x)^{10}(d+ex)\,dx\\ &= \int \left((d-e)(1+x)^{10}+(-6d+7e)(1+x)^{11}+3(5d-7e)(1+x)^{12}-5(4d-7e)(1\right.\\ &= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(6d-7e)(1+x)^{12}+\frac{3}{13}(5d-7e)(1+x)^{13}-\frac{5}{14}(4d-7e\end{aligned}$$

Mathematica [A] time = 0.02, size = 150, normalized size = 1.26

$$\frac{1}{17}x^{17}(d+10e)+\frac{5}{16}x^{16}(2d+9e)+x^{15}(3d+8e)+\frac{15}{7}x^{14}(4d+7e)+\frac{42}{13}x^{13}(5d+6e)+\frac{7}{2}x^{12}(6d+5e)+\frac{30}{11}x^{11}(7d+4e)+\frac{3}{2}x^{10}(8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^7)/7 + ((10*d + e)*x^8)/8 + (5*(9*d + 2*e)*x^9)/9 + (3*(8*d + 3*e)*x^1
0)/2 + (30*(7*d + 4*e)*x^11)/11 + (7*(6*d + 5*e)*x^12)/2 + (42*(5*d + 6*e)*
x^13)/13 + (15*(4*d + 7*e)*x^14)/7 + (3*d + 8*e)*x^15 + (5*(2*d + 9*e)*x^16
)/16 + ((d + 10*e)*x^17)/17 + (e*x^18)/18
```

fricas [A] time = 0.75, size = 133, normalized size = 1.12

$$\frac{1}{18}x^{18}e+\frac{10}{17}x^{17}e+\frac{1}{17}x^{17}d+\frac{45}{16}x^{16}e+\frac{5}{8}x^{16}d+8x^{15}e+3x^{15}d+15x^{14}e+\frac{60}{7}x^{14}d+\frac{252}{13}x^{13}e+\frac{210}{13}x^{13}d+\frac{35}{2}x^{12}e+21x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/18*x^18*e + 10/17*x^17*e + 1/17*x^17*d + 45/16*x^16*e + 5/8*x^16*d + 8*x^
15*e + 3*x^15*d + 15*x^14*e + 60/7*x^14*d + 252/13*x^13*e + 210/13*x^13*d +
 35/2*x^12*e + 21*x^12*d + 120/11*x^11*e + 210/11*x^11*d + 9/2*x^10*e + 12*
x^10*d + 10/9*x^9*e + 5*x^9*d + 1/8*x^8*e + 5/4*x^8*d + 1/7*x^7*d
```

giac [A] time = 0.15, size = 144, normalized size = 1.21

$$\frac{1}{18}x^{18}e+\frac{1}{17}dx^{17}+\frac{10}{17}x^{17}e+\frac{5}{8}dx^{16}+\frac{45}{16}x^{16}e+3dx^{15}+8x^{15}e+\frac{60}{7}dx^{14}+15x^{14}e+\frac{210}{13}dx^{13}+\frac{252}{13}x^{13}e+21dx^{12}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/18*x^18*e + 1/17*d*x^17 + 10/17*x^17*e + 5/8*d*x^16 + 45/16*x^16*e + 3*d*
x^15 + 8*x^15*e + 60/7*d*x^14 + 15*x^14*e + 210/13*d*x^13 + 252/13*x^13*e +
 21*d*x^12 + 35/2*x^12*e + 210/11*d*x^11 + 120/11*x^11*e + 12*d*x^10 + 9/2*
x^10*e + 5*d*x^9 + 10/9*x^9*e + 5/4*d*x^8 + 1/8*x^8*e + 1/7*d*x^7
```

maple [A] time = 0.04, size = 130, normalized size = 1.09

$$\frac{e\,x^{18}}{18}+\frac{(d+10e)\,x^{17}}{17}+\frac{(10d+45e)\,x^{16}}{16}+\frac{(45d+120e)\,x^{15}}{15}+\frac{(120d+210e)\,x^{14}}{14}+\frac{(210d+252e)\,x^{13}}{13}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/18*e*x^18+1/17*(d+10*e)*x^17+1/16*(10*d+45*e)*x^16+1/15*(45*d+120*e)*x^15
+1/14*(120*d+210*e)*x^14+1/13*(210*d+252*e)*x^13+1/12*(252*d+210*e)*x^12+1/
11*(210*d+120*e)*x^11+1/10*(120*d+45*e)*x^10+1/9*(45*d+10*e)*x^9+1/8*(10*d+
e)*x^8+1/7*d*x^7
```

maxima [A] time = 0.63, size = 128, normalized size = 1.08

$$\frac{1}{18}\,ex^{18}+\frac{1}{17}\,(d+10\,e)x^{17}+\frac{5}{16}\,(2\,d+9\,e)x^{16}+(3\,d+8\,e)x^{15}+\frac{15}{7}\,(4\,d+7\,e)x^{14}+\frac{42}{13}\,(5\,d+6\,e)x^{13}+\frac{7}{2}\,(6\,d+5\,e)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/18*e*x^18 + 1/17*(d + 10*e)*x^17 + 5/16*(2*d + 9*e)*x^16 + (3*d + 8*e)*x^
15 + 15/7*(4*d + 7*e)*x^14 + 42/13*(5*d + 6*e)*x^13 + 7/2*(6*d + 5*e)*x^12
+ 30/11*(7*d + 4*e)*x^11 + 3/2*(8*d + 3*e)*x^10 + 5/9*(9*d + 2*e)*x^9 + 1/8
*(10*d + e)*x^8 + 1/7*d*x^7
```

mupad [B] time = 0.08, size = 123, normalized size = 1.03

$$\frac{e\,x^{18}}{18}+\left(\frac{d}{17}+\frac{10\,e}{17}\right)\,x^{17}+\left(\frac{5\,d}{8}+\frac{45\,e}{16}\right)\,x^{16}+(3\,d+8\,e)\,x^{15}+\left(\frac{60\,d}{7}+15\,e\right)\,x^{14}+\left(\frac{210\,d}{13}+\frac{252\,e}{13}\right)\,x^{13}+\left(21\,d+\frac{35\,e}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^8*((5*d)/4 + e/8) + x^15*(3*d + 8*e) + x^9*(5*d + (10*e)/9) + x^10*(12*d
+ (9*e)/2) + x^17*(d/17 + (10*e)/17) + x^12*(21*d + (35*e)/2) + x^16*((5*d)
/8 + (45*e)/16) + x^14*((60*d)/7 + 15*e) + x^11*((210*d)/11 + (120*e)/11) +
 x^13*((210*d)/13 + (252*e)/13) + (d*x^7)/7 + (e*x^18)/18
```

sympy [A] time = 0.10, size = 134, normalized size = 1.13

$$\frac{dx^{7}}{7}+\frac{ex^{18}}{18}+x^{17}\left(\frac{d}{17}+\frac{10e}{17}\right)+x^{16}\left(\frac{5d}{8}+\frac{45e}{16}\right)+x^{15}\left(3d+8e\right)+x^{14}\left(\frac{60d}{7}+15e\right)+x^{13}\left(\frac{210d}{13}+\frac{252e}{13}\right)+x^{12}\Bigg(21d+\frac{35}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**7/7 + e*x**18/18 + x**17*(d/17 + 10*e/17) + x**16*(5*d/8 + 45*e/16) +
x**15*(3*d + 8*e) + x**14*(60*d/7 + 15*e) + x**13*(210*d/13 + 252*e/13) + x
**12*(21*d + 35*e/2) + x**11*(210*d/11 + 120*e/11) + x**10*(12*d + 9*e/2) +
 x**9*(5*d + 10*e/9) + x**8*(5*d/4 + e/8)
```

3.561 $\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=99

$$\frac{1}{16}(x+1)^{16}(d-6e)-\frac{1}{3}(x+1)^{15}(d-3e)+\frac{5}{7}(x+1)^{14}(d-2e)-\frac{5}{13}(x+1)^{13}(2d-3e)+\frac{1}{12}(x+1)^{12}(5d-6e)-\frac{1}{11}(x+1)^{11}(d-e)$$

```
[Out] -1/11*(d-e)*(1+x)^11+1/12*(5*d-6*e)*(1+x)^12-5/13*(2*d-3*e)*(1+x)^13+5/7*(d
-2*e)*(1+x)^14-1/3*(d-3*e)*(1+x)^15+1/16*(d-6*e)*(1+x)^16+1/17*e*(1+x)^17
```

Rubi [A] time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{16}(x+1)^{16}(d-6e)-\frac{1}{3}(x+1)^{15}(d-3e)+\frac{5}{7}(x+1)^{14}(d-2e)-\frac{5}{13}(x+1)^{13}(2d-3e)+\frac{1}{12}(x+1)^{12}(5d-6e)-\frac{1}{11}(x+1)^{11}(d-e)$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((5*d - 6*e)*(1 + x)^12)/12 - (5*(2*d - 3*e)*(1
+ x)^13)/13 + (5*(d - 2*e)*(1 + x)^14)/7 - ((d - 3*e)*(1 + x)^15)/3 + ((d -
 6*e)*(1 + x)^16)/16 + (e*(1 + x)^17)/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^5(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^5(1+x)^{10}(d+ex)\,dx\\ &= \int \Big((-d+e)(1+x)^{10}+(5d-6e)(1+x)^{11}-5(2d-3e)(1+x)^{12}+10(d-2e)\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(5d-6e)(1+x)^{12}-\frac{5}{13}(2d-3e)(1+x)^{13}+\frac{5}{7}(d-\end{aligned}$$

Mathematica [A] time = 0.02, size = 151, normalized size = 1.53

$$\frac{1}{16}x^{16}(d+10e)+\frac{1}{3}x^{15}(2d+9e)+\frac{15}{14}x^{14}(3d+8e)+\frac{30}{13}x^{13}(4d+7e)+\frac{7}{2}x^{12}(5d+6e)+\frac{42}{11}x^{11}(6d+5e)+3x^{10}(7d+4e)+\frac{5}{3}x$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^6)/6 + ((10*d + e)*x^7)/7 + (5*(9*d + 2*e)*x^8)/8 + (5*(8*d + 3*e)*x^9
)/3 + 3*(7*d + 4*e)*x^10 + (42*(6*d + 5*e)*x^11)/11 + (7*(5*d + 6*e)*x^12)/
2 + (30*(4*d + 7*e)*x^13)/13 + (15*(3*d + 8*e)*x^14)/14 + ((2*d + 9*e)*x^15
)/3 + ((d + 10*e)*x^16)/16 + (e*x^17)/17
```

fricas [A] time = 0.72, size = 133, normalized size = 1.34

$$\frac{1}{17}x^{17}e+\frac{5}{8}x^{16}e+\frac{1}{16}x^{16}d+3x^{15}e+\frac{2}{3}x^{15}d+\frac{60}{7}x^{14}e+\frac{45}{14}x^{14}d+\frac{210}{13}x^{13}e+\frac{120}{13}x^{13}d+21x^{12}e+\frac{35}{2}x^{12}d+\frac{210}{11}x^{11}e+\frac{252}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/17*x^17*e + 5/8*x^16*e + 1/16*x^16*d + 3*x^15*e + 2/3*x^15*d + 60/7*x^14*
e + 45/14*x^14*d + 210/13*x^13*e + 120/13*x^13*d + 21*x^12*e + 35/2*x^12*d
+ 210/11*x^11*e + 252/11*x^11*d + 12*x^10*e + 21*x^10*d + 5*x^9*e + 40/3*x^
9*d + 5/4*x^8*e + 45/8*x^8*d + 1/7*x^7*e + 10/7*x^7*d + 1/6*x^6*d
```

giac [A] time = 0.19, size = 144, normalized size = 1.45

$$\frac{1}{17}\,x^{17}e+\frac{1}{16}\,dx^{16}+\frac{5}{8}\,x^{16}e+\frac{2}{3}\,dx^{15}+3\,x^{15}e+\frac{45}{14}\,dx^{14}+\frac{60}{7}\,x^{14}e+\frac{120}{13}\,dx^{13}+\frac{210}{13}\,x^{13}e+\frac{35}{2}\,dx^{12}+21\,x^{12}e+\frac{252}{11}\,dx^{11}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/17*x^17*e + 1/16*d*x^16 + 5/8*x^16*e + 2/3*d*x^15 + 3*x^15*e + 45/14*d*x^
14 + 60/7*x^14*e + 120/13*d*x^13 + 210/13*x^13*e + 35/2*d*x^12 + 21*x^12*e
+ 252/11*d*x^11 + 210/11*x^11*e + 21*d*x^10 + 12*x^10*e + 40/3*d*x^9 + 5*x^
9*e + 45/8*d*x^8 + 5/4*x^8*e + 10/7*d*x^7 + 1/7*x^7*e + 1/6*d*x^6
```

maple [A] time = 0.04, size = 130, normalized size = 1.31

$$\frac{e\,x^{17}}{17}+\frac{(d+10e)\,x^{16}}{16}+\frac{(10d+45e)\,x^{15}}{15}+\frac{(45d+120e)\,x^{14}}{14}+\frac{(120d+210e)\,x^{13}}{13}+\frac{(210d+252e)\,x^{12}}{12}+\frac{(252d+210e)\,x}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/17*e*x^17+1/16*(d+10*e)*x^16+1/15*(10*d+45*e)*x^15+1/14*(45*d+120*e)*x^14
+1/13*(120*d+210*e)*x^13+1/12*(210*d+252*e)*x^12+1/11*(252*d+210*e)*x^11+1/
10*(210*d+120*e)*x^10+1/9*(120*d+45*e)*x^9+1/8*(45*d+10*e)*x^8+1/7*(10*d+e)
*x^7+1/6*d*x^6
```

maxima [A] time = 0.68, size = 129, normalized size = 1.30

$$\frac{1}{17}\,ex^{17}+\frac{1}{16}\,(d+10\,e)x^{16}+\frac{1}{3}\,(2\,d+9\,e)x^{15}+\frac{15}{14}\,(3\,d+8\,e)x^{14}+\frac{30}{13}\,(4\,d+7\,e)x^{13}+\frac{7}{2}\,(5\,d+6\,e)x^{12}+\frac{42}{11}\,(6\,d+5\,e)x^{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/17*e*x^17 + 1/16*(d + 10*e)*x^16 + 1/3*(2*d + 9*e)*x^15 + 15/14*(3*d + 8*
e)*x^14 + 30/13*(4*d + 7*e)*x^13 + 7/2*(5*d + 6*e)*x^12 + 42/11*(6*d + 5*e)
*x^11 + 3*(7*d + 4*e)*x^10 + 5/3*(8*d + 3*e)*x^9 + 5/8*(9*d + 2*e)*x^8 + 1/
7*(10*d + e)*x^7 + 1/6*d*x^6
```

mupad [B] time = 0.08, size = 123, normalized size = 1.24

$$\frac{e\,x^{17}}{17}+\left(\frac{d}{16}+\frac{5\,e}{8}\right)\,x^{16}+\left(\frac{2\,d}{3}+3\,e\right)\,x^{15}+\left(\frac{45\,d}{14}+\frac{60\,e}{7}\right)\,x^{14}+\left(\frac{120\,d}{13}+\frac{210\,e}{13}\right)\,x^{13}+\left(\frac{35\,d}{2}+21\,e\right)\,x^{12}+\left(\frac{252\,d}{11}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^15*((2*d)/3 + 3*e) + x^7*((10*d)/7 + e/7) + x^10*(21*d + 12*e) + x^16*(d/
16 + (5*e)/8) + x^9*((40*d)/3 + 5*e) + x^8*((45*d)/8 + (5*e)/4) + x^12*((35
*d)/2 + 21*e) + x^14*((45*d)/14 + (60*e)/7) + x^13*((120*d)/13 + (210*e)/13
) + x^11*((252*d)/11 + (210*e)/11) + (d*x^6)/6 + (e*x^17)/17
```

sympy [A] time = 0.10, size = 136, normalized size = 1.37

$$\frac{dx^6}{6}+\frac{ex^{17}}{17}+x^{16}\left(\frac{d}{16}+\frac{5e}{8}\right)+x^{15}\left(\frac{2d}{3}+3e\right)+x^{14}\left(\frac{45d}{14}+\frac{60e}{7}\right)+x^{13}\left(\frac{120d}{13}+\frac{210e}{13}\right)+x^{12}\left(\frac{35d}{2}+21e\right)+x^{11}\left(\frac{252d}{11}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**6/6 + e*x**17/17 + x**16*(d/16 + 5*e/8) + x**15*(2*d/3 + 3*e) + x**14*
(45*d/14 + 60*e/7) + x**13*(120*d/13 + 210*e/13) + x**12*(35*d/2 + 21*e) +
x**11*(252*d/11 + 210*e/11) + x**10*(21*d + 12*e) + x**9*(40*d/3 + 5*e) + x
**8*(45*d/8 + 5*e/4) + x**7*(10*d/7 + e/7)
```

3.562 $\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=87

$$\frac{1}{15}(x+1)^{15}(d-5e)-\frac{1}{7}(x+1)^{14}(2d-5e)+\frac{2}{13}(x+1)^{13}(3d-5e)-\frac{1}{12}(x+1)^{12}(4d-5e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{16}e(x+1)^{16}$$

```
[Out] 1/11*(d-e)*(1+x)^11-1/12*(4*d-5*e)*(1+x)^12+2/13*(3*d-5*e)*(1+x)^13-1/7*(2*
d-5*e)*(1+x)^14+1/15*(d-5*e)*(1+x)^15+1/16*e*(1+x)^16
```

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{15}(x+1)^{15}(d-5e)-\frac{1}{7}(x+1)^{14}(2d-5e)+\frac{2}{13}(x+1)^{13}(3d-5e)-\frac{1}{12}(x+1)^{12}(4d-5e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{16}e(x+1)^{16}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((4*d - 5*e)*(1 + x)^12)/12 + (2*(3*d - 5*e)*(1 +
 x)^13)/13 - ((2*d - 5*e)*(1 + x)^14)/7 + ((d - 5*e)*(1 + x)^15)/15 + (e*(1
 + x)^16)/16
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\int x^4(d+ex)\left(1+2x+x^2\right)^5\,dx = \int x^4(1+x)^{10}(d+ex)\,dx$$

$$= \int \big((d-e)(1+x)^{10}+(-4d+5e)(1+x)^{11}+2(3d-5e)(1+x)^{12}-2(2d-5e)(1$$

$$= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(4d-5e)(1+x)^{12}+\frac{2}{13}(3d-5e)(1+x)^{13}-\frac{1}{7}(2d-5e)($$

Mathematica [A] time = 0.02, size = 153, normalized size = 1.76

$$\frac{1}{15}x^{15}(d+10e)+\frac{5}{14}x^{14}(2d+9e)+\frac{15}{13}x^{13}(3d+8e)+\frac{5}{2}x^{12}(4d+7e)+\frac{42}{11}x^{11}(5d+6e)+\frac{21}{5}x^{10}(6d+5e)+\frac{10}{3}x^9(7d+4e)+\frac{15}{8}x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^5)/5 + ((10*d + e)*x^6)/6 + (5*(9*d + 2*e)*x^7)/7 + (15*(8*d + 3*e)*x^
8)/8 + (10*(7*d + 4*e)*x^9)/3 + (21*(6*d + 5*e)*x^10)/5 + (42*(5*d + 6*e)*x
^11)/11 + (5*(4*d + 7*e)*x^12)/2 + (15*(3*d + 8*e)*x^13)/13 + (5*(2*d + 9*e
)*x^14)/14 + ((d + 10*e)*x^15)/15 + (e*x^16)/16
```

fricas [A] time = 0.91, size = 133, normalized size = 1.53

$$\frac{1}{16}x^{16}e+\frac{2}{3}x^{15}e+\frac{1}{15}x^{15}d+\frac{45}{14}x^{14}e+\frac{5}{7}x^{14}d+\frac{120}{13}x^{13}e+\frac{45}{13}x^{13}d+\frac{35}{2}x^{12}e+10x^{12}d+\frac{252}{11}x^{11}e+\frac{210}{11}x^{11}d+21x^{10}e+\frac{126}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/16*x^16*e + 2/3*x^15*e + 1/15*x^15*d + 45/14*x^14*e + 5/7*x^14*d + 120/13
*x^13*e + 45/13*x^13*d + 35/2*x^12*e + 10*x^12*d + 252/11*x^11*e + 210/11*x
^11*d + 21*x^10*e + 126/5*x^10*d + 40/3*x^9*e + 70/3*x^9*d + 45/8*x^8*e + 1
5*x^8*d + 10/7*x^7*e + 45/7*x^7*d + 1/6*x^6*e + 5/3*x^6*d + 1/5*x^5*d
```

giac [A] time = 0.16, size = 144, normalized size = 1.66

$$\frac{1}{16}\,x^{16}e+\frac{1}{15}\,dx^{15}+\frac{2}{3}\,x^{15}e+\frac{5}{7}\,dx^{14}+\frac{45}{14}\,x^{14}e+\frac{45}{13}\,dx^{13}+\frac{120}{13}\,x^{13}e+10\,dx^{12}+\frac{35}{2}\,x^{12}e+\frac{210}{11}\,dx^{11}+\frac{252}{11}\,x^{11}e+\frac{126}{5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/16*x^16*e + 1/15*d*x^15 + 2/3*x^15*e + 5/7*d*x^14 + 45/14*x^14*e + 45/13*
d*x^13 + 120/13*x^13*e + 10*d*x^12 + 35/2*x^12*e + 210/11*d*x^11 + 252/11*x
^11*e + 126/5*d*x^10 + 21*x^10*e + 70/3*d*x^9 + 40/3*x^9*e + 15*d*x^8 + 45/
8*x^8*e + 45/7*d*x^7 + 10/7*x^7*e + 5/3*d*x^6 + 1/6*x^6*e + 1/5*d*x^5
```

maple [A] time = 0.05, size = 130, normalized size = 1.49

$$\frac{e\,x^{16}}{16}+\frac{(d+10e)\,x^{15}}{15}+\frac{(10d+45e)\,x^{14}}{14}+\frac{(45d+120e)\,x^{13}}{13}+\frac{(120d+210e)\,x^{12}}{12}+\frac{(210d+252e)\,x^{11}}{11}+\frac{(252d+210e}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/16*e*x^16+1/15*(d+10*e)*x^15+1/14*(10*d+45*e)*x^14+1/13*(45*d+120*e)*x^13
+1/12*(120*d+210*e)*x^12+1/11*(210*d+252*e)*x^11+1/10*(252*d+210*e)*x^10+1/
9*(210*d+120*e)*x^9+1/8*(120*d+45*e)*x^8+1/7*(45*d+10*e)*x^7+1/6*(10*d+e)*x
^6+1/5*d*x^5
```

maxima [A] time = 0.57, size = 129, normalized size = 1.48

$$\frac{1}{16}\,ex^{16}+\frac{1}{15}\,(d+10\,e)x^{15}+\frac{5}{14}\,(2\,d+9\,e)x^{14}+\frac{15}{13}\,(3\,d+8\,e)x^{13}+\frac{5}{2}\,(4\,d+7\,e)x^{12}+\frac{42}{11}\,(5\,d+6\,e)x^{11}+\frac{21}{5}\,(6\,d+5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/16*e*x^16 + 1/15*(d + 10*e)*x^15 + 5/14*(2*d + 9*e)*x^14 + 15/13*(3*d + 8
*e)*x^13 + 5/2*(4*d + 7*e)*x^12 + 42/11*(5*d + 6*e)*x^11 + 21/5*(6*d + 5*e)
*x^10 + 10/3*(7*d + 4*e)*x^9 + 15/8*(8*d + 3*e)*x^8 + 5/7*(9*d + 2*e)*x^7 +
 1/6*(10*d + e)*x^6 + 1/5*d*x^5
```

mupad [B] time = 0.08, size = 123, normalized size = 1.41

$$\frac{e\,x^{16}}{16}+\left(\frac{d}{15}+\frac{2\,e}{3}\right)\,x^{15}+\left(\frac{5\,d}{7}+\frac{45\,e}{14}\right)\,x^{14}+\left(\frac{45\,d}{13}+\frac{120\,e}{13}\right)\,x^{13}+\left(10\,d+\frac{35\,e}{2}\right)\,x^{12}+\left(\frac{210\,d}{11}+\frac{252\,e}{11}\right)\,x^{11}+\left(\frac{126\,d}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^6*((5*d)/3 + e/6) + x^15*(d/15 + (2*e)/3) + x^12*(10*d + (35*e)/2) + x^7*
((45*d)/7 + (10*e)/7) + x^8*(15*d + (45*e)/8) + x^14*((5*d)/7 + (45*e)/14)
+ x^9*((70*d)/3 + (40*e)/3) + x^10*((126*d)/5 + 21*e) + x^13*((45*d)/13 + (
120*e)/13) + x^11*((210*d)/11 + (252*e)/11) + (d*x^5)/5 + (e*x^16)/16
```

sympy [A] time = 0.10, size = 139, normalized size = 1.60

$$\frac{dx^5}{5}+\frac{ex^{16}}{16}+x^{15}\left(\frac{d}{15}+\frac{2e}{3}\right)+x^{14}\left(\frac{5d}{7}+\frac{45e}{14}\right)+x^{13}\left(\frac{45d}{13}+\frac{120e}{13}\right)+x^{12}\left(10d+\frac{35e}{2}\right)+x^{11}\left(\frac{210d}{11}+\frac{252e}{11}\right)+x^{10}\Bigg(\frac{126d}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**5/5 + e*x**16/16 + x**15*(d/15 + 2*e/3) + x**14*(5*d/7 + 45*e/14) + x*
*13*(45*d/13 + 120*e/13) + x**12*(10*d + 35*e/2) + x**11*(210*d/11 + 252*e/
11) + x**10*(126*d/5 + 21*e) + x**9*(70*d/3 + 40*e/3) + x**8*(15*d + 45*e/8
) + x**7*(45*d/7 + 10*e/7) + x**6*(5*d/3 + e/6)
```

3.563 $\int x^3(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=69

$$\frac{1}{14}(x+1)^{14}(d-4e)-\frac{3}{13}(x+1)^{13}(d-2e)+\frac{1}{12}(x+1)^{12}(3d-4e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{15}e(x+1)^{15}$$

```
[Out] -1/11*(d-e)*(1+x)^11+1/12*(3*d-4*e)*(1+x)^12-3/13*(d-2*e)*(1+x)^13+1/14*(d-
4*e)*(1+x)^14+1/15*e*(1+x)^15
```

Rubi [A] time = 0.05, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{14}(x+1)^{14}(d-4e)-\frac{3}{13}(x+1)^{13}(d-2e)+\frac{1}{12}(x+1)^{12}(3d-4e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{15}e(x+1)^{15}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((3*d - 4*e)*(1 + x)^12)/12 - (3*(d - 2*e)*(1 +
x)^13)/13 + ((d - 4*e)*(1 + x)^14)/14 + (e*(1 + x)^15)/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^3(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^3(1+x)^{10}(d+ex)\,dx\\ &= \int \left((-d+e)(1+x)^{10}+(3d-4e)(1+x)^{11}-3(d-2e)(1+x)^{12}+(d-4e)(1+\right.\\ &= -\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(3d-4e)(1+x)^{12}-\frac{3}{13}(d-2e)(1+x)^{13}+\frac{1}{14}(d-\end{aligned}$$

Mathematica [B] time = 0.02, size = 153, normalized size = 2.22

$$\frac{1}{14}x^{14}(d+10e)+\frac{5}{13}x^{13}(2d+9e)+\frac{5}{4}x^{12}(3d+8e)+\frac{30}{11}x^{11}(4d+7e)+\frac{21}{5}x^{10}(5d+6e)+\frac{14}{3}x^9(6d+5e)+\frac{15}{4}x^8(7d+4e)+\frac{15}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^4)/4 + ((10*d + e)*x^5)/5 + (5*(9*d + 2*e)*x^6)/6 + (15*(8*d + 3*e)*x^
7)/7 + (15*(7*d + 4*e)*x^8)/4 + (14*(6*d + 5*e)*x^9)/3 + (21*(5*d + 6*e)*x^
10)/5 + (30*(4*d + 7*e)*x^11)/11 + (5*(3*d + 8*e)*x^12)/4 + (5*(2*d + 9*e)*
x^13)/13 + ((d + 10*e)*x^14)/14 + (e*x^15)/15
```

fricas [B] time = 0.75, size = 133, normalized size = 1.93

$$\frac{1}{15}x^{15}e+\frac{5}{7}x^{14}e+\frac{1}{14}x^{14}d+\frac{45}{13}x^{13}e+\frac{10}{13}x^{13}d+10x^{12}e+\frac{15}{4}x^{12}d+\frac{210}{11}x^{11}e+\frac{120}{11}x^{11}d+\frac{126}{5}x^{10}e+21x^{10}d+\frac{70}{3}x^{9}e+28x^{9}d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/15*x^15*e + 5/7*x^14*e + 1/14*x^14*d + 45/13*x^13*e + 10/13*x^13*d + 10*x
^12*e + 15/4*x^12*d + 210/11*x^11*e + 120/11*x^11*d + 126/5*x^10*e + 21*x^1
0*d + 70/3*x^9*e + 28*x^9*d + 15*x^8*e + 105/4*x^8*d + 45/7*x^7*e + 120/7*x
^7*d + 5/3*x^6*e + 15/2*x^6*d + 1/5*x^5*e + 2*x^5*d + 1/4*x^4*d
```

giac [B] time = 0.15, size = 144, normalized size = 2.09

$$\frac{1}{15}x^{15}e+\frac{1}{14}dx^{14}+\frac{5}{7}x^{14}e+\frac{10}{13}dx^{13}+\frac{45}{13}x^{13}e+\frac{15}{4}dx^{12}+10x^{12}e+\frac{120}{11}dx^{11}+\frac{210}{11}x^{11}e+21dx^{10}+\frac{126}{5}x^{10}e+28dx^{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/15*x^15*e + 1/14*d*x^14 + 5/7*x^14*e + 10/13*d*x^13 + 45/13*x^13*e + 15/4
*d*x^12 + 10*x^12*e + 120/11*d*x^11 + 210/11*x^11*e + 21*d*x^10 + 126/5*x^1
0*e + 28*d*x^9 + 70/3*x^9*e + 105/4*d*x^8 + 15*x^8*e + 120/7*d*x^7 + 45/7*x
^7*e + 15/2*d*x^6 + 5/3*x^6*e + 2*d*x^5 + 1/5*x^5*e + 1/4*d*x^4
```

maple [B] time = 0.04, size = 130, normalized size = 1.88

$$\frac{e\,x^{15}}{15}+\frac{(d+10e)\,x^{14}}{14}+\frac{(10d+45e)\,x^{13}}{13}+\frac{(45d+120e)\,x^{12}}{12}+\frac{(120d+210e)\,x^{11}}{11}+\frac{(210d+252e)\,x^{10}}{10}+\frac{(252d+210e)\,x}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/15*e*x^15+1/14*(d+10*e)*x^14+1/13*(10*d+45*e)*x^13+1/12*(45*d+120*e)*x^12
+1/11*(120*d+210*e)*x^11+1/10*(210*d+252*e)*x^10+1/9*(252*d+210*e)*x^9+1/8*
(210*d+120*e)*x^8+1/7*(120*d+45*e)*x^7+1/6*(45*d+10*e)*x^6+1/5*(10*d+e)*x^5
+1/4*d*x^4
```

maxima [B] time = 0.54, size = 129, normalized size = 1.87

$$\frac{1}{15}\,ex^{15}+\frac{1}{14}\,(d+10\,e)x^{14}+\frac{5}{13}\,(2\,d+9\,e)x^{13}+\frac{5}{4}\,(3\,d+8\,e)x^{12}+\frac{30}{11}\,(4\,d+7\,e)x^{11}+\frac{21}{5}\,(5\,d+6\,e)x^{10}+\frac{14}{3}\,(6\,d+5\,e)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/15*e*x^15 + 1/14*(d + 10*e)*x^14 + 5/13*(2*d + 9*e)*x^13 + 5/4*(3*d + 8*e
)*x^12 + 30/11*(4*d + 7*e)*x^11 + 21/5*(5*d + 6*e)*x^10 + 14/3*(6*d + 5*e)*
x^9 + 15/4*(7*d + 4*e)*x^8 + 15/7*(8*d + 3*e)*x^7 + 5/6*(9*d + 2*e)*x^6 + 1
/5*(10*d + e)*x^5 + 1/4*d*x^4
```

mupad [B] time = 0.08, size = 123, normalized size = 1.78

$$\frac{e\,x^{15}}{15}+\left(\frac{d}{14}+\frac{5\,e}{7}\right)\,x^{14}+\left(\frac{10\,d}{13}+\frac{45\,e}{13}\right)\,x^{13}+\left(\frac{15\,d}{4}+10\,e\right)\,x^{12}+\left(\frac{120\,d}{11}+\frac{210\,e}{11}\right)\,x^{11}+\left(21\,d+\frac{126\,e}{5}\right)\,x^{10}+\left(28\,d+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^5*(2*d + e/5) + x^6*((15*d)/2 + (5*e)/3) + x^12*((15*d)/4 + 10*e) + x^14*
(d/14 + (5*e)/7) + x^13*((10*d)/13 + (45*e)/13) + x^9*(28*d + (70*e)/3) + x
^8*((105*d)/4 + 15*e) + x^10*(21*d + (126*e)/5) + x^7*((120*d)/7 + (45*e)/7
) + x^11*((120*d)/11 + (210*e)/11) + (d*x^4)/4 + (e*x^15)/15
```

sympy [B] time = 0.10, size = 136, normalized size = 1.97

$$\frac{dx^4}{4}+\frac{ex^{15}}{15}+x^{14}\left(\frac{d}{14}+\frac{5e}{7}\right)+x^{13}\left(\frac{10d}{13}+\frac{45e}{13}\right)+x^{12}\left(\frac{15d}{4}+10e\right)+x^{11}\left(\frac{120d}{11}+\frac{210e}{11}\right)+x^{10}\left(21d+\frac{126e}{5}\right)+x^9\left(28\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**4/4 + e*x**15/15 + x**14*(d/14 + 5*e/7) + x**13*(10*d/13 + 45*e/13) +
x**12*(15*d/4 + 10*e) + x**11*(120*d/11 + 210*e/11) + x**10*(21*d + 126*e/5
) + x**9*(28*d + 70*e/3) + x**8*(105*d/4 + 15*e) + x**7*(120*d/7 + 45*e/7)
+ x**6*(15*d/2 + 5*e/3) + x**5*(2*d + e/5)
```

3.564 $\int x^2(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=55

$$\frac{1}{13}(x+1)^{13}(d-3e)-\frac{1}{12}(x+1)^{12}(2d-3e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{14}e(x+1)^{14}$$

```
[Out] 1/11*(d-e)*(1+x)^11-1/12*(2*d-3*e)*(1+x)^12+1/13*(d-3*e)*(1+x)^13+1/14*e*(1
+x)^14
```

Rubi [**A**] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$\frac{1}{13}(x+1)^{13}(d-3e)-\frac{1}{12}(x+1)^{12}(2d-3e)+\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{14}e(x+1)^{14}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 - ((2*d - 3*e)*(1 + x)^12)/12 + ((d - 3*e)*(1 + x)^
13)/13 + (e*(1 + x)^14)/14
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int x^2(d+ex)\left(1+2x+x^2\right)^5\,dx &= \int x^2(1+x)^{10}(d+ex)\,dx\\
&= \int \left((d-e)(1+x)^{10}+(-2d+3e)(1+x)^{11}+(d-3e)(1+x)^{12}+e(1+x)^{13}\right)dx\\
&= \frac{1}{11}(d-e)(1+x)^{11}-\frac{1}{12}(2d-3e)(1+x)^{12}+\frac{1}{13}(d-3e)(1+x)^{13}+\frac{1}{14}e(1+x)^{14}
\end{aligned}$$

Mathematica [**B**] time = 0.02, size = 148, normalized size = 2.69

$$\frac{1}{13}x^{13}(d+10e)+\frac{5}{12}x^{12}(2d+9e)+\frac{15}{11}x^{11}(3d+8e)+3x^{10}(4d+7e)+\frac{14}{3}x^9(5d+6e)+\frac{21}{4}x^8(6d+5e)+\frac{30}{7}x^7(7d+4e)+\frac{5}{2}x^6(8d$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^3)/3 + ((10*d + e)*x^4)/4 + (9*d + 2*e)*x^5 + (5*(8*d + 3*e)*x^6)/2 +
(30*(7*d + 4*e)*x^7)/7 + (21*(6*d + 5*e)*x^8)/4 + (14*(5*d + 6*e)*x^9)/3 +
3*(4*d + 7*e)*x^10 + (15*(3*d + 8*e)*x^11)/11 + (5*(2*d + 9*e)*x^12)/12 + (
(d + 10*e)*x^13)/13 + (e*x^14)/14
```

fricas [B] time = 0.82, size = 133, normalized size = 2.42

$$\frac{1}{14}x^{14}e+\frac{10}{13}x^{13}e+\frac{1}{13}x^{13}d+\frac{15}{4}x^{12}e+\frac{5}{6}x^{12}d+\frac{120}{11}x^{11}e+\frac{45}{11}x^{11}d+21x^{10}e+12x^{10}d+28x^9e+\frac{70}{3}x^9d+\frac{105}{4}x^8e+\frac{63}{2}x^8d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*e + 10/13*x^13*e + 1/13*x^13*d + 15/4*x^12*e + 5/6*x^12*d + 120/1
1*x^11*e + 45/11*x^11*d + 21*x^10*e + 12*x^10*d + 28*x^9*e + 70/3*x^9*d + 1
05/4*x^8*e + 63/2*x^8*d + 120/7*x^7*e + 30*x^7*d + 15/2*x^6*e + 20*x^6*d +
2*x^5*e + 9*x^5*d + 1/4*x^4*e + 5/2*x^4*d + 1/3*x^3*d
```

giac [B] time = 0.18, size = 144, normalized size = 2.62

$$\frac{1}{14}x^{14}e+\frac{1}{13}dx^{13}+\frac{10}{13}x^{13}e+\frac{5}{6}dx^{12}+\frac{15}{4}x^{12}e+\frac{45}{11}dx^{11}+\frac{120}{11}x^{11}e+12dx^{10}+21x^{10}e+\frac{70}{3}dx^9+28x^9e+\frac{63}{2}dx^8+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/14*x^14*e + 1/13*d*x^13 + 10/13*x^13*e + 5/6*d*x^12 + 15/4*x^12*e + 45/11
*d*x^11 + 120/11*x^11*e + 12*d*x^10 + 21*x^10*e + 70/3*d*x^9 + 28*x^9*e + 6
3/2*d*x^8 + 105/4*x^8*e + 30*d*x^7 + 120/7*x^7*e + 20*d*x^6 + 15/2*x^6*e +
9*d*x^5 + 2*x^5*e + 5/2*d*x^4 + 1/4*x^4*e + 1/3*d*x^3
```

maple [B] time = 0.04, size = 130, normalized size = 2.36

$$\frac{e\,x^{14}}{14}+\frac{(d+10e)\,x^{13}}{13}+\frac{(10d+45e)\,x^{12}}{12}+\frac{(45d+120e)\,x^{11}}{11}+\frac{(120d+210e)\,x^{10}}{10}+\frac{(210d+252e)\,x^{9}}{9}+\frac{(252d+210e)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/14*e*x^14+1/13*(d+10*e)*x^13+1/12*(10*d+45*e)*x^12+1/11*(45*d+120*e)*x^11
+1/10*(120*d+210*e)*x^10+1/9*(210*d+252*e)*x^9+1/8*(252*d+210*e)*x^8+1/7*(2
10*d+120*e)*x^7+1/6*(120*d+45*e)*x^6+1/5*(45*d+10*e)*x^5+1/4*(10*d+e)*x^4+1
/3*d*x^3
```

maxima [B] time = 0.58, size = 128, normalized size = 2.33

$$\frac{1}{14}\,ex^{14}+\frac{1}{13}\,(d+10\,e)x^{13}+\frac{5}{12}\,(2\,d+9\,e)x^{12}+\frac{15}{11}\,(3\,d+8\,e)x^{11}+3\,(4\,d+7\,e)x^{10}+\frac{14}{3}\,(5\,d+6\,e)x^{9}+\frac{21}{4}\,(6\,d+5\,e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/14*e*x^14 + 1/13*(d + 10*e)*x^13 + 5/12*(2*d + 9*e)*x^12 + 15/11*(3*d + 8
*e)*x^11 + 3*(4*d + 7*e)*x^10 + 14/3*(5*d + 6*e)*x^9 + 21/4*(6*d + 5*e)*x^8
 + 30/7*(7*d + 4*e)*x^7 + 5/2*(8*d + 3*e)*x^6 + (9*d + 2*e)*x^5 + 1/4*(10*d
 + e)*x^4 + 1/3*d*x^3
```

mupad [B] time = 0.08, size = 123, normalized size = 2.24

$$\frac{e\,x^{14}}{14}+\left(\frac{d}{13}+\frac{10\,e}{13}\right)\,x^{13}+\left(\frac{5\,d}{6}+\frac{15\,e}{4}\right)\,x^{12}+\left(\frac{45\,d}{11}+\frac{120\,e}{11}\right)\,x^{11}+(12\,d+21\,e)\,x^{10}+\left(\frac{70\,d}{3}+28\,e\right)\,x^{9}+\left(\frac{63\,d}{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^4*((5*d)/2 + e/4) + x^5*(9*d + 2*e) + x^12*((5*d)/6 + (15*e)/4) + x^6*(20
*d + (15*e)/2) + x^10*(12*d + 21*e) + x^13*(d/13 + (10*e)/13) + x^9*((70*d)
/3 + 28*e) + x^7*(30*d + (120*e)/7) + x^8*((63*d)/2 + (105*e)/4) + x^11*((4
5*d)/11 + (120*e)/11) + (d*x^3)/3 + (e*x^14)/14
```

sympy [B] time = 0.10, size = 133, normalized size = 2.42

$$\frac{dx^3}{3}+\frac{ex^{14}}{14}+x^{13}\left(\frac{d}{13}+\frac{10e}{13}\right)+x^{12}\left(\frac{5d}{6}+\frac{15e}{4}\right)+x^{11}\left(\frac{45d}{11}+\frac{120e}{11}\right)+x^{10}\left(12d+21e\right)+x^{9}\left(\frac{70d}{3}+28e\right)+x^{8}\left(\frac{63d}{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**3/3 + e*x**14/14 + x**13*(d/13 + 10*e/13) + x**12*(5*d/6 + 15*e/4) + x
**11*(45*d/11 + 120*e/11) + x**10*(12*d + 21*e) + x**9*(70*d/3 + 28*e) + x*
*8*(63*d/2 + 105*e/4) + x**7*(30*d + 120*e/7) + x**6*(20*d + 15*e/2) + x**5
*(9*d + 2*e) + x**4*(5*d/2 + e/4)
```

3.565 $\int x(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=39

$$\frac{1}{12}(x+1)^{12}(d-2e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{13}e(x+1)^{13}$$

```
[Out] -1/11*(d-e)*(1+x)^11+1/12*(d-2*e)*(1+x)^12+1/13*e*(1+x)^13
```

Rubi [A] time = 0.04, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 76\}$

$$\frac{1}{12}(x+1)^{12}(d-2e)-\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{13}e(x+1)^{13}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -((d - e)*(1 + x)^11)/11 + ((d - 2*e)*(1 + x)^12)/12 + (e*(1 + x)^13)/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x(d+ex)\left(1+2x+x^2\right)^5\,dx&=\int x(1+x)^{10}(d+ex)\,dx\\&=\int\left((-d+e)(1+x)^{10}+(d-2e)(1+x)^{11}+e(1+x)^{12}\right)dx\\&=-\frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}(d-2e)(1+x)^{12}+\frac{1}{13}e(1+x)^{13}\end{aligned}$$

Mathematica [B] time = 0.02, size = 147, normalized size = 3.77

$$\frac{1}{12}x^{12}(d+10e)+\frac{5}{11}x^{11}(2d+9e)+\frac{3}{2}x^{10}(3d+8e)+\frac{10}{3}x^9(4d+7e)+\frac{21}{4}x^8(5d+6e)+6x^7(6d+5e)+5x^6(7d+4e)+3x^5(8d+$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^2)/2 + ((10*d + e)*x^3)/3 + (5*(9*d + 2*e)*x^4)/4 + 3*(8*d + 3*e)*x^5
+ 5*(7*d + 4*e)*x^6 + 6*(6*d + 5*e)*x^7 + (21*(5*d + 6*e)*x^8)/4 + (10*(4*d
 + 7*e)*x^9)/3 + (3*(3*d + 8*e)*x^10)/2 + (5*(2*d + 9*e)*x^11)/11 + ((d + 1
0*e)*x^12)/12 + (e*x^13)/13
```

fricas [B] time = 0.77, size = 133, normalized size = 3.41

$$\frac{1}{13}x^{13}e+\frac{5}{6}x^{12}e+\frac{1}{12}x^{12}d+\frac{45}{11}x^{11}e+\frac{10}{11}x^{11}d+12x^{10}e+\frac{9}{2}x^{10}d+\frac{70}{3}x^{9}e+\frac{40}{3}x^{9}d+\frac{63}{2}x^{8}e+\frac{105}{4}x^{8}d+30x^{7}e+36x^{7}d+20x^{6}e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e + 5/6*x^12*e + 1/12*x^12*d + 45/11*x^11*e + 10/11*x^11*d + 12*x
^10*e + 9/2*x^10*d + 70/3*x^9*e + 40/3*x^9*d + 63/2*x^8*e + 105/4*x^8*d + 3
0*x^7*e + 36*x^7*d + 20*x^6*e + 35*x^6*d + 9*x^5*e + 24*x^5*d + 5/2*x^4*e +
 45/4*x^4*d + 1/3*x^3*e + 10/3*x^3*d + 1/2*x^2*d
```

giac [B] time = 0.15, size = 144, normalized size = 3.69

$$\frac{1}{13}\,x^{13}e+\frac{1}{12}\,dx^{12}+\frac{5}{6}\,x^{12}e+\frac{10}{11}\,dx^{11}+\frac{45}{11}\,x^{11}e+\frac{9}{2}\,dx^{10}+12\,x^{10}e+\frac{40}{3}\,dx^{9}+\frac{70}{3}\,x^{9}e+\frac{105}{4}\,dx^{8}+\frac{63}{2}\,x^{8}e+36\,dx^{7}+30\,x^{7}e+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/13*x^13*e + 1/12*d*x^12 + 5/6*x^12*e + 10/11*d*x^11 + 45/11*x^11*e + 9/2*
d*x^10 + 12*x^10*e + 40/3*d*x^9 + 70/3*x^9*e + 105/4*d*x^8 + 63/2*x^8*e + 3
6*d*x^7 + 30*x^7*e + 35*d*x^6 + 20*x^6*e + 24*d*x^5 + 9*x^5*e + 45/4*d*x^4
+ 5/2*x^4*e + 10/3*d*x^3 + 1/3*x^3*e + 1/2*d*x^2
```

maple [B] time = 0.04, size = 130, normalized size = 3.33

$$\frac{e\,x^{13}}{13}+\frac{(d+10e)\,x^{12}}{12}+\frac{(10d+45e)\,x^{11}}{11}+\frac{(45d+120e)\,x^{10}}{10}+\frac{(120d+210e)\,x^{9}}{9}+\frac{(210d+252e)\,x^{8}}{8}+\frac{(252d+210e)\,x^{7}}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/13*e*x^13+1/12*(d+10*e)*x^12+1/11*(10*d+45*e)*x^11+1/10*(45*d+120*e)*x^10
+1/9*(120*d+210*e)*x^9+1/8*(210*d+252*e)*x^8+1/7*(252*d+210*e)*x^7+1/6*(210
*d+120*e)*x^6+1/5*(120*d+45*e)*x^5+1/4*(45*d+10*e)*x^4+1/3*(10*d+e)*x^3+1/2
*d*x^2
```

maxima [B] time = 0.56, size = 129, normalized size = 3.31

$$\frac{1}{13}\,ex^{13}+\frac{1}{12}\,(d+10\,e)x^{12}+\frac{5}{11}\,(2\,d+9\,e)x^{11}+\frac{3}{2}\,(3\,d+8\,e)x^{10}+\frac{10}{3}\,(4\,d+7\,e)x^{9}+\frac{21}{4}\,(5\,d+6\,e)x^{8}+6\,(6\,d+5\,e)x^{7}+5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/13*e*x^13 + 1/12*(d + 10*e)*x^12 + 5/11*(2*d + 9*e)*x^11 + 3/2*(3*d + 8*e
)*x^10 + 10/3*(4*d + 7*e)*x^9 + 21/4*(5*d + 6*e)*x^8 + 6*(6*d + 5*e)*x^7 +
5*(7*d + 4*e)*x^6 + 3*(8*d + 3*e)*x^5 + 5/4*(9*d + 2*e)*x^4 + 1/3*(10*d + e
)*x^3 + 1/2*d*x^2
```

mupad [B] time = 0.08, size = 123, normalized size = 3.15

$$\frac{e\,x^{13}}{13}+\left(\frac{d}{12}+\frac{5\,e}{6}\right)\,x^{12}+\left(\frac{10\,d}{11}+\frac{45\,e}{11}\right)\,x^{11}+\left(\frac{9\,d}{2}+12\,e\right)\,x^{10}+\left(\frac{40\,d}{3}+\frac{70\,e}{3}\right)\,x^{9}+\left(\frac{105\,d}{4}+\frac{63\,e}{2}\right)\,x^{8}+(36\,d+30\,e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^3*((10*d)/3 + e/3) + x^10*((9*d)/2 + 12*e) + x^12*(d/12 + (5*e)/6) + x^5*
(24*d + 9*e) + x^4*((45*d)/4 + (5*e)/2) + x^6*(35*d + 20*e) + x^7*(36*d + 3
0*e) + x^11*((10*d)/11 + (45*e)/11) + x^9*((40*d)/3 + (70*e)/3) + x^8*((105
*d)/4 + (63*e)/2) + (d*x^2)/2 + (e*x^13)/13
```

sympy [B] time = 0.10, size = 133, normalized size = 3.41

$$\frac{dx^2}{2}+\frac{ex^{13}}{13}+x^{12}\left(\frac{d}{12}+\frac{5e}{6}\right)+x^{11}\left(\frac{10d}{11}+\frac{45e}{11}\right)+x^{10}\left(\frac{9d}{2}+12e\right)+x^{9}\left(\frac{40d}{3}+\frac{70e}{3}\right)+x^{8}\left(\frac{105d}{4}+\frac{63e}{2}\right)+x^{7}\left(36d+3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x**2/2 + e*x**13/13 + x**12*(d/12 + 5*e/6) + x**11*(10*d/11 + 45*e/11) +
x**10*(9*d/2 + 12*e) + x**9*(40*d/3 + 70*e/3) + x**8*(105*d/4 + 63*e/2) + x
**7*(36*d + 30*e) + x**6*(35*d + 20*e) + x**5*(24*d + 9*e) + x**4*(45*d/4 +
 5*e/2) + x**3*(10*d/3 + e/3)
```

3.566 $\int (d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=25

$$\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{12}e(x+1)^{12}$$

```
[Out] 1/11*(d-e)*(1+x)^11+1/12*e*(1+x)^12
```

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = $\{27, 43\}$

$$\frac{1}{11}(x+1)^{11}(d-e)+\frac{1}{12}e(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] ((d - e)*(1 + x)^11)/11 + (e*(1 + x)^12)/12
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (d+ex)\left(1+2x+x^2\right)^5\,dx &= \int (1+x)^{10}(d+ex)\,dx\\ &= \int \left((d-e)(1+x)^{10}+e(1+x)^{11}\right)\,dx\\ &= \frac{1}{11}(d-e)(1+x)^{11}+\frac{1}{12}e(1+x)^{12}\end{aligned}$$

Mathematica [B] time = 0.02, size = 113, normalized size = 4.52

$$d\left(\frac{x^{11}}{11}+x^{10}+5x^9+15x^8+30x^7+42x^6+42x^5+30x^4+15x^3+5x^2+x\right)+\frac{1}{132}e\left(11x^{10}+120x^9+594x^8+176\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (e*x^2*(66 + 440*x + 1485*x^2 + 3168*x^3 + 4620*x^4 + 4752*x^5 + 3465*x^6 +
 1760*x^7 + 594*x^8 + 120*x^9 + 11*x^10))/132 + d*(x + 5*x^2 + 15*x^3 + 30*
x^4 + 42*x^5 + 42*x^6 + 30*x^7 + 15*x^8 + 5*x^9 + x^10 + x^11/11)
```

fricas [B] time = 0.58, size = 129, normalized size = 5.16

$$\frac{1}{12}x^{12}e+\frac{10}{11}x^{11}e+\frac{1}{11}x^{11}d+\frac{9}{2}x^{10}e+x^{10}d+\frac{40}{3}x^9e+5x^9d+\frac{105}{4}x^8e+15x^8d+36x^7e+30x^7d+35x^6e+42x^6d+24x^5e+42x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e + 10/11*x^11*e + 1/11*x^11*d + 9/2*x^10*e + x^10*d + 40/3*x^9*e
 + 5*x^9*d + 105/4*x^8*e + 15*x^8*d + 36*x^7*e + 30*x^7*d + 35*x^6*e + 42*x
^6*d + 24*x^5*e + 42*x^5*d + 45/4*x^4*e + 30*x^4*d + 10/3*x^3*e + 15*x^3*d
+ 1/2*x^2*e + 5*x^2*d + x*d
```

giac [B] time = 0.19, size = 140, normalized size = 5.60

$$\frac{1}{12}\,x^{12}e+\frac{1}{11}\,dx^{11}+\frac{10}{11}\,x^{11}e+dx^{10}+\frac{9}{2}\,x^{10}e+5\,dx^{9}+\frac{40}{3}\,x^{9}e+15\,dx^{8}+\frac{105}{4}\,x^{8}e+30\,dx^{7}+36\,x^{7}e+42\,dx^{6}+35\,x^{6}e+42\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/12*x^12*e + 1/11*d*x^11 + 10/11*x^11*e + d*x^10 + 9/2*x^10*e + 5*d*x^9 +
40/3*x^9*e + 15*d*x^8 + 105/4*x^8*e + 30*d*x^7 + 36*x^7*e + 42*d*x^6 + 35*x
^6*e + 42*d*x^5 + 24*x^5*e + 30*d*x^4 + 45/4*x^4*e + 15*d*x^3 + 10/3*x^3*e
+ 5*d*x^2 + 1/2*x^2*e + d*x
```

maple [B] time = 0.05, size = 127, normalized size = 5.08

$$\frac{e\,x^{12}}{12}+\frac{(d+10e)\,x^{11}}{11}+\frac{(10d+45e)\,x^{10}}{10}+\frac{(45d+120e)\,x^{9}}{9}+\frac{(120d+210e)\,x^{8}}{8}+\frac{(210d+252e)\,x^{7}}{7}+\frac{(252d+210e)\,x}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*e*x^12+1/11*(d+10*e)*x^11+1/10*(10*d+45*e)*x^10+1/9*(45*d+120*e)*x^9+1
/8*(120*d+210*e)*x^8+1/7*(210*d+252*e)*x^7+1/6*(252*d+210*e)*x^6+1/5*(210*d
+120*e)*x^5+1/4*(120*d+45*e)*x^4+1/3*(45*d+10*e)*x^3+1/2*(10*d+e)*x^2+d*x
```

maxima [B] time = 0.51, size = 126, normalized size = 5.04

$$\frac{1}{12}\,ex^{12}+\frac{1}{11}\,(d+10\,e)x^{11}+\frac{1}{2}\,(2\,d+9\,e)x^{10}+\frac{5}{3}\,(3\,d+8\,e)x^{9}+\frac{15}{4}\,(4\,d+7\,e)x^{8}+6\,(5\,d+6\,e)x^{7}+7\,(6\,d+5\,e)x^{6}+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/12*e*x^12 + 1/11*(d + 10*e)*x^11 + 1/2*(2*d + 9*e)*x^10 + 5/3*(3*d + 8*e)
*x^9 + 15/4*(4*d + 7*e)*x^8 + 6*(5*d + 6*e)*x^7 + 7*(6*d + 5*e)*x^6 + 6*(7*
d + 4*e)*x^5 + 15/4*(8*d + 3*e)*x^4 + 5/3*(9*d + 2*e)*x^3 + 1/2*(10*d + e)*
x^2 + d*x
```

mupad [B] time = 0.08, size = 118, normalized size = 4.72

$$\frac{e\,x^{12}}{12}+\left(\frac{d}{11}+\frac{10\,e}{11}\right)\,x^{11}+\left(d+\frac{9\,e}{2}\right)\,x^{10}+\left(5\,d+\frac{40\,e}{3}\right)\,x^{9}+\left(15\,d+\frac{105\,e}{4}\right)\,x^{8}+(30\,d+36\,e)\,x^{7}+(42\,d+35\,e)\,x^{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^2*(5*d + e/2) + x^3*(15*d + (10*e)/3) + x^11*(d/11 + (10*e)/11) + x^9*(5*
d + (40*e)/3) + x^5*(42*d + 24*e) + x^7*(30*d + 36*e) + x^4*(30*d + (45*e)/
4) + x^6*(42*d + 35*e) + x^8*(15*d + (105*e)/4) + d*x + (e*x^12)/12 + x^10*
(d + (9*e)/2)
```

sympy [B] time = 0.10, size = 119, normalized size = 4.76

$$dx+\frac{ex^{12}}{12}+x^{11}\left(\frac{d}{11}+\frac{10e}{11}\right)+x^{10}\left(d+\frac{9e}{2}\right)+x^{9}\left(5d+\frac{40e}{3}\right)+x^{8}\left(15d+\frac{105e}{4}\right)+x^{7}\left(30d+36e\right)+x^{6}\left(42d+35e\right)+x^{5}\left(42\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] d*x + e*x**12/12 + x**11*(d/11 + 10*e/11) + x**10*(d + 9*e/2) + x**9*(5*d +
 40*e/3) + x**8*(15*d + 105*e/4) + x**7*(30*d + 36*e) + x**6*(42*d + 35*e)
+ x**5*(42*d + 24*e) + x**4*(30*d + 45*e/4) + x**3*(15*d + 10*e/3) + x**2*(
5*d + e/2)
```

3.567 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx$

Optimal. Leaf size=87

$$\frac{dx^{10}}{10}+\frac{10dx^9}{9}+\frac{45dx^8}{8}+\frac{120dx^7}{7}+35dx^6+\frac{252dx^5}{5}+\frac{105dx^4}{2}+40dx^3+\frac{45dx^2}{2}+10dx+d\log(x)+\frac{1}{11}e(x+1)^{11}$$

```
[Out] 10*d*x+45/2*d*x^2+40*d*x^3+105/2*d*x^4+252/5*d*x^5+35*d*x^6+120/7*d*x^7+45/
8*d*x^8+10/9*d*x^9+1/10*d*x^10+1/11*e*(1+x)^11+d*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$, Rules used = {27, 80, 43}

$$\frac{dx^{10}}{10}+\frac{10dx^9}{9}+\frac{45dx^8}{8}+\frac{120dx^7}{7}+35dx^6+\frac{252dx^5}{5}+\frac{105dx^4}{2}+40dx^3+\frac{45dx^2}{2}+10dx+d\log(x)+\frac{1}{11}e(x+1)^{11}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] 10*d*x + (45*d*x^2)/2 + 40*d*x^3 + (105*d*x^4)/2 + (252*d*x^5)/5 + 35*d*x^6
 + (120*d*x^7)/7 + (45*d*x^8)/8 + (10*d*x^9)/9 + (d*x^10)/10 + (e*(1 + x)^1
1)/11 + d*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x}\,dx\\ &= \frac{1}{11}e(1+x)^{11}+d\int \frac{(1+x)^{10}}{x}\,dx\\ &= \frac{1}{11}e(1+x)^{11}+d\int \left(10+\frac{1}{x}+45x+120x^2+210x^3+252x^4+210x^5+120x^6\right.\\ &= 10dx+\frac{45dx^2}{2}+40dx^3+\frac{105dx^4}{2}+\frac{252dx^5}{5}+35dx^6+\frac{120dx^7}{7}+\frac{45dx^8}{8}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.98

$$d\left(\frac{x^{10}}{10}+\frac{10x^9}{9}+\frac{45x^8}{8}+\frac{120x^7}{7}+35x^6+\frac{252x^5}{5}+\frac{105x^4}{2}+40x^3+\frac{45x^2}{2}+10x+\frac{7381}{2520}\right)+d\log(-x)+\frac{1}{11}e(x+1)^{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] (e*(1 + x)^11)/11 + d*(7381/2520 + 10*x + (45*x^2)/2 + 40*x^3 + (105*x^4)/2
 + (252*x^5)/5 + 35*x^6 + (120*x^7)/7 + (45*x^8)/8 + (10*x^9)/9 + x^10/10)
+ d*Log[-x]
```

fricas [A] time = 1.10, size = 124, normalized size = 1.43

$$\frac{1}{11}\,ex^{11}+\frac{1}{10}\,(d+10\,e)x^{10}+\frac{5}{9}\,(2\,d+9\,e)x^{9}+\frac{15}{8}\,(3\,d+8\,e)x^{8}+\frac{30}{7}\,(4\,d+7\,e)x^{7}+7\,(5\,d+6\,e)x^{6}+\frac{42}{5}\,(6\,d+5\,e)x^{5}+\frac{15}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="fricas")
```

```
[Out] 1/11*e*x^11 + 1/10*(d + 10*e)*x^10 + 5/9*(2*d + 9*e)*x^9 + 15/8*(3*d + 8*e)
*x^8 + 30/7*(4*d + 7*e)*x^7 + 7*(5*d + 6*e)*x^6 + 42/5*(6*d + 5*e)*x^5 + 15
/2*(7*d + 4*e)*x^4 + 5*(8*d + 3*e)*x^3 + 5/2*(9*d + 2*e)*x^2 + (10*d + e)*x
 + d*log(x)
```

giac [A] time = 0.17, size = 137, normalized size = 1.57

$$\frac{1}{11}\,x^{11}e+\frac{1}{10}\,dx^{10}+x^{10}e+\frac{10}{9}\,dx^{9}+5\,x^{9}e+\frac{45}{8}\,dx^{8}+15\,x^{8}e+\frac{120}{7}\,dx^{7}+30\,x^{7}e+35\,dx^{6}+42\,x^{6}e+\frac{252}{5}\,dx^{5}+42\,x^{5}e+\frac{105}{2}\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="giac")
```

```
[Out] 1/11*x^11*e + 1/10*d*x^10 + x^10*e + 10/9*d*x^9 + 5*x^9*e + 45/8*d*x^8 + 15
*x^8*e + 120/7*d*x^7 + 30*x^7*e + 35*d*x^6 + 42*x^6*e + 252/5*d*x^5 + 42*x^
5*e + 105/2*d*x^4 + 30*x^4*e + 40*d*x^3 + 15*x^3*e + 45/2*d*x^2 + 5*x^2*e +
 10*d*x + x*e + d*log(abs(x))
```

maple [A] time = 0.04, size = 126, normalized size = 1.45

$$\frac{e\,x^{11}}{11}+\frac{d\,x^{10}}{10}+e\,x^{10}+\frac{10d\,x^{9}}{9}+5e\,x^{9}+\frac{45d\,x^{8}}{8}+15e\,x^{8}+\frac{120d\,x^{7}}{7}+30e\,x^{7}+35d\,x^{6}+42e\,x^{6}+\frac{252d\,x^{5}}{5}+42e\,x^{5}+\frac{105d\,x^{4}}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x,x)
```

```
[Out] 1/11*e*x^11+1/10*d*x^10+e*x^10+10/9*d*x^9+5*e*x^9+45/8*d*x^8+15*e*x^8+120/7
*d*x^7+30*e*x^7+35*d*x^6+42*e*x^6+252/5*d*x^5+42*e*x^5+105/2*d*x^4+30*e*x^4
+40*d*x^3+15*e*x^3+45/2*d*x^2+5*e*x^2+10*d*x+e*x+d*ln(x)
```

maxima [A] time = 0.63, size = 124, normalized size = 1.43

$$\frac{1}{11}\,ex^{11}+\frac{1}{10}\,(d+10\,e)x^{10}+\frac{5}{9}\,(2\,d+9\,e)x^{9}+\frac{15}{8}\,(3\,d+8\,e)x^{8}+\frac{30}{7}\,(4\,d+7\,e)x^{7}+7\,(5\,d+6\,e)x^{6}+\frac{42}{5}\,(6\,d+5\,e)x^{5}+\frac{15}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x,x, algorithm="maxima")
```

```
[Out] 1/11*e*x^11 + 1/10*(d + 10*e)*x^10 + 5/9*(2*d + 9*e)*x^9 + 15/8*(3*d + 8*e)
*x^8 + 30/7*(4*d + 7*e)*x^7 + 7*(5*d + 6*e)*x^6 + 42/5*(6*d + 5*e)*x^5 + 15
```

```
/2*(7*d + 4*e)*x^4 + 5*(8*d + 3*e)*x^3 + 5/2*(9*d + 2*e)*x^2 + (10*d + e)*x
 + d*log(x)
```

mupad [B] time = 0.08, size = 115, normalized size = 1.32

$$x^9\,\left(\frac{10\,d}{9}+5\,e\right)+x^2\,\left(\frac{45\,d}{2}+5\,e\right)+x^3\,\left(40\,d+15\,e\right)+x^8\,\left(\frac{45\,d}{8}+15\,e\right)+x^6\,\left(35\,d+42\,e\right)+x^4\,\left(\frac{105\,d}{2}+30\,e\right)+x^7\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x,x)
```

```
[Out] x^9*((10*d)/9 + 5*e) + x^2*((45*d)/2 + 5*e) + x^3*(40*d + 15*e) + x^8*((45*
d)/8 + 15*e) + x^6*(35*d + 42*e) + x^4*((105*d)/2 + 30*e) + x^7*((120*d)/7
+ 30*e) + x^5*((252*d)/5 + 42*e) + x*(10*d + e) + (e*x^11)/11 + d*log(x) +
x^10*(d/10 + e)
```

sympy [A] time = 0.31, size = 117, normalized size = 1.34

$$d\log\left(x\right)+\frac{ex^{11}}{11}+x^{10}\left(\frac{d}{10}+e\right)+x^{9}\left(\frac{10d}{9}+5e\right)+x^{8}\left(\frac{45d}{8}+15e\right)+x^{7}\left(\frac{120d}{7}+30e\right)+x^{6}\left(35d+42e\right)+x^{5}\left(\frac{252d}{5}+4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x,x)
```

```
[Out] d*log(x) + e*x**11/11 + x**10*(d/10 + e) + x**9*(10*d/9 + 5*e) + x**8*(45*d
/8 + 15*e) + x**7*(120*d/7 + 30*e) + x**6*(35*d + 42*e) + x**5*(252*d/5 + 4
2*e) + x**4*(105*d/2 + 30*e) + x**3*(40*d + 15*e) + x**2*(45*d/2 + 5*e) + x
*(10*d + e)
```

3.568 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2}\,dx$

Optimal. Leaf size=139

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)$$

```
[Out] -d/x+5*(9*d+2*e)*x+15/2*(8*d+3*e)*x^2+10*(7*d+4*e)*x^3+21/2*(6*d+5*e)*x^4+4
2/5*(5*d+6*e)*x^5+5*(4*d+7*e)*x^6+15/7*(3*d+8*e)*x^7+5/8*(2*d+9*e)*x^8+1/9*
(d+10*e)*x^9+1/10*e*x^10+(10*d+e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -(d/x) + 5*(9*d + 2*e)*x + (15*(8*d + 3*e)*x^2)/2 + 10*(7*d + 4*e)*x^3 + (2
1*(6*d + 5*e)*x^4)/2 + (42*(5*d + 6*e)*x^5)/5 + 5*(4*d + 7*e)*x^6 + (15*(3*
d + 8*e)*x^7)/7 + (5*(2*d + 9*e)*x^8)/8 + ((d + 10*e)*x^9)/9 + (e*x^10)/10
+ (10*d + e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^2}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^2}\,dx\\ &= \int \left(5(9d+2e)+\frac{d}{x^2}+\frac{10d+e}{x}+15(8d+3e)x+30(7d+4e)x^2+42(6d+5e)x^3\right.\\ &= -\frac{d}{x}+5(9d+2e)x+\frac{15}{2}(8d+3e)x^2+10(7d+4e)x^3+\frac{21}{2}(6d+5e)x^4+\frac{42}{5}(5d+6\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.00

$$\frac{1}{9}x^9(d+10e)+\frac{5}{8}x^8(2d+9e)+\frac{15}{7}x^7(3d+8e)+5x^6(4d+7e)+\frac{42}{5}x^5(5d+6e)+\frac{21}{2}x^4(6d+5e)+10x^3(7d+4e)+\frac{15}{2}x^2(8d+3e)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -(d/x) + 5*(9*d + 2*e)*x + (15*(8*d + 3*e)*x^2)/2 + 10*(7*d + 4*e)*x^3 + (2
1*(6*d + 5*e)*x^4)/2 + (42*(5*d + 6*e)*x^5)/5 + 5*(4*d + 7*e)*x^6 + (15*(3*
d + 8*e)*x^7)/7 + (5*(2*d + 9*e)*x^8)/8 + ((d + 10*e)*x^9)/9 + (e*x^10)/10
+ (10*d + e)*Log[x]
```

fricas [A] time = 0.64, size = 131, normalized size = 0.94

$$252\,ex^{11}+280\,(d+10\,e)x^{10}+1575\,(2\,d+9\,e)x^{9}+5400\,(3\,d+8\,e)x^{8}+12600\,(4\,d+7\,e)x^{7}+21168\,(5\,d+6\,e)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="fricas")
```

```
[Out] 1/2520*(252*e*x^11 + 280*(d + 10*e)*x^10 + 1575*(2*d + 9*e)*x^9 + 5400*(3*d
 + 8*e)*x^8 + 12600*(4*d + 7*e)*x^7 + 21168*(5*d + 6*e)*x^6 + 26460*(6*d +
5*e)*x^5 + 25200*(7*d + 4*e)*x^4 + 18900*(8*d + 3*e)*x^3 + 12600*(9*d + 2*e
)*x^2 + 2520*(10*d + e)*x*log(x) - 2520*d)/x
```

giac [A] time = 0.16, size = 137, normalized size = 0.99

$$\frac{1}{10}\,x^{10}e+\frac{1}{9}\,dx^{9}+\frac{10}{9}\,x^{9}e+\frac{5}{4}\,dx^{8}+\frac{45}{8}\,x^{8}e+\frac{45}{7}\,dx^{7}+\frac{120}{7}\,x^{7}e+20\,dx^{6}+35\,x^{6}e+42\,dx^{5}+\frac{252}{5}\,x^{5}e+63\,dx^{4}+\frac{105}{2}\,x^{4}e+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="giac")
```

```
[Out] 1/10*x^10*e + 1/9*d*x^9 + 10/9*x^9*e + 5/4*d*x^8 + 45/8*x^8*e + 45/7*d*x^7
+ 120/7*x^7*e + 20*d*x^6 + 35*x^6*e + 42*d*x^5 + 252/5*x^5*e + 63*d*x^4 + 1
05/2*x^4*e + 70*d*x^3 + 40*x^3*e + 60*d*x^2 + 45/2*x^2*e + 45*d*x + 10*x*e
+ (10*d + e)*log(abs(x)) - d/x
```

maple [A] time = 0.06, size = 127, normalized size = 0.91

$$\frac{e\,x^{10}}{10}+\frac{d\,x^{9}}{9}+\frac{10e\,x^{9}}{9}+\frac{5d\,x^{8}}{4}+\frac{45e\,x^{8}}{8}+\frac{45d\,x^{7}}{7}+\frac{120e\,x^{7}}{7}+20d\,x^{6}+35e\,x^{6}+42d\,x^{5}+\frac{252e\,x^{5}}{5}+63d\,x^{4}+\frac{105e\,x^{4}}{2}+70d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^2,x)
```

```
[Out] 1/10*e*x^10+1/9*d*x^9+10/9*e*x^9+5/4*d*x^8+45/8*e*x^8+45/7*d*x^7+120/7*e*x^
7+20*d*x^6+35*e*x^6+42*d*x^5+252/5*e*x^5+63*d*x^4+105/2*e*x^4+70*d*x^3+40*e
*x^3+60*d*x^2+45/2*e*x^2+45*d*x+10*e*x-d/x+10*d*ln(x)+e*ln(x)
```

maxima [A] time = 0.66, size = 125, normalized size = 0.90

$$\frac{1}{10}\,ex^{10}+\frac{1}{9}\,(d+10\,e)x^{9}+\frac{5}{8}\,(2\,d+9\,e)x^{8}+\frac{15}{7}\,(3\,d+8\,e)x^{7}+5\,(4\,d+7\,e)x^{6}+\frac{42}{5}\,(5\,d+6\,e)x^{5}+\frac{21}{2}\,(6\,d+5\,e)x^{4}+10$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^2,x, algorithm="maxima")
```

```
[Out] 1/10*e*x^10 + 1/9*(d + 10*e)*x^9 + 5/8*(2*d + 9*e)*x^8 + 15/7*(3*d + 8*e)*x
^7 + 5*(4*d + 7*e)*x^6 + 42/5*(5*d + 6*e)*x^5 + 21/2*(6*d + 5*e)*x^4 + 10*(
7*d + 4*e)*x^3 + 15/2*(8*d + 3*e)*x^2 + 5*(9*d + 2*e)*x + (10*d + e)*log(x)
 - d/x
```

mupad [**B**] time = 0.09, size = 118, normalized size = 0.85

$$x^9\left(\frac{d}{9}+\frac{10\,e}{9}\right)+x^6\,(20\,d+35\,e)+x^8\left(\frac{5\,d}{4}+\frac{45\,e}{8}\right)+x^2\left(60\,d+\frac{45\,e}{2}\right)+x^3\,(70\,d+40\,e)+x^4\left(63\,d+\frac{105\,e}{2}\right)+x^7\left(\frac{45}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^2,x)
```

```
[Out] x^9*(d/9 + (10*e)/9) + x^6*(20*d + 35*e) + x^8*((5*d)/4 + (45*e)/8) + x^2*(
60*d + (45*e)/2) + x^3*(70*d + 40*e) + x^4*(63*d + (105*e)/2) + x^7*((45*d)
/7 + (120*e)/7) + x^5*(42*d + (252*e)/5) - d/x + (e*x^10)/10 + x*(45*d + 10
*e) + log(x)*(10*d + e)
```

sympy [**A**] time = 0.36, size = 121, normalized size = 0.87

$$-\frac{d}{x}+\frac{ex^{10}}{10}+x^9\left(\frac{d}{9}+\frac{10e}{9}\right)+x^8\left(\frac{5d}{4}+\frac{45e}{8}\right)+x^7\left(\frac{45d}{7}+\frac{120e}{7}\right)+x^6\,(20d+35e)+x^5\left(42d+\frac{252e}{5}\right)+x^4\left(63d+\frac{105e}{2}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**2,x)
```

```
[Out] -d/x + e*x**10/10 + x**9*(d/9 + 10*e/9) + x**8*(5*d/4 + 45*e/8) + x**7*(45*
d/7 + 120*e/7) + x**6*(20*d + 35*e) + x**5*(42*d + 252*e/5) + x**4*(63*d +
105*e/2) + x**3*(70*d + 40*e) + x**2*(60*d + 45*e/2) + x*(45*d + 10*e) + (1
0*d + e)*log(x)
```

3.569 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^3}\,dx$

Optimal. Leaf size=138

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)$$

```
[Out] -1/2*d/x^2+(-10*d-e)/x+15*(8*d+3*e)*x+15*(7*d+4*e)*x^2+14*(6*d+5*e)*x^3+21/
2*(5*d+6*e)*x^4+6*(4*d+7*e)*x^5+5/2*(3*d+8*e)*x^6+5/7*(2*d+9*e)*x^7+1/8*(d+
10*e)*x^8+1/9*e*x^9+5*(9*d+2*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = $\{27, 76\}$

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -d/(2*x^2) - (10*d + e)/x + 15*(8*d + 3*e)*x + 15*(7*d + 4*e)*x^2 + 14*(6*d
 + 5*e)*x^3 + (21*(5*d + 6*e)*x^4)/2 + 6*(4*d + 7*e)*x^5 + (5*(3*d + 8*e)*x
^6)/2 + (5*(2*d + 9*e)*x^7)/7 + ((d + 10*e)*x^8)/8 + (e*x^9)/9 + 5*(9*d + 2
*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^3}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^3}\,dx\\ &= \int \left(15(8d+3e)+\frac{d}{x^3}+\frac{10d+e}{x^2}+\frac{5(9d+2e)}{x}+30(7d+4e)x+42(6d+5e)x^2\right.\\ &= -\frac{d}{2x^2}-\frac{10d+e}{x}+15(8d+3e)x+15(7d+4e)x^2+14(6d+5e)x^3+\frac{21}{2}(5d+6\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{1}{8}x^8(d+10e)+\frac{5}{7}x^7(2d+9e)+\frac{5}{2}x^6(3d+8e)+6x^5(4d+7e)+\frac{21}{2}x^4(5d+6e)+14x^3(6d+5e)+15x^2(7d+4e)+15x(8d+3e)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/2*d/x^2 + (-10*d - e)/x + 15*(8*d + 3*e)*x + 15*(7*d + 4*e)*x^2 + 14*(6*
d + 5*e)*x^3 + (21*(5*d + 6*e)*x^4)/2 + 6*(4*d + 7*e)*x^5 + (5*(3*d + 8*e)*
x^6)/2 + (5*(2*d + 9*e)*x^7)/7 + ((d + 10*e)*x^8)/8 + (e*x^9)/9 + 5*(9*d +
2*e)*Log[x]
```

fricas [A] time = 0.77, size = 131, normalized size = 0.95

$$\frac{56\,ex^{11} + 63\,(d + 10\,e)x^{10} + 360\,(2\,d + 9\,e)x^{9} + 1260\,(3\,d + 8\,e)x^{8} + 3024\,(4\,d + 7\,e)x^{7} + 5292\,(5\,d + 6\,e)x^{6} + 705}{504\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="fricas")
```

```
[Out] 1/504*(56*e*x^11 + 63*(d + 10*e)*x^10 + 360*(2*d + 9*e)*x^9 + 1260*(3*d + 8
*e)*x^8 + 3024*(4*d + 7*e)*x^7 + 5292*(5*d + 6*e)*x^6 + 7056*(6*d + 5*e)*x^
5 + 7560*(7*d + 4*e)*x^4 + 7560*(8*d + 3*e)*x^3 + 2520*(9*d + 2*e)*x^2*log(
x) - 504*(10*d + e)*x - 252*d)/x^2
```

giac [A] time = 0.16, size = 137, normalized size = 0.99

$$\frac{1}{9}\,x^{9}e+\frac{1}{8}\,dx^{8}+\frac{5}{4}\,x^{8}e+\frac{10}{7}\,dx^{7}+\frac{45}{7}\,x^{7}e+\frac{15}{2}\,dx^{6}+20\,x^{6}e+24\,dx^{5}+42\,x^{5}e+\frac{105}{2}\,dx^{4}+63\,x^{4}e+84\,dx^{3}+70\,x^{3}e+105\,dx^{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="giac")
```

```
[Out] 1/9*x^9*e + 1/8*d*x^8 + 5/4*x^8*e + 10/7*d*x^7 + 45/7*x^7*e + 15/2*d*x^6 +
20*x^6*e + 24*d*x^5 + 42*x^5*e + 105/2*d*x^4 + 63*x^4*e + 84*d*x^3 + 70*x^3
*e + 105*d*x^2 + 60*x^2*e + 120*d*x + 45*x*e + 5*(9*d + 2*e)*log(abs(x)) -
1/2*(2*(10*d + e)*x + d)/x^2
```

maple [A] time = 0.08, size = 128, normalized size = 0.93

$$\frac{e\,x^{9}}{9}+\frac{d\,x^{8}}{8}+\frac{5e\,x^{8}}{4}+\frac{10d\,x^{7}}{7}+\frac{45e\,x^{7}}{7}+\frac{15d\,x^{6}}{2}+20e\,x^{6}+24d\,x^{5}+42e\,x^{5}+\frac{105d\,x^{4}}{2}+63e\,x^{4}+84d\,x^{3}+70e\,x^{3}+105d\,x^{2}+60$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^3,x)
```

```
[Out] 1/9*e*x^9+1/8*d*x^8+5/4*e*x^8+10/7*d*x^7+45/7*e*x^7+15/2*d*x^6+20*e*x^6+24*
d*x^5+42*e*x^5+105/2*d*x^4+63*e*x^4+84*d*x^3+70*e*x^3+105*d*x^2+60*e*x^2+12
0*d*x+45*e*x-1/2*d/x^2-10*d/x-e/x+45*d*ln(x)+10*e*ln(x)
```

maxima [A] time = 0.51, size = 125, normalized size = 0.91

$$\frac{1}{9}\,ex^{9}+\frac{1}{8}\,(d + 10\,e)x^{8}+\frac{5}{7}\,(2\,d + 9\,e)x^{7}+\frac{5}{2}\,(3\,d + 8\,e)x^{6}+6\,(4\,d + 7\,e)x^{5}+\frac{21}{2}\,(5\,d + 6\,e)x^{4}+14\,(6\,d + 5\,e)x^{3}+15\,(7\,d +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^3,x, algorithm="maxima")
```

```
[Out] 1/9*e*x^9 + 1/8*(d + 10*e)*x^8 + 5/7*(2*d + 9*e)*x^7 + 5/2*(3*d + 8*e)*x^6
+ 6*(4*d + 7*e)*x^5 + 21/2*(5*d + 6*e)*x^4 + 14*(6*d + 5*e)*x^3 + 15*(7*d +
 4*e)*x^2 + 15*(8*d + 3*e)*x + 5*(9*d + 2*e)*log(x) - 1/2*(2*(10*d + e)*x +
 d)/x^2
```

mupad [B] time = 0.08, size = 119, normalized size = 0.86

$$x^8 \left(\frac{d}{8} + \frac{5\,e}{4}\right)+x^6 \left(\frac{15\,d}{2} + 20\,e\right)+x^5 \,(24\,d + 42\,e)+x^7 \left(\frac{10\,d}{7} + \frac{45\,e}{7}\right)+x^3 \,(84\,d + 70\,e)+x^2 \,(105\,d + 60\,e)+x^4 \left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^3,x)
```

```
[Out] x^8*(d/8 + (5*e)/4) + x^6*((15*d)/2 + 20*e) + x^5*(24*d + 42*e) + x^7*((10*
d)/7 + (45*e)/7) + x^3*(84*d + 70*e) + x^2*(105*d + 60*e) + x^4*((105*d)/2
+ 63*e) + log(x)*(45*d + 10*e) + (e*x^9)/9 - (d/2 + x*(10*d + e))/x^2 + x*(
120*d + 45*e)
```

sympy [A] time = 0.45, size = 122, normalized size = 0.88

$$\frac{ex^9}{9}+x^8 \left(\frac{d}{8} + \frac{5e}{4}\right)+x^7 \left(\frac{10d}{7} + \frac{45e}{7}\right)+x^6 \left(\frac{15d}{2} + 20e\right)+x^5 \,(24d + 42e)+x^4 \left(\frac{105d}{2} + 63e\right)+x^3 \,(84d + 70e)+x^2 \,(10$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**3,x)
```

```
[Out] e*x**9/9 + x**8*(d/8 + 5*e/4) + x**7*(10*d/7 + 45*e/7) + x**6*(15*d/2 + 20*
e) + x**5*(24*d + 42*e) + x**4*(105*d/2 + 63*e) + x**3*(84*d + 70*e) + x**2
*(105*d + 60*e) + x*(120*d + 45*e) + 5*(9*d + 2*e)*log(x) + (-d + x*(-20*d
- 2*e))/(2*x**2)
```

3.570 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx$

Optimal. Leaf size=138

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)-\frac{10d+e}{2x^2}+30x(7d+4e)-\frac{5(9d+}{x}$$

```
[Out] -1/3*d/x^3+1/2*(-10*d-e)/x^2-5*(9*d+2*e)/x+30*(7*d+4*e)*x+21*(6*d+5*e)*x^2+
14*(5*d+6*e)*x^3+15/2*(4*d+7*e)*x^4+3*(3*d+8*e)*x^5+5/6*(2*d+9*e)*x^6+1/7*(
d+10*e)*x^7+1/8*e*x^8+15*(8*d+3*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {27, 76}

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)-\frac{10d+e}{2x^2}+30x(7d+4e)-\frac{5(9d+}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -d/(3*x^3) - (10*d + e)/(2*x^2) - (5*(9*d + 2*e))/x + 30*(7*d + 4*e)*x + 21
*(6*d + 5*e)*x^2 + 14*(5*d + 6*e)*x^3 + (15*(4*d + 7*e)*x^4)/2 + 3*(3*d + 8
*e)*x^5 + (5*(2*d + 9*e)*x^6)/6 + ((d + 10*e)*x^7)/7 + (e*x^8)/8 + 15*(8*d
+ 3*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^4}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^4}\,dx\\
&= \int \left(30(7d+4e)+\frac{d}{x^4}+\frac{10d+e}{x^3}+\frac{5(9d+2e)}{x^2}+\frac{15(8d+3e)}{x}+42(6d+5e)x+42\right.\\
&= -\frac{d}{3x^3}-\frac{10d+e}{2x^2}-\frac{5(9d+2e)}{x}+30(7d+4e)x+21(6d+5e)x^2+14(5d+6e)x^3+
\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{1}{7}x^7(d+10e)+\frac{5}{6}x^6(2d+9e)+3x^5(3d+8e)+\frac{15}{2}x^4(4d+7e)+14x^3(5d+6e)+21x^2(6d+5e)+\frac{-10d-e}{2x^2}+30x(7d+4e)-\frac{5(9d}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/3*d/x^3 + (-10*d - e)/(2*x^2) - (5*(9*d + 2*e))/x + 30*(7*d + 4*e)*x + 2
1*(6*d + 5*e)*x^2 + 14*(5*d + 6*e)*x^3 + (15*(4*d + 7*e)*x^4)/2 + 3*(3*d +
8*e)*x^5 + (5*(2*d + 9*e)*x^6)/6 + ((d + 10*e)*x^7)/7 + (e*x^8)/8 + 15*(8*d
 + 3*e)*Log[x]
```

fricas [**A**] time = 0.96, size = 131, normalized size = 0.95

$$\frac{21\,ex^{11} + 24\,(d + 10\,e)x^{10} + 140\,(2\,d + 9\,e)x^{9} + 504\,(3\,d + 8\,e)x^{8} + 1260\,(4\,d + 7\,e)x^{7} + 2352\,(5\,d + 6\,e)x^{6} + 35}{168\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="fricas")
```

```
[Out] 1/168*(21*e*x^11 + 24*(d + 10*e)*x^10 + 140*(2*d + 9*e)*x^9 + 504*(3*d + 8*
e)*x^8 + 1260*(4*d + 7*e)*x^7 + 2352*(5*d + 6*e)*x^6 + 3528*(6*d + 5*e)*x^5
 + 5040*(7*d + 4*e)*x^4 + 2520*(8*d + 3*e)*x^3*log(x) - 840*(9*d + 2*e)*x^2
 - 84*(10*d + e)*x - 56*d)/x^3
```

giac [**A**] time = 0.16, size = 139, normalized size = 1.01

$$\frac{1}{8}\,x^{8}e+\frac{1}{7}\,dx^{7}+\frac{10}{7}\,x^{7}e+\frac{5}{3}\,dx^{6}+\frac{15}{2}\,x^{6}e+9\,dx^{5}+24\,x^{5}e+30\,dx^{4}+\frac{105}{2}\,x^{4}e+70\,dx^{3}+84\,x^{3}e+126\,dx^{2}+105\,x^{2}e+210\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="giac")
```

```
[Out] 1/8*x^8*e + 1/7*d*x^7 + 10/7*x^7*e + 5/3*d*x^6 + 15/2*x^6*e + 9*d*x^5 + 24*
x^5*e + 30*d*x^4 + 105/2*x^4*e + 70*d*x^3 + 84*x^3*e + 126*d*x^2 + 105*x^2*
e + 210*d*x + 120*x*e + 15*(8*d + 3*e)*log(abs(x)) - 1/6*(30*(9*d + 2*e)*x^
2 + 3*(10*d + e)*x + 2*d)/x^3
```

maple [**A**] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^{8}}{8}+\frac{d\,x^{7}}{7}+\frac{10e\,x^{7}}{7}+\frac{5d\,x^{6}}{3}+\frac{15e\,x^{6}}{2}+9d\,x^{5}+24e\,x^{5}+30d\,x^{4}+\frac{105e\,x^{4}}{2}+70d\,x^{3}+84e\,x^{3}+126d\,x^{2}+105e\,x^{2}+210dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^4,x)
```

```
[Out] 1/8*e*x^8+1/7*d*x^7+10/7*e*x^7+5/3*d*x^6+15/2*e*x^6+9*d*x^5+24*e*x^5+30*d*x
^4+105/2*e*x^4+70*d*x^3+84*e*x^3+126*d*x^2+105*e*x^2+210*d*x+120*e*x-1/3*d/
x^3-5*d/x^2-1/2*e/x^2-45*d/x-10*e/x+120*d*ln(x)+45*e*ln(x)
```

maxima [**A**] time = 0.51, size = 127, normalized size = 0.92

$$\frac{1}{8}\,ex^{8}+\frac{1}{7}\,(d+10\,e)x^{7}+\frac{5}{6}\,(2\,d+9\,e)x^{6}+3\,(3\,d+8\,e)x^{5}+\frac{15}{2}\,(4\,d+7\,e)x^{4}+14\,(5\,d+6\,e)x^{3}+21\,(6\,d+5\,e)x^{2}+30\,(7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^4,x, algorithm="maxima")
```

```
[Out] 1/8*e*x^8 + 1/7*(d + 10*e)*x^7 + 5/6*(2*d + 9*e)*x^6 + 3*(3*d + 8*e)*x^5 +
15/2*(4*d + 7*e)*x^4 + 14*(5*d + 6*e)*x^3 + 21*(6*d + 5*e)*x^2 + 30*(7*d +
4*e)*x + 15*(8*d + 3*e)*log(x) - 1/6*(30*(9*d + 2*e)*x^2 + 3*(10*d + e)*x +
 2*d)/x^3
```

mupad **[B]** time = 0.07, size = 121, normalized size = 0.88

$$x^6\,\left(\frac{5\,d}{3}+\frac{15\,e}{2}\right)+x^7\,\left(\frac{d}{7}+\frac{10\,e}{7}\right)+x^5\,\left(9\,d+24\,e\right)+x^4\,\left(30\,d+\frac{105\,e}{2}\right)+x^3\,\left(70\,d+84\,e\right)+x^2\,\left(126\,d+105\,e\right)+\ln(x)\,(1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^4,x)
```

```
[Out] x^6*((5*d)/3 + (15*e)/2) + x^7*(d/7 + (10*e)/7) + x^5*(9*d + 24*e) + x^4*(3
0*d + (105*e)/2) + x^3*(70*d + 84*e) + x^2*(126*d + 105*e) + log(x)*(120*d
+ 45*e) - (d/3 + x^2*(45*d + 10*e) + x*(5*d + e/2))/x^3 + (e*x^8)/8 + x*(21
0*d + 120*e)
```

sympy **[A]** time = 0.65, size = 124, normalized size = 0.90

$$\frac{ex^8}{8}+x^7\left(\frac{d}{7}+\frac{10e}{7}\right)+x^6\left(\frac{5d}{3}+\frac{15e}{2}\right)+x^5\,(9d+24e)+x^4\left(30d+\frac{105e}{2}\right)+x^3\,(70d+84e)+x^2\,(126d+105e)+x\,(210d+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**4,x)
```

```
[Out] e*x**8/8 + x**7*(d/7 + 10*e/7) + x**6*(5*d/3 + 15*e/2) + x**5*(9*d + 24*e)
+ x**4*(30*d + 105*e/2) + x**3*(70*d + 84*e) + x**2*(126*d + 105*e) + x*(21
0*d + 120*e) + 15*(8*d + 3*e)*log(x) + (-2*d + x**2*(-270*d - 60*e) + x*(-3
0*d - 3*e))/(6*x**3)
```

3.571 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx$

Optimal. Leaf size=137

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)-\frac{10d+e}{3x^3}+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}+42x(6d+5e)-\frac{15(8d}{}$$

```
[Out] -1/4*d/x^4+1/3*(-10*d-e)/x^3-5/2*(9*d+2*e)/x^2-15*(8*d+3*e)/x+42*(6*d+5*e)*
x+21*(5*d+6*e)*x^2+10*(4*d+7*e)*x^3+15/4*(3*d+8*e)*x^4+(2*d+9*e)*x^5+1/6*(d
+10*e)*x^6+1/7*e*x^7+30*(7*d+4*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = $\{27, 76\}$

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}-\frac{10d+e}{3x^3}+42x(6d+5e)-\frac{15(8d}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -d/(4*x^4) - (10*d + e)/(3*x^3) - (5*(9*d + 2*e))/(2*x^2) - (15*(8*d + 3*e)
)/x + 42*(6*d + 5*e)*x + 21*(5*d + 6*e)*x^2 + 10*(4*d + 7*e)*x^3 + (15*(3*d
 + 8*e)*x^4)/4 + (2*d + 9*e)*x^5 + ((d + 10*e)*x^6)/6 + (e*x^7)/7 + 30*(7*d
 + 4*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^5}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^5}\,dx\\ &= \int \left(42(6d+5e)+\frac{d}{x^5}+\frac{10d+e}{x^4}+\frac{5(9d+2e)}{x^3}+\frac{15(8d+3e)}{x^2}+\frac{30(7d+4e)}{x}+\right.\\ &= -\frac{d}{4x^4}-\frac{10d+e}{3x^3}-\frac{5(9d+2e)}{2x^2}-\frac{15(8d+3e)}{x}+42(6d+5e)x+21(5d+6e)x^2+\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{1}{6}x^6(d+10e)+x^5(2d+9e)+\frac{15}{4}x^4(3d+8e)+10x^3(4d+7e)+\frac{-10d-e}{3x^3}+21x^2(5d+6e)-\frac{5(9d+2e)}{2x^2}+42x(6d+5e)-\frac{15(8}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/4*d/x^4 + (-10*d - e)/(3*x^3) - (5*(9*d + 2*e))/(2*x^2) - (15*(8*d + 3*e
))/x + 42*(6*d + 5*e)*x + 21*(5*d + 6*e)*x^2 + 10*(4*d + 7*e)*x^3 + (15*(3*
d + 8*e)*x^4)/4 + (2*d + 9*e)*x^5 + ((d + 10*e)*x^6)/6 + (e*x^7)/7 + 30*(7*
d + 4*e)*Log[x]
```

fricas [A] time = 0.89, size = 131, normalized size = 0.96

$$\frac{12\,ex^{11} + 14\,(d + 10\,e)x^{10} + 84\,(2\,d + 9\,e)x^{9} + 315\,(3\,d + 8\,e)x^{8} + 840\,(4\,d + 7\,e)x^{7} + 1764\,(5\,d + 6\,e)x^{6} + 3528\,(6}{84\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="fricas")
```

```
[Out] 1/84*(12*e*x^11 + 14*(d + 10*e)*x^10 + 84*(2*d + 9*e)*x^9 + 315*(3*d + 8*e)
*x^8 + 840*(4*d + 7*e)*x^7 + 1764*(5*d + 6*e)*x^6 + 3528*(6*d + 5*e)*x^5 +
2520*(7*d + 4*e)*x^4*log(x) - 1260*(8*d + 3*e)*x^3 - 210*(9*d + 2*e)*x^2 -
28*(10*d + e)*x - 21*d)/x^4
```

giac [A] time = 0.19, size = 139, normalized size = 1.01

$$\frac{1}{7}\,x^{7}e+\frac{1}{6}\,dx^{6}+\frac{5}{3}\,x^{6}e+2\,dx^{5}+9\,x^{5}e+\frac{45}{4}\,dx^{4}+30\,x^{4}e+40\,dx^{3}+70\,x^{3}e+105\,dx^{2}+126\,x^{2}e+252\,dx+210\,xe+30\,(7\,d + 4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="giac")
```

```
[Out] 1/7*x^7*e + 1/6*d*x^6 + 5/3*x^6*e + 2*d*x^5 + 9*x^5*e + 45/4*d*x^4 + 30*x^4
*e + 40*d*x^3 + 70*x^3*e + 105*d*x^2 + 126*x^2*e + 252*d*x + 210*x*e + 30*(
7*d + 4*e)*log(abs(x)) - 1/12*(180*(8*d + 3*e)*x^3 + 30*(9*d + 2*e)*x^2 + 4
*(10*d + e)*x + 3*d)/x^4
```

maple [A] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^{7}}{7}+\frac{d\,x^{6}}{6}+\frac{5e\,x^{6}}{3}+2d\,x^{5}+9e\,x^{5}+\frac{45d\,x^{4}}{4}+30e\,x^{4}+40d\,x^{3}+70e\,x^{3}+105d\,x^{2}+126e\,x^{2}+252dx+210d\ln(x)+210ex+12$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^5,x)
```

```
[Out] 1/7*e*x^7+1/6*d*x^6+5/3*e*x^6+2*d*x^5+9*e*x^5+45/4*d*x^4+30*e*x^4+40*d*x^3+
70*e*x^3+105*d*x^2+126*e*x^2+252*d*x+210*e*x-1/4*d/x^4-10/3*d/x^3-1/3*e/x^3
-45/2*d/x^2-5*e/x^2-120*d/x-45*e/x+210*d*ln(x)+120*e*ln(x)
```

maxima [A] time = 0.64, size = 126, normalized size = 0.92

$$\frac{1}{7}\,ex^{7}+\frac{1}{6}\,(d + 10\,e)x^{6}+(2\,d + 9\,e)x^{5}+\frac{15}{4}\,(3\,d + 8\,e)x^{4}+10\,(4\,d + 7\,e)x^{3}+21\,(5\,d + 6\,e)x^{2}+42\,(6\,d + 5\,e)x+30\,(7\,d + 4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^5,x, algorithm="maxima")
```

```
[Out] 1/7*e*x^7 + 1/6*(d + 10*e)*x^6 + (2*d + 9*e)*x^5 + 15/4*(3*d + 8*e)*x^4 + 1
0*(4*d + 7*e)*x^3 + 21*(5*d + 6*e)*x^2 + 42*(6*d + 5*e)*x + 30*(7*d + 4*e)*
log(x) - 1/12*(180*(8*d + 3*e)*x^3 + 30*(9*d + 2*e)*x^2 + 4*(10*d + e)*x +
3*d)/x^4
```

mupad [B] time = 0.06, size = 121, normalized size = 0.88

$$x^5\ (2\,d+9\,e)+x^6\,\left(\frac{d}{6}+\frac{5\,e}{3}\right)+x^4\,\left(\frac{45\,d}{4}+30\,e\right)+x^3\ (40\,d+70\,e)+x^2\ (105\,d+126\,e)+\ln(x)\ (210\,d+120\,e)-\frac{(12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^5,x)
```

```
[Out] x^5*(2*d + 9*e) + x^6*(d/6 + (5*e)/3) + x^4*((45*d)/4 + 30*e) + x^3*(40*d +
 70*e) + x^2*(105*d + 126*e) + log(x)*(210*d + 120*e) - (d/4 + x^2*((45*d)/
2 + 5*e) + x^3*(120*d + 45*e) + x*((10*d)/3 + e/3))/x^4 + (e*x^7)/7 + x*(25
2*d + 210*e)
```

sympy [A] time = 1.00, size = 122, normalized size = 0.89

$$\frac{ex^7}{7}+x^6\left(\frac{d}{6}+\frac{5e}{3}\right)+x^5\ (2d+9e)+x^4\left(\frac{45d}{4}+30e\right)+x^3\ (40d+70e)+x^2\ (105d+126e)+x\ (252d+210e)+30\ (7d+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**5,x)
```

```
[Out] e*x**7/7 + x**6*(d/6 + 5*e/3) + x**5*(2*d + 9*e) + x**4*(45*d/4 + 30*e) + x
**3*(40*d + 70*e) + x**2*(105*d + 126*e) + x*(252*d + 210*e) + 30*(7*d + 4*
e)*log(x) + (-3*d + x**3*(-1440*d - 540*e) + x**2*(-270*d - 60*e) + x*(-40*
d - 4*e))/(12*x**4)
```

3.572 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^6} \, dx$

Optimal. Leaf size=140

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)-\frac{10d+e}{4x^4}+5x^3(3d+8e)-\frac{5(9d+2e)}{3x^3}+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}+42x(5d+6e)-\frac{30(7d+4}{x}$$

```
[Out] -1/5*d/x^5+1/4*(-10*d-e)/x^4-5/3*(9*d+2*e)/x^3-15/2*(8*d+3*e)/x^2-30*(7*d+4
*e)/x+42*(5*d+6*e)*x+15*(4*d+7*e)*x^2+5*(3*d+8*e)*x^3+5/4*(2*d+9*e)*x^4+1/5
*(d+10*e)*x^5+1/6*e*x^6+42*(6*d+5*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)+5x^3(3d+8e)+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}-\frac{5(9d+2e)}{3x^3}-\frac{10d+e}{4x^4}+42x(5d+6e)-\frac{30(7d+4}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -d/(5*x^5) - (10*d + e)/(4*x^4) - (5*(9*d + 2*e))/(3*x^3) - (15*(8*d + 3*e)
)/(2*x^2) - (30*(7*d + 4*e))/x + 42*(5*d + 6*e)*x + 15*(4*d + 7*e)*x^2 + 5*
(3*d + 8*e)*x^3 + (5*(2*d + 9*e)*x^4)/4 + ((d + 10*e)*x^5)/5 + (e*x^6)/6 +
42*(6*d + 5*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^6} \, dx &= \int \frac{(1+x)^{10}(d+ex)}{x^6} \, dx\\ &= \int \left(42(5d+6e)+\frac{d}{x^6}+\frac{10d+e}{x^5}+\frac{5(9d+2e)}{x^4}+\frac{15(8d+3e)}{x^3}+\frac{30(7d+4e)}{x^2}+\frac{42}{}\right.\\ &= -\frac{d}{5x^5}-\frac{10d+e}{4x^4}-\frac{5(9d+2e)}{3x^3}-\frac{15(8d+3e)}{2x^2}-\frac{30(7d+4e)}{x}+42(5d+6e)x+15(\end{aligned}$$

Mathematica [A] time = 0.04, size = 142, normalized size = 1.01

$$\frac{1}{5}x^5(d+10e)+\frac{5}{4}x^4(2d+9e)+\frac{-10d-e}{4x^4}+5x^3(3d+8e)-\frac{5(9d+2e)}{3x^3}+15x^2(4d+7e)-\frac{15(8d+3e)}{2x^2}+42x(5d+6e)-\frac{30(7d+}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/5*d/x^5 + (-10*d - e)/(4*x^4) - (5*(9*d + 2*e))/(3*x^3) - (15*(8*d + 3*e
))/(2*x^2) - (30*(7*d + 4*e))/x + 42*(5*d + 6*e)*x + 15*(4*d + 7*e)*x^2 + 5
*(3*d + 8*e)*x^3 + (5*(2*d + 9*e)*x^4)/4 + ((d + 10*e)*x^5)/5 + (e*x^6)/6 +
 42*(6*d + 5*e)*Log[x]
```

fricas [A] time = 0.88, size = 131, normalized size = 0.94

$$\frac{10\,ex^{11} + 12\,(d + 10\,e)x^{10} + 75\,(2\,d + 9\,e)x^{9} + 300\,(3\,d + 8\,e)x^{8} + 900\,(4\,d + 7\,e)x^{7} + 2520\,(5\,d + 6\,e)x^{6} + 2520}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(10*e*x^11 + 12*(d + 10*e)*x^10 + 75*(2*d + 9*e)*x^9 + 300*(3*d + 8*e)
*x^8 + 900*(4*d + 7*e)*x^7 + 2520*(5*d + 6*e)*x^6 + 2520*(6*d + 5*e)*x^5*lo
g(x) - 1800*(7*d + 4*e)*x^4 - 450*(8*d + 3*e)*x^3 - 100*(9*d + 2*e)*x^2 - 1
5*(10*d + e)*x - 12*d)/x^5
```

giac [A] time = 0.15, size = 139, normalized size = 0.99

$$\frac{1}{6}\,x^{6}e+\frac{1}{5}\,dx^{5}+2\,x^{5}e+\frac{5}{2}\,dx^{4}+\frac{45}{4}\,x^{4}e+15\,dx^{3}+40\,x^{3}e+60\,dx^{2}+105\,x^{2}e+210\,dx+252\,xe+42\,(6\,d+5\,e)\log\left(|x|\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="giac")
```

```
[Out] 1/6*x^6*e + 1/5*d*x^5 + 2*x^5*e + 5/2*d*x^4 + 45/4*x^4*e + 15*d*x^3 + 40*x^
3*e + 60*d*x^2 + 105*x^2*e + 210*d*x + 252*x*e + 42*(6*d + 5*e)*log(abs(x))
 - 1/60*(1800*(7*d + 4*e)*x^4 + 450*(8*d + 3*e)*x^3 + 100*(9*d + 2*e)*x^2 +
 15*(10*d + e)*x + 12*d)/x^5
```

maple [A] time = 0.05, size = 128, normalized size = 0.91

$$\frac{e\,x^{6}}{6}+\frac{d\,x^{5}}{5}+2e\,x^{5}+\frac{5d\,x^{4}}{2}+\frac{45e\,x^{4}}{4}+15d\,x^{3}+40e\,x^{3}+60d\,x^{2}+105e\,x^{2}+210dx+252d\ln(x)+252ex+210e\ln(x)-\frac{210}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^6,x)
```

```
[Out] 1/6*e*x^6+1/5*d*x^5+2*e*x^5+5/2*d*x^4+45/4*e*x^4+15*d*x^3+40*e*x^3+60*d*x^2
+105*e*x^2+210*d*x+252*e*x-1/5*d/x^5-5/2*d/x^4-1/4*e/x^4-15*d/x^3-10/3*e/x^
3-60*d/x^2-45/2*e/x^2-210*d/x-120*e/x+252*d*ln(x)+210*e*ln(x)
```

maxima [A] time = 0.54, size = 127, normalized size = 0.91

$$\frac{1}{6}\,ex^{6}+\frac{1}{5}\,(d+10\,e)x^{5}+\frac{5}{4}\,(2\,d+9\,e)x^{4}+5\,(3\,d+8\,e)x^{3}+15\,(4\,d+7\,e)x^{2}+42\,(5\,d+6\,e)x+42\,(6\,d+5\,e)\log(x)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^6,x, algorithm="maxima")
```

```
[Out] 1/6*e*x^6 + 1/5*(d + 10*e)*x^5 + 5/4*(2*d + 9*e)*x^4 + 5*(3*d + 8*e)*x^3 +
15*(4*d + 7*e)*x^2 + 42*(5*d + 6*e)*x + 42*(6*d + 5*e)*log(x) - 1/60*(1800*
(7*d + 4*e)*x^4 + 450*(8*d + 3*e)*x^3 + 100*(9*d + 2*e)*x^2 + 15*(10*d + e)
*x + 12*d)/x^5
```

mupad [B] time = 1.08, size = 121, normalized size = 0.86

$$x^5\,\left(\frac{d}{5}+2\,e\right)+x^3\,\left(15\,d+40\,e\right)+x^4\,\left(\frac{5\,d}{2}+\frac{45\,e}{4}\right)+x^2\,\left(60\,d+105\,e\right)+\ln(x)\,\left(252\,d+210\,e\right)-\frac{\left(210\,d+120\,e\right)\,x^4+\left(6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^6,x)
```

```
[Out] x^5*(d/5 + 2*e) + x^3*(15*d + 40*e) + x^4*((5*d)/2 + (45*e)/4) + x^2*(60*d
+ 105*e) + log(x)*(252*d + 210*e) - (d/5 + x^2*(15*d + (10*e)/3) + x^3*(60*
d + (45*e)/2) + x^4*(210*d + 120*e) + x*((5*d)/2 + e/4))/x^5 + (e*x^6)/6 +
x*(210*d + 252*e)
```

sympy [A] time = 1.42, size = 124, normalized size = 0.89

$$\frac{ex^6}{6}+x^5\left(\frac{d}{5}+2e\right)+x^4\left(\frac{5d}{2}+\frac{45e}{4}\right)+x^3\left(15d+40e\right)+x^2\left(60d+105e\right)+x\left(210d+252e\right)+42\left(6d+5e\right)\log\left(x\right)+\frac{-12d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**6,x)
```

```
[Out] e*x**6/6 + x**5*(d/5 + 2*e) + x**4*(5*d/2 + 45*e/4) + x**3*(15*d + 40*e) +
x**2*(60*d + 105*e) + x*(210*d + 252*e) + 42*(6*d + 5*e)*log(x) + (-12*d +
x**4*(-12600*d - 7200*e) + x**3*(-3600*d - 1350*e) + x**2*(-900*d - 200*e)
+ x*(-150*d - 15*e))/(60*x**5)
```

3.573 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7} \, dx$

Optimal. Leaf size=140

$$-\frac{10d+e}{5x^5}+\frac{1}{4}x^4(d+10e)-\frac{5(9d+2e)}{4x^4}+\frac{5}{3}x^3(2d+9e)-\frac{5(8d+3e)}{x^3}+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}+30x(4d+7e)-42(6$$

```
[Out] -1/6*d/x^6+1/5*(-10*d-e)/x^5-5/4*(9*d+2*e)/x^4-5*(8*d+3*e)/x^3-15*(7*d+4*e)
/x^2-42*(6*d+5*e)/x+30*(4*d+7*e)*x+15/2*(3*d+8*e)*x^2+5/3*(2*d+9*e)*x^3+1/4
*(d+10*e)*x^4+1/5*e*x^5+42*(5*d+6*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{4}x^4(d+10e)+\frac{5}{3}x^3(2d+9e)+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}-\frac{5(8d+3e)}{x^3}-\frac{5(9d+2e)}{4x^4}-\frac{10d+e}{5x^5}+30x(4d+7e)-\frac{42(6d}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -d/(6*x^6) - (10*d + e)/(5*x^5) - (5*(9*d + 2*e))/(4*x^4) - (5*(8*d + 3*e))
/x^3 - (15*(7*d + 4*e))/x^2 - (42*(6*d + 5*e))/x + 30*(4*d + 7*e)*x + (15*(
3*d + 8*e)*x^2)/2 + (5*(2*d + 9*e)*x^3)/3 + ((d + 10*e)*x^4)/4 + (e*x^5)/5
+ 42*(5*d + 6*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^7} \, dx &= \int \frac{(1+x)^{10}(d+ex)}{x^7} \, dx \\
&= \int \left(30(4d+7e)+\frac{d}{x^7}+\frac{10d+e}{x^6}+\frac{5(9d+2e)}{x^5}+\frac{15(8d+3e)}{x^4}+\frac{30(7d+4e)}{x^3}+\right. \\
&= -\frac{d}{6x^6}-\frac{10d+e}{5x^5}-\frac{5(9d+2e)}{4x^4}-\frac{5(8d+3e)}{x^3}-\frac{15(7d+4e)}{x^2}-\frac{42(6d+5e)}{x}+30
\end{aligned}$$

Mathematica [A] time = 0.04, size = 142, normalized size = 1.01

$$\frac{-10d-e}{5x^5}+\frac{1}{4}x^4(d+10e)-\frac{5(9d+2e)}{4x^4}+\frac{5}{3}x^3(2d+9e)-\frac{5(8d+3e)}{x^3}+\frac{15}{2}x^2(3d+8e)-\frac{15(7d+4e)}{x^2}+30x(4d+7e)-42(6$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/6*d/x^6 + (-10*d - e)/(5*x^5) - (5*(9*d + 2*e))/(4*x^4) - (5*(8*d + 3*e)
)/x^3 - (15*(7*d + 4*e))/x^2 - (42*(6*d + 5*e))/x + 30*(4*d + 7*e)*x + (15*
(3*d + 8*e)*x^2)/2 + (5*(2*d + 9*e)*x^3)/3 + ((d + 10*e)*x^4)/4 + (e*x^5)/5
 + 42*(5*d + 6*e)*Log[x]
```

fricas [A] time = 0.95, size = 131, normalized size = 0.94

$$\frac{12\,ex^{11}+15\,(d+10\,e)x^{10}+100\,(2\,d+9\,e)x^{9}+450\,(3\,d+8\,e)x^{8}+1800\,(4\,d+7\,e)x^{7}+2520\,(5\,d+6\,e)x^{6}\log(x)-}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(12*e*x^11 + 15*(d + 10*e)*x^10 + 100*(2*d + 9*e)*x^9 + 450*(3*d + 8*e
)*x^8 + 1800*(4*d + 7*e)*x^7 + 2520*(5*d + 6*e)*x^6*log(x) - 2520*(6*d + 5*
e)*x^5 - 900*(7*d + 4*e)*x^4 - 300*(8*d + 3*e)*x^3 - 75*(9*d + 2*e)*x^2 - 1
2*(10*d + e)*x - 10*d)/x^6
```

giac [A] time = 0.15, size = 139, normalized size = 0.99

$$\frac{1}{5}\,x^{5}e+\frac{1}{4}\,dx^{4}+\frac{5}{2}\,x^{4}e+\frac{10}{3}\,dx^{3}+15\,x^{3}e+\frac{45}{2}\,dx^{2}+60\,x^{2}e+120\,dx+210\,xe+42\,(5\,d+6\,e)\log\left(|x|\right)-\frac{2520\,(6\,d+5\,e)x^{5}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="giac")
```

```
[Out] 1/5*x^5*e + 1/4*d*x^4 + 5/2*x^4*e + 10/3*d*x^3 + 15*x^3*e + 45/2*d*x^2 + 60
*x^2*e + 120*d*x + 210*x*e + 42*(5*d + 6*e)*log(abs(x)) - 1/60*(2520*(6*d +
 5*e)*x^5 + 900*(7*d + 4*e)*x^4 + 300*(8*d + 3*e)*x^3 + 75*(9*d + 2*e)*x^2
+ 12*(10*d + e)*x + 10*d)/x^6
```

maple [A] time = 0.06, size = 128, normalized size = 0.91

$$\frac{e\,x^{5}}{5}+\frac{d\,x^{4}}{4}+\frac{5e\,x^{4}}{2}+\frac{10d\,x^{3}}{3}+15e\,x^{3}+\frac{45d\,x^{2}}{2}+60e\,x^{2}+120dx+210d\ln(x)+210ex+252e\ln(x)-\frac{252d}{x}-\frac{210e}{x}-\frac{105d}{x^{2}}-\frac{6}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^7,x)
```

```
[Out] 1/5*e*x^5+1/4*d*x^4+5/2*e*x^4+10/3*d*x^3+15*e*x^3+45/2*d*x^2+60*e*x^2+120*d
*x+210*e*x-2*d/x^5-1/5*e/x^5-45/4*d/x^4-5/2*e/x^4-40*d/x^3-15*e/x^3-105*d/x
^2-60*e/x^2-1/6*d/x^6-252*d/x-210*e/x+210*d*ln(x)+252*e*ln(x)
```

maxima [A] time = 0.54, size = 127, normalized size = 0.91

$$\frac{1}{5}\,ex^{5}+\frac{1}{4}\,(d+10\,e)x^{4}+\frac{5}{3}\,(2\,d+9\,e)x^{3}+\frac{15}{2}\,(3\,d+8\,e)x^{2}+30\,(4\,d+7\,e)x+42\,(5\,d+6\,e)\log(x)-\frac{2520\,(6\,d+5\,e)x^{5}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^7,x, algorithm="maxima")
```

```
[Out] 1/5*e*x^5 + 1/4*(d + 10*e)*x^4 + 5/3*(2*d + 9*e)*x^3 + 15/2*(3*d + 8*e)*x^2
 + 30*(4*d + 7*e)*x + 42*(5*d + 6*e)*log(x) - 1/60*(2520*(6*d + 5*e)*x^5 +
900*(7*d + 4*e)*x^4 + 300*(8*d + 3*e)*x^3 + 75*(9*d + 2*e)*x^2 + 12*(10*d +
 e)*x + 10*d)/x^6
```

mupad [**B**] time = 1.07, size = 121, normalized size = 0.86

$$x^4\left(\frac{d}{4}+\frac{5\,e}{2}\right)+x^3\left(\frac{10\,d}{3}+15\,e\right)+x^2\left(\frac{45\,d}{2}+60\,e\right)+\ln(x)\ (210\,d+252\,e)-\frac{(252\,d+210\,e)\ x^5+(105\,d+60\,e)\ x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^7,x)
```

```
[Out] x^4*(d/4 + (5*e)/2) + x^3*((10*d)/3 + 15*e) + x^2*((45*d)/2 + 60*e) + log(x
)*(210*d + 252*e) - (d/6 + x^2*((45*d)/4 + (5*e)/2) + x^3*(40*d + 15*e) + x
^4*(105*d + 60*e) + x^5*(252*d + 210*e) + x*(2*d + e/5))/x^6 + (e*x^5)/5 +
x*(120*d + 210*e)
```

sympy [**A**] time = 2.17, size = 128, normalized size = 0.91

$$\frac{ex^5}{5}+x^4\left(\frac{d}{4}+\frac{5e}{2}\right)+x^3\left(\frac{10d}{3}+15e\right)+x^2\left(\frac{45d}{2}+60e\right)+x\,(120d+210e)+42\,(5d+6e)\log\left(x\right)+\frac{-10d+x^5\,(-15120}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**7,x)
```

```
[Out] e*x**5/5 + x**4*(d/4 + 5*e/2) + x**3*(10*d/3 + 15*e) + x**2*(45*d/2 + 60*e)
 + x*(120*d + 210*e) + 42*(5*d + 6*e)*log(x) + (-10*d + x**5*(-15120*d - 12
600*e) + x**4*(-6300*d - 3600*e) + x**3*(-2400*d - 900*e) + x**2*(-675*d -
150*e) + x*(-120*d - 12*e))/(60*x**6)
```

3.574 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^8}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{6x^6}-\frac{9d+2e}{x^5}-\frac{15(8d+3e)}{4x^4}+\frac{1}{3}x^3(d+10e)-\frac{10(7d+4e)}{x^3}+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}+15x(3d+8e)-\frac{42(5d+6e}{x}$$

```
[Out] -1/7*d/x^7+1/6*(-10*d-e)/x^6+(-9*d-2*e)/x^5-15/4*(8*d+3*e)/x^4-10*(7*d+4*e)
/x^3-21*(6*d+5*e)/x^2-42*(5*d+6*e)/x+15*(3*d+8*e)*x+5/2*(2*d+9*e)*x^2+1/3*(
d+10*e)*x^3+1/4*e*x^4+30*(4*d+7*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{1}{3}x^3(d+10e)+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}-\frac{10(7d+4e)}{x^3}-\frac{15(8d+3e)}{4x^4}-\frac{9d+2e}{x^5}-\frac{10d+e}{6x^6}+15x(3d+8e)-\frac{42(5d+6e)}{x}+$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -d/(7*x^7) - (10*d + e)/(6*x^6) - (9*d + 2*e)/x^5 - (15*(8*d + 3*e))/(4*x^4
) - (10*(7*d + 4*e))/x^3 - (21*(6*d + 5*e))/x^2 - (42*(5*d + 6*e))/x + 15*(
3*d + 8*e)*x + (5*(2*d + 9*e)*x^2)/2 + ((d + 10*e)*x^3)/3 + (e*x^4)/4 + 30*
(4*d + 7*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^8}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^8}\,dx\\ &= \int \left(15(3d+8e)+\frac{d}{x^8}+\frac{10d+e}{x^7}+\frac{5(9d+2e)}{x^6}+\frac{15(8d+3e)}{x^5}+\frac{30(7d+4e)}{x^4}+42\right.\\ &= -\frac{d}{7x^7}-\frac{10d+e}{6x^6}-\frac{9d+2e}{x^5}-\frac{15(8d+3e)}{4x^4}-\frac{10(7d+4e)}{x^3}-\frac{21(6d+5e)}{x^2}-\frac{42(5d+}{x}\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{-10d-e}{6x^6}+\frac{-9d-2e}{x^5}-\frac{15(8d+3e)}{4x^4}+\frac{1}{3}x^3(d+10e)-\frac{10(7d+4e)}{x^3}+\frac{5}{2}x^2(2d+9e)-\frac{21(6d+5e)}{x^2}+15x(3d+8e)-\frac{42(5d+6}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/7*d/x^7 + (-10*d - e)/(6*x^6) + (-9*d - 2*e)/x^5 - (15*(8*d + 3*e))/(4*x
^4) - (10*(7*d + 4*e))/x^3 - (21*(6*d + 5*e))/x^2 - (42*(5*d + 6*e))/x + 15
*(3*d + 8*e)*x + (5*(2*d + 9*e)*x^2)/2 + ((d + 10*e)*x^3)/3 + (e*x^4)/4 + 3
0*(4*d + 7*e)*Log[x]
```

fricas [A] time = 0.88, size = 131, normalized size = 0.95

$$\frac{21\,ex^{11} + 28\,(d + 10\,e)x^{10} + 210\,(2\,d + 9\,e)x^{9} + 1260\,(3\,d + 8\,e)x^{8} + 2520\,(4\,d + 7\,e)x^{7}\log(x) - 3528\,(5\,d + 6\,e)}{84\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="fricas")
```

```
[Out] 1/84*(21*e*x^11 + 28*(d + 10*e)*x^10 + 210*(2*d + 9*e)*x^9 + 1260*(3*d + 8*
e)*x^8 + 2520*(4*d + 7*e)*x^7*log(x) - 3528*(5*d + 6*e)*x^6 - 1764*(6*d + 5
*e)*x^5 - 840*(7*d + 4*e)*x^4 - 315*(8*d + 3*e)*x^3 - 84*(9*d + 2*e)*x^2 -
14*(10*d + e)*x - 12*d)/x^7
```

giac [A] time = 0.15, size = 139, normalized size = 1.01

$$\frac{1}{4}\,x^{4}e+\frac{1}{3}\,dx^{3}+\frac{10}{3}\,x^{3}e+5\,dx^{2}+\frac{45}{2}\,x^{2}e+45\,dx+120\,xe+30\,(4\,d + 7\,e)\log\left(|x|\right)-\frac{3528\,(5\,d + 6\,e)x^{6} + 1764\,(6\,d + 5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="giac")
```

```
[Out] 1/4*x^4*e + 1/3*d*x^3 + 10/3*x^3*e + 5*d*x^2 + 45/2*x^2*e + 45*d*x + 120*x*
e + 30*(4*d + 7*e)*log(abs(x)) - 1/84*(3528*(5*d + 6*e)*x^6 + 1764*(6*d + 5
*e)*x^5 + 840*(7*d + 4*e)*x^4 + 315*(8*d + 3*e)*x^3 + 84*(9*d + 2*e)*x^2 +
14*(10*d + e)*x + 12*d)/x^7
```

maple [A] time = 0.05, size = 128, normalized size = 0.93

$$\frac{e\,x^{4}}{4}+\frac{d\,x^{3}}{3}+\frac{10e\,x^{3}}{3}+5d\,x^{2}+\frac{45e\,x^{2}}{2}+45dx+120d\ln(x)+120ex+210e\ln(x)-\frac{210d}{x}-\frac{252e}{x}-\frac{126d}{x^{2}}-\frac{105e}{x^{2}}-\frac{70d}{x^{3}}-\frac{40e}{x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^8,x)
```

```
[Out] 1/4*e*x^4+1/3*d*x^3+10/3*e*x^3+5*d*x^2+45/2*e*x^2+45*d*x+120*e*x-9*d/x^5-2*
e/x^5-30*d/x^4-45/4*e/x^4-70*d/x^3-40*e/x^3-126*d/x^2-105*e/x^2-1/7*d/x^7-5
/3*d/x^6-1/6*e/x^6-210*d/x-252*e/x+120*d*ln(x)+210*e*ln(x)
```

maxima [A] time = 0.59, size = 127, normalized size = 0.92

$$\frac{1}{4}\,ex^{4}+\frac{1}{3}\,(d + 10\,e)x^{3}+\frac{5}{2}\,(2\,d + 9\,e)x^{2}+15\,(3\,d + 8\,e)x+30\,(4\,d + 7\,e)\log(x)-\frac{3528\,(5\,d + 6\,e)x^{6} + 1764\,(6\,d + 5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*e*x^4 + 1/3*(d + 10*e)*x^3 + 5/2*(2*d + 9*e)*x^2 + 15*(3*d + 8*e)*x + 3
0*(4*d + 7*e)*log(x) - 1/84*(3528*(5*d + 6*e)*x^6 + 1764*(6*d + 5*e)*x^5 +
840*(7*d + 4*e)*x^4 + 315*(8*d + 3*e)*x^3 + 84*(9*d + 2*e)*x^2 + 14*(10*d +
 e)*x + 12*d)/x^7
```

mupad [B] time = 1.07, size = 121, normalized size = 0.88

$$x^3\left(\frac{d}{3}+\frac{10\,e}{3}\right)+x^2\left(5\,d+\frac{45\,e}{2}\right)+\ln(x)\,(120\,d+210\,e)+\frac{e\,x^4}{4}-\frac{(210\,d+252\,e)\,x^6+(126\,d+105\,e)\,x^5+(70\,d+40}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^8,x)
```

```
[Out] x^3*(d/3 + (10*e)/3) + x^2*(5*d + (45*e)/2) + log(x)*(120*d + 210*e) + (e*x
^4)/4 - (d/7 + x^2*(9*d + 2*e) + x^3*(30*d + (45*e)/4) + x^4*(70*d + 40*e)
+ x^5*(126*d + 105*e) + x^6*(210*d + 252*e) + x*((5*d)/3 + e/6))/x^7 + x*(4
5*d + 120*e)
```

sympy [A] time = 2.99, size = 128, normalized size = 0.93

$$\frac{ex^4}{4}+x^3\left(\frac{d}{3}+\frac{10e}{3}\right)+x^2\left(5d+\frac{45e}{2}\right)+x\,(45d+120e)+30\,(4d+7e)\log{(x)}+\frac{-12d+x^6\,(-17640d-21168e)+x^5\,(-1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**8,x)
```

```
[Out] e*x**4/4 + x**3*(d/3 + 10*e/3) + x**2*(5*d + 45*e/2) + x*(45*d + 120*e) + 3
0*(4*d + 7*e)*log(x) + (-12*d + x**6*(-17640*d - 21168*e) + x**5*(-10584*d
- 8820*e) + x**4*(-5880*d - 3360*e) + x**3*(-2520*d - 945*e) + x**2*(-756*d
 - 168*e) + x*(-140*d - 14*e))/(84*x**7)
```

3.575 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}+\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}+5x(2d+9e)-\frac{30(4d+}{x}$$

```
[Out] -1/8*d/x^8+1/7*(-10*d-e)/x^7-5/6*(9*d+2*e)/x^6-3*(8*d+3*e)/x^5-15/2*(7*d+4*
e)/x^4-14*(6*d+5*e)/x^3-21*(5*d+6*e)/x^2-30*(4*d+7*e)/x+5*(2*d+9*e)*x+1/2*(
d+10*e)*x^2+1/3*e*x^3+15*(3*d+8*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = $\{27, 76\}$

$$\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}-\frac{14(6d+5e)}{x^3}-\frac{15(7d+4e)}{2x^4}-\frac{3(8d+3e)}{x^5}-\frac{5(9d+2e)}{6x^6}-\frac{10d+e}{7x^7}+5x(2d+9e)-\frac{30(4d+7}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -d/(8*x^8) - (10*d + e)/(7*x^7) - (5*(9*d + 2*e))/(6*x^6) - (3*(8*d + 3*e))
/x^5 - (15*(7*d + 4*e))/(2*x^4) - (14*(6*d + 5*e))/x^3 - (21*(5*d + 6*e))/x
^2 - (30*(4*d + 7*e))/x + 5*(2*d + 9*e)*x + ((d + 10*e)*x^2)/2 + (e*x^3)/3
+ 15*(3*d + 8*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^9}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^9}\,dx\\ &= \int \left(5(2d+9e)+\frac{d}{x^9}+\frac{10d+e}{x^8}+\frac{5(9d+2e)}{x^7}+\frac{15(8d+3e)}{x^6}+\frac{30(7d+4e)}{x^5}+\frac{4}{}\right.\\ &= -\frac{d}{8x^8}-\frac{10d+e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}-\frac{21}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{-10d-e}{7x^7}-\frac{5(9d+2e)}{6x^6}-\frac{3(8d+3e)}{x^5}-\frac{15(7d+4e)}{2x^4}-\frac{14(6d+5e)}{x^3}+\frac{1}{2}x^2(d+10e)-\frac{21(5d+6e)}{x^2}+5x(2d+9e)-\frac{30(4d+}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/8*d/x^8 + (-10*d - e)/(7*x^7) - (5*(9*d + 2*e))/(6*x^6) - (3*(8*d + 3*e)
)/x^5 - (15*(7*d + 4*e))/(2*x^4) - (14*(6*d + 5*e))/x^3 - (21*(5*d + 6*e))/
x^2 - (30*(4*d + 7*e))/x + 5*(2*d + 9*e)*x + ((d + 10*e)*x^2)/2 + (e*x^3)/3
 + 15*(3*d + 8*e)*Log[x]
```

fricas [A] time = 1.14, size = 131, normalized size = 0.95

$$\frac{56\,ex^{11}+84\,(d+10\,e)x^{10}+840\,(2\,d+9\,e)x^{9}+2520\,(3\,d+8\,e)x^{8}\log(x)-5040\,(4\,d+7\,e)x^{7}-3528\,(5\,d+6\,e)x^{6}}{168\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="fricas")
```

```
[Out] 1/168*(56*e*x^11 + 84*(d + 10*e)*x^10 + 840*(2*d + 9*e)*x^9 + 2520*(3*d + 8
*e)*x^8*log(x) - 5040*(4*d + 7*e)*x^7 - 3528*(5*d + 6*e)*x^6 - 2352*(6*d +
5*e)*x^5 - 1260*(7*d + 4*e)*x^4 - 504*(8*d + 3*e)*x^3 - 140*(9*d + 2*e)*x^2
 - 24*(10*d + e)*x - 21*d)/x^8
```

giac [A] time = 0.16, size = 139, normalized size = 1.01

$$\frac{1}{3}\,x^{3}e+\frac{1}{2}\,dx^{2}+5\,x^{2}e+10\,dx+45\,xe+15\,(3\,d+8\,e)\log\left(|x|\right)-\frac{5040\,(4\,d+7\,e)x^{7}+3528\,(5\,d+6\,e)x^{6}+2352\,(6\,d+5\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="giac")
```

```
[Out] 1/3*x^3*e + 1/2*d*x^2 + 5*x^2*e + 10*d*x + 45*x*e + 15*(3*d + 8*e)*log(abs(
x)) - 1/168*(5040*(4*d + 7*e)*x^7 + 3528*(5*d + 6*e)*x^6 + 2352*(6*d + 5*e)
*x^5 + 1260*(7*d + 4*e)*x^4 + 504*(8*d + 3*e)*x^3 + 140*(9*d + 2*e)*x^2 + 2
4*(10*d + e)*x + 21*d)/x^8
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$\frac{e\,x^{3}}{3}+\frac{d\,x^{2}}{2}+5e\,x^{2}+10dx+45d\ln(x)+45ex+120e\ln(x)-\frac{120d}{x}-\frac{210e}{x}-\frac{105d}{x^{2}}-\frac{126e}{x^{2}}-\frac{84d}{x^{3}}-\frac{70e}{x^{3}}-\frac{105d}{2x^{4}}-\frac{30e}{x^{4}}-\frac{24d}{x^{5}}-\frac{9e}{x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^9,x)
```

```
[Out] 1/3*e*x^3+1/2*d*x^2+5*e*x^2+10*d*x+45*e*x-24*d/x^5-9*e/x^5-105/2*d/x^4-30*e
/x^4-84*d/x^3-70*e/x^3-1/8*d/x^8-105*d/x^2-126*e/x^2-10/7*d/x^7-1/7*e/x^7-1
5/2*d/x^6-5/3*e/x^6-120*d/x-210*e/x+45*d*ln(x)+120*e*ln(x)
```

maxima [A] time = 0.47, size = 127, normalized size = 0.92

$$\frac{1}{3}\,ex^{3}+\frac{1}{2}\,(d+10\,e)x^{2}+5\,(2\,d+9\,e)x+15\,(3\,d+8\,e)\log(x)-\frac{5040\,(4\,d+7\,e)x^{7}+3528\,(5\,d+6\,e)x^{6}+2352\,(6\,d+5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^9,x, algorithm="maxima")
```

```
[Out] 1/3*e*x^3 + 1/2*(d + 10*e)*x^2 + 5*(2*d + 9*e)*x + 15*(3*d + 8*e)*log(x) -
1/168*(5040*(4*d + 7*e)*x^7 + 3528*(5*d + 6*e)*x^6 + 2352*(6*d + 5*e)*x^5 +
 1260*(7*d + 4*e)*x^4 + 504*(8*d + 3*e)*x^3 + 140*(9*d + 2*e)*x^2 + 24*(10*
d + e)*x + 21*d)/x^8
```

mupad [B]   time = 1.08, size = 121, normalized size = 0.88

$$x^2\,\left(\frac{d}{2}+5\,e\right)+\ln(x)\,\left(45\,d+120\,e\right)+\frac{e\,x^3}{3}+x\,\left(10\,d+45\,e\right)-\frac{(120\,d+210\,e)\,x^7+(105\,d+126\,e)\,x^6+(84\,d+70\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^9,x)
```

```
[Out] x^2*(d/2 + 5*e) + log(x)*(45*d + 120*e) + (e*x^3)/3 + x*(10*d + 45*e) - (d/
8 + x^2*((15*d)/2 + (5*e)/3) + x^3*(24*d + 9*e) + x^4*((105*d)/2 + 30*e) +
x^5*(84*d + 70*e) + x^6*(105*d + 126*e) + x^7*(120*d + 210*e) + x*((10*d)/7
 + e/7))/x^8
```

sympy [A]   time = 4.27, size = 126, normalized size = 0.91

$$\frac{ex^3}{3}+x^2\left(\frac{d}{2}+5e\right)+x\left(10d+45e\right)+15\left(3d+8e\right)\log\left(x\right)+\frac{-21d+x^7\left(-20160d-35280e\right)+x^6\left(-17640d-21168e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**9,x)
```

```
[Out] e*x**3/3 + x**2*(d/2 + 5*e) + x*(10*d + 45*e) + 15*(3*d + 8*e)*log(x) + (-2
1*d + x**7*(-20160*d - 35280*e) + x**6*(-17640*d - 21168*e) + x**5*(-14112*
d - 11760*e) + x**4*(-8820*d - 5040*e) + x**3*(-4032*d - 1512*e) + x**2*(-1
260*d - 280*e) + x*(-240*d - 24*e))/(168*x**8)
```

3.576 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$

Optimal. Leaf size=137

$$-\frac{10d+e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d+6e)}{x^3}-\frac{15(4d+7e)}{x^2}+x(d+10e)-\frac{15(3d+8e)}{x}+$$

```
[Out] -1/9*d/x^9+1/8*(-10*d-e)/x^8-5/7*(9*d+2*e)/x^7-5/2*(8*d+3*e)/x^6-6*(7*d+4*e
)/x^5-21/2*(6*d+5*e)/x^4-14*(5*d+6*e)/x^3-15*(4*d+7*e)/x^2-15*(3*d+8*e)/x+(
d+10*e)*x+1/2*e*x^2+5*(2*d+9*e)*ln(x)
```

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$-\frac{15(4d+7e)}{x^2}-\frac{14(5d+6e)}{x^3}-\frac{21(6d+5e)}{2x^4}-\frac{6(7d+4e)}{x^5}-\frac{5(8d+3e)}{2x^6}-\frac{5(9d+2e)}{7x^7}-\frac{10d+e}{8x^8}+x(d+10e)-\frac{15(3d+8e)}{x}+$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -d/(9*x^9) - (10*d + e)/(8*x^8) - (5*(9*d + 2*e))/(7*x^7) - (5*(8*d + 3*e))
/(2*x^6) - (6*(7*d + 4*e))/x^5 - (21*(6*d + 5*e))/(2*x^4) - (14*(5*d + 6*e)
)/x^3 - (15*(4*d + 7*e))/x^2 - (15*(3*d + 8*e))/x + (d + 10*e)*x + (e*x^2)/
2 + 5*(2*d + 9*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{10}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{10}}\,dx\\ &= \int \left(d\left(1+\frac{10e}{d}\right)+\frac{d}{x^{10}}+\frac{10d+e}{x^9}+\frac{5(9d+2e)}{x^8}+\frac{15(8d+3e)}{x^7}+\frac{30(7d+4e)}{x^6}+4\right.\\ &= -\frac{d}{9x^9}-\frac{10d+e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d}{x^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 139, normalized size = 1.01

$$\frac{-10d-e}{8x^8}-\frac{5(9d+2e)}{7x^7}-\frac{5(8d+3e)}{2x^6}-\frac{6(7d+4e)}{x^5}-\frac{21(6d+5e)}{2x^4}-\frac{14(5d+6e)}{x^3}-\frac{15(4d+7e)}{x^2}+x(d+10e)-\frac{15(3d+8e)}{x}+$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/9*d/x^9 + (-10*d - e)/(8*x^8) - (5*(9*d + 2*e))/(7*x^7) - (5*(8*d + 3*e)
)/(2*x^6) - (6*(7*d + 4*e))/x^5 - (21*(6*d + 5*e))/(2*x^4) - (14*(5*d + 6*e
))/x^3 - (15*(4*d + 7*e))/x^2 - (15*(3*d + 8*e))/x + (d + 10*e)*x + (e*x^2)
/2 + 5*(2*d + 9*e)*Log[x]
```

fricas [A] time = 0.75, size = 131, normalized size = 0.96

$$\frac{252\,ex^{11} + 504\,(d + 10\,e)x^{10} + 2520\,(2\,d + 9\,e)x^{9}\log(x) - 7560\,(3\,d + 8\,e)x^{8} - 7560\,(4\,d + 7\,e)x^{7} - 7056\,(5\,d +}{504}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*e*x^11 + 504*(d + 10*e)*x^10 + 2520*(2*d + 9*e)*x^9*log(x) - 756
0*(3*d + 8*e)*x^8 - 7560*(4*d + 7*e)*x^7 - 7056*(5*d + 6*e)*x^6 - 5292*(6*d
 + 5*e)*x^5 - 3024*(7*d + 4*e)*x^4 - 1260*(8*d + 3*e)*x^3 - 360*(9*d + 2*e)
*x^2 - 63*(10*d + e)*x - 56*d)/x^9
```

giac [A] time = 0.17, size = 138, normalized size = 1.01

$$\frac{1}{2}\,x^{2}e + dx + 10\,xe + 5\,(2\,d + 9\,e)\log(|x|) - \frac{7560\,(3\,d + 8\,e)x^{8} + 7560\,(4\,d + 7\,e)x^{7} + 7056\,(5\,d + 6\,e)x^{6} + 5292\,(6\,d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="giac")
```

```
[Out] 1/2*x^2*e + d*x + 10*x*e + 5*(2*d + 9*e)*log(abs(x)) - 1/504*(7560*(3*d + 8
*e)*x^8 + 7560*(4*d + 7*e)*x^7 + 7056*(5*d + 6*e)*x^6 + 5292*(6*d + 5*e)*x^
5 + 3024*(7*d + 4*e)*x^4 + 1260*(8*d + 3*e)*x^3 + 360*(9*d + 2*e)*x^2 + 63*
(10*d + e)*x + 56*d)/x^9
```

maple [A] time = 0.06, size = 127, normalized size = 0.93

$$\frac{e\,x^{2}}{2} + dx + 10d\ln(x) + 10ex + 45e\ln(x) - \frac{45d}{x} - \frac{120e}{x} - \frac{60d}{x^{2}} - \frac{105e}{x^{2}} - \frac{70d}{x^{3}} - \frac{84e}{x^{3}} - \frac{63d}{x^{4}} - \frac{105e}{2x^{4}} - \frac{42d}{x^{5}} - \frac{24e}{x^{5}} - \frac{20d}{x^{6}} - \frac{15e}{2x^{6}} - \frac{4}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^10,x)
```

```
[Out] 1/2*e*x^2+d*x+10*e*x-42*d/x^5-24*e/x^5-63*d/x^4-105/2*e/x^4-70*d/x^3-84*e/x
^3-5/4*d/x^8-1/8*e/x^8-60*d/x^2-105*e/x^2-1/9*d/x^9-45/7*d/x^7-10/7*e/x^7-2
0*d/x^6-15/2*e/x^6-45*d/x-120*e/x+10*d*ln(x)+45*e*ln(x)
```

maxima [A] time = 0.51, size = 126, normalized size = 0.92

$$\frac{1}{2}\,ex^{2} + (d + 10\,e)x + 5\,(2\,d + 9\,e)\log(x) - \frac{7560\,(3\,d + 8\,e)x^{8} + 7560\,(4\,d + 7\,e)x^{7} + 7056\,(5\,d + 6\,e)x^{6} + 5292\,(6\,d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*e*x^2 + (d + 10*e)*x + 5*(2*d + 9*e)*log(x) - 1/504*(7560*(3*d + 8*e)*x
^8 + 7560*(4*d + 7*e)*x^7 + 7056*(5*d + 6*e)*x^6 + 5292*(6*d + 5*e)*x^5 + 3
024*(7*d + 4*e)*x^4 + 1260*(8*d + 3*e)*x^3 + 360*(9*d + 2*e)*x^2 + 63*(10*d
 + e)*x + 56*d)/x^9
```

mupad [**B**] time = 0.07, size = 119, normalized size = 0.87

$$\ln(x)\ (10\,d+45\,e)+x\ (d+10\,e)+\frac{e\,x^2}{2}-\frac{(45\,d+120\,e)\ x^8+(60\,d+105\,e)\ x^7+(70\,d+84\,e)\ x^6+\left(63\,d+\frac{105\,e}{2}\right)\ x^5}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^10,x)
```

```
[Out] log(x)*(10*d + 45*e) + x*(d + 10*e) + (e*x^2)/2 - (d/9 + x^3*(20*d + (15*e)
/2) + x^4*(42*d + 24*e) + x^2*((45*d)/7 + (10*e)/7) + x^6*(70*d + 84*e) + x
^7*(60*d + 105*e) + x^8*(45*d + 120*e) + x^5*(63*d + (105*e)/2) + x*((5*d)/
4 + e/8))/x^9
```

sympy [**A**] time = 5.59, size = 126, normalized size = 0.92

$$\frac{ex^2}{2}+x\,(d+10e)+5\,(2d+9e)\log{(x)}+\frac{-56d+x^8\,(-22680d-60480e)+x^7\,(-30240d-52920e)+x^6\,(-35280d-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**10,x)
```

```
[Out] e*x**2/2 + x*(d + 10*e) + 5*(2*d + 9*e)*log(x) + (-56*d + x**8*(-22680*d -
60480*e) + x**7*(-30240*d - 52920*e) + x**6*(-35280*d - 42336*e) + x**5*(-3
1752*d - 26460*e) + x**4*(-21168*d - 12096*e) + x**3*(-10080*d - 3780*e) +
x**2*(-3240*d - 720*e) + x*(-630*d - 63*e))/(504*x**9)
```

3.577 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$

Optimal. Leaf size=138

$$-\frac{10d+e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\frac{21(5d+6e)}{2x^4}-\frac{10(4d+7e)}{x^3}-\frac{15(3d+8e)}{2x^2}-\frac{5(2d+}{x}$$

```
[Out] -1/10*d/x^10+1/9*(-10*d-e)/x^9-5/8*(9*d+2*e)/x^8-15/7*(8*d+3*e)/x^7-5*(7*d+
4*e)/x^6-42/5*(6*d+5*e)/x^5-21/2*(5*d+6*e)/x^4-10*(4*d+7*e)/x^3-15/2*(3*d+8
*e)/x^2-5*(2*d+9*e)/x+e*x+(d+10*e)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$-\frac{15(3d+8e)}{2x^2}-\frac{10(4d+7e)}{x^3}-\frac{21(5d+6e)}{2x^4}-\frac{42(6d+5e)}{5x^5}-\frac{5(7d+4e)}{x^6}-\frac{15(8d+3e)}{7x^7}-\frac{5(9d+2e)}{8x^8}-\frac{10d+e}{9x^9}-\frac{5(2d+}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -d/(10*x^10) - (10*d + e)/(9*x^9) - (5*(9*d + 2*e))/(8*x^8) - (15*(8*d + 3*
e))/(7*x^7) - (5*(7*d + 4*e))/x^6 - (42*(6*d + 5*e))/(5*x^5) - (21*(5*d + 6
*e))/(2*x^4) - (10*(4*d + 7*e))/x^3 - (15*(3*d + 8*e))/(2*x^2) - (5*(2*d +
9*e))/x + e*x + (d + 10*e)*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{11}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{11}}\,dx\\ &= \int \left(e+\frac{d}{x^{11}}+\frac{10d+e}{x^{10}}+\frac{5(9d+2e)}{x^9}+\frac{15(8d+3e)}{x^8}+\frac{30(7d+4e)}{x^7}+\frac{42(6d+5}{x^6}\right.\\ &= -\frac{d}{10x^{10}}-\frac{10d+e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\end{aligned}$$

Mathematica [A] time = 0.04, size = 140, normalized size = 1.01

$$\frac{-10d-e}{9x^9}-\frac{5(9d+2e)}{8x^8}-\frac{15(8d+3e)}{7x^7}-\frac{5(7d+4e)}{x^6}-\frac{42(6d+5e)}{5x^5}-\frac{21(5d+6e)}{2x^4}-\frac{10(4d+7e)}{x^3}-\frac{15(3d+8e)}{2x^2}-\frac{5(2d+}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/10*d/x^10 + (-10*d - e)/(9*x^9) - (5*(9*d + 2*e))/(8*x^8) - (15*(8*d + 3
*e))/(7*x^7) - (5*(7*d + 4*e))/x^6 - (42*(6*d + 5*e))/(5*x^5) - (21*(5*d +
6*e))/(2*x^4) - (10*(4*d + 7*e))/x^3 - (15*(3*d + 8*e))/(2*x^2) - (5*(2*d +
 9*e))/x + e*x + (d + 10*e)*Log[x]
```

fricas [A] time = 0.77, size = 131, normalized size = 0.95

$$\frac{2520\,ex^{11} + 2520\,(d + 10\,e)x^{10}\log(x) - 12600\,(2\,d + 9\,e)x^{9} - 18900\,(3\,d + 8\,e)x^{8} - 25200\,(4\,d + 7\,e)x^{7} - 26460\,(5}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*e*x^11 + 2520*(d + 10*e)*x^10*log(x) - 12600*(2*d + 9*e)*x^9 -
 18900*(3*d + 8*e)*x^8 - 25200*(4*d + 7*e)*x^7 - 26460*(5*d + 6*e)*x^6 - 21
168*(6*d + 5*e)*x^5 - 12600*(7*d + 4*e)*x^4 - 5400*(8*d + 3*e)*x^3 - 1575*(
9*d + 2*e)*x^2 - 280*(10*d + e)*x - 252*d)/x^10
```

giac [A] time = 0.15, size = 137, normalized size = 0.99

$$xe+(d + 10\,e)\log\left(|x|\right)-\frac{12600\,(2\,d + 9\,e)x^{9} + 18900\,(3\,d + 8\,e)x^{8} + 25200\,(4\,d + 7\,e)x^{7} + 26460\,(5\,d + 6\,e)x^{6} + 211}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="giac")
```

```
[Out] x*e + (d + 10*e)*log(abs(x)) - 1/2520*(12600*(2*d + 9*e)*x^9 + 18900*(3*d +
 8*e)*x^8 + 25200*(4*d + 7*e)*x^7 + 26460*(5*d + 6*e)*x^6 + 21168*(6*d + 5*
e)*x^5 + 12600*(7*d + 4*e)*x^4 + 5400*(8*d + 3*e)*x^3 + 1575*(9*d + 2*e)*x^
2 + 280*(10*d + e)*x + 252*d)/x^10
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$d\ln(x)+ex+10e\ln(x)-\frac{10d}{x}-\frac{45e}{x}-\frac{45d}{2x^{2}}-\frac{60e}{x^{2}}-\frac{40d}{x^{3}}-\frac{70e}{x^{3}}-\frac{105d}{2x^{4}}-\frac{63e}{x^{4}}-\frac{252d}{5x^{5}}-\frac{42e}{x^{5}}-\frac{35d}{x^{6}}-\frac{20e}{x^{6}}-\frac{120d}{7x^{7}}-\frac{45e}{7x^{7}}-\frac{45d}{8x^{8}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^11,x)
```

```
[Out] e*x-252/5*d/x^5-42*e/x^5-105/2*d/x^4-63*e/x^4-40*d/x^3-70*e/x^3-45/8*d/x^8-
5/4*e/x^8-1/10*d/x^10-45/2*d/x^2-60*e/x^2-10/9*d/x^9-1/9*e/x^9-120/7*d/x^7-
45/7*e/x^7-35*d/x^6-20*e/x^6-10*d/x-45*e/x+d*ln(x)+10*e*ln(x)
```

maxima [A] time = 0.50, size = 125, normalized size = 0.91

$$ex+(d + 10\,e)\log(x)-\frac{12600\,(2\,d + 9\,e)x^{9} + 18900\,(3\,d + 8\,e)x^{8} + 25200\,(4\,d + 7\,e)x^{7} + 26460\,(5\,d + 6\,e)x^{6} + 2116}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^11,x, algorithm="maxima")
```

```
[Out] e*x + (d + 10*e)*log(x) - 1/2520*(12600*(2*d + 9*e)*x^9 + 18900*(3*d + 8*e)
*x^8 + 25200*(4*d + 7*e)*x^7 + 26460*(5*d + 6*e)*x^6 + 21168*(6*d + 5*e)*x^
5 + 12600*(7*d + 4*e)*x^4 + 5400*(8*d + 3*e)*x^3 + 1575*(9*d + 2*e)*x^2 + 2
80*(10*d + e)*x + 252*d)/x^10
```

mupad [B] time = 1.09, size = 118, normalized size = 0.86

$$e\,x-\frac{\left(10\,d+45\,e\right)\,x^9+\left(\frac{45\,d}{2}+60\,e\right)\,x^8+\left(40\,d+70\,e\right)\,x^7+\left(\frac{105\,d}{2}+63\,e\right)\,x^6+\left(\frac{252\,d}{5}+42\,e\right)\,x^5+\left(35\,d+20\,e\right)\,x^4}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^11,x)
```

```
[Out] e*x - (d/10 + x^4*(35*d + 20*e) + x^2*((45*d)/8 + (5*e)/4) + x^9*(10*d + 45
*e) + x^8*((45*d)/2 + 60*e) + x^7*(40*d + 70*e) + x^6*((105*d)/2 + 63*e) +
x^3*((120*d)/7 + (45*e)/7) + x^5*((252*d)/5 + 42*e) + x*((10*d)/9 + e/9))/x
^10 + log(x)*(d + 10*e)
```

sympy [A] time = 7.76, size = 124, normalized size = 0.90

$$ex+(d+10e)\log(x)+\frac{-252d+x^9(-25200d-113400e)+x^8(-56700d-151200e)+x^7(-100800d-176400e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**11,x)
```

```
[Out] e*x + (d + 10*e)*log(x) + (-252*d + x**9*(-25200*d - 113400*e) + x**8*(-567
00*d - 151200*e) + x**7*(-100800*d - 176400*e) + x**6*(-132300*d - 158760*e
) + x**5*(-127008*d - 105840*e) + x**4*(-88200*d - 50400*e) + x**3*(-43200*
d - 16200*e) + x**2*(-14175*d - 3150*e) + x*(-2800*d - 280*e))/(2520*x**10)
```

3.578 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{12}}\,dx$

Optimal. Leaf size=92

$$-\frac{d(x+1)^{11}}{11x^{11}}-\frac{e}{10x^{10}}-\frac{10e}{9x^9}-\frac{45e}{8x^8}-\frac{120e}{7x^7}-\frac{35e}{x^6}-\frac{252e}{5x^5}-\frac{105e}{2x^4}-\frac{40e}{x^3}-\frac{45e}{2x^2}-\frac{10e}{x}+e\log(x)$$

```
[Out] -1/10*e/x^10-10/9*e/x^9-45/8*e/x^8-120/7*e/x^7-35*e/x^6-252/5*e/x^5-105/2*e
/x^4-40*e/x^3-45/2*e/x^2-10*e/x-1/11*d*(1+x)^11/x^11+e*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.158$, Rules used = $\{27, 78, 43\}$

$$-\frac{d(x+1)^{11}}{11x^{11}}-\frac{45e}{2x^2}-\frac{40e}{x^3}-\frac{105e}{2x^4}-\frac{252e}{5x^5}-\frac{35e}{x^6}-\frac{120e}{7x^7}-\frac{45e}{8x^8}-\frac{10e}{9x^9}-\frac{e}{10x^{10}}-\frac{10e}{x}+e\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -e/(10*x^10) - (10*e)/(9*x^9) - (45*e)/(8*x^8) - (120*e)/(7*x^7) - (35*e)/x
^6 - (252*e)/(5*x^5) - (105*e)/(2*x^4) - (40*e)/x^3 - (45*e)/(2*x^2) - (10*
e)/x - (d*(1 + x)^11)/(11*x^11) + e*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{12}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{12}}\,dx \\
&= -\frac{d(1+x)^{11}}{11x^{11}}+e\int \frac{(1+x)^{10}}{x^{11}}\,dx \\
&= -\frac{d(1+x)^{11}}{11x^{11}}+e\int \left(\frac{1}{x^{11}}+\frac{10}{x^{10}}+\frac{45}{x^9}+\frac{120}{x^8}+\frac{210}{x^7}+\frac{252}{x^6}+\frac{210}{x^5}+\frac{120}{x^4}+\frac{45}{x^3}+ \right. \\
&= -\frac{e}{10x^{10}}-\frac{10e}{9x^9}-\frac{45e}{8x^8}-\frac{120e}{7x^7}-\frac{35e}{x^6}-\frac{252e}{5x^5}-\frac{105e}{2x^4}-\frac{40e}{x^3}-\frac{45e}{2x^2}-\frac{10e}{x}-\frac{d(1+x}{11x^{11}}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 143, normalized size = 1.55

$$-\frac{10d+e}{10x^{10}}-\frac{5(9d+2e)}{9x^9}-\frac{15(8d+3e)}{8x^8}-\frac{30(7d+4e)}{7x^7}-\frac{7(6d+5e)}{x^6}-\frac{42(5d+6e)}{5x^5}-\frac{15(4d+7e)}{2x^4}-\frac{5(3d+8e)}{x^3}-\frac{5(2d+}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/11*d/x^11 - (10*d + e)/(10*x^10) - (5*(9*d + 2*e))/(9*x^9) - (15*(8*d +
3*e))/(8*x^8) - (30*(7*d + 4*e))/(7*x^7) - (7*(6*d + 5*e))/x^6 - (42*(5*d +
 6*e))/(5*x^5) - (15*(4*d + 7*e))/(2*x^4) - (5*(3*d + 8*e))/x^3 - (5*(2*d +
 9*e))/(2*x^2) - (d + 10*e)/x + e*Log[x]
```

fricas [A] time = 0.92, size = 131, normalized size = 1.42

$$\frac{27720\,ex^{11}\log(x)-27720\,(d+10\,e)x^{10}-69300\,(2\,d+9\,e)x^9-138600\,(3\,d+8\,e)x^8-207900\,(4\,d+7\,e)x^7-2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="fricas")
```

```
[Out] 1/27720*(27720*e*x^11*log(x) - 27720*(d + 10*e)*x^10 - 69300*(2*d + 9*e)*x^
9 - 138600*(3*d + 8*e)*x^8 - 207900*(4*d + 7*e)*x^7 - 232848*(5*d + 6*e)*x^
6 - 194040*(6*d + 5*e)*x^5 - 118800*(7*d + 4*e)*x^4 - 51975*(8*d + 3*e)*x^3
 - 15400*(9*d + 2*e)*x^2 - 2772*(10*d + e)*x - 2520*d)/x^11
```

giac [A] time = 0.18, size = 140, normalized size = 1.52

$$e\log(|x|)-\frac{27720\,(d+10\,e)x^{10}+69300\,(2\,d+9\,e)x^9+138600\,(3\,d+8\,e)x^8+207900\,(4\,d+7\,e)x^7+232848\,(5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="giac")
```

```
[Out] e*log(abs(x)) - 1/27720*(27720*(d + 10*e)*x^10 + 69300*(2*d + 9*e)*x^9 + 13
8600*(3*d + 8*e)*x^8 + 207900*(4*d + 7*e)*x^7 + 232848*(5*d + 6*e)*x^6 + 19
4040*(6*d + 5*e)*x^5 + 118800*(7*d + 4*e)*x^4 + 51975*(8*d + 3*e)*x^3 + 154
00*(9*d + 2*e)*x^2 + 2772*(10*d + e)*x + 2520*d)/x^11
```

maple [A] time = 0.05, size = 132, normalized size = 1.43

$$e\ln(x)-\frac{d}{x}-\frac{10e}{x}-\frac{5d}{x^2}-\frac{45e}{2x^2}-\frac{15d}{x^3}-\frac{40e}{x^3}-\frac{30d}{x^4}-\frac{105e}{2x^4}-\frac{42d}{x^5}-\frac{252e}{5x^5}-\frac{42d}{x^6}-\frac{35e}{x^6}-\frac{30d}{x^7}-\frac{120e}{7x^7}-\frac{15d}{x^8}-\frac{45e}{8x^8}-\frac{5d}{x^9}-\frac{10e}{9x^9}-\frac{d}{x^{1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^12,x)
```

```
[Out] -42*d/x^5-252/5*e/x^5-30*d/x^4-105/2*e/x^4-15*d/x^3-40*e/x^3-15*d/x^8-45/8*
e/x^8-d/x^10-1/10*e/x^10-5*d/x^2-45/2*e/x^2-5*d/x^9-10/9*e/x^9-30*d/x^7-120
/7*e/x^7-42*d/x^6-35*e/x^6-d/x-10*e/x-1/11*d/x^11+e*ln(x)
```

maxima [A] time = 0.58, size = 128, normalized size = 1.39

$$e\log(x)-\frac{27720\,(d+10\,e)x^{10}+69300\,(2\,d+9\,e)x^9+138600\,(3\,d+8\,e)x^8+207900\,(4\,d+7\,e)x^7+232848\,(5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^12,x, algorithm="maxima")
```

```
[Out] e*log(x) - 1/27720*(27720*(d + 10*e)*x^10 + 69300*(2*d + 9*e)*x^9 + 138600*
(3*d + 8*e)*x^8 + 207900*(4*d + 7*e)*x^7 + 232848*(5*d + 6*e)*x^6 + 194040*
(6*d + 5*e)*x^5 + 118800*(7*d + 4*e)*x^4 + 51975*(8*d + 3*e)*x^3 + 15400*(9
*d + 2*e)*x^2 + 2772*(10*d + e)*x + 2520*d)/x^11
```

mupad [B] time = 1.10, size = 118, normalized size = 1.28

$$e\,\ln(x) - \frac{(d+10\,e)\,x^{10} + \left(5\,d + \frac{45\,e}{2}\right)x^9 + (15\,d+40\,e)\,x^8 + \left(30\,d + \frac{105\,e}{2}\right)x^7 + \left(42\,d + \frac{252\,e}{5}\right)x^6 + (42\,d+35\,e)\,x}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^12,x)
```

```
[Out] e*log(x) - (d/11 + x^2*(5*d + (10*e)/9) + x^9*(5*d + (45*e)/2) + x^8*(15*d
+ 40*e) + x^3*(15*d + (45*e)/8) + x^5*(42*d + 35*e) + x^7*(30*d + (105*e)/2
) + x^4*(30*d + (120*e)/7) + x^6*(42*d + (252*e)/5) + x*(d + e/10) + x^10*(
d + 10*e))/x^11
```

sympy [A] time = 9.30, size = 129, normalized size = 1.40

$$e\log(x) + \frac{-2520d + x^{10}(-27720d - 277200e) + x^9(-138600d - 623700e) + x^8(-415800d - 1108800e) + x^7(-8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**12,x)
```

```
[Out] e*log(x) + (-2520*d + x**10*(-27720*d - 277200*e) + x**9*(-138600*d - 62370
0*e) + x**8*(-415800*d - 1108800*e) + x**7*(-831600*d - 1455300*e) + x**6*(
-1164240*d - 1397088*e) + x**5*(-1164240*d - 970200*e) + x**4*(-831600*d -
475200*e) + x**3*(-415800*d - 155925*e) + x**2*(-138600*d - 30800*e) + x*(-
27720*d - 2772*e))/(27720*x**11)
```

3.579 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{13}}\,dx$

Optimal. Leaf size=31

$$\frac{(x+1)^{11}(d-12e)}{132x^{11}}-\frac{d(x+1)^{11}}{12x^{12}}$$

```
[Out] -1/12*d*(1+x)^11/x^12+1/132*(d-12*e)*(1+x)^11/x^11
```

Rubi [A] time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {27, 78, 37}

$$\frac{(x+1)^{11}(d-12e)}{132x^{11}}-\frac{d(x+1)^{11}}{12x^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -(d*(1 + x)^11)/(12*x^12) + ((d - 12*e)*(1 + x)^11)/(132*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{13}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{13}}\,dx\\ &= -\frac{d(1+x)^{11}}{12x^{12}}-\frac{1}{12}(d-12e)\int \frac{(1+x)^{10}}{x^{12}}\,dx\\ &= -\frac{d(1+x)^{11}}{12x^{12}}+\frac{(d-12e)(1+x)^{11}}{132x^{11}}\end{aligned}$$

Mathematica [B] time = 0.03, size = 114, normalized size = 3.68

$$-\frac{d\left(66x^{10}+440x^9+1485x^8+3168x^7+4620x^6+4752x^5+3465x^4+1760x^3+594x^2+120x+11\right)+12ex(}{132x^{12}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -1/132*(12*e*x*(1 + 11*x + 55*x^2 + 165*x^3 + 330*x^4 + 462*x^5 + 462*x^6 +
 330*x^7 + 165*x^8 + 55*x^9 + 11*x^10) + d*(11 + 120*x + 594*x^2 + 1760*x^3
 + 3465*x^4 + 4752*x^5 + 4620*x^6 + 3168*x^7 + 1485*x^8 + 440*x^9 + 66*x^10
))/x^12
```

fricas [B] time = 1.10, size = 129, normalized size = 4.16

$$-\frac{132\,ex^{11} + 66\,(d + 10\,e)x^{10} + 220\,(2\,d + 9\,e)x^{9} + 495\,(3\,d + 8\,e)x^{8} + 792\,(4\,d + 7\,e)x^{7} + 924\,(5\,d + 6\,e)x^{6} + 792}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="fricas")
```

```
[Out] -1/132*(132*e*x^11 + 66*(d + 10*e)*x^10 + 220*(2*d + 9*e)*x^9 + 495*(3*d +
8*e)*x^8 + 792*(4*d + 7*e)*x^7 + 924*(5*d + 6*e)*x^6 + 792*(6*d + 5*e)*x^5
+ 495*(7*d + 4*e)*x^4 + 220*(8*d + 3*e)*x^3 + 66*(9*d + 2*e)*x^2 + 12*(10*d
 + e)*x + 11*d)/x^12
```

giac [B] time = 0.16, size = 142, normalized size = 4.58

$$-\frac{132\,x^{11}e + 66\,dx^{10} + 660\,x^{10}e + 440\,dx^{9} + 1980\,x^{9}e + 1485\,dx^{8} + 3960\,x^{8}e + 3168\,dx^{7} + 5544\,x^{7}e + 4620\,dx^{6} +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="giac")
```

```
[Out] -1/132*(132*x^11*e + 66*d*x^10 + 660*x^10*e + 440*d*x^9 + 1980*x^9*e + 1485
*d*x^8 + 3960*x^8*e + 3168*d*x^7 + 5544*x^7*e + 4620*d*x^6 + 5544*x^6*e + 4
752*d*x^5 + 3960*x^5*e + 3465*d*x^4 + 1980*x^4*e + 1760*d*x^3 + 660*x^3*e +
 594*d*x^2 + 132*x^2*e + 120*d*x + 12*x*e + 11*d)/x^12
```

maple [B] time = 0.06, size = 130, normalized size = 4.19

$$-\frac{e}{x}-\frac{d+10e}{2x^{2}}-\frac{10d+45e}{3x^{3}}-\frac{45d+120e}{4x^{4}}-\frac{120d+210e}{5x^{5}}-\frac{210d+252e}{6x^{6}}-\frac{252d+210e}{7x^{7}}-\frac{210d+120e}{8x^{8}}-\frac{120d+45e}{9x^{9}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^13,x)
```

```
[Out] -1/5*(120*d+210*e)/x^5-1/4*(45*d+120*e)/x^4-1/3*(10*d+45*e)/x^3-1/8*(210*d+
120*e)/x^8-1/10*(45*d+10*e)/x^10-1/2*(d+10*e)/x^2-1/9*(120*d+45*e)/x^9-1/7*
(252*d+210*e)/x^7-1/6*(210*d+252*e)/x^6-e/x-1/12*d/x^12-1/11*(10*d+e)/x^11
```

maxima [B] time = 0.56, size = 129, normalized size = 4.16

$$-\frac{132\,ex^{11} + 66\,(d + 10\,e)x^{10} + 220\,(2\,d + 9\,e)x^{9} + 495\,(3\,d + 8\,e)x^{8} + 792\,(4\,d + 7\,e)x^{7} + 924\,(5\,d + 6\,e)x^{6} + 792}{132\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^13,x, algorithm="maxima")
```

```
[Out] -1/132*(132*e*x^11 + 66*(d + 10*e)*x^10 + 220*(2*d + 9*e)*x^9 + 495*(3*d +
8*e)*x^8 + 792*(4*d + 7*e)*x^7 + 924*(5*d + 6*e)*x^6 + 792*(6*d + 5*e)*x^5
+ 495*(7*d + 4*e)*x^4 + 220*(8*d + 3*e)*x^3 + 66*(9*d + 2*e)*x^2 + 12*(10*d
 + e)*x + 11*d)/x^12
```

mupad [B] time = 0.12, size = 120, normalized size = 3.87

$$-\frac{e\,x^{11}+\left(\frac{d}{2}+5\,e\right)\,x^{10}+\left(\frac{10\,d}{3}+15\,e\right)\,x^9+\left(\frac{45\,d}{4}+30\,e\right)\,x^8+(24\,d+42\,e)\,x^7+(35\,d+42\,e)\,x^6+(36\,d+30\,e}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^13,x)
```

```
[Out] -(d/12 + x^10*(d/2 + 5*e) + x^9*((10*d)/3 + 15*e) + x^3*((40*d)/3 + 5*e) +
x^5*(36*d + 30*e) + x^7*(24*d + 42*e) + x^6*(35*d + 42*e) + x^8*((45*d)/4 +
 30*e) + x^4*((105*d)/4 + 15*e) + e*x^11 + x*((10*d)/11 + e/11) + x^2*((9*d
)/2 + e))/x^12
```

sympy [B] time = 11.46, size = 131, normalized size = 4.23

$$\frac{-11d-132ex^{11}+x^{10}\left(-66d-660e\right)+x^{9}\left(-440d-1980e\right)+x^{8}\left(-1485d-3960e\right)+x^{7}\left(-3168d-5544e\right)+x^{6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**13,x)
```

```
[Out] (-11*d - 132*e*x**11 + x**10*(-66*d - 660*e) + x**9*(-440*d - 1980*e) + x**
8*(-1485*d - 3960*e) + x**7*(-3168*d - 5544*e) + x**6*(-4620*d - 5544*e) +
x**5*(-4752*d - 3960*e) + x**4*(-3465*d - 1980*e) + x**3*(-1760*d - 660*e)
+ x**2*(-594*d - 132*e) + x*(-120*d - 12*e))/(132*x**12)
```

3.580 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$

Optimal. Leaf size=52

$$\frac{(x+1)^{11}(2d-13e)}{156x^{12}}-\frac{(x+1)^{11}(2d-13e)}{1716x^{11}}-\frac{d(x+1)^{11}}{13x^{13}}$$

```
[Out] -1/13*d*(1+x)^11/x^13+1/156*(2*d-13*e)*(1+x)^11/x^12-1/1716*(2*d-13*e)*(1+x
)^11/x^11
```

Rubi [A] time = 0.01, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = $\{27, 78, 45, 37\}$

$$-\frac{(x+1)^{11}(2d-13e)}{1716x^{11}}+\frac{(x+1)^{11}(2d-13e)}{156x^{12}}-\frac{d(x+1)^{11}}{13x^{13}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -(d*(1 + x)^11)/(13*x^13) + ((2*d - 13*e)*(1 + x)^11)/(156*x^12) - ((2*d -
13*e)*(1 + x)^11)/(1716*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{14}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{14}}\,dx\\ &= -\frac{d(1+x)^{11}}{13x^{13}} - \frac{1}{13}(2d-13e)\int \frac{(1+x)^{10}}{x^{13}}\,dx\\ &= -\frac{d(1+x)^{11}}{13x^{13}} + \frac{(2d-13e)(1+x)^{11}}{156x^{12}} - \frac{1}{156}(-2d+13e)\int \frac{(1+x)^{10}}{x^{12}}\,dx\\ &= -\frac{d(1+x)^{11}}{13x^{13}} + \frac{(2d-13e)(1+x)^{11}}{156x^{12}} - \frac{(2d-13e)(1+x)^{11}}{1716x^{11}}\end{aligned}$$

Mathematica [**B**] time = 0.03, size = 115, normalized size = 2.21

$$-\frac{2d\left(286x^{10}+2145x^9+7722x^8+17160x^7+25740x^6+27027x^5+20020x^4+10296x^3+3510x^2+715x+6}{171}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -1/1716*(13*e*x*(11 + 120*x + 594*x^2 + 1760*x^3 + 3465*x^4 + 4752*x^5 + 46
20*x^6 + 3168*x^7 + 1485*x^8 + 440*x^9 + 66*x^10) + 2*d*(66 + 715*x + 3510*
x^2 + 10296*x^3 + 20020*x^4 + 27027*x^5 + 25740*x^6 + 17160*x^7 + 7722*x^8
+ 2145*x^9 + 286*x^10))/x^13
```

fricas [**B**] time = 0.83, size = 129, normalized size = 2.48

$$-\frac{858\,ex^{11}+572\,(d+10\,e)x^{10}+2145\,(2\,d+9\,e)x^9+5148\,(3\,d+8\,e)x^8+8580\,(4\,d+7\,e)x^7+10296\,(5\,d+6\,e)}{171}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="fricas")
```

```
[Out] -1/1716*(858*e*x^11 + 572*(d + 10*e)*x^10 + 2145*(2*d + 9*e)*x^9 + 5148*(3*
d + 8*e)*x^8 + 8580*(4*d + 7*e)*x^7 + 10296*(5*d + 6*e)*x^6 + 9009*(6*d + 5
*e)*x^5 + 5720*(7*d + 4*e)*x^4 + 2574*(8*d + 3*e)*x^3 + 780*(9*d + 2*e)*x^2
 + 143*(10*d + e)*x + 132*d)/x^13
```

giac [**B**] time = 0.16, size = 142, normalized size = 2.73

$$-\frac{858\,x^{11}e+572\,dx^{10}+5720\,x^{10}e+4290\,dx^9+19305\,x^9e+15444\,dx^8+41184\,x^8e+34320\,dx^7+60060\,x^7e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="giac")
```

```
[Out] -1/1716*(858*x^11*e + 572*d*x^10 + 5720*x^10*e + 4290*d*x^9 + 19305*x^9*e +
 15444*d*x^8 + 41184*x^8*e + 34320*d*x^7 + 60060*x^7*e + 51480*d*x^6 + 6177
6*x^6*e + 54054*d*x^5 + 45045*x^5*e + 40040*d*x^4 + 22880*x^4*e + 20592*d*x
^3 + 7722*x^3*e + 7020*d*x^2 + 1560*x^2*e + 1430*d*x + 143*x*e + 132*d)/x^1
3
```

maple [**B**] time = 0.06, size = 130, normalized size = 2.50

$$-\frac{e}{2x^2}-\frac{d+10e}{3x^3}-\frac{10d+45e}{4x^4}-\frac{45d+120e}{5x^5}-\frac{120d+210e}{6x^6}-\frac{210d+252e}{7x^7}-\frac{252d+210e}{8x^8}-\frac{210d+120e}{9x^9}-\frac{120d+45e}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^14,x)
```

```
[Out] -1/5*(45*d+120*e)/x^5-1/4*(10*d+45*e)/x^4-1/3*(d+10*e)/x^3-1/8*(252*d+210*e
)/x^8-1/12*(10*d+e)/x^12-1/10*(120*d+45*e)/x^10-1/2*e/x^2-1/9*(210*d+120*e)
/x^9-1/7*(210*d+252*e)/x^7-1/6*(120*d+210*e)/x^6-1/13*d/x^13-1/11*(45*d+10*
e)/x^11
```

maxima [B] time = 0.55, size = 129, normalized size = 2.48

$$-\frac{858\,ex^{11} + 572\,(d + 10\,e)x^{10} + 2145\,(2\,d + 9\,e)x^{9} + 5148\,(3\,d + 8\,e)x^{8} + 8580\,(4\,d + 7\,e)x^{7} + 10296\,(5\,d + 6\,e)x^{6}}{1716\,x^{1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^14,x, algorithm="maxima")
```

```
[Out] -1/1716*(858*e*x^11 + 572*(d + 10*e)*x^10 + 2145*(2*d + 9*e)*x^9 + 5148*(3*
d + 8*e)*x^8 + 8580*(4*d + 7*e)*x^7 + 10296*(5*d + 6*e)*x^6 + 9009*(6*d + 5
*e)*x^5 + 5720*(7*d + 4*e)*x^4 + 2574*(8*d + 3*e)*x^3 + 780*(9*d + 2*e)*x^2
 + 143*(10*d + e)*x + 132*d)/x^13
```

mupad [B] time = 1.14, size = 123, normalized size = 2.37

$$-\frac{\frac{e\,x^{11}}{2} + \left(\frac{d}{3} + \frac{10\,e}{3}\right)\,x^{10} + \left(\frac{5\,d}{2} + \frac{45\,e}{4}\right)\,x^{9} + (9\,d + 24\,e)\,x^{8} + (20\,d + 35\,e)\,x^{7} + (30\,d + 36\,e)\,x^{6} + \left(\frac{63\,d}{2} + \frac{105\,e}{4}\right)\,x^{5} +}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^14,x)
```

```
[Out] -(d/13 + x^3*(12*d + (9*e)/2) + x^10*(d/3 + (10*e)/3) + x^8*(9*d + 24*e) +
x^7*(20*d + 35*e) + x^9*((5*d)/2 + (45*e)/4) + x^6*(30*d + 36*e) + x^2*((45
*d)/11 + (10*e)/11) + x^4*((70*d)/3 + (40*e)/3) + x^5*((63*d)/2 + (105*e)/4
) + (e*x^11)/2 + x*((5*d)/6 + e/12))/x^13
```

sympy [B] time = 13.82, size = 131, normalized size = 2.52

$$\frac{-132d - 858ex^{11} + x^{10}\left(-572d - 5720e\right) + x^{9}\left(-4290d - 19305e\right) + x^{8}\left(-15444d - 41184e\right) + x^{7}\left(-34320d - 6006\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**14,x)
```

```
[Out] (-132*d - 858*e*x**11 + x**10*(-572*d - 5720*e) + x**9*(-4290*d - 19305*e)
+ x**8*(-15444*d - 41184*e) + x**7*(-34320*d - 60060*e) + x**6*(-51480*d -
61776*e) + x**5*(-54054*d - 45045*e) + x**4*(-40040*d - 22880*e) + x**3*(-2
0592*d - 7722*e) + x**2*(-7020*d - 1560*e) + x*(-1430*d - 143*e))/(1716*x**
13)
```

3.581 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$

Optimal. Leaf size=71

$$\frac{(x+1)^{11}(3d-14e)}{182x^{13}}-\frac{(x+1)^{11}(3d-14e)}{1092x^{12}}+\frac{(x+1)^{11}(3d-14e)}{12012x^{11}}-\frac{d(x+1)^{11}}{14x^{14}}$$

```
[Out] -1/14*d*(1+x)^11/x^14+1/182*(3*d-14*e)*(1+x)^11/x^13-1/1092*(3*d-14*e)*(1+x
)^11/x^12+1/12012*(3*d-14*e)*(1+x)^11/x^11
```

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$\frac{(x+1)^{11}(3d-14e)}{12012x^{11}}-\frac{(x+1)^{11}(3d-14e)}{1092x^{12}}+\frac{(x+1)^{11}(3d-14e)}{182x^{13}}-\frac{d(x+1)^{11}}{14x^{14}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -(d*(1 + x)^11)/(14*x^14) + ((3*d - 14*e)*(1 + x)^11)/(182*x^13) - ((3*d -
14*e)*(1 + x)^11)/(1092*x^12) + ((3*d - 14*e)*(1 + x)^11)/(12012*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{15}}\,dx = \int \frac{(1+x)^{10}(d+ex)}{x^{15}}\,dx$$
$$= -\frac{d(1+x)^{11}}{14x^{14}} - \frac{1}{14}(3d-14e)\int \frac{(1+x)^{10}}{x^{14}}\,dx$$
$$= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{1}{91}(-3d+14e)\int \frac{(1+x)^{10}}{x^{13}}\,dx$$
$$= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{(3d-14e)(1+x)^{11}}{1092x^{12}} - \frac{(3d-14e)\int \frac{(1+x)^{10}}{x^{12}}\,dx}{1092}$$
$$= -\frac{d(1+x)^{11}}{14x^{14}} + \frac{(3d-14e)(1+x)^{11}}{182x^{13}} - \frac{(3d-14e)(1+x)^{11}}{1092x^{12}} + \frac{(3d-14e)(1+x)^{11}}{12012x^{11}}$$

Mathematica [B] time = 0.04, size = 149, normalized size = 2.10

$$-\frac{10d+e}{13x^{13}} - \frac{5(9d+2e)}{12x^{12}} - \frac{15(8d+3e)}{11x^{11}} - \frac{3(7d+4e)}{x^{10}} - \frac{14(6d+5e)}{3x^9} - \frac{21(5d+6e)}{4x^8} - \frac{30(4d+7e)}{7x^7} - \frac{5(3d+8e)}{2x^6} - \frac{2d+9e}{x^5} -$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -1/14*d/x^14 - (10*d + e)/(13*x^13) - (5*(9*d + 2*e))/(12*x^12) - (15*(8*d
+ 3*e))/(11*x^11) - (3*(7*d + 4*e))/x^10 - (14*(6*d + 5*e))/(3*x^9) - (21*(
5*d + 6*e))/(4*x^8) - (30*(4*d + 7*e))/(7*x^7) - (5*(3*d + 8*e))/(2*x^6) -
(2*d + 9*e)/x^5 - (d + 10*e)/(4*x^4) - e/(3*x^3)
```

fricas [B] time = 0.83, size = 129, normalized size = 1.82

$$-\frac{4004\,ex^{11} + 3003\,(d+10\,e)x^{10} + 12012\,(2\,d+9\,e)x^9 + 30030\,(3\,d+8\,e)x^8 + 51480\,(4\,d+7\,e)x^7 + 63063\,(5\,d+}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="fricas")
```

```
[Out] -1/12012*(4004*e*x^11 + 3003*(d + 10*e)*x^10 + 12012*(2*d + 9*e)*x^9 + 3003
0*(3*d + 8*e)*x^8 + 51480*(4*d + 7*e)*x^7 + 63063*(5*d + 6*e)*x^6 + 56056*(
6*d + 5*e)*x^5 + 36036*(7*d + 4*e)*x^4 + 16380*(8*d + 3*e)*x^3 + 5005*(9*d
+ 2*e)*x^2 + 924*(10*d + e)*x + 858*d)/x^14
```

giac [B] time = 0.17, size = 142, normalized size = 2.00

$$-\frac{4004\,x^{11}e + 3003\,dx^{10} + 30030\,x^{10}e + 24024\,dx^9 + 108108\,x^9e + 90090\,dx^8 + 240240\,x^8e + 205920\,dx^7 + 3603}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="giac")
```

```
[Out] -1/12012*(4004*x^11*e + 3003*d*x^10 + 30030*x^10*e + 24024*d*x^9 + 108108*x
^9*e + 90090*d*x^8 + 240240*x^8*e + 205920*d*x^7 + 360360*x^7*e + 315315*d*
x^6 + 378378*x^6*e + 336336*d*x^5 + 280280*x^5*e + 252252*d*x^4 + 144144*x^
4*e + 131040*d*x^3 + 49140*x^3*e + 45045*d*x^2 + 10010*x^2*e + 9240*d*x + 9
24*x*e + 858*d)/x^14
```

maple [B] time = 0.05, size = 130, normalized size = 1.83

$$-\frac{e}{3x^3} - \frac{d+10e}{4x^4} - \frac{10d+45e}{5x^5} - \frac{45d+120e}{6x^6} - \frac{120d+210e}{7x^7} - \frac{210d+252e}{8x^8} - \frac{252d+210e}{9x^9} - \frac{210d+120e}{10x^{10}} - \frac{120d+45e}{11x^{11}} - 4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^15,x)
```

```
[Out] -1/5*(10*d+45*e)/x^5-1/4*(d+10*e)/x^4-1/3*e/x^3-1/8*(210*d+252*e)/x^8-1/10*
(210*d+120*e)/x^10-1/9*(252*d+210*e)/x^9-1/7*(120*d+210*e)/x^7-1/6*(45*d+12
0*e)/x^6-1/13*(10*d+e)/x^13-1/11*(120*d+45*e)/x^11-1/12*(45*d+10*e)/x^12-1/
14*d/x^14
```

maxima [B] time = 0.72, size = 129, normalized size = 1.82

$$-\frac{4004\,ex^{11} + 3003\,(d + 10\,e)x^{10} + 12012\,(2\,d + 9\,e)x^{9} + 30030\,(3\,d + 8\,e)x^{8} + 51480\,(4\,d + 7\,e)x^{7} + 63063\,(5\,d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^15,x, algorithm="maxima")
```

```
[Out] -1/12012*(4004*e*x^11 + 3003*(d + 10*e)*x^10 + 12012*(2*d + 9*e)*x^9 + 3003
0*(3*d + 8*e)*x^8 + 51480*(4*d + 7*e)*x^7 + 63063*(5*d + 6*e)*x^6 + 56056*(
6*d + 5*e)*x^5 + 36036*(7*d + 4*e)*x^4 + 16380*(8*d + 3*e)*x^3 + 5005*(9*d
+ 2*e)*x^2 + 924*(10*d + e)*x + 858*d)/x^14
```

mupad [B] time = 0.12, size = 123, normalized size = 1.73

$$-\frac{\frac{e\,x^{11}}{3} + \left(\frac{d}{4} + \frac{5\,e}{2}\right)\,x^{10} + \left(2\,d + 9\,e\right)\,x^{9} + \left(\frac{15\,d}{2} + 20\,e\right)\,x^{8} + \left(\frac{120\,d}{7} + 30\,e\right)\,x^{7} + \left(\frac{105\,d}{4} + \frac{63\,e}{2}\right)\,x^{6} + \left(28\,d + \frac{70\,e}{3}\right)\,x}{x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^15,x)
```

```
[Out] -(d/14 + x^9*(2*d + 9*e) + x^10*(d/4 + (5*e)/2) + x^2*((15*d)/4 + (5*e)/6)
+ x^4*(21*d + 12*e) + x^8*((15*d)/2 + 20*e) + x^5*(28*d + (70*e)/3) + x^7*(
(120*d)/7 + 30*e) + x^6*((105*d)/4 + (63*e)/2) + x^3*((120*d)/11 + (45*e)/1
1) + (e*x^11)/3 + x*((10*d)/13 + e/13))/x^14
```

sympy [B] time = 16.09, size = 131, normalized size = 1.85

$$\frac{-858d - 4004ex^{11} + x^{10}\left(-3003d - 30030e\right) + x^{9}\left(-24024d - 108108e\right) + x^{8}\left(-90090d - 240240e\right) + x^{7}\left(-205\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**15,x)
```

```
[Out] (-858*d - 4004*e*x**11 + x**10*(-3003*d - 30030*e) + x**9*(-24024*d - 10810
8*e) + x**8*(-90090*d - 240240*e) + x**7*(-205920*d - 360360*e) + x**6*(-31
5315*d - 378378*e) + x**5*(-336336*d - 280280*e) + x**4*(-252252*d - 144144
*e) + x**3*(-131040*d - 49140*e) + x**2*(-45045*d - 10010*e) + x*(-9240*d -
 924*e))/(12012*x**14)
```

3.582 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$

Optimal. Leaf size=90

$$\frac{(x+1)^{11}(4d-15e)}{210x^{14}}-\frac{(x+1)^{11}(4d-15e)}{910x^{13}}+\frac{(x+1)^{11}(4d-15e)}{5460x^{12}}-\frac{(x+1)^{11}(4d-15e)}{60060x^{11}}-\frac{d(x+1)^{11}}{15x^{15}}$$

```
[Out] -1/15*d*(1+x)^11/x^15+1/210*(4*d-15*e)*(1+x)^11/x^14-1/910*(4*d-15*e)*(1+x)
^11/x^13+1/5460*(4*d-15*e)*(1+x)^11/x^12-1/60060*(4*d-15*e)*(1+x)^11/x^11
```

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = $\{27, 78, 45, 37\}$

$$-\frac{(x+1)^{11}(4d-15e)}{60060x^{11}}+\frac{(x+1)^{11}(4d-15e)}{5460x^{12}}-\frac{(x+1)^{11}(4d-15e)}{910x^{13}}+\frac{(x+1)^{11}(4d-15e)}{210x^{14}}-\frac{d(x+1)^{11}}{15x^{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -(d*(1 + x)^11)/(15*x^15) + ((4*d - 15*e)*(1 + x)^11)/(210*x^14) - ((4*d -
15*e)*(1 + x)^11)/(910*x^13) + ((4*d - 15*e)*(1 + x)^11)/(5460*x^12) - ((4*
d - 15*e)*(1 + x)^11)/(60060*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{16}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{16}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} - \frac{1}{15}(4d-15e)\int \frac{(1+x)^{10}}{x^{15}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{1}{70}(-4d+15e)\int \frac{(1+x)^{10}}{x^{14}}\,dx \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} - \frac{1}{455}(4d-15e)\int \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} + \frac{(4d-15e)(1+x)^{11}}{5460x^{12}} \\
&= -\frac{d(1+x)^{11}}{15x^{15}} + \frac{(4d-15e)(1+x)^{11}}{210x^{14}} - \frac{(4d-15e)(1+x)^{11}}{910x^{13}} + \frac{(4d-15e)(1+x)^{11}}{5460x^{12}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.70

$$
-\frac{10d+e}{14x^{14}} - \frac{5(9d+2e)}{13x^{13}} - \frac{5(8d+3e)}{4x^{12}} - \frac{30(7d+4e)}{11x^{11}} - \frac{21(6d+5e)}{5x^{10}} - \frac{14(5d+6e)}{3x^9} - \frac{15(4d+7e)}{4x^8} - \frac{15(3d+8e)}{7x^7} - \frac{5(2d+}{6x}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -1/15*d/x^15 - (10*d + e)/(14*x^14) - (5*(9*d + 2*e))/(13*x^13) - (5*(8*d +
 3*e))/(4*x^12) - (30*(7*d + 4*e))/(11*x^11) - (21*(6*d + 5*e))/(5*x^10) -
(14*(5*d + 6*e))/(3*x^9) - (15*(4*d + 7*e))/(4*x^8) - (15*(3*d + 8*e))/(7*x
^7) - (5*(2*d + 9*e))/(6*x^6) - (d + 10*e)/(5*x^5) - e/(4*x^4)
```

fricas [A] time = 0.93, size = 129, normalized size = 1.43

$$
-\frac{15015\,ex^{11} + 12012\,(d+10\,e)x^{10} + 50050\,(2\,d+9\,e)x^9 + 128700\,(3\,d+8\,e)x^8 + 225225\,(4\,d+7\,e)x^7 + 28028}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="fricas")
```

```
[Out] -1/60060*(15015*e*x^11 + 12012*(d + 10*e)*x^10 + 50050*(2*d + 9*e)*x^9 + 12
8700*(3*d + 8*e)*x^8 + 225225*(4*d + 7*e)*x^7 + 280280*(5*d + 6*e)*x^6 + 25
2252*(6*d + 5*e)*x^5 + 163800*(7*d + 4*e)*x^4 + 75075*(8*d + 3*e)*x^3 + 231
00*(9*d + 2*e)*x^2 + 4290*(10*d + e)*x + 4004*d)/x^15
```

giac [A] time = 0.16, size = 142, normalized size = 1.58

$$
-\frac{15015\,x^{11}e + 12012\,dx^{10} + 120120\,x^{10}e + 100100\,dx^9 + 450450\,x^9e + 386100\,dx^8 + 1029600\,x^8e + 900900\,d}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="giac")
```

```
[Out] -1/60060*(15015*x^11*e + 12012*d*x^10 + 120120*x^10*e + 100100*d*x^9 + 4504
50*x^9*e + 386100*d*x^8 + 1029600*x^8*e + 900900*d*x^7 + 1576575*x^7*e + 14
01400*d*x^6 + 1681680*x^6*e + 1513512*d*x^5 + 1261260*x^5*e + 1146600*d*x^4
 + 655200*x^4*e + 600600*d*x^3 + 225225*x^3*e + 207900*d*x^2 + 46200*x^2*e
+ 42900*d*x + 4290*x*e + 4004*d)/x^15
```

maple [A] time = 0.06, size = 130, normalized size = 1.44

$$
-\frac{e}{4x^4} - \frac{d+10e}{5x^5} - \frac{10d+45e}{6x^6} - \frac{45d+120e}{7x^7} - \frac{120d+210e}{8x^8} - \frac{210d+252e}{9x^9} - \frac{252d+210e}{10x^{10}} - \frac{210d+120e}{11x^{11}} - \frac{120d+45e}{12x^{12}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^16,x)
```

```
[Out] -1/5*(d+10*e)/x^5-1/4*e/x^4-1/8*(120*d+210*e)/x^8-1/13*(45*d+10*e)/x^13-1/1
0*(252*d+210*e)/x^10-1/15*d/x^15-1/9*(210*d+252*e)/x^9-1/7*(45*d+120*e)/x^7
-1/14*(10*d+e)/x^14-1/6*(10*d+45*e)/x^6-1/12*(120*d+45*e)/x^12-1/11*(210*d+
120*e)/x^11
```

maxima [A] time = 0.71, size = 129, normalized size = 1.43

$$-\frac{15015\,ex^{11} + 12012\,(d + 10\,e)x^{10} + 50050\,(2\,d + 9\,e)x^{9} + 128700\,(3\,d + 8\,e)x^{8} + 225225\,(4\,d + 7\,e)x^{7} + 280280\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^16,x, algorithm="maxima")
```

```
[Out] -1/60060*(15015*e*x^11 + 12012*(d + 10*e)*x^10 + 50050*(2*d + 9*e)*x^9 + 12
8700*(3*d + 8*e)*x^8 + 225225*(4*d + 7*e)*x^7 + 280280*(5*d + 6*e)*x^6 + 25
2252*(6*d + 5*e)*x^5 + 163800*(7*d + 4*e)*x^4 + 75075*(8*d + 3*e)*x^3 + 231
00*(9*d + 2*e)*x^2 + 4290*(10*d + e)*x + 4004*d)/x^15
```

mupad [B] time = 0.12, size = 123, normalized size = 1.37

$$-\frac{\frac{e\,x^{11}}{4} + \left(\frac{d}{5} + 2\,e\right)\,x^{10} + \left(\frac{5\,d}{3} + \frac{15\,e}{2}\right)\,x^{9} + \left(\frac{45\,d}{7} + \frac{120\,e}{7}\right)\,x^{8} + \left(15\,d + \frac{105\,e}{4}\right)\,x^{7} + \left(\frac{70\,d}{3} + 28\,e\right)\,x^{6} + \left(\frac{126\,d}{5} + 21\,e\right)\,x^{5}}{x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^16,x)
```

```
[Out] -(d/15 + x^10*(d/5 + 2*e) + x^3*(10*d + (15*e)/4) + x^9*((5*d)/3 + (15*e)/2
) + x^2*((45*d)/13 + (10*e)/13) + x^6*((70*d)/3 + 28*e) + x^7*(15*d + (105*
e)/4) + x^5*((126*d)/5 + 21*e) + x^8*((45*d)/7 + (120*e)/7) + x^4*((210*d)/
11 + (120*e)/11) + (e*x^11)/4 + x*((5*d)/7 + e/14))/x^15
```

sympy [A] time = 19.11, size = 131, normalized size = 1.46

$$\frac{-4004d - 15015ex^{11} + x^{10}\left(-12012d - 120120e\right) + x^{9}\left(-100100d - 450450e\right) + x^{8}\left(-386100d - 1029600e\right) + x^{7}\,(-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**16,x)
```

```
[Out] (-4004*d - 15015*e*x**11 + x**10*(-12012*d - 120120*e) + x**9*(-100100*d -
450450*e) + x**8*(-386100*d - 1029600*e) + x**7*(-900900*d - 1576575*e) + x
**6*(-1401400*d - 1681680*e) + x**5*(-1513512*d - 1261260*e) + x**4*(-11466
00*d - 655200*e) + x**3*(-600600*d - 225225*e) + x**2*(-207900*d - 46200*e)
 + x*(-42900*d - 4290*e))/(60060*x**15)
```

3.583 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$

Optimal. Leaf size=109

$$\frac{(x+1)^{11}(5d-16e)}{240x^{15}}-\frac{(x+1)^{11}(5d-16e)}{840x^{14}}+\frac{(x+1)^{11}(5d-16e)}{3640x^{13}}-\frac{(x+1)^{11}(5d-16e)}{21840x^{12}}+\frac{(x+1)^{11}(5d-16e)}{240240x^{11}}-\frac{d(x+}{16}$$

```
[Out] -1/16*d*(1+x)^11/x^16+1/240*(5*d-16*e)*(1+x)^11/x^15-1/840*(5*d-16*e)*(1+x)
^11/x^14+1/3640*(5*d-16*e)*(1+x)^11/x^13-1/21840*(5*d-16*e)*(1+x)^11/x^12+1
/240240*(5*d-16*e)*(1+x)^11/x^11
```

Rubi [A] time = 0.03, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.210$, Rules used = $\{27, 78, 45, 37\}$

$$\frac{(x+1)^{11}(5d-16e)}{240240x^{11}}-\frac{(x+1)^{11}(5d-16e)}{21840x^{12}}+\frac{(x+1)^{11}(5d-16e)}{3640x^{13}}-\frac{(x+1)^{11}(5d-16e)}{840x^{14}}+\frac{(x+1)^{11}(5d-16e)}{240x^{15}}-\frac{d(x+}{16}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -(d*(1 + x)^11)/(16*x^16) + ((5*d - 16*e)*(1 + x)^11)/(240*x^15) - ((5*d -
16*e)*(1 + x)^11)/(840*x^14) + ((5*d - 16*e)*(1 + x)^11)/(3640*x^13) - ((5*
d - 16*e)*(1 + x)^11)/(21840*x^12) + ((5*d - 16*e)*(1 + x)^11)/(240240*x^11
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{17}}\,dx = \int \frac{(1+x)^{10}(d+ex)}{x^{17}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} - \frac{1}{16}(5d-16e)\int \frac{(1+x)^{10}}{x^{16}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{1}{60}(-5d+16e)\int \frac{(1+x)^{10}}{x^{15}}\,dx$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} - \frac{1}{280}(5d-16e)\int \frac{(1+}{x}$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$
$$= -\frac{d(1+x)^{11}}{16x^{16}} + \frac{(5d-16e)(1+x)^{11}}{240x^{15}} - \frac{(5d-16e)(1+x)^{11}}{840x^{14}} + \frac{(5d-16e)(1+x)^{11}}{3640x^{13}} -$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.40

$$-\frac{10d+e}{15x^{15}} - \frac{5(9d+2e)}{14x^{14}} - \frac{15(8d+3e)}{13x^{13}} - \frac{5(7d+4e)}{2x^{12}} - \frac{42(6d+5e)}{11x^{11}} - \frac{21(5d+6e)}{5x^{10}} - \frac{10(4d+7e)}{3x^9} - \frac{15(3d+8e)}{8x^8} - \frac{5(2d+9}{7x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -1/16*d/x^16 - (10*d + e)/(15*x^15) - (5*(9*d + 2*e))/(14*x^14) - (15*(8*d
+ 3*e))/(13*x^13) - (5*(7*d + 4*e))/(2*x^12) - (42*(6*d + 5*e))/(11*x^11) -
 (21*(5*d + 6*e))/(5*x^10) - (10*(4*d + 7*e))/(3*x^9) - (15*(3*d + 8*e))/(8
*x^8) - (5*(2*d + 9*e))/(7*x^7) - (d + 10*e)/(6*x^6) - e/(5*x^5)
```

fricas [A] time = 0.58, size = 129, normalized size = 1.18

$$-\frac{48048\,ex^{11} + 40040\,(d+10\,e)x^{10} + 171600\,(2\,d+9\,e)x^9 + 450450\,(3\,d+8\,e)x^8 + 800800\,(4\,d+7\,e)x^7 + 100900}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="fricas")
```

```
[Out] -1/240240*(48048*e*x^11 + 40040*(d + 10*e)*x^10 + 171600*(2*d + 9*e)*x^9 +
450450*(3*d + 8*e)*x^8 + 800800*(4*d + 7*e)*x^7 + 1009008*(5*d + 6*e)*x^6 +
 917280*(6*d + 5*e)*x^5 + 600600*(7*d + 4*e)*x^4 + 277200*(8*d + 3*e)*x^3 +
 85800*(9*d + 2*e)*x^2 + 16016*(10*d + e)*x + 15015*d)/x^16
```

giac [A] time = 0.16, size = 142, normalized size = 1.30

$$-\frac{48048\,x^{11}e + 40040\,dx^{10} + 400400\,x^{10}e + 343200\,dx^9 + 1544400\,x^9e + 1351350\,dx^8 + 3603600\,x^8e + 3203200}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="giac")
```

```
[Out] -1/240240*(48048*x^11*e + 40040*d*x^10 + 400400*x^10*e + 343200*d*x^9 + 154
4400*x^9*e + 1351350*d*x^8 + 3603600*x^8*e + 3203200*d*x^7 + 5605600*x^7*e
+ 5045040*d*x^6 + 6054048*x^6*e + 5503680*d*x^5 + 4586400*x^5*e + 4204200*d
*x^4 + 2402400*x^4*e + 2217600*d*x^3 + 831600*x^3*e + 772200*d*x^2 + 171600
*x^2*e + 160160*d*x + 16016*x*e + 15015*d)/x^16
```

maple [A] time = 0.05, size = 130, normalized size = 1.19

$$-\frac{e}{5x^5}-\frac{d+10e}{6x^6}-\frac{10d+45e}{7x^7}-\frac{45d+120e}{8x^8}-\frac{120d+210e}{9x^9}-\frac{210d+252e}{10x^{10}}-\frac{252d+210e}{11x^{11}}-\frac{210d+120e}{12x^{12}}-\frac{120d+45e}{13x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^17,x)
```

```
[Out] -1/5*e/x^5-1/12*(210*d+120*e)/x^12-1/16*d/x^16-1/8*(45*d+120*e)/x^8-1/10*(2
10*d+252*e)/x^10-1/15*(10*d+e)/x^15-1/13*(120*d+45*e)/x^13-1/14*(45*d+10*e)
/x^14-1/9*(120*d+210*e)/x^9-1/7*(10*d+45*e)/x^7-1/6*(d+10*e)/x^6-1/11*(252*
d+210*e)/x^11
```

maxima [A] time = 0.71, size = 129, normalized size = 1.18

$$-\frac{48048\,ex^{11}+40040\,(d+10\,e)x^{10}+171600\,(2\,d+9\,e)x^{9}+450450\,(3\,d+8\,e)x^{8}+800800\,(4\,d+7\,e)x^{7}+100}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^17,x, algorithm="maxima")
```

```
[Out] -1/240240*(48048*e*x^11 + 40040*(d + 10*e)*x^10 + 171600*(2*d + 9*e)*x^9 +
450450*(3*d + 8*e)*x^8 + 800800*(4*d + 7*e)*x^7 + 1009008*(5*d + 6*e)*x^6 +
 917280*(6*d + 5*e)*x^5 + 600600*(7*d + 4*e)*x^4 + 277200*(8*d + 3*e)*x^3 +
 85800*(9*d + 2*e)*x^2 + 16016*(10*d + e)*x + 15015*d)/x^16
```

mupad [B] time = 0.12, size = 123, normalized size = 1.13

$$-\frac{\frac{e\,x^{11}}{5}+\left(\frac{d}{6}+\frac{5\,e}{3}\right)\,x^{10}+\left(\frac{10\,d}{7}+\frac{45\,e}{7}\right)\,x^9+\left(\frac{45\,d}{8}+15\,e\right)\,x^8+\left(\frac{40\,d}{3}+\frac{70\,e}{3}\right)\,x^7+\left(21\,d+\frac{126\,e}{5}\right)\,x^6+\left(\frac{252\,d}{11}+\frac{210\,e}{11}\right)}{x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^17,x)
```

```
[Out] -(d/16 + x^10*(d/6 + (5*e)/3) + x^4*((35*d)/2 + 10*e) + x^2*((45*d)/14 + (5
*e)/7) + x^8*((45*d)/8 + 15*e) + x^9*((10*d)/7 + (45*e)/7) + x^7*((40*d)/3
+ (70*e)/3) + x^6*(21*d + (126*e)/5) + x^3*((120*d)/13 + (45*e)/13) + x^5*(
(252*d)/11 + (210*e)/11) + (e*x^11)/5 + x*((2*d)/3 + e/15))/x^16
```

sympy [A] time = 21.70, size = 131, normalized size = 1.20

$$\frac{-15015d-48048ex^{11}+x^{10}\left(-40040d-400400e\right)+x^{9}\left(-343200d-1544400e\right)+x^{8}\left(-1351350d-3603600e\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**17,x)
```

```
[Out] (-15015*d - 48048*e*x**11 + x**10*(-40040*d - 400400*e) + x**9*(-343200*d -
 1544400*e) + x**8*(-1351350*d - 3603600*e) + x**7*(-3203200*d - 5605600*e)
 + x**6*(-5045040*d - 6054048*e) + x**5*(-5503680*d - 4586400*e) + x**4*(-4
204200*d - 2402400*e) + x**3*(-2217600*d - 831600*e) + x**2*(-772200*d - 17
1600*e) + x*(-160160*d - 16016*e))/(240240*x**16)
```

3.584 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$

Optimal. Leaf size=128

$$\frac{(x+1)^{11}(6d-17e)}{272x^{16}}-\frac{(x+1)^{11}(6d-17e)}{816x^{15}}+\frac{(x+1)^{11}(6d-17e)}{2856x^{14}}-\frac{(x+1)^{11}(6d-17e)}{12376x^{13}}+\frac{(x+1)^{11}(6d-17e)}{74256x^{12}}-\frac{(x+1)^{11}}{816}$$

```
[Out] -1/17*d*(1+x)^11/x^17+1/272*(6*d-17*e)*(1+x)^11/x^16-1/816*(6*d-17*e)*(1+x)
^11/x^15+1/2856*(6*d-17*e)*(1+x)^11/x^14-1/12376*(6*d-17*e)*(1+x)^11/x^13+1
/74256*(6*d-17*e)*(1+x)^11/x^12-1/816816*(6*d-17*e)*(1+x)^11/x^11
```

Rubi [A] time = 0.03, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {27, 78, 45, 37}

$$-\frac{(x+1)^{11}(6d-17e)}{816816x^{11}}+\frac{(x+1)^{11}(6d-17e)}{74256x^{12}}-\frac{(x+1)^{11}(6d-17e)}{12376x^{13}}+\frac{(x+1)^{11}(6d-17e)}{2856x^{14}}-\frac{(x+1)^{11}(6d-17e)}{816x^{15}}+\frac{(x+1)}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -(d*(1 + x)^11)/(17*x^17) + ((6*d - 17*e)*(1 + x)^11)/(272*x^16) - ((6*d -
17*e)*(1 + x)^11)/(816*x^15) + ((6*d - 17*e)*(1 + x)^11)/(2856*x^14) - ((6*
d - 17*e)*(1 + x)^11)/(12376*x^13) + ((6*d - 17*e)*(1 + x)^11)/(74256*x^12)
 - ((6*d - 17*e)*(1 + x)^11)/(816816*x^11)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{18}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{18}}\,dx\\ &= -\frac{d(1+x)^{11}}{17x^{17}}-\frac{1}{17}(6d-17e)\int \frac{(1+x)^{10}}{x^{17}}\,dx\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}+\frac{1}{272}(5(6d-17e))\int \frac{(1+x)^{10}}{x^{16}}\,dx\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}-\frac{(6d-17e)(1+x)^{11}}{816x^{15}}+\frac{1}{204}(-6d+17e)\int\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}-\frac{(6d-17e)(1+x)^{11}}{816x^{15}}+\frac{(6d-17e)(1+x)^{11}}{2856x^{14}}\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}-\frac{(6d-17e)(1+x)^{11}}{816x^{15}}+\frac{(6d-17e)(1+x)^{11}}{2856x^{14}}\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}-\frac{(6d-17e)(1+x)^{11}}{816x^{15}}+\frac{(6d-17e)(1+x)^{11}}{2856x^{14}}\\ &= -\frac{d(1+x)^{11}}{17x^{17}}+\frac{(6d-17e)(1+x)^{11}}{272x^{16}}-\frac{(6d-17e)(1+x)^{11}}{816x^{15}}+\frac{(6d-17e)(1+x)^{11}}{2856x^{14}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 151, normalized size = 1.18

$$-\frac{10d+e}{16x^{16}}-\frac{9d+2e}{3x^{15}}-\frac{15(8d+3e)}{14x^{14}}-\frac{30(7d+4e)}{13x^{13}}-\frac{7(6d+5e)}{2x^{12}}-\frac{42(5d+6e)}{11x^{11}}-\frac{3(4d+7e)}{x^{10}}-\frac{5(3d+8e)}{3x^9}-\frac{5(2d+9e)}{8x^8}-$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -1/17*d/x^17 - (10*d + e)/(16*x^16) - (9*d + 2*e)/(3*x^15) - (15*(8*d + 3*e
))/(14*x^14) - (30*(7*d + 4*e))/(13*x^13) - (7*(6*d + 5*e))/(2*x^12) - (42*
(5*d + 6*e))/(11*x^11) - (3*(4*d + 7*e))/x^10 - (5*(3*d + 8*e))/(3*x^9) - (
5*(2*d + 9*e))/(8*x^8) - (d + 10*e)/(7*x^7) - e/(6*x^6)
```

fricas [A] time = 0.77, size = 129, normalized size = 1.01

$$-\frac{136136\,ex^{11}+116688\,(d+10\,e)x^{10}+510510\,(2\,d+9\,e)x^9+1361360\,(3\,d+8\,e)x^8+2450448\,(4\,d+7\,e)x^7+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="fricas")
```

```
[Out] -1/816816*(136136*e*x^11 + 116688*(d + 10*e)*x^10 + 510510*(2*d + 9*e)*x^9
+ 1361360*(3*d + 8*e)*x^8 + 2450448*(4*d + 7*e)*x^7 + 3118752*(5*d + 6*e)*x
^6 + 2858856*(6*d + 5*e)*x^5 + 1884960*(7*d + 4*e)*x^4 + 875160*(8*d + 3*e)
*x^3 + 272272*(9*d + 2*e)*x^2 + 51051*(10*d + e)*x + 48048*d)/x^17
```

giac [A] time = 0.16, size = 142, normalized size = 1.11

$$-\frac{136136\,x^{11}e+116688\,dx^{10}+1166880\,x^{10}e+1021020\,dx^9+4594590\,x^9e+4084080\,dx^8+10890880\,x^8e+9}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="giac")
```

```
[Out] -1/816816*(136136*x^11*e + 116688*d*x^10 + 1166880*x^10*e + 1021020*d*x^9 +
 4594590*x^9*e + 4084080*d*x^8 + 10890880*x^8*e + 9801792*d*x^7 + 17153136*
x^7*e + 15593760*d*x^6 + 18712512*x^6*e + 17153136*d*x^5 + 14294280*x^5*e +
 13194720*d*x^4 + 7539840*x^4*e + 7001280*d*x^3 + 2625480*x^3*e + 2450448*d
*x^2 + 544544*x^2*e + 510510*d*x + 51051*x*e + 48048*d)/x^17
```

maple [A] time = 0.05, size = 130, normalized size = 1.02

$$-\frac{e}{6x^6}-\frac{d+10e}{7x^7}-\frac{10d+45e}{8x^8}-\frac{45d+120e}{9x^9}-\frac{120d+210e}{10x^{10}}-\frac{210d+252e}{11x^{11}}-\frac{252d+210e}{12x^{12}}-\frac{210d+120e}{13x^{13}}-\frac{120d+45e}{14x^{14}}-4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^18,x)
```

```
[Out] -1/14*(120*d+45*e)/x^14-1/13*(210*d+120*e)/x^13-1/16*(10*d+e)/x^16-1/8*(10*
d+45*e)/x^8-1/10*(120*d+210*e)/x^10-1/15*(45*d+10*e)/x^15-1/9*(45*d+120*e)/
x^9-1/17*d/x^17-1/12*(252*d+210*e)/x^12-1/7*(d+10*e)/x^7-1/6*e/x^6-1/11*(21
0*d+252*e)/x^11
```

maxima [A] time = 0.51, size = 129, normalized size = 1.01

$$-\frac{136136\,ex^{11}+116688\,(d+10\,e)x^{10}+510510\,(2\,d+9\,e)x^9+1361360\,(3\,d+8\,e)x^8+2450448\,(4\,d+7\,e)x^7+311}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^18,x, algorithm="maxima")
```

```
[Out] -1/816816*(136136*e*x^11 + 116688*(d + 10*e)*x^10 + 510510*(2*d + 9*e)*x^9
+ 1361360*(3*d + 8*e)*x^8 + 2450448*(4*d + 7*e)*x^7 + 3118752*(5*d + 6*e)*x
^6 + 2858856*(6*d + 5*e)*x^5 + 1884960*(7*d + 4*e)*x^4 + 875160*(8*d + 3*e)
*x^3 + 272272*(9*d + 2*e)*x^2 + 51051*(10*d + e)*x + 48048*d)/x^17
```

mupad [B] time = 1.13, size = 123, normalized size = 0.96

$$-\frac{\frac{e\,x^{11}}{6}+\left(\frac{d}{7}+\frac{10\,e}{7}\right)\,x^{10}+\left(\frac{5\,d}{4}+\frac{45\,e}{8}\right)\,x^9+\left(5\,d+\frac{40\,e}{3}\right)\,x^8+\left(12\,d+21\,e\right)\,x^7+\left(\frac{210\,d}{11}+\frac{252\,e}{11}\right)\,x^6+\left(21\,d+\frac{35\,e}{2}\right)\,x^5}{x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^18,x)
```

```
[Out] -(d/17 + x^2*(3*d + (2*e)/3) + x^10*(d/7 + (10*e)/7) + x^7*(12*d + 21*e) +
x^8*(5*d + (40*e)/3) + x^5*(21*d + (35*e)/2) + x^9*((5*d)/4 + (45*e)/8) + x
^3*((60*d)/7 + (45*e)/14) + x^4*((210*d)/13 + (120*e)/13) + x^6*((210*d)/11
 + (252*e)/11) + (e*x^11)/6 + x*((5*d)/8 + e/16))/x^17
```

sympy [A] time = 24.87, size = 131, normalized size = 1.02

$$\frac{-48048d-136136ex^{11}+x^{10}\left(-116688d-1166880e\right)+x^{9}\left(-1021020d-4594590e\right)+x^{8}\left(-4084080d-1089088\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**18,x)
```

```
[Out] (-48048*d - 136136*e*x**11 + x**10*(-116688*d - 1166880*e) + x**9*(-1021020
*d - 4594590*e) + x**8*(-4084080*d - 10890880*e) + x**7*(-9801792*d - 17153
136*e) + x**6*(-15593760*d - 18712512*e) + x**5*(-17153136*d - 14294280*e)
+ x**4*(-13194720*d - 7539840*e) + x**3*(-7001280*d - 2625480*e) + x**2*(-2
450448*d - 544544*e) + x*(-510510*d - 51051*e))/(816816*x**17)
```

3.585 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$

Optimal. Leaf size=151

$$-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\frac{7(5d+6e)}{2x^{12}}-\frac{30(4d+7e)}{11x^{11}}-\frac{3(3d+8e)}{2x^{10}}-\frac{5(2d+9e)}{9x^9}-$$

```
[Out] -1/18*d/x^18+1/17*(-10*d-e)/x^17-5/16*(9*d+2*e)/x^16+(-8*d-3*e)/x^15-15/7*(
7*d+4*e)/x^14-42/13*(6*d+5*e)/x^13-7/2*(5*d+6*e)/x^12-30/11*(4*d+7*e)/x^11-
3/2*(3*d+8*e)/x^10-5/9*(2*d+9*e)/x^9+1/8*(-d-10*e)/x^8-1/7*e/x^7
```

Rubi [A] time = 0.07, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = $\{27, 76\}$

$$-\frac{d+10e}{8x^8}-\frac{5(2d+9e)}{9x^9}-\frac{3(3d+8e)}{2x^{10}}-\frac{30(4d+7e)}{11x^{11}}-\frac{7(5d+6e)}{2x^{12}}-\frac{42(6d+5e)}{13x^{13}}-\frac{15(7d+4e)}{7x^{14}}-\frac{8d+3e}{x^{15}}-\frac{5(9d+2e)}{16x^{16}}-$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -d/(18*x^18) - (10*d + e)/(17*x^17) - (5*(9*d + 2*e))/(16*x^16) - (8*d + 3*
e)/x^15 - (15*(7*d + 4*e))/(7*x^14) - (42*(6*d + 5*e))/(13*x^13) - (7*(5*d
+ 6*e))/(2*x^12) - (30*(4*d + 7*e))/(11*x^11) - (3*(3*d + 8*e))/(2*x^10) -
(5*(2*d + 9*e))/(9*x^9) - (d + 10*e)/(8*x^8) - e/(7*x^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{19}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{19}}\,dx\\ &= \int \left(\frac{d}{x^{19}}+\frac{10d+e}{x^{18}}+\frac{5(9d+2e)}{x^{17}}+\frac{15(8d+3e)}{x^{16}}+\frac{30(7d+4e)}{x^{15}}+\frac{42(6d+5e)}{x^{14}}\right.\\ &= -\frac{d}{18x^{18}}-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\end{aligned}$$

Mathematica [A] time = 0.05, size = 151, normalized size = 1.00

$$-\frac{10d+e}{17x^{17}}-\frac{5(9d+2e)}{16x^{16}}-\frac{8d+3e}{x^{15}}-\frac{15(7d+4e)}{7x^{14}}-\frac{42(6d+5e)}{13x^{13}}-\frac{7(5d+6e)}{2x^{12}}-\frac{30(4d+7e)}{11x^{11}}-\frac{3(3d+8e)}{2x^{10}}-\frac{5(2d+9e)}{9x^9}-$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -1/18*d/x^18 - (10*d + e)/(17*x^17) - (5*(9*d + 2*e))/(16*x^16) - (8*d + 3*
e)/x^15 - (15*(7*d + 4*e))/(7*x^14) - (42*(6*d + 5*e))/(13*x^13) - (7*(5*d
+ 6*e))/(2*x^12) - (30*(4*d + 7*e))/(11*x^11) - (3*(3*d + 8*e))/(2*x^10) -
(5*(2*d + 9*e))/(9*x^9) - (d + 10*e)/(8*x^8) - e/(7*x^7)
```

fricas [A] time = 0.87, size = 129, normalized size = 0.85

$$-\frac{350064\, ex^{11} + 306306\,(d + 10\,e)x^{10} + 1361360\,(2\,d + 9\,e)x^{9} + 3675672\,(3\,d + 8\,e)x^{8} + 6683040\,(4\,d + 7\,e)x^{7} + 8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="fricas")
```

```
[Out] -1/2450448*(350064*e*x^11 + 306306*(d + 10*e)*x^10 + 1361360*(2*d + 9*e)*x^
9 + 3675672*(3*d + 8*e)*x^8 + 6683040*(4*d + 7*e)*x^7 + 8576568*(5*d + 6*e)
*x^6 + 7916832*(6*d + 5*e)*x^5 + 5250960*(7*d + 4*e)*x^4 + 2450448*(8*d + 3
*e)*x^3 + 765765*(9*d + 2*e)*x^2 + 144144*(10*d + e)*x + 136136*d)/x^18
```

giac [A] time = 0.16, size = 142, normalized size = 0.94

$$-\frac{350064\, x^{11}e + 306306\, dx^{10} + 3063060\, x^{10}e + 2722720\, dx^{9} + 12252240\, x^{9}e + 11027016\, dx^{8} + 29405376\, x^{8}e + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="giac")
```

```
[Out] -1/2450448*(350064*x^11*e + 306306*d*x^10 + 3063060*x^10*e + 2722720*d*x^9
+ 12252240*x^9*e + 11027016*d*x^8 + 29405376*x^8*e + 26732160*d*x^7 + 46781
280*x^7*e + 42882840*d*x^6 + 51459408*x^6*e + 47500992*d*x^5 + 39584160*x^5
*e + 36756720*d*x^4 + 21003840*x^4*e + 19603584*d*x^3 + 7351344*x^3*e + 689
1885*d*x^2 + 1531530*x^2*e + 1441440*d*x + 144144*x*e + 136136*d)/x^18
```

maple [A] time = 0.05, size = 130, normalized size = 0.86

$$-\frac{e}{7x^{7}}-\frac{d+10e}{8x^{8}}-\frac{10d+45e}{9x^{9}}-\frac{45d+120e}{10x^{10}}-\frac{120d+210e}{11x^{11}}-\frac{210d+252e}{12x^{12}}-\frac{252d+210e}{13x^{13}}-\frac{210d+120e}{14x^{14}}-\frac{120d+45e}{15x^{15}}-4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^19,x)
```

```
[Out] -1/8*(d+10*e)/x^8-1/10*(45*d+120*e)/x^10-1/15*(120*d+45*e)/x^15-1/17*(10*d+
e)/x^17-1/16*(45*d+10*e)/x^16-1/14*(210*d+120*e)/x^14-1/9*(10*d+45*e)/x^9-1
/7*e/x^7-1/18*d/x^18-1/12*(210*d+252*e)/x^12-1/13*(252*d+210*e)/x^13-1/11*(
120*d+210*e)/x^11
```

maxima [A] time = 0.57, size = 129, normalized size = 0.85

$$-\frac{350064\, ex^{11} + 306306\,(d + 10\,e)x^{10} + 1361360\,(2\,d + 9\,e)x^{9} + 3675672\,(3\,d + 8\,e)x^{8} + 6683040\,(4\,d + 7\,e)x^{7} + 8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^19,x, algorithm="maxima")
```

```
[Out] -1/2450448*(350064*e*x^11 + 306306*(d + 10*e)*x^10 + 1361360*(2*d + 9*e)*x^
9 + 3675672*(3*d + 8*e)*x^8 + 6683040*(4*d + 7*e)*x^7 + 8576568*(5*d + 6*e)
*x^6 + 7916832*(6*d + 5*e)*x^5 + 5250960*(7*d + 4*e)*x^4 + 2450448*(8*d + 3
*e)*x^3 + 765765*(9*d + 2*e)*x^2 + 144144*(10*d + e)*x + 136136*d)/x^18
```

mupad [B] time = 0.12, size = 123, normalized size = 0.81

$$-\frac{\frac{e\,x^{11}}{7}+\left(\frac{d}{8}+\frac{5\,e}{4}\right)\,x^{10}+\left(\frac{10\,d}{9}+5\,e\right)\,x^9+\left(\frac{9\,d}{2}+12\,e\right)\,x^8+\left(\frac{120\,d}{11}+\frac{210\,e}{11}\right)\,x^7+\left(\frac{35\,d}{2}+21\,e\right)\,x^6+\left(\frac{252\,d}{13}+\frac{210\,e}{13}\right)}{x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^19,x)
```

```
[Out] -(d/18 + x^3*(8*d + 3*e) + x^10*(d/8 + (5*e)/4) + x^8*((9*d)/2 + 12*e) + x^
9*((10*d)/9 + 5*e) + x^6*((35*d)/2 + 21*e) + x^2*((45*d)/16 + (5*e)/8) + x^
4*(15*d + (60*e)/7) + x^7*((120*d)/11 + (210*e)/11) + x^5*((252*d)/13 + (21
0*e)/13) + (e*x^11)/7 + x*((10*d)/17 + e/17))/x^18
```

sympy [A] time = 27.79, size = 131, normalized size = 0.87

$$\frac{-136136d-350064ex^{11}+x^{10}\left(-306306d-3063060e\right)+x^{9}\left(-2722720d-12252240e\right)+x^{8}\left(-11027016d-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**19,x)
```

```
[Out] (-136136*d - 350064*e*x**11 + x**10*(-306306*d - 3063060*e) + x**9*(-272272
0*d - 12252240*e) + x**8*(-11027016*d - 29405376*e) + x**7*(-26732160*d - 4
6781280*e) + x**6*(-42882840*d - 51459408*e) + x**5*(-47500992*d - 39584160
*e) + x**4*(-36756720*d - 21003840*e) + x**3*(-19603584*d - 7351344*e) + x*
*2*(-6891885*d - 1531530*e) + x*(-1441440*d - 144144*e))/(2450448*x**18)
```

3.586 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$

Optimal. Leaf size=149

$$-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\frac{42(5d+6e)}{13x^{13}}-\frac{5(4d+7e)}{2x^{12}}-\frac{15(3d+8e)}{11x^{11}}-\frac{2d+9e}{2x^{10}}-\frac{d}{}-$$

```
[Out] -1/19*d/x^19+1/18*(-10*d-e)/x^18-5/17*(9*d+2*e)/x^17-15/16*(8*d+3*e)/x^16-2
*(7*d+4*e)/x^15-3*(6*d+5*e)/x^14-42/13*(5*d+6*e)/x^13-5/2*(4*d+7*e)/x^12-15
/11*(3*d+8*e)/x^11+1/2*(-2*d-9*e)/x^10+1/9*(-d-10*e)/x^9-1/8*e/x^8
```

Rubi [A] time = 0.07, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$-\frac{d+10e}{9x^9}-\frac{2d+9e}{2x^{10}}-\frac{15(3d+8e)}{11x^{11}}-\frac{5(4d+7e)}{2x^{12}}-\frac{42(5d+6e)}{13x^{13}}-\frac{3(6d+5e)}{x^{14}}-\frac{2(7d+4e)}{x^{15}}-\frac{15(8d+3e)}{16x^{16}}-\frac{5(9d+2e)}{17x^{17}}-\frac{10}{1}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -d/(19*x^19) - (10*d + e)/(18*x^18) - (5*(9*d + 2*e))/(17*x^17) - (15*(8*d
+ 3*e))/(16*x^16) - (2*(7*d + 4*e))/x^15 - (3*(6*d + 5*e))/x^14 - (42*(5*d
+ 6*e))/(13*x^13) - (5*(4*d + 7*e))/(2*x^12) - (15*(3*d + 8*e))/(11*x^11) -
 (2*d + 9*e)/(2*x^10) - (d + 10*e)/(9*x^9) - e/(8*x^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{20}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{20}}\,dx\\
&= \int \left(\frac{d}{x^{20}}+\frac{10d+e}{x^{19}}+\frac{5(9d+2e)}{x^{18}}+\frac{15(8d+3e)}{x^{17}}+\frac{30(7d+4e)}{x^{16}}+\frac{42(6d+5e)}{x^{15}}+\frac{4}{}\right.\\
&= -\frac{d}{19x^{19}}-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\frac{42(5}{1}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 149, normalized size = 1.00

$$-\frac{10d+e}{18x^{18}}-\frac{5(9d+2e)}{17x^{17}}-\frac{15(8d+3e)}{16x^{16}}-\frac{2(7d+4e)}{x^{15}}-\frac{3(6d+5e)}{x^{14}}-\frac{42(5d+6e)}{13x^{13}}-\frac{5(4d+7e)}{2x^{12}}-\frac{15(3d+8e)}{11x^{11}}-\frac{2d+9e}{2x^{10}}-\frac{d}{}-$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -1/19*d/x^19 - (10*d + e)/(18*x^18) - (5*(9*d + 2*e))/(17*x^17) - (15*(8*d
+ 3*e))/(16*x^16) - (2*(7*d + 4*e))/x^15 - (3*(6*d + 5*e))/x^14 - (42*(5*d
+ 6*e))/(13*x^13) - (5*(4*d + 7*e))/(2*x^12) - (15*(3*d + 8*e))/(11*x^11) -
 (2*d + 9*e)/(2*x^10) - (d + 10*e)/(9*x^9) - e/(8*x^8)
```

fricas [A] time = 0.90, size = 129, normalized size = 0.87

$$-\frac{831402\,ex^{11} + 739024\,(d+10\,e)x^{10} + 3325608\,(2\,d+9\,e)x^{9} + 9069840\,(3\,d+8\,e)x^{8} + 16628040\,(4\,d+7\,e)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="fricas")
```

```
[Out] -1/6651216*(831402*e*x^11 + 739024*(d + 10*e)*x^10 + 3325608*(2*d + 9*e)*x^
9 + 9069840*(3*d + 8*e)*x^8 + 16628040*(4*d + 7*e)*x^7 + 21488544*(5*d + 6*
e)*x^6 + 19953648*(6*d + 5*e)*x^5 + 13302432*(7*d + 4*e)*x^4 + 6235515*(8*d
 + 3*e)*x^3 + 1956240*(9*d + 2*e)*x^2 + 369512*(10*d + e)*x + 350064*d)/x^1
9
```

giac [A] time = 0.15, size = 142, normalized size = 0.95

$$-\frac{831402\,x^{11}e + 739024\,dx^{10} + 7390240\,x^{10}e + 6651216\,dx^{9} + 29930472\,x^{9}e + 27209520\,dx^{8} + 72558720\,x^{8}e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="giac")
```

```
[Out] -1/6651216*(831402*x^11*e + 739024*d*x^10 + 7390240*x^10*e + 6651216*d*x^9
+ 29930472*x^9*e + 27209520*d*x^8 + 72558720*x^8*e + 66512160*d*x^7 + 11639
6280*x^7*e + 107442720*d*x^6 + 128931264*x^6*e + 119721888*d*x^5 + 99768240
*x^5*e + 93117024*d*x^4 + 53209728*x^4*e + 49884120*d*x^3 + 18706545*x^3*e
+ 17606160*d*x^2 + 3912480*x^2*e + 3695120*d*x + 369512*x*e + 350064*d)/x^1
9
```

maple [A] time = 0.05, size = 130, normalized size = 0.87

$$-\frac{e}{8x^{8}}-\frac{d+10e}{9x^{9}}-\frac{10d+45e}{10x^{10}}-\frac{45d+120e}{11x^{11}}-\frac{120d+210e}{12x^{12}}-\frac{210d+252e}{13x^{13}}-\frac{252d+210e}{14x^{14}}-\frac{210d+120e}{15x^{15}}-\frac{120d+45e}{16x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^20,x)
```

```
[Out] -1/13*(210*d+252*e)/x^13-1/14*(252*d+210*e)/x^14-1/8*e/x^8-1/10*(10*d+45*e)
/x^10-1/17*(45*d+10*e)/x^17-1/15*(210*d+120*e)/x^15-1/12*(120*d+210*e)/x^12
-1/9*(d+10*e)/x^9-1/18*(10*d+e)/x^18-1/19*d/x^19-1/11*(45*d+120*e)/x^11-1/1
6*(120*d+45*e)/x^16
```

maxima [A] time = 0.59, size = 129, normalized size = 0.87

$$-\frac{831402\,ex^{11} + 739024\,(d+10\,e)x^{10} + 3325608\,(2\,d+9\,e)x^{9} + 9069840\,(3\,d+8\,e)x^{8} + 16628040\,(4\,d+7\,e)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^20,x, algorithm="maxima")
```

```
[Out] -1/6651216*(831402*e*x^11 + 739024*(d + 10*e)*x^10 + 3325608*(2*d + 9*e)*x^
9 + 9069840*(3*d + 8*e)*x^8 + 16628040*(4*d + 7*e)*x^7 + 21488544*(5*d + 6*
e)*x^6 + 19953648*(6*d + 5*e)*x^5 + 13302432*(7*d + 4*e)*x^4 + 6235515*(8*d
```

```
 + 3*e)*x^3 + 1956240*(9*d + 2*e)*x^2 + 369512*(10*d + e)*x + 350064*d)/x^1
9
```

mupad [**B**] time = 1.14, size = 121, normalized size = 0.81

$$-\frac{\frac{e\,x^{11}}{8}+\left(\frac{d}{9}+\frac{10\,e}{9}\right)\,x^{10}+\left(d+\frac{9\,e}{2}\right)\,x^9+\left(\frac{45\,d}{11}+\frac{120\,e}{11}\right)\,x^8+\left(10\,d+\frac{35\,e}{2}\right)\,x^7+\left(\frac{210\,d}{13}+\frac{252\,e}{13}\right)\,x^6+\left(18\,d+15\,e\right)\,x^5+}{x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^20,x)
```

```
[Out] -(d/19 + x^4*(14*d + 8*e) + x^5*(18*d + 15*e) + x^10*(d/9 + (10*e)/9) + x^7
*(10*d + (35*e)/2) + x^3*((15*d)/2 + (45*e)/16) + x^2*((45*d)/17 + (10*e)/1
7) + x^8*((45*d)/11 + (120*e)/11) + x^6*((210*d)/13 + (252*e)/13) + (e*x^11
)/8 + x*((5*d)/9 + e/18) + x^9*(d + (9*e)/2))/x^19
```

sympy [**A**] time = 31.79, size = 131, normalized size = 0.88

$$\frac{-350064d-831402ex^{11}+x^{10}\left(-739024d-7390240e\right)+x^{9}\left(-6651216d-29930472e\right)+x^{8}\left(-27209520d-7255\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**20,x)
```

```
[Out] (-350064*d - 831402*e*x**11 + x**10*(-739024*d - 7390240*e) + x**9*(-665121
6*d - 29930472*e) + x**8*(-27209520*d - 72558720*e) + x**7*(-66512160*d - 1
16396280*e) + x**6*(-107442720*d - 128931264*e) + x**5*(-119721888*d - 9976
8240*e) + x**4*(-93117024*d - 53209728*e) + x**3*(-49884120*d - 18706545*e)
 + x**2*(-17606160*d - 3912480*e) + x*(-3695120*d - 369512*e))/(6651216*x**
19)
```

3.587 $\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$

Optimal. Leaf size=151

$$-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\frac{3(5d+6e)}{x^{14}}-\frac{30(4d+7e)}{13x^{13}}-\frac{5(3d+8e)}{4x^{12}}-\frac{5(2d+}{11x^{1}}$$

```
[Out] -1/20*d/x^20+1/19*(-10*d-e)/x^19-5/18*(9*d+2*e)/x^18-15/17*(8*d+3*e)/x^17-1
5/8*(7*d+4*e)/x^16-14/5*(6*d+5*e)/x^15-3*(5*d+6*e)/x^14-30/13*(4*d+7*e)/x^1
3-5/4*(3*d+8*e)/x^12-5/11*(2*d+9*e)/x^11+1/10*(-d-10*e)/x^10-1/9*e/x^9
```

Rubi [A] time = 0.06, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = $\{27, 76\}$

$$-\frac{d+10e}{10x^{10}}-\frac{5(2d+9e)}{11x^{11}}-\frac{5(3d+8e)}{4x^{12}}-\frac{30(4d+7e)}{13x^{13}}-\frac{3(5d+6e)}{x^{14}}-\frac{14(6d+5e)}{5x^{15}}-\frac{15(7d+4e)}{8x^{16}}-\frac{15(8d+3e)}{17x^{17}}-\frac{5(9d+}{18x^{1}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -d/(20*x^20) - (10*d + e)/(19*x^19) - (5*(9*d + 2*e))/(18*x^18) - (15*(8*d
+ 3*e))/(17*x^17) - (15*(7*d + 4*e))/(8*x^16) - (14*(6*d + 5*e))/(5*x^15) -
 (3*(5*d + 6*e))/x^14 - (30*(4*d + 7*e))/(13*x^13) - (5*(3*d + 8*e))/(4*x^1
2) - (5*(2*d + 9*e))/(11*x^11) - (d + 10*e)/(10*x^10) - e/(9*x^9)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)\left(1+2x+x^2\right)^5}{x^{21}}\,dx &= \int \frac{(1+x)^{10}(d+ex)}{x^{21}}\,dx\\ &= \int \left(\frac{d}{x^{21}}+\frac{10d+e}{x^{20}}+\frac{5(9d+2e)}{x^{19}}+\frac{15(8d+3e)}{x^{18}}+\frac{30(7d+4e)}{x^{17}}+\frac{42(6d+5e)}{x^{16}}\right.\\ &= -\frac{d}{20x^{20}}-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\end{aligned}$$

Mathematica [A] time = 0.05, size = 151, normalized size = 1.00

$$-\frac{10d+e}{19x^{19}}-\frac{5(9d+2e)}{18x^{18}}-\frac{15(8d+3e)}{17x^{17}}-\frac{15(7d+4e)}{8x^{16}}-\frac{14(6d+5e)}{5x^{15}}-\frac{3(5d+6e)}{x^{14}}-\frac{30(4d+7e)}{13x^{13}}-\frac{5(3d+8e)}{4x^{12}}-\frac{5(2d+}{11x^{1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/20*d/x^20 - (10*d + e)/(19*x^19) - (5*(9*d + 2*e))/(18*x^18) - (15*(8*d
+ 3*e))/(17*x^17) - (15*(7*d + 4*e))/(8*x^16) - (14*(6*d + 5*e))/(5*x^15) -
 (3*(5*d + 6*e))/x^14 - (30*(4*d + 7*e))/(13*x^13) - (5*(3*d + 8*e))/(4*x^1
2) - (5*(2*d + 9*e))/(11*x^11) - (d + 10*e)/(10*x^10) - e/(9*x^9)
```

fricas [A] time = 0.60, size = 129, normalized size = 0.85

$$-\frac{1847560 \, e x^{11} + 1662804 \, (d + 10 \, e)x^{10} + 7558200 \, (2 \, d + 9 \, e)x^{9} + 20785050 \, (3 \, d + 8 \, e)x^{8} + 38372400 \, (4 \, d + 7 \, e)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="fricas")
```

```
[Out] -1/16628040*(1847560*e*x^11 + 1662804*(d + 10*e)*x^10 + 7558200*(2*d + 9*e)
*x^9 + 20785050*(3*d + 8*e)*x^8 + 38372400*(4*d + 7*e)*x^7 + 49884120*(5*d
+ 6*e)*x^6 + 46558512*(6*d + 5*e)*x^5 + 31177575*(7*d + 4*e)*x^4 + 14671800
*(8*d + 3*e)*x^3 + 4618900*(9*d + 2*e)*x^2 + 875160*(10*d + e)*x + 831402*d
)/x^20
```

giac [A] time = 0.18, size = 142, normalized size = 0.94

$$-\frac{1847560 \, x^{11} e + 1662804 \, d x^{10} + 16628040 \, x^{10} e + 15116400 \, d x^{9} + 68023800 \, x^{9} e + 62355150 \, d x^{8} + 166280400 \, x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="giac")
```

```
[Out] -1/16628040*(1847560*x^11*e + 1662804*d*x^10 + 16628040*x^10*e + 15116400*d
*x^9 + 68023800*x^9*e + 62355150*d*x^8 + 166280400*x^8*e + 153489600*d*x^7
+ 268606800*x^7*e + 249420600*d*x^6 + 299304720*x^6*e + 279351072*d*x^5 + 2
32792560*x^5*e + 218243025*d*x^4 + 124710300*x^4*e + 117374400*d*x^3 + 4401
5400*x^3*e + 41570100*d*x^2 + 9237800*x^2*e + 8751600*d*x + 875160*x*e + 83
1402*d)/x^20
```

maple [A] time = 0.05, size = 130, normalized size = 0.86

$$-\frac{e}{9x^{9}}-\frac{d+10e}{10x^{10}}-\frac{10d+45e}{11x^{11}}-\frac{45d+120e}{12x^{12}}-\frac{120d+210e}{13x^{13}}-\frac{210d+252e}{14x^{14}}-\frac{252d+210e}{15x^{15}}-\frac{210d+120e}{16x^{16}}-\frac{120d+45e}{17x^{17}}-\frac{4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(x^2+2*x+1)^5/x^21,x)
```

```
[Out] -1/10*(d+10*e)/x^10-1/13*(120*d+210*e)/x^13-1/15*(252*d+210*e)/x^15-1/14*(2
10*d+252*e)/x^14-1/20*d/x^20-1/17*(120*d+45*e)/x^17-1/9*e/x^9-1/12*(45*d+12
0*e)/x^12-1/18*(45*d+10*e)/x^18-1/19*(10*d+e)/x^19-1/11*(10*d+45*e)/x^11-1/
16*(210*d+120*e)/x^16
```

maxima [A] time = 0.60, size = 129, normalized size = 0.85

$$-\frac{1847560 \, e x^{11} + 1662804 \, (d + 10 \, e)x^{10} + 7558200 \, (2 \, d + 9 \, e)x^{9} + 20785050 \, (3 \, d + 8 \, e)x^{8} + 38372400 \, (4 \, d + 7 \, e)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x^2+2*x+1)^5/x^21,x, algorithm="maxima")
```

```
[Out] -1/16628040*(1847560*e*x^11 + 1662804*(d + 10*e)*x^10 + 7558200*(2*d + 9*e)
*x^9 + 20785050*(3*d + 8*e)*x^8 + 38372400*(4*d + 7*e)*x^7 + 49884120*(5*d
+ 6*e)*x^6 + 46558512*(6*d + 5*e)*x^5 + 31177575*(7*d + 4*e)*x^4 + 14671800
*(8*d + 3*e)*x^3 + 4618900*(9*d + 2*e)*x^2 + 875160*(10*d + e)*x + 831402*d
)/x^20
```

mupad **[B]** time = 0.12, size = 121, normalized size = 0.80

$$-\frac{\frac{e\,x^{11}}{9}+\left(\frac{d}{10}+e\right)\,x^{10}+\left(\frac{10\,d}{11}+\frac{45\,e}{11}\right)\,x^9+\left(\frac{15\,d}{4}+10\,e\right)\,x^8+\left(\frac{120\,d}{13}+\frac{210\,e}{13}\right)\,x^7+\left(15\,d+18\,e\right)\,x^6+\left(\frac{84\,d}{5}+14\,e\right)}{x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((d + e*x)*(2*x + x^2 + 1)^5)/x^21,x)
```

```
[Out] -(d/20 + x^2*((5*d)/2 + (5*e)/9) + x^8*((15*d)/4 + 10*e) + x^6*(15*d + 18*e
) + x^9*((10*d)/11 + (45*e)/11) + x^5*((84*d)/5 + 14*e) + x^4*((105*d)/8 +
(15*e)/2) + x^3*((120*d)/17 + (45*e)/17) + x^7*((120*d)/13 + (210*e)/13) +
(e*x^11)/9 + x*((10*d)/19 + e/19) + x^10*(d/10 + e))/x^20
```

sympy **[A]** time = 35.33, size = 131, normalized size = 0.87

$$\frac{-831402d-1847560ex^{11}+x^{10}\left(-1662804d-16628040e\right)+x^{9}\left(-15116400d-68023800e\right)+x^{8}\left(-62355150d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(x**2+2*x+1)**5/x**21,x)
```

```
[Out] (-831402*d - 1847560*e*x**11 + x**10*(-1662804*d - 16628040*e) + x**9*(-151
16400*d - 68023800*e) + x**8*(-62355150*d - 166280400*e) + x**7*(-153489600
*d - 268606800*e) + x**6*(-249420600*d - 299304720*e) + x**5*(-279351072*d
- 232792560*e) + x**4*(-218243025*d - 124710300*e) + x**3*(-117374400*d - 4
4015400*e) + x**2*(-41570100*d - 9237800*e) + x*(-8751600*d - 875160*e))/(1
6628040*x**20)
```

3.588 $\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=83

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

```
[Out] 1/12*x^12+11/13*x^13+55/14*x^14+11*x^15+165/8*x^16+462/17*x^17+77/3*x^18+33
0/19*x^19+33/4*x^20+55/21*x^21+1/2*x^22+1/23*x^23
```

Rubi [A] time = 0.03, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^11*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^{11}(1+x)\left(1+2x+x^2\right)^5\,dx&=\int x^{11}(1+x)^{11}\,dx\\&=\int\left(x^{11}+11x^{12}+55x^{13}+165x^{14}+330x^{15}+462x^{16}+462x^{17}+330x^{18}+165\right.\\&=\frac{x^{12}}{12}+\frac{11x^{13}}{13}+\frac{55x^{14}}{14}+11x^{15}+\frac{165x^{16}}{8}+\frac{462x^{17}}{17}+\frac{77x^{18}}{3}+\frac{330x^{19}}{19}+\frac{33x^{20}}{4}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^11*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

fricas [A] time = 0.79, size = 61, normalized size = 0.73

$$\frac{1}{23}x^{23}+\frac{1}{2}x^{22}+\frac{55}{21}x^{21}+\frac{33}{4}x^{20}+\frac{330}{19}x^{19}+\frac{77}{3}x^{18}+\frac{462}{17}x^{17}+\frac{165}{8}x^{16}+11x^{15}+\frac{55}{14}x^{14}+\frac{11}{13}x^{13}+\frac{1}{12}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

giac [A] time = 0.18, size = 61, normalized size = 0.73

$$\frac{1}{23}\,x^{23}+\frac{1}{2}\,x^{22}+\frac{55}{21}\,x^{21}+\frac{33}{4}\,x^{20}+\frac{330}{19}\,x^{19}+\frac{77}{3}\,x^{18}+\frac{462}{17}\,x^{17}+\frac{165}{8}\,x^{16}+11\,x^{15}+\frac{55}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{1}{12}\,x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

maple [A] time = 0.06, size = 62, normalized size = 0.75

$$\frac{1}{23}x^{23}+\frac{1}{2}x^{22}+\frac{55}{21}x^{21}+\frac{33}{4}x^{20}+\frac{330}{19}x^{19}+\frac{77}{3}x^{18}+\frac{462}{17}x^{17}+\frac{165}{8}x^{16}+11x^{15}+\frac{55}{14}x^{14}+\frac{11}{13}x^{13}+\frac{1}{12}x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^11*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*x^12+11/13*x^13+55/14*x^14+11*x^15+165/8*x^16+462/17*x^17+77/3*x^18+33
0/19*x^19+33/4*x^20+55/21*x^21+1/2*x^22+1/23*x^23
```

maxima [A] time = 0.53, size = 61, normalized size = 0.73

$$\frac{1}{23}\,x^{23}+\frac{1}{2}\,x^{22}+\frac{55}{21}\,x^{21}+\frac{33}{4}\,x^{20}+\frac{330}{19}\,x^{19}+\frac{77}{3}\,x^{18}+\frac{462}{17}\,x^{17}+\frac{165}{8}\,x^{16}+11\,x^{15}+\frac{55}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{1}{12}\,x^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^11*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/23*x^23 + 1/2*x^22 + 55/21*x^21 + 33/4*x^20 + 330/19*x^19 + 77/3*x^18 + 4
62/17*x^17 + 165/8*x^16 + 11*x^15 + 55/14*x^14 + 11/13*x^13 + 1/12*x^12
```

mupad [B] time = 0.06, size = 61, normalized size = 0.73

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55\,x^{21}}{21}+\frac{33\,x^{20}}{4}+\frac{330\,x^{19}}{19}+\frac{77\,x^{18}}{3}+\frac{462\,x^{17}}{17}+\frac{165\,x^{16}}{8}+11\,x^{15}+\frac{55\,x^{14}}{14}+\frac{11\,x^{13}}{13}+\frac{x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^11*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^12/12 + (11*x^13)/13 + (55*x^14)/14 + 11*x^15 + (165*x^16)/8 + (462*x^17)
/17 + (77*x^18)/3 + (330*x^19)/19 + (33*x^20)/4 + (55*x^21)/21 + x^22/2 + x
^23/23
```

sympy [A] time = 0.08, size = 73, normalized size = 0.88

$$\frac{x^{23}}{23}+\frac{x^{22}}{2}+\frac{55x^{21}}{21}+\frac{33x^{20}}{4}+\frac{330x^{19}}{19}+\frac{77x^{18}}{3}+\frac{462x^{17}}{17}+\frac{165x^{16}}{8}+11x^{15}+\frac{55x^{14}}{14}+\frac{11x^{13}}{13}+\frac{x^{12}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**11*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**23/23 + x**22/2 + 55*x**21/21 + 33*x**20/4 + 330*x**19/19 + 77*x**18/3 +
 462*x**17/17 + 165*x**16/8 + 11*x**15 + 55*x**14/14 + 11*x**13/13 + x**12/
12
```

3.589 $\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=83

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

```
[Out] 1/11*x^11+11/12*x^12+55/13*x^13+165/14*x^14+22*x^15+231/8*x^16+462/17*x^17+
55/3*x^18+165/19*x^19+11/4*x^20+11/21*x^21+1/22*x^22
```

Rubi [A] time = 0.03, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In] Int[x^10*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^{10}(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^{10}(1+x)^{11}\,dx\\ &= \int \left(x^{10}+11x^{11}+55x^{12}+165x^{13}+330x^{14}+462x^{15}+462x^{16}+330x^{17}+1\right.\\ &= \frac{x^{11}}{11}+\frac{11x^{12}}{12}+\frac{55x^{13}}{13}+\frac{165x^{14}}{14}+22x^{15}+\frac{231x^{16}}{8}+\frac{462x^{17}}{17}+\frac{55x^{18}}{3}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^10*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

fricas [A] time = 0.77, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22}+\frac{11}{21}x^{21}+\frac{11}{4}x^{20}+\frac{165}{19}x^{19}+\frac{55}{3}x^{18}+\frac{462}{17}x^{17}+\frac{231}{8}x^{16}+22x^{15}+\frac{165}{14}x^{14}+\frac{55}{13}x^{13}+\frac{11}{12}x^{12}+\frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

giac [A] time = 0.17, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22}+\frac{11}{21}x^{21}+\frac{11}{4}x^{20}+\frac{165}{19}x^{19}+\frac{55}{3}x^{18}+\frac{462}{17}x^{17}+\frac{231}{8}x^{16}+22x^{15}+\frac{165}{14}x^{14}+\frac{55}{13}x^{13}+\frac{11}{12}x^{12}+\frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

maple [A] time = 0.04, size = 62, normalized size = 0.75

$$\frac{1}{22}x^{22}+\frac{11}{21}x^{21}+\frac{11}{4}x^{20}+\frac{165}{19}x^{19}+\frac{55}{3}x^{18}+\frac{462}{17}x^{17}+\frac{231}{8}x^{16}+22x^{15}+\frac{165}{14}x^{14}+\frac{55}{13}x^{13}+\frac{11}{12}x^{12}+\frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^10*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/11*x^11+11/12*x^12+55/13*x^13+165/14*x^14+22*x^15+231/8*x^16+462/17*x^17+
55/3*x^18+165/19*x^19+11/4*x^20+11/21*x^21+1/22*x^22
```

maxima [A] time = 0.60, size = 61, normalized size = 0.73

$$\frac{1}{22}x^{22}+\frac{11}{21}x^{21}+\frac{11}{4}x^{20}+\frac{165}{19}x^{19}+\frac{55}{3}x^{18}+\frac{462}{17}x^{17}+\frac{231}{8}x^{16}+22x^{15}+\frac{165}{14}x^{14}+\frac{55}{13}x^{13}+\frac{11}{12}x^{12}+\frac{1}{11}x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^10*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/22*x^22 + 11/21*x^21 + 11/4*x^20 + 165/19*x^19 + 55/3*x^18 + 462/17*x^17
+ 231/8*x^16 + 22*x^15 + 165/14*x^14 + 55/13*x^13 + 11/12*x^12 + 1/11*x^11
```

mupad [B] time = 0.06, size = 61, normalized size = 0.73

$$\frac{x^{22}}{22}+\frac{11\,x^{21}}{21}+\frac{11\,x^{20}}{4}+\frac{165\,x^{19}}{19}+\frac{55\,x^{18}}{3}+\frac{462\,x^{17}}{17}+\frac{231\,x^{16}}{8}+22\,x^{15}+\frac{165\,x^{14}}{14}+\frac{55\,x^{13}}{13}+\frac{11\,x^{12}}{12}+\frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^10*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^11/11 + (11*x^12)/12 + (55*x^13)/13 + (165*x^14)/14 + 22*x^15 + (231*x^16
)/8 + (462*x^17)/17 + (55*x^18)/3 + (165*x^19)/19 + (11*x^20)/4 + (11*x^21)
/21 + x^22/22
```

sympy [A] time = 0.07, size = 75, normalized size = 0.90

$$\frac{x^{22}}{22}+\frac{11x^{21}}{21}+\frac{11x^{20}}{4}+\frac{165x^{19}}{19}+\frac{55x^{18}}{3}+\frac{462x^{17}}{17}+\frac{231x^{16}}{8}+22x^{15}+\frac{165x^{14}}{14}+\frac{55x^{13}}{13}+\frac{11x^{12}}{12}+\frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**10*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**22/22 + 11*x**21/21 + 11*x**20/4 + 165*x**19/19 + 55*x**18/3 + 462*x**17
/17 + 231*x**16/8 + 22*x**15 + 165*x**14/14 + 55*x**13/13 + 11*x**12/12 + x
**11/11
```

3.590 $\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=91

$$\frac{1}{21}(x+1)^{21}-\frac{9}{20}(x+1)^{20}+\frac{36}{19}(x+1)^{19}-\frac{14}{3}(x+1)^{18}+\frac{126}{17}(x+1)^{17}-\frac{63}{8}(x+1)^{16}+\frac{28}{5}(x+1)^{15}-\frac{18}{7}(x+1)^{14}+\frac{9}{13}(x+1)^{13}-\frac{1}{12}$$

```
[Out] -1/12*(1+x)^12+9/13*(1+x)^13-18/7*(1+x)^14+28/5*(1+x)^15-63/8*(1+x)^16+126/
17*(1+x)^17-14/3*(1+x)^18+36/19*(1+x)^19-9/20*(1+x)^20+1/21*(1+x)^21
```

Rubi [A] time = 0.03, antiderivative size = 91, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{21}(x+1)^{21}-\frac{9}{20}(x+1)^{20}+\frac{36}{19}(x+1)^{19}-\frac{14}{3}(x+1)^{18}+\frac{126}{17}(x+1)^{17}-\frac{63}{8}(x+1)^{16}+\frac{28}{5}(x+1)^{15}-\frac{18}{7}(x+1)^{14}+\frac{9}{13}(x+1)^{13}-\frac{1}{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^9*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (9*(1 + x)^13)/13 - (18*(1 + x)^14)/7 + (28*(1 + x)^15)/5
- (63*(1 + x)^16)/8 + (126*(1 + x)^17)/17 - (14*(1 + x)^18)/3 + (36*(1 + x)
^19)/19 - (9*(1 + x)^20)/20 + (1 + x)^21/21
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^9(1+x)\left(1+2x+x^2\right)^5\,dx&=\int x^9(1+x)^{11}\,dx\\&=\int\Big(-(1+x)^{11}+9(1+x)^{12}-36(1+x)^{13}+84(1+x)^{14}-126(1+x)^{15}+126(1+\\&=-\frac{1}{12}(1+x)^{12}+\frac{9}{13}(1+x)^{13}-\frac{18}{7}(1+x)^{14}+\frac{28}{5}(1+x)^{15}-\frac{63}{8}(1+x)^{16}+\frac{126}{17}(1\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 0.89

$$\frac{x^{21}}{21}+\frac{11x^{20}}{20}+\frac{55x^{19}}{19}+\frac{55x^{18}}{6}+\frac{330x^{17}}{17}+\frac{231x^{16}}{8}+\frac{154x^{15}}{5}+\frac{165x^{14}}{7}+\frac{165x^{13}}{13}+\frac{55x^{12}}{12}+x^{11}+\frac{x^{10}}{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^9*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^10/10 + x^11 + (55*x^12)/12 + (165*x^13)/13 + (165*x^14)/7 + (154*x^15)/5
 + (231*x^16)/8 + (330*x^17)/17 + (55*x^18)/6 + (55*x^19)/19 + (11*x^20)/20
 + x^21/21
```

fricas [A] time = 0.48, size = 59, normalized size = 0.65

$$\frac{1}{21}x^{21}+\frac{11}{20}x^{20}+\frac{55}{19}x^{19}+\frac{55}{6}x^{18}+\frac{330}{17}x^{17}+\frac{231}{8}x^{16}+\frac{154}{5}x^{15}+\frac{165}{7}x^{14}+\frac{165}{13}x^{13}+\frac{55}{12}x^{12}+x^{11}+\frac{1}{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

giac [A] time = 0.16, size = 59, normalized size = 0.65

$$\frac{1}{21}\,x^{21}+\frac{11}{20}\,x^{20}+\frac{55}{19}\,x^{19}+\frac{55}{6}\,x^{18}+\frac{330}{17}\,x^{17}+\frac{231}{8}\,x^{16}+\frac{154}{5}\,x^{15}+\frac{165}{7}\,x^{14}+\frac{165}{13}\,x^{13}+\frac{55}{12}\,x^{12}+x^{11}+\frac{1}{10}\,x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

maple [A] time = 0.04, size = 60, normalized size = 0.66

$$\frac{1}{21}x^{21}+\frac{11}{20}x^{20}+\frac{55}{19}x^{19}+\frac{55}{6}x^{18}+\frac{330}{17}x^{17}+\frac{231}{8}x^{16}+\frac{154}{5}x^{15}+\frac{165}{7}x^{14}+\frac{165}{13}x^{13}+\frac{55}{12}x^{12}+x^{11}+\frac{1}{10}x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/21*x^21+11/20*x^20+55/19*x^19+55/6*x^18+330/17*x^17+231/8*x^16+154/5*x^15
+165/7*x^14+165/13*x^13+55/12*x^12+x^11+1/10*x^10
```

maxima [A] time = 0.59, size = 59, normalized size = 0.65

$$\frac{1}{21}\,x^{21}+\frac{11}{20}\,x^{20}+\frac{55}{19}\,x^{19}+\frac{55}{6}\,x^{18}+\frac{330}{17}\,x^{17}+\frac{231}{8}\,x^{16}+\frac{154}{5}\,x^{15}+\frac{165}{7}\,x^{14}+\frac{165}{13}\,x^{13}+\frac{55}{12}\,x^{12}+x^{11}+\frac{1}{10}\,x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^9*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/21*x^21 + 11/20*x^20 + 55/19*x^19 + 55/6*x^18 + 330/17*x^17 + 231/8*x^16
+ 154/5*x^15 + 165/7*x^14 + 165/13*x^13 + 55/12*x^12 + x^11 + 1/10*x^10
```

mupad [B] time = 0.06, size = 59, normalized size = 0.65

$$\frac{x^{21}}{21}+\frac{11\,x^{20}}{20}+\frac{55\,x^{19}}{19}+\frac{55\,x^{18}}{6}+\frac{330\,x^{17}}{17}+\frac{231\,x^{16}}{8}+\frac{154\,x^{15}}{5}+\frac{165\,x^{14}}{7}+\frac{165\,x^{13}}{13}+\frac{55\,x^{12}}{12}+x^{11}+\frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^9*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^10/10 + x^11 + (55*x^12)/12 + (165*x^13)/13 + (165*x^14)/7 + (154*x^15)/5
 + (231*x^16)/8 + (330*x^17)/17 + (55*x^18)/6 + (55*x^19)/19 + (11*x^20)/20
 + x^21/21
```

sympy [A] time = 0.07, size = 73, normalized size = 0.80

$$\frac{x^{21}}{21}+\frac{11x^{20}}{20}+\frac{55x^{19}}{19}+\frac{55x^{18}}{6}+\frac{330x^{17}}{17}+\frac{231x^{16}}{8}+\frac{154x^{15}}{5}+\frac{165x^{14}}{7}+\frac{165x^{13}}{13}+\frac{55x^{12}}{12}+x^{11}+\frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**9*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**21/21 + 11*x**20/20 + 55*x**19/19 + 55*x**18/6 + 330*x**17/17 + 231*x**1
6/8 + 154*x**15/5 + 165*x**14/7 + 165*x**13/13 + 55*x**12/12 + x**11 + x**1
0/10
```

3.591 $\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=80

$$\frac{1}{20}(x+1)^{20}-\frac{8}{19}(x+1)^{19}+\frac{14}{9}(x+1)^{18}-\frac{56}{17}(x+1)^{17}+\frac{35}{8}(x+1)^{16}-\frac{56}{15}(x+1)^{15}+2(x+1)^{14}-\frac{8}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

```
[Out] 1/12*(1+x)^12-8/13*(1+x)^13+2*(1+x)^14-56/15*(1+x)^15+35/8*(1+x)^16-56/17*(
1+x)^17+14/9*(1+x)^18-8/19*(1+x)^19+1/20*(1+x)^20
```

Rubi [A] time = 0.02, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{1}{20}(x+1)^{20}-\frac{8}{19}(x+1)^{19}+\frac{14}{9}(x+1)^{18}-\frac{56}{17}(x+1)^{17}+\frac{35}{8}(x+1)^{16}-\frac{56}{15}(x+1)^{15}+2(x+1)^{14}-\frac{8}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^8*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (8*(1 + x)^13)/13 + 2*(1 + x)^14 - (56*(1 + x)^15)/15 + (35
*(1 + x)^16)/8 - (56*(1 + x)^17)/17 + (14*(1 + x)^18)/9 - (8*(1 + x)^19)/19
 + (1 + x)^20/20
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^8(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^8(1+x)^{11}\,dx\\ &= \int \left((1+x)^{11}-8(1+x)^{12}+28(1+x)^{13}-56(1+x)^{14}+70(1+x)^{15}-56(1+\right.\\ &= \frac{1}{12}(1+x)^{12}-\frac{8}{13}(1+x)^{13}+2(1+x)^{14}-\frac{56}{15}(1+x)^{15}+\frac{35}{8}(1+x)^{16}-\frac{56}{17}(1+\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.01

$$\frac{x^{20}}{20}+\frac{11x^{19}}{19}+\frac{55x^{18}}{18}+\frac{165x^{17}}{17}+\frac{165x^{16}}{8}+\frac{154x^{15}}{5}+33x^{14}+\frac{330x^{13}}{13}+\frac{55x^{12}}{4}+5x^{11}+\frac{11x^{10}}{10}+\frac{x^9}{9}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^8*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^9/9 + (11*x^10)/10 + 5*x^11 + (55*x^12)/4 + (330*x^13)/13 + 33*x^14 + (15
4*x^15)/5 + (165*x^16)/8 + (165*x^17)/17 + (55*x^18)/18 + (11*x^19)/19 + x^
20/20
```

fricas [A] time = 0.80, size = 61, normalized size = 0.76

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

giac [A] time = 0.15, size = 61, normalized size = 0.76

$$\frac{1}{20}\,x^{20}+\frac{11}{19}\,x^{19}+\frac{55}{18}\,x^{18}+\frac{165}{17}\,x^{17}+\frac{165}{8}\,x^{16}+\frac{154}{5}\,x^{15}+33\,x^{14}+\frac{330}{13}\,x^{13}+\frac{55}{4}\,x^{12}+5\,x^{11}+\frac{11}{10}\,x^{10}+\frac{1}{9}\,x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

maple [A] time = 0.08, size = 62, normalized size = 0.78

$$\frac{1}{20}x^{20}+\frac{11}{19}x^{19}+\frac{55}{18}x^{18}+\frac{165}{17}x^{17}+\frac{165}{8}x^{16}+\frac{154}{5}x^{15}+33x^{14}+\frac{330}{13}x^{13}+\frac{55}{4}x^{12}+5x^{11}+\frac{11}{10}x^{10}+\frac{1}{9}x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^8*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/20*x^20+11/19*x^19+55/18*x^18+165/17*x^17+165/8*x^16+154/5*x^15+33*x^14+3
30/13*x^13+55/4*x^12+5*x^11+11/10*x^10+1/9*x^9
```

maxima [A] time = 0.63, size = 61, normalized size = 0.76

$$\frac{1}{20}\,x^{20}+\frac{11}{19}\,x^{19}+\frac{55}{18}\,x^{18}+\frac{165}{17}\,x^{17}+\frac{165}{8}\,x^{16}+\frac{154}{5}\,x^{15}+33\,x^{14}+\frac{330}{13}\,x^{13}+\frac{55}{4}\,x^{12}+5\,x^{11}+\frac{11}{10}\,x^{10}+\frac{1}{9}\,x^{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^8*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/20*x^20 + 11/19*x^19 + 55/18*x^18 + 165/17*x^17 + 165/8*x^16 + 154/5*x^15
 + 33*x^14 + 330/13*x^13 + 55/4*x^12 + 5*x^11 + 11/10*x^10 + 1/9*x^9
```

mupad [B] time = 0.06, size = 61, normalized size = 0.76

$$\frac{x^{20}}{20}+\frac{11\,x^{19}}{19}+\frac{55\,x^{18}}{18}+\frac{165\,x^{17}}{17}+\frac{165\,x^{16}}{8}+\frac{154\,x^{15}}{5}+33\,x^{14}+\frac{330\,x^{13}}{13}+\frac{55\,x^{12}}{4}+5\,x^{11}+\frac{11\,x^{10}}{10}+\frac{x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^8*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^9/9 + (11*x^10)/10 + 5*x^11 + (55*x^12)/4 + (330*x^13)/13 + 33*x^14 + (15
4*x^15)/5 + (165*x^16)/8 + (165*x^17)/17 + (55*x^18)/18 + (11*x^19)/19 + x^
20/20
```

sympy [A] time = 0.07, size = 73, normalized size = 0.91

$$\frac{x^{20}}{20}+\frac{11x^{19}}{19}+\frac{55x^{18}}{18}+\frac{165x^{17}}{17}+\frac{165x^{16}}{8}+\frac{154x^{15}}{5}+33x^{14}+\frac{330x^{13}}{13}+\frac{55x^{12}}{4}+5x^{11}+\frac{11x^{10}}{10}+\frac{x^9}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**8*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**20/20 + 11*x**19/19 + 55*x**18/18 + 165*x**17/17 + 165*x**16/8 + 154*x**
15/5 + 33*x**14 + 330*x**13/13 + 55*x**12/4 + 5*x**11 + 11*x**10/10 + x**9/
9
```

3.592 $\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=73

$$\frac{1}{19}(x+1)^{19}-\frac{7}{18}(x+1)^{18}+\frac{21}{17}(x+1)^{17}-\frac{35}{16}(x+1)^{16}+\frac{7}{3}(x+1)^{15}-\frac{3}{2}(x+1)^{14}+\frac{7}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

```
[Out] -1/12*(1+x)^12+7/13*(1+x)^13-3/2*(1+x)^14+7/3*(1+x)^15-35/16*(1+x)^16+21/17
*(1+x)^17-7/18*(1+x)^18+1/19*(1+x)^19
```

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{1}{19}(x+1)^{19}-\frac{7}{18}(x+1)^{18}+\frac{21}{17}(x+1)^{17}-\frac{35}{16}(x+1)^{16}+\frac{7}{3}(x+1)^{15}-\frac{3}{2}(x+1)^{14}+\frac{7}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^7*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (7*(1 + x)^13)/13 - (3*(1 + x)^14)/2 + (7*(1 + x)^15)/3 -
(35*(1 + x)^16)/16 + (21*(1 + x)^17)/17 - (7*(1 + x)^18)/18 + (1 + x)^19/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^7(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^7(1+x)^{11}\,dx\\ &= \int (-(1+x)^{11}+7(1+x)^{12}-21(1+x)^{13}+35(1+x)^{14}-35(1+x)^{15}+21(1+x\\ &= -\frac{1}{12}(1+x)^{12}+\frac{7}{13}(1+x)^{13}-\frac{3}{2}(1+x)^{14}+\frac{7}{3}(1+x)^{15}-\frac{35}{16}(1+x)^{16}+\frac{21}{17}(1+x\end{aligned}$$

Mathematica [A] time = 0.00, size = 79, normalized size = 1.08

$$\frac{x^{19}}{19}+\frac{11x^{18}}{18}+\frac{55x^{17}}{17}+\frac{165x^{16}}{16}+22x^{15}+33x^{14}+\frac{462x^{13}}{13}+\frac{55x^{12}}{2}+15x^{11}+\frac{11x^{10}}{2}+\frac{11x^9}{9}+\frac{x^8}{8}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^7*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^8/8 + (11*x^9)/9 + (11*x^10)/2 + 15*x^11 + (55*x^12)/2 + (462*x^13)/13 +
33*x^14 + 22*x^15 + (165*x^16)/16 + (55*x^17)/17 + (11*x^18)/18 + x^19/19
```

fricas [A] time = 0.62, size = 61, normalized size = 0.84

$$\frac{1}{19}x^{19}+\frac{11}{18}x^{18}+\frac{55}{17}x^{17}+\frac{165}{16}x^{16}+22x^{15}+33x^{14}+\frac{462}{13}x^{13}+\frac{55}{2}x^{12}+15x^{11}+\frac{11}{2}x^{10}+\frac{11}{9}x^{9}+\frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

giac [A] time = 0.15, size = 61, normalized size = 0.84

$$\frac{1}{19}\,x^{19}+\frac{11}{18}\,x^{18}+\frac{55}{17}\,x^{17}+\frac{165}{16}\,x^{16}+22\,x^{15}+33\,x^{14}+\frac{462}{13}\,x^{13}+\frac{55}{2}\,x^{12}+15\,x^{11}+\frac{11}{2}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{1}{8}\,x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

maple [A] time = 0.04, size = 62, normalized size = 0.85

$$\frac{1}{19}x^{19}+\frac{11}{18}x^{18}+\frac{55}{17}x^{17}+\frac{165}{16}x^{16}+22x^{15}+33x^{14}+\frac{462}{13}x^{13}+\frac{55}{2}x^{12}+15x^{11}+\frac{11}{2}x^{10}+\frac{11}{9}x^{9}+\frac{1}{8}x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/19*x^19+11/18*x^18+55/17*x^17+165/16*x^16+22*x^15+33*x^14+462/13*x^13+55/
2*x^12+15*x^11+11/2*x^10+11/9*x^9+1/8*x^8
```

maxima [A] time = 0.55, size = 61, normalized size = 0.84

$$\frac{1}{19}\,x^{19}+\frac{11}{18}\,x^{18}+\frac{55}{17}\,x^{17}+\frac{165}{16}\,x^{16}+22\,x^{15}+33\,x^{14}+\frac{462}{13}\,x^{13}+\frac{55}{2}\,x^{12}+15\,x^{11}+\frac{11}{2}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{1}{8}\,x^{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^7*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/19*x^19 + 11/18*x^18 + 55/17*x^17 + 165/16*x^16 + 22*x^15 + 33*x^14 + 462
/13*x^13 + 55/2*x^12 + 15*x^11 + 11/2*x^10 + 11/9*x^9 + 1/8*x^8
```

mupad [B] time = 0.06, size = 61, normalized size = 0.84

$$\frac{x^{19}}{19}+\frac{11\,x^{18}}{18}+\frac{55\,x^{17}}{17}+\frac{165\,x^{16}}{16}+22\,x^{15}+33\,x^{14}+\frac{462\,x^{13}}{13}+\frac{55\,x^{12}}{2}+15\,x^{11}+\frac{11\,x^{10}}{2}+\frac{11\,x^9}{9}+\frac{x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^7*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^8/8 + (11*x^9)/9 + (11*x^10)/2 + 15*x^11 + (55*x^12)/2 + (462*x^13)/13 +
33*x^14 + 22*x^15 + (165*x^16)/16 + (55*x^17)/17 + (11*x^18)/18 + x^19/19
```

sympy [A] time = 0.07, size = 71, normalized size = 0.97

$$\frac{x^{19}}{19}+\frac{11x^{18}}{18}+\frac{55x^{17}}{17}+\frac{165x^{16}}{16}+22x^{15}+33x^{14}+\frac{462x^{13}}{13}+\frac{55x^{12}}{2}+15x^{11}+\frac{11x^{10}}{2}+\frac{11x^{9}}{9}+\frac{x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**7*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**19/19 + 11*x**18/18 + 55*x**17/17 + 165*x**16/16 + 22*x**15 + 33*x**14 +
 462*x**13/13 + 55*x**12/2 + 15*x**11 + 11*x**10/2 + 11*x**9/9 + x**8/8
```

3.593 $\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=64

$$\frac{1}{18}(x+1)^{18}-\frac{6}{17}(x+1)^{17}+\frac{15}{16}(x+1)^{16}-\frac{4}{3}(x+1)^{15}+\frac{15}{14}(x+1)^{14}-\frac{6}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

```
[Out] 1/12*(1+x)^12-6/13*(1+x)^13+15/14*(1+x)^14-4/3*(1+x)^15+15/16*(1+x)^16-6/17
*(1+x)^17+1/18*(1+x)^18
```

Rubi [A] time = 0.02, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{1}{18}(x+1)^{18}-\frac{6}{17}(x+1)^{17}+\frac{15}{16}(x+1)^{16}-\frac{4}{3}(x+1)^{15}+\frac{15}{14}(x+1)^{14}-\frac{6}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (6*(1 + x)^13)/13 + (15*(1 + x)^14)/14 - (4*(1 + x)^15)/3 +
 (15*(1 + x)^16)/16 - (6*(1 + x)^17)/17 + (1 + x)^18/18
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int x^6(1+x)\left(1+2x+x^2\right)^5\,dx = \int x^6(1+x)^{11}\,dx$$

$$= \int \left((1+x)^{11}-6(1+x)^{12}+15(1+x)^{13}-20(1+x)^{14}+15(1+x)^{15}-6(1+x\right.$$

$$= \frac{1}{12}(1+x)^{12}-\frac{6}{13}(1+x)^{13}+\frac{15}{14}(1+x)^{14}-\frac{4}{3}(1+x)^{15}+\frac{15}{16}(1+x)^{16}-\frac{6}{17}(1+$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.27

$$\frac{x^{18}}{18}+\frac{11x^{17}}{17}+\frac{55x^{16}}{16}+11x^{15}+\frac{165x^{14}}{7}+\frac{462x^{13}}{13}+\frac{77x^{12}}{2}+30x^{11}+\frac{33x^{10}}{2}+\frac{55x^9}{9}+\frac{11x^8}{8}+\frac{x^7}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^7/7 + (11*x^8)/8 + (55*x^9)/9 + (33*x^10)/2 + 30*x^11 + (77*x^12)/2 + (46
2*x^13)/13 + (165*x^14)/7 + 11*x^15 + (55*x^16)/16 + (11*x^17)/17 + x^18/18
```

fricas [A] time = 0.84, size = 61, normalized size = 0.95

$$\frac{1}{18}x^{18}+\frac{11}{17}x^{17}+\frac{55}{16}x^{16}+11x^{15}+\frac{165}{7}x^{14}+\frac{462}{13}x^{13}+\frac{77}{2}x^{12}+30x^{11}+\frac{33}{2}x^{10}+\frac{55}{9}x^{9}+\frac{11}{8}x^{8}+\frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

giac [A] time = 0.15, size = 61, normalized size = 0.95

$$\frac{1}{18}x^{18}+\frac{11}{17}x^{17}+\frac{55}{16}x^{16}+11x^{15}+\frac{165}{7}x^{14}+\frac{462}{13}x^{13}+\frac{77}{2}x^{12}+30x^{11}+\frac{33}{2}x^{10}+\frac{55}{9}x^{9}+\frac{11}{8}x^{8}+\frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

maple [A] time = 0.04, size = 62, normalized size = 0.97

$$\frac{1}{18}x^{18}+\frac{11}{17}x^{17}+\frac{55}{16}x^{16}+11x^{15}+\frac{165}{7}x^{14}+\frac{462}{13}x^{13}+\frac{77}{2}x^{12}+30x^{11}+\frac{33}{2}x^{10}+\frac{55}{9}x^{9}+\frac{11}{8}x^{8}+\frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/18*x^18+11/17*x^17+55/16*x^16+11*x^15+165/7*x^14+462/13*x^13+77/2*x^12+30
*x^11+33/2*x^10+55/9*x^9+11/8*x^8+1/7*x^7
```

maxima [A] time = 0.66, size = 61, normalized size = 0.95

$$\frac{1}{18}x^{18}+\frac{11}{17}x^{17}+\frac{55}{16}x^{16}+11x^{15}+\frac{165}{7}x^{14}+\frac{462}{13}x^{13}+\frac{77}{2}x^{12}+30x^{11}+\frac{33}{2}x^{10}+\frac{55}{9}x^{9}+\frac{11}{8}x^{8}+\frac{1}{7}x^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/18*x^18 + 11/17*x^17 + 55/16*x^16 + 11*x^15 + 165/7*x^14 + 462/13*x^13 +
77/2*x^12 + 30*x^11 + 33/2*x^10 + 55/9*x^9 + 11/8*x^8 + 1/7*x^7
```

mupad [B] time = 0.06, size = 61, normalized size = 0.95

$$\frac{x^{18}}{18}+\frac{11\,x^{17}}{17}+\frac{55\,x^{16}}{16}+11\,x^{15}+\frac{165\,x^{14}}{7}+\frac{462\,x^{13}}{13}+\frac{77\,x^{12}}{2}+30\,x^{11}+\frac{33\,x^{10}}{2}+\frac{55\,x^{9}}{9}+\frac{11\,x^{8}}{8}+\frac{x^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^7/7 + (11*x^8)/8 + (55*x^9)/9 + (33*x^10)/2 + 30*x^11 + (77*x^12)/2 + (46
2*x^13)/13 + (165*x^14)/7 + 11*x^15 + (55*x^16)/16 + (11*x^17)/17 + x^18/18
```

sympy [A] time = 0.07, size = 73, normalized size = 1.14

$$\frac{x^{18}}{18}+\frac{11x^{17}}{17}+\frac{55x^{16}}{16}+11x^{15}+\frac{165x^{14}}{7}+\frac{462x^{13}}{13}+\frac{77x^{12}}{2}+30x^{11}+\frac{33x^{10}}{2}+\frac{55x^{9}}{9}+\frac{11x^{8}}{8}+\frac{x^{7}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**18/18 + 11*x**17/17 + 55*x**16/16 + 11*x**15 + 165*x**14/7 + 462*x**13/1
3 + 77*x**12/2 + 30*x**11 + 33*x**10/2 + 55*x**9/9 + 11*x**8/8 + x**7/7
```

3.594 $\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=55

$$\frac{1}{17}(x+1)^{17}-\frac{5}{16}(x+1)^{16}+\frac{2}{3}(x+1)^{15}-\frac{5}{7}(x+1)^{14}+\frac{5}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

```
[Out] -1/12*(1+x)^12+5/13*(1+x)^13-5/7*(1+x)^14+2/3*(1+x)^15-5/16*(1+x)^16+1/17*(
1+x)^17
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{1}{17}(x+1)^{17}-\frac{5}{16}(x+1)^{16}+\frac{2}{3}(x+1)^{15}-\frac{5}{7}(x+1)^{14}+\frac{5}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (5*(1 + x)^13)/13 - (5*(1 + x)^14)/7 + (2*(1 + x)^15)/3 -
(5*(1 + x)^16)/16 + (1 + x)^17/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^5(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^5(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+5(1+x)^{12}-10(1+x)^{13}+10(1+x)^{14}-5(1+x)^{15}+(1+x)^{16}\right)\\ &= -\frac{1}{12}(1+x)^{12}+\frac{5}{13}(1+x)^{13}-\frac{5}{7}(1+x)^{14}+\frac{2}{3}(1+x)^{15}-\frac{5}{16}(1+x)^{16}+\frac{1}{17}(1+x\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.47

$$\frac{x^{17}}{17}+\frac{11x^{16}}{16}+\frac{11x^{15}}{3}+\frac{165x^{14}}{14}+\frac{330x^{13}}{13}+\frac{77x^{12}}{2}+42x^{11}+33x^{10}+\frac{55x^9}{3}+\frac{55x^8}{8}+\frac{11x^7}{7}+\frac{x^6}{6}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^6/6 + (11*x^7)/7 + (55*x^8)/8 + (55*x^9)/3 + 33*x^10 + 42*x^11 + (77*x^12
)/2 + (330*x^13)/13 + (165*x^14)/14 + (11*x^15)/3 + (11*x^16)/16 + x^17/17
```

fricas [A] time = 0.49, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17}+\frac{11}{16}x^{16}+\frac{11}{3}x^{15}+\frac{165}{14}x^{14}+\frac{330}{13}x^{13}+\frac{77}{2}x^{12}+42x^{11}+33x^{10}+\frac{55}{3}x^{9}+\frac{55}{8}x^{8}+\frac{11}{7}x^{7}+\frac{1}{6}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

giac [A] time = 0.15, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17}+\frac{11}{16}x^{16}+\frac{11}{3}x^{15}+\frac{165}{14}x^{14}+\frac{330}{13}x^{13}+\frac{77}{2}x^{12}+42x^{11}+33x^{10}+\frac{55}{3}x^{9}+\frac{55}{8}x^{8}+\frac{11}{7}x^{7}+\frac{1}{6}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

maple [A] time = 0.04, size = 62, normalized size = 1.13

$$\frac{1}{17}x^{17}+\frac{11}{16}x^{16}+\frac{11}{3}x^{15}+\frac{165}{14}x^{14}+\frac{330}{13}x^{13}+\frac{77}{2}x^{12}+42x^{11}+33x^{10}+\frac{55}{3}x^{9}+\frac{55}{8}x^{8}+\frac{11}{7}x^{7}+\frac{1}{6}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/17*x^17+11/16*x^16+11/3*x^15+165/14*x^14+330/13*x^13+77/2*x^12+42*x^11+33
*x^10+55/3*x^9+55/8*x^8+11/7*x^7+1/6*x^6
```

maxima [A] time = 0.66, size = 61, normalized size = 1.11

$$\frac{1}{17}x^{17}+\frac{11}{16}x^{16}+\frac{11}{3}x^{15}+\frac{165}{14}x^{14}+\frac{330}{13}x^{13}+\frac{77}{2}x^{12}+42x^{11}+33x^{10}+\frac{55}{3}x^{9}+\frac{55}{8}x^{8}+\frac{11}{7}x^{7}+\frac{1}{6}x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/17*x^17 + 11/16*x^16 + 11/3*x^15 + 165/14*x^14 + 330/13*x^13 + 77/2*x^12
+ 42*x^11 + 33*x^10 + 55/3*x^9 + 55/8*x^8 + 11/7*x^7 + 1/6*x^6
```

mupad [B] time = 0.06, size = 61, normalized size = 1.11

$$\frac{x^{17}}{17}+\frac{11\,x^{16}}{16}+\frac{11\,x^{15}}{3}+\frac{165\,x^{14}}{14}+\frac{330\,x^{13}}{13}+\frac{77\,x^{12}}{2}+42\,x^{11}+33\,x^{10}+\frac{55\,x^{9}}{3}+\frac{55\,x^{8}}{8}+\frac{11\,x^{7}}{7}+\frac{x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^6/6 + (11*x^7)/7 + (55*x^8)/8 + (55*x^9)/3 + 33*x^10 + 42*x^11 + (77*x^12
)/2 + (330*x^13)/13 + (165*x^14)/14 + (11*x^15)/3 + (11*x^16)/16 + x^17/17
```

sympy [A] time = 0.07, size = 73, normalized size = 1.33

$$\frac{x^{17}}{17}+\frac{11x^{16}}{16}+\frac{11x^{15}}{3}+\frac{165x^{14}}{14}+\frac{330x^{13}}{13}+\frac{77x^{12}}{2}+42x^{11}+33x^{10}+\frac{55x^{9}}{3}+\frac{55x^{8}}{8}+\frac{11x^{7}}{7}+\frac{x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**17/17 + 11*x**16/16 + 11*x**15/3 + 165*x**14/14 + 330*x**13/13 + 77*x**1
2/2 + 42*x**11 + 33*x**10 + 55*x**9/3 + 55*x**8/8 + 11*x**7/7 + x**6/6
```

3.595 $\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=46

$$\frac{1}{16}(x+1)^{16}-\frac{4}{15}(x+1)^{15}+\frac{3}{7}(x+1)^{14}-\frac{4}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

```
[Out] 1/12*(1+x)^12-4/13*(1+x)^13+3/7*(1+x)^14-4/15*(1+x)^15+1/16*(1+x)^16
```

Rubi [A] time = 0.02, antiderivative size = 46, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{1}{16}(x+1)^{16}-\frac{4}{15}(x+1)^{15}+\frac{3}{7}(x+1)^{14}-\frac{4}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (4*(1 + x)^13)/13 + (3*(1 + x)^14)/7 - (4*(1 + x)^15)/15 +
(1 + x)^16/16
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^4(1+x)\left(1+2x+x^2\right)^5\,dx&=\int x^4(1+x)^{11}\,dx\\&=\int\left((1+x)^{11}-4(1+x)^{12}+6(1+x)^{13}-4(1+x)^{14}+(1+x)^{15}\right)dx\\&=\frac{1}{12}(1+x)^{12}-\frac{4}{13}(1+x)^{13}+\frac{3}{7}(1+x)^{14}-\frac{4}{15}(1+x)^{15}+\frac{1}{16}(1+x)^{16}\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.80

$$\frac{x^{16}}{16}+\frac{11x^{15}}{15}+\frac{55x^{14}}{14}+\frac{165x^{13}}{13}+\frac{55x^{12}}{2}+42x^{11}+\frac{231x^{10}}{5}+\frac{110x^9}{3}+\frac{165x^8}{8}+\frac{55x^7}{7}+\frac{11x^6}{6}+\frac{x^5}{5}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^5/5 + (11*x^6)/6 + (55*x^7)/7 + (165*x^8)/8 + (110*x^9)/3 + (231*x^10)/5
+ 42*x^11 + (55*x^12)/2 + (165*x^13)/13 + (55*x^14)/14 + (11*x^15)/15 + x^1
6/16
```

fricas [A] time = 0.83, size = 61, normalized size = 1.33

$$\frac{1}{16}x^{16}+\frac{11}{15}x^{15}+\frac{55}{14}x^{14}+\frac{165}{13}x^{13}+\frac{55}{2}x^{12}+42x^{11}+\frac{231}{5}x^{10}+\frac{110}{3}x^{9}+\frac{165}{8}x^{8}+\frac{55}{7}x^{7}+\frac{11}{6}x^{6}+\frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

giac [A] time = 0.15, size = 61, normalized size = 1.33

$$\frac{1}{16}\,x^{16}+\frac{11}{15}\,x^{15}+\frac{55}{14}\,x^{14}+\frac{165}{13}\,x^{13}+\frac{55}{2}\,x^{12}+42\,x^{11}+\frac{231}{5}\,x^{10}+\frac{110}{3}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{55}{7}\,x^{7}+\frac{11}{6}\,x^{6}+\frac{1}{5}\,x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

maple [A] time = 0.04, size = 62, normalized size = 1.35

$$\frac{1}{16}x^{16}+\frac{11}{15}x^{15}+\frac{55}{14}x^{14}+\frac{165}{13}x^{13}+\frac{55}{2}x^{12}+42x^{11}+\frac{231}{5}x^{10}+\frac{110}{3}x^{9}+\frac{165}{8}x^{8}+\frac{55}{7}x^{7}+\frac{11}{6}x^{6}+\frac{1}{5}x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/16*x^16+11/15*x^15+55/14*x^14+165/13*x^13+55/2*x^12+42*x^11+231/5*x^10+11
0/3*x^9+165/8*x^8+55/7*x^7+11/6*x^6+1/5*x^5
```

maxima [A] time = 0.69, size = 61, normalized size = 1.33

$$\frac{1}{16}\,x^{16}+\frac{11}{15}\,x^{15}+\frac{55}{14}\,x^{14}+\frac{165}{13}\,x^{13}+\frac{55}{2}\,x^{12}+42\,x^{11}+\frac{231}{5}\,x^{10}+\frac{110}{3}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{55}{7}\,x^{7}+\frac{11}{6}\,x^{6}+\frac{1}{5}\,x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/16*x^16 + 11/15*x^15 + 55/14*x^14 + 165/13*x^13 + 55/2*x^12 + 42*x^11 + 2
31/5*x^10 + 110/3*x^9 + 165/8*x^8 + 55/7*x^7 + 11/6*x^6 + 1/5*x^5
```

mupad [B] time = 0.06, size = 61, normalized size = 1.33

$$\frac{x^{16}}{16}+\frac{11\,x^{15}}{15}+\frac{55\,x^{14}}{14}+\frac{165\,x^{13}}{13}+\frac{55\,x^{12}}{2}+42\,x^{11}+\frac{231\,x^{10}}{5}+\frac{110\,x^{9}}{3}+\frac{165\,x^{8}}{8}+\frac{55\,x^{7}}{7}+\frac{11\,x^{6}}{6}+\frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^5/5 + (11*x^6)/6 + (55*x^7)/7 + (165*x^8)/8 + (110*x^9)/3 + (231*x^10)/5
+ 42*x^11 + (55*x^12)/2 + (165*x^13)/13 + (55*x^14)/14 + (11*x^15)/15 + x^1
6/16
```

sympy [B] time = 0.07, size = 75, normalized size = 1.63

$$\frac{x^{16}}{16}+\frac{11x^{15}}{15}+\frac{55x^{14}}{14}+\frac{165x^{13}}{13}+\frac{55x^{12}}{2}+42x^{11}+\frac{231x^{10}}{5}+\frac{110x^{9}}{3}+\frac{165x^{8}}{8}+\frac{55x^{7}}{7}+\frac{11x^{6}}{6}+\frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**16/16 + 11*x**15/15 + 55*x**14/14 + 165*x**13/13 + 55*x**12/2 + 42*x**11
 + 231*x**10/5 + 110*x**9/3 + 165*x**8/8 + 55*x**7/7 + 11*x**6/6 + x**5/5
```

3.596 $\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=37

$$\frac{1}{15}(x+1)^{15}-\frac{3}{14}(x+1)^{14}+\frac{3}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

```
[Out] -1/12*(1+x)^12+3/13*(1+x)^13-3/14*(1+x)^14+1/15*(1+x)^15
```

Rubi [A] time = 0.02, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{1}{15}(x+1)^{15}-\frac{3}{14}(x+1)^{14}+\frac{3}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (3*(1 + x)^13)/13 - (3*(1 + x)^14)/14 + (1 + x)^15/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^3(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^3(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+3(1+x)^{12}-3(1+x)^{13}+(1+x)^{14}\right)dx\\ &= -\frac{1}{12}(1+x)^{12}+\frac{3}{13}(1+x)^{13}-\frac{3}{14}(1+x)^{14}+\frac{1}{15}(1+x)^{15}\end{aligned}$$

Mathematica [B] time = 0.00, size = 83, normalized size = 2.24

$$\frac{x^{15}}{15}+\frac{11x^{14}}{14}+\frac{55x^{13}}{13}+\frac{55x^{12}}{4}+30x^{11}+\frac{231x^{10}}{5}+\frac{154x^9}{3}+\frac{165x^8}{4}+\frac{165x^7}{7}+\frac{55x^6}{6}+\frac{11x^5}{5}+\frac{x^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^4/4 + (11*x^5)/5 + (55*x^6)/6 + (165*x^7)/7 + (165*x^8)/4 + (154*x^9)/3 +
 (231*x^10)/5 + 30*x^11 + (55*x^12)/4 + (55*x^13)/13 + (11*x^14)/14 + x^15/
15
```

fricas [B] time = 0.78, size = 61, normalized size = 1.65

$$\frac{1}{15}x^{15}+\frac{11}{14}x^{14}+\frac{55}{13}x^{13}+\frac{55}{4}x^{12}+30x^{11}+\frac{231}{5}x^{10}+\frac{154}{3}x^9+\frac{165}{4}x^8+\frac{165}{7}x^7+\frac{55}{6}x^6+\frac{11}{5}x^5+\frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

giac [B] time = 0.15, size = 61, normalized size = 1.65

$$\frac{1}{15}\,x^{15}+\frac{11}{14}\,x^{14}+\frac{55}{13}\,x^{13}+\frac{55}{4}\,x^{12}+30\,x^{11}+\frac{231}{5}\,x^{10}+\frac{154}{3}\,x^{9}+\frac{165}{4}\,x^{8}+\frac{165}{7}\,x^{7}+\frac{55}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{1}{4}\,x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

maple [B] time = 0.05, size = 62, normalized size = 1.68

$$\frac{1}{15}x^{15}+\frac{11}{14}x^{14}+\frac{55}{13}x^{13}+\frac{55}{4}x^{12}+30x^{11}+\frac{231}{5}x^{10}+\frac{154}{3}x^{9}+\frac{165}{4}x^{8}+\frac{165}{7}x^{7}+\frac{55}{6}x^{6}+\frac{11}{5}x^{5}+\frac{1}{4}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/15*x^15+11/14*x^14+55/13*x^13+55/4*x^12+30*x^11+231/5*x^10+154/3*x^9+165/
4*x^8+165/7*x^7+55/6*x^6+11/5*x^5+1/4*x^4
```

maxima [B] time = 0.60, size = 61, normalized size = 1.65

$$\frac{1}{15}\,x^{15}+\frac{11}{14}\,x^{14}+\frac{55}{13}\,x^{13}+\frac{55}{4}\,x^{12}+30\,x^{11}+\frac{231}{5}\,x^{10}+\frac{154}{3}\,x^{9}+\frac{165}{4}\,x^{8}+\frac{165}{7}\,x^{7}+\frac{55}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{1}{4}\,x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/15*x^15 + 11/14*x^14 + 55/13*x^13 + 55/4*x^12 + 30*x^11 + 231/5*x^10 + 15
4/3*x^9 + 165/4*x^8 + 165/7*x^7 + 55/6*x^6 + 11/5*x^5 + 1/4*x^4
```

mupad [B] time = 0.06, size = 61, normalized size = 1.65

$$\frac{x^{15}}{15}+\frac{11\,x^{14}}{14}+\frac{55\,x^{13}}{13}+\frac{55\,x^{12}}{4}+30\,x^{11}+\frac{231\,x^{10}}{5}+\frac{154\,x^{9}}{3}+\frac{165\,x^{8}}{4}+\frac{165\,x^{7}}{7}+\frac{55\,x^{6}}{6}+\frac{11\,x^{5}}{5}+\frac{x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^4/4 + (11*x^5)/5 + (55*x^6)/6 + (165*x^7)/7 + (165*x^8)/4 + (154*x^9)/3 +
 (231*x^10)/5 + 30*x^11 + (55*x^12)/4 + (55*x^13)/13 + (11*x^14)/14 + x^15/
15
```

sympy [B] time = 0.07, size = 75, normalized size = 2.03

$$\frac{x^{15}}{15}+\frac{11x^{14}}{14}+\frac{55x^{13}}{13}+\frac{55x^{12}}{4}+30x^{11}+\frac{231x^{10}}{5}+\frac{154x^{9}}{3}+\frac{165x^{8}}{4}+\frac{165x^{7}}{7}+\frac{55x^{6}}{6}+\frac{11x^{5}}{5}+\frac{x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**15/15 + 11*x**14/14 + 55*x**13/13 + 55*x**12/4 + 30*x**11 + 231*x**10/5
+ 154*x**9/3 + 165*x**8/4 + 165*x**7/7 + 55*x**6/6 + 11*x**5/5 + x**4/4
```

3.597 $\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=28

$$\frac{1}{14}(x+1)^{14}-\frac{2}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

```
[Out] 1/12*(1+x)^12-2/13*(1+x)^13+1/14*(1+x)^14
```

Rubi [A] time = 0.01, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{1}{14}(x+1)^{14}-\frac{2}{13}(x+1)^{13}+\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12 - (2*(1 + x)^13)/13 + (1 + x)^14/14
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^2(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x^2(1+x)^{11}\,dx\\ &= \int \left((1+x)^{11}-2(1+x)^{12}+(1+x)^{13}\right)dx\\ &= \frac{1}{12}(1+x)^{12}-\frac{2}{13}(1+x)^{13}+\frac{1}{14}(1+x)^{14}\end{aligned}$$

Mathematica [B] time = 0.00, size = 79, normalized size = 2.82

$$\frac{x^{14}}{14}+\frac{11x^{13}}{13}+\frac{55x^{12}}{12}+15x^{11}+33x^{10}+\frac{154x^9}{3}+\frac{231x^8}{4}+\frac{330x^7}{7}+\frac{55x^6}{2}+11x^5+\frac{11x^4}{4}+\frac{x^3}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^3/3 + (11*x^4)/4 + 11*x^5 + (55*x^6)/2 + (330*x^7)/7 + (231*x^8)/4 + (154
*x^9)/3 + 33*x^10 + 15*x^11 + (55*x^12)/12 + (11*x^13)/13 + x^14/14
```

fricas [B] time = 0.50, size = 61, normalized size = 2.18

$$\frac{1}{14}x^{14}+\frac{11}{13}x^{13}+\frac{55}{12}x^{12}+15x^{11}+33x^{10}+\frac{154}{3}x^9+\frac{231}{4}x^8+\frac{330}{7}x^7+\frac{55}{2}x^6+11x^5+\frac{11}{4}x^4+\frac{1}{3}x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

giac [B] time = 0.15, size = 61, normalized size = 2.18

$$\frac{1}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{55}{12}\,x^{12}+15\,x^{11}+33\,x^{10}+\frac{154}{3}\,x^{9}+\frac{231}{4}\,x^{8}+\frac{330}{7}\,x^{7}+\frac{55}{2}\,x^{6}+11\,x^{5}+\frac{11}{4}\,x^{4}+\frac{1}{3}\,x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

maple [B] time = 0.05, size = 62, normalized size = 2.21

$$\frac{1}{14}x^{14}+\frac{11}{13}x^{13}+\frac{55}{12}x^{12}+15x^{11}+33x^{10}+\frac{154}{3}x^{9}+\frac{231}{4}x^{8}+\frac{330}{7}x^{7}+\frac{55}{2}x^{6}+11x^{5}+\frac{11}{4}x^{4}+\frac{1}{3}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/14*x^14+11/13*x^13+55/12*x^12+15*x^11+33*x^10+154/3*x^9+231/4*x^8+330/7*x
^7+55/2*x^6+11*x^5+11/4*x^4+1/3*x^3
```

maxima [B] time = 0.61, size = 61, normalized size = 2.18

$$\frac{1}{14}\,x^{14}+\frac{11}{13}\,x^{13}+\frac{55}{12}\,x^{12}+15\,x^{11}+33\,x^{10}+\frac{154}{3}\,x^{9}+\frac{231}{4}\,x^{8}+\frac{330}{7}\,x^{7}+\frac{55}{2}\,x^{6}+11\,x^{5}+\frac{11}{4}\,x^{4}+\frac{1}{3}\,x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/14*x^14 + 11/13*x^13 + 55/12*x^12 + 15*x^11 + 33*x^10 + 154/3*x^9 + 231/4
*x^8 + 330/7*x^7 + 55/2*x^6 + 11*x^5 + 11/4*x^4 + 1/3*x^3
```

mupad [B] time = 0.06, size = 61, normalized size = 2.18

$$\frac{x^{14}}{14}+\frac{11\,x^{13}}{13}+\frac{55\,x^{12}}{12}+15\,x^{11}+33\,x^{10}+\frac{154\,x^9}{3}+\frac{231\,x^8}{4}+\frac{330\,x^7}{7}+\frac{55\,x^6}{2}+11\,x^5+\frac{11\,x^4}{4}+\frac{x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^3/3 + (11*x^4)/4 + 11*x^5 + (55*x^6)/2 + (330*x^7)/7 + (231*x^8)/4 + (154
*x^9)/3 + 33*x^10 + 15*x^11 + (55*x^12)/12 + (11*x^13)/13 + x^14/14
```

sympy [B] time = 0.07, size = 71, normalized size = 2.54

$$\frac{x^{14}}{14}+\frac{11x^{13}}{13}+\frac{55x^{12}}{12}+15x^{11}+33x^{10}+\frac{154x^{9}}{3}+\frac{231x^{8}}{4}+\frac{330x^{7}}{7}+\frac{55x^{6}}{2}+11x^{5}+\frac{11x^{4}}{4}+\frac{x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**14/14 + 11*x**13/13 + 55*x**12/12 + 15*x**11 + 33*x**10 + 154*x**9/3 + 2
31*x**8/4 + 330*x**7/7 + 55*x**6/2 + 11*x**5 + 11*x**4/4 + x**3/3
```

3.598 $\int x(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=19

$$\frac{1}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

```
[Out] -1/12*(1+x)^12+1/13*(1+x)^13
```

Rubi [A] time = 0.01, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {27, 43}

$$\frac{1}{13}(x+1)^{13}-\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[x*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] -(1 + x)^12/12 + (1 + x)^13/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x(1+x)\left(1+2x+x^2\right)^5\,dx &= \int x(1+x)^{11}\,dx\\ &= \int \left(-(1+x)^{11}+(1+x)^{12}\right)dx\\ &= -\frac{1}{12}(1+x)^{12}+\frac{1}{13}(1+x)^{13}\end{aligned}$$

Mathematica [B] time = 0.00, size = 77, normalized size = 4.05

$$\frac{x^{13}}{13}+\frac{11x^{12}}{12}+5x^{11}+\frac{33x^{10}}{2}+\frac{110x^9}{3}+\frac{231x^8}{4}+66x^7+55x^6+33x^5+\frac{55x^4}{4}+\frac{11x^3}{3}+\frac{x^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^2/2 + (11*x^3)/3 + (55*x^4)/4 + 33*x^5 + 55*x^6 + 66*x^7 + (231*x^8)/4 +
(110*x^9)/3 + (33*x^10)/2 + 5*x^11 + (11*x^12)/12 + x^13/13
```

fricas [B] time = 0.67, size = 61, normalized size = 3.21

$$\frac{1}{13}x^{13}+\frac{11}{12}x^{12}+5x^{11}+\frac{33}{2}x^{10}+\frac{110}{3}x^9+\frac{231}{4}x^8+66x^7+55x^6+33x^5+\frac{55}{4}x^4+\frac{11}{3}x^3+\frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

giac [B] time = 0.17, size = 61, normalized size = 3.21

$$\frac{1}{13}\,x^{13}+\frac{11}{12}\,x^{12}+5\,x^{11}+\frac{33}{2}\,x^{10}+\frac{110}{3}\,x^{9}+\frac{231}{4}\,x^{8}+66\,x^{7}+55\,x^{6}+33\,x^{5}+\frac{55}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{1}{2}\,x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

maple [B] time = 0.04, size = 62, normalized size = 3.26

$$\frac{1}{13}x^{13}+\frac{11}{12}x^{12}+5x^{11}+\frac{33}{2}x^{10}+\frac{110}{3}x^{9}+\frac{231}{4}x^{8}+66x^{7}+55x^{6}+33x^{5}+\frac{55}{4}x^{4}+\frac{11}{3}x^{3}+\frac{1}{2}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/13*x^13+11/12*x^12+5*x^11+33/2*x^10+110/3*x^9+231/4*x^8+66*x^7+55*x^6+33*
x^5+55/4*x^4+11/3*x^3+1/2*x^2
```

maxima [B] time = 0.58, size = 61, normalized size = 3.21

$$\frac{1}{13}\,x^{13}+\frac{11}{12}\,x^{12}+5\,x^{11}+\frac{33}{2}\,x^{10}+\frac{110}{3}\,x^{9}+\frac{231}{4}\,x^{8}+66\,x^{7}+55\,x^{6}+33\,x^{5}+\frac{55}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{1}{2}\,x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/13*x^13 + 11/12*x^12 + 5*x^11 + 33/2*x^10 + 110/3*x^9 + 231/4*x^8 + 66*x^
7 + 55*x^6 + 33*x^5 + 55/4*x^4 + 11/3*x^3 + 1/2*x^2
```

mupad [B] time = 0.06, size = 61, normalized size = 3.21

$$\frac{x^{13}}{13}+\frac{11\,x^{12}}{12}+5\,x^{11}+\frac{33\,x^{10}}{2}+\frac{110\,x^9}{3}+\frac{231\,x^8}{4}+66\,x^7+55\,x^6+33\,x^5+\frac{55\,x^4}{4}+\frac{11\,x^3}{3}+\frac{x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x^2/2 + (11*x^3)/3 + (55*x^4)/4 + 33*x^5 + 55*x^6 + 66*x^7 + (231*x^8)/4 +
(110*x^9)/3 + (33*x^10)/2 + 5*x^11 + (11*x^12)/12 + x^13/13
```

sympy [B] time = 0.07, size = 70, normalized size = 3.68

$$\frac{x^{13}}{13}+\frac{11x^{12}}{12}+5x^{11}+\frac{33x^{10}}{2}+\frac{110x^{9}}{3}+\frac{231x^{8}}{4}+66x^{7}+55x^{6}+33x^{5}+\frac{55x^{4}}{4}+\frac{11x^{3}}{3}+\frac{x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**13/13 + 11*x**12/12 + 5*x**11 + 33*x**10/2 + 110*x**9/3 + 231*x**8/4 + 6
6*x**7 + 55*x**6 + 33*x**5 + 55*x**4/4 + 11*x**3/3 + x**2/2
```

3.599 $\int (1+x)\left(1+2x+x^2\right)^5 \, dx$

Optimal. Leaf size=9

$$\frac{1}{12}(x+1)^{12}$$

```
[Out] 1/12*(1+x)^12
```

Rubi [A] time = 0.00, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {27, 32}

$$\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned} \int (1+x)\left(1+2x+x^2\right)^5 \, dx &= \int (1+x)^{11} \, dx \\ &= \frac{1}{12}(1+x)^{12} \end{aligned}$$

Mathematica [A] time = 0.00, size = 9, normalized size = 1.00

$$\frac{1}{12}(x+1)^{12}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (1 + x)^12/12
```

fricas [B] time = 0.76, size = 55, normalized size = 6.11

$$\frac{1}{12}x^{12} + x^{11} + \frac{11}{2}x^{10} + \frac{55}{3}x^9 + \frac{165}{4}x^8 + 66x^7 + 77x^6 + 66x^5 + \frac{165}{4}x^4 + \frac{55}{3}x^3 + \frac{11}{2}x^2 + x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] 1/12*x^12 + x^11 + 11/2*x^10 + 55/3*x^9 + 165/4*x^8 + 66*x^7 + 77*x^6 + 66*
x^5 + 165/4*x^4 + 55/3*x^3 + 11/2*x^2 + x
```

giac [**B**] time = 0.15, size = 62, normalized size = 6.89

$$\frac{1}{12}\left(x^{2}+2\,x\right)^{6}+\frac{1}{2}\left(x^{2}+2\,x\right)^{5}+\frac{5}{4}\left(x^{2}+2\,x\right)^{4}+\frac{5}{3}\left(x^{2}+2\,x\right)^{3}+\frac{5}{4}\left(x^{2}+2\,x\right)^{2}+\frac{1}{2}\,x^{2}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] 1/12*(x^2 + 2*x)^6 + 1/2*(x^2 + 2*x)^5 + 5/4*(x^2 + 2*x)^4 + 5/3*(x^2 + 2*x
)^3 + 5/4*(x^2 + 2*x)^2 + 1/2*x^2 + x
```

maple [**B**] time = 0.04, size = 56, normalized size = 6.22

$$\frac{1}{12}x^{12}+x^{11}+\frac{11}{2}x^{10}+\frac{55}{3}x^{9}+\frac{165}{4}x^{8}+66x^{7}+77x^{6}+66x^{5}+\frac{165}{4}x^{4}+\frac{55}{3}x^{3}+\frac{11}{2}x^{2}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] 1/12*x^12+x^11+11/2*x^10+55/3*x^9+165/4*x^8+66*x^7+77*x^6+66*x^5+165/4*x^4+
55/3*x^3+11/2*x^2+x
```

maxima [**A**] time = 0.67, size = 12, normalized size = 1.33

$$\frac{1}{12}\left(x^{2}+2\,x+1\right)^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] 1/12*(x^2 + 2*x + 1)^6
```

mupad [**B**] time = 0.06, size = 55, normalized size = 6.11

$$\frac{x^{12}}{12}+x^{11}+\frac{11\,x^{10}}{2}+\frac{55\,x^{9}}{3}+\frac{165\,x^{8}}{4}+66\,x^{7}+77\,x^{6}+66\,x^{5}+\frac{165\,x^{4}}{4}+\frac{55\,x^{3}}{3}+\frac{11\,x^{2}}{2}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] x + (11*x^2)/2 + (55*x^3)/3 + (165*x^4)/4 + 66*x^5 + 77*x^6 + 66*x^7 + (165
*x^8)/4 + (55*x^9)/3 + (11*x^10)/2 + x^11 + x^12/12
```

sympy [**B**] time = 0.08, size = 65, normalized size = 7.22

$$\frac{x^{12}}{12}+x^{11}+\frac{11x^{10}}{2}+\frac{55x^{9}}{3}+\frac{165x^{8}}{4}+66x^{7}+77x^{6}+66x^{5}+\frac{165x^{4}}{4}+\frac{55x^{3}}{3}+\frac{11x^{2}}{2}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] x**12/12 + x**11 + 11*x**10/2 + 55*x**9/3 + 165*x**8/4 + 66*x**7 + 77*x**6
+ 66*x**5 + 165*x**4/4 + 55*x**3/3 + 11*x**2/2 + x
```

3.600 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx$

Optimal. Leaf size=72

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^9}{9}+\frac{165x^8}{8}+\frac{330x^7}{7}+77x^6+\frac{462x^5}{5}+\frac{165x^4}{2}+55x^3+\frac{55x^2}{2}+11x+\log(x)$$

```
[Out] 11*x+55/2*x^2+55*x^3+165/2*x^4+462/5*x^5+77*x^6+330/7*x^7+165/8*x^8+55/9*x^
9+11/10*x^10+1/11*x^11+ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^9}{9}+\frac{165x^8}{8}+\frac{330x^7}{7}+77x^6+\frac{462x^5}{5}+\frac{165x^4}{2}+55x^3+\frac{55x^2}{2}+11x+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] 11*x + (55*x^2)/2 + 55*x^3 + (165*x^4)/2 + (462*x^5)/5 + 77*x^6 + (330*x^7)
/7 + (165*x^8)/8 + (55*x^9)/9 + (11*x^10)/10 + x^11/11 + Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x}\,dx &= \int \frac{(1+x)^{11}}{x}\,dx\\ &= \int \left(11+\frac{1}{x}+55x+165x^2+330x^3+462x^4+462x^5+330x^6+165x^7+55x^8+11\right.\\ &= 11x+\frac{55x^2}{2}+55x^3+\frac{165x^4}{2}+\frac{462x^5}{5}+77x^6+\frac{330x^7}{7}+\frac{165x^8}{8}+\frac{55x^9}{9}+\frac{11x^{10}}{10}+\end{aligned}$$

Mathematica [A] time = 0.01, size = 96, normalized size = 1.33

$$\frac{1}{11}(x+1)^{11}+\frac{1}{10}(x+1)^{10}+\frac{1}{9}(x+1)^9+\frac{1}{8}(x+1)^8+\frac{1}{7}(x+1)^7+\frac{1}{6}(x+1)^6+\frac{1}{5}(x+1)^5+\frac{1}{4}(x+1)^4+\frac{1}{3}(x+1)^3+\frac{1}{2}(x+1)^2+x+\log($$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x,x]
```

```
[Out] x + (1 + x)^2/2 + (1 + x)^3/3 + (1 + x)^4/4 + (1 + x)^5/5 + (1 + x)^6/6 + (
1 + x)^7/7 + (1 + x)^8/8 + (1 + x)^9/9 + (1 + x)^10/10 + (1 + x)^11/11 + Lo
g[-x]
```

fricas [A] time = 0.86, size = 56, normalized size = 0.78

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="fricas")
```

```
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(x)
```

giac [A] time = 0.15, size = 57, normalized size = 0.79

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="giac")
```

```
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(abs(x))
```

maple [A] time = 0.05, size = 57, normalized size = 0.79

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^{9}}{9}+\frac{165x^{8}}{8}+\frac{330x^{7}}{7}+77x^{6}+\frac{462x^{5}}{5}+\frac{165x^{4}}{2}+55x^{3}+\frac{55x^{2}}{2}+11x+\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x,x)
```

```
[Out] 11*x+55/2*x^2+55*x^3+165/2*x^4+462/5*x^5+77*x^6+330/7*x^7+165/8*x^8+55/9*x^
9+11/10*x^10+1/11*x^11+ln(x)
```

maxima [A] time = 0.63, size = 56, normalized size = 0.78

$$\frac{1}{11}\,x^{11}+\frac{11}{10}\,x^{10}+\frac{55}{9}\,x^{9}+\frac{165}{8}\,x^{8}+\frac{330}{7}\,x^{7}+77\,x^{6}+\frac{462}{5}\,x^{5}+\frac{165}{2}\,x^{4}+55\,x^{3}+\frac{55}{2}\,x^{2}+11\,x+\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x,x, algorithm="maxima")
```

```
[Out] 1/11*x^11 + 11/10*x^10 + 55/9*x^9 + 165/8*x^8 + 330/7*x^7 + 77*x^6 + 462/5*
x^5 + 165/2*x^4 + 55*x^3 + 55/2*x^2 + 11*x + log(x)
```

mupad [B] time = 0.06, size = 56, normalized size = 0.78

$$11\,x+\ln(x)+\frac{55\,x^2}{2}+55\,x^3+\frac{165\,x^4}{2}+\frac{462\,x^5}{5}+77\,x^6+\frac{330\,x^7}{7}+\frac{165\,x^8}{8}+\frac{55\,x^9}{9}+\frac{11\,x^{10}}{10}+\frac{x^{11}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x,x)
```

```
[Out] 11*x + log(x) + (55*x^2)/2 + 55*x^3 + (165*x^4)/2 + (462*x^5)/5 + 77*x^6 +
(330*x^7)/7 + (165*x^8)/8 + (55*x^9)/9 + (11*x^10)/10 + x^11/11
```

sympy [**A**] time = 0.11, size = 68, normalized size = 0.94

$$\frac{x^{11}}{11}+\frac{11x^{10}}{10}+\frac{55x^9}{9}+\frac{165x^8}{8}+\frac{330x^7}{7}+77x^6+\frac{462x^5}{5}+\frac{165x^4}{2}+55x^3+\frac{55x^2}{2}+11x+\log{(x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x,x)
```

```
[Out] x**11/11 + 11*x**10/10 + 55*x**9/9 + 165*x**8/8 + 330*x**7/7 + 77*x**6 + 46
2*x**5/5 + 165*x**4/2 + 55*x**3 + 55*x**2/2 + 11*x + log(x)
```

3.601 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx$

Optimal. Leaf size=72

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

```
[Out] -1/x+55*x+165/2*x^2+110*x^3+231/2*x^4+462/5*x^5+55*x^6+165/7*x^7+55/8*x^8+1
1/9*x^9+1/10*x^10+11*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -x^(-1) + 55*x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5 + 55*x^6
 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10 + 11*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^2}\,dx &= \int \frac{(1+x)^{11}}{x^2}\,dx\\ &= \int \left(55+\frac{1}{x^2}+\frac{11}{x}+165x+330x^2+462x^3+462x^4+330x^5+165x^6+55x^7+\right.\\ &= -\frac{1}{x}+55x+\frac{165x^2}{2}+110x^3+\frac{231x^4}{2}+\frac{462x^5}{5}+55x^6+\frac{165x^7}{7}+\frac{55x^8}{8}+\frac{11x^9}{9}\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$\frac{x^{10}}{10}+\frac{11x^9}{9}+\frac{55x^8}{8}+\frac{165x^7}{7}+55x^6+\frac{462x^5}{5}+\frac{231x^4}{2}+110x^3+\frac{165x^2}{2}+55x-\frac{1}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^2,x]
```

```
[Out] -x^(-1) + 55*x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5 + 55*x^6
 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10 + 11*Log[x]
```

fricas [A] time = 0.93, size = 62, normalized size = 0.86

$$\frac{252\,x^{11}+3080\,x^{10}+17325\,x^{9}+59400\,x^{8}+138600\,x^{7}+232848\,x^{6}+291060\,x^{5}+277200\,x^{4}+207900\,x^{3}+138}{2520\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="fricas")
```

```
[Out] 1/2520*(252*x^11 + 3080*x^10 + 17325*x^9 + 59400*x^8 + 138600*x^7 + 232848*
x^6 + 291060*x^5 + 277200*x^4 + 207900*x^3 + 138600*x^2 + 27720*x*log(x) -
2520)/x
```

giac [A] time = 0.16, size = 59, normalized size = 0.82

$$\frac{1}{10}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{55}{8}\,x^{8}+\frac{165}{7}\,x^{7}+55\,x^{6}+\frac{462}{5}\,x^{5}+\frac{231}{2}\,x^{4}+110\,x^{3}+\frac{165}{2}\,x^{2}+55\,x-\frac{1}{x}+11\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="giac")
```

```
[Out] 1/10*x^10 + 11/9*x^9 + 55/8*x^8 + 165/7*x^7 + 55*x^6 + 462/5*x^5 + 231/2*x^
4 + 110*x^3 + 165/2*x^2 + 55*x - 1/x + 11*log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.82

$$\frac{x^{10}}{10}+\frac{11x^{9}}{9}+\frac{55x^{8}}{8}+\frac{165x^{7}}{7}+55x^{6}+\frac{462x^{5}}{5}+\frac{231x^{4}}{2}+110x^{3}+\frac{165x^{2}}{2}+55x+11\ln(x)-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^2,x)
```

```
[Out] -1/x+55*x+165/2*x^2+110*x^3+231/2*x^4+462/5*x^5+55*x^6+165/7*x^7+55/8*x^8+1
1/9*x^9+1/10*x^10+11*ln(x)
```

maxima [A] time = 0.49, size = 58, normalized size = 0.81

$$\frac{1}{10}\,x^{10}+\frac{11}{9}\,x^{9}+\frac{55}{8}\,x^{8}+\frac{165}{7}\,x^{7}+55\,x^{6}+\frac{462}{5}\,x^{5}+\frac{231}{2}\,x^{4}+110\,x^{3}+\frac{165}{2}\,x^{2}+55\,x-\frac{1}{x}+11\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^2,x, algorithm="maxima")
```

```
[Out] 1/10*x^10 + 11/9*x^9 + 55/8*x^8 + 165/7*x^7 + 55*x^6 + 462/5*x^5 + 231/2*x^
4 + 110*x^3 + 165/2*x^2 + 55*x - 1/x + 11*log(x)
```

mupad [B] time = 0.06, size = 58, normalized size = 0.81

$$55\,x+11\,\ln(x)-\frac{1}{x}+\frac{165\,x^{2}}{2}+110\,x^{3}+\frac{231\,x^{4}}{2}+\frac{462\,x^{5}}{5}+55\,x^{6}+\frac{165\,x^{7}}{7}+\frac{55\,x^{8}}{8}+\frac{11\,x^{9}}{9}+\frac{x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^2,x)
```

```
[Out] 55*x + 11*log(x) - 1/x + (165*x^2)/2 + 110*x^3 + (231*x^4)/2 + (462*x^5)/5
+ 55*x^6 + (165*x^7)/7 + (55*x^8)/8 + (11*x^9)/9 + x^10/10
```

sympy [A] time = 0.11, size = 66, normalized size = 0.92

$$\frac{x^{10}}{10}+\frac{11x^{9}}{9}+\frac{55x^{8}}{8}+\frac{165x^{7}}{7}+55x^{6}+\frac{462x^{5}}{5}+\frac{231x^{4}}{2}+110x^{3}+\frac{165x^{2}}{2}+55x+11\log{(x)}-\frac{1}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**2,x)
```

```
[Out] x**10/10 + 11*x**9/9 + 55*x**8/8 + 165*x**7/7 + 55*x**6 + 462*x**5/5 + 231*
x**4/2 + 110*x**3 + 165*x**2/2 + 55*x + 11*log(x) - 1/x
```

3.602 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx$

Optimal. Leaf size=70

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

```
[Out] -1/2/x^2-11/x+165*x+165*x^2+154*x^3+231/2*x^4+66*x^5+55/2*x^6+55/7*x^7+11/8
*x^8+1/9*x^9+55*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/(2*x^2) - 11/x + 165*x + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66*x^5 + (55*
x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9 + 55*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^3}\,dx &= \int \frac{(1+x)^{11}}{x^3}\,dx\\ &= \int \left(165+\frac{1}{x^3}+\frac{11}{x^2}+\frac{55}{x}+330x+462x^2+462x^3+330x^4+165x^5+55x^6+11x^7\right.\\ &= -\frac{1}{2x^2}-\frac{11}{x}+165x+165x^2+154x^3+\frac{231x^4}{2}+66x^5+\frac{55x^6}{2}+\frac{55x^7}{7}+\frac{11x^8}{8}+\frac{x^9}{9}\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^9}{9}+\frac{11x^8}{8}+\frac{55x^7}{7}+\frac{55x^6}{2}+66x^5+\frac{231x^4}{2}+154x^3+165x^2-\frac{1}{2x^2}+165x-\frac{11}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^3,x]
```

```
[Out] -1/2*1/x^2 - 11/x + 165*x + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66*x^5 + (55*
x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9 + 55*Log[x]
```

fricas [A] time = 0.84, size = 62, normalized size = 0.89

$$\frac{56\,x^{11} + 693\,x^{10} + 3960\,x^{9} + 13860\,x^{8} + 33264\,x^{7} + 58212\,x^{6} + 77616\,x^{5} + 83160\,x^{4} + 83160\,x^{3} + 27720\,x^{2}\,\mathrm{l}}{504\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="fricas")
```

```
[Out] 1/504*(56*x^11 + 693*x^10 + 3960*x^9 + 13860*x^8 + 33264*x^7 + 58212*x^6 +
77616*x^5 + 83160*x^4 + 83160*x^3 + 27720*x^2*log(x) - 5544*x - 252)/x^2
```

giac [A] time = 0.17, size = 59, normalized size = 0.84

$$\frac{1}{9}\,x^{9} + \frac{11}{8}\,x^{8} + \frac{55}{7}\,x^{7} + \frac{55}{2}\,x^{6} + 66\,x^{5} + \frac{231}{2}\,x^{4} + 154\,x^{3} + 165\,x^{2} + 165\,x - \frac{22\,x + 1}{2\,x^{2}} + 55\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="giac")
```

```
[Out] 1/9*x^9 + 11/8*x^8 + 55/7*x^7 + 55/2*x^6 + 66*x^5 + 231/2*x^4 + 154*x^3 + 1
65*x^2 + 165*x - 1/2*(22*x + 1)/x^2 + 55*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^{9}}{9} + \frac{11x^{8}}{8} + \frac{55x^{7}}{7} + \frac{55x^{6}}{2} + 66x^{5} + \frac{231x^{4}}{2} + 154x^{3} + 165x^{2} + 165x + 55\ln(x) - \frac{11}{x} - \frac{1}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^3,x)
```

```
[Out] -1/2/x^2-11/x+165*x+165*x^2+154*x^3+231/2*x^4+66*x^5+55/2*x^6+55/7*x^7+11/8
*x^8+1/9*x^9+55*ln(x)
```

maxima [A] time = 0.55, size = 58, normalized size = 0.83

$$\frac{1}{9}\,x^{9} + \frac{11}{8}\,x^{8} + \frac{55}{7}\,x^{7} + \frac{55}{2}\,x^{6} + 66\,x^{5} + \frac{231}{2}\,x^{4} + 154\,x^{3} + 165\,x^{2} + 165\,x - \frac{22\,x + 1}{2\,x^{2}} + 55\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^3,x, algorithm="maxima")
```

```
[Out] 1/9*x^9 + 11/8*x^8 + 55/7*x^7 + 55/2*x^6 + 66*x^5 + 231/2*x^4 + 154*x^3 + 1
65*x^2 + 165*x - 1/2*(22*x + 1)/x^2 + 55*log(x)
```

mupad [B] time = 0.05, size = 58, normalized size = 0.83

$$165\,x + 55\,\ln(x) - \frac{11\,x + \frac{1}{2}}{x^{2}} + 165\,x^{2} + 154\,x^{3} + \frac{231\,x^{4}}{2} + 66\,x^{5} + \frac{55\,x^{6}}{2} + \frac{55\,x^{7}}{7} + \frac{11\,x^{8}}{8} + \frac{x^{9}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^3,x)
```

```
[Out] 165*x + 55*log(x) - (11*x + 1/2)/x^2 + 165*x^2 + 154*x^3 + (231*x^4)/2 + 66
*x^5 + (55*x^6)/2 + (55*x^7)/7 + (11*x^8)/8 + x^9/9
```

sympy [A] time = 0.12, size = 66, normalized size = 0.94

$$\frac{x^{9}}{9} + \frac{11x^{8}}{8} + \frac{55x^{7}}{7} + \frac{55x^{6}}{2} + 66x^{5} + \frac{231x^{4}}{2} + 154x^{3} + 165x^{2} + 165x + 55\log\left(x\right) + \frac{-22x - 1}{2x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**3,x)
```

```
[Out] x**9/9 + 11*x**8/8 + 55*x**7/7 + 55*x**6/2 + 66*x**5 + 231*x**4/2 + 154*x**
3 + 165*x**2 + 165*x + 55*log(x) + (-22*x - 1)/(2*x**2)
```

3.603 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx$

Optimal. Leaf size=70

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3-\frac{1}{3x^3}+231x^2-\frac{11}{2x^2}+330x-\frac{55}{x}+165\log(x)$$

```
[Out] -1/3/x^3-11/2/x^2-55/x+330*x+231*x^2+154*x^3+165/2*x^4+33*x^5+55/6*x^6+11/7
*x^7+1/8*x^8+165*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3+231x^2-\frac{11}{2x^2}-\frac{1}{3x^3}+330x-\frac{55}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/(3*x^3) - 11/(2*x^2) - 55/x + 330*x + 231*x^2 + 154*x^3 + (165*x^4)/2 +
33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8 + 165*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^4}\,dx &= \int \frac{(1+x)^{11}}{x^4}\,dx\\ &= \int \left(330+\frac{1}{x^4}+\frac{11}{x^3}+\frac{55}{x^2}+\frac{165}{x}+462x+462x^2+330x^3+165x^4+55x^5+11\right.\\ &= -\frac{1}{3x^3}-\frac{11}{2x^2}-\frac{55}{x}+330x+231x^2+154x^3+\frac{165x^4}{2}+33x^5+\frac{55x^6}{6}+\frac{11x^7}{7}+\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^8}{8}+\frac{11x^7}{7}+\frac{55x^6}{6}+33x^5+\frac{165x^4}{2}+154x^3-\frac{1}{3x^3}+231x^2-\frac{11}{2x^2}+330x-\frac{55}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^4,x]
```

```
[Out] -1/3*1/x^3 - 11/(2*x^2) - 55/x + 330*x + 231*x^2 + 154*x^3 + (165*x^4)/2 +
33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8 + 165*Log[x]
```

fricas [A] time = 0.78, size = 62, normalized size = 0.89

$$\frac{21\,x^{11}+264\,x^{10}+1540\,x^{9}+5544\,x^{8}+13860\,x^{7}+25872\,x^{6}+38808\,x^{5}+55440\,x^{4}+27720\,x^{3}\log(x)-9240\,x^{2}}{168\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="fricas")
```

```
[Out] 1/168*(21*x^11 + 264*x^10 + 1540*x^9 + 5544*x^8 + 13860*x^7 + 25872*x^6 + 3
8808*x^5 + 55440*x^4 + 27720*x^3*log(x) - 9240*x^2 - 924*x - 56)/x^3
```

giac [A] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{8}\,x^{8}+\frac{11}{7}\,x^{7}+\frac{55}{6}\,x^{6}+33\,x^{5}+\frac{165}{2}\,x^{4}+154\,x^{3}+231\,x^{2}+330\,x-\frac{330\,x^{2}+33\,x+2}{6\,x^{3}}+165\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="giac")
```

```
[Out] 1/8*x^8 + 11/7*x^7 + 55/6*x^6 + 33*x^5 + 165/2*x^4 + 154*x^3 + 231*x^2 + 33
0*x - 1/6*(330*x^2 + 33*x + 2)/x^3 + 165*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^{8}}{8}+\frac{11x^{7}}{7}+\frac{55x^{6}}{6}+33x^{5}+\frac{165x^{4}}{2}+154x^{3}+231x^{2}+330x+165\ln(x)-\frac{55}{x}-\frac{11}{2x^{2}}-\frac{1}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^4,x)
```

```
[Out] -1/3/x^3-11/2/x^2-55/x+330*x+231*x^2+154*x^3+165/2*x^4+33*x^5+55/6*x^6+11/7
*x^7+1/8*x^8+165*ln(x)
```

maxima [A] time = 0.52, size = 58, normalized size = 0.83

$$\frac{1}{8}\,x^{8}+\frac{11}{7}\,x^{7}+\frac{55}{6}\,x^{6}+33\,x^{5}+\frac{165}{2}\,x^{4}+154\,x^{3}+231\,x^{2}+330\,x-\frac{330\,x^{2}+33\,x+2}{6\,x^{3}}+165\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^4,x, algorithm="maxima")
```

```
[Out] 1/8*x^8 + 11/7*x^7 + 55/6*x^6 + 33*x^5 + 165/2*x^4 + 154*x^3 + 231*x^2 + 33
0*x - 1/6*(330*x^2 + 33*x + 2)/x^3 + 165*log(x)
```

mupad [B] time = 0.04, size = 58, normalized size = 0.83

$$330\,x+165\,\ln(x)-\frac{55\,x^{2}+\frac{11\,x}{2}+\frac{1}{3}}{x^{3}}+231\,x^{2}+154\,x^{3}+\frac{165\,x^{4}}{2}+33\,x^{5}+\frac{55\,x^{6}}{6}+\frac{11\,x^{7}}{7}+\frac{x^{8}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^4,x)
```

```
[Out] 330*x + 165*log(x) - ((11*x)/2 + 55*x^2 + 1/3)/x^3 + 231*x^2 + 154*x^3 + (1
65*x^4)/2 + 33*x^5 + (55*x^6)/6 + (11*x^7)/7 + x^8/8
```

sympy [A] time = 0.13, size = 65, normalized size = 0.93

$$\frac{x^{8}}{8}+\frac{11x^{7}}{7}+\frac{55x^{6}}{6}+33x^{5}+\frac{165x^{4}}{2}+154x^{3}+231x^{2}+330x+165\log{(x)}+\frac{-330x^{2}-33x-2}{6x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**4,x)
```

```
[Out] x**8/8 + 11*x**7/7 + 55*x**6/6 + 33*x**5 + 165*x**4/2 + 154*x**3 + 231*x**2
 + 330*x + 165*log(x) + (-330*x**2 - 33*x - 2)/(6*x**3)
```

3.604 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^5}\,dx$

Optimal. Leaf size=70

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}-\frac{1}{4x^4}+110x^3-\frac{11}{3x^3}+231x^2-\frac{55}{2x^2}+462x-\frac{165}{x}+330\log(x)$$

```
[Out] -1/4/x^4-11/3/x^3-55/2/x^2-165/x+462*x+231*x^2+110*x^3+165/4*x^4+11*x^5+11/
6*x^6+1/7*x^7+330*ln(x)
```

Rubi **[A]** time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}+110x^3+231x^2-\frac{55}{2x^2}-\frac{11}{3x^3}-\frac{1}{4x^4}+462x-\frac{165}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/(4*x^4) - 11/(3*x^3) - 55/(2*x^2) - 165/x + 462*x + 231*x^2 + 110*x^3 +
(165*x^4)/4 + 11*x^5 + (11*x^6)/6 + x^7/7 + 330*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^5}\,dx &= \int \frac{(1+x)^{11}}{x^5}\,dx\\ &= \int \left(462+\frac{1}{x^5}+\frac{11}{x^4}+\frac{55}{x^3}+\frac{165}{x^2}+\frac{330}{x}+462x+330x^2+165x^3+55x^4+11x^5+\right.\\ &= -\frac{1}{4x^4}-\frac{11}{3x^3}-\frac{55}{2x^2}-\frac{165}{x}+462x+231x^2+110x^3+\frac{165x^4}{4}+11x^5+\frac{11x^6}{6}+\frac{x^7}{7}+\end{aligned}$$

Mathematica **[A]** time = 0.00, size = 70, normalized size = 1.00

$$\frac{x^7}{7}+\frac{11x^6}{6}+11x^5+\frac{165x^4}{4}-\frac{1}{4x^4}+110x^3-\frac{11}{3x^3}+231x^2-\frac{55}{2x^2}+462x-\frac{165}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^5,x]
```

```
[Out] -1/4*1/x^4 - 11/(3*x^3) - 55/(2*x^2) - 165/x + 462*x + 231*x^2 + 110*x^3 +
(165*x^4)/4 + 11*x^5 + (11*x^6)/6 + x^7/7 + 330*Log[x]
```

fricas [**A**] time = 0.61, size = 62, normalized size = 0.89

$$\frac{12\,x^{11}+154\,x^{10}+924\,x^{9}+3465\,x^{8}+9240\,x^{7}+19404\,x^{6}+38808\,x^{5}+27720\,x^{4}\log(x)-13860\,x^{3}-2310\,x^{2}}{84\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="fricas")
```

```
[Out] 1/84*(12*x^11 + 154*x^10 + 924*x^9 + 3465*x^8 + 9240*x^7 + 19404*x^6 + 3880
8*x^5 + 27720*x^4*log(x) - 13860*x^3 - 2310*x^2 - 308*x - 21)/x^4
```

giac [**A**] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{7}\,x^{7}+\frac{11}{6}\,x^{6}+11\,x^{5}+\frac{165}{4}\,x^{4}+110\,x^{3}+231\,x^{2}+462\,x-\frac{1980\,x^{3}+330\,x^{2}+44\,x+3}{12\,x^{4}}+330\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="giac")
```

```
[Out] 1/7*x^7 + 11/6*x^6 + 11*x^5 + 165/4*x^4 + 110*x^3 + 231*x^2 + 462*x - 1/12*
(1980*x^3 + 330*x^2 + 44*x + 3)/x^4 + 330*log(abs(x))
```

maple [**A**] time = 0.05, size = 59, normalized size = 0.84

$$\frac{x^{7}}{7}+\frac{11x^{6}}{6}+11x^{5}+\frac{165x^{4}}{4}+110x^{3}+231x^{2}+462x+330\ln(x)-\frac{165}{x}-\frac{55}{2x^{2}}-\frac{11}{3x^{3}}-\frac{1}{4x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^5,x)
```

```
[Out] -1/4/x^4-11/3/x^3-55/2/x^2-165/x+462*x+231*x^2+110*x^3+165/4*x^4+11*x^5+11/
6*x^6+1/7*x^7+330*ln(x)
```

maxima [**A**] time = 0.65, size = 58, normalized size = 0.83

$$\frac{1}{7}\,x^{7}+\frac{11}{6}\,x^{6}+11\,x^{5}+\frac{165}{4}\,x^{4}+110\,x^{3}+231\,x^{2}+462\,x-\frac{1980\,x^{3}+330\,x^{2}+44\,x+3}{12\,x^{4}}+330\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^5,x, algorithm="maxima")
```

```
[Out] 1/7*x^7 + 11/6*x^6 + 11*x^5 + 165/4*x^4 + 110*x^3 + 231*x^2 + 462*x - 1/12*
(1980*x^3 + 330*x^2 + 44*x + 3)/x^4 + 330*log(x)
```

mupad [**B**] time = 0.04, size = 58, normalized size = 0.83

$$462\,x+330\,\ln(x)+231\,x^{2}+110\,x^{3}+\frac{165\,x^{4}}{4}+11\,x^{5}+\frac{11\,x^{6}}{6}+\frac{x^{7}}{7}-\frac{165\,x^{3}+\frac{55\,x^{2}}{2}+\frac{11\,x}{3}+\frac{1}{4}}{x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^5,x)
```

```
[Out] 462*x + 330*log(x) + 231*x^2 + 110*x^3 + (165*x^4)/4 + 11*x^5 + (11*x^6)/6
+ x^7/7 - ((11*x)/3 + (55*x^2)/2 + 165*x^3 + 1/4)/x^4
```

sympy [**A**] time = 0.13, size = 63, normalized size = 0.90

$$\frac{x^{7}}{7}+\frac{11x^{6}}{6}+11x^{5}+\frac{165x^{4}}{4}+110x^{3}+231x^{2}+462x+330\log\left(x\right)+\frac{-1980x^{3}-330x^{2}-44x-3}{12x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**5,x)
```

```
[Out] x**7/7 + 11*x**6/6 + 11*x**5 + 165*x**4/4 + 110*x**3 + 231*x**2 + 462*x + 3
30*log(x) + (-1980*x**3 - 330*x**2 - 44*x - 3)/(12*x**4)
```

3.605 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6} \, dx$

Optimal. Leaf size=72

$$\frac{x^6}{6}+\frac{11x^5}{5}-\frac{1}{5x^5}+\frac{55x^4}{4}-\frac{11}{4x^4}+55x^3-\frac{55}{3x^3}+165x^2-\frac{165}{2x^2}+462x-\frac{330}{x}+462\log(x)$$

```
[Out] -1/5/x^5-11/4/x^4-55/3/x^3-165/2/x^2-330/x+462*x+165*x^2+55*x^3+55/4*x^4+11
/5*x^5+1/6*x^6+462*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^6}{6}+\frac{11x^5}{5}+\frac{55x^4}{4}+55x^3+165x^2-\frac{165}{2x^2}-\frac{55}{3x^3}-\frac{11}{4x^4}-\frac{1}{5x^5}+462x-\frac{330}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/(5*x^5) - 11/(4*x^4) - 55/(3*x^3) - 165/(2*x^2) - 330/x + 462*x + 165*x^
2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6 + 462*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^6} \, dx &= \int \frac{(1+x)^{11}}{x^6} \, dx\\ &= \int \left(462+\frac{1}{x^6}+\frac{11}{x^5}+\frac{55}{x^4}+\frac{165}{x^3}+\frac{330}{x^2}+\frac{462}{x}+330x+165x^2+55x^3+11x^4+\right.\\ &= -\frac{1}{5x^5}-\frac{11}{4x^4}-\frac{55}{3x^3}-\frac{165}{2x^2}-\frac{330}{x}+462x+165x^2+55x^3+\frac{55x^4}{4}+\frac{11x^5}{5}+\frac{x^6}{6}-\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$\frac{x^6}{6}+\frac{11x^5}{5}-\frac{1}{5x^5}+\frac{55x^4}{4}-\frac{11}{4x^4}+55x^3-\frac{55}{3x^3}+165x^2-\frac{165}{2x^2}+462x-\frac{330}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^6,x]
```

```
[Out] -1/5*1/x^5 - 11/(4*x^4) - 55/(3*x^3) - 165/(2*x^2) - 330/x + 462*x + 165*x^
2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6 + 462*Log[x]
```

fricas [**A**] time = 0.84, size = 62, normalized size = 0.86

$$\frac{10\,x^{11}+132\,x^{10}+825\,x^{9}+3300\,x^{8}+9900\,x^{7}+27720\,x^{6}+27720\,x^{5}\log(x)-19800\,x^{4}-4950\,x^{3}-1100\,x^{2}-16}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(10*x^11 + 132*x^10 + 825*x^9 + 3300*x^8 + 9900*x^7 + 27720*x^6 + 2772
0*x^5*log(x) - 19800*x^4 - 4950*x^3 - 1100*x^2 - 165*x - 12)/x^5
```

giac [**A**] time = 0.16, size = 59, normalized size = 0.82

$$\frac{1}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{55}{4}\,x^{4}+55\,x^{3}+165\,x^{2}+462\,x-\frac{19800\,x^{4}+4950\,x^{3}+1100\,x^{2}+165\,x+12}{60\,x^{5}}+462\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="giac")
```

```
[Out] 1/6*x^6 + 11/5*x^5 + 55/4*x^4 + 55*x^3 + 165*x^2 + 462*x - 1/60*(19800*x^4
+ 4950*x^3 + 1100*x^2 + 165*x + 12)/x^5 + 462*log(abs(x))
```

maple [**A**] time = 0.05, size = 59, normalized size = 0.82

$$\frac{x^{6}}{6}+\frac{11x^{5}}{5}+\frac{55x^{4}}{4}+55x^{3}+165x^{2}+462x+462\ln(x)-\frac{330}{x}-\frac{165}{2x^{2}}-\frac{55}{3x^{3}}-\frac{11}{4x^{4}}-\frac{1}{5x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^6,x)
```

```
[Out] -1/5/x^5-11/4/x^4-55/3/x^3-165/2/x^2-330/x+462*x+165*x^2+55*x^3+55/4*x^4+11
/5*x^5+1/6*x^6+462*ln(x)
```

maxima [**A**] time = 0.61, size = 58, normalized size = 0.81

$$\frac{1}{6}\,x^{6}+\frac{11}{5}\,x^{5}+\frac{55}{4}\,x^{4}+55\,x^{3}+165\,x^{2}+462\,x-\frac{19800\,x^{4}+4950\,x^{3}+1100\,x^{2}+165\,x+12}{60\,x^{5}}+462\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^6,x, algorithm="maxima")
```

```
[Out] 1/6*x^6 + 11/5*x^5 + 55/4*x^4 + 55*x^3 + 165*x^2 + 462*x - 1/60*(19800*x^4
+ 4950*x^3 + 1100*x^2 + 165*x + 12)/x^5 + 462*log(x)
```

mupad [**B**] time = 0.03, size = 58, normalized size = 0.81

$$462\,x+462\,\ln(x)-\frac{330\,x^{4}+\frac{165\,x^{3}}{2}+\frac{55\,x^{2}}{3}+\frac{11\,x}{4}+\frac{1}{5}}{x^{5}}+165\,x^{2}+55\,x^{3}+\frac{55\,x^{4}}{4}+\frac{11\,x^{5}}{5}+\frac{x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^6,x)
```

```
[Out] 462*x + 462*log(x) - ((11*x)/4 + (55*x^2)/3 + (165*x^3)/2 + 330*x^4 + 1/5)/
x^5 + 165*x^2 + 55*x^3 + (55*x^4)/4 + (11*x^5)/5 + x^6/6
```

sympy [**A**] time = 0.14, size = 63, normalized size = 0.88

$$\frac{x^{6}}{6}+\frac{11x^{5}}{5}+\frac{55x^{4}}{4}+55x^{3}+165x^{2}+462x+462\log\left(x\right)+\frac{-19800x^{4}-4950x^{3}-1100x^{2}-165x-12}{60x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**6,x)
```

```
[Out] x**6/6 + 11*x**5/5 + 55*x**4/4 + 55*x**3 + 165*x**2 + 462*x + 462*log(x) +
(-19800*x**4 - 4950*x**3 - 1100*x**2 - 165*x - 12)/(60*x**5)
```

3.606 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^7}\,dx$

Optimal. Leaf size=72

$$-\frac{1}{6x^6}+\frac{x^5}{5}-\frac{11}{5x^5}+\frac{11x^4}{4}-\frac{55}{4x^4}+\frac{55x^3}{3}-\frac{55}{x^3}+\frac{165x^2}{2}-\frac{165}{x^2}+330x-\frac{462}{x}+462\log(x)$$

```
[Out] -1/6/x^6-11/5/x^5-55/4/x^4-55/x^3-165/x^2-462/x+330*x+165/2*x^2+55/3*x^3+11
/4*x^4+1/5*x^5+462*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{x^5}{5}+\frac{11x^4}{4}+\frac{55x^3}{3}+\frac{165x^2}{2}-\frac{165}{x^2}-\frac{55}{x^3}-\frac{55}{4x^4}-\frac{11}{5x^5}-\frac{1}{6x^6}+330x-\frac{462}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/(6*x^6) - 11/(5*x^5) - 55/(4*x^4) - 55/x^3 - 165/x^2 - 462/x + 330*x + (
165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5 + 462*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^7}\,dx &= \int \frac{(1+x)^{11}}{x^7}\,dx\\ &= \int \left(330+\frac{1}{x^7}+\frac{11}{x^6}+\frac{55}{x^5}+\frac{165}{x^4}+\frac{330}{x^3}+\frac{462}{x^2}+\frac{462}{x}+165x+55x^2+11x^3+x^4\right)\\ &= -\frac{1}{6x^6}-\frac{11}{5x^5}-\frac{55}{4x^4}-\frac{55}{x^3}-\frac{165}{x^2}-\frac{462}{x}+330x+\frac{165x^2}{2}+\frac{55x^3}{3}+\frac{11x^4}{4}+\frac{x^5}{5}+46\end{aligned}$$

Mathematica [A] time = 0.00, size = 72, normalized size = 1.00

$$-\frac{1}{6x^6}+\frac{x^5}{5}-\frac{11}{5x^5}+\frac{11x^4}{4}-\frac{55}{4x^4}+\frac{55x^3}{3}-\frac{55}{x^3}+\frac{165x^2}{2}-\frac{165}{x^2}+330x-\frac{462}{x}+462\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^7,x]
```

```
[Out] -1/6*1/x^6 - 11/(5*x^5) - 55/(4*x^4) - 55/x^3 - 165/x^2 - 462/x + 330*x + (
165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5 + 462*Log[x]
```

fricas [A] time = 0.95, size = 62, normalized size = 0.86

$$\frac{12 x^{11} + 165 x^{10} + 1100 x^{9} + 4950 x^{8} + 19800 x^{7} + 27720 x^{6} \log(x) - 27720 x^{5} - 9900 x^{4} - 3300 x^{3} - 825 x^{2} -}{60 x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(12*x^11 + 165*x^10 + 1100*x^9 + 4950*x^8 + 19800*x^7 + 27720*x^6*log(
x) - 27720*x^5 - 9900*x^4 - 3300*x^3 - 825*x^2 - 132*x - 10)/x^6
```

giac [A] time = 0.15, size = 59, normalized size = 0.82

$$\frac{1}{5} x^{5}+\frac{11}{4} x^{4}+\frac{55}{3} x^{3}+\frac{165}{2} x^{2}+330 x-\frac{27720 x^{5} + 9900 x^{4} + 3300 x^{3} + 825 x^{2} + 132 x + 10}{60 x^{6}}+462 \log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="giac")
```

```
[Out] 1/5*x^5 + 11/4*x^4 + 55/3*x^3 + 165/2*x^2 + 330*x - 1/60*(27720*x^5 + 9900*
x^4 + 3300*x^3 + 825*x^2 + 132*x + 10)/x^6 + 462*log(abs(x))
```

maple [A] time = 0.06, size = 59, normalized size = 0.82

$$\frac{x^{5}}{5}+\frac{11x^{4}}{4}+\frac{55x^{3}}{3}+\frac{165x^{2}}{2}+330x+462\ln(x)-\frac{462}{x}-\frac{165}{x^{2}}-\frac{55}{x^{3}}-\frac{55}{4x^{4}}-\frac{11}{5x^{5}}-\frac{1}{6x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^7,x)
```

```
[Out] -1/6/x^6-11/5/x^5-55/4/x^4-55/x^3-165/x^2-462/x+330*x+165/2*x^2+55/3*x^3+11
/4*x^4+1/5*x^5+462*ln(x)
```

maxima [A] time = 0.66, size = 58, normalized size = 0.81

$$\frac{1}{5} x^{5}+\frac{11}{4} x^{4}+\frac{55}{3} x^{3}+\frac{165}{2} x^{2}+330 x-\frac{27720 x^{5} + 9900 x^{4} + 3300 x^{3} + 825 x^{2} + 132 x + 10}{60 x^{6}}+462 \log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^7,x, algorithm="maxima")
```

```
[Out] 1/5*x^5 + 11/4*x^4 + 55/3*x^3 + 165/2*x^2 + 330*x - 1/60*(27720*x^5 + 9900*
x^4 + 3300*x^3 + 825*x^2 + 132*x + 10)/x^6 + 462*log(x)
```

mupad [B] time = 0.03, size = 58, normalized size = 0.81

$$330 x + 462 \ln(x) - \frac{462 x^{5} + 165 x^{4} + 55 x^{3} + \frac{55 x^{2}}{4} + \frac{11 x}{5} + \frac{1}{6}}{x^{6}} + \frac{165 x^{2}}{2} + \frac{55 x^{3}}{3} + \frac{11 x^{4}}{4} + \frac{x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^7,x)
```

```
[Out] 330*x + 462*log(x) - ((11*x)/5 + (55*x^2)/4 + 55*x^3 + 165*x^4 + 462*x^5 +
1/6)/x^6 + (165*x^2)/2 + (55*x^3)/3 + (11*x^4)/4 + x^5/5
```

sympy [A] time = 0.14, size = 65, normalized size = 0.90

$$\frac{x^{5}}{5}+\frac{11x^{4}}{4}+\frac{55x^{3}}{3}+\frac{165x^{2}}{2}+330x+462\log(x)+\frac{-27720x^{5}-9900x^{4}-3300x^{3}-825x^{2}-132x-10}{60x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**7,x)
```

```
[Out] x**5/5 + 11*x**4/4 + 55*x**3/3 + 165*x**2/2 + 330*x + 462*log(x) + (-27720*
x**5 - 9900*x**4 - 3300*x**3 - 825*x**2 - 132*x - 10)/(60*x**6)
```

3.607 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}+\frac{x^4}{4}-\frac{165}{4x^4}+\frac{11x^3}{3}-\frac{110}{x^3}+\frac{55x^2}{2}-\frac{231}{x^2}+165x-\frac{462}{x}+330\log(x)$$

```
[Out] -1/7/x^7-11/6/x^6-11/x^5-165/4/x^4-110/x^3-231/x^2-462/x+165*x+55/2*x^2+11/
3*x^3+1/4*x^4+330*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^4}{4}+\frac{11x^3}{3}+\frac{55x^2}{2}-\frac{231}{x^2}-\frac{110}{x^3}-\frac{165}{4x^4}-\frac{11}{x^5}-\frac{11}{6x^6}-\frac{1}{7x^7}+165x-\frac{462}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/(7*x^7) - 11/(6*x^6) - 11/x^5 - 165/(4*x^4) - 110/x^3 - 231/x^2 - 462/x
+ 165*x + (55*x^2)/2 + (11*x^3)/3 + x^4/4 + 330*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^8}\,dx &= \int \frac{(1+x)^{11}}{x^8}\,dx\\ &= \int \Bigg(165+\frac{1}{x^8}+\frac{11}{x^7}+\frac{55}{x^6}+\frac{165}{x^5}+\frac{330}{x^4}+\frac{462}{x^3}+\frac{462}{x^2}+\frac{330}{x}+55x+11x^2+x^3\Bigg)\\ &= -\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}-\frac{165}{4x^4}-\frac{110}{x^3}-\frac{231}{x^2}-\frac{462}{x}+165x+\frac{55x^2}{2}+\frac{11x^3}{3}+\frac{x^4}{4}+33\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{7x^7}-\frac{11}{6x^6}-\frac{11}{x^5}+\frac{x^4}{4}-\frac{165}{4x^4}+\frac{11x^3}{3}-\frac{110}{x^3}+\frac{55x^2}{2}-\frac{231}{x^2}+165x-\frac{462}{x}+330\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^8,x]
```

```
[Out] -1/7*1/x^7 - 11/(6*x^6) - 11/x^5 - 165/(4*x^4) - 110/x^3 - 231/x^2 - 462/x
+ 165*x + (55*x^2)/2 + (11*x^3)/3 + x^4/4 + 330*Log[x]
```

fricas [**A**] time = 0.90, size = 62, normalized size = 0.89

$$\frac{21\,x^{11}+308\,x^{10}+2310\,x^{9}+13860\,x^{8}+27720\,x^{7}\log(x)-38808\,x^{6}-19404\,x^{5}-9240\,x^{4}-3465\,x^{3}-924\,x^{2}-1}{84\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="fricas")
```

```
[Out] 1/84*(21*x^11 + 308*x^10 + 2310*x^9 + 13860*x^8 + 27720*x^7*log(x) - 38808*
x^6 - 19404*x^5 - 9240*x^4 - 3465*x^3 - 924*x^2 - 154*x - 12)/x^7
```

giac [**A**] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{55}{2}\,x^{2}+165\,x-\frac{38808\,x^{6}+19404\,x^{5}+9240\,x^{4}+3465\,x^{3}+924\,x^{2}+154\,x+12}{84\,x^{7}}+330\,\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="giac")
```

```
[Out] 1/4*x^4 + 11/3*x^3 + 55/2*x^2 + 165*x - 1/84*(38808*x^6 + 19404*x^5 + 9240*
x^4 + 3465*x^3 + 924*x^2 + 154*x + 12)/x^7 + 330*log(abs(x))
```

maple [**A**] time = 0.05, size = 59, normalized size = 0.84

$$\frac{x^4}{4}+\frac{11x^3}{3}+\frac{55x^2}{2}+165x+330\ln(x)-\frac{462}{x}-\frac{231}{x^2}-\frac{110}{x^3}-\frac{165}{4x^4}-\frac{11}{x^5}-\frac{11}{6x^6}-\frac{1}{7x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^8,x)
```

```
[Out] -1/7/x^7-11/6/x^6-11/x^5-165/4/x^4-110/x^3-231/x^2-462/x+165*x+55/2*x^2+11/
3*x^3+1/4*x^4+330*ln(x)
```

maxima [**A**] time = 0.48, size = 58, normalized size = 0.83

$$\frac{1}{4}\,x^{4}+\frac{11}{3}\,x^{3}+\frac{55}{2}\,x^{2}+165\,x-\frac{38808\,x^{6}+19404\,x^{5}+9240\,x^{4}+3465\,x^{3}+924\,x^{2}+154\,x+12}{84\,x^{7}}+330\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*x^4 + 11/3*x^3 + 55/2*x^2 + 165*x - 1/84*(38808*x^6 + 19404*x^5 + 9240*
x^4 + 3465*x^3 + 924*x^2 + 154*x + 12)/x^7 + 330*log(x)
```

mupad [**B**] time = 0.03, size = 58, normalized size = 0.83

$$165\,x+330\,\ln(x)-\frac{462\,x^{6}+231\,x^{5}+110\,x^{4}+\frac{165\,x^{3}}{4}+11\,x^{2}+\frac{11\,x}{6}+\frac{1}{7}}{x^{7}}+\frac{55\,x^{2}}{2}+\frac{11\,x^{3}}{3}+\frac{x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^8,x)
```

```
[Out] 165*x + 330*log(x) - ((11*x)/6 + 11*x^2 + (165*x^3)/4 + 110*x^4 + 231*x^5 +
 462*x^6 + 1/7)/x^7 + (55*x^2)/2 + (11*x^3)/3 + x^4/4
```

sympy [**A**] time = 0.15, size = 63, normalized size = 0.90

$$\frac{x^4}{4}+\frac{11x^3}{3}+\frac{55x^2}{2}+165x+330\log\left(x\right)+\frac{-38808x^6-19404x^5-9240x^4-3465x^3-924x^2-154x-12}{84x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**8,x)
```

```
[Out] x**4/4 + 11*x**3/3 + 55*x**2/2 + 165*x + 330*log(x) + (-38808*x**6 - 19404*
x**5 - 9240*x**4 - 3465*x**3 - 924*x**2 - 154*x - 12)/(84*x**7)
```

3.608 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^9} \, dx$

Optimal. Leaf size=70

$$-\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}+\frac{x^3}{3}-\frac{154}{x^3}+\frac{11x^2}{2}-\frac{231}{x^2}+55x-\frac{330}{x}+165\log(x)$$

```
[Out] -1/8/x^8-11/7/x^7-55/6/x^6-33/x^5-165/2/x^4-154/x^3-231/x^2-330/x+55*x+11/2
*x^2+1/3*x^3+165*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^3}{3}+\frac{11x^2}{2}-\frac{231}{x^2}-\frac{154}{x^3}-\frac{165}{2x^4}-\frac{33}{x^5}-\frac{55}{6x^6}-\frac{11}{7x^7}-\frac{1}{8x^8}+55x-\frac{330}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/(8*x^8) - 11/(7*x^7) - 55/(6*x^6) - 33/x^5 - 165/(2*x^4) - 154/x^3 - 231
/x^2 - 330/x + 55*x + (11*x^2)/2 + x^3/3 + 165*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^9} \, dx &= \int \frac{(1+x)^{11}}{x^9} \, dx\\ &= \int \left(55+\frac{1}{x^9}+\frac{11}{x^8}+\frac{55}{x^7}+\frac{165}{x^6}+\frac{330}{x^5}+\frac{462}{x^4}+\frac{462}{x^3}+\frac{330}{x^2}+\frac{165}{x}+11x+x^2\right) dx\\ &= -\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}-\frac{154}{x^3}-\frac{231}{x^2}-\frac{330}{x}+55x+\frac{11x^2}{2}+\frac{x^3}{3}+165\log\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{8x^8}-\frac{11}{7x^7}-\frac{55}{6x^6}-\frac{33}{x^5}-\frac{165}{2x^4}+\frac{x^3}{3}-\frac{154}{x^3}+\frac{11x^2}{2}-\frac{231}{x^2}+55x-\frac{330}{x}+165\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^9,x]
```

```
[Out] -1/8*1/x^8 - 11/(7*x^7) - 55/(6*x^6) - 33/x^5 - 165/(2*x^4) - 154/x^3 - 231
/x^2 - 330/x + 55*x + (11*x^2)/2 + x^3/3 + 165*Log[x]
```

fricas [**A**] time = 0.90, size = 62, normalized size = 0.89

$$\frac{56\,x^{11}+924\,x^{10}+9240\,x^{9}+27720\,x^{8}\log(x)-55440\,x^{7}-38808\,x^{6}-25872\,x^{5}-13860\,x^{4}-5544\,x^{3}-1540}{168\,x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="fricas")
```

```
[Out] 1/168*(56*x^11 + 924*x^10 + 9240*x^9 + 27720*x^8*log(x) - 55440*x^7 - 38808
*x^6 - 25872*x^5 - 13860*x^4 - 5544*x^3 - 1540*x^2 - 264*x - 21)/x^8
```

giac [**A**] time = 0.15, size = 59, normalized size = 0.84

$$\frac{1}{3}\,x^{3}+\frac{11}{2}\,x^{2}+55\,x-\frac{55440\,x^{7}+38808\,x^{6}+25872\,x^{5}+13860\,x^{4}+5544\,x^{3}+1540\,x^{2}+264\,x+21}{168\,x^{8}}+165\,\log\left(|x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="giac")
```

```
[Out] 1/3*x^3 + 11/2*x^2 + 55*x - 1/168*(55440*x^7 + 38808*x^6 + 25872*x^5 + 1386
0*x^4 + 5544*x^3 + 1540*x^2 + 264*x + 21)/x^8 + 165*log(abs(x))
```

maple [**A**] time = 0.04, size = 59, normalized size = 0.84

$$\frac{x^{3}}{3}+\frac{11x^{2}}{2}+55x+165\ln(x)-\frac{330}{x}-\frac{231}{x^{2}}-\frac{154}{x^{3}}-\frac{165}{2x^{4}}-\frac{33}{x^{5}}-\frac{55}{6x^{6}}-\frac{11}{7x^{7}}-\frac{1}{8x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^9,x)
```

```
[Out] -1/8/x^8-11/7/x^7-55/6/x^6-33/x^5-165/2/x^4-154/x^3-231/x^2-330/x+55*x+11/2
*x^2+1/3*x^3+165*ln(x)
```

maxima [**A**] time = 0.62, size = 58, normalized size = 0.83

$$\frac{1}{3}\,x^{3}+\frac{11}{2}\,x^{2}+55\,x-\frac{55440\,x^{7}+38808\,x^{6}+25872\,x^{5}+13860\,x^{4}+5544\,x^{3}+1540\,x^{2}+264\,x+21}{168\,x^{8}}+165\,\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^9,x, algorithm="maxima")
```

```
[Out] 1/3*x^3 + 11/2*x^2 + 55*x - 1/168*(55440*x^7 + 38808*x^6 + 25872*x^5 + 1386
0*x^4 + 5544*x^3 + 1540*x^2 + 264*x + 21)/x^8 + 165*log(x)
```

mupad [**B**] time = 0.03, size = 58, normalized size = 0.83

$$55\,x+165\,\ln(x)-\frac{330\,x^{7}+231\,x^{6}+154\,x^{5}+\frac{165\,x^{4}}{2}+33\,x^{3}+\frac{55\,x^{2}}{6}+\frac{11\,x}{7}+\frac{1}{8}}{x^{8}}+\frac{11\,x^{2}}{2}+\frac{x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^9,x)
```

```
[Out] 55*x + 165*log(x) - ((11*x)/7 + (55*x^2)/6 + 33*x^3 + (165*x^4)/2 + 154*x^5
 + 231*x^6 + 330*x^7 + 1/8)/x^8 + (11*x^2)/2 + x^3/3
```

sympy [**A**] time = 0.15, size = 61, normalized size = 0.87

$$\frac{x^{3}}{3}+\frac{11x^{2}}{2}+55x+165\log\left(x\right)+\frac{-55440x^{7}-38808x^{6}-25872x^{5}-13860x^{4}-5544x^{3}-1540x^{2}-264x-21}{168x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**9,x)
```

```
[Out] x**3/3 + 11*x**2/2 + 55*x + 165*log(x) + (-55440*x**7 - 38808*x**6 - 25872*
x**5 - 13860*x**4 - 5544*x**3 - 1540*x**2 - 264*x - 21)/(168*x**8)
```

3.609 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}+\frac{x^2}{2}-\frac{165}{x^2}+11x-\frac{165}{x}+55\log(x)$$

```
[Out] -1/9/x^9-11/8/x^8-55/7/x^7-55/2/x^6-66/x^5-231/2/x^4-154/x^3-165/x^2-165/x+
11*x+1/2*x^2+55*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$\frac{x^2}{2}-\frac{165}{x^2}-\frac{154}{x^3}-\frac{231}{2x^4}-\frac{66}{x^5}-\frac{55}{2x^6}-\frac{55}{7x^7}-\frac{11}{8x^8}-\frac{1}{9x^9}+11x-\frac{165}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/(9*x^9) - 11/(8*x^8) - 55/(7*x^7) - 55/(2*x^6) - 66/x^5 - 231/(2*x^4) -
154/x^3 - 165/x^2 - 165/x + 11*x + x^2/2 + 55*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{10}}\,dx &= \int \frac{(1+x)^{11}}{x^{10}}\,dx\\ &= \int \left(11+\frac{1}{x^{10}}+\frac{11}{x^9}+\frac{55}{x^8}+\frac{165}{x^7}+\frac{330}{x^6}+\frac{462}{x^5}+\frac{462}{x^4}+\frac{330}{x^3}+\frac{165}{x^2}+\frac{55}{x}+x\right) d\\ &= -\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}-\frac{165}{x^2}-\frac{165}{x}+11x+\frac{x^2}{2}+55\log\end{aligned}$$

Mathematica [A] time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{9x^9}-\frac{11}{8x^8}-\frac{55}{7x^7}-\frac{55}{2x^6}-\frac{66}{x^5}-\frac{231}{2x^4}-\frac{154}{x^3}+\frac{x^2}{2}-\frac{165}{x^2}+11x-\frac{165}{x}+55\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^10,x]
```

```
[Out] -1/9*1/x^9 - 11/(8*x^8) - 55/(7*x^7) - 55/(2*x^6) - 66/x^5 - 231/(2*x^4) -
154/x^3 - 165/x^2 - 165/x + 11*x + x^2/2 + 55*Log[x]
```

fricas [**A**] time = 0.86, size = 62, normalized size = 0.89

$$\frac{252\,x^{11}+5544\,x^{10}+27720\,x^{9}\log(x)-83160\,x^{8}-83160\,x^{7}-77616\,x^{6}-58212\,x^{5}-33264\,x^{4}-13860\,x^{3}-396}{504\,x^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="fricas")
```

```
[Out] 1/504*(252*x^11 + 5544*x^10 + 27720*x^9*log(x) - 83160*x^8 - 83160*x^7 - 77
616*x^6 - 58212*x^5 - 33264*x^4 - 13860*x^3 - 3960*x^2 - 693*x - 56)/x^9
```

giac [**A**] time = 0.17, size = 59, normalized size = 0.84

$$\frac{1}{2}\,x^{2}+11\,x-\frac{83160\,x^{8}+83160\,x^{7}+77616\,x^{6}+58212\,x^{5}+33264\,x^{4}+13860\,x^{3}+3960\,x^{2}+693\,x+56}{504\,x^{9}}+55\,\log\left(|\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="giac")
```

```
[Out] 1/2*x^2 + 11*x - 1/504*(83160*x^8 + 83160*x^7 + 77616*x^6 + 58212*x^5 + 332
64*x^4 + 13860*x^3 + 3960*x^2 + 693*x + 56)/x^9 + 55*log(abs(x))
```

maple [**A**] time = 0.06, size = 59, normalized size = 0.84

$$\frac{x^2}{2}+11x+55\ln(x)-\frac{165}{x}-\frac{165}{x^2}-\frac{154}{x^3}-\frac{231}{2x^4}-\frac{66}{x^5}-\frac{55}{2x^6}-\frac{55}{7x^7}-\frac{11}{8x^8}-\frac{1}{9x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^10,x)
```

```
[Out] -1/9/x^9-11/8/x^8-55/7/x^7-55/2/x^6-66/x^5-231/2/x^4-154/x^3-165/x^2-165/x+
11*x+1/2*x^2+55*ln(x)
```

maxima [**A**] time = 0.55, size = 58, normalized size = 0.83

$$\frac{1}{2}\,x^{2}+11\,x-\frac{83160\,x^{8}+83160\,x^{7}+77616\,x^{6}+58212\,x^{5}+33264\,x^{4}+13860\,x^{3}+3960\,x^{2}+693\,x+56}{504\,x^{9}}+55\,\log(x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^10,x, algorithm="maxima")
```

```
[Out] 1/2*x^2 + 11*x - 1/504*(83160*x^8 + 83160*x^7 + 77616*x^6 + 58212*x^5 + 332
64*x^4 + 13860*x^3 + 3960*x^2 + 693*x + 56)/x^9 + 55*log(x)
```

mupad [**B**] time = 0.03, size = 58, normalized size = 0.83

$$11\,x+55\,\ln(x)+\frac{x^2}{2}-\frac{165\,x^8+165\,x^7+154\,x^6+\frac{231\,x^5}{2}+66\,x^4+\frac{55\,x^3}{2}+\frac{55\,x^2}{7}+\frac{11\,x}{8}+\frac{1}{9}}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^10,x)
```

```
[Out] 11*x + 55*log(x) + x^2/2 - ((11*x)/8 + (55*x^2)/7 + (55*x^3)/2 + 66*x^4 + (
231*x^5)/2 + 154*x^6 + 165*x^7 + 165*x^8 + 1/9)/x^9
```

sympy [**A**] time = 0.16, size = 60, normalized size = 0.86

$$\frac{x^2}{2}+11x+55\log(x)+\frac{-83160x^8-83160x^7-77616x^6-58212x^5-33264x^4-13860x^3-3960x^2-693x-56}{504x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**10,x)
```

```
[Out] x**2/2 + 11*x + 55*log(x) + (-83160*x**8 - 83160*x**7 - 77616*x**6 - 58212*
x**5 - 33264*x**4 - 13860*x**3 - 3960*x**2 - 693*x - 56)/(504*x**9)
```

3.610 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{11}}\,dx$

Optimal. Leaf size=70

$$-\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}+x-\frac{55}{x}+11\log(x)$$

```
[Out] -1/10/x^10-11/9/x^9-55/8/x^8-165/7/x^7-55/x^6-462/5/x^5-231/2/x^4-110/x^3-1
65/2/x^2-55/x+x+11*ln(x)
```

Rubi **[A]** time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$-\frac{165}{2x^2}-\frac{110}{x^3}-\frac{231}{2x^4}-\frac{462}{5x^5}-\frac{55}{x^6}-\frac{165}{7x^7}-\frac{55}{8x^8}-\frac{11}{9x^9}-\frac{1}{10x^{10}}+x-\frac{55}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/(10*x^10) - 11/(9*x^9) - 55/(8*x^8) - 165/(7*x^7) - 55/x^6 - 462/(5*x^5)
 - 231/(2*x^4) - 110/x^3 - 165/(2*x^2) - 55/x + x + 11*Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{11}}\,dx &= \int \frac{(1+x)^{11}}{x^{11}}\,dx\\ &= \int \left(1+\frac{1}{x^{11}}+\frac{11}{x^{10}}+\frac{55}{x^9}+\frac{165}{x^8}+\frac{330}{x^7}+\frac{462}{x^6}+\frac{462}{x^5}+\frac{330}{x^4}+\frac{165}{x^3}+\frac{55}{x^2}+\frac{11}{x}\right)dx\\ &= -\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}-\frac{55}{x}+x+11\log(x)\end{aligned}$$

Mathematica **[A]** time = 0.00, size = 70, normalized size = 1.00

$$-\frac{1}{10x^{10}}-\frac{11}{9x^9}-\frac{55}{8x^8}-\frac{165}{7x^7}-\frac{55}{x^6}-\frac{462}{5x^5}-\frac{231}{2x^4}-\frac{110}{x^3}-\frac{165}{2x^2}+x-\frac{55}{x}+11\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^11,x]
```

```
[Out] -1/10*1/x^10 - 11/(9*x^9) - 55/(8*x^8) - 165/(7*x^7) - 55/x^6 - 462/(5*x^5)
 - 231/(2*x^4) - 110/x^3 - 165/(2*x^2) - 55/x + x + 11*Log[x]
```

fricas [**A**] time = 1.15, size = 62, normalized size = 0.89

$$\frac{2520\,x^{11}+27720\,x^{10}\log(x)-138600\,x^{9}-207900\,x^{8}-277200\,x^{7}-291060\,x^{6}-232848\,x^{5}-138600\,x^{4}-59}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="fricas")
```

```
[Out] 1/2520*(2520*x^11 + 27720*x^10*log(x) - 138600*x^9 - 207900*x^8 - 277200*x^
7 - 291060*x^6 - 232848*x^5 - 138600*x^4 - 59400*x^3 - 17325*x^2 - 3080*x -
 252)/x^10
```

giac [**A**] time = 0.15, size = 57, normalized size = 0.81

$$x-\frac{138600\,x^{9}+207900\,x^{8}+277200\,x^{7}+291060\,x^{6}+232848\,x^{5}+138600\,x^{4}+59400\,x^{3}+17325\,x^{2}+3080\,x}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="giac")
```

```
[Out] x - 1/2520*(138600*x^9 + 207900*x^8 + 277200*x^7 + 291060*x^6 + 232848*x^5
+ 138600*x^4 + 59400*x^3 + 17325*x^2 + 3080*x + 252)/x^10 + 11*log(abs(x))
```

maple [**A**] time = 0.05, size = 57, normalized size = 0.81

$$x+11\ln(x)-\frac{55}{x}-\frac{165}{2x^{2}}-\frac{110}{x^{3}}-\frac{231}{2x^{4}}-\frac{462}{5x^{5}}-\frac{55}{x^{6}}-\frac{165}{7x^{7}}-\frac{55}{8x^{8}}-\frac{11}{9x^{9}}-\frac{1}{10x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^11,x)
```

```
[Out] -1/10/x^10-11/9/x^9-55/8/x^8-165/7/x^7-55/x^6-462/5/x^5-231/2/x^4-110/x^3-1
65/2/x^2-55/x+x+11*ln(x)
```

maxima [**A**] time = 0.53, size = 56, normalized size = 0.80

$$x-\frac{138600\,x^{9}+207900\,x^{8}+277200\,x^{7}+291060\,x^{6}+232848\,x^{5}+138600\,x^{4}+59400\,x^{3}+17325\,x^{2}+3080\,x}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^11,x, algorithm="maxima")
```

```
[Out] x - 1/2520*(138600*x^9 + 207900*x^8 + 277200*x^7 + 291060*x^6 + 232848*x^5
+ 138600*x^4 + 59400*x^3 + 17325*x^2 + 3080*x + 252)/x^10 + 11*log(x)
```

mupad [**B**] time = 1.08, size = 62, normalized size = 0.89

$$-\frac{\frac{11\,x}{9}-11\,x^{10}\,\ln(x)+\frac{55\,x^{2}}{8}+\frac{165\,x^{3}}{7}+55\,x^{4}+\frac{462\,x^{5}}{5}+\frac{231\,x^{6}}{2}+110\,x^{7}+\frac{165\,x^{8}}{2}+55\,x^{9}-x^{11}+\frac{1}{10}}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^11,x)
```

```
[Out] -((11*x)/9 - 11*x^10*log(x) + (55*x^2)/8 + (165*x^3)/7 + 55*x^4 + (462*x^5)
/5 + (231*x^6)/2 + 110*x^7 + (165*x^8)/2 + 55*x^9 - x^11 + 1/10)/x^10
```

sympy [**A**] time = 0.17, size = 58, normalized size = 0.83

$$x+11\log{(x)}+\frac{-138600x^{9}-207900x^{8}-277200x^{7}-291060x^{6}-232848x^{5}-138600x^{4}-59400x^{3}-17325x^{2}}{2520x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**11,x)
```

```
[Out] x + 11*log(x) + (-138600*x**9 - 207900*x**8 - 277200*x**7 - 291060*x**6 - 2
32848*x**5 - 138600*x**4 - 59400*x**3 - 17325*x**2 - 3080*x - 252)/(2520*x*
*10)
```

3.611 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}}\,dx$

Optimal. Leaf size=74

$$-\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log(x)$$

```
[Out] -1/11/x^11-11/10/x^10-55/9/x^9-165/8/x^8-330/7/x^7-77/x^6-462/5/x^5-165/2/x
^4-55/x^3-55/2/x^2-11/x+ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {27, 43}

$$-\frac{55}{2x^2}-\frac{55}{x^3}-\frac{165}{2x^4}-\frac{462}{5x^5}-\frac{77}{x^6}-\frac{330}{7x^7}-\frac{165}{8x^8}-\frac{55}{9x^9}-\frac{11}{10x^{10}}-\frac{1}{11x^{11}}-\frac{11}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/(11*x^11) - 11/(10*x^10) - 55/(9*x^9) - 165/(8*x^8) - 330/(7*x^7) - 77/x
^6 - 462/(5*x^5) - 165/(2*x^4) - 55/x^3 - 55/(2*x^2) - 11/x + Log[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{12}}\,dx &= \int \frac{(1+x)^{11}}{x^{12}}\,dx\\ &= \int \left(\frac{1}{x^{12}}+\frac{11}{x^{11}}+\frac{55}{x^{10}}+\frac{165}{x^9}+\frac{330}{x^8}+\frac{462}{x^7}+\frac{462}{x^6}+\frac{330}{x^5}+\frac{165}{x^4}+\frac{55}{x^3}+\frac{11}{x^2}+\frac{1}{x}\right)\\ &= -\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log\end{aligned}$$

Mathematica [A] time = 0.00, size = 74, normalized size = 1.00

$$-\frac{1}{11x^{11}}-\frac{11}{10x^{10}}-\frac{55}{9x^9}-\frac{165}{8x^8}-\frac{330}{7x^7}-\frac{77}{x^6}-\frac{462}{5x^5}-\frac{165}{2x^4}-\frac{55}{x^3}-\frac{55}{2x^2}-\frac{11}{x}+\log(x)$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^12,x]
```

```
[Out] -1/11*1/x^11 - 11/(10*x^10) - 55/(9*x^9) - 165/(8*x^8) - 330/(7*x^7) - 77/x
^6 - 462/(5*x^5) - 165/(2*x^4) - 55/x^3 - 55/(2*x^2) - 11/x + Log[x]
```

fricas [A] time = 0.82, size = 62, normalized size = 0.84

$$\frac{27720\,x^{11}\log(x)-304920\,x^{10}-762300\,x^{9}-1524600\,x^{8}-2286900\,x^{7}-2561328\,x^{6}-2134440\,x^{5}-1306800\,x^{4}}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="fricas")
```

```
[Out] 1/27720*(27720*x^11*log(x) - 304920*x^10 - 762300*x^9 - 1524600*x^8 - 22869
00*x^7 - 2561328*x^6 - 2134440*x^5 - 1306800*x^4 - 571725*x^3 - 169400*x^2
- 30492*x - 2520)/x^11
```

giac [A] time = 0.19, size = 59, normalized size = 0.80

$$-\frac{304920\,x^{10}+762300\,x^{9}+1524600\,x^{8}+2286900\,x^{7}+2561328\,x^{6}+2134440\,x^{5}+1306800\,x^{4}+571725\,x^{3}+1}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="giac")
```

```
[Out] -1/27720*(304920*x^10 + 762300*x^9 + 1524600*x^8 + 2286900*x^7 + 2561328*x^
6 + 2134440*x^5 + 1306800*x^4 + 571725*x^3 + 169400*x^2 + 30492*x + 2520)/x
^11 + log(abs(x))
```

maple [A] time = 0.05, size = 59, normalized size = 0.80

$$\ln(x)-\frac{11}{x}-\frac{55}{2x^{2}}-\frac{55}{x^{3}}-\frac{165}{2x^{4}}-\frac{462}{5x^{5}}-\frac{77}{x^{6}}-\frac{330}{7x^{7}}-\frac{165}{8x^{8}}-\frac{55}{9x^{9}}-\frac{11}{10x^{10}}-\frac{1}{11x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^12,x)
```

```
[Out] -1/11/x^11-11/10/x^10-55/9/x^9-165/8/x^8-330/7/x^7-77/x^6-462/5/x^5-165/2/x
^4-55/x^3-55/2/x^2-11/x+ln(x)
```

maxima [A] time = 0.58, size = 58, normalized size = 0.78

$$-\frac{304920\,x^{10}+762300\,x^{9}+1524600\,x^{8}+2286900\,x^{7}+2561328\,x^{6}+2134440\,x^{5}+1306800\,x^{4}+571725\,x^{3}+1}{27720\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^12,x, algorithm="maxima")
```

```
[Out] -1/27720*(304920*x^10 + 762300*x^9 + 1524600*x^8 + 2286900*x^7 + 2561328*x^
6 + 2134440*x^5 + 1306800*x^4 + 571725*x^3 + 169400*x^2 + 30492*x + 2520)/x
^11 + log(x)
```

mupad [B] time = 1.08, size = 58, normalized size = 0.78

$$\ln(x)-\frac{11\,x^{10}+\frac{55\,x^{9}}{2}+55\,x^{8}+\frac{165\,x^{7}}{2}+\frac{462\,x^{6}}{5}+77\,x^{5}+\frac{330\,x^{4}}{7}+\frac{165\,x^{3}}{8}+\frac{55\,x^{2}}{9}+\frac{11\,x}{10}+\frac{1}{11}}{x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^12,x)
```

```
[Out] log(x) - ((11*x)/10 + (55*x^2)/9 + (165*x^3)/8 + (330*x^4)/7 + 77*x^5 + (46
2*x^6)/5 + (165*x^7)/2 + 55*x^8 + (55*x^9)/2 + 11*x^10 + 1/11)/x^11
```

sympy [A] time = 0.18, size = 60, normalized size = 0.81

$$\log(x)+\frac{-304920x^{10}-762300x^9-1524600x^8-2286900x^7-2561328x^6-2134440x^5-1306800x^4-571725}{27720x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**12,x)
```

```
[Out] log(x) + (-304920*x**10 - 762300*x**9 - 1524600*x**8 - 2286900*x**7 - 25613
28*x**6 - 2134440*x**5 - 1306800*x**4 - 571725*x**3 - 169400*x**2 - 30492*x
 - 2520)/(27720*x**11)
```

3.612 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx$

Optimal. Leaf size=12

$$-\frac{(x+1)^{12}}{12x^{12}}$$

```
[Out] -1/12*(1+x)^12/x^12
```

Rubi [A] time = 0.00, antiderivative size = 12, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 37\}$

$$-\frac{(x+1)^{12}}{12x^{12}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -(1 + x)^12/(12*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned} \int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{13}} \, dx &= \int \frac{(1+x)^{11}}{x^{13}} \, dx \\ &= -\frac{(1+x)^{12}}{12x^{12}} \end{aligned}$$

Mathematica [B] time = 0.00, size = 75, normalized size = 6.25

$$-\frac{1}{12x^{12}}-\frac{1}{x^{11}}-\frac{11}{2x^{10}}-\frac{55}{3x^9}-\frac{165}{4x^8}-\frac{66}{x^7}-\frac{77}{x^6}-\frac{66}{x^5}-\frac{165}{4x^4}-\frac{55}{3x^3}-\frac{11}{2x^2}-\frac{1}{x}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^13,x]
```

```
[Out] -1/12*1/x^12 - x^(-11) - 11/(2*x^10) - 55/(3*x^9) - 165/(4*x^8) - 66/x^7 -
77/x^6 - 66/x^5 - 165/(4*x^4) - 55/(3*x^3) - 11/(2*x^2) - x^(-1)
```

fricas [B] time = 0.85, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11}+66\,x^{10}+220\,x^{9}+495\,x^{8}+792\,x^{7}+924\,x^{6}+792\,x^{5}+495\,x^{4}+220\,x^{3}+66\,x^{2}+12\,x+1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="fricas")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

giac [B] time = 0.17, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11} + 66\,x^{10} + 220\,x^{9} + 495\,x^{8} + 792\,x^{7} + 924\,x^{6} + 792\,x^{5} + 495\,x^{4} + 220\,x^{3} + 66\,x^{2} + 12\,x + 1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="giac")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

maple [B] time = 0.05, size = 62, normalized size = 5.17

$$-\frac{1}{x}-\frac{11}{2x^{2}}-\frac{55}{3x^{3}}-\frac{165}{4x^{4}}-\frac{66}{x^{5}}-\frac{77}{x^{6}}-\frac{66}{x^{7}}-\frac{165}{4x^{8}}-\frac{55}{3x^{9}}-\frac{11}{2x^{10}}-\frac{1}{x^{11}}-\frac{1}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^13,x)
```

```
[Out] -66/x^5-165/4/x^4-55/3/x^3-165/4/x^8-11/2/x^10-11/2/x^2-55/3/x^9-66/x^7-77/
x^6-1/x-1/12/x^12-1/x^11
```

maxima [B] time = 0.47, size = 60, normalized size = 5.00

$$-\frac{12\,x^{11} + 66\,x^{10} + 220\,x^{9} + 495\,x^{8} + 792\,x^{7} + 924\,x^{6} + 792\,x^{5} + 495\,x^{4} + 220\,x^{3} + 66\,x^{2} + 12\,x + 1}{12\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^13,x, algorithm="maxima")
```

```
[Out] -1/12*(12*x^11 + 66*x^10 + 220*x^9 + 495*x^8 + 792*x^7 + 924*x^6 + 792*x^5
+ 495*x^4 + 220*x^3 + 66*x^2 + 12*x + 1)/x^12
```

mupad [B] time = 0.03, size = 56, normalized size = 4.67

$$-\frac{x^{11}+\frac{11\,x^{10}}{2}+\frac{55\,x^{9}}{3}+\frac{165\,x^{8}}{4}+66\,x^{7}+77\,x^{6}+66\,x^{5}+\frac{165\,x^{4}}{4}+\frac{55\,x^{3}}{3}+\frac{11\,x^{2}}{2}+x+\frac{1}{12}}{x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^13,x)
```

```
[Out] -(x + (11*x^2)/2 + (55*x^3)/3 + (165*x^4)/4 + 66*x^5 + 77*x^6 + 66*x^7 + (1
65*x^8)/4 + (55*x^9)/3 + (11*x^10)/2 + x^11 + 1/12)/x^12
```

sympy [B] time = 0.17, size = 61, normalized size = 5.08

$$\frac{-12x^{11} - 66x^{10} - 220x^{9} - 495x^{8} - 792x^{7} - 924x^{6} - 792x^{5} - 495x^{4} - 220x^{3} - 66x^{2} - 12x - 1}{12x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**13,x)
```

```
[Out] (-12*x**11 - 66*x**10 - 220*x**9 - 495*x**8 - 792*x**7 - 924*x**6 - 792*x**
5 - 495*x**4 - 220*x**3 - 66*x**2 - 12*x - 1)/(12*x**12)
```

3.613 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}}\,dx$

Optimal. Leaf size=25

$$\frac{(x+1)^{12}}{156x^{12}}-\frac{(x+1)^{12}}{13x^{13}}$$

```
[Out] -1/13*(1+x)^12/x^13+1/156*(1+x)^12/x^12
```

Rubi [A] time = 0.00, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$\frac{(x+1)^{12}}{156x^{12}}-\frac{(x+1)^{12}}{13x^{13}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -(1 + x)^12/(13*x^13) + (1 + x)^12/(156*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{14}}\,dx &= \int \frac{(1+x)^{11}}{x^{14}}\,dx\\ &= -\frac{(1+x)^{12}}{13x^{13}}-\frac{1}{13}\int \frac{(1+x)^{11}}{x^{13}}\,dx\\ &= -\frac{(1+x)^{12}}{13x^{13}}+\frac{(1+x)^{12}}{156x^{12}}\end{aligned}$$

Mathematica [B] time = 0.00, size = 77, normalized size = 3.08

$$-\frac{1}{13x^{13}}-\frac{11}{12x^{12}}-\frac{5}{x^{11}}-\frac{33}{2x^{10}}-\frac{110}{3x^9}-\frac{231}{4x^8}-\frac{66}{x^7}-\frac{55}{x^6}-\frac{33}{x^5}-\frac{55}{4x^4}-\frac{11}{3x^3}-\frac{1}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^14,x]
```

```
[Out] -1/13*1/x^13 - 11/(12*x^12) - 5/x^11 - 33/(2*x^10) - 110/(3*x^9) - 231/(4*x
^8) - 66/x^7 - 55/x^6 - 33/x^5 - 55/(4*x^4) - 11/(3*x^3) - 1/(2*x^2)
```

fricas [B] time = 0.79, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="fricas")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

giac [B] time = 0.18, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="giac")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

maple [B] time = 0.04, size = 62, normalized size = 2.48

$$-\frac{1}{2x^{2}}-\frac{11}{3x^{3}}-\frac{55}{4x^{4}}-\frac{33}{x^{5}}-\frac{55}{x^{6}}-\frac{66}{x^{7}}-\frac{231}{4x^{8}}-\frac{110}{3x^{9}}-\frac{33}{2x^{10}}-\frac{5}{x^{11}}-\frac{11}{12x^{12}}-\frac{1}{13x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^14,x)
```

```
[Out] -33/x^5-55/4/x^4-11/3/x^3-11/12/x^12-231/4/x^8-33/2/x^10-1/2/x^2-110/3/x^9-
66/x^7-55/x^6-1/13/x^13-5/x^11
```

maxima [B] time = 0.52, size = 60, normalized size = 2.40

$$-\frac{78\,x^{11}+572\,x^{10}+2145\,x^{9}+5148\,x^{8}+8580\,x^{7}+10296\,x^{6}+9009\,x^{5}+5720\,x^{4}+2574\,x^{3}+780\,x^{2}+143\,x}{156\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^14,x, algorithm="maxima")
```

```
[Out] -1/156*(78*x^11 + 572*x^10 + 2145*x^9 + 5148*x^8 + 8580*x^7 + 10296*x^6 + 9
009*x^5 + 5720*x^4 + 2574*x^3 + 780*x^2 + 143*x + 12)/x^13
```

mupad [B] time = 0.03, size = 60, normalized size = 2.40

$$-\frac{\frac{x^{11}}{2}+\frac{11\,x^{10}}{3}+\frac{55\,x^{9}}{4}+33\,x^{8}+55\,x^{7}+66\,x^{6}+\frac{231\,x^{5}}{4}+\frac{110\,x^{4}}{3}+\frac{33\,x^{3}}{2}+5\,x^{2}+\frac{11\,x}{12}+\frac{1}{13}}{x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^14,x)
```

```
[Out] -((11*x)/12 + 5*x^2 + (33*x^3)/2 + (110*x^4)/3 + (231*x^5)/4 + 66*x^6 + 55*
x^7 + 33*x^8 + (55*x^9)/4 + (11*x^10)/3 + x^11/2 + 1/13)/x^13
```

sympy [B] time = 0.18, size = 61, normalized size = 2.44

$$\frac{-78x^{11} - 572x^{10} - 2145x^{9} - 5148x^{8} - 8580x^{7} - 10296x^{6} - 9009x^{5} - 5720x^{4} - 2574x^{3} - 780x^{2} - 143x - 12}{156x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**14,x)
```

```
[Out] (-78*x**11 - 572*x**10 - 2145*x**9 - 5148*x**8 - 8580*x**7 - 10296*x**6 - 9
009*x**5 - 5720*x**4 - 2574*x**3 - 780*x**2 - 143*x - 12)/(156*x**13)
```

3.614 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx$

Optimal. Leaf size=37

$$-\frac{(x+1)^{12}}{14x^{14}}+\frac{(x+1)^{12}}{91x^{13}}-\frac{(x+1)^{12}}{1092x^{12}}$$

```
[Out] -1/14*(1+x)^12/x^14+1/91*(1+x)^12/x^13-1/1092*(1+x)^12/x^12
```

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = $\{27, 45, 37\}$

$$-\frac{(x+1)^{12}}{1092x^{12}}+\frac{(x+1)^{12}}{91x^{13}}-\frac{(x+1)^{12}}{14x^{14}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -(1 + x)^12/(14*x^14) + (1 + x)^12/(91*x^13) - (1 + x)^12/(1092*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{15}}\,dx &= \int \frac{(1+x)^{11}}{x^{15}}\,dx\\ &= -\frac{(1+x)^{12}}{14x^{14}}-\frac{1}{7}\int \frac{(1+x)^{11}}{x^{14}}\,dx\\ &= -\frac{(1+x)^{12}}{14x^{14}}+\frac{(1+x)^{12}}{91x^{13}}+\frac{1}{91}\int \frac{(1+x)^{11}}{x^{13}}\,dx\\ &= -\frac{(1+x)^{12}}{14x^{14}}+\frac{(1+x)^{12}}{91x^{13}}-\frac{(1+x)^{12}}{1092x^{12}}\end{aligned}$$

Mathematica [**B**]   time = 0.00, size = 79, normalized size = 2.14

$$-\frac{1}{14x^{14}}-\frac{11}{13x^{13}}-\frac{55}{12x^{12}}-\frac{15}{x^{11}}-\frac{33}{x^{10}}-\frac{154}{3x^9}-\frac{231}{4x^8}-\frac{330}{7x^7}-\frac{55}{2x^6}-\frac{11}{x^5}-\frac{11}{4x^4}-\frac{1}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^15,x]
```

```
[Out] -1/14*1/x^14 - 11/(13*x^13) - 55/(12*x^12) - 15/x^11 - 33/x^10 - 154/(3*x^9
) - 231/(4*x^8) - 330/(7*x^7) - 55/(2*x^6) - 11/x^5 - 11/(4*x^4) - 1/(3*x^3
)
```

fricas [**A**]   time = 0.81, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="fricas")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

giac [**A**]   time = 0.17, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="giac")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

maple [**A**]   time = 0.05, size = 62, normalized size = 1.68

$$-\frac{1}{3x^3}-\frac{11}{4x^4}-\frac{11}{x^5}-\frac{55}{2x^6}-\frac{330}{7x^7}-\frac{231}{4x^8}-\frac{154}{3x^9}-\frac{33}{x^{10}}-\frac{15}{x^{11}}-\frac{55}{12x^{12}}-\frac{11}{13x^{13}}-\frac{1}{14x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^15,x)
```

```
[Out] -11/x^5-11/4/x^4-1/3/x^3-55/12/x^12-231/4/x^8-33/x^10-154/3/x^9-1/14/x^14-3
30/7/x^7-55/2/x^6-15/x^11-11/13/x^13
```

maxima [**A**]   time = 0.48, size = 60, normalized size = 1.62

$$-\frac{364\,x^{11}+3003\,x^{10}+12012\,x^{9}+30030\,x^{8}+51480\,x^{7}+63063\,x^{6}+56056\,x^{5}+36036\,x^{4}+16380\,x^{3}+5005\,x^{2}}{1092\,x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^15,x, algorithm="maxima")
```

```
[Out] -1/1092*(364*x^11 + 3003*x^10 + 12012*x^9 + 30030*x^8 + 51480*x^7 + 63063*x
^6 + 56056*x^5 + 36036*x^4 + 16380*x^3 + 5005*x^2 + 924*x + 78)/x^14
```

mupad [**B**]   time = 1.08, size = 60, normalized size = 1.62

$$-\frac{\frac{x^{11}}{3}+\frac{11\,x^{10}}{4}+11\,x^9+\frac{55\,x^8}{2}+\frac{330\,x^7}{7}+\frac{231\,x^6}{4}+\frac{154\,x^5}{3}+33\,x^4+15\,x^3+\frac{55\,x^2}{12}+\frac{11\,x}{13}+\frac{1}{14}}{x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^15,x)
```

```
[Out] -((11*x)/13 + (55*x^2)/12 + 15*x^3 + 33*x^4 + (154*x^5)/3 + (231*x^6)/4 + (
330*x^7)/7 + (55*x^8)/2 + 11*x^9 + (11*x^10)/4 + x^11/3 + 1/14)/x^14
```

sympy [B] time = 0.18, size = 61, normalized size = 1.65

$$\frac{-364x^{11} - 3003x^{10} - 12012x^{9} - 30030x^{8} - 51480x^{7} - 63063x^{6} - 56056x^{5} - 36036x^{4} - 16380x^{3} - 5005x^{2} -}{1092x^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**15,x)
```

```
[Out] (-364*x**11 - 3003*x**10 - 12012*x**9 - 30030*x**8 - 51480*x**7 - 63063*x**
6 - 56056*x**5 - 36036*x**4 - 16380*x**3 - 5005*x**2 - 924*x - 78)/(1092*x*
*14)
```

3.615 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}}\,dx$

Optimal. Leaf size=49

$$-\frac{(x+1)^{12}}{15x^{15}}+\frac{(x+1)^{12}}{70x^{14}}-\frac{(x+1)^{12}}{455x^{13}}+\frac{(x+1)^{12}}{5460x^{12}}$$

```
[Out] -1/15*(1+x)^12/x^15+1/70*(1+x)^12/x^14-1/455*(1+x)^12/x^13+1/5460*(1+x)^12/
x^12
```

Rubi [A] time = 0.01, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = $\{27, 45, 37\}$

$$\frac{(x+1)^{12}}{5460x^{12}}-\frac{(x+1)^{12}}{455x^{13}}+\frac{(x+1)^{12}}{70x^{14}}-\frac{(x+1)^{12}}{15x^{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -(1 + x)^12/(15*x^15) + (1 + x)^12/(70*x^14) - (1 + x)^12/(455*x^13) + (1 +
 x)^12/(5460*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{16}}\,dx &= \int \frac{(1+x)^{11}}{x^{16}}\,dx\\ &= -\frac{(1+x)^{12}}{15x^{15}}-\frac{1}{5}\int \frac{(1+x)^{11}}{x^{15}}\,dx\\ &= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}+\frac{1}{35}\int \frac{(1+x)^{11}}{x^{14}}\,dx\\ &= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}-\frac{(1+x)^{12}}{455x^{13}}-\frac{1}{455}\int \frac{(1+x)^{11}}{x^{13}}\,dx\\ &= -\frac{(1+x)^{12}}{15x^{15}}+\frac{(1+x)^{12}}{70x^{14}}-\frac{(1+x)^{12}}{455x^{13}}+\frac{(1+x)^{12}}{5460x^{12}}\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.69

$$-\frac{1}{15x^{15}}-\frac{11}{14x^{14}}-\frac{55}{13x^{13}}-\frac{55}{4x^{12}}-\frac{30}{x^{11}}-\frac{231}{5x^{10}}-\frac{154}{3x^9}-\frac{165}{4x^8}-\frac{165}{7x^7}-\frac{55}{6x^6}-\frac{11}{5x^5}-\frac{1}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^16,x]
```

```
[Out] -1/15*1/x^15 - 11/(14*x^14) - 55/(13*x^13) - 55/(4*x^12) - 30/x^11 - 231/(5
*x^10) - 154/(3*x^9) - 165/(4*x^8) - 165/(7*x^7) - 55/(6*x^6) - 11/(5*x^5)
- 1/(4*x^4)
```

fricas [A] time = 0.89, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="fricas")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

giac [A] time = 0.15, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="giac")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

maple [A] time = 0.05, size = 62, normalized size = 1.27

$$-\frac{1}{4x^4}-\frac{11}{5x^5}-\frac{55}{6x^6}-\frac{165}{7x^7}-\frac{165}{4x^8}-\frac{154}{3x^9}-\frac{231}{5x^{10}}-\frac{30}{x^{11}}-\frac{55}{4x^{12}}-\frac{55}{13x^{13}}-\frac{11}{14x^{14}}-\frac{1}{15x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^16,x)
```

```
[Out] -11/5/x^5-1/4/x^4-11/14/x^14-165/4/x^8-231/5/x^10-1/15/x^15-154/3/x^9-165/7
/x^7-55/6/x^6-55/13/x^13-30/x^11-55/4/x^12
```

maxima [A] time = 0.56, size = 60, normalized size = 1.22

$$-\frac{1365\,x^{11}+12012\,x^{10}+50050\,x^{9}+128700\,x^{8}+225225\,x^{7}+280280\,x^{6}+252252\,x^{5}+163800\,x^{4}+75075\,x^{3}+}{5460\,x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^16,x, algorithm="maxima")
```

```
[Out] -1/5460*(1365*x^11 + 12012*x^10 + 50050*x^9 + 128700*x^8 + 225225*x^7 + 280
280*x^6 + 252252*x^5 + 163800*x^4 + 75075*x^3 + 23100*x^2 + 4290*x + 364)/x
^15
```

mupad [B] time = 1.07, size = 60, normalized size = 1.22

$$-\frac{\frac{x^{11}}{4}+\frac{11\,x^{10}}{5}+\frac{55\,x^{9}}{6}+\frac{165\,x^{8}}{7}+\frac{165\,x^{7}}{4}+\frac{154\,x^{6}}{3}+\frac{231\,x^{5}}{5}+30\,x^{4}+\frac{55\,x^{3}}{4}+\frac{55\,x^{2}}{13}+\frac{11\,x}{14}+\frac{1}{15}}{x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^16,x)
```

```
[Out] -((11*x)/14 + (55*x^2)/13 + (55*x^3)/4 + 30*x^4 + (231*x^5)/5 + (154*x^6)/3
 + (165*x^7)/4 + (165*x^8)/7 + (55*x^9)/6 + (11*x^10)/5 + x^11/4 + 1/15)/x^
15
```

sympy [A] time = 0.19, size = 61, normalized size = 1.24

$$\frac{-1365x^{11}-12012x^{10}-50050x^{9}-128700x^{8}-225225x^{7}-280280x^{6}-252252x^{5}-163800x^{4}-75075x^{3}-2310}{5460x^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**16,x)
```

```
[Out] (-1365*x**11 - 12012*x**10 - 50050*x**9 - 128700*x**8 - 225225*x**7 - 28028
0*x**6 - 252252*x**5 - 163800*x**4 - 75075*x**3 - 23100*x**2 - 4290*x - 364
)/(5460*x**15)
```

3.616 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx$

Optimal. Leaf size=61

$$-\frac{(x+1)^{12}}{16x^{16}}+\frac{(x+1)^{12}}{60x^{15}}-\frac{(x+1)^{12}}{280x^{14}}+\frac{(x+1)^{12}}{1820x^{13}}-\frac{(x+1)^{12}}{21840x^{12}}$$

```
[Out] -1/16*(1+x)^12/x^16+1/60*(1+x)^12/x^15-1/280*(1+x)^12/x^14+1/1820*(1+x)^12/
x^13-1/21840*(1+x)^12/x^12
```

Rubi [A] time = 0.01, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {27, 45, 37}

$$-\frac{(x+1)^{12}}{21840x^{12}}+\frac{(x+1)^{12}}{1820x^{13}}-\frac{(x+1)^{12}}{280x^{14}}+\frac{(x+1)^{12}}{60x^{15}}-\frac{(x+1)^{12}}{16x^{16}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -(1 + x)^12/(16*x^16) + (1 + x)^12/(60*x^15) - (1 + x)^12/(280*x^14) + (1 +
 x)^12/(1820*x^13) - (1 + x)^12/(21840*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{17}}\,dx &= \int \frac{(1+x)^{11}}{x^{17}}\,dx\\
&= -\frac{(1+x)^{12}}{16x^{16}} - \frac{1}{4}\int \frac{(1+x)^{11}}{x^{16}}\,dx\\
&= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} + \frac{1}{20}\int \frac{(1+x)^{11}}{x^{15}}\,dx\\
&= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} - \frac{1}{140}\int \frac{(1+x)^{11}}{x^{14}}\,dx\\
&= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} + \frac{(1+x)^{12}}{1820x^{13}} + \frac{\int \frac{(1+x)^{11}}{x^{13}}\,dx}{1820}\\
&= -\frac{(1+x)^{12}}{16x^{16}} + \frac{(1+x)^{12}}{60x^{15}} - \frac{(1+x)^{12}}{280x^{14}} + \frac{(1+x)^{12}}{1820x^{13}} - \frac{(1+x)^{12}}{21840x^{12}}
\end{aligned}
$$

Mathematica [**A**] time = 0.00, size = 83, normalized size = 1.36

$$
-\frac{1}{16x^{16}} - \frac{11}{15x^{15}} - \frac{55}{14x^{14}} - \frac{165}{13x^{13}} - \frac{55}{2x^{12}} - \frac{42}{x^{11}} - \frac{231}{5x^{10}} - \frac{110}{3x^9} - \frac{165}{8x^8} - \frac{55}{7x^7} - \frac{11}{6x^6} - \frac{1}{5x^5}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^17,x]
```

```
[Out] -1/16*1/x^16 - 11/(15*x^15) - 55/(14*x^14) - 165/(13*x^13) - 55/(2*x^12) -
42/x^11 - 231/(5*x^10) - 110/(3*x^9) - 165/(8*x^8) - 55/(7*x^7) - 11/(6*x^6
) - 1/(5*x^5)
```

fricas [**A**] time = 0.93, size = 60, normalized size = 0.98

$$
-\frac{4368\,x^{11} + 40040\,x^{10} + 171600\,x^{9} + 450450\,x^{8} + 800800\,x^{7} + 1009008\,x^{6} + 917280\,x^{5} + 600600\,x^{4} + 277200\,x}{21840\,x^{16}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="fricas")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

giac [**A**] time = 0.15, size = 60, normalized size = 0.98

$$
-\frac{4368\,x^{11} + 40040\,x^{10} + 171600\,x^{9} + 450450\,x^{8} + 800800\,x^{7} + 1009008\,x^{6} + 917280\,x^{5} + 600600\,x^{4} + 277200\,x}{21840\,x^{16}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="giac")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

maple [**A**] time = 0.05, size = 62, normalized size = 1.02

$$
-\frac{1}{5x^5} - \frac{11}{6x^6} - \frac{55}{7x^7} - \frac{165}{8x^8} - \frac{110}{3x^9} - \frac{231}{5x^{10}} - \frac{42}{x^{11}} - \frac{55}{2x^{12}} - \frac{165}{13x^{13}} - \frac{55}{14x^{14}} - \frac{11}{15x^{15}} - \frac{1}{16x^{16}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^17,x)
```

```
[Out] -1/5/x^5-165/8/x^8-231/5/x^10-55/14/x^14-11/15/x^15-110/3/x^9-55/7/x^7-55/2
/x^12-11/6/x^6-165/13/x^13-1/16/x^16-42/x^11
```

maxima [A] time = 0.58, size = 60, normalized size = 0.98

$$-\frac{4368\,x^{11}+40040\,x^{10}+171600\,x^{9}+450450\,x^{8}+800800\,x^{7}+1009008\,x^{6}+917280\,x^{5}+600600\,x^{4}+27720}{21840\,x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^17,x, algorithm="maxima")
```

```
[Out] -1/21840*(4368*x^11 + 40040*x^10 + 171600*x^9 + 450450*x^8 + 800800*x^7 + 1
009008*x^6 + 917280*x^5 + 600600*x^4 + 277200*x^3 + 85800*x^2 + 16016*x + 1
365)/x^16
```

mupad [B] time = 1.05, size = 60, normalized size = 0.98

$$-\frac{\frac{x^{11}}{5}+\frac{11\,x^{10}}{6}+\frac{55\,x^{9}}{7}+\frac{165\,x^{8}}{8}+\frac{110\,x^{7}}{3}+\frac{231\,x^{6}}{5}+42\,x^{5}+\frac{55\,x^{4}}{2}+\frac{165\,x^{3}}{13}+\frac{55\,x^{2}}{14}+\frac{11\,x}{15}+\frac{1}{16}}{x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^17,x)
```

```
[Out] -((11*x)/15 + (55*x^2)/14 + (165*x^3)/13 + (55*x^4)/2 + 42*x^5 + (231*x^6)/
5 + (110*x^7)/3 + (165*x^8)/8 + (55*x^9)/7 + (11*x^10)/6 + x^11/5 + 1/16)/x
^16
```

sympy [A] time = 0.19, size = 61, normalized size = 1.00

$$\frac{-4368x^{11}-40040x^{10}-171600x^{9}-450450x^{8}-800800x^{7}-1009008x^{6}-917280x^{5}-600600x^{4}-277200x^{3}}{21840x^{16}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**17,x)
```

```
[Out] (-4368*x**11 - 40040*x**10 - 171600*x**9 - 450450*x**8 - 800800*x**7 - 1009
008*x**6 - 917280*x**5 - 600600*x**4 - 277200*x**3 - 85800*x**2 - 16016*x -
 1365)/(21840*x**16)
```

3.617 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx$

Optimal. Leaf size=73

$$-\frac{(x+1)^{12}}{17x^{17}}+\frac{5(x+1)^{12}}{272x^{16}}-\frac{(x+1)^{12}}{204x^{15}}+\frac{(x+1)^{12}}{952x^{14}}-\frac{(x+1)^{12}}{6188x^{13}}+\frac{(x+1)^{12}}{74256x^{12}}$$

```
[Out] -1/17*(1+x)^12/x^17+5/272*(1+x)^12/x^16-1/204*(1+x)^12/x^15+1/952*(1+x)^12/
x^14-1/6188*(1+x)^12/x^13+1/74256*(1+x)^12/x^12
```

Rubi [A] time = 0.02, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$, Rules used = $\{27, 45, 37\}$

$$\frac{(x+1)^{12}}{74256x^{12}}-\frac{(x+1)^{12}}{6188x^{13}}+\frac{(x+1)^{12}}{952x^{14}}-\frac{(x+1)^{12}}{204x^{15}}+\frac{5(x+1)^{12}}{272x^{16}}-\frac{(x+1)^{12}}{17x^{17}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -(1 + x)^12/(17*x^17) + (5*(1 + x)^12)/(272*x^16) - (1 + x)^12/(204*x^15) +
 (1 + x)^12/(952*x^14) - (1 + x)^12/(6188*x^13) + (1 + x)^12/(74256*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{18}}\,dx &= \int \frac{(1+x)^{11}}{x^{18}}\,dx \\
&= -\frac{(1+x)^{12}}{17x^{17}} - \frac{5}{17}\int \frac{(1+x)^{11}}{x^{17}}\,dx \\
&= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} + \frac{5}{68}\int \frac{(1+x)^{11}}{x^{16}}\,dx \\
&= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} - \frac{1}{68}\int \frac{(1+x)^{11}}{x^{15}}\,dx \\
&= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} + \frac{1}{476}\int \frac{(1+x)^{11}}{x^{14}}\,dx \\
&= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} - \frac{(1+x)^{12}}{6188x^{13}} - \frac{\int \frac{(1+x)^{11}}{x^{13}}\,dx}{6188} \\
&= -\frac{(1+x)^{12}}{17x^{17}} + \frac{5(1+x)^{12}}{272x^{16}} - \frac{(1+x)^{12}}{204x^{15}} + \frac{(1+x)^{12}}{952x^{14}} - \frac{(1+x)^{12}}{6188x^{13}} + \frac{(1+x)^{12}}{74256x^{12}}
\end{aligned}
$$

Mathematica [**A**]   time = 0.00, size = 81, normalized size = 1.11

$$
-\frac{1}{17x^{17}} - \frac{11}{16x^{16}} - \frac{11}{3x^{15}} - \frac{165}{14x^{14}} - \frac{330}{13x^{13}} - \frac{77}{2x^{12}} - \frac{42}{x^{11}} - \frac{33}{x^{10}} - \frac{55}{3x^9} - \frac{55}{8x^8} - \frac{11}{7x^7} - \frac{1}{6x^6}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^18,x]
```

```
[Out] -1/17*1/x^17 - 11/(16*x^16) - 11/(3*x^15) - 165/(14*x^14) - 330/(13*x^13) -
 77/(2*x^12) - 42/x^11 - 33/x^10 - 55/(3*x^9) - 55/(8*x^8) - 11/(7*x^7) - 1
/(6*x^6)
```

fricas [**A**]   time = 0.82, size = 60, normalized size = 0.82

$$
-\frac{12376\,x^{11} + 116688\,x^{10} + 510510\,x^9 + 1361360\,x^8 + 2450448\,x^7 + 3118752\,x^6 + 2858856\,x^5 + 1884960\,x^4 +}{74256\,x^{17}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="fricas")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

giac [**A**]   time = 0.15, size = 60, normalized size = 0.82

$$
-\frac{12376\,x^{11} + 116688\,x^{10} + 510510\,x^9 + 1361360\,x^8 + 2450448\,x^7 + 3118752\,x^6 + 2858856\,x^5 + 1884960\,x^4 +}{74256\,x^{17}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="giac")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

maple [**A**]   time = 0.05, size = 62, normalized size = 0.85

$$
-\frac{1}{6x^6} - \frac{11}{7x^7} - \frac{55}{8x^8} - \frac{55}{3x^9} - \frac{33}{x^{10}} - \frac{42}{x^{11}} - \frac{77}{2x^{12}} - \frac{330}{13x^{13}} - \frac{165}{14x^{14}} - \frac{11}{3x^{15}} - \frac{11}{16x^{16}} - \frac{1}{17x^{17}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^18,x)
```

```
[Out] -11/16/x^16-55/8/x^8-33/x^10-11/3/x^15-165/14/x^14-77/2/x^12-55/3/x^9-11/7/
x^7-1/17/x^17-1/6/x^6-42/x^11-330/13/x^13
```

maxima [A] time = 0.53, size = 60, normalized size = 0.82

$$-\frac{12376\,x^{11}+116688\,x^{10}+510510\,x^{9}+1361360\,x^{8}+2450448\,x^{7}+3118752\,x^{6}+2858856\,x^{5}+1884960\,x^{4}+87}{74256\,x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^18,x, algorithm="maxima")
```

```
[Out] -1/74256*(12376*x^11 + 116688*x^10 + 510510*x^9 + 1361360*x^8 + 2450448*x^7
 + 3118752*x^6 + 2858856*x^5 + 1884960*x^4 + 875160*x^3 + 272272*x^2 + 5105
1*x + 4368)/x^17
```

mupad [B] time = 0.03, size = 60, normalized size = 0.82

$$-\frac{\frac{x^{11}}{6}+\frac{11\,x^{10}}{7}+\frac{55\,x^{9}}{8}+\frac{55\,x^{8}}{3}+33\,x^{7}+42\,x^{6}+\frac{77\,x^{5}}{2}+\frac{330\,x^{4}}{13}+\frac{165\,x^{3}}{14}+\frac{11\,x^{2}}{3}+\frac{11\,x}{16}+\frac{1}{17}}{x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^18,x)
```

```
[Out] -((11*x)/16 + (11*x^2)/3 + (165*x^3)/14 + (330*x^4)/13 + (77*x^5)/2 + 42*x^
6 + 33*x^7 + (55*x^8)/3 + (55*x^9)/8 + (11*x^10)/7 + x^11/6 + 1/17)/x^17
```

sympy [A] time = 0.20, size = 61, normalized size = 0.84

$$\frac{-12376x^{11}-116688x^{10}-510510x^{9}-1361360x^{8}-2450448x^{7}-3118752x^{6}-2858856x^{5}-1884960x^{4}-87516}{74256x^{17}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**18,x)
```

```
[Out] (-12376*x**11 - 116688*x**10 - 510510*x**9 - 1361360*x**8 - 2450448*x**7 -
3118752*x**6 - 2858856*x**5 - 1884960*x**4 - 875160*x**3 - 272272*x**2 - 51
051*x - 4368)/(74256*x**17)
```

3.618 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{19}}\,dx$

Optimal. Leaf size=85

$$-\frac{(x+1)^{12}}{18x^{18}}+\frac{(x+1)^{12}}{51x^{17}}-\frac{5(x+1)^{12}}{816x^{16}}+\frac{(x+1)^{12}}{612x^{15}}-\frac{(x+1)^{12}}{2856x^{14}}+\frac{(x+1)^{12}}{18564x^{13}}-\frac{(x+1)^{12}}{222768x^{12}}$$

```
[Out] -1/18*(1+x)^12/x^18+1/51*(1+x)^12/x^17-5/816*(1+x)^12/x^16+1/612*(1+x)^12/x
^15-1/2856*(1+x)^12/x^14+1/18564*(1+x)^12/x^13-1/222768*(1+x)^12/x^12
```

Rubi [A] time = 0.02, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$, Rules used = {27, 45, 37}

$$-\frac{(x+1)^{12}}{222768x^{12}}+\frac{(x+1)^{12}}{18564x^{13}}-\frac{(x+1)^{12}}{2856x^{14}}+\frac{(x+1)^{12}}{612x^{15}}-\frac{5(x+1)^{12}}{816x^{16}}+\frac{(x+1)^{12}}{51x^{17}}-\frac{(x+1)^{12}}{18x^{18}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -(1 + x)^12/(18*x^18) + (1 + x)^12/(51*x^17) - (5*(1 + x)^12)/(816*x^16) +
(1 + x)^12/(612*x^15) - (1 + x)^12/(2856*x^14) + (1 + x)^12/(18564*x^13) -
(1 + x)^12/(222768*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{19}}\,dx &= \int \frac{(1+x)^{11}}{x^{19}}\,dx \\
&= -\frac{(1+x)^{12}}{18x^{18}} - \frac{1}{3}\int \frac{(1+x)^{11}}{x^{18}}\,dx \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} + \frac{5}{51}\int \frac{(1+x)^{11}}{x^{17}}\,dx \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} - \frac{5}{204}\int \frac{(1+x)^{11}}{x^{16}}\,dx \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} + \frac{1}{204}\int \frac{(1+x)^{11}}{x^{15}}\,dx \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} - \frac{\int \frac{(1+x)^{11}}{x^{14}}\,dx}{1428} \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} + \frac{(1+x)^{12}}{18564x^{13}} + \frac{\int \frac{(1+x)}{x^{13}}}{185} \\
&= -\frac{(1+x)^{12}}{18x^{18}} + \frac{(1+x)^{12}}{51x^{17}} - \frac{5(1+x)^{12}}{816x^{16}} + \frac{(1+x)^{12}}{612x^{15}} - \frac{(1+x)^{12}}{2856x^{14}} + \frac{(1+x)^{12}}{18564x^{13}} - \frac{(1+x}{22276}
\end{aligned}
$$

Mathematica [A] time = 0.00, size = 81, normalized size = 0.95

$$
-\frac{1}{18x^{18}} - \frac{11}{17x^{17}} - \frac{55}{16x^{16}} - \frac{11}{x^{15}} - \frac{165}{7x^{14}} - \frac{462}{13x^{13}} - \frac{77}{2x^{12}} - \frac{30}{x^{11}} - \frac{33}{2x^{10}} - \frac{55}{9x^9} - \frac{11}{8x^8} - \frac{1}{7x^7}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^19,x]
```

```
[Out] -1/18*1/x^18 - 11/(17*x^17) - 55/(16*x^16) - 11/x^15 - 165/(7*x^14) - 462/(
13*x^13) - 77/(2*x^12) - 30/x^11 - 33/(2*x^10) - 55/(9*x^9) - 11/(8*x^8) -
1/(7*x^7)
```

fricas [A] time = 0.84, size = 60, normalized size = 0.71

$$
-\frac{31824\,x^{11} + 306306\,x^{10} + 1361360\,x^{9} + 3675672\,x^{8} + 6683040\,x^{7} + 8576568\,x^{6} + 7916832\,x^{5} + 5250960\,x^{4} +}{222768\,x^{18}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="fricas")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

giac [A] time = 0.15, size = 60, normalized size = 0.71

$$
-\frac{31824\,x^{11} + 306306\,x^{10} + 1361360\,x^{9} + 3675672\,x^{8} + 6683040\,x^{7} + 8576568\,x^{6} + 7916832\,x^{5} + 5250960\,x^{4} +}{222768\,x^{18}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="giac")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

maple [A] time = 0.05, size = 62, normalized size = 0.73

$$-\frac{1}{7x^{7}}-\frac{11}{8x^{8}}-\frac{55}{9x^{9}}-\frac{33}{2x^{10}}-\frac{30}{x^{11}}-\frac{77}{2x^{12}}-\frac{462}{13x^{13}}-\frac{165}{7x^{14}}-\frac{11}{x^{15}}-\frac{55}{16x^{16}}-\frac{11}{17x^{17}}-\frac{1}{18x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^19,x)
```

```
[Out] -462/13/x^13-77/2/x^12-11/8/x^8-33/2/x^10-11/x^15-55/9/x^9-55/16/x^16-1/18/
x^18-1/7/x^7-165/7/x^14-11/17/x^17-30/x^11
```

maxima [A] time = 0.57, size = 60, normalized size = 0.71

$$-\frac{31824\,x^{11}+306306\,x^{10}+1361360\,x^{9}+3675672\,x^{8}+6683040\,x^{7}+8576568\,x^{6}+7916832\,x^{5}+5250960\,x^{4}}{222768\,x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^19,x, algorithm="maxima")
```

```
[Out] -1/222768*(31824*x^11 + 306306*x^10 + 1361360*x^9 + 3675672*x^8 + 6683040*x
^7 + 8576568*x^6 + 7916832*x^5 + 5250960*x^4 + 2450448*x^3 + 765765*x^2 + 1
44144*x + 12376)/x^18
```

mupad [B] time = 1.06, size = 60, normalized size = 0.71

$$-\frac{\frac{x^{11}}{7}+\frac{11\,x^{10}}{8}+\frac{55\,x^{9}}{9}+\frac{33\,x^{8}}{2}+30\,x^{7}+\frac{77\,x^{6}}{2}+\frac{462\,x^{5}}{13}+\frac{165\,x^{4}}{7}+11\,x^{3}+\frac{55\,x^{2}}{16}+\frac{11\,x}{17}+\frac{1}{18}}{x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^19,x)
```

```
[Out] -((11*x)/17 + (55*x^2)/16 + 11*x^3 + (165*x^4)/7 + (462*x^5)/13 + (77*x^6)/
2 + 30*x^7 + (33*x^8)/2 + (55*x^9)/9 + (11*x^10)/8 + x^11/7 + 1/18)/x^18
```

sympy [A] time = 0.21, size = 61, normalized size = 0.72

$$\frac{-31824x^{11}-306306x^{10}-1361360x^{9}-3675672x^{8}-6683040x^{7}-8576568x^{6}-7916832x^{5}-5250960x^{4}-}{222768x^{18}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**19,x)
```

```
[Out] (-31824*x**11 - 306306*x**10 - 1361360*x**9 - 3675672*x**8 - 6683040*x**7 -
 8576568*x**6 - 7916832*x**5 - 5250960*x**4 - 2450448*x**3 - 765765*x**2 -
144144*x - 12376)/(222768*x**18)
```

3.619 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx$

Optimal. Leaf size=97

$$-\frac{(x+1)^{12}}{19x^{19}}+\frac{7(x+1)^{12}}{342x^{18}}-\frac{7(x+1)^{12}}{969x^{17}}+\frac{35(x+1)^{12}}{15504x^{16}}-\frac{7(x+1)^{12}}{11628x^{15}}+\frac{(x+1)^{12}}{7752x^{14}}-\frac{(x+1)^{12}}{50388x^{13}}+\frac{(x+1)^{12}}{604656x^{12}}$$

```
[Out] -1/19*(1+x)^12/x^19+7/342*(1+x)^12/x^18-7/969*(1+x)^12/x^17+35/15504*(1+x)^
12/x^16-7/11628*(1+x)^12/x^15+1/7752*(1+x)^12/x^14-1/50388*(1+x)^12/x^13+1/
604656*(1+x)^12/x^12
```

Rubi [A] time = 0.03, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.176$, Rules used = $\{27, 45, 37\}$

$$\frac{(x+1)^{12}}{604656x^{12}}-\frac{(x+1)^{12}}{50388x^{13}}+\frac{(x+1)^{12}}{7752x^{14}}-\frac{7(x+1)^{12}}{11628x^{15}}+\frac{35(x+1)^{12}}{15504x^{16}}-\frac{7(x+1)^{12}}{969x^{17}}+\frac{7(x+1)^{12}}{342x^{18}}-\frac{(x+1)^{12}}{19x^{19}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -(1 + x)^12/(19*x^19) + (7*(1 + x)^12)/(342*x^18) - (7*(1 + x)^12)/(969*x^1
7) + (35*(1 + x)^12)/(15504*x^16) - (7*(1 + x)^12)/(11628*x^15) + (1 + x)^1
2/(7752*x^14) - (1 + x)^12/(50388*x^13) + (1 + x)^12/(604656*x^12)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{20}}\,dx &= \int \frac{(1+x)^{11}}{x^{20}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} - \frac{7}{19}\int \frac{(1+x)^{11}}{x^{19}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} + \frac{7}{57}\int \frac{(1+x)^{11}}{x^{18}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} - \frac{35}{969}\int \frac{(1+x)^{11}}{x^{17}}\,dx \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} + \frac{35\int \frac{(1+x)^{11}}{x^{16}}\,dx}{3876} \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} - \frac{7\int \frac{(1+x)^{11}}{x^{15}}\,d}{3876} \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} + \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} - \\
&= -\frac{(1+x)^{12}}{19x^{19}} + \frac{7(1+x)^{12}}{342x^{18}} - \frac{7(1+x)^{12}}{969x^{17}} + \frac{35(1+x)^{12}}{15504x^{16}} - \frac{7(1+x)^{12}}{11628x^{15}} + \frac{(1+x)^{12}}{7752x^{14}} -
\end{aligned}
$$

Mathematica [A] time = 0.00, size = 79, normalized size = 0.81

$$
-\frac{1}{19x^{19}} - \frac{11}{18x^{18}} - \frac{55}{17x^{17}} - \frac{165}{16x^{16}} - \frac{22}{x^{15}} - \frac{33}{x^{14}} - \frac{462}{13x^{13}} - \frac{55}{2x^{12}} - \frac{15}{x^{11}} - \frac{11}{2x^{10}} - \frac{11}{9x^9} - \frac{1}{8x^8}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^20,x]
```

```
[Out] -1/19*1/x^19 - 11/(18*x^18) - 55/(17*x^17) - 165/(16*x^16) - 22/x^15 - 33/x
^14 - 462/(13*x^13) - 55/(2*x^12) - 15/x^11 - 11/(2*x^10) - 11/(9*x^9) - 1/
(8*x^8)
```

fricas [A] time = 0.95, size = 60, normalized size = 0.62

$$
-\frac{75582\,x^{11} + 739024\,x^{10} + 3325608\,x^9 + 9069840\,x^8 + 16628040\,x^7 + 21488544\,x^6 + 19953648\,x^5 + 133024}{604656\,x^{19}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="fricas")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

giac [A] time = 0.16, size = 60, normalized size = 0.62

$$
-\frac{75582\,x^{11} + 739024\,x^{10} + 3325608\,x^9 + 9069840\,x^8 + 16628040\,x^7 + 21488544\,x^6 + 19953648\,x^5 + 133024}{604656\,x^{19}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="giac")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

maple [A] time = 0.05, size = 62, normalized size = 0.64

$$-\frac{1}{8x^{8}}-\frac{11}{9x^{9}}-\frac{11}{2x^{10}}-\frac{15}{x^{11}}-\frac{55}{2x^{12}}-\frac{462}{13x^{13}}-\frac{33}{x^{14}}-\frac{22}{x^{15}}-\frac{165}{16x^{16}}-\frac{55}{17x^{17}}-\frac{11}{18x^{18}}-\frac{1}{19x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^20,x)
```

```
[Out] -462/13/x^13-1/8/x^8-11/18/x^18-11/2/x^10-22/x^15-55/2/x^12-33/x^14-11/9/x^
9-165/16/x^16-55/17/x^17-1/19/x^19-15/x^11
```

maxima [A] time = 0.58, size = 60, normalized size = 0.62

$$-\frac{75582\,x^{11}+739024\,x^{10}+3325608\,x^{9}+9069840\,x^{8}+16628040\,x^{7}+21488544\,x^{6}+19953648\,x^{5}+13302432}{604656\,x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^20,x, algorithm="maxima")
```

```
[Out] -1/604656*(75582*x^11 + 739024*x^10 + 3325608*x^9 + 9069840*x^8 + 16628040*
x^7 + 21488544*x^6 + 19953648*x^5 + 13302432*x^4 + 6235515*x^3 + 1956240*x^
2 + 369512*x + 31824)/x^19
```

mupad [B] time = 0.03, size = 60, normalized size = 0.62

$$-\frac{\frac{x^{11}}{8}+\frac{11\,x^{10}}{9}+\frac{11\,x^{9}}{2}+15\,x^{8}+\frac{55\,x^{7}}{2}+\frac{462\,x^{6}}{13}+33\,x^{5}+22\,x^{4}+\frac{165\,x^{3}}{16}+\frac{55\,x^{2}}{17}+\frac{11\,x}{18}+\frac{1}{19}}{x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^20,x)
```

```
[Out] -((11*x)/18 + (55*x^2)/17 + (165*x^3)/16 + 22*x^4 + 33*x^5 + (462*x^6)/13 +
 (55*x^7)/2 + 15*x^8 + (11*x^9)/2 + (11*x^10)/9 + x^11/8 + 1/19)/x^19
```

sympy [A] time = 0.21, size = 61, normalized size = 0.63

$$\frac{-75582x^{11}-739024x^{10}-3325608x^{9}-9069840x^{8}-16628040x^{7}-21488544x^{6}-19953648x^{5}-13302432x^{4}-}{604656x^{19}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**20,x)
```

```
[Out] (-75582*x**11 - 739024*x**10 - 3325608*x**9 - 9069840*x**8 - 16628040*x**7
- 21488544*x**6 - 19953648*x**5 - 13302432*x**4 - 6235515*x**3 - 1956240*x*
*2 - 369512*x - 31824)/(604656*x**19)
```

3.620 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx$

Optimal. Leaf size=81

$$-\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\frac{11}{10x^{10}}-\frac{1}{9x^{9}}$$

```
[Out] -1/20/x^20-11/19/x^19-55/18/x^18-165/17/x^17-165/8/x^16-154/5/x^15-33/x^14-
330/13/x^13-55/4/x^12-5/x^11-11/10/x^10-1/9/x^9
```

Rubi [A] time = 0.02, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$-\frac{1}{9x^{9}}-\frac{11}{10x^{10}}-\frac{5}{x^{11}}-\frac{55}{4x^{12}}-\frac{330}{13x^{13}}-\frac{33}{x^{14}}-\frac{154}{5x^{15}}-\frac{165}{8x^{16}}-\frac{165}{17x^{17}}-\frac{55}{18x^{18}}-\frac{11}{19x^{19}}-\frac{1}{20x^{20}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/(20*x^20) - 11/(19*x^19) - 55/(18*x^18) - 165/(17*x^17) - 165/(8*x^16) -
 154/(5*x^15) - 33/x^14 - 330/(13*x^13) - 55/(4*x^12) - 5/x^11 - 11/(10*x^1
0) - 1/(9*x^9)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{21}}\,dx &= \int \frac{(1+x)^{11}}{x^{21}}\,dx\\ &= \int \left(\frac{1}{x^{21}}+\frac{11}{x^{20}}+\frac{55}{x^{19}}+\frac{165}{x^{18}}+\frac{330}{x^{17}}+\frac{462}{x^{16}}+\frac{462}{x^{15}}+\frac{330}{x^{14}}+\frac{165}{x^{13}}+\frac{55}{x^{12}}+\frac{11}{x^{11}}+\right.\\ &= -\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\end{aligned}$$

Mathematica [A] time = 0.00, size = 81, normalized size = 1.00

$$-\frac{1}{20x^{20}}-\frac{11}{19x^{19}}-\frac{55}{18x^{18}}-\frac{165}{17x^{17}}-\frac{165}{8x^{16}}-\frac{154}{5x^{15}}-\frac{33}{x^{14}}-\frac{330}{13x^{13}}-\frac{55}{4x^{12}}-\frac{5}{x^{11}}-\frac{11}{10x^{10}}-\frac{1}{9x^{9}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^21,x]
```

```
[Out] -1/20*1/x^20 - 11/(19*x^19) - 55/(18*x^18) - 165/(17*x^17) - 165/(8*x^16) -
 154/(5*x^15) - 33/x^14 - 330/(13*x^13) - 55/(4*x^12) - 5/x^11 - 11/(10*x^1
0) - 1/(9*x^9)
```

fricas [A] time = 0.75, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^{9}+20785050\,x^{8}+38372400\,x^{7}+49884120\,x^{6}+46558512\,x^{5}+311775}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="fricas")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

giac [A] time = 0.15, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^{9}+20785050\,x^{8}+38372400\,x^{7}+49884120\,x^{6}+46558512\,x^{5}+311775}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="giac")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

maple [A] time = 0.05, size = 62, normalized size = 0.77

$$-\frac{1}{9x^{9}}-\frac{11}{10x^{10}}-\frac{5}{x^{11}}-\frac{55}{4x^{12}}-\frac{330}{13x^{13}}-\frac{33}{x^{14}}-\frac{154}{5x^{15}}-\frac{165}{8x^{16}}-\frac{165}{17x^{17}}-\frac{55}{18x^{18}}-\frac{11}{19x^{19}}-\frac{1}{20x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^21,x)
```

```
[Out] -1/20/x^20-11/19/x^19-55/18/x^18-165/17/x^17-165/8/x^16-154/5/x^15-33/x^14-
330/13/x^13-55/4/x^12-5/x^11-11/10/x^10-1/9/x^9
```

maxima [A] time = 0.51, size = 60, normalized size = 0.74

$$-\frac{167960\,x^{11}+1662804\,x^{10}+7558200\,x^{9}+20785050\,x^{8}+38372400\,x^{7}+49884120\,x^{6}+46558512\,x^{5}+311775}{1511640\,x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^21,x, algorithm="maxima")
```

```
[Out] -1/1511640*(167960*x^11 + 1662804*x^10 + 7558200*x^9 + 20785050*x^8 + 38372
400*x^7 + 49884120*x^6 + 46558512*x^5 + 31177575*x^4 + 14671800*x^3 + 46189
00*x^2 + 875160*x + 75582)/x^20
```

mupad [B] time = 0.03, size = 60, normalized size = 0.74

$$-\frac{\frac{x^{11}}{9}+\frac{11\,x^{10}}{10}+5\,x^9+\frac{55\,x^8}{4}+\frac{330\,x^7}{13}+33\,x^6+\frac{154\,x^5}{5}+\frac{165\,x^4}{8}+\frac{165\,x^3}{17}+\frac{55\,x^2}{18}+\frac{11\,x}{19}+\frac{1}{20}}{x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^21,x)
```

```
[Out] -((11*x)/19 + (55*x^2)/18 + (165*x^3)/17 + (165*x^4)/8 + (154*x^5)/5 + 33*x
^6 + (330*x^7)/13 + (55*x^8)/4 + 5*x^9 + (11*x^10)/10 + x^11/9 + 1/20)/x^20
```

sympy [A] time = 0.22, size = 61, normalized size = 0.75

$$\frac{-167960x^{11} - 1662804x^{10} - 7558200x^{9} - 20785050x^{8} - 38372400x^{7} - 49884120x^{6} - 46558512x^{5} - 311775}{1511640x^{20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**21,x)
```

```
[Out] (-167960*x**11 - 1662804*x**10 - 7558200*x**9 - 20785050*x**8 - 38372400*x*
*7 - 49884120*x**6 - 46558512*x**5 - 31177575*x**4 - 14671800*x**3 - 461890
0*x**2 - 875160*x - 75582)/(1511640*x**20)
```

3.621 $\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx$

Optimal. Leaf size=83

$$-\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}-\frac{1}{x^{11}}-\frac{1}{10x^{10}}$$

```
[Out] -1/21/x^21-11/20/x^20-55/19/x^19-55/6/x^18-330/17/x^17-231/8/x^16-154/5/x^1
5-165/7/x^14-165/13/x^13-55/12/x^12-1/x^11-1/10/x^10
```

Rubi [A] time = 0.02, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}} = 0.118$, Rules used = $\{27, 43\}$

$$-\frac{1}{10x^{10}}-\frac{1}{x^{11}}-\frac{55}{12x^{12}}-\frac{165}{13x^{13}}-\frac{165}{7x^{14}}-\frac{154}{5x^{15}}-\frac{231}{8x^{16}}-\frac{330}{17x^{17}}-\frac{55}{6x^{18}}-\frac{55}{19x^{19}}-\frac{11}{20x^{20}}-\frac{1}{21x^{21}}$$

Antiderivative was successfully verified.

```
[In] Int[((1 + x)*(1 + 2*x + x^2)^5)/x^22,x]
```

```
[Out] -1/(21*x^21) - 11/(20*x^20) - 55/(19*x^19) - 55/(6*x^18) - 330/(17*x^17) -
231/(8*x^16) - 154/(5*x^15) - 165/(7*x^14) - 165/(13*x^13) - 55/(12*x^12) -
 x^(-11) - 1/(10*x^10)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(1+x)\left(1+2x+x^2\right)^5}{x^{22}}\,dx &= \int \frac{(1+x)^{11}}{x^{22}}\,dx\\ &= \int \left(\frac{1}{x^{22}}+\frac{11}{x^{21}}+\frac{55}{x^{20}}+\frac{165}{x^{19}}+\frac{330}{x^{18}}+\frac{462}{x^{17}}+\frac{462}{x^{16}}+\frac{330}{x^{15}}+\frac{165}{x^{14}}+\frac{55}{x^{13}}+\frac{11}{x^{12}}+\frac{1}{x^{11}}\right.\\ &= -\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}\end{aligned}$$

Mathematica [A] time = 0.00, size = 83, normalized size = 1.00

$$-\frac{1}{21x^{21}}-\frac{11}{20x^{20}}-\frac{55}{19x^{19}}-\frac{55}{6x^{18}}-\frac{330}{17x^{17}}-\frac{231}{8x^{16}}-\frac{154}{5x^{15}}-\frac{165}{7x^{14}}-\frac{165}{13x^{13}}-\frac{55}{12x^{12}}-\frac{1}{x^{11}}-\frac{1}{10x^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 + x)*(1 + 2*x + x^2)^5)/x^22,x]
```

```
[Out] -1/21*1/x^21 - 11/(20*x^20) - 55/(19*x^19) - 55/(6*x^18) - 330/(17*x^17) -
231/(8*x^16) - 154/(5*x^15) - 165/(7*x^14) - 165/(13*x^13) - 55/(12*x^12) -
 x^(-11) - 1/(10*x^10)
```

fricas [A] time = 0.61, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="fricas")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

giac [A] time = 0.16, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="giac")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

maple [A] time = 0.05, size = 62, normalized size = 0.75

$$-\frac{1}{10x^{10}}-\frac{1}{x^{11}}-\frac{55}{12x^{12}}-\frac{165}{13x^{13}}-\frac{165}{7x^{14}}-\frac{154}{5x^{15}}-\frac{231}{8x^{16}}-\frac{330}{17x^{17}}-\frac{55}{6x^{18}}-\frac{55}{19x^{19}}-\frac{11}{20x^{20}}-\frac{1}{21x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(x^2+2*x+1)^5/x^22,x)
```

```
[Out] -1/21/x^21-11/20/x^20-55/19/x^19-55/6/x^18-330/17/x^17-231/8/x^16-154/5/x^1
5-165/7/x^14-165/13/x^13-55/12/x^12-1/x^11-1/10/x^10
```

maxima [A] time = 0.57, size = 60, normalized size = 0.72

$$-\frac{352716\,x^{11}+3527160\,x^{10}+16166150\,x^{9}+44767800\,x^{8}+83140200\,x^{7}+108636528\,x^{6}+101846745\,x^{5}+}{3527160\,x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x^2+2*x+1)^5/x^22,x, algorithm="maxima")
```

```
[Out] -1/3527160*(352716*x^11 + 3527160*x^10 + 16166150*x^9 + 44767800*x^8 + 8314
0200*x^7 + 108636528*x^6 + 101846745*x^5 + 68468400*x^4 + 32332300*x^3 + 10
210200*x^2 + 1939938*x + 167960)/x^21
```

mupad [B] time = 1.07, size = 58, normalized size = 0.70

$$-\frac{\frac{x^{11}}{10}+x^{10}+\frac{55\,x^9}{12}+\frac{165\,x^8}{13}+\frac{165\,x^7}{7}+\frac{154\,x^6}{5}+\frac{231\,x^5}{8}+\frac{330\,x^4}{17}+\frac{55\,x^3}{6}+\frac{55\,x^2}{19}+\frac{11\,x}{20}+\frac{1}{21}}{x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((x + 1)*(2*x + x^2 + 1)^5)/x^22,x)
```

```
[Out] -((11*x)/20 + (55*x^2)/19 + (55*x^3)/6 + (330*x^4)/17 + (231*x^5)/8 + (154*
x^6)/5 + (165*x^7)/7 + (165*x^8)/13 + (55*x^9)/12 + x^10 + x^11/10 + 1/21)/
x^21
```

sympy [A] time = 0.22, size = 61, normalized size = 0.73

$$\frac{-352716x^{11} - 3527160x^{10} - 16166150x^{9} - 44767800x^{8} - 83140200x^{7} - 108636528x^{6} - 101846745x^{5} - 684684}{3527160x^{21}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(x**2+2*x+1)**5/x**22,x)
```

```
[Out] (-352716*x**11 - 3527160*x**10 - 16166150*x**9 - 44767800*x**8 - 83140200*x
**7 - 108636528*x**6 - 101846745*x**5 - 68468400*x**4 - 32332300*x**3 - 102
10200*x**2 - 1939938*x - 167960)/(3527160*x**21)
```

3.622 $\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=134

$$\frac{a^5(Ab-aB)}{b^7(a+bx)}+\frac{a^4(5Ab-6aB)\log(a+bx)}{b^7}-\frac{a^3x(4Ab-5aB)}{b^6}+\frac{a^2x^2(3Ab-4aB)}{2b^5}-\frac{ax^3(2Ab-3aB)}{3b^4}+\frac{x^4(Ab-2a}{4b^3}$$

```
[Out] -a^3*(4*A*b-5*B*a)*x/b^6+1/2*a^2*(3*A*b-4*B*a)*x^2/b^5-1/3*a*(2*A*b-3*B*a)*
x^3/b^4+1/4*(A*b-2*B*a)*x^4/b^3+1/5*B*x^5/b^2+a^5*(A*b-B*a)/b^7/(b*x+a)+a^4
*(5*A*b-6*B*a)*ln(b*x+a)/b^7
```

Rubi [A] time = 0.16, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{a^2x^2(3Ab-4aB)}{2b^5}+\frac{a^5(Ab-aB)}{b^7(a+bx)}-\frac{a^3x(4Ab-5aB)}{b^6}+\frac{a^4(5Ab-6aB)\log(a+bx)}{b^7}-\frac{ax^3(2Ab-3aB)}{3b^4}+\frac{x^4(Ab-2a}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a^3*(4*A*b - 5*a*B)*x)/b^6) + (a^2*(3*A*b - 4*a*B)*x^2)/(2*b^5) - (a*(2*
A*b - 3*a*B)*x^3)/(3*b^4) + ((A*b - 2*a*B)*x^4)/(4*b^3) + (B*x^5)/(5*b^2) +
 (a^5*(A*b - a*B))/(b^7*(a + b*x)) + (a^4*(5*A*b - 6*a*B)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^5(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{a^3(-4Ab+5aB)}{b^6}-\frac{a^2(-3Ab+4aB)x}{b^5}+\frac{a(-2Ab+3aB)x^2}{b^4}+\frac{(Ab-2aB)x^3}{b^3}+B\right.\\ &= -\frac{a^3(4Ab-5aB)x}{b^6}+\frac{a^2(3Ab-4aB)x^2}{2b^5}-\frac{a(2Ab-3aB)x^3}{3b^4}+\frac{(Ab-2aB)x^4}{4b^3}+\frac{Bx^5}{5b^2}+\end{aligned}$$

Mathematica [A] time = 0.06, size = 127, normalized size = 0.95

$$\frac{\frac{60a^5(Ab-aB)}{a+bx}+60a^4(5Ab-6aB)\log(a+bx)+60a^3bx(5aB-4Ab)-30a^2b^2x^2(4aB-3Ab)+15b^4x^4(Ab-2aB}{60b^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (60*a^3*b*(-4*A*b + 5*a*B)*x - 30*a^2*b^2*(-3*A*b + 4*a*B)*x^2 + 20*a*b^3*(
-2*A*b + 3*a*B)*x^3 + 15*b^4*(A*b - 2*a*B)*x^4 + 12*b^5*B*x^5 + (60*a^5*(A*
b - a*B))/(a + b*x) + 60*a^4*(5*A*b - 6*a*B)*Log[a + b*x])/(60*b^7)
```

fricas [A] time = 0.75, size = 188, normalized size = 1.40

$$\frac{12\,Bb^6x^6 - 60\,Ba^6 + 60\,Aa^5b - 3\left(6\,Bab^5 - 5\,Ab^6\right)x^5 + 5\left(6\,Ba^2b^4 - 5\,Aab^5\right)x^4 - 10\left(6\,Ba^3b^3 - 5\,Aa^2b^4\right)x^3 + 30(}{60(b^8x + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^6*x^6 - 60*B*a^6 + 60*A*a^5*b - 3*(6*B*a*b^5 - 5*A*b^6)*x^5 +
5*(6*B*a^2*b^4 - 5*A*a*b^5)*x^4 - 10*(6*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 30*(
6*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 60*(5*B*a^5*b - 4*A*a^4*b^2)*x - 60*(6*B*a
^6 - 5*A*a^5*b + (6*B*a^5*b - 5*A*a^4*b^2)*x)*log(b*x + a))/(b^8*x + a*b^7)
```

giac [A] time = 0.16, size = 152, normalized size = 1.13

$$-\frac{\left(6\,Ba^5 - 5\,Aa^4b\right)\log\left(|bx + a|\right)}{b^7} - \frac{Ba^6 - Aa^5b}{(bx + a)b^7} + \frac{12\,Bb^8x^5 - 30\,Bab^7x^4 + 15\,Ab^8x^4 + 60\,Ba^2b^6x^3 - 40\,Aab^7x^3 - 12}{60\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(6*B*a^5 - 5*A*a^4*b)*log(abs(b*x + a))/b^7 - (B*a^6 - A*a^5*b)/((b*x + a)
*b^7) + 1/60*(12*B*b^8*x^5 - 30*B*a*b^7*x^4 + 15*A*b^8*x^4 + 60*B*a^2*b^6*x
^3 - 40*A*a*b^7*x^3 - 120*B*a^3*b^5*x^2 + 90*A*a^2*b^6*x^2 + 300*B*a^4*b^4*
x - 240*A*a^3*b^5*x)/b^10
```

maple [A] time = 0.06, size = 156, normalized size = 1.16

$$\frac{B\,x^5}{5b^2} + \frac{A\,x^4}{4b^2} - \frac{Ba\,x^4}{2b^3} - \frac{2Aa\,x^3}{3b^3} + \frac{B\,a^2x^3}{b^4} + \frac{3A\,a^2x^2}{2b^4} - \frac{2B\,a^3x^2}{b^5} + \frac{A\,a^5}{(bx + a)\,b^6} + \frac{5A\,a^4\ln(bx + a)}{b^6} - \frac{4A\,a^3x}{b^5} - \frac{B\,a^6}{(bx + a)\,b^7} - 6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*x^5/b^2+1/4/b^2*A*x^4-1/2/b^3*B*x^4*a-2/3/b^3*A*x^3*a+1/b^4*B*x^3*a^2
+3/2/b^4*A*x^2*a^2-2/b^5*B*x^2*a^3-4/b^5*A*a^3*x+5/b^6*B*a^4*x+5*a^4/b^6*ln
(b*x+a)*A-6*a^5/b^7*ln(b*x+a)*B+a^5/b^6/(b*x+a)*A-a^6/b^7/(b*x+a)*B
```

maxima [A] time = 0.55, size = 149, normalized size = 1.11

$$-\frac{Ba^6 - Aa^5b}{b^8x + ab^7} + \frac{12\,Bb^4x^5 - 15\left(2\,Bab^3 - Ab^4\right)x^4 + 20\left(3\,Ba^2b^2 - 2\,Aab^3\right)x^3 - 30\left(4\,Ba^3b - 3\,Aa^2b^2\right)x^2 + 60(5\,Ba^4}{60\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^6 - A*a^5*b)/(b^8*x + a*b^7) + 1/60*(12*B*b^4*x^5 - 15*(2*B*a*b^3 - A
*b^4)*x^4 + 20*(3*B*a^2*b^2 - 2*A*a*b^3)*x^3 - 30*(4*B*a^3*b - 3*A*a^2*b^2)
*x^2 + 60*(5*B*a^4 - 4*A*a^3*b)*x)/b^6 - (6*B*a^5 - 5*A*a^4*b)*log(b*x + a)
/b^7
```

mupad [**B**] time = 1.10, size = 279, normalized size = 2.08

$$x^2\left(\frac{a\left(\frac{2\,a\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{b}+\frac{B\,a^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{2\,b^2}\right)+x^4\left(\frac{A}{4\,b^2}-\frac{B\,a}{2\,b^3}\right)-x^3\left(\frac{2\,a\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{3\,b}+\frac{B\,a^2}{3\,b^4}\right)-x\left(\frac{2\,a\left(2\,a\left(\frac{2\,a\left(\frac{A}{b^2}\right.}{}\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((a*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2
*B*a)/b^3))/(2*b^2)) + x^4*(A/(4*b^2) - (B*a)/(2*b^3)) - x^3*((2*a*(A/b^2 -
 (2*B*a)/b^3))/(3*b) + (B*a^2)/(3*b^4)) - x*((2*a*((2*a*((2*a*(A/b^2 - (2*B
*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2*B*a)/b^3))/b^2))/b - (a^2*
((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b^2) - (log(a + b*x)*(6*B*a^
5 - 5*A*a^4*b))/b^7 + (B*x^5)/(5*b^2) - (B*a^6 - A*a^5*b)/(b*(a*b^6 + b^7*x
))
```

sympy [**A**] time = 0.51, size = 143, normalized size = 1.07

$$\frac{Bx^5}{5b^2}-\frac{a^4\left(-5Ab+6Ba\right)\log\left(a+bx\right)}{b^7}+x^4\left(\frac{A}{4b^2}-\frac{Ba}{2b^3}\right)+x^3\left(-\frac{2Aa}{3b^3}+\frac{Ba^2}{b^4}\right)+x^2\left(\frac{3Aa^2}{2b^4}-\frac{2Ba^3}{b^5}\right)+x\left(-\frac{4Aa^3}{b^5}+\frac{5B}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**5/(5*b**2) - a**4*(-5*A*b + 6*B*a)*log(a + b*x)/b**7 + x**4*(A/(4*b**2
) - B*a/(2*b**3)) + x**3*(-2*A*a/(3*b**3) + B*a**2/b**4) + x**2*(3*A*a**2/(
2*b**4) - 2*B*a**3/b**5) + x*(-4*A*a**3/b**5 + 5*B*a**4/b**6) + (A*a**5*b -
 B*a**6)/(a*b**7 + b**8*x)
```

3.623 $\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=113

$$-\frac{a^4(Ab-aB)}{b^6(a+bx)}-\frac{a^3(4Ab-5aB)\log(a+bx)}{b^6}+\frac{a^2x(3Ab-4aB)}{b^5}-\frac{ax^2(2Ab-3aB)}{2b^4}+\frac{x^3(Ab-2aB)}{3b^3}+\frac{Bx^4}{4b^2}$$

```
[Out] a^2*(3*A*b-4*B*a)*x/b^5-1/2*a*(2*A*b-3*B*a)*x^2/b^4+1/3*(A*b-2*B*a)*x^3/b^3
+1/4*B*x^4/b^2-a^4*(A*b-B*a)/b^6/(b*x+a)-a^3*(4*A*b-5*B*a)*ln(b*x+a)/b^6
```

Rubi [A] time = 0.11, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$-\frac{a^4(Ab-aB)}{b^6(a+bx)}+\frac{a^2x(3Ab-4aB)}{b^5}-\frac{a^3(4Ab-5aB)\log(a+bx)}{b^6}-\frac{ax^2(2Ab-3aB)}{2b^4}+\frac{x^3(Ab-2aB)}{3b^3}+\frac{Bx^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*(3*A*b - 4*a*B)*x)/b^5 - (a*(2*A*b - 3*a*B)*x^2)/(2*b^4) + ((A*b - 2*a
*B)*x^3)/(3*b^3) + (B*x^4)/(4*b^2) - (a^4*(A*b - a*B))/(b^6*(a + b*x)) - (a
^3*(4*A*b - 5*a*B)*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^4(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(-\frac{a^2(-3Ab+4aB)}{b^5}+\frac{a(-2Ab+3aB)x}{b^4}+\frac{(Ab-2aB)x^2}{b^3}+\frac{Bx^3}{b^2}-\frac{a^4(-Ab+aB)}{b^5(a+bx)^2}+\right.\\ &= \frac{a^2(3Ab-4aB)x}{b^5}-\frac{a(2Ab-3aB)x^2}{2b^4}+\frac{(Ab-2aB)x^3}{3b^3}+\frac{Bx^4}{4b^2}-\frac{a^4(Ab-aB)}{b^6(a+bx)}-\frac{a^3(4Ab-}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 107, normalized size = 0.95

$$\frac{\frac{12a^4(aB-Ab)}{a+bx}+12a^3(5aB-4Ab)\log(a+bx)-12a^2bx(4aB-3Ab)+4b^3x^3(Ab-2aB)+6ab^2x^2(3aB-2Ab)+3b^4}{12b^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-12*a^2*b*(-3*A*b + 4*a*B)*x + 6*a*b^2*(-2*A*b + 3*a*B)*x^2 + 4*b^3*(A*b -
 2*a*B)*x^3 + 3*b^4*B*x^4 + (12*a^4*(-(A*b) + a*B))/(a + b*x) + 12*a^3*(-4*
A*b + 5*a*B)*Log[a + b*x])/(12*b^6)
```

fricas [**A**] time = 0.85, size = 164, normalized size = 1.45

$$\frac{3\,Bb^5x^5+12\,Ba^5-12\,Aa^4b-\left(5\,Bab^4-4\,Ab^5\right)x^4+2\left(5\,Ba^2b^3-4\,Aab^4\right)x^3-6\left(5\,Ba^3b^2-4\,Aa^2b^3\right)x^2-12\,\big(4}{12\left(b^7x+ab^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*x^5 + 12*B*a^5 - 12*A*a^4*b - (5*B*a*b^4 - 4*A*b^5)*x^4 + 2*(
5*B*a^2*b^3 - 4*A*a*b^4)*x^3 - 6*(5*B*a^3*b^2 - 4*A*a^2*b^3)*x^2 - 12*(4*B*
a^4*b - 3*A*a^3*b^2)*x + 12*(5*B*a^5 - 4*A*a^4*b + (5*B*a^4*b - 4*A*a^3*b^2
)*x)*log(b*x + a))/(b^7*x + a*b^6)
```

giac [**A**] time = 0.16, size = 126, normalized size = 1.12

$$\frac{\left(5\,Ba^4-4\,Aa^3b\right)\log\left(|bx+a|\right)}{b^6}+\frac{Ba^5-Aa^4b}{(bx+a)b^6}+\frac{3\,Bb^6x^4-8\,Bab^5x^3+4\,Ab^6x^3+18\,Ba^2b^4x^2-12\,Aab^5x^2-48\,B}{12\,b^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a^4 - 4*A*a^3*b)*log(abs(b*x + a))/b^6 + (B*a^5 - A*a^4*b)/((b*x + a)*
b^6) + 1/12*(3*B*b^6*x^4 - 8*B*a*b^5*x^3 + 4*A*b^6*x^3 + 18*B*a^2*b^4*x^2 -
 12*A*a*b^5*x^2 - 48*B*a^3*b^3*x + 36*A*a^2*b^4*x)/b^8
```

maple [**A**] time = 0.05, size = 133, normalized size = 1.18

$$\frac{B\,x^4}{4b^2}+\frac{A\,x^3}{3b^2}-\frac{2Ba\,x^3}{3b^3}-\frac{Aa\,x^2}{b^3}+\frac{3B\,a^2x^2}{2b^4}-\frac{A\,a^4}{(bx+a)\,b^5}-\frac{4A\,a^3\ln(bx+a)}{b^5}+\frac{3A\,a^2x}{b^4}+\frac{B\,a^5}{(bx+a)\,b^6}+\frac{5B\,a^4\ln(bx+a)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*B*x^4/b^2+1/3/b^2*A*x^3-2/3/b^3*B*x^3*a-1/b^3*A*x^2*a+3/2/b^4*B*x^2*a^2
+3/b^4*A*a^2*x-4/b^5*B*x*a^3-4*a^3/b^5*ln(b*x+a)*A+5*a^4/b^6*ln(b*x+a)*B-a^
4/b^5/(b*x+a)*A+a^5/b^6/(b*x+a)*B
```

maxima [**A**] time = 0.72, size = 123, normalized size = 1.09

$$\frac{Ba^5-Aa^4b}{b^7x+ab^6}+\frac{3\,Bb^3x^4-4\left(2\,Bab^2-Ab^3\right)x^3+6\left(3\,Ba^2b-2\,Aab^2\right)x^2-12\left(4\,Ba^3-3\,Aa^2b\right)x}{12\,b^5}+\frac{\big(5\,Ba^4-4\,Aa^3b}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^5 - A*a^4*b)/(b^7*x + a*b^6) + 1/12*(3*B*b^3*x^4 - 4*(2*B*a*b^2 - A*b^
3)*x^3 + 6*(3*B*a^2*b - 2*A*a*b^2)*x^2 - 12*(4*B*a^3 - 3*A*a^2*b)*x)/b^5 +
(5*B*a^4 - 4*A*a^3*b)*log(b*x + a)/b^6
```

mupad [**B**] time = 0.06, size = 173, normalized size = 1.53

$$x\left(\frac{2\,a\left(\frac{2\,a\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{b}+\frac{B\,a^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{b^2}\right)+x^3\left(\frac{A}{3\,b^2}-\frac{2\,B\,a}{3\,b^3}\right)-x^2\left(\frac{a\left(\frac{A}{b^2}-\frac{2\,B\,a}{b^3}\right)}{b}+\frac{B\,a^2}{2\,b^4}\right)+\frac{\ln(a+b\,x)\,\big(5\,B}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((2*a*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^4))/b - (a^2*(A/b^2 - (2
*B*a)/b^3))/b^2) + x^3*(A/(3*b^2) - (2*B*a)/(3*b^3)) - x^2*((a*(A/b^2 - (2*
B*a)/b^3))/b + (B*a^2)/(2*b^4)) + (log(a + b*x)*(5*B*a^4 - 4*A*a^3*b))/b^6
+ (B*x^4)/(4*b^2) + (B*a^5 - A*a^4*b)/(b*(a*b^5 + b^6*x))
```

sympy [A] time = 0.46, size = 119, normalized size = 1.05

$$\frac{Bx^4}{4b^2}+\frac{a^3\left(-4Ab+5Ba\right)\log\left(a+bx\right)}{b^6}+x^3\left(\frac{A}{3b^2}-\frac{2Ba}{3b^3}\right)+x^2\left(-\frac{Aa}{b^3}+\frac{3Ba^2}{2b^4}\right)+x\left(\frac{3Aa^2}{b^4}-\frac{4Ba^3}{b^5}\right)+\frac{-Aa^4b+Ba^5}{ab^6+b^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**4/(4*b**2) + a**3*(-4*A*b + 5*B*a)*log(a + b*x)/b**6 + x**3*(A/(3*b**2
) - 2*B*a/(3*b**3)) + x**2*(-A*a/b**3 + 3*B*a**2/(2*b**4)) + x*(3*A*a**2/b*
*4 - 4*B*a**3/b**5) + (-A*a**4*b + B*a**5)/(a*b**6 + b**7*x)
```

3.624 $\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=90

$$\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+bx)}{b^5}-\frac{ax(2Ab-3aB)}{b^4}+\frac{x^2(Ab-2aB)}{2b^3}+\frac{Bx^3}{3b^2}$$

```
[Out] -a*(2*A*b-3*B*a)*x/b^4+1/2*(A*b-2*B*a)*x^2/b^3+1/3*B*x^3/b^2+a^3*(A*b-B*a)/
b^5/(b*x+a)+a^2*(3*A*b-4*B*a)*ln(b*x+a)/b^5
```

Rubi [A] time = 0.08, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+bx)}{b^5}+\frac{x^2(Ab-2aB)}{2b^3}-\frac{ax(2Ab-3aB)}{b^4}+\frac{Bx^3}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a*(2*A*b - 3*a*B)*x)/b^4) + ((A*b - 2*a*B)*x^2)/(2*b^3) + (B*x^3)/(3*b^2
) + (a^3*(A*b - a*B))/(b^5*(a + b*x)) + (a^2*(3*A*b - 4*a*B)*Log[a + b*x])/
b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{a(-2Ab+3aB)}{b^4}+\frac{(Ab-2aB)x}{b^3}+\frac{Bx^2}{b^2}+\frac{a^3(-Ab+aB)}{b^4(a+bx)^2}-\frac{a^2(-3Ab+4aB)}{b^4(a+bx)}\right) d\\ &= -\frac{a(2Ab-3aB)x}{b^4}+\frac{(Ab-2aB)x^2}{2b^3}+\frac{Bx^3}{3b^2}+\frac{a^3(Ab-aB)}{b^5(a+bx)}+\frac{a^2(3Ab-4aB)\log(a+}{b^5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 87, normalized size = 0.97

$$\frac{\frac{6a^3(Ab-aB)}{a+bx}+6a^2(3Ab-4aB)\log(a+bx)+3b^2x^2(Ab-2aB)+6abx(3aB-2Ab)+2b^3Bx^3}{6b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (6*a*b*(-2*A*b + 3*a*B)*x + 3*b^2*(A*b - 2*a*B)*x^2 + 2*b^3*B*x^3 + (6*a^3*
(A*b - a*B))/(a + b*x) + 6*a^2*(3*A*b - 4*a*B)*Log[a + b*x])/(6*b^5)
```

fricas [A] time = 0.83, size = 140, normalized size = 1.56

$$\frac{2\,Bb^4x^4 - 6\,Ba^4 + 6\,Aa^3b - \left(4\,Bab^3 - 3\,Ab^4\right)x^3 + 3\left(4\,Ba^2b^2 - 3\,Aab^3\right)x^2 + 6\left(3\,Ba^3b - 2\,Aa^2b^2\right)x - 6\left(4\,Ba^4 - 3}{6\left(b^6x + ab^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*x^4 - 6*B*a^4 + 6*A*a^3*b - (4*B*a*b^3 - 3*A*b^4)*x^3 + 3*(4*B
*a^2*b^2 - 3*A*a*b^3)*x^2 + 6*(3*B*a^3*b - 2*A*a^2*b^2)*x - 6*(4*B*a^4 - 3*
A*a^3*b + (4*B*a^3*b - 3*A*a^2*b^2)*x)*log(b*x + a))/(b^6*x + a*b^5)
```

giac [A] time = 0.18, size = 104, normalized size = 1.16

$$-\frac{\left(4\,Ba^3 - 3\,Aa^2b\right)\log\left(|bx + a|\right)}{b^5} + \frac{2\,Bb^4x^3 - 6\,Bab^3x^2 + 3\,Ab^4x^2 + 18\,Ba^2b^2x - 12\,Aab^3x}{6\,b^6} - \frac{Ba^4 - Aa^3b}{(bx + a)b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(4*B*a^3 - 3*A*a^2*b)*log(abs(b*x + a))/b^5 + 1/6*(2*B*b^4*x^3 - 6*B*a*b^3
*x^2 + 3*A*b^4*x^2 + 18*B*a^2*b^2*x - 12*A*a*b^3*x)/b^6 - (B*a^4 - A*a^3*b)
/((b*x + a)*b^5)
```

maple [A] time = 0.06, size = 109, normalized size = 1.21

$$\frac{B\,x^3}{3b^2} + \frac{A\,x^2}{2b^2} - \frac{Ba\,x^2}{b^3} + \frac{A\,a^3}{(bx + a)\,b^4} + \frac{3A\,a^2\ln(bx + a)}{b^4} - \frac{2Aax}{b^3} - \frac{B\,a^4}{(bx + a)\,b^5} - \frac{4B\,a^3\ln(bx + a)}{b^5} + \frac{3B\,a^2x}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*B/b^2*x^3+1/2/b^2*A*x^2-1/b^3*a*B*x^2-2/b^3*A*a*x+3/b^4*B*x*a^2+3*a^2/b
^4*ln(b*x+a)*A-4*a^3/b^5*ln(b*x+a)*B+a^3/b^4/(b*x+a)*A-a^4/b^5/(b*x+a)*B
```

maxima [A] time = 0.57, size = 101, normalized size = 1.12

$$-\frac{Ba^4 - Aa^3b}{b^6x + ab^5} + \frac{2\,Bb^2x^3 - 3\left(2\,Bab - Ab^2\right)x^2 + 6\left(3\,Ba^2 - 2\,Aab\right)x}{6\,b^4} - \frac{\left(4\,Ba^3 - 3\,Aa^2b\right)\log\left(bx + a\right)}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^4 - A*a^3*b)/(b^6*x + a*b^5) + 1/6*(2*B*b^2*x^3 - 3*(2*B*a*b - A*b^2)
*x^2 + 6*(3*B*a^2 - 2*A*a*b)*x)/b^4 - (4*B*a^3 - 3*A*a^2*b)*log(b*x + a)/b^
5
```

mupad [B] time = 0.05, size = 115, normalized size = 1.28

$$x^2\left(\frac{A}{2\,b^2} - \frac{B\,a}{b^3}\right) - x\left(\frac{2\,a\left(\frac{A}{b^2} - \frac{2\,B\,a}{b^3}\right)}{b} + \frac{B\,a^2}{b^4}\right) - \frac{\ln\left(a + b\,x\right)\left(4\,B\,a^3 - 3\,A\,a^2\,b\right)}{b^5} + \frac{B\,x^3}{3\,b^2} - \frac{B\,a^4 - A\,a^3\,b}{b\left(x\,b^5 + a\,b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*(A/(2*b^2) - (B*a)/b^3) - x*((2*a*(A/b^2 - (2*B*a)/b^3))/b + (B*a^2)/b^
4) - (log(a + b*x)*(4*B*a^3 - 3*A*a^2*b))/b^5 + (B*x^3)/(3*b^2) - (B*a^4 -
A*a^3*b)/(b*(a*b^4 + b^5*x))
```

sympy [A] time = 0.42, size = 92, normalized size = 1.02

$$\frac{Bx^3}{3b^2} - \frac{a^2(-3Ab+4Ba)\log(a+bx)}{b^5} + x^2\left(\frac{A}{2b^2} - \frac{Ba}{b^3}\right) + x\left(-\frac{2Aa}{b^3} + \frac{3Ba^2}{b^4}\right) + \frac{Aa^3b - Ba^4}{ab^5 + b^6x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**3/(3*b**2) - a**2*(-3*A*b + 4*B*a)*log(a + b*x)/b**5 + x**2*(A/(2*b**2
) - B*a/b**3) + x*(-2*A*a/b**3 + 3*B*a**2/b**4) + (A*a**3*b - B*a**4)/(a*b*
*5 + b**6*x)
```

3.625 $\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=69

$$-\frac{a^2(Ab-aB)}{b^4(a+bx)}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}+\frac{x(Ab-2aB)}{b^3}+\frac{Bx^2}{2b^2}$$

```
[Out] (A*b-2*B*a)*x/b^3+1/2*B*x^2/b^2-a^2*(A*b-B*a)/b^4/(b*x+a)-a*(2*A*b-3*B*a)*l
n(b*x+a)/b^4
```

Rubi [A] time = 0.06, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{a^2(Ab-aB)}{b^4(a+bx)}+\frac{x(Ab-2aB)}{b^3}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}+\frac{Bx^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - 2*a*B)*x)/b^3 + (B*x^2)/(2*b^2) - (a^2*(A*b - a*B))/(b^4*(a + b*x))
 - (a*(2*A*b - 3*a*B)*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^2(A+Bx)}{(a+bx)^2}\,dx\\ &= \int \left(\frac{Ab-2aB}{b^3}+\frac{Bx}{b^2}-\frac{a^2(-Ab+aB)}{b^3(a+bx)^2}+\frac{a(-2Ab+3aB)}{b^3(a+bx)}\right)dx\\ &= \frac{(Ab-2aB)x}{b^3}+\frac{Bx^2}{2b^2}-\frac{a^2(Ab-aB)}{b^4(a+bx)}-\frac{a(2Ab-3aB)\log(a+bx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 66, normalized size = 0.96

$$\frac{\frac{2a^2(aB-Ab)}{a+bx}+2bx(Ab-2aB)+2a(3aB-2Ab)\log(a+bx)+b^2Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*b*(A*b - 2*a*B)*x + b^2*B*x^2 + (2*a^2*(-(A*b) + a*B))/(a + b*x) + 2*a*(
-2*A*b + 3*a*B)*Log[a + b*x])/(2*b^4)
```

fricas [A] time = 0.90, size = 113, normalized size = 1.64

$$\frac{Bb^3x^3 + 2\,Ba^3 - 2\,Aa^2b - \left(3\,Bab^2 - 2\,Ab^3\right)x^2 - 2\left(2\,Ba^2b - Aab^2\right)x + 2\left(3\,Ba^3 - 2\,Aa^2b + \left(3\,Ba^2b - 2\,Aab^2\right)x}{2\left(b^5x + ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*x^3 + 2*B*a^3 - 2*A*a^2*b - (3*B*a*b^2 - 2*A*b^3)*x^2 - 2*(2*B*a
^2*b - A*a*b^2)*x + 2*(3*B*a^3 - 2*A*a^2*b + (3*B*a^2*b - 2*A*a*b^2)*x)*log
(b*x + a))/(b^5*x + a*b^4)
```

giac [A] time = 0.16, size = 75, normalized size = 1.09

$$\frac{\left(3\,Ba^2 - 2\,Aab\right)\log\left(|bx + a|\right)}{b^4} + \frac{Bb^2x^2 - 4\,Babx + 2\,Ab^2x}{2\,b^4} + \frac{Ba^3 - Aa^2b}{(bx + a)b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (3*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^4 + 1/2*(B*b^2*x^2 - 4*B*a*b*x + 2*
A*b^2*x)/b^4 + (B*a^3 - A*a^2*b)/((b*x + a)*b^4)
```

maple [A] time = 0.06, size = 84, normalized size = 1.22

$$\frac{B\,x^2}{2b^2} - \frac{A\,a^2}{(bx + a)\,b^3} - \frac{2Aa\ln\left(bx + a\right)}{b^3} + \frac{Ax}{b^2} + \frac{B\,a^3}{(bx + a)\,b^4} + \frac{3B\,a^2\ln\left(bx + a\right)}{b^4} - \frac{2Bax}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/2*B*x^2/b^2+1/b^2*A*x-2/b^3*B*a*x-2*a/b^3*ln(b*x+a)*A+3*a^2/b^4*ln(b*x+a)
*B-a^2/b^3/(b*x+a)*A+a^3/b^4/(b*x+a)*B
```

maxima [A] time = 0.47, size = 74, normalized size = 1.07

$$\frac{Ba^3 - Aa^2b}{b^5x + ab^4} + \frac{Bbx^2 - 2\,(2\,Ba - Ab)x}{2\,b^3} + \frac{\left(3\,Ba^2 - 2\,Aab\right)\log\left(bx + a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^3 - A*a^2*b)/(b^5*x + a*b^4) + 1/2*(B*b*x^2 - 2*(2*B*a - A*b)*x)/b^3 +
 (3*B*a^2 - 2*A*a*b)*log(b*x + a)/b^4
```

mupad [B] time = 0.06, size = 77, normalized size = 1.12

$$x\left(\frac{A}{b^2} - \frac{2\,B\,a}{b^3}\right) + \frac{B\,x^2}{2\,b^2} + \frac{B\,a^3 - A\,a^2\,b}{b\,\left(x\,b^4 + a\,b^3\right)} + \frac{\ln\left(a + b\,x\right)\,\left(3\,B\,a^2 - 2\,A\,a\,b\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*(A/b^2 - (2*B*a)/b^3) + (B*x^2)/(2*b^2) + (B*a^3 - A*a^2*b)/(b*(a*b^3 + b
^4*x)) + (log(a + b*x)*(3*B*a^2 - 2*A*a*b))/b^4
```

sympy [A] time = 0.36, size = 68, normalized size = 0.99

$$\frac{Bx^2}{2b^2}+\frac{a\left(-2Ab+3Ba\right)\log\left(a+bx\right)}{b^4}+x\left(\frac{A}{b^2}-\frac{2Ba}{b^3}\right)+\frac{-Aa^2b+Ba^3}{ab^4+b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x**2/(2*b**2) + a*(-2*A*b + 3*B*a)*log(a + b*x)/b**4 + x*(A/b**2 - 2*B*a/
b**3) + (-A*a**2*b + B*a**3)/(a*b**4 + b**5*x)
```

3.626 $\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=45

$$\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}+\frac{Bx}{b^2}$$

```
[Out] B*x/b^2+a*(A*b-B*a)/b^3/(b*x+a)+(A*b-2*B*a)*ln(b*x+a)/b^3
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 77\}$

$$\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}+\frac{Bx}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*x)/b^2 + (a*(A*b - a*B))/(b^3*(a + b*x)) + ((A*b - 2*a*B)*Log[a + b*x])/
b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{a^2+2abx+b^2x^2}\,dx&=\int \frac{x(A+Bx)}{(a+bx)^2}\,dx\\&=\int \left(\frac{B}{b^2}+\frac{a(-Ab+aB)}{b^2(a+bx)^2}+\frac{Ab-2aB}{b^2(a+bx)}\right)dx\\&=\frac{Bx}{b^2}+\frac{a(Ab-aB)}{b^3(a+bx)}+\frac{(Ab-2aB)\log(a+bx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 41, normalized size = 0.91

$$\frac{\frac{a(Ab-aB)}{a+bx}+(Ab-2aB)\log(a+bx)+bBx}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*B*x + (a*(A*b - a*B))/(a + b*x) + (A*b - 2*a*B)*Log[a + b*x])/b^3
```

fricas [A] time = 0.64, size = 72, normalized size = 1.60

$$\frac{Bb^2x^2 + Babx - Ba^2 + Aab - \left(2\,Ba^2 - Aab + \left(2\,Bab - Ab^2\right)x\right)\log\left(bx + a\right)}{b^4x + ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (B*b^2*x^2 + B*a*b*x - B*a^2 + A*a*b - (2*B*a^2 - A*a*b + (2*B*a*b - A*b^2)
*x)*log(b*x + a))/(b^4*x + a*b^3)
```

giac [A] time = 0.18, size = 51, normalized size = 1.13

$$\frac{Bx}{b^2} - \frac{(2\,Ba - Ab)\log\left(|bx + a|\right)}{b^3} - \frac{Ba^2 - Aab}{(bx + a)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] B*x/b^2 - (2*B*a - A*b)*log(abs(b*x + a))/b^3 - (B*a^2 - A*a*b)/((b*x + a)*
b^3)
```

maple [A] time = 0.06, size = 61, normalized size = 1.36

$$\frac{Aa}{(bx + a)\,b^2} + \frac{A\ln\left(bx + a\right)}{b^2} - \frac{B\,a^2}{(bx + a)\,b^3} - \frac{2Ba\ln\left(bx + a\right)}{b^3} + \frac{Bx}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] B*x/b^2+1/b^2*ln(b*x+a)*A-2/b^3*ln(b*x+a)*B*a+a/b^2/(b*x+a)*A-a^2/b^3/(b*x+
a)*B
```

maxima [A] time = 0.49, size = 53, normalized size = 1.18

$$-\frac{Ba^2 - Aab}{b^4x + ab^3} + \frac{Bx}{b^2} - \frac{(2\,Ba - Ab)\log\left(bx + a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^2 - A*a*b)/(b^4*x + a*b^3) + B*x/b^2 - (2*B*a - A*b)*log(b*x + a)/b^3
```

mupad [B] time = 1.10, size = 54, normalized size = 1.20

$$\frac{B\,x}{b^2} - \frac{B\,a^2 - A\,a\,b}{b\,\left(x\,b^3 + a\,b^2\right)} + \frac{\ln\left(a + b\,x\right)\,\left(A\,b - 2\,B\,a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (B*x)/b^2 - (B*a^2 - A*a*b)/(b*(a*b^2 + b^3*x)) + (log(a + b*x)*(A*b - 2*B*
a))/b^3
```

sympy [A] time = 0.28, size = 44, normalized size = 0.98

$$\frac{Bx}{b^2} + \frac{Aab - Ba^2}{ab^3 + b^4x} - \frac{(-Ab + 2Ba)\log\left(a + bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*x/b**2 + (A*a*b - B*a**2)/(a*b**3 + b**4*x) - (-A*b + 2*B*a)*log(a + b*x)
/b**3
```

3.627 $\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=32

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

```
[Out] (-A*b+B*a)/b^2/(b*x+a)+B*ln(b*x+a)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((A*b - a*B)/(b^2*(a + b*x))) + (B*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx &= \int \frac{A+Bx}{(a+bx)^2}\,dx\\ &= \int \left(\frac{Ab-aB}{b(a+bx)^2}+\frac{B}{b(a+bx)}\right)dx\\ &= -\frac{Ab-aB}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{aB-Ab}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-(A*b) + a*B)/(b^2*(a + b*x)) + (B*Log[a + b*x])/b^2
```

fricas [A] time = 0.88, size = 37, normalized size = 1.16

$$\frac{Ba-Ab+(Bbx+Ba)\log(bx+a)}{b^3x+ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (B*a - A*b + (B*b*x + B*a)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [A] time = 0.15, size = 32, normalized size = 1.00

$$\frac{B\log\left(|bx+a|\right)}{b^2}+\frac{Ba-Ab}{(bx+a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] B*log(abs(b*x + a))/b^2 + (B*a - A*b)/((b*x + a)*b^2)
```

maple [A] time = 0.06, size = 39, normalized size = 1.22

$$-\frac{A}{(bx+a)\,b}+\frac{Ba}{(bx+a)\,b^2}+\frac{B\ln\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] B*ln(b*x+a)/b^2-1/b/(b*x+a)*A+1/b^2/(b*x+a)*B*a
```

maxima [A] time = 0.48, size = 34, normalized size = 1.06

$$\frac{Ba-Ab}{b^3x+ab^2}+\frac{B\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] (B*a - A*b)/(b^3*x + a*b^2) + B*log(b*x + a)/b^2
```

mupad [B] time = 1.08, size = 32, normalized size = 1.00

$$\frac{B\,\ln\left(a+b\,x\right)}{b^2}-\frac{A\,b-B\,a}{b^2\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] (B*log(a + b*x))/b^2 - (A*b - B*a)/(b^2*(a + b*x))
```

sympy [A] time = 0.19, size = 27, normalized size = 0.84

$$\frac{B\log\left(a+bx\right)}{b^2}+\frac{-Ab+Ba}{ab^2+b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] B*log(a + b*x)/b**2 + (-A*b + B*a)/(a*b**2 + b**3*x)
```

3.628 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=42

$$-\frac{A\log(a+bx)}{a^2}+\frac{A\log(x)}{a^2}+\frac{Ab-aB}{ab(a+bx)}$$

```
[Out] (A*b-B*a)/a/b/(b*x+a)+A*ln(x)/a^2-A*ln(b*x+a)/a^2
```

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$-\frac{A\log(a+bx)}{a^2}+\frac{A\log(x)}{a^2}+\frac{Ab-aB}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (A*b - a*B)/(a*b*(a + b*x)) + (A*Log[x])/a^2 - (A*Log[a + b*x])/a^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)}\,dx&=\int \frac{A+Bx}{x(a+bx)^2}\,dx\\&=\int \left(\frac{A}{a^2x}+\frac{-Ab+aB}{a(a+bx)^2}-\frac{Ab}{a^2(a+bx)}\right)dx\\&=\frac{Ab-aB}{ab(a+bx)}+\frac{A\log(x)}{a^2}-\frac{A\log(a+bx)}{a^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 38, normalized size = 0.90

$$\frac{\frac{a(Ab-aB)}{b(a+bx)}-A\log(a+bx)+A\log(x)}{a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((a*(A*b - a*B))/(b*(a + b*x)) + A*Log[x] - A*Log[a + b*x])/a^2
```

fricas [**A**] time = 1.03, size = 62, normalized size = 1.48

$$-\frac{Ba^2 - Aab + \left(Ab^2x + Aab\right)\log\left(bx + a\right) - \left(Ab^2x + Aab\right)\log(x)}{a^2b^2x + a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -(B*a^2 - A*a*b + (A*b^2*x + A*a*b)*log(b*x + a) - (A*b^2*x + A*a*b)*log(x)
)/(a^2*b^2*x + a^3*b)
```

giac [**A**] time = 0.15, size = 48, normalized size = 1.14

$$-\frac{A\log\left(|bx + a|\right)}{a^2} + \frac{A\log\left(|x|\right)}{a^2} - \frac{Ba^2 - Aab}{(bx + a)a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -A*log(abs(b*x + a))/a^2 + A*log(abs(x))/a^2 - (B*a^2 - A*a*b)/((b*x + a)*a
^2*b)
```

maple [**A**] time = 0.06, size = 46, normalized size = 1.10

$$\frac{A}{(bx + a)\,a} + \frac{A\ln(x)}{a^2} - \frac{A\ln\left(bx + a\right)}{a^2} - \frac{B}{(bx + a)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/a/(b*x+a)*A-1/b/(b*x+a)*B-A*ln(b*x+a)/a^2+A/a^2*ln(x)
```

maxima [**A**] time = 0.61, size = 44, normalized size = 1.05

$$-\frac{Ba - Ab}{ab^2x + a^2b} - \frac{A\log\left(bx + a\right)}{a^2} + \frac{A\log(x)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a - A*b)/(a*b^2*x + a^2*b) - A*log(b*x + a)/a^2 + A*log(x)/a^2
```

mupad [**B**] time = 0.07, size = 39, normalized size = 0.93

$$\frac{A\,b - B\,a}{a\,b\,\left(a + b\,x\right)} - \frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a} + 1\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (A*b - B*a)/(a*b*(a + b*x)) - (2*A*atanh((2*b*x)/a + 1))/a^2
```

sympy [**A**] time = 0.29, size = 32, normalized size = 0.76

$$\frac{A\left(\log\left(x\right) - \log\left(\frac{a}{b} + x\right)\right)}{a^2} + \frac{Ab - Ba}{a^2b + ab^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*(log(x) - log(a/b + x))/a**2 + (A*b - B*a)/(a**2*b + a*b**2*x)
```

3.629 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=65

$$-\frac{\log(x)(2Ab-aB)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}-\frac{Ab-aB}{a^2(a+bx)}-\frac{A}{a^2x}$$

```
[Out] -A/a^2/x+(-A*b+B*a)/a^2/(b*x+a)-(2*A*b-B*a)*ln(x)/a^3+(2*A*b-B*a)*ln(b*x+a)
/a^3
```

Rubi [A] time = 0.05, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$-\frac{Ab-aB}{a^2(a+bx)}-\frac{\log(x)(2Ab-aB)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}-\frac{A}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(A/(a^2*x)) - (A*b - a*B)/(a^2*(a + b*x)) - ((2*A*b - a*B)*Log[x])/a^3 + (
(2*A*b - a*B)*Log[a + b*x])/a^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^2}+\frac{-2Ab+aB}{a^3x}-\frac{b(-Ab+aB)}{a^2(a+bx)^2}-\frac{b(-2Ab+aB)}{a^3(a+bx)}\right)dx\\ &= -\frac{A}{a^2x}-\frac{Ab-aB}{a^2(a+bx)}-\frac{(2Ab-aB)\log(x)}{a^3}+\frac{(2Ab-aB)\log(a+bx)}{a^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 56, normalized size = 0.86

$$\frac{\frac{a(aB-Ab)}{a+bx}+\log(x)(aB-2Ab)+(2Ab-aB)\log(a+bx)-\frac{aA}{x}}{a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((a*A)/x) + (a*(-(A*b) + a*B))/(a + b*x) + (-2*A*b + a*B)*Log[x] + (2*A*b
 - a*B)*Log[a + b*x])/a^3
```

fricas [**A**] time = 1.02, size = 107, normalized size = 1.65

$$-\frac{Aa^2 - (Ba^2 - 2\,Aab)x + ((Bab - 2\,Ab^2)x^2 + (Ba^2 - 2\,Aab)x)\log(bx + a) - ((Bab - 2\,Ab^2)x^2 + (Ba^2 - 2\,A}{a^3bx^2 + a^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -(A*a^2 - (B*a^2 - 2*A*a*b)*x + ((B*a*b - 2*A*b^2)*x^2 + (B*a^2 - 2*A*a*b)*
x)*log(b*x + a) - ((B*a*b - 2*A*b^2)*x^2 + (B*a^2 - 2*A*a*b)*x)*log(x))/(a^
3*b*x^2 + a^4*x)
```

giac [**A**] time = 0.15, size = 71, normalized size = 1.09

$$\frac{(Ba - 2\,Ab)\log(|x|)}{a^3} + \frac{Bax - 2\,Abx - Aa}{(bx^2 + ax)a^2} - \frac{(Bab - 2\,Ab^2)\log(|bx + a|)}{a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*a - 2*A*b)*log(abs(x))/a^3 + (B*a*x - 2*A*b*x - A*a)/((b*x^2 + a*x)*a^2)
 - (B*a*b - 2*A*b^2)*log(abs(b*x + a))/(a^3*b)
```

maple [**A**] time = 0.06, size = 78, normalized size = 1.20

$$-\frac{Ab}{(bx+a)\,a^2} - \frac{2Ab\ln(x)}{a^3} + \frac{2Ab\ln(bx+a)}{a^3} + \frac{B}{(bx+a)\,a} + \frac{B\ln(x)}{a^2} - \frac{B\ln(bx+a)}{a^2} - \frac{A}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/a^3*ln(b*x+a)*A*b-1/a^2*ln(b*x+a)*B-1/a^2/(b*x+a)*A*b+1/a/(b*x+a)*B-A/a^2
/x-2/a^3*ln(x)*A*b+B/a^2*ln(x)
```

maxima [**A**] time = 0.53, size = 67, normalized size = 1.03

$$-\frac{Aa - (Ba - 2\,Ab)x}{a^2bx^2 + a^3x} - \frac{(Ba - 2\,Ab)\log(bx+a)}{a^3} + \frac{(Ba - 2\,Ab)\log(x)}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(A*a - (B*a - 2*A*b)*x)/(a^2*b*x^2 + a^3*x) - (B*a - 2*A*b)*log(b*x + a)/a
^3 + (B*a - 2*A*b)*log(x)/a^3
```

mupad [**B**] time = 1.12, size = 58, normalized size = 0.89

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,(2\,A\,b - B\,a)}{a^3} - \frac{\frac{A}{a} + \frac{x\,(2\,A\,b - B\,a)}{a^2}}{b\,x^2 + a\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(2*A*b - B*a))/a^3 - (A/a + (x*(2*A*b - B*a))/a^2)/
(a*x + b*x^2)
```

sympy [**B**]   time = 0.49, size = 128, normalized size = 1.97

$$\frac{-Aa + x(-2Ab + Ba)}{a^3x + a^2bx^2} + \frac{(-2Ab + Ba)\log\left(x + \frac{-2Aab+Ba^2-a(-2Ab+Ba)}{-4Ab^2+2Bab}\right)}{a^3} - \frac{(-2Ab + Ba)\log\left(x + \frac{-2Aab+Ba^2+a(-2Ab+Ba)}{-4Ab^2+2Bab}\right.}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a + x*(-2*A*b + B*a))/(a**3*x + a**2*b*x**2) + (-2*A*b + B*a)*log(x + (
-2*A*a*b + B*a**2 - a*(-2*A*b + B*a))/(-4*A*b**2 + 2*B*a*b))/a**3 - (-2*A*b
 + B*a)*log(x + (-2*A*a*b + B*a**2 + a*(-2*A*b + B*a))/(-4*A*b**2 + 2*B*a*b
))/a**3
```

3.630 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=85

$$\frac{b\log(x)(3Ab-2aB)}{a^4}-\frac{b(3Ab-2aB)\log(a+bx)}{a^4}+\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}-\frac{A}{2a^2x^2}$$

```
[Out] -1/2*A/a^2/x^2+(2*A*b-B*a)/a^3/x+b*(A*b-B*a)/a^3/(b*x+a)+b*(3*A*b-2*B*a)*ln
(x)/a^4-b*(3*A*b-2*B*a)*ln(b*x+a)/a^4
```

Rubi [A] time = 0.07, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}+\frac{b\log(x)(3Ab-2aB)}{a^4}-\frac{b(3Ab-2aB)\log(a+bx)}{a^4}-\frac{A}{2a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(2*a^2*x^2) + (2*A*b - a*B)/(a^3*x) + (b*(A*b - a*B))/(a^3*(a + b*x)) +
(b*(3*A*b - 2*a*B)*Log[x])/a^4 - (b*(3*A*b - 2*a*B)*Log[a + b*x])/a^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^3(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^3}+\frac{-2Ab+aB}{a^3x^2}-\frac{b(-3Ab+2aB)}{a^4x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^2}+\frac{b^2(-3Ab+2aB)}{a^4(a+bx)}\right.\\ &= -\frac{A}{2a^2x^2}+\frac{2Ab-aB}{a^3x}+\frac{b(Ab-aB)}{a^3(a+bx)}+\frac{b(3Ab-2aB)\log(x)}{a^4}-\frac{b(3Ab-2aB)\log}{a^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 85, normalized size = 1.00

$$\frac{-\frac{a\left(a^2(A+2Bx)+abx(4Bx-3A)-6Ab^2x^2\right)}{x^2(a+bx)}+2b\log(x)(3Ab-2aB)+2b(2aB-3Ab)\log(a+bx)}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((a*(-6*A*b^2*x^2 + a^2*(A + 2*B*x) + a*b*x*(-3*A + 4*B*x)))/(x^2*(a + b*
x))) + 2*b*(3*A*b - 2*a*B)*Log[x] + 2*b*(-3*A*b + 2*a*B)*Log[a + b*x])/(2*a
^4)
```

fricas [A] time = 1.36, size = 150, normalized size = 1.76

$$-\frac{Aa^{3}+2\left(2\,Ba^{2}b-3\,Aab^{2}\right)x^{2}+\left(2\,Ba^{3}-3\,Aa^{2}b\right)x-2\left(\left(2\,Bab^{2}-3\,Ab^{3}\right)x^{3}+\left(2\,Ba^{2}b-3\,Aab^{2}\right)x^{2}\right)\log\left(bx+a\right)}{2\left(a^{4}bx^{3}+a^{5}x^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*x^2 + (2*B*a^3 - 3*A*a^2*b)*x - 2*(
(2*B*a*b^2 - 3*A*b^3)*x^3 + (2*B*a^2*b - 3*A*a*b^2)*x^2)*log(b*x + a) + 2*(
(2*B*a*b^2 - 3*A*b^3)*x^3 + (2*B*a^2*b - 3*A*a*b^2)*x^2)*log(x))/(a^4*b*x^3
 + a^5*x^2)
```

giac [A] time = 0.16, size = 106, normalized size = 1.25

$$-\frac{\left(2\,Bab-3\,Ab^{2}\right)\log\left(|x|\right)}{a^{4}}+\frac{\left(2\,Bab^{2}-3\,Ab^{3}\right)\log\left(|bx+a|\right)}{a^{4}b}-\frac{Aa^{3}+2\left(2\,Ba^{2}b-3\,Aab^{2}\right)x^{2}+\left(2\,Ba^{3}-3\,Aa^{2}b\right)x}{2\,(bx+a)a^{4}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(2*B*a*b - 3*A*b^2)*log(abs(x))/a^4 + (2*B*a*b^2 - 3*A*b^3)*log(abs(b*x +
a))/(a^4*b) - 1/2*(A*a^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*x^2 + (2*B*a^3 - 3*A*a
^2*b)*x)/((b*x + a)*a^4*x^2)
```

maple [A] time = 0.06, size = 107, normalized size = 1.26

$$\frac{A\,b^{2}}{\left(bx+a\right)a^{3}}+\frac{3A\,b^{2}\ln(x)}{a^{4}}-\frac{3A\,b^{2}\ln\left(bx+a\right)}{a^{4}}-\frac{Bb}{\left(bx+a\right)a^{2}}-\frac{2Bb\ln(x)}{a^{3}}+\frac{2Bb\ln\left(bx+a\right)}{a^{3}}+\frac{2Ab}{a^{3}x}-\frac{B}{a^{2}x}-\frac{A}{2a^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -3*b^2/a^4*ln(b*x+a)*A+2*b/a^3*ln(b*x+a)*B+b^2/a^3/(b*x+a)*A-b/a^2/(b*x+a)*
B-1/2*A/a^2/x^2+2*A/a^3*b/x-B/a^2/x+3*b^2/a^4*ln(x)*A-2*b/a^3*ln(x)*B
```

maxima [A] time = 0.59, size = 99, normalized size = 1.16

$$-\frac{Aa^{2}+2\left(2\,Bab-3\,Ab^{2}\right)x^{2}+\left(2\,Ba^{2}-3\,Aab\right)x}{2\left(a^{3}bx^{3}+a^{4}x^{2}\right)}+\frac{\left(2\,Bab-3\,Ab^{2}\right)\log\left(bx+a\right)}{a^{4}}-\frac{\left(2\,Bab-3\,Ab^{2}\right)\log(x)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/2*(A*a^2 + 2*(2*B*a*b - 3*A*b^2)*x^2 + (2*B*a^2 - 3*A*a*b)*x)/(a^3*b*x^3
 + a^4*x^2) + (2*B*a*b - 3*A*b^2)*log(b*x + a)/a^4 - (2*B*a*b - 3*A*b^2)*lo
g(x)/a^4
```

mupad [B] time = 1.14, size = 104, normalized size = 1.22

$$\frac{\frac{x\,(3\,A\,b-2\,B\,a)}{2\,a^2}-\frac{A}{2\,a}+\frac{b\,x^2\,(3\,A\,b-2\,B\,a)}{a^3}}{b\,x^3+a\,x^2}-\frac{2\,b\,\mathrm{atanh}\left(\frac{b\,(3\,A\,b-2\,B\,a)\,(a+2\,b\,x)}{a\,\left(3\,A\,b^2-2\,B\,a\,b\right)}\right)\,(3\,A\,b-2\,B\,a)}{a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((x*(3*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (b*x^2*(3*A*b - 2*B*a))/a^3)/(a*x^
2 + b*x^3) - (2*b*atanh((b*(3*A*b - 2*B*a)*(a + 2*b*x))/(a*(3*A*b^2 - 2*B*a
*b)))*(3*A*b - 2*B*a))/a^4
```

sympy [B] time = 0.59, size = 184, normalized size = 2.16

$$\frac{-Aa^2 + x^2\left(6Ab^2 - 4Bab\right) + x\left(3Aab - 2Ba^2\right)}{2a^4x^2 + 2a^3bx^3} - \frac{b\left(-3Ab + 2Ba\right)\log\left(x + \frac{-3Aab^2+2Ba^2b-ab(-3Ab+2Ba)}{-6Ab^3+4Bab^2}\right)}{a^4} + \frac{b\left(-3Ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a**2 + x**2*(6*A*b**2 - 4*B*a*b) + x*(3*A*a*b - 2*B*a**2))/(2*a**4*x**2
 + 2*a**3*b*x**3) - b*(-3*A*b + 2*B*a)*log(x + (-3*A*a*b**2 + 2*B*a**2*b -
a*b*(-3*A*b + 2*B*a))/(-6*A*b**3 + 4*B*a*b**2))/a**4 + b*(-3*A*b + 2*B*a)*l
og(x + (-3*A*a*b**2 + 2*B*a**2*b + a*b*(-3*A*b + 2*B*a))/(-6*A*b**3 + 4*B*a
*b**2))/a**4
```

3.631 $\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=113

$$-\frac{b^2\log(x)(4Ab-3aB)}{a^5}+\frac{b^2(4Ab-3aB)\log(a+bx)}{a^5}-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b(3Ab-2aB)}{a^4x}+\frac{2Ab-aB}{2a^3x^2}-\frac{A}{3a^2x^3}$$

```
[Out] -1/3*A/a^2/x^3+1/2*(2*A*b-B*a)/a^3/x^2-b*(3*A*b-2*B*a)/a^4/x-b^2*(A*b-B*a)/
a^4/(b*x+a)-b^2*(4*A*b-3*B*a)*ln(x)/a^5+b^2*(4*A*b-3*B*a)*ln(b*x+a)/a^5
```

Rubi [A] time = 0.09, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b^2\log(x)(4Ab-3aB)}{a^5}+\frac{b^2(4Ab-3aB)\log(a+bx)}{a^5}+\frac{2Ab-aB}{2a^3x^2}-\frac{b(3Ab-2aB)}{a^4x}-\frac{A}{3a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(3*a^2*x^3) + (2*A*b - a*B)/(2*a^3*x^2) - (b*(3*A*b - 2*a*B))/(a^4*x) -
(b^2*(A*b - a*B))/(a^4*(a + b*x)) - (b^2*(4*A*b - 3*a*B)*Log[x])/a^5 + (b^2
*(4*A*b - 3*a*B)*Log[a + b*x])/a^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^4(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^4}+\frac{-2Ab+aB}{a^3x^3}-\frac{b(-3Ab+2aB)}{a^4x^2}+\frac{b^2(-4Ab+3aB)}{a^5x}-\frac{b^3(-Ab+aB)}{a^4(a+bx)^2}-\right.\\ &= -\frac{A}{3a^2x^3}+\frac{2Ab-aB}{2a^3x^2}-\frac{b(3Ab-2aB)}{a^4x}-\frac{b^2(Ab-aB)}{a^4(a+bx)}-\frac{b^2(4Ab-3aB)\log(x)}{a^5}+\end{aligned}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.94

$$\frac{-\frac{2a^3A}{x^3}-\frac{3a^2(aB-2Ab)}{x^2}+\frac{6ab^2(aB-Ab)}{a+bx}+6b^2\log(x)(3aB-4Ab)+6b^2(4Ab-3aB)\log(a+bx)+\frac{6ab(2aB-3Ab)}{x}}{6a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-2*a^3*A)/x^3 - (3*a^2*(-2*A*b + a*B))/x^2 + (6*a*b*(-3*A*b + 2*a*B))/x +
 (6*a*b^2*(-(A*b) + a*B))/(a + b*x) + 6*b^2*(-4*A*b + 3*a*B)*Log[x] + 6*b^2
*(4*A*b - 3*a*B)*Log[a + b*x])/(6*a^5)
```

fricas [A] time = 0.84, size = 179, normalized size = 1.58

$$-\frac{2\,Aa^4 - 6\,\left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3 - 3\,\left(3\,Ba^3b - 4\,Aa^2b^2\right)x^2 + \left(3\,Ba^4 - 4\,Aa^3b\right)x + 6\,\left(\left(3\,Bab^3 - 4\,Ab^4\right)x^4 + (3}{6\,\left(a^5bx^4 + a^6x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*A*a^4 - 6*(3*B*a^2*b^2 - 4*A*a*b^3)*x^3 - 3*(3*B*a^3*b - 4*A*a^2*b^
2)*x^2 + (3*B*a^4 - 4*A*a^3*b)*x + 6*((3*B*a*b^3 - 4*A*b^4)*x^4 + (3*B*a^2*
b^2 - 4*A*a*b^3)*x^3)*log(b*x + a) - 6*((3*B*a*b^3 - 4*A*b^4)*x^4 + (3*B*a^
2*b^2 - 4*A*a*b^3)*x^3)*log(x))/(a^5*b*x^4 + a^6*x^3)
```

giac [A] time = 0.16, size = 133, normalized size = 1.18

$$\frac{\left(3\,Bab^2 - 4\,Ab^3\right)\log\left(|x|\right)}{a^5} - \frac{\left(3\,Bab^3 - 4\,Ab^4\right)\log\left(|bx + a|\right)}{a^5b} - \frac{2\,Aa^4 - 6\,\left(3\,Ba^2b^2 - 4\,Aab^3\right)x^3 - 3\,(3\,Ba^3b - 4\,Aa}{6\,(bx + a)a^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (3*B*a*b^2 - 4*A*b^3)*log(abs(x))/a^5 - (3*B*a*b^3 - 4*A*b^4)*log(abs(b*x +
 a))/(a^5*b) - 1/6*(2*A*a^4 - 6*(3*B*a^2*b^2 - 4*A*a*b^3)*x^3 - 3*(3*B*a^3*
b - 4*A*a^2*b^2)*x^2 + (3*B*a^4 - 4*A*a^3*b)*x)/((b*x + a)*a^5*x^3)
```

maple [A] time = 0.06, size = 134, normalized size = 1.19

$$-\frac{A\,b^3}{(bx + a)\,a^4} - \frac{4A\,b^3\ln(x)}{a^5} + \frac{4A\,b^3\ln\left(bx + a\right)}{a^5} + \frac{B\,b^2}{(bx + a)\,a^3} + \frac{3B\,b^2\ln(x)}{a^4} - \frac{3B\,b^2\ln\left(bx + a\right)}{a^4} - \frac{3A\,b^2}{a^4x} + \frac{2Bb}{a^3x} + \frac{Ab}{a^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 4*b^3/a^5*ln(b*x+a)*A-3*b^2/a^4*ln(b*x+a)*B-b^3/a^4/(b*x+a)*A+b^2/a^3/(b*x+
a)*B-1/3*A/a^2/x^3+1/a^3/x^2*A*b-1/2/a^2/x^2*B-3*b^2/a^4/x*A+2*b/a^3/x*B-4*
A/a^5*b^3*ln(x)+3*B/a^4*b^2*ln(x)
```

maxima [A] time = 0.50, size = 128, normalized size = 1.13

$$-\frac{2\,Aa^3 - 6\,\left(3\,Bab^2 - 4\,Ab^3\right)x^3 - 3\,\left(3\,Ba^2b - 4\,Aab^2\right)x^2 + \left(3\,Ba^3 - 4\,Aa^2b\right)x}{6\,\left(a^4bx^4 + a^5x^3\right)} - \frac{\left(3\,Bab^2 - 4\,Ab^3\right)\log\left(bx + a\right)}{a^5} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/6*(2*A*a^3 - 6*(3*B*a*b^2 - 4*A*b^3)*x^3 - 3*(3*B*a^2*b - 4*A*a*b^2)*x^2
 + (3*B*a^3 - 4*A*a^2*b)*x)/(a^4*b*x^4 + a^5*x^3) - (3*B*a*b^2 - 4*A*b^3)*l
og(b*x + a)/a^5 + (3*B*a*b^2 - 4*A*b^3)*log(x)/a^5
```

mupad [B] time = 0.11, size = 131, normalized size = 1.16

$$\frac{2\,b^2\,\mathrm{atanh}\left(\frac{b^2\,(4\,A\,b-3\,B\,a)\,(a+2\,b\,x)}{a\,\left(4\,A\,b^3-3\,B\,a\,b^2\right)}\right)\,(4\,A\,b-3\,B\,a)}{a^5} - \frac{\frac{A}{3\,a}-\frac{x\,(4\,A\,b-3\,B\,a)}{6\,a^2}+\frac{b^2\,x^3\,(4\,A\,b-3\,B\,a)}{a^4}+\frac{b\,x^2\,(4\,A\,b-3\,B\,a)}{2\,a^3}}{b\,x^4+a\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^2*atanh((b^2*(4*A*b - 3*B*a)*(a + 2*b*x))/(a*(4*A*b^3 - 3*B*a*b^2)))*(
4*A*b - 3*B*a))/a^5 - (A/(3*a) - (x*(4*A*b - 3*B*a))/(6*a^2) + (b^2*x^3*(4*
A*b - 3*B*a))/a^4 + (b*x^2*(4*A*b - 3*B*a))/(2*a^3))/(a*x^3 + b*x^4)
```

sympy [B] time = 0.65, size = 219, normalized size = 1.94

$$\frac{-2Aa^3+x^3\left(-24Ab^3+18Bab^2\right)+x^2\left(-12Aab^2+9Ba^2b\right)+x\left(4Aa^2b-3Ba^3\right)}{6a^5x^3+6a^4bx^4}+\frac{b^2\left(-4Ab+3Ba\right)\log\Big(x+\frac{-4Aab^3}{}}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-2*A*a**3 + x**3*(-24*A*b**3 + 18*B*a*b**2) + x**2*(-12*A*a*b**2 + 9*B*a**
2*b) + x*(4*A*a**2*b - 3*B*a**3))/(6*a**5*x**3 + 6*a**4*b*x**4) + b**2*(-4*
A*b + 3*B*a)*log(x + (-4*A*a*b**3 + 3*B*a**2*b**2 - a*b**2*(-4*A*b + 3*B*a)
)/(-8*A*b**4 + 6*B*a*b**3))/a**5 - b**2*(-4*A*b + 3*B*a)*log(x + (-4*A*a*b*
*3 + 3*B*a**2*b**2 + a*b**2*(-4*A*b + 3*B*a))/(-8*A*b**4 + 6*B*a*b**3))/a**
5
```

3.632 $\int \frac{A+Bx}{x^5\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=133

$$\frac{b^3\log(x)(5Ab-4aB)}{a^6}-\frac{b^3(5Ab-4aB)\log(a+bx)}{a^6}+\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^2(4Ab-3aB)}{a^5x}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{2Ab-aB}{3a^3x^3}-$$

```
[Out] -1/4*A/a^2/x^4+1/3*(2*A*b-B*a)/a^3/x^3-1/2*b*(3*A*b-2*B*a)/a^4/x^2+b^2*(4*A
*b-3*B*a)/a^5/x+b^3*(A*b-B*a)/a^5/(b*x+a)+b^3*(5*A*b-4*B*a)*ln(x)/a^6-b^3*(
5*A*b-4*B*a)*ln(b*x+a)/a^6
```

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^2(4Ab-3aB)}{a^5x}+\frac{b^3\log(x)(5Ab-4aB)}{a^6}-\frac{b^3(5Ab-4aB)\log(a+bx)}{a^6}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{2Ab-aB}{3a^3x^3}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -A/(4*a^2*x^4) + (2*A*b - a*B)/(3*a^3*x^3) - (b*(3*A*b - 2*a*B))/(2*a^4*x^2
) + (b^2*(4*A*b - 3*a*B))/(a^5*x) + (b^3*(A*b - a*B))/(a^5*(a + b*x)) + (b^
3*(5*A*b - 4*a*B)*Log[x])/a^6 - (b^3*(5*A*b - 4*a*B)*Log[a + b*x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^5\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^5(a+bx)^2}\,dx\\ &= \int \left(\frac{A}{a^2x^5}+\frac{-2Ab+aB}{a^3x^4}-\frac{b(-3Ab+2aB)}{a^4x^3}+\frac{b^2(-4Ab+3aB)}{a^5x^2}-\frac{b^3(-5Ab+4a}{a^6x}\right.\\ &= -\frac{A}{4a^2x^4}+\frac{2Ab-aB}{3a^3x^3}-\frac{b(3Ab-2aB)}{2a^4x^2}+\frac{b^2(4Ab-3aB)}{a^5x}+\frac{b^3(Ab-aB)}{a^5(a+bx)}+\frac{b^3(5}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 129, normalized size = 0.97

$$\frac{\frac{a\left(-\left(a^4(3A+4Bx)\right)+a^3bx(5A+8Bx)-2a^2b^2x^2(5A+12Bx)+6ab^3x^3(5A-8Bx)+60Ab^4x^4\right)}{x^4(a+bx)}+12b^3\log(x)(5Ab-4aB)+12b^3(4aB-5A}{12a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((a*(60*A*b^4*x^4 + 6*a*b^3*x^3*(5*A - 8*B*x) - a^4*(3*A + 4*B*x) + a^3*b*x
*(5*A + 8*B*x) - 2*a^2*b^2*x^2*(5*A + 12*B*x)))/(x^4*(a + b*x)) + 12*b^3*(5
*A*b - 4*a*B)*Log[x] + 12*b^3*(-5*A*b + 4*a*B)*Log[a + b*x])/(12*a^6)
```

fricas [A] time = 0.89, size = 203, normalized size = 1.53

$$-\frac{3\,Aa^5+12\,(4\,Ba^2b^3-5\,Aab^4)x^4+6\,(4\,Ba^3b^2-5\,Aa^2b^3)x^3-2\,(4\,Ba^4b-5\,Aa^3b^2)x^2+(4\,Ba^5-5\,Aa^4b)x-12}{12\,(a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/12*(3*A*a^5 + 12*(4*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(4*B*a^3*b^2 - 5*A*a^
2*b^3)*x^3 - 2*(4*B*a^4*b - 5*A*a^3*b^2)*x^2 + (4*B*a^5 - 5*A*a^4*b)*x - 12
*((4*B*a*b^4 - 5*A*b^5)*x^5 + (4*B*a^2*b^3 - 5*A*a*b^4)*x^4)*log(b*x + a) +
 12*((4*B*a*b^4 - 5*A*b^5)*x^5 + (4*B*a^2*b^3 - 5*A*a*b^4)*x^4)*log(x))/(a^
6*b*x^5 + a^7*x^4)
```

giac [A] time = 0.18, size = 157, normalized size = 1.18

$$-\frac{(4\,Bab^3-5\,Ab^4)\log(|x|)}{a^6}+\frac{(4\,Bab^4-5\,Ab^5)\log(|bx+a|)}{a^6b}-\frac{3\,Aa^5+12\,(4\,Ba^2b^3-5\,Aab^4)x^4+6\,(4\,Ba^3b^2-5\,A}{12\,(bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(4*B*a*b^3 - 5*A*b^4)*log(abs(x))/a^6 + (4*B*a*b^4 - 5*A*b^5)*log(abs(b*x
+ a))/(a^6*b) - 1/12*(3*A*a^5 + 12*(4*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(4*B*a
^3*b^2 - 5*A*a^2*b^3)*x^3 - 2*(4*B*a^4*b - 5*A*a^3*b^2)*x^2 + (4*B*a^5 - 5*
A*a^4*b)*x)/((b*x + a)*a^6*x^4)
```

maple [A] time = 0.06, size = 158, normalized size = 1.19

$$\frac{A\,b^4}{(bx+a)\,a^5}+\frac{5A\,b^4\ln(x)}{a^6}-\frac{5A\,b^4\ln(bx+a)}{a^6}-\frac{B\,b^3}{(bx+a)\,a^4}-\frac{4B\,b^3\ln(x)}{a^5}+\frac{4B\,b^3\ln(bx+a)}{a^5}+\frac{4A\,b^3}{a^5x}-\frac{3B\,b^2}{a^4x}-\frac{3A\,b^2}{2a^4x^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -5*b^4/a^6*ln(b*x+a)*A+4*b^3/a^5*ln(b*x+a)*B+b^4/a^5/(b*x+a)*A-b^3/a^4/(b*x
+a)*B-1/4*A/a^2/x^4+2/3/a^3/x^3*A*b-1/3/a^2/x^3*B-3/2*A/a^4*b^2/x^2+B/a^3*b
/x^2+5*b^4/a^6*ln(x)*A-4*b^3/a^5*ln(x)*B+4*b^3/a^5/x*A-3*b^2/a^4/x*B
```

maxima [A] time = 0.50, size = 152, normalized size = 1.14

$$-\frac{3\,Aa^4+12\,(4\,Bab^3-5\,Ab^4)x^4+6\,(4\,Ba^2b^2-5\,Aab^3)x^3-2\,(4\,Ba^3b-5\,Aa^2b^2)x^2+(4\,Ba^4-5\,Aa^3b)x}{12\,(a^5bx^5+a^6x^4)}+\frac{(4\,Bab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*A*a^4 + 12*(4*B*a*b^3 - 5*A*b^4)*x^4 + 6*(4*B*a^2*b^2 - 5*A*a*b^3)
*x^3 - 2*(4*B*a^3*b - 5*A*a^2*b^2)*x^2 + (4*B*a^4 - 5*A*a^3*b)*x)/(a^5*b*x^
5 + a^6*x^4) + (4*B*a*b^3 - 5*A*b^4)*log(b*x + a)/a^6 - (4*B*a*b^3 - 5*A*b^
4)*log(x)/a^6
```

mupad [B] time = 1.15, size = 150, normalized size = 1.13

$$\frac{\frac{x\,(5\,A\,b-4\,B\,a)}{12\,a^2}-\frac{A}{4\,a}+\frac{b^2\,x^3\,(5\,A\,b-4\,B\,a)}{2\,a^4}+\frac{b^3\,x^4\,(5\,A\,b-4\,B\,a)}{a^5}-\frac{b\,x^2\,(5\,A\,b-4\,B\,a)}{6\,a^3}}{b\,x^5+a\,x^4}-\frac{2\,b^3\,\mathrm{atanh}\left(\frac{b^3\,(5\,A\,b-4\,B\,a)\,(a+2\,b\,x)}{a\,\left(5\,A\,b^4-4\,B\,a\,b^3\right)}\right)\,(5\,A\,b-}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((x*(5*A*b - 4*B*a))/(12*a^2) - A/(4*a) + (b^2*x^3*(5*A*b - 4*B*a))/(2*a^4)
 + (b^3*x^4*(5*A*b - 4*B*a))/a^5 - (b*x^2*(5*A*b - 4*B*a))/(6*a^3))/(a*x^4
+ b*x^5) - (2*b^3*atanh((b^3*(5*A*b - 4*B*a)*(a + 2*b*x))/(a*(5*A*b^4 - 4*B
*a*b^3)))*(5*A*b - 4*B*a))/a^6
```

sympy [A] time = 0.73, size = 243, normalized size = 1.83

$$\frac{-3Aa^{4}+x^{4}\left(60Ab^{4}-48Bab^{3}\right)+x^{3}\left(30Aab^{3}-24Ba^{2}b^{2}\right)+x^{2}\left(-10Aa^{2}b^{2}+8Ba^{3}b\right)+x\left(5Aa^{3}b-4Ba^{4}\right)}{12a^{6}x^{4}+12a^{5}bx^{5}}-b^{3}($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-3*A*a**4 + x**4*(60*A*b**4 - 48*B*a*b**3) + x**3*(30*A*a*b**3 - 24*B*a**2
*b**2) + x**2*(-10*A*a**2*b**2 + 8*B*a**3*b) + x*(5*A*a**3*b - 4*B*a**4))/(
12*a**6*x**4 + 12*a**5*b*x**5) - b**3*(-5*A*b + 4*B*a)*log(x + (-5*A*a*b**4
 + 4*B*a**2*b**3 - a*b**3*(-5*A*b + 4*B*a))/(-10*A*b**5 + 8*B*a*b**4))/a**6
 + b**3*(-5*A*b + 4*B*a)*log(x + (-5*A*a*b**4 + 4*B*a**2*b**3 + a*b**3*(-5*
A*b + 4*B*a))/(-10*A*b**5 + 8*B*a*b**4))/a**6
```

3.633 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+\frac{5a^3(2Ab-3aB)}{b^7(a+bx)}+\frac{10a^2(Ab-2aB)\log(a+bx)}{b^7}-\frac{2ax(2Ab-5aB)}{b^6}+\frac{x^2(Ab-4aB)}{2b^5}+$$

```
[Out] -2*a*(2*A*b-5*B*a)*x/b^6+1/2*(A*b-4*B*a)*x^2/b^5+1/3*B*x^3/b^4+1/3*a^5*(A*b
-B*a)/b^7/(b*x+a)^3-1/2*a^4*(5*A*b-6*B*a)/b^7/(b*x+a)^2+5*a^3*(2*A*b-3*B*a)
/b^7/(b*x+a)+10*a^2*(A*b-2*B*a)*ln(b*x+a)/b^7
```

Rubi [A] time = 0.16, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+\frac{5a^3(2Ab-3aB)}{b^7(a+bx)}+\frac{10a^2(Ab-2aB)\log(a+bx)}{b^7}+\frac{x^2(Ab-4aB)}{2b^5}-\frac{2ax(2Ab-5aB)}{b^6}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*a*(2*A*b - 5*a*B)*x)/b^6 + ((A*b - 4*a*B)*x^2)/(2*b^5) + (B*x^3)/(3*b^4
) + (a^5*(A*b - a*B))/(3*b^7*(a + b*x)^3) - (a^4*(5*A*b - 6*a*B))/(2*b^7*(a
 + b*x)^2) + (5*a^3*(2*A*b - 3*a*B))/(b^7*(a + b*x)) + (10*a^2*(A*b - 2*a*B
)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^5(A+Bx)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{2a(-2Ab+5aB)}{b^6}+\frac{(Ab-4aB)x}{b^5}+\frac{Bx^2}{b^4}+\frac{a^5(-Ab+aB)}{b^6(a+bx)^4}-\frac{a^4(-5Ab+6aB)}{b^6(a+bx)^3}+\right.\\ &= -\frac{2a(2Ab-5aB)x}{b^6}+\frac{(Ab-4aB)x^2}{2b^5}+\frac{Bx^3}{3b^4}+\frac{a^5(Ab-aB)}{3b^7(a+bx)^3}-\frac{a^4(5Ab-6aB)}{2b^7(a+bx)^2}+\frac{5a^3(}{b^7}\end{aligned}$$

Mathematica [A] time = 0.05, size = 147, normalized size = 1.03

$$\frac{-74a^6B+a^5b(47A-102Bx)+3a^4b^2x(27A+26Bx)+a^3b^3x^2(146Bx-9A)+3a^2b^4x^3(10Bx-21A)-60a^2(a+b}{6b^7(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-74*a^6*B + a^5*b*(47*A - 102*B*x) + b^6*x^5*(3*A + 2*B*x) - 3*a*b^5*x^4*(
5*A + 2*B*x) + 3*a^2*b^4*x^3*(-21*A + 10*B*x) + 3*a^4*b^2*x*(27*A + 26*B*x)
 + a^3*b^3*x^2*(-9*A + 146*B*x) - 60*a^2*(-(A*b) + 2*a*B)*(a + b*x)^3*Log[a
 + b*x])/(6*b^7*(a + b*x)^3)
```

fricas [**A**]   time = 0.79, size = 257, normalized size = 1.80

$$\frac{2\,Bb^{6}x^{6} - 74\,Ba^{6} + 47\,Aa^{5}b - 3\left(2\,Bab^{5} - Ab^{6}\right)x^{5} + 15\left(2\,Ba^{2}b^{4} - Aab^{5}\right)x^{4} + \left(146\,Ba^{3}b^{3} - 63\,Aa^{2}b^{4}\right)x^{3} + 3\,(2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^6*x^6 - 74*B*a^6 + 47*A*a^5*b - 3*(2*B*a*b^5 - A*b^6)*x^5 + 15*(
2*B*a^2*b^4 - A*a*b^5)*x^4 + (146*B*a^3*b^3 - 63*A*a^2*b^4)*x^3 + 3*(26*B*a
^4*b^2 - 3*A*a^3*b^3)*x^2 - 3*(34*B*a^5*b - 27*A*a^4*b^2)*x - 60*(2*B*a^6 -
 A*a^5*b + (2*B*a^3*b^3 - A*a^2*b^4)*x^3 + 3*(2*B*a^4*b^2 - A*a^3*b^3)*x^2
+ 3*(2*B*a^5*b - A*a^4*b^2)*x)*log(b*x + a))/(b^10*x^3 + 3*a*b^9*x^2 + 3*a^
2*b^8*x + a^3*b^7)
```

giac [**A**]   time = 0.15, size = 149, normalized size = 1.04

$$-\frac{10\left(2\,Ba^{3} - Aa^{2}b\right)\log\left(|bx + a|\right)}{b^{7}} - \frac{74\,Ba^{6} - 47\,Aa^{5}b + 30\left(3\,Ba^{4}b^{2} - 2\,Aa^{3}b^{3}\right)x^{2} + 3\left(54\,Ba^{5}b - 35\,Aa^{4}b^{2}\right)x}{6\,(bx + a)^{3}b^{7}} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -10*(2*B*a^3 - A*a^2*b)*log(abs(b*x + a))/b^7 - 1/6*(74*B*a^6 - 47*A*a^5*b
+ 30*(3*B*a^4*b^2 - 2*A*a^3*b^3)*x^2 + 3*(54*B*a^5*b - 35*A*a^4*b^2)*x)/((b
*x + a)^3*b^7) + 1/6*(2*B*b^8*x^3 - 12*B*a*b^7*x^2 + 3*A*b^8*x^2 + 60*B*a^2
*b^6*x - 24*A*a*b^7*x)/b^12
```

maple [**A**]   time = 0.06, size = 174, normalized size = 1.22

$$\frac{A\,a^{5}}{3\,(bx + a)^{3}\,b^{6}} - \frac{B\,a^{6}}{3\,(bx + a)^{3}\,b^{7}} + \frac{B\,x^{3}}{3b^{4}} - \frac{5A\,a^{4}}{2\,(bx + a)^{2}\,b^{6}} + \frac{A\,x^{2}}{2b^{4}} + \frac{3B\,a^{5}}{(bx + a)^{2}\,b^{7}} - \frac{2Ba\,x^{2}}{b^{5}} + \frac{10A\,a^{3}}{(bx + a)\,b^{6}} + \frac{10A\,a^{2}\ln(bx +}{b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3*B*x^3/b^4+1/2/b^4*A*x^2-2/b^5*a*B*x^2-4/b^5*A*a*x+10/b^6*B*x*a^2+1/3*a^
5/b^6/(b*x+a)^3*A-1/3*a^6/b^7/(b*x+a)^3*B-5/2*a^4/b^6/(b*x+a)^2*A+3*a^5/b^7
/(b*x+a)^2*B+10*a^2/b^6*ln(b*x+a)*A-20*a^3/b^7*ln(b*x+a)*B+10*a^3/b^6/(b*x+
a)*A-15*a^4/b^7/(b*x+a)*B
```

maxima [**A**]   time = 0.57, size = 168, normalized size = 1.17

$$-\frac{74\,Ba^{6} - 47\,Aa^{5}b + 30\left(3\,Ba^{4}b^{2} - 2\,Aa^{3}b^{3}\right)x^{2} + 3\left(54\,Ba^{5}b - 35\,Aa^{4}b^{2}\right)x}{6\left(b^{10}x^{3} + 3\,ab^{9}x^{2} + 3\,a^{2}b^{8}x + a^{3}b^{7}\right)} + \frac{2\,Bb^{2}x^{3} - 3\left(4\,Bab - Ab^{2}\right)x^{2} + 12}{6\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(74*B*a^6 - 47*A*a^5*b + 30*(3*B*a^4*b^2 - 2*A*a^3*b^3)*x^2 + 3*(54*B*
a^5*b - 35*A*a^4*b^2)*x)/(b^10*x^3 + 3*a*b^9*x^2 + 3*a^2*b^8*x + a^3*b^7) +
 1/6*(2*B*b^2*x^3 - 3*(4*B*a*b - A*b^2)*x^2 + 12*(5*B*a^2 - 2*A*a*b)*x)/b^6
 - 10*(2*B*a^3 - A*a^2*b)*log(b*x + a)/b^7
```

mupad [B] time = 1.11, size = 180, normalized size = 1.26

$$x^2\left(\frac{A}{2\,b^4}-\frac{2\,B\,a}{b^5}\right)-\frac{x\,\left(27\,B\,a^5-\frac{35\,A\,a^4\,b}{2}\right)-x^2\,\left(10\,A\,a^3\,b^2-15\,B\,a^4\,b\right)+\frac{74\,B\,a^6-47\,A\,a^5\,b}{6\,b}}{a^3\,b^6+3\,a^2\,b^7\,x+3\,a\,b^8\,x^2+b^9\,x^3}-x\,\left(\frac{4\,a\,\left(\frac{A}{b^4}-\frac{4\,B\,a}{b^5}\right)}{b}+\frac{6\,B\,a}{b^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*(A/(2*b^4) - (2*B*a)/b^5) - (x*(27*B*a^5 - (35*A*a^4*b)/2) - x^2*(10*A*
a^3*b^2 - 15*B*a^4*b) + (74*B*a^6 - 47*A*a^5*b)/(6*b))/(a^3*b^6 + b^9*x^3 +
 3*a^2*b^7*x + 3*a*b^8*x^2) - x*((4*a*(A/b^4 - (4*B*a)/b^5))/b + (6*B*a^2)/
b^6) - (log(a + b*x)*(20*B*a^3 - 10*A*a^2*b))/b^7 + (B*x^3)/(3*b^4)
```

sympy [A] time = 1.25, size = 168, normalized size = 1.17

$$\frac{Bx^3}{3b^4}-\frac{10a^2\left(-Ab+2Ba\right)\log\left(a+bx\right)}{b^7}+x^2\left(\frac{A}{2b^4}-\frac{2Ba}{b^5}\right)+x\left(-\frac{4Aa}{b^5}+\frac{10Ba^2}{b^6}\right)+\frac{47Aa^5b-74Ba^6+x^2\left(60Aa^3b^3-9\right.}{6a^3b^7+18a^2b^8x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x**3/(3*b**4) - 10*a**2*(-A*b + 2*B*a)*log(a + b*x)/b**7 + x**2*(A/(2*b**
4) - 2*B*a/b**5) + x*(-4*A*a/b**5 + 10*B*a**2/b**6) + (47*A*a**5*b - 74*B*a
**6 + x**2*(60*A*a**3*b**3 - 90*B*a**4*b**2) + x*(105*A*a**4*b**2 - 162*B*a
**5*b))/(6*a**3*b**7 + 18*a**2*b**8*x + 18*a*b**9*x**2 + 6*b**10*x**3)
```

3.634 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=121

$$-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}-\frac{2a(2Ab-5aB)\log(a+bx)}{b^6}+\frac{x(Ab-4aB)}{b^5}+\frac{Bx^2}{2b^4}$$

```
[Out] (A*b-4*B*a)*x/b^5+1/2*B*x^2/b^4-1/3*a^4*(A*b-B*a)/b^6/(b*x+a)^3+1/2*a^3*(4*
A*b-5*B*a)/b^6/(b*x+a)^2-2*a^2*(3*A*b-5*B*a)/b^6/(b*x+a)-2*a*(2*A*b-5*B*a)*
ln(b*x+a)/b^6
```

Rubi [A] time = 0.12, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}+\frac{x(Ab-4aB)}{b^5}-\frac{2a(2Ab-5aB)\log(a+bx)}{b^6}+\frac{Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - 4*a*B)*x)/b^5 + (B*x^2)/(2*b^4) - (a^4*(A*b - a*B))/(3*b^6*(a + b*x
)^3) + (a^3*(4*A*b - 5*a*B))/(2*b^6*(a + b*x)^2) - (2*a^2*(3*A*b - 5*a*B))/
(b^6*(a + b*x)) - (2*a*(2*A*b - 5*a*B)*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^4(A+Bx)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{Ab-4aB}{b^5}+\frac{Bx}{b^4}-\frac{a^4(-Ab+aB)}{b^5(a+bx)^4}+\frac{a^3(-4Ab+5aB)}{b^5(a+bx)^3}-\frac{2a^2(-3Ab+5aB)}{b^5(a+bx)^2}+\right.\\ &= \frac{(Ab-4aB)x}{b^5}+\frac{Bx^2}{2b^4}-\frac{a^4(Ab-aB)}{3b^6(a+bx)^3}+\frac{a^3(4Ab-5aB)}{2b^6(a+bx)^2}-\frac{2a^2(3Ab-5aB)}{b^6(a+bx)}-\end{aligned}$$

Mathematica [A] time = 0.04, size = 129, normalized size = 1.07

$$\frac{2\left(5a^2B-2aAb\right)\log(a+bx)}{b^6}+\frac{a^5B-a^4Ab}{3b^6(a+bx)^3}+\frac{4a^3Ab-5a^4B}{2b^6(a+bx)^2}+\frac{2\left(5a^3B-3a^2Ab\right)}{b^6(a+bx)}+\frac{x(Ab-4aB)}{b^5}+\frac{Bx^2}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - 4*a*B)*x)/b^5 + (B*x^2)/(2*b^4) + (-(a^4*A*b) + a^5*B)/(3*b^6*(a +
b*x)^3) + (4*a^3*A*b - 5*a^4*B)/(2*b^6*(a + b*x)^2) + (2*(-3*a^2*A*b + 5*a^
3*B))/(b^6*(a + b*x)) + (2*(-2*a*A*b + 5*a^2*B)*Log[a + b*x])/b^6
```

fricas [A] time = 0.67, size = 231, normalized size = 1.91

$$\frac{3\,Bb^5x^5 + 47\,Ba^5 - 26\,Aa^4b - 3\left(5\,Bab^4 - 2\,Ab^5\right)x^4 - 9\left(7\,Ba^2b^3 - 2\,Aab^4\right)x^3 - 9\left(Ba^3b^2 + 2\,Aa^2b^3\right)x^2 + 27\left(3\,Ba\right.}{6\left(b^9x^3 + 3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^5*x^5 + 47*B*a^5 - 26*A*a^4*b - 3*(5*B*a*b^4 - 2*A*b^5)*x^4 - 9*
(7*B*a^2*b^3 - 2*A*a*b^4)*x^3 - 9*(B*a^3*b^2 + 2*A*a^2*b^3)*x^2 + 27*(3*B*a
^4*b - 2*A*a^3*b^2)*x + 12*(5*B*a^5 - 2*A*a^4*b + (5*B*a^2*b^3 - 2*A*a*b^4)
*x^3 + 3*(5*B*a^3*b^2 - 2*A*a^2*b^3)*x^2 + 3*(5*B*a^4*b - 2*A*a^3*b^2)*x)*l
og(b*x + a))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)
```

giac [A] time = 0.16, size = 124, normalized size = 1.02

$$\frac{2\left(5\,Ba^2 - 2\,Aab\right)\log\left(|bx + a|\right)}{b^6} + \frac{Bb^4x^2 - 8\,Bab^3x + 2\,Ab^4x}{2\,b^8} + \frac{47\,Ba^5 - 26\,Aa^4b + 12\left(5\,Ba^3b^2 - 3\,Aa^2b^3\right)x^2 + 15\left(\right.}{6\left(bx + a\right)^3b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*(5*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^6 + 1/2*(B*b^4*x^2 - 8*B*a*b^3*x
+ 2*A*b^4*x)/b^8 + 1/6*(47*B*a^5 - 26*A*a^4*b + 12*(5*B*a^3*b^2 - 3*A*a^2*b
^3)*x^2 + 15*(7*B*a^4*b - 4*A*a^3*b^2)*x)/((b*x + a)^3*b^6)
```

maple [A] time = 0.06, size = 149, normalized size = 1.23

$$-\frac{A\,a^4}{3\left(bx + a\right)^3 b^5} + \frac{B\,a^5}{3\left(bx + a\right)^3 b^6} + \frac{2A\,a^3}{\left(bx + a\right)^2 b^5} - \frac{5B\,a^4}{2\left(bx + a\right)^2 b^6} + \frac{B\,x^2}{2b^4} - \frac{6A\,a^2}{\left(bx + a\right) b^5} - \frac{4Aa\ln\left(bx + a\right)}{b^5} + \frac{Ax}{b^4} + \frac{10B\,a^3}{\left(bx + a\right) b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2*B*x^2/b^4+1/b^4*A*x-4/b^5*B*a*x-1/3*a^4/b^5/(b*x+a)^3*A+1/3*a^5/b^6/(b*
x+a)^3*B-4*a/b^5*ln(b*x+a)*A+10*a^2/b^6*ln(b*x+a)*B+2*a^3/b^5/(b*x+a)^2*A-5
/2*a^4/b^6/(b*x+a)^2*B-6*a^2/b^5/(b*x+a)*A+10*a^3/b^6/(b*x+a)*B
```

maxima [A] time = 0.50, size = 143, normalized size = 1.18

$$\frac{47\,Ba^5 - 26\,Aa^4b + 12\left(5\,Ba^3b^2 - 3\,Aa^2b^3\right)x^2 + 15\left(7\,Ba^4b - 4\,Aa^3b^2\right)x}{6\left(b^9x^3 + 3\,ab^8x^2 + 3\,a^2b^7x + a^3b^6\right)} + \frac{Bbx^2 - 2\left(4\,Ba - Ab\right)x}{2\,b^5} + \frac{2\left(5\,Ba^2 - 2\,Aa\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*a^5 - 26*A*a^4*b + 12*(5*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 15*(7*B*a
^4*b - 4*A*a^3*b^2)*x)/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6) + 1/
2*(B*b*x^2 - 2*(4*B*a - A*b)*x)/b^5 + 2*(5*B*a^2 - 2*A*a*b)*log(b*x + a)/b^
6
```

mupad [B] time = 0.08, size = 141, normalized size = 1.17

$$x\left(\frac{A}{b^4}-\frac{4\,B\,a}{b^5}\right)+\frac{x\left(\frac{35\,B\,a^4}{2}-10\,A\,a^3\,b\right)-x^2\left(6\,A\,a^2\,b^2-10\,B\,a^3\,b\right)+\frac{47\,B\,a^5-26\,A\,a^4\,b}{6\,b}}{a^3\,b^5+3\,a^2\,b^6\,x+3\,a\,b^7\,x^2+b^8\,x^3}+\frac{B\,x^2}{2\,b^4}+\frac{\ln\left(a+b\,x\right)\big(10\,B\,a^2}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x*(A/b^4 - (4*B*a)/b^5) + (x*((35*B*a^4)/2 - 10*A*a^3*b) - x^2*(6*A*a^2*b^2
 - 10*B*a^3*b) + (47*B*a^5 - 26*A*a^4*b)/(6*b))/(a^3*b^5 + b^8*x^3 + 3*a^2*
b^6*x + 3*a*b^7*x^2) + (B*x^2)/(2*b^4) + (log(a + b*x)*(10*B*a^2 - 4*A*a*b)
)/b^6
```

sympy [A] time = 1.15, size = 144, normalized size = 1.19

$$\frac{Bx^2}{2b^4}+\frac{2a\left(-2Ab+5Ba\right)\log\left(a+bx\right)}{b^6}+x\left(\frac{A}{b^4}-\frac{4Ba}{b^5}\right)+\frac{-26Aa^4b+47Ba^5+x^2\left(-36Aa^2b^3+60Ba^3b^2\right)+x\big(-60}{6a^3b^6+18a^2b^7x+18ab^8x^2+6b^9x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x**2/(2*b**4) + 2*a*(-2*A*b + 5*B*a)*log(a + b*x)/b**6 + x*(A/b**4 - 4*B*
a/b**5) + (-26*A*a**4*b + 47*B*a**5 + x**2*(-36*A*a**2*b**3 + 60*B*a**3*b**
2) + x*(-60*A*a**3*b**2 + 105*B*a**4*b))/(6*a**3*b**6 + 18*a**2*b**7*x + 18
*a*b**8*x**2 + 6*b**9*x**3)
```

3.635 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=97

$$\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}+\frac{Bx}{b^4}$$

```
[Out] B*x/b^4+1/3*a^3*(A*b-B*a)/b^5/(b*x+a)^3-1/2*a^2*(3*A*b-4*B*a)/b^5/(b*x+a)^2
+3*a*(A*b-2*B*a)/b^5/(b*x+a)+(A*b-4*B*a)*ln(b*x+a)/b^5
```

Rubi [A] time = 0.09, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}+\frac{Bx}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*x)/b^4 + (a^3*(A*b - a*B))/(3*b^5*(a + b*x)^3) - (a^2*(3*A*b - 4*a*B))/(
2*b^5*(a + b*x)^2) + (3*a*(A*b - 2*a*B))/(b^5*(a + b*x)) + ((A*b - 4*a*B)*L
og[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{B}{b^4}+\frac{a^3(-Ab+aB)}{b^4(a+bx)^4}-\frac{a^2(-3Ab+4aB)}{b^4(a+bx)^3}+\frac{3a(-Ab+2aB)}{b^4(a+bx)^2}+\frac{Ab-4aB}{b^4(a+bx)}\right)dx\\ &= \frac{Bx}{b^4}+\frac{a^3(Ab-aB)}{3b^5(a+bx)^3}-\frac{a^2(3Ab-4aB)}{2b^5(a+bx)^2}+\frac{3a(Ab-2aB)}{b^5(a+bx)}+\frac{(Ab-4aB)\log(a+bx)}{b^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 97, normalized size = 1.00

$$\frac{-26a^4B+a^3b(11A-54Bx)+9a^2b^2x(3A-2Bx)+18ab^3x^2(A+Bx)+6(a+bx)^3(Ab-4aB)\log(a+bx)+6b^4B}{6b^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-26*a^4*B + 6*b^4*B*x^4 + a^3*b*(11*A - 54*B*x) + 9*a^2*b^2*x*(3*A - 2*B*x
) + 18*a*b^3*x^2*(A + B*x) + 6*(A*b - 4*a*B)*(a + b*x)^3*Log[a + b*x])/(6*b
^5*(a + b*x)^3)
```

fricas [**B**] time = 0.82, size = 193, normalized size = 1.99

$$\frac{6\,Bb^{4}x^{4}+18\,Bab^{3}x^{3}-26\,Ba^{4}+11\,Aa^{3}b-18\,\left(Ba^{2}b^{2}-Aab^{3}\right)x^{2}-27\,\left(2\,Ba^{3}b-Aa^{2}b^{2}\right)x-6\,\left(4\,Ba^{4}-Aa^{3}b+(\right.}{6\,\left(b^{8}x^{3}+3\,ab^{7}x^{2}+3\,a^{2}b^{6}x+a^{3}b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^4*x^4 + 18*B*a*b^3*x^3 - 26*B*a^4 + 11*A*a^3*b - 18*(B*a^2*b^2 -
 A*a*b^3)*x^2 - 27*(2*B*a^3*b - A*a^2*b^2)*x - 6*(4*B*a^4 - A*a^3*b + (4*B*
a*b^3 - A*b^4)*x^3 + 3*(4*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(4*B*a^3*b - A*a^2*b
^2)*x)*log(b*x + a))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

giac [**A**] time = 0.16, size = 96, normalized size = 0.99

$$\frac{Bx}{b^{4}}-\frac{(4\,Ba-Ab)\log\left(|bx+a|\right)}{b^{5}}-\frac{26\,Ba^{4}-11\,Aa^{3}b+18\,\left(2\,Ba^{2}b^{2}-Aab^{3}\right)x^{2}+3\,\left(20\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x}{6\,(bx+a)^{3}b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*x/b^4 - (4*B*a - A*b)*log(abs(b*x + a))/b^5 - 1/6*(26*B*a^4 - 11*A*a^3*b
+ 18*(2*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(20*B*a^3*b - 9*A*a^2*b^2)*x)/((b*x +
a)^3*b^5)
```

maple [**A**] time = 0.06, size = 126, normalized size = 1.30

$$\frac{A\,a^{3}}{3\,(bx+a)^{3}\,b^{4}}-\frac{B\,a^{4}}{3\,(bx+a)^{3}\,b^{5}}-\frac{3A\,a^{2}}{2\,(bx+a)^{2}\,b^{4}}+\frac{2B\,a^{3}}{(bx+a)^{2}\,b^{5}}+\frac{3Aa}{(bx+a)\,b^{4}}+\frac{A\ln(bx+a)}{b^{4}}-\frac{6B\,a^{2}}{(bx+a)\,b^{5}}-\frac{4Ba\ln(b}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] B*x/b^4+1/3*a^3/b^4/(b*x+a)^3*A-1/3*a^4/b^5/(b*x+a)^3*B+1/b^4*ln(b*x+a)*A-4
/b^5*ln(b*x+a)*B*a+3*a/b^4/(b*x+a)*A-6*a^2/b^5/(b*x+a)*B-3/2*a^2/b^4/(b*x+a
)^2*A+2*a^3/b^5/(b*x+a)^2*B
```

maxima [**A**] time = 0.54, size = 120, normalized size = 1.24

$$-\frac{26\,Ba^{4}-11\,Aa^{3}b+18\,\left(2\,Ba^{2}b^{2}-Aab^{3}\right)x^{2}+3\,\left(20\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x}{6\,\left(b^{8}x^{3}+3\,ab^{7}x^{2}+3\,a^{2}b^{6}x+a^{3}b^{5}\right)}+\frac{Bx}{b^{4}}-\frac{(4\,Ba-Ab)\log(bx+a)}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(26*B*a^4 - 11*A*a^3*b + 18*(2*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(20*B*a^3*
b - 9*A*a^2*b^2)*x)/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5) + B*x/b
^4 - (4*B*a - A*b)*log(b*x + a)/b^5
```

mupad [**B**] time = 1.12, size = 118, normalized size = 1.22

$$\frac{B\,x}{b^{4}}-\frac{x\,\left(10\,B\,a^{3}-\frac{9\,A\,a^{2}\,b}{2}\right)-x^{2}\,\left(3\,A\,a\,b^{2}-6\,B\,a^{2}\,b\right)+\frac{26\,B\,a^{4}-11\,A\,a^{3}\,b}{6\,b}}{a^{3}\,b^{4}+3\,a^{2}\,b^{5}\,x+3\,a\,b^{6}\,x^{2}+b^{7}\,x^{3}}+\frac{\ln(a+b\,x)\,\left(A\,b-4\,B\,a\right)}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*x)/b^4 - (x*(10*B*a^3 - (9*A*a^2*b)/2) - x^2*(3*A*a*b^2 - 6*B*a^2*b) + (
26*B*a^4 - 11*A*a^3*b)/(6*b))/(a^3*b^4 + b^7*x^3 + 3*a^2*b^5*x + 3*a*b^6*x^
2) + (log(a + b*x)*(A*b - 4*B*a))/b^5
```

sympy [A] time = 0.96, size = 119, normalized size = 1.23

$$\frac{Bx}{b^4}+\frac{11Aa^3b-26Ba^4+x^2\left(18Aab^3-36Ba^2b^2\right)+x\left(27Aa^2b^2-60Ba^3b\right)}{6a^3b^5+18a^2b^6x+18ab^7x^2+6b^8x^3}-\frac{(-Ab+4Ba)\log{(a+bx)}}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*x/b**4 + (11*A*a**3*b - 26*B*a**4 + x**2*(18*A*a*b**3 - 36*B*a**2*b**2) +
 x*(27*A*a**2*b**2 - 60*B*a**3*b))/(6*a**3*b**5 + 18*a**2*b**6*x + 18*a*b**
7*x**2 + 6*b**8*x**3) - (-A*b + 4*B*a)*log(a + b*x)/b**5
```

3.636 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=72

$$-\frac{a^2B}{2b^4(a+bx)^2}+\frac{x^3(Ab-aB)}{3ab(a+bx)^3}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}$$

```
[Out] 1/3*(A*b-B*a)*x^3/a/b/(b*x+a)^3-1/2*a^2*B/b^4/(b*x+a)^2+2*a*B/b^4/(b*x+a)+B
*ln(b*x+a)/b^4
```

Rubi [A] time = 0.03, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = $\{27, 78, 43\}$

$$-\frac{a^2B}{2b^4(a+bx)^2}+\frac{x^3(Ab-aB)}{3ab(a+bx)^3}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^3)/(3*a*b*(a + b*x)^3) - (a^2*B)/(2*b^4*(a + b*x)^2) + (2*a*
B)/(b^4*(a + b*x)) + (B*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^2(A+Bx)}{(a+bx)^4}\,dx\\ &= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}+\frac{B\int \frac{x^2}{(a+bx)^3}\,dx}{b}\\ &= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}+\frac{B\int \left(\frac{a^2}{b^2(a+bx)^3}-\frac{2a}{b^2(a+bx)^2}+\frac{1}{b^2(a+bx)}\right)dx}{b}\\ &= \frac{(Ab-aB)x^3}{3ab(a+bx)^3}-\frac{a^2B}{2b^4(a+bx)^2}+\frac{2aB}{b^4(a+bx)}+\frac{B\log(a+bx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 1.01

$$\frac{11a^3B+a^2(27bBx-2Ab)-6ab^2x(A-3Bx)+6B(a+bx)^3\log(a+bx)-6Ab^3x^2}{6b^4(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (11*a^3*B - 6*A*b^3*x^2 - 6*a*b^2*x*(A - 3*B*x) + a^2*(-2*A*b + 27*b*B*x) +
 6*B*(a + b*x)^3*Log[a + b*x])/(6*b^4*(a + b*x)^3)
```

fricas [A] time = 0.96, size = 128, normalized size = 1.78

$$\frac{11\,Ba^3-2\,Aa^2b+6\left(3\,Bab^2-Ab^3\right)x^2+3\left(9\,Ba^2b-2\,Aab^2\right)x+6\left(Bb^3x^3+3\,Bab^2x^2+3\,Ba^2bx+Ba^3\right)\log\left(bx+\right.}{6\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*a^3 - 2*A*a^2*b + 6*(3*B*a*b^2 - A*b^3)*x^2 + 3*(9*B*a^2*b - 2*A*
a*b^2)*x + 6*(B*b^3*x^3 + 3*B*a*b^2*x^2 + 3*B*a^2*b*x + B*a^3)*log(b*x + a)
)/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [A] time = 0.15, size = 76, normalized size = 1.06

$$\frac{B\log\left(|bx+a|\right)}{b^4}+\frac{6\left(3\,Bab-Ab^2\right)x^2+3\left(9\,Ba^2-2\,Aab\right)x+\frac{11\,Ba^3-2\,Aa^2b}{b}}{6\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*log(abs(b*x + a))/b^4 + 1/6*(6*(3*B*a*b - A*b^2)*x^2 + 3*(9*B*a^2 - 2*A*a
*b)*x + (11*B*a^3 - 2*A*a^2*b)/b)/((b*x + a)^3*b^3)
```

maple [A] time = 0.07, size = 101, normalized size = 1.40

$$-\frac{A\,a^2}{3\,(bx+a)^3\,b^3}+\frac{B\,a^3}{3\,(bx+a)^3\,b^4}+\frac{Aa}{(bx+a)^2\,b^3}-\frac{3B\,a^2}{2\,(bx+a)^2\,b^4}-\frac{A}{(bx+a)\,b^3}+\frac{3Ba}{(bx+a)\,b^4}+\frac{B\ln\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*a^2/b^3/(b*x+a)^3*A+1/3*a^3/b^4/(b*x+a)^3*B+a/b^3/(b*x+a)^2*A-3/2*a^2*
B/b^4/(b*x+a)^2+B*ln(b*x+a)/b^4-1/b^3/(b*x+a)*A+3*a*B/b^4/(b*x+a)
```

maxima [A] time = 0.62, size = 100, normalized size = 1.39

$$\frac{11\,Ba^3-2\,Aa^2b+6\left(3\,Bab^2-Ab^3\right)x^2+3\left(9\,Ba^2b-2\,Aab^2\right)x}{6\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}+\frac{B\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*a^3 - 2*A*a^2*b + 6*(3*B*a*b^2 - A*b^3)*x^2 + 3*(9*B*a^2*b - 2*A*
a*b^2)*x)/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4) + B*log(b*x + a)/
b^4
```

mupad [B] time = 0.08, size = 96, normalized size = 1.33

$$\frac{\frac{11\,B\,a^3-2\,A\,a^2\,b}{6\,b^4}-\frac{x^2\,\left(A\,b-3\,B\,a\right)}{b^2}+\frac{x\,\left(9\,B\,a^2-2\,A\,a\,b\right)}{2\,b^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}+\frac{B\,\ln\left(a+b\,x\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((11*B*a^3 - 2*A*a^2*b)/(6*b^4) - (x^2*(A*b - 3*B*a))/b^2 + (x*(9*B*a^2 - 2
*A*a*b))/(2*b^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (B*log(a + b*
x))/b^4
```

sympy [A] time = 0.66, size = 100, normalized size = 1.39

$$\frac{B\log\left(a+bx\right)}{b^4}+\frac{-2Aa^2b+11Ba^3+x^2\left(-6Ab^3+18Bab^2\right)+x\left(-6Aab^2+27Ba^2b\right)}{6a^3b^4+18a^2b^5x+18ab^6x^2+6b^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*log(a + b*x)/b**4 + (-2*A*a**2*b + 11*B*a**3 + x**2*(-6*A*b**3 + 18*B*a*b
**2) + x*(-6*A*a*b**2 + 27*B*a**2*b))/(6*a**3*b**4 + 18*a**2*b**5*x + 18*a*
b**6*x**2 + 6*b**7*x**3)
```

3.637 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=59

$$-\frac{Ab-2aB}{2b^3(a+bx)^2}+\frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{B}{b^3(a+bx)}$$

```
[Out] 1/3*a*(A*b-B*a)/b^3/(b*x+a)^3+1/2*(-A*b+2*B*a)/b^3/(b*x+a)^2-B/b^3/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 77\}$

$$-\frac{Ab-2aB}{2b^3(a+bx)^2}+\frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{B}{b^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a*(A*b - a*B))/(3*b^3*(a + b*x)^3) - (A*b - 2*a*B)/(2*b^3*(a + b*x)^2) - B
/(b^3*(a + b*x))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x(A+Bx)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{a(-Ab+aB)}{b^2(a+bx)^4}+\frac{Ab-2aB}{b^2(a+bx)^3}+\frac{B}{b^2(a+bx)^2}\right)dx\\ &= \frac{a(Ab-aB)}{3b^3(a+bx)^3}-\frac{Ab-2aB}{2b^3(a+bx)^2}-\frac{B}{b^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.71

$$-\frac{2a^2B+ab(A+6Bx)+3b^2x(A+2Bx)}{6b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*a^2*B + 3*b^2*x*(A + 2*B*x) + a*b*(A + 6*B*x))/(b^3*(a + b*x)^3)
```

fricas [**A**] time = 0.70, size = 71, normalized size = 1.20

$$-\frac{6\,Bb^2x^2+2\,Ba^2+Aab+3\left(2\,Bab+Ab^2\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b^2*x^2 + 2*B*a^2 + A*a*b + 3*(2*B*a*b + A*b^2)*x)/(b^6*x^3 + 3*a
*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [**A**] time = 0.19, size = 45, normalized size = 0.76

$$-\frac{6\,Bb^2x^2+6\,Babx+3\,Ab^2x+2\,Ba^2+Aab}{6\,(bx+a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*b^2*x^2 + 6*B*a*b*x + 3*A*b^2*x + 2*B*a^2 + A*a*b)/((b*x + a)^3*b
^3)
```

maple [**A**] time = 0.07, size = 56, normalized size = 0.95

$$-\frac{B}{(bx+a)\,b^3}+\frac{(Ab-Ba)\,a}{3\,(bx+a)^3\,b^3}-\frac{Ab-2Ba}{2\,(bx+a)^2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3*a*(A*b-B*a)/b^3/(b*x+a)^3-1/2*(A*b-2*B*a)/b^3/(b*x+a)^2-B/b^3/(b*x+a)
```

maxima [**A**] time = 0.71, size = 71, normalized size = 1.20

$$-\frac{6\,Bb^2x^2+2\,Ba^2+Aab+3\left(2\,Bab+Ab^2\right)x}{6\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(6*B*b^2*x^2 + 2*B*a^2 + A*a*b + 3*(2*B*a*b + A*b^2)*x)/(b^6*x^3 + 3*a
*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

mupad [**B**] time = 0.04, size = 68, normalized size = 1.15

$$-\frac{\frac{B\,x^2}{b}+\frac{a\,(A\,b+2\,B\,a)}{6\,b^3}+\frac{x\,(A\,b+2\,B\,a)}{2\,b^2}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((B*x^2)/b + (a*(A*b + 2*B*a))/(6*b^3) + (x*(A*b + 2*B*a))/(2*b^2))/(a^3 +
 b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 0.45, size = 75, normalized size = 1.27

$$\frac{-Aab-2Ba^2-6Bb^2x^2+x\left(-3Ab^2-6Bab\right)}{6a^3b^3+18a^2b^4x+18ab^5x^2+6b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-A*a*b - 2*B*a**2 - 6*B*b**2*x**2 + x*(-3*A*b**2 - 6*B*a*b))/(6*a**3*b**3
+ 18*a**2*b**4*x + 18*a*b**5*x**2 + 6*b**6*x**3)
```

3.638 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=38

$$\frac{aB-Ab}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

```
[Out] 1/3*(-A*b+B*a)/b^2/(b*x+a)^3-1/2*B/b^2/(b*x+a)^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(A*b - a*B)/(3*b^2*(a + b*x)^3) - B/(2*b^2*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4}\,dx\\ &= \int \left(\frac{Ab-aB}{b(a+bx)^4}+\frac{B}{b(a+bx)^3}\right)dx\\ &= -\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+3bx)+2Ab}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*A*b + B*(a + 3*b*x))/(b^2*(a + b*x)^3)
```

fricas [A] time = 0.89, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx+Ba+2\,Ab}{6\left(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [A] time = 0.15, size = 25, normalized size = 0.66

$$-\frac{3\,Bbx + Ba + 2\,Ab}{6\,(bx + a)^3b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/((b*x + a)^3*b^2)
```

maple [A] time = 0.06, size = 35, normalized size = 0.92

$$-\frac{B}{2\,(bx + a)^2\,b^2} - \frac{Ab - Ba}{3\,(bx + a)^3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*(A*b-B*a)/b^2/(b*x+a)^3-1/2*B/b^2/(b*x+a)^2
```

maxima [A] time = 0.51, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx + Ba + 2\,Ab}{6\left(b^5x^3 + 3\,ab^4x^2 + 3\,a^2b^3x + a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

mupad [B] time = 0.03, size = 52, normalized size = 1.37

$$-\frac{\frac{2\,A\,b+B\,a}{6\,b^2} + \frac{B\,x}{2\,b}}{a^3 + 3\,a^2\,b\,x + 3\,a\,b^2\,x^2 + b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((2*A*b + B*a)/(6*b^2) + (B*x)/(2*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2
*b*x)
```

sympy [A] time = 0.35, size = 53, normalized size = 1.39

$$\frac{-2Ab - Ba - 3Bbx}{6a^3b^2 + 18a^2b^3x + 18ab^4x^2 + 6b^5x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*b - B*a - 3*B*b*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**4*x**2 + 6
*b**5*x**3)
```

3.639 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=72

$$-\frac{A\log(a+bx)}{a^4}+\frac{A\log(x)}{a^4}+\frac{A}{a^3(a+bx)}+\frac{A}{2a^2(a+bx)^2}+\frac{Ab-aB}{3ab(a+bx)^3}$$

```
[Out] 1/3*(A*b-B*a)/a/b/(b*x+a)^3+1/2*A/a^2/(b*x+a)^2+A/a^3/(b*x+a)+A*ln(x)/a^4-A
*ln(b*x+a)/a^4
```

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$\frac{A}{a^3(a+bx)}+\frac{A}{2a^2(a+bx)^2}-\frac{A\log(a+bx)}{a^4}+\frac{A\log(x)}{a^4}+\frac{Ab-aB}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (A*b - a*B)/(3*a*b*(a + b*x)^3) + A/(2*a^2*(a + b*x)^2) + A/(a^3*(a + b*x))
 + (A*Log[x])/a^4 - (A*Log[a + b*x])/a^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^2}\,dx&=\int \frac{A+Bx}{x(a+bx)^4}\,dx\\&=\int \left(\frac{A}{a^4x}+\frac{-Ab+aB}{a(a+bx)^4}-\frac{Ab}{a^2(a+bx)^3}-\frac{Ab}{a^3(a+bx)^2}-\frac{Ab}{a^4(a+bx)}\right)dx\\&=\frac{Ab-aB}{3ab(a+bx)^3}+\frac{A}{2a^2(a+bx)^2}+\frac{A}{a^3(a+bx)}+\frac{A\log(x)}{a^4}-\frac{A\log(a+bx)}{a^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 65, normalized size = 0.90

$$\frac{\frac{a\left(-2a^3B+11a^2Ab+15aAb^2x+6Ab^3x^2\right)}{b(a+bx)^3}-6A\log(a+bx)+6A\log(x)}{6a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(11*a^2*A*b - 2*a^3*B + 15*a*A*b^2*x + 6*A*b^3*x^2))/(b*(a + b*x)^3) +
6*A*Log[x] - 6*A*Log[a + b*x])/(6*a^4)
```

fricas [B] time = 0.86, size = 156, normalized size = 2.17

$$\frac{6\,Aab^{3}x^{2}+15\,Aa^{2}b^{2}x-2\,Ba^{4}+11\,Aa^{3}b-6\left(Ab^{4}x^{3}+3\,Aab^{3}x^{2}+3\,Aa^{2}b^{2}x+Aa^{3}b\right)\log\left(bx+a\right)+6\left(Ab^{4}x^{3}+3\right.}{6\left(a^{4}b^{4}x^{3}+3\,a^{5}b^{3}x^{2}+3\,a^{6}b^{2}x+a^{7}b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(6*A*a*b^3*x^2 + 15*A*a^2*b^2*x - 2*B*a^4 + 11*A*a^3*b - 6*(A*b^4*x^3 +
 3*A*a*b^3*x^2 + 3*A*a^2*b^2*x + A*a^3*b)*log(b*x + a) + 6*(A*b^4*x^3 + 3*A
*a*b^3*x^2 + 3*A*a^2*b^2*x + A*a^3*b)*log(x))/(a^4*b^4*x^3 + 3*a^5*b^3*x^2
+ 3*a^6*b^2*x + a^7*b)
```

giac [A] time = 0.15, size = 71, normalized size = 0.99

$$-\frac{A\log\left(|bx+a|\right)}{a^{4}}+\frac{A\log\left(|x|\right)}{a^{4}}+\frac{6\,Aab^{3}x^{2}+15\,Aa^{2}b^{2}x-2\,Ba^{4}+11\,Aa^{3}b}{6\,(bx+a)^{3}a^{4}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -A*log(abs(b*x + a))/a^4 + A*log(abs(x))/a^4 + 1/6*(6*A*a*b^3*x^2 + 15*A*a^
2*b^2*x - 2*B*a^4 + 11*A*a^3*b)/((b*x + a)^3*a^4*b)
```

maple [A] time = 0.05, size = 72, normalized size = 1.00

$$\frac{A}{3\,(bx+a)^{3}\,a}-\frac{B}{3\,(bx+a)^{3}\,b}+\frac{A}{2\,(bx+a)^{2}\,a^{2}}+\frac{A}{(bx+a)\,a^{3}}+\frac{A\ln(x)}{a^{4}}-\frac{A\ln\left(bx+a\right)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3/a/(b*x+a)^3*A-1/3/b/(b*x+a)^3*B-A*ln(b*x+a)/a^4+A/a^3/(b*x+a)+1/2*A/a^2
/(b*x+a)^2+A*ln(x)/a^4
```

maxima [A] time = 0.59, size = 91, normalized size = 1.26

$$\frac{6\,Ab^{3}x^{2}+15\,Aab^{2}x-2\,Ba^{3}+11\,Aa^{2}b}{6\left(a^{3}b^{4}x^{3}+3\,a^{4}b^{3}x^{2}+3\,a^{5}b^{2}x+a^{6}b\right)}-\frac{A\log\left(bx+a\right)}{a^{4}}+\frac{A\log(x)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(6*A*b^3*x^2 + 15*A*a*b^2*x - 2*B*a^3 + 11*A*a^2*b)/(a^3*b^4*x^3 + 3*a^
4*b^3*x^2 + 3*a^5*b^2*x + a^6*b) - A*log(b*x + a)/a^4 + A*log(x)/a^4
```

mupad [B] time = 1.11, size = 84, normalized size = 1.17

$$\frac{\frac{11\,A\,b-2\,B\,a}{6\,a\,b}+\frac{5\,A\,b\,x}{2\,a^{2}}+\frac{A\,b^{2}\,x^{2}}{a^{3}}}{a^{3}+3\,a^{2}\,b\,x+3\,a\,b^{2}\,x^{2}+b^{3}\,x^{3}}-\frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)}{a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((11*A*b - 2*B*a)/(6*a*b) + (5*A*b*x)/(2*a^2) + (A*b^2*x^2)/a^3)/(a^3 + b^3
*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) - (2*A*atanh((2*b*x)/a + 1))/a^4
```

sympy [A] time = 0.53, size = 90, normalized size = 1.25

$$\frac{A\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^4}+\frac{11Aa^2b+15Aab^2x+6Ab^3x^2-2Ba^3}{6a^6b+18a^5b^2x+18a^4b^3x^2+6a^3b^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*(log(x) - log(a/b + x))/a**4 + (11*A*a**2*b + 15*A*a*b**2*x + 6*A*b**3*x*
*2 - 2*B*a**3)/(6*a**6*b + 18*a**5*b**2*x + 18*a**4*b**3*x**2 + 6*a**3*b**4
*x**3)
```

3.640 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=111

$$-\frac{\log(x)(4Ab-aB)}{a^5}+\frac{(4Ab-aB)\log(a+bx)}{a^5}-\frac{3Ab-aB}{a^4(a+bx)}-\frac{A}{a^4x}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{Ab-aB}{3a^2(a+bx)^3}$$

```
[Out] -A/a^4/x+1/3*(-A*b+B*a)/a^2/(b*x+a)^3+1/2*(-2*A*b+B*a)/a^3/(b*x+a)^2+(-3*A*
b+B*a)/a^4/(b*x+a)-(4*A*b-B*a)*ln(x)/a^5+(4*A*b-B*a)*ln(b*x+a)/a^5
```

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$-\frac{3Ab-aB}{a^4(a+bx)}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{Ab-aB}{3a^2(a+bx)^3}-\frac{\log(x)(4Ab-aB)}{a^5}+\frac{(4Ab-aB)\log(a+bx)}{a^5}-\frac{A}{a^4x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A/(a^4*x)) - (A*b - a*B)/(3*a^2*(a + b*x)^3) - (2*A*b - a*B)/(2*a^3*(a +
b*x)^2) - (3*A*b - a*B)/(a^4*(a + b*x)) - ((4*A*b - a*B)*Log[x])/a^5 + ((4*
A*b - a*B)*Log[a + b*x])/a^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^4}\,dx\\ &= \int \left(\frac{A}{a^4x^2}+\frac{-4Ab+aB}{a^5x}-\frac{b(-Ab+aB)}{a^2(a+bx)^4}-\frac{b(-2Ab+aB)}{a^3(a+bx)^3}-\frac{b(-3Ab+aB)}{a^4(a+bx)^2}-\frac{b(-}{a^5}\right.\\ &= -\frac{A}{a^4x}-\frac{Ab-aB}{3a^2(a+bx)^3}-\frac{2Ab-aB}{2a^3(a+bx)^2}-\frac{3Ab-aB}{a^4(a+bx)}-\frac{(4Ab-aB)\log(x)}{a^5}+\frac{(4Ab-}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 0.92

$$\frac{\frac{2a^3(aB-Ab)}{(a+bx)^3}+\frac{3a^2(aB-2Ab)}{(a+bx)^2}+\frac{6a(aB-3Ab)}{a+bx}+6\log(x)(aB-4Ab)+6(4Ab-aB)\log(a+bx)-\frac{6aA}{x}}{6a^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-6*a*A)/x + (2*a^3*(-(A*b) + a*B))/(a + b*x)^3 + (3*a^2*(-2*A*b + a*B))/(
a + b*x)^2 + (6*a*(-3*A*b + a*B))/(a + b*x) + 6*(-4*A*b + a*B)*Log[x] + 6*(
4*A*b - a*B)*Log[a + b*x])/(6*a^5)
```

fricas **[B]** time = 0.66, size = 267, normalized size = 2.41

$$-\frac{6\,Aa^4 - 6\,\left(Ba^2b^2 - 4\,Aab^3\right)x^3 - 15\,\left(Ba^3b - 4\,Aa^2b^2\right)x^2 - 11\,\left(Ba^4 - 4\,Aa^3b\right)x + 6\,\left(\left(Bab^3 - 4\,Ab^4\right)x^4 + 3\,\left(Ba^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(6*A*a^4 - 6*(B*a^2*b^2 - 4*A*a*b^3)*x^3 - 15*(B*a^3*b - 4*A*a^2*b^2)*
x^2 - 11*(B*a^4 - 4*A*a^3*b)*x + 6*((B*a*b^3 - 4*A*b^4)*x^4 + 3*(B*a^2*b^2
- 4*A*a*b^3)*x^3 + 3*(B*a^3*b - 4*A*a^2*b^2)*x^2 + (B*a^4 - 4*A*a^3*b)*x)*l
og(b*x + a) - 6*((B*a*b^3 - 4*A*b^4)*x^4 + 3*(B*a^2*b^2 - 4*A*a*b^3)*x^3 +
3*(B*a^3*b - 4*A*a^2*b^2)*x^2 + (B*a^4 - 4*A*a^3*b)*x)*log(x))/(a^5*b^3*x^4
 + 3*a^6*b^2*x^3 + 3*a^7*b*x^2 + a^8*x)
```

giac **[A]** time = 0.17, size = 122, normalized size = 1.10

$$\frac{(Ba - 4\,Ab)\log\left(|x|\right)}{a^5} - \frac{\left(Bab - 4\,Ab^2\right)\log\left(|bx + a|\right)}{a^5b} - \frac{6\,Aa^4 - 6\,\left(Ba^2b^2 - 4\,Aab^3\right)x^3 - 15\,\left(Ba^3b - 4\,Aa^2b^2\right)x^2 - 1}{6\,(bx + a)^3a^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*a - 4*A*b)*log(abs(x))/a^5 - (B*a*b - 4*A*b^2)*log(abs(b*x + a))/(a^5*b)
 - 1/6*(6*A*a^4 - 6*(B*a^2*b^2 - 4*A*a*b^3)*x^3 - 15*(B*a^3*b - 4*A*a^2*b^2
)*x^2 - 11*(B*a^4 - 4*A*a^3*b)*x)/((b*x + a)^3*a^5*x)
```

maple **[A]** time = 0.06, size = 132, normalized size = 1.19

$$-\frac{Ab}{3\,(bx + a)^3\,a^2} + \frac{B}{3\,(bx + a)^3\,a} - \frac{Ab}{(bx + a)^2\,a^3} + \frac{B}{2\,(bx + a)^2\,a^2} - \frac{3Ab}{(bx + a)\,a^4} - \frac{4Ab\ln(x)}{a^5} + \frac{4Ab\ln(bx + a)}{a^5} + \frac{B}{(bx + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/a^3/(b*x+a)^2*A*b+1/2/a^2/(b*x+a)^2*B-3/a^4/(b*x+a)*A*b+1/a^3/(b*x+a)*B+
4/a^5*ln(b*x+a)*A*b-1/a^4*ln(b*x+a)*B-1/3/a^2/(b*x+a)^3*A*b+1/3/a/(b*x+a)^3
*B-A/a^4/x-4/a^5*ln(x)*A*b+1/a^4*ln(x)*B
```

maxima **[A]** time = 0.54, size = 134, normalized size = 1.21

$$-\frac{6\,Aa^3 - 6\,\left(Bab^2 - 4\,Ab^3\right)x^3 - 15\,\left(Ba^2b - 4\,Aab^2\right)x^2 - 11\,\left(Ba^3 - 4\,Aa^2b\right)x}{6\,\left(a^4b^3x^4 + 3\,a^5b^2x^3 + 3\,a^6bx^2 + a^7x\right)} - \frac{(Ba - 4\,Ab)\log(bx + a)}{a^5} + \frac{(Ba - }{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(6*A*a^3 - 6*(B*a*b^2 - 4*A*b^3)*x^3 - 15*(B*a^2*b - 4*A*a*b^2)*x^2 -
11*(B*a^3 - 4*A*a^2*b)*x)/(a^4*b^3*x^4 + 3*a^5*b^2*x^3 + 3*a^6*b*x^2 + a^7*
x) - (B*a - 4*A*b)*log(b*x + a)/a^5 + (B*a - 4*A*b)*log(x)/a^5
```

mupad [B] time = 1.15, size = 118, normalized size = 1.06

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,(4\,A\,b-B\,a)}{a^5}-\frac{\frac{A}{a}+\frac{11\,x\,(4\,A\,b-B\,a)}{6\,a^2}+\frac{b^2\,x^3\,(4\,A\,b-B\,a)}{a^4}+\frac{5\,b\,x^2\,(4\,A\,b-B\,a)}{2\,a^3}}{a^3\,x+3\,a^2\,b\,x^2+3\,a\,b^2\,x^3+b^3\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(4*A*b - B*a))/a^5 - (A/a + (11*x*(4*A*b - B*a))/(6
*a^2) + (b^2*x^3*(4*A*b - B*a))/a^4 + (5*b*x^2*(4*A*b - B*a))/(2*a^3))/(a^3
*x + b^3*x^4 + 3*a^2*b*x^2 + 3*a*b^2*x^3)
```

sympy [B] time = 0.76, size = 204, normalized size = 1.84

$$\frac{-6Aa^3+x^3\left(-24Ab^3+6Bab^2\right)+x^2\left(-60Aab^2+15Ba^2b\right)+x\left(-44Aa^2b+11Ba^3\right)}{6a^7x+18a^6bx^2+18a^5b^2x^3+6a^4b^3x^4}+\frac{(-4Ab+Ba)\log\left(x+\frac{-4Aab}{}\right.}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-6*A*a**3 + x**3*(-24*A*b**3 + 6*B*a*b**2) + x**2*(-60*A*a*b**2 + 15*B*a**
2*b) + x*(-44*A*a**2*b + 11*B*a**3))/(6*a**7*x + 18*a**6*b*x**2 + 18*a**5*b
**2*x**3 + 6*a**4*b**3*x**4) + (-4*A*b + B*a)*log(x + (-4*A*a*b + B*a**2 -
a*(-4*A*b + B*a))/(-8*A*b**2 + 2*B*a*b))/a**5 - (-4*A*b + B*a)*log(x + (-4*
A*a*b + B*a**2 + a*(-4*A*b + B*a))/(-8*A*b**2 + 2*B*a*b))/a**5
```

3.641 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=135

$$\frac{2b\log(x)(5Ab-2aB)}{a^6}-\frac{2b(5Ab-2aB)\log(a+bx)}{a^6}+\frac{4Ab-aB}{a^5x}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}-\frac{A}{2a^4x^2}+\frac{b(Ab}{3a^3(a}$$

```
[Out] -1/2*A/a^4/x^2+(4*A*b-B*a)/a^5/x+1/3*b*(A*b-B*a)/a^3/(b*x+a)^3+1/2*b*(3*A*b
-2*B*a)/a^4/(b*x+a)^2+3*b*(2*A*b-B*a)/a^5/(b*x+a)+2*b*(5*A*b-2*B*a)*ln(x)/a
^6-2*b*(5*A*b-2*B*a)*ln(b*x+a)/a^6
```

Rubi [A] time = 0.12, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{4Ab-aB}{a^5x}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}+\frac{b(Ab-aB)}{3a^3(a+bx)^3}+\frac{2b\log(x)(5Ab-2aB)}{a^6}-\frac{2b(5Ab-2aB)\log(a+bx)}{a^6}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -A/(2*a^4*x^2) + (4*A*b - a*B)/(a^5*x) + (b*(A*b - a*B))/(3*a^3*(a + b*x)^3
) + (b*(3*A*b - 2*a*B))/(2*a^4*(a + b*x)^2) + (3*b*(2*A*b - a*B))/(a^5*(a +
 b*x)) + (2*b*(5*A*b - 2*a*B)*Log[x])/a^6 - (2*b*(5*A*b - 2*a*B)*Log[a + b*
x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x^3(a+bx)^4}\,dx\\
&= \int \left(\frac{A}{a^4x^3}+\frac{-4Ab+aB}{a^5x^2}-\frac{2b(-5Ab+2aB)}{a^6x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^4}+\frac{b^2(-3Ab+2a}{a^4(a+bx)^3}\right.\\
&= -\frac{A}{2a^4x^2}+\frac{4Ab-aB}{a^5x}+\frac{b(Ab-aB)}{3a^3(a+bx)^3}+\frac{b(3Ab-2aB)}{2a^4(a+bx)^2}+\frac{3b(2Ab-aB)}{a^5(a+bx)}+\frac{2b(5}{}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 123, normalized size = 0.91

$$\frac{\frac{a\left(-3a^4(A+2Bx)+a^3bx(15A-44Bx)+10a^2b^2x^2(11A-6Bx)+6ab^3x^3(25A-4Bx)+60Ab^4x^4\right)}{x^2(a+bx)^3}+12b\log(x)(5Ab-2aB)+12b(2aB-5Ab}{6a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(60*A*b^4*x^4 + a^3*b*x*(15*A - 44*B*x) + 10*a^2*b^2*x^2*(11*A - 6*B*x)
 + 6*a*b^3*x^3*(25*A - 4*B*x) - 3*a^4*(A + 2*B*x)))/(x^2*(a + b*x)^3) + 12*
b*(5*A*b - 2*a*B)*Log[x] + 12*b*(-5*A*b + 2*a*B)*Log[a + b*x])/(6*a^6)
```

fricas [**B**] time = 0.93, size = 318, normalized size = 2.36

$$-\frac{3\,Aa^{5} + 12\left(2\,Ba^{2}b^{3} - 5\,Aab^{4}\right)x^{4} + 30\left(2\,Ba^{3}b^{2} - 5\,Aa^{2}b^{3}\right)x^{3} + 22\left(2\,Ba^{4}b - 5\,Aa^{3}b^{2}\right)x^{2} + 3\left(2\,Ba^{5} - 5\,Aa^{4}b\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*A*a^5 + 12*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 30*(2*B*a^3*b^2 - 5*A*a^
2*b^3)*x^3 + 22*(2*B*a^4*b - 5*A*a^3*b^2)*x^2 + 3*(2*B*a^5 - 5*A*a^4*b)*x -
 12*((2*B*a*b^4 - 5*A*b^5)*x^5 + 3*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 3*(2*B*a
^3*b^2 - 5*A*a^2*b^3)*x^3 + (2*B*a^4*b - 5*A*a^3*b^2)*x^2)*log(b*x + a) + 1
2*((2*B*a*b^4 - 5*A*b^5)*x^5 + 3*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 3*(2*B*a^3
*b^2 - 5*A*a^2*b^3)*x^3 + (2*B*a^4*b - 5*A*a^3*b^2)*x^2)*log(x))/(a^6*b^3*x
^5 + 3*a^7*b^2*x^4 + 3*a^8*b*x^3 + a^9*x^2)
```

giac [**A**] time = 0.15, size = 157, normalized size = 1.16

$$-\frac{2\left(2\,Bab - 5\,Ab^{2}\right)\log\left(|x|\right)}{a^{6}} + \frac{2\left(2\,Bab^{2} - 5\,Ab^{3}\right)\log\left(|bx + a|\right)}{a^{6}b} - \frac{3\,Aa^{5} + 12\left(2\,Ba^{2}b^{3} - 5\,Aab^{4}\right)x^{4} + 30\left(2\,Ba^{3}b^{2} -\right.}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -2*(2*B*a*b - 5*A*b^2)*log(abs(x))/a^6 + 2*(2*B*a*b^2 - 5*A*b^3)*log(abs(b*
x + a))/(a^6*b) - 1/6*(3*A*a^5 + 12*(2*B*a^2*b^3 - 5*A*a*b^4)*x^4 + 30*(2*B
*a^3*b^2 - 5*A*a^2*b^3)*x^3 + 22*(2*B*a^4*b - 5*A*a^3*b^2)*x^2 + 3*(2*B*a^5
 - 5*A*a^4*b)*x)/((b*x + a)^3*a^6*x^2)
```

maple [**A**] time = 0.05, size = 168, normalized size = 1.24

$$\frac{A\,b^{2}}{3\left(bx + a\right)^{3}a^{3}} - \frac{Bb}{3\left(bx + a\right)^{3}a^{2}} + \frac{3A\,b^{2}}{2\left(bx + a\right)^{2}a^{4}} - \frac{Bb}{\left(bx + a\right)^{2}a^{3}} + \frac{6A\,b^{2}}{\left(bx + a\right)a^{5}} + \frac{10A\,b^{2}\ln(x)}{a^{6}} - \frac{10A\,b^{2}\ln\left(bx + a\right)}{a^{6}} - \frac{3B}{(bx +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 6*b^2/a^5/(b*x+a)*A-3*b/a^4/(b*x+a)*B+3/2*b^2/a^4/(b*x+a)^2*A-b/a^3/(b*x+a)
^2*B-10*b^2/a^6*ln(b*x+a)*A+4*b/a^5*ln(b*x+a)*B+1/3*b^2/a^3/(b*x+a)^3*A-1/3
*b/a^2/(b*x+a)^3*B-1/2*A/a^4/x^2+4/a^5/x*A*b-1/a^4/x*B+10*b^2/a^6*ln(x)*A-4
*b/a^5*ln(x)*B
```

maxima [**A**] time = 0.62, size = 172, normalized size = 1.27

$$-\frac{3\,Aa^{4} + 12\left(2\,Bab^{3} - 5\,Ab^{4}\right)x^{4} + 30\left(2\,Ba^{2}b^{2} - 5\,Aab^{3}\right)x^{3} + 22\left(2\,Ba^{3}b - 5\,Aa^{2}b^{2}\right)x^{2} + 3\left(2\,Ba^{4} - 5\,Aa^{3}b\right)x}{6\left(a^{5}b^{3}x^{5} + 3\,a^{6}b^{2}x^{4} + 3\,a^{7}bx^{3} + a^{8}x^{2}\right)} + \frac{2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(3*A*a^4 + 12*(2*B*a*b^3 - 5*A*b^4)*x^4 + 30*(2*B*a^2*b^2 - 5*A*a*b^3)
*x^3 + 22*(2*B*a^3*b - 5*A*a^2*b^2)*x^2 + 3*(2*B*a^4 - 5*A*a^3*b)*x)/(a^5*b
^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*b*x^3 + a^8*x^2) + 2*(2*B*a*b - 5*A*b^2)*log
(b*x + a)/a^6 - 2*(2*B*a*b - 5*A*b^2)*log(x)/a^6
```

mupad [B] time = 1.16, size = 168, normalized size = 1.24

$$\frac{\frac{x\,(5\,A\,b-2\,B\,a)}{2\,a^2}-\frac{A}{2\,a}+\frac{5\,b^2\,x^3\,(5\,A\,b-2\,B\,a)}{a^4}+\frac{2\,b^3\,x^4\,(5\,A\,b-2\,B\,a)}{a^5}+\frac{11\,b\,x^2\,(5\,A\,b-2\,B\,a)}{3\,a^3}}{a^3\,x^2+3\,a^2\,b\,x^3+3\,a\,b^2\,x^4+b^3\,x^5}-\frac{4\,b\,\mathrm{atanh}\left(\frac{2\,b\,(5\,A\,b-2\,B\,a)\,(a+2\,b\,x)}{a\,\left(10\,A\,b^2-4\,B\,a\,b\right)}\right)\,(5\,A}{a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x*(5*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (5*b^2*x^3*(5*A*b - 2*B*a))/a^4 +
(2*b^3*x^4*(5*A*b - 2*B*a))/a^5 + (11*b*x^2*(5*A*b - 2*B*a))/(3*a^3))/(a^3*
x^2 + b^3*x^5 + 3*a^2*b*x^3 + 3*a*b^2*x^4) - (4*b*atanh((2*b*(5*A*b - 2*B*a
)*(a + 2*b*x))/(a*(10*A*b^2 - 4*B*a*b)))*(5*A*b - 2*B*a))/a^6
```

sympy [B] time = 0.88, size = 264, normalized size = 1.96

$$\frac{-3Aa^4+x^4\left(60Ab^4-24Bab^3\right)+x^3\left(150Aab^3-60Ba^2b^2\right)+x^2\left(110Aa^2b^2-44Ba^3b\right)+x\left(15Aa^3b-6Ba^4\right)}{6a^8x^2+18a^7bx^3+18a^6b^2x^4+6a^5b^3x^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-3*A*a**4 + x**4*(60*A*b**4 - 24*B*a*b**3) + x**3*(150*A*a*b**3 - 60*B*a**
2*b**2) + x**2*(110*A*a**2*b**2 - 44*B*a**3*b) + x*(15*A*a**3*b - 6*B*a**4)
)/(6*a**8*x**2 + 18*a**7*b*x**3 + 18*a**6*b**2*x**4 + 6*a**5*b**3*x**5) - 2
*b*(-5*A*b + 2*B*a)*log(x + (-10*A*a*b**2 + 4*B*a**2*b - 2*a*b*(-5*A*b + 2*
B*a))/(-20*A*b**3 + 8*B*a*b**2))/a**6 + 2*b*(-5*A*b + 2*B*a)*log(x + (-10*A
*a*b**2 + 4*B*a**2*b + 2*a*b*(-5*A*b + 2*B*a))/(-20*A*b**3 + 8*B*a*b**2))/a
**6
```

3.642 $\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=166

$$-\frac{10b^2\log(x)(2Ab-aB)}{a^7}+\frac{10b^2(2Ab-aB)\log(a+bx)}{a^7}-\frac{2b^2(5Ab-3aB)}{a^6(a+bx)}-\frac{2b(5Ab-2aB)}{a^6x}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}+\frac{4Ab}{2a^5}$$

```
[Out] -1/3*A/a^4/x^3+1/2*(4*A*b-B*a)/a^5/x^2-2*b*(5*A*b-2*B*a)/a^6/x-1/3*b^2*(A*b
-B*a)/a^4/(b*x+a)^3-1/2*b^2*(4*A*b-3*B*a)/a^5/(b*x+a)^2-2*b^2*(5*A*b-3*B*a)
/a^6/(b*x+a)-10*b^2*(2*A*b-B*a)*ln(x)/a^7+10*b^2*(2*A*b-B*a)*ln(b*x+a)/a^7
```

Rubi [**A**] time = 0.17, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{2b^2(5Ab-3aB)}{a^6(a+bx)}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}-\frac{b^2(Ab-aB)}{3a^4(a+bx)^3}-\frac{10b^2\log(x)(2Ab-aB)}{a^7}+\frac{10b^2(2Ab-aB)\log(a+bx)}{a^7}+\frac{4Ab-}{2a^5x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -A/(3*a^4*x^3) + (4*A*b - a*B)/(2*a^5*x^2) - (2*b*(5*A*b - 2*a*B))/(a^6*x)
- (b^2*(A*b - a*B))/(3*a^4*(a + b*x)^3) - (b^2*(4*A*b - 3*a*B))/(2*a^5*(a +
 b*x)^2) - (2*b^2*(5*A*b - 3*a*B))/(a^6*(a + b*x)) - (10*b^2*(2*A*b - a*B)*
Log[x])/a^7 + (10*b^2*(2*A*b - a*B)*Log[a + b*x])/a^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{x^4(a+bx)^4}\,dx\\ &= \int \left(\frac{A}{a^4x^4}+\frac{-4Ab+aB}{a^5x^3}-\frac{2b(-5Ab+2aB)}{a^6x^2}+\frac{10b^2(-2Ab+aB)}{a^7x}-\frac{b^3(-Ab+aB)}{a^4(a+bx)^4}\right.\\ &= -\frac{A}{3a^4x^3}+\frac{4Ab-aB}{2a^5x^2}-\frac{2b(5Ab-2aB)}{a^6x}-\frac{b^2(Ab-aB)}{3a^4(a+bx)^3}-\frac{b^2(4Ab-3aB)}{2a^5(a+bx)^2}-\frac{2b^2(5}{a^6(}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 148, normalized size = 0.89

$$\frac{\frac{a\left(-\left(a^5(2A+3Bx)\right)+3a^4bx(2A+5Bx)+10a^3b^2x^2(11Bx-3A)+10a^2b^3x^3(15Bx-22A)+60ab^4x^4(Bx-5A)-120Ab^5x^5\right)}{x^3(a+bx)^3}-60b^2\log(x)(2Ab-aB)+}{6a^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a*(-120*A*b^5*x^5 + 60*a*b^4*x^4*(-5*A + B*x) - a^5*(2*A + 3*B*x) + 3*a^4
*b*x*(2*A + 5*B*x) + 10*a^3*b^2*x^2*(-3*A + 11*B*x) + 10*a^2*b^3*x^3*(-22*A
 + 15*B*x)))/(x^3*(a + b*x)^3) - 60*b^2*(2*A*b - a*B)*Log[x] + 60*b^2*(2*A*
b - a*B)*Log[a + b*x])/(6*a^7)
```

fricas [B] time = 1.09, size = 333, normalized size = 2.01

$$-\frac{2\,Aa^6-60\left(Ba^2b^4-2\,Aab^5\right)x^5-150\left(Ba^3b^3-2\,Aa^2b^4\right)x^4-110\left(Ba^4b^2-2\,Aa^3b^3\right)x^3-15\left(Ba^5b-2\,Aa^4b^2\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(2*A*a^6 - 60*(B*a^2*b^4 - 2*A*a*b^5)*x^5 - 150*(B*a^3*b^3 - 2*A*a^2*b
^4)*x^4 - 110*(B*a^4*b^2 - 2*A*a^3*b^3)*x^3 - 15*(B*a^5*b - 2*A*a^4*b^2)*x^
2 + 3*(B*a^6 - 2*A*a^5*b)*x + 60*((B*a*b^5 - 2*A*b^6)*x^6 + 3*(B*a^2*b^4 -
2*A*a*b^5)*x^5 + 3*(B*a^3*b^3 - 2*A*a^2*b^4)*x^4 + (B*a^4*b^2 - 2*A*a^3*b^3
)*x^3)*log(b*x + a) - 60*((B*a*b^5 - 2*A*b^6)*x^6 + 3*(B*a^2*b^4 - 2*A*a*b^
5)*x^5 + 3*(B*a^3*b^3 - 2*A*a^2*b^4)*x^4 + (B*a^4*b^2 - 2*A*a^3*b^3)*x^3)*l
og(x))/(a^7*b^3*x^6 + 3*a^8*b^2*x^5 + 3*a^9*b*x^4 + a^10*x^3)
```

giac [A] time = 0.15, size = 175, normalized size = 1.05

$$\frac{10\left(Bab^2-2\,Ab^3\right)\log\left(|x|\right)}{a^7}-\frac{10\left(Bab^3-2\,Ab^4\right)\log\left(|bx+a|\right)}{a^7b}+\frac{60\,Bab^4x^5-120\,Ab^5x^5+150\,Ba^2b^3x^4-300\,Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 10*(B*a*b^2 - 2*A*b^3)*log(abs(x))/a^7 - 10*(B*a*b^3 - 2*A*b^4)*log(abs(b*x
 + a))/(a^7*b) + 1/6*(60*B*a*b^4*x^5 - 120*A*b^5*x^5 + 150*B*a^2*b^3*x^4 -
300*A*a*b^4*x^4 + 110*B*a^3*b^2*x^3 - 220*A*a^2*b^3*x^3 + 15*B*a^4*b*x^2 -
30*A*a^3*b^2*x^2 - 3*B*a^5*x + 6*A*a^4*b*x - 2*A*a^5)/((b*x^2 + a*x)^3*a^6)
```

maple [A] time = 0.07, size = 200, normalized size = 1.20

$$-\frac{A\,b^3}{3\left(bx+a\right)^3a^4}+\frac{B\,b^2}{3\left(bx+a\right)^3a^3}-\frac{2A\,b^3}{\left(bx+a\right)^2a^5}+\frac{3B\,b^2}{2\left(bx+a\right)^2a^4}-\frac{10A\,b^3}{\left(bx+a\right)a^6}-\frac{20A\,b^3\ln(x)}{a^7}+\frac{20A\,b^3\ln\left(bx+a\right)}{a^7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -2*b^3/a^5/(b*x+a)^2*A+3/2*b^2/a^4/(b*x+a)^2*B-1/3*b^3/a^4/(b*x+a)^3*A+1/3*
b^2/a^3/(b*x+a)^3*B+20*b^3/a^7*ln(b*x+a)*A-10*b^2/a^6*ln(b*x+a)*B-10*b^3/a^
6/(b*x+a)*A+6*b^2/a^5/(b*x+a)*B-1/3*A/a^4/x^3+2/a^5/x^2*A*b-1/2/a^4/x^2*B-1
0*b^2/a^6/x*A+4*b/a^5/x*B-20*b^3/a^7*ln(x)*A+10*b^2/a^6*ln(x)*B
```

maxima [A] time = 0.67, size = 193, normalized size = 1.16

$$-\frac{2\,Aa^5-60\left(Bab^4-2\,Ab^5\right)x^5-150\left(Ba^2b^3-2\,Aab^4\right)x^4-110\left(Ba^3b^2-2\,Aa^2b^3\right)x^3-15\left(Ba^4b-2\,Aa^3b^2\right)x^2}{6\left(a^6b^3x^6+3\,a^7b^2x^5+3\,a^8bx^4+a^9x^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(2*A*a^5 - 60*(B*a*b^4 - 2*A*b^5)*x^5 - 150*(B*a^2*b^3 - 2*A*a*b^4)*x^
4 - 110*(B*a^3*b^2 - 2*A*a^2*b^3)*x^3 - 15*(B*a^4*b - 2*A*a^3*b^2)*x^2 + 3*
(B*a^5 - 2*A*a^4*b)*x)/(a^6*b^3*x^6 + 3*a^7*b^2*x^5 + 3*a^8*b*x^4 + a^9*x^3
) - 10*(B*a*b^2 - 2*A*b^3)*log(b*x + a)/a^7 + 10*(B*a*b^2 - 2*A*b^3)*log(x)
/a^7
```

mupad [**B**] time = 1.19, size = 195, normalized size = 1.17

$$\frac{20\,b^2\,\mathrm{atanh}\left(\frac{10\,b^2\,(2\,A\,b-B\,a)\,(a+2\,b\,x)}{a\,\left(20\,A\,b^3-10\,B\,a\,b^2\right)}\right)\,(2\,A\,b-B\,a)}{a^7}-\frac{\frac{A}{3\,a}-\frac{x\,(2\,A\,b-B\,a)}{2\,a^2}+\frac{55\,b^2\,x^3\,(2\,A\,b-B\,a)}{3\,a^4}+\frac{25\,b^3\,x^4\,(2\,A\,b-B\,a)}{a^5}+\frac{10\,b^4\,x^5\,(2\,A}{a^6}}{a^3\,x^3+3\,a^2\,b\,x^4+3\,a\,b^2\,x^5+b^3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (20*b^2*atanh((10*b^2*(2*A*b - B*a)*(a + 2*b*x))/(a*(20*A*b^3 - 10*B*a*b^2)
))*(2*A*b - B*a))/a^7 - (A/(3*a) - (x*(2*A*b - B*a))/(2*a^2) + (55*b^2*x^3*
(2*A*b - B*a))/(3*a^4) + (25*b^3*x^4*(2*A*b - B*a))/a^5 + (10*b^4*x^5*(2*A*
b - B*a))/a^6 + (5*b*x^2*(2*A*b - B*a))/(2*a^3))/(a^3*x^3 + b^3*x^6 + 3*a^2
*b*x^4 + 3*a*b^2*x^5)
```

sympy [**A**] time = 0.94, size = 291, normalized size = 1.75

$$\frac{-2Aa^5+x^5\left(-120Ab^5+60Bab^4\right)+x^4\left(-300Aab^4+150Ba^2b^3\right)+x^3\left(-220Aa^2b^3+110Ba^3b^2\right)+x^2\left(-30Aa^3b^2\right.}{6a^9x^3+18a^8bx^4+18a^7b^2x^5+6a^6b^3x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*a**5 + x**5*(-120*A*b**5 + 60*B*a*b**4) + x**4*(-300*A*a*b**4 + 150*B
*a**2*b**3) + x**3*(-220*A*a**2*b**3 + 110*B*a**3*b**2) + x**2*(-30*A*a**3*
b**2 + 15*B*a**4*b) + x*(6*A*a**4*b - 3*B*a**5))/(6*a**9*x**3 + 18*a**8*b*x
**4 + 18*a**7*b**2*x**5 + 6*a**6*b**3*x**6) + 10*b**2*(-2*A*b + B*a)*log(x
+ (-20*A*a*b**3 + 10*B*a**2*b**2 - 10*a*b**2*(-2*A*b + B*a))/(-40*A*b**4 +
20*B*a*b**3))/a**7 - 10*b**2*(-2*A*b + B*a)*log(x + (-20*A*a*b**3 + 10*B*a*
*2*b**2 + 10*a*b**2*(-2*A*b + B*a))/(-40*A*b**4 + 20*B*a*b**3))/a**7
```

3.643 $\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=171

$$-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4Ab-7aB)}{2b^8(a+bx)^2}-\frac{5a^2(3Ab-7aB)}{b^8(a+bx)}-\frac{3a(2Ab-7aB)\log(a+}{b^8}$$

```
[Out] (A*b-6*B*a)*x/b^7+1/2*B*x^2/b^6-1/5*a^6*(A*b-B*a)/b^8/(b*x+a)^5+1/4*a^5*(6*
A*b-7*B*a)/b^8/(b*x+a)^4-a^4*(5*A*b-7*B*a)/b^8/(b*x+a)^3+5/2*a^3*(4*A*b-7*B
*a)/b^8/(b*x+a)^2-5*a^2*(3*A*b-7*B*a)/b^8/(b*x+a)-3*a*(2*A*b-7*B*a)*ln(b*x+
a)/b^8
```

Rubi [A] time = 0.22, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {27, 77}

$$-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4Ab-7aB)}{2b^8(a+bx)^2}-\frac{5a^2(3Ab-7aB)}{b^8(a+bx)}+\frac{x(Ab-6aB)}{b^7}-\frac{3a(2Ab-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - 6*a*B)*x)/b^7 + (B*x^2)/(2*b^6) - (a^6*(A*b - a*B))/(5*b^8*(a + b*x
)^5) + (a^5*(6*A*b - 7*a*B))/(4*b^8*(a + b*x)^4) - (a^4*(5*A*b - 7*a*B))/(b
^8*(a + b*x)^3) + (5*a^3*(4*A*b - 7*a*B))/(2*b^8*(a + b*x)^2) - (5*a^2*(3*A
*b - 7*a*B))/(b^8*(a + b*x)) - (3*a*(2*A*b - 7*a*B)*Log[a + b*x])/b^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{x^6(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{x^6(A+Bx)}{(a+bx)^6}\,dx$$
$$=\int \left(\frac{Ab-6aB}{b^7}+\frac{Bx}{b^6}-\frac{a^6(-Ab+aB)}{b^7(a+bx)^6}+\frac{a^5(-6Ab+7aB)}{b^7(a+bx)^5}-\frac{3a^4(-5Ab+7aB)}{b^7(a+bx)^4}+\right.$$
$$=\frac{(Ab-6aB)x}{b^7}+\frac{Bx^2}{2b^6}-\frac{a^6(Ab-aB)}{5b^8(a+bx)^5}+\frac{a^5(6Ab-7aB)}{4b^8(a+bx)^4}-\frac{a^4(5Ab-7aB)}{b^8(a+bx)^3}+\frac{5a^3(4}{2b^8(}$$

Mathematica [A] time = 0.10, size = 151, normalized size = 0.88

$$\frac{\frac{4a^6(aB-Ab)}{(a+bx)^5}+\frac{5a^5(6Ab-7aB)}{(a+bx)^4}+\frac{20a^4(7aB-5Ab)}{(a+bx)^3}-\frac{50a^3(7aB-4Ab)}{(a+bx)^2}+\frac{100a^2(7aB-3Ab)}{a+bx}+20bx(Ab-6aB)+60a(7aB-2Ab)\,\mathrm{lo}}{20b^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^6*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (20*b*(A*b - 6*a*B)*x + 10*b^2*B*x^2 + (4*a^6*(-(A*b) + a*B))/(a + b*x)^5 +
 (5*a^5*(6*A*b - 7*a*B))/(a + b*x)^4 + (20*a^4*(-5*A*b + 7*a*B))/(a + b*x)^
3 - (50*a^3*(-4*A*b + 7*a*B))/(a + b*x)^2 + (100*a^2*(-3*A*b + 7*a*B))/(a +
 b*x) + 60*a*(-2*A*b + 7*a*B)*Log[a + b*x])/(20*b^8)
```

fricas [B] time = 0.78, size = 349, normalized size = 2.04

$$\frac{10\,Bb^{7}x^{7} + 459\,Ba^{7} - 174\,Aa^{6}b - 10\left(7\,Bab^{6} - 2\,Ab^{7}\right)x^{6} - 100\left(5\,Ba^{2}b^{5} - Aab^{6}\right)x^{5} - 100\left(4\,Ba^{3}b^{4} + Aa^{2}b^{5}\right)x^{4} +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*b^7*x^7 + 459*B*a^7 - 174*A*a^6*b - 10*(7*B*a*b^6 - 2*A*b^7)*x^6
 - 100*(5*B*a^2*b^5 - A*a*b^6)*x^5 - 100*(4*B*a^3*b^4 + A*a^2*b^5)*x^4 + 10
0*(13*B*a^4*b^3 - 8*A*a^3*b^4)*x^3 + 300*(9*B*a^5*b^2 - 4*A*a^4*b^3)*x^2 +
375*(5*B*a^6*b - 2*A*a^5*b^2)*x + 60*(7*B*a^7 - 2*A*a^6*b + (7*B*a^2*b^5 -
2*A*a*b^6)*x^5 + 5*(7*B*a^3*b^4 - 2*A*a^2*b^5)*x^4 + 10*(7*B*a^4*b^3 - 2*A*
a^3*b^4)*x^3 + 10*(7*B*a^5*b^2 - 2*A*a^4*b^3)*x^2 + 5*(7*B*a^6*b - 2*A*a^5*
b^2)*x)*log(b*x + a))/(b^13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^3 + 10*a^3*b
^10*x^2 + 5*a^4*b^9*x + a^5*b^8)
```

giac [A] time = 0.16, size = 172, normalized size = 1.01

$$\frac{3\left(7\,Ba^{2} - 2\,Aab\right)\log\left(|bx + a|\right)}{b^{8}} + \frac{Bb^{6}x^{2} - 12\,Bab^{5}x + 2\,Ab^{6}x}{2\,b^{12}} + \frac{459\,Ba^{7} - 174\,Aa^{6}b + 100\left(7\,Ba^{3}b^{4} - 3\,Aa^{2}b^{5}\right)x^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 3*(7*B*a^2 - 2*A*a*b)*log(abs(b*x + a))/b^8 + 1/2*(B*b^6*x^2 - 12*B*a*b^5*x
 + 2*A*b^6*x)/b^12 + 1/20*(459*B*a^7 - 174*A*a^6*b + 100*(7*B*a^3*b^4 - 3*A
*a^2*b^5)*x^4 + 50*(49*B*a^4*b^3 - 20*A*a^3*b^4)*x^3 + 10*(329*B*a^5*b^2 -
130*A*a^4*b^3)*x^2 + 35*(57*B*a^6*b - 22*A*a^5*b^2)*x)/((b*x + a)^5*b^8)
```

maple [A] time = 0.07, size = 213, normalized size = 1.25

$$-\frac{A\,a^{6}}{5\left(bx + a\right)^{5}b^{7}} + \frac{B\,a^{7}}{5\left(bx + a\right)^{5}b^{8}} + \frac{3A\,a^{5}}{2\left(bx + a\right)^{4}b^{7}} - \frac{7B\,a^{6}}{4\left(bx + a\right)^{4}b^{8}} - \frac{5A\,a^{4}}{\left(bx + a\right)^{3}b^{7}} + \frac{7B\,a^{5}}{\left(bx + a\right)^{3}b^{8}} + \frac{10A\,a^{3}}{\left(bx + a\right)^{2}b^{7}} - \frac{35B}{2\left(bx +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/2*B*x^2/b^6+1/b^6*A*x-6/b^7*B*a*x-5*a^4/b^7/(b*x+a)^3*A+7*a^5/b^8/(b*x+a)
^3*B-1/5*a^6/b^7/(b*x+a)^5*A+1/5*a^7/b^8/(b*x+a)^5*B+10*a^3/b^7/(b*x+a)^2*A
-35/2*a^4/b^8/(b*x+a)^2*B+3/2*a^5/b^7/(b*x+a)^4*A-7/4*a^6/b^8/(b*x+a)^4*B-6
*a/b^7*ln(b*x+a)*A+21*a^2/b^8*ln(b*x+a)*B-15*a^2/b^7/(b*x+a)*A+35*a^3/b^8/(
b*x+a)*B
```

maxima [A] time = 0.70, size = 213, normalized size = 1.25

$$\frac{459\,Ba^{7} - 174\,Aa^{6}b + 100\left(7\,Ba^{3}b^{4} - 3\,Aa^{2}b^{5}\right)x^{4} + 50\left(49\,Ba^{4}b^{3} - 20\,Aa^{3}b^{4}\right)x^{3} + 10\left(329\,Ba^{5}b^{2} - 130\,Aa^{4}b^{3}\right)x^{2}}{20\left(b^{13}x^{5} + 5\,ab^{12}x^{4} + 10\,a^{2}b^{11}x^{3} + 10\,a^{3}b^{10}x^{2} + 5\,a^{4}b^{9}x + a^{5}b^{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*a^7 - 174*A*a^6*b + 100*(7*B*a^3*b^4 - 3*A*a^2*b^5)*x^4 + 50*(4
9*B*a^4*b^3 - 20*A*a^3*b^4)*x^3 + 10*(329*B*a^5*b^2 - 130*A*a^4*b^3)*x^2 +
35*(57*B*a^6*b - 22*A*a^5*b^2)*x)/(b^13*x^5 + 5*a*b^12*x^4 + 10*a^2*b^11*x^
3 + 10*a^3*b^10*x^2 + 5*a^4*b^9*x + a^5*b^8) + 1/2*(B*b*x^2 - 2*(6*B*a - A*
b)*x)/b^7 + 3*(7*B*a^2 - 2*A*a*b)*log(b*x + a)/b^8
```

mupad [B] time = 1.16, size = 210, normalized size = 1.23

$$x\left(\frac{A}{b^6}-\frac{6\,B\,a}{b^7}\right)-\frac{x^2\,\left(65\,A\,a^4\,b^2-\frac{329\,B\,a^5\,b}{2}\right)-x\,\left(\frac{399\,B\,a^6}{4}-\frac{77\,A\,a^5\,b}{2}\right)-\frac{3\,\left(153\,B\,a^7-58\,A\,a^6\,b\right)}{20\,b}+x^4\,(15\,A\,a^2\,b^4-35\,B\,a}{a^5\,b^7+5\,a^4\,b^8\,x+10\,a^3\,b^9\,x^2+10\,a^2\,b^{10}\,x^3+5\,a\,b^{11}\,x^4+b^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^6*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x*(A/b^6 - (6*B*a)/b^7) - (x^2*(65*A*a^4*b^2 - (329*B*a^5*b)/2) - x*((399*B
*a^6)/4 - (77*A*a^5*b)/2) - (3*(153*B*a^7 - 58*A*a^6*b))/(20*b) + x^4*(15*A
*a^2*b^4 - 35*B*a^3*b^3) + x^3*(50*A*a^3*b^3 - (245*B*a^4*b^2)/2))/(a^5*b^7
 + b^12*x^5 + 5*a^4*b^8*x + 5*a*b^11*x^4 + 10*a^3*b^9*x^2 + 10*a^2*b^10*x^3
) + (B*x^2)/(2*b^6) + (log(a + b*x)*(21*B*a^2 - 6*A*a*b))/b^8
```

sympy [A] time = 2.75, size = 216, normalized size = 1.26

$$\frac{Bx^2}{2b^6}+\frac{3a\left(-2Ab+7Ba\right)\log\left(a+bx\right)}{b^8}+x\left(\frac{A}{b^6}-\frac{6Ba}{b^7}\right)+\frac{-174Aa^6b+459Ba^7+x^4\left(-300Aa^2b^5+700Ba^3b^4\right)+x^3}{20a^5b^8+100a^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*x**2/(2*b**6) + 3*a*(-2*A*b + 7*B*a)*log(a + b*x)/b**8 + x*(A/b**6 - 6*B*
a/b**7) + (-174*A*a**6*b + 459*B*a**7 + x**4*(-300*A*a**2*b**5 + 700*B*a**3
*b**4) + x**3*(-1000*A*a**3*b**4 + 2450*B*a**4*b**3) + x**2*(-1300*A*a**4*b
**3 + 3290*B*a**5*b**2) + x*(-770*A*a**5*b**2 + 1995*B*a**6*b))/(20*a**5*b*
*8 + 100*a**4*b**9*x + 200*a**3*b**10*x**2 + 200*a**2*b**11*x**3 + 100*a*b*
*12*x**4 + 20*b**13*x**5)
```

3.644 $\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=146

$$\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab-3aB)}{b^7(a+bx)}+\frac{(Ab-6aB)\log(a+bx)}{b^7}+\frac{Bx}{b^6}$$

```
[Out] B*x/b^6+1/5*a^5*(A*b-B*a)/b^7/(b*x+a)^5-1/4*a^4*(5*A*b-6*B*a)/b^7/(b*x+a)^4
+5/3*a^3*(2*A*b-3*B*a)/b^7/(b*x+a)^3-5*a^2*(A*b-2*B*a)/b^7/(b*x+a)^2+5*a*(A
*b-3*B*a)/b^7/(b*x+a)+(A*b-6*B*a)*ln(b*x+a)/b^7
```

Rubi [A] time = 0.16, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab-3aB)}{b^7(a+bx)}+\frac{(Ab-6aB)\log(a+bx)}{b^7}+\frac{Bx}{b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (B*x)/b^6 + (a^5*(A*b - a*B))/(5*b^7*(a + b*x)^5) - (a^4*(5*A*b - 6*a*B))/(
4*b^7*(a + b*x)^4) + (5*a^3*(2*A*b - 3*a*B))/(3*b^7*(a + b*x)^3) - (5*a^2*(
A*b - 2*a*B))/(b^7*(a + b*x)^2) + (5*a*(A*b - 3*a*B))/(b^7*(a + b*x)) + ((A
*b - 6*a*B)*Log[a + b*x])/b^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^5(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^5(A+Bx)}{(a+bx)^6}\,dx\\ &= \int \left(\frac{B}{b^6}+\frac{a^5(-Ab+aB)}{b^6(a+bx)^6}-\frac{a^4(-5Ab+6aB)}{b^6(a+bx)^5}+\frac{5a^3(-2Ab+3aB)}{b^6(a+bx)^4}-\frac{10a^2(-Ab+2a}{b^6(a+bx)^3}\right.\\ &= \frac{Bx}{b^6}+\frac{a^5(Ab-aB)}{5b^7(a+bx)^5}-\frac{a^4(5Ab-6aB)}{4b^7(a+bx)^4}+\frac{5a^3(2Ab-3aB)}{3b^7(a+bx)^3}-\frac{5a^2(Ab-2aB)}{b^7(a+bx)^2}+\frac{5a(Ab}{b^7(a}\end{aligned}$$

Mathematica [A] time = 0.08, size = 130, normalized size = 0.89

$$\frac{\frac{12a^5(Ab-aB)}{(a+bx)^5}+\frac{15a^4(6aB-5Ab)}{(a+bx)^4}+\frac{100a^3(2Ab-3aB)}{(a+bx)^3}+\frac{300a^2(2aB-Ab)}{(a+bx)^2}+\frac{300a(Ab-3aB)}{a+bx}+60(Ab-6aB)\log(a+bx)+60bBx}{60b^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^5*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (60*b*B*x + (12*a^5*(A*b - a*B))/(a + b*x)^5 + (15*a^4*(-5*A*b + 6*a*B))/(a
 + b*x)^4 + (100*a^3*(2*A*b - 3*a*B))/(a + b*x)^3 + (300*a^2*(-(A*b) + 2*a*
B))/(a + b*x)^2 + (300*a*(A*b - 3*a*B))/(a + b*x) + 60*(A*b - 6*a*B)*Log[a
+ b*x])/(60*b^7)
```

fricas [B] time = 0.83, size = 311, normalized size = 2.13

$$\frac{60\,Bb^6x^6 + 300\,Bab^5x^5 - 522\,Ba^6 + 137\,Aa^5b - 300\,\left(Ba^2b^4 - Aab^5\right)x^4 - 300\,\left(8\,Ba^3b^3 - 3\,Aa^2b^4\right)x^3 - 100\,\big(36}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^6*x^6 + 300*B*a*b^5*x^5 - 522*B*a^6 + 137*A*a^5*b - 300*(B*a^2
*b^4 - A*a*b^5)*x^4 - 300*(8*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 100*(36*B*a^4*b
^2 - 11*A*a^3*b^3)*x^2 - 125*(18*B*a^5*b - 5*A*a^4*b^2)*x - 60*(6*B*a^6 - A
*a^5*b + (6*B*a*b^5 - A*b^6)*x^5 + 5*(6*B*a^2*b^4 - A*a*b^5)*x^4 + 10*(6*B*
a^3*b^3 - A*a^2*b^4)*x^3 + 10*(6*B*a^4*b^2 - A*a^3*b^3)*x^2 + 5*(6*B*a^5*b
- A*a^4*b^2)*x)*log(b*x + a))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 +
10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)
```

giac [A] time = 0.15, size = 144, normalized size = 0.99

$$\frac{Bx}{b^6} - \frac{(6\,Ba - Ab)\log\left(|bx + a|\right)}{b^7} - \frac{522\,Ba^6 - 137\,Aa^5b + 300\,\left(3\,Ba^2b^4 - Aab^5\right)x^4 + 300\,\left(10\,Ba^3b^3 - 3\,Aa^2b^4\right)x^3}{60\,(bx + a)^5b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] B*x/b^6 - (6*B*a - A*b)*log(abs(b*x + a))/b^7 - 1/60*(522*B*a^6 - 137*A*a^5
*b + 300*(3*B*a^2*b^4 - A*a*b^5)*x^4 + 300*(10*B*a^3*b^3 - 3*A*a^2*b^4)*x^3
 + 100*(39*B*a^4*b^2 - 11*A*a^3*b^3)*x^2 + 5*(462*B*a^5*b - 125*A*a^4*b^2)*
x)/((b*x + a)^5*b^7)
```

maple [A] time = 0.07, size = 190, normalized size = 1.30

$$\frac{A\,a^5}{5\,(bx + a)^5\,b^6} - \frac{B\,a^6}{5\,(bx + a)^5\,b^7} - \frac{5A\,a^4}{4\,(bx + a)^4\,b^6} + \frac{3B\,a^5}{2\,(bx + a)^4\,b^7} + \frac{10A\,a^3}{3\,(bx + a)^3\,b^6} - \frac{5B\,a^4}{(bx + a)^3\,b^7} - \frac{5A\,a^2}{(bx + a)^2\,b^6} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] B*x/b^6+10/3*a^3/b^6/(b*x+a)^3*A-5*a^4/b^7/(b*x+a)^3*B+1/5*a^5/b^6/(b*x+a)^
5*A-1/5*a^6/b^7/(b*x+a)^5*B-5/4*a^4/b^6/(b*x+a)^4*A+3/2*a^5/b^7/(b*x+a)^4*B
-5*a^2/b^6/(b*x+a)^2*A+10*a^3/b^7/(b*x+a)^2*B+1/b^6*ln(b*x+a)*A-6/b^7*ln(b*
x+a)*B*a+5*a/b^6/(b*x+a)*A-15*a^2/b^7/(b*x+a)*B
```

maxima [A] time = 0.64, size = 190, normalized size = 1.30

$$-\frac{522\,Ba^6 - 137\,Aa^5b + 300\,\left(3\,Ba^2b^4 - Aab^5\right)x^4 + 300\,\left(10\,Ba^3b^3 - 3\,Aa^2b^4\right)x^3 + 100\,\left(39\,Ba^4b^2 - 11\,Aa^3b^3\right)x^2}{60\,\left(b^{12}x^5 + 5\,ab^{11}x^4 + 10\,a^2b^{10}x^3 + 10\,a^3b^9x^2 + 5\,a^4b^8x + a^5b^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(522*B*a^6 - 137*A*a^5*b + 300*(3*B*a^2*b^4 - A*a*b^5)*x^4 + 300*(10*
B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 100*(39*B*a^4*b^2 - 11*A*a^3*b^3)*x^2 + 5*(4
62*B*a^5*b - 125*A*a^4*b^2)*x)/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 +
 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7) + B*x/b^6 - (6*B*a - A*b)*log(b*x
+ a)/b^7
```

mupad [B] time = 0.13, size = 187, normalized size = 1.28

$$\frac{B\,x}{b^6}-\frac{x\,(\frac{77\,B\,a^5}{2}-\frac{125\,A\,a^4\,b}{12})+x^4\,(15\,B\,a^2\,b^3-5\,A\,a\,b^4)-x^2\,(\frac{55\,A\,a^3\,b^2}{3}-65\,B\,a^4\,b)+\frac{522\,B\,a^6-137\,A\,a^5\,b}{60\,b}-x^3\,(15\,A\,a^2}{a^5\,b^6+5\,a^4\,b^7\,x+10\,a^3\,b^8\,x^2+10\,a^2\,b^9\,x^3+5\,a\,b^{10}\,x^4+b^{11}\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^5*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (B*x)/b^6 - (x*((77*B*a^5)/2 - (125*A*a^4*b)/12) + x^4*(15*B*a^2*b^3 - 5*A*
a*b^4) - x^2*((55*A*a^3*b^2)/3 - 65*B*a^4*b) + (522*B*a^6 - 137*A*a^5*b)/(6
0*b) - x^3*(15*A*a^2*b^3 - 50*B*a^3*b^2))/(a^5*b^6 + b^11*x^5 + 5*a^4*b^7*x
 + 5*a*b^10*x^4 + 10*a^3*b^8*x^2 + 10*a^2*b^9*x^3) + (log(a + b*x)*(A*b - 6
*B*a))/b^7
```

sympy [A] time = 2.48, size = 190, normalized size = 1.30

$$\frac{Bx}{b^6}+\frac{137Aa^5b-522Ba^6+x^4\,(300Aab^5-900Ba^2b^4)+x^3\,(900Aa^2b^4-3000Ba^3b^3)+x^2\,(1100Aa^3b^3-3900Ba^4}{60a^5b^7+300a^4b^8x+600a^3b^9x^2+600a^2b^{10}x^3+300ab^{11}x^4+60b^{12}x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*x/b**6 + (137*A*a**5*b - 522*B*a**6 + x**4*(300*A*a*b**5 - 900*B*a**2*b**
4) + x**3*(900*A*a**2*b**4 - 3000*B*a**3*b**3) + x**2*(1100*A*a**3*b**3 - 3
900*B*a**4*b**2) + x*(625*A*a**4*b**2 - 2310*B*a**5*b))/(60*a**5*b**7 + 300
*a**4*b**8*x + 600*a**3*b**9*x**2 + 600*a**2*b**10*x**3 + 300*a*b**11*x**4
+ 60*b**12*x**5) - (-A*b + 6*B*a)*log(a + b*x)/b**7
```

3.645 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=106

$$-\frac{a^4B}{4b^6(a+bx)^4}+\frac{4a^3B}{3b^6(a+bx)^3}-\frac{3a^2B}{b^6(a+bx)^2}+\frac{x^5(Ab-aB)}{5ab(a+bx)^5}+\frac{4aB}{b^6(a+bx)}+\frac{B\log(a+bx)}{b^6}$$

```
[Out] 1/5*(A*b-B*a)*x^5/a/b/(b*x+a)^5-1/4*a^4*B/b^6/(b*x+a)^4+4/3*a^3*B/b^6/(b*x+
a)^3-3*a^2*B/b^6/(b*x+a)^2+4*a*B/b^6/(b*x+a)+B*ln(b*x+a)/b^6
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = $\{27, 78, 43\}$

$$-\frac{3a^2B}{b^6(a+bx)^2}+\frac{4a^3B}{3b^6(a+bx)^3}-\frac{a^4B}{4b^6(a+bx)^4}+\frac{x^5(Ab-aB)}{5ab(a+bx)^5}+\frac{4aB}{b^6(a+bx)}+\frac{B\log(a+bx)}{b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^5)/(5*a*b*(a + b*x)^5) - (a^4*B)/(4*b^6*(a + b*x)^4) + (4*a^
3*B)/(3*b^6*(a + b*x)^3) - (3*a^2*B)/(b^6*(a + b*x)^2) + (4*a*B)/(b^6*(a +
b*x)) + (B*Log[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^4(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^5}{5ab(a+bx)^5} + \frac{B\int \frac{x^4}{(a+bx)^5}\,dx}{b}$$

$$= \frac{(Ab-aB)x^5}{5ab(a+bx)^5} + \frac{B\int \left(\frac{a^4}{b^4(a+bx)^5} - \frac{4a^3}{b^4(a+bx)^4} + \frac{6a^2}{b^4(a+bx)^3} - \frac{4a}{b^4(a+bx)^2} + \frac{1}{b^4(a+bx)}\right)dx}{b}$$

$$= \frac{(Ab-aB)x^5}{5ab(a+bx)^5} - \frac{a^4B}{4b^6(a+bx)^4} + \frac{4a^3B}{3b^6(a+bx)^3} - \frac{3a^2B}{b^6(a+bx)^2} + \frac{4aB}{b^6(a+bx)} + \frac{B\log(a}{b^6}$$

Mathematica [A] time = 0.04, size = 113, normalized size = 1.07

$$\frac{137a^5B + a^4(625bBx-12Ab) + 20a^3b^2x(55Bx-3A) + 60a^2b^3x^2(15Bx-2A) + 60ab^4x^3(5Bx-2A) + 60B(a+b}{60b^6(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (137*a^5*B - 60*A*b^5*x^4 + 60*a*b^4*x^3*(-2*A + 5*B*x) + 60*a^2*b^3*x^2*(-
2*A + 15*B*x) + 20*a^3*b^2*x*(-3*A + 55*B*x) + a^4*(-12*A*b + 625*b*B*x) +
60*B*(a + b*x)^5*Log[a + b*x])/(60*b^6*(a + b*x)^5)
```

fricas [B] time = 0.72, size = 222, normalized size = 2.09

$$\frac{137\,Ba^5 - 12\,Aa^4b + 60\left(5\,Bab^4 - Ab^5\right)x^4 + 60\left(15\,Ba^2b^3 - 2\,Aab^4\right)x^3 + 20\left(55\,Ba^3b^2 - 6\,Aa^2b^3\right)x^2 + 5\left(125\,Ba^4b\right.}{60\left(b^{11}x^5 + 5\,ab^{10}x^4 + 10\,a^2b^9x^3 + 10\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*a^5 - 12*A*a^4*b + 60*(5*B*a*b^4 - A*b^5)*x^4 + 60*(15*B*a^2*b^
3 - 2*A*a*b^4)*x^3 + 20*(55*B*a^3*b^2 - 6*A*a^2*b^3)*x^2 + 5*(125*B*a^4*b -
 12*A*a^3*b^2)*x + 60*(B*b^5*x^5 + 5*B*a*b^4*x^4 + 10*B*a^2*b^3*x^3 + 10*B*
a^3*b^2*x^2 + 5*B*a^4*b*x + B*a^5)*log(b*x + a))/(b^11*x^5 + 5*a*b^10*x^4 +
 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b^7*x + a^5*b^6)
```

giac [A] time = 0.15, size = 124, normalized size = 1.17

$$\frac{B\log\left(|bx+a|\right)}{b^6} + \frac{60\left(5\,Bab^3 - Ab^4\right)x^4 + 60\left(15\,Ba^2b^2 - 2\,Aab^3\right)x^3 + 20\left(55\,Ba^3b - 6\,Aa^2b^2\right)x^2 + 5\left(125\,Ba^4 - 12\right.}{60\,(bx+a)^5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] B*log(abs(b*x + a))/b^6 + 1/60*(60*(5*B*a*b^3 - A*b^4)*x^4 + 60*(15*B*a^2*b
^2 - 2*A*a*b^3)*x^3 + 20*(55*B*a^3*b - 6*A*a^2*b^2)*x^2 + 5*(125*B*a^4 - 12
*A*a^3*b)*x + (137*B*a^5 - 12*A*a^4*b)/b)/((b*x + a)^5*b^5)
```

maple [A] time = 0.05, size = 165, normalized size = 1.56

$$-\frac{A\,a^4}{5\,(bx+a)^5\,b^5} + \frac{B\,a^5}{5\,(bx+a)^5\,b^6} + \frac{A\,a^3}{(bx+a)^4\,b^5} - \frac{5B\,a^4}{4\,(bx+a)^4\,b^6} - \frac{2A\,a^2}{(bx+a)^3\,b^5} + \frac{10B\,a^3}{3\,(bx+a)^3\,b^6} + \frac{2Aa}{(bx+a)^2\,b^5} - \frac{5B\,a^2}{(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -2*a^2/b^5/(b*x+a)^3*A+10/3*a^3*B/b^6/(b*x+a)^3-1/5*a^4/b^5/(b*x+a)^5*A+1/5
*a^5/b^6/(b*x+a)^5*B+a^3/b^5/(b*x+a)^4*A-5/4*a^4*B/b^6/(b*x+a)^4+2*a/b^5/(b
*x+a)^2*A-5*a^2*B/b^6/(b*x+a)^2+B*ln(b*x+a)/b^6-1/b^5/(b*x+a)*A+5*a*B/b^6/(
b*x+a)
```

maxima [A] time = 0.60, size = 170, normalized size = 1.60

$$\frac{137\,Ba^5 - 12\,Aa^4b + 60\,\big(5\,Bab^4 - Ab^5\big)x^4 + 60\,\big(15\,Ba^2b^3 - 2\,Aab^4\big)x^3 + 20\,\big(55\,Ba^3b^2 - 6\,Aa^2b^3\big)x^2 + 5\,\big(125\,B}{60\,\big(b^{11}x^5 + 5\,ab^{10}x^4 + 10\,a^2b^9x^3 + 10\,a^3b^8x^2 + 5\,a^4b^7x + a^5b^6\big)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*a^5 - 12*A*a^4*b + 60*(5*B*a*b^4 - A*b^5)*x^4 + 60*(15*B*a^2*b^
3 - 2*A*a*b^4)*x^3 + 20*(55*B*a^3*b^2 - 6*A*a^2*b^3)*x^2 + 5*(125*B*a^4*b -
 12*A*a^3*b^2)*x)/(b^11*x^5 + 5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^
2 + 5*a^4*b^7*x + a^5*b^6) + B*log(b*x + a)/b^6
```

mupad [B] time = 1.17, size = 161, normalized size = 1.52

$$\frac{\frac{137\,B\,a^5-12\,A\,a^4\,b}{60\,b^6}+\frac{x^3\,\left(15\,B\,a^2-2\,A\,a\,b\right)}{b^3}+\frac{x\,\left(125\,B\,a^4-12\,A\,a^3\,b\right)}{12\,b^5}-\frac{x^4\,\left(A\,b-5\,B\,a\right)}{b^2}+\frac{x^2\,\left(55\,B\,a^3-6\,A\,a^2\,b\right)}{3\,b^4}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{B\,\ln\left(a+b\,x\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((137*B*a^5 - 12*A*a^4*b)/(60*b^6) + (x^3*(15*B*a^2 - 2*A*a*b))/b^3 + (x*(1
25*B*a^4 - 12*A*a^3*b))/(12*b^5) - (x^4*(A*b - 5*B*a))/b^2 + (x^2*(55*B*a^3
 - 6*A*a^2*b))/(3*b^4))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*
a^2*b^3*x^3 + 5*a^4*b*x) + (B*log(a + b*x))/b^6
```

sympy [A] time = 1.95, size = 172, normalized size = 1.62

$$\frac{B\log{\left(a + bx \right)}}{b^{6}} + \frac{-12Aa^{4}b + 137Ba^{5} + x^{4}\big(-60Ab^{5} + 300Bab^{4}\big) + x^{3}\big(-120Aab^{4} + 900Ba^{2}b^{3}\big) + x^{2}\big(-120Aa^{2}b^{3}}{60a^{5}b^{6} + 300a^{4}b^{7}x + 600a^{3}b^{8}x^{2} + 600a^{2}b^{9}x^{3} + 300ab^{10}x^{4} +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] B*log(a + b*x)/b**6 + (-12*A*a**4*b + 137*B*a**5 + x**4*(-60*A*b**5 + 300*B
*a*b**4) + x**3*(-120*A*a*b**4 + 900*B*a**2*b**3) + x**2*(-120*A*a**2*b**3
+ 1100*B*a**3*b**2) + x*(-60*A*a**3*b**2 + 625*B*a**4*b))/(60*a**5*b**6 + 3
00*a**4*b**7*x + 600*a**3*b**8*x**2 + 600*a**2*b**9*x**3 + 300*a*b**10*x**4
 + 60*b**11*x**5)
```

3.646 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=57

$$\frac{x^4(4aB+Ab)}{20a^2b(a+bx)^4}+\frac{x^4(Ab-aB)}{5ab(a+bx)^5}$$

```
[Out] 1/5*(A*b-B*a)*x^4/a/b/(b*x+a)^5+1/20*(A*b+4*B*a)*x^4/a^2/b/(b*x+a)^4
```

Rubi [A] time = 0.01, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 37}

$$\frac{x^4(4aB+Ab)}{20a^2b(a+bx)^4}+\frac{x^4(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^4)/(5*a*b*(a + b*x)^5) + ((A*b + 4*a*B)*x^4)/(20*a^2*b*(a +
b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^3(A+Bx)}{(a+bx)^6}\,dx\\
&= \frac{(Ab-aB)x^4}{5ab(a+bx)^5}+\frac{(Ab+4aB)\int \frac{x^3}{(a+bx)^5}\,dx}{5ab}\\
&= \frac{(Ab-aB)x^4}{5ab(a+bx)^5}+\frac{(Ab+4aB)x^4}{20a^2b(a+bx)^4}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 76, normalized size = 1.33

$$-\frac{4a^4B+a^3b(A+20Bx)+5a^2b^2x(A+8Bx)+10ab^3x^2(A+4Bx)+10b^4x^3(A+2Bx)}{20b^5(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/20*(4*a^4*B + 10*b^4*x^3*(A + 2*B*x) + 10*a*b^3*x^2*(A + 4*B*x) + 5*a^2*
b^2*x*(A + 8*B*x) + a^3*b*(A + 20*B*x))/(b^5*(a + b*x)^5)
```

fricas [B] time = 0.83, size = 139, normalized size = 2.44

$$-\frac{20\,Bb^4x^4+4\,Ba^4+Aa^3b+10\left(4\,Bab^3+Ab^4\right)x^3+10\left(4\,Ba^2b^2+Aab^3\right)x^2+5\left(4\,Ba^3b+Aa^2b^2\right)x}{20\left(b^{10}x^5+5\,ab^9x^4+10\,a^2b^8x^3+10\,a^3b^7x^2+5\,a^4b^6x+a^5b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 4*B*a^4 + A*a^3*b + 10*(4*B*a*b^3 + A*b^4)*x^3 + 10*(
4*B*a^2*b^2 + A*a*b^3)*x^2 + 5*(4*B*a^3*b + A*a^2*b^2)*x)/(b^10*x^5 + 5*a*b
^9*x^4 + 10*a^2*b^8*x^3 + 10*a^3*b^7*x^2 + 5*a^4*b^6*x + a^5*b^5)
```

giac [A] time = 0.17, size = 93, normalized size = 1.63

$$-\frac{20\,Bb^4x^4+40\,Bab^3x^3+10\,Ab^4x^3+40\,Ba^2b^2x^2+10\,Aab^3x^2+20\,Ba^3bx+5\,Aa^2b^2x+4\,Ba^4+Aa^3b}{20\,(bx+a)^5b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 40*B*a*b^3*x^3 + 10*A*b^4*x^3 + 40*B*a^2*b^2*x^2 + 10
*A*a*b^3*x^2 + 20*B*a^3*b*x + 5*A*a^2*b^2*x + 4*B*a^4 + A*a^3*b)/((b*x + a)
^5*b^5)
```

maple [A] time = 0.05, size = 102, normalized size = 1.79

$$\frac{(Ab-Ba)\,a^3}{5\,(bx+a)^5\,b^5}-\frac{(3Ab-4Ba)\,a^2}{4\,(bx+a)^4\,b^5}-\frac{B}{(bx+a)\,b^5}+\frac{(Ab-2Ba)\,a}{(bx+a)^3\,b^5}-\frac{Ab-4Ba}{2\,(bx+a)^2\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] a*(A*b-2*B*a)/b^5/(b*x+a)^3+1/5*a^3*(A*b-B*a)/b^5/(b*x+a)^5-1/4*a^2*(3*A*b-
4*B*a)/b^5/(b*x+a)^4-B/b^5/(b*x+a)-1/2*(A*b-4*B*a)/b^5/(b*x+a)^2
```

maxima [B] time = 0.65, size = 139, normalized size = 2.44

$$-\frac{20\,Bb^4x^4+4\,Ba^4+Aa^3b+10\left(4\,Bab^3+Ab^4\right)x^3+10\left(4\,Ba^2b^2+Aab^3\right)x^2+5\left(4\,Ba^3b+Aa^2b^2\right)x}{20\left(b^{10}x^5+5\,ab^9x^4+10\,a^2b^8x^3+10\,a^3b^7x^2+5\,a^4b^6x+a^5b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/20*(20*B*b^4*x^4 + 4*B*a^4 + A*a^3*b + 10*(4*B*a*b^3 + A*b^4)*x^3 + 10*(
4*B*a^2*b^2 + A*a*b^3)*x^2 + 5*(4*B*a^3*b + A*a^2*b^2)*x)/(b^10*x^5 + 5*a*b
^9*x^4 + 10*a^2*b^8*x^3 + 10*a^3*b^7*x^2 + 5*a^4*b^6*x + a^5*b^5)
```

mupad [**B**] time = 0.05, size = 128, normalized size = 2.25

$$-\frac{\frac{B\,x^4}{b}+\frac{a^3\,(A\,b+4\,B\,a)}{20\,b^5}+\frac{x^3\,(A\,b+4\,B\,a)}{2\,b^2}+\frac{a\,x^2\,(A\,b+4\,B\,a)}{2\,b^3}+\frac{a^2\,x\,(A\,b+4\,B\,a)}{4\,b^4}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^4)/b + (a^3*(A*b + 4*B*a))/(20*b^5) + (x^3*(A*b + 4*B*a))/(2*b^2) +
(a*x^2*(A*b + 4*B*a))/(2*b^3) + (a^2*x*(A*b + 4*B*a))/(4*b^4))/(a^5 + b^5*x
^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [**B**] time = 1.47, size = 150, normalized size = 2.63

$$\frac{-Aa^3b-4Ba^4-20Bb^4x^4+x^3\left(-10Ab^4-40Bab^3\right)+x^2\left(-10Aab^3-40Ba^2b^2\right)+x\left(-5Aa^2b^2-20Ba^3b\right)}{20a^5b^5+100a^4b^6x+200a^3b^7x^2+200a^2b^8x^3+100ab^9x^4+20b^{10}x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-A*a**3*b - 4*B*a**4 - 20*B*b**4*x**4 + x**3*(-10*A*b**4 - 40*B*a*b**3) +
x**2*(-10*A*a*b**3 - 40*B*a**2*b**2) + x*(-5*A*a**2*b**2 - 20*B*a**3*b))/(2
0*a**5*b**5 + 100*a**4*b**6*x + 200*a**3*b**7*x**2 + 200*a**2*b**8*x**3 + 1
00*a*b**9*x**4 + 20*b**10*x**5)
```

3.647 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=87

$$-\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}$$

```
[Out] -1/5*a^2*(A*b-B*a)/b^4/(b*x+a)^5+1/4*a*(2*A*b-3*B*a)/b^4/(b*x+a)^4+1/3*(-A*
b+3*B*a)/b^4/(b*x+a)^3-1/2*B/b^4/(b*x+a)^2
```

Rubi [A] time = 0.07, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 77\}$

$$-\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(a^2*(A*b - a*B))/(5*b^4*(a + b*x)^5) + (a*(2*A*b - 3*a*B))/(4*b^4*(a + b*
x)^4) - (A*b - 3*a*B)/(3*b^4*(a + b*x)^3) - B/(2*b^4*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx&=\int \frac{x^2(A+Bx)}{(a+bx)^6}\,dx\\&=\int \left(-\frac{a^2(-Ab+aB)}{b^3(a+bx)^6}+\frac{a(-2Ab+3aB)}{b^3(a+bx)^5}+\frac{Ab-3aB}{b^3(a+bx)^4}+\frac{B}{b^3(a+bx)^3}\right)dx\\&=-\frac{a^2(Ab-aB)}{5b^4(a+bx)^5}+\frac{a(2Ab-3aB)}{4b^4(a+bx)^4}-\frac{Ab-3aB}{3b^4(a+bx)^3}-\frac{B}{2b^4(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 63, normalized size = 0.72

$$-\frac{3a^3B+a^2b(2A+15Bx)+10ab^2x(A+3Bx)+10b^3x^2(2A+3Bx)}{60b^4(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/60*(3*a^3*B + 10*a*b^2*x*(A + 3*B*x) + 10*b^3*x^2*(2*A + 3*B*x) + a^2*b*
(2*A + 15*B*x))/(b^4*(a + b*x)^5)
```

fricas [A] time = 0.82, size = 119, normalized size = 1.37

$$-\frac{30\,Bb^3x^3+3\,Ba^3+2\,Aa^2b+10\left(3\,Bab^2+2\,Ab^3\right)x^2+5\left(3\,Ba^2b+2\,Aab^2\right)x}{60\left(b^9x^5+5\,ab^8x^4+10\,a^2b^7x^3+10\,a^3b^6x^2+5\,a^4b^5x+a^5b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 3*B*a^3 + 2*A*a^2*b + 10*(3*B*a*b^2 + 2*A*b^3)*x^2 +
5*(3*B*a^2*b + 2*A*a*b^2)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7*x^3 + 10*a
^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

giac [A] time = 0.16, size = 70, normalized size = 0.80

$$-\frac{30\,Bb^3x^3+30\,Bab^2x^2+20\,Ab^3x^2+15\,Ba^2bx+10\,Aab^2x+3\,Ba^3+2\,Aa^2b}{60\,(bx+a)^5b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 30*B*a*b^2*x^2 + 20*A*b^3*x^2 + 15*B*a^2*b*x + 10*A*a
*b^2*x + 3*B*a^3 + 2*A*a^2*b)/((b*x + a)^5*b^4)
```

maple [A] time = 0.05, size = 80, normalized size = 0.92

$$-\frac{(Ab-Ba)\,a^2}{5\,(bx+a)^5\,b^4}-\frac{B}{2\,(bx+a)^2\,b^4}+\frac{(2Ab-3Ba)\,a}{4\,(bx+a)^4\,b^4}-\frac{Ab-3Ba}{3\,(bx+a)^3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/3*(A*b-3*B*a)/b^4/(b*x+a)^3-1/5*a^2*(A*b-B*a)/b^4/(b*x+a)^5-1/2*B/b^4/(b
*x+a)^2+1/4*a*(2*A*b-3*B*a)/b^4/(b*x+a)^4
```

maxima [A] time = 0.61, size = 119, normalized size = 1.37

$$-\frac{30\,Bb^3x^3+3\,Ba^3+2\,Aa^2b+10\left(3\,Bab^2+2\,Ab^3\right)x^2+5\left(3\,Ba^2b+2\,Aab^2\right)x}{60\left(b^9x^5+5\,ab^8x^4+10\,a^2b^7x^3+10\,a^3b^6x^2+5\,a^4b^5x+a^5b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*b^3*x^3 + 3*B*a^3 + 2*A*a^2*b + 10*(3*B*a*b^2 + 2*A*b^3)*x^2 +
5*(3*B*a^2*b + 2*A*a*b^2)*x)/(b^9*x^5 + 5*a*b^8*x^4 + 10*a^2*b^7*x^3 + 10*a
^3*b^6*x^2 + 5*a^4*b^5*x + a^5*b^4)
```

mupad [B] time = 0.04, size = 113, normalized size = 1.30

$$-\frac{\frac{B\,x^3}{2\,b}+\frac{a^2\,(2\,A\,b+3\,B\,a)}{60\,b^4}+\frac{x^2\,(2\,A\,b+3\,B\,a)}{6\,b^2}+\frac{a\,x\,(2\,A\,b+3\,B\,a)}{12\,b^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^3)/(2*b) + (a^2*(2*A*b + 3*B*a))/(60*b^4) + (x^2*(2*A*b + 3*B*a))/(6
*b^2) + (a*x*(2*A*b + 3*B*a))/(12*b^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a
^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [A] time = 1.01, size = 126, normalized size = 1.45

$$\frac{-2Aa^2b-3Ba^3-30Bb^3x^3+x^2\left(-20Ab^3-30Bab^2\right)+x\left(-10Aab^2-15Ba^2b\right)}{60a^5b^4+300a^4b^5x+600a^3b^6x^2+600a^2b^7x^3+300ab^8x^4+60b^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-2*A*a**2*b - 3*B*a**3 - 30*B*b**3*x**3 + x**2*(-20*A*b**3 - 30*B*a*b**2)
+ x*(-10*A*a*b**2 - 15*B*a**2*b))/(60*a**5*b**4 + 300*a**4*b**5*x + 600*a**
3*b**6*x**2 + 600*a**2*b**7*x**3 + 300*a*b**8*x**4 + 60*b**9*x**5)
```

3.648 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=61

$$-\frac{Ab-2aB}{4b^3(a+bx)^4}+\frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{B}{3b^3(a+bx)^3}$$

```
[Out] 1/5*a*(A*b-B*a)/b^3/(b*x+a)^5+1/4*(-A*b+2*B*a)/b^3/(b*x+a)^4-1/3*B/b^3/(b*x
+a)^3
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = $\{27, 77\}$

$$-\frac{Ab-2aB}{4b^3(a+bx)^4}+\frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{B}{3b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a*(A*b - a*B))/(5*b^3*(a + b*x)^5) - (A*b - 2*a*B)/(4*b^3*(a + b*x)^4) - B
/(3*b^3*(a + b*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x(A+Bx)}{(a+bx)^6}\,dx\\ &= \int \left(\frac{a(-Ab+aB)}{b^2(a+bx)^6}+\frac{Ab-2aB}{b^2(a+bx)^5}+\frac{B}{b^2(a+bx)^4}\right)dx\\ &= \frac{a(Ab-aB)}{5b^3(a+bx)^5}-\frac{Ab-2aB}{4b^3(a+bx)^4}-\frac{B}{3b^3(a+bx)^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 0.75

$$-\frac{2a^2B+ab(3A+10Bx)+5b^2x(3A+4Bx)}{60b^3(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/60*(2*a^2*B + 5*b^2*x*(3*A + 4*B*x) + a*b*(3*A + 10*B*x))/(b^3*(a + b*x)
^5)
```

fricas [**A**] time = 0.75, size = 95, normalized size = 1.56

$$-\frac{20\,Bb^{2}x^{2}+2\,Ba^{2}+3\,Aab+5\left(2\,Bab+3\,Ab^{2}\right)x}{60\left(b^{8}x^{5}+5\,ab^{7}x^{4}+10\,a^{2}b^{6}x^{3}+10\,a^{3}b^{5}x^{2}+5\,a^{4}b^{4}x+a^{5}b^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b^2*x^2 + 2*B*a^2 + 3*A*a*b + 5*(2*B*a*b + 3*A*b^2)*x)/(b^8*x^5
 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

giac [**A**] time = 0.18, size = 46, normalized size = 0.75

$$-\frac{20\,Bb^{2}x^{2}+10\,Babx+15\,Ab^{2}x+2\,Ba^{2}+3\,Aab}{60\,(bx+a)^{5}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b^2*x^2 + 10*B*a*b*x + 15*A*b^2*x + 2*B*a^2 + 3*A*a*b)/((b*x +
a)^5*b^3)
```

maple [**A**] time = 0.05, size = 56, normalized size = 0.92

$$-\frac{B}{3\,(bx+a)^{3}\,b^{3}}+\frac{(Ab-Ba)\,a}{5\,(bx+a)^{5}\,b^{3}}-\frac{Ab-2Ba}{4\,(bx+a)^{4}\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/3*B/b^3/(b*x+a)^3+1/5*a*(A*b-B*a)/b^3/(b*x+a)^5-1/4*(A*b-2*B*a)/b^3/(b*x
+a)^4
```

maxima [**A**] time = 0.63, size = 95, normalized size = 1.56

$$-\frac{20\,Bb^{2}x^{2}+2\,Ba^{2}+3\,Aab+5\left(2\,Bab+3\,Ab^{2}\right)x}{60\left(b^{8}x^{5}+5\,ab^{7}x^{4}+10\,a^{2}b^{6}x^{3}+10\,a^{3}b^{5}x^{2}+5\,a^{4}b^{4}x+a^{5}b^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*b^2*x^2 + 2*B*a^2 + 3*A*a*b + 5*(2*B*a*b + 3*A*b^2)*x)/(b^8*x^5
 + 5*a*b^7*x^4 + 10*a^2*b^6*x^3 + 10*a^3*b^5*x^2 + 5*a^4*b^4*x + a^5*b^3)
```

mupad [**B**] time = 1.10, size = 93, normalized size = 1.52

$$-\frac{\frac{B\,x^2}{3\,b}+\frac{a\,(3\,A\,b+2\,B\,a)}{60\,b^3}+\frac{x\,(3\,A\,b+2\,B\,a)}{12\,b^2}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((B*x^2)/(3*b) + (a*(3*A*b + 2*B*a))/(60*b^3) + (x*(3*A*b + 2*B*a))/(12*b^
2))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*
b*x)
```

sympy [A] time = 0.68, size = 100, normalized size = 1.64

$$\frac{-3Aab-2Ba^2-20Bb^2x^2+x\left(-15Ab^2-10Bab\right)}{60a^5b^3+300a^4b^4x+600a^3b^5x^2+600a^2b^6x^3+300ab^7x^4+60b^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-3*A*a*b - 2*B*a**2 - 20*B*b**2*x**2 + x*(-15*A*b**2 - 10*B*a*b))/(60*a**5
*b**3 + 300*a**4*b**4*x + 600*a**3*b**5*x**2 + 600*a**2*b**6*x**3 + 300*a*b
**7*x**4 + 60*b**8*x**5)
```

3.649 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=38

$$\frac{aB-Ab}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}$$

```
[Out] 1/5*(-A*b+B*a)/b^2/(b*x+a)^5-1/4*B/b^2/(b*x+a)^4
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(A*b - a*B)/(5*b^2*(a + b*x)^5) - B/(4*b^2*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx&=\int \frac{A+Bx}{(a+bx)^6}\,dx\\&=\int \left(\frac{Ab-aB}{b(a+bx)^6}+\frac{B}{b(a+bx)^5}\right)dx\\&=-\frac{Ab-aB}{5b^2(a+bx)^5}-\frac{B}{4b^2(a+bx)^4}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+5bx)+4Ab}{20b^2(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/20*(4*A*b + B*(a + 5*b*x))/(b^2*(a + b*x)^5)
```

fricas [B] time = 0.79, size = 72, normalized size = 1.89

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,\left(b^7x^5+5\,ab^6x^4+10\,a^2b^5x^3+10\,a^3b^4x^2+5\,a^4b^3x+a^5b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/(b^7*x^5 + 5*a*b^6*x^4 + 10*a^2*b^5*x^3 + 10*
a^3*b^4*x^2 + 5*a^4*b^3*x + a^5*b^2)
```

giac [A] time = 0.16, size = 25, normalized size = 0.66

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,(bx+a)^5b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/((b*x + a)^5*b^2)
```

maple [A] time = 0.05, size = 35, normalized size = 0.92

$$-\frac{B}{4\,(bx+a)^4\,b^2}-\frac{Ab-Ba}{5\,(bx+a)^5\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/5*(A*b-B*a)/b^2/(b*x+a)^5-1/4*B/b^2/(b*x+a)^4
```

maxima [B] time = 0.69, size = 72, normalized size = 1.89

$$-\frac{5\,Bbx+Ba+4\,Ab}{20\,\left(b^7x^5+5\,ab^6x^4+10\,a^2b^5x^3+10\,a^3b^4x^2+5\,a^4b^3x+a^5b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/20*(5*B*b*x + B*a + 4*A*b)/(b^7*x^5 + 5*a*b^6*x^4 + 10*a^2*b^5*x^3 + 10*
a^3*b^4*x^2 + 5*a^4*b^3*x + a^5*b^2)
```

mupad [B] time = 1.08, size = 74, normalized size = 1.95

$$-\frac{\frac{4\,A\,b+B\,a}{20\,b^2}+\frac{B\,x}{4\,b}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((4*A*b + B*a)/(20*b^2) + (B*x)/(4*b))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a
^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [B] time = 0.54, size = 76, normalized size = 2.00

$$\frac{-4Ab-Ba-5Bbx}{20a^5b^2+100a^4b^3x+200a^3b^4x^2+200a^2b^5x^3+100ab^6x^4+20b^7x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-4*A*b - B*a - 5*B*b*x)/(20*a**5*b**2 + 100*a**4*b**3*x + 200*a**3*b**4*x*
*2 + 200*a**2*b**5*x**3 + 100*a*b**6*x**4 + 20*b**7*x**5)
```

3.650 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{A\log(a+bx)}{a^6}+\frac{A\log(x)}{a^6}+\frac{A}{a^5(a+bx)}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{4a^2(a+bx)^4}+\frac{Ab-aB}{5ab(a+bx)^5}$$

```
[Out] 1/5*(A*b-B*a)/a/b/(b*x+a)^5+1/4*A/a^2/(b*x+a)^4+1/3*A/a^3/(b*x+a)^3+1/2*A/a
^4/(b*x+a)^2+A/a^5/(b*x+a)+A*ln(x)/a^6-A*ln(b*x+a)/a^6
```

Rubi [A] time = 0.07, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{A}{a^5(a+bx)}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{4a^2(a+bx)^4}-\frac{A\log(a+bx)}{a^6}+\frac{A\log(x)}{a^6}+\frac{Ab-aB}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (A*b - a*B)/(5*a*b*(a + b*x)^5) + A/(4*a^2*(a + b*x)^4) + A/(3*a^3*(a + b*x
)^3) + A/(2*a^4*(a + b*x)^2) + A/(a^5*(a + b*x)) + (A*Log[x])/a^6 - (A*Log[
a + b*x])/a^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{A+Bx}{x(a+bx)^6}\,dx\\ &= \int \left(\frac{A}{a^6x}+\frac{-Ab+aB}{a(a+bx)^6}-\frac{Ab}{a^2(a+bx)^5}-\frac{Ab}{a^3(a+bx)^4}-\frac{Ab}{a^4(a+bx)^3}-\frac{Ab}{a^5(a+bx)^2}\right.\\ &= \frac{Ab-aB}{5ab(a+bx)^5}+\frac{A}{4a^2(a+bx)^4}+\frac{A}{3a^3(a+bx)^3}+\frac{A}{2a^4(a+bx)^2}+\frac{A}{a^5(a+bx)}+\frac{A}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.87

$$\frac{\frac{a\left(-12a^5B+137a^4Ab+385a^3Ab^2x+470a^2Ab^3x^2+270aAb^4x^3+60Ab^5x^4\right)}{b(a+bx)^5}-60A\log(a+bx)+60A\log(x)}{60a^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a*(137*a^4*A*b - 12*a^5*B + 385*a^3*A*b^2*x + 470*a^2*A*b^3*x^2 + 270*a*A
*b^4*x^3 + 60*A*b^5*x^4))/(b*(a + b*x)^5) + 60*A*Log[x] - 60*A*Log[a + b*x]
)/(60*a^6)
```

fricas [B] time = 0.89, size = 250, normalized size = 2.45

$$\frac{60\,Aab^{5}x^{4}+270\,Aa^{2}b^{4}x^{3}+470\,Aa^{3}b^{3}x^{2}+385\,Aa^{4}b^{2}x-12\,Ba^{6}+137\,Aa^{5}b-60\left(Ab^{6}x^{5}+5\,Aab^{5}x^{4}+10\,Aa^{2}b\right.}{60\left(a^{6}b^{6}x^{5}+5\,a^{7}b^{5}x^{4}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/60*(60*A*a*b^5*x^4 + 270*A*a^2*b^4*x^3 + 470*A*a^3*b^3*x^2 + 385*A*a^4*b^
2*x - 12*B*a^6 + 137*A*a^5*b - 60*(A*b^6*x^5 + 5*A*a*b^5*x^4 + 10*A*a^2*b^4
*x^3 + 10*A*a^3*b^3*x^2 + 5*A*a^4*b^2*x + A*a^5*b)*log(b*x + a) + 60*(A*b^6
*x^5 + 5*A*a*b^5*x^4 + 10*A*a^2*b^4*x^3 + 10*A*a^3*b^3*x^2 + 5*A*a^4*b^2*x
+ A*a^5*b)*log(x))/(a^6*b^6*x^5 + 5*a^7*b^5*x^4 + 10*a^8*b^4*x^3 + 10*a^9*b
^3*x^2 + 5*a^10*b^2*x + a^11*b)
```

giac [A] time = 0.16, size = 95, normalized size = 0.93

$$-\frac{A\log\left(|bx+a|\right)}{a^{6}}+\frac{A\log\left(|x|\right)}{a^{6}}+\frac{60\,Aab^{5}x^{4}+270\,Aa^{2}b^{4}x^{3}+470\,Aa^{3}b^{3}x^{2}+385\,Aa^{4}b^{2}x-12\,Ba^{6}+137\,Aa^{5}b}{60\,(bx+a)^{5}a^{6}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -A*log(abs(b*x + a))/a^6 + A*log(abs(x))/a^6 + 1/60*(60*A*a*b^5*x^4 + 270*A
*a^2*b^4*x^3 + 470*A*a^3*b^3*x^2 + 385*A*a^4*b^2*x - 12*B*a^6 + 137*A*a^5*b
)/((b*x + a)^5*a^6*b)
```

maple [A] time = 0.06, size = 98, normalized size = 0.96

$$\frac{A}{5\,(bx+a)^{5}\,a}-\frac{B}{5\,(bx+a)^{5}\,b}+\frac{A}{4\,(bx+a)^{4}\,a^{2}}+\frac{A}{3\,(bx+a)^{3}\,a^{3}}+\frac{A}{2\,(bx+a)^{2}\,a^{4}}+\frac{A}{(bx+a)\,a^{5}}+\frac{A\ln(x)}{a^{6}}-\frac{A\ln\left(bx+a\right)}{a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/5/a/(b*x+a)^5*A-1/5/b/(b*x+a)^5*B-A*ln(b*x+a)/a^6+A/a^5/(b*x+a)+1/2*A/a^4
/(b*x+a)^2+1/3*A/a^3/(b*x+a)^3+1/4*A/a^2/(b*x+a)^4+A*ln(x)/a^6
```

maxima [A] time = 0.91, size = 137, normalized size = 1.34

$$\frac{60\,Ab^{5}x^{4}+270\,Aab^{4}x^{3}+470\,Aa^{2}b^{3}x^{2}+385\,Aa^{3}b^{2}x-12\,Ba^{5}+137\,Aa^{4}b}{60\left(a^{5}b^{6}x^{5}+5\,a^{6}b^{5}x^{4}+10\,a^{7}b^{4}x^{3}+10\,a^{8}b^{3}x^{2}+5\,a^{9}b^{2}x+a^{10}b\right)}-\frac{A\log\left(bx+a\right)}{a^{6}}+\frac{A\log(x)}{a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/60*(60*A*b^5*x^4 + 270*A*a*b^4*x^3 + 470*A*a^2*b^3*x^2 + 385*A*a^3*b^2*x
- 12*B*a^5 + 137*A*a^4*b)/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 + 10*a^7*b^4*x^3 + 1
0*a^8*b^3*x^2 + 5*a^9*b^2*x + a^10*b) - A*log(b*x + a)/a^6 + A*log(x)/a^6
```

mupad [B] time = 1.13, size = 130, normalized size = 1.27

$$\frac{\frac{137\,A\,b-12\,B\,a}{60\,a\,b}+\frac{77\,A\,b\,x}{12\,a^{2}}+\frac{47\,A\,b^{2}\,x^{2}}{6\,a^{3}}+\frac{9\,A\,b^{3}\,x^{3}}{2\,a^{4}}+\frac{A\,b^{4}\,x^{4}}{a^{5}}}{a^{5}+5\,a^{4}\,b\,x+10\,a^{3}\,b^{2}\,x^{2}+10\,a^{2}\,b^{3}\,x^{3}+5\,a\,b^{4}\,x^{4}+b^{5}\,x^{5}}-\frac{2\,A\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)}{a^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((137*A*b - 12*B*a)/(60*a*b) + (77*A*b*x)/(12*a^2) + (47*A*b^2*x^2)/(6*a^3)
 + (9*A*b^3*x^3)/(2*a^4) + (A*b^4*x^4)/a^5)/(a^5 + b^5*x^5 + 5*a*b^4*x^4 +
10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) - (2*A*atanh((2*b*x)/a + 1))/a
^6
```

sympy [A] time = 0.77, size = 141, normalized size = 1.38

$$\frac{A\left(\log\left(x\right)-\log\left(\frac{a}{b}+x\right)\right)}{a^{6}}+\frac{137Aa^{4}b+385Aa^{3}b^{2}x+470Aa^{2}b^{3}x^{2}+270Aab^{4}x^{3}+60Ab^{5}x^{4}-12Ba^{5}}{60a^{10}b+300a^{9}b^{2}x+600a^{8}b^{3}x^{2}+600a^{7}b^{4}x^{3}+300a^{6}b^{5}x^{4}+60a^{5}b^{6}x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*(log(x) - log(a/b + x))/a**6 + (137*A*a**4*b + 385*A*a**3*b**2*x + 470*A*
a**2*b**3*x**2 + 270*A*a*b**4*x**3 + 60*A*b**5*x**4 - 12*B*a**5)/(60*a**10*
b + 300*a**9*b**2*x + 600*a**8*b**3*x**2 + 600*a**7*b**4*x**3 + 300*a**6*b*
*5*x**4 + 60*a**5*b**6*x**5)
```

3.651 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=157

$$-\frac{\log(x)(6Ab-aB)}{a^7}+\frac{(6Ab-aB)\log(a+bx)}{a^7}-\frac{5Ab-aB}{a^6(a+bx)}-\frac{A}{a^6x}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{Ab}{5a^2(}$$

```
[Out] -A/a^6/x+1/5*(-A*b+B*a)/a^2/(b*x+a)^5+1/4*(-2*A*b+B*a)/a^3/(b*x+a)^4+1/3*(-
3*A*b+B*a)/a^4/(b*x+a)^3+1/2*(-4*A*b+B*a)/a^5/(b*x+a)^2+(-5*A*b+B*a)/a^6/(b
*x+a)-(6*A*b-B*a)*ln(x)/a^7+(6*A*b-B*a)*ln(b*x+a)/a^7
```

Rubi [A] time = 0.16, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 77}

$$-\frac{5Ab-aB}{a^6(a+bx)}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{Ab-aB}{5a^2(a+bx)^5}-\frac{\log(x)(6Ab-aB)}{a^7}+\frac{(6Ab-aB)\log(a+b}{a^7}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -(A/(a^6*x)) - (A*b - a*B)/(5*a^2*(a + b*x)^5) - (2*A*b - a*B)/(4*a^3*(a +
b*x)^4) - (3*A*b - a*B)/(3*a^4*(a + b*x)^3) - (4*A*b - a*B)/(2*a^5*(a + b*x
)^2) - (5*A*b - a*B)/(a^6*(a + b*x)) - ((6*A*b - a*B)*Log[x])/a^7 + ((6*A*b
 - a*B)*Log[a + b*x])/a^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{A+Bx}{x^2(a+bx)^6}\,dx\\ &= \int \left(\frac{A}{a^6x^2}+\frac{-6Ab+aB}{a^7x}-\frac{b(-Ab+aB)}{a^2(a+bx)^6}-\frac{b(-2Ab+aB)}{a^3(a+bx)^5}-\frac{b(-3Ab+aB)}{a^4(a+bx)^4}-\frac{b(-}{a^5(}\right.\\ &= -\frac{A}{a^6x}-\frac{Ab-aB}{5a^2(a+bx)^5}-\frac{2Ab-aB}{4a^3(a+bx)^4}-\frac{3Ab-aB}{3a^4(a+bx)^3}-\frac{4Ab-aB}{2a^5(a+bx)^2}-\frac{5Ab-aB}{a^6(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.09, size = 142, normalized size = 0.90

$$\frac{\frac{12a^5(aB-Ab)}{(a+bx)^5}+\frac{15a^4(aB-2Ab)}{(a+bx)^4}+\frac{20a^3(aB-3Ab)}{(a+bx)^3}+\frac{30a^2(aB-4Ab)}{(a+bx)^2}+\frac{60a(aB-5Ab)}{a+bx}+60\log(x)(aB-6Ab)+60(6Ab-aB)\log(a}{60a^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-60*a*A)/x + (12*a^5*(-(A*b) + a*B))/(a + b*x)^5 + (15*a^4*(-2*A*b + a*B)
)/(a + b*x)^4 + (20*a^3*(-3*A*b + a*B))/(a + b*x)^3 + (30*a^2*(-4*A*b + a*B
))/(a + b*x)^2 + (60*a*(-5*A*b + a*B))/(a + b*x) + 60*(-6*A*b + a*B)*Log[x]
 + 60*(6*A*b - a*B)*Log[a + b*x])/(60*a^7)
```

fricas [B] time = 0.89, size = 427, normalized size = 2.72

$$-\frac{60\,Aa^6 - 60\left(Ba^2b^4 - 6\,Aab^5\right)x^5 - 270\left(Ba^3b^3 - 6\,Aa^2b^4\right)x^4 - 470\left(Ba^4b^2 - 6\,Aa^3b^3\right)x^3 - 385\left(Ba^5b - 6\,Aa^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/60*(60*A*a^6 - 60*(B*a^2*b^4 - 6*A*a*b^5)*x^5 - 270*(B*a^3*b^3 - 6*A*a^2
*b^4)*x^4 - 470*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 - 385*(B*a^5*b - 6*A*a^4*b^2)
*x^2 - 137*(B*a^6 - 6*A*a^5*b)*x + 60*((B*a*b^5 - 6*A*b^6)*x^6 + 5*(B*a^2*b
^4 - 6*A*a*b^5)*x^5 + 10*(B*a^3*b^3 - 6*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 6*
A*a^3*b^3)*x^3 + 5*(B*a^5*b - 6*A*a^4*b^2)*x^2 + (B*a^6 - 6*A*a^5*b)*x)*log
(b*x + a) - 60*((B*a*b^5 - 6*A*b^6)*x^6 + 5*(B*a^2*b^4 - 6*A*a*b^5)*x^5 + 1
0*(B*a^3*b^3 - 6*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 + 5*(B*a
^5*b - 6*A*a^4*b^2)*x^2 + (B*a^6 - 6*A*a^5*b)*x)*log(x))/(a^7*b^5*x^6 + 5*a
^8*b^4*x^5 + 10*a^9*b^3*x^4 + 10*a^10*b^2*x^3 + 5*a^11*b*x^2 + a^12*x)
```

giac [A] time = 0.16, size = 168, normalized size = 1.07

$$\frac{(Ba - 6\,Ab)\log\left(|x|\right)}{a^7} - \frac{\left(Bab - 6\,Ab^2\right)\log\left(|bx + a|\right)}{a^7b} - \frac{60\,Aa^6 - 60\left(Ba^2b^4 - 6\,Aab^5\right)x^5 - 270\left(Ba^3b^3 - 6\,Aa^2b^4\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] (B*a - 6*A*b)*log(abs(x))/a^7 - (B*a*b - 6*A*b^2)*log(abs(b*x + a))/(a^7*b)
 - 1/60*(60*A*a^6 - 60*(B*a^2*b^4 - 6*A*a*b^5)*x^5 - 270*(B*a^3*b^3 - 6*A*a
^2*b^4)*x^4 - 470*(B*a^4*b^2 - 6*A*a^3*b^3)*x^3 - 385*(B*a^5*b - 6*A*a^4*b^
2)*x^2 - 137*(B*a^6 - 6*A*a^5*b)*x)/((b*x + a)^5*a^7*x)
```

maple [A] time = 0.06, size = 186, normalized size = 1.18

$$-\frac{Ab}{5\,(bx+a)^5\,a^2} + \frac{B}{5\,(bx+a)^5\,a} - \frac{Ab}{2\,(bx+a)^4\,a^3} + \frac{B}{4\,(bx+a)^4\,a^2} - \frac{Ab}{(bx+a)^3\,a^4} + \frac{B}{3\,(bx+a)^3\,a^3} - \frac{2Ab}{(bx+a)^2\,a^5} + \frac{}{2\,(b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/2/a^3/(b*x+a)^4*A*b+1/4/a^2/(b*x+a)^4*B-1/a^4/(b*x+a)^3*A*b+1/3/a^3/(b*x
+a)^3*B-2/a^5/(b*x+a)^2*A*b+1/2/a^4/(b*x+a)^2*B-5/a^6/(b*x+a)*A*b+1/a^5/(b*
x+a)*B+6/a^7*ln(b*x+a)*A*b-1/a^6*ln(b*x+a)*B-1/5/a^2/(b*x+a)^5*A*b+1/5/a/(b
*x+a)^5*B-A/a^6/x-6/a^7*ln(x)*A*b+1/a^6*ln(x)*B
```

maxima [A] time = 0.75, size = 202, normalized size = 1.29

$$-\frac{60\,Aa^5 - 60\left(Bab^4 - 6\,Ab^5\right)x^5 - 270\left(Ba^2b^3 - 6\,Aab^4\right)x^4 - 470\left(Ba^3b^2 - 6\,Aa^2b^3\right)x^3 - 385\left(Ba^4b - 6\,Aa^3b^2\right)}{60\left(a^6b^5x^6 + 5\,a^7b^4x^5 + 10\,a^8b^3x^4 + 10\,a^9b^2x^3 + 5\,a^{10}bx^2 + a^{11}x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/60*(60*A*a^5 - 60*(B*a*b^4 - 6*A*b^5)*x^5 - 270*(B*a^2*b^3 - 6*A*a*b^4)*
x^4 - 470*(B*a^3*b^2 - 6*A*a^2*b^3)*x^3 - 385*(B*a^4*b - 6*A*a^3*b^2)*x^2 -
 137*(B*a^5 - 6*A*a^4*b)*x)/(a^6*b^5*x^6 + 5*a^7*b^4*x^5 + 10*a^8*b^3*x^4 +
 10*a^9*b^2*x^3 + 5*a^10*b*x^2 + a^11*x) - (B*a - 6*A*b)*log(b*x + a)/a^7 +
 (B*a - 6*A*b)*log(x)/a^7
```

mupad [B] time = 0.15, size = 180, normalized size = 1.15

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,b\,x}{a}+1\right)\,(6\,A\,b-B\,a)}{a^7}-\frac{\frac{A}{a}+\frac{137\,x\,(6\,A\,b-B\,a)}{60\,a^2}+\frac{47\,b^2\,x^3\,(6\,A\,b-B\,a)}{6\,a^4}+\frac{9\,b^3\,x^4\,(6\,A\,b-B\,a)}{2\,a^5}+\frac{b^4\,x^5\,(6\,A\,b-B\,a)}{a^6}+\frac{77\,b\,x^2\,(6\,A}{12\,a}}{a^5\,x+5\,a^4\,b\,x^2+10\,a^3\,b^2\,x^3+10\,a^2\,b^3\,x^4+5\,a\,b^4\,x^5+b^5\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (2*atanh((2*b*x)/a + 1)*(6*A*b - B*a))/a^7 - (A/a + (137*x*(6*A*b - B*a))/(
60*a^2) + (47*b^2*x^3*(6*A*b - B*a))/(6*a^4) + (9*b^3*x^4*(6*A*b - B*a))/(2
*a^5) + (b^4*x^5*(6*A*b - B*a))/a^6 + (77*b*x^2*(6*A*b - B*a))/(12*a^3))/(a
^5*x + b^5*x^6 + 5*a^4*b*x^2 + 5*a*b^4*x^5 + 10*a^3*b^2*x^3 + 10*a^2*b^3*x^
4)
```

sympy [B] time = 1.06, size = 275, normalized size = 1.75

$$\frac{-60Aa^5+x^5\left(-360Ab^5+60Bab^4\right)+x^4\left(-1620Aab^4+270Ba^2b^3\right)+x^3\left(-2820Aa^2b^3+470Ba^3b^2\right)+x^2\left(-2310\right.}{60a^{11}x+300a^{10}bx^2+600a^9b^2x^3+600a^8b^3x^4+300a^7b^4x^5+60a^6b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-60*A*a**5 + x**5*(-360*A*b**5 + 60*B*a*b**4) + x**4*(-1620*A*a*b**4 + 270
*B*a**2*b**3) + x**3*(-2820*A*a**2*b**3 + 470*B*a**3*b**2) + x**2*(-2310*A*
a**3*b**2 + 385*B*a**4*b) + x*(-822*A*a**4*b + 137*B*a**5))/(60*a**11*x + 3
00*a**10*b*x**2 + 600*a**9*b**2*x**3 + 600*a**8*b**3*x**4 + 300*a**7*b**4*x
**5 + 60*a**6*b**5*x**6) + (-6*A*b + B*a)*log(x + (-6*A*a*b + B*a**2 - a*(-
6*A*b + B*a))/(-12*A*b**2 + 2*B*a*b))/a**7 - (-6*A*b + B*a)*log(x + (-6*A*a
*b + B*a**2 + a*(-6*A*b + B*a))/(-12*A*b**2 + 2*B*a*b))/a**7
```

3.652 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=177

$$\frac{3b\log(x)(7Ab-2aB)}{a^8}-\frac{3b(7Ab-2aB)\log(a+bx)}{a^8}+\frac{6Ab-aB}{a^7x}+\frac{5b(3Ab-aB)}{a^7(a+bx)}+\frac{b(5Ab-2aB)}{a^6(a+bx)^2}-\frac{A}{2a^6x^2}+\frac{b(2Ab}{a^5(a}$$

```
[Out] -1/2*A/a^6/x^2+(6*A*b-B*a)/a^7/x+1/5*b*(A*b-B*a)/a^3/(b*x+a)^5+1/4*b*(3*A*b
-2*B*a)/a^4/(b*x+a)^4+b*(2*A*b-B*a)/a^5/(b*x+a)^3+b*(5*A*b-2*B*a)/a^6/(b*x+
a)^2+5*b*(3*A*b-B*a)/a^7/(b*x+a)+3*b*(7*A*b-2*B*a)*ln(x)/a^8-3*b*(7*A*b-2*B
*a)*ln(b*x+a)/a^8
```

Rubi [A] time = 0.20, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{6Ab-aB}{a^7x}+\frac{5b(3Ab-aB)}{a^7(a+bx)}+\frac{b(5Ab-2aB)}{a^6(a+bx)^2}+\frac{b(2Ab-aB)}{a^5(a+bx)^3}+\frac{b(3Ab-2aB)}{4a^4(a+bx)^4}+\frac{b(Ab-aB)}{5a^3(a+bx)^5}+\frac{3b\log(x)(7Ab-2aB}{a^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -A/(2*a^6*x^2) + (6*A*b - a*B)/(a^7*x) + (b*(A*b - a*B))/(5*a^3*(a + b*x)^5
) + (b*(3*A*b - 2*a*B))/(4*a^4*(a + b*x)^4) + (b*(2*A*b - a*B))/(a^5*(a + b
*x)^3) + (b*(5*A*b - 2*a*B))/(a^6*(a + b*x)^2) + (5*b*(3*A*b - a*B))/(a^7*(
a + b*x)) + (3*b*(7*A*b - 2*a*B)*Log[x])/a^8 - (3*b*(7*A*b - 2*a*B)*Log[a +
 b*x])/a^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^3}\,dx&=\int \frac{A+Bx}{x^3(a+bx)^6}\,dx\\&=\int \left(\frac{A}{a^6x^3}+\frac{-6Ab+aB}{a^7x^2}-\frac{3b(-7Ab+2aB)}{a^8x}+\frac{b^2(-Ab+aB)}{a^3(a+bx)^6}+\frac{b^2(-3Ab+2a}{a^4(a+bx)^5}\right.\\&=-\frac{A}{2a^6x^2}+\frac{6Ab-aB}{a^7x}+\frac{b(Ab-aB)}{5a^3(a+bx)^5}+\frac{b(3Ab-2aB)}{4a^4(a+bx)^4}+\frac{b(2Ab-aB)}{a^5(a+bx)^3}+\frac{b(5A}{a^6(a}\end{aligned}$$

Mathematica [A] time = 0.18, size = 162, normalized size = 0.92

$$\frac{\frac{a\left(-10a^6(A+2Bx)+2a^5bx(35A-137Bx)+7a^4b^2x^2(137A-110Bx)+5a^3b^3x^3(539A-188Bx)+10a^2b^4x^4(329A-54Bx)+30ab^5x^5(63A-4Bx)+420Ab^6x^6\right)}{x^2(a+bx)^5}}{20a^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a*(420*A*b^6*x^6 + 5*a^3*b^3*x^3*(539*A - 188*B*x) + 2*a^5*b*x*(35*A - 13
7*B*x) + 7*a^4*b^2*x^2*(137*A - 110*B*x) + 10*a^2*b^4*x^4*(329*A - 54*B*x)
+ 30*a*b^5*x^5*(63*A - 4*B*x) - 10*a^6*(A + 2*B*x)))/(x^2*(a + b*x)^5) + 60
*b*(7*A*b - 2*a*B)*Log[x] + 60*b*(-7*A*b + 2*a*B)*Log[a + b*x])/(20*a^8)
```

fricas [B] time = 0.92, size = 484, normalized size = 2.73

$$-\frac{10\,Aa^{7}+60\,(2\,Ba^{2}b^{5}-7\,Aab^{6})x^{6}+270\,(2\,Ba^{3}b^{4}-7\,Aa^{2}b^{5})x^{5}+470\,(2\,Ba^{4}b^{3}-7\,Aa^{3}b^{4})x^{4}+385\,(2\,Ba^{5}b^{2}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/20*(10*A*a^7 + 60*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 270*(2*B*a^3*b^4 - 7*A
*a^2*b^5)*x^5 + 470*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 385*(2*B*a^5*b^2 - 7*
A*a^4*b^3)*x^3 + 137*(2*B*a^6*b - 7*A*a^5*b^2)*x^2 + 10*(2*B*a^7 - 7*A*a^6*
b)*x - 60*((2*B*a*b^6 - 7*A*b^7)*x^7 + 5*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 10
*(2*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 10*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 5*(
2*B*a^5*b^2 - 7*A*a^4*b^3)*x^3 + (2*B*a^6*b - 7*A*a^5*b^2)*x^2)*log(b*x + a
) + 60*((2*B*a*b^6 - 7*A*b^7)*x^7 + 5*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 10*(2
*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 10*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 5*(2*B
*a^5*b^2 - 7*A*a^4*b^3)*x^3 + (2*B*a^6*b - 7*A*a^5*b^2)*x^2)*log(x))/(a^8*b
^5*x^7 + 5*a^9*b^4*x^6 + 10*a^10*b^3*x^5 + 10*a^11*b^2*x^4 + 5*a^12*b*x^3 +
 a^13*x^2)
```

giac [A] time = 0.16, size = 205, normalized size = 1.16

$$-\frac{3\,(2\,Bab-7\,Ab^{2})\log(|x|)}{a^{8}}+\frac{3\,(2\,Bab^{2}-7\,Ab^{3})\log(|bx+a|)}{a^{8}b}-\frac{10\,Aa^{7}+60\,(2\,Ba^{2}b^{5}-7\,Aab^{6})x^{6}+270\,(2\,Ba^{3}b^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -3*(2*B*a*b - 7*A*b^2)*log(abs(x))/a^8 + 3*(2*B*a*b^2 - 7*A*b^3)*log(abs(b*
x + a))/(a^8*b) - 1/20*(10*A*a^7 + 60*(2*B*a^2*b^5 - 7*A*a*b^6)*x^6 + 270*(
2*B*a^3*b^4 - 7*A*a^2*b^5)*x^5 + 470*(2*B*a^4*b^3 - 7*A*a^3*b^4)*x^4 + 385*
(2*B*a^5*b^2 - 7*A*a^4*b^3)*x^3 + 137*(2*B*a^6*b - 7*A*a^5*b^2)*x^2 + 10*(2
*B*a^7 - 7*A*a^6*b)*x)/((b*x + a)^5*a^8*x^2)
```

maple [A] time = 0.08, size = 228, normalized size = 1.29

$$\frac{A\,b^{2}}{5\,(bx+a)^{5}\,a^{3}}-\frac{Bb}{5\,(bx+a)^{5}\,a^{2}}+\frac{3A\,b^{2}}{4\,(bx+a)^{4}\,a^{4}}-\frac{Bb}{2\,(bx+a)^{4}\,a^{3}}+\frac{2A\,b^{2}}{(bx+a)^{3}\,a^{5}}-\frac{Bb}{(bx+a)^{3}\,a^{4}}+\frac{5A\,b^{2}}{(bx+a)^{2}\,a^{6}}-\frac{2Bb}{(bx+a)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*b^2/a^5/(b*x+a)^3*A-b/a^4/(b*x+a)^3*B+3/4*b^2/a^4/(b*x+a)^4*A-1/2*b/a^3/(
b*x+a)^4*B+15*b^2/a^7/(b*x+a)*A-5*b/a^6/(b*x+a)*B+5*b^2/a^6/(b*x+a)^2*A-2*b
/a^5/(b*x+a)^2*B-21*b^2/a^8*ln(b*x+a)*A+6*b/a^7*ln(b*x+a)*B+1/5*b^2/a^3/(b*
x+a)^5*A-1/5*b/a^2/(b*x+a)^5*B-1/2*A/a^6/x^2+6/a^7/x*A*b-1/a^6/x*B+21*b^2/a
^8*ln(x)*A-6*b/a^7*ln(x)*B
```

maxima [A] time = 0.78, size = 242, normalized size = 1.37

$$-\frac{10\,Aa^{6}+60\left(2\,Bab^{5}-7\,Ab^{6}\right)x^{6}+270\left(2\,Ba^{2}b^{4}-7\,Aab^{5}\right)x^{5}+470\left(2\,Ba^{3}b^{3}-7\,Aa^{2}b^{4}\right)x^{4}+385\left(2\,Ba^{4}b^{2}-7\right.}{20\left(a^{7}b^{5}x^{7}+5\,a^{8}b^{4}x^{6}+10\,a^{9}b^{3}x^{5}+10\,a^{10}b^{2}x^{4}+5\,a^{11}bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/20*(10*A*a^6 + 60*(2*B*a*b^5 - 7*A*b^6)*x^6 + 270*(2*B*a^2*b^4 - 7*A*a*b
^5)*x^5 + 470*(2*B*a^3*b^3 - 7*A*a^2*b^4)*x^4 + 385*(2*B*a^4*b^2 - 7*A*a^3*
b^3)*x^3 + 137*(2*B*a^5*b - 7*A*a^4*b^2)*x^2 + 10*(2*B*a^6 - 7*A*a^5*b)*x)/
(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5*a^11*b*
x^3 + a^12*x^2) + 3*(2*B*a*b - 7*A*b^2)*log(b*x + a)/a^8 - 3*(2*B*a*b - 7*A
*b^2)*log(x)/a^8
```

mupad [B] time = 1.21, size = 230, normalized size = 1.30

$$\frac{\frac{x\,\left(7\,A\,b-2\,B\,a\right)}{2\,a^2}-\frac{A}{2\,a}+\frac{77\,b^2\,x^3\,\left(7\,A\,b-2\,B\,a\right)}{4\,a^4}+\frac{47\,b^3\,x^4\,\left(7\,A\,b-2\,B\,a\right)}{2\,a^5}+\frac{27\,b^4\,x^5\,\left(7\,A\,b-2\,B\,a\right)}{2\,a^6}+\frac{3\,b^5\,x^6\,\left(7\,A\,b-2\,B\,a\right)}{a^7}+\frac{137\,b\,x^2\,\left(7\,A\,b-2\,B\,a\right.}{20\,a^3}}{a^5\,x^2+5\,a^4\,b\,x^3+10\,a^3\,b^2\,x^4+10\,a^2\,b^3\,x^5+5\,a\,b^4\,x^6+b^5\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((x*(7*A*b - 2*B*a))/(2*a^2) - A/(2*a) + (77*b^2*x^3*(7*A*b - 2*B*a))/(4*a^
4) + (47*b^3*x^4*(7*A*b - 2*B*a))/(2*a^5) + (27*b^4*x^5*(7*A*b - 2*B*a))/(2
*a^6) + (3*b^5*x^6*(7*A*b - 2*B*a))/a^7 + (137*b*x^2*(7*A*b - 2*B*a))/(20*a
^3))/(a^5*x^2 + b^5*x^7 + 5*a^4*b*x^3 + 5*a*b^4*x^6 + 10*a^3*b^2*x^4 + 10*a
^2*b^3*x^5) - (6*b*atanh((3*b*(7*A*b - 2*B*a)*(a + 2*b*x))/(a*(21*A*b^2 - 6
*B*a*b)))*(7*A*b - 2*B*a))/a^8
```

sympy [A] time = 1.19, size = 335, normalized size = 1.89

$$\frac{-10Aa^{6}+x^{6}\left(420Ab^{6}-120Bab^{5}\right)+x^{5}\left(1890Aab^{5}-540Ba^{2}b^{4}\right)+x^{4}\left(3290Aa^{2}b^{4}-940Ba^{3}b^{3}\right)+x^{3}\left(2695Aa\right.}{20a^{12}x^{2}+100a^{11}bx^{3}+200a^{10}b^{2}x^{4}+200a^{9}b^{3}x^{5}+100a^{8}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-10*A*a**6 + x**6*(420*A*b**6 - 120*B*a*b**5) + x**5*(1890*A*a*b**5 - 540*
B*a**2*b**4) + x**4*(3290*A*a**2*b**4 - 940*B*a**3*b**3) + x**3*(2695*A*a**
3*b**3 - 770*B*a**4*b**2) + x**2*(959*A*a**4*b**2 - 274*B*a**5*b) + x*(70*A
*a**5*b - 20*B*a**6))/(20*a**12*x**2 + 100*a**11*b*x**3 + 200*a**10*b**2*x*
*4 + 200*a**9*b**3*x**5 + 100*a**8*b**4*x**6 + 20*a**7*b**5*x**7) - 3*b*(-7
*A*b + 2*B*a)*log(x + (-21*A*a*b**2 + 6*B*a**2*b - 3*a*b*(-7*A*b + 2*B*a))/
(-42*A*b**3 + 12*B*a*b**2))/a**8 + 3*b*(-7*A*b + 2*B*a)*log(x + (-21*A*a*b*
*2 + 6*B*a**2*b + 3*a*b*(-7*A*b + 2*B*a))/(-42*A*b**3 + 12*B*a*b**2))/a**8
```

3.653 $\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{6(a+bx)}+\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

```
[Out] 1/5*a*A*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+1/6*(A*b+B*a)*x^6*((b*x+a)^2)^(1/2)/(
b*x+a)+1/7*b*B*x^7*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [**A**] time = 0.07, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}=0.069$, Rules used = $\{770, 76\}$

$$\frac{x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{6(a+bx)}+\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + ((A*b + a*B)*x^6*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (b*B*x^7*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^4\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^4+b(Ab+aB)x^5+b^2Bx^6\right)dx}{ab+b^2x}\\&=\frac{aAx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{(Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{bBx^7\sqrt{a^2}}{7(}\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^5\sqrt{(a+bx)^2}\,(7a(6A+5Bx)+5bx(7A+6Bx))}{210(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(7*a*(6*A + 5*B*x) + 5*b*x*(7*A + 6*B*x)))/(210*(a +
 b*x))
```

fricas [A] time = 0.92, size = 27, normalized size = 0.24

$$\frac{1}{7}\,Bbx^{7}+\frac{1}{5}\,Aax^{5}+\frac{1}{6}\,(Ba+Ab)x^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b*x^7 + 1/5*A*a*x^5 + 1/6*(B*a + A*b)*x^6
```

giac [A] time = 0.20, size = 78, normalized size = 0.68

$$\frac{1}{7}\,Bbx^{7}\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Bax^{6}\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Abx^{6}\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Aax^{5}\mathrm{sgn}\left(bx+a\right)-\frac{\left(5\,Ba^{7}-7\,Aa^{6}b\right)\mathrm{sgn}\left(bx\right.}{210\,b^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b*x^7*sgn(b*x + a) + 1/6*B*a*x^6*sgn(b*x + a) + 1/6*A*b*x^6*sgn(b*x +
 a) + 1/5*A*a*x^5*sgn(b*x + a) - 1/210*(5*B*a^7 - 7*A*a^6*b)*sgn(b*x + a)/b
^6
```

maple [A] time = 0.06, size = 44, normalized size = 0.39

$$\frac{\left(30Bb\,x^{2}+35Abx+35Bax+42Aa\right)\sqrt{\left(bx+a\right)^{2}}\;x^{5}}{210bx+210a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/210*x^5*(30*B*b*x^2+35*A*b*x+35*B*a*x+42*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.58, size = 361, normalized size = 3.17

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Bx^{4}}{7\,b^{2}}-\frac{11\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Bax^{3}}{42\,b^{3}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Ax^{3}}{6\,b^{2}}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ba^{5}x}{2\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^4/b^2 - 11/42*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x^3/b^2 - 1/
2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*x/b^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*a^4*x/b^4 + 5/14*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*x^2/b^4 - 3/1
0*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*x^2/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*B*a^6/b^6 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^5/b^5 - 3/7*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*x/b^5 + 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
*A*a^2*x/b^4 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4/b^6 - 7/15*(b^2*
x^2 + 2*a*b*x + a^2)^(3/2)*A*a^3/b^5
```

mupad [B] time = 1.87, size = 431, normalized size = 3.78

$$\frac{A\,x^{3}\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{6\,b^{2}}+\frac{B\,x^{4}\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{7\,b^{2}}-\frac{11\,B\,a\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(a^{5}+5\,b^{3}\,x^{3}\,\left(a^{2}+2\,a\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2) + (B*x^4*(a^2 + b^2*x^2 + 2
*a*b*x)^(3/2))/(7*b^2) - (11*B*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b
^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^
2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(210*b
^6) - (B*a^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*
a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x
)))/(35*b^6) - (A*a^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 +
3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (3*A*a*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2
*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^5}{5} + \frac{Bbx^7}{7} + x^6\left(\frac{Ab}{6} + \frac{Ba}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**5/5 + B*b*x**7/7 + x**6*(A*b/6 + B*a/6)
```

3.654 $\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}$$

```
[Out] 1/4*a*A*x^4*((b*x+a)^2)^(1/2)/(b*x+a)+1/5*(A*b+B*a)*x^5*((b*x+a)^2)^(1/2)/(
b*x+a)+1/6*b*B*x^6*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + ((A*b + a*B)*x^5*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (b*B*x^6*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^3\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^3+b(Ab+aB)x^4+b^2Bx^5\right)dx}{ab+b^2x}\\&=\frac{aAx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{(Ab+aB)x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{bBx^6\sqrt{}}{}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^4\sqrt{(a+bx)^2}\,(3a(5A+4Bx)+2bx(6A+5Bx))}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(3*a*(5*A + 4*B*x) + 2*b*x*(6*A + 5*B*x)))/(60*(a +
b*x))
```

fricas [A] time = 0.86, size = 27, normalized size = 0.24

$$\frac{1}{6}\,Bbx^{6}+\frac{1}{4}\,Aax^{4}+\frac{1}{5}\,(Ba+Ab)x^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*B*b*x^6 + 1/4*A*a*x^4 + 1/5*(B*a + A*b)*x^5
```

giac [A] time = 0.15, size = 78, normalized size = 0.68

$$\frac{1}{6}\,Bbx^{6}\mathrm{sgn}\,(bx+a)+\frac{1}{5}\,Bax^{5}\mathrm{sgn}\,(bx+a)+\frac{1}{5}\,Abx^{5}\mathrm{sgn}\,(bx+a)+\frac{1}{4}\,Aax^{4}\mathrm{sgn}\,(bx+a)+\frac{(2\,Ba^{6}-3\,Aa^{5}b)\mathrm{sgn}\,(bx+}{60\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b*x^6*sgn(b*x + a) + 1/5*B*a*x^5*sgn(b*x + a) + 1/5*A*b*x^5*sgn(b*x +
 a) + 1/4*A*a*x^4*sgn(b*x + a) + 1/60*(2*B*a^6 - 3*A*a^5*b)*sgn(b*x + a)/b^
5
```

maple [A] time = 0.04, size = 44, normalized size = 0.39

$$\frac{\left(10Bb\,x^{2}+12Abx+12Bax+15Aa\right)\sqrt{(bx+a)^{2}}\;x^{4}}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x^4*(10*B*b*x^2+12*A*b*x+12*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.59, size = 301, normalized size = 2.64

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Bx^{3}}{6\,b^{2}}+\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ba^{4}x}{2\,b^{4}}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Aa^{3}x}{2\,b^{3}}-\frac{3\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Bax^{2}}{10\,b^{3}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*B*a^4*x/b^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^3*x/b^3 - 3/10*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*x^2/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*A*x^2/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5/b^5 - 1/2*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*A*a^4/b^4 + 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^
2*x/b^4 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*x/b^3 - 7/15*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*a^3/b^5 + 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2
/b^4
```

mupad [B] time = 1.30, size = 340, normalized size = 2.98

$$\frac{A\,x^{2}\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{5\,b^{2}}+\frac{B\,x^{3}\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{6\,b^{2}}-\frac{7\,A\,a\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\;\left(a^{3}-5\,a\,b^{2}\,x^{2}+3\,b\,x\,(a^{2}}{60\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*x^3*(a^2 + b^2*x^2 + 2
*a*b*x)^(3/2))/(6*b^2) - (7*A*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*
b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (B*a^2*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 +
2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (A*a^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^
2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) - (3*B*a*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b
^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^4}{4} + \frac{Bbx^6}{6} + x^5\left(\frac{Ab}{5} + \frac{Ba}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**4/4 + B*b*x**6/6 + x**5*(A*b/5 + B*a/5)
```

3.655 $\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

```
[Out] 1/3*a*A*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+1/4*(A*b+B*a)*x^4*((b*x+a)^2)^(1/2)/(
b*x+a)+1/5*b*B*x^5*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}=0.069$, Rules used = $\{770, 76\}$

$$\frac{x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + ((A*b + a*B)*x^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (b*B*x^5*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^2\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^2+b(Ab+aB)x^3+b^2Bx^4\right)dx}{ab+b^2x}\\&=\frac{aAx^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{(Ab+aB)x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{bBx^5\sqrt{a^2}}{5(}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$\frac{x^3\sqrt{(a+bx)^2}\,(5a(4A+3Bx)+3bx(5A+4Bx))}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(5*a*(4*A + 3*B*x) + 3*b*x*(5*A + 4*B*x)))/(60*(a +
b*x))
```

fricas [A] time = 0.95, size = 27, normalized size = 0.24

$$\frac{1}{5}\,Bbx^{5}+\frac{1}{3}\,Aax^{3}+\frac{1}{4}\,(Ba+Ab)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b*x^5 + 1/3*A*a*x^3 + 1/4*(B*a + A*b)*x^4
```

giac [A] time = 0.22, size = 78, normalized size = 0.68

$$\frac{1}{5}\,Bbx^{5}\mathrm{sgn}\,(bx+a)+\frac{1}{4}\,Bax^{4}\mathrm{sgn}\,(bx+a)+\frac{1}{4}\,Abx^{4}\mathrm{sgn}\,(bx+a)+\frac{1}{3}\,Aax^{3}\mathrm{sgn}\,(bx+a)-\frac{\left(3\,Ba^{5}-5\,Aa^{4}b\right)\mathrm{sgn}\,(bx}{60\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b*x^5*sgn(b*x + a) + 1/4*B*a*x^4*sgn(b*x + a) + 1/4*A*b*x^4*sgn(b*x +
 a) + 1/3*A*a*x^3*sgn(b*x + a) - 1/60*(3*B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^
4
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$\frac{\left(12Bb\,x^{2}+15Abx+15Bax+20Aa\right)\sqrt{(bx+a)^{2}}\;x^{3}}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x^3*(12*B*b*x^2+15*A*b*x+15*B*a*x+20*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.57, size = 241, normalized size = 2.11

$$-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ba^{3}x}{2\,b^{3}}+\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Aa^{2}x}{2\,b^{2}}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Bx^{2}}{5\,b^{2}}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ba^{4}}{2\,b^{4}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3*x/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*A*a^2*x/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x^2/b^2 - 1/2*s
qrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*
A*a^3/b^3 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*x/b^3 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*x/b^2 + 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/
b^4 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a/b^3
```

mupad [B] time = 1.30, size = 271, normalized size = 2.38

$$\frac{B\,x^{2}\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{5\,b^{2}}+\frac{A\,x\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}{4\,b^{2}}-\frac{7\,B\,a\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\;\left(a^{3}-5\,a\,b^{2}\,x^{2}+3\,b\,x\,\right(}{60\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (B*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (A*x*(a^2 + b^2*x^2 + 2*a
*b*x)^(3/2))/(4*b^2) - (7*B*a*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^
2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (5*A*a*(8*
b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/(96*b^5) - (B*a^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) - (A*a^2*(x/2 + a/(2*b))*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/(4*b^2)
```

sympy [A] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^3}{3} + \frac{Bbx^5}{5} + x^4\left(\frac{Ab}{4} + \frac{Ba}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**3/3 + B*b*x**5/5 + x**4*(A*b/4 + B*a/4)
```

3.656 $\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=114

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{bBx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

```
[Out] 1/2*a*A*x^2*((b*x+a)^2)^(1/2)/(b*x+a)+1/3*(A*b+B*a)*x^3*((b*x+a)^2)^(1/2)/(
b*x+a)+1/4*b*B*x^4*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{770, 76\}$

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{bBx^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + ((A*b + a*B)*x^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b*B*x^4*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx+b(Ab+aB)x^2+b^2Bx^3\right)dx}{ab+b^2x}\\&=\frac{aAx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{(Ab+aB)x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{bBx^4\sqrt{a}}{}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.41

$$\frac{x^2\sqrt{(a+bx)^2}\,(a(6A+4Bx)+bx(4A+3Bx))}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(b*x*(4*A + 3*B*x) + a*(6*A + 4*B*x)))/(12*(a + b*x)
)
```

fricas [A] time = 0.93, size = 27, normalized size = 0.24

$$\frac{1}{4}Bbx^4 + \frac{1}{2}Aax^2 + \frac{1}{3}(Ba + Ab)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*B*b*x^4 + 1/2*A*a*x^2 + 1/3*(B*a + A*b)*x^3
```

giac [A] time = 0.19, size = 77, normalized size = 0.68

$$\frac{1}{4}Bbx^4\operatorname{sgn}(bx+a)+\frac{1}{3}Bax^3\operatorname{sgn}(bx+a)+\frac{1}{3}Abx^3\operatorname{sgn}(bx+a)+\frac{1}{2}Aax^2\operatorname{sgn}(bx+a)+\frac{\left(Ba^4-2Aa^3b\right)\operatorname{sgn}(bx+a)}{12b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*B*b*x^4*sgn(b*x + a) + 1/3*B*a*x^3*sgn(b*x + a) + 1/3*A*b*x^3*sgn(b*x +
 a) + 1/2*A*a*x^2*sgn(b*x + a) + 1/12*(B*a^4 - 2*A*a^3*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$\frac{\left(3Bb\,x^2+4Abx+4Bax+6Aa\right)\sqrt{(bx+a)^2}\;x^2}{12bx+12a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/12*x^2*(3*B*b*x^2+4*A*b*x+4*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.51, size = 183, normalized size = 1.61

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^2x}{2\,b^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aax}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^3}{2\,b^3}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Aa^2}{2\,b^2}+\frac{\left(b^2x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*A*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3/b^3 - 1/2*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*a^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*x/b
^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*A/b^2
```

mupad [B] time = 1.28, size = 176, normalized size = 1.54

$$\frac{A\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}+\frac{B\,x\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{4\,b^2}-\frac{5\,B\,a\,\left(8\,b^2\,\left(a^2+b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2))/(24*b^4) + (B*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (5*B*a
*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(96*b^5) - (B*a^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
(4*b^2)
```

sympy [**A**] time = 0.10, size = 29, normalized size = 0.25

$$\frac{Aax^2}{2} + \frac{Bbx^4}{4} + x^3\left(\frac{Ab}{3} + \frac{Ba}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x**2/2 + B*b*x**4/4 + x**3*(A*b/3 + B*a/3)
```

3.657 $\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

```
[Out] 1/3*B*(b^2*x^2+2*a*b*x+a^2)^(3/2)/b^2+1/2*(A*b-B*a)*(b*x+a)*((b*x+a)^2)^(1/
2)/b^2
```

Rubi **[A]** time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + (B*(a^2 + 2
*a*b*x + b^2*x^2)^(3/2))/(3*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}+\frac{\left(2Ab^2-2abB\right)\int \sqrt{a^2+2abx+b^2x^2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}\end{aligned}$$

Mathematica **[A]** time = 0.01, size = 45, normalized size = 0.65

$$\frac{x\sqrt{(a+bx)^2}\,(3a(2A+Bx)+bx(3A+2Bx))}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(2*A + B*x) + b*x*(3*A + 2*B*x)))/(6*(a + b*x))
```

fricas [A] time = 0.65, size = 24, normalized size = 0.35

$$\frac{1}{3}\,Bbx^{3}+Aax+\frac{1}{2}\,(Ba+Ab)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*B*b*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

giac [A] time = 0.22, size = 74, normalized size = 1.07

$$\frac{1}{3}\,Bbx^{3}\mathrm{sgn}\,(bx+a)+\frac{1}{2}\,Bax^{2}\mathrm{sgn}\,(bx+a)+\frac{1}{2}\,Abx^{2}\mathrm{sgn}\,(bx+a)+Aax\mathrm{sgn}\,(bx+a)-\frac{\left(Ba^{3}-3\,Aa^{2}b\right)\mathrm{sgn}\,(bx+a)}{6\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*B*b*x^3*sgn(b*x + a) + 1/2*B*a*x^2*sgn(b*x + a) + 1/2*A*b*x^2*sgn(b*x +
 a) + A*a*x*sgn(b*x + a) - 1/6*(B*a^3 - 3*A*a^2*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.05, size = 42, normalized size = 0.61

$$\frac{\left(2Bb\,x^{2}+3Abx+3Bax+6Aa\right)\sqrt{(bx+a)^{2}}\;x}{6bx+6a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*x*(2*B*b*x^2+3*A*b*x+3*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.63, size = 125, normalized size = 1.81

$$\frac{1}{2}\,\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ax-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Bax}{2\,b}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Ba^{2}}{2\,b^{2}}+\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,Aa}{2\,b}+\left(b^{2}x^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B
*a*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^2 + 1/2*sqrt(b^2*x^2 + 2
*a*b*x + a^2)*A*a/b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/b^2
```

mupad [B] time = 1.25, size = 77, normalized size = 1.12

$$\frac{A\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)}{2\,b}+\frac{B\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b) + (B*(8*b^2*(a^2 + b^2*x^2) - 12*a^
2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4)
```

sympy [A] time = 0.10, size = 26, normalized size = 0.38

$$Aax+\frac{Bbx^{3}}{3}+x^{2}\left(\frac{Ab}{2}+\frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x + B*b*x**3/3 + x**2*(A*b/2 + B*a/2)
```

3.658 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x} \, dx$

Optimal. Leaf size=105

$$\frac{x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{aA\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

```
[Out] (A*b+B*a)*x*((b*x+a)^2)^(1/2)/(b*x+a)+1/2*b*B*x^2*((b*x+a)^2)^(1/2)/(b*x+a)
+a*A*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{aA\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x,x]
```

```
[Out] ((A*b + a*B)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b*B*x^2*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b(Ab+aB)+\frac{aAb}{x}+b^2Bx\right)dx}{ab+b^2x}\\ &= \frac{(Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{bBx^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{aA\sqrt{a^2+}}{}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\,(x(2aB+2Ab+bBx)+2aA\log(x))}{2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(2*A*b + 2*a*B + b*B*x) + 2*a*A*Log[x]))/(2*(a + b*x)
)
```

fricas [A] time = 1.12, size = 22, normalized size = 0.21

$$\frac{1}{2}Bbx^2 + Aa\log(x) + (Ba + Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] 1/2*B*b*x^2 + A*a*log(x) + (B*a + A*b)*x
```

giac [A] time = 0.16, size = 46, normalized size = 0.44

$$\frac{1}{2}Bbx^2\mathrm{sgn}\left(bx+a\right) + Bax\mathrm{sgn}\left(bx+a\right) + Abx\mathrm{sgn}\left(bx+a\right) + Aa\log\left(|x|\right)\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="giac")
```

```
[Out] 1/2*B*b*x^2*sgn(b*x + a) + B*a*x*sgn(b*x + a) + A*b*x*sgn(b*x + a) + A*a*lo
g(abs(x))*sgn(b*x + a)
```

maple [C] time = 0.07, size = 53, normalized size = 0.50

$$\frac{\left(B\,b^2x^2 + 2Aab\ln\left(bx\right) + 2A\,b^2x + 2Babx + 2Aab + B\,a^2\right)\mathrm{csgn}\left(bx+a\right)}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x,x)
```

```
[Out] 1/2*csgn(b*x+a)*(B*b^2*x^2+2*A*a*b*ln(b*x)+2*A*b^2*x+2*B*a*b*x+2*A*a*b+a^2*
B)/b
```

maxima [A] time = 0.51, size = 133, normalized size = 1.27

$$(-1)^{2\,b^2x+2\,ab}\,Aa\log\left(2\,b^2x+2\,ab\right) - (-1)^{2\,abx+2\,a^2}\,Aa\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right) + \frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Bx + \sqrt{b^2x^2+2\,abx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*A*
a*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*
x + sqrt(b^2*x^2 + 2*a*b*x + a^2)*A + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a
/b
```

mupad [B] time = 1.37, size = 122, normalized size = 1.16

$$A\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2} - A\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)\sqrt{a^2} + \frac{B\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)}{2\,b} + \frac{A\,a\,b\,\ln\left(a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x,x)
```

```
[Out] A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) - A*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/x)*(a^2)^(1/2) + (B*((a + b*x)^2)^(1/2)*(a + b*x
))/(2*b) + (A*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)
^(1/2)
```

sympy [A] time = 0.13, size = 22, normalized size = 0.21

$$Aa\log\left(x\right)+\frac{Bbx^{2}}{2}+x\left(Ab+Ba\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x,x)
```

```
[Out] A*a*log(x) + B*b*x**2/2 + x*(A*b + B*a)
```

3.659 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^2}\,dx$

Optimal. Leaf size=103

$$\frac{\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

```
[Out] -a*A*((b*x+a)^2)^(1/2)/x/(b*x+a)+b*B*x*((b*x+a)^2)^(1/2)/(b*x+a)+(A*b+B*a)*
ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^2,x]
```

```
[Out] -((a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (b*B*x*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(a + b*x) + ((A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Lo
g[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^2}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^2B+\frac{aAb}{x^2}+\frac{b(Ab+aB)}{x}\right)dx}{ab+b^2x}\\
&= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bBx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{(Ab+aB)\sqrt{a^2+2ab}}{a+bx}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.43

$$\frac{\sqrt{(a+bx)^2}\left(x\log(x)(aB+Ab)-aA+bBx^2\right)}{x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a*A) + b*B*x^2 + (A*b + a*B)*x*Log[x]))/(x*(a + b*x))
```

fricas [A] time = 1.02, size = 26, normalized size = 0.25

$$\frac{Bbx^2 + (Ba + Ab)x\log(x) - Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] (B*b*x^2 + (B*a + A*b)*x*log(x) - A*a)/x
```

giac [A] time = 0.18, size = 47, normalized size = 0.46

$$Bbx\operatorname{sgn}(bx + a) + \left(Ba\operatorname{sgn}(bx + a) + Ab\operatorname{sgn}(bx + a)\right)\log(|x|) - \frac{Aa\operatorname{sgn}(bx + a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] B*b*x*sgn(b*x + a) + (B*a*sgn(b*x + a) + A*b*sgn(b*x + a))*log(abs(x)) - A*
a*sgn(b*x + a)/x
```

maple [C] time = 0.06, size = 42, normalized size = 0.41

$$\frac{\left(Abx\ln(bx) + Bax\ln(bx) + Bb\,x^2 + Bax - Aa\right)\operatorname{csgn}(bx + a)}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x)
```

```
[Out] csgn(b*x+a)*(A*ln(b*x)*x*b+B*ln(b*x)*x*a+B*b*x^2+B*a*x-A*a)/x
```

maxima [B] time = 0.72, size = 175, normalized size = 1.70

$$(-1)^{2\,b^2x+2\,ab}\,Ba\log\left(2\,b^2x + 2\,ab\right)+(-1)^{2\,b^2x+2\,ab}\,Ab\log\left(2\,b^2x + 2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Ba\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)-(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a*b)*A*
b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a*log(2*a*b*x/abs(x) + 2*
a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))
 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B - sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/x
```

mupad [B] time = 1.46, size = 207, normalized size = 2.01

$$B\,\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2} - B\,\ln\left(a\,b + \frac{a^2}{x} + \frac{\sqrt{a^2}\,\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}}{x}\right)\,\sqrt{a^2} + A\,\ln\left(a\,b + \sqrt{(a + b\,x)^2}\,\sqrt{b^2} + b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^2,x)
```

```
[Out] B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) - B*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/x)*(a^2)^(1/2) + A*log(a*b + ((a + b*x)^2)^(1/2)
*(b^2)^(1/2) + b^2*x)*(b^2)^(1/2) - (A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x +
 (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^(1/2) - (
A*a*b*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(
a^2)^(1/2)
```

sympy [A] time = 0.17, size = 19, normalized size = 0.18

$$-\frac{Aa}{x} + Bbx + (Ab + Ba)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**2,x)
```

```
[Out] -A*a/x + B*b*x + (A*b + B*a)*log(x)
```

3.660 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{bB\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

```
[Out] -1/2*a*A*((b*x+a)^2)^(1/2)/x^2/(b*x+a)-(A*b+B*a)*((b*x+a)^2)^(1/2)/x/(b*x+a
)+b*B*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}+\frac{bB\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^3,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]*Log[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^3}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^3}+\frac{b(Ab+aB)}{x^2}+\frac{b^2B}{x}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{bB\sqrt{a^2+2a}}{a}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.44

$$-\frac{\sqrt{(a+bx)^2}\,\left(a(A+2Bx)+2Abx-2bBx^2\log(x)\right)}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^3,x]
```

```
[Out] -1/2*(Sqrt[(a + b*x)^2]*(2*A*b*x + a*(A + 2*B*x) - 2*b*B*x^2*Log[x]))/(x^2*
(a + b*x))
```

fricas [A] time = 1.37, size = 29, normalized size = 0.27

$$\frac{2\,Bbx^2\log(x) - Aa - 2\,(Ba + Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b*x^2*log(x) - A*a - 2*(B*a + A*b)*x)/x^2
```

giac [A] time = 0.19, size = 50, normalized size = 0.46

$$Bb\log\left(|x|\right)\mathrm{sgn}\left(bx + a\right) - \frac{Aa\mathrm{sgn}\left(bx + a\right) + 2\left(Ba\mathrm{sgn}\left(bx + a\right) + Ab\mathrm{sgn}\left(bx + a\right)\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] B*b*log(abs(x))*sgn(b*x + a) - 1/2*(A*a*sgn(b*x + a) + 2*(B*a*sgn(b*x + a)
+ A*b*sgn(b*x + a))*x)/x^2
```

maple [C] time = 0.06, size = 37, normalized size = 0.34

$$-\frac{\left(-2Bb\,x^2\ln\left(bx\right) + 2Abx + 2Bax + Aa\right)\mathrm{csgn}\left(bx + a\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x)
```

```
[Out] -1/2*csgn(b*x+a)*(-2*B*ln(b*x)*x^2*b+2*A*b*x+2*B*a*x+A*a)/x^2
```

maxima [B] time = 0.55, size = 172, normalized size = 1.59

$$(-1)^{2\,b^2x+2\,ab}\,Bb\log\left(2\,b^2x + 2\,ab\right) - (-1)^{2\,abx+2\,a^2}\,Bb\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right) + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Ab^2}{2\,a^2} - \frac{\sqrt{b^2x^2 + 2\,abx}}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*
b*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*
b^2/a^2 - sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/x + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^2)
```

mupad [B] time = 1.33, size = 134, normalized size = 1.24

$$B\,\ln\left(a\,b + \sqrt{{(a + b\,x)}^2}\,\sqrt{b^2} + b^2\,x\right)\,\sqrt{b^2} - \frac{B\,\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}}{x} - \frac{A\,\sqrt{{(a + b\,x)}^2}\,\left(a + 2\,b\,x\right)}{2\,x^2\,\left(a + b\,x\right)} - \frac{B\,a\,b\,\ln\left(a\,b + \frac{a^2}{x}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^3,x)
```

```
[Out] B*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x)*(b^2)^(1/2) - (B*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/x - (A*((a + b*x)^2)^(1/2)*(a + 2*b*x))/(2*x^2*
(a + b*x)) - (B*a*b*log(a*b + a^2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/x))/(a^2)^(1/2)
```

sympy [A] time = 0.25, size = 27, normalized size = 0.25

$$Bb\log{(x)} + \frac{-Aa + x(-2Ab - 2Ba)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**3,x)
```

```
[Out] B*b*log(x) + (-A*a + x*(-2*A*b - 2*B*a))/(2*x**2)
```

3.661 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^4}\,dx$

Optimal. Leaf size=75

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}$$

```
[Out] -1/3*A*(b^2*x^2+2*a*b*x+a^2)^(3/2)/a^2/x^3+1/2*(A*b-B*a)*(b*x+a)*((b*x+a)^2
)^(1/2)/a^2/x^2
```

Rubi [A] time = 0.04, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^4,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*a^2*x^2) - (A*(a^2
 + 2*a*b*x + b^2*x^2)^(3/2))/(3*a^2*x^3)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^4}\,dx &= -\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}-\frac{\left(2Ab^2-2abB\right)\int \frac{\sqrt{a^2+2abx+b^2x^2}}{x^3}\,dx}{2ab}\\
&= -\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}-\frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{ab+b^2x}{x^3}}{2ab\left(ab+b^2x\right)}\\
&= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2a^2x^2}-\frac{A\left(a^2+2abx+b^2x^2\right)^{3/2}}{3a^2x^3}
\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 46, normalized size = 0.61

$$-\frac{\sqrt{(a+bx)^2}\,(a(2A+3Bx)+3bx(A+2Bx))}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(3*b*x*(A + 2*B*x) + a*(2*A + 3*B*x)))/(x^3*(a + b*
x))
```

fricas [**A**] time = 0.77, size = 27, normalized size = 0.36

$$-\frac{6\,Bbx^2+2\,Aa+3\,(Ba+Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

giac [**A**] time = 0.16, size = 77, normalized size = 1.03

$$-\frac{\left(3\,Bab^2-Ab^3\right)\mathrm{sgn}\,(bx+a)}{6\,a^2}-\frac{6\,Bbx^2\mathrm{sgn}\,(bx+a)+3\,Bax\mathrm{sgn}\,(bx+a)+3\,Abx\mathrm{sgn}\,(bx+a)+2\,Aa\mathrm{sgn}\,(bx+}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] -1/6*(3*B*a*b^2 - A*b^3)*sgn(b*x + a)/a^2 - 1/6*(6*B*b*x^2*sgn(b*x + a) + 3
*B*a*x*sgn(b*x + a) + 3*A*b*x*sgn(b*x + a) + 2*A*a*sgn(b*x + a))/x^3
```

maple [**A**] time = 0.05, size = 44, normalized size = 0.59

$$-\frac{\left(6Bb\,x^2+3Abx+3Bax+2Aa\right)\sqrt{(bx+a)^2}}{6\,(bx+a)\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x)
```

```
[Out] -1/6*(6*B*b*x^2+3*A*b*x+3*B*a*x+2*A*a)*((b*x+a)^2)^(1/2)/x^3/(b*x+a)
```

maxima [**B**] time = 0.49, size = 195, normalized size = 2.60

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2}{2\,a^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3}{2\,a^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb}{2\,ax}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^2}{2\,a^2x}-\left(b^2x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2/a^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*b^3/a^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b/(a*x) - 1/2*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*b^2/(a^2*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B
/(a^2*x^2) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b/(a^3*x^2) - 1/3*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^3)
```

mupad [**B**] time = 1.11, size = 43, normalized size = 0.57

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(2\,A\,a+3\,A\,b\,x+3\,B\,a\,x+6\,B\,b\,x^2\right)}{6\,x^3\,(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^4,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(2*A*a + 3*A*b*x + 3*B*a*x + 6*B*b*x^2))/(6*x^3*(a +
b*x))
```

sympy [**A**] time = 0.30, size = 31, normalized size = 0.41

$$\frac{-2Aa-6Bbx^2+x\,(-3Ab-3Ba)}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**4,x)
```

```
[Out] (-2*A*a - 6*B*b*x**2 + x*(-3*A*b - 3*B*a))/(6*x**3)
```

3.662 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^5}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^3(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}$$

```
[Out] -1/4*a*A*((b*x+a)^2)^(1/2)/x^4/(b*x+a)-1/3*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^3/
(b*x+a)-1/2*b*B*((b*x+a)^2)^(1/2)/x^2/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^3(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^5,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*x^2*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^5}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^5}+\frac{b(Ab+aB)}{x^4}+\frac{b^2B}{x^3}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{bB\sqrt{a^2+2a}{2x^2(a -}\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(3aA+4aBx+4Abx+6bBx^2\right)}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(3*a*A + 4*A*b*x + 4*a*B*x + 6*b*B*x^2))/(x^4*(a +
 b*x))
```

fricas [A] time = 0.60, size = 27, normalized size = 0.24

$$-\frac{6\,Bbx^2+3\,Aa+4\,(Ba+Ab)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

giac [A] time = 0.16, size = 77, normalized size = 0.68

$$\frac{\left(2\,Bab^3-Ab^4\right)\mathrm{sgn}\,(bx+a)}{12\,a^3}-\frac{6\,Bbx^2\mathrm{sgn}\,(bx+a)+4\,Bax\mathrm{sgn}\,(bx+a)+4\,Abx\mathrm{sgn}\,(bx+a)+3\,Aa\mathrm{sgn}\,(bx+a)}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/12*(2*B*a*b^3 - A*b^4)*sgn(b*x + a)/a^3 - 1/12*(6*B*b*x^2*sgn(b*x + a) +
4*B*a*x*sgn(b*x + a) + 4*A*b*x*sgn(b*x + a) + 3*A*a*sgn(b*x + a))/x^4
```

maple [A] time = 0.06, size = 44, normalized size = 0.39

$$-\frac{\left(6Bb\,x^2+4Abx+4Bax+3Aa\right)\sqrt{(bx+a)^2}}{12\,(bx+a)\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x)
```

```
[Out] -1/12*(6*B*b*x^2+4*A*b*x+4*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^4/(b*x+a)
```

maxima [B] time = 0.54, size = 255, normalized size = 2.24

$$-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3}{2\,a^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4}{2\,a^4}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2}{2\,a^2x}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^3}{2\,a^3x}+\frac{\left(b^2x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/a^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*A*b^4/a^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2/(a^2*x) + 1/2*sqr
t(b^2*x^2 + 2*a*b*x + a^2)*A*b^3/(a^3*x) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*b/(a^3*x^2) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2/(a^4*x^2) - 1
/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2*x^3) + 5/12*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*b/(a^3*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^4)
```

mupad [B] time = 1.13, size = 43, normalized size = 0.38

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(3\,A\,a+4\,A\,b\,x+4\,B\,a\,x+6\,B\,b\,x^2\right)}{12\,x^4\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*A*a + 4*A*b*x + 4*B*a*x + 6*B*b*x^2))/(12*x^4*(a +
 b*x))
```

sympy [A] time = 0.37, size = 31, normalized size = 0.27

$$\frac{-3Aa-6Bbx^{2}+x\left(-4Ab-4Ba\right)}{12x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**5,x)
```

```
[Out] (-3*A*a - 6*B*b*x**2 + x*(-4*A*b - 4*B*a))/(12*x**4)
```

3.663 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^6}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

```
[Out] -1/5*a*A*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-1/4*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^4/
(b*x+a)-1/3*b*B*((b*x+a)^2)^(1/2)/x^3/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^6,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^6}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^6}+\frac{b(Ab+aB)}{x^5}+\frac{b^2B}{x^4}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{bB\sqrt{a^2+2abx}}{3x^3(a+b}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\,(3a(4A+5Bx)+5bx(3A+4Bx))}{60x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(5*b*x*(3*A + 4*B*x) + 3*a*(4*A + 5*B*x)))/(x^5*(a
 + b*x))
```

fricas [A] time = 0.50, size = 27, normalized size = 0.24

$$-\frac{20\,Bbx^2+12\,Aa+15\,(Ba+Ab)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

giac [A] time = 0.22, size = 77, normalized size = 0.68

$$-\frac{\left(5\,Bab^4-3\,Ab^5\right)\operatorname{sgn}(bx+a)}{60\,a^4}-\frac{20\,Bbx^2\operatorname{sgn}(bx+a)+15\,Bax\operatorname{sgn}(bx+a)+15\,Abx\operatorname{sgn}(bx+a)+12\,Aa\operatorname{sgn}}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/60*(5*B*a*b^4 - 3*A*b^5)*sgn(b*x + a)/a^4 - 1/60*(20*B*b*x^2*sgn(b*x + a
) + 15*B*a*x*sgn(b*x + a) + 15*A*b*x*sgn(b*x + a) + 12*A*a*sgn(b*x + a))/x^
5
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$-\frac{\left(20Bb\,x^2+15Abx+15Bax+12Aa\right)\sqrt{(bx+a)^2}}{60\,(bx+a)\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x)
```

```
[Out] -1/60*(20*B*b*x^2+15*A*b*x+15*B*a*x+12*A*a)*((b*x+a)^2)^(1/2)/x^5/(b*x+a)
```

maxima [B] time = 0.65, size = 315, normalized size = 2.76

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4}{2\,a^4}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^5}{2\,a^5}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^3}{2\,a^3x}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^4}{2\,a^4x}-\left(b^2x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4/a^4 - 1/2*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*A*b^5/a^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/(a^3*x) - 1/2*sqrt
(b^2*x^2 + 2*a*b*x + a^2)*A*b^4/(a^4*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*b^2/(a^4*x^2) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^3/(a^5*x^2) +
5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b/(a^3*x^3) - 9/20*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*A*b^2/(a^4*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2
*x^4) + 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b/(a^3*x^4) - 1/5*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A/(a^2*x^5)
```

mupad [B] time = 1.12, size = 43, normalized size = 0.38

$$-\frac{\sqrt{(a+b\,x)^2}\;\left(12\,A\,a+15\,A\,b\,x+15\,B\,a\,x+20\,B\,b\,x^2\right)}{60\,x^5\;(a+b\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(12*A*a + 15*A*b*x + 15*B*a*x + 20*B*b*x^2))/(60*x^5*
(a + b*x))
```

sympy [A] time = 0.43, size = 31, normalized size = 0.27

$$\frac{-12Aa - 20Bbx^2 + x\left(-15Ab - 15Ba\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**6,x)
```

```
[Out] (-12*A*a - 20*B*b*x**2 + x*(-15*A*b - 15*B*a))/(60*x**5)
```

3.664 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^7}\,dx$

Optimal. Leaf size=114

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

```
[Out] -1/6*a*A*((b*x+a)^2)^(1/2)/x^6/(b*x+a)-1/5*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^5/
(b*x+a)-1/4*b*B*((b*x+a)^2)^(1/2)/x^4/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^7,x]
```

```
[Out] -(a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - ((A*b + a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{x^7}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^7}+\frac{b(Ab+aB)}{x^6}+\frac{b^2B}{x^5}\right)dx}{ab+b^2x}\\ &= -\frac{aA\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{bB\sqrt{a^2+2a}}{4x^4(a -}\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\,(2a(5A+6Bx)+3bx(4A+5Bx))}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*b*x*(4*A + 5*B*x) + 2*a*(5*A + 6*B*x)))/(x^6*(a
 + b*x))
```

fricas [A] time = 0.88, size = 27, normalized size = 0.24

$$-\frac{15\,Bbx^2+10\,Aa+12\,(Ba+Ab)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*B*b*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

giac [A] time = 0.16, size = 77, normalized size = 0.68

$$\frac{\left(3\,Bab^5-2\,Ab^6\right)\mathrm{sgn}\left(bx+a\right)}{60\,a^5}-\frac{15\,Bbx^2\mathrm{sgn}\left(bx+a\right)+12\,Bax\mathrm{sgn}\left(bx+a\right)+12\,Abx\mathrm{sgn}\left(bx+a\right)+10\,Aa\mathrm{sgn}\left(bx\right.}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/60*(3*B*a*b^5 - 2*A*b^6)*sgn(b*x + a)/a^5 - 1/60*(15*B*b*x^2*sgn(b*x + a)
 + 12*B*a*x*sgn(b*x + a) + 12*A*b*x*sgn(b*x + a) + 10*A*a*sgn(b*x + a))/x^6
```

maple [A] time = 0.05, size = 44, normalized size = 0.39

$$-\frac{\left(15Bb\,x^2+12Abx+12Bax+10Aa\right)\sqrt{\left(bx+a\right)^2}}{60\left(bx+a\right)x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x)
```

```
[Out] -1/60*(15*B*b*x^2+12*A*b*x+12*B*a*x+10*A*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)
```

maxima [B] time = 0.61, size = 375, normalized size = 3.29

$$-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^5}{2\,a^5}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^6}{2\,a^6}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bb^4}{2\,a^4x}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ab^5}{2\,a^5x}+\frac{\left(b^2x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5/a^5 + 1/2*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*A*b^6/a^6 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4/(a^4*x) + 1/2*sqr
t(b^2*x^2 + 2*a*b*x + a^2)*A*b^5/(a^5*x) + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*b^3/(a^5*x^2) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/(a^6*x^2) -
 9/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2/(a^4*x^3) + 7/15*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*A*b^3/(a^5*x^3) + 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*
b/(a^3*x^4) - 2/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2/(a^4*x^4) - 1/5*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*B/(a^2*x^5) + 3/10*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/(a^2*x^6)
```

mupad [B] time = 1.15, size = 43, normalized size = 0.38

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(10\,A\,a+12\,A\,b\,x+12\,B\,a\,x+15\,B\,b\,x^2\right)}{60\,x^6\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*A*a + 12*A*b*x + 12*B*a*x + 15*B*b*x^2))/(60*x^6*
(a + b*x))
```

sympy [A] time = 0.51, size = 31, normalized size = 0.27

$$\frac{-10Aa - 15Bbx^2 + x(-12Ab - 12Ba)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**7,x)
```

```
[Out] (-10*A*a - 15*B*b*x**2 + x*(-12*A*b - 12*B*a))/(60*x**6)
```

3.665 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{3abx^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8(a+bx)}+\frac{a^2x^7\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7(a+bx)}+$$

```
[Out] 1/6*a^3*A*x^6*((b*x+a)^2)^(1/2)/(b*x+a)+1/7*a^2*(3*A*b+B*a)*x^7*((b*x+a)^2)
^(1/2)/(b*x+a)+3/8*a*b*(A*b+B*a)*x^8*((b*x+a)^2)^(1/2)/(b*x+a)+1/9*b^2*(A*b
+3*B*a)*x^9*((b*x+a)^2)^(1/2)/(b*x+a)+1/10*b^3*B*x^10*((b*x+a)^2)^(1/2)/(b*
x+a)
```

Rubi [A] time = 0.13, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{3abx^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8(a+bx)}+\frac{a^2x^7\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7(a+bx)}+$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (3*a*b*(A*b + a*B)*x^8
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^9*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (b^3*B*x^10*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(10*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^5\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^5+a^2b^3(3Ab+aB)x^6+3ab^4(Ab+aB)\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{a^3Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{a^2(3Ab+aB)x^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^6\sqrt{(a+bx)^2}\left(60a^3(7A+6Bx)+135a^2bx(8A+7Bx)+105ab^2x^2(9A+8Bx)+28b^3x^3(10A+9Bx)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^6*Sqrt[(a + b*x)^2]*(60*a^3*(7*A + 6*B*x) + 135*a^2*b*x*(8*A + 7*B*x) +
105*a*b^2*x^2*(9*A + 8*B*x) + 28*b^3*x^3*(10*A + 9*B*x)))/(2520*(a + b*x))
```

fricas [**A**] time = 0.66, size = 73, normalized size = 0.35

$$\frac{1}{10}\,Bb^3x^{10}+\frac{1}{6}\,Aa^3x^6+\frac{1}{9}\left(3\,Bab^2+Ab^3\right)x^9+\frac{3}{8}\left(Ba^2b+Aab^2\right)x^8+\frac{1}{7}\left(Ba^3+3\,Aa^2b\right)x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/10*B*b^3*x^10 + 1/6*A*a^3*x^6 + 1/9*(3*B*a*b^2 + A*b^3)*x^9 + 3/8*(B*a^2*
b + A*a*b^2)*x^8 + 1/7*(B*a^3 + 3*A*a^2*b)*x^7
```

giac [**A**] time = 0.18, size = 150, normalized size = 0.71

$$\frac{1}{10}\,Bb^3x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Bab^2x^9\mathrm{sgn}\left(bx+a\right)+\frac{1}{9}\,Ab^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Ba^2bx^8\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Aab^2x^8\mathrm{sgn}\,(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/10*B*b^3*x^10*sgn(b*x + a) + 1/3*B*a*b^2*x^9*sgn(b*x + a) + 1/9*A*b^3*x^9
*sgn(b*x + a) + 3/8*B*a^2*b*x^8*sgn(b*x + a) + 3/8*A*a*b^2*x^8*sgn(b*x + a)
 + 1/7*B*a^3*x^7*sgn(b*x + a) + 3/7*A*a^2*b*x^7*sgn(b*x + a) + 1/6*A*a^3*x^
6*sgn(b*x + a) + 1/2520*(3*B*a^10 - 5*A*a^9*b)*sgn(b*x + a)/b^7
```

maple [**A**] time = 0.06, size = 92, normalized size = 0.44

$$\frac{\left(252b^3B\,x^4+280A\,b^3x^3+840x^3Ba\,b^2+945x^2Aa\,b^2+945B\,a^2b\,x^2+1080xA\,a^2b+360B\,a^3x+420A\,a^3\right)\,((b}{2520\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x^6*(252*B*b^3*x^4+280*A*b^3*x^3+840*B*a*b^2*x^3+945*A*a*b^2*x^2+945
*B*a^2*b*x^2+1080*A*a^2*b*x+360*B*a^3*x+420*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [**B**] time = 0.70, size = 421, normalized size = 2.00

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^5}{10\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax^4}{6\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax^4}{9\,b^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x^3}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^5/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*a*x^4/b^3 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x^4/b^2 + 5/2
```

```
4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x^3/b^4 - 13/72*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*A*a*x^3/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^6*x/b^6
- 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^5*x/b^5 - 13/56*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a^3*x^2/b^5 + 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^2
*x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^7/b^7 - 1/4*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*A*a^6/b^6 + 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^
4*x/b^6 - 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3*x/b^5 - 209/840*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5/b^7 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*A*a^4/b^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^5\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{5}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**5*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.666 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8(a+bx)}+\frac{3abx^7\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{a^2x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab}{6(a+bx)}$$

```
[Out] 1/5*a^3*A*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+1/6*a^2*(3*A*b+B*a)*x^6*((b*x+a)^2)
^(1/2)/(b*x+a)+3/7*a*b*(A*b+B*a)*x^7*((b*x+a)^2)^(1/2)/(b*x+a)+1/8*b^2*(A*b
+3*B*a)*x^8*((b*x+a)^2)^(1/2)/(b*x+a)+1/9*b^3*B*x^9*((b*x+a)^2)^(1/2)/(b*x+
a)
```

Rubi **[A]** time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8(a+bx)}+\frac{3abx^7\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{a^2x^6\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (3*a*b*(A*b + a*B)*x^7
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^8*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (b^3*B*x^9*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^4\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Big(a^3Ab^3x^4+a^2b^3(3Ab+aB)x^5+3ab^4(Ab+a}{b^2\left(ab+b^2x\right)}\\ &= \frac{a^3Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{a^2(3Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^5\sqrt{(a+bx)^2}\left(84a^3(6A+5Bx)+180a^2bx(7A+6Bx)+135ab^2x^2(8A+7Bx)+35b^3x^3(9A+8Bx)\right)}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(84*a^3*(6*A + 5*B*x) + 180*a^2*b*x*(7*A + 6*B*x) +
135*a*b^2*x^2*(8*A + 7*B*x) + 35*b^3*x^3*(9*A + 8*B*x)))/(2520*(a + b*x))
```

fricas [A] time = 0.89, size = 73, normalized size = 0.35

$$\frac{1}{9}\,Bb^3x^9+\frac{1}{5}\,Aa^3x^5+\frac{1}{8}\left(3\,Bab^2+Ab^3\right)x^8+\frac{3}{7}\left(Ba^2b+Aab^2\right)x^7+\frac{1}{6}\left(Ba^3+3\,Aa^2b\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9*B*b^3*x^9 + 1/5*A*a^3*x^5 + 1/8*(3*B*a*b^2 + A*b^3)*x^8 + 3/7*(B*a^2*b
+ A*a*b^2)*x^7 + 1/6*(B*a^3 + 3*A*a^2*b)*x^6
```

giac [A] time = 0.21, size = 150, normalized size = 0.71

$$\frac{1}{9}\,Bb^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,Bab^2x^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{8}\,Ab^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}\,Ba^2bx^7\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}\,Aab^2x^7\mathrm{sgn}\left(bx+a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^3*x^9*sgn(b*x + a) + 3/8*B*a*b^2*x^8*sgn(b*x + a) + 1/8*A*b^3*x^8*s
gn(b*x + a) + 3/7*B*a^2*b*x^7*sgn(b*x + a) + 3/7*A*a*b^2*x^7*sgn(b*x + a) +
 1/6*B*a^3*x^6*sgn(b*x + a) + 1/2*A*a^2*b*x^6*sgn(b*x + a) + 1/5*A*a^3*x^5*
sgn(b*x + a) - 1/2520*(5*B*a^9 - 9*A*a^8*b)*sgn(b*x + a)/b^6
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(280b^3B\,x^4+315A\,b^3x^3+945x^3Ba\,b^2+1080x^2Aa\,b^2+1080B\,a^2b\,x^2+1260xA\,a^2b+420B\,a^3x+504A\,a^3\right)\left((bx\right.}{2520\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x^5*(280*B*b^3*x^4+315*A*b^3*x^3+945*B*a*b^2*x^3+1080*A*a*b^2*x^2+10
80*B*a^2*b*x^2+1260*A*a^2*b*x+420*B*a^3*x+504*A*a^3)*((b*x+a)^2)^(3/2)/(b*x
+a)^3
```

maxima [B] time = 0.57, size = 361, normalized size = 1.72

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^4}{9\,b^2}-\frac{13\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax^3}{72\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax^3}{8\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^5x}{4\,b^5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^4/b^2 - 13/72*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a*x^3/b^3 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x^3/b^2 - 1/
```

```
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*x/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*a^4*x/b^4 + 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x^2/b^4
 - 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*x^2/b^3 - 1/4*(b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*B*a^6/b^6 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^5/b^5 -
 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*x/b^5 + 13/56*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*A*a^2*x/b^4 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a
^4/b^6 - 69/280*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3/b^5
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^{4} \left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.667 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^7\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{abx^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2(a+bx)}+\frac{a^2x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5(a+bx)}+$$

```
[Out] 1/4*a^3*A*x^4*((b*x+a)^2)^(1/2)/(b*x+a)+1/5*a^2*(3*A*b+B*a)*x^5*((b*x+a)^2)
^(1/2)/(b*x+a)+1/2*a*b*(A*b+B*a)*x^6*((b*x+a)^2)^(1/2)/(b*x+a)+1/7*b^2*(A*b
+3*B*a)*x^7*((b*x+a)^2)^(1/2)/(b*x+a)+1/8*b^3*B*x^8*((b*x+a)^2)^(1/2)/(b*x+
a)
```

Rubi [A] time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^2x^7\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{abx^6\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2(a+bx)}+\frac{a^2x^5\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5(a+bx)}+$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a*b*(A*b + a*B)*x^6*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^7*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (b^3*B*x^8*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(8*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^3\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^3+a^2b^3(3Ab+aB)x^4+3ab^4(Ab+aB)\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{a^3Ax^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{a^2(3Ab+aB)x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^4\sqrt{(a+bx)^2}\left(14a^3(5A+4Bx)+28a^2bx(6A+5Bx)+20ab^2x^2(7A+6Bx)+5b^3x^3(8A+7Bx)\right)}{280(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(14*a^3*(5*A + 4*B*x) + 28*a^2*b*x*(6*A + 5*B*x) + 2
0*a*b^2*x^2*(7*A + 6*B*x) + 5*b^3*x^3*(8*A + 7*B*x)))/(280*(a + b*x))
```

fricas [**A**] time = 0.90, size = 73, normalized size = 0.35

$$\frac{1}{8}Bb^3x^8+\frac{1}{4}Aa^3x^4+\frac{1}{7}\left(3Bab^2+Ab^3\right)x^7+\frac{1}{2}\left(Ba^2b+Aab^2\right)x^6+\frac{1}{5}\left(Ba^3+3Aa^2b\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/8*B*b^3*x^8 + 1/4*A*a^3*x^4 + 1/7*(3*B*a*b^2 + A*b^3)*x^7 + 1/2*(B*a^2*b
+ A*a*b^2)*x^6 + 1/5*(B*a^3 + 3*A*a^2*b)*x^5
```

giac [**A**] time = 0.20, size = 149, normalized size = 0.71

$$\frac{1}{8}Bb^3x^8\operatorname{sgn}(bx+a)+\frac{3}{7}Bab^2x^7\operatorname{sgn}(bx+a)+\frac{1}{7}Ab^3x^7\operatorname{sgn}(bx+a)+\frac{1}{2}Ba^2bx^6\operatorname{sgn}(bx+a)+\frac{1}{2}Aab^2x^6\operatorname{sgn}(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^3*x^8*sgn(b*x + a) + 3/7*B*a*b^2*x^7*sgn(b*x + a) + 1/7*A*b^3*x^7*s
gn(b*x + a) + 1/2*B*a^2*b*x^6*sgn(b*x + a) + 1/2*A*a*b^2*x^6*sgn(b*x + a) +
 1/5*B*a^3*x^5*sgn(b*x + a) + 3/5*A*a^2*b*x^5*sgn(b*x + a) + 1/4*A*a^3*x^4*
sgn(b*x + a) + 1/280*(B*a^8 - 2*A*a^7*b)*sgn(b*x + a)/b^5
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(35b^3Bx^4+40Ab^3x^3+120x^3Bab^2+140x^2Aab^2+140Ba^2bx^2+168xAa^2b+56Ba^3x+70Aa^3\right)\left((bx+a)^2\right.}{280\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x^4*(35*B*b^3*x^4+40*A*b^3*x^3+120*B*a*b^2*x^3+140*A*a*b^2*x^2+140*B*
a^2*b*x^2+168*A*a^2*b*x+56*B*a^3*x+70*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [**B**] time = 0.57, size = 301, normalized size = 1.43

$$\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bx^3}{8b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^4x}{4b^4}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aa^3x}{4b^3}-\frac{11\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba}{56b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*B*a^4*x/b^4 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^3*x/b^3 - 11
/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*x^2/b^3 + 1/7*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*x^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5/b^5 - 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^4/b^4 + 13/56*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*a^2*x/b^4 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*x/b^3 - 69/28
0*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3/b^5 + 17/70*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.668 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$\frac{b^2x^6\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6(a+bx)}+\frac{3abx^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{a^2x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab}{4(a+bx)}$$

```
[Out] 1/3*a^3*A*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+1/4*a^2*(3*A*b+B*a)*x^4*((b*x+a)^2)
^(1/2)/(b*x+a)+3/5*a*b*(A*b+B*a)*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+1/6*b^2*(A*b
+3*B*a)*x^6*((b*x+a)^2)^(1/2)/(b*x+a)+1/7*b^3*B*x^7*((b*x+a)^2)^(1/2)/(b*x+
a)
```

Rubi [A] time = 0.09, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{b^2x^6\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6(a+bx)}+\frac{3abx^5\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{a^2x^4\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*A*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (a^2*(3*A*b + a*B
)*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (3*a*b*(A*b + a*B)*x^5
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (b^2*(A*b + 3*a*B)*x^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (b^3*B*x^7*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^2\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^3Ab^3x^2+a^2b^3(3Ab+aB)x^3+3ab^4(Ab+a\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{a^3Ax^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{a^2(3Ab+aB)x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 87, normalized size = 0.41

$$\frac{x^3\sqrt{(a+bx)^2}\,\left(35a^3(4A+3Bx)+63a^2bx(5A+4Bx)+42ab^2x^2(6A+5Bx)+10b^3x^3(7A+6Bx)\right)}{420(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(35*a^3*(4*A + 3*B*x) + 63*a^2*b*x*(5*A + 4*B*x) + 4
2*a*b^2*x^2*(6*A + 5*B*x) + 10*b^3*x^3*(7*A + 6*B*x)))/(420*(a + b*x))
```

fricas [**A**] time = 0.83, size = 73, normalized size = 0.35

$$\frac{1}{7}\,Bb^3x^7+\frac{1}{3}\,Aa^3x^3+\frac{1}{6}\left(3\,Bab^2+Ab^3\right)x^6+\frac{3}{5}\left(Ba^2b+Aab^2\right)x^5+\frac{1}{4}\left(Ba^3+3\,Aa^2b\right)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^3*x^7 + 1/3*A*a^3*x^3 + 1/6*(3*B*a*b^2 + A*b^3)*x^6 + 3/5*(B*a^2*b
+ A*a*b^2)*x^5 + 1/4*(B*a^3 + 3*A*a^2*b)*x^4
```

giac [**A**] time = 0.16, size = 150, normalized size = 0.71

$$\frac{1}{7}\,Bb^3x^7\mathrm{sgn}\,(bx+a)+\frac{1}{2}\,Bab^2x^6\mathrm{sgn}\,(bx+a)+\frac{1}{6}\,Ab^3x^6\mathrm{sgn}\,(bx+a)+\frac{3}{5}\,Ba^2bx^5\mathrm{sgn}\,(bx+a)+\frac{3}{5}\,Aab^2x^5\mathrm{sgn}\,(bx+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^3*x^7*sgn(b*x + a) + 1/2*B*a*b^2*x^6*sgn(b*x + a) + 1/6*A*b^3*x^6*s
gn(b*x + a) + 3/5*B*a^2*b*x^5*sgn(b*x + a) + 3/5*A*a*b^2*x^5*sgn(b*x + a) +
 1/4*B*a^3*x^4*sgn(b*x + a) + 3/4*A*a^2*b*x^4*sgn(b*x + a) + 1/3*A*a^3*x^3*
sgn(b*x + a) - 1/420*(3*B*a^7 - 7*A*a^6*b)*sgn(b*x + a)/b^4
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.44

$$\frac{\left(60b^3B\,x^4+70A\,b^3x^3+210x^3Ba\,b^2+252x^2Aa\,b^2+252B\,a^2b\,x^2+315xA\,a^2b+105B\,a^3x+140A\,a^3\right)\left((bx+a)^2\right.}{420\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/420*x^3*(60*B*b^3*x^4+70*A*b^3*x^3+210*B*a*b^2*x^3+252*A*a*b^2*x^2+252*B*
a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+140*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [**A**] time = 0.54, size = 241, normalized size = 1.15

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^3x}{4\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa^2x}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bx^2}{7\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^4}{4\,b^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*x/b^3 + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*a^2*x/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x^2/b^2 - 1
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*A*a^3/b^3 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*x/b^3 + 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x/b^2 + 17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a^2/b^4 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
[Out] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x**2*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.669 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=121

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(Ab-2aB)}{5b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)}{6b^3}$$

```
[Out] -1/4*a*(A*b-B*a)*(b*x+a)^3*((b*x+a)^2)^(1/2)/b^3+1/5*(A*b-2*B*a)*(b*x+a)^4*
((b*x+a)^2)^(1/2)/b^3+1/6*B*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{770, 76\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(Ab-2aB)}{5b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+bx)}{6b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + ((A*b
- 2*a*B)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3) + (B*(a + b*x)^
5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(\frac{a(-Ab+aB)\left(ab+b^2x\right)^3}{b^2}+\frac{(Ab-2aB)\left(ab+b^2x\right)^4}{b^3}+\frac{B\left(ab+b^2x\right)^5}{b^4}\right.}{b^2\left(ab+b^2x\right)}\\&=-\frac{a(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^3}+\frac{(Ab-2aB)(a+bx)^4\sqrt{a^2+}}{5b^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.72

$$\frac{x^2\sqrt{(a+bx)^2}\,\left(10a^3(3A+2Bx)+15a^2bx(4A+3Bx)+9ab^2x^2(5A+4Bx)+2b^3x^3(6A+5Bx)\right)}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(10*a^3*(3*A + 2*B*x) + 15*a^2*b*x*(4*A + 3*B*x) + 9
*a*b^2*x^2*(5*A + 4*B*x) + 2*b^3*x^3*(6*A + 5*B*x)))/(60*(a + b*x))
```

fricas [A] time = 0.77, size = 73, normalized size = 0.60

$$\frac{1}{6}\,Bb^{3}x^{6}+\frac{1}{2}\,Aa^{3}x^{2}+\frac{1}{5}\left(3\,Bab^{2}+Ab^{3}\right)x^{5}+\frac{3}{4}\left(Ba^{2}b+Aab^{2}\right)x^{4}+\frac{1}{3}\left(Ba^{3}+3\,Aa^{2}b\right)x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*B*b^3*x^6 + 1/2*A*a^3*x^2 + 1/5*(3*B*a*b^2 + A*b^3)*x^5 + 3/4*(B*a^2*b
+ A*a*b^2)*x^4 + 1/3*(B*a^3 + 3*A*a^2*b)*x^3
```

giac [A] time = 0.16, size = 148, normalized size = 1.22

$$\frac{1}{6}\,Bb^{3}x^{6}\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}\,Bab^{2}x^{5}\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Ab^{3}x^{5}\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,Ba^{2}bx^{4}\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,Aab^{2}x^{4}\mathrm{sgn}\left(bx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^3*x^6*sgn(b*x + a) + 3/5*B*a*b^2*x^5*sgn(b*x + a) + 1/5*A*b^3*x^5*s
gn(b*x + a) + 3/4*B*a^2*b*x^4*sgn(b*x + a) + 3/4*A*a*b^2*x^4*sgn(b*x + a) +
 1/3*B*a^3*x^3*sgn(b*x + a) + A*a^2*b*x^3*sgn(b*x + a) + 1/2*A*a^3*x^2*sgn(
b*x + a) + 1/60*(B*a^6 - 3*A*a^5*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 92, normalized size = 0.76

$$\frac{\left(10b^{3}B\,x^{4}+12A\,b^{3}x^{3}+36x^{3}Ba\,b^{2}+45x^{2}Aa\,b^{2}+45B\,a^{2}b\,x^{2}+60xA\,a^{2}b+20B\,a^{3}x+30A\,a^{3}\right)\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}x^{2}}{60\left(bx+a\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*x^2*(10*B*b^3*x^4+12*A*b^3*x^3+36*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*
b*x^2+60*A*a^2*b*x+20*B*a^3*x+30*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.66, size = 183, normalized size = 1.51

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Ba^{2}x}{4\,b^{2}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Aax}{4\,b}+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Ba^{3}}{4\,b^{3}}-\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}Aa^{2}}{4\,b^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3/b^3 - 1/4*(b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*x/b^2 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a/b^3 + 1/5*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\left((a+bx)^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.670 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

```
[Out] 1/4*(A*b-B*a)*(b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/b^2+1/5*B*(b^2*x^2+2*a*b*
x+a^2)^(5/2)/b^2
```

Rubi **[A]** time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(4*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(5/2))/(5*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}+\frac{\left(2Ab^2-2abB\right)\int\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}\end{aligned}$$

Mathematica **[A]** time = 0.03, size = 83, normalized size = 1.20

$$\frac{x\sqrt{(a+bx)^2}\left(10a^3(2A+Bx)+10a^2bx(3A+2Bx)+5ab^2x^2(4A+3Bx)+b^3x^3(5A+4Bx)\right)}{20(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(2*A + B*x) + 10*a^2*b*x*(3*A + 2*B*x) + 5*a*b
^2*x^2*(4*A + 3*B*x) + b^3*x^3*(5*A + 4*B*x)))/(20*(a + b*x))
```

fricas [A] time = 0.89, size = 69, normalized size = 1.00

$$\frac{1}{5}Bb^3x^5 + Aa^3x + \frac{1}{4}\left(3Bab^2 + Ab^3\right)x^4 + \left(Ba^2b + Aab^2\right)x^3 + \frac{1}{2}\left(Ba^3 + 3Aa^2b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b^3*x^5 + A*a^3*x + 1/4*(3*B*a*b^2 + A*b^3)*x^4 + (B*a^2*b + A*a*b^2)
*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

giac [B] time = 0.17, size = 144, normalized size = 2.09

$$\frac{1}{5}Bb^3x^5\operatorname{sgn}(bx+a)+\frac{3}{4}Bab^2x^4\operatorname{sgn}(bx+a)+\frac{1}{4}Ab^3x^4\operatorname{sgn}(bx+a)+Ba^2bx^3\operatorname{sgn}(bx+a)+Aab^2x^3\operatorname{sgn}(bx+a)+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^3*x^5*sgn(b*x + a) + 3/4*B*a*b^2*x^4*sgn(b*x + a) + 1/4*A*b^3*x^4*s
gn(b*x + a) + B*a^2*b*x^3*sgn(b*x + a) + A*a*b^2*x^3*sgn(b*x + a) + 1/2*B*a
^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*x^2*sgn(b*x + a) + A*a^3*x*sgn(b*x + a) -
 1/20*(B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.05, size = 90, normalized size = 1.30

$$\frac{\left(4b^3Bx^4+5Ab^3x^3+15x^3Bab^2+20x^2Aab^2+20Ba^2bx^2+30xAa^2b+10Ba^3x+20Aa^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}x}{20\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/20*x*(4*B*b^3*x^4+5*A*b^3*x^3+15*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x^
2+30*A*a^2*b*x+10*B*a^3*x+20*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.61, size = 125, normalized size = 1.81

$$\frac{1}{4}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ax-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Bax}{4b}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^2}{4b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aa}{4b}+(b^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*a*x/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*a/b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/b^2
```

mupad [B] time = 1.22, size = 42, normalized size = 0.61

$$\frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,\left(5\,A\,b-B\,a+4\,B\,b\,x\right)}{20\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)*(5*A*b - B*a + 4*B*b*x))/(20*b^2
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.671 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=182

$$\frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{B(a+bx)^3\sqrt{a^2+2abx+}}{4b}$$

```
[Out] 3*a^2*A*b*x*((b*x+a)^2)^(1/2)/(b*x+a)+3/2*a*A*b^2*x^2*((b*x+a)^2)^(1/2)/(b*
x+a)+1/3*A*b^3*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+1/4*B*(b*x+a)^3*((b*x+a)^2)^(1
/2)/b+a^3*A*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 80, 43}

$$\frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)}+\frac{Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{a^3A\log(x)\sqrt{a^2+2abx+}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x,x]
```

```
[Out] (3*a^2*A*b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (3*a*A*b^2*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (A*b^3*x^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(3*(a + b*x)) + (B*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
b) + (a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^3}{x}\,d}{b^2\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \left(3a^2b^4 +\right.}{b^2\left(ab+b^2x\right)}$$

$$= \frac{3a^2Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx} + \frac{3aAb^2x^2\sqrt{a^2+2abx+b^2x^2}}{2(a+bx)} + \frac{Ab^3x^3}{}$$

Mathematica [**A**] time = 0.04, size = 83, normalized size = 0.46

$$\frac{\sqrt{(a+bx)^2}\left(12a^3A\log(x)+x\left(12a^3B+18a^2b(2A+Bx)+6ab^2x(3A+2Bx)+b^3x^2(4A+3Bx)\right)\right)}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(12*a^3*B + 18*a^2*b*(2*A + B*x) + 6*a*b^2*x*(3*A + 2
*B*x) + b^3*x^2*(4*A + 3*B*x)) + 12*a^3*A*Log[x]))/(12*(a + b*x))
```

fricas [**A**] time = 0.74, size = 68, normalized size = 0.37

$$\frac{1}{4}Bb^3x^4 + Aa^3\log(x) + \frac{1}{3}\left(3\,Bab^2 + Ab^3\right)x^3 + \frac{3}{2}\left(Ba^2b + Aab^2\right)x^2 + \left(Ba^3 + 3\,Aa^2b\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] 1/4*B*b^3*x^4 + A*a^3*log(x) + 1/3*(3*B*a*b^2 + A*b^3)*x^3 + 3/2*(B*a^2*b +
 A*a*b^2)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

giac [**A**] time = 0.16, size = 118, normalized size = 0.65

$$\frac{1}{4}Bb^3x^4\mathrm{sgn}\,(bx+a)+Bab^2x^3\mathrm{sgn}\,(bx+a)+\frac{1}{3}Ab^3x^3\mathrm{sgn}\,(bx+a)+\frac{3}{2}Ba^2bx^2\mathrm{sgn}\,(bx+a)+\frac{3}{2}Aab^2x^2\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="giac")
```

```
[Out] 1/4*B*b^3*x^4*sgn(b*x + a) + B*a*b^2*x^3*sgn(b*x + a) + 1/3*A*b^3*x^3*sgn(b
*x + a) + 3/2*B*a^2*b*x^2*sgn(b*x + a) + 3/2*A*a*b^2*x^2*sgn(b*x + a) + B*a
^3*x*sgn(b*x + a) + 3*A*a^2*b*x*sgn(b*x + a) + A*a^3*log(abs(x))*sgn(b*x +
a)
```

maple [**A**] time = 0.06, size = 91, normalized size = 0.50

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(3B\,b^3x^4+4A\,b^3x^3+12Ba\,b^2x^3+18Aa\,b^2x^2+18B\,a^2b\,x^2+12A\,a^3\ln(x)+36A\,a^2bx+12B\,a^3x\right)}{12\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*b^3*B*x^4+4*A*b^3*x^3+12*x^3*B*a*b^2+18*x^2*A*a*b
^2+18*B*a^2*b*x^2+12*A*a^3*ln(x)+36*x*A*a^2*b+12*B*a^3*x)/(b*x+a)^3
```

maxima [A] time = 0.48, size = 186, normalized size = 1.02

$$(-1)^{2\,b^2x+2\,ab}\,Aa^3\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Aa^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Aabx+\frac{3}{2}\,\sqrt{b^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a^3*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
A*a^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*a*b*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2 + 1/4*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*x + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*B*a/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^{2}\right)^{\frac{3}{2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x, x)
```

3.672 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=200

$$\frac{3abx\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{2(a+bx)}+\frac{a^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+3}{a+bx}$$

```
[Out] -a^3*A*((b*x+a)^2)^(1/2)/x/(b*x+a)+3*a*b*(A*b+B*a)*x*((b*x+a)^2)^(1/2)/(b*x
+a)+1/2*b^2*(A*b+3*B*a)*x^2*((b*x+a)^2)^(1/2)/(b*x+a)+1/3*b^3*B*x^3*((b*x+a
)^2)^(1/2)/(b*x+a)+a^2*(3*A*b+B*a)*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi **[A]** time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{3abx\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{2(a+bx)}+\frac{a^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+3}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^2,x]
```

```
[Out] -((a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (3*a*b*(A*b + a*B)
*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^2*(A*b + 3*a*B)*x^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^3*B*x^3*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(3*(a + b*x)) + (a^2*(3*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Lo
g[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(3ab^4(Ab+aB)+\frac{a^3Ab^3}{x^2}+\frac{a^2b^3(3Ab+aB)}{x}+b^5(Ab}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{3ab(Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{b^2(}{}$$

Mathematica [A] time = 0.03, size = 89, normalized size = 0.44

$$\frac{\sqrt{(a+bx)^2}\left(-6a^3A+6a^2x\log(x)(aB+3Ab)+18a^2bBx^2+9ab^2x^2(2A+Bx)+b^3x^3(3A+2Bx)\right)}{6x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^3*A + 18*a^2*b*B*x^2 + 9*a*b^2*x^2*(2*A + B*x) + b
^3*x^3*(3*A + 2*B*x) + 6*a^2*(3*A*b + a*B)*x*Log[x]))/(6*x*(a + b*x))
```

fricas [A] time = 0.87, size = 75, normalized size = 0.38

$$\frac{2\,Bb^3x^4-6\,Aa^3+3\left(3\,Bab^2+Ab^3\right)x^3+18\left(Ba^2b+Aab^2\right)x^2+6\left(Ba^3+3\,Aa^2b\right)x\log(x)}{6\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*x^4 - 6*A*a^3 + 3*(3*B*a*b^2 + A*b^3)*x^3 + 18*(B*a^2*b + A*a*
b^2)*x^2 + 6*(B*a^3 + 3*A*a^2*b)*x*log(x))/x
```

giac [A] time = 0.18, size = 119, normalized size = 0.60

$$\frac{1}{3}\,Bb^3x^3\mathrm{sgn}\left(bx+a\right)+\frac{3}{2}\,Bab^2x^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Ab^3x^2\mathrm{sgn}\left(bx+a\right)+3\,Ba^2bx\mathrm{sgn}\left(bx+a\right)+3\,Aab^2x\mathrm{sgn}\left(bx+a\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/3*B*b^3*x^3*sgn(b*x + a) + 3/2*B*a*b^2*x^2*sgn(b*x + a) + 1/2*A*b^3*x^2*s
gn(b*x + a) + 3*B*a^2*b*x*sgn(b*x + a) + 3*A*a*b^2*x*sgn(b*x + a) - A*a^3*s
gn(b*x + a)/x + (B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*log(abs(x))
```

maple [A] time = 0.06, size = 96, normalized size = 0.48

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(2B\,b^3x^4+3A\,b^3x^3+9Ba\,b^2x^3+18A\,a^2bx\ln(x)+18Aa\,b^2x^2+6B\,a^3x\ln(x)+18B\,a^2b\,x^2-6A\,a^3\right)}{6\,(bx+a)^3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(2*B*b^3*x^4+3*A*b^3*x^3+9*B*a*b^2*x^3+18*A*ln(x)*x*a
^2*b+18*A*a*b^2*x^2+6*B*ln(x)*x*a^3+18*B*a^2*b*x^2-6*A*a^3)/(b*x+a)^3/x
```

maxima [B] time = 0.54, size = 283, normalized size = 1.42

$$(-1)^{2\,b^2x+2\,ab}\,Ba^3\log\left(2\,b^2x+2\,ab\right)+3\,(-1)^{2\,b^2x+2\,ab}\,Aa^2b\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Ba^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a^3*log(2*b^2*x + 2*a*b) + 3*(-1)^(2*b^2*x + 2*a*b
)*A*a^2*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a^3*log(2*a*b*x/a
bs(x) + 2*a^2/abs(x)) - 3*(-1)^(2*a*b*x + 2*a^2)*A*a^2*b*log(2*a*b*x/abs(x)
```

```
 + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*b*x + 3/2*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*b^2*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2 + 9
/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2
)*B - (b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**2, x)
```

3.673 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=200

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{x(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}+\frac{3ab\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab}{a+bx}$$

```
[Out] -1/2*a^3*A*((b*x+a)^2)^(1/2)/x^2/(b*x+a)-a^2*(3*A*b+B*a)*((b*x+a)^2)^(1/2)/
x/(b*x+a)+b^2*(A*b+3*B*a)*x*((b*x+a)^2)^(1/2)/(b*x+a)+1/2*b^3*B*x^2*((b*x+a
)^2)^(1/2)/(b*x+a)+3*a*b*(A*b+B*a)*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{x(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}+\frac{3ab\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^3,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^2*(A*b + 3*a*B)*x*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(2*(a + b*x)) + (3*a*b*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^3}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^5(Ab+3aB)+\frac{a^3Ab^3}{x^3}+\frac{a^2b^3(3Ab+aB)}{x^2}+\frac{3ab^4(Ab+aB)}{x}\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^2(Ab+\end{aligned}$$

Mathematica [A] time = 0.04, size = 85, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\left(-\left(a^3(A+2Bx)\right)-6a^2Abx+6abx^2\log(x)(aB+Ab)+6ab^2Bx^3+b^3x^3(2A+Bx)\right)}{2x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^2*A*b*x + 6*a*b^2*B*x^3 + b^3*x^3*(2*A + B*x) - a^
3*(A + 2*B*x) + 6*a*b*(A*b + a*B)*x^2*Log[x]))/(2*x^2*(a + b*x))
```

fricas [A] time = 0.93, size = 74, normalized size = 0.37

$$\frac{Bb^3x^4-Aa^3+2\left(3\,Bab^2+Ab^3\right)x^3+6\left(Ba^2b+Aab^2\right)x^2\log(x)-2\left(Ba^3+3\,Aa^2b\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*x^4 - A*a^3 + 2*(3*B*a*b^2 + A*b^3)*x^3 + 6*(B*a^2*b + A*a*b^2)*
x^2*log(x) - 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

giac [A] time = 0.16, size = 117, normalized size = 0.58

$$\frac{1}{2}\,Bb^3x^2\mathrm{sgn}\,(bx+a)+3\,Bab^2x\mathrm{sgn}\,(bx+a)+Ab^3x\mathrm{sgn}\,(bx+a)+3\left(Ba^2b\mathrm{sgn}\,(bx+a)+Aab^2\mathrm{sgn}\,(bx+a)\right)\log\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/2*B*b^3*x^2*sgn(b*x + a) + 3*B*a*b^2*x*sgn(b*x + a) + A*b^3*x*sgn(b*x + a
) + 3*(B*a^2*b*sgn(b*x + a) + A*a*b^2*sgn(b*x + a))*log(abs(x)) - 1/2*(A*a^
3*sgn(b*x + a) + 2*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^2
```

maple [A] time = 0.06, size = 95, normalized size = 0.48

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(B\,b^3x^4+6Aa\,b^2x^2\ln(x)+2A\,b^3x^3+6B\,a^2b\,x^2\ln(x)+6Ba\,b^2x^3-6A\,a^2bx-2B\,a^3x-A\,a^3\right)}{2\,(bx+a)^3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(B*b^3*x^4+6*A*ln(x)*x^2*a*b^2+2*A*b^3*x^3+6*B*ln(x)*
x^2*a^2*b+6*B*a*b^2*x^3-6*A*a^2*b*x-2*B*a^3*x-A*a^3)/(b*x+a)^3/x^2
```

maxima [B] time = 0.63, size = 351, normalized size = 1.76

$$3\,(-1)^{2\,b^2x+2\,ab}\,Ba^2b\log\left(2\,b^2x+2\,ab\right)+3\,(-1)^{2\,b^2x+2\,ab}\,Aab^2\log\left(2\,b^2x+2\,ab\right)-3\,(-1)^{2\,abx+2\,a^2}\,Ba^2b\log\Bigg(\frac{2\,abx}{|x|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*b^2*x + 2*a*b)*B*a^2*b*log(2*b^2*x + 2*a*b) + 3*(-1)^(2*b^2*x + 2
*a*b)*A*a*b^2*log(2*b^2*x + 2*a*b) - 3*(-1)^(2*a*b*x + 2*a^2)*B*a^2*b*log(2
*a*b*x/abs(x) + 2*a^2/abs(x)) - 3*(-1)^(2*a*b*x + 2*a^2)*A*a*b^2*log(2*a*b*
x/abs(x) + 2*a^2/abs(x)) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^2*x + 3/2*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^3*x/a + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*B*a*b + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^2 + 1/2*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*b^2/a^2 - (b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/x - 1/2*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*A*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a
^2*x^2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^3, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**3, x)
```

3.674 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^4}\,dx$

Optimal. Leaf size=199

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{2x^2(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(3aB+A}{a+bx}$$

```
[Out] -1/3*a^3*A*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-1/2*a^2*(3*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^2/(b*x+a)-3*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x/(b*x+a)+b^3*B*x*((b*x+a
)^2)^(1/2)/(b*x+a)+b^2*(A*b+3*B*a)*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{2x^2(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(3aB+A}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^4,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^3*B*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(a + b*x) + (b^2*(A*b + 3*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^4}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^4}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(b^6B+\frac{a^3Ab^3}{x^4}+\frac{a^2b^3(3Ab+aB)}{x^3}+\frac{3ab^4(Ab+aB)}{x^2}+\frac{b^5(Al}{}\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab(}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 88, normalized size = 0.44

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(2A+3Bx)+9a^2bx(A+2Bx)-6b^2x^3\log(x)(3aB+Ab)+18aAb^2x^2-6b^3Bx^4\right)}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(18*a*A*b^2*x^2 - 6*b^3*B*x^4 + 9*a^2*b*x*(A + 2*B*
x) + a^3*(2*A + 3*B*x) - 6*b^2*(A*b + 3*a*B)*x^3*Log[x]))/(x^3*(a + b*x))
```

fricas [A] time = 0.85, size = 75, normalized size = 0.38

$$\frac{6\,Bb^3x^4+6\left(3\,Bab^2+Ab^3\right)x^3\log(x)-2\,Aa^3-18\left(Ba^2b+Aab^2\right)x^2-3\left(Ba^3+3\,Aa^2b\right)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^3*x^4 + 6*(3*B*a*b^2 + A*b^3)*x^3*log(x) - 2*A*a^3 - 18*(B*a^2*b
 + A*a*b^2)*x^2 - 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

giac [A] time = 0.17, size = 118, normalized size = 0.59

$$Bb^3x\,\mathrm{sgn}\left(bx+a\right)+\left(3\,Bab^2\mathrm{sgn}\left(bx+a\right)+Ab^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)-\frac{2\,Aa^3\mathrm{sgn}\left(bx+a\right)+18\left(Ba^2b\,\mathrm{sgn}\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] B*b^3*x*sgn(b*x + a) + (3*B*a*b^2*sgn(b*x + a) + A*b^3*sgn(b*x + a))*log(ab
s(x)) - 1/6*(2*A*a^3*sgn(b*x + a) + 18*(B*a^2*b*sgn(b*x + a) + A*a*b^2*sgn(
b*x + a))*x^2 + 3*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^3
```

maple [A] time = 0.06, size = 96, normalized size = 0.48

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(6A\,b^3x^3\ln(x)+18Ba\,b^2x^3\ln(x)+6B\,b^3x^4-18Aa\,b^2x^2-18B\,a^2b\,x^2-9A\,a^2bx-3B\,a^3x-2A\,a^3\right)}{6\,(bx+a)^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(6*A*ln(x)*x^3*b^3+18*B*ln(x)*x^3*a*b^2+6*B*b^3*x^4-1
8*A*a*b^2*x^2-18*B*a^2*b*x^2-9*A*a^2*b*x-3*B*a^3*x-2*A*a^3)/(b*x+a)^3/x^3
```

maxima [B] time = 0.66, size = 443, normalized size = 2.23

$$3\,(-1)^{2\,b^2x+2\,ab}\,Bab^2\log\left(2\,b^2x+2\,ab\right)+(-1)^{2\,b^2x+2\,ab}\,Ab^3\log\left(2\,b^2x+2\,ab\right)-3\,(-1)^{2\,abx+2\,a^2}\,Bab^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a}{|x|}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*b^2*x + 2*a*b)*B*a*b^2*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a
*b)*A*b^3*log(2*b^2*x + 2*a*b) - 3*(-1)^(2*a*b*x + 2*a^2)*B*a*b^2*log(2*a*b
*x/abs(x) + 2*a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b^3*log(2*a*b*x/abs(x)
```

```
 + 2*a^2/abs(x)) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3*x/a + 1/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*b^4*x/a^2 + 9/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b
^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^3/a + 1/2*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*B*b^2/a^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^3/a^3 - 1/2*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*A*b^2/(a^2*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^2) + 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*A/(a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**4, x)
```

3.675 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=187

$$-\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4}-\frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab^2B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{b^3B\log(x)\sqrt{a^2+2abx+}}{a+bx}$$

```
[Out] -1/3*a^3*B*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-3/2*a^2*b*B*((b*x+a)^2)^(1/2)/x^2/
(b*x+a)-3*a*b^2*B*((b*x+a)^2)^(1/2)/x/(b*x+a)-1/4*A*(b*x+a)^3*((b*x+a)^2)^(
1/2)/a/x^4+b^3*B*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [**A**] time = 0.06, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = {770, 78, 43}

$$-\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4}-\frac{a^3B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{3ab^2B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^5,x]
```

```
[Out] -(a^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (3*a^2*b*B*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (3*a*b^2*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(x*(a + b*x)) - (A*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(4*a*x^4) + (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^5}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^3}{x^4}}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4ax^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{a^3b^3}{x^4} + 3\right.}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{a^3B\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)} - \frac{3a^2bB\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)} - \frac{3ab^2B\sqrt{a^2+}}{x(a+}$$

Mathematica [**A**] time = 0.03, size = 88, normalized size = 0.47

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(3A+4Bx)+6a^2bx(2A+3Bx)+18ab^2x^2(A+2Bx)+12Ab^3x^3-12b^3Bx^4\log(x)\right)}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(12*A*b^3*x^3 + 18*a*b^2*x^2*(A + 2*B*x) + 6*a^2*b
*x*(2*A + 3*B*x) + a^3*(3*A + 4*B*x) - 12*b^3*B*x^4*Log[x]))/(x^4*(a + b*x)
)
```

fricas [**A**] time = 0.72, size = 75, normalized size = 0.40

$$\frac{12\,Bb^3x^4\log(x)-3\,Aa^3-12\left(3\,Bab^2+Ab^3\right)x^3-18\left(Ba^2b+Aab^2\right)x^2-4\left(Ba^3+3\,Aa^2b\right)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^3*x^4*log(x) - 3*A*a^3 - 12*(3*B*a*b^2 + A*b^3)*x^3 - 18*(B*a^
2*b + A*a*b^2)*x^2 - 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

giac [**A**] time = 0.18, size = 121, normalized size = 0.65

$$Bb^3\log\left(|x|\right)\operatorname{sgn}\left(bx+a\right)-\frac{3\,Aa^3\operatorname{sgn}\left(bx+a\right)+12\left(3\,Bab^2\operatorname{sgn}\left(bx+a\right)+Ab^3\operatorname{sgn}\left(bx+a\right)\right)x^3+18\left(Ba^2b\operatorname{sgn}\left(b\right.\right.}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] B*b^3*log(abs(x))*sgn(b*x + a) - 1/12*(3*A*a^3*sgn(b*x + a) + 12*(3*B*a*b^2
*sgn(b*x + a) + A*b^3*sgn(b*x + a))*x^3 + 18*(B*a^2*b*sgn(b*x + a) + A*a*b^
2*sgn(b*x + a))*x^2 + 4*(B*a^3*sgn(b*x + a) + 3*A*a^2*b*sgn(b*x + a))*x)/x^
4
```

maple [**A**] time = 0.06, size = 94, normalized size = 0.50

$$-\frac{\left((bx+a)^2\right)^{\frac{3}{2}}\left(-12B\,b^3x^4\ln(x)+12A\,b^3x^3+36Ba\,b^2x^3+18Aa\,b^2x^2+18B\,a^2b\,x^2+12A\,a^2bx+4B\,a^3x+3A\right.}{12\left(bx+a\right)^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x)
```

```
[Out] -1/12*((b*x+a)^2)^(3/2)*(-12*b^3*B*ln(x)*x^4+12*A*b^3*x^3+36*B*a*b^2*x^3+18
*A*a*b^2*x^2+18*B*a^2*b*x^2+12*A*a^2*b*x+4*B*a^3*x+3*A*a^3)/(b*x+a)^3/x^4
```

maxima [B] time = 0.76, size = 379, normalized size = 2.03

$$(-1)^{2b^2x+2ab}Bb^3\log\left(2b^2x+2ab\right)-(-1)^{2abx+2a^2}Bb^3\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)+\frac{\sqrt{b^2x^2+2abx+a^2}Bb^4x}{2a^2}+\frac{3\sqrt{b^2x^2+2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*b^3*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
B*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*B*b^4*x/a^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^3/a - 1/6*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*b^3/a^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/
a^4 - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2/(a^2*x) + 1/4*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*A*b^3/(a^3*x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/
(a^3*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^2) - 1/3*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*A*b/(a^3*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**5, x)
```

3.676 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=77

$$\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{4a^2x^4}-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

```
[Out] -1/5*A*(b^2*x^2+2*a*b*x+a^2)^(5/2)/a^2/x^5+1/4*(A*b-B*a)*(b*x+a)^3*((b*x+a)
^2)^(1/2)/a^2/x^4
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{4a^2x^4}-\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^6,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*a^2*x^4) - (A*(a
^2 + 2*a*b*x + b^2*x^2)^(5/2))/(5*a^2*x^5)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^6}\,dx = -\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5} - \frac{\left(2Ab^2-2abB\right)\int \frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^5}\,dx}{2ab}$$

$$= -\frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5} - \frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(ab+}{x}}{2ab^3\left(ab+b^2x\right)}$$

$$= \frac{(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4a^2x^4} - \frac{A\left(a^2+2abx+b^2x^2\right)^{5/2}}{5a^2x^5}$$

Mathematica [A] time = 0.03, size = 84, normalized size = 1.09

$$-\frac{\sqrt{(a+bx)^2}\left(a^3(4A+5Bx)+5a^2bx(3A+4Bx)+10ab^2x^2(2A+3Bx)+10b^3x^3(A+2Bx)\right)}{20x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^6,x]
```

```
[Out] -1/20*(Sqrt[(a + b*x)^2]*(10*b^3*x^3*(A + 2*B*x) + 10*a*b^2*x^2*(2*A + 3*B*
x) + 5*a^2*b*x*(3*A + 4*B*x) + a^3*(4*A + 5*B*x)))/(x^5*(a + b*x))
```

fricas [A] time = 0.81, size = 73, normalized size = 0.95

$$-\frac{20\,Bb^3x^4+4\,Aa^3+10\left(3\,Bab^2+Ab^3\right)x^3+20\left(Ba^2b+Aab^2\right)x^2+5\left(Ba^3+3\,Aa^2b\right)x}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] -1/20*(20*B*b^3*x^4 + 4*A*a^3 + 10*(3*B*a*b^2 + A*b^3)*x^3 + 20*(B*a^2*b +
A*a*b^2)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

giac [B] time = 0.16, size = 149, normalized size = 1.94

$$-\frac{\left(5\,Bab^4-Ab^5\right)\mathrm{sgn}\left(bx+a\right)}{20\,a^2} - \frac{20\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+30\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+10\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+20\,Ba^2b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/20*(5*B*a*b^4 - A*b^5)*sgn(b*x + a)/a^2 - 1/20*(20*B*b^3*x^4*sgn(b*x + a
) + 30*B*a*b^2*x^3*sgn(b*x + a) + 10*A*b^3*x^3*sgn(b*x + a) + 20*B*a^2*b*x^
2*sgn(b*x + a) + 20*A*a*b^2*x^2*sgn(b*x + a) + 5*B*a^3*x*sgn(b*x + a) + 15*
A*a^2*b*x*sgn(b*x + a) + 4*A*a^3*sgn(b*x + a))/x^5
```

maple [A] time = 0.05, size = 92, normalized size = 1.19

$$-\frac{\left(20B\,b^3x^4+10A\,b^3x^3+30Ba\,b^2x^3+20Aa\,b^2x^2+20B\,a^2b\,x^2+15A\,a^2bx+5B\,a^3x+4A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{20\,(bx+a)^3\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x)
```

```
[Out] -1/20*(20*B*b^3*x^4+10*A*b^3*x^3+30*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x
^2+15*A*a^2*b*x+5*B*a^3*x+4*A*a^3)*((b*x+a)^2)^(3/2)/x^5/(b*x+a)^3
```

maxima [B] time = 0.81, size = 315, normalized size = 4.09

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^4}{4\,a^4}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^5}{4\,a^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^3}{4\,a^3x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^4}{4\,a^4x}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/a^4 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^5/a^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^3/(a^3*x) - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^4/(a^4*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^2/(a^4*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^3) - 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B/(a^2*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^4) - 1/5*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^5)
```

mupad [B] time = 1.17, size = 196, normalized size = 2.55

$$-\frac{\left(\frac{B\,a^3}{4}+\frac{3\,A\,b\,a^2}{4}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{2}+\frac{3\,B\,a\,b^2}{2}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^2\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{5\,x^5\,\left(a+b\,x\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^6,x)
```

```
[Out] - (((B*a^3)/4 + (3*A*a^2*b)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(a + b
*x)) - (((A*b^3)/2 + (3*B*a*b^2)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^2*(
a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x*(a + b*x)) - (a*b*(A*b + B*a)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**6, x)
```

3.677 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^5(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{3x^3(a+bx)}-\frac{b^3B\sqrt{a}}{2}$$

```
[Out] -1/6*a^3*A*((b*x+a)^2)^(1/2)/x^6/(b*x+a)-1/5*a^2*(3*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^5/(b*x+a)-3/4*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^4/(b*x+a)-1/3*b^2*(A*
b+3*B*a)*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-1/2*b^3*B*((b*x+a)^2)^(1/2)/x^2/(b*x
+a)
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^5(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^4(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{3x^3(a+bx)}-\frac{a^3A\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^7,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*x^2*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^7}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^7}+\frac{a^2b^3(3Ab+aB)}{x^6}+\frac{3ab^4(Ab+aB)}{x^5}+\frac{b^5(Ab+3aB)}{x^4}+\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{3ab(Ab}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(2a^3(5A+6Bx)+9a^2bx(4A+5Bx)+15ab^2x^2(3A+4Bx)+10b^3x^3(2A+3Bx)\right)}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(10*b^3*x^3*(2*A + 3*B*x) + 15*a*b^2*x^2*(3*A + 4*
B*x) + 9*a^2*b*x*(4*A + 5*B*x) + 2*a^3*(5*A + 6*B*x)))/(x^6*(a + b*x))
```

fricas [A] time = 0.88, size = 73, normalized size = 0.35

$$-\frac{30\,Bb^3x^4+10\,Aa^3+20\left(3\,Bab^2+Ab^3\right)x^3+45\left(Ba^2b+Aab^2\right)x^2+12\left(Ba^3+3\,Aa^2b\right)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^3*x^4 + 10*A*a^3 + 20*(3*B*a*b^2 + A*b^3)*x^3 + 45*(B*a^2*b +
 A*a*b^2)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

giac [A] time = 0.16, size = 149, normalized size = 0.71

$$\frac{\left(3\,Bab^5-Ab^6\right)\mathrm{sgn}\left(bx+a\right)}{60\,a^3}-\frac{30\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+60\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+20\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+45\,Ba^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/60*(3*B*a*b^5 - A*b^6)*sgn(b*x + a)/a^3 - 1/60*(30*B*b^3*x^4*sgn(b*x + a)
 + 60*B*a*b^2*x^3*sgn(b*x + a) + 20*A*b^3*x^3*sgn(b*x + a) + 45*B*a^2*b*x^2
*sgn(b*x + a) + 45*A*a*b^2*x^2*sgn(b*x + a) + 12*B*a^3*x*sgn(b*x + a) + 36*
A*a^2*b*x*sgn(b*x + a) + 10*A*a^3*sgn(b*x + a))/x^6
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(30B\,b^3x^4+20A\,b^3x^3+60Ba\,b^2x^3+45Aa\,b^2x^2+45B\,a^2b\,x^2+36A\,a^2bx+12B\,a^3x+10A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{60\,(bx+a)^3\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x)
```

```
[Out] -1/60*(30*B*b^3*x^4+20*A*b^3*x^3+60*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*b*x
^2+36*A*a^2*b*x+12*B*a^3*x+10*A*a^3)*((b*x+a)^2)^(3/2)/x^6/(b*x+a)^3
```

maxima [B] time = 0.57, size = 375, normalized size = 1.79

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^5}{4\,a^5}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^6}{4\,a^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^4}{4\,a^4x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^5}{4\,a^5x}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^5/a^5 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^6/a^6 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/(a^4*x) + 1
```

```
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^5/(a^5*x) + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^3/(a^5*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^
6*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^3) + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*b/(a^3*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^4) - 1/
5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^5) + 7/30*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^6)
```

mupad [**B**] time = 1.18, size = 195, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{5}+\frac{3\,A\,b\,a^2}{5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{3}+B\,a\,b^2\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^3\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{6\,x^6\,\left(a+b\,x\right)}-B\,b^3\,\surd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^7,x)
```

```
[Out] - (((B*a^3)/5 + (3*A*a^2*b)/5)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b
*x)) - (((A*b^3)/3 + B*a*b^2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(a + b*
x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (B*b^3*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^2*(a + b*x)) - (3*a*b*(A*b + B*a)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**7, x)
```

3.678 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6x^6(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{4x^4(a+bx)}-\frac{b^3}{}$$

```
[Out] -1/7*a^3*A*((b*x+a)^2)^(1/2)/x^7/(b*x+a)-1/6*a^2*(3*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^6/(b*x+a)-3/5*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-1/4*b^2*(A*
b+3*B*a)*((b*x+a)^2)^(1/2)/x^4/(b*x+a)-1/3*b^3*B*((b*x+a)^2)^(1/2)/x^3/(b*x
+a)
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{6x^6(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^5(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{4x^4(a+bx)}-\frac{a^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^8,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^8}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^8}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^8}+\frac{a^2b^3(3Ab+aB)}{x^7}+\frac{3ab^4(Ab+aB)}{x^6}+\frac{b^5(Ab+3aB)}{x^5}\right.}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{6x^6(a+bx)}-\frac{3ab(}{}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(10a^3(6A+7Bx)+42a^2bx(5A+6Bx)+63ab^2x^2(4A+5Bx)+35b^3x^3(3A+4Bx)\right)}{420x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^8,x]
```

```
[Out] -1/420*(Sqrt[(a + b*x)^2]*(35*b^3*x^3*(3*A + 4*B*x) + 63*a*b^2*x^2*(4*A + 5
*B*x) + 42*a^2*b*x*(5*A + 6*B*x) + 10*a^3*(6*A + 7*B*x)))/(x^7*(a + b*x))
```

fricas [A] time = 0.87, size = 73, normalized size = 0.35

$$-\frac{140\,Bb^3x^4+60\,Aa^3+105\left(3\,Bab^2+Ab^3\right)x^3+252\left(Ba^2b+Aab^2\right)x^2+70\left(Ba^3+3\,Aa^2b\right)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(140*B*b^3*x^4 + 60*A*a^3 + 105*(3*B*a*b^2 + A*b^3)*x^3 + 252*(B*a^2
*b + A*a*b^2)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

giac [A] time = 0.23, size = 149, normalized size = 0.71

$$-\frac{\left(7\,Bab^6-3\,Ab^7\right)\mathrm{sgn}\left(bx+a\right)}{420\,a^4}-\frac{140\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+315\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+105\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+252}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(7*B*a*b^6 - 3*A*b^7)*sgn(b*x + a)/a^4 - 1/420*(140*B*b^3*x^4*sgn(b*
x + a) + 315*B*a*b^2*x^3*sgn(b*x + a) + 105*A*b^3*x^3*sgn(b*x + a) + 252*B*
a^2*b*x^2*sgn(b*x + a) + 252*A*a*b^2*x^2*sgn(b*x + a) + 70*B*a^3*x*sgn(b*x
+ a) + 210*A*a^2*b*x*sgn(b*x + a) + 60*A*a^3*sgn(b*x + a))/x^7
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(140B\,b^3x^4+105A\,b^3x^3+315Ba\,b^2x^3+252Aa\,b^2x^2+252B\,a^2b\,x^2+210A\,a^2bx+70B\,a^3x+60A\,a^3\right)\left((bx+a)\right.}{420\left(bx+a\right)^3x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x)
```

```
[Out] -1/420*(140*B*b^3*x^4+105*A*b^3*x^3+315*B*a*b^2*x^3+252*A*a*b^2*x^2+252*B*a
^2*b*x^2+210*A*a^2*b*x+70*B*a^3*x+60*A*a^3)*((b*x+a)^2)^(3/2)/x^7/(b*x+a)^3
```

maxima [B] time = 0.55, size = 435, normalized size = 2.07

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^6}{4\,a^6}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^7}{4\,a^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^5}{4\,a^5x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^6}{4\,a^6x}-\frac{\left(b^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^6/a^6 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^7/a^7 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^5/(a^5*x) - 1/
```

```
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^6/(a^6*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^4/(a^6*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^3) - 1/4*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^2/(a^4*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^4) + 7
/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^5) - 17/70*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*A*b^2/(a^4*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2
*x^6) + 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^6) - 1/7*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A/(a^2*x^7)
```

mupad [B] time = 1.19, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{6}+\frac{A\,b\,a^2}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{4}+\frac{3\,B\,a\,b^2}{4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-B\,b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^8,x)
```

```
[Out] - (((B*a^3)/6 + (A*a^2*b)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a + b*x
)) - (((A*b^3)/4 + (3*B*a*b^2)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (B*b^
3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (3*a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**8, x)
```

3.679 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^9}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7x^7(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2x^6(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5x^5(a+bx)}-$$

```
[Out] -1/8*a^3*A*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-1/7*a^2*(3*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^7/(b*x+a)-1/2*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)-1/5*b^2*(A*
b+3*B*a)*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-1/4*b^3*B*((b*x+a)^2)^(1/2)/x^4/(b*x
+a)
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{7x^7(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{2x^6(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5x^5(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^9,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (a*b*(A*b + a*B)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*x^6*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^9}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^9}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{a^3Ab^3}{x^9}+\frac{a^2b^3(3Ab+aB)}{x^8}+\frac{3ab^4(Ab+aB)}{x^7}+\frac{b^5(Ab+3aB)}{x^6}+\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{7x^7(a+bx)}-\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(5a^3(7A+8Bx)+20a^2bx(6A+7Bx)+28ab^2x^2(5A+6Bx)+14b^3x^3(4A+5Bx)\right)}{280x^8(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(14*b^3*x^3*(4*A + 5*B*x) + 28*a*b^2*x^2*(5*A + 6
*B*x) + 20*a^2*b*x*(6*A + 7*B*x) + 5*a^3*(7*A + 8*B*x)))/(x^8*(a + b*x))
```

fricas [A] time = 0.81, size = 73, normalized size = 0.35

$$-\frac{70\,Bb^3x^4+35\,Aa^3+56\left(3\,Bab^2+Ab^3\right)x^3+140\left(Ba^2b+Aab^2\right)x^2+40\left(Ba^3+3\,Aa^2b\right)x}{280\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="fricas")
```

```
[Out] -1/280*(70*B*b^3*x^4 + 35*A*a^3 + 56*(3*B*a*b^2 + A*b^3)*x^3 + 140*(B*a^2*b
 + A*a*b^2)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

giac [A] time = 0.17, size = 149, normalized size = 0.71

$$\frac{\left(2\,Bab^7-Ab^8\right)\mathrm{sgn}\left(bx+a\right)}{280\,a^5}-\frac{70\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+168\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+56\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+140\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="giac")
```

```
[Out] 1/280*(2*B*a*b^7 - A*b^8)*sgn(b*x + a)/a^5 - 1/280*(70*B*b^3*x^4*sgn(b*x +
a) + 168*B*a*b^2*x^3*sgn(b*x + a) + 56*A*b^3*x^3*sgn(b*x + a) + 140*B*a^2*b
*x^2*sgn(b*x + a) + 140*A*a*b^2*x^2*sgn(b*x + a) + 40*B*a^3*x*sgn(b*x + a)
+ 120*A*a^2*b*x*sgn(b*x + a) + 35*A*a^3*sgn(b*x + a))/x^8
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{(70B\,b^3x^4+56A\,b^3x^3+168Ba\,b^2x^3+140Aa\,b^2x^2+140B\,a^2b\,x^2+120A\,a^2bx+40B\,a^3x+35A\,a^3)\,((bx+a}{280\,(bx+a)^3\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x)
```

```
[Out] -1/280*(70*B*b^3*x^4+56*A*b^3*x^3+168*B*a*b^2*x^3+140*A*a*b^2*x^2+140*B*a^2
*b*x^2+120*A*a^2*b*x+40*B*a^3*x+35*A*a^3)*((b*x+a)^2)^(3/2)/x^8/(b*x+a)^3
```

maxima [B] time = 0.52, size = 495, normalized size = 2.36

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^7}{4\,a^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^8}{4\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^6}{4\,a^6x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^7}{4\,a^7x}+-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^9,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^7/a^7 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^8/a^8 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^6/(a^6*x) + 1
```

```
/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^7/(a^7*x) + 1/4*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^5/(a^7*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^
8*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a^6*x^3) + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*b^3/(a^5*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^4) -
17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^5) + 69/280*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^5) + 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B*b/(a^3*x^6) - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^6) - 1/7
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^7) + 11/56*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b/(a^3*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^8)
```

mupad [B] time = 1.17, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{7}+\frac{3\,A\,b\,a^2}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{5}+\frac{3\,B\,a\,b^2}{5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-B\,b^3\,\surd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^9,x)
```

```
[Out] - (((B*a^3)/7 + (3*A*a^2*b)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a + b
*x)) - (((A*b^3)/5 + (3*B*a*b^2)/5)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(
a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^6*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**9, x)
```

3.680 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{10}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{8x^8(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6x^6(a+bx)}-\frac{b^3}{}$$

```
[Out] -1/9*a^3*A*((b*x+a)^2)^(1/2)/x^9/(b*x+a)-1/8*a^2*(3*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^8/(b*x+a)-3/7*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^7/(b*x+a)-1/6*b^2*(A*
b+3*B*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)-1/5*b^3*B*((b*x+a)^2)^(1/2)/x^5/(b*x
+a)
```

Rubi [**A**] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{8x^8(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{6x^6(a+bx)}-\frac{a^3}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^10,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (a^2*(3*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (3*a*b*(A*b + a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(5*x^5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{10}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{10}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{a^3Ab^3}{x^{10}}+\frac{a^2b^3(3Ab+aB)}{x^9}+\frac{3ab^4(Ab+aB)}{x^8}+\frac{b^5(Ab+3aB)}{x^7}\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{3ab(}{}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(35a^3(8A+9Bx)+135a^2bx(7A+8Bx)+180ab^2x^2(6A+7Bx)+84b^3x^3(5A+6Bx)\right)}{2520x^9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^10,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(84*b^3*x^3*(5*A + 6*B*x) + 180*a*b^2*x^2*(6*A +
 7*B*x) + 135*a^2*b*x*(7*A + 8*B*x) + 35*a^3*(8*A + 9*B*x)))/(x^9*(a + b*x)
)
```

fricas [**A**] time = 0.92, size = 73, normalized size = 0.35

$$-\frac{504\,Bb^3x^4+280\,Aa^3+420\left(3\,Bab^2+Ab^3\right)x^3+1080\left(Ba^2b+Aab^2\right)x^2+315\left(Ba^3+3\,Aa^2b\right)x}{2520\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(504*B*b^3*x^4 + 280*A*a^3 + 420*(3*B*a*b^2 + A*b^3)*x^3 + 1080*(B*
a^2*b + A*a*b^2)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

giac [**A**] time = 0.18, size = 149, normalized size = 0.71

$$-\frac{\left(9\,Bab^8-5\,Ab^9\right)\mathrm{sgn}\left(bx+a\right)}{2520\,a^6}-\frac{504\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+1260\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+420\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="giac")
```

```
[Out] -1/2520*(9*B*a*b^8 - 5*A*b^9)*sgn(b*x + a)/a^6 - 1/2520*(504*B*b^3*x^4*sgn(
b*x + a) + 1260*B*a*b^2*x^3*sgn(b*x + a) + 420*A*b^3*x^3*sgn(b*x + a) + 108
0*B*a^2*b*x^2*sgn(b*x + a) + 1080*A*a*b^2*x^2*sgn(b*x + a) + 315*B*a^3*x*sg
n(b*x + a) + 945*A*a^2*b*x*sgn(b*x + a) + 280*A*a^3*sgn(b*x + a))/x^9
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(504B\,b^3x^4+420A\,b^3x^3+1260Ba\,b^2x^3+1080Aa\,b^2x^2+1080B\,a^2b\,x^2+945A\,a^2bx+315B\,a^3x+280A\,a^3\right)\left((b\right.}{2520\left(bx+a\right)^3x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x)
```

```
[Out] -1/2520*(504*B*b^3*x^4+420*A*b^3*x^3+1260*B*a*b^2*x^3+1080*A*a*b^2*x^2+1080
*B*a^2*b*x^2+945*A*a^2*b*x+315*B*a^3*x+280*A*a^3)*((b*x+a)^2)^(3/2)/x^9/(b*
x+a)^3
```

maxima [**B**] time = 0.57, size = 555, normalized size = 2.64

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^8}{4\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^9}{4\,a^9}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^7}{4\,a^7x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^8}{4\,a^8x}-\frac{\left(b^2x^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^10,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^8/a^8 - 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*A*b^9/a^9 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^7/(a^7*x) - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^8/(a^8*x) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^6/(a^8*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9
*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^7*x^3) - 1/4*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^3) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^4/(a^6*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^4) + 6
9/280*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^5) - 125/504*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^5) - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*b^2/(a^4*x^6) + 121/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^6)
 + 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^7) - 37/168*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
B/(a^2*x^8) + 13/72*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^8) - 1/9*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^9)
```

mupad **[B]** time = 1.17, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{8}+\frac{3\,A\,b\,a^2}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{6}+\frac{B\,a\,b^2}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-B\,b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^10,x)
```

```
[Out] - (((B*a^3)/8 + (3*A*a^2*b)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^8*(a + b
*x)) - (((A*b^3)/6 + (B*a*b^2)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (B*b^
3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (3*a*b*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x))
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**10,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**10, x)
```

3.681 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{11}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{9x^9(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8x^8(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7x^7(a+bx)}-$$

```
[Out] -1/10*a^3*A*((b*x+a)^2)^(1/2)/x^10/(b*x+a)-1/9*a^2*(3*A*b+B*a)*((b*x+a)^2)^
(1/2)/x^9/(b*x+a)-3/8*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-1/7*b^2*(
A*b+3*B*a)*((b*x+a)^2)^(1/2)/x^7/(b*x+a)-1/6*b^3*B*((b*x+a)^2)^(1/2)/x^6/(b
*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{9x^9(a+bx)}-\frac{3ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{8x^8(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7x^7(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^11,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a^2*(3*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (3*a*b*(A*b + a*B)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(6*x^6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{11}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{11}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{a^3Ab^3}{x^{11}}+\frac{a^2b^3(3Ab+aB)}{x^{10}}+\frac{3ab^4(Ab+aB)}{x^9}+\frac{b^5(Ab+3aB)}{x^8}+\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-
\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(28a^3(9A+10Bx)+105a^2bx(8A+9Bx)+135ab^2x^2(7A+8Bx)+60b^3x^3(6A+7Bx)\right)}{2520x^{10}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(60*b^3*x^3*(6*A + 7*B*x) + 135*a*b^2*x^2*(7*A +
 8*B*x) + 105*a^2*b*x*(8*A + 9*B*x) + 28*a^3*(9*A + 10*B*x)))/(x^10*(a + b*
x))
```

fricas [A] time = 0.76, size = 73, normalized size = 0.35

$$-\frac{420\,Bb^3x^4+252\,Aa^3+360\left(3\,Bab^2+Ab^3\right)x^3+945\left(Ba^2b+Aab^2\right)x^2+280\left(Ba^3+3\,Aa^2b\right)x}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(420*B*b^3*x^4 + 252*A*a^3 + 360*(3*B*a*b^2 + A*b^3)*x^3 + 945*(B*a
^2*b + A*a*b^2)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

giac [A] time = 0.16, size = 149, normalized size = 0.71

$$\frac{\left(5\,Bab^9-3\,Ab^{10}\right)\mathrm{sgn}\left(bx+a\right)}{2520\,a^7}-\frac{420\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+1080\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+360\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="giac")
```

```
[Out] 1/2520*(5*B*a*b^9 - 3*A*b^10)*sgn(b*x + a)/a^7 - 1/2520*(420*B*b^3*x^4*sgn(
b*x + a) + 1080*B*a*b^2*x^3*sgn(b*x + a) + 360*A*b^3*x^3*sgn(b*x + a) + 945
*B*a^2*b*x^2*sgn(b*x + a) + 945*A*a*b^2*x^2*sgn(b*x + a) + 280*B*a^3*x*sgn(
b*x + a) + 840*A*a^2*b*x*sgn(b*x + a) + 252*A*a^3*sgn(b*x + a))/x^10
```

maple [A] time = 0.05, size = 92, normalized size = 0.44

$$-\frac{\left(420B\,b^3x^4+360A\,b^3x^3+1080Ba\,b^2x^3+945Aa\,b^2x^2+945B\,a^2b\,x^2+840A\,a^2bx+280B\,a^3x+252A\,a^3\right)\left(\left(\right.\right.}{2520\left(bx+a\right)^3x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x)
```

```
[Out] -1/2520*(420*B*b^3*x^4+360*A*b^3*x^3+1080*B*a*b^2*x^3+945*A*a*b^2*x^2+945*B
*a^2*b*x^2+840*A*a^2*b*x+280*B*a^3*x+252*A*a^3)*((b*x+a)^2)^(3/2)/x^10/(b*x
+a)^3
```

maxima [B] time = 0.69, size = 615, normalized size = 2.93

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^9}{4\,a^9}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^{10}}{4\,a^{10}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^8}{4\,a^8x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^9}{4\,a^9x}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^11,x, algorithm="maxima")
```

```
[Out] -1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^9/a^9 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*A*b^10/a^10 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^8/(a^8*x) +
 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^9/(a^9*x) + 1/4*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*b^7/(a^9*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(
a^10*x^2) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/(a^8*x^3) + 1/4*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9*x^3) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*B*b^5/(a^7*x^4) - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^4)
 - 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a^6*x^5) + 209/840*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^7*x^5) + 121/504*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*B*b^3/(a^5*x^6) - 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^
6*x^6) - 37/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/(a^4*x^7) + 13/56*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^5*x^7) + 13/72*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*b/(a^3*x^8) - 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x
^8) - 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/(a^2*x^9) + 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*A*b/(a^3*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^
2*x^10)
```

mupad **[B]** time = 1.18, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{9}+\frac{A\,b\,a^2}{3}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^9\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{7}+\frac{3\,B\,a\,b^2}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{10\,x^{10}\,\left(a+b\,x\right)}-\frac{B\,b^3\,\sqrt{a}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^11,x)
```

```
[Out] - (((B*a^3)/9 + (A*a^2*b)/3)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^9*(a + b*x
)) - (((A*b^3)/7 + (3*B*a*b^2)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a
+ b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*x^10*(a + b*x)) - (B*
b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (3*a*b*(A*b + B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x))
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**11,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**11, x)
```

3.682 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{12}}\,dx$

Optimal. Leaf size=210

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{10x^{10}(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^9(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8x^8(a+bx)}-b^3B$$

```
[Out] -1/11*a^3*A*((b*x+a)^2)^(1/2)/x^11/(b*x+a)-1/10*a^2*(3*A*b+B*a)*((b*x+a)^2)
^(1/2)/x^10/(b*x+a)-1/3*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^9/(b*x+a)-1/8*b^2
*(A*b+3*B*a)*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-1/7*b^3*B*((b*x+a)^2)^(1/2)/x^7/
(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{10x^{10}(a+bx)}-\frac{ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^9(a+bx)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{8x^8(a+bx)}-a^3A$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^12,x]
```

```
[Out] -(a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^2*(3*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a*b*(A*b + a*B)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^9*(a + b*x)) - (b^2*(A*b + 3*a*B)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(7*x^7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{12}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{12}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{12}}+\frac{a^2b^3(3Ab+aB)}{x^{11}}+\frac{3ab^4(Ab+aB)}{x^{10}}+\frac{b^5(Ab+3aB)}{x^9}\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{a^3A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-ab(A
\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 87, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(84a^3(10A+11Bx)+308a^2bx(9A+10Bx)+385ab^2x^2(8A+9Bx)+165b^3x^3(7A+8Bx)\right)}{9240x^{11}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^12,x]
```

```
[Out] -1/9240*(Sqrt[(a + b*x)^2]*(165*b^3*x^3*(7*A + 8*B*x) + 385*a*b^2*x^2*(8*A
+ 9*B*x) + 308*a^2*b*x*(9*A + 10*B*x) + 84*a^3*(10*A + 11*B*x)))/(x^11*(a +
 b*x))
```

fricas [**A**] time = 0.82, size = 73, normalized size = 0.35

$$-\frac{1320\,Bb^3x^4+840\,Aa^3+1155\left(3\,Bab^2+Ab^3\right)x^3+3080\left(Ba^2b+Aab^2\right)x^2+924\left(Ba^3+3\,Aa^2b\right)x}{9240\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="fricas")
```

```
[Out] -1/9240*(1320*B*b^3*x^4 + 840*A*a^3 + 1155*(3*B*a*b^2 + A*b^3)*x^3 + 3080*(
B*a^2*b + A*a*b^2)*x^2 + 924*(B*a^3 + 3*A*a^2*b)*x)/x^11
```

giac [**A**] time = 0.20, size = 149, normalized size = 0.71

$$-\frac{\left(11\,Bab^{10}-7\,Ab^{11}\right)\mathrm{sgn}\left(bx+a\right)}{9240\,a^8}-\frac{1320\,Bb^3x^4\mathrm{sgn}\left(bx+a\right)+3465\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+1155\,Ab^3x^3\mathrm{sgn}\left(bx+a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="giac")
```

```
[Out] -1/9240*(11*B*a*b^10 - 7*A*b^11)*sgn(b*x + a)/a^8 - 1/9240*(1320*B*b^3*x^4*
sgn(b*x + a) + 3465*B*a*b^2*x^3*sgn(b*x + a) + 1155*A*b^3*x^3*sgn(b*x + a)
+ 3080*B*a^2*b*x^2*sgn(b*x + a) + 3080*A*a*b^2*x^2*sgn(b*x + a) + 924*B*a^3
*x*sgn(b*x + a) + 2772*A*a^2*b*x*sgn(b*x + a) + 840*A*a^3*sgn(b*x + a))/x^1
1
```

maple [**A**] time = 0.06, size = 92, normalized size = 0.44

$$-\frac{\left(1320B\,b^3x^4+1155A\,b^3x^3+3465Ba\,b^2x^3+3080Aa\,b^2x^2+3080B\,a^2b\,x^2+2772A\,a^2bx+924B\,a^3x+840A\,a^3\right)}{9240\left(bx+a\right)^3x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x)
```

```
[Out] -1/9240*(1320*B*b^3*x^4+1155*A*b^3*x^3+3465*B*a*b^2*x^3+3080*A*a*b^2*x^2+30
80*B*a^2*b*x^2+2772*A*a^2*b*x+924*B*a^3*x+840*A*a^3)*((b*x+a)^2)^(3/2)/x^11
/(b*x+a)^3
```

maxima [**B**] time = 0.65, size = 675, normalized size = 3.21

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^{10}}{4\,a^{10}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^{11}}{4\,a^{11}}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bb^{9}}{4\,a^{9}x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ab^{10}}{4\,a^{10}x}-\frac{\left(b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^12,x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^10/a^10 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*A*b^11/a^11 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^9/(a^9*x)
- 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^10/(a^10*x) - 1/4*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*B*b^8/(a^10*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b
^9/(a^11*x^2) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/(a^9*x^3) - 1/4*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(a^10*x^3) - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*b^6/(a^8*x^4) + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^9
*x^4) + 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^7*x^5) - 329/1320*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^8*x^5) - 41/168*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*b^4/(a^6*x^6) + 65/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^
5/(a^7*x^6) + 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/(a^5*x^7) - 21/88
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^6*x^7) - 5/24*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*B*b^2/(a^4*x^8) + 59/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3
/(a^5*x^8) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b/(a^3*x^9) - 13/66*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^4*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*B/(a^2*x^10) + 17/110*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b/(a^3*x^10
) - 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A/(a^2*x^11)
```

mupad [B] time = 1.16, size = 196, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^3}{10}+\frac{3\,A\,b\,a^2}{10}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{10}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^3}{8}+\frac{3\,B\,a\,b^2}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{A\,a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{11\,x^{11}\,\left(a+b\,x\right)}-B\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^12,x)
```

```
[Out] - (((B*a^3)/10 + (3*A*a^2*b)/10)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a
+ b*x)) - (((A*b^3)/8 + (3*B*a*b^2)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
8*(a + b*x)) - (A*a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x))
- (B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (a*b*(A*b + B
*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^9*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**12,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**12, x)
```

3.683 $\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=303

$$\frac{a^2b^2x^{10}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^{12}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{12(a+bx)}+\frac{5ab^3x^{11}\sqrt{a^2+2abx+b^2x^2}\,(2aB+}{11(a+bx)}$$

```
[Out] 1/7*a^5*A*x^7*((b*x+a)^2)^(1/2)/(b*x+a)+1/8*a^4*(5*A*b+B*a)*x^8*((b*x+a)^2)
^(1/2)/(b*x+a)+5/9*a^3*b*(2*A*b+B*a)*x^9*((b*x+a)^2)^(1/2)/(b*x+a)+a^2*b^2*
(A*b+B*a)*x^10*((b*x+a)^2)^(1/2)/(b*x+a)+5/11*a*b^3*(A*b+2*B*a)*x^11*((b*x+
a)^2)^(1/2)/(b*x+a)+1/12*b^4*(A*b+5*B*a)*x^12*((b*x+a)^2)^(1/2)/(b*x+a)+1/1
3*b^5*B*x^13*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi **[A]** time = 0.18, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$\frac{b^4x^{12}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{12(a+bx)}+\frac{5ab^3x^{11}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{11(a+bx)}+\frac{a^2b^2x^{10}\sqrt{a^2+2abx+b^2x^2}\,(aB+}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (a^2*b^2*(A*b + a*B)*x^
10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^11*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^12*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(12*(a + b*x)) + (b^5*B*x^13*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^6(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^6\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^5Ab^5x^6+a^4b^5(5Ab+aB)x^7+5a^3b^6(2Ab+a\right.}{}\\&=\frac{a^5Ax^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{a^4(5Ab+aB)x^8\sqrt{a^2+2abx+b^2x^2}}{8(a+bx)}+\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 125, normalized size = 0.41

$$\frac{x^7\sqrt{(a+bx)^2}\,\big(1287a^5(8A+7Bx)+5005a^4bx(9A+8Bx)+8008a^3b^2x^2(10A+9Bx)+6552a^2b^3x^3(11A+10}{72072(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^6*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^7*Sqrt[(a + b*x)^2]*(1287*a^5*(8*A + 7*B*x) + 5005*a^4*b*x*(9*A + 8*B*x)
 + 8008*a^3*b^2*x^2*(10*A + 9*B*x) + 6552*a^2*b^3*x^3*(11*A + 10*B*x) + 273
0*a*b^4*x^4*(12*A + 11*B*x) + 462*b^5*x^5*(13*A + 12*B*x)))/(72072*(a + b*x
))
```

fricas [**A**] time = 0.61, size = 118, normalized size = 0.39

$$\frac{1}{13}\,Bb^5x^{13}+\frac{1}{7}\,Aa^5x^7+\frac{1}{12}\,\big(5\,Bab^4+Ab^5\big)x^{12}+\frac{5}{11}\,\big(2\,Ba^2b^3+Aab^4\big)x^{11}+\big(Ba^3b^2+Aa^2b^3\big)x^{10}+\frac{5}{9}\,\big(Ba^4b+2\,Aa^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/13*B*b^5*x^13 + 1/7*A*a^5*x^7 + 1/12*(5*B*a*b^4 + A*b^5)*x^12 + 5/11*(2*B
*a^2*b^3 + A*a*b^4)*x^11 + (B*a^3*b^2 + A*a^2*b^3)*x^10 + 5/9*(B*a^4*b + 2*
A*a^3*b^2)*x^9 + 1/8*(B*a^5 + 5*A*a^4*b)*x^8
```

giac [**A**] time = 0.18, size = 220, normalized size = 0.73

$$\frac{1}{13}\,Bb^5x^{13}\mathrm{sgn}\,(bx+a)+\frac{5}{12}\,Bab^4x^{12}\mathrm{sgn}\,(bx+a)+\frac{1}{12}\,Ab^5x^{12}\mathrm{sgn}\,(bx+a)+\frac{10}{11}\,Ba^2b^3x^{11}\mathrm{sgn}\,(bx+a)+\frac{5}{11}\,Aab^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/13*B*b^5*x^13*sgn(b*x + a) + 5/12*B*a*b^4*x^12*sgn(b*x + a) + 1/12*A*b^5*
x^12*sgn(b*x + a) + 10/11*B*a^2*b^3*x^11*sgn(b*x + a) + 5/11*A*a*b^4*x^11*s
gn(b*x + a) + B*a^3*b^2*x^10*sgn(b*x + a) + A*a^2*b^3*x^10*sgn(b*x + a) + 5
/9*B*a^4*b*x^9*sgn(b*x + a) + 10/9*A*a^3*b^2*x^9*sgn(b*x + a) + 1/8*B*a^5*x
^8*sgn(b*x + a) + 5/8*A*a^4*b*x^8*sgn(b*x + a) + 1/7*A*a^5*x^7*sgn(b*x + a)
 - 1/72072*(7*B*a^13 - 13*A*a^12*b)*sgn(b*x + a)/b^8
```

maple [**A**] time = 0.06, size = 140, normalized size = 0.46

$$\frac{\big(5544B\,b^5x^6+6006x^5A\,b^5+30030x^5Ba\,b^4+32760x^4Aa\,b^4+65520x^4B\,a^2b^3+72072A\,a^2b^3x^3+72072B\,a^3}{72072\,(bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/72072*x^7*(5544*B*b^5*x^6+6006*A*b^5*x^5+30030*B*a*b^4*x^5+32760*A*a*b^4*
x^4+65520*B*a^2*b^3*x^4+72072*A*a^2*b^3*x^3+72072*B*a^3*b^2*x^3+80080*A*a^3
*b^2*x^2+40040*B*a^4*b*x^2+45045*A*a^4*b*x+9009*B*a^5*x+10296*A*a^5)*((b*x+
a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**] time = 0.66, size = 481, normalized size = 1.59

$$\frac{\big(b^2x^2+2\,abx+a^2\big)^{\frac{7}{2}}Bx^6}{13\,b^2}-\frac{19\,\big(b^2x^2+2\,abx+a^2\big)^{\frac{7}{2}}Bax^5}{156\,b^3}+\frac{\big(b^2x^2+2\,abx+a^2\big)^{\frac{7}{2}}Ax^5}{12\,b^2}+\frac{251\,\big(b^2x^2+2\,abx+a^2\big)^{\frac{7}{2}}}{1716\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^6*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^6/b^2 - 19/156*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*a*x^5/b^3 + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^5/b^2 +
 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^4/b^4 - 17/132*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*A*a*x^4/b^3 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
B*a^3*x^3/b^5 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^2*x^3/b^4 - 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7*x/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*A*a^6*x/b^6 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^4*x^2/b^6 -
 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3*x^2/b^5 - 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*B*a^8/b^8 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^7/b^7 -
 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^5*x/b^7 + 131/792*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*a^4*x/b^6 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^6/b^8 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^5/b^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^6\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^6*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^6*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{6}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**6*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**6*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.684 $\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=306

$$\frac{10a^2b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{b^4x^{11}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{ab^3x^{10}\sqrt{a^2+2abx+b^2x^2}\,(2aB}{2(a+bx)}$$

```
[Out] 1/6*a^5*A*x^6*((b*x+a)^2)^(1/2)/(b*x+a)+1/7*a^4*(5*A*b+B*a)*x^7*((b*x+a)^2)
^(1/2)/(b*x+a)+5/8*a^3*b*(2*A*b+B*a)*x^8*((b*x+a)^2)^(1/2)/(b*x+a)+10/9*a^2
*b^2*(A*b+B*a)*x^9*((b*x+a)^2)^(1/2)/(b*x+a)+1/2*a*b^3*(A*b+2*B*a)*x^10*((b
*x+a)^2)^(1/2)/(b*x+a)+1/11*b^4*(A*b+5*B*a)*x^11*((b*x+a)^2)^(1/2)/(b*x+a)+
1/12*b^5*B*x^12*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{b^4x^{11}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{ab^3x^{10}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{2(a+bx)}+\frac{10a^2b^2x^9\sqrt{a^2+2abx+b^2x^2}\,(aB}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)
*x^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (a*b^3*(A*b + 2*a*B)*x^
10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^11*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (b^5*B*x^12*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(12*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^5(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^5\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^5Ab^5x^5+a^4b^5(5Ab+aB)x^6+5a^3b^6(2Ab-\right.}{}\\&=\frac{a^5Ax^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{a^4(5Ab+aB)x^7\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$\frac{x^6\sqrt{(a+bx)^2}\left(132a^5(7A+6Bx)+495a^4bx(8A+7Bx)+770a^3b^2x^2(9A+8Bx)+616a^2b^3x^3(10A+9Bx)+252\right.}{5544(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^5*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^6*Sqrt[(a + b*x)^2]*(132*a^5*(7*A + 6*B*x) + 495*a^4*b*x*(8*A + 7*B*x) +
 770*a^3*b^2*x^2*(9*A + 8*B*x) + 616*a^2*b^3*x^3*(10*A + 9*B*x) + 252*a*b^4
*x^4*(11*A + 10*B*x) + 42*b^5*x^5*(12*A + 11*B*x)))/(5544*(a + b*x))
```

fricas [A] time = 0.81, size = 119, normalized size = 0.39

$$\frac{1}{12}Bb^5x^{12}+\frac{1}{6}Aa^5x^6+\frac{1}{11}\left(5\,Bab^4+Ab^5\right)x^{11}+\frac{1}{2}\left(2\,Ba^2b^3+Aab^4\right)x^{10}+\frac{10}{9}\left(Ba^3b^2+Aa^2b^3\right)x^9+\frac{5}{8}\left(Ba^4b+2\,Aa^3b^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*B*b^5*x^12 + 1/6*A*a^5*x^6 + 1/11*(5*B*a*b^4 + A*b^5)*x^11 + 1/2*(2*B*
a^2*b^3 + A*a*b^4)*x^10 + 10/9*(B*a^3*b^2 + A*a^2*b^3)*x^9 + 5/8*(B*a^4*b +
 2*A*a^3*b^2)*x^8 + 1/7*(B*a^5 + 5*A*a^4*b)*x^7
```

giac [A] time = 0.17, size = 220, normalized size = 0.72

$$\frac{1}{12}Bb^5x^{12}\mathrm{sgn}\left(bx+a\right)+\frac{5}{11}Bab^4x^{11}\mathrm{sgn}\left(bx+a\right)+\frac{1}{11}Ab^5x^{11}\mathrm{sgn}\left(bx+a\right)+Ba^2b^3x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Aab^4x^{10}\mathrm{sgn}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/12*B*b^5*x^12*sgn(b*x + a) + 5/11*B*a*b^4*x^11*sgn(b*x + a) + 1/11*A*b^5*
x^11*sgn(b*x + a) + B*a^2*b^3*x^10*sgn(b*x + a) + 1/2*A*a*b^4*x^10*sgn(b*x
+ a) + 10/9*B*a^3*b^2*x^9*sgn(b*x + a) + 10/9*A*a^2*b^3*x^9*sgn(b*x + a) +
5/8*B*a^4*b*x^8*sgn(b*x + a) + 5/4*A*a^3*b^2*x^8*sgn(b*x + a) + 1/7*B*a^5*x
^7*sgn(b*x + a) + 5/7*A*a^4*b*x^7*sgn(b*x + a) + 1/6*A*a^5*x^6*sgn(b*x + a)
 + 1/5544*(B*a^12 - 2*A*a^11*b)*sgn(b*x + a)/b^7
```

maple [A] time = 0.07, size = 140, normalized size = 0.46

$$\frac{\left(462B\,b^5x^6+504x^5A\,b^5+2520x^5Ba\,b^4+2772x^4Aa\,b^4+5544x^4B\,a^2b^3+6160A\,a^2b^3x^3+6160B\,a^3b^2x^3+6930\right.}{5544\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/5544*x^6*(462*B*b^5*x^6+504*A*b^5*x^5+2520*B*a*b^4*x^5+2772*A*a*b^4*x^4+5
544*B*a^2*b^3*x^4+6160*A*a^2*b^3*x^3+6160*B*a^3*b^2*x^3+6930*A*a^3*b^2*x^2+
3465*B*a^4*b*x^2+3960*A*a^4*b*x+792*B*a^5*x+924*A*a^5)*((b*x+a)^2)^(5/2)/(b
*x+a)^5
```

maxima [A] time = 0.52, size = 421, normalized size = 1.38

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^5}{12\,b^2}-\frac{17\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^4}{132\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^4}{11\,b^2}+\frac{5\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ba^2x^3}{33\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^5*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^5/b^2 - 17/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*a*x^4/b^3 + 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^4/b^2 +
 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^3/b^4 - 3/22*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*A*a*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^6*x/b
^6 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^5*x/b^5 - 16/99*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*B*a^3*x^2/b^5 + 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*
a^2*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7/b^7 - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*A*a^6/b^6 + 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
B*a^4*x/b^6 - 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3*x/b^5 - 923/5544
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^5/b^7 + 461/2772*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*A*a^4/b^6
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^5\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^5*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^{5} \left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**5*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**5*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.685 $\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=306

$$\frac{5a^2b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4(a+bx)}+\frac{b^4x^{10}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{10(a+bx)}+\frac{5ab^3x^9\sqrt{a^2+2abx+b^2x^2}\,(2aB+}{9(a+bx)}$$

```
[Out] 1/5*a^5*A*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+1/6*a^4*(5*A*b+B*a)*x^6*((b*x+a)^2)
^(1/2)/(b*x+a)+5/7*a^3*b*(2*A*b+B*a)*x^7*((b*x+a)^2)^(1/2)/(b*x+a)+5/4*a^2*
b^2*(A*b+B*a)*x^8*((b*x+a)^2)^(1/2)/(b*x+a)+5/9*a*b^3*(A*b+2*B*a)*x^9*((b*x
+a)^2)^(1/2)/(b*x+a)+1/10*b^4*(A*b+5*B*a)*x^10*((b*x+a)^2)^(1/2)/(b*x+a)+1/
11*b^5*B*x^11*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.13, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{b^4x^{10}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{10(a+bx)}+\frac{5ab^3x^9\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9(a+bx)}+\frac{5a^2b^2x^8\sqrt{a^2+2abx+b^2x^2}\,(aB+}{4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^5*A*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (a^4*(5*A*b + a*B
)*x^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)
*x^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (5*a^2*b^2*(A*b + a*B)*
x^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*x
^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^10*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(10*(a + b*x)) + (b^5*B*x^11*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^4(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^4\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^5Ab^5x^4+a^4b^5(5Ab+aB)x^5+5a^3b^6(2Ab+a\right.}{b}\\ &= \frac{a^5Ax^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{a^4(5Ab+aB)x^6\sqrt{a^2+2abx+b^2x^2}}{6(a+bx)}+\frac{5a}{}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 125, normalized size = 0.41

$$\frac{x^5\sqrt{(a+bx)^2}\left(462a^5(6A+5Bx)+1650a^4bx(7A+6Bx)+2475a^3b^2x^2(8A+7Bx)+1925a^2b^3x^3(9A+8Bx)+\right.}{13860(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^5*Sqrt[(a + b*x)^2]*(462*a^5*(6*A + 5*B*x) + 1650*a^4*b*x*(7*A + 6*B*x)
+ 2475*a^3*b^2*x^2*(8*A + 7*B*x) + 1925*a^2*b^3*x^3*(9*A + 8*B*x) + 770*a*b
^4*x^4*(10*A + 9*B*x) + 126*b^5*x^5*(11*A + 10*B*x)))/(13860*(a + b*x))
```

fricas [**A**] time = 0.90, size = 119, normalized size = 0.39

$$\frac{1}{11}Bb^5x^{11}+\frac{1}{5}Aa^5x^5+\frac{1}{10}\left(5Bab^4+Ab^5\right)x^{10}+\frac{5}{9}\left(2Ba^2b^3+Aab^4\right)x^9+\frac{5}{4}\left(Ba^3b^2+Aa^2b^3\right)x^8+\frac{5}{7}\left(Ba^4b+2Aa^3b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/11*B*b^5*x^11 + 1/5*A*a^5*x^5 + 1/10*(5*B*a*b^4 + A*b^5)*x^10 + 5/9*(2*B*
a^2*b^3 + A*a*b^4)*x^9 + 5/4*(B*a^3*b^2 + A*a^2*b^3)*x^8 + 5/7*(B*a^4*b + 2
*A*a^3*b^2)*x^7 + 1/6*(B*a^5 + 5*A*a^4*b)*x^6
```

giac [**A**] time = 0.17, size = 222, normalized size = 0.73

$$\frac{1}{11}Bb^5x^{11}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}Bab^4x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{1}{10}Ab^5x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}Ba^2b^3x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}Aab^4x^9\mathrm{sg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/11*B*b^5*x^11*sgn(b*x + a) + 1/2*B*a*b^4*x^10*sgn(b*x + a) + 1/10*A*b^5*x
^10*sgn(b*x + a) + 10/9*B*a^2*b^3*x^9*sgn(b*x + a) + 5/9*A*a*b^4*x^9*sgn(b*
x + a) + 5/4*B*a^3*b^2*x^8*sgn(b*x + a) + 5/4*A*a^2*b^3*x^8*sgn(b*x + a) +
5/7*B*a^4*b*x^7*sgn(b*x + a) + 10/7*A*a^3*b^2*x^7*sgn(b*x + a) + 1/6*B*a^5*
x^6*sgn(b*x + a) + 5/6*A*a^4*b*x^6*sgn(b*x + a) + 1/5*A*a^5*x^5*sgn(b*x + a
) - 1/13860*(5*B*a^11 - 11*A*a^10*b)*sgn(b*x + a)/b^6
```

maple [**A**] time = 0.06, size = 140, normalized size = 0.46

$$\frac{\left(1260B\,b^5x^6+1386x^5A\,b^5+6930x^5Ba\,b^4+7700x^4Aa\,b^4+15400x^4B\,a^2b^3+17325A\,a^2b^3x^3+17325B\,a^3b^2x\right.}{13860\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/13860*x^5*(1260*B*b^5*x^6+1386*A*b^5*x^5+6930*B*a*b^4*x^5+7700*A*a*b^4*x^
4+15400*B*a^2*b^3*x^4+17325*A*a^2*b^3*x^3+17325*B*a^3*b^2*x^3+19800*A*a^3*b
^2*x^2+9900*B*a^4*b*x^2+11550*A*a^4*b*x+2310*B*a^5*x+2772*A*a^5)*((b*x+a)^2
)^(5/2)/(b*x+a)^5
```

maxima [**A**] time = 0.60, size = 361, normalized size = 1.18

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^4}{11\,b^2}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bax^3}{22\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Ax^3}{10\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^5x}{6\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^4/b^2 - 3/22*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*a*x^3/b^3 + 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x^3/b^2 - 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*x/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*a^4*x/b^4 + 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*x^2/b^
4 - 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a*x^2/b^3 - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*B*a^6/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^5/b^5
- 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*x/b^5 + 29/180*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*A*a^2*x/b^4 + 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B
*a^4/b^6 - 209/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a^3/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{4} \left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.686 $\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=212

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(Ab-4aB)}{9b^5}-\frac{3a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-2aB)}{8b^5}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a}{7b^5}$$

```
[Out] -1/6*a^3*(A*b-B*a)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^5+1/7*a^2*(3*A*b-4*B*a)*(b
*x+a)^6*((b*x+a)^2)^(1/2)/b^5-3/8*a*(A*b-2*B*a)*(b*x+a)^7*((b*x+a)^2)^(1/2)
/b^5+1/9*(A*b-4*B*a)*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^5+1/10*B*(b*x+a)^9*((b*x
+a)^2)^(1/2)/b^5
```

Rubi [A] time = 0.12, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(Ab-4aB)}{9b^5}-\frac{3a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-2aB)}{8b^5}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a}{7b^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(a^3*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^5) + (a^2
*(3*A*b - 4*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) - (3*a*
(A*b - 2*a*B)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5) + ((A*b -
4*a*B)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5) + (B*(a + b*x)^9*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^5)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^3(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^3\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(\frac{a^3(-Ab+aB)\left(ab+b^2x\right)^5}{b^4}-\frac{a^2(-3Ab+4aB)\left(ab+b^2x\right)^6}{b^5}+\frac{3a}{}\right.}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{a^3(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^5}+\frac{a^2(3Ab-4aB)(a+bx}{7}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.59

$$\frac{x^4\sqrt{(a+bx)^2}\left(126a^5(5A+4Bx)+420a^4bx(6A+5Bx)+600a^3b^2x^2(7A+6Bx)+450a^2b^3x^3(8A+7Bx)+175a\right.}{2520(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^4*Sqrt[(a + b*x)^2]*(126*a^5*(5*A + 4*B*x) + 420*a^4*b*x*(6*A + 5*B*x) +
 600*a^3*b^2*x^2*(7*A + 6*B*x) + 450*a^2*b^3*x^3*(8*A + 7*B*x) + 175*a*b^4*
x^4*(9*A + 8*B*x) + 28*b^5*x^5*(10*A + 9*B*x)))/(2520*(a + b*x))
```

fricas [A] time = 0.86, size = 119, normalized size = 0.56

$$\frac{1}{10}Bb^5x^{10}+\frac{1}{4}Aa^5x^4+\frac{1}{9}\left(5Bab^4+Ab^5\right)x^9+\frac{5}{8}\left(2Ba^2b^3+Aab^4\right)x^8+\frac{10}{7}\left(Ba^3b^2+Aa^2b^3\right)x^7+\frac{5}{6}\left(Ba^4b+2Aa^3b^2\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/10*B*b^5*x^10 + 1/4*A*a^5*x^4 + 1/9*(5*B*a*b^4 + A*b^5)*x^9 + 5/8*(2*B*a^
2*b^3 + A*a*b^4)*x^8 + 10/7*(B*a^3*b^2 + A*a^2*b^3)*x^7 + 5/6*(B*a^4*b + 2*
A*a^3*b^2)*x^6 + 1/5*(B*a^5 + 5*A*a^4*b)*x^5
```

giac [A] time = 0.17, size = 221, normalized size = 1.04

$$\frac{1}{10}Bb^5x^{10}\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}Bab^4x^9\mathrm{sgn}\left(bx+a\right)+\frac{1}{9}Ab^5x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}Ba^2b^3x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}Aab^4x^8\mathrm{sgn}\left(bx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/10*B*b^5*x^10*sgn(b*x + a) + 5/9*B*a*b^4*x^9*sgn(b*x + a) + 1/9*A*b^5*x^9
*sgn(b*x + a) + 5/4*B*a^2*b^3*x^8*sgn(b*x + a) + 5/8*A*a*b^4*x^8*sgn(b*x +
a) + 10/7*B*a^3*b^2*x^7*sgn(b*x + a) + 10/7*A*a^2*b^3*x^7*sgn(b*x + a) + 5/
6*B*a^4*b*x^6*sgn(b*x + a) + 5/3*A*a^3*b^2*x^6*sgn(b*x + a) + 1/5*B*a^5*x^5
*sgn(b*x + a) + A*a^4*b*x^5*sgn(b*x + a) + 1/4*A*a^5*x^4*sgn(b*x + a) + 1/2
520*(2*B*a^10 - 5*A*a^9*b)*sgn(b*x + a)/b^5
```

maple [A] time = 0.05, size = 140, normalized size = 0.66

$$\frac{\left(252Bb^5x^6+280x^5Ab^5+1400x^5Bab^4+1575x^4Aab^4+3150x^4Ba^2b^3+3600Aa^2b^3x^3+3600Ba^3b^2x^3+4200\right.}{2520\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2520*x^4*(252*B*b^5*x^6+280*A*b^5*x^5+1400*B*a*b^4*x^5+1575*A*a*b^4*x^4+3
150*B*a^2*b^3*x^4+3600*A*a^2*b^3*x^3+3600*B*a^3*b^2*x^3+4200*A*a^3*b^2*x^2+
2100*B*a^4*b*x^2+2520*A*a^4*b*x+504*B*a^5*x+630*A*a^5)*((b*x+a)^2)^(5/2)/(b
*x+a)^5
```

maxima [B] time = 0.75, size = 301, normalized size = 1.42

$$\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bx^3}{10b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^4x}{6b^4}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Aa^3x}{6b^3}-\frac{13\left(b^2x^2+2abx+a^2\right)^{\frac{7}{2}}Bax^2}{90b^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*a^4*x/b^4 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^3*x/b^3 - 1
3/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*x^2/b^3 + 1/9*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*A*x^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5/b^5 - 1/6
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^4/b^4 + 29/180*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*B*a^2*x/b^4 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a*x/b^3 - 20
9/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3/b^5 + 83/504*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A*a^2/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.687 $\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=167

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-3aB)}{8b^4}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(2Ab-3aB)}{7b^4}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a+}{6b^4}$$

```
[Out] 1/6*a^2*(A*b-B*a)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^4-1/7*a*(2*A*b-3*B*a)*(b*x+
a)^6*((b*x+a)^2)^(1/2)/b^4+1/8*(A*b-3*B*a)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^4+
1/9*B*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^4
```

Rubi [A] time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(Ab-3aB)}{8b^4}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(2Ab-3aB)}{7b^4}+\frac{a^2\sqrt{a^2+2abx+b^2x^2}\,(a+}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^2*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^4) - (a*(2
*A*b - 3*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + ((A*b -
3*a*B)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4) + (B*(a + b*x)^8*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^4)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^2\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{a^2(-Ab+aB)\left(ab+b^2x\right)^5}{b^3}+\frac{a(-2Ab+3aB)\left(ab+b^2x\right)^6}{b^4}+\frac{(Ab-}{}\right.}{b^4\left(ab+b^2x\right)}\\&=\frac{a^2(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^4}-\frac{a(2Ab-3aB)(a+bx)^6\sqrt{a^2}}{7b^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.75

$$\frac{x^3\sqrt{(a+bx)^2}\,\left(42a^5(4A+3Bx)+126a^4bx(5A+4Bx)+168a^3b^2x^2(6A+5Bx)+120a^2b^3x^3(7A+6Bx)+45ab^4x\right.}{504(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^3*Sqrt[(a + b*x)^2]*(42*a^5*(4*A + 3*B*x) + 126*a^4*b*x*(5*A + 4*B*x) +
168*a^3*b^2*x^2*(6*A + 5*B*x) + 120*a^2*b^3*x^3*(7*A + 6*B*x) + 45*a*b^4*x^
4*(8*A + 7*B*x) + 7*b^5*x^5*(9*A + 8*B*x)))/(504*(a + b*x))
```

fricas [**A**] time = 0.92, size = 118, normalized size = 0.71

$$\frac{1}{9}\,Bb^5x^9+\frac{1}{3}\,Aa^5x^3+\frac{1}{8}\left(5\,Bab^4+Ab^5\right)x^8+\frac{5}{7}\left(2\,Ba^2b^3+Aab^4\right)x^7+\frac{5}{3}\left(Ba^3b^2+Aa^2b^3\right)x^6+\left(Ba^4b+2\,Aa^3b^2\right)x^5+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/9*B*b^5*x^9 + 1/3*A*a^5*x^3 + 1/8*(5*B*a*b^4 + A*b^5)*x^8 + 5/7*(2*B*a^2*
b^3 + A*a*b^4)*x^7 + 5/3*(B*a^3*b^2 + A*a^2*b^3)*x^6 + (B*a^4*b + 2*A*a^3*b
^2)*x^5 + 1/4*(B*a^5 + 5*A*a^4*b)*x^4
```

giac [**A**] time = 0.19, size = 220, normalized size = 1.32

$$\frac{1}{9}\,Bb^5x^9\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}\,Bab^4x^8\mathrm{sgn}\left(bx+a\right)+\frac{1}{8}\,Ab^5x^8\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,Ba^2b^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}\,Aab^4x^7\mathrm{sgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^5*x^9*sgn(b*x + a) + 5/8*B*a*b^4*x^8*sgn(b*x + a) + 1/8*A*b^5*x^8*s
gn(b*x + a) + 10/7*B*a^2*b^3*x^7*sgn(b*x + a) + 5/7*A*a*b^4*x^7*sgn(b*x + a
) + 5/3*B*a^3*b^2*x^6*sgn(b*x + a) + 5/3*A*a^2*b^3*x^6*sgn(b*x + a) + B*a^4
*b*x^5*sgn(b*x + a) + 2*A*a^3*b^2*x^5*sgn(b*x + a) + 1/4*B*a^5*x^4*sgn(b*x
+ a) + 5/4*A*a^4*b*x^4*sgn(b*x + a) + 1/3*A*a^5*x^3*sgn(b*x + a) - 1/504*(B
*a^9 - 3*A*a^8*b)*sgn(b*x + a)/b^4
```

maple [**A**] time = 0.05, size = 140, normalized size = 0.84

$$\frac{\left(56B\,b^5x^6+63x^5A\,b^5+315x^5Ba\,b^4+360x^4Aa\,b^4+720x^4B\,a^2b^3+840A\,a^2b^3x^3+840B\,a^3b^2x^3+1008x^2A\,a\right.}{504\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/504*x^3*(56*B*b^5*x^6+63*A*b^5*x^5+315*B*a*b^4*x^5+360*A*a*b^4*x^4+720*B*
a^2*b^3*x^4+840*A*a^2*b^3*x^3+840*B*a^3*b^2*x^3+1008*A*a^3*b^2*x^2+504*B*a^
4*b*x^2+630*A*a^4*b*x+126*B*a^5*x+168*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**] time = 0.61, size = 241, normalized size = 1.44

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3x}{6\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2x}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Bx^2}{9\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^4}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*x/b^3 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*A*a^2*x/b^2 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*x^2/b^2 - 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^4/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*A*a^3/b^3 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*x/b^3 + 1/8*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*x/b^2 + 83/504*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^2/b^4 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*a/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^2\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2} \left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.688 $\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=121

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(Ab-2aB)}{7b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+}{8b^3}$$

```
[Out] -1/6*a*(A*b-B*a)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^3+1/7*(A*b-2*B*a)*(b*x+a)^6*
((b*x+a)^2)^(1/2)/b^3+1/8*B*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 76}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(Ab-2aB)}{7b^3}-\frac{a\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6b^3}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(a+}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(a*(A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3) + ((A*b
- 2*a*B)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3) + (B*(a + b*x)^
7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^3)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(\frac{a(-Ab+aB)\left(ab+b^2x\right)^5}{b^2}+\frac{(Ab-2aB)\left(ab+b^2x\right)^6}{b^3}+\frac{B\left(ab+b^2\right.}{b^4}\right.}{b^4\left(ab+b^2x\right)}\\&=-\frac{a(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^3}+\frac{(Ab-2aB)(a+bx)^6\sqrt{a}}{7b^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 1.03

$$\frac{x^2\sqrt{(a+bx)^2}\,\left(28a^5(3A+2Bx)+70a^4bx(4A+3Bx)+84a^3b^2x^2(5A+4Bx)+56a^2b^3x^3(6A+5Bx)+20ab^4x\right.}{168(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^2*Sqrt[(a + b*x)^2]*(28*a^5*(3*A + 2*B*x) + 70*a^4*b*x*(4*A + 3*B*x) + 8
4*a^3*b^2*x^2*(5*A + 4*B*x) + 56*a^2*b^3*x^3*(6*A + 5*B*x) + 20*a*b^4*x^4*(
7*A + 6*B*x) + 3*b^5*x^5*(8*A + 7*B*x)))/(168*(a + b*x))
```

fricas [A] time = 0.71, size = 119, normalized size = 0.98

$$\frac{1}{8}\,Bb^5x^8+\frac{1}{2}\,Aa^5x^2+\frac{1}{7}\,\left(5\,Bab^4+Ab^5\right)x^7+\frac{5}{6}\,\left(2\,Ba^2b^3+Aab^4\right)x^6+2\,\left(Ba^3b^2+Aa^2b^3\right)x^5+\frac{5}{4}\,\left(Ba^4b+2\,Aa^3b^2\right)x^4+\frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/8*B*b^5*x^8 + 1/2*A*a^5*x^2 + 1/7*(5*B*a*b^4 + A*b^5)*x^7 + 5/6*(2*B*a^2*
b^3 + A*a*b^4)*x^6 + 2*(B*a^3*b^2 + A*a^2*b^3)*x^5 + 5/4*(B*a^4*b + 2*A*a^3
*b^2)*x^4 + 1/3*(B*a^5 + 5*A*a^4*b)*x^3
```

giac [B] time = 0.17, size = 221, normalized size = 1.83

$$\frac{1}{8}\,Bb^5x^8\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}\,Bab^4x^7\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,Ab^5x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,Ba^2b^3x^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}\,Aab^4x^6\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^5*x^8*sgn(b*x + a) + 5/7*B*a*b^4*x^7*sgn(b*x + a) + 1/7*A*b^5*x^7*s
gn(b*x + a) + 5/3*B*a^2*b^3*x^6*sgn(b*x + a) + 5/6*A*a*b^4*x^6*sgn(b*x + a)
 + 2*B*a^3*b^2*x^5*sgn(b*x + a) + 2*A*a^2*b^3*x^5*sgn(b*x + a) + 5/4*B*a^4*
b*x^4*sgn(b*x + a) + 5/2*A*a^3*b^2*x^4*sgn(b*x + a) + 1/3*B*a^5*x^3*sgn(b*x
 + a) + 5/3*A*a^4*b*x^3*sgn(b*x + a) + 1/2*A*a^5*x^2*sgn(b*x + a) + 1/168*(
B*a^8 - 4*A*a^7*b)*sgn(b*x + a)/b^3
```

maple [A] time = 0.05, size = 140, normalized size = 1.16

$$\frac{(21B\,b^5x^6+24x^5A\,b^5+120x^5Ba\,b^4+140x^4Aa\,b^4+280x^4B\,a^2b^3+336A\,a^2b^3x^3+336B\,a^3b^2x^3+420x^2A\,a^3b^2+}{168\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/168*x^2*(21*B*b^5*x^6+24*A*b^5*x^5+120*B*a*b^4*x^5+140*A*a*b^4*x^4+280*B*
a^2*b^3*x^4+336*A*a^2*b^3*x^3+336*B*a^3*b^2*x^3+420*A*a^3*b^2*x^2+210*B*a^4
*b*x^2+280*A*a^4*b*x+56*B*a^5*x+84*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.68, size = 183, normalized size = 1.51

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2x}{6\,b^2}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aax}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3}{6\,b^3}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa^2}{6\,b^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3/b^3 - 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a^2/b^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*B*x/b^2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a/b^3 + 1/7*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\,(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.689 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

```
[Out] 1/6*(A*b-B*a)*(b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/b^2+1/7*B*(b^2*x^2+2*a*b*
x+a^2)^(7/2)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(6*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(7/2))/(7*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}+\frac{\left(2Ab^2-2abB\right)\int\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 121, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\left(21a^5(2A+Bx)+35a^4bx(3A+2Bx)+35a^3b^2x^2(4A+3Bx)+21a^2b^3x^3(5A+4Bx)+7ab^4x^4(6A+\right.}{42(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^5*(2*A + B*x) + 35*a^4*b*x*(3*A + 2*B*x) + 35*a^
3*b^2*x^2*(4*A + 3*B*x) + 21*a^2*b^3*x^3*(5*A + 4*B*x) + 7*a*b^4*x^4*(6*A +
 5*B*x) + b^5*x^5*(7*A + 6*B*x)))/(42*(a + b*x))
```

fricas [A] time = 0.87, size = 115, normalized size = 1.67

$$\frac{1}{7}Bb^5x^7+Aa^5x+\frac{1}{6}\left(5\,Bab^4+Ab^5\right)x^6+\left(2\,Ba^2b^3+Aab^4\right)x^5+\frac{5}{2}\left(Ba^3b^2+Aa^2b^3\right)x^4+\frac{5}{3}\left(Ba^4b+2\,Aa^3b^2\right)x^3+\frac{1}{2}($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^5*x^7 + A*a^5*x + 1/6*(5*B*a*b^4 + A*b^5)*x^6 + (2*B*a^2*b^3 + A*a*
b^4)*x^5 + 5/2*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 5/3*(B*a^4*b + 2*A*a^3*b^2)*x^
3 + 1/2*(B*a^5 + 5*A*a^4*b)*x^2
```

giac [B] time = 0.20, size = 217, normalized size = 3.14

$$\frac{1}{7}Bb^5x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}Bab^4x^6\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}Ab^5x^6\mathrm{sgn}\left(bx+a\right)+2\,Ba^2b^3x^5\mathrm{sgn}\left(bx+a\right)+Aab^4x^5\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^5*x^7*sgn(b*x + a) + 5/6*B*a*b^4*x^6*sgn(b*x + a) + 1/6*A*b^5*x^6*s
gn(b*x + a) + 2*B*a^2*b^3*x^5*sgn(b*x + a) + A*a*b^4*x^5*sgn(b*x + a) + 5/2
*B*a^3*b^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*x^4*sgn(b*x + a) + 5/3*B*a^4*b*
x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*x^3*sgn(b*x + a) + 1/2*B*a^5*x^2*sgn(b*x
+ a) + 5/2*A*a^4*b*x^2*sgn(b*x + a) + A*a^5*x*sgn(b*x + a) - 1/42*(B*a^7 -
7*A*a^6*b)*sgn(b*x + a)/b^2
```

maple [B] time = 0.05, size = 138, normalized size = 2.00

$$\frac{(6B\,b^5x^6+7x^5A\,b^5+35x^5Ba\,b^4+42x^4Aa\,b^4+84x^4B\,a^2b^3+105A\,a^2b^3x^3+105B\,a^3b^2x^3+140x^2A\,a^3b^2+70}{42\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/42*x*(6*B*b^5*x^6+7*A*b^5*x^5+35*B*a*b^4*x^5+42*A*a*b^4*x^4+84*B*a^2*b^3*
x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+140*A*a^3*b^2*x^2+70*B*a^4*b*x^2+10
5*A*a^4*b*x+21*B*a^5*x+42*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.52, size = 125, normalized size = 1.81

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ax-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bax}{6\,b}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa}{6\,b}+\frac{(b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a*x/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2/b^2 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A*a/b + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.690 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=262

$$\frac{Ab^5x^5\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{5aAb^4x^4\sqrt{a^2+2abx+b^2x^2}}{4(a+bx)}+\frac{10a^2Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{B(a+bx)^5\sqrt{a^2+2a}}{6b}$$

```
[Out] 5*a^4*A*b*x*((b*x+a)^2)^(1/2)/(b*x+a)+5*a^3*A*b^2*x^2*((b*x+a)^2)^(1/2)/(b*
x+a)+10/3*a^2*A*b^3*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+5/4*a*A*b^4*x^4*((b*x+a)^
2)^(1/2)/(b*x+a)+1/5*A*b^5*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+1/6*B*(b*x+a)^5*((
b*x+a)^2)^(1/2)/b+a^5*A*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 80, 43}

$$\frac{5a^4Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{5a^3Ab^2x^2\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{10a^2Ab^3x^3\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{5aAb^4x^4\sqrt{a^2+2}}{4(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x,x]
```

```
[Out] (5*a^4*A*b*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a^3*A*b^2*x^2*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a^2*A*b^3*x^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(3*(a + b*x)) + (5*a*A*b^4*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(4*(a + b*x)) + (A*b^5*x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) +
 (B*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b) + (a^5*A*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^5}{x}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{B(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b} + \frac{\left(A\sqrt{a^2+2abx+b^2x^2}\right)\int\left(5a^4b^6+\frac{a^5b^5}{x}\right.}{b^4\left(\right.}$$

$$= \frac{5a^4Abx\sqrt{a^2+2abx+b^2x^2}}{a+bx} + \frac{5a^3Ab^2x^2\sqrt{a^2+2abx+b^2x^2}}{a+bx} + \frac{10a^2Ab^3x}{}$$

Mathematica [**A**] time = 0.06, size = 122, normalized size = 0.47

$$\frac{\sqrt{(a+bx)^2}\left(60a^5A\log(x)+x\left(60a^5B+150a^4b(2A+Bx)+100a^3b^2x(3A+2Bx)+50a^2b^3x^2(4A+3Bx)+15ab\right.\right.}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(x*(60*a^5*B + 150*a^4*b*(2*A + B*x) + 100*a^3*b^2*x*(3*
A + 2*B*x) + 50*a^2*b^3*x^2*(4*A + 3*B*x) + 15*a*b^4*x^3*(5*A + 4*B*x) + 2*
b^5*x^4*(6*A + 5*B*x)) + 60*a^5*A*Log[x]))/(60*(a + b*x))
```

fricas [**A**] time = 0.95, size = 114, normalized size = 0.44

$$\frac{1}{6}Bb^5x^6+Aa^5\log(x)+\frac{1}{5}\left(5Bab^4+Ab^5\right)x^5+\frac{5}{4}\left(2Ba^2b^3+Aab^4\right)x^4+\frac{10}{3}\left(Ba^3b^2+Aa^2b^3\right)x^3+\frac{5}{2}\left(Ba^4b+2Aa^3b^2\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] 1/6*B*b^5*x^6 + A*a^5*log(x) + 1/5*(5*B*a*b^4 + A*b^5)*x^5 + 5/4*(2*B*a^2*b
^3 + A*a*b^4)*x^4 + 10/3*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 5/2*(B*a^4*b + 2*A*a
^3*b^2)*x^2 + (B*a^5 + 5*A*a^4*b)*x
```

giac [**A**] time = 0.21, size = 190, normalized size = 0.73

$$\frac{1}{6}Bb^5x^6\operatorname{sgn}(bx+a)+Bab^4x^5\operatorname{sgn}(bx+a)+\frac{1}{5}Ab^5x^5\operatorname{sgn}(bx+a)+\frac{5}{2}Ba^2b^3x^4\operatorname{sgn}(bx+a)+\frac{5}{4}Aab^4x^4\operatorname{sgn}(bx+a)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="giac")
```

```
[Out] 1/6*B*b^5*x^6*sgn(b*x + a) + B*a*b^4*x^5*sgn(b*x + a) + 1/5*A*b^5*x^5*sgn(b
*x + a) + 5/2*B*a^2*b^3*x^4*sgn(b*x + a) + 5/4*A*a*b^4*x^4*sgn(b*x + a) + 1
0/3*B*a^3*b^2*x^3*sgn(b*x + a) + 10/3*A*a^2*b^3*x^3*sgn(b*x + a) + 5/2*B*a^
4*b*x^2*sgn(b*x + a) + 5*A*a^3*b^2*x^2*sgn(b*x + a) + B*a^5*x*sgn(b*x + a)
+ 5*A*a^4*b*x*sgn(b*x + a) + A*a^5*log(abs(x))*sgn(b*x + a)
```

maple [**A**] time = 0.06, size = 139, normalized size = 0.53

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(10Bb^5x^6+12Ab^5x^5+60Bab^4x^5+75Aab^4x^4+150Ba^2b^3x^4+200Aa^2b^3x^3+200Ba^3b^2x^3+300\right.}{60\,(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(10*B*b^5*x^6+12*x^5*A*b^5+60*x^5*B*a*b^4+75*x^4*A*a
*b^4+150*x^4*B*a^2*b^3+200*A*a^2*b^3*x^3+200*B*a^3*b^2*x^3+300*x^2*A*a^3*b^
2+150*x^2*B*a^4*b+60*A*a^5*ln(x)+300*x*A*a^4*b+60*x*B*a^5)/(b*x+a)^5
```

maxima [A] time = 0.53, size = 236, normalized size = 0.90

$$(-1)^{2\,b^2x+2\,ab}\,Aa^5\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Aa^5\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)+\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Aa^3bx+\frac{3}{2}\,\sqrt{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*A*a^5*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
A*a^5*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*a^3*b*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^4 + 1/4*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*a*b*x + 7/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a^2 + 1/6
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*x + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
A + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a/b
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x, x)
```

3.691 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=294

$$\frac{5a^2b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4(a+bx)}+\frac{5ab^3x^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+A}{3(a+bx)}$$

```
[Out] -a^5*A*((b*x+a)^2)^(1/2)/x/(b*x+a)+5*a^3*b*(2*A*b+B*a)*x*((b*x+a)^2)^(1/2)/
(b*x+a)+5*a^2*b^2*(A*b+B*a)*x^2*((b*x+a)^2)^(1/2)/(b*x+a)+5/3*a*b^3*(A*b+2*
B*a)*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+1/4*b^4*(A*b+5*B*a)*x^4*((b*x+a)^2)^(1/2
)/(b*x+a)+1/5*b^5*B*x^5*((b*x+a)^2)^(1/2)/(b*x+a)+a^4*(5*A*b+B*a)*ln(x)*((b
*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 294, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$\frac{5a^3bx\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}+\frac{5a^2b^2x^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{5ab^3x^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^2,x]
```

```
[Out] -((a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x))) + (5*a^3*b*(2*A*b +
a*B)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a^2*b^2*(A*b + a*B)*x^
2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(4*(a + b*x)) + (b^5*B*x^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(5*(a + b*x)) + (a^4*(5*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(5a^3b^6(2Ab+aB)+\frac{a^5Ab^5}{x^2}+\frac{a^4b^5(5Ab+aB)}{x}+10a^2}{b^4\left(ab+\right.}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}+\frac{5a^3b(2Ab+aB)x\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{5}{}$$

Mathematica [**A**] time = 0.05, size = 128, normalized size = 0.44

$$\frac{\sqrt{(a+bx)^2}\,\left(-60a^5A+60a^4x\log(x)(aB+5Ab)+300a^4bBx^2+300a^3b^2x^2(2A+Bx)+100a^2b^3x^3(3A+2Bx)\right.}{60x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^5*A + 300*a^4*b*B*x^2 + 300*a^3*b^2*x^2*(2*A + B*
x) + 100*a^2*b^3*x^3*(3*A + 2*B*x) + 25*a*b^4*x^4*(4*A + 3*B*x) + 3*b^5*x^5
*(5*A + 4*B*x) + 60*a^4*(5*A*b + a*B)*x*Log[x]))/(60*x*(a + b*x))
```

fricas [**A**] time = 0.98, size = 121, normalized size = 0.41

$$\frac{12\,Bb^5x^6-60\,Aa^5+15\left(5\,Bab^4+Ab^5\right)x^5+100\left(2\,Ba^2b^3+Aab^4\right)x^4+300\left(Ba^3b^2+Aa^2b^3\right)x^3+300\left(Ba^4b+\right.}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^5*x^6 - 60*A*a^5 + 15*(5*B*a*b^4 + A*b^5)*x^5 + 100*(2*B*a^2*b
^3 + A*a*b^4)*x^4 + 300*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 300*(B*a^4*b + 2*A*a^
3*b^2)*x^2 + 60*(B*a^5 + 5*A*a^4*b)*x*log(x))/x
```

giac [**A**] time = 0.22, size = 191, normalized size = 0.65

$$\frac{1}{5}\,Bb^5x^5\mathrm{sgn}\,(bx+a)+\frac{5}{4}\,Bab^4x^4\mathrm{sgn}\,(bx+a)+\frac{1}{4}\,Ab^5x^4\mathrm{sgn}\,(bx+a)+\frac{10}{3}\,Ba^2b^3x^3\mathrm{sgn}\,(bx+a)+\frac{5}{3}\,Aab^4x^3\mathrm{sgn}\,(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] 1/5*B*b^5*x^5*sgn(b*x + a) + 5/4*B*a*b^4*x^4*sgn(b*x + a) + 1/4*A*b^5*x^4*s
gn(b*x + a) + 10/3*B*a^2*b^3*x^3*sgn(b*x + a) + 5/3*A*a*b^4*x^3*sgn(b*x + a
) + 5*B*a^3*b^2*x^2*sgn(b*x + a) + 5*A*a^2*b^3*x^2*sgn(b*x + a) + 5*B*a^4*b
*x*sgn(b*x + a) + 10*A*a^3*b^2*x*sgn(b*x + a) - A*a^5*sgn(b*x + a)/x + (B*a
^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*log(abs(x))
```

maple [**A**] time = 0.06, size = 144, normalized size = 0.49

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(12B\,b^5x^6+15A\,b^5x^5+75Ba\,b^4x^5+100Aa\,b^4x^4+200B\,a^2b^3x^4+300A\,a^2b^3x^3+300B\,a^3b^2x^3+\right.}{60\,(bx+a)^5\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(12*B*b^5*x^6+15*A*b^5*x^5+75*B*a*b^4*x^5+100*A*a*b^
4*x^4+200*B*a^2*b^3*x^4+300*A*a^2*b^3*x^3+300*B*a^3*b^2*x^3+300*A*ln(x)*x*a
^4*b+600*A*a^3*b^2*x^2+60*B*ln(x)*x*a^5+300*B*a^4*b*x^2-60*A*a^5)/(b*x+a)^5
/x
```

maxima [A] time = 0.59, size = 386, normalized size = 1.31

$$(-1)^{2\,b^2x+2\,ab}\,Ba^5\log\left(2\,b^2x+2\,ab\right)+5\,(-1)^{2\,b^2x+2\,ab}\,Aa^4b\log\left(2\,b^2x+2\,ab\right)-(-1)^{2\,abx+2\,a^2}\,Ba^5\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*a^5*log(2*b^2*x + 2*a*b) + 5*(-1)^(2*b^2*x + 2*a*b
)*A*a^4*b*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*B*a^5*log(2*a*b*x/a
bs(x) + 2*a^2/abs(x)) - 5*(-1)^(2*a*b*x + 2*a^2)*A*a^4*b*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^3*b*x + 5/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*a^2*b^2*x + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a
^4 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^3*b + 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a*b*x + 5/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^2*x + 7/12*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2 + 35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*
A*a*b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B - (b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*A/x
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**2, x)
```

3.692 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=297

$$\frac{10a^2b^2x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^3\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}+\frac{5ab^3x^2\sqrt{a^2+2abx+b^2x^2}\,(2aB+$$

```
[Out] -1/2*a^5*A*((b*x+a)^2)^(1/2)/x^2/(b*x+a)-a^4*(5*A*b+B*a)*((b*x+a)^2)^(1/2)/
x/(b*x+a)+10*a^2*b^2*(A*b+B*a)*x*((b*x+a)^2)^(1/2)/(b*x+a)+5/2*a*b^3*(A*b+2
*B*a)*x^2*((b*x+a)^2)^(1/2)/(b*x+a)+1/3*b^4*(A*b+5*B*a)*x^3*((b*x+a)^2)^(1/
2)/(b*x+a)+1/4*b^5*B*x^4*((b*x+a)^2)^(1/2)/(b*x+a)+5*a^3*b*(2*A*b+B*a)*ln(x
)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{x(a+bx)}+\frac{10a^2b^2x\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{5ab^3x^2\sqrt{a^2+2abx+b^2x^2}\,(2aB+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^3,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)*x
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (5*a*b^3*(A*b + 2*a*B)*x^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^4*(A*b + 5*a*B)*x^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b^5*B*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(4*(a + b*x)) + (5*a^3*b*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(10a^2b^7(Ab+aB)+\frac{a^5Ab^5}{x^3}+\frac{a^4b^5(5Ab+aB)}{x^2}+\frac{5a^3b^6(2A}{x}\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)} - \frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)} + \frac{10a^2b^2(}{}$$

Mathematica [A] time = 0.06, size = 126, normalized size = 0.42

$$\frac{\sqrt{(a+bx)^2}\left(-6a^5(A+2Bx)-60a^4Abx+60a^3bx^2\log(x)(aB+2Ab)+120a^3b^2Bx^3+60a^2b^3x^3(2A+Bx)+10a\right.}{12x^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^4*A*b*x + 120*a^3*b^2*B*x^3 + 60*a^2*b^3*x^3*(2*A
 + B*x) - 6*a^5*(A + 2*B*x) + 10*a*b^4*x^4*(3*A + 2*B*x) + b^5*x^5*(4*A + 3
*B*x) + 60*a^3*b*(2*A*b + a*B)*x^2*Log[x]))/(12*x^2*(a + b*x))
```

fricas [A] time = 0.77, size = 121, normalized size = 0.41

$$\frac{3\,Bb^5x^6-6\,Aa^5+4\left(5\,Bab^4+Ab^5\right)x^5+30\left(2\,Ba^2b^3+Aab^4\right)x^4+120\left(Ba^3b^2+Aa^2b^3\right)x^3+60\left(Ba^4b+2\,Aa^3b^2\right)}{12\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*x^6 - 6*A*a^5 + 4*(5*B*a*b^4 + A*b^5)*x^5 + 30*(2*B*a^2*b^3 +
 A*a*b^4)*x^4 + 120*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 60*(B*a^4*b + 2*A*a^3*b^2
)*x^2*log(x) - 12*(B*a^5 + 5*A*a^4*b)*x)/x^2
```

giac [A] time = 0.17, size = 191, normalized size = 0.64

$$\frac{1}{4}\,Bb^5x^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,Bab^4x^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Ab^5x^3\mathrm{sgn}\left(bx+a\right)+5\,Ba^2b^3x^2\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,Aab^4x^2\mathrm{sgn}\left(bx+a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*B*b^5*x^4*sgn(b*x + a) + 5/3*B*a*b^4*x^3*sgn(b*x + a) + 1/3*A*b^5*x^3*s
gn(b*x + a) + 5*B*a^2*b^3*x^2*sgn(b*x + a) + 5/2*A*a*b^4*x^2*sgn(b*x + a) +
 10*B*a^3*b^2*x*sgn(b*x + a) + 10*A*a^2*b^3*x*sgn(b*x + a) + 5*(B*a^4*b*sgn
(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*log(abs(x)) - 1/2*(A*a^5*sgn(b*x + a)
 + 2*(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^2
```

maple [A] time = 0.07, size = 144, normalized size = 0.48

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}\left(3B\,b^5x^6+4A\,b^5x^5+20Ba\,b^4x^5+30Aa\,b^4x^4+60B\,a^2b^3x^4+120A\,a^3b^2x^2\ln(x)+120A\,a^2b^3x^3+6\right.}{12\left(bx+a\right)^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(3*B*b^5*x^6+4*A*b^5*x^5+20*B*a*b^4*x^5+30*A*a*b^4*x
^4+60*B*a^2*b^3*x^4+120*A*ln(x)*x^2*a^3*b^2+120*A*a^2*b^3*x^3+60*B*ln(x)*x^
2*a^4*b+120*B*a^3*b^2*x^3-60*A*a^4*b*x-12*B*a^5*x-6*A*a^5)/(b*x+a)^5/x^2
```

maxima [B] time = 0.58, size = 461, normalized size = 1.55

$$5\,(-1)^{2\,b^2x+2\,ab}\,Ba^4b\log\left(2\,b^2x+2\,ab\right)+10\,(-1)^{2\,b^2x+2\,ab}\,Aa^3b^2\log\left(2\,b^2x+2\,ab\right)-5\,(-1)^{2\,abx+2\,a^2}\,Ba^4b\log\left(\frac{2\,a}{|x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] 5*(-1)^(2*b^2*x + 2*a*b)*B*a^4*b*log(2*b^2*x + 2*a*b) + 10*(-1)^(2*b^2*x +
2*a*b)*A*a^3*b^2*log(2*b^2*x + 2*a*b) - 5*(-1)^(2*a*b*x + 2*a^2)*B*a^4*b*lo
g(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 10*(-1)^(2*a*b*x + 2*a^2)*A*a^3*b^2*log(
2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*b^
2*x + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b^3*x + 15/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*B*a^3*b + 15*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2*b^2 + 5/4*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*B*b^2*x + 5/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b
^3*x/a + 35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*b + 35/6*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*b^2 + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/a^2 - (b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/x - 3/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b
/(a*x) - 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^3} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**3, x)
```

3.693 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=297

$$\frac{10a^2b^2\log(x)\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{2(a+bx)}+\frac{5ab^3x\sqrt{a^2+2abx+b^2x^2}\,(2aB$$

```
[Out] -1/3*a^5*A*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-1/2*a^4*(5*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^2/(b*x+a)-5*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x/(b*x+a)+5*a*b^3*(A*
b+2*B*a)*x*((b*x+a)^2)^(1/2)/(b*x+a)+1/2*b^4*(A*b+5*B*a)*x^2*((b*x+a)^2)^(1
/2)/(b*x+a)+1/3*b^5*B*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+10*a^2*b^2*(A*b+B*a)*ln
(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{2x^2(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{x(a+bx)}+\frac{5ab^3x\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{a+bx}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^4,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*x*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^4*(A*b + 5*a*B)*x^2*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + (b^5*B*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(3*(a + b*x)) + (10*a^2*b^2*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^4}dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^4}dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(5ab^8(Ab+2aB)+\frac{a^5Ab^5}{x^4}+\frac{a^4b^5(5Ab+aB)}{x^3}+\frac{5a^3b^6(}{}\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{2x^2(a+bx)}-\frac{5a^3b(}{}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.43

$$\frac{\sqrt{(a+bx)^2}\left(-\left(a^5(2A+3Bx)\right)-15a^4bx(A+2Bx)-60a^3Ab^2x^2+60a^2b^2x^3\log(x)(aB+Ab)+60a^2b^3Bx^4+1\right.}{6x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^4,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-60*a^3*A*b^2*x^2 + 60*a^2*b^3*B*x^4 + 15*a*b^4*x^4*(2*
A + B*x) - 15*a^4*b*x*(A + 2*B*x) + b^5*x^5*(3*A + 2*B*x) - a^5*(2*A + 3*B*
x) + 60*a^2*b^2*(A*b + a*B)*x^3*Log[x]))/(6*x^3*(a + b*x))
```

fricas [A] time = 0.79, size = 121, normalized size = 0.41

$$\frac{2\,Bb^5x^6-2\,Aa^5+3\left(5\,Bab^4+Ab^5\right)x^5+30\left(2\,Ba^2b^3+Aab^4\right)x^4+60\left(Ba^3b^2+Aa^2b^3\right)x^3\log(x)-30\left(Ba^4b+\right.}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^5*x^6 - 2*A*a^5 + 3*(5*B*a*b^4 + A*b^5)*x^5 + 30*(2*B*a^2*b^3 +
A*a*b^4)*x^4 + 60*(B*a^3*b^2 + A*a^2*b^3)*x^3*log(x) - 30*(B*a^4*b + 2*A*a^
3*b^2)*x^2 - 3*(B*a^5 + 5*A*a^4*b)*x)/x^3
```

giac [A] time = 0.20, size = 190, normalized size = 0.64

$$\frac{1}{3}Bb^5x^3\mathrm{sgn}\,(bx+a)+\frac{5}{2}Bab^4x^2\mathrm{sgn}\,(bx+a)+\frac{1}{2}Ab^5x^2\mathrm{sgn}\,(bx+a)+10\,Ba^2b^3x\mathrm{sgn}\,(bx+a)+5\,Aab^4x\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/3*B*b^5*x^3*sgn(b*x + a) + 5/2*B*a*b^4*x^2*sgn(b*x + a) + 1/2*A*b^5*x^2*s
gn(b*x + a) + 10*B*a^2*b^3*x*sgn(b*x + a) + 5*A*a*b^4*x*sgn(b*x + a) + 10*(
B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a))*log(abs(x)) - 1/6*(2*A*a^5
*sgn(b*x + a) + 30*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 +
3*(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^3
```

maple [A] time = 0.06, size = 144, normalized size = 0.48

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(2B\,b^5x^6+3A\,b^5x^5+15Ba\,b^4x^5+60A\,a^2b^3x^3\ln(x)+30Aa\,b^4x^4+60B\,a^3b^2x^3\ln(x)+60B\,a^2b^3x\right.}{6\,(bx+a)^5\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(5/2)*(2*B*b^5*x^6+3*A*b^5*x^5+15*B*a*b^4*x^5+60*A*ln(x)*x^
3*a^2*b^3+30*A*a*b^4*x^4+60*B*ln(x)*x^3*a^3*b^2+60*B*a^2*b^3*x^4-60*A*a^3*b
^2*x^2-30*B*a^4*b*x^2-15*A*a^4*b*x-3*B*a^5*x-2*A*a^5)/(b*x+a)^5/x^3
```

maxima [B] time = 0.64, size = 557, normalized size = 1.88

$$10\,(-1)^{2\,b^2x+2\,ab}\,Ba^3b^2\log\left(2\,b^2x+2\,ab\right)+10\,(-1)^{2\,b^2x+2\,ab}\,Aa^2b^3\log\left(2\,b^2x+2\,ab\right)-10\,(-1)^{2\,abx+2\,a^2}\,Ba^3b^2\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] 10*(-1)^(2*b^2*x + 2*a*b)*B*a^3*b^2*log(2*b^2*x + 2*a*b) + 10*(-1)^(2*b^2*x
 + 2*a*b)*A*a^2*b^3*log(2*b^2*x + 2*a*b) - 10*(-1)^(2*a*b*x + 2*a^2)*B*a^3*
b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 10*(-1)^(2*a*b*x + 2*a^2)*A*a^2*b^
3*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*
b^3*x + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^4*x + 15*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*B*a^2*b^2 + 15*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*b^3 + 5/2*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*B*b^3*x/a + 5/2*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b
^4*x/a^2 + 35/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^2 + 35/6*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*A*b^3/a + 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^2/a^2 +
 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/a^3 - 3/2*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*B*b/(a*x) - 11/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^2/(a^2*x) -
1/2*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^2) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*A*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**4, x)
```

3.694 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=296

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x(a+bx)}+\frac{b^4x\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}+\frac{5ab^3\log(x)\sqrt{a^2+2abx+b^2x^2}\,(2$$

```
[Out] -1/4*a^5*A*((b*x+a)^2)^(1/2)/x^4/(b*x+a)-1/3*a^4*(5*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^3/(b*x+a)-5/2*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^2/(b*x+a)-10*a^2*
b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x/(b*x+a)+b^4*(A*b+5*B*a)*x*((b*x+a)^2)^(1/
2)/(b*x+a)+1/2*b^5*B*x^2*((b*x+a)^2)^(1/2)/(b*x+a)+5*a*b^3*(A*b+2*B*a)*ln(x
)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.13, antiderivative size = 296, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{3x^3(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{2x^2(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab}{x(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^5,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^2*(a + b*x)) - (10*a^2*b^2*(A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^4*(A*b + 5*a*B)*x*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (b^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(2*(a + b*x)) + (5*a*b^3*(A*b + 2*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*L
og[x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int\frac{\left(ab+b^2x\right)^5(A+Bx)}{x^5}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\Big(b^9(Ab+5aB)+\frac{a^5Ab^5}{x^5}+\frac{a^4b^5(5Ab+aB)}{x^4}+\frac{5a^3b^6(2Ab+a}{x^3}}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^3(a+bx)}-\frac{5a^3b(2A}{}$$

Mathematica [**A**] time = 0.04, size = 126, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\left(a^5(3A+4Bx)+10a^4bx(2A+3Bx)+60a^3b^2x^2(A+2Bx)+120a^2Ab^3x^3-60ab^3x^4\log(x)(2aB+\right.}{12x^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(120*a^2*A*b^3*x^3 - 60*a*b^4*B*x^5 - 6*b^5*x^5*(2
*A + B*x) + 60*a^3*b^2*x^2*(A + 2*B*x) + 10*a^4*b*x*(2*A + 3*B*x) + a^5*(3*
A + 4*B*x) - 60*a*b^3*(A*b + 2*a*B)*x^4*Log[x]))/(x^4*(a + b*x))
```

fricas [**A**] time = 0.88, size = 121, normalized size = 0.41

$$\frac{6\,Bb^5x^6-3\,Aa^5+12\left(5\,Bab^4+Ab^5\right)x^5+60\left(2\,Ba^2b^3+Aab^4\right)x^4\log(x)-120\left(Ba^3b^2+Aa^2b^3\right)x^3-30\left(Ba^4b+2\right.}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(6*B*b^5*x^6 - 3*A*a^5 + 12*(5*B*a*b^4 + A*b^5)*x^5 + 60*(2*B*a^2*b^3
+ A*a*b^4)*x^4*log(x) - 120*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 30*(B*a^4*b + 2*A
*a^3*b^2)*x^2 - 4*(B*a^5 + 5*A*a^4*b)*x)/x^4
```

giac [**A**] time = 0.17, size = 188, normalized size = 0.64

$$\frac{1}{2}\,Bb^5x^2\mathrm{sgn}\left(bx+a\right)+5\,Bab^4x\mathrm{sgn}\left(bx+a\right)+Ab^5x\mathrm{sgn}\left(bx+a\right)+5\left(2\,Ba^2b^3\mathrm{sgn}\left(bx+a\right)+Aab^4\mathrm{sgn}\left(bx+a\right)\right)\log\left(|\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/2*B*b^5*x^2*sgn(b*x + a) + 5*B*a*b^4*x*sgn(b*x + a) + A*b^5*x*sgn(b*x + a
) + 5*(2*B*a^2*b^3*sgn(b*x + a) + A*a*b^4*sgn(b*x + a))*log(abs(x)) - 1/12*
(3*A*a^5*sgn(b*x + a) + 120*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a
))*x^3 + 30*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 4*(B*a^
5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^4
```

maple [**A**] time = 0.36, size = 144, normalized size = 0.49

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}\left(6B\,b^5x^6+60Aa\,b^4x^4\ln(x)+12A\,b^5x^5+120B\,a^2b^3x^4\ln(x)+60Ba\,b^4x^5-120A\,a^2b^3x^3-120B\,a^3b^2\right.}{12\left(bx+a\right)^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(6*B*b^5*x^6+60*A*ln(x)*x^4*a*b^4+12*A*b^5*x^5+120*B
*ln(x)*x^4*a^2*b^3+60*B*a*b^4*x^5-120*A*a^2*b^3*x^3-120*B*a^3*b^2*x^3-60*A*
a^3*b^2*x^2-30*B*a^4*b*x^2-20*A*a^4*b*x-4*B*a^5*x-3*A*a^5)/(b*x+a)^5/x^4
```

maxima [B] time = 0.62, size = 615, normalized size = 2.08

$$10\,(-1)^{2\,b^2x+2\,ab}\,Ba^2b^3\log\bigl(2\,b^2x+2\,ab\bigr)+5\,(-1)^{2\,b^2x+2\,ab}\,Aab^4\log\bigl(2\,b^2x+2\,ab\bigr)-10\,(-1)^{2\,abx+2\,a^2}\,Ba^2b^3\log\Bigl($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] 10*(-1)^(2*b^2*x + 2*a*b)*B*a^2*b^3*log(2*b^2*x + 2*a*b) + 5*(-1)^(2*b^2*x
+ 2*a*b)*A*a*b^4*log(2*b^2*x + 2*a*b) - 10*(-1)^(2*a*b*x + 2*a^2)*B*a^2*b^3
*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) - 5*(-1)^(2*a*b*x + 2*a^2)*A*a*b^4*log(
2*a*b*x/abs(x) + 2*a^2/abs(x)) + 5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^4*x +
5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^5*x/a + 15*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*B*a*b^3 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^4 + 5/2*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*B*b^4*x/a^2 + 5/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^5*x
/a^3 + 35/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^3/a + 35/12*(b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*A*b^4/a^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^3/a^3
+ 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/a^4 - 11/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*b^2/(a^2*x) - 2/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^3/(a^3*
x) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^2) - 1/3*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A*b^2/(a^4*x^2) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(
a^2*x^3) + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^3) - 1/4*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**5, x)
```

3.695 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^6} \, dx$

Optimal. Leaf size=293

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^2(a+bx)}+\frac{b^4\log(x)\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{a+bx}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+}{x(a+bx)}$$

```
[Out] -1/5*a^5*A*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-1/4*a^4*(5*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^4/(b*x+a)-5/3*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-5*a^2*b
^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^2/(b*x+a)-5*a*b^3*(A*b+2*B*a)*((b*x+a)^2)^
(1/2)/x/(b*x+a)+b^5*B*x*((b*x+a)^2)^(1/2)/(b*x+a)+b^4*(A*b+5*B*a)*ln(x)*((b
*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{4x^4(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{3x^3(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^2(a+bx)}-5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^6,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^2*b^2*(A*b + a*B)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^2*(a + b*x)) - (5*a*b^3*(A*b + 2*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*x)) + (b^5*B*x*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(a + b*x) + (b^4*(A*b + 5*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[
x])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^6}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(b^{10}B+\frac{a^5Ab^5}{x^6}+\frac{a^4b^5(5Ab+aB)}{x^5}+\frac{5a^3b^6(2Ab+aB)}{x^4}+\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-$$

Mathematica [A] time = 0.06, size = 127, normalized size = 0.43

$$-\frac{\sqrt{(a+bx)^2}\,\left(3a^5(4A+5Bx)+25a^4bx(3A+4Bx)+100a^3b^2x^2(2A+3Bx)+300a^2b^3x^3(A+2Bx)-60b^4x^5\right.}{60x^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(300*a*A*b^4*x^4 - 60*b^5*B*x^6 + 300*a^2*b^3*x^3*
(A + 2*B*x) + 100*a^3*b^2*x^2*(2*A + 3*B*x) + 25*a^4*b*x*(3*A + 4*B*x) + 3*
a^5*(4*A + 5*B*x) - 60*b^4*(A*b + 5*a*B)*x^5*Log[x]))/(x^5*(a + b*x))
```

fricas [A] time = 0.91, size = 121, normalized size = 0.41

$$\frac{60\,Bb^5x^6+60\left(5\,Bab^4+Ab^5\right)x^5\log(x)-12\,Aa^5-300\left(2\,Ba^2b^3+Aab^4\right)x^4-300\left(Ba^3b^2+Aa^2b^3\right)x^3-100\left(\right.}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^5*x^6 + 60*(5*B*a*b^4 + A*b^5)*x^5*log(x) - 12*A*a^5 - 300*(2*
B*a^2*b^3 + A*a*b^4)*x^4 - 300*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 100*(B*a^4*b +
 2*A*a^3*b^2)*x^2 - 15*(B*a^5 + 5*A*a^4*b)*x)/x^5
```

giac [A] time = 0.19, size = 188, normalized size = 0.64

$$Bb^5x\,\mathrm{sgn}\left(bx+a\right)+\left(5\,Bab^4\mathrm{sgn}\left(bx+a\right)+Ab^5\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)-\frac{12\,Aa^5\mathrm{sgn}\left(bx+a\right)+300\left(2\,Ba^2b^3\mathrm{sgn}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] B*b^5*x*sgn(b*x + a) + (5*B*a*b^4*sgn(b*x + a) + A*b^5*sgn(b*x + a))*log(ab
s(x)) - 1/60*(12*A*a^5*sgn(b*x + a) + 300*(2*B*a^2*b^3*sgn(b*x + a) + A*a*b
^4*sgn(b*x + a))*x^4 + 300*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x + a)
)*x^3 + 100*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 15*(B*a
^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^5
```

maple [A] time = 0.07, size = 144, normalized size = 0.49

$$\frac{\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}\left(60A\,b^5x^5\ln(x)+300Ba\,b^4x^5\ln(x)+60B\,b^5x^6-300Aa\,b^4x^4-600B\,a^2b^3x^4-300A\,a^2b^3x^3-\right.}{60\left(bx+a\right)^5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(60*A*ln(x)*x^5*b^5+300*B*ln(x)*x^5*a*b^4+60*B*b^5*x
^6-300*A*a*b^4*x^4-600*B*a^2*b^3*x^4-300*A*a^2*b^3*x^3-300*B*a^3*b^2*x^3-20
0*A*a^3*b^2*x^2-100*B*a^4*b*x^2-75*A*a^4*b*x-15*B*a^5*x-12*A*a^5)/(b*x+a)^5
/x^5
```

maxima [B] time = 0.64, size = 673, normalized size = 2.30

$$5\,(-1)^{2\,b^{2}x+2\,ab}\,Bab^{4}\log\left(2\,b^{2}x+2\,ab\right)+(-1)^{2\,b^{2}x+2\,ab}\,Ab^{5}\log\left(2\,b^{2}x+2\,ab\right)-5\,(-1)^{2\,abx+2\,a^{2}}\,Bab^{4}\log\left(\frac{2\,abx}{|x|}+\frac{2\,a}{|x|}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] 5*(-1)^(2*b^2*x + 2*a*b)*B*a*b^4*log(2*b^2*x + 2*a*b) + (-1)^(2*b^2*x + 2*a
*b)*A*b^5*log(2*b^2*x + 2*a*b) - 5*(-1)^(2*a*b*x + 2*a^2)*B*a*b^4*log(2*a*b
*x/abs(x) + 2*a^2/abs(x)) - (-1)^(2*a*b*x + 2*a^2)*A*b^5*log(2*a*b*x/abs(x)
 + 2*a^2/abs(x)) + 5/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5*x/a + 1/2*sqrt(b
^2*x^2 + 2*a*b*x + a^2)*A*b^6*x/a^2 + 15/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*
b^4 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^5/a + 5/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*b^5*x/a^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*b^6*x/a^4 +
35/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b^4/a^2 + 7/12*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*A*b^5/a^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/a^4 - 2/1
5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/a^5 - 2/3*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*b^3/(a^3*x) - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^4/(a^4*x) -
1/3*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^2) + 2/15*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*A*b^3/(a^5*x^2) + 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/
(a^3*x^3) - 11/60*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^3) - 1/4*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^4) + 3/20*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*A*b/(a^3*x^4) - 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{5/2}}{x^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^{2}\right)^{\frac{5}{2}}}{x^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**6, x)
```

3.696 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=267

$$-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}+\frac{b^5B\log(x)\sqrt{a^2+2abx+b^2x^2}}{a+bx}-\frac{5ab^4B\sqrt{a^2+2abx+b^2x^2}}{x(a+bx)}-\frac{5a^2b^3B\sqrt{a^2+2a}}{x^2(a+b}$$

```
[Out] -1/5*a^5*B*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-5/4*a^4*b*B*((b*x+a)^2)^(1/2)/x^4/
(b*x+a)-10/3*a^3*b^2*B*((b*x+a)^2)^(1/2)/x^3/(b*x+a)-5*a^2*b^3*B*((b*x+a)^2
)^(1/2)/x^2/(b*x+a)-5*a*b^4*B*((b*x+a)^2)^(1/2)/x/(b*x+a)-1/6*A*(b*x+a)^5*(
(b*x+a)^2)^(1/2)/a/x^6+b^5*B*ln(x)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = {770, 78, 43}

$$-\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6}-\frac{a^5B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)}-\frac{5a^4bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)}-\frac{10a^3b^2B\sqrt{a^2+2abx+}}{3x^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^7,x]
```

```
[Out] -(a^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (5*a^4*b*B*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (10*a^3*b^2*B*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(3*x^3*(a + b*x)) - (5*a^2*b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(x^2*(a + b*x)) - (5*a*b^4*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x*(a + b*
x)) - (A*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*a*x^6) + (b^5*B*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]*Log[x])/(a + b*x)
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^7}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{\left(ab+b^2x\right)^5}{x^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6ax^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{a^5b^5}{x^6} + \frac{5a^4b}{x^5}\right.}{b^4\left(ab+\right.}$$

$$= -\frac{a^5B\sqrt{a^2+2abx+b^2x^2}}{5x^5(a+bx)} - \frac{5a^4bB\sqrt{a^2+2abx+b^2x^2}}{4x^4(a+bx)} - \frac{10a^3b^2B\sqrt{a^2+2}}{3x^3(a+}$$

Mathematica [A]   time = 0.05, size = 127, normalized size = 0.48

$$-\frac{\sqrt{(a+bx)^2}\left(2a^5(5A+6Bx)+15a^4bx(4A+5Bx)+50a^3b^2x^2(3A+4Bx)+100a^2b^3x^3(2A+3Bx)+150ab^4x^4(\right.}{60x^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(60*A*b^5*x^5 + 150*a*b^4*x^4*(A + 2*B*x) + 100*a^
2*b^3*x^3*(2*A + 3*B*x) + 50*a^3*b^2*x^2*(3*A + 4*B*x) + 15*a^4*b*x*(4*A +
5*B*x) + 2*a^5*(5*A + 6*B*x) - 60*b^5*B*x^6*Log[x]))/(x^6*(a + b*x))
```

fricas [A]   time = 0.87, size = 121, normalized size = 0.45

$$\frac{60\,Bb^5x^6\log(x) - 10\,Aa^5 - 60\left(5\,Bab^4 + Ab^5\right)x^5 - 150\left(2\,Ba^2b^3 + Aab^4\right)x^4 - 200\left(Ba^3b^2 + Aa^2b^3\right)x^3 - 75\left(Ba^4b\right.}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*b^5*x^6*log(x) - 10*A*a^5 - 60*(5*B*a*b^4 + A*b^5)*x^5 - 150*(2*
B*a^2*b^3 + A*a*b^4)*x^4 - 200*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 75*(B*a^4*b +
2*A*a^3*b^2)*x^2 - 12*(B*a^5 + 5*A*a^4*b)*x)/x^6
```

giac [A]   time = 0.17, size = 191, normalized size = 0.72

$$Bb^5\log(|x|)\,\mathrm{sgn}(bx+a) - \frac{10\,Aa^5\mathrm{sgn}(bx+a) + 60\left(5\,Bab^4\mathrm{sgn}(bx+a) + Ab^5\mathrm{sgn}(bx+a)\right)x^5 + 150\left(2\,Ba^2b^3\mathrm{sgn}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] B*b^5*log(abs(x))*sgn(b*x + a) - 1/60*(10*A*a^5*sgn(b*x + a) + 60*(5*B*a*b^
4*sgn(b*x + a) + A*b^5*sgn(b*x + a))*x^5 + 150*(2*B*a^2*b^3*sgn(b*x + a) +
A*a*b^4*sgn(b*x + a))*x^4 + 200*(B*a^3*b^2*sgn(b*x + a) + A*a^2*b^3*sgn(b*x
 + a))*x^3 + 75*(B*a^4*b*sgn(b*x + a) + 2*A*a^3*b^2*sgn(b*x + a))*x^2 + 12*
(B*a^5*sgn(b*x + a) + 5*A*a^4*b*sgn(b*x + a))*x)/x^6
```

maple [A]   time = 0.06, size = 142, normalized size = 0.53

$$-\frac{\left((bx+a)^2\right)^{\frac{5}{2}}\left(-60B\,b^5x^6\ln(x) + 60A\,b^5x^5 + 300Ba\,b^4x^5 + 150Aa\,b^4x^4 + 300B\,a^2b^3x^4 + 200A\,a^2b^3x^3 + 200B\,a^3\right.}{60\,(bx+a)^5\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x)
```

```
[Out] -1/60*((b*x+a)^2)^(5/2)*(-60*B*b^5*ln(x)*x^6+60*A*b^5*x^5+300*B*a*b^4*x^5+1
50*A*a*b^4*x^4+300*B*a^2*b^3*x^4+200*A*a^2*b^3*x^3+200*B*a^3*b^2*x^3+150*A*
a^3*b^2*x^2+75*B*a^4*b*x^2+60*A*a^4*b*x+12*B*a^5*x+10*A*a^5)/(b*x+a)^5/x^6
```

maxima [B] time = 0.57, size = 554, normalized size = 2.07

$$(-1)^{2b^2x+2ab}Bb^5\log\left(2b^2x+2ab\right)-(-1)^{2abx+2a^2}Bb^5\log\left(\frac{2abx}{|x|}+\frac{2a^2}{|x|}\right)+\frac{\sqrt{b^2x^2+2abx+a^2}\,Bb^6x}{2a^2}+\frac{3\sqrt{b^2x^2}}{\;}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] (-1)^(2*b^2*x + 2*a*b)*B*b^5*log(2*b^2*x + 2*a*b) - (-1)^(2*a*b*x + 2*a^2)*
B*b^5*log(2*a*b*x/abs(x) + 2*a^2/abs(x)) + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*B*b^6*x/a^2 + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b^5/a + 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*b^6*x/a^4 + 7/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*b
^5/a^3 - 2/15*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/a^5 + 1/6*(b^2*x^2 + 2*
a*b*x + a^2)^(5/2)*A*b^6/a^6 - 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^4/(a
^4*x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^5/(a^5*x) + 2/15*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*A*b^4/(a^6*x^2) - 11/60*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^3) +
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^3) + 3/20*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*b/(a^3*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(
a^4*x^4) - 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^5) + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A
/(a^2*x^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**7, x)
```

3.697 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=77

$$\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{6a^2x^6}-\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}$$

```
[Out] -1/7*A*(b^2*x^2+2*a*b*x+a^2)^(7/2)/a^2/x^7+1/6*(A*b-B*a)*(b*x+a)^5*((b*x+a)
^2)^(1/2)/a^2/x^6
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{6a^2x^6}-\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^8,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*a^2*x^6) - (A*(a
^2 + 2*a*b*x + b^2*x^2)^(7/2))/(7*a^2*x^7)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^8}\,dx = -\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7} - \frac{\left(2Ab^2-2abB\right)\int \frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^7}\,dx}{2ab}$$

$$= -\frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7} - \frac{\left(\left(2Ab^2-2abB\right)\sqrt{a^2+2abx+b^2x^2}\right)\int}{2ab^5\left(ab+b^2x\right)}$$

$$= \frac{(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6a^2x^6} - \frac{A\left(a^2+2abx+b^2x^2\right)^{7/2}}{7a^2x^7}$$

Mathematica [A] time = 0.04, size = 122, normalized size = 1.58

$$-\frac{\sqrt{(a+bx)^2}\left(a^5(6A+7Bx)+7a^4bx(5A+6Bx)+21a^3b^2x^2(4A+5Bx)+35a^2b^3x^3(3A+4Bx)+35ab^4x^4(2A\right.}{42x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^8,x]
```

```
[Out] -1/42*(Sqrt[(a + b*x)^2]*(21*b^5*x^5*(A + 2*B*x) + 35*a*b^4*x^4*(2*A + 3*B*
x) + 35*a^2*b^3*x^3*(3*A + 4*B*x) + 21*a^3*b^2*x^2*(4*A + 5*B*x) + 7*a^4*b*
x*(5*A + 6*B*x) + a^5*(6*A + 7*B*x)))/(x^7*(a + b*x))
```

fricas [A] time = 0.95, size = 119, normalized size = 1.55

$$-\frac{42\,Bb^5x^6+6\,Aa^5+21\left(5\,Bab^4+Ab^5\right)x^5+70\left(2\,Ba^2b^3+Aab^4\right)x^4+105\left(Ba^3b^2+Aa^2b^3\right)x^3+42\left(Ba^4b+2\right.}{42\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] -1/42*(42*B*b^5*x^6 + 6*A*a^5 + 21*(5*B*a*b^4 + A*b^5)*x^5 + 70*(2*B*a^2*b^
3 + A*a*b^4)*x^4 + 105*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 42*(B*a^4*b + 2*A*a^3*
b^2)*x^2 + 7*(B*a^5 + 5*A*a^4*b)*x)/x^7
```

giac [B] time = 0.22, size = 221, normalized size = 2.87

$$-\frac{\left(7\,Bab^6-Ab^7\right)\mathrm{sgn}\left(bx+a\right)}{42\,a^2}-\frac{42\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+105\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+21\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+140}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] -1/42*(7*B*a*b^6 - A*b^7)*sgn(b*x + a)/a^2 - 1/42*(42*B*b^5*x^6*sgn(b*x + a
) + 105*B*a*b^4*x^5*sgn(b*x + a) + 21*A*b^5*x^5*sgn(b*x + a) + 140*B*a^2*b^
3*x^4*sgn(b*x + a) + 70*A*a*b^4*x^4*sgn(b*x + a) + 105*B*a^3*b^2*x^3*sgn(b*
x + a) + 105*A*a^2*b^3*x^3*sgn(b*x + a) + 42*B*a^4*b*x^2*sgn(b*x + a) + 84*
A*a^3*b^2*x^2*sgn(b*x + a) + 7*B*a^5*x*sgn(b*x + a) + 35*A*a^4*b*x*sgn(b*x
+ a) + 6*A*a^5*sgn(b*x + a))/x^7
```

maple [B] time = 0.08, size = 140, normalized size = 1.82

$$-\frac{\left(42B\,b^5x^6+21A\,b^5x^5+105Ba\,b^4x^5+70Aa\,b^4x^4+140B\,a^2b^3x^4+105A\,a^2b^3x^3+105B\,a^3b^2x^3+84A\,a^3b^2x^2\right.}{42\left(bx+a\right)^5x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x)
```

```
[Out] -1/42*(42*B*b^5*x^6+21*A*b^5*x^5+105*B*a*b^4*x^5+70*A*a*b^4*x^4+140*B*a^2*b
^3*x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+84*A*a^3*b^2*x^2+42*B*a^4*b*x^2+
35*A*a^4*b*x+7*B*a^5*x+6*A*a^5)*((b*x+a)^2)^(5/2)/x^7/(b*x+a)^5
```

maxima [B] time = 0.58, size = 435, normalized size = 5.65

$$\frac{\left(b^{2} x^{2} + 2 \, a b x + a^{2}\right)^{\frac{5}{2}} B b^{6}}{6 \, a^{6}} - \frac{\left(b^{2} x^{2} + 2 \, a b x + a^{2}\right)^{\frac{5}{2}} A b^{7}}{6 \, a^{7}} + \frac{\left(b^{2} x^{2} + 2 \, a b x + a^{2}\right)^{\frac{5}{2}} B b^{5}}{6 \, a^{5} x} - \frac{\left(b^{2} x^{2} + 2 \, a b x + a^{2}\right)^{\frac{5}{2}} A b^{6}}{6 \, a^{6} x} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/a^6 - 1/6*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*b^7/a^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^5/(a^5*x) - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^6/(a^6*x) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^4/(a^6*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7
*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^3) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^3) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^2/(a^4*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^4) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^5) - 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*A*b^2/(a^4*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^
6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^6) - 1/7*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A/(a^2*x^7)
```

mupad [B] time = 1.33, size = 284, normalized size = 3.69

$$-\frac{\left(\frac{B\,a^5}{6}+\frac{5\,A\,b\,a^4}{6}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{2}+\frac{5\,B\,a\,b^4}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^2\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{7\,x^7\,\left(a+b\,x\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^8,x)
```

```
[Out] - (((B*a^5)/6 + (5*A*a^4*b)/6)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(a + b
*x)) - (((A*b^5)/2 + (5*B*a*b^4)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^2*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x*(a + b*x)) - (5*a*b^3*(A*b + 2*B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (a^3*b*(2*A*b + B*a)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x)) - (5*a^2*b^2*(A*b + B*a)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^4*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}{x^{8}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**8, x)
```

3.698 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=130

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{28a^2x^7}-\frac{A\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{8ax^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-}{168a^3x^6}$$

```
[Out] -1/8*A*(b*x+a)^5*((b*x+a)^2)^(1/2)/a/x^8+1/28*(A*b-4*B*a)*(b*x+a)^5*((b*x+a
)^2)^(1/2)/a^2/x^7-1/168*b*(A*b-4*B*a)*(b*x+a)^5*((b*x+a)^2)^(1/2)/a^3/x^6
```

Rubi [A] time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.138, Rules used = {770, 78, 45, 37}

$$-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{168a^3x^6}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-4aB)}{28a^2x^7}-\frac{A\sqrt{a^2+2abx+b^2x^2}\,(a}{8ax^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^9,x]
```

```
[Out] -(A*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*a*x^8) + ((A*b - 4*a*B)*(
a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(28*a^2*x^7) - (b*(A*b - 4*a*B)*(
a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(168*a^3*x^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^9}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{\left(\left(-2Ab^2+8abB\right)\sqrt{a^2+2abx+b^2x^2}}{8ab^5\left(ab+b^2x\right)}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{(Ab-4aB)(a+bx)^5\sqrt{a^2+2abx+b^2}}{28a^2x^7}$$

$$= -\frac{A(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8ax^8} + \frac{(Ab-4aB)(a+bx)^5\sqrt{a^2+2abx+b^2}}{28a^2x^7}$$

Mathematica [**A**] time = 0.04, size = 125, normalized size = 0.96

$$-\frac{\sqrt{(a+bx)^2}\left(3a^5(7A+8Bx)+20a^4bx(6A+7Bx)+56a^3b^2x^2(5A+6Bx)+84a^2b^3x^3(4A+5Bx)+70ab^4x^4(3A\right.}{168x^8(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/168*(Sqrt[(a + b*x)^2]*(28*b^5*x^5*(2*A + 3*B*x) + 70*a*b^4*x^4*(3*A + 4
*B*x) + 84*a^2*b^3*x^3*(4*A + 5*B*x) + 56*a^3*b^2*x^2*(5*A + 6*B*x) + 20*a^
4*b*x*(6*A + 7*B*x) + 3*a^5*(7*A + 8*B*x)))/(x^8*(a + b*x))
```

fricas [**A**] time = 0.72, size = 119, normalized size = 0.92

$$-\frac{84\,Bb^5x^6+21\,Aa^5+56\left(5\,Bab^4+Ab^5\right)x^5+210\left(2\,Ba^2b^3+Aab^4\right)x^4+336\left(Ba^3b^2+Aa^2b^3\right)x^3+140\left(Ba^4b+2\right.}{168\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] -1/168*(84*B*b^5*x^6 + 21*A*a^5 + 56*(5*B*a*b^4 + A*b^5)*x^5 + 210*(2*B*a^2
*b^3 + A*a*b^4)*x^4 + 336*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 140*(B*a^4*b + 2*A*
a^3*b^2)*x^2 + 24*(B*a^5 + 5*A*a^4*b)*x)/x^8
```

giac [**B**] time = 0.17, size = 221, normalized size = 1.70

$$\frac{\left(4\,Bab^7-Ab^8\right)\mathrm{sgn}\left(bx+a\right)}{168\,a^3} - \frac{84\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+280\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+56\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+420\,Ba^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 1/168*(4*B*a*b^7 - A*b^8)*sgn(b*x + a)/a^3 - 1/168*(84*B*b^5*x^6*sgn(b*x +
a) + 280*B*a*b^4*x^5*sgn(b*x + a) + 56*A*b^5*x^5*sgn(b*x + a) + 420*B*a^2*b
^3*x^4*sgn(b*x + a) + 210*A*a*b^4*x^4*sgn(b*x + a) + 336*B*a^3*b^2*x^3*sgn(
b*x + a) + 336*A*a^2*b^3*x^3*sgn(b*x + a) + 140*B*a^4*b*x^2*sgn(b*x + a) +
280*A*a^3*b^2*x^2*sgn(b*x + a) + 24*B*a^5*x*sgn(b*x + a) + 120*A*a^4*b*x*sg
n(b*x + a) + 21*A*a^5*sgn(b*x + a))/x^8
```

maple [**A**] time = 0.05, size = 140, normalized size = 1.08

$$-\frac{\left(84B\,b^5x^6+56A\,b^5x^5+280Ba\,b^4x^5+210Aa\,b^4x^4+420B\,a^2b^3x^4+336A\,a^2b^3x^3+336B\,a^3b^2x^3+280A\,a^3b^2x^2\right.}{168\,(bx+a)^5\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x)
```

```
[Out] -1/168*(84*B*b^5*x^6+56*A*b^5*x^5+280*B*a*b^4*x^5+210*A*a*b^4*x^4+420*B*a^2
*b^3*x^4+336*A*a^2*b^3*x^3+336*B*a^3*b^2*x^3+280*A*a^3*b^2*x^2+140*B*a^4*b*
x^2+120*A*a^4*b*x+24*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^8/(b*x+a)^5
```

maxima [B] time = 0.63, size = 495, normalized size = 3.81

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^7}{6\,a^7}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^8}{6\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^6}{6\,a^6x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^7}{6\,a^7x}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/a^7 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b^8/a^8 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^6/(a^6*x) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^7/(a^7*x) + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*B*b^5/(a^7*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^
8*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^3) + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^3) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*B*b^3/(a^5*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^4) -
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^5) + 1/6*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A*b^3/(a^5*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a
^3*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^6) - 1/7*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^7) + 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*A*b/(a^3*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^8)
```

mupad [B] time = 1.31, size = 284, normalized size = 2.18

$$-\frac{\left(\frac{B\,a^5}{7}+\frac{5\,A\,b\,a^4}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{3}+\frac{5\,B\,a\,b^4}{3}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^3\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{8\,x^8\,\left(a+b\,x\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^9,x)
```

```
[Out] - (((B*a^5)/7 + (5*A*a^4*b)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^7*(a + b
*x)) - (((A*b^5)/3 + (5*B*a*b^4)/3)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^3*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^2*(a + b*x)) - (5*a*b^3*(A*b + 2*
B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (5*a^3*b*(2*A*b +
 B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (2*a^2*b^2*(A*b
+ B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**9, x)
```

3.699 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=304

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^6(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{4x^4(a+bx)}-\frac{ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{x^5(a+bx)}-b^5$$

```
[Out] -1/9*a^5*A*((b*x+a)^2)^(1/2)/x^9/(b*x+a)-1/8*a^4*(5*A*b+B*a)*((b*x+a)^2)^(1
/2)/x^8/(b*x+a)-5/7*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^7/(b*x+a)-5/3*a^2
*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)-a*b^3*(A*b+2*B*a)*((b*x+a)^2)^
(1/2)/x^5/(b*x+a)-1/4*b^4*(A*b+5*B*a)*((b*x+a)^2)^(1/2)/x^4/(b*x+a)-1/3*b^5
*B*((b*x+a)^2)^(1/2)/x^3/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{8x^8(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{7x^7(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^6(a+bx)}-a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^10,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (a^4*(5*A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (5*a^3*b*(2*A*b + a*B
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (5*a^2*b^2*(A*b + a*B)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^6*(a + b*x)) - (a*b^3*(A*b + 2*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(x^5*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*x^4*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(3*x^3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{10}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(\frac{a^5Ab^5}{x^{10}}+\frac{a^4b^5(5Ab+aB)}{x^9}+\frac{5a^3b^6(2Ab+aB)}{x^8}+\frac{10a^2b^7(Ab+}{x^7}}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{8x^8(a+bx)}-\frac{5a^3b(}{}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\,\big(7a^5(8A+9Bx)+45a^4bx(7A+8Bx)+120a^3b^2x^2(6A+7Bx)+168a^2b^3x^3(5A+6Bx)+126ab^4}{504x^9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^10,x]
```

```
[Out] -1/504*(Sqrt[(a + b*x)^2]*(42*b^5*x^5*(3*A + 4*B*x) + 126*a*b^4*x^4*(4*A +
5*B*x) + 168*a^2*b^3*x^3*(5*A + 6*B*x) + 120*a^3*b^2*x^2*(6*A + 7*B*x) + 45
*a^4*b*x*(7*A + 8*B*x) + 7*a^5*(8*A + 9*B*x)))/(x^9*(a + b*x))
```

fricas [A] time = 0.86, size = 119, normalized size = 0.39

$$-\frac{168\,Bb^5x^6+56\,Aa^5+126\left(5\,Bab^4+Ab^5\right)x^5+504\left(2\,Ba^2b^3+Aab^4\right)x^4+840\left(Ba^3b^2+Aa^2b^3\right)x^3+360\,\big(Ba^4}{504\,x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] -1/504*(168*B*b^5*x^6 + 56*A*a^5 + 126*(5*B*a*b^4 + A*b^5)*x^5 + 504*(2*B*a
^2*b^3 + A*a*b^4)*x^4 + 840*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 360*(B*a^4*b + 2*
A*a^3*b^2)*x^2 + 63*(B*a^5 + 5*A*a^4*b)*x)/x^9
```

giac [A] time = 0.17, size = 221, normalized size = 0.73

$$-\frac{\left(3\,Bab^8-Ab^9\right)\mathrm{sgn}\left(bx+a\right)}{504\,a^4}-\frac{168\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+630\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+126\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -1/504*(3*B*a*b^8 - A*b^9)*sgn(b*x + a)/a^4 - 1/504*(168*B*b^5*x^6*sgn(b*x
+ a) + 630*B*a*b^4*x^5*sgn(b*x + a) + 126*A*b^5*x^5*sgn(b*x + a) + 1008*B*a
^2*b^3*x^4*sgn(b*x + a) + 504*A*a*b^4*x^4*sgn(b*x + a) + 840*B*a^3*b^2*x^3*
sgn(b*x + a) + 840*A*a^2*b^3*x^3*sgn(b*x + a) + 360*B*a^4*b*x^2*sgn(b*x + a
) + 720*A*a^3*b^2*x^2*sgn(b*x + a) + 63*B*a^5*x*sgn(b*x + a) + 315*A*a^4*b*
x*sgn(b*x + a) + 56*A*a^5*sgn(b*x + a))/x^9
```

maple [A] time = 0.05, size = 140, normalized size = 0.46

$$-\frac{\big(168B\,b^5x^6+126A\,b^5x^5+630Ba\,b^4x^5+504Aa\,b^4x^4+1008B\,a^2b^3x^4+840A\,a^2b^3x^3+840B\,a^3b^2x^3+720A}{504\left(bx+a\right)^5x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x)
```

```
[Out] -1/504*(168*B*b^5*x^6+126*A*b^5*x^5+630*B*a*b^4*x^5+504*A*a*b^4*x^4+1008*B*
a^2*b^3*x^4+840*A*a^2*b^3*x^3+840*B*a^3*b^2*x^3+720*A*a^3*b^2*x^2+360*B*a^4
*b*x^2+315*A*a^4*b*x+63*B*a^5*x+56*A*a^5)*((b*x+a)^2)^(5/2)/x^9/(b*x+a)^5
```

maxima [B] time = 0.74, size = 555, normalized size = 1.83

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^8}{6\,a^8}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^9}{6\,a^9}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^7}{6\,a^7x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^8}{6\,a^8x}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^8/a^8 - 1/6*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*A*b^9/a^9 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^7/(a^7*x) - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^8/(a^8*x) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^3) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^3) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^4/(a^6*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^4) + 1
/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^5) - 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*A*b^4/(a^6*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(
a^4*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^6) + 9/56*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^7) - 83/504*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*A*b^2/(a^4*x^7) - 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^8) +
11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^8) - 1/9*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*A/(a^2*x^9)
```

mupad [B] time = 1.30, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{8}+\frac{5\,A\,b\,a^4}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{4}+\frac{5\,B\,a\,b^4}{4}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^4\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{9\,x^9\,\left(a+b\,x\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^10,x)
```

```
[Out] - (((B*a^5)/8 + (5*A*a^4*b)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^8*(a + b
*x)) - (((A*b^5)/4 + (5*B*a*b^4)/4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^4*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (B*
b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^3*(a + b*x)) - (a*b^3*(A*b + 2*B*
a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*x)) - (5*a^3*b*(2*A*b + B*a
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a^2*b^2*(A*b + B*
a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*x^6*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**10,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**10, x)
```

3.700 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{11}}\,dx$

Optimal. Leaf size=306

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7x^7(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5x^5(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab}{6x^6(a+bx)}$$

```
[Out] -1/10*a^5*A*((b*x+a)^2)^(1/2)/x^10/(b*x+a)-1/9*a^4*(5*A*b+B*a)*((b*x+a)^2)^
(1/2)/x^9/(b*x+a)-5/8*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-10/7*
a^2*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^7/(b*x+a)-5/6*a*b^3*(A*b+2*B*a)*((b*x
+a)^2)^(1/2)/x^6/(b*x+a)-1/5*b^4*(A*b+5*B*a)*((b*x+a)^2)^(1/2)/x^5/(b*x+a)-
1/4*b^5*B*((b*x+a)^2)^(1/2)/x^4/(b*x+a)
```

Rubi [A] time = 0.11, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{9x^9(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{8x^8(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab}{7x^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^11,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a^3*b*(2*A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (10*a^2*b^2*(A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (5*a*b^3*(A*b + 2*a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^5*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(4*x^4*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{11}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(\frac{a^5Ab^5}{x^{11}}+\frac{a^4b^5(5Ab+aB)}{x^{10}}+\frac{5a^3b^6(2Ab+aB)}{x^9}+\frac{10a^2b^7(Ab+aB)}{x^8}}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{9x^9(a+bx)}-5a^3b(2A$$

Mathematica [**A**] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\,\big(28a^5(9A+10Bx)+175a^4bx(8A+9Bx)+450a^3b^2x^2(7A+8Bx)+600a^2b^3x^3(6A+7Bx)+420ab}{2520x^{10}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(126*b^5*x^5*(4*A + 5*B*x) + 420*a*b^4*x^4*(5*A
+ 6*B*x) + 600*a^2*b^3*x^3*(6*A + 7*B*x) + 450*a^3*b^2*x^2*(7*A + 8*B*x) +
175*a^4*b*x*(8*A + 9*B*x) + 28*a^5*(9*A + 10*B*x)))/(x^10*(a + b*x))
```

fricas [**A**] time = 0.79, size = 119, normalized size = 0.39

$$-\frac{630\,Bb^5x^6+252\,Aa^5+504\left(5\,Bab^4+Ab^5\right)x^5+2100\left(2\,Ba^2b^3+Aab^4\right)x^4+3600\left(Ba^3b^2+Aa^2b^3\right)x^3+1575\,\big(B}{2520\,x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*b^5*x^6 + 252*A*a^5 + 504*(5*B*a*b^4 + A*b^5)*x^5 + 2100*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 3600*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 1575*(B*a^4*b
 + 2*A*a^3*b^2)*x^2 + 280*(B*a^5 + 5*A*a^4*b)*x)/x^10
```

giac [**A**] time = 0.22, size = 221, normalized size = 0.72

$$\frac{\left(5\,Bab^9-2\,Ab^{10}\right)\mathrm{sgn}\left(bx+a\right)}{2520\,a^5}-\frac{630\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+2520\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+504\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+42}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="giac")
```

```
[Out] 1/2520*(5*B*a*b^9 - 2*A*b^10)*sgn(b*x + a)/a^5 - 1/2520*(630*B*b^5*x^6*sgn(
b*x + a) + 2520*B*a*b^4*x^5*sgn(b*x + a) + 504*A*b^5*x^5*sgn(b*x + a) + 420
0*B*a^2*b^3*x^4*sgn(b*x + a) + 2100*A*a*b^4*x^4*sgn(b*x + a) + 3600*B*a^3*b
^2*x^3*sgn(b*x + a) + 3600*A*a^2*b^3*x^3*sgn(b*x + a) + 1575*B*a^4*b*x^2*sg
n(b*x + a) + 3150*A*a^3*b^2*x^2*sgn(b*x + a) + 280*B*a^5*x*sgn(b*x + a) + 1
400*A*a^4*b*x*sgn(b*x + a) + 252*A*a^5*sgn(b*x + a))/x^10
```

maple [**A**] time = 0.05, size = 140, normalized size = 0.46

$$-\frac{\big(630B\,b^5x^6+504A\,b^5x^5+2520Ba\,b^4x^5+2100Aa\,b^4x^4+4200B\,a^2b^3x^4+3600A\,a^2b^3x^3+3600B\,a^3b^2x^3+315}{2520\left(bx+a\right)^5x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x)
```

```
[Out] -1/2520*(630*B*b^5*x^6+504*A*b^5*x^5+2520*B*a*b^4*x^5+2100*A*a*b^4*x^4+4200
*B*a^2*b^3*x^4+3600*A*a^2*b^3*x^3+3600*B*a^3*b^2*x^3+3150*A*a^3*b^2*x^2+157
5*B*a^4*b*x^2+1400*A*a^4*b*x+280*B*a^5*x+252*A*a^5)*((b*x+a)^2)^(5/2)/x^10/
(b*x+a)^5
```

maxima [B] time = 0.66, size = 615, normalized size = 2.01

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^9}{6\,a^9}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{10}}{6\,a^{10}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^8}{6\,a^8x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^9}{6\,a^9x}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^11,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^9/a^9 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*A*b^10/a^10 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^8/(a^8*x) +
 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^9/(a^9*x) + 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*B*b^7/(a^9*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(
a^10*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^6/(a^8*x^3) + 1/6*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9*x^3) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*B*b^5/(a^7*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^4)
 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^5) + 1/6*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*A*b^5/(a^7*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b
^3/(a^5*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^6) - 83/504
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^7) + 209/1260*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*A*b^3/(a^5*x^7) + 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*
b/(a^3*x^8) - 29/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^8) - 1/9*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^9) + 13/90*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*A*b/(a^3*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^10)
```

mupad [B] time = 1.31, size = 283, normalized size = 0.92

$$-\frac{\left(\frac{B\,a^5}{9}+\frac{5\,A\,b\,a^4}{9}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^9\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{5}+B\,a\,b^4\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^5\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{10\,x^{10}\,\left(a+b\,x\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^11,x)
```

```
[Out] - (((B*a^5)/9 + (5*A*a^4*b)/9)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^9*(a + b
*x)) - (((A*b^5)/5 + B*a*b^4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^5*(a + b*
x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*x^10*(a + b*x)) - (B*b^5*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^4*(a + b*x)) - (5*a*b^3*(A*b + 2*B*a)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (5*a^3*b*(2*A*b + B*a
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (10*a^2*b^2*(A*b + B
*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**11,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**11, x)
```

3.701 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{12}}\,dx$

Optimal. Leaf size=306

$$-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^8(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{6x^6(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{7x^7(a+bx)}-b^5$$

```
[Out] -1/11*a^5*A*((b*x+a)^2)^(1/2)/x^11/(b*x+a)-1/10*a^4*(5*A*b+B*a)*((b*x+a)^2)
^(1/2)/x^10/(b*x+a)-5/9*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^9/(b*x+a)-5/4
*a^2*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-5/7*a*b^3*(A*b+2*B*a)*((b*
x+a)^2)^(1/2)/x^7/(b*x+a)-1/6*b^4*(A*b+5*B*a)*((b*x+a)^2)^(1/2)/x^6/(b*x+a)
-1/5*b^5*B*((b*x+a)^2)^(1/2)/x^5/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 76\}$

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{10x^{10}(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{9x^9(a+bx)}-\frac{5a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{4x^8(a+bx)}-5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^12,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*x^10*(a + b*x)) - (5*a^3*b*(2*A*b +
 a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*x^8*(a + b*x)) - (5*a*b^3*(A*b + 2*a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^4*(A*b + 5*a*B)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(6*x^6*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(5*x^5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{12}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(\frac{a^5Ab^5}{x^{12}} + \frac{a^4b^5(5Ab+aB)}{x^{11}} + \frac{5a^3b^6(2Ab+aB)}{x^{10}} + \frac{10a^2b^7(Ab+}{x^9}}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)} - \frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{10x^{10}(a+bx)} - \frac{5a^3b(}{}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\,\big(126a^5(10A+11Bx)+770a^4bx(9A+10Bx)+1925a^3b^2x^2(8A+9Bx)+2475a^2b^3x^3(7A+8Bx)}{13860x^{11}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^12,x]
```

```
[Out] -1/13860*(Sqrt[(a + b*x)^2]*(462*b^5*x^5*(5*A + 6*B*x) + 1650*a*b^4*x^4*(6*
A + 7*B*x) + 2475*a^2*b^3*x^3*(7*A + 8*B*x) + 1925*a^3*b^2*x^2*(8*A + 9*B*x
) + 770*a^4*b*x*(9*A + 10*B*x) + 126*a^5*(10*A + 11*B*x)))/(x^11*(a + b*x))
```

fricas [A] time = 0.71, size = 119, normalized size = 0.39

$$-\frac{2772\,Bb^5x^6+1260\,Aa^5+2310\left(5\,Bab^4+Ab^5\right)x^5+9900\left(2\,Ba^2b^3+Aab^4\right)x^4+17325\left(Ba^3b^2+Aa^2b^3\right)x^3+}{13860\,x^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="fricas")
```

```
[Out] -1/13860*(2772*B*b^5*x^6 + 1260*A*a^5 + 2310*(5*B*a*b^4 + A*b^5)*x^5 + 9900
*(2*B*a^2*b^3 + A*a*b^4)*x^4 + 17325*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 7700*(B*
a^4*b + 2*A*a^3*b^2)*x^2 + 1386*(B*a^5 + 5*A*a^4*b)*x)/x^11
```

giac [A] time = 0.20, size = 221, normalized size = 0.72

$$-\frac{\left(11\,Bab^{10}-5\,Ab^{11}\right)\mathrm{sgn}\left(bx+a\right)}{13860\,a^6}-\frac{2772\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+11550\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+2310\,Ab^5x^5\mathrm{sgn}\left(bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="giac")
```

```
[Out] -1/13860*(11*B*a*b^10 - 5*A*b^11)*sgn(b*x + a)/a^6 - 1/13860*(2772*B*b^5*x^
6*sgn(b*x + a) + 11550*B*a*b^4*x^5*sgn(b*x + a) + 2310*A*b^5*x^5*sgn(b*x +
a) + 19800*B*a^2*b^3*x^4*sgn(b*x + a) + 9900*A*a*b^4*x^4*sgn(b*x + a) + 173
25*B*a^3*b^2*x^3*sgn(b*x + a) + 17325*A*a^2*b^3*x^3*sgn(b*x + a) + 7700*B*a
^4*b*x^2*sgn(b*x + a) + 15400*A*a^3*b^2*x^2*sgn(b*x + a) + 1386*B*a^5*x*sgn
(b*x + a) + 6930*A*a^4*b*x*sgn(b*x + a) + 1260*A*a^5*sgn(b*x + a))/x^11
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\big(2772B\,b^5x^6+2310A\,b^5x^5+11550Ba\,b^4x^5+9900Aa\,b^4x^4+19800B\,a^2b^3x^4+17325A\,a^2b^3x^3+17325B\,a^3b}{13860\left(bx+a\right)^5x^{1}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x)
```

```
[Out] -1/13860*(2772*B*b^5*x^6+2310*A*b^5*x^5+11550*B*a*b^4*x^5+9900*A*a*b^4*x^4+
19800*B*a^2*b^3*x^4+17325*A*a^2*b^3*x^3+17325*B*a^3*b^2*x^3+15400*A*a^3*b^2
*x^2+7700*B*a^4*b*x^2+6930*A*a^4*b*x+1386*B*a^5*x+1260*A*a^5)*((b*x+a)^2)^(
5/2)/x^11/(b*x+a)^5
```

maxima [B] time = 0.74, size = 675, normalized size = 2.21

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{10}}{6\,a^{10}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{11}}{6\,a^{11}}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{9}}{6\,a^{9}x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{10}}{6\,a^{10}x}-(b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^12,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^10/a^10 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*b^11/a^11 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^9/(a^9*x)
- 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^10/(a^10*x) - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*b^8/(a^10*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b
^9/(a^11*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^7/(a^9*x^3) - 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(a^10*x^3) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^5) - 1/6*(b^2*x^2
+ 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^5) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2
)*B*b^4/(a^6*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^6) + 2
09/1260*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^7) - 461/2772*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^7) - 29/180*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*B*b^2/(a^4*x^8) + 65/396*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x
^8) + 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x^9) - 31/198*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^9) - 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*B/(a^2*x^10) + 3/22*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^10) - 1/
11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^11)
```

mupad [B] time = 1.39, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{10}+\frac{A\,b\,a^4}{2}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{10}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{6}+\frac{5\,B\,a\,b^4}{6}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^6\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{11\,x^{11}\,\left(a+b\,x\right)}-\frac{B\,b^5\,\sqrt{a}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^12,x)
```

```
[Out] - (((B*a^5)/10 + (A*a^4*b)/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a + b
*x)) - (((A*b^5)/6 + (5*B*a*b^4)/6)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^6*(
a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x)) - (
B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*x^5*(a + b*x)) - (5*a*b^3*(A*b +
2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a^3*b*(2*A*b
 + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (5*a^2*b^2*(A*
b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*x^8*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**12,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**12, x)
```

3.702 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{13}}\,dx$

Optimal. Leaf size=306

$$-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9x^9(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7x^7(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab}{8x^8(a+bx)}$$

```
[Out] -1/12*a^5*A*((b*x+a)^2)^(1/2)/x^12/(b*x+a)-1/11*a^4*(5*A*b+B*a)*((b*x+a)^2)
^(1/2)/x^11/(b*x+a)-1/2*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^10/(b*x+a)-10
/9*a^2*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^9/(b*x+a)-5/8*a*b^3*(A*b+2*B*a)*((
b*x+a)^2)^(1/2)/x^8/(b*x+a)-1/7*b^4*(A*b+5*B*a)*((b*x+a)^2)^(1/2)/x^7/(b*x+
a)-1/6*b^5*B*((b*x+a)^2)^(1/2)/x^6/(b*x+a)
```

Rubi [**A**] time = 0.11, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{11x^{11}(a+bx)}-\frac{a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{2x^{10}(a+bx)}-\frac{10a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9x^9(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^13,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*x^12*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^3*b*(2*A*b + a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*x^10*(a + b*x)) - (10*a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (5*a*b^3*(A*b + 2*a
*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^4*(A*b + 5*a*B)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^7*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(6*x^6*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{13}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{13}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{13}}+\frac{a^4b^5(5Ab+aB)}{x^{12}}+\frac{5a^3b^6(2Ab+aB)}{x^{11}}+\frac{10a^2b^7(Ab+aB)}{x^{10}}\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{12x^{12}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{11x^{11}(a+bx)}-\frac{a^3b(2Ab}{}$$

Mathematica [**A**] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(42a^5(11A+12Bx)+252a^4bx(10A+11Bx)+616a^3b^2x^2(9A+10Bx)+770a^2b^3x^3(8A+9Bx)+49\right.}{5544x^{12}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(132*b^5*x^5*(6*A + 7*B*x) + 495*a*b^4*x^4*(7*A
+ 8*B*x) + 770*a^2*b^3*x^3*(8*A + 9*B*x) + 616*a^3*b^2*x^2*(9*A + 10*B*x) +
 252*a^4*b*x*(10*A + 11*B*x) + 42*a^5*(11*A + 12*B*x)))/(x^12*(a + b*x))
```

fricas [**A**] time = 0.91, size = 119, normalized size = 0.39

$$-\frac{924\,Bb^5x^6+462\,Aa^5+792\left(5\,Bab^4+Ab^5\right)x^5+3465\left(2\,Ba^2b^3+Aab^4\right)x^4+6160\left(Ba^3b^2+Aa^2b^3\right)x^3+2772\left(B\right.}{5544\,x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="fricas")
```

```
[Out] -1/5544*(924*B*b^5*x^6 + 462*A*a^5 + 792*(5*B*a*b^4 + A*b^5)*x^5 + 3465*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 6160*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 2772*(B*a^4*b
 + 2*A*a^3*b^2)*x^2 + 504*(B*a^5 + 5*A*a^4*b)*x)/x^12
```

giac [**A**] time = 0.22, size = 221, normalized size = 0.72

$$\frac{\left(2\,Bab^{11}-Ab^{12}\right)\mathrm{sgn}\left(bx+a\right)}{5544\,a^7}-\frac{924\,Bb^5x^6\mathrm{sgn}\left(bx+a\right)+3960\,Bab^4x^5\mathrm{sgn}\left(bx+a\right)+792\,Ab^5x^5\mathrm{sgn}\left(bx+a\right)+69}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="giac")
```

```
[Out] 1/5544*(2*B*a*b^11 - A*b^12)*sgn(b*x + a)/a^7 - 1/5544*(924*B*b^5*x^6*sgn(b
*x + a) + 3960*B*a*b^4*x^5*sgn(b*x + a) + 792*A*b^5*x^5*sgn(b*x + a) + 6930
*B*a^2*b^3*x^4*sgn(b*x + a) + 3465*A*a*b^4*x^4*sgn(b*x + a) + 6160*B*a^3*b^
2*x^3*sgn(b*x + a) + 6160*A*a^2*b^3*x^3*sgn(b*x + a) + 2772*B*a^4*b*x^2*sgn
(b*x + a) + 5544*A*a^3*b^2*x^2*sgn(b*x + a) + 504*B*a^5*x*sgn(b*x + a) + 25
20*A*a^4*b*x*sgn(b*x + a) + 462*A*a^5*sgn(b*x + a))/x^12
```

maple [**A**] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\left(924B\,b^5x^6+792A\,b^5x^5+3960Ba\,b^4x^5+3465Aa\,b^4x^4+6930B\,a^2b^3x^4+6160A\,a^2b^3x^3+6160B\,a^3b^2x^3+554\right.}{5544\left(bx+a\right)^5x^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x)
```

```
[Out] -1/5544*(924*B*b^5*x^6+792*A*b^5*x^5+3960*B*a*b^4*x^5+3465*A*a*b^4*x^4+6930
*B*a^2*b^3*x^4+6160*A*a^2*b^3*x^3+6160*B*a^3*b^2*x^3+5544*A*a^3*b^2*x^2+277
2*B*a^4*b*x^2+2520*A*a^4*b*x+504*B*a^5*x+462*A*a^5)*((b*x+a)^2)^(5/2)/x^12/
(b*x+a)^5
```

maxima [B] time = 0.83, size = 735, normalized size = 2.40

$$-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{11}}{6\,a^{11}}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{12}}{6\,a^{12}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{10}}{6\,a^{10}x}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{11}}{6\,a^{11}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^13,x, algorithm="maxima")
```

```
[Out] -1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^11/a^11 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*A*b^12/a^12 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^10/(a^10*
x) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^11/(a^11*x) + 1/6*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*B*b^9/(a^11*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
A*b^10/(a^12*x^2) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^8/(a^10*x^3) +
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^9/(a^11*x^3) + 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*b^7/(a^9*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8
/(a^10*x^4) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^6/(a^8*x^5) + 1/6*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9*x^5) + 1/6*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*B*b^5/(a^7*x^6) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^
6) - 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^4/(a^6*x^7) + 923/5544*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^5/(a^7*x^7) + 65/396*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*B*b^3/(a^5*x^8) - 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4
/(a^6*x^8) - 31/198*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^9) + 16/99
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^3/(a^5*x^9) + 3/22*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*B*b/(a^3*x^10) - 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a
^4*x^10) - 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^11) + 17/132*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*A*b/(a^3*x^11) - 1/12*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*A/(a^2*x^12)
```

mupad [B] time = 2.19, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{11}+\frac{5\,A\,b\,a^4}{11}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{11}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{7}+\frac{5\,B\,a\,b^4}{7}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^7\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{12\,x^{12}\,\left(a+b\,x\right)}-B\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^13,x)
```

```
[Out] - (((B*a^5)/11 + (5*A*a^4*b)/11)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^11*(a
+ b*x)) - (((A*b^5)/7 + (5*B*a*b^4)/7)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
7*(a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(12*x^12*(a + b*x))
- (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*x^6*(a + b*x)) - (5*a*b^3*(A*b
 + 2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*x^8*(a + b*x)) - (a^3*b*(2*A*
b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*x^10*(a + b*x)) - (10*a^2*b^2*
(A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**13,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**13, x)
```

3.703 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{14}}\,dx$

Optimal. Leaf size=304

$$-\frac{a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{10}(a+bx)}-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{8x^8(a+bx)}-\frac{5ab^3\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9x^9(a+bx)}-b^5$$

```
[Out] -1/13*a^5*A*((b*x+a)^2)^(1/2)/x^13/(b*x+a)-1/12*a^4*(5*A*b+B*a)*((b*x+a)^2)
^(1/2)/x^12/(b*x+a)-5/11*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^11/(b*x+a)-a
^2*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^10/(b*x+a)-5/9*a*b^3*(A*b+2*B*a)*((b*x
+a)^2)^(1/2)/x^9/(b*x+a)-1/8*b^4*(A*b+5*B*a)*((b*x+a)^2)^(1/2)/x^8/(b*x+a)-
1/7*b^5*B*((b*x+a)^2)^(1/2)/x^7/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 76}

$$-\frac{a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{12x^{12}(a+bx)}-\frac{5a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{11x^{11}(a+bx)}-\frac{a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{10}(a+bx)}-5a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^14,x]
```

```
[Out] -(a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*x^13*(a + b*x)) - (a^4*(5*A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*x^12*(a + b*x)) - (5*a^3*b*(2*A*b +
 a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*x^11*(a + b*x)) - (a^2*b^2*(A*b +
a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^10*(a + b*x)) - (5*a*b^3*(A*b + 2*a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*x^9*(a + b*x)) - (b^4*(A*b + 5*a*B)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(8*x^8*(a + b*x)) - (b^5*B*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(7*x^7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{14}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{14}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{x^{14}}+\frac{a^4b^5(5Ab+aB)}{x^{13}}+\frac{5a^3b^6(2Ab+aB)}{x^{12}}+\frac{10a^2b^7(Ab+}{x^{11}}\right.}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{a^5A\sqrt{a^2+2abx+b^2x^2}}{13x^{13}(a+bx)}-\frac{a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{12x^{12}(a+bx)}-\frac{5a^3b(}{}$$

Mathematica [A] time = 0.04, size = 125, normalized size = 0.41

$$-\frac{\sqrt{(a+bx)^2}\left(462a^5(12A+13Bx)+2730a^4bx(11A+12Bx)+6552a^3b^2x^2(10A+11Bx)+8008a^2b^3x^3(9A+\right.}{72072x^{13}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^14,x]
```

```
[Out] -1/72072*(Sqrt[(a + b*x)^2]*(1287*b^5*x^5*(7*A + 8*B*x) + 5005*a*b^4*x^4*(8
*A + 9*B*x) + 8008*a^2*b^3*x^3*(9*A + 10*B*x) + 6552*a^3*b^2*x^2*(10*A + 11
*B*x) + 2730*a^4*b*x*(11*A + 12*B*x) + 462*a^5*(12*A + 13*B*x)))/(x^13*(a +
 b*x))
```

fricas [A] time = 0.64, size = 119, normalized size = 0.39

$$-\frac{10296\,Bb^5x^6+5544\,Aa^5+9009\left(5\,Bab^4+Ab^5\right)x^5+40040\left(2\,Ba^2b^3+Aab^4\right)x^4+72072\left(Ba^3b^2+Aa^2b^3\right)x^3}{72072\,x^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="fricas")
```

```
[Out] -1/72072*(10296*B*b^5*x^6 + 5544*A*a^5 + 9009*(5*B*a*b^4 + A*b^5)*x^5 + 400
40*(2*B*a^2*b^3 + A*a*b^4)*x^4 + 72072*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 32760*
(B*a^4*b + 2*A*a^3*b^2)*x^2 + 6006*(B*a^5 + 5*A*a^4*b)*x)/x^13
```

giac [A] time = 0.20, size = 221, normalized size = 0.73

$$-\frac{\left(13\,Bab^{12}-7\,Ab^{13}\right)\operatorname{sgn}\left(bx+a\right)}{72072\,a^8}-\frac{10296\,Bb^5x^6\operatorname{sgn}\left(bx+a\right)+45045\,Bab^4x^5\operatorname{sgn}\left(bx+a\right)+9009\,Ab^5x^5\operatorname{sgn}(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="giac")
```

```
[Out] -1/72072*(13*B*a*b^12 - 7*A*b^13)*sgn(b*x + a)/a^8 - 1/72072*(10296*B*b^5*x
^6*sgn(b*x + a) + 45045*B*a*b^4*x^5*sgn(b*x + a) + 9009*A*b^5*x^5*sgn(b*x +
 a) + 80080*B*a^2*b^3*x^4*sgn(b*x + a) + 40040*A*a*b^4*x^4*sgn(b*x + a) + 7
2072*B*a^3*b^2*x^3*sgn(b*x + a) + 72072*A*a^2*b^3*x^3*sgn(b*x + a) + 32760*
B*a^4*b*x^2*sgn(b*x + a) + 65520*A*a^3*b^2*x^2*sgn(b*x + a) + 6006*B*a^5*x*
sgn(b*x + a) + 30030*A*a^4*b*x*sgn(b*x + a) + 5544*A*a^5*sgn(b*x + a))/x^13
```

maple [A] time = 0.06, size = 140, normalized size = 0.46

$$-\frac{\left(10296B\,b^5x^6+9009A\,b^5x^5+45045Ba\,b^4x^5+40040Aa\,b^4x^4+80080B\,a^2b^3x^4+72072A\,a^2b^3x^3+72072B\right.}{72072\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x)
```

```
[Out] -1/72072*(10296*B*b^5*x^6+9009*A*b^5*x^5+45045*B*a*b^4*x^5+40040*A*a*b^4*x^
4+80080*B*a^2*b^3*x^4+72072*A*a^2*b^3*x^3+72072*B*a^3*b^2*x^3+65520*A*a^3*b
^2*x^2+32760*B*a^4*b*x^2+30030*A*a^4*b*x+6006*B*a^5*x+5544*A*a^5)*((b*x+a)^
2)^(5/2)/x^13/(b*x+a)^5
```

maxima [B] time = 0.74, size = 795, normalized size = 2.62

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{12}}{6\,a^{12}}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{13}}{6\,a^{13}}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Bb^{11}}{6\,a^{11}x}-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ab^{12}}{6\,a^{12}x}-(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^14,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^12/a^12 - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*A*b^13/a^13 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*b^11/(a^11*x
) - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*b^12/(a^12*x) - 1/6*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*B*b^10/(a^12*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
A*b^11/(a^13*x^2) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^9/(a^11*x^3) -
1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^10/(a^12*x^3) - 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*b^8/(a^10*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b
^9/(a^11*x^4) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^7/(a^9*x^5) - 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^8/(a^10*x^5) - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*B*b^6/(a^8*x^6) + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^7/(a^9
*x^6) + 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^5/(a^7*x^7) - 1715/102
96*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^6/(a^8*x^7) - 131/792*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*B*b^4/(a^6*x^8) + 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*A*b^5/(a^7*x^8) + 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b^3/(a^5*x^9)
 - 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^4/(a^6*x^9) - 5/33*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*B*b^2/(a^4*x^10) + 68/429*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*A*b^3/(a^5*x^10) + 17/132*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*b/(a^3*x
^11) - 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A*b^2/(a^4*x^11) - 1/12*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*B/(a^2*x^12) + 19/156*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*A*b/(a^3*x^12) - 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*A/(a^2*x^13)
```

mupad [B] time = 1.23, size = 284, normalized size = 0.93

$$-\frac{\left(\frac{B\,a^5}{12}+\frac{5\,A\,b\,a^4}{12}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^{12}\,\left(a+b\,x\right)}-\frac{\left(\frac{A\,b^5}{8}+\frac{5\,B\,a\,b^4}{8}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x^8\,\left(a+b\,x\right)}-\frac{A\,a^5\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{13\,x^{13}\,\left(a+b\,x\right)}-B\,b^5\,\surd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^14,x)
```

```
[Out] - (((B*a^5)/12 + (5*A*a^4*b)/12)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^12*(a
+ b*x)) - (((A*b^5)/8 + (5*B*a*b^4)/8)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^
8*(a + b*x)) - (A*a^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(13*x^13*(a + b*x))
- (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*x^7*(a + b*x)) - (5*a*b^3*(A*b
 + 2*B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*x^9*(a + b*x)) - (5*a^3*b*(2*
A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(11*x^11*(a + b*x)) - (a^2*b^2*
(A*b + B*a)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(x^10*(a + b*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{14}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**14,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**14, x)
```

3.704 $\int \frac{x^4(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=258

$$\frac{x^4(a+bx)(Ab-aB)}{4b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x^2(a+bx)(Ab-aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^3(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^5(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}+\frac{a^4(a+bx)(Ab}{b^6\sqrt{a^2+}}$$

```
[Out] -a^3*(A*b-B*a)*x*(b*x+a)/b^5/((b*x+a)^2)^(1/2)+1/2*a^2*(A*b-B*a)*x^2*(b*x+a
)/b^4/((b*x+a)^2)^(1/2)-1/3*a*(A*b-B*a)*x^3*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+1
/4*(A*b-B*a)*x^4*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+1/5*B*x^5*(b*x+a)/b/((b*x+a)
^2)^(1/2)+a^4*(A*b-B*a)*(b*x+a)*ln(b*x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$\frac{x^4(a+bx)(Ab-aB)}{4b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^3(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x^2(a+bx)(Ab-aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3x(a+bx)(Ab-aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^4(a+bx)(Ab}{b^6\sqrt{a^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -((a^3*(A*b - a*B)*x*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a^2
*(A*b - a*B)*x^2*(a + b*x))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b
 - a*B)*x^3*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)
*x^4*(a + b*x))/(4*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^5*(a + b*x))/(
5*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^4*(A*b - a*B)*(a + b*x)*Log[a + b*x
])/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^4(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{a^3(-Ab+aB)}{b^6}-\frac{a^2(-Ab+aB)x}{b^5}+\frac{a(-Ab+aB)x^2}{b^4}+\frac{(Ab-aB)x^3}{b^3}+\frac{Bx^4}{b^2}-\frac{a^4(-Ab+aB)}{b^6(a+bx)}\right) d}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a^3(Ab-aB)x(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(Ab-aB)x^2(a+bx)}{2b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)x^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab}{4b^2\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 116, normalized size = 0.45

$$\frac{(a+bx)\left(bx\left(60a^4B-30a^3b(2A+Bx)+10a^2b^2x(3A+2Bx)-5ab^3x^2(4A+3Bx)+3b^4x^3(5A+4Bx)\right)-60a^4\right.}{60b^6\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(60*a^4*B - 30*a^3*b*(2*A + B*x) + 10*a^2*b^2*x*(3*A + 2*B*
x) - 5*a*b^3*x^2*(4*A + 3*B*x) + 3*b^4*x^3*(5*A + 4*B*x)) - 60*a^4*(-(A*b)
+ a*B)*Log[a + b*x]))/(60*b^6*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.87, size = 117, normalized size = 0.45

$$\frac{12\,Bb^5x^5-15\left(Bab^4-Ab^5\right)x^4+20\left(Ba^2b^3-Aab^4\right)x^3-30\left(Ba^3b^2-Aa^2b^3\right)x^2+60\left(Ba^4b-Aa^3b^2\right)x-60\,(Ba}{60\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^5*x^5 - 15*(B*a*b^4 - A*b^5)*x^4 + 20*(B*a^2*b^3 - A*a*b^4)*x^
3 - 30*(B*a^3*b^2 - A*a^2*b^3)*x^2 + 60*(B*a^4*b - A*a^3*b^2)*x - 60*(B*a^5
 - A*a^4*b)*log(b*x + a))/b^6
```

giac [A] time = 0.16, size = 185, normalized size = 0.72

$$\frac{12\,Bb^4x^5\mathrm{sgn}\,(bx+a)-15\,Bab^3x^4\mathrm{sgn}\,(bx+a)+15\,Ab^4x^4\mathrm{sgn}\,(bx+a)+20\,Ba^2b^2x^3\mathrm{sgn}\,(bx+a)-20\,Aab^3x^3}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/60*(12*B*b^4*x^5*sgn(b*x + a) - 15*B*a*b^3*x^4*sgn(b*x + a) + 15*A*b^4*x^
4*sgn(b*x + a) + 20*B*a^2*b^2*x^3*sgn(b*x + a) - 20*A*a*b^3*x^3*sgn(b*x + a
) - 30*B*a^3*b*x^2*sgn(b*x + a) + 30*A*a^2*b^2*x^2*sgn(b*x + a) + 60*B*a^4*
x*sgn(b*x + a) - 60*A*a^3*b*x*sgn(b*x + a))/b^5 - (B*a^5*sgn(b*x + a) - A*a
^4*b*sgn(b*x + a))*log(abs(b*x + a))/b^6
```

maple [A] time = 0.06, size = 138, normalized size = 0.53

$$\frac{(bx+a)\left(12B\,b^5x^5+15A\,b^5x^4-15Ba\,b^4x^4-20Aa\,b^4x^3+20B\,a^2b^3x^3+30A\,a^2b^3x^2-30B\,a^3b^2x^2+60A\,a^4b\,l\right.}{60\sqrt{(bx+a)^2}\;b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*(b*x+a)*(12*B*b^5*x^5+15*A*x^4*b^5-15*B*x^4*a*b^4-20*A*x^3*a*b^4+20*B*
x^3*a^2*b^3+30*A*x^2*a^2*b^3-30*B*x^2*a^3*b^2+60*A*ln(b*x+a)*a^4*b-60*A*a^3
*b^2*x-60*B*ln(b*x+a)*a^5+60*B*a^4*b*x)/((b*x+a)^2)^(1/2)/b^6
```

maxima [A] time = 0.57, size = 272, normalized size = 1.05

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bx^4}{5\,b^2}-\frac{9\,\sqrt{b^2x^2+2\,abx+a^2}\,Bax^3}{20\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ax^3}{4\,b^2}-\frac{77\,Ba^3x^2}{60\,b^4}+\frac{13\,Aa^2x^2}{12\,b^3}+\frac{47\,\sqrt{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^4/b^2 - 9/20*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*B*a*x^3/b^3 + 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x^3/b^2 - 77/60*B*a
^3*x^2/b^4 + 13/12*A*a^2*x^2/b^3 + 47/60*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^
2*x^2/b^4 - 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*x^2/b^3 + 77/30*B*a^4*x/
b^5 - 13/6*A*a^3*x/b^4 - B*a^5*log(x + a/b)/b^6 + A*a^4*log(x + a/b)/b^5 -
47/30*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4/b^6 + 7/6*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*A*a^3/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,(A+B\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.29, size = 109, normalized size = 0.42

$$\frac{Bx^5}{5b}-\frac{a^4(-Ab+Ba)\log(a+bx)}{b^6}+x^4\left(\frac{A}{4b}-\frac{Ba}{4b^2}\right)+x^3\left(-\frac{Aa}{3b^2}+\frac{Ba^2}{3b^3}\right)+x^2\left(\frac{Aa^2}{2b^3}-\frac{Ba^3}{2b^4}\right)+x\left(-\frac{Aa^3}{b^4}+\frac{Ba^4}{b^5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**5/(5*b) - a**4*(-A*b + B*a)*log(a + b*x)/b**6 + x**4*(A/(4*b) - B*a/(4
*b**2)) + x**3*(-A*a/(3*b**2) + B*a**2/(3*b**3)) + x**2*(A*a**2/(2*b**3) -
B*a**3/(2*b**4)) + x*(-A*a**3/b**4 + B*a**4/b**5)
```

3.705 $\int \frac{x^3(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=212

$$\frac{x^3(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^2(a+bx)(Ab-aB)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^4(a+bx)}{4b\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3(a+bx)(A}{b^5\sqrt{a^2}}$$

```
[Out] a^2*(A*b-B*a)*x*(b*x+a)/b^4/((b*x+a)^2)^(1/2)-1/2*a*(A*b-B*a)*x^2*(b*x+a)/b
^3/((b*x+a)^2)^(1/2)+1/3*(A*b-B*a)*x^3*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+1/4*B*
x^4*(b*x+a)/b/((b*x+a)^2)^(1/2)-a^3*(A*b-B*a)*(b*x+a)*ln(b*x+a)/b^5/((b*x+a
)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{x^3(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax^2(a+bx)(Ab-aB)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2x(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^3(a+bx)(Ab-aB)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a^2*(A*b - a*B)*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b
 - a*B)*x^2*(a + b*x))/(2*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)
*x^3*(a + b*x))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^4*(a + b*x))/(
4*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^3*(A*b - a*B)*(a + b*x)*Log[a + b*x
])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^3(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(-\frac{a^2(-Ab+aB)}{b^5}+\frac{a(-Ab+aB)x}{b^4}+\frac{(Ab-aB)x^2}{b^3}+\frac{Bx^3}{b^2}+\frac{a^3(-Ab+aB)}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a^2(Ab-aB)x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)x^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^3(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{}{4b\sqrt{}}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 96, normalized size = 0.45

$$\frac{(a+bx)\left(12a^3(aB-Ab)\log(a+bx)+bx\left(-12a^3B+6a^2b(2A+Bx)-2ab^2x(3A+2Bx)+b^3x^2(4A+3Bx)\right)\right)}{12b^5\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(-12*a^3*B + 6*a^2*b*(2*A + B*x) - 2*a*b^2*x*(3*A + 2*B*x)
+ b^3*x^2*(4*A + 3*B*x)) + 12*a^3*(-(A*b) + a*B)*Log[a + b*x]))/(12*b^5*Sqr
t[(a + b*x)^2])
```

fricas [**A**] time = 0.85, size = 94, normalized size = 0.44

$$\frac{3\,Bb^4x^4-4\left(Bab^3-Ab^4\right)x^3+6\left(Ba^2b^2-Aab^3\right)x^2-12\left(Ba^3b-Aa^2b^2\right)x+12\left(Ba^4-Aa^3b\right)\log\left(bx+a\right)}{12\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*x^4 - 4*(B*a*b^3 - A*b^4)*x^3 + 6*(B*a^2*b^2 - A*a*b^3)*x^2 -
 12*(B*a^3*b - A*a^2*b^2)*x + 12*(B*a^4 - A*a^3*b)*log(b*x + a))/b^5
```

giac [**A**] time = 0.16, size = 148, normalized size = 0.70

$$\frac{3\,Bb^3x^4\operatorname{sgn}\left(bx+a\right)-4\,Bab^2x^3\operatorname{sgn}\left(bx+a\right)+4\,Ab^3x^3\operatorname{sgn}\left(bx+a\right)+6\,Ba^2bx^2\operatorname{sgn}\left(bx+a\right)-6\,Aab^2x^2\operatorname{sgn}\left(bx+\right.}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/12*(3*B*b^3*x^4*sgn(b*x + a) - 4*B*a*b^2*x^3*sgn(b*x + a) + 4*A*b^3*x^3*s
gn(b*x + a) + 6*B*a^2*b*x^2*sgn(b*x + a) - 6*A*a*b^2*x^2*sgn(b*x + a) - 12*
B*a^3*x*sgn(b*x + a) + 12*A*a^2*b*x*sgn(b*x + a))/b^4 + (B*a^4*sgn(b*x + a)
 - A*a^3*b*sgn(b*x + a))*log(abs(b*x + a))/b^5
```

maple [**A**] time = 0.05, size = 114, normalized size = 0.54

$$-\frac{(bx+a)\left(-3B\,b^4x^4-4A\,b^4x^3+4Ba\,b^3x^3+6Aa\,b^3x^2-6B\,a^2b^2x^2+12A\,a^3b\ln\left(bx+a\right)-12A\,a^2b^2x-12B\,a^4\ln\right.}{12\sqrt{(bx+a)^2}\;b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/12*(b*x+a)*(-3*B*b^4*x^4-4*A*x^3*b^4+4*B*x^3*a*b^3+6*A*x^2*a*b^3-6*B*x^2
*a^2*b^2+12*A*ln(b*x+a)*a^3*b-12*A*x*a^2*b^2-12*B*ln(b*x+a)*a^4+12*B*x*a^3*
b)/((b*x+a)^2)^(1/2)/b^5
```

maxima [**A**] time = 0.75, size = 212, normalized size = 1.00

$$\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Bx^3}{4\,b^2}+\frac{13\,Ba^2x^2}{12\,b^3}-\frac{5\,Aax^2}{6\,b^2}-\frac{7\,\sqrt{b^2x^2+2\,abx+a^2}\,Bax^2}{12\,b^3}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ax^2}{3\,b^2}-\frac{13\,Ba^3x}{6\,b^4}+\frac{5\,A}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^3/b^2 + 13/12*B*a^2*x^2/b^3 - 5/6*A*a
*x^2/b^2 - 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*x^2/b^3 + 1/3*sqrt(b^2*x^
2 + 2*a*b*x + a^2)*A*x^2/b^2 - 13/6*B*a^3*x/b^4 + 5/3*A*a^2*x/b^3 + B*a^4*l
og(x + a/b)/b^5 - A*a^3*log(x + a/b)/b^4 + 7/6*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*B*a^3/b^5 - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a^2/b^4
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy **[A]** time = 0.27, size = 85, normalized size = 0.40

$$\frac{Bx^4}{4b} + \frac{a^3\left(-Ab + Ba\right)\log\left(a + bx\right)}{b^5} + x^3\left(\frac{A}{3b} - \frac{Ba}{3b^2}\right) + x^2\left(-\frac{Aa}{2b^2} + \frac{Ba^2}{2b^3}\right) + x\left(\frac{Aa^2}{b^3} - \frac{Ba^3}{b^4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**4/(4*b) + a**3*(-A*b + B*a)*log(a + b*x)/b**5 + x**3*(A/(3*b) - B*a/(3
*b**2)) + x**2*(-A*a/(2*b**2) + B*a**2/(2*b**3)) + x*(A*a**2/b**3 - B*a**3/
b**4)
```

3.706 $\int \frac{x^2(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}} dx$

Optimal. Leaf size=166

$$\frac{x^2(a+bx)(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(a+bx)(Ab-aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{ax(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -a*(A*b-B*a)*x*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*x^2*(b*x+a)/b^2/
((b*x+a)^2)^(1/2)+1/3*B*x^3*(b*x+a)/b/((b*x+a)^2)^(1/2)+a^2*(A*b-B*a)*(b*x+
a)*ln(b*x+a)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$\frac{x^2(a+bx)(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{ax(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(a+bx)(Ab-aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] -((a*(A*b - a*B)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + ((A*b
- a*B)*x^2*(a + b*x))/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^3*(a + b
*x))/(3*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^2*(A*b - a*B)*(a + b*x)*Log[a
 + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^2(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{a(-Ab+aB)}{b^4}+\frac{(Ab-aB)x}{b^3}+\frac{Bx^2}{b^2}-\frac{a^2(-Ab+aB)}{b^4(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a(Ab-aB)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^2(a+bx)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}+\frac{a^2(Ab}{b}\end{aligned}$$

Mathematica [A] time = 0.04, size = 77, normalized size = 0.46

$$\frac{(a+bx)\left(bx\left(6a^2B-3ab(2A+Bx)+b^2x(3A+2Bx)\right)+6a^2(Ab-aB)\log(a+bx)\right)}{6b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(6*a^2*B - 3*a*b*(2*A + B*x) + b^2*x*(3*A + 2*B*x)) + 6*a^2
*(A*b - a*B)*Log[a + b*x]))/(6*b^4*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.91, size = 71, normalized size = 0.43

$$\frac{2\,Bb^3x^3 - 3\left(Bab^2 - Ab^3\right)x^2 + 6\left(Ba^2b - Aab^2\right)x - 6\left(Ba^3 - Aa^2b\right)\log\left(bx + a\right)}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*x^3 - 3*(B*a*b^2 - A*b^3)*x^2 + 6*(B*a^2*b - A*a*b^2)*x - 6*(B
*a^3 - A*a^2*b)*log(b*x + a))/b^4
```

giac [**A**] time = 0.15, size = 113, normalized size = 0.68

$$\frac{2\,Bb^2x^3\mathrm{sgn}\left(bx + a\right) - 3\,Babx^2\mathrm{sgn}\left(bx + a\right) + 3\,Ab^2x^2\mathrm{sgn}\left(bx + a\right) + 6\,Ba^2x\mathrm{sgn}\left(bx + a\right) - 6\,Aabx\mathrm{sgn}\left(bx + a\right)}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*(2*B*b^2*x^3*sgn(b*x + a) - 3*B*a*b*x^2*sgn(b*x + a) + 3*A*b^2*x^2*sgn(
b*x + a) + 6*B*a^2*x*sgn(b*x + a) - 6*A*a*b*x*sgn(b*x + a))/b^3 - (B*a^3*sg
n(b*x + a) - A*a^2*b*sgn(b*x + a))*log(abs(b*x + a))/b^4
```

maple [**A**] time = 0.05, size = 90, normalized size = 0.54

$$\frac{\left(bx + a\right)\left(2B\,b^3x^3 + 3A\,b^3x^2 - 3Ba\,b^2x^2 + 6A\,a^2b\ln\left(bx + a\right) - 6Aa\,b^2x - 6B\,a^3\ln\left(bx + a\right) + 6B\,a^2bx\right)}{6\sqrt{\left(bx + a\right)^2}\;b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(2*b^3*B*x^3+3*A*x^2*b^3-3*B*x^2*a*b^2+6*A*ln(b*x+a)*a^2*b-6*A*
a*b^2*x-6*B*ln(b*x+a)*a^3+6*B*a^2*b*x)/((b*x+a)^2)^(1/2)/b^4
```

maxima [**A**] time = 0.54, size = 125, normalized size = 0.75

$$-\frac{5\,Bax^2}{6\,b^2} + \frac{Ax^2}{2\,b} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,Bx^2}{3\,b^2} + \frac{5\,Ba^2x}{3\,b^3} - \frac{Aax}{b^2} - \frac{Ba^3\log\left(x + \frac{a}{b}\right)}{b^4} + \frac{Aa^2\log\left(x + \frac{a}{b}\right)}{b^3} - \frac{2\,\sqrt{b^2x^2 + 2\,abx}}{3\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*B*a*x^2/b^2 + 1/2*A*x^2/b + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*x^2/b^
2 + 5/3*B*a^2*x/b^3 - A*a*x/b^2 - B*a^3*log(x + a/b)/b^4 + A*a^2*log(x + a/
b)/b^3 - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^4
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A + B\,x\right)}{\sqrt{\left(a + b\,x\right)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [**A**] time = 0.24, size = 61, normalized size = 0.37

$$\frac{Bx^3}{3b} - \frac{a^2\left(-Ab + Ba\right)\log\left(a + bx\right)}{b^4} + x^2\left(\frac{A}{2b} - \frac{Ba}{2b^2}\right) + x\left(-\frac{Aa}{b^2} + \frac{Ba^2}{b^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**3/(3*b) - a**2*(-A*b + B*a)*log(a + b*x)/b**4 + x**2*(A/(2*b) - B*a/(2
*b**2)) + x*(-A*a/b**2 + B*a**2/b**3)
```

3.707 $\int \frac{x(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=120

$$\frac{x(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a(a+bx)(Ab-aB)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (A*b-B*a)*x*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+1/2*B*x^2*(b*x+a)/b/((b*x+a)^2)^(
1/2)-a*(A*b-B*a)*(b*x+a)*ln(b*x+a)/b^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {770, 77}

$$\frac{x(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a(a+bx)(Ab-aB)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*x*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^2*(a +
 b*x))/(2*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a*(A*b - a*B)*(a + b*x)*Log[a
 + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{Ab-aB}{b^3}+\frac{Bx}{b^2}+\frac{a(-Ab+aB)}{b^3(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(Ab-aB)x(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b\sqrt{a^2+2abx+b^2x^2}}-\frac{a(Ab-aB)(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 0.48

$$\frac{(a+bx)(bx(-2aB+2Ab+bBx)+2a(aB-Ab)\log(a+bx))}{2b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(2*A*b - 2*a*B + b*B*x) + 2*a*(-(A*b) + a*B)*Log[a + b*x]))
/(2*b^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.86, size = 47, normalized size = 0.39

$$\frac{Bb^2x^2 - 2\left(Bab - Ab^2\right)x + 2\left(Ba^2 - Aab\right)\log\left(bx + a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*x^2 - 2*(B*a*b - A*b^2)*x + 2*(B*a^2 - A*a*b)*log(b*x + a))/b^3
```

giac [A] time = 0.15, size = 75, normalized size = 0.62

$$\frac{Bbx^2\mathrm{sgn}\left(bx + a\right) - 2\,Bax\mathrm{sgn}\left(bx + a\right) + 2\,Abx\mathrm{sgn}\left(bx + a\right)}{2\,b^2} + \frac{\left(Ba^2\mathrm{sgn}\left(bx + a\right) - Aab\mathrm{sgn}\left(bx + a\right)\right)\log\left(|bx + a|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(B*b*x^2*sgn(b*x + a) - 2*B*a*x*sgn(b*x + a) + 2*A*b*x*sgn(b*x + a))/b^
2 + (B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*log(abs(b*x + a))/b^3
```

maple [A] time = 0.05, size = 66, normalized size = 0.55

$$-\frac{\left(bx + a\right)\left(-B\,b^2x^2 + 2Aab\ln\left(bx + a\right) - 2A\,b^2x - 2B\,a^2\ln\left(bx + a\right) + 2Babx\right)}{2\sqrt{\left(bx + a\right)^2}\;b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(-B*b^2*x^2+2*A*ln(b*x+a)*a*b-2*A*b^2*x-2*B*ln(b*x+a)*a^2+2*B*
a*b*x)/((b*x+a)^2)^(1/2)/b^3
```

maxima [A] time = 0.76, size = 72, normalized size = 0.60

$$\frac{Bx^2}{2\,b} - \frac{Bax}{b^2} + \frac{Ba^2\log\left(x + \frac{a}{b}\right)}{b^3} - \frac{Aa\log\left(x + \frac{a}{b}\right)}{b^2} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,A}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^2/b - B*a*x/b^2 + B*a^2*log(x + a/b)/b^3 - A*a*log(x + a/b)/b^2 + s
qrt(b^2*x^2 + 2*a*b*x + a^2)*A/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(A + B\,x\right)}{\sqrt{{\left(a + b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.21, size = 37, normalized size = 0.31

$$\frac{Bx^2}{2b} + \frac{a\left(-Ab + Ba\right)\log\left(a + bx\right)}{b^3} + x\left(\frac{A}{b} - \frac{Ba}{b^2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x**2/(2*b) + a*(-A*b + B*a)*log(a + b*x)/b**3 + x*(A/b - B*a/b**2)
```

3.708 $\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

```
[Out] (A*b-B*a)*(b*x+a)*ln(b*x+a)/b^2/((b*x+a)^2)^(1/2)+B*((b*x+a)^2)^(1/2)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {640, 608, 31}

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + ((A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b^2}\\ &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{2b^2\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{(Ab-aB)(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.58

$$\frac{(a+bx)((Ab-aB)\log(a+bx)+bBx)}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*B*x + (A*b - a*B)*Log[a + b*x]))/(b^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.12, size = 25, normalized size = 0.36

$$\frac{Bbx - (Ba - Ab)\log(bx + a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (B*b*x - (B*a - A*b)*log(b*x + a))/b^2
```

giac [A] time = 0.16, size = 45, normalized size = 0.65

$$\frac{Bx\mathrm{sgn}(bx + a)}{b} - \frac{\left(Ba\mathrm{sgn}(bx + a) - Ab\mathrm{sgn}(bx + a)\right)\log(|bx + a|)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] B*x*sgn(b*x + a)/b - (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a)
)/b^2
```

maple [A] time = 0.05, size = 43, normalized size = 0.62

$$\frac{(bx + a)(Ab\ln(bx + a) - Ba\ln(bx + a) + Bbx)}{\sqrt{(bx + a)^2}\, b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*b-B*ln(b*x+a)*a+B*b*x)/((b*x+a)^2)^(1/2)/b^2
```

maxima [A] time = 0.61, size = 52, normalized size = 0.75

$$-\frac{Ba\log\left(x + \frac{a}{b}\right)}{b^2} + \frac{A\log\left(x + \frac{a}{b}\right)}{b} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,B}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*a*log(x + a/b)/b^2 + A*log(x + a/b)/b + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/
b^2
```

mupad [B] time = 1.47, size = 79, normalized size = 1.14

$$\frac{B\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}}{b^2} + \frac{A\,\ln\left(a + b\,x + \sqrt{(a + b\,x)^2}\right)}{b} - \frac{B\,a\,b\,\ln\left(a\,b + \sqrt{(a + b\,x)^2}\,\sqrt{b^2} + b^2\,x\right)}{\left(b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b^2 + (A*log(a + b*x + ((a + b*x)^2)^(1
/2)))/b - (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^
(3/2)
```

sympy [A] time = 0.18, size = 20, normalized size = 0.29

$$\frac{Bx}{b} - \frac{(-Ab + Ba)\log(a + bx)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x/b - (-A*b + B*a)*log(a + b*x)/b**2
```

3.709 $\int \frac{A+Bx}{x\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=80

$$\frac{A\log(x)(a+bx)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] A*(b*x+a)*ln(x)/a/((b*x+a)^2)^(1/2)-(A*b-B*a)*(b*x+a)*ln(b*x+a)/a/b/((b*x+a
)^2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 72}

$$\frac{A\log(x)(a+bx)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (A*(a + b*x)*Log[x])/(a*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(a +
b*x)*Log[a + b*x])/(a*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx}+\frac{-Ab+aB}{ab(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{A(a+bx)\log(x)}{a\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(a+bx)\log(a+bx)}{ab\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.55

$$\frac{(a+bx)((aB-Ab)\log(a+bx)+Ab\log(x))}{ab\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(A*b*Log[x] + (-(A*b) + a*B)*Log[a + b*x]))/(a*b*Sqrt[(a + b*x)^
2])
```

fricas [**A**] time = 0.96, size = 28, normalized size = 0.35

$$\frac{Ab\log(x) + (Ba - Ab)\log(bx + a)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (A*b*log(x) + (B*a - A*b)*log(b*x + a))/(a*b)
```

giac [**A**] time = 0.16, size = 49, normalized size = 0.61

$$\frac{A\log(|x|)\,\mathrm{sgn}(bx + a)}{a} + \frac{\left(Ba\mathrm{sgn}(bx + a) - Ab\mathrm{sgn}(bx + a)\right)\log(|bx + a|)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] A*log(abs(x))*sgn(b*x + a)/a + (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(ab
s(b*x + a))/(a*b)
```

maple [**A**] time = 0.06, size = 49, normalized size = 0.61

$$-\frac{(bx + a)(-Ab\ln(x) + Ab\ln(bx + a) - Ba\ln(bx + a))}{\sqrt{(bx + a)^2}\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/((b*x+a)^2)^(1/2),x)
```

```
[Out] -(b*x+a)*(A*b*ln(b*x+a)-A*b*ln(x)-B*a*ln(b*x+a))/((b*x+a)^2)^(1/2)/a/b
```

maxima [**A**] time = 0.56, size = 53, normalized size = 0.66

$$-\frac{(-1)^{2\,abx+2\,a^2}A\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)}{a} + \frac{B\log\left(x + \frac{a}{b}\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a + B*log(x +
a/b)/b
```

mupad [**B**] time = 1.45, size = 68, normalized size = 0.85

$$\frac{B\,\ln\left(a + b\,x + \sqrt{(a + b\,x)^2}\right)}{b} - \frac{A\,\ln\left(a\,b + \frac{a^2}{x} + \frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*((a + b*x)^2)^(1/2)),x)
```

```
[Out] (B*log(a + b*x + ((a + b*x)^2)^(1/2)))/b - (A*log(a*b + a^2/x + ((a^2)^(1/2
)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(a^2)^(1/2)
```

sympy [A] time = 0.44, size = 41, normalized size = 0.51

$$\frac{A\log(x)}{a}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aa+\frac{a(-Ab+Ba)}{b}}{-2Ab+Ba}\right)}{ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/((b*x+a)**2)**(1/2),x)
```

```
[Out] A*log(x)/a + (-A*b + B*a)*log(x + (-A*a + a*(-A*b + B*a)/b)/(-2*A*b + B*a))
/(a*b)
```

3.710 $\int \frac{A+Bx}{x^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=113

$$-\frac{\log(x)(a+bx)(Ab-aB)}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{a^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x}$$

```
[Out] -(A*b-B*a)*(b*x+a)*ln(x)/a^2/((b*x+a)^2)^(1/2)+(A*b-B*a)*(b*x+a)*ln(b*x+a)/
a^2/((b*x+a)^2)^(1/2)-A*((b*x+a)^2)^(1/2)/a^2/x
```

Rubi **[A]** time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{769, 646, 36, 29, 31\}$

$$-\frac{\log(x)(a+bx)(Ab-aB)}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{a^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a^2*x)) - ((A*b - a*B)*(a + b*x)*Log[x
])/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a + b*x)*Log[a + b*x
])/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 29

```
Int[(x_)^(-1), x_Symbol] :> Simp[Log[x], x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\sqrt{a^2+2abx+b^2x^2}}\,dx &= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{\left(2Ab^2-2abB\right)\int \frac{1}{x\sqrt{a^2+2abx+b^2x^2}}\,dx}{2ab} \\ &= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{x\left(ab+b^2x\right)}\,dx}{2ab\sqrt{a^2+2abx+b^2x^2}} \\ &= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} + \frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{2a^2\sqrt{a^2+2abx+b^2x^2}} - \frac{((2Ab^2 -}{2a^2b^2} \\ &= -\frac{A\sqrt{a^2+2abx+b^2x^2}}{a^2x} - \frac{(Ab-aB)(a+bx)\log(x)}{a^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)(a+bx)\log(a}{a^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 57, normalized size = 0.50

$$\frac{(a+bx)(\log(x)(aBx-Abx)+x(Ab-aB)\log(a+bx)-aA)}{a^2x\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(-(a*A) + (-(A*b*x) + a*B*x)*Log[x] + (A*b - a*B)*x*Log[a + b*x]
))/(a^2*x*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.56, size = 41, normalized size = 0.36

$$-\frac{(Ba-Ab)x\log(bx+a)-(Ba-Ab)x\log(x)+Aa}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -((B*a - A*b)*x*log(b*x + a) - (B*a - A*b)*x*log(x) + A*a)/(a^2*x)
```

giac [**A**] time = 0.16, size = 81, normalized size = 0.72

$$\frac{\left(Ba\operatorname{sgn}(bx+a)-Ab\operatorname{sgn}(bx+a)\right)\log(|x|)}{a^2} - \frac{A\operatorname{sgn}(bx+a)}{ax} - \frac{\left(Bab\operatorname{sgn}(bx+a)-Ab^2\operatorname{sgn}(bx+a)\right)\log(|bx+}{a^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(x))/a^2 - A*sgn(b*x + a)/(a*x
) - (B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(b*x + a))/(a^2*b)
```

maple [**A**] time = 0.06, size = 61, normalized size = 0.54

$$\frac{(bx+a)(-Abx\ln(x)+Abx\ln(bx+a)+Bax\ln(x)-Bax\ln(bx+a)-Aa)}{\sqrt{(bx+a)^2}\,a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*x*b-A*ln(x)*x*b-B*ln(b*x+a)*x*a+B*ln(x)*x*a-A*a)/((b*x
+a)^2)^(1/2)/x/a^2
```

maxima [**A**] time = 0.51, size = 106, normalized size = 0.94

$$-\frac{(-1)^{2\,abx+2\,a^2}B\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a}+\frac{(-1)^{2\,abx+2\,a^2}Ab\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^2}-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,A}{a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a + (-1)^(2*a*
b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^2 - sqrt(b^2*x^2 + 2*
a*b*x + a^2)*A/(a^2*x)
```

mupad [**B**] time = 1.49, size = 117, normalized size = 1.04

$$\frac{A\,a\,b\,\mathrm{atanh}\left(\frac{a^2+b\,x\,a}{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}\right)}{\left(a^2\right)^{3/2}}-\frac{A\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{a^2\,x}-\frac{B\,\ln\left(a\,b+\frac{a^2}{x}+\frac{\sqrt{a^2}\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{x}\right)}{\sqrt{a^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*((a + b*x)^2)^(1/2)),x)
```

```
[Out] (A*a*b*atanh((a^2 + a*b*x)/((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))))/
(a^2)^(3/2) - (A*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a^2*x) - (B*log(a*b + a^
2/x + ((a^2)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/x))/(a^2)^(1/2)
```

sympy [**A**] time = 0.40, size = 95, normalized size = 0.84

$$-\frac{A}{ax}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aab+Ba^2-a(-Ab+Ba)}{-2Ab^2+2Bab}\right)}{a^2}-\frac{(-Ab+Ba)\log\left(x+\frac{-Aab+Ba^2+a(-Ab+Ba)}{-2Ab^2+2Bab}\right)}{a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] -A/(a*x) + (-A*b + B*a)*log(x + (-A*a*b + B*a**2 - a*(-A*b + B*a))/(-2*A*b*
*2 + 2*B*a*b))/a**2 - (-A*b + B*a)*log(x + (-A*a*b + B*a**2 + a*(-A*b + B*a
))/(-2*A*b**2 + 2*B*a*b))/a**2
```

3.711 $\int \frac{A+Bx}{x^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=162

$$\frac{(a+bx)(Ab-aB)}{a^2x\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}+\frac{b\log(x)(a+bx)(Ab-aB)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)\log(a+bx}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/2*A*(b*x+a)/a/x^2/((b*x+a)^2)^(1/2)+(A*b-B*a)*(b*x+a)/a^2/x/((b*x+a)^2)^
(1/2)+b*(A*b-B*a)*(b*x+a)*ln(x)/a^3/((b*x+a)^2)^(1/2)-b*(A*b-B*a)*(b*x+a)*l
n(b*x+a)/a^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$\frac{(a+bx)(Ab-aB)}{a^2x\sqrt{a^2+2abx+b^2x^2}}+\frac{b\log(x)(a+bx)(Ab-aB)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(2*a*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(a^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x)*Log[
x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x)*Log[a +
b*x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^3\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^3}+\frac{-Ab+aB}{a^2bx^2}+\frac{Ab-aB}{a^3x}+\frac{b(-Ab+aB)}{a^3(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{A(a+bx)}{2ax^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{a^2x\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)(a+bx)\log(}{a^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.49

$$-\frac{(a+bx)\left(2bx^2\log(x)(aB-Ab)+2bx^2(Ab-aB)\log(a+bx)+a(aA+2aBx-2Abx)\right)}{2a^3x^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/2*((a + b*x)*(a*(a*A - 2*A*b*x + 2*a*B*x) + 2*b*(-(A*b) + a*B)*x^2*Log[x
] + 2*b*(A*b - a*B)*x^2*Log[a + b*x]))/(a^3*x^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.87, size = 69, normalized size = 0.43

$$\frac{2\left(Bab-Ab^{2}\right)x^{2}\log\left(bx+a\right)-2\left(Bab-Ab^{2}\right)x^{2}\log(x)-Aa^{2}-2\left(Ba^{2}-Aab\right)x}{2\,a^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*(B*a*b - A*b^2)*x^2*log(b*x + a) - 2*(B*a*b - A*b^2)*x^2*log(x) - A*
a^2 - 2*(B*a^2 - A*a*b)*x)/(a^3*x^2)
```

giac [A] time = 0.15, size = 117, normalized size = 0.72

$$-\frac{\left(Bab\mathrm{sgn}\left(bx+a\right)-Ab^{2}\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)}{a^{3}}+\frac{\left(Bab^{2}\mathrm{sgn}\left(bx+a\right)-Ab^{3}\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{a^{3}b}-\frac{Aa^{2}\mathrm{sgn}\,(b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(x))/a^3 + (B*a*b^2*sgn(b
*x + a) - A*b^3*sgn(b*x + a))*log(abs(b*x + a))/(a^3*b) - 1/2*(A*a^2*sgn(b*
x + a) + 2*(B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*x)/(a^3*x^2)
```

maple [A] time = 0.06, size = 92, normalized size = 0.57

$$-\frac{(bx+a)\left(-2A\,b^{2}x^{2}\ln(x)+2A\,b^{2}x^{2}\ln\left(bx+a\right)+2Bab\,x^{2}\ln(x)-2Bab\,x^{2}\ln\left(bx+a\right)-2Aabx+2B\,a^{2}x+A\,a^{2}\right)}{2\sqrt{(bx+a)^{2}}\;a^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*A*ln(b*x+a)*x^2*b^2-2*A*ln(x)*x^2*b^2-2*B*ln(b*x+a)*x^2*a*b
+2*B*ln(x)*x^2*a*b-2*A*a*b*x+2*B*a^2*x+A*a^2)/((b*x+a)^2)^(1/2)/x^2/a^3
```

maxima [A] time = 0.59, size = 164, normalized size = 1.01

$$\frac{(-1)^{2\,abx+2\,a^{2}}\,Bb\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^{2}}{|x|}\right)}{a^{2}}-\frac{(-1)^{2\,abx+2\,a^{2}}\,Ab^{2}\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^{2}}{|x|}\right)}{a^{3}}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,B}{a^{2}x}+\frac{3\,\sqrt{b^{2}x^{2}+2\,abx+}}{2\,a^{3}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] (-1)^(2*a*b*x + 2*a^2)*B*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^2 - (-1)^(2
*a*b*x + 2*a^2)*A*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 - sqrt(b^2*x^2
 + 2*a*b*x + a^2)*B/(a^2*x) + 3/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x)
 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(a^2*x^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{3}\,\sqrt{(a+b\,x)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^3*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.48, size = 131, normalized size = 0.81

$$\frac{-Aa + x\left(2Ab - 2Ba\right)}{2a^2x^2} - \frac{b\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^2 + Ba^2b - ab(-Ab + Ba)}{-2Ab^3 + 2Bab^2}\right)}{a^3} + \frac{b\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^2 + Ba^2b + ab(-Al}{-2Ab^3 + 2Bab^2}\right.}{a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-A*a + x*(2*A*b - 2*B*a))/(2*a**2*x**2) - b*(-A*b + B*a)*log(x + (-A*a*b**
2 + B*a**2*b - a*b*(-A*b + B*a))/(-2*A*b**3 + 2*B*a*b**2))/a**3 + b*(-A*b +
 B*a)*log(x + (-A*a*b**2 + B*a**2*b + a*b*(-A*b + B*a))/(-2*A*b**3 + 2*B*a*
b**2))/a**3
```

3.712 $\int \frac{A+Bx}{x^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=211

$$\frac{(a+bx)(Ab-aB)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{3ax^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b^2\log(x)(a+bx)(Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^2(a+bx)(Ab-aB)\log(a+b}{a^4\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/3*A*(b*x+a)/a/x^3/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*(b*x+a)/a^2/x^2/((b*x+
a)^2)^(1/2)-b*(A*b-B*a)*(b*x+a)/a^3/x/((b*x+a)^2)^(1/2)-b^2*(A*b-B*a)*(b*x+
a)*ln(x)/a^4/((b*x+a)^2)^(1/2)+b^2*(A*b-B*a)*(b*x+a)*ln(b*x+a)/a^4/((b*x+a)
^2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$-\frac{b(a+bx)(Ab-aB)}{a^3x\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{b^2\log(x)(a+bx)(Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^2(a+bx)(Ab-aB)\log(a+b}{a^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(3*a*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(2*a^2*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x))
/(a^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^2*(A*b - a*B)*(a + b*x)*Log[x])
/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x)*Log[a + b
*x])/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^4\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^4}+\frac{-Ab+aB}{a^2bx^3}+\frac{Ab-aB}{a^3x^2}+\frac{b(-Ab+aB)}{a^4x}-\frac{b^2(-Ab+aB)}{a^4(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{A(a+bx)}{3ax^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{2a^2x^2\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)(a+bx)}{a^3x\sqrt{a^2+2abx+b^2x^2}}-\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 102, normalized size = 0.48

$$-\frac{(a+bx)\bigl(a\bigl(a^2(2A+3Bx)-3abx(A+2Bx)+6Ab^2x^2\bigr)+6b^2x^3\log(x)(Ab-aB)+6b^2x^3(aB-Ab)\log(a+}{6a^4x^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/6*((a + b*x)*(a*(6*A*b^2*x^2 - 3*a*b*x*(A + 2*B*x) + a^2*(2*A + 3*B*x))
+ 6*b^2*(A*b - a*B)*x^3*Log[x] + 6*b^2*(-(A*b) + a*B)*x^3*Log[a + b*x]))/(a
^4*x^3*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.97, size = 94, normalized size = 0.45

$$-\frac{6\left(Bab^2-Ab^3\right)x^3\log\left(bx+a\right)-6\left(Bab^2-Ab^3\right)x^3\log(x)+2\,Aa^3-6\left(Ba^2b-Aab^2\right)x^2+3\left(Ba^3-Aa^2b\right)x}{6\,a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*(6*(B*a*b^2 - A*b^3)*x^3*log(b*x + a) - 6*(B*a*b^2 - A*b^3)*x^3*log(x)
 + 2*A*a^3 - 6*(B*a^2*b - A*a*b^2)*x^2 + 3*(B*a^3 - A*a^2*b)*x)/(a^4*x^3)
```

giac [**A**] time = 0.16, size = 153, normalized size = 0.73

$$\frac{\left(Bab^2\mathrm{sgn}\left(bx+a\right)-Ab^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)}{a^4}-\frac{\left(Bab^3\mathrm{sgn}\left(bx+a\right)-Ab^4\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{a^4b}-\frac{2\,Aa^3\mathrm{sg}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] (B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*log(abs(x))/a^4 - (B*a*b^3*sgn(
b*x + a) - A*b^4*sgn(b*x + a))*log(abs(b*x + a))/(a^4*b) - 1/6*(2*A*a^3*sgn
(b*x + a) - 6*(B*a^2*b*sgn(b*x + a) - A*a*b^2*sgn(b*x + a))*x^2 + 3*(B*a^3*
sgn(b*x + a) - A*a^2*b*sgn(b*x + a))*x)/(a^4*x^3)
```

maple [**A**] time = 0.07, size = 119, normalized size = 0.56

$$\frac{(bx+a)\bigl(-6A\,b^3x^3\ln(x)+6A\,b^3x^3\ln\left(bx+a\right)+6Ba\,b^2x^3\ln(x)-6Ba\,b^2x^3\ln\left(bx+a\right)-6Aa\,b^2x^2+6B\,a^2b\,x^2}{6\sqrt{\left(bx+a\right)^2}\;a^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(6*A*ln(b*x+a)*x^3*b^3-6*A*b^3*x^3*ln(x)-6*B*ln(b*x+a)*x^3*a*b^
2+6*B*a*b^2*x^3*ln(x)-6*A*a*b^2*x^2+6*B*a^2*b*x^2+3*A*a^2*b*x-3*B*a^3*x-2*A
*a^3)/((b*x+a)^2)^(1/2)/a^4/x^3
```

maxima [**A**] time = 0.67, size = 224, normalized size = 1.06

$$-\frac{(-1)^{2\,abx+2\,a^2}\,Bb^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^3}+\frac{(-1)^{2\,abx+2\,a^2}\,Ab^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}+\frac{3\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb}{2\,a^3x}-\frac{11\,\sqrt{b^2x^2+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + (-1)
^(2*a*b*x + 2*a^2)*A*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 + 3/2*sqrt(
b^2*x^2 + 2*a*b*x + a^2)*B*b/(a^3*x) - 11/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A
*b^2/(a^4*x) - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/(a^2*x^2) + 5/6*sqrt(b^2
*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x^2) - 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(
a^2*x^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^4\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^4*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.53, size = 165, normalized size = 0.78

$$\frac{-2Aa^{2} + x^{2}\left(-6Ab^{2} + 6Bab\right) + x\left(3Aab - 3Ba^{2}\right)}{6a^{3}x^{3}} + \frac{b^{2}\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^{3} + Ba^{2}b^{2} - ab^{2}\left(-Ab + Ba\right)}{-2Ab^{4} + 2Bab^{3}}\right)}{a^{4}} - \frac{b^{2}\left(-Ab + B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-2*A*a**2 + x**2*(-6*A*b**2 + 6*B*a*b) + x*(3*A*a*b - 3*B*a**2))/(6*a**3*x
**3) + b**2*(-A*b + B*a)*log(x + (-A*a*b**3 + B*a**2*b**2 - a*b**2*(-A*b +
B*a))/(-2*A*b**4 + 2*B*a*b**3))/a**4 - b**2*(-A*b + B*a)*log(x + (-A*a*b**3
 + B*a**2*b**2 + a*b**2*(-A*b + B*a))/(-2*A*b**4 + 2*B*a*b**3))/a**4
```

3.713 $\int \frac{A+Bx}{x^5\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=256

$$\frac{(a+bx)(Ab-aB)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{4ax^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b^3\log(x)(a+bx)(Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{b^3(a+bx)(Ab-aB)\log(a}{a^5\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/4*A*(b*x+a)/a/x^4/((b*x+a)^2)^(1/2)+1/3*(A*b-B*a)*(b*x+a)/a^2/x^3/((b*x+
a)^2)^(1/2)-1/2*b*(A*b-B*a)*(b*x+a)/a^3/x^2/((b*x+a)^2)^(1/2)+b^2*(A*b-B*a)
*(b*x+a)/a^4/x/((b*x+a)^2)^(1/2)+b^3*(A*b-B*a)*(b*x+a)*ln(x)/a^5/((b*x+a)^2
)^(1/2)-b^3*(A*b-B*a)*(b*x+a)*ln(b*x+a)/a^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$\frac{b^2(a+bx)(Ab-aB)}{a^4x\sqrt{a^2+2abx+b^2x^2}}-\frac{b(a+bx)(Ab-aB)}{2a^3x^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}+\frac{b^3\log(x)(a+bx)(Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-b$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(A*(a + b*x))/(4*a*x^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(a +
b*x))/(3*a^2*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x))
/(2*a^3*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x))/(a
^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^3*(A*b - a*B)*(a + b*x)*Log[x])/(a
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^3*(A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^5\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^5\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{A}{abx^5}+\frac{-Ab+aB}{a^2bx^4}+\frac{Ab-aB}{a^3x^3}+\frac{b(-Ab+aB)}{a^4x^2}-\frac{b^2(-Ab+aB)}{a^5x}+\frac{b^3(-Ab+aB)}{a^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{A(a+bx)}{4ax^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{3a^2x^3\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)(a+bx}{2a^3x^2\sqrt{a^2+2abx+b}}\end{aligned}$$

Mathematica [**A**]   time = 0.06, size = 121, normalized size = 0.47

$$-\frac{(a+bx)\left(a\left(a^3(3A+4Bx)-2a^2bx(2A+3Bx)+6ab^2x^2(A+2Bx)-12Ab^3x^3\right)-12b^3x^4\log(x)(Ab-aB)+12b}{12a^5x^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/12*((a + b*x)*(a*(-12*A*b^3*x^3 + 6*a*b^2*x^2*(A + 2*B*x) - 2*a^2*b*x*(2
*A + 3*B*x) + a^3*(3*A + 4*B*x)) - 12*b^3*(A*b - a*B)*x^4*Log[x] + 12*b^3*(
A*b - a*B)*x^4*Log[a + b*x]))/(a^5*x^4*Sqrt[(a + b*x)^2])
```

fricas [**A**]   time = 0.89, size = 117, normalized size = 0.46

$$\frac{12\left(Bab^3-Ab^4\right)x^4\log\left(bx+a\right)-12\left(Bab^3-Ab^4\right)x^4\log(x)-3\,Aa^4-12\left(Ba^2b^2-Aab^3\right)x^3+6\left(Ba^3b-Aa^2b^2\right)x}{12\,a^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*(B*a*b^3 - A*b^4)*x^4*log(b*x + a) - 12*(B*a*b^3 - A*b^4)*x^4*log(
x) - 3*A*a^4 - 12*(B*a^2*b^2 - A*a*b^3)*x^3 + 6*(B*a^3*b - A*a^2*b^2)*x^2 -
 4*(B*a^4 - A*a^3*b)*x)/(a^5*x^4)
```

giac [**A**]   time = 0.23, size = 188, normalized size = 0.73

$$-\frac{\left(Bab^3\mathrm{sgn}\left(bx+a\right)-Ab^4\mathrm{sgn}\left(bx+a\right)\right)\log\left(|x|\right)}{a^5}+\frac{\left(Bab^4\mathrm{sgn}\left(bx+a\right)-Ab^5\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{a^5b}-\frac{3\,Aa^4\mathrm{sg}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*log(abs(x))/a^5 + (B*a*b^4*sgn
(b*x + a) - A*b^5*sgn(b*x + a))*log(abs(b*x + a))/(a^5*b) - 1/12*(3*A*a^4*s
gn(b*x + a) + 12*(B*a^2*b^2*sgn(b*x + a) - A*a*b^3*sgn(b*x + a))*x^3 - 6*(B
*a^3*b*sgn(b*x + a) - A*a^2*b^2*sgn(b*x + a))*x^2 + 4*(B*a^4*sgn(b*x + a) -
 A*a^3*b*sgn(b*x + a))*x)/(a^5*x^4)
```

maple [**A**]   time = 0.07, size = 143, normalized size = 0.56

$$-\frac{(bx+a)\left(-12A\,b^4x^4\ln(x)+12A\,b^4x^4\ln\left(bx+a\right)+12Ba\,b^3x^4\ln(x)-12Ba\,b^3x^4\ln\left(bx+a\right)-12Aa\,b^3x^3+12B\,a\right.}{12\sqrt{\left(bx+a\right)^2}\;a^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*A*ln(b*x+a)*x^4*b^4-12*A*ln(x)*x^4*b^4-12*B*ln(b*x+a)*x^4
*a*b^3+12*B*ln(x)*x^4*a*b^3-12*A*a*b^3*x^3+12*B*x^3*a^2*b^2+6*A*a^2*b^2*x^2
-6*B*x^2*a^3*b-4*A*a^3*b*x+4*B*a^4*x+3*A*a^4)/((b*x+a)^2)^(1/2)/x^4/a^5
```

maxima [**A**]   time = 0.54, size = 284, normalized size = 1.11

$$\frac{(-1)^{2\,abx+2\,a^2}\,Bb^3\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}-\frac{(-1)^{2\,abx+2\,a^2}\,Ab^4\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^5}-\frac{11\,\sqrt{b^2x^2+2\,abx+a^2}\,Bb^2}{6\,a^4x}+\frac{25\,\sqrt{b^2x^2+2}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] (-1)^(2*a*b*x + 2*a^2)*B*b^3*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 - (-1)^
(2*a*b*x + 2*a^2)*A*b^4*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 - 11/6*sqrt(
b^2*x^2 + 2*a*b*x + a^2)*B*b^2/(a^4*x) + 25/12*sqrt(b^2*x^2 + 2*a*b*x + a^2
)*A*b^3/(a^5*x) + 5/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*b/(a^3*x^2) - 13/12*s
qrt(b^2*x^2 + 2*a*b*x + a^2)*A*b^2/(a^4*x^2) - 1/3*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*B/(a^2*x^3) + 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*b/(a^3*x^3) - 1/4*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*A/(a^2*x^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^5\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^5*((a + b*x)^2)^(1/2)), x)
```

sympy [A] time = 0.59, size = 189, normalized size = 0.74

$$\frac{-3Aa^3 + x^3\left(12Ab^3 - 12Bab^2\right) + x^2\left(-6Aab^2 + 6Ba^2b\right) + x\left(4Aa^2b - 4Ba^3\right)}{12a^4x^4} - \frac{b^3\left(-Ab + Ba\right)\log\left(x + \frac{-Aab^4+Ba}{-2}\right.}{a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-3*A*a**3 + x**3*(12*A*b**3 - 12*B*a*b**2) + x**2*(-6*A*a*b**2 + 6*B*a**2*
b) + x*(4*A*a**2*b - 4*B*a**3))/(12*a**4*x**4) - b**3*(-A*b + B*a)*log(x +
(-A*a*b**4 + B*a**2*b**3 - a*b**3*(-A*b + B*a))/(-2*A*b**5 + 2*B*a*b**4))/a
**5 + b**3*(-A*b + B*a)*log(x + (-A*a*b**4 + B*a**2*b**3 + a*b**3*(-A*b + B
*a))/(-2*A*b**5 + 2*B*a*b**4))/a**5
```

3.714 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=249

$$\frac{2a^2(a+bx)(3Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{3ax(a+bx)(Ab-2aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x^2(a+bx)(Ab-3aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^3(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}-$$

```
[Out] a^3*(4*A*b-5*B*a)/b^6/((b*x+a)^2)^(1/2)-1/2*a^4*(A*b-B*a)/b^6/(b*x+a)/((b*x
+a)^2)^(1/2)-3*a*(A*b-2*B*a)*x*(b*x+a)/b^5/((b*x+a)^2)^(1/2)+1/2*(A*b-3*B*a
)*x^2*(b*x+a)/b^4/((b*x+a)^2)^(1/2)+1/3*B*x^3*(b*x+a)/b^3/((b*x+a)^2)^(1/2)
+2*a^2*(3*A*b-5*B*a)*(b*x+a)*ln(b*x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$-\frac{a^4(Ab-aB)}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{3ax(a+bx)(Ab-2aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x^2(a+bx)(Ab-3aB)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^3*(4*A*b - 5*a*B))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^4*(A*b - a*B
))/(2*b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*a*(A*b - 2*a*B)*x*(
a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*x^2*(a + b*x
))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^3*(a + b*x))/(3*b^3*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]) + (2*a^2*(3*A*b - 5*a*B)*(a + b*x)*Log[a + b*x])/(b
^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^4(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{3a(-Ab+2aB)}{b^8}+\frac{(Ab-3aB)x}{b^7}+\frac{Bx^2}{b^6}-\frac{a^4(-Ab+aB)}{b^8(a+bx)^3}+\frac{a^3(-4Ab+5aB)}{b^8(a+bx)^2}-\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a^3(4Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{a^4(Ab-aB)}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(Ab-2aB)x(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 140, normalized size = 0.56

$$\frac{-27a^5B+3a^4b(7A+2Bx)+3a^3b^2x(2A+21Bx)+a^2b^3x^2(20Bx-33A)-12a^2(a+bx)^2(5aB-3Ab)\log(a+}{6b^6(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-27*a^5*B + b^5*x^4*(3*A + 2*B*x) + 3*a^4*b*(7*A + 2*B*x) - a*b^4*x^3*(12*
A + 5*B*x) + a^2*b^3*x^2*(-33*A + 20*B*x) + 3*a^3*b^2*x*(2*A + 21*B*x) - 12
*a^2*(-3*A*b + 5*a*B)*(a + b*x)^2*Log[a + b*x])/(6*b^6*(a + b*x)*Sqrt[(a +
b*x)^2])
```

fricas [A] time = 0.89, size = 197, normalized size = 0.79

$$\frac{2\,Bb^5x^5-27\,Ba^5+21\,Aa^4b-\big(5\,Bab^4-3\,Ab^5\big)x^4+4\,\big(5\,Ba^2b^3-3\,Aab^4\big)x^3+3\,\big(21\,Ba^3b^2-11\,Aa^2b^3\big)x^2+6\,\big(}{6\,\big(b^8x^2+2\,ab^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^5*x^5 - 27*B*a^5 + 21*A*a^4*b - (5*B*a*b^4 - 3*A*b^5)*x^4 + 4*(5
*B*a^2*b^3 - 3*A*a*b^4)*x^3 + 3*(21*B*a^3*b^2 - 11*A*a^2*b^3)*x^2 + 6*(B*a^
4*b + A*a^3*b^2)*x - 12*(5*B*a^5 - 3*A*a^4*b + (5*B*a^3*b^2 - 3*A*a^2*b^3)*
x^2 + 2*(5*B*a^4*b - 3*A*a^3*b^2)*x)*log(b*x + a))/(b^8*x^2 + 2*a*b^7*x + a
^2*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 217, normalized size = 0.87

$$\big(2B\,b^5x^5+3A\,b^5x^4-5Ba\,b^4x^4+36A\,a^2b^3x^2\ln(bx+a)-12Aa\,b^4x^3-60B\,a^3b^2x^2\ln(bx+a)+20B\,a^2b^3x^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/6*(2*B*b^5*x^5+3*A*b^5*x^4-5*B*a*b^4*x^4+36*A*ln(b*x+a)*x^2*a^2*b^3-12*A*
a*b^4*x^3-60*B*ln(b*x+a)*x^2*a^3*b^2+20*B*a^2*b^3*x^3+72*A*ln(b*x+a)*x*a^3*
b^2-33*A*a^2*b^3*x^2-120*B*ln(b*x+a)*x*a^4*b+63*B*a^3*b^2*x^2+36*A*a^4*b*ln
(b*x+a)+6*A*a^3*b^2*x-60*B*a^5*ln(b*x+a)+6*B*a^4*b*x+21*A*a^4*b-27*B*a^5)*(
b*x+a)/b^6/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.59, size = 303, normalized size = 1.22

$$\frac{Bx^4}{3\,\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{7\,Bax^3}{6\,\sqrt{b^2x^2+2\,abx+a^2}\,b^3}+\frac{Ax^3}{2\,\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{9\,Ba^2x^2}{2\,\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{}{2\,\sqrt{b^2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/3*B*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 7/6*B*a*x^3/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) + 1/2*A*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 9/2*
B*a^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 5/2*A*a*x^2/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) - 10*B*a^3*log(x + a/b)/b^6 + 6*A*a^2*log(x + a/b)/b^5
 + 9*B*a^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^6) - 5*A*a^3/(sqrt(b^2*x^2 + 2*
a*b*x + a^2)*b^5) - 20*B*a^4*x/(b^7*(x + a/b)^2) + 12*A*a^3*x/(b^6*(x + a/b
)^2) - 39/2*B*a^5/(b^8*(x + a/b)^2) + 23/2*A*a^4/(b^7*(x + a/b)^2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.715 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=202

$$-\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(a+bx)(Ab-2aB)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x(a+bx)(Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx^2(a+bx)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+$$

```
[Out] -a^2*(3*A*b-4*B*a)/b^5/((b*x+a)^2)^(1/2)+1/2*a^3*(A*b-B*a)/b^5/(b*x+a)/((b*
x+a)^2)^(1/2)+(A*b-3*B*a)*x*(b*x+a)/b^4/((b*x+a)^2)^(1/2)+1/2*B*x^2*(b*x+a)
/b^3/((b*x+a)^2)^(1/2)-3*a*(A*b-2*B*a)*(b*x+a)*ln(b*x+a)/b^5/((b*x+a)^2)^(1
/2)
```

Rubi [A] time = 0.14, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$\frac{a^3(Ab-aB)}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{x(a+bx)(Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{3a(a+bx)(Ab-2aB)\log(a+}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((a^2*(3*A*b - 4*a*B))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a^3*(A*b -
a*B))/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*x*(a
 + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x^2*(a + b*x))/(2*b^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (3*a*(A*b - 2*a*B)*(a + b*x)*Log[a + b*x])/(b
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^3(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-3aB}{b^7}+\frac{Bx}{b^6}+\frac{a^3(-Ab+aB)}{b^7(a+bx)^3}-\frac{a^2(-3Ab+4aB)}{b^7(a+bx)^2}+\frac{3a(-Ab+2aB)}{b^7(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a^2(3Ab-4aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(Ab-aB)}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-3aB)x(a+b}{b^4\sqrt{a^2+2abx+b^2}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 117, normalized size = 0.58

$$\frac{7a^4B+a^3(2bBx-5Ab)-a^2b^2x(4A+11Bx)+4ab^3x^2(A-Bx)+6a(a+bx)^2(2aB-Ab)\log(a+bx)+b^4x^3(2A}{2b^5(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*a^4*B + 4*a*b^3*x^2*(A - B*x) + b^4*x^3*(2*A + B*x) - a^2*b^2*x*(4*A + 1
1*B*x) + a^3*(-5*A*b + 2*b*B*x) + 6*a*(-(A*b) + 2*a*B)*(a + b*x)^2*Log[a +
b*x])/(2*b^5*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.92, size = 171, normalized size = 0.85

$$\frac{Bb^4x^4+7\,Ba^4-5\,Aa^3b-2\left(2\,Bab^3-Ab^4\right)x^3-\left(11\,Ba^2b^2-4\,Aab^3\right)x^2+2\left(Ba^3b-2\,Aa^2b^2\right)x+6\left(2\,Ba^4-Aa^3b\right.}{2\left(b^7x^2+2\,ab^6x+a^2b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^4*x^4 + 7*B*a^4 - 5*A*a^3*b - 2*(2*B*a*b^3 - A*b^4)*x^3 - (11*B*a^
2*b^2 - 4*A*a*b^3)*x^2 + 2*(B*a^3*b - 2*A*a^2*b^2)*x + 6*(2*B*a^4 - A*a^3*b
 + (2*B*a^2*b^2 - A*a*b^3)*x^2 + 2*(2*B*a^3*b - A*a^2*b^2)*x)*log(b*x + a))
/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.10, size = 191, normalized size = 0.95

$$-\frac{\left(-B\,b^4x^4+6Aa\,b^3x^2\ln\left(bx+a\right)-2A\,b^4x^3-12B\,a^2b^2x^2\ln\left(bx+a\right)+4Ba\,b^3x^3+12A\,a^2b^2x\ln\left(bx+a\right)-4Aa\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-B*b^4*x^4+6*A*ln(b*x+a)*x^2*a*b^3-2*A*b^4*x^3-12*B*ln(b*x+a)*x^2*a^2
*b^2+4*B*x^3*a*b^3+12*A*ln(b*x+a)*x*a^2*b^2-4*A*x^2*a*b^3-24*B*ln(b*x+a)*x*
a^3*b+11*B*x^2*a^2*b^2+6*A*a^3*b*ln(b*x+a)+4*A*x*a^2*b^2-12*B*a^4*ln(b*x+a)
-2*B*a^3*b*x+5*A*a^3*b-7*B*a^4)*(b*x+a)/b^5/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.51, size = 242, normalized size = 1.20

$$\frac{Bx^3}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{5\,Bax^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}+\frac{Ax^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{6\,Ba^2\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{3\,Aa\log\left(x+\frac{a}{b}\right)}{b^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 5/2*B*a*x^2/(sqrt(b^2*x^2 +
 2*a*b*x + a^2)*b^3) + A*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 6*B*a^2*
log(x + a/b)/b^5 - 3*A*a*log(x + a/b)/b^4 - 5*B*a^3/(sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*b^5) + 2*A*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) + 12*B*a^3*x/(b^
6*(x + a/b)^2) - 6*A*a^2*x/(b^5*(x + a/b)^2) + 23/2*B*a^4/(b^7*(x + a/b)^2)
 - 11/2*A*a^3/(b^6*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.716 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=154

$$-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-3aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] a*(2*A*b-3*B*a)/b^4/((b*x+a)^2)^(1/2)-1/2*a^2*(A*b-B*a)/b^4/(b*x+a)/((b*x+a
)^2)^(1/2)+B*x*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+(A*b-3*B*a)*(b*x+a)*ln(b*x+a)/
b^4/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.11, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{770, 77\}$

$$-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-3aB)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a*(2*A*b - 3*a*B))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^2*(A*b - a*B))
/(2*b^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x*(a + b*x))/(b^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 3*a*B)*(a + b*x)*Log[a + b*x])/(b^4*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^2(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{B}{b^6}-\frac{a^2(-Ab+aB)}{b^6(a+bx)^3}+\frac{a(-2Ab+3aB)}{b^6(a+bx)^2}+\frac{Ab-3aB}{b^6(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{a(2Ab-3aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(Ab-aB)}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.58

$$\frac{-5a^3B+a^2b(3A-4Bx)+4ab^2x(A+Bx)+2(a+bx)^2(Ab-3aB)\log(a+bx)+2b^3Bx^3}{2b^4(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-5*a^3*B + 2*b^3*B*x^3 + a^2*b*(3*A - 4*B*x) + 4*a*b^2*x*(A + B*x) + 2*(A*
b - 3*a*B)*(a + b*x)^2*Log[a + b*x])/(2*b^4*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.53, size = 134, normalized size = 0.87

$$\frac{2\,Bb^3x^3+4\,Bab^2x^2-5\,Ba^3+3\,Aa^2b-4\left(Ba^2b-Aab^2\right)x-2\left(3\,Ba^3-Aa^2b+\left(3\,Bab^2-Ab^3\right)x^2+2\left(3\,Ba^2b-\right.\right.}{2\left(b^6x^2+2\,ab^5x+a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^3*x^3 + 4*B*a*b^2*x^2 - 5*B*a^3 + 3*A*a^2*b - 4*(B*a^2*b - A*a*b
^2)*x - 2*(3*B*a^3 - A*a^2*b + (3*B*a*b^2 - A*b^3)*x^2 + 2*(3*B*a^2*b - A*a
*b^2)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.09, size = 153, normalized size = 0.99

$$\frac{\left(2A\,b^3x^2\ln(bx+a)-6Ba\,b^2x^2\ln(bx+a)+2B\,b^3x^3+4Aa\,b^2x\ln(bx+a)-12B\,a^2bx\ln(bx+a)+4Ba\,b^2x^2\right.}{2\left((bx+a)^2\right)^{\frac{3}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(2*A*ln(b*x+a)*x^2*b^3-6*B*ln(b*x+a)*x^2*a*b^2+2*B*b^3*x^3+4*A*ln(b*x+a
)*x*a*b^2-12*B*ln(b*x+a)*x*a^2*b+4*B*a*b^2*x^2+2*A*a^2*b*ln(b*x+a)+4*A*a*b^
2*x-6*B*a^3*ln(b*x+a)-4*B*a^2*b*x+3*A*a^2*b-5*B*a^3)*(b*x+a)/b^4/((b*x+a)^2
)^(3/2)
```

maxima [A] time = 0.53, size = 154, normalized size = 1.00

$$\frac{Bx^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{3\,Ba\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{A\log\left(x+\frac{a}{b}\right)}{b^3}+\frac{2\,Ba^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{6\,Ba^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,Aax}{b^4\left(x+\frac{a}{b}\right)^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] B*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 3*B*a*log(x + a/b)/b^4 + A*log(
x + a/b)/b^3 + 2*B*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 6*B*a^2*x/(b^5
*(x + a/b)^2) + 2*A*a*x/(b^4*(x + a/b)^2) - 11/2*B*a^3/(b^6*(x + a/b)^2) +
3/2*A*a^2/(b^5*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.717 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=113

$$-\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (-A*b+2*B*a)/b^3/((b*x+a)^2)^(1/2)+1/2*a*(A*b-B*a)/b^3/(b*x+a)/((b*x+a)^2)^
(1/2)+B*(b*x+a)*ln(b*x+a)/b^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {770, 77}

$$-\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((A*b - 2*a*B)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (a*(A*b - a*B))/(2*b
^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*(a + b*x)*Log[a + b*x])/(b
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{a(-Ab+aB)}{b^5(a+bx)^3}+\frac{Ab-2aB}{b^5(a+bx)^2}+\frac{B}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{Ab-2aB}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+}{b^3\sqrt{a^2+2abx+b^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 65, normalized size = 0.58

$$\frac{3a^2B-ab(A-4Bx)+2B(a+bx)^2\log(a+bx)-2Ab^2x}{2b^3(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*a^2*B - 2*A*b^2*x - a*b*(A - 4*B*x) + 2*B*(a + b*x)^2*Log[a + b*x])/(2*b
^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.89, size = 81, normalized size = 0.72

$$\frac{3\,Ba^2 - Aab + 2\left(2\,Bab - Ab^2\right)x + 2\left(Bb^2x^2 + 2\,Babx + Ba^2\right)\log\left(bx + a\right)}{2\left(b^5x^2 + 2\,ab^4x + a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*a^2 - A*a*b + 2*(2*B*a*b - A*b^2)*x + 2*(B*b^2*x^2 + 2*B*a*b*x + B
*a^2)*log(b*x + a))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 83, normalized size = 0.73

$$-\frac{\left(-2B\,b^2x^2\ln\left(bx + a\right) - 4Babx\ln\left(bx + a\right) + 2A\,b^2x - 2B\,a^2\ln\left(bx + a\right) - 4Babx + Aab - 3B\,a^2\right)\left(bx + a\right)}{2\left(\left(bx + a\right)^2\right)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-2*B*ln(b*x+a)*x^2*b^2-4*B*ln(b*x+a)*x*a*b+2*A*b^2*x-2*B*a^2*ln(b*x+a
)-4*B*a*b*x+A*a*b-3*B*a^2)*(b*x+a)/b^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.50, size = 89, normalized size = 0.79

$$\frac{B\log\left(x + \frac{a}{b}\right)}{b^3} - \frac{A}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} + \frac{2\,Bax}{b^4\left(x + \frac{a}{b}\right)^2} + \frac{3\,Ba^2}{2\,b^5\left(x + \frac{a}{b}\right)^2} + \frac{Aa}{2\,b^4\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] B*log(x + a/b)/b^3 - A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*B*a*x/(b^4*(
x + a/b)^2) + 3/2*B*a^2/(b^5*(x + a/b)^2) + 1/2*A*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral(x*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.718 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -B/b^2/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/b^2/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(B/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*b^2*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b^2}\\ &= -\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 39, normalized size = 0.57

$$\frac{-B(a+2bx)-Ab}{2b^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b) - B*(a + 2*b*x))/(2*b^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.75, size = 38, normalized size = 0.55

$$-\frac{2 Bbx + Ba + Ab}{2 \left(b^4x^2 + 2 ab^3x + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*B*b*x + B*a + A*b)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [**A**] time = 0.05, size = 32, normalized size = 0.46

$$-\frac{(bx + a)(2Bbx + Ab + Ba)}{2 \left((bx + a)^2\right)^{\frac{3}{2}} b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*B*b*x+A*b+B*a)/b^2/((b*x+a)^2)^(3/2)
```

maxima [**A**] time = 0.46, size = 56, normalized size = 0.81

$$-\frac{B}{\sqrt{b^2x^2 + 2 abx + a^2}\, b^2} + \frac{Ba}{2 b^4\left(x + \frac{a}{b}\right)^2} - \frac{A}{2 b^3\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 1/2*B*a/(b^4*(x + a/b)^2) - 1/2*A/
(b^3*(x + a/b)^2)
```

mupad [**B**] time = 1.19, size = 42, normalized size = 0.61

$$-\frac{\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\;\left(A\,b + B\,a + 2\,B\,b\,x\right)}{2\,b^2\,\left(a + b\,x\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(A*b + B*a + 2*B*b*x))/(2*b^2*(a + b*x)^3
)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.719 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=140

$$\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] A/a^2/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)/a/b/(b*x+a)/((b*x+a)^2)^(1/2)+A*(b*x+
a)*ln(x)/a^3/((b*x+a)^2)^(1/2)-A*(b*x+a)*ln(b*x+a)/a^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{770, 77\}$

$$\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx)}{a^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] A/(a^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)/(2*a*b*(a + b*x)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) + (A*(a + b*x)*Log[x])/(a^3*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) - (A*(a + b*x)*Log[a + b*x])/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x}+\frac{-Ab+aB}{ab^3(a+bx)^3}-\frac{A}{a^2b^2(a+bx)^2}-\frac{A}{a^3b^2(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{A}{a^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A(a+bx)\log(x)}{a^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.57

$$\frac{a\left(a^2(-B)+3aAb+2Ab^2x\right)+2Ab\log(x)(a+bx)^2-2Ab(a+bx)^2\log(a+bx)}{2a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a*(3*a*A*b - a^2*B + 2*A*b^2*x) + 2*A*b*(a + b*x)^2*Log[x] - 2*A*b*(a + b*
x)^2*Log[a + b*x])/(2*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.76, size = 109, normalized size = 0.78

$$\frac{2\,Aab^2x - Ba^3 + 3\,Aa^2b - 2\left(Ab^3x^2 + 2\,Aab^2x + Aa^2b\right)\log\left(bx + a\right) + 2\left(Ab^3x^2 + 2\,Aab^2x + Aa^2b\right)\log(x)}{2\left(a^3b^3x^2 + 2\,a^4b^2x + a^5b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2*(2*A*a*b^2*x - B*a^3 + 3*A*a^2*b - 2*(A*b^3*x^2 + 2*A*a*b^2*x + A*a^2*b
)*log(b*x + a) + 2*(A*b^3*x^2 + 2*A*a*b^2*x + A*a^2*b)*log(x))/(a^3*b^3*x^2
 + 2*a^4*b^2*x + a^5*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 116, normalized size = 0.83

$$-\frac{\left(-2A\,b^3x^2\ln(x) + 2A\,b^3x^2\ln\left(bx + a\right) - 4Aa\,b^2x\ln(x) + 4Aa\,b^2x\ln\left(bx + a\right) - 2A\,a^2b\ln(x) + 2A\,a^2b\ln\left(bx\right.\right.}{2\left(\left(bx + a\right)^2\right)^{\frac{3}{2}}a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(2*A*b^3*x^2*ln(b*x+a)-2*A*ln(x)*x^2*b^3+4*A*a*b^2*x*ln(b*x+a)-4*A*ln(
x)*x*a*b^2+2*A*a^2*b*ln(b*x+a)-2*A*ln(x)*a^2*b-2*A*a*b^2*x-3*A*a^2*b+B*a^3)
*(b*x+a)/b/a^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.47, size = 96, normalized size = 0.69

$$-\frac{(-1)^{2\,abx+2\,a^2}A\log\left(\frac{2\,abx}{|x|} + \frac{2\,a^2}{|x|}\right)}{a^3} + \frac{A}{\sqrt{b^2x^2 + 2\,abx + a^2}\,a^2} - \frac{B}{2\,b^3\left(x + \frac{a}{b}\right)^2} + \frac{A}{2\,ab^2\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + A/(sqrt(
b^2*x^2 + 2*a*b*x + a^2)*a^2) - 1/2*B/(b^3*(x + a/b)^2) + 1/2*A/(a*b^2*(x +
 a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B\,x}{x\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*((a + b*x)**2)**(3/2)), x)
```

3.720 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=196

$$-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(3Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)\log(a+bx)}{a^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-a}{a^3\sqrt{a^2+2abx}}$$

```
[Out] (-2*A*b+B*a)/a^3/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/a^2/(b*x+a)/((b*x+a)^2)^(
1/2)-A*(b*x+a)/a^3/x/((b*x+a)^2)^(1/2)-(3*A*b-B*a)*(b*x+a)*ln(x)/a^4/((b*x+
a)^2)^(1/2)+(3*A*b-B*a)*(b*x+a)*ln(b*x+a)/a^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-aB}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(3Ab-aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)\log(}{a^4\sqrt{a^2+2abx+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((2*A*b - a*B)/(a^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*a^2*(
a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(a^3*x*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]) - ((3*A*b - a*B)*(a + b*x)*Log[x])/(a^4*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) + ((3*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^4*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^2\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x^2}+\frac{-3Ab+aB}{a^4b^3x}+\frac{Ab-aB}{a^2b^2(a+bx)^3}+\frac{2Ab-aB}{a^3b^2(a+bx)^2}+\frac{3Ab-aB}{a^4b^2(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{2Ab-aB}{a^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2a^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx}{a^3x\sqrt{a^2+2abx}}\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 110, normalized size = 0.56

$$\frac{a\left(a^2(3Bx-2A)+abx(2Bx-9A)-6Ab^2x^2\right)+2x\log(x)(a+bx)^2(aB-3Ab)+2x(a+bx)^2(3Ab-aB)\log(a+}{2a^4x(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a*(-6*A*b^2*x^2 + a*b*x*(-9*A + 2*B*x) + a^2*(-2*A + 3*B*x)) + 2*(-3*A*b +
 a*B)*x*(a + b*x)^2*Log[x] + 2*(3*A*b - a*B)*x*(a + b*x)^2*Log[a + b*x])/(2
*a^4*x*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.66, size = 187, normalized size = 0.95

$$-\frac{2\,Aa^3-2\left(Ba^2b-3\,Aab^2\right)x^2-3\left(Ba^3-3\,Aa^2b\right)x+2\,(\left(Bab^2-3\,Ab^3\right)x^3+2\left(Ba^2b-3\,Aab^2\right)x^2+(Ba^3-3\,Aa^2}{2\,(a^4b^2x^3+2\,a^5bx^2+a^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*A*a^3 - 2*(B*a^2*b - 3*A*a*b^2)*x^2 - 3*(B*a^3 - 3*A*a^2*b)*x + 2*(
(B*a*b^2 - 3*A*b^3)*x^3 + 2*(B*a^2*b - 3*A*a*b^2)*x^2 + (B*a^3 - 3*A*a^2*b)
*x)*log(b*x + a) - 2*((B*a*b^2 - 3*A*b^3)*x^3 + 2*(B*a^2*b - 3*A*a*b^2)*x^2
 + (B*a^3 - 3*A*a^2*b)*x)*log(x))/(a^4*b^2*x^3 + 2*a^5*b*x^2 + a^6*x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [**A**] time = 0.07, size = 221, normalized size = 1.13

$$\frac{(-6A\,b^3x^3\ln(x)+6A\,b^3x^3\ln(bx+a)+2Ba\,b^2x^3\ln(x)-2Ba\,b^2x^3\ln(bx+a)-12Aa\,b^2x^2\ln(x)+12Aa\,b^2x^2\ln(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(6*A*b^3*x^3*ln(b*x+a)-6*A*b^3*x^3*ln(x)-2*B*a*b^2*x^3*ln(b*x+a)+2*B*a*
b^2*x^3*ln(x)+12*A*ln(b*x+a)*x^2*a*b^2-12*A*a*b^2*x^2*ln(x)-4*B*ln(b*x+a)*x
^2*a^2*b+4*B*a^2*b*x^2*ln(x)+6*A*ln(b*x+a)*x*a^2*b-6*A*ln(x)*x*a^2*b-6*A*a*
b^2*x^2-2*B*ln(b*x+a)*x*a^3+2*B*a^3*x*ln(x)+2*B*a^2*b*x^2-9*A*a^2*b*x+3*B*a
^3*x-2*A*a^3)*(b*x+a)/x/a^4/((b*x+a)^2)^(3/2)
```

maxima [**A**] time = 0.52, size = 191, normalized size = 0.97

$$-\frac{(-1)^{2\,abx+2\,a^2}\,B\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^3}+\frac{3\,(-1)^{2\,abx+2\,a^2}\,Ab\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}+\frac{B}{\sqrt{b^2x^2+2\,abx+a^2}\,a^2}-\frac{3\,Ab}{\sqrt{b^2x^2+2\,abx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^3 + 3*(-1)^(
2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 + B/(sqrt(b^2*x
^2 + 2*a*b*x + a^2)*a^2) - 3*A*b/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3) - A/(s
qrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x) + 1/2*B/(a*b^2*(x + a/b)^2) - 1/2*A/(a^
2*b*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{2} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*((a + b*x)**2)**(3/2)), x)
```

3.721 $\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=243

$$\frac{3b\log(x)(a+bx)(2Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3b(a+bx)(2Ab-aB)\log(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}+\frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)}{a^4x\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] b*(3*A*b-2*B*a)/a^4/((b*x+a)^2)^(1/2)+1/2*b*(A*b-B*a)/a^3/(b*x+a)/((b*x+a)^
2)^(1/2)-1/2*A*(b*x+a)/a^3/x^2/((b*x+a)^2)^(1/2)+(3*A*b-B*a)*(b*x+a)/a^4/x/
((b*x+a)^2)^(1/2)+3*b*(2*A*b-B*a)*(b*x+a)*ln(x)/a^5/((b*x+a)^2)^(1/2)-3*b*(
2*A*b-B*a)*(b*x+a)*ln(b*x+a)/a^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$\frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3Ab-aB)}{a^4x\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3b\log(x)(a+bx)(2Ab-aB)}{a^5\sqrt{a^2+2abx+b^2x^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (b*(3*A*b - 2*a*B))/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B))/(
2*a^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(2*a^3*x^2*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + ((3*A*b - a*B)*(a + b*x))/(a^4*x*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (3*b*(2*A*b - a*B)*(a + b*x)*Log[x])/(a^5*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) - (3*b*(2*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^5*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^3\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^3b^3x^3}+\frac{-3Ab+aB}{a^4b^3x^2}-\frac{3(-2Ab+aB)}{a^5b^2x}+\frac{-Ab+aB}{a^3b(a+bx)^3}+\frac{-3Ab+2aB}{a^4b(a+bx)^2}+\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{b(3Ab-2aB)}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{b(Ab-aB)}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)}{2a^3x^2\sqrt{a^2+2abx+}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 133, normalized size = 0.55

$$\frac{-a\left(a^3(A+2Bx)+a^2bx(9Bx-4A)+6ab^2x^2(Bx-3A)-12Ab^3x^3\right)+6bx^2\log(x)(a+bx)^2(2Ab-aB)+6bx^2}{2a^5x^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(a*(-12*A*b^3*x^3 + 6*a*b^2*x^2*(-3*A + B*x) + a^3*(A + 2*B*x) + a^2*b*x*
(-4*A + 9*B*x))) + 6*b*(2*A*b - a*B)*x^2*(a + b*x)^2*Log[x] + 6*b*(-2*A*b +
 a*B)*x^2*(a + b*x)^2*Log[a + b*x])/(2*a^5*x^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.76, size = 225, normalized size = 0.93

$$-\frac{Aa^4+6\left(Ba^2b^2-2\,Aab^3\right)x^3+9\left(Ba^3b-2\,Aa^2b^2\right)x^2+2\left(Ba^4-2\,Aa^3b\right)x-6\left(\left(Bab^3-2\,Ab^4\right)x^4+2\left(Ba^2b^2\right.\right.}{2\left(a^5b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^4 + 6*(B*a^2*b^2 - 2*A*a*b^3)*x^3 + 9*(B*a^3*b - 2*A*a^2*b^2)*x^2
 + 2*(B*a^4 - 2*A*a^3*b)*x - 6*((B*a*b^3 - 2*A*b^4)*x^4 + 2*(B*a^2*b^2 - 2*
A*a*b^3)*x^3 + (B*a^3*b - 2*A*a^2*b^2)*x^2)*log(b*x + a) + 6*((B*a*b^3 - 2*
A*b^4)*x^4 + 2*(B*a^2*b^2 - 2*A*a*b^3)*x^3 + (B*a^3*b - 2*A*a^2*b^2)*x^2)*l
og(x))/(a^5*b^2*x^4 + 2*a^6*b*x^3 + a^7*x^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 262, normalized size = 1.08

$$-\frac{\left(-12A\,b^4x^4\ln(x)+12A\,b^4x^4\ln(bx+a)+6Ba\,b^3x^4\ln(x)-6Ba\,b^3x^4\ln(bx+a)-24Aa\,b^3x^3\ln(x)+24Aa\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(12*A*b^4*x^4*ln(b*x+a)-12*A*b^4*x^4*ln(x)-6*B*a*b^3*x^4*ln(b*x+a)+6*B
*a*b^3*x^4*ln(x)+24*A*ln(b*x+a)*x^3*a*b^3-24*A*ln(x)*x^3*a*b^3-12*B*ln(b*x+
a)*x^3*a^2*b^2+12*B*ln(x)*x^3*a^2*b^2+12*A*ln(b*x+a)*x^2*a^2*b^2-12*A*ln(x)
*x^2*a^2*b^2-12*A*a*b^3*x^3-6*B*ln(b*x+a)*x^2*a^3*b+6*B*ln(x)*x^2*a^3*b+6*B
*a^2*b^2*x^3-18*A*a^2*b^2*x^2+9*B*a^3*b*x^2-4*A*a^3*b*x+2*B*a^4*x+A*a^4)*(b
*x+a)/x^2/a^5/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.49, size = 250, normalized size = 1.03

$$\frac{3\,(-1)^{2\,abx+2\,a^2}\,Bb\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^4}-\frac{6\,(-1)^{2\,abx+2\,a^2}\,Ab^2\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^5}-\frac{3\,Bb}{\sqrt{b^2x^2+2\,abx+a^2}\,a^3}+\frac{6\,A}{\sqrt{b^2x^2+2\,}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 3*(-1)^(2*a*b*x + 2*a^2)*B*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^4 - 6*(-1
)^(2*a*b*x + 2*a^2)*A*b^2*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 - 3*B*b/(s
qrt(b^2*x^2 + 2*a*b*x + a^2)*a^3) + 6*A*b^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*
a^4) - B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x) + 5/2*A*b/(sqrt(b^2*x^2 + 2*
a*b*x + a^2)*a^3*x) - 1/2*A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x^2) + 1/2*A
/(a^3*(x + a/b)^2) - 1/2*B/(a^2*b*(x + a/b)^2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*((a + b*x)**2)**(3/2)), x)
```

3.722 $\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=245

$$-\frac{a^2(3Ab-5aB)}{b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2a(2Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-5aB)\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)}{b^5\sqrt{a^2+2abx+b^2}}$$

```
[Out] 2*a*(2*A*b-5*B*a)/b^6/((b*x+a)^2)^(1/2)-1/4*a^4*(A*b-B*a)/b^6/(b*x+a)^3/((b
*x+a)^2)^(1/2)+1/3*a^3*(4*A*b-5*B*a)/b^6/(b*x+a)^2/((b*x+a)^2)^(1/2)-a^2*(3
*A*b-5*B*a)/b^6/(b*x+a)/((b*x+a)^2)^(1/2)+B*x*(b*x+a)/b^5/((b*x+a)^2)^(1/2)
+(A*b-5*B*a)*(b*x+a)*ln(b*x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{a^4(Ab-aB)}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5aB)}{3b^6(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{a^2(3Ab-5aB)}{b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2a(2}{b^6\sqrt{a^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a*(2*A*b - 5*a*B))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^4*(A*b - a*B
))/(4*b^6*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^3*(4*A*b - 5*a*B)
)/(3*b^6*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (a^2*(3*A*b - 5*a*B))
/(b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*x*(a + b*x))/(b^5*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - 5*a*B)*(a + b*x)*Log[a + b*x])/(b^6*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^4(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{B}{b^{10}}-\frac{a^4(-Ab+aB)}{b^{10}(a+bx)^5}+\frac{a^3(-4Ab+5aB)}{b^{10}(a+bx)^4}-\frac{2a^2(-3Ab+5aB)}{b^{10}(a+bx)^3}+\frac{2a(-2Ab+5aB)}{b^{10}(a+bx)^2}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2a(2Ab-5aB)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{a^4(Ab-aB)}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3(4Ab-5}{3b^6(a+bx)^2\sqrt{a^2+}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 127, normalized size = 0.52

$$\frac{-77a^5B + a^4b(25A - 248Bx) + 4a^3b^2x(22A - 63Bx) + 12a^2b^3x^2(9A - 4Bx) + 48ab^4x^3(A + Bx) + 12(a + bx)^4(A}{12b^6(a + bx)^3\sqrt{(a + bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-77*a^5*B + 12*b^5*B*x^5 + a^4*b*(25*A - 248*B*x) + 4*a^3*b^2*x*(22*A - 63
*B*x) + 12*a^2*b^3*x^2*(9*A - 4*B*x) + 48*a*b^4*x^3*(A + B*x) + 12*(A*b - 5
*a*B)*(a + b*x)^4*Log[a + b*x])/(12*b^6*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.89, size = 252, normalized size = 1.03

$$\frac{12\,Bb^5x^5 + 48\,Bab^4x^4 - 77\,Ba^5 + 25\,Aa^4b - 48\left(Ba^2b^3 - Aab^4\right)x^3 - 36\left(7\,Ba^3b^2 - 3\,Aa^2b^3\right)x^2 - 8\left(31\,Ba^4b - 11\,A\right.}{12\left(b^{10}x^4 + 4\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^5*x^5 + 48*B*a*b^4*x^4 - 77*B*a^5 + 25*A*a^4*b - 48*(B*a^2*b^3
 - A*a*b^4)*x^3 - 36*(7*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 - 8*(31*B*a^4*b - 11*A
*a^3*b^2)*x - 12*(5*B*a^5 - A*a^4*b + (5*B*a*b^4 - A*b^5)*x^4 + 4*(5*B*a^2*
b^3 - A*a*b^4)*x^3 + 6*(5*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(5*B*a^4*b - A*a^3
*b^2)*x)*log(b*x + a))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 273, normalized size = 1.11

$$\frac{\left(12A\,b^5x^4\ln\left(bx + a\right) - 60Ba\,b^4x^4\ln\left(bx + a\right) + 12B\,b^5x^5 + 48Aa\,b^4x^3\ln\left(bx + a\right) - 240B\,a^2b^3x^3\ln\left(bx + a\right) + 48B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(12*A*ln(b*x+a)*x^4*b^5-60*B*ln(b*x+a)*x^4*a*b^4+12*B*b^5*x^5+48*A*ln(
b*x+a)*x^3*a*b^4-240*B*ln(b*x+a)*x^3*a^2*b^3+48*B*a*b^4*x^4+72*A*a^2*b^3*x^
2*ln(b*x+a)+48*A*a*b^4*x^3-360*B*a^3*b^2*x^2*ln(b*x+a)-48*B*a^2*b^3*x^3+48*
A*a^3*b^2*x*ln(b*x+a)+108*A*a^2*b^3*x^2-240*B*a^4*b*x*ln(b*x+a)-252*B*a^3*b
^2*x^2+12*A*a^4*b*ln(b*x+a)+88*A*a^3*b^2*x-60*B*a^5*ln(b*x+a)-248*B*a^4*b*x
+25*A*a^4*b-77*B*a^5)*(b*x+a)/b^6/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.79, size = 211, normalized size = 0.86

$$\frac{1}{12}\,B\left(\frac{12\,b^5x^5 + 48\,ab^4x^4 - 48\,a^2b^3x^3 - 252\,a^3b^2x^2 - 248\,a^4bx - 77\,a^5}{b^{10}x^4 + 4\,ab^9x^3 + 6\,a^2b^8x^2 + 4\,a^3b^7x + a^4b^6} - \frac{60\,a\log\left(bx + a\right)}{b^6}\right) + \frac{1}{12}\,A\left(\frac{48\,ab^3x^3 + 10}{b^9x^4 + 4\,ab^8x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*B*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248
*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x +
a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/12*A*((48*a*b^3*x^3 + 108*a^2*b^2*x^2
 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*
x + a^4*b^5) + 12*log(b*x + a)/b^5)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.723 $\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=188

$$\frac{x^4(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a^2B}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 3*a*B/b^5/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)*x^4/a/b/(b*x+a)^3/((b*x+a)^2)^(1/
2)+1/3*a^3*B/b^5/(b*x+a)^2/((b*x+a)^2)^(1/2)-3/2*a^2*B/b^5/(b*x+a)/((b*x+a)
^2)^(1/2)+B*(b*x+a)*ln(b*x+a)/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {770, 78, 43}

$$\frac{x^4(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3a^2B}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{a^3B}{3b^5(a+bx)^2\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (3*a*B)/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*x^4)/(4*a*b*(a +
 b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (a^3*B)/(3*b^5*(a + b*x)^2*Sqrt[a^
2 + 2*a*b*x + b^2*x^2]) - (3*a^2*B)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) + (B*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^3(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \frac{x^3}{\left(ab+b^2x\right)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \left(-\frac{a^3}{b^7(a+bx)^4}+\frac{3a^2}{b^7(a+bx)^3}-\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{3aB}{b^5\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^4}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{a^3B}{3b^5(a+bx)^2\sqrt{a^2+}}$$

Mathematica [A] time = 0.05, size = 103, normalized size = 0.55

$$\frac{25a^4B+a^3(88bBx-3Ab)-12a^2b^2x(A-9Bx)+6ab^3x^2(8Bx-3A)+12B(a+bx)^4\log(a+bx)-12Ab^4x^3}{12b^5(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (25*a^4*B - 12*A*b^4*x^3 - 12*a^2*b^2*x*(A - 9*B*x) + 6*a*b^3*x^2*(-3*A + 8
*B*x) + a^3*(-3*A*b + 88*b*B*x) + 12*B*(a + b*x)^4*Log[a + b*x])/(12*b^5*(a
 + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.85, size = 175, normalized size = 0.93

$$\frac{25\,Ba^4-3\,Aa^3b+12\left(4\,Bab^3-Ab^4\right)x^3+18\left(6\,Ba^2b^2-Aab^3\right)x^2+4\left(22\,Ba^3b-3\,Aa^2b^2\right)x+12\left(Bb^4x^4+4\,Ba\right.}{12\left(b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(25*B*a^4 - 3*A*a^3*b + 12*(4*B*a*b^3 - A*b^4)*x^3 + 18*(6*B*a^2*b^2 -
 A*a*b^3)*x^2 + 4*(22*B*a^3*b - 3*A*a^2*b^2)*x + 12*(B*b^4*x^4 + 4*B*a*b^3*
x^3 + 6*B*a^2*b^2*x^2 + 4*B*a^3*b*x + B*a^4)*log(b*x + a))/(b^9*x^4 + 4*a*b
^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 168, normalized size = 0.89

$$-\frac{\left(-12B\,b^4x^4\ln(bx+a)-48Ba\,b^3x^3\ln(bx+a)+12A\,b^4x^3-72B\,a^2b^2x^2\ln(bx+a)-48Ba\,b^3x^3+18Aa\,b^3x^2\right.}{12\left((bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-12*B*ln(b*x+a)*x^4*b^4-48*B*ln(b*x+a)*x^3*a*b^3+12*A*b^4*x^3-72*B*a
^2*b^2*x^2*ln(b*x+a)-48*B*a*b^3*x^3+18*A*a*b^3*x^2-48*B*a^3*b*x*ln(b*x+a)-1
08*B*a^2*b^2*x^2+12*A*a^2*b^2*x-12*B*a^4*ln(b*x+a)-88*B*a^3*b*x+3*A*a^3*b-2
5*B*a^4)*(b*x+a)/b^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.65, size = 201, normalized size = 1.07

$$\frac{1}{12}\,B\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log\left(bx+a\right)}{b^5}\right)-\frac{1}{12}\,A\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/12*B*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4
*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5)
- 1/12*A*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 +
2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3)
 - 3*a^3/(b^8*(x + a/b)^4))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3} \left(A + B x\right)}{\left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.724 $\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=77

$$\frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{x^4(Ab-aB)}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/3*A*x^3/a^2/(b^2*x^2+2*a*b*x+a^2)^(3/2)-1/4*(A*b-B*a)*x^4/a^2/(b*x+a)^3/(
(b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = {769, 646, 37}

$$\frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{x^4(Ab-aB)}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (A*x^3)/(3*a^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - ((A*b - a*B)*x^4)/(4*a^2*
(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{\left(2Ab^2-2abB\right)\int \frac{x^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2ab}$$

$$= \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{\left(b^3\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{x^3}{\left(ab+b^2x\right)^5}\,dx}{2a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ax^3}{3a^2\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{(Ab-aB)x^4}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.95

$$\frac{-3a^3B-a^2b(A+12Bx)-2ab^2x(2A+9Bx)-6b^3x^2(A+2Bx)}{12b^4(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*a^3*B - 6*b^3*x^2*(A + 2*B*x) - 2*a*b^2*x*(2*A + 9*B*x) - a^2*b*(A + 12
*B*x))/(12*b^4*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.89, size = 105, normalized size = 1.36

$$-\frac{12\,Bb^3x^3+3\,Ba^3+Aa^2b+6\left(3\,Bab^2+Ab^3\right)x^2+4\left(3\,Ba^2b+Aab^2\right)x}{12\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^3*x^3 + 3*B*a^3 + A*a^2*b + 6*(3*B*a*b^2 + A*b^3)*x^2 + 4*(3*
B*a^2*b + A*a*b^2)*x)/(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x
+ a^4*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 77, normalized size = 1.00

$$-\frac{(bx+a)\left(12B\,b^3x^3+6A\,b^3x^2+18Ba\,b^2x^2+4Aa\,b^2x+12B\,a^2bx+A\,a^2b+3B\,a^3\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*B*b^3*x^3+6*A*b^3*x^2+18*B*a*b^2*x^2+4*A*a*b^2*x+12*B*a^2
*b*x+A*a^2*b+3*B*a^3)/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.52, size = 156, normalized size = 2.03

$$-\frac{Bx^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{2\,Ba^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}-\frac{Ba}{2\,b^6\left(x+\frac{a}{b}\right)^2}-\frac{A}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba^2}{3\,b^7\left(x+\frac{a}{b}\right)^3}+\frac{2\,Aa}{3\,b^6\left(x+\frac{a}{b}\right)^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 2/3*B*a^2/((b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*b^4) - 1/2*B*a/(b^6*(x + a/b)^2) - 1/2*A/(b^5*(x + a/b)^2) +
 2/3*B*a^2/(b^7*(x + a/b)^3) + 2/3*A*a/(b^6*(x + a/b)^3) + 1/4*B*a^3/(b^8*(
x + a/b)^4) - 1/4*A*a^2/(b^7*(x + a/b)^4)
```

mupad [B] time = 1.27, size = 201, normalized size = 2.61

$$-\frac{\left(\frac{B\,a^2-A\,a\,b}{3\,b^4}-\frac{a\left(\frac{A\,b^2-B\,a\,b}{3\,b^4}-\frac{B\,a}{3\,b^3}\right)}{b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^4}-\frac{\left(\frac{A\,b-2\,B\,a}{2\,b^4}-\frac{B\,a}{2\,b^4}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^3}-\frac{B\sqrt{a^2+2\,a\,b\,x+}}{b^4\,{\left(a+b\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] - (((B*a^2 - A*a*b)/(3*b^4) - (a*((A*b^2 - B*a*b)/(3*b^4) - (B*a)/(3*b^3)))
/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^4 - (((A*b - 2*B*a)/(2*b^4)
- (B*a)/(2*b^4))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^3 - (B*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/(b^4*(a + b*x)^2) - (a^2*(A/(4*b) - (B*a)/(4*b^2))
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(b^2*(a + b*x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{x^2\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.725 $\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=121

$$-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/4*a*(A*b-B*a)/b^3/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/3*(-A*b+2*B*a)/b^3/(b*x+a
)^2/((b*x+a)^2)^(1/2)-1/2*B/b^3/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{770, 77\}$

$$-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a*(A*b - a*B))/(4*b^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b -
2*a*B)/(3*b^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - B/(2*b^3*(a + b*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{a(-Ab+aB)}{b^7(a+bx)^5}+\frac{Ab-2aB}{b^7(a+bx)^4}+\frac{B}{b^7(a+bx)^3}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{a(Ab-aB)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-2aB}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.46

$$\frac{a^2(-B)-ab(A+4Bx)-2b^2x(2A+3Bx)}{12b^3(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(a^2*B) - 2*b^2*x*(2*A + 3*B*x) - a*b*(A + 4*B*x))/(12*b^3*(a + b*x)^3*Sq
rt[(a + b*x)^2])
```

fricas [**A**] time = 0.86, size = 80, normalized size = 0.66

$$-\frac{6\,Bb^2x^2+Ba^2+Aab+4\left(Bab+Ab^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b^2*x^2 + B*a^2 + A*a*b + 4*(B*a*b + A*b^2)*x)/(b^7*x^4 + 4*a*b^
6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.43

$$-\frac{(bx+a)\left(6B\,b^2x^2+4A\,b^2x+4Babx+Aab+B\,a^2\right)}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^3*(6*B*b^2*x^2+4*A*b^2*x+4*B*a*b*x+A*a*b+B*a^2)/((b*x+a)^2)
^(5/2)
```

maxima [**A**] time = 0.55, size = 90, normalized size = 0.74

$$-\frac{A}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{B}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba}{3\,b^6\left(x+\frac{a}{b}\right)^3}-\frac{Ba^2}{4\,b^7\left(x+\frac{a}{b}\right)^4}+\frac{Aa}{4\,b^6\left(x+\frac{a}{b}\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*A/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*B/(b^5*(x + a/b)^2) + 2/
3*B*a/(b^6*(x + a/b)^3) - 1/4*B*a^2/(b^7*(x + a/b)^4) + 1/4*A*a/(b^6*(x + a
/b)^4)
```

mupad [**B**] time = 1.25, size = 62, normalized size = 0.51

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(B\,a^2+4\,B\,a\,b\,x+A\,a\,b+6\,B\,b^2\,x^2+4\,A\,b^2\,x\right)}{12\,b^3\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(B*a^2 + 6*B*b^2*x^2 + A*a*b + 4*A*b^2*x
+ 4*B*a*b*x))/(12*b^3*(a + b*x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.726 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

```
[Out] -1/3*B/b^2/(b^2*x^2+2*a*b*x+a^2)^(3/2)+1/4*(-A*b+B*a)/b^2/(b*x+a)/(b^2*x^2+
2*a*b*x+a^2)^(3/2)
```

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -B/(3*b^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (A*b - a*B)/(4*b^2*(a + b*x)*(
a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2b^2}\\ &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.55

$$\frac{-B(a+4bx)-3Ab}{12b^2(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*A*b - B*(a + 4*b*x))/(12*b^2*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.60, size = 61, normalized size = 0.86

$$-\frac{4\,Bbx + Ba + 3\,Ab}{12\,\left(b^{6}x^{4} + 4\,ab^{5}x^{3} + 6\,a^{2}b^{4}x^{2} + 4\,a^{3}b^{3}x + a^{4}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(4*B*b*x + B*a + 3*A*b)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 33, normalized size = 0.46

$$-\frac{(bx + a)\,(4Bbx + 3Ab + Ba)}{12\left((bx + a)^{2}\right)^{\frac{5}{2}} b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^2*(4*B*b*x+3*A*b+B*a)/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.52, size = 56, normalized size = 0.79

$$-\frac{B}{3\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}b^{2}} + \frac{Ba}{4\,b^{6}\left(x + \frac{a}{b}\right)^{4}} - \frac{A}{4\,b^{5}\left(x + \frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 1/4*B*a/(b^6*(x + a/b)^4) -
1/4*A/(b^5*(x + a/b)^4)
```

mupad [B] time = 1.20, size = 43, normalized size = 0.61

$$-\frac{\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\,\left(3\,A\,b + B\,a + 4\,B\,b\,x\right)}{12\,b^2\,{\left(a + b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b + B*a + 4*B*b*x))/(12*b^2*(a + b*x
)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left((a + bx)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.727 $\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=210

$$\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A\log(x)(a+bx)}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{A(a+bx)\log(a+bx}{a^5\sqrt{a^2+2abx+b^2x^}}$$

```
[Out] A/a^4/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/3*A
/a^2/(b*x+a)^2/((b*x+a)^2)^(1/2)+1/2*A/a^3/(b*x+a)/((b*x+a)^2)^(1/2)+A*(b*x
+a)*ln(x)/a^5/((b*x+a)^2)^(1/2)-A*(b*x+a)*ln(b*x+a)/a^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = {770, 77}

$$\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{2a^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{a^4\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] A/(a^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)/(4*a*b*(a + b*x)^3*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) + A/(3*a^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) + A/(2*a^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*(a + b*x)*Lo
g[x])/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*(a + b*x)*Log[a + b*x])/(a^5
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^5b^5x}+\frac{-Ab+aB}{ab^5(a+bx)^5}-\frac{A}{a^2b^4(a+bx)^4}-\frac{A}{a^3b^4(a+bx)^3}-\frac{A}{a^4b^4(a+bx)^2}-\frac{A}{a^5b^4(a}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{A}{a^4\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{A}{3a^2(a+bx)^2\sqrt{a^2+2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 104, normalized size = 0.50

$$\frac{a\left(-3a^4B+25a^3Ab+52a^2Ab^2x+42aAb^3x^2+12Ab^4x^3\right)+12Ab\log(x)(a+bx)^4-12Ab(a+bx)^4\log(a+bx}{12a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a*(25*a^3*A*b - 3*a^4*B + 52*a^2*A*b^2*x + 42*a*A*b^3*x^2 + 12*A*b^4*x^3)
+ 12*A*b*(a + b*x)^4*Log[x] - 12*A*b*(a + b*x)^4*Log[a + b*x])/(12*a^5*b*(a
 + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.88, size = 203, normalized size = 0.97

$$\frac{12\,Aab^4x^3+42\,Aa^2b^3x^2+52\,Aa^3b^2x-3\,Ba^5+25\,Aa^4b-12\left(Ab^5x^4+4\,Aab^4x^3+6\,Aa^2b^3x^2+4\,Aa^3b^2x+\right.}{12\left(a^5b^5x^4+4\,a^6b^4x^3+6\,a^7b^3x^2+4\,a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/12*(12*A*a*b^4*x^3 + 42*A*a^2*b^3*x^2 + 52*A*a^3*b^2*x - 3*B*a^5 + 25*A*a
^4*b - 12*(A*b^5*x^4 + 4*A*a*b^4*x^3 + 6*A*a^2*b^3*x^2 + 4*A*a^3*b^2*x + A*
a^4*b)*log(b*x + a) + 12*(A*b^5*x^4 + 4*A*a*b^4*x^3 + 6*A*a^2*b^3*x^2 + 4*A
*a^3*b^2*x + A*a^4*b)*log(x))/(a^5*b^5*x^4 + 4*a^6*b^4*x^3 + 6*a^7*b^3*x^2
+ 4*a^8*b^2*x + a^9*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.07, size = 205, normalized size = 0.98

$$-\frac{\left(-12A\,b^5x^4\ln(x)+12A\,b^5x^4\ln\left(bx+a\right)-48Aa\,b^4x^3\ln(x)+48Aa\,b^4x^3\ln\left(bx+a\right)-72A\,a^2b^3x^2\ln(x)+72\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(12*A*b^5*x^4*ln(b*x+a)-12*A*ln(x)*x^4*b^5+48*A*a*b^4*x^3*ln(b*x+a)-4
8*A*ln(x)*x^3*a*b^4+72*A*a^2*b^3*x^2*ln(b*x+a)-72*A*ln(x)*x^2*a^2*b^3-12*A*
a*b^4*x^3+48*A*a^3*b^2*x*ln(b*x+a)-48*A*ln(x)*x*a^3*b^2-42*A*a^2*b^3*x^2+12
*A*a^4*b*ln(b*x+a)-12*A*ln(x)*a^4*b-52*A*a^3*b^2*x-25*A*a^4*b+3*B*a^5)*(b*x
+a)/b/a^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.49, size = 138, normalized size = 0.66

$$-\frac{(-1)^{2\,abx+2\,a^2}A\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^5}+\frac{A}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2}+\frac{A}{\sqrt{b^2x^2+2\,abx+a^2}\,a^4}+\frac{A}{2\,a^3b^2\left(x+\frac{a}{b}\right)^2}-\frac{B}{4\,b^5\left(x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*A*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 + 1/3*A/((
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2) + A/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4)
 + 1/2*A/(a^3*b^2*(x + a/b)^2) - 1/4*B/(b^5*(x + a/b)^4) + 1/4*A/(a*b^4*(x
+ a/b)^4)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{x\,{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x\left((a + bx)^{2}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*((a + b*x)**2)**(5/2)), x)
```

3.728 $\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=282

$$-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\log(x)(a+bx)(5Ab-aB)}{a^6\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(5Ab-aB)\log(a+bx)}{a^6\sqrt{a^2+2abx+b^2x^2}}-\frac{4Ab-}{a^5\sqrt{a^2+2ab}}$$

```
[Out] (-4*A*b+B*a)/a^5/((b*x+a)^2)^(1/2)+1/4*(-A*b+B*a)/a^2/(b*x+a)^3/((b*x+a)^2)
^(1/2)+1/3*(-2*A*b+B*a)/a^3/(b*x+a)^2/((b*x+a)^2)^(1/2)+1/2*(-3*A*b+B*a)/a^
4/(b*x+a)/((b*x+a)^2)^(1/2)-A*(b*x+a)/a^5/x/((b*x+a)^2)^(1/2)-(5*A*b-B*a)*(
b*x+a)*ln(x)/a^6/((b*x+a)^2)^(1/2)+(5*A*b-B*a)*(b*x+a)*ln(b*x+a)/a^6/((b*x+
a)^2)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {770, 77}

$$-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{4Ab-aB}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Ab-aB}{2a^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{2Ab-}{3a^3(a+bx)^2\sqrt{a^2-}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((4*A*b - a*B)/(a^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(4*a^2*(
a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*A*b - a*B)/(3*a^3*(a + b*x)^
2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*A*b - a*B)/(2*a^4*(a + b*x)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (A*(a + b*x))/(a^5*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - ((5*A*b - a*B)*(a + b*x)*Log[x])/(a^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
(5*A*b - a*B)*(a + b*x)*Log[a + b*x])/(a^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^2\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{A}{a^5b^5x^2}+\frac{-5Ab+aB}{a^6b^5x}+\frac{Ab-aB}{a^2b^4(a+bx)^5}+\frac{2Ab-aB}{a^3b^4(a+bx)^4}+\frac{3Ab-aB}{a^4b^4(a+bx)^3}+\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{4Ab-aB}{a^5\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{4a^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{2A}{3a^3(a+bx)^2\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.11, size = 148, normalized size = 0.52

$$\frac{a\left(a^4(25Bx-12A)+a^3bx(52Bx-125A)+2a^2b^2x^2(21Bx-130A)+6ab^3x^3(2Bx-35A)-60Ab^4x^4\right)+12x\log(}{12a^6x(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a*(-60*A*b^4*x^4 + 6*a*b^3*x^3*(-35*A + 2*B*x) + 2*a^2*b^2*x^2*(-130*A + 2
1*B*x) + a^4*(-12*A + 25*B*x) + a^3*b*x*(-125*A + 52*B*x)) + 12*(-5*A*b + a
*B)*x*(a + b*x)^4*Log[x] + 12*(5*A*b - a*B)*x*(a + b*x)^4*Log[a + b*x])/(12
*a^6*x*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.83, size = 347, normalized size = 1.23

$$-\frac{12\,Aa^5-12\left(Ba^2b^3-5\,Aab^4\right)x^4-42\left(Ba^3b^2-5\,Aa^2b^3\right)x^3-52\left(Ba^4b-5\,Aa^3b^2\right)x^2-25\left(Ba^5-5\,Aa^4b\right)x+12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(12*A*a^5 - 12*(B*a^2*b^3 - 5*A*a*b^4)*x^4 - 42*(B*a^3*b^2 - 5*A*a^2*
b^3)*x^3 - 52*(B*a^4*b - 5*A*a^3*b^2)*x^2 - 25*(B*a^5 - 5*A*a^4*b)*x + 12*(
(B*a*b^4 - 5*A*b^5)*x^5 + 4*(B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6*(B*a^3*b^2 - 5*
A*a^2*b^3)*x^3 + 4*(B*a^4*b - 5*A*a^3*b^2)*x^2 + (B*a^5 - 5*A*a^4*b)*x)*log
(b*x + a) - 12*((B*a*b^4 - 5*A*b^5)*x^5 + 4*(B*a^2*b^3 - 5*A*a*b^4)*x^4 + 6
*(B*a^3*b^2 - 5*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 5*A*a^3*b^2)*x^2 + (B*a^5 - 5
*A*a^4*b)*x)*log(x))/(a^6*b^4*x^5 + 4*a^7*b^3*x^4 + 6*a^8*b^2*x^3 + 4*a^9*b
*x^2 + a^10*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.06, size = 397, normalized size = 1.41

$$\frac{\left(-60A\,b^5x^5\ln(x)+60A\,b^5x^5\ln(bx+a)+12Ba\,b^4x^5\ln(x)-12Ba\,b^4x^5\ln(bx+a)-240Aa\,b^4x^4\ln(x)+240Aa\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(52*B*a^4*b*x^2-125*A*a^4*b*x-60*A*a*b^4*x^4+12*B*a^2*b^3*x^4-260*A*a^
3*b^2*x^2-210*A*a^2*b^3*x^3+42*B*a^3*b^2*x^3-60*A*b^5*x^5*ln(x)+12*B*a^5*x*
ln(x)-12*A*a^5+12*B*a*b^4*x^5*ln(x)-240*A*a^3*b^2*x^2*ln(x)+48*B*a^4*b*x^2*
ln(x)-60*A*ln(x)*x*a^4*b-12*B*ln(b*x+a)*x^5*a*b^4+240*A*ln(b*x+a)*x^4*a*b^4
+25*B*a^5*x+60*A*ln(b*x+a)*x^5*b^5-12*B*ln(b*x+a)*x*a^5-48*B*ln(b*x+a)*x^4*
a^2*b^3-240*A*ln(x)*x^4*a*b^4+48*B*ln(x)*x^4*a^2*b^3-360*A*ln(x)*x^3*a^2*b^
3+72*B*ln(x)*x^3*a^3*b^2+360*A*ln(b*x+a)*x^3*a^2*b^3-72*B*ln(b*x+a)*x^3*a^3
*b^2+240*A*ln(b*x+a)*x^2*a^3*b^2-48*B*ln(b*x+a)*x^2*a^4*b+60*A*ln(b*x+a)*x*
a^4*b)*(b*x+a)/x/a^6/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.47, size = 276, normalized size = 0.98

$$-\frac{(-1)^{2\,abx+2\,a^2}B\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^5}+\frac{5\,(-1)^{2\,abx+2\,a^2}Ab\log\left(\frac{2\,abx}{|x|}+\frac{2\,a^2}{|x|}\right)}{a^6}+\frac{B}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2}-\frac{5}{3\left(b^2x^2+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -(-1)^(2*a*b*x + 2*a^2)*B*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^5 + 5*(-1)^(
2*a*b*x + 2*a^2)*A*b*log(2*a*b*x/abs(x) + 2*a^2/abs(x))/a^6 + 1/3*B/((b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^2) - 5/3*A*b/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a
^3) + B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4) - 5*A*b/(sqrt(b^2*x^2 + 2*a*b*x
 + a^2)*a^5) - A/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x) + 1/2*B/(a^3*b^2*(
x + a/b)^2) - 5/2*A/(a^4*b*(x + a/b)^2) + 1/4*B/(a*b^4*(x + a/b)^4) - 1/4*A
/(a^2*b^3*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left((a+bx)^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*((a + b*x)**2)**(5/2)), x)
```

3.729 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{13}bx^{13/2}(2aB+Ab)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{15}b^2Bx^{15/2}$$

```
[Out] 2/9*a^2*A*x^(9/2)+2/11*a*(2*A*b+B*a)*x^(11/2)+2/13*b*(A*b+2*B*a)*x^(13/2)+2
/15*b^2*B*x^(15/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{13}bx^{13/2}(2aB+Ab)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{15}b^2Bx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a*(2*A*b + a*B)*x^(11/2))/11 + (2*b*(A*b + 2*a*B)*
x^(13/2))/13 + (2*b^2*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x^{7/2}(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^{7/2}+a(2Ab+aB)x^{9/2}+b(Ab+2aB)x^{11/2}+b^2Bx^{13/2}\right)dx\\&=\frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a(2Ab+aB)x^{11/2}+\frac{2}{13}b(Ab+2aB)x^{13/2}+\frac{2}{15}b^2Bx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{9/2}\left(65a^2(11A+9Bx)+90abx(13A+11Bx)+33b^2x^2(15A+13Bx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a^2*(11*A + 9*B*x) + 90*a*b*x*(13*A + 11*B*x) + 33*b^2*x^2*(
15*A + 13*B*x)))/6435
```

fricas [**A**] time = 0.83, size = 56, normalized size = 0.89

$$\frac{2}{6435}\left(429\,Bb^2x^7+715\,Aa^2x^4+495\,\left(2\,Bab+Ab^2\right)x^6+585\,\left(Ba^2+2\,Aab\right)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*b^2*x^7 + 715*A*a^2*x^4 + 495*(2*B*a*b + A*b^2)*x^6 + 585*(B*
a^2 + 2*A*a*b)*x^5)*sqrt(x)
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{4}{13}\,Babx^{\frac{13}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}+\frac{2}{11}\,Ba^2x^{\frac{11}{2}}+\frac{4}{11}\,Aabx^{\frac{11}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^2*x^(15/2) + 4/13*B*a*b*x^(13/2) + 2/13*A*b^2*x^(13/2) + 2/11*B*a^
2*x^(11/2) + 4/11*A*a*b*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(429B\,b^2x^3+495A\,b^2x^2+990Bab\,x^2+1170Aabx+585B\,a^2x+715A\,a^2\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*b^2*x^3+495*A*b^2*x^2+990*B*a*b*x^2+1170*A*a*b*x+585*
B*a^2*x+715*A*a^2)
```

maxima [**A**] time = 0.59, size = 51, normalized size = 0.81

$$\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}+\frac{2}{13}\,\left(2\,Bab+Ab^2\right)x^{\frac{13}{2}}+\frac{2}{11}\,\left(Ba^2+2\,Aab\right)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/15*B*b^2*x^(15/2) + 2/9*A*a^2*x^(9/2) + 2/13*(2*B*a*b + A*b^2)*x^(13/2) +
 2/11*(B*a^2 + 2*A*a*b)*x^(11/2)
```

mupad [**B**] time = 0.06, size = 51, normalized size = 0.81

$$x^{11/2}\,\left(\frac{2\,B\,a^2}{11}+\frac{4\,A\,b\,a}{11}\right)+x^{13/2}\,\left(\frac{2\,A\,b^2}{13}+\frac{4\,B\,a\,b}{13}\right)+\frac{2\,A\,a^2\,x^{9/2}}{9}+\frac{2\,B\,b^2\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(11/2)*((2*B*a^2)/11 + (4*A*a*b)/11) + x^(13/2)*((2*A*b^2)/13 + (4*B*a*b)
/13) + (2*A*a^2*x^(9/2))/9 + (2*B*b^2*x^(15/2))/15
```

sympy [**A**] time = 8.08, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{9}{2}}}{9}+\frac{4Aabx^{\frac{11}{2}}}{11}+\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{2Ba^2x^{\frac{11}{2}}}{11}+\frac{4Babx^{\frac{13}{2}}}{13}+\frac{2Bb^2x^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*b*x**(11/2)/11 + 2*A*b**2*x**(13/2)/13 + 2*B*a*
*2*x**(11/2)/11 + 4*B*a*b*x**(13/2)/13 + 2*B*b**2*x**(15/2)/15
```

3.730 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)dx$

Optimal. Leaf size=63

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{11}bx^{11/2}(2aB+Ab)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{13}b^2Bx^{13/2}$$

```
[Out] 2/7*a^2*A*x^(7/2)+2/9*a*(2*A*b+B*a)*x^(9/2)+2/11*b*(A*b+2*B*a)*x^(11/2)+2/1
3*b^2*B*x^(13/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{11}bx^{11/2}(2aB+Ab)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{13}b^2Bx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a*(2*A*b + a*B)*x^(9/2))/9 + (2*b*(A*b + 2*a*B)*x^
(11/2))/11 + (2*b^2*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)dx&=\int x^{5/2}(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^{5/2}+a(2Ab+aB)x^{7/2}+b(Ab+2aB)x^{9/2}+b^2Bx^{11/2}\right)dx\\&=\frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a(2Ab+aB)x^{9/2}+\frac{2}{11}b(Ab+2aB)x^{11/2}+\frac{2}{13}b^2Bx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{7/2}\left(143a^2(9A+7Bx)+182abx(11A+9Bx)+63b^2x^2(13A+11Bx)\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a^2*(9*A + 7*B*x) + 182*a*b*x*(11*A + 9*B*x) + 63*b^2*x^2*(
13*A + 11*B*x)))/9009
```

fricas [**A**] time = 0.86, size = 56, normalized size = 0.89

$$\frac{2}{9009}\left(693\,Bb^2x^6+1287\,Aa^2x^3+819\left(2\,Bab+Ab^2\right)x^5+1001\left(Ba^2+2\,Aab\right)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*b^2*x^6 + 1287*A*a^2*x^3 + 819*(2*B*a*b + A*b^2)*x^5 + 1001*(
B*a^2 + 2*A*a*b)*x^4)*sqrt(x)
```

giac [**A**] time = 0.16, size = 53, normalized size = 0.84

$$\frac{2}{13}\,Bb^2x^{\frac{13}{2}}+\frac{4}{11}\,Babx^{\frac{11}{2}}+\frac{2}{11}\,Ab^2x^{\frac{11}{2}}+\frac{2}{9}\,Ba^2x^{\frac{9}{2}}+\frac{4}{9}\,Aabx^{\frac{9}{2}}+\frac{2}{7}\,Aa^2x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^2*x^(13/2) + 4/11*B*a*b*x^(11/2) + 2/11*A*b^2*x^(11/2) + 2/9*B*a^2
*x^(9/2) + 4/9*A*a*b*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(693B\,b^2x^3+819A\,b^2x^2+1638Bab\,x^2+2002Aabx+1001B\,a^2x+1287A\,a^2\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*b^2*x^3+819*A*b^2*x^2+1638*B*a*b*x^2+2002*A*a*b*x+100
1*B*a^2*x+1287*A*a^2)
```

maxima [**A**] time = 0.57, size = 51, normalized size = 0.81

$$\frac{2}{13}\,Bb^2x^{\frac{13}{2}}+\frac{2}{7}\,Aa^2x^{\frac{7}{2}}+\frac{2}{11}\left(2\,Bab+Ab^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Ba^2+2\,Aab\right)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^2*x^(13/2) + 2/7*A*a^2*x^(7/2) + 2/11*(2*B*a*b + A*b^2)*x^(11/2) +
 2/9*(B*a^2 + 2*A*a*b)*x^(9/2)
```

mupad [**B**] time = 0.05, size = 51, normalized size = 0.81

$$x^{9/2}\left(\frac{2\,B\,a^2}{9}+\frac{4\,A\,b\,a}{9}\right)+x^{11/2}\left(\frac{2\,A\,b^2}{11}+\frac{4\,B\,a\,b}{11}\right)+\frac{2\,A\,a^2\,x^{7/2}}{7}+\frac{2\,B\,b^2\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(9/2)*((2*B*a^2)/9 + (4*A*a*b)/9) + x^(11/2)*((2*A*b^2)/11 + (4*B*a*b)/11
) + (2*A*a^2*x^(7/2))/7 + (2*B*b^2*x^(13/2))/13
```

sympy [**A**] time = 3.98, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{7}{2}}}{7}+\frac{4Aabx^{\frac{9}{2}}}{9}+\frac{2Ab^2x^{\frac{11}{2}}}{11}+\frac{2Ba^2x^{\frac{9}{2}}}{9}+\frac{4Babx^{\frac{11}{2}}}{11}+\frac{2Bb^2x^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*b*x**(9/2)/9 + 2*A*b**2*x**(11/2)/11 + 2*B*a**2
*x**(9/2)/9 + 4*B*a*b*x**(11/2)/11 + 2*B*b**2*x**(13/2)/13
```

3.731 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{9}bx^{9/2}(2aB+Ab)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{11}b^2Bx^{11/2}$$

```
[Out] 2/5*a^2*A*x^(5/2)+2/7*a*(2*A*b+B*a)*x^(7/2)+2/9*b*(A*b+2*B*a)*x^(9/2)+2/11*
b^2*B*x^(11/2)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{9}bx^{9/2}(2aB+Ab)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{11}b^2Bx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a*(2*A*b + a*B)*x^(7/2))/7 + (2*b*(A*b + 2*a*B)*x^
(9/2))/9 + (2*b^2*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)dx&=\int x^{3/2}(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^{3/2}+a(2Ab+aB)x^{5/2}+b(Ab+2aB)x^{7/2}+b^2Bx^{9/2}\right)dx\\&=\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a(2Ab+aB)x^{7/2}+\frac{2}{9}b(Ab+2aB)x^{9/2}+\frac{2}{11}b^2Bx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 0.83

$$\frac{2x^{5/2}\left(99a^2(7A+5Bx)+110abx(9A+7Bx)+35b^2x^2(11A+9Bx)\right)}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(5/2)*(99*a^2*(7*A + 5*B*x) + 110*a*b*x*(9*A + 7*B*x) + 35*b^2*x^2*(11
*A + 9*B*x)))/3465
```

fricas [A] time = 0.94, size = 56, normalized size = 0.89

$$\frac{2}{3465}\left(315\,Bb^2x^5+693\,Aa^2x^2+385\left(2\,Bab+Ab^2\right)x^4+495\left(Ba^2+2\,Aab\right)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*b^2*x^5 + 693*A*a^2*x^2 + 385*(2*B*a*b + A*b^2)*x^4 + 495*(B*
a^2 + 2*A*a*b)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{11}\,Bb^2x^{\frac{11}{2}}+\frac{4}{9}\,Babx^{\frac{9}{2}}+\frac{2}{9}\,Ab^2x^{\frac{9}{2}}+\frac{2}{7}\,Ba^2x^{\frac{7}{2}}+\frac{4}{7}\,Aabx^{\frac{7}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^2*x^(11/2) + 4/9*B*a*b*x^(9/2) + 2/9*A*b^2*x^(9/2) + 2/7*B*a^2*x^(
7/2) + 4/7*A*a*b*x^(7/2) + 2/5*A*a^2*x^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(315B\,b^2x^3+385A\,b^2x^2+770Bab\,x^2+990Aabx+495B\,a^2x+693A\,a^2\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*b^2*x^3+385*A*b^2*x^2+770*B*a*b*x^2+990*A*a*b*x+495*B
*a^2*x+693*A*a^2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.81

$$\frac{2}{11}\,Bb^2x^{\frac{11}{2}}+\frac{2}{5}\,Aa^2x^{\frac{5}{2}}+\frac{2}{9}\left(2\,Bab+Ab^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^2+2\,Aab\right)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^2*x^(11/2) + 2/5*A*a^2*x^(5/2) + 2/9*(2*B*a*b + A*b^2)*x^(9/2) + 2
/7*(B*a^2 + 2*A*a*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{7/2}\left(\frac{2\,B\,a^2}{7}+\frac{4\,A\,b\,a}{7}\right)+x^{9/2}\left(\frac{2\,A\,b^2}{9}+\frac{4\,B\,a\,b}{9}\right)+\frac{2\,A\,a^2\,x^{5/2}}{5}+\frac{2\,B\,b^2\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(7/2)*((2*B*a^2)/7 + (4*A*a*b)/7) + x^(9/2)*((2*A*b^2)/9 + (4*B*a*b)/9) +
 (2*A*a^2*x^(5/2))/5 + (2*B*b^2*x^(11/2))/11
```

sympy [A] time = 1.77, size = 80, normalized size = 1.27

$$\frac{2Aa^2x^{\frac{5}{2}}}{5}+\frac{4Aabx^{\frac{7}{2}}}{7}+\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{2Ba^2x^{\frac{7}{2}}}{7}+\frac{4Babx^{\frac{9}{2}}}{9}+\frac{2Bb^2x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*b*x**(7/2)/7 + 2*A*b**2*x**(9/2)/9 + 2*B*a**2*x
**(7/2)/7 + 4*B*a*b*x**(9/2)/9 + 2*B*b**2*x**(11/2)/11
```

3.732 $\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=63

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{7}bx^{7/2}(2aB+Ab)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{9}b^2Bx^{9/2}$$

```
[Out] 2/3*a^2*A*x^(3/2)+2/5*a*(2*A*b+B*a)*x^(5/2)+2/7*b*(A*b+2*B*a)*x^(7/2)+2/9*b
^2*B*x^(9/2)
```

Rubi **[A]** time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{7}bx^{7/2}(2aB+Ab)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{9}b^2Bx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a*(2*A*b + a*B)*x^(5/2))/5 + (2*b*(A*b + 2*a*B)*x^
(7/2))/7 + (2*b^2*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int \sqrt{x}(a+bx)^2(A+Bx)\,dx\\ &= \int \left(a^2A\sqrt{x}+a(2Ab+aB)x^{3/2}+b(Ab+2aB)x^{5/2}+b^2Bx^{7/2}\right)\,dx\\ &= \frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a(2Ab+aB)x^{5/2}+\frac{2}{7}b(Ab+2aB)x^{7/2}+\frac{2}{9}b^2Bx^{9/2}\end{aligned}$$

Mathematica **[A]** time = 0.02, size = 52, normalized size = 0.83

$$\frac{2}{315}x^{3/2}\left(21a^2(5A+3Bx)+18abx(7A+5Bx)+5b^2x^2(9A+7Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a^2*(5*A + 3*B*x) + 18*a*b*x*(7*A + 5*B*x) + 5*b^2*x^2*(9*A
 + 7*B*x)))/315
```

fricas [A] time = 0.88, size = 54, normalized size = 0.86

$$\frac{2}{315}\left(35\,Bb^2x^4+105\,Aa^2x+45\left(2\,Bab+Ab^2\right)x^3+63\left(Ba^2+2\,Aab\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b^2*x^4 + 105*A*a^2*x + 45*(2*B*a*b + A*b^2)*x^3 + 63*(B*a^2 +
2*A*a*b)*x^2)*sqrt(x)
```

giac [A] time = 0.15, size = 53, normalized size = 0.84

$$\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{4}{7}\,Babx^{\frac{7}{2}}+\frac{2}{7}\,Ab^2x^{\frac{7}{2}}+\frac{2}{5}\,Ba^2x^{\frac{5}{2}}+\frac{4}{5}\,Aabx^{\frac{5}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^2*x^(9/2) + 4/7*B*a*b*x^(7/2) + 2/7*A*b^2*x^(7/2) + 2/5*B*a^2*x^(5/
2) + 4/5*A*a*b*x^(5/2) + 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.83

$$\frac{2\left(35B\,b^2x^3+45A\,b^2x^2+90Bab\,x^2+126Aabx+63B\,a^2x+105A\,a^2\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*b^2*x^3+45*A*b^2*x^2+90*B*a*b*x^2+126*A*a*b*x+63*B*a^2*
x+105*A*a^2)
```

maxima [A] time = 0.55, size = 51, normalized size = 0.81

$$\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}+\frac{2}{7}\left(2\,Bab+Ab^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^2+2\,Aab\right)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*b^2*x^(9/2) + 2/3*A*a^2*x^(3/2) + 2/7*(2*B*a*b + A*b^2)*x^(7/2) + 2/5
*(B*a^2 + 2*A*a*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.81

$$x^{5/2}\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)+x^{7/2}\left(\frac{2\,A\,b^2}{7}+\frac{4\,B\,a\,b}{7}\right)+\frac{2\,A\,a^2\,x^{3/2}}{3}+\frac{2\,B\,b^2\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(5/2)*((2*B*a^2)/5 + (4*A*a*b)/5) + x^(7/2)*((2*A*b^2)/7 + (4*B*a*b)/7) +
 (2*A*a^2*x^(3/2))/3 + (2*B*b^2*x^(9/2))/9
```

sympy [A] time = 2.90, size = 66, normalized size = 1.05

$$\frac{2Aa^2x^{\frac{3}{2}}}{3}+\frac{2Bb^2x^{\frac{9}{2}}}{9}+\frac{2x^{\frac{7}{2}}\left(Ab^2+2Bab\right)}{7}+\frac{2x^{\frac{5}{2}}\left(2Aab+Ba^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 2*B*b**2*x**(9/2)/9 + 2*x**(7/2)*(A*b**2 + 2*B*a*b)/7
 + 2*x**(5/2)*(2*A*a*b + B*a**2)/5
```

3.733 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=61

$$2a^2A\sqrt{x}+\frac{2}{5}bx^{5/2}(2aB+Ab)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{7}b^2Bx^{7/2}$$

```
[Out] 2/3*a*(2*A*b+B*a)*x^(3/2)+2/5*b*(A*b+2*B*a)*x^(5/2)+2/7*b^2*B*x^(7/2)+2*a^2
*A*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}=0.074$, Rules used = $\{27, 76\}$

$$2a^2A\sqrt{x}+\frac{2}{5}bx^{5/2}(2aB+Ab)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{7}b^2Bx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a*(2*A*b + a*B)*x^(3/2))/3 + (2*b*(A*b + 2*a*B)*x^(5/2
))/5 + (2*b^2*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{x}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{\sqrt{x}}\,dx\\ &= \int \left(\frac{a^2A}{\sqrt{x}}+a(2Ab+aB)\sqrt{x}+b(Ab+2aB)x^{3/2}+b^2Bx^{5/2}\right)dx\\ &= 2a^2A\sqrt{x}+\frac{2}{3}a(2Ab+aB)x^{3/2}+\frac{2}{5}b(Ab+2aB)x^{5/2}+\frac{2}{7}b^2Bx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 51, normalized size = 0.84

$$\frac{2}{105}\sqrt{x}\left(35a^2(3A+Bx)+14abx(5A+3Bx)+3b^2x^2(7A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a^2*(3*A + B*x) + 14*a*b*x*(5*A + 3*B*x) + 3*b^2*x^2*(7*A +
5*B*x)))/105
```

fricas [A] time = 0.90, size = 51, normalized size = 0.84

$$\frac{2}{105}\left(15\,Bb^2x^3+105\,Aa^2+21\left(2\,Bab+Ab^2\right)x^2+35\left(Ba^2+2\,Aab\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b^2*x^3 + 105*A*a^2 + 21*(2*B*a*b + A*b^2)*x^2 + 35*(B*a^2 + 2*
A*a*b)*x)*sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.87

$$\frac{2}{7}\,Bb^2x^{\frac{7}{2}}+\frac{4}{5}\,Babx^{\frac{5}{2}}+\frac{2}{5}\,Ab^2x^{\frac{5}{2}}+\frac{2}{3}\,Ba^2x^{\frac{3}{2}}+\frac{4}{3}\,Aabx^{\frac{3}{2}}+2\,Aa^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^2*x^(7/2) + 4/5*B*a*b*x^(5/2) + 2/5*A*b^2*x^(5/2) + 2/3*B*a^2*x^(3/
2) + 4/3*A*a*b*x^(3/2) + 2*A*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.85

$$\frac{2\left(15B\,b^2x^3+21A\,b^2x^2+42Bab\,x^2+70Aabx+35B\,a^2x+105A\,a^2\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x)
```

```
[Out] 2/105*x^(1/2)*(15*B*b^2*x^3+21*A*b^2*x^2+42*B*a*b*x^2+70*A*a*b*x+35*B*a^2*x
+105*A*a^2)
```

maxima [A] time = 0.48, size = 51, normalized size = 0.84

$$\frac{2}{7}\,Bb^2x^{\frac{7}{2}}+2\,Aa^2\sqrt{x}+\frac{2}{5}\left(2\,Bab+Ab^2\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Ba^2+2\,Aab\right)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*b^2*x^(7/2) + 2*A*a^2*sqrt(x) + 2/5*(2*B*a*b + A*b^2)*x^(5/2) + 2/3*(
B*a^2 + 2*A*a*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)+x^{5/2}\left(\frac{2\,A\,b^2}{5}+\frac{4\,B\,a\,b}{5}\right)+2\,A\,a^2\,\sqrt{x}+\frac{2\,B\,b^2\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^2)/3 + (4*A*a*b)/3) + x^(5/2)*((2*A*b^2)/5 + (4*B*a*b)/5) +
 2*A*a^2*x^(1/2) + (2*B*b^2*x^(7/2))/7
```

sympy [A] time = 0.46, size = 78, normalized size = 1.28

$$2Aa^2\sqrt{x}+\frac{4Aabx^{\frac{3}{2}}}{3}+\frac{2Ab^2x^{\frac{5}{2}}}{5}+\frac{2Ba^2x^{\frac{3}{2}}}{3}+\frac{4Babx^{\frac{5}{2}}}{5}+\frac{2Bb^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*b*x**(3/2)/3 + 2*A*b**2*x**(5/2)/5 + 2*B*a**2*x**(
3/2)/3 + 4*B*a*b*x**(5/2)/5 + 2*B*b**2*x**(7/2)/7
```

3.734 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{3}bx^{3/2}(2aB+Ab)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{5}b^2Bx^{5/2}$$

```
[Out] 2/3*b*(A*b+2*B*a)*x^(3/2)+2/5*b^2*B*x^(5/2)-2*a^2*A/x^(1/2)+2*a*(2*A*b+B*a)
*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{3}bx^{3/2}(2aB+Ab)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{5}b^2Bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a*(2*A*b + a*B)*Sqrt[x] + (2*b*(A*b + 2*a*B)*x^(3/2)
)/3 + (2*b^2*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{3/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{3/2}}\,dx\\ &= \int \left(\frac{a^2A}{x^{3/2}}+\frac{a(2Ab+aB)}{\sqrt{x}}+b(Ab+2aB)\sqrt{x}+b^2Bx^{3/2}\right)dx\\ &= -\frac{2a^2A}{\sqrt{x}}+2a(2Ab+aB)\sqrt{x}+\frac{2}{3}b(Ab+2aB)x^{3/2}+\frac{2}{5}b^2Bx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.83

$$\frac{-30a^2(A-Bx)+20abx(3A+Bx)+2b^2x^2(5A+3Bx)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(3/2),x]
```

```
[Out] (-30*a^2*(A - B*x) + 20*a*b*x*(3*A + B*x) + 2*b^2*x^2*(5*A + 3*B*x))/(15*Sq
rt[x])
```

fricas [A] time = 0.85, size = 51, normalized size = 0.86

$$\frac{2\left(3\,Bb^{2}x^{3}-15\,Aa^{2}+5\left(2\,Bab+Ab^{2}\right)x^{2}+15\left(Ba^{2}+2\,Aab\right)x\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b^2*x^3 - 15*A*a^2 + 5*(2*B*a*b + A*b^2)*x^2 + 15*(B*a^2 + 2*A*a*
b)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.90

$$\frac{2}{5}\,Bb^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Babx^{\frac{3}{2}}+\frac{2}{3}\,Ab^{2}x^{\frac{3}{2}}+2\,Ba^{2}\sqrt{x}+4\,Aab\sqrt{x}-\frac{2\,Aa^{2}}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^2*x^(5/2) + 4/3*B*a*b*x^(3/2) + 2/3*A*b^2*x^(3/2) + 2*B*a^2*sqrt(x)
 + 4*A*a*b*sqrt(x) - 2*A*a^2/sqrt(x)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-3B\,b^{2}x^{3}-5A\,b^{2}x^{2}-10Bab\,x^{2}-30Aabx-15B\,a^{2}x+15A\,a^{2}\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x)
```

```
[Out] -2/15*(-3*B*b^2*x^3-5*A*b^2*x^2-10*B*a*b*x^2-30*A*a*b*x-15*B*a^2*x+15*A*a^2
)/x^(1/2)
```

maxima [A] time = 0.52, size = 51, normalized size = 0.86

$$\frac{2}{5}\,Bb^{2}x^{\frac{5}{2}}-\frac{2\,Aa^{2}}{\sqrt{x}}+\frac{2}{3}\left(2\,Bab+Ab^{2}\right)x^{\frac{3}{2}}+2\left(Ba^{2}+2\,Aab\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^2*x^(5/2) - 2*A*a^2/sqrt(x) + 2/3*(2*B*a*b + A*b^2)*x^(3/2) + 2*(B*
a^2 + 2*A*a*b)*sqrt(x)
```

mupad [B] time = 0.05, size = 51, normalized size = 0.86

$$\sqrt{x}\,\left(2\,B\,a^2+4\,A\,b\,a\right)+x^{3/2}\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}\right)-\frac{2\,A\,a^2}{\sqrt{x}}+\frac{2\,B\,b^2\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^2 + 4*A*a*b) + x^(3/2)*((2*A*b^2)/3 + (4*B*a*b)/3) - (2*A*a^
2)/x^(1/2) + (2*B*b^2*x^(5/2))/5
```

sympy [A] time = 0.66, size = 75, normalized size = 1.27

$$-\frac{2Aa^2}{\sqrt{x}} + 4Aab\sqrt{x} + \frac{2Ab^2x^{\frac{3}{2}}}{3} + 2Ba^2\sqrt{x} + \frac{4Babx^{\frac{3}{2}}}{3} + \frac{2Bb^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*b*sqrt(x) + 2*A*b**2*x**(3/2)/3 + 2*B*a**2*sqrt(x
) + 4*B*a*b*x**(3/2)/3 + 2*B*b**2*x**(5/2)/5
```

3.735 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a(aB+2Ab)}{\sqrt{x}}+2b\sqrt{x}\,(2aB+Ab)+\frac{2}{3}b^2Bx^{3/2}$$

```
[Out] -2/3*a^2*A/x^(3/2)+2/3*b^2*B*x^(3/2)-2*a*(2*A*b+B*a)/x^(1/2)+2*b*(A*b+2*B*a
)*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 76\}$

$$-\frac{2a^2A}{3x^{3/2}}-\frac{2a(aB+2Ab)}{\sqrt{x}}+2b\sqrt{x}\,(2aB+Ab)+\frac{2}{3}b^2Bx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a*(2*A*b + a*B))/Sqrt[x] + 2*b*(A*b + 2*a*B)*Sq
rt[x] + (2*b^2*B*x^(3/2))/3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{5/2}}\,dx&=\int \frac{(a+bx)^2(A+Bx)}{x^{5/2}}\,dx\\&=\int \left(\frac{a^2A}{x^{5/2}}+\frac{a(2Ab+aB)}{x^{3/2}}+\frac{b(Ab+2aB)}{\sqrt{x}}+b^2B\sqrt{x}\right)dx\\&=-\frac{2a^2A}{3x^{3/2}}-\frac{2a(2Ab+aB)}{\sqrt{x}}+2b(Ab+2aB)\sqrt{x}+\frac{2}{3}b^2Bx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.80

$$\frac{2\left(-\left(a^2(A+3Bx)\right)+6abx(Bx-A)+b^2x^2(3A+Bx)\right)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(5/2),x]
```

```
[Out] (2*(6*a*b*x*(-A + B*x) + b^2*x^2*(3*A + B*x) - a^2*(A + 3*B*x)))/(3*x^(3/2)
)
```

fricas [A] time = 0.79, size = 50, normalized size = 0.85

$$\frac{2\left(Bb^2x^3 - Aa^2 + 3\left(2\,Bab + Ab^2\right)x^2 - 3\left(Ba^2 + 2\,Aab\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b^2*x^3 - A*a^2 + 3*(2*B*a*b + A*b^2)*x^2 - 3*(B*a^2 + 2*A*a*b)*x)/x
^(3/2)
```

giac [A] time = 0.15, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bb^2x^{\frac{3}{2}} + 4\,Bab\sqrt{x} + 2\,Ab^2\sqrt{x} - \frac{2\left(3\,Ba^2x + 6\,Aabx + Aa^2\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b^2*x^(3/2) + 4*B*a*b*sqrt(x) + 2*A*b^2*sqrt(x) - 2/3*(3*B*a^2*x + 6*
A*a*b*x + A*a^2)/x^(3/2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.86

$$-\frac{2\left(-B\,b^2x^3 - 3A\,b^2x^2 - 6Bab\,x^2 + 6Aabx + 3B\,a^2x + A\,a^2\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x)
```

```
[Out] -2/3*(-B*b^2*x^3-3*A*b^2*x^2-6*B*a*b*x^2+6*A*a*b*x+3*B*a^2*x+A*a^2)/x^(3/2)
```

maxima [A] time = 0.53, size = 51, normalized size = 0.86

$$\frac{2}{3}\,Bb^2x^{\frac{3}{2}} + 2\left(2\,Bab + Ab^2\right)\sqrt{x} - \frac{2\left(Aa^2 + 3\left(Ba^2 + 2\,Aab\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*b^2*x^(3/2) + 2*(2*B*a*b + A*b^2)*sqrt(x) - 2/3*(A*a^2 + 3*(B*a^2 + 2
*A*a*b)*x)/x^(3/2)
```

mupad [B] time = 1.13, size = 51, normalized size = 0.86

$$-\frac{6\,B\,a^2\,x + 2\,A\,a^2 - 12\,B\,a\,b\,x^2 + 12\,A\,a\,b\,x - 2\,B\,b^2\,x^3 - 6\,A\,b^2\,x^2}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(5/2),x)
```

```
[Out] -(2*A*a^2 - 6*A*b^2*x^2 - 2*B*b^2*x^3 + 6*B*a^2*x - 12*B*a*b*x^2 + 12*A*a*b
*x)/(3*x^(3/2))
```

sympy [A] time = 0.80, size = 73, normalized size = 1.24

$$-\frac{2Aa^2}{3x^{\frac{3}{2}}}-\frac{4Aab}{\sqrt{x}}+2Ab^2\sqrt{x}-\frac{2Ba^2}{\sqrt{x}}+4Bab\sqrt{x}+\frac{2Bb^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) - 4*A*a*b/sqrt(x) + 2*A*b**2*sqrt(x) - 2*B*a**2/sqrt
(x) + 4*B*a*b*sqrt(x) + 2*B*b**2*x**(3/2)/3
```

3.736 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{7/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a(aB+2Ab)}{3x^{3/2}}-\frac{2b(2aB+Ab)}{\sqrt{x}}+2b^2B\sqrt{x}$$

```
[Out] -2/5*a^2*A/x^(5/2)-2/3*a*(2*A*b+B*a)/x^(3/2)-2*b*(A*b+2*B*a)/x^(1/2)+2*b^2*
B*x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = $\{27, 76\}$

$$-\frac{2a^2A}{5x^{5/2}}-\frac{2a(aB+2Ab)}{3x^{3/2}}-\frac{2b(2aB+Ab)}{\sqrt{x}}+2b^2B\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a*(2*A*b + a*B))/(3*x^(3/2)) - (2*b*(A*b + 2*a*
B))/Sqrt[x] + 2*b^2*B*Sqrt[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{7/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{7/2}}\,dx\\
&= \int \left(\frac{a^2A}{x^{7/2}}+\frac{a(2Ab+aB)}{x^{5/2}}+\frac{b(Ab+2aB)}{x^{3/2}}+\frac{b^2B}{\sqrt{x}}\right)dx\\
&= -\frac{2a^2A}{5x^{5/2}}-\frac{2a(2Ab+aB)}{3x^{3/2}}-\frac{2b(Ab+2aB)}{\sqrt{x}}+2b^2B\sqrt{x}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 47, normalized size = 0.80

$$-\frac{2\left(a^2(3A+5Bx)+10abx(A+3Bx)+15b^2x^2(A-Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(7/2),x]
```

```
[Out] (-2*(15*b^2*x^2*(A - B*x) + 10*a*b*x*(A + 3*B*x) + a^2*(3*A + 5*B*x)))/(15*
x^(5/2))
```

fricas [A] time = 0.87, size = 51, normalized size = 0.86

$$\frac{2\left(15\,Bb^{2}x^{3}-3\,Aa^{2}-15\left(2\,Bab+Ab^{2}\right)x^{2}-5\left(Ba^{2}+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*b^2*x^3 - 3*A*a^2 - 15*(2*B*a*b + A*b^2)*x^2 - 5*(B*a^2 + 2*A*a*
b)*x)/x^(5/2)
```

giac [A] time = 0.15, size = 52, normalized size = 0.88

$$2\,Bb^{2}\sqrt{x}-\frac{2\left(30\,Babx^{2}+15\,Ab^{2}x^{2}+5\,Ba^{2}x+10\,Aabx+3\,Aa^{2}\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*b^2*sqrt(x) - 2/15*(30*B*a*b*x^2 + 15*A*b^2*x^2 + 5*B*a^2*x + 10*A*a*b*
x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 52, normalized size = 0.88

$$-\frac{2\left(-15B\,b^{2}x^{3}+15A\,b^{2}x^{2}+30Bab\,x^{2}+10Aabx+5B\,a^{2}x+3A\,a^{2}\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x)
```

```
[Out] -2/15*(-15*B*b^2*x^3+15*A*b^2*x^2+30*B*a*b*x^2+10*A*a*b*x+5*B*a^2*x+3*A*a^2
)/x^(5/2)
```

maxima [A] time = 0.51, size = 52, normalized size = 0.88

$$2\,Bb^{2}\sqrt{x}-\frac{2\left(3\,Aa^{2}+15\left(2\,Bab+Ab^{2}\right)x^{2}+5\left(Ba^{2}+2\,Aab\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*b^2*sqrt(x) - 2/15*(3*A*a^2 + 15*(2*B*a*b + A*b^2)*x^2 + 5*(B*a^2 + 2*A
*a*b)*x)/x^(5/2)
```

mupad [B] time = 0.06, size = 52, normalized size = 0.88

$$2\,B\,b^2\,\sqrt{x}-\frac{x^2\,\left(2\,A\,b^2+4\,B\,a\,b\right)+\frac{2\,A\,a^2}{5}+x\,\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(7/2),x)
```

```
[Out] 2*B*b^2*x^(1/2) - (x^2*(2*A*b^2 + 4*B*a*b) + (2*A*a^2)/5 + x*((2*B*a^2)/3 +
 (4*A*a*b)/3))/x^(5/2)
```

sympy [A] time = 1.47, size = 75, normalized size = 1.27

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}}-\frac{4Aab}{3x^{\frac{3}{2}}}-\frac{2Ab^2}{\sqrt{x}}-\frac{2Ba^2}{3x^{\frac{3}{2}}}-\frac{4Bab}{\sqrt{x}}+2Bb^2\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*b/(3*x**(3/2)) - 2*A*b**2/sqrt(x) - 2*B*a**2
/(3*x**(3/2)) - 4*B*a*b/sqrt(x) + 2*B*b**2*sqrt(x)
```

3.737 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{9/2}}\,dx$

Optimal. Leaf size=61

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a(aB+2Ab)}{5x^{5/2}}-\frac{2b(2aB+Ab)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}$$

```
[Out] -2/7*a^2*A/x^(7/2)-2/5*a*(2*A*b+B*a)/x^(5/2)-2/3*b*(A*b+2*B*a)/x^(3/2)-2*b^
2*B/x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2a(aB+2Ab)}{5x^{5/2}}-\frac{2b(2aB+Ab)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a*(2*A*b + a*B))/(5*x^(5/2)) - (2*b*(A*b + 2*a*
B))/(3*x^(3/2)) - (2*b^2*B)/Sqrt[x]
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{x^{9/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{x^{9/2}}\,dx\\ &= \int \left(\frac{a^2A}{x^{9/2}}+\frac{a(2Ab+aB)}{x^{7/2}}+\frac{b(Ab+2aB)}{x^{5/2}}+\frac{b^2B}{x^{3/2}}\right)dx\\ &= -\frac{2a^2A}{7x^{7/2}}-\frac{2a(2Ab+aB)}{5x^{5/2}}-\frac{2b(Ab+2aB)}{3x^{3/2}}-\frac{2b^2B}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 50, normalized size = 0.82

$$-\frac{2\left(3a^2(5A+7Bx)+14abx(3A+5Bx)+35b^2x^2(A+3Bx)\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/x^(9/2),x]
```

```
[Out] (-2*(35*b^2*x^2*(A + 3*B*x) + 14*a*b*x*(3*A + 5*B*x) + 3*a^2*(5*A + 7*B*x))
)/(105*x^(7/2))
```

fricas [**A**] time = 0.85, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^{2}x^{3}+15\,Aa^{2}+35\left(2\,Bab+Ab^{2}\right)x^{2}+21\left(Ba^{2}+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2)*x^2 + 21*(B*a^2 + 2
*A*a*b)*x)/x^(7/2)
```

giac [**A**] time = 0.18, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^{2}x^{3}+70\,Babx^{2}+35\,Ab^{2}x^{2}+21\,Ba^{2}x+42\,Aabx+15\,Aa^{2}\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 70*B*a*b*x^2 + 35*A*b^2*x^2 + 21*B*a^2*x + 42*A*a*b
*x + 15*A*a^2)/x^(7/2)
```

maple [**A**] time = 0.05, size = 52, normalized size = 0.85

$$-\frac{2\left(105B\,b^{2}x^{3}+35A\,b^{2}x^{2}+70Bab\,x^{2}+42Aabx+21B\,a^{2}x+15A\,a^{2}\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*b^2*x^3+35*A*b^2*x^2+70*B*a*b*x^2+42*A*a*b*x+21*B*a^2*x+15*A*
a^2)/x^(7/2)
```

maxima [**A**] time = 0.54, size = 51, normalized size = 0.84

$$-\frac{2\left(105\,Bb^{2}x^{3}+15\,Aa^{2}+35\left(2\,Bab+Ab^{2}\right)x^{2}+21\left(Ba^{2}+2\,Aab\right)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*b^2*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2)*x^2 + 21*(B*a^2 + 2
*A*a*b)*x)/x^(7/2)
```

mupad [**B**] time = 1.12, size = 51, normalized size = 0.84

$$-\frac{x^{2}\left(\frac{2\,A\,b^{2}}{3}+\frac{4\,B\,a\,b}{3}\right)+\frac{2\,A\,a^{2}}{7}+x\left(\frac{2\,B\,a^{2}}{5}+\frac{4\,A\,b\,a}{5}\right)+2\,B\,b^{2}\,x^{3}}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/x^(9/2),x)
```

```
[Out] -(x^2*((2*A*b^2)/3 + (4*B*a*b)/3) + (2*A*a^2)/7 + x*((2*B*a^2)/5 + (4*A*a*b
)/5) + 2*B*b^2*x^3)/x^(7/2)
```

sympy [A] time = 3.07, size = 80, normalized size = 1.31

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}}-\frac{4Aab}{5x^{\frac{5}{2}}}-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{2Ba^2}{5x^{\frac{5}{2}}}-\frac{4Bab}{3x^{\frac{3}{2}}}-\frac{2Bb^2}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*b/(5*x**(5/2)) - 2*A*b**2/(3*x**(3/2)) - 2*B
*a**2/(5*x**(5/2)) - 4*B*a*b/(3*x**(3/2)) - 2*B*b**2/sqrt(x)
```

3.738 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{9}a^4Ax^{9/2}+\frac{2}{11}a^3x^{11/2}(aB+4Ab)+\frac{4}{13}a^2bx^{13/2}(2aB+3Ab)+\frac{2}{17}b^3x^{17/2}(4aB+Ab)+\frac{4}{15}ab^2x^{15/2}(3aB+2Ab)+\frac{2}{19}b^4Bx$$

```
[Out] 2/9*a^4*A*x^(9/2)+2/11*a^3*(4*A*b+B*a)*x^(11/2)+4/13*a^2*b*(3*A*b+2*B*a)*x^
(13/2)+4/15*a*b^2*(2*A*b+3*B*a)*x^(15/2)+2/17*b^3*(A*b+4*B*a)*x^(17/2)+2/19
*b^4*B*x^(19/2)
```

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$\frac{4}{13}a^2bx^{13/2}(2aB+3Ab)+\frac{2}{11}a^3x^{11/2}(aB+4Ab)+\frac{2}{9}a^4Ax^{9/2}+\frac{2}{17}b^3x^{17/2}(4aB+Ab)+\frac{4}{15}ab^2x^{15/2}(3aB+2Ab)+\frac{2}{19}b^4Bx$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(9/2))/9 + (2*a^3*(4*A*b + a*B)*x^(11/2))/11 + (4*a^2*b*(3*A*b +
 2*a*B)*x^(13/2))/13 + (4*a*b^2*(2*A*b + 3*a*B)*x^(15/2))/15 + (2*b^3*(A*b
+ 4*a*B)*x^(17/2))/17 + (2*b^4*B*x^(19/2))/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{7/2}(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4Ax^{7/2}+a^3(4Ab+aB)x^{9/2}+2a^2b(3Ab+2aB)x^{11/2}+2ab^2(2A\right.\\ &= \frac{2}{9}a^4Ax^{9/2}+\frac{2}{11}a^3(4Ab+aB)x^{11/2}+\frac{4}{13}a^2b(3Ab+2aB)x^{13/2}+\frac{4}{15}ab\end{aligned}$$

Mathematica [A] time = 0.07, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{9/2}\left(12155a^4+39780a^3bx+50490a^2b^2x^2+29172ab^3x^3+6435b^4x^4\right)(19Ab-9aB)}{109395}+Bx^{9/2}(a+bx)^5\right)}{19b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(9/2)*(a + b*x)^5 + ((19*A*b - 9*a*B)*x^(9/2)*(12155*a^4 + 39780*a^
3*b*x + 50490*a^2*b^2*x^2 + 29172*a*b^3*x^3 + 6435*b^4*x^4))/109395))/(19*b
)
```

fricas [A] time = 0.84, size = 104, normalized size = 0.94

$$\frac{2}{2078505}\left(109395\,Bb^4x^9 + 230945\,Aa^4x^4 + 122265\left(4\,Bab^3 + Ab^4\right)x^8 + 277134\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^7 + 319770\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*b^4*x^9 + 230945*A*a^4*x^4 + 122265*(4*B*a*b^3 + A*b^4)
*x^8 + 277134*(3*B*a^2*b^2 + 2*A*a*b^3)*x^7 + 319770*(2*B*a^3*b + 3*A*a^2*b
^2)*x^6 + 188955*(B*a^4 + 4*A*a^3*b)*x^5)*sqrt(x)
```

giac [A] time = 0.19, size = 101, normalized size = 0.91

$$\frac{2}{19}\,Bb^4x^{\frac{19}{2}} + \frac{8}{17}\,Bab^3x^{\frac{17}{2}} + \frac{2}{17}\,Ab^4x^{\frac{17}{2}} + \frac{4}{5}\,Ba^2b^2x^{\frac{15}{2}} + \frac{8}{15}\,Aab^3x^{\frac{15}{2}} + \frac{8}{13}\,Ba^3bx^{\frac{13}{2}} + \frac{12}{13}\,Aa^2b^2x^{\frac{13}{2}} + \frac{2}{11}\,Ba^4x^{\frac{11}{2}} + \frac{8}{11}\,Aa^3bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*b^4*x^(19/2) + 8/17*B*a*b^3*x^(17/2) + 2/17*A*b^4*x^(17/2) + 4/5*B*a
^2*b^2*x^(15/2) + 8/15*A*a*b^3*x^(15/2) + 8/13*B*a^3*b*x^(13/2) + 12/13*A*a
^2*b^2*x^(13/2) + 2/11*B*a^4*x^(11/2) + 8/11*A*a^3*b*x^(11/2) + 2/9*A*a^4*x
^(9/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.90

$$\frac{2\left(109395b^4B\,x^5 + 122265A\,b^4x^4 + 489060x^4Ba\,b^3 + 554268Aa\,b^3x^3 + 831402B\,a^2b^2x^3 + 959310A\,a^2b^2x^2 + 63\right.}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*b^4*x^5+122265*A*b^4*x^4+489060*B*a*b^3*x^4+554
268*A*a*b^3*x^3+831402*B*a^2*b^2*x^3+959310*A*a^2*b^2*x^2+639540*B*a^3*b*x^
2+755820*A*a^3*b*x+188955*B*a^4*x+230945*A*a^4)
```

maxima [A] time = 0.60, size = 99, normalized size = 0.89

$$\frac{2}{19}\,Bb^4x^{\frac{19}{2}} + \frac{2}{9}\,Aa^4x^{\frac{9}{2}} + \frac{2}{17}\left(4\,Bab^3 + Ab^4\right)x^{\frac{17}{2}} + \frac{4}{15}\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^{\frac{15}{2}} + \frac{4}{13}\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^{\frac{13}{2}} + \frac{2}{11}\left(Ba^4 + 4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*b^4*x^(19/2) + 2/9*A*a^4*x^(9/2) + 2/17*(4*B*a*b^3 + A*b^4)*x^(17/2)
 + 4/15*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(15/2) + 4/13*(2*B*a^3*b + 3*A*a^2*b^2)
*x^(13/2) + 2/11*(B*a^4 + 4*A*a^3*b)*x^(11/2)
```

mupad [B] time = 0.05, size = 91, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^4}{11}+\frac{8\,A\,b\,a^3}{11}\right)+x^{17/2}\left(\frac{2\,A\,b^4}{17}+\frac{8\,B\,a\,b^3}{17}\right)+\frac{2\,A\,a^4\,x^{9/2}}{9}+\frac{2\,B\,b^4\,x^{19/2}}{19}+\frac{4\,a^2\,b\,x^{13/2}\,\left(3\,A\,b+2\,B\,a\right)}{13}+4\,a\,b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(11/2)*((2*B*a^4)/11 + (8*A*a^3*b)/11) + x^(17/2)*((2*A*b^4)/17 + (8*B*a*
b^3)/17) + (2*A*a^4*x^(9/2))/9 + (2*B*b^4*x^(19/2))/19 + (4*a^2*b*x^(13/2)*
(3*A*b + 2*B*a))/13 + (4*a*b^2*x^(15/2)*(2*A*b + 3*B*a))/15
```

sympy [A] time = 15.90, size = 148, normalized size = 1.33

$$\frac{2Aa^{4}x^{\frac{9}{2}}}{9} + \frac{8Aa^{3}bx^{\frac{11}{2}}}{11} + \frac{12Aa^{2}b^{2}x^{\frac{13}{2}}}{13} + \frac{8Aab^{3}x^{\frac{15}{2}}}{15} + \frac{2Ab^{4}x^{\frac{17}{2}}}{17} + \frac{2Ba^{4}x^{\frac{11}{2}}}{11} + \frac{8Ba^{3}bx^{\frac{13}{2}}}{13} + \frac{4Ba^{2}b^{2}x^{\frac{15}{2}}}{5} + \frac{8Bab^{3}x^{\frac{17}{2}}}{17} + 2Bb$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(9/2)/9 + 8*A*a**3*b*x**(11/2)/11 + 12*A*a**2*b**2*x**(13/2)/13
 + 8*A*a*b**3*x**(15/2)/15 + 2*A*b**4*x**(17/2)/17 + 2*B*a**4*x**(11/2)/11
+ 8*B*a**3*b*x**(13/2)/13 + 4*B*a**2*b**2*x**(15/2)/5 + 8*B*a*b**3*x**(17/2
)/17 + 2*B*b**4*x**(19/2)/19
```

3.739 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{7}a^4Ax^{7/2}+\frac{2}{9}a^3x^{9/2}(aB+4Ab)+\frac{4}{11}a^2bx^{11/2}(2aB+3Ab)+\frac{2}{15}b^3x^{15/2}(4aB+Ab)+\frac{4}{13}ab^2x^{13/2}(3aB+2Ab)+\frac{2}{17}b^4Bx^{17/2}$$

```
[Out] 2/7*a^4*A*x^(7/2)+2/9*a^3*(4*A*b+B*a)*x^(9/2)+4/11*a^2*b*(3*A*b+2*B*a)*x^(1
1/2)+4/13*a*b^2*(2*A*b+3*B*a)*x^(13/2)+2/15*b^3*(A*b+4*B*a)*x^(15/2)+2/17*b
^4*B*x^(17/2)
```

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{11}a^2bx^{11/2}(2aB+3Ab)+\frac{2}{9}a^3x^{9/2}(aB+4Ab)+\frac{2}{7}a^4Ax^{7/2}+\frac{2}{15}b^3x^{15/2}(4aB+Ab)+\frac{4}{13}ab^2x^{13/2}(3aB+2Ab)+\frac{2}{17}b^4Bx^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(7/2))/7 + (2*a^3*(4*A*b + a*B)*x^(9/2))/9 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(11/2))/11 + (4*a*b^2*(2*A*b + 3*a*B)*x^(13/2))/13 + (2*b^3*(A*b +
4*a*B)*x^(15/2))/15 + (2*b^4*B*x^(17/2))/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{5/2}(a+bx)^4(A+Bx)\,dx\\
&= \int \Big(a^4Ax^{5/2}+a^3(4Ab+aB)x^{7/2}+2a^2b(3Ab+2aB)x^{9/2}+2ab^2(2Ab+\\
&= \frac{2}{7}a^4Ax^{7/2}+\frac{2}{9}a^3(4Ab+aB)x^{9/2}+\frac{4}{11}a^2b(3Ab+2aB)x^{11/2}+\frac{4}{13}ab^2(2A
\end{aligned}$$

Mathematica [A] time = 0.08, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{7/2}\left(6435a^4+20020a^3bx+24570a^2b^2x^2+13860ab^3x^3+3003b^4x^4\right)(17Ab-7aB)}{45045}+Bx^{7/2}(a+bx)^5\right)}{17b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(7/2)*(a + b*x)^5 + ((17*A*b - 7*a*B)*x^(7/2)*(6435*a^4 + 20020*a^3
*b*x + 24570*a^2*b^2*x^2 + 13860*a*b^3*x^3 + 3003*b^4*x^4))/45045))/(17*b)
```

fricas [A] time = 0.84, size = 104, normalized size = 0.94

$$\frac{2}{765765}\,\Big(45045\,Bb^4x^8 + 109395\,Aa^4x^3 + 51051\,\big(4\,Bab^3 + Ab^4\big)x^7 + 117810\,\big(3\,Ba^2b^2 + 2\,Aab^3\big)x^6 + 139230\,\big(2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*b^4*x^8 + 109395*A*a^4*x^3 + 51051*(4*B*a*b^3 + A*b^4)*x^
7 + 117810*(3*B*a^2*b^2 + 2*A*a*b^3)*x^6 + 139230*(2*B*a^3*b + 3*A*a^2*b^2)
*x^5 + 85085*(B*a^4 + 4*A*a^3*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 101, normalized size = 0.91

$$\frac{2}{17}\,Bb^4x^{\frac{17}{2}} + \frac{8}{15}\,Bab^3x^{\frac{15}{2}} + \frac{2}{15}\,Ab^4x^{\frac{15}{2}} + \frac{12}{13}\,Ba^2b^2x^{\frac{13}{2}} + \frac{8}{13}\,Aab^3x^{\frac{13}{2}} + \frac{8}{11}\,Ba^3bx^{\frac{11}{2}} + \frac{12}{11}\,Aa^2b^2x^{\frac{11}{2}} + \frac{2}{9}\,Ba^4x^{\frac{9}{2}} + \frac{8}{9}\,Aa^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*b^4*x^(17/2) + 8/15*B*a*b^3*x^(15/2) + 2/15*A*b^4*x^(15/2) + 12/13*B
*a^2*b^2*x^(13/2) + 8/13*A*a*b^3*x^(13/2) + 8/11*B*a^3*b*x^(11/2) + 12/11*A
*a^2*b^2*x^(11/2) + 2/9*B*a^4*x^(9/2) + 8/9*A*a^3*b*x^(9/2) + 2/7*A*a^4*x^(
7/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.90

$$\frac{2\,\big(45045b^4B\,x^5 + 51051A\,b^4x^4 + 204204x^4Ba\,b^3 + 235620Aa\,b^3x^3 + 353430B\,a^2b^2x^3 + 417690A\,a^2b^2x^2 + 27}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*b^4*x^5+51051*A*b^4*x^4+204204*B*a*b^3*x^4+235620
*A*a*b^3*x^3+353430*B*a^2*b^2*x^3+417690*A*a^2*b^2*x^2+278460*B*a^3*b*x^2+3
40340*A*a^3*b*x+85085*B*a^4*x+109395*A*a^4)
```

maxima [A] time = 0.59, size = 99, normalized size = 0.89

$$\frac{2}{17}\,Bb^4x^{\frac{17}{2}} + \frac{2}{7}\,Aa^4x^{\frac{7}{2}} + \frac{2}{15}\,\big(4\,Bab^3 + Ab^4\big)x^{\frac{15}{2}} + \frac{4}{13}\,\big(3\,Ba^2b^2 + 2\,Aab^3\big)x^{\frac{13}{2}} + \frac{4}{11}\,\big(2\,Ba^3b + 3\,Aa^2b^2\big)x^{\frac{11}{2}} + \frac{2}{9}\,\big(Ba^4 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*b^4*x^(17/2) + 2/7*A*a^4*x^(7/2) + 2/15*(4*B*a*b^3 + A*b^4)*x^(15/2)
 + 4/13*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(13/2) + 4/11*(2*B*a^3*b + 3*A*a^2*b^2)
*x^(11/2) + 2/9*(B*a^4 + 4*A*a^3*b)*x^(9/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.82

$$x^{9/2}\,\left(\frac{2\,B\,a^4}{9} + \frac{8\,A\,b\,a^3}{9}\right) + x^{15/2}\,\left(\frac{2\,A\,b^4}{15} + \frac{8\,B\,a\,b^3}{15}\right) + \frac{2\,A\,a^4\,x^{7/2}}{7} + \frac{2\,B\,b^4\,x^{17/2}}{17} + \frac{4\,a^2\,b\,x^{11/2}\,\left(3\,A\,b + 2\,B\,a\right)}{11} + 4\,a\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(9/2)*((2*B*a^4)/9 + (8*A*a^3*b)/9) + x^(15/2)*((2*A*b^4)/15 + (8*B*a*b^3
)/15) + (2*A*a^4*x^(7/2))/7 + (2*B*b^4*x^(17/2))/17 + (4*a^2*b*x^(11/2)*(3*
A*b + 2*B*a))/11 + (4*a*b^2*x^(13/2)*(2*A*b + 3*B*a))/13
```

sympy [**A**] time = 8.75, size = 148, normalized size = 1.33

$$\frac{2Aa^4x^{\frac{7}{2}}}{7}+\frac{8Aa^3bx^{\frac{9}{2}}}{9}+\frac{12Aa^2b^2x^{\frac{11}{2}}}{11}+\frac{8Aab^3x^{\frac{13}{2}}}{13}+\frac{2Ab^4x^{\frac{15}{2}}}{15}+\frac{2Ba^4x^{\frac{9}{2}}}{9}+\frac{8Ba^3bx^{\frac{11}{2}}}{11}+\frac{12Ba^2b^2x^{\frac{13}{2}}}{13}+\frac{8Bab^3x^{\frac{15}{2}}}{15}+\frac{2Bb^4x^{\frac{17}{2}}}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(7/2)/7 + 8*A*a**3*b*x**(9/2)/9 + 12*A*a**2*b**2*x**(11/2)/11 +
 8*A*a*b**3*x**(13/2)/13 + 2*A*b**4*x**(15/2)/15 + 2*B*a**4*x**(9/2)/9 + 8*
B*a**3*b*x**(11/2)/11 + 12*B*a**2*b**2*x**(13/2)/13 + 8*B*a*b**3*x**(15/2)/
15 + 2*B*b**4*x**(17/2)/17
```

3.740 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{5}a^4Ax^{5/2}+\frac{2}{7}a^3x^{7/2}(aB+4Ab)+\frac{4}{9}a^2bx^{9/2}(2aB+3Ab)+\frac{2}{13}b^3x^{13/2}(4aB+Ab)+\frac{4}{11}ab^2x^{11/2}(3aB+2Ab)+\frac{2}{15}b^4Bx^{15/2}$$

```
[Out] 2/5*a^4*A*x^(5/2)+2/7*a^3*(4*A*b+B*a)*x^(7/2)+4/9*a^2*b*(3*A*b+2*B*a)*x^(9/
2)+4/11*a*b^2*(2*A*b+3*B*a)*x^(11/2)+2/13*b^3*(A*b+4*B*a)*x^(13/2)+2/15*b^4
*B*x^(15/2)
```

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 76\}$

$$\frac{4}{9}a^2bx^{9/2}(2aB+3Ab)+\frac{2}{7}a^3x^{7/2}(aB+4Ab)+\frac{2}{5}a^4Ax^{5/2}+\frac{2}{13}b^3x^{13/2}(4aB+Ab)+\frac{4}{11}ab^2x^{11/2}(3aB+2Ab)+\frac{2}{15}b^4Bx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(5/2))/5 + (2*a^3*(4*A*b + a*B)*x^(7/2))/7 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(9/2))/9 + (4*a*b^2*(2*A*b + 3*a*B)*x^(11/2))/11 + (2*b^3*(A*b + 4*
a*B)*x^(13/2))/13 + (2*b^4*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int x^{3/2}(a+bx)^4(A+Bx)\,dx\\ &= \int\left(a^4Ax^{3/2}+a^3(4Ab+aB)x^{5/2}+2a^2b(3Ab+2aB)x^{7/2}+2ab^2(2A\right.\\ &= \frac{2}{5}a^4Ax^{5/2}+\frac{2}{7}a^3(4Ab+aB)x^{7/2}+\frac{4}{9}a^2b(3Ab+2aB)x^{9/2}+\frac{4}{11}ab^2(2\end{aligned}$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{5/2}\left(3003a^4+8580a^3bx+10010a^2b^2x^2+5460ab^3x^3+1155b^4x^4\right)(3Ab-aB)}{3003}+Bx^{5/2}(a+bx)^5\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(5/2)*(a + b*x)^5 + ((3*A*b - a*B)*x^(5/2)*(3003*a^4 + 8580*a^3*b*x
 + 10010*a^2*b^2*x^2 + 5460*a*b^3*x^3 + 1155*b^4*x^4))/3003))/(15*b)
```

fricas [A] time = 0.88, size = 104, normalized size = 0.94

$$\frac{2}{45045}\left(3003\,Bb^4x^7 + 9009\,Aa^4x^2 + 3465\left(4\,Bab^3 + Ab^4\right)x^6 + 8190\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^5 + 10010\left(2\,Ba^3b + 3\,A\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*b^4*x^7 + 9009*A*a^4*x^2 + 3465*(4*B*a*b^3 + A*b^4)*x^6 + 8
190*(3*B*a^2*b^2 + 2*A*a*b^3)*x^5 + 10010*(2*B*a^3*b + 3*A*a^2*b^2)*x^4 + 6
435*(B*a^4 + 4*A*a^3*b)*x^3)*sqrt(x)
```

giac [A] time = 0.15, size = 101, normalized size = 0.91

$$\frac{2}{15}\,Bb^4x^{\frac{15}{2}} + \frac{8}{13}\,Bab^3x^{\frac{13}{2}} + \frac{2}{13}\,Ab^4x^{\frac{13}{2}} + \frac{12}{11}\,Ba^2b^2x^{\frac{11}{2}} + \frac{8}{11}\,Aab^3x^{\frac{11}{2}} + \frac{8}{9}\,Ba^3bx^{\frac{9}{2}} + \frac{4}{3}\,Aa^2b^2x^{\frac{9}{2}} + \frac{2}{7}\,Ba^4x^{\frac{7}{2}} + \frac{8}{7}\,Aa^3bx^{\frac{7}{2}} + \frac{2}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*b^4*x^(15/2) + 8/13*B*a*b^3*x^(13/2) + 2/13*A*b^4*x^(13/2) + 12/11*B
*a^2*b^2*x^(11/2) + 8/11*A*a*b^3*x^(11/2) + 8/9*B*a^3*b*x^(9/2) + 4/3*A*a^2
*b^2*x^(9/2) + 2/7*B*a^4*x^(7/2) + 8/7*A*a^3*b*x^(7/2) + 2/5*A*a^4*x^(5/2)
```

maple [A] time = 0.06, size = 100, normalized size = 0.90

$$\frac{2\left(3003b^4B\,x^5 + 3465A\,b^4x^4 + 13860x^4Ba\,b^3 + 16380Aa\,b^3x^3 + 24570B\,a^2b^2x^3 + 30030A\,a^2b^2x^2 + 20020B\,a^3b\,x\right.}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*b^4*x^5+3465*A*b^4*x^4+13860*B*a*b^3*x^4+16380*A*a*
b^3*x^3+24570*B*a^2*b^2*x^3+30030*A*a^2*b^2*x^2+20020*B*a^3*b*x^2+25740*A*a
^3*b*x+6435*B*a^4*x+9009*A*a^4)
```

maxima [A] time = 0.50, size = 99, normalized size = 0.89

$$\frac{2}{15}\,Bb^4x^{\frac{15}{2}} + \frac{2}{5}\,Aa^4x^{\frac{5}{2}} + \frac{2}{13}\left(4\,Bab^3 + Ab^4\right)x^{\frac{13}{2}} + \frac{4}{11}\left(3\,Ba^2b^2 + 2\,Aab^3\right)x^{\frac{11}{2}} + \frac{4}{9}\left(2\,Ba^3b + 3\,Aa^2b^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Ba^4 + 4\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*b^4*x^(15/2) + 2/5*A*a^4*x^(5/2) + 2/13*(4*B*a*b^3 + A*b^4)*x^(13/2)
 + 4/11*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(11/2) + 4/9*(2*B*a^3*b + 3*A*a^2*b^2)*
x^(9/2) + 2/7*(B*a^4 + 4*A*a^3*b)*x^(7/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.82

$$x^{7/2}\left(\frac{2\,B\,a^4}{7} + \frac{8\,A\,b\,a^3}{7}\right) + x^{13/2}\left(\frac{2\,A\,b^4}{13} + \frac{8\,B\,a\,b^3}{13}\right) + \frac{2\,A\,a^4\,x^{5/2}}{5} + \frac{2\,B\,b^4\,x^{15/2}}{15} + \frac{4\,a^2\,b\,x^{9/2}\,\left(3\,A\,b + 2\,B\,a\right)}{9} + \frac{4\,a\,b^2\,x^{1}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(7/2)*((2*B*a^4)/7 + (8*A*a^3*b)/7) + x^(13/2)*((2*A*b^4)/13 + (8*B*a*b^3
)/13) + (2*A*a^4*x^(5/2))/5 + (2*B*b^4*x^(15/2))/15 + (4*a^2*b*x^(9/2)*(3*A
*b + 2*B*a))/9 + (4*a*b^2*x^(11/2)*(2*A*b + 3*B*a))/11
```

sympy [A] time = 4.30, size = 148, normalized size = 1.33

$$\frac{2Aa^4x^{\frac{5}{2}}}{5}+\frac{8Aa^3bx^{\frac{7}{2}}}{7}+\frac{4Aa^2b^2x^{\frac{9}{2}}}{3}+\frac{8Aab^3x^{\frac{11}{2}}}{11}+\frac{2Ab^4x^{\frac{13}{2}}}{13}+\frac{2Ba^4x^{\frac{7}{2}}}{7}+\frac{8Ba^3bx^{\frac{9}{2}}}{9}+\frac{12Ba^2b^2x^{\frac{11}{2}}}{11}+\frac{8Bab^3x^{\frac{13}{2}}}{13}+\frac{2Bb^4x}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 2*A*a**4*x**(5/2)/5 + 8*A*a**3*b*x**(7/2)/7 + 4*A*a**2*b**2*x**(9/2)/3 + 8*
A*a*b**3*x**(11/2)/11 + 2*A*b**4*x**(13/2)/13 + 2*B*a**4*x**(7/2)/7 + 8*B*a
**3*b*x**(9/2)/9 + 12*B*a**2*b**2*x**(11/2)/11 + 8*B*a*b**3*x**(13/2)/13 +
2*B*b**4*x**(15/2)/15
```

3.741 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=111

$$\frac{2}{3}a^4Ax^{3/2}+\frac{2}{5}a^3x^{5/2}(aB+4Ab)+\frac{4}{7}a^2bx^{7/2}(2aB+3Ab)+\frac{2}{11}b^3x^{11/2}(4aB+Ab)+\frac{4}{9}ab^2x^{9/2}(3aB+2Ab)+\frac{2}{13}b^4Bx^{13/2}$$

```
[Out] 2/3*a^4*A*x^(3/2)+2/5*a^3*(4*A*b+B*a)*x^(5/2)+4/7*a^2*b*(3*A*b+2*B*a)*x^(7/
2)+4/9*a*b^2*(2*A*b+3*B*a)*x^(9/2)+2/11*b^3*(A*b+4*B*a)*x^(11/2)+2/13*b^4*B
*x^(13/2)
```

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 76\}$

$$\frac{4}{7}a^2bx^{7/2}(2aB+3Ab)+\frac{2}{5}a^3x^{5/2}(aB+4Ab)+\frac{2}{3}a^4Ax^{3/2}+\frac{2}{11}b^3x^{11/2}(4aB+Ab)+\frac{4}{9}ab^2x^{9/2}(3aB+2Ab)+\frac{2}{13}b^4Bx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*a^4*A*x^(3/2))/3 + (2*a^3*(4*A*b + a*B)*x^(5/2))/5 + (4*a^2*b*(3*A*b + 2
*a*B)*x^(7/2))/7 + (4*a*b^2*(2*A*b + 3*a*B)*x^(9/2))/9 + (2*b^3*(A*b + 4*a*
B)*x^(11/2))/11 + (2*b^4*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int \sqrt{x}\,(a+bx)^4(A+Bx)\,dx\\ &= \int \left(a^4A\sqrt{x}+a^3(4Ab+aB)x^{3/2}+2a^2b(3Ab+2aB)x^{5/2}+2ab^2(2Ab+\right.\\ &= \frac{2}{3}a^4Ax^{3/2}+\frac{2}{5}a^3(4Ab+aB)x^{5/2}+\frac{4}{7}a^2b(3Ab+2aB)x^{7/2}+\frac{4}{9}ab^2(2Ab+\end{aligned}$$

Mathematica [A] time = 0.06, size = 81, normalized size = 0.73

$$\frac{2\left(\frac{x^{3/2}\left(1155a^4+2772a^3bx+2970a^2b^2x^2+1540ab^3x^3+315b^4x^4\right)(13Ab-3aB)}{3465}+Bx^{3/2}(a+bx)^5\right)}{13b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(B*x^(3/2)*(a + b*x)^5 + ((13*A*b - 3*a*B)*x^(3/2)*(1155*a^4 + 2772*a^3*
b*x + 2970*a^2*b^2*x^2 + 1540*a*b^3*x^3 + 315*b^4*x^4))/3465))/(13*b)
```

fricas [**A**] time = 0.93, size = 102, normalized size = 0.92

$$\frac{2}{45045}\bigl(3465\,Bb^4x^6+15015\,Aa^4x+4095\bigl(4\,Bab^3+Ab^4\bigr)x^5+10010\bigl(3\,Ba^2b^2+2\,Aab^3\bigr)x^4+12870\bigl(2\,Ba^3b+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*b^4*x^6 + 15015*A*a^4*x + 4095*(4*B*a*b^3 + A*b^4)*x^5 + 10
010*(3*B*a^2*b^2 + 2*A*a*b^3)*x^4 + 12870*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 9
009*(B*a^4 + 4*A*a^3*b)*x^2)*sqrt(x)
```

giac [**A**] time = 0.15, size = 101, normalized size = 0.91

$$\frac{2}{13}\,Bb^4x^{\frac{13}{2}}+\frac{8}{11}\,Bab^3x^{\frac{11}{2}}+\frac{2}{11}\,Ab^4x^{\frac{11}{2}}+\frac{4}{3}\,Ba^2b^2x^{\frac{9}{2}}+\frac{8}{9}\,Aab^3x^{\frac{9}{2}}+\frac{8}{7}\,Ba^3bx^{\frac{7}{2}}+\frac{12}{7}\,Aa^2b^2x^{\frac{7}{2}}+\frac{2}{5}\,Ba^4x^{\frac{5}{2}}+\frac{8}{5}\,Aa^3bx^{\frac{5}{2}}+\frac{2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^4*x^(13/2) + 8/11*B*a*b^3*x^(11/2) + 2/11*A*b^4*x^(11/2) + 4/3*B*a
^2*b^2*x^(9/2) + 8/9*A*a*b^3*x^(9/2) + 8/7*B*a^3*b*x^(7/2) + 12/7*A*a^2*b^2
*x^(7/2) + 2/5*B*a^4*x^(5/2) + 8/5*A*a^3*b*x^(5/2) + 2/3*A*a^4*x^(3/2)
```

maple [**A**] time = 0.06, size = 100, normalized size = 0.90

$$\frac{2\bigl(3465b^4B\,x^5+4095A\,b^4x^4+16380x^4Ba\,b^3+20020Aa\,b^3x^3+30030B\,a^2b^2x^3+38610A\,a^2b^2x^2+25740B\,a}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*b^4*x^5+4095*A*b^4*x^4+16380*B*a*b^3*x^4+20020*A*a*
b^3*x^3+30030*B*a^2*b^2*x^3+38610*A*a^2*b^2*x^2+25740*B*a^3*b*x^2+36036*A*a
^3*b*x+9009*B*a^4*x+15015*A*a^4)
```

maxima [**A**] time = 0.56, size = 99, normalized size = 0.89

$$\frac{2}{13}\,Bb^4x^{\frac{13}{2}}+\frac{2}{3}\,Aa^4x^{\frac{3}{2}}+\frac{2}{11}\,\bigl(4\,Bab^3+Ab^4\bigr)x^{\frac{11}{2}}+\frac{4}{9}\,\bigl(3\,Ba^2b^2+2\,Aab^3\bigr)x^{\frac{9}{2}}+\frac{4}{7}\,\bigl(2\,Ba^3b+3\,Aa^2b^2\bigr)x^{\frac{7}{2}}+\frac{2}{5}\,\bigl(Ba^4+4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^4*x^(13/2) + 2/3*A*a^4*x^(3/2) + 2/11*(4*B*a*b^3 + A*b^4)*x^(11/2)
 + 4/9*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(9/2) + 4/7*(2*B*a^3*b + 3*A*a^2*b^2)*x^
(7/2) + 2/5*(B*a^4 + 4*A*a^3*b)*x^(5/2)
```

mupad [**B**] time = 0.04, size = 91, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^4}{5}+\frac{8\,A\,b\,a^3}{5}\right)+x^{11/2}\left(\frac{2\,A\,b^4}{11}+\frac{8\,B\,a\,b^3}{11}\right)+\frac{2\,A\,a^4\,x^{3/2}}{3}+\frac{2\,B\,b^4\,x^{13/2}}{13}+\frac{4\,a^2\,b\,x^{7/2}\,\left(3\,A\,b+2\,B\,a\right)}{7}+4\,a\,b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(5/2)*((2*B*a^4)/5 + (8*A*a^3*b)/5) + x^(11/2)*((2*A*b^4)/11 + (8*B*a*b^3
)/11) + (2*A*a^4*x^(3/2))/3 + (2*B*b^4*x^(13/2))/13 + (4*a^2*b*x^(7/2)*(3*A
*b + 2*B*a))/7 + (4*a*b^2*x^(9/2)*(2*A*b + 3*B*a))/9
```

sympy [A] time = 4.38, size = 124, normalized size = 1.12

$$\frac{2Aa^4x^{\frac{3}{2}}}{3}+\frac{2Bb^4x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ab^4+4Bab^3\right)}{11}+\frac{2x^{\frac{9}{2}}\left(4Aab^3+6Ba^2b^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(6Aa^2b^2+4Ba^3b\right)}{7}+\frac{2x^{\frac{5}{2}}\left(4Aa^3b+Ba^4\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2*x**(1/2),x)
```

```
[Out] 2*A*a**4*x**(3/2)/3 + 2*B*b**4*x**(13/2)/13 + 2*x**(11/2)*(A*b**4 + 4*B*a*b
**3)/11 + 2*x**(9/2)*(4*A*a*b**3 + 6*B*a**2*b**2)/9 + 2*x**(7/2)*(6*A*a**2*
b**2 + 4*B*a**3*b)/7 + 2*x**(5/2)*(4*A*a**3*b + B*a**4)/5
```

3.742 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=109

$$2a^4A\sqrt{x}+\frac{2}{3}a^3x^{3/2}(aB+4Ab)+\frac{4}{5}a^2bx^{5/2}(2aB+3Ab)+\frac{2}{9}b^3x^{9/2}(4aB+Ab)+\frac{4}{7}ab^2x^{7/2}(3aB+2Ab)+\frac{2}{11}b^4Bx^{11/2}$$

```
[Out] 2/3*a^3*(4*A*b+B*a)*x^(3/2)+4/5*a^2*b*(3*A*b+2*B*a)*x^(5/2)+4/7*a*b^2*(2*A*
b+3*B*a)*x^(7/2)+2/9*b^3*(A*b+4*B*a)*x^(9/2)+2/11*b^4*B*x^(11/2)+2*a^4*A*x^
(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{4}{5}a^2bx^{5/2}(2aB+3Ab)+\frac{2}{3}a^3x^{3/2}(aB+4Ab)+2a^4A\sqrt{x}+\frac{2}{9}b^3x^{9/2}(4aB+Ab)+\frac{4}{7}ab^2x^{7/2}(3aB+2Ab)+\frac{2}{11}b^4Bx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^4*A*Sqrt[x] + (2*a^3*(4*A*b + a*B)*x^(3/2))/3 + (4*a^2*b*(3*A*b + 2*a*B
)*x^(5/2))/5 + (4*a*b^2*(2*A*b + 3*a*B)*x^(7/2))/7 + (2*b^3*(A*b + 4*a*B)*x
^(9/2))/9 + (2*b^4*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{x}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{\sqrt{x}}\,dx\\ &= \int \left(\frac{a^4A}{\sqrt{x}}+a^3(4Ab+aB)\sqrt{x}+2a^2b(3Ab+2aB)x^{3/2}+2ab^2(2Ab+3a\right.\\ &= 2a^4A\sqrt{x}+\frac{2}{3}a^3(4Ab+aB)x^{3/2}+\frac{4}{5}a^2b(3Ab+2aB)x^{5/2}+\frac{4}{7}ab^2(2Ab+\end{aligned}$$

Mathematica [A] time = 0.03, size = 89, normalized size = 0.82

$$\frac{2\sqrt{x}\left(1155a^4(3A+Bx)+924a^3bx(5A+3Bx)+594a^2b^2x^2(7A+5Bx)+220ab^3x^3(9A+7Bx)+35b^4x^4(11A\right.}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(1155*a^4*(3*A + B*x) + 924*a^3*b*x*(5*A + 3*B*x) + 594*a^2*b^2*
x^2*(7*A + 5*B*x) + 220*a*b^3*x^3*(9*A + 7*B*x) + 35*b^4*x^4*(11*A + 9*B*x)
))/3465
```

fricas [A] time = 0.75, size = 99, normalized size = 0.91

$$\frac{2}{3465} (315 Bb^4x^5 + 3465 Aa^4 + 385 (4 Bab^3 + Ab^4)x^4 + 990 (3 Ba^2b^2 + 2 Aab^3)x^3 + 1386 (2 Ba^3b + 3 Aa^2b^2)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*b^4*x^5 + 3465*A*a^4 + 385*(4*B*a*b^3 + A*b^4)*x^4 + 990*(3*B
*a^2*b^2 + 2*A*a*b^3)*x^3 + 1386*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 1155*(B*a^
4 + 4*A*a^3*b)*x)*sqrt(x)
```

giac [A] time = 0.15, size = 101, normalized size = 0.93

$$\frac{2}{11} Bb^4x^{\frac{11}{2}} + \frac{8}{9} Bab^3x^{\frac{9}{2}} + \frac{2}{9} Ab^4x^{\frac{9}{2}} + \frac{12}{7} Ba^2b^2x^{\frac{7}{2}} + \frac{8}{7} Aab^3x^{\frac{7}{2}} + \frac{8}{5} Ba^3bx^{\frac{5}{2}} + \frac{12}{5} Aa^2b^2x^{\frac{5}{2}} + \frac{2}{3} Ba^4x^{\frac{3}{2}} + \frac{8}{3} Aa^3bx^{\frac{3}{2}} + 2 Aa^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^4*x^(11/2) + 8/9*B*a*b^3*x^(9/2) + 2/9*A*b^4*x^(9/2) + 12/7*B*a^2*
b^2*x^(7/2) + 8/7*A*a*b^3*x^(7/2) + 8/5*B*a^3*b*x^(5/2) + 12/5*A*a^2*b^2*x^
(5/2) + 2/3*B*a^4*x^(3/2) + 8/3*A*a^3*b*x^(3/2) + 2*A*a^4*sqrt(x)
```

maple [A] time = 0.05, size = 100, normalized size = 0.92

$$\frac{2 (315b^4B x^5 + 385A b^4x^4 + 1540x^4Ba b^3 + 1980Aa b^3x^3 + 2970B a^2b^2x^3 + 4158A a^2b^2x^2 + 2772B a^3b x^2 + 4620}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*b^4*x^5+385*A*b^4*x^4+1540*B*a*b^3*x^4+1980*A*a*b^3*x
^3+2970*B*a^2*b^2*x^3+4158*A*a^2*b^2*x^2+2772*B*a^3*b*x^2+4620*A*a^3*b*x+11
55*B*a^4*x+3465*A*a^4)
```

maxima [A] time = 0.47, size = 99, normalized size = 0.91

$$\frac{2}{11} Bb^4x^{\frac{11}{2}} + 2 Aa^4\sqrt{x} + \frac{2}{9} (4 Bab^3 + Ab^4)x^{\frac{9}{2}} + \frac{4}{7} (3 Ba^2b^2 + 2 Aab^3)x^{\frac{7}{2}} + \frac{4}{5} (2 Ba^3b + 3 Aa^2b^2)x^{\frac{5}{2}} + \frac{2}{3} (Ba^4 + 4 Aa^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^4*x^(11/2) + 2*A*a^4*sqrt(x) + 2/9*(4*B*a*b^3 + A*b^4)*x^(9/2) + 4
/7*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(7/2) + 4/5*(2*B*a^3*b + 3*A*a^2*b^2)*x^(5/2
) + 2/3*(B*a^4 + 4*A*a^3*b)*x^(3/2)
```

mupad [B] time = 0.04, size = 91, normalized size = 0.83

$$x^{3/2} \left(\frac{2 B a^4}{3} + \frac{8 A b a^3}{3}\right) + x^{9/2} \left(\frac{2 A b^4}{9} + \frac{8 B a b^3}{9}\right) + 2 A a^4 \sqrt{x} + \frac{2 B b^4 x^{11/2}}{11} + \frac{4 a^2 b x^{5/2} (3 A b + 2 B a)}{5} + 4 a b^2 x^{7/2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^4)/3 + (8*A*a^3*b)/3) + x^(9/2)*((2*A*b^4)/9 + (8*B*a*b^3)/
9) + 2*A*a^4*x^(1/2) + (2*B*b^4*x^(11/2))/11 + (4*a^2*b*x^(5/2)*(3*A*b + 2*
B*a))/5 + (4*a*b^2*x^(7/2)*(2*A*b + 3*B*a))/7
```

sympy [A] time = 1.58, size = 146, normalized size = 1.34

$$2Aa^4\sqrt{x}+\frac{8Aa^3bx^{\frac{3}{2}}}{3}+\frac{12Aa^2b^2x^{\frac{5}{2}}}{5}+\frac{8Aab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^4x^{\frac{9}{2}}}{9}+\frac{2Ba^4x^{\frac{3}{2}}}{3}+\frac{8Ba^3bx^{\frac{5}{2}}}{5}+\frac{12Ba^2b^2x^{\frac{7}{2}}}{7}+\frac{8Bab^3x^{\frac{9}{2}}}{9}+\frac{2Bb^4x^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(1/2),x)
```

```
[Out] 2*A*a**4*sqrt(x) + 8*A*a**3*b*x**(3/2)/3 + 12*A*a**2*b**2*x**(5/2)/5 + 8*A*
a*b**3*x**(7/2)/7 + 2*A*b**4*x**(9/2)/9 + 2*B*a**4*x**(3/2)/3 + 8*B*a**3*b*
x**(5/2)/5 + 12*B*a**2*b**2*x**(7/2)/7 + 8*B*a*b**3*x**(9/2)/9 + 2*B*b**4*x
**(11/2)/11
```

3.743 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{\sqrt{x}}+2a^3\sqrt{x}\,(aB+4Ab)+\frac{4}{3}a^2bx^{3/2}(2aB+3Ab)+\frac{2}{7}b^3x^{7/2}(4aB+Ab)+\frac{4}{5}ab^2x^{5/2}(3aB+2Ab)+\frac{2}{9}b^4Bx^{9/2}$$

```
[Out] 4/3*a^2*b*(3*A*b+2*B*a)*x^(3/2)+4/5*a*b^2*(2*A*b+3*B*a)*x^(5/2)+2/7*b^3*(A*
b+4*B*a)*x^(7/2)+2/9*b^4*B*x^(9/2)-2*a^4*A/x^(1/2)+2*a^3*(4*A*b+B*a)*x^(1/2
)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$\frac{4}{3}a^2bx^{3/2}(2aB+3Ab)+2a^3\sqrt{x}\,(aB+4Ab)-\frac{2a^4A}{\sqrt{x}}+\frac{2}{7}b^3x^{7/2}(4aB+Ab)+\frac{4}{5}ab^2x^{5/2}(3aB+2Ab)+\frac{2}{9}b^4Bx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^4*A)/Sqrt[x] + 2*a^3*(4*A*b + a*B)*Sqrt[x] + (4*a^2*b*(3*A*b + 2*a*B)
*x^(3/2))/3 + (4*a*b^2*(2*A*b + 3*a*B)*x^(5/2))/5 + (2*b^3*(A*b + 4*a*B)*x^
(7/2))/7 + (2*b^4*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{3/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{3/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{3/2}}+\frac{a^3(4Ab+aB)}{\sqrt{x}}+2a^2b(3Ab+2aB)\sqrt{x}+2ab^2(2Ab+3aB)x^{3/2}\right.\\ &= -\frac{2a^4A}{\sqrt{x}}+2a^3(4Ab+aB)\sqrt{x}+\frac{4}{3}a^2b(3Ab+2aB)x^{3/2}+\frac{4}{5}ab^2(2Ab+3aB)\end{aligned}$$

Mathematica [A] time = 0.03, size = 87, normalized size = 0.81

$$\frac{-630a^4(A-Bx)+840a^3bx(3A+Bx)+252a^2b^2x^2(5A+3Bx)+72ab^3x^3(7A+5Bx)+10b^4x^4(9A+7Bx)}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(3/2),x]
```

```
[Out] (-630*a^4*(A - B*x) + 840*a^3*b*x*(3*A + B*x) + 252*a^2*b^2*x^2*(5*A + 3*B*
x) + 72*a*b^3*x^3*(7*A + 5*B*x) + 10*b^4*x^4*(9*A + 7*B*x))/(315*Sqrt[x])
```

fricas [**A**] time = 0.86, size = 99, normalized size = 0.93

$$\frac{2 (35 Bb^4x^5 - 315 Aa^4 + 45 (4 Bab^3 + Ab^4) x^4 + 126 (3 Ba^2b^2 + 2 Aab^3) x^3 + 210 (2 Ba^3b + 3 Aa^2b^2) x^2 + 315 (}{315 \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b^4*x^5 - 315*A*a^4 + 45*(4*B*a*b^3 + A*b^4)*x^4 + 126*(3*B*a^2
*b^2 + 2*A*a*b^3)*x^3 + 210*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 315*(B*a^4 + 4*
A*a^3*b)*x)/sqrt(x)
```

giac [**A**] time = 0.20, size = 101, normalized size = 0.94

$$\frac{2}{9} Bb^4x^{\frac{9}{2}} + \frac{8}{7} Bab^3x^{\frac{7}{2}} + \frac{2}{7} Ab^4x^{\frac{7}{2}} + \frac{12}{5} Ba^2b^2x^{\frac{5}{2}} + \frac{8}{5} Aab^3x^{\frac{5}{2}} + \frac{8}{3} Ba^3bx^{\frac{3}{2}} + 4 Aa^2b^2x^{\frac{3}{2}} + 2 Ba^4\sqrt{x} + 8 Aa^3b\sqrt{x} - \frac{2 Aa^4}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^4*x^(9/2) + 8/7*B*a*b^3*x^(7/2) + 2/7*A*b^4*x^(7/2) + 12/5*B*a^2*b^
2*x^(5/2) + 8/5*A*a*b^3*x^(5/2) + 8/3*B*a^3*b*x^(3/2) + 4*A*a^2*b^2*x^(3/2)
 + 2*B*a^4*sqrt(x) + 8*A*a^3*b*sqrt(x) - 2*A*a^4/sqrt(x)
```

maple [**A**] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2 (-35b^4B x^5 - 45A b^4x^4 - 180x^4Ba b^3 - 252Aa b^3x^3 - 378B a^2b^2x^3 - 630A a^2b^2x^2 - 420B a^3b x^2 - 1260A a}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x)
```

```
[Out] -2/315*(-35*B*b^4*x^5-45*A*b^4*x^4-180*B*a*b^3*x^4-252*A*a*b^3*x^3-378*B*a^
2*b^2*x^3-630*A*a^2*b^2*x^2-420*B*a^3*b*x^2-1260*A*a^3*b*x-315*B*a^4*x+315*
A*a^4)/x^(1/2)
```

maxima [**A**] time = 0.62, size = 99, normalized size = 0.93

$$\frac{2}{9} Bb^4x^{\frac{9}{2}} - \frac{2 Aa^4}{\sqrt{x}} + \frac{2}{7} (4 Bab^3 + Ab^4) x^{\frac{7}{2}} + \frac{4}{5} (3 Ba^2b^2 + 2 Aab^3) x^{\frac{5}{2}} + \frac{4}{3} (2 Ba^3b + 3 Aa^2b^2) x^{\frac{3}{2}} + 2 (Ba^4 + 4 Aa^3b) \sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*b^4*x^(9/2) - 2*A*a^4/sqrt(x) + 2/7*(4*B*a*b^3 + A*b^4)*x^(7/2) + 4/5
*(3*B*a^2*b^2 + 2*A*a*b^3)*x^(5/2) + 4/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^(3/2)
+ 2*(B*a^4 + 4*A*a^3*b)*sqrt(x)
```

mupad [**B**] time = 0.04, size = 91, normalized size = 0.85

$$\sqrt{x}\ (2\,B\,a^4 + 8\,A\,b\,a^3) + x^{7/2}\ \left(\frac{2\,A\,b^4}{7} + \frac{8\,B\,a\,b^3}{7}\right) - \frac{2\,A\,a^4}{\sqrt{x}} + \frac{2\,B\,b^4\,x^{9/2}}{9} + \frac{4\,a^2\,b\,x^{3/2}\ (3\,A\,b + 2\,B\,a)}{3} + 4\,a\,b^2\,x^{5/2}\ (2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^4 + 8*A*a^3*b) + x^(7/2)*((2*A*b^4)/7 + (8*B*a*b^3)/7) - (2*
A*a^4)/x^(1/2) + (2*B*b^4*x^(9/2))/9 + (4*a^2*b*x^(3/2)*(3*A*b + 2*B*a))/3
+ (4*a*b^2*x^(5/2)*(2*A*b + 3*B*a))/5
```

sympy [**A**] time = 1.80, size = 141, normalized size = 1.32

$$-\frac{2Aa^4}{\sqrt{x}}+8Aa^3b\sqrt{x}+4Aa^2b^2x^{\frac{3}{2}}+\frac{8Aab^3x^{\frac{5}{2}}}{5}+\frac{2Ab^4x^{\frac{7}{2}}}{7}+2Ba^4\sqrt{x}+\frac{8Ba^3bx^{\frac{3}{2}}}{3}+\frac{12Ba^2b^2x^{\frac{5}{2}}}{5}+\frac{8Bab^3x^{\frac{7}{2}}}{7}+\frac{2Bb^4x^{\frac{9}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(3/2),x)
```

```
[Out] -2*A*a**4/sqrt(x) + 8*A*a**3*b*sqrt(x) + 4*A*a**2*b**2*x**(3/2) + 8*A*a*b**
3*x**(5/2)/5 + 2*A*b**4*x**(7/2)/7 + 2*B*a**4*sqrt(x) + 8*B*a**3*b*x**(3/2)
/3 + 12*B*a**2*b**2*x**(5/2)/5 + 8*B*a*b**3*x**(7/2)/7 + 2*B*b**4*x**(9/2)/
9
```

3.744 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{3x^{3/2}}-\frac{2a^3(aB+4Ab)}{\sqrt{x}}+4a^2b\sqrt{x}\,(2aB+3Ab)+\frac{2}{5}b^3x^{5/2}(4aB+Ab)+\frac{4}{3}ab^2x^{3/2}(3aB+2Ab)+\frac{2}{7}b^4Bx^{7/2}$$

```
[Out] -2/3*a^4*A/x^(3/2)+4/3*a*b^2*(2*A*b+3*B*a)*x^(3/2)+2/5*b^3*(A*b+4*B*a)*x^(5
/2)+2/7*b^4*B*x^(7/2)-2*a^3*(4*A*b+B*a)/x^(1/2)+4*a^2*b*(3*A*b+2*B*a)*x^(1/
2)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$-\frac{2a^3(aB+4Ab)}{\sqrt{x}}+4a^2b\sqrt{x}\,(2aB+3Ab)-\frac{2a^4A}{3x^{3/2}}+\frac{4}{3}ab^2x^{3/2}(3aB+2Ab)+\frac{2}{5}b^3x^{5/2}(4aB+Ab)+\frac{2}{7}b^4Bx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^4*A)/(3*x^(3/2)) - (2*a^3*(4*A*b + a*B))/Sqrt[x] + 4*a^2*b*(3*A*b + 2
*a*B)*Sqrt[x] + (4*a*b^2*(2*A*b + 3*a*B)*x^(3/2))/3 + (2*b^3*(A*b + 4*a*B)*
x^(5/2))/5 + (2*b^4*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{5/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{5/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{5/2}}+\frac{a^3(4Ab+aB)}{x^{3/2}}+\frac{2a^2b(3Ab+2aB)}{\sqrt{x}}+2ab^2(2Ab+3aB)\sqrt{x}\right.\\ &= -\frac{2a^4A}{3x^{3/2}}-\frac{2a^3(4Ab+aB)}{\sqrt{x}}+4a^2b(3Ab+2aB)\sqrt{x}+\frac{4}{3}ab^2(2Ab+3aB)x\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.80

$$\frac{-70a^4(A+3Bx)+840a^3bx(Bx-A)+420a^2b^2x^2(3A+Bx)+56ab^3x^3(5A+3Bx)+6b^4x^4(7A+5Bx)}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(5/2),x]
```

```
[Out] (840*a^3*b*x*(-A + B*x) + 420*a^2*b^2*x^2*(3*A + B*x) - 70*a^4*(A + 3*B*x)
+ 56*a*b^3*x^3*(5*A + 3*B*x) + 6*b^4*x^4*(7*A + 5*B*x))/(105*x^(3/2))
```

fricas [A] time = 0.85, size = 99, normalized size = 0.93

$$\frac{2\left(15\,Bb^4x^5-35\,Aa^4+21\left(4\,Bab^3+Ab^4\right)x^4+70\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+210\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-105\left(Ba^4+\right.\right.}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b^4*x^5 - 35*A*a^4 + 21*(4*B*a*b^3 + A*b^4)*x^4 + 70*(3*B*a^2*b
^2 + 2*A*a*b^3)*x^3 + 210*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 105*(B*a^4 + 4*A*
a^3*b)*x)/x^(3/2)
```

giac [A] time = 0.16, size = 99, normalized size = 0.93

$$\frac{2}{7}\,Bb^4x^{\frac{7}{2}}+\frac{8}{5}\,Bab^3x^{\frac{5}{2}}+\frac{2}{5}\,Ab^4x^{\frac{5}{2}}+4\,Ba^2b^2x^{\frac{3}{2}}+\frac{8}{3}\,Aab^3x^{\frac{3}{2}}+8\,Ba^3b\sqrt{x}+12\,Aa^2b^2\sqrt{x}-\frac{2\left(3\,Ba^4x+12\,Aa^3bx+Aa^4\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^4*x^(7/2) + 8/5*B*a*b^3*x^(5/2) + 2/5*A*b^4*x^(5/2) + 4*B*a^2*b^2*x
^(3/2) + 8/3*A*a*b^3*x^(3/2) + 8*B*a^3*b*sqrt(x) + 12*A*a^2*b^2*sqrt(x) - 2
/3*(3*B*a^4*x + 12*A*a^3*b*x + A*a^4)/x^(3/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-15b^4B\,x^5-21A\,b^4x^4-84x^4Ba\,b^3-140Aa\,b^3x^3-210B\,a^2b^2x^3-630A\,a^2b^2x^2-420B\,a^3b\,x^2+420A\,a^3bx+\right.}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x)
```

```
[Out] -2/105*(-15*B*b^4*x^5-21*A*b^4*x^4-84*B*a*b^3*x^4-140*A*a*b^3*x^3-210*B*a^2
*b^2*x^3-630*A*a^2*b^2*x^2-420*B*a^3*b*x^2+420*A*a^3*b*x+105*B*a^4*x+35*A*a
^4)/x^(3/2)
```

maxima [A] time = 0.51, size = 99, normalized size = 0.93

$$\frac{2}{7}\,Bb^4x^{\frac{7}{2}}+\frac{2}{5}\left(4\,Bab^3+Ab^4\right)x^{\frac{5}{2}}+\frac{4}{3}\left(3\,Ba^2b^2+2\,Aab^3\right)x^{\frac{3}{2}}+4\left(2\,Ba^3b+3\,Aa^2b^2\right)\sqrt{x}-\frac{2\left(Aa^4+3\left(Ba^4+4\,Aa^3b\right)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*b^4*x^(7/2) + 2/5*(4*B*a*b^3 + A*b^4)*x^(5/2) + 4/3*(3*B*a^2*b^2 + 2*
A*a*b^3)*x^(3/2) + 4*(2*B*a^3*b + 3*A*a^2*b^2)*sqrt(x) - 2/3*(A*a^4 + 3*(B*
a^4 + 4*A*a^3*b)*x)/x^(3/2)
```

mupad [B] time = 0.04, size = 92, normalized size = 0.86

$$x^{5/2}\left(\frac{2\,A\,b^4}{5}+\frac{8\,B\,a\,b^3}{5}\right)-\frac{x\,\left(2\,B\,a^4+8\,A\,b\,a^3\right)+\frac{2\,A\,a^4}{3}}{x^{3/2}}+\frac{2\,B\,b^4\,x^{7/2}}{7}+4\,a^2\,b\,\sqrt{x}\,\left(3\,A\,b+2\,B\,a\right)+\frac{4\,a\,b^2\,x^{3/2}\,\left(2\,A\,b+\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*A*b^4)/5 + (8*B*a*b^3)/5) - (x*(2*B*a^4 + 8*A*a^3*b) + (2*A*a^4
)/3)/x^(3/2) + (2*B*b^4*x^(7/2))/7 + 4*a^2*b*x^(1/2)*(3*A*b + 2*B*a) + (4*a
*b^2*x^(3/2)*(2*A*b + 3*B*a))/3
```

sympy **[A]** time = 2.16, size = 139, normalized size = 1.30

$$-\frac{2Aa^4}{3x^{\frac{3}{2}}}-\frac{8Aa^3b}{\sqrt{x}}+12Aa^2b^2\sqrt{x}+\frac{8Aab^3x^{\frac{3}{2}}}{3}+\frac{2Ab^4x^{\frac{5}{2}}}{5}-\frac{2Ba^4}{\sqrt{x}}+8Ba^3b\sqrt{x}+4Ba^2b^2x^{\frac{3}{2}}+\frac{8Bab^3x^{\frac{5}{2}}}{5}+\frac{2Bb^4x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(5/2),x)
```

```
[Out] -2*A*a**4/(3*x**(3/2)) - 8*A*a**3*b/sqrt(x) + 12*A*a**2*b**2*sqrt(x) + 8*A*
a*b**3*x**(3/2)/3 + 2*A*b**4*x**(5/2)/5 - 2*B*a**4/sqrt(x) + 8*B*a**3*b*sqr
t(x) + 4*B*a**2*b**2*x**(3/2) + 8*B*a*b**3*x**(5/2)/5 + 2*B*b**4*x**(7/2)/7
```

3.745 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{5x^{5/2}}-\frac{2a^3(aB+4Ab)}{3x^{3/2}}-\frac{4a^2b(2aB+3Ab)}{\sqrt{x}}+\frac{2}{3}b^3x^{3/2}(4aB+Ab)+4ab^2\sqrt{x}\,(3aB+2Ab)+\frac{2}{5}b^4Bx^{5/2}$$

```
[Out] -2/5*a^4*A/x^(5/2)-2/3*a^3*(4*A*b+B*a)/x^(3/2)+2/3*b^3*(A*b+4*B*a)*x^(3/2)+
2/5*b^4*B*x^(5/2)-4*a^2*b*(3*A*b+2*B*a)/x^(1/2)+4*a*b^2*(2*A*b+3*B*a)*x^(1/
2)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$-\frac{2a^3(aB+4Ab)}{3x^{3/2}}-\frac{4a^2b(2aB+3Ab)}{\sqrt{x}}-\frac{2a^4A}{5x^{5/2}}+\frac{2}{3}b^3x^{3/2}(4aB+Ab)+4ab^2\sqrt{x}\,(3aB+2Ab)+\frac{2}{5}b^4Bx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^4*A)/(5*x^(5/2)) - (2*a^3*(4*A*b + a*B))/(3*x^(3/2)) - (4*a^2*b*(3*A*
b + 2*a*B))/Sqrt[x] + 4*a*b^2*(2*A*b + 3*a*B)*Sqrt[x] + (2*b^3*(A*b + 4*a*B
)*x^(3/2))/3 + (2*b^4*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{7/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{7/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{7/2}}+\frac{a^3(4Ab+aB)}{x^{5/2}}+\frac{2a^2b(3Ab+2aB)}{x^{3/2}}+\frac{2ab^2(2Ab+3aB)}{\sqrt{x}}+b^3(A\\ &= -\frac{2a^4A}{5x^{5/2}}-\frac{2a^3(4Ab+aB)}{3x^{3/2}}-\frac{4a^2b(3Ab+2aB)}{\sqrt{x}}+4ab^2(2Ab+3aB)\sqrt{x}+\frac{2}{3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.79

$$\frac{2\left(-\left(a^4(3A+5Bx)\right)-20a^3bx(A+3Bx)+90a^2b^2x^2(Bx-A)+20ab^3x^3(3A+Bx)+b^4x^4(5A+3Bx)\right)}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(7/2),x]
```

```
[Out] (2*(90*a^2*b^2*x^2*(-A + B*x) + 20*a*b^3*x^3*(3*A + B*x) - 20*a^3*b*x*(A +
3*B*x) + b^4*x^4*(5*A + 3*B*x) - a^4*(3*A + 5*B*x)))/(15*x^(5/2))
```

fricas [A] time = 0.78, size = 99, normalized size = 0.93

$$\frac{2(3Bb^4x^5 - 3Aa^4 + 5(4Bab^3 + Ab^4)x^4 + 30(3Ba^2b^2 + 2Aab^3)x^3 - 30(2Ba^3b + 3Aa^2b^2)x^2 - 5(Ba^4 + 4A}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b^4*x^5 - 3*A*a^4 + 5*(4*B*a*b^3 + A*b^4)*x^4 + 30*(3*B*a^2*b^2 +
 2*A*a*b^3)*x^3 - 30*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 5*(B*a^4 + 4*A*a^3*b)*
x)/x^(5/2)
```

giac [A] time = 0.19, size = 100, normalized size = 0.93

$$\frac{2}{5}Bb^4x^{\frac{5}{2}} + \frac{8}{3}Bab^3x^{\frac{3}{2}} + \frac{2}{3}Ab^4x^{\frac{3}{2}} + 12Ba^2b^2\sqrt{x} + 8Aab^3\sqrt{x} - \frac{2(60Ba^3bx^2 + 90Aa^2b^2x^2 + 5Ba^4x + 20Aa^3bx + 3}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^4*x^(5/2) + 8/3*B*a*b^3*x^(3/2) + 2/3*A*b^4*x^(3/2) + 12*B*a^2*b^2*
sqrt(x) + 8*A*a*b^3*sqrt(x) - 2/15*(60*B*a^3*b*x^2 + 90*A*a^2*b^2*x^2 + 5*B
*a^4*x + 20*A*a^3*b*x + 3*A*a^4)/x^(5/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2(-3b^4Bx^5 - 5Ab^4x^4 - 20x^4Bab^3 - 60Aab^3x^3 - 90Ba^2b^2x^3 + 90Aa^2b^2x^2 + 60Ba^3bx^2 + 20Aa^3bx + 5B}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*b^4*x^5-5*A*b^4*x^4-20*B*a*b^3*x^4-60*A*a*b^3*x^3-90*B*a^2*b^2*
x^3+90*A*a^2*b^2*x^2+60*B*a^3*b*x^2+20*A*a^3*b*x+5*B*a^4*x+3*A*a^4)/x^(5/2)
```

maxima [A] time = 0.48, size = 100, normalized size = 0.93

$$\frac{2}{5}Bb^4x^{\frac{5}{2}} + \frac{2}{3}(4Bab^3 + Ab^4)x^{\frac{3}{2}} + 4(3Ba^2b^2 + 2Aab^3)\sqrt{x} - \frac{2(3Aa^4 + 30(2Ba^3b + 3Aa^2b^2)x^2 + 5(Ba^4 + 4A}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^4*x^(5/2) + 2/3*(4*B*a*b^3 + A*b^4)*x^(3/2) + 4*(3*B*a^2*b^2 + 2*A*
a*b^3)*sqrt(x) - 2/15*(3*A*a^4 + 30*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 5*(B*a^
4 + 4*A*a^3*b)*x)/x^(5/2)
```

mupad [B] time = 0.07, size = 95, normalized size = 0.89

$$x^{3/2}\left(\frac{2Ab^4}{3} + \frac{8Bab^3}{3}\right) - \frac{x\left(\frac{2Ba^4}{3} + \frac{8Aba^3}{3}\right) + \frac{2Aa^4}{5} + x^2\left(8Ba^3b + 12Aa^2b^2\right)}{x^{5/2}} + \frac{2Bb^4x^{5/2}}{5} + 4ab^2\sqrt{x}\ (2Ab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*A*b^4)/3 + (8*B*a*b^3)/3) - (x*((2*B*a^4)/3 + (8*A*a^3*b)/3) +
(2*A*a^4)/5 + x^2*(12*A*a^2*b^2 + 8*B*a^3*b))/x^(5/2) + (2*B*b^4*x^(5/2))/5
 + 4*a*b^2*x^(1/2)*(2*A*b + 3*B*a)
```

sympy [**A**] time = 3.14, size = 141, normalized size = 1.32

$$-\frac{2Aa^4}{5x^{\frac{5}{2}}}-\frac{8Aa^3b}{3x^{\frac{3}{2}}}-\frac{12Aa^2b^2}{\sqrt{x}}+8Aab^3\sqrt{x}+\frac{2Ab^4x^{\frac{3}{2}}}{3}-\frac{2Ba^4}{3x^{\frac{3}{2}}}-\frac{8Ba^3b}{\sqrt{x}}+12Ba^2b^2\sqrt{x}+\frac{8Bab^3x^{\frac{3}{2}}}{3}+\frac{2Bb^4x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(7/2),x)
```

```
[Out] -2*A*a**4/(5*x**(5/2)) - 8*A*a**3*b/(3*x**(3/2)) - 12*A*a**2*b**2/sqrt(x) +
 8*A*a*b**3*sqrt(x) + 2*A*b**4*x**(3/2)/3 - 2*B*a**4/(3*x**(3/2)) - 8*B*a**
3*b/sqrt(x) + 12*B*a**2*b**2*sqrt(x) + 8*B*a*b**3*x**(3/2)/3 + 2*B*b**4*x**
(5/2)/5
```

3.746 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=107

$$-\frac{2a^4A}{7x^{7/2}}-\frac{2a^3(aB+4Ab)}{5x^{5/2}}-\frac{4a^2b(2aB+3Ab)}{3x^{3/2}}+2b^3\sqrt{x}\,(4aB+Ab)-\frac{4ab^2(3aB+2Ab)}{\sqrt{x}}+\frac{2}{3}b^4Bx^{3/2}$$

```
[Out] -2/7*a^4*A/x^(7/2)-2/5*a^3*(4*A*b+B*a)/x^(5/2)-4/3*a^2*b*(3*A*b+2*B*a)/x^(3
/2)+2/3*b^4*B*x^(3/2)-4*a*b^2*(2*A*b+3*B*a)/x^(1/2)+2*b^3*(A*b+4*B*a)*x^(1/
2)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$-\frac{2a^3(aB+4Ab)}{5x^{5/2}}-\frac{4a^2b(2aB+3Ab)}{3x^{3/2}}-\frac{2a^4A}{7x^{7/2}}-\frac{4ab^2(3aB+2Ab)}{\sqrt{x}}+2b^3\sqrt{x}\,(4aB+Ab)+\frac{2}{3}b^4Bx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^4*A)/(7*x^(7/2)) - (2*a^3*(4*A*b + a*B))/(5*x^(5/2)) - (4*a^2*b*(3*A*
b + 2*a*B))/(3*x^(3/2)) - (4*a*b^2*(2*A*b + 3*a*B))/Sqrt[x] + 2*b^3*(A*b +
4*a*B)*Sqrt[x] + (2*b^4*B*x^(3/2))/3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{x^{9/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{x^{9/2}}\,dx\\ &= \int \left(\frac{a^4A}{x^{9/2}}+\frac{a^3(4Ab+aB)}{x^{7/2}}+\frac{2a^2b(3Ab+2aB)}{x^{5/2}}+\frac{2ab^2(2Ab+3aB)}{x^{3/2}}+\right.\\ &= -\frac{2a^4A}{7x^{7/2}}-\frac{2a^3(4Ab+aB)}{5x^{5/2}}-\frac{4a^2b(3Ab+2aB)}{3x^{3/2}}-\frac{4ab^2(2Ab+3aB)}{\sqrt{x}}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.79

$$-\frac{2\left(3a^4(5A+7Bx)+28a^3bx(3A+5Bx)+210a^2b^2x^2(A+3Bx)+420ab^3x^3(A-Bx)-35b^4x^4(3A+Bx)\right)}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*(420*a*b^3*x^3*(A - B*x) - 35*b^4*x^4*(3*A + B*x) + 210*a^2*b^2*x^2*(A
+ 3*B*x) + 28*a^3*b*x*(3*A + 5*B*x) + 3*a^4*(5*A + 7*B*x)))/(105*x^(7/2))
```

fricas [A] time = 0.64, size = 99, normalized size = 0.93

$$\frac{2\left(35\,Bb^4x^5-15\,Aa^4+105\left(4\,Bab^3+Ab^4\right)x^4-210\left(3\,Ba^2b^2+2\,Aab^3\right)x^3-70\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2-21\left(Ba^4+\right.\right.}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*b^4*x^5 - 15*A*a^4 + 105*(4*B*a*b^3 + A*b^4)*x^4 - 210*(3*B*a^2
*b^2 + 2*A*a*b^3)*x^3 - 70*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 - 21*(B*a^4 + 4*A*
a^3*b)*x)/x^(7/2)
```

giac [A] time = 0.17, size = 100, normalized size = 0.93

$$\frac{2}{3}\,Bb^4x^{\frac{3}{2}}+8\,Bab^3\sqrt{x}+2\,Ab^4\sqrt{x}-\frac{2\left(630\,Ba^2b^2x^3+420\,Aab^3x^3+140\,Ba^3bx^2+210\,Aa^2b^2x^2+21\,Ba^4x+84\,Aa^3b\right.}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b^4*x^(3/2) + 8*B*a*b^3*sqrt(x) + 2*A*b^4*sqrt(x) - 2/105*(630*B*a^2*
b^2*x^3 + 420*A*a*b^3*x^3 + 140*B*a^3*b*x^2 + 210*A*a^2*b^2*x^2 + 21*B*a^4*
x + 84*A*a^3*b*x + 15*A*a^4)/x^(7/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.93

$$-\frac{2\left(-35b^4B\,x^5-105A\,b^4x^4-420x^4Ba\,b^3+420Aa\,b^3x^3+630B\,a^2b^2x^3+210A\,a^2b^2x^2+140B\,a^3b\,x^2+84A\,a^3bx\right.}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x)
```

```
[Out] -2/105*(-35*B*b^4*x^5-105*A*b^4*x^4-420*B*a*b^3*x^4+420*A*a*b^3*x^3+630*B*a
^2*b^2*x^3+210*A*a^2*b^2*x^2+140*B*a^3*b*x^2+84*A*a^3*b*x+21*B*a^4*x+15*A*a
^4)/x^(7/2)
```

maxima [A] time = 0.58, size = 100, normalized size = 0.93

$$\frac{2}{3}\,Bb^4x^{\frac{3}{2}}+2\left(4\,Bab^3+Ab^4\right)\sqrt{x}-\frac{2\left(15\,Aa^4+210\left(3\,Ba^2b^2+2\,Aab^3\right)x^3+70\left(2\,Ba^3b+3\,Aa^2b^2\right)x^2+21\left(Ba^4+4\right.\right.}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*b^4*x^(3/2) + 2*(4*B*a*b^3 + A*b^4)*sqrt(x) - 2/105*(15*A*a^4 + 210*(
3*B*a^2*b^2 + 2*A*a*b^3)*x^3 + 70*(2*B*a^3*b + 3*A*a^2*b^2)*x^2 + 21*(B*a^4
 + 4*A*a^3*b)*x)/x^(7/2)
```

mupad [B] time = 0.06, size = 98, normalized size = 0.92

$$\sqrt{x}\,\left(2\,A\,b^4+8\,B\,a\,b^3\right)-\frac{x\,\left(\frac{2\,B\,a^4}{5}+\frac{8\,A\,b\,a^3}{5}\right)+\frac{2\,A\,a^4}{7}+x^2\,\left(\frac{8\,B\,a^3\,b}{3}+4\,A\,a^2\,b^2\right)+x^3\,\left(12\,B\,a^2\,b^2+8\,A\,a\,b^3\right)}{x^{7/2}}+\frac{2\,B\,b^4\,x}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*A*b^4 + 8*B*a*b^3) - (x*((2*B*a^4)/5 + (8*A*a^3*b)/5) + (2*A*a^4
)/7 + x^2*(4*A*a^2*b^2 + (8*B*a^3*b)/3) + x^3*(12*B*a^2*b^2 + 8*A*a*b^3))/x
^(7/2) + (2*B*b^4*x^(3/2))/3
```

sympy [A] time = 4.10, size = 139, normalized size = 1.30

$$-\frac{2Aa^4}{7x^{\frac{7}{2}}}-\frac{8Aa^3b}{5x^{\frac{5}{2}}}-\frac{4Aa^2b^2}{x^{\frac{3}{2}}}-\frac{8Aab^3}{\sqrt{x}}+2Ab^4\sqrt{x}-\frac{2Ba^4}{5x^{\frac{5}{2}}}-\frac{8Ba^3b}{3x^{\frac{3}{2}}}-\frac{12Ba^2b^2}{\sqrt{x}}+8Bab^3\sqrt{x}+\frac{2Bb^4x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/x**(9/2),x)
```

```
[Out] -2*A*a**4/(7*x**(7/2)) - 8*A*a**3*b/(5*x**(5/2)) - 4*A*a**2*b**2/x**(3/2) -
 8*A*a*b**3/sqrt(x) + 2*A*b**4*sqrt(x) - 2*B*a**4/(5*x**(5/2)) - 8*B*a**3*b
/(3*x**(3/2)) - 12*B*a**2*b**2/sqrt(x) + 8*B*a*b**3*sqrt(x) + 2*B*b**4*x**(
3/2)/3
```

3.747 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{9}a^6Ax^{9/2}+\frac{2}{11}a^5x^{11/2}(aB+6Ab)+\frac{6}{13}a^4bx^{13/2}(2aB+5Ab)+\frac{2}{3}a^3b^2x^{15/2}(3aB+4Ab)+\frac{10}{17}a^2b^3x^{17/2}(4aB+3Ab)+\frac{2}{21}b^5x^2$$

```
[Out] 2/9*a^6*A*x^(9/2)+2/11*a^5*(6*A*b+B*a)*x^(11/2)+6/13*a^4*b*(5*A*b+2*B*a)*x^
(13/2)+2/3*a^3*b^2*(4*A*b+3*B*a)*x^(15/2)+10/17*a^2*b^3*(3*A*b+4*B*a)*x^(17
/2)+6/19*a*b^4*(2*A*b+5*B*a)*x^(19/2)+2/21*b^5*(A*b+6*B*a)*x^(21/2)+2/23*b^
6*B*x^(23/2)
```

Rubi [A] time = 0.09, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}=0.069$, Rules used = {27, 76}

$$\frac{10}{17}a^2b^3x^{17/2}(4aB+3Ab)+\frac{2}{3}a^3b^2x^{15/2}(3aB+4Ab)+\frac{6}{13}a^4bx^{13/2}(2aB+5Ab)+\frac{2}{11}a^5x^{11/2}(aB+6Ab)+\frac{2}{9}a^6Ax^{9/2}+\frac{2}{21}b^5x^2$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(9/2))/9 + (2*a^5*(6*A*b + a*B)*x^(11/2))/11 + (6*a^4*b*(5*A*b +
 2*a*B)*x^(13/2))/13 + (2*a^3*b^2*(4*A*b + 3*a*B)*x^(15/2))/3 + (10*a^2*b^3
*(3*A*b + 4*a*B)*x^(17/2))/17 + (6*a*b^4*(2*A*b + 5*a*B)*x^(19/2))/19 + (2*
b^5*(A*b + 6*a*B)*x^(21/2))/21 + (2*b^6*B*x^(23/2))/23
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^{7/2}(a+bx)^6(A+Bx)\,dx\\&=\int\left(a^6Ax^{7/2}+a^5(6Ab+aB)x^{9/2}+3a^4b(5Ab+2aB)x^{11/2}+5a^3b^2(4Ab\right.\\&=\frac{2}{9}a^6Ax^{9/2}+\frac{2}{11}a^5(6Ab+aB)x^{11/2}+\frac{6}{13}a^4b(5Ab+2aB)x^{13/2}+\frac{2}{3}a^3b^2(4\end{aligned}$$

Mathematica [A] time = 0.10, size = 131, normalized size = 0.82

$$\frac{2\left(\frac{1}{2}\left(\frac{2}{9}a^6x^{9/2}+\frac{12}{11}a^5bx^{11/2}+\frac{30}{13}a^4b^2x^{13/2}+\frac{8}{3}a^3b^3x^{15/2}+\frac{30}{17}a^2b^4x^{17/2}+\frac{12}{19}ab^5x^{19/2}+\frac{2}{21}b^6x^{21/2}\right)(23Ab-9aB)+Bx}{23b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(9/2)*(a + b*x)^7 + ((23*A*b - 9*a*B)*((2*a^6*x^(9/2))/9 + (12*a^5*
b*x^(11/2))/11 + (30*a^4*b^2*x^(13/2))/13 + (8*a^3*b^3*x^(15/2))/3 + (30*a^
2*b^4*x^(17/2))/17 + (12*a*b^5*x^(19/2))/19 + (2*b^6*x^(21/2))/21))/2))/(23
*b)
```

fricas [A] time = 0.92, size = 152, normalized size = 0.96

$$\frac{2}{66927861}\left(2909907\,Bb^{6}x^{11} + 7436429\,Aa^{6}x^{4} + 3187041\left(6\,Bab^{5} + Ab^{6}\right)x^{10} + 10567557\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/66927861*(2909907*B*b^6*x^11 + 7436429*A*a^6*x^4 + 3187041*(6*B*a*b^5 + A
*b^6)*x^10 + 10567557*(5*B*a^2*b^4 + 2*A*a*b^5)*x^9 + 19684665*(4*B*a^3*b^3
 + 3*A*a^2*b^4)*x^8 + 22309287*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^7 + 15444891*(
2*B*a^5*b + 5*A*a^4*b^2)*x^6 + 6084351*(B*a^6 + 6*A*a^5*b)*x^5)*sqrt(x)
```

giac [A] time = 0.17, size = 149, normalized size = 0.94

$$\frac{2}{23}\,Bb^{6}x^{\frac{23}{2}} + \frac{4}{7}\,Bab^{5}x^{\frac{21}{2}} + \frac{2}{21}\,Ab^{6}x^{\frac{21}{2}} + \frac{30}{19}\,Ba^{2}b^{4}x^{\frac{19}{2}} + \frac{12}{19}\,Aab^{5}x^{\frac{19}{2}} + \frac{40}{17}\,Ba^{3}b^{3}x^{\frac{17}{2}} + \frac{30}{17}\,Aa^{2}b^{4}x^{\frac{17}{2}} + 2\,Ba^{4}b^{2}x^{\frac{15}{2}} + \frac{8}{3}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*b^6*x^(23/2) + 4/7*B*a*b^5*x^(21/2) + 2/21*A*b^6*x^(21/2) + 30/19*B*
a^2*b^4*x^(19/2) + 12/19*A*a*b^5*x^(19/2) + 40/17*B*a^3*b^3*x^(17/2) + 30/1
7*A*a^2*b^4*x^(17/2) + 2*B*a^4*b^2*x^(15/2) + 8/3*A*a^3*b^3*x^(15/2) + 12/1
3*B*a^5*b*x^(13/2) + 30/13*A*a^4*b^2*x^(13/2) + 2/11*B*a^6*x^(11/2) + 12/11
*A*a^5*b*x^(11/2) + 2/9*A*a^6*x^(9/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.93

$$\frac{2\left(2909907B\,b^{6}x^{7} + 3187041A\,b^{6}x^{6} + 19122246x^{6}Ba\,b^{5} + 21135114Aa\,b^{5}x^{5} + 52837785x^{5}B\,a^{2}b^{4} + 59053995\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/66927861*x^(9/2)*(2909907*B*b^6*x^7+3187041*A*b^6*x^6+19122246*B*a*b^5*x^
6+21135114*A*a*b^5*x^5+52837785*B*a^2*b^4*x^5+59053995*A*a^2*b^4*x^4+787386
60*B*a^3*b^3*x^4+89237148*A*a^3*b^3*x^3+66927861*B*a^4*b^2*x^3+77224455*A*a
^4*b^2*x^2+30889782*B*a^5*b*x^2+36506106*A*a^5*b*x+6084351*B*a^6*x+7436429*
A*a^6)
```

maxima [A] time = 0.54, size = 147, normalized size = 0.92

$$\frac{2}{23}\,Bb^{6}x^{\frac{23}{2}} + \frac{2}{9}\,Aa^{6}x^{\frac{9}{2}} + \frac{2}{21}\left(6\,Bab^{5} + Ab^{6}\right)x^{\frac{21}{2}} + \frac{6}{19}\left(5\,Ba^{2}b^{4} + 2\,Aab^{5}\right)x^{\frac{19}{2}} + \frac{10}{17}\left(4\,Ba^{3}b^{3} + 3\,Aa^{2}b^{4}\right)x^{\frac{17}{2}} + \frac{2}{3}\left(3\,Ba\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*b^6*x^(23/2) + 2/9*A*a^6*x^(9/2) + 2/21*(6*B*a*b^5 + A*b^6)*x^(21/2)
 + 6/19*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(19/2) + 10/17*(4*B*a^3*b^3 + 3*A*a^2*b
^4)*x^(17/2) + 2/3*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(15/2) + 6/13*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(13/2) + 2/11*(B*a^6 + 6*A*a^5*b)*x^(11/2)
```

mupad [B] time = 0.07, size = 131, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^6}{11}+\frac{12\,A\,b\,a^5}{11}\right)+x^{21/2}\left(\frac{2\,A\,b^6}{21}+\frac{4\,B\,a\,b^5}{7}\right)+\frac{2\,A\,a^6\,x^{9/2}}{9}+\frac{2\,B\,b^6\,x^{23/2}}{23}+\frac{2\,a^3\,b^2\,x^{15/2}\,(4\,A\,b+3\,B\,a)}{3}+10\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(11/2)*((2*B*a^6)/11 + (12*A*a^5*b)/11) + x^(21/2)*((2*A*b^6)/21 + (4*B*a
*b^5)/7) + (2*A*a^6*x^(9/2))/9 + (2*B*b^6*x^(23/2))/23 + (2*a^3*b^2*x^(15/2
)*(4*A*b + 3*B*a))/3 + (10*a^2*b^3*x^(17/2)*(3*A*b + 4*B*a))/17 + (6*a^4*b*
x^(13/2)*(5*A*b + 2*B*a))/13 + (6*a*b^4*x^(19/2)*(2*A*b + 5*B*a))/19
```

sympy [A] time = 28.78, size = 214, normalized size = 1.35

$$\frac{2Aa^6x^{\frac{9}{2}}}{9}+\frac{12Aa^5bx^{\frac{11}{2}}}{11}+\frac{30Aa^4b^2x^{\frac{13}{2}}}{13}+\frac{8Aa^3b^3x^{\frac{15}{2}}}{3}+\frac{30Aa^2b^4x^{\frac{17}{2}}}{17}+\frac{12Aab^5x^{\frac{19}{2}}}{19}+\frac{2Ab^6x^{\frac{21}{2}}}{21}+\frac{2Ba^6x^{\frac{11}{2}}}{11}+\frac{12Ba^5bx^{\frac{13}{2}}}{13}+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(9/2)/9 + 12*A*a**5*b*x**(11/2)/11 + 30*A*a**4*b**2*x**(13/2)/1
3 + 8*A*a**3*b**3*x**(15/2)/3 + 30*A*a**2*b**4*x**(17/2)/17 + 12*A*a*b**5*x
**(19/2)/19 + 2*A*b**6*x**(21/2)/21 + 2*B*a**6*x**(11/2)/11 + 12*B*a**5*b*x
**(13/2)/13 + 2*B*a**4*b**2*x**(15/2) + 40*B*a**3*b**3*x**(17/2)/17 + 30*B*
a**2*b**4*x**(19/2)/19 + 4*B*a*b**5*x**(21/2)/7 + 2*B*b**6*x**(23/2)/23
```

3.748 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{7}a^6Ax^{7/2}+\frac{2}{9}a^5x^{9/2}(aB+6Ab)+\frac{6}{11}a^4bx^{11/2}(2aB+5Ab)+\frac{10}{13}a^3b^2x^{13/2}(3aB+4Ab)+\frac{2}{3}a^2b^3x^{15/2}(4aB+3Ab)+\frac{2}{19}b^5x$$

```
[Out] 2/7*a^6*A*x^(7/2)+2/9*a^5*(6*A*b+B*a)*x^(9/2)+6/11*a^4*b*(5*A*b+2*B*a)*x^(1
1/2)+10/13*a^3*b^2*(4*A*b+3*B*a)*x^(13/2)+2/3*a^2*b^3*(3*A*b+4*B*a)*x^(15/2
)+6/17*a*b^4*(2*A*b+5*B*a)*x^(17/2)+2/19*b^5*(A*b+6*B*a)*x^(19/2)+2/21*b^6*
B*x^(21/2)
```

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}=0.069$, Rules used = $\{27, 76\}$

$$\frac{2}{3}a^2b^3x^{15/2}(4aB+3Ab)+\frac{10}{13}a^3b^2x^{13/2}(3aB+4Ab)+\frac{6}{11}a^4bx^{11/2}(2aB+5Ab)+\frac{2}{9}a^5x^{9/2}(aB+6Ab)+\frac{2}{7}a^6Ax^{7/2}+\frac{2}{19}b^5x$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(7/2))/7 + (2*a^5*(6*A*b + a*B)*x^(9/2))/9 + (6*a^4*b*(5*A*b + 2
*a*B)*x^(11/2))/11 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(13/2))/13 + (2*a^2*b^3*
(3*A*b + 4*a*B)*x^(15/2))/3 + (6*a*b^4*(2*A*b + 5*a*B)*x^(17/2))/17 + (2*b^
5*(A*b + 6*a*B)*x^(19/2))/19 + (2*b^6*B*x^(21/2))/21
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^{5/2}(a+bx)^6(A+Bx)\,dx\\&=\int\left(a^6Ax^{5/2}+a^5(6Ab+aB)x^{7/2}+3a^4b(5Ab+2aB)x^{9/2}+5a^3b^2(4A\right.\\&=\frac{2}{7}a^6Ax^{7/2}+\frac{2}{9}a^5(6Ab+aB)x^{9/2}+\frac{6}{11}a^4b(5Ab+2aB)x^{11/2}+\frac{10}{13}a^3b^2\end{aligned}$$

Mathematica [A] time = 0.09, size = 128, normalized size = 0.81

$$\frac{2\left(Bx^{7/2}(a+bx)^7-\frac{7}{2}\left(\frac{2}{7}a^6x^{7/2}+\frac{4}{3}a^5bx^{9/2}+\frac{30}{11}a^4b^2x^{11/2}+\frac{40}{13}a^3b^3x^{13/2}+2a^2b^4x^{15/2}+\frac{12}{17}ab^5x^{17/2}+\frac{2}{19}b^6x^{19/2}\right)(\right.}{21b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(7/2)*(a + b*x)^7 - (7*(-3*A*b + a*B)*((2*a^6*x^(7/2))/7 + (4*a^5*b
*x^(9/2))/3 + (30*a^4*b^2*x^(11/2))/11 + (40*a^3*b^3*x^(13/2))/13 + 2*a^2*b
^4*x^(15/2) + (12*a*b^5*x^(17/2))/17 + (2*b^6*x^(19/2))/19))/2))/(21*b)
```

fricas [A] time = 0.85, size = 152, normalized size = 0.96

$$\frac{2}{2909907}\left(138567\,Bb^{6}x^{10}+415701\,Aa^{6}x^{3}+153153\left(6\,Bab^{5}+Ab^{6}\right)x^{9}+513513\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{8}+969969\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/2909907*(138567*B*b^6*x^10 + 415701*A*a^6*x^3 + 153153*(6*B*a*b^5 + A*b^6
)*x^9 + 513513*(5*B*a^2*b^4 + 2*A*a*b^5)*x^8 + 969969*(4*B*a^3*b^3 + 3*A*a^
2*b^4)*x^7 + 1119195*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^6 + 793611*(2*B*a^5*b +
5*A*a^4*b^2)*x^5 + 323323*(B*a^6 + 6*A*a^5*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.94

$$\frac{2}{21}\,Bb^{6}x^{\frac{21}{2}}+\frac{12}{19}\,Bab^{5}x^{\frac{19}{2}}+\frac{2}{19}\,Ab^{6}x^{\frac{19}{2}}+\frac{30}{17}\,Ba^{2}b^{4}x^{\frac{17}{2}}+\frac{12}{17}\,Aab^{5}x^{\frac{17}{2}}+\frac{8}{3}\,Ba^{3}b^{3}x^{\frac{15}{2}}+2\,Aa^{2}b^{4}x^{\frac{15}{2}}+\frac{30}{13}\,Ba^{4}b^{2}x^{\frac{13}{2}}+\frac{40}{13}\,Aa^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*b^6*x^(21/2) + 12/19*B*a*b^5*x^(19/2) + 2/19*A*b^6*x^(19/2) + 30/17*
B*a^2*b^4*x^(17/2) + 12/17*A*a*b^5*x^(17/2) + 8/3*B*a^3*b^3*x^(15/2) + 2*A*
a^2*b^4*x^(15/2) + 30/13*B*a^4*b^2*x^(13/2) + 40/13*A*a^3*b^3*x^(13/2) + 12
/11*B*a^5*b*x^(11/2) + 30/11*A*a^4*b^2*x^(11/2) + 2/9*B*a^6*x^(9/2) + 4/3*A
*a^5*b*x^(9/2) + 2/7*A*a^6*x^(7/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.93

$$2\left(138567B\,b^{6}x^{7}+153153A\,b^{6}x^{6}+918918x^{6}Ba\,b^{5}+1027026Aa\,b^{5}x^{5}+2567565x^{5}B\,a^{2}b^{4}+2909907A\,a^{2}b^{4}x^{4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*x^(7/2)*(138567*B*b^6*x^7+153153*A*b^6*x^6+918918*B*a*b^5*x^6+102
7026*A*a*b^5*x^5+2567565*B*a^2*b^4*x^5+2909907*A*a^2*b^4*x^4+3879876*B*a^3*
b^3*x^4+4476780*A*a^3*b^3*x^3+3357585*B*a^4*b^2*x^3+3968055*A*a^4*b^2*x^2+1
587222*B*a^5*b*x^2+1939938*A*a^5*b*x+323323*B*a^6*x+415701*A*a^6)
```

maxima [A] time = 0.57, size = 147, normalized size = 0.92

$$\frac{2}{21}\,Bb^{6}x^{\frac{21}{2}}+\frac{2}{7}\,Aa^{6}x^{\frac{7}{2}}+\frac{2}{19}\left(6\,Bab^{5}+Ab^{6}\right)x^{\frac{19}{2}}+\frac{6}{17}\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{\frac{17}{2}}+\frac{2}{3}\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{\frac{15}{2}}+\frac{10}{13}\left(3\,Ba^{4}b^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*b^6*x^(21/2) + 2/7*A*a^6*x^(7/2) + 2/19*(6*B*a*b^5 + A*b^6)*x^(19/2)
 + 6/17*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(17/2) + 2/3*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*x^(15/2) + 10/13*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(13/2) + 6/11*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(11/2) + 2/9*(B*a^6 + 6*A*a^5*b)*x^(9/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.82

$$x^{9/2}\left(\frac{2\,B\,a^6}{9}+\frac{4\,A\,b\,a^5}{3}\right)+x^{19/2}\left(\frac{2\,A\,b^6}{19}+\frac{12\,B\,a\,b^5}{19}\right)+\frac{2\,A\,a^6\,x^{7/2}}{7}+\frac{2\,B\,b^6\,x^{21/2}}{21}+\frac{10\,a^3\,b^2\,x^{13/2}\,(4\,A\,b+3\,B\,a)}{13}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(9/2)*((2*B*a^6)/9 + (4*A*a^5*b)/3) + x^(19/2)*((2*A*b^6)/19 + (12*B*a*b^
5)/19) + (2*A*a^6*x^(7/2))/7 + (2*B*b^6*x^(21/2))/21 + (10*a^3*b^2*x^(13/2)
*(4*A*b + 3*B*a))/13 + (2*a^2*b^3*x^(15/2)*(3*A*b + 4*B*a))/3 + (6*a^4*b*x^
(11/2)*(5*A*b + 2*B*a))/11 + (6*a*b^4*x^(17/2)*(2*A*b + 5*B*a))/17
```

sympy [A] time = 19.55, size = 214, normalized size = 1.35

$$\frac{2Aa^6x^{\frac{7}{2}}}{7}+\frac{4Aa^5bx^{\frac{9}{2}}}{3}+\frac{30Aa^4b^2x^{\frac{11}{2}}}{11}+\frac{40Aa^3b^3x^{\frac{13}{2}}}{13}+2Aa^2b^4x^{\frac{15}{2}}+\frac{12Aab^5x^{\frac{17}{2}}}{17}+\frac{2Ab^6x^{\frac{19}{2}}}{19}+\frac{2Ba^6x^{\frac{9}{2}}}{9}+\frac{12Ba^5bx^{\frac{11}{2}}}{11}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(7/2)/7 + 4*A*a**5*b*x**(9/2)/3 + 30*A*a**4*b**2*x**(11/2)/11 +
 40*A*a**3*b**3*x**(13/2)/13 + 2*A*a**2*b**4*x**(15/2) + 12*A*a*b**5*x**(17
/2)/17 + 2*A*b**6*x**(19/2)/19 + 2*B*a**6*x**(9/2)/9 + 12*B*a**5*b*x**(11/2
)/11 + 30*B*a**4*b**2*x**(13/2)/13 + 8*B*a**3*b**3*x**(15/2)/3 + 30*B*a**2*
b**4*x**(17/2)/17 + 12*B*a*b**5*x**(19/2)/19 + 2*B*b**6*x**(21/2)/21
```

3.749 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{5}a^6Ax^{5/2}+\frac{2}{7}a^5x^{7/2}(aB+6Ab)+\frac{2}{3}a^4bx^{9/2}(2aB+5Ab)+\frac{10}{11}a^3b^2x^{11/2}(3aB+4Ab)+\frac{10}{13}a^2b^3x^{13/2}(4aB+3Ab)+\frac{2}{17}b^5x^{17/2}$$

```
[Out] 2/5*a^6*A*x^(5/2)+2/7*a^5*(6*A*b+B*a)*x^(7/2)+2/3*a^4*b*(5*A*b+2*B*a)*x^(9/
2)+10/11*a^3*b^2*(4*A*b+3*B*a)*x^(11/2)+10/13*a^2*b^3*(3*A*b+4*B*a)*x^(13/2
)+2/5*a*b^4*(2*A*b+5*B*a)*x^(15/2)+2/17*b^5*(A*b+6*B*a)*x^(17/2)+2/19*b^6*B
*x^(19/2)
```

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{13}a^2b^3x^{13/2}(4aB+3Ab)+\frac{10}{11}a^3b^2x^{11/2}(3aB+4Ab)+\frac{2}{3}a^4bx^{9/2}(2aB+5Ab)+\frac{2}{7}a^5x^{7/2}(aB+6Ab)+\frac{2}{5}a^6Ax^{5/2}+\frac{2}{17}b^5x^{17/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(5/2))/5 + (2*a^5*(6*A*b + a*B)*x^(7/2))/7 + (2*a^4*b*(5*A*b + 2
*a*B)*x^(9/2))/3 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(11/2))/11 + (10*a^2*b^3*(
3*A*b + 4*a*B)*x^(13/2))/13 + (2*a*b^4*(2*A*b + 5*a*B)*x^(15/2))/5 + (2*b^5
*(A*b + 6*a*B)*x^(17/2))/17 + (2*b^6*B*x^(19/2))/19
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int x^{3/2}(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6Ax^{3/2}+a^5(6Ab+aB)x^{5/2}+3a^4b(5Ab+2aB)x^{7/2}+5a^3b^2(4Ab\right.\\ &= \frac{2}{5}a^6Ax^{5/2}+\frac{2}{7}a^5(6Ab+aB)x^{7/2}+\frac{2}{3}a^4b(5Ab+2aB)x^{9/2}+\frac{10}{11}a^3b^2(4Ab\end{aligned}$$

Mathematica [A] time = 0.09, size = 103, normalized size = 0.65

$$\frac{2\left(\frac{x^{5/2}\left(51051a^6+218790a^5bx+425425a^4b^2x^2+464100a^3b^3x^3+294525a^2b^4x^4+102102ab^5x^5+15015b^6x^6\right)(19Ab-5aB)}{255255}+Bx^{5/2}(a+bx)^7\right)}{19b}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(5/2)*(a + b*x)^7 + ((19*A*b - 5*a*B)*x^(5/2)*(51051*a^6 + 218790*a
^5*b*x + 425425*a^4*b^2*x^2 + 464100*a^3*b^3*x^3 + 294525*a^2*b^4*x^4 + 102
102*a*b^5*x^5 + 15015*b^6*x^6))/255255))/(19*b)
```

fricas [A] time = 0.89, size = 152, normalized size = 0.96

$$\frac{2}{4849845}\left(255255\,Bb^{6}x^{9}+969969\,Aa^{6}x^{2}+285285\left(6\,Bab^{5}+Ab^{6}\right)x^{8}+969969\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{7}+1865\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*b^6*x^9 + 969969*A*a^6*x^2 + 285285*(6*B*a*b^5 + A*b^6)
*x^8 + 969969*(5*B*a^2*b^4 + 2*A*a*b^5)*x^7 + 1865325*(4*B*a^3*b^3 + 3*A*a^
2*b^4)*x^6 + 2204475*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^5 + 1616615*(2*B*a^5*b +
 5*A*a^4*b^2)*x^4 + 692835*(B*a^6 + 6*A*a^5*b)*x^3)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.94

$$\frac{2}{19}\,Bb^{6}x^{\frac{19}{2}}+\frac{12}{17}\,Bab^{5}x^{\frac{17}{2}}+\frac{2}{17}\,Ab^{6}x^{\frac{17}{2}}+2\,Ba^{2}b^{4}x^{\frac{15}{2}}+\frac{4}{5}\,Aab^{5}x^{\frac{15}{2}}+\frac{40}{13}\,Ba^{3}b^{3}x^{\frac{13}{2}}+\frac{30}{13}\,Aa^{2}b^{4}x^{\frac{13}{2}}+\frac{30}{11}\,Ba^{4}b^{2}x^{\frac{11}{2}}+\frac{40}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*b^6*x^(19/2) + 12/17*B*a*b^5*x^(17/2) + 2/17*A*b^6*x^(17/2) + 2*B*a^
2*b^4*x^(15/2) + 4/5*A*a*b^5*x^(15/2) + 40/13*B*a^3*b^3*x^(13/2) + 30/13*A*
a^2*b^4*x^(13/2) + 30/11*B*a^4*b^2*x^(11/2) + 40/11*A*a^3*b^3*x^(11/2) + 4/
3*B*a^5*b*x^(9/2) + 10/3*A*a^4*b^2*x^(9/2) + 2/7*B*a^6*x^(7/2) + 12/7*A*a^5
*b*x^(7/2) + 2/5*A*a^6*x^(5/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.93

$$2\left(255255B\,b^{6}x^{7}+285285A\,b^{6}x^{6}+1711710x^{6}Ba\,b^{5}+1939938Aa\,b^{5}x^{5}+4849845x^{5}B\,a^{2}b^{4}+5595975A\,a^{2}b^{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*b^6*x^7+285285*A*b^6*x^6+1711710*B*a*b^5*x^6+19
39938*A*a*b^5*x^5+4849845*B*a^2*b^4*x^5+5595975*A*a^2*b^4*x^4+7461300*B*a^3
*b^3*x^4+8817900*A*a^3*b^3*x^3+6613425*B*a^4*b^2*x^3+8083075*A*a^4*b^2*x^2+
3233230*B*a^5*b*x^2+4157010*A*a^5*b*x+692835*B*a^6*x+969969*A*a^6)
```

maxima [A] time = 0.54, size = 147, normalized size = 0.92

$$\frac{2}{19}\,Bb^{6}x^{\frac{19}{2}}+\frac{2}{5}\,Aa^{6}x^{\frac{5}{2}}+\frac{2}{17}\left(6\,Bab^{5}+Ab^{6}\right)x^{\frac{17}{2}}+\frac{2}{5}\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)x^{\frac{15}{2}}+\frac{10}{13}\left(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4}\right)x^{\frac{13}{2}}+\frac{10}{11}\left(3\,Ba\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*b^6*x^(19/2) + 2/5*A*a^6*x^(5/2) + 2/17*(6*B*a*b^5 + A*b^6)*x^(17/2)
 + 2/5*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(15/2) + 10/13*(4*B*a^3*b^3 + 3*A*a^2*b^
4)*x^(13/2) + 10/11*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(11/2) + 2/3*(2*B*a^5*b +
 5*A*a^4*b^2)*x^(9/2) + 2/7*(B*a^6 + 6*A*a^5*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.82

$$x^{7/2}\left(\frac{2\,B\,a^6}{7}+\frac{12\,A\,b\,a^5}{7}\right)+x^{17/2}\left(\frac{2\,A\,b^6}{17}+\frac{12\,B\,a\,b^5}{17}\right)+\frac{2\,A\,a^6\,x^{5/2}}{5}+\frac{2\,B\,b^6\,x^{19/2}}{19}+\frac{10\,a^3\,b^2\,x^{11/2}\,(4\,A\,b+3\,B\,a)}{11}+10$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(7/2)*((2*B*a^6)/7 + (12*A*a^5*b)/7) + x^(17/2)*((2*A*b^6)/17 + (12*B*a*b
^5)/17) + (2*A*a^6*x^(5/2))/5 + (2*B*b^6*x^(19/2))/19 + (10*a^3*b^2*x^(11/2
)*(4*A*b + 3*B*a))/11 + (10*a^2*b^3*x^(13/2)*(3*A*b + 4*B*a))/13 + (2*a^4*b
*x^(9/2)*(5*A*b + 2*B*a))/3 + (2*a*b^4*x^(15/2)*(2*A*b + 5*B*a))/5
```

sympy [A] time = 10.11, size = 214, normalized size = 1.35

$$\frac{2Aa^6x^{\frac{5}{2}}}{5}+\frac{12Aa^5bx^{\frac{7}{2}}}{7}+\frac{10Aa^4b^2x^{\frac{9}{2}}}{3}+\frac{40Aa^3b^3x^{\frac{11}{2}}}{11}+\frac{30Aa^2b^4x^{\frac{13}{2}}}{13}+\frac{4Aab^5x^{\frac{15}{2}}}{5}+\frac{2Ab^6x^{\frac{17}{2}}}{17}+\frac{2Ba^6x^{\frac{7}{2}}}{7}+\frac{4Ba^5bx^{\frac{9}{2}}}{3}+30Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 2*A*a**6*x**(5/2)/5 + 12*A*a**5*b*x**(7/2)/7 + 10*A*a**4*b**2*x**(9/2)/3 +
40*A*a**3*b**3*x**(11/2)/11 + 30*A*a**2*b**4*x**(13/2)/13 + 4*A*a*b**5*x**(
15/2)/5 + 2*A*b**6*x**(17/2)/17 + 2*B*a**6*x**(7/2)/7 + 4*B*a**5*b*x**(9/2)
/3 + 30*B*a**4*b**2*x**(11/2)/11 + 40*B*a**3*b**3*x**(13/2)/13 + 2*B*a**2*b
**4*x**(15/2) + 12*B*a*b**5*x**(17/2)/17 + 2*B*b**6*x**(19/2)/19
```

3.750 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=159

$$\frac{2}{3}a^6Ax^{3/2}+\frac{2}{5}a^5x^{5/2}(aB+6Ab)+\frac{6}{7}a^4bx^{7/2}(2aB+5Ab)+\frac{10}{9}a^3b^2x^{9/2}(3aB+4Ab)+\frac{10}{11}a^2b^3x^{11/2}(4aB+3Ab)+\frac{2}{15}b^5x^{15}$$

```
[Out] 2/3*a^6*A*x^(3/2)+2/5*a^5*(6*A*b+B*a)*x^(5/2)+6/7*a^4*b*(5*A*b+2*B*a)*x^(7/
2)+10/9*a^3*b^2*(4*A*b+3*B*a)*x^(9/2)+10/11*a^2*b^3*(3*A*b+4*B*a)*x^(11/2)+
6/13*a*b^4*(2*A*b+5*B*a)*x^(13/2)+2/15*b^5*(A*b+6*B*a)*x^(15/2)+2/17*b^6*B*
x^(17/2)
```

Rubi [**A**] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 76\}$

$$\frac{10}{11}a^2b^3x^{11/2}(4aB+3Ab)+\frac{10}{9}a^3b^2x^{9/2}(3aB+4Ab)+\frac{6}{7}a^4bx^{7/2}(2aB+5Ab)+\frac{2}{5}a^5x^{5/2}(aB+6Ab)+\frac{2}{3}a^6Ax^{3/2}+\frac{2}{15}b^5x^{15}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*a^6*A*x^(3/2))/3 + (2*a^5*(6*A*b + a*B)*x^(5/2))/5 + (6*a^4*b*(5*A*b + 2
*a*B)*x^(7/2))/7 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(9/2))/9 + (10*a^2*b^3*(3*
A*b + 4*a*B)*x^(11/2))/11 + (6*a*b^4*(2*A*b + 5*a*B)*x^(13/2))/13 + (2*b^5*
(A*b + 6*a*B)*x^(15/2))/15 + (2*b^6*B*x^(17/2))/17
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int \sqrt{x}\,(a+bx)^6(A+Bx)\,dx\\ &= \int \left(a^6A\sqrt{x}+a^5(6Ab+aB)x^{3/2}+3a^4b(5Ab+2aB)x^{5/2}+5a^3b^2(4A\right.\\ &= \frac{2}{3}a^6Ax^{3/2}+\frac{2}{5}a^5(6Ab+aB)x^{5/2}+\frac{6}{7}a^4b(5Ab+2aB)x^{7/2}+\frac{10}{9}a^3b^2(4\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 103, normalized size = 0.65

$$\frac{2\left(\frac{x^{3/2}\left(15015a^6+54054a^5bx+96525a^4b^2x^2+100100a^3b^3x^3+61425a^2b^4x^4+20790ab^5x^5+3003b^6x^6\right)(17Ab-3aB)}{45045}+Bx^{3/2}(a+bx)^7\right)}{17b}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(B*x^(3/2)*(a + b*x)^7 + ((17*A*b - 3*a*B)*x^(3/2)*(15015*a^6 + 54054*a^
5*b*x + 96525*a^4*b^2*x^2 + 100100*a^3*b^3*x^3 + 61425*a^2*b^4*x^4 + 20790*
a*b^5*x^5 + 3003*b^6*x^6))/45045))/(17*b)
```

fricas [A]   time = 0.84, size = 150, normalized size = 0.94

$$\frac{2}{765765}\,(45045\,Bb^6x^8 + 255255\,Aa^6x + 51051\left(6\,Bab^5 + Ab^6\right)x^7 + 176715\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^6 + 348075\,(4\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*b^6*x^8 + 255255*A*a^6*x + 51051*(6*B*a*b^5 + A*b^6)*x^7
+ 176715*(5*B*a^2*b^4 + 2*A*a*b^5)*x^6 + 348075*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*x^5 + 425425*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^4 + 328185*(2*B*a^5*b + 5*A*a^4
*b^2)*x^3 + 153153*(B*a^6 + 6*A*a^5*b)*x^2)*sqrt(x)
```

giac [A]   time = 0.17, size = 149, normalized size = 0.94

$$\frac{2}{17}\,Bb^6x^{\frac{17}{2}} + \frac{4}{5}\,Bab^5x^{\frac{15}{2}} + \frac{2}{15}\,Ab^6x^{\frac{15}{2}} + \frac{30}{13}\,Ba^2b^4x^{\frac{13}{2}} + \frac{12}{13}\,Aab^5x^{\frac{13}{2}} + \frac{40}{11}\,Ba^3b^3x^{\frac{11}{2}} + \frac{30}{11}\,Aa^2b^4x^{\frac{11}{2}} + \frac{10}{3}\,Ba^4b^2x^{\frac{9}{2}} + \frac{40}{9}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^6*x^(17/2) + 4/5*B*a*b^5*x^(15/2) + 2/15*A*b^6*x^(15/2) + 30/13*B*
a^2*b^4*x^(13/2) + 12/13*A*a*b^5*x^(13/2) + 40/11*B*a^3*b^3*x^(11/2) + 30/1
1*A*a^2*b^4*x^(11/2) + 10/3*B*a^4*b^2*x^(9/2) + 40/9*A*a^3*b^3*x^(9/2) + 12
/7*B*a^5*b*x^(7/2) + 30/7*A*a^4*b^2*x^(7/2) + 2/5*B*a^6*x^(5/2) + 12/5*A*a^
5*b*x^(5/2) + 2/3*A*a^6*x^(3/2)
```

maple [A]   time = 0.05, size = 148, normalized size = 0.93

$$2\,(45045B\,b^6x^7 + 51051A\,b^6x^6 + 306306x^6Ba\,b^5 + 353430Aa\,b^5x^5 + 883575x^5B\,a^2b^4 + 1044225A\,a^2b^4x^4 + 1392$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x)
```

```
[Out] 2/765765*x^(3/2)*(45045*B*b^6*x^7+51051*A*b^6*x^6+306306*B*a*b^5*x^6+353430
*A*a*b^5*x^5+883575*B*a^2*b^4*x^5+1044225*A*a^2*b^4*x^4+1392300*B*a^3*b^3*x
^4+1701700*A*a^3*b^3*x^3+1276275*B*a^4*b^2*x^3+1640925*A*a^4*b^2*x^2+656370
*B*a^5*b*x^2+918918*A*a^5*b*x+153153*B*a^6*x+255255*A*a^6)
```

maxima [A]   time = 0.50, size = 147, normalized size = 0.92

$$\frac{2}{17}\,Bb^6x^{\frac{17}{2}} + \frac{2}{3}\,Aa^6x^{\frac{3}{2}} + \frac{2}{15}\left(6\,Bab^5 + Ab^6\right)x^{\frac{15}{2}} + \frac{6}{13}\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^{\frac{13}{2}} + \frac{10}{11}\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^{\frac{11}{2}} + \frac{10}{9}\,(3\,Ba^4b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*b^6*x^(17/2) + 2/3*A*a^6*x^(3/2) + 2/15*(6*B*a*b^5 + A*b^6)*x^(15/2)
 + 6/13*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(13/2) + 10/11*(4*B*a^3*b^3 + 3*A*a^2*b
^4)*x^(11/2) + 10/9*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(9/2) + 6/7*(2*B*a^5*b +
5*A*a^4*b^2)*x^(7/2) + 2/5*(B*a^6 + 6*A*a^5*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^6}{5}+\frac{12\,A\,b\,a^5}{5}\right)+x^{15/2}\left(\frac{2\,A\,b^6}{15}+\frac{4\,B\,a\,b^5}{5}\right)+\frac{2\,A\,a^6\,x^{3/2}}{3}+\frac{2\,B\,b^6\,x^{17/2}}{17}+\frac{10\,a^3\,b^2\,x^{9/2}\,\left(4\,A\,b+3\,B\,a\right)}{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(5/2)*((2*B*a^6)/5 + (12*A*a^5*b)/5) + x^(15/2)*((2*A*b^6)/15 + (4*B*a*b^
5)/5) + (2*A*a^6*x^(3/2))/3 + (2*B*b^6*x^(17/2))/17 + (10*a^3*b^2*x^(9/2)*(
4*A*b + 3*B*a))/9 + (10*a^2*b^3*x^(11/2)*(3*A*b + 4*B*a))/11 + (6*a^4*b*x^(
7/2)*(5*A*b + 2*B*a))/7 + (6*a*b^4*x^(13/2)*(2*A*b + 5*B*a))/13
```

sympy [A] time = 5.91, size = 182, normalized size = 1.14

$$\frac{2Aa^6x^{\frac{3}{2}}}{3}+\frac{2Bb^6x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ab^6+6Bab^5\right)}{15}+\frac{2x^{\frac{13}{2}}\left(6Aab^5+15Ba^2b^4\right)}{13}+\frac{2x^{\frac{11}{2}}\left(15Aa^2b^4+20Ba^3b^3\right)}{11}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3*x**(1/2),x)
```

```
[Out] 2*A*a**6*x**(3/2)/3 + 2*B*b**6*x**(17/2)/17 + 2*x**(15/2)*(A*b**6 + 6*B*a*b
**5)/15 + 2*x**(13/2)*(6*A*a*b**5 + 15*B*a**2*b**4)/13 + 2*x**(11/2)*(15*A*
a**2*b**4 + 20*B*a**3*b**3)/11 + 2*x**(9/2)*(20*A*a**3*b**3 + 15*B*a**4*b**
2)/9 + 2*x**(7/2)*(15*A*a**4*b**2 + 6*B*a**5*b)/7 + 2*x**(5/2)*(6*A*a**5*b
+ B*a**6)/5
```

3.751 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=157

$$2a^6A\sqrt{x}+\frac{2}{3}a^5x^{3/2}(aB+6Ab)+\frac{6}{5}a^4bx^{5/2}(2aB+5Ab)+\frac{10}{7}a^3b^2x^{7/2}(3aB+4Ab)+\frac{10}{9}a^2b^3x^{9/2}(4aB+3Ab)+\frac{2}{13}b^5x^{13/2}(6a$$

```
[Out] 2/3*a^5*(6*A*b+B*a)*x^(3/2)+6/5*a^4*b*(5*A*b+2*B*a)*x^(5/2)+10/7*a^3*b^2*(4
*A*b+3*B*a)*x^(7/2)+10/9*a^2*b^3*(3*A*b+4*B*a)*x^(9/2)+6/11*a*b^4*(2*A*b+5*
B*a)*x^(11/2)+2/13*b^5*(A*b+6*B*a)*x^(13/2)+2/15*b^6*B*x^(15/2)+2*a^6*A*x^(
1/2)
```

Rubi [A] time = 0.08, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{9}a^2b^3x^{9/2}(4aB+3Ab)+\frac{10}{7}a^3b^2x^{7/2}(3aB+4Ab)+\frac{6}{5}a^4bx^{5/2}(2aB+5Ab)+\frac{2}{3}a^5x^{3/2}(aB+6Ab)+2a^6A\sqrt{x}+\frac{2}{13}b^5x^{13/2}(6a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^6*A*Sqrt[x] + (2*a^5*(6*A*b + a*B)*x^(3/2))/3 + (6*a^4*b*(5*A*b + 2*a*B
)*x^(5/2))/5 + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(7/2))/7 + (10*a^2*b^3*(3*A*b
+ 4*a*B)*x^(9/2))/9 + (6*a*b^4*(2*A*b + 5*a*B)*x^(11/2))/11 + (2*b^5*(A*b +
 6*a*B)*x^(13/2))/13 + (2*b^6*B*x^(15/2))/15
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{x}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{\sqrt{x}}\,dx\\
&= \int \left(\frac{a^6A}{\sqrt{x}}+a^5(6Ab+aB)\sqrt{x}+3a^4b(5Ab+2aB)x^{3/2}+5a^3b^2(4Ab+3aB)x\\
&= 2a^6A\sqrt{x}+\frac{2}{3}a^5(6Ab+aB)x^{3/2}+\frac{6}{5}a^4b(5Ab+2aB)x^{5/2}+\frac{10}{7}a^3b^2(4Ab+3
\end{aligned}$$

Mathematica [A] time = 0.09, size = 103, normalized size = 0.66

$$\frac{2\left(\frac{\sqrt{x}\left(3003a^6+6006a^5bx+9009a^4b^2x^2+8580a^3b^3x^3+5005a^2b^4x^4+1638ab^5x^5+231b^6x^6\right)(15Ab-aB)}{3003}+B\sqrt{x}\,(a+bx)^7\right)}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*(B*Sqrt[x]*(a + b*x)^7 + ((15*A*b - a*B)*Sqrt[x]*(3003*a^6 + 6006*a^5*b*
x + 9009*a^4*b^2*x^2 + 8580*a^3*b^3*x^3 + 5005*a^2*b^4*x^4 + 1638*a*b^5*x^5
 + 231*b^6*x^6))/3003))/(15*b)
```

fricas [A] time = 0.94, size = 147, normalized size = 0.94

$$\frac{2}{45045}\left(3003\,Bb^6x^7 + 45045\,Aa^6 + 3465\left(6\,Bab^5 + Ab^6\right)x^6 + 12285\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 25025\left(4\,Ba^3b^3 + \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*b^6*x^7 + 45045*A*a^6 + 3465*(6*B*a*b^5 + A*b^6)*x^6 + 1228
5*(5*B*a^2*b^4 + 2*A*a*b^5)*x^5 + 25025*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 3
2175*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 27027*(2*B*a^5*b + 5*A*a^4*b^2)*x^2
+ 15015*(B*a^6 + 6*A*a^5*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.95

$$\frac{2}{15}\,Bb^6x^{\frac{15}{2}} + \frac{12}{13}\,Bab^5x^{\frac{13}{2}} + \frac{2}{13}\,Ab^6x^{\frac{13}{2}} + \frac{30}{11}\,Ba^2b^4x^{\frac{11}{2}} + \frac{12}{11}\,Aab^5x^{\frac{11}{2}} + \frac{40}{9}\,Ba^3b^3x^{\frac{9}{2}} + \frac{10}{3}\,Aa^2b^4x^{\frac{9}{2}} + \frac{30}{7}\,Ba^4b^2x^{\frac{7}{2}} + \frac{40}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^6*x^(15/2) + 12/13*B*a*b^5*x^(13/2) + 2/13*A*b^6*x^(13/2) + 30/11*
B*a^2*b^4*x^(11/2) + 12/11*A*a*b^5*x^(11/2) + 40/9*B*a^3*b^3*x^(9/2) + 10/3
*A*a^2*b^4*x^(9/2) + 30/7*B*a^4*b^2*x^(7/2) + 40/7*A*a^3*b^3*x^(7/2) + 12/5
*B*a^5*b*x^(5/2) + 6*A*a^4*b^2*x^(5/2) + 2/3*B*a^6*x^(3/2) + 4*A*a^5*b*x^(3
/2) + 2*A*a^6*sqrt(x)
```

maple [A] time = 0.05, size = 148, normalized size = 0.94

$$\frac{2\left(3003B\,b^6x^7 + 3465A\,b^6x^6 + 20790x^6Ba\,b^5 + 24570Aa\,b^5x^5 + 61425x^5B\,a^2b^4 + 75075A\,a^2b^4x^4 + 100100x^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(1/2)*(3003*B*b^6*x^7+3465*A*b^6*x^6+20790*B*a*b^5*x^6+24570*A*a*
b^5*x^5+61425*B*a^2*b^4*x^5+75075*A*a^2*b^4*x^4+100100*B*a^3*b^3*x^4+128700
*A*a^3*b^3*x^3+96525*B*a^4*b^2*x^3+135135*A*a^4*b^2*x^2+54054*B*a^5*b*x^2+9
0090*A*a^5*b*x+15015*B*a^6*x+45045*A*a^6)
```

maxima [A] time = 0.60, size = 147, normalized size = 0.94

$$\frac{2}{15}\,Bb^6x^{\frac{15}{2}} + 2\,Aa^6\sqrt{x} + \frac{2}{13}\left(6\,Bab^5 + Ab^6\right)x^{\frac{13}{2}} + \frac{6}{11}\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^{\frac{11}{2}} + \frac{10}{9}\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^{\frac{9}{2}} + \frac{10}{7}\left(3\,Ba\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*b^6*x^(15/2) + 2*A*a^6*sqrt(x) + 2/13*(6*B*a*b^5 + A*b^6)*x^(13/2) +
 6/11*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(11/2) + 10/9*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*x^(9/2) + 10/7*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(7/2) + 6/5*(2*B*a^5*b + 5*A*
a^4*b^2)*x^(5/2) + 2/3*(B*a^6 + 6*A*a^5*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.83

$$x^{3/2}\,\left(\frac{2\,B\,a^6}{3}+4\,A\,b\,a^5\right)+x^{13/2}\,\left(\frac{2\,A\,b^6}{13}+\frac{12\,B\,a\,b^5}{13}\right)+2\,A\,a^6\,\sqrt{x}+\frac{2\,B\,b^6\,x^{15/2}}{15}+\frac{10\,a^3\,b^2\,x^{7/2}\,\left(4\,A\,b+3\,B\,a\right)}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^6)/3 + 4*A*a^5*b) + x^(13/2)*((2*A*b^6)/13 + (12*B*a*b^5)/1
3) + 2*A*a^6*x^(1/2) + (2*B*b^6*x^(15/2))/15 + (10*a^3*b^2*x^(7/2)*(4*A*b +
 3*B*a))/7 + (10*a^2*b^3*x^(9/2)*(3*A*b + 4*B*a))/9 + (6*a^4*b*x^(5/2)*(5*A
*b + 2*B*a))/5 + (6*a*b^4*x^(11/2)*(2*A*b + 5*B*a))/11
```

sympy [A] time = 4.11, size = 211, normalized size = 1.34

$$2Aa^6\sqrt{x}+4Aa^5bx^{\frac{3}{2}}+6Aa^4b^2x^{\frac{5}{2}}+\frac{40Aa^3b^3x^{\frac{7}{2}}}{7}+\frac{10Aa^2b^4x^{\frac{9}{2}}}{3}+\frac{12Aab^5x^{\frac{11}{2}}}{11}+\frac{2Ab^6x^{\frac{13}{2}}}{13}+\frac{2Ba^6x^{\frac{3}{2}}}{3}+\frac{12Ba^5bx^{\frac{5}{2}}}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(1/2),x)
```

```
[Out] 2*A*a**6*sqrt(x) + 4*A*a**5*b*x**(3/2) + 6*A*a**4*b**2*x**(5/2) + 40*A*a**3
*b**3*x**(7/2)/7 + 10*A*a**2*b**4*x**(9/2)/3 + 12*A*a*b**5*x**(11/2)/11 + 2
*A*b**6*x**(13/2)/13 + 2*B*a**6*x**(3/2)/3 + 12*B*a**5*b*x**(5/2)/5 + 30*B*
a**4*b**2*x**(7/2)/7 + 40*B*a**3*b**3*x**(9/2)/9 + 30*B*a**2*b**4*x**(11/2)
/11 + 12*B*a*b**5*x**(13/2)/13 + 2*B*b**6*x**(15/2)/15
```

3.752 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{2a^6A}{\sqrt{x}}+2a^5\sqrt{x}\,(aB+6Ab)+2a^4bx^{3/2}(2aB+5Ab)+2a^3b^2x^{5/2}(3aB+4Ab)+\frac{10}{7}a^2b^3x^{7/2}(4aB+3Ab)+\frac{2}{11}b^5x^{11/2}(6a$$

```
[Out] 2*a^4*b*(5*A*b+2*B*a)*x^(3/2)+2*a^3*b^2*(4*A*b+3*B*a)*x^(5/2)+10/7*a^2*b^3*
(3*A*b+4*B*a)*x^(7/2)+2/3*a*b^4*(2*A*b+5*B*a)*x^(9/2)+2/11*b^5*(A*b+6*B*a)*
x^(11/2)+2/13*b^6*B*x^(13/2)-2*a^6*A/x^(1/2)+2*a^5*(6*A*b+B*a)*x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{7}a^2b^3x^{7/2}(4aB+3Ab)+2a^3b^2x^{5/2}(3aB+4Ab)+2a^4bx^{3/2}(2aB+5Ab)+2a^5\sqrt{x}\,(aB+6Ab)-\frac{2a^6A}{\sqrt{x}}+\frac{2}{11}b^5x^{11/2}(6aB+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^6*A)/Sqrt[x] + 2*a^5*(6*A*b + a*B)*Sqrt[x] + 2*a^4*b*(5*A*b + 2*a*B)*
x^(3/2) + 2*a^3*b^2*(4*A*b + 3*a*B)*x^(5/2) + (10*a^2*b^3*(3*A*b + 4*a*B)*x
^(7/2))/7 + (2*a*b^4*(2*A*b + 5*a*B)*x^(9/2))/3 + (2*b^5*(A*b + 6*a*B)*x^(1
1/2))/11 + (2*b^6*B*x^(13/2))/13
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{3/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{3/2}}\,dx\\
&= \int \left(\frac{a^6A}{x^{3/2}}+\frac{a^5(6Ab+aB)}{\sqrt{x}}+3a^4b(5Ab+2aB)\sqrt{x}+5a^3b^2(4Ab+3aB)x\right.\\
&= -\frac{2a^6A}{\sqrt{x}}+2a^5(6Ab+aB)\sqrt{x}+2a^4b(5Ab+2aB)x^{3/2}+2a^3b^2(4Ab+3a
\end{aligned}$$

Mathematica [A] time = 0.08, size = 101, normalized size = 0.67

$$\frac{2\left(\frac{\sqrt{x}\left(3003a^6+6006a^5bx+9009a^4b^2x^2+8580a^3b^3x^3+5005a^2b^4x^4+1638ab^5x^5+231b^6x^6\right)(aB+13Ab)}{3003}-\frac{A(a+bx)^7}{\sqrt{x}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(3/2),x]
```

```
[Out] (2*(-((A*(a + b*x)^7)/Sqrt[x]) + ((13*A*b + a*B)*Sqrt[x]*(3003*a^6 + 6006*a
^5*b*x + 9009*a^4*b^2*x^2 + 8580*a^3*b^3*x^3 + 5005*a^2*b^4*x^4 + 1638*a*b^
5*x^5 + 231*b^6*x^6))/3003))/a
```

fricas [A] time = 0.84, size = 147, normalized size = 0.97

$$\frac{2\left(231\,Bb^6x^7 - 3003\,Aa^6 + 273\left(6\,Bab^5 + Ab^6\right)x^6 + 1001\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^5 + 2145\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^4 +}{3003\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3003*(231*B*b^6*x^7 - 3003*A*a^6 + 273*(6*B*a*b^5 + A*b^6)*x^6 + 1001*(5*
B*a^2*b^4 + 2*A*a*b^5)*x^5 + 2145*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 3003*(3
*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 3003*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 3003*(
B*a^6 + 6*A*a^5*b)*x)/sqrt(x)
```

giac [A] time = 0.16, size = 149, normalized size = 0.99

$$\frac{2}{13}\,Bb^6x^{\frac{13}{2}} + \frac{12}{11}\,Bab^5x^{\frac{11}{2}} + \frac{2}{11}\,Ab^6x^{\frac{11}{2}} + \frac{10}{3}\,Ba^2b^4x^{\frac{9}{2}} + \frac{4}{3}\,Aab^5x^{\frac{9}{2}} + \frac{40}{7}\,Ba^3b^3x^{\frac{7}{2}} + \frac{30}{7}\,Aa^2b^4x^{\frac{7}{2}} + 6\,Ba^4b^2x^{\frac{5}{2}} + 8\,Aa^3b^3x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^6*x^(13/2) + 12/11*B*a*b^5*x^(11/2) + 2/11*A*b^6*x^(11/2) + 10/3*B
*a^2*b^4*x^(9/2) + 4/3*A*a*b^5*x^(9/2) + 40/7*B*a^3*b^3*x^(7/2) + 30/7*A*a^
2*b^4*x^(7/2) + 6*B*a^4*b^2*x^(5/2) + 8*A*a^3*b^3*x^(5/2) + 4*B*a^5*b*x^(3/
2) + 10*A*a^4*b^2*x^(3/2) + 2*B*a^6*sqrt(x) + 12*A*a^5*b*sqrt(x) - 2*A*a^6/
sqrt(x)
```

maple [A] time = 0.05, size = 148, normalized size = 0.98

$$-\frac{2\left(-231B\,b^6x^7 - 273A\,b^6x^6 - 1638x^6Ba\,b^5 - 2002Aa\,b^5x^5 - 5005x^5B\,a^2b^4 - 6435A\,a^2b^4x^4 - 8580x^4B\,a^3b^3 -\right.}{3003\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x)
```

```
[Out] -2/3003*(-231*B*b^6*x^7-273*A*b^6*x^6-1638*B*a*b^5*x^6-2002*A*a*b^5*x^5-500
5*B*a^2*b^4*x^5-6435*A*a^2*b^4*x^4-8580*B*a^3*b^3*x^4-12012*A*a^3*b^3*x^3-9
009*B*a^4*b^2*x^3-15015*A*a^4*b^2*x^2-6006*B*a^5*b*x^2-18018*A*a^5*b*x-3003
*B*a^6*x+3003*A*a^6)/x^(1/2)
```

maxima [A] time = 0.56, size = 147, normalized size = 0.97

$$\frac{2}{13}\,Bb^6x^{\frac{13}{2}} - \frac{2\,Aa^6}{\sqrt{x}} + \frac{2}{11}\left(6\,Bab^5 + Ab^6\right)x^{\frac{11}{2}} + \frac{2}{3}\left(5\,Ba^2b^4 + 2\,Aab^5\right)x^{\frac{9}{2}} + \frac{10}{7}\left(4\,Ba^3b^3 + 3\,Aa^2b^4\right)x^{\frac{7}{2}} + 2\left(3\,Ba^4b^2 + 4\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*b^6*x^(13/2) - 2*A*a^6/sqrt(x) + 2/11*(6*B*a*b^5 + A*b^6)*x^(11/2) +
 2/3*(5*B*a^2*b^4 + 2*A*a*b^5)*x^(9/2) + 10/7*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x
```

```
^(7/2) + 2*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^(5/2) + 2*(2*B*a^5*b + 5*A*a^4*b^2
)*x^(3/2) + 2*(B*a^6 + 6*A*a^5*b)*sqrt(x)
```

mupad [B] time = 0.05, size = 131, normalized size = 0.87

$$\sqrt{x}\,\left(2\,B\,a^6+12\,A\,b\,a^5\right)+x^{11/2}\,\left(\frac{2\,A\,b^6}{11}+\frac{12\,B\,a\,b^5}{11}\right)-\frac{2\,A\,a^6}{\sqrt{x}}+\frac{2\,B\,b^6\,x^{13/2}}{13}+2\,a^3\,b^2\,x^{5/2}\,\left(4\,A\,b+3\,B\,a\right)+\frac{10\,a^2\,b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^6 + 12*A*a^5*b) + x^(11/2)*((2*A*b^6)/11 + (12*B*a*b^5)/11)
- (2*A*a^6)/x^(1/2) + (2*B*b^6*x^(13/2))/13 + 2*a^3*b^2*x^(5/2)*(4*A*b + 3*
B*a) + (10*a^2*b^3*x^(7/2)*(3*A*b + 4*B*a))/7 + 2*a^4*b*x^(3/2)*(5*A*b + 2*
B*a) + (2*a*b^4*x^(9/2)*(2*A*b + 5*B*a))/3
```

sympy [A] time = 4.60, size = 204, normalized size = 1.35

$$-\frac{2Aa^6}{\sqrt{x}}+12Aa^5b\sqrt{x}+10Aa^4b^2x^{\frac{3}{2}}+8Aa^3b^3x^{\frac{5}{2}}+\frac{30Aa^2b^4x^{\frac{7}{2}}}{7}+\frac{4Aab^5x^{\frac{9}{2}}}{3}+\frac{2Ab^6x^{\frac{11}{2}}}{11}+2Ba^6\sqrt{x}+4Ba^5bx^{\frac{3}{2}}+6Ba^4b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(3/2),x)
```

```
[Out] -2*A*a**6/sqrt(x) + 12*A*a**5*b*sqrt(x) + 10*A*a**4*b**2*x**(3/2) + 8*A*a**
3*b**3*x**(5/2) + 30*A*a**2*b**4*x**(7/2)/7 + 4*A*a*b**5*x**(9/2)/3 + 2*A*b
**6*x**(11/2)/11 + 2*B*a**6*sqrt(x) + 4*B*a**5*b*x**(3/2) + 6*B*a**4*b**2*x
**(5/2) + 40*B*a**3*b**3*x**(7/2)/7 + 10*B*a**2*b**4*x**(9/2)/3 + 12*B*a*b*
*5*x**(11/2)/11 + 2*B*b**6*x**(13/2)/13
```

3.753 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=153

$$-\frac{2a^6A}{3x^{3/2}}-\frac{2a^5(aB+6Ab)}{\sqrt{x}}+6a^4b\sqrt{x}\,(2aB+5Ab)+\frac{10}{3}a^3b^2x^{3/2}(3aB+4Ab)+2a^2b^3x^{5/2}(4aB+3Ab)+\frac{2}{9}b^5x^{9/2}(6aB+Ab)+$$

```
[Out] -2/3*a^6*A/x^(3/2)+10/3*a^3*b^2*(4*A*b+3*B*a)*x^(3/2)+2*a^2*b^3*(3*A*b+4*B*
a)*x^(5/2)+6/7*a*b^4*(2*A*b+5*B*a)*x^(7/2)+2/9*b^5*(A*b+6*B*a)*x^(9/2)+2/11
*b^6*B*x^(11/2)-2*a^5*(6*A*b+B*a)/x^(1/2)+6*a^4*b*(5*A*b+2*B*a)*x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$\frac{10}{3}a^3b^2x^{3/2}(3aB+4Ab)+2a^2b^3x^{5/2}(4aB+3Ab)-\frac{2a^5(aB+6Ab)}{\sqrt{x}}+6a^4b\sqrt{x}\,(2aB+5Ab)-\frac{2a^6A}{3x^{3/2}}+\frac{6}{7}ab^4x^{7/2}(5aB+2Ab)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^6*A)/(3*x^(3/2)) - (2*a^5*(6*A*b + a*B))/Sqrt[x] + 6*a^4*b*(5*A*b + 2
*a*B)*Sqrt[x] + (10*a^3*b^2*(4*A*b + 3*a*B)*x^(3/2))/3 + 2*a^2*b^3*(3*A*b +
 4*a*B)*x^(5/2) + (6*a*b^4*(2*A*b + 5*a*B)*x^(7/2))/7 + (2*b^5*(A*b + 6*a*B
)*x^(9/2))/9 + (2*b^6*B*x^(11/2))/11
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{5/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{5/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{5/2}}+\frac{a^5(6Ab+aB)}{x^{3/2}}+\frac{3a^4b(5Ab+2aB)}{\sqrt{x}}+5a^3b^2(4Ab+3aB)\sqrt{x}+\right.\\ &= -\frac{2a^6A}{3x^{3/2}}-\frac{2a^5(6Ab+aB)}{\sqrt{x}}+6a^4b(5Ab+2aB)\sqrt{x}+\frac{10}{3}a^3b^2(4Ab+3aB)x^{3}\end{aligned}$$

Mathematica [A] time = 0.07, size = 97, normalized size = 0.63

$$\frac{2\left(x\left(-231a^6+1386a^5bx+1155a^4b^2x^2+924a^3b^3x^3+495a^2b^4x^4+154ab^5x^5+21b^6x^6\right)(3aB+11Ab)-231A(a}{693ax^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-231*A*(a + b*x)^7 + (11*A*b + 3*a*B)*x*(-231*a^6 + 1386*a^5*b*x + 1155
*a^4*b^2*x^2 + 924*a^3*b^3*x^3 + 495*a^2*b^4*x^4 + 154*a*b^5*x^5 + 21*b^6*x
^6)))/(693*a*x^(3/2))
```

fricas [**A**] time = 0.96, size = 147, normalized size = 0.96

$$\frac{2\,(63\,Bb^6x^7 - 231\,Aa^6 + 77\,(6\,Bab^5 + Ab^6)x^6 + 297\,(5\,Ba^2b^4 + 2\,Aab^5)x^5 + 693\,(4\,Ba^3b^3 + 3\,Aa^2b^4)x^4 + 115}{693\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b^6*x^7 - 231*A*a^6 + 77*(6*B*a*b^5 + A*b^6)*x^6 + 297*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 + 693*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1155*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 + 2079*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 693*(B*a^6 +
 6*A*a^5*b)*x)/x^(3/2)
```

giac [**A**] time = 0.17, size = 147, normalized size = 0.96

$$\frac{2}{11}\,Bb^6x^{\frac{11}{2}} + \frac{4}{3}\,Bab^5x^{\frac{9}{2}} + \frac{2}{9}\,Ab^6x^{\frac{9}{2}} + \frac{30}{7}\,Ba^2b^4x^{\frac{7}{2}} + \frac{12}{7}\,Aab^5x^{\frac{7}{2}} + 8\,Ba^3b^3x^{\frac{5}{2}} + 6\,Aa^2b^4x^{\frac{5}{2}} + 10\,Ba^4b^2x^{\frac{3}{2}} + \frac{40}{3}\,Aa^3b^3x^{\frac{3}{2}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^6*x^(11/2) + 4/3*B*a*b^5*x^(9/2) + 2/9*A*b^6*x^(9/2) + 30/7*B*a^2*
b^4*x^(7/2) + 12/7*A*a*b^5*x^(7/2) + 8*B*a^3*b^3*x^(5/2) + 6*A*a^2*b^4*x^(5
/2) + 10*B*a^4*b^2*x^(3/2) + 40/3*A*a^3*b^3*x^(3/2) + 12*B*a^5*b*sqrt(x) +
30*A*a^4*b^2*sqrt(x) - 2/3*(3*B*a^6*x + 18*A*a^5*b*x + A*a^6)/x^(3/2)
```

maple [**A**] time = 0.06, size = 148, normalized size = 0.97

$$-\frac{2\,(-63B\,b^6x^7 - 77A\,b^6x^6 - 462x^6Ba\,b^5 - 594Aa\,b^5x^5 - 1485x^5B\,a^2b^4 - 2079A\,a^2b^4x^4 - 2772x^4B\,a^3b^3 - 462}{693x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x)
```

```
[Out] -2/693*(-63*B*b^6*x^7-77*A*b^6*x^6-462*B*a*b^5*x^6-594*A*a*b^5*x^5-1485*B*a
^2*b^4*x^5-2079*A*a^2*b^4*x^4-2772*B*a^3*b^3*x^4-4620*A*a^3*b^3*x^3-3465*B*
a^4*b^2*x^3-10395*A*a^4*b^2*x^2-4158*B*a^5*b*x^2+4158*A*a^5*b*x+693*B*a^6*x
+231*A*a^6)/x^(3/2)
```

maxima [**A**] time = 0.66, size = 147, normalized size = 0.96

$$\frac{2}{11}\,Bb^6x^{\frac{11}{2}} + \frac{2}{9}\,(6\,Bab^5 + Ab^6)x^{\frac{9}{2}} + \frac{6}{7}\,(5\,Ba^2b^4 + 2\,Aab^5)x^{\frac{7}{2}} + 2\,(4\,Ba^3b^3 + 3\,Aa^2b^4)x^{\frac{5}{2}} + \frac{10}{3}\,(3\,Ba^4b^2 + 4\,Aa^3b^3)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*b^6*x^(11/2) + 2/9*(6*B*a*b^5 + A*b^6)*x^(9/2) + 6/7*(5*B*a^2*b^4 +
2*A*a*b^5)*x^(7/2) + 2*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^(5/2) + 10/3*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^(3/2) + 6*(2*B*a^5*b + 5*A*a^4*b^2)*sqrt(x) - 2/3*(A*a
^6 + 3*(B*a^6 + 6*A*a^5*b)*x)/x^(3/2)
```

mupad [B] time = 0.05, size = 132, normalized size = 0.86

$$x^{9/2}\left(\frac{2\,A\,b^6}{9}+\frac{4\,B\,a\,b^5}{3}\right)-\frac{x\,\left(2\,B\,a^6+12\,A\,b\,a^5\right)+\frac{2\,A\,a^6}{3}}{x^{3/2}}+\frac{2\,B\,b^6\,x^{11/2}}{11}+\frac{10\,a^3\,b^2\,x^{3/2}\,\left(4\,A\,b+3\,B\,a\right)}{3}+2\,a^2\,b^3\,x^{5/2}\,(3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(5/2),x)
```

```
[Out] x^(9/2)*((2*A*b^6)/9 + (4*B*a*b^5)/3) - (x*(2*B*a^6 + 12*A*a^5*b) + (2*A*a^
6)/3)/x^(3/2) + (2*B*b^6*x^(11/2))/11 + (10*a^3*b^2*x^(3/2)*(4*A*b + 3*B*a)
)/3 + 2*a^2*b^3*x^(5/2)*(3*A*b + 4*B*a) + 6*a^4*b*x^(1/2)*(5*A*b + 2*B*a) +
 (6*a*b^4*x^(7/2)*(2*A*b + 5*B*a))/7
```

sympy [A] time = 5.44, size = 204, normalized size = 1.33

$$-\frac{2Aa^6}{3x^{\frac{3}{2}}}-\frac{12Aa^5b}{\sqrt{x}}+30Aa^4b^2\sqrt{x}+\frac{40Aa^3b^3x^{\frac{3}{2}}}{3}+6Aa^2b^4x^{\frac{5}{2}}+\frac{12Aab^5x^{\frac{7}{2}}}{7}+\frac{2Ab^6x^{\frac{9}{2}}}{9}-\frac{2Ba^6}{\sqrt{x}}+12Ba^5b\sqrt{x}+10Ba^4b^2x^{\frac{3}{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(5/2),x)
```

```
[Out] -2*A*a**6/(3*x**(3/2)) - 12*A*a**5*b/sqrt(x) + 30*A*a**4*b**2*sqrt(x) + 40*
A*a**3*b**3*x**(3/2)/3 + 6*A*a**2*b**4*x**(5/2) + 12*A*a*b**5*x**(7/2)/7 +
2*A*b**6*x**(9/2)/9 - 2*B*a**6/sqrt(x) + 12*B*a**5*b*sqrt(x) + 10*B*a**4*b*
*2*x**(3/2) + 8*B*a**3*b**3*x**(5/2) + 30*B*a**2*b**4*x**(7/2)/7 + 4*B*a*b*
*5*x**(9/2)/3 + 2*B*b**6*x**(11/2)/11
```

3.754 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{2a^6A}{5x^{5/2}}-\frac{2a^5(aB+6Ab)}{3x^{3/2}}-\frac{6a^4b(2aB+5Ab)}{\sqrt{x}}+10a^3b^2\sqrt{x}\,(3aB+4Ab)+\frac{10}{3}a^2b^3x^{3/2}(4aB+3Ab)+\frac{2}{7}b^5x^{7/2}(6aB+Ab$$

```
[Out] -2/5*a^6*A/x^(5/2)-2/3*a^5*(6*A*b+B*a)/x^(3/2)+10/3*a^2*b^3*(3*A*b+4*B*a)*x
^(3/2)+6/5*a*b^4*(2*A*b+5*B*a)*x^(5/2)+2/7*b^5*(A*b+6*B*a)*x^(7/2)+2/9*b^6*
B*x^(9/2)-6*a^4*b*(5*A*b+2*B*a)/x^(1/2)+10*a^3*b^2*(4*A*b+3*B*a)*x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 76}

$$\frac{10}{3}a^2b^3x^{3/2}(4aB+3Ab)+10a^3b^2\sqrt{x}\,(3aB+4Ab)-\frac{2a^5(aB+6Ab)}{3x^{3/2}}-\frac{6a^4b(2aB+5Ab)}{\sqrt{x}}-\frac{2a^6A}{5x^{5/2}}+\frac{6}{5}ab^4x^{5/2}(5aB+2A$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^6*A)/(5*x^(5/2)) - (2*a^5*(6*A*b + a*B))/(3*x^(3/2)) - (6*a^4*b*(5*A*
b + 2*a*B))/Sqrt[x] + 10*a^3*b^2*(4*A*b + 3*a*B)*Sqrt[x] + (10*a^2*b^3*(3*A
*b + 4*a*B)*x^(3/2))/3 + (6*a*b^4*(2*A*b + 5*a*B)*x^(5/2))/5 + (2*b^5*(A*b
+ 6*a*B)*x^(7/2))/7 + (2*b^6*B*x^(9/2))/9
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{7/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{7/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{7/2}}+\frac{a^5(6Ab+aB)}{x^{5/2}}+\frac{3a^4b(5Ab+2aB)}{x^{3/2}}+\frac{5a^3b^2(4Ab+3aB)}{\sqrt{x}}+\right.\\ &= -\frac{2a^6A}{5x^{5/2}}-\frac{2a^5(6Ab+aB)}{3x^{3/2}}-\frac{6a^4b(5Ab+2aB)}{\sqrt{x}}+10a^3b^2(4Ab+3aB)\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.04, size = 124, normalized size = 0.80

$$\frac{2\left(-21a^6(3A+5Bx)-630a^5bx(A+3Bx)+4725a^4b^2x^2(Bx-A)+2100a^3b^3x^3(3A+Bx)+315a^2b^4x^4(5A+\right.}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(4725*a^4*b^2*x^2*(-A + B*x) + 2100*a^3*b^3*x^3*(3*A + B*x) - 630*a^5*b*
x*(A + 3*B*x) + 315*a^2*b^4*x^4*(5*A + 3*B*x) - 21*a^6*(3*A + 5*B*x) + 54*a
*b^5*x^5*(7*A + 5*B*x) + 5*b^6*x^6*(9*A + 7*B*x)))/(315*x^(5/2))
```

fricas [A] time = 0.78, size = 147, normalized size = 0.95

$$\frac{2\left(35\,Bb^6x^7-63\,Aa^6+45\left(6\,Bab^5+Ab^6\right)x^6+189\left(5\,Ba^2b^4+2\,Aab^5\right)x^5+525\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^4+1575\,(3}{315\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b^6*x^7 - 63*A*a^6 + 45*(6*B*a*b^5 + A*b^6)*x^6 + 189*(5*B*a^2*
b^4 + 2*A*a*b^5)*x^5 + 525*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 1575*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*x^3 - 945*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 105*(B*a^6 + 6
*A*a^5*b)*x)/x^(5/2)
```

giac [A] time = 0.20, size = 148, normalized size = 0.95

$$\frac{2}{9}\,Bb^6x^{\frac{9}{2}}+\frac{12}{7}\,Bab^5x^{\frac{7}{2}}+\frac{2}{7}\,Ab^6x^{\frac{7}{2}}+6\,Ba^2b^4x^{\frac{5}{2}}+\frac{12}{5}\,Aab^5x^{\frac{5}{2}}+\frac{40}{3}\,Ba^3b^3x^{\frac{3}{2}}+10\,Aa^2b^4x^{\frac{3}{2}}+30\,Ba^4b^2\sqrt{x}+40\,Aa^3b^3\sqrt{x}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^6*x^(9/2) + 12/7*B*a*b^5*x^(7/2) + 2/7*A*b^6*x^(7/2) + 6*B*a^2*b^4*
x^(5/2) + 12/5*A*a*b^5*x^(5/2) + 40/3*B*a^3*b^3*x^(3/2) + 10*A*a^2*b^4*x^(3
/2) + 30*B*a^4*b^2*sqrt(x) + 40*A*a^3*b^3*sqrt(x) - 2/15*(90*B*a^5*b*x^2 +
225*A*a^4*b^2*x^2 + 5*B*a^6*x + 30*A*a^5*b*x + 3*A*a^6)/x^(5/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.95

$$-\frac{2\left(-35B\,b^6x^7-45A\,b^6x^6-270x^6Ba\,b^5-378Aa\,b^5x^5-945x^5B\,a^2b^4-1575A\,a^2b^4x^4-2100x^4B\,a^3b^3-6300A\,a}{315x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*b^6*x^7-45*A*b^6*x^6-270*B*a*b^5*x^6-378*A*a*b^5*x^5-945*B*a^
2*b^4*x^5-1575*A*a^2*b^4*x^4-2100*B*a^3*b^3*x^4-6300*A*a^3*b^3*x^3-4725*B*a
^4*b^2*x^3+4725*A*a^4*b^2*x^2+1890*B*a^5*b*x^2+630*A*a^5*b*x+105*B*a^6*x+63
*A*a^6)/x^(5/2)
```

maxima [A] time = 0.54, size = 148, normalized size = 0.95

$$\frac{2}{9}\,Bb^6x^{\frac{9}{2}}+\frac{2}{7}\left(6\,Bab^5+Ab^6\right)x^{\frac{7}{2}}+\frac{6}{5}\left(5\,Ba^2b^4+2\,Aab^5\right)x^{\frac{5}{2}}+\frac{10}{3}\left(4\,Ba^3b^3+3\,Aa^2b^4\right)x^{\frac{3}{2}}+10\left(3\,Ba^4b^2+4\,Aa^3b^3\right)\sqrt{x}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*b^6*x^(9/2) + 2/7*(6*B*a*b^5 + A*b^6)*x^(7/2) + 6/5*(5*B*a^2*b^4 + 2*
A*a*b^5)*x^(5/2) + 10/3*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^(3/2) + 10*(3*B*a^4*b
^2 + 4*A*a^3*b^3)*sqrt(x) - 2/15*(3*A*a^6 + 45*(2*B*a^5*b + 5*A*a^4*b^2)*x^
2 + 5*(B*a^6 + 6*A*a^5*b)*x)/x^(5/2)
```

mupad [B] time = 0.05, size = 135, normalized size = 0.87

$$x^{7/2}\,\left(\frac{2\,A\,b^6}{7}+\frac{12\,B\,a\,b^5}{7}\right)-\frac{x\,\left(\frac{2\,B\,a^6}{3}+4\,A\,b\,a^5\right)+\frac{2\,A\,a^6}{5}+x^2\,\left(12\,B\,a^5\,b+30\,A\,a^4\,b^2\right)}{x^{5/2}}+\frac{2\,B\,b^6\,x^{9/2}}{9}+10\,a^3\,b^2\,\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(7/2),x)
```

```
[Out] x^(7/2)*((2*A*b^6)/7 + (12*B*a*b^5)/7) - (x*((2*B*a^6)/3 + 4*A*a^5*b) + (2*
A*a^6)/5 + x^2*(30*A*a^4*b^2 + 12*B*a^5*b))/x^(5/2) + (2*B*b^6*x^(9/2))/9 +
 10*a^3*b^2*x^(1/2)*(4*A*b + 3*B*a) + (10*a^2*b^3*x^(3/2)*(3*A*b + 4*B*a))/
3 + (6*a*b^4*x^(5/2)*(2*A*b + 5*B*a))/5
```

sympy [A] time = 7.32, size = 204, normalized size = 1.32

$$-\frac{2Aa^6}{5x^{\frac{5}{2}}}-\frac{4Aa^5b}{x^{\frac{3}{2}}}-\frac{30Aa^4b^2}{\sqrt{x}}+40Aa^3b^3\sqrt{x}+10Aa^2b^4x^{\frac{3}{2}}+\frac{12Aab^5x^{\frac{5}{2}}}{5}+\frac{2Ab^6x^{\frac{7}{2}}}{7}-\frac{2Ba^6}{3x^{\frac{3}{2}}}-\frac{12Ba^5b}{\sqrt{x}}+30Ba^4b^2\sqrt{x}+40$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(7/2),x)
```

```
[Out] -2*A*a**6/(5*x**(5/2)) - 4*A*a**5*b/x**(3/2) - 30*A*a**4*b**2/sqrt(x) + 40*
A*a**3*b**3*sqrt(x) + 10*A*a**2*b**4*x**(3/2) + 12*A*a*b**5*x**(5/2)/5 + 2*
A*b**6*x**(7/2)/7 - 2*B*a**6/(3*x**(3/2)) - 12*B*a**5*b/sqrt(x) + 30*B*a**4
*b**2*sqrt(x) + 40*B*a**3*b**3*x**(3/2)/3 + 6*B*a**2*b**4*x**(5/2) + 12*B*a
*b**5*x**(7/2)/7 + 2*B*b**6*x**(9/2)/9
```

3.755 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{9/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{2a^6A}{7x^{7/2}}-\frac{2a^5(aB+6Ab)}{5x^{5/2}}-\frac{2a^4b(2aB+5Ab)}{x^{3/2}}-\frac{10a^3b^2(3aB+4Ab)}{\sqrt{x}}+10a^2b^3\sqrt{x}\,(4aB+3Ab)+\frac{2}{5}b^5x^{5/2}(6aB+Ab)+2a$$

```
[Out] -2/7*a^6*A/x^(7/2)-2/5*a^5*(6*A*b+B*a)/x^(5/2)-2*a^4*b*(5*A*b+2*B*a)/x^(3/2
)+2*a*b^4*(2*A*b+5*B*a)*x^(3/2)+2/5*b^5*(A*b+6*B*a)*x^(5/2)+2/7*b^6*B*x^(7/
2)-10*a^3*b^2*(4*A*b+3*B*a)/x^(1/2)+10*a^2*b^3*(3*A*b+4*B*a)*x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 76\}$

$$-\frac{10a^3b^2(3aB+4Ab)}{\sqrt{x}}+10a^2b^3\sqrt{x}\,(4aB+3Ab)-\frac{2a^5(aB+6Ab)}{5x^{5/2}}-\frac{2a^4b(2aB+5Ab)}{x^{3/2}}-\frac{2a^6A}{7x^{7/2}}+2ab^4x^{3/2}(5aB+2Ab)+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^6*A)/(7*x^(7/2)) - (2*a^5*(6*A*b + a*B))/(5*x^(5/2)) - (2*a^4*b*(5*A*
b + 2*a*B))/x^(3/2) - (10*a^3*b^2*(4*A*b + 3*a*B))/Sqrt[x] + 10*a^2*b^3*(3*
A*b + 4*a*B)*Sqrt[x] + 2*a*b^4*(2*A*b + 5*a*B)*x^(3/2) + (2*b^5*(A*b + 6*a*
B)*x^(5/2))/5 + (2*b^6*B*x^(7/2))/7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{9/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{9/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{9/2}}+\frac{a^5(6Ab+aB)}{x^{7/2}}+\frac{3a^4b(5Ab+2aB)}{x^{5/2}}+\frac{5a^3b^2(4Ab+3aB)}{x^{3/2}}+5a^2\right.\\ &= -\frac{2a^6A}{7x^{7/2}}-\frac{2a^5(6Ab+aB)}{5x^{5/2}}-\frac{2a^4b(5Ab+2aB)}{x^{3/2}}-\frac{10a^3b^2(4Ab+3aB)}{\sqrt{x}}+10a\end{aligned}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.81

$$\frac{2\left(-\left(a^6(5A+7Bx)\right)-14a^5bx(3A+5Bx)-175a^4b^2x^2(A+3Bx)+700a^3b^3x^3(Bx-A)+175a^2b^4x^4(3A+Bx)+\right.}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(700*a^3*b^3*x^3*(-A + B*x) + 175*a^2*b^4*x^4*(3*A + B*x) - 175*a^4*b^2*
x^2*(A + 3*B*x) + 14*a*b^5*x^5*(5*A + 3*B*x) - 14*a^5*b*x*(3*A + 5*B*x) + b
^6*x^6*(7*A + 5*B*x) - a^6*(5*A + 7*B*x)))/(35*x^(7/2))
```

fricas [A] time = 0.86, size = 147, normalized size = 0.97

$$\frac{2 (5 Bb^6x^7 - 5 Aa^6 + 7 (6 Bab^5 + Ab^6)x^6 + 35 (5 Ba^2b^4 + 2 Aab^5)x^5 + 175 (4 Ba^3b^3 + 3 Aa^2b^4)x^4 - 175 (3 Ba}{35 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*b^6*x^7 - 5*A*a^6 + 7*(6*B*a*b^5 + A*b^6)*x^6 + 35*(5*B*a^2*b^4 +
 2*A*a*b^5)*x^5 + 175*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 175*(3*B*a^4*b^2 +
4*A*a^3*b^3)*x^3 - 35*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 7*(B*a^6 + 6*A*a^5*b)
*x)/x^(7/2)
```

giac [A] time = 0.18, size = 148, normalized size = 0.98

$$\frac{2}{7} Bb^6x^{\frac{7}{2}} + \frac{12}{5} Bab^5x^{\frac{5}{2}} + \frac{2}{5} Ab^6x^{\frac{5}{2}} + 10 Ba^2b^4x^{\frac{3}{2}} + 4 Aab^5x^{\frac{3}{2}} + 40 Ba^3b^3\sqrt{x} + 30 Aa^2b^4\sqrt{x} - \frac{2 (525 Ba^4b^2x^3 + 700 A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^6*x^(7/2) + 12/5*B*a*b^5*x^(5/2) + 2/5*A*b^6*x^(5/2) + 10*B*a^2*b^4
*x^(3/2) + 4*A*a*b^5*x^(3/2) + 40*B*a^3*b^3*sqrt(x) + 30*A*a^2*b^4*sqrt(x)
- 2/35*(525*B*a^4*b^2*x^3 + 700*A*a^3*b^3*x^3 + 70*B*a^5*b*x^2 + 175*A*a^4*
b^2*x^2 + 7*B*a^6*x + 42*A*a^5*b*x + 5*A*a^6)/x^(7/2)
```

maple [A] time = 0.06, size = 148, normalized size = 0.98

$$-\frac{2 (-5B b^6x^7 - 7A b^6x^6 - 42x^6Ba b^5 - 70Aa b^5x^5 - 175x^5B a^2b^4 - 525A a^2b^4x^4 - 700x^4B a^3b^3 + 700A a^3b^3x^3}{35x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*b^6*x^7-7*A*b^6*x^6-42*B*a*b^5*x^6-70*A*a*b^5*x^5-175*B*a^2*b^4
*x^5-525*A*a^2*b^4*x^4-700*B*a^3*b^3*x^4+700*A*a^3*b^3*x^3+525*B*a^4*b^2*x^
3+175*A*a^4*b^2*x^2+70*B*a^5*b*x^2+42*A*a^5*b*x+7*B*a^6*x+5*A*a^6)/x^(7/2)
```

maxima [A] time = 0.56, size = 148, normalized size = 0.98

$$\frac{2}{7} Bb^6x^{\frac{7}{2}} + \frac{2}{5} (6 Bab^5 + Ab^6)x^{\frac{5}{2}} + 2 (5 Ba^2b^4 + 2 Aab^5)x^{\frac{3}{2}} + 10 (4 Ba^3b^3 + 3 Aa^2b^4)\sqrt{x} - \frac{2 (5 Aa^6 + 175 (3 Ba^4b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*b^6*x^(7/2) + 2/5*(6*B*a*b^5 + A*b^6)*x^(5/2) + 2*(5*B*a^2*b^4 + 2*A*
a*b^5)*x^(3/2) + 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*sqrt(x) - 2/35*(5*A*a^6 + 1
75*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 35*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 7*(
B*a^6 + 6*A*a^5*b)*x)/x^(7/2)
```

mupad [B] time = 1.15, size = 138, normalized size = 0.91

$$x^{5/2}\left(\frac{2\,A\,b^6}{5}+\frac{12\,B\,a\,b^5}{5}\right)-\frac{x\left(\frac{2\,B\,a^6}{5}+\frac{12\,A\,b\,a^5}{5}\right)+\frac{2\,A\,a^6}{7}+x^2\left(4\,B\,a^5\,b+10\,A\,a^4\,b^2\right)+x^3\left(30\,B\,a^4\,b^2+40\,A\,a^3\,b^3\right)}{x^{7/2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(9/2),x)
```

```
[Out] x^(5/2)*((2*A*b^6)/5 + (12*B*a*b^5)/5) - (x*((2*B*a^6)/5 + (12*A*a^5*b)/5)
+ (2*A*a^6)/7 + x^2*(10*A*a^4*b^2 + 4*B*a^5*b) + x^3*(40*A*a^3*b^3 + 30*B*a
^4*b^2))/x^(7/2) + (2*B*b^6*x^(7/2))/7 + 10*a^2*b^3*x^(1/2)*(3*A*b + 4*B*a)
 + 2*a*b^4*x^(3/2)*(2*A*b + 5*B*a)
```

sympy [A] time = 9.61, size = 202, normalized size = 1.34

$$-\frac{2Aa^6}{7x^{\frac{7}{2}}}-\frac{12Aa^5b}{5x^{\frac{5}{2}}}-\frac{10Aa^4b^2}{x^{\frac{3}{2}}}-\frac{40Aa^3b^3}{\sqrt{x}}+30Aa^2b^4\sqrt{x}+4Aab^5x^{\frac{3}{2}}+\frac{2Ab^6x^{\frac{5}{2}}}{5}-\frac{2Ba^6}{5x^{\frac{5}{2}}}-\frac{4Ba^5b}{x^{\frac{3}{2}}}-\frac{30Ba^4b^2}{\sqrt{x}}+40Ba^3b^3\sqrt{x}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(9/2),x)
```

```
[Out] -2*A*a**6/(7*x**(7/2)) - 12*A*a**5*b/(5*x**(5/2)) - 10*A*a**4*b**2/x**(3/2)
 - 40*A*a**3*b**3/sqrt(x) + 30*A*a**2*b**4*sqrt(x) + 4*A*a*b**5*x**(3/2) +
2*A*b**6*x**(5/2)/5 - 2*B*a**6/(5*x**(5/2)) - 4*B*a**5*b/x**(3/2) - 30*B*a*
*4*b**2/sqrt(x) + 40*B*a**3*b**3*sqrt(x) + 10*B*a**2*b**4*x**(3/2) + 12*B*a
*b**5*x**(5/2)/5 + 2*B*b**6*x**(7/2)/7
```

3.756 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=155

$$-\frac{2a^6A}{9x^{9/2}}-\frac{2a^5(aB+6Ab)}{7x^{7/2}}-\frac{6a^4b(2aB+5Ab)}{5x^{5/2}}-\frac{10a^3b^2(3aB+4Ab)}{3x^{3/2}}-\frac{10a^2b^3(4aB+3Ab)}{\sqrt{x}}+\frac{2}{3}b^5x^{3/2}(6aB+Ab)+6a$$

```
[Out] -2/9*a^6*A/x^(9/2)-2/7*a^5*(6*A*b+B*a)/x^(7/2)-6/5*a^4*b*(5*A*b+2*B*a)/x^(5
/2)-10/3*a^3*b^2*(4*A*b+3*B*a)/x^(3/2)+2/3*b^5*(A*b+6*B*a)*x^(3/2)+2/5*b^6*
B*x^(5/2)-10*a^2*b^3*(3*A*b+4*B*a)/x^(1/2)+6*a*b^4*(2*A*b+5*B*a)*x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 76\}$

$$-\frac{10a^3b^2(3aB+4Ab)}{3x^{3/2}}-\frac{10a^2b^3(4aB+3Ab)}{\sqrt{x}}-\frac{2a^5(aB+6Ab)}{7x^{7/2}}-\frac{6a^4b(2aB+5Ab)}{5x^{5/2}}-\frac{2a^6A}{9x^{9/2}}+\frac{2}{3}b^5x^{3/2}(6aB+Ab)+6a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^6*A)/(9*x^(9/2)) - (2*a^5*(6*A*b + a*B))/(7*x^(7/2)) - (6*a^4*b*(5*A*
b + 2*a*B))/(5*x^(5/2)) - (10*a^3*b^2*(4*A*b + 3*a*B))/(3*x^(3/2)) - (10*a^
2*b^3*(3*A*b + 4*a*B))/Sqrt[x] + 6*a*b^4*(2*A*b + 5*a*B)*Sqrt[x] + (2*b^5*(
A*b + 6*a*B)*x^(3/2))/3 + (2*b^6*B*x^(5/2))/5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{x^{11/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{x^{11/2}}\,dx\\ &= \int \left(\frac{a^6A}{x^{11/2}}+\frac{a^5(6Ab+aB)}{x^{9/2}}+\frac{3a^4b(5Ab+2aB)}{x^{7/2}}+\frac{5a^3b^2(4Ab+3aB)}{x^{5/2}}+\right.\\ &= -\frac{2a^6A}{9x^{9/2}}-\frac{2a^5(6Ab+aB)}{7x^{7/2}}-\frac{6a^4b(5Ab+2aB)}{5x^{5/2}}-\frac{10a^3b^2(4Ab+3aB)}{3x^{3/2}}-\end{aligned}$$

Mathematica [A] time = 0.04, size = 123, normalized size = 0.79

$$-\frac{2\left(5a^6(7A+9Bx)+54a^5bx(5A+7Bx)+315a^4b^2x^2(3A+5Bx)+2100a^3b^3x^3(A+3Bx)+4725a^2b^4x^4(A-\right.}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(4725*a^2*b^4*x^4*(A - B*x) - 630*a*b^5*x^5*(3*A + B*x) + 2100*a^3*b^3*
x^3*(A + 3*B*x) - 21*b^6*x^6*(5*A + 3*B*x) + 315*a^4*b^2*x^2*(3*A + 5*B*x)
+ 54*a^5*b*x*(5*A + 7*B*x) + 5*a^6*(7*A + 9*B*x)))/(315*x^(9/2))
```

fricas [A] time = 0.91, size = 147, normalized size = 0.95

$$\frac{2\,(63\,Bb^{6}x^{7}-35\,Aa^{6}+105\,(6\,Bab^{5}+Ab^{6})x^{6}+945\,(5\,Ba^{2}b^{4}+2\,Aab^{5})x^{5}-1575\,(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4})x^{4}-525\,(}{315\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*b^6*x^7 - 35*A*a^6 + 105*(6*B*a*b^5 + A*b^6)*x^6 + 945*(5*B*a^2
*b^4 + 2*A*a*b^5)*x^5 - 1575*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 - 525*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*x^3 - 189*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 - 45*(B*a^6 + 6
*A*a^5*b)*x)/x^(9/2)
```

giac [A] time = 0.16, size = 148, normalized size = 0.95

$$\frac{2}{5}\,Bb^{6}x^{\frac{5}{2}}+4\,Bab^{5}x^{\frac{3}{2}}+\frac{2}{3}\,Ab^{6}x^{\frac{3}{2}}+30\,Ba^{2}b^{4}\sqrt{x}+12\,Aab^{5}\sqrt{x}-\frac{2\,(6300\,Ba^{3}b^{3}x^{4}+4725\,Aa^{2}b^{4}x^{4}+1575\,Ba^{4}b^{2}x^{3}+21}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^6*x^(5/2) + 4*B*a*b^5*x^(3/2) + 2/3*A*b^6*x^(3/2) + 30*B*a^2*b^4*sq
rt(x) + 12*A*a*b^5*sqrt(x) - 2/315*(6300*B*a^3*b^3*x^4 + 4725*A*a^2*b^4*x^4
 + 1575*B*a^4*b^2*x^3 + 2100*A*a^3*b^3*x^3 + 378*B*a^5*b*x^2 + 945*A*a^4*b^
2*x^2 + 45*B*a^6*x + 270*A*a^5*b*x + 35*A*a^6)/x^(9/2)
```

maple [A] time = 0.05, size = 148, normalized size = 0.95

$$-\frac{2\,(-63B\,b^{6}x^{7}-105A\,b^{6}x^{6}-630x^{6}Ba\,b^{5}-1890Aa\,b^{5}x^{5}-4725x^{5}B\,a^{2}b^{4}+4725A\,a^{2}b^{4}x^{4}+6300x^{4}B\,a^{3}b^{3}+210}{315x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*b^6*x^7-105*A*b^6*x^6-630*B*a*b^5*x^6-1890*A*a*b^5*x^5-4725*B
*a^2*b^4*x^5+4725*A*a^2*b^4*x^4+6300*B*a^3*b^3*x^4+2100*A*a^3*b^3*x^3+1575*
B*a^4*b^2*x^3+945*A*a^4*b^2*x^2+378*B*a^5*b*x^2+270*A*a^5*b*x+45*B*a^6*x+35
*A*a^6)/x^(9/2)
```

maxima [A] time = 0.46, size = 148, normalized size = 0.95

$$\frac{2}{5}\,Bb^{6}x^{\frac{5}{2}}+\frac{2}{3}\,(6\,Bab^{5}+Ab^{6})x^{\frac{3}{2}}+6\,(5\,Ba^{2}b^{4}+2\,Aab^{5})\sqrt{x}-\frac{2\,(35\,Aa^{6}+1575\,(4\,Ba^{3}b^{3}+3\,Aa^{2}b^{4})x^{4}+525\,(3\,Ba^{4}b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*b^6*x^(5/2) + 2/3*(6*B*a*b^5 + A*b^6)*x^(3/2) + 6*(5*B*a^2*b^4 + 2*A*
a*b^5)*sqrt(x) - 2/315*(35*A*a^6 + 1575*(4*B*a^3*b^3 + 3*A*a^2*b^4)*x^4 + 5
25*(3*B*a^4*b^2 + 4*A*a^3*b^3)*x^3 + 189*(2*B*a^5*b + 5*A*a^4*b^2)*x^2 + 45
*(B*a^6 + 6*A*a^5*b)*x)/x^(9/2)
```

mupad [B] time = 1.16, size = 141, normalized size = 0.91

$$x^{3/2}\,\left(\frac{2\,A\,b^6}{3}+4\,B\,a\,b^5\right)-\frac{x\,\left(\frac{2\,B\,a^6}{7}+\frac{12\,A\,b\,a^5}{7}\right)+\frac{2\,A\,a^6}{9}+x^2\,\left(\frac{12\,B\,a^5\,b}{5}+6\,A\,a^4\,b^2\right)+x^3\,\left(10\,B\,a^4\,b^2+\frac{40\,A\,a^3\,b^3}{3}\right)+}{x^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*b^6)/3 + 4*B*a*b^5) - (x*((2*B*a^6)/7 + (12*A*a^5*b)/7) + (2*
A*a^6)/9 + x^2*(6*A*a^4*b^2 + (12*B*a^5*b)/5) + x^3*((40*A*a^3*b^3)/3 + 10*
B*a^4*b^2) + x^4*(30*A*a^2*b^4 + 40*B*a^3*b^3))/x^(9/2) + (2*B*b^6*x^(5/2))
/5 + 6*a*b^4*x^(1/2)*(2*A*b + 5*B*a)
```

sympy [A] time = 12.62, size = 204, normalized size = 1.32

$$-\frac{2Aa^6}{9x^{\frac{9}{2}}}-\frac{12Aa^5b}{7x^{\frac{7}{2}}}-\frac{6Aa^4b^2}{x^{\frac{5}{2}}}-\frac{40Aa^3b^3}{3x^{\frac{3}{2}}}-\frac{30Aa^2b^4}{\sqrt{x}}+12Aab^5\sqrt{x}+\frac{2Ab^6x^{\frac{3}{2}}}{3}-\frac{2Ba^6}{7x^{\frac{7}{2}}}-\frac{12Ba^5b}{5x^{\frac{5}{2}}}-\frac{10Ba^4b^2}{x^{\frac{3}{2}}}-\frac{40Ba^3b^3}{\sqrt{x}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/x**(11/2),x)
```

```
[Out] -2*A*a**6/(9*x**(9/2)) - 12*A*a**5*b/(7*x**(7/2)) - 6*A*a**4*b**2/x**(5/2)
- 40*A*a**3*b**3/(3*x**(3/2)) - 30*A*a**2*b**4/sqrt(x) + 12*A*a*b**5*sqrt(x
) + 2*A*b**6*x**(3/2)/3 - 2*B*a**6/(7*x**(7/2)) - 12*B*a**5*b/(5*x**(5/2))
- 10*B*a**4*b**2/x**(3/2) - 40*B*a**3*b**3/sqrt(x) + 30*B*a**2*b**4*sqrt(x)
 + 4*B*a*b**5*x**(3/2) + 2*B*b**6*x**(5/2)/5
```

3.757 $\int \frac{x^{7/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=154

$$-\frac{a^{5/2}(7Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}}+\frac{a^2\sqrt{x}\,(7Ab-9aB)}{b^5}-\frac{ax^{3/2}(7Ab-9aB)}{3b^4}+\frac{x^{5/2}(7Ab-9aB)}{5b^3}-\frac{x^{7/2}(7Ab-9aB)}{7ab^2}+x^{9}$$

```
[Out] -1/3*a*(7*A*b-9*B*a)*x^(3/2)/b^4+1/5*(7*A*b-9*B*a)*x^(5/2)/b^3-1/7*(7*A*b-9
*B*a)*x^(7/2)/a/b^2+(A*b-B*a)*x^(9/2)/a/b/(b*x+a)-a^(5/2)*(7*A*b-9*B*a)*arc
tan(b^(1/2)*x^(1/2)/a^(1/2))/b^(11/2)+a^2*(7*A*b-9*B*a)*x^(1/2)/b^5
```

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 50, 63, 205}

$$\frac{a^2\sqrt{x}\,(7Ab-9aB)}{b^5}-\frac{a^{5/2}(7Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}}-\frac{x^{7/2}(7Ab-9aB)}{7ab^2}+\frac{x^{5/2}(7Ab-9aB)}{5b^3}-\frac{ax^{3/2}(7Ab-9aB)}{3b^4}+\frac{x^{9/2}}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*(7*A*b - 9*a*B)*Sqrt[x])/b^5 - (a*(7*A*b - 9*a*B)*x^(3/2))/(3*b^4) + (
(7*A*b - 9*a*B)*x^(5/2))/(5*b^3) - ((7*A*b - 9*a*B)*x^(7/2))/(7*a*b^2) + ((
A*b - a*B)*x^(9/2))/(a*b*(a + b*x)) - (a^(5/2)*(7*A*b - 9*a*B)*ArcTan[(Sqrt
[b]*Sqrt[x])/Sqrt[a]])/b^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(a+bx)^2}\,dx \\
&= \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} - \frac{\left(\frac{7Ab}{2}-\frac{9aB}{2}\right)\int \frac{x^{7/2}}{a+bx}\,dx}{ab} \\
&= -\frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} + \frac{(7Ab-9aB)\int \frac{x^{5/2}}{a+bx}\,dx}{2b^2} \\
&= \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} - \frac{(a(7Ab-9aB))\int \frac{x^{3/2}}{a+bx}\,dx}{2b^3} \\
&= -\frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + \frac{(Ab-aB)x^{9/2}}{ab(a+bx)} + \big(a^2(7 \\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + (A \\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + (A \\
&= \frac{a^2(7Ab-9aB)\sqrt{x}}{b^5} - \frac{a(7Ab-9aB)x^{3/2}}{3b^4} + \frac{(7Ab-9aB)x^{5/2}}{5b^3} - \frac{(7Ab-9aB)x^{7/2}}{7ab^2} + (A
\end{aligned}$$

Mathematica [A] time = 0.09, size = 128, normalized size = 0.83

$$\frac{a^{5/2}(9aB-7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{11/2}} + \frac{\sqrt{x}\left(-945a^4B+105a^3b(7A-6Bx)+14a^2b^2x(35A+9Bx)-2ab^3x^2(49A+2\right.}{105b^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-945*a^4*B + 105*a^3*b*(7*A - 6*B*x) + 6*b^4*x^3*(7*A + 5*B*x) +
14*a^2*b^2*x*(35*A + 9*B*x) - 2*a*b^3*x^2*(49*A + 27*B*x)))/(105*b^5*(a + b
*x)) + (a^(5/2)*(-7*A*b + 9*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(11/2
)
```

fricas [A] time = 0.91, size = 341, normalized size = 2.21

$$\left[-\frac{105\left(9\,Ba^4-7\,Aa^3b+\left(9\,Ba^3b-7\,Aa^2b^2\right)x\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(30\,Bb^4x^4-945\,Ba^4+735\,Aa^3b\right.}{210\left(b^6x+ab^5\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/210*(105*(9*B*a^4 - 7*A*a^3*b + (9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(-a/b)
*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(30*B*b^4*x^4 - 945*
B*a^4 + 735*A*a^3*b - 6*(9*B*a*b^3 - 7*A*b^4)*x^3 + 14*(9*B*a^2*b^2 - 7*A*a
*b^3)*x^2 - 70*(9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(x))/(b^6*x + a*b^5), 1/105
*(105*(9*B*a^4 - 7*A*a^3*b + (9*B*a^3*b - 7*A*a^2*b^2)*x)*sqrt(a/b)*arctan(
b*sqrt(x)*sqrt(a/b)/a) + (30*B*b^4*x^4 - 945*B*a^4 + 735*A*a^3*b - 6*(9*B*a
*b^3 - 7*A*b^4)*x^3 + 14*(9*B*a^2*b^2 - 7*A*a*b^3)*x^2 - 70*(9*B*a^3*b - 7*
A*a^2*b^2)*x)*sqrt(x))/(b^6*x + a*b^5)]
```

giac [**A**] time = 0.19, size = 146, normalized size = 0.95

$$\frac{\left(9\,Ba^4 - 7\,Aa^3b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5} - \frac{Ba^4\sqrt{x} - Aa^3b\sqrt{x}}{(bx+a)b^5} + \frac{2\left(15\,Bb^{12}x^{\frac{7}{2}} - 42\,Bab^{11}x^{\frac{5}{2}} + 21\,Ab^{12}x^{\frac{5}{2}} + 105\,Ba^2b^{10}x^{\frac{3}{2}} - \right.}{105\,b^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (9*B*a^4 - 7*A*a^3*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - (B*a^4*
sqrt(x) - A*a^3*b*sqrt(x))/((b*x + a)*b^5) + 2/105*(15*B*b^12*x^(7/2) - 42*
B*a*b^11*x^(5/2) + 21*A*b^12*x^(5/2) + 105*B*a^2*b^10*x^(3/2) - 70*A*a*b^11
*x^(3/2) - 420*B*a^3*b^9*sqrt(x) + 315*A*a^2*b^10*sqrt(x))/b^14
```

maple [**A**] time = 0.07, size = 163, normalized size = 1.06

$$\frac{2B\,x^{\frac{7}{2}}}{7b^2} + \frac{2A\,x^{\frac{5}{2}}}{5b^2} - \frac{4Ba\,x^{\frac{5}{2}}}{5b^3} - \frac{7A\,a^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^4} + \frac{9B\,a^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^5} + \frac{A\,a^3\sqrt{x}}{(bx+a)\,b^4} - \frac{4Aa\,x^{\frac{3}{2}}}{3b^3} - \frac{B\,a^4\sqrt{x}}{(bx+a)\,b^5} + \frac{2B\,a^2x^{\frac{3}{2}}}{b^4} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/7/b^2*B*x^(7/2)+2/5/b^2*A*x^(5/2)-4/5/b^3*B*x^(5/2)*a-4/3/b^3*A*x^(3/2)*a
+2/b^4*B*x^(3/2)*a^2+6/b^4*A*a^2*x^(1/2)-8/b^5*B*x^(1/2)*a^3+a^3/b^4*x^(1/2
)/(b*x+a)*A-a^4/b^5*x^(1/2)/(b*x+a)*B-7*a^3/b^4/(a*b)^(1/2)*arctan(x^(1/2)*
b/(a*b)^(1/2))*A+9*a^4/b^5/(a*b)^(1/2)*arctan(x^(1/2)*b/(a*b)^(1/2))*B
```

maxima [**A**] time = 1.32, size = 139, normalized size = 0.90

$$-\frac{\left(Ba^4 - Aa^3b\right)\sqrt{x}}{b^6x + ab^5} + \frac{\left(9\,Ba^4 - 7\,Aa^3b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5} + \frac{2\left(15\,Bb^3x^{\frac{7}{2}} - 21\left(2\,Bab^2 - Ab^3\right)x^{\frac{5}{2}} + 35\left(3\,Ba^2b - 2\,Aab^2\right)\right.}{105\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^4 - A*a^3*b)*sqrt(x)/(b^6*x + a*b^5) + (9*B*a^4 - 7*A*a^3*b)*arctan(b
*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) + 2/105*(15*B*b^3*x^(7/2) - 21*(2*B*a*b
^2 - A*b^3)*x^(5/2) + 35*(3*B*a^2*b - 2*A*a*b^2)*x^(3/2) - 105*(4*B*a^3 - 3
*A*a^2*b)*sqrt(x))/b^5
```

mupad [**B**] time = 0.07, size = 209, normalized size = 1.36

$$\sqrt{x}\left(\frac{2\,a\left(\frac{2\,a\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{b}+\frac{2\,B\,a^2}{b^4}\right)}{b}-\frac{a^2\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{b^2}\right)+x^{5/2}\left(\frac{2\,A}{5\,b^2}-\frac{4\,B\,a}{5\,b^3}\right)-x^{3/2}\left(\frac{2\,a\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)}{3\,b}+\frac{2\,B\,a^2}{3\,b^4}\right)+\frac{2\,B\,x^{7/2}}{7\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(1/2)*((2*a*((2*a*((2*A)/b^2 - (4*B*a)/b^3))/b + (2*B*a^2)/b^4))/b - (a^2
*((2*A)/b^2 - (4*B*a)/b^3))/b^2) + x^(5/2)*((2*A)/(5*b^2) - (4*B*a)/(5*b^3)
) - x^(3/2)*((2*a*((2*A)/b^2 - (4*B*a)/b^3))/(3*b) + (2*B*a^2)/(3*b^4)) + (
2*B*x^(7/2))/(7*b^2) - (x^(1/2)*(B*a^4 - A*a^3*b))/(a*b^5 + b^6*x) + (a^(5/
2)*atan((a^(5/2)*b^(1/2)*x^(1/2)*(7*A*b - 9*B*a))/(9*B*a^4 - 7*A*a^3*b))*(7
*A*b - 9*B*a))/b^(11/2)
```

sympy **[A]** time = 153.51, size = 1197, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(5/2)/5 + 2*B*x**(7/2)/7), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(9/2)/9 + 2*B*x**(11/2)/11)/a**2, Eq(b, 0)), ((2*A*x**(5/2)/5 + 2*B*x
**(7/2)/7)/b**2, Eq(a, 0)), (1470*I*A*a**(7/2)*b**2*sqrt(x)*sqrt(1/b)/(210*
I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 980*I*A*a**(5
/2)*b**3*x**(3/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*
b**7*x*sqrt(1/b)) - 196*I*A*a**(3/2)*b**4*x**(5/2)*sqrt(1/b)/(210*I*a**(3/2
)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 84*I*A*sqrt(a)*b**5*x*
*(7/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt
(1/b)) - 735*A*a**4*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b
**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 735*A*a**4*b*log(I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*
x*sqrt(1/b)) - 735*A*a**3*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I
*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 735*A*a**3*b**
2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210
*I*sqrt(a)*b**7*x*sqrt(1/b)) - 1890*I*B*a**(9/2)*b*sqrt(x)*sqrt(1/b)/(210*I
*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) - 1260*I*B*a**(7
/2)*b**2*x**(3/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*
b**7*x*sqrt(1/b)) + 252*I*B*a**(5/2)*b**3*x**(5/2)*sqrt(1/b)/(210*I*a**(3/2
)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) - 108*I*B*a**(3/2)*b**4*
x**(7/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sq
rt(1/b)) + 60*I*B*sqrt(a)*b**5*x**(9/2)*sqrt(1/b)/(210*I*a**(3/2)*b**6*sqrt
(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 945*B*a**5*log(-I*sqrt(a)*sqrt(1/
b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/
b)) - 945*B*a**5*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sq
rt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)) + 945*B*a**4*b*x*log(-I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(210*I*a**(3/2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*s
qrt(1/b)) - 945*B*a**4*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(210*I*a**(3/
2)*b**6*sqrt(1/b) + 210*I*sqrt(a)*b**7*x*sqrt(1/b)), True))
```

3.758 $\int \frac{x^{5/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=130

$$\frac{a^{3/2}(5Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}-\frac{a\sqrt{x}\,(5Ab-7aB)}{b^4}+\frac{x^{3/2}(5Ab-7aB)}{3b^3}-\frac{x^{5/2}(5Ab-7aB)}{5ab^2}+\frac{x^{7/2}(Ab-aB)}{ab(a+bx)}$$

```
[Out] 1/3*(5*A*b-7*B*a)*x^(3/2)/b^3-1/5*(5*A*b-7*B*a)*x^(5/2)/a/b^2+(A*b-B*a)*x^(
7/2)/a/b/(b*x+a)+a^(3/2)*(5*A*b-7*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(9
/2)-a*(5*A*b-7*B*a)*x^(1/2)/b^4
```

Rubi **[A]** time = 0.07, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = $\{27, 78, 50, 63, 205\}$

$$\frac{a^{3/2}(5Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}-\frac{x^{5/2}(5Ab-7aB)}{5ab^2}+\frac{x^{3/2}(5Ab-7aB)}{3b^3}-\frac{a\sqrt{x}\,(5Ab-7aB)}{b^4}+\frac{x^{7/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((a*(5*A*b - 7*a*B)*Sqrt[x])/b^4) + ((5*A*b - 7*a*B)*x^(3/2))/(3*b^3) - ((
5*A*b - 7*a*B)*x^(5/2))/(5*a*b^2) + ((A*b - a*B)*x^(7/2))/(a*b*(a + b*x)) +
 (a^(3/2)*(5*A*b - 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{(a+bx)^2}\,dx\\
&= \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} - \frac{\left(\frac{5Ab}{2}-\frac{7aB}{2}\right)\int \frac{x^{5/2}}{a+bx}\,dx}{ab}\\
&= -\frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{(5Ab-7aB)\int \frac{x^{3/2}}{a+bx}\,dx}{2b^2}\\
&= \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} - \frac{(a(5Ab-7aB))\int \frac{\sqrt{x}}{a+bx}\,dx}{2b^3}\\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{\left(a^2(5\right.}{}\\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{\left(a^2(5\right.}{}\\
&= -\frac{a(5Ab-7aB)\sqrt{x}}{b^4} + \frac{(5Ab-7aB)x^{3/2}}{3b^3} - \frac{(5Ab-7aB)x^{5/2}}{5ab^2} + \frac{(Ab-aB)x^{7/2}}{ab(a+bx)} + \frac{a^{3/2}(5}{}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.85

$$\frac{\sqrt{x}\left(105a^3B+a^2(70bBx-75Ab)-2ab^2x(25A+7Bx)+2b^3x^2(5A+3Bx)\right)}{15b^4(a+bx)}-\frac{a^{3/2}(7aB-5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{b^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(105*a^3*B + 2*b^3*x^2*(5*A + 3*B*x) - 2*a*b^2*x*(25*A + 7*B*x) +
a^2*(-75*A*b + 70*b*B*x)))/(15*b^4*(a + b*x)) - (a^(3/2)*(-5*A*b + 7*a*B)*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(9/2)
```

fricas [A] time = 0.92, size = 290, normalized size = 2.23

$$\left[-\frac{15\left(7\,Ba^3-5\,Aa^2b+\left(7\,Ba^2b-5\,Aab^2\right)x\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx+2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(6\,Bb^3x^3+105\,Ba^3-75\,Aa^2b-2\,(\right.}{30\left(b^5x+ab^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/30*(15*(7*B*a^3 - 5*A*a^2*b + (7*B*a^2*b - 5*A*a*b^2)*x)*sqrt(-a/b)*log
((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(6*B*b^3*x^3 + 105*B*a^3
 - 75*A*a^2*b - 2*(7*B*a*b^2 - 5*A*b^3)*x^2 + 10*(7*B*a^2*b - 5*A*a*b^2)*x)
*sqrt(x))/(b^5*x + a*b^4), -1/15*(15*(7*B*a^3 - 5*A*a^2*b + (7*B*a^2*b - 5*
A*a*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) - (6*B*b^3*x^3 + 105*B*
a^3 - 75*A*a^2*b - 2*(7*B*a*b^2 - 5*A*b^3)*x^2 + 10*(7*B*a^2*b - 5*A*a*b^2)
*x)*sqrt(x))/(b^5*x + a*b^4)]
```

giac [**A**] time = 0.18, size = 122, normalized size = 0.94

$$-\frac{\left(7\,Ba^{3}-5\,Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{4}}+\frac{Ba^{3}\sqrt{x}-Aa^{2}b\sqrt{x}}{(bx+a)b^{4}}+\frac{2\left(3\,Bb^{8}x^{\frac{5}{2}}-10\,Bab^{7}x^{\frac{3}{2}}+5\,Ab^{8}x^{\frac{3}{2}}+45\,Ba^{2}b^{6}\sqrt{x}-30\,A}{15\,b^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(7*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + (B*a^3
*sqrt(x) - A*a^2*b*sqrt(x))/((b*x + a)*b^4) + 2/15*(3*B*b^8*x^(5/2) - 10*B*
a*b^7*x^(3/2) + 5*A*b^8*x^(3/2) + 45*B*a^2*b^6*sqrt(x) - 30*A*a*b^7*sqrt(x)
)/b^10
```

maple [**A**] time = 0.10, size = 139, normalized size = 1.07

$$\frac{2Bx^{\frac{5}{2}}}{5b^{2}}+\frac{5A\,a^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{3}}-\frac{7B\,a^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b^{4}}-\frac{A\,a^{2}\sqrt{x}}{(bx+a)\,b^{3}}+\frac{2A\,x^{\frac{3}{2}}}{3b^{2}}+\frac{B\,a^{3}\sqrt{x}}{(bx+a)\,b^{4}}-\frac{4Ba\,x^{\frac{3}{2}}}{3b^{3}}-\frac{4Aa\sqrt{x}}{b^{3}}+\frac{6B\,a^{2}\sqrt{x}}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5/b^2*B*x^(5/2)+2/3/b^2*A*x^(3/2)-4/3/b^3*a*B*x^(3/2)-4/b^3*A*x^(1/2)*a+6
/b^4*B*x^(1/2)*a^2-a^2/b^3*x^(1/2)/(b*x+a)*A+a^3/b^4*x^(1/2)/(b*x+a)*B+5*a^
2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-7*a^3/b^4/(a*b)^(1/2)*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.21, size = 115, normalized size = 0.88

$$\frac{\left(Ba^{3}-Aa^{2}b\right)\sqrt{x}}{b^{5}x+ab^{4}}-\frac{\left(7\,Ba^{3}-5\,Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{4}}+\frac{2\left(3\,Bb^{2}x^{\frac{5}{2}}-5\left(2\,Bab-Ab^{2}\right)x^{\frac{3}{2}}+15\left(3\,Ba^{2}-2\,Aab\right)\sqrt{x}\right)}{15\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a^3 - A*a^2*b)*sqrt(x)/(b^5*x + a*b^4) - (7*B*a^3 - 5*A*a^2*b)*arctan(b*
sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 2/15*(3*B*b^2*x^(5/2) - 5*(2*B*a*b - A
*b^2)*x^(3/2) + 15*(3*B*a^2 - 2*A*a*b)*sqrt(x))/b^4
```

mupad [**B**] time = 1.15, size = 146, normalized size = 1.12

$$x^{3/2}\,\left(\frac{2\,A}{3\,b^{2}}-\frac{4\,B\,a}{3\,b^{3}}\right)-\sqrt{x}\,\left(\frac{2\,a\,\left(\frac{2\,A}{b^{2}}-\frac{4\,B\,a}{b^{3}}\right)}{b}+\frac{2\,B\,a^{2}}{b^{4}}\right)+\frac{2\,B\,x^{5/2}}{5\,b^{2}}+\frac{\sqrt{x}\,\left(B\,a^{3}-A\,a^{2}\,b\right)}{x\,b^{5}+a\,b^{4}}-\frac{a^{3/2}\,\mathrm{atan}\left(\frac{a^{3/2}\,\sqrt{b}\,\sqrt{x}\,(5\,A\,b-7\,B}{7\,B\,a^{3}-5\,A\,a^{2}\,b}}{b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(3/2)*((2*A)/(3*b^2) - (4*B*a)/(3*b^3)) - x^(1/2)*((2*a*((2*A)/b^2 - (4*B
*a)/b^3))/b + (2*B*a^2)/b^4) + (2*B*x^(5/2))/(5*b^2) + (x^(1/2)*(B*a^3 - A*
a^2*b))/(a*b^4 + b^5*x) - (a^(3/2)*atan((a^(3/2)*b^(1/2)*x^(1/2)*(5*A*b - 7
*B*a))/(7*B*a^3 - 5*A*a^2*b))*(5*A*b - 7*B*a))/b^(9/2)
```

sympy [A] time = 52.86, size = 1068, normalized size = 8.22

$$\begin{cases} \tilde{\infty}\left(\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}\right) \\ \frac{\frac{2Ax^{\frac{7}{2}}}{7}+\frac{2Bx^{\frac{9}{2}}}{9}}{a^{2}} \\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{b^{2}} \\ -\frac{150iAa^{\frac{5}{2}}b^{2}\sqrt{x}\sqrt{\frac{1}{b}}}{30ia^{\frac{3}{2}}b^{5}\sqrt{\frac{1}{b}}+30i\sqrt{a}\,b^{6}x\sqrt{\frac{1}{b}}}-\frac{100iAa^{\frac{3}{2}}b^{3}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}{30ia^{\frac{3}{2}}b^{5}\sqrt{\frac{1}{b}}+30i\sqrt{a}\,b^{6}x\sqrt{\frac{1}{b}}}+\frac{20iA\sqrt{a}\,b^{4}x^{\frac{5}{2}}\sqrt{\frac{1}{b}}}{30ia^{\frac{3}{2}}b^{5}\sqrt{\frac{1}{b}}+30i\sqrt{a}\,b^{6}x\sqrt{\frac{1}{b}}}+\frac{75Aa^{3}b\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{30ia^{\frac{3}{2}}b^{5}\sqrt{\frac{1}{b}}+30i\sqrt{a}\,b^{6}x\sqrt{\frac{1}{b}}}-\frac{75Aa^{3}b\,\mathrm{lo}}{30ia^{\frac{3}{2}}b^{5}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*x**(3/2)/3 + 2*B*x**(5/2)/5), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a**2, Eq(b, 0)), ((2*A*x**(3/2)/3 + 2*B*x**
(5/2)/5)/b**2, Eq(a, 0)), (-150*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(30*I*a
**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) - 100*I*A*a**(3/2)*
b**3*x**(3/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x
*sqrt(1/b)) + 20*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sq
rt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 75*A*a**3*b*log(-I*sqrt(a)*sqrt(
1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/
b)) - 75*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sq
rt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 75*A*a**2*b**2*x*log(-I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sq
rt(1/b)) - 75*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/
2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 210*I*B*a**(7/2)*b*sqr
t(x)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b
)) + 140*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b)
 + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) - 28*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)
/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 12*I*B*sq
rt(a)*b**4*x**(7/2)*sqrt(1/b)/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*
b**6*x*sqrt(1/b)) - 105*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a*
*(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 105*B*a**4*log(I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b*
*6*x*sqrt(1/b)) - 105*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*
a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt(a)*b**6*x*sqrt(1/b)) + 105*B*a**3*b*x*l
og(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(3/2)*b**5*sqrt(1/b) + 30*I*sqrt
(a)*b**6*x*sqrt(1/b)), True))
```

3.759 $\int \frac{x^{3/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{\sqrt{x}\,(3Ab-5aB)}{b^3}-\frac{x^{3/2}(3Ab-5aB)}{3ab^2}+\frac{x^{5/2}(Ab-aB)}{ab(a+bx)}$$

```
[Out] -1/3*(3*A*b-5*B*a)*x^(3/2)/a/b^2+(A*b-B*a)*x^(5/2)/a/b/(b*x+a)-(3*A*b-5*B*a
)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*a^(1/2)/b^(7/2)+(3*A*b-5*B*a)*x^(1/2)/b^3
```

Rubi [A] time = 0.05, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = $\{27, 78, 50, 63, 205\}$

$$-\frac{x^{3/2}(3Ab-5aB)}{3ab^2}+\frac{\sqrt{x}\,(3Ab-5aB)}{b^3}-\frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}+\frac{x^{5/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((3*A*b - 5*a*B)*Sqrt[x])/b^3 - ((3*A*b - 5*a*B)*x^(3/2))/(3*a*b^2) + ((A*b
 - a*B)*x^(5/2))/(a*b*(a + b*x)) - (Sqrt[a]*(3*A*b - 5*a*B)*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(a+bx)^2}\,dx \\
&= \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{\left(\frac{3Ab}{2}-\frac{5aB}{2}\right)\int \frac{x^{3/2}}{a+bx}\,dx}{ab} \\
&= -\frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} + \frac{(3Ab-5aB)\int \frac{\sqrt{x}}{a+bx}\,dx}{2b^2} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{(a(3Ab-5aB))\int \frac{1}{\sqrt{x}\,(a+bx)}\,d}{2b^3} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{(a(3Ab-5aB))\,\text{Subst}\left(\int \frac{}{a+}\right.}{b^3} \\
&= \frac{(3Ab-5aB)\sqrt{x}}{b^3} - \frac{(3Ab-5aB)x^{3/2}}{3ab^2} + \frac{(Ab-aB)x^{5/2}}{ab(a+bx)} - \frac{\sqrt{a}\,(3Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{}}{\sqrt{a}}\right.}{b^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.81

$$\frac{\sqrt{x}\left(-15a^2B+ab(9A-10Bx)+2b^2x(3A+Bx)\right)}{3b^3(a+bx)}+\frac{\sqrt{a}\,(5aB-3Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-15*a^2*B + a*b*(9*A - 10*B*x) + 2*b^2*x*(3*A + B*x)))/(3*b^3*(a
+ b*x)) + (Sqrt[a]*(-3*A*b + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/b^(7
/2)
```

fricas [A] time = 0.86, size = 231, normalized size = 2.14

$$\left[-\frac{3\left(5\,Ba^2-3\,Aab+\left(5\,Bab-3\,Ab^2\right)x\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx-2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(2\,Bb^2x^2-15\,Ba^2+9\,Aab-2\left(5\,Bab-\right.\right.}{6\left(b^4x+ab^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(5*B*a^2 - 3*A*a*b + (5*B*a*b - 3*A*b^2)*x)*sqrt(-a/b)*log((b*x -
2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(2*B*b^2*x^2 - 15*B*a^2 + 9*A*a*
b - 2*(5*B*a*b - 3*A*b^2)*x)*sqrt(x))/(b^4*x + a*b^3), 1/3*(3*(5*B*a^2 - 3*
A*a*b + (5*B*a*b - 3*A*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (2
*B*b^2*x^2 - 15*B*a^2 + 9*A*a*b - 2*(5*B*a*b - 3*A*b^2)*x)*sqrt(x))/(b^4*x
+ a*b^3)]
```

giac [A] time = 0.19, size = 95, normalized size = 0.88

$$\frac{\left(5\,Ba^2-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^3}-\frac{Ba^2\sqrt{x}-Aab\sqrt{x}}{(bx+a)b^3}+\frac{2\left(Bb^4x^{\frac{3}{2}}-6\,Bab^3\sqrt{x}+3\,Ab^4\sqrt{x}\right)}{3\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) - (B*a^2*sq
rt(x) - A*a*b*sqrt(x))/((b*x + a)*b^3) + 2/3*(B*b^4*x^(3/2) - 6*B*a*b^3*sqr
t(x) + 3*A*b^4*sqrt(x))/b^6
```

maple [**A**] time = 0.13, size = 113, normalized size = 1.05

$$-\frac{3Aa\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^2}+\frac{5B\,a^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^3}+\frac{Aa\sqrt{x}}{(bx+a)\,b^2}-\frac{B\,a^2\sqrt{x}}{(bx+a)\,b^3}+\frac{2B\,x^{\frac{3}{2}}}{3b^2}+\frac{2A\sqrt{x}}{b^2}-\frac{4Ba\sqrt{x}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3/b^2*B*x^(3/2)+2/b^2*A*x^(1/2)-4/b^3*B*a*x^(1/2)+a/b^2*x^(1/2)/(b*x+a)*A
-a^2/b^3*x^(1/2)/(b*x+a)*B-3*a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*A+5*a^2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.35, size = 88, normalized size = 0.81

$$-\frac{\left(Ba^2-Aab\right)\sqrt{x}}{b^4x+ab^3}+\frac{\left(5\,Ba^2-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^3}+\frac{2\left(Bbx^{\frac{3}{2}}-3\,(2\,Ba-Ab)\sqrt{x}\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(B*a^2 - A*a*b)*sqrt(x)/(b^4*x + a*b^3) + (5*B*a^2 - 3*A*a*b)*arctan(b*sqr
t(x)/sqrt(a*b))/(sqrt(a*b)*b^3) + 2/3*(B*b*x^(3/2) - 3*(2*B*a - A*b)*sqrt(x
))/b^3
```

mupad [**B**] time = 0.08, size = 107, normalized size = 0.99

$$\sqrt{x}\,\left(\frac{2\,A}{b^2}-\frac{4\,B\,a}{b^3}\right)-\frac{\sqrt{x}\,\left(B\,a^2-A\,a\,b\right)}{x\,b^4+a\,b^3}+\frac{2\,B\,x^{3/2}}{3\,b^2}+\frac{\sqrt{a}\,\mathrm{atan}\left(\frac{\sqrt{a}\,\sqrt{b}\,\sqrt{x}\,(3\,A\,b-5\,B\,a)}{5\,B\,a^2-3\,A\,a\,b}\right)\,(3\,A\,b-5\,B\,a)}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^(1/2)*((2*A)/b^2 - (4*B*a)/b^3) - (x^(1/2)*(B*a^2 - A*a*b))/(a*b^3 + b^4*
x) + (2*B*x^(3/2))/(3*b^2) + (a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/2)*(3*A*b
- 5*B*a))/(5*B*a^2 - 3*A*a*b))*(3*A*b - 5*B*a))/b^(7/2)
```

sympy [**A**] time = 14.34, size = 932, normalized size = 8.63

$$\begin{cases} \tilde{\infty}\left(2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}\right) \\ \frac{\frac{2Ax^{\frac{5}{2}}}{5}+\frac{2Bx^{\frac{7}{2}}}{7}}{a^2} \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{b^2} \\ \frac{18iAa^{\frac{3}{2}}b^2\sqrt{x}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^4\sqrt{\frac{1}{b}}+6i\sqrt{a}\,b^5x\sqrt{\frac{1}{b}}}+\frac{12iA\sqrt{a}\,b^3x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{3}{2}}b^4\sqrt{\frac{1}{b}}+6i\sqrt{a}\,b^5x\sqrt{\frac{1}{b}}}-\frac{9Aa^2b\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^4\sqrt{\frac{1}{b}}+6i\sqrt{a}\,b^5x\sqrt{\frac{1}{b}}}+\frac{9Aa^2b\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{3}{2}}b^4\sqrt{\frac{1}{b}}+6i\sqrt{a}\,b^5x\sqrt{\frac{1}{b}}}-\frac{9Aab^2x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\right.}{6ia^{\frac{3}{2}}b^4\sqrt{\frac{1}{b}}+6i\sqrt{a}\,b^5x} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(2*A*sqrt(x) + 2*B*x**(3/2)/3), Eq(a, 0) & Eq(b, 0)), ((2*A*
x**(5/2)/5 + 2*B*x**(7/2)/7)/a**2, Eq(b, 0)), ((2*A*sqrt(x) + 2*B*x**(3/2)/
3)/b**2, Eq(a, 0)), (18*I*A*a**(3/2)*b**2*sqrt(x)*sqrt(1/b)/(6*I*a**(3/2)*b
**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 12*I*A*sqrt(a)*b**3*x**(3/2
)*sqrt(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) -
9*A*a**2*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b)
 + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 9*A*a**2*b*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) - 9*A*a*
b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6
*I*sqrt(a)*b**5*x*sqrt(1/b)) + 9*A*a*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) - 30*I*B*a
**(5/2)*b*sqrt(x)*sqrt(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5
*x*sqrt(1/b)) - 20*I*B*a**(3/2)*b**2*x**(3/2)*sqrt(1/b)/(6*I*a**(3/2)*b**4*
sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 4*I*B*sqrt(a)*b**3*x**(5/2)*sqr
t(1/b)/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 15*B*
a**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I
*sqrt(a)*b**5*x*sqrt(1/b)) - 15*B*a**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)) + 15*B*a**2*b*x
*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqr
t(a)*b**5*x*sqrt(1/b)) - 15*B*a**2*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
6*I*a**(3/2)*b**4*sqrt(1/b) + 6*I*sqrt(a)*b**5*x*sqrt(1/b)), True))
```

3.760 $\int \frac{\sqrt{x}\,(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=85

$$\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}-\frac{\sqrt{x}\,(Ab-3aB)}{ab^2}+\frac{x^{3/2}(Ab-aB)}{ab(a+bx)}$$

```
[Out] (A*b-B*a)*x^(3/2)/a/b/(b*x+a)+(A*b-3*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b
^(5/2)/a^(1/2)-(A*b-3*B*a)*x^(1/2)/a/b^2
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 50, 63, 205}

$$-\frac{\sqrt{x}\,(Ab-3aB)}{ab^2}+\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}+\frac{x^{3/2}(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((A*b - 3*a*B)*Sqrt[x])/(a*b^2)) + ((A*b - a*B)*x^(3/2))/(a*b*(a + b*x))
+ ((A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(a+bx)^2}\,dx\\
&= \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} - \frac{\left(\frac{Ab}{2}-\frac{3aB}{2}\right)\int \frac{\sqrt{x}}{a+bx}\,dx}{ab}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2b^2}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{b^2}\\
&= -\frac{(Ab-3aB)\sqrt{x}}{ab^2} + \frac{(Ab-aB)x^{3/2}}{ab(a+bx)} + \frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 67, normalized size = 0.79

$$\frac{(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{5/2}} + \frac{\sqrt{x}\,(3aB-Ab+2bBx)}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (Sqrt[x]*(-(A*b) + 3*a*B + 2*b*B*x))/(b^2*(a + b*x)) + ((A*b - 3*a*B)*ArcTa
n[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(5/2))
```

fricas [A] time = 0.96, size = 198, normalized size = 2.33

$$\left[\frac{\left(3\,Ba^2-Aab+\left(3\,Bab-Ab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(2\,Bab^2x+3\,Ba^2b-Aab^2\right)\sqrt{x}}{2\left(ab^4x+a^2b^3\right)}, \frac{\left(3\,Ba^2-Aab\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [1/2*((3*B*a^2 - A*a*b + (3*B*a*b - A*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*s
qrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(2*B*a*b^2*x + 3*B*a^2*b - A*a*b^2)*sqrt(
x))/(a*b^4*x + a^2*b^3), ((3*B*a^2 - A*a*b + (3*B*a*b - A*b^2)*x)*sqrt(a*b)
*arctan(sqrt(a*b)/(b*sqrt(x))) + (2*B*a*b^2*x + 3*B*a^2*b - A*a*b^2)*sqrt(x
))/(a*b^4*x + a^2*b^3)]
```

giac [A] time = 0.16, size = 65, normalized size = 0.76

$$\frac{2\,B\sqrt{x}}{b^2} - \frac{(3\,Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^2} + \frac{Ba\sqrt{x}-Ab\sqrt{x}}{(bx+a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^2 - (3*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2)
 + (B*a*sqrt(x) - A*b*sqrt(x))/((b*x + a)*b^2)
```

maple [A] time = 0.08, size = 87, normalized size = 1.02

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b}-\frac{3Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{2}}-\frac{A\sqrt{x}}{(bx+a)\,b}+\frac{Ba\sqrt{x}}{(bx+a)\,b^{2}}+\frac{2B\sqrt{x}}{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*B/b^2*x^(1/2)-1/b*x^(1/2)/(b*x+a)*A+1/b^2*x^(1/2)/(b*x+a)*B*a+1/b/(a*b)^(
1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*B*a
```

maxima [A] time = 1.33, size = 65, normalized size = 0.76

$$\frac{(Ba-Ab)\sqrt{x}}{b^{3}x+ab^{2}}+\frac{2\,B\sqrt{x}}{b^{2}}-\frac{(3\,Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*a - A*b)*sqrt(x)/(b^3*x + a*b^2) + 2*B*sqrt(x)/b^2 - (3*B*a - A*b)*arcta
n(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2)
```

mupad [B] time = 0.09, size = 62, normalized size = 0.73

$$\frac{2\,B\,\sqrt{x}}{b^{2}}-\frac{\sqrt{x}\;(A\,b-B\,a)}{x\,b^{3}+a\,b^{2}}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)(A\,b-3\,B\,a)}{\sqrt{a}\;b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*B*x^(1/2))/b^2 - (x^(1/2)*(A*b - B*a))/(a*b^2 + b^3*x) + (atan((b^(1/2)*
x^(1/2))/a^(1/2))*(A*b - 3*B*a))/(a^(1/2)*b^(5/2))
```

sympy [A] time = 10.57, size = 782, normalized size = 9.20

$$\begin{cases}\tilde{\infty}\left(-\frac{2A}{\sqrt{x}}+2B\sqrt{x}\right)\\ \frac{\frac{2Ax^{\frac{3}{2}}}{3}+\frac{2Bx^{\frac{5}{2}}}{5}}{a^{2}}\\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{b^{2}}\\ -\frac{2iA\sqrt{a}\,b^{2}\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{3}{2}}b^{3}\sqrt{\frac{1}{b}}+2i\sqrt{a}\,b^{4}x\sqrt{\frac{1}{b}}}+\frac{Aab\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{3}{2}}b^{3}\sqrt{\frac{1}{b}}+2i\sqrt{a}\,b^{4}x\sqrt{\frac{1}{b}}}-\frac{Aab\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{3}{2}}b^{3}\sqrt{\frac{1}{b}}+2i\sqrt{a}\,b^{4}x\sqrt{\frac{1}{b}}}+\frac{Ab^{2}x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{3}{2}}b^{3}\sqrt{\frac{1}{b}}+2i\sqrt{a}\,b^{4}x\sqrt{\frac{1}{b}}}-\frac{Ab^{2}x\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\right.}{2ia^{\frac{3}{2}}b^{3}\sqrt{\frac{1}{b}}+2i\sqrt{a}\,b^{4}x}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2*A*x*
*(3/2)/3 + 2*B*x**(5/2)/5)/a**2, Eq(b, 0)), ((-2*A/sqrt(x) + 2*B*sqrt(x))/b
**2, Eq(a, 0)), (-2*I*A*sqrt(a)*b**2*sqrt(x)*sqrt(1/b)/(2*I*a**(3/2)*b**3*s
qrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) + A*a*b*log(-I*sqrt(a)*sqrt(1/b) +
 sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - A*
a*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*s
qrt(a)*b**4*x*sqrt(1/b)) + A*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*
I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - A*b**2*x*log(I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**
4*x*sqrt(1/b)) + 6*I*B*a**(3/2)*b*sqrt(x)*sqrt(1/b)/(2*I*a**(3/2)*b**3*sqrt
(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) + 4*I*B*sqrt(a)*b**2*x**(3/2)*sqrt(1/
b)/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - 3*B*a**2*
log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt
(a)*b**4*x*sqrt(1/b)) + 3*B*a**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a*
*(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)) - 3*B*a*b*x*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*
x*sqrt(1/b)) + 3*B*a*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(3/2)*b
**3*sqrt(1/b) + 2*I*sqrt(a)*b**4*x*sqrt(1/b)), True))
```

3.761 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=63

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}+\frac{\sqrt{x}\,(Ab-aB)}{ab(a+bx)}$$

```
[Out] (A*b+B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(3/2)/b^(3/2)+(A*b-B*a)*x^(1/2)
/a/b/(b*x+a)
```

Rubi [A] time = 0.03, antiderivative size = 63, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.138$, Rules used = $\{27, 78, 63, 205\}$

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}+\frac{\sqrt{x}\,(Ab-aB)}{ab(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(a*b*(a + b*x)) + ((A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/(a^(3/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{\sqrt{x}\,(a+bx)^2}\,dx \\
&= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2ab} \\
&= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{ab} \\
&= \frac{(Ab-aB)\sqrt{x}}{ab(a+bx)} + \frac{(Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 63, normalized size = 1.00

$$
\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}b^{3/2}} + \frac{\sqrt{x}\,(Ab-aB)}{ab(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(a*b*(a + b*x)) + ((A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x
])/Sqrt[a]])/(a^(3/2)*b^(3/2))
```

fricas [A] time = 0.89, size = 177, normalized size = 2.81

$$
\left[-\frac{\left(Ba^2+Aab+\left(Bab+Ab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(Ba^2b-Aab^2\right)\sqrt{x}}{2\left(a^2b^3x+a^3b^2\right)}, -\frac{\left(Ba^2+Aab+\left(Bab+Ab\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((B*a^2 + A*a*b + (B*a*b + A*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(B*a^2*b - A*a*b^2)*sqrt(x))/(a^2*b^3*x + a^
3*b^2), -((B*a^2 + A*a*b + (B*a*b + A*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b
*sqrt(x))) + (B*a^2*b - A*a*b^2)*sqrt(x))/(a^2*b^3*x + a^3*b^2)]
```

giac [A] time = 0.19, size = 60, normalized size = 0.95

$$
\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,ab} - \frac{Ba\sqrt{x}-Ab\sqrt{x}}{(bx+a)ab}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="giac")
```

```
[Out] (B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b) - (B*a*sqrt(x) - A*
b*sqrt(x))/((b*x + a)*a*b)
```

maple [A] time = 0.07, size = 69, normalized size = 1.10

$$
\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a} + \frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;b} + \frac{(Ab-Ba)\sqrt{x}}{(bx+a)\,ab}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x)
```

```
[Out] (A*b-B*a)*x^(1/2)/a/b/(b*x+a)+1/a/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*A+1/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.43, size = 58, normalized size = 0.92

$$-\frac{(Ba-Ab)\sqrt{x}}{ab^2x+a^2b}+\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -(B*a - A*b)*sqrt(x)/(a*b^2*x + a^2*b) + (B*a + A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*a*b)
```

mupad [**B**] time = 1.18, size = 51, normalized size = 0.81

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(A\,b+B\,a\right)}{a^{3/2}\,b^{3/2}}+\frac{\sqrt{x}\,\left(A\,b-B\,a\right)}{a\,b\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + B*a))/(a^(3/2)*b^(3/2)) + (x^(1/2)*
(A*b - B*a))/(a*b*(a + b*x))
```

sympy [**A**] time = 8.36, size = 716, normalized size = 11.37

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}\right) \\ \frac{2A\sqrt{x}+\frac{2Bx^{\frac{3}{2}}}{3}}{a^2} \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{b^2} \\ \frac{2iA\sqrt{a}b^2\sqrt{x}\sqrt{\frac{1}{b}}}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Aab\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Aab\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}+\frac{Ab^2x\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}-\frac{Ab^2x\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{5}{2}}b^2\sqrt{\frac{1}{b}}+2ia^{\frac{3}{2}}b^3x\sqrt{\frac{1}{b}}}- \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2
*A*sqrt(x) + 2*B*x**(3/2)/3)/a**2, Eq(b, 0)), ((-2*A/(3*x**(3/2)) - 2*B/sqr
t(x))/b**2, Eq(a, 0)), (2*I*A*sqrt(a)*b**2*sqrt(x)*sqrt(1/b)/(2*I*a**(5/2)*
b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + A*a*b*log(-I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/
b)) - A*a*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b)
 + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + A*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) - A*b**
2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a
**(3/2)*b**3*x*sqrt(1/b)) - 2*I*B*a**(3/2)*b*sqrt(x)*sqrt(1/b)/(2*I*a**(5/2
)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + B*a**2*log(-I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt
(1/b)) - B*a**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(
1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) + B*a*b*x*log(-I*sqrt(a)*sqrt(1/b) +
sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I*a**(3/2)*b**3*x*sqrt(1/b)) - B*
a*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(5/2)*b**2*sqrt(1/b) + 2*I
*a**(3/2)*b**3*x*sqrt(1/b)), True))
```

3.762 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=88

$$-\frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}-\frac{3Ab-aB}{a^2b\sqrt{x}}+\frac{Ab-aB}{ab\sqrt{x}\,(a+bx)}$$

```
[Out] -(3*A*b-B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(5/2)/b^(1/2)+(-3*A*b+B*a)/a
^2/b/x^(1/2)+(A*b-B*a)/a/b/(b*x+a)/x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = $\{27, 78, 51, 63, 205\}$

$$-\frac{3Ab-aB}{a^2b\sqrt{x}}-\frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}+\frac{Ab-aB}{ab\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((3*A*b - a*B)/(a^2*b*Sqrt[x])) + (A*b - a*B)/(a*b*Sqrt[x]*(a + b*x)) - ((
3*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(5/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^{3/2}(a+bx)^2}\,dx\\
&= \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{\left(-\frac{3Ab}{2}+\frac{aB}{2}\right)\int \frac{1}{x^{3/2}(a+bx)}\,dx}{ab}\\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2a^2}\\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\,\text{Subst}\left(\int \frac{1}{a+bx^2}\,dx, x, \sqrt{x}\right)}{a^2}\\
&= -\frac{3Ab-aB}{a^2b\sqrt{x}} + \frac{Ab-aB}{ab\sqrt{x}\,(a+bx)} - \frac{(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{b}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.67

$$
\frac{(a+bx)(aB-3Ab)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{bx}{a}\right)+a(Ab-aB)}{a^2b\sqrt{x}\,(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (a*(A*b - a*B) + (-3*A*b + a*B)*(a + b*x)*Hypergeometric2F1[-1/2, 1, 1/2, -
((b*x)/a)])/(a^2*b*Sqrt[x]*(a + b*x))
```

fricas [A] time = 0.89, size = 215, normalized size = 2.44

$$
\left[\frac{\left(\left(Bab-3\,Ab^2\right)x^2+\left(Ba^2-3\,Aab\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)-2\left(2\,Aa^2b-\left(Ba^2b-3\,Aab^2\right)x\right)\sqrt{x}}{2\left(a^3b^2x^2+a^4bx\right)}, -\frac{\left(\left(Ba\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [1/2*(((B*a*b - 3*A*b^2)*x^2 + (B*a^2 - 3*A*a*b)*x)*sqrt(-a*b)*log((b*x - a
 + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(2*A*a^2*b - (B*a^2*b - 3*A*a*b^2)*
x)*sqrt(x))/(a^3*b^2*x^2 + a^4*b*x), -(((B*a*b - 3*A*b^2)*x^2 + (B*a^2 - 3*
A*a*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (2*A*a^2*b - (B*a^2*b -
 3*A*a*b^2)*x)*sqrt(x))/(a^3*b^2*x^2 + a^4*b*x)]
```

giac [A] time = 0.16, size = 60, normalized size = 0.68

$$
\frac{(Ba-3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^2}+\frac{Bax-3\,Abx-2\,Aa}{\left(bx^{\frac{3}{2}}+a\sqrt{x}\right)a^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*a - 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + (B*a*x - 3*A*b*
x - 2*A*a)/((b*x^(3/2) + a*sqrt(x))*a^2)
```

maple **[A]** time = 0.09, size = 87, normalized size = 0.99

$$-\frac{3Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^{2}}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a}-\frac{Ab\sqrt{x}}{\left(bx+a\right)a^{2}}+\frac{B\sqrt{x}}{\left(bx+a\right)a}-\frac{2A}{a^{2}\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/a^2*x^(1/2)/(b*x+a)*A*b+1/a*x^(1/2)/(b*x+a)*B-3/a^2/(a*b)^(1/2)*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*A*b+1/a/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))
*B-2*A/a^2/x^(1/2)
```

maxima **[A]** time = 1.41, size = 65, normalized size = 0.74

$$-\frac{2\,Aa-(Ba-3\,Ab)x}{a^{2}bx^{\frac{3}{2}}+a^{3}\sqrt{x}}+\frac{(Ba-3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -(2*A*a - (B*a - 3*A*b)*x)/(a^2*b*x^(3/2) + a^3*sqrt(x)) + (B*a - 3*A*b)*ar
ctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2)
```

mupad **[B]** time = 1.17, size = 65, normalized size = 0.74

$$-\frac{\frac{2\,A}{a}+\frac{x\,(3\,A\,b-B\,a)}{a^{2}}}{a\,\sqrt{x}+b\,x^{3/2}}-\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(3\,A\,b-B\,a)}{a^{5/2}\,\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*A)/a + (x*(3*A*b - B*a))/a^2)/(a*x^(1/2) + b*x^(3/2)) - (atan((b^(1/2
)*x^(1/2))/a^(1/2))*(3*A*b - B*a))/(a^(5/2)*b^(1/2))
```

sympy **[A]** time = 19.07, size = 884, normalized size = 10.05

$$\begin{cases}\tilde{\infty}\left(-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}\right)\\ \frac{-\frac{2A}{\sqrt{x}}+2B\sqrt{x}}{a^{2}}\\ \frac{-\frac{2A}{5x^{\frac{5}{2}}}-\frac{2B}{3x^{\frac{3}{2}}}}{b^{2}}\\ -\frac{4iAa^{\frac{3}{2}}b\sqrt{\frac{1}{b}}}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}+2ia^{\frac{5}{2}}b^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}-\frac{6iA\sqrt{a}\,b^{2}x\sqrt{\frac{1}{b}}}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}+2ia^{\frac{5}{2}}b^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}-\frac{3Aab\sqrt{x}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}+2ia^{\frac{5}{2}}b^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}+\frac{3Aab\sqrt{x}\log\left(i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{2ia^{\frac{7}{2}}b\sqrt{x}\sqrt{\frac{1}{b}}+2ia^{\frac{5}{2}}b^{2}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}}-\frac{3Ab^{2}x^{\frac{3}{2}}}{2ia^{\frac{7}{2}}b\sqrt{x}}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/sqrt(x) + 2*B*sqrt(x))/a**2, Eq(b, 0)), ((-2*A/(5*x**(5/2)) - 2*B/
(3*x**(3/2)))/b**2, Eq(a, 0)), (-4*I*A*a**(3/2)*b*sqrt(1/b)/(2*I*a**(7/2)*b
*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - 6*I*A*sqrt(a)*
b**2*x*sqrt(1/b)/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(
3/2)*sqrt(1/b)) - 3*A*a*b*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*
a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + 3*A*
a*b*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt
(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - 3*A*b**2*x**(3/2)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)
*b**2*x**(3/2)*sqrt(1/b)) + 3*A*b**2*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1
/b)) + 2*I*B*a**(3/2)*b*x*sqrt(1/b)/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I
*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + B*a**2*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b
) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)
*sqrt(1/b)) - B*a**2*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/
2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) + B*a*b*x**(
3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b)
+ 2*I*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)) - B*a*b*x**(3/2)*log(I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(2*I*a**(7/2)*b*sqrt(x)*sqrt(1/b) + 2*I*a**(5/2)*b**2*x**(
3/2)*sqrt(1/b)), True))
```

3.763 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=107

$$\frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}-\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}$$

```
[Out] 1/3*(-5*A*b+3*B*a)/a^2/b/x^(3/2)+(A*b-B*a)/a/b/x^(3/2)/(b*x+a)+(5*A*b-3*B*a
)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*b^(1/2)/a^(7/2)+(5*A*b-3*B*a)/a^3/x^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{27, 78, 51, 63, 205\}$

$$-\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}+\frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(5*A*b - 3*a*B)/(3*a^2*b*x^(3/2)) + (5*A*b - 3*a*B)/(a^3*Sqrt[x]) + (A*b -
 a*B)/(a*b*x^(3/2)*(a + b*x)) + (Sqrt[b]*(5*A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sq
rt[x])/Sqrt[a]])/a^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^{5/2}(a+bx)^2}\,dx\\
&= \frac{Ab-aB}{abx^{3/2}(a+bx)}-\frac{\left(-\frac{5Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)}\,dx}{ab}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}-\frac{(5Ab-3aB)\int \frac{1}{x^{3/2}(a+bx)}\,dx}{2a^2}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}+\frac{(b(5Ab-3aB))\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{2a^3}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}+\frac{(b(5Ab-3aB))\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}}{a^3}\\
&= -\frac{5Ab-3aB}{3a^2bx^{3/2}}+\frac{5Ab-3aB}{a^3\sqrt{x}}+\frac{Ab-aB}{abx^{3/2}(a+bx)}+\frac{\sqrt{b}\,(5Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.60

$$
\frac{(a+bx)(3aB-5Ab)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{bx}{a}\right)+3a(Ab-aB)}{3a^2bx^{3/2}(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (3*a*(A*b - a*B) + (-5*A*b + 3*a*B)*(a + b*x)*Hypergeometric2F1[-3/2, 1, -1
/2, -((b*x)/a)])/(3*a^2*b*x^(3/2)*(a + b*x))
```

fricas [A] time = 0.94, size = 262, normalized size = 2.45

$$
\left[-\frac{3\left(\left(3\,Bab-5\,Ab^2\right)x^3+\left(3\,Ba^2-5\,Aab\right)x^2\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}\,\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(2\,Aa^2+3\left(3\,Bab-5\,Ab^2\right)x^2+2}{6\left(a^3bx^3+a^4x^2\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((3*B*a*b - 5*A*b^2)*x^3 + (3*B*a^2 - 5*A*a*b)*x^2)*sqrt(-b/a)*log
((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(2*A*a^2 + 3*(3*B*a*b -
5*A*b^2)*x^2 + 2*(3*B*a^2 - 5*A*a*b)*x)*sqrt(x))/(a^3*b*x^3 + a^4*x^2), 1/3
*(3*((3*B*a*b - 5*A*b^2)*x^3 + (3*B*a^2 - 5*A*a*b)*x^2)*sqrt(b/a)*arctan(a*
sqrt(b/a)/(b*sqrt(x))) - (2*A*a^2 + 3*(3*B*a*b - 5*A*b^2)*x^2 + 2*(3*B*a^2
- 5*A*a*b)*x)*sqrt(x))/(a^3*b*x^3 + a^4*x^2)]
```

giac [A] time = 0.16, size = 85, normalized size = 0.79

$$
-\frac{\left(3\,Bab-5\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^3}-\frac{Bab\sqrt{x}-Ab^2\sqrt{x}}{(bx+a)a^3}-\frac{2\,(3\,Bax-6\,Abx+Aa)}{3\,a^3x^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(3*B*a*b - 5*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - (B*a*b*s
qrt(x) - A*b^2*sqrt(x))/((b*x + a)*a^3) - 2/3*(3*B*a*x - 6*A*b*x + A*a)/(a^
3*x^(3/2))
```

maple [A] time = 0.07, size = 113, normalized size = 1.06

$$\frac{5A\,b^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^3}-\frac{3Bb\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^2}+\frac{A\,b^2\sqrt{x}}{(bx+a)\,a^3}-\frac{Bb\sqrt{x}}{(bx+a)\,a^2}+\frac{4Ab}{a^3\sqrt{x}}-\frac{2B}{a^2\sqrt{x}}-\frac{2A}{3a^2x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] b^2/a^3*x^(1/2)/(b*x+a)*A-b/a^2*x^(1/2)/(b*x+a)*B+5*b^2/a^3/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-3*b/a^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x
^(1/2))*B-2/3*A/a^2/x^(3/2)+4/a^3/x^(1/2)*A*b-2*B/a^2/x^(1/2)
```

maxima [A] time = 1.51, size = 93, normalized size = 0.87

$$-\frac{2\,Aa^2+3\left(3\,Bab-5\,Ab^2\right)x^2+2\left(3\,Ba^2-5\,Aab\right)x}{3\left(a^3bx^{\frac{5}{2}}+a^4x^{\frac{3}{2}}\right)}-\frac{\left(3\,Bab-5\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/3*(2*A*a^2 + 3*(3*B*a*b - 5*A*b^2)*x^2 + 2*(3*B*a^2 - 5*A*a*b)*x)/(a^3*b
*x^(5/2) + a^4*x^(3/2)) - (3*B*a*b - 5*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3)
```

mupad [B] time = 1.18, size = 81, normalized size = 0.76

$$\frac{\frac{2\,x\,(5\,A\,b-3\,B\,a)}{3\,a^2}-\frac{2\,A}{3\,a}+\frac{b\,x^2\,(5\,A\,b-3\,B\,a)}{a^3}}{a\,x^{3/2}+b\,x^{5/2}}+\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(5\,A\,b-3\,B\,a)}{a^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((2*x*(5*A*b - 3*B*a))/(3*a^2) - (2*A)/(3*a) + (b*x^2*(5*A*b - 3*B*a))/a^3)
/(a*x^(3/2) + b*x^(5/2)) + (b^(1/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(5*A*b
- 3*B*a))/a^(7/2)
```

sympy [A] time = 53.23, size = 983, normalized size = 9.19

$$\begin{cases} \tilde{\infty}\left(-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}\right) \\ \frac{-\frac{2A}{7x^{\frac{7}{2}}}-\frac{2B}{5x^{\frac{5}{2}}}}{b^2} \\ \frac{-\frac{2A}{3x^{\frac{3}{2}}}-\frac{2B}{\sqrt{x}}}{a^2} \\ -\frac{4iAa^{\frac{5}{2}}\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{20iAa^{\frac{3}{2}}bx\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{30iA\sqrt{a}b^2x^2\sqrt{\frac{1}{b}}}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}+\frac{15Aabx^{\frac{3}{2}}\log\left(-i\sqrt{a}\sqrt{\frac{1}{b}}+\sqrt{x}\right)}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6ia^{\frac{7}{2}}bx^{\frac{5}{2}}\sqrt{\frac{1}{b}}}-\frac{15Aabx^{\frac{3}{2}}\log\left(i\right.}{6ia^{\frac{9}{2}}x^{\frac{3}{2}}\sqrt{\frac{1}{b}}+6i} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2)))/b**2, Eq(a, 0)), ((-2*A/(3*x**(3/
2)) - 2*B/sqrt(x))/a**2, Eq(b, 0)), (-4*I*A*a**(5/2)*sqrt(1/b)/(6*I*a**(9/2
)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 20*I*A*a**(3/2)
*b*x*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*s
qrt(1/b)) + 30*I*A*sqrt(a)*b**2*x**2*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(
1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 15*A*a*b*x**(3/2)*log(-I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x*
*(5/2)*sqrt(1/b)) - 15*A*a*b*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6
*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 15*A*
b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sq
rt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) - 15*A*b**2*x**(5/2)*log(I*sqr
t(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b
*x**(5/2)*sqrt(1/b)) - 12*I*B*a**(5/2)*x*sqrt(1/b)/(6*I*a**(9/2)*x**(3/2)*s
qrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) - 18*I*B*a**(3/2)*b*x**2*sqrt
(1/b)/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b))
 - 9*B*a**2*x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(
3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)) + 9*B*a**2*x**(3/2)*log
(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(
7/2)*b*x**(5/2)*sqrt(1/b)) - 9*B*a*b*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sq
rt(x))/(6*I*a**(9/2)*x**(3/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)
) + 9*B*a*b*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(6*I*a**(9/2)*x**(3
/2)*sqrt(1/b) + 6*I*a**(7/2)*b*x**(5/2)*sqrt(1/b)), True))
```

3.764 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=131

$$-\frac{b^{3/2}(7Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}-\frac{b(7Ab-5aB)}{a^4\sqrt{x}}+\frac{7Ab-5aB}{3a^3x^{3/2}}-\frac{7Ab-5aB}{5a^2bx^{5/2}}+\frac{Ab-aB}{abx^{5/2}(a+bx)}$$

```
[Out] 1/5*(-7*A*b+5*B*a)/a^2/b/x^(5/2)+1/3*(7*A*b-5*B*a)/a^3/x^(3/2)+(A*b-B*a)/a/
b/x^(5/2)/(b*x+a)-b^(3/2)*(7*A*b-5*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(
9/2)-b*(7*A*b-5*B*a)/a^4/x^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{b^{3/2}(7Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}}+\frac{7Ab-5aB}{3a^3x^{3/2}}-\frac{7Ab-5aB}{5a^2bx^{5/2}}-\frac{b(7Ab-5aB)}{a^4\sqrt{x}}+\frac{Ab-aB}{abx^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(7*A*b - 5*a*B)/(5*a^2*b*x^(5/2)) + (7*A*b - 5*a*B)/(3*a^3*x^(3/2)) - (b*(
7*A*b - 5*a*B))/(a^4*Sqrt[x]) + (A*b - a*B)/(a*b*x^(5/2)*(a + b*x)) - (b^(3
/2)*(7*A*b - 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/a^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{x^{7/2}(a+bx)^2}\,dx$$

$$= \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(-\frac{7Ab}{2}+\frac{5aB}{2}\right)\int \frac{1}{x^{7/2}(a+bx)}\,dx}{ab}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{(7Ab-5aB)\int \frac{1}{x^{5/2}(a+bx)}\,dx}{2a^2}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} + \frac{(b(7Ab-5aB))\int \frac{1}{x^{3/2}(a+bx)}\,dx}{2a^3}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(b^2(7Ab-5a\right.}{}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{\left(b^2(7Ab-5a\right.}{}$$

$$= -\frac{7Ab-5aB}{5a^2bx^{5/2}} + \frac{7Ab-5aB}{3a^3x^{3/2}} - \frac{b(7Ab-5aB)}{a^4\sqrt{x}} + \frac{Ab-aB}{abx^{5/2}(a+bx)} - \frac{b^{3/2}(7Ab-5a}{}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.49

$$\frac{(a+bx)(5aB-7Ab)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{bx}{a}\right)+5a(Ab-aB)}{5a^2bx^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (5*a*(A*b - a*B) + (-7*A*b + 5*a*B)*(a + b*x)*Hypergeometric2F1[-5/2, 1, -3
/2, -((b*x)/a)])/(5*a^2*b*x^(5/2)*(a + b*x))
```

fricas [A] time = 0.85, size = 319, normalized size = 2.44

$$\left[-\frac{15\left(\left(5\,Bab^2-7\,Ab^3\right)x^4+\left(5\,Ba^2b-7\,Aab^2\right)x^3\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx-2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(6\,Aa^3-15\left(5\,Bab^2-7\,Ab^3\right)\right.}{30\left(a^4bx^4+a^5x^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/30*(15*((5*B*a*b^2 - 7*A*b^3)*x^4 + (5*B*a^2*b - 7*A*a*b^2)*x^3)*sqrt(-
b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(6*A*a^3 - 15*(5
*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*x^2 + 2*(5*B*a^3 - 7*A
*a^2*b)*x)*sqrt(x))/(a^4*b*x^4 + a^5*x^3), -1/15*(15*((5*B*a*b^2 - 7*A*b^3)
*x^4 + (5*B*a^2*b - 7*A*a*b^2)*x^3)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x)
)) + (6*A*a^3 - 15*(5*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*x
^2 + 2*(5*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b*x^4 + a^5*x^3)]
```

giac [A] time = 0.16, size = 110, normalized size = 0.84

$$\frac{\left(5\,Bab^{2}-7\,Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{4}}+\frac{Bab^{2}\sqrt{x}-Ab^{3}\sqrt{x}}{(bx+a)a^{4}}+\frac{2\left(30\,Babx^{2}-45\,Ab^{2}x^{2}-5\,Ba^{2}x+10\,Aabx-3\,Aa^{2}\right)}{15\,a^{4}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (5*B*a*b^2 - 7*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + (B*a*b^
2*sqrt(x) - A*b^3*sqrt(x))/((b*x + a)*a^4) + 2/15*(30*B*a*b*x^2 - 45*A*b^2*
x^2 - 5*B*a^2*x + 10*A*a*b*x - 3*A*a^2)/(a^4*x^(5/2))
```

maple [A] time = 0.07, size = 139, normalized size = 1.06

$$-\frac{7A\,b^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^{4}}+\frac{5B\,b^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^{3}}-\frac{A\,b^{3}\sqrt{x}}{(bx+a)\,a^{4}}+\frac{B\,b^{2}\sqrt{x}}{(bx+a)\,a^{3}}-\frac{6A\,b^{2}}{a^{4}\sqrt{x}}+\frac{4Bb}{a^{3}\sqrt{x}}+\frac{4Ab}{3a^{3}x^{\frac{3}{2}}}-\frac{2B}{3a^{2}x^{\frac{3}{2}}}-\frac{2A}{5a^{2}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/a^4*b^3*x^(1/2)/(b*x+a)*A+1/a^3*b^2*x^(1/2)/(b*x+a)*B-7/a^4*b^3/(a*b)^(1
/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+5/a^3*b^2/(a*b)^(1/2)*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*B-2/5*A/a^2/x^(5/2)+4/3/a^3/x^(3/2)*A*b-2/3/a^2/x^(3/2)*B-
6*b^2/a^4/x^(1/2)*A+4*b/a^3/x^(1/2)*B
```

maxima [A] time = 1.32, size = 118, normalized size = 0.90

$$-\frac{6\,Aa^{3}-15\left(5\,Bab^{2}-7\,Ab^{3}\right)x^{3}-10\left(5\,Ba^{2}b-7\,Aab^{2}\right)x^{2}+2\left(5\,Ba^{3}-7\,Aa^{2}b\right)x}{15\left(a^{4}bx^{\frac{7}{2}}+a^{5}x^{\frac{5}{2}}\right)}+\frac{\left(5\,Bab^{2}-7\,Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/15*(6*A*a^3 - 15*(5*B*a*b^2 - 7*A*b^3)*x^3 - 10*(5*B*a^2*b - 7*A*a*b^2)*
x^2 + 2*(5*B*a^3 - 7*A*a^2*b)*x)/(a^4*b*x^(7/2) + a^5*x^(5/2)) + (5*B*a*b^2
 - 7*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4)
```

mupad [B] time = 1.19, size = 103, normalized size = 0.79

$$-\frac{\frac{2\,A}{5\,a}-\frac{2\,x\,(7\,A\,b-5\,B\,a)}{15\,a^{2}}+\frac{b^{2}\,x^{3}\,(7\,A\,b-5\,B\,a)}{a^{4}}+\frac{2\,b\,x^{2}\,(7\,A\,b-5\,B\,a)}{3\,a^{3}}}{a\,x^{5/2}+b\,x^{7/2}}-\frac{b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(7\,A\,b-5\,B\,a)}{a^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*A)/(5*a) - (2*x*(7*A*b - 5*B*a))/(15*a^2) + (b^2*x^3*(7*A*b - 5*B*a))
/a^4 + (2*b*x^2*(7*A*b - 5*B*a))/(3*a^3))/(a*x^(5/2) + b*x^(7/2)) - (b^(3/2
)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(7*A*b - 5*B*a))/a^(9/2)
```

sympy [A] time = 155.21, size = 1127, normalized size = 8.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/a**2, Eq(b, 0)), ((-2*A/(9*x**(9/
2)) - 2*B/(7*x**(7/2)))/b**2, Eq(a, 0)), (-12*I*A*a**(7/2)*sqrt(1/b)/(30*I*
a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 28*I*A
*a**(5/2)*b*x*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*
b*x**(7/2)*sqrt(1/b)) - 140*I*A*a**(3/2)*b**2*x**2*sqrt(1/b)/(30*I*a**(11/2
)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 210*I*A*sqrt(a
)*b**3*x**3*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*
x**(7/2)*sqrt(1/b)) - 105*A*a*b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b
)) + 105*A*a*b**2*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/
2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 105*A*b**3*x*
*(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/
b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 105*A*b**3*x**(7/2)*log(I*sqrt(a
)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b
*x**(7/2)*sqrt(1/b)) - 20*I*B*a**(7/2)*x*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)
*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 100*I*B*a**(5/2)*b*x**2*
sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqr
t(1/b)) + 150*I*B*a**(3/2)*b**2*x**3*sqrt(1/b)/(30*I*a**(11/2)*x**(5/2)*sqr
t(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) + 75*B*a**2*b*x**(5/2)*log(-I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(
9/2)*b*x**(7/2)*sqrt(1/b)) - 75*B*a**2*b*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) +
 sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqr
t(1/b)) + 75*B*a*b**2*x**(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a*
*(11/2)*x**(5/2)*sqrt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)) - 75*B*a*b
**2*x**(7/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(30*I*a**(11/2)*x**(5/2)*sq
rt(1/b) + 30*I*a**(9/2)*b*x**(7/2)*sqrt(1/b)), True))
```

3.765 $\int \frac{A+Bx}{x^{9/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=153

$$\frac{b^{5/2}(9Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{11/2}}+\frac{b^2(9Ab-7aB)}{a^5\sqrt{x}}-\frac{b(9Ab-7aB)}{3a^4x^{3/2}}+\frac{9Ab-7aB}{5a^3x^{5/2}}-\frac{9Ab-7aB}{7a^2bx^{7/2}}+\frac{Ab-aB}{abx^{7/2}(a+bx)}$$

```
[Out] 1/7*(-9*A*b+7*B*a)/a^2/b/x^(7/2)+1/5*(9*A*b-7*B*a)/a^3/x^(5/2)-1/3*b*(9*A*b
-7*B*a)/a^4/x^(3/2)+(A*b-B*a)/a/b/x^(7/2)/(b*x+a)+b^(5/2)*(9*A*b-7*B*a)*arc
tan(b^(1/2)*x^(1/2)/a^(1/2))/a^(11/2)+b^2*(9*A*b-7*B*a)/a^5/x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$\frac{b^2(9Ab-7aB)}{a^5\sqrt{x}}+\frac{b^{5/2}(9Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{11/2}}-\frac{b(9Ab-7aB)}{3a^4x^{3/2}}+\frac{9Ab-7aB}{5a^3x^{5/2}}-\frac{9Ab-7aB}{7a^2bx^{7/2}}+\frac{Ab-aB}{abx^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(9*A*b - 7*a*B)/(7*a^2*b*x^(7/2)) + (9*A*b - 7*a*B)/(5*a^3*x^(5/2)) - (b*(
9*A*b - 7*a*B))/(3*a^4*x^(3/2)) + (b^2*(9*A*b - 7*a*B))/(a^5*Sqrt[x]) + (A*
b - a*B)/(a*b*x^(7/2)*(a + b*x)) + (b^(5/2)*(9*A*b - 7*a*B)*ArcTan[(Sqrt[b]
*Sqrt[x])/Sqrt[a]])/a^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{9/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{x^{9/2}(a+bx)^2}\,dx \\
&= \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{\left(-\frac{9Ab}{2}+\frac{7aB}{2}\right)\int \frac{1}{x^{9/2}(a+bx)}\,dx}{ab} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{(9Ab-7aB)\int \frac{1}{x^{7/2}(a+bx)}\,dx}{2a^2} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} + \frac{(b(9Ab-7aB))\int \frac{1}{x^{5/2}(a+bx)}\,dx}{2a^3} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{Ab-aB}{abx^{7/2}(a+bx)} - \frac{\left(b^2(9Ab-7a\right.}{} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+b} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+b} \\
&= -\frac{9Ab-7aB}{7a^2bx^{7/2}} + \frac{9Ab-7aB}{5a^3x^{5/2}} - \frac{b(9Ab-7aB)}{3a^4x^{3/2}} + \frac{b^2(9Ab-7aB)}{a^5\sqrt{x}} + \frac{Ab-aB}{abx^{7/2}(a+b}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.42

$$\frac{(a+bx)(7aB-9Ab)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};-\frac{bx}{a}\right)+7a(Ab-aB)}{7a^2bx^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (7*a*(A*b - a*B) + (-9*A*b + 7*a*B)*(a + b*x)*Hypergeometric2F1[-7/2, 1, -5
/2, -((b*x)/a)])/(7*a^2*b*x^(7/2)*(a + b*x))
```

fricas [A] time = 0.83, size = 372, normalized size = 2.43

$$\left[-\frac{105\left(\left(7\,Bab^3-9\,Ab^4\right)x^5+\left(7\,Ba^2b^2-9\,Aab^3\right)x^4\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}\,\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(30\,Aa^4+105\left(7\,Bab^3-9\,\right.\right.}{210\left(a^5bx^5+a^6x^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] [-1/210*(105*((7*B*a*b^3 - 9*A*b^4)*x^5 + (7*B*a^2*b^2 - 9*A*a*b^3)*x^4)*sq
rt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(30*A*a^4 +
105*(7*B*a*b^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 14*(7*B*
a^3*b - 9*A*a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b*x^5 +
 a^6*x^4), 1/105*(105*((7*B*a*b^3 - 9*A*b^4)*x^5 + (7*B*a^2*b^2 - 9*A*a*b^3
)*x^4)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (30*A*a^4 + 105*(7*B*a*b
^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 14*(7*B*a^3*b - 9*A*
a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b*x^5 + a^6*x^4)]
```

giac [A] time = 0.17, size = 136, normalized size = 0.89

$$-\frac{\left(7\,Bab^3-9\,Ab^4\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^5}-\frac{Bab^3\sqrt{x}-Ab^4\sqrt{x}}{(bx+a)a^5}-\frac{2\,(315\,Bab^2x^3-420\,Ab^3x^3-70\,Ba^2bx^2+105\,Aab^2x^2+2}{105\,a^5x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] -(7*B*a*b^3 - 9*A*b^4)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) - (B*a*b
^3*sqrt(x) - A*b^4*sqrt(x))/((b*x + a)*a^5) - 2/105*(315*B*a*b^2*x^3 - 420*
A*b^3*x^3 - 70*B*a^2*b*x^2 + 105*A*a*b^2*x^2 + 21*B*a^3*x - 42*A*a^2*b*x +
15*A*a^3)/(a^5*x^(7/2))
```

maple [A] time = 0.08, size = 163, normalized size = 1.07

$$\frac{9A\,b^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^5}-\frac{7B\,b^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\;a^4}+\frac{A\,b^4\sqrt{x}}{(bx+a)\,a^5}-\frac{B\,b^3\sqrt{x}}{(bx+a)\,a^4}+\frac{8A\,b^3}{a^5\sqrt{x}}-\frac{6B\,b^2}{a^4\sqrt{x}}-\frac{2A\,b^2}{a^4x^{\frac{3}{2}}}+\frac{4Bb}{3a^3x^{\frac{3}{2}}}+\frac{4Ab}{5a^3x^{\frac{5}{2}}}-\frac{2B}{5a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/a^5*b^4*x^(1/2)/(b*x+a)*A-1/a^4*b^3*x^(1/2)/(b*x+a)*B+9/a^5*b^4/(a*b)^(1/
2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-7/a^4*b^3/(a*b)^(1/2)*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*B-2/7*A/a^2/x^(7/2)+4/5/a^3/x^(5/2)*A*b-2/5/a^2/x^(5/2)*B-2
*b^2/a^4/x^(3/2)*A+4/3*b/a^3/x^(3/2)*B+8*b^3/a^5/x^(1/2)*A-6*b^2/a^4/x^(1/2
)*B
```

maxima [A] time = 1.36, size = 143, normalized size = 0.93

$$-\frac{30\,Aa^4+105\left(7\,Bab^3-9\,Ab^4\right)x^4+70\left(7\,Ba^2b^2-9\,Aab^3\right)x^3-14\left(7\,Ba^3b-9\,Aa^2b^2\right)x^2+6\left(7\,Ba^4-9\,Aa^3b\right)x}{105\left(a^5bx^{\frac{9}{2}}+a^6x^{\frac{7}{2}}\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] -1/105*(30*A*a^4 + 105*(7*B*a*b^3 - 9*A*b^4)*x^4 + 70*(7*B*a^2*b^2 - 9*A*a*
b^3)*x^3 - 14*(7*B*a^3*b - 9*A*a^2*b^2)*x^2 + 6*(7*B*a^4 - 9*A*a^3*b)*x)/(a
^5*b*x^(9/2) + a^6*x^(7/2)) - (7*B*a*b^3 - 9*A*b^4)*arctan(b*sqrt(x)/sqrt(a
*b))/(sqrt(a*b)*a^5)
```

mupad [B] time = 1.26, size = 121, normalized size = 0.79

$$\frac{\frac{2\,x\,(9\,A\,b-7\,B\,a)}{35\,a^2}-\frac{2\,A}{7\,a}+\frac{2\,b^2\,x^3\,(9\,A\,b-7\,B\,a)}{3\,a^4}+\frac{b^3\,x^4\,(9\,A\,b-7\,B\,a)}{a^5}-\frac{2\,b\,x^2\,(9\,A\,b-7\,B\,a)}{15\,a^3}}{a\,x^{7/2}+b\,x^{9/2}}+\frac{b^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(9\,A\,b-7\,B\,a)}{a^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] ((2*x*(9*A*b - 7*B*a))/(35*a^2) - (2*A)/(7*a) + (2*b^2*x^3*(9*A*b - 7*B*a))
/(3*a^4) + (b^3*x^4*(9*A*b - 7*B*a))/a^5 - (2*b*x^2*(9*A*b - 7*B*a))/(15*a^
3))/(a*x^(7/2) + b*x^(9/2)) + (b^(5/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(9*A
*b - 7*B*a))/a^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.766 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=173

$$-\frac{35\sqrt{a}\,(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8b^{11/2}}+\frac{35\sqrt{x}\,(Ab-3aB)}{8b^5}-\frac{35x^{3/2}(Ab-3aB)}{24ab^4}+\frac{7x^{5/2}(Ab-3aB)}{8ab^3(a+bx)}+\frac{x^{7/2}(Ab-3aB)}{4ab^2(a+bx)^2}+\frac{x^{9/}}{3a}$$

```
[Out] -35/24*(A*b-3*B*a)*x^(3/2)/a/b^4+1/3*(A*b-B*a)*x^(9/2)/a/b/(b*x+a)^3+1/4*(A
*b-3*B*a)*x^(7/2)/a/b^2/(b*x+a)^2+7/8*(A*b-3*B*a)*x^(5/2)/a/b^3/(b*x+a)-35/
8*(A*b-3*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*a^(1/2)/b^(11/2)+35/8*(A*b-3*
B*a)*x^(1/2)/b^5
```

Rubi [**A**] time = 0.08, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{27, 78, 47, 50, 63, 205\}$

$$\frac{x^{7/2}(Ab-3aB)}{4ab^2(a+bx)^2}+\frac{7x^{5/2}(Ab-3aB)}{8ab^3(a+bx)}-\frac{35x^{3/2}(Ab-3aB)}{24ab^4}+\frac{35\sqrt{x}\,(Ab-3aB)}{8b^5}-\frac{35\sqrt{a}\,(Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8b^{11/2}}+\frac{x^{9/2}(}{3ab}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*(A*b - 3*a*B)*Sqrt[x])/(8*b^5) - (35*(A*b - 3*a*B)*x^(3/2))/(24*a*b^4)
+ ((A*b - a*B)*x^(9/2))/(3*a*b*(a + b*x)^3) + ((A*b - 3*a*B)*x^(7/2))/(4*a*
b^2*(a + b*x)^2) + (7*(A*b - 3*a*B)*x^(5/2))/(8*a*b^3*(a + b*x)) - (35*Sqrt
[a]*(A*b - 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^{7/2}(A+Bx)}{(a+bx)^4}\,dx\\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}-\frac{\left(\frac{3Ab}{2}-\frac{9aB}{2}\right)\int \frac{x^{7/2}}{(a+bx)^3}\,dx}{3ab}\\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}-\frac{(7(Ab-3aB))\int \frac{x^{5/2}}{(a+bx)^2}\,dx}{8ab^2}\\
&= \frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}+\frac{7(Ab-3aB)x^{5/2}}{8ab^3(a+bx)}-\frac{(35(Ab-3aB))\int \frac{x^{3/2}}{a+bx}\,dx}{16ab^3}\\
&= -\frac{35(Ab-3aB)x^{3/2}}{24ab^4}+\frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}+\frac{7(Ab-3aB)x^{5/2}}{8ab^3(a+bx)}+\frac{(35}{}\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5}-\frac{35(Ab-3aB)x^{3/2}}{24ab^4}+\frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}+\frac{7(A}{8a}\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5}-\frac{35(Ab-3aB)x^{3/2}}{24ab^4}+\frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}+\frac{7(A}{8a}\\
&= \frac{35(Ab-3aB)\sqrt{x}}{8b^5}-\frac{35(Ab-3aB)x^{3/2}}{24ab^4}+\frac{(Ab-aB)x^{9/2}}{3ab(a+bx)^3}+\frac{(Ab-3aB)x^{7/2}}{4ab^2(a+bx)^2}+\frac{7(A}{8a}
\end{aligned}
$$

Mathematica [C]   time = 0.03, size = 61, normalized size = 0.35

$$\frac{x^{9/2}\left(\frac{9a^3(Ab-aB)}{(a+bx)^3}+(9aB-3Ab)\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{27a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(9/2)*((9*a^3*(A*b - a*B))/(a + b*x)^3 + (-3*A*b + 9*a*B)*Hypergeometric
2F1[3, 9/2, 11/2, -((b*x)/a)]))/(27*a^4*b)
```

fricas [A]   time = 1.02, size = 467, normalized size = 2.70

$$\left[-\frac{105\left(3\,Ba^{4}-Aa^{3}b+\left(3\,Bab^{3}-Ab^{4}\right)x^{3}+3\left(3\,Ba^{2}b^{2}-Aab^{3}\right)x^{2}+3\left(3\,Ba^{3}b-Aa^{2}b^{2}\right)x\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}}{bx+a}\right.}{48\left(b^{8}x^{3}+3\,a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(105*(3*B*a^4 - A*a^3*b + (3*B*a*b^3 - A*b^4)*x^3 + 3*(3*B*a^2*b^2 -
 A*a*b^3)*x^2 + 3*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt
(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(16*B*b^4*x^4 - 315*B*a^4 + 105*A*a^3*b
- 48*(3*B*a*b^3 - A*b^4)*x^3 - 231*(3*B*a^2*b^2 - A*a*b^3)*x^2 - 280*(3*B*a
^3*b - A*a^2*b^2)*x)*sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^
5), 1/24*(105*(3*B*a^4 - A*a^3*b + (3*B*a*b^3 - A*b^4)*x^3 + 3*(3*B*a^2*b^2
 - A*a*b^3)*x^2 + 3*(3*B*a^3*b - A*a^2*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*s
qrt(a/b)/a) + (16*B*b^4*x^4 - 315*B*a^4 + 105*A*a^3*b - 48*(3*B*a*b^3 - A*b
^4)*x^3 - 231*(3*B*a^2*b^2 - A*a*b^3)*x^2 - 280*(3*B*a^3*b - A*a^2*b^2)*x)*
sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)]
```

giac [A]   time = 0.17, size = 143, normalized size = 0.83

$$\frac{35\left(3\,Ba^{2}-Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,b^{5}}-\frac{165\,Ba^{2}b^{2}x^{\frac{5}{2}}-87\,Aab^{3}x^{\frac{5}{2}}+280\,Ba^{3}bx^{\frac{3}{2}}-136\,Aa^{2}b^{2}x^{\frac{3}{2}}+123\,Ba^{4}\sqrt{x}-57\,Aa^{3}}{24\,(bx+a)^{3}b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 35/8*(3*B*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - 1/24*(
165*B*a^2*b^2*x^(5/2) - 87*A*a*b^3*x^(5/2) + 280*B*a^3*b*x^(3/2) - 136*A*a^
2*b^2*x^(3/2) + 123*B*a^4*sqrt(x) - 57*A*a^3*b*sqrt(x))/((b*x + a)^3*b^5) +
 2/3*(B*b^8*x^(3/2) - 12*B*a*b^7*sqrt(x) + 3*A*b^8*sqrt(x))/b^12
```

maple [A]   time = 0.07, size = 190, normalized size = 1.10

$$\frac{29Aa\,x^{\frac{5}{2}}}{8\,(bx+a)^{3}\,b^{2}}-\frac{55B\,a^{2}x^{\frac{5}{2}}}{8\,(bx+a)^{3}\,b^{3}}+\frac{17A\,a^{2}x^{\frac{3}{2}}}{3\,(bx+a)^{3}\,b^{3}}-\frac{35B\,a^{3}x^{\frac{3}{2}}}{3\,(bx+a)^{3}\,b^{4}}+\frac{19A\,a^{3}\sqrt{x}}{8\,(bx+a)^{3}\,b^{4}}-\frac{41B\,a^{4}\sqrt{x}}{8\,(bx+a)^{3}\,b^{5}}-\frac{35Aa\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;b^{4}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/3/b^4*B*x^(3/2)+2/b^4*A*x^(1/2)-8/b^5*B*a*x^(1/2)+29/8*a/b^2/(b*x+a)^3*x^
(5/2)*A-55/8*a^2/b^3/(b*x+a)^3*x^(5/2)*B+17/3*a^2/b^3/(b*x+a)^3*A*x^(3/2)-3
5/3*a^3/b^4/(b*x+a)^3*B*x^(3/2)+19/8*a^3/b^4/(b*x+a)^3*x^(1/2)*A-41/8*a^4/b
^5/(b*x+a)^3*x^(1/2)*B-35/8*a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*A+105/8*a^2/b^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A]   time = 1.17, size = 161, normalized size = 0.93

$$-\frac{3\left(55\,Ba^{2}b^{2}-29\,Aab^{3}\right)x^{\frac{5}{2}}+8\left(35\,Ba^{3}b-17\,Aa^{2}b^{2}\right)x^{\frac{3}{2}}+3\left(41\,Ba^{4}-19\,Aa^{3}b\right)\sqrt{x}}{24\left(b^{8}x^{3}+3\,ab^{7}x^{2}+3\,a^{2}b^{6}x+a^{3}b^{5}\right)}+\frac{35\left(3\,Ba^{2}-Aab\right)\arctan\left(\frac{b}{\sqrt{}}\right.}{8\,\sqrt{ab}\,b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(3*(55*B*a^2*b^2 - 29*A*a*b^3)*x^(5/2) + 8*(35*B*a^3*b - 17*A*a^2*b^2
)*x^(3/2) + 3*(41*B*a^4 - 19*A*a^3*b)*sqrt(x))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a
^2*b^6*x + a^3*b^5) + 35/8*(3*B*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*b^5) + 2/3*(B*b*x^(3/2) - 3*(4*B*a - A*b)*sqrt(x))/b^5
```

mupad [B] time = 1.22, size = 176, normalized size = 1.02

$$\sqrt{x}\,\left(\frac{2\,A}{b^4}-\frac{8\,B\,a}{b^5}\right)-\frac{x^{5/2}\,\left(\frac{55\,B\,a^2\,b^2}{8}-\frac{29\,A\,a\,b^3}{8}\right)-x^{3/2}\,\left(\frac{17\,A\,a^2\,b^2}{3}-\frac{35\,B\,a^3\,b}{3}\right)+\sqrt{x}\,\left(\frac{41\,B\,a^4}{8}-\frac{19\,A\,a^3\,b}{8}\right)}{a^3\,b^5+3\,a^2\,b^6\,x+3\,a\,b^7\,x^2+b^8\,x^3}+\frac{2\,B\,x^{3/2}}{3\,b^4}+\frac{35}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^(1/2)*((2*A)/b^4 - (8*B*a)/b^5) - (x^(5/2)*((55*B*a^2*b^2)/8 - (29*A*a*b^
3)/8) - x^(3/2)*((17*A*a^2*b^2)/3 - (35*B*a^3*b)/3) + x^(1/2)*((41*B*a^4)/8
 - (19*A*a^3*b)/8))/(a^3*b^5 + b^8*x^3 + 3*a^2*b^6*x + 3*a*b^7*x^2) + (2*B*
x^(3/2))/(3*b^4) + (35*a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/2)*(A*b - 3*B*a))
/(3*B*a^2 - A*a*b))*(A*b - 3*B*a))/(8*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.767 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=153

$$\frac{5(Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{a}\,b^{9/2}}-\frac{5\sqrt{x}\,(Ab-7aB)}{8ab^4}+\frac{5x^{3/2}(Ab-7aB)}{24ab^3(a+bx)}+\frac{x^{5/2}(Ab-7aB)}{12ab^2(a+bx)^2}+\frac{x^{7/2}(Ab-aB)}{3ab(a+bx)^3}$$

```
[Out] 1/3*(A*b-B*a)*x^(7/2)/a/b/(b*x+a)^3+1/12*(A*b-7*B*a)*x^(5/2)/a/b^2/(b*x+a)^
2+5/24*(A*b-7*B*a)*x^(3/2)/a/b^3/(b*x+a)+5/8*(A*b-7*B*a)*arctan(b^(1/2)*x^(
1/2)/a^(1/2))/b^(9/2)/a^(1/2)-5/8*(A*b-7*B*a)*x^(1/2)/a/b^4
```

Rubi [A] time = 0.07, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{27, 78, 47, 50, 63, 205\}$

$$\frac{x^{5/2}(Ab-7aB)}{12ab^2(a+bx)^2}+\frac{5x^{3/2}(Ab-7aB)}{24ab^3(a+bx)}-\frac{5\sqrt{x}\,(Ab-7aB)}{8ab^4}+\frac{5(Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8\sqrt{a}\,b^{9/2}}+\frac{x^{7/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-5*(A*b - 7*a*B)*Sqrt[x])/(8*a*b^4) + ((A*b - a*B)*x^(7/2))/(3*a*b*(a + b*
x)^3) + ((A*b - 7*a*B)*x^(5/2))/(12*a*b^2*(a + b*x)^2) + (5*(A*b - 7*a*B)*x
^(3/2))/(24*a*b^3*(a + b*x)) + (5*(A*b - 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sq
rt[a]])/(8*Sqrt[a]*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^{5/2}(A+Bx)}{(a+bx)^4}\,dx \\
&= \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} - \frac{\left(\frac{Ab}{2}-\frac{7aB}{2}\right)\int \frac{x^{5/2}}{(a+bx)^3}\,dx}{3ab} \\
&= \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} + \frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2} - \frac{(5(Ab-7aB))\int \frac{x^{3/2}}{(a+bx)^2}\,dx}{24ab^2} \\
&= \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} + \frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2} + \frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)} - \frac{(5(Ab-7aB))\int \frac{\sqrt{x}}{a+bx}\,dx}{16ab^3} \\
&= -\frac{5(Ab-7aB)\sqrt{x}}{8ab^4} + \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} + \frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2} + \frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)} + \frac{(5(A}{} \\
&= -\frac{5(Ab-7aB)\sqrt{x}}{8ab^4} + \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} + \frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2} + \frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)} + \frac{(5(A}{} \\
&= -\frac{5(Ab-7aB)\sqrt{x}}{8ab^4} + \frac{(Ab-aB)x^{7/2}}{3ab(a+bx)^3} + \frac{(Ab-7aB)x^{5/2}}{12ab^2(a+bx)^2} + \frac{5(Ab-7aB)x^{3/2}}{24ab^3(a+bx)} + \frac{5(Ab}{}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.40

$$\frac{x^{7/2}\left(\frac{7a^3(Ab-aB)}{(a+bx)^3}+(7aB-Ab)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};-\frac{bx}{a}\right)\right)}{21a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(7/2)*((7*a^3*(A*b - a*B))/(a + b*x)^3 + (-(A*b) + 7*a*B)*Hypergeometric
2F1[3, 7/2, 9/2, -((b*x)/a)]))/(21*a^4*b)
```

fricas [A] time = 0.99, size = 437, normalized size = 2.86

$$\left[\frac{15\left(7\,Ba^4-Aa^3b+\left(7\,Bab^3-Ab^4\right)x^3+3\left(7\,Ba^2b^2-Aab^3\right)x^2+3\left(7\,Ba^3b-Aa^2b^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}}{bx+a}\right.}{48\left(ab^8x^3+3\,a^2b^7x^2+3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [1/48*(15*(7*B*a^4 - A*a^3*b + (7*B*a*b^3 - A*b^4)*x^3 + 3*(7*B*a^2*b^2 - A
*a*b^3)*x^2 + 3*(7*B*a^3*b - A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(48*B*a*b^4*x^3 + 105*B*a^4*b - 15*A*a^3*b^2
 + 33*(7*B*a^2*b^3 - A*a*b^4)*x^2 + 40*(7*B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x)
)/(a*b^8*x^3 + 3*a^2*b^7*x^2 + 3*a^3*b^6*x + a^4*b^5), 1/24*(15*(7*B*a^4 -
A*a^3*b + (7*B*a*b^3 - A*b^4)*x^3 + 3*(7*B*a^2*b^2 - A*a*b^3)*x^2 + 3*(7*B*
a^3*b - A*a^2*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (48*B*a*b^4
*x^3 + 105*B*a^4*b - 15*A*a^3*b^2 + 33*(7*B*a^2*b^3 - A*a*b^4)*x^2 + 40*(7*
B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a*b^8*x^3 + 3*a^2*b^7*x^2 + 3*a^3*b^6*x
 + a^4*b^5)]
```

giac [A] time = 0.17, size = 111, normalized size = 0.73

$$\frac{2\,B\sqrt{x}}{b^4} - \frac{5\,(7\,Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,b^4} + \frac{87\,Bab^2x^{\frac{5}{2}} - 33\,Ab^3x^{\frac{5}{2}} + 136\,Ba^2bx^{\frac{3}{2}} - 40\,Aab^2x^{\frac{3}{2}} + 57\,Ba^3\sqrt{x} - 15\,Aa^2b}{24\,(bx + a)^3b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^4 - 5/8*(7*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*
b^4) + 1/24*(87*B*a*b^2*x^(5/2) - 33*A*b^3*x^(5/2) + 136*B*a^2*b*x^(3/2) -
40*A*a*b^2*x^(3/2) + 57*B*a^3*sqrt(x) - 15*A*a^2*b*sqrt(x))/((b*x + a)^3*b^
4)
```

maple [A] time = 0.07, size = 163, normalized size = 1.07

$$-\frac{11A\,x^{\frac{5}{2}}}{8\,(bx + a)^3\,b} + \frac{29Ba\,x^{\frac{5}{2}}}{8\,(bx + a)^3\,b^2} - \frac{5Aa\,x^{\frac{3}{2}}}{3\,(bx + a)^3\,b^2} + \frac{17B\,a^2x^{\frac{3}{2}}}{3\,(bx + a)^3\,b^3} - \frac{5A\,a^2\sqrt{x}}{8\,(bx + a)^3\,b^3} + \frac{19B\,a^3\sqrt{x}}{8\,(bx + a)^3\,b^4} + \frac{5A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;b^3} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*B/b^4*x^(1/2)+29/8/b^2/(b*x+a)^3*x^(5/2)*B*a-11/8/b/(b*x+a)^3*x^(5/2)*A-5
/3/b^2/(b*x+a)^3*A*x^(3/2)*a+17/3/b^3/(b*x+a)^3*B*x^(3/2)*a^2+19/8/b^4/(b*x
+a)^3*x^(1/2)*B*a^3-5/8/b^3/(b*x+a)^3*x^(1/2)*A*a^2+5/8/b^3/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-35/8/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*B*a
```

maxima [A] time = 1.20, size = 136, normalized size = 0.89

$$\frac{3\left(29\,Bab^2 - 11\,Ab^3\right)x^{\frac{5}{2}} + 8\left(17\,Ba^2b - 5\,Aab^2\right)x^{\frac{3}{2}} + 3\left(19\,Ba^3 - 5\,Aa^2b\right)\sqrt{x}}{24\left(b^7x^3 + 3\,ab^6x^2 + 3\,a^2b^5x + a^3b^4\right)} + \frac{2\,B\sqrt{x}}{b^4} - \frac{5\,(7\,Ba - Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/24*(3*(29*B*a*b^2 - 11*A*b^3)*x^(5/2) + 8*(17*B*a^2*b - 5*A*a*b^2)*x^(3/2
) + 3*(19*B*a^3 - 5*A*a^2*b)*sqrt(x))/(b^7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x
+ a^3*b^4) + 2*B*sqrt(x)/b^4 - 5/8*(7*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b)
)/(sqrt(a*b)*b^4)
```

mupad [B] time = 1.25, size = 131, normalized size = 0.86

$$\frac{2\,B\,\sqrt{x}}{b^4}-\frac{x^{3/2}\,\left(\frac{5\,A\,a\,b^2}{3}-\frac{17\,B\,a^2\,b}{3}\right)-\sqrt{x}\,\left(\frac{19\,B\,a^3}{8}-\frac{5\,A\,a^2\,b}{8}\right)+x^{5/2}\,\left(\frac{11\,A\,b^3}{8}-\frac{29\,B\,a\,b^2}{8}\right)}{a^3\,b^4+3\,a^2\,b^5\,x+3\,a\,b^6\,x^2+b^7\,x^3}+\frac{5\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b-7\,B\,a}{8\,\sqrt{a}\,b^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*B*x^(1/2))/b^4 - (x^(3/2)*((5*A*a*b^2)/3 - (17*B*a^2*b)/3) - x^(1/2)*((1
9*B*a^3)/8 - (5*A*a^2*b)/8) + x^(5/2)*((11*A*b^3)/8 - (29*B*a*b^2)/8))/(a^3
*b^4 + b^7*x^3 + 3*a^2*b^5*x + 3*a*b^6*x^2) + (5*atan((b^(1/2)*x^(1/2))/a^(
1/2))*(A*b - 7*B*a))/(8*a^(1/2)*b^(9/2))
```

sympy [A] time = 151.18, size = 2649, normalized size = 17.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/sqrt(x) + 2*B*sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((-2*A/s
qrt(x) + 2*B*sqrt(x))/b**4, Eq(a, 0)), ((2*A*x**(7/2)/7 + 2*B*x**(9/2)/9)/a
**4, Eq(b, 0)), (-30*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 80*I*A*a**(3/2)*b**3*x**(3/2)
*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b)
+ 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) -
66*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*
I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqr
t(a)*b**8*x**3*sqrt(1/b)) + 15*A*a**3*b*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))
/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a*
*(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 15*A*a**3*
b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(
a)*b**8*x**3*sqrt(1/b)) + 45*A*a**2*b**2*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I
*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) - 45*A*a*
*2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b)
+ 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48
*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 45*A*a*b**3*x**2*log(-I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b)
 + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) -
 45*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sq
rt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1
/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 15*A*b**4*x**3*log(-I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqr
t(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1
/b)) - 15*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 210*I*B*a**(7/2)*b*sqrt(x)*sq
rt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 1
44*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 560
*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I
*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt
(a)*b**8*x**3*sqrt(1/b)) + 462*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)/(48*I*a
**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b
**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 96*I*B*sqrt(a)*b**
4*x**(7/2)*sqrt(1/b)/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqr
t(1/b)) - 105*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 105*B*a**4*log(I*sqrt(a)*sqrt
(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt
(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/
b)) - 315*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**
5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sq
rt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 315*B*a**3*b*x*log(I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqr
t(1/b)) - 315*B*a**2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a*
*(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b*
*7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 315*B*a**2*b**2*x**
2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(
a)*b**8*x**3*sqrt(1/b)) - 105*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(48*I*a**(7/2)*b**5*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*
I*a**(3/2)*b**7*x**2*sqrt(1/b) + 48*I*sqrt(a)*b**8*x**3*sqrt(1/b)) + 105*B*
a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(7/2)*b**5*sqrt(1/b
) + 144*I*a**(5/2)*b**6*x*sqrt(1/b) + 144*I*a**(3/2)*b**7*x**2*sqrt(1/b) +
48*I*sqrt(a)*b**8*x**3*sqrt(1/b)), True))
```

3.768 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{\sqrt{x}\,(5aB+Ab)}{8ab^3(a+bx)}-\frac{x^{3/2}(5aB+Ab)}{12ab^2(a+bx)^2}+\frac{x^{5/2}(Ab-aB)}{3ab(a+bx)^3}$$

```
[Out] 1/3*(A*b-B*a)*x^(5/2)/a/b/(b*x+a)^3-1/12*(A*b+5*B*a)*x^(3/2)/a/b^2/(b*x+a)^
2+1/8*(A*b+5*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(3/2)/b^(7/2)-1/8*(A*b+
5*B*a)*x^(1/2)/a/b^3/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{27, 78, 47, 63, 205\}$

$$\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{x^{3/2}(5aB+Ab)}{12ab^2(a+bx)^2}-\frac{\sqrt{x}\,(5aB+Ab)}{8ab^3(a+bx)}+\frac{x^{5/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^(5/2))/(3*a*b*(a + b*x)^3) - ((A*b + 5*a*B)*x^(3/2))/(12*a*b
^2*(a + b*x)^2) - ((A*b + 5*a*B)*Sqrt[x])/(8*a*b^3*(a + b*x)) + ((A*b + 5*a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(3/2)*b^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^{3/2}(A+Bx)}{(a+bx)^4}\,dx\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}+\frac{(Ab+5aB)\int\frac{x^{3/2}}{(a+bx)^3}\,dx}{6ab}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}+\frac{(Ab+5aB)\int\frac{\sqrt{x}}{(a+bx)^2}\,dx}{8ab^2}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\int\frac{1}{\sqrt{x}\,(a+bx)}\,dx}{16ab^3}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\,\mathrm{Subst}\left(\int\frac{1}{a+bx^2}\,dx,\right.}{8ab^3}\\
&= \frac{(Ab-aB)x^{5/2}}{3ab(a+bx)^3}-\frac{(Ab+5aB)x^{3/2}}{12ab^2(a+bx)^2}-\frac{(Ab+5aB)\sqrt{x}}{8ab^3(a+bx)}+\frac{(Ab+5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 105, normalized size = 0.81

$$
\frac{(5aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{3/2}b^{7/2}}-\frac{\sqrt{x}\left(15a^3B+a^2b(3A+40Bx)+ab^2x(8A+33Bx)-3Ab^3x^2\right)}{24ab^3(a+bx)^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/24*(Sqrt[x]*(15*a^3*B - 3*A*b^3*x^2 + a*b^2*x*(8*A + 33*B*x) + a^2*b*(3*
A + 40*B*x)))/(a*b^3*(a + b*x)^3) + ((A*b + 5*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])
/Sqrt[a]])/(8*a^(3/2)*b^(7/2))
```

fricas [A] time = 0.89, size = 411, normalized size = 3.16

$$
\left[-\frac{3\left(5\,Ba^4+Aa^3b+\left(5\,Bab^3+Ab^4\right)x^3+3\left(5\,Ba^2b^2+Aab^3\right)x^2+3\left(5\,Ba^3b+Aa^2b^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\sqrt{-ab}\sqrt{x}}{bx+a}\right.}{48\left(a^2b^7x^3+3\,a^3b^6x^2+3\,a^4b^5x+a\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*B*a^4 + A*a^3*b + (5*B*a*b^3 + A*b^4)*x^3 + 3*(5*B*a^2*b^2 + A
*a*b^3)*x^2 + 3*(5*B*a^3*b + A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(15*B*a^4*b + 3*A*a^3*b^2 + 3*(11*B*a^2*b^3
- A*a*b^4)*x^2 + 8*(5*B*a^3*b^2 + A*a^2*b^3)*x)*sqrt(x))/(a^2*b^7*x^3 + 3*a
^3*b^6*x^2 + 3*a^4*b^5*x + a^5*b^4), -1/24*(3*(5*B*a^4 + A*a^3*b + (5*B*a*b
^3 + A*b^4)*x^3 + 3*(5*B*a^2*b^2 + A*a*b^3)*x^2 + 3*(5*B*a^3*b + A*a^2*b^2)
*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^4*b + 3*A*a^3*b^2 + 3
*(11*B*a^2*b^3 - A*a*b^4)*x^2 + 8*(5*B*a^3*b^2 + A*a^2*b^3)*x)*sqrt(x))/(a^
2*b^7*x^3 + 3*a^3*b^6*x^2 + 3*a^4*b^5*x + a^5*b^4)]
```

giac [A] time = 0.16, size = 107, normalized size = 0.82

$$\frac{(5\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,ab^3}-\frac{33\,Bab^2x^{\frac{5}{2}}-3\,Ab^3x^{\frac{5}{2}}+40\,Ba^2bx^{\frac{3}{2}}+8\,Aab^2x^{\frac{3}{2}}+15\,Ba^3\sqrt{x}+3\,Aa^2b\sqrt{x}}{24\,(bx+a)^3ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*(5*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^3) - 1/24*(33*
B*a*b^2*x^(5/2) - 3*A*b^3*x^(5/2) + 40*B*a^2*b*x^(3/2) + 8*A*a*b^2*x^(3/2)
+ 15*B*a^3*sqrt(x) + 3*A*a^2*b*sqrt(x))/((b*x + a)^3*a*b^3)
```

maple [A] time = 0.10, size = 111, normalized size = 0.85

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a\,b^2}+\frac{5B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;b^3}+\frac{\frac{(Ab-11Ba)x^{\frac{5}{2}}}{8ab}-\frac{(Ab+5Ba)x^{\frac{3}{2}}}{3b^2}-\frac{(Ab+5Ba)a\sqrt{x}}{8b^3}}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*(1/16*(A*b-11*B*a)/a/b*x^(5/2)-1/6/b^2*(A*b+5*B*a)*x^(3/2)-1/16*(A*b+5*B*
a)*a/b^3*x^(1/2))/(b*x+a)^3+1/8/a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))*A+5/8/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.10, size = 130, normalized size = 1.00

$$-\frac{3\left(11\,Bab^2-Ab^3\right)x^{\frac{5}{2}}+8\left(5\,Ba^2b+Aab^2\right)x^{\frac{3}{2}}+3\left(5\,Ba^3+Aa^2b\right)\sqrt{x}}{24\left(ab^6x^3+3\,a^2b^5x^2+3\,a^3b^4x+a^4b^3\right)}+\frac{(5\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(3*(11*B*a*b^2 - A*b^3)*x^(5/2) + 8*(5*B*a^2*b + A*a*b^2)*x^(3/2) + 3
*(5*B*a^3 + A*a^2*b)*sqrt(x))/(a*b^6*x^3 + 3*a^2*b^5*x^2 + 3*a^3*b^4*x + a^
4*b^3) + 1/8*(5*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^3)
```

mupad [B] time = 1.25, size = 112, normalized size = 0.86

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+5\,B\,a)}{8\,a^{3/2}\,b^{7/2}}-\frac{\frac{x^{3/2}\,(A\,b+5\,B\,a)}{3\,b^2}-\frac{x^{5/2}\,(A\,b-11\,B\,a)}{8\,a\,b}+\frac{a\,\sqrt{x}\,(A\,b+5\,B\,a)}{8\,b^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + 5*B*a))/(8*a^(3/2)*b^(7/2)) - ((x^(
3/2)*(A*b + 5*B*a))/(3*b^2) - (x^(5/2)*(A*b - 11*B*a))/(8*a*b) + (a*x^(1/2)
*(A*b + 5*B*a))/(8*b^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 84.21, size = 2547, normalized size = 19.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(3*x**(3/2)) - 2*B/sqrt(x)), Eq(a, 0) & Eq(b, 0)), ((2
*A*x**(5/2)/5 + 2*B*x**(7/2)/7)/a**4, Eq(b, 0)), ((-2*A/(3*x**(3/2)) - 2*B/
sqrt(x))/b**4, Eq(a, 0)), (-6*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(48*I*a**
(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**
6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 16*I*A*a**(3/2)*b**
3*x**(3/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sq
rt(1/b)) + 6*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1
/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b)
+ 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 3*A*a**3*b*log(-I*sqrt(a)*sqrt(1/b)
+ sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b)
+ 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) -
 3*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b
) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) +
48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 9*A*a**2*b**2*x*log(-I*sqrt(a)*sqrt(1/
b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/
b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)
) - 9*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*
sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt
(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 9*A*a*b**3*x**2*log(-I*sqrt(a)
*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x
*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*s
qrt(1/b)) - 9*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/
2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x
**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 3*A*b**4*x**3*log(-I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*
b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*
x**3*sqrt(1/b)) - 3*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a*
*(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b*
*6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 30*I*B*a**(7/2)*b*
sqrt(x)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqr
t(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(
1/b)) - 80*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*a**(9/2)*b**4*sqrt(1/
b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) +
 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 66*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/
b)/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 15*B*a*
*4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*
I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**
(3/2)*b**7*x**3*sqrt(1/b)) - 15*B*a**4*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(
48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(
5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 45*B*a**3*b
*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*
I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**
(3/2)*b**7*x**3*sqrt(1/b)) - 45*B*a**3*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x
))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*
a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) + 45*B*a*
*2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1
/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b)
+ 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 45*B*a**2*b**2*x**2*log(I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sq
rt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt
(1/b)) + 15*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2
)*b**4*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x*
*2*sqrt(1/b) + 48*I*a**(3/2)*b**7*x**3*sqrt(1/b)) - 15*B*a*b**3*x**3*log(I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(9/2)*b**4*sqrt(1/b) + 144*I*a**(7/2)
*b**5*x*sqrt(1/b) + 144*I*a**(5/2)*b**6*x**2*sqrt(1/b) + 48*I*a**(3/2)*b**7
*x**3*sqrt(1/b)), True))
```

3.769 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=127

$$\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}+\frac{\sqrt{x}\,(aB+Ab)}{8a^2b^2(a+bx)}-\frac{\sqrt{x}\,(aB+Ab)}{4ab^2(a+bx)^2}+\frac{x^{3/2}(Ab-aB)}{3ab(a+bx)^3}$$

```
[Out] 1/3*(A*b-B*a)*x^(3/2)/a/b/(b*x+a)^3+1/8*(A*b+B*a)*arctan(b^(1/2)*x^(1/2)/a^
(1/2))/a^(5/2)/b^(5/2)-1/4*(A*b+B*a)*x^(1/2)/a/b^2/(b*x+a)^2+1/8*(A*b+B*a)*
x^(1/2)/a^2/b^2/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{\sqrt{x}\,(aB+Ab)}{8a^2b^2(a+bx)}+\frac{(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}-\frac{\sqrt{x}\,(aB+Ab)}{4ab^2(a+bx)^2}+\frac{x^{3/2}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^(3/2))/(3*a*b*(a + b*x)^3) - ((A*b + a*B)*Sqrt[x])/(4*a*b^2*
(a + b*x)^2) + ((A*b + a*B)*Sqrt[x])/(8*a^2*b^2*(a + b*x)) + ((A*b + a*B)*A
rcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(5/2)*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{\sqrt{x}\,(A+Bx)}{(a+bx)^4}\,dx$$

$$=\frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}+\frac{(Ab+aB)\int \frac{\sqrt{x}}{(a+bx)^3}\,dx}{2ab}$$

$$=\frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^2}\,dx}{8ab^2}$$

$$=\frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)}\,dx}{16a^2b^2}$$

$$=\frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\,\mathrm{Subst}\left(\int \frac{1}{a+bx^2}\,dx,x,\right.}{8a^2b^2}$$

$$=\frac{(Ab-aB)x^{3/2}}{3ab(a+bx)^3}-\frac{(Ab+aB)\sqrt{x}}{4ab^2(a+bx)^2}+\frac{(Ab+aB)\sqrt{x}}{8a^2b^2(a+bx)}+\frac{(Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8a^{5/2}b^{5/2}}$$

Mathematica [**C**] time = 0.02, size = 60, normalized size = 0.47

$$\frac{x^{3/2}\left(\frac{3a^3(Ab-aB)}{(a+bx)^3}+3(aB+Ab)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};-\frac{bx}{a}\right)\right)}{9a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(3/2)*((3*a^3*(A*b - a*B))/(a + b*x)^3 + 3*(A*b + a*B)*Hypergeometric2F1
[3/2, 3, 5/2, -((b*x)/a)]))/(9*a^4*b)
```

fricas [**A**] time = 0.92, size = 399, normalized size = 3.14

$$\left[-\frac{3\left(Ba^4+Aa^3b+\left(Bab^3+Ab^4\right)x^3+3\left(Ba^2b^2+Aab^3\right)x^2+3\left(Ba^3b+Aa^2b^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(\right.}{48\left(a^3b^6x^3+3\,a^4b^5x^2+3\,a^5b^4x+a^6b^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*a^4 + A*a^3*b + (B*a*b^3 + A*b^4)*x^3 + 3*(B*a^2*b^2 + A*a*b^3
)*x^2 + 3*(B*a^3*b + A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*s
qrt(x))/(b*x + a)) + 2*(3*B*a^4*b + 3*A*a^3*b^2 - 3*(B*a^2*b^3 + A*a*b^4)*x
^2 + 8*(B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a^3*b^6*x^3 + 3*a^4*b^5*x^2 + 3
*a^5*b^4*x + a^6*b^3), -1/24*(3*(B*a^4 + A*a^3*b + (B*a*b^3 + A*b^4)*x^3 +
3*(B*a^2*b^2 + A*a*b^3)*x^2 + 3*(B*a^3*b + A*a^2*b^2)*x)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))) + (3*B*a^4*b + 3*A*a^3*b^2 - 3*(B*a^2*b^3 + A*a*b^4)*
x^2 + 8*(B*a^3*b^2 - A*a^2*b^3)*x)*sqrt(x))/(a^3*b^6*x^3 + 3*a^4*b^5*x^2 +
3*a^5*b^4*x + a^6*b^3)]
```

giac [**A**] time = 0.16, size = 106, normalized size = 0.83

$$\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^2b^2}+\frac{3\,Bab^2x^{\frac{5}{2}}+3\,Ab^3x^{\frac{5}{2}}-8\,Ba^2bx^{\frac{3}{2}}+8\,Aab^2x^{\frac{3}{2}}-3\,Ba^3\sqrt{x}-3\,Aa^2b\sqrt{x}}{24\,(bx+a)^3\,a^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^2) + 1/24*(3*B
*a*b^2*x^(5/2) + 3*A*b^3*x^(5/2) - 8*B*a^2*b*x^(3/2) + 8*A*a*b^2*x^(3/2) -
3*B*a^3*sqrt(x) - 3*A*a^2*b*sqrt(x))/((b*x + a)^3*a^2*b^2)
```

maple [**A**] time = 0.10, size = 111, normalized size = 0.87

$$\frac{A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^2b}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a\,b^2}+\frac{\frac{(Ab+Ba)x^{\frac{5}{2}}}{8a^2}+\frac{(Ab-Ba)x^{\frac{3}{2}}}{3ab}-\frac{(Ab+Ba)\sqrt{x}}{8b^2}}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*(1/16*(A*b+B*a)/a^2*x^(5/2)+1/6*(A*b-B*a)/a/b*x^(3/2)-1/16*(A*b+B*a)/b^2*
x^(1/2))/(b*x+a)^3+1/8/a^2/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+
1/8/a/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.23, size = 128, normalized size = 1.01

$$\frac{3\left(Bab^2+Ab^3\right)x^{\frac{5}{2}}-8\left(Ba^2b-Aab^2\right)x^{\frac{3}{2}}-3\left(Ba^3+Aa^2b\right)\sqrt{x}}{24\left(a^2b^5x^3+3\,a^3b^4x^2+3\,a^4b^3x+a^5b^2\right)}+\frac{(Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/24*(3*(B*a*b^2 + A*b^3)*x^(5/2) - 8*(B*a^2*b - A*a*b^2)*x^(3/2) - 3*(B*a^
3 + A*a^2*b)*sqrt(x))/(a^2*b^5*x^3 + 3*a^3*b^4*x^2 + 3*a^4*b^3*x + a^5*b^2)
 + 1/8*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^2)
```

mupad [**B**] time = 1.24, size = 107, normalized size = 0.84

$$\frac{\frac{x^{5/2}\,(A\,b+B\,a)}{8\,a^2}-\frac{\sqrt{x}\,(A\,b+B\,a)}{8\,b^2}+\frac{x^{3/2}\,(A\,b-B\,a)}{3\,a\,b}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+B\,a)}{8\,a^{5/2}\,b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((x^(5/2)*(A*b + B*a))/(8*a^2) - (x^(1/2)*(A*b + B*a))/(8*b^2) + (x^(3/2)*(
A*b - B*a))/(3*a*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (atan((b^(
1/2)*x^(1/2))/a^(1/2))*(A*b + B*a))/(8*a^(5/2)*b^(5/2))
```

sympy [**A**] time = 49.70, size = 2550, normalized size = 20.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/(5*x**(5/2)) - 2*B/(3*x**(3/2)))/b**4, Eq(a, 0)), ((2*A*x**(3/2)/3
 + 2*B*x**(5/2)/5)/a**4, Eq(b, 0)), (-6*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)
/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a
**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 16*I*A*a
**(3/2)*b**3*x**(3/2)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(
9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*
b**6*x**3*sqrt(1/b)) + 6*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(11/2
)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
*2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 3*A*a**3*b*log(-I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) - 3*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2
)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x*
*2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 9*A*a**2*b**2*x*log(-I*
sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2
)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**
6*x**3*sqrt(1/b)) - 9*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*
I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/
2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 9*A*a*b**3*x*
*2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144
*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a*
*(5/2)*b**6*x**3*sqrt(1/b)) - 9*A*a*b**3*x**2*log(I*sqrt(a)*sqrt(1/b) + sqr
t(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 14
4*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 3*A
*b**4*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/
b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) +
 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3*A*b**4*x**3*log(I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b
) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b))
 - 6*I*B*a**(7/2)*b*sqrt(x)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*
I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**
(5/2)*b**6*x**3*sqrt(1/b)) - 16*I*B*a**(5/2)*b**2*x**(3/2)*sqrt(1/b)/(48*I*
a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)
*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) + 6*I*B*a**(3/2)*
b**3*x**(5/2)*sqrt(1/b)/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) + 3*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)
*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**
2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3*B*a**4*log(I*sqrt(a)*s
qrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*
sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sq
rt(1/b)) + 9*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)
*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**
2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 9*B*a**3*b*x*log(I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**
4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**
3*sqrt(1/b)) + 9*B*a**2*b**2*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I
*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2
)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 9*B*a**2*b**2*
x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 14
4*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a
**(5/2)*b**6*x**3*sqrt(1/b)) + 3*B*a*b**3*x**3*log(-I*sqrt(a)*sqrt(1/b) + s
qrt(x))/(48*I*a**(11/2)*b**3*sqrt(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) +
144*I*a**(7/2)*b**5*x**2*sqrt(1/b) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)) - 3
*B*a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(11/2)*b**3*sqrt
(1/b) + 144*I*a**(9/2)*b**4*x*sqrt(1/b) + 144*I*a**(7/2)*b**5*x**2*sqrt(1/b
) + 48*I*a**(5/2)*b**6*x**3*sqrt(1/b)), True))
```

3.770 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=130

$$\frac{(aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{7/2}b^{3/2}}+\frac{\sqrt{x}\,(aB+5Ab)}{8a^3b(a+bx)}+\frac{\sqrt{x}\,(aB+5Ab)}{12a^2b(a+bx)^2}+\frac{\sqrt{x}\,(Ab-aB)}{3ab(a+bx)^3}$$

```
[Out] 1/8*(5*A*b+B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(7/2)/b^(3/2)+1/3*(A*b-B*
a)*x^(1/2)/a/b/(b*x+a)^3+1/12*(5*A*b+B*a)*x^(1/2)/a^2/b/(b*x+a)^2+1/8*(5*A*
b+B*a)*x^(1/2)/a^3/b/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{27, 78, 51, 63, 205\}$

$$\frac{(aB+5Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{7/2}b^{3/2}}+\frac{\sqrt{x}\,(aB+5Ab)}{8a^3b(a+bx)}+\frac{\sqrt{x}\,(aB+5Ab)}{12a^2b(a+bx)^2}+\frac{\sqrt{x}\,(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(3*a*b*(a + b*x)^3) + ((5*A*b + a*B)*Sqrt[x])/(12*a^2
*b*(a + b*x)^2) + ((5*A*b + a*B)*Sqrt[x])/(8*a^3*b*(a + b*x)) + ((5*A*b + a
*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(7/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{\sqrt{x}\,(a+bx)^4}\,dx\\
&= \frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^3}\,dx}{6ab}\\
&= \frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^2}\,dx}{8a^2b}\\
&= \frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)}}{16a^3b}\\
&= \frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\,\mathrm{Subst}\left(\int\right.}{8a^3b}\\
&= \frac{(Ab-aB)\sqrt{x}}{3ab(a+bx)^3}+\frac{(5Ab+aB)\sqrt{x}}{12a^2b(a+bx)^2}+\frac{(5Ab+aB)\sqrt{x}}{8a^3b(a+bx)}+\frac{(5Ab+aB)\tan^{-1}\left(\frac{\sqrt{b}}{\sqrt{a}}\right.}{8a^{7/2}b^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.45

$$
\frac{\sqrt{x}\left(\frac{a^3(Ab-aB)}{(a+bx)^3}+(aB+5Ab)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};-\frac{bx}{a}\right)\right)}{3a^4b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (Sqrt[x]*((a^3*(A*b - a*B))/(a + b*x)^3 + (5*A*b + a*B)*Hypergeometric2F1[1
/2, 3, 3/2, -((b*x)/a)]))/(3*a^4*b)
```

fricas [A] time = 0.92, size = 409, normalized size = 3.15

$$
\left[-\frac{3\left(Ba^4+5\,Aa^3b+\left(Bab^3+5\,Ab^4\right)x^3+3\left(Ba^2b^2+5\,Aab^3\right)x^2+3\left(Ba^3b+5\,Aa^2b^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}}{bx+a}\right.}{48\left(a^4b^5x^3+3\,a^5b^4x^2+3\,a^6b^3x\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*a^4 + 5*A*a^3*b + (B*a*b^3 + 5*A*b^4)*x^3 + 3*(B*a^2*b^2 + 5*A
*a*b^3)*x^2 + 3*(B*a^3*b + 5*A*a^2*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt
(-a*b)*sqrt(x))/(b*x + a)) + 2*(3*B*a^4*b - 33*A*a^3*b^2 - 3*(B*a^2*b^3 + 5
*A*a*b^4)*x^2 - 8*(B*a^3*b^2 + 5*A*a^2*b^3)*x)*sqrt(x))/(a^4*b^5*x^3 + 3*a^
5*b^4*x^2 + 3*a^6*b^3*x + a^7*b^2), -1/24*(3*(B*a^4 + 5*A*a^3*b + (B*a*b^3
+ 5*A*b^4)*x^3 + 3*(B*a^2*b^2 + 5*A*a*b^3)*x^2 + 3*(B*a^3*b + 5*A*a^2*b^2)*
x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (3*B*a^4*b - 33*A*a^3*b^2 - 3*
(B*a^2*b^3 + 5*A*a*b^4)*x^2 - 8*(B*a^3*b^2 + 5*A*a^2*b^3)*x)*sqrt(x))/(a^4*
b^5*x^3 + 3*a^5*b^4*x^2 + 3*a^6*b^3*x + a^7*b^2)]
```

giac [A] time = 0.21, size = 107, normalized size = 0.82

$$\frac{(Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^3b}+\frac{3\,Bab^2x^{\frac{5}{2}}+15\,Ab^3x^{\frac{5}{2}}+8\,Ba^2bx^{\frac{3}{2}}+40\,Aab^2x^{\frac{3}{2}}-3\,Ba^3\sqrt{x}+33\,Aa^2b\sqrt{x}}{24\,(bx+a)^3a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*(B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b) + 1/24*(3*B
*a*b^2*x^(5/2) + 15*A*b^3*x^(5/2) + 8*B*a^2*b*x^(3/2) + 40*A*a*b^2*x^(3/2)
- 3*B*a^3*sqrt(x) + 33*A*a^2*b*sqrt(x))/((b*x + a)^3*a^3*b)
```

maple [A] time = 0.06, size = 112, normalized size = 0.86

$$\frac{5A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^3}+\frac{B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^2b}+\frac{\frac{(5Ab+Ba)b\,x^{\frac{5}{2}}}{8a^3}+\frac{(5Ab+Ba)x^{\frac{3}{2}}}{3a^2}+\frac{(11Ab-Ba)\sqrt{x}}{8ab}}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x)
```

```
[Out] 2*(1/16*(5*A*b+B*a)/a^3*b*x^(5/2)+1/6/a^2*(5*A*b+B*a)*x^(3/2)+1/16*(11*A*b-
B*a)/a/b*x^(1/2))/(b*x+a)^3+5/8/a^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*A+1/8/a^2/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.24, size = 129, normalized size = 0.99

$$\frac{3\left(Bab^2+5\,Ab^3\right)x^{\frac{5}{2}}+8\left(Ba^2b+5\,Aab^2\right)x^{\frac{3}{2}}-3\left(Ba^3-11\,Aa^2b\right)\sqrt{x}}{24\left(a^3b^4x^3+3\,a^4b^3x^2+3\,a^5b^2x+a^6b\right)}+\frac{(Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^3b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/24*(3*(B*a*b^2 + 5*A*b^3)*x^(5/2) + 8*(B*a^2*b + 5*A*a*b^2)*x^(3/2) - 3*(
B*a^3 - 11*A*a^2*b)*sqrt(x))/(a^3*b^4*x^3 + 3*a^4*b^3*x^2 + 3*a^5*b^2*x + a
^6*b) + 1/8*(B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b)
```

mupad [B] time = 1.23, size = 112, normalized size = 0.86

$$\frac{\frac{x^{3/2}\,(5\,A\,b+B\,a)}{3\,a^2}+\frac{\sqrt{x}\,(11\,A\,b-B\,a)}{8\,a\,b}+\frac{b\,x^{5/2}\,(5\,A\,b+B\,a)}{8\,a^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(5\,A\,b+B\,a)}{8\,a^{7/2}\,b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x^(3/2)*(5*A*b + B*a))/(3*a^2) + (x^(1/2)*(11*A*b - B*a))/(8*a*b) + (b*x^
(5/2)*(5*A*b + B*a))/(8*a^3))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) + (
atan((b^(1/2)*x^(1/2))/a^(1/2))*(5*A*b + B*a))/(8*a^(7/2)*b^(3/2))
```

sympy [A] time = 70.82, size = 2548, normalized size = 19.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2/x**(1/2),x)
```

```
[Out] Piecewise((zoo*(-2*A/(7*x**(7/2)) - 2*B/(5*x**(5/2))), Eq(a, 0) & Eq(b, 0))
, ((2*A*sqrt(x) + 2*B*x**(3/2)/3)/a**4, Eq(b, 0)), ((-2*A/(7*x**(7/2)) - 2*
B/(5*x**(5/2)))/b**4, Eq(a, 0)), (66*I*A*a**(5/2)*b**2*sqrt(x)*sqrt(1/b)/(4
8*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**
(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 80*I*A*a**
(3/2)*b**3*x**(3/2)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11
/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b
**5*x**3*sqrt(1/b)) + 30*I*A*sqrt(a)*b**4*x**(5/2)*sqrt(1/b)/(48*I*a**(13/2
)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x
**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 15*A*a**3*b*log(-I*sqr
t(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*
b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*
x**3*sqrt(1/b)) - 15*A*a**3*b*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b*
*4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 45*A*a**2*b**2*x*l
og(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a
**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7
/2)*b**5*x**3*sqrt(1/b)) - 45*A*a**2*b**2*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144
*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 45*A
*a*b**3*x**2*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(
1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b
) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 45*A*a*b**3*x**2*log(I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*s
qrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqr
t(1/b)) + 15*A*b**4*x**3*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2
)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x
**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 15*A*b**4*x**3*log(I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2
)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**
5*x**3*sqrt(1/b)) - 6*I*B*a**(7/2)*b*sqrt(x)*sqrt(1/b)/(48*I*a**(13/2)*b**2
*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sq
rt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 16*I*B*a**(5/2)*b**2*x**(3/2
)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/
b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)
) + 6*I*B*a**(3/2)*b**3*x**(5/2)*sqrt(1/b)/(48*I*a**(13/2)*b**2*sqrt(1/b) +
 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48
*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 3*B*a**4*log(-I*sqrt(a)*sqrt(1/b) + sqrt
(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 14
4*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 3*B
*a**4*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 1
44*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I
*a**(7/2)*b**5*x**3*sqrt(1/b)) + 9*B*a**3*b*x*log(-I*sqrt(a)*sqrt(1/b) + sq
rt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) +
144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) - 9
*B*a**3*b*x*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/
b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b)
+ 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 9*B*a**2*b**2*x**2*log(-I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*
sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sq
rt(1/b)) - 9*B*a**2*b**2*x**2*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b*
*4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)) + 3*B*a*b**3*x**3*lo
g(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a*
*(11/2)*b**3*x*sqrt(1/b) + 144*I*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/
2)*b**5*x**3*sqrt(1/b)) - 3*B*a*b**3*x**3*log(I*sqrt(a)*sqrt(1/b) + sqrt(x)
)/(48*I*a**(13/2)*b**2*sqrt(1/b) + 144*I*a**(11/2)*b**3*x*sqrt(1/b) + 144*I
*a**(9/2)*b**4*x**2*sqrt(1/b) + 48*I*a**(7/2)*b**5*x**3*sqrt(1/b)), True))
```

3.771 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=157

$$-\frac{5(7Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{9/2}\sqrt{b}}-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}+\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}$$

```
[Out] -5/8*(7*A*b-B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(9/2)/b^(1/2)-5/8*(7*A*b
-B*a)/a^4/b/x^(1/2)+1/3*(A*b-B*a)/a/b/(b*x+a)^3/x^(1/2)+1/12*(7*A*b-B*a)/a^
2/b/(b*x+a)^2/x^(1/2)+5/24*(7*A*b-B*a)/a^3/b/(b*x+a)/x^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = $\{27, 78, 51, 63, 205\}$

$$-\frac{5(7Ab-aB)}{8a^4b\sqrt{x}}+\frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}+\frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2}-\frac{5(7Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{8a^{9/2}\sqrt{b}}+\frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-5*(7*A*b - a*B))/(8*a^4*b*Sqrt[x]) + (A*b - a*B)/(3*a*b*Sqrt[x]*(a + b*x)
^3) + (7*A*b - a*B)/(12*a^2*b*Sqrt[x]*(a + b*x)^2) + (5*(7*A*b - a*B))/(24*
a^3*b*Sqrt[x]*(a + b*x)) - (5*(7*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a
]])/(8*a^(9/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{x^{3/2}(a+bx)^4}\,dx$$

$$= \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} - \frac{\left(-\frac{7Ab}{2}+\frac{aB}{2}\right)\int \frac{1}{x^{3/2}(a+bx)^3}\,dx}{3ab}$$

$$= \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} + \frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2} + \frac{(5(7Ab-aB))\int \frac{1}{x^{3/2}(a+bx)^2}\,dx}{24a^2b}$$

$$= \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} + \frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2} + \frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)} + \frac{(5(7Ab-aB))}{16}$$

$$= -\frac{5(7Ab-aB)}{8a^4b\sqrt{x}} + \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} + \frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2} + \frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}$$

$$= -\frac{5(7Ab-aB)}{8a^4b\sqrt{x}} + \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} + \frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2} + \frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}$$

$$= -\frac{5(7Ab-aB)}{8a^4b\sqrt{x}} + \frac{Ab-aB}{3ab\sqrt{x}\,(a+bx)^3} + \frac{7Ab-aB}{12a^2b\sqrt{x}\,(a+bx)^2} + \frac{5(7Ab-aB)}{24a^3b\sqrt{x}\,(a+bx)}$$

Mathematica [C] time = 0.04, size = 59, normalized size = 0.38

$$\frac{\frac{a^3(Ab-aB)}{(a+bx)^3} + (aB-7Ab)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};-\frac{bx}{a}\right)}{3a^4b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((a^3*(A*b - a*B))/(a + b*x)^3 + (-7*A*b + a*B)*Hypergeometric2F1[-1/2, 3,
1/2, -((b*x)/a)])/(3*a^4*b*Sqrt[x])
```

fricas [A] time = 0.94, size = 445, normalized size = 2.83

$$\left[\frac{15\left(\left(Bab^3-7\,Ab^4\right)x^4+3\left(Ba^2b^2-7\,Aab^3\right)x^3+3\left(Ba^3b-7\,Aa^2b^2\right)x^2+\left(Ba^4-7\,Aa^3b\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2}{bx}\right)}{48\left(a^5b^4x^4+3\,a^6b^3x^3+\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [1/48*(15*((B*a*b^3 - 7*A*b^4)*x^4 + 3*(B*a^2*b^2 - 7*A*a*b^3)*x^3 + 3*(B*a
^3*b - 7*A*a^2*b^2)*x^2 + (B*a^4 - 7*A*a^3*b)*x)*sqrt(-a*b)*log((b*x - a +
2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(48*A*a^4*b - 15*(B*a^2*b^3 - 7*A*a*b^
4)*x^3 - 40*(B*a^3*b^2 - 7*A*a^2*b^3)*x^2 - 33*(B*a^4*b - 7*A*a^3*b^2)*x)*s
qrt(x))/(a^5*b^4*x^4 + 3*a^6*b^3*x^3 + 3*a^7*b^2*x^2 + a^8*b*x), -1/24*(15*
((B*a*b^3 - 7*A*b^4)*x^4 + 3*(B*a^2*b^2 - 7*A*a*b^3)*x^3 + 3*(B*a^3*b - 7*A
*a^2*b^2)*x^2 + (B*a^4 - 7*A*a^3*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x
))) + (48*A*a^4*b - 15*(B*a^2*b^3 - 7*A*a*b^4)*x^3 - 40*(B*a^3*b^2 - 7*A*a^
2*b^3)*x^2 - 33*(B*a^4*b - 7*A*a^3*b^2)*x)*sqrt(x))/(a^5*b^4*x^4 + 3*a^6*b^
3*x^3 + 3*a^7*b^2*x^2 + a^8*b*x)]
```

giac [**A**] time = 0.16, size = 110, normalized size = 0.70

$$\frac{5\,(Ba-7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^{4}}-\frac{2\,A}{a^{4}\sqrt{x}}+\frac{15\,Bab^{2}x^{\frac{5}{2}}-57\,Ab^{3}x^{\frac{5}{2}}+40\,Ba^{2}bx^{\frac{3}{2}}-136\,Aab^{2}x^{\frac{3}{2}}+33\,Ba^{3}\sqrt{x}-87\,Aa^{2}b}{24\,(bx+a)^{3}a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 5/8*(B*a - 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) - 2*A/(a^4*sq
rt(x)) + 1/24*(15*B*a*b^2*x^(5/2) - 57*A*b^3*x^(5/2) + 40*B*a^2*b*x^(3/2) -
 136*A*a*b^2*x^(3/2) + 33*B*a^3*sqrt(x) - 87*A*a^2*b*sqrt(x))/((b*x + a)^3*
a^4)
```

maple [**A**] time = 0.09, size = 163, normalized size = 1.04

$$-\frac{19A\,b^{3}x^{\frac{5}{2}}}{8\,(bx+a)^{3}\,a^{4}}+\frac{5B\,b^{2}x^{\frac{5}{2}}}{8\,(bx+a)^{3}\,a^{3}}-\frac{17A\,b^{2}x^{\frac{3}{2}}}{3\,(bx+a)^{3}\,a^{3}}+\frac{5Bb\,x^{\frac{3}{2}}}{3\,(bx+a)^{3}\,a^{2}}-\frac{29Ab\sqrt{x}}{8\,(bx+a)^{3}\,a^{2}}+\frac{11B\sqrt{x}}{8\,(bx+a)^{3}\,a}-\frac{35Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\sqrt{ab}\;a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -19/8/a^4/(b*x+a)^3*x^(5/2)*A*b^3+5/8/a^3/(b*x+a)^3*x^(5/2)*B*b^2-17/3/a^3/
(b*x+a)^3*A*x^(3/2)*b^2+5/3/a^2/(b*x+a)^3*B*x^(3/2)*b-29/8/a^2/(b*x+a)^3*x^
(1/2)*A*b+11/8/a/(b*x+a)^3*x^(1/2)*B-35/8/a^4/(a*b)^(1/2)*arctan(1/(a*b)^(1
/2)*b*x^(1/2))*A*b+5/8/a^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B-2*
A/a^4/x^(1/2)
```

maxima [**A**] time = 1.15, size = 132, normalized size = 0.84

$$-\frac{48\,Aa^{3}-15\left(Bab^{2}-7\,Ab^{3}\right)x^{3}-40\left(Ba^{2}b-7\,Aab^{2}\right)x^{2}-33\left(Ba^{3}-7\,Aa^{2}b\right)x}{24\left(a^{4}b^{3}x^{\frac{7}{2}}+3\,a^{5}b^{2}x^{\frac{5}{2}}+3\,a^{6}bx^{\frac{3}{2}}+a^{7}\sqrt{x}\right)}+\frac{5\,(Ba-7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(48*A*a^3 - 15*(B*a*b^2 - 7*A*b^3)*x^3 - 40*(B*a^2*b - 7*A*a*b^2)*x^2
 - 33*(B*a^3 - 7*A*a^2*b)*x)/(a^4*b^3*x^(7/2) + 3*a^5*b^2*x^(5/2) + 3*a^6*b
*x^(3/2) + a^7*sqrt(x)) + 5/8*(B*a - 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sq
rt(a*b)*a^4)
```

mupad [**B**] time = 1.28, size = 147, normalized size = 0.94

$$-\frac{\frac{2\,A}{a}+\frac{11\,x\,(7\,A\,b-B\,a)}{8\,a^{2}}+\frac{5\,b^{2}\,x^{3}\,(7\,A\,b-B\,a)}{8\,a^{4}}+\frac{5\,b\,x^{2}\,(7\,A\,b-B\,a)}{3\,a^{3}}}{a^{3}\,\sqrt{x}+b^{3}\,x^{7/2}+3\,a^{2}\,b\,x^{3/2}+3\,a\,b^{2}\,x^{5/2}}-\frac{5\,\mathrm{atan}\left(\frac{5\,\sqrt{b}\,\sqrt{x}\,(7\,A\,b-B\,a)}{\sqrt{a}\,(35\,A\,b-5\,B\,a)}\right)\,(7\,A\,b-B\,a)}{8\,a^{9/2}\,\sqrt{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*A)/a + (11*x*(7*A*b - B*a))/(8*a^2) + (5*b^2*x^3*(7*A*b - B*a))/(8*a^
4) + (5*b*x^2*(7*A*b - B*a))/(3*a^3))/(a^3*x^(1/2) + b^3*x^(7/2) + 3*a^2*b*
x^(3/2) + 3*a*b^2*x^(5/2)) - (5*atan((5*b^(1/2)*x^(1/2)*(7*A*b - B*a))/(a^(
1/2)*(35*A*b - 5*B*a)))*(7*A*b - B*a))/(8*a^(9/2)*b^(1/2))
```

sympy [**A**] time = 144.73, size = 2917, normalized size = 18.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((zoo*(-2*A/(9*x**(9/2)) - 2*B/(7*x**(7/2))), Eq(a, 0) & Eq(b, 0))
, ((-2*A/sqrt(x) + 2*B*sqrt(x))/a**4, Eq(b, 0)), ((-2*A/(9*x**(9/2)) - 2*B/
(7*x**(7/2)))/b**4, Eq(a, 0)), (-96*I*A*a**(7/2)*b*sqrt(1/b)/(48*I*a**(15/2
)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**
(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 4
62*I*A*a**(5/2)*b**2*x*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*
I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/
b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 560*I*A*a**(3/2)*b**3*x**2*sq
rt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)
*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x
**(7/2)*sqrt(1/b)) - 210*I*A*sqrt(a)*b**4*x**3*sqrt(1/b)/(48*I*a**(15/2)*b*
sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/
2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 105*A
*a**3*b*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(
x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b*
*3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 105*A*a**3
*b*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqr
t(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**
(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 315*A*a**2*b**2*
x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt
(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(
5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 315*A*a**2*b**2*x
**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1
/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/
2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 315*A*a*b**3*x**(5/
2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b)
+ 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*s
qrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 315*A*a*b**3*x**(5/2)*l
og(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144
*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1
/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 105*A*b**4*x**(7/2)*log(-I*s
qrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**
(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) +
48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 105*A*b**4*x**(7/2)*log(I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*
b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a*
*(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 66*I*B*a**(7/2)*b*x*sqrt(1/b)/(48*I*a**(1
5/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*
a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b))
+ 80*I*B*a**(5/2)*b**2*x**2*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) +
 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sq
rt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 30*I*B*a**(3/2)*b**3*x**
3*sqrt(1/b)/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(
3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b*
*4*x**(7/2)*sqrt(1/b)) + 15*B*a**4*sqrt(x)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(
x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqr
t(1/b) + 144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7
/2)*sqrt(1/b)) - 15*B*a**4*sqrt(x)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I
*a**(15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) +
144*I*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(
1/b)) + 45*B*a**3*b*x**(3/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(
15/2)*b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I
*a**(11/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b))
 - 45*B*a**3*b*x**(3/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*
b*sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(1
1/2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 45*
B*a**2*b**2*x**(5/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*
sqrt(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/
2)*b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 45*B*
a**2*b**2*x**(5/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqr
t(x)*sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*
b**3*x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) + 15*B*a*b
**3*x**(7/2)*log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*
sqrt(1/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*
x**(5/2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)) - 15*B*a*b**3*x
**(7/2)*log(I*sqrt(a)*sqrt(1/b) + sqrt(x))/(48*I*a**(15/2)*b*sqrt(x)*sqrt(1
/b) + 144*I*a**(13/2)*b**2*x**(3/2)*sqrt(1/b) + 144*I*a**(11/2)*b**3*x**(5/
2)*sqrt(1/b) + 48*I*a**(9/2)*b**4*x**(7/2)*sqrt(1/b)), True))
```

3.772 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=178

$$\frac{35\sqrt{b}\,(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8a^{11/2}}+\frac{35(3Ab-aB)}{8a^5\sqrt{x}}-\frac{35(3Ab-aB)}{24a^4bx^{3/2}}+\frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)}+\frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2}+\frac{A}{3abx^{3/}}$$

```
[Out] -35/24*(3*A*b-B*a)/a^4/b/x^(3/2)+1/3*(A*b-B*a)/a/b/x^(3/2)/(b*x+a)^3+1/4*(3
*A*b-B*a)/a^2/b/x^(3/2)/(b*x+a)^2+7/8*(3*A*b-B*a)/a^3/b/x^(3/2)/(b*x+a)+35/
8*(3*A*b-B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*b^(1/2)/a^(11/2)+35/8*(3*A*b-
B*a)/a^5/x^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{27, 78, 51, 63, 205\}$

$$\frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)}-\frac{35(3Ab-aB)}{24a^4bx^{3/2}}+\frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2}+\frac{35(3Ab-aB)}{8a^5\sqrt{x}}+\frac{35\sqrt{b}\,(3Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{8a^{11/2}}+\frac{A}{3abx^{3/}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-35*(3*A*b - a*B))/(24*a^4*b*x^(3/2)) + (35*(3*A*b - a*B))/(8*a^5*Sqrt[x])
 + (A*b - a*B)/(3*a*b*x^(3/2)*(a + b*x)^3) + (3*A*b - a*B)/(4*a^2*b*x^(3/2)
*(a + b*x)^2) + (7*(3*A*b - a*B))/(8*a^3*b*x^(3/2)*(a + b*x)) + (35*Sqrt[b]
*(3*A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(8*a^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{x^{5/2}(a+bx)^4}\,dx$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} - \frac{\left(-\frac{9Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)^3}\,dx}{3ab}$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{(7(3Ab-aB))\int \frac{1}{x^{5/2}(a+bx)^2}\,dx}{8a^2b}$$

$$= \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)} + \frac{(35(3Ab-aB))\int}{16a^3b}$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7(3Ab-aB)}{8a^3bx^{3/2}(a+bx)} - $$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7}{8a^3}$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7}{8a^3}$$

$$= -\frac{35(3Ab-aB)}{24a^4bx^{3/2}} + \frac{35(3Ab-aB)}{8a^5\sqrt{x}} + \frac{Ab-aB}{3abx^{3/2}(a+bx)^3} + \frac{3Ab-aB}{4a^2bx^{3/2}(a+bx)^2} + \frac{7}{8a^3}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.34

$$\frac{\frac{3a^3(Ab-aB)}{(a+bx)^3} + (3aB-9Ab)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};-\frac{bx}{a}\right)}{9a^4bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((3*a^3*(A*b - a*B))/(a + b*x)^3 + (-9*A*b + 3*a*B)*Hypergeometric2F1[-3/2,
 3, -1/2, -((b*x)/a)])/(9*a^4*b*x^(3/2))
```

fricas [A] time = 0.91, size = 482, normalized size = 2.71

$$\left[-\frac{105\left(\left(Bab^3-3\,Ab^4\right)x^5+3\left(Ba^2b^2-3\,Aab^3\right)x^4+3\left(Ba^3b-3\,Aa^2b^2\right)x^3+\left(Ba^4-3\,Aa^3b\right)x^2\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}}{bx}\right.}{48\left(a^5b^3x^5+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(105*((B*a*b^3 - 3*A*b^4)*x^5 + 3*(B*a^2*b^2 - 3*A*a*b^3)*x^4 + 3*(B
*a^3*b - 3*A*a^2*b^2)*x^3 + (B*a^4 - 3*A*a^3*b)*x^2)*sqrt(-b/a)*log((b*x +
2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(16*A*a^4 + 105*(B*a*b^3 - 3*A*b
^4)*x^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2
 + 48*(B*a^4 - 3*A*a^3*b)*x)*sqrt(x))/(a^5*b^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*
b*x^3 + a^8*x^2), 1/24*(105*((B*a*b^3 - 3*A*b^4)*x^5 + 3*(B*a^2*b^2 - 3*A*a
*b^3)*x^4 + 3*(B*a^3*b - 3*A*a^2*b^2)*x^3 + (B*a^4 - 3*A*a^3*b)*x^2)*sqrt(b
/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (16*A*a^4 + 105*(B*a*b^3 - 3*A*b^4)*x
^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2 + 48
*(B*a^4 - 3*A*a^3*b)*x)*sqrt(x))/(a^5*b^3*x^5 + 3*a^6*b^2*x^4 + 3*a^7*b*x^3
 + a^8*x^2)]
```

giac [A]   time = 0.17, size = 136, normalized size = 0.76

$$-\frac{35\left(Bab-3\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{8\,\sqrt{ab}\,a^{5}}-\frac{105\,Bab^{3}x^{4}-315\,Ab^{4}x^{4}+280\,Ba^{2}b^{2}x^{3}-840\,Aab^{3}x^{3}+231\,Ba^{3}bx^{2}-693}{24\left(bx^{\frac{3}{2}}+a\sqrt{x}\right)^{3}a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -35/8*(B*a*b - 3*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) - 1/24*
(105*B*a*b^3*x^4 - 315*A*b^4*x^4 + 280*B*a^2*b^2*x^3 - 840*A*a*b^3*x^3 + 23
1*B*a^3*b*x^2 - 693*A*a^2*b^2*x^2 + 48*B*a^4*x - 144*A*a^3*b*x + 16*A*a^4)/
((b*x^(3/2) + a*sqrt(x))^3*a^5)
```

maple [A]   time = 0.08, size = 190, normalized size = 1.07

$$\frac{41A\,b^{4}x^{\frac{5}{2}}}{8\left(bx+a\right)^{3}a^{5}}-\frac{19B\,b^{3}x^{\frac{5}{2}}}{8\left(bx+a\right)^{3}a^{4}}+\frac{35A\,b^{3}x^{\frac{3}{2}}}{3\left(bx+a\right)^{3}a^{4}}-\frac{17B\,b^{2}x^{\frac{3}{2}}}{3\left(bx+a\right)^{3}a^{3}}+\frac{55A\,b^{2}\sqrt{x}}{8\left(bx+a\right)^{3}a^{3}}-\frac{29Bb\sqrt{x}}{8\left(bx+a\right)^{3}a^{2}}+\frac{105A\,b^{2}\arctan\left(\right.}{8\sqrt{ab}\,a^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 41/8/a^5*b^4/(b*x+a)^3*x^(5/2)*A-19/8/a^4*b^3/(b*x+a)^3*x^(5/2)*B+35/3/a^4*
b^3/(b*x+a)^3*A*x^(3/2)-17/3/a^3*b^2/(b*x+a)^3*B*x^(3/2)+55/8/a^3*b^2/(b*x+
a)^3*x^(1/2)*A-29/8/a^2*b/(b*x+a)^3*x^(1/2)*B+105/8/a^5*b^2/(a*b)^(1/2)*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))*A-35/8/a^4*b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*B-2/3*A/a^4/x^(3/2)+8/a^5/x^(1/2)*A*b-2/a^4/x^(1/2)*B
```

maxima [A]   time = 1.40, size = 158, normalized size = 0.89

$$-\frac{16\,Aa^{4}+105\left(Bab^{3}-3\,Ab^{4}\right)x^{4}+280\left(Ba^{2}b^{2}-3\,Aab^{3}\right)x^{3}+231\left(Ba^{3}b-3\,Aa^{2}b^{2}\right)x^{2}+48\left(Ba^{4}-3\,Aa^{3}b\right)x}{24\left(a^{5}b^{3}x^{\frac{9}{2}}+3\,a^{6}b^{2}x^{\frac{7}{2}}+3\,a^{7}bx^{\frac{5}{2}}+a^{8}x^{\frac{3}{2}}\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/24*(16*A*a^4 + 105*(B*a*b^3 - 3*A*b^4)*x^4 + 280*(B*a^2*b^2 - 3*A*a*b^3)
*x^3 + 231*(B*a^3*b - 3*A*a^2*b^2)*x^2 + 48*(B*a^4 - 3*A*a^3*b)*x)/(a^5*b^3
*x^(9/2) + 3*a^6*b^2*x^(7/2) + 3*a^7*b*x^(5/2) + a^8*x^(3/2)) - 35/8*(B*a*b
 - 3*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5)
```

mupad [B]   time = 1.25, size = 145, normalized size = 0.81

$$\frac{\frac{2\,x\,\left(3\,A\,b-B\,a\right)}{a^{2}}-\frac{2\,A}{3\,a}+\frac{35\,b^{2}\,x^{3}\,\left(3\,A\,b-B\,a\right)}{3\,a^{4}}+\frac{35\,b^{3}\,x^{4}\,\left(3\,A\,b-B\,a\right)}{8\,a^{5}}+\frac{77\,b\,x^{2}\,\left(3\,A\,b-B\,a\right)}{8\,a^{3}}}{a^{3}\,x^{3/2}+b^{3}\,x^{9/2}+3\,a^{2}\,b\,x^{5/2}+3\,a\,b^{2}\,x^{7/2}}+\frac{35\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,\left(3\,A\,b-B\,a\right)}{8\,a^{11/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((2*x*(3*A*b - B*a))/a^2 - (2*A)/(3*a) + (35*b^2*x^3*(3*A*b - B*a))/(3*a^4)
 + (35*b^3*x^4*(3*A*b - B*a))/(8*a^5) + (77*b*x^2*(3*A*b - B*a))/(8*a^3))/(
a^3*x^(3/2) + b^3*x^(9/2) + 3*a^2*b*x^(5/2) + 3*a*b^2*x^(7/2)) + (35*b^(1/2
)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(3*A*b - B*a))/(8*a^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.773 $\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=240

$$-\frac{231\sqrt{a}\,(3Ab-13aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{128b^{15/2}}+\frac{231\sqrt{x}\,(3Ab-13aB)}{128b^7}-\frac{77x^{3/2}(3Ab-13aB)}{128ab^6}+\frac{231x^{5/2}(3Ab-13aB)}{640ab^5(a+bx)}+$$

```
[Out] -77/128*(3*A*b-13*B*a)*x^(3/2)/a/b^6+1/5*(A*b-B*a)*x^(13/2)/a/b/(b*x+a)^5+1
/40*(3*A*b-13*B*a)*x^(11/2)/a/b^2/(b*x+a)^4+11/240*(3*A*b-13*B*a)*x^(9/2)/a
/b^3/(b*x+a)^3+33/320*(3*A*b-13*B*a)*x^(7/2)/a/b^4/(b*x+a)^2+231/640*(3*A*b
-13*B*a)*x^(5/2)/a/b^5/(b*x+a)-231/128*(3*A*b-13*B*a)*arctan(b^(1/2)*x^(1/2
)/a^(1/2))*a^(1/2)/b^(15/2)+231/128*(3*A*b-13*B*a)*x^(1/2)/b^7
```

Rubi [A] time = 0.12, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{11/2}(3Ab-13aB)}{40ab^2(a+bx)^4}+\frac{11x^{9/2}(3Ab-13aB)}{240ab^3(a+bx)^3}+\frac{33x^{7/2}(3Ab-13aB)}{320ab^4(a+bx)^2}+\frac{231x^{5/2}(3Ab-13aB)}{640ab^5(a+bx)}-\frac{77x^{3/2}(3Ab-13aB)}{128ab^6}+$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (231*(3*A*b - 13*a*B)*Sqrt[x])/(128*b^7) - (77*(3*A*b - 13*a*B)*x^(3/2))/(1
28*a*b^6) + ((A*b - a*B)*x^(13/2))/(5*a*b*(a + b*x)^5) + ((3*A*b - 13*a*B)*
x^(11/2))/(40*a*b^2*(a + b*x)^4) + (11*(3*A*b - 13*a*B)*x^(9/2))/(240*a*b^3
*(a + b*x)^3) + (33*(3*A*b - 13*a*B)*x^(7/2))/(320*a*b^4*(a + b*x)^2) + (23
1*(3*A*b - 13*a*B)*x^(5/2))/(640*a*b^5*(a + b*x)) - (231*Sqrt[a]*(3*A*b - 1
3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*b^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{x^{11/2}(A+Bx)}{(a+bx)^6}\,dx \\
&= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} - \frac{\left(\frac{3Ab}{2}-\frac{13aB}{2}\right)\int \frac{x^{11/2}}{(a+bx)^5}\,dx}{5ab} \\
&= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} - \frac{(11(3Ab-13aB))\int \frac{x^{9/2}}{(a+bx)^4}\,dx}{80ab^2} \\
&= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} - \frac{(33(3Ab-13aB))\int}{160ab^3} \\
&= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} + \frac{33(3Ab-13aB)x^{7/2}}{320ab^4(a+bx)^2} \\
&= \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} + \frac{33(3Ab-13aB)x^{7/2}}{320ab^4(a+bx)^2} \\
&= -\frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} + \frac{11(3Ab-13aB)x^{9/2}}{240ab^3(a+bx)^3} \\
&= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} \\
&= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4} \\
&= \frac{231(3Ab-13aB)\sqrt{x}}{128b^7} - \frac{77(3Ab-13aB)x^{3/2}}{128ab^6} + \frac{(Ab-aB)x^{13/2}}{5ab(a+bx)^5} + \frac{(3Ab-13aB)x^{11/2}}{40ab^2(a+bx)^4}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.25

$$
\frac{x^{13/2}\left(\frac{13a^5(Ab-aB)}{(a+bx)^5}+(13aB-3Ab)\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};-\frac{bx}{a}\right)\right)}{65a^6b}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(13/2)*((13*a^5*(A*b - a*B))/(a + b*x)^5 + (-3*A*b + 13*a*B)*Hypergeomet
ric2F1[5, 13/2, 15/2, -((b*x)/a)]))/(65*a^6*b)
```

fricas [**A**] time = 0.91, size = 703, normalized size = 2.93

$$\left[-\frac{3465\left(13\,Ba^{6}-3\,Aa^{5}b+\left(13\,Bab^{5}-3\,Ab^{6}\right)x^{5}+5\left(13\,Ba^{2}b^{4}-3\,Aab^{5}\right)x^{4}+10\left(13\,Ba^{3}b^{3}-3\,Aa^{2}b^{4}\right)x^{3}+10\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(3465*(13*B*a^6 - 3*A*a^5*b + (13*B*a*b^5 - 3*A*b^6)*x^5 + 5*(13*B
*a^2*b^4 - 3*A*a*b^5)*x^4 + 10*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 10*(13*B*
a^4*b^2 - 3*A*a^3*b^3)*x^2 + 5*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(-a/b)*log
((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)) - 2*(1280*B*b^6*x^6 - 45045*
B*a^6 + 10395*A*a^5*b - 1280*(13*B*a*b^5 - 3*A*b^6)*x^5 - 10615*(13*B*a^2*b
^4 - 3*A*a*b^5)*x^4 - 26070*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 29568*(13*B*
a^4*b^2 - 3*A*a^3*b^3)*x^2 - 16170*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(x))/(
b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x +
a^5*b^7), 1/1920*(3465*(13*B*a^6 - 3*A*a^5*b + (13*B*a*b^5 - 3*A*b^6)*x^5 +
 5*(13*B*a^2*b^4 - 3*A*a*b^5)*x^4 + 10*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 + 1
0*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x^2 + 5*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(a
/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (1280*B*b^6*x^6 - 45045*B*a^6 + 10395*A
*a^5*b - 1280*(13*B*a*b^5 - 3*A*b^6)*x^5 - 10615*(13*B*a^2*b^4 - 3*A*a*b^5)
*x^4 - 26070*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^3 - 29568*(13*B*a^4*b^2 - 3*A*a
^3*b^3)*x^2 - 16170*(13*B*a^5*b - 3*A*a^4*b^2)*x)*sqrt(x))/(b^12*x^5 + 5*a*
b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)]
```

giac [**A**] time = 0.18, size = 191, normalized size = 0.80

$$\frac{231\left(13\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,b^{7}}-\frac{35595\,Ba^{2}b^{4}x^{\frac{9}{2}}-12645\,Aab^{5}x^{\frac{9}{2}}+121310\,Ba^{3}b^{3}x^{\frac{7}{2}}-39810\,Aa^{2}b^{4}x^{\frac{7}{2}}+1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 231/128*(13*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^7) -
1/1920*(35595*B*a^2*b^4*x^(9/2) - 12645*A*a*b^5*x^(9/2) + 121310*B*a^3*b^3*
x^(7/2) - 39810*A*a^2*b^4*x^(7/2) + 160384*B*a^4*b^2*x^(5/2) - 50304*A*a^3*
b^3*x^(5/2) + 96290*B*a^5*b*x^(3/2) - 29310*A*a^4*b^2*x^(3/2) + 22005*B*a^6
*sqrt(x) - 6555*A*a^5*b*sqrt(x))/((b*x + a)^5*b^7) + 2/3*(B*b^12*x^(3/2) -
18*B*a*b^11*sqrt(x) + 3*A*b^12*sqrt(x))/b^18
```

maple [**A**] time = 0.08, size = 266, normalized size = 1.11

$$\frac{843Aa\,x^{\frac{9}{2}}}{128\left(bx+a\right)^{5}b^{2}}-\frac{2373B\,a^{2}x^{\frac{9}{2}}}{128\left(bx+a\right)^{5}b^{3}}+\frac{1327A\,a^{2}x^{\frac{7}{2}}}{64\left(bx+a\right)^{5}b^{3}}-\frac{12131B\,a^{3}x^{\frac{7}{2}}}{192\left(bx+a\right)^{5}b^{4}}+\frac{131A\,a^{3}x^{\frac{5}{2}}}{5\left(bx+a\right)^{5}b^{4}}-\frac{1253B\,a^{4}x^{\frac{5}{2}}}{15\left(bx+a\right)^{5}b^{5}}+\frac{977A}{64\left(bx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3/b^6*B*x^(3/2)+2/b^6*A*x^(1/2)-12/b^7*B*a*x^(1/2)+843/128*a/b^2/(b*x+a)^
5*x^(9/2)*A-2373/128*a^2/b^3/(b*x+a)^5*x^(9/2)*B+1327/64*a^2/b^3/(b*x+a)^5*
x^(7/2)*A-12131/192*a^3/b^4/(b*x+a)^5*x^(7/2)*B+131/5*a^3/b^4/(b*x+a)^5*x^(
5/2)*A-1253/15*a^4/b^5/(b*x+a)^5*x^(5/2)*B+977/64*a^4/b^5/(b*x+a)^5*A*x^(3/
2)-9629/192*a^5/b^6/(b*x+a)^5*B*x^(3/2)+437/128*a^5/b^6/(b*x+a)^5*x^(1/2)*A
-1467/128*a^6/b^7/(b*x+a)^5*x^(1/2)*B-693/128*a/b^6/(a*b)^(1/2)*arctan(1/(a
*b)^(1/2)*b*x^(1/2))*A+3003/128*a^2/b^7/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*B
```

maxima [A] time = 1.18, size = 231, normalized size = 0.96

$$-\frac{45\bigl(791\,Ba^2b^4-281\,Aab^5\bigr)x^{\frac{9}{2}}+10\bigl(12131\,Ba^3b^3-3981\,Aa^2b^4\bigr)x^{\frac{7}{2}}+128\bigl(1253\,Ba^4b^2-393\,Aa^3b^3\bigr)x^{\frac{5}{2}}+10\bigl(962}{1920\bigl(b^{12}x^5+5\,ab^{11}x^4+10\,a^2b^{10}x^3+10\,a^3b^9x^2+5\,a^4b^8x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(45*(791*B*a^2*b^4 - 281*A*a*b^5)*x^(9/2) + 10*(12131*B*a^3*b^3 - 3
981*A*a^2*b^4)*x^(7/2) + 128*(1253*B*a^4*b^2 - 393*A*a^3*b^3)*x^(5/2) + 10*
(9629*B*a^5*b - 2931*A*a^4*b^2)*x^(3/2) + 15*(1467*B*a^6 - 437*A*a^5*b)*sqr
t(x))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b
^8*x + a^5*b^7) + 231/128*(13*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^7) + 2/3*(B*b*x^(3/2) - 3*(6*B*a - A*b)*sqrt(x))/b^7
```

mupad [B] time = 1.24, size = 246, normalized size = 1.02

$$\sqrt{x}\,\left(\frac{2\,A}{b^6}-\frac{12\,B\,a}{b^7}\right)+\frac{x^{3/2}\,\left(\frac{977\,A\,a^4\,b^2}{64}-\frac{9629\,B\,a^5\,b}{192}\right)-x^{9/2}\,\left(\frac{2373\,B\,a^2\,b^4}{128}-\frac{843\,A\,a\,b^5}{128}\right)-\sqrt{x}\,\left(\frac{1467\,B\,a^6}{128}-\frac{437\,A\,a^5\,b}{128}\right)+x^{5/2}\,\bigl(}{a^5\,b^7+5\,a^4\,b^8\,x+10\,a^3\,b^9\,x^2+10\,a^2\,b^{10}\,x^3+5\,a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^(1/2)*((2*A)/b^6 - (12*B*a)/b^7) + (x^(3/2)*((977*A*a^4*b^2)/64 - (9629*B
*a^5*b)/192) - x^(9/2)*((2373*B*a^2*b^4)/128 - (843*A*a*b^5)/128) - x^(1/2)
*((1467*B*a^6)/128 - (437*A*a^5*b)/128) + x^(5/2)*((131*A*a^3*b^3)/5 - (125
3*B*a^4*b^2)/15) + x^(7/2)*((1327*A*a^2*b^4)/64 - (12131*B*a^3*b^3)/192))/(
a^5*b^7 + b^12*x^5 + 5*a^4*b^8*x + 5*a*b^11*x^4 + 10*a^3*b^9*x^2 + 10*a^2*b
^10*x^3) + (2*B*x^(3/2))/(3*b^6) + (231*a^(1/2)*atan((a^(1/2)*b^(1/2)*x^(1/
2)*(3*A*b - 13*B*a))/(13*B*a^2 - 3*A*a*b))*(3*A*b - 13*B*a))/(128*b^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.774 $\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=213

$$\frac{63(Ab-11aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128\sqrt{a}\,b^{13/2}}-\frac{63\sqrt{x}\,(Ab-11aB)}{128ab^6}+\frac{21x^{3/2}(Ab-11aB)}{128ab^5(a+bx)}+\frac{21x^{5/2}(Ab-11aB)}{320ab^4(a+bx)^2}+\frac{3x^{7/2}(Ab-11aB)}{80ab^3(a+bx)^3}$$

```
[Out] 1/5*(A*b-B*a)*x^(11/2)/a/b/(b*x+a)^5+1/40*(A*b-11*B*a)*x^(9/2)/a/b^2/(b*x+a
)^4+3/80*(A*b-11*B*a)*x^(7/2)/a/b^3/(b*x+a)^3+21/320*(A*b-11*B*a)*x^(5/2)/a
/b^4/(b*x+a)^2+21/128*(A*b-11*B*a)*x^(3/2)/a/b^5/(b*x+a)+63/128*(A*b-11*B*a
)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(13/2)/a^(1/2)-63/128*(A*b-11*B*a)*x^(1
/2)/a/b^6
```

Rubi [A] time = 0.10, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-11aB)}{40ab^2(a+bx)^4}+\frac{3x^{7/2}(Ab-11aB)}{80ab^3(a+bx)^3}+\frac{21x^{5/2}(Ab-11aB)}{320ab^4(a+bx)^2}+\frac{21x^{3/2}(Ab-11aB)}{128ab^5(a+bx)}-\frac{63\sqrt{x}\,(Ab-11aB)}{128ab^6}+\frac{63(Ab-11}{12}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-63*(A*b - 11*a*B)*Sqrt[x])/(128*a*b^6) + ((A*b - a*B)*x^(11/2))/(5*a*b*(a
 + b*x)^5) + ((A*b - 11*a*B)*x^(9/2))/(40*a*b^2*(a + b*x)^4) + (3*(A*b - 11
*a*B)*x^(7/2))/(80*a*b^3*(a + b*x)^3) + (21*(A*b - 11*a*B)*x^(5/2))/(320*a*
b^4*(a + b*x)^2) + (21*(A*b - 11*a*B)*x^(3/2))/(128*a*b^5*(a + b*x)) + (63*
(A*b - 11*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*Sqrt[a]*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{x^{9/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$=\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}-\frac{(Ab-11aB)\int \frac{x^{9/2}}{(a+bx)^5}\,dx}{10ab}$$

$$=\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}-\frac{(9(Ab-11aB))\int \frac{x^{7/2}}{(a+bx)^4}\,dx}{80ab^2}$$

$$=\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}-\frac{(21(Ab-11aB))\int \frac{x^{5/2}}{(a+bx)^3}}{160ab^3}$$

$$=\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}+\frac{21(Ab-11aB)x^{5/2}}{320ab^4(a+bx)^2}-$$

$$=\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}+\frac{21(Ab-11aB)x^{5/2}}{320ab^4(a+bx)^2}+$$

$$=-\frac{63(Ab-11aB)\sqrt{x}}{128ab^6}+\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}+$$

$$=-\frac{63(Ab-11aB)\sqrt{x}}{128ab^6}+\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}+$$

$$=-\frac{63(Ab-11aB)\sqrt{x}}{128ab^6}+\frac{(Ab-aB)x^{11/2}}{5ab(a+bx)^5}+\frac{(Ab-11aB)x^{9/2}}{40ab^2(a+bx)^4}+\frac{3(Ab-11aB)x^{7/2}}{80ab^3(a+bx)^3}+$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.29

$$\frac{x^{11/2}\left(\frac{11a^5(Ab-aB)}{(a+bx)^5}+(11aB-Ab)\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};-\frac{bx}{a}\right)\right)}{55a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(11/2)*((11*a^5*(A*b - a*B))/(a + b*x)^5 + (-(A*b) + 11*a*B)*Hypergeomet
ric2F1[5, 11/2, 13/2, -((b*x)/a)]))/(55*a^6*b)
```

fricas [A] time = 1.02, size = 673, normalized size = 3.16

$$\left[\frac{315\left(11\,Ba^{6}-Aa^{5}b+\left(11\,Bab^{5}-Ab^{6}\right)x^{5}+5\left(11\,Ba^{2}b^{4}-Aab^{5}\right)x^{4}+10\left(11\,Ba^{3}b^{3}-Aa^{2}b^{4}\right)x^{3}+10\left(11\,Ba^{4}b^{2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [1/1280*(315*(11*B*a^6 - A*a^5*b + (11*B*a*b^5 - A*b^6)*x^5 + 5*(11*B*a^2*b
^4 - A*a*b^5)*x^4 + 10*(11*B*a^3*b^3 - A*a^2*b^4)*x^3 + 10*(11*B*a^4*b^2 -
A*a^3*b^3)*x^2 + 5*(11*B*a^5*b - A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*
sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(1280*B*a*b^6*x^5 + 3465*B*a^6*b - 315*A
*a^5*b^2 + 965*(11*B*a^2*b^5 - A*a*b^6)*x^4 + 2370*(11*B*a^3*b^4 - A*a^2*b^
5)*x^3 + 2688*(11*B*a^4*b^3 - A*a^3*b^4)*x^2 + 1470*(11*B*a^5*b^2 - A*a^4*b
^3)*x)*sqrt(x))/(a*b^12*x^5 + 5*a^2*b^11*x^4 + 10*a^3*b^10*x^3 + 10*a^4*b^9
*x^2 + 5*a^5*b^8*x + a^6*b^7), 1/640*(315*(11*B*a^6 - A*a^5*b + (11*B*a*b^5
 - A*b^6)*x^5 + 5*(11*B*a^2*b^4 - A*a*b^5)*x^4 + 10*(11*B*a^3*b^3 - A*a^2*b
^4)*x^3 + 10*(11*B*a^4*b^2 - A*a^3*b^3)*x^2 + 5*(11*B*a^5*b - A*a^4*b^2)*x)
*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (1280*B*a*b^6*x^5 + 3465*B*a^6*b
 - 315*A*a^5*b^2 + 965*(11*B*a^2*b^5 - A*a*b^6)*x^4 + 2370*(11*B*a^3*b^4 -
A*a^2*b^5)*x^3 + 2688*(11*B*a^4*b^3 - A*a^3*b^4)*x^2 + 1470*(11*B*a^5*b^2 -
 A*a^4*b^3)*x)*sqrt(x))/(a*b^12*x^5 + 5*a^2*b^11*x^4 + 10*a^3*b^10*x^3 + 10
*a^4*b^9*x^2 + 5*a^5*b^8*x + a^6*b^7)]
```

giac [A] time = 0.17, size = 159, normalized size = 0.75

$$\frac{2\,B\sqrt{x}}{b^{6}}-\frac{63\,(11\,Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,b^{6}}+\frac{4215\,Bab^{4}x^{\frac{9}{2}}-965\,Ab^{5}x^{\frac{9}{2}}+13270\,Ba^{2}b^{3}x^{\frac{7}{2}}-2370\,Aab^{4}x^{\frac{7}{2}}+16768}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/b^6 - 63/128*(11*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*b^6) + 1/640*(4215*B*a*b^4*x^(9/2) - 965*A*b^5*x^(9/2) + 13270*B*a^2*b^
3*x^(7/2) - 2370*A*a*b^4*x^(7/2) + 16768*B*a^3*b^2*x^(5/2) - 2688*A*a^2*b^3
*x^(5/2) + 9770*B*a^4*b*x^(3/2) - 1470*A*a^3*b^2*x^(3/2) + 2185*B*a^5*sqrt(
x) - 315*A*a^4*b*sqrt(x))/((b*x + a)^5*b^6)
```

maple [A] time = 0.08, size = 239, normalized size = 1.12

$$-\frac{193A\,x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,b}+\frac{843Ba\,x^{\frac{9}{2}}}{128\,(bx+a)^{5}\,b^{2}}-\frac{237Aa\,x^{\frac{7}{2}}}{64\,(bx+a)^{5}\,b^{2}}+\frac{1327B\,a^{2}x^{\frac{7}{2}}}{64\,(bx+a)^{5}\,b^{3}}-\frac{21A\,a^{2}x^{\frac{5}{2}}}{5\,(bx+a)^{5}\,b^{3}}+\frac{131B\,a^{3}x^{\frac{5}{2}}}{5\,(bx+a)^{5}\,b^{4}}-\frac{147A\,a}{64\,(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*B/b^6*x^(1/2)-193/128/b/(b*x+a)^5*x^(9/2)*A+843/128/b^2/(b*x+a)^5*x^(9/2)
*B*a+1327/64/b^3/(b*x+a)^5*x^(7/2)*B*a^2-237/64/b^2/(b*x+a)^5*x^(7/2)*A*a+1
31/5/b^4/(b*x+a)^5*x^(5/2)*B*a^3-21/5/b^3/(b*x+a)^5*x^(5/2)*A*a^2-147/64/b^
4/(b*x+a)^5*A*x^(3/2)*a^3+977/64/b^5/(b*x+a)^5*B*x^(3/2)*a^4+437/128/b^6/(b
*x+a)^5*x^(1/2)*B*a^5-63/128/b^5/(b*x+a)^5*x^(1/2)*A*a^4+63/128/b^5/(a*b)^(
1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-693/128/b^6/(a*b)^(1/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*B*a
```

maxima [A] time = 1.34, size = 206, normalized size = 0.97

$$\frac{5\,(843\,Bab^4-193\,Ab^5)x^{\frac{9}{2}}+10\,(1327\,Ba^2b^3-237\,Aab^4)x^{\frac{7}{2}}+128\,(131\,Ba^3b^2-21\,Aa^2b^3)x^{\frac{5}{2}}+10\,(977\,Ba^4b-14}{640\,(b^{11}x^5+5\,ab^{10}x^4+10\,a^2b^9x^3+10\,a^3b^8x^2+5\,a^4b^7x+a^5b^6)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/640*(5*(843*B*a*b^4 - 193*A*b^5)*x^(9/2) + 10*(1327*B*a^2*b^3 - 237*A*a*b
^4)*x^(7/2) + 128*(131*B*a^3*b^2 - 21*A*a^2*b^3)*x^(5/2) + 10*(977*B*a^4*b
- 147*A*a^3*b^2)*x^(3/2) + 5*(437*B*a^5 - 63*A*a^4*b)*sqrt(x))/(b^11*x^5 +
5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b^7*x + a^5*b^6) + 2
*B*sqrt(x)/b^6 - 63/128*(11*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*
b)*b^6)
```

mupad [B] time = 0.18, size = 200, normalized size = 0.94

$$\frac{2\,B\,\sqrt{x}}{b^6}-\frac{x^{3/2}\,\left(\frac{147\,A\,a^3\,b^2}{64}-\frac{977\,B\,a^4\,b}{64}\right)-x^{7/2}\,\left(\frac{1327\,B\,a^2\,b^3}{64}-\frac{237\,A\,a\,b^4}{64}\right)-\sqrt{x}\,\left(\frac{437\,B\,a^5}{128}-\frac{63\,A\,a^4\,b}{128}\right)+x^{9/2}\,(\frac{193\,A\,b^5}{128}-\frac{843\,B}{12}}{a^5\,b^6+5\,a^4\,b^7\,x+10\,a^3\,b^8\,x^2+10\,a^2\,b^9\,x^3+5\,a\,b^{10}\,x^4+b^{11}\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*B*x^(1/2))/b^6 - (x^(3/2)*((147*A*a^3*b^2)/64 - (977*B*a^4*b)/64) - x^(7
/2)*((1327*B*a^2*b^3)/64 - (237*A*a*b^4)/64) - x^(1/2)*((437*B*a^5)/128 - (
63*A*a^4*b)/128) + x^(9/2)*((193*A*b^5)/128 - (843*B*a*b^4)/128) + x^(5/2)*
((21*A*a^2*b^3)/5 - (131*B*a^3*b^2)/5))/(a^5*b^6 + b^11*x^5 + 5*a^4*b^7*x +
 5*a*b^10*x^4 + 10*a^3*b^8*x^2 + 10*a^2*b^9*x^3) + (63*atan((b^(1/2)*x^(1/2
))/a^(1/2))*(A*b - 11*B*a))/(128*a^(1/2)*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.775 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=190

$$\frac{7(9aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{3/2}b^{11/2}}-\frac{7\sqrt{x}\,(9aB+Ab)}{128ab^5(a+bx)}-\frac{7x^{3/2}(9aB+Ab)}{192ab^4(a+bx)^2}-\frac{7x^{5/2}(9aB+Ab)}{240ab^3(a+bx)^3}-\frac{x^{7/2}(9aB+Ab)}{40ab^2(a+bx)^4}+\frac{x^{9/2}(Ab}{5ab(a+}$$

```
[Out] 1/5*(A*b-B*a)*x^(9/2)/a/b/(b*x+a)^5-1/40*(A*b+9*B*a)*x^(7/2)/a/b^2/(b*x+a)^
4-7/240*(A*b+9*B*a)*x^(5/2)/a/b^3/(b*x+a)^3-7/192*(A*b+9*B*a)*x^(3/2)/a/b^4
/(b*x+a)^2+7/128*(A*b+9*B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(3/2)/b^(11/
2)-7/128*(A*b+9*B*a)*x^(1/2)/a/b^5/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 47, 63, 205}

$$\frac{7(9aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{3/2}b^{11/2}}-\frac{x^{7/2}(9aB+Ab)}{40ab^2(a+bx)^4}-\frac{7x^{5/2}(9aB+Ab)}{240ab^3(a+bx)^3}-\frac{7x^{3/2}(9aB+Ab)}{192ab^4(a+bx)^2}-\frac{7\sqrt{x}\,(9aB+Ab)}{128ab^5(a+bx)}+\frac{x^{9/2}(Ab}{5ab(a+}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(9/2))/(5*a*b*(a + b*x)^5) - ((A*b + 9*a*B)*x^(7/2))/(40*a*b
^2*(a + b*x)^4) - (7*(A*b + 9*a*B)*x^(5/2))/(240*a*b^3*(a + b*x)^3) - (7*(A
*b + 9*a*B)*x^(3/2))/(192*a*b^4*(a + b*x)^2) - (7*(A*b + 9*a*B)*Sqrt[x])/(1
28*a*b^5*(a + b*x)) + (7*(A*b + 9*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
128*a^(3/2)*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{7/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} + \frac{(Ab+9aB)\int \frac{x^{7/2}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} + \frac{(7(Ab+9aB))\int \frac{x^{5/2}}{(a+bx)^4}\,dx}{80ab^2}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} + \frac{(7(Ab+9aB))\int \frac{x^{3/2}}{(a+bx)^3}\,dx}{96ab^3}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} + (7(Ab+$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab+9}{128ab^5(}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab+9}{128ab^5(}$$

$$= \frac{(Ab-aB)x^{9/2}}{5ab(a+bx)^5} - \frac{(Ab+9aB)x^{7/2}}{40ab^2(a+bx)^4} - \frac{7(Ab+9aB)x^{5/2}}{240ab^3(a+bx)^3} - \frac{7(Ab+9aB)x^{3/2}}{192ab^4(a+bx)^2} - \frac{7(Ab+9}{128ab^5(}$$

Mathematica [**A**] time = 0.18, size = 134, normalized size = 0.71

$$\frac{(9aB+Ab)\left(105(a+bx)^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\sqrt{a}\sqrt{b}\sqrt{x}\left(105a^3+385a^2bx+511ab^2x^2+279b^3x^3\right)\right)}{1920a^{3/2}b^{11/2}(a+bx)^4}+\frac{x^{9/2}(Ab-aB)}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(9/2))/(5*a*b*(a + b*x)^5) + ((A*b + 9*a*B)*(-(Sqrt[a]*Sqrt[
b]*Sqrt[x]*(105*a^3 + 385*a^2*b*x + 511*a*b^2*x^2 + 279*b^3*x^3)) + 105*(a
+ b*x)^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(1920*a^(3/2)*b^(11/2)*(a + b*
x)^4)
```

fricas [**A**] time = 0.91, size = 639, normalized size = 3.36

$$\left[-\frac{105\left(9\,Ba^6+Aa^5b+\left(9\,Bab^5+Ab^6\right)x^5+5\left(9\,Ba^2b^4+Aab^5\right)x^4+10\left(9\,Ba^3b^3+Aa^2b^4\right)x^3+10\left(9\,Ba^4b^2+Aa^3\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(9*B*a^6 + A*a^5*b + (9*B*a*b^5 + A*b^6)*x^5 + 5*(9*B*a^2*b^4
 + A*a*b^5)*x^4 + 10*(9*B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(9*B*a^4*b^2 + A*a^
3*b^3)*x^2 + 5*(9*B*a^5*b + A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(
-a*b)*sqrt(x))/(b*x + a)) + 2*(945*B*a^6*b + 105*A*a^5*b^2 + 15*(193*B*a^2*
b^5 - 7*A*a*b^6)*x^4 + 790*(9*B*a^3*b^4 + A*a^2*b^5)*x^3 + 896*(9*B*a^4*b^3
 + A*a^3*b^4)*x^2 + 490*(9*B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^2*b^11*x^5
 + 5*a^3*b^10*x^4 + 10*a^4*b^9*x^3 + 10*a^5*b^8*x^2 + 5*a^6*b^7*x + a^7*b^6
), -1/1920*(105*(9*B*a^6 + A*a^5*b + (9*B*a*b^5 + A*b^6)*x^5 + 5*(9*B*a^2*b
^4 + A*a*b^5)*x^4 + 10*(9*B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(9*B*a^4*b^2 + A*
a^3*b^3)*x^2 + 5*(9*B*a^5*b + A*a^4*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*s
qrt(x))) + (945*B*a^6*b + 105*A*a^5*b^2 + 15*(193*B*a^2*b^5 - 7*A*a*b^6)*x^
4 + 790*(9*B*a^3*b^4 + A*a^2*b^5)*x^3 + 896*(9*B*a^4*b^3 + A*a^3*b^4)*x^2 +
 490*(9*B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^2*b^11*x^5 + 5*a^3*b^10*x^4 +
 10*a^4*b^9*x^3 + 10*a^5*b^8*x^2 + 5*a^6*b^7*x + a^7*b^6)]
```

giac [A] time = 0.17, size = 155, normalized size = 0.82

$$\frac{7\,(9\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,ab^5}-\frac{2895\,Bab^4x^{\frac{9}{2}}-105\,Ab^5x^{\frac{9}{2}}+7110\,Ba^2b^3x^{\frac{7}{2}}+790\,Aab^4x^{\frac{7}{2}}+8064\,Ba^3b^2x^{\frac{5}{2}}+896}{1920\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 7/128*(9*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^5) - 1/1920*
(2895*B*a*b^4*x^(9/2) - 105*A*b^5*x^(9/2) + 7110*B*a^2*b^3*x^(7/2) + 790*A*
a*b^4*x^(7/2) + 8064*B*a^3*b^2*x^(5/2) + 896*A*a^2*b^3*x^(5/2) + 4410*B*a^4
*b*x^(3/2) + 490*A*a^3*b^2*x^(3/2) + 945*B*a^5*sqrt(x) + 105*A*a^4*b*sqrt(x
))/((b*x + a)^5*a*b^5)
```

maple [A] time = 0.06, size = 150, normalized size = 0.79

$$\frac{7A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a\,b^4}+\frac{63B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;b^5}+\frac{\frac{(7Ab-193Ba)x^{\frac{9}{2}}}{128ab}-\frac{79(Ab+9Ba)x^{\frac{7}{2}}}{192b^2}-\frac{7(Ab+9Ba)a\,x^{\frac{5}{2}}}{15b^3}-\frac{49(Ab+9Ba)a^2x^{\frac{3}{2}}}{192b^4}-\frac{7(Ab+9Ba)}{128b^5}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(7*A*b-193*B*a)/a/b*x^(9/2)-79/384*(A*b+9*B*a)/b^2*x^(7/2)-7/30*a*
(A*b+9*B*a)/b^3*x^(5/2)-49/384*a^2*(A*b+9*B*a)/b^4*x^(3/2)-7/256*(A*b+9*B*a
)*a^3/b^5*x^(1/2))/(b*x+a)^5+7/128/a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b
*x^(1/2))*A+63/128/b^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.38, size = 198, normalized size = 1.04

$$-\frac{15\left(193\,Bab^4-7\,Ab^5\right)x^{\frac{9}{2}}+790\left(9\,Ba^2b^3+Aab^4\right)x^{\frac{7}{2}}+896\left(9\,Ba^3b^2+Aa^2b^3\right)x^{\frac{5}{2}}+490\left(9\,Ba^4b+Aa^3b^2\right)x^{\frac{3}{2}}}{1920\left(ab^{10}x^5+5\,a^2b^9x^4+10\,a^3b^8x^3+10\,a^4b^7x^2+5\,a^5b^6x+a^6b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(15*(193*B*a*b^4 - 7*A*b^5)*x^(9/2) + 790*(9*B*a^2*b^3 + A*a*b^4)*x
^(7/2) + 896*(9*B*a^3*b^2 + A*a^2*b^3)*x^(5/2) + 490*(9*B*a^4*b + A*a^3*b^2
)*x^(3/2) + 105*(9*B*a^5 + A*a^4*b)*sqrt(x))/(a*b^10*x^5 + 5*a^2*b^9*x^4 +
10*a^3*b^8*x^3 + 10*a^4*b^7*x^2 + 5*a^5*b^6*x + a^6*b^5) + 7/128*(9*B*a + A
*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^5)
```

mupad [B] time = 1.28, size = 173, normalized size = 0.91

$$\frac{7\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+9\,B\,a)}{128\,a^{3/2}\,b^{11/2}}-\frac{\frac{79\,x^{7/2}\,(A\,b+9\,B\,a)}{192\,b^2}+\frac{49\,a^2\,x^{3/2}\,(A\,b+9\,B\,a)}{192\,b^4}+\frac{7\,a^3\,\sqrt{x}\,(A\,b+9\,B\,a)}{128\,b^5}-\frac{x^{9/2}\,(7\,A\,b-193\,B\,a)}{128\,a\,b}+\frac{7\,a\,x^{5/2}\,(A\,b+}{15\,b^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (7*atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + 9*B*a))/(128*a^(3/2)*b^(11/2)) -
((79*x^(7/2)*(A*b + 9*B*a))/(192*b^2) + (49*a^2*x^(3/2)*(A*b + 9*B*a))/(192
*b^4) + (7*a^3*x^(1/2)*(A*b + 9*B*a))/(128*b^5) - (x^(9/2)*(7*A*b - 193*B*a
))/(128*a*b) + (7*a*x^(5/2)*(A*b + 9*B*a))/(15*b^3))/(a^5 + b^5*x^5 + 5*a*b
^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.776 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=195

$$\frac{(7aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{5/2}b^{9/2}}+\frac{\sqrt{x}\,(7aB+3Ab)}{128a^2b^4(a+bx)}-\frac{\sqrt{x}\,(7aB+3Ab)}{64ab^4(a+bx)^2}-\frac{x^{3/2}(7aB+3Ab)}{48ab^3(a+bx)^3}-\frac{x^{5/2}(7aB+3Ab)}{40ab^2(a+bx)^4}+\frac{x^{7/2}(A}{5ab(a}$$

```
[Out] 1/5*(A*b-B*a)*x^(7/2)/a/b/(b*x+a)^5-1/40*(3*A*b+7*B*a)*x^(5/2)/a/b^2/(b*x+a
)^4-1/48*(3*A*b+7*B*a)*x^(3/2)/a/b^3/(b*x+a)^3+1/128*(3*A*b+7*B*a)*arctan(b
^(1/2)*x^(1/2)/a^(1/2))/a^(5/2)/b^(9/2)-1/64*(3*A*b+7*B*a)*x^(1/2)/a/b^4/(b
*x+a)^2+1/128*(3*A*b+7*B*a)*x^(1/2)/a^2/b^4/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = $\{27, 78, 47, 51, 63, 205\}$

$$\frac{\sqrt{x}\,(7aB+3Ab)}{128a^2b^4(a+bx)}+\frac{(7aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{5/2}b^{9/2}}-\frac{x^{5/2}(7aB+3Ab)}{40ab^2(a+bx)^4}-\frac{x^{3/2}(7aB+3Ab)}{48ab^3(a+bx)^3}-\frac{\sqrt{x}\,(7aB+3Ab)}{64ab^4(a+bx)^2}+\frac{x^{7/2}(A}{5ab(a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(7/2))/(5*a*b*(a + b*x)^5) - ((3*A*b + 7*a*B)*x^(5/2))/(40*a
*b^2*(a + b*x)^4) - ((3*A*b + 7*a*B)*x^(3/2))/(48*a*b^3*(a + b*x)^3) - ((3*
A*b + 7*a*B)*Sqrt[x])/(64*a*b^4*(a + b*x)^2) + ((3*A*b + 7*a*B)*Sqrt[x])/(1
28*a^2*b^4*(a + b*x)) + ((3*A*b + 7*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])
/(128*a^(5/2)*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{5/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} + \frac{(3Ab+7aB)\int \frac{x^{5/2}}{(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} + \frac{(3Ab+7aB)\int \frac{x^{3/2}}{(a+bx)^4}\,dx}{16ab^2}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} + \frac{(3Ab+7aB)\int \frac{\sqrt{x}}{(a+bx)^3}\,dx}{32ab^3}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \frac{(3Ab+}{}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \frac{(3Ab+}{128a^2b^4}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \frac{(3Ab+}{128a^2b^4}$$

$$= \frac{(Ab-aB)x^{7/2}}{5ab(a+bx)^5} - \frac{(3Ab+7aB)x^{5/2}}{40ab^2(a+bx)^4} - \frac{(3Ab+7aB)x^{3/2}}{48ab^3(a+bx)^3} - \frac{(3Ab+7aB)\sqrt{x}}{64ab^4(a+bx)^2} + \frac{(3Ab+}{128a^2b^4}$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.31

$$\frac{x^{7/2}\left(\frac{7a^5(Ab-aB)}{(a+bx)^5} + (7aB+3Ab)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};-\frac{bx}{a}\right)\right)}{35a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(7/2)*((7*a^5*(A*b - a*B))/(a + b*x)^5 + (3*A*b + 7*a*B)*Hypergeometric2
F1[7/2, 5, 9/2, -((b*x)/a)]))/(35*a^6*b)
```

fricas [A] time = 0.88, size = 657, normalized size = 3.37

$$\left[-\frac{15\left(7\,Ba^6+3\,Aa^5b+\left(7\,Bab^5+3\,Ab^6\right)x^5+5\left(7\,Ba^2b^4+3\,Aab^5\right)x^4+10\left(7\,Ba^3b^3+3\,Aa^2b^4\right)x^3+10\left(7\,Ba^4\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(7*B*a^6 + 3*A*a^5*b + (7*B*a*b^5 + 3*A*b^6)*x^5 + 5*(7*B*a^2*
b^4 + 3*A*a*b^5)*x^4 + 10*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 + 10*(7*B*a^4*b^2
 + 3*A*a^3*b^3)*x^2 + 5*(7*B*a^5*b + 3*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x -
a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a^6*b + 45*A*a^5*b^2 - 15*(
7*B*a^2*b^5 + 3*A*a*b^6)*x^4 + 10*(79*B*a^3*b^4 - 21*A*a^2*b^5)*x^3 + 128*(
7*B*a^4*b^3 + 3*A*a^3*b^4)*x^2 + 70*(7*B*a^5*b^2 + 3*A*a^4*b^3)*x)*sqrt(x))
/(a^3*b^10*x^5 + 5*a^4*b^9*x^4 + 10*a^5*b^8*x^3 + 10*a^6*b^7*x^2 + 5*a^7*b^
6*x + a^8*b^5), -1/1920*(15*(7*B*a^6 + 3*A*a^5*b + (7*B*a*b^5 + 3*A*b^6)*x^
5 + 5*(7*B*a^2*b^4 + 3*A*a*b^5)*x^4 + 10*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^3 +
10*(7*B*a^4*b^2 + 3*A*a^3*b^3)*x^2 + 5*(7*B*a^5*b + 3*A*a^4*b^2)*x)*sqrt(a*
b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (105*B*a^6*b + 45*A*a^5*b^2 - 15*(7*B*a^
2*b^5 + 3*A*a*b^6)*x^4 + 10*(79*B*a^3*b^4 - 21*A*a^2*b^5)*x^3 + 128*(7*B*a^
4*b^3 + 3*A*a^3*b^4)*x^2 + 70*(7*B*a^5*b^2 + 3*A*a^4*b^3)*x)*sqrt(x))/(a^3*
b^10*x^5 + 5*a^4*b^9*x^4 + 10*a^5*b^8*x^3 + 10*a^6*b^7*x^2 + 5*a^7*b^6*x +
a^8*b^5)]
```

giac [A] time = 0.17, size = 156, normalized size = 0.80

$$\frac{(7\,Ba+3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^2b^4}+\frac{105\,Bab^4x^{\frac{9}{2}}+45\,Ab^5x^{\frac{9}{2}}-790\,Ba^2b^3x^{\frac{7}{2}}+210\,Aab^4x^{\frac{7}{2}}-896\,Ba^3b^2x^{\frac{5}{2}}-384\,Aa^2}{1920\,(bx+a)^5a^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/128*(7*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^4) + 1/1
920*(105*B*a*b^4*x^(9/2) + 45*A*b^5*x^(9/2) - 790*B*a^2*b^3*x^(7/2) + 210*A
*a*b^4*x^(7/2) - 896*B*a^3*b^2*x^(5/2) - 384*A*a^2*b^3*x^(5/2) - 490*B*a^4*
b*x^(3/2) - 210*A*a^3*b^2*x^(3/2) - 105*B*a^5*sqrt(x) - 45*A*a^4*b*sqrt(x))
/((b*x + a)^5*a^2*b^4)
```

maple [A] time = 0.07, size = 154, normalized size = 0.79

$$\frac{3A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^2b^3}+\frac{7B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a\,b^4}+\frac{\frac{(3Ab+7Ba)x^{\frac{9}{2}}}{128a^2}+\frac{(21Ab-79Ba)x^{\frac{7}{2}}}{192ab}-\frac{(3Ab+7Ba)x^{\frac{5}{2}}}{15b^2}-\frac{7(3Ab+7Ba)a\,x^{\frac{3}{2}}}{192b^3}-\frac{(3Ab+7Ba)a^2\sqrt{x}}{128b^4}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(3*A*b+7*B*a)/a^2*x^(9/2)+1/384*(21*A*b-79*B*a)/a/b*x^(7/2)-1/30/b
^2*(3*A*b+7*B*a)*x^(5/2)-7/384*a/b^3*(3*A*b+7*B*a)*x^(3/2)-1/256*(3*A*b+7*B
*a)*a^2/b^4*x^(1/2))/(b*x+a)^5+3/128/a^2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*A+7/128/a/b^4/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.54, size = 205, normalized size = 1.05

$$\frac{15\left(7\,Bab^4+3\,Ab^5\right)x^{\frac{9}{2}}-10\left(79\,Ba^2b^3-21\,Aab^4\right)x^{\frac{7}{2}}-128\left(7\,Ba^3b^2+3\,Aa^2b^3\right)x^{\frac{5}{2}}-70\left(7\,Ba^4b+3\,Aa^3b^2\right)x^{\frac{3}{2}}}{1920\left(a^2b^9x^5+5\,a^3b^8x^4+10\,a^4b^7x^3+10\,a^5b^6x^2+5\,a^6b^5x+a^7b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/1920*(15*(7*B*a*b^4 + 3*A*b^5)*x^(9/2) - 10*(79*B*a^2*b^3 - 21*A*a*b^4)*x
^(7/2) - 128*(7*B*a^3*b^2 + 3*A*a^2*b^3)*x^(5/2) - 70*(7*B*a^4*b + 3*A*a^3*
b^2)*x^(3/2) - 15*(7*B*a^5 + 3*A*a^4*b)*sqrt(x))/(a^2*b^9*x^5 + 5*a^3*b^8*x
^4 + 10*a^4*b^7*x^3 + 10*a^5*b^6*x^2 + 5*a^6*b^5*x + a^7*b^4) + 1/128*(7*B*
a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^4)
```

mupad [B] time = 1.24, size = 175, normalized size = 0.90

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(3\,A\,b+7\,B\,a)}{128\,a^{5/2}\,b^{9/2}}-\frac{\frac{x^{5/2}\,(3\,A\,b+7\,B\,a)}{15\,b^2}-\frac{x^{9/2}\,(3\,A\,b+7\,B\,a)}{128\,a^2}+\frac{a^2\,\sqrt{x}\,(3\,A\,b+7\,B\,a)}{128\,b^4}-\frac{x^{7/2}\,(21\,A\,b-79\,B\,a)}{192\,a\,b}+\frac{7\,a\,x^{3/2}\,(3\,A\,b+7\,B}{192\,b^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (atan((b^(1/2)*x^(1/2))/a^(1/2))*(3*A*b + 7*B*a))/(128*a^(5/2)*b^(9/2)) - (
(x^(5/2)*(3*A*b + 7*B*a))/(15*b^2) - (x^(9/2)*(3*A*b + 7*B*a))/(128*a^2) +
(a^2*x^(1/2)*(3*A*b + 7*B*a))/(128*b^4) - (x^(7/2)*(21*A*b - 79*B*a))/(192*
a*b) + (7*a*x^(3/2)*(3*A*b + 7*B*a))/(192*b^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^
4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.777 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=185

$$\frac{3(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{7/2}b^{7/2}}+\frac{3\sqrt{x}\,(aB+Ab)}{128a^3b^3(a+bx)}+\frac{\sqrt{x}\,(aB+Ab)}{64a^2b^3(a+bx)^2}-\frac{\sqrt{x}\,(aB+Ab)}{16ab^3(a+bx)^3}-\frac{x^{3/2}(aB+Ab)}{8ab^2(a+bx)^4}+\frac{x^{5/2}(Ab-aB}{5ab(a+bx)^5}$$

```
[Out] 1/5*(A*b-B*a)*x^(5/2)/a/b/(b*x+a)^5-1/8*(A*b+B*a)*x^(3/2)/a/b^2/(b*x+a)^4+3
/128*(A*b+B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(7/2)/b^(7/2)-1/16*(A*b+B*
a)*x^(1/2)/a/b^3/(b*x+a)^3+1/64*(A*b+B*a)*x^(1/2)/a^2/b^3/(b*x+a)^2+3/128*(
A*b+B*a)*x^(1/2)/a^3/b^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = $\{27, 78, 47, 51, 63, 205\}$

$$\frac{3\sqrt{x}\,(aB+Ab)}{128a^3b^3(a+bx)}+\frac{\sqrt{x}\,(aB+Ab)}{64a^2b^3(a+bx)^2}+\frac{3(aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{7/2}b^{7/2}}-\frac{x^{3/2}(aB+Ab)}{8ab^2(a+bx)^4}-\frac{\sqrt{x}\,(aB+Ab)}{16ab^3(a+bx)^3}+\frac{x^{5/2}(Ab-aB}{5ab(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(5/2))/(5*a*b*(a + b*x)^5) - ((A*b + a*B)*x^(3/2))/(8*a*b^2*
(a + b*x)^4) - ((A*b + a*B)*Sqrt[x])/(16*a*b^3*(a + b*x)^3) + ((A*b + a*B)*
Sqrt[x])/(64*a^2*b^3*(a + b*x)^2) + (3*(A*b + a*B)*Sqrt[x])/(128*a^3*b^3*(a
 + b*x)) + (3*(A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(7/2)*b
^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{x^{3/2}(A+Bx)}{(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} + \frac{(Ab+aB)\int \frac{x^{3/2}}{(a+bx)^5}\,dx}{2ab}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} + \frac{(3(Ab+aB))\int \frac{\sqrt{x}}{(a+bx)^4}\,dx}{16ab^2}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\int \frac{1}{\sqrt{x}(a+bx)^3}\,dx}{32ab^3}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{(3(Ab+aB)}{12}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+aB)}{128a^3b^3(a+}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+aB)}{128a^3b^3(a+}$$

$$= \frac{(Ab-aB)x^{5/2}}{5ab(a+bx)^5} - \frac{(Ab+aB)x^{3/2}}{8ab^2(a+bx)^4} - \frac{(Ab+aB)\sqrt{x}}{16ab^3(a+bx)^3} + \frac{(Ab+aB)\sqrt{x}}{64a^2b^3(a+bx)^2} + \frac{3(Ab+aB)}{128a^3b^3(a+}$$

Mathematica [C] time = 0.03, size = 60, normalized size = 0.32

$$\frac{x^{5/2}\left(\frac{5a^5(Ab-aB)}{(a+bx)^5}+5(aB+Ab)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};-\frac{bx}{a}\right)\right)}{25a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(5/2)*((5*a^5*(A*b - a*B))/(a + b*x)^5 + 5*(A*b + a*B)*Hypergeometric2F1
[5/2, 5, 7/2, -((b*x)/a)]))/(25*a^6*b)
```

fricas [**A**] time = 0.91, size = 619, normalized size = 3.35

$$\left[-\frac{15\left(Ba^6 + Aa^5b + \left(Bab^5 + Ab^6\right)x^5 + 5\left(Ba^2b^4 + Aab^5\right)x^4 + 10\left(Ba^3b^3 + Aa^2b^4\right)x^3 + 10\left(Ba^4b^2 + Aa^3b^3\right)x^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*a^6 + A*a^5*b + (B*a*b^5 + A*b^6)*x^5 + 5*(B*a^2*b^4 + A*a*
b^5)*x^4 + 10*(B*a^3*b^3 + A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + A*a^3*b^3)*x^2
+ 5*(B*a^5*b + A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x)
)/(b*x + a)) + 2*(15*B*a^6*b + 15*A*a^5*b^2 - 15*(B*a^2*b^5 + A*a*b^6)*x^4
- 70*(B*a^3*b^4 + A*a^2*b^5)*x^3 + 128*(B*a^4*b^3 - A*a^3*b^4)*x^2 + 70*(B*
a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^4*b^9*x^5 + 5*a^5*b^8*x^4 + 10*a^6*b^7*
x^3 + 10*a^7*b^6*x^2 + 5*a^8*b^5*x + a^9*b^4), -1/640*(15*(B*a^6 + A*a^5*b
+ (B*a*b^5 + A*b^6)*x^5 + 5*(B*a^2*b^4 + A*a*b^5)*x^4 + 10*(B*a^3*b^3 + A*a
^2*b^4)*x^3 + 10*(B*a^4*b^2 + A*a^3*b^3)*x^2 + 5*(B*a^5*b + A*a^4*b^2)*x)*s
qrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^6*b + 15*A*a^5*b^2 - 15*(B
*a^2*b^5 + A*a*b^6)*x^4 - 70*(B*a^3*b^4 + A*a^2*b^5)*x^3 + 128*(B*a^4*b^3 -
 A*a^3*b^4)*x^2 + 70*(B*a^5*b^2 + A*a^4*b^3)*x)*sqrt(x))/(a^4*b^9*x^5 + 5*a
^5*b^8*x^4 + 10*a^6*b^7*x^3 + 10*a^7*b^6*x^2 + 5*a^8*b^5*x + a^9*b^4)]
```

giac [**A**] time = 0.16, size = 154, normalized size = 0.83

$$\frac{3\,(Ba + Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^3b^3} + \frac{15\,Bab^4x^{\frac{9}{2}} + 15\,Ab^5x^{\frac{9}{2}} + 70\,Ba^2b^3x^{\frac{7}{2}} + 70\,Aab^4x^{\frac{7}{2}} - 128\,Ba^3b^2x^{\frac{5}{2}} + 128\,Aa^2b^3x^{\frac{5}{2}}}{640\,(bx + a)^5a^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 3/128*(B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b^3) + 1/640*(
15*B*a*b^4*x^(9/2) + 15*A*b^5*x^(9/2) + 70*B*a^2*b^3*x^(7/2) + 70*A*a*b^4*x
^(7/2) - 128*B*a^3*b^2*x^(5/2) + 128*A*a^2*b^3*x^(5/2) - 70*B*a^4*b*x^(3/2)
 - 70*A*a^3*b^2*x^(3/2) - 15*B*a^5*sqrt(x) - 15*A*a^4*b*sqrt(x))/((b*x + a)
^5*a^3*b^3)
```

maple [**A**] time = 0.07, size = 143, normalized size = 0.77

$$\frac{3A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^3b^2} + \frac{3B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^2b^3} + \frac{\frac{3(Ab+Ba)b\,x^{\frac{9}{2}}}{128a^3} + \frac{7(Ab+Ba)x^{\frac{7}{2}}}{64a^2} + \frac{(Ab-Ba)x^{\frac{5}{2}}}{5ab} - \frac{7(Ab+Ba)x^{\frac{3}{2}}}{64b^2} - \frac{3(Ab+Ba)a\sqrt{x}}{128b^3}}{(bx + a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(3/256*(A*b+B*a)/a^3*b*x^(9/2)+7/128*(A*b+B*a)/a^2*x^(7/2)+1/10*(A*b-B*a)
/a/b*x^(5/2)-7/128*(A*b+B*a)/b^2*x^(3/2)-3/256*(A*b+B*a)*a/b^3*x^(1/2))/(b*
x+a)^5+3/128/a^3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A+3/128/a^
2/b^3/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.19, size = 194, normalized size = 1.05

$$\frac{15\left(Bab^4 + Ab^5\right)x^{\frac{9}{2}} + 70\left(Ba^2b^3 + Aab^4\right)x^{\frac{7}{2}} - 128\left(Ba^3b^2 - Aa^2b^3\right)x^{\frac{5}{2}} - 70\left(Ba^4b + Aa^3b^2\right)x^{\frac{3}{2}} - 15\left(Ba^5 + Aa\right.}{640\left(a^3b^8x^5 + 5\,a^4b^7x^4 + 10\,a^5b^6x^3 + 10\,a^6b^5x^2 + 5\,a^7b^4x + a^8b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/640*(15*(B*a*b^4 + A*b^5)*x^(9/2) + 70*(B*a^2*b^3 + A*a*b^4)*x^(7/2) - 12
8*(B*a^3*b^2 - A*a^2*b^3)*x^(5/2) - 70*(B*a^4*b + A*a^3*b^2)*x^(3/2) - 15*(
B*a^5 + A*a^4*b)*sqrt(x))/(a^3*b^8*x^5 + 5*a^4*b^7*x^4 + 10*a^5*b^6*x^3 + 1
0*a^6*b^5*x^2 + 5*a^7*b^4*x + a^8*b^3) + 3/128*(B*a + A*b)*arctan(b*sqrt(x)
/sqrt(a*b))/(sqrt(a*b)*a^3*b^3)
```

mupad [B] time = 1.23, size = 161, normalized size = 0.87

$$\frac{\frac{7\,x^{7/2}\,(A\,b+B\,a)}{64\,a^2}-\frac{7\,x^{3/2}\,(A\,b+B\,a)}{64\,b^2}+\frac{x^{5/2}\,(A\,b-B\,a)}{5\,a\,b}-\frac{3\,a\,\sqrt{x}\,(A\,b+B\,a)}{128\,b^3}+\frac{3\,b\,x^{9/2}\,(A\,b+B\,a)}{128\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{3\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(A\,b+B\,a)}{128\,a^{7/2}\,b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*x^(7/2)*(A*b + B*a))/(64*a^2) - (7*x^(3/2)*(A*b + B*a))/(64*b^2) + (x^(
5/2)*(A*b - B*a))/(5*a*b) - (3*a*x^(1/2)*(A*b + B*a))/(128*b^3) + (3*b*x^(9
/2)*(A*b + B*a))/(128*a^3))/(a^5 + b^5*x^5 + 5*a*b^4*x^4 + 10*a^3*b^2*x^2 +
 10*a^2*b^3*x^3 + 5*a^4*b*x) + (3*atan((b^(1/2)*x^(1/2))/a^(1/2))*(A*b + B*
a))/(128*a^(7/2)*b^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.778 $\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3} dx$

Optimal. Leaf size=195

$$\frac{(3aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{9/2}b^{5/2}}+\frac{\sqrt{x}(3aB+7Ab)}{128a^4b^2(a+bx)}+\frac{\sqrt{x}(3aB+7Ab)}{192a^3b^2(a+bx)^2}+\frac{\sqrt{x}(3aB+7Ab)}{240a^2b^2(a+bx)^3}-\frac{\sqrt{x}(3aB+7Ab)}{40ab^2(a+bx)^4}+\frac{x^{3/2}(}{5ab(}$$

```
[Out] 1/5*(A*b-B*a)*x^(3/2)/a/b/(b*x+a)^5+1/128*(7*A*b+3*B*a)*arctan(b^(1/2)*x^(1
/2)/a^(1/2))/a^(9/2)/b^(5/2)-1/40*(7*A*b+3*B*a)*x^(1/2)/a/b^2/(b*x+a)^4+1/2
40*(7*A*b+3*B*a)*x^(1/2)/a^2/b^2/(b*x+a)^3+1/192*(7*A*b+3*B*a)*x^(1/2)/a^3/
b^2/(b*x+a)^2+1/128*(7*A*b+3*B*a)*x^(1/2)/a^4/b^2/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {27, 78, 47, 51, 63, 205}

$$\frac{\sqrt{x}(3aB+7Ab)}{128a^4b^2(a+bx)}+\frac{\sqrt{x}(3aB+7Ab)}{192a^3b^2(a+bx)^2}+\frac{\sqrt{x}(3aB+7Ab)}{240a^2b^2(a+bx)^3}+\frac{(3aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{9/2}b^{5/2}}-\frac{\sqrt{x}(3aB+7Ab)}{40ab^2(a+bx)^4}+\frac{x^{3/2}(}{5ab(}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*x^(3/2))/(5*a*b*(a + b*x)^5) - ((7*A*b + 3*a*B)*Sqrt[x])/(40*a
*b^2*(a + b*x)^4) + ((7*A*b + 3*a*B)*Sqrt[x])/(240*a^2*b^2*(a + b*x)^3) + (
(7*A*b + 3*a*B)*Sqrt[x])/(192*a^3*b^2*(a + b*x)^2) + ((7*A*b + 3*a*B)*Sqrt[
x])/(128*a^4*b^2*(a + b*x)) + ((7*A*b + 3*a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqr
t[a]])/(128*a^(9/2)*b^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{\sqrt{x}\,(A+Bx)}{(a+bx)^6}\,dx \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} + \frac{(7Ab+3aB)\int \frac{\sqrt{x}}{(a+bx)^5}\,dx}{10ab} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\int \frac{1}{\sqrt{x}\,(a+bx)^4}\,dx}{80ab^2} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\int \frac{1}{\sqrt{x}\,(a+bx)^3}\,d}{96a^2b^2} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7Ab}{} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7Ab}{128a^4} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7Ab}{128a^4} \\
&= \frac{(Ab-aB)x^{3/2}}{5ab(a+bx)^5} - \frac{(7Ab+3aB)\sqrt{x}}{40ab^2(a+bx)^4} + \frac{(7Ab+3aB)\sqrt{x}}{240a^2b^2(a+bx)^3} + \frac{(7Ab+3aB)\sqrt{x}}{192a^3b^2(a+bx)^2} + \frac{(7Ab}{128a^4}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 61, normalized size = 0.31

$$\frac{x^{3/2}\left(\frac{3a^5(Ab-aB)}{(a+bx)^5}+(3aB+7Ab)\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};-\frac{bx}{a}\right)\right)}{15a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(3/2)*((3*a^5*(A*b - a*B))/(a + b*x)^5 + (7*A*b + 3*a*B)*Hypergeometric2
F1[3/2, 5, 5/2, -((b*x)/a)]))/(15*a^6*b)
```

fricas [A] time = 0.83, size = 657, normalized size = 3.37

$$\Bigg[-\frac{15\,(3\,Ba^6 + 7\,Aa^5b + (3\,Bab^5 + 7\,Ab^6)x^5 + 5\,(3\,Ba^2b^4 + 7\,Aab^5)x^4 + 10\,(3\,Ba^3b^3 + 7\,Aa^2b^4)x^3 + 10\,(3\,Ba^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*B*a^6 + 7*A*a^5*b + (3*B*a*b^5 + 7*A*b^6)*x^5 + 5*(3*B*a^2*
b^4 + 7*A*a*b^5)*x^4 + 10*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^3 + 10*(3*B*a^4*b^2
 + 7*A*a^3*b^3)*x^2 + 5*(3*B*a^5*b + 7*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x -
a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(45*B*a^6*b + 105*A*a^5*b^2 - 15*(
3*B*a^2*b^5 + 7*A*a*b^6)*x^4 - 70*(3*B*a^3*b^4 + 7*A*a^2*b^5)*x^3 - 128*(3*
B*a^4*b^3 + 7*A*a^3*b^4)*x^2 + 10*(21*B*a^5*b^2 - 79*A*a^4*b^3)*x)*sqrt(x))
/(a^5*b^8*x^5 + 5*a^6*b^7*x^4 + 10*a^7*b^6*x^3 + 10*a^8*b^5*x^2 + 5*a^9*b^4
*x + a^10*b^3), -1/1920*(15*(3*B*a^6 + 7*A*a^5*b + (3*B*a*b^5 + 7*A*b^6)*x^
5 + 5*(3*B*a^2*b^4 + 7*A*a*b^5)*x^4 + 10*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^3 +
10*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x^2 + 5*(3*B*a^5*b + 7*A*a^4*b^2)*x)*sqrt(a*
b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (45*B*a^6*b + 105*A*a^5*b^2 - 15*(3*B*a^
2*b^5 + 7*A*a*b^6)*x^4 - 70*(3*B*a^3*b^4 + 7*A*a^2*b^5)*x^3 - 128*(3*B*a^4*
b^3 + 7*A*a^3*b^4)*x^2 + 10*(21*B*a^5*b^2 - 79*A*a^4*b^3)*x)*sqrt(x))/(a^5*
b^8*x^5 + 5*a^6*b^7*x^4 + 10*a^7*b^6*x^3 + 10*a^8*b^5*x^2 + 5*a^9*b^4*x + a
^10*b^3)]
```

giac [A] time = 0.18, size = 156, normalized size = 0.80

$$\frac{(3\,Ba + 7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^4b^2} + \frac{45\,Bab^4x^{\frac{9}{2}} + 105\,Ab^5x^{\frac{9}{2}} + 210\,Ba^2b^3x^{\frac{7}{2}} + 490\,Aab^4x^{\frac{7}{2}} + 384\,Ba^3b^2x^{\frac{5}{2}} + 896\,Aa^2}{1920\,(bx+a)^5a^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/128*(3*B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b^2) + 1/1
920*(45*B*a*b^4*x^(9/2) + 105*A*b^5*x^(9/2) + 210*B*a^2*b^3*x^(7/2) + 490*A
*a*b^4*x^(7/2) + 384*B*a^3*b^2*x^(5/2) + 896*A*a^2*b^3*x^(5/2) - 210*B*a^4*
b*x^(3/2) + 790*A*a^3*b^2*x^(3/2) - 45*B*a^5*sqrt(x) - 105*A*a^4*b*sqrt(x))
/((b*x + a)^5*a^4*b^2)
```

maple [A] time = 0.08, size = 154, normalized size = 0.79

$$\frac{7A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^4b} + \frac{3B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^3b^2} + \frac{\frac{(7Ab+3Ba)b^2x^{\frac{9}{2}}}{128a^4} + \frac{7(7Ab+3Ba)b\,x^{\frac{7}{2}}}{192a^3} + \frac{(7Ab+3Ba)x^{\frac{5}{2}}}{15a^2} + \frac{(79Ab-21Ba)x^{\frac{3}{2}}}{192ab} - \frac{(7Ab+3Ba)\sqrt{}}{128b^2}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*(1/256*(7*A*b+3*B*a)/a^4*b^2*x^(9/2)+7/384/a^3*b*(7*A*b+3*B*a)*x^(7/2)+1/
30/a^2*(7*A*b+3*B*a)*x^(5/2)+1/384*(79*A*b-21*B*a)/a/b*x^(3/2)-1/256*(7*A*b
+3*B*a)/b^2*x^(1/2))/(b*x+a)^5+7/128/a^4/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*A+3/128/a^3/b^2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [A] time = 1.38, size = 205, normalized size = 1.05

$$\frac{15\,(3\,Bab^4 + 7\,Ab^5)x^{\frac{9}{2}} + 70\,(3\,Ba^2b^3 + 7\,Aab^4)x^{\frac{7}{2}} + 128\,(3\,Ba^3b^2 + 7\,Aa^2b^3)x^{\frac{5}{2}} - 10\,(21\,Ba^4b - 79\,Aa^3b^2)x^{\frac{3}{2}}}{1920\,(a^4b^7x^5 + 5\,a^5b^6x^4 + 10\,a^6b^5x^3 + 10\,a^7b^4x^2 + 5\,a^8b^3x + a^9b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/1920*(15*(3*B*a*b^4 + 7*A*b^5)*x^(9/2) + 70*(3*B*a^2*b^3 + 7*A*a*b^4)*x^(
7/2) + 128*(3*B*a^3*b^2 + 7*A*a^2*b^3)*x^(5/2) - 10*(21*B*a^4*b - 79*A*a^3*
b^2)*x^(3/2) - 15*(3*B*a^5 + 7*A*a^4*b)*sqrt(x))/(a^4*b^7*x^5 + 5*a^5*b^6*x
^4 + 10*a^6*b^5*x^3 + 10*a^7*b^4*x^2 + 5*a^8*b^3*x + a^9*b^2) + 1/128*(3*B*
a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b^2)
```

mupad [**B**] time = 1.26, size = 174, normalized size = 0.89

$$\frac{\frac{x^{5/2}\,(7\,A\,b+3\,B\,a)}{15\,a^2}-\frac{\sqrt{x}\,(7\,A\,b+3\,B\,a)}{128\,b^2}+\frac{b^2\,x^{9/2}\,(7\,A\,b+3\,B\,a)}{128\,a^4}+\frac{x^{3/2}\,(79\,A\,b-21\,B\,a)}{192\,a\,b}+\frac{7\,b\,x^{7/2}\,(7\,A\,b+3\,B\,a)}{192\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(7\,A\,b+3\,B}{128\,a^{9/2}\,b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((x^(5/2)*(7*A*b + 3*B*a))/(15*a^2) - (x^(1/2)*(7*A*b + 3*B*a))/(128*b^2) +
 (b^2*x^(9/2)*(7*A*b + 3*B*a))/(128*a^4) + (x^(3/2)*(79*A*b - 21*B*a))/(192
*a*b) + (7*b*x^(7/2)*(7*A*b + 3*B*a))/(192*a^3))/(a^5 + b^5*x^5 + 5*a*b^4*x
^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) + (atan((b^(1/2)*x^(1/2))
/a^(1/2))*(7*A*b + 3*B*a))/(128*a^(9/2)*b^(5/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.779 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=190

$$\frac{7(aB+9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{11/2}b^{3/2}}+\frac{7\sqrt{x}\,(aB+9Ab)}{128a^5b(a+bx)}+\frac{7\sqrt{x}\,(aB+9Ab)}{192a^4b(a+bx)^2}+\frac{7\sqrt{x}\,(aB+9Ab)}{240a^3b(a+bx)^3}+\frac{\sqrt{x}\,(aB+9Ab)}{40a^2b(a+bx)^4}+\frac{\sqrt{x}\,(Ab}{5ab(a+}$$

```
[Out] 7/128*(9*A*b+B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(11/2)/b^(3/2)+1/5*(A*b
-B*a)*x^(1/2)/a/b/(b*x+a)^5+1/40*(9*A*b+B*a)*x^(1/2)/a^2/b/(b*x+a)^4+7/240*
(9*A*b+B*a)*x^(1/2)/a^3/b/(b*x+a)^3+7/192*(9*A*b+B*a)*x^(1/2)/a^4/b/(b*x+a)
^2+7/128*(9*A*b+B*a)*x^(1/2)/a^5/b/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {27, 78, 51, 63, 205}

$$\frac{7(aB+9Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{11/2}b^{3/2}}+\frac{7\sqrt{x}\,(aB+9Ab)}{128a^5b(a+bx)}+\frac{7\sqrt{x}\,(aB+9Ab)}{192a^4b(a+bx)^2}+\frac{7\sqrt{x}\,(aB+9Ab)}{240a^3b(a+bx)^3}+\frac{\sqrt{x}\,(aB+9Ab)}{40a^2b(a+bx)^4}+\frac{\sqrt{x}\,(Ab}{5ab(a+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((A*b - a*B)*Sqrt[x])/(5*a*b*(a + b*x)^5) + ((9*A*b + a*B)*Sqrt[x])/(40*a^2
*b*(a + b*x)^4) + (7*(9*A*b + a*B)*Sqrt[x])/(240*a^3*b*(a + b*x)^3) + (7*(9
*A*b + a*B)*Sqrt[x])/(192*a^4*b*(a + b*x)^2) + (7*(9*A*b + a*B)*Sqrt[x])/(1
28*a^5*b*(a + b*x)) + (7*(9*A*b + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(
128*a^(11/2)*b^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{\sqrt{x}\,(a+bx)^6}\,dx$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\int \frac{1}{\sqrt{x}\,(a+bx)^5}\,dx}{10ab}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{(7(9Ab+aB))\int \frac{1}{\sqrt{x}\,(a+bx)^4}\,dx}{80a^2b}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{(7(9Ab+aB))\int \frac{1}{\sqrt{x}\,(a+bx}}{96a^3b}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \frac{(7(9}{}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \frac{7(9A}{128}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \frac{7(9A}{128}$$

$$= \frac{(Ab-aB)\sqrt{x}}{5ab(a+bx)^5} + \frac{(9Ab+aB)\sqrt{x}}{40a^2b(a+bx)^4} + \frac{7(9Ab+aB)\sqrt{x}}{240a^3b(a+bx)^3} + \frac{7(9Ab+aB)\sqrt{x}}{192a^4b(a+bx)^2} + \frac{7(9A}{128}$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.31

$$\frac{\sqrt{x}\left(\frac{a^5(Ab-aB)}{(a+bx)^5} + (aB+9Ab)\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};-\frac{bx}{a}\right)\right)}{5a^6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (Sqrt[x]*((a^5*(A*b - a*B))/(a + b*x)^5 + (9*A*b + a*B)*Hypergeometric2F1[1
/2, 5, 3/2, -((b*x)/a)]))/(5*a^6*b)
```

fricas [A] time = 0.98, size = 637, normalized size = 3.35

$$\left[-\frac{105\left(Ba^6+9\,Aa^5b+\left(Bab^5+9\,Ab^6\right)x^5+5\left(Ba^2b^4+9\,Aab^5\right)x^4+10\left(Ba^3b^3+9\,Aa^2b^4\right)x^3+10\left(Ba^4b^2+9\,Aa^3\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(105*(B*a^6 + 9*A*a^5*b + (B*a*b^5 + 9*A*b^6)*x^5 + 5*(B*a^2*b^4 +
 9*A*a*b^5)*x^4 + 10*(B*a^3*b^3 + 9*A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + 9*A*a^
3*b^3)*x^2 + 5*(B*a^5*b + 9*A*a^4*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(
-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a^6*b - 2895*A*a^5*b^2 - 105*(B*a^2*b^
5 + 9*A*a*b^6)*x^4 - 490*(B*a^3*b^4 + 9*A*a^2*b^5)*x^3 - 896*(B*a^4*b^3 + 9
*A*a^3*b^4)*x^2 - 790*(B*a^5*b^2 + 9*A*a^4*b^3)*x)*sqrt(x))/(a^6*b^7*x^5 +
5*a^7*b^6*x^4 + 10*a^8*b^5*x^3 + 10*a^9*b^4*x^2 + 5*a^10*b^3*x + a^11*b^2),
 -1/1920*(105*(B*a^6 + 9*A*a^5*b + (B*a*b^5 + 9*A*b^6)*x^5 + 5*(B*a^2*b^4 +
 9*A*a*b^5)*x^4 + 10*(B*a^3*b^3 + 9*A*a^2*b^4)*x^3 + 10*(B*a^4*b^2 + 9*A*a^
3*b^3)*x^2 + 5*(B*a^5*b + 9*A*a^4*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqr
t(x))) + (105*B*a^6*b - 2895*A*a^5*b^2 - 105*(B*a^2*b^5 + 9*A*a*b^6)*x^4 -
490*(B*a^3*b^4 + 9*A*a^2*b^5)*x^3 - 896*(B*a^4*b^3 + 9*A*a^3*b^4)*x^2 - 790
*(B*a^5*b^2 + 9*A*a^4*b^3)*x)*sqrt(x))/(a^6*b^7*x^5 + 5*a^7*b^6*x^4 + 10*a^
8*b^5*x^3 + 10*a^9*b^4*x^2 + 5*a^10*b^3*x + a^11*b^2)]
```

giac [**A**] time = 0.18, size = 155, normalized size = 0.82

$$\frac{7\,(Ba+9\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^5b}+\frac{105\,Bab^4x^{\frac{9}{2}}+945\,Ab^5x^{\frac{9}{2}}+490\,Ba^2b^3x^{\frac{7}{2}}+4410\,Aab^4x^{\frac{7}{2}}+896\,Ba^3b^2x^{\frac{5}{2}}+8064}{1920\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 7/128*(B*a + 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*b) + 1/1920*
(105*B*a*b^4*x^(9/2) + 945*A*b^5*x^(9/2) + 490*B*a^2*b^3*x^(7/2) + 4410*A*a
*b^4*x^(7/2) + 896*B*a^3*b^2*x^(5/2) + 8064*A*a^2*b^3*x^(5/2) + 790*B*a^4*b
*x^(3/2) + 7110*A*a^3*b^2*x^(3/2) - 105*B*a^5*sqrt(x) + 2895*A*a^4*b*sqrt(x
))/((b*x + a)^5*a^5*b)
```

maple [**A**] time = 0.07, size = 150, normalized size = 0.79

$$\frac{63A\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^5}+\frac{7B\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\sqrt{ab}\;a^4b}+\frac{\frac{7(9Ab+Ba)b^3x^{\frac{9}{2}}}{128a^5}+\frac{49(9Ab+Ba)b^2x^{\frac{7}{2}}}{192a^4}+\frac{7(9Ab+Ba)b\,x^{\frac{5}{2}}}{15a^3}+\frac{79(9Ab+Ba)x^{\frac{3}{2}}}{192a^2}+\frac{(193Ab-7}{128a}}{(bx+a)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x)
```

```
[Out] 2*(7/256*(9*A*b+B*a)/a^5*b^3*x^(9/2)+49/384/a^4*b^2*(9*A*b+B*a)*x^(7/2)+7/3
0/a^3*(9*A*b+B*a)*b*x^(5/2)+79/384/a^2*(9*A*b+B*a)*x^(3/2)+1/256*(193*A*b-7
*B*a)/a/b*x^(1/2))/(b*x+a)^5+63/128/a^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*
x^(1/2))*A+7/128/a^4/b/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*B
```

maxima [**A**] time = 1.19, size = 198, normalized size = 1.04

$$\frac{105\left(Bab^4+9\,Ab^5\right)x^{\frac{9}{2}}+490\left(Ba^2b^3+9\,Aab^4\right)x^{\frac{7}{2}}+896\left(Ba^3b^2+9\,Aa^2b^3\right)x^{\frac{5}{2}}+790\left(Ba^4b+9\,Aa^3b^2\right)x^{\frac{3}{2}}-15}{1920\left(a^5b^6x^5+5\,a^6b^5x^4+10\,a^7b^4x^3+10\,a^8b^3x^2+5\,a^9b^2x+a^{10}b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/1920*(105*(B*a*b^4 + 9*A*b^5)*x^(9/2) + 490*(B*a^2*b^3 + 9*A*a*b^4)*x^(7/
2) + 896*(B*a^3*b^2 + 9*A*a^2*b^3)*x^(5/2) + 790*(B*a^4*b + 9*A*a^3*b^2)*x^
(3/2) - 15*(7*B*a^5 - 193*A*a^4*b)*sqrt(x))/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 +
10*a^7*b^4*x^3 + 10*a^8*b^3*x^2 + 5*a^9*b^2*x + a^10*b) + 7/128*(B*a + 9*A*
b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*b)
```

mupad [B] time = 1.24, size = 172, normalized size = 0.91

$$\frac{\frac{79\,x^{3/2}\,(9\,A\,b+B\,a)}{192\,a^2}+\frac{49\,b^2\,x^{7/2}\,(9\,A\,b+B\,a)}{192\,a^4}+\frac{7\,b^3\,x^{9/2}\,(9\,A\,b+B\,a)}{128\,a^5}+\frac{\sqrt{x}\,(193\,A\,b-7\,B\,a)}{128\,a\,b}+\frac{7\,b\,x^{5/2}\,(9\,A\,b+B\,a)}{15\,a^3}}{a^5+5\,a^4\,b\,x+10\,a^3\,b^2\,x^2+10\,a^2\,b^3\,x^3+5\,a\,b^4\,x^4+b^5\,x^5}+\frac{7\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\,(9\,A\,b+}{128\,a^{11/2}\,b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((79*x^(3/2)*(9*A*b + B*a))/(192*a^2) + (49*b^2*x^(7/2)*(9*A*b + B*a))/(192
*a^4) + (7*b^3*x^(9/2)*(9*A*b + B*a))/(128*a^5) + (x^(1/2)*(193*A*b - 7*B*a
))/(128*a*b) + (7*b*x^(5/2)*(9*A*b + B*a))/(15*a^3))/(a^5 + b^5*x^5 + 5*a*b
^4*x^4 + 10*a^3*b^2*x^2 + 10*a^2*b^3*x^3 + 5*a^4*b*x) + (7*atan((b^(1/2)*x^
(1/2))/a^(1/2))*(9*A*b + B*a))/(128*a^(11/2)*b^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.780 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=219

$$-\frac{63(11Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{13/2}\sqrt{b}}-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{21(11Ab-aB)}{128a^5b\sqrt{x}\,(a+bx)}+\frac{21(11Ab-aB)}{320a^4b\sqrt{x}\,(a+bx)^2}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)}$$

```
[Out] -63/128*(11*A*b-B*a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(13/2)/b^(1/2)-63/12
8*(11*A*b-B*a)/a^6/b/x^(1/2)+1/5*(A*b-B*a)/a/b/(b*x+a)^5/x^(1/2)+1/40*(11*A
*b-B*a)/a^2/b/(b*x+a)^4/x^(1/2)+3/80*(11*A*b-B*a)/a^3/b/(b*x+a)^3/x^(1/2)+2
1/320*(11*A*b-B*a)/a^4/b/(b*x+a)^2/x^(1/2)+21/128*(11*A*b-B*a)/a^5/b/(b*x+a
)/x^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {27, 78, 51, 63, 205}

$$-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{21(11Ab-aB)}{128a^5b\sqrt{x}\,(a+bx)}+\frac{21(11Ab-aB)}{320a^4b\sqrt{x}\,(a+bx)^2}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}-\frac{63(11A}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-63*(11*A*b - a*B))/(128*a^6*b*Sqrt[x]) + (A*b - a*B)/(5*a*b*Sqrt[x]*(a +
b*x)^5) + (11*A*b - a*B)/(40*a^2*b*Sqrt[x]*(a + b*x)^4) + (3*(11*A*b - a*B)
)/(80*a^3*b*Sqrt[x]*(a + b*x)^3) + (21*(11*A*b - a*B))/(320*a^4*b*Sqrt[x]*(
a + b*x)^2) + (21*(11*A*b - a*B))/(128*a^5*b*Sqrt[x]*(a + b*x)) - (63*(11*A
*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(13/2)*Sqrt[b])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{x^{3/2}(a+bx)^6}\,dx$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{(11Ab-aB)\int \frac{1}{x^{3/2}(a+bx)^5}\,dx}{10ab}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{(9(11Ab-aB))\int \frac{1}{x^{3/2}(a+bx)^4}\,dx}{80a^2b}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{(21(11Ab-aB))}{160}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{21(11Ab-aB}{320a^4b\sqrt{x}\,(a+}$$

$$=\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}+\frac{21(11Ab-aB}{320a^4b\sqrt{x}\,(a+}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}$$

$$=-\frac{63(11Ab-aB)}{128a^6b\sqrt{x}}+\frac{Ab-aB}{5ab\sqrt{x}\,(a+bx)^5}+\frac{11Ab-aB}{40a^2b\sqrt{x}\,(a+bx)^4}+\frac{3(11Ab-aB)}{80a^3b\sqrt{x}\,(a+bx)^3}$$

Mathematica [C] time = 0.03, size = 59, normalized size = 0.27

$$\frac{\frac{a^5(Ab-aB)}{(a+bx)^5}+(aB-11Ab)\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};-\frac{bx}{a}\right)}{5a^6b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((a^5*(A*b - a*B))/(a + b*x)^5 + (-11*A*b + a*B)*Hypergeometric2F1[-1/2, 5,
 1/2, -((b*x)/a)])/(5*a^6*b*Sqrt[x])
```

fricas [A] time = 0.93, size = 673, normalized size = 3.07

$$\left[\frac{315\left(\left(Bab^5-11\,Ab^6\right)x^6+5\left(Ba^2b^4-11\,Aab^5\right)x^5+10\left(Ba^3b^3-11\,Aa^2b^4\right)x^4+10\left(Ba^4b^2-11\,Aa^3b^3\right)x^3+5\left(Ba\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [1/1280*(315*((B*a*b^5 - 11*A*b^6)*x^6 + 5*(B*a^2*b^4 - 11*A*a*b^5)*x^5 + 1
0*(B*a^3*b^3 - 11*A*a^2*b^4)*x^4 + 10*(B*a^4*b^2 - 11*A*a^3*b^3)*x^3 + 5*(B
*a^5*b - 11*A*a^4*b^2)*x^2 + (B*a^6 - 11*A*a^5*b)*x)*sqrt(-a*b)*log((b*x -
a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(1280*A*a^6*b - 315*(B*a^2*b^5 - 1
1*A*a*b^6)*x^5 - 1470*(B*a^3*b^4 - 11*A*a^2*b^5)*x^4 - 2688*(B*a^4*b^3 - 11
*A*a^3*b^4)*x^3 - 2370*(B*a^5*b^2 - 11*A*a^4*b^3)*x^2 - 965*(B*a^6*b - 11*A
*a^5*b^2)*x)*sqrt(x))/(a^7*b^6*x^6 + 5*a^8*b^5*x^5 + 10*a^9*b^4*x^4 + 10*a^
10*b^3*x^3 + 5*a^11*b^2*x^2 + a^12*b*x), -1/640*(315*((B*a*b^5 - 11*A*b^6)*
x^6 + 5*(B*a^2*b^4 - 11*A*a*b^5)*x^5 + 10*(B*a^3*b^3 - 11*A*a^2*b^4)*x^4 +
10*(B*a^4*b^2 - 11*A*a^3*b^3)*x^3 + 5*(B*a^5*b - 11*A*a^4*b^2)*x^2 + (B*a^6
 - 11*A*a^5*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (1280*A*a^6*b -
 315*(B*a^2*b^5 - 11*A*a*b^6)*x^5 - 1470*(B*a^3*b^4 - 11*A*a^2*b^5)*x^4 - 2
688*(B*a^4*b^3 - 11*A*a^3*b^4)*x^3 - 2370*(B*a^5*b^2 - 11*A*a^4*b^3)*x^2 -
965*(B*a^6*b - 11*A*a^5*b^2)*x)*sqrt(x))/(a^7*b^6*x^6 + 5*a^8*b^5*x^5 + 10*
a^9*b^4*x^4 + 10*a^10*b^3*x^3 + 5*a^11*b^2*x^2 + a^12*b*x)]
```

giac [A] time = 0.21, size = 158, normalized size = 0.72

$$\frac{63\,(Ba-11\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^6}-\frac{2\,A}{a^6\sqrt{x}}+\frac{315\,Bab^4x^{\frac{9}{2}}-2185\,Ab^5x^{\frac{9}{2}}+1470\,Ba^2b^3x^{\frac{7}{2}}-9770\,Aab^4x^{\frac{7}{2}}+2688\,Ba^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 63/128*(B*a - 11*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6) - 2*A/(a^
6*sqrt(x)) + 1/640*(315*B*a*b^4*x^(9/2) - 2185*A*b^5*x^(9/2) + 1470*B*a^2*b
^3*x^(7/2) - 9770*A*a*b^4*x^(7/2) + 2688*B*a^3*b^2*x^(5/2) - 16768*A*a^2*b^
3*x^(5/2) + 2370*B*a^4*b*x^(3/2) - 13270*A*a^3*b^2*x^(3/2) + 965*B*a^5*sqrt
(x) - 4215*A*a^4*b*sqrt(x))/((b*x + a)^5*a^6)
```

maple [A] time = 0.11, size = 239, normalized size = 1.09

$$-\frac{437A\,b^5x^{\frac{9}{2}}}{128\,(bx+a)^5\,a^6}+\frac{63B\,b^4x^{\frac{9}{2}}}{128\,(bx+a)^5\,a^5}-\frac{977A\,b^4x^{\frac{7}{2}}}{64\,(bx+a)^5\,a^5}+\frac{147B\,b^3x^{\frac{7}{2}}}{64\,(bx+a)^5\,a^4}-\frac{131A\,b^3x^{\frac{5}{2}}}{5\,(bx+a)^5\,a^4}+\frac{21B\,b^2x^{\frac{5}{2}}}{5\,(bx+a)^5\,a^3}-\frac{1327A}{64\,(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -437/128/a^6/(b*x+a)^5*x^(9/2)*A*b^5+63/128/a^5/(b*x+a)^5*x^(9/2)*B*b^4-977
/64/a^5/(b*x+a)^5*A*x^(7/2)*b^4+147/64/a^4/(b*x+a)^5*B*x^(7/2)*b^3-131/5/a^
4/(b*x+a)^5*x^(5/2)*A*b^3+21/5/a^3/(b*x+a)^5*x^(5/2)*b^2*B-1327/64/a^3/(b*x
+a)^5*x^(3/2)*A*b^2+237/64/a^2/(b*x+a)^5*x^(3/2)*b*B-843/128/a^2/(b*x+a)^5*
x^(1/2)*A*b+193/128/a/(b*x+a)^5*x^(1/2)*B-693/128/a^6/(a*b)^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*A*b+63/128/a^5/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))*B-2*A/a^6/x^(1/2)
```

maxima [A] time = 1.25, size = 200, normalized size = 0.91

$$-\frac{1280\,Aa^5-315\left(Bab^4-11\,Ab^5\right)x^5-1470\left(Ba^2b^3-11\,Aab^4\right)x^4-2688\left(Ba^3b^2-11\,Aa^2b^3\right)x^3-2370\left(Ba^4b-\right.}{640\left(a^6b^5x^{\frac{11}{2}}+5\,a^7b^4x^{\frac{9}{2}}+10\,a^8b^3x^{\frac{7}{2}}+10\,a^9b^2x^{\frac{5}{2}}+5\,a^{10}bx^{\frac{3}{2}}+a^{11}\sqrt{x}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/640*(1280*A*a^5 - 315*(B*a*b^4 - 11*A*b^5)*x^5 - 1470*(B*a^2*b^3 - 11*A*
a*b^4)*x^4 - 2688*(B*a^3*b^2 - 11*A*a^2*b^3)*x^3 - 2370*(B*a^4*b - 11*A*a^3
*b^2)*x^2 - 965*(B*a^5 - 11*A*a^4*b)*x)/(a^6*b^5*x^(11/2) + 5*a^7*b^4*x^(9/
2) + 10*a^8*b^3*x^(7/2) + 10*a^9*b^2*x^(5/2) + 5*a^10*b*x^(3/2) + a^11*sqrt
(x)) + 63/128*(B*a - 11*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6)
```

mupad [B] time = 1.36, size = 209, normalized size = 0.95

$$-\frac{\frac{2\,A}{a}+\frac{193\,x\,\left(11\,A\,b-B\,a\right)}{128\,a^2}+\frac{21\,b^2\,x^3\,\left(11\,A\,b-B\,a\right)}{5\,a^4}+\frac{147\,b^3\,x^4\,\left(11\,A\,b-B\,a\right)}{64\,a^5}+\frac{63\,b^4\,x^5\,\left(11\,A\,b-B\,a\right)}{128\,a^6}+\frac{237\,b\,x^2\,\left(11\,A\,b-B\,a\right)}{64\,a^3}}{a^5\,\sqrt{x}+b^5\,x^{11/2}+5\,a^4\,b\,x^{3/2}+5\,a\,b^4\,x^{9/2}+10\,a^3\,b^2\,x^{5/2}+10\,a^2\,b^3\,x^{7/2}}-\frac{63\,\mathrm{atan}\left(\frac{63\,\sqrt{b}}{\sqrt{a}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*A)/a + (193*x*(11*A*b - B*a))/(128*a^2) + (21*b^2*x^3*(11*A*b - B*a))
/(5*a^4) + (147*b^3*x^4*(11*A*b - B*a))/(64*a^5) + (63*b^4*x^5*(11*A*b - B*
a))/(128*a^6) + (237*b*x^2*(11*A*b - B*a))/(64*a^3))/(a^5*x^(1/2) + b^5*x^(
11/2) + 5*a^4*b*x^(3/2) + 5*a*b^4*x^(9/2) + 10*a^3*b^2*x^(5/2) + 10*a^2*b^3
*x^(7/2)) - (63*atan((63*b^(1/2)*x^(1/2)*(11*A*b - B*a))/(a^(1/2)*(693*A*b
- 63*B*a)))*(11*A*b - B*a))/(128*a^(13/2)*b^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.781 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=240

$$\frac{231\sqrt{b}\,(13Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{128a^{15/2}}+\frac{231(13Ab-3aB)}{128a^7\sqrt{x}}-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{231(13Ab-3aB)}{640a^5bx^{3/2}(a+bx)}+\frac{33(13Ab-3}{320a^4bx^{3/2}(a}$$

```
[Out] -77/128*(13*A*b-3*B*a)/a^6/b/x^(3/2)+1/5*(A*b-B*a)/a/b/x^(3/2)/(b*x+a)^5+1/
40*(13*A*b-3*B*a)/a^2/b/x^(3/2)/(b*x+a)^4+11/240*(13*A*b-3*B*a)/a^3/b/x^(3/
2)/(b*x+a)^3+33/320*(13*A*b-3*B*a)/a^4/b/x^(3/2)/(b*x+a)^2+231/640*(13*A*b-
3*B*a)/a^5/b/x^(3/2)/(b*x+a)+231/128*(13*A*b-3*B*a)*arctan(b^(1/2)*x^(1/2)/
a^(1/2))*b^(1/2)/a^(15/2)+231/128*(13*A*b-3*B*a)/a^7/x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {27, 78, 51, 63, 205}

$$\frac{231(13Ab-3aB)}{640a^5bx^{3/2}(a+bx)}-\frac{77(13Ab-3aB)}{128a^6bx^{3/2}}+\frac{33(13Ab-3aB)}{320a^4bx^{3/2}(a+bx)^2}+\frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3}+\frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}+\frac{231(1}{12}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-77*(13*A*b - 3*a*B))/(128*a^6*b*x^(3/2)) + (231*(13*A*b - 3*a*B))/(128*a^
7*Sqrt[x]) + (A*b - a*B)/(5*a*b*x^(3/2)*(a + b*x)^5) + (13*A*b - 3*a*B)/(40
*a^2*b*x^(3/2)*(a + b*x)^4) + (11*(13*A*b - 3*a*B))/(240*a^3*b*x^(3/2)*(a +
 b*x)^3) + (33*(13*A*b - 3*a*B))/(320*a^4*b*x^(3/2)*(a + b*x)^2) + (231*(13
*A*b - 3*a*B))/(640*a^5*b*x^(3/2)*(a + b*x)) + (231*Sqrt[b]*(13*A*b - 3*a*B
)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(128*a^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{x^{5/2}(a+bx)^6}\,dx$$

$$= \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} - \frac{\left(-\frac{13Ab}{2}+\frac{3aB}{2}\right)\int \frac{1}{x^{5/2}(a+bx)^5}\,dx}{5ab}$$

$$= \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4} + \frac{(11(13Ab-3aB))\int \frac{1}{x^{5/2}(a+bx)^4}\,dx}{80a^2b}$$

$$= \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4} + \frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3} + \frac{(33(13Ab-3a}{16}$$

$$= \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4} + \frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3} + \frac{33(13Ab-3}{320a^4bx^{3/2}(a+}$$

$$= \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4} + \frac{11(13Ab-3aB)}{240a^3bx^{3/2}(a+bx)^3} + \frac{33(13Ab-3}{320a^4bx^{3/2}(a+}$$

$$= -\frac{77(13Ab-3aB)}{128a^6bx^{3/2}} + \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4} + \frac{11(13Ab-3aB}{240a^3bx^{3/2}(a+b}$$

$$= -\frac{77(13Ab-3aB)}{128a^6bx^{3/2}} + \frac{231(13Ab-3aB)}{128a^7\sqrt{x}} + \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}$$

$$= -\frac{77(13Ab-3aB)}{128a^6bx^{3/2}} + \frac{231(13Ab-3aB)}{128a^7\sqrt{x}} + \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}$$

$$= -\frac{77(13Ab-3aB)}{128a^6bx^{3/2}} + \frac{231(13Ab-3aB)}{128a^7\sqrt{x}} + \frac{Ab-aB}{5abx^{3/2}(a+bx)^5} + \frac{13Ab-3aB}{40a^2bx^{3/2}(a+bx)^4}$$

Mathematica [C]   time = 0.03, size = 61, normalized size = 0.25

$$\frac{\frac{3a^5(Ab-aB)}{(a+bx)^5} + (3aB-13Ab)\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};-\frac{bx}{a}\right)}{15a^6bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((3*a^5*(A*b - a*B))/(a + b*x)^5 + (-13*A*b + 3*a*B)*Hypergeometric2F1[-3/2
, 5, -1/2, -((b*x)/a)])/(15*a^6*b*x^(3/2))
```

fricas [**A**] time = 0.68, size = 734, normalized size = 3.06

$$\left[-\frac{3465\left(\left(3\,Bab^5-13\,Ab^6\right)x^7+5\left(3\,Ba^2b^4-13\,Aab^5\right)x^6+10\left(3\,Ba^3b^3-13\,Aa^2b^4\right)x^5+10\left(3\,Ba^4b^2-13\,Aa^3b\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] [-1/3840*(3465*((3*B*a*b^5 - 13*A*b^6)*x^7 + 5*(3*B*a^2*b^4 - 13*A*a*b^5)*x
^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 10*(3*B*a^4*b^2 - 13*A*a^3*b^3)*
x^4 + 5*(3*B*a^5*b - 13*A*a^4*b^2)*x^3 + (3*B*a^6 - 13*A*a^5*b)*x^2)*sqrt(-
b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(b*x + a)) + 2*(1280*A*a^6 + 34
65*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4 - 13*A*a*b^5)*x^5 + 2956
8*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4*b^2 - 13*A*a^3*b^3)*x^3
 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B*a^6 - 13*A*a^5*b)*x)*sq
rt(x))/(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5*
a^11*b*x^3 + a^12*x^2), 1/1920*(3465*((3*B*a*b^5 - 13*A*b^6)*x^7 + 5*(3*B*a
^2*b^4 - 13*A*a*b^5)*x^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 10*(3*B*a^
4*b^2 - 13*A*a^3*b^3)*x^4 + 5*(3*B*a^5*b - 13*A*a^4*b^2)*x^3 + (3*B*a^6 - 1
3*A*a^5*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (1280*A*a^6 + 3
465*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4 - 13*A*a*b^5)*x^5 + 295
68*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4*b^2 - 13*A*a^3*b^3)*x^
3 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B*a^6 - 13*A*a^5*b)*x)*s
qrt(x))/(a^7*b^5*x^7 + 5*a^8*b^4*x^6 + 10*a^9*b^3*x^5 + 10*a^10*b^2*x^4 + 5
*a^11*b*x^3 + a^12*x^2)]
```

giac [**A**] time = 0.18, size = 180, normalized size = 0.75

$$-\frac{231\left(3\,Bab-13\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{128\,\sqrt{ab}\,a^7}-\frac{2\left(3\,Bax-18\,Abx+Aa\right)}{3\,a^7x^{\frac{3}{2}}}-\frac{6555\,Bab^5x^{\frac{9}{2}}-22005\,Ab^6x^{\frac{9}{2}}+29310\,Ba^2b^4x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -231/128*(3*B*a*b - 13*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7) -
 2/3*(3*B*a*x - 18*A*b*x + A*a)/(a^7*x^(3/2)) - 1/1920*(6555*B*a*b^5*x^(9/2
) - 22005*A*b^6*x^(9/2) + 29310*B*a^2*b^4*x^(7/2) - 96290*A*a*b^5*x^(7/2) +
 50304*B*a^3*b^3*x^(5/2) - 160384*A*a^2*b^4*x^(5/2) + 39810*B*a^4*b^2*x^(3/
2) - 121310*A*a^3*b^3*x^(3/2) + 12645*B*a^5*b*sqrt(x) - 35595*A*a^4*b^2*sqr
t(x))/((b*x + a)^5*a^7)
```

maple [**A**] time = 0.10, size = 266, normalized size = 1.11

$$\frac{1467A\,b^6x^{\frac{9}{2}}}{128\left(bx+a\right)^5a^7}-\frac{437B\,b^5x^{\frac{9}{2}}}{128\left(bx+a\right)^5a^6}+\frac{9629A\,b^5x^{\frac{7}{2}}}{192\left(bx+a\right)^5a^6}-\frac{977B\,b^4x^{\frac{7}{2}}}{64\left(bx+a\right)^5a^5}+\frac{1253A\,b^4x^{\frac{5}{2}}}{15\left(bx+a\right)^5a^5}-\frac{131B\,b^3x^{\frac{5}{2}}}{5\left(bx+a\right)^5a^4}+\frac{12131}{192\left(bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1467/128/a^7*b^6/(b*x+a)^5*x^(9/2)*A-437/128/a^6*b^5/(b*x+a)^5*x^(9/2)*B+96
29/192/a^6*b^5/(b*x+a)^5*A*x^(7/2)-977/64/a^5*b^4/(b*x+a)^5*B*x^(7/2)+1253/
15/a^5*b^4/(b*x+a)^5*x^(5/2)*A-131/5/a^4*b^3/(b*x+a)^5*x^(5/2)*B+12131/192/
a^4*b^3/(b*x+a)^5*x^(3/2)*A-1327/64/a^3*b^2/(b*x+a)^5*x^(3/2)*B+2373/128/a^
```

```
3*b^2/(b*x+a)^5*x^(1/2)*A-843/128/a^2*b/(b*x+a)^5*x^(1/2)*B+3003/128/a^7*b^
2/(a*b)^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*A-693/128/a^6*b/(a*b)^(1/2)*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*B-2/3*A/a^6/x^(3/2)+12/a^7/x^(1/2)*A*b-2/a^6
/x^(1/2)*B
```

maxima [A] time = 1.44, size = 233, normalized size = 0.97

$$-\frac{1280\,Aa^6 + 3465\left(3\,Bab^5 - 13\,Ab^6\right)x^6 + 16170\left(3\,Ba^2b^4 - 13\,Aab^5\right)x^5 + 29568\left(3\,Ba^3b^3 - 13\,Aa^2b^4\right)x^4 + 26070}{1920\left(a^7b^5x^{\frac{13}{2}} + 5\,a^8b^4x^{\frac{11}{2}} + 10\,a^9b^3x^{\frac{9}{2}} + 10\,a^{10}b^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/1920*(1280*A*a^6 + 3465*(3*B*a*b^5 - 13*A*b^6)*x^6 + 16170*(3*B*a^2*b^4
- 13*A*a*b^5)*x^5 + 29568*(3*B*a^3*b^3 - 13*A*a^2*b^4)*x^4 + 26070*(3*B*a^4
*b^2 - 13*A*a^3*b^3)*x^3 + 10615*(3*B*a^5*b - 13*A*a^4*b^2)*x^2 + 1280*(3*B
*a^6 - 13*A*a^5*b)*x)/(a^7*b^5*x^(13/2) + 5*a^8*b^4*x^(11/2) + 10*a^9*b^3*x
^(9/2) + 10*a^10*b^2*x^(7/2) + 5*a^11*b*x^(5/2) + a^12*x^(3/2)) - 231/128*(
3*B*a*b - 13*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7)
```

mupad [B] time = 1.33, size = 207, normalized size = 0.86

$$\frac{\frac{2\,x\,(13\,A\,b-3\,B\,a)}{3\,a^2} - \frac{2\,A}{3\,a} + \frac{869\,b^2\,x^3\,(13\,A\,b-3\,B\,a)}{64\,a^4} + \frac{77\,b^3\,x^4\,(13\,A\,b-3\,B\,a)}{5\,a^5} + \frac{539\,b^4\,x^5\,(13\,A\,b-3\,B\,a)}{64\,a^6} + \frac{231\,b^5\,x^6\,(13\,A\,b-3\,B\,a)}{128\,a^7} + \frac{2123\,b\,x^2\,(1}{38}}{a^5\,x^{3/2} + b^5\,x^{13/2} + 5\,a^4\,b\,x^{5/2} + 5\,a\,b^4\,x^{11/2} + 10\,a^3\,b^2\,x^{7/2} + 10\,a^2\,b^3\,x^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((2*x*(13*A*b - 3*B*a))/(3*a^2) - (2*A)/(3*a) + (869*b^2*x^3*(13*A*b - 3*B*
a))/(64*a^4) + (77*b^3*x^4*(13*A*b - 3*B*a))/(5*a^5) + (539*b^4*x^5*(13*A*b
 - 3*B*a))/(64*a^6) + (231*b^5*x^6*(13*A*b - 3*B*a))/(128*a^7) + (2123*b*x^
2*(13*A*b - 3*B*a))/(384*a^3))/(a^5*x^(3/2) + b^5*x^(13/2) + 5*a^4*b*x^(5/2
) + 5*a*b^4*x^(11/2) + 10*a^3*b^2*x^(7/2) + 10*a^2*b^3*x^(9/2)) + (231*b^(1
/2)*atan((b^(1/2)*x^(1/2))/a^(1/2))*(13*A*b - 3*B*a))/(128*a^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.782 $\int x^{7/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2bBx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

```
[Out] 2/9*a*A*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/11*(A*b+B*a)*x^(11/2)*((b*x+a)^
2)^(1/2)/(b*x+a)+2/13*b*B*x^(13/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2bBx^{13/2}\sqrt{a^2+2abx+b^2x^2}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*(A*b + a*B
)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b*B*x^(13/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^{7/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{7/2}+b(Ab+aB)x^{9/2}+b^2Bx^{11/2}\right)dx}{ab+b^2x}\\ &= \frac{2aAx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2(Ab+aB)x^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{9/2}\sqrt{(a+bx)^2}\,(13a(11A+9Bx)+9bx(13A+11Bx))}{1287(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(9/2)*Sqrt[(a + b*x)^2]*(13*a*(11*A + 9*B*x) + 9*b*x*(13*A + 11*B*x)))
/(1287*(a + b*x))
```

fricas [A] time = 0.95, size = 32, normalized size = 0.27

$$\frac{2}{1287}\left(99\,Bbx^{6}+143\,Aax^{4}+117\,(Ba+Ab)x^{5}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*B*b*x^6 + 143*A*a*x^4 + 117*(B*a + A*b)*x^5)*sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.44

$$\frac{2}{13}\,Bbx^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Bax^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Abx^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Aax^{\frac{9}{2}}\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b*x^(13/2)*sgn(b*x + a) + 2/11*B*a*x^(11/2)*sgn(b*x + a) + 2/11*A*b*
x^(11/2)*sgn(b*x + a) + 2/9*A*a*x^(9/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(99Bb\,x^{2}+117Abx+117Bax+143Aa\right)\sqrt{(bx+a)^{2}}\;x^{\frac{9}{2}}}{1287\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*x^(9/2)*(99*B*b*x^2+117*A*b*x+117*B*a*x+143*A*a)*((b*x+a)^2)^(1/2)/(
b*x+a)
```

maxima [A] time = 0.54, size = 35, normalized size = 0.29

$$\frac{2}{143}\left(11\,bx^{2}+13\,ax\right)Bx^{\frac{9}{2}}+\frac{2}{99}\left(9\,bx^{2}+11\,ax\right)Ax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/143*(11*b*x^2 + 13*a*x)*B*x^(9/2) + 2/99*(9*b*x^2 + 11*a*x)*A*x^(7/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{7/2}\,\sqrt{(a+b\,x)^{2}}\;(A+B\,x)\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(7/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.783 $\int x^{5/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2bBx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

```
[Out] 2/7*a*A*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/9*(A*b+B*a)*x^(9/2)*((b*x+a)^2)
^(1/2)/(b*x+a)+2/11*b*B*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2bBx^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*(A*b + a*B
)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b*B*x^(11/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int x^{5/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int x^{5/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{5/2}+b(Ab+aB)x^{7/2}+b^2Bx^{9/2}\right)dx}{ab+b^2x}\\
&= \frac{2aAx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2(Ab+aB)x^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+2b
\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{7/2}\sqrt{(a+bx)^2}\,(11a(9A+7Bx)+7bx(11A+9Bx))}{693(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(7/2)*Sqrt[(a + b*x)^2]*(11*a*(9*A + 7*B*x) + 7*b*x*(11*A + 9*B*x)))/(
693*(a + b*x))
```

fricas [A] time = 0.88, size = 32, normalized size = 0.27

$$\frac{2}{693}\left(63\,Bbx^5 + 99\,Aax^3 + 77\,(Ba + Ab)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b*x^5 + 99*A*a*x^3 + 77*(B*a + A*b)*x^4)*sqrt(x)
```

giac [A] time = 0.23, size = 53, normalized size = 0.44

$$\frac{2}{11}\,Bbx^{\frac{11}{2}}\mathrm{sgn}\left(bx + a\right) + \frac{2}{9}\,Bax^{\frac{9}{2}}\mathrm{sgn}\left(bx + a\right) + \frac{2}{9}\,Abx^{\frac{9}{2}}\mathrm{sgn}\left(bx + a\right) + \frac{2}{7}\,Aax^{\frac{7}{2}}\mathrm{sgn}\left(bx + a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b*x^(11/2)*sgn(b*x + a) + 2/9*B*a*x^(9/2)*sgn(b*x + a) + 2/9*A*b*x^(
9/2)*sgn(b*x + a) + 2/7*A*a*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(63Bb\,x^2 + 77Abx + 77Bax + 99Aa\right)\sqrt{\left(bx + a\right)^2}\;x^{\frac{7}{2}}}{693\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*x^(7/2)*(63*B*b*x^2+77*A*b*x+77*B*a*x+99*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [A] time = 0.62, size = 35, normalized size = 0.29

$$\frac{2}{99}\left(9\,bx^2 + 11\,ax\right)Bx^{\frac{7}{2}} + \frac{2}{63}\left(7\,bx^2 + 9\,ax\right)Ax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*x^2 + 11*a*x)*B*x^(7/2) + 2/63*(7*b*x^2 + 9*a*x)*A*x^(5/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{5/2}\,\sqrt{{\left(a + b\,x\right)}^2}\;\left(A + B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(5/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.784 $\int x^{3/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2bBx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

```
[Out] 2/5*a*A*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*(A*b+B*a)*x^(7/2)*((b*x+a)^2)
^(1/2)/(b*x+a)+2/9*b*B*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2bBx^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*(A*b + a*B
)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b*B*x^(9/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(aAbx^{3/2}+b(Ab+aB)x^{5/2}+b^2Bx^{7/2}\right)dx}{ab+b^2x}\\&=\frac{2aAx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2(Ab+aB)x^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\,(9a(7A+5Bx)+5bx(9A+7Bx))}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(9*a*(7*A + 5*B*x) + 5*b*x*(9*A + 7*B*x)))/(31
5*(a + b*x))
```

fricas [A] time = 0.85, size = 32, normalized size = 0.27

$$\frac{2}{315}\left(35\,Bbx^{4}+63\,Aax^{2}+45\,(Ba+Ab)x^{3}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b*x^4 + 63*A*a*x^2 + 45*(B*a + A*b)*x^3)*sqrt(x)
```

giac [A] time = 0.21, size = 53, normalized size = 0.44

$$\frac{2}{9}\,Bbx^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Bax^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{7}\,Abx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Aax^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b*x^(9/2)*sgn(b*x + a) + 2/7*B*a*x^(7/2)*sgn(b*x + a) + 2/7*A*b*x^(7/
2)*sgn(b*x + a) + 2/5*A*a*x^(5/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(35Bb\,x^{2}+45Abx+45Bax+63Aa\right)\sqrt{\left(bx+a\right)^{2}}\;x^{\frac{5}{2}}}{315\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*x^(5/2)*(35*B*b*x^2+45*A*b*x+45*B*a*x+63*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [A] time = 0.52, size = 35, normalized size = 0.29

$$\frac{2}{63}\left(7\,bx^{2}+9\,ax\right)Bx^{\frac{5}{2}}+\frac{2}{35}\left(5\,bx^{2}+7\,ax\right)Ax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*x^2 + 9*a*x)*B*x^(5/2) + 2/35*(5*b*x^2 + 7*a*x)*A*x^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x^{3/2}\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(3/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.785 $\int \sqrt{x}\,(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=120

$$\frac{2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2bBx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

```
[Out] 2/3*a*A*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*(A*b+B*a)*x^(5/2)*((b*x+a)^2)
^(1/2)/(b*x+a)+2/7*b*B*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2bBx^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*(A*b + a*B
)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b*B*x^(7/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \sqrt{x}\left(ab+b^2x\right)(A+Bx)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(aAb\sqrt{x}+b(Ab+aB)x^{3/2}+b^2Bx^{5/2}\right)dx}{ab+b^2x}\\ &= \frac{2aAx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2(Ab+aB)x^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+2b\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\,(7a(5A+3Bx)+3bx(7A+5Bx))}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(7*a*(5*A + 3*B*x) + 3*b*x*(7*A + 5*B*x)))/(10
5*(a + b*x))
```

fricas [**A**] time = 0.86, size = 30, normalized size = 0.25

$$\frac{2}{105}\left(15\,Bbx^{3}+35\,Aax+21\,(Ba+Ab)x^{2}\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b*x^3 + 35*A*a*x + 21*(B*a + A*b)*x^2)*sqrt(x)
```

giac [**A**] time = 0.15, size = 53, normalized size = 0.44

$$\frac{2}{7}\,Bbx^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Bax^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Abx^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aax^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b*x^(7/2)*sgn(b*x + a) + 2/5*B*a*x^(5/2)*sgn(b*x + a) + 2/5*A*b*x^(5/
2)*sgn(b*x + a) + 2/3*A*a*x^(3/2)*sgn(b*x + a)
```

maple [**A**] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(15Bb\,x^{2}+21Abx+21Bax+35Aa\right)\sqrt{\left(bx+a\right)^{2}}\;x^{\frac{3}{2}}}{105\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*x^(3/2)*(15*B*b*x^2+21*A*b*x+21*B*a*x+35*A*a)*((b*x+a)^2)^(1/2)/(b*x+
a)
```

maxima [**A**] time = 0.59, size = 35, normalized size = 0.29

$$\frac{2}{35}\left(5\,bx^{2}+7\,ax\right)Bx^{\frac{3}{2}}+\frac{2}{15}\left(3\,bx^{2}+5\,ax\right)A\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*x^2 + 7*a*x)*B*x^(3/2) + 2/15*(3*b*x^2 + 5*a*x)*A*sqrt(x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{x}\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] int(x^(1/2)*((a + b*x)^2)^(1/2)*(A + B*x), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.786 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=118

$$\frac{2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2bBx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

```
[Out] 2/3*(A*b+B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*b*B*x^(5/2)*((b*x+a)^2)
^(1/2)/(b*x+a)+2*a*A*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2bBx^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[x],x]
```

```
[Out] (2*a*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*(A*b + a*B)*x^
(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b*B*x^(5/2)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{\sqrt{x}}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{\sqrt{x}}+b(Ab+aB)\sqrt{x}+b^2Bx^{3/2}\right)dx}{ab+b^2x}\\
&= \frac{2aA\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2(Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+2bB
\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.42

$$\frac{2\sqrt{x}\,\sqrt{(a+bx)^2}\,(5a(3A+Bx)+bx(5A+3Bx))}{15(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(5*a*(3*A + B*x) + b*x*(5*A + 3*B*x)))/(15*(a
+ b*x))
```

fricas [A] time = 0.86, size = 27, normalized size = 0.23

$$\frac{2}{15}\left(3\,Bbx^2 + 15\,Aa + 5\,(Ba + Ab)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b*x^2 + 15*A*a + 5*(B*a + A*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 53, normalized size = 0.45

$$\frac{2}{5}\,Bbx^{\frac{5}{2}}\mathrm{sgn}\left(bx + a\right) + \frac{2}{3}\,Bax^{\frac{3}{2}}\mathrm{sgn}\left(bx + a\right) + \frac{2}{3}\,Abx^{\frac{3}{2}}\mathrm{sgn}\left(bx + a\right) + 2\,Aa\sqrt{x}\,\mathrm{sgn}\left(bx + a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b*x^(5/2)*sgn(b*x + a) + 2/3*B*a*x^(3/2)*sgn(b*x + a) + 2/3*A*b*x^(3/
2)*sgn(b*x + a) + 2*A*a*sqrt(x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$\frac{2\left(3Bb\,x^2 + 5Abx + 5Bax + 15Aa\right)\sqrt{\left(bx + a\right)^2}\,\sqrt{x}}{15\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x)
```

```
[Out] 2/15*x^(1/2)*(3*B*b*x^2+5*A*b*x+5*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [A] time = 0.50, size = 34, normalized size = 0.29

$$\frac{2}{15}\left(3\,bx^2 + 5\,ax\right)B\sqrt{x} + \frac{2\left(bx^2 + 3\,ax\right)A}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*x^2 + 5*a*x)*B*sqrt(x) + 2/3*(b*x^2 + 3*a*x)*A/sqrt(x)
```

mupad [B] time = 1.31, size = 56, normalized size = 0.47

$$\frac{\sqrt{{\left(a + b\,x\right)}^2}\,\left(\frac{2\,B\,x^3}{5} + \frac{x^2\,\left(10\,A\,b+10\,B\,a\right)}{15\,b} + \frac{2\,A\,a\,x}{b}\right)}{x^{3/2} + \frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^3)/5 + (x^2*(10*A*b + 10*B*a))/(15*b) + (2*A*a
*x)/b))/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/sqrt(x), x)
```

3.787 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=116

$$\frac{2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bBx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

```
[Out] 2/3*b*B*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)-2*a*A*((b*x+a)^2)^(1/2)/(b*x+a)/x
^(1/2)+2*(A*b+B*a)*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{770, 76\}$

$$\frac{2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bBx^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(3/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*(A*b + a*B)
*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b*B*x^(3/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^{3/2}}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{3/2}}+\frac{b(Ab+aB)}{\sqrt{x}}+b^2B\sqrt{x}\right)dx}{ab+b^2x}\\
&= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2(Ab+aB)\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+2bBx^{3/2}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.41

$$\frac{2\sqrt{(a+bx)^2}\,(bx(3A+Bx)-3a(A-Bx))}{3\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3*a*(A - B*x) + b*x*(3*A + B*x)))/(3*Sqrt[x]*(a + b*
x))
```

fricas [A] time = 0.92, size = 26, normalized size = 0.22

$$\frac{2\left(Bbx^{2} - 3\,Aa + 3\,(Ba + Ab)x\right)}{3\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b*x^2 - 3*A*a + 3*(B*a + A*b)*x)/sqrt(x)
```

giac [A] time = 0.18, size = 53, normalized size = 0.46

$$\frac{2}{3}\,Bbx^{\frac{3}{2}}\mathrm{sgn}\left(bx + a\right) + 2\,Ba\sqrt{x}\,\mathrm{sgn}\left(bx + a\right) + 2\,Ab\sqrt{x}\,\mathrm{sgn}\left(bx + a\right) - \frac{2\,Aa\mathrm{sgn}\left(bx + a\right)}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b*x^(3/2)*sgn(b*x + a) + 2*B*a*sqrt(x)*sgn(b*x + a) + 2*A*b*sqrt(x)*s
gn(b*x + a) - 2*A*a*sgn(b*x + a)/sqrt(x)
```

maple [A] time = 0.05, size = 44, normalized size = 0.38

$$-\frac{2\left(-Bb\,x^{2} - 3Abx - 3Bax + 3Aa\right)\sqrt{\left(bx + a\right)^{2}}}{3\left(bx + a\right)\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x)
```

```
[Out] -2/3*(-B*b*x^2-3*A*b*x-3*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^(1/2)/(b*x+a)
```

maxima [A] time = 0.62, size = 33, normalized size = 0.28

$$\frac{2\left(bx^{2} + 3\,ax\right)B}{3\,\sqrt{x}} + \frac{2\left(bx^{2} - ax\right)A}{x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*x^2 + 3*a*x)*B/sqrt(x) + 2*(b*x^2 - a*x)*A/x^(3/2)
```

mupad [B] time = 1.32, size = 53, normalized size = 0.46

$$\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(\frac{2\,B\,x^2}{3}-\frac{2\,A\,a}{b}+\frac{x\,\left(6\,A\,b+6\,B\,a\right)}{3\,b}\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^2)/3 - (2*A*a)/b + (x*(6*A*b + 6*B*a))/(3*b)))
/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(3/2),x)
```

```
[Out] Timed out
```

3.788 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=116

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

```
[Out] -2/3*a*A*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)-2*(A*b+B*a)*((b*x+a)^2)^(1/2)/(b
*x+a)/x^(1/2)+2*b*B*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(5/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b*B*Sqrt[x]*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^{5/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{5/2}}+\frac{b(Ab+aB)}{x^{3/2}}+\frac{b^2B}{\sqrt{x}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2bB\sqrt{x}\,\sqrt{}}{}\end{aligned}$$

Mathematica [A] time = 0.03, size = 46, normalized size = 0.40

$$-\frac{2\sqrt{(a+bx)^2}\,(a(A+3Bx)+3bx(A-Bx))}{3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*b*x*(A - B*x) + a*(A + 3*B*x)))/(3*x^(3/2)*(a + b*
x))
```

fricas [**A**] time = 0.61, size = 27, normalized size = 0.23

$$\frac{2\left(3\,Bbx^2 - Aa - 3\,(Ba + Ab)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*b*x^2 - A*a - 3*(B*a + A*b)*x)/x^(3/2)
```

giac [**A**] time = 0.16, size = 51, normalized size = 0.44

$$2\,Bb\sqrt{x}\,\mathrm{sgn}\left(bx + a\right) - \frac{2\left(3\,Bax\mathrm{sgn}\left(bx + a\right) + 3\,Abx\mathrm{sgn}\left(bx + a\right) + Aa\mathrm{sgn}\left(bx + a\right)\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2*B*b*sqrt(x)*sgn(b*x + a) - 2/3*(3*B*a*x*sgn(b*x + a) + 3*A*b*x*sgn(b*x +
a) + A*a*sgn(b*x + a))/x^(3/2)
```

maple [**A**] time = 0.05, size = 43, normalized size = 0.37

$$-\frac{2\left(-3Bb\,x^2 + 3Abx + 3Bax + Aa\right)\sqrt{(bx + a)^2}}{3\,(bx + a)\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x)
```

```
[Out] -2/3*(-3*B*b*x^2+3*A*b*x+3*B*a*x+A*a)*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)
```

maxima [**A**] time = 0.64, size = 33, normalized size = 0.28

$$\frac{2\left(bx^2 - ax\right)B}{x^{\frac{3}{2}}} - \frac{2\left(3\,bx^2 + ax\right)A}{3\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2*(b*x^2 - a*x)*B/x^(3/2) - 2/3*(3*b*x^2 + a*x)*A/x^(5/2)
```

mupad [**B**] time = 1.36, size = 54, normalized size = 0.47

$$-\frac{\sqrt{(a + b\,x)^2}\,\left(\frac{2\,A\,a}{3\,b} - 2\,B\,x^2 + \frac{x\,(6\,A\,b + 6\,B\,a)}{3\,b}\right)}{x^{5/2} + \frac{a\,x^{3/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*A*a)/(3*b) - 2*B*x^2 + (x*(6*A*b + 6*B*a))/(3*b))
)/(x^(5/2) + (a*x^(3/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(5/2),x)
```

```
[Out] Timed out
```

3.789 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^{3/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}$$

```
[Out] -2/5*a*A*((b*x+a)^2)^(1/2)/x^(5/2)/(b*x+a)-2/3*(A*b+B*a)*((b*x+a)^2)^(1/2)/
x^(3/2)/(b*x+a)-2*b*B*((b*x+a)^2)^(1/2)/(b*x+a)/x^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3x^{3/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(7/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*b*B*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{7/2}}+\frac{b(Ab+aB)}{x^{5/2}}+\frac{b^2B}{x^{3/2}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2bB\sqrt{a^2+2a}}{\sqrt{x}\,(a-}\end{aligned}$$

Mathematica [A] time = 0.03, size = 48, normalized size = 0.41

$$-\frac{2\sqrt{(a+bx)^2}\,(a(3A+5Bx)+5bx(A+3Bx))}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(5*b*x*(A + 3*B*x) + a*(3*A + 5*B*x)))/(15*x^(5/2)*(a
 + b*x))
```

fricas [**A**] time = 1.00, size = 27, normalized size = 0.23

$$-\frac{2\left(15\,Bbx^{2}+3\,Aa+5\,(Ba+Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*B*b*x^2 + 3*A*a + 5*(B*a + A*b)*x)/x^(5/2)
```

giac [**A**] time = 0.17, size = 51, normalized size = 0.43

$$-\frac{2\left(15\,Bbx^{2}\mathrm{sgn}\left(bx+a\right)+5\,Bax\mathrm{sgn}\left(bx+a\right)+5\,Abx\mathrm{sgn}\left(bx+a\right)+3\,Aa\mathrm{sgn}\left(bx+a\right)\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*B*b*x^2*sgn(b*x + a) + 5*B*a*x*sgn(b*x + a) + 5*A*b*x*sgn(b*x + a
) + 3*A*a*sgn(b*x + a))/x^(5/2)
```

maple [**A**] time = 0.06, size = 44, normalized size = 0.37

$$-\frac{2\left(15Bb\,x^{2}+5Abx+5Bax+3Aa\right)\sqrt{\left(bx+a\right)^{2}}}{15\left(bx+a\right)x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x)
```

```
[Out] -2/15*(15*B*b*x^2+5*A*b*x+5*B*a*x+3*A*a)*((b*x+a)^2)^(1/2)/x^(5/2)/(b*x+a)
```

maxima [**A**] time = 0.57, size = 34, normalized size = 0.29

$$-\frac{2\left(3\,bx^{2}+ax\right)B}{3\,x^{\frac{5}{2}}}-\frac{2\left(5\,bx^{2}+3\,ax\right)A}{15\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*x^2 + a*x)*B/x^(5/2) - 2/15*(5*b*x^2 + 3*a*x)*A/x^(7/2)
```

mupad [**B**] time = 1.36, size = 54, normalized size = 0.46

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(2\,B\,x^2+\frac{2\,A\,a}{5\,b}+\frac{x\,\left(10\,A\,b+10\,B\,a\right)}{15\,b}\right)}{x^{7/2}+\frac{a\,x^{5/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(2*B*x^2 + (2*A*a)/(5*b) + (x*(10*A*b + 10*B*a))/(15*
b)))/(x^(7/2) + (a*x^(5/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(7/2),x)
```

```
[Out] Timed out
```

3.790 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{9/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^{5/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}$$

```
[Out] -2/7*a*A*((b*x+a)^2)^(1/2)/x^(7/2)/(b*x+a)-2/5*(A*b+B*a)*((b*x+a)^2)^(1/2)/
x^(5/2)/(b*x+a)-2/3*b*B*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)
```

Rubi [A] time = 0.04, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5x^{5/2}(a+bx)}-\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(9/2),x]
```

```
[Out] (-2*a*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*(A*b + a*
B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*b*B*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{x^{9/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{x^{9/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{aAb}{x^{9/2}}+\frac{b(Ab+aB)}{x^{7/2}}+\frac{b^2B}{x^{5/2}}\right)dx}{ab+b^2x}\\ &= -\frac{2aA\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2(Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2bB\sqrt{a^2+}}{3x^{3/}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 51, normalized size = 0.42

$$-\frac{2\sqrt{(a+bx)^2}\,(3a(5A+7Bx)+7bx(3A+5Bx))}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(7*b*x*(3*A + 5*B*x) + 3*a*(5*A + 7*B*x)))/(105*x^(7/
2)*(a + b*x))
```

fricas [A] time = 0.95, size = 27, normalized size = 0.22

$$-\frac{2\left(35\,Bbx^{2}+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(35*B*b*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/2)
```

giac [A] time = 0.19, size = 51, normalized size = 0.42

$$-\frac{2\left(35\,Bbx^{2}\mathrm{sgn}\left(bx+a\right)+21\,Bax\mathrm{sgn}\left(bx+a\right)+21\,Abx\mathrm{sgn}\left(bx+a\right)+15\,Aa\mathrm{sgn}\left(bx+a\right)\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(35*B*b*x^2*sgn(b*x + a) + 21*B*a*x*sgn(b*x + a) + 21*A*b*x*sgn(b*x
+ a) + 15*A*a*sgn(b*x + a))/x^(7/2)
```

maple [A] time = 0.05, size = 44, normalized size = 0.37

$$-\frac{2\left(35Bb\,x^{2}+21Abx+21Bax+15Aa\right)\sqrt{(bx+a)^{2}}}{105\,(bx+a)\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x)
```

```
[Out] -2/105*(35*B*b*x^2+21*A*b*x+21*B*a*x+15*A*a)*((b*x+a)^2)^(1/2)/x^(7/2)/(b*x
+a)
```

maxima [A] time = 0.66, size = 35, normalized size = 0.29

$$-\frac{2\left(5\,bx^{2}+3\,ax\right)B}{15\,x^{\frac{7}{2}}}-\frac{2\left(7\,bx^{2}+5\,ax\right)A}{35\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*b*x^2 + 3*a*x)*B/x^(7/2) - 2/35*(7*b*x^2 + 5*a*x)*A/x^(9/2)
```

mupad [B] time = 1.35, size = 54, normalized size = 0.45

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(\frac{2\,B\,x^2}{3}+\frac{2\,A\,a}{7\,b}+\frac{x\,\left(42\,A\,b+42\,B\,a\right)}{105\,b}\right)}{x^{9/2}+\frac{a\,x^{7/2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/x^(9/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*B*x^2)/3 + (2*A*a)/(7*b) + (x*(42*A*b + 42*B*a))/
(105*b)))/(x^(9/2) + (a*x^(7/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/x**(9/2),x)
```

```
[Out] Timed out
```

3.791 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{15(a+bx)}+\frac{6abx^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2a^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB}{11(a+bx)}$$

```
[Out] 2/9*a^3*A*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/11*a^2*(3*A*b+B*a)*x^(11/2)*(
(b*x+a)^2)^(1/2)/(b*x+a)+6/13*a*b*(A*b+B*a)*x^(13/2)*((b*x+a)^2)^(1/2)/(b*x
+a)+2/15*b^2*(A*b+3*B*a)*x^(15/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/17*b^3*B*x^(1
7/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{15(a+bx)}+\frac{6abx^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2a^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (6*a*b*(
A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (2*b^2*
(A*b + 3*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x)) + (2*b
^3*B*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^{7/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^3Ab^3x^{7/2}+a^2b^3(3Ab+aB)x^{9/2}+3ab^4(Ab+\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{2a^3Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2a^2(3Ab+aB)x^{11/2}\sqrt{a^2+2abx+b^2x}}{11(a+bx)}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{9/2}\sqrt{(a+bx)^2}\left(1105a^3(11A+9Bx)+2295a^2bx(13A+11Bx)+1683ab^2x^2(15A+13Bx)+429b^3x^3(17A+1\right.}{109395(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(9/2)*Sqrt[(a + b*x)^2]*(1105*a^3*(11*A + 9*B*x) + 2295*a^2*b*x*(13*A
+ 11*B*x) + 1683*a*b^2*x^2*(15*A + 13*B*x) + 429*b^3*x^3*(17*A + 15*B*x)))/
(109395*(a + b*x))
```

fricas [**A**] time = 0.86, size = 78, normalized size = 0.35

$$\frac{2}{109395}\left(6435\,Bb^3x^8+12155\,Aa^3x^4+7293\left(3\,Bab^2+Ab^3\right)x^7+25245\left(Ba^2b+Aab^2\right)x^6+9945\left(Ba^3+3\,Aa^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/109395*(6435*B*b^3*x^8 + 12155*A*a^3*x^4 + 7293*(3*B*a*b^2 + A*b^3)*x^7 +
 25245*(B*a^2*b + A*a*b^2)*x^6 + 9945*(B*a^3 + 3*A*a^2*b)*x^5)*sqrt(x)
```

giac [**A**] time = 0.20, size = 125, normalized size = 0.57

$$\frac{2}{17}\,Bb^3x^{\frac{17}{2}}\operatorname{sgn}(bx+a)+\frac{2}{5}\,Bab^2x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{2}{15}\,Ab^3x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{6}{13}\,Ba^2bx^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{6}{13}\,Aab^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^3*x^(17/2)*sgn(b*x + a) + 2/5*B*a*b^2*x^(15/2)*sgn(b*x + a) + 2/15
*A*b^3*x^(15/2)*sgn(b*x + a) + 6/13*B*a^2*b*x^(13/2)*sgn(b*x + a) + 6/13*A*
a*b^2*x^(13/2)*sgn(b*x + a) + 2/11*B*a^3*x^(11/2)*sgn(b*x + a) + 6/11*A*a^2
*b*x^(11/2)*sgn(b*x + a) + 2/9*A*a^3*x^(9/2)*sgn(b*x + a)
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(6435B\,b^3x^4+7293A\,b^3x^3+21879Ba\,b^2x^3+25245Aa\,b^2x^2+25245B\,a^2b\,x^2+29835A\,a^2bx+9945B\,a^3x+\right.}{109395\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/109395*x^(9/2)*(6435*B*b^3*x^4+7293*A*b^3*x^3+21879*B*a*b^2*x^3+25245*A*a
*b^2*x^2+25245*B*a^2*b*x^2+29835*A*a^2*b*x+9945*B*a^3*x+12155*A*a^3)*((b*x+
a)^2)^(3/2)/(b*x+a)^3
```

maxima [**A**] time = 0.57, size = 137, normalized size = 0.62

$$\frac{2}{6435}\left(33\left(13\,b^3x^2+15\,ab^2x\right)x^{\frac{11}{2}}+90\left(11\,ab^2x^2+13\,a^2bx\right)x^{\frac{9}{2}}+65\left(9\,a^2bx^2+11\,a^3x\right)x^{\frac{7}{2}}\right)A+\frac{2}{36465}\left(143\left(15\,b\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(33*(13*b^3*x^2 + 15*a*b^2*x)*x^(11/2) + 90*(11*a*b^2*x^2 + 13*a^2*b
*x)*x^(9/2) + 65*(9*a^2*b*x^2 + 11*a^3*x)*x^(7/2))*A + 2/36465*(143*(15*b^3
*x^2 + 17*a*b^2*x)*x^(13/2) + 374*(13*a*b^2*x^2 + 15*a^2*b*x)*x^(11/2) + 25
5*(11*a^2*b*x^2 + 13*a^3*x)*x^(9/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2}\,(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.792 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{13(a+bx)}+\frac{6abx^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2a^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(a}{9(a+bx)}$$

```
[Out] 2/7*a^3*A*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/9*a^2*(3*A*b+B*a)*x^(9/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+6/11*a*b*(A*b+B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a
)+2/13*b^2*(A*b+3*B*a)*x^(13/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/15*b^3*B*x^(15/
2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$\frac{2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{13(a+bx)}+\frac{6abx^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2a^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(a}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (6*a*b*(A*
b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b^2*(A
*b + 3*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (2*b^3
*B*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int x^{5/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(a^3Ab^3x^{5/2}+a^2b^3(3Ab+aB)x^{7/2}+3ab^4(Al\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{2a^3Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2a^2(3Ab+aB)x^{9/2}\sqrt{a^2+2abx+b}}{9(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{7/2}\sqrt{(a+bx)^2}\left(715a^3(9A+7Bx)+1365a^2bx(11A+9Bx)+945ab^2x^2(13A+11Bx)+231b^3x^3(15A+13Bx)\right)}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(7/2)*Sqrt[(a + b*x)^2]*(715*a^3*(9*A + 7*B*x) + 1365*a^2*b*x*(11*A +
9*B*x) + 945*a*b^2*x^2*(13*A + 11*B*x) + 231*b^3*x^3*(15*A + 13*B*x)))/(450
45*(a + b*x))
```

fricas [A] time = 0.86, size = 78, normalized size = 0.35

$$\frac{2}{45045}\left(3003\,Bb^3x^7+6435\,Aa^3x^3+3465\left(3\,Bab^2+Ab^3\right)x^6+12285\left(Ba^2b+Aab^2\right)x^5+5005\left(Ba^3+3\,Aa^2b\right)x^4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/45045*(3003*B*b^3*x^7 + 6435*A*a^3*x^3 + 3465*(3*B*a*b^2 + A*b^3)*x^6 + 1
2285*(B*a^2*b + A*a*b^2)*x^5 + 5005*(B*a^3 + 3*A*a^2*b)*x^4)*sqrt(x)
```

giac [A] time = 0.17, size = 125, normalized size = 0.57

$$\frac{2}{15}\,Bb^3x^{\frac{15}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{6}{13}\,Bab^2x^{\frac{13}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{13}\,Ab^3x^{\frac{13}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{6}{11}\,Ba^2bx^{\frac{11}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{6}{11}\,Aab^2x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^3*x^(15/2)*sgn(b*x + a) + 6/13*B*a*b^2*x^(13/2)*sgn(b*x + a) + 2/1
3*A*b^3*x^(13/2)*sgn(b*x + a) + 6/11*B*a^2*b*x^(11/2)*sgn(b*x + a) + 6/11*A
*a*b^2*x^(11/2)*sgn(b*x + a) + 2/9*B*a^3*x^(9/2)*sgn(b*x + a) + 2/3*A*a^2*b
*x^(9/2)*sgn(b*x + a) + 2/7*A*a^3*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(3003B\,b^3x^4+3465A\,b^3x^3+10395Ba\,b^2x^3+12285Aa\,b^2x^2+12285B\,a^2b\,x^2+15015A\,a^2bx+5005B\,a^3x+64\right.}{45045\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*x^(7/2)*(3003*B*b^3*x^4+3465*A*b^3*x^3+10395*B*a*b^2*x^3+12285*A*a*
b^2*x^2+12285*B*a^2*b*x^2+15015*A*a^2*b*x+5005*B*a^3*x+6435*A*a^3)*((b*x+a)
^2)^(3/2)/(b*x+a)^3
```

maxima [A] time = 0.63, size = 137, normalized size = 0.62

$$\frac{2}{9009}\left(63\left(11\,b^3x^2+13\,ab^2x\right)x^{\frac{9}{2}}+182\left(9\,ab^2x^2+11\,a^2bx\right)x^{\frac{7}{2}}+143\left(7\,a^2bx^2+9\,a^3x\right)x^{\frac{5}{2}}\right)A+\frac{2}{6435}\left(33\left(13\,b^3x^2+1\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/9009*(63*(11*b^3*x^2 + 13*a*b^2*x)*x^(9/2) + 182*(9*a*b^2*x^2 + 11*a^2*b*
x)*x^(7/2) + 143*(7*a^2*b*x^2 + 9*a^3*x)*x^(5/2))*A + 2/6435*(33*(13*b^3*x^
2 + 15*a*b^2*x)*x^(11/2) + 90*(11*a*b^2*x^2 + 13*a^2*b*x)*x^(9/2) + 65*(9*a
^2*b*x^2 + 11*a^3*x)*x^(7/2))*B
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.793 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{11(a+bx)}+\frac{2abx^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2a^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+}{7(a+bx)}$$

```
[Out] 2/5*a^3*A*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*a^2*(3*A*b+B*a)*x^(7/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+2/3*a*b*(A*b+B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+
2/11*b^2*(A*b+3*B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/13*b^3*B*x^(13/2)
*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{11(a+bx)}+\frac{2abx^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2a^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a*b*(A*
b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b^2*(A*b
 + 3*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b^3*B
*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^3Ab^3x^{3/2}+a^2b^3(3Ab+aB)x^{5/2}+3ab^4(Ab+\right.}{b^2\left(ab+b^2x\right)}\\&=\frac{2a^3Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2a^2(3Ab+aB)x^{7/2}\sqrt{a^2+2abx+b^2x}}{7(a+bx)}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\left(429a^3(7A+5Bx)+715a^2bx(9A+7Bx)+455ab^2x^2(11A+9Bx)+105b^3x^3(13A+11Bx)\right)}{15015(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(429*a^3*(7*A + 5*B*x) + 715*a^2*b*x*(9*A + 7*
B*x) + 455*a*b^2*x^2*(11*A + 9*B*x) + 105*b^3*x^3*(13*A + 11*B*x)))/(15015*
(a + b*x))
```

fricas [**A**] time = 0.78, size = 78, normalized size = 0.35

$$\frac{2}{15015}\left(1155\,Bb^3x^6+3003\,Aa^3x^2+1365\left(3\,Bab^2+Ab^3\right)x^5+5005\left(Ba^2b+Aab^2\right)x^4+2145\left(Ba^3+3\,Aa^2b\right)x^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/15015*(1155*B*b^3*x^6 + 3003*A*a^3*x^2 + 1365*(3*B*a*b^2 + A*b^3)*x^5 + 5
005*(B*a^2*b + A*a*b^2)*x^4 + 2145*(B*a^3 + 3*A*a^2*b)*x^3)*sqrt(x)
```

giac [**A**] time = 0.16, size = 125, normalized size = 0.57

$$\frac{2}{13}\,Bb^3x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{6}{11}\,Bab^2x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Ab^3x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Ba^2bx^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Aab^2x^{\frac{9}{2}}\mathrm{sg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^3*x^(13/2)*sgn(b*x + a) + 6/11*B*a*b^2*x^(11/2)*sgn(b*x + a) + 2/1
1*A*b^3*x^(11/2)*sgn(b*x + a) + 2/3*B*a^2*b*x^(9/2)*sgn(b*x + a) + 2/3*A*a*
b^2*x^(9/2)*sgn(b*x + a) + 2/7*B*a^3*x^(7/2)*sgn(b*x + a) + 6/7*A*a^2*b*x^(
7/2)*sgn(b*x + a) + 2/5*A*a^3*x^(5/2)*sgn(b*x + a)
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(1155B\,b^3x^4+1365A\,b^3x^3+4095Ba\,b^2x^3+5005Aa\,b^2x^2+5005B\,a^2b\,x^2+6435A\,a^2bx+2145B\,a^3x+300\right.}{15015\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*x^(5/2)*(1155*B*b^3*x^4+1365*A*b^3*x^3+4095*B*a*b^2*x^3+5005*A*a*b^
2*x^2+5005*B*a^2*b*x^2+6435*A*a^2*b*x+2145*B*a^3*x+3003*A*a^3)*((b*x+a)^2)^
(3/2)/(b*x+a)^3
```

maxima [**A**] time = 0.54, size = 137, normalized size = 0.62

$$\frac{2}{3465}\left(35\left(9\,b^3x^2+11\,ab^2x\right)x^{\frac{7}{2}}+110\left(7\,ab^2x^2+9\,a^2bx\right)x^{\frac{5}{2}}+99\left(5\,a^2bx^2+7\,a^3x\right)x^{\frac{3}{2}}\right)A+\frac{2}{9009}\left(63\left(11\,b^3x^2+1\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(35*(9*b^3*x^2 + 11*a*b^2*x)*x^(7/2) + 110*(7*a*b^2*x^2 + 9*a^2*b*x)
*x^(5/2) + 99*(5*a^2*b*x^2 + 7*a^3*x)*x^(3/2))*A + 2/9009*(63*(11*b^3*x^2 +
 13*a*b^2*x)*x^(9/2) + 182*(9*a*b^2*x^2 + 11*a^2*b*x)*x^(7/2) + 143*(7*a^2*
b*x^2 + 9*a^3*x)*x^(5/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{\frac{3}{2}}\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(x**(3/2)*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.794 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=220

$$\frac{2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{6abx^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB}{5(a+bx)}$$

```
[Out] 2/3*a^3*A*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*a^2*(3*A*b+B*a)*x^(5/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+6/7*a*b*(A*b+B*a)*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)+
2/9*b^2*(A*b+3*B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/11*b^3*B*x^(11/2)*(
(b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{9(a+bx)}+\frac{6abx^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB}{5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^2*(3*A
*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (6*a*b*(A*
b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^2*(A*b
 + 3*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^3*B*x
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \sqrt{x}\left(ab+b^2x\right)^3(A+Bx)\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(a^3Ab^3\sqrt{x}+a^2b^3(3Ab+aB)x^{3/2}+3ab^4(A\right.}{b^2\left(ab+b^2x\right)}\\
&= \frac{2a^3Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2a^2(3Ab+aB)x^{5/2}\sqrt{a^2+2abx+b}}{5(a+bx)}
\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 89, normalized size = 0.40

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\,\left(231a^3(5A+3Bx)+297a^2bx(7A+5Bx)+165ab^2x^2(9A+7Bx)+35b^3x^3(11A+9Bx)\right)}{3465(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(231*a^3*(5*A + 3*B*x) + 297*a^2*b*x*(7*A + 5*
B*x) + 165*a*b^2*x^2*(9*A + 7*B*x) + 35*b^3*x^3*(11*A + 9*B*x)))/(3465*(a +
 b*x))
```

fricas [**A**] time = 0.83, size = 76, normalized size = 0.35

$$\frac{2}{3465}\left(315\,Bb^3x^5+1155\,Aa^3x+385\left(3\,Bab^2+Ab^3\right)x^4+1485\left(Ba^2b+Aab^2\right)x^3+693\left(Ba^3+3\,Aa^2b\right)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/3465*(315*B*b^3*x^5 + 1155*A*a^3*x + 385*(3*B*a*b^2 + A*b^3)*x^4 + 1485*(
B*a^2*b + A*a*b^2)*x^3 + 693*(B*a^3 + 3*A*a^2*b)*x^2)*sqrt(x)
```

giac [**A**] time = 0.33, size = 125, normalized size = 0.57

$$\frac{2}{11}\,Bb^3x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Bab^2x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Ab^3x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{6}{7}\,Ba^2bx^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{6}{7}\,Aab^2x^{\frac{7}{2}}\operatorname{sgn}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^3*x^(11/2)*sgn(b*x + a) + 2/3*B*a*b^2*x^(9/2)*sgn(b*x + a) + 2/9*A
*b^3*x^(9/2)*sgn(b*x + a) + 6/7*B*a^2*b*x^(7/2)*sgn(b*x + a) + 6/7*A*a*b^2*
x^(7/2)*sgn(b*x + a) + 2/5*B*a^3*x^(5/2)*sgn(b*x + a) + 6/5*A*a^2*b*x^(5/2)
*sgn(b*x + a) + 2/3*A*a^3*x^(3/2)*sgn(b*x + a)
```

maple [**A**] time = 0.06, size = 92, normalized size = 0.42

$$\frac{2\left(315B\,b^3x^4+385A\,b^3x^3+1155Ba\,b^2x^3+1485Aa\,b^2x^2+1485B\,a^2b\,x^2+2079A\,a^2bx+693B\,a^3x+1155A\,a^3\right)(}{3465\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x)
```

```
[Out] 2/3465*x^(3/2)*(315*B*b^3*x^4+385*A*b^3*x^3+1155*B*a*b^2*x^3+1485*A*a*b^2*x
^2+1485*B*a^2*b*x^2+2079*A*a^2*b*x+693*B*a^3*x+1155*A*a^3)*((b*x+a)^2)^(3/2
)/(b*x+a)^3
```

maxima [**A**] time = 0.62, size = 137, normalized size = 0.62

$$\frac{2}{315}\left(5\left(7\,b^3x^2+9\,ab^2x\right)x^{\frac{5}{2}}+18\left(5\,ab^2x^2+7\,a^2bx\right)x^{\frac{3}{2}}+21\left(3\,a^2bx^2+5\,a^3x\right)\sqrt{x}\right)A+\frac{2}{3465}\left(35\left(9\,b^3x^2+11\,ab^2x\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(5*(7*b^3*x^2 + 9*a*b^2*x)*x^(5/2) + 18*(5*a*b^2*x^2 + 7*a^2*b*x)*x^(
3/2) + 21*(3*a^2*b*x^2 + 5*a^3*x)*sqrt(x))*A + 2/3465*(35*(9*b^3*x^2 + 11*a
*b^2*x)*x^(7/2) + 110*(7*a*b^2*x^2 + 9*a^2*b*x)*x^(5/2) + 99*(5*a^2*b*x^2 +
 7*a^3*x)*x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x}\,\,(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.795 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=218

$$\frac{2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{6abx^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3}{3(a+bx)}$$

```
[Out] 2/3*a^2*(3*A*b+B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+6/5*a*b*(A*b+B*a)*x^(
5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*b^2*(A*b+3*B*a)*x^(7/2)*((b*x+a)^2)^(1/2
)/(b*x+a)+2/9*b^3*B*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2*a^3*A*x^(1/2)*((b*x
+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{7(a+bx)}+\frac{6abx^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{5(a+bx)}+\frac{2a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+3}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*a^3*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a^2*(3*A*b +
 a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (6*a*b*(A*b +
a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b^2*(A*b + 3
*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^3*B*x^(9/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{x}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{\sqrt{x}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{a^3Ab^3}{\sqrt{x}}+a^2b^3(3Ab+aB)\sqrt{x}+3ab^4(Ab+aB)x^{3/2}\right.}{b^2\left(ab+b^2x\right)}\\ &= \frac{2a^3A\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2a^2(3Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 88, normalized size = 0.40

$$\frac{2\sqrt{x}\sqrt{(a+bx)^2}\left(105a^3(3A+Bx)+63a^2bx(5A+3Bx)+27ab^2x^2(7A+5Bx)+5b^3x^3(9A+7Bx)\right)}{315(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(105*a^3*(3*A + B*x) + 63*a^2*b*x*(5*A + 3*B*x
) + 27*a*b^2*x^2*(7*A + 5*B*x) + 5*b^3*x^3*(9*A + 7*B*x)))/(315*(a + b*x))
```

fricas [**A**] time = 0.84, size = 73, normalized size = 0.33

$$\frac{2}{315}\left(35\,Bb^3x^4+315\,Aa^3+45\left(3\,Bab^2+Ab^3\right)x^3+189\left(Ba^2b+Aab^2\right)x^2+105\left(Ba^3+3\,Aa^2b\right)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*B*b^3*x^4 + 315*A*a^3 + 45*(3*B*a*b^2 + A*b^3)*x^3 + 189*(B*a^2*b
 + A*a*b^2)*x^2 + 105*(B*a^3 + 3*A*a^2*b)*x)*sqrt(x)
```

giac [**A**] time = 0.19, size = 125, normalized size = 0.57

$$\frac{2}{9}\,Bb^3x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{6}{7}\,Bab^2x^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{2}{7}\,Ab^3x^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{6}{5}\,Ba^2bx^{\frac{5}{2}}\operatorname{sgn}(bx+a)+\frac{6}{5}\,Aab^2x^{\frac{5}{2}}\operatorname{sgn}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^3*x^(9/2)*sgn(b*x + a) + 6/7*B*a*b^2*x^(7/2)*sgn(b*x + a) + 2/7*A*b
^3*x^(7/2)*sgn(b*x + a) + 6/5*B*a^2*b*x^(5/2)*sgn(b*x + a) + 6/5*A*a*b^2*x^
(5/2)*sgn(b*x + a) + 2/3*B*a^3*x^(3/2)*sgn(b*x + a) + 2*A*a^2*b*x^(3/2)*sgn
(b*x + a) + 2*A*a^3*sqrt(x)*sgn(b*x + a)
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.42

$$\frac{2\left(35B\,b^3x^4+45A\,b^3x^3+135Ba\,b^2x^3+189Aa\,b^2x^2+189B\,a^2b\,x^2+315A\,a^2bx+105B\,a^3x+315A\,a^3\right)\left((bx+\right.}{315\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x)
```

```
[Out] 2/315*x^(1/2)*(35*B*b^3*x^4+45*A*b^3*x^3+135*B*a*b^2*x^3+189*A*a*b^2*x^2+18
9*B*a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+315*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [**A**] time = 0.62, size = 136, normalized size = 0.62

$$\frac{2}{105}\left(3\left(5\,b^3x^2+7\,ab^2x\right)x^{\frac{3}{2}}+14\left(3\,ab^2x^2+5\,a^2bx\right)\sqrt{x}+\frac{35\left(a^2bx^2+3\,a^3x\right)}{\sqrt{x}}\right)A+\frac{2}{315}\left(5\left(7\,b^3x^2+9\,ab^2x\right)x^{\frac{5}{2}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(3*(5*b^3*x^2 + 7*a*b^2*x)*x^(3/2) + 14*(3*a*b^2*x^2 + 5*a^2*b*x)*sqr
t(x) + 35*(a^2*b*x^2 + 3*a^3*x)/sqrt(x))*A + 2/315*(5*(7*b^3*x^2 + 9*a*b^2*
x)*x^(5/2) + 18*(5*a*b^2*x^2 + 7*a^2*b*x)*x^(3/2) + 21*(3*a^2*b*x^2 + 5*a^3
*x)*sqrt(x))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(1/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/sqrt(x), x)
```

3.796 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{2a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{a+bx}+\frac{2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5(a+bx)}+\frac{2abx^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(a}{a+bx}$$

```
[Out] 2*a*b*(A*b+B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*b^2*(A*b+3*B*a)*x^(5/
2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*b^3*B*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)-2*
a^3*A*((b*x+a)^2)^(1/2)/(b*x+a)/x^(1/2)+2*a^2*(3*A*b+B*a)*x^(1/2)*((b*x+a)^
2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{5(a+bx)}+\frac{2abx^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*a^2*(3*A*
b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a*b*(A*b + a
*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^2*(A*b + 3*a*B)
*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*b^3*B*x^(7/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{3/2}}+\frac{a^2b^3(3Ab+aB)}{\sqrt{x}}+3ab^4(Ab+aB)\sqrt{x}+b^5(\right.}{b^2\left(ab+b^2x\right)}\\ &= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2a^2(3Ab+aB)\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\end{aligned}$$

Mathematica [A] time = 0.03, size = 85, normalized size = 0.40

$$\frac{2\sqrt{(a+bx)^2}\left(-35a^3(A-Bx)+35a^2bx(3A+Bx)+7ab^2x^2(5A+3Bx)+b^3x^3(7A+5Bx)\right)}{35\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-35*a^3*(A - B*x) + 35*a^2*b*x*(3*A + B*x) + 7*a*b^2*
x^2*(5*A + 3*B*x) + b^3*x^3*(7*A + 5*B*x)))/(35*Sqrt[x]*(a + b*x))
```

fricas [A] time = 0.86, size = 73, normalized size = 0.34

$$\frac{2\left(5\,Bb^3x^4-35\,Aa^3+7\left(3\,Bab^2+Ab^3\right)x^3+35\left(Ba^2b+Aab^2\right)x^2+35\left(Ba^3+3\,Aa^2b\right)x\right)}{35\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(5*B*b^3*x^4 - 35*A*a^3 + 7*(3*B*a*b^2 + A*b^3)*x^3 + 35*(B*a^2*b + A*
a*b^2)*x^2 + 35*(B*a^3 + 3*A*a^2*b)*x)/sqrt(x)
```

giac [A] time = 0.17, size = 125, normalized size = 0.58

$$\frac{2}{7}\,Bb^3x^{\frac{7}{2}}\mathrm{sgn}\,(bx+a)+\frac{6}{5}\,Bab^2x^{\frac{5}{2}}\mathrm{sgn}\,(bx+a)+\frac{2}{5}\,Ab^3x^{\frac{5}{2}}\mathrm{sgn}\,(bx+a)+2\,Ba^2bx^{\frac{3}{2}}\mathrm{sgn}\,(bx+a)+2\,Aab^2x^{\frac{3}{2}}\mathrm{sgn}\,(bx+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^3*x^(7/2)*sgn(b*x + a) + 6/5*B*a*b^2*x^(5/2)*sgn(b*x + a) + 2/5*A*b
^3*x^(5/2)*sgn(b*x + a) + 2*B*a^2*b*x^(3/2)*sgn(b*x + a) + 2*A*a*b^2*x^(3/2
)*sgn(b*x + a) + 2*B*a^3*sqrt(x)*sgn(b*x + a) + 6*A*a^2*b*sqrt(x)*sgn(b*x +
 a) - 2*A*a^3*sgn(b*x + a)/sqrt(x)
```

maple [A] time = 0.05, size = 92, normalized size = 0.43

$$-\frac{2\left(-5B\,b^3x^4-7A\,b^3x^3-21Ba\,b^2x^3-35Aa\,b^2x^2-35B\,a^2b\,x^2-105A\,a^2bx-35B\,a^3x+35A\,a^3\right)\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}{35\left(bx+a\right)^3\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x)
```

```
[Out] -2/35*(-5*B*b^3*x^4-7*A*b^3*x^3-21*B*a*b^2*x^3-35*A*a*b^2*x^2-35*B*a^2*b*x^
2-105*A*a^2*b*x-35*B*a^3*x+35*A*a^3)*((b*x+a)^2)^(3/2)/x^(1/2)/(b*x+a)^3
```

maxima [A] time = 0.56, size = 133, normalized size = 0.62

$$\frac{2}{15}\left(\left(3\,b^3x^2+5\,ab^2x\right)\sqrt{x}+\frac{10\left(ab^2x^2+3\,a^2bx\right)}{\sqrt{x}}+\frac{15\left(a^2bx^2-a^3x\right)}{x^{\frac{3}{2}}}\right)A+\frac{2}{105}\Bigg(3\left(5\,b^3x^2+7\,ab^2x\right)x^{\frac{3}{2}}+14\,\big(3\,ab^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^3*x^2 + 5*a*b^2*x)*sqrt(x) + 10*(a*b^2*x^2 + 3*a^2*b*x)/sqrt(x)
+ 15*(a^2*b*x^2 - a^3*x)/x^(3/2))*A + 2/105*(3*(5*b^3*x^2 + 7*a*b^2*x)*x^(3
/2) + 14*(3*a*b^2*x^2 + 5*a^2*b*x)*sqrt(x) + 35*(a^2*b*x^2 + 3*a^3*x)/sqrt(
x))*B
```

mupad [B] time = 1.64, size = 107, normalized size = 0.50

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x\,\left(70\,B\,a^3+210\,A\,b\,a^2\right)}{35\,b}-\frac{2\,A\,a^3}{b}+\frac{2\,B\,b^2\,x^4}{7}+\frac{x^3\,\left(14\,A\,b^3+42\,B\,a\,b^2\right)}{35\,b}+2\,a\,x^2\,\left(A\,b+B\,a\right)\right)}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x*(70*B*a^3 + 210*A*a^2*b))/(35*b) - (2*
A*a^3)/b + (2*B*b^2*x^4)/7 + (x^3*(14*A*b^3 + 42*B*a*b^2))/(35*b) + 2*a*x^2
*(A*b + B*a)))/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(3/2), x)
```

3.797 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{\sqrt{x}\,(a+bx)}+\frac{6ab\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+A}{3(a+bx)}$$

```
[Out] -2/3*a^3*A*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)+2/3*b^2*(A*b+3*B*a)*x^(3/2)*((
b*x+a)^2)^(1/2)/(b*x+a)+2/5*b^3*B*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)-2*a^2*(
3*A*b+B*a)*((b*x+a)^2)^(1/2)/(b*x+a)/x^(1/2)+6*a*b*(A*b+B*a)*x^(1/2)*((b*x+
a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{\sqrt{x}\,(a+bx)}+\frac{6ab\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(3aB+A}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (6*a*b*(A*b
 + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^2*(A*b + 3*
a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*b^3*B*x^(5/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{5/2}}\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{a^3Ab^3}{x^{5/2}}+\frac{a^2b^3(3Ab+aB)}{x^{3/2}}+\frac{3ab^4(Ab+aB)}{\sqrt{x}}+b^5(Ab+3aB)\right.}{b^2\left(ab+b^2x\right)}\\
&= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{6ab(A}{}
\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 84, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(5a^3(A+3Bx)+45a^2bx(A-Bx)-15ab^2x^2(3A+Bx)-b^3x^3(5A+3Bx)\right)}{15x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(45*a^2*b*x*(A - B*x) - 15*a*b^2*x^2*(3*A + B*x) + 5*
a^3*(A + 3*B*x) - b^3*x^3*(5*A + 3*B*x)))/(15*x^(3/2)*(a + b*x))
```

fricas [**A**] time = 0.93, size = 73, normalized size = 0.34

$$\frac{2\left(3\,Bb^3x^4-5\,Aa^3+5\left(3\,Bab^2+Ab^3\right)x^3+45\left(Ba^2b+Aab^2\right)x^2-15\left(Ba^3+3\,Aa^2b\right)x\right)}{15\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(3*B*b^3*x^4 - 5*A*a^3 + 5*(3*B*a*b^2 + A*b^3)*x^3 + 45*(B*a^2*b + A*a
*b^2)*x^2 - 15*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2)
```

giac [**A**] time = 0.16, size = 123, normalized size = 0.57

$$\frac{2}{5}\,Bb^3x^{\frac{5}{2}}\operatorname{sgn}\left(bx+a\right)+2\,Bab^2x^{\frac{3}{2}}\operatorname{sgn}\left(bx+a\right)+\frac{2}{3}\,Ab^3x^{\frac{3}{2}}\operatorname{sgn}\left(bx+a\right)+6\,Ba^2b\sqrt{x}\operatorname{sgn}\left(bx+a\right)+6\,Aab^2\sqrt{x}\operatorname{sgn}\left(b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^3*x^(5/2)*sgn(b*x + a) + 2*B*a*b^2*x^(3/2)*sgn(b*x + a) + 2/3*A*b^3
*x^(3/2)*sgn(b*x + a) + 6*B*a^2*b*sqrt(x)*sgn(b*x + a) + 6*A*a*b^2*sqrt(x)*
sgn(b*x + a) - 2/3*(3*B*a^3*x*sgn(b*x + a) + 9*A*a^2*b*x*sgn(b*x + a) + A*a
^3*sgn(b*x + a))/x^(3/2)
```

maple [**A**] time = 0.05, size = 92, normalized size = 0.43

$$-\frac{2\left(-3B\,b^3x^4-5A\,b^3x^3-15Ba\,b^2x^3-45Aa\,b^2x^2-45B\,a^2b\,x^2+45A\,a^2bx+15B\,a^3x+5A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15\left(bx+a\right)^3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x)
```

```
[Out] -2/15*(-3*B*b^3*x^4-5*A*b^3*x^3-15*B*a*b^2*x^3-45*A*a*b^2*x^2-45*B*a^2*b*x^
2+45*A*a^2*b*x+15*B*a^3*x+5*A*a^3)*((b*x+a)^2)^(3/2)/x^(3/2)/(b*x+a)^3
```

maxima [**A**] time = 0.65, size = 130, normalized size = 0.60

$$\frac{2}{15}\left(\left(3\,b^3x^2+5\,ab^2x\right)\sqrt{x}+\frac{10\left(ab^2x^2+3\,a^2bx\right)}{\sqrt{x}}+\frac{15\left(a^2bx^2-a^3x\right)}{x^{\frac{3}{2}}}\right)B+\frac{2}{3}\,A\left(\frac{b^3x^2+3\,ab^2x}{\sqrt{x}}+\frac{6\left(ab^2x^2-a^2bx\right.}{x^{\frac{3}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^3*x^2 + 5*a*b^2*x)*sqrt(x) + 10*(a*b^2*x^2 + 3*a^2*b*x)/sqrt(x)
+ 15*(a^2*b*x^2 - a^3*x)/x^(3/2))*B + 2/3*A*((b^3*x^2 + 3*a*b^2*x)/sqrt(x)
+ 6*(a*b^2*x^2 - a^2*b*x)/x^(3/2) - (3*a^2*b*x^2 + a^3*x)/x^(5/2))
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{x^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(5/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}}{x^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(5/2), x)
```

3.798 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=216

$$-\frac{6ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{a+bx}-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3A}{3x^{3/2}(a+bx)}$$

```
[Out] -2/5*a^3*A*((b*x+a)^2)^(1/2)/x^(5/2)/(b*x+a)-2/3*a^2*(3*A*b+B*a)*((b*x+a)^2
)^(1/2)/x^(3/2)/(b*x+a)+2/3*b^3*B*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)-6*a*b*(
A*b+B*a)*((b*x+a)^2)^(1/2)/(b*x+a)/x^(1/2)+2*b^2*(A*b+3*B*a)*x^(1/2)*((b*x+
a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{3x^{3/2}(a+bx)}-\frac{6ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(3aB+A}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (6*a*b*(A
*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b^2*(A*b
+ 3*a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^3*B*x^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{7/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{7/2}}+\frac{a^2b^3(3Ab+aB)}{x^{5/2}}+\frac{3ab^4(Ab+aB)}{x^{3/2}}+\frac{b^5(Ab+3aB)}{\sqrt{x}}\right.}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-$$

Mathematica [A] time = 0.03, size = 83, normalized size = 0.38

$$-\frac{2\sqrt{(a+bx)^2}\,\left(a^3(3A+5Bx)+15a^2bx(A+3Bx)+45ab^2x^2(A-Bx)-5b^3x^3(3A+Bx)\right)}{15x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(45*a*b^2*x^2*(A - B*x) - 5*b^3*x^3*(3*A + B*x) + 15*
a^2*b*x*(A + 3*B*x) + a^3*(3*A + 5*B*x)))/(15*x^(5/2)*(a + b*x))
```

fricas [A] time = 0.60, size = 73, normalized size = 0.34

$$\frac{2\left(5\,Bb^3x^4-3\,Aa^3+15\left(3\,Bab^2+Ab^3\right)x^3-45\left(Ba^2b+Aab^2\right)x^2-5\left(Ba^3+3\,Aa^2b\right)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(5*B*b^3*x^4 - 3*A*a^3 + 15*(3*B*a*b^2 + A*b^3)*x^3 - 45*(B*a^2*b + A*
a*b^2)*x^2 - 5*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

giac [A] time = 0.17, size = 124, normalized size = 0.57

$$\frac{2}{3}\,Bb^3x^{\frac{3}{2}}\operatorname{sgn}(bx+a)+6\,Bab^2\sqrt{x}\operatorname{sgn}(bx+a)+2\,Ab^3\sqrt{x}\operatorname{sgn}(bx+a)-\frac{2\left(45\,Ba^2bx^2\operatorname{sgn}(bx+a)+45\,Aab^2x^2\operatorname{sgn}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/3*B*b^3*x^(3/2)*sgn(b*x + a) + 6*B*a*b^2*sqrt(x)*sgn(b*x + a) + 2*A*b^3*s
qrt(x)*sgn(b*x + a) - 2/15*(45*B*a^2*b*x^2*sgn(b*x + a) + 45*A*a*b^2*x^2*sg
n(b*x + a) + 5*B*a^3*x*sgn(b*x + a) + 15*A*a^2*b*x*sgn(b*x + a) + 3*A*a^3*s
gn(b*x + a))/x^(5/2)
```

maple [A] time = 0.07, size = 92, normalized size = 0.43

$$-\frac{2\left(-5B\,b^3x^4-15A\,b^3x^3-45Ba\,b^2x^3+45Aa\,b^2x^2+45B\,a^2b\,x^2+15A\,a^2bx+5B\,a^3x+3A\,a^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}}{15\,(bx+a)^3\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x)
```

```
[Out] -2/15*(-5*B*b^3*x^4-15*A*b^3*x^3-45*B*a*b^2*x^3+45*A*a*b^2*x^2+45*B*a^2*b*x
^2+15*A*a^2*b*x+5*B*a^3*x+3*A*a^3)*((b*x+a)^2)^(3/2)/x^(5/2)/(b*x+a)^3
```

maxima [A] time = 0.65, size = 131, normalized size = 0.61

$$\frac{2}{3}\,B\left(\frac{b^3x^2+3\,ab^2x}{\sqrt{x}}+\frac{6\left(ab^2x^2-a^2bx\right)}{x^{\frac{3}{2}}}-\frac{3\,a^2bx^2+a^3x}{x^{\frac{5}{2}}}\right)+\frac{2}{15}\,A\left(\frac{15\left(b^3x^2-ab^2x\right)}{x^{\frac{3}{2}}}-\frac{10\left(3\,ab^2x^2+a^2bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^2bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*B*((b^3*x^2 + 3*a*b^2*x)/sqrt(x) + 6*(a*b^2*x^2 - a^2*b*x)/x^(3/2) - (3
*a^2*b*x^2 + a^3*x)/x^(5/2)) + 2/15*A*(15*(b^3*x^2 - a*b^2*x)/x^(3/2) - 10*
(3*a*b^2*x^2 + a^2*b*x)/x^(5/2) - (5*a^2*b*x^2 + 3*a^3*x)/x^(7/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(7/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{3}{2}}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(7/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(7/2), x)
```

3.799 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{9/2}} \, dx$

Optimal. Leaf size=214

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{\sqrt{x}\,(a+bx)}-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^{5/2}(a+bx)}-\frac{2ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{3/2}(a+bx)}+2b^3$$

```
[Out] -2/7*a^3*A*((b*x+a)^2)^(1/2)/x^(7/2)/(b*x+a)-2/5*a^2*(3*A*b+B*a)*((b*x+a)^2
)^(1/2)/x^(5/2)/(b*x+a)-2*a*b*(A*b+B*a)*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)-2
*b^2*(A*b+3*B*a)*((b*x+a)^2)^(1/2)/(b*x+a)/x^(1/2)+2*b^3*B*x^(1/2)*((b*x+a)
^2)^(1/2)/(b*x+a)
```

Rubi **[A]** time = 0.08, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$-\frac{2a^2\sqrt{a^2+2abx+b^2x^2}\,(aB+3Ab)}{5x^{5/2}(a+bx)}-\frac{2ab\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{x^{3/2}(a+bx)}-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(3aB+Ab)}{\sqrt{x}\,(a+bx)}-2a^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-2*a^3*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*a^2*(3*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a*b*(A
*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(x^(3/2)*(a + b*x)) - (2*b^2*(A*b
+ 3*a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*b^3*B*Sqrt
[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x)
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{x^{9/2}} \, dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{x^{9/2}} \, dx}{b^2\left(ab+b^2x\right)} \\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^3Ab^3}{x^{9/2}}+\frac{a^2b^3(3Ab+aB)}{x^{7/2}}+\frac{3ab^4(Ab+aB)}{x^{5/2}}+\frac{b^5(Ab+3aB)}{x^{3/2}}+\right.}{b^2\left(ab+b^2x\right)} \\
&= -\frac{2a^3A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2a^2(3Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-2ab(
\end{aligned}$$

Mathematica [A] time = 0.04, size = 84, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(a^3(5A+7Bx)+7a^2bx(3A+5Bx)+35ab^2x^2(A+3Bx)+35b^3x^3(A-Bx)\right)}{35x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(35*b^3*x^3*(A - B*x) + 35*a*b^2*x^2*(A + 3*B*x) + 7*
a^2*b*x*(3*A + 5*B*x) + a^3*(5*A + 7*B*x)))/(35*x^(7/2)*(a + b*x))
```

fricas [A] time = 0.88, size = 73, normalized size = 0.34

$$\frac{2\left(35\,Bb^3x^4-5\,Aa^3-35\left(3\,Bab^2+Ab^3\right)x^3-35\left(Ba^2b+Aab^2\right)x^2-7\left(Ba^3+3\,Aa^2b\right)x\right)}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(35*B*b^3*x^4 - 5*A*a^3 - 35*(3*B*a*b^2 + A*b^3)*x^3 - 35*(B*a^2*b + A
*a*b^2)*x^2 - 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

giac [A] time = 0.18, size = 124, normalized size = 0.58

$$2\,Bb^3\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)-\frac{2\left(105\,Bab^2x^3\mathrm{sgn}\left(bx+a\right)+35\,Ab^3x^3\mathrm{sgn}\left(bx+a\right)+35\,Ba^2bx^2\mathrm{sgn}\left(bx+a\right)+35\,Aab^2\right.}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 2*B*b^3*sqrt(x)*sgn(b*x + a) - 2/35*(105*B*a*b^2*x^3*sgn(b*x + a) + 35*A*b^
3*x^3*sgn(b*x + a) + 35*B*a^2*b*x^2*sgn(b*x + a) + 35*A*a*b^2*x^2*sgn(b*x +
 a) + 7*B*a^3*x*sgn(b*x + a) + 21*A*a^2*b*x*sgn(b*x + a) + 5*A*a^3*sgn(b*x
+ a))/x^(7/2)
```

maple [A] time = 0.06, size = 92, normalized size = 0.43

$$-\frac{2\left(-35B\,b^3x^4+35A\,b^3x^3+105Ba\,b^2x^3+35Aa\,b^2x^2+35B\,a^2b\,x^2+21A\,a^2bx+7B\,a^3x+5A\,a^3\right)\left(\left(bx+a\right)^2\right)}{35\left(bx+a\right)^3x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x)
```

```
[Out] -2/35*(-35*B*b^3*x^4+35*A*b^3*x^3+105*B*a*b^2*x^3+35*A*a*b^2*x^2+35*B*a^2*b
*x^2+21*A*a^2*b*x+7*B*a^3*x+5*A*a^3)*((b*x+a)^2)^(3/2)/x^(7/2)/(b*x+a)^3
```

maxima [A] time = 0.60, size = 134, normalized size = 0.63

$$\frac{2}{15}\,B\left(\frac{15\left(b^3x^2-ab^2x\right)}{x^{\frac{3}{2}}}-\frac{10\left(3\,ab^2x^2+a^2bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^2bx^2+3\,a^3x}{x^{\frac{7}{2}}}\right)-\frac{2}{105}\,A\left(\frac{35\left(3\,b^3x^2+ab^2x\right)}{x^{\frac{5}{2}}}+\frac{14\left(5\,ab^2x^2+\right.}{x^{\frac{7}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(9/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*B*(15*(b^3*x^2 - a*b^2*x)/x^(3/2) - 10*(3*a*b^2*x^2 + a^2*b*x)/x^(5/2)
 - (5*a^2*b*x^2 + 3*a^3*x)/x^(7/2)) - 2/105*A*(35*(3*b^3*x^2 + a*b^2*x)/x^(
5/2) + 14*(5*a*b^2*x^2 + 3*a^2*b*x)/x^(7/2) + 3*(7*a^2*b*x^2 + 5*a^3*x)/x^(
9/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(9/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(9/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/x**(9/2), x)
```

3.800 $\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{4a^2b^2x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2b^4x^{19/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{19(a+bx)}+\frac{10ab^3x^{17/2}\sqrt{a^2+2abx+b^2}}{17(a+bx)}$$

```
[Out] 2/9*a^5*A*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/11*a^4*(5*A*b+B*a)*x^(11/2)*(
(b*x+a)^2)^(1/2)/(b*x+a)+10/13*a^3*b*(2*A*b+B*a)*x^(13/2)*((b*x+a)^2)^(1/2)
/(b*x+a)+4/3*a^2*b^2*(A*b+B*a)*x^(15/2)*((b*x+a)^2)^(1/2)/(b*x+a)+10/17*a*b
^3*(A*b+2*B*a)*x^(17/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/19*b^4*(A*b+5*B*a)*x^(1
9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/21*b^5*B*x^(21/2)*((b*x+a)^2)^(1/2)/(b*x+a
)
```

Rubi [A] time = 0.13, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^4x^{19/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{19(a+bx)}+\frac{10ab^3x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{17(a+bx)}+\frac{4a^2b^2x^{15/2}\sqrt{a^2+2abx+}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (10*a^3*
b*(2*A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x)) + (4
*a^2*b^2*(A*b + a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x))
 + (10*a*b^3*(A*b + 2*a*B)*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a +
b*x)) + (2*b^4*(A*b + 5*a*B)*x^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*(a
 + b*x)) + (2*b^5*B*x^(21/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int x^{7/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{7/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^{7/2}+a^4b^5(5Ab+aB)x^{9/2}+5a^3b^6(2Ab\right.}{}$$

$$=\frac{2a^5Ax^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}+\frac{2a^4(5Ab+aB)x^{11/2}\sqrt{a^2+2abx+b^2x}}{11(a+bx)}$$

Mathematica [A] time = 0.09, size = 110, normalized size = 0.34

$$\frac{2\sqrt{(a+bx)^2}\left(\frac{x^{9/2}\left(46189a^5+188955a^4bx+319770a^3b^2x^2+277134a^2b^3x^3+122265ab^4x^4+21879b^5x^5\right)(7Ab-3aB)}{138567}+Bx^{9/2}(a+bx)^6\right)}{21b(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(B*x^(9/2)*(a + b*x)^6 + ((7*A*b - 3*a*B)*x^(9/2)*(461
89*a^5 + 188955*a^4*b*x + 319770*a^3*b^2*x^2 + 277134*a^2*b^3*x^3 + 122265*
a*b^4*x^4 + 21879*b^5*x^5))/138567))/(21*b*(a + b*x))
```

fricas [A] time = 0.96, size = 124, normalized size = 0.39

$$\frac{2}{2909907}\left(138567\,Bb^5x^{10}+323323\,Aa^5x^4+153153\left(5\,Bab^4+Ab^5\right)x^9+855855\left(2\,Ba^2b^3+Aab^4\right)x^8+1939938\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/2909907*(138567*B*b^5*x^10 + 323323*A*a^5*x^4 + 153153*(5*B*a*b^4 + A*b^5
)*x^9 + 855855*(2*B*a^2*b^3 + A*a*b^4)*x^8 + 1939938*(B*a^3*b^2 + A*a^2*b^3
)*x^7 + 1119195*(B*a^4*b + 2*A*a^3*b^2)*x^6 + 264537*(B*a^5 + 5*A*a^4*b)*x^
5)*sqrt(x)
```

giac [A] time = 0.21, size = 197, normalized size = 0.62

$$\frac{2}{21}\,Bb^5x^{\frac{21}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{19}\,Bab^4x^{\frac{19}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{19}\,Ab^5x^{\frac{19}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{20}{17}\,Ba^2b^3x^{\frac{17}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{17}\,Aab^4x^{\frac{17}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/21*B*b^5*x^(21/2)*sgn(b*x + a) + 10/19*B*a*b^4*x^(19/2)*sgn(b*x + a) + 2/
19*A*b^5*x^(19/2)*sgn(b*x + a) + 20/17*B*a^2*b^3*x^(17/2)*sgn(b*x + a) + 10
/17*A*a*b^4*x^(17/2)*sgn(b*x + a) + 4/3*B*a^3*b^2*x^(15/2)*sgn(b*x + a) + 4
/3*A*a^2*b^3*x^(15/2)*sgn(b*x + a) + 10/13*B*a^4*b*x^(13/2)*sgn(b*x + a) +
20/13*A*a^3*b^2*x^(13/2)*sgn(b*x + a) + 2/11*B*a^5*x^(11/2)*sgn(b*x + a) +
10/11*A*a^4*b*x^(11/2)*sgn(b*x + a) + 2/9*A*a^5*x^(9/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(138567B\,b^5x^6+153153A\,b^5x^5+765765Ba\,b^4x^5+855855Aa\,b^4x^4+1711710B\,a^2b^3x^4+1939938A\,a^2b^3x^3+1\right.}{2909}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*x^(9/2)*(138567*B*b^5*x^6+153153*A*b^5*x^5+765765*B*a*b^4*x^5+855
855*A*a*b^4*x^4+1711710*B*a^2*b^3*x^4+1939938*A*a^2*b^3*x^3+1939938*B*a^3*b
^2*x^3+2238390*A*a^3*b^2*x^2+1119195*B*a^4*b*x^2+1322685*A*a^4*b*x+264537*B
*a^5*x+323323*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**A**] time = 0.68, size = 241, normalized size = 0.75

$$\frac{2}{2078505}\left(6435\left(17\,b^{5}x^{2}+19\,ab^{4}x\right)x^{\frac{15}{2}}+32604\left(15\,ab^{4}x^{2}+17\,a^{2}b^{3}x\right)x^{\frac{13}{2}}+63954\left(13\,a^{2}b^{3}x^{2}+15\,a^{3}b^{2}x\right)x^{\frac{11}{2}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/2078505*(6435*(17*b^5*x^2 + 19*a*b^4*x)*x^(15/2) + 32604*(15*a*b^4*x^2 +
17*a^2*b^3*x)*x^(13/2) + 63954*(13*a^2*b^3*x^2 + 15*a^3*b^2*x)*x^(11/2) + 5
8140*(11*a^3*b^2*x^2 + 13*a^4*b*x)*x^(9/2) + 20995*(9*a^4*b*x^2 + 11*a^5*x)
*x^(7/2))*A + 2/4849845*(12155*(19*b^5*x^2 + 21*a*b^4*x)*x^(17/2) + 60060*(
17*a*b^4*x^2 + 19*a^2*b^3*x)*x^(15/2) + 114114*(15*a^2*b^3*x^2 + 17*a^3*b^2
*x)*x^(13/2) + 99484*(13*a^3*b^2*x^2 + 15*a^4*b*x)*x^(11/2) + 33915*(11*a^4
*b*x^2 + 13*a^5*x)*x^(9/2))*B
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{7/2}\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(7/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.801 $\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{13(a+bx)}+\frac{2b^4x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{17(a+bx)}+\frac{2ab^3x^{15/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

```
[Out] 2/7*a^5*A*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/9*a^4*(5*A*b+B*a)*x^(9/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+10/11*a^3*b*(2*A*b+B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(
b*x+a)+20/13*a^2*b^2*(A*b+B*a)*x^(13/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/3*a*b^3
*(A*b+2*B*a)*x^(15/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/17*b^4*(A*b+5*B*a)*x^(17/
2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/19*b^5*B*x^(19/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^4x^{17/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{17(a+bx)}+\frac{2ab^3x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{3(a+bx)}+\frac{20a^2b^2x^{13/2}\sqrt{a^2+2abx+b^2x}}{13(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (20*
a^2*b^2*(A*b + a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
+ (2*a*b^3*(A*b + 2*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*
x)) + (2*b^4*(A*b + 5*a*B)*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a +
 b*x)) + (2*b^5*B*x^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{5/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\big(a^5Ab^5x^{5/2}+a^4b^5(5Ab+aB)x^{7/2}+5a^3b^6(2Ab}{}\\&=\frac{2a^5Ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7(a+bx)}+\frac{2a^4(5Ab+aB)x^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.08, size = 110, normalized size = 0.34

$$\frac{2\sqrt{(a+bx)^2}\left(\frac{x^{7/2}\left(21879a^5+85085a^4bx+139230a^3b^2x^2+117810a^2b^3x^3+51051ab^4x^4+9009b^5x^5\right)(19Ab-7aB)}{153153}+Bx^{7/2}(a+bx)^6\right)}{19b(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(B*x^(7/2)*(a + b*x)^6 + ((19*A*b - 7*a*B)*x^(7/2)*(21
879*a^5 + 85085*a^4*b*x + 139230*a^3*b^2*x^2 + 117810*a^2*b^3*x^3 + 51051*a
*b^4*x^4 + 9009*b^5*x^5))/153153))/(19*b*(a + b*x))
```

fricas [A] time = 0.90, size = 124, normalized size = 0.39

$$\frac{2}{2909907}\left(153153\,Bb^5x^9+415701\,Aa^5x^3+171171\left(5\,Bab^4+Ab^5\right)x^8+969969\left(2\,Ba^2b^3+Aab^4\right)x^7+223839\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/2909907*(153153*B*b^5*x^9 + 415701*A*a^5*x^3 + 171171*(5*B*a*b^4 + A*b^5)
*x^8 + 969969*(2*B*a^2*b^3 + A*a*b^4)*x^7 + 2238390*(B*a^3*b^2 + A*a^2*b^3)
*x^6 + 1322685*(B*a^4*b + 2*A*a^3*b^2)*x^5 + 323323*(B*a^5 + 5*A*a^4*b)*x^4
)*sqrt(x)
```

giac [A] time = 0.19, size = 197, normalized size = 0.62

$$\frac{2}{19}\,Bb^5x^{\frac{19}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{10}{17}\,Bab^4x^{\frac{17}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{17}\,Ab^5x^{\frac{17}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}\,Ba^2b^3x^{\frac{15}{2}}\,\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,Aab^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/19*B*b^5*x^(19/2)*sgn(b*x + a) + 10/17*B*a*b^4*x^(17/2)*sgn(b*x + a) + 2/
17*A*b^5*x^(17/2)*sgn(b*x + a) + 4/3*B*a^2*b^3*x^(15/2)*sgn(b*x + a) + 2/3*
A*a*b^4*x^(15/2)*sgn(b*x + a) + 20/13*B*a^3*b^2*x^(13/2)*sgn(b*x + a) + 20/
13*A*a^2*b^3*x^(13/2)*sgn(b*x + a) + 10/11*B*a^4*b*x^(11/2)*sgn(b*x + a) +
20/11*A*a^3*b^2*x^(11/2)*sgn(b*x + a) + 2/9*B*a^5*x^(9/2)*sgn(b*x + a) + 10
/9*A*a^4*b*x^(9/2)*sgn(b*x + a) + 2/7*A*a^5*x^(7/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(153153B\,b^5x^6+171171A\,b^5x^5+855855Ba\,b^4x^5+969969Aa\,b^4x^4+1939938B\,a^2b^3x^4+2238390A\,a^2b^3x^3\right.}{29}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*x^(7/2)*(153153*B*b^5*x^6+171171*A*b^5*x^5+855855*B*a*b^4*x^5+969
969*A*a*b^4*x^4+1939938*B*a^2*b^3*x^4+2238390*A*a^2*b^3*x^3+2238390*B*a^3*b
^2*x^3+2645370*A*a^3*b^2*x^2+1322685*B*a^4*b*x^2+1616615*A*a^4*b*x+323323*B
*a^5*x+415701*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.73, size = 241, normalized size = 0.75

$$\frac{2}{765765}\left(3003\left(15\,b^5x^2+17\,ab^4x\right)x^{\frac{13}{2}}+15708\left(13\,ab^4x^2+15\,a^2b^3x\right)x^{\frac{11}{2}}+32130\left(11\,a^2b^3x^2+13\,a^3b^2x\right)x^{\frac{9}{2}}+3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/765765*(3003*(15*b^5*x^2 + 17*a*b^4*x)*x^(13/2) + 15708*(13*a*b^4*x^2 + 1
5*a^2*b^3*x)*x^(11/2) + 32130*(11*a^2*b^3*x^2 + 13*a^3*b^2*x)*x^(9/2) + 309
40*(9*a^3*b^2*x^2 + 11*a^4*b*x)*x^(7/2) + 12155*(7*a^4*b*x^2 + 9*a^5*x)*x^(
5/2))*A + 2/2078505*(6435*(17*b^5*x^2 + 19*a*b^4*x)*x^(15/2) + 32604*(15*a*
b^4*x^2 + 17*a^2*b^3*x)*x^(13/2) + 63954*(13*a^2*b^3*x^2 + 15*a^3*b^2*x)*x^
(11/2) + 58140*(11*a^3*b^2*x^2 + 13*a^4*b*x)*x^(9/2) + 20995*(9*a^4*b*x^2 +
 11*a^5*x)*x^(7/2))*B
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^{5/2}\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(5/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.802 $\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{11(a+bx)}+\frac{2b^4x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{15(a+bx)}+\frac{10ab^3x^{13/2}\sqrt{a^2+2abx+b}}{13(a+bx)}$$

```
[Out] 2/5*a^5*A*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*a^4*(5*A*b+B*a)*x^(7/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+10/9*a^3*b*(2*A*b+B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*
x+a)+20/11*a^2*b^2*(A*b+B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)+10/13*a*b^3
*(A*b+2*B*a)*x^(13/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/15*b^4*(A*b+5*B*a)*x^(15/
2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/17*b^5*B*x^(17/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^4x^{15/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{15(a+bx)}+\frac{10ab^3x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{13(a+bx)}+\frac{20a^2b^2x^{11/2}\sqrt{a^2+2abx+}}{11(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (20*a^
2*b^2*(A*b + a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) +
(10*a*b^3*(A*b + 2*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*
x)) + (2*b^4*(A*b + 5*a*B)*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a +
 b*x)) + (2*b^5*B*x^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\int x^{3/2}\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(a^5Ab^5x^{3/2}+a^4b^5(5Ab+aB)x^{5/2}+5a^3b^6(2\right.}{}\\&=\frac{2a^5Ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}+\frac{2a^4(5Ab+aB)x^{7/2}\sqrt{a^2+2abx+b}}{7(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.40

$$\frac{2x^{5/2}\sqrt{(a+bx)^2}\,\big(21879a^5(7A+5Bx)+60775a^4bx(9A+7Bx)+77350a^3b^2x^2(11A+9Bx)+53550a^2b^3x^3(13A}{765765(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*x^(5/2)*Sqrt[(a + b*x)^2]*(21879*a^5*(7*A + 5*B*x) + 60775*a^4*b*x*(9*A
+ 7*B*x) + 77350*a^3*b^2*x^2*(11*A + 9*B*x) + 53550*a^2*b^3*x^3*(13*A + 11*
B*x) + 19635*a*b^4*x^4*(15*A + 13*B*x) + 3003*b^5*x^5*(17*A + 15*B*x)))/(76
5765*(a + b*x))
```

fricas [A] time = 0.91, size = 124, normalized size = 0.39

$$\frac{2}{765765}\big(45045\,Bb^5x^8+153153\,Aa^5x^2+51051\,\big(5\,Bab^4+Ab^5\big)x^7+294525\,\big(2\,Ba^2b^3+Aab^4\big)x^6+696150\,\big(Ba^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/765765*(45045*B*b^5*x^8 + 153153*A*a^5*x^2 + 51051*(5*B*a*b^4 + A*b^5)*x^
7 + 294525*(2*B*a^2*b^3 + A*a*b^4)*x^6 + 696150*(B*a^3*b^2 + A*a^2*b^3)*x^5
 + 425425*(B*a^4*b + 2*A*a^3*b^2)*x^4 + 109395*(B*a^5 + 5*A*a^4*b)*x^3)*sqr
t(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{17}\,Bb^5x^{\frac{17}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Bab^4x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{2}{15}\,Ab^5x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{20}{13}\,Ba^2b^3x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{10}{13}\,Aab^4x^{\frac{13}{2}}\operatorname{s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/17*B*b^5*x^(17/2)*sgn(b*x + a) + 2/3*B*a*b^4*x^(15/2)*sgn(b*x + a) + 2/15
*A*b^5*x^(15/2)*sgn(b*x + a) + 20/13*B*a^2*b^3*x^(13/2)*sgn(b*x + a) + 10/1
3*A*a*b^4*x^(13/2)*sgn(b*x + a) + 20/11*B*a^3*b^2*x^(11/2)*sgn(b*x + a) + 2
0/11*A*a^2*b^3*x^(11/2)*sgn(b*x + a) + 10/9*B*a^4*b*x^(9/2)*sgn(b*x + a) +
20/9*A*a^3*b^2*x^(9/2)*sgn(b*x + a) + 2/7*B*a^5*x^(7/2)*sgn(b*x + a) + 10/7
*A*a^4*b*x^(7/2)*sgn(b*x + a) + 2/5*A*a^5*x^(5/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\big(45045B\,b^5x^6+51051A\,b^5x^5+255255Ba\,b^4x^5+294525Aa\,b^4x^4+589050B\,a^2b^3x^4+696150A\,a^2b^3x^3+6961}{765765(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/765765*x^(5/2)*(45045*B*b^5*x^6+51051*A*b^5*x^5+255255*B*a*b^4*x^5+294525
*A*a*b^4*x^4+589050*B*a^2*b^3*x^4+696150*A*a^2*b^3*x^3+696150*B*a^3*b^2*x^3
+850850*A*a^3*b^2*x^2+425425*B*a^4*b*x^2+546975*A*a^4*b*x+109395*B*a^5*x+15
3153*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.69, size = 241, normalized size = 0.75

$$\frac{2}{45045}\Big(231\,\big(13\,b^5x^2+15\,ab^4x\big)x^{\frac{11}{2}}+1260\,\big(11\,ab^4x^2+13\,a^2b^3x\big)x^{\frac{9}{2}}+2730\,\big(9\,a^2b^3x^2+11\,a^3b^2x\big)x^{\frac{7}{2}}+2860\,\big(7\,a^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/45045*(231*(13*b^5*x^2 + 15*a*b^4*x)*x^(11/2) + 1260*(11*a*b^4*x^2 + 13*a
^2*b^3*x)*x^(9/2) + 2730*(9*a^2*b^3*x^2 + 11*a^3*b^2*x)*x^(7/2) + 2860*(7*a
^3*b^2*x^2 + 9*a^4*b*x)*x^(5/2) + 1287*(5*a^4*b*x^2 + 7*a^5*x)*x^(3/2))*A +
 2/765765*(3003*(15*b^5*x^2 + 17*a*b^4*x)*x^(13/2) + 15708*(13*a*b^4*x^2 +
15*a^2*b^3*x)*x^(11/2) + 32130*(11*a^2*b^3*x^2 + 13*a^3*b^2*x)*x^(9/2) + 30
940*(9*a^3*b^2*x^2 + 11*a^4*b*x)*x^(7/2) + 12155*(7*a^4*b*x^2 + 9*a^5*x)*x^
(5/2))*B
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3/2}\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(3/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.803 $\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=320

$$\frac{20a^2b^2x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{9(a+bx)}+\frac{2b^4x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{13(a+bx)}+\frac{10ab^3x^{11/2}\sqrt{a^2+2abx+b^2x^2}}{11(a+bx)}$$

```
[Out] 2/3*a^5*A*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*a^4*(5*A*b+B*a)*x^(5/2)*((b
*x+a)^2)^(1/2)/(b*x+a)+10/7*a^3*b*(2*A*b+B*a)*x^(7/2)*((b*x+a)^2)^(1/2)/(b*
x+a)+20/9*a^2*b^2*(A*b+B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+10/11*a*b^3*(
A*b+2*B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/13*b^4*(A*b+5*B*a)*x^(13/2)
*((b*x+a)^2)^(1/2)/(b*x+a)+2/15*b^5*B*x^(15/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi **[A]** time = 0.12, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$\frac{2b^4x^{13/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{13(a+bx)}+\frac{10ab^3x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{11(a+bx)}+\frac{20a^2b^2x^{9/2}\sqrt{a^2+2abx+b^2x}}{9(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*a^5*A*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^4*(5*A
*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (10*a^3*b*
(2*A*b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (20*a^
2*b^2*(A*b + a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (1
0*a*b^3*(A*b + 2*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)
) + (2*b^4*(A*b + 5*a*B)*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b
*x)) + (2*b^5*B*x^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \sqrt{x}\,\left(ab+b^2x\right)^5(A+Bx)\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(a^5Ab^5\sqrt{x}+a^4b^5(5Ab+aB)x^{3/2}+5a^3b^6(2Ab\right.}{}\\ &= \frac{2a^5Ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+\frac{2a^4(5Ab+aB)x^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 127, normalized size = 0.40

$$\frac{2x^{3/2}\sqrt{(a+bx)^2}\,(3003a^5(5A+3Bx)+6435a^4bx(7A+5Bx)+7150a^3b^2x^2(9A+7Bx)+4550a^2b^3x^3(11A+9}{45045(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*Sqrt[(a + b*x)^2]*(3003*a^5*(5*A + 3*B*x) + 6435*a^4*b*x*(7*A +
5*B*x) + 7150*a^3*b^2*x^2*(9*A + 7*B*x) + 4550*a^2*b^3*x^3*(11*A + 9*B*x) +
 1575*a*b^4*x^4*(13*A + 11*B*x) + 231*b^5*x^5*(15*A + 13*B*x)))/(45045*(a +
 b*x))
```

fricas [A] time = 0.89, size = 122, normalized size = 0.38

$$\frac{2}{45045}\,(3003\,Bb^5x^7+15015\,Aa^5x+3465\,(5\,Bab^4+Ab^5)x^6+20475\,(2\,Ba^2b^3+Aab^4)x^5+50050\,(Ba^3b^2+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/45045*(3003*B*b^5*x^7 + 15015*A*a^5*x + 3465*(5*B*a*b^4 + A*b^5)*x^6 + 20
475*(2*B*a^2*b^3 + A*a*b^4)*x^5 + 50050*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 32175
*(B*a^4*b + 2*A*a^3*b^2)*x^3 + 9009*(B*a^5 + 5*A*a^4*b)*x^2)*sqrt(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{15}\,Bb^5x^{\frac{15}{2}}\operatorname{sgn}(bx+a)+\frac{10}{13}\,Bab^4x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{2}{13}\,Ab^5x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{20}{11}\,Ba^2b^3x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{10}{11}\,Aab^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*b^5*x^(15/2)*sgn(b*x + a) + 10/13*B*a*b^4*x^(13/2)*sgn(b*x + a) + 2/
13*A*b^5*x^(13/2)*sgn(b*x + a) + 20/11*B*a^2*b^3*x^(11/2)*sgn(b*x + a) + 10
/11*A*a*b^4*x^(11/2)*sgn(b*x + a) + 20/9*B*a^3*b^2*x^(9/2)*sgn(b*x + a) + 2
0/9*A*a^2*b^3*x^(9/2)*sgn(b*x + a) + 10/7*B*a^4*b*x^(7/2)*sgn(b*x + a) + 20
/7*A*a^3*b^2*x^(7/2)*sgn(b*x + a) + 2/5*B*a^5*x^(5/2)*sgn(b*x + a) + 2*A*a^
4*b*x^(5/2)*sgn(b*x + a) + 2/3*A*a^5*x^(3/2)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\,(3003B\,b^5x^6+3465A\,b^5x^5+17325Ba\,b^4x^5+20475Aa\,b^4x^4+40950B\,a^2b^3x^4+50050A\,a^2b^3x^3+50050B\,a}{45045\,(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3003*B*b^5*x^6+3465*A*b^5*x^5+17325*B*a*b^4*x^5+20475*A*a*
b^4*x^4+40950*B*a^2*b^3*x^4+50050*A*a^2*b^3*x^3+50050*B*a^3*b^2*x^3+64350*A
*a^3*b^2*x^2+32175*B*a^4*b*x^2+45045*A*a^4*b*x+9009*B*a^5*x+15015*A*a^5)*((
b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.78, size = 241, normalized size = 0.75

$$\frac{2}{45045}\,(315\,(11\,b^5x^2+13\,ab^4x)x^{\frac{9}{2}}+1820\,(9\,ab^4x^2+11\,a^2b^3x)x^{\frac{7}{2}}+4290\,(7\,a^2b^3x^2+9\,a^3b^2x)x^{\frac{5}{2}}+5148\,(5\,a^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/45045*(315*(11*b^5*x^2 + 13*a*b^4*x)*x^(9/2) + 1820*(9*a*b^4*x^2 + 11*a^2
*b^3*x)*x^(7/2) + 4290*(7*a^2*b^3*x^2 + 9*a^3*b^2*x)*x^(5/2) + 5148*(5*a^3*
b^2*x^2 + 7*a^4*b*x)*x^(3/2) + 3003*(3*a^4*b*x^2 + 5*a^5*x)*sqrt(x))*A + 2/
45045*(231*(13*b^5*x^2 + 15*a*b^4*x)*x^(11/2) + 1260*(11*a*b^4*x^2 + 13*a^2
*b^3*x)*x^(9/2) + 2730*(9*a^2*b^3*x^2 + 11*a^3*b^2*x)*x^(7/2) + 2860*(7*a^3
*b^2*x^2 + 9*a^4*b*x)*x^(5/2) + 1287*(5*a^4*b*x^2 + 7*a^5*x)*x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x}\,\left(A+B\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(x^(1/2)*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\left(A+Bx\right)\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*x**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.804 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=316

$$\frac{20a^2b^2x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{7(a+bx)}+\frac{2b^4x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{10ab^3x^{9/2}\sqrt{a^2+2abx+b^2}}{9(a+bx)}$$

```
[Out] 2/3*a^4*(5*A*b+B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2*a^3*b*(2*A*b+B*a)*x
^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+20/7*a^2*b^2*(A*b+B*a)*x^(7/2)*((b*x+a)^2)
^(1/2)/(b*x+a)+10/9*a*b^3*(A*b+2*B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/1
1*b^4*(A*b+5*B*a)*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/13*b^5*B*x^(13/2)*((
b*x+a)^2)^(1/2)/(b*x+a)+2*a^5*A*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^4x^{11/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{11(a+bx)}+\frac{10ab^3x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{9(a+bx)}+\frac{20a^2b^2x^{7/2}\sqrt{a^2+2abx+b}}{7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*a^5*A*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*a^4*(5*A*b +
 a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a^3*b*(2*A*
b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (20*a^2*b^2*(A*
b + a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (10*a*b^3*(
A*b + 2*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^4*
(A*b + 5*a*B)*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x)) + (2*b
^5*B*x^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{x}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{\sqrt{x}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{a^5Ab^5}{\sqrt{x}}+a^4b^5(5Ab+aB)\sqrt{x}+5a^3b^6(2Ab+aB)x^3$$

$$= \frac{2a^5A\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{2a^4(5Ab+aB)x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}+$$

Mathematica [A] time = 0.06, size = 126, normalized size = 0.40

$$\frac{2\sqrt{x}\sqrt{(a+bx)^2}\left(3003a^5(3A+Bx)+3003a^4bx(5A+3Bx)+2574a^3b^2x^2(7A+5Bx)+1430a^2b^3x^3(9A+7Bx)+\right.}{9009(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[(a + b*x)^2]*(3003*a^5*(3*A + B*x) + 3003*a^4*b*x*(5*A + 3*
B*x) + 2574*a^3*b^2*x^2*(7*A + 5*B*x) + 1430*a^2*b^3*x^3*(9*A + 7*B*x) + 45
5*a*b^4*x^4*(11*A + 9*B*x) + 63*b^5*x^5*(13*A + 11*B*x)))/(9009*(a + b*x))
```

fricas [A] time = 0.92, size = 119, normalized size = 0.38

$$\frac{2}{9009}\left(693\,Bb^5x^6+9009\,Aa^5+819\left(5\,Bab^4+Ab^5\right)x^5+5005\left(2\,Ba^2b^3+Aab^4\right)x^4+12870\left(Ba^3b^2+Aa^2b^3\right)x^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/9009*(693*B*b^5*x^6 + 9009*A*a^5 + 819*(5*B*a*b^4 + A*b^5)*x^5 + 5005*(2*
B*a^2*b^3 + A*a*b^4)*x^4 + 12870*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 9009*(B*a^4*
b + 2*A*a^3*b^2)*x^2 + 3003*(B*a^5 + 5*A*a^4*b)*x)*sqrt(x)
```

giac [A] time = 0.17, size = 197, normalized size = 0.62

$$\frac{2}{13}\,Bb^5x^{\frac{13}{2}}\operatorname{sgn}(bx+a)+\frac{10}{11}\,Bab^4x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{2}{11}\,Ab^5x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{20}{9}\,Ba^2b^3x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{10}{9}\,Aab^4x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*b^5*x^(13/2)*sgn(b*x + a) + 10/11*B*a*b^4*x^(11/2)*sgn(b*x + a) + 2/
11*A*b^5*x^(11/2)*sgn(b*x + a) + 20/9*B*a^2*b^3*x^(9/2)*sgn(b*x + a) + 10/9
*A*a*b^4*x^(9/2)*sgn(b*x + a) + 20/7*B*a^3*b^2*x^(7/2)*sgn(b*x + a) + 20/7*
A*a^2*b^3*x^(7/2)*sgn(b*x + a) + 2*B*a^4*b*x^(5/2)*sgn(b*x + a) + 4*A*a^3*b
^2*x^(5/2)*sgn(b*x + a) + 2/3*B*a^5*x^(3/2)*sgn(b*x + a) + 10/3*A*a^4*b*x^(
3/2)*sgn(b*x + a) + 2*A*a^5*sqrt(x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$\frac{2\left(693B\,b^5x^6+819A\,b^5x^5+4095Ba\,b^4x^5+5005Aa\,b^4x^4+10010B\,a^2b^3x^4+12870A\,a^2b^3x^3+12870B\,a^3b^2x^3+\right.}{9009\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x)
```

```
[Out] 2/9009*x^(1/2)*(693*B*b^5*x^6+819*A*b^5*x^5+4095*B*a*b^4*x^5+5005*A*a*b^4*x
^4+10010*B*a^2*b^3*x^4+12870*A*a^2*b^3*x^3+12870*B*a^3*b^2*x^3+18018*A*a^3*
b^2*x^2+9009*B*a^4*b*x^2+15015*A*a^4*b*x+3003*B*a^5*x+9009*A*a^5)*((b*x+a)^
2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.77, size = 240, normalized size = 0.76

$$\frac{2}{3465}\left(35\left(9\,b^5x^2+11\,ab^4x\right)x^{\frac{7}{2}}+220\left(7\,ab^4x^2+9\,a^2b^3x\right)x^{\frac{5}{2}}+594\left(5\,a^2b^3x^2+7\,a^3b^2x\right)x^{\frac{3}{2}}+924\left(3\,a^3b^2x^2+5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(35*(9*b^5*x^2 + 11*a*b^4*x)*x^(7/2) + 220*(7*a*b^4*x^2 + 9*a^2*b^3*
x)*x^(5/2) + 594*(5*a^2*b^3*x^2 + 7*a^3*b^2*x)*x^(3/2) + 924*(3*a^3*b^2*x^2
 + 5*a^4*b*x)*sqrt(x) + 1155*(a^4*b*x^2 + 3*a^5*x)/sqrt(x))*A + 2/45045*(31
5*(11*b^5*x^2 + 13*a*b^4*x)*x^(9/2) + 1820*(9*a*b^4*x^2 + 11*a^2*b^3*x)*x^(
7/2) + 4290*(7*a^2*b^3*x^2 + 9*a^3*b^2*x)*x^(5/2) + 5148*(5*a^3*b^2*x^2 + 7
*a^4*b*x)*x^(3/2) + 3003*(3*a^4*b*x^2 + 5*a^5*x)*sqrt(x))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(1/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/sqrt(x), x)
```

3.805 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=314

$$\frac{4a^2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^4x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{9(a+bx)}+\frac{10ab^3x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(2a}{7(a+bx)}$$

```
[Out] 10/3*a^3*b*(2*A*b+B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+4*a^2*b^2*(A*b+B*a
)*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+10/7*a*b^3*(A*b+2*B*a)*x^(7/2)*((b*x+a)
^2)^(1/2)/(b*x+a)+2/9*b^4*(A*b+5*B*a)*x^(9/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/1
1*b^5*B*x^(11/2)*((b*x+a)^2)^(1/2)/(b*x+a)-2*a^5*A*((b*x+a)^2)^(1/2)/(b*x+a
)/x^(1/2)+2*a^4*(5*A*b+B*a)*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 76}

$$\frac{2b^4x^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{9(a+bx)}+\frac{10ab^3x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(2aB+Ab)}{7(a+bx)}+\frac{4a^2b^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (2*a^4*(5*A*
b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a^3*b*(2*A*
b + a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (4*a^2*b^2*
(A*b + a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a*b^3*(A
*b + 2*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^4*(
A*b + 5*a*B)*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x)) + (2*b^5*
B*x^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{3/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Bigl(\frac{a^5Ab^5}{x^{3/2}}+\frac{a^4b^5(5Ab+aB)}{\sqrt{x}}+5a^3b^6(2Ab+aB)\sqrt{x}+1}{b^4}$$

$$= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{2a^4(5Ab+aB)\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}{a+bx}+$$

Mathematica [**A**] time = 0.04, size = 124, normalized size = 0.39

$$\frac{2\sqrt{(a+bx)^2}\,\bigl(-693a^5(A-Bx)+1155a^4bx(3A+Bx)+462a^3b^2x^2(5A+3Bx)+198a^2b^3x^3(7A+5Bx)+55ab}{693\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-693*a^5*(A - B*x) + 1155*a^4*b*x*(3*A + B*x) + 462*a
^3*b^2*x^2*(5*A + 3*B*x) + 198*a^2*b^3*x^3*(7*A + 5*B*x) + 55*a*b^4*x^4*(9*
A + 7*B*x) + 7*b^5*x^5*(11*A + 9*B*x)))/(693*Sqrt[x]*(a + b*x))
```

fricas [**A**] time = 0.95, size = 119, normalized size = 0.38

$$\frac{2\bigl(63\,Bb^5x^6-693\,Aa^5+77\left(5\,Bab^4+Ab^5\right)x^5+495\left(2\,Ba^2b^3+Aab^4\right)x^4+1386\left(Ba^3b^2+Aa^2b^3\right)x^3+1155\bigl(B}{693\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/693*(63*B*b^5*x^6 - 693*A*a^5 + 77*(5*B*a*b^4 + A*b^5)*x^5 + 495*(2*B*a^2
*b^3 + A*a*b^4)*x^4 + 1386*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 1155*(B*a^4*b + 2*
A*a^3*b^2)*x^2 + 693*(B*a^5 + 5*A*a^4*b)*x)/sqrt(x)
```

giac [**A**] time = 0.18, size = 197, normalized size = 0.63

$$\frac{2}{11}\,Bb^5x^{\frac{11}{2}}\operatorname{sgn}(bx+a)+\frac{10}{9}\,Bab^4x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{2}{9}\,Ab^5x^{\frac{9}{2}}\operatorname{sgn}(bx+a)+\frac{20}{7}\,Ba^2b^3x^{\frac{7}{2}}\operatorname{sgn}(bx+a)+\frac{10}{7}\,Aab^4x^{\frac{7}{2}}\mathrm{s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/11*B*b^5*x^(11/2)*sgn(b*x + a) + 10/9*B*a*b^4*x^(9/2)*sgn(b*x + a) + 2/9*
A*b^5*x^(9/2)*sgn(b*x + a) + 20/7*B*a^2*b^3*x^(7/2)*sgn(b*x + a) + 10/7*A*a
*b^4*x^(7/2)*sgn(b*x + a) + 4*B*a^3*b^2*x^(5/2)*sgn(b*x + a) + 4*A*a^2*b^3*
x^(5/2)*sgn(b*x + a) + 10/3*B*a^4*b*x^(3/2)*sgn(b*x + a) + 20/3*A*a^3*b^2*x
^(3/2)*sgn(b*x + a) + 2*B*a^5*sqrt(x)*sgn(b*x + a) + 10*A*a^4*b*sqrt(x)*sgn
(b*x + a) - 2*A*a^5*sgn(b*x + a)/sqrt(x)
```

maple [**A**] time = 0.06, size = 140, normalized size = 0.45

$$-\frac{2\bigl(-63B\,b^5x^6-77A\,b^5x^5-385Ba\,b^4x^5-495Aa\,b^4x^4-990B\,a^2b^3x^4-1386A\,a^2b^3x^3-1386B\,a^3b^2x^3-2310}{693\,(bx+a)^5\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x)
```

```
[Out] -2/693*(-63*B*b^5*x^6-77*A*b^5*x^5-385*B*a*b^4*x^5-495*A*a*b^4*x^4-990*B*a^
2*b^3*x^4-1386*A*a^2*b^3*x^3-1386*B*a^3*b^2*x^3-2310*A*a^3*b^2*x^2-1155*B*a
^4*b*x^2-3465*A*a^4*b*x-693*B*a^5*x+693*A*a^5)*((b*x+a)^2)^(5/2)/x^(1/2)/(b
*x+a)^5
```

maxima [A] time = 0.64, size = 238, normalized size = 0.76

$$\frac{2}{315}\left(5\left(7\,b^5x^2+9\,ab^4x\right)x^{\frac{5}{2}}+36\left(5\,ab^4x^2+7\,a^2b^3x\right)x^{\frac{3}{2}}+126\left(3\,a^2b^3x^2+5\,a^3b^2x\right)\sqrt{x}+\frac{420\left(a^3b^2x^2+3\,a^4bx\right)}{\sqrt{x}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(5*(7*b^5*x^2 + 9*a*b^4*x)*x^(5/2) + 36*(5*a*b^4*x^2 + 7*a^2*b^3*x)*x
^(3/2) + 126*(3*a^2*b^3*x^2 + 5*a^3*b^2*x)*sqrt(x) + 420*(a^3*b^2*x^2 + 3*a
^4*b*x)/sqrt(x) + 315*(a^4*b*x^2 - a^5*x)/x^(3/2))*A + 2/3465*(35*(9*b^5*x^
2 + 11*a*b^4*x)*x^(7/2) + 220*(7*a*b^4*x^2 + 9*a^2*b^3*x)*x^(5/2) + 594*(5*
a^2*b^3*x^2 + 7*a^3*b^2*x)*x^(3/2) + 924*(3*a^3*b^2*x^2 + 5*a^4*b*x)*sqrt(x
) + 1155*(a^4*b*x^2 + 3*a^5*x)/sqrt(x))*B
```

mupad [B] time = 1.85, size = 140, normalized size = 0.45

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,B\,b^4\,x^6}{11}-\frac{2\,A\,a^5}{b}+\frac{10\,a^3\,x^2\,(2\,A\,b+B\,a)}{3}+\frac{x^5\,\left(154\,A\,b^5+770\,B\,a\,b^4\right)}{693\,b}+4\,a^2\,b\,x^3\,(A\,b+B\,a)+\frac{10\,a\,b^2\,x^4\,(A}{7}\right.}{x^{3/2}+\frac{a\,\sqrt{x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*B*b^4*x^6)/11 - (2*A*a^5)/b + (10*a^3*
x^2*(2*A*b + B*a))/3 + (x^5*(154*A*b^5 + 770*B*a*b^4))/(693*b) + 4*a^2*b*x^
3*(A*b + B*a) + (10*a*b^2*x^4*(A*b + 2*B*a))/7 + (2*a^4*x*(5*A*b + B*a))/b)
)/(x^(3/2) + (a*x^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(3/2), x)
```

3.806 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=314

$$\frac{20a^2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{3(a+bx)}+\frac{2b^4x^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{7(a+bx)}+\frac{2ab^3x^{5/2}\sqrt{a^2+2abx+b^2x^2}}{a+bx}$$

```
[Out] -2/3*a^5*A*((b*x+a)^2)^(1/2)/x^(3/2)/(b*x+a)+20/3*a^2*b^2*(A*b+B*a)*x^(3/2)
*((b*x+a)^2)^(1/2)/(b*x+a)+2*a*b^3*(A*b+2*B*a)*x^(5/2)*((b*x+a)^2)^(1/2)/(b
*x+a)+2/7*b^4*(A*b+5*B*a)*x^(7/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/9*b^5*B*x^(9/
2)*((b*x+a)^2)^(1/2)/(b*x+a)-2*a^4*(5*A*b+B*a)*((b*x+a)^2)^(1/2)/(b*x+a)/x^
(1/2)+10*a^3*b*(2*A*b+B*a)*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{\sqrt{x}\,(a+bx)}+\frac{10a^3b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{a+bx}+\frac{20a^2b^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (10*a^3*b*(
2*A*b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (20*a^2*b^2
*(A*b + a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*a*b^
3*(A*b + 2*a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*b^4*(
A*b + 5*a*B)*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x)) + (2*b^5*
B*x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(\frac{a^5Ab^5}{x^{5/2}}+\frac{a^4b^5(5Ab+aB)}{x^{3/2}}+\frac{5a^3b^6(2Ab+aB)}{\sqrt{x}}+10a^2b^7(Ab+}{b^4\big(ab+b}$$

$$= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)}-\frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{x}\,(a+bx)}+\frac{10a^3b}{}$$

Mathematica [**A**] time = 0.04, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\,\big(21a^5(A+3Bx)+315a^4bx(A-Bx)-210a^3b^2x^2(3A+Bx)-42a^2b^3x^3(5A+3Bx)-9ab^4x^4(7A+}{63x^{3/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(315*a^4*b*x*(A - B*x) - 210*a^3*b^2*x^2*(3*A + B*x)
+ 21*a^5*(A + 3*B*x) - 42*a^2*b^3*x^3*(5*A + 3*B*x) - 9*a*b^4*x^4*(7*A + 5*
B*x) - b^5*x^5*(9*A + 7*B*x)))/(63*x^(3/2)*(a + b*x))
```

fricas [**A**] time = 0.89, size = 119, normalized size = 0.38

$$\frac{2\,\big(7\,Bb^5x^6-21\,Aa^5+9\,\big(5\,Bab^4+Ab^5\big)x^5+63\,\big(2\,Ba^2b^3+Aab^4\big)x^4+210\,\big(Ba^3b^2+Aa^2b^3\big)x^3+315\,\big(Ba^4b+2\,A}{63\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/63*(7*B*b^5*x^6 - 21*A*a^5 + 9*(5*B*a*b^4 + A*b^5)*x^5 + 63*(2*B*a^2*b^3
+ A*a*b^4)*x^4 + 210*(B*a^3*b^2 + A*a^2*b^3)*x^3 + 315*(B*a^4*b + 2*A*a^3*b
^2)*x^2 - 63*(B*a^5 + 5*A*a^4*b)*x)/x^(3/2)
```

giac [**A**] time = 0.18, size = 195, normalized size = 0.62

$$\frac{2}{9}\,Bb^5x^{\frac{9}{2}}\mathrm{sgn}\,(bx+a)+\frac{10}{7}\,Bab^4x^{\frac{7}{2}}\mathrm{sgn}\,(bx+a)+\frac{2}{7}\,Ab^5x^{\frac{7}{2}}\mathrm{sgn}\,(bx+a)+4\,Ba^2b^3x^{\frac{5}{2}}\mathrm{sgn}\,(bx+a)+2\,Aab^4x^{\frac{5}{2}}\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/9*B*b^5*x^(9/2)*sgn(b*x + a) + 10/7*B*a*b^4*x^(7/2)*sgn(b*x + a) + 2/7*A*
b^5*x^(7/2)*sgn(b*x + a) + 4*B*a^2*b^3*x^(5/2)*sgn(b*x + a) + 2*A*a*b^4*x^(
5/2)*sgn(b*x + a) + 20/3*B*a^3*b^2*x^(3/2)*sgn(b*x + a) + 20/3*A*a^2*b^3*x^
(3/2)*sgn(b*x + a) + 10*B*a^4*b*sqrt(x)*sgn(b*x + a) + 20*A*a^3*b^2*sqrt(x)
*sgn(b*x + a) - 2/3*(3*B*a^5*x*sgn(b*x + a) + 15*A*a^4*b*x*sgn(b*x + a) + A
*a^5*sgn(b*x + a))/x^(3/2)
```

maple [**A**] time = 0.06, size = 140, normalized size = 0.45

$$-\frac{2\,\big(-7B\,b^5x^6-9A\,b^5x^5-45Ba\,b^4x^5-63Aa\,b^4x^4-126B\,a^2b^3x^4-210A\,a^2b^3x^3-210B\,a^3b^2x^3-630A\,a^3b^2x^2-}{63\,(bx+a)^5\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x)
```

```
[Out] -2/63*(-7*B*b^5*x^6-9*A*b^5*x^5-45*B*a*b^4*x^5-63*A*a*b^4*x^4-126*B*a^2*b^3
*x^4-210*A*a^2*b^3*x^3-210*B*a^3*b^2*x^3-630*A*a^3*b^2*x^2-315*B*a^4*b*x^2+
315*A*a^4*b*x+63*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^(3/2)/(b*x+a)^5
```

maxima [A] time = 0.57, size = 236, normalized size = 0.75

$$\frac{2}{105}\left(3\left(5\,b^5x^2 + 7\,ab^4x\right)x^{\frac{3}{2}} + 28\left(3\,ab^4x^2 + 5\,a^2b^3x\right)\sqrt{x} + \frac{210\left(a^2b^3x^2 + 3\,a^3b^2x\right)}{\sqrt{x}} + \frac{420\left(a^3b^2x^2 - a^4bx\right)}{x^{\frac{3}{2}}} - 35\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(3*(5*b^5*x^2 + 7*a*b^4*x)*x^(3/2) + 28*(3*a*b^4*x^2 + 5*a^2*b^3*x)*s
qrt(x) + 210*(a^2*b^3*x^2 + 3*a^3*b^2*x)/sqrt(x) + 420*(a^3*b^2*x^2 - a^4*b
*x)/x^(3/2) - 35*(3*a^4*b*x^2 + a^5*x)/x^(5/2))*A + 2/315*(5*(7*b^5*x^2 + 9
*a*b^4*x)*x^(5/2) + 36*(5*a*b^4*x^2 + 7*a^2*b^3*x)*x^(3/2) + 126*(3*a^2*b^3
*x^2 + 5*a^3*b^2*x)*sqrt(x) + 420*(a^3*b^2*x^2 + 3*a^4*b*x)/sqrt(x) + 315*(
a^4*b*x^2 - a^5*x)/x^(3/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(5/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{5}{2}}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(5/2), x)
```

3.807 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=316

$$\frac{20a^2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{a+bx}+\frac{2b^4x^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{5(a+bx)}+\frac{10ab^3x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(2}{3(a+bx)}$$

```
[Out] -2/5*a^5*A*((b*x+a)^2)^(1/2)/x^(5/2)/(b*x+a)-2/3*a^4*(5*A*b+B*a)*((b*x+a)^2
)^(1/2)/x^(3/2)/(b*x+a)+10/3*a*b^3*(A*b+2*B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b
*x+a)+2/5*b^4*(A*b+5*B*a)*x^(5/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/7*b^5*B*x^(7/
2)*((b*x+a)^2)^(1/2)/(b*x+a)-10*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/(b*x+a)
/x^(1/2)+20*a^2*b^2*(A*b+B*a)*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 76}

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{3x^{3/2}(a+bx)}-\frac{10a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{\sqrt{x}\,(a+bx)}+\frac{20a^2b^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(aB+}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (10*a^3*b
*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (20*a^2
*b^2*(A*b + a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (10*a*b
^3*(A*b + 2*a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2*
b^4*(A*b + 5*a*B)*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x)) + (2
*b^5*B*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{7/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{7/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(\frac{a^5Ab^5}{x^{7/2}}+\frac{a^4b^5(5Ab+aB)}{x^{5/2}}+\frac{5a^3b^6(2Ab+aB)}{x^{3/2}}+\frac{10a^2b^7(Ab+}{\sqrt{x}}\right.}{b^4\left(ab+b^2\right.}$$

$$= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)} - \frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{3x^{3/2}(a+bx)} - 10$$

Mathematica [A] time = 0.04, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\left(7a^5(3A+5Bx)+175a^4bx(A+3Bx)+1050a^3b^2x^2(A-Bx)-350a^2b^3x^3(3A+Bx)-35ab^4x^4(\right.}{105x^{5/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(1050*a^3*b^2*x^2*(A - B*x) - 350*a^2*b^3*x^3*(3*A +
B*x) + 175*a^4*b*x*(A + 3*B*x) - 35*a*b^4*x^4*(5*A + 3*B*x) + 7*a^5*(3*A +
5*B*x) - 3*b^5*x^5*(7*A + 5*B*x)))/(105*x^(5/2)*(a + b*x))
```

fricas [A] time = 0.79, size = 119, normalized size = 0.38

$$\frac{2\left(15\,Bb^5x^6-21\,Aa^5+21\left(5\,Bab^4+Ab^5\right)x^5+175\left(2\,Ba^2b^3+Aab^4\right)x^4+1050\left(Ba^3b^2+Aa^2b^3\right)x^3-525\left(Ba^4\right.\right.}{105\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(15*B*b^5*x^6 - 21*A*a^5 + 21*(5*B*a*b^4 + A*b^5)*x^5 + 175*(2*B*a^2*
b^3 + A*a*b^4)*x^4 + 1050*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 525*(B*a^4*b + 2*A*
a^3*b^2)*x^2 - 35*(B*a^5 + 5*A*a^4*b)*x)/x^(5/2)
```

giac [A] time = 0.18, size = 196, normalized size = 0.62

$$\frac{2}{7}\,Bb^5x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right)+2\,Bab^4x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,Ab^5x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{20}{3}\,Ba^2b^3x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+\frac{10}{3}\,Aab^4x^{\frac{3}{2}}\mathrm{sgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/7*B*b^5*x^(7/2)*sgn(b*x + a) + 2*B*a*b^4*x^(5/2)*sgn(b*x + a) + 2/5*A*b^5
*x^(5/2)*sgn(b*x + a) + 20/3*B*a^2*b^3*x^(3/2)*sgn(b*x + a) + 10/3*A*a*b^4*
x^(3/2)*sgn(b*x + a) + 20*B*a^3*b^2*sqrt(x)*sgn(b*x + a) + 20*A*a^2*b^3*sqr
t(x)*sgn(b*x + a) - 2/15*(75*B*a^4*b*x^2*sgn(b*x + a) + 150*A*a^3*b^2*x^2*s
gn(b*x + a) + 5*B*a^5*x*sgn(b*x + a) + 25*A*a^4*b*x*sgn(b*x + a) + 3*A*a^5*
sgn(b*x + a))/x^(5/2)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$-\frac{2\left(-15B\,b^5x^6-21A\,b^5x^5-105Ba\,b^4x^5-175Aa\,b^4x^4-350B\,a^2b^3x^4-1050A\,a^2b^3x^3-1050B\,a^3b^2x^3+1050\right.}{105\left(bx+a\right)^5x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x)
```

```
[Out] -2/105*(-15*B*b^5*x^6-21*A*b^5*x^5-105*B*a*b^4*x^5-175*A*a*b^4*x^4-350*B*a^
2*b^3*x^4-1050*A*a^2*b^3*x^3-1050*B*a^3*b^2*x^3+1050*A*a^3*b^2*x^2+525*B*a^
4*b*x^2+175*A*a^4*b*x+35*B*a^5*x+21*A*a^5)*((b*x+a)^2)^(5/2)/x^(5/2)/(b*x+a
)^5
```

maxima [A] time = 0.58, size = 234, normalized size = 0.74

$$\frac{2}{15}\left(\left(3\,b^5x^2+5\,ab^4x\right)\sqrt{x}+\frac{20\left(ab^4x^2+3\,a^2b^3x\right)}{\sqrt{x}}+\frac{90\left(a^2b^3x^2-a^3b^2x\right)}{x^{\frac{3}{2}}}-\frac{20\left(3\,a^3b^2x^2+a^4bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^4bx^2+3\,a^5}{x^{\frac{7}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^5*x^2 + 5*a*b^4*x)*sqrt(x) + 20*(a*b^4*x^2 + 3*a^2*b^3*x)/sqrt(x
) + 90*(a^2*b^3*x^2 - a^3*b^2*x)/x^(3/2) - 20*(3*a^3*b^2*x^2 + a^4*b*x)/x^(
5/2) - (5*a^4*b*x^2 + 3*a^5*x)/x^(7/2))*A + 2/105*(3*(5*b^5*x^2 + 7*a*b^4*x
)*x^(3/2) + 28*(3*a*b^4*x^2 + 5*a^2*b^3*x)*sqrt(x) + 210*(a^2*b^3*x^2 + 3*a
^3*b^2*x)/sqrt(x) + 420*(a^3*b^2*x^2 - a^4*b*x)/x^(3/2) - 35*(3*a^4*b*x^2 +
 a^5*x)/x^(5/2))*B
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(7/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(7/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(7/2), x)
```

3.808 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=316

$$-\frac{20a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+Ab)}{\sqrt{x}\,(a+bx)}+\frac{2b^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(5aB+Ab)}{3(a+bx)}+\frac{10ab^3\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}\,(}{a+bx}$$

```
[Out] -2/7*a^5*A*((b*x+a)^2)^(1/2)/x^(7/2)/(b*x+a)-2/5*a^4*(5*A*b+B*a)*((b*x+a)^2
)^(1/2)/x^(5/2)/(b*x+a)-10/3*a^3*b*(2*A*b+B*a)*((b*x+a)^2)^(1/2)/x^(3/2)/(b
*x+a)+2/3*b^4*(A*b+5*B*a)*x^(3/2)*((b*x+a)^2)^(1/2)/(b*x+a)+2/5*b^5*B*x^(5/
2)*((b*x+a)^2)^(1/2)/(b*x+a)-20*a^2*b^2*(A*b+B*a)*((b*x+a)^2)^(1/2)/(b*x+a)
/x^(1/2)+10*a*b^3*(A*b+2*B*a)*x^(1/2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 76\}$

$$-\frac{2a^4\sqrt{a^2+2abx+b^2x^2}\,(aB+5Ab)}{5x^{5/2}(a+bx)}-\frac{10a^3b\sqrt{a^2+2abx+b^2x^2}\,(aB+2Ab)}{3x^{3/2}(a+bx)}-\frac{20a^2b^2\sqrt{a^2+2abx+b^2x^2}\,(aB+}{\sqrt{x}\,(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (-2*a^5*A*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*x^(7/2)*(a + b*x)) - (2*a^4*(5*
A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*x^(5/2)*(a + b*x)) - (10*a^3*b
*(2*A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*x^(3/2)*(a + b*x)) - (20*a
^2*b^2*(A*b + a*B)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(Sqrt[x]*(a + b*x)) + (10
*a*b^3*(A*b + 2*a*B)*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + (2*
b^4*(A*b + 5*a*B)*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (2
*b^5*B*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*(a + b*x))
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{x^{9/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{x^{9/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(\frac{a^5Ab^5}{x^{9/2}}+\frac{a^4b^5(5Ab+aB)}{x^{7/2}}+\frac{5a^3b^6(2Ab+aB)}{x^{5/2}}+\frac{10a^2b^7(Ab+aB)}{x^{3/2}}}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{2a^5A\sqrt{a^2+2abx+b^2x^2}}{7x^{7/2}(a+bx)}-\frac{2a^4(5Ab+aB)\sqrt{a^2+2abx+b^2x^2}}{5x^{5/2}(a+bx)}-\frac{10a^3b}{}$$

Mathematica [A] time = 0.05, size = 122, normalized size = 0.39

$$-\frac{2\sqrt{(a+bx)^2}\,\big(3a^5(5A+7Bx)+35a^4bx(3A+5Bx)+350a^3b^2x^2(A+3Bx)+1050a^2b^3x^3(A-Bx)-175ab^4x^4(3}{105x^{7/2}(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/x^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(1050*a^2*b^3*x^3*(A - B*x) - 175*a*b^4*x^4*(3*A + B*
x) + 350*a^3*b^2*x^2*(A + 3*B*x) - 7*b^5*x^5*(5*A + 3*B*x) + 35*a^4*b*x*(3*
A + 5*B*x) + 3*a^5*(5*A + 7*B*x)))/(105*x^(7/2)*(a + b*x))
```

fricas [A] time = 0.83, size = 119, normalized size = 0.38

$$\frac{2\,\big(21\,Bb^5x^6-15\,Aa^5+35\,\left(5\,Bab^4+Ab^5\right)x^5+525\,\left(2\,Ba^2b^3+Aab^4\right)x^4-1050\,\left(Ba^3b^2+Aa^2b^3\right)x^3-175\,\big(Ba^4b+}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(21*B*b^5*x^6 - 15*A*a^5 + 35*(5*B*a*b^4 + A*b^5)*x^5 + 525*(2*B*a^2*
b^3 + A*a*b^4)*x^4 - 1050*(B*a^3*b^2 + A*a^2*b^3)*x^3 - 175*(B*a^4*b + 2*A*
a^3*b^2)*x^2 - 21*(B*a^5 + 5*A*a^4*b)*x)/x^(7/2)
```

giac [A] time = 0.18, size = 196, normalized size = 0.62

$$\frac{2}{5}\,Bb^5x^{\frac{5}{2}}\operatorname{sgn}(bx+a)+\frac{10}{3}\,Bab^4x^{\frac{3}{2}}\operatorname{sgn}(bx+a)+\frac{2}{3}\,Ab^5x^{\frac{3}{2}}\operatorname{sgn}(bx+a)+20\,Ba^2b^3\sqrt{x}\operatorname{sgn}(bx+a)+10\,Aab^4\sqrt{x}\operatorname{sgn}($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/5*B*b^5*x^(5/2)*sgn(b*x + a) + 10/3*B*a*b^4*x^(3/2)*sgn(b*x + a) + 2/3*A*
b^5*x^(3/2)*sgn(b*x + a) + 20*B*a^2*b^3*sqrt(x)*sgn(b*x + a) + 10*A*a*b^4*s
qrt(x)*sgn(b*x + a) - 2/105*(1050*B*a^3*b^2*x^3*sgn(b*x + a) + 1050*A*a^2*b
^3*x^3*sgn(b*x + a) + 175*B*a^4*b*x^2*sgn(b*x + a) + 350*A*a^3*b^2*x^2*sgn(
b*x + a) + 21*B*a^5*x*sgn(b*x + a) + 105*A*a^4*b*x*sgn(b*x + a) + 15*A*a^5*
sgn(b*x + a))/x^(7/2)
```

maple [A] time = 0.05, size = 140, normalized size = 0.44

$$-\frac{2\,\big(-21B\,b^5x^6-35A\,b^5x^5-175Ba\,b^4x^5-525Aa\,b^4x^4-1050B\,a^2b^3x^4+1050A\,a^2b^3x^3+1050B\,a^3b^2x^3+350A\,a}{105\,(bx+a)^5\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x)
```

```
[Out] -2/105*(-21*B*b^5*x^6-35*A*b^5*x^5-175*B*a*b^4*x^5-525*A*a*b^4*x^4-1050*B*a
^2*b^3*x^4+1050*A*a^2*b^3*x^3+1050*B*a^3*b^2*x^3+350*A*a^3*b^2*x^2+175*B*a^
4*b*x^2+105*A*a^4*b*x+21*B*a^5*x+15*A*a^5)*((b*x+a)^2)^(5/2)/x^(7/2)/(b*x+a
)^5
```

maxima [A] time = 0.63, size = 234, normalized size = 0.74

$$\frac{2}{15}\left(\left(3\,b^5x^2+5\,ab^4x\right)\sqrt{x}+\frac{20\left(ab^4x^2+3\,a^2b^3x\right)}{\sqrt{x}}+\frac{90\left(a^2b^3x^2-a^3b^2x\right)}{x^{\frac{3}{2}}}-\frac{20\left(3\,a^3b^2x^2+a^4bx\right)}{x^{\frac{5}{2}}}-\frac{5\,a^4bx^2+3}{x^{\frac{7}{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(9/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*b^5*x^2 + 5*a*b^4*x)*sqrt(x) + 20*(a*b^4*x^2 + 3*a^2*b^3*x)/sqrt(x
) + 90*(a^2*b^3*x^2 - a^3*b^2*x)/x^(3/2) - 20*(3*a^3*b^2*x^2 + a^4*b*x)/x^(
5/2) - (5*a^4*b*x^2 + 3*a^5*x)/x^(7/2))*B + 2/105*A*(35*(b^5*x^2 + 3*a*b^4*
x)/sqrt(x) + 420*(a*b^4*x^2 - a^2*b^3*x)/x^(3/2) - 210*(3*a^2*b^3*x^2 + a^3
*b^2*x)/x^(5/2) - 28*(5*a^3*b^2*x^2 + 3*a^4*b*x)/x^(7/2) - 3*(7*a^4*b*x^2 +
 5*a^5*x)/x^(9/2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{x^{9/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(9/2),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(9/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/x**(9/2), x)
```

3.809 $\int \frac{x^{7/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=286

$$\frac{2x^{7/2}(a+bx)(Ab-aB)}{7b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2x^{3/2}(a+bx)(Ab-aB)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{5/2}(a+bx)(Ab-aB)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{7/2}(a+}{b^{11}}$$

```
[Out] 2/3*a^2*(A*b-B*a)*x^(3/2)*(b*x+a)/b^4/((b*x+a)^2)^(1/2)-2/5*a*(A*b-B*a)*x^(
5/2)*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+2/7*(A*b-B*a)*x^(7/2)*(b*x+a)/b^2/((b*x+
a)^2)^(1/2)+2/9*B*x^(9/2)*(b*x+a)/b/((b*x+a)^2)^(1/2)+2*a^(7/2)*(A*b-B*a)*(
b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(11/2)/((b*x+a)^2)^(1/2)-2*a^3*(A*
b-B*a)*(b*x+a)*x^(1/2)/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 286, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{7/2}(a+bx)(Ab-aB)}{7b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{5/2}(a+bx)(Ab-aB)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2x^{3/2}(a+bx)(Ab-aB)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^3\sqrt{x}(a+bx)(Ab-aB)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{7/2}(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (-2*a^3*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (2*a^2*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) - (2*a*(A*b - a*B)*x^(5/2)*(a + b*x))/(5*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]) + (2*(A*b - a*B)*x^(7/2)*(a + b*x))/(7*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (2*B*x^(9/2)*(a + b*x))/(9*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*a^(7/
2)*(A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(11/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{7/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^{7/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2\left(\frac{9Ab^2}{2}-\frac{9abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{ab+b^2x}\,dx}{9b^2\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{9/2}(a+bx)}{9b\sqrt{a^2+2abx+b^2x^2}}+\\
&= \frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a(Ab-aB)x^{5/2}(a+bx)}{5b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{7/2}(a+bx)}{7b^2\sqrt{a^2+2abx+b^2x^2}}+\\
&= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{2a^3(Ab-aB)\sqrt{x}\,(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2(Ab-aB)x^{3/2}(a+bx)}{3b^4\sqrt{a^2+2abx+b^2x^2}}-
\end{aligned}$$

Mathematica [A] time = 0.08, size = 139, normalized size = 0.49

$$\frac{2(a+bx)\left(\sqrt{b}\,\sqrt{x}\,\left(315a^4B-105a^3b(3A+Bx)+21a^2b^2x(5A+3Bx)-9ab^3x^2(7A+5Bx)+5b^4x^3(9A+7Bx)\right.\right.}{315b^{11/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(315*a^4*B - 105*a^3*b*(3*A + B*x) + 21*a^2*b
^2*x*(5*A + 3*B*x) - 9*a*b^3*x^2*(7*A + 5*B*x) + 5*b^4*x^3*(9*A + 7*B*x)) -
 315*a^(7/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(315*b^(11/
2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.95, size = 276, normalized size = 0.97

$$\left[-\frac{315 \left(Ba^4 - Aa^3b\right)\sqrt{-\frac{a}{b}} \log\left(\frac{bx+2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right) - 2 \left(35\,Bb^4x^4 + 315\,Ba^4 - 315\,Aa^3b - 45\left(Bab^3 - Ab^4\right)x^3 + 63\,(B}{315\,b^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/315*(315*(B*a^4 - A*a^3*b)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b)
 - a)/(b*x + a)) - 2*(35*B*b^4*x^4 + 315*B*a^4 - 315*A*a^3*b - 45*(B*a*b^3
- A*b^4)*x^3 + 63*(B*a^2*b^2 - A*a*b^3)*x^2 - 105*(B*a^3*b - A*a^2*b^2)*x)*
sqrt(x))/b^5, -2/315*(315*(B*a^4 - A*a^3*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt
(a/b)/a) - (35*B*b^4*x^4 + 315*B*a^4 - 315*A*a^3*b - 45*(B*a*b^3 - A*b^4)*x
^3 + 63*(B*a^2*b^2 - A*a*b^3)*x^2 - 105*(B*a^3*b - A*a^2*b^2)*x)*sqrt(x))/b
^5]
```

giac [A] time = 0.37, size = 205, normalized size = 0.72

$$-\frac{2\left(Ba^5\mathrm{sgn}\left(bx+a\right) - Aa^4b\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^5} + \frac{2\left(35\,Bb^8x^{\frac{9}{2}}\mathrm{sgn}\left(bx+a\right) - 45\,Bab^7x^{\frac{7}{2}}\mathrm{sgn}\left(bx+a\right) + 45\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a^5*sgn(b*x + a) - A*a^4*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^5) + 2/315*(35*B*b^8*x^(9/2)*sgn(b*x + a) - 45*B*a*b^7*x^(7/2)
*sgn(b*x + a) + 45*A*b^8*x^(7/2)*sgn(b*x + a) + 63*B*a^2*b^6*x^(5/2)*sgn(b*
x + a) - 63*A*a*b^7*x^(5/2)*sgn(b*x + a) - 105*B*a^3*b^5*x^(3/2)*sgn(b*x +
a) + 105*A*a^2*b^6*x^(3/2)*sgn(b*x + a) + 315*B*a^4*b^4*sqrt(x)*sgn(b*x + a
) - 315*A*a^3*b^5*sqrt(x)*sgn(b*x + a))/b^9
```

maple [A] time = 0.06, size = 197, normalized size = 0.69

$$\frac{2\left(bx+a\right)\left(35\sqrt{ab}\;B\,b^4x^{\frac{9}{2}} + 45\sqrt{ab}\;A\,b^4x^{\frac{7}{2}} - 45\sqrt{ab}\;Ba\,b^3x^{\frac{7}{2}} - 63\sqrt{ab}\;Aa\,b^3x^{\frac{5}{2}} + 63\sqrt{ab}\;B\,a^2b^2x^{\frac{5}{2}} + 315A\,a^4b\,a\right.}{315\sqrt{(bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(b*x+a)*(35*B*x^(9/2)*(a*b)^(1/2)*b^4+45*A*x^(7/2)*(a*b)^(1/2)*b^4-45
*B*x^(7/2)*(a*b)^(1/2)*a*b^3-63*A*x^(5/2)*(a*b)^(1/2)*a*b^3+63*B*x^(5/2)*(a
*b)^(1/2)*a^2*b^2+105*A*x^(3/2)*(a*b)^(1/2)*a^2*b^2-105*B*x^(3/2)*(a*b)^(1/
2)*a^3*b-315*A*x^(1/2)*(a*b)^(1/2)*a^3*b+315*A*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*a^4*b+315*B*x^(1/2)*(a*b)^(1/2)*a^4-315*B*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*a^5)/((b*x+a)^2)^(1/2)/b^5/(a*b)^(1/2)
```

maxima [A] time = 1.52, size = 257, normalized size = 0.90

$$\frac{10\left(7\,Bb^4x^2 + 9\,Bab^3x\right)x^{\frac{7}{2}} - 2\left(5\left(11\,Bab^3 - 9\,Ab^4\right)x^2 + 9\left(9\,Ba^2b^2 - 7\,Aab^3\right)x\right)x^{\frac{5}{2}} + 6\left(3\left(11\,Ba^2b^2 - 9\,Aab^3\right)x^2 +\right.}{315\left(b^5x + ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/315*(10*(7*B*b^4*x^2 + 9*B*a*b^3*x)*x^(7/2) - 2*(5*(11*B*a*b^3 - 9*A*b^4)
*x^2 + 9*(9*B*a^2*b^2 - 7*A*a*b^3)*x)*x^(5/2) + 6*(3*(11*B*a^2*b^2 - 9*A*a*
b^3)*x^2 + 7*(9*B*a^3*b - 7*A*a^2*b^2)*x)*x^(3/2) + 21*(3*(11*B*a^3*b - 9*A
*a^2*b^2)*x^2 + 5*(9*B*a^4 - 7*A*a^3*b)*x)*sqrt(x))/(b^5*x + a*b^4) - 2*(B*
a^5 - A*a^4*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5) - 1/3*((11*B*a^3
*b - 9*A*a^2*b^2)*x^(3/2) - 6*(B*a^4 - A*a^3*b)*sqrt(x))/b^5
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.810 $\int \frac{x^{5/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=238

$$\frac{2x^{5/2}(a+bx)(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2\sqrt{x}\,(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{3/2}(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^{5/2}(a+}{b^{9/}}$$

```
[Out] -2/3*a*(A*b-B*a)*x^(3/2)*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+2/5*(A*b-B*a)*x^(5/2
)*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+2/7*B*x^(7/2)*(b*x+a)/b/((b*x+a)^2)^(1/2)-2
*a^(5/2)*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(9/2)/((b*x+a)
^2)^(1/2)+2*a^2*(A*b-B*a)*(b*x+a)*x^(1/2)/b^4/((b*x+a)^2)^(1/2)
```

Rubi **[A]** time = 0.11, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{5/2}(a+bx)(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2ax^{3/2}(a+bx)(Ab-aB)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^2\sqrt{x}\,(a+bx)(Ab-aB)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a^{5/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}}{\sqrt{a}}\right.}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*a^2*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 (2*a*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (2*(A*b - a*B)*x^(5/2)*(a + b*x))/(5*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (2*B*x^(7/2)*(a + b*x))/(7*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*a^(5/2)*(
A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(9/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^{5/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2\left(\frac{7Ab^2}{2}-\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{ab+b^2x}\,dx}{7b^2\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(2a\left(\frac{7Ab^2}{2}-\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)}{7b^3\sqrt{a^2+2abx+b^2}}\\
&= -\frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{7/2}(a+bx)}{7b\sqrt{a^2+2abx+b^2x^2}}+\\
&= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\\
&= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\\
&= \frac{2a^2(Ab-aB)\sqrt{x}\,(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{2a(Ab-aB)x^{3/2}(a+bx)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)x^{5/2}(a+bx)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+
\end{aligned}$$

Mathematica [A] time = 0.06, size = 120, normalized size = 0.50

$$\frac{2(a+bx)\left(105a^{5/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+\sqrt{b}\sqrt{x}\left(-105a^3B+35a^2b(3A+Bx)-7ab^2x(5A+3Bx)+3b^3x^2\right.\right.}{105b^{9/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(-105*a^3*B + 35*a^2*b*(3*A + B*x) - 7*a*b^2*
x*(5*A + 3*B*x) + 3*b^3*x^2*(7*A + 5*B*x)) + 105*a^(5/2)*(-(A*b) + a*B)*Arc
Tan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(105*b^(9/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.97, size = 229, normalized size = 0.96

$$\left[-\frac{105\left(Ba^3-Aa^2b\right)\sqrt{-\frac{a}{b}}\log\left(\frac{bx-2\,b\sqrt{x}\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(15\,Bb^3x^3-105\,Ba^3+105\,Aa^2b-21\left(Bab^2-Ab^3\right)x^2+35\right.}{105\,b^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*a^3 - A*a^2*b)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b)
 - a)/(b*x + a)) - 2*(15*B*b^3*x^3 - 105*B*a^3 + 105*A*a^2*b - 21*(B*a*b^2
- A*b^3)*x^2 + 35*(B*a^2*b - A*a*b^2)*x)*sqrt(x))/b^4, 2/105*(105*(B*a^3 -
A*a^2*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (15*B*b^3*x^3 - 105*B*a^
3 + 105*A*a^2*b - 21*(B*a*b^2 - A*b^3)*x^2 + 35*(B*a^2*b - A*a*b^2)*x)*sqrt
(x))/b^4]
```

giac [A] time = 0.20, size = 169, normalized size = 0.71

$$\frac{2\left(Ba^4\operatorname{sgn}(bx+a) - Aa^3b\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^4} + 2\left(15\,Bb^6x^{\frac{7}{2}}\operatorname{sgn}(bx+a) - 21\,Bab^5x^{\frac{5}{2}}\operatorname{sgn}(bx+a) + 21\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a^4*sgn(b*x + a) - A*a^3*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*b^4) + 2/105*(15*B*b^6*x^(7/2)*sgn(b*x + a) - 21*B*a*b^5*x^(5/2)*
sgn(b*x + a) + 21*A*b^6*x^(5/2)*sgn(b*x + a) + 35*B*a^2*b^4*x^(3/2)*sgn(b*x
 + a) - 35*A*a*b^5*x^(3/2)*sgn(b*x + a) - 105*B*a^3*b^3*sqrt(x)*sgn(b*x + a
) + 105*A*a^2*b^4*sqrt(x)*sgn(b*x + a))/b^7
```

maple [A] time = 0.07, size = 163, normalized size = 0.68

$$\frac{2\,(bx+a)\left(15\sqrt{ab}\;B\,b^3x^{\frac{7}{2}} + 21\sqrt{ab}\;A\,b^3x^{\frac{5}{2}} - 21\sqrt{ab}\;Ba\,b^2x^{\frac{5}{2}} - 105A\,a^3b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 105B\,a^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) -\right.}{105\sqrt{(bx+a)^2}\;\sqrt{ab}\;b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(15*B*x^(7/2)*(a*b)^(1/2)*b^3+21*A*x^(5/2)*(a*b)^(1/2)*b^3-21
*B*x^(5/2)*(a*b)^(1/2)*a*b^2-35*A*x^(3/2)*(a*b)^(1/2)*a*b^2+35*B*x^(3/2)*(a
*b)^(1/2)*a^2*b+105*A*x^(1/2)*(a*b)^(1/2)*a^2*b-105*A*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*a^3*b-105*B*x^(1/2)*(a*b)^(1/2)*a^3+105*B*arctan(1/(a*b)^(1/2)*b
*x^(1/2))*a^4)/((b*x+a)^2)^(1/2)/b^4/(a*b)^(1/2)
```

maxima [A] time = 1.74, size = 203, normalized size = 0.85

$$\frac{6\left(5\,Bb^3x^2 + 7\,Bab^2x\right)x^{\frac{5}{2}} - 2\left(3\left(9\,Bab^2 - 7\,Ab^3\right)x^2 + 7\left(7\,Ba^2b - 5\,Aab^2\right)x\right)x^{\frac{3}{2}} - 7\left(3\left(9\,Ba^2b - 7\,Aab^2\right)x^2 + 5\left(7\right.\right.}{105\left(b^4x + ab^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/105*(6*(5*B*b^3*x^2 + 7*B*a*b^2*x)*x^(5/2) - 2*(3*(9*B*a*b^2 - 7*A*b^3)*x
^2 + 7*(7*B*a^2*b - 5*A*a*b^2)*x)*x^(3/2) - 7*(3*(9*B*a^2*b - 7*A*a*b^2)*x^
2 + 5*(7*B*a^3 - 5*A*a^2*b)*x)*sqrt(x))/(b^4*x + a*b^3) + 2*(B*a^4 - A*a^3*
b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 1/3*((9*B*a^2*b - 7*A*a*b^
2)*x^(3/2) - 6*(B*a^3 - A*a^2*b)*sqrt(x))/b^4
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,(A+B\,x)}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.811 $\int \frac{x^{3/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=190

$$\frac{2x^{3/2}(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2a\sqrt{x}\,(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/3*(A*b-B*a)*x^(3/2)*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+2/5*B*x^(5/2)*(b*x+a)/b
/((b*x+a)^2)^(1/2)+2*a^(3/2)*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/
2))/b^(7/2)/((b*x+a)^2)^(1/2)-2*a*(A*b-B*a)*(b*x+a)*x^(1/2)/b^3/((b*x+a)^2)
^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 80, 50, 63, 205}

$$\frac{2x^{3/2}(a+bx)(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2a\sqrt{x}\,(a+bx)(Ab-aB)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2a^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (-2*a*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(2*(A*b - a*B)*x^(3/2)*(a + b*x))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
2*B*x^(5/2)*(a + b*x))/(5*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*a^(3/2)*(A*
b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{x^{3/2}(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{5Ab^2}{2}-\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{ab+b^2x}\,dx}{5b^2\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{5Ab^2}{2}-\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)}{5b^3\sqrt{a^2+2abx+b^2}} \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} + \\
&= -\frac{2a(Ab-aB)\sqrt{x}\,(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)x^{3/2}(a+bx)}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{5/2}(a+bx)}{5b\sqrt{a^2+2abx+b^2x^2}} +
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 100, normalized size = 0.53

$$
\frac{2(a+bx)\left(\sqrt{b}\,\sqrt{x}\,\left(15a^2B-5ab(3A+Bx)+b^2x(5A+3Bx)\right)-15a^{3/2}(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\right)}{15b^{7/2}\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(15*a^2*B - 5*a*b*(3*A + B*x) + b^2*x*(5*A +
3*B*x)) - 15*a^(3/2)*(-(A*b) + a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(15
*b^(7/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.91, size = 180, normalized size = 0.95

$$
\left[-\frac{15\left(Ba^2-Aab\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx+2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(3\,Bb^2x^2+15\,Ba^2-15\,Aab-5\left(Bab-Ab^2\right)x\right)\sqrt{x}}{15\,b^3}, -\frac{2\left(15\left(B\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*a^2 - A*a*b)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a
)/(b*x + a)) - 2*(3*B*b^2*x^2 + 15*B*a^2 - 15*A*a*b - 5*(B*a*b - A*b^2)*x)*
sqrt(x))/b^3, -2/15*(15*(B*a^2 - A*a*b)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b
)/a) - (3*B*b^2*x^2 + 15*B*a^2 - 15*A*a*b - 5*(B*a*b - A*b^2)*x)*sqrt(x))/b
^3]
```

giac [A] time = 0.17, size = 133, normalized size = 0.70

$$-\frac{2\left(Ba^{3}\mathrm{sgn}\left(bx+a\right)-Aa^{2}b\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}+\frac{2\left(3\,Bb^{4}x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)-5\,Bab^{3}x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)+5\,Ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a^3*sgn(b*x + a) - A*a^2*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*b^3) + 2/15*(3*B*b^4*x^(5/2)*sgn(b*x + a) - 5*B*a*b^3*x^(3/2)*sg
n(b*x + a) + 5*A*b^4*x^(3/2)*sgn(b*x + a) + 15*B*a^2*b^2*sqrt(x)*sgn(b*x +
a) - 15*A*a*b^3*sqrt(x)*sgn(b*x + a))/b^5
```

maple [A] time = 0.06, size = 129, normalized size = 0.68

$$\frac{2\left(bx+a\right)\left(3\sqrt{ab}\;B\,b^{2}x^{\frac{5}{2}}+15A\,a^{2}b\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-15B\,a^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+5\sqrt{ab}\;A\,b^{2}x^{\frac{3}{2}}-5\sqrt{ab}\;Bab\,x^{\frac{3}{2}}-15\sqrt{a}}{15\sqrt{\left(bx+a\right)^{2}}\;\sqrt{ab}\;b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/15*(b*x+a)*(3*B*x^(5/2)*(a*b)^(1/2)*b^2+5*A*x^(3/2)*(a*b)^(1/2)*b^2-5*B*x
^(3/2)*(a*b)^(1/2)*a*b-15*A*x^(1/2)*(a*b)^(1/2)*a*b+15*A*arctan(1/(a*b)^(1/
2)*b*x^(1/2))*a^2*b+15*B*x^(1/2)*(a*b)^(1/2)*a^2-15*B*arctan(1/(a*b)^(1/2)*
b*x^(1/2))*a^3)/((b*x+a)^2)^(1/2)/b^3/(a*b)^(1/2)
```

maxima [A] time = 1.59, size = 147, normalized size = 0.77

$$\frac{2\left(3\,Bb^{2}x^{2}+5\,Babx\right)x^{\frac{3}{2}}+\left(3\left(7\,Bab-5\,Ab^{2}\right)x^{2}+5\left(5\,Ba^{2}-3\,Aab\right)x\right)\sqrt{x}}{15\left(b^{3}x+ab^{2}\right)}-\frac{2\left(Ba^{3}-Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{3}}-\frac{\left(7\,Bab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/15*(2*(3*B*b^2*x^2 + 5*B*a*b*x)*x^(3/2) + (3*(7*B*a*b - 5*A*b^2)*x^2 + 5*
(5*B*a^2 - 3*A*a*b)*x)*sqrt(x))/(b^3*x + a*b^2) - 2*(B*a^3 - A*a^2*b)*arcta
n(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^3) - 1/3*((7*B*a*b - 5*A*b^2)*x^(3/2) -
 6*(B*a^2 - A*a*b)*sqrt(x))/b^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.812 $\int \frac{\sqrt{x}\,(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=144

$$\frac{2\sqrt{x}\,(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2\sqrt{a}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/3*B*x^(3/2)*(b*x+a)/b/((b*x+a)^2)^(1/2)-2*(A*b-B*a)*(b*x+a)*arctan(b^(1/2
)*x^(1/2)/a^(1/2))*a^(1/2)/b^(5/2)/((b*x+a)^2)^(1/2)+2*(A*b-B*a)*(b*x+a)*x^
(1/2)/b^2/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.07, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 80, 50, 63, 205}

$$\frac{2\sqrt{x}\,(a+bx)(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2\sqrt{a}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*Sqrt[x]*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*
B*x^(3/2)*(a + b*x))/(3*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*Sqrt[a]*(A*b
- a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(b^(5/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{\sqrt{x}\,(A+Bx)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{ab+b^2x}\,dx}{3b^2\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(Ab-aB)\sqrt{x}\,(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2a\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)}{3b^3\sqrt{a^2+2abx+b}}\\
&= \frac{2(Ab-aB)\sqrt{x}\,(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(4a\left(\frac{3Ab^2}{2}-\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)}{3b^3\sqrt{a^2+2a}}\\
&= \frac{2(Ab-aB)\sqrt{x}\,(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2Bx^{3/2}(a+bx)}{3b\sqrt{a^2+2abx+b^2x^2}} - \frac{2\sqrt{a}\,(Ab-aB)(a+bx)\tan^{-1}\bigg(}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 82, normalized size = 0.57

$$
\frac{2(a+bx)\left(\sqrt{b}\,\sqrt{x}\,(-3aB+3Ab+bBx)+3\sqrt{a}\,(aB-Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)\right)}{3b^{5/2}\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[x]*(3*A*b - 3*a*B + b*B*x) + 3*Sqrt[a]*(-(A*b) +
 a*B)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]))/(3*b^(5/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.04, size = 129, normalized size = 0.90

$$
\Bigg[-\frac{3\,(Ba-Ab)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx-2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\,(Bbx-3\,Ba+3\,Ab)\sqrt{x}}{3\,b^2},\ \frac{2\Bigg(3\,(Ba-Ab)\sqrt{\frac{a}{b}}\,\arctan\left(\frac{b\sqrt{x}\,\sqrt{\frac{a}{b}}}{a}\right)+(}{3\,b^2}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x
 + a)) - 2*(B*b*x - 3*B*a + 3*A*b)*sqrt(x))/b^2, 2/3*(3*(B*a - A*b)*sqrt(a/
b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (B*b*x - 3*B*a + 3*A*b)*sqrt(x))/b^2]
```

giac [A] time = 0.16, size = 94, normalized size = 0.65

$$
\frac{2\left(Ba^2\mathrm{sgn}\,(bx+a)-Aab\mathrm{sgn}\,(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^2}+\frac{2\Bigg(Bb^2x^{\frac{3}{2}}\mathrm{sgn}\,(bx+a)-3\,Bab\sqrt{x}\,\mathrm{sgn}\,(bx+a)+3\,Ab^2}{3\,b^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a^2*sgn(b*x + a) - A*a*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(sq
rt(a*b)*b^2) + 2/3*(B*b^2*x^(3/2)*sgn(b*x + a) - 3*B*a*b*sqrt(x)*sgn(b*x +
a) + 3*A*b^2*sqrt(x)*sgn(b*x + a))/b^3
```

maple [A] time = 0.07, size = 94, normalized size = 0.65

$$\frac{2\left(bx+a\right)\left(-3Aab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3B\,a^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\,Bb\,x^{\frac{3}{2}}+3\sqrt{ab}\,Ab\sqrt{x}-3\sqrt{ab}\,Ba\sqrt{x}\right)}{3\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ab}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(B*x^(3/2)*(a*b)^(1/2)*b+3*A*x^(1/2)*(a*b)^(1/2)*b-3*A*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*a*b-3*B*x^(1/2)*(a*b)^(1/2)*a+3*B*arctan(1/(a*b)^(1
/2)*b*x^(1/2))*a^2)/((b*x+a)^2)^(1/2)/b^2/(a*b)^(1/2)
```

maxima [A] time = 1.34, size = 122, normalized size = 0.85

$$-\frac{\left(\left(Bab-Ab^{2}\right)x^{2}+\left(Ba^{2}-Aab\right)x\right)\sqrt{x}}{ab^{2}x+a^{2}b}+\frac{2\left(Ba^{2}-Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b^{2}}+\frac{\left(5\,Bab-3\,Ab^{2}\right)x^{\frac{3}{2}}-6\left(Ba^{2}-Aab\right)\sqrt{x}}{3\,ab^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -((B*a*b - A*b^2)*x^2 + (B*a^2 - A*a*b)*x)*sqrt(x)/(a*b^2*x + a^2*b) + 2*(B
*a^2 - A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^2) + 1/3*((5*B*a*b -
 3*A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*sqrt(x))/(a*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,\left(A+Bx\right)}{\sqrt{\left(a+bx\right)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/sqrt((a + b*x)**2), x)
```

3.813 $\int \frac{A+Bx}{\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=99

$$\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(3/2)/a^(1/2)/((b*x+a
)^2)^(1/2)+2*B*(b*x+a)*x^(1/2)/b/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.129$, Rules used = $\{770, 80, 63, 205\}$

$$\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*B*Sqrt[x]*(a + b*x))/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*B)*
(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(Sqrt[a]*b^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{Ab^2}{2}-\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(\frac{Ab^2}{2}-\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\text{Subst}\left(\int \frac{1}{ab+b^2x^2}\,dx, x, \sqrt{x}\right)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B\sqrt{x}\,(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{\sqrt{a}\,b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.73

$$\frac{2(a+bx)\left((Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)+\sqrt{a}\sqrt{b}\,B\sqrt{x}\right)}{\sqrt{a}\,b^{3/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(Sqrt[a]*Sqrt[b]*B*Sqrt[x] + (A*b - a*B)*ArcTan[(Sqrt[b]*Sqrt[
x])/Sqrt[a]]))/(Sqrt[a]*b^(3/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.88, size = 102, normalized size = 1.03

$$\left[\frac{2\,Bab\sqrt{x}+(Ba-Ab)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)}{ab^2}, \frac{2\left(Bab\sqrt{x}+(Ba-Ab)\sqrt{ab}\,\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)\right)}{ab^2}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [(2*B*a*b*sqrt(x) + (B*a - A*b)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt
(x))/(b*x + a)))/(a*b^2), 2*(B*a*b*sqrt(x) + (B*a - A*b)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))))/(a*b^2)]
```

giac [A] time = 0.16, size = 57, normalized size = 0.58

$$\frac{2\,B\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)}{b} - \frac{2\left(Ba\mathrm{sgn}\left(bx+a\right)-Ab\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)*sgn(b*x + a)/b - 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan
(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b)
```

maple [A] time = 0.06, size = 65, normalized size = 0.66

$$\frac{2\left(bx+a\right)\left(Ab\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-Ba\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\;B\sqrt{x}\right)}{\sqrt{\left(bx+a\right)^2}\;\sqrt{ab}\;b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b+B*x^(1/2)*(a*b)^(1/2)-B*arct
an(1/(a*b)^(1/2)*b*x^(1/2))*a)/((b*x+a)^2)^(1/2)/b/(a*b)^(1/2)
```

maxima [B] time = 1.54, size = 140, normalized size = 1.41

$$-\frac{2\,(Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,b}+\frac{\left(\left(3\,Bab-Ab^{2}\right)x^{2}+3\left(Ba^{2}+Aab\right)x\right)\sqrt{x}+\frac{2\left(Aabx^{2}+3\,Aa^{2}x\right)}{\sqrt{x}}}{3\left(a^{2}bx+a^{3}\right)}-\frac{\left(3\,Bab-Ab^{2}\right)x^{\frac{3}{2}}-6}{3\,a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2*(B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b) + 1/3*(((3*B*a*b -
 A*b^2)*x^2 + 3*(B*a^2 + A*a*b)*x)*sqrt(x) + 2*(A*a*b*x^2 + 3*A*a^2*x)/sqrt
(x))/(a^2*b*x + a^3) - 1/3*((3*B*a*b - A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*s
qrt(x))/(a^2*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x}\sqrt{\left(a+bx\right)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x)*sqrt((a + b*x)**2)), x)
```

3.814 $\int \frac{A+Bx}{x^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=99

$$-\frac{2A(a+bx)}{a\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -2*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(3/2)/b^(1/2)/((b*x+
a)^2)^(1/2)-2*A*(b*x+a)/a/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi **[A]** time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = $\{770, 78, 63, 205\}$

$$-\frac{2(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{a\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(a*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b - a*B)
*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(3/2)*Sqrt[b]*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{Ab^2}{2}+\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)}\,dx}{ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(-\frac{Ab^2}{2}+\frac{abB}{2}\right)\left(ab+b^2x\right)\right)\text{Subst}\left(\int \frac{1}{ab+b^2x^2}\,dx,\right.}{ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{a\sqrt{x}\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{3/2}\sqrt{b}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.80

$$\frac{2(a+bx)\left(-\sqrt{x}\,(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)-\sqrt{a}\,A\sqrt{b}\right)}{a^{3/2}\sqrt{b}\sqrt{x}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-(Sqrt[a]*A*Sqrt[b]) - (A*b - a*B)*Sqrt[x]*ArcTan[(Sqrt[b]*Sq
rt[x])/Sqrt[a]]))/(a^(3/2)*Sqrt[b]*Sqrt[x]*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.66, size = 112, normalized size = 1.13

$$\left[-\frac{2\,Aab\sqrt{x}-(Ba-Ab)\sqrt{-ab}\,x\log\left(\frac{bx-a+2\sqrt{-ab}\sqrt{x}}{bx+a}\right)}{a^2bx},-\frac{2\left(Aab\sqrt{x}+(Ba-Ab)\sqrt{ab}\,x\arctan\left(\frac{\sqrt{ab}}{b\sqrt{x}}\right)\right)}{a^2bx}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-(2*A*a*b*sqrt(x) - (B*a - A*b)*sqrt(-a*b)*x*log((b*x - a + 2*sqrt(-a*b)*s
qrt(x))/(b*x + a)))/(a^2*b*x), -2*(A*a*b*sqrt(x) + (B*a - A*b)*sqrt(a*b)*x*
arctan(sqrt(a*b)/(b*sqrt(x))))/(a^2*b*x)]
```

giac [A] time = 0.16, size = 57, normalized size = 0.58

$$\frac{2\left(Ba\,\mathrm{sgn}\left(bx+a\right)-Ab\,\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a}-\frac{2\,A\,\mathrm{sgn}\left(bx+a\right)}{a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*a) - 2*A*sgn(b*x + a)/(a*sqrt(x))
```

maple [A] time = 0.06, size = 71, normalized size = 0.72

$$-\frac{2\left(bx+a\right)\left(Ab\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-Ba\sqrt{x}\,\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\sqrt{ab}\,A\right)}{\sqrt{\left(bx+a\right)^2}\,\sqrt{ab}\,a\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2*(b*x+a)*(A*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b-B*x^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*a+A*(a*b)^(1/2))/((b*x+a)^2)^(1/2)/a/(a*b)^(1/2)/x^(
1/2)
```

maxima [B] time = 1.61, size = 180, normalized size = 1.82

$$\frac{2\,(Ba-Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a}-\frac{\left(\left(Bab^{2}+Ab^{3}\right)x^{2}-3\left(Ba^{2}b-3\,Aab^{2}\right)x\right)\sqrt{x}-\frac{2\left(\left(Ba^{2}b+Aab^{2}\right)x^{2}+3\left(Ba^{3}-3\,Aa^{2}b\right)x\right)}{\sqrt{x}}-\frac{6\left(Aa^{2}bx^{2}\right.}{x^{\frac{3}{2}}}}{3\left(a^{3}bx+a^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*(B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a) - 1/3*(((B*a*b^2 +
A*b^3)*x^2 - 3*(B*a^2*b - 3*A*a*b^2)*x)*sqrt(x) - 2*((B*a^2*b + A*a*b^2)*x^
2 + 3*(B*a^3 - 3*A*a^2*b)*x)/sqrt(x) - 6*(A*a^2*b*x^2 - A*a^3*x)/x^(3/2))/(
a^3*b*x + a^4) + 1/3*((B*a*b + A*b^2)*x^(3/2) - 6*(B*a^2 - A*a*b)*sqrt(x))/
a^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{3/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^{\frac{3}{2}}\sqrt{\left(a+bx\right)^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*sqrt((a + b*x)**2)), x)
```

3.815 $\int \frac{A+Bx}{x^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=144

$$\frac{2(a+bx)(Ab-aB)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -2/3*A*(b*x+a)/a/x^(3/2)/((b*x+a)^2)^(1/2)+2*(A*b-B*a)*(b*x+a)*arctan(b^(1/
2)*x^(1/2)/a^(1/2))*b^(1/2)/a^(5/2)/((b*x+a)^2)^(1/2)+2*(A*b-B*a)*(b*x+a)/a
^2/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$\frac{2(a+bx)(Ab-aB)}{a^2\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(3*a*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(a^2*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*Sqrt[b]*(A*b
 - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(5/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+b^2x\right)}\,dx}{3ab\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(2\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab\right.\right.}{3a^2\sqrt{a^2+}}\\
&= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(4\left(-\frac{3Ab^2}{2}+\frac{3abB}{2}\right)\left(ab\right.\right.}{3a^2}\\
&= -\frac{2A(a+bx)}{3ax^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(Ab-aB)(a+bx)}{a^2\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{2\sqrt{b}\,(Ab-aB)(a+b}{a^{5/2}\sqrt{a^2+2ab}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 59, normalized size = 0.41

$$
-\frac{2(a+bx)\left({}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};-\frac{bx}{a}\right)(3aBx-3Abx)+aA\right)}{3a^2x^{3/2}\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(a*A + (-3*A*b*x + 3*a*B*x)*Hypergeometric2F1[-1/2, 1, 1/2, -
((b*x)/a)]))/(3*a^2*x^(3/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.09, size = 146, normalized size = 1.01

$$
\left[-\frac{3\,(Ba-Ab)x^2\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}\,\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\,(Aa+3\,(Ba-Ab)x)\sqrt{x}}{3\,a^2x^2},\frac{2\left(3\,(Ba-Ab)x^2\sqrt{\frac{b}{a}}\,\arctan\left(\frac{a\sqrt{\frac{b}{a}}}{b\sqrt{x}}\right)-(A\right.}{3\,a^2x^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*x^2*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/
(b*x + a)) + 2*(A*a + 3*(B*a - A*b)*x)*sqrt(x))/(a^2*x^2), 2/3*(3*(B*a - A*
b)*x^2*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (A*a + 3*(B*a - A*b)*x)*
sqrt(x))/(a^2*x^2)]
```

giac [A] time = 0.17, size = 85, normalized size = 0.59

$$
-\frac{2\left(Bab\operatorname{sgn}(bx+a)-Ab^2\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^2}-\frac{2\left(3\,Bax\operatorname{sgn}(bx+a)-3\,Abx\operatorname{sgn}(bx+a)+Aa\operatorname{sgn}(bx+\right.}{3\,a^2x^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*a^2) - 2/3*(3*B*a*x*sgn(b*x + a) - 3*A*b*x*sgn(b*x + a) + A*a*sgn(
b*x + a))/(a^2*x^(3/2))
```

maple **[A]** time = 0.06, size = 97, normalized size = 0.67

$$\frac{2\left(bx+a\right)\left(3A\,b^{2}x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3Bab\,x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3\sqrt{ab}\;Abx-3\sqrt{ab}\;Bax-\sqrt{ab}\;Aa\right)}{3\sqrt{\left(bx+a\right)^{2}}\;\sqrt{ab}\;a^{2}x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(3*A*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^2-3*B*x^(3/2)*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b+3*A*x*(a*b)^(1/2)*b-3*B*x*(a*b)^(1/2)*a-A
*a*(a*b)^(1/2))/((b*x+a)^2)^(1/2)/a^2/(a*b)^(1/2)/x^(3/2)
```

maxima **[B]** time = 1.67, size = 244, normalized size = 1.69

$$-\frac{\left(\left(Bab^{3}-3\,Ab^{4}\right)x^{2}+3\left(3\,Ba^{2}b^{2}-5\,Aab^{3}\right)x\right)\sqrt{x}-\frac{2\left(\left(Ba^{2}b^{2}-3\,Aab^{3}\right)x^{2}-3\left(3\,Ba^{3}b-5\,Aa^{2}b^{2}\right)x\right)}{\sqrt{x}}-\frac{2\left(3\left(Ba^{3}b-3\,Aa^{2}b^{2}\right)x^{2}-(3\,B}{x^{\frac{3}{2}}}}{3\left(a^{4}bx+a^{5}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*(((B*a*b^3 - 3*A*b^4)*x^2 + 3*(3*B*a^2*b^2 - 5*A*a*b^3)*x)*sqrt(x) - 2
*((B*a^2*b^2 - 3*A*a*b^3)*x^2 - 3*(3*B*a^3*b - 5*A*a^2*b^2)*x)/sqrt(x) - 2*
(3*(B*a^3*b - 3*A*a^2*b^2)*x^2 - (3*B*a^4 - 5*A*a^3*b)*x)/x^(3/2) + 2*(3*A*
a^3*b*x^2 + A*a^4*x)/x^(5/2))/(a^4*b*x + a^5) - 2*(B*a*b - A*b^2)*arctan(b*
sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2) + 1/3*((B*a*b^2 - 3*A*b^3)*x^(3/2) + 6*(
B*a^2*b - A*a*b^2)*sqrt(x))/a^4
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{5/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*((a + b*x)^2)^(1/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.816 $\int \frac{A+Bx}{x^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=190

$$\frac{2(a+bx)(Ab-aB)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b(a+bx)(Ab}{a^3\sqrt{x}\sqrt{a^2+2abx}}$$

```
[Out] -2/5*A*(b*x+a)/a/x^(5/2)/((b*x+a)^2)^(1/2)+2/3*(A*b-B*a)*(b*x+a)/a^2/x^(3/2
)/((b*x+a)^2)^(1/2)-2*b^(3/2)*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1
/2))/a^(7/2)/((b*x+a)^2)^(1/2)-2*b*(A*b-B*a)*(b*x+a)/a^3/x^(1/2)/((b*x+a)^2
)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$-\frac{2b(a+bx)(Ab-aB)}{a^3\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(Ab-aB)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b^{3/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+b}{5ax^{5/2}\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(5*a*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(3*a^2*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*(A*b - a
*B)*(a + b*x))/(a^3*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b^(3/2)*(A*
b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{5Ab^2}{2}+\frac{5abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{5/2}\left(ab+b^2x\right)}\,dx}{5ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2\left(-\frac{5Ab^2}{2}+\frac{5abB}{2}\right.\right.}{5a^2\sqrt{}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{a^3\sqrt{x}\sqrt{a^2+2abx}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{a^3\sqrt{x}\sqrt{a^2+2abx}}$$

$$= -\frac{2A(a+bx)}{5ax^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{3a^2x^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{a^3\sqrt{x}\sqrt{a^2+2abx}}$$

Mathematica [**C**] time = 0.02, size = 60, normalized size = 0.32

$$-\frac{2(a+bx)\left({}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};-\frac{bx}{a}\right)(5aBx-5Abx)+3aA\right)}{15a^2x^{5/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(3*a*A + (-5*A*b*x + 5*a*B*x)*Hypergeometric2F1[-3/2, 1, -1/2
, -((b*x)/a)]))/(15*a^2*x^(5/2)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 1.13, size = 195, normalized size = 1.03

$$\left[-\frac{15\left(Bab-Ab^2\right)x^3\sqrt{-\frac{b}{a}}\log\left(\frac{bx-2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(3Aa^2-15\left(Bab-Ab^2\right)x^2+5\left(Ba^2-Aab\right)x\right)\sqrt{x}}{15a^3x^3}, -\frac{2\left(15\left(\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*(B*a*b - A*b^2)*x^3*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a)
 - a)/(b*x + a)) + 2*(3*A*a^2 - 15*(B*a*b - A*b^2)*x^2 + 5*(B*a^2 - A*a*b)*
x)*sqrt(x))/(a^3*x^3), -2/15*(15*(B*a*b - A*b^2)*x^3*sqrt(b/a)*arctan(a*sqr
t(b/a)/(b*sqrt(x))) + (3*A*a^2 - 15*(B*a*b - A*b^2)*x^2 + 5*(B*a^2 - A*a*b)
*x)*sqrt(x))/(a^3*x^3)]
```

giac [A]   time = 0.16, size = 122, normalized size = 0.64

$$\frac{2\left(Bab^{2}\mathrm{sgn}\left(bx+a\right)-Ab^{3}\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^{3}}+\frac{2\left(15\,Babx^{2}\mathrm{sgn}\left(bx+a\right)-15\,Ab^{2}x^{2}\mathrm{sgn}\left(bx+a\right)-5\,Ba^{2}x}{15\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3) + 2/15*(15*B*a*b*x^2*sgn(b*x + a) - 15*A*b^2*x^2*sgn(b*x + a
) - 5*B*a^2*x*sgn(b*x + a) + 5*A*a*b*x*sgn(b*x + a) - 3*A*a^2*sgn(b*x + a))
/(a^3*x^(5/2))
```

maple [A]   time = 0.06, size = 131, normalized size = 0.69

$$-\frac{2\left(bx+a\right)\left(15A\,b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-15Ba\,b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15\sqrt{ab}\;A\,b^{2}x^{2}-15\sqrt{ab}\;Bab\,x^{2}-5\sqrt{ab}\;Aabx+}{15\sqrt{\left(bx+a\right)^{2}}\;\sqrt{ab}\;a^{3}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/15*(b*x+a)*(15*A*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^3-15*B*x^(5/2
)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^2+15*A*x^2*(a*b)^(1/2)*b^2-15*B*x^2*(
a*b)^(1/2)*a*b-5*A*x*(a*b)^(1/2)*a*b+5*B*x*(a*b)^(1/2)*a^2+3*A*a^2*(a*b)^(1
/2))/((b*x+a)^2)^(1/2)/a^3/(a*b)^(1/2)/x^(5/2)
```

maxima [B]   time = 1.65, size = 305, normalized size = 1.61

$$\frac{5\left(\left(3\,Bab^{4}-5\,Ab^{5}\right)x^{2}+3\left(5\,Ba^{2}b^{3}-7\,Aab^{4}\right)x\right)\sqrt{x}-\frac{10\left(\left(3\,Ba^{2}b^{3}-5\,Aab^{4}\right)x^{2}-3\left(5\,Ba^{3}b^{2}-7\,Aa^{2}b^{3}\right)x\right)}{\sqrt{x}}-\frac{10\left(3\left(3\,Ba^{3}b^{2}-5\,Aa^{2}b^{3}\right)x}{x^{\frac{3}{2}}}}{15\left(a^{5}bx+a^{6}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/15*(5*((3*B*a*b^4 - 5*A*b^5)*x^2 + 3*(5*B*a^2*b^3 - 7*A*a*b^4)*x)*sqrt(x)
 - 10*((3*B*a^2*b^3 - 5*A*a*b^4)*x^2 - 3*(5*B*a^3*b^2 - 7*A*a^2*b^3)*x)/sqr
t(x) - 10*(3*(3*B*a^3*b^2 - 5*A*a^2*b^3)*x^2 - (5*B*a^4*b - 7*A*a^3*b^2)*x)
/x^(3/2) - 2*(5*(3*B*a^4*b - 5*A*a^3*b^2)*x^2 + (5*B*a^5 - 7*A*a^4*b)*x)/x^
(5/2) - 2*(5*A*a^4*b*x^2 + 3*A*a^5*x)/x^(7/2))/(a^5*b*x + a^6) + 2*(B*a*b^2
 - A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3) - 1/3*((3*B*a*b^3 - 5
*A*b^4)*x^(3/2) + 6*(B*a^2*b^2 - A*a*b^3)*sqrt(x))/a^5
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^{7/2}\,\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*((a + b*x)^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.817 $\int \frac{A+Bx}{x^{9/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=238

$$\frac{2(a+bx)(Ab-aB)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^{5/2}(a+bx)(Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{a^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^2(a+bx)(Ab}{a^4\sqrt{x}\sqrt{a^2+2abx}}$$

```
[Out] -2/7*A*(b*x+a)/a/x^(7/2)/((b*x+a)^2)^(1/2)+2/5*(A*b-B*a)*(b*x+a)/a^2/x^(5/2
)/((b*x+a)^2)^(1/2)-2/3*b*(A*b-B*a)*(b*x+a)/a^3/x^(3/2)/((b*x+a)^2)^(1/2)+2
*b^(5/2)*(A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(9/2)/((b*x+a)
^2)^(1/2)+2*b^2*(A*b-B*a)*(b*x+a)/a^4/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{2b^2(a+bx)(Ab-aB)}{a^4\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{2b(a+bx)(Ab-aB)}{3a^3x^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(Ab-aB)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2b^{5/2}(a+bx)(Ab-aB)\tan^{-}}{a^{9/2}\sqrt{a^2+2abx+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*A*(a + b*x))/(7*a*x^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*
B)*(a + b*x))/(5*a^2*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*(A*b - a
*B)*(a + b*x))/(3*a^3*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b^2*(A*b
- a*B)*(a + b*x))/(a^4*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b^(5/2)*
(A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(a^(9/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{x^{9/2}\left(ab+b^2x\right)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(-\frac{7Ab^2}{2}+\frac{7abB}{2}\right)\left(ab+b^2x\right)\right)\int \frac{1}{x^{7/2}\left(ab+b^2x\right)}\,dx}{7ab\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(2\left(-\frac{7Ab^2}{2}+\frac{7abB}{2}\right.\right.}{7a^2\sqrt{a}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{3a^3x^{3/2}\sqrt{a^2+2ab}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{3a^3x^{3/2}\sqrt{a^2+2ab}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{3a^3x^{3/2}\sqrt{a^2+2ab}}$$

$$= -\frac{2A(a+bx)}{7ax^{7/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)}{5a^2x^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{2b(Ab-aB)(a}{3a^3x^{3/2}\sqrt{a^2+2ab}}$$

Mathematica [C] time = 0.02, size = 60, normalized size = 0.25

$$-\frac{2(a+bx)\left({}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};-\frac{bx}{a}\right)(7aBx-7Abx)+5aA\right)}{35a^2x^{7/2}\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x)*(5*a*A + (-7*A*b*x + 7*a*B*x)*Hypergeometric2F1[-5/2, 1, -3/2
, -((b*x)/a)]))/(35*a^2*x^(7/2)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.13, size = 246, normalized size = 1.03

$$\left[-\frac{105\left(Bab^2-Ab^3\right)x^4\sqrt{-\frac{b}{a}}\log\left(\frac{bx+2a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(15Aa^3+105\left(Bab^2-Ab^3\right)x^3-35\left(Ba^2b-Aab^2\right)x^2+2\right.}{105a^4x^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*(B*a*b^2 - A*b^3)*x^4*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-
b/a) - a)/(b*x + a)) + 2*(15*A*a^3 + 105*(B*a*b^2 - A*b^3)*x^3 - 35*(B*a^2*
b - A*a*b^2)*x^2 + 21*(B*a^3 - A*a^2*b)*x)*sqrt(x))/(a^4*x^4), 2/105*(105*(
B*a*b^2 - A*b^3)*x^4*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (15*A*a^3
+ 105*(B*a*b^2 - A*b^3)*x^3 - 35*(B*a^2*b - A*a*b^2)*x^2 + 21*(B*a^3 - A*a^
2*b)*x)*sqrt(x))/(a^4*x^4)]
```

giac [**A**] time = 0.18, size = 158, normalized size = 0.66

$$-\frac{2\left(Bab^3\operatorname{sgn}(bx+a) - Ab^4\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{\sqrt{ab}\,a^4} - \frac{2\left(105\,Bab^2x^3\operatorname{sgn}(bx+a) - 105\,Ab^3x^3\operatorname{sgn}(bx+a) - 3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*arctan(b*sqrt(x)/sqrt(a*b))/
(sqrt(a*b)*a^4) - 2/105*(105*B*a*b^2*x^3*sgn(b*x + a) - 105*A*b^3*x^3*sgn(b
*x + a) - 35*B*a^2*b*x^2*sgn(b*x + a) + 35*A*a*b^2*x^2*sgn(b*x + a) + 21*B*
a^3*x*sgn(b*x + a) - 21*A*a^2*b*x*sgn(b*x + a) + 15*A*a^3*sgn(b*x + a))/(a^
4*x^(7/2))
```

maple [**A**] time = 0.07, size = 165, normalized size = 0.69

$$\frac{2(bx+a)\left(105A\,b^4x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 105Ba\,b^3x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 105\sqrt{ab}\;A\,b^3x^3 - 105\sqrt{ab}\;Ba\,b^2x^3 - 35\sqrt{ab}\;A\right.}{105\sqrt{(bx+a)^2}\;\sqrt{ab}\;a^4x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(105*A*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*b^4-105*B*x^(7
/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^3+105*A*x^3*(a*b)^(1/2)*b^3-105*B*x
^3*(a*b)^(1/2)*a*b^2-35*A*x^2*(a*b)^(1/2)*a*b^2+35*B*x^2*(a*b)^(1/2)*a^2*b+
21*A*x*(a*b)^(1/2)*a^2*b-21*B*x*(a*b)^(1/2)*a^3-15*A*a^3*(a*b)^(1/2))/((b*x
+a)^2)^(1/2)/a^4/(a*b)^(1/2)/x^(7/2)
```

maxima [**B**] time = 1.51, size = 357, normalized size = 1.50

$$-\frac{35\left(\left(5\,Bab^5 - 7\,Ab^6\right)x^2 + 3\left(7\,Ba^2b^4 - 9\,Aab^5\right)x\right)\sqrt{x} - \frac{70\left(\left(5\,Ba^2b^4-7\,Aab^5\right)x^2-3\left(7\,Ba^3b^3-9\,Aa^2b^4\right)x\right)}{\sqrt{x}} - \frac{70\left(3\left(5\,Ba^3b^3-7\,Aa^2b\right.\right.}{}}{105\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/105*(35*((5*B*a*b^5 - 7*A*b^6)*x^2 + 3*(7*B*a^2*b^4 - 9*A*a*b^5)*x)*sqrt
(x) - 70*((5*B*a^2*b^4 - 7*A*a*b^5)*x^2 - 3*(7*B*a^3*b^3 - 9*A*a^2*b^4)*x)/
sqrt(x) - 70*(3*(5*B*a^3*b^3 - 7*A*a^2*b^4)*x^2 - (7*B*a^4*b^2 - 9*A*a^3*b^
3)*x)/x^(3/2) - 14*(5*(5*B*a^4*b^2 - 7*A*a^3*b^3)*x^2 + (7*B*a^5*b - 9*A*a^
4*b^2)*x)/x^(5/2) + 2*(7*(5*B*a^5*b - 7*A*a^4*b^2)*x^2 + 3*(7*B*a^6 - 9*A*a
^5*b)*x)/x^(7/2) + 6*(7*A*a^5*b*x^2 + 5*A*a^6*x)/x^(9/2))/(a^6*b*x + a^7) -
 2*(B*a*b^3 - A*b^4)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + 1/3*((5*
B*a*b^4 - 7*A*b^5)*x^(3/2) + 6*(B*a^2*b^3 - A*a*b^4)*sqrt(x))/a^6
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{9/2}\,\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*((a + b*x)^2)^(1/2)),x)
[Out] int((A + B*x)/(x^(9/2)*((a + b*x)^2)^(1/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.818 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=302

$$\frac{x^{9/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(5Ab-9aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7a\sqrt{x}\,(a+bx)(5Ab-9aB)}{4b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{3/2}(a+bx)(5Ab-9aB}{12b^4\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/4*(5*A*b-9*B*a)*x^(7/2)/a/b^2/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*x^(9/2)/a/b
/(b*x+a)/((b*x+a)^2)^(1/2)+7/12*(5*A*b-9*B*a)*x^(3/2)*(b*x+a)/b^4/((b*x+a)^
2)^(1/2)-7/20*(5*A*b-9*B*a)*x^(5/2)*(b*x+a)/a/b^3/((b*x+a)^2)^(1/2)+7/4*a^(
3/2)*(5*A*b-9*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(11/2)/((b*x+a
)^2)^(1/2)-7/4*a*(5*A*b-9*B*a)*(b*x+a)*x^(1/2)/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(5Ab-9aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7x^{5/2}(a+bx)(5Ab-9aB)}{20ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{3/2}(a+bx)(5Ab-9aB)}{12b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((5*A*b - 9*a*B)*x^(7/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
 a*B)*x^(9/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*a*(5*A*
b - 9*a*B)*Sqrt[x]*(a + b*x))/(4*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(5
*A*b - 9*a*B)*x^(3/2)*(a + b*x))/(12*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
7*(5*A*b - 9*a*B)*x^(5/2)*(a + b*x))/(20*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (7*a^(3/2)*(5*A*b - 9*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]]
)/(4*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{7/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((5Ab-9aB)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\Big(7(5Ab-9aB)\Big(a}{8ab^2\sqrt{a^2+}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(5Ab-9aB)x^{5/2}}{20ab^3\sqrt{a^2+2abx}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{7(5Ab-9aB)x^{3/2}}{12b^4\sqrt{a^2+2abx}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{}}{4b^5\sqrt{a^2+2abx}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{}}{4b^5\sqrt{a^2+2abx}}$$

$$= \frac{(5Ab-9aB)x^{7/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7a(5Ab-9aB)\sqrt{}}{4b^5\sqrt{a^2+2abx}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.26

$$\frac{x^{9/2}\left(9a^2(Ab-aB)+(a+bx)^2(9aB-5Ab)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{18a^3b(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(9/2)*(9*a^2*(A*b - a*B) + (-5*A*b + 9*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 9/2, 11/2, -((b*x)/a)]))/(18*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.01, size = 408, normalized size = 1.35

$$\left[-\frac{105\left(9\,Ba^4-5\,Aa^3b+\left(9\,Ba^2b^2-5\,Aab^3\right)x^2+2\left(9\,Ba^3b-5\,Aa^2b^2\right)x\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx+2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(24\,Bb^4x^4\right.}{120\left(b^7x^2+2\,ab\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/120*(105*(9*B*a^4 - 5*A*a^3*b + (9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 2*(9*B*
a^3*b - 5*A*a^2*b^2)*x)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) - a)/(
b*x + a)) - 2*(24*B*b^4*x^4 + 945*B*a^4 - 525*A*a^3*b - 8*(9*B*a*b^3 - 5*A*
b^4)*x^3 + 56*(9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 175*(9*B*a^3*b - 5*A*a^2*b^2)
*x)*sqrt(x))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5), -1/60*(105*(9*B*a^4 - 5*A*a^3
*b + (9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 2*(9*B*a^3*b - 5*A*a^2*b^2)*x)*sqrt(a/
b)*arctan(b*sqrt(x)*sqrt(a/b)/a) - (24*B*b^4*x^4 + 945*B*a^4 - 525*A*a^3*b
- 8*(9*B*a*b^3 - 5*A*b^4)*x^3 + 56*(9*B*a^2*b^2 - 5*A*a*b^3)*x^2 + 175*(9*B
*a^3*b - 5*A*a^2*b^2)*x)*sqrt(x))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)]
```

giac [A] time = 0.22, size = 170, normalized size = 0.56

$$-\frac{7\left(9\,Ba^3-5\,Aa^2b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,b^5\mathrm{sgn}\left(bx+a\right)}+\frac{17\,Ba^3bx^{\frac{3}{2}}-13\,Aa^2b^2x^{\frac{3}{2}}+15\,Ba^4\sqrt{x}-11\,Aa^3b\sqrt{x}}{4\left(bx+a\right)^2b^5\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(3\,Bb^{12}x^{\frac{5}{2}}-15\,Bab^{11}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -7/4*(9*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^5*sgn(b
*x + a)) + 1/4*(17*B*a^3*b*x^(3/2) - 13*A*a^2*b^2*x^(3/2) + 15*B*a^4*sqrt(x
) - 11*A*a^3*b*sqrt(x))/((b*x + a)^2*b^5*sgn(b*x + a)) + 2/15*(3*B*b^12*x^(
5/2) - 15*B*a*b^11*x^(3/2) + 5*A*b^12*x^(3/2) + 90*B*a^2*b^10*sqrt(x) - 45*
A*a*b^11*sqrt(x))/(b^15*sgn(b*x + a))
```

maple [A] time = 0.07, size = 283, normalized size = 0.94

$$\frac{\left(24\sqrt{ab}\;B\,b^4x^{\frac{9}{2}}+525A\,a^2b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945B\,a^3b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+40\sqrt{ab}\;A\,b^4x^{\frac{7}{2}}-72\sqrt{ab}\;Ba\,b^3x^{\frac{7}{2}}+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*(24*(a*b)^(1/2)*B*b^4*x^(9/2)-72*(a*b)^(1/2)*B*a*b^3*x^(7/2)+40*(a*b)^
(1/2)*A*b^4*x^(7/2)+504*(a*b)^(1/2)*B*a^2*b^2*x^(5/2)-280*(a*b)^(1/2)*A*a*b
^3*x^(5/2)-875*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+525*A*arctan(1/(a*b)^(1/2)*b*x
^(1/2))*x^2*a^2*b^3+1575*(a*b)^(1/2)*B*a^3*b*x^(3/2)-945*B*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*x^2*a^3*b^2+1050*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^3*b^
2-1890*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^4*b-525*(a*b)^(1/2)*A*a^3*b*x^
(1/2)+525*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))+945*(a*b)^(1/2)*B*a^4*x^(
1/2)-945*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^5/((b
*x+a)^2)^(3/2)
```

maxima [A] time = 1.86, size = 273, normalized size = 0.90

$$\frac{16\,(3\,Bb^4x^2+5\,Bab^3x)x^{\frac{7}{2}}+(89\,(11\,Bab^3-5\,Ab^4)x^2+285\,(3\,Ba^2b^2-Aab^3)x)x^{\frac{5}{2}}+12\,(12\,(11\,Ba^2b^2-5\,Aab^3}{120\,(b^7x^3+3\,ab^6x^2+3\,a^2b^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/120*(16*(3*B*b^4*x^2 + 5*B*a*b^3*x)*x^(7/2) + (89*(11*B*a*b^3 - 5*A*b^4)*
x^2 + 285*(3*B*a^2*b^2 - A*a*b^3)*x)*x^(5/2) + 12*(12*(11*B*a^2*b^2 - 5*A*a
*b^3)*x^2 + 35*(3*B*a^3*b - A*a^2*b^2)*x)*x^(3/2) + 7*(9*(11*B*a^3*b - 5*A*
a^2*b^2)*x^2 + 25*(3*B*a^4 - A*a^3*b)*x)*sqrt(x))/(b^7*x^3 + 3*a*b^6*x^2 +
3*a^2*b^5*x + a^3*b^4) - 7/4*(9*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*
b))/(sqrt(a*b)*b^5) - 7/8*((11*B*a*b - 5*A*b^2)*x^(3/2) - 2*(9*B*a^2 - 5*A*
a*b)*sqrt(x))/b^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,(A+B\,x)}{{(a^2+2\,a\,b\,x+b^2\,x^2)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.819 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=255

$$\frac{x^{7/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{5/2}(3Ab-7aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{a}\,(a+bx)(3Ab-7aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(a+bx}{4b^4\sqrt{a^2+}}$$

```
[Out] 1/4*(3*A*b-7*B*a)*x^(5/2)/a/b^2/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*x^(7/2)/a/b
/(b*x+a)/((b*x+a)^2)^(1/2)-5/12*(3*A*b-7*B*a)*x^(3/2)*(b*x+a)/a/b^3/((b*x+a
)^2)^(1/2)-5/4*(3*A*b-7*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*a^(1/2
)/b^(9/2)/((b*x+a)^2)^(1/2)+5/4*(3*A*b-7*B*a)*(b*x+a)*x^(1/2)/b^4/((b*x+a)^
2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = $\{770, 78, 47, 50, 63, 205\}$

$$\frac{x^{7/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{5/2}(3Ab-7aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5x^{3/2}(a+bx)(3Ab-7aB)}{12ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(a+bx)(3Ab-7aB)}{4b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((3*A*b - 7*a*B)*x^(5/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
 a*B)*x^(7/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*(3*A*b
- 7*a*B)*Sqrt[x]*(a + b*x))/(4*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*(3*A
*b - 7*a*B)*x^(3/2)*(a + b*x))/(12*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
5*Sqrt[a]*(3*A*b - 7*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*b
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{5/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((3Ab-7aB)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(5(3Ab-7aB)(a}{8ab^2\sqrt{a^2+}}\\
&= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(3Ab-7aB)x^{3/2}}{12ab^3\sqrt{a^2+2abx}}\\
&= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}}{4b^4\sqrt{a^2+2abx}}\\
&= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}}{4b^4\sqrt{a^2+2abx}}\\
&= \frac{(3Ab-7aB)x^{5/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{5(3Ab-7aB)\sqrt{x}}{4b^4\sqrt{a^2+2abx}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.31

$$
\frac{x^{7/2}\left(7a^2(Ab-aB)+(a+bx)^2(7aB-3Ab)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{bx}{a}\right)\right)}{14a^3b(a+bx)\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(7/2)*(7*a^2*(A*b - a*B) + (-3*A*b + 7*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 7/2, 9/2, -((b*x)/a)]))/(14*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 1.04, size = 349, normalized size = 1.37

$$\left[-\frac{15\left(7\,Ba^{3}-3\,Aa^{2}b+\left(7\,Bab^{2}-3\,Ab^{3}\right)x^{2}+2\left(7\,Ba^{2}b-3\,Aab^{2}\right)x\right)\sqrt{-\frac{a}{b}}\,\log\left(\frac{bx-2\,b\sqrt{x}\,\sqrt{-\frac{a}{b}}-a}{bx+a}\right)-2\left(8\,Bb^{3}x^{3}-105\right.}{24\left(b^{6}x^{2}+2\,ab^{5}x+a^{2}b^{4}\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/24*(15*(7*B*a^3 - 3*A*a^2*b + (7*B*a*b^2 - 3*A*b^3)*x^2 + 2*(7*B*a^2*b
- 3*A*a*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x + a)
) - 2*(8*B*b^3*x^3 - 105*B*a^3 + 45*A*a^2*b - 8*(7*B*a*b^2 - 3*A*b^3)*x^2 -
 25*(7*B*a^2*b - 3*A*a*b^2)*x)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4), 1/
12*(15*(7*B*a^3 - 3*A*a^2*b + (7*B*a*b^2 - 3*A*b^3)*x^2 + 2*(7*B*a^2*b - 3*
A*a*b^2)*x)*sqrt(a/b)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (8*B*b^3*x^3 - 105*B*
a^3 + 45*A*a^2*b - 8*(7*B*a*b^2 - 3*A*b^3)*x^2 - 25*(7*B*a^2*b - 3*A*a*b^2)
*x)*sqrt(x))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)]
```

giac [**A**] time = 0.26, size = 143, normalized size = 0.56

$$\frac{5\left(7\,Ba^{2}-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,b^{4}\mathrm{sgn}\left(bx+a\right)}-\frac{13\,Ba^{2}bx^{\frac{3}{2}}-9\,Aab^{2}x^{\frac{3}{2}}+11\,Ba^{3}\sqrt{x}-7\,Aa^{2}b\sqrt{x}}{4\left(bx+a\right)^{2}b^{4}\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(Bb^{6}x^{\frac{3}{2}}-9\,Bab^{5}\sqrt{x}+3\,A\right.}{3\,b^{9}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 5/4*(7*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4*sgn(b*x
+ a)) - 1/4*(13*B*a^2*b*x^(3/2) - 9*A*a*b^2*x^(3/2) + 11*B*a^3*sqrt(x) - 7*
A*a^2*b*sqrt(x))/((b*x + a)^2*b^4*sgn(b*x + a)) + 2/3*(B*b^6*x^(3/2) - 9*B*
a*b^5*sqrt(x) + 3*A*b^6*sqrt(x))/(b^9*sgn(b*x + a))
```

maple [**A**] time = 0.07, size = 247, normalized size = 0.97

$$\frac{\left(-45Aa\,b^{3}x^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105B\,a^{2}b^{2}x^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+8\sqrt{ab}\;B\,b^{3}x^{\frac{7}{2}}-90A\,a^{2}b^{2}x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+210B\,a^{3}bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(8*(a*b)^(1/2)*B*b^3*x^(7/2)-56*(a*b)^(1/2)*B*a*b^2*x^(5/2)+75*(a*b)^(
1/2)*A*a*b^2*x^(3/2)+24*(a*b)^(1/2)*A*b^3*x^(5/2)-45*A*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^2*a*b^3-175*(a*b)^(1/2)*B*a^2*b*x^(3/2)+105*B*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^2*a^2*b^2-90*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^2*b^2
+210*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^3*b+45*(a*b)^(1/2)*A*a^2*b*x^(1/
2)-45*A*a^3*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-105*(a*b)^(1/2)*B*a^3*x^(1/2)
+105*B*a^4*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^4/((b*x+a
)^2)^(3/2)
```

maxima [**A**] time = 1.70, size = 252, normalized size = 0.99

$$-\frac{\left(\left(89\,Bab^{3}-35\,Ab^{4}\right)x^{2}+3\left(19\,Ba^{2}b^{2}-5\,Aab^{3}\right)x\right)x^{\frac{5}{2}}+12\left(4\left(3\,Ba^{2}b^{2}-Aab^{3}\right)x^{2}+\left(7\,Ba^{3}b-Aa^{2}b^{2}\right)x\right)x^{\frac{3}{2}}+\left(21\right.}{24\left(ab^{6}x^{3}+3\,a^{2}b^{5}x^{2}+3\,a^{3}b^{4}x+a^{4}b^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] -1/24*(((89*B*a*b^3 - 35*A*b^4)*x^2 + 3*(19*B*a^2*b^2 - 5*A*a*b^3)*x)*x^(5/
2) + 12*(4*(3*B*a^2*b^2 - A*a*b^3)*x^2 + (7*B*a^3*b - A*a^2*b^2)*x)*x^(3/2)
 + (21*(3*B*a^3*b - A*a^2*b^2)*x^2 + 5*(7*B*a^4 - A*a^3*b)*x)*sqrt(x))/(a*b
^6*x^3 + 3*a^2*b^5*x^2 + 3*a^3*b^4*x + a^4*b^3) + 5/4*(7*B*a^2 - 3*A*a*b)*a
rctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^4) + 5/24*(7*(3*B*a*b - A*b^2)*x^(3
/2) - 6*(7*B*a^2 - 3*A*a*b)*sqrt(x))/(a*b^4)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.820 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=206

$$\frac{x^{5/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-5aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3(a+bx)(Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4\sqrt{a}\,b^{7/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{3\sqrt{x}\,(a+bx)(Ab}{4ab^3\sqrt{a^2+2abx}}$$

```
[Out] 1/4*(A*b-5*B*a)*x^(3/2)/a/b^2/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*x^(5/2)/a/b/(
b*x+a)/((b*x+a)^2)^(1/2)+3/4*(A*b-5*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(
1/2))/b^(7/2)/a^(1/2)/((b*x+a)^2)^(1/2)-3/4*(A*b-5*B*a)*(b*x+a)*x^(1/2)/a/b
^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{5/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-5aB)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3\sqrt{x}\,(a+bx)(Ab-5aB)}{4ab^3\sqrt{a^2+2abx+b^2x^2}}+\frac{3(a+bx)(Ab-5aB)\tan^{-1}}{4\sqrt{a}\,b^{7/2}\sqrt{a^2+2abx+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - 5*a*B)*x^(3/2))/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a
*B)*x^(5/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(A*b - 5*
a*B)*Sqrt[x]*(a + b*x))/(4*a*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*(A*b -
 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*Sqrt[a]*b^(7/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{x^{3/2}(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(3(Ab-5aB)(ab}{8ab^2\sqrt{a^2+}}\\
&= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(}{4ab^3\sqrt{a^2+2abx}}\\
&= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(}{4ab^3\sqrt{a^2+2abx}}\\
&= \frac{(Ab-5aB)x^{3/2}}{4ab^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{3(Ab-5aB)\sqrt{x}\,(}{4ab^3\sqrt{a^2+2abx}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.38

$$
\frac{x^{5/2}\left(5a^2(Ab-aB)+(a+bx)^2(5aB-Ab)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{bx}{a}\right)\right)}{10a^3b(a+bx)\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x^(5/2)*(5*a^2*(A*b - a*B) + (-(A*b) + 5*a*B)*(a + b*x)^2*Hypergeometric2F
1[2, 5/2, 7/2, -((b*x)/a)]))/(10*a^3*b*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.07, size = 319, normalized size = 1.55

$$\left[\frac{3\left(5\,Ba^3 - Aa^2b + \left(5\,Bab^2 - Ab^3\right)x^2 + 2\left(5\,Ba^2b - Aab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right) + 2\left(8\,Bab^3x^2 + 15\,Ba^3b -\right.}{8\left(ab^6x^2 + 2\,a^2b^5x + a^3b^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [1/8*(3*(5*B*a^3 - A*a^2*b + (5*B*a*b^2 - A*b^3)*x^2 + 2*(5*B*a^2*b - A*a*b
^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(8*B*
a*b^3*x^2 + 15*B*a^3*b - 3*A*a^2*b^2 + 5*(5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x)
)/(a*b^6*x^2 + 2*a^2*b^5*x + a^3*b^4), 1/4*(3*(5*B*a^3 - A*a^2*b + (5*B*a*b
^2 - A*b^3)*x^2 + 2*(5*B*a^2*b - A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*
sqrt(x))) + (8*B*a*b^3*x^2 + 15*B*a^3*b - 3*A*a^2*b^2 + 5*(5*B*a^2*b^2 - A*
a*b^3)*x)*sqrt(x))/(a*b^6*x^2 + 2*a^2*b^5*x + a^3*b^4)]
```

giac [A] time = 0.21, size = 111, normalized size = 0.54

$$\frac{2\,B\sqrt{x}}{b^3\mathrm{sgn}\left(bx+a\right)} - \frac{3\left(5\,Ba - Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,b^3\mathrm{sgn}\left(bx+a\right)} + \frac{9\,Babx^{\frac{3}{2}} - 5\,Ab^2x^{\frac{3}{2}} + 7\,Ba^2\sqrt{x} - 3\,Aab\sqrt{x}}{4\left(bx+a\right)^2b^3\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/(b^3*sgn(b*x + a)) - 3/4*(5*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*
b))/(sqrt(a*b)*b^3*sgn(b*x + a)) + 1/4*(9*B*a*b*x^(3/2) - 5*A*b^2*x^(3/2) +
 7*B*a^2*sqrt(x) - 3*A*a*b*sqrt(x))/((b*x + a)^2*b^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 208, normalized size = 1.01

$$-\frac{\left(-3A\,b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 15Ba\,b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 6Aa\,b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 30B\,a^2bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) - 8\sqrt{ab}\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(5*(a*b)^(1/2)*A*b^2*x^(3/2)-3*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^2*b
^3-25*(a*b)^(1/2)*B*a*b*x^(3/2)-8*(a*b)^(1/2)*B*b^2*x^(5/2)+15*B*arctan(1/(
a*b)^(1/2)*b*x^(1/2))*x^2*a*b^2-6*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a*b^2
+30*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^2*b+3*(a*b)^(1/2)*A*a*b*x^(1/2)-3
*A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^2*x^(1/2)+15*B*
a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^3/((b*x+a)^2)^(3
/2)
```

maxima [A] time = 1.58, size = 237, normalized size = 1.15

$$\frac{\left(5\left(7\,Bab^3 - Ab^4\right)x^2 + 3\left(5\,Ba^2b^2 + Aab^3\right)x\right)x^{\frac{5}{2}} + 12\left(4\,Ba^2b^2x^2 + \left(Ba^3b + Aa^2b^2\right)x\right)x^{\frac{3}{2}} + \left(3\left(7\,Ba^3b - Aa^2b^2\right)x^2\right.}{24\left(a^2b^5x^3 + 3\,a^3b^4x^2 + 3\,a^4b^3x + a^5b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*((5*(7*B*a*b^3 - A*b^4)*x^2 + 3*(5*B*a^2*b^2 + A*a*b^3)*x)*x^(5/2) + 1
2*(4*B*a^2*b^2*x^2 + (B*a^3*b + A*a^2*b^2)*x)*x^(3/2) + (3*(7*B*a^3*b - A*a
^2*b^2)*x^2 + (5*B*a^4 + A*a^3*b)*x)*sqrt(x))/(a^2*b^5*x^3 + 3*a^3*b^4*x^2
+ 3*a^4*b^3*x + a^5*b^2) - 3/4*(5*B*a - A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(s
qrt(a*b)*b^3) - 1/24*(5*(7*B*a*b - A*b^2)*x^(3/2) - 18*(5*B*a^2 - A*a*b)*sq
rt(x))/(a^2*b^3)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{3/2}\,(A+B\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.821 $\int \frac{\sqrt{x}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{x}(3aB+Ab)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/2*(A*b-B*a)*x^(3/2)/a/b/(b*x+a)/((b*x+a)^2)^(1/2)+1/4*(A*b+3*B*a)*(b*x+a)
*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(3/2)/b^(5/2)/((b*x+a)^2)^(1/2)-1/4*(A*b
+3*B*a)*x^(1/2)/a/b^2/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 47, 63, 205\}$

$$\frac{x^{3/2}(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}(3aB+Ab)}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((A*b + 3*a*B)*Sqrt[x])/(4*a*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b -
a*B)*x^(3/2))/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b + 3*a
*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*b^(5/2)*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}\,(A+Bx)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left((Ab+3aB)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left((Ab+3aB)\left(a\right.\right.}{8ab^2\sqrt{a}}\\
&= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left((Ab+3aB)\left(a\right.\right.}{4}\\
&= -\frac{(Ab+3aB)\sqrt{x}}{4ab^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)x^{3/2}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab+3aB)(a+}{4a^{3/2}b^{5/2}\sqrt{a^2}}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 105, normalized size = 0.66

$$
\frac{\sqrt{a}\,\sqrt{b}\,\sqrt{x}\,\left(-3a^2B-ab(A+5Bx)+Ab^2x\right)+(a+bx)^2(3aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{3/2}b^{5/2}(a+bx)\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (Sqrt[a]*Sqrt[b]*Sqrt[x]*(-3*a^2*B + A*b^2*x - a*b*(A + 5*B*x)) + (A*b + 3*
a*B)*(a + b*x)^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(3/2)*b^(5/2)*(a +
 b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.97, size = 291, normalized size = 1.84

$$
\left[-\frac{\left(3\,Ba^3+Aa^2b+\left(3\,Bab^2+Ab^3\right)x^2+2\left(3\,Ba^2b+Aab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(3\,Ba^3b+Aa^2b^2+\right.}{8\left(a^2b^5x^2+2\,a^3b^4x+a^4b^3\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/8*((3*B*a^3 + A*a^2*b + (3*B*a*b^2 + A*b^3)*x^2 + 2*(3*B*a^2*b + A*a*b^
2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(3*B*a
^3*b + A*a^2*b^2 + (5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x))/(a^2*b^5*x^2 + 2*a^3
*b^4*x + a^4*b^3), -1/4*((3*B*a^3 + A*a^2*b + (3*B*a*b^2 + A*b^3)*x^2 + 2*(
3*B*a^2*b + A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (3*B*a^3*
b + A*a^2*b^2 + (5*B*a^2*b^2 - A*a*b^3)*x)*sqrt(x))/(a^2*b^5*x^2 + 2*a^3*b^
4*x + a^4*b^3)]
```

giac [A] time = 0.30, size = 98, normalized size = 0.62

$$\frac{(3\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,ab^{2}\mathrm{sgn}\left(bx+a\right)}-\frac{5\,Babx^{\frac{3}{2}}-Ab^{2}x^{\frac{3}{2}}+3\,Ba^{2}\sqrt{x}+Aab\sqrt{x}}{4\,(bx+a)^{2}ab^{2}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*(3*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^2*sgn(b*x + a)
) - 1/4*(5*B*a*b*x^(3/2) - A*b^2*x^(3/2) + 3*B*a^2*sqrt(x) + A*a*b*sqrt(x))
/((b*x + a)^2*a*b^2*sgn(b*x + a))
```

maple [A] time = 0.07, size = 194, normalized size = 1.23

$$\frac{\left(A\,b^{3}x^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3Ba\,b^{2}x^{2}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+2Aa\,b^{2}x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+6B\,a^{2}bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+A\,a^{2}b\arctan\right.}{4\sqrt{ab}\,\left((bx+a)^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/4*((a*b)^(1/2)*A*b^2*x^(3/2)+A*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))-5*
(a*b)^(1/2)*B*a*b*x^(3/2)+3*B*a*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+2*A
*a*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+6*B*a^2*b*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))-(a*b)^(1/2)*A*a*b*x^(1/2)+A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))
-3*(a*b)^(1/2)*B*a^2*x^(1/2)+3*B*a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+
a)/(a*b)^(1/2)/b^2/a/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.68, size = 218, normalized size = 1.38

$$\frac{12\left(Ba^{3}b+Aa^{2}b^{2}\right)x^{\frac{5}{2}}-\left(\left(5\,Bab^{3}+Ab^{4}\right)x^{2}-3\left(Ba^{2}b^{2}+Aab^{3}\right)x\right)x^{\frac{5}{2}}-\left(3\left(Ba^{3}b-3\,Aa^{2}b^{2}\right)x^{2}-\left(Ba^{4}+17\,Aa^{3}b\right)x\right.}{24\left(a^{3}b^{4}x^{3}+3\,a^{4}b^{3}x^{2}+3\,a^{5}b^{2}x+a^{6}b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(12*(B*a^3*b + A*a^2*b^2)*x^(5/2) - ((5*B*a*b^3 + A*b^4)*x^2 - 3*(B*a^
2*b^2 + A*a*b^3)*x)*x^(5/2) - (3*(B*a^3*b - 3*A*a^2*b^2)*x^2 - (B*a^4 + 17*
A*a^3*b)*x)*sqrt(x))/(a^3*b^4*x^3 + 3*a^4*b^3*x^2 + 3*a^5*b^2*x + a^6*b) +
1/4*(3*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^2) + 1/24*((5*
B*a*b + A*b^2)*x^(3/2) - 6*(3*B*a^2 + A*a*b)*sqrt(x))/(a^3*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.822 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{x}\,(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+3Ab)}{4a^2b\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/4*(3*A*b+B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(5/2)/b^(3/2)/((b
*x+a)^2)^(1/2)+1/4*(3*A*b+B*a)*x^(1/2)/a^2/b/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a
)*x^(1/2)/a/b/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$\frac{\sqrt{x}\,(Ab-aB)}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+3Ab)}{4a^2b\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((3*A*b + a*B)*Sqrt[x])/(4*a^2*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a
*B)*Sqrt[x])/(2*a*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((3*A*b + a*
B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*b^(3/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)^2}\,dx}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\right.}{8a^2b}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+aB)\right.}{}$$

$$= \frac{(3Ab+aB)\sqrt{x}}{4a^2b\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)\sqrt{x}}{2ab(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab+aB)(a}{4a^{5/2}b^{3/2}\sqrt{}}$$

Mathematica [A] time = 0.05, size = 106, normalized size = 0.67

$$\frac{\sqrt{a}\sqrt{b}\sqrt{x}\left(a^2(-B)+ab(5A+Bx)+3Ab^2x\right)+(a+bx)^2(aB+3Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{5/2}b^{3/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[a]*Sqrt[b]*Sqrt[x]*(-(a^2*B) + 3*A*b^2*x + a*b*(5*A + B*x)) + (3*A*b
+ a*B)*(a + b*x)^2*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(5/2)*b^(3/2)*(a
 + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.75, size = 291, normalized size = 1.84

$$\left[-\frac{\left(Ba^3+3\,Aa^2b+\left(Bab^2+3\,Ab^3\right)x^2+2\left(Ba^2b+3\,Aab^2\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a-2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)+2\left(Ba^3b-5\,Aa^2b^2-\right.}{8\left(a^3b^4x^2+2\,a^4b^3x+a^5b^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/8*((B*a^3 + 3*A*a^2*b + (B*a*b^2 + 3*A*b^3)*x^2 + 2*(B*a^2*b + 3*A*a*b^
2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(B*a^3
*b - 5*A*a^2*b^2 - (B*a^2*b^2 + 3*A*a*b^3)*x)*sqrt(x))/(a^3*b^4*x^2 + 2*a^4
*b^3*x + a^5*b^2), -1/4*((B*a^3 + 3*A*a^2*b + (B*a*b^2 + 3*A*b^3)*x^2 + 2*(
B*a^2*b + 3*A*a*b^2)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (B*a^3*b
- 5*A*a^2*b^2 - (B*a^2*b^2 + 3*A*a*b^3)*x)*sqrt(x))/(a^3*b^4*x^2 + 2*a^4*b^
3*x + a^5*b^2)]
```

giac [A] time = 0.23, size = 98, normalized size = 0.62

$$\frac{(Ba + 3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^2b\mathrm{sgn}\,(bx+a)} + \frac{Babx^{\frac{3}{2}} + 3\,Ab^2x^{\frac{3}{2}} - Ba^2\sqrt{x} + 5\,Aab\sqrt{x}}{4\,(bx+a)^2a^2b\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b*sgn(b*x + a)
) + 1/4*(B*a*b*x^(3/2) + 3*A*b^2*x^(3/2) - B*a^2*sqrt(x) + 5*A*a*b*sqrt(x))
/((b*x + a)^2*a^2*b*sgn(b*x + a))
```

maple [A] time = 0.07, size = 194, normalized size = 1.23

$$\frac{\left(3A\,b^3x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + Ba\,b^2x^2\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 6Aa\,b^2x\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 2B\,a^2bx\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right) + 3A\,a^2b\,\mathrm{arctar}\right.}{4\sqrt{ab}\,\left((bx+a)^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x)
```

```
[Out] 1/4*(3*(a*b)^(1/2)*A*b^2*x^(3/2)+3*A*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2)
)+(a*b)^(1/2)*B*a*b*x^(3/2)+B*a*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+6*A
*a*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+2*B*a^2*b*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+5*(a*b)^(1/2)*A*a*b*x^(1/2)+3*A*a^2*b*arctan(1/(a*b)^(1/2)*b*x^(1
/2))-(a*b)^(1/2)*B*a^2*x^(1/2)+B*a^3*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+
a)/(a*b)^(1/2)/b/a^2/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.71, size = 234, normalized size = 1.48

$$\frac{12\left(Ba^3b + 5\,Aa^2b^2\right)x^{\frac{5}{2}} - \left(\left(Bab^3 + Ab^4\right)x^2 - 3\left(Ba^2b^2 + 5\,Aab^3\right)x\right)x^{\frac{5}{2}} + \left(9\left(Ba^3b + Aa^2b^2\right)x^2 + 17\left(Ba^4 + 5\,Aa^3b\right.\right.}{24\left(a^4b^3x^3 + 3\,a^5b^2x^2 + 3\,a^6bx + a^7\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(12*(B*a^3*b + 5*A*a^2*b^2)*x^(5/2) - ((B*a*b^3 + A*b^4)*x^2 - 3*(B*a^
2*b^2 + 5*A*a*b^3)*x)*x^(5/2) + (9*(B*a^3*b + A*a^2*b^2)*x^2 + 17*(B*a^4 +
5*A*a^3*b)*x)*sqrt(x) + 16*(A*a^3*b*x^2 + 3*A*a^4*x)/sqrt(x))/(a^4*b^3*x^3
+ 3*a^5*b^2*x^2 + 3*a^6*b*x + a^7) + 1/4*(B*a + 3*A*b)*arctan(b*sqrt(x)/sqr
t(a*b))/(sqrt(a*b)*a^2*b) + 1/24*((B*a*b + A*b^2)*x^(3/2) - 6*(B*a^2 + 3*A*
a*b)*sqrt(x))/(a^4*b)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x}\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/x**(1/2),x)
[Out] Integral((A + B*x)/(sqrt(x)*((a + b*x)**2)**(3/2)), x)
```

3.823 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=209

$$\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{x}}{\sqrt{a}}\right)}{4a^{7/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+}{4a^3b\sqrt{x}\,\surd}$$

```
[Out] -3/4*(5*A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(7/2)/b^(1/2)/((
b*x+a)^2)^(1/2)+1/4*(5*A*b-B*a)/a^2/b/x^(1/2)/((b*x+a)^2)^(1/2)+1/2*(A*b-B*
a)/a/b/(b*x+a)/x^(1/2)/((b*x+a)^2)^(1/2)-3/4*(5*A*b-B*a)*(b*x+a)/a^3/b/x^(1
/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-aB)}{4a^3b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{3(a+bx)(5Ab-}{4a^{7/2}\sqrt{b}\,\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (5*A*b - a*B)/(4*a^2*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*B)
/(2*a*b*Sqrt[x]*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(5*A*b - a*B)
*(a + b*x))/(4*a^3*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*(5*A*b - a
*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(7/2)*Sqrt[b]*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left((5Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+b^2x\right)}}{4a\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\big(3(5A\\
&= \frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3(5}{4a^3b\surd}\\
&= \frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3(5}{4a^3b\surd}\\
&= \frac{5Ab-aB}{4a^2b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2ab\sqrt{x}\,(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{3(5}{4a^3b\surd}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 77, normalized size = 0.37

$$
\frac{a^2(Ab-aB)+(a+bx)^2(aB-5Ab)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{bx}{a}\right)}{2a^3b\sqrt{x}\,(a+bx)\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (a^2*(A*b - a*B) + (-5*A*b + a*B)*(a + b*x)^2*Hypergeometric2F1[-1/2, 2, 1/
2, -((b*x)/a)])/(2*a^3*b*Sqrt[x]*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.18, size = 331, normalized size = 1.58

$$
\left[\frac{3\left(\left(Bab^2-5\,Ab^3\right)x^3+2\left(Ba^2b-5\,Aab^2\right)x^2+\left(Ba^3-5\,Aa^2b\right)x\right)\sqrt{-ab}\,\log\left(\frac{bx-a+2\,\sqrt{-ab}\,\sqrt{x}}{bx+a}\right)-2\left(8\,Aa^3b-3\,(B\right.}{8\left(a^4b^3x^3+2\,a^5b^2x^2+a^6bx\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [1/8*(3*((B*a*b^2 - 5*A*b^3)*x^3 + 2*(B*a^2*b - 5*A*a*b^2)*x^2 + (B*a^3 - 5
*A*a^2*b)*x)*sqrt(-a*b)*log((b*x - a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2
*(8*A*a^3*b - 3*(B*a^2*b^2 - 5*A*a*b^3)*x^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*x)*
sqrt(x))/(a^4*b^3*x^3 + 2*a^5*b^2*x^2 + a^6*b*x), -1/4*(3*((B*a*b^2 - 5*A*b
^3)*x^3 + 2*(B*a^2*b - 5*A*a*b^2)*x^2 + (B*a^3 - 5*A*a^2*b)*x)*sqrt(a*b)*ar
ctan(sqrt(a*b)/(b*sqrt(x))) + (8*A*a^3*b - 3*(B*a^2*b^2 - 5*A*a*b^3)*x^2 -
5*(B*a^3*b - 5*A*a^2*b^2)*x)*sqrt(x))/(a^4*b^3*x^3 + 2*a^5*b^2*x^2 + a^6*b*
x)]
```

giac [A] time = 0.21, size = 110, normalized size = 0.53

$$\frac{3\,(Ba-5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^{3}\mathrm{sgn}\left(bx+a\right)}-\frac{2\,A}{a^{3}\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)}+\frac{3\,Babx^{\frac{3}{2}}-7\,Ab^{2}x^{\frac{3}{2}}+5\,Ba^{2}\sqrt{x}-9\,Aab\sqrt{x}}{4\,(bx+a)^{2}a^{3}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 3/4*(B*a - 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*sgn(b*x + a))
- 2*A/(a^3*sqrt(x)*sgn(b*x + a)) + 1/4*(3*B*a*b*x^(3/2) - 7*A*b^2*x^(3/2) +
 5*B*a^2*sqrt(x) - 9*A*a*b*sqrt(x))/((b*x + a)^2*a^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 214, normalized size = 1.02

$$-\frac{(15A\,b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3Ba\,b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+30Aa\,b^{2}x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-6B\,a^{2}b\,x^{\frac{3}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15A}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(15*(a*b)^(1/2)*A*b^2*x^2+15*A*b^3*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1
/2))-3*(a*b)^(1/2)*B*a*b*x^2-3*B*a*b^2*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
2))+30*A*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^2-6*B*x^(3/2)*arctan(1
/(a*b)^(1/2)*b*x^(1/2))*a^2*b+25*(a*b)^(1/2)*A*a*b*x+15*A*x^(1/2)*arctan(1/
(a*b)^(1/2)*b*x^(1/2))*a^2*b-5*(a*b)^(1/2)*B*a^2*x-3*B*x^(1/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*a^3+8*(a*b)^(1/2)*A*a^2)*(b*x+a)/x^(1/2)/(a*b)^(1/2)/a^
3/((b*x+a)^2)^(3/2)
```

maxima [B] time = 1.65, size = 280, normalized size = 1.34

$$\frac{60\,(Ba^{3}b^{2}-7\,Aa^{2}b^{3})x^{\frac{5}{2}}-((Bab^{4}+5\,Ab^{5})x^{2}-15\,(Ba^{2}b^{3}-7\,Aab^{4})x)x^{\frac{5}{2}}+(9\,(Ba^{3}b^{2}+5\,Aa^{2}b^{3})x^{2}+85\,(Ba^{4}b-}{24\,(a^{5}b^{3}x^{3}+3\,a^{6}b^{2}x^{2}+3\,a^{7}bx+a^{8})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/24*(60*(B*a^3*b^2 - 7*A*a^2*b^3)*x^(5/2) - ((B*a*b^4 + 5*A*b^5)*x^2 - 15*
(B*a^2*b^3 - 7*A*a*b^4)*x)*x^(5/2) + (9*(B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 85*
(B*a^4*b - 7*A*a^3*b^2)*x)*sqrt(x) + 16*((B*a^4*b + 5*A*a^3*b^2)*x^2 + 3*(B
*a^5 - 7*A*a^4*b)*x)/sqrt(x) + 48*(A*a^4*b*x^2 - A*a^5*x)/x^(3/2))/(a^5*b^3
*x^3 + 3*a^6*b^2*x^2 + 3*a^7*b*x + a^8) + 3/4*(B*a - 5*A*b)*arctan(b*sqrt(x
)/sqrt(a*b))/(sqrt(a*b)*a^3) + 1/24*((B*a*b + 5*A*b^2)*x^(3/2) - 18*(B*a^2
- 5*A*a*b)*sqrt(x))/a^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{\frac{3}{2}} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**(3/2)*((a + b*x)**2)**(3/2)), x)
```

3.824 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=255

$$\frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{b}\,(a+bx)(7Ab-3aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{9/2}\sqrt{a^2+2abx+b^2x^2}}+$$

```
[Out] 1/4*(7*A*b-3*B*a)/a^2/b/x^(3/2)/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)/a/b/x^(3/2)
/(b*x+a)/((b*x+a)^2)^(1/2)-5/12*(7*A*b-3*B*a)*(b*x+a)/a^3/b/x^(3/2)/((b*x+a
)^2)^(1/2)+5/4*(7*A*b-3*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*b^(1/2
)/a^(9/2)/((b*x+a)^2)^(1/2)+5/4*(7*A*b-3*B*a)*(b*x+a)/a^4/x^(1/2)/((b*x+a)^
2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$\frac{5(a+bx)(7Ab-3aB)}{4a^4\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{5(a+bx)(7Ab-3aB)}{12a^3bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (7*A*b - 3*a*B)/(4*a^2*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*
B)/(2*a*b*x^(3/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*(7*A*b - 3*
a*B)*(a + b*x))/(12*a^3*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*(7*A*
b - 3*a*B)*(a + b*x))/(4*a^4*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*Sq
rt[b]*(7*A*b - 3*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4*a^(9/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((7Ab-3aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{5/2}\left(ab+b^2\right.}}{4a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \left(5(7A\right.$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(}{12a^3b}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(}{12a^3b}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(}{12a^3b}$$

$$= \frac{7Ab-3aB}{4a^2bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{5(}{12a^3b}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.31

$$\frac{3a^2(Ab-aB)+(a+bx)^2(3aB-7Ab)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{bx}{a}\right)}{6a^3bx^{3/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (3*a^2*(A*b - a*B) + (-7*A*b + 3*a*B)*(a + b*x)^2*Hypergeometric2F1[-3/2, 2
, -1/2, -((b*x)/a)])/(6*a^3*b*x^(3/2)*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.13, size = 380, normalized size = 1.49

$$\left[-\frac{15\left(\left(3\,Bab^2-7\,Ab^3\right)x^4+2\left(3\,Ba^2b-7\,Aab^2\right)x^3+\left(3\,Ba^3-7\,Aa^2b\right)x^2\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx+2\,a\sqrt{x}\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\left(8\,Aa\right.}{24\left(a^4b^2x^4+2\,a^5bx^3+a^6x^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/24*(15*((3*B*a*b^2 - 7*A*b^3)*x^4 + 2*(3*B*a^2*b - 7*A*a*b^2)*x^3 + (3*
B*a^3 - 7*A*a^2*b)*x^2)*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) - a)/(
b*x + a)) + 2*(8*A*a^3 + 15*(3*B*a*b^2 - 7*A*b^3)*x^3 + 25*(3*B*a^2*b - 7*A
*a*b^2)*x^2 + 8*(3*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b^2*x^4 + 2*a^5*b*x^
3 + a^6*x^2), 1/12*(15*((3*B*a*b^2 - 7*A*b^3)*x^4 + 2*(3*B*a^2*b - 7*A*a*b^
2)*x^3 + (3*B*a^3 - 7*A*a^2*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x)
)) - (8*A*a^3 + 15*(3*B*a*b^2 - 7*A*b^3)*x^3 + 25*(3*B*a^2*b - 7*A*a*b^2)*x
^2 + 8*(3*B*a^3 - 7*A*a^2*b)*x)*sqrt(x))/(a^4*b^2*x^4 + 2*a^5*b*x^3 + a^6*x
^2)]
```

giac [A] time = 0.21, size = 132, normalized size = 0.52

$$-\frac{5\left(3\,Bab-7\,Ab^{2}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\,\sqrt{ab}\,a^{4}\mathrm{sgn}\left(bx+a\right)}-\frac{2\left(3\,Bax-9\,Abx+Aa\right)}{3\,a^{4}x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)}-\frac{7\,Bab^{2}x^{\frac{3}{2}}-11\,Ab^{3}x^{\frac{3}{2}}+9\,Ba^{2}b\sqrt{x}-13\,Aab^{2}\sqrt{x}}{4\left(bx+a\right)^{2}a^{4}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -5/4*(3*B*a*b - 7*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*sgn(b*x
 + a)) - 2/3*(3*B*a*x - 9*A*b*x + A*a)/(a^4*x^(3/2)*sgn(b*x + a)) - 1/4*(7*
B*a*b^2*x^(3/2) - 11*A*b^3*x^(3/2) + 9*B*a^2*b*sqrt(x) - 13*A*a*b^2*sqrt(x)
)/((b*x + a)^2*a^4*sgn(b*x + a))
```

maple [A] time = 0.07, size = 253, normalized size = 0.99

$$\left(105A\,b^{4}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-45Ba\,b^{3}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+210Aa\,b^{3}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-90B\,a^{2}b^{2}x^{\frac{5}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(105*(a*b)^(1/2)*A*b^3*x^3+105*A*b^4*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^
(1/2))-45*(a*b)^(1/2)*B*a*b^2*x^3-45*B*a*b^3*x^(7/2)*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+210*A*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a*b^3-90*B*x^(5/2)*
arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^2*b^2+175*(a*b)^(1/2)*A*a*b^2*x^2+105*A*x
^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^2*b^2-75*(a*b)^(1/2)*B*a^2*b*x^2-4
5*B*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^3*b+56*(a*b)^(1/2)*A*a^2*b*x-
24*(a*b)^(1/2)*B*a^3*x-8*(a*b)^(1/2)*A*a^3)*(b*x+a)/x^(3/2)/(a*b)^(1/2)/a^4
/((b*x+a)^2)^(3/2)
```

maxima [A] time = 1.66, size = 341, normalized size = 1.34

$$-\frac{420\left(Ba^{3}b^{3}-3\,Aa^{2}b^{4}\right)x^{\frac{5}{2}}+5\left(\left(Bab^{5}-7\,Ab^{6}\right)x^{2}+21\left(Ba^{2}b^{4}-3\,Aab^{5}\right)x\right)x^{\frac{5}{2}}-5\left(9\left(Ba^{3}b^{3}-7\,Aa^{2}b^{4}\right)x^{2}-119\left(\right.\right.}{24\left(a^{6}b^{3}x^{3}+3\,a^{7}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] -1/24*(420*(B*a^3*b^3 - 3*A*a^2*b^4)*x^(5/2) + 5*((B*a*b^5 - 7*A*b^6)*x^2 +
 21*(B*a^2*b^4 - 3*A*a*b^5)*x)*x^(5/2) - 5*(9*(B*a^3*b^3 - 7*A*a^2*b^4)*x^2
 - 119*(B*a^4*b^2 - 3*A*a^3*b^3)*x)*sqrt(x) - 16*(5*(B*a^4*b^2 - 7*A*a^3*b^
3)*x^2 - 21*(B*a^5*b - 3*A*a^4*b^2)*x)/sqrt(x) - 48*((B*a^5*b - 7*A*a^4*b^2
)*x^2 - (B*a^6 - 3*A*a^5*b)*x)/x^(3/2) + 16*(3*A*a^5*b*x^2 + A*a^6*x)/x^(5/
2))/(a^6*b^3*x^3 + 3*a^7*b^2*x^2 + 3*a^8*b*x + a^9) - 5/4*(3*B*a*b - 7*A*b^
2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4) + 5/24*((B*a*b^2 - 7*A*b^3)*
x^(3/2) + 6*(3*B*a^2*b - 7*A*a*b^2)*sqrt(x))/a^6
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.825 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=302

$$\frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7b^{3/2}(a+bx)(9Ab-5aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{4a^{11/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7b}{4a^5}$$

```
[Out] 1/4*(9*A*b-5*B*a)/a^2/b/x^(5/2)/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)/a/b/x^(5/2)
/(b*x+a)/((b*x+a)^2)^(1/2)-7/20*(9*A*b-5*B*a)*(b*x+a)/a^3/b/x^(5/2)/((b*x+a
)^2)^(1/2)+7/12*(9*A*b-5*B*a)*(b*x+a)/a^4/x^(3/2)/((b*x+a)^2)^(1/2)-7/4*b^(
3/2)*(9*A*b-5*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(11/2)/((b*x+a
)^2)^(1/2)-7/4*b*(9*A*b-5*B*a)*(b*x+a)/a^5/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$-\frac{7b(a+bx)(9Ab-5aB)}{4a^5\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{7(a+bx)(9Ab-5aB)}{12a^4x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{7(a+bx)(9Ab-5aB)}{20a^3bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (9*A*b - 5*a*B)/(4*a^2*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b - a*
B)/(2*a*b*x^(5/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*(9*A*b - 5*
a*B)*(a + b*x))/(20*a^3*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(9*A*
b - 5*a*B)*(a + b*x))/(12*a^4*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*b
*(9*A*b - 5*a*B)*(a + b*x))/(4*a^5*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 (7*b^(3/2)*(9*A*b - 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(4
*a^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((9Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{7/2}\left(ab+b^2\right.}}{4a\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(7(9A\right.}{}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(}{20a^3b}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(}{20a^3b}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(}{20a^3b}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(}{20a^3b}\\
&= \frac{9Ab-5aB}{4a^2bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{2abx^{5/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{7(}{20a^3b}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.26

$$\frac{5a^2(Ab-aB)+(a+bx)^2(5aB-9Ab)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{bx}{a}\right)}{10a^3bx^{5/2}(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (5*a^2*(A*b - a*B) + (-9*A*b + 5*a*B)*(a + b*x)^2*Hypergeometric2F1[-5/2, 2
, -3/2, -((b*x)/a)])/(10*a^3*b*x^(5/2)*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.68, size = 437, normalized size = 1.45

$$\left[-\frac{105\left(\left(5\,Bab^{3}-9\,Ab^{4}\right)x^{5}+2\left(5\,Ba^{2}b^{2}-9\,Aab^{3}\right)x^{4}+\left(5\,Ba^{3}b-9\,Aa^{2}b^{2}\right)x^{3}\right)\sqrt{-\frac{b}{a}}\,\log\left(\frac{bx-2\,a\sqrt{x}\,\sqrt{-\frac{b}{a}}-a}{bx+a}\right)+2\,(24}{120\left(a^{5}b^{2}x^{5}+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] [-1/120*(105*((5*B*a*b^3 - 9*A*b^4)*x^5 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*x^4 +
 (5*B*a^3*b - 9*A*a^2*b^2)*x^3)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(-b/a
) - a)/(b*x + a)) + 2*(24*A*a^4 - 105*(5*B*a*b^3 - 9*A*b^4)*x^4 - 175*(5*B*
a^2*b^2 - 9*A*a*b^3)*x^3 - 56*(5*B*a^3*b - 9*A*a^2*b^2)*x^2 + 8*(5*B*a^4 -
9*A*a^3*b)*x)*sqrt(x))/(a^5*b^2*x^5 + 2*a^6*b*x^4 + a^7*x^3), -1/60*(105*((
5*B*a*b^3 - 9*A*b^4)*x^5 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*x^4 + (5*B*a^3*b - 9
*A*a^2*b^2)*x^3)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) + (24*A*a^4 - 10
5*(5*B*a*b^3 - 9*A*b^4)*x^4 - 175*(5*B*a^2*b^2 - 9*A*a*b^3)*x^3 - 56*(5*B*a
^3*b - 9*A*a^2*b^2)*x^2 + 8*(5*B*a^4 - 9*A*a^3*b)*x)*sqrt(x))/(a^5*b^2*x^5
+ 2*a^6*b*x^4 + a^7*x^3)]
```

giac [**A**] time = 0.21, size = 159, normalized size = 0.53

$$\frac{7\left(5\,Bab^{2}-9\,Ab^{3}\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{4\sqrt{ab}\,a^{5}\mathrm{sgn}\left(bx+a\right)}+\frac{11\,Bab^{3}x^{\frac{3}{2}}-15\,Ab^{4}x^{\frac{3}{2}}+13\,Ba^{2}b^{2}\sqrt{x}-17\,Aab^{3}\sqrt{x}}{4\left(bx+a\right)^{2}a^{5}\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(45\,Babx^{2}-90\,Ab^{2}x^{2}\right.}{15\,a^{5}x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 7/4*(5*B*a*b^2 - 9*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*sgn(b*
x + a)) + 1/4*(11*B*a*b^3*x^(3/2) - 15*A*b^4*x^(3/2) + 13*B*a^2*b^2*sqrt(x)
 - 17*A*a*b^3*sqrt(x))/((b*x + a)^2*a^5*sgn(b*x + a)) + 2/15*(45*B*a*b*x^2
- 90*A*b^2*x^2 - 5*B*a^2*x + 15*A*a*b*x - 3*A*a^2)/(a^5*x^(5/2)*sgn(b*x + a
))
```

maple [**A**] time = 0.07, size = 289, normalized size = 0.96

$$-\frac{\left(945A\,b^{5}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-525Ba\,b^{4}x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+1890Aa\,b^{4}x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-1050B\,a^{2}b^{3}x^{\frac{7}{2}}\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/60*(-1050*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^2*b^3+1890*A*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a*b^4-525*B*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*x^(9/2)*a*b^4-280*B*(a*b)^(1/2)*x^2*a^3*b-72*A*(a*b)^(1/2)*x*a^3*b+945*
A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^2*b^3-875*B*(a*b)^(1/2)*x^3*a^2
*b^2-525*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^3*b^2+504*A*(a*b)^(1/2
)*x^2*a^2*b^2+24*A*(a*b)^(1/2)*a^4+945*A*(a*b)^(1/2)*x^4*b^4+40*B*(a*b)^(1/
2)*x*a^4+945*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*b^5-525*B*(a*b)^(1/2
)*x^4*a*b^3+1575*A*(a*b)^(1/2)*x^3*a*b^3)*(b*x+a)/x^(5/2)/(a*b)^(1/2)/a^5/(
(b*x+a)^2)^(3/2)
```

maxima [A] time = 1.68, size = 404, normalized size = 1.34

$$1260 \left(5 \, B a^{3} b^{4} - 11 \, A a^{2} b^{5}\right) x^{\frac{5}{2}} + 35 \left(5 \left(B a b^{6} - 3 \, A b^{7}\right) x^{2} + 9 \left(5 \, B a^{2} b^{5} - 11 \, A a b^{6}\right) x\right) x^{\frac{5}{2}} - 105 \left(15 \left(B a^{3} b^{4} - 3 \, A a^{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/120*(1260*(5*B*a^3*b^4 - 11*A*a^2*b^5)*x^(5/2) + 35*(5*(B*a*b^6 - 3*A*b^7
)*x^2 + 9*(5*B*a^2*b^5 - 11*A*a*b^6)*x)*x^(5/2) - 105*(15*(B*a^3*b^4 - 3*A*
a^2*b^5)*x^2 - 17*(5*B*a^4*b^3 - 11*A*a^3*b^4)*x)*sqrt(x) - 112*(25*(B*a^4*
b^3 - 3*A*a^3*b^4)*x^2 - 9*(5*B*a^5*b^2 - 11*A*a^4*b^3)*x)/sqrt(x) - 48*(35
*(B*a^5*b^2 - 3*A*a^4*b^3)*x^2 - 3*(5*B*a^6*b - 11*A*a^5*b^2)*x)/x^(3/2) -
16*(15*(B*a^6*b - 3*A*a^5*b^2)*x^2 + (5*B*a^7 - 11*A*a^6*b)*x)/x^(5/2) - 16
*(5*A*a^6*b*x^2 + 3*A*a^7*x)/x^(7/2))/(a^7*b^3*x^3 + 3*a^8*b^2*x^2 + 3*a^9*
b*x + a^10) + 7/4*(5*B*a*b^2 - 9*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a
*b)*a^5) - 7/24*(5*(B*a*b^3 - 3*A*b^4)*x^(3/2) + 6*(5*B*a^2*b^2 - 9*A*a*b^3
)*sqrt(x))/a^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.826 $\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=404

$$\frac{x^{13/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{11/2}(5Ab-13aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{231a\sqrt{x}\,(a+bx)(5Ab-13aB)}{64b^7\sqrt{a^2+2abx+b^2x^2}}+\frac{77x^{3/2}(a+}{64b^6\sqrt{a^2}}$$

```
[Out] 33/64*(5*A*b-13*B*a)*x^(7/2)/a/b^4/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)*x^(13/2)
/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(5*A*b-13*B*a)*x^(11/2)/a/b^2/(b*x+a)
^2/((b*x+a)^2)^(1/2)+11/96*(5*A*b-13*B*a)*x^(9/2)/a/b^3/(b*x+a)/((b*x+a)^2)
^(1/2)+77/64*(5*A*b-13*B*a)*x^(3/2)*(b*x+a)/b^6/((b*x+a)^2)^(1/2)-231/320*(
5*A*b-13*B*a)*x^(5/2)*(b*x+a)/a/b^5/((b*x+a)^2)^(1/2)+231/64*a^(3/2)*(5*A*b
-13*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(15/2)/((b*x+a)^2)^(1/2)
-231/64*a*(5*A*b-13*B*a)*(b*x+a)*x^(1/2)/b^7/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{13/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{11/2}(5Ab-13aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{11x^{9/2}(5Ab-13aB)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{33x}{64ab^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (33*(5*A*b - 13*a*B)*x^(7/2))/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
A*b - a*B)*x^(13/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
5*A*b - 13*a*B)*x^(11/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^
2]) + (11*(5*A*b - 13*a*B)*x^(9/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (231*a*(5*A*b - 13*a*B)*Sqrt[x]*(a + b*x))/(64*b^7*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (77*(5*A*b - 13*a*B)*x^(3/2)*(a + b*x))/(64*b^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (231*(5*A*b - 13*a*B)*x^(5/2)*(a + b*x))/(320*
a*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*a^(3/2)*(5*A*b - 13*a*B)*(a + b
*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*b^(15/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{11/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{11/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(5Ab-13aB)\left(ab+b^2x\right)\right)\int \frac{x^{11/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13aB)x^{11/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(11(5Ab}{}$$

$$= \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13aB)x^{11/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{11}{96ab^3(a}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

$$= \frac{33(5Ab-13aB)x^{7/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{13/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(5Ab-13}{24ab^2(a+bx)^2\sqrt{a}}$$

Mathematica [C] time = 0.04, size = 80, normalized size = 0.20

$$\frac{x^{13/2}\left(13a^4(Ab-aB)-(a+bx)^4(5Ab-13aB)\,{}_2F_1\left(4,\frac{13}{2};\frac{15}{2};-\frac{bx}{a}\right)\right)}{52a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(11/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(13/2)*(13*a^4*(A*b - a*B) - (5*A*b - 13*a*B)*(a + b*x)^4*Hypergeometric
2F1[4, 13/2, 15/2, -((b*x)/a)]))/(52*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.13, size = 644, normalized size = 1.59

$$\left[-\frac{3465\left(13\,Ba^6-5\,Aa^5b+\left(13\,Ba^2b^4-5\,Aab^5\right)x^4+4\left(13\,Ba^3b^3-5\,Aa^2b^4\right)x^3+6\left(13\,Ba^4b^2-5\,Aa^3b^3\right)x^2+4\left(1\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas
")
```

```
[Out] [-1/1920*(3465*(13*B*a^6 - 5*A*a^5*b + (13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 4*(
13*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 6*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 4*(1
3*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(-a/b)*log((b*x + 2*b*sqrt(x)*sqrt(-a/b) -
a)/(b*x + a)) - 2*(384*B*b^6*x^6 + 45045*B*a^6 - 17325*A*a^5*b - 128*(13*B*
a*b^5 - 5*A*b^6)*x^5 + 1408*(13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 9207*(13*B*a^3
*b^3 - 5*A*a^2*b^4)*x^3 + 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 12705*(1
3*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(x))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x
^2 + 4*a^3*b^8*x + a^4*b^7), -1/960*(3465*(13*B*a^6 - 5*A*a^5*b + (13*B*a^2
*b^4 - 5*A*a*b^5)*x^4 + 4*(13*B*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 6*(13*B*a^4*b^
2 - 5*A*a^3*b^3)*x^2 + 4*(13*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(a/b)*arctan(b*s
qrt(x)*sqrt(a/b)/a) - (384*B*b^6*x^6 + 45045*B*a^6 - 17325*A*a^5*b - 128*(1
3*B*a*b^5 - 5*A*b^6)*x^5 + 1408*(13*B*a^2*b^4 - 5*A*a*b^5)*x^4 + 9207*(13*B
*a^3*b^3 - 5*A*a^2*b^4)*x^3 + 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*x^2 + 1270
5*(13*B*a^5*b - 5*A*a^4*b^2)*x)*sqrt(x))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b
^9*x^2 + 4*a^3*b^8*x + a^4*b^7)]
```

giac [A] time = 0.29, size = 218, normalized size = 0.54

$$-\frac{231\left(13\,Ba^{3}-5\,Aa^{2}b\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^{7}\mathrm{sgn}\left(bx+a\right)}+\frac{4431\,Ba^{3}b^{3}x^{\frac{7}{2}}-2295\,Aa^{2}b^{4}x^{\frac{7}{2}}+11767\,Ba^{4}b^{2}x^{\frac{5}{2}}-5855\,Aa^{3}b^{3}x^{\frac{5}{2}}+10}{192\,(bx+a)^{4}b^{7}\mathrm{sg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] -231/64*(13*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^7*s
gn(b*x + a)) + 1/192*(4431*B*a^3*b^3*x^(7/2) - 2295*A*a^2*b^4*x^(7/2) + 117
67*B*a^4*b^2*x^(5/2) - 5855*A*a^3*b^3*x^(5/2) + 10633*B*a^5*b*x^(3/2) - 515
3*A*a^4*b^2*x^(3/2) + 3249*B*a^6*sqrt(x) - 1545*A*a^5*b*sqrt(x))/((b*x + a)
^4*b^7*sgn(b*x + a)) + 2/15*(3*B*b^20*x^(5/2) - 25*B*a*b^19*x^(3/2) + 5*A*b
^20*x^(3/2) + 225*B*a^2*b^18*sqrt(x) - 75*A*a*b^19*sqrt(x))/(b^25*sgn(b*x +
 a))
```

maple [A] time = 0.10, size = 443, normalized size = 1.10

$$\frac{\left(384\sqrt{ab}\;B\,b^{6}x^{\frac{13}{2}}+17325A\,a^{2}b^{5}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-45045B\,a^{3}b^{4}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+640\sqrt{ab}\;A\,b^{6}x^{\frac{11}{2}}-1664}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/960*(384*B*(a*b)^(1/2)*x^(13/2)*b^6+640*A*(a*b)^(1/2)*x^(11/2)*b^6-1664*B
*(a*b)^(1/2)*x^(11/2)*a*b^5-7040*A*(a*b)^(1/2)*x^(9/2)*a*b^5+18304*B*(a*b)^
(1/2)*x^(9/2)*a^2*b^4-46035*A*(a*b)^(1/2)*x^(7/2)*a^2*b^4+119691*B*(a*b)^(1
/2)*x^(7/2)*a^3*b^3-84315*A*(a*b)^(1/2)*x^(5/2)*a^3*b^3+17325*A*arctan(1/(a
*b)^(1/2)*b*x^(1/2))*x^4*a^2*b^5+219219*B*(a*b)^(1/2)*x^(5/2)*a^4*b^2-45045
*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a^3*b^4+69300*A*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^3*a^3*b^4-180180*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^4*b^
3-63525*A*(a*b)^(1/2)*x^(3/2)*a^4*b^2+103950*A*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*x^2*a^4*b^3+165165*B*(a*b)^(1/2)*x^(3/2)*a^5*b-270270*B*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^2*a^5*b^2+69300*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^5*
b^2-180180*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^6*b-17325*A*(a*b)^(1/2)*x^
(1/2)*a^5*b+17325*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^6*b+45045*B*(a*b)^(1/
2)*x^(1/2)*a^6-45045*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^7)*(b*x+a)/(a*b)^(
1/2)/b^7/((b*x+a)^2)^(5/2)
```

maxima [A] time = 1.87, size = 401, normalized size = 0.99

$$\underline{256\left(3\,Bb^6x^2+5\,Bab^5x\right)x^{\frac{11}{2}}+5\left(2747\left(3\,Bab^5-Ab^6\right)x^2+437\left(13\,Ba^2b^4-3\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(4667\left(3\,Ba^2b^4-A\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(11/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima
")
```

```
[Out] 1/1920*(256*(3*B*b^6*x^2 + 5*B*a*b^5*x)*x^(11/2) + 5*(2747*(3*B*a*b^5 - A*b
^6)*x^2 + 437*(13*B*a^2*b^4 - 3*A*a*b^5)*x)*x^(9/2) + 10*(4667*(3*B*a^2*b^4
 - A*a*b^5)*x^2 + 671*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x)*x^(7/2) + 2860*(22*(3
*B*a^3*b^3 - A*a^2*b^4)*x^2 + 3*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x)*x^(5/2) + 6
6*(585*(3*B*a^4*b^2 - A*a^3*b^3)*x^2 + 77*(13*B*a^5*b - 3*A*a^4*b^2)*x)*x^(
3/2) + 231*(39*(3*B*a^5*b - A*a^4*b^2)*x^2 + 5*(13*B*a^6 - 3*A*a^5*b)*x)*sq
rt(x))/(b^11*x^5 + 5*a*b^10*x^4 + 10*a^2*b^9*x^3 + 10*a^3*b^8*x^2 + 5*a^4*b
^7*x + a^5*b^6) - 231/64*(13*B*a^3 - 5*A*a^2*b)*arctan(b*sqrt(x)/sqrt(a*b))
/(sqrt(a*b)*b^7) - 77/128*(13*(3*B*a*b - A*b^2)*x^(3/2) - 6*(13*B*a^2 - 5*A
*a*b)*sqrt(x))/b^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{11/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(11/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(11/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.827 $\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=357

$$\frac{x^{11/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{9/2}(3Ab-11aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{105\sqrt{a}\,(a+bx)(3Ab-11aB)\tan^{-1}\Big(\frac{\sqrt{b}}{\sqrt{}}}{64b^{13/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 21/64*(3*A*b-11*B*a)*x^(5/2)/a/b^4/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)*x^(11/2)
/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(3*A*b-11*B*a)*x^(9/2)/a/b^2/(b*x+a)^
2/((b*x+a)^2)^(1/2)+3/32*(3*A*b-11*B*a)*x^(7/2)/a/b^3/(b*x+a)/((b*x+a)^2)^(
1/2)-35/64*(3*A*b-11*B*a)*x^(3/2)*(b*x+a)/a/b^5/((b*x+a)^2)^(1/2)-105/64*(3
*A*b-11*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*a^(1/2)/b^(13/2)/((b*x
+a)^2)^(1/2)+105/64*(3*A*b-11*B*a)*(b*x+a)*x^(1/2)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.194$, Rules used = $\{770, 78, 47, 50, 63, 205\}$

$$\frac{x^{11/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{9/2}(3Ab-11aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3x^{7/2}(3Ab-11aB)}{32ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2}{64a}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (21*(3*A*b - 11*a*B)*x^(5/2))/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
A*b - a*B)*x^(11/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((
3*A*b - 11*a*B)*x^(9/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (3*(3*A*b - 11*a*B)*x^(7/2))/(32*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (105*(3*A*b - 11*a*B)*Sqrt[x]*(a + b*x))/(64*b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - (35*(3*A*b - 11*a*B)*x^(3/2)*(a + b*x))/(64*a*b^5*Sqrt[a
^2 + 2*a*b*x + b^2*x^2]) - (105*Sqrt[a]*(3*A*b - 11*a*B)*(a + b*x)*ArcTan[(
Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*b^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{9/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{9/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(3Ab-11aB)\left(ab+b^2x\right)\right)\int \frac{x^{9/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11aB)x^{9/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3(3Ab-\right.}{}\\
&= \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11aB)x^{9/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{3}{32ab^3(a}\\
&= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11}{24ab^2(a+bx)^2\sqrt{a}}\\
&= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11}{24ab^2(a+bx)^2\sqrt{a}}\\
&= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11}{24ab^2(a+bx)^2\sqrt{a}}\\
&= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11}{24ab^2(a+bx)^2\sqrt{a}}\\
&= \frac{21(3Ab-11aB)x^{5/2}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{11/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(3Ab-11}{24ab^2(a+bx)^2\sqrt{a}}
\end{aligned}$$

Mathematica [**C**] time = 0.03, size = 80, normalized size = 0.22

$$\frac{x^{11/2}\left(11a^4(Ab-aB)-(a+bx)^4(3Ab-11aB)\,{}_2F_1\left(4,\frac{11}{2};\frac{13}{2};-\frac{bx}{a}\right)\right)}{44a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(9/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(11/2)*(11*a^4*(A*b - a*B) - (3*A*b - 11*a*B)*(a + b*x)^4*Hypergeometric
2F1[4, 11/2, 13/2, -((b*x)/a)]))/(44*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 1.26, size = 585, normalized size = 1.64

$$\Bigg[-\frac{315\left(11\,Ba^5-3\,Aa^4b+\left(11\,Bab^4-3\,Ab^5\right)x^4+4\left(11\,Ba^2b^3-3\,Aab^4\right)x^3+6\left(11\,Ba^3b^2-3\,Aa^2b^3\right)x^2+4\left(11\,B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(315*(11*B*a^5 - 3*A*a^4*b + (11*B*a*b^4 - 3*A*b^5)*x^4 + 4*(11*B*a
^2*b^3 - 3*A*a*b^4)*x^3 + 6*(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 4*(11*B*a^4*
b - 3*A*a^3*b^2)*x)*sqrt(-a/b)*log((b*x - 2*b*sqrt(x)*sqrt(-a/b) - a)/(b*x
+ a)) - 2*(128*B*b^5*x^5 - 3465*B*a^5 + 945*A*a^4*b - 128*(11*B*a*b^4 - 3*A
*b^5)*x^4 - 837*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 - 1533*(11*B*a^3*b^2 - 3*A*a
^2*b^3)*x^2 - 1155*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sqrt(x))/(b^10*x^4 + 4*a*b
^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6), 1/192*(315*(11*B*a^5 - 3*A
*a^4*b + (11*B*a*b^4 - 3*A*b^5)*x^4 + 4*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 + 6*
(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 + 4*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sqrt(a/b
)*arctan(b*sqrt(x)*sqrt(a/b)/a) + (128*B*b^5*x^5 - 3465*B*a^5 + 945*A*a^4*b
 - 128*(11*B*a*b^4 - 3*A*b^5)*x^4 - 837*(11*B*a^2*b^3 - 3*A*a*b^4)*x^3 - 15
33*(11*B*a^3*b^2 - 3*A*a^2*b^3)*x^2 - 1155*(11*B*a^4*b - 3*A*a^3*b^2)*x)*sq
rt(x))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6)]
```

giac [**A**] time = 0.23, size = 191, normalized size = 0.54

$$\frac{105\left(11\,Ba^2-3\,Aab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^6\mathrm{sgn}\left(bx+a\right)}-\frac{2295\,Ba^2b^3x^{\frac{7}{2}}-975\,Aab^4x^{\frac{7}{2}}+5855\,Ba^3b^2x^{\frac{5}{2}}-2295\,Aa^2b^3x^{\frac{5}{2}}+5153\,Ba}{192\left(bx+a\right)^4b^6\mathrm{sgn}\left(bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 105/64*(11*B*a^2 - 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^6*sgn(
b*x + a)) - 1/192*(2295*B*a^2*b^3*x^(7/2) - 975*A*a*b^4*x^(7/2) + 5855*B*a^
3*b^2*x^(5/2) - 2295*A*a^2*b^3*x^(5/2) + 5153*B*a^4*b*x^(3/2) - 1929*A*a^3*
b^2*x^(3/2) + 1545*B*a^5*sqrt(x) - 561*A*a^4*b*sqrt(x))/((b*x + a)^4*b^6*sg
n(b*x + a)) + 2/3*(B*b^10*x^(3/2) - 15*B*a*b^9*sqrt(x) + 3*A*b^10*sqrt(x))/
(b^15*sgn(b*x + a))
```

maple [**A**] time = 0.08, size = 407, normalized size = 1.14

$$\frac{\left(-945Aa\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3465B\,a^2b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+128\sqrt{ab}\;B\,b^5x^{\frac{11}{2}}-3780A\,a^2b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-1408*B*(a*b)^(1/2)*x^(9/2)*a*b^4+2511*A*(a*b)^(1/2)*x^(7/2)*a*b^4-9
207*B*(a*b)^(1/2)*x^(7/2)*a^2*b^3+128*B*(a*b)^(1/2)*x^(11/2)*b^5+4599*A*(a*
b)^(1/2)*x^(5/2)*a^2*b^3-945*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^5*b-3465*B
*(a*b)^(1/2)*x^(1/2)*a^5+3465*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a^6-945*A*a
rctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a*b^5-16863*B*(a*b)^(1/2)*x^(5/2)*a^3*b^
2+3465*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a^2*b^4-3780*A*arctan(1/(a*b)^
(1/2)*b*x^(1/2))*x^3*a^2*b^4+13860*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^
3*b^3+3465*A*(a*b)^(1/2)*x^(3/2)*a^3*b^2-5670*A*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*x^2*a^3*b^3-12705*B*(a*b)^(1/2)*x^(3/2)*a^4*b+20790*B*arctan(1/(a*b)^(
1/2)*b*x^(1/2))*x^2*a^4*b^2-3780*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^4*b^
2+13860*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x*a^5*b+945*A*(a*b)^(1/2)*x^(1/2)
*a^4*b+384*A*(a*b)^(1/2)*x^(9/2)*b^5)*(b*x+a)/(a*b)^(1/2)/b^6/((b*x+a)^2)^(
5/2)
```

maxima [A] time = 1.76, size = 381, normalized size = 1.07

$$-\frac{5\left(\left(2747\,Bab^5-693\,Ab^6\right)x^2+3\left(437\,Ba^2b^4-63\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(359\left(13\,Ba^2b^4-3\,Aab^5\right)x^2+183\left(11\,Ba^3b^3-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(9/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((2747*B*a*b^5 - 693*A*b^6)*x^2 + 3*(437*B*a^2*b^4 - 63*A*a*b^5)
*x)*x^(9/2) + 10*(359*(13*B*a^2*b^4 - 3*A*a*b^5)*x^2 + 183*(11*B*a^3*b^3 -
A*a^2*b^4)*x)*x^(7/2) + 20*(242*(13*B*a^3*b^3 - 3*A*a^2*b^4)*x^2 + 117*(11*
B*a^4*b^2 - A*a^3*b^3)*x)*x^(5/2) + 198*(15*(13*B*a^4*b^2 - 3*A*a^3*b^3)*x^
2 + 7*(11*B*a^5*b - A*a^4*b^2)*x)*x^(3/2) + 63*(11*(13*B*a^5*b - 3*A*a^4*b^
2)*x^2 + 5*(11*B*a^6 - A*a^5*b)*x)*sqrt(x))/(a*b^10*x^5 + 5*a^2*b^9*x^4 + 1
0*a^3*b^8*x^3 + 10*a^4*b^7*x^2 + 5*a^5*b^6*x + a^6*b^5) + 105/64*(11*B*a^2
- 3*A*a*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*b^6) + 7/128*(11*(13*B*a*
b - 3*A*b^2)*x^(3/2) - 30*(11*B*a^2 - 3*A*a*b)*sqrt(x))/(a*b^6)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{9/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(9/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(9/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.828 $\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=306

$$\frac{x^{9/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(Ab-9aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{35(a+bx)(Ab-9aB)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64\sqrt{a}\,b^{11/2}\sqrt{a^2+2abx+b^2x^2}}-$$

```
[Out] 35/192*(A*b-9*B*a)*x^(3/2)/a/b^4/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)*x^(9/2)/a/
b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(A*b-9*B*a)*x^(7/2)/a/b^2/(b*x+a)^2/((b*
x+a)^2)^(1/2)+7/96*(A*b-9*B*a)*x^(5/2)/a/b^3/(b*x+a)/((b*x+a)^2)^(1/2)+35/6
4*(A*b-9*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/b^(11/2)/a^(1/2)/((b*
x+a)^2)^(1/2)-35/64*(A*b-9*B*a)*(b*x+a)*x^(1/2)/a/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 50, 63, 205}

$$\frac{x^{9/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{7/2}(Ab-9aB)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{7x^{5/2}(Ab-9aB)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{}{192}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (35*(A*b - 9*a*B)*x^(3/2))/(192*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(9/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - 9*a*B)*x^(7/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (
7*(A*b - 9*a*B)*x^(5/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - (35*(A*b - 9*a*B)*Sqrt[x]*(a + b*x))/(64*a*b^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) + (35*(A*b - 9*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*
Sqrt[a]*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{7/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(b^2(Ab-9aB)\left(ab+b^2x\right)\right)\int \frac{x^{7/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-9aB)x^{7/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7(Ab-}{4}$$

$$= \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-9aB)x^{7/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{7}{96ab^3(a}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{35(Ab-9aB)x^{3/2}}{192ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{9/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-}{24ab^2(a+bx)^2\sqrt{}}$$

Mathematica [C]   time = 0.03, size = 79, normalized size = 0.26

$$\frac{x^{9/2}\left(9a^4(Ab-aB)-(a+bx)^4(Ab-9aB)\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};-\frac{bx}{a}\right)\right)}{36a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(9/2)*(9*a^4*(A*b - a*B) - (A*b - 9*a*B)*(a + b*x)^4*Hypergeometric2F1[4
, 9/2, 11/2, -((b*x)/a)]))/(36*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A]   time = 1.26, size = 555, normalized size = 1.81

$$\left[\frac{105\left(9\,Ba^5-Aa^4b+\left(9\,Bab^4-Ab^5\right)x^4+4\left(9\,Ba^2b^3-Aab^4\right)x^3+6\left(9\,Ba^3b^2-Aa^2b^3\right)x^2+4\left(9\,Ba^4b-Aa^3b^2\right.\right.}{38}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [1/384*(105*(9*B*a^5 - A*a^4*b + (9*B*a*b^4 - A*b^5)*x^4 + 4*(9*B*a^2*b^3 -
 A*a*b^4)*x^3 + 6*(9*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(9*B*a^4*b - A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(384*B*a
*b^5*x^4 + 945*B*a^5*b - 105*A*a^4*b^2 + 279*(9*B*a^2*b^4 - A*a*b^5)*x^3 +
511*(9*B*a^3*b^3 - A*a^2*b^4)*x^2 + 385*(9*B*a^4*b^2 - A*a^3*b^3)*x)*sqrt(x
))/(a*b^10*x^4 + 4*a^2*b^9*x^3 + 6*a^3*b^8*x^2 + 4*a^4*b^7*x + a^5*b^6), 1/
192*(105*(9*B*a^5 - A*a^4*b + (9*B*a*b^4 - A*b^5)*x^4 + 4*(9*B*a^2*b^3 - A*
a*b^4)*x^3 + 6*(9*B*a^3*b^2 - A*a^2*b^3)*x^2 + 4*(9*B*a^4*b - A*a^3*b^2)*x)
*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (384*B*a*b^5*x^4 + 945*B*a^5*b -
 105*A*a^4*b^2 + 279*(9*B*a^2*b^4 - A*a*b^5)*x^3 + 511*(9*B*a^3*b^3 - A*a^2
*b^4)*x^2 + 385*(9*B*a^4*b^2 - A*a^3*b^3)*x)*sqrt(x))/(a*b^10*x^4 + 4*a^2*b
^9*x^3 + 6*a^3*b^8*x^2 + 4*a^4*b^7*x + a^5*b^6)]
```

giac [A]   time = 0.38, size = 159, normalized size = 0.52

$$\frac{2\,B\sqrt{x}}{b^5\mathrm{sgn}\left(bx+a\right)}-\frac{35\left(9\,Ba-Ab\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,b^5\mathrm{sgn}\left(bx+a\right)}+\frac{975\,Bab^3x^{\frac{7}{2}}-279\,Ab^4x^{\frac{7}{2}}+2295\,Ba^2b^2x^{\frac{5}{2}}-511\,Aab^3x^{\frac{5}{2}}+192}{192\left(bx+a\right)^4b^5\mathrm{sg}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/(b^5*sgn(b*x + a)) - 35/64*(9*B*a - A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*b^5*sgn(b*x + a)) + 1/192*(975*B*a*b^3*x^(7/2) - 279*A*b^4
*x^(7/2) + 2295*B*a^2*b^2*x^(5/2) - 511*A*a*b^3*x^(5/2) + 1929*B*a^3*b*x^(3
/2) - 385*A*a^2*b^2*x^(3/2) + 561*B*a^4*sqrt(x) - 105*A*a^3*b*sqrt(x))/((b*
x + a)^4*b^5*sgn(b*x + a))
```

maple [A]   time = 0.08, size = 368, normalized size = 1.20

$$-\frac{\left(-105A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+945Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-420Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3780B\,a^2b^3x^3\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(279*(a*b)^(1/2)*A*b^4*x^(7/2)-2511*(a*b)^(1/2)*B*a*b^3*x^(7/2)+511*
(a*b)^(1/2)*A*a*b^3*x^(5/2)-105*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^4*b^5-4
599*(a*b)^(1/2)*B*a^2*b^2*x^(5/2)-384*(a*b)^(1/2)*B*b^4*x^(9/2)+945*B*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^4*a*b^4-420*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*
x^3*a*b^4+3780*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^3*a^2*b^3+385*(a*b)^(1/2
)*A*a^2*b^2*x^(3/2)-630*A*a^2*b^3*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))-3465*
(a*b)^(1/2)*B*a^3*b*x^(3/2)+5670*B*a^3*b^2*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/
2))-420*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+3780*B*a^4*b*x*arctan(1
/(a*b)^(1/2)*b*x^(1/2))+105*(a*b)^(1/2)*A*a^3*b*x^(1/2)-105*A*a^4*b*arctan(
1/(a*b)^(1/2)*b*x^(1/2))-945*(a*b)^(1/2)*B*a^4*x^(1/2)+945*B*a^5*arctan(1/(
a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^5/((b*x+a)^2)^(5/2)
```

maxima [A] time = 1.62, size = 374, normalized size = 1.22

$$\frac{105\left(3\left(11\,Bab^{5}-Ab^{6}\right)x^{2}+\left(9\,Ba^{2}b^{4}+Aab^{5}\right)x\right)x^{\frac{9}{2}}+30\left(\left(359\,Ba^{2}b^{4}-21\,Aab^{5}\right)x^{2}+\left(61\,Ba^{3}b^{3}+21\,Aa^{2}b^{4}\right)x\right)x^{\frac{7}{2}}}{192}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/1920*(105*(3*(11*B*a*b^5 - A*b^6)*x^2 + (9*B*a^2*b^4 + A*a*b^5)*x)*x^(9/2
) + 30*((359*B*a^2*b^4 - 21*A*a*b^5)*x^2 + (61*B*a^3*b^3 + 21*A*a^2*b^4)*x)
*x^(7/2) + 20*(66*(11*B*a^3*b^3 - A*a^2*b^4)*x^2 + 13*(9*B*a^4*b^2 + A*a^3*
b^3)*x)*x^(5/2) + 2*(405*(11*B*a^4*b^2 - A*a^3*b^3)*x^2 + 77*(9*B*a^5*b + A
*a^4*b^2)*x)*x^(3/2) + 7*(27*(11*B*a^5*b - A*a^4*b^2)*x^2 + 5*(9*B*a^6 + A*
a^5*b)*x)*sqrt(x))/(a^2*b^9*x^5 + 5*a^3*b^8*x^4 + 10*a^4*b^7*x^3 + 10*a^5*b
^6*x^2 + 5*a^6*b^5*x + a^7*b^4) - 35/64*(9*B*a - A*b)*arctan(b*sqrt(x)/sqrt
(a*b))/(sqrt(a*b)*b^5) - 7/128*(3*(11*B*a*b - A*b^2)*x^(3/2) - 10*(9*B*a^2
- A*a*b)*sqrt(x))/(a^2*b^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{7/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(7/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.829 $\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=258

$$\frac{x^{7/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{5/2}(7aB+Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5\sqrt{x}\,(7aB+Ab)}{64ab^4\sqrt{a^2+2abx+b^2x^2}}-$$

```
[Out] 1/4*(A*b-B*a)*x^(7/2)/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/24*(A*b+7*B*a)*x^(5
/2)/a/b^2/(b*x+a)^2/((b*x+a)^2)^(1/2)-5/96*(A*b+7*B*a)*x^(3/2)/a/b^3/(b*x+a
)/((b*x+a)^2)^(1/2)+5/64*(A*b+7*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2)
)/a^(3/2)/b^(9/2)/((b*x+a)^2)^(1/2)-5/64*(A*b+7*B*a)*x^(1/2)/a/b^4/((b*x+a)
^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 47, 63, 205\}$

$$\frac{x^{7/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{5/2}(7aB+Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5x^{3/2}(7aB+Ab)}{96ab^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-5*(A*b + 7*a*B)*Sqrt[x])/(64*a*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - a*B)*x^(7/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b
+ 7*a*B)*x^(5/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5
*(A*b + 7*a*B)*x^(3/2))/(96*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (5*(A*b + 7*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(3/2)
*b^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{5/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(Ab+7aB)\left(ab+b^2x\right)\right)\int \frac{x^{5/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+7aB)x^{5/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(5(Ab+}{4}$$

$$= \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+7aB)x^{5/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{5}{96ab^3(a+}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+}{24ab^2(a+bx)^2\surd}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+}{24ab^2(a+bx)^2\surd}$$

$$= -\frac{5(Ab+7aB)\sqrt{x}}{64ab^4\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{7/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab+}{24ab^2(a+bx)^2\surd}$$

Mathematica [A] time = 0.08, size = 146, normalized size = 0.57

$$\frac{15(a+bx)^4(7aB+Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right) - \sqrt{a}\sqrt{b}\sqrt{x}\left(105a^4B+5a^3b(3A+77Bx)+a^2b^2x(55A+511Bx)+ab^3x^2(}{192a^{3/2}b^{9/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[a]*Sqrt[b]*Sqrt[x]*(105*a^4*B - 15*A*b^4*x^3 + 5*a^3*b*(3*A + 77*B*
x) + a*b^3*x^2*(73*A + 279*B*x) + a^2*b^2*x*(55*A + 511*B*x))) + 15*(A*b +
7*a*B)*(a + b*x)^4*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(192*a^(3/2)*b^(9/2)*
(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.10, size = 525, normalized size = 2.03

$$\left[-\frac{15\left(7\,Ba^5+Aa^4b+\left(7\,Bab^4+Ab^5\right)x^4+4\left(7\,Ba^2b^3+Aab^4\right)x^3+6\left(7\,Ba^3b^2+Aa^2b^3\right)x^2+4\left(7\,Ba^4b+Aa^3b^2\right)x}{384\left(a^2b^9x^4\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(15*(7*B*a^5 + A*a^4*b + (7*B*a*b^4 + A*b^5)*x^4 + 4*(7*B*a^2*b^3 +
 A*a*b^4)*x^3 + 6*(7*B*a^3*b^2 + A*a^2*b^3)*x^2 + 4*(7*B*a^4*b + A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(105*B*a
^5*b + 15*A*a^4*b^2 + 3*(93*B*a^2*b^4 - 5*A*a*b^5)*x^3 + 73*(7*B*a^3*b^3 +
A*a^2*b^4)*x^2 + 55*(7*B*a^4*b^2 + A*a^3*b^3)*x)*sqrt(x))/(a^2*b^9*x^4 + 4*
a^3*b^8*x^3 + 6*a^4*b^7*x^2 + 4*a^5*b^6*x + a^6*b^5), -1/192*(15*(7*B*a^5 +
 A*a^4*b + (7*B*a*b^4 + A*b^5)*x^4 + 4*(7*B*a^2*b^3 + A*a*b^4)*x^3 + 6*(7*B
*a^3*b^2 + A*a^2*b^3)*x^2 + 4*(7*B*a^4*b + A*a^3*b^2)*x)*sqrt(a*b)*arctan(s
qrt(a*b)/(b*sqrt(x))) + (105*B*a^5*b + 15*A*a^4*b^2 + 3*(93*B*a^2*b^4 - 5*A
*a*b^5)*x^3 + 73*(7*B*a^3*b^3 + A*a^2*b^4)*x^2 + 55*(7*B*a^4*b^2 + A*a^3*b^
3)*x)*sqrt(x))/(a^2*b^9*x^4 + 4*a^3*b^8*x^3 + 6*a^4*b^7*x^2 + 4*a^5*b^6*x +
 a^6*b^5)]
```

giac [A] time = 0.36, size = 147, normalized size = 0.57

$$\frac{5\,(7\,Ba+Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,ab^4\mathrm{sgn}\,(bx+a)}-\frac{279\,Bab^3x^{\frac{7}{2}}-15\,Ab^4x^{\frac{7}{2}}+511\,Ba^2b^2x^{\frac{5}{2}}+73\,Aab^3x^{\frac{5}{2}}+385\,Ba^3bx^{\frac{3}{2}}+55\,Aa^2b^2x}{192\,(bx+a)^4ab^4\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 5/64*(7*B*a + A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a*b^4*sgn(b*x + a
)) - 1/192*(279*B*a*b^3*x^(7/2) - 15*A*b^4*x^(7/2) + 511*B*a^2*b^2*x^(5/2)
+ 73*A*a*b^3*x^(5/2) + 385*B*a^3*b*x^(3/2) + 55*A*a^2*b^2*x^(3/2) + 105*B*a
^4*sqrt(x) + 15*A*a^3*b*sqrt(x))/((b*x + a)^4*a*b^4*sgn(b*x + a))
```

maple [B] time = 0.07, size = 357, normalized size = 1.38

$$\frac{\left(15A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+105Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+420B\,a^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(15*(a*b)^(1/2)*A*b^4*x^(7/2)-279*(a*b)^(1/2)*B*a*b^3*x^(7/2)-73*(a*b
)^(1/2)*A*a*b^3*x^(5/2)+15*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))-511*(a
*b)^(1/2)*B*a^2*b^2*x^(5/2)+105*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+60*A*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+420*B*a^2*b^3*x^3*arctan(1/
(a*b)^(1/2)*b*x^(1/2))-55*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+90*A*a^2*b^3*x^2*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))-385*(a*b)^(1/2)*B*a^3*b*x^(3/2)+630*B*a^3*b^2
*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*
x^(1/2))+420*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*A*a^3
*b*x^(1/2)+15*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-105*(a*b)^(1/2)*B*a^4
*x^(1/2)+105*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^4
/a/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.75, size = 376, normalized size = 1.46

$$-\frac{5\left(7\left(9\,Bab^5+Ab^6\right)x^2-3\left(7\,Ba^2b^4+3\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(7\left(9\,Ba^2b^4+Aab^5\right)x^2-9\left(7\,Ba^3b^3+3\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*(7*(9*B*a*b^5 + A*b^6)*x^2 - 3*(7*B*a^2*b^4 + 3*A*a*b^5)*x)*x^(9
/2) + 10*(7*(9*B*a^2*b^4 + A*a*b^5)*x^2 - 9*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x)*
x^(7/2) + 20*(2*(33*B*a^3*b^3 - 7*A*a^2*b^4)*x^2 - (13*B*a^4*b^2 + 33*A*a^3
*b^3)*x)*x^(5/2) + 2*(45*(9*B*a^4*b^2 + A*a^3*b^3)*x^2 - 11*(7*B*a^5*b + 3*
A*a^4*b^2)*x)*x^(3/2) + (21*(9*B*a^5*b + A*a^4*b^2)*x^2 - 5*(7*B*a^6 + 3*A*
a^5*b)*x)*sqrt(x))/(a^3*b^8*x^5 + 5*a^4*b^7*x^4 + 10*a^5*b^6*x^3 + 10*a^6*b
^5*x^2 + 5*a^7*b^4*x + a^8*b^3) + 5/64*(7*B*a + A*b)*arctan(b*sqrt(x)/sqrt(
a*b))/(sqrt(a*b)*a*b^4) + 1/384*(7*(9*B*a*b + A*b^2)*x^(3/2) - 30*(7*B*a^2
+ A*a*b)*sqrt(x))/(a^3*b^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{5/2}\,(A+B\,x)}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(5/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.830 $\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=262

$$\frac{x^{5/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{3/2}(5aB+3Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(5aB+3Ab)}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}}{32ab^3(a+b}$$

```
[Out] 1/4*(A*b-B*a)*x^(5/2)/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/24*(3*A*b+5*B*a)*x^
(3/2)/a/b^2/(b*x+a)^2/((b*x+a)^2)^(1/2)+1/64*(3*A*b+5*B*a)*(b*x+a)*arctan(b
^(1/2)*x^(1/2)/a^(1/2))/a^(5/2)/b^(7/2)/((b*x+a)^2)^(1/2)+1/64*(3*A*b+5*B*a
)*x^(1/2)/a^2/b^3/((b*x+a)^2)^(1/2)-1/32*(3*A*b+5*B*a)*x^(1/2)/a/b^3/(b*x+a
)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = {770, 78, 47, 51, 63, 205}

$$\frac{x^{5/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{x^{3/2}(5aB+3Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(5aB+3Ab)}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}}{32ab^3(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((3*A*b + 5*a*B)*Sqrt[x])/(64*a^2*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(5/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((3*A
*b + 5*a*B)*x^(3/2))/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 ((3*A*b + 5*a*B)*Sqrt[x])/(32*a*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + ((3*A*b + 5*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(5
/2)*b^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{x^{3/2}(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(3Ab+5aB)\left(ab+b^2x\right)\right)\int \frac{x^{3/2}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+5aB)x^{3/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((3Ab+}{1}$$

$$= \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+5aB)x^{3/2}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(}{32ab^3(a+}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{(3Ab+5aB)\sqrt{x}}{64a^2b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{5/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(3Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.30

$$\frac{x^{5/2}\left(5a^4(Ab-aB)+(a+bx)^4(5aB+3Ab)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};-\frac{bx}{a}\right)\right)}{20a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*(5*a^4*(A*b - a*B) + (3*A*b + 5*a*B)*(a + b*x)^4*Hypergeometric2F1
[5/2, 4, 7/2, -((b*x)/a)]))/(20*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.03, size = 537, normalized size = 2.05

$$\left[-\frac{3\left(5\,Ba^{5}+3\,Aa^{4}b+\left(5\,Bab^{4}+3\,Ab^{5}\right)x^{4}+4\left(5\,Ba^{2}b^{3}+3\,Aab^{4}\right)x^{3}+6\left(5\,Ba^{3}b^{2}+3\,Aa^{2}b^{3}\right)x^{2}+4\left(5\,Ba^{4}b+\right.\right.}{384\left(a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(3*(5*B*a^5 + 3*A*a^4*b + (5*B*a*b^4 + 3*A*b^5)*x^4 + 4*(5*B*a^2*b^
3 + 3*A*a*b^4)*x^3 + 6*(5*B*a^3*b^2 + 3*A*a^2*b^3)*x^2 + 4*(5*B*a^4*b + 3*A
*a^3*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2
*(15*B*a^5*b + 9*A*a^4*b^2 - 3*(5*B*a^2*b^4 + 3*A*a*b^5)*x^3 + (73*B*a^3*b^
3 - 33*A*a^2*b^4)*x^2 + 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*x)*sqrt(x))/(a^3*b^8
*x^4 + 4*a^4*b^7*x^3 + 6*a^5*b^6*x^2 + 4*a^6*b^5*x + a^7*b^4), -1/192*(3*(5
*B*a^5 + 3*A*a^4*b + (5*B*a*b^4 + 3*A*b^5)*x^4 + 4*(5*B*a^2*b^3 + 3*A*a*b^4
)*x^3 + 6*(5*B*a^3*b^2 + 3*A*a^2*b^3)*x^2 + 4*(5*B*a^4*b + 3*A*a^3*b^2)*x)*
sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (15*B*a^5*b + 9*A*a^4*b^2 - 3*(5*
B*a^2*b^4 + 3*A*a*b^5)*x^3 + (73*B*a^3*b^3 - 33*A*a^2*b^4)*x^2 + 11*(5*B*a^
4*b^2 + 3*A*a^3*b^3)*x)*sqrt(x))/(a^3*b^8*x^4 + 4*a^4*b^7*x^3 + 6*a^5*b^6*x
^2 + 4*a^6*b^5*x + a^7*b^4)]
```

giac [A] time = 0.27, size = 148, normalized size = 0.56

$$\frac{(5\,Ba+3\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{2}b^{3}\mathrm{sgn}\left(bx+a\right)}+\frac{15\,Bab^{3}x^{\frac{7}{2}}+9\,Ab^{4}x^{\frac{7}{2}}-73\,Ba^{2}b^{2}x^{\frac{5}{2}}+33\,Aab^{3}x^{\frac{5}{2}}-55\,Ba^{3}bx^{\frac{3}{2}}-33\,Aa^{2}b^{2}x^{\frac{3}{2}}-1}{192\,(bx+a)^{4}a^{2}b^{3}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/64*(5*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^2*b^3*sgn(b*x
 + a)) + 1/192*(15*B*a*b^3*x^(7/2) + 9*A*b^4*x^(7/2) - 73*B*a^2*b^2*x^(5/2)
 + 33*A*a*b^3*x^(5/2) - 55*B*a^3*b*x^(3/2) - 33*A*a^2*b^2*x^(3/2) - 15*B*a^
4*sqrt(x) - 9*A*a^3*b*sqrt(x))/((b*x + a)^4*a^2*b^3*sgn(b*x + a))
```

maple [A] time = 0.07, size = 357, normalized size = 1.36

$$\frac{\left(9A\,b^{5}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Ba\,b^{4}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+36Aa\,b^{4}x^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^{2}b^{3}x^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+54\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(9*(a*b)^(1/2)*A*b^4*x^(7/2)+15*(a*b)^(1/2)*B*a*b^3*x^(7/2)+33*(a*b)^
(1/2)*A*a*b^3*x^(5/2)+9*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))-73*(a*b)^
(1/2)*B*a^2*b^2*x^(5/2)+15*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+36*A
*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*B*a^2*b^3*x^3*arctan(1/(a*b)^
(1/2)*b*x^(1/2))-33*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+54*A*a^2*b^3*x^2*arctan(1
/(a*b)^(1/2)*b*x^(1/2))-55*(a*b)^(1/2)*B*a^3*b*x^(3/2)+90*B*a^3*b^2*x^2*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))+36*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+60*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-9*(a*b)^(1/2)*A*a^3*b*x^(1/2)
+9*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^4*x^(1/2)+15*
B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^3/a^2/((b*x+a)
^2)^(5/2)
```

maxima [B] time = 1.80, size = 372, normalized size = 1.42

$$-\frac{5\left(\left(7\,Bab^5+3\,Ab^6\right)x^2-9\left(Ba^2b^4+Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(\left(7\,Ba^2b^4+3\,Aab^5\right)x^2-27\left(Ba^3b^3+Aa^2b^4\right)x\right)x^{\frac{7}{2}}-20\,(2\,(}{1920\,(a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((7*B*a*b^5 + 3*A*b^6)*x^2 - 9*(B*a^2*b^4 + A*a*b^5)*x)*x^(9/2)
+ 10*((7*B*a^2*b^4 + 3*A*a*b^5)*x^2 - 27*(B*a^3*b^3 + A*a^2*b^4)*x)*x^(7/2)
 - 20*(2*(7*B*a^3*b^3 + 3*A*a^2*b^4)*x^2 + 33*(B*a^4*b^2 + A*a^3*b^3)*x)*x^
(5/2) + 6*(5*(3*B*a^4*b^2 - 17*A*a^3*b^3)*x^2 - (11*B*a^5*b + 139*A*a^4*b^2
)*x)*x^(3/2) + 3*((7*B*a^5*b + 3*A*a^4*b^2)*x^2 - 5*(B*a^6 + A*a^5*b)*x)*sq
rt(x))/(a^4*b^7*x^5 + 5*a^5*b^6*x^4 + 10*a^6*b^5*x^3 + 10*a^7*b^4*x^2 + 5*a
^8*b^3*x + a^9*b^2) + 1/64*(5*B*a + 3*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqr
t(a*b)*a^2*b^3) + 1/384*((7*B*a*b + 3*A*b^2)*x^(3/2) - 6*(5*B*a^2 + 3*A*a*b
)*sqrt(x))/(a^4*b^3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^{3/2}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(3/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.831 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=262

$$\frac{\sqrt{x}\,(3aB+5Ab)}{96a^2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{x}\,(3aB+5Ab)}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{x^{3/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+$$

```
[Out] 1/4*(A*b-B*a)*x^(3/2)/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/64*(5*A*b+3*B*a)*(b
*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(7/2)/b^(5/2)/((b*x+a)^2)^(1/2)+1/6
4*(5*A*b+3*B*a)*x^(1/2)/a^3/b^2/((b*x+a)^2)^(1/2)-1/24*(5*A*b+3*B*a)*x^(1/2
)/a/b^2/(b*x+a)^2/((b*x+a)^2)^(1/2)+1/96*(5*A*b+3*B*a)*x^(1/2)/a^2/b^2/(b*x
+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.194, Rules used = $\{770, 78, 47, 51, 63, 205\}$

$$\frac{x^{3/2}(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(3aB+5Ab)}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(3aB+5Ab)}{96a^2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((5*A*b + 3*a*B)*Sqrt[x])/(64*a^3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*
b - a*B)*x^(3/2))/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((5*A
*b + 3*a*B)*Sqrt[x])/(24*a*b^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 ((5*A*b + 3*a*B)*Sqrt[x])/(96*a^2*b^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + ((5*A*b + 3*a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^
(7/2)*b^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}\,(A+Bx)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(5Ab+3aB)\left(ab+b^2x\right)\right)\int \frac{\sqrt{x}}{\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+3aB)\sqrt{x}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{\Big((5Ab+}{}$$

$$= \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+3aB)\sqrt{x}}{24ab^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} + \frac{}{96a^2b^2(a}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

$$= \frac{(5Ab+3aB)\sqrt{x}}{64a^3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{(Ab-aB)x^{3/2}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(5Ab+}{24ab^2(a+bx)^2\sqrt{}}$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.30

$$\frac{x^{3/2}\left(3a^4(Ab-aB)+(a+bx)^4(3aB+5Ab)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};-\frac{bx}{a}\right)\right)}{12a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x^(3/2)*(3*a^4*(A*b - a*B) + (5*A*b + 3*a*B)*(a + b*x)^4*Hypergeometric2F1
[3/2, 4, 5/2, -((b*x)/a)]))/(12*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.16, size = 537, normalized size = 2.05

$$\left[-\frac{3\left(3\,Ba^{5}+5\,Aa^{4}b+\left(3\,Bab^{4}+5\,Ab^{5}\right)x^{4}+4\left(3\,Ba^{2}b^{3}+5\,Aab^{4}\right)x^{3}+6\left(3\,Ba^{3}b^{2}+5\,Aa^{2}b^{3}\right)x^{2}+4\left(3\,Ba^{4}b+\right.\right.}{384\left(a\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(3*(3*B*a^5 + 5*A*a^4*b + (3*B*a*b^4 + 5*A*b^5)*x^4 + 4*(3*B*a^2*b^
3 + 5*A*a*b^4)*x^3 + 6*(3*B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 4*(3*B*a^4*b + 5*A
*a^3*b^2)*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2
*(9*B*a^5*b + 15*A*a^4*b^2 - 3*(3*B*a^2*b^4 + 5*A*a*b^5)*x^3 - 11*(3*B*a^3*
b^3 + 5*A*a^2*b^4)*x^2 + (33*B*a^4*b^2 - 73*A*a^3*b^3)*x)*sqrt(x))/(a^4*b^7
*x^4 + 4*a^5*b^6*x^3 + 6*a^6*b^5*x^2 + 4*a^7*b^4*x + a^8*b^3), -1/192*(3*(3
*B*a^5 + 5*A*a^4*b + (3*B*a*b^4 + 5*A*b^5)*x^4 + 4*(3*B*a^2*b^3 + 5*A*a*b^4
)*x^3 + 6*(3*B*a^3*b^2 + 5*A*a^2*b^3)*x^2 + 4*(3*B*a^4*b + 5*A*a^3*b^2)*x)*
sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (9*B*a^5*b + 15*A*a^4*b^2 - 3*(3*
B*a^2*b^4 + 5*A*a*b^5)*x^3 - 11*(3*B*a^3*b^3 + 5*A*a^2*b^4)*x^2 + (33*B*a^4
*b^2 - 73*A*a^3*b^3)*x)*sqrt(x))/(a^4*b^7*x^4 + 4*a^5*b^6*x^3 + 6*a^6*b^5*x
^2 + 4*a^7*b^4*x + a^8*b^3)]
```

giac [A] time = 0.22, size = 148, normalized size = 0.56

$$\frac{(3\,Ba+5\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^{3}b^{2}\mathrm{sgn}\left(bx+a\right)}+\frac{9\,Bab^{3}x^{\frac{7}{2}}+15\,Ab^{4}x^{\frac{7}{2}}+33\,Ba^{2}b^{2}x^{\frac{5}{2}}+55\,Aab^{3}x^{\frac{5}{2}}-33\,Ba^{3}bx^{\frac{3}{2}}+73\,Aa^{2}b^{2}x^{\frac{3}{2}}-9}{192\,(bx+a)^{4}a^{3}b^{2}\mathrm{sgn}\left(bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/64*(3*B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^3*b^2*sgn(b*x
 + a)) + 1/192*(9*B*a*b^3*x^(7/2) + 15*A*b^4*x^(7/2) + 33*B*a^2*b^2*x^(5/2)
 + 55*A*a*b^3*x^(5/2) - 33*B*a^3*b*x^(3/2) + 73*A*a^2*b^2*x^(3/2) - 9*B*a^4
*sqrt(x) - 15*A*a^3*b*sqrt(x))/((b*x + a)^4*a^3*b^2*sgn(b*x + a))
```

maple [A] time = 0.07, size = 357, normalized size = 1.36

$$\frac{\left(15A\,b^{5}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+9Ba\,b^{4}x^{4}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60Aa\,b^{4}x^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+36B\,a^{2}b^{3}x^{3}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+90\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(15*(a*b)^(1/2)*A*b^4*x^(7/2)+9*(a*b)^(1/2)*B*a*b^3*x^(7/2)+55*(a*b)^
(1/2)*A*a*b^3*x^(5/2)+15*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+33*(a*b)
^(1/2)*B*a^2*b^2*x^(5/2)+9*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*A
*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+36*B*a^2*b^3*x^3*arctan(1/(a*b)^
(1/2)*b*x^(1/2))+73*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+90*A*a^2*b^3*x^2*arctan(1
/(a*b)^(1/2)*b*x^(1/2))-33*(a*b)^(1/2)*B*a^3*b*x^(3/2)+54*B*a^3*b^2*x^2*arc
tan(1/(a*b)^(1/2)*b*x^(1/2))+60*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+36*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*A*a^3*b*x^(1/2
)+15*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-9*(a*b)^(1/2)*B*a^4*x^(1/2)+9*
B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b^2/a^3/((b*x+a)
^2)^(5/2)
```

maxima [B] time = 1.53, size = 368, normalized size = 1.40

$$-\frac{15\left(\left(Bab^5+Ab^6\right)x^2-\left(3\,Ba^2b^4+7\,Aab^5\right)x\right)x^{\frac{9}{2}}+30\left(\left(Ba^2b^4+Aab^5\right)x^2-3\left(3\,Ba^3b^3+7\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}-20\bigl(6\bigl(B}{1920\bigl(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(15*((B*a*b^5 + A*b^6)*x^2 - (3*B*a^2*b^4 + 7*A*a*b^5)*x)*x^(9/2) +
 30*((B*a^2*b^4 + A*a*b^5)*x^2 - 3*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x)*x^(7/2) -
 20*(6*(B*a^3*b^3 + A*a^2*b^4)*x^2 + 11*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x)*x^(5
/2) - 2*(255*(B*a^4*b^2 + A*a^3*b^3)*x^2 + 139*(3*B*a^5*b + 7*A*a^4*b^2)*x)
*x^(3/2) + (3*(3*B*a^5*b - 253*A*a^4*b^2)*x^2 - 5*(3*B*a^6 + 263*A*a^5*b)*x
)*sqrt(x))/(a^5*b^6*x^5 + 5*a^6*b^5*x^4 + 10*a^7*b^4*x^3 + 10*a^8*b^3*x^2 +
 5*a^9*b^2*x + a^10*b) + 1/64*(3*B*a + 5*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(
sqrt(a*b)*a^3*b^2) + 1/128*((B*a*b + A*b^2)*x^(3/2) - 2*(3*B*a^2 + 5*A*a*b)
*sqrt(x))/(a^5*b^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{x}\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((x^(1/2)*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x} \left(A + Bx\right)}{\left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.832 $\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=258

$$\frac{\sqrt{x}\,(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{\sqrt{x}\,(aB+7Ab)}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5(a+bx)(aB+7Ab)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{x}}{\sqrt{a}}\right)}{64a^{9/2}b^{3/2}\sqrt{a^2+2abx+b^2x^2}}+$$

```
[Out] 5/64*(7*A*b+B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(9/2)/b^(3/2)/((
b*x+a)^2)^(1/2)+5/64*(7*A*b+B*a)*x^(1/2)/a^4/b/((b*x+a)^2)^(1/2)+1/4*(A*b-B
*a)*x^(1/2)/a/b/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(7*A*b+B*a)*x^(1/2)/a^2/b/
(b*x+a)^2/((b*x+a)^2)^(1/2)+5/96*(7*A*b+B*a)*x^(1/2)/a^3/b/(b*x+a)/((b*x+a)
^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 78, 51, 63, 205}

$$\frac{\sqrt{x}\,(Ab-aB)}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(aB+7Ab)}{64a^4b\sqrt{a^2+2abx+b^2x^2}}+\frac{5\sqrt{x}\,(aB+7Ab)}{96a^3b(a+bx)\sqrt{a^2+2abx+b^2x^2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (5*(7*A*b + a*B)*Sqrt[x])/(64*a^4*b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
- a*B)*Sqrt[x])/(4*a*b*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((7*A*b
 + a*B)*Sqrt[x])/(24*a^2*b*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*
(7*A*b + a*B)*Sqrt[x])/(96*a^3*b*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (5*(7*A*b + a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(9/2)*
b^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{x}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\sqrt{x}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(b^2(7Ab+aB)\left(ab+b^2x\right)\right)\int \frac{1}{\sqrt{x}\left(ab+b^2x\right)^4}\,dx}{8a\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(7Ab+aB)\sqrt{x}}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(5b(7\right.}{} \\
&= \frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(7Ab+aB)\sqrt{x}}{24a^2b(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{}{96a^3} \\
&= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(7A}{24a^2b(a+bx)} \\
&= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(7A}{24a^2b(a+bx)} \\
&= \frac{5(7Ab+aB)\sqrt{x}}{64a^4b\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)\sqrt{x}}{4ab(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(7A}{24a^2b(a+bx)}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 77, normalized size = 0.30

$$\frac{\sqrt{x}\left(a^4(Ab-aB)+(a+bx)^4(aB+7Ab)\,{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};-\frac{bx}{a}\right)\right)}{4a^5b(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[x]*(a^4*(A*b - a*B) + (7*A*b + a*B)*(a + b*x)^4*Hypergeometric2F1[1/2
, 4, 3/2, -((b*x)/a)]))/(4*a^5*b*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.88, size = 523, normalized size = 2.03

$$\left[-\frac{15\left(Ba^5+7\,Aa^4b+\left(Bab^4+7\,Ab^5\right)x^4+4\left(Ba^2b^3+7\,Aab^4\right)x^3+6\left(Ba^3b^2+7\,Aa^2b^3\right)x^2+4\left(Ba^4b+7\,Aa^3b^2\right)x\right.}{384\left(a^5b^6x^4+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(15*(B*a^5 + 7*A*a^4*b + (B*a*b^4 + 7*A*b^5)*x^4 + 4*(B*a^2*b^3 + 7
*A*a*b^4)*x^3 + 6*(B*a^3*b^2 + 7*A*a^2*b^3)*x^2 + 4*(B*a^4*b + 7*A*a^3*b^2)
*x)*sqrt(-a*b)*log((b*x - a - 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) + 2*(15*B*a^
5*b - 279*A*a^4*b^2 - 15*(B*a^2*b^4 + 7*A*a*b^5)*x^3 - 55*(B*a^3*b^3 + 7*A*
a^2*b^4)*x^2 - 73*(B*a^4*b^2 + 7*A*a^3*b^3)*x)*sqrt(x))/(a^5*b^6*x^4 + 4*a^
6*b^5*x^3 + 6*a^7*b^4*x^2 + 4*a^8*b^3*x + a^9*b^2), -1/192*(15*(B*a^5 + 7*A
*a^4*b + (B*a*b^4 + 7*A*b^5)*x^4 + 4*(B*a^2*b^3 + 7*A*a*b^4)*x^3 + 6*(B*a^3
*b^2 + 7*A*a^2*b^3)*x^2 + 4*(B*a^4*b + 7*A*a^3*b^2)*x)*sqrt(a*b)*arctan(sqr
t(a*b)/(b*sqrt(x))) + (15*B*a^5*b - 279*A*a^4*b^2 - 15*(B*a^2*b^4 + 7*A*a*b
^5)*x^3 - 55*(B*a^3*b^3 + 7*A*a^2*b^4)*x^2 - 73*(B*a^4*b^2 + 7*A*a^3*b^3)*x
)*sqrt(x))/(a^5*b^6*x^4 + 4*a^6*b^5*x^3 + 6*a^7*b^4*x^2 + 4*a^8*b^3*x + a^9
*b^2)]
```

giac [A] time = 0.24, size = 147, normalized size = 0.57

$$\frac{5\,(Ba+7\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^4b\mathrm{sgn}\,(bx+a)}+\frac{15\,Bab^3x^{\frac{7}{2}}+105\,Ab^4x^{\frac{7}{2}}+55\,Ba^2b^2x^{\frac{5}{2}}+385\,Aab^3x^{\frac{5}{2}}+73\,Ba^3bx^{\frac{3}{2}}+511\,Aa^2b^2x}{192\,(bx+a)^4a^4b\mathrm{sgn}\,(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] 5/64*(B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b*sgn(b*x + a
)) + 1/192*(15*B*a*b^3*x^(7/2) + 105*A*b^4*x^(7/2) + 55*B*a^2*b^2*x^(5/2) +
 385*A*a*b^3*x^(5/2) + 73*B*a^3*b*x^(3/2) + 511*A*a^2*b^2*x^(3/2) - 15*B*a^
4*sqrt(x) + 279*A*a^3*b*sqrt(x))/((b*x + a)^4*a^4*b*sgn(b*x + a))
```

maple [B] time = 0.07, size = 357, normalized size = 1.38

$$\frac{\left(105A\,b^5x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+15Ba\,b^4x^4\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+420Aa\,b^4x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+60B\,a^2b^3x^3\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x)
```

```
[Out] 1/192*(105*(a*b)^(1/2)*A*b^4*x^(7/2)+15*(a*b)^(1/2)*B*a*b^3*x^(7/2)+385*(a*
b)^(1/2)*A*a*b^3*x^(5/2)+105*A*b^5*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))+55*(
a*b)^(1/2)*B*a^2*b^2*x^(5/2)+15*B*a*b^4*x^4*arctan(1/(a*b)^(1/2)*b*x^(1/2))
+420*A*a*b^4*x^3*arctan(1/(a*b)^(1/2)*b*x^(1/2))+60*B*a^2*b^3*x^3*arctan(1/
(a*b)^(1/2)*b*x^(1/2))+511*(a*b)^(1/2)*A*a^2*b^2*x^(3/2)+630*A*a^2*b^3*x^2*
arctan(1/(a*b)^(1/2)*b*x^(1/2))+73*(a*b)^(1/2)*B*a^3*b*x^(3/2)+90*B*a^3*b^2
*x^2*arctan(1/(a*b)^(1/2)*b*x^(1/2))+420*A*a^3*b^2*x*arctan(1/(a*b)^(1/2)*b
*x^(1/2))+60*B*a^4*b*x*arctan(1/(a*b)^(1/2)*b*x^(1/2))+279*(a*b)^(1/2)*A*a^
3*b*x^(1/2)+105*A*a^4*b*arctan(1/(a*b)^(1/2)*b*x^(1/2))-15*(a*b)^(1/2)*B*a^
4*x^(1/2)+15*B*a^5*arctan(1/(a*b)^(1/2)*b*x^(1/2)))*(b*x+a)/(a*b)^(1/2)/b/a
^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.87, size = 390, normalized size = 1.51

$$-\frac{5\left(\left(3\,Bab^5+7\,Ab^6\right)x^2-21\left(Ba^2b^4+9\,Aab^5\right)x\right)x^{\frac{9}{2}}+10\left(\left(3\,Ba^2b^4+7\,Aab^5\right)x^2-63\left(Ba^3b^3+9\,Aa^2b^4\right)x\right)x^{\frac{7}{2}}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/x^(1/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(5*((3*B*a*b^5 + 7*A*b^6)*x^2 - 21*(B*a^2*b^4 + 9*A*a*b^5)*x)*x^(9/
2) + 10*((3*B*a^2*b^4 + 7*A*a*b^5)*x^2 - 63*(B*a^3*b^3 + 9*A*a^2*b^4)*x)*x^
(7/2) - 20*(2*(3*B*a^3*b^3 + 7*A*a^2*b^4)*x^2 + 77*(B*a^4*b^2 + 9*A*a^3*b^3
)*x)*x^(5/2) - 2*(85*(3*B*a^4*b^2 + 7*A*a^3*b^3)*x^2 + 973*(B*a^5*b + 9*A*a
^4*b^2)*x)*x^(3/2) - (253*(3*B*a^5*b + 7*A*a^4*b^2)*x^2 + 1315*(B*a^6 + 9*A
*a^5*b)*x)*sqrt(x) - 1280*(A*a^5*b*x^2 + 3*A*a^6*x)/sqrt(x))/(a^6*b^5*x^5 +
 5*a^7*b^4*x^4 + 10*a^8*b^3*x^3 + 10*a^9*b^2*x^2 + 5*a^10*b*x + a^11) + 5/6
4*(B*a + 7*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^4*b) + 1/384*((3*B
*a*b + 7*A*b^2)*x^(3/2) - 30*(B*a^2 + 7*A*a*b)*sqrt(x))/(a^6*b)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/x**(1/2),x)
```

```
[Out] Timed out
```

3.833 $\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=311

$$\frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(9Ab-aB)\tan^{-1}\left(\frac{\sqrt{b}}{\sqrt{\ }}\right.}{64a^{11/2}\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -35/64*(9*A*b-B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(11/2)/b^(1/2)
/((b*x+a)^2)^(1/2)+35/192*(9*A*b-B*a)/a^4/b/x^(1/2)/((b*x+a)^2)^(1/2)+1/4*(
A*b-B*a)/a/b/(b*x+a)^3/x^(1/2)/((b*x+a)^2)^(1/2)+1/24*(9*A*b-B*a)/a^2/b/(b*
x+a)^2/x^(1/2)/((b*x+a)^2)^(1/2)+7/96*(9*A*b-B*a)/a^3/b/(b*x+a)/x^(1/2)/((b
*x+a)^2)^(1/2)-35/64*(9*A*b-B*a)*(b*x+a)/a^5/b/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = $\{770, 78, 51, 63, 205\}$

$$\frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(9Ab-aB)}{64a^5b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{35(9Ab-aB)}{192a^4b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{}{96a^3b\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (35*(9*A*b - a*B))/(192*a^4*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A*b
 - a*B)/(4*a*b*Sqrt[x]*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (9*A*b
- a*B)/(24*a^2*b*Sqrt[x]*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*(9
*A*b - a*B))/(96*a^3*b*Sqrt[x]*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
35*(9*A*b - a*B)*(a + b*x))/(64*a^5*b*Sqrt[x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) - (35*(9*A*b - a*B)*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(1
1/2)*Sqrt[b]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{3/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(9Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{3/2}\left(ab+b^2x\right)}}{8a\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{9Ab-aB}{24a^2b\sqrt{x}\,(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b} \\
&= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b} \\
&= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b} \\
&= \frac{35(9Ab-aB)}{192a^4b\sqrt{x}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4ab\sqrt{x}\,(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 79, normalized size = 0.25

$$
\frac{a^4(Ab-aB)-(a+bx)^4(9Ab-aB)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};-\frac{bx}{a}\right)}{4a^5b\sqrt{x}\,(a+bx)^3\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (a^4*(A*b - a*B) - (9*A*b - a*B)*(a + b*x)^4*Hypergeometric2F1[-1/2, 4, 1/2
, -((b*x)/a)])/(4*a^5*b*Sqrt[x]*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.02, size = 559, normalized size = 1.80

$$\left[\frac{105\left(\left(Bab^4-9\,Ab^5\right)x^5+4\left(Ba^2b^3-9\,Aab^4\right)x^4+6\left(Ba^3b^2-9\,Aa^2b^3\right)x^3+4\left(Ba^4b-9\,Aa^3b^2\right)x^2+\left(Ba^5-9\,A\right.\right.}{38}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [1/384*(105*((B*a*b^4 - 9*A*b^5)*x^5 + 4*(B*a^2*b^3 - 9*A*a*b^4)*x^4 + 6*(B
*a^3*b^2 - 9*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 9*A*a^3*b^2)*x^2 + (B*a^5 - 9*A*
a^4*b)*x)*sqrt(-a*b)*log((b*x - a + 2*sqrt(-a*b)*sqrt(x))/(b*x + a)) - 2*(3
84*A*a^5*b - 105*(B*a^2*b^4 - 9*A*a*b^5)*x^4 - 385*(B*a^3*b^3 - 9*A*a^2*b^4
)*x^3 - 511*(B*a^4*b^2 - 9*A*a^3*b^3)*x^2 - 279*(B*a^5*b - 9*A*a^4*b^2)*x)*
sqrt(x))/(a^6*b^5*x^5 + 4*a^7*b^4*x^4 + 6*a^8*b^3*x^3 + 4*a^9*b^2*x^2 + a^1
0*b*x), -1/192*(105*((B*a*b^4 - 9*A*b^5)*x^5 + 4*(B*a^2*b^3 - 9*A*a*b^4)*x^
4 + 6*(B*a^3*b^2 - 9*A*a^2*b^3)*x^3 + 4*(B*a^4*b - 9*A*a^3*b^2)*x^2 + (B*a^
5 - 9*A*a^4*b)*x)*sqrt(a*b)*arctan(sqrt(a*b)/(b*sqrt(x))) + (384*A*a^5*b -
105*(B*a^2*b^4 - 9*A*a*b^5)*x^4 - 385*(B*a^3*b^3 - 9*A*a^2*b^4)*x^3 - 511*(
B*a^4*b^2 - 9*A*a^3*b^3)*x^2 - 279*(B*a^5*b - 9*A*a^4*b^2)*x)*sqrt(x))/(a^6
*b^5*x^5 + 4*a^7*b^4*x^4 + 6*a^8*b^3*x^3 + 4*a^9*b^2*x^2 + a^10*b*x)]
```

giac [A] time = 0.27, size = 158, normalized size = 0.51

$$\frac{35\,(Ba-9\,Ab)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^5\mathrm{sgn}\left(bx+a\right)}-\frac{2\,A}{a^5\sqrt{x}\,\mathrm{sgn}\left(bx+a\right)}+\frac{105\,Bab^3x^{\frac{7}{2}}-561\,Ab^4x^{\frac{7}{2}}+385\,Ba^2b^2x^{\frac{5}{2}}-1929\,Aab^3x^{\frac{5}{2}}+}{192\,(bx+a)^4a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 35/64*(B*a - 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5*sgn(b*x + a)
) - 2*A/(a^5*sqrt(x)*sgn(b*x + a)) + 1/192*(105*B*a*b^3*x^(7/2) - 561*A*b^4
*x^(7/2) + 385*B*a^2*b^2*x^(5/2) - 1929*A*a*b^3*x^(5/2) + 511*B*a^3*b*x^(3/
2) - 2295*A*a^2*b^2*x^(3/2) + 279*B*a^4*sqrt(x) - 975*A*a^3*b*sqrt(x))/((b*
x + a)^4*a^5*sgn(b*x + a))
```

maple [A] time = 0.07, size = 374, normalized size = 1.20

$$-\frac{\left(945A\,b^5x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-105Ba\,b^4x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+3780Aa\,b^4x^{\frac{7}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-420B\,a^2b^3x^{\frac{7}{2}}\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(945*(a*b)^(1/2)*A*b^4*x^4-105*(a*b)^(1/2)*B*a*b^3*x^4+3465*(a*b)^(1
/2)*A*a*b^3*x^3+945*A*b^5*x^(9/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-385*(a*b)
^(1/2)*B*a^2*b^2*x^3-105*B*a*b^4*x^(9/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))+37
80*A*a*b^4*x^(7/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-420*B*a^2*b^3*x^(7/2)*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))+4599*(a*b)^(1/2)*A*a^2*b^2*x^2+5670*A*a^2*b^3
*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))-511*(a*b)^(1/2)*B*a^3*b*x^2-630*B*
a^3*b^2*x^(5/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))+3780*A*x^(3/2)*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*a^3*b^2-420*B*x^(3/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2))*a
^4*b+2511*(a*b)^(1/2)*A*a^3*b*x+945*A*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/2
))*a^4*b-279*(a*b)^(1/2)*B*a^4*x-105*B*x^(1/2)*arctan(1/(a*b)^(1/2)*b*x^(1/
2))*a^5+384*(a*b)^(1/2)*A*a^4)*(b*x+a)/x^(1/2)/(a*b)^(1/2)/a^5/((b*x+a)^2)^
(5/2)
```

maxima [B] time = 1.93, size = 427, normalized size = 1.37

$$-\frac{35\left(\left(Bab^{6}+9\,Ab^{7}\right)x^{2}-27\left(Ba^{2}b^{5}-11\,Aab^{6}\right)x\right)x^{\frac{9}{2}}+70\left(\left(Ba^{2}b^{5}+9\,Aab^{6}\right)x^{2}-81\left(Ba^{3}b^{4}-11\,Aa^{2}b^{5}\right)x\right)x^{\frac{7}{2}}-14}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(35*((B*a*b^6 + 9*A*b^7)*x^2 - 27*(B*a^2*b^5 - 11*A*a*b^6)*x)*x^(9/
2) + 70*((B*a^2*b^5 + 9*A*a*b^6)*x^2 - 81*(B*a^3*b^4 - 11*A*a^2*b^5)*x)*x^(
7/2) - 140*(2*(B*a^3*b^4 + 9*A*a^2*b^5)*x^2 + 99*(B*a^4*b^3 - 11*A*a^3*b^4)
*x)*x^(5/2) - 14*(85*(B*a^4*b^3 + 9*A*a^3*b^4)*x^2 + 1251*(B*a^5*b^2 - 11*A
*a^4*b^3)*x)*x^(3/2) - (1771*(B*a^5*b^2 + 9*A*a^4*b^3)*x^2 + 11835*(B*a^6*b
 - 11*A*a^5*b^2)*x)*sqrt(x) - 1280*((B*a^6*b + 9*A*a^5*b^2)*x^2 + 3*(B*a^7
- 11*A*a^6*b)*x)/sqrt(x) - 3840*(A*a^6*b*x^2 - A*a^7*x)/x^(3/2))/(a^7*b^5*x
^5 + 5*a^8*b^4*x^4 + 10*a^9*b^3*x^3 + 10*a^10*b^2*x^2 + 5*a^11*b*x + a^12)
+ 35/64*(B*a - 9*A*b)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^5) + 7/384*(
(B*a*b + 9*A*b^2)*x^(3/2) - 30*(B*a^2 - 9*A*a*b)*sqrt(x))/a^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.834 $\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=357

$$\frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{105\sqrt{b}\,(a+bx)(11Ab-3aB)\,\text{ta}}{64a^{13/2}\sqrt{a^2+2abx+b}}$$

```
[Out] 21/64*(11*A*b-3*B*a)/a^4/b/x^(3/2)/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)/a/b/x^(3
/2)/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(11*A*b-3*B*a)/a^2/b/x^(3/2)/(b*x+a)^2
/((b*x+a)^2)^(1/2)+3/32*(11*A*b-3*B*a)/a^3/b/x^(3/2)/(b*x+a)/((b*x+a)^2)^(1
/2)-35/64*(11*A*b-3*B*a)*(b*x+a)/a^5/b/x^(3/2)/((b*x+a)^2)^(1/2)+105/64*(11
*A*b-3*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))*b^(1/2)/a^(13/2)/((b*x+
a)^2)^(1/2)+105/64*(11*A*b-3*B*a)*(b*x+a)/a^6/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.161$, Rules used = {770, 78, 51, 63, 205}

$$\frac{105(a+bx)(11Ab-3aB)}{64a^6\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}-\frac{35(a+bx)(11Ab-3aB)}{64a^5bx^{3/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{3(11Ab-3aB)}{32a^3bx^{3/2}(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{21(}{64a^4bx^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (21*(11*A*b - 3*a*B))/(64*a^4*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A
*b - a*B)/(4*a*b*x^(3/2)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (11*A
*b - 3*a*B)/(24*a^2*b*x^(3/2)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(3*(11*A*b - 3*a*B))/(32*a^3*b*x^(3/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (35*(11*A*b - 3*a*B)*(a + b*x))/(64*a^5*b*x^(3/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (105*(11*A*b - 3*a*B)*(a + b*x))/(64*a^6*Sqrt[x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (105*Sqrt[b]*(11*A*b - 3*a*B)*(a + b*x)*ArcTan[(Sqrt[
b]*Sqrt[x])/Sqrt[a]])/(64*a^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{5/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(11Ab-3aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{5/2}(ab+b}}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{11Ab-3aB}{24a^2bx^{3/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{21(11Ab-3aB)}{64a^4bx^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{3/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.22

$$\frac{3a^4(Ab-aB)-(a+bx)^4(11Ab-3aB)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};-\frac{bx}{a}\right)}{12a^5bx^{3/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (3*a^4*(A*b - a*B) - (11*A*b - 3*a*B)*(a + b*x)^4*Hypergeometric2F1[-3/2, 4
, -1/2, -((b*x)/a)])/(12*a^5*b*x^(3/2)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas **[A]** time = 1.03, size = 616, normalized size = 1.73

$$\left[-\frac{315\left(\left(3\,Bab^4-11\,Ab^5\right)x^6+4\left(3\,Ba^2b^3-11\,Aab^4\right)x^5+6\left(3\,Ba^3b^2-11\,Aa^2b^3\right)x^4+4\left(3\,Ba^4b-11\,Aa^3b^2\right)x^3\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/384*(315*((3*B*a*b^4 - 11*A*b^5)*x^6 + 4*(3*B*a^2*b^3 - 11*A*a*b^4)*x^5
 + 6*(3*B*a^3*b^2 - 11*A*a^2*b^3)*x^4 + 4*(3*B*a^4*b - 11*A*a^3*b^2)*x^3 +
(3*B*a^5 - 11*A*a^4*b)*x^2)*sqrt(-b/a)*log((b*x + 2*a*sqrt(x)*sqrt(-b/a) -
a)/(b*x + a)) + 2*(128*A*a^5 + 315*(3*B*a*b^4 - 11*A*b^5)*x^5 + 1155*(3*B*a
^2*b^3 - 11*A*a*b^4)*x^4 + 1533*(3*B*a^3*b^2 - 11*A*a^2*b^3)*x^3 + 837*(3*B
*a^4*b - 11*A*a^3*b^2)*x^2 + 128*(3*B*a^5 - 11*A*a^4*b)*x)*sqrt(x))/(a^6*b^
4*x^6 + 4*a^7*b^3*x^5 + 6*a^8*b^2*x^4 + 4*a^9*b*x^3 + a^10*x^2), 1/192*(315
*((3*B*a*b^4 - 11*A*b^5)*x^6 + 4*(3*B*a^2*b^3 - 11*A*a*b^4)*x^5 + 6*(3*B*a^
3*b^2 - 11*A*a^2*b^3)*x^4 + 4*(3*B*a^4*b - 11*A*a^3*b^2)*x^3 + (3*B*a^5 - 1
1*A*a^4*b)*x^2)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) - (128*A*a^5 + 31
5*(3*B*a*b^4 - 11*A*b^5)*x^5 + 1155*(3*B*a^2*b^3 - 11*A*a*b^4)*x^4 + 1533*(
3*B*a^3*b^2 - 11*A*a^2*b^3)*x^3 + 837*(3*B*a^4*b - 11*A*a^3*b^2)*x^2 + 128*
(3*B*a^5 - 11*A*a^4*b)*x)*sqrt(x))/(a^6*b^4*x^6 + 4*a^7*b^3*x^5 + 6*a^8*b^2
*x^4 + 4*a^9*b*x^3 + a^10*x^2)]
```

giac **[A]** time = 0.24, size = 180, normalized size = 0.50

$$-\frac{105\left(3\,Bab-11\,Ab^2\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^6\mathrm{sgn}\left(bx+a\right)}-\frac{2\left(3\,Bax-15\,Abx+Aa\right)}{3\,a^6x^{\frac{3}{2}}\mathrm{sgn}\left(bx+a\right)}-\frac{561\,Bab^4x^{\frac{7}{2}}-1545\,Ab^5x^{\frac{7}{2}}+1929\,Ba^2b^3x^{\frac{5}{2}}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] -105/64*(3*B*a*b - 11*A*b^2)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6*sgn
(b*x + a)) - 2/3*(3*B*a*x - 15*A*b*x + A*a)/(a^6*x^(3/2)*sgn(b*x + a)) - 1/
192*(561*B*a*b^4*x^(7/2) - 1545*A*b^5*x^(7/2) + 1929*B*a^2*b^3*x^(5/2) - 51
53*A*a*b^4*x^(5/2) + 2295*B*a^3*b^2*x^(3/2) - 5855*A*a^2*b^3*x^(3/2) + 975*
B*a^4*b*sqrt(x) - 2295*A*a^3*b^2*sqrt(x))/((b*x + a)^4*a^6*sgn(b*x + a))
```

maple **[A]** time = 0.08, size = 413, normalized size = 1.16

$$\frac{\left(3465A\,b^6x^{\frac{11}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-945Ba\,b^5x^{\frac{11}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+13860Aa\,b^5x^{\frac{9}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-3780B\,a^2b^4x^{\frac{9}{2}}\,\mathrm{arcta}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(13860*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^3*b^3-3780*B*arcta
n(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*a^4*b^2-945*B*arctan(1/(a*b)^(1/2)*b*x^(
1/2))*x^(11/2)*a*b^5+13860*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a*b^5-
3780*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a^2*b^4+20790*A*arctan(1/(a*
b)^(1/2)*b*x^(1/2))*x^(7/2)*a^2*b^4-5670*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*
x^(7/2)*a^3*b^3+3465*A*(a*b)^(1/2)*x^5*b^5-384*B*(a*b)^(1/2)*x*a^5-128*A*(a
*b)^(1/2)*a^5-945*B*(a*b)^(1/2)*x^5*a*b^4+12705*A*(a*b)^(1/2)*x^4*a*b^4+346
5*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/2)*b^6-3465*B*(a*b)^(1/2)*x^4*a^2
*b^3+16863*A*(a*b)^(1/2)*x^3*a^2*b^3-4599*B*(a*b)^(1/2)*x^3*a^3*b^2+9207*A*
(a*b)^(1/2)*x^2*a^3*b^2+3465*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(3/2)*a^4*
b^2-2511*B*(a*b)^(1/2)*x^2*a^4*b-945*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(3
/2)*a^5*b+1408*A*(a*b)^(1/2)*x*a^4*b)*(b*x+a)/x^(3/2)/(a*b)^(1/2)/a^6/((b*x
+a)^2)^(5/2)
```

maxima [B] time = 2.03, size = 495, normalized size = 1.39

$$-\frac{315\left(\left(Bab^{7}-11\,Ab^{8}\right)x^{2}+11\left(3\,Ba^{2}b^{6}-13\,Aab^{7}\right)x\right)x^{\frac{9}{2}}+630\left(\left(Ba^{2}b^{6}-11\,Aab^{7}\right)x^{2}+33\left(3\,Ba^{3}b^{5}-13\,Aa^{2}b^{6}\right)x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/1920*(315*((B*a*b^7 - 11*A*b^8)*x^2 + 11*(3*B*a^2*b^6 - 13*A*a*b^7)*x)*x
^(9/2) + 630*((B*a^2*b^6 - 11*A*a*b^7)*x^2 + 33*(3*B*a^3*b^5 - 13*A*a^2*b^6
)*x)*x^(7/2) - 420*(6*(B*a^3*b^5 - 11*A*a^2*b^6)*x^2 - 121*(3*B*a^4*b^4 - 1
3*A*a^3*b^5)*x)*x^(5/2) - 42*(255*(B*a^4*b^4 - 11*A*a^3*b^5)*x^2 - 1529*(3*
B*a^5*b^3 - 13*A*a^4*b^4)*x)*x^(3/2) - 33*(483*(B*a^5*b^3 - 11*A*a^4*b^4)*x
^2 - 1315*(3*B*a^6*b^2 - 13*A*a^5*b^3)*x)*sqrt(x) - 1280*(9*(B*a^6*b^2 - 11
*A*a^5*b^3)*x^2 - 11*(3*B*a^7*b - 13*A*a^6*b^2)*x)/sqrt(x) - 1280*(3*(B*a^7
*b - 11*A*a^6*b^2)*x^2 - (3*B*a^8 - 13*A*a^7*b)*x)/x^(3/2) + 1280*(3*A*a^7*
b*x^2 + A*a^8*x)/x^(5/2))/(a^8*b^5*x^5 + 5*a^9*b^4*x^4 + 10*a^10*b^3*x^3 +
10*a^11*b^2*x^2 + 5*a^12*b*x + a^13) - 105/64*(3*B*a*b - 11*A*b^2)*arctan(b
*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^6) + 21/128*((B*a*b^2 - 11*A*b^3)*x^(3/2)
+ 10*(3*B*a^2*b - 11*A*a*b^2)*sqrt(x))/a^8
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.835 $\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=404

$$\frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{231b^{3/2}(a+bx)(13Ab-5aB)\,\mathrm{ta}}{64a^{15/2}\sqrt{a^2+2abx+b^2}}$$

```
[Out] 33/64*(13*A*b-5*B*a)/a^4/b/x^(5/2)/((b*x+a)^2)^(1/2)+1/4*(A*b-B*a)/a/b/x^(5
/2)/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/24*(13*A*b-5*B*a)/a^2/b/x^(5/2)/(b*x+a)^2
/((b*x+a)^2)^(1/2)+11/96*(13*A*b-5*B*a)/a^3/b/x^(5/2)/(b*x+a)/((b*x+a)^2)^(
1/2)-231/320*(13*A*b-5*B*a)*(b*x+a)/a^5/b/x^(5/2)/((b*x+a)^2)^(1/2)+77/64*(
13*A*b-5*B*a)*(b*x+a)/a^6/x^(3/2)/((b*x+a)^2)^(1/2)-231/64*b^(3/2)*(13*A*b-
5*B*a)*(b*x+a)*arctan(b^(1/2)*x^(1/2)/a^(1/2))/a^(15/2)/((b*x+a)^2)^(1/2)-2
31/64*b*(13*A*b-5*B*a)*(b*x+a)/a^7/x^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.21, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.161, Rules used = {770, 78, 51, 63, 205}

$$-\frac{231b(a+bx)(13Ab-5aB)}{64a^7\sqrt{x}\sqrt{a^2+2abx+b^2x^2}}+\frac{77(a+bx)(13Ab-5aB)}{64a^6x^{3/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{231(a+bx)(13Ab-5aB)}{320a^5bx^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{11(13}{96a^3bx^{5/2}(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (33*(13*A*b - 5*a*B))/(64*a^4*b*x^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (A
*b - a*B)/(4*a*b*x^(5/2)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (13*A
*b - 5*a*B)/(24*a^2*b*x^(5/2)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(11*(13*A*b - 5*a*B))/(96*a^3*b*x^(5/2)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (231*(13*A*b - 5*a*B)*(a + b*x))/(320*a^5*b*x^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (77*(13*A*b - 5*a*B)*(a + b*x))/(64*a^6*x^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) - (231*b*(13*A*b - 5*a*B)*(a + b*x))/(64*a^7*Sqrt[x]*
Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b^(3/2)*(13*A*b - 5*a*B)*(a + b*x)*Ar
cTan[(Sqrt[b]*Sqrt[x])/Sqrt[a]])/(64*a^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{x^{7/2}\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(13Ab-5aB)\left(ab+b^2x\right)\right)\int \frac{1}{x^{7/2}\left(ab+b}{8a\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{13Ab-5aB}{24a^2bx^{5/2}(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

$$= \frac{33(13Ab-5aB)}{64a^4bx^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{Ab-aB}{4abx^{5/2}(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{}{24a^2b}$$

Mathematica [C] time = 0.03, size = 80, normalized size = 0.20

$$\frac{5a^4(Ab-aB)-(a+bx)^4(13Ab-5aB)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};-\frac{bx}{a}\right)}{20a^5bx^{5/2}(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (5*a^4*(A*b - a*B) - (13*A*b - 5*a*B)*(a + b*x)^4*Hypergeometric2F1[-5/2, 4
, -3/2, -((b*x)/a)])/(20*a^5*b*x^(5/2)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.15, size = 673, normalized size = 1.67

$$\left[-\frac{3465\left(\left(5\,Bab^5-13\,Ab^6\right)x^7+4\left(5\,Ba^2b^4-13\,Aab^5\right)x^6+6\left(5\,Ba^3b^3-13\,Aa^2b^4\right)x^5+4\left(5\,Ba^4b^2-13\,Aa^3b^3\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] [-1/1920*(3465*((5*B*a*b^5 - 13*A*b^6)*x^7 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*x
^6 + 6*(5*B*a^3*b^3 - 13*A*a^2*b^4)*x^5 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^
4 + (5*B*a^5*b - 13*A*a^4*b^2)*x^3)*sqrt(-b/a)*log((b*x - 2*a*sqrt(x)*sqrt(
-b/a) - a)/(b*x + a)) + 2*(384*A*a^6 - 3465*(5*B*a*b^5 - 13*A*b^6)*x^6 - 12
705*(5*B*a^2*b^4 - 13*A*a*b^5)*x^5 - 16863*(5*B*a^3*b^3 - 13*A*a^2*b^4)*x^4
 - 9207*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^3 - 1408*(5*B*a^5*b - 13*A*a^4*b^2)*
x^2 + 128*(5*B*a^6 - 13*A*a^5*b)*x)*sqrt(x))/(a^7*b^4*x^7 + 4*a^8*b^3*x^6 +
 6*a^9*b^2*x^5 + 4*a^10*b*x^4 + a^11*x^3), -1/960*(3465*((5*B*a*b^5 - 13*A*
b^6)*x^7 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*x^6 + 6*(5*B*a^3*b^3 - 13*A*a^2*b^4
)*x^5 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^4 + (5*B*a^5*b - 13*A*a^4*b^2)*x^3
)*sqrt(b/a)*arctan(a*sqrt(b/a)/(b*sqrt(x))) + (384*A*a^6 - 3465*(5*B*a*b^5
- 13*A*b^6)*x^6 - 12705*(5*B*a^2*b^4 - 13*A*a*b^5)*x^5 - 16863*(5*B*a^3*b^3
 - 13*A*a^2*b^4)*x^4 - 9207*(5*B*a^4*b^2 - 13*A*a^3*b^3)*x^3 - 1408*(5*B*a^
5*b - 13*A*a^4*b^2)*x^2 + 128*(5*B*a^6 - 13*A*a^5*b)*x)*sqrt(x))/(a^7*b^4*x
^7 + 4*a^8*b^3*x^6 + 6*a^9*b^2*x^5 + 4*a^10*b*x^4 + a^11*x^3)]
```

giac [A] time = 0.23, size = 207, normalized size = 0.51

$$\frac{231\left(5\,Bab^2-13\,Ab^3\right)\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)}{64\,\sqrt{ab}\,a^7\mathrm{sgn}\left(bx+a\right)}+\frac{2\left(75\,Babx^2-225\,Ab^2x^2-5\,Ba^2x+25\,Aabx-3\,Aa^2\right)}{15\,a^7x^{\frac{5}{2}}\mathrm{sgn}\left(bx+a\right)}+\frac{1545\,Bab^5x^{\frac{7}{2}}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 231/64*(5*B*a*b^2 - 13*A*b^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7*sg
n(b*x + a)) + 2/15*(75*B*a*b*x^2 - 225*A*b^2*x^2 - 5*B*a^2*x + 25*A*a*b*x -
 3*A*a^2)/(a^7*x^(5/2)*sgn(b*x + a)) + 1/192*(1545*B*a*b^5*x^(7/2) - 3249*A
*b^6*x^(7/2) + 5153*B*a^2*b^4*x^(5/2) - 10633*A*a*b^5*x^(5/2) + 5855*B*a^3*
b^3*x^(3/2) - 11767*A*a^2*b^4*x^(3/2) + 2295*B*a^4*b^2*sqrt(x) - 4431*A*a^3
*b^3*sqrt(x))/((b*x + a)^4*a^7*sgn(b*x + a))
```

maple [A] time = 0.08, size = 449, normalized size = 1.11

$$-\frac{\left(45045A\,b^7x^{\frac{13}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-17325Ba\,b^6x^{\frac{13}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)+180180Aa\,b^6x^{\frac{11}{2}}\arctan\left(\frac{b\sqrt{x}}{\sqrt{ab}}\right)-69300B\,a^2b^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(180180*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^3*b^4-69300*B*ar
ctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(7/2)*a^4*b^3-103950*B*arctan(1/(a*b)^(1/2)
*b*x^(1/2))*x^(9/2)*a^3*b^4+180180*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/
2)*a*b^6-69300*B*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(11/2)*a^2*b^5+270270*A*
arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(9/2)*a^2*b^5-17325*B*arctan(1/(a*b)^(1/2
)*b*x^(1/2))*x^(13/2)*a*b^6+45045*A*(a*b)^(1/2)*x^6*b^6+640*B*(a*b)^(1/2)*x
*a^6+384*A*(a*b)^(1/2)*a^6-7040*B*(a*b)^(1/2)*x^2*a^5*b-1664*A*(a*b)^(1/2)*
x*a^5*b-17325*B*(a*b)^(1/2)*x^6*a*b^5+165165*A*(a*b)^(1/2)*x^5*a*b^5+45045*
A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(13/2)*b^7-63525*B*(a*b)^(1/2)*x^5*a^2*
b^4+219219*A*(a*b)^(1/2)*x^4*a^2*b^4-84315*B*(a*b)^(1/2)*x^4*a^3*b^3+119691
*A*(a*b)^(1/2)*x^3*a^3*b^3+45045*A*arctan(1/(a*b)^(1/2)*b*x^(1/2))*x^(5/2)*
a^4*b^3-46035*B*(a*b)^(1/2)*x^3*a^4*b^2-17325*B*arctan(1/(a*b)^(1/2)*b*x^(1
/2))*x^(5/2)*a^5*b^2+18304*A*(a*b)^(1/2)*x^2*a^4*b^2)*(b*x+a)/x^(5/2)/(a*b)
^(1/2)/a^7/((b*x+a)^2)^(5/2)
```

maxima [A] time = 2.12, size = 550, normalized size = 1.36

$$\frac{1155\left(\left(3\,Bab^{8}-13\,Ab^{9}\right)x^{2}+39\left(Ba^{2}b^{7}-3\,Aab^{8}\right)x\right)x^{\frac{9}{2}}+2310\left(\left(3\,Ba^{2}b^{7}-13\,Aab^{8}\right)x^{2}+117\left(Ba^{3}b^{6}-3\,Aa^{2}b^{7}\right)x\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/1920*(1155*((3*B*a*b^8 - 13*A*b^9)*x^2 + 39*(B*a^2*b^7 - 3*A*a*b^8)*x)*x^
(9/2) + 2310*((3*B*a^2*b^7 - 13*A*a*b^8)*x^2 + 117*(B*a^3*b^6 - 3*A*a^2*b^7
)*x)*x^(7/2) - 4620*(2*(3*B*a^3*b^6 - 13*A*a^2*b^7)*x^2 - 143*(B*a^4*b^5 -
3*A*a^3*b^6)*x)*x^(5/2) - 462*(85*(3*B*a^4*b^5 - 13*A*a^3*b^6)*x^2 - 1807*(
B*a^5*b^4 - 3*A*a^4*b^5)*x)*x^(3/2) - 33*(1771*(3*B*a^5*b^4 - 13*A*a^4*b^5)
*x^2 - 17095*(B*a^6*b^3 - 3*A*a^5*b^4)*x)*sqrt(x) - 14080*(3*(3*B*a^6*b^3 -
 13*A*a^5*b^4)*x^2 - 13*(B*a^7*b^2 - 3*A*a^6*b^3)*x)/sqrt(x) - 1280*(11*(3*
B*a^7*b^2 - 13*A*a^6*b^3)*x^2 - 13*(B*a^8*b - 3*A*a^7*b^2)*x)/x^(3/2) - 128
0*((3*B*a^8*b - 13*A*a^7*b^2)*x^2 + (B*a^9 - 3*A*a^8*b)*x)/x^(5/2) - 256*(5
*A*a^8*b*x^2 + 3*A*a^9*x)/x^(7/2))/(a^9*b^5*x^5 + 5*a^10*b^4*x^4 + 10*a^11*
b^3*x^3 + 10*a^12*b^2*x^2 + 5*a^13*b*x + a^14) + 231/64*(5*B*a*b^2 - 13*A*b
^3)*arctan(b*sqrt(x)/sqrt(a*b))/(sqrt(a*b)*a^7) - 77/128*((3*B*a*b^3 - 13*A
*b^4)*x^(3/2) + 6*(5*B*a^2*b^2 - 13*A*a*b^3)*sqrt(x))/a^9
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.836 $\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=179

$$\frac{a^6Ax^{m+1}}{m+1}+\frac{a^5x^{m+2}(aB+6Ab)}{m+2}+\frac{3a^4bx^{m+3}(2aB+5Ab)}{m+3}+\frac{5a^3b^2x^{m+4}(3aB+4Ab)}{m+4}+\frac{5a^2b^3x^{m+5}(4aB+3Ab)}{m+5}+$$

```
[Out] a^6*A*x^(1+m)/(1+m)+a^5*(6*A*b+B*a)*x^(2+m)/(2+m)+3*a^4*b*(5*A*b+2*B*a)*x^(
3+m)/(3+m)+5*a^3*b^2*(4*A*b+3*B*a)*x^(4+m)/(4+m)+5*a^2*b^3*(3*A*b+4*B*a)*x^
(5+m)/(5+m)+3*a*b^4*(2*A*b+5*B*a)*x^(6+m)/(6+m)+b^5*(A*b+6*B*a)*x^(7+m)/(7+
m)+b^6*B*x^(8+m)/(8+m)
```

Rubi [A] time = 0.12, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}=0.074$, Rules used = $\{27, 76\}$

$$\frac{5a^3b^2x^{m+4}(3aB+4Ab)}{m+4}+\frac{5a^2b^3x^{m+5}(4aB+3Ab)}{m+5}+\frac{a^5x^{m+2}(aB+6Ab)}{m+2}+\frac{3a^4bx^{m+3}(2aB+5Ab)}{m+3}+\frac{a^6Ax^{m+1}}{m+1}+$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a^6*A*x^(1 + m))/(1 + m) + (a^5*(6*A*b + a*B)*x^(2 + m))/(2 + m) + (3*a^4*
b*(5*A*b + 2*a*B)*x^(3 + m))/(3 + m) + (5*a^3*b^2*(4*A*b + 3*a*B)*x^(4 + m)
)/(4 + m) + (5*a^2*b^3*(3*A*b + 4*a*B)*x^(5 + m))/(5 + m) + (3*a*b^4*(2*A*b
 + 5*a*B)*x^(6 + m))/(6 + m) + (b^5*(A*b + 6*a*B)*x^(7 + m))/(7 + m) + (b^6
*B*x^(8 + m))/(8 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int x^m(a+bx)^6(A+Bx)\,dx\\&=\int \left(a^6Ax^m+a^5(6Ab+aB)x^{1+m}+3a^4b(5Ab+2aB)x^{2+m}+5a^3b^2(4A\right.\\&=\frac{a^6Ax^{1+m}}{1+m}+\frac{a^5(6Ab+aB)x^{2+m}}{2+m}+\frac{3a^4b(5Ab+2aB)x^{3+m}}{3+m}+\frac{5a^3b^2(4A}{}\end{aligned}$$

Mathematica [A] time = 0.20, size = 135, normalized size = 0.75

$$\frac{x^{m+1}\left(\left(\frac{a^6}{m+1}+\frac{6a^5bx}{m+2}+\frac{15a^4b^2x^2}{m+3}+\frac{20a^3b^3x^3}{m+4}+\frac{15a^2b^4x^4}{m+5}+\frac{6ab^5x^5}{m+6}+\frac{b^6x^6}{m+7}\right)(Ab(m+8)-aB(m+1))+B(a+bx)^7\right)}{b(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^7 + (-(a*B*(1 + m)) + A*b*(8 + m))*(a^6/(1 + m) + (
6*a^5*b*x)/(2 + m) + (15*a^4*b^2*x^2)/(3 + m) + (20*a^3*b^3*x^3)/(4 + m) +
(15*a^2*b^4*x^4)/(5 + m) + (6*a*b^5*x^5)/(6 + m) + (b^6*x^6)/(7 + m))))/(b*
(8 + m))
```

fricas [B] time = 1.11, size = 1191, normalized size = 6.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] ((B*b^6*m^7 + 28*B*b^6*m^6 + 322*B*b^6*m^5 + 1960*B*b^6*m^4 + 6769*B*b^6*m^
3 + 13132*B*b^6*m^2 + 13068*B*b^6*m + 5040*B*b^6)*x^8 + ((6*B*a*b^5 + A*b^6
)*m^7 + 34560*B*a*b^5 + 5760*A*b^6 + 29*(6*B*a*b^5 + A*b^6)*m^6 + 343*(6*B*
a*b^5 + A*b^6)*m^5 + 2135*(6*B*a*b^5 + A*b^6)*m^4 + 7504*(6*B*a*b^5 + A*b^6
)*m^3 + 14756*(6*B*a*b^5 + A*b^6)*m^2 + 14832*(6*B*a*b^5 + A*b^6)*m)*x^7 +
3*((5*B*a^2*b^4 + 2*A*a*b^5)*m^7 + 33600*B*a^2*b^4 + 13440*A*a*b^5 + 30*(5*
B*a^2*b^4 + 2*A*a*b^5)*m^6 + 366*(5*B*a^2*b^4 + 2*A*a*b^5)*m^5 + 2340*(5*B*
a^2*b^4 + 2*A*a*b^5)*m^4 + 8409*(5*B*a^2*b^4 + 2*A*a*b^5)*m^3 + 16830*(5*B*
a^2*b^4 + 2*A*a*b^5)*m^2 + 17144*(5*B*a^2*b^4 + 2*A*a*b^5)*m)*x^6 + 5*((4*B
*a^3*b^3 + 3*A*a^2*b^4)*m^7 + 32256*B*a^3*b^3 + 24192*A*a^2*b^4 + 31*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*m^6 + 391*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^5 + 2581*(4*B
*a^3*b^3 + 3*A*a^2*b^4)*m^4 + 9544*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^3 + 19564*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*m^2 + 20304*(4*B*a^3*b^3 + 3*A*a^2*b^4)*m)*x^5
+ 5*((3*B*a^4*b^2 + 4*A*a^3*b^3)*m^7 + 30240*B*a^4*b^2 + 40320*A*a^3*b^3 +
32*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^6 + 418*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^5 +
2864*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^4 + 10993*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^
3 + 23312*(3*B*a^4*b^2 + 4*A*a^3*b^3)*m^2 + 24876*(3*B*a^4*b^2 + 4*A*a^3*b^
3)*m)*x^4 + 3*((2*B*a^5*b + 5*A*a^4*b^2)*m^7 + 26880*B*a^5*b + 67200*A*a^4*
b^2 + 33*(2*B*a^5*b + 5*A*a^4*b^2)*m^6 + 447*(2*B*a^5*b + 5*A*a^4*b^2)*m^5
+ 3195*(2*B*a^5*b + 5*A*a^4*b^2)*m^4 + 12864*(2*B*a^5*b + 5*A*a^4*b^2)*m^3
+ 28692*(2*B*a^5*b + 5*A*a^4*b^2)*m^2 + 32048*(2*B*a^5*b + 5*A*a^4*b^2)*m)*
x^3 + ((B*a^6 + 6*A*a^5*b)*m^7 + 20160*B*a^6 + 120960*A*a^5*b + 34*(B*a^6 +
 6*A*a^5*b)*m^6 + 478*(B*a^6 + 6*A*a^5*b)*m^5 + 3580*(B*a^6 + 6*A*a^5*b)*m^
4 + 15289*(B*a^6 + 6*A*a^5*b)*m^3 + 36706*(B*a^6 + 6*A*a^5*b)*m^2 + 44712*(
B*a^6 + 6*A*a^5*b)*m)*x^2 + (A*a^6*m^7 + 35*A*a^6*m^6 + 511*A*a^6*m^5 + 402
5*A*a^6*m^4 + 18424*A*a^6*m^3 + 48860*A*a^6*m^2 + 69264*A*a^6*m + 40320*A*a
^6)*x)*x^m/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118
124*m^2 + 109584*m + 40320)
```

giac [B] time = 0.27, size = 1808, normalized size = 10.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] (B*b^6*m^7*x^8*x^m + 6*B*a*b^5*m^7*x^7*x^m + A*b^6*m^7*x^7*x^m + 28*B*b^6*m
^6*x^8*x^m + 15*B*a^2*b^4*m^7*x^6*x^m + 6*A*a*b^5*m^7*x^6*x^m + 174*B*a*b^5
*m^6*x^7*x^m + 29*A*b^6*m^6*x^7*x^m + 322*B*b^6*m^5*x^8*x^m + 20*B*a^3*b^3*
m^7*x^5*x^m + 15*A*a^2*b^4*m^7*x^5*x^m + 450*B*a^2*b^4*m^6*x^6*x^m + 180*A*
a*b^5*m^6*x^6*x^m + 2058*B*a*b^5*m^5*x^7*x^m + 343*A*b^6*m^5*x^7*x^m + 1960
*B*b^6*m^4*x^8*x^m + 15*B*a^4*b^2*m^7*x^4*x^m + 20*A*a^3*b^3*m^7*x^4*x^m +
620*B*a^3*b^3*m^6*x^5*x^m + 465*A*a^2*b^4*m^6*x^5*x^m + 5490*B*a^2*b^4*m^5*
x^6*x^m + 2196*A*a*b^5*m^5*x^6*x^m + 12810*B*a*b^5*m^4*x^7*x^m + 2135*A*b^6
*m^4*x^7*x^m + 6769*B*b^6*m^3*x^8*x^m + 6*B*a^5*b*m^7*x^3*x^m + 15*A*a^4*b^
2*m^7*x^3*x^m + 480*B*a^4*b^2*m^6*x^4*x^m + 640*A*a^3*b^3*m^6*x^4*x^m + 782
0*B*a^3*b^3*m^5*x^5*x^m + 5865*A*a^2*b^4*m^5*x^5*x^m + 35100*B*a^2*b^4*m^4*
x^6*x^m + 14040*A*a*b^5*m^4*x^6*x^m + 45024*B*a*b^5*m^3*x^7*x^m + 7504*A*b^
6*m^3*x^7*x^m + 13132*B*b^6*m^2*x^8*x^m + B*a^6*m^7*x^2*x^m + 6*A*a^5*b*m^7
*x^2*x^m + 198*B*a^5*b*m^6*x^3*x^m + 495*A*a^4*b^2*m^6*x^3*x^m + 6270*B*a^4
*b^2*m^5*x^4*x^m + 8360*A*a^3*b^3*m^5*x^4*x^m + 51620*B*a^3*b^3*m^4*x^5*x^m
 + 38715*A*a^2*b^4*m^4*x^5*x^m + 126135*B*a^2*b^4*m^3*x^6*x^m + 50454*A*a*b
^5*m^3*x^6*x^m + 88536*B*a*b^5*m^2*x^7*x^m + 14756*A*b^6*m^2*x^7*x^m + 1306
8*B*b^6*m*x^8*x^m + A*a^6*m^7*x*x^m + 34*B*a^6*m^6*x^2*x^m + 204*A*a^5*b*m^
6*x^2*x^m + 2682*B*a^5*b*m^5*x^3*x^m + 6705*A*a^4*b^2*m^5*x^3*x^m + 42960*B
*a^4*b^2*m^4*x^4*x^m + 57280*A*a^3*b^3*m^4*x^4*x^m + 190880*B*a^3*b^3*m^3*x
^5*x^m + 143160*A*a^2*b^4*m^3*x^5*x^m + 252450*B*a^2*b^4*m^2*x^6*x^m + 1009
80*A*a*b^5*m^2*x^6*x^m + 88992*B*a*b^5*m*x^7*x^m + 14832*A*b^6*m*x^7*x^m +
5040*B*b^6*x^8*x^m + 35*A*a^6*m^6*x*x^m + 478*B*a^6*m^5*x^2*x^m + 2868*A*a^
5*b*m^5*x^2*x^m + 19170*B*a^5*b*m^4*x^3*x^m + 47925*A*a^4*b^2*m^4*x^3*x^m +
 164895*B*a^4*b^2*m^3*x^4*x^m + 219860*A*a^3*b^3*m^3*x^4*x^m + 391280*B*a^3
*b^3*m^2*x^5*x^m + 293460*A*a^2*b^4*m^2*x^5*x^m + 257160*B*a^2*b^4*m*x^6*x^
m + 102864*A*a*b^5*m*x^6*x^m + 34560*B*a*b^5*x^7*x^m + 5760*A*b^6*x^7*x^m +
 511*A*a^6*m^5*x*x^m + 3580*B*a^6*m^4*x^2*x^m + 21480*A*a^5*b*m^4*x^2*x^m +
 77184*B*a^5*b*m^3*x^3*x^m + 192960*A*a^4*b^2*m^3*x^3*x^m + 349680*B*a^4*b^
2*m^2*x^4*x^m + 466240*A*a^3*b^3*m^2*x^4*x^m + 406080*B*a^3*b^3*m*x^5*x^m +
 304560*A*a^2*b^4*m*x^5*x^m + 100800*B*a^2*b^4*x^6*x^m + 40320*A*a*b^5*x^6*
x^m + 4025*A*a^6*m^4*x*x^m + 15289*B*a^6*m^3*x^2*x^m + 91734*A*a^5*b*m^3*x^
2*x^m + 172152*B*a^5*b*m^2*x^3*x^m + 430380*A*a^4*b^2*m^2*x^3*x^m + 373140*
B*a^4*b^2*m*x^4*x^m + 497520*A*a^3*b^3*m*x^4*x^m + 161280*B*a^3*b^3*x^5*x^m
 + 120960*A*a^2*b^4*x^5*x^m + 18424*A*a^6*m^3*x*x^m + 36706*B*a^6*m^2*x^2*x
^m + 220236*A*a^5*b*m^2*x^2*x^m + 192288*B*a^5*b*m*x^3*x^m + 480720*A*a^4*b
^2*m*x^3*x^m + 151200*B*a^4*b^2*x^4*x^m + 201600*A*a^3*b^3*x^4*x^m + 48860*
A*a^6*m^2*x*x^m + 44712*B*a^6*m*x^2*x^m + 268272*A*a^5*b*m*x^2*x^m + 80640*
B*a^5*b*x^3*x^m + 201600*A*a^4*b^2*x^3*x^m + 69264*A*a^6*m*x*x^m + 20160*B*
a^6*x^2*x^m + 120960*A*a^5*b*x^2*x^m + 40320*A*a^6*x*x^m)/(m^8 + 36*m^7 + 5
46*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple [B] time = 0.06, size = 1438, normalized size = 8.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] x^(m+1)*(B*b^6*m^7*x^7+A*b^6*m^7*x^6+6*B*a*b^5*m^7*x^6+28*B*b^6*m^6*x^7+6*A
*a*b^5*m^7*x^5+29*A*b^6*m^6*x^6+15*B*a^2*b^4*m^7*x^5+174*B*a*b^5*m^6*x^6+32
2*B*b^6*m^5*x^7+15*A*a^2*b^4*m^7*x^4+180*A*a*b^5*m^6*x^5+343*A*b^6*m^5*x^6+
20*B*a^3*b^3*m^7*x^4+450*B*a^2*b^4*m^6*x^5+2058*B*a*b^5*m^5*x^6+1960*B*b^6*
m^4*x^7+20*A*a^3*b^3*m^7*x^3+465*A*a^2*b^4*m^6*x^4+2196*A*a*b^5*m^5*x^5+213
5*A*b^6*m^4*x^6+15*B*a^4*b^2*m^7*x^3+620*B*a^3*b^3*m^6*x^4+5490*B*a^2*b^4*m
^5*x^5+12810*B*a*b^5*m^4*x^6+6769*B*b^6*m^3*x^7+15*A*a^4*b^2*m^7*x^2+640*A*
a^3*b^3*m^6*x^3+5865*A*a^2*b^4*m^5*x^4+14040*A*a*b^5*m^4*x^5+7504*A*b^6*m^3
*x^6+6*B*a^5*b*m^7*x^2+480*B*a^4*b^2*m^6*x^3+7820*B*a^3*b^3*m^5*x^4+35100*B
*a^2*b^4*m^4*x^5+45024*B*a*b^5*m^3*x^6+13132*B*b^6*m^2*x^7+6*A*a^5*b*m^7*x+
495*A*a^4*b^2*m^6*x^2+8360*A*a^3*b^3*m^5*x^3+38715*A*a^2*b^4*m^4*x^4+50454*
A*a*b^5*m^3*x^5+14756*A*b^6*m^2*x^6+B*a^6*m^7*x+198*B*a^5*b*m^6*x^2+6270*B*
a^4*b^2*m^5*x^3+51620*B*a^3*b^3*m^4*x^4+126135*B*a^2*b^4*m^3*x^5+88536*B*a*
b^5*m^2*x^6+13068*B*b^6*m*x^7+A*a^6*m^7+204*A*a^5*b*m^6*x+6705*A*a^4*b^2*m^
5*x^2+57280*A*a^3*b^3*m^4*x^3+143160*A*a^2*b^4*m^3*x^4+100980*A*a*b^5*m^2*x
^5+14832*A*b^6*m*x^6+34*B*a^6*m^6*x+2682*B*a^5*b*m^5*x^2+42960*B*a^4*b^2*m^
4*x^3+190880*B*a^3*b^3*m^3*x^4+252450*B*a^2*b^4*m^2*x^5+88992*B*a*b^5*m*x^6
+5040*B*b^6*x^7+35*A*a^6*m^6+2868*A*a^5*b*m^5*x+47925*A*a^4*b^2*m^4*x^2+219
860*A*a^3*b^3*m^3*x^3+293460*A*a^2*b^4*m^2*x^4+102864*A*a*b^5*m*x^5+5760*A*
b^6*x^6+478*B*a^6*m^5*x+19170*B*a^5*b*m^4*x^2+164895*B*a^4*b^2*m^3*x^3+3912
80*B*a^3*b^3*m^2*x^4+257160*B*a^2*b^4*m*x^5+34560*B*a*b^5*x^6+511*A*a^6*m^5
+21480*A*a^5*b*m^4*x+192960*A*a^4*b^2*m^3*x^2+466240*A*a^3*b^3*m^2*x^3+3045
60*A*a^2*b^4*m*x^4+40320*A*a*b^5*x^5+3580*B*a^6*m^4*x+77184*B*a^5*b*m^3*x^2
+349680*B*a^4*b^2*m^2*x^3+406080*B*a^3*b^3*m*x^4+100800*B*a^2*b^4*x^5+4025*
A*a^6*m^4+91734*A*a^5*b*m^3*x+430380*A*a^4*b^2*m^2*x^2+497520*A*a^3*b^3*m*x
^3+120960*A*a^2*b^4*x^4+15289*B*a^6*m^3*x+172152*B*a^5*b*m^2*x^2+373140*B*a
^4*b^2*m*x^3+161280*B*a^3*b^3*x^4+18424*A*a^6*m^3+220236*A*a^5*b*m^2*x+4807
20*A*a^4*b^2*m*x^2+201600*A*a^3*b^3*x^3+36706*B*a^6*m^2*x+192288*B*a^5*b*m*
x^2+151200*B*a^4*b^2*x^3+48860*A*a^6*m^2+268272*A*a^5*b*m*x+201600*A*a^4*b^
2*x^2+44712*B*a^6*m*x+80640*B*a^5*b*x^2+69264*A*a^6*m+120960*A*a^5*b*x+2016
0*B*a^6*x+40320*A*a^6)/(m+8)/(m+7)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [**A**] time = 0.48, size = 243, normalized size = 1.36

$$\frac{Bb^6x^{m+8}}{m+8}+\frac{6\,Bab^5x^{m+7}}{m+7}+\frac{Ab^6x^{m+7}}{m+7}+\frac{15\,Ba^2b^4x^{m+6}}{m+6}+\frac{6\,Aab^5x^{m+6}}{m+6}+\frac{20\,Ba^3b^3x^{m+5}}{m+5}+\frac{15\,Aa^2b^4x^{m+5}}{m+5}+\frac{15\,Ba^4b^2x^{m+4}}{m+4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] B*b^6*x^(m + 8)/(m + 8) + 6*B*a*b^5*x^(m + 7)/(m + 7) + A*b^6*x^(m + 7)/(m
+ 7) + 15*B*a^2*b^4*x^(m + 6)/(m + 6) + 6*A*a*b^5*x^(m + 6)/(m + 6) + 20*B*
a^3*b^3*x^(m + 5)/(m + 5) + 15*A*a^2*b^4*x^(m + 5)/(m + 5) + 15*B*a^4*b^2*x
^(m + 4)/(m + 4) + 20*A*a^3*b^3*x^(m + 4)/(m + 4) + 6*B*a^5*b*x^(m + 3)/(m
+ 3) + 15*A*a^4*b^2*x^(m + 3)/(m + 3) + B*a^6*x^(m + 2)/(m + 2) + 6*A*a^5*b
*x^(m + 2)/(m + 2) + A*a^6*x^(m + 1)/(m + 1)
```

mupad [**B**] time = 1.77, size = 729, normalized size = 4.07

$$\frac{A\,a^6\,x\,x^m\,\left(m^7+35\,m^6+511\,m^5+4025\,m^4+18424\,m^3+48860\,m^2+69264\,m+40320\right)}{m^8+36\,m^7+546\,m^6+4536\,m^5+22449\,m^4+67284\,m^3+118124\,m^2+109584\,m+40320}+\frac{B\,b^6\,x^m\,x^8\,\left(m^7\right.}{m^8+36\,m^7+546}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (A*a^6*x*x^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*m^5 + 35*m^6
 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320) + (B*b^6*x^m*x^8*(13068*m + 13132*m^2 + 6
769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2
 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (a^
5*x^m*x^2*(6*A*b + B*a)*(44712*m + 36706*m^2 + 15289*m^3 + 3580*m^4 + 478*m
^5 + 34*m^6 + m^7 + 20160))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
+ 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (b^5*x^m*x^7*(A*b + 6*B*a)*(
14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*m^5 + 29*m^6 + m^7 + 5760))
/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m
^7 + m^8 + 40320) + (3*a*b^4*x^m*x^6*(2*A*b + 5*B*a)*(17144*m + 16830*m^2 +
 8409*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 6720))/(109584*m + 118124*m
^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (
3*a^4*b*x^m*x^3*(5*A*b + 2*B*a)*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4
 + 447*m^5 + 33*m^6 + m^7 + 13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (5*a^2*b^3*x^m*x^5*(
3*A*b + 4*B*a)*(20304*m + 19564*m^2 + 9544*m^3 + 2581*m^4 + 391*m^5 + 31*m^
6 + m^7 + 8064))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320) + (5*a^3*b^2*x^m*x^4*(4*A*b + 3*B*a)*(248
76*m + 23312*m^2 + 10993*m^3 + 2864*m^4 + 418*m^5 + 32*m^6 + m^7 + 10080))/
(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^
7 + m^8 + 40320)
```

sympy [A] time = 5.08, size = 7745, normalized size = 43.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((-A*a**6/(7*x**7) - A*a**5*b/x**6 - 3*A*a**4*b**2/x**5 - 5*A*a**3
*b**3/x**4 - 5*A*a**2*b**4/x**3 - 3*A*a*b**5/x**2 - A*b**6/x - B*a**6/(6*x*
*6) - 6*B*a**5*b/(5*x**5) - 15*B*a**4*b**2/(4*x**4) - 20*B*a**3*b**3/(3*x**
3) - 15*B*a**2*b**4/(2*x**2) - 6*B*a*b**5/x + B*b**6*log(x), Eq(m, -8)), (-
A*a**6/(6*x**6) - 6*A*a**5*b/(5*x**5) - 15*A*a**4*b**2/(4*x**4) - 20*A*a**3
*b**3/(3*x**3) - 15*A*a**2*b**4/(2*x**2) - 6*A*a*b**5/x + A*b**6*log(x) - B
*a**6/(5*x**5) - 3*B*a**5*b/(2*x**4) - 5*B*a**4*b**2/x**3 - 10*B*a**3*b**3/
x**2 - 15*B*a**2*b**4/x + 6*B*a*b**5*log(x) + B*b**6*x, Eq(m, -7)), (-A*a**
6/(5*x**5) - 3*A*a**5*b/(2*x**4) - 5*A*a**4*b**2/x**3 - 10*A*a**3*b**3/x**2
 - 15*A*a**2*b**4/x + 6*A*a*b**5*log(x) + A*b**6*x - B*a**6/(4*x**4) - 2*B*
a**5*b/x**3 - 15*B*a**4*b**2/(2*x**2) - 20*B*a**3*b**3/x + 15*B*a**2*b**4*l
og(x) + 6*B*a*b**5*x + B*b**6*x**2/2, Eq(m, -6)), (-A*a**6/(4*x**4) - 2*A*a
**5*b/x**3 - 15*A*a**4*b**2/(2*x**2) - 20*A*a**3*b**3/x + 15*A*a**2*b**4*lo
g(x) + 6*A*a*b**5*x + A*b**6*x**2/2 - B*a**6/(3*x**3) - 3*B*a**5*b/x**2 - 1
5*B*a**4*b**2/x + 20*B*a**3*b**3*log(x) + 15*B*a**2*b**4*x + 3*B*a*b**5*x**
2 + B*b**6*x**3/3, Eq(m, -5)), (-A*a**6/(3*x**3) - 3*A*a**5*b/x**2 - 15*A*a
**4*b**2/x + 20*A*a**3*b**3*log(x) + 15*A*a**2*b**4*x + 3*A*a*b**5*x**2 + A
*b**6*x**3/3 - B*a**6/(2*x**2) - 6*B*a**5*b/x + 15*B*a**4*b**2*log(x) + 20*
B*a**3*b**3*x + 15*B*a**2*b**4*x**2/2 + 2*B*a*b**5*x**3 + B*b**6*x**4/4, Eq
(m, -4)), (-A*a**6/(2*x**2) - 6*A*a**5*b/x + 15*A*a**4*b**2*log(x) + 20*A*a
**3*b**3*x + 15*A*a**2*b**4*x**2/2 + 2*A*a*b**5*x**3 + A*b**6*x**4/4 - B*a*
*6/x + 6*B*a**5*b*log(x) + 15*B*a**4*b**2*x + 10*B*a**3*b**3*x**2 + 5*B*a**
2*b**4*x**3 + 3*B*a*b**5*x**4/2 + B*b**6*x**5/5, Eq(m, -3)), (-A*a**6/x + 6
*A*a**5*b*log(x) + 15*A*a**4*b**2*x + 10*A*a**3*b**3*x**2 + 5*A*a**2*b**4*x
**3 + 3*A*a*b**5*x**4/2 + A*b**6*x**5/5 + B*a**6*log(x) + 6*B*a**5*b*x + 15
*B*a**4*b**2*x**2/2 + 20*B*a**3*b**3*x**3/3 + 15*B*a**2*b**4*x**4/4 + 6*B*a
*b**5*x**5/5 + B*b**6*x**6/6, Eq(m, -2)), (A*a**6*log(x) + 6*A*a**5*b*x + 1
5*A*a**4*b**2*x**2/2 + 20*A*a**3*b**3*x**3/3 + 15*A*a**2*b**4*x**4/4 + 6*A*
a*b**5*x**5/5 + A*b**6*x**6/6 + B*a**6*x + 3*B*a**5*b*x**2 + 5*B*a**4*b**2*
x**3 + 5*B*a**3*b**3*x**4 + 3*B*a**2*b**4*x**5 + B*a*b**5*x**6 + B*b**6*x**
7/7, Eq(m, -1)), (A*a**6*m**7*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35*A*a**6*m*
*6*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 511*A*a**6*m**5*x*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 4025*A*a**6*m**4*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 18424*A*a**6*m*
*3*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
+ 118124*m**2 + 109584*m + 40320) + 48860*A*a**6*m**2*x*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 69264*A*a**6*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**6*x*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 6*A*a**5*b*m**7*x**2*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 204*A*a**5*b*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2868*A*a**5*b
*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 21480*A*a**5*b*m**4*x**2*x**m/(m*
*8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
 + 109584*m + 40320) + 91734*A*a**5*b*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
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) + 220236*A*a**5*b*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 268272*A*a**5*
b*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 120960*A*a**5*b*x**2*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 15*A*a**4*b**2*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 49
5*A*a**4*b**2*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449
*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6705*A*a**4*b**2*m**
5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 47925*A*a**4*b**2*m**4*x**3*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 192960*A*a**4*b**2*m**3*x**3*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 430380*A*a**4*b**2*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 480720*A
*a**4*b**2*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 201600*A*a**4*b**2*x**3*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 20*A*a**3*b**3*m**7*x**4*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 640*A*a**3*b**3*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8360*A*a
**3*b**3*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 57280*A*a**3*b**3*m**4*x*
*4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 219860*A*a**3*b**3*m**3*x**4*x**m/(m**8 +
 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 466240*A*a**3*b**3*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 497520*A*a**3*b**3*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 201600*A*a**3*
b**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 15*A*a**2*b**4*m**7*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 465*A*a**2*b**4*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 5865*A*a**2*b**4*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38715*A*a**2*
b**4*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 143160*A*a**2*b**4*m**3*x**5*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 293460*A*a**2*b**4*m**2*x**5*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 304560*A*a**2*b**4*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 12
0960*A*a**2*b**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6*A*a*b**5*m**7*x**6*x
**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 180*A*a*b**5*m**6*x**6*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 2196*A*a*b**5*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14040*A*a*b
**5*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 50454*A*a*b**5*m**3*x**6*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 100980*A*a*b**5*m**2*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 102864*A*a*b**5*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
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+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a*b**
5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + A*b**6*m**7*x**7*x**m/(m**8 + 36*m**7
 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
+ 40320) + 29*A*b**6*m**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 343*A*b**6*m*
*5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 2135*A*b**6*m**4*x**7*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 7504*A*b**6*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14756
*A*b**6*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*b**6*m*x**7*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 5760*A*b**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + B*
a**6*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a**6*m**6*x**2*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 478*B*a**6*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3
580*B*a**6*m**4*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 15289*B*a**6*m**3*x**2*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 36706*B*a**6*m**2*x**2*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 44712*B*a**6*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a**6*x
**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
 118124*m**2 + 109584*m + 40320) + 6*B*a**5*b*m**7*x**3*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 198*B*a**5*b*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2682*B*a*
*5*b*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 19170*B*a**5*b*m**4*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 77184*B*a**5*b*m**3*x**3*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 172152*B*a**5*b*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 192288*B*a
**5*b*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 80640*B*a**5*b*x**3*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 15*B*a**4*b**2*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 480*B*a**4*b**2*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6270*B*a**4*b**2*
m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 42960*B*a**4*b**2*m**4*x**4*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 164895*B*a**4*b**2*m**3*x**4*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 349680*B*a**4*b**2*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 37314
0*B*a**4*b**2*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m*
*4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 151200*B*a**4*b**2*x**4
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 20*B*a**3*b**3*m**7*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
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m + 40320) + 620*B*a**3*b**3*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 45
36*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7820*
B*a**3*b**3*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 51620*B*a**3*b**3*m**4
*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 190880*B*a**3*b**3*m**3*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 391280*B*a**3*b**3*m**2*x**5*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 406080*B*a**3*b**3*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 161280*B*a*
*3*b**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 15*B*a**2*b**4*m**7*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 450*B*a**2*b**4*m**6*x**6*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 5490*B*a**2*b**4*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 35100*B*a*
*2*b**4*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 126135*B*a**2*b**4*m**3*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 252450*B*a**2*b**4*m**2*x**6*x**m/(m**8 +
 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 257160*B*a**2*b**4*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 100800*B*a**2*b**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 6*B*a*b**5*m**7*x**
7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1
18124*m**2 + 109584*m + 40320) + 174*B*a*b**5*m**6*x**7*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 2058*B*a*b**5*m**5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 12810*B*
a*b**5*m**4*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 45024*B*a*b**5*m**3*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 88536*B*a*b**5*m**2*x**7*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + 88992*B*a*b**5*m*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34560*B*a*b*
*5*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + B*b**6*m**7*x**8*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 28*B*b**6*m**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 322*B*b**6*m
**5*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 1960*B*b**6*m**4*x**8*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 6769*B*b**6*m**3*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4
536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1313
2*B*b**6*m**2*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13068*B*b**6*m*x**8*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 5040*B*b**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320), Tr
ue))
```

3.837 $\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=125

$$\frac{a^4Ax^{m+1}}{m+1}+\frac{a^3x^{m+2}(aB+4Ab)}{m+2}+\frac{2a^2bx^{m+3}(2aB+3Ab)}{m+3}+\frac{b^3x^{m+5}(4aB+Ab)}{m+5}+\frac{2ab^2x^{m+4}(3aB+2Ab)}{m+4}+\frac{b^4Bx^{m+6}}{m+6}$$

```
[Out] a^4*A*x^(1+m)/(1+m)+a^3*(4*A*b+B*a)*x^(2+m)/(2+m)+2*a^2*b*(3*A*b+2*B*a)*x^(
3+m)/(3+m)+2*a*b^2*(2*A*b+3*B*a)*x^(4+m)/(4+m)+b^3*(A*b+4*B*a)*x^(5+m)/(5+m
)+b^4*B*x^(6+m)/(6+m)
```

Rubi [A] time = 0.07, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 76}

$$\frac{a^3x^{m+2}(aB+4Ab)}{m+2}+\frac{2a^2bx^{m+3}(2aB+3Ab)}{m+3}+\frac{a^4Ax^{m+1}}{m+1}+\frac{2ab^2x^{m+4}(3aB+2Ab)}{m+4}+\frac{b^3x^{m+5}(4aB+Ab)}{m+5}+\frac{b^4Bx^{m+6}}{m+6}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a^4*A*x^(1 + m))/(1 + m) + (a^3*(4*A*b + a*B)*x^(2 + m))/(2 + m) + (2*a^2*
b*(3*A*b + 2*a*B)*x^(3 + m))/(3 + m) + (2*a*b^2*(2*A*b + 3*a*B)*x^(4 + m))/
(4 + m) + (b^3*(A*b + 4*a*B)*x^(5 + m))/(5 + m) + (b^4*B*x^(6 + m))/(6 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx&=\int x^m(a+bx)^4(A+Bx)\,dx\\&=\int\left(a^4Ax^m+a^3(4Ab+aB)x^{1+m}+2a^2b(3Ab+2aB)x^{2+m}+2ab^2(2A\right.\\&=\frac{a^4Ax^{1+m}}{1+m}+\frac{a^3(4Ab+aB)x^{2+m}}{2+m}+\frac{2a^2b(3Ab+2aB)x^{3+m}}{3+m}+2ab^2(2A\end{aligned}$$

Mathematica [A] time = 0.13, size = 103, normalized size = 0.82

$$\frac{x^{m+1}\left(\left(\frac{a^4}{m+1}+\frac{4a^3bx}{m+2}+\frac{6a^2b^2x^2}{m+3}+\frac{4ab^3x^3}{m+4}+\frac{b^4x^4}{m+5}\right)(Ab(m+6)-aB(m+1))+B(a+bx)^5\right)}{b(m+6)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^5 + (-(a*B*(1 + m)) + A*b*(6 + m))*(a^4/(1 + m) + (
4*a^3*b*x)/(2 + m) + (6*a^2*b^2*x^2)/(3 + m) + (4*a*b^3*x^3)/(4 + m) + (b^4
*x^4)/(5 + m))))/(b*(6 + m))
```

fricas [B] time = 1.04, size = 607, normalized size = 4.86

$$((Bb^4m^5 + 15\,Bb^4m^4 + 85\,Bb^4m^3 + 225\,Bb^4m^2 + 274\,Bb^4m + 120\,Bb^4)x^6 + ((4\,Bab^3 + Ab^4)m^5 + 576\,Bab^3 + 14$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] ((B*b^4*m^5 + 15*B*b^4*m^4 + 85*B*b^4*m^3 + 225*B*b^4*m^2 + 274*B*b^4*m + 1
20*B*b^4)*x^6 + ((4*B*a*b^3 + A*b^4)*m^5 + 576*B*a*b^3 + 144*A*b^4 + 16*(4*
B*a*b^3 + A*b^4)*m^4 + 95*(4*B*a*b^3 + A*b^4)*m^3 + 260*(4*B*a*b^3 + A*b^4)
*m^2 + 324*(4*B*a*b^3 + A*b^4)*m)*x^5 + 2*((3*B*a^2*b^2 + 2*A*a*b^3)*m^5 +
540*B*a^2*b^2 + 360*A*a*b^3 + 17*(3*B*a^2*b^2 + 2*A*a*b^3)*m^4 + 107*(3*B*a
^2*b^2 + 2*A*a*b^3)*m^3 + 307*(3*B*a^2*b^2 + 2*A*a*b^3)*m^2 + 396*(3*B*a^2*
b^2 + 2*A*a*b^3)*m)*x^4 + 2*((2*B*a^3*b + 3*A*a^2*b^2)*m^5 + 480*B*a^3*b +
720*A*a^2*b^2 + 18*(2*B*a^3*b + 3*A*a^2*b^2)*m^4 + 121*(2*B*a^3*b + 3*A*a^2
*b^2)*m^3 + 372*(2*B*a^3*b + 3*A*a^2*b^2)*m^2 + 508*(2*B*a^3*b + 3*A*a^2*b^
2)*m)*x^3 + ((B*a^4 + 4*A*a^3*b)*m^5 + 360*B*a^4 + 1440*A*a^3*b + 19*(B*a^4
 + 4*A*a^3*b)*m^4 + 137*(B*a^4 + 4*A*a^3*b)*m^3 + 461*(B*a^4 + 4*A*a^3*b)*m
^2 + 702*(B*a^4 + 4*A*a^3*b)*m)*x^2 + (A*a^4*m^5 + 20*A*a^4*m^4 + 155*A*a^4
*m^3 + 580*A*a^4*m^2 + 1044*A*a^4*m + 720*A*a^4)*x)*x^m/(m^6 + 21*m^5 + 175
*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)
```

giac [B] time = 0.20, size = 926, normalized size = 7.41

$$Bb^4m^5x^6x^m + 4\,Bab^3m^5x^5x^m + Ab^4m^5x^5x^m + 15\,Bb^4m^4x^6x^m + 6\,Ba^2b^2m^5x^4x^m + 4\,Aab^3m^5x^4x^m + 64\,Bab^3m^4x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*b^4*m^5*x^6*x^m + 4*B*a*b^3*m^5*x^5*x^m + A*b^4*m^5*x^5*x^m + 15*B*b^4*m
^4*x^6*x^m + 6*B*a^2*b^2*m^5*x^4*x^m + 4*A*a*b^3*m^5*x^4*x^m + 64*B*a*b^3*m
^4*x^5*x^m + 16*A*b^4*m^4*x^5*x^m + 85*B*b^4*m^3*x^6*x^m + 4*B*a^3*b*m^5*x^
3*x^m + 6*A*a^2*b^2*m^5*x^3*x^m + 102*B*a^2*b^2*m^4*x^4*x^m + 68*A*a*b^3*m^
4*x^4*x^m + 380*B*a*b^3*m^3*x^5*x^m + 95*A*b^4*m^3*x^5*x^m + 225*B*b^4*m^2*
x^6*x^m + B*a^4*m^5*x^2*x^m + 4*A*a^3*b*m^5*x^2*x^m + 72*B*a^3*b*m^4*x^3*x^
m + 108*A*a^2*b^2*m^4*x^3*x^m + 642*B*a^2*b^2*m^3*x^4*x^m + 428*A*a*b^3*m^3
*x^4*x^m + 1040*B*a*b^3*m^2*x^5*x^m + 260*A*b^4*m^2*x^5*x^m + 274*B*b^4*m*x
^6*x^m + A*a^4*m^5*x*x^m + 19*B*a^4*m^4*x^2*x^m + 76*A*a^3*b*m^4*x^2*x^m +
484*B*a^3*b*m^3*x^3*x^m + 726*A*a^2*b^2*m^3*x^3*x^m + 1842*B*a^2*b^2*m^2*x^
4*x^m + 1228*A*a*b^3*m^2*x^4*x^m + 1296*B*a*b^3*m*x^5*x^m + 324*A*b^4*m*x^5
*x^m + 120*B*b^4*x^6*x^m + 20*A*a^4*m^4*x*x^m + 137*B*a^4*m^3*x^2*x^m + 548
*A*a^3*b*m^3*x^2*x^m + 1488*B*a^3*b*m^2*x^3*x^m + 2232*A*a^2*b^2*m^2*x^3*x^
m + 2376*B*a^2*b^2*m*x^4*x^m + 1584*A*a*b^3*m*x^4*x^m + 576*B*a*b^3*x^5*x^m
 + 144*A*b^4*x^5*x^m + 155*A*a^4*m^3*x*x^m + 461*B*a^4*m^2*x^2*x^m + 1844*A
*a^3*b*m^2*x^2*x^m + 2032*B*a^3*b*m*x^3*x^m + 3048*A*a^2*b^2*m*x^3*x^m + 10
80*B*a^2*b^2*x^4*x^m + 720*A*a*b^3*x^4*x^m + 580*A*a^4*m^2*x*x^m + 702*B*a^
4*m*x^2*x^m + 2808*A*a^3*b*m*x^2*x^m + 960*B*a^3*b*x^3*x^m + 1440*A*a^2*b^2
*x^3*x^m + 1044*A*a^4*m*x*x^m + 360*B*a^4*x^2*x^m + 1440*A*a^3*b*x^2*x^m +
720*A*a^4*x*x^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 72
0)
```

maple [**B**]   time = 0.05, size = 722, normalized size = 5.78

$$\left(B\,b^4m^5x^5 + A\,b^4m^5x^4 + 4Ba\,b^3m^5x^4 + 15B\,b^4m^4x^5 + 4Aa\,b^3m^5x^3 + 16A\,b^4m^4x^4 + 6B\,a^2b^2m^5x^3 + 64Ba\,b^3m$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] x^(m+1)*(B*b^4*m^5*x^5+A*b^4*m^5*x^4+4*B*a*b^3*m^5*x^4+15*B*b^4*m^4*x^5+4*A
*a*b^3*m^5*x^3+16*A*b^4*m^4*x^4+6*B*a^2*b^2*m^5*x^3+64*B*a*b^3*m^4*x^4+85*B
*b^4*m^3*x^5+6*A*a^2*b^2*m^5*x^2+68*A*a*b^3*m^4*x^3+95*A*b^4*m^3*x^4+4*B*a^
3*b*m^5*x^2+102*B*a^2*b^2*m^4*x^3+380*B*a*b^3*m^3*x^4+225*B*b^4*m^2*x^5+4*A
*a^3*b*m^5*x+108*A*a^2*b^2*m^4*x^2+428*A*a*b^3*m^3*x^3+260*A*b^4*m^2*x^4+B*
a^4*m^5*x+72*B*a^3*b*m^4*x^2+642*B*a^2*b^2*m^3*x^3+1040*B*a*b^3*m^2*x^4+274
*B*b^4*m*x^5+A*a^4*m^5+76*A*a^3*b*m^4*x+726*A*a^2*b^2*m^3*x^2+1228*A*a*b^3*
m^2*x^3+324*A*b^4*m*x^4+19*B*a^4*m^4*x+484*B*a^3*b*m^3*x^2+1842*B*a^2*b^2*m
^2*x^3+1296*B*a*b^3*m*x^4+120*B*b^4*x^5+20*A*a^4*m^4+548*A*a^3*b*m^3*x+2232
*A*a^2*b^2*m^2*x^2+1584*A*a*b^3*m*x^3+144*A*b^4*x^4+137*B*a^4*m^3*x+1488*B*
a^3*b*m^2*x^2+2376*B*a^2*b^2*m*x^3+576*B*a*b^3*x^4+155*A*a^4*m^3+1844*A*a^3
*b*m^2*x+3048*A*a^2*b^2*m*x^2+720*A*a*b^3*x^3+461*B*a^4*m^2*x+2032*B*a^3*b*
m*x^2+1080*B*a^2*b^2*x^3+580*A*a^4*m^2+2808*A*a^3*b*m*x+1440*A*a^2*b^2*x^2+
702*B*a^4*m*x+960*B*a^3*b*x^2+1044*A*a^4*m+1440*A*a^3*b*x+360*B*a^4*x+720*A
*a^4)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [**A**]   time = 0.61, size = 167, normalized size = 1.34

$$\frac{Bb^4x^{m+6}}{m+6}+\frac{4\,Bab^3x^{m+5}}{m+5}+\frac{Ab^4x^{m+5}}{m+5}+\frac{6\,Ba^2b^2x^{m+4}}{m+4}+\frac{4\,Aab^3x^{m+4}}{m+4}+\frac{4\,Ba^3bx^{m+3}}{m+3}+\frac{6\,Aa^2b^2x^{m+3}}{m+3}+\frac{Ba^4x^{m+2}}{m+2}+\frac{4\,Aa^3b}{m-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] B*b^4*x^(m + 6)/(m + 6) + 4*B*a*b^3*x^(m + 5)/(m + 5) + A*b^4*x^(m + 5)/(m
+ 5) + 6*B*a^2*b^2*x^(m + 4)/(m + 4) + 4*A*a*b^3*x^(m + 4)/(m + 4) + 4*B*a^
3*b*x^(m + 3)/(m + 3) + 6*A*a^2*b^2*x^(m + 3)/(m + 3) + B*a^4*x^(m + 2)/(m
+ 2) + 4*A*a^3*b*x^(m + 2)/(m + 2) + A*a^4*x^(m + 1)/(m + 1)
```

mupad [**B**]   time = 1.48, size = 417, normalized size = 3.34

$$\frac{B\,b^4\,x^m\,x^6\,\left(m^5+15\,m^4+85\,m^3+225\,m^2+274\,m+120\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{a^3\,x^m\,x^2\,\left(4\,A\,b+B\,a\right)\,\left(m^5+19\,m^4+137\,m^3+4}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*b^4*x^m*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (a^3*x^m*x^2*(4*A*b + B
*a)*(702*m + 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 +
735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (b^3*x^m*x^5*(A*b + 4*B*a)*(324*m
 + 260*m^2 + 95*m^3 + 16*m^4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 1
75*m^4 + 21*m^5 + m^6 + 720) + (A*a^4*x*x^m*(1044*m + 580*m^2 + 155*m^3 + 2
0*m^4 + m^5 + 720))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
 720) + (2*a*b^2*x^m*x^4*(2*A*b + 3*B*a)*(396*m + 307*m^2 + 107*m^3 + 17*m^
4 + m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720
) + (2*a^2*b*x^m*x^3*(3*A*b + 2*B*a)*(508*m + 372*m^2 + 121*m^3 + 18*m^4 +
m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)
```

sympy [**A**]   time = 2.54, size = 3417, normalized size = 27.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((-A*a**4/(5*x**5) - A*a**3*b/x**4 - 2*A*a**2*b**2/x**3 - 2*A*a*b*
*3/x**2 - A*b**4/x - B*a**4/(4*x**4) - 4*B*a**3*b/(3*x**3) - 3*B*a**2*b**2/
x**2 - 4*B*a*b**3/x + B*b**4*log(x), Eq(m, -6)), (-A*a**4/(4*x**4) - 4*A*a*
*3*b/(3*x**3) - 3*A*a**2*b**2/x**2 - 4*A*a*b**3/x + A*b**4*log(x) - B*a**4/
(3*x**3) - 2*B*a**3*b/x**2 - 6*B*a**2*b**2/x + 4*B*a*b**3*log(x) + B*b**4*x
, Eq(m, -5)), (-A*a**4/(3*x**3) - 2*A*a**3*b/x**2 - 6*A*a**2*b**2/x + 4*A*a
*b**3*log(x) + A*b**4*x - B*a**4/(2*x**2) - 4*B*a**3*b/x + 6*B*a**2*b**2*lo
g(x) + 4*B*a*b**3*x + B*b**4*x**2/2, Eq(m, -4)), (-A*a**4/(2*x**2) - 4*A*a*
*3*b/x + 6*A*a**2*b**2*log(x) + 4*A*a*b**3*x + A*b**4*x**2/2 - B*a**4/x + 4
*B*a**3*b*log(x) + 6*B*a**2*b**2*x + 2*B*a*b**3*x**2 + B*b**4*x**3/3, Eq(m,
 -3)), (-A*a**4/x + 4*A*a**3*b*log(x) + 6*A*a**2*b**2*x + 2*A*a*b**3*x**2 +
 A*b**4*x**3/3 + B*a**4*log(x) + 4*B*a**3*b*x + 3*B*a**2*b**2*x**2 + 4*B*a*
b**3*x**3/3 + B*b**4*x**4/4, Eq(m, -2)), (A*a**4*log(x) + 4*A*a**3*b*x + 3*
A*a**2*b**2*x**2 + 4*A*a*b**3*x**3/3 + A*b**4*x**4/4 + B*a**4*x + 2*B*a**3*
b*x**2 + 2*B*a**2*b**2*x**3 + B*a*b**3*x**4 + B*b**4*x**5/5, Eq(m, -1)), (A
*a**4*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*
m + 720) + 20*A*a**4*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 155*A*a**4*m**3*x*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**4*m**2*x*x**m/(m**6 + 21
*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A*a**4*m*x*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720
*A*a**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 4*A*a**3*b*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 76*A*a**3*b*m**4*x**2*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 548*A*a**3*b*m**3*x**2*x**m/
(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1844*A*
a**3*b*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1
764*m + 720) + 2808*A*a**3*b*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 1440*A*a**3*b*x**2*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 6*A*a**2*b**2*m**5*x**3*
x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 10
8*A*a**2*b**2*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 726*A*a**2*b**2*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*
m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2232*A*a**2*b**2*m**2*x**3*x*
*m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3048
*A*a**2*b**2*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
+ 1764*m + 720) + 1440*A*a**2*b**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 7
35*m**3 + 1624*m**2 + 1764*m + 720) + 4*A*a*b**3*m**5*x**4*x**m/(m**6 + 21*
m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 68*A*a*b**3*m**4*x
**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 428*A*a*b**3*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 1228*A*a*b**3*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1584*A*a*b**3*m*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720*A*a*b**
3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 72
0) + A*b**4*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 16*A*b**4*m**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 7
35*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*b**4*m**3*x**5*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 260*A*b**4*m**2*x**
5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
324*A*b**4*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
1764*m + 720) + 144*A*b**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
+ 1624*m**2 + 1764*m + 720) + B*a**4*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 19*B*a**4*m**4*x**2*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 137*B*a**4*m
**3*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 461*B*a**4*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 702*B*a**4*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 360*B*a**4*x**2*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 4*B*a**3*b*m**5*x**
3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
72*B*a**3*b*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 484*B*a**3*b*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + 1488*B*a**3*b*m**2*x**3*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2032*B*a**3*
b*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
720) + 960*B*a**3*b*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 6*B*a**2*b**2*m**5*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 102*B*a**2*b**2*m**4*x**4*x**m
/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 642*B*
a**2*b**2*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
+ 1764*m + 720) + 1842*B*a**2*b**2*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**
4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2376*B*a**2*b**2*m*x**4*x**m/(m*
*6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1080*B*a**
2*b**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 4*B*a*b**3*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
 1624*m**2 + 1764*m + 720) + 64*B*a*b**3*m**4*x**5*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 380*B*a*b**3*m**3*x**5*x**
m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1040*
B*a*b**3*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
 1764*m + 720) + 1296*B*a*b**3*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735
*m**3 + 1624*m**2 + 1764*m + 720) + 576*B*a*b**3*x**5*x**m/(m**6 + 21*m**5
+ 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*b**4*m**5*x**6*x**m/(
m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*b**
4*m**4*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 85*B*b**4*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 225*B*b**4*m**2*x**6*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*B*b**4*m*x**6*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 120*B*b**4*x
**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720),
 True))
```

3.838 $\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=71

$$\frac{a^2Ax^{m+1}}{m+1}+\frac{ax^{m+2}(aB+2Ab)}{m+2}+\frac{bx^{m+3}(2aB+Ab)}{m+3}+\frac{b^2Bx^{m+4}}{m+4}$$

```
[Out] a^2*A*x^(1+m)/(1+m)+a*(2*A*b+B*a)*x^(2+m)/(2+m)+b*(A*b+2*B*a)*x^(3+m)/(3+m)
+b^2*B*x^(4+m)/(4+m)
```

Rubi [A] time = 0.04, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}=0.080$, Rules used = $\{27, 76\}$

$$\frac{a^2Ax^{m+1}}{m+1}+\frac{ax^{m+2}(aB+2Ab)}{m+2}+\frac{bx^{m+3}(2aB+Ab)}{m+3}+\frac{b^2Bx^{m+4}}{m+4}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a^2*A*x^(1 + m))/(1 + m) + (a*(2*A*b + a*B)*x^(2 + m))/(2 + m) + (b*(A*b +
 2*a*B)*x^(3 + m))/(3 + m) + (b^2*B*x^(4 + m))/(4 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx&=\int x^m(a+bx)^2(A+Bx)\,dx\\&=\int\left(a^2Ax^m+a(2Ab+aB)x^{1+m}+b(Ab+2aB)x^{2+m}+b^2Bx^{3+m}\right)\,dx\\&=\frac{a^2Ax^{1+m}}{1+m}+\frac{a(2Ab+aB)x^{2+m}}{2+m}+\frac{b(Ab+2aB)x^{3+m}}{3+m}+\frac{b^2Bx^{4+m}}{4+m}\end{aligned}$$

Mathematica [A] time = 0.09, size = 71, normalized size = 1.00

$$\frac{x^{m+1}\left(\left(\frac{a^2}{m+1}+\frac{2abx}{m+2}+\frac{b^2x^2}{m+3}\right)(Ab(m+4)-aB(m+1))+B(a+bx)^3\right)}{b(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^(1 + m)*(B*(a + b*x)^3 + (-(a*B*(1 + m)) + A*b*(4 + m))*(a^2/(1 + m) + (
2*a*b*x)/(2 + m) + (b^2*x^2)/(3 + m))))/(b*(4 + m))
```

fricas [B] time = 1.17, size = 215, normalized size = 3.03

$$((Bb^2m^3 + 6\,Bb^2m^2 + 11\,Bb^2m + 6\,Bb^2)x^4 + ((2\,Bab + Ab^2)m^3 + 16\,Bab + 8\,Ab^2 + 7\,(2\,Bab + Ab^2)m^2 + 14\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] ((B*b^2*m^3 + 6*B*b^2*m^2 + 11*B*b^2*m + 6*B*b^2)*x^4 + ((2*B*a*b + A*b^2)*
m^3 + 16*B*a*b + 8*A*b^2 + 7*(2*B*a*b + A*b^2)*m^2 + 14*(2*B*a*b + A*b^2)*m
)*x^3 + ((B*a^2 + 2*A*a*b)*m^3 + 12*B*a^2 + 24*A*a*b + 8*(B*a^2 + 2*A*a*b)*
m^2 + 19*(B*a^2 + 2*A*a*b)*m)*x^2 + (A*a^2*m^3 + 9*A*a^2*m^2 + 26*A*a^2*m +
 24*A*a^2)*x)*x^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

giac [B] time = 0.18, size = 332, normalized size = 4.68

$$Bb^2m^3x^4x^m + 2\,Babm^3x^3x^m + Ab^2m^3x^3x^m + 6\,Bb^2m^2x^4x^m + Ba^2m^3x^2x^m + 2\,Aabm^3x^2x^m + 14\,Babm^2x^3x^m +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^2*m^3*x^4*x^m + 2*B*a*b*m^3*x^3*x^m + A*b^2*m^3*x^3*x^m + 6*B*b^2*m^2*
x^4*x^m + B*a^2*m^3*x^2*x^m + 2*A*a*b*m^3*x^2*x^m + 14*B*a*b*m^2*x^3*x^m +
7*A*b^2*m^2*x^3*x^m + 11*B*b^2*m*x^4*x^m + A*a^2*m^3*x*x^m + 8*B*a^2*m^2*x^
2*x^m + 16*A*a*b*m^2*x^2*x^m + 28*B*a*b*m*x^3*x^m + 14*A*b^2*m*x^3*x^m + 6*
B*b^2*x^4*x^m + 9*A*a^2*m^2*x*x^m + 19*B*a^2*m*x^2*x^m + 38*A*a*b*m*x^2*x^m
 + 16*B*a*b*x^3*x^m + 8*A*b^2*x^3*x^m + 26*A*a^2*m*x*x^m + 12*B*a^2*x^2*x^m
 + 24*A*a*b*x^2*x^m + 24*A*a^2*x*x^m)/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

maple [B] time = 0.06, size = 246, normalized size = 3.46

$$(B\,b^2m^3x^3 + A\,b^2m^3x^2 + 2Bab\,m^3x^2 + 6B\,b^2m^2x^3 + 2Aab\,m^3x + 7A\,b^2m^2x^2 + B\,a^2m^3x + 14Bab\,m^2x^2 + 11B\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] x^(m+1)*(B*b^2*m^3*x^3+A*b^2*m^3*x^2+2*B*a*b*m^3*x^2+6*B*b^2*m^2*x^3+2*A*a*
b*m^3*x+7*A*b^2*m^2*x^2+B*a^2*m^3*x+14*B*a*b*m^2*x^2+11*B*b^2*m*x^3+A*a^2*m
^3+16*A*a*b*m^2*x+14*A*b^2*m*x^2+8*B*a^2*m^2*x+28*B*a*b*m*x^2+6*B*b^2*x^3+9
*A*a^2*m^2+38*A*a*b*m*x+8*A*b^2*x^2+19*B*a^2*m*x+16*B*a*b*x^2+26*A*a^2*m+24
*A*a*b*x+12*B*a^2*x+24*A*a^2)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.46, size = 91, normalized size = 1.28

$$\frac{Bb^2x^{m+4}}{m+4} + \frac{2\,Babx^{m+3}}{m+3} + \frac{Ab^2x^{m+3}}{m+3} + \frac{Ba^2x^{m+2}}{m+2} + \frac{2\,Aabx^{m+2}}{m+2} + \frac{Aa^2x^{m+1}}{m+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] B*b^2*x^(m + 4)/(m + 4) + 2*B*a*b*x^(m + 3)/(m + 3) + A*b^2*x^(m + 3)/(m +
3) + B*a^2*x^(m + 2)/(m + 2) + 2*A*a*b*x^(m + 2)/(m + 2) + A*a^2*x^(m + 1)/
(m + 1)
```

mupad [B] time = 1.29, size = 177, normalized size = 2.49

$$x^m \left(\frac{B\,b^2\,x^4\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{A\,a^2\,x\,\left(m^3+9\,m^2+26\,m+24\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{a\,x^2\,\left(2\,A\,b+B\,a\right)\,\left(m^3+8\,m^2+19\right.}{m^4+10\,m^3+35\,m^2+50\,m+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^m*((B*b^2*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (A*a^2*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24
) + (a*x^2*(2*A*b + B*a)*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^3
 + m^4 + 24) + (b*x^3*(A*b + 2*B*a)*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^
2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 1.13, size = 1020, normalized size = 14.37

$$\begin{cases} -\frac{Aa^2}{3x^3}-\frac{Aab}{x^2}-\frac{Ab^2}{x}-\frac{Ba^2}{2x^2}-\frac{2Bab}{x}+Bb^2\log(x) \\ -\frac{Aa^2}{2x^2}-\frac{2Aab}{x}+Ab^2\log(x)-\frac{Ba^2}{x}+2Bab\log(x)+Bb^2x \\ -\frac{Aa^2}{x}+2Aab\log(x)+Ab^2x+Ba^2\log(x)+2Babx+\frac{Bb^2x^2}{2} \\ Aa^2\log(x)+2Aabx+\frac{Ab^2x^2}{2}+Ba^2x+Babx^2+\frac{Bb^2x^3}{3} \\ \frac{Aa^2m^3xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{9Aa^2m^2xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{26Aa^2mxx^m}{m^4+10m^3+35m^2+50m+24}+\frac{24Aa^2xx^m}{m^4+10m^3+35m^2+50m+24}+\frac{2Aabm^3x^2x^m}{m^4+10m^3+35m^2+50m} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((-A*a**2/(3*x**3) - A*a*b/x**2 - A*b**2/x - B*a**2/(2*x**2) - 2*B
*a*b/x + B*b**2*log(x), Eq(m, -4)), (-A*a**2/(2*x**2) - 2*A*a*b/x + A*b**2*
log(x) - B*a**2/x + 2*B*a*b*log(x) + B*b**2*x, Eq(m, -3)), (-A*a**2/x + 2*A
*a*b*log(x) + A*b**2*x + B*a**2*log(x) + 2*B*a*b*x + B*b**2*x**2/2, Eq(m, -
2)), (A*a**2*log(x) + 2*A*a*b*x + A*b**2*x**2/2 + B*a**2*x + B*a*b*x**2 + B
*b**2*x**3/3, Eq(m, -1)), (A*a**2*m**3*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 9*A*a**2*m**2*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2
6*A*a**2*m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 24*A*a**2*x*x**m
/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2*A*a*b*m**3*x**2*x**m/(m**4 + 10
*m**3 + 35*m**2 + 50*m + 24) + 16*A*a*b*m**2*x**2*x**m/(m**4 + 10*m**3 + 35
*m**2 + 50*m + 24) + 38*A*a*b*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m
+ 24) + 24*A*a*b*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*b**2*
m**3*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 7*A*b**2*m**2*x**3*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 14*A*b**2*m*x**3*x**m/(m**4 +
 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*b**2*x**3*x**m/(m**4 + 10*m**3 + 35*m
**2 + 50*m + 24) + B*a**2*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
 24) + 8*B*a**2*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*
B*a**2*m*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*B*a**2*x**2*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 2*B*a*b*m**3*x**3*x**m/(m**4
+ 10*m**3 + 35*m**2 + 50*m + 24) + 14*B*a*b*m**2*x**3*x**m/(m**4 + 10*m**3
+ 35*m**2 + 50*m + 24) + 28*B*a*b*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 16*B*a*b*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*b
**2*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*b**2*m**2*x
**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*b**2*m*x**4*x**m/(m*
*4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*b**2*x**4*x**m/(m**4 + 10*m**3 +
35*m**2 + 50*m + 24), True))
```

3.839 $\int \frac{x^m(A+Bx)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=73

$$\frac{x^{m+1}(Ab-aB)}{ab(a+bx)}-\frac{x^{m+1}(Abm-aB(m+1))\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{a^2b(m+1)}$$

```
[Out] (A*b-B*a)*x^(1+m)/a/b/(b*x+a)-(A*b*m-a*B*(1+m))*x^(1+m)*hypergeom([1, 1+m],
[2+m],-b*x/a)/a^2/b/(1+m)
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = $\{27, 78, 64\}$

$$\frac{x^{m+1}(Ab-aB)}{ab(a+bx)}-\frac{x^{m+1}(Abm-aB(m+1))\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{a^2b(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*x^(1 + m))/(a*b*(a + b*x)) - ((A*b*m - a*B*(1 + m))*x^(1 + m)*
Hypergeometric2F1[1, 1 + m, 2 + m, -((b*x)/a)])/(a^2*b*(1 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^m(A+Bx)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{x^m(A+Bx)}{(a+bx)^2}\,dx\\ &= \frac{(Ab-aB)x^{1+m}}{ab(a+bx)}-\frac{(Abm-aB(1+m))\int \frac{x^m}{a+bx}\,dx}{ab}\\ &= \frac{(Ab-aB)x^{1+m}}{ab(a+bx)}-\frac{(Abm-aB(1+m))x^{1+m}\,{}_2F_1\left(1,1+m;2+m;-\frac{bx}{a}\right)}{a^2b(1+m)}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 63, normalized size = 0.86

$$\frac{x^{m+1}\left(\frac{(aB(m+1)-Abm)\,{}_2F_1\left(1,m+1;m+2;-\frac{bx}{a}\right)}{m+1}+\frac{a(Ab-aB)}{a+bx}\right)}{a^2b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x^(1 + m)*((a*(A*b - a*B))/(a + b*x) + ((-(A*b*m) + a*B*(1 + m))*Hypergeom
etric2F1[1, 1 + m, 2 + m, -((b*x)/a)])/(1 + m)))/(a^2*b)
```

fricas [**F**] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)x^m}{b^2x^2+2\,abx+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*x^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*x^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [**F**] time = 1.16, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,x^m}{b^2x^2+2abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] int(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m\,(A+B\,x)}{a^2+2\,a\,b\,x+b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] int((x^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m (A + Bx)}{(a + bx)^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Integral(x**m*(A + B*x)/(a + b*x)**2, x)
```

3.840 $\int \frac{x^m(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=81

$$\frac{x^{m+1}(aB(m+1)+Ab(2-m))\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{3a^4b(m+1)}+\frac{x^{m+1}(Ab-aB)}{3ab(a+bx)^3}$$

```
[Out] 1/3*(A*b-B*a)*x^(1+m)/a/b/(b*x+a)^3+1/3*(A*b*(2-m)+a*B*(1+m))*x^(1+m)*hyper
geom([3, 1+m],[2+m],-b*x/a)/a^4/b/(1+m)
```

Rubi [A] time = 0.03, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {27, 78, 64}

$$\frac{x^{m+1}(aB(m+1)+Ab(2-m))\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{3a^4b(m+1)}+\frac{x^{m+1}(Ab-aB)}{3ab(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x^m*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*x^(1 + m))/(3*a*b*(a + b*x)^3) + ((A*b*(2 - m) + a*B*(1 + m))*
x^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((b*x)/a)])/(3*a^4*b*(1 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{x^m(A+Bx)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{x^m(A+Bx)}{(a+bx)^4}\,dx\\ &= \frac{(Ab-aB)x^{1+m}}{3ab(a+bx)^3}-\frac{(Ab(-2+m)-aB(1+m))\int \frac{x^m}{(a+bx)^3}\,dx}{3ab}\\ &= \frac{(Ab-aB)x^{1+m}}{3ab(a+bx)^3}+\frac{(Ab(2-m)+aB(1+m))x^{1+m}\,{}_2F_1\left(3,1+m;2+m;-\frac{bx}{a}\right)}{3a^4b(1+m)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 0.88

$$\frac{x^{m+1}\left(\frac{a^3(Ab-aB)}{(a+bx)^3}-\frac{(Ab(m-2)-aB(m+1))\,{}_2F_1\left(3,m+1;m+2;-\frac{bx}{a}\right)}{m+1}\right)}{3a^4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^m*(A + B*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x^(1 + m)*((a^3*(A*b - a*B))/(a + b*x)^3 - ((A*b*(-2 + m) - a*B*(1 + m))*H
ypergeometric2F1[3, 1 + m, 2 + m, -((b*x)/a)])/(1 + m)))/(3*a^4*b)
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)x^m}{b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*x^m/(b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x +
 a^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*x^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

maple [F] time = 1.08, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,x^m}{\left(b^2x^2+2abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] int(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)x^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*x^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^m\,\left(A+B\,x\right)}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] int((x^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^m (A+Bx)}{(a+bx)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Integral(x**m*(A + B*x)/(a + b*x)**4, x)
```

3.841 $\int x^m(1+x)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=143

$$\frac{x^{m+1}}{m+1}+\frac{11x^{m+2}}{m+2}+\frac{55x^{m+3}}{m+3}+\frac{165x^{m+4}}{m+4}+\frac{330x^{m+5}}{m+5}+\frac{462x^{m+6}}{m+6}+\frac{462x^{m+7}}{m+7}+\frac{330x^{m+8}}{m+8}+\frac{165x^{m+9}}{m+9}+\frac{55x^{m+10}}{m+10}+\frac{11x^{m+11}}{m+11}$$

```
[Out] x^(1+m)/(1+m)+11*x^(2+m)/(2+m)+55*x^(3+m)/(3+m)+165*x^(4+m)/(4+m)+330*x^(5+
m)/(5+m)+462*x^(6+m)/(6+m)+462*x^(7+m)/(7+m)+330*x^(8+m)/(8+m)+165*x^(9+m)/
(9+m)+55*x^(10+m)/(10+m)+11*x^(11+m)/(11+m)+x^(12+m)/(12+m)
```

Rubi [A] time = 0.04, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{27, 43\}$

$$\frac{x^{m+1}}{m+1}+\frac{11x^{m+2}}{m+2}+\frac{55x^{m+3}}{m+3}+\frac{165x^{m+4}}{m+4}+\frac{330x^{m+5}}{m+5}+\frac{462x^{m+6}}{m+6}+\frac{462x^{m+7}}{m+7}+\frac{330x^{m+8}}{m+8}+\frac{165x^{m+9}}{m+9}+\frac{55x^{m+10}}{m+10}+\frac{11x^{m+11}}{m+11}$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^(1 + m)/(1 + m) + (11*x^(2 + m))/(2 + m) + (55*x^(3 + m))/(3 + m) + (165*
x^(4 + m))/(4 + m) + (330*x^(5 + m))/(5 + m) + (462*x^(6 + m))/(6 + m) + (4
62*x^(7 + m))/(7 + m) + (330*x^(8 + m))/(8 + m) + (165*x^(9 + m))/(9 + m) +
 (55*x^(10 + m))/(10 + m) + (11*x^(11 + m))/(11 + m) + x^(12 + m)/(12 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int x^m(1+x)\left(1+2x+x^2\right)^5\,dx&=\int x^m(1+x)^{11}\,dx\\&=\int\left(x^m+11x^{1+m}+55x^{2+m}+165x^{3+m}+330x^{4+m}+462x^{5+m}+462x^{6+m}+3\right.\\&=\frac{x^{1+m}}{1+m}+\frac{11x^{2+m}}{2+m}+\frac{55x^{3+m}}{3+m}+\frac{165x^{4+m}}{4+m}+\frac{330x^{5+m}}{5+m}+\frac{462x^{6+m}}{6+m}+\frac{462x^{7+m}}{7+m}\end{aligned}$$

Mathematica [A] time = 0.05, size = 119, normalized size = 0.83

$$x^{m+1}\left(\frac{x^{11}}{m+12}+\frac{11x^{10}}{m+11}+\frac{55x^9}{m+10}+\frac{165x^8}{m+9}+\frac{330x^7}{m+8}+\frac{462x^6}{m+7}+\frac{462x^5}{m+6}+\frac{330x^4}{m+5}+\frac{165x^3}{m+4}+\frac{55x^2}{m+3}+\frac{11x}{m+2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(1 + x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] x^(1 + m)*((1 + m)^(-1) + (11*x)/(2 + m) + (55*x^2)/(3 + m) + (165*x^3)/(4
+ m) + (330*x^4)/(5 + m) + (462*x^5)/(6 + m) + (462*x^6)/(7 + m) + (330*x^7
)/(8 + m) + (165*x^8)/(9 + m) + (55*x^9)/(10 + m) + (11*x^10)/(11 + m) + x^
11/(12 + m))
```

fricas [B] time = 0.76, size = 757, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] ((m^11 + 66*m^10 + 1925*m^9 + 32670*m^8 + 357423*m^7 + 2637558*m^6 + 133395
35*m^5 + 45995730*m^4 + 105258076*m^3 + 150917976*m^2 + 120543840*m + 39916
800)*x^12 + 11*(m^11 + 67*m^10 + 1980*m^9 + 33990*m^8 + 375573*m^7 + 279533
1*m^6 + 14241590*m^5 + 49412660*m^4 + 113667576*m^3 + 163671552*m^2 + 13117
2480*m + 43545600)*x^11 + 55*(m^11 + 68*m^10 + 2037*m^9 + 35400*m^8 + 39546
3*m^7 + 2972004*m^6 + 15270191*m^5 + 53368240*m^4 + 123524436*m^3 + 1787705
28*m^2 + 143854272*m + 47900160)*x^10 + 165*(m^11 + 69*m^10 + 2096*m^9 + 36
906*m^8 + 417309*m^7 + 3170853*m^6 + 16452554*m^5 + 57997164*m^4 + 13523236
0*m^3 + 196923648*m^2 + 159246720*m + 53222400)*x^9 + 330*(m^11 + 70*m^10 +
 2157*m^9 + 38514*m^8 + 441351*m^7 + 3395826*m^6 + 17823623*m^5 + 63481166*
m^4 + 149357508*m^3 + 219154824*m^2 + 178320960*m + 59875200)*x^8 + 462*(m^
11 + 71*m^10 + 2220*m^9 + 40230*m^8 + 467853*m^7 + 3651663*m^6 + 19428590*m
^5 + 70070020*m^4 + 166716696*m^3 + 246998016*m^2 + 202573440*m + 68428800)
*x^7 + 462*(m^11 + 72*m^10 + 2285*m^9 + 42060*m^8 + 497103*m^7 + 3944016*m^
6 + 21326135*m^5 + 78113340*m^4 + 188526796*m^3 + 282854112*m^2 + 234434880
*m + 79833600)*x^6 + 330*(m^11 + 73*m^10 + 2352*m^9 + 44010*m^8 + 529413*m^
7 + 4279569*m^6 + 23592386*m^5 + 88108220*m^4 + 216665736*m^3 + 330686208*m
^2 + 278128512*m + 95800320)*x^5 + 165*(m^11 + 74*m^10 + 2421*m^9 + 46086*m
^8 + 565119*m^7 + 4666158*m^6 + 26325599*m^5 + 100767754*m^4 + 254135820*m^
3 + 397471608*m^2 + 341673120*m + 119750400)*x^4 + 55*(m^11 + 75*m^10 + 249
2*m^9 + 48294*m^8 + 604581*m^7 + 5112891*m^6 + 29651558*m^5 + 117115476*m^4
 + 305860408*m^3 + 496433664*m^2 + 442258560*m + 159667200)*x^3 + 11*(m^11
+ 76*m^10 + 2565*m^9 + 50640*m^8 + 648183*m^7 + 5630268*m^6 + 33729695*m^5
+ 138610760*m^4 + 379985316*m^3 + 654044256*m^2 + 623471040*m + 239500800)*
x^2 + (m^11 + 77*m^10 + 2640*m^9 + 53130*m^8 + 696333*m^7 + 6230301*m^6 + 3
8759930*m^5 + 167310220*m^4 + 489896616*m^3 + 924118272*m^2 + 1007441280*m
+ 479001600)*x)*x^m/(m^12 + 78*m^11 + 2717*m^10 + 55770*m^9 + 749463*m^8 +
6926634*m^7 + 44990231*m^6 + 206070150*m^5 + 657206836*m^4 + 1414014888*m^3
 + 1931559552*m^2 + 1486442880*m + 479001600)
```

giac [B] time = 0.24, size = 1560, normalized size = 10.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] (m^11*x^12*x^m + 11*m^11*x^11*x^m + 66*m^10*x^12*x^m + 55*m^11*x^10*x^m + 7
37*m^10*x^11*x^m + 1925*m^9*x^12*x^m + 165*m^11*x^9*x^m + 3740*m^10*x^10*x^
m + 21780*m^9*x^11*x^m + 32670*m^8*x^12*x^m + 330*m^11*x^8*x^m + 11385*m^10
*x^9*x^m + 112035*m^9*x^10*x^m + 373890*m^8*x^11*x^m + 357423*m^7*x^12*x^m
+ 462*m^11*x^7*x^m + 23100*m^10*x^8*x^m + 345840*m^9*x^9*x^m + 1947000*m^8*
x^10*x^m + 4131303*m^7*x^11*x^m + 2637558*m^6*x^12*x^m + 462*m^11*x^6*x^m +
 32802*m^10*x^7*x^m + 711810*m^9*x^8*x^m + 6089490*m^8*x^9*x^m + 21750465*m
^7*x^10*x^m + 30748641*m^6*x^11*x^m + 13339535*m^5*x^12*x^m + 330*m^11*x^5*
x^m + 33264*m^10*x^6*x^m + 1025640*m^9*x^7*x^m + 12709620*m^8*x^8*x^m + 688
55985*m^7*x^9*x^m + 163460220*m^6*x^10*x^m + 156657490*m^5*x^11*x^m + 45995
730*m^4*x^12*x^m + 165*m^11*x^4*x^m + 24090*m^10*x^5*x^m + 1055670*m^9*x^6*
x^m + 18586260*m^8*x^7*x^m + 145645830*m^7*x^8*x^m + 523190745*m^6*x^9*x^m
+ 839860505*m^5*x^10*x^m + 543539260*m^4*x^11*x^m + 105258076*m^3*x^12*x^m
+ 55*m^11*x^3*x^m + 12210*m^10*x^4*x^m + 776160*m^9*x^5*x^m + 19431720*m^8*
x^6*x^m + 216148086*m^7*x^7*x^m + 1120622580*m^6*x^8*x^m + 2714671410*m^5*x
^9*x^m + 2935253200*m^4*x^10*x^m + 1250343336*m^3*x^11*x^m + 150917976*m^2*
x^12*x^m + 11*m^11*x^2*x^m + 4125*m^10*x^3*x^m + 399465*m^9*x^4*x^m + 14523
300*m^8*x^5*x^m + 229661586*m^7*x^6*x^m + 1687068306*m^6*x^7*x^m + 58817955
90*m^5*x^8*x^m + 9569532060*m^4*x^9*x^m + 6793843980*m^3*x^10*x^m + 1800387
072*m^2*x^11*x^m + 120543840*m*x^12*x^m + m^11*x*x^m + 836*m^10*x^2*x^m + 1
37060*m^9*x^3*x^m + 7604190*m^8*x^4*x^m + 174706290*m^7*x^5*x^m + 182213539
2*m^6*x^6*x^m + 8976008580*m^5*x^7*x^m + 20948784780*m^4*x^8*x^m + 22313339
400*m^3*x^9*x^m + 9832379040*m^2*x^10*x^m + 1442897280*m*x^11*x^m + 3991680
0*x^12*x^m + 77*m^10*x*x^m + 28215*m^9*x^2*x^m + 2656170*m^8*x^3*x^m + 9324
4635*m^7*x^4*x^m + 1412257770*m^6*x^5*x^m + 9852674370*m^5*x^6*x^m + 323723
49240*m^4*x^7*x^m + 49287977640*m^3*x^8*x^m + 32492401920*m^2*x^9*x^m + 791
1984960*m*x^10*x^m + 479001600*x^11*x^m + 2640*m^9*x*x^m + 557040*m^8*x^2*x
^m + 33251955*m^7*x^3*x^m + 769916070*m^6*x^4*x^m + 7785487380*m^5*x^5*x^m
+ 36088363080*m^4*x^6*x^m + 77023113552*m^3*x^7*x^m + 72321091920*m^2*x^8*x
^m + 26275708800*m*x^9*x^m + 2634508800*x^10*x^m + 53130*m^8*x*x^m + 713001
3*m^7*x^2*x^m + 281209005*m^6*x^3*x^m + 4343723835*m^5*x^4*x^m + 2907571260
0*m^4*x^5*x^m + 87099379752*m^3*x^6*x^m + 114113083392*m^2*x^7*x^m + 588459
16800*m*x^8*x^m + 8781696000*x^9*x^m + 696333*m^7*x*x^m + 61932948*m^6*x^2*
x^m + 1630835690*m^5*x^3*x^m + 16626679410*m^4*x^4*x^m + 71499692880*m^3*x^
5*x^m + 130678599744*m^2*x^6*x^m + 93588929280*m*x^7*x^m + 19758816000*x^8*
x^m + 6230301*m^6*x*x^m + 371026645*m^5*x^2*x^m + 6441351180*m^4*x^3*x^m +
41932410300*m^3*x^4*x^m + 109126448640*m^2*x^5*x^m + 108308914560*m*x^6*x^m
 + 31614105600*x^7*x^m + 38759930*m^5*x*x^m + 1524718360*m^4*x^2*x^m + 1682
2322440*m^3*x^3*x^m + 65582815320*m^2*x^4*x^m + 91782408960*m*x^5*x^m + 368
83123200*x^6*x^m + 167310220*m^4*x*x^m + 4179838476*m^3*x^2*x^m + 273038515
20*m^2*x^3*x^m + 56376064800*m*x^4*x^m + 31614105600*x^5*x^m + 489896616*m^
3*x*x^m + 7194486816*m^2*x^2*x^m + 24324220800*m*x^3*x^m + 19758816000*x^4*
x^m + 924118272*m^2*x*x^m + 6858181440*m*x^2*x^m + 8781696000*x^3*x^m + 100
7441280*m*x*x^m + 2634508800*x^2*x^m + 479001600*x*x^m)/(m^12 + 78*m^11 + 2
717*m^10 + 55770*m^9 + 749463*m^8 + 6926634*m^7 + 44990231*m^6 + 206070150*
m^5 + 657206836*m^4 + 1414014888*m^3 + 1931559552*m^2 + 1486442880*m + 4790
01600)
```

maple [B] time = 0.05, size = 1096, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(x+1)*(x^2+2*x+1)^5,x)
```

```
[Out] x^(m+1)*(m^11*x^11+11*m^11*x^10+66*m^10*x^11+55*m^11*x^9+737*m^10*x^10+1925
*m^9*x^11+165*m^11*x^8+3740*m^10*x^9+21780*m^9*x^10+32670*m^8*x^11+330*m^11
*x^7+11385*m^10*x^8+112035*m^9*x^9+373890*m^8*x^10+357423*m^7*x^11+462*m^11
*x^6+23100*m^10*x^7+345840*m^9*x^8+1947000*m^8*x^9+4131303*m^7*x^10+2637558
*m^6*x^11+462*m^11*x^5+32802*m^10*x^6+711810*m^9*x^7+6089490*m^8*x^8+217504
65*m^7*x^9+30748641*m^6*x^10+13339535*m^5*x^11+330*m^11*x^4+33264*m^10*x^5+
1025640*m^9*x^6+12709620*m^8*x^7+68855985*m^7*x^8+163460220*m^6*x^9+1566574
90*m^5*x^10+45995730*m^4*x^11+165*m^11*x^3+24090*m^10*x^4+1055670*m^9*x^5+1
8586260*m^8*x^6+145645830*m^7*x^7+523190745*m^6*x^8+839860505*m^5*x^9+54353
9260*m^4*x^10+105258076*m^3*x^11+55*m^11*x^2+12210*m^10*x^3+776160*m^9*x^4+
19431720*m^8*x^5+216148086*m^7*x^6+1120622580*m^6*x^7+2714671410*m^5*x^8+29
35253200*m^4*x^9+1250343336*m^3*x^10+150917976*m^2*x^11+11*m^11*x+4125*m^10
*x^2+399465*m^9*x^3+14523300*m^8*x^4+229661586*m^7*x^5+1687068306*m^6*x^6+5
881795590*m^5*x^7+9569532060*m^4*x^8+6793843980*m^3*x^9+1800387072*m^2*x^10
+120543840*m*x^11+m^11+836*m^10*x+137060*m^9*x^2+7604190*m^8*x^3+174706290*
m^7*x^4+1822135392*m^6*x^5+8976008580*m^5*x^6+20948784780*m^4*x^7+223133394
00*m^3*x^8+9832379040*m^2*x^9+1442897280*m*x^10+39916800*x^11+77*m^10+28215
*m^9*x+2656170*m^8*x^2+93244635*m^7*x^3+1412257770*m^6*x^4+9852674370*m^5*x
^5+32372349240*m^4*x^6+49287977640*m^3*x^7+32492401920*m^2*x^8+7911984960*m
*x^9+479001600*x^10+2640*m^9+557040*m^8*x+33251955*m^7*x^2+769916070*m^6*x^
3+7785487380*m^5*x^4+36088363080*m^4*x^5+77023113552*m^3*x^6+72321091920*m^
2*x^7+26275708800*m*x^8+2634508800*x^9+53130*m^8+7130013*m^7*x+281209005*m^
6*x^2+4343723835*m^5*x^3+29075712600*m^4*x^4+87099379752*m^3*x^5+1141130833
92*m^2*x^6+58845916800*m*x^7+8781696000*x^8+696333*m^7+61932948*m^6*x+16308
35690*m^5*x^2+16626679410*m^4*x^3+71499692880*m^3*x^4+130678599744*m^2*x^5+
93588929280*m*x^6+19758816000*x^7+6230301*m^6+371026645*m^5*x+6441351180*m^
4*x^2+41932410300*m^3*x^3+109126448640*m^2*x^4+108308914560*m*x^5+316141056
00*x^6+38759930*m^5+1524718360*m^4*x+16822322440*m^3*x^2+65582815320*m^2*x^
3+91782408960*m*x^4+36883123200*x^5+167310220*m^4+4179838476*m^3*x+27303851
520*m^2*x^2+56376064800*m*x^3+31614105600*x^4+489896616*m^3+7194486816*m^2*
x+24324220800*m*x^2+19758816000*x^3+924118272*m^2+6858181440*m*x+8781696000
*x^2+1007441280*m+2634508800*x+479001600)/(12+m)/(m+11)/(m+10)/(m+9)/(m+8)/
(m+7)/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.59, size = 143, normalized size = 1.00

$$\frac{x^{m+12}}{m+12}+\frac{11\,x^{m+11}}{m+11}+\frac{55\,x^{m+10}}{m+10}+\frac{165\,x^{m+9}}{m+9}+\frac{330\,x^{m+8}}{m+8}+\frac{462\,x^{m+7}}{m+7}+\frac{462\,x^{m+6}}{m+6}+\frac{330\,x^{m+5}}{m+5}+\frac{165\,x^{m+4}}{m+4}+\frac{55\,x^{m+3}}{m+3}+\frac{11\,x^{m}}{m+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(1+x)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] x^(m + 12)/(m + 12) + 11*x^(m + 11)/(m + 11) + 55*x^(m + 10)/(m + 10) + 165
*x^(m + 9)/(m + 9) + 330*x^(m + 8)/(m + 8) + 462*x^(m + 7)/(m + 7) + 462*x^
(m + 6)/(m + 6) + 330*x^(m + 5)/(m + 5) + 165*x^(m + 4)/(m + 4) + 55*x^(m +
 3)/(m + 3) + 11*x^(m + 2)/(m + 2) + x^(m + 1)/(m + 1)
```

mupad [B] time = 2.07, size = 1459, normalized size = 10.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(x + 1)*(2*x + x^2 + 1)^5,x)
```

```
[Out] (x^m*x^8*(58845916800*m + 72321091920*m^2 + 49287977640*m^3 + 20948784780*m
^4 + 5881795590*m^5 + 1120622580*m^6 + 145645830*m^7 + 12709620*m^8 + 71181
0*m^9 + 23100*m^10 + 330*m^11 + 19758816000))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^10*(7911984960*m + 9832379040*m^2 + 6793843980*m^3 + 2935253200*m^4 +
 839860505*m^5 + 163460220*m^6 + 21750465*m^7 + 1947000*m^8 + 112035*m^9 +
3740*m^10 + 55*m^11 + 2634508800))/(1486442880*m + 1931559552*m^2 + 1414014
888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 7494
63*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^2*(68
58181440*m + 7194486816*m^2 + 4179838476*m^3 + 1524718360*m^4 + 371026645*m
^5 + 61932948*m^6 + 7130013*m^7 + 557040*m^8 + 28215*m^9 + 836*m^10 + 11*m^
11 + 2634508800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6572068
36*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^
9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^11*(1442897280*m + 180
0387072*m^2 + 1250343336*m^3 + 543539260*m^4 + 156657490*m^5 + 30748641*m^6
 + 4131303*m^7 + 373890*m^8 + 21780*m^9 + 737*m^10 + 11*m^11 + 479001600))/
(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150
*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78
*m^11 + m^12 + 479001600) + (x^m*x^6*(108308914560*m + 130678599744*m^2 + 8
7099379752*m^3 + 36088363080*m^4 + 9852674370*m^5 + 1822135392*m^6 + 229661
586*m^7 + 19431720*m^8 + 1055670*m^9 + 33264*m^10 + 462*m^11 + 36883123200)
)/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 2060701
50*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
78*m^11 + m^12 + 479001600) + (x^m*x^7*(93588929280*m + 114113083392*m^2 +
77023113552*m^3 + 32372349240*m^4 + 8976008580*m^5 + 1687068306*m^6 + 21614
8086*m^7 + 18586260*m^8 + 1025640*m^9 + 32802*m^10 + 462*m^11 + 31614105600
))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070
150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
 78*m^11 + m^12 + 479001600) + (x^m*x^12*(120543840*m + 150917976*m^2 + 105
258076*m^3 + 45995730*m^4 + 13339535*m^5 + 2637558*m^6 + 357423*m^7 + 32670
*m^8 + 1925*m^9 + 66*m^10 + m^11 + 39916800))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^5*(91782408960*m + 109126448640*m^2 + 71499692880*m^3 + 29075712600*m
^4 + 7785487380*m^5 + 1412257770*m^6 + 174706290*m^7 + 14523300*m^8 + 77616
0*m^9 + 24090*m^10 + 330*m^11 + 31614105600))/(1486442880*m + 1931559552*m^
2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634
*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (
x^m*x^4*(56376064800*m + 65582815320*m^2 + 41932410300*m^3 + 16626679410*m^
4 + 4343723835*m^5 + 769916070*m^6 + 93244635*m^7 + 7604190*m^8 + 399465*m^
9 + 12210*m^10 + 165*m^11 + 19758816000))/(1486442880*m + 1931559552*m^2 +
1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*
x^9*(26275708800*m + 32492401920*m^2 + 22313339400*m^3 + 9569532060*m^4 + 2
714671410*m^5 + 523190745*m^6 + 68855985*m^7 + 6089490*m^8 + 345840*m^9 + 1
1385*m^10 + 165*m^11 + 8781696000))/(1486442880*m + 1931559552*m^2 + 141401
4888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749
463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^3*(2
4324220800*m + 27303851520*m^2 + 16822322440*m^3 + 6441351180*m^4 + 1630835
690*m^5 + 281209005*m^6 + 33251955*m^7 + 2656170*m^8 + 137060*m^9 + 4125*m^
10 + 55*m^11 + 8781696000))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3
 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8
+ 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x*x^m*(1007441280*
m + 924118272*m^2 + 489896616*m^3 + 167310220*m^4 + 38759930*m^5 + 6230301*
m^6 + 696333*m^7 + 53130*m^8 + 2640*m^9 + 77*m^10 + m^11 + 479001600))/(148
6442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5
 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^1
1 + m^12 + 479001600)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(1+x)*(x**2+2*x+1)**5,x)
```

```
[Out] Timed out
```

3.842 $\int x^m(d+ex)\left(1+2x+x^2\right)^5\,dx$

Optimal. Leaf size=209

$$\frac{(10d+e)x^{m+2}}{m+2}+\frac{5(9d+2e)x^{m+3}}{m+3}+\frac{15(8d+3e)x^{m+4}}{m+4}+\frac{30(7d+4e)x^{m+5}}{m+5}+\frac{42(6d+5e)x^{m+6}}{m+6}+\frac{42(5d+6e)x^{m+7}}{m+7}+30(4$$

```
[Out] d*x^(1+m)/(1+m)+(10*d+e)*x^(2+m)/(2+m)+5*(9*d+2*e)*x^(3+m)/(3+m)+15*(8*d+3*
e)*x^(4+m)/(4+m)+30*(7*d+4*e)*x^(5+m)/(5+m)+42*(6*d+5*e)*x^(6+m)/(6+m)+42*(
5*d+6*e)*x^(7+m)/(7+m)+30*(4*d+7*e)*x^(8+m)/(8+m)+15*(3*d+8*e)*x^(9+m)/(9+m
)+5*(2*d+9*e)*x^(10+m)/(10+m)+(d+10*e)*x^(11+m)/(11+m)+e*x^(12+m)/(12+m)
```

Rubi [A] time = 0.10, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {27, 76}

$$\frac{(10d+e)x^{m+2}}{m+2}+\frac{5(9d+2e)x^{m+3}}{m+3}+\frac{15(8d+3e)x^{m+4}}{m+4}+\frac{30(7d+4e)x^{m+5}}{m+5}+\frac{42(6d+5e)x^{m+6}}{m+6}+\frac{42(5d+6e)x^{m+7}}{m+7}+30(4$$

Antiderivative was successfully verified.

```
[In] Int[x^m*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (d*x^(1 + m))/(1 + m) + ((10*d + e)*x^(2 + m))/(2 + m) + (5*(9*d + 2*e)*x^(
3 + m))/(3 + m) + (15*(8*d + 3*e)*x^(4 + m))/(4 + m) + (30*(7*d + 4*e)*x^(5
 + m))/(5 + m) + (42*(6*d + 5*e)*x^(6 + m))/(6 + m) + (42*(5*d + 6*e)*x^(7
+ m))/(7 + m) + (30*(4*d + 7*e)*x^(8 + m))/(8 + m) + (15*(3*d + 8*e)*x^(9 +
 m))/(9 + m) + (5*(2*d + 9*e)*x^(10 + m))/(10 + m) + ((d + 10*e)*x^(11 + m)
)/(11 + m) + (e*x^(12 + m))/(12 + m)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 76

```
Int[((d_.)*(x_))^(n_.)*((a_) + (b_.)*(x_))*((e_) + (f_.)*(x_))^(p_.), x_Sym
bol] :> Int[ExpandIntegrand[(a + b*x)*(d*x)^n*(e + f*x)^p, x], x] /; FreeQ[
{a, b, d, e, f, n}, x] && IGtQ[p, 0] && (NeQ[n, -1] || EqQ[p, 1]) && NeQ[b*
e + a*f, 0] && ( !IntegerQ[n] || LtQ[9*p + 5*n, 0] || GeQ[n + p + 1, 0] ||
(GeQ[n + p + 2, 0] && RationalQ[a, b, d, e, f])) && (NeQ[n + p + 3, 0] || E
qQ[p, 1])
```

Rubi steps

$$\begin{aligned}\int x^m(d+ex)\left(1+2x+x^2\right)^5\,dx&=\int x^m(1+x)^{10}(d+ex)\,dx\\&=\int\Big(dx^m+(10d+e)x^{1+m}+5(9d+2e)x^{2+m}+15(8d+3e)x^{3+m}+30(7d+4e)x^{4}\\&=\frac{dx^{1+m}}{1+m}+\frac{(10d+e)x^{2+m}}{2+m}+\frac{5(9d+2e)x^{3+m}}{3+m}+\frac{15(8d+3e)x^{4+m}}{4+m}+\frac{30(7d+4e)x}{5+m}\end{aligned}$$

Mathematica [A] time = 0.66, size = 135, normalized size = 0.65

$$\frac{x^{m+1}\left(\left(\frac{x^{10}}{m+11}+\frac{10x^9}{m+10}+\frac{45x^8}{m+9}+\frac{120x^7}{m+8}+\frac{210x^6}{m+7}+\frac{252x^5}{m+6}+\frac{210x^4}{m+5}+\frac{120x^3}{m+4}+\frac{45x^2}{m+3}+\frac{10x}{m+2}+\frac{1}{m+1}\right)(d(m+12)-e(m+1))+\right.}{m+12}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^m*(d + e*x)*(1 + 2*x + x^2)^5,x]
```

```
[Out] (x^(1 + m)*(e*(1 + x)^11 + (-(e*(1 + m)) + d*(12 + m))*((1 + m)^(-1) + (10*
x)/(2 + m) + (45*x^2)/(3 + m) + (120*x^3)/(4 + m) + (210*x^4)/(5 + m) + (25
2*x^5)/(6 + m) + (210*x^6)/(7 + m) + (120*x^7)/(8 + m) + (45*x^8)/(9 + m) +
 (10*x^9)/(10 + m) + x^10/(11 + m))))/(12 + m)
```

fricas [B] time = 0.66, size = 1569, normalized size = 7.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="fricas")
```

```
[Out] ((e*m^11 + 66*e*m^10 + 1925*e*m^9 + 32670*e*m^8 + 357423*e*m^7 + 2637558*e*
m^6 + 13339535*e*m^5 + 45995730*e*m^4 + 105258076*e*m^3 + 150917976*e*m^2 +
 120543840*e*m + 39916800*e)*x^12 + ((d + 10*e)*m^11 + 67*(d + 10*e)*m^10 +
 1980*(d + 10*e)*m^9 + 33990*(d + 10*e)*m^8 + 375573*(d + 10*e)*m^7 + 27953
31*(d + 10*e)*m^6 + 14241590*(d + 10*e)*m^5 + 49412660*(d + 10*e)*m^4 + 113
667576*(d + 10*e)*m^3 + 163671552*(d + 10*e)*m^2 + 131172480*(d + 10*e)*m +
 43545600*d + 435456000*e)*x^11 + 5*((2*d + 9*e)*m^11 + 68*(2*d + 9*e)*m^10
 + 2037*(2*d + 9*e)*m^9 + 35400*(2*d + 9*e)*m^8 + 395463*(2*d + 9*e)*m^7 +
2972004*(2*d + 9*e)*m^6 + 15270191*(2*d + 9*e)*m^5 + 53368240*(2*d + 9*e)*m
^4 + 123524436*(2*d + 9*e)*m^3 + 178770528*(2*d + 9*e)*m^2 + 143854272*(2*d
 + 9*e)*m + 95800320*d + 431101440*e)*x^10 + 15*((3*d + 8*e)*m^11 + 69*(3*d
 + 8*e)*m^10 + 2096*(3*d + 8*e)*m^9 + 36906*(3*d + 8*e)*m^8 + 417309*(3*d +
 8*e)*m^7 + 3170853*(3*d + 8*e)*m^6 + 16452554*(3*d + 8*e)*m^5 + 57997164*(
3*d + 8*e)*m^4 + 135232360*(3*d + 8*e)*m^3 + 196923648*(3*d + 8*e)*m^2 + 15
9246720*(3*d + 8*e)*m + 159667200*d + 425779200*e)*x^9 + 30*((4*d + 7*e)*m^
11 + 70*(4*d + 7*e)*m^10 + 2157*(4*d + 7*e)*m^9 + 38514*(4*d + 7*e)*m^8 + 4
41351*(4*d + 7*e)*m^7 + 3395826*(4*d + 7*e)*m^6 + 17823623*(4*d + 7*e)*m^5
+ 63481166*(4*d + 7*e)*m^4 + 149357508*(4*d + 7*e)*m^3 + 219154824*(4*d + 7
*e)*m^2 + 178320960*(4*d + 7*e)*m + 239500800*d + 419126400*e)*x^8 + 42*((5
*d + 6*e)*m^11 + 71*(5*d + 6*e)*m^10 + 2220*(5*d + 6*e)*m^9 + 40230*(5*d +
6*e)*m^8 + 467853*(5*d + 6*e)*m^7 + 3651663*(5*d + 6*e)*m^6 + 19428590*(5*d
 + 6*e)*m^5 + 70070020*(5*d + 6*e)*m^4 + 166716696*(5*d + 6*e)*m^3 + 246998
016*(5*d + 6*e)*m^2 + 202573440*(5*d + 6*e)*m + 342144000*d + 410572800*e)*
x^7 + 42*((6*d + 5*e)*m^11 + 72*(6*d + 5*e)*m^10 + 2285*(6*d + 5*e)*m^9 + 4
2060*(6*d + 5*e)*m^8 + 497103*(6*d + 5*e)*m^7 + 3944016*(6*d + 5*e)*m^6 + 2
1326135*(6*d + 5*e)*m^5 + 78113340*(6*d + 5*e)*m^4 + 188526796*(6*d + 5*e)*
m^3 + 282854112*(6*d + 5*e)*m^2 + 234434880*(6*d + 5*e)*m + 479001600*d + 3
99168000*e)*x^6 + 30*((7*d + 4*e)*m^11 + 73*(7*d + 4*e)*m^10 + 2352*(7*d +
4*e)*m^9 + 44010*(7*d + 4*e)*m^8 + 529413*(7*d + 4*e)*m^7 + 4279569*(7*d +
4*e)*m^6 + 23592386*(7*d + 4*e)*m^5 + 88108220*(7*d + 4*e)*m^4 + 216665736*
(7*d + 4*e)*m^3 + 330686208*(7*d + 4*e)*m^2 + 278128512*(7*d + 4*e)*m + 670
602240*d + 383201280*e)*x^5 + 15*((8*d + 3*e)*m^11 + 74*(8*d + 3*e)*m^10 +
2421*(8*d + 3*e)*m^9 + 46086*(8*d + 3*e)*m^8 + 565119*(8*d + 3*e)*m^7 + 466
6158*(8*d + 3*e)*m^6 + 26325599*(8*d + 3*e)*m^5 + 100767754*(8*d + 3*e)*m^4
 + 254135820*(8*d + 3*e)*m^3 + 397471608*(8*d + 3*e)*m^2 + 341673120*(8*d +
 3*e)*m + 958003200*d + 359251200*e)*x^4 + 5*((9*d + 2*e)*m^11 + 75*(9*d +
2*e)*m^10 + 2492*(9*d + 2*e)*m^9 + 48294*(9*d + 2*e)*m^8 + 604581*(9*d + 2*
e)*m^7 + 5112891*(9*d + 2*e)*m^6 + 29651558*(9*d + 2*e)*m^5 + 117115476*(9*
d + 2*e)*m^4 + 305860408*(9*d + 2*e)*m^3 + 496433664*(9*d + 2*e)*m^2 + 4422
58560*(9*d + 2*e)*m + 1437004800*d + 319334400*e)*x^3 + ((10*d + e)*m^11 +
76*(10*d + e)*m^10 + 2565*(10*d + e)*m^9 + 50640*(10*d + e)*m^8 + 648183*(1
0*d + e)*m^7 + 5630268*(10*d + e)*m^6 + 33729695*(10*d + e)*m^5 + 138610760
*(10*d + e)*m^4 + 379985316*(10*d + e)*m^3 + 654044256*(10*d + e)*m^2 + 623
471040*(10*d + e)*m + 2395008000*d + 239500800*e)*x^2 + (d*m^11 + 77*d*m^10
```

```
 + 2640*d*m^9 + 53130*d*m^8 + 696333*d*m^7 + 6230301*d*m^6 + 38759930*d*m^5
 + 167310220*d*m^4 + 489896616*d*m^3 + 924118272*d*m^2 + 1007441280*d*m + 4
79001600*d)*x)*x^m/(m^12 + 78*m^11 + 2717*m^10 + 55770*m^9 + 749463*m^8 + 6
926634*m^7 + 44990231*m^6 + 206070150*m^5 + 657206836*m^4 + 1414014888*m^3
+ 1931559552*m^2 + 1486442880*m + 479001600)
```

giac [B] time = 0.33, size = 3224, normalized size = 15.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="giac")
```

```
[Out] (m^11*x^12*x^m*e + d*m^11*x^11*x^m + 10*m^11*x^11*x^m*e + 66*m^10*x^12*x^m*
e + 10*d*m^11*x^10*x^m + 67*d*m^10*x^11*x^m + 45*m^11*x^10*x^m*e + 670*m^10
*x^11*x^m*e + 1925*m^9*x^12*x^m*e + 45*d*m^11*x^9*x^m + 680*d*m^10*x^10*x^m
 + 1980*d*m^9*x^11*x^m + 120*m^11*x^9*x^m*e + 3060*m^10*x^10*x^m*e + 19800*
m^9*x^11*x^m*e + 32670*m^8*x^12*x^m*e + 120*d*m^11*x^8*x^m + 3105*d*m^10*x^
9*x^m + 20370*d*m^9*x^10*x^m + 33990*d*m^8*x^11*x^m + 210*m^11*x^8*x^m*e +
8280*m^10*x^9*x^m*e + 91665*m^9*x^10*x^m*e + 339900*m^8*x^11*x^m*e + 357423
*m^7*x^12*x^m*e + 210*d*m^11*x^7*x^m + 8400*d*m^10*x^8*x^m + 94320*d*m^9*x^
9*x^m + 354000*d*m^8*x^10*x^m + 375573*d*m^7*x^11*x^m + 252*m^11*x^7*x^m*e
+ 14700*m^10*x^8*x^m*e + 251520*m^9*x^9*x^m*e + 1593000*m^8*x^10*x^m*e + 37
55730*m^7*x^11*x^m*e + 2637558*m^6*x^12*x^m*e + 252*d*m^11*x^6*x^m + 14910*
d*m^10*x^7*x^m + 258840*d*m^9*x^8*x^m + 1660770*d*m^8*x^9*x^m + 3954630*d*m
^7*x^10*x^m + 2795331*d*m^6*x^11*x^m + 210*m^11*x^6*x^m*e + 17892*m^10*x^7*
x^m*e + 452970*m^9*x^8*x^m*e + 4428720*m^8*x^9*x^m*e + 17795835*m^7*x^10*x^
m*e + 27953310*m^6*x^11*x^m*e + 13339535*m^5*x^12*x^m*e + 210*d*m^11*x^5*x^
m + 18144*d*m^10*x^6*x^m + 466200*d*m^9*x^7*x^m + 4621680*d*m^8*x^8*x^m + 1
8778905*d*m^7*x^9*x^m + 29720040*d*m^6*x^10*x^m + 14241590*d*m^5*x^11*x^m +
 120*m^11*x^5*x^m*e + 15120*m^10*x^6*x^m*e + 559440*m^9*x^7*x^m*e + 8087940
*m^8*x^8*x^m*e + 50077080*m^7*x^9*x^m*e + 133740180*m^6*x^10*x^m*e + 142415
900*m^5*x^11*x^m*e + 45995730*m^4*x^12*x^m*e + 120*d*m^11*x^4*x^m + 15330*d
*m^10*x^5*x^m + 575820*d*m^9*x^6*x^m + 8448300*d*m^8*x^7*x^m + 52962120*d*m
^7*x^8*x^m + 142688385*d*m^6*x^9*x^m + 152701910*d*m^5*x^10*x^m + 49412660*
d*m^4*x^11*x^m + 45*m^11*x^4*x^m*e + 8760*m^10*x^5*x^m*e + 479850*m^9*x^6*x
^m*e + 10137960*m^8*x^7*x^m*e + 92683710*m^7*x^8*x^m*e + 380502360*m^6*x^9*
x^m*e + 687158595*m^5*x^10*x^m*e + 494126600*m^4*x^11*x^m*e + 105258076*m^3
*x^12*x^m*e + 45*d*m^11*x^3*x^m + 8880*d*m^10*x^4*x^m + 493920*d*m^9*x^5*x^
m + 10599120*d*m^8*x^6*x^m + 98249130*d*m^7*x^7*x^m + 407499120*d*m^6*x^8*x
^m + 740364930*d*m^5*x^9*x^m + 533682400*d*m^4*x^10*x^m + 113667576*d*m^3*x
^11*x^m + 10*m^11*x^3*x^m*e + 3330*m^10*x^4*x^m*e + 282240*m^9*x^5*x^m*e +
8832600*m^8*x^6*x^m*e + 117898956*m^7*x^7*x^m*e + 713123460*m^6*x^8*x^m*e +
 1974306480*m^5*x^9*x^m*e + 2401570800*m^4*x^10*x^m*e + 1136675760*m^3*x^11
*x^m*e + 150917976*m^2*x^12*x^m*e + 10*d*m^11*x^2*x^m + 3375*d*m^10*x^3*x^m
 + 290520*d*m^9*x^4*x^m + 9242100*d*m^8*x^5*x^m + 125269956*d*m^7*x^6*x^m +
 766849230*d*m^6*x^7*x^m + 2138834760*d*m^5*x^8*x^m + 2609872380*d*m^4*x^9*
x^m + 1235244360*d*m^3*x^10*x^m + 163671552*d*m^2*x^11*x^m + m^11*x^2*x^m*e
 + 750*m^10*x^3*x^m*e + 108945*m^9*x^4*x^m*e + 5281200*m^8*x^5*x^m*e + 1043
91630*m^7*x^6*x^m*e + 920219076*m^6*x^7*x^m*e + 3742960830*m^5*x^8*x^m*e +
6959659680*m^4*x^9*x^m*e + 5558599620*m^3*x^10*x^m*e + 1636715520*m^2*x^11*
x^m*e + 120543840*m*x^12*x^m*e + d*m^11*x*x^m + 760*d*m^10*x^2*x^m + 112140
*d*m^9*x^3*x^m + 5530320*d*m^8*x^4*x^m + 111176730*d*m^7*x^5*x^m + 99389203
2*d*m^6*x^6*x^m + 4080003900*d*m^5*x^7*x^m + 7617739920*d*m^4*x^8*x^m + 608
5456200*d*m^3*x^9*x^m + 1787705280*d*m^2*x^10*x^m + 131172480*d*m*x^11*x^m
+ 76*m^10*x^2*x^m*e + 24920*m^9*x^3*x^m*e + 2073870*m^8*x^4*x^m*e + 6352956
0*m^7*x^5*x^m*e + 828243360*m^6*x^6*x^m*e + 4896004680*m^5*x^7*x^m*e + 1333
1044860*m^4*x^8*x^m*e + 16227883200*m^3*x^9*x^m*e + 8044673760*m^2*x^10*x^m
*e + 1311724800*m*x^11*x^m*e + 39916800*x^12*x^m*e + 77*d*m^10*x*x^m + 2565
0*d*m^9*x^2*x^m + 2173230*d*m^8*x^3*x^m + 67814280*d*m^7*x^4*x^m + 89870949
0*d*m^6*x^5*x^m + 5374186020*d*m^5*x^6*x^m + 14714704200*d*m^4*x^7*x^m + 17
922900960*d*m^3*x^8*x^m + 8861564160*d*m^2*x^9*x^m + 1438542720*d*m*x^10*x^
m + 43545600*d*x^11*x^m + 2565*m^9*x^2*x^m*e + 482940*m^8*x^3*x^m*e + 25430
355*m^7*x^4*x^m*e + 513548280*m^6*x^5*x^m*e + 4478488350*m^5*x^6*x^m*e + 17
657645040*m^4*x^7*x^m*e + 31365076680*m^3*x^8*x^m*e + 23630837760*m^2*x^9*x
^m*e + 6473442240*m*x^10*x^m*e + 435456000*x^11*x^m*e + 2640*d*m^9*x*x^m +
506400*d*m^8*x^2*x^m + 27206145*d*m^7*x^3*x^m + 559938960*d*m^6*x^4*x^m + 4
954401060*d*m^5*x^5*x^m + 19684561680*d*m^4*x^6*x^m + 35010506160*d*m^3*x^7
*x^m + 26298578880*d*m^2*x^8*x^m + 7166102400*d*m*x^9*x^m + 479001600*d*x^1
0*x^m + 50640*m^8*x^2*x^m*e + 6045810*m^7*x^3*x^m*e + 209977110*m^6*x^4*x^m
*e + 2831086320*m^5*x^5*x^m*e + 16403801400*m^4*x^6*x^m*e + 42012607392*m^3
*x^7*x^m*e + 46022513040*m^2*x^8*x^m*e + 19109606400*m*x^9*x^m*e + 21555072
00*x^10*x^m*e + 53130*d*m^8*x*x^m + 6481830*d*m^7*x^2*x^m + 230080095*d*m^6
*x^3*x^m + 3159071880*d*m^5*x^4*x^m + 18502726200*d*m^4*x^5*x^m + 475087525
92*d*m^3*x^6*x^m + 51869583360*d*m^2*x^7*x^m + 21398515200*d*m*x^8*x^m + 23
95008000*d*x^9*x^m + 648183*m^7*x^2*x^m*e + 51128910*m^6*x^3*x^m*e + 118465
1955*m^5*x^4*x^m*e + 10572986400*m^4*x^5*x^m*e + 39590627160*m^3*x^6*x^m*e
+ 62243500032*m^2*x^7*x^m*e + 37447401600*m*x^8*x^m*e + 6386688000*x^9*x^m*
e + 696333*d*m^7*x*x^m + 56302680*d*m^6*x^2*x^m + 1334320110*d*m^5*x^3*x^m
+ 12092130480*d*m^4*x^4*x^m + 45499804560*d*m^3*x^5*x^m + 71279236224*d*m^2
*x^6*x^m + 42540422400*d*m*x^7*x^m + 7185024000*d*x^8*x^m + 5630268*m^6*x^2
*x^m*e + 296515580*m^5*x^3*x^m*e + 4534548930*m^4*x^4*x^m*e + 25999888320*m
^3*x^5*x^m*e + 59399363520*m^2*x^6*x^m*e + 51048506880*m*x^7*x^m*e + 125737
92000*x^8*x^m*e + 6230301*d*m^6*x*x^m + 337296950*d*m^5*x^2*x^m + 527019642
0*d*m^4*x^3*x^m + 30496298400*d*m^3*x^4*x^m + 69444103680*d*m^2*x^5*x^m + 5
9077589760*d*m*x^6*x^m + 14370048000*d*x^7*x^m + 33729695*m^5*x^2*x^m*e + 1
171154760*m^4*x^3*x^m*e + 11436111900*m^3*x^4*x^m*e + 39682344960*m^2*x^5*x
^m*e + 49231324800*m*x^6*x^m*e + 17244057600*x^7*x^m*e + 38759930*d*m^5*x*x
^m + 1386107600*d*m^4*x^2*x^m + 13763718360*d*m^3*x^3*x^m + 47696592960*d*m
^2*x^4*x^m + 58406987520*d*m*x^5*x^m + 20118067200*d*x^6*x^m + 138610760*m^
4*x^2*x^m*e + 3058604080*m^3*x^3*x^m*e + 17886222360*m^2*x^4*x^m*e + 333754
21440*m*x^5*x^m*e + 16765056000*x^6*x^m*e + 167310220*d*m^4*x*x^m + 3799853
160*d*m^3*x^2*x^m + 22339514880*d*m^2*x^3*x^m + 41000774400*d*m*x^4*x^m + 2
0118067200*d*x^5*x^m + 379985316*m^3*x^2*x^m*e + 4964336640*m^2*x^3*x^m*e +
 15375290400*m*x^4*x^m*e + 11496038400*x^5*x^m*e + 489896616*d*m^3*x*x^m +
6540442560*d*m^2*x^2*x^m + 19901635200*d*m*x^3*x^m + 14370048000*d*x^4*x^m
+ 654044256*m^2*x^2*x^m*e + 4422585600*m*x^3*x^m*e + 5388768000*x^4*x^m*e +
 924118272*d*m^2*x*x^m + 6234710400*d*m*x^2*x^m + 7185024000*d*x^3*x^m + 62
3471040*m*x^2*x^m*e + 1596672000*x^3*x^m*e + 1007441280*d*m*x*x^m + 2395008
000*d*x^2*x^m + 239500800*x^2*x^m*e + 479001600*d*x*x^m)/(m^12 + 78*m^11 +
2717*m^10 + 55770*m^9 + 749463*m^8 + 6926634*m^7 + 44990231*m^6 + 206070150
*m^5 + 657206836*m^4 + 1414014888*m^3 + 1931559552*m^2 + 1486442880*m + 479
001600)
```

maple [B] time = 0.05, size = 2246, normalized size = 10.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(e*x+d)*(x^2+2*x+1)^5,x)
```

```
[Out] x^(m+1)*(e*m^11*x^11+d*m^11*x^10+10*e*m^11*x^10+66*e*m^10*x^11+10*d*m^11*x^
9+67*d*m^10*x^10+45*e*m^11*x^9+670*e*m^10*x^10+1925*e*m^9*x^11+45*d*m^11*x^
8+680*d*m^10*x^9+1980*d*m^9*x^10+120*e*m^11*x^8+3060*e*m^10*x^9+19800*e*m^9
*x^10+32670*e*m^8*x^11+120*d*m^11*x^7+3105*d*m^10*x^8+20370*d*m^9*x^9+33990
*d*m^8*x^10+210*e*m^11*x^7+8280*e*m^10*x^8+91665*e*m^9*x^9+339900*e*m^8*x^1
0+357423*e*m^7*x^11+210*d*m^11*x^6+8400*d*m^10*x^7+94320*d*m^9*x^8+354000*d
*m^8*x^9+375573*d*m^7*x^10+252*e*m^11*x^6+14700*e*m^10*x^7+251520*e*m^9*x^8
+1593000*e*m^8*x^9+3755730*e*m^7*x^10+2637558*e*m^6*x^11+252*d*m^11*x^5+149
10*d*m^10*x^6+258840*d*m^9*x^7+1660770*d*m^8*x^8+3954630*d*m^7*x^9+2795331*
d*m^6*x^10+210*e*m^11*x^5+17892*e*m^10*x^6+452970*e*m^9*x^7+4428720*e*m^8*x
^8+17795835*e*m^7*x^9+27953310*e*m^6*x^10+13339535*e*m^5*x^11+210*d*m^11*x^
4+18144*d*m^10*x^5+466200*d*m^9*x^6+4621680*d*m^8*x^7+18778905*d*m^7*x^8+29
720040*d*m^6*x^9+14241590*d*m^5*x^10+120*e*m^11*x^4+15120*e*m^10*x^5+559440
*e*m^9*x^6+8087940*e*m^8*x^7+50077080*e*m^7*x^8+133740180*e*m^6*x^9+1424159
00*e*m^5*x^10+45995730*e*m^4*x^11+120*d*m^11*x^3+15330*d*m^10*x^4+575820*d*
m^9*x^5+8448300*d*m^8*x^6+52962120*d*m^7*x^7+142688385*d*m^6*x^8+152701910*
d*m^5*x^9+49412660*d*m^4*x^10+45*e*m^11*x^3+8760*e*m^10*x^4+479850*e*m^9*x^
5+10137960*e*m^8*x^6+92683710*e*m^7*x^7+380502360*e*m^6*x^8+687158595*e*m^5
*x^9+494126600*e*m^4*x^10+105258076*e*m^3*x^11+45*d*m^11*x^2+8880*d*m^10*x^
3+493920*d*m^9*x^4+10599120*d*m^8*x^5+98249130*d*m^7*x^6+407499120*d*m^6*x^
7+740364930*d*m^5*x^8+533682400*d*m^4*x^9+113667576*d*m^3*x^10+10*e*m^11*x^
2+3330*e*m^10*x^3+282240*e*m^9*x^4+8832600*e*m^8*x^5+117898956*e*m^7*x^6+71
3123460*e*m^6*x^7+1974306480*e*m^5*x^8+2401570800*e*m^4*x^9+1136675760*e*m^
3*x^10+150917976*e*m^2*x^11+10*d*m^11*x+3375*d*m^10*x^2+290520*d*m^9*x^3+92
42100*d*m^8*x^4+125269956*d*m^7*x^5+766849230*d*m^6*x^6+2138834760*d*m^5*x^
7+2609872380*d*m^4*x^8+1235244360*d*m^3*x^9+163671552*d*m^2*x^10+e*m^11*x+7
50*e*m^10*x^2+108945*e*m^9*x^3+5281200*e*m^8*x^4+104391630*e*m^7*x^5+920219
076*e*m^6*x^6+3742960830*e*m^5*x^7+6959659680*e*m^4*x^8+5558599620*e*m^3*x^
9+1636715520*e*m^2*x^10+120543840*e*m*x^11+d*m^11+760*d*m^10*x+112140*d*m^9
*x^2+5530320*d*m^8*x^3+111176730*d*m^7*x^4+993892032*d*m^6*x^5+4080003900*d
*m^5*x^6+7617739920*d*m^4*x^7+6085456200*d*m^3*x^8+1787705280*d*m^2*x^9+131
172480*d*m*x^10+76*e*m^10*x+24920*e*m^9*x^2+2073870*e*m^8*x^3+63529560*e*m^
7*x^4+828243360*e*m^6*x^5+4896004680*e*m^5*x^6+13331044860*e*m^4*x^7+162278
83200*e*m^3*x^8+8044673760*e*m^2*x^9+1311724800*e*m*x^10+39916800*e*x^11+77
*d*m^10+25650*d*m^9*x+2173230*d*m^8*x^2+67814280*d*m^7*x^3+898709490*d*m^6*
x^4+5374186020*d*m^5*x^5+14714704200*d*m^4*x^6+17922900960*d*m^3*x^7+886156
4160*d*m^2*x^8+1438542720*d*m*x^9+43545600*d*x^10+2565*e*m^9*x+482940*e*m^8
*x^2+25430355*e*m^7*x^3+513548280*e*m^6*x^4+4478488350*e*m^5*x^5+1765764504
0*e*m^4*x^6+31365076680*e*m^3*x^7+23630837760*e*m^2*x^8+6473442240*e*m*x^9+
435456000*e*x^10+2640*d*m^9+506400*d*m^8*x+27206145*d*m^7*x^2+559938960*d*m
^6*x^3+4954401060*d*m^5*x^4+19684561680*d*m^4*x^5+35010506160*d*m^3*x^6+262
98578880*d*m^2*x^7+7166102400*d*m*x^8+479001600*d*x^9+50640*e*m^8*x+6045810
*e*m^7*x^2+209977110*e*m^6*x^3+2831086320*e*m^5*x^4+16403801400*e*m^4*x^5+4
2012607392*e*m^3*x^6+46022513040*e*m^2*x^7+19109606400*e*m*x^8+2155507200*e
*x^9+53130*d*m^8+6481830*d*m^7*x+230080095*d*m^6*x^2+3159071880*d*m^5*x^3+1
8502726200*d*m^4*x^4+47508752592*d*m^3*x^5+51869583360*d*m^2*x^6+2139851520
0*d*m*x^7+2395008000*d*x^8+648183*e*m^7*x+51128910*e*m^6*x^2+1184651955*e*m
^5*x^3+10572986400*e*m^4*x^4+39590627160*e*m^3*x^5+62243500032*e*m^2*x^6+37
447401600*e*m*x^7+6386688000*e*x^8+696333*d*m^7+56302680*d*m^6*x+1334320110
*d*m^5*x^2+12092130480*d*m^4*x^3+45499804560*d*m^3*x^4+71279236224*d*m^2*x^
5+42540422400*d*m*x^6+7185024000*d*x^7+5630268*e*m^6*x+296515580*e*m^5*x^2+
4534548930*e*m^4*x^3+25999888320*e*m^3*x^4+59399363520*e*m^2*x^5+5104850688
0*e*m*x^6+12573792000*e*x^7+6230301*d*m^6+337296950*d*m^5*x+5270196420*d*m^
4*x^2+30496298400*d*m^3*x^3+69444103680*d*m^2*x^4+59077589760*d*m*x^5+14370
048000*d*x^6+33729695*e*m^5*x+1171154760*e*m^4*x^2+11436111900*e*m^3*x^3+39
682344960*e*m^2*x^4+49231324800*e*m*x^5+17244057600*e*x^6+38759930*d*m^5+13
86107600*d*m^4*x+13763718360*d*m^3*x^2+47696592960*d*m^2*x^3+58406987520*d*
m*x^4+20118067200*d*x^5+138610760*e*m^4*x+3058604080*e*m^3*x^2+17886222360*
e*m^2*x^3+33375421440*e*m*x^4+16765056000*e*x^5+167310220*d*m^4+3799853160*
d*m^3*x+22339514880*d*m^2*x^2+41000774400*d*m*x^3+20118067200*d*x^4+3799853
16*e*m^3*x+4964336640*e*m^2*x^2+15375290400*e*m*x^3+11496038400*e*x^4+48989
6616*d*m^3+6540442560*d*m^2*x+19901635200*d*m*x^2+14370048000*d*x^3+6540442
56*e*m^2*x+4422585600*e*m*x^2+5388768000*e*x^3+924118272*d*m^2+6234710400*d
*m*x+7185024000*d*x^2+623471040*e*m*x+1596672000*e*x^2+1007441280*d*m+23950
08000*d*x+239500800*e*x+479001600*d)/(m+12)/(m+11)/(m+10)/(m+9)/(m+8)/(m+7)
/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.58, size = 283, normalized size = 1.35

$$\frac{ex^{m+12}}{m+12}+\frac{dx^{m+11}}{m+11}+\frac{10\,ex^{m+11}}{m+11}+\frac{10\,dx^{m+10}}{m+10}+\frac{45\,ex^{m+10}}{m+10}+\frac{45\,dx^{m+9}}{m+9}+\frac{120\,ex^{m+9}}{m+9}+\frac{120\,dx^{m+8}}{m+8}+\frac{210\,ex^{m+8}}{m+8}+\frac{210\,dx^{m}}{m+7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^m*(e*x+d)*(x^2+2*x+1)^5,x, algorithm="maxima")
```

```
[Out] e*x^(m + 12)/(m + 12) + d*x^(m + 11)/(m + 11) + 10*e*x^(m + 11)/(m + 11) +
10*d*x^(m + 10)/(m + 10) + 45*e*x^(m + 10)/(m + 10) + 45*d*x^(m + 9)/(m + 9
) + 120*e*x^(m + 9)/(m + 9) + 120*d*x^(m + 8)/(m + 8) + 210*e*x^(m + 8)/(m
+ 8) + 210*d*x^(m + 7)/(m + 7) + 252*e*x^(m + 7)/(m + 7) + 252*d*x^(m + 6)/
(m + 6) + 210*e*x^(m + 6)/(m + 6) + 210*d*x^(m + 5)/(m + 5) + 120*e*x^(m +
5)/(m + 5) + 120*d*x^(m + 4)/(m + 4) + 45*e*x^(m + 4)/(m + 4) + 45*d*x^(m +
 3)/(m + 3) + 10*e*x^(m + 3)/(m + 3) + 10*d*x^(m + 2)/(m + 2) + e*x^(m + 2)
/(m + 2) + d*x^(m + 1)/(m + 1)
```

mupad [B] time = 2.45, size = 1515, normalized size = 7.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^m*(d + e*x)*(2*x + x^2 + 1)^5,x)
```

```
[Out] (e*x^m*x^12*(120543840*m + 150917976*m^2 + 105258076*m^3 + 45995730*m^4 + 1
3339535*m^5 + 2637558*m^6 + 357423*m^7 + 32670*m^8 + 1925*m^9 + 66*m^10 + m
^11 + 39916800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 65720683
6*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9
 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x^11*(d + 10*e)*(13117248
0*m + 163671552*m^2 + 113667576*m^3 + 49412660*m^4 + 14241590*m^5 + 2795331
*m^6 + 375573*m^7 + 33990*m^8 + 1980*m^9 + 67*m^10 + m^11 + 43545600))/(148
6442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5
 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^1
1 + m^12 + 479001600) + (d*x*x^m*(1007441280*m + 924118272*m^2 + 489896616*
m^3 + 167310220*m^4 + 38759930*m^5 + 6230301*m^6 + 696333*m^7 + 53130*m^8 +
 2640*m^9 + 77*m^10 + m^11 + 479001600))/(1486442880*m + 1931559552*m^2 + 1
414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
+ 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (x^m*x
^2*(10*d + e)*(623471040*m + 654044256*m^2 + 379985316*m^3 + 138610760*m^4
+ 33729695*m^5 + 5630268*m^6 + 648183*m^7 + 50640*m^8 + 2565*m^9 + 76*m^10
+ m^11 + 239500800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6572
06836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770
*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (5*x^m*x^10*(2*d + 9*e)*(1
43854272*m + 178770528*m^2 + 123524436*m^3 + 53368240*m^4 + 15270191*m^5 +
2972004*m^6 + 395463*m^7 + 35400*m^8 + 2037*m^9 + 68*m^10 + m^11 + 47900160
))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070
150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 +
 78*m^11 + m^12 + 479001600) + (15*x^m*x^9*(3*d + 8*e)*(159246720*m + 19692
3648*m^2 + 135232360*m^3 + 57997164*m^4 + 16452554*m^5 + 3170853*m^6 + 4173
09*m^7 + 36906*m^8 + 2096*m^9 + 69*m^10 + m^11 + 53222400))/(1486442880*m +
 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231
*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 +
479001600) + (30*x^m*x^8*(4*d + 7*e)*(178320960*m + 219154824*m^2 + 1493575
08*m^3 + 63481166*m^4 + 17823623*m^5 + 3395826*m^6 + 441351*m^7 + 38514*m^8
 + 2157*m^9 + 70*m^10 + m^11 + 59875200))/(1486442880*m + 1931559552*m^2 +
1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7
 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (42*x
^m*x^7*(5*d + 6*e)*(202573440*m + 246998016*m^2 + 166716696*m^3 + 70070020*
m^4 + 19428590*m^5 + 3651663*m^6 + 467853*m^7 + 40230*m^8 + 2220*m^9 + 71*m
^10 + m^11 + 68428800))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 6
57206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55
770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) + (42*x^m*x^6*(6*d + 5*e)
*(234434880*m + 282854112*m^2 + 188526796*m^3 + 78113340*m^4 + 21326135*m^5
 + 3944016*m^6 + 497103*m^7 + 42060*m^8 + 2285*m^9 + 72*m^10 + m^11 + 79833
600))/(1486442880*m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206
070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^1
0 + 78*m^11 + m^12 + 479001600) + (30*x^m*x^5*(7*d + 4*e)*(278128512*m + 33
0686208*m^2 + 216665736*m^3 + 88108220*m^4 + 23592386*m^5 + 4279569*m^6 + 5
29413*m^7 + 44010*m^8 + 2352*m^9 + 73*m^10 + m^11 + 95800320))/(1486442880*
m + 1931559552*m^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990
231*m^6 + 6926634*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12
 + 479001600) + (15*x^m*x^4*(8*d + 3*e)*(341673120*m + 397471608*m^2 + 2541
35820*m^3 + 100767754*m^4 + 26325599*m^5 + 4666158*m^6 + 565119*m^7 + 46086
*m^8 + 2421*m^9 + 74*m^10 + m^11 + 119750400))/(1486442880*m + 1931559552*m
^2 + 1414014888*m^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 692663
4*m^7 + 749463*m^8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600) +
(5*x^m*x^3*(9*d + 2*e)*(442258560*m + 496433664*m^2 + 305860408*m^3 + 11711
5476*m^4 + 29651558*m^5 + 5112891*m^6 + 604581*m^7 + 48294*m^8 + 2492*m^9 +
 75*m^10 + m^11 + 159667200))/(1486442880*m + 1931559552*m^2 + 1414014888*m
^3 + 657206836*m^4 + 206070150*m^5 + 44990231*m^6 + 6926634*m^7 + 749463*m^
8 + 55770*m^9 + 2717*m^10 + 78*m^11 + m^12 + 479001600)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**m*(e*x+d)*(x**2+2*x+1)**5,x)
```

```
[Out] Timed out
```

3.843 $\int x^3(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

```
[Out] 1/4*a*A*x^4+1/5*(A*b+B*a)*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

Rubi [A] time = 0.06, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + ((A*b + a*B)*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^3+(Ab+aB)x^4+(bB+Ac)x^5+Bcx^6\right)\,dx\\&=\frac{1}{4}aAx^4+\frac{1}{5}(Ab+aB)x^5+\frac{1}{6}(bB+Ac)x^6+\frac{1}{7}Bcx^7\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.00

$$\frac{1}{5}x^5(aB+Ab)+\frac{1}{4}aAx^4+\frac{1}{6}x^6(Ac+bB)+\frac{1}{7}Bcx^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*x^4)/4 + ((A*b + a*B)*x^5)/5 + ((b*B + A*c)*x^6)/6 + (B*c*x^7)/7
```

fricas [A] time = 0.93, size = 43, normalized size = 0.91

$$\frac{1}{7}x^7cB+\frac{1}{6}x^6bB+\frac{1}{6}x^6cA+\frac{1}{5}x^5aB+\frac{1}{5}x^5bA+\frac{1}{4}x^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c*B + 1/6*x^6*b*B + 1/6*x^6*c*A + 1/5*x^5*a*B + 1/5*x^5*b*A + 1/4*x
^4*a*A
```

giac [A] time = 0.17, size = 43, normalized size = 0.91

$$\frac{1}{7}Bcx^7+\frac{1}{6}Bbx^6+\frac{1}{6}Acx^6+\frac{1}{5}Bax^5+\frac{1}{5}Abx^5+\frac{1}{4}Aax^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7 + 1/6*B*b*x^6 + 1/6*A*c*x^6 + 1/5*B*a*x^5 + 1/5*A*b*x^5 + 1/4*A
*a*x^4
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{Bc\,x^7}{7}+\frac{Aa\,x^4}{4}+\frac{(Ac+bB)\,x^6}{6}+\frac{(Ab+Ba)\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/4*A*a*x^4+1/5*(A*b+B*a)*x^5+1/6*(A*c+B*b)*x^6+1/7*B*c*x^7
```

maxima [A] time = 0.48, size = 39, normalized size = 0.83

$$\frac{1}{7}Bcx^7+\frac{1}{6}(Bb+Ac)x^6+\frac{1}{4}Aax^4+\frac{1}{5}(Ba+Ab)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*x^7 + 1/6*(B*b + A*c)*x^6 + 1/4*A*a*x^4 + 1/5*(B*a + A*b)*x^5
```

mupad [B] time = 0.05, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^7}{7}+\left(\frac{A\,c}{6}+\frac{B\,b}{6}\right)\,x^6+\left(\frac{A\,b}{5}+\frac{B\,a}{5}\right)\,x^5+\frac{A\,a\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^5*((A*b)/5 + (B*a)/5) + x^6*((A*c)/6 + (B*b)/6) + (A*a*x^4)/4 + (B*c*x^7)
/7
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^4}{4}+\frac{Bcx^7}{7}+x^6\left(\frac{Ac}{6}+\frac{Bb}{6}\right)+x^5\left(\frac{Ab}{5}+\frac{Ba}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**4/4 + B*c*x**7/7 + x**6*(A*c/6 + B*b/6) + x**5*(A*b/5 + B*a/5)
```

3.844 $\int x^2(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

```
[Out] 1/3*a*A*x^3+1/4*(A*b+B*a)*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

Rubi [A] time = 0.05, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*x^3)/3 + ((A*b + a*B)*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^2+(Ab+aB)x^3+(bB+Ac)x^4+Bcx^5\right)\,dx\\&=\frac{1}{3}aAx^3+\frac{1}{4}(Ab+aB)x^4+\frac{1}{5}(bB+Ac)x^5+\frac{1}{6}Bcx^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 47, normalized size = 1.00

$$\frac{1}{4}x^4(aB+Ab)+\frac{1}{3}aAx^3+\frac{1}{5}x^5(Ac+bB)+\frac{1}{6}Bcx^6$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*x^3)/3 + ((A*b + a*B)*x^4)/4 + ((b*B + A*c)*x^5)/5 + (B*c*x^6)/6
```

fricas [A] time = 0.91, size = 43, normalized size = 0.91

$$\frac{1}{6}x^6cB+\frac{1}{5}x^5bB+\frac{1}{5}x^5cA+\frac{1}{4}x^4aB+\frac{1}{4}x^4bA+\frac{1}{3}x^3aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c*B + 1/5*x^5*b*B + 1/5*x^5*c*A + 1/4*x^4*a*B + 1/4*x^4*b*A + 1/3*x
^3*a*A
```

giac [A] time = 0.22, size = 43, normalized size = 0.91

$$\frac{1}{6}Bcx^6 + \frac{1}{5}Bbx^5 + \frac{1}{5}Acx^5 + \frac{1}{4}Bax^4 + \frac{1}{4}Abx^4 + \frac{1}{3}Aax^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6 + 1/5*B*b*x^5 + 1/5*A*c*x^5 + 1/4*B*a*x^4 + 1/4*A*b*x^4 + 1/3*A
*a*x^3
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{Bc\,x^6}{6} + \frac{Aa\,x^3}{3} + \frac{(Ac + bB)\,x^5}{5} + \frac{(Ab + Ba)\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/3*A*a*x^3+1/4*(A*b+B*a)*x^4+1/5*(A*c+B*b)*x^5+1/6*B*c*x^6
```

maxima [A] time = 0.60, size = 39, normalized size = 0.83

$$\frac{1}{6}Bcx^6 + \frac{1}{5}(Bb + Ac)x^5 + \frac{1}{3}Aax^3 + \frac{1}{4}(Ba + Ab)x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*x^6 + 1/5*(B*b + A*c)*x^5 + 1/3*A*a*x^3 + 1/4*(B*a + A*b)*x^4
```

mupad [B] time = 0.04, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^6}{6} + \left(\frac{A\,c}{5} + \frac{B\,b}{5}\right)x^5 + \left(\frac{A\,b}{4} + \frac{B\,a}{4}\right)x^4 + \frac{A\,a\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((A*b)/4 + (B*a)/4) + x^5*((A*c)/5 + (B*b)/5) + (A*a*x^3)/3 + (B*c*x^6)
/6
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^3}{3} + \frac{Bcx^6}{6} + x^5\left(\frac{Ac}{5} + \frac{Bb}{5}\right) + x^4\left(\frac{Ab}{4} + \frac{Ba}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**3/3 + B*c*x**6/6 + x**5*(A*c/5 + B*b/5) + x**4*(A*b/4 + B*a/4)
```

3.845 $\int x(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{3}x^3(aB+Ab)+\frac{1}{2}aAx^2+\frac{1}{4}x^4(Ac+bB)+\frac{1}{5}Bcx^5$$

```
[Out] 1/2*a*A*x^2+1/3*(A*b+B*a)*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {765}

$$\frac{1}{3}x^3(aB+Ab)+\frac{1}{2}aAx^2+\frac{1}{4}x^4(Ac+bB)+\frac{1}{5}Bcx^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*x^2)/2 + ((A*b + a*B)*x^3)/3 + ((b*B + A*c)*x^4)/4 + (B*c*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx+(Ab+aB)x^2+(bB+Ac)x^3+Bcx^4\right)\,dx\\&=\frac{1}{2}aAx^2+\frac{1}{3}(Ab+aB)x^3+\frac{1}{4}(bB+Ac)x^4+\frac{1}{5}Bcx^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.87

$$\frac{1}{60}x^2\left(20x(aB+Ab)+30aA+15x^2(Ac+bB)+12Bcx^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (x^2*(30*a*A + 20*(A*b + a*B)*x + 15*(b*B + A*c)*x^2 + 12*B*c*x^3))/60
```

fricas [A] time = 0.85, size = 43, normalized size = 0.91

$$\frac{1}{5}x^5cB+\frac{1}{4}x^4bB+\frac{1}{4}x^4cA+\frac{1}{3}x^3aB+\frac{1}{3}x^3bA+\frac{1}{2}x^2aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*c*B + 1/4*x^4*b*B + 1/4*x^4*c*A + 1/3*x^3*a*B + 1/3*x^3*b*A + 1/2*x
^2*a*A
```

giac [**A**] time = 0.15, size = 43, normalized size = 0.91

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{4}\,Bbx^{4}+\frac{1}{4}\,Acx^{4}+\frac{1}{3}\,Bax^{3}+\frac{1}{3}\,Abx^{3}+\frac{1}{2}\,Aax^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5 + 1/4*B*b*x^4 + 1/4*A*c*x^4 + 1/3*B*a*x^3 + 1/3*A*b*x^3 + 1/2*A
*a*x^2
```

maple [**A**] time = 0.08, size = 40, normalized size = 0.85

$$\frac{Bc\,x^{5}}{5}+\frac{Aa\,x^{2}}{2}+\frac{(Ac+bB)\,x^{4}}{4}+\frac{(Ab+Ba)\,x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*A*a*x^2+1/3*(A*b+B*a)*x^3+1/4*(A*c+B*b)*x^4+1/5*B*c*x^5
```

maxima [**A**] time = 0.53, size = 39, normalized size = 0.83

$$\frac{1}{5}\,Bcx^{5}+\frac{1}{4}\,(Bb+Ac)x^{4}+\frac{1}{2}\,Aax^{2}+\frac{1}{3}\,(Ba+Ab)x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*x^5 + 1/4*(B*b + A*c)*x^4 + 1/2*A*a*x^2 + 1/3*(B*a + A*b)*x^3
```

mupad [**B**] time = 0.04, size = 41, normalized size = 0.87

$$\frac{B\,c\,x^{5}}{5}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x^{4}+\left(\frac{A\,b}{3}+\frac{B\,a}{3}\right)\,x^{3}+\frac{A\,a\,x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*b)/3 + (B*a)/3) + x^4*((A*c)/4 + (B*b)/4) + (A*a*x^2)/2 + (B*c*x^5)
/5
```

sympy [**A**] time = 0.07, size = 42, normalized size = 0.89

$$\frac{Aax^{2}}{2}+\frac{Bcx^{5}}{5}+x^{4}\left(\frac{Ac}{4}+\frac{Bb}{4}\right)+x^{3}\left(\frac{Ab}{3}+\frac{Ba}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x**2/2 + B*c*x**5/5 + x**4*(A*c/4 + B*b/4) + x**3*(A*b/3 + B*a/3)
```

3.846 $\int (A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=42

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

```
[Out] a*A*x+1/2*(A*b+B*a)*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

Rubi [A] time = 0.03, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}} = 0.062$, Rules used = $\{631\}$

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)\,dx &= \int \left(aA+(Ab+aB)x+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= aAx+\frac{1}{2}(Ab+aB)x^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

fricas [A] time = 0.98, size = 40, normalized size = 0.95

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+\frac{1}{2}x^2bA+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*a*B + 1/2*x^2*b*A + x*a*A
```

giac [A] time = 0.15, size = 40, normalized size = 0.95

$$\frac{1}{4}Bcx^4+\frac{1}{3}Bbx^3+\frac{1}{3}Acx^3+\frac{1}{2}Bax^2+\frac{1}{2}Abx^2+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + 1/2*A*b*x^2 + A*a*x
```

maple [A] time = 0.06, size = 37, normalized size = 0.88

$$\frac{Bc\,x^{4}}{4}+Aax+\frac{\left(Ac+bB\right)x^{3}}{3}+\frac{\left(Ab+Ba\right)x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] A*a*x+1/2*(A*b+B*a)*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

maxima [A] time = 0.56, size = 36, normalized size = 0.86

$$\frac{1}{4}\,Bcx^{4}+\frac{1}{3}\,(Bb+Ac)x^{3}+Aax+\frac{1}{2}\,(Ba+Ab)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/3*(B*b + A*c)*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

mupad [B] time = 0.04, size = 38, normalized size = 0.90

$$\frac{B\,c\,x^4}{4}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^3+\left(\frac{A\,b}{2}+\frac{B\,a}{2}\right)\,x^2+A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*b)/2 + (B*a)/2) + x^3*((A*c)/3 + (B*b)/3) + A*a*x + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 39, normalized size = 0.93

$$Aax+\frac{Bcx^{4}}{4}+x^{3}\left(\frac{Ac}{3}+\frac{Bb}{3}\right)+x^{2}\left(\frac{Ab}{2}+\frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x + B*c*x**4/4 + x**3*(A*c/3 + B*b/3) + x**2*(A*b/2 + B*a/2)
```

3.847 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x}\,dx$

Optimal. Leaf size=38

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

```
[Out] (A*b+B*a)*x+1/2*(A*c+B*b)*x^2+1/3*B*c*x^3+a*A*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$, Rules used = {765}

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x,x]
```

```
[Out] (A*b + a*B)*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x}\,dx &= \int \left(Ab+aB+\frac{aA}{x}+(bB+Ac)x+Bcx^2\right)dx\\ &= (Ab+aB)x+\frac{1}{2}(bB+Ac)x^2+\frac{1}{3}Bcx^3+aA\log(x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 1.00

$$x(aB+Ab)+aA\log(x)+\frac{1}{2}x^2(Ac+bB)+\frac{1}{3}Bcx^3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x,x]
```

```
[Out] (A*b + a*B)*x + ((b*B + A*c)*x^2)/2 + (B*c*x^3)/3 + a*A*Log[x]
```

fricas [A] time = 0.87, size = 34, normalized size = 0.89

$$\frac{1}{3}\,Bcx^3+\frac{1}{2}\,(Bb+Ac)x^2+Aa\log(x)+(Ba+Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="fricas")
```

```
[Out] 1/3*B*c*x^3 + 1/2*(B*b + A*c)*x^2 + A*a*log(x) + (B*a + A*b)*x
```

giac [A] time = 0.15, size = 36, normalized size = 0.95

$$\frac{1}{3}Bcx^3 + \frac{1}{2}Bbx^2 + \frac{1}{2}Acx^2 + Bax + Abx + Aa\log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="giac")
```

```
[Out] 1/3*B*c*x^3 + 1/2*B*b*x^2 + 1/2*A*c*x^2 + B*a*x + A*b*x + A*a*log(abs(x))
```

maple [A] time = 0.04, size = 36, normalized size = 0.95

$$\frac{Bc\,x^3}{3} + \frac{Ac\,x^2}{2} + \frac{Bb\,x^2}{2} + Aa\ln(x) + Abx + Bax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x,x)
```

```
[Out] 1/3*B*c*x^3+1/2*A*c*x^2+1/2*B*b*x^2+A*b*x+B*a*x+A*a*ln(x)
```

maxima [A] time = 0.53, size = 34, normalized size = 0.89

$$\frac{1}{3}Bcx^3 + \frac{1}{2}(Bb + Ac)x^2 + Aa\log(x) + (Ba + Ab)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x,x, algorithm="maxima")
```

```
[Out] 1/3*B*c*x^3 + 1/2*(B*b + A*c)*x^2 + A*a*log(x) + (B*a + A*b)*x
```

mupad [B] time = 0.04, size = 35, normalized size = 0.92

$$x\,(A\,b + B\,a) + x^2\left(\frac{A\,c}{2} + \frac{B\,b}{2}\right) + \frac{B\,c\,x^3}{3} + A\,a\,\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x,x)
```

```
[Out] x*(A*b + B*a) + x^2*((A*c)/2 + (B*b)/2) + (B*c*x^3)/3 + A*a*log(x)
```

sympy [A] time = 0.13, size = 36, normalized size = 0.95

$$Aa\log(x) + \frac{Bcx^3}{3} + x^2\left(\frac{Ac}{2} + \frac{Bb}{2}\right) + x\,(Ab + Ba)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x,x)
```

```
[Out] A*a*log(x) + B*c*x**3/3 + x**2*(A*c/2 + B*b/2) + x*(A*b + B*a)
```

3.848 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^2}\,dx$

Optimal. Leaf size=36

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

```
[Out] -a*A/x+(A*c+B*b)*x+1/2*B*c*x^2+(A*b+B*a)*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + (b*B + A*c)*x + (B*c*x^2)/2 + (A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^2}\,dx &= \int \left(bB\left(1+\frac{Ac}{bB}\right)+\frac{aA}{x^2}+\frac{Ab+aB}{x}+Bcx\right)dx\\ &= -\frac{aA}{x}+(bB+Ac)x+\frac{1}{2}Bcx^2+(Ab+aB)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 36, normalized size = 1.00

$$\log(x)(aB+Ab)-\frac{aA}{x}+x(Ac+bB)+\frac{1}{2}Bcx^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^2,x]
```

```
[Out] -((a*A)/x) + (b*B + A*c)*x + (B*c*x^2)/2 + (A*b + a*B)*Log[x]
```

fricas [A] time = 0.79, size = 40, normalized size = 1.11

$$\frac{Bcx^3+2\,(Bb+Ac)x^2+2\,(Ba+Ab)x\log(x)-2\,Aa}{2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*x^3 + 2*(B*b + A*c)*x^2 + 2*(B*a + A*b)*x*log(x) - 2*A*a)/x
```

giac [**A**] time = 0.18, size = 34, normalized size = 0.94

$$\frac{1}{2}Bcx^2 + Bbx + Acx + (Ba + Ab)\log(|x|) - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="giac")
```

```
[Out] 1/2*B*c*x^2 + B*b*x + A*c*x + (B*a + A*b)*log(abs(x)) - A*a/x
```

maple [**A**] time = 0.05, size = 34, normalized size = 0.94

$$\frac{Bc\,x^2}{2} + Ab\ln(x) + Acx + Ba\ln(x) + Bbx - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^2,x)
```

```
[Out] 1/2*B*c*x^2+A*c*x+B*b*x-A*a/x+A*b*ln(x)+B*a*ln(x)
```

maxima [**A**] time = 0.53, size = 34, normalized size = 0.94

$$\frac{1}{2}Bcx^2 + (Bb + Ac)x + (Ba + Ab)\log(x) - \frac{Aa}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*c*x^2 + (B*b + A*c)*x + (B*a + A*b)*log(x) - A*a/x
```

mupad [**B**] time = 0.04, size = 34, normalized size = 0.94

$$x\,(A\,c + B\,b) + \ln(x)\,(A\,b + B\,a) - \frac{A\,a}{x} + \frac{B\,c\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^2,x)
```

```
[Out] x*(A*c + B*b) + log(x)*(A*b + B*a) - (A*a)/x + (B*c*x^2)/2
```

sympy [**A**] time = 0.17, size = 31, normalized size = 0.86

$$-\frac{Aa}{x} + \frac{Bcx^2}{2} + x\,(Ac + Bb) + (Ab + Ba)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**2,x)
```

```
[Out] -A*a/x + B*c*x**2/2 + x*(A*c + B*b) + (A*b + B*a)*log(x)
```

3.849 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^3}\,dx$

Optimal. Leaf size=36

$$-\frac{aB+Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

```
[Out] -1/2*a*A/x^2+(-A*b-B*a)/x+B*c*x+(A*c+B*b)*ln(x)
```

Rubi [A] time = 0.02, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^3,x]
```

```
[Out] -(a*A)/(2*x^2) - (A*b + a*B)/x + B*c*x + (b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^3}\,dx &= \int \left(Bc+\frac{aA}{x^3}+\frac{Ab+aB}{x^2}+\frac{bB+Ac}{x}\right)dx\\ &= -\frac{aA}{2x^2}-\frac{Ab+aB}{x}+Bcx+(bB+Ac)\log(x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 37, normalized size = 1.03

$$\frac{-aB-Ab}{x}-\frac{aA}{2x^2}+\log(x)(Ac+bB)+Bcx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^3,x]
```

```
[Out] -1/2*(a*A)/x^2 + (-(A*b) - a*B)/x + B*c*x + (b*B + A*c)*Log[x]
```

fricas [A] time = 0.90, size = 41, normalized size = 1.14

$$\frac{2\,Bcx^3+2\,(Bb+Ac)x^2\log(x)-Aa-2\,(Ba+Ab)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*x^3 + 2*(B*b + A*c)*x^2*log(x) - A*a - 2*(B*a + A*b)*x)/x^2
```

giac [**A**] time = 0.15, size = 35, normalized size = 0.97

$$Bcx + (Bb + Ac)\log(|x|) - \frac{Aa + 2(Ba + Ab)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="giac")
```

```
[Out] B*c*x + (B*b + A*c)*log(abs(x)) - 1/2*(A*a + 2*(B*a + A*b)*x)/x^2
```

maple [**A**] time = 0.05, size = 37, normalized size = 1.03

$$Ac\ln(x) + Bb\ln(x) + Bcx - \frac{Ab}{x} - \frac{Ba}{x} - \frac{Aa}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^3,x)
```

```
[Out] B*c*x-1/2*A*a/x^2-A*b/x-B*a/x+A*c*ln(x)+B*b*ln(x)
```

maxima [**A**] time = 0.50, size = 34, normalized size = 0.94

$$Bcx + (Bb + Ac)\log(x) - \frac{Aa + 2(Ba + Ab)x}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^3,x, algorithm="maxima")
```

```
[Out] B*c*x + (B*b + A*c)*log(x) - 1/2*(A*a + 2*(B*a + A*b)*x)/x^2
```

mupad [**B**] time = 1.17, size = 34, normalized size = 0.94

$$\ln(x)\ (A\,c + B\,b) - \frac{\frac{A\,a}{2} + x\ (A\,b + B\,a)}{x^2} + B\,c\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^3,x)
```

```
[Out] log(x)*(A*c + B*b) - ((A*a)/2 + x*(A*b + B*a))/x^2 + B*c*x
```

sympy [**A**] time = 0.31, size = 36, normalized size = 1.00

$$Bcx + (Ac + Bb)\log(x) + \frac{-Aa + x(-2Ab - 2Ba)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**3,x)
```

```
[Out] B*c*x + (A*c + B*b)*log(x) + (-A*a + x*(-2*A*b - 2*B*a))/(2*x**2)
```

3.850 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^4}\,dx$

Optimal. Leaf size=41

$$-\frac{aB+Ab}{2x^2}-\frac{aA}{3x^3}-\frac{Ac+bB}{x}+Bc\log(x)$$

```
[Out] -1/3*a*A/x^3+1/2*(-A*b-B*a)/x^2+(-A*c-B*b)/x+B*c*ln(x)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{2x^2}-\frac{aA}{3x^3}-\frac{Ac+bB}{x}+Bc\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^4,x]
```

```
[Out] -(a*A)/(3*x^3) - (A*b + a*B)/(2*x^2) - (b*B + A*c)/x + B*c*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^4}\,dx &= \int \left(\frac{aA}{x^4}+\frac{Ab+aB}{x^3}+\frac{bB+Ac}{x^2}+\frac{Bc}{x}\right)dx\\ &= -\frac{aA}{3x^3}-\frac{Ab+aB}{2x^2}-\frac{bB+Ac}{x}+Bc\log(x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 41, normalized size = 1.00

$$Bc\log(x)-\frac{a(2A+3Bx)+3x(Ab+2Acx+2bBx)}{6x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^4,x]
```

```
[Out] -1/6*(a*(2*A + 3*B*x) + 3*x*(A*b + 2*b*B*x + 2*A*c*x))/x^3 + B*c*Log[x]
```

fricas [A] time = 1.01, size = 41, normalized size = 1.00

$$\frac{6\,Bcx^3\log(x)-6\,(Bb+Ac)x^2-2\,Aa-3\,(Ba+Ab)x}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*c*x^3*log(x) - 6*(B*b + A*c)*x^2 - 2*A*a - 3*(B*a + A*b)*x)/x^3
```

giac [**A**] time = 0.17, size = 39, normalized size = 0.95

$$Bc\log\left(|x|\right)-\frac{6\left(Bb+Ac\right)x^{2}+2\,Aa+3\left(Ba+Ab\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="giac")
```

```
[Out] B*c*log(abs(x)) - 1/6*(6*(B*b + A*c)*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

maple [**A**] time = 0.05, size = 42, normalized size = 1.02

$$Bc\ln(x)-\frac{Ac}{x}-\frac{Bb}{x}-\frac{Ab}{2x^{2}}-\frac{Ba}{2x^{2}}-\frac{Aa}{3x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^4,x)
```

```
[Out] -1/3*A*a/x^3-1/2*A*b/x^2-1/2*B*a/x^2-1/x*A*c-1/x*b*B+B*c*ln(x)
```

maxima [**A**] time = 0.62, size = 38, normalized size = 0.93

$$Bc\log(x)-\frac{6\left(Bb+Ac\right)x^{2}+2\,Aa+3\left(Ba+Ab\right)x}{6\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^4,x, algorithm="maxima")
```

```
[Out] B*c*log(x) - 1/6*(6*(B*b + A*c)*x^2 + 2*A*a + 3*(B*a + A*b)*x)/x^3
```

mupad [**B**] time = 1.18, size = 38, normalized size = 0.93

$$B\,c\,\ln(x)-\frac{\left(A\,c+B\,b\right)\,x^{2}+\left(\frac{A\,b}{2}+\frac{B\,a}{2}\right)\,x+\frac{A\,a}{3}}{x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^4,x)
```

```
[Out] B*c*log(x) - ((A*a)/3 + x*((A*b)/2 + (B*a)/2) + x^2*(A*c + B*b))/x^3
```

sympy [**A**] time = 0.58, size = 44, normalized size = 1.07

$$Bc\log\left(x\right)+\frac{-2Aa+x^{2}\left(-6Ac-6Bb\right)+x\left(-3Ab-3Ba\right)}{6x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**4,x)
```

```
[Out] B*c*log(x) + (-2*A*a + x**2*(-6*A*c - 6*B*b) + x*(-3*A*b - 3*B*a))/(6*x**3)
```

3.851 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^5}\,dx$

Optimal. Leaf size=45

$$-\frac{aB+Ab}{3x^3}-\frac{aA}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Bc}{x}$$

```
[Out] -1/4*a*A/x^4+1/3*(-A*b-B*a)/x^3+1/2*(-A*c-B*b)/x^2-B*c/x
```

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{3x^3}-\frac{aA}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Bc}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^5,x]
```

```
[Out] -(a*A)/(4*x^4) - (A*b + a*B)/(3*x^3) - (b*B + A*c)/(2*x^2) - (B*c)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^5}\,dx &= \int \left(\frac{aA}{x^5}+\frac{Ab+aB}{x^4}+\frac{bB+Ac}{x^3}+\frac{Bc}{x^2}\right)dx\\ &= -\frac{aA}{4x^4}-\frac{Ab+aB}{3x^3}-\frac{bB+Ac}{2x^2}-\frac{Bc}{x}\end{aligned}$$

Mathematica [A] time = 0.02, size = 42, normalized size = 0.93

$$-\frac{a(3A+4Bx)+2x(A(2b+3cx)+3Bx(b+2cx))}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^5,x]
```

```
[Out] -1/12*(a*(3*A + 4*B*x) + 2*x*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x)))/x^4
```

fricas [A] time = 0.80, size = 39, normalized size = 0.87

$$-\frac{12\,Bcx^3+6\,(Bb+Ac)x^2+3\,Aa+4\,(Ba+Ab)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*(B*b + A*c)*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

giac [A] time = 0.17, size = 41, normalized size = 0.91

$$-\frac{12\,Bcx^3+6\,Bbx^2+6\,Acx^2+4\,Bax+4\,Abx+3\,Aa}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*B*b*x^2 + 6*A*c*x^2 + 4*B*a*x + 4*A*b*x + 3*A*a)/x^4
```

maple [A] time = 0.06, size = 40, normalized size = 0.89

$$-\frac{Bc}{x}-\frac{Aa}{4x^4}-\frac{Ac+bB}{2x^2}-\frac{Ab+Ba}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^5,x)
```

```
[Out] -1/4*A*a/x^4-1/3*(A*b+B*a)/x^3-1/2*(A*c+B*b)/x^2-B*c/x
```

maxima [A] time = 0.65, size = 39, normalized size = 0.87

$$-\frac{12\,Bcx^3+6\,(Bb+Ac)x^2+3\,Aa+4\,(Ba+Ab)x}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*x^3 + 6*(B*b + A*c)*x^2 + 3*A*a + 4*(B*a + A*b)*x)/x^4
```

mupad [B] time = 0.03, size = 40, normalized size = 0.89

$$-\frac{B\,c\,x^3+\left(\frac{A\,c}{2}+\frac{B\,b}{2}\right)\,x^2+\left(\frac{A\,b}{3}+\frac{B\,a}{3}\right)\,x+\frac{A\,a}{4}}{x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^5,x)
```

```
[Out] -((A*a)/4 + x*((A*b)/3 + (B*a)/3) + x^2*((A*c)/2 + (B*b)/2) + B*c*x^3)/x^4
```

sympy [A] time = 1.04, size = 46, normalized size = 1.02

$$\frac{-3Aa-12Bcx^3+x^2\,(-6Ac-6Bb)+x\,(-4Ab-4Ba)}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**5,x)
```

```
[Out] (-3*A*a - 12*B*c*x**3 + x**2*(-6*A*c - 6*B*b) + x*(-4*A*b - 4*B*a))/(12*x**
4)
```

3.852 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6} \, dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{4x^4}-\frac{aA}{5x^5}-\frac{Ac+bB}{3x^3}-\frac{Bc}{2x^2}$$

```
[Out] -1/5*a*A/x^5+1/4*(-A*b-B*a)/x^4+1/3*(-A*c-B*b)/x^3-1/2*B*c/x^2
```

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{4x^4}-\frac{aA}{5x^5}-\frac{Ac+bB}{3x^3}-\frac{Bc}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^6,x]
```

```
[Out] -(a*A)/(5*x^5) - (A*b + a*B)/(4*x^4) - (b*B + A*c)/(3*x^3) - (B*c)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^6}\,dx &= \int \left(\frac{aA}{x^6}+\frac{Ab+aB}{x^5}+\frac{bB+Ac}{x^4}+\frac{Bc}{x^3}\right)dx\\ &= -\frac{aA}{5x^5}-\frac{Ab+aB}{4x^4}-\frac{bB+Ac}{3x^3}-\frac{Bc}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.94

$$-\frac{3a(4A+5Bx)+5x\left(3Ab+4Acx+4bBx+6Bcx^2\right)}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^6,x]
```

```
[Out] -1/60*(3*a*(4*A + 5*B*x) + 5*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2))/x^5
```

fricas [A] time = 1.03, size = 39, normalized size = 0.83

$$-\frac{30\,Bcx^3+20\,(Bb+Ac)x^2+12\,Aa+15\,(Ba+Ab)x}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*(B*b + A*c)*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

giac [**A**] time = 0.15, size = 41, normalized size = 0.87

$$-\frac{30\,Bcx^{3}+20\,Bbx^{2}+20\,Acx^{2}+15\,Bax+15\,Abx+12\,Aa}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*B*b*x^2 + 20*A*c*x^2 + 15*B*a*x + 15*A*b*x + 12*A*a)
/x^5
```

maple [**A**] time = 0.05, size = 40, normalized size = 0.85

$$-\frac{Bc}{2x^{2}}-\frac{Aa}{5x^{5}}-\frac{Ac+bB}{3x^{3}}-\frac{Ab+Ba}{4x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^6,x)
```

```
[Out] -1/5*A*a/x^5-1/4*(A*b+B*a)/x^4-1/3*(A*c+B*b)/x^3-1/2*B*c/x^2
```

maxima [**A**] time = 0.67, size = 39, normalized size = 0.83

$$-\frac{30\,Bcx^{3}+20\,(Bb+Ac)x^{2}+12\,Aa+15\,(Ba+Ab)x}{60\,x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*x^3 + 20*(B*b + A*c)*x^2 + 12*A*a + 15*(B*a + A*b)*x)/x^5
```

mupad [**B**] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^{3}}{2}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^{2}+\left(\frac{A\,b}{4}+\frac{B\,a}{4}\right)\,x+\frac{A\,a}{5}}{x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^6,x)
```

```
[Out] -((A*a)/5 + x*((A*b)/4 + (B*a)/4) + x^2*((A*c)/3 + (B*b)/3) + (B*c*x^3)/2)/
x^5
```

sympy [**A**] time = 1.70, size = 46, normalized size = 0.98

$$\frac{-12Aa-30Bcx^{3}+x^{2}\left(-20Ac-20Bb\right)+x\left(-15Ab-15Ba\right)}{60x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**6,x)
```

```
[Out] (-12*A*a - 30*B*c*x**3 + x**2*(-20*A*c - 20*B*b) + x*(-15*A*b - 15*B*a))/(6
0*x**5)
```

3.853 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^7} dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{5x^5}-\frac{aA}{6x^6}-\frac{Ac+bB}{4x^4}-\frac{Bc}{3x^3}$$

```
[Out] -1/6*a*A/x^6+1/5*(-A*b-B*a)/x^5+1/4*(-A*c-B*b)/x^4-1/3*B*c/x^3
```

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{5x^5}-\frac{aA}{6x^6}-\frac{Ac+bB}{4x^4}-\frac{Bc}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^7,x]
```

```
[Out] -(a*A)/(6*x^6) - (A*b + a*B)/(5*x^5) - (b*B + A*c)/(4*x^4) - (B*c)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^7}dx &= \int \left(\frac{aA}{x^7}+\frac{Ab+aB}{x^6}+\frac{bB+Ac}{x^5}+\frac{Bc}{x^4}\right)dx\\ &= -\frac{aA}{6x^6}-\frac{Ab+aB}{5x^5}-\frac{bB+Ac}{4x^4}-\frac{Bc}{3x^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 45, normalized size = 0.96

$$-\frac{2a(5A+6Bx)+x(3A(4b+5cx)+5Bx(3b+4cx))}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^7,x]
```

```
[Out] -1/60*(2*a*(5*A + 6*B*x) + x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x)))/x^6
```

fricas [A] time = 0.94, size = 39, normalized size = 0.83

$$-\frac{20\,Bcx^3+15\,(Bb+Ac)x^2+10\,Aa+12\,(Ba+Ab)x}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*(B*b + A*c)*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

giac [**A**] time = 0.15, size = 41, normalized size = 0.87

$$-\frac{20\,Bcx^{3}+15\,Bbx^{2}+15\,Acx^{2}+12\,Bax+12\,Abx+10\,Aa}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*B*b*x^2 + 15*A*c*x^2 + 12*B*a*x + 12*A*b*x + 10*A*a)
/x^6
```

maple [**A**] time = 0.05, size = 40, normalized size = 0.85

$$-\frac{Bc}{3x^{3}}-\frac{Aa}{6x^{6}}-\frac{Ac+bB}{4x^{4}}-\frac{Ab+Ba}{5x^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^7,x)
```

```
[Out] -1/5*(A*b+B*a)/x^5-1/4*(A*c+B*b)/x^4-1/3*B*c/x^3-1/6*A*a/x^6
```

maxima [**A**] time = 0.59, size = 39, normalized size = 0.83

$$-\frac{20\,Bcx^{3}+15\,(Bb+Ac)x^{2}+10\,Aa+12\,(Ba+Ab)x}{60\,x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*x^3 + 15*(B*b + A*c)*x^2 + 10*A*a + 12*(B*a + A*b)*x)/x^6
```

mupad [**B**] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^{3}}{3}+\left(\frac{A\,c}{4}+\frac{B\,b}{4}\right)\,x^{2}+\left(\frac{A\,b}{5}+\frac{B\,a}{5}\right)\,x+\frac{A\,a}{6}}{x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^7,x)
```

```
[Out] -((A*a)/6 + x*((A*b)/5 + (B*a)/5) + x^2*((A*c)/4 + (B*b)/4) + (B*c*x^3)/3)/
x^6
```

sympy [**A**] time = 2.67, size = 46, normalized size = 0.98

$$\frac{-10Aa-20Bcx^{3}+x^{2}\left(-15Ac-15Bb\right)+x\left(-12Ab-12Ba\right)}{60x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**7,x)
```

```
[Out] (-10*A*a - 20*B*c*x**3 + x**2*(-15*A*c - 15*B*b) + x*(-12*A*b - 12*B*a))/(6
0*x**6)
```

3.854 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx$

Optimal. Leaf size=47

$$-\frac{aB+Ab}{6x^6}-\frac{aA}{7x^7}-\frac{Ac+bB}{5x^5}-\frac{Bc}{4x^4}$$

```
[Out] -1/7*a*A/x^7+1/6*(-A*b-B*a)/x^6+1/5*(-A*c-B*b)/x^5-1/4*B*c/x^4
```

Rubi [A] time = 0.03, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$-\frac{aB+Ab}{6x^6}-\frac{aA}{7x^7}-\frac{Ac+bB}{5x^5}-\frac{Bc}{4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^8,x]
```

```
[Out] -(a*A)/(7*x^7) - (A*b + a*B)/(6*x^6) - (b*B + A*c)/(5*x^5) - (B*c)/(4*x^4)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^8}\,dx &= \int \left(\frac{aA}{x^8}+\frac{Ab+aB}{x^7}+\frac{bB+Ac}{x^6}+\frac{Bc}{x^5}\right)dx\\ &= -\frac{aA}{7x^7}-\frac{Ab+aB}{6x^6}-\frac{bB+Ac}{5x^5}-\frac{Bc}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 0.98

$$-\frac{10a(6A+7Bx)+7x(2A(5b+6cx)+3Bx(4b+5cx))}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^8,x]
```

```
[Out] -1/420*(10*a*(6*A + 7*B*x) + 7*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c*x)))
/x^7
```

fricas [A] time = 0.99, size = 39, normalized size = 0.83

$$-\frac{105\,Bcx^3+84\,(Bb+Ac)x^2+60\,Aa+70\,(Ba+Ab)x}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*(B*b + A*c)*x^2 + 60*A*a + 70*(B*a + A*b)*x)/x^7
```

giac [**A**] time = 0.17, size = 41, normalized size = 0.87

$$-\frac{105\,Bcx^{3}+84\,Bbx^{2}+84\,Acx^{2}+70\,Bax+70\,Abx+60\,Aa}{420\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*B*b*x^2 + 84*A*c*x^2 + 70*B*a*x + 70*A*b*x + 60*A*
a)/x^7
```

maple [**A**] time = 0.06, size = 40, normalized size = 0.85

$$-\frac{Bc}{4x^{4}}-\frac{Aa}{7x^{7}}-\frac{Ac+bB}{5x^{5}}-\frac{Ab+Ba}{6x^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^8,x)
```

```
[Out] -1/5*(A*c+B*b)/x^5-1/4*B*c/x^4-1/7*a*A/x^7-1/6*(A*b+B*a)/x^6
```

maxima [**A**] time = 0.49, size = 39, normalized size = 0.83

$$-\frac{105\,Bcx^{3}+84\,(Bb+Ac)x^{2}+60\,Aa+70\,(Ba+Ab)x}{420\,x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*c*x^3 + 84*(B*b + A*c)*x^2 + 60*A*a + 70*(B*a + A*b)*x)/x^7
```

mupad [**B**] time = 0.03, size = 41, normalized size = 0.87

$$-\frac{\frac{B\,c\,x^{3}}{4}+\left(\frac{A\,c}{5}+\frac{B\,b}{5}\right)\,x^{2}+\left(\frac{A\,b}{6}+\frac{B\,a}{6}\right)\,x+\frac{A\,a}{7}}{x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^8,x)
```

```
[Out] -((A*a)/7 + x*((A*b)/6 + (B*a)/6) + x^2*((A*c)/5 + (B*b)/5) + (B*c*x^3)/4)/
x^7
```

sympy [**A**] time = 3.87, size = 46, normalized size = 0.98

$$\frac{-60Aa-105Bcx^{3}+x^{2}\,(-84Ac-84Bb)+x\,(-70Ab-70Ba)}{420x^{7}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**8,x)
```

```
[Out] (-60*A*a - 105*B*c*x**3 + x**2*(-84*A*c - 84*B*b) + x*(-70*A*b - 70*B*a))/(
420*x**7)
```

3.855 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=101

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

```
[Out] 1/3*a^2*A*x^3+1/4*a*(2*A*b+B*a)*x^4+1/5*(2*a*b*B+A*(2*a*c+b^2))*x^5+1/6*(2*
A*b*c+2*B*a*c+B*b^2)*x^6+1/7*c*(A*c+2*B*b)*x^7+1/8*B*c^2*x^8
```

Rubi [A] time = 0.14, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {765}

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^5)
/5 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2
*x^8)/8
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax^2+a(2Ab+aB)x^3+\left(2abB+A\left(b^2+2ac\right)\right)x^4+\left(b^2B+2Abc+\right.\right.\\ &= \frac{1}{3}a^2Ax^3+\frac{1}{4}a(2Ab+aB)x^4+\frac{1}{5}\left(2abB+A\left(b^2+2ac\right)\right)x^5+\frac{1}{6}\left(b^2B+2A\right.\end{aligned}$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.00

$$\frac{1}{3}a^2Ax^3+\frac{1}{6}x^6\left(2aBc+2Abc+b^2B\right)+\frac{1}{5}x^5\left(2aAc+2abB+Ab^2\right)+\frac{1}{4}ax^4(aB+2Ab)+\frac{1}{7}cx^7(Ac+2bB)+\frac{1}{8}Bc^2x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^3)/3 + (a*(2*A*b + a*B)*x^4)/4 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^5)
/5 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^6)/6 + (c*(2*b*B + A*c)*x^7)/7 + (B*c^2
*x^8)/8
```

fricas [A] time = 0.96, size = 103, normalized size = 1.02

$$\frac{1}{8}x^8c^2B+\frac{2}{7}x^7cbB+\frac{1}{7}x^7c^2A+\frac{1}{6}x^6b^2B+\frac{1}{3}x^6caB+\frac{1}{3}x^6cbA+\frac{2}{5}x^5baB+\frac{1}{5}x^5b^2A+\frac{2}{5}x^5caA+\frac{1}{4}x^4a^2B+\frac{1}{2}x^4baA+\frac{1}{3}x^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^2*B + 2/7*x^7*c*b*B + 1/7*x^7*c^2*A + 1/6*x^6*b^2*B + 1/3*x^6*c*a
*B + 1/3*x^6*c*b*A + 2/5*x^5*b*a*B + 1/5*x^5*b^2*A + 2/5*x^5*c*a*A + 1/4*x^
4*a^2*B + 1/2*x^4*b*a*A + 1/3*x^3*a^2*A
```

giac [A] time = 0.15, size = 103, normalized size = 1.02

$$\frac{1}{8}Bc^2x^8+\frac{2}{7}Bbcx^7+\frac{1}{7}Ac^2x^7+\frac{1}{6}Bb^2x^6+\frac{1}{3}Bacx^6+\frac{1}{3}Abcx^6+\frac{2}{5}Babx^5+\frac{1}{5}Ab^2x^5+\frac{2}{5}Aacx^5+\frac{1}{4}Ba^2x^4+\frac{1}{2}Aabx^4+\frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8 + 2/7*B*b*c*x^7 + 1/7*A*c^2*x^7 + 1/6*B*b^2*x^6 + 1/3*B*a*c*x
^6 + 1/3*A*b*c*x^6 + 2/5*B*a*b*x^5 + 1/5*A*b^2*x^5 + 2/5*A*a*c*x^5 + 1/4*B*
a^2*x^4 + 1/2*A*a*b*x^4 + 1/3*A*a^2*x^3
```

maple [A] time = 0.05, size = 94, normalized size = 0.93

$$\frac{Bc^2x^8}{8}+\frac{\left(Ac^2+2bBc\right)x^7}{7}+\frac{Aa^2x^3}{3}+\frac{\left(2Abc+\left(2ac+b^2\right)B\right)x^6}{6}+\frac{\left(2Bab+\left(2ac+b^2\right)A\right)x^5}{5}+\frac{\left(2Aab+Ba^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/8*B*c^2*x^8+1/7*(A*c^2+2*B*b*c)*x^7+1/6*(2*A*b*c+B*(2*a*c+b^2))*x^6+1/5*(
2*a*b*B+A*(2*a*c+b^2))*x^5+1/4*(2*A*a*b+B*a^2)*x^4+1/3*A*a^2*x^3
```

maxima [A] time = 0.56, size = 93, normalized size = 0.92

$$\frac{1}{8}Bc^2x^8+\frac{1}{7}\left(2Bbc+Ac^2\right)x^7+\frac{1}{6}\left(Bb^2+2(Ba+Ab)c\right)x^6+\frac{1}{3}Aa^2x^3+\frac{1}{5}\left(2Bab+Ab^2+2Aac\right)x^5+\frac{1}{4}\left(Ba^2+2Aab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*x^8 + 1/7*(2*B*b*c + A*c^2)*x^7 + 1/6*(B*b^2 + 2*(B*a + A*b)*c)*x
^6 + 1/3*A*a^2*x^3 + 1/5*(2*B*a*b + A*b^2 + 2*A*a*c)*x^5 + 1/4*(B*a^2 + 2*A
*a*b)*x^4
```

mupad [B] time = 1.16, size = 93, normalized size = 0.92

$$x^4\left(\frac{Ba^2}{4}+\frac{Aba}{2}\right)+x^7\left(\frac{Ac^2}{7}+\frac{2Bbc}{7}\right)+x^5\left(\frac{Ab^2}{5}+\frac{2Bab}{5}+\frac{2Aac}{5}\right)+x^6\left(\frac{Bb^2}{6}+\frac{Acb}{3}+\frac{Bac}{3}\right)+\frac{Aa^2x^3}{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^4*((B*a^2)/4 + (A*a*b)/2) + x^7*((A*c^2)/7 + (2*B*b*c)/7) + x^5*((A*b^2)/
5 + (2*A*a*c)/5 + (2*B*a*b)/5) + x^6*((B*b^2)/6 + (A*b*c)/3 + (B*a*c)/3) +
(A*a^2*x^3)/3 + (B*c^2*x^8)/8
```

sympy [A] time = 0.09, size = 105, normalized size = 1.04

$$\frac{Aa^2x^3}{3}+\frac{Bc^2x^8}{8}+x^7\left(\frac{Ac^2}{7}+\frac{2Bbc}{7}\right)+x^6\left(\frac{Abc}{3}+\frac{Bac}{3}+\frac{Bb^2}{6}\right)+x^5\left(\frac{2Aac}{5}+\frac{Ab^2}{5}+\frac{2Bab}{5}\right)+x^4\left(\frac{Aab}{2}+\frac{Ba^2}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x**3/3 + B*c**2*x**8/8 + x**7*(A*c**2/7 + 2*B*b*c/7) + x**6*(A*b*c/3
 + B*a*c/3 + B*b**2/6) + x**5*(2*A*a*c/5 + A*b**2/5 + 2*B*a*b/5) + x**4*(A*
a*b/2 + B*a**2/4)
```

3.856 $\int x(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=101

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

```
[Out] 1/2*a^2*A*x^2+1/3*a*(2*A*b+B*a)*x^3+1/4*(2*a*b*B+A*(2*a*c+b^2))*x^4+1/5*(2*
A*b*c+2*B*a*c+B*b^2)*x^5+1/6*c*(A*c+2*B*b)*x^6+1/7*B*c^2*x^7
```

Rubi [A] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^4)
/4 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2
*x^7)/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax+a(2Ab+aB)x^2+\left(2abB+A\left(b^2+2ac\right)\right)x^3+\left(b^2B+2Abc+2\right.\right.\\ &= \frac{1}{2}a^2Ax^2+\frac{1}{3}a(2Ab+aB)x^3+\frac{1}{4}\left(2abB+A\left(b^2+2ac\right)\right)x^4+\frac{1}{5}\left(b^2B+2Ab\right.\end{aligned}$$

Mathematica [A] time = 0.02, size = 101, normalized size = 1.00

$$\frac{1}{2}a^2Ax^2+\frac{1}{5}x^5\left(2aBc+2Abc+b^2B\right)+\frac{1}{4}x^4\left(2aAc+2abB+Ab^2\right)+\frac{1}{3}ax^3(aB+2Ab)+\frac{1}{6}cx^6(Ac+2bB)+\frac{1}{7}Bc^2x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*x^2)/2 + (a*(2*A*b + a*B)*x^3)/3 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^4)
/4 + ((b^2*B + 2*A*b*c + 2*a*B*c)*x^5)/5 + (c*(2*b*B + A*c)*x^6)/6 + (B*c^2
*x^7)/7
```

fricas [A] time = 0.80, size = 103, normalized size = 1.02

$$\frac{1}{7}x^7c^2B+\frac{1}{3}x^6cbB+\frac{1}{6}x^6c^2A+\frac{1}{5}x^5b^2B+\frac{2}{5}x^5caB+\frac{2}{5}x^5cbA+\frac{1}{2}x^4baB+\frac{1}{4}x^4b^2A+\frac{1}{2}x^4caA+\frac{1}{3}x^3a^2B+\frac{2}{3}x^3baA+\frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*c^2*B + 1/3*x^6*c*b*B + 1/6*x^6*c^2*A + 1/5*x^5*b^2*B + 2/5*x^5*c*a
*B + 2/5*x^5*c*b*A + 1/2*x^4*b*a*B + 1/4*x^4*b^2*A + 1/2*x^4*c*a*A + 1/3*x^
3*a^2*B + 2/3*x^3*b*a*A + 1/2*x^2*a^2*A
```

giac [A] time = 0.15, size = 103, normalized size = 1.02

$$\frac{1}{7}Bc^2x^7+\frac{1}{3}Bbcx^6+\frac{1}{6}Ac^2x^6+\frac{1}{5}Bb^2x^5+\frac{2}{5}Bacx^5+\frac{2}{5}Abcx^5+\frac{1}{2}Babx^4+\frac{1}{4}Ab^2x^4+\frac{1}{2}Aacx^4+\frac{1}{3}Ba^2x^3+\frac{2}{3}Aabx^3+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7 + 1/3*B*b*c*x^6 + 1/6*A*c^2*x^6 + 1/5*B*b^2*x^5 + 2/5*B*a*c*x
^5 + 2/5*A*b*c*x^5 + 1/2*B*a*b*x^4 + 1/4*A*b^2*x^4 + 1/2*A*a*c*x^4 + 1/3*B*
a^2*x^3 + 2/3*A*a*b*x^3 + 1/2*A*a^2*x^2
```

maple [A] time = 0.04, size = 94, normalized size = 0.93

$$\frac{B c^2x^7}{7}+\frac{\left(A c^2+2bBc\right)x^6}{6}+\frac{A a^2x^2}{2}+\frac{\left(2Abc+\left(2ac+b^2\right)B\right)x^5}{5}+\frac{\left(2Bab+\left(2ac+b^2\right)A\right)x^4}{4}+\frac{\left(2Aab+B a^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/7*B*c^2*x^7+1/6*(A*c^2+2*B*b*c)*x^6+1/5*(2*A*b*c+(2*a*c+b^2)*B)*x^5+1/4*(
2*B*a*b+(2*a*c+b^2)*A)*x^4+1/3*(2*A*a*b+B*a^2)*x^3+1/2*A*a^2*x^2
```

maxima [A] time = 0.54, size = 93, normalized size = 0.92

$$\frac{1}{7}Bc^2x^7+\frac{1}{6}\left(2Bbc+Ac^2\right)x^6+\frac{1}{5}\left(Bb^2+2(Ba+Ab)c\right)x^5+\frac{1}{2}Aa^2x^2+\frac{1}{4}\left(2Bab+Ab^2+2Aac\right)x^4+\frac{1}{3}\left(Ba^2+2Aab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*x^7 + 1/6*(2*B*b*c + A*c^2)*x^6 + 1/5*(B*b^2 + 2*(B*a + A*b)*c)*x
^5 + 1/2*A*a^2*x^2 + 1/4*(2*B*a*b + A*b^2 + 2*A*a*c)*x^4 + 1/3*(B*a^2 + 2*A
*a*b)*x^3
```

mupad [B] time = 0.03, size = 93, normalized size = 0.92

$$x^3\left(\frac{B\,a^2}{3}+\frac{2\,A\,b\,a}{3}\right)+x^6\left(\frac{A\,c^2}{6}+\frac{B\,b\,c}{3}\right)+x^4\left(\frac{A\,b^2}{4}+\frac{B\,a\,b}{2}+\frac{A\,a\,c}{2}\right)+x^5\left(\frac{B\,b^2}{5}+\frac{2\,A\,c\,b}{5}+\frac{2\,B\,a\,c}{5}\right)+\frac{A\,a^2\,x^2}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((B*a^2)/3 + (2*A*a*b)/3) + x^6*((A*c^2)/6 + (B*b*c)/3) + x^4*((A*b^2)/
4 + (A*a*c)/2 + (B*a*b)/2) + x^5*((B*b^2)/5 + (2*A*b*c)/5 + (2*B*a*c)/5) +
(A*a^2*x^2)/2 + (B*c^2*x^7)/7
```

sympy [A] time = 0.09, size = 105, normalized size = 1.04

$$\frac{Aa^2x^2}{2}+\frac{Bc^2x^7}{7}+x^6\left(\frac{Ac^2}{6}+\frac{Bbc}{3}\right)+x^5\left(\frac{2Abc}{5}+\frac{2Bac}{5}+\frac{Bb^2}{5}\right)+x^4\left(\frac{Aac}{2}+\frac{Ab^2}{4}+\frac{Bab}{2}\right)+x^3\left(\frac{2Aab}{3}+\frac{Ba^2}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x**2/2 + B*c**2*x**7/7 + x**6*(A*c**2/6 + B*b*c/3) + x**5*(2*A*b*c/5
 + 2*B*a*c/5 + B*b**2/5) + x**4*(A*a*c/2 + A*b**2/4 + B*a*b/2) + x**3*(2*A*
a*b/3 + B*a**2/3)
```

3.857 $\int (A+Bx)\left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=96

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

```
[Out] a^2*A*x+1/2*a*(2*A*b+B*a)*x^2+1/3*(2*a*b*B+A*(2*a*c+b^2))*x^3+1/4*(2*A*b*c+
2*B*a*c+B*b^2)*x^4+1/5*c*(A*c+2*B*b)*x^5+1/6*B*c^2*x^6
```

Rubi [A] time = 0.07, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^2 \, dx = \int \Big(a^2A+a(2Ab+aB)x+\left(2abB+A\left(b^2+2ac\right)\right)x^2+\big(b^2B+2Abc+2aBc$$

$$= a^2Ax+\frac{1}{2}a(2Ab+aB)x^2+\frac{1}{3}\left(2abB+A\left(b^2+2ac\right)\right)x^3+\frac{1}{4}\big(b^2B+2Abc+2$$

Mathematica [A] time = 0.02, size = 96, normalized size = 1.00

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(2aAc+2abB+Ab^2\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

fricas [A] time = 0.96, size = 99, normalized size = 1.03

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4caB+\frac{1}{2}x^4cbA+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{2}{3}x^3caA+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*a
*B + 1/2*x^4*c*b*A + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 2/3*x^3*c*a*A + 1/2*x^
2*a^2*B + x^2*b*a*A + x*a^2*A
```

giac [A] time = 0.15, size = 99, normalized size = 1.03

$$\frac{1}{6}Bc^2x^6+\frac{2}{5}Bbcx^5+\frac{1}{5}Ac^2x^5+\frac{1}{4}Bb^2x^4+\frac{1}{2}Bacx^4+\frac{1}{2}Abcx^4+\frac{2}{3}Babx^3+\frac{1}{3}Ab^2x^3+\frac{2}{3}Aacx^3+\frac{1}{2}Ba^2x^2+Aabx^2+Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*B*a*c*x
^4 + 1/2*A*b*c*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 2/3*A*a*c*x^3 + 1/2*B*
a^2*x^2 + A*a*b*x^2 + A*a^2*x
```

maple [A] time = 0.04, size = 91, normalized size = 0.95

$$\frac{Bc^2x^6}{6}+\frac{\left(Ac^2+2bBc\right)x^5}{5}+Aa^2x+\frac{\left(2Abc+\left(2ac+b^2\right)B\right)x^4}{4}+\frac{\left(2Bab+\left(2ac+b^2\right)A\right)x^3}{3}+\frac{\left(2Aab+Ba^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+(2*a*c+b^2)*B)*x^4+1/3*(
2*B*a*b+(2*a*c+b^2)*A)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.52, size = 90, normalized size = 0.94

$$\frac{1}{6}Bc^2x^6+\frac{1}{5}\left(2Bbc+Ac^2\right)x^5+\frac{1}{4}\left(Bb^2+2(Ba+Ab)c\right)x^4+Aa^2x+\frac{1}{3}\left(2Bab+Ab^2+2Aac\right)x^3+\frac{1}{2}\left(Ba^2+2Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*(B*a + A*b)*c)*x
^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 1/2*(B*a^2 + 2*A*a*b)*
x^2
```

mupad [B] time = 0.03, size = 89, normalized size = 0.93

$$x^2\left(\frac{Ba^2}{2}+Aba\right)+x^5\left(\frac{Ac^2}{5}+\frac{2Bbc}{5}\right)+x^3\left(\frac{Ab^2}{3}+\frac{2Bab}{3}+\frac{2Aac}{3}\right)+x^4\left(\frac{Bb^2}{4}+\frac{Acb}{2}+\frac{Bac}{2}\right)+\frac{Bc^2x^6}{6}+Aa^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + x^3*((A*b^2)/3 +
(2*A*a*c)/3 + (2*B*a*b)/3) + x^4*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + (B*c
^2*x^6)/6 + A*a^2*x
```

sympy [A] time = 0.09, size = 100, normalized size = 1.04

$$Aa^2x+\frac{Bc^2x^6}{6}+x^5\left(\frac{Ac^2}{5}+\frac{2Bbc}{5}\right)+x^4\left(\frac{Abc}{2}+\frac{Bac}{2}+\frac{Bb^2}{4}\right)+x^3\left(\frac{2Aac}{3}+\frac{Ab^2}{3}+\frac{2Bab}{3}\right)+x^2\left(Aab+\frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2 + B*
a*c/2 + B*b**2/4) + x**3*(2*A*a*c/3 + A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b +
 B*a**2/2)
```

3.858 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x}\,dx$

Optimal. Leaf size=92

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(A\left(2ac+b^2\right)+2abB\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

```
[Out] a*(2*A*b+B*a)*x+1/2*(2*a*b*B+A*(2*a*c+b^2))*x^2+1/3*(2*A*b*c+2*B*a*c+B*b^2)
*x^3+1/4*c*(A*c+2*B*b)*x^4+1/5*B*c^2*x^5+a^2*A*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {765}

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(A\left(2ac+b^2\right)+2abB\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x,x]
```

```
[Out] a*(2*A*b + a*B)*x + ((2*a*b*B + A*(b^2 + 2*a*c))*x^2)/2 + ((b^2*B + 2*A*b*c
 + 2*a*B*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*x^5)/5 + a^2*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x}\,dx &= \int \left(a(2Ab+aB)+\frac{a^2A}{x}+\left(2abB+A\left(b^2+2ac\right)\right)x+\left(b^2B+2Abc+2aBc\right)\right.\\ &= a(2Ab+aB)x+\frac{1}{2}\left(2abB+A\left(b^2+2ac\right)\right)x^2+\frac{1}{3}\left(b^2B+2Abc+2aBc\right)x^3+\end{aligned}$$

Mathematica [A] time = 0.03, size = 92, normalized size = 1.00

$$a^2A\log(x)+\frac{1}{3}x^3\left(2aBc+2Abc+b^2B\right)+\frac{1}{2}x^2\left(2aAc+2abB+Ab^2\right)+ax(aB+2Ab)+\frac{1}{4}cx^4(Ac+2bB)+\frac{1}{5}Bc^2x^5$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x,x]
```

```
[Out] a*(2*A*b + a*B)*x + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^2)/2 + ((b^2*B + 2*A*b*c
 + 2*a*B*c)*x^3)/3 + (c*(2*b*B + A*c)*x^4)/4 + (B*c^2*x^5)/5 + a^2*A*Log[x]
```

fricas [A] time = 0.86, size = 88, normalized size = 0.96

$$\frac{1}{5}Bc^2x^5+\frac{1}{4}\left(2Bbc+Ac^2\right)x^4+\frac{1}{3}\left(Bb^2+2(Ba+Ab)c\right)x^3+Aa^2\log(x)+\frac{1}{2}\left(2Bab+Ab^2+2Aac\right)x^2+\left(Ba^2+2A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="fricas")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + (B*a^2 + 2*A*a*b)
*x
```

giac [A] time = 0.16, size = 95, normalized size = 1.03

$$\frac{1}{5} Bc^2x^5+\frac{1}{2} Bbcx^4+\frac{1}{4} Ac^2x^4+\frac{1}{3} Bb^2x^3+\frac{2}{3} Bacx^3+\frac{2}{3} Abcx^3+Babx^2+\frac{1}{2} Ab^2x^2+Aacx^2+Ba^2x+2 Aabx+Aa^2 \log(|x|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="giac")
```

```
[Out] 1/5*B*c^2*x^5 + 1/2*B*b*c*x^4 + 1/4*A*c^2*x^4 + 1/3*B*b^2*x^3 + 2/3*B*a*c*x
^3 + 2/3*A*b*c*x^3 + B*a*b*x^2 + 1/2*A*b^2*x^2 + A*a*c*x^2 + B*a^2*x + 2*A*
a*b*x + A*a^2*log(abs(x))
```

maple [A] time = 0.05, size = 95, normalized size = 1.03

$$\frac{B c^2x^5}{5}+\frac{A c^2x^4}{4}+\frac{Bbc x^4}{2}+\frac{2Abc x^3}{3}+\frac{2Bac x^3}{3}+\frac{B b^2x^3}{3}+Aac x^2+\frac{A b^2x^2}{2}+Bab x^2+A a^2 \ln(x)+2Aabx+B a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x,x)
```

```
[Out] 1/5*B*c^2*x^5+1/4*A*c^2*x^4+1/2*B*x^4*b*c+2/3*A*x^3*b*c+2/3*B*a*c*x^3+1/3*B
*b^2*x^3+A*a*c*x^2+1/2*A*b^2*x^2+B*a*b*x^2+2*A*a*b*x+B*a^2*x+A*a^2*ln(x)
```

maxima [A] time = 0.45, size = 88, normalized size = 0.96

$$\frac{1}{5} Bc^2x^5+\frac{1}{4}\left(2 Bbc + Ac^2\right)x^4+\frac{1}{3}\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3+Aa^2 \log(x)+\frac{1}{2}\left(2 Bab + Ab^2 + 2 Aac\right)x^2+\left(Ba^2 + 2 Aab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^2*x^5 + 1/4*(2*B*b*c + A*c^2)*x^4 + 1/3*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 + A*a^2*log(x) + 1/2*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + (B*a^2 + 2*A*a*b)
*x
```

mupad [B] time = 0.04, size = 86, normalized size = 0.93

$$x^4\left(\frac{A\,c^2}{4}+\frac{B\,b\,c}{2}\right)+x^2\left(\frac{A\,b^2}{2}+B\,a\,b+A\,a\,c\right)+x^3\left(\frac{B\,b^2}{3}+\frac{2\,A\,c\,b}{3}+\frac{2\,B\,a\,c}{3}\right)+x\,\left(B\,a^2+2\,A\,b\,a\right)+\frac{B\,c^2\,x^5}{5}+A\,a^2\,\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x,x)
```

```
[Out] x^4*((A*c^2)/4 + (B*b*c)/2) + x^2*((A*b^2)/2 + A*a*c + B*a*b) + x^3*((B*b^2
)/3 + (2*A*b*c)/3 + (2*B*a*c)/3) + x*(B*a^2 + 2*A*a*b) + (B*c^2*x^5)/5 + A*
a^2*log(x)
```

sympy [A] time = 0.21, size = 95, normalized size = 1.03

$$Aa^2 \log(x)+\frac{Bc^2x^5}{5}+x^4\left(\frac{Ac^2}{4}+\frac{Bbc}{2}\right)+x^3\left(\frac{2Abc}{3}+\frac{2Bac}{3}+\frac{Bb^2}{3}\right)+x^2\left(Aac+\frac{Ab^2}{2}+Bab\right)+x\left(2Aab+Ba^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x,x)
```

```
[Out] A*a**2*log(x) + B*c**2*x**5/5 + x**4*(A*c**2/4 + B*b*c/2) + x**3*(2*A*b*c/3
 + 2*B*a*c/3 + B*b**2/3) + x**2*(A*a*c + A*b**2/2 + B*a*b) + x*(2*A*a*b + B
*a**2)
```

3.859 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^2}\,dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{x}+\frac{1}{2}x^2\left(2aBc+2Abc+b^2B\right)+x\left(A\left(2ac+b^2\right)+2abB\right)+a\log(x)(aB+2Ab)+\frac{1}{3}cx^3(Ac+2bB)+\frac{1}{4}Bc^2x^4$$

```
[Out] -a^2*A/x+(2*a*b*B+A*(2*a*c+b^2))*x+1/2*(2*A*b*c+2*B*a*c+B*b^2)*x^2+1/3*c*(A
*c+2*B*b)*x^3+1/4*B*c^2*x^4+a*(2*A*b+B*a)*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{x}+\frac{1}{2}x^2\left(2aBc+2Abc+b^2B\right)+x\left(A\left(2ac+b^2\right)+2abB\right)+a\log(x)(aB+2Ab)+\frac{1}{3}cx^3(Ac+2bB)+\frac{1}{4}Bc^2x^4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + (2*a*b*B + A*(b^2 + 2*a*c))*x + ((b^2*B + 2*A*b*c + 2*a*B*c)
*x^2)/2 + (c*(2*b*B + A*c)*x^3)/3 + (B*c^2*x^4)/4 + a*(2*A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^2}\,dx &= \int \left(Ab^2\left(1+\frac{2a(bB+Ac)}{Ab^2}\right)+\frac{a^2A}{x^2}+\frac{a(2Ab+aB)}{x}+\left(b^2B+2Abc+2aBc\right)\right.\\ &= -\frac{a^2A}{x}+\left(2abB+A\left(b^2+2ac\right)\right)x+\frac{1}{2}\left(b^2B+2Abc+2aBc\right)x^2+\frac{1}{3}c(2bB+\end{aligned}$$

Mathematica [A] time = 0.06, size = 87, normalized size = 0.97

$$-\frac{a^2A}{x}+ax(2Ac+2bB+Bcx)+a\log(x)(aB+2Ab)+\frac{1}{12}x\left(4A\left(3b^2+3bcx+c^2x^2\right)+Bx\left(6b^2+8bcx+3c^2x^2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x]
```

```
[Out] -((a^2*A)/x) + a*x*(2*b*B + 2*A*c + B*c*x) + (x*(4*A*(3*b^2 + 3*b*c*x + c^2
*x^2) + B*x*(6*b^2 + 8*b*c*x + 3*c^2*x^2)))/12 + a*(2*A*b + a*B)*Log[x]
```

fricas [A] time = 0.66, size = 95, normalized size = 1.06

$$\frac{3\,Bc^2x^5+4\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3-12\,Aa^2+12\left(2\,Bab+Ab^2+2\,Aac\right)x^2+12\left(Ba^2+\right.}{12\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*x^5 + 4*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x
^3 - 12*A*a^2 + 12*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*b)*x
*log(x))/x
```

giac [A] time = 0.20, size = 92, normalized size = 1.02

$$\frac{1}{4}Bc^2x^4+\frac{2}{3}Bbcx^3+\frac{1}{3}Ac^2x^3+\frac{1}{2}Bb^2x^2+Bacx^2+Abcx^2+2Babx+Ab^2x+2Aacx-\frac{Aa^2}{x}+\left(Ba^2+2Aab\right)\log\left(|x|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="giac")
```

```
[Out] 1/4*B*c^2*x^4 + 2/3*B*b*c*x^3 + 1/3*A*c^2*x^3 + 1/2*B*b^2*x^2 + B*a*c*x^2 +
 A*b*c*x^2 + 2*B*a*b*x + A*b^2*x + 2*A*a*c*x - A*a^2/x + (B*a^2 + 2*A*a*b)*
log(abs(x))
```

maple [A] time = 0.05, size = 92, normalized size = 1.02

$$\frac{Bc^2x^4}{4}+\frac{Ac^2x^3}{3}+\frac{2Bbcx^3}{3}+Abcx^2+Bacx^2+\frac{Bb^2x^2}{2}+2Aab\ln(x)+2Aacx+Ab^2x+Ba^2\ln(x)+2Babx-\frac{Aa^2}{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^2,x)
```

```
[Out] 1/4*B*c^2*x^4+1/3*A*c^2*x^3+2/3*B*x^3*b*c+A*b*c*x^2+B*a*c*x^2+1/2*B*b^2*x^2
+2*A*a*c*x+A*b^2*x+2*B*a*b*x-A*a^2/x+2*A*a*b*ln(x)+B*a^2*ln(x)
```

maxima [A] time = 0.58, size = 88, normalized size = 0.98

$$\frac{1}{4}Bc^2x^4+\frac{1}{3}\left(2Bbc+Ac^2\right)x^3+\frac{1}{2}\left(Bb^2+2(Ba+Ab)c\right)x^2-\frac{Aa^2}{x}+\left(2Bab+Ab^2+2Aac\right)x+\left(Ba^2+2Aab\right)\log(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^2,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^2*x^4 + 1/3*(2*B*b*c + A*c^2)*x^3 + 1/2*(B*b^2 + 2*(B*a + A*b)*c)*x
^2 - A*a^2/x + (2*B*a*b + A*b^2 + 2*A*a*c)*x + (B*a^2 + 2*A*a*b)*log(x)
```

mupad [B] time = 0.04, size = 86, normalized size = 0.96

$$x^3\left(\frac{Ac^2}{3}+\frac{2Bbc}{3}\right)+x\left(Ab^2+2Bab+2Aac\right)+\ln(x)\left(Ba^2+2Aba\right)+x^2\left(\frac{Bb^2}{2}+Acb+Bac\right)-\frac{Aa^2}{x}+\frac{Bc^2x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^2,x)
```

```
[Out] x^3*((A*c^2)/3 + (2*B*b*c)/3) + x*(A*b^2 + 2*A*a*c + 2*B*a*b) + log(x)*(B*a
^2 + 2*A*a*b) + x^2*((B*b^2)/2 + A*b*c + B*a*c) - (A*a^2)/x + (B*c^2*x^4)/4
```

sympy [A] time = 0.26, size = 88, normalized size = 0.98

$$-\frac{Aa^2}{x}+\frac{Bc^2x^4}{4}+a\left(2Ab+Ba\right)\log\left(x\right)+x^3\left(\frac{Ac^2}{3}+\frac{2Bbc}{3}\right)+x^2\left(Abc+Bac+\frac{Bb^2}{2}\right)+x\left(2Aac+Ab^2+2Bab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**2,x)
```

```
[Out] -A*a**2/x + B*c**2*x**4/4 + a*(2*A*b + B*a)*log(x) + x**3*(A*c**2/3 + 2*B*b
*c/3) + x**2*(A*b*c + B*a*c + B*b**2/2) + x*(2*A*a*c + A*b**2 + 2*B*a*b)
```

3.860 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^3}\,dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{2x^2}+x\left(2aBc+2Abc+b^2B\right)+\log(x)\left(A\left(2ac+b^2\right)+2abB\right)-\frac{a(aB+2Ab)}{x}+\frac{1}{2}cx^2(Ac+2bB)+\frac{1}{3}Bc^2x^3$$

```
[Out] -1/2*a^2*A/x^2-a*(2*A*b+B*a)/x+(2*A*b*c+2*B*a*c+B*b^2)*x+1/2*c*(A*c+2*B*b)*
x^2+1/3*B*c^2*x^3+(2*a*b*B+A*(2*a*c+b^2))*ln(x)
```

Rubi [A] time = 0.07, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{2x^2}+x\left(2aBc+2Abc+b^2B\right)+\log(x)\left(A\left(2ac+b^2\right)+2abB\right)-\frac{a(aB+2Ab)}{x}+\frac{1}{2}cx^2(Ac+2bB)+\frac{1}{3}Bc^2x^3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x]
```

```
[Out] -(a^2*A)/(2*x^2) - (a*(2*A*b + a*B))/x + (b^2*B + 2*A*b*c + 2*a*B*c)*x + (c
*(2*b*B + A*c)*x^2)/2 + (B*c^2*x^3)/3 + (2*a*b*B + A*(b^2 + 2*a*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^3}\,dx &= \int \left(b^2B\left(1+\frac{2(Ab+aB)c}{b^2B}\right)+\frac{a^2A}{x^3}+\frac{a(2Ab+aB)}{x^2}+\frac{2abB+A\left(b^2+2ac\right)}{x}\right.\\ &= -\frac{a^2A}{2x^2}-\frac{a(2Ab+aB)}{x}+\left(b^2B+2Abc+2aBc\right)x+\frac{1}{2}c(2bB+Ac)x^2+\frac{1}{3}Bc^2\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.96

$$-\frac{a^2(A+2Bx)}{2x^2}+A\log(x)\left(2ac+b^2\right)+a\left(2Bcx-\frac{2Ab}{x}\right)+2abB\log(x)+bcx(2A+Bx)+\frac{1}{6}c^2x^2(3A+2Bx)+b^2Bx$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x]
```

```
[Out] b^2*B*x + b*c*x*(2*A + B*x) - (a^2*(A + 2*B*x))/(2*x^2) + (c^2*x^2*(3*A + 2
*B*x))/6 + a*((-2*A*b)/x + 2*B*c*x) + 2*a*b*B*Log[x] + A*(b^2 + 2*a*c)*Log[
x]
```

fricas [A] time = 1.04, size = 95, normalized size = 1.06

$$\frac{2\,Bc^2x^5+3\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3+6\left(2\,Bab+Ab^2+2\,Aac\right)x^2\log(x)-3\,Aa^2-6\,\bigl(Ba^2}{6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*x^5 + 3*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x^
3 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2*log(x) - 3*A*a^2 - 6*(B*a^2 + 2*A*a*b
)*x)/x^2
```

giac [A] time = 0.16, size = 89, normalized size = 0.99

$$\frac{1}{3}\,Bc^2x^3+Bbcx^2+\frac{1}{2}\,Ac^2x^2+Bb^2x+2\,Bacx+2\,Abcx+\left(2\,Bab+Ab^2+2\,Aac\right)\log\left(|x|\right)-\frac{Aa^2+2\left(Ba^2+2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="giac")
```

```
[Out] 1/3*B*c^2*x^3 + B*b*c*x^2 + 1/2*A*c^2*x^2 + B*b^2*x + 2*B*a*c*x + 2*A*b*c*x
 + (2*B*a*b + A*b^2 + 2*A*a*c)*log(abs(x)) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*
b)*x)/x^2
```

maple [A] time = 0.06, size = 92, normalized size = 1.02

$$\frac{B\,c^2x^3}{3}+\frac{A\,c^2x^2}{2}+Bbc\,x^2+2Aac\ln(x)+A\,b^2\ln(x)+2Abcx+2Bab\ln(x)+2Bacx+B\,b^2x-\frac{2Aab}{x}-\frac{B\,a^2}{x}-\frac{A\,a^2}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^3,x)
```

```
[Out] 1/3*B*c^2*x^3+1/2*A*c^2*x^2+B*x^2*b*c+2*A*b*c*x+2*B*a*c*x+B*b^2*x-1/2*A*a^2
/x^2-2*a/x*A*b-B*a^2/x+2*A*a*c*ln(x)+A*b^2*ln(x)+2*B*ln(x)*a*b
```

maxima [A] time = 0.53, size = 88, normalized size = 0.98

$$\frac{1}{3}\,Bc^2x^3+\frac{1}{2}\left(2\,Bbc+Ac^2\right)x^2+\left(Bb^2+2\,(Ba+Ab)c\right)x+\left(2\,Bab+Ab^2+2\,Aac\right)\log(x)-\frac{Aa^2+2\left(Ba^2+2\,Aab\right)x}{2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^3,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^2*x^3 + 1/2*(2*B*b*c + A*c^2)*x^2 + (B*b^2 + 2*(B*a + A*b)*c)*x + (
2*B*a*b + A*b^2 + 2*A*a*c)*log(x) - 1/2*(A*a^2 + 2*(B*a^2 + 2*A*a*b)*x)/x^2
```

mupad [B] time = 1.15, size = 87, normalized size = 0.97

$$x^2\left(\frac{A\,c^2}{2}+B\,b\,c\right)+x\,\left(B\,b^2+2\,A\,c\,b+2\,B\,a\,c\right)+\ln(x)\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)-\frac{\frac{A\,a^2}{2}+x\,\left(B\,a^2+2\,A\,b\,a\right)}{x^2}+\frac{B\,c^2\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^3,x)
```

```
[Out] x^2*((A*c^2)/2 + B*b*c) + x*(B*b^2 + 2*A*b*c + 2*B*a*c) + log(x)*(A*b^2 + 2
*A*a*c + 2*B*a*b) - ((A*a^2)/2 + x*(B*a^2 + 2*A*a*b))/x^2 + (B*c^2*x^3)/3
```

sympy [A] time = 0.44, size = 94, normalized size = 1.04

$$\frac{Bc^2x^3}{3}+x^2\left(\frac{Ac^2}{2}+Bbc\right)+x\left(2Abc+2Bac+Bb^2\right)+\left(2Aac+Ab^2+2Bab\right)\log\left(x\right)+\frac{-Aa^2+x\left(-4Aab-2Ba^2\right)}{2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**3,x)
```

```
[Out] B*c**2*x**3/3 + x**2*(A*c**2/2 + B*b*c) + x*(2*A*b*c + 2*B*a*c + B*b**2) +
(2*A*a*c + A*b**2 + 2*B*a*b)*log(x) + (-A*a**2 + x*(-4*A*a*b - 2*B*a**2))/(
2*x**2)
```

3.861 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^4} \, dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{x}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(aB+2Ab)}{2x^2}+cx(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

```
[Out] -1/3*a^2*A/x^3-1/2*a*(2*A*b+B*a)/x^2+(-2*a*b*B-A*(2*a*c+b^2))/x+c*(A*c+2*B*
b)*x+1/2*B*c^2*x^2+(2*A*b*c+2*B*a*c+B*b^2)*ln(x)
```

Rubi [A] time = 0.06, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{x}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(aB+2Ab)}{2x^2}+cx(Ac+2bB)+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -(a^2*A)/(3*x^3) - (a*(2*A*b + a*B))/(2*x^2) - (2*a*b*B + A*(b^2 + 2*a*c))/
x + c*(2*b*B + A*c)*x + (B*c^2*x^2)/2 + (b^2*B + 2*A*b*c + 2*a*B*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^4}\,dx &= \int \left(c(2bB+Ac)+\frac{a^2A}{x^4}+\frac{a(2Ab+aB)}{x^3}+\frac{2abB+A\left(b^2+2ac\right)}{x^2}+\frac{b^2B+2A\right.\\ &= -\frac{a^2A}{3x^3}-\frac{a(2Ab+aB)}{2x^2}-\frac{2abB+A\left(b^2+2ac\right)}{x}+c(2bB+Ac)x+\frac{1}{2}Bc^2x^2+(\end{aligned}$$

Mathematica [A] time = 0.05, size = 90, normalized size = 1.00

$$-\frac{a^2(2A+3Bx)}{6x^3}+\log(x)\left(2aBc+2Abc+b^2B\right)-\frac{a(Ab+2Acx+2bBx)}{x^2}-\frac{Ab^2}{x}+Ac^2x+2bBcx+\frac{1}{2}Bc^2x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x]
```

```
[Out] -((A*b^2)/x) + 2*b*B*c*x + A*c^2*x + (B*c^2*x^2)/2 - (a^2*(2*A + 3*B*x))/(6
*x^3) - (a*(A*b + 2*b*B*x + 2*A*c*x))/x^2 + (b^2*B + 2*A*b*c + 2*a*B*c)*Log
[x]
```

fricas [A] time = 0.99, size = 95, normalized size = 1.06

$$\frac{3\,Bc^2x^5+6\left(2\,Bbc+Ac^2\right)x^4+6\left(Bb^2+2\,(Ba+Ab)c\right)x^3\log(x)-2\,Aa^2-6\left(2\,Bab+Ab^2+2\,Aac\right)x^2-3\,(Ba^2}{6\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*x^5 + 6*(2*B*b*c + A*c^2)*x^4 + 6*(B*b^2 + 2*(B*a + A*b)*c)*x^
3*log(x) - 2*A*a^2 - 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 3*(B*a^2 + 2*A*a*b
)*x)/x^3
```

giac [A] time = 0.17, size = 89, normalized size = 0.99

$$\frac{1}{2}Bc^2x^2+2Bbcx+Ac^2x+\left(Bb^2+2Bac+2Abc\right)\log\left(|x|\right)-\frac{2Aa^2+6\left(2Bab+Ab^2+2Aac\right)x^2+3\left(Ba^2+2Aab\right)x}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="giac")
```

```
[Out] 1/2*B*c^2*x^2 + 2*B*b*c*x + A*c^2*x + (B*b^2 + 2*B*a*c + 2*A*b*c)*log(abs(x
)) - 1/6*(2*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 3*(B*a^2 + 2*A*a*b)
*x)/x^3
```

maple [A] time = 0.06, size = 95, normalized size = 1.06

$$\frac{Bc^2x^2}{2}+2Abc\ln(x)+Ac^2x+2Bac\ln(x)+Bb^2\ln(x)+2Bbcx-\frac{2Aac}{x}-\frac{Ab^2}{x}-\frac{2Bab}{x}-\frac{Aab}{x^2}-\frac{Ba^2}{2x^2}-\frac{Aa^2}{3x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^4,x)
```

```
[Out] 1/2*B*c^2*x^2+A*c^2*x+2*b*B*c*x-1/3*A*a^2/x^3-A*a*b/x^2-1/2*B*a^2/x^2-2/x*A
*a*c-A*b^2/x-2*B*a*b/x+2*A*ln(x)*b*c+2*B*ln(x)*a*c+B*b^2*ln(x)
```

maxima [A] time = 0.50, size = 89, normalized size = 0.99

$$\frac{1}{2}Bc^2x^2+\left(2Bbc+Ac^2\right)x+\left(Bb^2+2(Ba+Ab)c\right)\log(x)-\frac{2Aa^2+6\left(2Bab+Ab^2+2Aac\right)x^2+3\left(Ba^2+2Aab\right)x}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^4,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^2*x^2 + (2*B*b*c + A*c^2)*x + (B*b^2 + 2*(B*a + A*b)*c)*log(x) - 1/
6*(2*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 3*(B*a^2 + 2*A*a*b)*x)/x^3
```

mupad [B] time = 0.05, size = 87, normalized size = 0.97

$$x\left(Ac^2+2Bbc\right)-\frac{\frac{Aa^2}{3}+x^2\left(Ab^2+2Bab+2Aac\right)+x\left(\frac{Ba^2}{2}+Aba\right)}{x^3}+\ln(x)\left(Bb^2+2Acb+2Bac\right)+\frac{Bc^2x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^4,x)
```

```
[Out] x*(A*c^2 + 2*B*b*c) - ((A*a^2)/3 + x^2*(A*b^2 + 2*A*a*c + 2*B*a*b) + x*((B*
a^2)/2 + A*a*b))/x^3 + log(x)*(B*b^2 + 2*A*b*c + 2*B*a*c) + (B*c^2*x^2)/2
```

sympy [A] time = 1.07, size = 99, normalized size = 1.10

$$\frac{Bc^2x^2}{2}+x\left(Ac^2+2Bbc\right)+\left(2Abc+2Bac+Bb^2\right)\log(x)+\frac{-2Aa^2+x^2\left(-12Aac-6Ab^2-12Bab\right)+x\left(-6Aab-3Ba\right.}{6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**4,x)
```

```
[Out] B*c**2*x**2/2 + x*(A*c**2 + 2*B*b*c) + (2*A*b*c + 2*B*a*c + B*b**2)*log(x)
+ (-2*A*a**2 + x**2*(-12*A*a*c - 6*A*b**2 - 12*B*a*b) + x*(-6*A*a*b - 3*B*a
**2))/(6*x**3)
```

3.862 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^5}\,dx$

Optimal. Leaf size=90

$$-\frac{a^2A}{4x^4}-\frac{A\left(2ac+b^2\right)+2abB}{2x^2}-\frac{2aBc+2Abc+b^2B}{x}-\frac{a(aB+2Ab)}{3x^3}+c\log(x)(Ac+2bB)+Bc^2x$$

```
[Out] -1/4*a^2*A/x^4-1/3*a*(2*A*b+B*a)/x^3+1/2*(-2*a*b*B-A*(2*a*c+b^2))/x^2+(-2*A
*b*c-2*B*a*c-B*b^2)/x+B*c^2*x+c*(A*c+2*B*b)*ln(x)
```

Rubi [A] time = 0.06, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{4x^4}-\frac{A\left(2ac+b^2\right)+2abB}{2x^2}-\frac{2aBc+2Abc+b^2B}{x}-\frac{a(aB+2Ab)}{3x^3}+c\log(x)(Ac+2bB)+Bc^2x$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -(a^2*A)/(4*x^4) - (a*(2*A*b + a*B))/(3*x^3) - (2*a*b*B + A*(b^2 + 2*a*c))/
(2*x^2) - (b^2*B + 2*A*b*c + 2*a*B*c)/x + B*c^2*x + c*(2*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^5}\,dx=\int \left(Bc^2+\frac{a^2A}{x^5}+\frac{a(2Ab+aB)}{x^4}+\frac{2abB+A\left(b^2+2ac\right)}{x^3}+\frac{b^2B+2Abc+2aBc}{x^2}\right.$$

$$=-\frac{a^2A}{4x^4}-\frac{a(2Ab+aB)}{3x^3}-\frac{2abB+A\left(b^2+2ac\right)}{2x^2}-\frac{b^2B+2Abc+2aBc}{x}+Bc^2x+$$

Mathematica [A] time = 0.05, size = 92, normalized size = 1.02

$$-\frac{a^2(3A+4Bx)+4ax(A(2b+3cx)+3Bx(b+2cx))+6x^2\left(Ab(b+4cx)+2Bx\left(b^2-c^2x^2\right)\right)-12cx^4\log(x)(Ac+}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x]
```

```
[Out] -1/12*(a^2*(3*A + 4*B*x) + 4*a*x*(3*B*x*(b + 2*c*x) + A*(2*b + 3*c*x)) + 6*
x^2*(A*b*(b + 4*c*x) + 2*B*x*(b^2 - c^2*x^2)) - 12*c*(2*b*B + A*c)*x^4*Log[
x])/x^4
```

fricas [A] time = 0.76, size = 95, normalized size = 1.06

$$\frac{12\,Bc^2x^5+12\left(2\,Bbc+Ac^2\right)x^4\log(x)-12\left(Bb^2+2\,(Ba+Ab)c\right)x^3-3\,Aa^2-6\left(2\,Bab+Ab^2+2\,Aac\right)x^2-4\,(Ba}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*x^5 + 12*(2*B*b*c + A*c^2)*x^4*log(x) - 12*(B*b^2 + 2*(B*a +
 A*b)*c)*x^3 - 3*A*a^2 - 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 4*(B*a^2 + 2*A
*a*b)*x)/x^4
```

giac [A] time = 0.15, size = 90, normalized size = 1.00

$$Bc^2x + \left(2\,Bbc + Ac^2\right)\log\left(|x|\right) - \frac{12\left(Bb^2 + 2\,Bac + 2\,Abc\right)x^3 + 3\,Aa^2 + 6\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 4\left(Ba^2 + 2\right.}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="giac")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(abs(x)) - 1/12*(12*(B*b^2 + 2*B*a*c + 2*A*b
*c)*x^3 + 3*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 4*(B*a^2 + 2*A*a*b)
*x)/x^4
```

maple [A] time = 0.05, size = 98, normalized size = 1.09

$$A\,c^2\ln(x) + 2Bbc\ln(x) + B\,c^2x - \frac{2Abc}{x} - \frac{2Bac}{x} - \frac{B\,b^2}{x} - \frac{Aac}{x^2} - \frac{A\,b^2}{2x^2} - \frac{Bab}{x^2} - \frac{2Aab}{3x^3} - \frac{B\,a^2}{3x^3} - \frac{A\,a^2}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^5,x)
```

```
[Out] B*c^2*x-1/4*A*a^2/x^4-2/3*a/x^3*A*b-1/3*a^2/x^3*B-1/x^2*A*a*c-1/2*A*b^2/x^2
-1/x^2*B*a*b-2/x*A*b*c-2/x*a*B*c-1/x*b^2*B+A*ln(x)*c^2+2*B*ln(x)*b*c
```

maxima [A] time = 0.75, size = 89, normalized size = 0.99

$$Bc^2x + \left(2\,Bbc + Ac^2\right)\log(x) - \frac{12\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 3\,Aa^2 + 6\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 4\left(Ba^2 + 2\,Aa\right.}{12\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^5,x, algorithm="maxima")
```

```
[Out] B*c^2*x + (2*B*b*c + A*c^2)*log(x) - 1/12*(12*(B*b^2 + 2*(B*a + A*b)*c)*x^3
 + 3*A*a^2 + 6*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 4*(B*a^2 + 2*A*a*b)*x)/x^4
```

mupad [B] time = 0.07, size = 86, normalized size = 0.96

$$\ln(x)\,\left(A\,c^2 + 2\,B\,b\,c\right) - \frac{\frac{A\,a^2}{4} + x^2\,\left(\frac{A\,b^2}{2} + B\,a\,b + A\,a\,c\right) + x^3\,\left(B\,b^2 + 2\,A\,c\,b + 2\,B\,a\,c\right) + x\,\left(\frac{B\,a^2}{3} + \frac{2\,A\,b\,a}{3}\right)}{x^4} + B\,c^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^5,x)
```

```
[Out] log(x)*(A*c^2 + 2*B*b*c) - ((A*a^2)/4 + x^2*((A*b^2)/2 + A*a*c + B*a*b) + x
^3*(B*b^2 + 2*A*b*c + 2*B*a*c) + x*((B*a^2)/3 + (2*A*a*b)/3))/x^4 + B*c^2*x
```

sympy [A] time = 3.05, size = 99, normalized size = 1.10

$$Bc^2x + c\,(Ac + 2Bb)\log(x) + \frac{-3Aa^2 + x^3\left(-24Abc - 24Bac - 12Bb^2\right) + x^2\left(-12Aac - 6Ab^2 - 12Bab\right) + x\left(-8A\right.}{12x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**5,x)
```

```
[Out] B*c**2*x + c*(A*c + 2*B*b)*log(x) + (-3*A*a**2 + x**3*(-24*A*b*c - 24*B*a*c
 - 12*B*b**2) + x**2*(-12*A*a*c - 6*A*b**2 - 12*B*a*b) + x*(-8*A*a*b - 4*B*
a**2))/(12*x**4)
```

3.863 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^6}\,dx$

Optimal. Leaf size=95

$$-\frac{a^2A}{5x^5}-\frac{A\left(2ac+b^2\right)+2abB}{3x^3}-\frac{2aBc+2Abc+b^2B}{2x^2}-\frac{a(aB+2Ab)}{4x^4}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

```
[Out] -1/5*a^2*A/x^5-1/4*a*(2*A*b+B*a)/x^4+1/3*(-2*a*b*B-A*(2*a*c+b^2))/x^3+1/2*(
-2*A*b*c-2*B*a*c-B*b^2)/x^2-c*(A*c+2*B*b)/x+B*c^2*ln(x)
```

Rubi [A] time = 0.05, antiderivative size = 95, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{5x^5}-\frac{2aBc+2Abc+b^2B}{2x^2}-\frac{A\left(2ac+b^2\right)+2abB}{3x^3}-\frac{a(aB+2Ab)}{4x^4}-\frac{c(Ac+2bB)}{x}+Bc^2\log(x)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -(a^2*A)/(5*x^5) - (a*(2*A*b + a*B))/(4*x^4) - (2*a*b*B + A*(b^2 + 2*a*c))/
(3*x^3) - (b^2*B + 2*A*b*c + 2*a*B*c)/(2*x^2) - (c*(2*b*B + A*c))/x + B*c^2
*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^6}\,dx &= \int \left(\frac{a^2A}{x^6}+\frac{a(2Ab+aB)}{x^5}+\frac{2abB+A\left(b^2+2ac\right)}{x^4}+\frac{b^2B+2Abc+2aBc}{x^3}+\right.\\ &= -\frac{a^2A}{5x^5}-\frac{a(2Ab+aB)}{4x^4}-\frac{2abB+A\left(b^2+2ac\right)}{3x^3}-\frac{b^2B+2Abc+2aBc}{2x^2}-\end{aligned}$$

Mathematica [A] time = 0.06, size = 92, normalized size = 0.97

$$Bc^2\log(x)-\frac{3a^2(4A+5Bx)+10ax\left(3Ab+4Acx+4bBx+6Bcx^2\right)+10x^2\left(2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b\right.}{60x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x]
```

```
[Out] -1/60*(3*a^2*(4*A + 5*B*x) + 10*a*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)
 + 10*x^2*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2)))/x^5 + B*
c^2*Log[x]
```

fricas [A] time = 0.78, size = 95, normalized size = 1.00

$$\frac{60\,Bc^2x^5\log(x)-60\left(2\,Bbc+Ac^2\right)x^4-30\left(Bb^2+2\,(Ba+Ab)c\right)x^3-12\,Aa^2-20\left(2\,Bab+Ab^2+2\,Aac\right)x^2-}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^2*x^5*log(x) - 60*(2*B*b*c + A*c^2)*x^4 - 30*(B*b^2 + 2*(B*a +
 A*b)*c)*x^3 - 12*A*a^2 - 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 15*(B*a^2 +
2*A*a*b)*x)/x^5
```

giac [**A**] time = 0.18, size = 93, normalized size = 0.98

$$Bc^2\log\left(|x|\right)-\frac{60\left(2\,Bbc+Ac^2\right)x^4+30\left(Bb^2+2\,Bac+2\,Abc\right)x^3+12\,Aa^2+20\left(2\,Bab+Ab^2+2\,Aac\right)x^2+15\,(Ba}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="giac")
```

```
[Out] B*c^2*log(abs(x)) - 1/60*(60*(2*B*b*c + A*c^2)*x^4 + 30*(B*b^2 + 2*B*a*c +
2*A*b*c)*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 15*(B*a^2 +
2*A*a*b)*x)/x^5
```

maple [**A**] time = 0.05, size = 102, normalized size = 1.07

$$B\,c^2\ln(x)-\frac{A\,c^2}{x}-\frac{2Bbc}{x}-\frac{Abc}{x^2}-\frac{Bac}{x^2}-\frac{B\,b^2}{2x^2}-\frac{2Aac}{3x^3}-\frac{A\,b^2}{3x^3}-\frac{2Bab}{3x^3}-\frac{Aab}{2x^4}-\frac{B\,a^2}{4x^4}-\frac{A\,a^2}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^6,x)
```

```
[Out] -1/5*A*a^2/x^5-1/2*a/x^4*A*b-1/4*a^2/x^4*B-2/3/x^3*A*a*c-1/3*A*b^2/x^3-2/3/
x^3*B*a*b-1/x^2*A*b*c-1/x^2*a*B*c-1/2*B*b^2/x^2-c^2/x*A-2*c/x*b*B+B*c^2*ln(
x)
```

maxima [**A**] time = 0.72, size = 92, normalized size = 0.97

$$Bc^2\log(x)-\frac{60\left(2\,Bbc+Ac^2\right)x^4+30\left(Bb^2+2\,(Ba+Ab)c\right)x^3+12\,Aa^2+20\left(2\,Bab+Ab^2+2\,Aac\right)x^2+15\,(Ba^2+}{60\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^6,x, algorithm="maxima")
```

```
[Out] B*c^2*log(x) - 1/60*(60*(2*B*b*c + A*c^2)*x^4 + 30*(B*b^2 + 2*(B*a + A*b)*c
)*x^3 + 12*A*a^2 + 20*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 15*(B*a^2 + 2*A*a*b
)*x)/x^5
```

mupad [**B**] time = 0.07, size = 89, normalized size = 0.94

$$B\,c^2\,\ln(x)-\frac{x^4\,\left(A\,c^2+2\,B\,b\,c\right)+\frac{A\,a^2}{5}+x^2\,\left(\frac{A\,b^2}{3}+\frac{2\,B\,a\,b}{3}+\frac{2\,A\,a\,c}{3}\right)+x^3\,\left(\frac{B\,b^2}{2}+A\,c\,b+B\,a\,c\right)+x\,\left(\frac{B\,a^2}{4}+\frac{A\,b\,a}{2}\right)}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^6,x)
```

```
[Out] B*c^2*log(x) - (x^4*(A*c^2 + 2*B*b*c) + (A*a^2)/5 + x^2*((A*b^2)/3 + (2*A*a
*c)/3 + (2*B*a*b)/3) + x^3*((B*b^2)/2 + A*b*c + B*a*c) + x*((B*a^2)/4 + (A*
a*b)/2))/x^5
```

sympy [**A**] time = 7.11, size = 105, normalized size = 1.11

$$Bc^2\log\left(x\right)+\frac{-12Aa^2+x^4\left(-60Ac^2-120Bbc\right)+x^3\left(-60Abc-60Bac-30Bb^2\right)+x^2\left(-40Aac-20Ab^2-40Bab\right)}{60x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**6,x)
```

```
[Out] B*c**2*log(x) + (-12*A*a**2 + x**4*(-60*A*c**2 - 120*B*b*c) + x**3*(-60*A*b
*c - 60*B*a*c - 30*B*b**2) + x**2*(-40*A*a*c - 20*A*b**2 - 40*B*a*b) + x*(-
30*A*a*b - 15*B*a**2))/(60*x**5)
```

3.864 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^7}\,dx$

Optimal. Leaf size=99

$$-\frac{a^2A}{6x^6}-\frac{A\left(2ac+b^2\right)+2abB}{4x^4}-\frac{2aBc+2Abc+b^2B}{3x^3}-\frac{a(aB+2Ab)}{5x^5}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

```
[Out] -1/6*a^2*A/x^6-1/5*a*(2*A*b+B*a)/x^5+1/4*(-2*a*b*B-A*(2*a*c+b^2))/x^4+1/3*(
-2*A*b*c-2*B*a*c-B*b^2)/x^3-1/2*c*(A*c+2*B*b)/x^2-B*c^2/x
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {765}

$$-\frac{a^2A}{6x^6}-\frac{2aBc+2Abc+b^2B}{3x^3}-\frac{A\left(2ac+b^2\right)+2abB}{4x^4}-\frac{a(aB+2Ab)}{5x^5}-\frac{c(Ac+2bB)}{2x^2}-\frac{Bc^2}{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -(a^2*A)/(6*x^6) - (a*(2*A*b + a*B))/(5*x^5) - (2*a*b*B + A*(b^2 + 2*a*c))/
(4*x^4) - (b^2*B + 2*A*b*c + 2*a*B*c)/(3*x^3) - (c*(2*b*B + A*c))/(2*x^2) -
 (B*c^2)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^7}\,dx &= \int \Bigg(\frac{a^2A}{x^7}+\frac{a(2Ab+aB)}{x^6}+\frac{2abB+A\left(b^2+2ac\right)}{x^5}+\frac{b^2B+2Abc+2aBc}{x^4}+\frac{c(2b}{}\\ &= -\frac{a^2A}{6x^6}-\frac{a(2Ab+aB)}{5x^5}-\frac{2abB+A\left(b^2+2ac\right)}{4x^4}-\frac{b^2B+2Abc+2aBc}{3x^3}-\frac{c(2bB+}{2x^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 97, normalized size = 0.98

$$-\frac{2a^2(5A+6Bx)+2ax(3A(4b+5cx)+5Bx(3b+4cx))+5x^2\left(A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\,(b^2+3bcx+3c^2x^2\right.}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x]
```

```
[Out] -1/60*(2*a^2*(5*A + 6*B*x) + 2*a*x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*x)
) + 5*x^2*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*c^2*x
^2)))/x^6
```

fricas [A] time = 1.00, size = 93, normalized size = 0.94

$$-\frac{60\,Bc^2x^5+30\left(2\,Bbc+Ac^2\right)x^4+20\left(Bb^2+2\,(Ba+Ab)c\right)x^3+10\,Aa^2+15\left(2\,Bab+Ab^2+2\,Aac\right)x^2+12\,(Ba^2}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 30*(2*B*b*c + A*c^2)*x^4 + 20*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*
b)*x)/x^6
```

giac [A] time = 0.15, size = 101, normalized size = 1.02

$$-\frac{60\,Bc^2x^5 + 60\,Bbcx^4 + 30\,Ac^2x^4 + 20\,Bb^2x^3 + 40\,Bacx^3 + 40\,Abcx^3 + 30\,Babx^2 + 15\,Ab^2x^2 + 30\,Aacx^2 + 12}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 60*B*b*c*x^4 + 30*A*c^2*x^4 + 20*B*b^2*x^3 + 40*B*a*c
*x^3 + 40*A*b*c*x^3 + 30*B*a*b*x^2 + 15*A*b^2*x^2 + 30*A*a*c*x^2 + 12*B*a^2
*x + 24*A*a*b*x + 10*A*a^2)/x^6
```

maple [A] time = 0.05, size = 90, normalized size = 0.91

$$-\frac{B\,c^2}{x} - \frac{(Ac + 2bB)\,c}{2x^2} - \frac{A\,a^2}{6x^6} - \frac{2Abc + 2aBc + b^2B}{3x^3} - \frac{(2Ab + Ba)\,a}{5x^5} - \frac{2Aac + A\,b^2 + 2Bab}{4x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^7,x)
```

```
[Out] -1/5*(2*A*b+B*a)*a/x^5-1/4*(2*A*a*c+A*b^2+2*B*a*b)/x^4-1/3*(2*A*b*c+2*B*a*c
+B*b^2)/x^3-1/2*(A*c+2*B*b)*c/x^2-1/6*A*a^2/x^6-B*c^2/x
```

maxima [A] time = 0.46, size = 93, normalized size = 0.94

$$-\frac{60\,Bc^2x^5 + 30\left(2\,Bbc + Ac^2\right)x^4 + 20\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 10\,Aa^2 + 15\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 + 12\,(B}{60\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*x^5 + 30*(2*B*b*c + A*c^2)*x^4 + 20*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 + 10*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 12*(B*a^2 + 2*A*a*
b)*x)/x^6
```

mupad [B] time = 0.05, size = 91, normalized size = 0.92

$$-\frac{x^4\left(\frac{A\,c^2}{2}+B\,b\,c\right)+\frac{A\,a^2}{6}+x^2\left(\frac{A\,b^2}{4}+\frac{B\,a\,b}{2}+\frac{A\,a\,c}{2}\right)+x^3\left(\frac{B\,b^2}{3}+\frac{2\,A\,c\,b}{3}+\frac{2\,B\,a\,c}{3}\right)+x\left(\frac{B\,a^2}{5}+\frac{2\,A\,b\,a}{5}\right)+B\,c^2\,x^5}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^7,x)
```

```
[Out] -(x^4*((A*c^2)/2 + B*b*c) + (A*a^2)/6 + x^2*((A*b^2)/4 + (A*a*c)/2 + (B*a*b
)/2) + x^3*((B*b^2)/3 + (2*A*b*c)/3 + (2*B*a*c)/3) + x*((B*a^2)/5 + (2*A*a*
b)/5) + B*c^2*x^5)/x^6
```

sympy [A] time = 14.09, size = 107, normalized size = 1.08

$$\frac{-10Aa^2 - 60Bc^2x^5 + x^4\left(-30Ac^2 - 60Bbc\right) + x^3\left(-40Abc - 40Bac - 20Bb^2\right) + x^2\left(-30Aac - 15Ab^2 - 30Bab\right)}{60x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**7,x)
```

```
[Out] (-10*A*a**2 - 60*B*c**2*x**5 + x**4*(-30*A*c**2 - 60*B*b*c) + x**3*(-40*A*b
*c - 40*B*a*c - 20*B*b**2) + x**2*(-30*A*a*c - 15*A*b**2 - 30*B*a*b) + x*(-
24*A*a*b - 12*B*a**2))/(60*x**6)
```

3.865 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^8}\,dx$

Optimal. Leaf size=101

$$-\frac{a^2A}{7x^7}-\frac{A\left(2ac+b^2\right)+2abB}{5x^5}-\frac{2aBc+2Abc+b^2B}{4x^4}-\frac{a(aB+2Ab)}{6x^6}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

```
[Out] -1/7*a^2*A/x^7-1/6*a*(2*A*b+B*a)/x^6+1/5*(-2*a*b*B-A*(2*a*c+b^2))/x^5+1/4*(
-2*A*b*c-2*B*a*c-B*b^2)/x^4-1/3*c*(A*c+2*B*b)/x^3-1/2*B*c^2/x^2
```

Rubi [A] time = 0.05, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{7x^7}-\frac{2aBc+2Abc+b^2B}{4x^4}-\frac{A\left(2ac+b^2\right)+2abB}{5x^5}-\frac{a(aB+2Ab)}{6x^6}-\frac{c(Ac+2bB)}{3x^3}-\frac{Bc^2}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -(a^2*A)/(7*x^7) - (a*(2*A*b + a*B))/(6*x^6) - (2*a*b*B + A*(b^2 + 2*a*c))/
(5*x^5) - (b^2*B + 2*A*b*c + 2*a*B*c)/(4*x^4) - (c*(2*b*B + A*c))/(3*x^3) -
 (B*c^2)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^8}\,dx=\int\left(\frac{a^2A}{x^8}+\frac{a(2Ab+aB)}{x^7}+\frac{2abB+A\left(b^2+2ac\right)}{x^6}+\frac{b^2B+2Abc+2aBc}{x^5}+c($$

$$=-\frac{a^2A}{7x^7}-\frac{a(2Ab+aB)}{6x^6}-\frac{2abB+A\left(b^2+2ac\right)}{5x^5}-\frac{b^2B+2Abc+2aBc}{4x^4}-c(2b$$

Mathematica [A] time = 0.04, size = 100, normalized size = 0.99

$$-\frac{10a^2(6A+7Bx)+14ax(2A(5b+6cx)+3Bx(4b+5cx))+7x^2\left(2A\left(6b^2+15bcx+10c^2x^2\right)+5Bx\left(3b^2+8bc\right.\right.}{420x^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x]
```

```
[Out] -1/420*(10*a^2*(6*A + 7*B*x) + 14*a*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6*c
*x)) + 7*x^2*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*c*x +
 10*c^2*x^2)))/x^7
```

fricas [A] time = 1.07, size = 93, normalized size = 0.92

$$-\frac{210\,Bc^2x^5+140\left(2\,Bbc+Ac^2\right)x^4+105\left(Bb^2+2\,(Ba+Ab)c\right)x^3+60\,Aa^2+84\left(2\,Bab+Ab^2+2\,Aac\right)x^2+7}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="fricas")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 140*(2*B*b*c + A*c^2)*x^4 + 105*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 70*(B*a^2 + 2*
A*a*b)*x)/x^7
```

giac [**A**]   time = 0.15, size = 101, normalized size = 1.00

$$-\frac{210\,Bc^2x^5+280\,Bbcx^4+140\,Ac^2x^4+105\,Bb^2x^3+210\,Bacx^3+210\,Abcx^3+168\,Babx^2+84\,Ab^2x^2+168\,Aacx}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="giac")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 280*B*b*c*x^4 + 140*A*c^2*x^4 + 105*B*b^2*x^3 + 210
*B*a*c*x^3 + 210*A*b*c*x^3 + 168*B*a*b*x^2 + 84*A*b^2*x^2 + 168*A*a*c*x^2 +
 70*B*a^2*x + 140*A*a*b*x + 60*A*a^2)/x^7
```

maple [**A**]   time = 0.05, size = 90, normalized size = 0.89

$$-\frac{B\,c^2}{2x^2}-\frac{(Ac+2bB)\,c}{3x^3}-\frac{A\,a^2}{7x^7}-\frac{2Abc+2aBc+b^2B}{4x^4}-\frac{(2Ab+Ba)\,a}{6x^6}-\frac{2Aac+A\,b^2+2Bab}{5x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^8,x)
```

```
[Out] -1/5*(2*A*a*c+A*b^2+2*B*a*b)/x^5-1/4*(2*A*b*c+2*B*a*c+B*b^2)/x^4-1/3*(A*c+2
*B*b)*c/x^3-1/2*B*c^2/x^2-1/7*A*a^2/x^7-1/6*(2*A*b+B*a)*a/x^6
```

maxima [**A**]   time = 0.63, size = 93, normalized size = 0.92

$$-\frac{210\,Bc^2x^5+140\left(2\,Bbc+Ac^2\right)x^4+105\left(Bb^2+2\,(Ba+Ab)c\right)x^3+60\,Aa^2+84\left(2\,Bab+Ab^2+2\,Aac\right)x^2+70\,\big(}{420\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*x^5 + 140*(2*B*b*c + A*c^2)*x^4 + 105*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 60*A*a^2 + 84*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 70*(B*a^2 + 2*
A*a*b)*x)/x^7
```

mupad [**B**]   time = 1.17, size = 93, normalized size = 0.92

$$-\frac{x^4\left(\frac{A\,c^2}{3}+\frac{2\,B\,b\,c}{3}\right)+\frac{A\,a^2}{7}+x^2\left(\frac{A\,b^2}{5}+\frac{2\,B\,a\,b}{5}+\frac{2\,A\,a\,c}{5}\right)+x^3\left(\frac{B\,b^2}{4}+\frac{A\,c\,b}{2}+\frac{B\,a\,c}{2}\right)+x\left(\frac{B\,a^2}{6}+\frac{A\,b\,a}{3}\right)+\frac{B\,c^2\,x^5}{2}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^8,x)
```

```
[Out] -(x^4*((A*c^2)/3 + (2*B*b*c)/3) + (A*a^2)/7 + x^2*((A*b^2)/5 + (2*A*a*c)/5
+ (2*B*a*b)/5) + x^3*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + x*((B*a^2)/6 + (
A*a*b)/3) + (B*c^2*x^5)/2)/x^7
```

sympy [**A**]   time = 24.02, size = 107, normalized size = 1.06

$$\frac{-60Aa^2-210Bc^2x^5+x^4\left(-140Ac^2-280Bbc\right)+x^3\left(-210Abc-210Bac-105Bb^2\right)+x^2\big(-168Aac-84Ab^2-16}{420x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**8,x)
```

```
[Out] (-60*A*a**2 - 210*B*c**2*x**5 + x**4*(-140*A*c**2 - 280*B*b*c) + x**3*(-210
*A*b*c - 210*B*a*c - 105*B*b**2) + x**2*(-168*A*a*c - 84*A*b**2 - 168*B*a*b
) + x*(-140*A*a*b - 70*B*a**2))/(420*x**7)
```

3.866 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^9}\,dx$

Optimal. Leaf size=101

$$-\frac{a^2A}{8x^8}-\frac{A\left(2ac+b^2\right)+2abB}{6x^6}-\frac{2aBc+2Abc+b^2B}{5x^5}-\frac{a(aB+2Ab)}{7x^7}-\frac{c(Ac+2bB)}{4x^4}-\frac{Bc^2}{3x^3}$$

```
[Out] -1/8*a^2*A/x^8-1/7*a*(2*A*b+B*a)/x^7+1/6*(-2*a*b*B-A*(2*a*c+b^2))/x^6+1/5*(
-2*A*b*c-2*B*a*c-B*b^2)/x^5-1/4*c*(A*c+2*B*b)/x^4-1/3*B*c^2/x^3
```

Rubi [A] time = 0.05, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2A}{8x^8}-\frac{2aBc+2Abc+b^2B}{5x^5}-\frac{A\left(2ac+b^2\right)+2abB}{6x^6}-\frac{a(aB+2Ab)}{7x^7}-\frac{c(Ac+2bB)}{4x^4}-\frac{Bc^2}{3x^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x]
```

```
[Out] -(a^2*A)/(8*x^8) - (a*(2*A*b + a*B))/(7*x^7) - (2*a*b*B + A*(b^2 + 2*a*c))/
(6*x^6) - (b^2*B + 2*A*b*c + 2*a*B*c)/(5*x^5) - (c*(2*b*B + A*c))/(4*x^4) -
 (B*c^2)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^9}\,dx &= \int \left(\frac{a^2A}{x^9}+\frac{a(2Ab+aB)}{x^8}+\frac{2abB+A\left(b^2+2ac\right)}{x^7}+\frac{b^2B+2Abc+2aBc}{x^6}+\frac{c(2b}{}\right.\\ &= -\frac{a^2A}{8x^8}-\frac{a(2Ab+aB)}{7x^7}-\frac{2abB+A\left(b^2+2ac\right)}{6x^6}-\frac{b^2B+2Abc+2aBc}{5x^5}-\frac{c(2bB+}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 99, normalized size = 0.98

$$-\frac{15a^2(7A+8Bx)+8ax(5A(6b+7cx)+7Bx(5b+6cx))+14x^2\left(A\left(10b^2+24bcx+15c^2x^2\right)+2Bx\left(6b^2+15bcx\right.\right.}{840x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x]
```

```
[Out] -1/840*(15*a^2*(7*A + 8*B*x) + 8*a*x*(7*B*x*(5*b + 6*c*x) + 5*A*(6*b + 7*c*
x)) + 14*x^2*(2*B*x*(6*b^2 + 15*b*c*x + 10*c^2*x^2) + A*(10*b^2 + 24*b*c*x
+ 15*c^2*x^2)))/x^8
```

fricas [A] time = 1.24, size = 93, normalized size = 0.92

$$-\frac{280\,Bc^2x^5+210\left(2\,Bbc+Ac^2\right)x^4+168\left(Bb^2+2\,(Ba+Ab)c\right)x^3+105\,Aa^2+140\left(2\,Bab+Ab^2+2\,Aac\right)x^2+12}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 210*(2*B*b*c + A*c^2)*x^4 + 168*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 105*A*a^2 + 140*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 120*(B*a^2 +
 2*A*a*b)*x)/x^8
```

giac [A] time = 0.19, size = 101, normalized size = 1.00

$$-\frac{280\,Bc^2x^5 + 420\,Bbcx^4 + 210\,Ac^2x^4 + 168\,Bb^2x^3 + 336\,Bacx^3 + 336\,Abcx^3 + 280\,Babx^2 + 140\,Ab^2x^2 + 280}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 420*B*b*c*x^4 + 210*A*c^2*x^4 + 168*B*b^2*x^3 + 336
*B*a*c*x^3 + 336*A*b*c*x^3 + 280*B*a*b*x^2 + 140*A*b^2*x^2 + 280*A*a*c*x^2
+ 120*B*a^2*x + 240*A*a*b*x + 105*A*a^2)/x^8
```

maple [A] time = 0.05, size = 90, normalized size = 0.89

$$-\frac{B\,c^2}{3x^3} - \frac{(Ac + 2bB)\,c}{4x^4} - \frac{A\,a^2}{8x^8} - \frac{2Abc + 2aBc + b^2B}{5x^5} - \frac{(2Ab + Ba)\,a}{7x^7} - \frac{2Aac + A\,b^2 + 2Bab}{6x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^9,x)
```

```
[Out] -1/5*(2*A*b*c+2*B*a*c+B*b^2)/x^5-1/4*c*(A*c+2*B*b)/x^4-1/3*B*c^2/x^3-1/8*A*
a^2/x^8-1/7*a*(2*A*b+B*a)/x^7-1/6*(2*A*a*c+A*b^2+2*B*a*b)/x^6
```

maxima [A] time = 0.60, size = 93, normalized size = 0.92

$$-\frac{280\,Bc^2x^5 + 210\left(2\,Bbc + Ac^2\right)x^4 + 168\left(Bb^2 + 2\,(Ba + Ab)c\right)x^3 + 105\,Aa^2 + 140\left(2\,Bab + Ab^2 + 2\,Aac\right)x^2 +}{840\,x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*c^2*x^5 + 210*(2*B*b*c + A*c^2)*x^4 + 168*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 105*A*a^2 + 140*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 120*(B*a^2 +
 2*A*a*b)*x)/x^8
```

mupad [B] time = 0.05, size = 93, normalized size = 0.92

$$-\frac{x^4\left(\frac{A\,c^2}{4} + \frac{B\,b\,c}{2}\right) + \frac{A\,a^2}{8} + x^2\left(\frac{A\,b^2}{6} + \frac{B\,a\,b}{3} + \frac{A\,a\,c}{3}\right) + x^3\left(\frac{B\,b^2}{5} + \frac{2\,A\,c\,b}{5} + \frac{2\,B\,a\,c}{5}\right) + x\left(\frac{B\,a^2}{7} + \frac{2\,A\,b\,a}{7}\right) + \frac{B\,c^2\,x^5}{3}}{x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^9,x)
```

```
[Out] -(x^4*((A*c^2)/4 + (B*b*c)/2) + (A*a^2)/8 + x^2*((A*b^2)/6 + (A*a*c)/3 + (B
*a*b)/3) + x^3*((B*b^2)/5 + (2*A*b*c)/5 + (2*B*a*c)/5) + x*((B*a^2)/7 + (2*
A*a*b)/7) + (B*c^2*x^5)/3)/x^8
```

sympy [A] time = 41.52, size = 107, normalized size = 1.06

$$\frac{-105Aa^2 - 280Bc^2x^5 + x^4\left(-210Ac^2 - 420Bbc\right) + x^3\left(-336Abc - 336Bac - 168Bb^2\right) + x^2\left(-280Aac - 140Ab\right.}{840x^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**9,x)
```

```
[Out] (-105*A*a**2 - 280*B*c**2*x**5 + x**4*(-210*A*c**2 - 420*B*b*c) + x**3*(-33
6*A*b*c - 336*B*a*c - 168*B*b**2) + x**2*(-280*A*a*c - 140*A*b**2 - 280*B*a
*b) + x*(-240*A*a*b - 120*B*a**2))/(840*x**8)
```

3.867 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=166

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^2x^4(aB+3Ab)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{3}{5}ax^5\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}x^7\,(3aAc^2+6abBc+3Ab^2$$

```
[Out] 1/3*a^3*A*x^3+1/4*a^2*(3*A*b+B*a)*x^4+3/5*a*(a*b*B+A*(a*c+b^2))*x^5+1/6*(3*
a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^6+1/7*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3
)*x^7+3/8*c*(A*b*c+B*a*c+B*b^2)*x^8+1/9*c^2*(A*c+3*B*b)*x^9+1/10*B*c^3*x^10
```

Rubi [A] time = 0.26, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{1}{4}a^2x^4(aB+3Ab)+\frac{1}{3}a^3Ax^3+\frac{1}{7}x^7\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{1}{6}x^6\,(A\,(6abc+b$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^2*(3*A*b + a*B)*x^4)/4 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
5)/5 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^6)/6 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^7)/7 + (3*c*(b^2*B + A*b*c + a*B*c)*x^8)/8 + (
c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^2(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int (a^3Ax^2+a^2(3Ab+aB)x^3+3a\left(abB+A\left(b^2+ac\right)\right)x^4+(3aB\,(b^2+ac\\ &= \frac{1}{3}a^3Ax^3+\frac{1}{4}a^2(3Ab+aB)x^4+\frac{3}{5}a\left(abB+A\left(b^2+ac\right)\right)x^5+\frac{1}{6}(3aB\,(b^2+\end{aligned}$$

Mathematica [A] time = 0.05, size = 166, normalized size = 1.00

$$\frac{1}{3}a^3Ax^3+\frac{1}{4}a^2x^4(aB+3Ab)+\frac{3}{8}cx^8\left(aBc+Abc+b^2B\right)+\frac{3}{5}ax^5\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{7}x^7\,(3aAc^2+6abBc+3Ab^2$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^3)/3 + (a^2*(3*A*b + a*B)*x^4)/4 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
5)/5 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^6)/6 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^7)/7 + (3*c*(b^2*B + A*b*c + a*B*c)*x^8)/8 + (
c^2*(3*b*B + A*c)*x^9)/9 + (B*c^3*x^10)/10
```

fricas [A] time = 0.93, size = 192, normalized size = 1.16

$$\frac{1}{10}x^{10}c^3B+\frac{1}{3}x^9c^2bB+\frac{1}{9}x^9c^3A+\frac{3}{8}x^8cb^2B+\frac{3}{8}x^8c^2aB+\frac{3}{8}x^8c^2bA+\frac{1}{7}x^7b^3B+\frac{6}{7}x^7cbaB+\frac{3}{7}x^7cb^2A+\frac{3}{7}x^7c^2aA+\frac{1}{2}x^6b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*c^3*B + 1/3*x^9*c^2*b*B + 1/9*x^9*c^3*A + 3/8*x^8*c*b^2*B + 3/8*x
^8*c^2*a*B + 3/8*x^8*c^2*b*A + 1/7*x^7*b^3*B + 6/7*x^7*c*b*a*B + 3/7*x^7*c*
b^2*A + 3/7*x^7*c^2*a*A + 1/2*x^6*b^2*a*B + 1/2*x^6*c*a^2*B + 1/6*x^6*b^3*A
 + x^6*c*b*a*A + 3/5*x^5*b*a^2*B + 3/5*x^5*b^2*a*A + 3/5*x^5*c*a^2*A + 1/4*
x^4*a^3*B + 3/4*x^4*b*a^2*A + 1/3*x^3*a^3*A
```

giac [A] time = 0.20, size = 192, normalized size = 1.16

$$\frac{1}{10}\,Bc^{3}x^{10}+\frac{1}{3}\,Bbc^{2}x^{9}+\frac{1}{9}\,Ac^{3}x^{9}+\frac{3}{8}\,Bb^{2}cx^{8}+\frac{3}{8}\,Bac^{2}x^{8}+\frac{3}{8}\,Abc^{2}x^{8}+\frac{1}{7}\,Bb^{3}x^{7}+\frac{6}{7}\,Babcx^{7}+\frac{3}{7}\,Ab^{2}cx^{7}+\frac{3}{7}\,Aac^{2}x^{7}+\frac{1}{2}\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10 + 1/3*B*b*c^2*x^9 + 1/9*A*c^3*x^9 + 3/8*B*b^2*c*x^8 + 3/8*B
*a*c^2*x^8 + 3/8*A*b*c^2*x^8 + 1/7*B*b^3*x^7 + 6/7*B*a*b*c*x^7 + 3/7*A*b^2*
c*x^7 + 3/7*A*a*c^2*x^7 + 1/2*B*a*b^2*x^6 + 1/6*A*b^3*x^6 + 1/2*B*a^2*c*x^6
 + A*a*b*c*x^6 + 3/5*B*a^2*b*x^5 + 3/5*A*a*b^2*x^5 + 3/5*A*a^2*c*x^5 + 1/4*
B*a^3*x^4 + 3/4*A*a^2*b*x^4 + 1/3*A*a^3*x^3
```

maple [A] time = 0.04, size = 226, normalized size = 1.36

$$\frac{B\,c^{3}x^{10}}{10}+\frac{\left(A\,c^{3}+3Bb\,c^{2}\right)x^{9}}{9}+\frac{\left(3Ab\,c^{2}+\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)B\right)x^{8}}{8}+\frac{A\,a^{3}x^{3}}{3}+\frac{\left(\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/10*B*c^3*x^10+1/9*(A*c^3+3*B*b*c^2)*x^9+1/8*(3*A*b*c^2+B*(a*c^2+2*b^2*c+c
*(2*a*c+b^2)))*x^8+1/7*(A*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+B*(4*a*b*c+b*(2*a*c
+b^2)))*x^7+1/6*(A*(4*a*b*c+b*(2*a*c+b^2))+B*(a*(2*a*c+b^2)+2*a*b^2+c*a^2))
*x^6+1/5*(A*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*B*a^2*b)*x^5+1/4*(3*A*a^2*b+B*a
^3)*x^4+1/3*A*a^3*x^3
```

maxima [A] time = 0.71, size = 166, normalized size = 1.00

$$\frac{1}{10}\,Bc^{3}x^{10}+\frac{1}{9}\left(3\,Bbc^{2}+Ac^{3}\right)x^{9}+\frac{3}{8}\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{8}+\frac{1}{7}\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{7}+\frac{1}{3}\,Aa^{3}x^{3}+\frac{1}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*x^10 + 1/9*(3*B*b*c^2 + A*c^3)*x^9 + 3/8*(B*b^2*c + (B*a + A*b)*
c^2)*x^8 + 1/7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^7 + 1/3*A*a^3*
x^3 + 1/6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^6 + 3/5*(B*a^2*b +
A*a*b^2 + A*a^2*c)*x^5 + 1/4*(B*a^3 + 3*A*a^2*b)*x^4
```

mupad [B] time = 0.07, size = 168, normalized size = 1.01

$$x^{6}\left(\frac{B\,c\,a^{2}}{2}+\frac{B\,a\,b^{2}}{2}+A\,c\,a\,b+\frac{A\,b^{3}}{6}\right)+x^{7}\left(\frac{B\,b^{3}}{7}+\frac{3\,A\,b^{2}\,c}{7}+\frac{6\,B\,a\,b\,c}{7}+\frac{3\,A\,a\,c^{2}}{7}\right)+x^{4}\left(\frac{B\,a^{3}}{4}+\frac{3\,A\,b\,a^{2}}{4}\right)+x^{9}\left(\frac{A}{9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^6*((A*b^3)/6 + (B*a*b^2)/2 + (B*a^2*c)/2 + A*a*b*c) + x^7*((B*b^3)/7 + (3
*A*a*c^2)/7 + (3*A*b^2*c)/7 + (6*B*a*b*c)/7) + x^4*((B*a^3)/4 + (3*A*a^2*b)
/4) + x^9*((A*c^3)/9 + (B*b*c^2)/3) + x^5*((3*A*a*b^2)/5 + (3*A*a^2*c)/5 +
(3*B*a^2*b)/5) + x^8*((3*A*b*c^2)/8 + (3*B*a*c^2)/8 + (3*B*b^2*c)/8) + (A*a
^3*x^3)/3 + (B*c^3*x^10)/10
```

sympy [**A**] time = 0.11, size = 201, normalized size = 1.21

$$\frac{Aa^3x^3}{3}+\frac{Bc^3x^{10}}{10}+x^9\left(\frac{Ac^3}{9}+\frac{Bbc^2}{3}\right)+x^8\left(\frac{3Abc^2}{8}+\frac{3Bac^2}{8}+\frac{3Bb^2c}{8}\right)+x^7\left(\frac{3Aac^2}{7}+\frac{3Ab^2c}{7}+\frac{6Babc}{7}+\frac{Bb^3}{7}\right)+x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x**3/3 + B*c**3*x**10/10 + x**9*(A*c**3/9 + B*b*c**2/3) + x**8*(3*A*
b*c**2/8 + 3*B*a*c**2/8 + 3*B*b**2*c/8) + x**7*(3*A*a*c**2/7 + 3*A*b**2*c/7
 + 6*B*a*b*c/7 + B*b**3/7) + x**6*(A*a*b*c + A*b**3/6 + B*a**2*c/2 + B*a*b*
*2/2) + x**5*(3*A*a**2*c/5 + 3*A*a*b**2/5 + 3*B*a**2*b/5) + x**4*(3*A*a**2*
b/4 + B*a**3/4)
```

3.868 $\int x(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=166

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^2x^3(aB+3Ab)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{3}{4}ax^4\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2c+\right.$$

```
[Out] 1/2*a^3*A*x^2+1/3*a^2*(3*A*b+B*a)*x^3+3/4*a*(a*b*B+A*(a*c+b^2))*x^4+1/5*(3*
a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^5+1/6*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3
)*x^6+3/7*c*(A*b*c+B*a*c+B*b^2)*x^7+1/8*c^2*(A*c+3*B*b)*x^8+1/9*B*c^3*x^9
```

Rubi [A] time = 0.20, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {765}

$$\frac{1}{3}a^2x^3(aB+3Ab)+\frac{1}{2}a^3Ax^2+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{1}{5}x^5\left(A\left(6abc+b^3\right)\right.$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^2*(3*A*b + a*B)*x^3)/3 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
4)/4 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^5)/5 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^6)/6 + (3*c*(b^2*B + A*b*c + a*B*c)*x^7)/7 + (
c^2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3Ax+a^2(3Ab+aB)x^2+3a\left(abB+A\left(b^2+ac\right)\right)x^3+\left(3aB\left(b^2+ac\right)+\right.\right.\\ &= \frac{1}{2}a^3Ax^2+\frac{1}{3}a^2(3Ab+aB)x^3+\frac{3}{4}a\left(abB+A\left(b^2+ac\right)\right)x^4+\frac{1}{5}\left(3aB\left(b^2+ac\right)\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 166, normalized size = 1.00

$$\frac{1}{2}a^3Ax^2+\frac{1}{3}a^2x^3(aB+3Ab)+\frac{3}{7}cx^7\left(aBc+Abc+b^2B\right)+\frac{3}{4}ax^4\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{6}x^6\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*x^2)/2 + (a^2*(3*A*b + a*B)*x^3)/3 + (3*a*(a*b*B + A*(b^2 + a*c))*x^
4)/4 + ((3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^5)/5 + ((b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)*x^6)/6 + (3*c*(b^2*B + A*b*c + a*B*c)*x^7)/7 + (
c^2*(3*b*B + A*c)*x^8)/8 + (B*c^3*x^9)/9
```

fricas [A] time = 0.80, size = 191, normalized size = 1.15

$$\frac{1}{9}x^9c^3B+\frac{3}{8}x^8c^2bB+\frac{1}{8}x^8c^3A+\frac{3}{7}x^7cb^2B+\frac{3}{7}x^7c^2aB+\frac{3}{7}x^7c^2bA+\frac{1}{6}x^6b^3B+x^6cbaB+\frac{1}{2}x^6cb^2A+\frac{1}{2}x^6c^2aA+\frac{3}{5}x^5b^2aB+\frac{3}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*c^3*B + 3/8*x^8*c^2*b*B + 1/8*x^8*c^3*A + 3/7*x^7*c*b^2*B + 3/7*x^7
*c^2*a*B + 3/7*x^7*c^2*b*A + 1/6*x^6*b^3*B + x^6*c*b*a*B + 1/2*x^6*c*b^2*A
+ 1/2*x^6*c^2*a*A + 3/5*x^5*b^2*a*B + 3/5*x^5*c*a^2*B + 1/5*x^5*b^3*A + 6/5
*x^5*c*b*a*A + 3/4*x^4*b*a^2*B + 3/4*x^4*b^2*a*A + 3/4*x^4*c*a^2*A + 1/3*x^
3*a^3*B + x^3*b*a^2*A + 1/2*x^2*a^3*A
```

giac [A] time = 0.15, size = 191, normalized size = 1.15

$$\frac{1}{9} Bc^3x^9+\frac{3}{8} Bbc^2x^8+\frac{1}{8} Ac^3x^8+\frac{3}{7} Bb^2cx^7+\frac{3}{7} Bac^2x^7+\frac{3}{7} Abc^2x^7+\frac{1}{6} Bb^3x^6+Babcx^6+\frac{1}{2} Ab^2cx^6+\frac{1}{2} Aac^2x^6+\frac{3}{5} Bab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9 + 3/8*B*b*c^2*x^8 + 1/8*A*c^3*x^8 + 3/7*B*b^2*c*x^7 + 3/7*B*a
*c^2*x^7 + 3/7*A*b*c^2*x^7 + 1/6*B*b^3*x^6 + B*a*b*c*x^6 + 1/2*A*b^2*c*x^6
+ 1/2*A*a*c^2*x^6 + 3/5*B*a*b^2*x^5 + 1/5*A*b^3*x^5 + 3/5*B*a^2*c*x^5 + 6/5
*A*a*b*c*x^5 + 3/4*B*a^2*b*x^4 + 3/4*A*a*b^2*x^4 + 3/4*A*a^2*c*x^4 + 1/3*B*
a^3*x^3 + A*a^2*b*x^3 + 1/2*A*a^3*x^2
```

maple [A] time = 0.04, size = 226, normalized size = 1.36

$$\frac{B c^3x^9}{9}+\frac{\left(A c^3+3Bb c^2\right) x^8}{8}+\frac{\left(3Ab c^2+\left(a c^2+2b^2c+\left(2ac+b^2\right) c\right) B\right) x^7}{7}+\frac{A a^3x^2}{2}+((a c^2+2b^2c+(2ac+b^2)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/9*B*c^3*x^9+1/8*(A*c^3+3*B*b*c^2)*x^8+1/7*(3*A*b*c^2+(a*c^2+2*b^2*c+(2*a*
c+b^2)*c)*B)*x^7+1/6*((a*c^2+2*b^2*c+(2*a*c+b^2)*c)*A+(4*a*b*c+(2*a*c+b^2)*
b)*B)*x^6+1/5*((4*a*b*c+(2*a*c+b^2)*b)*A+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*B)*x
^5+1/4*(3*B*a^2*b+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*A)*x^4+1/3*(3*A*a^2*b+B*a^3
)*x^3+1/2*A*a^3*x^2
```

maxima [A] time = 0.66, size = 166, normalized size = 1.00

$$\frac{1}{9} Bc^3x^9+\frac{1}{8} \left(3 Bbc^2 + Ac^3\right)x^8+\frac{3}{7} \left(Bb^2c + (Ba + Ab)c^2\right)x^7+\frac{1}{6} \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right)x^6+\frac{1}{2} Aa^3x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*x^9 + 1/8*(3*B*b*c^2 + A*c^3)*x^8 + 3/7*(B*b^2*c + (B*a + A*b)*c^
2)*x^7 + 1/6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^6 + 1/2*A*a^3*x^
2 + 1/5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^5 + 3/4*(B*a^2*b + A*
a*b^2 + A*a^2*c)*x^4 + 1/3*(B*a^3 + 3*A*a^2*b)*x^3
```

mupad [B] time = 1.16, size = 167, normalized size = 1.01

$$x^5 \left(\frac{3 B c a^2}{5} + \frac{3 B a b^2}{5} + \frac{6 A c a b}{5} + \frac{A b^3}{5}\right)+x^6 \left(\frac{B b^3}{6} + \frac{A b^2 c}{2} + B a b c + \frac{A a c^2}{2}\right)+x^3 \left(\frac{B a^3}{3} + A b a^2\right)+x^8 ($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((A*b^3)/5 + (3*B*a*b^2)/5 + (3*B*a^2*c)/5 + (6*A*a*b*c)/5) + x^6*((B*b
^3)/6 + (A*a*c^2)/2 + (A*b^2*c)/2 + B*a*b*c) + x^3*((B*a^3)/3 + A*a^2*b) +
x^8*((A*c^3)/8 + (3*B*b*c^2)/8) + x^4*((3*A*a*b^2)/4 + (3*A*a^2*c)/4 + (3*B
*a^2*b)/4) + x^7*((3*A*b*c^2)/7 + (3*B*a*c^2)/7 + (3*B*b^2*c)/7) + (A*a^3*x
^2)/2 + (B*c^3*x^9)/9
```

sympy [A] time = 0.10, size = 199, normalized size = 1.20

$$\frac{Aa^3x^2}{2}+\frac{Bc^3x^9}{9}+x^8\left(\frac{Ac^3}{8}+\frac{3Bbc^2}{8}\right)+x^7\left(\frac{3Abc^2}{7}+\frac{3Bac^2}{7}+\frac{3Bb^2c}{7}\right)+x^6\left(\frac{Aac^2}{2}+\frac{Ab^2c}{2}+Babc+\frac{Bb^3}{6}\right)+x^5\left(\frac{6Aab}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x**2/2 + B*c**3*x**9/9 + x**8*(A*c**3/8 + 3*B*b*c**2/8) + x**7*(3*A*
b*c**2/7 + 3*B*a*c**2/7 + 3*B*b**2*c/7) + x**6*(A*a*c**2/2 + A*b**2*c/2 + B
*a*b*c + B*b**3/6) + x**5*(6*A*a*b*c/5 + A*b**3/5 + 3*B*a**2*c/5 + 3*B*a*b*
*2/5) + x**4*(3*A*a**2*c/4 + 3*A*a*b**2/4 + 3*B*a**2*b/4) + x**3*(A*a**2*b
+ B*a**3/3)
```

3.869 $\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=158

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+\right.$$

```
[Out] a^3*A*x+1/2*a^2*(3*A*b+B*a)*x^2+a*(a*b*B+A*(a*c+b^2))*x^3+1/4*(3*a*B*(a*c+b
^2)+A*(6*a*b*c+b^3))*x^4+1/5*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^5+1/2*
c*(A*b*c+B*a*c+B*b^2)*x^6+1/7*c^2*(A*c+3*B*b)*x^7+1/8*B*c^3*x^8
```

Rubi [A] time = 0.15, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {631}

$$\frac{1}{2}a^2x^2(aB+3Ab)+a^3Ax+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A+a^2(3Ab+aB)x+3a\left(abB+A\left(b^2+ac\right)\right)x^2+\left(3aB\left(b^2+ac\right)+A\right.\right.\\ &= a^3Ax+\frac{1}{2}a^2(3Ab+aB)x^2+a\left(abB+A\left(b^2+ac\right)\right)x^3+\frac{1}{4}\left(3aB\left(b^2+ac\right)+\right.\end{aligned}$$

Mathematica [A] time = 0.03, size = 158, normalized size = 1.00

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

fricas [A] time = 0.88, size = 187, normalized size = 1.18

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2aB+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{6}{5}x^5cbaB+\frac{3}{5}x^5cb^2A+\frac{3}{5}x^5c^2aA+\frac{3}{4}x^4b^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*a*B + 1/2*x^6*c^2*b*A + 1/5*x^5*b^3*B + 6/5*x^5*c*b*a*B + 3/5*x^5*c*b^
2*A + 3/5*x^5*c^2*a*A + 3/4*x^4*b^2*a*B + 3/4*x^4*c*a^2*B + 1/4*x^4*b^3*A +
 3/2*x^4*c*b*a*A + x^3*b*a^2*B + x^3*b^2*a*A + x^3*c*a^2*A + 1/2*x^2*a^3*B
+ 3/2*x^2*b*a^2*A + x*a^3*A
```

giac [A] time = 0.15, size = 187, normalized size = 1.18

$$\frac{1}{8}Bc^3x^8+\frac{3}{7}Bbc^2x^7+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bb^2cx^6+\frac{1}{2}Bac^2x^6+\frac{1}{2}Abc^2x^6+\frac{1}{5}Bb^3x^5+\frac{6}{5}Babcx^5+\frac{3}{5}Ab^2cx^5+\frac{3}{5}Aac^2x^5+\frac{3}{4}Bab^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*B*a
*c^2*x^6 + 1/2*A*b*c^2*x^6 + 1/5*B*b^3*x^5 + 6/5*B*a*b*c*x^5 + 3/5*A*b^2*c*
x^5 + 3/5*A*a*c^2*x^5 + 3/4*B*a*b^2*x^4 + 1/4*A*b^3*x^4 + 3/4*B*a^2*c*x^4 +
 3/2*A*a*b*c*x^4 + B*a^2*b*x^3 + A*a*b^2*x^3 + A*a^2*c*x^3 + 1/2*B*a^3*x^2
+ 3/2*A*a^2*b*x^2 + A*a^3*x
```

maple [A] time = 0.05, size = 223, normalized size = 1.41

$$\frac{Bc^3x^8}{8}+\frac{\left(Ac^3+3Bbc^2\right)x^7}{7}+\frac{\left(3Abc^2+\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)B\right)x^6}{6}+Aa^3x+\frac{\left(\left(ac^2+2b^2c+\left(2ac+b^2\right)c\right)A}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+(a*c^2+2*b^2*c+(2*a*
c+b^2)*c)*B)*x^6+1/5*((a*c^2+2*b^2*c+(2*a*c+b^2)*c)*A+(4*a*b*c+(2*a*c+b^2)*
b)*B)*x^5+1/4*((4*a*b*c+(2*a*c+b^2)*b)*A+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*B)*x
^4+1/3*(3*B*a^2*b+(a^2*c+2*a*b^2+(2*a*c+b^2)*a)*A)*x^3+1/2*(3*A*a^2*b+B*a^3
)*x^2+A*a^3*x
```

maxima [A] time = 0.58, size = 162, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}\left(3Bbc^2+Ac^3\right)x^7+\frac{1}{2}\left(Bb^2c+(Ba+Ab)c^2\right)x^6+\frac{1}{5}\left(Bb^3+3Aac^2+3\left(2Bab+Ab^2\right)c\right)x^5+Aa^3x+\frac{1}{4}(3B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^6 + 1/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^5 + A*a^3*x + 1/
4*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^4 + (B*a^2*b + A*a*b^2 + A*
a^2*c)*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

mupad [B] time = 0.05, size = 163, normalized size = 1.03

$$x^4\left(\frac{3Bca^2}{4}+\frac{3Bab^2}{4}+\frac{3Acab}{2}+\frac{Ab^3}{4}\right)+x^5\left(\frac{Bb^3}{5}+\frac{3Ab^2c}{5}+\frac{6Babc}{5}+\frac{3Aac^2}{5}\right)+x^2\left(\frac{Ba^3}{2}+\frac{3Aba^2}{2}\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c)/2) + x^5*((B*b
^3)/5 + (3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x^2*((B*a^3)/2 + (
3*A*a^2*b)/2) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + x^3*(A*a*b^2 + A*a^2*c +
B*a^2*b) + x^6*((A*b*c^2)/2 + (B*a*c^2)/2 + (B*b^2*c)/2) + (B*c^3*x^8)/8 +
A*a^3*x
```

sympy [A] time = 0.10, size = 190, normalized size = 1.20

$$Aa^3x+\frac{Bc^3x^8}{8}+x^7\left(\frac{Ac^3}{7}+\frac{3Bbc^2}{7}\right)+x^6\left(\frac{Abc^2}{2}+\frac{Bac^2}{2}+\frac{Bb^2c}{2}\right)+x^5\left(\frac{3Aac^2}{5}+\frac{3Ab^2c}{5}+\frac{6Babc}{5}+\frac{Bb^3}{5}\right)+x^4\left(\frac{3A}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*c**2/
2 + B*a*c**2/2 + B*b**2*c/2) + x**5*(3*A*a*c**2/5 + 3*A*b**2*c/5 + 6*B*a*b*
c/5 + B*b**3/5) + x**4*(3*A*a*b*c/2 + A*b**3/4 + 3*B*a**2*c/4 + 3*B*a*b**2/
4) + x**3*(A*a**2*c + A*a*b**2 + B*a**2*b) + x**2*(3*A*a**2*b/2 + B*a**3/2)
```

3.870 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x}\,dx$

Optimal. Leaf size=157

$$a^3A\log(x)+a^2x(aB+3Ab)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{3}{2}ax^2\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2c+\right.$$

```
[Out] a^2*(3*A*b+B*a)*x+3/2*a*(a*b*B+A*(a*c+b^2))*x^2+1/3*(3*a*B*(a*c+b^2)+A*(6*a
*b*c+b^3))*x^3+1/4*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^4+3/5*c*(A*b*c+B
*a*c+B*b^2)*x^5+1/6*c^2*(A*c+3*B*b)*x^6+1/7*B*c^3*x^7+a^3*A*ln(x)
```

Rubi [A] time = 0.11, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$a^2x(aB+3Ab)+a^3A\log(x)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(6abc+b^3\right)\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x,x]
```

```
[Out] a^2*(3*A*b + a*B)*x + (3*a*(a*b*B + A*(b^2 + a*c))*x^2)/2 + ((3*a*B*(b^2 +
a*c) + A*(b^3 + 6*a*b*c))*x^3)/3 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*
c^2)*x^4)/4 + (3*c*(b^2*B + A*b*c + a*B*c)*x^5)/5 + (c^2*(3*b*B + A*c)*x^6)
/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x}\,dx &= \int \left(a^2(3Ab+aB)+\frac{a^3A}{x}+3a\left(abB+A\left(b^2+ac\right)\right)x+\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.\right.\\ &= a^2(3Ab+aB)x+\frac{3}{2}a\left(abB+A\left(b^2+ac\right)\right)x^2+\frac{1}{3}\left(3aB\left(b^2+ac\right)+A\left(b^3+6abc\right.\right.\end{aligned}$$

Mathematica [A] time = 0.06, size = 157, normalized size = 1.00

$$a^3A\log(x)+a^2x(aB+3Ab)+\frac{3}{5}cx^5\left(aBc+Abc+b^2B\right)+\frac{3}{2}ax^2\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{4}x^4\left(3aAc^2+6abBc+3Ab^2c+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x,x]
```

```
[Out] a^2*(3*A*b + a*B)*x + (3*a*(a*b*B + A*(b^2 + a*c))*x^2)/2 + ((3*a*B*(b^2 +
a*c) + A*(b^3 + 6*a*b*c))*x^3)/3 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*
c^2)*x^4)/4 + (3*c*(b^2*B + A*b*c + a*B*c)*x^5)/5 + (c^2*(3*b*B + A*c)*x^6)
/6 + (B*c^3*x^7)/7 + a^3*A*Log[x]
```

fricas [A] time = 0.97, size = 161, normalized size = 1.03

$$\frac{1}{7}Bc^3x^7+\frac{1}{6}\left(3\,Bbc^2+Ac^3\right)x^6+\frac{3}{5}\left(Bb^2c+(Ba+Ab)c^2\right)x^5+\frac{1}{4}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4+Aa^3\log(x)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="fricas")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c + (B*a + A*b)*c^
2)*x^5 + 1/4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + A*a^3*log(x)
 + 1/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 3/2*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

giac [A] time = 0.15, size = 185, normalized size = 1.18

$$\frac{1}{7} Bc^3x^7+\frac{1}{2} Bbc^2x^6+\frac{1}{6} Ac^3x^6+\frac{3}{5} Bb^2cx^5+\frac{3}{5} Bac^2x^5+\frac{3}{5} Abc^2x^5+\frac{1}{4} Bb^3x^4+\frac{3}{2} Babcx^4+\frac{3}{4} Ab^2cx^4+\frac{3}{4} Aac^2x^4+Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="giac")
```

```
[Out] 1/7*B*c^3*x^7 + 1/2*B*b*c^2*x^6 + 1/6*A*c^3*x^6 + 3/5*B*b^2*c*x^5 + 3/5*B*a
*c^2*x^5 + 3/5*A*b*c^2*x^5 + 1/4*B*b^3*x^4 + 3/2*B*a*b*c*x^4 + 3/4*A*b^2*c*
x^4 + 3/4*A*a*c^2*x^4 + B*a*b^2*x^3 + 1/3*A*b^3*x^3 + B*a^2*c*x^3 + 2*A*a*b
*c*x^3 + 3/2*B*a^2*b*x^2 + 3/2*A*a*b^2*x^2 + 3/2*A*a^2*c*x^2 + B*a^3*x + 3*
A*a^2*b*x + A*a^3*log(abs(x))
```

maple [A] time = 0.05, size = 185, normalized size = 1.18

$$\frac{B c^3x^7}{7}+\frac{A c^3x^6}{6}+\frac{Bb c^2x^6}{2}+\frac{3Ab c^2x^5}{5}+\frac{3Ba c^2x^5}{5}+\frac{3B b^2c x^5}{5}+\frac{3Aa c^2x^4}{4}+\frac{3A b^2c x^4}{4}+\frac{3Babc x^4}{2}+\frac{B b^3x^4}{4}+2Aabc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x,x)
```

```
[Out] 1/7*B*c^3*x^7+1/6*A*c^3*x^6+1/2*B*x^6*b*c^2+3/5*A*x^5*b*c^2+3/5*B*a*c^2*x^5
+3/5*B*x^5*b^2*c+3/4*A*a*c^2*x^4+3/4*A*x^4*b^2*c+3/2*B*x^4*a*b*c+1/4*B*b^3*
x^4+2*A*x^3*a*b*c+1/3*A*b^3*x^3+B*a^2*c*x^3+B*a*b^2*x^3+3/2*A*a^2*c*x^2+3/2
*A*x^2*a*b^2+3/2*B*a^2*b*x^2+3*A*a^2*b*x+B*a^3*x+A*a^3*ln(x)
```

maxima [A] time = 0.48, size = 161, normalized size = 1.03

$$\frac{1}{7} Bc^3x^7+\frac{1}{6} \left(3 Bbc^2 + Ac^3\right)x^6+\frac{3}{5} \left(Bb^2c + (Ba + Ab)c^2\right)x^5+\frac{1}{4} \left(Bb^3 + 3 Aac^2 + 3 \left(2 Bab + Ab^2\right)c\right)x^4+Aa^3 \log($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^3*x^7 + 1/6*(3*B*b*c^2 + A*c^3)*x^6 + 3/5*(B*b^2*c + (B*a + A*b)*c^
2)*x^5 + 1/4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + A*a^3*log(x)
 + 1/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 3/2*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + (B*a^3 + 3*A*a^2*b)*x
```

mupad [B] time = 0.05, size = 162, normalized size = 1.03

$$x^3 \left(B c a^2 + B a b^2 + 2 A c a b + \frac{A b^3}{3}\right)+x^4 \left(\frac{B b^3}{4} + \frac{3 A b^2 c}{4} + \frac{3 B a b c}{2} + \frac{3 A a c^2}{4}\right)+x \left(B a^3 + 3 A b a^2\right)+x^6 \left($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x,x)
```

```
[Out] x^3*((A*b^3)/3 + B*a*b^2 + B*a^2*c + 2*A*a*b*c) + x^4*((B*b^3)/4 + (3*A*a*c
^2)/4 + (3*A*b^2*c)/4 + (3*B*a*b*c)/2) + x*(B*a^3 + 3*A*a^2*b) + x^6*((A*c^
3)/6 + (B*b*c^2)/2) + x^2*((3*A*a*b^2)/2 + (3*A*a^2*c)/2 + (3*B*a^2*b)/2) +
 x^5*((3*A*b*c^2)/5 + (3*B*a*c^2)/5 + (3*B*b^2*c)/5) + (B*c^3*x^7)/7 + A*a^
3*log(x)
```

sympy [A] time = 0.31, size = 192, normalized size = 1.22

$$Aa^3\log(x)+\frac{Bc^3x^7}{7}+x^6\left(\frac{Ac^3}{6}+\frac{Bbc^2}{2}\right)+x^5\left(\frac{3Abc^2}{5}+\frac{3Bac^2}{5}+\frac{3Bb^2c}{5}\right)+x^4\left(\frac{3Aac^2}{4}+\frac{3Ab^2c}{4}+\frac{3Babc}{2}+\frac{Bb^3}{4}\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x,x)
```

```
[Out] A*a**3*log(x) + B*c**3*x**7/7 + x**6*(A*c**3/6 + B*b*c**2/2) + x**5*(3*A*b*
c**2/5 + 3*B*a*c**2/5 + 3*B*b**2*c/5) + x**4*(3*A*a*c**2/4 + 3*A*b**2*c/4 +
 3*B*a*b*c/2 + B*b**3/4) + x**3*(2*A*a*b*c + A*b**3/3 + B*a**2*c + B*a*b**2
) + x**2*(3*A*a**2*c/2 + 3*A*a*b**2/2 + 3*B*a**2*b/2) + x*(3*A*a**2*b + B*a
**3)
```

3.871 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^2}\,dx$

Optimal. Leaf size=156

$$-\frac{a^3A}{x}+a^2\log(x)(aB+3Ab)+\frac{3}{4}cx^4\,(aBc+Abc+b^2B)+3ax\,(A\,(ac+b^2)+abB)+\frac{1}{3}x^3\,(3aAc^2+6abBc+3Ab^2$$

```
[Out] -a^3*A/x+3*a*(a*b*B+A*(a*c+b^2))*x+1/2*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^
2+1/3*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^3+3/4*c*(A*b*c+B*a*c+B*b^2)*x
^4+1/5*c^2*(A*c+3*B*b)*x^5+1/6*B*c^3*x^6+a^2*(3*A*b+B*a)*ln(x)
```

Rubi [A] time = 0.11, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$a^2\log(x)(aB+3Ab)-\frac{a^3A}{x}+\frac{1}{3}x^3\,(3aAc^2+6abBc+3Ab^2c+b^3B)+\frac{3}{4}cx^4\,(aBc+Abc+b^2B)+\frac{1}{2}x^2\,(A\,(6abc+b$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a*(a*b*B + A*(b^2 + a*c))*x + ((3*a*B*(b^2 + a*c) + A*(b^3
 + 6*a*b*c))*x^2)/2 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^3)/3 +
 (3*c*(b^2*B + A*b*c + a*B*c)*x^4)/4 + (c^2*(3*b*B + A*c)*x^5)/5 + (B*c^3*x
^6)/6 + a^2*(3*A*b + a*B)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\,(a+bx+cx^2)^3}{x^2}\,dx=\int \Big(3a\,(abB+A\,(b^2+ac))+\frac{a^3A}{x^2}+\frac{a^2(3Ab+aB)}{x}+(3aB\,(b^2+ac)+A\,(b$$

$$=-\frac{a^3A}{x}+3a\,(abB+A\,(b^2+ac))\,x+\frac{1}{2}\,(3aB\,(b^2+ac)+A\,(b^3+6abc))\,x^2+$$

Mathematica [A] time = 0.08, size = 156, normalized size = 1.00

$$-\frac{a^3A}{x}+a^2\log(x)(aB+3Ab)+\frac{3}{4}cx^4\,(aBc+Abc+b^2B)+3ax\,(A\,(ac+b^2)+abB)+\frac{1}{3}x^3\,(3aAc^2+6abBc+3Ab^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x]
```

```
[Out] -((a^3*A)/x) + 3*a*(a*b*B + A*(b^2 + a*c))*x + ((3*a*B*(b^2 + a*c) + A*(b^3
 + 6*a*b*c))*x^2)/2 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^3)/3 +
 (3*c*(b^2*B + A*b*c + a*B*c)*x^4)/4 + (c^2*(3*b*B + A*c)*x^5)/5 + (B*c^3*x
^6)/6 + a^2*(3*A*b + a*B)*Log[x]
```

fricas [A] time = 0.75, size = 168, normalized size = 1.08

$$\frac{10\,Bc^3x^7+12\,(3\,Bbc^2+Ac^3)x^6+45\,(Bb^2c+(Ba+Ab)c^2)x^5+20\,(Bb^3+3\,Aac^2+3\,(2\,Bab+Ab^2)c)x^4-60}{60}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*x^7 + 12*(3*B*b*c^2 + A*c^3)*x^6 + 45*(B*b^2*c + (B*a + A*b)
*c^2)*x^5 + 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 60*A*a^3 +
 30*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 180*(B*a^2*b + A*a*b^
2 + A*a^2*c)*x^2 + 60*(B*a^3 + 3*A*a^2*b)*x*log(x))/x
```

giac [A] time = 0.15, size = 183, normalized size = 1.17

$$\frac{1}{6}Bc^3x^6+\frac{3}{5}Bbc^2x^5+\frac{1}{5}Ac^3x^5+\frac{3}{4}Bb^2cx^4+\frac{3}{4}Bac^2x^4+\frac{3}{4}Abc^2x^4+\frac{1}{3}Bb^3x^3+2Babcx^3+Ab^2cx^3+Aac^2x^3+\frac{3}{2}Bab^2x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^3*x^6 + 3/5*B*b*c^2*x^5 + 1/5*A*c^3*x^5 + 3/4*B*b^2*c*x^4 + 3/4*B*a
*c^2*x^4 + 3/4*A*b*c^2*x^4 + 1/3*B*b^3*x^3 + 2*B*a*b*c*x^3 + A*b^2*c*x^3 +
A*a*c^2*x^3 + 3/2*B*a*b^2*x^2 + 1/2*A*b^3*x^2 + 3/2*B*a^2*c*x^2 + 3*A*a*b*c
*x^2 + 3*B*a^2*b*x + 3*A*a*b^2*x + 3*A*a^2*c*x - A*a^3/x + (B*a^3 + 3*A*a^2
*b)*log(abs(x))
```

maple [A] time = 0.06, size = 183, normalized size = 1.17

$$\frac{Bc^3x^6}{6}+\frac{Ac^3x^5}{5}+\frac{3Bbc^2x^5}{5}+\frac{3Abc^2x^4}{4}+\frac{3Bac^2x^4}{4}+\frac{3Bb^2cx^4}{4}+Aac^2x^3+Ab^2cx^3+2Babcx^3+\frac{Bb^3x^3}{3}+3Aabcx^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^2,x)
```

```
[Out] 1/6*B*c^3*x^6+1/5*A*c^3*x^5+3/5*B*x^5*b*c^2+3/4*A*b*c^2*x^4+3/4*B*a*c^2*x^4
+3/4*B*x^4*b^2*c+A*a*c^2*x^3+A*x^3*b^2*c+2*B*x^3*a*b*c+1/3*b^3*B*x^3+3*A*x^
2*a*b*c+1/2*A*x^2*b^3+3/2*B*a^2*c*x^2+3/2*B*x^2*a*b^2+3*A*a^2*c*x+3*A*a*b^2
*x+3*B*a^2*b*x-A*a^3/x+3*A*ln(x)*a^2*b+B*a^3*ln(x)
```

maxima [A] time = 0.52, size = 162, normalized size = 1.04

$$\frac{1}{6}Bc^3x^6+\frac{1}{5}(3Bbc^2+Ac^3)x^5+\frac{3}{4}(Bb^2c+(Ba+Ab)c^2)x^4+\frac{1}{3}(Bb^3+3Aac^2+3(2Bab+Ab^2)c)x^3-\frac{Aa^3}{x}+\frac{1}{2}(3Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^3*x^6 + 1/5*(3*B*b*c^2 + A*c^3)*x^5 + 3/4*(B*b^2*c + (B*a + A*b)*c^
2)*x^4 + 1/3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^3 - A*a^3/x + 1/
2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^2 + 3*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x + (B*a^3 + 3*A*a^2*b)*log(x)
```

mupad [B] time = 1.19, size = 163, normalized size = 1.04

$$x^2\left(\frac{3Bca^2}{2}+\frac{3Bab^2}{2}+3Acab+\frac{Ab^3}{2}\right)+x^3\left(\frac{Bb^3}{3}+Ab^2c+2Babc+Aac^2\right)+x(3Ba^2b+3Aca^2+3Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^2,x)
```

```
[Out] x^2*((A*b^3)/2 + (3*B*a*b^2)/2 + (3*B*a^2*c)/2 + 3*A*a*b*c) + x^3*((B*b^3)/
3 + A*a*c^2 + A*b^2*c + 2*B*a*b*c) + x*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)
```

```
+ x^5*((A*c^3)/5 + (3*B*b*c^2)/5) + log(x)*(B*a^3 + 3*A*a^2*b) + x^4*((3*A*
b*c^2)/4 + (3*B*a*c^2)/4 + (3*B*b^2*c)/4) - (A*a^3)/x + (B*c^3*x^6)/6
```

sympy [A] time = 0.36, size = 184, normalized size = 1.18

$$-\frac{Aa^3}{x}+\frac{Bc^3x^6}{6}+a^2\left(3Ab+Ba\right)\log\left(x\right)+x^5\left(\frac{Ac^3}{5}+\frac{3Bbc^2}{5}\right)+x^4\left(\frac{3Abc^2}{4}+\frac{3Bac^2}{4}+\frac{3Bb^2c}{4}\right)+x^3\Bigg(Aac^2+Ab^2c+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**2,x)
```

```
[Out] -A*a**3/x + B*c**3*x**6/6 + a**2*(3*A*b + B*a)*log(x) + x**5*(A*c**3/5 + 3*
B*b*c**2/5) + x**4*(3*A*b*c**2/4 + 3*B*a*c**2/4 + 3*B*b**2*c/4) + x**3*(A*a
*c**2 + A*b**2*c + 2*B*a*b*c + B*b**3/3) + x**2*(3*A*a*b*c + A*b**3/2 + 3*B
*a**2*c/2 + 3*B*a*b**2/2) + x*(3*A*a**2*c + 3*A*a*b**2 + 3*B*a**2*b)
```

3.872 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^3}\,dx$

Optimal. Leaf size=153

$$-\frac{a^3A}{2x^2}-\frac{a^2(aB+3Ab)}{x}+cx^3\left(aBc+Abc+b^2B\right)+3a\log(x)\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{2}x^2 (3aAc^2+6abBc+3Ab^2c+b$$

```
[Out] -1/2*a^3*A/x^2-a^2*(3*A*b+B*a)/x+(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x+1/2*(3
*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^2+c*(A*b*c+B*a*c+B*b^2)*x^3+1/4*c^2*(
A*c+3*B*b)*x^4+1/5*B*c^3*x^5+3*a*(a*b*B+A*(a*c+b^2))*ln(x)
```

Rubi [A] time = 0.12, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{x}-\frac{a^3A}{2x^2}+\frac{1}{2}x^2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+cx^3\left(aBc+Abc+b^2B\right)+x\left(A\left(6abc+b^3\right)+3aB (a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -(a^3*A)/(2*x^2) - (a^2*(3*A*b + a*B))/x + (3*a*B*(b^2 + a*c) + A*(b^3 + 6*
a*b*c))*x + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^2)/2 + c*(b^2*B
+ A*b*c + a*B*c)*x^3 + (c^2*(3*b*B + A*c)*x^4)/4 + (B*c^3*x^5)/5 + 3*a*(a*b
*B + A*(b^2 + a*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^3}\,dx &= \int \left(Ab^3\left(1+\frac{3a\left(b^2B+2Abc+aBc\right)}{Ab^3}\right)+\frac{a^3A}{x^3}+\frac{a^2(3Ab+aB)}{x^2}+\frac{3a (abB+A (}{x}\right.\\ &= -\frac{a^3A}{2x^2}-\frac{a^2(3Ab+aB)}{x}+\left(3aB\left(b^2+ac\right)+A\left(b^3+6abc\right)\right)x+\frac{1}{2} (b^3B+3Ab^2c\end{aligned}$$

Mathematica [A] time = 0.08, size = 153, normalized size = 1.00

$$-\frac{a^3A}{2x^2}-\frac{a^2(aB+3Ab)}{x}+cx^3\left(aBc+Abc+b^2B\right)+3a\log(x)\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{2}x^2 (3aAc^2+6abBc+3Ab^2c+b$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x]
```

```
[Out] -1/2*(a^3*A)/x^2 - (a^2*(3*A*b + a*B))/x + (3*a*B*(b^2 + a*c) + A*(b^3 + 6*
a*b*c))*x + ((b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^2)/2 + c*(b^2*B
+ A*b*c + a*B*c)*x^3 + (c^2*(3*b*B + A*c)*x^4)/4 + (B*c^3*x^5)/5 + 3*a*(a*b
*B + A*(b^2 + a*c))*Log[x]
```

fricas [A] time = 1.02, size = 168, normalized size = 1.10

$$\frac{4\,Bc^3x^7+5\left(3\,Bbc^2+Ac^3\right)x^6+20\left(Bb^2c+(Ba+Ab)c^2\right)x^5+10\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4-10\,Aa^3+}{20\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*x^7 + 5*(3*B*b*c^2 + A*c^3)*x^6 + 20*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 10*A*a^3 + 2
0*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 60*(B*a^2*b + A*a*b^2 +
 A*a^2*c)*x^2*log(x) - 20*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

giac [A]   time = 0.17, size = 174, normalized size = 1.14

$$\frac{1}{5}Bc^3x^5+\frac{3}{4}Bbc^2x^4+\frac{1}{4}Ac^3x^4+Bb^2cx^3+Bac^2x^3+Abc^2x^3+\frac{1}{2}Bb^3x^2+3Babcx^2+\frac{3}{2}Ab^2cx^2+\frac{3}{2}Aac^2x^2+3Bab^2x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="giac")
```

```
[Out] 1/5*B*c^3*x^5 + 3/4*B*b*c^2*x^4 + 1/4*A*c^3*x^4 + B*b^2*c*x^3 + B*a*c^2*x^3
 + A*b*c^2*x^3 + 1/2*B*b^3*x^2 + 3*B*a*b*c*x^2 + 3/2*A*b^2*c*x^2 + 3/2*A*a*
c^2*x^2 + 3*B*a*b^2*x + A*b^3*x + 3*B*a^2*c*x + 6*A*a*b*c*x + 3*(B*a^2*b +
A*a*b^2 + A*a^2*c)*log(abs(x)) - 1/2*(A*a^3 + 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

maple [A]   time = 0.06, size = 179, normalized size = 1.17

$$\frac{Bc^3x^5}{5}+\frac{Ac^3x^4}{4}+\frac{3Bbc^2x^4}{4}+Abc^2x^3+Bac^2x^3+Bb^2cx^3+\frac{3Aac^2x^2}{2}+\frac{3Ab^2cx^2}{2}+3Babcx^2+\frac{Bb^3x^2}{2}+3Aa^2c\ln(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^3,x)
```

```
[Out] 1/5*B*c^3*x^5+1/4*A*c^3*x^4+3/4*B*x^4*b*c^2+A*x^3*b*c^2+B*a*c^2*x^3+B*x^3*b
^2*c+3/2*A*a*c^2*x^2+3/2*A*b^2*c*x^2+3*B*x^2*a*b*c+1/2*B*x^2*b^3+6*A*a*b*c*
x+A*b^3*x+3*B*a^2*c*x+3*B*a*b^2*x-1/2*A*a^3/x^2-3*a^2/x*A*b-B*a^3/x+3*A*a^2
*c*ln(x)+3*A*ln(x)*a*b^2+3*B*ln(x)*a^2*b
```

maxima [A]   time = 0.58, size = 161, normalized size = 1.05

$$\frac{1}{5}Bc^3x^5+\frac{1}{4}\left(3Bbc^2+Ac^3\right)x^4+\left(Bb^2c+(Ba+Ab)c^2\right)x^3+\frac{1}{2}\left(Bb^3+3Aac^2+3\left(2Bab+Ab^2\right)c\right)x^2+\Big(3Bab^2+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^3,x, algorithm="maxima")
```

```
[Out] 1/5*B*c^3*x^5 + 1/4*(3*B*b*c^2 + A*c^3)*x^4 + (B*b^2*c + (B*a + A*b)*c^2)*x
^3 + 1/2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^2 + (3*B*a*b^2 + A*b
^3 + 3*(B*a^2 + 2*A*a*b)*c)*x + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*log(x) - 1/
2*(A*a^3 + 2*(B*a^3 + 3*A*a^2*b)*x)/x^2
```

mupad [B]   time = 0.06, size = 162, normalized size = 1.06

$$x^2\left(\frac{Bb^3}{2}+\frac{3Ab^2c}{2}+3Babc+\frac{3Aac^2}{2}\right)-\frac{x\left(Ba^3+3Aba^2\right)+\frac{Aa^3}{2}}{x^2}+x^4\left(\frac{Ac^3}{4}+\frac{3Bbc^2}{4}\right)+x^3\Big(Bb^2c+Ab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^3,x)
```

```
[Out] x^2*((B*b^3)/2 + (3*A*a*c^2)/2 + (3*A*b^2*c)/2 + 3*B*a*b*c) - (x*(B*a^3 + 3
*A*a^2*b) + (A*a^3)/2)/x^2 + x^4*((A*c^3)/4 + (3*B*b*c^2)/4) + x^3*(A*b*c^2
```

```
 + B*a*c^2 + B*b^2*c) + x*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c) + log
(x)*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b) + (B*c^3*x^5)/5
```

sympy [A] time = 0.60, size = 175, normalized size = 1.14

$$\frac{Bc^3x^5}{5}+3a\Big(Aac+Ab^2+Bab\Big)\log(x)+x^4\left(\frac{Ac^3}{4}+\frac{3Bbc^2}{4}\right)+x^3\Big(Abc^2+Bac^2+Bb^2c\Big)+x^2\Bigg(\frac{3Aac^2}{2}+\frac{3Ab^2c}{2}+3Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**3,x)
```

```
[Out] B*c**3*x**5/5 + 3*a*(A*a*c + A*b**2 + B*a*b)*log(x) + x**4*(A*c**3/4 + 3*B*
b*c**2/4) + x**3*(A*b*c**2 + B*a*c**2 + B*b**2*c) + x**2*(3*A*a*c**2/2 + 3*
A*b**2*c/2 + 3*B*a*b*c + B*b**3/2) + x*(6*A*a*b*c + A*b**3 + 3*B*a**2*c + 3
*B*a*b**2) + (-A*a**3 + x*(-6*A*a**2*b - 2*B*a**3))/(2*x**2)
```

3.873 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx$

Optimal. Leaf size=155

$$-\frac{a^3A}{3x^3}-\frac{a^2(aB+3Ab)}{2x^2}+\frac{3}{2}cx^2\left(aBc+Abc+b^2B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{x}+x\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+$$

```
[Out] -1/3*a^3*A/x^3-1/2*a^2*(3*A*b+B*a)/x^2-3*a*(a*b*B+A*(a*c+b^2))/x+(3*A*a*c^2
+3*A*b^2*c+6*B*a*b*c+B*b^3)*x+3/2*c*(A*b*c+B*a*c+B*b^2)*x^2+1/3*c^2*(A*c+3*
B*b)*x^3+1/4*B*c^3*x^4+(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*ln(x)
```

Rubi [A] time = 0.14, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{2x^2}-\frac{a^3A}{3x^3}+x\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{3}{2}cx^2\left(aBc+Abc+b^2B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{x}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x]
```

```
[Out] -(a^3*A)/(3*x^3) - (a^2*(3*A*b + a*B))/(2*x^2) - (3*a*(a*b*B + A*(b^2 + a*c
)))/x + (b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x + (3*c*(b^2*B + A*b*c
 + a*B*c)*x^2)/2 + (c^2*(3*b*B + A*c)*x^3)/3 + (B*c^3*x^4)/4 + (3*a*B*(b^2
+ a*c) + A*(b^3 + 6*a*b*c))*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^4}\,dx &= \int \left(b^3B\left(1+\frac{3c\left(2abB+A\left(b^2+ac\right)\right)}{b^3B}\right)+\frac{a^3A}{x^4}+\frac{a^2(3Ab+aB)}{x^3}+\frac{3a\left(abB+\right.}{}\right.\\ &= -\frac{a^3A}{3x^3}-\frac{a^2(3Ab+aB)}{2x^2}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x}+\left(b^3B+3Ab^2c+6abBc\right.\end{aligned}$$

Mathematica [A] time = 0.06, size = 160, normalized size = 1.03

$$\frac{-2a^3(2A+3Bx)-18a^2x(A(b+2cx)+2bBx)+18ax^2\left(Bcx^2(4b+cx)-2A\left(b^2-c^2x^2\right)\right)+12x^3\log(x)\left(A\left(6a\right.\right.}{12x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x]
```

```
[Out] (-2*a^3*(2*A + 3*B*x) + x^4*(12*b^3*B + 18*b^2*c*(2*A + B*x) + 6*b*c^2*x*(3
*A + 2*B*x) + c^3*x^2*(4*A + 3*B*x)) - 18*a^2*x*(2*b*B*x + A*(b + 2*c*x)) +
 18*a*x^2*(B*c*x^2*(4*b + c*x) - 2*A*(b^2 - c^2*x^2)) + 12*(3*a*B*(b^2 + a*
c) + A*(b^3 + 6*a*b*c))*x^3*Log[x])/(12*x^3)
```

fricas [A] time = 1.02, size = 168, normalized size = 1.08

$$\frac{3\,Bc^3x^7 + 4\left(3\,Bbc^2 + Ac^3\right)x^6 + 18\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 12\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 12\,(3\,Ba}{12\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*x^7 + 4*(3*B*b*c^2 + A*c^3)*x^6 + 18*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 12*(3*B*a*b^
2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3*log(x) - 4*A*a^3 - 36*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 - 6*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

giac [A] time = 0.17, size = 169, normalized size = 1.09

$$\frac{1}{4}\,Bc^3x^4+Bbc^2x^3+\frac{1}{3}\,Ac^3x^3+\frac{3}{2}\,Bb^2cx^2+\frac{3}{2}\,Bac^2x^2+\frac{3}{2}\,Abc^2x^2+Bb^3x+6\,Babcx+3\,Ab^2cx+3\,Aac^2x+(3\,Bab^2 + Ab^3 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="giac")
```

```
[Out] 1/4*B*c^3*x^4 + B*b*c^2*x^3 + 1/3*A*c^3*x^3 + 3/2*B*b^2*c*x^2 + 3/2*B*a*c^2
*x^2 + 3/2*A*b*c^2*x^2 + B*b^3*x + 6*B*a*b*c*x + 3*A*b^2*c*x + 3*A*a*c^2*x
+ (3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*log(abs(x)) - 1/6*(2*A*a^3 +
18*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

maple [A] time = 0.05, size = 179, normalized size = 1.15

$$\frac{B\,c^3x^4}{4}+\frac{A\,c^3x^3}{3}+Bb\,c^2x^3+\frac{3Ab\,c^2x^2}{2}+\frac{3Ba\,c^2x^2}{2}+\frac{3B\,b^2c\,x^2}{2}+6Aabc\ln(x)+3Aa\,c^2x+A\,b^3\ln(x)+3A\,b^2cx+3B\,a^2c\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^4,x)
```

```
[Out] 1/4*B*c^3*x^4+1/3*A*x^3*c^3+B*x^3*b*c^2+3/2*A*x^2*b*c^2+3/2*B*x^2*a*c^2+3/2
*B*x^2*b^2*c+3*A*a*c^2*x+3*A*b^2*c*x+6*a*b*B*c*x+b^3*B*x-1/3*A*a^3/x^3-3/2*
a^2/x^2*A*b-1/2*B*a^3/x^2-3*a^2/x*A*c-3*a/x*A*b^2-3*a^2/x*B*b+6*A*ln(x)*a*b
*c+A*b^3*ln(x)+3*B*ln(x)*a^2*c+3*B*ln(x)*a*b^2
```

maxima [A] time = 0.49, size = 162, normalized size = 1.05

$$\frac{1}{4}\,Bc^3x^4+\frac{1}{3}\left(3\,Bbc^2 + Ac^3\right)x^3+\frac{3}{2}\left(Bb^2c + (Ba + Ab)c^2\right)x^2+\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x+(3\,Bab^2 + Ab^3 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^4,x, algorithm="maxima")
```

```
[Out] 1/4*B*c^3*x^4 + 1/3*(3*B*b*c^2 + A*c^3)*x^3 + 3/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^2 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x + (3*B*a*b^2 + A*b^3
 + 3*(B*a^2 + 2*A*a*b)*c)*log(x) - 1/6*(2*A*a^3 + 18*(B*a^2*b + A*a*b^2 + A
*a^2*c)*x^2 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^3
```

mupad [B] time = 0.06, size = 164, normalized size = 1.06

$$\ln(x)\,\left(3\,B\,c\,a^2+3\,B\,a\,b^2+6\,A\,c\,a\,b+A\,b^3\right)-\frac{x\,\left(\frac{B\,a^3}{2}+\frac{3\,A\,b\,a^2}{2}\right)+\frac{A\,a^3}{3}+x^2\,\left(3\,B\,a^2\,b+3\,A\,c\,a^2+3\,A\,a\,b^2\right)}{x^3}+x^3\,(\frac{A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^4,x)
```

```
[Out] log(x)*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c) - (x*((B*a^3)/2 + (3*A*a
^2*b)/2) + (A*a^3)/3 + x^2*(3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b))/x^3 + x^3*(
(A*c^3)/3 + B*b*c^2) + x^2*((3*A*b*c^2)/2 + (3*B*a*c^2)/2 + (3*B*b^2*c)/2)
+ x*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) + (B*c^3*x^4)/4
```

sympy [A] time = 1.36, size = 187, normalized size = 1.21

$$\frac{Bc^3x^4}{4}+x^3\left(\frac{Ac^3}{3}+Bbc^2\right)+x^2\left(\frac{3Abc^2}{2}+\frac{3Bac^2}{2}+\frac{3Bb^2c}{2}\right)+x\left(3Aac^2+3Ab^2c+6Babc+Bb^3\right)+\Big(6Aabc+Ab^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**4,x)
```

```
[Out] B*c**3*x**4/4 + x**3*(A*c**3/3 + B*b*c**2) + x**2*(3*A*b*c**2/2 + 3*B*a*c**
2/2 + 3*B*b**2*c/2) + x*(3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3) + (6
*A*a*b*c + A*b**3 + 3*B*a**2*c + 3*B*a*b**2)*log(x) + (-2*A*a**3 + x**2*(-1
8*A*a**2*c - 18*A*a*b**2 - 18*B*a**2*b) + x*(-9*A*a**2*b - 3*B*a**3))/(6*x*
*3)
```

3.874 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^5}\,dx$

Optimal. Leaf size=156

$$-\frac{a^3A}{4x^4}-\frac{a^2(aB+3Ab)}{3x^3}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{2x^2}+3cx\left(aBc+Abc+b^2B\right)+\log(x)\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)$$

```
[Out] -1/4*a^3*A/x^4-1/3*a^2*(3*A*b+B*a)/x^3-3/2*a*(a*b*B+A*(a*c+b^2))/x^2+(-3*a*
B*(a*c+b^2)-A*(6*a*b*c+b^3))/x+3*c*(A*b*c+B*a*c+B*b^2)*x+1/2*c^2*(A*c+3*B*b
)*x^2+1/3*B*c^3*x^3+(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*ln(x)
```

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{3x^3}-\frac{a^3A}{4x^4}+\log(x)\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{2x^2}+3cx\left(aBc+Abc+b^2B\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x]
```

```
[Out] -(a^3*A)/(4*x^4) - (a^2*(3*A*b + a*B))/(3*x^3) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(2*x^2) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/x + 3*c*(b^2*B + A*b*
c + a*B*c)*x + (c^2*(3*b*B + A*c)*x^2)/2 + (B*c^3*x^3)/3 + (b^3*B + 3*A*b^2
*c + 6*a*b*B*c + 3*a*A*c^2)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^5}\,dx &= \int \left(3c\left(b^2B+Abc+aBc\right)+\frac{a^3A}{x^5}+\frac{a^2(3Ab+aB)}{x^4}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^3}+\right.\\ &= -\frac{a^3A}{4x^4}-\frac{a^2(3Ab+aB)}{3x^3}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{2x^2}-\frac{3aB\left(b^2+ac\right)+A(b^3+6a}{x}\end{aligned}$$

Mathematica [A] time = 0.06, size = 154, normalized size = 0.99

$$\frac{-3a^3A-4a^2x(aB+3Ab)+36cx^5\left(aBc+Abc+b^2B\right)-18ax^2\left(A\left(ac+b^2\right)+abB\right)+12x^4\log(x)(3aAc^2+6abB}{12x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x]
```

```
[Out] (-3*a^3*A - 4*a^2*(3*A*b + a*B)*x - 18*a*(a*b*B + A*(b^2 + a*c))*x^2 - 12*(
3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^3 + 36*c*(b^2*B + A*b*c + a*B*c)*x
^5 + 6*c^2*(3*b*B + A*c)*x^6 + 4*B*c^3*x^7 + 12*(b^3*B + 3*A*b^2*c + 6*a*b*
B*c + 3*a*A*c^2)*x^4*Log[x])/(12*x^4)
```

fricas [A] time = 1.01, size = 168, normalized size = 1.08

$$\frac{4\,Bc^{3}x^{7} + 6\left(3\,Bbc^{2} + Ac^{3}\right)x^{6} + 36\left(Bb^{2}c + (Ba + Ab)c^{2}\right)x^{5} + 12\left(Bb^{3} + 3\,Aac^{2} + 3\left(2\,Bab + Ab^{2}\right)c\right)x^{4}\log(x) -}{12\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*x^7 + 6*(3*B*b*c^2 + A*c^3)*x^6 + 36*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4*log(x) - 3*A*a
^3 - 12*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 18*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 - 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

giac [A] time = 0.18, size = 166, normalized size = 1.06

$$\frac{1}{3}\,Bc^{3}x^{3}+\frac{3}{2}\,Bbc^{2}x^{2}+\frac{1}{2}\,Ac^{3}x^{2}+3\,Bb^{2}cx+3\,Bac^{2}x+3\,Abc^{2}x+\left(Bb^{3} + 6\,Babc + 3\,Ab^{2}c + 3\,Aac^{2}\right)\log\left(|x|\right)-\frac{3\,Aa^{3} +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="giac")
```

```
[Out] 1/3*B*c^3*x^3 + 3/2*B*b*c^2*x^2 + 1/2*A*c^3*x^2 + 3*B*b^2*c*x + 3*B*a*c^2*x
 + 3*A*b*c^2*x + (B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*log(abs(x)) -
1/12*(3*A*a^3 + 12*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 18*(B*
a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

maple [A] time = 0.07, size = 183, normalized size = 1.17

$$\frac{B\,c^{3}x^{3}}{3}+\frac{A\,c^{3}x^{2}}{2}+\frac{3Bb\,c^{2}x^{2}}{2}+3Aa\,c^{2}\ln(x)+3A\,b^{2}c\ln(x)+3Ab\,c^{2}x+6Babc\ln(x)+3Ba\,c^{2}x+B\,b^{3}\ln(x)+3B\,b^{2}cx-\frac{6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^5,x)
```

```
[Out] 1/3*B*c^3*x^3+1/2*A*x^2*c^3+3/2*B*x^2*b*c^2+3*A*b*c^2*x+3*B*a*c^2*x+3*B*b^2
*c*x-1/4*a^3*A/x^4-a^2/x^3*A*b-1/3*a^3/x^3*B-3/2*a^2/x^2*A*c-3/2*a/x^2*A*b^
2-3/2*a^2/x^2*B*b-6/x*A*a*b*c-A*b^3/x-3/x*B*a^2*c-3/x*B*a*b^2+3*A*ln(x)*a*c
^2+3*A*ln(x)*b^2*c+6*B*ln(x)*a*b*c+B*ln(x)*b^3
```

maxima [A] time = 0.49, size = 163, normalized size = 1.04

$$\frac{1}{3}\,Bc^{3}x^{3}+\frac{1}{2}\left(3\,Bbc^{2} + Ac^{3}\right)x^{2}+3\left(Bb^{2}c + (Ba + Ab)c^{2}\right)x+\left(Bb^{3} + 3\,Aac^{2} + 3\left(2\,Bab + Ab^{2}\right)c\right)\log(x)-\frac{3\,Aa^{3} + 1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^5,x, algorithm="maxima")
```

```
[Out] 1/3*B*c^3*x^3 + 1/2*(3*B*b*c^2 + A*c^3)*x^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)
*x + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*log(x) - 1/12*(3*A*a^3 + 1
2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 18*(B*a^2*b + A*a*b^2 +
 A*a^2*c)*x^2 + 4*(B*a^3 + 3*A*a^2*b)*x)/x^4
```

mupad [B] time = 1.17, size = 164, normalized size = 1.05

$$\ln(x)\,\left(B\,b^{3}+3\,A\,b^{2}\,c+6\,B\,a\,b\,c+3\,A\,a\,c^{2}\right)-\frac{x^{3}\,\left(3\,B\,c\,a^{2}+3\,B\,a\,b^{2}+6\,A\,c\,a\,b+A\,b^{3}\right)+x\,\left(\frac{B\,a^{3}}{3}+A\,b\,a^{2}\right)+\frac{A}{4}}{x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^5,x)
```

```
[Out] log(x)*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) - (x^3*(A*b^3 + 3*B*a*b^
2 + 3*B*a^2*c + 6*A*a*b*c) + x*((B*a^3)/3 + A*a^2*b) + (A*a^3)/4 + x^2*((3*
A*a*b^2)/2 + (3*A*a^2*c)/2 + (3*B*a^2*b)/2))/x^4 + x*(3*A*b*c^2 + 3*B*a*c^2
 + 3*B*b^2*c) + x^2*((A*c^3)/2 + (3*B*b*c^2)/2) + (B*c^3*x^3)/3
```

sympy [A] time = 4.21, size = 189, normalized size = 1.21

$$\frac{Bc^3x^3}{3}+x^2\left(\frac{Ac^3}{2}+\frac{3Bbc^2}{2}\right)+x\left(3Abc^2+3Bac^2+3Bb^2c\right)+\left(3Aac^2+3Ab^2c+6Babc+Bb^3\right)\log(x)+\frac{-3Aa^3+x^3(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**5,x)
```

```
[Out] B*c**3*x**3/3 + x**2*(A*c**3/2 + 3*B*b*c**2/2) + x*(3*A*b*c**2 + 3*B*a*c**2
 + 3*B*b**2*c) + (3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3)*log(x) + (-
3*A*a**3 + x**3*(-72*A*a*b*c - 12*A*b**3 - 36*B*a**2*c - 36*B*a*b**2) + x**
2*(-18*A*a**2*c - 18*A*a*b**2 - 18*B*a**2*b) + x*(-12*A*a**2*b - 4*B*a**3))
/(12*x**4)
```

3.875 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^6} dx$

Optimal. Leaf size=154

$$-\frac{a^3A}{5x^5}-\frac{a^2(aB+3Ab)}{4x^4}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{x^3}+3c\log(x)\left(aBc+Abc+b^2B\right)-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{x}-$$

```
[Out] -1/5*a^3*A/x^5-1/4*a^2*(3*A*b+B*a)/x^4-a*(a*b*B+A*(a*c+b^2))/x^3+1/2*(-3*a*
B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^2+(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-B*b^3)/x+c
^2*(A*c+3*B*b)*x+1/2*B*c^3*x^2+3*c*(A*b*c+B*a*c+B*b^2)*ln(x)
```

Rubi [A] time = 0.12, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{4x^4}-\frac{a^3A}{5x^5}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{x}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{x^3}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{2x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -(a^3*A)/(5*x^5) - (a^2*(3*A*b + a*B))/(4*x^4) - (a*(a*b*B + A*(b^2 + a*c))
)/x^3 - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(2*x^2) - (b^3*B + 3*A*b^2*
c + 6*a*b*B*c + 3*a*A*c^2)/x + c^2*(3*b*B + A*c)*x + (B*c^3*x^2)/2 + 3*c*(b
^2*B + A*b*c + a*B*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^6} dx = \int \left(c^2(3bB+Ac)+\frac{a^3A}{x^6}+\frac{a^2(3Ab+aB)}{x^5}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^4}+\frac{3aB (}{}\right.$$

$$=-\frac{a^3A}{5x^5}-\frac{a^2(3Ab+aB)}{4x^4}-\frac{a\left(abB+A\left(b^2+ac\right)\right)}{x^3}-\frac{3aB\left(b^2+ac\right)+A (b^3+6}{2x^2}$$

Mathematica [A] time = 0.09, size = 161, normalized size = 1.05

$$-\frac{a^3(4A+5Bx)+5a^2x\left(3Ab+4Acx+4bBx+6Bcx^2\right)+10ax^2\left(2A\left(b^2+3bcx+3c^2x^2\right)+3bBx(b+4cx)\right)-6}{20x^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x]
```

```
[Out] -1/20*(a^3*(4*A + 5*B*x) + 5*a^2*x*(3*A*b + 4*b*B*x + 4*A*c*x + 6*B*c*x^2)
+ 10*a*x^2*(3*b*B*x*(b + 4*c*x) + 2*A*(b^2 + 3*b*c*x + 3*c^2*x^2)) + 10*x^3
*(A*(b^3 + 6*b^2*c*x - 2*c^3*x^3) - B*x*(-2*b^3 + 6*b*c^2*x^2 + c^3*x^3)) -
 60*c*(b^2*B + A*b*c + a*B*c)*x^5*Log[x])/x^5
```

fricas [A] time = 0.78, size = 168, normalized size = 1.09

$$\frac{10\,Bc^3x^7 + 20\left(3\,Bbc^2 + Ac^3\right)x^6 + 60\left(Bb^2c + (Ba + Ab)c^2\right)x^5\log(x) - 20\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 -}{20\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*x^7 + 20*(3*B*b*c^2 + A*c^3)*x^6 + 60*(B*b^2*c + (B*a + A*b)
*c^2)*x^5*log(x) - 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 4*A
*a^3 - 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 20*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 - 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

giac [A] time = 0.16, size = 162, normalized size = 1.05

$$\frac{1}{2}\,Bc^3x^2 + 3\,Bbc^2x + Ac^3x + 3\left(Bb^2c + Bac^2 + Abc^2\right)\log\left(|x|\right) - \frac{20\left(Bb^3 + 6\,Babc + 3\,Ab^2c + 3\,Aac^2\right)x^4 + 4\,Aa^3 + 10}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="giac")
```

```
[Out] 1/2*B*c^3*x^2 + 3*B*b*c^2*x + A*c^3*x + 3*(B*b^2*c + B*a*c^2 + A*b*c^2)*log
(abs(x)) - 1/20*(20*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 + 4*A*a
^3 + 10*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 20*(B*a^2*b + A*a
*b^2 + A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

maple [A] time = 0.05, size = 186, normalized size = 1.21

$$\frac{B\,c^3x^2}{2} + 3Ab\,c^2\ln(x) + A\,c^3x + 3Ba\,c^2\ln(x) + 3B\,b^2c\ln(x) + 3Bb\,c^2x - \frac{3Aa\,c^2}{x} - \frac{3A\,b^2c}{x} - \frac{6Babc}{x} - \frac{B\,b^3}{x} - \frac{3Aabc}{x^2} - \frac{A\,b^3}{2x^2} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^6,x)
```

```
[Out] 1/2*B*c^3*x^2+A*c^3*x+3*B*b*c^2*x-1/5*a^3*A/x^5-3/4*a^2/x^4*A*b-1/4*a^3/x^4
*B-a^2/x^3*A*c-a/x^3*A*b^2-a^2/x^3*B*b-3/x^2*A*a*b*c-1/2*A*b^3/x^2-3/2/x^2*
B*a^2*c-3/2/x^2*B*a*b^2-3/x*A*a*c^2-3/x*A*b^2*c-6/x*a*b*B*c-1/x*b^3*B+3*A*l
n(x)*b*c^2+3*B*ln(x)*a*c^2+3*B*ln(x)*b^2*c
```

maxima [A] time = 0.62, size = 163, normalized size = 1.06

$$\frac{1}{2}\,Bc^3x^2 + \left(3\,Bbc^2 + Ac^3\right)x + 3\left(Bb^2c + (Ba + Ab)c^2\right)\log(x) - \frac{20\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 4\,Aa^3 + 1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^6,x, algorithm="maxima")
```

```
[Out] 1/2*B*c^3*x^2 + (3*B*b*c^2 + A*c^3)*x + 3*(B*b^2*c + (B*a + A*b)*c^2)*log(x
) - 1/20*(20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 4*A*a^3 + 10
*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 20*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^5
```

mupad [B] time = 1.18, size = 162, normalized size = 1.05

$$x\,\left(A\,c^3 + 3\,B\,b\,c^2\right) - \frac{x^3\,\left(\frac{3\,B\,c\,a^2}{2} + \frac{3\,B\,a\,b^2}{2} + 3\,A\,c\,a\,b + \frac{A\,b^3}{2}\right) + x^4\,\left(B\,b^3 + 3\,A\,b^2\,c + 6\,B\,a\,b\,c + 3\,A\,a\,c^2\right) + x\,\left(\frac{B\,a^3}{4} +\right.}{x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^6,x)
```

```
[Out] x*(A*c^3 + 3*B*b*c^2) - (x^3*((A*b^3)/2 + (3*B*a*b^2)/2 + (3*B*a^2*c)/2 + 3
*A*a*b*c) + x^4*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c) + x*((B*a^3)/4
+ (3*A*a^2*b)/4) + (A*a^3)/5 + x^2*(A*a*b^2 + A*a^2*c + B*a^2*b))/x^5 + log
(x)*(3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c) + (B*c^3*x^2)/2
```

sympy [A] time = 11.62, size = 182, normalized size = 1.18

$$\frac{Bc^3x^2}{2}+3c\left(Abc+Bac+Bb^2\right)\log(x)+x\left(Ac^3+3Bbc^2\right)+\frac{-4Aa^3+x^4\left(-60Aac^2-60Ab^2c-120Babc-20Bb^3\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**6,x)
```

```
[Out] B*c**3*x**2/2 + 3*c*(A*b*c + B*a*c + B*b**2)*log(x) + x*(A*c**3 + 3*B*b*c**
2) + (-4*A*a**3 + x**4*(-60*A*a*c**2 - 60*A*b**2*c - 120*B*a*b*c - 20*B*b**
3) + x**3*(-60*A*a*b*c - 10*A*b**3 - 30*B*a**2*c - 30*B*a*b**2) + x**2*(-20
*A*a**2*c - 20*A*a*b**2 - 20*B*a**2*b) + x*(-15*A*a**2*b - 5*B*a**3))/(20*x
**5)
```

3.876 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^7}\,dx$

Optimal. Leaf size=155

$$-\frac{a^3A}{6x^6}-\frac{a^2(aB+3Ab)}{5x^5}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{4x^4}-\frac{3c\left(aBc+Abc+b^2B\right)}{x}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{2x^2}-\frac{A\left(6abc\right.}{}$$

```
[Out] -1/6*a^3*A/x^6-1/5*a^2*(3*A*b+B*a)/x^5-3/4*a*(a*b*B+A*(a*c+b^2))/x^4+1/3*(-
3*a*B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^3+1/2*(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-B*
b^3)/x^2-3*c*(A*b*c+B*a*c+B*b^2)/x+B*c^3*x+c^2*(A*c+3*B*b)*ln(x)
```

Rubi **[A]** time = 0.11, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{5x^5}-\frac{a^3A}{6x^6}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{2x^2}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{4x^4}-\frac{A\left(6abc+b^3\right)+3aB\left(ac+b^2\right)}{3x^3}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -(a^3*A)/(6*x^6) - (a^2*(3*A*b + a*B))/(5*x^5) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(4*x^4) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(3*x^3) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(2*x^2) - (3*c*(b^2*B + A*b*c + a*B*c))/x
+ B*c^3*x + c^2*(3*b*B + A*c)*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^7}\,dx &= \int \left(Bc^3+\frac{a^3A}{x^7}+\frac{a^2(3Ab+aB)}{x^6}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^5}+\frac{3aB\left(b^2+ac\right)+A}{x^4}\right.\\ &= -\frac{a^3A}{6x^6}-\frac{a^2(3Ab+aB)}{5x^5}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{4x^4}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6a\right.}{3x^3}\end{aligned}$$

Mathematica **[A]** time = 0.09, size = 169, normalized size = 1.09

$$-\frac{2a^3(5A+6Bx)+3a^2x(3A(4b+5cx)+5Bx(3b+4cx))+15ax^2\left(A\left(3b^2+8bcx+6c^2x^2\right)+4Bx\left(b^2+3bcx+3c\right.\right.}{60x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x]
```

```
[Out] -1/60*(2*a^3*(5*A + 6*B*x) + 3*a^2*x*(5*B*x*(3*b + 4*c*x) + 3*A*(4*b + 5*c*
x)) + 15*a*x^2*(4*B*x*(b^2 + 3*b*c*x + 3*c^2*x^2) + A*(3*b^2 + 8*b*c*x + 6*
c^2*x^2)) + 10*x^3*(A*b*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*B*x*(b^3 + 6*b^2
*c*x - 2*c^3*x^3)) - 60*c^2*(3*b*B + A*c)*x^6*Log[x])/x^6
```

fricas [**A**] time = 0.57, size = 168, normalized size = 1.08

$$\frac{60\,Bc^3x^7+60\left(3\,Bbc^2+Ac^3\right)x^6\log(x)-180\left(Bb^2c+(Ba+Ab)c^2\right)x^5-30\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)}{60\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*x^7 + 60*(3*B*b*c^2 + A*c^3)*x^6*log(x) - 180*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 - 30*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 10
*A*a^3 - 20*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 45*(B*a^2*b +
 A*a*b^2 + A*a^2*c)*x^2 - 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

giac [**A**] time = 0.15, size = 162, normalized size = 1.05

$$Bc^3x+\left(3\,Bbc^2+Ac^3\right)\log\left(|x|\right)-\frac{180\left(Bb^2c+Bac^2+Abc^2\right)x^5+30\left(Bb^3+6\,Babc+3\,Ab^2c+3\,Aac^2\right)x^4+10\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="giac")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(abs(x)) - 1/60*(180*(B*b^2*c + B*a*c^2 +
A*b*c^2)*x^5 + 30*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 + 10*A*a^
3 + 20*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 45*(B*a^2*b + A*a*
b^2 + A*a^2*c)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

maple [**A**] time = 0.06, size = 188, normalized size = 1.21

$$A\,c^3\ln(x)+3Bb\,c^2\ln(x)+B\,c^3x-\frac{3Ab\,c^2}{x}-\frac{3Ba\,c^2}{x}-\frac{3B\,b^2c}{x}-\frac{3Aa\,c^2}{2x^2}-\frac{3A\,b^2c}{2x^2}-\frac{3Babc}{x^2}-\frac{B\,b^3}{2x^2}-\frac{2Aabc}{x^3}-\frac{A\,b^3}{3x^3}-\frac{B\,a^2c}{x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^7,x)
```

```
[Out] B*c^3*x-3/5*a^2/x^5*A*b-1/5*a^3/x^5*B-3/4*a^2/x^4*A*c-3/4*a/x^4*A*b^2-3/4*a
^2/x^4*B*b-2/x^3*A*a*b*c-1/3*A*b^3/x^3-1/x^3*B*a^2*c-1/x^3*B*a*b^2-3/2/x^2*
A*a*c^2-3/2/x^2*A*b^2*c-3/x^2*a*b*B*c-1/2/x^2*b^3*B-1/6*a^3*A/x^6-3*c^2/x*A
*b-3*c^2/x*a*B-3*c/x*b^2*B+A*ln(x)*c^3+3*B*ln(x)*b*c^2
```

maxima [**A**] time = 0.54, size = 162, normalized size = 1.05

$$Bc^3x+\left(3\,Bbc^2+Ac^3\right)\log(x)-\frac{180\left(Bb^2c+(Ba+Ab)c^2\right)x^5+30\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4+10\,Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^7,x, algorithm="maxima")
```

```
[Out] B*c^3*x + (3*B*b*c^2 + A*c^3)*log(x) - 1/60*(180*(B*b^2*c + (B*a + A*b)*c^2
)*x^5 + 30*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 10*A*a^3 + 20*
(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 45*(B*a^2*b + A*a*b^2 + A
*a^2*c)*x^2 + 12*(B*a^3 + 3*A*a^2*b)*x)/x^6
```

mupad [**B**] time = 0.09, size = 163, normalized size = 1.05

$$\ln(x)\,\left(A\,c^3+3\,B\,b\,c^2\right)-\frac{x^3\,\left(B\,c\,a^2+B\,a\,b^2+2\,A\,c\,a\,b+\frac{A\,b^3}{3}\right)+x^4\,\left(\frac{B\,b^3}{2}+\frac{3\,A\,b^2\,c}{2}+3\,B\,a\,b\,c+\frac{3\,A\,a\,c^2}{2}\right)+x\,\left(\frac{B\,a^3}{5}\right.}{x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^7,x)
```

```
[Out] log(x)*(A*c^3 + 3*B*b*c^2) - (x^3*((A*b^3)/3 + B*a*b^2 + B*a^2*c + 2*A*a*b*
c) + x^4*((B*b^3)/2 + (3*A*a*c^2)/2 + (3*A*b^2*c)/2 + 3*B*a*b*c) + x*((B*a^
3)/5 + (3*A*a^2*b)/5) + (A*a^3)/6 + x^2*((3*A*a*b^2)/4 + (3*A*a^2*c)/4 + (3
*B*a^2*b)/4) + x^5*(3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c))/x^6 + B*c^3*x
```

sympy [A] time = 28.65, size = 187, normalized size = 1.21

$$Bc^3x+c^2\left(Ac+3Bb\right)\log\left(x\right)+\frac{-10Aa^3+x^5\left(-180Abc^2-180Bac^2-180Bb^2c\right)+x^4\left(-90Aac^2-90Ab^2c-180Bab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**7,x)
```

```
[Out] B*c**3*x + c**2*(A*c + 3*B*b)*log(x) + (-10*A*a**3 + x**5*(-180*A*b*c**2 -
180*B*a*c**2 - 180*B*b**2*c) + x**4*(-90*A*a*c**2 - 90*A*b**2*c - 180*B*a*b
*c - 30*B*b**3) + x**3*(-120*A*a*b*c - 20*A*b**3 - 60*B*a**2*c - 60*B*a*b**
2) + x**2*(-45*A*a**2*c - 45*A*a*b**2 - 45*B*a**2*b) + x*(-36*A*a**2*b - 12
*B*a**3))/(60*x**6)
```

3.877 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^8}\,dx$

Optimal. Leaf size=160

$$-\frac{a^3A}{7x^7}-\frac{a^2(aB+3Ab)}{6x^6}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{5x^5}-\frac{3c\left(aBc+Abc+b^2B\right)}{2x^2}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{3x^3}-A\left(6$$

```
[Out] -1/7*a^3*A/x^7-1/6*a^2*(3*A*b+B*a)/x^6-3/5*a*(a*b*B+A*(a*c+b^2))/x^5+1/4*(-
3*a*B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^4+1/3*(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-B*
b^3)/x^3-3/2*c*(A*b*c+B*a*c+B*b^2)/x^2-c^2*(A*c+3*B*b)/x+B*c^3*ln(x)
```

Rubi [A] time = 0.11, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{6x^6}-\frac{a^3A}{7x^7}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{3x^3}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{5x^5}-\frac{3c\left(aBc+Abc+b^2B\right)}{2x^2}-A\left(6$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -(a^3*A)/(7*x^7) - (a^2*(3*A*b + a*B))/(6*x^6) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(5*x^5) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(4*x^4) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(3*x^3) - (3*c*(b^2*B + A*b*c + a*B*c))/(2
*x^2) - (c^2*(3*b*B + A*c))/x + B*c^3*Log[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^8}\,dx &= \int \left(\frac{a^3A}{x^8}+\frac{a^2(3Ab+aB)}{x^7}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^6}+\frac{3aB\left(b^2+ac\right)+A\left(b\right.}{x^5}\right.\\ &= -\frac{a^3A}{7x^7}-\frac{a^2(3Ab+aB)}{6x^6}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{5x^5}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{4x^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 175, normalized size = 1.09

$$-\frac{10a^3(6A+7Bx)+21a^2x(2A(5b+6cx)+3Bx(4b+5cx))+21ax^2\left(2A\left(6b^2+15bcx+10c^2x^2\right)+5Bx\left(3b^2+\right.\right.}{42}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x]
```

```
[Out] -1/420*(10*a^3*(6*A + 7*B*x) + 21*a^2*x*(3*B*x*(4*b + 5*c*x) + 2*A*(5*b + 6
*c*x)) + 21*a*x^2*(5*B*x*(3*b^2 + 8*b*c*x + 6*c^2*x^2) + 2*A*(6*b^2 + 15*b*
c*x + 10*c^2*x^2)) + 35*x^3*(2*b*B*x*(2*b^2 + 9*b*c*x + 18*c^2*x^2) + 3*A*(
b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^3)) - 420*B*c^3*x^7*Log[x])/x^7
```

fricas [A] time = 0.79, size = 168, normalized size = 1.05

$$\frac{420\,Bc^3x^7\log(x) - 420\left(3\,Bbc^2 + Ac^3\right)x^6 - 630\left(Bb^2c + (Ba + Ab)c^2\right)x^5 - 140\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right.}{420}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="fricas")
```

```
[Out] 1/420*(420*B*c^3*x^7*log(x) - 420*(3*B*b*c^2 + A*c^3)*x^6 - 630*(B*b^2*c +
(B*a + A*b)*c^2)*x^5 - 140*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4
- 60*A*a^3 - 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 252*(B*a
^2*b + A*a*b^2 + A*a^2*c)*x^2 - 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

giac [A] time = 0.19, size = 165, normalized size = 1.03

$$Bc^3\log\left(|x|\right) - \frac{420\left(3\,Bbc^2 + Ac^3\right)x^6 + 630\left(Bb^2c + Bac^2 + Abc^2\right)x^5 + 140\left(Bb^3 + 6\,Babc + 3\,Ab^2c + 3\,Aac^2\right)x^4 +}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="giac")
```

```
[Out] B*c^3*log(abs(x)) - 1/420*(420*(3*B*b*c^2 + A*c^3)*x^6 + 630*(B*b^2*c + B*a
*c^2 + A*b*c^2)*x^5 + 140*(B*b^3 + 6*B*a*b*c + 3*A*b^2*c + 3*A*a*c^2)*x^4 +
 60*A*a^3 + 105*(3*B*a*b^2 + A*b^3 + 3*B*a^2*c + 6*A*a*b*c)*x^3 + 252*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

maple [A] time = 0.04, size = 192, normalized size = 1.20

$$B\,c^3\ln(x) - \frac{A\,c^3}{x} - \frac{3Bb\,c^2}{x} - \frac{3Ab\,c^2}{2x^2} - \frac{3Ba\,c^2}{2x^2} - \frac{3B\,b^2c}{2x^2} - \frac{Aa\,c^2}{x^3} - \frac{A\,b^2c}{x^3} - \frac{2Babc}{x^3} - \frac{B\,b^3}{3x^3} - \frac{3Aabc}{2x^4} - \frac{A\,b^3}{4x^4} - \frac{3B\,a^2c}{4x^4} - \frac{3Ba\,b^2}{4x^4} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^8,x)
```

```
[Out] -3/5*a^2/x^5*A*c-3/5*a/x^5*A*b^2-3/5*a^2/x^5*B*b-3/2/x^4*A*a*b*c-1/4*A*b^3/
x^4-3/4/x^4*B*a^2*c-3/4/x^4*B*a*b^2-1/x^3*A*a*c^2-1/x^3*A*b^2*c-2/x^3*a*b*B
*c-1/3/x^3*b^3*B-3/2*c^2/x^2*A*b-3/2*c^2/x^2*a*B-3/2*c/x^2*b^2*B-1/7*a^3*A/
x^7-1/2*a^2/x^6*A*b-1/6*a^3/x^6*B-c^3/x*A-3*c^2/x*b*B+B*c^3*ln(x)
```

maxima [A] time = 0.54, size = 165, normalized size = 1.03

$$Bc^3\log(x) - \frac{420\left(3\,Bbc^2 + Ac^3\right)x^6 + 630\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 140\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 + 6}{42}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^8,x, algorithm="maxima")
```

```
[Out] B*c^3*log(x) - 1/420*(420*(3*B*b*c^2 + A*c^3)*x^6 + 630*(B*b^2*c + (B*a + A
*b)*c^2)*x^5 + 140*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 60*A*a
^3 + 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 252*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 70*(B*a^3 + 3*A*a^2*b)*x)/x^7
```

mupad [B] time = 1.22, size = 165, normalized size = 1.03

$$B\,c^3\,\ln(x) - \frac{x^3\left(\frac{3\,B\,c\,a^2}{4} + \frac{3\,B\,a\,b^2}{4} + \frac{3\,A\,c\,a\,b}{2} + \frac{A\,b^3}{4}\right) + x^4\left(\frac{B\,b^3}{3} + A\,b^2\,c + 2\,B\,a\,b\,c + A\,a\,c^2\right) + x\left(\frac{B\,a^3}{6} + \frac{A\,b\,a^2}{2}\right) + \frac{A\,a^3}{7}}{x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^8,x)
```

```
[Out] B*c^3*log(x) - (x^3*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c
)/2) + x^4*((B*b^3)/3 + A*a*c^2 + A*b^2*c + 2*B*a*b*c) + x*((B*a^3)/6 + (A*
a^2*b)/2) + (A*a^3)/7 + x^6*(A*c^3 + 3*B*b*c^2) + x^2*((3*A*a*b^2)/5 + (3*A
*a^2*c)/5 + (3*B*a^2*b)/5) + x^5*((3*A*b*c^2)/2 + (3*B*a*c^2)/2 + (3*B*b^2*
c)/2))/x^7
```

sympy [A] time = 57.14, size = 194, normalized size = 1.21

$$Bc^3\log(x)+\frac{-60Aa^3+x^6\left(-420Ac^3-1260Bbc^2\right)+x^5\left(-630Abc^2-630Bac^2-630Bb^2c\right)+x^4\left(-420Aac^2-4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**8,x)
```

```
[Out] B*c**3*log(x) + (-60*A*a**3 + x**6*(-420*A*c**3 - 1260*B*b*c**2) + x**5*(-6
30*A*b*c**2 - 630*B*a*c**2 - 630*B*b**2*c) + x**4*(-420*A*a*c**2 - 420*A*b*
*2*c - 840*B*a*b*c - 140*B*b**3) + x**3*(-630*A*a*b*c - 105*A*b**3 - 315*B*
a**2*c - 315*B*a*b**2) + x**2*(-252*A*a**2*c - 252*A*a*b**2 - 252*B*a**2*b)
 + x*(-210*A*a**2*b - 70*B*a**3))/(420*x**7)
```

3.878 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx$

Optimal. Leaf size=162

$$-\frac{a^3A}{8x^8}-\frac{a^2(aB+3Ab)}{7x^7}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{2x^6}-\frac{c\left(aBc+Abc+b^2B\right)}{x^3}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{4x^4}-A\left(6abc+\right.$$

```
[Out] -1/8*a^3*A/x^8-1/7*a^2*(3*A*b+B*a)/x^7-1/2*a*(a*b*B+A*(a*c+b^2))/x^6+1/5*(-
3*a*B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^5+1/4*(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-B*
b^3)/x^4-c*(A*b*c+B*a*c+B*b^2)/x^3-1/2*c^2*(A*c+3*B*b)/x^2-B*c^3/x
```

Rubi [A] time = 0.10, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{7x^7}-\frac{a^3A}{8x^8}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{4x^4}-\frac{a\left(A\left(ac+b^2\right)+abB\right)}{2x^6}-\frac{c\left(aBc+Abc+b^2B\right)}{x^3}-A\left(6abc+\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -(a^3*A)/(8*x^8) - (a^2*(3*A*b + a*B))/(7*x^7) - (a*(a*b*B + A*(b^2 + a*c))
)/(2*x^6) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(5*x^5) - (b^3*B + 3*A*
b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(4*x^4) - (c*(b^2*B + A*b*c + a*B*c))/x^3 -
(c^2*(3*b*B + A*c))/(2*x^2) - (B*c^3)/x
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^9}\,dx &= \int \left(\frac{a^3A}{x^9}+\frac{a^2(3Ab+aB)}{x^8}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^7}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^6}\right.\\ &= -\frac{a^3A}{8x^8}-\frac{a^2(3Ab+aB)}{7x^7}-\frac{a\left(abB+A\left(b^2+ac\right)\right)}{2x^6}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6ab\right.}{5x^5}\end{aligned}$$

Mathematica [A] time = 0.06, size = 172, normalized size = 1.06

$$-\frac{5a^3(7A+8Bx)+4a^2x(5A(6b+7cx)+7Bx(5b+6cx))+14ax^2\left(A\left(10b^2+24bcx+15c^2x^2\right)+2Bx\left(6b^2+15bc\right.\right.}{280x^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x]
```

```
[Out] -1/280*(5*a^3*(7*A + 8*B*x) + 4*a^2*x*(7*B*x*(5*b + 6*c*x) + 5*A*(6*b + 7*c
*x)) + 14*a*x^2*(2*B*x*(6*b^2 + 15*b*c*x + 10*c^2*x^2) + A*(10*b^2 + 24*b*c
*x + 15*c^2*x^2)) + 14*x^3*(5*B*x*(b^3 + 4*b^2*c*x + 6*b*c^2*x^2 + 4*c^3*x^
3) + A*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2 + 10*c^3*x^3)))/x^8
```

fricas [A]   time = 0.68, size = 166, normalized size = 1.02

$$-\frac{280\,Bc^{3}x^{7}+140\left(3\,Bbc^{2}+Ac^{3}\right)x^{6}+280\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{5}+70\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{4}}{280}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 140*(3*B*b*c^2 + A*c^3)*x^6 + 280*(B*b^2*c + (B*a +
 A*b)*c^2)*x^5 + 70*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 35*A*
a^3 + 56*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 140*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

giac [A]   time = 0.17, size = 191, normalized size = 1.18

$$-\frac{280\,Bc^{3}x^{7}+420\,Bbc^{2}x^{6}+140\,Ac^{3}x^{6}+280\,Bb^{2}cx^{5}+280\,Bac^{2}x^{5}+280\,Abc^{2}x^{5}+70\,Bb^{3}x^{4}+420\,Babcx^{4}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 420*B*b*c^2*x^6 + 140*A*c^3*x^6 + 280*B*b^2*c*x^5 +
 280*B*a*c^2*x^5 + 280*A*b*c^2*x^5 + 70*B*b^3*x^4 + 420*B*a*b*c*x^4 + 210*A
*b^2*c*x^4 + 210*A*a*c^2*x^4 + 168*B*a*b^2*x^3 + 56*A*b^3*x^3 + 168*B*a^2*c
*x^3 + 336*A*a*b*c*x^3 + 140*B*a^2*b*x^2 + 140*A*a*b^2*x^2 + 140*A*a^2*c*x^
2 + 40*B*a^3*x + 120*A*a^2*b*x + 35*A*a^3)/x^8
```

maple [A]   time = 0.05, size = 154, normalized size = 0.95

$$-\frac{B\,c^{3}}{x}-\frac{(Ac+3bB)\,c^{2}}{2x^{2}}-\frac{\left(Abc+aBc+b^{2}B\right)c}{x^{3}}-\frac{A\,a^{3}}{8x^{8}}-\frac{3Aa\,c^{2}+3A\,b^{2}c+6abBc+b^{3}B}{4x^{4}}-\frac{(3Ab+Ba)\,a^{2}}{7x^{7}}-\frac{\left(Aac+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^9,x)
```

```
[Out] -1/5*(6*A*a*b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/x^5-1/4*(3*A*a*c^2+3*A*b^2*c+6*B
*a*b*c+B*b^3)/x^4-c*(A*b*c+B*a*c+B*b^2)/x^3-1/8*a^3*A/x^8-1/2*(A*c+3*B*b)*c
^2/x^2-1/7*a^2*(3*A*b+B*a)/x^7-1/2*a*(A*a*c+A*b^2+B*a*b)/x^6-B*c^3/x
```

maxima [A]   time = 0.56, size = 166, normalized size = 1.02

$$-\frac{280\,Bc^{3}x^{7}+140\left(3\,Bbc^{2}+Ac^{3}\right)x^{6}+280\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{5}+70\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{4}}{280}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*x^7 + 140*(3*B*b*c^2 + A*c^3)*x^6 + 280*(B*b^2*c + (B*a +
 A*b)*c^2)*x^5 + 70*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 35*A*
a^3 + 56*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 140*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 + 40*(B*a^3 + 3*A*a^2*b)*x)/x^8
```

mupad [B]   time = 1.18, size = 165, normalized size = 1.02

$$-\frac{x^{3}\left(\frac{3\,B\,c\,a^{2}}{5}+\frac{3\,B\,a\,b^{2}}{5}+\frac{6\,A\,c\,a\,b}{5}+\frac{A\,b^{3}}{5}\right)+x^{4}\left(\frac{B\,b^{3}}{4}+\frac{3\,A\,b^{2}\,c}{4}+\frac{3\,B\,a\,b\,c}{2}+\frac{3\,A\,a\,c^{2}}{4}\right)+x\left(\frac{B\,a^{3}}{7}+\frac{3\,A\,b\,a^{2}}{7}\right)+\frac{A\,a^{3}}{8}+x^{6}\left(\right.}{x^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^9,x)
```

```
[Out] -(x^3*((A*b^3)/5 + (3*B*a*b^2)/5 + (3*B*a^2*c)/5 + (6*A*a*b*c)/5) + x^4*((B
*b^3)/4 + (3*A*a*c^2)/4 + (3*A*b^2*c)/4 + (3*B*a*b*c)/2) + x*((B*a^3)/7 + (
3*A*a^2*b)/7) + (A*a^3)/8 + x^6*((A*c^3)/2 + (3*B*b*c^2)/2) + x^2*((A*a*b^2
)/2 + (A*a^2*c)/2 + (B*a^2*b)/2) + x^5*(A*b*c^2 + B*a*c^2 + B*b^2*c) + B*c^
3*x^7)/x^8
```

sympy [A] time = 119.40, size = 196, normalized size = 1.21

$$-35Aa^3 - 280Bc^3x^7 + x^6\left(-140Ac^3 - 420Bbc^2\right) + x^5\left(-280Abc^2 - 280Bac^2 - 280Bb^2c\right) + x^4\left(-210Aac^2 - 210A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**9,x)
```

```
[Out] (-35*A*a**3 - 280*B*c**3*x**7 + x**6*(-140*A*c**3 - 420*B*b*c**2) + x**5*(-
280*A*b*c**2 - 280*B*a*c**2 - 280*B*b**2*c) + x**4*(-210*A*a*c**2 - 210*A*b
**2*c - 420*B*a*b*c - 70*B*b**3) + x**3*(-336*A*a*b*c - 56*A*b**3 - 168*B*a
**2*c - 168*B*a*b**2) + x**2*(-140*A*a**2*c - 140*A*a*b**2 - 140*B*a**2*b)
+ x*(-120*A*a**2*b - 40*B*a**3))/(280*x**8)
```

3.879 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{10}}\,dx$

Optimal. Leaf size=166

$$-\frac{a^3A}{9x^9}-\frac{a^2(aB+3Ab)}{8x^8}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{7x^7}-\frac{3c\left(aBc+Abc+b^2B\right)}{4x^4}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{5x^5}-A\left(6\right.$$

```
[Out] -1/9*a^3*A/x^9-1/8*a^2*(3*A*b+B*a)/x^8-3/7*a*(a*b*B+A*(a*c+b^2))/x^7+1/6*(-
3*a*B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^6+1/5*(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-B*
b^3)/x^5-3/4*c*(A*b*c+B*a*c+B*b^2)/x^4-1/3*c^2*(A*c+3*B*b)/x^3-1/2*B*c^3/x^
2
```

Rubi [A] time = 0.11, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{8x^8}-\frac{a^3A}{9x^9}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{5x^5}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{7x^7}-\frac{3c\left(aBc+Abc+b^2B\right)}{4x^4}-A\left(6\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -(a^3*A)/(9*x^9) - (a^2*(3*A*b + a*B))/(8*x^8) - (3*a*(a*b*B + A*(b^2 + a*c
)))/(7*x^7) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(6*x^6) - (b^3*B + 3*
A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(5*x^5) - (3*c*(b^2*B + A*b*c + a*B*c))/(4
*x^4) - (c^2*(3*b*B + A*c))/(3*x^3) - (B*c^3)/(2*x^2)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{10}}\,dx &= \int \left(\frac{a^3A}{x^{10}}+\frac{a^2(3Ab+aB)}{x^9}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^8}+\frac{3aB\left(b^2+ac\right)+A\left(b\right.}{x^7}\right.\\ &= -\frac{a^3A}{9x^9}-\frac{a^2(3Ab+aB)}{8x^8}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{7x^7}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{6x^6}\end{aligned}$$

Mathematica [A] time = 0.06, size = 175, normalized size = 1.05

$$-\frac{35a^3(8A+9Bx)+45a^2x(3A(7b+8cx)+4Bx(6b+7cx))+18ax^2\left(4A\left(15b^2+35bcx+21c^2x^2\right)+7Bx\left(10b^2\right.\right.}{25}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x]
```

```
[Out] -1/2520*(35*a^3*(8*A + 9*B*x) + 45*a^2*x*(4*B*x*(6*b + 7*c*x) + 3*A*(7*b +
8*c*x)) + 18*a*x^2*(7*B*x*(10*b^2 + 24*b*c*x + 15*c^2*x^2) + 4*A*(15*b^2 +
35*b*c*x + 21*c^2*x^2)) + 42*x^3*(3*B*x*(4*b^3 + 15*b^2*c*x + 20*b*c^2*x^2
+ 10*c^3*x^3) + A*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2 + 20*c^3*x^3)))/x^9
```

fricas [A] time = 1.04, size = 166, normalized size = 1.00

$$-\frac{1260\,Bc^3x^7 + 840\left(3\,Bbc^2 + Ac^3\right)x^6 + 1890\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 504\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4}{252}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 840*(3*B*b*c^2 + A*c^3)*x^6 + 1890*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 + 504*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 2
80*A*a^3 + 420*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 1080*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

giac [A] time = 0.16, size = 191, normalized size = 1.15

$$-\frac{1260\,Bc^3x^7 + 2520\,Bbc^2x^6 + 840\,Ac^3x^6 + 1890\,Bb^2cx^5 + 1890\,Bac^2x^5 + 1890\,Abc^2x^5 + 504\,Bb^3x^4 + 3024\,Babc}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 2520*B*b*c^2*x^6 + 840*A*c^3*x^6 + 1890*B*b^2*c*x
^5 + 1890*B*a*c^2*x^5 + 1890*A*b*c^2*x^5 + 504*B*b^3*x^4 + 3024*B*a*b*c*x^4
 + 1512*A*b^2*c*x^4 + 1512*A*a*c^2*x^4 + 1260*B*a*b^2*x^3 + 420*A*b^3*x^3 +
 1260*B*a^2*c*x^3 + 2520*A*a*b*c*x^3 + 1080*B*a^2*b*x^2 + 1080*A*a*b^2*x^2
+ 1080*A*a^2*c*x^2 + 315*B*a^3*x + 945*A*a^2*b*x + 280*A*a^3)/x^9
```

maple [A] time = 0.06, size = 154, normalized size = 0.93

$$-\frac{B\,c^3}{2x^2}-\frac{(Ac+3bB)\,c^2}{3x^3}-\frac{3\left(Abc+aBc+b^2B\right)c}{4x^4}-\frac{A\,a^3}{9x^9}-\frac{3Aa\,c^2+3A\,b^2c+6abBc+b^3B}{5x^5}-\frac{(3Ab+Ba)\,a^2}{8x^8}-\frac{3\left(Aac+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^10,x)
```

```
[Out] -1/5*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)/x^5-3/4*c*(A*b*c+B*a*c+B*b^2)/x^
4-1/3*(A*c+3*B*b)*c^2/x^3-1/8*a^2*(3*A*b+B*a)/x^8-1/2*B*c^3/x^2-1/9*a^3*A/x
^9-3/7*a*(A*a*c+A*b^2+B*a*b)/x^7-1/6*(6*A*a*b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/
x^6
```

maxima [A] time = 0.52, size = 166, normalized size = 1.00

$$-\frac{1260\,Bc^3x^7 + 840\left(3\,Bbc^2 + Ac^3\right)x^6 + 1890\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 504\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4}{252}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*x^7 + 840*(3*B*b*c^2 + A*c^3)*x^6 + 1890*(B*b^2*c + (B*
a + A*b)*c^2)*x^5 + 504*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 2
80*A*a^3 + 420*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 1080*(B*a^
2*b + A*a*b^2 + A*a^2*c)*x^2 + 315*(B*a^3 + 3*A*a^2*b)*x)/x^9
```

mupad [B] time = 1.19, size = 167, normalized size = 1.01

$$-\frac{x^3\left(\frac{B\,c\,a^2}{2}+\frac{B\,a\,b^2}{2}+A\,c\,a\,b+\frac{A\,b^3}{6}\right)+x^4\left(\frac{B\,b^3}{5}+\frac{3\,A\,b^2\,c}{5}+\frac{6\,B\,a\,b\,c}{5}+\frac{3\,A\,a\,c^2}{5}\right)+x\left(\frac{B\,a^3}{8}+\frac{3\,A\,b\,a^2}{8}\right)+\frac{A\,a^3}{9}+x^6\left(\frac{A\,c^3}{3}+\right.}{x^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^10,x)
```

```
[Out] -(x^3*((A*b^3)/6 + (B*a*b^2)/2 + (B*a^2*c)/2 + A*a*b*c) + x^4*((B*b^3)/5 +
(3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x*((B*a^3)/8 + (3*A*a^2*b)
/8) + (A*a^3)/9 + x^6*((A*c^3)/3 + B*b*c^2) + x^2*((3*A*a*b^2)/7 + (3*A*a^2
*c)/7 + (3*B*a^2*b)/7) + x^5*((3*A*b*c^2)/4 + (3*B*a*c^2)/4 + (3*B*b^2*c)/4
) + (B*c^3*x^7)/2)/x^9
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**10,x)
```

```
[Out] Timed out
```

3.880 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx$

Optimal. Leaf size=166

$$-\frac{a^3A}{10x^{10}}-\frac{a^2(aB+3Ab)}{9x^9}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{8x^8}-\frac{3c\left(aBc+Abc+b^2B\right)}{5x^5}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{6x^6}-\frac{A\left(6a\right.}{}$$

```
[Out] -1/10*a^3*A/x^10-1/9*a^2*(3*A*b+B*a)/x^9-3/8*a*(a*b*B+A*(a*c+b^2))/x^8+1/7*
(-3*a*B*(a*c+b^2)-A*(6*a*b*c+b^3))/x^7+1/6*(-3*A*a*c^2-3*A*b^2*c-6*B*a*b*c-
B*b^3)/x^6-3/5*c*(A*b*c+B*a*c+B*b^2)/x^5-1/4*c^2*(A*c+3*B*b)/x^4-1/3*B*c^3/
x^3
```

Rubi **[A]** time = 0.10, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{a^2(aB+3Ab)}{9x^9}-\frac{a^3A}{10x^{10}}-\frac{3aAc^2+6abBc+3Ab^2c+b^3B}{6x^6}-\frac{3a\left(A\left(ac+b^2\right)+abB\right)}{8x^8}-\frac{3c\left(aBc+Abc+b^2B\right)}{5x^5}-\frac{A\left(6a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -(a^3*A)/(10*x^10) - (a^2*(3*A*b + a*B))/(9*x^9) - (3*a*(a*b*B + A*(b^2 + a
*c)))/(8*x^8) - (3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))/(7*x^7) - (b^3*B +
3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)/(6*x^6) - (3*c*(b^2*B + A*b*c + a*B*c))/
(5*x^5) - (c^2*(3*b*B + A*c))/(4*x^4) - (B*c^3)/(3*x^3)
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11}}\,dx &= \int \left(\frac{a^3A}{x^{11}}+\frac{a^2(3Ab+aB)}{x^{10}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^9}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^8}\right.\\ &= -\frac{a^3A}{10x^{10}}-\frac{a^2(3Ab+aB)}{9x^9}-\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{8x^8}-\frac{3aB\left(b^2+ac\right)+A\left(b^3+6\right.}{7x^7}\end{aligned}$$

Mathematica **[A]** time = 0.06, size = 176, normalized size = 1.06

$$-\frac{28a^3(9A+10Bx)+15a^2x(7A(8b+9cx)+9Bx(7b+8cx))+9ax^2\left(5A\left(21b^2+48bcx+28c^2x^2\right)+8Bx\left(15b^2+\right.\right.}{2520}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x]
```

```
[Out] -1/2520*(28*a^3*(9*A + 10*B*x) + 15*a^2*x*(9*B*x*(7*b + 8*c*x) + 7*A*(8*b +
 9*c*x)) + 9*a*x^2*(8*B*x*(15*b^2 + 35*b*c*x + 21*c^2*x^2) + 5*A*(21*b^2 +
48*b*c*x + 28*c^2*x^2)) + 6*x^3*(7*B*x*(10*b^3 + 36*b^2*c*x + 45*b*c^2*x^2
+ 20*c^3*x^3) + 3*A*(20*b^3 + 70*b^2*c*x + 84*b*c^2*x^2 + 35*c^3*x^3)))/x^1
0
```

fricas [**A**] time = 0.95, size = 166, normalized size = 1.00

$$-\frac{840\,Bc^3x^7+630\left(3\,Bbc^2+Ac^3\right)x^6+1512\left(Bb^2c+(Ba+Ab)c^2\right)x^5+420\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 630*(3*B*b*c^2 + A*c^3)*x^6 + 1512*(B*b^2*c + (B*a
 + A*b)*c^2)*x^5 + 420*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 25
2*A*a^3 + 360*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 945*(B*a^2*
b + A*a*b^2 + A*a^2*c)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

giac [**A**] time = 0.16, size = 191, normalized size = 1.15

$$-\frac{840\,Bc^3x^7+1890\,Bbc^2x^6+630\,Ac^3x^6+1512\,Bb^2cx^5+1512\,Bac^2x^5+1512\,Abc^2x^5+420\,Bb^3x^4+2520\,Bab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 1890*B*b*c^2*x^6 + 630*A*c^3*x^6 + 1512*B*b^2*c*x^
5 + 1512*B*a*c^2*x^5 + 1512*A*b*c^2*x^5 + 420*B*b^3*x^4 + 2520*B*a*b*c*x^4
+ 1260*A*b^2*c*x^4 + 1260*A*a*c^2*x^4 + 1080*B*a*b^2*x^3 + 360*A*b^3*x^3 +
1080*B*a^2*c*x^3 + 2160*A*a*b*c*x^3 + 945*B*a^2*b*x^2 + 945*A*a*b^2*x^2 + 9
45*A*a^2*c*x^2 + 280*B*a^3*x + 840*A*a^2*b*x + 252*A*a^3)/x^10
```

maple [**A**] time = 0.06, size = 154, normalized size = 0.93

$$-\frac{B\,c^3}{3x^3}-\frac{(Ac+3bB)\,c^2}{4x^4}-\frac{3\left(Abc+aBc+b^2B\right)c}{5x^5}-\frac{A\,a^3}{10x^{10}}-\frac{3Aa\,c^2+3A\,b^2c+6abBc+b^3B}{6x^6}-\frac{(3Ab+Ba)\,a^2}{9x^9}-\frac{3\left(A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^11,x)
```

```
[Out] -3/5*c*(A*b*c+B*a*c+B*b^2)/x^5-1/4*(A*c+3*B*b)*c^2/x^4-1/3*B*c^3/x^3-3/8*a*
(A*a*c+A*b^2+B*a*b)/x^8-1/9*a^2*(3*A*b+B*a)/x^9-1/10*a^3*A/x^10-1/7*(6*A*a*
b*c+A*b^3+3*B*a^2*c+3*B*a*b^2)/x^7-1/6*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3
)/x^6
```

maxima [**A**] time = 0.46, size = 166, normalized size = 1.00

$$-\frac{840\,Bc^3x^7+630\left(3\,Bbc^2+Ac^3\right)x^6+1512\left(Bb^2c+(Ba+Ab)c^2\right)x^5+420\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*x^7 + 630*(3*B*b*c^2 + A*c^3)*x^6 + 1512*(B*b^2*c + (B*a
 + A*b)*c^2)*x^5 + 420*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 + 25
2*A*a^3 + 360*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 945*(B*a^2*
b + A*a*b^2 + A*a^2*c)*x^2 + 280*(B*a^3 + 3*A*a^2*b)*x)/x^10
```

mupad [**B**] time = 1.19, size = 168, normalized size = 1.01

$$-\frac{x^3\left(\frac{3\,B\,c\,a^2}{7}+\frac{3\,B\,a\,b^2}{7}+\frac{6\,A\,c\,a\,b}{7}+\frac{A\,b^3}{7}\right)+x^4\left(\frac{B\,b^3}{6}+\frac{A\,b^2\,c}{2}+B\,a\,b\,c+\frac{A\,a\,c^2}{2}\right)+x\left(\frac{B\,a^3}{9}+\frac{A\,b\,a^2}{3}\right)+\frac{A\,a^3}{10}+x^6\left(\frac{A\,c^3}{4}\right.}{x^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^11,x)
```

```
[Out] -(x^3*((A*b^3)/7 + (3*B*a*b^2)/7 + (3*B*a^2*c)/7 + (6*A*a*b*c)/7) + x^4*((B
*b^3)/6 + (A*a*c^2)/2 + (A*b^2*c)/2 + B*a*b*c) + x*((B*a^3)/9 + (A*a^2*b)/3
) + (A*a^3)/10 + x^6*((A*c^3)/4 + (3*B*b*c^2)/4) + x^2*((3*A*a*b^2)/8 + (3*
A*a^2*c)/8 + (3*B*a^2*b)/8) + x^5*((3*A*b*c^2)/5 + (3*B*a*c^2)/5 + (3*B*b^2
*c)/5) + (B*c^3*x^7)/3)/x^10
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**11,x)
```

```
[Out] Timed out
```

3.881 $\int \frac{x^4(d+ex)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=229

$$-\frac{\left(-a^2c^2e+3ab^2ce-2abc^2d+b^4(-e)+b^3cd\right)\log\left(a+bx+cx^2\right)}{2c^5}-\frac{\left(-5a^2bc^2e+2a^2c^3d+5ab^3ce-4ab^2c^2d+b\right.}{c^5\sqrt{b^2-4ac}}$$

```
[Out] (2*a*b*c*e-a*c^2*d-b^3*e+b^2*c*d)*x/c^4-1/2*(a*c*e-b^2*e+b*c*d)*x^2/c^3+1/3
*(-b*e+c*d)*x^3/c^2+1/4*e*x^4/c-1/2*(-a^2*c^2*e+3*a*b^2*c*e-2*a*b*c^2*d-b^4
*e+b^3*c*d)*ln(c*x^2+b*x+a)/c^5-(-5*a^2*b*c^2*e+2*a^2*c^3*d+5*a*b^3*c*e-4*a
*b^2*c^2*d-b^5*e+b^4*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^5/(-4*a*c
+b^2)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(-a^2c^2e+3ab^2ce-2abc^2d+b^3cd+b^4(-e)\right)\log\left(a+bx+cx^2\right)}{2c^5}-\frac{\left(-5a^2bc^2e+2a^2c^3d-4ab^2c^2d+5ab^3ce+b\right.}{c^5\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] ((b^2*c*d - a*c^2*d - b^3*e + 2*a*b*c*e)*x)/c^4 - ((b*c*d - b^2*e + a*c*e)*
x^2)/(2*c^3) + ((c*d - b*e)*x^3)/(3*c^2) + (e*x^4)/(4*c) - ((b^4*c*d - 4*a*
b^2*c^2*d + 2*a^2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*ArcTanh[(b +
 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^5*Sqrt[b^2 - 4*a*c]) - ((b^3*c*d - 2*a*b*c^2
*d - b^4*e + 3*a*b^2*c*e - a^2*c^2*e)*Log[a + b*x + c*x^2])/(2*c^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{x^4(d+ex)}{a+bx+cx^2}\,dx &= \int \left(\frac{b^2cd-ac^2d-b^3e+2abce}{c^4}-\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{c^2}+\frac{ex^3}{c}-\frac{a\left(b^2cd-ac^2d-\right.}{}\right.\\ &= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4}-\frac{\left(bcd-b^2e+ace\right)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{\int\frac{a\left(b^2cd-ac^2d-b^3\right.}{}}{}\\ &= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4}-\frac{\left(bcd-b^2e+ace\right)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{\left(b^3cd-2abc^2d\right.}{}\\ &= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4}-\frac{\left(bcd-b^2e+ace\right)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{\left(b^3cd-2abc^2d\right.}{}\\ &= \frac{\left(b^2cd-ac^2d-b^3e+2abce\right)x}{c^4}-\frac{\left(bcd-b^2e+ace\right)x^2}{2c^3}+\frac{(cd-be)x^3}{3c^2}+\frac{ex^4}{4c}-\frac{\left(b^4cd-4ab^2c^2\right.}{}\end{aligned}$$

Mathematica [A] time = 0.14, size = 222, normalized size = 0.97

$$\frac{6\left(a^2c^2e-3ab^2ce+2abc^2d+b^4e-b^3cd\right)\log(a+x(b+cx))+\frac{12\left(-5a^2bc^2e+2a^2c^3d+5ab^3ce-4ab^2c^2d+b^5(-e)+b^4cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b}}\right.}{\sqrt{4ac-b^2}}}{12c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-12*c*(-(b^2*c*d) + a*c^2*d + b^3*e - 2*a*b*c*e)*x - 6*c^2*(b*c*d - b^2*e
+ a*c*e)*x^2 + 4*c^3*(c*d - b*e)*x^3 + 3*c^4*e*x^4 + (12*(b^4*c*d - 4*a*b^2
*c^2*d + 2*a^2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*ArcTan[(b + 2*c
*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 6*(-(b^3*c*d) + 2*a*b*c^2*d +
 b^4*e - 3*a*b^2*c*e + a^2*c^2*e)*Log[a + x*(b + c*x)])/(12*c^5)
```

fricas [A] time = 0.81, size = 730, normalized size = 3.19

$$\left[\frac{3\left(b^2c^4-4\,ac^5\right)ex^4+4\left(\left(b^2c^4-4\,ac^5\right)d-\left(b^3c^3-4\,abc^4\right)e\right)x^3-6\left(\left(b^3c^3-4\,abc^4\right)d-\left(b^4c^2-5\,ab^2c^3+4\,a^2c^4\right)e\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(b^2*c^4 - 4*a*c^5)*e*x^4 + 4*((b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 -
4*a*b*c^4)*e)*x^3 - 6*((b^3*c^3 - 4*a*b*c^4)*d - (b^4*c^2 - 5*a*b^2*c^3 + 4
*a^2*c^4)*e)*x^2 - 6*sqrt(b^2 - 4*a*c)*((b^4*c - 4*a*b^2*c^2 + 2*a^2*c^3)*d
 - (b^5 - 5*a*b^3*c + 5*a^2*b*c^2)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*
c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 12*((b^4*c^2 - 5*a*
b^2*c^3 + 4*a^2*c^4)*d - (b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*e)*x - 6*((b^5
*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*d - (b^6 - 7*a*b^4*c + 13*a^2*b^2*c^2 - 4*a
^3*c^3)*e)*log(c*x^2 + b*x + a))/(b^2*c^5 - 4*a*c^6), 1/12*(3*(b^2*c^4 - 4*
a*c^5)*e*x^4 + 4*((b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*x^3 - 6*
((b^3*c^3 - 4*a*b*c^4)*d - (b^4*c^2 - 5*a*b^2*c^3 + 4*a^2*c^4)*e)*x^2 - 12*
sqrt(-b^2 + 4*a*c)*((b^4*c - 4*a*b^2*c^2 + 2*a^2*c^3)*d - (b^5 - 5*a*b^3*c
+ 5*a^2*b*c^2)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 1
2*((b^4*c^2 - 5*a*b^2*c^3 + 4*a^2*c^4)*d - (b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c
^3)*e)*x - 6*((b^5*c - 6*a*b^3*c^2 + 8*a^2*b*c^3)*d - (b^6 - 7*a*b^4*c + 13
*a^2*b^2*c^2 - 4*a^3*c^3)*e)*log(c*x^2 + b*x + a))/(b^2*c^5 - 4*a*c^6)]
```

giac [**A**] time = 0.18, size = 247, normalized size = 1.08

$$\frac{3\,c^3x^4e+4\,c^3dx^3-4\,bc^2x^3e-6\,bc^2dx^2+6\,b^2cx^2e-6\,ac^2x^2e+12\,b^2cdx-12\,ac^2dx-12\,b^3xe+24\,abcxe}{12\,c^4}-\left(b^3c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/12*(3*c^3*x^4*e + 4*c^3*d*x^3 - 4*b*c^2*x^3*e - 6*b*c^2*d*x^2 + 6*b^2*c*x
^2*e - 6*a*c^2*x^2*e + 12*b^2*c*d*x - 12*a*c^2*d*x - 12*b^3*x*e + 24*a*b*c*
x*e)/c^4 - 1/2*(b^3*c*d - 2*a*b*c^2*d - b^4*e + 3*a*b^2*c*e - a^2*c^2*e)*lo
g(c*x^2 + b*x + a)/c^5 + (b^4*c*d - 4*a*b^2*c^2*d + 2*a^2*c^3*d - b^5*e + 5
*a*b^3*c*e - 5*a^2*b*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b
^2 + 4*a*c)*c^5)
```

maple [**B**] time = 0.06, size = 445, normalized size = 1.94

$$\frac{e\,x^4}{4c}-\frac{be\,x^3}{3c^2}+\frac{d\,x^3}{3c}-\frac{5a^2be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^3}+\frac{2a^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}+\frac{5a\,b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^4}-\frac{4a\,b^2d\arctan\left(\right.}{\sqrt{4ac-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/4/c*e*x^4-1/3/c^2*x^3*b*e+1/3/c*d*x^3-1/2*a/c^2*e*x^2+1/2/c^3*x^2*b^2*e-1
/2/c^2*x^2*b*d+2/c^3*a*b*e*x-a/c^2*d*x-1/c^4*b^3*e*x+1/c^3*b^2*d*x+1/2/c^3*
ln(c*x^2+b*x+a)*e*a^2-3/2/c^4*ln(c*x^2+b*x+a)*a*b^2*e+1/c^3*ln(c*x^2+b*x+a)
*a*b*d+1/2/c^5*ln(c*x^2+b*x+a)*b^4*e-1/2/c^4*ln(c*x^2+b*x+a)*b^3*d-5/c^3/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e+2/c^2/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d+5/c^4/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e-4/c^3/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d-1/c^5/(4*a*c-b^2)^(1/2)*arctan((2*c*x+
b)/(4*a*c-b^2)^(1/2))*b^5*e+1/c^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*b^4*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 0.23, size = 302, normalized size = 1.32

$$x^3\left(\frac{d}{3\,c}-\frac{b\,e}{3\,c^2}\right)+x\left(\frac{b\left(\frac{b\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{c}+\frac{a\,e}{c^2}\right)}{c}-\frac{a\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{c}\right)-x^2\left(\frac{b\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)}{2\,c}+\frac{a\,e}{2\,c^2}\right)+\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(4\,e\,a^3\,c^3-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^3*(d/(3*c) - (b*e)/(3*c^2)) + x*((b*((b*(d/c - (b*e)/c^2))/c + (a*e)/c^2)
)/c - (a*(d/c - (b*e)/c^2))/c) - x^2*((b*(d/c - (b*e)/c^2))/(2*c) + (a*e)/(
2*c^2)) + (log(a + b*x + c*x^2)*(4*a^3*c^3*e - b^6*e + b^5*c*d - 13*a^2*b^2
*c^2*e + 7*a*b^4*c*e - 6*a*b^3*c^2*d + 8*a^2*b*c^3*d))/(2*(4*a*c^6 - b^2*c^
5)) + (e*x^4)/(4*c) - (atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(
1/2))*(b^5*e - 2*a^2*c^3*d - b^4*c*d - 5*a*b^3*c*e + 4*a*b^2*c^2*d + 5*a^2*
b*c^2*e))/(c^5*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 3.92, size = 1100, normalized size = 4.80

$$x^{3}\left(-\frac{be}{3c^{2}}+\frac{d}{3c}\right)+x^{2}\left(-\frac{ae}{2c^{2}}+\frac{b^{2}e}{2c^{3}}-\frac{bd}{2c^{2}}\right)+x\left(\frac{2abe}{c^{3}}-\frac{ad}{c^{2}}-\frac{b^{3}e}{c^{4}}+\frac{b^{2}d}{c^{3}}\right)+\Bigg(-\frac{\sqrt{-4ac+b^{2}}\,(5a^{2}bc^{2}e-2a^{2}c^{3}d-5ab^{3}c}{2c^{5}\,(4ac-b^{2})}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x**3*(-b*e/(3*c**2) + d/(3*c)) + x**2*(-a*e/(2*c**2) + b**2*e/(2*c**3) - b*
d/(2*c**2)) + x*(2*a*b*e/c**3 - a*d/c**2 - b**3*e/c**4 + b**2*d/c**3) + (-s
qrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b*
*2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a
*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5))*log(x + (2*a**3*c**
2*e - 4*a**2*b**2*c*e + 3*a**2*b*c**2*d + a*b**4*e - a*b**3*c*d - 4*a*c**5*
(-sqrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a
*b**2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e -
3*a*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)) + b**2*c**4*(-sq
rt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**
2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*
b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)))/(5*a**2*b*c**2*e -
2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c**2*d + b**5*e - b**4*c*d)) + (sqr
t(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2
*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*b
**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5))*log(x + (2*a**3*c**2*
e - 4*a**2*b**2*c*e + 3*a**2*b*c**2*d + a*b**4*e - a*b**3*c*d - 4*a*c**5*(s
qrt(-4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b*
*2*c**2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a
*b**2*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)) + b**2*c**4*(sqrt(-
4*a*c + b**2)*(5*a**2*b*c**2*e - 2*a**2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c*
*2*d + b**5*e - b**4*c*d)/(2*c**5*(4*a*c - b**2)) + (a**2*c**2*e - 3*a*b**2
*c*e + 2*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**5)))/(5*a**2*b*c**2*e - 2*a*
*2*c**3*d - 5*a*b**3*c*e + 4*a*b**2*c**2*d + b**5*e - b**4*c*d)) + e*x**4/(
4*c)
```

3.882 $\int \frac{x^3(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=169

$$\frac{\left(-2a^2c^2e+4ab^2ce-3abc^2d+b^4(-e)+b^3cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\sqrt{b^2-4ac}}-\frac{x\left(ace+b^2(-e)+bcd\right)}{c^3}+\frac{\left(2abce-ac^2d+b^3(-\right.}{}$$

```
[Out] -(a*c*e-b^2*e+b*c*d)*x/c^3+1/2*(-b*e+c*d)*x^2/c^2+1/3*e*x^3/c+1/2*(2*a*b*c*
e-a*c^2*d-b^3*e+b^2*c*d)*ln(c*x^2+b*x+a)/c^4+(-2*a^2*c^2*e+4*a*b^2*c*e-3*a*
b*c^2*d-b^4*e+b^3*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^4/(-4*a*c+b^
2)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(-2a^2c^2e+4ab^2ce-3abc^2d+b^3cd+b^4(-e)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\sqrt{b^2-4ac}}+\frac{\left(2abce-ac^2d+b^2cd+b^3(-e)\right)\log\left(a+bx+\right.}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] -(((b*c*d - b^2*e + a*c*e)*x)/c^3) + ((c*d - b*e)*x^2)/(2*c^2) + (e*x^3)/(3
*c) + ((b^3*c*d - 3*a*b*c^2*d - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*ArcTanh[
(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^4*Sqrt[b^2 - 4*a*c]) + ((b^2*c*d - a*c^2
*d - b^3*e + 2*a*b*c*e)*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(d+ex)}{a+bx+cx^2}\,dx &= \int \left(-\frac{bcd-b^2e+ace}{c^3}+\frac{(cd-be)x}{c^2}+\frac{ex^2}{c}+\frac{a\left(bcd-b^2e+ace\right)+\left(b^2cd-ac^2d-b^3e+2abc\right.}{c^3\left(a+bx+cx^2\right)}\right.\\ &= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\int\frac{a\left(bcd-b^2e+ace\right)+\left(b^2cd-ac^2d-b^3e+2abce\right)x}{a+bx+cx^2}\,dx}{c^3}\\ &= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^2cd-ac^2d-b^3e+2abce\right)\int\frac{b+2cx}{a+bx+cx^2}\,dx}{2c^4}-\frac{(b}{}\\ &= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^2cd-ac^2d-b^3e+2abce\right)\log\left(a+bx+cx^2\right)}{2c^4}\\ &= -\frac{\left(bcd-b^2e+ace\right)x}{c^3}+\frac{(cd-be)x^2}{2c^2}+\frac{ex^3}{3c}+\frac{\left(b^3cd-3abc^2d-b^4e+4ab^2ce-2a^2c^2e\right)\tanh^{-}}{c^4\sqrt{b^2-4ac}}\end{aligned}$$

Mathematica [**A**] time = 0.10, size = 165, normalized size = 0.98

$$\frac{\frac{6\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-6cx\left(ace+b^2(-e)+bcd\right)-3\left(-2abce+ac^2d+b^3e-b^2cd\right)\log(a+x(b}{6c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-6*c*(b*c*d - b^2*e + a*c*e)*x + 3*c^2*(c*d - b*e)*x^2 + 2*c^3*e*x^3 + (6*
(-(b^3*c*d) + 3*a*b*c^2*d + b^4*e - 4*a*b^2*c*e + 2*a^2*c^2*e)*ArcTan[(b +
2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 3*(-(b^2*c*d) + a*c^2*d +
b^3*e - 2*a*b*c*e)*Log[a + x*(b + c*x)])/(6*c^4)
```

fricas [**A**] time = 0.84, size = 563, normalized size = 3.33

$$\left[\frac{2\left(b^2c^3-4\,ac^4\right)ex^3+3\left(\left(b^2c^3-4\,ac^4\right)d-\left(b^3c^2-4\,abc^3\right)e\right)x^2-3\,\sqrt{b^2-4\,ac}\left(\left(b^3c-3\,abc^2\right)d-\left(b^4-4\,ab^2c+2\,a\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*(b^2*c^3 - 4*a*c^4)*e*x^3 + 3*((b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 - 4
*a*b*c^3)*e)*x^2 - 3*sqrt(b^2 - 4*a*c)*((b^3*c - 3*a*b*c^2)*d - (b^4 - 4*a*
b^2*c + 2*a^2*c^2)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4
*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 6*((b^3*c^2 - 4*a*b*c^3)*d - (b^4*c
 - 5*a*b^2*c^2 + 4*a^2*c^3)*e)*x + 3*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d -
 (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*e)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^
5), 1/6*(2*(b^2*c^3 - 4*a*c^4)*e*x^3 + 3*((b^2*c^3 - 4*a*c^4)*d - (b^3*c^2
- 4*a*b*c^3)*e)*x^2 + 6*sqrt(-b^2 + 4*a*c)*((b^3*c - 3*a*b*c^2)*d - (b^4 -
4*a*b^2*c + 2*a^2*c^2)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a
*c)) - 6*((b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e)*x
+ 3*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*
e)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^5)]
```

giac [**A**] time = 0.16, size = 178, normalized size = 1.05

$$\frac{2\,c^{2}x^{3}e+3\,c^{2}dx^{2}-3\,bcx^{2}e-6\,bcdx+6\,b^{2}xe-6\,acxe}{6\,c^{3}}+\frac{\left(b^{2}cd-ac^{2}d-b^{3}e+2\,abce\right)\log\left(cx^{2}+bx+a\right)}{2\,c^{4}}-\frac{\left(b^{3}cd\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*(2*c^2*x^3*e + 3*c^2*d*x^2 - 3*b*c*x^2*e - 6*b*c*d*x + 6*b^2*x*e - 6*a*
c*x*e)/c^3 + 1/2*(b^2*c*d - a*c^2*d - b^3*e + 2*a*b*c*e)*log(c*x^2 + b*x +
a)/c^4 - (b^3*c*d - 3*a*b*c^2*d - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*arctan
((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^4)
```

maple [**B**] time = 0.05, size = 335, normalized size = 1.98

$$\frac{e\,x^{3}}{3c}+\frac{2a^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{2}}-\frac{4a\,b^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{3}}+\frac{3abd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{2}}+\frac{b^{4}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{4}}-\frac{b^{3}d\,\mathrm{arc}}{\sqrt{4a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/3/c*e*x^3-1/2*b/c^2*e*x^2+1/2/c*d*x^2-a/c^2*e*x+b^2/c^3*e*x-b/c^2*d*x+1/c
^3*ln(c*x^2+b*x+a)*a*b*e-1/2/c^2*ln(c*x^2+b*x+a)*a*d-1/2/c^4*ln(c*x^2+b*x+a
)*b^3*e+1/2/c^3*ln(c*x^2+b*x+a)*b^2*d+2/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a^2*e-4/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*a*b^2*e+3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^
(1/2))*a*b*d+1/c^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
4*e-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 1.30, size = 221, normalized size = 1.31

$$x^{2}\left(\frac{d}{2\,c}-\frac{b\,e}{2\,c^{2}}\right)-x\left(\frac{b\left(\frac{d}{c}-\frac{b\,e}{c^{2}}\right)}{c}+\frac{a\,e}{c^{2}}\right)+\frac{\ln\left(c\,x^{2}+b\,x+a\right)\left(8\,e\,a^{2}\,b\,c^{2}-4\,d\,a^{2}\,c^{3}-6\,e\,a\,b^{3}\,c+5\,d\,a\,b^{2}\,c^{2}+e\,b^{5}-\right.}{2\left(4\,a\,c^{5}-b^{2}\,c^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^2*(d/(2*c) - (b*e)/(2*c^2)) - x*((b*(d/c - (b*e)/c^2))/c + (a*e)/c^2) + (
log(a + b*x + c*x^2)*(b^5*e - 4*a^2*c^3*d - b^4*c*d - 6*a*b^3*c*e + 5*a*b^2
*c^2*d + 8*a^2*b*c^2*e))/(2*(4*a*c^5 - b^2*c^4)) + (e*x^3)/(3*c) + (atan(b/
(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(b^4*e + 2*a^2*c^2*e - b
^3*c*d + 3*a*b*c^2*d - 4*a*b^2*c*e))/(c^4*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 2.96, size = 840, normalized size = 4.97

$$x^2\left(-\frac{be}{2c^2}+\frac{d}{2c}\right)+x\left(-\frac{ae}{c^2}+\frac{b^2e}{c^3}-\frac{bd}{c^2}\right)+\Bigg(-\frac{\sqrt{-4ac+b^2}\left(2a^2c^2e-4ab^2ce+3abc^2d+b^4e-b^3cd\right)}{2c^4\left(4ac-b^2\right)}+\frac{2abce-ac^2d-}{2c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x**2*(-b*e/(2*c**2) + d/(2*c)) + x*(-a*e/c**2 + b**2*e/c**3 - b*d/c**2) + (
-sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e
- b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2
*c*d)/(2*c**4))*log(x + (-3*a**2*b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*
c*d + 4*a*c**4*(-sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*
c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d
 - b**3*e + b**2*c*d)/(2*c**4)) - b**2*c**3*(-sqrt(-4*a*c + b**2)*(2*a**2*c
**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b
**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d)/(2*c**4)))/(2*a**2*c**2*
e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)) + (sqrt(-4*a*c + b**2
)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4
*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d)/(2*c**4))*log
(x + (-3*a**2*b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*c*d + 4*a*c**4*(sqr
t(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e + 3*a*b*c**2*d + b**4*e - b*
*3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e - a*c**2*d - b**3*e + b**2*c*d
)/(2*c**4)) - b**2*c**3*(sqrt(-4*a*c + b**2)*(2*a**2*c**2*e - 4*a*b**2*c*e
+ 3*a*b*c**2*d + b**4*e - b**3*c*d)/(2*c**4*(4*a*c - b**2)) + (2*a*b*c*e -
a*c**2*d - b**3*e + b**2*c*d)/(2*c**4)))/(2*a**2*c**2*e - 4*a*b**2*c*e + 3*
a*b*c**2*d + b**4*e - b**3*c*d)) + e*x**3/(3*c)
```

3.883 $\int \frac{x^2(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=121

$$-\frac{\left(ace+b^2(-e)+bcd\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(3abce-2ac^2d+b^3(-e)+b^2cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

```
[Out] (-b*e+c*d)*x/c^2+1/2*e*x^2/c-1/2*(a*c*e-b^2*e+b*c*d)*ln(c*x^2+b*x+a)/c^3-(3
*a*b*c*e-2*a*c^2*d-b^3*e+b^2*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3
/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(ace+b^2(-e)+bcd\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(3abce-2ac^2d+b^2cd+b^3(-e)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}+\frac{x(cd-be)}{c^2}+\frac{ex^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] ((c*d - b*e)*x)/c^2 + (e*x^2)/(2*c) - ((b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b
*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[b^2 - 4*a*c]) - ((b
*c*d - b^2*e + a*c*e)*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{a+bx+cx^2}\,dx &= \int \left(\frac{cd-be}{c^2}+\frac{ex}{c}-\frac{a(cd-be)+\left(bcd-b^2e+ace\right)x}{c^2\left(a+bx+cx^2\right)}\right)dx\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\int \frac{a(cd-be)+\left(bcd-b^2e+ace\right)x}{a+bx+cx^2}\,dx}{c^2}\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(bcd-b^2e+ace\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^3}+\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)\int \frac{1}{a+bx+c}}{2c^3}\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(bcd-b^2e+ace\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)\mathrm{Su}}{c^3}\\ &= \frac{(cd-be)x}{c^2}+\frac{ex^2}{2c}-\frac{\left(b^2cd-2ac^2d-b^3e+3abce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\sqrt{b^2-4ac}}-\frac{\left(bcd-b^2e+ace\right)\log}{2c^3}\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 119, normalized size = 0.98

$$\frac{\left(-ace+b^2e-bcd\right)\log(a+x(b+cx))+\frac{2\left(3abce-2ac^2d+b^3(-e)+b^2cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+2cx(cd-be)+c^2ex^2}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*(c*d - b*e)*x + c^2*e*x^2 + (2*(b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*
e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + (-(b*c*d) +
 b^2*e - a*c*e)*Log[a + x*(b + c*x)])/(2*c^3)
```

fricas [**A**] time = 1.15, size = 414, normalized size = 3.42

$$\left[\frac{\left(b^2c^2-4\,ac^3\right)ex^2+\sqrt{b^2-4\,ac}\left(\left(b^2c-2\,ac^2\right)d-\left(b^3-3\,abc\right)e\right)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+2\left(\left(b^2c^2-\right.\right.}{2\left(b^2c^3-4\,ac^4\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((b^2*c^2 - 4*a*c^3)*e*x^2 + sqrt(b^2 - 4*a*c)*((b^2*c - 2*a*c^2)*d -
(b^3 - 3*a*b*c)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*
c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*((b^2*c^2 - 4*a*c^3)*d - (b^3*c - 4*
a*b*c^2)*e)*x - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e)*l
og(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4), 1/2*((b^2*c^2 - 4*a*c^3)*e*x^2 -
2*sqrt(-b^2 + 4*a*c)*((b^2*c - 2*a*c^2)*d - (b^3 - 3*a*b*c)*e)*arctan(-sqrt
(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*((b^2*c^2 - 4*a*c^3)*d - (b^3
*c - 4*a*b*c^2)*e)*x - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 5*a*b^2*c + 4*a^2*c^
2)*e)*log(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4)]
```

giac [**A**] time = 0.17, size = 122, normalized size = 1.01

$$\frac{cx^2e+2\,cdx-2\,bxe}{2\,c^2}-\frac{\left(bcd-b^2e+ace\right)\log\left(cx^2+bx+a\right)}{2\,c^3}+\frac{\left(b^2cd-2\,ac^2d-b^3e+3\,abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(c*x^2*e + 2*c*d*x - 2*b*x*e)/c^2 - 1/2*(b*c*d - b^2*e + a*c*e)*log(c*x
^2 + b*x + a)/c^3 + (b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*e)*arctan((2*c*x
 + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3)
```

maple [B] time = 0.04, size = 241, normalized size = 1.99

$$\frac{3abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}-\frac{2ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^3}+\frac{b^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{e\,x^2}{2c}-\frac{ae\ln\left(c\,x^2\right.}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*e*x^2-1/c^2*b*e*x+1/c*d*x-1/2/c^2*ln(c*x^2+b*x+a)*a*e+1/2/c^3*ln(c*x^
2+b*x+a)*e*b^2-1/2/c^2*ln(c*x^2+b*x+a)*b*d+3/c^2/(4*a*c-b^2)^(1/2)*arctan((
2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*e-2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*a*d-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*b^3*e+1/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2
*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.17, size = 168, normalized size = 1.39

$$x\left(\frac{d}{c}-\frac{b\,e}{c^2}\right)-\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(4\,e\,a^2\,c^2-5\,e\,a\,b^2\,c+4\,d\,a\,b\,c^2+e\,b^4-d\,b^3\,c\right)}{2\,\left(4\,a\,c^4-b^2\,c^3\right)}+\frac{e\,x^2}{2\,c}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] x*(d/c - (b*e)/c^2) - (log(a + b*x + c*x^2)*(b^4*e + 4*a^2*c^2*e - b^3*c*d
+ 4*a*b*c^2*d - 5*a*b^2*c*e))/(2*(4*a*c^4 - b^2*c^3)) + (e*x^2)/(2*c) - (at
an(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(b^3*e + 2*a*c^2*d
- b^2*c*d - 3*a*b*c*e))/(c^3*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 2.04, size = 609, normalized size = 5.03

$$x\left(-\frac{be}{c^2}+\frac{d}{c}\right)+\left(-\frac{\sqrt{-4ac+b^2}\,\left(3abce-2ac^2d-b^3e+b^2cd\right)}{2c^3\left(4ac-b^2\right)}-\frac{ace-b^2e+bcd}{2c^3}\right)\log\left(x+\frac{2a^2ce-ab^2e+abcd+}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] x*(-b*e/c**2 + d/c) + (-sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*
e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))*
```

```
log(x + (2*a**2*c*e - a*b**2*e + a*b*c*d + 4*a*c**3*(-sqrt(-4*a*c + b**2)*(
3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*
e - b**2*e + b*c*d)/(2*c**3)) - b**2*c**2*(-sqrt(-4*a*c + b**2)*(3*a*b*c*e
- 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e
 + b*c*d)/(2*c**3)))/(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)) + (sqrt(
-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*d)/(2*c**3*(4*a*c
- b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))*log(x + (2*a**2*c*e - a*b**2*
e + a*b*c*d + 4*a*c**3*(sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*
e + b**2*c*d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3))
- b**2*c**2*(sqrt(-4*a*c + b**2)*(3*a*b*c*e - 2*a*c**2*d - b**3*e + b**2*c*
d)/(2*c**3*(4*a*c - b**2)) - (a*c*e - b**2*e + b*c*d)/(2*c**3)))/(3*a*b*c*e
 - 2*a*c**2*d - b**3*e + b**2*c*d)) + e*x**2/(2*c)
```

3.884 $\int \frac{x(d+ex)}{a+bx+cx^2} \, dx$

Optimal. Leaf size=85

$$\frac{\left(2ace+b^2(-e)+bcd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}+\frac{ex}{c}$$

```
[Out] e*x/c+1/2*(-b*e+c*d)*ln(c*x^2+b*x+a)/c^2+(2*a*c*e-b^2*e+b*c*d)*arctanh((2*c
*x+b)/(-4*a*c+b^2)^(1/2))/c^2/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {773, 634, 618, 206, 628}

$$\frac{\left(2ace+b^2(-e)+bcd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}+\frac{ex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (e*x)/c + ((b*c*d - b^2*e + 2*a*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]]
)/(c^2*Sqrt[b^2 - 4*a*c]) + ((c*d - b*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{x(d+ex)}{a+bx+cx^2}\,dx &= \frac{ex}{c} + \frac{\int \frac{-ae+(cd-be)x}{a+bx+cx^2}\,dx}{c}\\ &= \frac{ex}{c} + \frac{(cd-be)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2} - \frac{\left(bcd-b^2e+2ace\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c^2}\\ &= \frac{ex}{c} + \frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2} + \frac{\left(bcd-b^2e+2ace\right)\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{c^2}\\ &= \frac{ex}{c} + \frac{\left(bcd-b^2e+2ace\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}} + \frac{(cd-be)\log\left(a+bx+cx^2\right)}{2c^2}\end{aligned}$$

Mathematica [A] time = 0.08, size = 86, normalized size = 1.01

$$\frac{\frac{2\left(-2ace+b^2e-bcd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+(cd-be)\log(a+x(b+cx))+2cex}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*x + (2*(-(b*c*d) + b^2*e - 2*a*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4
*a*c]])/Sqrt[-b^2 + 4*a*c] + (c*d - b*e)*Log[a + x*(b + c*x)])/(2*c^2)
```

fricas [A] time = 1.11, size = 289, normalized size = 3.40

$$\left[\frac{2\left(b^2c-4\,ac^2\right)ex+\left(bcd-\left(b^2-2\,ac\right)e\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(\left(b^2c-4\,ac^2\right)d-\left(b^3\right.\right.}{2\left(b^2c^2-4\,ac^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(b^2*c - 4*a*c^2)*e*x + (b*c*d - (b^2 - 2*a*c)*e)*sqrt(b^2 - 4*a*c)
*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c
*x^2 + b*x + a)) + ((b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*log(c*x^2 + b*
x + a))/(b^2*c^2 - 4*a*c^3), 1/2*(2*(b^2*c - 4*a*c^2)*e*x + 2*(b*c*d - (b^2
 - 2*a*c)*e)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2
 - 4*a*c)) + ((b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*log(c*x^2 + b*x + a)
)/(b^2*c^2 - 4*a*c^3)]
```

giac [A] time = 0.16, size = 88, normalized size = 1.04

$$\frac{xe}{c}+\frac{(cd-be)\log\left(cx^2+bx+a\right)}{2\,c^2}-\frac{\left(bcd-b^2e+2\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] x*e/c + 1/2*(c*d - b*e)*log(c*x^2 + b*x + a)/c^2 - (b*c*d - b^2*e + 2*a*c*e
)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2)
```

maple [**B**] time = 0.04, size = 161, normalized size = 1.89

$$-\frac{2ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}+\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}-\frac{bd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{be\ln\left(c\,x^2+bx+a\right)}{2c^2}+\frac{d\ln\left(c\,x^2+bx+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/c*e*x-1/2/c^2*ln(c*x^2+b*x+a)*b*e+1/2/c*ln(c*x^2+b*x+a)*d-2/c/(4*a*c-b^2)
^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e+1/c^2/(4*a*c-b^2)^(1/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e-1/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 1.34, size = 127, normalized size = 1.49

$$\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(e\,b^3-d\,b^2\,c-4\,a\,e\,b\,c+4\,a\,d\,c^2\right)}{2\,\left(4\,a\,c^3-b^2\,c^2\right)}+\frac{e\,x}{c}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\,\left(-e\,b^2+c\,d\,b+2\,a\,c\,e\right)}{c^2\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] (log(a + b*x + c*x^2)*(b^3*e + 4*a*c^2*d - b^2*c*d - 4*a*b*c*e))/(2*(4*a*c^
3 - b^2*c^2)) + (e*x)/c - (atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^
2)^(1/2))*(2*a*c*e - b^2*e + b*c*d))/(c^2*(4*a*c - b^2)^(1/2))
```

sympy [**B**] time = 1.35, size = 423, normalized size = 4.98

$$\left(-\frac{\sqrt{-4ac+b^2}\,\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)\log\Biggl(x+\frac{-abe-4ac^2\left(-\frac{\sqrt{-4ac+b^2}\left(2ace-b^2e+bcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{be-cd}{2c^2}\right)+2acd+b}{2ace-b^2e+bcd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] (-sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) -
(b*e - c*d)/(2*c**2))*log(x + (-a*b*e - 4*a*c**2*(-sqrt(-4*a*c + b**2)*(2*a
*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c*d)/(2*c**2)) + 2*
a*c*d + b**2*c*(-sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*
a*c - b**2)) - (b*e - c*d)/(2*c**2)))/(2*a*c*e - b**2*e + b*c*d)) + (sqrt(-
4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c
*d)/(2*c**2))*log(x + (-a*b*e - 4*a*c**2*(sqrt(-4*a*c + b**2)*(2*a*c*e - b*
*2*e + b*c*d)/(2*c**2*(4*a*c - b**2)) - (b*e - c*d)/(2*c**2)) + 2*a*c*d + b
**2*c*(sqrt(-4*a*c + b**2)*(2*a*c*e - b**2*e + b*c*d)/(2*c**2*(4*a*c - b**2
)) - (b*e - c*d)/(2*c**2)))/(2*a*c*e - b**2*e + b*c*d)) + e*x/c
```

3.885 $\int \frac{d+ex}{a+bx+cx^2} \, dx$

Optimal. Leaf size=66

$$\frac{e \log \left(a+bx+cx^2\right)}{2c}-\frac{(2cd-be) \tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}$$

```
[Out] 1/2*e*ln(c*x^2+b*x+a)/c-(-b*e+2*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/
c/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 206, 628}

$$\frac{e \log \left(a+bx+cx^2\right)}{2c}-\frac{(2cd-be) \tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] -(((2*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*
c])) + (e*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{d+ex}{a+bx+cx^2}\,dx &= \frac{e\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c} + \frac{(2cd-be)\int \frac{1}{a+bx+cx^2}\,dx}{2c}\\ &= \frac{e\log\left(a+bx+cx^2\right)}{2c} - \frac{(2cd-be)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx, x, b+2cx\right)}{c}\\ &= -\frac{(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}} + \frac{e\log\left(a+bx+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.06, size = 66, normalized size = 1.00

$$\frac{e\log(a+x(b+cx)) - \frac{2(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((-2*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a
*c] + e*Log[a + x*(b + c*x)])/(2*c)
```

fricas [A] time = 1.12, size = 204, normalized size = 3.09

$$\left[\frac{\left(b^2-4\,ac\right)e\log\left(cx^2+bx+a\right) - \sqrt{b^2-4\,ac}\,(2\,cd-be)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)}{2\left(b^2c-4\,ac^2\right)}, \frac{\left(b^2-4\,ac\right)e\log\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((b^2 - 4*a*c)*e*log(c*x^2 + b*x + a) - sqrt(b^2 - 4*a*c)*(2*c*d - b*e
)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(
c*x^2 + b*x + a)))/(b^2*c - 4*a*c^2), 1/2*((b^2 - 4*a*c)*e*log(c*x^2 + b*x
+ a) - 2*sqrt(-b^2 + 4*a*c)*(2*c*d - b*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x
 + b)/(b^2 - 4*a*c)))/(b^2*c - 4*a*c^2)]
```

giac [A] time = 0.17, size = 65, normalized size = 0.98

$$\frac{e\log\left(cx^2+bx+a\right)}{2\,c} + \frac{(2\,cd-be)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*e*log(c*x^2 + b*x + a)/c + (2*c*d - b*e)*arctan((2*c*x + b)/sqrt(-b^2 +
 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)
```

maple [A] time = 0.05, size = 93, normalized size = 1.41

$$-\frac{be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c} + \frac{2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{e\ln\left(c\,x^2+bx+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*e*ln(c*x^2+b*x+a)+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*d-1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b/c*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 0.12, size = 162, normalized size = 2.45

$$\frac{2\,d\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{\sqrt{4\,a\,c-b^2}}-\frac{b^2\,e\,\ln\left(c\,x^2+b\,x+a\right)}{2\,\left(4\,a\,c^2-b^2\,c\right)}+\frac{2\,a\,c\,e\,\ln\left(c\,x^2+b\,x+a\right)}{4\,a\,c^2-b^2\,c}-\frac{b\,e\,\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)}{c\,\sqrt{4\,a\,c-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2),x)
```

```
[Out] (2*d*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2)))/(4*a*c - b^
2)^(1/2) - (b^2*e*log(a + b*x + c*x^2))/(2*(4*a*c^2 - b^2*c)) + (2*a*c*e*lo
g(a + b*x + c*x^2))/(4*a*c^2 - b^2*c) - (b*e*atan(b/(4*a*c - b^2)^(1/2) + (
2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2))
```

sympy [**B**] time = 0.74, size = 280, normalized size = 4.24

$$\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-4ac\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)+2ae+b^2\left(\frac{e}{2c}-\frac{\sqrt{-4ac+b^2}\,(be-2cd)}{2c\left(4ac-b^2\right)}\right)-bd}{be-2cd}\right)+\left(\frac{e}{2c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] (e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2)))*log(x +
(-4*a*c*(e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2)))
+ 2*a*e + b**2*(e/(2*c) - sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c*(4*a*c - b
**2))) - b*d)/(b*e - 2*c*d)) + (e/(2*c) + sqrt(-4*a*c + b**2)*(b*e - 2*c*d)
/(2*c*(4*a*c - b**2)))*log(x + (-4*a*c*(e/(2*c) + sqrt(-4*a*c + b**2)*(b*e
- 2*c*d)/(2*c*(4*a*c - b**2))) + 2*a*e + b**2*(e/(2*c) + sqrt(-4*a*c + b**2
)*(b*e - 2*c*d)/(2*c*(4*a*c - b**2))) - b*d)/(b*e - 2*c*d))
```

3.886 $\int \frac{d+ex}{x\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=71

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{d\log\left(a+bx+cx^2\right)}{2a}+\frac{d\log(x)}{a}$$

```
[Out] d*ln(x)/a-1/2*d*ln(c*x^2+b*x+a)/a+(-2*a*e+b*d)*arctanh((2*c*x+b)/(-4*a*c+b^
2)^(1/2))/a/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$\frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}-\frac{d\log\left(a+bx+cx^2\right)}{2a}+\frac{d\log(x)}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] ((b*d - 2*a*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a*Sqrt[b^2 - 4*a*c]
) + (d*Log[x])/a - (d*Log[a + b*x + c*x^2])/(2*a)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x\left(a+bx+cx^2\right)}\,dx &= \int \left(\frac{d}{ax}+\frac{-bd+ae-cdx}{a\left(a+bx+cx^2\right)}\right)dx \\
&= \frac{d\log(x)}{a}+\frac{\int \frac{-bd+ae-cdx}{a+bx+cx^2}\,dx}{a} \\
&= \frac{d\log(x)}{a}-\frac{d\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a}+\frac{(-bd+2ae)\int \frac{1}{a+bx+cx^2}\,dx}{2a} \\
&= \frac{d\log(x)}{a}-\frac{d\log\left(a+bx+cx^2\right)}{2a}-\frac{(-bd+2ae)\,\mathrm{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{a} \\
&= \frac{(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a\sqrt{b^2-4ac}}+\frac{d\log(x)}{a}-\frac{d\log\left(a+bx+cx^2\right)}{2a}
\end{aligned}
$$

Mathematica [**A**] time = 0.11, size = 71, normalized size = 1.00

$$
-\frac{\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+d(\log(a+x(b+cx))-2\log(x))}{2a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + b*x + c*x^2)),x]
```

```
[Out] -1/2*((2*(b*d - 2*a*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 +
4*a*c] + d*(-2*Log[x] + Log[a + x*(b + c*x)]))/a
```

fricas [**A**] time = 1.02, size = 228, normalized size = 3.21

$$
\left[-\frac{\left(b^2-4\,ac\right)d\log\left(cx^2+bx+a\right)-2\left(b^2-4\,ac\right)d\log(x)+\sqrt{b^2-4\,ac}\,(bd-2\,ae)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2}{cx^2+bx+a}\right.}{2\left(ab^2-4\,a^2c\right)}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((b^2 - 4*a*c)*d*log(c*x^2 + b*x + a) - 2*(b^2 - 4*a*c)*d*log(x) + sq
rt(b^2 - 4*a*c)*(b*d - 2*a*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt
(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)))/(a*b^2 - 4*a^2*c), -1/2*((b^
2 - 4*a*c)*d*log(c*x^2 + b*x + a) - 2*(b^2 - 4*a*c)*d*log(x) - 2*sqrt(-b^2
+ 4*a*c)*(b*d - 2*a*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)
))/(a*b^2 - 4*a^2*c)]
```

giac [**A**] time = 0.16, size = 72, normalized size = 1.01

$$
-\frac{d\log\left(cx^2+bx+a\right)}{2\,a}+\frac{d\log\left(|x|\right)}{a}-\frac{(bd-2\,ae)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/2*d*log(c*x^2 + b*x + a)/a + d*log(abs(x))/a - (b*d - 2*a*e)*arctan((2*c
*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*a)
```

maple [A] time = 0.06, size = 100, normalized size = 1.41

$$-\frac{bd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,a}+\frac{2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{d\ln(x)}{a}-\frac{d\ln\left(c\,x^2+bx+a\right)}{2a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x+a),x)
```

```
[Out] -1/2*d*ln(c*x^2+b*x+a)/a+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*e-1/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d+1/a*d
*ln(x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.95, size = 375, normalized size = 5.28

$$\ln\Big(a^2\,e\,\sqrt{b^2-4\,a\,c}-2\,a\,b^2\,d+a^2\,b\,e+6\,a^2\,c\,d-2\,b^3\,d\,x-2\,a\,b\,d\,\sqrt{b^2-4\,a\,c}+a\,b^2\,e\,x-2\,a^2\,c\,e\,x-2\,b^2\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + b*x + c*x^2)),x)
```

```
[Out] log(a^2*e*(b^2 - 4*a*c)^(1/2) - 2*a*b^2*d + a^2*b*e + 6*a^2*c*d - 2*b^3*d*x
 - 2*a*b*d*(b^2 - 4*a*c)^(1/2) + a*b^2*e*x - 2*a^2*c*e*x - 2*b^2*d*x*(b^2 -
 4*a*c)^(1/2) + 7*a*b*c*d*x + a*b*e*x*(b^2 - 4*a*c)^(1/2) + 3*a*c*d*x*(b^2
- 4*a*c)^(1/2))*((2*a*e*(b^2 - 4*a*c)^(1/2) - b*d*(b^2 - 4*a*c)^(1/2))/(2*a
*b^2 - 8*a^2*c) - d/(2*a)) - log(a^2*e*(b^2 - 4*a*c)^(1/2) + 2*a*b^2*d - a^
2*b*e - 6*a^2*c*d + 2*b^3*d*x - 2*a*b*d*(b^2 - 4*a*c)^(1/2) - a*b^2*e*x + 2
*a^2*c*e*x - 2*b^2*d*x*(b^2 - 4*a*c)^(1/2) - 7*a*b*c*d*x + a*b*e*x*(b^2 - 4
*a*c)^(1/2) + 3*a*c*d*x*(b^2 - 4*a*c)^(1/2))*((2*a*e*(b^2 - 4*a*c)^(1/2) -
b*d*(b^2 - 4*a*c)^(1/2))/(2*a*b^2 - 8*a^2*c) + d/(2*a)) + (d*log(x))/a
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.887 $\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=104

$$-\frac{\left(-abe-2acd+b^2d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\log(x)(bd-ae)}{a^2}-\frac{d}{ax}$$

```
[Out] -d/a/x-(-a*e+b*d)*ln(x)/a^2+1/2*(-a*e+b*d)*ln(c*x^2+b*x+a)/a^2-(-a*b*e-2*a*
c*d+b^2*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^2/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(-abe-2acd+b^2d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\log(x)(bd-ae)}{a^2}-\frac{d}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] -(d/(a*x)) - ((b^2*d - 2*a*c*d - a*b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*
c]])/(a^2*Sqrt[b^2 - 4*a*c]) - ((b*d - a*e)*Log[x])/a^2 + ((b*d - a*e)*Log[
a + b*x + c*x^2])/(2*a^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)}\,dx &= \int \left(\frac{d}{ax^2}+\frac{-bd+ae}{a^2x}+\frac{b^2d-acd-abe+c(bd-ae)x}{a^2\left(a+bx+cx^2\right)}\right)dx \\
&= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{\int \frac{b^2d-acd-abe+c(bd-ae)x}{a+bx+cx^2}\,dx}{a^2} \\
&= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a^2}+\frac{\left(b^2d-2acd-abe\right)\int \frac{1}{a+bx+cx^2}\,d}{2a^2} \\
&= -\frac{d}{ax}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\log\left(a+bx+cx^2\right)}{2a^2}-\frac{\left(b^2d-2acd-abe\right)\mathrm{Subst}(}{a} \\
&= -\frac{d}{ax}-\frac{\left(b^2d-2acd-abe\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\sqrt{b^2-4ac}}-\frac{(bd-ae)\log(x)}{a^2}+\frac{(bd-ae)\log(a+}{2a^2}
\end{aligned}
$$

Mathematica [**A**] time = 0.08, size = 100, normalized size = 0.96

$$
\frac{\frac{2\left(-abe-2acd+b^2d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+(bd-ae)\log(a+x(b+cx))+2\log(x)(ae-bd)-\frac{2ad}{x}}{2a^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a*d)/x + (2*(b^2*d - 2*a*c*d - a*b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4
*a*c]])/Sqrt[-b^2 + 4*a*c] + 2*(-(b*d) + a*e)*Log[x] + (b*d - a*e)*Log[a +
x*(b + c*x)])/(2*a^2)
```

fricas [**A**] time = 1.37, size = 361, normalized size = 3.47

$$
\left[\frac{\left(abe-\left(b^2-2\,ac\right)d\right)\sqrt{b^2-4\,ac}\,x\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(\left(b^3-4\,abc\right)d-\left(ab^2-4\,a^2c\right)e\right)x\,\mathrm{lo}}{2\left(a^2b^2-4\,a^3c\right)x}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((a*b*e - (b^2 - 2*a*c)*d)*sqrt(b^2 - 4*a*c)*x*log((2*c^2*x^2 + 2*b*c*
x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + ((b^3
 - 4*a*b*c)*d - (a*b^2 - 4*a^2*c)*e)*x*log(c*x^2 + b*x + a) - 2*((b^3 - 4*a
*b*c)*d - (a*b^2 - 4*a^2*c)*e)*x*log(x) - 2*(a*b^2 - 4*a^2*c)*d)/((a^2*b^2
- 4*a^3*c)*x), 1/2*(2*(a*b*e - (b^2 - 2*a*c)*d)*sqrt(-b^2 + 4*a*c)*x*arctan
(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + ((b^3 - 4*a*b*c)*d - (a*b
^2 - 4*a^2*c)*e)*x*log(c*x^2 + b*x + a) - 2*((b^3 - 4*a*b*c)*d - (a*b^2 - 4
*a^2*c)*e)*x*log(x) - 2*(a*b^2 - 4*a^2*c)*d)/((a^2*b^2 - 4*a^3*c)*x)]
```

giac [**A**] time = 0.15, size = 105, normalized size = 1.01

$$
\frac{(bd-ae)\log\left(cx^2+bx+a\right)}{2\,a^2}-\frac{(bd-ae)\log\left(|x|\right)}{a^2}+\frac{\left(b^2d-2\,acd-abe\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,a^2}-\frac{d}{ax}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(b*d - a*e)*log(c*x^2 + b*x + a)/a^2 - (b*d - a*e)*log(abs(x))/a^2 + (b
^2*d - 2*a*c*d - a*b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 +
 4*a*c)*a^2) - d/(a*x)
```

maple [A]   time = 0.06, size = 180, normalized size = 1.73

$$-\frac{be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a}-\frac{2cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a}+\frac{b^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^2}+\frac{e\ln(x)}{a}-\frac{e\ln\left(cx^2+bx+a\right)}{2a}-\frac{bd\ln(x)}{a^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x+a),x)
```

```
[Out] -1/2/a*ln(c*x^2+b*x+a)*e+1/2/a^2*ln(c*x^2+b*x+a)*b*d-1/a/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*e-2/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*c*d+1/a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-
b^2)^(1/2))*b^2*d-1/a*d/x+1/a*e*ln(x)-1/a^2*ln(x)*b*d
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B]   time = 2.96, size = 791, normalized size = 7.61

$$\frac{\ln(x)\,(a\,e-b\,d)}{a^2}-\frac{d}{a\,x}+\frac{\ln\left(\frac{b\,c^2\,d^2-a\,c^2\,d\,e}{a^2}+\frac{\left(\frac{e\,a^2\,b\,c+d\,a^2\,c^2-d\,a\,b^2\,c}{a^2}+\frac{\left(\frac{x\left(6\,a^3\,c^2-2\,a^2\,b^2\,c\right)}{a^2}-a\,b\,c\right)\left(d\left(b^2-4\,a\,c\right)^{3/2}+b^2\,d\,\sqrt{b^2-4\,a\,c}-2\,a\,e\left(4\,a\,c-b^2\right)+2\,b\,d\,(4\,a\,c\right.}{16\,a^3\,c-4\,a^2\,b^2}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(x)*(a*e - b*d))/a^2 - d/(a*x) + (log((b*c^2*d^2 - a*c^2*d*e)/a^2 + (((
a^2*c^2*d - a*b^2*c*d + a^2*b*c*e)/a^2 + (((x*(6*a^3*c^2 - 2*a^2*b^2*c))/a^
2 - a*b*c)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*
c - b^2) + 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c -
4*a^2*b^2) + (x*(3*a^2*c^2*e - 2*a*b*c^2*d))/a^2)*(d*(b^2 - 4*a*c)^(3/2) +
b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*c - b^2) + 2*b*d*(4*a*c - b^2) - 2*a
*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) + (c^3*d^2*x)/a^2)*(d*(b^
2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*e*(4*a*c - b^2) + 2*b*d*
(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) - (log
((b*c^2*d^2 - a*c^2*d*e)/a^2 - (((a^2*c^2*d - a*b^2*c*d + a^2*b*c*e)/a^2 -
(((x*(6*a^3*c^2 - 2*a^2*b^2*c))/a^2 - a*b*c)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d
*(b^2 - 4*a*c)^(1/2) + 2*a*e*(4*a*c - b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*
(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*a^2*b^2) + (x*(3*a^2*c^2*e - 2*a*b*c^2*
d))/a^2)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1/2) + 2*a*e*(4*a*c
- b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/2)))/(16*a^3*c - 4*
a^2*b^2) + (c^3*d^2*x)/a^2)*(d*(b^2 - 4*a*c)^(3/2) + b^2*d*(b^2 - 4*a*c)^(1
/2) + 2*a*e*(4*a*c - b^2) - 2*b*d*(4*a*c - b^2) - 2*a*b*e*(b^2 - 4*a*c)^(1/
2)))/(16*a^3*c - 4*a^2*b^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.888 $\int \frac{d+ex}{x^3(a+bx+cx^2)}\,dx$

Optimal. Leaf size=145

$$-\frac{\left(-abe-acd+b^2d\right)\log\left(a+bx+cx^2\right)}{2a^3}+\frac{\log(x)\left(-abe-acd+b^2d\right)}{a^3}+\frac{bd-ae}{a^2x}+\frac{\left(2a^2ce-ab^2e-3abcd+b^3d\right)\tanh}{a^3\sqrt{b^2-4ac}}$$

```
[Out] -1/2*d/a/x^2+(-a*e+b*d)/a^2/x+(-a*b*e-a*c*d+b^2*d)*ln(x)/a^3-1/2*(-a*b*e-a*
c*d+b^2*d)*ln(c*x^2+b*x+a)/a^3+(2*a^2*c*e-a*b^2*e-3*a*b*c*d+b^3*d)*arctanh(
(2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^3/(-4*a*c+b^2)^(1/2)
```

Rubi **[A]** time = 0.23, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(-abe-acd+b^2d\right)\log\left(a+bx+cx^2\right)}{2a^3}+\frac{\log(x)\left(-abe-acd+b^2d\right)}{a^3}+\frac{\left(2a^2ce-ab^2e-3abcd+b^3d\right)\tanh^{-1}\left(\frac{b+2c}{\sqrt{b^2-4}}\right.}{a^3\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] -d/(2*a*x^2) + (b*d - a*e)/(a^2*x) + ((b^3*d - 3*a*b*c*d - a*b^2*e + 2*a^2*
c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a^3*Sqrt[b^2 - 4*a*c]) + ((b^
2*d - a*c*d - a*b*e)*Log[x])/a^3 - ((b^2*d - a*c*d - a*b*e)*Log[a + b*x + c
*x^2])/(2*a^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{d}{ax^3}+\frac{-bd+ae}{a^2x^2}+\frac{b^2d-acd-abe}{a^3x}+\frac{-b^3d+2abcd+ab^2e-a^2ce-c\left(b^2d-acd\right.}{a^3\left(a+bx+cx^2\right)}\right.$$

$$=-\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}+\frac{\int\frac{-b^3d+2abcd+ab^2e-a^2ce-c\left(b^2d-acd-abe\right)x}{a+bx+cx^2}}{a^3}$$

$$=-\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}-\frac{\left(b^2d-acd-abe\right)\int\frac{b+2cx}{a+bx+cx^2}\,dx}{2a^3}-$$

$$=-\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^2d-acd-abe\right)\log(x)}{a^3}-\frac{\left(b^2d-acd-abe\right)\log\left(a+bx+cx^2\right)}{2a^3}$$

$$=-\frac{d}{2ax^2}+\frac{bd-ae}{a^2x}+\frac{\left(b^3d-3abcd-ab^2e+2a^2ce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^3\sqrt{b^2-4ac}}+\frac{\left(b^2d-acd-\right.}{a^3}$$

Mathematica [A] time = 0.13, size = 141, normalized size = 0.97

$$\frac{\frac{2\left(-2a^2ce+ab^2e+3abcd+b^3(-d)\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{a^2d}{x^2}+2\log(x)\left(-abe-acd+b^2d\right)+\left(abe+acd+b^2(-d)\right)\log(a+x(b}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + b*x + c*x^2)),x]
```

```
[Out] (-((a^2*d)/x^2) + (2*a*(b*d - a*e))/x + (2*(-(b^3*d) + 3*a*b*c*d + a*b^2*e
- 2*a^2*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 2
*(b^2*d - a*c*d - a*b*e)*Log[x] + (-(b^2*d) + a*c*d + a*b*e)*Log[a + x*(b +
 c*x)])/(2*a^3)
```

fricas [A] time = 1.91, size = 517, normalized size = 3.57

$$\left[\frac{\sqrt{b^2-4\,ac}\left(\left(b^3-3\,abc\right)d-\left(ab^2-2\,a^2c\right)e\right)x^2\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)-\left(\left(b^4-5\,ab^2c+4\,a^2c^2\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*((b^3 - 3*a*b*c)*d - (a*b^2 - 2*a^2*c)*e)*x^2*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) - ((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a^2*b*c)*e)*x^2*
log(c*x^2 + b*x + a) + 2*((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a^2*
b*c)*e)*x^2*log(x) - (a^2*b^2 - 4*a^3*c)*d + 2*((a*b^3 - 4*a^2*b*c)*d - (a^
2*b^2 - 4*a^3*c)*e)*x)/((a^3*b^2 - 4*a^4*c)*x^2), 1/2*(2*sqrt(-b^2 + 4*a*c)
*((b^3 - 3*a*b*c)*d - (a*b^2 - 2*a^2*c)*e)*x^2*arctan(-sqrt(-b^2 + 4*a*c)*(
2*c*x + b)/(b^2 - 4*a*c)) - ((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d - (a*b^3 - 4*a
^2*b*c)*e)*x^2*log(c*x^2 + b*x + a) + 2*((b^4 - 5*a*b^2*c + 4*a^2*c^2)*d -
(a*b^3 - 4*a^2*b*c)*e)*x^2*log(x) - (a^2*b^2 - 4*a^3*c)*d + 2*((a*b^3 - 4*a
^2*b*c)*d - (a^2*b^2 - 4*a^3*c)*e)*x)/((a^3*b^2 - 4*a^4*c)*x^2)]
```

giac [A] time = 0.18, size = 152, normalized size = 1.05

$$-\frac{\left(b^{2}d-acd-abe\right)\log\left(cx^{2}+bx+a\right)}{2\,a^{3}}+\frac{\left(b^{2}d-acd-abe\right)\log\left(|x|\right)}{a^{3}}-\frac{\left(b^{3}d-3\,abcd-ab^{2}e+2\,a^{2}ce\right)\arctan\left(\frac{2\,cx+}{\sqrt{-b^{2}+4}}\right.}{\sqrt{-b^{2}+4\,ac}\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/2*(b^2*d - a*c*d - a*b*e)*log(c*x^2 + b*x + a)/a^3 + (b^2*d - a*c*d - a*
b*e)*log(abs(x))/a^3 - (b^3*d - 3*a*b*c*d - a*b^2*e + 2*a^2*c*e)*arctan((2*
c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*a^3) - 1/2*(a^2*d - 2*(a*b
*d - a^2*e)*x)/(a^3*x^2)
```

maple [A] time = 0.07, size = 273, normalized size = 1.88

$$-\frac{2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;a}+\frac{b^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;a^{2}}+\frac{3bcd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;a^{2}}-\frac{b^{3}d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;a^{3}}-\frac{be\ln(x)}{a^{2}}+\frac{be\ln\left(c\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/a^2*ln(c*x^2+b*x+a)*b*e+1/2/a^2*c*ln(c*x^2+b*x+a)*d-1/2/a^3*ln(c*x^2+b*
x+a)*b^2*d-2/a/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c*e+1/
a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e+3/a^2/(4*a*
c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d-1/a^3/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d-1/2/a*d/x^2-1/a*e/x+1/a^2/x*b
*d-1/a^2*ln(x)*b*e-1/a^2*c*d*ln(x)+1/a^3*ln(x)*b^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.49, size = 814, normalized size = 5.61

$$\frac{\ln\left(6\,a^{3}\,c^{2}\,d-2\,a^{2}\,b^{3}\,e+2\,a\,b^{4}\,d+2\,b^{5}\,d\,x+7\,a^{3}\,b\,c\,e-2\,a\,b^{4}\,e\,x+2\,a\,b^{3}\,d\,\sqrt{b^{2}-4\,a\,c}+a^{3}\,c\,e\,\sqrt{b^{2}-4\,a\,c}+2\,b^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(6*a^3*c^2*d - 2*a^2*b^3*e + 2*a*b^4*d + 2*b^5*d*x + 7*a^3*b*c*e - 2*a*
b^4*e*x + 2*a*b^3*d*(b^2 - 4*a*c)^(1/2) + a^3*c*e*(b^2 - 4*a*c)^(1/2) + 2*b
^4*d*x*(b^2 - 4*a*c)^(1/2) - 9*a^2*b^2*c*d - 2*a^3*c^2*e*x - 2*a^2*b^2*e*(b
^2 - 4*a*c)^(1/2) - 2*a*b^3*e*x*(b^2 - 4*a*c)^(1/2) + 9*a^2*b*c^2*d*x + 8*a
^2*b^2*c*e*x + 3*a^2*c^2*d*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^3*c*d*x - 3*a^2*b
*c*d*(b^2 - 4*a*c)^(1/2) - 6*a*b^2*c*d*x*(b^2 - 4*a*c)^(1/2) + 4*a^2*b*c*e*
x*(b^2 - 4*a*c)^(1/2))*(a^2*(2*c^2*d + 2*b*c*e + c*e*(b^2 - 4*a*c)^(1/2)) +
 (b^4*d)/2 - a*((b^3*e)/2 + (b^2*e*(b^2 - 4*a*c)^(1/2))/2 + (5*b^2*c*d)/2 +
 (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) + (b^3*d*(b^2 - 4*a*c)^(1/2))/2))/(4*a^4*
c - a^3*b^2) - (log(x)*(a*(b*e + c*d) - b^2*d))/a^3 - (d/(2*a) + (x*(a*e -
b*d))/a^2)/x^2 + (log(2*a^2*b^3*e - 6*a^3*c^2*d - 2*a*b^4*d - 2*b^5*d*x - 7
*a^3*b*c*e + 2*a*b^4*e*x + 2*a*b^3*d*(b^2 - 4*a*c)^(1/2) + a^3*c*e*(b^2 - 4
*a*c)^(1/2) + 2*b^4*d*x*(b^2 - 4*a*c)^(1/2) + 9*a^2*b^2*c*d + 2*a^3*c^2*e*x
 - 2*a^2*b^2*e*(b^2 - 4*a*c)^(1/2) - 2*a*b^3*e*x*(b^2 - 4*a*c)^(1/2) - 9*a^
2*b*c^2*d*x - 8*a^2*b^2*c*e*x + 3*a^2*c^2*d*x*(b^2 - 4*a*c)^(1/2) + 10*a*b^
3*c*d*x - 3*a^2*b*c*d*(b^2 - 4*a*c)^(1/2) - 6*a*b^2*c*d*x*(b^2 - 4*a*c)^(1/
2) + 4*a^2*b*c*e*x*(b^2 - 4*a*c)^(1/2))*(a^2*(2*c^2*d + 2*b*c*e - c*e*(b^2
- 4*a*c)^(1/2)) + (b^4*d)/2 - a*((b^3*e)/2 - (b^2*e*(b^2 - 4*a*c)^(1/2))/2
+ (5*b^2*c*d)/2 - (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) - (b^3*d*(b^2 - 4*a*c)^(
1/2))/2))/(4*a^4*c - a^3*b^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.889 $\int \frac{d+ex}{x^4(a+bx+cx^2)}\,dx$

Optimal. Leaf size=204

$$-\frac{-abe-acd+b^2d}{a^3x}+\frac{bd-ae}{2a^2x^2}+\frac{\left(a^2ce-ab^2e-2abcd+b^3d\right)\log\left(a+bx+cx^2\right)}{2a^4}-\frac{\log(x)\left(a^2ce-ab^2e-2abcd+b^3d\right)}{a^4}$$

```
[Out] -1/3*d/a/x^3+1/2*(-a*e+b*d)/a^2/x^2+(a*b*e+a*c*d-b^2*d)/a^3/x-(a^2*c*e-a*b^
2*e-2*a*b*c*d+b^3*d)*ln(x)/a^4+1/2*(a^2*c*e-a*b^2*e-2*a*b*c*d+b^3*d)*ln(c*x
^2+b*x+a)/a^4-(3*a^2*b*c*e+2*a^2*c^2*d-a*b^3*e-4*a*b^2*c*d+b^4*d)*arctanh((
2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^4/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\left(3a^2bce+2a^2c^2d-4ab^2cd-ab^3e+b^4d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^4\sqrt{b^2-4ac}}+\frac{\left(a^2ce-ab^2e-2abcd+b^3d\right)\log\left(a+bx+cx^2\right)}{2a^4}-$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^4*(a + b*x + c*x^2)),x]
```

```
[Out] -d/(3*a*x^3) + (b*d - a*e)/(2*a^2*x^2) - (b^2*d - a*c*d - a*b*e)/(a^3*x) -
((b^4*d - 4*a*b^2*c*d + 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*ArcTanh[(b + 2
*c*x)/Sqrt[b^2 - 4*a*c]])/(a^4*Sqrt[b^2 - 4*a*c]) - ((b^3*d - 2*a*b*c*d - a
*b^2*e + a^2*c*e)*Log[x])/a^4 + ((b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*Lo
g[a + b*x + c*x^2])/(2*a^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{d+ex}{x^4\left(a+bx+cx^2\right)}\,dx = \int \bigg(\frac{d}{ax^4}+\frac{-bd+ae}{a^2x^3}+\frac{b^2d-acd-abe}{a^3x^2}+\frac{-b^3d+2abcd+ab^2e-a^2ce}{a^4x}+\frac{b^4d-3ab^2}{}$$

$$=-\frac{d}{3ax^3}+\frac{bd-ae}{2a^2x^2}-\frac{b^2d-acd-abe}{a^3x}-\frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4}+\frac{\int \frac{b^4d-3}{}}{}$$

$$=-\frac{d}{3ax^3}+\frac{bd-ae}{2a^2x^2}-\frac{b^2d-acd-abe}{a^3x}-\frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4}+\frac{\big(b^3d-}{}$$

$$=-\frac{d}{3ax^3}+\frac{bd-ae}{2a^2x^2}-\frac{b^2d-acd-abe}{a^3x}-\frac{\left(b^3d-2abcd-ab^2e+a^2ce\right)\log(x)}{a^4}+\frac{\big(b^3d-}{}$$

$$=-\frac{d}{3ax^3}+\frac{bd-ae}{2a^2x^2}-\frac{b^2d-acd-abe}{a^3x}-\frac{\left(b^4d-4ab^2cd+2a^2c^2d-ab^3e+3a^2bce\right)\tan}{a^4\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.14, size = 196, normalized size = 0.96

$$\frac{-\frac{2a^3d}{x^3}-6\log(x)\left(a^2ce-ab^2e-2abcd+b^3d\right)+3\left(a^2ce-ab^2e-2abcd+b^3d\right)\log(a+x(b+cx))+\frac{6\big(3a^2bce+2a^2c}{}}{6a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^4*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a^3*d)/x^3 + (3*a^2*(b*d - a*e))/x^2 + (6*a*(-(b^2*d) + a*c*d + a*b*e)
)/x + (6*(b^4*d - 4*a*b^2*c*d + 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*ArcTan
[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 6*(b^3*d - 2*a*b*c*d
 - a*b^2*e + a^2*c*e)*Log[x] + 3*(b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*Lo
g[a + x*(b + c*x)])/(6*a^4)
```

fricas [A] time = 4.03, size = 687, normalized size = 3.37

$$\Bigg[\frac{3\sqrt{b^2-4ac}\left(\left(b^4-4ab^2c+2a^2c^2\right)d-\left(ab^3-3a^2bc\right)e\right)x^3\log\left(\frac{2c^2x^2+2bcx+b^2-2ac-\sqrt{b^2-4ac}\,(2cx+b)}{cx^2+bx+a}\right)+3\big(\big(b^5-6a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*sqrt(b^2 - 4*a*c)*((b^4 - 4*a*b^2*c + 2*a^2*c^2)*d - (a*b^3 - 3*a^2
*b*c)*e)*x^3*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*
c*x + b))/(c*x^2 + b*x + a)) + 3*((b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d - (a*b^
4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(c*x^2 + b*x + a) - 6*((b^5 - 6*a*b^
3*c + 8*a^2*b*c^2)*d - (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(x) - 6*
((a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d - (a^2*b^3 - 4*a^3*b*c)*e)*x^2 - 2*(a^
3*b^2 - 4*a^4*c)*d + 3*((a^2*b^3 - 4*a^3*b*c)*d - (a^3*b^2 - 4*a^4*c)*e)*x)
/((a^4*b^2 - 4*a^5*c)*x^3), -1/6*(6*sqrt(-b^2 + 4*a*c)*((b^4 - 4*a*b^2*c +
2*a^2*c^2)*d - (a*b^3 - 3*a^2*b*c)*e)*x^3*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x
 + b)/(b^2 - 4*a*c)) - 3*((b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d - (a*b^4 - 5*a^
2*b^2*c + 4*a^3*c^2)*e)*x^3*log(c*x^2 + b*x + a) + 6*((b^5 - 6*a*b^3*c + 8*
a^2*b*c^2)*d - (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e)*x^3*log(x) + 6*((a*b^4
- 5*a^2*b^2*c + 4*a^3*c^2)*d - (a^2*b^3 - 4*a^3*b*c)*e)*x^2 + 2*(a^3*b^2 -
4*a^4*c)*d - 3*((a^2*b^3 - 4*a^3*b*c)*d - (a^3*b^2 - 4*a^4*c)*e)*x)/((a^4*b
^2 - 4*a^5*c)*x^3)]
```

giac **[A]** time = 0.18, size = 214, normalized size = 1.05

$$\frac{\left(b^3d-2\,abcd-ab^2e+a^2ce\right)\log\left(cx^2+bx+a\right)}{2\,a^4}-\frac{\left(b^3d-2\,abcd-ab^2e+a^2ce\right)\log\left(|x|\right)}{a^4}+\frac{\left(b^4d-4\,ab^2cd+2\,a^2c^2d\right.}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(b^3*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*log(c*x^2 + b*x + a)/a^4 - (b^3
*d - 2*a*b*c*d - a*b^2*e + a^2*c*e)*log(abs(x))/a^4 + (b^4*d - 4*a*b^2*c*d
+ 2*a^2*c^2*d - a*b^3*e + 3*a^2*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c
))/(sqrt(-b^2 + 4*a*c)*a^4) - 1/6*(2*a^3*d + 6*(a*b^2*d - a^2*c*d - a^2*b*e
)*x^2 - 3*(a^2*b*d - a^3*e)*x)/(a^4*x^3)
```

maple **[A]** time = 0.07, size = 381, normalized size = 1.87

$$\frac{3bce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^2}+\frac{2c^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^2}-\frac{b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^3}-\frac{4b^2cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;a^3}+\frac{b^4d\arctan\left(\frac{2cx+}{\sqrt{4ac-}}\right.}{\sqrt{4ac-b^2}\;a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^4/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/a^2*c*ln(c*x^2+b*x+a)*e-1/2/a^3*ln(c*x^2+b*x+a)*b^2*e-1/a^3*c*ln(c*x^2+
b*x+a)*b*d+1/2/a^4*ln(c*x^2+b*x+a)*b^3*d+3/a^2/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*c*e+2/a^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*c^2*d-1/a^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^3*e-4/a^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b
^2*c*d+1/a^4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-1/
3/a*d/x^3-1/2/a*e/x^2+1/2/a^2/x^2*b*d+1/a^2*b*e/x+1/a^2*c*d/x-1/a^3*b^2*d/x
-1/a^2*c*e*ln(x)+1/a^3*ln(x)*b^2*e+2/a^3*ln(x)*b*c*d-1/a^4*ln(x)*b^3*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^4/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad **[B]** time = 2.75, size = 1063, normalized size = 5.21

$$\ln\left(2\,a^2\,b^4\,e+6\,a^4\,c^2\,e-2\,a\,b^5\,d-2\,b^6\,d\,x+2\,a\,b^5\,e\,x+2\,a\,b^4\,d\,\sqrt{b^2-4\,a\,c}+2\,b^5\,d\,x\,\sqrt{b^2-4\,a\,c}+11\,a^2\,b^3\,c\,d-1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^4*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*a^2*b^4*e + 6*a^4*c^2*e - 2*a*b^5*d - 2*b^6*d*x + 2*a*b^5*e*x + 2*a*
b^4*d*(b^2 - 4*a*c)^(1/2) + 2*b^5*d*x*(b^2 - 4*a*c)^(1/2) + 11*a^2*b^3*c*d
- 13*a^3*b*c^2*d - 9*a^3*b^2*c*e + 2*a^3*c^3*d*x - 2*a^2*b^3*e*(b^2 - 4*a*c
)^(1/2) + a^3*c^2*d*(b^2 - 4*a*c)^(1/2) - 2*a*b^4*e*x*(b^2 - 4*a*c)^(1/2) -
 10*a^2*b^3*c*e*x + 9*a^3*b*c^2*e*x - 5*a^2*b^2*c*d*(b^2 - 4*a*c)^(1/2) - 3
*a^3*c^2*e*x*(b^2 - 4*a*c)^(1/2) - 17*a^2*b^2*c^2*d*x + 12*a*b^4*c*d*x + 3*
a^3*b*c*e*(b^2 - 4*a*c)^(1/2) - 8*a*b^3*c*d*x*(b^2 - 4*a*c)^(1/2) + 7*a^2*b
*c^2*d*x*(b^2 - 4*a*c)^(1/2) + 6*a^2*b^2*c*e*x*(b^2 - 4*a*c)^(1/2))*(b^4*d*
(b^2 - 4*a*c)^(1/2) - b^5*d + 4*a^3*c^2*e + a*b^4*e + 6*a*b^3*c*d - a*b^3*e
*(b^2 - 4*a*c)^(1/2) - 8*a^2*b*c^2*d - 5*a^2*b^2*c*e + 2*a^2*c^2*d*(b^2 - 4
*a*c)^(1/2) - 4*a*b^2*c*d*(b^2 - 4*a*c)^(1/2) + 3*a^2*b*c*e*(b^2 - 4*a*c)^(
1/2)))/(2*(4*a^5*c - a^4*b^2)) - (d/(3*a) + (x*(a*e - b*d))/(2*a^2) - (x^2*
(a*b*e - b^2*d + a*c*d))/a^3)/x^3 - (log(2*a^2*b^4*e + 6*a^4*c^2*e - 2*a*b^
5*d - 2*b^6*d*x + 2*a*b^5*e*x - 2*a*b^4*d*(b^2 - 4*a*c)^(1/2) - 2*b^5*d*x*(
b^2 - 4*a*c)^(1/2) + 11*a^2*b^3*c*d - 13*a^3*b*c^2*d - 9*a^3*b^2*c*e + 2*a^
3*c^3*d*x + 2*a^2*b^3*e*(b^2 - 4*a*c)^(1/2) - a^3*c^2*d*(b^2 - 4*a*c)^(1/2)
 + 2*a*b^4*e*x*(b^2 - 4*a*c)^(1/2) - 10*a^2*b^3*c*e*x + 9*a^3*b*c^2*e*x + 5
*a^2*b^2*c*d*(b^2 - 4*a*c)^(1/2) + 3*a^3*c^2*e*x*(b^2 - 4*a*c)^(1/2) - 17*a
^2*b^2*c^2*d*x + 12*a*b^4*c*d*x - 3*a^3*b*c*e*(b^2 - 4*a*c)^(1/2) + 8*a*b^3
*c*d*x*(b^2 - 4*a*c)^(1/2) - 7*a^2*b*c^2*d*x*(b^2 - 4*a*c)^(1/2) - 6*a^2*b^
2*c*e*x*(b^2 - 4*a*c)^(1/2))*(b^5*d + b^4*d*(b^2 - 4*a*c)^(1/2) - 4*a^3*c^2
*e - a*b^4*e - 6*a*b^3*c*d - a*b^3*e*(b^2 - 4*a*c)^(1/2) + 8*a^2*b*c^2*d +
5*a^2*b^2*c*e + 2*a^2*c^2*d*(b^2 - 4*a*c)^(1/2) - 4*a*b^2*c*d*(b^2 - 4*a*c)
^(1/2) + 3*a^2*b*c*e*(b^2 - 4*a*c)^(1/2)))/(2*(4*a^5*c - a^4*b^2)) - (log(x
)*(b^3*d - a*(b^2*e + 2*b*c*d) + a^2*c*e))/a^4
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**4/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.890 $\int \frac{x^4(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=262

$$-\frac{\left(-30a^2bc^2e+12a^2c^3d+20ab^3ce-12ab^2c^2d-3b^5e+2b^4cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\left(b^2-4ac\right)^{3/2}}-\frac{\left(2ace-3b^2e+2bcd\right)\log\left(a+\right.}{2c^4}$$

```
[Out] (11*a*b*c*e-6*a*c^2*d-3*b^3*e+2*b^2*c*d)*x/c^3/(-4*a*c+b^2)-1/2*(8*a*c*e-3*
b^2*e+2*b*c*d)*x^2/c^2/(-4*a*c+b^2)+x^3*(a*(-b*e+2*c*d)+(2*a*c*e-b^2*e+b*c*
d)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)-(-30*a^2*b*c^2*e+12*a^2*c^3*d+20*a*b^3*c
*e-12*a*b^2*c^2*d-3*b^5*e+2*b^4*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/
c^4/(-4*a*c+b^2)^(3/2)-1/2*(2*a*c*e-3*b^2*e+2*b*c*d)*ln(c*x^2+b*x+a)/c^4
```

Rubi [A] time = 0.64, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 800, 634, 618, 206, 628}

$$-\frac{\left(-30a^2bc^2e+12a^2c^3d-12ab^2c^2d+20ab^3ce+2b^4cd-3b^5e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^4\left(b^2-4ac\right)^{3/2}}-\frac{x^2\left(8ace-3b^2e+2bcd\right)}{2c^2\left(b^2-4ac\right)}-\frac{\left(2ace\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((2*b^2*c*d - 6*a*c^2*d - 3*b^3*e + 11*a*b*c*e)*x)/(c^3*(b^2 - 4*a*c)) - ((
2*b*c*d - 3*b^2*e + 8*a*c*e)*x^2)/(2*c^2*(b^2 - 4*a*c)) + (x^3*(a*(2*c*d -
b*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x^2)) -
((2*b^4*c*d - 12*a*b^2*c^2*d + 12*a^2*c^3*d - 3*b^5*e + 20*a*b^3*c*e - 30*a
^2*b*c^2*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^4*(b^2 - 4*a*c)^(3/2
)) - ((2*b*c*d - 3*b^2*e + 2*a*c*e)*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^4(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{x^3\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{x^2\left(-3a(2cd-be)-\left(2bcd-3b^2e+8ace\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$= \frac{x^3\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \left(\frac{2b^2cd-6ac^2d-3b^3e+11abce}{c^2}-\frac{\left(2bcd-3b^2e+8ace\right)x}{c}-\right.}{c}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bc\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bc\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bc\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

$$= \frac{\left(2b^2cd-6ac^2d-3b^3e+11abce\right)x}{c^3\left(b^2-4ac\right)}-\frac{\left(2bcd-3b^2e+8ace\right)x^2}{2c^2\left(b^2-4ac\right)}+\frac{x^3\left(a(2cd-be)+\left(bc\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

Mathematica [A] time = 0.36, size = 249, normalized size = 0.95

$$\frac{\frac{2\left(30a^2bc^2e-12a^2c^3d-20ab^3ce+12ab^2c^2d+3b^5e-2b^4cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+\frac{2\left(2a^3c^2e+a^2c\left(-4b^2e+bc(3d+5ex)-2c^2dx\right)+ab^2\left(b^2e-bc(d+5ex)+4c^2dx\right)\right.}{\left(b^2-4ac\right)(a+x(b+cx))}}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*c*(c*d - 2*b*e)*x + c^2*e*x^2 + (2*(2*a^3*c^2*e + b^4*(-(c*d) + b*e)*x +
 a*b^2*(b^2*e + 4*c^2*d*x - b*c*(d + 5*e*x)) + a^2*c*(-4*b^2*e - 2*c^2*d*x
+ b*c*(3*d + 5*e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(-2*b^4*c*d +
 12*a*b^2*c^2*d - 12*a^2*c^3*d + 3*b^5*e - 20*a*b^3*c*e + 30*a^2*b*c^2*e)*A
rcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + (-2*b*c*d + 3
*b^2*e - 2*a*c*e)*Log[a + x*(b + c*x)])/(2*c^4)
```

fricas [B] time = 1.11, size = 1696, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*e*x^4 + (2*(b^4*c^3 - 8*a*b^2*c^
4 + 16*a^2*c^5)*d - 3*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3 + (2*(b
^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d - (4*b^6*c - 33*a*b^4*c^2 + 72*a^2*b
^2*c^3 - 16*a^3*c^4)*e)*x^2 + ((2*(b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*d - (
3*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*e)*x^2 + 2*(a*b^4*c - 6*a^2*b^2*c^2
+ 6*a^3*c^3)*d - (3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*e + (2*(b^5*c - 6*
a*b^3*c^2 + 6*a^2*b*c^3)*d - (3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*e)*x)*sq
rt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*
(2*c*x + b))/(c*x^2 + b*x + a)) - 2*(a*b^5*c - 7*a^2*b^3*c^2 + 12*a^3*b*c^3
)*d + 2*(a*b^6 - 8*a^2*b^4*c + 18*a^3*b^2*c^2 - 8*a^4*c^3)*e - 2*((b^6*c -
9*a*b^4*c^2 + 26*a^2*b^2*c^3 - 24*a^3*c^4)*d - (b^7 - 11*a*b^5*c + 41*a^2*b
^3*c^2 - 52*a^3*b*c^3)*e)*x - ((2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d
- (3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*e)*x^2 + 2*(a*b^5*
c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d - (3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*
c^2 - 32*a^4*c^3)*e + (2*(b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*d - (3*b^7
- 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*e)*x)*log(c*x^2 + b*x + a))/(
a*b^4*c^4 - 8*a^2*b^2*c^5 + 16*a^3*c^6 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^
7)*x^2 + (b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x), 1/2*((b^4*c^3 - 8*a*b^2
*c^4 + 16*a^2*c^5)*e*x^4 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d - 3*(b
^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3 + (2*(b^5*c^2 - 8*a*b^3*c^3 + 1
6*a^2*b*c^4)*d - (4*b^6*c - 33*a*b^4*c^2 + 72*a^2*b^2*c^3 - 16*a^3*c^4)*e)*
x^2 - 2*((2*(b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*d - (3*b^5*c - 20*a*b^3*c^2
 + 30*a^2*b*c^3)*e)*x^2 + 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*a^3*c^3)*d - (3*a*
b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*e + (2*(b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^
3)*d - (3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*e)*x)*sqrt(-b^2 + 4*a*c)*arcta
n(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^5*c - 7*a^2*b^3*c
^2 + 12*a^3*b*c^3)*d + 2*(a*b^6 - 8*a^2*b^4*c + 18*a^3*b^2*c^2 - 8*a^4*c^3)
*e - 2*((b^6*c - 9*a*b^4*c^2 + 26*a^2*b^2*c^3 - 24*a^3*c^4)*d - (b^7 - 11*a
*b^5*c + 41*a^2*b^3*c^2 - 52*a^3*b*c^3)*e)*x - ((2*(b^5*c^2 - 8*a*b^3*c^3 +
 16*a^2*b*c^4)*d - (3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*e
)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d - (3*a*b^6 - 26*a^2*b^
4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*e + (2*(b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2
*c^3)*d - (3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*e)*x)*log(c*
x^2 + b*x + a))/(a*b^4*c^4 - 8*a^2*b^2*c^5 + 16*a^3*c^6 + (b^4*c^5 - 8*a*b^
2*c^6 + 16*a^2*c^7)*x^2 + (b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x)]
```

giac [A] time = 0.16, size = 297, normalized size = 1.13

$$\frac{\left(2\,b^{4}cd-12\,ab^{2}c^{2}d+12\,a^{2}c^{3}d-3\,b^{5}e+20\,ab^{3}ce-30\,a^{2}bc^{2}e\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}c^{4}-4\,ac^{5}\right)\sqrt{-b^{2}+4\,ac}}-\frac{\left(2\,bcd-3\,b^{2}e+2\,ace\right)\log\left(cx^{2}\right.}{2\,c^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*b^4*c*d - 12*a*b^2*c^2*d + 12*a^2*c^3*d - 3*b^5*e + 20*a*b^3*c*e - 30*a^
2*b*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^4 - 4*a*c^5)*sqrt
(-b^2 + 4*a*c)) - 1/2*(2*b*c*d - 3*b^2*e + 2*a*c*e)*log(c*x^2 + b*x + a)/c^
4 + 1/2*(c^2*x^2*e + 2*c^2*d*x - 4*b*c*x*e)/c^4 - (a*b^3*c*d - 3*a^2*b*c^2*
d - a*b^4*e + 4*a^2*b^2*c*e - 2*a^3*c^2*e + (b^4*c*d - 4*a*b^2*c^2*d + 2*a^
2*c^3*d - b^5*e + 5*a*b^3*c*e - 5*a^2*b*c^2*e)*x)/((c*x^2 + b*x + a)*(b^2 -
 4*a*c)*c^4)
```

maple [**B**] time = 0.06, size = 809, normalized size = 3.09

$$-\frac{5a^2bex}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)c^2}+\frac{30a^2be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}c^2}+\frac{2a^2dx}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)c}-\frac{12a^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right.}{\left(4ac-b^2\right)^{\frac{3}{2}}c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -5/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a^2*b*e+5/c^3/(c*x^2+b*x+a)/(4*a*c-b^2)*
x*a*b^3*e-4/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a*b^2*d-20/c^3/(4*a*c-b^2)^(3/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e+12/c^2/(4*a*c-b^2)^(3/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d+7/c^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a
*b^2*e-4/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*b*d+30/c^2/(4*a*c-b^2)^(3/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e+1/c^3/(c*x^2+b*x+a)*a/(4*a*c-b^2)*
b^3*d-3/c^2/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*b*d-1/c^4/(c*x^2+b*x+a)*a/(4*a*c-
b^2)*b^4*e-1/c^4/(c*x^2+b*x+a)/(4*a*c-b^2)*x*b^5*e+1/c^3/(c*x^2+b*x+a)/(4*a
*c-b^2)*x*b^4*d+4/c^3/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*b^2*e+2/c/(c*x^2+b*x+a)
/(4*a*c-b^2)*x*a^2*d-4/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*e*a^2-3/2/c^4/(4*a*c
-b^2)*ln(c*x^2+b*x+a)*b^4*e+1/c^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*d-12/c/(4
*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d+1/2/c^2*e*x^2+1/c
^2*d*x+3/c^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e-2/
c^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-2/c^2/(c*x^
2+b*x+a)*a^3/(4*a*c-b^2)*e-2/c^3*b*e*x
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 1.98, size = 427, normalized size = 1.63

$$x\left(\frac{d}{c^2}-\frac{2\,b\,e}{c^3}\right)-\frac{\frac{a\left(2\,e\,a^2\,c^2-4\,e\,a\,b^2\,c+3\,d\,a\,b\,c^2+e\,b^4-d\,b^3\,c\right)}{c\left(4\,a\,c-b^2\right)}+\frac{x\left(5\,e\,a^2\,b\,c^2-2\,d\,a^2\,c^3-5\,e\,a\,b^3\,c+4\,d\,a\,b^2\,c^2+e\,b^5-d\,b^4\,c\right)}{c\left(4\,a\,c-b^2\right)}}{c^4\,x^2+b\,c^3\,x+a\,c^3}+\frac{e\,x^2}{2\,c^2}-\frac{\ln\left(c\,x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] x*(d/c^2 - (2*b*e)/c^3) - ((a*(b^4*e + 2*a^2*c^2*e - b^3*c*d + 3*a*b*c^2*d
- 4*a*b^2*c*e))/(c*(4*a*c - b^2)) + (x*(b^5*e - 2*a^2*c^3*d - b^4*c*d - 5*a
*b^3*c*e + 4*a*b^2*c^2*d + 5*a^2*b*c^2*e))/(c*(4*a*c - b^2)))/(a*c^3 + c^4*
x^2 + b*c^3*x) + (e*x^2)/(2*c^2) - (log(a + b*x + c*x^2)*(3*b^8*e + 128*a^4
*c^4*e - 2*b^7*c*d - 96*a^2*b^3*c^3*d + 168*a^2*b^4*c^2*e - 288*a^3*b^2*c^3
*e - 38*a*b^6*c*e + 24*a*b^5*c^2*d + 128*a^3*b*c^4*d))/(2*(64*a^3*c^7 - b^6
*c^4 + 12*a*b^4*c^5 - 48*a^2*b^2*c^6)) + (atan((2*c*x)/(4*a*c - b^2)^(1/2)
- (b^3*c^3 - 4*a*b*c^4)/(c^3*(4*a*c - b^2)^(3/2)))*(3*b^5*e - 12*a^2*c^3*d
- 2*b^4*c*d - 20*a*b^3*c*e + 12*a*b^2*c^2*d + 30*a^2*b*c^2*e))/(c^4*(4*a*c
- b^2)^(3/2))
```

sympy [B] time = 7.71, size = 1572, normalized size = 6.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] x*(-2*b*e/c**3 + d/c**2) + (-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 1
2*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(
2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e
- 3*b**2*e + 2*b*c*d)/(2*c**4))*log(x + (16*a**3*c**2*e - 17*a**2*b**2*c*e
+ 10*a**2*b*c**2*d + 16*a**2*c**5*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**
2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4
*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2
*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + 3*a*b**4*e - 2*a*b**3*c*d - 8*a*b*
*2*c**4*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*
a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**
3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*
d)/(2*c**4)) + b**4*c**3*(-sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*e - 12*
a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)/(2*
c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a*c*e -
3*b**2*e + 2*b*c*d)/(2*c**4)))/(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b*
*3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d)) + (sqrt(-(4*a*c - b**2)
**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d
+ 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b
**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4))*log(x + (16*a**3*
c**2*e - 17*a**2*b**2*c*e + 10*a**2*b*c**2*d + 16*a**2*c**5*(sqrt(-(4*a*c -
 b**2)**3)*(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c
**2*d + 3*b**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
12*a*b**4*c - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + 3*a*b**4*
e - 2*a*b**3*c*d - 8*a*b**2*c**4*(sqrt(-(4*a*c - b**2)**3)*(30*a**2*b*c**2*
e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c
*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*a
*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)) + b**4*c**3*(sqrt(-(4*a*c - b**2)**3)*
(30*a**2*b*c**2*e - 12*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b
**5*e - 2*b**4*c*d)/(2*c**4*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c
 - b**6)) - (2*a*c*e - 3*b**2*e + 2*b*c*d)/(2*c**4)))/(30*a**2*b*c**2*e - 1
2*a**2*c**3*d - 20*a*b**3*c*e + 12*a*b**2*c**2*d + 3*b**5*e - 2*b**4*c*d))
+ (-2*a**3*c**2*e + 4*a**2*b**2*c*e - 3*a**2*b*c**2*d - a*b**4*e + a*b**3*c
*d + x*(-5*a**2*b*c**2*e + 2*a**2*c**3*d + 5*a*b**3*c*e - 4*a*b**2*c**2*d -
 b**5*e + b**4*c*d))/(4*a**2*c**5 - a*b**2*c**4 + x**2*(4*a*c**6 - b**2*c**
5) + x*(4*a*b*c**5 - b**3*c**4)) + e*x**2/(2*c**2)
```

3.891 $\int \frac{x^3(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=192

$$\frac{\left(-12a^2c^2e+12ab^2ce-6abc^2d-2b^4e+b^3cd\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\left(b^2-4ac\right)^{3/2}}-\frac{x\left(6ace-2b^2e+bcd\right)}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(x\left(2ace+b^2(-e)+\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

```
[Out] -(6*a*c*e-2*b^2*e+b*c*d)*x/c^2/(-4*a*c+b^2)+x^2*(a*(-b*e+2*c*d)+(2*a*c*e-b^
2*e+b*c*d)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)+(-12*a^2*c^2*e+12*a*b^2*c*e-6*a*
b*c^2*d-2*b^4*e+b^3*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3/(-4*a*c+
b^2)^(3/2)+1/2*(-2*b*e+c*d)*ln(c*x^2+b*x+a)/c^3
```

Rubi [A] time = 0.31, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {818, 773, 634, 618, 206, 628}

$$\frac{\left(-12a^2c^2e+12ab^2ce-6abc^2d+b^3cd-2b^4e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^3\left(b^2-4ac\right)^{3/2}}-\frac{x\left(6ace-2b^2e+bcd\right)}{c^2\left(b^2-4ac\right)}+\frac{x^2\left(x\left(2ace+b^2(-e)+\right.\right.}{c\left(b^2-4ac\right)\left(a\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((b*c*d - 2*b^2*e + 6*a*c*e)*x)/(c^2*(b^2 - 4*a*c))) + (x^2*(a*(2*c*d - b
*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (
(b^3*c*d - 6*a*b*c^2*d - 2*b^4*e + 12*a*b^2*c*e - 12*a^2*c^2*e)*ArcTanh[(b
+ 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*(b^2 - 4*a*c)^(3/2)) + ((c*d - 2*b*e)*Log
[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^3(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\int \frac{x\left(-2a(2cd-be)-\left(bcd-2b^2e+6ace\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)} + \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\int \frac{-a\left(-bcd+2b^2e-6ace\right)+}{}}{c}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)} + \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(cd-2be)\int \frac{b+2cx}{a+bx+cx^2}}{2c^3}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)} + \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(cd-2be)\log\left(a+b\right.}{2c^3}$$

$$= -\frac{\left(bcd-2b^2e+6ace\right)x}{c^2\left(b^2-4ac\right)} + \frac{x^2\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(b^3cd-6abc^2d-2b\right.}{}$$

Mathematica [A] time = 0.29, size = 190, normalized size = 0.99

$$\frac{\frac{2\left(a^2c(3be-2c(d+ex))+ab\left(b^2(-e)+bc(d+4ex)-3c^2dx\right)+b^3x(cd-be)\right)}{\left(b^2-4ac\right)(a+x(b+cx))} - \frac{2\left(12a^2c^2e-12ab^2ce+6abc^2d+2b^4e-b^3cd\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} + (cd-2be)\log(}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*c*e*x + (2*(b^3*(c*d - b*e)*x + a^2*c*(3*b*e - 2*c*(d + e*x)) + a*b*(-(b
^2*e) - 3*c^2*d*x + b*c*(d + 4*e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) -
(2*(-(b^3*c*d) + 6*a*b*c^2*d + 2*b^4*e - 12*a*b^2*c*e + 12*a^2*c^2*e)*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + (c*d - 2*b*e)*Log
[a + x*(b + c*x)])/(2*c^3)
```

fricas [B] time = 1.13, size = 1283, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e*x^3 + 2*(b^5*c - 8*a*b^3*c^2
 + 16*a^2*b*c^3)*e*x^2 + (((b^3*c^2 - 6*a*b*c^3)*d - 2*(b^4*c - 6*a*b^2*c^2
 + 6*a^2*c^3)*e)*x^2 + (a*b^3*c - 6*a^2*b*c^2)*d - 2*(a*b^4 - 6*a^2*b^2*c +
 6*a^3*c^2)*e + ((b^4*c - 6*a*b^2*c^2)*d - 2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2
)*e)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2
 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a*b^4*c - 6*a^2*b^2*c^2 + 8*
a^3*c^3)*d - 2*(a*b^5 - 7*a^2*b^3*c + 12*a^3*b*c^2)*e + 2*((b^5*c - 7*a*b^3
*c^2 + 12*a^2*b*c^3)*d - (b^6 - 9*a*b^4*c + 26*a^2*b^2*c^2 - 24*a^3*c^3)*e)
*x + (((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d - 2*(b^5*c - 8*a*b^3*c^2 + 16
*a^2*b*c^3)*e)*x^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*d - 2*(a*b^5 -
8*a^2*b^3*c + 16*a^3*b*c^2)*e + ((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - 2
*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*e)*x)*log(c*x^2 + b*x + a))/(a*b^4*c^3
- 8*a^2*b^2*c^4 + 16*a^3*c^5 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^2 + (
b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x), 1/2*(2*(b^4*c^2 - 8*a*b^2*c^3 + 1
6*a^2*c^4)*e*x^3 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e*x^2 + 2*(((b^3*
c^2 - 6*a*b*c^3)*d - 2*(b^4*c - 6*a*b^2*c^2 + 6*a^2*c^3)*e)*x^2 + (a*b^3*c
- 6*a^2*b*c^2)*d - 2*(a*b^4 - 6*a^2*b^2*c + 6*a^3*c^2)*e + ((b^4*c - 6*a*b^
2*c^2)*d - 2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2)*e)*x)*sqrt(-b^2 + 4*a*c)*arcta
n(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(a*b^4*c - 6*a^2*b^2*c
^2 + 8*a^3*c^3)*d - 2*(a*b^5 - 7*a^2*b^3*c + 12*a^3*b*c^2)*e + 2*((b^5*c -
7*a*b^3*c^2 + 12*a^2*b*c^3)*d - (b^6 - 9*a*b^4*c + 26*a^2*b^2*c^2 - 24*a^3*
c^3)*e)*x + (((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d - 2*(b^5*c - 8*a*b^3*c
^2 + 16*a^2*b*c^3)*e)*x^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*d - 2*(a
*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e + ((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*d - 2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*e)*x)*log(c*x^2 + b*x + a))/(a*b
^4*c^3 - 8*a^2*b^2*c^4 + 16*a^3*c^5 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*
x^2 + (b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x)]
```

giac [A] time = 0.16, size = 235, normalized size = 1.22

$$-\frac{\left(b^{3}cd-6\,abc^{2}d-2\,b^{4}e+12\,ab^{2}ce-12\,a^{2}c^{2}e\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}c^{3}-4\,ac^{4}\right)\sqrt{-b^{2}+4\,ac}}+\frac{xe}{c^{2}}+\frac{(cd-2\,be)\log\left(cx^{2}+bx+a\right)}{2\,c^{3}}+\frac{(b^{3}cd-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(b^3*c*d - 6*a*b*c^2*d - 2*b^4*e + 12*a*b^2*c*e - 12*a^2*c^2*e)*arctan((2*
c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^3 - 4*a*c^4)*sqrt(-b^2 + 4*a*c)) + x*e
/c^2 + 1/2*(c*d - 2*b*e)*log(c*x^2 + b*x + a)/c^3 + ((b^3*c*d - 3*a*b*c^2*d
 - b^4*e + 4*a*b^2*c*e - 2*a^2*c^2*e)*x/c + (a*b^2*c*d - 2*a^2*c^2*d - a*b^
3*e + 3*a^2*b*c*e)/c)/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*c^2)
```

maple [B] time = 0.06, size = 639, normalized size = 3.33

$$\frac{2a^{2}ex}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)c}-\frac{12a^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c}-\frac{4a\,b^{2}ex}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)c^{2}}+\frac{12a\,b^{2}e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/c^2*e*x+2/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x*e*a^2-4/c^2/(c*x^2+b*x+a)/(4*a*c-
b^2)*x*a*b^2*e+3/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x*a*b*d+1/c^3/(c*x^2+b*x+a)/(4
*a*c-b^2)*x*b^4*e-1/c^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x*b^3*d-3/c^2/(c*x^2+b*x+
a)*a^2/(4*a*c-b^2)*b*e+2/c/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*d+1/c^3/(c*x^2+b*x
+a)*a/(4*a*c-b^2)*b^3*e-1/c^2/(c*x^2+b*x+a)*a/(4*a*c-b^2)*b^2*d-4/c^2/(4*a*
c-b^2)*ln(c*x^2+b*x+a)*a*b*e+2/c/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*d+1/c^3/(4*a
*c-b^2)*ln(c*x^2+b*x+a)*b^3*e-1/2/c^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^2*d-12/
c/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e+12/c^2/(4*a*c
-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*e-6/c/(4*a*c-b^2)^(3/
2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d-2/c^3/(4*a*c-b^2)^(3/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*e+1/c^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b^3*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.85, size = 360, normalized size = 1.88

$$\frac{\frac{a\left(e\,b^3-d\,b^2\,c-3\,a\,e\,b\,c+2\,a\,d\,c^2\right)}{c\left(4\,a\,c-b^2\right)}+\frac{x\left(2\,e\,a^2\,c^2-4\,e\,a\,b^2\,c+3\,d\,a\,b\,c^2+e\,b^4-d\,b^3\,c\right)}{c\left(4\,a\,c-b^2\right)}}{c^3\,x^2+b\,c^2\,x+a\,c^2}+\frac{\ln\left(c\,x^2+b\,x+a\right)\left(-128\,e\,a^3\,b\,c^3+64\,d\,a^3\,c^4+96\,e\right.}{2\left(64\,a^3\,c^6-4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((a*(b^3*e + 2*a*c^2*d - b^2*c*d - 3*a*b*c*e))/(c*(4*a*c - b^2)) + (x*(b^4*
e + 2*a^2*c^2*e - b^3*c*d + 3*a*b*c^2*d - 4*a*b^2*c*e))/(c*(4*a*c - b^2)))/
(a*c^2 + c^3*x^2 + b*c^2*x) + (log(a + b*x + c*x^2)*(2*b^7*e + 64*a^3*c^4*d
 - b^6*c*d - 48*a^2*b^2*c^3*d + 96*a^2*b^3*c^2*e - 24*a*b^5*c*e + 12*a*b^4*
c^2*d - 128*a^3*b*c^3*e))/(2*(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*
b^2*c^5)) + (e*x)/c^2 - (atan((2*c*x)/(4*a*c - b^2)^(1/2) - (b^3*c^2 - 4*a*
b*c^3)/(c^2*(4*a*c - b^2)^(3/2)))*(2*b^4*e + 12*a^2*c^2*e - b^3*c*d + 6*a*b
*c^2*d - 12*a*b^2*c*e))/(c^3*(4*a*c - b^2)^(3/2))
```

sympy [B] time = 5.40, size = 1248, normalized size = 6.50

$$\left(-\frac{\sqrt{-\left(4ac-b^2\right)^3}\left(12a^2c^2e-12ab^2ce+6abc^2d+2b^4e-b^3cd\right)}{2c^3\left(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6\right)}-\frac{2be-cd}{2c^3}\right)\log\left(x+\frac{-10a^2bce-16a^2c^4\left(-\frac{\sqrt{-\left(4ac\right.}}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] (-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d +
 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4
*c - b**6)) - (2*b*e - c*d)/(2*c**3))*log(x + (-10*a**2*b*c*e - 16*a**2*c**
4*(-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d
 + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b*
*4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) + 8*a**2*c**2*d + 2*a*b**3*e + 8*a*
b**2*c**3*(-sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*
b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) - a*b**2*c*d - b**4*c**2*(-
sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2
*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c
 - b**6)) - (2*b*e - c*d)/(2*c**3)))/(12*a**2*c**2*e - 12*a*b**2*c*e + 6*a*
b*c**2*d + 2*b**4*e - b**3*c*d)) + (sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*
e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c*
*3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3))*log
(x + (-10*a**2*b*c*e - 16*a**2*c**4*(sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2
*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c
**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)) +
8*a**2*c**2*d + 2*a*b**3*e + 8*a*b**2*c**3*(sqrt(-(4*a*c - b**2)**3)*(12*a*
*2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64
*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c*
*3)) - a*b**2*c*d - b**4*c**2*(sqrt(-(4*a*c - b**2)**3)*(12*a**2*c**2*e - 1
2*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)/(2*c**3*(64*a**3*c**3 -
48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)) - (2*b*e - c*d)/(2*c**3)))/(12*a**
2*c**2*e - 12*a*b**2*c*e + 6*a*b*c**2*d + 2*b**4*e - b**3*c*d)) + (-3*a**2*
b*c*e + 2*a**2*c**2*d + a*b**3*e - a*b**2*c*d + x*(2*a**2*c**2*e - 4*a*b**2
*c*e + 3*a*b*c**2*d + b**4*e - b**3*c*d))/(4*a**2*c**4 - a*b**2*c**3 + x**2
*(4*a*c**5 - b**2*c**4) + x*(4*a*b*c**4 - b**3*c**3)) + e*x/c**2
```

3.892 $\int \frac{x^2(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=132

$$\frac{x\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(2ac(2cd-3be)+b^3e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{e\log\left(a+bx+cx^2\right)}{2c^2}$$

```
[Out] x*(a*(-b*e+2*c*d)+(2*a*c*e-b^2*e+b*c*d)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)+(b^
3*e+2*a*c*(-3*b*e+2*c*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^2/(-4*a*c
+b^2)^(3/2)+1/2*e*ln(c*x^2+b*x+a)/c^2
```

Rubi [A] time = 0.11, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {818, 634, 618, 206, 628}

$$\frac{\left(2ac(2cd-3be)+b^3e\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{x\left(x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e\log\left(a+bx+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (x*(a*(2*c*d - b*e) + (b*c*d - b^2*e + 2*a*c*e)*x))/(c*(b^2 - 4*a*c)*(a + b
*x + c*x^2)) + ((b^3*e + 2*a*c*(2*c*d - 3*b*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^
2 - 4*a*c]])/(c^2*(b^2 - 4*a*c)^(3/2)) + (e*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx &= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{-a(2cd-be)+\left(b^2-4ac\right)ex}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}\\ &= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2}-\frac{\left(b^3e+2ac(2cd-3be)\right)\int}{2c^2\left(b^2-4ac\right)}\\ &= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e\log\left(a+bx+cx^2\right)}{2c^2}+\frac{\left(b^3e+2ac(2cd-3be\right.}{}\\ &= \frac{x\left(a(2cd-be)+\left(bcd-b^2e+2ace\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^3e+2ac(2cd-3be)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\end{aligned}$$

Mathematica [A] time = 0.19, size = 146, normalized size = 1.11

$$\frac{-\frac{2\left(2a^2ce+a\left(b^2(-e)+bc(d+3ex)-2c^2dx\right)+b^2x(cd-be)\right)}{\left(b^2-4ac\right)(a+x(b+cx))}+\frac{2\left(2ac(2cd-3be)+b^3e\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+e\log(a+x(b+cx))}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-2*(2*a^2*c*e + b^2*(c*d - b*e)*x + a*(-(b^2*e) - 2*c^2*d*x + b*c*(d + 3*
e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(b^3*e + 2*a*c*(2*c*d - 3*b*
e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + e*Log[a
+ x*(b + c*x)])/(2*c^2)
```

fricas [B] time = 0.98, size = 813, normalized size = 6.16

$$\left[\frac{\left(4\,a^2c^2d+\left(4\,ac^3d+\left(b^3c-6\,abc^2\right)e\right)x^2+\left(ab^3-6\,a^2bc\right)e+\left(4\,abc^2d+\left(b^4-6\,ab^2c\right)e\right)x\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*((4*a^2*c^2*d + (4*a*c^3*d + (b^3*c - 6*a*b*c^2)*e)*x^2 + (a*b^3 - 6*a
^2*b*c)*e + (4*a*b*c^2*d + (b^4 - 6*a*b^2*c)*e)*x)*sqrt(b^2 - 4*a*c)*log((2
*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
b*x + a)) - 2*(a*b^3*c - 4*a^2*b*c^2)*d + 2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^
2)*e - 2*((b^4*c - 6*a*b^2*c^2 + 8*a^2*c^3)*d - (b^5 - 7*a*b^3*c + 12*a^2*b
*c^2)*e)*x + ((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*e*x^2 + (b^5 - 8*a*b^3*c +
 16*a^2*b*c^2)*e*x + (a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*e)*log(c*x^2 + b*x
+ a))/(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4 + (b^4*c^3 - 8*a*b^2*c^4 + 16
*a^2*c^5)*x^2 + (b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x), 1/2*(2*(4*a^2*c^
2*d + (4*a*c^3*d + (b^3*c - 6*a*b*c^2)*e)*x^2 + (a*b^3 - 6*a^2*b*c)*e + (4*
a*b*c^2*d + (b^4 - 6*a*b^2*c)*e)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 +
4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^3*c - 4*a^2*b*c^2)*d + 2*(a*b^4
- 6*a^2*b^2*c + 8*a^3*c^2)*e - 2*((b^4*c - 6*a*b^2*c^2 + 8*a^2*c^3)*d - (b^
5 - 7*a*b^3*c + 12*a^2*b*c^2)*e)*x + ((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*e*
x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e*x + (a*b^4 - 8*a^2*b^2*c + 16*a^3*
c^2)*e)*log(c*x^2 + b*x + a))/(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4 + (b^
4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^2 + (b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
^4)*x)]
```

giac [A] time = 0.20, size = 169, normalized size = 1.28

$$-\frac{\left(4\,ac^2d+b^3e-6\,abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2c^2-4\,ac^3\right)\sqrt{-b^2+4\,ac}}+\frac{e\log\left(cx^2+bx+a\right)}{2\,c^2}-\frac{abcd-ab^2e+2\,a^2ce+(b^2cd-2\,ac^2d-b^3e+}{\left(cx^2+bx+a\right)\left(b^2-4\,ac\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(4*a*c^2*d + b^3*e - 6*a*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b
^2*c^2 - 4*a*c^3)*sqrt(-b^2 + 4*a*c)) + 1/2*e*log(c*x^2 + b*x + a)/c^2 - (a
*b*c*d - a*b^2*e + 2*a^2*c*e + (b^2*c*d - 2*a*c^2*d - b^3*e + 3*a*b*c*e)*x)
/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*c^2)
```

maple [B] time = 0.07, size = 270, normalized size = 2.05

$$-\frac{6abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}c}+\frac{4ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{b^3e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}c^2}+\frac{2ae\ln\left(c\,x^2+bx+a\right)}{\left(4ac-b^2\right)c}-\frac{b^2e\ln(c\,x^2+bx+}{2\left(4ac-b^2\right)c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (1/c^2*(3*a*b*c*e-2*a*c^2*d-b^3*e+b^2*c*d)/(4*a*c-b^2)*x+a*(2*a*c*e-b^2*e+b
*c*d)/c^2/(4*a*c-b^2))/(c*x^2+b*x+a)+2/(4*a*c-b^2)/c*ln(c*x^2+b*x+a)*a*e-1/
2/(4*a*c-b^2)/c^2*ln(c*x^2+b*x+a)*e*b^2-6/(4*a*c-b^2)^(3/2)/c*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a*b*e+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*a*d+1/(4*a*c-b^2)^(3/2)/c^2*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b
^3*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.54, size = 895, normalized size = 6.78

$$\frac{2a^2ce}{4a^2c^3 - ab^2c^2 + 4abc^3x + 4ac^4x^2 - b^3c^2x - b^2c^3x^2} - \frac{ab^2e}{4a^2c^3 - ab^2c^2 + 4abc^3x + 4ac^4x^2 - b^3c^2x - b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*a^2*c*e)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2
+ 4*a*b*c^3*x) - (a*b^2*e)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x
 - b^2*c^3*x^2 + 4*a*b*c^3*x) - (b^3*e*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*
x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (4*a*d*atan((2*c*x)/(4*a*c -
 b^2)^(1/2) - b^3/(4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c - b^2)^(3/2)))/(4*
a*c - b^2)^(3/2) - (b^6*e*log(a + b*x + c*x^2))/(2*(64*a^3*c^5 - b^6*c^2 +
12*a*b^4*c^3 - 48*a^2*b^2*c^4)) - (2*a*c^2*d*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*
a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (b^2*c*d*x)/(4*a^2*c^3
 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b*c^3*x) + (a*b*
c*d)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*c^3*x^2 + 4*a*b
*c^3*x) + (32*a^3*c^3*e*log(a + b*x + c*x^2))/(64*a^3*c^5 - b^6*c^2 + 12*a*
b^4*c^3 - 48*a^2*b^2*c^4) + (b^3*e*atan((2*c*x)/(4*a*c - b^2)^(1/2) - b^3/(
4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c - b^2)^(3/2)))/(c^2*(4*a*c - b^2)^(3/
2)) + (3*a*b*c*e*x)/(4*a^2*c^3 - a*b^2*c^2 + 4*a*c^4*x^2 - b^3*c^2*x - b^2*
c^3*x^2 + 4*a*b*c^3*x) - (24*a^2*b^2*c^2*e*log(a + b*x + c*x^2))/(64*a^3*c^
5 - b^6*c^2 + 12*a*b^4*c^3 - 48*a^2*b^2*c^4) + (6*a*b^4*c*e*log(a + b*x + c
*x^2))/(64*a^3*c^5 - b^6*c^2 + 12*a*b^4*c^3 - 48*a^2*b^2*c^4) - (6*a*b*e*at
an((2*c*x)/(4*a*c - b^2)^(1/2) - b^3/(4*a*c - b^2)^(3/2) + (4*a*b*c)/(4*a*c
 - b^2)^(3/2)))/(c*(4*a*c - b^2)^(3/2))
```

sympy [B] time = 2.84, size = 901, normalized size = 6.83

$$\left(\frac{e}{2c^2} - \frac{\sqrt{-\left(4ac-b^2\right)^3}\left(6abce-4ac^2d-b^3e\right)}{2c^2\left(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6\right)}\right)\log\left(x + \frac{-16a^2c^3\left(\frac{e}{2c^2} - \frac{\sqrt{-\left(4ac-b^2\right)^3}\left(6abce-4ac^2d-b^3e\right)}{2c^2\left(64a^3c^3-48a^2b^2c^2+12ab^4c-b^6\right)}\right) + 8a^2ce +}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] (e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2
*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))*log(x + (-1
6*a**2*c**3*(e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d
- b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))
 + 8*a**2*c*e + 8*a*b**2*c**2*(e/(2*c**2) - sqrt(-(4*a*c - b**2)**3)*(6*a*b
*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*
a*b**4*c - b**6))) - a*b**2*e - 2*a*b*c*d - b**4*c*(e/(2*c**2) - sqrt(-(4*a
*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48
*a**2*b**2*c**2 + 12*a*b**4*c - b**6))))/(6*a*b*c*e - 4*a*c**2*d - b**3*e))
 + (e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)
/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6)))*log(x +
(-16*a**2*c**3*(e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2
*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6
))) + 8*a**2*c*e + 8*a*b**2*c**2*(e/(2*c**2) + sqrt(-(4*a*c - b**2)**3)*(6*
a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 +
12*a*b**4*c - b**6))) - a*b**2*e - 2*a*b*c*d - b**4*c*(e/(2*c**2) + sqrt(-(
4*a*c - b**2)**3)*(6*a*b*c*e - 4*a*c**2*d - b**3*e)/(2*c**2*(64*a**3*c**3 -
 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))))/(6*a*b*c*e - 4*a*c**2*d - b**3*
e)) + (2*a**2*c*e - a*b**2*e + a*b*c*d + x*(3*a*b*c*e - 2*a*c**2*d - b**3*e
 + b**2*c*d))/(4*a**2*c**3 - a*b**2*c**2 + x**2*(4*a*c**4 - b**2*c**3) + x*
(4*a*b*c**3 - b**3*c**2))
```

3.893 $\int \frac{x(d+ex)}{\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=99

$$\frac{x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

```
[Out] (a*(-b*e+2*c*d)+(2*a*c*e-b^2*e+b*c*d)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)-2*(-2
*a*e+b*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(3/2)
```

Rubi [A] time = 0.05, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {777, 618, 206}

$$\frac{x\left(2ace+b^2(-e)+bcd\right)+a(2cd-be)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (a*(2*c*d - b*e) + (b*c*d - b^2*e + 2*a*c*e)*x)/(c*(b^2 - 4*a*c)*(a + b*x +
 c*x^2)) - (2*(b*d - 2*a*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 -
4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx &= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(bd-2ae)\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}\\
&= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2(bd-2ae))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{b^2-4ac}\\
&= \frac{a(2cd-be)+\left(bcd-b^2e+2ace\right)x}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2(bd-2ae)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}
\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 99, normalized size = 1.00

$$\frac{abe-2ac(d+ex)+bx(be-cd)}{c\left(4ac-b^2\right)(a+x(b+cx))}-\frac{2(bd-2ae)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (a*b*e + b*(-(c*d) + b*e)*x - 2*a*c*(d + e*x))/(c*(-b^2 + 4*a*c)*(a + x*(b
+ c*x))) - (2*(b*d - 2*a*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 +
 4*a*c)^(3/2)
```

fricas [**B**] time = 1.09, size = 521, normalized size = 5.26

$$\left[\frac{\left(abcd-2\,a^2ce+\left(bc^2d-2\,ac^2e\right)x^2+\left(b^2cd-2\,abce\right)x\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+2\left(ab^2\right.}{ab^4c-8\,a^2b^2c^2+16\,a^3c^3+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^2+\left(b\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((a*b*c*d - 2*a^2*c*e + (b*c^2*d - 2*a*c^2*e)*x^2 + (b^2*c*d - 2*a*b*c*e)*
x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*
a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a*b^2*c - 4*a^2*c^2)*d - (a*b^3 -
 4*a^2*b*c)*e + ((b^3*c - 4*a*b*c^2)*d - (b^4 - 6*a*b^2*c + 8*a^2*c^2)*e)*x
)/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c
^4)*x^2 + (b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x), -(2*(a*b*c*d - 2*a^2*c*e
 + (b*c^2*d - 2*a*c^2*e)*x^2 + (b^2*c*d - 2*a*b*c*e)*x)*sqrt(-b^2 + 4*a*c)*
arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(a*b^2*c - 4*a^2*
c^2)*d + (a*b^3 - 4*a^2*b*c)*e - ((b^3*c - 4*a*b*c^2)*d - (b^4 - 6*a*b^2*c
+ 8*a^2*c^2)*e)*x)/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b
^2*c^3 + 16*a^2*c^4)*x^2 + (b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x)]
```

giac [**A**] time = 0.16, size = 113, normalized size = 1.14

$$\frac{2\,(bd-2\,ae)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}}+\frac{bcdx-b^2xe+2\,acxe+2\,acd-abe}{\left(b^2c-4\,ac^2\right)\left(cx^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*(b*d - 2*a*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*sqrt(
-b^2 + 4*a*c)) + (b*c*d*x - b^2*x*e + 2*a*c*x*e + 2*a*c*d - a*b*e)/((b^2*c
- 4*a*c^2)*(c*x^2 + b*x + a))
```

maple [A] time = 0.06, size = 147, normalized size = 1.48

$$\frac{4ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}-\frac{2bd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{\frac{(be-2cd)a}{\left(4ac-b^2\right)c}-\frac{\left(2ace-e\,b^2+bcd\right)x}{\left(4ac-b^2\right)c}}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-(2*a*c*e-b^2*e+b*c*d)/c/(4*a*c-b^2)*x+a*(b*e-2*c*d)/(4*a*c-b^2)/c)/(c*x^2
+b*x+a)+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e-2/(4*a*
c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.28, size = 177, normalized size = 1.79

$$\frac{\frac{a\,(b\,e-2\,c\,d)}{c\,\left(4\,a\,c-b^2\right)}-\frac{x\,\left(-e\,b^2+c\,d\,b+2\,a\,c\,e\right)}{c\,\left(4\,a\,c-b^2\right)}}{c\,x^2+b\,x+a}-\frac{2\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^2\right)\,\left(\frac{\left(b^3-4\,a\,b\,c\right)\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{5/2}}-\frac{2\,c\,x\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{3/2}}\right)}{2\,a\,e-b\,d}\right)\,(2\,a\,e-b\,d)}{\left(4\,a\,c-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((a*(b*e - 2*c*d))/(c*(4*a*c - b^2)) - (x*(2*a*c*e - b^2*e + b*c*d))/(c*(4*
a*c - b^2)))/(a + b*x + c*x^2) - (2*atan(((4*a*c - b^2)*(((b^3 - 4*a*b*c)*(
2*a*e - b*d))/(4*a*c - b^2)^(5/2) - (2*c*x*(2*a*e - b*d))/(4*a*c - b^2)^(3/
2)))/(2*a*e - b*d))*(2*a*e - b*d))/(4*a*c - b^2)^(3/2)
```

sympy [B] time = 1.05, size = 379, normalized size = 3.83

$$-\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)\log\left(x+\frac{-16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)+8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(2ae-bd)+2abe-}{4ace-2bcd}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] -sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d)*log(x + (-16*a**2*c**2*sqrt(-1/(4
*a*c - b**2)**3)*(2*a*e - b*d) + 8*a*b**2*c*sqrt(-1/(4*a*c - b**2)**3)*(2*a
*e - b*d) + 2*a*b*e - b**4*sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d) - b**2*
d)/(4*a*c*e - 2*b*c*d)) + sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d)*log(x +
(16*a**2*c**2*sqrt(-1/(4*a*c - b**2)**3)*(2*a*e - b*d) - 8*a*b**2*c*sqrt(-1
/(4*a*c - b**2)**3)*(2*a*e - b*d) + 2*a*b*e + b**4*sqrt(-1/(4*a*c - b**2)**
3)*(2*a*e - b*d) - b**2*d)/(4*a*c*e - 2*b*c*d)) + (a*b*e - 2*a*c*d + x*(-2*
a*c*e + b**2*e - b*c*d))/(4*a**2*c**2 - a*b**2*c + x**2*(4*a*c**3 - b**2*c*
*2) + x*(4*a*b*c**2 - b**3*c))
```

3.894 $\int \frac{d+ex}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=87

$$\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{-2ae+x(2cd-be)+bd}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

```
[Out] (-b*d+2*a*e-(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)+2*(-b*e+2*c*d)*arcta
nh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {638, 618, 206}

$$\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{-2ae+x(2cd-be)+bd}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((b*d - 2*a*e + (2*c*d - b*e)*x)/((b^2 - 4*a*c)*(a + b*x + c*x^2))) + (2*(
2*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{d+ex}{\left(a+bx+cx^2\right)^2}\,dx &= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2cd-be)\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}\\
&= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(2(2cd-be))\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{b^2-4ac}\\
&= -\frac{bd-2ae+(2cd-be)x}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 88, normalized size = 1.01

$$\frac{\frac{2(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{2ae-bd+bex-2cdx}{a+x(b+cx)}}{b^2-4ac}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(a + x*(b + c*x)) + (2*(-2*c*d + b*e)*A
rcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c])/(b^2 - 4*a*c)
```

fricas [B] time = 0.97, size = 459, normalized size = 5.28

$$\left[\frac{\left(2\,acd - abe + \left(2\,c^2d - bce\right)x^2 + \left(2\,bcd - b^2e\right)x\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right) - \left(b^3-4\,abc\right)}{ab^4 - 8\,a^2b^2c + 16\,a^3c^2 + \left(b^4c - 8\,ab^2c^2 + 16\,a^2c^3\right)x^2 + \left(b^5 - 8\,ab^3c\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((2*a*c*d - a*b*e + (2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*sqrt(b^2
- 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x
+ b))/(c*x^2 + b*x + a)) - (b^3 - 4*a*b*c)*d + 2*(a*b^2 - 4*a^2*c)*e - (2*(
b^2*c - 4*a*c^2)*d - (b^3 - 4*a*b*c)*e)*x)/(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^
2 + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^
2)*x), (2*(2*a*c*d - a*b*e + (2*c^2*d - b*c*e)*x^2 + (2*b*c*d - b^2*e)*x)*s
qrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (
b^3 - 4*a*b*c)*d + 2*(a*b^2 - 4*a^2*c)*e - (2*(b^2*c - 4*a*c^2)*d - (b^3 -
4*a*b*c)*e)*x)/(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2 + (b^4*c - 8*a*b^2*c^2 + 1
6*a^2*c^3)*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*x)]
```

giac [A] time = 0.16, size = 99, normalized size = 1.14

$$-\frac{2\,(2\,cd - be)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}} - \frac{2\,cdx - bxe + bd - 2\,ae}{\left(cx^2+bx+a\right)\left(b^2-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -2*(2*c*d - b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*sqrt
(-b^2 + 4*a*c)) - (2*c*d*x - b*x*e + b*d - 2*a*e)/((c*x^2 + b*x + a)*(b^2 -
 4*a*c))
```

maple [A] time = 0.05, size = 118, normalized size = 1.36

$$-\frac{2be\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}} + \frac{4cd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}} + \frac{-2ae+bd+(-be+2cd)\,x}{\left(4ac-b^2\right)\left(c\,x^2+bx+a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-2*a*e+b*d+(-b*e+2*c*d)*x)/(4*a*c-b^2)/(c*x^2+b*x+a)-2/(4*a*c-b^2)^(3/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*e+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.11, size = 159, normalized size = 1.83

$$\frac{2\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^2\right)\left(\frac{\left(b^3-4\,a\,b\,c\right)\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}-\frac{2\,c\,x\,\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{3/2}}\right)}{b\,e-2\,c\,d}\right)\left(b\,e-2\,c\,d\right)}{{\left(4\,a\,c-b^2\right)}^{3/2}}-\frac{\frac{2\,a\,e-b\,d}{4\,a\,c-b^2}+\frac{x\,\left(b\,e-2\,c\,d\right)}{4\,a\,c-b^2}}{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*atan(((4*a*c - b^2)*(((b^3 - 4*a*b*c)*(b*e - 2*c*d))/(4*a*c - b^2)^(5/2)
 - (2*c*x*(b*e - 2*c*d))/(4*a*c - b^2)^(3/2)))/(b*e - 2*c*d))*(b*e - 2*c*d)
)/(4*a*c - b^2)^(3/2) - ((2*a*e - b*d)/(4*a*c - b^2) + (x*(b*e - 2*c*d))/(4
*a*c - b^2))/(a + b*x + c*x^2)
```

sympy [B] time = 0.95, size = 359, normalized size = 4.13

$$\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{-16a^2c^2\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+8ab^2c\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)-b^4\sqrt{-\frac{}{(4a}}}{2bce-4c^2d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x + (-16*a**2*c**2*sqrt(-1/(4*
a*c - b**2)**3)*(b*e - 2*c*d) + 8*a*b**2*c*sqrt(-1/(4*a*c - b**2)**3)*(b*e
- 2*c*d) - b**4*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e - 2*b*c*d
)/(2*b*c*e - 4*c**2*d)) - sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x +
(16*a**2*c**2*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) - 8*a*b**2*c*sqrt(-1
/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**4*sqrt(-1/(4*a*c - b**2)**3)*(b*e -
2*c*d) + b**2*e - 2*b*c*d)/(2*b*c*e - 4*c**2*d)) + (-2*a*e + b*d + x*(-b*e
+ 2*c*d))/(4*a**2*c - a*b**2 + x**2*(4*a*c**2 - b**2*c) + x*(4*a*b*c - b**3
))
```

3.895 $\int \frac{d+ex}{x\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=135

$$\frac{\left(4a^2ce-6abcd+b^3d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}}-\frac{d\log\left(a+bx+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

```
[Out] (b^2*d-2*a*c*d-a*b*e+c*(-2*a*e+b*d)*x)/a/(-4*a*c+b^2)/(c*x^2+b*x+a)+(4*a^2*
c*e-6*a*b*c*d+b^3*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^2/(-4*a*c+b^2)
^(3/2)+d*ln(x)/a^2-1/2*d*ln(c*x^2+b*x+a)/a^2
```

Rubi [A] time = 0.20, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{\left(4a^2ce-6abcd+b^3d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}}-\frac{d\log\left(a+bx+cx^2\right)}{2a^2}+\frac{d\log(x)}{a^2}+\frac{cx(bd-2ae)-abe-2acd+b^2d}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x*(a + b*x + c*x^2)^2),x]
```

```
[Out] (b^2*d - 2*a*c*d - a*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*(a + b*x + c
*x^2)) + ((b^3*d - 6*a*b*c*d + 4*a^2*c*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*
a*c]])/(a^2*(b^2 - 4*a*c)^(3/2)) + (d*Log[x])/a^2 - (d*Log[a + b*x + c*x^2]
)/(2*a^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{-\left(b^2-4ac\right)d-c(bd-2ae)x}{x\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{\left(-b^2+4ac\right)d}{ax} + \frac{b^3d-5abcd+2a^2ce+c\left(b^2-4ac\right)dx}{a\left(a+bx+cx^2\right)}\right)dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{\int \frac{b^3d-5abcd+2a^2ce+c\left(b^2-4ac\right)dx}{a+bx+cx^2}\,dx}{a^2\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{d\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2a^2} - \frac{\left(b^3d-6abcd+4a^2\right.}{2a^2\left(b^2-\right.}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{d\log(x)}{a^2} - \frac{d\log\left(a+bx+cx^2\right)}{2a^2} + \frac{\left(b^3d-6abcd\right.}{}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(b^3d-6abcd+4a^2ce\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^2\left(b^2-4ac\right)^{3/2}} + \frac{d\log}{a^2}$$

Mathematica [A] time = 0.20, size = 134, normalized size = 0.99

$$\frac{\frac{2\left(4a^2ce-6abcd+b^3d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} - \frac{2a\left(b(ae-cdx)+2ac(d+ex)+b^2(-d)\right)}{\left(b^2-4ac\right)(a+x(b+cx))} - d\log(a+x(b+cx)) + 2d\log(x)}{2a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-2*a*(-(b^2*d) + b*(a*e - c*d*x) + 2*a*c*(d + e*x)))/((b^2 - 4*a*c)*(a +
x*(b + c*x))) + (2*(b^3*d - 6*a*b*c*d + 4*a^2*c*e)*ArcTan[(b + 2*c*x)/Sqrt[
-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*d*Log[x] - d*Log[a + x*(b + c*x)])
/(2*a^2)
```

fricas [B] time = 1.94, size = 955, normalized size = 7.07

$$\left[-\frac{\left(4\,a^{3}ce+\left(4\,a^{2}c^{2}e+\left(b^{3}c-6\,abc^{2}\right)d\right)x^{2}+\left(ab^{3}-6\,a^{2}bc\right)d+\left(4\,a^{2}bce+\left(b^{4}-6\,ab^{2}c\right)d\right)x\right)\sqrt{b^{2}-4\,ac}\,\log\left(\frac{2\,c^{2}x^{2}+}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*((4*a^3*c*e + (4*a^2*c^2*e + (b^3*c - 6*a*b*c^2)*d)*x^2 + (a*b^3 - 6*
a^2*b*c)*d + (4*a^2*b*c*e + (b^4 - 6*a*b^2*c)*d)*x)*sqrt(b^2 - 4*a*c)*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) - 2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^2)*d + 2*(a^2*b^3 - 4*a^3*b*c
)*e - 2*((a*b^3*c - 4*a^2*b*c^2)*d - 2*(a^2*b^2*c - 4*a^3*c^2)*e)*x + ((b^4
*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x
 + (a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*d)*log(c*x^2 + b*x + a) - 2*((b^4*c -
 8*a*b^2*c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (
a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*d)*log(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^
5*c^2 + (a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3
*c + 16*a^4*b*c^2)*x), 1/2*(2*(4*a^3*c*e + (4*a^2*c^2*e + (b^3*c - 6*a*b*c^
2)*d)*x^2 + (a*b^3 - 6*a^2*b*c)*d + (4*a^2*b*c*e + (b^4 - 6*a*b^2*c)*d)*x)*
sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) +
2*(a*b^4 - 6*a^2*b^2*c + 8*a^3*c^2)*d - 2*(a^2*b^3 - 4*a^3*b*c)*e + 2*((a*b
^3*c - 4*a^2*b*c^2)*d - 2*(a^2*b^2*c - 4*a^3*c^2)*e)*x - ((b^4*c - 8*a*b^2*
c^2 + 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2)*d)*log(c*x^2 + b*x + a) + 2*((b^4*c - 8*a*b^2*c^2
+ 16*a^2*c^3)*d*x^2 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*x + (a*b^4 - 8*a^2
*b^2*c + 16*a^3*c^2)*d)*log(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a^2*
b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b
*c^2)*x)]
```

giac [A] time = 0.16, size = 160, normalized size = 1.19

$$-\frac{\left(b^{3}d-6\,abcd+4\,a^{2}ce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(a^{2}b^{2}-4\,a^{3}c\right)\sqrt{-b^{2}+4\,ac}}-\frac{d\log\left(cx^{2}+bx+a\right)}{2\,a^{2}}+\frac{d\log\left(|x|\right)}{a^{2}}+\frac{ab^{2}d-2\,a^{2}cd-a^{2}be+\left(abcd-2\,\right.}{\left(cx^{2}+bx+a\right)\left(b^{2}-4\,ac\right)a^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(b^3*d - 6*a*b*c*d + 4*a^2*c*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((a
^2*b^2 - 4*a^3*c)*sqrt(-b^2 + 4*a*c)) - 1/2*d*log(c*x^2 + b*x + a)/a^2 + d*
log(abs(x))/a^2 + (a*b^2*d - 2*a^2*c*d - a^2*b*e + (a*b*c*d - 2*a^2*c*e)*x)
/((c*x^2 + b*x + a)*(b^2 - 4*a*c)*a^2)
```

maple [B] time = 0.06, size = 337, normalized size = 2.50

$$-\frac{bcdx}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)a}-\frac{6bcd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}a}+\frac{b^{3}d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}a^{2}}+\frac{2cex}{\left(c\,x^{2}+bx+a\right)\left(4ac-b^{2}\right)}+\frac{4ce\,\mathrm{arc}}{(4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*e-1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b*d+1/(
c*x^2+b*x+a)/(4*a*c-b^2)*b*e+2/(c*x^2+b*x+a)/(4*a*c-b^2)*c*d-1/a/(c*x^2+b*x
+a)/(4*a*c-b^2)*b^2*d-2/a/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*d+1/2/a^2/(4*a*c-b^
2)*ln(c*x^2+b*x+a)*b^2*d+4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*c*e-6/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d+1
/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d+1/a^2*d*ln
(x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.42, size = 920, normalized size = 6.81

$$\frac{\frac{-d\,b^2+a\,e\,b+2\,a\,c\,d}{a\,\left(4\,a\,c-b^2\right)}+\frac{c\,x\,\left(2\,a\,e-b\,d\right)}{a\,\left(4\,a\,c-b^2\right)}}{c\,x^2+b\,x+a}-\ln\left(96\,a^4\,c^3\,d-2\,a\,b^6\,d-2\,b^7\,d\,x-84\,a^3\,b^2\,c^2\,d+2\,a\,b^3\,d\,\sqrt{-{\left(4\,a\,c-b^2\right)}^3}+23\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((a*b*e - b^2*d + 2*a*c*d)/(a*(4*a*c - b^2)) + (c*x*(2*a*e - b*d))/(a*(4*a*
c - b^2)))/(a + b*x + c*x^2) - log(96*a^4*c^3*d - 2*a*b^6*d - 2*b^7*d*x - 8
4*a^3*b^2*c^2*d + 2*a*b^3*d*(-(4*a*c - b^2)^3)^(1/2) + 23*a^2*b^4*c*d - 2*a
^3*b^3*c*e + 8*a^4*b*c^2*e + 2*a^3*c*e*(-(4*a*c - b^2)^3)^(1/2) + 2*b^4*d*x
*(-(4*a*c - b^2)^3)^(1/2) - 16*a^4*c^3*e*x - 9*a^2*b*c*d*(-(4*a*c - b^2)^3)
^(1/2) + 120*a^3*b*c^3*d*x - 2*a^2*b^4*c*e*x - 94*a^2*b^3*c^2*d*x + 12*a^2*
c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) + 12*a^3*b^2*c^2*e*x + 24*a*b^5*c*d*x - 12
*a*b^2*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 2*a^2*b*c*e*x*(-(4*a*c - b^2)^3)^(1
/2))*(d/(2*a^2) - ((b^3*d*(-(4*a*c - b^2)^3)^(1/2))/2 + 2*a^2*c*e*(-(4*a*c
- b^2)^3)^(1/2) - 3*a*b*c*d*(-(4*a*c - b^2)^3)^(1/2))/(a^2*b^6 - 64*a^5*c^3
 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)) - log(2*a*b^6*d - 96*a^4*c^3*d + 2*b^7*d
*x + 84*a^3*b^2*c^2*d + 2*a*b^3*d*(-(4*a*c - b^2)^3)^(1/2) - 23*a^2*b^4*c*d
 + 2*a^3*b^3*c*e - 8*a^4*b*c^2*e + 2*a^3*c*e*(-(4*a*c - b^2)^3)^(1/2) + 2*b
^4*d*x*(-(4*a*c - b^2)^3)^(1/2) + 16*a^4*c^3*e*x - 9*a^2*b*c*d*(-(4*a*c - b
^2)^3)^(1/2) - 120*a^3*b*c^3*d*x + 2*a^2*b^4*c*e*x + 94*a^2*b^3*c^2*d*x + 1
2*a^2*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) - 12*a^3*b^2*c^2*e*x - 24*a*b^5*c*d*
x - 12*a*b^2*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 2*a^2*b*c*e*x*(-(4*a*c - b^2)
^3)^(1/2))*(d/(2*a^2) + ((b^3*d*(-(4*a*c - b^2)^3)^(1/2))/2 + 2*a^2*c*e*(-(
4*a*c - b^2)^3)^(1/2) - 3*a*b*c*d*(-(4*a*c - b^2)^3)^(1/2))/(a^2*b^6 - 64*a
^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)) + (d*log(x))/a^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.896 $\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=211

$$\frac{(2bd-ae)\log\left(a+bx+cx^2\right)}{2a^3}-\frac{\log(x)(2bd-ae)}{a^3}-\frac{-abe-6acd+2b^2d}{a^2x\left(b^2-4ac\right)}-\frac{\left(6a^2bce+12a^2c^2d-ab^3e-12ab^2cd+2b^4\right.}{a^3\left(b^2-4ac\right)^{3/2}}$$

```
[Out] (a*b*e+6*a*c*d-2*b^2*d)/a^2/(-4*a*c+b^2)/x+(b^2*d-2*a*c*d-a*b*e+c*(-2*a*e+b
*d)*x)/a/(-4*a*c+b^2)/x/(c*x^2+b*x+a)-(6*a^2*b*c*e+12*a^2*c^2*d-a*b^3*e-12*
a*b^2*c*d+2*b^4*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^3/(-4*a*c+b^2)^(
3/2)-(-a*e+2*b*d)*ln(x)/a^3+1/2*(-a*e+2*b*d)*ln(c*x^2+b*x+a)/a^3
```

Rubi [A] time = 0.36, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {822, 800, 634, 618, 206, 628}

$$-\frac{\left(6a^2bce+12a^2c^2d-12ab^2cd-ab^3e+2b^4d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^3\left(b^2-4ac\right)^{3/2}}-\frac{-abe-6acd+2b^2d}{a^2x\left(b^2-4ac\right)}+\frac{(2bd-ae)\log\left(a+bx+c\right.}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((2*b^2*d - 6*a*c*d - a*b*e)/(a^2*(b^2 - 4*a*c)*x)) + (b^2*d - 2*a*c*d - a
*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*x*(a + b*x + c*x^2)) - ((2*b^4*d
 - 12*a*b^2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*ArcTanh[(b + 2*c*x)
/Sqrt[b^2 - 4*a*c]])/(a^3*(b^2 - 4*a*c)^(3/2)) - ((2*b*d - a*e)*Log[x])/a^3
 + ((2*b*d - a*e)*Log[a + b*x + c*x^2])/(2*a^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^2\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\int \frac{-2b^2d+6acd+abe-2c(bd-2ae)x}{x^2\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{-2b^2d+6acd+abe}{ax^2} + \frac{\left(-b^2+4ac\right)(-2bd+ae)}{a^2x} + \frac{-2b^4d+10a}{}\right.}{a\left(b^2-4a\right.}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} - \int \frac{-2}{}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} + \frac{(2bd}{}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{(2bd-ae)\log(x)}{a^3} + \frac{(2bd}{}$$

$$= -\frac{2b^2d-6acd-abe}{a^2\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)} - \frac{\left(2b^4d-12ab^2cd+12a^2c\right.}{a}$$

Mathematica [A] time = 0.34, size = 192, normalized size = 0.91

$$\frac{-\frac{2\left(6a^2bce+12a^2c^2d-ab^3e-12ab^2cd+2b^4d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} - \frac{2a\left(b^2(cdx-ae)-abc(3d+ex)+2ac(ae-cdx)+b^3d\right)}{\left(b^2-4ac\right)(a+x(b+cx))} + (2bd-ae)\log(a+x(b+}{2a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-2*a*d)/x - (2*a*(b^3*d + 2*a*c*(a*e - c*d*x) + b^2*(-(a*e) + c*d*x) - a*
b*c*(3*d + e*x)))/((b^2 - 4*a*c)*(a + x*(b + c*x))) - (2*(2*b^4*d - 12*a*b^
2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2
+ 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*(-2*b*d + a*e)*Log[x] + (2*b*d - a*e)*L
og[a + x*(b + c*x)])/(2*a^3)
```

fricas [B] time = 4.87, size = 1615, normalized size = 7.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(2*(a*b^4*c - 7*a^2*b^2*c^2 + 12*a^3*c^3)*d - (a^2*b^3*c - 4*a^3*b
*c^2)*e)*x^2 + ((2*(b^4*c - 6*a*b^2*c^2 + 6*a^2*c^3)*d - (a*b^3*c - 6*a^2*b
*c^2)*e)*x^3 + (2*(b^5 - 6*a*b^3*c + 6*a^2*b*c^2)*d - (a*b^4 - 6*a^2*b^2*c)
*e)*x^2 + (2*(a*b^4 - 6*a^2*b^2*c + 6*a^3*c^2)*d - (a^2*b^3 - 6*a^3*b*c)*e)
*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4
*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c
^2)*d + 2*((2*a*b^5 - 15*a^2*b^3*c + 28*a^3*b*c^2)*d - (a^2*b^4 - 6*a^3*b^2
*c + 8*a^4*c^2)*e)*x - ((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - (a*b^4*
c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c
^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 - 8*a^2*b^3
*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*log(c*x^2
 + b*x + a) + 2*((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d - (a*b^4*c - 8*a
^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*a^2*b^2*c^2)*d -
 (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 - 8*a^2*b^3*c + 16
*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*log(x))/((a^3*b^
4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^3 + (a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c
^2)*x^2 + (a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*x), -1/2*(2*(2*(a*b^4*c - 7*
a^2*b^2*c^2 + 12*a^3*c^3)*d - (a^2*b^3*c - 4*a^3*b*c^2)*e)*x^2 + 2*((2*(b^4
*c - 6*a*b^2*c^2 + 6*a^2*c^3)*d - (a*b^3*c - 6*a^2*b*c^2)*e)*x^3 + (2*(b^5
- 6*a*b^3*c + 6*a^2*b*c^2)*d - (a*b^4 - 6*a^2*b^2*c)*e)*x^2 + (2*(a*b^4 - 6
*a^2*b^2*c + 6*a^3*c^2)*d - (a^2*b^3 - 6*a^3*b*c)*e)*x)*sqrt(-b^2 + 4*a*c)*
arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(a^2*b^4 - 8*a^3*
b^2*c + 16*a^4*c^2)*d + 2*((2*a*b^5 - 15*a^2*b^3*c + 28*a^3*b*c^2)*d - (a^2
*b^4 - 6*a^3*b^2*c + 8*a^4*c^2)*e)*x - ((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*
c^3)*d - (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*
c + 16*a^2*b^2*c^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a
*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)
*e)*x)*log(c*x^2 + b*x + a) + 2*((2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d
- (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*e)*x^3 + (2*(b^6 - 8*a*b^4*c + 16*
a^2*b^2*c^2)*d - (a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e)*x^2 + (2*(a*b^5 -
8*a^2*b^3*c + 16*a^3*b*c^2)*d - (a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*e)*x)*
log(x))/((a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^3 + (a^3*b^5 - 8*a^4*b^
3*c + 16*a^5*b*c^2)*x^2 + (a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*x)]
```

giac [A] time = 0.16, size = 245, normalized size = 1.16

$$\frac{\left(2\,b^4d-12\,ab^2cd+12\,a^2c^2d-ab^3e+6\,a^2bce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(a^3b^2-4\,a^4c\right)\sqrt{-b^2+4\,ac}}-\frac{2\,b^2cdx^2-6\,ac^2dx^2-abcx^2e+2\,b^3dx-7\,abc}{\left(a^2b^2-4\,a^3c\right)\left(cx^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*b^4*d - 12*a*b^2*c*d + 12*a^2*c^2*d - a*b^3*e + 6*a^2*b*c*e)*arctan((2*c
*x + b)/sqrt(-b^2 + 4*a*c))/((a^3*b^2 - 4*a^4*c)*sqrt(-b^2 + 4*a*c)) - (2*b
^2*c*d*x^2 - 6*a*c^2*d*x^2 - a*b*c*x^2*e + 2*b^3*d*x - 7*a*b*c*d*x - a*b^2*
x*e + 2*a^2*c*x*e + a*b^2*d - 4*a^2*c*d)/((a^2*b^2 - 4*a^3*c)*(c*x^3 + b*x^
2 + a*x)) + 1/2*(2*b*d - a*e)*log(c*x^2 + b*x + a)/a^3 - (2*b*d - a*e)*log(
abs(x))/a^3
```

maple [B] time = 0.06, size = 582, normalized size = 2.76

$$-\frac{bcex}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)a}-\frac{6bce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a}-\frac{2c^2dx}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)a}-\frac{12c^2d\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] -1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b*e-2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x*
d+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b^2*d+2/(c*x^2+b*x+a)/(4*a*c-b^2)*c*e
-1/a/(c*x^2+b*x+a)/(4*a*c-b^2)*b^2*e-3/a/(c*x^2+b*x+a)/(4*a*c-b^2)*b*c*d+1/
a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*b^3*d-2/a/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*e+1/2
/a^2/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^2*e+4/a^2/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*
b*d-1/a^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*d-6/a/(4*a*c-b^2)^(3/2)*arctan((2
*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*e-12/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*c^2*d+1/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^3*e+12/a^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
b^2*c*d-2/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d-1
/a^2*d/x+1/a^2*e*ln(x)-2/a^3*ln(x)*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.09, size = 1366, normalized size = 6.47

$$\ln\left(96\,a^5\,c^3\,e-2\,a^2\,b^6\,e+4\,a\,b^7\,d+4\,b^8\,d\,x+174\,a^3\,b^3\,c^2\,d-2\,a^2\,b^3\,e\,\sqrt{-\left(4\,a\,c-b^2\right)^3}+6\,a^3\,c^2\,d\,\sqrt{-\left(4\,a\,c-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^2*(a + b*x + c*x^2)^2),x)
```

```
[Out] log(96*a^5*c^3*e - 2*a^2*b^6*e + 4*a*b^7*d + 4*b^8*d*x + 174*a^3*b^3*c^2*d
- 2*a^2*b^3*e*(-(4*a*c - b^2)^3)^(1/2) + 6*a^3*c^2*d*(-(4*a*c - b^2)^3)^(1/
2) - 84*a^4*b^2*c^2*e - 2*a*b^7*e*x + 4*a*b^4*d*(-(4*a*c - b^2)^3)^(1/2) -
46*a^2*b^5*c*d - 216*a^4*b*c^3*d + 23*a^3*b^4*c*e + 48*a^4*c^4*d*x + 4*b^5*
d*x*(-(4*a*c - b^2)^3)^(1/2) + 9*a^3*b*c*e*(-(4*a*c - b^2)^3)^(1/2) - 2*a*b
^4*e*x*(-(4*a*c - b^2)^3)^(1/2) + 24*a^2*b^5*c*e*x + 120*a^4*b*c^3*e*x - 18
*a^2*b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 194*a^2*b^4*c^2*d*x - 276*a^3*b^2*c
^3*d*x - 94*a^3*b^3*c^2*e*x - 12*a^3*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2) - 48*
a*b^6*c*d*x - 24*a*b^3*c*d*x*(-(4*a*c - b^2)^3)^(1/2) + 30*a^2*b*c^2*d*x*(-
(4*a*c - b^2)^3)^(1/2) + 12*a^2*b^2*c*e*x*(-(4*a*c - b^2)^3)^(1/2))*((b^4*d
*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*c^2*d*(-(4*a*c - b^2)^3)^(1/2) - (a*b^3*e
*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a*b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 3*a^2
*b*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a^3*b^6 - 64*a^6*c^3 - 12*a^4*b^4*c + 48*
a^5*b^2*c^2) - e/(2*a^2) + (b*d)/a^3) - log(2*a^2*b^6*e - 96*a^5*c^3*e - 4*
a*b^7*d - 4*b^8*d*x - 174*a^3*b^3*c^2*d - 2*a^2*b^3*e*(-(4*a*c - b^2)^3)^(1
/2) + 6*a^3*c^2*d*(-(4*a*c - b^2)^3)^(1/2) + 84*a^4*b^2*c^2*e + 2*a*b^7*e*x
 + 4*a*b^4*d*(-(4*a*c - b^2)^3)^(1/2) + 46*a^2*b^5*c*d + 216*a^4*b*c^3*d -
23*a^3*b^4*c*e - 48*a^4*c^4*d*x + 4*b^5*d*x*(-(4*a*c - b^2)^3)^(1/2) + 9*a^
3*b*c*e*(-(4*a*c - b^2)^3)^(1/2) - 2*a*b^4*e*x*(-(4*a*c - b^2)^3)^(1/2) - 2
4*a^2*b^5*c*e*x - 120*a^4*b*c^3*e*x - 18*a^2*b^2*c*d*(-(4*a*c - b^2)^3)^(1/
2) - 194*a^2*b^4*c^2*d*x + 276*a^3*b^2*c^3*d*x + 94*a^3*b^3*c^2*e*x - 12*a^
3*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a*b^6*c*d*x - 24*a*b^3*c*d*x*(-(4*a
*c - b^2)^3)^(1/2) + 30*a^2*b*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b^2
*c*e*x*(-(4*a*c - b^2)^3)^(1/2))*((b^4*d*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*c
^2*d*(-(4*a*c - b^2)^3)^(1/2) - (a*b^3*e*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a*
b^2*c*d*(-(4*a*c - b^2)^3)^(1/2) + 3*a^2*b*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a
^3*b^6 - 64*a^6*c^3 - 12*a^4*b^4*c + 48*a^5*b^2*c^2) + e/(2*a^2) - (b*d)/a^
3) - (d/a - (x*(2*b^3*d - a*b^2*e + 2*a^2*c*e - 7*a*b*c*d))/(a^2*(4*a*c - b
^2)) + (c*x^2*(a*b*e - 2*b^2*d + 6*a*c*d))/(a^2*(4*a*c - b^2)))/(a*x + b*x^
2 + c*x^3) + (log(x)*(a*e - 2*b*d))/a^3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**2/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.897 $\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=283

$$-\frac{\left(-2abe-2acd+3b^2d\right)\log\left(a+bx+cx^2\right)}{2a^4}+\frac{\log(x)\left(-2abe-2acd+3b^2d\right)}{a^4}-\frac{-2abe-8acd+3b^2d}{2a^2x^2\left(b^2-4ac\right)}+\frac{6a^2ce-2}{a}$$

```
[Out] 1/2*(2*a*b*e+8*a*c*d-3*b^2*d)/a^2/(-4*a*c+b^2)/x^2+(6*a^2*c*e-2*a*b^2*e-11*
a*b*c*d+3*b^3*d)/a^3/(-4*a*c+b^2)/x+(b^2*d-2*a*c*d-a*b*e+c*(-2*a*e+b*d)*x)/
a/(-4*a*c+b^2)/x^2/(c*x^2+b*x+a)+(-12*a^3*c^2*e+12*a^2*b^2*c*e+30*a^2*b*c^2
*d-2*a*b^4*e-20*a*b^3*c*d+3*b^5*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/a^
4/(-4*a*c+b^2)^(3/2)+(-2*a*b*e-2*a*c*d+3*b^2*d)*ln(x)/a^4-1/2*(-2*a*b*e-2*a
*c*d+3*b^2*d)*ln(c*x^2+b*x+a)/a^4
```

Rubi [A] time = 0.61, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{\left(12a^2b^2ce+30a^2bc^2d-12a^3c^2e-20ab^3cd-2ab^4e+3b^5d\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{a^4\left(b^2-4ac\right)^{3/2}}-\frac{-2abe-8acd+3b^2d}{2a^2x^2\left(b^2-4ac\right)}-\left(-2abe\right.$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(x^3*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(3*b^2*d - 8*a*c*d - 2*a*b*e)/(2*a^2*(b^2 - 4*a*c)*x^2) + (3*b^3*d - 11*a*
b*c*d - 2*a*b^2*e + 6*a^2*c*e)/(a^3*(b^2 - 4*a*c)*x) + (b^2*d - 2*a*c*d - a
*b*e + c*(b*d - 2*a*e)*x)/(a*(b^2 - 4*a*c)*x^2*(a + b*x + c*x^2)) + ((3*b^5
*d - 20*a*b^3*c*d + 30*a^2*b*c^2*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12*a^3*c^
2*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(a^4*(b^2 - 4*a*c)^(3/2)) + ((
3*b^2*d - 2*a*c*d - 2*a*b*e)*Log[x])/a^4 - ((3*b^2*d - 2*a*c*d - 2*a*b*e)*L
og[a + b*x + c*x^2])/(2*a^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{d+ex}{x^3\left(a+bx+cx^2\right)^2}\,dx = \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)} - \frac{\int \frac{-3b^2d+8acd+2abe-3c(bd-2ae)x}{x^3\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{b^2d-2acd-abe+c(bd-2ae)x}{a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)} - \frac{\int\left(\frac{-3b^2d+8acd+2abe}{ax^3}+\frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^2x^2}-\frac{\left(-b^2+4a\right.}{}\right.}{}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2}{a\left(b^2-4ac\right)x^2\left(a+bx+c\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2}{a\left(b^2-4ac\right)x^2\left(a+bx+c\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2}{a\left(b^2-4ac\right)x^2\left(a+bx+c\right.}$$

$$= -\frac{3b^2d-8acd-2abe}{2a^2\left(b^2-4ac\right)x^2} + \frac{3b^3d-11abcd-2ab^2e+6a^2ce}{a^3\left(b^2-4ac\right)x} + \frac{b^2d-2acd-abe+c(bd-2}{a\left(b^2-4ac\right)x^2\left(a+bx+c\right.}$$

Mathematica [A] time = 0.45, size = 253, normalized size = 0.89

$$\frac{\frac{2a\left(2a^2c^2(d+ex)+b^3(cdx-ae)-ab^2c(4d+ex)+3abc(ae-cdx)+b^4d\right)}{\left(b^2-4ac\right)(a+x(b+cx))} - \frac{a^2d}{x^2} + \frac{2\left(-12a^3c^2e+12a^2b^2ce+30a^2bc^2d-2ab^4e-20ab^3cd+3b^5d\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} +}{2a^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(x^3*(a + b*x + c*x^2)^2),x]
```

```
[Out] (-((a^2*d)/x^2) - (2*a*(-2*b*d + a*e))/x + (2*a*(b^4*d + 3*a*b*c*(a*e - c*d
*x) + b^3*(-(a*e) + c*d*x) + 2*a^2*c^2*(d + e*x) - a*b^2*c*(4*d + e*x)))/((
b^2 - 4*a*c)*(a + x*(b + c*x))) + (2*(3*b^5*d - 20*a*b^3*c*d + 30*a^2*b*c^2
*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12*a^3*c^2*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*(3*b^2*d - 2*a*c*d - 2*a*b*e)*Log[x]
+ (-3*b^2*d + 2*a*c*d + 2*a*b*e)*Log[a + x*(b + c*x)])/(2*a^4)
```

fricas [B] time = 9.74, size = 2003, normalized size = 7.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((3*a*b^5*c - 23*a^2*b^3*c^2 + 44*a^3*b*c^3)*d - 2*(a^2*b^4*c - 7*a
^3*b^2*c^2 + 12*a^4*c^3)*e)*x^3 + ((6*a*b^6 - 49*a^2*b^4*c + 108*a^3*b^2*c^
2 - 32*a^4*c^3)*d - 2*(2*a^2*b^5 - 15*a^3*b^3*c + 28*a^4*b*c^2)*e)*x^2 + ((
(3*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*d - 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*
a^3*c^3)*e)*x^4 + ((3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*d - 2*(a*b^5 - 6*a
^2*b^3*c + 6*a^3*b*c^2)*e)*x^3 + ((3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*d
 - 2*(a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e)*x^2)*sqrt(b^2 - 4*a*c)*log((2*c
^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*
x + a)) - (a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*d + (3*(a^2*b^5 - 8*a^3*b^3*
c + 16*a^4*b*c^2)*d - 2*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*e)*x - (((3*b^
6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^
3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a
^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 -
 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c +
 16*a^4*b*c^2)*e)*x^2)*log(c*x^2 + b*x + a) + 2*(((3*b^6*c - 26*a*b^4*c^2 +
 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3
)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b
^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a
^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^
2)*log(x))/((a^4*b^4*c - 8*a^5*b^2*c^2 + 16*a^6*c^3)*x^4 + (a^4*b^5 - 8*a^5
*b^3*c + 16*a^6*b*c^2)*x^3 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x^2), 1/2
*(2*((3*a*b^5*c - 23*a^2*b^3*c^2 + 44*a^3*b*c^3)*d - 2*(a^2*b^4*c - 7*a^3*b
^2*c^2 + 12*a^4*c^3)*e)*x^3 + ((6*a*b^6 - 49*a^2*b^4*c + 108*a^3*b^2*c^2 -
32*a^4*c^3)*d - 2*(2*a^2*b^5 - 15*a^3*b^3*c + 28*a^4*b*c^2)*e)*x^2 + 2*(((3
*b^5*c - 20*a*b^3*c^2 + 30*a^2*b*c^3)*d - 2*(a*b^4*c - 6*a^2*b^2*c^2 + 6*a^
3*c^3)*e)*x^4 + ((3*b^6 - 20*a*b^4*c + 30*a^2*b^2*c^2)*d - 2*(a*b^5 - 6*a^2
*b^3*c + 6*a^3*b*c^2)*e)*x^3 + ((3*a*b^5 - 20*a^2*b^3*c + 30*a^3*b*c^2)*d -
 2*(a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e)*x^2)*sqrt(-b^2 + 4*a*c)*arctan(-s
qrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (a^3*b^4 - 8*a^4*b^2*c + 16*
a^5*c^2)*d + (3*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*d - 2*(a^3*b^4 - 8*a
^4*b^2*c + 16*a^5*c^2)*e)*x - (((3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 -
32*a^3*c^4)*d - 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7
 - 26*a*b^5*c + 64*a^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c +
 16*a^3*b^2*c^2)*e)*x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^
4*c^3)*d - 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^2)*log(c*x^2 + b*x
 + a) + 2*(((3*b^6*c - 26*a*b^4*c^2 + 64*a^2*b^2*c^3 - 32*a^3*c^4)*d - 2*(a
*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*e)*x^4 + ((3*b^7 - 26*a*b^5*c + 64*a
^2*b^3*c^2 - 32*a^3*b*c^3)*d - 2*(a*b^6 - 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e)*
x^3 + ((3*a*b^6 - 26*a^2*b^4*c + 64*a^3*b^2*c^2 - 32*a^4*c^3)*d - 2*(a^2*b^
5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e)*x^2)*log(x))/((a^4*b^4*c - 8*a^5*b^2*c^2
 + 16*a^6*c^3)*x^4 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^3 + (a^5*b^4
- 8*a^6*b^2*c + 16*a^7*c^2)*x^2)]
```

giac [A] time = 0.17, size = 345, normalized size = 1.22

$$-\frac{\left(3\,b^5d-20\,ab^3cd+30\,a^2bc^2d-2\,ab^4e+12\,a^2b^2ce-12\,a^3c^2e\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(a^4b^2-4\,a^5c\right)\sqrt{-b^2+4\,ac}}-\frac{\left(3\,b^2d-2\,acd-2\,abe\right)\log\left(c\right.}{2\,a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(3*b^5*d - 20*a*b^3*c*d + 30*a^2*b*c^2*d - 2*a*b^4*e + 12*a^2*b^2*c*e - 12
*a^3*c^2*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((a^4*b^2 - 4*a^5*c)*sqr
t(-b^2 + 4*a*c)) - 1/2*(3*b^2*d - 2*a*c*d - 2*a*b*e)*log(c*x^2 + b*x + a)/a
^4 + (3*b^2*d - 2*a*c*d - 2*a*b*e)*log(abs(x))/a^4 - 1/2*(a^3*b^2*d - 4*a^4
*c*d - 2*(3*a*b^3*c*d - 11*a^2*b*c^2*d - 2*a^2*b^2*c*e + 6*a^3*c^2*e)*x^3 -
 (6*a*b^4*d - 25*a^2*b^2*c*d + 8*a^3*c^2*d - 4*a^2*b^3*e + 14*a^3*b*c*e)*x^
2 - (3*a^2*b^3*d - 12*a^3*b*c*d - 2*a^3*b^2*e + 8*a^4*c*e)*x)/((c*x^2 + b*x
 + a)*(b^2 - 4*a*c)*a^4*x^2)
```

maple [B] time = 0.07, size = 770, normalized size = 2.72

$$-\frac{2c^2ex}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)a}-\frac{12c^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a}+\frac{b^2cex}{\left(c\,x^2+bx+a\right)\left(4ac-b^2\right)a^2}+\frac{12b^2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}a^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/x^3/(c*x^2+b*x+a)^2,x)
```

```
[Out] -1/2/a^2*d/x^2-1/a^2*e/x-20/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^3*c*d+4/a^2/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b*e+4/a^2/(c*x^2+b*x
+a)/(4*a*c-b^2)*b^2*c*d-2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x*e-3/a/(c*x^2+b*
x+a)/(4*a*c-b^2)*b*c*e-7/a^3/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b^2*d+12/a^2/(4*
a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c*e+30/a^2/(4*a*c-b^
2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c^2*d-1/a^3/(c*x^2+b*x+a)*c/
(4*a*c-b^2)*x*b^3*d+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x*b^2*e+3/a^2/(c*x^2+
b*x+a)*c^2/(4*a*c-b^2)*x*b*d+2/a^3/x*b*d-2/a^3*ln(x)*b*e+3/a^4*ln(x)*b^2*d-
2/a/(c*x^2+b*x+a)/(4*a*c-b^2)*c^2*d+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*b^3*e-1
/a^3/(c*x^2+b*x+a)/(4*a*c-b^2)*b^4*d+4/a^2/(4*a*c-b^2)*c^2*ln(c*x^2+b*x+a)*
d-1/a^3/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3*e+3/2/a^4/(4*a*c-b^2)*ln(c*x^2+b*x+
a)*b^4*d-12/a/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*e-2
/a^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*e+3/a^4/(4*a
*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*d-2/a^3*c*d*ln(x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x^3/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.06, size = 1661, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(x^3*(a + b*x + c*x^2)^2),x)
```

```
[Out] log(192*a^5*c^4*d - 4*a^2*b^7*e + 6*a*b^8*d + 6*b^9*d*x + 307*a^3*b^4*c^2*d
 - 492*a^4*b^2*c^3*d + 4*a^2*b^4*e*(-(4*a*c - b^2)^3)^(1/2) - 174*a^4*b^3*c
^2*e + 6*a^4*c^2*e*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b^8*e*x - 6*a*b^5*d*(-(4*
a*c - b^2)^3)^(1/2) - 73*a^2*b^6*c*d + 46*a^3*b^5*c*e + 216*a^5*b*c^3*e - 6
*b^6*d*x*(-(4*a*c - b^2)^3)^(1/2) - 48*a^5*c^4*e*x + 312*a^4*b*c^4*d*x + 4*
a*b^5*e*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a^2*b^6*c*e*x + 31*a^2*b^3*c*d*(-(4
*a*c - b^2)^3)^(1/2) - 27*a^3*b*c^2*d*(-(4*a*c - b^2)^3)^(1/2) - 18*a^3*b^2
*c*e*(-(4*a*c - b^2)^3)^(1/2) + 339*a^2*b^5*c^2*d*x - 602*a^3*b^3*c^3*d*x +
 24*a^3*c^3*d*x*(-(4*a*c - b^2)^3)^(1/2) - 194*a^3*b^4*c^2*e*x + 276*a^4*b^
2*c^3*e*x - 76*a*b^7*c*d*x - 69*a^2*b^2*c^2*d*x*(-(4*a*c - b^2)^3)^(1/2) +
40*a*b^4*c*d*x*(-(4*a*c - b^2)^3)^(1/2) - 24*a^2*b^3*c*e*x*(-(4*a*c - b^2)^
3)^(1/2) + 30*a^3*b*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2))*(((3*b^5*d*(-(4*a*c -
 b^2)^3)^(1/2))/2 - 6*a^3*c^2*e*(-(4*a*c - b^2)^3)^(1/2) - a*b^4*e*(-(4*a*c
 - b^2)^3)^(1/2) - 10*a*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2) + 15*a^2*b*c^2*d*(
-(4*a*c - b^2)^3)^(1/2) + 6*a^2*b^2*c*e*(-(4*a*c - b^2)^3)^(1/2))/(a^4*b^6
- 64*a^7*c^3 - 12*a^5*b^4*c + 48*a^6*b^2*c^2) - (3*b^2*d)/(2*a^4) + (b*e)/a
^3 + (c*d)/a^3) - log(4*a^2*b^7*e - 192*a^5*c^4*d - 6*a*b^8*d - 6*b^9*d*x -
 307*a^3*b^4*c^2*d + 492*a^4*b^2*c^3*d + 4*a^2*b^4*e*(-(4*a*c - b^2)^3)^(1/
2) + 174*a^4*b^3*c^2*e + 6*a^4*c^2*e*(-(4*a*c - b^2)^3)^(1/2) + 4*a*b^8*e*x
 - 6*a*b^5*d*(-(4*a*c - b^2)^3)^(1/2) + 73*a^2*b^6*c*d - 46*a^3*b^5*c*e - 2
16*a^5*b*c^3*e - 6*b^6*d*x*(-(4*a*c - b^2)^3)^(1/2) + 48*a^5*c^4*e*x - 312*
a^4*b*c^4*d*x + 4*a*b^5*e*x*(-(4*a*c - b^2)^3)^(1/2) - 48*a^2*b^6*c*e*x + 3
1*a^2*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2) - 27*a^3*b*c^2*d*(-(4*a*c - b^2)^3)^
(1/2) - 18*a^3*b^2*c*e*(-(4*a*c - b^2)^3)^(1/2) - 339*a^2*b^5*c^2*d*x + 602
*a^3*b^3*c^3*d*x + 24*a^3*c^3*d*x*(-(4*a*c - b^2)^3)^(1/2) + 194*a^3*b^4*c^
2*e*x - 276*a^4*b^2*c^3*e*x + 76*a*b^7*c*d*x - 69*a^2*b^2*c^2*d*x*(-(4*a*c
- b^2)^3)^(1/2) + 40*a*b^4*c*d*x*(-(4*a*c - b^2)^3)^(1/2) - 24*a^2*b^3*c*e*
x*(-(4*a*c - b^2)^3)^(1/2) + 30*a^3*b*c^2*e*x*(-(4*a*c - b^2)^3)^(1/2))*(((
3*b^5*d*(-(4*a*c - b^2)^3)^(1/2))/2 - 6*a^3*c^2*e*(-(4*a*c - b^2)^3)^(1/2)
- a*b^4*e*(-(4*a*c - b^2)^3)^(1/2) - 10*a*b^3*c*d*(-(4*a*c - b^2)^3)^(1/2)
+ 15*a^2*b*c^2*d*(-(4*a*c - b^2)^3)^(1/2) + 6*a^2*b^2*c*e*(-(4*a*c - b^2)^3
)^(1/2))/(a^4*b^6 - 64*a^7*c^3 - 12*a^5*b^4*c + 48*a^6*b^2*c^2) + (3*b^2*d)
/(2*a^4) - (b*e)/a^3 - (c*d)/a^3) - (d/(2*a) + (x*(2*a*e - 3*b*d))/(2*a^2)
+ (x^2*(6*b^4*d + 8*a^2*c^2*d - 4*a*b^3*e - 25*a*b^2*c*d + 14*a^2*b*c*e))/(
2*a^3*(4*a*c - b^2)) + (c*x^3*(3*b^3*d - 2*a*b^2*e + 6*a^2*c*e - 11*a*b*c*d
))/(a^3*(4*a*c - b^2)))/(a*x^2 + b*x^3 + c*x^4) - (log(x)*(a*(2*b*e + 2*c*d
) - 3*b^2*d))/a^4
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/x**3/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.898 $\int \frac{5+2x}{4+5x+x^2} \, dx$

Optimal. Leaf size=9

$$\log \left(x^2+5x+4\right)$$

```
[Out] ln(x^2+5*x+4)
```

Rubi [A] time = 0.00, antiderivative size = 9, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {628}

$$\log \left(x^2+5x+4\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + 2*x)/(4 + 5*x + x^2),x]
```

```
[Out] Log[4 + 5*x + x^2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{5+2x}{4+5x+x^2} \, dx = \log \left(4+5x+x^2\right)$$

Mathematica [A] time = 0.00, size = 9, normalized size = 1.00

$$\log \left(x^2+5x+4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + 2*x)/(4 + 5*x + x^2),x]
```

```
[Out] Log[4 + 5*x + x^2]
```

fricas [A] time = 0.69, size = 9, normalized size = 1.00

$$\log \left(x^2+5\,x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="fricas")
```

```
[Out] log(x^2 + 5*x + 4)
```

giac [A] time = 0.19, size = 10, normalized size = 1.11

$$\log \left(\left|x^2+5\,x+4\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="giac")
```

```
[Out] log(abs(x^2 + 5*x + 4))
```

maple [A] time = 0.04, size = 10, normalized size = 1.11

$$\ln\left(x^2+5x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+2*x)/(x^2+5*x+4),x)
```

```
[Out] ln(x^2+5*x+4)
```

maxima [A] time = 0.49, size = 9, normalized size = 1.00

$$\log\left(x^2+5\,x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+5*x+4),x, algorithm="maxima")
```

```
[Out] log(x^2 + 5*x + 4)
```

mupad [B] time = 0.04, size = 9, normalized size = 1.00

$$\ln\left(x^2+5\,x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 5)/(5*x + x^2 + 4),x)
```

```
[Out] log(5*x + x^2 + 4)
```

sympy [A] time = 0.10, size = 8, normalized size = 0.89

$$\log\left(x^2+5x+4\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x**2+5*x+4),x)
```

```
[Out] log(x**2 + 5*x + 4)
```

3.899 $\int \frac{7+3x}{8+6x+x^2} \, dx$

Optimal. Leaf size=17

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

```
[Out] 1/2*ln(2+x)+5/2*ln(4+x)
```

Rubi [A] time = 0.00, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {632, 31}

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

Antiderivative was successfully verified.

```
[In] Int[(7 + 3*x)/(8 + 6*x + x^2),x]
```

```
[Out] Log[2 + x]/2 + (5*Log[4 + x])/2
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{7+3x}{8+6x+x^2}\,dx &= \frac{1}{2}\int \frac{1}{2+x}\,dx+\frac{5}{2}\int \frac{1}{4+x}\,dx\\ &= \frac{1}{2}\log(2+x)+\frac{5}{2}\log(4+x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 17, normalized size = 1.00

$$\frac{1}{2}\log(x+2)+\frac{5}{2}\log(x+4)$$

Antiderivative was successfully verified.

```
[In] Integrate[(7 + 3*x)/(8 + 6*x + x^2),x]
```

```
[Out] Log[2 + x]/2 + (5*Log[4 + x])/2
```

fricas [A] time = 0.72, size = 13, normalized size = 0.76

$$\frac{5}{2}\,\log\left(x+4\right)+\frac{1}{2}\,\log\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="fricas")
```

```
[Out] 5/2*log(x + 4) + 1/2*log(x + 2)
```

giac [A] time = 0.15, size = 15, normalized size = 0.88

$$\frac{5}{2}\,\log\left(|x+4|\right)+\frac{1}{2}\,\log\left(|x+2|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="giac")
```

```
[Out] 5/2*log(abs(x + 4)) + 1/2*log(abs(x + 2))
```

maple [A] time = 0.06, size = 14, normalized size = 0.82

$$\frac{\ln\left(x+2\right)}{2}+\frac{5\ln\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x+7)/(x^2+6*x+8),x)
```

```
[Out] 1/2*ln(x+2)+5/2*ln(x+4)
```

maxima [A] time = 0.45, size = 13, normalized size = 0.76

$$\frac{5}{2}\,\log\left(x+4\right)+\frac{1}{2}\,\log\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x^2+6*x+8),x, algorithm="maxima")
```

```
[Out] 5/2*log(x + 4) + 1/2*log(x + 2)
```

mupad [B] time = 0.05, size = 13, normalized size = 0.76

$$\frac{\ln\left(x+2\right)}{2}+\frac{5\,\ln\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x + 7)/(6*x + x^2 + 8),x)
```

```
[Out] log(x + 2)/2 + (5*log(x + 4))/2
```

sympy [A] time = 0.11, size = 14, normalized size = 0.82

$$\frac{\log\left(x+2\right)}{2}+\frac{5\log\left(x+4\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((7+3*x)/(x**2+6*x+8),x)
```

```
[Out] log(x + 2)/2 + 5*log(x + 4)/2
```

3.900 $\int \frac{5+2x}{5+4x+x^2}\,dx$

Optimal. Leaf size=14

$$\log\left(x^2+4x+5\right)+\tan^{-1}(x+2)$$

```
[Out] arctan(2+x)+ln(x^2+4*x+5)
```

Rubi [A] time = 0.01, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {634, 618, 204, 628}

$$\log\left(x^2+4x+5\right)+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + 2*x)/(5 + 4*x + x^2),x]
```

```
[Out] ArcTan[2 + x] + Log[5 + 4*x + x^2]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5+2x}{5+4x+x^2}\,dx &= \int \frac{1}{5+4x+x^2}\,dx+\int \frac{4+2x}{5+4x+x^2}\,dx\\ &= \log\left(5+4x+x^2\right)-2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,4+2x\right)\\ &= \tan^{-1}(2+x)+\log\left(5+4x+x^2\right)\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\log\left(x^2+4x+5\right)+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + 2*x)/(5 + 4*x + x^2),x]
```

```
[Out] ArcTan[2 + x] + Log[5 + 4*x + x^2]
```

fricas [**A**] time = 0.64, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="fricas")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

giac [**A**] time = 0.15, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="giac")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

maple [**A**] time = 0.05, size = 15, normalized size = 1.07

$$\arctan\left(x+2\right)+\ln\left(x^2+4x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+2*x)/(x^2+4*x+5),x)
```

```
[Out] arctan(x+2)+ln(x^2+4*x+5)
```

maxima [**A**] time = 1.42, size = 14, normalized size = 1.00

$$\arctan\left(x+2\right)+\log\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x^2+4*x+5),x, algorithm="maxima")
```

```
[Out] arctan(x + 2) + log(x^2 + 4*x + 5)
```

mupad [**B**] time = 1.18, size = 14, normalized size = 1.00

$$\mathrm{atan}\left(x+2\right)+\ln\left(x^2+4\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 5)/(4*x + x^2 + 5),x)
```

```
[Out] atan(x + 2) + log(4*x + x^2 + 5)
```

sympy [**A**] time = 0.12, size = 14, normalized size = 1.00

$$\log\left(x^2+4x+5\right)+\mathrm{atan}\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+2*x)/(x**2+4*x+5),x)
```

```
[Out] log(x**2 + 4*x + 5) + atan(x + 2)
```

3.901 $\int \frac{-2+7x}{42-16x+2x^2} \, dx$

Optimal. Leaf size=33

$$\frac{7}{4}\log\left(x^2-8x+21\right)-\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}$$

```
[Out] 7/4*ln(x^2-8*x+21)-13/5*arctan(1/5*(4-x)*5^(1/2))*5^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 204, 628}

$$\frac{7}{4}\log\left(x^2-8x+21\right)-\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(-2 + 7*x)/(42 - 16*x + 2*x^2),x]
```

```
[Out] (-13*ArcTan[(4 - x)/Sqrt[5]])/Sqrt[5] + (7*Log[21 - 8*x + x^2])/4
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{-2+7x}{42-16x+2x^2} \, dx &= \frac{7}{4}\int \frac{-16+4x}{42-16x+2x^2} \, dx+26\int \frac{1}{42-16x+2x^2} \, dx \\
&= \frac{7}{4}\log\left(21-8x+x^2\right)-52\,\text{Subst}\left(\int \frac{1}{-80-x^2} \, dx,x,-16+4x\right) \\
&= -\frac{13\tan^{-1}\left(\frac{4-x}{\sqrt{5}}\right)}{\sqrt{5}}+\frac{7}{4}\log\left(21-8x+x^2\right)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 1.06

$$\frac{1}{2}\left(\frac{7}{2}\log\left(x^2-8x+21\right)+\frac{26\tan^{-1}\left(\frac{x-4}{\sqrt{5}}\right)}{\sqrt{5}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-2 + 7*x)/(42 - 16*x + 2*x^2),x]
```

```
[Out] ((26*ArcTan[(-4 + x)/Sqrt[5]])/Sqrt[5] + (7*Log[21 - 8*x + x^2])/2)/2
```

fricas [A] time = 0.95, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="fricas")
```

```
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

giac [A] time = 0.15, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="giac")
```

```
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

maple [A] time = 0.06, size = 29, normalized size = 0.88

$$\frac{13\sqrt{5}\arctan\left(\frac{(2x-8)\sqrt{5}}{10}\right)}{5}+\frac{7\ln\left(x^2-8x+21\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-2+7*x)/(2*x^2-16*x+42),x)
```

```
[Out] 7/4*ln(x^2-8*x+21)+13/5*5^(1/2)*arctan(1/10*(2*x-8)*5^(1/2))
```

maxima [A] time = 1.36, size = 26, normalized size = 0.79

$$\frac{13}{5}\sqrt{5}\arctan\left(\frac{1}{5}\sqrt{5}(x-4)\right)+\frac{7}{4}\log\left(x^2-8x+21\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x^2-16*x+42),x, algorithm="maxima")
```

```
[Out] 13/5*sqrt(5)*arctan(1/5*sqrt(5)*(x - 4)) + 7/4*log(x^2 - 8*x + 21)
```

mupad [B] time = 1.17, size = 30, normalized size = 0.91

$$\frac{7\ln\left(x^2-8x+21\right)}{4}+\frac{13\sqrt{5}\operatorname{atan}\left(\frac{\sqrt{5}x}{5}-\frac{4\sqrt{5}}{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((7*x - 2)/(2*x^2 - 16*x + 42),x)
```

```
[Out] (7*log(x^2 - 8*x + 21))/4 + (13*5^(1/2)*atan((5^(1/2)*x)/5 - (4*5^(1/2))/5)
)/5
```

sympy [**A**] time = 0.15, size = 39, normalized size = 1.18

$$\frac{7\log\left(x^2 - 8x + 21\right)}{4} + \frac{13\sqrt{5}\,\operatorname{atan}\left(\frac{\sqrt{5}\,x}{5} - \frac{4\sqrt{5}}{5}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+7*x)/(2*x**2-16*x+42),x)
```

```
[Out] 7*log(x**2 - 8*x + 21)/4 + 13*sqrt(5)*atan(sqrt(5)*x/5 - 4*sqrt(5)/5)/5
```

3.902 $\int \frac{3+x}{1+3x+x^2} \, dx$

Optimal. Leaf size=51

$$\frac{1}{10} \left(5+3 \sqrt{5}\right) \log \left(2 x-\sqrt{5}+3\right)+\frac{1}{10} \left(5-3 \sqrt{5}\right) \log \left(2 x+\sqrt{5}+3\right)$$

```
[Out] 1/10*ln(3+2*x+5^(1/2))*(5-3*5^(1/2))+1/10*ln(3+2*x-5^(1/2))*(5+3*5^(1/2))
```

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {632, 31}

$$\frac{1}{10} \left(5+3 \sqrt{5}\right) \log \left(2 x-\sqrt{5}+3\right)+\frac{1}{10} \left(5-3 \sqrt{5}\right) \log \left(2 x+\sqrt{5}+3\right)$$

Antiderivative was successfully verified.

```
[In] Int[(3 + x)/(1 + 3*x + x^2),x]
```

```
[Out] ((5 + 3*Sqrt[5])*Log[3 - Sqrt[5] + 2*x])/10 + ((5 - 3*Sqrt[5])*Log[3 + Sqrt
[5] + 2*x])/10
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned} \int \frac{3+x}{1+3 x+x^2} \, dx &= -\left(\frac{1}{10} \left(-5+3 \sqrt{5}\right) \int \frac{1}{\frac{3}{2}+\frac{\sqrt{5}}{2}+x} \, dx\right)+\frac{1}{10} \left(5+3 \sqrt{5}\right) \int \frac{1}{\frac{3}{2}-\frac{\sqrt{5}}{2}+x} \, dx\\ &= \frac{1}{10} \left(5+3 \sqrt{5}\right) \log \left(3-\sqrt{5}+2 x\right)+\frac{1}{10} \left(5-3 \sqrt{5}\right) \log \left(3+\sqrt{5}+2 x\right) \end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.96

$$\frac{1}{10} \left(5+3 \sqrt{5}\right) \log \left(-2 x+\sqrt{5}-3\right)+\frac{1}{10} \left(5-3 \sqrt{5}\right) \log \left(2 x+\sqrt{5}+3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + x)/(1 + 3*x + x^2),x]
```

```
[Out] ((5 + 3*Sqrt[5])*Log[-3 + Sqrt[5] - 2*x])/10 + ((5 - 3*Sqrt[5])*Log[3 + Sqr
t[5] + 2*x])/10
```

fricas [A] time = 0.74, size = 49, normalized size = 0.96

$$\frac{3}{10} \, \sqrt{5} \log\left(\frac{2 \, x^{2} - \sqrt{5} {\left(2 \, x + 3\right)} + 6 \, x + 7}{x^{2} + 3 \, x + 1}\right) + \frac{1}{2} \, \log\left(x^{2} + 3 \, x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="fricas")
```

```
[Out] 3/10*sqrt(5)*log((2*x^2 - sqrt(5)*(2*x + 3) + 6*x + 7)/(x^2 + 3*x + 1)) + 1
/2*log(x^2 + 3*x + 1)
```

giac [**A**] time = 0.15, size = 42, normalized size = 0.82

$$\frac{3}{10}\,\sqrt{5}\,\log\left(\frac{\left|2\,x-\sqrt{5}\,+3\right|}{\left|2\,x+\sqrt{5}\,+3\right|}\right)+\frac{1}{2}\,\log\left(\left|x^2+3\,x+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="giac")
```

```
[Out] 3/10*sqrt(5)*log(abs(2*x - sqrt(5) + 3)/abs(2*x + sqrt(5) + 3)) + 1/2*log(a
bs(x^2 + 3*x + 1))
```

maple [**A**] time = 0.05, size = 29, normalized size = 0.57

$$-\frac{3\sqrt{5}\,\operatorname{arctanh}\left(\frac{(2x+3)\sqrt{5}}{5}\right)}{5}+\frac{\ln\left(x^2+3x+1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+3)/(x^2+3*x+1),x)
```

```
[Out] 1/2*ln(x^2+3*x+1)-3/5*5^(1/2)*arctanh(1/5*(2*x+3)*5^(1/2))
```

maxima [**A**] time = 1.32, size = 39, normalized size = 0.76

$$\frac{3}{10}\,\sqrt{5}\,\log\left(\frac{2\,x-\sqrt{5}\,+3}{2\,x+\sqrt{5}\,+3}\right)+\frac{1}{2}\,\log\left(x^2+3\,x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+3*x+1),x, algorithm="maxima")
```

```
[Out] 3/10*sqrt(5)*log((2*x - sqrt(5) + 3)/(2*x + sqrt(5) + 3)) + 1/2*log(x^2 + 3
*x + 1)
```

mupad [**B**] time = 0.12, size = 36, normalized size = 0.71

$$\ln\left(x-\frac{\sqrt{5}}{2}+\frac{3}{2}\right)\left(\frac{3\,\sqrt{5}}{10}+\frac{1}{2}\right)-\ln\left(x+\frac{\sqrt{5}}{2}+\frac{3}{2}\right)\left(\frac{3\,\sqrt{5}}{10}-\frac{1}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 3)/(3*x + x^2 + 1),x)
```

```
[Out] log(x - 5^(1/2)/2 + 3/2)*((3*5^(1/2))/10 + 1/2) - log(x + 5^(1/2)/2 + 3/2)*
((3*5^(1/2))/10 - 1/2)
```

sympy [**A**] time = 0.12, size = 49, normalized size = 0.96

$$\left(\frac{1}{2}+\frac{3\sqrt{5}}{10}\right)\log\left(x-\frac{\sqrt{5}}{2}+\frac{3}{2}\right)+\left(\frac{1}{2}-\frac{3\sqrt{5}}{10}\right)\log\left(x+\frac{\sqrt{5}}{2}+\frac{3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x**2+3*x+1),x)
```

```
[Out] (1/2 + 3*sqrt(5)/10)*log(x - sqrt(5)/2 + 3/2) + (1/2 - 3*sqrt(5)/10)*log(x
+ sqrt(5)/2 + 3/2)
```

3.903 $\int \frac{-1+2x}{1+8x+4x^2}\,dx$

Optimal. Leaf size=49

$$\frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2x-\sqrt{3}+2\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)$$

```
[Out] 1/4*ln(2+2*x-3^(1/2))*(1-3^(1/2))+1/4*ln(2+2*x+3^(1/2))*(1+3^(1/2))
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {632, 31}

$$\frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2x-\sqrt{3}+2\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + 2*x)/(1 + 8*x + 4*x^2),x]
```

```
[Out] ((1 - Sqrt[3])*Log[2 - Sqrt[3] + 2*x])/4 + ((1 + Sqrt[3])*Log[2 + Sqrt[3] +
 2*x])/4
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{-1+2x}{1+8x+4x^2}\,dx &= -\left(\left(-1+\sqrt{3}\right)\int \frac{1}{4-2\sqrt{3}+4x}\,dx\right)+\left(1+\sqrt{3}\right)\int \frac{1}{4+2\sqrt{3}+4x}\,dx\\ &= \frac{1}{4}\left(1-\sqrt{3}\right)\log\left(2-\sqrt{3}+2x\right)+\frac{1}{4}\left(1+\sqrt{3}\right)\log\left(2+\sqrt{3}+2x\right)\end{aligned}$$

Mathematica [A] time = 0.02, size = 44, normalized size = 0.90

$$\frac{1}{4}\left(\left(1+\sqrt{3}\right)\log\left(2x+\sqrt{3}+2\right)-\left(\sqrt{3}-1\right)\log\left(-2x+\sqrt{3}-2\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + 2*x)/(1 + 8*x + 4*x^2),x]
```

```
[Out] (-((-1 + Sqrt[3])*Log[-2 + Sqrt[3] - 2*x]) + (1 + Sqrt[3])*Log[2 + Sqrt[3]
+ 2*x])/4
```

fricas [A] time = 0.88, size = 51, normalized size = 1.04

$$\frac{1}{4}\sqrt{3}\,\log\left(\frac{4\,x^2+4\,\sqrt{3}\,(x+1)+8\,x+7}{4\,x^2+8\,x+1}\right)+\frac{1}{4}\,\log\left(4\,x^2+8\,x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="fricas")
```

```
[Out] 1/4*sqrt(3)*log((4*x^2 + 4*sqrt(3)*(x + 1) + 8*x + 7)/(4*x^2 + 8*x + 1)) +
1/4*log(4*x^2 + 8*x + 1)
```

giac [A] time = 0.15, size = 46, normalized size = 0.94

$$-\frac{1}{4}\,\sqrt{3}\,\log\left(\frac{\left|8\,x-4\,\sqrt{3}+8\right|}{\left|8\,x+4\,\sqrt{3}+8\right|}\right)+\frac{1}{4}\,\log\left(\left|4\,x^2+8\,x+1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(3)*log(abs(8*x - 4*sqrt(3) + 8)/abs(8*x + 4*sqrt(3) + 8)) + 1/4*l
og(abs(4*x^2 + 8*x + 1))
```

maple [A] time = 0.04, size = 31, normalized size = 0.63

$$\frac{\sqrt{3}\,\operatorname{arctanh}\left(\frac{(8x+8)\sqrt{3}}{12}\right)}{2}+\frac{\ln\left(4x^2+8x+1\right)}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x-1)/(4*x^2+8*x+1),x)
```

```
[Out] 1/4*ln(4*x^2+8*x+1)+1/2*3^(1/2)*arctanh(1/12*(8*x+8)*3^(1/2))
```

maxima [A] time = 1.14, size = 41, normalized size = 0.84

$$-\frac{1}{4}\,\sqrt{3}\,\log\left(\frac{2\,x-\sqrt{3}+2}{2\,x+\sqrt{3}+2}\right)+\frac{1}{4}\,\log\left(4\,x^2+8\,x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x^2+8*x+1),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(3)*log((2*x - sqrt(3) + 2)/(2*x + sqrt(3) + 2)) + 1/4*log(4*x^2 +
 8*x + 1)
```

mupad [B] time = 0.17, size = 36, normalized size = 0.73

$$\ln\left(x+\frac{\sqrt{3}}{2}+1\right)\left(\frac{\sqrt{3}}{4}+\frac{1}{4}\right)-\ln\left(x-\frac{\sqrt{3}}{2}+1\right)\left(\frac{\sqrt{3}}{4}-\frac{1}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x - 1)/(8*x + 4*x^2 + 1),x)
```

```
[Out] log(x + 3^(1/2)/2 + 1)*(3^(1/2)/4 + 1/4) - log(x - 3^(1/2)/2 + 1)*(3^(1/2)/
4 - 1/4)
```

sympy [A] time = 0.12, size = 42, normalized size = 0.86

$$\left(\frac{1}{4}-\frac{\sqrt{3}}{4}\right)\log\left(x-\frac{\sqrt{3}}{2}+1\right)+\left(\frac{1}{4}+\frac{\sqrt{3}}{4}\right)\log\left(x+\frac{\sqrt{3}}{2}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+2*x)/(4*x**2+8*x+1),x)
```

```
[Out] (1/4 - sqrt(3)/4)*log(x - sqrt(3)/2 + 1) + (1/4 + sqrt(3)/4)*log(x + sqrt(3
)/2 + 1)
```

3.904 $\int \frac{3+2x}{\left(13+12x+4x^2\right)^2}\,dx$

Optimal. Leaf size=16

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

```
[Out] -1/4/(4*x^2+12*x+13)
```

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {629}

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(3 + 2*x)/(13 + 12*x + 4*x^2)^2,x]
```

```
[Out] -1/(4*(13 + 12*x + 4*x^2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{3+2x}{\left(13+12x+4x^2\right)^2}\,dx = -\frac{1}{4\left(13+12x+4x^2\right)}$$

Mathematica [A] time = 0.01, size = 16, normalized size = 1.00

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + 2*x)/(13 + 12*x + 4*x^2)^2,x]
```

```
[Out] -1/4*1/(13 + 12*x + 4*x^2)
```

fricas [A] time = 0.75, size = 14, normalized size = 0.88

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="fricas")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

giac [A] time = 0.15, size = 14, normalized size = 0.88

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="giac")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

maple [A] time = 0.05, size = 15, normalized size = 0.94

$$-\frac{1}{4\left(4x^2+12x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x+3)/(4*x^2+12*x+13)^2,x)
```

```
[Out] -1/4/(4*x^2+12*x+13)
```

maxima [A] time = 0.53, size = 14, normalized size = 0.88

$$-\frac{1}{4\left(4\,x^2+12\,x+13\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x^2+12*x+13)^2,x, algorithm="maxima")
```

```
[Out] -1/4/(4*x^2 + 12*x + 13)
```

mupad [B] time = 1.16, size = 14, normalized size = 0.88

$$-\frac{1}{16\,x^2+48\,x+52}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*x + 3)/(12*x + 4*x^2 + 13)^2,x)
```

```
[Out] -1/(48*x + 16*x^2 + 52)
```

sympy [A] time = 0.11, size = 12, normalized size = 0.75

$$-\frac{1}{16x^2+48x+52}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+2*x)/(4*x**2+12*x+13)**2,x)
```

```
[Out] -1/(16*x**2 + 48*x + 52)
```

3.905 $\int \frac{4+x}{\left(5+4x+x^2\right)^2}\,dx$

Optimal. Leaf size=24

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

```
[Out] 1/2*(3+2*x)/(x^2+4*x+5)+arctan(2+x)
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = $\{638, 618, 204\}$

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(4 + x)/(5 + 4*x + x^2)^2,x]
```

```
[Out] (3 + 2*x)/(2*(5 + 4*x + x^2)) + ArcTan[2 + x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{4+x}{\left(5+4x+x^2\right)^2}\,dx&=\frac{3+2x}{2\left(5+4x+x^2\right)}+\int \frac{1}{5+4x+x^2}\,dx\\&=\frac{3+2x}{2\left(5+4x+x^2\right)}-2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,4+2x\right)\\&=\frac{3+2x}{2\left(5+4x+x^2\right)}+\tan^{-1}(2+x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 24, normalized size = 1.00

$$\frac{2x+3}{2\left(x^2+4x+5\right)}+\tan^{-1}(x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(4 + x)/(5 + 4*x + x^2)^2,x]
```

```
[Out] (3 + 2*x)/(2*(5 + 4*x + x^2)) + ArcTan[2 + x]
```

fricas [A] time = 0.89, size = 31, normalized size = 1.29

$$\frac{2\left(x^{2}+4\,x+5\right)\arctan\left(x+2\right)+2\,x+3}{2\left(x^{2}+4\,x+5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*(x^2 + 4*x + 5)*arctan(x + 2) + 2*x + 3)/(x^2 + 4*x + 5)
```

giac [A] time = 0.16, size = 22, normalized size = 0.92

$$\frac{2\,x+3}{2\left(x^{2}+4\,x+5\right)}+\arctan\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*x + 3)/(x^2 + 4*x + 5) + arctan(x + 2)
```

maple [A] time = 0.05, size = 23, normalized size = 0.96

$$\arctan\left(x+2\right)+\frac{4x+6}{4x^{2}+16x+20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+4)/(x^2+4*x+5)^2,x)
```

```
[Out] 1/4*(4*x+6)/(x^2+4*x+5)+arctan(x+2)
```

maxima [A] time = 1.18, size = 22, normalized size = 0.92

$$\frac{2\,x+3}{2\left(x^{2}+4\,x+5\right)}+\arctan\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x^2+4*x+5)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(2*x + 3)/(x^2 + 4*x + 5) + arctan(x + 2)
```

mupad [B] time = 0.03, size = 19, normalized size = 0.79

$$\mathrm{atan}\left(x+2\right)+\frac{x+\frac{3}{2}}{x^{2}+4\,x+5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 4)/(4*x + x^2 + 5)^2,x)
```

```
[Out] atan(x + 2) + (x + 3/2)/(4*x + x^2 + 5)
```

sympy [A] time = 0.12, size = 19, normalized size = 0.79

$$\frac{2x+3}{2x^{2}+8x+10}+\mathrm{atan}\left(x+2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((4+x)/(x**2+4*x+5)**2,x)
```

```
[Out] (2*x + 3)/(2*x**2 + 8*x + 10) + atan(x + 2)
```

3.906 $\int \frac{-1+3x}{\left(1+x+x^2\right)^2} \, dx$

Optimal. Leaf size=39

$$-\frac{5x+7}{3\left(x^2+x+1\right)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

```
[Out] 1/3*(-7-5*x)/(x^2+x+1)-10/9*arctan(1/3*(1+2*x)*3^(1/2))*3^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {638, 618, 204}

$$-\frac{5x+7}{3\left(x^2+x+1\right)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + 3*x)/(1 + x + x^2)^2,x]
```

```
[Out] -(7 + 5*x)/(3*(1 + x + x^2)) - (10*ArcTan[(1 + 2*x)/Sqrt[3]])/(3*Sqrt[3])
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}
\int \frac{-1+3x}{\left(1+x+x^2\right)^2} \, dx &= -\frac{7+5x}{3\left(1+x+x^2\right)}-\frac{5}{3}\int \frac{1}{1+x+x^2} \, dx \\
&= -\frac{7+5x}{3\left(1+x+x^2\right)}+\frac{10}{3}\operatorname{Subst}\left(\int \frac{1}{-3-x^2} \, dx,x,1+2x\right) \\
&= -\frac{7+5x}{3\left(1+x+x^2\right)}-\frac{10\tan^{-1}\left(\frac{1+2x}{\sqrt{3}}\right)}{3\sqrt{3}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 1.00

$$\frac{-5x-7}{3\left(x^2+x+1\right)}-\frac{10\tan^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + 3*x)/(1 + x + x^2)^2,x]
```

```
[Out] (-7 - 5*x)/(3*(1 + x + x^2)) - (10*ArcTan[(1 + 2*x)/Sqrt[3]])/(3*Sqrt[3])
```

fricas [A] time = 0.82, size = 37, normalized size = 0.95

$$-\frac{10\sqrt{3}\left(x^2+x+1\right)\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)+15x+21}{9\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="fricas")
```

```
[Out] -1/9*(10*sqrt(3)*(x^2 + x + 1)*arctan(1/3*sqrt(3)*(2*x + 1)) + 15*x + 21)/(
x^2 + x + 1)
```

giac [A] time = 0.15, size = 32, normalized size = 0.82

$$-\frac{10}{9}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)-\frac{5x+7}{3\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="giac")
```

```
[Out] -10/9*sqrt(3)*arctan(1/3*sqrt(3)*(2*x + 1)) - 1/3*(5*x + 7)/(x^2 + x + 1)
```

maple [A] time = 0.04, size = 33, normalized size = 0.85

$$-\frac{10\sqrt{3}\,\arctan\left(\frac{(2x+1)\sqrt{3}}{3}\right)}{9}+\frac{-5x-7}{3x^2+3x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x-1)/(x^2+x+1)^2,x)
```

```
[Out] 1/3*(-7-5*x)/(x^2+x+1)-10/9*3^(1/2)*arctan(1/3*(2*x+1)*3^(1/2))
```

maxima [A] time = 1.30, size = 32, normalized size = 0.82

$$-\frac{10}{9}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}\left(2x+1\right)\right)-\frac{5x+7}{3\left(x^2+x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x^2+x+1)^2,x, algorithm="maxima")
```

```
[Out] -10/9*sqrt(3)*arctan(1/3*sqrt(3)*(2*x + 1)) - 1/3*(5*x + 7)/(x^2 + x + 1)
```

mupad [B] time = 0.04, size = 34, normalized size = 0.87

$$-\frac{10\sqrt{3}\,\mathrm{atan}\left(\frac{2\sqrt{3}\,x}{3}+\frac{\sqrt{3}}{3}\right)}{9}-\frac{\frac{5x}{3}+\frac{7}{3}}{x^2+x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((3*x - 1)/(x + x^2 + 1)^2,x)
```

```
[Out] - (10*3^(1/2)*atan((2*3^(1/2)*x)/3 + 3^(1/2)/3))/9 - ((5*x)/3 + 7/3)/(x + x
^2 + 1)
```

sympy **[A]** time = 0.14, size = 42, normalized size = 1.08

$$\frac{-5x-7}{3x^2+3x+3}-\frac{10\sqrt{3}\,\operatorname{atan}\left(\frac{2\sqrt{3}\,x}{3}+\frac{\sqrt{3}}{3}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+3*x)/(x**2+x+1)**2,x)
```

```
[Out] (-5*x - 7)/(3*x**2 + 3*x + 3) - 10*sqrt(3)*atan(2*sqrt(3)*x/3 + sqrt(3)/3)/
9
```

3.907 $\int \frac{1+x}{\left(1-x+x^2\right)^3} \, dx$

Optimal. Leaf size=58

$$-\frac{1-2x}{2\left(x^2-x+1\right)}-\frac{1-x}{2\left(x^2-x+1\right)^2}-\frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

```
[Out] 1/2*(-1+x)/(x^2-x+1)^2+1/2*(-1+2*x)/(x^2-x+1)-2/3*arctan(1/3*(1-2*x)*3^(1/2
))*3^(1/2)
```

Rubi **[A]** time = 0.02, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {638, 614, 618, 204}

$$-\frac{1-2x}{2\left(x^2-x+1\right)}-\frac{1-x}{2\left(x^2-x+1\right)^2}-\frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)/(1 - x + x^2)^3,x]
```

```
[Out] -(1 - x)/(2*(1 - x + x^2)^2) - (1 - 2*x)/(2*(1 - x + x^2)) - (2*ArcTan[(1 -
 2*x)/Sqrt[3]])/Sqrt[3]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{1+x}{\left(1-x+x^2\right)^3}\,dx &= -\frac{1-x}{2\left(1-x+x^2\right)^2}+\frac{3}{2}\int \frac{1}{\left(1-x+x^2\right)^2}\,dx\\ &= -\frac{1-x}{2\left(1-x+x^2\right)^2}-\frac{1-2x}{2\left(1-x+x^2\right)}+\int \frac{1}{1-x+x^2}\,dx\\ &= -\frac{1-x}{2\left(1-x+x^2\right)^2}-\frac{1-2x}{2\left(1-x+x^2\right)}-2\,\text{Subst}\left(\int \frac{1}{-3-x^2}\,dx,x,-1+2x\right)\\ &= -\frac{1-x}{2\left(1-x+x^2\right)^2}-\frac{1-2x}{2\left(1-x+x^2\right)}-\frac{2\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 49, normalized size = 0.84

$$\frac{2x^3-3x^2+4x-2}{2\left(x^2-x+1\right)^2}+\frac{2\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)/(1 - x + x^2)^3,x]
```

```
[Out] (-2 + 4*x - 3*x^2 + 2*x^3)/(2*(1 - x + x^2)^2) + (2*ArcTan[(-1 + 2*x)/Sqrt[
3]])/Sqrt[3]
```

fricas [**A**] time = 0.92, size = 71, normalized size = 1.22

$$\frac{6\,x^3+4\,\sqrt{3}\left(x^4-2\,x^3+3\,x^2-2\,x+1\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-9\,x^2+12\,x-6}{6\left(x^4-2\,x^3+3\,x^2-2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(6*x^3 + 4*sqrt(3)*(x^4 - 2*x^3 + 3*x^2 - 2*x + 1)*arctan(1/3*sqrt(3)*(
2*x - 1)) - 9*x^2 + 12*x - 6)/(x^4 - 2*x^3 + 3*x^2 - 2*x + 1)
```

giac [**A**] time = 0.15, size = 44, normalized size = 0.76

$$\frac{2}{3}\,\sqrt{3}\,\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)+\frac{2\,x^3-3\,x^2+4\,x-2}{2\left(x^2-x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 2/3*sqrt(3)*arctan(1/3*sqrt(3)*(2*x - 1)) + 1/2*(2*x^3 - 3*x^2 + 4*x - 2)/(
x^2 - x + 1)^2
```

maple [**A**] time = 0.08, size = 52, normalized size = 0.90

$$\frac{2\sqrt{3}\,\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}+\frac{3x-3}{6\left(x^2-x+1\right)^2}+\frac{2x-1}{2x^2-2x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)/(x^2-x+1)^3,x)
```

```
[Out] 1/6*(3*x-3)/(x^2-x+1)^2+1/2*(2*x-1)/(x^2-x+1)+2/3*3^(1/2)*arctan(1/3*(2*x-1
)*3^(1/2))
```

maxima [A] time = 1.26, size = 54, normalized size = 0.93

$$\frac{2}{3}\sqrt{3}\arctan\left(\frac{1}{3}\sqrt{3}(2x-1)\right)+\frac{2x^3-3x^2+4x-2}{2\left(x^4-2x^3+3x^2-2x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 2/3*sqrt(3)*arctan(1/3*sqrt(3)*(2*x - 1)) + 1/2*(2*x^3 - 3*x^2 + 4*x - 2)/(
x^4 - 2*x^3 + 3*x^2 - 2*x + 1)
```

mupad [B] time = 0.05, size = 53, normalized size = 0.91

$$\frac{2\sqrt{3}\,\mathrm{atan}\left(\frac{2\sqrt{3}\,x}{3}-\frac{\sqrt{3}}{3}\right)}{3}+\frac{x^3-\frac{3x^2}{2}+2x-1}{x^4-2x^3+3x^2-2x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)/(x^2 - x + 1)^3,x)
```

```
[Out] (2*3^(1/2)*atan((2*3^(1/2)*x)/3 - 3^(1/2)/3))/3 + (2*x - (3*x^2)/2 + x^3 -
1)/(3*x^2 - 2*x - 2*x^3 + x^4 + 1)
```

sympy [A] time = 0.16, size = 61, normalized size = 1.05

$$\frac{2x^3-3x^2+4x-2}{2x^4-4x^3+6x^2-4x+2}+\frac{2\sqrt{3}\,\mathrm{atan}\left(\frac{2\sqrt{3}x}{3}-\frac{\sqrt{3}}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)/(x**2-x+1)**3,x)
```

```
[Out] (2*x**3 - 3*x**2 + 4*x - 2)/(2*x**4 - 4*x**3 + 6*x**2 - 4*x + 2) + 2*sqrt(3
)*atan(2*sqrt(3)*x/3 - sqrt(3)/3)/3
```

3.908 $\int \frac{1}{A+Bx} \, dx$

Optimal. Leaf size=10

$$\frac{\log(A+Bx)}{B}$$

```
[Out] ln(B*x+A)/B
```

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 7, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {31}

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)^(-1),x]
```

```
[Out] Log[A + B*x]/B
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\int \frac{1}{A+Bx} \, dx = \frac{\log(A+Bx)}{B}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)^(-1),x]
```

```
[Out] Log[A + B*x]/B
```

fricas [A] time = 1.13, size = 10, normalized size = 1.00

$$\frac{\log(Bx+A)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="fricas")
```

```
[Out] log(B*x + A)/B
```

giac [A] time = 0.15, size = 11, normalized size = 1.10

$$\frac{\log(|Bx+A|)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="giac")
```

```
[Out] log(abs(B*x + A))/B
```

maple [A] time = 0.04, size = 11, normalized size = 1.10

$$\frac{\ln\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(B*x+A),x)
```

```
[Out] ln(B*x+A)/B
```

maxima [A] time = 0.48, size = 10, normalized size = 1.00

$$\frac{\log\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x, algorithm="maxima")
```

```
[Out] log(B*x + A)/B
```

mupad [B] time = 1.15, size = 10, normalized size = 1.00

$$\frac{\ln\left(A+B\,x\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(1/(A + B*x),x)
```

```
[Out] log(A + B*x)/B
```

sympy [A] time = 0.07, size = 7, normalized size = 0.70

$$\frac{\log\left(A+Bx\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(1/(B*x+A),x)
```

```
[Out] log(A + B*x)/B
```

3.909 $\int \frac{A+Bx}{A^2+2ABx+B^2x^2} \, dx$

Optimal. Leaf size=10

$$\frac{\log(A+Bx)}{B}$$

```
[Out] ln(B*x+A)/B
```

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 31\}$

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2),x]
```

```
[Out] Log[A + B*x]/B
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{A^2+2ABx+B^2x^2} \, dx &= \int \frac{1}{A+Bx} \, dx\\ &= \frac{\log(A+Bx)}{B}\end{aligned}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(A+Bx)}{B}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(A^2 + 2*A*B*x + B^2*x^2),x]
```

```
[Out] Log[A + B*x]/B
```

fricas [A] time = 0.95, size = 10, normalized size = 1.00

$$\frac{\log\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="fricas")
```

```
[Out] log(B*x + A)/B
```

giac [B] time = 0.15, size = 22, normalized size = 2.20

$$\frac{\log\left(A^2+\left(Bx^2+2\,Ax\right)B\right)}{2\,B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="giac")
[Out] 1/2*log(A^2 + (B*x^2 + 2*A*x)*B)/B
```

maple [A] time = 0.08, size = 11, normalized size = 1.10

$$\frac{\ln\left(Bx+A\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x)
[Out] 1/B*ln(B*x+A)
```

maxima [B] time = 0.71, size = 22, normalized size = 2.20

$$\frac{\log\left(B^2x^2+2\,ABx+A^2\right)}{2\,B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B^2*x^2+2*A*B*x+A^2),x, algorithm="maxima")
[Out] 1/2*log(B^2*x^2 + 2*A*B*x + A^2)/B
```

mupad [B] time = 0.02, size = 10, normalized size = 1.00

$$\frac{\ln\left(A+B\,x\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(A^2 + B^2*x^2 + 2*A*B*x),x)
[Out] log(A + B*x)/B
```

sympy [A] time = 0.07, size = 7, normalized size = 0.70

$$\frac{\log\left(A+Bx\right)}{B}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(B**2*x**2+2*A*B*x+A**2),x)
[Out] log(A + B*x)/B
```

3.910 $\int x^4(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=367

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(1024a^2Bc^2-6cx\left(280aAc^2-444abBc-294Ab^2c+231b^3B\right)+2744aAbc^2-3276ab^2Bc-147}{13440c^5}$$

```
[Out] 1/280*(-42*A*b*c-32*B*a*c+33*B*b^2)*x^2*(c*x^2+b*x+a)^(3/2)/c^3-1/84*(-14*A
*c+11*B*b)*x^3*(c*x^2+b*x+a)^(3/2)/c^2+1/7*B*x^4*(c*x^2+b*x+a)^(3/2)/c+1/13
440*(1155*b^4*B-1470*A*b^3*c-3276*a*b^2*B*c+2744*a*A*b*c^2+1024*a^2*B*c^2-6
*c*(280*A*a*c^2-294*A*b^2*c-444*B*a*b*c+231*B*b^3)*x)*(c*x^2+b*x+a)^(3/2)/c
^5+1/2048*(-4*a*c+b^2)*(-32*A*a^2*c^3+112*A*a*b^2*c^2-42*A*b^4*c+80*B*a^2*b
*c^2-120*B*a*b^3*c+33*B*b^5)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1
/2))/c^(13/2)-1/1024*(-32*A*a^2*c^3+112*A*a*b^2*c^2-42*A*b^4*c+80*B*a^2*b*c
^2-120*B*a*b^3*c+33*B*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^6
```

Rubi [A] time = 0.51, antiderivative size = 367, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(1024a^2Bc^2-6cx\left(280aAc^2-444abBc-294Ab^2c+231b^3B\right)+2744aAbc^2-3276ab^2Bc-147}{13440c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((33*b^5*B - 42*A*b^4*c - 120*a*b^3*B*c + 112*a*A*b^2*c^2 + 80*a^2*b*B*c^2
 - 32*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(1024*c^6) + ((33*b^2*B
 - 42*A*b*c - 32*a*B*c)*x^2*(a + b*x + c*x^2)^(3/2))/(280*c^3) - ((11*b*B -
 14*A*c)*x^3*(a + b*x + c*x^2)^(3/2))/(84*c^2) + (B*x^4*(a + b*x + c*x^2)^(
3/2))/(7*c) + ((1155*b^4*B - 1470*A*b^3*c - 3276*a*b^2*B*c + 2744*a*A*b*c^2
 + 1024*a^2*B*c^2 - 6*c*(231*b^3*B - 294*A*b^2*c - 444*a*b*B*c + 280*a*A*c^
2)*x)*(a + b*x + c*x^2)^(3/2))/(13440*c^5) + ((b^2 - 4*a*c)*(33*b^5*B - 42*
A*b^4*c - 120*a*b^3*B*c + 112*a*A*b^2*c^2 + 80*a^2*b*B*c^2 - 32*a^2*A*c^3)*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2048*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^4(A+Bx)\sqrt{a+bx+cx^2}\,dx &= \frac{Bx^4\left(a+bx+cx^2\right)^{3/2}}{7c}+\frac{\int x^3\left(-4aB-\frac{1}{2}(11bB-14Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{7c}\\
&= -\frac{(11bB-14Ac)x^3\left(a+bx+cx^2\right)^{3/2}}{84c^2}+\frac{Bx^4\left(a+bx+cx^2\right)^{3/2}}{7c}+\frac{\int x^2\left(\frac{3}{2}a(11}{}\\
&= \frac{\left(33b^2B-42Abc-32aBc\right)x^2\left(a+bx+cx^2\right)^{3/2}}{280c^3}-\frac{(11bB-14Ac)x^3\left(a+bx\right.}{84c^2}\\
&= \frac{\left(33b^2B-42Abc-32aBc\right)x^2\left(a+bx+cx^2\right)^{3/2}}{280c^3}-\frac{(11bB-14Ac)x^3\left(a+bx\right.}{84c^2}\\
&= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}\\
&= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}\\
&= -\frac{\left(33b^5B-42Ab^4c-120ab^3Bc+112aAb^2c^2+80a^2bBc^2-32a^2Ac^3\right)(b+2}{1024c^6}
\end{aligned}$$

Mathematica [A] time = 0.54, size = 312, normalized size = 0.85

$$\frac{\frac{7\left(32a^2Ac^3-80a^2bBc^2-112aAb^2c^2+120ab^3Bc+42Ab^4c-33b^5B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)\right)}{2048c^{11/2}}+\frac{x^2(a+x(b+cx))^{3}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (((33*b^2*B - 42*A*b*c - 32*a*B*c)*x^2*(a + x*(b + c*x))^(3/2))/(40*c^2) +
((-11*b*B + 14*A*c)*x^3*(a + x*(b + c*x))^(3/2))/(12*c) + B*x^4*(a + x*(b +
 c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(1155*b^4*B - 42*b^3*c*(35*A + 33*B
*x) + 8*a*b*c^2*(343*A + 333*B*x) + 16*a*c^2*(64*a*B - 105*A*c*x) + 252*b^2
*c*(-13*a*B + 7*A*c*x)))/(1920*c^4) + (7*(-33*b^5*B + 42*A*b^4*c + 120*a*b^
3*B*c - 112*a*A*b^2*c^2 - 80*a^2*b*B*c^2 + 32*a^2*A*c^3)*(2*Sqrt[c]*(b + 2*
c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*S
qrt[a + x*(b + c*x)])]))/(2048*c^(11/2)))/(7*c)
```

fricas [A] time = 1.30, size = 843, normalized size = 2.30

$$\left[\frac{105\left(33\,Bb^7+128\,Aa^3c^4-160\left(2\,Ba^3b+3\,Aa^2b^2\right)c^3+280\left(2\,Ba^2b^3+Aab^4\right)c^2-42\left(6\,Bab^5+Ab^6\right)c\right)\sqrt{c}\,\log\left(-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(33*B*b^7 + 128*A*a^3*c^4 - 160*(2*B*a^3*b + 3*A*a^2*b^2)*c^
3 + 280*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 42*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log
(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) -
 4*a*c) + 4*(15360*B*c^7*x^6 - 3465*B*b^6*c + 1280*(B*b*c^6 + 14*A*c^7)*x^5
 + 32*(256*B*a^3 + 791*A*a^2*b)*c^4 - 128*(11*B*b^2*c^5 - 2*(12*B*a + 7*A*b
)*c^6)*x^4 - 336*(103*B*a^2*b^2 + 70*A*a*b^3)*c^3 + 16*(99*B*b^3*c^4 + 280*
A*a*c^6 - 2*(158*B*a*b + 63*A*b^2)*c^5)*x^3 + 210*(104*B*a*b^4 + 21*A*b^5)*
c^2 - 8*(231*B*b^4*c^3 + 8*(64*B*a^2 + 119*A*a*b)*c^5 - 6*(162*B*a*b^2 + 49
*A*b^3)*c^4)*x^2 + 2*(1155*B*b^5*c^2 - 3360*A*a^2*c^5 + 16*(397*B*a^2*b + 3
92*A*a*b^2)*c^4 - 42*(144*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^7, -1/215040*(105*(33*B*b^7 + 128*A*a^3*c^4 - 160*(2*B*a^3*b + 3*A*a^2*
b^2)*c^3 + 280*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 42*(6*B*a*b^5 + A*b^6)*c)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) - 2*(15360*B*c^7*x^6 - 3465*B*b^6*c + 1280*(B*b*c^6 + 14*A*c^7)*x^
5 + 32*(256*B*a^3 + 791*A*a^2*b)*c^4 - 128*(11*B*b^2*c^5 - 2*(12*B*a + 7*A*
b)*c^6)*x^4 - 336*(103*B*a^2*b^2 + 70*A*a*b^3)*c^3 + 16*(99*B*b^3*c^4 + 280
*A*a*c^6 - 2*(158*B*a*b + 63*A*b^2)*c^5)*x^3 + 210*(104*B*a*b^4 + 21*A*b^5)
*c^2 - 8*(231*B*b^4*c^3 + 8*(64*B*a^2 + 119*A*a*b)*c^5 - 6*(162*B*a*b^2 + 4
9*A*b^3)*c^4)*x^2 + 2*(1155*B*b^5*c^2 - 3360*A*a^2*c^5 + 16*(397*B*a^2*b +
392*A*a*b^2)*c^4 - 42*(144*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a
))/c^7]
```

giac [A] time = 0.24, size = 414, normalized size = 1.13

$$\frac{1}{107520}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\left(12\,Bx+\frac{Bbc^5+14\,Ac^6}{c^6}\right)x-\frac{11\,Bb^2c^4-24\,Bac^5-14\,Abc^5}{c^6}\right)x+\frac{99\,Bb^3c^3-}{}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(12*B*x + (B*b*c^5 + 14*A*c^
6)/c^6)*x - (11*B*b^2*c^4 - 24*B*a*c^5 - 14*A*b*c^5)/c^6)*x + (99*B*b^3*c^3
 - 316*B*a*b*c^4 - 126*A*b^2*c^4 + 280*A*a*c^5)/c^6)*x - (231*B*b^4*c^2 - 9
72*B*a*b^2*c^3 - 294*A*b^3*c^3 + 512*B*a^2*c^4 + 952*A*a*b*c^4)/c^6)*x + (1
155*B*b^5*c - 6048*B*a*b^3*c^2 - 1470*A*b^4*c^2 + 6352*B*a^2*b*c^3 + 6272*A
*a*b^2*c^3 - 3360*A*a^2*c^4)/c^6)*x - (3465*B*b^6 - 21840*B*a*b^4*c - 4410*
A*b^5*c + 34608*B*a^2*b^2*c^2 + 23520*A*a*b^3*c^2 - 8192*B*a^3*c^3 - 25312*
A*a^2*b*c^3)/c^6) - 1/2048*(33*B*b^7 - 252*B*a*b^5*c - 42*A*b^6*c + 560*B*a
^2*b^3*c^2 + 280*A*a*b^4*c^2 - 320*B*a^3*b*c^3 - 480*A*a^2*b^2*c^3 + 128*A*
a^3*c^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13
/2)
```

maple [B] time = 0.06, size = 872, normalized size = 2.38

$$\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}B\,x^4}{7c}+\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}A\,x^3}{6c}-\frac{11\left(c\,x^2+bx+a\right)^{\frac{3}{2}}Bb\,x^3}{84c^2}+\frac{A\,a^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{15A\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -4/35*B*a/c^2*x^2*(c*x^2+b*x+a)^(3/2)-11/84*B*b/c^2*x^3*(c*x^2+b*x+a)^(3/2)
-5/32*B*b/c^3*a^2*(c*x^2+b*x+a)^(1/2)*x+15/64*B*b^3/c^4*a*(c*x^2+b*x+a)^(1/
2)*x-7/32*A*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)*x+111/560*B*b/c^3*a*x*(c*x^2+b*x+
a)^(3/2)+1/16*A*a^2/c^2*(c*x^2+b*x+a)^(1/2)*x-1/8*A*a/c^2*x*(c*x^2+b*x+a)^(
3/2)+1/32*A*a^2/c^3*(c*x^2+b*x+a)^(1/2)*b+21/256*A*b^4/c^4*(c*x^2+b*x+a)^(1
/2)*x+15/128*B*b^4/c^5*a*(c*x^2+b*x+a)^(1/2)-15/64*A*b^2/c^(7/2)*a^2*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+35/128*B*b^3/c^(9/2)*a^2*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/32*B*b/c^(7/2)*a^3*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))-39/160*B*b^2/c^4*a*(c*x^2+b*x+a)^(3/2)+33/280*B*b^2/c
^3*x^2*(c*x^2+b*x+a)^(3/2)-33/320*B*b^3/c^4*x*(c*x^2+b*x+a)^(3/2)-33/512*B*
b^5/c^5*(c*x^2+b*x+a)^(1/2)*x+21/160*A*b^2/c^3*x*(c*x^2+b*x+a)^(3/2)-5/64*B
*b^2/c^4*a^2*(c*x^2+b*x+a)^(1/2)-63/512*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*a+35/256*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a-7/64*A*b^3/c^4*a*(c*x^2+b*x+a)^(1/2)+49/240*A*b/c^3*a*(c*
x^2+b*x+a)^(3/2)-3/20*A*b/c^2*x^2*(c*x^2+b*x+a)^(3/2)+1/6*A*x^3*(c*x^2+b*x+
a)^(3/2)/c-7/64*A*b^3/c^4*(c*x^2+b*x+a)^(3/2)+8/105*B*a^2/c^3*(c*x^2+b*x+a)
^(3/2)+33/2048*B*b^7/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1
1/128*B*b^4/c^5*(c*x^2+b*x+a)^(3/2)-33/1024*B*b^6/c^6*(c*x^2+b*x+a)^(1/2)+2
1/512*A*b^5/c^5*(c*x^2+b*x+a)^(1/2)-21/1024*A*b^6/c^(11/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))+1/16*A*a^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+1/7*B*x^4*(c*x^2+b*x+a)^(3/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 3.91, size = 992, normalized size = 2.70

$$\frac{8\,B\,a^3\,\sqrt{c\,x^2+b\,x+a}}{105\,c^3}-\frac{33\,B\,b^6\,\sqrt{c\,x^2+b\,x+a}}{1024\,c^6}+\frac{A\,x^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{6\,c}+\frac{B\,x^4\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{7\,c}+33\,B\,b^7\,\ln\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (8*B*a^3*(a + b*x + c*x^2)^(1/2))/(105*c^3) - (33*B*b^6*(a + b*x + c*x^2)^(
1/2))/(1024*c^6) + (A*x^3*(a + b*x + c*x^2)^(3/2))/(6*c) + (B*x^4*(a + b*x
+ c*x^2)^(3/2))/(7*c) + (33*B*b^7*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2)
 + 2*c*x))/(2048*c^(13/2)) + (A*a*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x
^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2
+ c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c
)))/(2*c) - (3*A*b*((7*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x
^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*
c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2)
)/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^
(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c
) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*
b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)
^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3/2))/(5*c)))/(4*c) - (5
*B*a^3*b*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(32*c^(7/2)) -
 (63*B*a*b^5*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(512*c^(11
/2)) + (35*B*a^2*b^3*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(1
28*c^(9/2)) + (13*B*a*b^4*(a + b*x + c*x^2)^(1/2))/(64*c^5) - (4*B*a*x^2*(a
 + b*x + c*x^2)^(3/2))/(35*c^2) - (11*B*b*x^3*(a + b*x + c*x^2)^(3/2))/(84*
c^2) - (33*B*b^3*x*(a + b*x + c*x^2)^(3/2))/(320*c^4) + (11*B*b^5*x*(a + b*
x + c*x^2)^(1/2))/(512*c^5) - (103*B*a^2*b^2*(a + b*x + c*x^2)^(1/2))/(320*
c^4) + (8*B*a^2*x^2*(a + b*x + c*x^2)^(1/2))/(105*c^2) + (33*B*b^2*x^2*(a +
 b*x + c*x^2)^(3/2))/(280*c^3) + (11*B*b^4*x^2*(a + b*x + c*x^2)^(1/2))/(12
8*c^4) - (39*B*a*b^2*x^2*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (111*B*a*b*x*
(a + b*x + c*x^2)^(3/2))/(560*c^3) - (269*B*a^2*b*x*(a + b*x + c*x^2)^(1/2)
)/(3360*c^3) - (3*B*a*b^3*x*(a + b*x + c*x^2)^(1/2))/(320*c^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^4 (A + Bx) \sqrt{a + bx + cx^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.911 $\int x^3(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=280

$$-\frac{\left(b^2-4ac\right)\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{11/2}}+\frac{(b+2cx)\sqrt{a+bx+}}{}$$

```
[Out] -1/20*(-4*A*c+3*B*b)*x^2*(c*x^2+b*x+a)^(3/2)/c^2+1/6*B*x^3*(c*x^2+b*x+a)^(3
/2)/c-1/960*(105*b^3*B-140*A*b^2*c-196*a*b*B*c+128*a*A*c^2-6*c*(-28*A*b*c-2
0*B*a*c+21*B*b^2)*x)*(c*x^2+b*x+a)^(3/2)/c^4-1/1024*(-4*a*c+b^2)*(48*A*a*b*
c^2-28*A*b^3*c+16*B*a^2*c^2-56*B*a*b^2*c+21*B*b^4)*arctanh(1/2*(2*c*x+b)/c^
(1/2)/(c*x^2+b*x+a)^(1/2))/c^(11/2)+1/512*(48*A*a*b*c^2-28*A*b^3*c+16*B*a^2
*c^2-56*B*a*b^2*c+21*B*b^4)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi [A] time = 0.32, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)}{512c^5}-\frac{\left(b^2-4ac\right)\left(16a^2Bc^2+48aAbc^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((21*b^4*B - 28*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*(b +
2*c*x)*Sqrt[a + b*x + c*x^2])/(512*c^5) - ((3*b*B - 4*A*c)*x^2*(a + b*x + c
*x^2)^(3/2))/(20*c^2) + (B*x^3*(a + b*x + c*x^2)^(3/2))/(6*c) - ((105*b^3*B
 - 140*A*b^2*c - 196*a*b*B*c + 128*a*A*c^2 - 6*c*(21*b^2*B - 28*A*b*c - 20*
a*B*c)*x)*(a + b*x + c*x^2)^(3/2))/(960*c^4) - ((b^2 - 4*a*c)*(21*b^4*B - 2
8*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*ArcTanh[(b + 2*c*x)
/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^3(A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c} + \frac{\int x^2\left(-3aB-\frac{3}{2}(3bB-4Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{6c}$$

$$= -\frac{(3bB-4Ac)x^2\left(a+bx+cx^2\right)^{3/2}}{20c^2} + \frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c} + \frac{\int x\Big(3a(3bB-4A}{}$$

$$= -\frac{(3bB-4Ac)x^2\left(a+bx+cx^2\right)^{3/2}}{20c^2} + \frac{Bx^3\left(a+bx+cx^2\right)^{3/2}}{6c} - \frac{\Big(105b^3B-140A}{}$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5} -$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5} -$$

$$= \frac{\left(21b^4B-28Ab^3c-56ab^2Bc+48aAbc^2+16a^2Bc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^5} -$$

Mathematica [A] time = 0.36, size = 241, normalized size = 0.86

$$\frac{\frac{3\left(16a^2Bc^2+48aAbc^2-56ab^2Bc-28Ab^3c+21b^4B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}-\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)\right)}{512c^{9/2}} + \frac{(a+x(b+cx))^{3/2}\Big(28bc(7aB-6Acx)-}{}}{6c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((3*(-3*b*B + 4*A*c)*x^2*(a + x*(b + c*x))^(3/2))/(10*c) + B*x^3*(a + x*(b
+ c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(-105*b^3*B + 14*b^2*c*(10*A + 9*B
*x) - 8*a*c^2*(16*A + 15*B*x) + 28*b*c*(7*a*B - 6*A*c*x)))/(160*c^3) + (3*(
21*b^4*B - 28*A*b^3*c - 56*a*b^2*B*c + 48*a*A*b*c^2 + 16*a^2*B*c^2)*(2*Sqrt
[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(
2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(512*c^(9/2)))/(6*c)
```

fricas [A] time = 1.06, size = 667, normalized size = 2.38

$$\left[-\frac{15\left(21\,Bb^6-64\left(Ba^3+3\,Aa^2b\right)c^3+80\left(3\,Ba^2b^2+2\,Aab^3\right)c^2-28\left(5\,Bab^4+Ab^5\right)c\right)\sqrt{c}\,\log\Big(-8\,c^2x^2-8\,bcx-}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(21*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*
A*a*b^3)*c^2 - 28*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
 b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*B*c^6
*x^5 + 315*B*b^5*c - 1024*A*a^2*c^4 + 128*(B*b*c^5 + 12*A*c^6)*x^4 + 16*(11
3*B*a^2*b + 115*A*a*b^2)*c^3 - 16*(9*B*b^2*c^4 - 4*(5*B*a + 3*A*b)*c^5)*x^3
 - 420*(4*B*a*b^3 + A*b^4)*c^2 + 8*(21*B*b^3*c^3 + 64*A*a*c^5 - 4*(17*B*a*b
 + 7*A*b^2)*c^4)*x^2 - 2*(105*B*b^4*c^2 + 16*(15*B*a^2 + 29*A*a*b)*c^4 - 28
*(16*B*a*b^2 + 5*A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1/15360*(15*(21
*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 28
*(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*B*c^6*x^5 + 315*B*b^5*c - 10
24*A*a^2*c^4 + 128*(B*b*c^5 + 12*A*c^6)*x^4 + 16*(113*B*a^2*b + 115*A*a*b^2
)*c^3 - 16*(9*B*b^2*c^4 - 4*(5*B*a + 3*A*b)*c^5)*x^3 - 420*(4*B*a*b^3 + A*b
^4)*c^2 + 8*(21*B*b^3*c^3 + 64*A*a*c^5 - 4*(17*B*a*b + 7*A*b^2)*c^4)*x^2 -
2*(105*B*b^4*c^2 + 16*(15*B*a^2 + 29*A*a*b)*c^4 - 28*(16*B*a*b^2 + 5*A*b^3)
*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [**A**] time = 0.26, size = 323, normalized size = 1.15

$$\frac{1}{7680}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\,Bx+\frac{Bbc^4+12\,Ac^5}{c^5}\right)x-\frac{9\,Bb^2c^3-20\,Bac^4-12\,Abc^4}{c^5}\right)x+\frac{21\,Bb^3c^2-68\,B\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*B*x + (B*b*c^4 + 12*A*c^5)/c^5
)*x - (9*B*b^2*c^3 - 20*B*a*c^4 - 12*A*b*c^4)/c^5)*x + (21*B*b^3*c^2 - 68*B
*a*b*c^3 - 28*A*b^2*c^3 + 64*A*a*c^4)/c^5)*x - (105*B*b^4*c - 448*B*a*b^2*c
^2 - 140*A*b^3*c^2 + 240*B*a^2*c^3 + 464*A*a*b*c^3)/c^5)*x + (315*B*b^5 - 1
680*B*a*b^3*c - 420*A*b^4*c + 1808*B*a^2*b*c^2 + 1840*A*a*b^2*c^2 - 1024*A*
a^2*c^3)/c^5) + 1/1024*(21*B*b^6 - 140*B*a*b^4*c - 28*A*b^5*c + 240*B*a^2*b
^2*c^2 + 160*A*a*b^3*c^2 - 64*B*a^3*c^3 - 192*A*a^2*b*c^3)*log(abs(-2*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [**B**] time = 0.06, size = 671, normalized size = 2.40

$$\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}B\,x^3}{6c}+\frac{3A\,a^2b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{5Aa\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{32c^{\frac{7}{2}}}+\frac{7A\,b^5\ln\left(\frac{cx+}{\sqrt{c}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -7/32*B*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)*x+3/16*A*b/c^2*a*(c*x^2+b*x+a)^(1/2)*
x-7/40*A*b/c^2*x*(c*x^2+b*x+a)^(3/2)-7/64*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x+4
9/240*B*b/c^3*a*(c*x^2+b*x+a)^(3/2)-1/8*B*a/c^2*x*(c*x^2+b*x+a)^(3/2)+35/25
6*B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-7/64*B*b^3/c^
4*a*(c*x^2+b*x+a)^(1/2)-15/64*B*b^2/c^(7/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))+3/32*A*b^2/c^3*a*(c*x^2+b*x+a)^(1/2)+3/16*A*b/c^(5/2)*a^2*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/32*A*b^3/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/20*B*b/c^2*x^2*(c*x^2+b*x+a)^(3/2)+21/1
60*B*b^2/c^3*x*(c*x^2+b*x+a)^(3/2)+21/256*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x+1
/16*B*a^2/c^2*(c*x^2+b*x+a)^(1/2)*x+1/32*B*a^2/c^3*(c*x^2+b*x+a)^(1/2)*b+7/
256*A*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/15*A*a/c^2*
```

```
(c*x^2+b*x+a)^(3/2)-7/64*B*b^3/c^4*(c*x^2+b*x+a)^(3/2)+21/512*B*b^5/c^5*(c*
x^2+b*x+a)^(1/2)-21/1024*B*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+1/16*B*a^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/5
*A*x^2*(c*x^2+b*x+a)^(3/2)/c+7/48*A*b^2/c^3*(c*x^2+b*x+a)^(3/2)-7/128*A*b^4
/c^4*(c*x^2+b*x+a)^(1/2)+1/6*B*x^3*(c*x^2+b*x+a)^(3/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.96, size = 781, normalized size = 2.79

$$\frac{A x^2 \left(c x^2+b x+a\right)^{3/2}}{5 c}+\frac{B x^3 \left(c x^2+b x+a\right)^{3/2}}{6 c}-\frac{2 A a \left(\frac{\ln\left(\frac{b+2 c x}{\sqrt{c}}+2 \sqrt{c x^2+b x+a}\right) \left(b^3-4 a b c\right)}{16 c^{5/2}}+\frac{\left(-3 b^2+2 c x b+8 c \left(c x^2+a\right)\right) \sqrt{c}}{24 c^2}\right.}{5 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + (B*x^3*(a + b*x + c*x^2)^(3/2))/(6*
c) - (2*A*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4
*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x
^2)^(1/2))/(24*c^2)))/(5*c) + (7*A*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a
 + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) -
3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x +
c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b
/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(
4*c)))/(10*c) + (B*a*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^
(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)
*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4
*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2
) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(2*c) - (
3*B*b*((7*b*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b
^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x
 + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*
((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a +
b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((lo
g((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(
5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c
^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3/2))/(5*c)))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^3 (A + Bx) \sqrt{a + bx + cx^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.912 $\int x^2(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=205

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aBc-6cx(7bB-10Ac)-50Abc+35b^2B\right)}{240c^3}+\frac{\left(b^2-4ac\right)(8aAc^2-12abBc-10Ab^2c+7b^3B}{256c^{9/2}}$$

```
[Out] 1/5*B*x^2*(c*x^2+b*x+a)^(3/2)/c+1/240*(35*b^2*B-50*A*b*c-32*a*B*c-6*c*(-10*
A*c+7*B*b)*x)*(c*x^2+b*x+a)^(3/2)/c^3+1/256*(-4*a*c+b^2)*(8*A*a*c^2-10*A*b^
2*c-12*B*a*b*c+7*B*b^3)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/
c^(9/2)-1/128*(8*A*a*c^2-10*A*b^2*c-12*B*a*b*c+7*B*b^3)*(2*c*x+b)*(c*x^2+b*
x+a)^(1/2)/c^4
```

Rubi **[A]** time = 0.20, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aBc-6cx(7bB-10Ac)-50Abc+35b^2B\right)}{240c^3}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\,(8aAc^2-12abBc-1}{128c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((7*b^3*B - 10*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*Sqrt[a + b*x
+ c*x^2])/(128*c^4) + (B*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + ((35*b^2*B -
50*A*b*c - 32*a*B*c - 6*c*(7*b*B - 10*A*c)*x)*(a + b*x + c*x^2)^(3/2))/(240
*c^3) + ((b^2 - 4*a*c)*(7*b^3*B - 10*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^2(A+Bx)\sqrt{a+bx+cx^2}\,dx &= \frac{Bx^2\left(a+bx+cx^2\right)^{3/2}}{5c}+\frac{\int x\left(-2aB-\frac{1}{2}(7bB-10Ac)x\right)\sqrt{a+bx+cx^2}\,dx}{5c}\\
&= \frac{Bx^2\left(a+bx+cx^2\right)^{3/2}}{5c}+\frac{\left(35b^2B-50Abc-32aBc-6c(7bB-10Ac)x\right)\left(a+\right.}{240c^3}\\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+\right.}{}\\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+\right.}{}\\
&= -\frac{\left(7b^3B-10Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{128c^4}+\frac{Bx^2\left(a+\right.}{}
\end{aligned}$$

Mathematica [A] time = 0.23, size = 179, normalized size = 0.87

$$\frac{\frac{(a+x(b+cx))^{3/2}\left(4c(15Acx-8aB)-2bc(25A+21Bx)+35b^2B\right)}{48c^2}+\frac{5\left(8aAc^2-12abBc-10Ab^2c+7b^3B\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\right.\right.}{256c^{7/2}}}{5c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(35*b^2*B - 2*b*c
*(25*A + 21*B*x) + 4*c*(-8*a*B + 15*A*c*x)))/(48*c^2) + (5*(7*b^3*B - 10*A*
b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x
)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))
/(256*c^(7/2)))/(5*c)
```

fricas [A] time = 1.12, size = 517, normalized size = 2.52

$$\left[-\frac{15\left(7Bb^5-32Aa^2c^3+48\left(Ba^2b+Aab^2\right)c^2-10\left(4Bab^3+Ab^4\right)c\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(7*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^2*b + A*a*b^2)*c^2 - 10*(4*B
*a*b^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(384*B*c^5*x^4 - 105*B*b^4*c - 8*
(32*B*a^2 + 65*A*a*b)*c^3 + 48*(B*b*c^4 + 10*A*c^5)*x^3 + 10*(46*B*a*b^2 +
15*A*b^3)*c^2 - 8*(7*B*b^2*c^3 - 2*(8*B*a + 5*A*b)*c^4)*x^2 + 2*(35*B*b^3*c
^2 + 120*A*a*c^4 - 2*(58*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c
^5, -1/3840*(15*(7*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^2*b + A*a*b^2)*c^2 - 10*(
4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)
*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(384*B*c^5*x^4 - 105*B*b^4*c - 8*(32
*B*a^2 + 65*A*a*b)*c^3 + 48*(B*b*c^4 + 10*A*c^5)*x^3 + 10*(46*B*a*b^2 + 15*
A*b^3)*c^2 - 8*(7*B*b^2*c^3 - 2*(8*B*a + 5*A*b)*c^4)*x^2 + 2*(35*B*b^3*c^2
+ 120*A*a*c^4 - 2*(58*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [A] time = 0.23, size = 245, normalized size = 1.20

$$\frac{1}{1920}\sqrt{cx^2+bx+a}\left(2\left(4\left(6\left(8\,Bx+\frac{Bbc^3+10\,Ac^4}{c^4}\right)x-\frac{7\,Bb^2c^2-16\,Bac^3-10\,Abc^3}{c^4}\right)x+\frac{35\,Bb^3c-116\,Babc^2-}{c^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(8*B*x + (B*b*c^3 + 10*A*c^4)/c^4)*x
- (7*B*b^2*c^2 - 16*B*a*c^3 - 10*A*b*c^3)/c^4)*x + (35*B*b^3*c - 116*B*a*b*
c^2 - 50*A*b^2*c^2 + 120*A*a*c^3)/c^4)*x - (105*B*b^4 - 460*B*a*b^2*c - 150
*A*b^3*c + 256*B*a^2*c^2 + 520*A*a*b*c^2)/c^4) - 1/256*(7*B*b^5 - 40*B*a*b^
3*c - 10*A*b^4*c + 48*B*a^2*b*c^2 + 48*A*a*b^2*c^2 - 32*A*a^2*c^3)*log(abs(
-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.06, size = 497, normalized size = 2.42

$$-\frac{A\,a^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}+\frac{3Aa\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{5A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{128c^{\frac{7}{2}}}+\frac{3B\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/5*B*x^2*(c*x^2+b*x+a)^(3/2)/c-7/40*B*b/c^2*x*(c*x^2+b*x+a)^(3/2)+7/48*B*b
^2/c^3*(c*x^2+b*x+a)^(3/2)-7/64*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x-7/128*B*b^4
/c^4*(c*x^2+b*x+a)^(1/2)-5/32*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a+7/256*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+3/16*B*b/c^2*a*(c*x^2+b*x+a)^(1/2)*x+3/32*B*b^2/c^3*a*(c*x^2+b*x+a)^(1/
2)+3/16*B*b/c^(5/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/15*B*
a/c^2*(c*x^2+b*x+a)^(3/2)+1/4*A*x*(c*x^2+b*x+a)^(3/2)/c-5/24*A*b/c^2*(c*x^2
+b*x+a)^(3/2)+5/32*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x+5/64*A*b^3/c^3*(c*x^2+b*
x+a)^(1/2)+3/16*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a
-5/128*A*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8*A*a/c*
(c*x^2+b*x+a)^(1/2)*x-1/16*A*a/c^2*(c*x^2+b*x+a)^(1/2)*b-1/8*A*a^2/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.72, size = 463, normalized size = 2.26

$$\frac{Bx^2\left(cx^2+bx+a\right)^{3/2}}{5c}-\frac{Aa\left(\left(\frac{x}{2}+\frac{b}{4c}\right)\sqrt{cx^2+bx+a}+\frac{\ln\left(\frac{\frac{b}{2}+cx}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)\left(ac-\frac{b^2}{4}\right)}{2c^{3/2}}\right)}{4c}-\frac{5Ab\left(\frac{\ln\left(\frac{b+2cx}{\sqrt{c}}+2\sqrt{cx^2+}\right.}{16c^{5}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) - (A*a*((x/2 + b/(4*c))*(a + b*x + c*
x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2
/4))/(2*c^(3/2))))/(4*c) - (5*A*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2
*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (2*B*a*((log((b + 2*c*x
)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*
c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c)
+ (A*x*(a + b*x + c*x^2)^(3/2))/(4*c) + (7*B*b*((5*b*((log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a +
 c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(
a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2)
 + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^
(3/2))))/(4*c)))/(10*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\,(A+Bx)\sqrt{a+bx+cx^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.913 $\int x(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=144

$$-\frac{\left(b^2-4ac\right)\left(-4aBc-8Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{7/2}}+\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-8Abc+5b^2B\right)}{64c^3}-$$

```
[Out] -1/24*(-6*B*c*x-8*A*c+5*B*b)*(c*x^2+b*x+a)^(3/2)/c^2-1/128*(-4*a*c+b^2)*(-8
*A*b*c-4*B*a*c+5*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/
c^(7/2)+1/64*(-8*A*b*c-4*B*a*c+5*B*b^2)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.06, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.190$, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\sqrt{a+bx+cx^2}\left(-4aBc-8Abc+5b^2B\right)}{64c^3}-\frac{\left(b^2-4ac\right)\left(-4aBc-8Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{7/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((5*b^2*B - 8*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(64*c^3)
- ((5*b*B - 8*A*c - 6*B*c*x)*(a + b*x + c*x^2)^(3/2))/(24*c^2) - ((b^2 - 4*
a*c)*(5*b^2*B - 8*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
b*x + c*x^2])])/(128*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\sqrt{a+bx+cx^2}\,dx &= -\frac{(5bB-8Ac-6Bcx)\left(a+bx+cx^2\right)^{3/2}}{24c^2}+\frac{\left(5b^2B-8Abc-4aBc\right)\int\sqrt{a+bx}}{16c^2}\\ &= \frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+b\right.}{24c^2}\\ &= \frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+b\right.}{24c^2}\\ &= \frac{\left(5b^2B-8Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{64c^3}-\frac{(5bB-8Ac-6Bcx)\left(a+b\right.}{24c^2}\end{aligned}$$

Mathematica [A] time = 0.13, size = 127, normalized size = 0.88

$$\frac{(a+x(b+cx))^{3/2}(8Ac-5bB+6Bcx)-\frac{3\left(-4aBc-8Abc+5b^2B\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{16c^{3/2}}}{24c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((-5*b*B + 8*A*c + 6*B*c*x)*(a + x*(b + c*x))^(3/2) - (3*(5*b^2*B - 8*A*b*c
 - 4*a*B*c)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*A
rcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(16*c^(3/2)))/(24*c
^2)
```

fricas [A] time = 1.11, size = 393, normalized size = 2.73

$$\left[\frac{3\left(5Bb^4+16\left(Ba^2+2Aab\right)c^2-8\left(3Bab^2+Ab^3\right)c\right)\sqrt{c}\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/768*(3*(5*B*b^4 + 16*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sq
rt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 + 15*B*b^3*c + 64*A*a*c^3 - 4*(13*B*a*b
+ 6*A*b^2)*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^2 - 2*(5*B*b^2*c^2 - 4*(3*B*a + 2*
A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/384*(3*(5*B*b^4 + 16*(B*a^2 + 2*
A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3 + 15*B
*b^3*c + 64*A*a*c^3 - 4*(13*B*a*b + 6*A*b^2)*c^2 + 8*(B*b*c^3 + 8*A*c^4)*x^
2 - 2*(5*B*b^2*c^2 - 4*(3*B*a + 2*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.25, size = 178, normalized size = 1.24

$$\frac{1}{192}\sqrt{cx^2+bx+a}\left(2\left(4\left(6Bx+\frac{Bbc^2+8Ac^3}{c^3}\right)x-\frac{5Bb^2c-12Bac^2-8Abc^2}{c^3}\right)x+\frac{15Bb^3-52Babc-24Ab^2}{c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x + (B*b*c^2 + 8*A*c^3)/c^3)*x - (5*
B*b^2*c - 12*B*a*c^2 - 8*A*b*c^2)/c^3)*x + (15*B*b^3 - 52*B*a*b*c - 24*A*b^
2*c + 64*A*a*c^2)/c^3) + 1/128*(5*B*b^4 - 24*B*a*b^2*c - 8*A*b^3*c + 16*B*a
^2*c^2 + 32*A*a*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(
c) - b))/c^(7/2)
```

maple [**B**] time = 0.05, size = 352, normalized size = 2.44

$$-\frac{Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{4c^{\frac{3}{2}}}+\frac{A\,b^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{16c^{\frac{5}{2}}}-\frac{B\,a^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{8c^{\frac{3}{2}}}+3Ba\,b^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x+a)^(3/2)/c-5/24*B*b/c^2*(c*x^2+b*x+a)^(3/2)+5/32*B*b^2/c
^2*x*(c*x^2+b*x+a)^(1/2)+5/64*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)+3/16*B*b^2/c^(5
/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-5/128*B*b^4/c^(7/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8*B*a/c*x*(c*x^2+b*x+a)^(1/2)-1/16
*B*a/c^2*(c*x^2+b*x+a)^(1/2)*b-1/8*B*a^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))+1/3*A*(c*x^2+b*x+a)^(3/2)/c-1/4*A*b/c*x*(c*x^2+b*x+a)^(1/
2)-1/8*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)-1/4*A*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a+1/16*A*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**B**] time = 1.51, size = 256, normalized size = 1.78

$$\frac{A\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^{2}+b\,x+a}\right)\,\left(b^{3}-4\,a\,b\,c\right)}{16\,c^{5/2}}-\frac{B\,a\,\left(\left(\frac{x}{2}+\frac{b}{4\,c}\right)\,\sqrt{c\,x^{2}+b\,x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}+b\,x+a}\right)\left(a\,c-\frac{b^{2}}{4}\right)}{2\,c^{3/2}}\right)}{4\,c}-5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(1
6*c^(5/2)) - (B*a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*
x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c) -
(5*B*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*
c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(
1/2))/(24*c^2)))/(8*c) + (A*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2) + (B*x*(a + b*x + c*x^2)^(3/2))/(4*c)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\sqrt{a+bx+cx^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.914 $\int (A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=113

$$\frac{\left(b^2-4ac\right)(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{16c^{5/2}}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(a+bx+cx^2\right)^{3/2}}{3c}$$

```
[Out] 1/3*B*(c*x^2+b*x+a)^(3/2)/c+1/16*(-4*a*c+b^2)*(-2*A*c+B*b)*arctanh(1/2*(2*c
*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-1/8*(-2*A*c+B*b)*(2*c*x+b)*(c*x^
2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.05, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$\frac{\left(b^2-4ac\right)(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{16c^{5/2}}-\frac{(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(a+bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8*c^2) + (B*(a + b*x +
c*x^2)^(3/2))/(3*c) + ((b^2 - 4*a*c)*(b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*S
qrt[c]*Sqrt[a + b*x + c*x^2])])/(16*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{(-bB+2Ac)\int \sqrt{a+bx+cx^2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{((b^2-4ac)(bB}{}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{((b^2-4ac)(bB}{}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{8c^2} + \frac{B\left(a+bx+cx^2\right)^{3/2}}{3c} + \frac{(b^2-4ac)(bB -}{}$$

Mathematica [**A**] time = 0.11, size = 114, normalized size = 1.01

$$\frac{2\sqrt{c}\sqrt{a+x(b+cx)}\left(4c(2aB+cx(3A+2Bx))+2bc(3A+Bx)-3b^2B\right)+3\left(b^2-4ac\right)(bB-2Ac)\tanh^{-1}\left(\frac{}{2\sqrt{c}}\right.}{48c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c*(2*a*B
 + c*x*(3*A + 2*B*x))) + 3*(b^2 - 4*a*c)*(b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/
(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(48*c^(5/2))
```

fricas [**A**] time = 1.06, size = 291, normalized size = 2.58

$$\left[\frac{3\left(Bb^3+8\,Aac^2-2\left(2\,Bab+Ab^2\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)+4}{96\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(B*b^3 + 8*A*a*c^2 - 2*(2*B*a*b + A*b^2)*c)*sqrt(c)*log(-8*c^2*x^2
 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4
*(8*B*c^3*x^2 - 3*B*b^2*c + 2*(4*B*a + 3*A*b)*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x
)*sqrt(c*x^2 + b*x + a))/c^3, -1/48*(3*(B*b^3 + 8*A*a*c^2 - 2*(2*B*a*b + A*
b^2)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2
*x^2 + b*c*x + a*c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 2*(4*B*a + 3*A*b)*c^2 +
 2*(B*b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [**A**] time = 0.25, size = 123, normalized size = 1.09

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(4\,Bx+\frac{Bbc+6\,Ac^2}{c^2}\right)x-\frac{3\,Bb^2-8\,Bac-6\,Abc}{c^2}\right)-\frac{\left(Bb^3-4\,Babc-2\,Ab^2c+8\,Aac^2\right)\log}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - (3*B*b^2
- 8*B*a*c - 6*A*b*c)/c^2) - 1/16*(B*b^3 - 4*B*a*b*c - 2*A*b^2*c + 8*A*a*c^2
)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.05, size = 229, normalized size = 2.03

$$\frac{Aa\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2\sqrt{c}}-\frac{A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}-\frac{Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\frac{B\,b^3\ln\left(\frac{cx+}{\sqrt{c}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*(c*x^2+b*x+a)^(3/2)/c-1/4*B*b/c*x*(c*x^2+b*x+a)^(1/2)-1/8*B*b^2/c^2*(
c*x^2+b*x+a)^(1/2)-1/4*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*A*
x*(c*x^2+b*x+a)^(1/2)+1/4*A/c*(c*x^2+b*x+a)^(1/2)*b+1/2*A/c^(1/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/8*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*b^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.43, size = 145, normalized size = 1.28

$$A\left(\frac{x}{2}+\frac{b}{4\,c}\right)\sqrt{c\,x^2+b\,x+a}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}+\frac{B\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\left(b^3-\right.}{16\,c^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] A*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (A*log((b/2 + c*x)/c^(1/2) + (a
 + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2)) + (B*log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (B*(8*c*(a
 + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.915 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x}\,dx$

Optimal. Leaf size=129

$$-\frac{\left(-4aBc-4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ac+bB+2Bcx)}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a}{2\sqrt{a}\sqrt{a+}}\right.$$

```
[Out] -1/8*(-4*A*b*c-4*B*a*c+B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(
1/2))/c^(3/2)-A*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))*a^(1/2)+
1/4*(2*B*c*x+4*A*c+B*b)*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.10, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {814, 843, 621, 206, 724}

$$-\frac{\left(-4aBc-4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(4Ac+bB+2Bcx)}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a}{2\sqrt{a}\sqrt{a+}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c) - Sqrt[a]*A*ArcTanh[(
2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])] - ((b^2*B - 4*A*b*c - 4*a*B*c
)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x}\,dx &= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c}-\frac{\int \frac{-4aAc+\frac{1}{2}\left(b^2B-4Abc-4aBc\right)x}{x\sqrt{a+bx+cx^2}}\,dx}{4c}\\
&= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c}+(aA)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx-\frac{\left(b^2B-4Abc\right.}{}\\
&= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c}-(2aA)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx,x,\frac{2a+bx}{\sqrt{a+bx+c}}\right.\\
&= \frac{(bB+4Ac+2Bcx)\sqrt{a+bx+cx^2}}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+bx+cx^2}}\right)-\frac{\left(b^2B\right.}{}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 127, normalized size = 0.98

$$\frac{\left(4aBc+4Abc+b^2(-B)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)}{8c^{3/2}}+\frac{\sqrt{a+x(b+cx)}\,(4Ac+bB+2Bcx)}{4c}-\sqrt{a}\,A\tanh^{-1}\left(\frac{2a+}{2\sqrt{a}\,\sqrt{a+}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x,x]
```

```
[Out] ((b*B + 4*A*c + 2*B*c*x)*Sqrt[a + x*(b + c*x)])/(4*c) - Sqrt[a]*A*ArcTanh[(
2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + ((-(b^2*B) + 4*A*b*c + 4*a*
B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(3/2))
```

fricas [A] time = 3.18, size = 651, normalized size = 5.05

$$\left[\frac{8\,A\sqrt{a}\,c^2\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-\left(Bb^2-4\,(Ba+Ab)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-\right.}{16\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="fricas")
```

```
[Out] [1/16*(8*A*sqrt(a)*c^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b
*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - (B*b^2 - 4*(B*a + A*b)*c)*sqrt(
c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(c) - 4*a*c) + 4*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2,
 1/8*(4*A*sqrt(a)*c^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*
x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + (B*b^2 - 4*(B*a + A*b)*c)*sqrt(-
c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x +
 a*c)) + 2*(2*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2, 1/16*(
16*A*sqrt(-a)*c^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*
c*x^2 + a*b*x + a^2)) - (B*b^2 - 4*(B*a + A*b)*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(2
*B*c^2*x + B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^2, 1/8*(8*A*sqrt(-a)*c
^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
 a^2)) + (B*b^2 - 4*(B*a + A*b)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(2*B*c^2*x + B*b*c + 4*
A*c^2)*sqrt(c*x^2 + b*x + a))/c^2]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [A] time = 0.06, size = 184, normalized size = 1.43

$$-A\sqrt{a}\,\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)+\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2\sqrt{c}}+\frac{Ba\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x)
```

```
[Out] 1/2*B*x*(c*x^2+b*x+a)^(1/2)+1/4*B/c*(c*x^2+b*x+a)^(1/2)*b+1/2*B/c^(1/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/8*B/c^(3/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x+a)^(1/2))*b^2+A*(c*x^2+b*x+a)^(1/2)+1/2*A*b*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-A*a^(1/2)*ln((2*a+b*x+2*a^(1/2)*(c*x^2
+b*x+a)^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.37, size = 146, normalized size = 1.13

$$A\,\sqrt{c\,x^2+b\,x+a}+B\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)\,\sqrt{c\,x^2+b\,x+a}-A\,\sqrt{a}\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x,x)
```

```
[Out] A*(a + b*x + c*x^2)^(1/2) + B*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) - A*a
^(1/2)*log(b/2 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x) + (A*b*log((b/2
 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/(2*c^(1/2)) + (B*log((b/2 + c*x
)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x, x)
```

3.916 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx$

Optimal. Leaf size=121

$$-\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{c}}$$

```
[Out] -1/2*(A*b+2*B*a)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(1/2)
+1/2*(2*A*c+B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(1/2)
-(-B*x+A)*(c*x^2+b*x+a)^(1/2)/x
```

Rubi [A] time = 0.09, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = $\{812, 843, 621, 206, 724\}$

$$-\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^2,x]
```

```
[Out] -(((A - B*x)*Sqrt[a + b*x + c*x^2])/x) - ((A*b + 2*a*B)*ArcTanh[(2*a + b*x)
/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2*Sqrt[a]) + ((b*B + 2*A*c)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx &= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{1}{2}\int \frac{-Ab-2aB-(bB+2Ac)x}{x\sqrt{a+bx+cx^2}}\,dx\\
&= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{1}{2}(-Ab-2aB)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx-\frac{1}{2}(-bB-2\\
&= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-(Ab+2aB)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx,x,\frac{2a+bx}{\sqrt{a+bx+cx^2}}\right.\\
&= -\frac{(A-Bx)\sqrt{a+bx+cx^2}}{x}-\frac{(Ab+2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2\sqrt{a}}+\frac{(bB+2Ac)\,\mathrm{t}}{}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 118, normalized size = 0.98

$$\frac{(Bx-A)\sqrt{a+x(b+cx)}}{x}-\frac{(2aB+Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2\sqrt{a}}+\frac{(2Ac+bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^2,x]
```

```
[Out] ((-A + B*x)*Sqrt[a + x*(b + c*x)])/x - ((A*b + 2*a*B)*ArcTanh[(2*a + b*x)/(
2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(2*Sqrt[a]) + ((b*B + 2*A*c)*ArcTanh[(b
+ 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(2*Sqrt[c])
```

fricas [A] time = 2.04, size = 648, normalized size = 5.36

$$\Bigg[\frac{(2\,Ba+Ab)\sqrt{a}\,cx\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)+(Bab+2\,Aac)\sqrt{c}\,x\log\left(-8\,c^2x^2-8\,bcx-b^2\right.}{4\,acx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/4*((2*B*a + A*b)*sqrt(a)*c*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(
c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + (B*a*b + 2*A*a*c)*sqrt
(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(c) - 4*a*c) + 4*(B*a*c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/4*
((2*B*a + A*b)*sqrt(a)*c*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 2*(B*a*b + 2*A*a*c)*sqrt(-c
)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
+ a*c)) + 4*(B*a*c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/4*(2*(2*B*a
 + A*b)*sqrt(-a)*c*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/
(a*c*x^2 + a*b*x + a^2)) + (B*a*b + 2*A*a*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b
*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(B*a*
c*x - A*a*c)*sqrt(c*x^2 + b*x + a))/(a*c*x), 1/2*((2*B*a + A*b)*sqrt(-a)*c*
x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
a^2)) - (B*a*b + 2*A*a*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(B*a*c*x - A*a*c)*sqrt(c*x^2 +
 b*x + a))/(a*c*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{2,[4,4,0]%%%}+%%%{%%%{-16,[1]%%%},[4,2,1]%%%}+%%%{%%%{32,[2]%%%},[4,
0,2]%%%}+%%%{-4,[2,4,1]%%%}+%%%{%%%{32,[1]%%%},[2,2,2]%%%}+%%%{%%%{-64,[2]%
%%},[2,0,3]%%%}+%%%{2,[0,4,2]%%%}+%%%{%%%{-16,[1]%%%},[0,2,3]%%%}+%%%{%%%{3
2,[2]%%%},[0,0,4]%%%} / %%%{4,[4,0,0]%%%}+%%%{-8,[2,0,1]%%%}+%%%{4,[0,0,2]%
%%} Error: Bad Argument Value
```

maple [B] time = 0.08, size = 207, normalized size = 1.71

$$-\frac{A b \ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+A\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)-B\sqrt{a}\,\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+b*x+a)^(3/2)+A/a*b*(c*x^2+b*x+a)^(1/2)-1/2*A/a^(1/2)*b*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c/a*(c*x^2+b*x+a)^(1/2)*x+A*c^(1/
2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+B*(c*x^2+b*x+a)^(1/2)+1/2*B*
b*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-B*a^(1/2)*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.56, size = 166, normalized size = 1.37

$$B\,\sqrt{c\,x^2+b\,x+a}-\frac{A\,\sqrt{c\,x^2+b\,x+a}}{x}-B\,\sqrt{a}\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)+A\,\sqrt{c}\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^2,x)
```

```
[Out] B*(a + b*x + c*x^2)^(1/2) - (A*(a + b*x + c*x^2)^(1/2))/x - B*a^(1/2)*log(b
/2 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x) + A*c^(1/2)*log((b/2 + c*x)
/c^(1/2) + (a + b*x + c*x^2)^(1/2)) + (B*b*log((b/2 + c*x)/c^(1/2) + (a + b
*x + c*x^2)^(1/2)))/(2*c^(1/2)) - (A*b*log(b/2 + a/x + (a^(1/2)*(a + b*x +
c*x^2)^(1/2))/x))/(2*a^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**2, x)
```

3.917 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^3}\,dx$

Optimal. Leaf size=133

$$\frac{\left(-4aAc-4abB+Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{3/2}}-\frac{\sqrt{a+bx+cx^2}\,(x(4aB+Ab)+2aA)}{4ax^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{b+}{2\sqrt{c}\sqrt{a}}\right.$$

```
[Out] 1/8*(-4*A*a*c+A*b^2-4*B*a*b)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1
/2))/a^(3/2)+B*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))*c^(1/2)-1
/4*(2*a*A+(A*b+4*B*a)*x)*(c*x^2+b*x+a)^(1/2)/a/x^2
```

Rubi **[A]** time = 0.10, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {810, 843, 621, 206, 724}

$$\frac{\left(-4aAc-4abB+Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{3/2}}-\frac{\sqrt{a+bx+cx^2}\,(x(4aB+Ab)+2aA)}{4ax^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{b+}{2\sqrt{c}\sqrt{a}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^3,x]
```

```
[Out] -((2*a*A + (A*b + 4*a*B)*x)*Sqrt[a + b*x + c*x^2])/(4*a*x^2) + ((A*b^2 - 4*
a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8
*a^(3/2)) + B*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])
]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^3}\,dx &= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2}-\frac{\int \frac{\frac{1}{2}\left(-4abB+A\left(b^2-4ac\right)\right)-4aBcx}{x\sqrt{a+bx+cx^2}}\,dx}{4a}\\
&= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2}+(Bc)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx-\frac{\left(-4abB+\right.}{}\\
&= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2}+(2Bc)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2}{\sqrt{a+bx}}\right.\\
&= -\frac{(2aA+(Ab+4aB)x)\sqrt{a+bx+cx^2}}{4ax^2}-\frac{\left(4abB-A\left(b^2-4ac\right)\right)\tanh^{-1}\left(\frac{2a+}{2\sqrt{a}\,\sqrt{a+}}\right.}{8a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 129, normalized size = 0.97

$$
\frac{\left(A\left(b^2-4ac\right)-4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)}{8a^{3/2}}-\frac{\sqrt{a+x(b+cx)}\,(2a(A+2Bx)+Abx)}{4ax^2}+B\sqrt{c}\,\tanh^{-1}\left(\frac{b+2}{2\sqrt{c}\,\sqrt{a+x}}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^3,x]
```

```
[Out] -1/4*((A*b*x + 2*a*(A + 2*B*x))*Sqrt[a + x*(b + c*x)])/(a*x^2) + ((-4*a*b*B
 + A*(b^2 - 4*a*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])
/(8*a^(3/2)) + B*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x
)])]
```

fricas [A] time = 2.12, size = 699, normalized size = 5.26

$$
\left[\frac{8\,Ba^2\sqrt{c}\,x^2\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)+\left(4\,Bab-Ab^2+4\,Aac\right)\sqrt{a}\,x^2\log\left(\right.}{16\,a^2x^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/16*(8*B*a^2*sqrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + (4*B*a*b - A*b^2 + 4*A*a*c)*sqrt(a)
*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a
)*sqrt(a) + 8*a^2)/x^2) - 4*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*sqrt(c*x^2 + b*
x + a))/(a^2*x^2), -1/16*(16*B*a^2*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - (4*B*a*b - A*b^2 + 4*
A*a*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
 a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*s
qrt(c*x^2 + b*x + a))/(a^2*x^2), 1/8*(4*B*a^2*sqrt(c)*x^2*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + (4*B
*a*b - A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x
+ 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(2*A*a^2 + (4*B*a^2 + A*a*b)*x
)*sqrt(c*x^2 + b*x + a))/(a^2*x^2), -1/8*(8*B*a^2*sqrt(-c)*x^2*arctan(1/2*s
qrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - (4*B*a
*b - A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(2*A*a^2 + (4*B*a^2 + A*a*b)*x)*
sqrt(c*x^2 + b*x + a))/(a^2*x^2)]
```

giac [**B**] time = 0.30, size = 359, normalized size = 2.70

$$-B\sqrt{c}\,\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)c-b\sqrt{c}\right|\right)+\frac{\left(4\,Bab-Ab^2+4\,Aac\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a}+\frac{4\left(\sqrt{c}\,x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) +
 1/4*(4*B*a*b - A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)/sqrt(-a))/(sqrt(-a)*a) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a
*b + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(
c) + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*B*a^2*b + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b
^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c))/(((sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a)
```

maple [**B**] time = 0.06, size = 304, normalized size = 2.29

$$-\frac{Ac\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{A\,b^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{Bb\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+B\sqrt{c}\;\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+b*x+a)^(3/2)+1/4*A/a^2*b/x*(c*x^2+b*x+a)^(3/2)-1/4*A/a^
2*b^2*(c*x^2+b*x+a)^(1/2)+1/8*A/a^(3/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)-1/4*A/a^2*b*c*(c*x^2+b*x+a)^(1/2)*x+1/2*A*c/a*(c*x^2+b*x+a)^
(1/2)-1/2*A*c/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x*(
c*x^2+b*x+a)^(3/2)+B/a*b*(c*x^2+b*x+a)^(1/2)-1/2*B/a^(1/2)*b*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c/a*(c*x^2+b*x+a)^(1/2)*x+B*c^(1/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A+B\,x\right)\,\sqrt{c\,x^2+b\,x+a}}{x^3} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^3, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + Bx\right)\sqrt{a + bx + cx^{2}}}{x^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**3, x)
```

3.918 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx$

Optimal. Leaf size=121

$$-\frac{\left(b^2-4ac\right)(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{5/2}}+\frac{(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{8a^2x^2}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3}$$

```
[Out] -1/3*A*(c*x^2+b*x+a)^(3/2)/a/x^3-1/16*(A*b-2*B*a)*(-4*a*c+b^2)*arctanh(1/2*
(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(5/2)+1/8*(A*b-2*B*a)*(b*x+2*a)*(c
*x^2+b*x+a)^(1/2)/a^2/x^2
```

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{806, 720, 724, 206\}$

$$-\frac{\left(b^2-4ac\right)(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{5/2}}+\frac{(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{8a^2x^2}-\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^4,x]
```

```
[Out] ((A*b - 2*a*B)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(8*a^2*x^2) - (A*(a + b*x
 + c*x^2)^(3/2))/(3*a*x^3) - ((A*b - 2*a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*
x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - \frac{(Ab-2aB)\int \frac{\sqrt{a+bx+cx^2}}{x^3}\,dx}{2a}\\ &= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} + \frac{((Ab-2aB)(b^2 -}{1}\\ &= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - ((Ab-2aB)(b^2 -\\ &= \frac{(Ab-2aB)(2a+bx)\sqrt{a+bx+cx^2}}{8a^2x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{3ax^3} - (Ab-2aB)(b^2-4\end{aligned}$$

Mathematica [A] time = 0.16, size = 116, normalized size = 0.96

$$\frac{3x(Ab-2aB)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)} - x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)\right) - 16a^{3/2}A(a+x(b+cx))^{3/2}}{48a^{5/2}x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^4,x]
```

```
[Out] (-16*a^(3/2)*A*(a + x*(b + c*x))^(3/2) + 3*(A*b - 2*a*B)*x*(2*Sqrt[a]*(2*a
+ b*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)])]))/(48*a^(5/2)*x^3)
```

fricas [A] time = 1.37, size = 317, normalized size = 2.62

$$\left[\frac{3\left(2\,Bab^2 - Ab^3 - 4\left(2\,Ba^2 - Aab\right)c\right)\sqrt{a}\,x^3\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right) - 4\,(8\,Aa^3 + (6\,Ba^2b}{96\,a^3x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(3*(2*B*a*b^2 - A*b^3 - 4*(2*B*a^2 - A*a*b)*c)*sqrt(a)*x^3*log(-(8*a*
b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a
^2)/x^2) - 4*(8*A*a^3 + (6*B*a^2*b - 3*A*a*b^2 + 8*A*a^2*c)*x^2 + 2*(6*B*a^
3 + A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^3), -1/48*(3*(2*B*a*b^2 - A*b
^3 - 4*(2*B*a^2 - A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(
b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(8*A*a^3 + (6*B*a^2*b - 3*
A*a*b^2 + 8*A*a^2*c)*x^2 + 2*(6*B*a^3 + A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/
(a^3*x^3)]
```

giac [B] time = 0.22, size = 524, normalized size = 4.33

$$-\frac{\left(2\,Bab^2 - Ab^3 - 8\,Ba^2c + 4\,Aabc\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}\,a^2} + \frac{6\left(\sqrt{c}\,x - \sqrt{cx^2+bx+a}\right)^5 Bab^2 - 3\,(\sqrt{c}\,x - \sqrt{cx^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="giac")
```

```
[Out] -1/8*(2*B*a*b^2 - A*b^3 - 8*B*a^2*c + 4*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/24*(6*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*B*a*b^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3 + 2
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 12*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*A*a*b*c + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*
sqrt(c) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*c^(3/2) + 8*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^3*A*a^2*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c
) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*sqrt(c) - 6*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*A*a^2*b^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*c + 36*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c + 16*A*a^4*c^(3/2))/(((sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2 - a)^3*a^2)
```

maple [B] time = 0.06, size = 386, normalized size = 3.19

$$\frac{Abc\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{4a^{\frac{3}{2}}}-\frac{A\,b^{3}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}-\frac{Bc\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{2\sqrt{a}}+\frac{B\,b^{2}\ln\left(\frac{bx+2a+2\sqrt{}}{}\right.}{8a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x)
```

```
[Out] -1/3*A*(c*x^2+b*x+a)^(3/2)/a/x^3+1/4*A/a^2*b/x^2*(c*x^2+b*x+a)^(3/2)-1/8*A/
a^3*b^2/x*(c*x^2+b*x+a)^(3/2)+1/8*A/a^3*b^3*(c*x^2+b*x+a)^(1/2)-1/16*A/a^(5
/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*A/a^3*b^2*c*(c*x^
2+b*x+a)^(1/2)*x-1/4*A/a^2*b*c*(c*x^2+b*x+a)^(1/2)+1/4*A/a^(3/2)*b*c*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/2*B/a/x^2*(c*x^2+b*x+a)^(3/2)+1/4
*B/a^2*b/x*(c*x^2+b*x+a)^(3/2)-1/4*B/a^2*b^2*(c*x^2+b*x+a)^(1/2)+1/8*B/a^(3
/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/4*B/a^2*b*c*(c*x^2+
b*x+a)^(1/2)*x+1/2*B*c/a*(c*x^2+b*x+a)^(1/2)-1/2*B*c/a^(1/2)*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**4, x)
```

3.919 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx$

Optimal. Leaf size=172

$$\frac{\left(b^2-4ac\right)\left(-4aAc-8abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{7/2}}-\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(-4aAc-8abB+5Ab^2\right)}{64a^3x^2}$$

```
[Out] -1/4*A*(c*x^2+b*x+a)^(3/2)/a/x^4+1/24*(5*A*b-8*B*a)*(c*x^2+b*x+a)^(3/2)/a^2
/x^3+1/128*(-4*a*c+b^2)*(-4*A*a*c+5*A*b^2-8*B*a*b)*arctanh(1/2*(b*x+2*a)/a^
(1/2)/(c*x^2+b*x+a)^(1/2))/a^(7/2)-1/64*(-4*A*a*c+5*A*b^2-8*B*a*b)*(b*x+2*a
)*(c*x^2+b*x+a)^(1/2)/a^3/x^2
```

Rubi [**A**] time = 0.14, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = $\{834, 806, 720, 724, 206\}$

$$-\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(-4aAc-8abB+5Ab^2\right)}{64a^3x^2}+\frac{\left(b^2-4ac\right)\left(-4aAc-8abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right.}{128a^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^5,x]
```

```
[Out] -((5*A*b^2 - 8*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(64*a^3*
x^2) - (A*(a + b*x + c*x^2)^(3/2))/(4*a*x^4) + ((5*A*b - 8*a*B)*(a + b*x +
c*x^2)^(3/2))/(24*a^2*x^3) + ((b^2 - 4*a*c)*(5*A*b^2 - 8*a*b*B - 4*a*A*c)*A
rcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(128*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
```

```
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} - \frac{\int \frac{\left(\frac{1}{2}(5Ab-8aB)+Acx\right)\sqrt{a+bx+cx^2}}{x^4}\,dx}{4a}\\
&= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + \frac{(5Ab-8aB)\left(a+bx+cx^2\right)^{3/2}}{24a^2x^3} + \frac{\left(5Ab^2-8abB-4aAc\right.}{16a^2}\\
&= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + (5Ab\\
&= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + (5Ab\\
&= -\frac{\left(5Ab^2-8abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{64a^3x^2} - \frac{A\left(a+bx+cx^2\right)^{3/2}}{4ax^4} + (5Ab\end{aligned}$$

Mathematica [A] time = 0.18, size = 153, normalized size = 0.89

$$\frac{\frac{3\left(-4aAc-8abB+5Ab^2\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\right)}{16a^{3/2}x^2}+\frac{(5Ab-8aB)(a+x(b+cx))^{3/2}}{x^3}-\frac{6aA(a+x(b+cx))^{3/2}}{x^4}}{24a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^5,x]
```

```
[Out] ((-6*a*A*(a + x*(b + c*x))^(3/2))/x^4 + ((5*A*b - 8*a*B)*(a + x*(b + c*x))^
(3/2))/x^3 + (3*(5*A*b^2 - 8*a*b*B - 4*a*A*c)*(-2*Sqrt[a]*(2*a + b*x)*Sqrt[
a + x*(b + c*x)] + (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a
+ x*(b + c*x)])]))/(16*a^(3/2)*x^2))/(24*a^2)
```

fricas [A] time = 2.35, size = 425, normalized size = 2.47

$$\left[-\frac{3\left(8\,Bab^3-5\,Ab^4-16\,Aa^2c^2-8\left(4\,Ba^2b-3\,Aab^2\right)c\right)\sqrt{a}\,x^4\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)+4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(8*B*a*b^3 - 5*A*b^4 - 16*A*a^2*c^2 - 8*(4*B*a^2*b - 3*A*a*b^2)*
c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*
(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(48*A*a^4 - (24*B*a^2*b^2 - 15*A*a*b^
3 - 4*(16*B*a^3 - 13*A*a^2*b)*c)*x^3 + 2*(8*B*a^3*b - 5*A*a^2*b^2 + 12*A*a^
3*c)*x^2 + 8*(8*B*a^4 + A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^4), 1/384
*(3*(8*B*a*b^3 - 5*A*b^4 - 16*A*a^2*c^2 - 8*(4*B*a^2*b - 3*A*a*b^2)*c)*sqrt
(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a
*b*x + a^2)) - 2*(48*A*a^4 - (24*B*a^2*b^2 - 15*A*a*b^3 - 4*(16*B*a^3 - 13*
A*a^2*b)*c)*x^3 + 2*(8*B*a^3*b - 5*A*a^2*b^2 + 12*A*a^3*c)*x^2 + 8*(8*B*a^4
 + A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^4)]
```

giac [B] time = 0.27, size = 991, normalized size = 5.76

$$\frac{\left(8\,Bab^{3}-5\,Ab^{4}-32\,Ba^{2}bc+24\,Aab^{2}c-16\,Aa^{2}c^{2}\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}}{\sqrt{-a}}\right)}{64\,\sqrt{-a}\,a^{3}}-24\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)^{7}B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/64*(8*B*a*b^3 - 5*A*b^4 - 32*B*a^2*b*c + 24*A*a*b^2*c - 16*A*a^2*c^2)*arc
tan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/192*(
24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 15*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*b^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b*c
 + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c - 48*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^7*A*a^2*c^2 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6
*B*a^3*c^(3/2) - 88*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 55*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*B*a^3*b*c - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^
2*c - 336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*c^2 - 384*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^4*B*a^3*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^4*B*a^4*c^(3/2) - 1152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*
a^3*b*c^(3/2) + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 73*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*b^4 + 96*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*B*a^4*b*c - 648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^
2*c - 336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 384*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^2*B*a^4*b^2*sqrt(c) - 384*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^2*A*a^3*b^3*sqrt(c) - 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*B*a^5*c^(3/2) - 256*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3/2)
+ 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 - 15*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^3*b^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5*
b*c - 312*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c - 48*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*A*a^5*c^2 + 128*B*a^6*c^(3/2) - 128*A*a^5*b*c^(3/2)
)/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^4*a^3)
```

maple [B] time = 0.06, size = 569, normalized size = 3.31

$$\frac{A\,c^{2}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{3}{2}}}-\frac{3A\,b^{2}c\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}+\frac{5A\,b^{4}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{7}{2}}}+Bbc\ln\left(bx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x)
```

```
[Out] -1/4*A*(c*x^2+b*x+a)^(3/2)/a/x^4+5/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(3/2)-5/32*
A/a^3*b^2/x^2*(c*x^2+b*x+a)^(3/2)+5/64*A/a^4*b^3/x*(c*x^2+b*x+a)^(3/2)-5/64
*A/a^4*b^4*(c*x^2+b*x+a)^(1/2)+5/128*A/a^(7/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x
+a)^(1/2)*a^(1/2))/x)-5/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)*x+7/32*A/a^3*b^2
*c*(c*x^2+b*x+a)^(1/2)-3/16*A/a^(5/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)+1/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(3/2)-1/16*A*c/a^3*b/x*(c*x^2+
b*x+a)^(3/2)+1/16*A*c^2/a^3*b*(c*x^2+b*x+a)^(1/2)*x-1/8*A*c^2/a^2*(c*x^2+b*
x+a)^(1/2)+1/8*A*c^2/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/3*B/a/x^3*(c*x^2+b*x+a)^(3/2)+1/4*B/a^2*b/x^2*(c*x^2+b*x+a)^(3/2)-1/8*B/a
^3*b^2/x*(c*x^2+b*x+a)^(3/2)+1/8*B/a^3*b^3*(c*x^2+b*x+a)^(1/2)-1/16*B/a^(5/
2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B/a^3*b^2*c*(c*x^2
+b*x+a)^(1/2)*x-1/4*B/a^2*b*c*(c*x^2+b*x+a)^(1/2)+1/4*B/a^(3/2)*b*c*ln((b*x
+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**5, x)
```

3.920 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6}\,dx$

Optimal. Leaf size=235

$$\frac{\left(b^2-4ac\right)\left(2aB\left(5b^2-4ac\right)-A\left(7b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{9/2}}-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aAc-50abB+\right.}{240a^3x^3}$$

```
[Out] -1/5*A*(c*x^2+b*x+a)^(3/2)/a/x^5+1/40*(7*A*b-10*B*a)*(c*x^2+b*x+a)^(3/2)/a^
2/x^4-1/240*(-32*A*a*c+35*A*b^2-50*B*a*b)*(c*x^2+b*x+a)^(3/2)/a^3/x^3+1/256
*(-4*a*c+b^2)*(2*a*B*(-4*a*c+5*b^2)-A*(-12*a*b*c+7*b^3))*arctanh(1/2*(b*x+2
*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(9/2)+1/128*(-12*A*a*b*c+7*A*b^3+8*B*a^2
*c-10*B*a*b^2)*(b*x+2*a)*(c*x^2+b*x+a)^(1/2)/a^4/x^2
```

Rubi [A] time = 0.27, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-32aAc-50abB+35Ab^2\right)}{240a^3x^3}+\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(8a^2Bc-12aAbc-10ab^2B+7Ab^3\right)}{128a^4x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^6,x]
```

```
[Out] ((7*A*b^3 - 10*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*x)*Sqrt[a + b*x +
 c*x^2])/(128*a^4*x^2) - (A*(a + b*x + c*x^2)^(3/2))/(5*a*x^5) + ((7*A*b -
10*a*B)*(a + b*x + c*x^2)^(3/2))/(40*a^2*x^4) - ((35*A*b^2 - 50*a*b*B - 32*
a*A*c)*(a + b*x + c*x^2)^(3/2))/(240*a^3*x^3) + ((b^2 - 4*a*c)*(2*a*B*(5*b^
2 - 4*a*c) - A*(7*b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a +
b*x + c*x^2])])/(256*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6}\,dx = -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} - \frac{\int \frac{\left(\frac{1}{2}(7Ab-10aB)+2Acx\right)\sqrt{a+bx+cx^2}}{x^5}\,dx}{5a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} + \frac{(7Ab-10aB)\left(a+bx+cx^2\right)^{3/2}}{40a^2x^4} + \int \frac{\left(\frac{1}{4}\left(35Ab^2-50abB-32aA\right.\right.}{}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{5ax^5} + \frac{(7Ab-10aB)\left(a+bx+cx^2\right)^{3/2}}{40a^2x^4} - \frac{\left(35Ab^2-50abB-32\right.}{240}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+cx^2\right.}{5ax^5}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+cx^2\right.}{5ax^5}$$

$$= \frac{\left(7Ab^3-10ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^4x^2} - \frac{A\left(a+bx+cx^2\right.}{5ax^5}$$

Mathematica [A] time = 0.39, size = 206, normalized size = 0.88

$$\frac{-\frac{5\left(A\left(7b^3-12abc\right)+2aB\left(4ac-5b^2\right)\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)-2\sqrt{a}(2a+bx)\sqrt{a+x(b+cx)}\right)}{32a^{7/2}x^2}+\frac{(a+x(b+cx))^{3/2}\left(32aAc+50abB-35Ab^2\right)}{6a^2x^3}+}{40a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^6,x]
```

```
[Out] ((-8*A*(a + x*(b + c*x))^(3/2))/x^5 + ((7*A*b - 10*a*B)*(a + x*(b + c*x))^(
3/2))/(a*x^4) + ((-35*A*b^2 + 50*a*b*B + 32*a*A*c)*(a + x*(b + c*x))^(3/2))
/(6*a^2*x^3) - (5*(2*a*B*(-5*b^2 + 4*a*c) + A*(7*b^3 - 12*a*b*c))*(-2*Sqrt[
a]*(2*a + b*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x
)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(32*a^(7/2)*x^2))/(40*a)
```

fricas [A] time = 4.69, size = 553, normalized size = 2.35

$$\left[-\frac{15\left(10\,Bab^4-7\,Ab^5+16\left(2\,Ba^3-3\,Aa^2b\right)c^2-8\left(6\,Ba^2b^2-5\,Aab^3\right)c\right)\sqrt{a}\,x^5\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+}}{x^2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(10*B*a*b^4 - 7*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B*
a^2*b^2 - 5*A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*s
qrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(384*A*a^5 + (15
0*B*a^2*b^3 - 105*A*a*b^4 - 256*A*a^3*c^2 - 20*(26*B*a^3*b - 23*A*a^2*b^2)*
c)*x^4 - 2*(50*B*a^3*b^2 - 35*A*a^2*b^3 - 4*(30*B*a^4 - 29*A*a^3*b)*c)*x^3
+ 8*(10*B*a^4*b - 7*A*a^3*b^2 + 16*A*a^4*c)*x^2 + 48*(10*B*a^5 + A*a^4*b)*x
)*sqrt(c*x^2 + b*x + a))/(a^5*x^5), -1/3840*(15*(10*B*a*b^4 - 7*A*b^5 + 16*
(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*sqrt(-a)*x^5*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2))
 + 2*(384*A*a^5 + (150*B*a^2*b^3 - 105*A*a*b^4 - 256*A*a^3*c^2 - 20*(26*B*a
^3*b - 23*A*a^2*b^2)*c)*x^4 - 2*(50*B*a^3*b^2 - 35*A*a^2*b^3 - 4*(30*B*a^4
- 29*A*a^3*b)*c)*x^3 + 8*(10*B*a^4*b - 7*A*a^3*b^2 + 16*A*a^4*c)*x^2 + 48*(
10*B*a^5 + A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^5)]
```

giac [B] time = 0.26, size = 1407, normalized size = 5.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="giac")
```

```
[Out] -1/128*(10*B*a*b^4 - 7*A*b^5 - 48*B*a^2*b^2*c + 40*A*a*b^3*c + 32*B*a^3*c^2
 - 48*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(s
qrt(-a)*a^4) + 1/1920*(150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 -
105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 720*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^9*B*a^2*b^2*c + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*
a*b^3*c + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 720*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 700*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^7*B*a^2*b^4 + 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^5 +
 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c - 2800*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^7*B*a^4*c^2 + 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b*c^2
+ 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*c^(3/2) + 7680*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^4*c^(5/2) + 1280*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*B*a^3*b^4 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2
*b^5 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^2*c + 5120*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*b^3*c + 15360*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^5*A*a^4*b*c^2 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a
^4*b^3*sqrt(c) - 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2)
 + 24320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) + 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) - 580*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*B*a^4*b^4 + 790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a
^3*b^5 - 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c + 9200*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c - 2880*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*B*a^6*c^2 + 12000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a
^5*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^5*b^3*sqrt(c) + 3
840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b^4*sqrt(c) - 1280*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) + 5120*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*A*a^5*b^2*c^(3/2) + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*A*a^6*c^(5/2) - 150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5*b^4 + 105
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 - 3120*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*B*a^6*b^2*c + 3240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5
*b^3*c - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2 + 720*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 - 1280*B*a^7*b*c^(3/2) + 1280*A*a^6*b
^2*c^(3/2) - 512*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a
)^5*a^4)
```

maple [B] time = 0.07, size = 777, normalized size = 3.31

$$-\frac{3Abc^2\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{5}{2}}}+\frac{5Ab^3c\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{32a^{\frac{7}{2}}}-\frac{7Ab^5\ln\left(\frac{bx+2a+2\sqrt{cx^2+bx+a}\,\sqrt{a}}{x}\right)}{256a^{\frac{9}{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x)
```

```
[Out] -13/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)+5/32*A/a^(7/2)*b^3*c*ln((b*x+2*a+2*(
c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+3/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(1/2)-3/16*A/
a^(5/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/15*A*c/a^2/x^
3*(c*x^2+b*x+a)^(3/2)+7/32*B/a^3*b^2*c*(c*x^2+b*x+a)^(1/2)-3/16*B/a^(5/2)*b
^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B*c/a^2/x^2*(c*x^2+b
*x+a)^(3/2)+7/128*A/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)*x-3/16*A/a^3*b*c/x^2*(c*x
^2+b*x+a)^(3/2)+3/32*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(3/2)-3/32*A/a^4*b^2*c^2*(
c*x^2+b*x+a)^(1/2)*x-1/16*B*c/a^3*b/x*(c*x^2+b*x+a)^(3/2)+1/16*B*c^2/a^3*b*
(c*x^2+b*x+a)^(1/2)*x-5/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)*x-5/32*B/a^3*b^2
/x^2*(c*x^2+b*x+a)^(3/2)+5/24*B/a^2*b/x^3*(c*x^2+b*x+a)^(3/2)+7/128*A/a^5*b
^5*(c*x^2+b*x+a)^(1/2)-7/256*A/a^(9/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2
)*a^(1/2))/x)-1/4*B/a/x^4*(c*x^2+b*x+a)^(3/2)-5/64*B/a^4*b^4*(c*x^2+b*x+a)^
(1/2)+5/128*B/a^(7/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/8
*B*c^2/a^2*(c*x^2+b*x+a)^(1/2)+1/8*B*c^2/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a
)^(1/2)*a^(1/2))/x)+7/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(3/2)-7/48*A/a^3*b^2/x^3
*(c*x^2+b*x+a)^(3/2)+7/64*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(3/2)-7/128*A/a^5*b^4
/x*(c*x^2+b*x+a)^(3/2)+5/64*B/a^4*b^3/x*(c*x^2+b*x+a)^(3/2)-1/5*A*(c*x^2+b*
x+a)^(3/2)/a/x^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**6, x)
```

3.921 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^7}\,dx$

Optimal. Leaf size=310

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(-20aAc-28abB+21Ab^2\right)}{160a^3x^4}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}-\frac{\left(b^2-4ac\right)\left(4abB\left(7b^2-12ac\right)-\right.}{}$$

```
[Out] -1/6*A*(c*x^2+b*x+a)^(3/2)/a/x^6+1/20*(3*A*b-4*B*a)*(c*x^2+b*x+a)^(3/2)/a^2
/x^5-1/160*(-20*A*a*c+21*A*b^2-28*B*a*b)*(c*x^2+b*x+a)^(3/2)/a^3/x^4+1/960*
(-196*A*a*b*c+105*A*b^3+128*B*a^2*c-140*B*a*b^2)*(c*x^2+b*x+a)^(3/2)/a^4/x^
3-1/1024*(-4*a*c+b^2)*(4*a*b*B*(-12*a*c+7*b^2)-A*(16*a^2*c^2-56*a*b^2*c+21*
b^4))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(11/2)+1/512*(4*
a*b*B*(-12*a*c+7*b^2)-A*(16*a^2*c^2-56*a*b^2*c+21*b^4))*(b*x+2*a)*(c*x^2+b*
x+a)^(1/2)/a^5/x^2
```

Rubi [A] time = 0.36, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$\frac{(2a+bx)\sqrt{a+bx+cx^2}\left(4abB\left(7b^2-12ac\right)-A\left(16a^2c^2-56ab^2c+21b^4\right)\right)}{512a^5x^2}-\frac{\left(b^2-4ac\right)\left(4abB\left(7b^2-12ac\right)-A\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^7,x]
```

```
[Out] ((4*a*b*B*(7*b^2 - 12*a*c) - A*(21*b^4 - 56*a*b^2*c + 16*a^2*c^2))*(2*a + b
*x)*Sqrt[a + b*x + c*x^2])/(512*a^5*x^2) - (A*(a + b*x + c*x^2)^(3/2))/(6*a
*x^6) + ((3*A*b - 4*a*B)*(a + b*x + c*x^2)^(3/2))/(20*a^2*x^5) - ((21*A*b^2
 - 28*a*b*B - 20*a*A*c)*(a + b*x + c*x^2)^(3/2))/(160*a^3*x^4) + ((105*A*b^
3 - 140*a*b^2*B - 196*a*A*b*c + 128*a^2*B*c)*(a + b*x + c*x^2)^(3/2))/(960*
a^4*x^3) - ((b^2 - 4*a*c)*(4*a*b*B*(7*b^2 - 12*a*c) - A*(21*b^4 - 56*a*b^2*
c + 16*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(1
024*a^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^7}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6}-\frac{\int \frac{\left(\frac{3}{2}(3Ab-4aB)+3Acx\right)\sqrt{a+bx+cx^2}}{x^6}\,dx}{6a}\\
&= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}+\int \frac{\left(\frac{3}{4}(21Ab^2-28abB-20a\right.}{}\\
&= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}-\frac{(21Ab^2-28abB-}{16}\\
&= -\frac{A\left(a+bx+cx^2\right)^{3/2}}{6ax^6}+\frac{(3Ab-4aB)\left(a+bx+cx^2\right)^{3/2}}{20a^2x^5}-\frac{(21Ab^2-28abB-}{16}\\
&= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2}-\\
&= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2}-\\
&= \frac{\left(4abB\left(7b^2-12ac\right)-A\left(21b^4-56ab^2c+16a^2c^2\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^5x^2}-
\end{aligned}$$

Mathematica [A] time = 0.44, size = 262, normalized size = 0.85

$$\frac{\frac{2x^3(a+x(b+cx))^{3/2}\left(7A\left(15b^3-28abc\right)+4aB\left(32ac-35b^2\right)\right)}{a^2}+\frac{15x^4\left(A\left(16a^2c^2-56ab^2c+21b^4\right)+4abB\left(12ac-7b^2\right)\right)\left(x^2\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right.\right.}{8a^{7/2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^7,x]
```

```
[Out] (-320*a*A*(a + x*(b + c*x))^(3/2) + 96*(3*A*b - 4*a*B)*x*(a + x*(b + c*x))^
(3/2) + (12*(-21*A*b^2 + 28*a*b*B + 20*a*A*c)*x^2*(a + x*(b + c*x))^(3/2))/
a + (2*(4*a*B*(-35*b^2 + 32*a*c) + 7*A*(15*b^3 - 28*a*b*c))*x^3*(a + x*(b +
 c*x))^(3/2))/a^2 + (15*(4*a*b*B*(-7*b^2 + 12*a*c) + A*(21*b^4 - 56*a*b^2*c
 + 16*a^2*c^2))*x^4*(-2*Sqrt[a]*(2*a + b*x)*Sqrt[a + x*(b + c*x)] + (b^2 -
4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(8*a^(7
/2)))/(1920*a^2*x^6)
```

fricas [A] time = 9.88, size = 709, normalized size = 2.29

$$\left[\frac{15\left(28\,Bab^5 - 21\,Ab^6 + 64\,Aa^3c^3 + 48\left(4\,Ba^3b - 5\,Aa^2b^2\right)c^2 - 20\left(8\,Ba^2b^3 - 7\,Aab^4\right)c\right)\sqrt{a}\,x^6\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15*(28*B*a*b^5 - 21*A*b^6 + 64*A*a^3*c^3 + 48*(4*B*a^3*b - 5*A*a^
2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 7*A*a*b^4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b
^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
 - 4*(1280*A*a^6 - (420*B*a^2*b^4 - 315*A*a*b^5 + 16*(64*B*a^4 - 113*A*a^3*
b)*c^2 - 80*(23*B*a^3*b^2 - 21*A*a^2*b^3)*c)*x^5 + 2*(140*B*a^3*b^3 - 105*A
*a^2*b^4 - 240*A*a^4*c^2 - 16*(29*B*a^4*b - 28*A*a^3*b^2)*c)*x^4 - 8*(28*B*
a^4*b^2 - 21*A*a^3*b^3 - 4*(16*B*a^5 - 17*A*a^4*b)*c)*x^3 + 16*(12*B*a^5*b
- 9*A*a^4*b^2 + 20*A*a^5*c)*x^2 + 128*(12*B*a^6 + A*a^5*b)*x)*sqrt(c*x^2 +
b*x + a))/(a^6*x^6), 1/15360*(15*(28*B*a*b^5 - 21*A*b^6 + 64*A*a^3*c^3 + 48
*(4*B*a^3*b - 5*A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 7*A*a*b^4)*c)*sqrt(-a)*x
^6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
 a^2)) - 2*(1280*A*a^6 - (420*B*a^2*b^4 - 315*A*a*b^5 + 16*(64*B*a^4 - 113*
A*a^3*b)*c^2 - 80*(23*B*a^3*b^2 - 21*A*a^2*b^3)*c)*x^5 + 2*(140*B*a^3*b^3 -
 105*A*a^2*b^4 - 240*A*a^4*c^2 - 16*(29*B*a^4*b - 28*A*a^3*b^2)*c)*x^4 - 8*
(28*B*a^4*b^2 - 21*A*a^3*b^3 - 4*(16*B*a^5 - 17*A*a^4*b)*c)*x^3 + 16*(12*B*
a^5*b - 9*A*a^4*b^2 + 20*A*a^5*c)*x^2 + 128*(12*B*a^6 + A*a^5*b)*x)*sqrt(c*
x^2 + b*x + a))/(a^6*x^6)]
```

giac [B] time = 0.32, size = 1955, normalized size = 6.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="giac")
```

```
[Out] 1/512*(28*B*a*b^5 - 21*A*b^6 - 160*B*a^2*b^3*c + 140*A*a*b^4*c + 192*B*a^3*
b*c^2 - 240*A*a^2*b^2*c^2 + 64*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))/sqrt(-a))/(sqrt(-a)*a^5) - 1/7680*(420*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^11*B*a*b^5 - 315*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 -
2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 2100*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^11*A*a*b^4*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^11*B*a^3*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2
*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 - 2380*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^9*B*a^2*b^5 + 1785*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*A*a*b^6 + 13600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c
 - 11900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b^4*c - 16320*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b*c^2 + 20400*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^9*A*a^3*b^2*c^2 - 5440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a
^4*c^3 - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) + 5544*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^5 - 4158*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*a^2*b^6 - 31680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*
a^4*b^3*c + 27720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b^4*c - 48000
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b*c^2 - 47520*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 - 36480*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^7*A*a^5*c^3 - 97280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^2*c^
(3/2) + 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*c^(5/2) - 163840*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b*c^(5/2) - 6744*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^5*B*a^4*b^5 + 5058*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*A*a^3*b^6 - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^3*c - 3
3720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^4*c + 13440*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^5*B*a^6*b*c^2 - 170400*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*A*a^5*b^2*c^2 - 36480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6
*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b^4*sqrt(c) + 7680
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^6*b^2*c^(3/2) - 168960*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*b^3*c^(3/2) - 61440*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^4*A*a^6*b*c^(5/2) + 2740*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*B*a^5*b^5 - 3335*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 + 238
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^3*c - 47740*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^3*A*a^5*b^4*c + 45120*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*B*a^7*b*c^2 - 102480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2
*c^2 - 5440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*c^3 + 15360*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b^4*sqrt(c) - 15360*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^2*A*a^5*b^5*sqrt(c) + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*B*a^7*b^2*c^(3/2) - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*
a^6*b^3*c^(3/2) + 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^8*c^(5/2)
 - 24576*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(5/2) + 420*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 315*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))*A*a^5*b^6 + 12960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^3*c -
13260*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c + 2880*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*B*a^8*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*A*a^7*b^2*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^8*c^3 + 5120*
B*a^8*b^2*c^(3/2) - 5120*A*a^7*b^3*c^(3/2) - 2048*B*a^9*c^(5/2) + 4096*A*a^
8*b*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^6*a^5)
```

maple [B] time = 0.07, size = 1014, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x)
```

```
[Out] 7/128*B/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)*x-3/32*B/a^4*b^2*c^2*(c*x^2+b*x+a)^(1
/2)*x+3/32*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(3/2)-3/16*B/a^3*b*c/x^2*(c*x^2+b*x+
a)^(3/2)+7/64*A/a^5*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x-7/64*A/a^5*b^3*c/x*(c*x^2
+b*x+a)^(3/2)-49/240*A/a^3*b*c/x^3*(c*x^2+b*x+a)^(3/2)+1/32*A*c^2/a^4*b/x*(
c*x^2+b*x+a)^(3/2)-1/32*A*c^3/a^4*b*(c*x^2+b*x+a)^(1/2)*x-21/512*A/a^6*b^5*
c*(c*x^2+b*x+a)^(1/2)*x+7/32*A/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(3/2)+21/1024*A/
a^(11/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-21/512*A/a^6*b^6
*(c*x^2+b*x+a)^(1/2)-1/16*A*c^3/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)+1/16*A*c^3/a^3*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(c*x^2+b*x+a)^(3/
2)+7/128*B/a^5*b^5*(c*x^2+b*x+a)^(1/2)-7/256*B/a^(9/2)*b^5*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)-21/160*A/a^3*b^2/x^4*(c*x^2+b*x+a)^(3/2)+3/20
*A/a^2*b/x^5*(c*x^2+b*x+a)^(3/2)+7/64*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(3/2)-21/
256*A/a^5*b^4/x^2*(c*x^2+b*x+a)^(3/2)+21/512*A/a^6*b^5/x*(c*x^2+b*x+a)^(3/2
)+49/256*A/a^5*b^4*c*(c*x^2+b*x+a)^(1/2)-1/4*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(1
/2)+1/8*A*c/a^2/x^4*(c*x^2+b*x+a)^(3/2)-1/16*A*c^2/a^3/x^2*(c*x^2+b*x+a)^(3
/2)-35/256*A/a^(9/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15
/64*A/a^(7/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/40*B/
a^2*b/x^4*(c*x^2+b*x+a)^(3/2)-7/48*B/a^3*b^2/x^3*(c*x^2+b*x+a)^(3/2)+7/64*B
/a^4*b^3/x^2*(c*x^2+b*x+a)^(3/2)-7/128*B/a^5*b^4/x*(c*x^2+b*x+a)^(3/2)-13/6
4*B/a^4*b^3*c*(c*x^2+b*x+a)^(1/2)+5/32*B/a^(7/2)*b^3*c*ln((b*x+2*a+2*(c*x^2
+b*x+a)^(1/2)*a^(1/2))/x)+3/16*B/a^3*b*c^2*(c*x^2+b*x+a)^(1/2)-3/16*B/a^(5/
2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/15*B*c/a^2/x^3*(c*
x^2+b*x+a)^(3/2)-1/6*A*(c*x^2+b*x+a)^(3/2)/a/x^6
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**7, x)
```

3.922 $\int x^4(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=455

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(2048a^2Bc^2-10cx\left(504aAc^2-748abBc-594Ab^2c+429b^3B\right)+6696aAbc^2-7524ab^2Bc-\right.}{80640c^5}$$

```
[Out] -1/12288*(-96*A*a^2*c^3+432*A*a*b^2*c^2-198*A*b^4*c+240*B*a^2*b*c^2-440*B*a
*b^3*c+143*B*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^6+1/2016*(-198*A*b*c-128*
B*a*c+143*B*b^2)*x^2*(c*x^2+b*x+a)^(5/2)/c^3-1/144*(-18*A*c+13*B*b)*x^3*(c*
x^2+b*x+a)^(5/2)/c^2+1/9*B*x^4*(c*x^2+b*x+a)^(5/2)/c+1/80640*(3003*b^4*B-41
58*A*b^3*c-7524*a*b^2*B*c+6696*a*A*b*c^2+2048*a^2*B*c^2-10*c*(504*A*a*c^2-5
94*A*b^2*c-748*B*a*b*c+429*B*b^3)*x)*(c*x^2+b*x+a)^(5/2)/c^5-1/65536*(-4*a*
c+b^2)^2*(-96*A*a^2*c^3+432*A*a*b^2*c^2-198*A*b^4*c+240*B*a^2*b*c^2-440*B*a
*b^3*c+143*B*b^5)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(15/
2)+1/32768*(-4*a*c+b^2)*(-96*A*a^2*c^3+432*A*a*b^2*c^2-198*A*b^4*c+240*B*a^
2*b*c^2-440*B*a*b^3*c+143*B*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^7
```

Rubi [A] time = 0.63, antiderivative size = 455, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(2048a^2Bc^2-10cx\left(504aAc^2-748abBc-594Ab^2c+429b^3B\right)+6696aAbc^2-7524ab^2Bc-\right.}{80640c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((b^2 - 4*a*c)*(143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 +
 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32768*
c^7) - ((143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 + 240*a^
2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(12288*c^6)
+ ((143*b^2*B - 198*A*b*c - 128*a*B*c)*x^2*(a + b*x + c*x^2)^(5/2))/(2016*c
^3) - ((13*b*B - 18*A*c)*x^3*(a + b*x + c*x^2)^(5/2))/(144*c^2) + (B*x^4*(a
 + b*x + c*x^2)^(5/2))/(9*c) + ((3003*b^4*B - 4158*A*b^3*c - 7524*a*b^2*B*c
 + 6696*a*A*b*c^2 + 2048*a^2*B*c^2 - 10*c*(429*b^3*B - 594*A*b^2*c - 748*a*
b*B*c + 504*a*A*c^2)*x)*(a + b*x + c*x^2)^(5/2))/(80640*c^5) - ((b^2 - 4*a*
c)^2*(143*b^5*B - 198*A*b^4*c - 440*a*b^3*B*c + 432*a*A*b^2*c^2 + 240*a^2*b
*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2]
)])/(65536*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^4(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx=\frac{Bx^4\left(a+bx+cx^2\right)^{5/2}}{9c}+\frac{\int x^3\left(-4aB-\frac{1}{2}(13bB-18Ac)x\right)\left(a+bx+cx^2\right)^{3/2}}{9c}$$

$$=-\frac{(13bB-18Ac)x^3\left(a+bx+cx^2\right)^{5/2}}{144c^2}+\frac{Bx^4\left(a+bx+cx^2\right)^{5/2}}{9c}+\frac{\int x^2\left(\frac{3}{2}a(13\right.}{}$$

$$=\frac{\left(143b^2B-198Abc-128aBc\right)x^2\left(a+bx+cx^2\right)^{5/2}}{2016c^3}-\frac{(13bB-18Ac)x^3\left(a+\right.}{144c^2}$$

$$=\frac{\left(143b^2B-198Abc-128aBc\right)x^2\left(a+bx+cx^2\right)^{5/2}}{2016c^3}-\frac{(13bB-18Ac)x^3\left(a+\right.}{144c^2}$$

$$=-\frac{\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-96a^2Ac^3\right)(b}{12288c^6}$$

$$=\frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-96\right.}{32768c^7}$$

$$=\frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-96\right.}{32768c^7}$$

$$=\frac{\left(b^2-4ac\right)\left(143b^5B-198Ab^4c-440ab^3Bc+432aAb^2c^2+240a^2bBc^2-96\right.}{32768c^7}$$

Mathematica [A]   time = 0.82, size = 338, normalized size = 0.74

$$\frac{3\left(96a^2Ac^3-240a^2bBc^2-432aAb^2c^2+440ab^3Bc+198Ab^4c-143b^5B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(}}\right.\right.}{65536c^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (((143*b^2*B - 198*A*b*c - 128*a*B*c)*x^2*(a + x*(b + c*x))^(5/2))/(224*c^2
) + ((-13*b*B + 18*A*c)*x^3*(a + x*(b + c*x))^(5/2))/(16*c) + B*x^4*(a + x*
(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(3003*b^4*B - 66*b^3*c*(63*A +
65*B*x) + 8*a*b*c^2*(837*A + 935*B*x) + 16*a*c^2*(128*a*B - 315*A*c*x) + 39
6*b^2*c*(-19*a*B + 15*A*c*x)))/(8960*c^4) + (3*(-143*b^5*B + 198*A*b^4*c +
440*a*b^3*B*c - 432*a*A*b^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*(2*Sqrt[c
]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)
) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])
]))/(65536*c^(13/2)))/(9*c)
```

fricas [**A**] time = 1.78, size = 1263, normalized size = 2.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/41287680*(315*(143*B*b^9 - 1536*A*a^4*c^5 + 3840*(B*a^4*b + 2*A*a^3*b^2
)*c^4 - 2240*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 2016*(3*B*a^2*b^5 + A*a*b^6)
*c^2 - 198*(8*B*a*b^7 + A*b^8)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1146880*B*c^9*x^8
 + 45045*B*b^8*c + 71680*(19*B*b*c^8 + 18*A*c^9)*x^7 + 5120*(3*B*b^2*c^7 +
2*(160*B*a + 153*A*b)*c^8)*x^6 + 128*(2048*B*a^4 + 8271*A*a^3*b)*c^5 - 1280
*(13*B*b^3*c^6 - 1512*A*a*c^8 - 6*(10*B*a*b + 3*A*b^2)*c^7)*x^5 - 2592*(566
*B*a^3*b^2 + 567*A*a^2*b^3)*c^4 + 128*(143*B*b^4*c^5 + 24*(32*B*a^2 + 39*A*
a*b)*c^7 - 6*(134*B*a*b^2 + 33*A*b^3)*c^6)*x^4 + 504*(2746*B*a^2*b^4 + 1095
*A*a*b^5)*c^3 - 16*(1287*B*b^5*c^4 - 10080*A*a^2*c^7 + 48*(269*B*a^2*b + 21
3*A*a*b^2)*c^6 - 22*(388*B*a*b^3 + 81*A*b^4)*c^5)*x^3 - 2310*(190*B*a*b^6 +
 27*A*b^7)*c^2 + 8*(3003*B*b^6*c^3 - 32*(512*B*a^3 + 1359*A*a^2*b)*c^6 + 24
0*(197*B*a^2*b^2 + 117*A*a*b^3)*c^5 - 198*(116*B*a*b^4 + 21*A*b^5)*c^4)*x^2
 - 2*(15015*B*b^7*c^2 + 120960*A*a^3*c^6 - 32*(7402*B*a^3*b + 10629*A*a^2*b
^2)*c^5 + 72*(4706*B*a^2*b^3 + 2247*A*a*b^4)*c^4 - 1386*(94*B*a*b^5 + 15*A*
b^6)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8, 1/20643840*(315*(143*B*b^9 - 1536*
A*a^4*c^5 + 3840*(B*a^4*b + 2*A*a^3*b^2)*c^4 - 2240*(4*B*a^3*b^3 + 3*A*a^2*
b^4)*c^3 + 2016*(3*B*a^2*b^5 + A*a*b^6)*c^2 - 198*(8*B*a*b^7 + A*b^8)*c)*sq
rt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) + 2*(1146880*B*c^9*x^8 + 45045*B*b^8*c + 71680*(19*B*b*c^8 + 18*
A*c^9)*x^7 + 5120*(3*B*b^2*c^7 + 2*(160*B*a + 153*A*b)*c^8)*x^6 + 128*(2048
*B*a^4 + 8271*A*a^3*b)*c^5 - 1280*(13*B*b^3*c^6 - 1512*A*a*c^8 - 6*(10*B*a*
b + 3*A*b^2)*c^7)*x^5 - 2592*(566*B*a^3*b^2 + 567*A*a^2*b^3)*c^4 + 128*(143
*B*b^4*c^5 + 24*(32*B*a^2 + 39*A*a*b)*c^7 - 6*(134*B*a*b^2 + 33*A*b^3)*c^6)
*x^4 + 504*(2746*B*a^2*b^4 + 1095*A*a*b^5)*c^3 - 16*(1287*B*b^5*c^4 - 10080
*A*a^2*c^7 + 48*(269*B*a^2*b + 213*A*a*b^2)*c^6 - 22*(388*B*a*b^3 + 81*A*b^
4)*c^5)*x^3 - 2310*(190*B*a*b^6 + 27*A*b^7)*c^2 + 8*(3003*B*b^6*c^3 - 32*(5
12*B*a^3 + 1359*A*a^2*b)*c^6 + 240*(197*B*a^2*b^2 + 117*A*a*b^3)*c^5 - 198*
(116*B*a*b^4 + 21*A*b^5)*c^4)*x^2 - 2*(15015*B*b^7*c^2 + 120960*A*a^3*c^6 -
 32*(7402*B*a^3*b + 10629*A*a^2*b^2)*c^5 + 72*(4706*B*a^2*b^3 + 2247*A*a*b^
4)*c^4 - 1386*(94*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8]
```

giac [**A**] time = 0.32, size = 639, normalized size = 1.40

$$\frac{1}{10321920}\sqrt{cx^2+bx+a}\bigg(2\bigg(4\bigg(2\bigg(8\bigg(10\bigg(4\bigg(14\bigg(16\,Bcx+\frac{19\,Bbc^8+18\,Ac^9}{c^8}\bigg)x+\frac{3\,Bb^2c^7+320\,Bac^8+306\,Abc}{c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/10321920*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*(16*B*c*x + (19*B*b
*c^8 + 18*A*c^9)/c^8)*x + (3*B*b^2*c^7 + 320*B*a*c^8 + 306*A*b*c^8)/c^8)*x
- (13*B*b^3*c^6 - 60*B*a*b*c^7 - 18*A*b^2*c^7 - 1512*A*a*c^8)/c^8)*x + (143
*B*b^4*c^5 - 804*B*a*b^2*c^6 - 198*A*b^3*c^6 + 768*B*a^2*c^7 + 936*A*a*b*c^
7)/c^8)*x - (1287*B*b^5*c^4 - 8536*B*a*b^3*c^5 - 1782*A*b^4*c^5 + 12912*B*a
^2*b*c^6 + 10224*A*a*b^2*c^6 - 10080*A*a^2*c^7)/c^8)*x + (3003*B*b^6*c^3 -
22968*B*a*b^4*c^4 - 4158*A*b^5*c^4 + 47280*B*a^2*b^2*c^5 + 28080*A*a*b^3*c^
5 - 16384*B*a^3*c^6 - 43488*A*a^2*b*c^6)/c^8)*x - (15015*B*b^7*c^2 - 130284
*B*a*b^5*c^3 - 20790*A*b^6*c^3 + 338832*B*a^2*b^3*c^4 + 161784*A*a*b^4*c^4
- 236864*B*a^3*b*c^5 - 340128*A*a^2*b^2*c^5 + 120960*A*a^3*c^6)/c^8)*x + (4
5045*B*b^8*c - 438900*B*a*b^6*c^2 - 62370*A*b^7*c^2 + 1383984*B*a^2*b^4*c^3
 + 551880*A*a*b^5*c^3 - 1467072*B*a^3*b^2*c^4 - 1469664*A*a^2*b^3*c^4 + 262
144*B*a^4*c^5 + 1058688*A*a^3*b*c^5)/c^8) + 1/65536*(143*B*b^9 - 1584*B*a*b
^7*c - 198*A*b^8*c + 6048*B*a^2*b^5*c^2 + 2016*A*a*b^6*c^2 - 8960*B*a^3*b^3
*c^3 - 6720*A*a^2*b^4*c^3 + 3840*B*a^4*b*c^4 + 7680*A*a^3*b^2*c^4 - 1536*A*
a^4*c^5)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(15
/2)
```

maple [**B**] time = 0.06, size = 1311, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -253/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*x*a-15/256*B*b/c^3*a^3*(c*x^2+b*x+a
)^(1/2)*x-9/128*A*b^2/c^3*a*(c*x^2+b*x+a)^(3/2)*x-57/512*A*b^2/c^3*a^2*(c*x
^2+b*x+a)^(1/2)*x+153/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a-5/128*B*b/c^3*
a^2*(c*x^2+b*x+a)^(3/2)*x+125/1024*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(1/2)*x+55/7
68*B*b^3/c^4*a*(c*x^2+b*x+a)^(3/2)*x+187/2016*B*b/c^3*a*x*(c*x^2+b*x+a)^(5/
2)+1/8*A*x^3*(c*x^2+b*x+a)^(5/2)/c+99/32768*A*b^8/c^(13/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))+3/128*A*a^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))-33/640*A*b^3/c^4*(c*x^2+b*x+a)^(5/2)+33/2048*A*b^5/c^5*(c*
x^2+b*x+a)^(3/2)-99/16384*A*b^7/c^6*(c*x^2+b*x+a)^(1/2)+8/315*B*a^2/c^3*(c*
x^2+b*x+a)^(5/2)-143/65536*B*b^9/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))+143/3840*B*b^4/c^5*(c*x^2+b*x+a)^(5/2)-143/12288*B*b^6/c^6*(c*x^
2+b*x+a)^(3/2)+143/32768*B*b^8/c^7*(c*x^2+b*x+a)^(1/2)+3/256*A*a^3/c^3*(c*x
^2+b*x+a)^(1/2)*b+3/128*A*a^3/c^2*(c*x^2+b*x+a)^(1/2)*x-15/128*A*b^2/c^(7/2
)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-63/2048*A*b^6/c^(11/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-143/6144*B*b^5/c^5*(c*x^2+b*x+a
)^(3/2)*x-99/8192*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x+153/4096*A*b^5/c^5*(c*x^2
+b*x+a)^(1/2)*a-9/256*A*b^3/c^4*a*(c*x^2+b*x+a)^(3/2)-57/1024*A*b^3/c^4*a^2
*(c*x^2+b*x+a)^(1/2)+1/64*A*a^2/c^2*(c*x^2+b*x+a)^(3/2)*x+1/128*A*a^2/c^3*(
c*x^2+b*x+a)^(3/2)*b+105/1024*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a^2-11/112*A*b/c^2*x^2*(c*x^2+b*x+a)^(5/2)+93/1120*A*b/c^3*a*(
c*x^2+b*x+a)^(5/2)+33/448*A*b^2/c^3*x*(c*x^2+b*x+a)^(5/2)+33/1024*A*b^4/c^4
*(c*x^2+b*x+a)^(3/2)*x-4/63*B*a/c^2*x^2*(c*x^2+b*x+a)^(5/2)-15/256*B*b/c^(7
/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+35/256*B*b^3/c^(9/2)*a^
3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+99/4096*B*b^7/c^(13/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-189/2048*B*b^5/c^(11/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+143/16384*B*b^7/c^6*(c*x^2+b*x+a)^(1/2
)*x-253/8192*B*b^6/c^6*(c*x^2+b*x+a)^(1/2)*a+55/1536*B*b^4/c^5*a*(c*x^2+b*x
+a)^(3/2)+125/2048*B*b^4/c^5*a^2*(c*x^2+b*x+a)^(1/2)-13/144*B*b/c^2*x^3*(c*
x^2+b*x+a)^(5/2)-5/256*B*b^2/c^4*a^2*(c*x^2+b*x+a)^(3/2)-15/512*B*b^2/c^4*a
^3*(c*x^2+b*x+a)^(1/2)+143/2016*B*b^2/c^3*x^2*(c*x^2+b*x+a)^(5/2)-209/2240*
B*b^2/c^4*a*(c*x^2+b*x+a)^(5/2)-143/2688*B*b^3/c^4*x*(c*x^2+b*x+a)^(5/2)-1/
16*A*a/c^2*x*(c*x^2+b*x+a)^(5/2)+1/9*B*x^4*(c*x^2+b*x+a)^(5/2)/c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^{4}\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.923 $\int x^3(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=356

$$\frac{3\left(b^2-4ac\right)^2\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{13/2}}-3\left(b^2-4ac\right)(b+2cx)$$

```
[Out] 1/2048*(64*A*a*b*c^2-48*A*b^3*c+16*B*a^2*c^2-72*B*a*b^2*c+33*B*b^4)*(2*c*x+
b)*(c*x^2+b*x+a)^(3/2)/c^5-1/112*(-16*A*c+11*B*b)*x^2*(c*x^2+b*x+a)^(5/2)/c
^2+1/8*B*x^3*(c*x^2+b*x+a)^(5/2)/c-1/4480*(231*b^3*B-336*A*b^2*c-372*a*b*B*
c+256*a*A*c^2-10*c*(-48*A*b*c-28*B*a*c+33*B*b^2)*x)*(c*x^2+b*x+a)^(5/2)/c^4
+3/32768*(-4*a*c+b^2)^2*(64*A*a*b*c^2-48*A*b^3*c+16*B*a^2*c^2-72*B*a*b^2*c+
33*B*b^4)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(13/2)-3/163
84*(-4*a*c+b^2)*(64*A*a*b*c^2-48*A*b^3*c+16*B*a^2*c^2-72*B*a*b^2*c+33*B*b^4
)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^6
```

Rubi [A] time = 0.40, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)}{2048c^5}-3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*(b^2 - 4*a*c)*(33*b^4*B - 48*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16
*a^2*B*c^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(16384*c^6) + ((33*b^4*B - 4
8*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*(b + 2*c*x)*(a + b*
x + c*x^2)^(3/2))/(2048*c^5) - ((11*b*B - 16*A*c)*x^2*(a + b*x + c*x^2)^(5/
2))/(112*c^2) + (B*x^3*(a + b*x + c*x^2)^(5/2))/(8*c) - ((231*b^3*B - 336*A
*b^2*c - 372*a*b*B*c + 256*a*A*c^2 - 10*c*(33*b^2*B - 48*A*b*c - 28*a*B*c)*
x)*(a + b*x + c*x^2)^(5/2))/(4480*c^4) + (3*(b^2 - 4*a*c)^2*(33*b^4*B - 48*
A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(
2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^3(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx &= \frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c}+\frac{\int x^2\left(-3aB-\frac{1}{2}(11bB-16Ac)x\right)\left(a+bx+cx^2\right)^{3}}{8c}\\
&= -\frac{(11bB-16Ac)x^2\left(a+bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c}+\frac{\int x\left(a(11\right.}{}\\
&= -\frac{(11bB-16Ac)x^2\left(a+bx+cx^2\right)^{5/2}}{112c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{5/2}}{8c}-\frac{\left(231b^3B\right.}{}\\
&= \frac{\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2cx)\left(a+bx+\right.}{2048c^5}\\
&= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2}{16384c^6}\\
&= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2}{16384c^6}\\
&= -\frac{3\left(b^2-4ac\right)\left(33b^4B-48Ab^3c-72ab^2Bc+64aAbc^2+16a^2Bc^2\right)(b+2}{16384c^6}
\end{aligned}$$

Mathematica [A] time = 0.52, size = 267, normalized size = 0.75

$$\frac{\frac{\left(16a^2Bc^2+64aAbc^2-72ab^2Bc-48Ab^3c+33b^4B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)\right)}{4096c^{11/2}}+\frac{(a+}{}}{8}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (((-11*b*B + 16*A*c)*x^2*(a + x*(b + c*x))^(5/2))/(14*c) + B*x^3*(a + x*(b
+ c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(-231*b^3*B - 8*a*c^2*(32*A + 35*B
*x) + 6*b^2*c*(56*A + 55*B*x) + 12*b*c*(31*a*B - 40*A*c*x)))/(560*c^3) + ((
33*b^4*B - 48*A*b^3*c - 72*a*b^2*B*c + 64*a*A*b*c^2 + 16*a^2*B*c^2)*(2*Sqrt
[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^
2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)
])])])/(4096*c^(11/2)))/(8*c)
```

fricas [A] time = 1.44, size = 1037, normalized size = 2.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2293760*(105*(33*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*c^4 - 1280*(B*a^3*b^2 +
 A*a^2*b^3)*c^3 + 224*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 - 48*(7*B*a*b^6 + A*b^7
)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(c) - 4*a*c) + 4*(71680*B*c^8*x^7 - 3465*B*b^7*c - 32768*A*a^3*c
^5 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c^6 + 4*(21*B*a + 20*A*
b)*c^7)*x^5 + 64*(919*B*a^3*b + 1372*A*a^2*b^2)*c^4 - 128*(11*B*b^3*c^5 - 1
024*A*a*c^7 - 4*(13*B*a*b + 4*A*b^2)*c^6)*x^4 - 1008*(81*B*a^2*b^3 + 40*A*a
*b^4)*c^3 + 16*(99*B*b^4*c^4 + 16*(35*B*a^2 + 44*A*a*b)*c^6 - 8*(71*B*a*b^2
 + 18*A*b^3)*c^5)*x^3 + 420*(73*B*a*b^5 + 12*A*b^6)*c^2 - 8*(231*B*b^5*c^3
- 2048*A*a^2*c^6 + 16*(151*B*a^2*b + 124*A*a*b^2)*c^5 - 24*(65*B*a*b^3 + 14
*A*b^4)*c^4)*x^2 + 2*(1155*B*b^6*c^2 - 64*(105*B*a^3 + 292*A*a^2*b)*c^5 + 1
6*(1181*B*a^2*b^2 + 728*A*a*b^3)*c^4 - 84*(107*B*a*b^4 + 20*A*b^5)*c^3)*x)*
sqrt(c*x^2 + b*x + a))/c^7, -1/1146880*(105*(33*B*b^8 + 256*(B*a^4 + 4*A*a^
3*b)*c^4 - 1280*(B*a^3*b^2 + A*a^2*b^3)*c^3 + 224*(5*B*a^2*b^4 + 2*A*a*b^5)
*c^2 - 48*(7*B*a*b^6 + A*b^7)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(71680*B*c^8*x^7 - 3465*B
*b^7*c - 32768*A*a^3*c^5 + 5120*(17*B*b*c^7 + 16*A*c^8)*x^6 + 1280*(B*b^2*c
^6 + 4*(21*B*a + 20*A*b)*c^7)*x^5 + 64*(919*B*a^3*b + 1372*A*a^2*b^2)*c^4 -
 128*(11*B*b^3*c^5 - 1024*A*a*c^7 - 4*(13*B*a*b + 4*A*b^2)*c^6)*x^4 - 1008*
(81*B*a^2*b^3 + 40*A*a*b^4)*c^3 + 16*(99*B*b^4*c^4 + 16*(35*B*a^2 + 44*A*a*
b)*c^6 - 8*(71*B*a*b^2 + 18*A*b^3)*c^5)*x^3 + 420*(73*B*a*b^5 + 12*A*b^6)*c
^2 - 8*(231*B*b^5*c^3 - 2048*A*a^2*c^6 + 16*(151*B*a^2*b + 124*A*a*b^2)*c^5
 - 24*(65*B*a*b^3 + 14*A*b^4)*c^4)*x^2 + 2*(1155*B*b^6*c^2 - 64*(105*B*a^3
+ 292*A*a^2*b)*c^5 + 16*(1181*B*a^2*b^2 + 728*A*a*b^3)*c^4 - 84*(107*B*a*b^
4 + 20*A*b^5)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^7]
```

giac [A] time = 0.27, size = 524, normalized size = 1.47

$$\frac{1}{573440}\sqrt{cx^2+bx+a}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\Bigg(4\Bigg(14\,Bcx+\frac{17\,Bbc^7+16\,Ac^8}{c^7}\Bigg)x+\frac{Bb^2c^6+84\,Bac^7+80\,Abc^7}{c^7}\Bigg)x-\frac{11\,Bb^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/573440*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*B*c*x + (17*B*b*c^7 +
 16*A*c^8)/c^7)*x + (B*b^2*c^6 + 84*B*a*c^7 + 80*A*b*c^7)/c^7)*x - (11*B*b^
3*c^5 - 52*B*a*b*c^6 - 16*A*b^2*c^6 - 1024*A*a*c^7)/c^7)*x + (99*B*b^4*c^4
- 568*B*a*b^2*c^5 - 144*A*b^3*c^5 + 560*B*a^2*c^6 + 704*A*a*b*c^6)/c^7)*x -
 (231*B*b^5*c^3 - 1560*B*a*b^3*c^4 - 336*A*b^4*c^4 + 2416*B*a^2*b*c^5 + 198
4*A*a*b^2*c^5 - 2048*A*a^2*c^6)/c^7)*x + (1155*B*b^6*c^2 - 8988*B*a*b^4*c^3
 - 1680*A*b^5*c^3 + 18896*B*a^2*b^2*c^4 + 11648*A*a*b^3*c^4 - 6720*B*a^3*c^
5 - 18688*A*a^2*b*c^5)/c^7)*x - (3465*B*b^7*c - 30660*B*a*b^5*c^2 - 5040*A*
b^6*c^2 + 81648*B*a^2*b^3*c^3 + 40320*A*a*b^4*c^3 - 58816*B*a^3*b*c^4 - 878
08*A*a^2*b^2*c^4 + 32768*A*a^3*c^5)/c^7) - 3/32768*(33*B*b^8 - 336*B*a*b^6*
c - 48*A*b^7*c + 1120*B*a^2*b^4*c^2 + 448*A*a*b^5*c^2 - 1280*B*a^3*b^2*c^3
- 1280*A*a^2*b^3*c^3 + 256*B*a^4*c^4 + 1024*A*a^3*b*c^4)*log(abs(-2*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.06, size = 1061, normalized size = 2.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -57/512*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)*x-9/128*B*b^2/c^3*a*(c*x^2+b*x+a)
^(3/2)*x+153/2048*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a-3/32*A*b^3/c^3*(c*x^2+b
*x+a)^(1/2)*x*a+1/16*A*b/c^2*a*(c*x^2+b*x+a)^(3/2)*x+3/32*A*b/c^2*a^2*(c*x^
2+b*x+a)^(1/2)*x-99/8192*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x+105/1024*B*b^4/c^(
9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-11/112*B*b/c^2*x^2*(c*
x^2+b*x+a)^(5/2)-57/1024*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(1/2)+21/512*A*b^5/c^(
9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/32*A*b/c^(5/2)*a^3*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/256*B*a^3/c^3*(c*x^2+b*x+a)^(1/2
)*b-15/128*B*b^2/c^(7/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+33
/448*B*b^2/c^3*x*(c*x^2+b*x+a)^(5/2)-63/2048*B*b^6/c^(11/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/64*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)-3/28*
A*b/c^2*x*(c*x^2+b*x+a)^(5/2)-3/64*A*b^3/c^3*(c*x^2+b*x+a)^(3/2)*x+9/512*A*
b^5/c^4*(c*x^2+b*x+a)^(1/2)*x-3/64*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a+1/32*A*b
^2/c^3*a*(c*x^2+b*x+a)^(3/2)-15/128*A*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*a^2+3/128*B*a^3/c^2*(c*x^2+b*x+a)^(1/2)*x+33/1024*B*b^4/
c^4*(c*x^2+b*x+a)^(3/2)*x+153/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*a-9/256*B*
b^3/c^4*a*(c*x^2+b*x+a)^(3/2)+93/1120*B*b/c^3*a*(c*x^2+b*x+a)^(5/2)-1/16*B*
a/c^2*x*(c*x^2+b*x+a)^(5/2)+1/64*B*a^2/c^2*(c*x^2+b*x+a)^(3/2)*x+1/128*B*a^
2/c^3*(c*x^2+b*x+a)^(3/2)*b+33/2048*B*b^5/c^5*(c*x^2+b*x+a)^(3/2)-99/16384*
B*b^7/c^6*(c*x^2+b*x+a)^(1/2)-33/640*B*b^3/c^4*(c*x^2+b*x+a)^(5/2)+99/32768
*B*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/128*B*a^4/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/7*A*x^2*(c*x^2+b*x+a)^(5
/2)/c+9/1024*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)+3/40*A*b^2/c^3*(c*x^2+b*x+a)^(5/
2)-3/128*A*b^4/c^4*(c*x^2+b*x+a)^(3/2)-9/2048*A*b^7/c^(11/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/35*A*a/c^2*(c*x^2+b*x+a)^(5/2)+1/8*B*x^3*(c
*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(A + B x\right) \left(a + b x + c x^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.924 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=269

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aBc-10cx(9bB-14Ac)-98Abc+63b^2B\right)}{840c^3}-\frac{\left(b^2-4ac\right)^2\left(8aAc^2-12abBc-14Ab^2c+\right.}{2048c^{11/2}}$$

```
[Out] -1/384*(8*A*a*c^2-14*A*b^2*c-12*B*a*b*c+9*B*b^3)*(2*c*x+b)*(c*x^2+b*x+a)^(3
/2)/c^4+1/7*B*x^2*(c*x^2+b*x+a)^(5/2)/c+1/840*(63*b^2*B-98*A*b*c-48*a*B*c-1
0*c*(-14*A*c+9*B*b)*x)*(c*x^2+b*x+a)^(5/2)/c^3-1/2048*(-4*a*c+b^2)^2*(8*A*a
*c^2-14*A*b^2*c-12*B*a*b*c+9*B*b^3)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*
x+a)^(1/2))/c^(11/2)+1/1024*(-4*a*c+b^2)*(8*A*a*c^2-14*A*b^2*c-12*B*a*b*c+9
*B*b^3)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi [A] time = 0.25, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = $\{832, 779, 612, 621, 206\}$

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aBc-10cx(9bB-14Ac)-98Abc+63b^2B\right)}{840c^3}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(8aAc^2-12ab\right.}{384c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((b^2 - 4*a*c)*(9*b^3*B - 14*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*
Sqrt[a + b*x + c*x^2])/(1024*c^5) - ((9*b^3*B - 14*A*b^2*c - 12*a*b*B*c + 8
*a*A*c^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(384*c^4) + (B*x^2*(a + b*x
+ c*x^2)^(5/2))/(7*c) + ((63*b^2*B - 98*A*b*c - 48*a*B*c - 10*c*(9*b*B - 14
*A*c)*x)*(a + b*x + c*x^2)^(5/2))/(840*c^3) - ((b^2 - 4*a*c)^2*(9*b^3*B - 1
4*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
 b*x + c*x^2])])/(2048*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx=\frac{Bx^2\left(a+bx+cx^2\right)^{5/2}}{7c}+\frac{\int x\left(-2aB-\frac{1}{2}(9bB-14Ac)x\right)\left(a+bx+cx^2\right)^{3/2}\,dx}{7c}$$

$$=\frac{Bx^2\left(a+bx+cx^2\right)^{5/2}}{7c}+\frac{\left(63b^2B-98Abc-48aBc-10c(9bB-14Ac)x\right)\left(a\right.}{840c^3}$$

$$=-\frac{\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{384c^4}+\frac{Bx^2\left(a\right.}{}$$

$$=\frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5}-$$

$$=\frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5}-$$

$$=\frac{\left(b^2-4ac\right)\left(9b^3B-14Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^5}-$$

Mathematica [A] time = 0.33, size = 206, normalized size = 0.77

$$\frac{\frac{(a+x(b+cx))^{5/2}\left(4c(35Acx-12aB)-2bc(49A+45Bx)+63b^2B\right)}{120c^2}-\frac{7\left(8aAc^2-12abBc-14Ab^2c+9b^3B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+\right.}{6144c^{9/2}}}{7c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(63*b^2*B - 2*b*c
*(49*A + 45*B*x) + 4*c*(-12*a*B + 35*A*c*x)))/(120*c^2) - (7*(9*b^3*B - 14*
A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(6144*c^(9/2)))/(7*c)
```

fricas [A] time = 1.37, size = 845, normalized size = 3.14

$$\left[\frac{105\left(9\,Bb^7+128\,Aa^3c^4-96\left(2\,Ba^3b+3\,Aa^2b^2\right)c^3+120\left(2\,Ba^2b^3+Aab^4\right)c^2-14\left(6\,Bab^5+Ab^6\right)c\right)\sqrt{c}\,\log\left(-8\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(9*B*b^7 + 128*A*a^3*c^4 - 96*(2*B*a^3*b + 3*A*a^2*b^2)*c^3
+ 120*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 14*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log(-
8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4
*a*c) + 4*(15360*B*c^7*x^6 + 945*B*b^6*c + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5
 - 96*(64*B*a^3 + 189*A*a^2*b)*c^4 + 128*(3*B*b^2*c^5 + 2*(96*B*a + 91*A*b)
*c^6)*x^4 + 112*(147*B*a^2*b^2 + 95*A*a*b^3)*c^3 - 16*(27*B*b^3*c^4 - 1960*
A*a*c^6 - 6*(22*B*a*b + 7*A*b^2)*c^5)*x^3 - 210*(36*B*a*b^4 + 7*A*b^5)*c^2
+ 8*(63*B*b^4*c^3 + 24*(16*B*a^2 + 21*A*a*b)*c^5 - 2*(186*B*a*b^2 + 49*A*b^
3)*c^4)*x^2 - 2*(315*B*b^5*c^2 - 3360*A*a^2*c^5 + 48*(73*B*a^2*b + 63*A*a*b
^2)*c^4 - 14*(156*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1
/215040*(105*(9*B*b^7 + 128*A*a^3*c^4 - 96*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 +
120*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 14*(6*B*a*b^5 + A*b^6)*c)*sqrt(-c)*arctan
(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) +
2*(15360*B*c^7*x^6 + 945*B*b^6*c + 1280*(15*B*b*c^6 + 14*A*c^7)*x^5 - 96*(6
4*B*a^3 + 189*A*a^2*b)*c^4 + 128*(3*B*b^2*c^5 + 2*(96*B*a + 91*A*b)*c^6)*x^
4 + 112*(147*B*a^2*b^2 + 95*A*a*b^3)*c^3 - 16*(27*B*b^3*c^4 - 1960*A*a*c^6
- 6*(22*B*a*b + 7*A*b^2)*c^5)*x^3 - 210*(36*B*a*b^4 + 7*A*b^5)*c^2 + 8*(63*
B*b^4*c^3 + 24*(16*B*a^2 + 21*A*a*b)*c^5 - 2*(186*B*a*b^2 + 49*A*b^3)*c^4)*
x^2 - 2*(315*B*b^5*c^2 - 3360*A*a^2*c^5 + 48*(73*B*a^2*b + 63*A*a*b^2)*c^4
- 14*(156*B*a*b^3 + 35*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [A] time = 0.24, size = 422, normalized size = 1.57

$$\frac{1}{107520}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\left(12\,Bcx+\frac{15\,Bbc^6+14\,Ac^7}{c^6}\right)x+\frac{3\,Bb^2c^5+192\,Bac^6+182\,Abc^6}{c^6}\right)x-27\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(12*B*c*x + (15*B*b*c^6 + 14
*A*c^7)/c^6)*x + (3*B*b^2*c^5 + 192*B*a*c^6 + 182*A*b*c^6)/c^6)*x - (27*B*b
^3*c^4 - 132*B*a*b*c^5 - 42*A*b^2*c^5 - 1960*A*a*c^6)/c^6)*x + (63*B*b^4*c^
3 - 372*B*a*b^2*c^4 - 98*A*b^3*c^4 + 384*B*a^2*c^5 + 504*A*a*b*c^5)/c^6)*x
- (315*B*b^5*c^2 - 2184*B*a*b^3*c^3 - 490*A*b^4*c^3 + 3504*B*a^2*b*c^4 + 30
24*A*a*b^2*c^4 - 3360*A*a^2*c^5)/c^6)*x + (945*B*b^6*c - 7560*B*a*b^4*c^2 -
 1470*A*b^5*c^2 + 16464*B*a^2*b^2*c^3 + 10640*A*a*b^3*c^3 - 6144*B*a^3*c^4
- 18144*A*a^2*b*c^4)/c^6) + 1/2048*(9*B*b^7 - 84*B*a*b^5*c - 14*A*b^6*c + 2
40*B*a^2*b^3*c^2 + 120*A*a*b^4*c^2 - 192*B*a^3*b*c^3 - 288*A*a^2*b^2*c^3 +
128*A*a^3*c^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))
/c^(11/2)
```

maple [B] time = 0.06, size = 838, normalized size = 3.12

$$-\frac{A\,a^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{9A\,a^2b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{64c^{\frac{5}{2}}}-\frac{15Aa\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{256c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -3/32*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a+1/16*B*b/c^2*a*(c*x^2+b*x+a)^(3/2)*
x+1/8*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x*a+3/32*B*b/c^2*a^2*(c*x^2+b*x+a)^(1/2
)*x+3/40*B*b^2/c^3*(c*x^2+b*x+a)^(5/2)-3/128*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)+
9/1024*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)-1/16*A*a^3/c^(3/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))-3/64*B*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a+1/32*B*b^2/c^
3*a*(c*x^2+b*x+a)^(3/2)+9/64*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*a^2-1/48*A*a/c^2*(c*x^2+b*x+a)^(3/2)*b-15/256*A*b^4/c^(7/2)*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/28*B*b/c^2*x*(c*x^2+b*x+a)^(5/
2)+7/96*A*b^2/c^2*(c*x^2+b*x+a)^(3/2)*x-1/16*A*a^2/c*(c*x^2+b*x+a)^(1/2)*x+
3/64*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(1/2)-15/128*B*b^3/c^(7/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/24*A*a/c*(c*x^2+b*x+a)^(3/2)*x+9/512*B*b
^5/c^4*(c*x^2+b*x+a)^(1/2)*x-3/64*B*b^3/c^3*(c*x^2+b*x+a)^(3/2)*x-7/256*A*b
^4/c^3*(c*x^2+b*x+a)^(1/2)*x+1/16*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a-1/32*A*a^
2/c^2*(c*x^2+b*x+a)^(1/2)*b+21/512*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))*a+3/32*B*b/c^(5/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))+1/6*A*x*(c*x^2+b*x+a)^(5/2)/c-7/60*A*b/c^2*(c*x^2+b*x+a)^(5/2)+7/
192*A*b^3/c^3*(c*x^2+b*x+a)^(3/2)-7/512*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)+7/102
4*A*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/35*B*a/c^2*(c
*x^2+b*x+a)^(5/2)-9/2048*B*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+1/7*B*x^2*(c*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{2} \left(A + B x\right) \left(a + b x + c x^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.925 $\int x(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=198

$$\frac{\left(b^2-4ac\right)^2\left(-4aBc-12Abc+7b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{1024c^{9/2}}-\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(-4aBc-12}{512c^4}$$

```
[Out] 1/192*(-12*A*b*c-4*B*a*c+7*B*b^2)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^3-1/60*(-
10*B*c*x-12*A*c+7*B*b)*(c*x^2+b*x+a)^(5/2)/c^2+1/1024*(-4*a*c+b^2)^2*(-12*A
*b*c-4*B*a*c+7*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^
(9/2)-1/512*(-4*a*c+b^2)*(-12*A*b*c-4*B*a*c+7*B*b^2)*(2*c*x+b)*(c*x^2+b*x+a
)^(1/2)/c^4
```

Rubi [A] time = 0.09, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.190, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}\left(-4aBc-12Abc+7b^2B\right)}{192c^3}-\frac{\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(-4aBc-12Abc+7}{512c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)*(7*b^2*B - 12*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x + c
*x^2])/(512*c^4) + ((7*b^2*B - 12*A*b*c - 4*a*B*c)*(b + 2*c*x)*(a + b*x + c
*x^2)^(3/2))/(192*c^3) - ((7*b*B - 12*A*c - 10*B*c*x)*(a + b*x + c*x^2)^(5/
2))/(60*c^2) + ((b^2 - 4*a*c)^2*(7*b^2*B - 12*A*b*c - 4*a*B*c)*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx = -\frac{(7bB-12Ac-10Bcx)\left(a+bx+cx^2\right)^{5/2}}{60c^2} + \frac{\left(7b^2B-12Abc-4aBc\right)\int\left(a+\right.}{24c^2}$$

$$= \frac{\left(7b^2B-12Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{192c^3} - \frac{(7bB-12Ac-10Bcx)}{60c^2}$$

$$= -\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4} + \frac{\left(7b^2B-12A\right.}{}$$

$$= -\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4} + \frac{\left(7b^2B-12A\right.}{}$$

$$= -\frac{\left(b^2-4ac\right)\left(7b^2B-12Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{512c^4} + \frac{\left(7b^2B-12A\right.}{}$$

Mathematica [A] time = 0.21, size = 156, normalized size = 0.79

$$\frac{\frac{5\left(-4aBc-12Abc+7b^2B\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)\right)}{256c^{5/2}} + (a+x(b+cx))^{5/2}(2c(6}{60c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((-7*b*B + 2*c*(6*A + 5*B*x))*(a + x*(b + c*x))^(5/2) + (5*(7*b^2*B - 12*A*
b*c - 4*a*B*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c
*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])]))/(256*c^(5/2)))/(60*c^2)
```

fricas [A] time = 1.09, size = 669, normalized size = 3.38

$$\left[-\frac{15\left(7\,Bb^6-64\left(Ba^3+3\,Aa^2b\right)c^3+48\left(3\,Ba^2b^2+2\,Aab^3\right)c^2-12\left(5\,Bab^4+Ab^5\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/30720*(15*(7*B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 48*(3*B*a^2*b^2 + 2*A
*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*B*c^6*
x^5 - 105*B*b^5*c + 1536*A*a^2*c^4 + 128*(13*B*b*c^5 + 12*A*c^6)*x^4 - 48*(
27*B*a^2*b + 25*A*a*b^2)*c^3 + 16*(3*B*b^2*c^4 + 4*(35*B*a + 33*A*b)*c^5)*x
^3 + 20*(38*B*a*b^3 + 9*A*b^4)*c^2 - 8*(7*B*b^3*c^3 - 384*A*a*c^5 - 12*(3*B
*a*b + A*b^2)*c^4)*x^2 + 2*(35*B*b^4*c^2 + 48*(5*B*a^2 + 7*A*a*b)*c^4 - 12*
(18*B*a*b^2 + 5*A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/15360*(15*(7*
B*b^6 - 64*(B*a^3 + 3*A*a^2*b)*c^3 + 48*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*
(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b
)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1280*B*c^6*x^5 - 105*B*b^5*c + 153
6*A*a^2*c^4 + 128*(13*B*b*c^5 + 12*A*c^6)*x^4 - 48*(27*B*a^2*b + 25*A*a*b^2
)*c^3 + 16*(3*B*b^2*c^4 + 4*(35*B*a + 33*A*b)*c^5)*x^3 + 20*(38*B*a*b^3 + 9
*A*b^4)*c^2 - 8*(7*B*b^3*c^3 - 384*A*a*c^5 - 12*(3*B*a*b + A*b^2)*c^4)*x^2
+ 2*(35*B*b^4*c^2 + 48*(5*B*a^2 + 7*A*a*b)*c^4 - 12*(18*B*a*b^2 + 5*A*b^3)*
c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [A] time = 0.27, size = 332, normalized size = 1.68

$$\frac{1}{7680}\sqrt{cx^2+bx+a}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\,Bcx+\frac{13\,Bbc^5+12\,Ac^6}{c^5}\Bigg)x+\frac{3\,Bb^2c^4+140\,Bac^5+132\,Abc^5}{c^5}\Bigg)x-\frac{7\,Bb^3c^3-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*B*c*x + (13*B*b*c^5 + 12*A*c^6
)/c^5)*x + (3*B*b^2*c^4 + 140*B*a*c^5 + 132*A*b*c^5)/c^5)*x - (7*B*b^3*c^3
- 36*B*a*b*c^4 - 12*A*b^2*c^4 - 384*A*a*c^5)/c^5)*x + (35*B*b^4*c^2 - 216*B
*a*b^2*c^3 - 60*A*b^3*c^3 + 240*B*a^2*c^4 + 336*A*a*b*c^4)/c^5)*x - (105*B*
b^5*c - 760*B*a*b^3*c^2 - 180*A*b^4*c^2 + 1296*B*a^2*b*c^3 + 1200*A*a*b^2*c
^3 - 1536*A*a^2*c^4)/c^5) - 1/1024*(7*B*b^6 - 60*B*a*b^4*c - 12*A*b^5*c + 1
44*B*a^2*b^2*c^2 + 96*A*a*b^3*c^2 - 64*B*a^3*c^3 - 192*A*a^2*b*c^3)*log(abs
(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 644, normalized size = 3.25

$$-\frac{3A\,a^2b\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3Aa\,b^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{32c^{\frac{5}{2}}}-\frac{3A\,b^5\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{256c^{\frac{7}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -3/16*A*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/8*A*b/c
*x*(c*x^2+b*x+a)^(3/2)+3/64*A*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x-1/16*B*a^2/c*(c
*x^2+b*x+a)^(1/2)*x-1/32*B*a^2/c^2*(c*x^2+b*x+a)^(1/2)*b-1/48*B*a/c^2*(c*x^
2+b*x+a)^(3/2)*b-15/256*B*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))*a-1/24*B*a/c*x*(c*x^2+b*x+a)^(3/2)+9/64*B*b^2/c^(5/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-7/256*B*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x+1/1
6*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a+7/96*B*b^2/c^2*x*(c*x^2+b*x+a)^(3/2)+1/8*
B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*x*a-3/16*A*b/c*(c*x^2+b*x+a)^(1/2)*x*a+7/192*
B*b^3/c^3*(c*x^2+b*x+a)^(3/2)+1/6*B*x*(c*x^2+b*x+a)^(5/2)/c-7/60*B*b/c^2*(c
*x^2+b*x+a)^(5/2)-7/512*B*b^5/c^4*(c*x^2+b*x+a)^(1/2)+7/1024*B*b^6/c^(9/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/16*B*a^3/c^(3/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/16*A*b^2/c^2*(c*x^2+b*x+a)^(3/2)+3/128*A*
b^4/c^3*(c*x^2+b*x+a)^(1/2)-3/256*A*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))-3/32*A*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a+3/32*A*b^3/c^(5/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+1/5*A*(c*x^2+b*x+a)^(5/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int x\,(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(x*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.926 $\int (A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=158

$$-\frac{3\left(b^2-4ac\right)^2(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{7/2}}+\frac{3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}(bB-2Ac)}{128c^3}-(b+2cx)$$

```
[Out] -1/16*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^2+1/5*B*(c*x^2+b*x+a)^(5
/2)/c-3/256*(-4*a*c+b^2)^2*(-2*A*c+B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^
2+b*x+a)^(1/2))/c^(7/2)+3/128*(-4*a*c+b^2)*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*
x+a)^(1/2)/c^3
```

Rubi [A] time = 0.07, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$\frac{3\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}(bB-2Ac)}{128c^3}-\frac{3\left(b^2-4ac\right)^2(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{256c^{7/2}}-(b+2cx)($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(128*c^3)
 - ((b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(16*c^2) + (B*(a + b
*x + c*x^2)^(5/2))/(5*c) - (3*(b^2 - 4*a*c)^2*(b*B - 2*A*c)*ArcTanh[(b + 2*
c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^{3/2}dx = \frac{B\left(a+bx+cx^2\right)^{5/2}}{5c} + \frac{(-bB+2Ac)\int\left(a+bx+cx^2\right)^{3/2}dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{16c^2} + \frac{B\left(a+bx+cx^2\right)^{5/2}}{5c} + \frac{\left(3\left(b^2-4ac\right)}{}$$

$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\,(a+b}{16c^2}$$

$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\,(a+b}{16c^2}$$

$$= \frac{3\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{128c^3} - \frac{(bB-2Ac)(b+2cx)\,(a+b}{16c^2}$$

Mathematica [A] time = 0.28, size = 144, normalized size = 0.91

$$\frac{5(2Ac-bB)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\right)}{128c^{5/2}}+\frac{(b+2cx)(a+x(b+cx))^{3/2}}{8c}\right)+2B(a+x(b+cx))^{5/2}}{10c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(a + x*(b + c*x))^(5/2) + 5*(-(b*B) + 2*A*c)*(((b + 2*c*x)*(a + x*(b +
 c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(
b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])]))/(128*c^(5/2))))/(10*c)
```

fricas [A] time = 1.22, size = 515, normalized size = 3.26

$$\left[\frac{15\left(Bb^5-32\,Aa^2c^3+16\left(Ba^2b+Aab^2\right)c^2-2\left(4\,Bab^3+Ab^4\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2560*(15*(B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b + A*a*b^2)*c^2 - 2*(4*B*a*b
^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x
+ a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(128*B*c^5*x^4 + 15*B*b^4*c + 8*(16*B
*a^2 + 25*A*a*b)*c^3 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 - 10*(10*B*a*b^2 + 3*
A*b^3)*c^2 + 8*(B*b^2*c^3 + 2*(16*B*a + 15*A*b)*c^4)*x^2 - 2*(5*B*b^3*c^2 -
 200*A*a*c^4 - 2*(14*B*a*b + 5*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1
/1280*(15*(B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b + A*a*b^2)*c^2 - 2*(4*B*a*b^3
 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)
/(c^2*x^2 + b*c*x + a*c)) + 2*(128*B*c^5*x^4 + 15*B*b^4*c + 8*(16*B*a^2 + 2
5*A*a*b)*c^3 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 - 10*(10*B*a*b^2 + 3*A*b^3)*c
^2 + 8*(B*b^2*c^3 + 2*(16*B*a + 15*A*b)*c^4)*x^2 - 2*(5*B*b^3*c^2 - 200*A*a
*c^4 - 2*(14*B*a*b + 5*A*b^2)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.23, size = 251, normalized size = 1.59

$$\frac{1}{640}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\,Bcx+\frac{11\,Bbc^4+10\,Ac^5}{c^4}\right)x+\frac{Bb^2c^3+32\,Bac^4+30\,Abc^4}{c^4}\right)x-\frac{5\,Bb^3c^2-28\,Babc^3-}{c}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4
)*x + (B*b^2*c^3 + 32*B*a*c^4 + 30*A*b*c^4)/c^4)*x - (5*B*b^3*c^2 - 28*B*a*
b*c^3 - 10*A*b^2*c^3 - 200*A*a*c^4)/c^4)*x + (15*B*b^4*c - 100*B*a*b^2*c^2
- 30*A*b^3*c^2 + 128*B*a^2*c^3 + 200*A*a*b*c^3)/c^4) + 3/256*(B*b^5 - 8*B*a
*b^3*c - 2*A*b^4*c + 16*B*a^2*b*c^2 + 16*A*a*b^2*c^2 - 32*A*a^2*c^3)*log(ab
s(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.05, size = 469, normalized size = 2.97

$$\frac{3A\,a^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8\sqrt{c}}-\frac{3Aa\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16c^{\frac{3}{2}}}+\frac{3A\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{128c^{\frac{5}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 1/5*B*(c*x^2+b*x+a)^(5/2)/c-1/8*B*b/c*x*(c*x^2+b*x+a)^(3/2)-1/16*B*b^2/c^2*
(c*x^2+b*x+a)^(3/2)-3/16*B*b/c*(c*x^2+b*x+a)^(1/2)*x*a+3/64*B*b^3/c^2*(c*x^
2+b*x+a)^(1/2)*x-3/32*B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a+3/128*B*b^4/c^3*(c*x^
2+b*x+a)^(1/2)-3/16*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
*a^2+3/32*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-3/256
*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/4*A*x*(c*x^2+b
*x+a)^(3/2)+1/8*A/c*(c*x^2+b*x+a)^(3/2)*b+3/8*A*(c*x^2+b*x+a)^(1/2)*x*a-3/3
2*A/c*(c*x^2+b*x+a)^(1/2)*x*b^2+3/16*A/c*(c*x^2+b*x+a)^(1/2)*b*a-3/64*A/c^2
*(c*x^2+b*x+a)^(1/2)*b^3+3/8*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*a^2-3/16*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^2*
a+3/128*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**B**] time = 1.61, size = 305, normalized size = 1.93

$$\frac{B\left(c\,x^2+b\,x+a\right)^{5/2}}{5\,c}+\frac{A\left(\left(\frac{x}{2}+\frac{b}{4\,c}\right)\sqrt{c\,x^2+b\,x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}\right)\left(3\,a\,c-\frac{3\,b^2}{4}\right)}{4\,c}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(5/2))/(5*c) + (A*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(
1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(
2*c^(3/2)))*(3*a*c - (3*b^2)/4))/(4*c) - (B*b*((3*a*(log((b/2 + c*x)/c^(1/2
) + (a + b*x + c*x^2)^(1/2))*(a/(2*c^(1/2)) - b^2/(8*c^(3/2))) + ((b + 2*c*
x)*(a + b*x + c*x^2)^(1/2))/(4*c)))/4 + (x*(a + b*x + c*x^2)^(3/2))/4 + (b*
(a + b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(log((b/2 + c*x)/c^(1/2) + (a + b*x
 + c*x^2)^(1/2))*(a/(2*c^(1/2)) - b^2/(8*c^(3/2))) + ((b + 2*c*x)*(a + b*x
+ c*x^2)^(1/2))/(4*c)))/(16*c)))/(2*c) + (A*(b/2 + c*x)*(a + b*x + c*x^2)^(
3/2))/(4*c)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.927 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x}\,dx$

Optimal. Leaf size=218

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)+\frac{\left(\left(b^2-4ac\right)\left(-12aBc-8Abc+3b^2B\right)+64aAbc^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+c}}\right.}{128c^{5/2}}$$

```
[Out] 1/24*(6*B*c*x+8*A*c+3*B*b)*(c*x^2+b*x+a)^(3/2)/c-a^(3/2)*A*arctanh(1/2*(b*x
+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))+1/128*(64*a*A*b*c^2+(-4*a*c+b^2)*(-8*A*b
*c-12*B*a*c+3*B*b^2))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^
(5/2)-1/64*(3*b^3*B-8*A*b^2*c-12*a*b*B*c-64*a*A*c^2+2*c*(-8*A*b*c-12*B*a*c+
3*B*b^2)*x)*(c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.25, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {814, 843, 621, 206, 724}

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{\sqrt{a+bx+cx^2}\left(2cx\left(-12aBc-8Abc+3b^2B\right)-64aAc^2-12abBc-8\right.}{64c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] -((3*b^3*B - 8*A*b^2*c - 12*a*b*B*c - 64*a*A*c^2 + 2*c*(3*b^2*B - 8*A*b*c -
 12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(64*c^2) + ((3*b*B + 8*A*c + 6*B*c*x)*
(a + b*x + c*x^2)^(3/2))/(24*c) - a^(3/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*
Sqrt[a + b*x + c*x^2])] + ((64*a*A*b*c^2 + (b^2 - 4*a*c)*(3*b^2*B - 8*A*b*c
 - 12*a*B*c))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(128*
c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x}\,dx &= \frac{(3bB+8Ac+6Bcx)\left(a+bx+cx^2\right)^{3/2}}{24c}-\frac{\int \frac{\left(-8aAc-\frac{1}{2}\left(8Abc-3B\left(b^2-4ac\right)\right)x\right)\sqrt{a+bx+cx^2}}{x}}{8c}\\ &= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+bx}}{64c^2}\\ &= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+bx}}{64c^2}\\ &= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+bx}}{64c^2}\\ &= -\frac{\left(3b^3B-8Ab^2c-12abBc-64aAc^2+2c\left(3b^2B-8Abc-12aBc\right)x\right)\sqrt{a+bx}}{64c^2}\end{aligned}$$

Mathematica [**A**] time = 0.34, size = 206, normalized size = 0.94

$$a^{3/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\left(48a^2Bc^2+96aAbc^2-24ab^2Bc-8Ab^3c+3b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right.}{128c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-9*b^3*B + 6*b^2*c*(4*A + B*x) + 8*c^2*(32*a*A + 15
*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 4*b*c*(15*a*B + 2*c*x*(14*A + 9*B*x))))/(
192*c^2) - a^(3/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]
 + ((3*b^4*B - 8*A*b^3*c - 24*a*b^2*B*c + 96*a*A*b*c^2 + 48*a^2*B*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(128*c^(5/2))
```

fricas [**A**] time = 12.71, size = 1023, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="fricas")
```

```
[Out] [1/768*(384*A*a^(3/2)*c^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 3*(3*B*b^4 + 48*(B*a^2 + 2*A
*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 -
 9*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*
c^4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x +
a))/c^3, 1/384*(192*A*a^(3/2)*c^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 3*(3*B*b^4 + 48*(B*a
^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2
 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3
 - 9*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*
A*c^4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x
+ a))/c^3, 1/768*(768*A*sqrt(-a)*a*c^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*
x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(3*B*b^4 + 48*(B*a^2 + 2*A*a
*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 - 9
*B*b^3*c + 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*c^
4)*x^2 + 2*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^3, 1/384*(384*A*sqrt(-a)*a*c^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(3*B*b^4 + 48*(B*a^2 + 2*A*a*b)*
c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2
*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*B*c^4*x^3 - 9*B*b^3*c +
 256*A*a*c^3 + 12*(5*B*a*b + 2*A*b^2)*c^2 + 8*(9*B*b*c^3 + 8*A*c^4)*x^2 + 2
*(3*B*b^2*c^2 + 4*(15*B*a + 14*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [B] time = 0.05, size = 390, normalized size = 1.79

$$-A\,a^{\frac{3}{2}}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)+\frac{3Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{4\sqrt{c}}-\frac{A\,b^{3}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+\right.}}{16c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x)
```

```
[Out] 1/4*B*x*(c*x^2+b*x+a)^(3/2)+1/8*B/c*(c*x^2+b*x+a)^(3/2)*b+3/8*B*(c*x^2+b*x+
a)^(1/2)*x*a-3/32*B/c*(c*x^2+b*x+a)^(1/2)*x*b^2+3/16*B/c*(c*x^2+b*x+a)^(1/2
)*b*a-3/64*B/c^2*(c*x^2+b*x+a)^(1/2)*b^3+3/8*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*a^2-3/16*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*b^2*a+3/128*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*b^4+1/3*A*(c*x^2+b*x+a)^(3/2)+1/4*A*b*(c*x^2+b*x+a)^(1/2)*x+1/8*A/c*(c*x
^2+b*x+a)^(1/2)*b^2+3/4*A*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a-1/16*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3+A*a*(
c*x^2+b*x+a)^(1/2)-A*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x, x)
```

3.928 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^2}\,dx$

Optimal. Leaf size=193

$$\frac{\sqrt{a+bx+cx^2}\,\left(8aBc+2cx(6Ac+bB)+18Abc+b^2B\right)}{8c}-\frac{\left(-24aAc^2-12abBc-6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2}{2\sqrt{c}\,\sqrt{a+}}\right.}{16c^{3/2}}$$

```
[Out] -1/3*(-B*x+3*A)*(c*x^2+b*x+a)^(3/2)/x-1/16*(-24*A*a*c^2-6*A*b^2*c-12*B*a*b*
c+B*b^3)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)-1/2*(3*
A*b+2*B*a)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))*a^(1/2)+1/8*(
b^2*B+18*A*b*c+8*a*B*c+2*c*(6*A*c+B*b)*x)*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.18, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{\left(-24aAc^2-12abBc-6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{16c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,\left(8aBc+2cx(6Ac+bB)+18Ab\right.}{8c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((b^2*B + 18*A*b*c + 8*a*B*c + 2*c*(b*B + 6*A*c)*x)*Sqrt[a + b*x + c*x^2])/
(8*c) - ((3*A - B*x)*(a + b*x + c*x^2)^(3/2))/(3*x) - (Sqrt[a]*(3*A*b + 2*a
*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/2 - ((b^3*B - 6
*A*b^2*c - 12*a*b*B*c - 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
 b*x + c*x^2])])/(16*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] && !RationalQ[m])) && NeQ[m, -1] && !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] || !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) && !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^2}\,dx = -\frac{(3A-Bx)\left(a+bx+cx^2\right)^{3/2}}{3x} - \frac{1}{2}\int \frac{(-3Ab-2aB-(bB+6Ac)x)\sqrt{a+bx+}}{x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+bx\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+bx\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+bx\right.}{3x}$$

$$= \frac{\left(b^2B+18Abc+8aBc+2c(bB+6Ac)x\right)\sqrt{a+bx+cx^2}}{8c} - \frac{(3A-Bx)\left(a+bx\right.}{3x}$$

Mathematica [A] time = 0.32, size = 183, normalized size = 0.95

$$\frac{1}{48}\left(\frac{2\sqrt{a+x(b+cx)}\left(x\left(2bc(15A+7Bx)+4c^2x(3A+2Bx)+3b^2B\right)-8ac(3A-4Bx)\right)}{cx}+\frac{3\left(24aAc^2+12abBc+\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-8*a*c*(3*A - 4*B*x) + x*(3*b^2*B + 4*c^2*x*(3*A
 + 2*B*x) + 2*b*c*(15*A + 7*B*x))))/(c*x) - 24*Sqrt[a]*(3*A*b + 2*a*B)*ArcT
anh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + (3*(-(b^3*B) + 6*A*b^2
*c + 12*a*b*B*c + 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b
+ c*x)])])/c^(3/2))/48
```

fricas [A] time = 5.66, size = 917, normalized size = 4.75

$$\left[\frac{24\,(2\,Ba+3\,Ab)\sqrt{a}\,c^2x\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-3\left(Bb^3-24\,Aac^2-6\left(2\,Bab+Ab^2\right)\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/96*(24*(2*B*a + 3*A*b)*sqrt(a)*c^2*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 -
 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 3*(B*b^3 - 24*
A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 -
 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(8*B*c^3*x^3 - 24
*A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c
^2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x), 1/48*(12*(2*B*a + 3*A*b)*sqrt(a)*c^2
*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*
sqrt(a) + 8*a^2)/x^2) + 3*(B*b^3 - 24*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt
(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) + 2*(8*B*c^3*x^3 - 24*A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3
*B*b^2*c + 2*(16*B*a + 15*A*b)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x), 1/96
*(48*(2*B*a + 3*A*b)*sqrt(-a)*c^2*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(B*b^3 - 24*A*a*c^2 - 6*(2*B*a*
b + A*b^2)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(8*B*c^3*x^3 - 24*A*a*c^2 + 2*(7*B*b
*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c^2)*x)*sqrt(c*x^2 +
 b*x + a))/(c^2*x), 1/48*(24*(2*B*a + 3*A*b)*sqrt(-a)*c^2*x*arctan(1/2*sqrt
(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(B*b^3
- 24*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*x^3 - 24*
A*a*c^2 + 2*(7*B*b*c^2 + 6*A*c^3)*x^2 + (3*B*b^2*c + 2*(16*B*a + 15*A*b)*c^
2)*x)*sqrt(c*x^2 + b*x + a))/(c^2*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,0,0]%%%}+%%%{%%{[-2,0]:[1,0,
%%%{-1,[1]%%%}]%%},[2,0,1,0,0]%%%}+%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,
0,2,0,0]%%%} / %%%{%%%{1,[1]%%%},[4,0,0,0,0]%%%}+%%%{%%%{-2,[1]%%%},[2,0,1,
0,0]%%%}+%%%{%%%{1,[1]%%%},[0,0,2,0,0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 365, normalized size = 1.89

$$\frac{3Aa\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2}-\frac{3A\sqrt{a}\,b\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2}+\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8\sqrt{c}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x)
```

```
[Out] -A/a/x*(c*x^2+b*x+a)^(5/2)+A/a*b*(c*x^2+b*x+a)^(3/2)+3/8*A*b^2/c^(1/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+9/4*A*b*(c*x^2+b*x+a)^(1/2)-3/2*A*a
^(1/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c/a*(c*x^2+b*x+a)^
(3/2)*x+3/2*A*c*(c*x^2+b*x+a)^(1/2)*x+3/2*A*c^(1/2)*a*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))+1/3*B*(c*x^2+b*x+a)^(3/2)+1/4*B*b*(c*x^2+b*x+a)^(1/2
)*x+1/8*B/c*(c*x^2+b*x+a)^(1/2)*b^2+3/4*B*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))*a-1/16*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))*b^3+B*a*(c*x^2+b*x+a)^(1/2)-B*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1
/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}{x^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**2, x)
```

3.929 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^3}\,dx$

Optimal. Leaf size=179

$$-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{a}}+\frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{c}}-\frac{(A-Bx)}{}$$

```
[Out] -1/2*(-B*x+A)*(c*x^2+b*x+a)^(3/2)/x^2-3/8*(4*a*b*B+A*(4*a*c+b^2))*arctanh(1
/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(1/2)+3/8*(4*A*b*c+4*B*a*c+B*b^
2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(1/2)-3/4*(A*b+2*a*
B-(2*A*c+B*b)*x)*(c*x^2+b*x+a)^(1/2)/x
```

Rubi [A] time = 0.17, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = $\{812, 843, 621, 206, 724\}$

$$-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{a}}+\frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{8\sqrt{c}}-\frac{(A-Bx)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] (-3*(A*b + 2*a*B - (b*B + 2*A*c)*x)*Sqrt[a + b*x + c*x^2])/(4*x) - ((A - B*
x)*(a + b*x + c*x^2)^(3/2))/(2*x^2) - (3*(4*a*b*B + A*(b^2 + 4*a*c))*ArcTan
h[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8*Sqrt[a]) + (3*(b^2*B +
 4*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])
/(8*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^3}\,dx = -\frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} - \frac{3}{8}\int \frac{(-2(Ab+2aB)-2(bB+2Ac)x)\sqrt{a+bx}}{x^2}$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} +$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} +$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} +$$

$$= -\frac{3(Ab+2aB-(bB+2Ac)x)\sqrt{a+bx+cx^2}}{4x} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{3/2}}{2x^2} -$$

Mathematica [A] time = 0.44, size = 162, normalized size = 0.91

$$\frac{1}{8}\left(-\frac{3\left(A\left(4ac+b^2\right)+4abB\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{\sqrt{a}} + \frac{3\left(4aBc+4Abc+b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}} + 2\sqrt{a+}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-2*a*(A + 2*B*x) + x*(B*x*(5*b + 2*c*x) + A*(-5*
b + 4*c*x))))/x^2 - (3*(4*a*b*B + A*(b^2 + 4*a*c))*ArcTanh[(2*a + b*x)/(2*S
qrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a] + (3*(b^2*B + 4*A*b*c + 4*a*B*c)*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c])/8
```

fricas [A] time = 4.81, size = 921, normalized size = 5.15

$$\left[\frac{3\left(Bab^2+4\left(Ba^2+Aab\right)c\right)\sqrt{c}\,x^2\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)+3\left(4\,Aac^2+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="fricas")
```

```
[Out] [1/16*(3*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*sqrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 3*(4*A*a*
c^2 + (4*B*a*b + A*b^2)*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 -
4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*B*a*c^2*x^
3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt
(c*x^2 + b*x + a))/(a*c*x^2), -1/16*(6*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*sqrt
(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b
*c*x + a*c)) - 3*(4*A*a*c^2 + (4*B*a*b + A*b^2)*c)*sqrt(a)*x^2*log(-(8*a*b*
x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2
)/x^2) - 4*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*c*x + (5*B*a*b*
c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2), 1/16*(6*(4*A*a*c^2 +
(4*B*a*b + A*b^2)*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 3*(B*a*b^2 + 4*(B*a^2 + A*a*b)*c)*s
qrt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(c) - 4*a*c) + 4*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5*A*a*b)*
c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2), 1/8*(3
*(4*A*a*c^2 + (4*B*a*b + A*b^2)*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 3*(B*a*b^2 + 4*(B*a^2
 + A*a*b)*c)*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt
(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(2*B*a*c^2*x^3 - 2*A*a^2*c - (4*B*a^2 + 5
*A*a*b)*c*x + (5*B*a*b*c + 4*A*a*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^2)
]
```

giac [B] time = 0.38, size = 412, normalized size = 2.30

$$\frac{1}{4}\left(2\,Bcx+\frac{5\,Bbc+4\,Ac^2}{c}\right)\sqrt{cx^2+bx+a}+\frac{3\left(4\,Bab+Ab^2+4\,Aac\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\sqrt{-a}}-\frac{3\left(Bb^2+4\,Ba\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c*x + (5*B*b*c + 4*A*c^2)/c)*sqrt(c*x^2 + b*x + a) + 3/4*(4*B*a*b
+ A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/sq
rt(-a) - 3/8*(B*b^2 + 4*B*a*c + 4*A*b*c)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) + b))/sqrt(c) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^3*B*a*b + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*
B*a^2*sqrt(c) + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b - 3*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*
sqrt(c) - 8*A*a^2*b*sqrt(c))/((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2
```

maple [B] time = 0.06, size = 463, normalized size = 2.59

$$-\frac{3A\sqrt{a}\;c\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\;\sqrt{a}}{x}\right)}{2}-\frac{3A\,b^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\;\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3Ab\sqrt{c}\;\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2}+\frac{3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x)
```

```
[Out] -1/2*A/a/x^2*(c*x^2+b*x+a)^(5/2)-1/4*A/a^2*b/x*(c*x^2+b*x+a)^(5/2)+1/4*A/a^
2*b^2*(c*x^2+b*x+a)^(3/2)+3/4*A/a*b^2*(c*x^2+b*x+a)^(1/2)-3/8*A/a^(1/2)*b^2
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/4*A/a^2*b*c*(c*x^2+b*x+a)^
(3/2)*x+3/4*A/a*b*c*(c*x^2+b*x+a)^(1/2)*x+3/2*A*b*c^(1/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*A*c/a*(c*x^2+b*x+a)^(3/2)+3/2*A*c*(c*x^2+b*x
+a)^(1/2)-3/2*A*c*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a
/x*(c*x^2+b*x+a)^(5/2)+B/a*b*(c*x^2+b*x+a)^(3/2)+3/8*B*b^2/c^(1/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+9/4*B*b*(c*x^2+b*x+a)^(1/2)-3/2*B*a^(1/
2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c/a*(c*x^2+b*x+a)^(3/2
)*x+3/2*B*c*(c*x^2+b*x+a)^(1/2)*x+3/2*B*c^(1/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^3, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**3, x)
```

3.930 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^4}\,dx$

Optimal. Leaf size=206

$$-\frac{\left(6aB\left(4ac+b^2\right)-A\left(b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,\big(2cx(6aB+Ab)-8aAc-6abB+}{8ax}$$

```
[Out] -1/12*(4*a*A+3*(A*b+2*B*a)*x)*(c*x^2+b*x+a)^(3/2)/a/x^3-1/16*(6*a*B*(4*a*c+
b^2)-A*(-12*a*b*c+b^3))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/
a^(3/2)+1/2*(2*A*c+3*B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2)
)*c^(1/2)+1/8*(A*b^2-6*a*b*B-8*a*A*c+2*(A*b+6*B*a)*c*x)*(c*x^2+b*x+a)^(1/2)
/a/x
```

Rubi [A] time = 0.22, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = $\{810, 812, 843, 621, 206, 724\}$

$$-\frac{\left(6aB\left(4ac+b^2\right)-A\left(b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,\big(2cx(6aB+Ab)-8aAc-6abB+}{8ax}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] ((A*b^2 - 6*a*b*B - 8*a*A*c + 2*(A*b + 6*a*B)*c*x)*Sqrt[a + b*x + c*x^2])/(
8*a*x) - ((4*a*A + 3*(A*b + 2*a*B)*x)*(a + b*x + c*x^2)^(3/2))/(12*a*x^3) -
 ((6*a*B*(b^2 + 4*a*c) - A*(b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]
*Sqrt[a + b*x + c*x^2])])/(16*a^(3/2)) + (Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^4}\,dx = -\frac{(4aA+3(Ab+2aB)x)\left(a+bx+cx^2\right)^{3/2}}{12ax^3} - \frac{\int \frac{\left(\frac{1}{2}\left(-6abB+A\left(b^2-8ac\right)\right)-(Ab+6aB)cx\right)\surd}{x^2}}{4a}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+2aB}{12}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+2aB}{12}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+2aB}{12}$$

$$= \frac{\left(Ab^2-6abB-8aAc+2(Ab+6aB)cx\right)\sqrt{a+bx+cx^2}}{8ax} - \frac{(4aA+3(Ab+2aB}{12}$$

Mathematica [A]   time = 0.50, size = 182, normalized size = 0.88

$$\frac{1}{48}\left(\frac{3\left(A\left(b^3-12abc\right)-6aB\left(4ac+b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{3/2}} - \frac{2\sqrt{a+x(b+cx)}\left(4a^2(2A+3Bx)+2ax(A(7b}{ax^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x]
```

```
[Out] ((-2*Sqrt[a + x*(b + c*x)]*(3*A*b^2*x^2 + 4*a^2*(2*A + 3*B*x) + 2*a*x*(3*B*
x*(5*b - 4*c*x) + A*(7*b + 16*c*x))))/(a*x^3) + (3*(-6*a*B*(b^2 + 4*a*c) +
A*(b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])
/a^(3/2) + 24*Sqrt[c]*(3*b*B + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + x*(b + c*x)])])/48
```

fricas [A] time = 4.52, size = 953, normalized size = 4.63

$$\left[\frac{24\left(3\,Ba^{2}b+2\,Aa^{2}c\right)\sqrt{c}\,x^{3}\log\left(-8\,c^{2}x^{2}-8\,bcx-b^{2}-4\,\sqrt{cx^{2}+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)+3\left(6\,Bab^{2}-Ab\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(24*(3*B*a^2*b + 2*A*a^2*c)*sqrt(c)*x^3*log(-8*c^2*x^2 - 8*b*c*x - b^
2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 3*(6*B*a*b^2 - A
*b^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^
2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(24*B*a^2
*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3 +
 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^3), -1/96*(48*(3*B*a^2*b + 2*A
*a^2*c)*sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/
(c^2*x^2 + b*c*x + a*c)) - 3*(6*B*a*b^2 - A*b^3 + 12*(2*B*a^2 + A*a*b)*c)*s
qrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x
 + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(24*B*a^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b +
 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x
+ a))/(a^2*x^3), 1/48*(3*(6*B*a*b^2 - A*b^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(
-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*
b*x + a^2)) + 12*(3*B*a^2*b + 2*A*a^2*c)*sqrt(c)*x^3*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 2*(24*B*a
^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 + 32*A*a^2*c)*x^2 - 2*(6*B*a^3
 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^3), 1/48*(3*(6*B*a*b^2 - A*b
^3 + 12*(2*B*a^2 + A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 24*(3*B*a^2*b + 2*A*a^2*c)*
sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
 + b*c*x + a*c)) + 2*(24*B*a^2*c*x^3 - 8*A*a^3 - (30*B*a^2*b + 3*A*a*b^2 +
32*A*a^2*c)*x^2 - 2*(6*B*a^3 + 7*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^
3)]
```

giac [B] time = 0.44, size = 630, normalized size = 3.06

$$\sqrt{cx^{2}+bx+a}\,Bc-\frac{\left(3\,Bbc^{\frac{3}{2}}+2\,Ac^{\frac{5}{2}}\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)c-b\sqrt{c}\right|\right)}{2\,c}+\frac{\left(6\,Bab^{2}-Ab^{3}+24\,Ba^{2}c+1\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B*c - 1/2*(3*B*b*c^(3/2) + 2*A*c^(5/2))*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c)))/c + 1/8*(6*B*a*b^2 - A*b^
3 + 24*B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sq
rt(-a))/(sqrt(-a)*a) + 1/24*(30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a*b
^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3 + 24*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a^2*c + 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b
*c + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*sqrt(c) + 48*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a*b^2*sqrt(c) + 96*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^4*A*a^2*c^(3/2) - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^
2*b^2 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 - 144*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c) - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*A*a^3*c^(3/2) + 18*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 -
 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3 - 24*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*B*a^4*c + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c +
 48*B*a^4*b*sqrt(c) + 64*A*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2 - a)^3*a)
```

maple [B] time = 0.06, size = 635, normalized size = 3.08

$$-\frac{3Abc\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{4\sqrt{a}}+\frac{A\,b^3\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}+A\,c^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)-\frac{3B\sqrt{a}\,c\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x)
```

```
[Out] 5/4*A/a*b*c*(c*x^2+b*x+a)^(1/2)-3/4*A/a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-2/3*A*c/a^2/x*(c*x^2+b*x+a)^(5/2)-1/8*A/a^2*b^2*c*(c*x
^2+b*x+a)^(1/2)*x-1/24*A/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)*x+3/4*B/a*b*c*(c*x^2
+b*x+a)^(1/2)*x+1/4*B/a^2*b*c*(c*x^2+b*x+a)^(3/2)*x-1/4*B/a^2*b/x*(c*x^2+b*
x+a)^(5/2)+1/12*A/a^2*b/x^2*(c*x^2+b*x+a)^(5/2)+3/2*B*b*c^(1/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/2*B*c/a*(c*x^2+b*x+a)^(3/2)-3/2*B*c*a^(1
/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/3*A/a/x^3*(c*x^2+b*x+a)
^(5/2)-1/24*A/a^3*b^3*(c*x^2+b*x+a)^(3/2)-1/8*A/a^2*b^3*(c*x^2+b*x+a)^(1/2)
+1/16*A/a^(3/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+A*c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/2*B*c*(c*x^2+b*x+a)^(1/2)-1/
2*B/a/x^2*(c*x^2+b*x+a)^(5/2)+1/4*B/a^2*b^2*(c*x^2+b*x+a)^(3/2)+3/4*B/a*b^2
*(c*x^2+b*x+a)^(1/2)-3/8*B/a^(1/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+1/24*A/a^3*b^2/x*(c*x^2+b*x+a)^(5/2)+7/12*A/a^2*b*c*(c*x^2+b*x+a)
^(3/2)+2/3*A*c^2/a^2*(c*x^2+b*x+a)^(3/2)*x+A*c^2/a*(c*x^2+b*x+a)^(1/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}{x^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**4, x)
```

3.931 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx$

Optimal. Leaf size=217

$$\frac{\left(8abB\left(b^2-12ac\right)-3A\left(b^2-4ac\right)^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{5/2}}-\frac{\sqrt{a+bx+cx^2}\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+x\left(8a\right.\right.}{64a^2x^2}$$

```
[Out] -1/24*(6*a*A+(3*A*b+8*B*a)*x)*(c*x^2+b*x+a)^(3/2)/a/x^4+1/128*(8*a*b*B*(-12
*a*c+b^2)-3*A*(-4*a*c+b^2)^2)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(
1/2))/a^(5/2)+B*c^(3/2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))-
1/64*(2*a*(8*a*b*B-3*A*(-4*a*c+b^2))+(8*a*B*(8*a*c+b^2)-3*A*(-4*a*b*c+b^3))
*x)*(c*x^2+b*x+a)^(1/2)/a^2/x^2
```

Rubi [A] time = 0.25, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {810, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\left(x\left(8aB\left(8ac+b^2\right)-3A\left(b^3-4abc\right)\right)+2a\left(8abB-3A\left(b^2-4ac\right)\right)\right)}{64a^2x^2}+\frac{\left(8abB\left(b^2-12ac\right)-3A\left(b^{\cdot}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -((2*a*(8*a*b*B - 3*A*(b^2 - 4*a*c)) + (8*a*B*(b^2 + 8*a*c) - 3*A*(b^3 - 4*
a*b*c))*x)*Sqrt[a + b*x + c*x^2])/(64*a^2*x^2) - ((6*a*A + (3*A*b + 8*a*B)*
x)*(a + b*x + c*x^2)^(3/2))/(24*a*x^4) + ((8*a*b*B*(b^2 - 12*a*c) - 3*A*(b^
2 - 4*a*c)^2)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(128*
a^(5/2)) + B*c^(3/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx = -\frac{(6aA+(3Ab+8aB)x)\left(a+bx+cx^2\right)^{3/2}}{24ax^4} - \frac{\int \frac{\left(\frac{1}{2}\left(-8abB+3A\left(b^2-4ac\right)\right)-8aBcx\right)\sqrt{}}{x^3}}{8a}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

$$= -\frac{\left(2a\left(8abB-3A\left(b^2-4ac\right)\right)+\left(8aB\left(b^2+8ac\right)-3A\left(b^3-4abc\right)\right)x\right)\sqrt{a+}}{64a^2x^2}$$

Mathematica [A] time = 0.63, size = 202, normalized size = 0.93

$$-\frac{\left(3A\left(b^2-4ac\right)^2+8abB\left(12ac-b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{128a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\left(16a^3(3A+4Bx)+8a^2x(3A(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x]
```

```
[Out] -1/192*(Sqrt[a + x*(b + c*x)]*(-9*A*b^3*x^3 + 16*a^3*(3*A + 4*B*x) + 6*a*b*
x^2*(4*b*B*x + A*(b + 10*c*x)) + 8*a^2*x*(3*A*(3*b + 5*c*x) + 2*B*x*(7*b +
16*c*x))))/(a^2*x^4) - ((3*A*(b^2 - 4*a*c)^2 + 8*a*b*B*(-b^2 + 12*a*c))*Arc
Tanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(128*a^(5/2)) + B*c^(3
/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]
```

fricas [A] time = 6.36, size = 1083, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/768*(384*B*a^3*c^(3/2)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^
2*c^2 - 24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(48*
A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3 + 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(5
6*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt
(c*x^2 + b*x + a))/(a^3*x^4), -1/768*(768*B*a^3*sqrt(-c)*c*x^4*arctan(1/2*s
qrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 3*(8*B
*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(a)*x^4*l
og(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt
(a) + 8*a^2)/x^2) + 4*(48*A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3 + 4*(64*B*a^3 +
 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3*c)*x^2 + 8*(8*
B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^4), 1/384*(192*B*a^3*c^
(3/2)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) - 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*
b - A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(48*A*a^4 + (24*B*a^2*b^2 - 9*A*a*b^3
+ 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^2 + 60*A*a^3
*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^4), -1/3
84*(384*B*a^3*sqrt(-c)*c*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*s
qrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 3*(8*B*a*b^3 - 3*A*b^4 - 48*A*a^2*c^2 -
24*(4*B*a^2*b - A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(
b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(48*A*a^4 + (24*B*a^2*b^2
- 9*A*a*b^3 + 4*(64*B*a^3 + 15*A*a^2*b)*c)*x^3 + 2*(56*B*a^3*b + 3*A*a^2*b^
2 + 60*A*a^3*c)*x^2 + 8*(8*B*a^4 + 9*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^
3*x^4)]
```

giac [B] time = 0.59, size = 1019, normalized size = 4.70

$$-Bc^{\frac{3}{2}}\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)c-b\sqrt{c}\right|\right)-\frac{\left(8\,Bab^3-3\,Ab^4-96\,Ba^2bc+24\,Aab^2c-48\,Aa^2c^2\right)\arctan\Bigl(-}{64\,\sqrt{-a}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="giac")
```

```
[Out] -B*c^(3/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) -
 1/64*(8*B*a*b^3 - 3*A*b^4 - 96*B*a^2*b*c + 24*A*a*b^2*c - 48*A*a^2*c^2)*ar
ctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/192*
(24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 9*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*A*b^4 + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b*
c + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c + 240*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*A*a^2*c^2 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^6*B*a^2*b^2*sqrt(c) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^3*c^(3
/2) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b*c^(3/2) + 40*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*A*a*b^4 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b*c + 5
04*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^2*c + 144*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^5*A*a^3*c^2 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4
*B*a^3*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*b^3*sq
rt(c) - 1536*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*c^(3/2) - 88*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^3*A*a^2*b^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^4*b*c
+ 504*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c + 144*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*B*a^5*c^(3/2) + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3
/2) + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 - 9*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^5*b*c + 72*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c + 240*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 512*B*a^6*c^(3/2))/(((sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2 - a)^4*a^2)
```

maple [B] time = 0.08, size = 838, normalized size = 3.86

$$-\frac{3A\,c^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{8\sqrt{a}}+\frac{3A\,b^2c\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{3A\,b^4\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{5}{2}}}-3Bbc\ln($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x)
```

```
[Out] 3/64*A/a^3*b^3*c*(c*x^2+b*x+a)^(1/2)*x+1/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)
*x-1/24*B/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)*x-1/8*B/a^2*b^2*c*(c*x^2+b*x+a)^(1/
2)*x-3/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)*x-3/16*A/a^2*b*c^2*(c*x^2+b*x+a)^
(1/2)*x+3/16*A/a^3*b*c/x*(c*x^2+b*x+a)^(5/2)+5/4*B/a*b*c*(c*x^2+b*x+a)^(1/2
)-2/3*B*c/a^2/x*(c*x^2+b*x+a)^(5/2)-1/3*B/a/x^3*(c*x^2+b*x+a)^(5/2)-1/24*B/
a^3*b^3*(c*x^2+b*x+a)^(3/2)-1/8*B/a^2*b^3*(c*x^2+b*x+a)^(1/2)+1/16*B/a^(3/2
)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/128*A/a^(5/2)*b^4*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*A*c^2/a^2*(c*x^2+b*x+a)^(3/2
)+3/8*A*c^2/a*(c*x^2+b*x+a)^(1/2)+1/64*A/a^4*b^4*(c*x^2+b*x+a)^(3/2)+3/64*A
/a^3*b^4*(c*x^2+b*x+a)^(1/2)-1/4*A/a/x^4*(c*x^2+b*x+a)^(5/2)-3/8*A*c^2/a^(1
/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+B*c^(3/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/16*A/a^(3/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-3/4*B/a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+2/3*B*c^2/a^2*(c*x^2+b*x+a)^(3/2)*x+B*c^2/a*(c*x^2+b*x+a)^(1/2)*x
-1/32*A/a^3*b^2/x^2*(c*x^2+b*x+a)^(5/2)-1/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(5/2)
+1/8*A/a^2*b/x^3*(c*x^2+b*x+a)^(5/2)+1/12*B/a^2*b/x^2*(c*x^2+b*x+a)^(5/2)+1
/24*B/a^3*b^2/x*(c*x^2+b*x+a)^(5/2)+7/12*B/a^2*b*c*(c*x^2+b*x+a)^(3/2)-1/64
*A/a^4*b^3/x*(c*x^2+b*x+a)^(5/2)-5/32*A/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)-9/32*
A/a^2*b^2*c*(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**5, x)
```

3.932 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx$

Optimal. Leaf size=170

$$\frac{3\left(b^2-4ac\right)^2(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{7/2}}-\frac{3\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{128a^3x^2}+\frac{(2a+bx)(}{}$$

```
[Out] 1/16*(A*b-2*B*a)*(b*x+2*a)*(c*x^2+b*x+a)^(3/2)/a^2/x^4-1/5*A*(c*x^2+b*x+a)^
(5/2)/a/x^5+3/256*(A*b-2*B*a)*(-4*a*c+b^2)^2*arctanh(1/2*(b*x+2*a)/a^(1/2)/
(c*x^2+b*x+a)^(1/2))/a^(7/2)-3/128*(A*b-2*B*a)*(-4*a*c+b^2)*(b*x+2*a)*(c*x^
2+b*x+a)^(1/2)/a^3/x^2
```

Rubi [A] time = 0.10, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{806, 720, 724, 206\}$

$$-\frac{3\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{128a^3x^2}+\frac{3\left(b^2-4ac\right)^2(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{256a^{7/2}}+\frac{(2a+b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] (-3*(A*b - 2*a*B)*(b^2 - 4*a*c)*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(128*a^3
*x^2) + ((A*b - 2*a*B)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(16*a^2*x^4) -
(A*(a + b*x + c*x^2)^(5/2))/(5*a*x^5) + (3*(A*b - 2*a*B)*(b^2 - 4*a*c)^2*Ar
cTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{5ax^5} - \frac{(Ab-2aB)\int \frac{\left(a+bx+cx^2\right)^{3/2}}{x^5}\,dx}{2a} \\
&= \frac{(Ab-2aB)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{16a^2x^4} - \frac{A\left(a+bx+cx^2\right)^{5/2}}{5ax^5} + \frac{\left(3(Ab-2aB)\right.}{} \\
&= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4} \\
&= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4} \\
&= -\frac{3(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}}{128a^3x^2} + \frac{(Ab-2aB)(2a+bx)\left(a\right.}{16a^2x^4}
\end{aligned}
$$

Mathematica [A] time = 0.26, size = 157, normalized size = 0.92

$$
\frac{(Ab-2aB)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4ac\right)\tan\right.\right.}{256a^{7/2}x^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x]
```

```
[Out] -1/5*(A*(a + x*(b + c*x))^(5/2))/(a*x^5) + ((A*b - 2*a*B)*(16*a^(3/2)*(2*a
+ b*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)
*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*S
qrt[a + x*(b + c*x)])])))/(256*a^(7/2)*x^4)
```

fricas [A] time = 4.51, size = 555, normalized size = 3.26

$$
\left[\frac{15\left(2\,Bab^4-Ab^5+16\left(2\,Ba^3-Aa^2b\right)c^2-8\left(2\,Ba^2b^2-Aab^3\right)c\right)\sqrt{a}\,x^5\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+}{x^2}\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/2560*(15*(2*B*a*b^4 - A*b^5 + 16*(2*B*a^3 - A*a^2*b)*c^2 - 8*(2*B*a^2*b^
2 - A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^
2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(128*A*a^5 - (30*B*a^2*b
^3 - 15*A*a*b^4 - 128*A*a^3*c^2 - 100*(2*B*a^3*b - A*a^2*b^2)*c)*x^4 + 2*(1
0*B*a^3*b^2 - 5*A*a^2*b^3 + 4*(50*B*a^4 + 7*A*a^3*b)*c)*x^3 + 8*(30*B*a^4*b
 + A*a^3*b^2 + 32*A*a^4*c)*x^2 + 16*(10*B*a^5 + 11*A*a^4*b)*x)*sqrt(c*x^2 +
 b*x + a))/(a^4*x^5), 1/1280*(15*(2*B*a*b^4 - A*b^5 + 16*(2*B*a^3 - A*a^2*b
)*c^2 - 8*(2*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b
*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(128*A*a^5 - (30*
B*a^2*b^3 - 15*A*a*b^4 - 128*A*a^3*c^2 - 100*(2*B*a^3*b - A*a^2*b^2)*c)*x^4
```

```
 + 2*(10*B*a^3*b^2 - 5*A*a^2*b^3 + 4*(50*B*a^4 + 7*A*a^3*b)*c)*x^3 + 8*(30*
B*a^4*b + A*a^3*b^2 + 32*A*a^4*c)*x^2 + 16*(10*B*a^5 + 11*A*a^4*b)*x)*sqrt(
c*x^2 + b*x + a))/(a^4*x^5)]
```

giac [B] time = 0.29, size = 1357, normalized size = 7.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="giac")
```

```
[Out] 3/128*(2*B*a*b^4 - A*b^5 - 16*B*a^2*b^2*c + 8*A*a*b^3*c + 32*B*a^3*c^2 - 16
*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-
a)*a^3) - 1/640*(30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 - 15*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^9*B*a^2*b^2*c + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^3*c
- 800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 240*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^8*B*a^3*b*c^(3/2) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*c^(
5/2) - 140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^2*b^4 + 70*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^7*A*a*b^5 - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^7*B*a^3*b^2*c - 560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c +
320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^4*c^2 - 2720*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^7*A*a^3*b*c^2 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^6*B*a^3*b^3*sqrt(c) + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*
c^(3/2) - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^3*b^2*c^(3/2) - 12
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 - 2560*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a^3*b^3*c - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^4*b*c^2 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*b^3*sqrt(c
) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^3*b^4*sqrt(c) - 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2) - 2560*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) - 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*A*a^5*c^(5/2) + 140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^4*b^
4 - 70*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^5 + 1440*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c - 2000*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*A*a^4*b^3*c - 320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*c^2 -
2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b*c^2 + 2560*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) - 2560*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^2*A*a^5*b^2*c^(3/2) - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^5
*b^4 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 + 240*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*A*a^5*b^3*c + 800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2 - 1040*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 - 256*A*a^7*c^(5/2))/(((sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^5*a^3)
```

maple [B] time = 0.09, size = 978, normalized size = 5.75

$$\frac{3Abc^{2}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\;\sqrt{a}}{x}\right)}{16a^{\frac{3}{2}}}-\frac{3A\,b^{3}c\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\;\sqrt{a}}{x}\right)}{32a^{\frac{5}{2}}}+\frac{3A\,b^{5}\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\;\sqrt{a}}{x}\right)}{256a^{\frac{7}{2}}}-3B\,c^{2}\ln\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x)
```

```
[Out] -3/16*B/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)*x-3/16*B/a^2*b*c^2*(c*x^2+b*x+a)^(1/2
)*x+3/32*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*A/a^3*b*c/x^2*(c*x^2+b*x+
a)^(5/2)+3/32*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x-3/32*A/a^4*b^2*c/x*(c*x^2
+b*x+a)^(5/2)-1/128*A/a^5*b^4*c*(c*x^2+b*x+a)^(3/2)*x-3/128*A/a^4*b^4*c*(c*
x^2+b*x+a)^(1/2)*x+1/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)*x+3/64*B/a^3*b^3*c*
```

```
(c*x^2+b*x+a)^(1/2)*x+3/16*B/a^3*b*c/x*(c*x^2+b*x+a)^(5/2)+1/64*A/a^4*b^3/x
^2*(c*x^2+b*x+a)^(5/2)-1/128*A/a^5*b^5*(c*x^2+b*x+a)^(3/2)-3/128*A/a^4*b^5*
(c*x^2+b*x+a)^(1/2)+3/256*A/a^(7/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)-3/8*B*c^2/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+
1/64*B/a^4*b^4*(c*x^2+b*x+a)^(3/2)+3/64*B/a^3*b^4*(c*x^2+b*x+a)^(1/2)+1/8*B
*c^2/a^2*(c*x^2+b*x+a)^(3/2)+3/8*B*c^2/a*(c*x^2+b*x+a)^(1/2)-1/4*B/a/x^4*(c
*x^2+b*x+a)^(5/2)-3/128*B/a^(5/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+5/64*A/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)+9/64*A/a^3*b^3*c*(c*x^2+b*x+a
)^(1/2)+3/16*A/a^(3/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/16*A/a^3*b*c^2*(c*x^2+b*x+a)^(3/2)-3/16*A/a^2*b*c^2*(c*x^2+b*x+a)^(1/2)+1
/8*A/a^2*b/x^4*(c*x^2+b*x+a)^(5/2)-3/32*A/a^(5/2)*b^3*c*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)-1/16*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(5/2)+1/8*B/a^2
*b/x^3*(c*x^2+b*x+a)^(5/2)-1/32*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(5/2)-1/64*B/a^
4*b^3/x*(c*x^2+b*x+a)^(5/2)-5/32*B/a^3*b^2*c*(c*x^2+b*x+a)^(3/2)-9/32*B/a^2
*b^2*c*(c*x^2+b*x+a)^(1/2)-1/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(5/2)+3/16*B/a^(3/
2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/128*A/a^5*b^4/x*(c
*x^2+b*x+a)^(5/2)-1/5*A*(c*x^2+b*x+a)^(5/2)/a/x^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{x^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^6, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^6}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**6, x)
```

3.933 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx$

Optimal. Leaf size=230

$$-\frac{\left(b^2-4ac\right)^2\left(-4aAc-12abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{1024a^{9/2}}+\frac{\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}\,\bigl(-4aAc-}{512a^4x^2}$$

```
[Out] -1/192*(-4*A*a*c+7*A*b^2-12*B*a*b)*(b*x+2*a)*(c*x^2+b*x+a)^(3/2)/a^3/x^4-1/
6*A*(c*x^2+b*x+a)^(5/2)/a/x^6+1/60*(7*A*b-12*B*a)*(c*x^2+b*x+a)^(5/2)/a^2/x
^5-1/1024*(-4*a*c+b^2)^2*(-4*A*a*c+7*A*b^2-12*B*a*b)*arctanh(1/2*(b*x+2*a)/
a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(9/2)+1/512*(-4*a*c+b^2)*(-4*A*a*c+7*A*b^2-1
2*B*a*b)*(b*x+2*a)*(c*x^2+b*x+a)^(1/2)/a^4/x^2
```

Rubi [A] time = 0.20, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(-4aAc-12abB+7Ab^2\right)}{192a^3x^4}+\frac{\left(b^2-4ac\right)(2a+bx)\sqrt{a+bx+cx^2}\,\bigl(-4aAc-12abB+}{512a^4x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((b^2 - 4*a*c)*(7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x + c*
x^2])/(512*a^4*x^2) - ((7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*a + b*x)*(a + b*x
+ c*x^2)^(3/2))/(192*a^3*x^4) - (A*(a + b*x + c*x^2)^(5/2))/(6*a*x^6) + ((7
*A*b - 12*a*B)*(a + b*x + c*x^2)^(5/2))/(60*a^2*x^5) - ((b^2 - 4*a*c)^2*(7*
A*b^2 - 12*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c
*x^2])])/(1024*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6}-\frac{\int \frac{\left(\frac{1}{2}(7Ab-12aB)+Acx\right)\left(a+bx+cx^2\right)^{3/2}}{x^6}\,dx}{6a}\\
&= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6}+\frac{(7Ab-12aB)\left(a+bx+cx^2\right)^{5/2}}{60a^2x^5}+\frac{\left(7Ab^2-12abB-4\right.}{2}\\
&= -\frac{\left(7Ab^2-12abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{192a^3x^4}-\frac{A\left(a+bx+cx^2\right)^{5/2}}{6ax^6}+\\
&= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2}-\frac{\left(7Ab^2-12abB\right.}{}\\
&= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2}-\frac{\left(7Ab^2-12abB\right.}{}\\
&= \frac{\left(b^2-4ac\right)\left(7Ab^2-12abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{512a^4x^2}-\frac{\left(7Ab^2-12abB\right.}{}
\end{aligned}$$

Mathematica [A] time = 0.33, size = 182, normalized size = 0.79

$$\frac{-\frac{5\left(-4aAc-12abB+7Ab^2\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}\left(8a^2+4ax(2b+5cx)-3b^2x^2\right)+3x^4\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)\right)}{256a^{5/2}x^4}+\frac{(7Ab-12aB)(a+x(b+cx)}{x^5}}{60a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x]
```

```
[Out] ((-10*a*A*(a + x*(b + c*x))^(5/2))/x^6 + ((7*A*b - 12*a*B)*(a + x*(b + c*x)
)^(5/2))/x^5 - (5*(7*A*b^2 - 12*a*b*B - 4*a*A*c)*(2*Sqrt[a]*(2*a + b*x)*Sqr
t[a + x*(b + c*x)]*(8*a^2 - 3*b^2*x^2 + 4*a*x*(2*b + 5*c*x)) + 3*(b^2 - 4*a
*c)^2*x^4*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))/(256*a^(
5/2)*x^4))/(60*a^2)
```

fricas [**A**] time = 9.12, size = 709, normalized size = 3.08

$$\left[\frac{15\left(12\,Bab^5-7\,Ab^6+64\,Aa^3c^3+48\left(4\,Ba^3b-3\,Aa^2b^2\right)c^2-12\left(8\,Ba^2b^3-5\,Aab^4\right)c\right)\sqrt{a}\,x^6\log\left(-\frac{8\,abx+\left(b^2+4\,a\right.}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15*(12*B*a*b^5 - 7*A*b^6 + 64*A*a^3*c^3 + 48*(4*B*a^3*b - 3*A*a^2
*b^2)*c^2 - 12*(8*B*a^2*b^3 - 5*A*a*b^4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b^
2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
- 4*(1280*A*a^6 + (180*B*a^2*b^4 - 105*A*a*b^5 + 48*(32*B*a^4 - 27*A*a^3*b)
*c^2 - 40*(30*B*a^3*b^2 - 19*A*a^2*b^3)*c)*x^5 - 2*(60*B*a^3*b^3 - 35*A*a^2
*b^4 - 240*A*a^4*c^2 - 24*(14*B*a^4*b - 9*A*a^3*b^2)*c)*x^4 + 8*(12*B*a^4*b
^2 - 7*A*a^3*b^3 + 12*(32*B*a^5 + 3*A*a^4*b)*c)*x^3 + 16*(132*B*a^5*b + 3*A
*a^4*b^2 + 140*A*a^5*c)*x^2 + 128*(12*B*a^6 + 13*A*a^5*b)*x)*sqrt(c*x^2 + b
*x + a))/(a^5*x^6), -1/15360*(15*(12*B*a*b^5 - 7*A*b^6 + 64*A*a^3*c^3 + 48*
(4*B*a^3*b - 3*A*a^2*b^2)*c^2 - 12*(8*B*a^2*b^3 - 5*A*a*b^4)*c)*sqrt(-a)*x^
6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x +
a^2)) + 2*(1280*A*a^6 + (180*B*a^2*b^4 - 105*A*a*b^5 + 48*(32*B*a^4 - 27*A*
a^3*b)*c^2 - 40*(30*B*a^3*b^2 - 19*A*a^2*b^3)*c)*x^5 - 2*(60*B*a^3*b^3 - 35
*A*a^2*b^4 - 240*A*a^4*c^2 - 24*(14*B*a^4*b - 9*A*a^3*b^2)*c)*x^4 + 8*(12*B
*a^4*b^2 - 7*A*a^3*b^3 + 12*(32*B*a^5 + 3*A*a^4*b)*c)*x^3 + 16*(132*B*a^5*b
 + 3*A*a^4*b^2 + 140*A*a^5*c)*x^2 + 128*(12*B*a^6 + 13*A*a^5*b)*x)*sqrt(c*x
^2 + b*x + a))/(a^5*x^6)]
```

giac [**B**] time = 0.36, size = 2059, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="giac")
```

```
[Out] -1/512*(12*B*a*b^5 - 7*A*b^6 - 96*B*a^2*b^3*c + 60*A*a*b^4*c + 192*B*a^3*b*
c^2 - 144*A*a^2*b^2*c^2 + 64*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/7680*(180*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^11*B*a*b^5 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 - 14
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 900*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^11*A*a*b^4*c + 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^11*B*a^3*b*c^2 - 2160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2*c^
2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 + 15360*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^10*B*a^4*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^9*B*a^2*b^5 + 595*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^6
+ 8160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c - 5100*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^9*A*a^2*b^4*c + 29760*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*B*a^4*b*c^2 + 12240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b
^2*c^2 + 15040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*c^3 + 61440*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^4*b^2*c^(3/2) - 15360*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) + 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^8*A*a^4*b*c^(5/2) + 2376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*
b^5 - 1386*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^6 + 24000*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^7*B*a^4*b^3*c + 11880*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^7*A*a^3*b^4*c + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^
5*b*c^2 + 97440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 + 24960
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*c^3 + 15360*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^6*B*a^4*b^4*sqrt(c) - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^6*B*a^5*b^2*c^(3/2) + 112640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A
*a^4*b^3*c^(3/2) + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*c^(5/2
) + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b*c^(5/2) - 696*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^5 + 1686*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*A*a^3*b^6 - 6720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b
^3*c + 42600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^4*c - 17280*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6*b*c^2 + 128160*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^5*A*a^5*b^2*c^2 + 24960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^6*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b^4*sqrt(c
) + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^5*sqrt(c) + 61440*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*b^3*c^(3/2) - 30720*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^4*B*a^7*c^(5/2) + 92160*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^4*A*a^6*b*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a
^5*b^5 + 595*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 - 22560*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^3*c + 25620*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a^5*b^4*c - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*
a^7*b*c^2 + 58320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2*c^2 + 150
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*c^3 - 30720*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*B*a^7*b^2*c^(3/2) + 30720*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^2*A*a^6*b^3*c^(3/2) + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B
*a^8*c^(5/2) + 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(5/2)
+ 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 105*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))*A*a^5*b^6 - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^7*b^3*c + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c - 12480*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*B*a^8*b*c^2 + 13200*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*A*a^7*b^2*c^2 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^8*
c^3 - 3072*B*a^9*c^(5/2) + 3072*A*a^8*b*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^2 - a)^6*a^4)
```

maple [B] time = 0.08, size = 1264, normalized size = 5.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x)
```

```
[Out] 7/1536*A/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)*x+7/512*A/a^5*b^5*c*(c*x^2+b*x+a)^(1
/2)*x+11/192*A/a^5*b^3*c/x*(c*x^2+b*x+a)^(5/2)-1/32*A/a^4*b^2*c/x^2*(c*x^2+
b*x+a)^(5/2)-1/16*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x-11/192*A/a^5*b^3*c^2*
(c*x^2+b*x+a)^(3/2)*x-1/32*A*c^2/a^4*b/x*(c*x^2+b*x+a)^(5/2)-1/48*A*c/a^3*b
/x^3*(c*x^2+b*x+a)^(5/2)+1/32*A*c^3/a^3*b*(c*x^2+b*x+a)^(1/2)*x+1/32*A*c^3/
a^4*b*(c*x^2+b*x+a)^(3/2)*x+3/32*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+3/32*B
/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+1/16*B/a^3*b*c/x^2*(c*x^2+b*x+a)^(5/2)-3
/32*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(5/2)-3/128*B/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)
*x-1/128*B/a^5*b^4*c*(c*x^2+b*x+a)^(3/2)*x-7/768*A/a^5*b^4/x^2*(c*x^2+b*x+a
)^(5/2)-7/1536*A/a^6*b^5/x*(c*x^2+b*x+a)^(5/2)-37/768*A/a^5*b^4*c*(c*x^2+b*
x+a)^(3/2)-23/256*A/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)+3/256*B/a^(7/2)*b^5*ln((b
*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/1536*A/a^6*b^6*(c*x^2+b*x+a)^(3/
2)-3/32*B/a^(5/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/8*B
/a^2*b/x^4*(c*x^2+b*x+a)^(5/2)+7/512*A/a^5*b^6*(c*x^2+b*x+a)^(1/2)-1/48*A*c
^3/a^3*(c*x^2+b*x+a)^(3/2)-1/16*A*c^3/a^2*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(
c*x^2+b*x+a)^(5/2)-1/128*B/a^5*b^5*(c*x^2+b*x+a)^(3/2)-7/1024*A/a^(9/2)*b^6
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/16*A*c^3/a^(3/2)*ln((b*x+2
*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/128*B/a^4*b^5*(c*x^2+b*x+a)^(1/2)+1/
24*A*c/a^2/x^4*(c*x^2+b*x+a)^(5/2)+1/48*A*c^2/a^3/x^2*(c*x^2+b*x+a)^(5/2)+1
5/256*A/a^(7/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-9/64*A/
a^(5/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/128*B/a^5*b
^4/x*(c*x^2+b*x+a)^(5/2)+5/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(3/2)+9/64*B/a^3*b^
3*c*(c*x^2+b*x+a)^(1/2)+7/60*A/a^2*b/x^5*(c*x^2+b*x+a)^(5/2)-7/96*A/a^3*b^2
/x^4*(c*x^2+b*x+a)^(5/2)+1/16*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(3/2)+5/32*A/a^3*
b^2*c^2*(c*x^2+b*x+a)^(1/2)+7/192*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(5/2)-1/16*B/
```

```
a^3*b*c^2*(c*x^2+b*x+a)^(3/2)-3/16*B/a^2*b*c^2*(c*x^2+b*x+a)^(1/2)+3/16*B/a
^(3/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/16*B/a^3*b^2/x
^3*(c*x^2+b*x+a)^(5/2)+1/64*B/a^4*b^3/x^2*(c*x^2+b*x+a)^(5/2)-1/6*A*(c*x^2+
b*x+a)^(5/2)/a/x^6
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^7, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**7, x)
```

3.934 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^8}\,dx$

Optimal. Leaf size=303

$$-\frac{\left(b^2-4ac\right)^2\left(2aB\left(7b^2-4ac\right)-A\left(9b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{11/2}}-\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aAc-98abB+\right.}{840a^3x^5}$$

```
[Out] 1/384*(-12*A*a*b*c+9*A*b^3+8*B*a^2*c-14*B*a*b^2)*(b*x+2*a)*(c*x^2+b*x+a)^(3
/2)/a^4/x^4-1/7*A*(c*x^2+b*x+a)^(5/2)/a/x^7+1/84*(9*A*b-14*B*a)*(c*x^2+b*x+
a)^(5/2)/a^2/x^6-1/840*(-48*A*a*c+63*A*b^2-98*B*a*b)*(c*x^2+b*x+a)^(5/2)/a^
3/x^5-1/2048*(-4*a*c+b^2)^2*(2*a*B*(-4*a*c+7*b^2)-A*(-12*a*b*c+9*b^3))*arct
anh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(11/2)-1/1024*(-4*a*c+b^2)
*(-12*A*a*b*c+9*A*b^3+8*B*a^2*c-14*B*a*b^2)*(b*x+2*a)*(c*x^2+b*x+a)^(1/2)/a
^5/x^2
```

Rubi [A] time = 0.39, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{\left(a+bx+cx^2\right)^{5/2}\left(-48aAc-98abB+63Ab^2\right)}{840a^3x^5}+\frac{(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(8a^2Bc-12aAbc-14ab^2B+9Ab^3\right)}{384a^4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] -((b^2 - 4*a*c)*(9*A*b^3 - 14*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*x)
*Sqrt[a + b*x + c*x^2])/(1024*a^5*x^2) + ((9*A*b^3 - 14*a*b^2*B - 12*a*A*b*
c + 8*a^2*B*c)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(384*a^4*x^4) - (A*(a +
 b*x + c*x^2)^(5/2))/(7*a*x^7) + ((9*A*b - 14*a*B)*(a + b*x + c*x^2)^(5/2))
/(84*a^2*x^6) - ((63*A*b^2 - 98*a*b*B - 48*a*A*c)*(a + b*x + c*x^2)^(5/2))/
(840*a^3*x^5) - ((b^2 - 4*a*c)^2*(2*a*B*(7*b^2 - 4*a*c) - A*(9*b^3 - 12*a*b
*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2048*a^(11/2)
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{3/2}}{x^8}\,dx = -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} - \frac{\int \frac{\left(\frac{1}{2}(9Ab-14aB)+2Acx\right)\left(a+bx+cx^2\right)^{3/2}}{x^7}\,dx}{7a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} + \frac{(9Ab-14aB)\left(a+bx+cx^2\right)^{5/2}}{84a^2x^6} + \int \left(\frac{1}{4}\left(63Ab^2-98abB\right.\right.$$

$$= -\frac{A\left(a+bx+cx^2\right)^{5/2}}{7ax^7} + \frac{(9Ab-14aB)\left(a+bx+cx^2\right)^{5/2}}{84a^2x^6} - \left(63Ab^2-98abB\right.$$

$$= \frac{\left(9Ab^3-14ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{384a^4x^4} - \frac{A\left(a+b\right.}{7}$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

$$= \frac{\left(b^2-4ac\right)\left(2aB\left(7b^2-4ac\right)-3A\left(3b^3-4abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{1024a^5x^2} +$$

Mathematica [A] time = 0.56, size = 234, normalized size = 0.77

$$\frac{\frac{7\left(3A\left(3b^3-4abc\right)+2aB\left(4ac-7b^2\right)\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}\left(8a^2+4ax(2b+5cx)-3b^2x^2\right)+3x^4\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)\right)}{512a^{7/2}x^4} + \frac{(a+x(b+cx))^5}{}}{84a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x]
```

```
[Out] ((-12*a*A*(a + x*(b + c*x))^(5/2))/x^7 + ((9*A*b - 14*a*B)*(a + x*(b + c*x)
)^(5/2))/x^6 + ((-63*A*b^2 + 98*a*b*B + 48*a*A*c)*(a + x*(b + c*x))^(5/2))/
(10*a*x^5) + (7*(2*a*B*(-7*b^2 + 4*a*c) + 3*A*(3*b^3 - 4*a*b*c))*(2*Sqrt[a]
*(2*a + b*x)*Sqrt[a + x*(b + c*x)]*(8*a^2 - 3*b^2*x^2 + 4*a*x*(2*b + 5*c*x)
) + 3*(b^2 - 4*a*c)^2*x^4*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*
x)])]))/(512*a^(7/2)*x^4))/(84*a^2)
```

fricas [A] time = 11.68, size = 889, normalized size = 2.93

$$\Bigg[\frac{105\left(14\,Bab^6 - 9\,Ab^7 - 64\left(2\,Ba^4 - 3\,Aa^3b\right)c^3 + 48\left(6\,Ba^3b^2 - 5\,Aa^2b^3\right)c^2 - 12\left(10\,Ba^2b^4 - 7\,Aab^5\right)c\right)\sqrt{a}\,x^7\log\Big(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="fricas")
```

```
[Out] [1/430080*(105*(14*B*a*b^6 - 9*A*b^7 - 64*(2*B*a^4 - 3*A*a^3*b)*c^3 + 48*(6
*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 12*(10*B*a^2*b^4 - 7*A*a*b^5)*c)*sqrt(a)*x^
7*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(a) + 8*a^2)/x^2) - 4*(15360*A*a^7 - (1470*B*a^2*b^5 - 945*A*a*b^6 + 614
4*A*a^4*c^3 + 336*(54*B*a^4*b - 49*A*a^3*b^2)*c^2 - 280*(38*B*a^3*b^3 - 27*
A*a^2*b^4)*c)*x^6 + 2*(490*B*a^3*b^4 - 315*A*a^2*b^5 + 48*(70*B*a^5 - 73*A*
a^4*b)*c^2 - 168*(18*B*a^4*b^2 - 13*A*a^3*b^3)*c)*x^5 - 8*(98*B*a^4*b^3 - 6
3*A*a^3*b^4 - 384*A*a^5*c^2 - 12*(42*B*a^5*b - 31*A*a^4*b^2)*c)*x^4 + 16*(4
2*B*a^5*b^2 - 27*A*a^4*b^3 + 4*(490*B*a^6 + 33*A*a^5*b)*c)*x^3 + 128*(182*B
*a^6*b + 3*A*a^5*b^2 + 192*A*a^6*c)*x^2 + 1280*(14*B*a^7 + 15*A*a^6*b)*x)*s
qrt(c*x^2 + b*x + a))/(a^6*x^7), 1/215040*(105*(14*B*a*b^6 - 9*A*b^7 - 64*(
2*B*a^4 - 3*A*a^3*b)*c^3 + 48*(6*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 12*(10*B*a^
2*b^4 - 7*A*a*b^5)*c)*sqrt(-a)*x^7*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(15360*A*a^7 - (1470*B*a^2*b^5 -
 945*A*a*b^6 + 6144*A*a^4*c^3 + 336*(54*B*a^4*b - 49*A*a^3*b^2)*c^2 - 280*(
38*B*a^3*b^3 - 27*A*a^2*b^4)*c)*x^6 + 2*(490*B*a^3*b^4 - 315*A*a^2*b^5 + 48
*(70*B*a^5 - 73*A*a^4*b)*c^2 - 168*(18*B*a^4*b^2 - 13*A*a^3*b^3)*c)*x^5 - 8
*(98*B*a^4*b^3 - 63*A*a^3*b^4 - 384*A*a^5*c^2 - 12*(42*B*a^5*b - 31*A*a^4*b
^2)*c)*x^4 + 16*(42*B*a^5*b^2 - 27*A*a^4*b^3 + 4*(490*B*a^6 + 33*A*a^5*b)*c
)*x^3 + 128*(182*B*a^6*b + 3*A*a^5*b^2 + 192*A*a^6*c)*x^2 + 1280*(14*B*a^7
+ 15*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^7)]
```

giac [B] time = 0.36, size = 2713, normalized size = 8.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="giac")
```

```
[Out] 1/1024*(14*B*a*b^6 - 9*A*b^7 - 120*B*a^2*b^4*c + 84*A*a*b^5*c + 288*B*a^3*b
^2*c^2 - 240*A*a^2*b^3*c^2 - 128*B*a^4*c^3 + 192*A*a^3*b*c^3)*arctan(-(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^5) - 1/107520*(1470*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a*b^6 - 945*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^13*A*b^7 - 12600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b
^4*c + 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a*b^5*c + 30240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^3*b^2*c^2 - 25200*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^13*A*a^2*b^3*c^2 - 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^13*B*a^4*c^3 + 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b*c^3 -
 9800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^6 + 6300*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^11*A*a*b^7 + 84000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^11*B*a^3*b^4*c - 58800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^5*
c - 201600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^2*c^2 + 168000*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*b^3*c^2 - 197120*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^11*B*a^5*c^3 - 134400*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^11*A*a^4*b*c^3 - 1075200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^5*b
*c^(5/2) - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^5*c^(7/2) + 27
734*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^6 - 17829*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^9*A*a^2*b^7 - 237720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^9*B*a^4*b^4*c + 166404*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^5*c
 - 1192800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^5*b^2*c^2 - 475440*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^3*c^2 - 138880*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^9*B*a^6*c^3 - 1512000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^9*A*a^5*b*c^3 - 1576960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*b^3*c
^(3/2) + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b*c^(5/2) - 365
5680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^2*c^(5/2) - 430080*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*c^(7/2) - 43008*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^7*B*a^4*b^6 + 27648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A
*a^3*b^7 - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b^4*c - 25804
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*b^5*c - 430080*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*B*a^6*b^2*c^2 - 3225600*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^7*A*a^5*b^3*c^2 - 2580480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*
a^6*b*c^3 - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^5*sqrt(c)
+ 716800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^6*b^3*c^(3/2) - 2580480*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b^4*c^(3/2) - 430080*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^6*B*a^7*b*c^(5/2) - 3440640*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^6*A*a^6*b^2*c^(5/2) - 860160*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^6*A*a^7*c^(7/2) + 15274*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^
6 - 25179*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b^7 + 237720*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^5*B*a^6*b^4*c - 768516*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^5*A*a^5*b^5*c + 977760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*
a^7*b^2*c^2 - 3610320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^3*c^2 +
 138880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^8*c^3 - 1928640*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*A*a^7*b*c^3 + 215040*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^4*B*a^6*b^5*sqrt(c) - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*A*a^5*b^6*sqrt(c) + 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^7*b
^3*c^(3/2) - 1290240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^6*b^4*c^(3/2
) + 1118208*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b*c^(5/2) - 2838528
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^7*b^2*c^(5/2) - 172032*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^4*A*a^8*c^(7/2) + 9800*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*B*a^6*b^6 - 6300*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b
^7 + 346080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b^4*c - 371280*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^5*c + 631680*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*B*a^8*b^2*c^2 - 1243200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*A*a^7*b^3*c^2 + 197120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*c^3
 - 725760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^8*b*c^3 + 430080*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^8*b^3*c^(3/2) - 430080*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*A*a^7*b^4*c^(3/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^2*B*a^9*b*c^(5/2) - 344064*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*
A*a^8*b^2*c^(5/2) - 86016*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^9*c^(7/
2) - 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^6 + 945*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^6*b^7 + 12600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*B*a^8*b^4*c - 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^5*c + 1848
00*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^2*c^2 - 189840*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^8*b^3*c^2 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*B*a^10*c^3 - 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b*c^3 +
43008*B*a^10*b*c^(5/2) - 43008*A*a^9*b^2*c^(5/2) + 12288*A*a^10*c^(7/2))/((
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^7*a^5)
```

maple [B] time = 0.08, size = 1575, normalized size = 5.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x)
```

```
[Out] -5/128*A/a^6*b^4*c/x*(c*x^2+b*x+a)^(5/2)-1/16*B/a^4*b^3*c^2*(c*x^2+b*x+a)^(
1/2)*x+11/192*B/a^5*b^3*c/x*(c*x^2+b*x+a)^(5/2)+1/64*A/a^5*b^3*c/x^2*(c*x^2
+b*x+a)^(5/2)-1/32*A/a^4*b*c^2/x^2*(c*x^2+b*x+a)^(5/2)-1/16*A/a^3*b*c/x^4*(
c*x^2+b*x+a)^(5/2)-3/64*A/a^5*b^2*c^3*(c*x^2+b*x+a)^(3/2)*x+3/64*A/a^5*b^2*
c^2/x*(c*x^2+b*x+a)^(5/2)-3/64*A/a^4*b^2*c^3*(c*x^2+b*x+a)^(1/2)*x-1/48*B*c
/a^3*b/x^3*(c*x^2+b*x+a)^(5/2)+1/32*B*c^3/a^3*b*(c*x^2+b*x+a)^(1/2)*x-1/32*
B*c^2/a^4*b/x*(c*x^2+b*x+a)^(5/2)+1/32*B*c^3/a^4*b*(c*x^2+b*x+a)^(3/2)*x-1/
32*B/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(5/2)-11/192*B/a^5*b^3*c^2*(c*x^2+b*x+a)^(
3/2)*x+7/1536*B/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)*x+7/512*B/a^5*b^5*c*(c*x^2+b*
x+a)^(1/2)*x+1/32*A/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(5/2)+5/128*A/a^6*b^4*c^2*(
c*x^2+b*x+a)^(3/2)*x-3/1024*A/a^7*b^6*c*(c*x^2+b*x+a)^(3/2)*x-9/1024*A/a^6*
b^6*c*(c*x^2+b*x+a)^(1/2)*x+3/64*A/a^5*b^4*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*B
*c^3/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+7/1536*B/a^6*b^6
*(c*x^2+b*x+a)^(3/2)+7/512*B/a^5*b^6*(c*x^2+b*x+a)^(1/2)-1/48*B*c^3/a^3*(c*
x^2+b*x+a)^(3/2)-1/16*B*c^3/a^2*(c*x^2+b*x+a)^(1/2)-1/6*B/a/x^6*(c*x^2+b*x+
a)^(5/2)-7/1024*B/a^(9/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
-3/1024*A/a^7*b^7*(c*x^2+b*x+a)^(3/2)-9/1024*A/a^6*b^7*(c*x^2+b*x+a)^(1/2)+
9/2048*A/a^(11/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-7/96*B/
a^3*b^2/x^4*(c*x^2+b*x+a)^(5/2)+7/192*B/a^4*b^3/x^3*(c*x^2+b*x+a)^(5/2)-7/7
68*B/a^5*b^4/x^2*(c*x^2+b*x+a)^(5/2)-9/64*B/a^(5/2)*b^2*c^2*ln((b*x+2*a+2*(
c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/256*B/a^(7/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)-7/1536*B/a^6*b^5/x*(c*x^2+b*x+a)^(5/2)-37/768*B/a^
5*b^4*c*(c*x^2+b*x+a)^(3/2)-23/256*B/a^4*b^4*c*(c*x^2+b*x+a)^(1/2)+1/48*B*c
^2/a^3/x^2*(c*x^2+b*x+a)^(5/2)+1/24*B*c/a^2/x^4*(c*x^2+b*x+a)^(5/2)+3/512*A
/a^6*b^5/x^2*(c*x^2+b*x+a)^(5/2)+1/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(3/2)+3/32*
A/a^3*b*c^3*(c*x^2+b*x+a)^(1/2)+3/28*A/a^2*b/x^6*(c*x^2+b*x+a)^(5/2)+3/1024
*A/a^7*b^6/x*(c*x^2+b*x+a)^(5/2)+17/512*A/a^6*b^5*c*(c*x^2+b*x+a)^(3/2)+33/
512*A/a^5*b^5*c*(c*x^2+b*x+a)^(1/2)-3/32*A/a^(5/2)*b*c^3*ln((b*x+2*a+2*(c*x
^2+b*x+a)^(1/2)*a^(1/2))/x)+15/128*A/a^(7/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b
*x+a)^(1/2)*a^(1/2))/x)-21/512*A/a^(9/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+7/60*B/a^2*b/x^5*(c*x^2+b*x+a)^(5/2)+1/16*B/a^4*b^2*c^2*(
c*x^2+b*x+a)^(3/2)+5/32*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(1/2)+2/35*A*c/a^2/x^5*
(c*x^2+b*x+a)^(5/2)-3/40*A/a^3*b^2/x^5*(c*x^2+b*x+a)^(5/2)-1/16*A/a^5*b^3*c
^2*(c*x^2+b*x+a)^(3/2)-9/64*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(1/2)+3/64*A/a^4*b^
3/x^4*(c*x^2+b*x+a)^(5/2)-3/128*A/a^5*b^4/x^3*(c*x^2+b*x+a)^(5/2)-1/7*A*(c*
x^2+b*x+a)^(5/2)/a/x^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(3/2)/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(3/2))/x^8, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(3/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(3/2)/x**8, x)
```

3.935 $\int x^4(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=543

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(10240a^2Bc^2-14cx\left(2376aAc^2-3380abBc-3146Ab^2c+2145b^3B\right)+39688aAbc^2-42900ab\right.}{887040c^5}$$

```
[Out] 1/98304*(-4*a*c+b^2)*(-96*A*a^2*c^3+528*A*a*b^2*c^2-286*A*b^4*c+240*B*a^2*b
*c^2-520*B*a*b^3*c+195*B*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^7-1/30720*(-9
6*A*a^2*c^3+528*A*a*b^2*c^2-286*A*b^4*c+240*B*a^2*b*c^2-520*B*a*b^3*c+195*B
*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^6+1/3960*(-286*A*b*c-160*B*a*c+195*B*
b^2)*x^2*(c*x^2+b*x+a)^(7/2)/c^3-1/220*(-22*A*c+15*B*b)*x^3*(c*x^2+b*x+a)^(
7/2)/c^2+1/11*B*x^4*(c*x^2+b*x+a)^(7/2)/c+1/887040*(19305*b^4*B-28314*A*b^3
*c-42900*a*b^2*B*c+39688*a*A*b*c^2+10240*a^2*B*c^2-14*c*(2376*A*a*c^2-3146*
A*b^2*c-3380*B*a*b*c+2145*B*b^3)*x)*(c*x^2+b*x+a)^(7/2)/c^5+1/524288*(-4*a*
c+b^2)^3*(-96*A*a^2*c^3+528*A*a*b^2*c^2-286*A*b^4*c+240*B*a^2*b*c^2-520*B*a
*b^3*c+195*B*b^5)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(17/
2)-1/262144*(-4*a*c+b^2)^2*(-96*A*a^2*c^3+528*A*a*b^2*c^2-286*A*b^4*c+240*B
*a^2*b*c^2-520*B*a*b^3*c+195*B*b^5)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^8
```

Rubi [A] time = 0.72, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(10240a^2Bc^2-14cx\left(2376aAc^2-3380abBc-3146Ab^2c+2145b^3B\right)+39688aAbc^2-42900ab\right.}{887040c^5}$$

Antiderivative was successfully verified.

```
[In] Int[x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*A*b^2*c^
2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(262
144*c^8) + ((b^2 - 4*a*c)*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*
A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(
3/2))/(98304*c^7) - ((195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528*a*A*b^2
*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))
/(30720*c^6) + ((195*b^2*B - 286*A*b*c - 160*a*B*c)*x^2*(a + b*x + c*x^2)^(
7/2))/(3960*c^3) - ((15*b*B - 22*A*c)*x^3*(a + b*x + c*x^2)^(7/2))/(220*c^2
) + (B*x^4*(a + b*x + c*x^2)^(7/2))/(11*c) + ((19305*b^4*B - 28314*A*b^3*c
- 42900*a*b^2*B*c + 39688*a*A*b*c^2 + 10240*a^2*B*c^2 - 14*c*(2145*b^3*B -
3146*A*b^2*c - 3380*a*b*B*c + 2376*a*A*c^2)*x)*(a + b*x + c*x^2)^(7/2))/(88
7040*c^5) + ((b^2 - 4*a*c)^3*(195*b^5*B - 286*A*b^4*c - 520*a*b^3*B*c + 528
*a*A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[
c]*Sqrt[a + b*x + c*x^2])])/(524288*c^(17/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^4(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx &= \frac{Bx^4\left(a+bx+cx^2\right)^{7/2}}{11c}+\frac{\int x^3\left(-4aB-\frac{1}{2}(15bB-22Ac)x\right)\left(a+bx+cx^2\right)}{11c} \\
&= -\frac{(15bB-22Ac)x^3\left(a+bx+cx^2\right)^{7/2}}{220c^2}+\frac{Bx^4\left(a+bx+cx^2\right)^{7/2}}{11c}+\frac{\int x^2\left(\frac{3}{2}a}{} \\
&= \frac{\left(195b^2B-286Abc-160aBc\right)x^2\left(a+bx+cx^2\right)^{7/2}}{3960c^3}-\frac{(15bB-22Ac)x^3\left(a}{220c} \\
&= \frac{\left(195b^2B-286Abc-160aBc\right)x^2\left(a+bx+cx^2\right)^{7/2}}{3960c^3}-\frac{(15bB-22Ac)x^3\left(a}{220c} \\
&= -\frac{\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2-96a^2Ac^3\right.}{30720c^6} \\
&= \frac{\left(b^2-4ac\right)\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2-\right.}{98304c^7} \\
&= -\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8} \\
&= -\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8} \\
&= -\frac{\left(b^2-4ac\right)^2\left(195b^5B-286Ab^4c-520ab^3Bc+528aAb^2c^2+240a^2bBc^2\right.}{262144c^8}
\end{aligned}
$$

Mathematica [A]   time = 1.01, size = 386, normalized size = 0.71

$$\frac{\frac{11\big(96a^2Ac^3-240a^2bBc^2-528aAb^2c^2+520ab^3Bc+286Ab^4c-195b^5B\big)\Big(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\,\big(16c^2\big(33a^2+26acx^2+8c^2x^4\big)+8b^2c\big(11cx^2-20a\big)+32bc^2x(}{7864320c^{15/2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((195*b^2*B - 286*A*b*c - 160*a*B*c)*x^2*(a + x*(b + c*x))^(7/2))/(360*c^2
) + ((-15*b*B + 22*A*c)*x^3*(a + x*(b + c*x))^(7/2))/(20*c) + B*x^4*(a + x*
(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(19305*b^4*B - 858*b^3*c*(33*A
+ 35*B*x) + 8*a*b*c^2*(4961*A + 5915*B*x) + 16*a*c^2*(640*a*B - 2079*A*c*x)
 + 572*b^2*c*(-75*a*B + 77*A*c*x)))/(80640*c^4) + (11*(-195*b^5*B + 286*A*b
^4*c + 520*a*b^3*B*c - 528*a*A*b^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*(2
*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(15*b^4 - 40*b^3*c*x + 32*b*c^2*
x*(13*a + 8*c*x^2) + 8*b^2*c*(-20*a + 11*c*x^2) + 16*c^2*(33*a^2 + 26*a*c*x
^2 + 8*c^2*x^4)) - 15*(b^2 - 4*a*c)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + x*(b + c*x)])]))/(7864320*c^(15/2)))/(11*c)
```

fricas [A]   time = 2.07, size = 1775, normalized size = 3.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3633315840*(3465*(195*B*b^11 + 6144*A*a^5*c^6 - 7680*(2*B*a^5*b + 5*A*a^
4*b^2)*c^5 + 44800*(B*a^4*b^3 + A*a^3*b^4)*c^4 - 20160*(2*B*a^3*b^5 + A*a^2
*b^6)*c^3 + 3960*(4*B*a^2*b^7 + A*a*b^8)*c^2 - 286*(10*B*a*b^9 + A*b^10)*c)
*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(c) - 4*a*c) + 4*(82575360*B*c^11*x^10 - 675675*B*b^10*c + 4128768*(
45*B*b*c^10 + 22*A*c^11)*x^9 + 229376*(465*B*b^2*c^9 + 2*(460*B*a + 451*A*b
)*c^10)*x^8 + 14336*(15*B*b^3*c^8 + 16632*A*a*c^10 + 2*(8650*B*a*b + 4213*A
*b^2)*c^9)*x^7 + 2560*(4096*B*a^5 + 20449*A*a^4*b)*c^6 - 1024*(225*B*b^4*c^
7 - 8*(18080*B*a^2 + 34991*A*a*b)*c^9 - 30*(54*B*a*b^2 + 11*A*b^3)*c^8)*x^6
 - 42240*(1733*B*a^4*b^2 + 2295*A*a^3*b^3)*c^5 + 256*(975*B*b^5*c^6 + 68745
6*A*a^2*c^9 + 240*(71*B*a^2*b + 44*A*a*b^2)*c^8 - 10*(800*B*a*b^3 + 143*A*b
^4)*c^7)*x^5 + 12672*(7265*B*a^3*b^4 + 4319*A*a^2*b^5)*c^4 - 128*(2145*B*b^
6*c^5 - 480*(64*B*a^3 + 121*A*a^2*b)*c^8 + 240*(221*B*a^2*b^2 + 110*A*a*b^3
)*c^7 - 26*(760*B*a*b^4 + 121*A*b^5)*c^6)*x^4 - 18480*(2372*B*a^2*b^6 + 671
*A*a*b^7)*c^3 + 16*(19305*B*b^7*c^4 + 443520*A*a^3*c^8 - 480*(1286*B*a^3*b
+ 1529*A*a^2*b^2)*c^7 + 40*(15934*B*a^2*b^3 + 6655*A*a*b^4)*c^6 - 858*(230*
B*a*b^5 + 33*A*b^6)*c^5)*x^3 + 90090*(100*B*a*b^8 + 11*A*b^9)*c^2 - 8*(4504
5*B*b^8*c^3 + 640*(1024*B*a^4 + 3553*A*a^3*b)*c^7 - 480*(5358*B*a^3*b^2 + 4
741*A*a^2*b^3)*c^6 + 792*(2410*B*a^2*b^4 + 869*A*a*b^5)*c^5 - 858*(590*B*a*
b^6 + 77*A*b^7)*c^4)*x^2 + 2*(225225*B*b^9*c^2 - 5322240*A*a^4*c^7 + 1280*(
8347*B*a^4*b + 15763*A*a^3*b^2)*c^6 - 21120*(971*B*a^3*b^3 + 690*A*a^2*b^4)
*c^5 + 1584*(7520*B*a^2*b^5 + 2387*A*a*b^6)*c^4 - 30030*(92*B*a*b^7 + 11*A*
b^8)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^9, -1/1816657920*(3465*(195*B*b^11 +
6144*A*a^5*c^6 - 7680*(2*B*a^5*b + 5*A*a^4*b^2)*c^5 + 44800*(B*a^4*b^3 + A*
a^3*b^4)*c^4 - 20160*(2*B*a^3*b^5 + A*a^2*b^6)*c^3 + 3960*(4*B*a^2*b^7 + A*
a*b^8)*c^2 - 286*(10*B*a*b^9 + A*b^10)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 +
b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(82575360*B*c^11
*x^10 - 675675*B*b^10*c + 4128768*(45*B*b*c^10 + 22*A*c^11)*x^9 + 229376*(4
65*B*b^2*c^9 + 2*(460*B*a + 451*A*b)*c^10)*x^8 + 14336*(15*B*b^3*c^8 + 1663
2*A*a*c^10 + 2*(8650*B*a*b + 4213*A*b^2)*c^9)*x^7 + 2560*(4096*B*a^5 + 2044
9*A*a^4*b)*c^6 - 1024*(225*B*b^4*c^7 - 8*(18080*B*a^2 + 34991*A*a*b)*c^9 -
30*(54*B*a*b^2 + 11*A*b^3)*c^8)*x^6 - 42240*(1733*B*a^4*b^2 + 2295*A*a^3*b^
3)*c^5 + 256*(975*B*b^5*c^6 + 687456*A*a^2*c^9 + 240*(71*B*a^2*b + 44*A*a*b
^2)*c^8 - 10*(800*B*a*b^3 + 143*A*b^4)*c^7)*x^5 + 12672*(7265*B*a^3*b^4 + 4
319*A*a^2*b^5)*c^4 - 128*(2145*B*b^6*c^5 - 480*(64*B*a^3 + 121*A*a^2*b)*c^8
 + 240*(221*B*a^2*b^2 + 110*A*a*b^3)*c^7 - 26*(760*B*a*b^4 + 121*A*b^5)*c^6
)*x^4 - 18480*(2372*B*a^2*b^6 + 671*A*a*b^7)*c^3 + 16*(19305*B*b^7*c^4 + 44
3520*A*a^3*c^8 - 480*(1286*B*a^3*b + 1529*A*a^2*b^2)*c^7 + 40*(15934*B*a^2*
b^3 + 6655*A*a*b^4)*c^6 - 858*(230*B*a*b^5 + 33*A*b^6)*c^5)*x^3 + 90090*(10
0*B*a*b^8 + 11*A*b^9)*c^2 - 8*(45045*B*b^8*c^3 + 640*(1024*B*a^4 + 3553*A*a
^3*b)*c^7 - 480*(5358*B*a^3*b^2 + 4741*A*a^2*b^3)*c^6 + 792*(2410*B*a^2*b^4
 + 869*A*a*b^5)*c^5 - 858*(590*B*a*b^6 + 77*A*b^7)*c^4)*x^2 + 2*(225225*B*b
^9*c^2 - 5322240*A*a^4*c^7 + 1280*(8347*B*a^4*b + 15763*A*a^3*b^2)*c^6 - 21
120*(971*B*a^3*b^3 + 690*A*a^2*b^4)*c^5 + 1584*(7520*B*a^2*b^5 + 2387*A*a*b
^6)*c^4 - 30030*(92*B*a*b^7 + 11*A*b^8)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^9]
```

giac [**A**] time = 0.31, size = 908, normalized size = 1.67

$$\frac{1}{908328960}\sqrt{cx^2+bx+a}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(4\Bigg(14\Bigg(16\Bigg(18\Bigg(20\,Bc^2x+\frac{45\,Bbc^{11}+22\,Ac^{12}}{c^{10}}\Bigg)x+\frac{465\,Bb^2c^{10}+920}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/908328960*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(18*(20*B*c^2*x
 + (45*B*b*c^11 + 22*A*c^12)/c^10)*x + (465*B*b^2*c^10 + 920*B*a*c^11 + 902
*A*b*c^11)/c^10)*x + (15*B*b^3*c^9 + 17300*B*a*b*c^10 + 8426*A*b^2*c^10 + 1
6632*A*a*c^11)/c^10)*x - (225*B*b^4*c^8 - 1620*B*a*b^2*c^9 - 330*A*b^3*c^9
- 144640*B*a^2*c^10 - 279928*A*a*b*c^10)/c^10)*x + (975*B*b^5*c^7 - 8000*B*
a*b^3*c^8 - 1430*A*b^4*c^8 + 17040*B*a^2*b*c^9 + 10560*A*a*b^2*c^9 + 687456
*A*a^2*c^10)/c^10)*x - (2145*B*b^6*c^6 - 19760*B*a*b^4*c^7 - 3146*A*b^5*c^7
 + 53040*B*a^2*b^2*c^8 + 26400*A*a*b^3*c^8 - 30720*B*a^3*c^9 - 58080*A*a^2*
b*c^9)/c^10)*x + (19305*B*b^7*c^5 - 197340*B*a*b^5*c^6 - 28314*A*b^6*c^6 +
637360*B*a^2*b^3*c^7 + 266200*A*a*b^4*c^7 - 617280*B*a^3*b*c^8 - 733920*A*a
^2*b^2*c^8 + 443520*A*a^3*c^9)/c^10)*x - (45045*B*b^8*c^4 - 506220*B*a*b^6*
c^5 - 66066*A*b^7*c^5 + 1908720*B*a^2*b^4*c^6 + 688248*A*a*b^5*c^6 - 257184
0*B*a^3*b^2*c^7 - 2275680*A*a^2*b^3*c^7 + 655360*B*a^4*c^8 + 2273920*A*a^3*
b*c^8)/c^10)*x + (225225*B*b^9*c^3 - 2762760*B*a*b^7*c^4 - 330330*A*b^8*c^4
 + 11911680*B*a^2*b^5*c^5 + 3781008*A*a*b^6*c^5 - 20507520*B*a^3*b^3*c^6 -
14572800*A*a^2*b^4*c^6 + 10684160*B*a^4*b*c^7 + 20176640*A*a^3*b^2*c^7 - 53
22240*A*a^4*c^8)/c^10)*x - (675675*B*b^10*c^2 - 9009000*B*a*b^8*c^3 - 99099
0*A*b^9*c^3 + 43834560*B*a^2*b^6*c^4 + 12400080*A*a*b^7*c^4 - 92062080*B*a^
3*b^4*c^5 - 54730368*A*a^2*b^5*c^5 + 73201920*B*a^4*b^2*c^6 + 96940800*A*a^
3*b^3*c^6 - 10485760*B*a^5*c^7 - 52349440*A*a^4*b*c^7)/c^10) - 1/524288*(19
5*B*b^11 - 2860*B*a*b^9*c - 286*A*b^10*c + 15840*B*a^2*b^7*c^2 + 3960*A*a*b
^8*c^2 - 40320*B*a^3*b^5*c^3 - 20160*A*a^2*b^6*c^3 + 44800*B*a^4*b^3*c^4 +
44800*A*a^3*b^4*c^4 - 15360*B*a^5*b*c^5 - 38400*A*a^4*b^2*c^5 + 6144*A*a^5*
c^6)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(17/2)
```

maple [**B**] time = 0.07, size = 1848, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -15/512*B*b/c^3*a^4*(c*x^2+b*x+a)^(1/2)*x+13/384*B*b^3/c^4*a*(c*x^2+b*x+a)^
(5/2)*x-5/256*B*b/c^3*a^3*(c*x^2+b*x+a)^(3/2)*x+65/4096*B*b^7/c^6*(c*x^2+b*
x+a)^(1/2)*x*a+145/3072*B*b^3/c^4*a^2*(c*x^2+b*x+a)^(3/2)*x+5/64*B*b^3/c^4*
a^3*(c*x^2+b*x+a)^(1/2)*x-1/64*B*b/c^3*a^2*(c*x^2+b*x+a)^(5/2)*x-143/262144
```

```
*A*b^10/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/10*A*x^3*(c*
x^2+b*x+a)^(7/2)/c+3/256*A*a^5/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))+143/131072*A*b^9/c^7*(c*x^2+b*x+a)^(1/2)-325/12288*B*b^5/c^5*(c*x^2
+b*x+a)^(3/2)*x*a-9/128*A*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)*x+209/6144*A*b^4/
c^4*(c*x^2+b*x+a)^(3/2)*x*a+139/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*x*a^2-11
/320*A*b^2/c^3*a*(c*x^2+b*x+a)^(5/2)*x-23/512*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(
3/2)*x-11/512*A*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x*a+3/512*A*a^4/c^3*(c*x^2+b*x+
a)^(1/2)*b+1/160*A*a^2/c^2*(c*x^2+b*x+a)^(5/2)*x-5/512*B*b^2/c^4*a^3*(c*x^2
+b*x+a)^(3/2)+175/2048*B*b^3/c^(9/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))-235/4096*B*b^5/c^5*(c*x^2+b*x+a)^(1/2)*x*a^2+169/3168*B*b/c^3*a*x
*(c*x^2+b*x+a)^(7/2)+143/15360*A*b^5/c^5*(c*x^2+b*x+a)^(5/2)-143/49152*A*b^
7/c^6*(c*x^2+b*x+a)^(3/2)-143/4480*A*b^3/c^4*(c*x^2+b*x+a)^(7/2)-195/262144
*B*b^10/c^8*(c*x^2+b*x+a)^(1/2)-13/2048*B*b^6/c^6*(c*x^2+b*x+a)^(5/2)+65/32
768*B*b^8/c^7*(c*x^2+b*x+a)^(3/2)+39/1792*B*b^4/c^5*(c*x^2+b*x+a)^(7/2)+8/6
93*B*a^2/c^3*(c*x^2+b*x+a)^(7/2)+195/524288*B*b^11/c^(17/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+143/65536*A*b^8/c^6*(c*x^2+b*x+a)^(1/2)*x+451/
10080*A*b/c^3*a*(c*x^2+b*x+a)^(7/2)-13/180*A*b/c^2*x^2*(c*x^2+b*x+a)^(7/2)-
9/256*A*b^3/c^4*a^3*(c*x^2+b*x+a)^(1/2)-11/640*A*b^3/c^4*a*(c*x^2+b*x+a)^(5
/2)-23/1024*A*b^3/c^4*a^2*(c*x^2+b*x+a)^(3/2)+139/4096*A*b^5/c^5*(c*x^2+b*x
+a)^(1/2)*a^2-11/1024*A*b^7/c^6*(c*x^2+b*x+a)^(1/2)*a+143/2880*A*b^2/c^3*x*
(c*x^2+b*x+a)^(7/2)+143/7680*A*b^4/c^4*(c*x^2+b*x+a)^(5/2)*x-143/24576*A*b^
6/c^5*(c*x^2+b*x+a)^(3/2)*x+209/12288*A*b^5/c^5*(c*x^2+b*x+a)^(3/2)*a+3/256
*A*a^4/c^2*(c*x^2+b*x+a)^(1/2)*x-325/24576*B*b^6/c^6*(c*x^2+b*x+a)^(3/2)*a-
15/1024*B*b^2/c^4*a^4*(c*x^2+b*x+a)^(1/2)-1/128*B*b^2/c^4*a^2*(c*x^2+b*x+a)
^(5/2)+5/128*B*b^4/c^5*a^3*(c*x^2+b*x+a)^(1/2)+13/768*B*b^4/c^5*a*(c*x^2+b*
x+a)^(5/2)+145/6144*B*b^4/c^5*a^2*(c*x^2+b*x+a)^(3/2)-235/8192*B*b^6/c^6*(c
*x^2+b*x+a)^(1/2)*a^2+65/8192*B*b^8/c^7*(c*x^2+b*x+a)^(1/2)*a-13/384*B*b^3/
c^4*x*(c*x^2+b*x+a)^(7/2)-13/1024*B*b^5/c^5*(c*x^2+b*x+a)^(5/2)*x+65/16384*
B*b^7/c^6*(c*x^2+b*x+a)^(3/2)*x-315/4096*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))*a^3+495/16384*B*b^7/c^(13/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^2-15/512*B*b/c^(7/2)*a^5*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))-715/131072*B*b^9/c^(15/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))*a-4/99*B*a/c^2*x^2*(c*x^2+b*x+a)^(7/2)-3/44*B*b/c^2*x^3*(c*x^
2+b*x+a)^(7/2)-195/131072*B*b^9/c^7*(c*x^2+b*x+a)^(1/2)*x-65/1344*B*b^2/c^4
*a*(c*x^2+b*x+a)^(7/2)+13/264*B*b^2/c^3*x^2*(c*x^2+b*x+a)^(7/2)+1/320*A*a^2
/c^3*(c*x^2+b*x+a)^(5/2)*b+1/128*A*a^3/c^2*(c*x^2+b*x+a)^(3/2)*x+1/256*A*a^
3/c^3*(c*x^2+b*x+a)^(3/2)*b+495/65536*A*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a-75/1024*A*b^2/c^(7/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))+175/2048*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a^3-315/8192*A*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*a^2-3/80*A*a/c^2*x*(c*x^2+b*x+a)^(7/2)+1/11*B*x^4*(c*x^2+b*x+a)^(7/
2)/c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int x^4\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^4*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int x^4 (A+Bx) \left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**4*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.936 $\int x^3(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=432

$$-\frac{\left(b^2-4ac\right)^3\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{262144c^{15/2}}+\left(b^2-4ac\right)^2(b+$$

```
[Out] -1/49152*(-4*a*c+b^2)*(240*A*a*b*c^2-220*A*b^3*c+48*B*a^2*c^2-264*B*a*b^2*c
+143*B*b^4)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^6+1/15360*(240*A*a*b*c^2-220*A*
b^3*c+48*B*a^2*c^2-264*B*a*b^2*c+143*B*b^4)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c
^5-1/180*(-20*A*c+13*B*b)*x^2*(c*x^2+b*x+a)^(7/2)/c^2+1/10*B*x^3*(c*x^2+b*x
+a)^(7/2)/c-1/40320*(1287*b^3*B-1980*A*b^2*c-1804*a*b*B*c+1280*a*A*c^2-14*c
*(-220*A*b*c-108*B*a*c+143*B*b^2)*x)*(c*x^2+b*x+a)^(7/2)/c^4-1/262144*(-4*a
*c+b^2)^3*(240*A*a*b*c^2-220*A*b^3*c+48*B*a^2*c^2-264*B*a*b^2*c+143*B*b^4)*
arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(15/2)+1/131072*(-4*a*
c+b^2)^2*(240*A*a*b*c^2-220*A*b^3*c+48*B*a^2*c^2-264*B*a*b^2*c+143*B*b^4)*(
2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^7
```

Rubi [A] time = 0.49, antiderivative size = 432, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {832, 779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)}{15360c^5}-\left(b^2-4ac\right)(b+2cx)\left(a+bx\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] ((b^2 - 4*a*c)^2*(143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 +
 48*a^2*B*c^2)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(131072*c^7) - ((b^2 - 4*
a*c)*(143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^
2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(49152*c^6) + ((143*b^4*B - 220*A*b
^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2)*(b + 2*c*x)*(a + b*x +
 c*x^2)^(5/2))/(15360*c^5) - ((13*b*B - 20*A*c)*x^2*(a + b*x + c*x^2)^(7/2)
)/(180*c^2) + (B*x^3*(a + b*x + c*x^2)^(7/2))/(10*c) - ((1287*b^3*B - 1980*
A*b^2*c - 1804*a*b*B*c + 1280*a*A*c^2 - 14*c*(143*b^2*B - 220*A*b*c - 108*a
*B*c)*x)*(a + b*x + c*x^2)^(7/2))/(40320*c^4) - ((b^2 - 4*a*c)^3*(143*b^4*B
 - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2)*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(262144*c^(15/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int x^3(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx &= \frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}+\frac{\int x^2\left(-3aB-\frac{1}{2}(13bB-20Ac)x\right)\left(a+bx+cx^2\right)}{10c} \\
&= -\frac{(13bB-20Ac)x^2\left(a+bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}+\frac{\int x\,\big(a(1}{} \\
&= -\frac{(13bB-20Ac)x^2\left(a+bx+cx^2\right)^{7/2}}{180c^2}+\frac{Bx^3\left(a+bx+cx^2\right)^{7/2}}{10c}-\frac{\big(1287b^3}{} \\
&= \frac{\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b+2cx)\big(a+}{15360c^5} \\
&= -\frac{\left(b^2-4ac\right)\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{49152c^6} \\
&= \frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7} \\
&= \frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7} \\
&= \frac{\left(b^2-4ac\right)^2\left(143b^4B-220Ab^3c-264ab^2Bc+240aAbc^2+48a^2Bc^2\right)(b}{131072c^7}
\end{aligned}
$$

Mathematica [**A**] time = 0.76, size = 315, normalized size = 0.73

$$
\frac{\left(48a^2Bc^2+240aAbc^2-264ab^2Bc-220Ab^3c+143b^4B\right)\Big(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\Big(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2}-3\left(b^2-4ac\right)\Big(2\sqrt{c}\,(b+2}{393216c^{13/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((-13*b*B + 20*A*c)*x^2*(a + x*(b + c*x))^(7/2))/(18*c) + B*x^3*(a + x*(b
+ c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(-1287*b^3*B + 22*b^2*c*(90*A + 91
*B*x) - 8*a*c^2*(160*A + 189*B*x) + 44*b*c*(41*a*B - 70*A*c*x)))/(4032*c^3)
 + ((143*b^4*B - 220*A*b^3*c - 264*a*b^2*B*c + 240*a*A*b*c^2 + 48*a^2*B*c^2
)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^
(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b +
 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])]))))/(393216*c^(13/2)))/(10*c)
```

fricas [A] time = 1.75, size = 1511, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/165150720*(315*(143*B*b^10 - 3072*(B*a^5 + 5*A*a^4*b)*c^5 + 6400*(3*B*a
^4*b^2 + 4*A*a^3*b^3)*c^4 - 4480*(5*B*a^3*b^4 + 3*A*a^2*b^5)*c^3 + 1440*(7*
B*a^2*b^6 + 2*A*a*b^7)*c^2 - 220*(9*B*a*b^8 + A*b^9)*c)*sqrt(c)*log(-8*c^2*
x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
- 4*(4128768*B*c^10*x^9 + 45045*B*b^9*c - 1310720*A*a^4*c^6 + 229376*(41*B*
b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*b^2*c^8 + 4*(189*B*a + 185*A*b)*c^9)*
x^7 + 1024*(15*B*b^3*c^7 + 12160*A*a*c^9 + 4*(3181*B*a*b + 1545*A*b^2)*c^8)
*x^6 + 14080*(169*B*a^4*b + 333*A*a^3*b^2)*c^5 - 256*(65*B*b^4*c^6 - 48*(65
1*B*a^2 + 1255*A*a*b)*c^8 - 20*(24*B*a*b^2 + 5*A*b^3)*c^7)*x^5 - 2880*(1530
*B*a^3*b^3 + 1127*A*a^2*b^4)*c^4 + 128*(143*B*b^5*c^5 + 76800*A*a^2*c^8 + 2
40*(11*B*a^2*b + 7*A*a*b^2)*c^7 - 20*(60*B*a*b^3 + 11*A*b^4)*c^6)*x^4 + 336
*(7404*B*a^2*b^5 + 2425*A*a*b^6)*c^3 - 16*(1287*B*b^6*c^4 - 960*(21*B*a^3 +
 41*A*a^2*b)*c^7 + 80*(417*B*a^2*b^2 + 214*A*a*b^3)*c^6 - 220*(55*B*a*b^4 +
 9*A*b^5)*c^5)*x^3 - 4620*(122*B*a*b^7 + 15*A*b^8)*c^2 + 8*(3003*B*b^7*c^3
+ 81920*A*a^3*c^7 - 6080*(17*B*a^3*b + 21*A*a^2*b^2)*c^6 + 240*(431*B*a^2*b
^3 + 186*A*a*b^4)*c^5 - 132*(237*B*a*b^5 + 35*A*b^6)*c^4)*x^2 - 2*(15015*B*
b^8*c^2 + 1280*(189*B*a^4 + 689*A*a^3*b)*c^6 - 320*(2866*B*a^3*b^2 + 2637*A
*a^2*b^3)*c^5 + 720*(920*B*a^2*b^4 + 343*A*a*b^5)*c^4 - 924*(186*B*a*b^6 +
25*A*b^7)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^8, 1/82575360*(315*(143*B*b^10 -
 3072*(B*a^5 + 5*A*a^4*b)*c^5 + 6400*(3*B*a^4*b^2 + 4*A*a^3*b^3)*c^4 - 4480
*(5*B*a^3*b^4 + 3*A*a^2*b^5)*c^3 + 1440*(7*B*a^2*b^6 + 2*A*a*b^7)*c^2 - 220
*(9*B*a*b^8 + A*b^9)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(4128768*B*c^10*x^9 + 45045*B*b^9*
c - 1310720*A*a^4*c^6 + 229376*(41*B*b*c^9 + 20*A*c^10)*x^8 + 14336*(383*B*
b^2*c^8 + 4*(189*B*a + 185*A*b)*c^9)*x^7 + 1024*(15*B*b^3*c^7 + 12160*A*a*c
^9 + 4*(3181*B*a*b + 1545*A*b^2)*c^8)*x^6 + 14080*(169*B*a^4*b + 333*A*a^3*
b^2)*c^5 - 256*(65*B*b^4*c^6 - 48*(651*B*a^2 + 1255*A*a*b)*c^8 - 20*(24*B*a
*b^2 + 5*A*b^3)*c^7)*x^5 - 2880*(1530*B*a^3*b^3 + 1127*A*a^2*b^4)*c^4 + 128
*(143*B*b^5*c^5 + 76800*A*a^2*c^8 + 240*(11*B*a^2*b + 7*A*a*b^2)*c^7 - 20*(
60*B*a*b^3 + 11*A*b^4)*c^6)*x^4 + 336*(7404*B*a^2*b^5 + 2425*A*a*b^6)*c^3 -
 16*(1287*B*b^6*c^4 - 960*(21*B*a^3 + 41*A*a^2*b)*c^7 + 80*(417*B*a^2*b^2 +
 214*A*a*b^3)*c^6 - 220*(55*B*a*b^4 + 9*A*b^5)*c^5)*x^3 - 4620*(122*B*a*b^7
 + 15*A*b^8)*c^2 + 8*(3003*B*b^7*c^3 + 81920*A*a^3*c^7 - 6080*(17*B*a^3*b +
 21*A*a^2*b^2)*c^6 + 240*(431*B*a^2*b^3 + 186*A*a*b^4)*c^5 - 132*(237*B*a*b
^5 + 35*A*b^6)*c^4)*x^2 - 2*(15015*B*b^8*c^2 + 1280*(189*B*a^4 + 689*A*a^3*
b)*c^6 - 320*(2866*B*a^3*b^2 + 2637*A*a^2*b^3)*c^5 + 720*(920*B*a^2*b^4 + 3
43*A*a*b^5)*c^4 - 924*(186*B*a*b^6 + 25*A*b^7)*c^3)*x)*sqrt(c*x^2 + b*x + a
))/c^8]
```

giac [A] time = 0.32, size = 769, normalized size = 1.78

$$\frac{1}{41287680}\sqrt{cx^{2}+bx+a}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(4\Bigg(14\Bigg(16\Bigg(18\,Bc^{2}x+\frac{41\,Bbc^{10}+20\,Ac^{11}}{c^{9}}\Bigg)x+\frac{383\,Bb^{2}c^{9}+756\,Bac^{10}+}{c^{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/41287680*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(18*B*c^2*x + (4
1*B*b*c^10 + 20*A*c^11)/c^9)*x + (383*B*b^2*c^9 + 756*B*a*c^10 + 740*A*b*c^
10)/c^9)*x + (15*B*b^3*c^8 + 12724*B*a*b*c^9 + 6180*A*b^2*c^9 + 12160*A*a*c
^10)/c^9)*x - (65*B*b^4*c^7 - 480*B*a*b^2*c^8 - 100*A*b^3*c^8 - 31248*B*a^2
*c^9 - 60240*A*a*b*c^9)/c^9)*x + (143*B*b^5*c^6 - 1200*B*a*b^3*c^7 - 220*A*
b^4*c^7 + 2640*B*a^2*b*c^8 + 1680*A*a*b^2*c^8 + 76800*A*a^2*c^9)/c^9)*x - (
1287*B*b^6*c^5 - 12100*B*a*b^4*c^6 - 1980*A*b^5*c^6 + 33360*B*a^2*b^2*c^7 +
 17120*A*a*b^3*c^7 - 20160*B*a^3*c^8 - 39360*A*a^2*b*c^8)/c^9)*x + (3003*B*
b^7*c^4 - 31284*B*a*b^5*c^5 - 4620*A*b^6*c^5 + 103440*B*a^2*b^3*c^6 + 44640
*A*a*b^4*c^6 - 103360*B*a^3*b*c^7 - 127680*A*a^2*b^2*c^7 + 81920*A*a^3*c^8)
/c^9)*x - (15015*B*b^8*c^3 - 171864*B*a*b^6*c^4 - 23100*A*b^7*c^4 + 662400*
B*a^2*b^4*c^5 + 246960*A*a*b^5*c^5 - 917120*B*a^3*b^2*c^6 - 843840*A*a^2*b^
3*c^6 + 241920*B*a^4*c^7 + 881920*A*a^3*b*c^7)/c^9)*x + (45045*B*b^9*c^2 -
563640*B*a*b^7*c^3 - 69300*A*b^8*c^3 + 2487744*B*a^2*b^5*c^4 + 814800*A*a*b
^6*c^4 - 4406400*B*a^3*b^3*c^5 - 3245760*A*a^2*b^4*c^5 + 2379520*B*a^4*b*c^
6 + 4688640*A*a^3*b^2*c^6 - 1310720*A*a^4*c^7)/c^9) + 1/262144*(143*B*b^10
- 1980*B*a*b^8*c - 220*A*b^9*c + 10080*B*a^2*b^6*c^2 + 2880*A*a*b^7*c^2 - 2
2400*B*a^3*b^4*c^3 - 13440*A*a^2*b^5*c^3 + 19200*B*a^4*b^2*c^4 + 25600*A*a^
3*b^3*c^4 - 3072*B*a^5*c^5 - 15360*A*a^4*b*c^5)*log(abs(-2*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*sqrt(c) - b))/c^(15/2)
```

maple [B] time = 0.07, size = 1549, normalized size = 3.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 125/4096*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)*x*a-35/768*A*b^3/c^3*(c*x^2+b*x+a)^(
3/2)*x*a+15/256*A*b/c^2*a^3*(c*x^2+b*x+a)^(1/2)*x+5/128*A*b/c^2*a^2*(c*x^2+
b*x+a)^(3/2)*x-85/1024*A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a^2-11/320*B*b^2/c^3
*a*(c*x^2+b*x+a)^(5/2)*x-23/512*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)*x-9/128*B
*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)*x+209/6144*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)*x
*a-11/512*B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*x*a+139/2048*B*b^4/c^4*(c*x^2+b*x+a
)^(1/2)*x*a^2+1/32*A*b/c^2*a*(c*x^2+b*x+a)^(5/2)*x+139/4096*B*b^5/c^5*(c*x^
2+b*x+a)^(1/2)*a^2-11/1024*B*b^7/c^6*(c*x^2+b*x+a)^(1/2)*a-45/4096*A*b^7/c^
(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/256*A*b/c^(5/2)*a^4
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-25/256*A*b^3/c^(7/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-55/16384*A*b^7/c^5*(c*x^2+b*x+a)^(1/
2)*x-85/2048*A*b^4/c^4*(c*x^2+b*x+a)^(1/2)*a^2+125/8192*A*b^6/c^5*(c*x^2+b*
x+a)^(1/2)*a+55/6144*A*b^5/c^4*(c*x^2+b*x+a)^(3/2)*x-35/1536*A*b^4/c^4*(c*x
^2+b*x+a)^(3/2)*a-11/384*A*b^3/c^3*(c*x^2+b*x+a)^(5/2)*x+1/64*A*b^2/c^3*a*(
c*x^2+b*x+a)^(5/2)+5/256*A*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)+15/512*A*b^2/c^3
*a^3*(c*x^2+b*x+a)^(1/2)+105/2048*A*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))*a^2-11/144*A*b/c^2*x*(c*x^2+b*x+a)^(7/2)+143/7680*B*b^4/c^
4*(c*x^2+b*x+a)^(5/2)*x-11/640*B*b^3/c^4*a*(c*x^2+b*x+a)^(5/2)-23/1024*B*b^
3/c^4*a^2*(c*x^2+b*x+a)^(3/2)-9/256*B*b^3/c^4*a^3*(c*x^2+b*x+a)^(1/2)+143/2
880*B*b^2/c^3*x*(c*x^2+b*x+a)^(7/2)+1/128*B*a^3/c^2*(c*x^2+b*x+a)^(3/2)*x+1
/256*B*a^3/c^3*(c*x^2+b*x+a)^(3/2)*b+3/256*B*a^4/c^2*(c*x^2+b*x+a)^(1/2)*x+
3/512*B*a^4/c^3*(c*x^2+b*x+a)^(1/2)*b-143/24576*B*b^6/c^5*(c*x^2+b*x+a)^(3/
2)*x+209/12288*B*b^5/c^5*(c*x^2+b*x+a)^(3/2)*a+143/65536*B*b^8/c^6*(c*x^2+b
*x+a)^(1/2)*x+451/10080*B*b/c^3*a*(c*x^2+b*x+a)^(7/2)+3/256*B*a^5/c^(5/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-143/262144*B*b^10/c^(15/2)*ln((c
*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+143/15360*B*b^5/c^5*(c*x^2+b*x+a)^(5
/2)-143/49152*B*b^7/c^6*(c*x^2+b*x+a)^(3/2)+143/131072*B*b^9/c^7*(c*x^2+b*x
+a)^(1/2)-143/4480*B*b^3/c^4*(c*x^2+b*x+a)^(7/2)-2/63*A*a/c^2*(c*x^2+b*x+a)
```

```
^(7/2)-11/768*A*b^4/c^4*(c*x^2+b*x+a)^(5/2)+55/12288*A*b^6/c^5*(c*x^2+b*x+a
)^(3/2)-55/32768*A*b^8/c^6*(c*x^2+b*x+a)^(1/2)+11/224*A*b^2/c^3*(c*x^2+b*x+
a)^(7/2)+1/9*A*x^2*(c*x^2+b*x+a)^(7/2)/c+55/65536*A*b^9/c^(13/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-13/180*B*b/c^2*x^2*(c*x^2+b*x+a)^(7/2)+1/
320*B*a^2/c^3*(c*x^2+b*x+a)^(5/2)*b-75/1024*B*b^2/c^(7/2)*a^4*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+175/2048*B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^3-315/8192*B*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*a^2+1/160*B*a^2/c^2*(c*x^2+b*x+a)^(5/2)*x-3/80*B*a/c^2*
x*(c*x^2+b*x+a)^(7/2)+495/65536*B*b^8/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a+1/10*B*x^3*(c*x^2+b*x+a)^(7/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^3\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^3*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^{3} \left(A + B x\right) \left(a + b x + c x^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**3*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.937 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=333

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aBc-14cx(11bB-18Ac)-162Abc+99b^2B\right)}{2016c^3}+\frac{5\left(b^2-4ac\right)^3\left(8aAc^2-12abBc-18Ab^2\right.}{65536c^1}$$

```
[Out] 5/12288*(-4*a*c+b^2)*(8*A*a*c^2-18*A*b^2*c-12*B*a*b*c+11*B*b^3)*(2*c*x+b)*(
c*x^2+b*x+a)^(3/2)/c^5-1/768*(8*A*a*c^2-18*A*b^2*c-12*B*a*b*c+11*B*b^3)*(2*
c*x+b)*(c*x^2+b*x+a)^(5/2)/c^4+1/9*B*x^2*(c*x^2+b*x+a)^(7/2)/c+1/2016*(99*b
^2*B-162*A*b*c-64*a*B*c-14*c*(-18*A*c+11*B*b)*x)*(c*x^2+b*x+a)^(7/2)/c^3+5/
65536*(-4*a*c+b^2)^3*(8*A*a*c^2-18*A*b^2*c-12*B*a*b*c+11*B*b^3)*arctanh(1/2
*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(13/2)-5/32768*(-4*a*c+b^2)^2*(8*
A*a*c^2-18*A*b^2*c-12*B*a*b*c+11*B*b^3)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^6
```

Rubi [A] time = 0.31, antiderivative size = 333, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aBc-14cx(11bB-18Ac)-162Abc+99b^2B\right)}{2016c^3}-\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(8aAc^2-12a\right.}{768c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(11*b^3*B - 18*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2
*c*x)*Sqrt[a + b*x + c*x^2])/(32768*c^6) + (5*(b^2 - 4*a*c)*(11*b^3*B - 18*
A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(122
88*c^5) - ((11*b^3*B - 18*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2)*(b + 2*c*x)*(a
+ b*x + c*x^2)^(5/2))/(768*c^4) + (B*x^2*(a + b*x + c*x^2)^(7/2))/(9*c) + (
(99*b^2*B - 162*A*b*c - 64*a*B*c - 14*c*(11*b*B - 18*A*c)*x)*(a + b*x + c*x
^2)^(7/2))/(2016*c^3) + (5*(b^2 - 4*a*c)^3*(11*b^3*B - 18*A*b^2*c - 12*a*b*
B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(6
5536*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
```

```
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int x^2(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx &= \frac{Bx^2\left(a+bx+cx^2\right)^{7/2}}{9c}+\frac{\int x\left(-2aB-\frac{1}{2}(11bB-18Ac)x\right)\left(a+bx+cx^2\right)^{5/2}\,d}{9c} \\
&= \frac{Bx^2\left(a+bx+cx^2\right)^{7/2}}{9c}+\frac{\left(99b^2B-162Abc-64aBc-14c(11bB-18Ac)x\right)\left(\right.}{2016c^3} \\
&= -\frac{\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{768c^4}+\frac{Bx^2\left(a\right.}{} \\
&= \frac{5\left(b^2-4ac\right)\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\left(a+bx+cx^2\right)^{3/}}{12288c^5} \\
&= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6} \\
&= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6} \\
&= -\frac{5\left(b^2-4ac\right)^2\left(11b^3B-18Ab^2c-12abBc+8aAc^2\right)(b+2cx)\sqrt{a+bx+cx}}{32768c^6}
\end{aligned}$$

Mathematica [A] time = 0.45, size = 254, normalized size = 0.76

$$\frac{\frac{(a+x(b+cx))^{7/2}\left(4c(63Acx-16aB)-2bc(81A+77Bx)+99b^2B\right)}{224c^2}+\frac{3\left(-8aAc^2+12abBc+18Ab^2c-11b^3B\right)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(16c^{3/2}\right.\right.}{}}{9c}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (B*x^2*(a + x*(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(99*b^2*B - 2*b*c
*(81*A + 77*B*x) + 4*c*(-16*a*B + 63*A*c*x)))/(224*c^2) + (3*(-11*b^3*B + 1
8*A*b^2*c + 12*a*b*B*c - 8*a*A*c^2)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*
x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2)
 - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*
a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))))/(65536*c^(1
1/2)))/(9*c)
```

fricas [B] time = 1.77, size = 1263, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/8257536*(315*(11*B*b^9 - 512*A*a^4*c^5 + 768*(B*a^4*b + 2*A*a^3*b^2)*c^4
 - 320*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 224*(3*B*a^2*b^5 + A*a*b^6)*c^2 -
18*(8*B*a*b^7 + A*b^8)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(229376*B*c^9*x^8 - 3465*B
*b^8*c + 14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 1024*(309*B*b^2*c^7 + 2*(304*B
*a + 297*A*b)*c^8)*x^6 - 128*(512*B*a^4 + 1989*A*a^3*b)*c^5 + 256*(5*B*b^3*
c^6 + 2856*A*a*c^8 + 6*(502*B*a*b + 243*A*b^2)*c^7)*x^5 + 96*(2442*B*a^3*b^
2 + 2359*A*a^2*b^3)*c^4 - 128*(11*B*b^4*c^5 - 24*(160*B*a^2 + 307*A*a*b)*c^
7 - 6*(14*B*a*b^2 + 3*A*b^3)*c^6)*x^4 - 504*(322*B*a^2*b^4 + 125*A*a*b^5)*c
^3 + 16*(99*B*b^5*c^4 + 39648*A*a^2*c^7 + 48*(41*B*a^2*b + 27*A*a*b^2)*c^6
- 2*(428*B*a*b^3 + 81*A*b^4)*c^5)*x^3 + 210*(194*B*a*b^6 + 27*A*b^7)*c^2 -
8*(231*B*b^6*c^3 - 32*(128*B*a^3 + 261*A*a^2*b)*c^6 + 48*(133*B*a^2*b^2 + 7
1*A*a*b^3)*c^5 - 18*(124*B*a*b^4 + 21*A*b^5)*c^4)*x^2 + 2*(1155*B*b^7*c^2 +
 40320*A*a^3*c^6 - 32*(1378*B*a^3*b + 1791*A*a^2*b^2)*c^5 + 24*(1758*B*a^2*
b^3 + 791*A*a*b^4)*c^4 - 126*(98*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c*x^2 + b
*x + a))/c^7, -1/4128768*(315*(11*B*b^9 - 512*A*a^4*c^5 + 768*(B*a^4*b + 2*
A*a^3*b^2)*c^4 - 320*(4*B*a^3*b^3 + 3*A*a^2*b^4)*c^3 + 224*(3*B*a^2*b^5 + A
*a*b^6)*c^2 - 18*(8*B*a*b^7 + A*b^8)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(229376*B*c^9*x^8
- 3465*B*b^8*c + 14336*(37*B*b*c^8 + 18*A*c^9)*x^7 + 1024*(309*B*b^2*c^7 +
2*(304*B*a + 297*A*b)*c^8)*x^6 - 128*(512*B*a^4 + 1989*A*a^3*b)*c^5 + 256*(
5*B*b^3*c^6 + 2856*A*a*c^8 + 6*(502*B*a*b + 243*A*b^2)*c^7)*x^5 + 96*(2442*
B*a^3*b^2 + 2359*A*a^2*b^3)*c^4 - 128*(11*B*b^4*c^5 - 24*(160*B*a^2 + 307*A
*a*b)*c^7 - 6*(14*B*a*b^2 + 3*A*b^3)*c^6)*x^4 - 504*(322*B*a^2*b^4 + 125*A*
a*b^5)*c^3 + 16*(99*B*b^5*c^4 + 39648*A*a^2*c^7 + 48*(41*B*a^2*b + 27*A*a*b
^2)*c^6 - 2*(428*B*a*b^3 + 81*A*b^4)*c^5)*x^3 + 210*(194*B*a*b^6 + 27*A*b^7
)*c^2 - 8*(231*B*b^6*c^3 - 32*(128*B*a^3 + 261*A*a^2*b)*c^6 + 48*(133*B*a^2
*b^2 + 71*A*a*b^3)*c^5 - 18*(124*B*a*b^4 + 21*A*b^5)*c^4)*x^2 + 2*(1155*B*b
^7*c^2 + 40320*A*a^3*c^6 - 32*(1378*B*a^3*b + 1791*A*a^2*b^2)*c^5 + 24*(175
8*B*a^2*b^3 + 791*A*a*b^4)*c^4 - 126*(98*B*a*b^5 + 15*A*b^6)*c^3)*x)*sqrt(c
*x^2 + b*x + a))/c^7]
```

giac [B] time = 0.27, size = 643, normalized size = 1.93

$$\frac{1}{2064384}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(2\left(4\left(14\left(16\,Bc^2x+\frac{37\,Bbc^9+18\,Ac^{10}}{c^8}\right)x+\frac{309\,Bb^2c^8+608\,Bac^9+594}{c^8}\right.\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x + (37*B*b
*c^9 + 18*A*c^10)/c^8)*x + (309*B*b^2*c^8 + 608*B*a*c^9 + 594*A*b*c^9)/c^8)
*x + (5*B*b^3*c^7 + 3012*B*a*b*c^8 + 1458*A*b^2*c^8 + 2856*A*a*c^9)/c^8)*x
- (11*B*b^4*c^6 - 84*B*a*b^2*c^7 - 18*A*b^3*c^7 - 3840*B*a^2*c^8 - 7368*A*a
*b*c^8)/c^8)*x + (99*B*b^5*c^5 - 856*B*a*b^3*c^6 - 162*A*b^4*c^6 + 1968*B*a
^2*b*c^7 + 1296*A*a*b^2*c^7 + 39648*A*a^2*c^8)/c^8)*x - (231*B*b^6*c^4 - 22
32*B*a*b^4*c^5 - 378*A*b^5*c^5 + 6384*B*a^2*b^2*c^6 + 3408*A*a*b^3*c^6 - 40
96*B*a^3*c^7 - 8352*A*a^2*b*c^7)/c^8)*x + (1155*B*b^7*c^3 - 12348*B*a*b^5*c
^4 - 1890*A*b^6*c^4 + 42192*B*a^2*b^3*c^5 + 18984*A*a*b^4*c^5 - 44096*B*a^3
*b*c^6 - 57312*A*a^2*b^2*c^6 + 40320*A*a^3*c^7)/c^8)*x - (3465*B*b^8*c^2 -
40740*B*a*b^6*c^3 - 5670*A*b^7*c^3 + 162288*B*a^2*b^4*c^4 + 63000*A*a*b^5*c
^4 - 234432*B*a^3*b^2*c^5 - 226464*A*a^2*b^3*c^5 + 65536*B*a^4*c^6 + 254592
*A*a^3*b*c^6)/c^8) - 5/65536*(11*B*b^9 - 144*B*a*b^7*c - 18*A*b^8*c + 672*B
*a^2*b^5*c^2 + 224*A*a*b^6*c^2 - 1280*B*a^3*b^3*c^3 - 960*A*a^2*b^4*c^3 + 7
68*B*a^4*b*c^4 + 1536*A*a^3*b^2*c^4 - 512*A*a^4*c^5)*log(abs(-2*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.06, size = 1277, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 125/4096*B*b^5/c^4*(c*x^2+b*x+a)^(1/2)*x*a-35/768*B*b^3/c^3*(c*x^2+b*x+a)^(
3/2)*x*a-85/1024*B*b^3/c^3*(c*x^2+b*x+a)^(1/2)*x*a^2+25/384*A*b^2/c^2*(c*x^
2+b*x+a)^(3/2)*x*a-95/2048*A*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x*a+55/512*A*b^2/c
^2*(c*x^2+b*x+a)^(1/2)*x*a^2+1/32*B*b/c^2*a*(c*x^2+b*x+a)^(5/2)*x+15/256*B*
b/c^2*a^3*(c*x^2+b*x+a)^(1/2)*x-5/256*A*a^3/c^2*(c*x^2+b*x+a)^(1/2)*b-5/128
*A*a^3/c*(c*x^2+b*x+a)^(1/2)*x-1/48*A*a/c*(c*x^2+b*x+a)^(5/2)*x+1/64*B*b^2/
c^3*a*(c*x^2+b*x+a)^(5/2)+15/512*B*b^2/c^3*a^3*(c*x^2+b*x+a)^(1/2)-15/2048*
A*b^5/c^4*(c*x^2+b*x+a)^(3/2)-5/128*A*a^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))+1/8*A*x*(c*x^2+b*x+a)^(7/2)/c-45/32768*A*b^8/c^(11/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+45/16384*A*b^7/c^5*(c*x^2+b*x+a)^
(1/2)-9/112*A*b/c^2*(c*x^2+b*x+a)^(7/2)+3/128*A*b^3/c^3*(c*x^2+b*x+a)^(5/2)
-2/63*B*a/c^2*(c*x^2+b*x+a)^(7/2)+55/65536*B*b^9/c^(13/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))+55/12288*B*b^6/c^5*(c*x^2+b*x+a)^(3/2)-55/32768*
B*b^8/c^6*(c*x^2+b*x+a)^(1/2)+11/224*B*b^2/c^3*(c*x^2+b*x+a)^(7/2)-11/768*B
*b^4/c^4*(c*x^2+b*x+a)^(5/2)+5/128*B*b/c^2*a^2*(c*x^2+b*x+a)^(3/2)*x-25/256
*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3+25/768*A*b^3
/c^3*(c*x^2+b*x+a)^(3/2)*a+45/8192*A*b^6/c^4*(c*x^2+b*x+a)^(1/2)*x+55/1024*
A*b^3/c^3*(c*x^2+b*x+a)^(1/2)*a^2-95/4096*A*b^5/c^4*(c*x^2+b*x+a)^(1/2)*a+1
5/128*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-5/384*A
*a^2/c^2*(c*x^2+b*x+a)^(3/2)*b+15/256*B*b/c^(5/2)*a^4*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))+105/2048*B*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*a^2-35/1536*B*b^4/c^4*(c*x^2+b*x+a)^(3/2)*a-11/384*B*b^3/c^3
*(c*x^2+b*x+a)^(5/2)*x+55/6144*B*b^5/c^4*(c*x^2+b*x+a)^(3/2)*x-11/144*B*b/c
^2*x*(c*x^2+b*x+a)^(7/2)-55/16384*B*b^7/c^5*(c*x^2+b*x+a)^(1/2)*x+125/8192*
B*b^6/c^5*(c*x^2+b*x+a)^(1/2)*a+35/2048*A*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a-75/1024*A*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))*a^2+3/64*A*b^2/c^2*(c*x^2+b*x+a)^(5/2)*x-15/1024*A*b^4/c^3*
(c*x^2+b*x+a)^(3/2)*x+5/256*B*b^2/c^3*a^2*(c*x^2+b*x+a)^(3/2)-1/96*A*a/c^2*
(c*x^2+b*x+a)^(5/2)*b-5/192*A*a^2/c*(c*x^2+b*x+a)^(3/2)*x-45/4096*B*b^7/c^(
11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-85/2048*B*b^4/c^4*(c*x^
2+b*x+a)^(1/2)*a^2+1/9*B*x^2*(c*x^2+b*x+a)^(7/2)/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x^2*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x^2\left(A+Bx\right)\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x**2*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.938 $\int x(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=252

$$-\frac{5\left(b^2-4ac\right)^3\left(-4aBc-16Abc+9b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{32768c^{11/2}}+\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\ (-4aBc-}{16384c^5}$$

```
[Out] -5/6144*(-4*a*c+b^2)*(-16*A*b*c-4*B*a*c+9*B*b^2)*(2*c*x+b)*(c*x^2+b*x+a)^(3
/2)/c^4+1/384*(-16*A*b*c-4*B*a*c+9*B*b^2)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^3
-1/112*(-14*B*c*x-16*A*c+9*B*b)*(c*x^2+b*x+a)^(7/2)/c^2-5/32768*(-4*a*c+b^2
)^3*(-16*A*b*c-4*B*a*c+9*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)
^(1/2))/c^(11/2)+5/16384*(-4*a*c+b^2)^2*(-16*A*b*c-4*B*a*c+9*B*b^2)*(2*c*x+
b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi **[A]** time = 0.12, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.190$, Rules used = {779, 612, 621, 206}

$$\frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}\left(-4aBc-16Abc+9b^2B\right)}{384c^3}-\frac{5\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}\ (-4aBc-16Abc+}{6144c^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^2*(9*b^2*B - 16*A*b*c - 4*a*B*c)*(b + 2*c*x)*Sqrt[a + b*x
+ c*x^2])/(16384*c^5) - (5*(b^2 - 4*a*c)*(9*b^2*B - 16*A*b*c - 4*a*B*c)*(b
+ 2*c*x)*(a + b*x + c*x^2)^(3/2))/(6144*c^4) + ((9*b^2*B - 16*A*b*c - 4*a*B
*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B - 16*A*c - 14*
B*c*x)*(a + b*x + c*x^2)^(7/2))/(112*c^2) - (5*(b^2 - 4*a*c)^3*(9*b^2*B - 1
6*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/
(32768*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && !LeQ[p, -1]
```

Rubi steps

$$\int x(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx = -\frac{(9bB-16Ac-14Bcx)\left(a+bx+cx^2\right)^{7/2}}{112c^2}+\frac{\left(9b^2B-16Abc-4aBc\right)\int \left(a}{32c^2}$$

$$=\frac{\left(9b^2B-16Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{384c^3}-\frac{(9bB-16Ac-14B}{11}$$

$$=-\frac{5\left(b^2-4ac\right)\left(9b^2B-16Abc-4aBc\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{6144c^4}+\frac{\left(9b^2}{}$$

$$=\frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5}-\frac{5\left(b^2-4\right.}{}$$

$$=\frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5}-\frac{5\left(b^2-4\right.}{}$$

$$=\frac{5\left(b^2-4ac\right)^2\left(9b^2B-16Abc-4aBc\right)(b+2cx)\sqrt{a+bx+cx^2}}{16384c^5}-\frac{5\left(b^2-4\right.}{}$$

Mathematica [A] time = 0.60, size = 205, normalized size = 0.81

$$\frac{\frac{7\left(-2aBc-8Abc+\frac{9b^2B}{2}\right)\left(2(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{128c^{5/2}}+\frac{(b+2cx)(a+x(b+cx))^{3/2}}{8c}\right.\right.}{24c}}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] ((-9*b*B + 2*c*(8*A + 7*B*x))*(a + x*(b + c*x))^(7/2) + (7*((9*b^2*B)/2 - 8
*A*b*c - 2*a*B*c)*(2*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*
(((b + 2*c*x)*(a + x*(b + c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]
*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*S
qrt[c]*Sqrt[a + x*(b + c*x)])]))/(128*c^(5/2)))))/(24*c))/(112*c^2)
```

fricas [B] time = 1.62, size = 1039, normalized size = 4.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/1376256*(105*(9*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*c^4 - 768*(B*a^3*b^2 + A
*a^2*b^3)*c^3 + 96*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 - 16*(7*B*a*b^6 + A*b^7)*c
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 4*(43008*B*c^8*x^7 + 945*B*b^7*c + 49152*A*a^3*c^5 +
 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 + 4*(119*B*a + 116*A
*b)*c^7)*x^5 - 192*(221*B*a^3*b + 308*A*a^2*b^2)*c^4 + 128*(3*B*b^3*c^5 + 1
152*A*a*c^7 + 4*(307*B*a*b + 148*A*b^2)*c^6)*x^4 + 112*(337*B*a^2*b^3 + 160
*A*a*b^4)*c^3 - 16*(27*B*b^4*c^4 - 16*(413*B*a^2 + 788*A*a*b)*c^6 - 24*(9*B
*a*b^2 + 2*A*b^3)*c^5)*x^3 - 420*(25*B*a*b^5 + 4*A*b^6)*c^2 + 8*(63*B*b^5*c
^3 + 18432*A*a^2*c^6 + 48*(29*B*a^2*b + 20*A*a*b^2)*c^5 - 8*(71*B*a*b^3 + 1
4*A*b^4)*c^4)*x^2 - 2*(315*B*b^6*c^2 - 192*(35*B*a^3 + 76*A*a^2*b)*c^5 + 48
*(199*B*a^2*b^2 + 112*A*a*b^3)*c^4 - 28*(113*B*a*b^4 + 20*A*b^5)*c^3)*x)*sq
rt(c*x^2 + b*x + a))/c^6, 1/688128*(105*(9*B*b^8 + 256*(B*a^4 + 4*A*a^3*b)*
c^4 - 768*(B*a^3*b^2 + A*a^2*b^3)*c^3 + 96*(5*B*a^2*b^4 + 2*A*a*b^5)*c^2 -
16*(7*B*a*b^6 + A*b^7)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(43008*B*c^8*x^7 + 945*B*b^7*c +
 49152*A*a^3*c^5 + 3072*(33*B*b*c^7 + 16*A*c^8)*x^6 + 256*(243*B*b^2*c^6 +
4*(119*B*a + 116*A*b)*c^7)*x^5 - 192*(221*B*a^3*b + 308*A*a^2*b^2)*c^4 + 12
8*(3*B*b^3*c^5 + 1152*A*a*c^7 + 4*(307*B*a*b + 148*A*b^2)*c^6)*x^4 + 112*(3
37*B*a^2*b^3 + 160*A*a*b^4)*c^3 - 16*(27*B*b^4*c^4 - 16*(413*B*a^2 + 788*A*
a*b)*c^6 - 24*(9*B*a*b^2 + 2*A*b^3)*c^5)*x^3 - 420*(25*B*a*b^5 + 4*A*b^6)*c
^2 + 8*(63*B*b^5*c^3 + 18432*A*a^2*c^6 + 48*(29*B*a^2*b + 20*A*a*b^2)*c^5 -
 8*(71*B*a*b^3 + 14*A*b^4)*c^4)*x^2 - 2*(315*B*b^6*c^2 - 192*(35*B*a^3 + 76
*A*a^2*b)*c^5 + 48*(199*B*a^2*b^2 + 112*A*a*b^3)*c^4 - 28*(113*B*a*b^4 + 20
*A*b^5)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^6]
```

giac [B] time = 0.31, size = 528, normalized size = 2.10

$$\frac{1}{344064}\sqrt{cx^2+bx+a}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(12\Bigg(14\,Bc^2x+\frac{33\,Bbc^8+16\,Ac^9}{c^7}\Bigg)x+\frac{243\,Bb^2c^7+476\,Bac^8+464\,Abc^8}{c^7}\Bigg)x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x + (33*B*b*c^8
 + 16*A*c^9)/c^7)*x + (243*B*b^2*c^7 + 476*B*a*c^8 + 464*A*b*c^8)/c^7)*x +
(3*B*b^3*c^6 + 1228*B*a*b*c^7 + 592*A*b^2*c^7 + 1152*A*a*c^8)/c^7)*x - (27*
B*b^4*c^5 - 216*B*a*b^2*c^6 - 48*A*b^3*c^6 - 6608*B*a^2*c^7 - 12608*A*a*b*c
^7)/c^7)*x + (63*B*b^5*c^4 - 568*B*a*b^3*c^5 - 112*A*b^4*c^5 + 1392*B*a^2*b
*c^6 + 960*A*a*b^2*c^6 + 18432*A*a^2*c^7)/c^7)*x - (315*B*b^6*c^3 - 3164*B*
a*b^4*c^4 - 560*A*b^5*c^4 + 9552*B*a^2*b^2*c^5 + 5376*A*a*b^3*c^5 - 6720*B*
a^3*c^6 - 14592*A*a^2*b*c^6)/c^7)*x + (945*B*b^7*c^2 - 10500*B*a*b^5*c^3 -
1680*A*b^6*c^3 + 37744*B*a^2*b^3*c^4 + 17920*A*a*b^4*c^4 - 42432*B*a^3*b*c^
5 - 59136*A*a^2*b^2*c^5 + 49152*A*a^3*c^6)/c^7) + 5/32768*(9*B*b^8 - 112*B*
a*b^6*c - 16*A*b^7*c + 480*B*a^2*b^4*c^2 + 192*A*a*b^5*c^2 - 768*B*a^3*b^2*
c^3 - 768*A*a^2*b^3*c^3 + 256*B*a^4*c^4 + 1024*A*a^3*b*c^4)*log(abs(-2*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 1034, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -95/2048*B*b^4/c^3*(c*x^2+b*x+a)^(1/2)*x*a-5/32*A*b/c*(c*x^2+b*x+a)^(1/2)*x
*a^2+5/64*A*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x*a-5/48*A*b/c*(c*x^2+b*x+a)^(3/2)*
x*a+25/384*B*b^2/c^2*(c*x^2+b*x+a)^(3/2)*x*a+55/512*B*b^2/c^2*(c*x^2+b*x+a)
^(1/2)*x*a^2+15/128*B*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*a^3-5/256*B*a^3/c^2*(c*x^2+b*x+a)^(1/2)*b+55/1024*B*b^3/c^3*(c*x^2+b*x+a
)^(1/2)*a^2-15/1024*B*b^4/c^3*(c*x^2+b*x+a)^(3/2)*x-1/48*B*a/c*x*(c*x^2+b*x
+a)^(5/2)+5/192*A*b^3/c^2*(c*x^2+b*x+a)^(3/2)*x-5/128*B*a^3/c*(c*x^2+b*x+a)
^(1/2)*x+3/128*B*b^3/c^3*(c*x^2+b*x+a)^(5/2)-9/112*B*b/c^2*(c*x^2+b*x+a)^(7
/2)+25/768*B*b^3/c^3*(c*x^2+b*x+a)^(3/2)*a-5/192*B*a^2/c*(c*x^2+b*x+a)^(3/2
)*x+45/8192*B*b^6/c^4*(c*x^2+b*x+a)^(1/2)*x+3/64*B*b^2/c^2*x*(c*x^2+b*x+a)^
(5/2)-45/32768*B*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5
/128*B*a^4/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8*B*x*(c*x
^2+b*x+a)^(7/2)/c-1/12*A*b/c*x*(c*x^2+b*x+a)^(5/2)+45/16384*B*b^7/c^5*(c*x^
2+b*x+a)^(1/2)+1/7*A*(c*x^2+b*x+a)^(7/2)/c-5/96*A*b^2/c^2*(c*x^2+b*x+a)^(3/
2)*a-75/1024*B*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-
15/512*A*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+35/2048*
B*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/128*A*b^3/c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-5/384*B*a^2/c^2*(c*x^
2+b*x+a)^(3/2)*b-1/96*B*a/c^2*(c*x^2+b*x+a)^(5/2)*b-95/4096*B*b^5/c^4*(c*x^
2+b*x+a)^(1/2)*a-5/512*A*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x-5/64*A*b^2/c^2*(c*x^
2+b*x+a)^(1/2)*a^2+5/128*A*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a-5/32*A*b/c^(3/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-1/24*A*b^2/c^2*(c*x^2+b*x+a)
^(5/2)+5/384*A*b^4/c^3*(c*x^2+b*x+a)^(3/2)-5/1024*A*b^6/c^4*(c*x^2+b*x+a)^(
1/2)+5/2048*A*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/20
48*B*b^5/c^4*(c*x^2+b*x+a)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(x*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x\left(A+Bx\right)\left(a+bx+cx^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral(x*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.939 $\int (A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=203

$$\frac{5\left(b^2-4ac\right)^3(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2048c^{9/2}}-\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5\left(b^2-4ac\right)}{}$$

```
[Out] 5/384*(-4*a*c+b^2)*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^3-1/24*(-2*
A*c+B*b)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^2+1/7*B*(c*x^2+b*x+a)^(7/2)/c+5/20
48*(-4*a*c+b^2)^3*(-2*A*c+B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^
(1/2))/c^(9/2)-5/1024*(-4*a*c+b^2)^2*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x+a)^(
1/2)/c^4
```

Rubi [A] time = 0.10, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = $\{640, 612, 621, 206\}$

$$\frac{5\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-\frac{5\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5\left(b^2-4a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(1024*
c^4) + (5*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/
(384*c^3) - ((b*B - 2*A*c)*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(24*c^2) +
(B*(a + b*x + c*x^2)^(7/2))/(7*c) + (5*(b^2 - 4*a*c)^3*(b*B - 2*A*c)*ArcTan
h[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2048*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(a+bx+cx^2\right)^{5/2}dx = \frac{B\left(a+bx+cx^2\right)^{7/2}}{7c}+\frac{(-bB+2Ac)\int \left(a+bx+cx^2\right)^{5/2}dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{24c^2}+\frac{B\left(a+bx+cx^2\right)^{7/2}}{7c}+\left(5\left(b^2-4\right.\right.$$

$$= \frac{5\left(b^2-4ac\right)(bB-2Ac)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{384c^3}-\frac{(bB-2Ac)(b+2cx)\left(\right.}{24c^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4}+5\left(b^2-4ac\right)(bB-2A$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4}+5\left(b^2-4ac\right)(bB-2A$$

$$= -\frac{5\left(b^2-4ac\right)^2(bB-2Ac)(b+2cx)\sqrt{a+bx+cx^2}}{1024c^4}+5\left(b^2-4ac\right)(bB-2A$$

Mathematica [A] time = 0.29, size = 179, normalized size = 0.88

$$\frac{B(a+x(b+cx))^{7/2}}{7c}-\frac{(bB-2Ac)\left(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(16c^{3/2}(b+2cx)(a+x(b+c\right.\right.}{614}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (B*(a + x*(b + c*x))^(7/2))/(7*c) - ((b*B - 2*A*c)*(256*c^(5/2)*(b + 2*c*x)
*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(
b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)] - (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])
)))/(6144*c^(9/2))
```

fricas [B] time = 1.13, size = 843, normalized size = 4.15

$$\left[-\frac{105\left(Bb^7+128\,Aa^3c^4-32\left(2\,Ba^3b+3\,Aa^2b^2\right)c^3+24\left(2\,Ba^2b^3+Aab^4\right)c^2-2\left(6\,Bab^5+Ab^6\right)c\right)\sqrt{c}\,\log\left(-8\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/86016*(105*(B*b^7 + 128*A*a^3*c^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 +
24*(2*B*a^2*b^3 + A*a*b^4)*c^2 - 2*(6*B*a*b^5 + A*b^6)*c)*sqrt(c)*log(-8*c^
2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c
) - 4*(3072*B*c^7*x^6 - 105*B*b^6*c + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 96*
(32*B*a^3 + 77*A*a^2*b)*c^4 + 128*(37*B*b^2*c^5 + 2*(36*B*a + 35*A*b)*c^6)*
x^4 - 112*(33*B*a^2*b^2 + 20*A*a*b^3)*c^3 + 16*(3*B*b^3*c^4 + 728*A*a*c^6 +
 2*(394*B*a*b + 189*A*b^2)*c^5)*x^3 + 70*(16*B*a*b^4 + 3*A*b^5)*c^2 - 8*(7*
B*b^4*c^3 - 24*(48*B*a^2 + 91*A*a*b)*c^5 - 2*(30*B*a*b^2 + 7*A*b^3)*c^4)*x^
2 + 2*(35*B*b^5*c^2 + 7392*A*a^2*c^5 + 48*(19*B*a^2*b + 14*A*a*b^2)*c^4 - 1
4*(24*B*a*b^3 + 5*A*b^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/43008*(105*
(B*b^7 + 128*A*a^3*c^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*c^3 + 24*(2*B*a^2*b^3
 + A*a*b^4)*c^2 - 2*(6*B*a*b^5 + A*b^6)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(3072*B*c^7*x^6
 - 105*B*b^6*c + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 96*(32*B*a^3 + 77*A*a^2*
b)*c^4 + 128*(37*B*b^2*c^5 + 2*(36*B*a + 35*A*b)*c^6)*x^4 - 112*(33*B*a^2*b
^2 + 20*A*a*b^3)*c^3 + 16*(3*B*b^3*c^4 + 728*A*a*c^6 + 2*(394*B*a*b + 189*A
*b^2)*c^5)*x^3 + 70*(16*B*a*b^4 + 3*A*b^5)*c^2 - 8*(7*B*b^4*c^3 - 24*(48*B*
a^2 + 91*A*a*b)*c^5 - 2*(30*B*a*b^2 + 7*A*b^3)*c^4)*x^2 + 2*(35*B*b^5*c^2 +
 7392*A*a^2*c^5 + 48*(19*B*a^2*b + 14*A*a*b^2)*c^4 - 14*(24*B*a*b^3 + 5*A*b
^4)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [**B**] time = 0.31, size = 425, normalized size = 2.09

$$\frac{1}{21504}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(2\left(12\,Bc^2x+\frac{29\,Bbc^7+14\,Ac^8}{c^6}\right)x+\frac{37\,Bb^2c^6+72\,Bac^7+70\,Abc^7}{c^6}\right)x+\frac{3\,Bb^3c^5}{}\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14
*A*c^8)/c^6)*x + (37*B*b^2*c^6 + 72*B*a*c^7 + 70*A*b*c^7)/c^6)*x + (3*B*b^3
*c^5 + 788*B*a*b*c^6 + 378*A*b^2*c^6 + 728*A*a*c^7)/c^6)*x - (7*B*b^4*c^4 -
 60*B*a*b^2*c^5 - 14*A*b^3*c^5 - 1152*B*a^2*c^6 - 2184*A*a*b*c^6)/c^6)*x +
(35*B*b^5*c^3 - 336*B*a*b^3*c^4 - 70*A*b^4*c^4 + 912*B*a^2*b*c^5 + 672*A*a*
b^2*c^5 + 7392*A*a^2*c^6)/c^6)*x - (105*B*b^6*c^2 - 1120*B*a*b^4*c^3 - 210*
A*b^5*c^3 + 3696*B*a^2*b^2*c^4 + 2240*A*a*b^3*c^4 - 3072*B*a^3*c^5 - 7392*A
*a^2*b*c^5)/c^6) - 5/2048*(B*b^7 - 12*B*a*b^5*c - 2*A*b^6*c + 48*B*a^2*b^3*
c^2 + 24*A*a*b^4*c^2 - 64*B*a^3*b*c^3 - 96*A*a^2*b^2*c^3 + 128*A*a^3*c^4)*l
og(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [**B**] time = 0.05, size = 807, normalized size = 3.98

$$\frac{5A\,a^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{16\sqrt{c}}-\frac{15A\,a^2b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{64c^{\frac{3}{2}}}+\frac{15Aa\,b^4\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{256c^{\frac{5}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -1/24*B*b^2/c^2*(c*x^2+b*x+a)^(5/2)+5/384*B*b^4/c^3*(c*x^2+b*x+a)^(3/2)-5/1
92*A/c^2*(c*x^2+b*x+a)^(3/2)*b^3+1/12*A/c*(c*x^2+b*x+a)^(5/2)*b-5/1024*B*b^
6/c^4*(c*x^2+b*x+a)^(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+5/16*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*
a^3+5/16*A*(c*x^2+b*x+a)^(1/2)*x*a^2+5/24*A*(c*x^2+b*x+a)^(3/2)*x*a-5/1024*
A/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^6+5/512*A/c^3*(c*x^
2+b*x+a)^(1/2)*b^5+1/6*A*x*(c*x^2+b*x+a)^(5/2)-5/48*B*b/c*(c*x^2+b*x+a)^(3/
2)*x*a+5/64*B*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x*a-5/32*B*b/c*(c*x^2+b*x+a)^(1/2
)*x*a^2-5/32*A/c*(c*x^2+b*x+a)^(1/2)*x*a*b^2+5/48*A/c*(c*x^2+b*x+a)^(3/2)*b
*a-5/64*B*b^2/c^2*(c*x^2+b*x+a)^(1/2)*a^2+5/128*B*b^4/c^3*(c*x^2+b*x+a)^(1/
2)*a+5/256*A/c^2*(c*x^2+b*x+a)^(1/2)*x*b^4+15/128*B*b^3/c^(5/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-15/512*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))*a+15/256*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*b^4*a+5/32*A/c*(c*x^2+b*x+a)^(1/2)*b*a^2-5/32*B*b/c^(3/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3-1/12*B*b/c*x*(c*x^2+b*x+a)^(5
/2)-15/64*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^2*a^2-5/5
12*B*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x+5/192*B*b^3/c^2*(c*x^2+b*x+a)^(3/2)*x-5/
96*B*b^2/c^2*(c*x^2+b*x+a)^(3/2)*a-5/96*A/c*(c*x^2+b*x+a)^(3/2)*x*b^2-5/64*
A/c^2*(c*x^2+b*x+a)^(1/2)*b^3*a+1/7*B*(c*x^2+b*x+a)^(7/2)/c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,\left(c\,x^2 + b\,x + a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\left(a + bx + cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.940 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x}\,dx$

Optimal. Leaf size=350

$$a^{5/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)+\frac{\sqrt{a+bx+cx^2}\,\left(512a^2Ac^3+2cx\left(\left(b^2-4ac\right)\left(-20aBc-12Abc+5b^2B\right)+\right.\right.}{512c^3}$$

```
[Out] -1/192*(5*b^3*B-12*A*b^2*c-20*a*b*B*c-64*a*A*c^2+2+2*c*(-12*A*b*c-20*B*a*c+5*
B*b^2)*x)*(c*x^2+b*x+a)^(3/2)/c^2+1/60*(10*B*c*x+12*A*c+5*B*b)*(c*x^2+b*x+a
)^(5/2)/c-a^(5/2)*A*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))+1/10
24*(512*a^2*A*b*c^3-(-4*a*c+b^2)*(112*A*a*b*c^2-12*A*b^3*c+80*B*a^2*c^2-40*
B*a*b^2*c+5*B*b^4))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7
/2)+1/512*(512*a^2*A*c^3+b*(64*a*A*b*c^2+(-4*a*c+b^2)*(-12*A*b*c-20*B*a*c+5
*B*b^2))+2*c*(64*a*A*b*c^2+(-4*a*c+b^2)*(-12*A*b*c-20*B*a*c+5*B*b^2))*x)*(c
*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.42, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\,\left(512a^2Ac^3+2cx\left(\left(b^2-4ac\right)\left(-20aBc-12Abc+5b^2B\right)+64aAbc^2\right)+b\left(b^2-4ac\right)\left(-20aBc-12\right.\right.}{512c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] ((64*a*A*b^2*c^2 + 512*a^2*A*c^3 + b*(b^2 - 4*a*c)*(5*b^2*B - 12*A*b*c - 20
*a*B*c) + 2*c*(64*a*A*b*c^2 + (b^2 - 4*a*c)*(5*b^2*B - 12*A*b*c - 20*a*B*c)
)*x)*Sqrt[a + b*x + c*x^2])/(512*c^3) - ((5*b^3*B - 12*A*b^2*c - 20*a*b*B*c
 - 64*a*A*c^2 + 2*c*(5*b^2*B - 12*A*b*c - 20*a*B*c)*x)*(a + b*x + c*x^2)^(3
/2))/(192*c^2) + ((5*b*B + 12*A*c + 10*B*c*x)*(a + b*x + c*x^2)^(5/2))/(60*
c) - a^(5/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])] + ((5
12*a^2*A*b*c^3 - (b^2 - 4*a*c)*(5*b^4*B - 12*A*b^3*c - 40*a*b^2*B*c + 112*a
*A*b*c^2 + 80*a^2*B*c^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x
^2])])/(1024*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x}\,dx = \frac{(5bB+12Ac+10Bcx)\left(a+bx+cx^2\right)^{5/2}}{60c} - \frac{\int \frac{\left(-12aAc-\frac{1}{2}\left(12Abc-5B\left(b^2-4ac\right)\right)x\right)(a}{x}}{12c}$$

$$= -\frac{\left(5b^3B-12Ab^2c-20abBc-64aAc^2+2c\left(5b^2B-12Abc-20aBc\right)x\right)(a}{192c^2}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\,(64a}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\,(64a}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\,(64a}{512c^3}$$

$$= \frac{\left(64aAb^2c^2+512a^2Ac^3+b\left(b^2-4ac\right)\left(5b^2B-12Abc-20aBc\right)+2c\,(64a}{512c^3}$$

Mathematica [A] time = 0.46, size = 349, normalized size = 1.00

$$a^{5/2}(-A)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\left(512a^2Abc^3-\left(b^2-4ac\right)\left(80a^2Bc^2+112aAbc^2-40ab^2Bc-12Ab^3c\right.\right.}{1024c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x]
```

```
[Out] ((5*b*B + 2*c*(6*A + 5*B*x))*(a + x*(b + c*x))^(5/2))/(60*c) + ((a + x*(b +
 c*x))^(3/2)*(-5*b^3*B + 2*b^2*c*(6*A - 5*B*x) + 8*a*c^2*(8*A + 5*B*x) + 4*
b*c*(5*a*B + 6*A*c*x)))/(192*c^2) + (Sqrt[a + x*(b + c*x)]*(5*b^5*B - 2*b^4
*c*(6*A - 5*B*x) + 16*a*b^2*c^2*(7*A - 5*B*x) + 32*a^2*c^3*(16*A + 5*B*x) -
 8*b^3*c*(5*a*B + 3*A*c*x) + 16*a*b*c^2*(5*a*B + 14*A*c*x)))/(512*c^3) - a^
(5/2)*A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])] + ((512*a^2*
A*b*c^3 - (b^2 - 4*a*c)*(5*b^4*B - 12*A*b^3*c - 40*a*b^2*B*c + 112*a*A*b*c^
2 + 80*a^2*B*c^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/
(1024*c^(7/2))
```

fricas [A] time = 40.05, size = 1575, normalized size = 4.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="fricas")
```

```
[Out] [1/30720*(15360*A*a^(5/2)*c^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 15*(5*B*b^6 - 320*(B*a^3
 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^
5)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c
*x + b)*sqrt(c) - 4*a*c) + 4*(1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4
 + 128*(25*B*b*c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*
(135*B*b^2*c^4 + 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c
^2 + 8*(5*B*b^3*c^3 + 704*A*a*c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(
25*B*b^4*c^2 - 16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)
*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/15360*(7680*A*a^(5/2)*c^4*log(-(8*a*b*x +
 (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x
^2) + 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b
^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x +
a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*B*c^6*x^5 + 75*B
*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*
b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4 + 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*
(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3*c^3 + 704*A*a*c^5 + 12*(65*B*a*b +
31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 - 16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*
(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/30720*(30720*A*sq
rt(-a)*a^2*c^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x
^2 + a*b*x + a^2)) - 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^2*b)*c^3 + 80*(3*B*a^
2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqrt(c)*log(-8*c^2*x^2 -
 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(
1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*c^5 + 12*A*c^6)
*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4 + 4*(65*B*a + 6
3*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3*c^3 + 704*A*a*
c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 - 16*(165*B*a^2 +
 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4
, 1/15360*(15360*A*sqrt(-a)*a^2*c^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x +
 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 15*(5*B*b^6 - 320*(B*a^3 + 3*A*a^
2*b)*c^3 + 80*(3*B*a^2*b^2 + 2*A*a*b^3)*c^2 - 12*(5*B*a*b^4 + A*b^5)*c)*sqr
t(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*
x + a*c)) + 2*(1280*B*c^6*x^5 + 75*B*b^5*c + 11776*A*a^2*c^4 + 128*(25*B*b*
c^5 + 12*A*c^6)*x^4 + 240*(11*B*a^2*b + 9*A*a*b^2)*c^3 + 16*(135*B*b^2*c^4
+ 4*(65*B*a + 63*A*b)*c^5)*x^3 - 20*(40*B*a*b^3 + 9*A*b^4)*c^2 + 8*(5*B*b^3
*c^3 + 704*A*a*c^5 + 12*(65*B*a*b + 31*A*b^2)*c^4)*x^2 - 2*(25*B*b^4*c^2 -
16*(165*B*a^2 + 311*A*a*b)*c^4 - 60*(4*B*a*b^2 + A*b^3)*c^3)*x)*sqrt(c*x^2
+ b*x + a))/c^4]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, replacing 0 by ` u`, a substitution
 variable should perhaps be purged.Warning, replacing 0 by ` u`, a substitu
tion variable should perhaps be purged.Warning, replacing 0 by ` u`, a subs
titution variable should perhaps be purged.index.cc index_m operator + Erro
r: Bad Argument Value
```

maple [B] time = 0.06, size = 694, normalized size = 1.98

$$-A a^{\frac{5}{2}} \ln\left(\frac{bx+2a+2\sqrt{c x^{2}+bx+a}\,\sqrt{a}}{x}\right)+\frac{15 A a^{2} b \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+bx+a}\right)}{16\sqrt{c}}-\frac{5 A a b^{3} \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b}\right)}{32 c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x)
```

```
[Out] -5/32*B/c*(c*x^2+b*x+a)^(1/2)*x*a*b^2+1/3*A*a*(c*x^2+b*x+a)^(3/2)+A*a^2*(c*
x^2+b*x+a)^(1/2)-15/64*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)*b^2*a^2+15/256*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4*
a+1/5*A*(c*x^2+b*x+a)^(5/2)-5/192*B/c^2*(c*x^2+b*x+a)^(3/2)*b^3+1/8*A*b*(c*
x^2+b*x+a)^(3/2)*x+1/16*A/c*(c*x^2+b*x+a)^(3/2)*b^2-3/128*A/c^2*(c*x^2+b*x+
a)^(1/2)*b^4+3/256*A/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^
5+5/512*B/c^3*(c*x^2+b*x+a)^(1/2)*b^5+5/16*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*a^3+1/12*B/c*(c*x^2+b*x+a)^(5/2)*b+5/24*B*(c*x^2+b*x+
a)^(3/2)*x*a+5/16*B*(c*x^2+b*x+a)^(1/2)*x*a^2-5/1024*B/c^(7/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^6+5/256*B/c^2*(c*x^2+b*x+a)^(1/2)*x*b^4+5
/48*B/c*(c*x^2+b*x+a)^(3/2)*b*a-5/96*B/c*(c*x^2+b*x+a)^(3/2)*x*b^2+7/32*A/c
*(c*x^2+b*x+a)^(1/2)*b^2*a-3/64*A/c*(c*x^2+b*x+a)^(1/2)*x*b^3+15/16*A*b/c^(
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-5/32*A/c^(3/2)*ln((c*x
+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3*a+7/16*A*b*(c*x^2+b*x+a)^(1/2)*x*a
-A*a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/6*B*x*(c*x^2+b*x
+a)^(5/2)+5/32*B/c*(c*x^2+b*x+a)^(1/2)*b*a^2-5/64*B/c^2*(c*x^2+b*x+a)^(1/2)
*b^3*a
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a + bx + cx^{2}\right)^{\frac{5}{2}}}{x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x, x)
```

3.941 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^2}\,dx$

Optimal. Leaf size=310

$$-\frac{1}{2}a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)-\frac{\sqrt{a+bx+cx^2}\,\left(-128a^2Bc^2+2cx\left(-120aAc^2-28abBc-10\right.\right.}{128c}$$

```
[Out] 1/48*(3*b^2*B+70*A*b*c+16*a*B*c+6*c*(10*A*c+B*b)*x)*(c*x^2+b*x+a)^(3/2)/c-1
/5*(-B*x+5*A)*(c*x^2+b*x+a)^(5/2)/x-1/2*a^(3/2)*(5*A*b+2*B*a)*arctanh(1/2*(
b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))+1/256*(480*A*a^2*c^3+240*A*a*b^2*c^2-
10*A*b^4*c+240*B*a^2*b*c^2-40*B*a*b^3*c+3*B*b^5)*arctanh(1/2*(2*c*x+b)/c^(1
/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-1/128*(3*b^4*B-10*A*b^3*c-28*a*b^2*B*c-440
*a*A*b*c^2-128*a^2*B*c^2+2*c*(-120*A*a*c^2-10*A*b^2*c-28*B*a*b*c+3*B*b^3)*x
)*(c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [**A**] time = 0.31, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\,\left(-128a^2Bc^2+2cx\left(-120aAc^2-28abBc-10Ab^2c+3b^3B\right)-440aAbc^2-28ab^2Bc-10Ab^3c\right.}{128c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] -((3*b^4*B - 10*A*b^3*c - 28*a*b^2*B*c - 440*a*A*b*c^2 - 128*a^2*B*c^2 + 2*
c*(3*b^3*B - 10*A*b^2*c - 28*a*b*B*c - 120*a*A*c^2)*x)*Sqrt[a + b*x + c*x^2
])/(128*c^2) + ((3*b^2*B + 70*A*b*c + 16*a*B*c + 6*c*(b*B + 10*A*c)*x)*(a +
 b*x + c*x^2)^(3/2))/(48*c) - ((5*A - B*x)*(a + b*x + c*x^2)^(5/2))/(5*x) -
 (a^(3/2)*(5*A*b + 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/2 + ((3*b^5*B - 10*A*b^4*c - 40*a*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^
2*b*B*c^2 + 480*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*
x^2])])/(256*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^2}\,dx &= -\frac{(5A-Bx)\left(a+bx+cx^2\right)^{5/2}}{5x}-\frac{1}{2}\int \frac{(-5Ab-2aB-(bB+10Ac)x)\,(a+bx+}{x} \\
&= \frac{\left(3b^2B+70Abc+16aBc+6c(bB+10Ac)x\right)\left(a+bx+cx^2\right)^{3/2}}{48c}-\frac{(5A-Bx)\,(a}{} \\
&= -\frac{(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\,(3b^3B-10Ab^2c-}{128c^2} \\
&= -\frac{(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\,(3b^3B-10Ab^2c-}{128c^2} \\
&= -\frac{(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\,(3b^3B-10Ab^2c-}{128c^2} \\
&= -\frac{(3b^4B-10Ab^3c-28ab^2Bc-440aAbc^2-128a^2Bc^2+2c\,(3b^3B-10Ab^2c-}{128c^2}
\end{aligned}
$$

Mathematica [**A**]   time = 0.52, size = 288, normalized size = 0.93

$$-\frac{1}{2}a^{3/2}(2aB+5Ab)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)+\frac{\sqrt{a+x(b+cx)}\,\left(-128a^2c^2(15A-23Bx)+4acx\left(2bc(695A\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-128*a^2*c^2*(15*A - 23*B*x) + x*(-45*b^4*B + 30*b^
3*c*(5*A + B*x) + 96*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(85*A + 63*B*x) +
 4*b^2*c^2*x*(295*A + 186*B*x)) + 4*a*c*x*(135*b^2*B + 4*c^2*x*(135*A + 88*
B*x) + 2*b*c*(695*A + 311*B*x))))/(1920*c^2*x) - (a^(3/2)*(5*A*b + 2*a*B)*A
rcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/2 + ((3*b^5*B - 10*A
*b^4*c - 40*a*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^2*b*B*c^2 + 480*a^2*A*c^3)*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(256*c^(5/2))
```

fricas [**A**]   time = 20.59, size = 1393, normalized size = 4.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="fricas")
```

```
[Out] [1/7680*(1920*(2*B*a^2 + 5*A*a*b)*sqrt(a)*c^3*x*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 15*(3*
B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4
)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*
c*x + b)*sqrt(c) - 4*a*c) + 4*(384*B*c^5*x^5 - 1920*A*a^2*c^3 + 48*(21*B*b*
c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*(88*B*a + 85*A*b)*c^4)*x^3 + 2*(1
5*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b + 295*A*b^2)*c^3)*x^2 - (45*B*b^4
*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(18*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt
(c*x^2 + b*x + a))/(c^3*x), 1/3840*(960*(2*B*a^2 + 5*A*a*b)*sqrt(a)*c^3*x*l
og(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt
(a) + 8*a^2)/x^2) - 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c
^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*B*c^5*x^5 - 1920*A*a
^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*(88*B*a + 85*
A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b + 295*A*b^2)*
c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(18*B*a*b^2 + 5
*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x), 1/7680*(3840*(2*B*a^2 + 5*A
*a*b)*sqrt(-a)*c^3*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/
(a*c*x^2 + a*b*x + a^2)) + 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(B*a^2*b + A*a
*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(c)*x*log(-8*c^2*x^2 - 8*b*c*x -
b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(384*B*c^5*x
^5 - 1920*A*a^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c^3 + 2*
(88*B*a + 85*A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622*B*a*b
+ 295*A*b^2)*c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3 - 30*(1
8*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x), 1/3840*(1920*(
2*B*a^2 + 5*A*a*b)*sqrt(-a)*c^3*x*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 15*(3*B*b^5 + 480*A*a^2*c^3 + 240*(
B*a^2*b + A*a*b^2)*c^2 - 10*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*x*arctan(1/2*sq
rt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*
B*c^5*x^5 - 1920*A*a^2*c^3 + 48*(21*B*b*c^4 + 10*A*c^5)*x^4 + 8*(93*B*b^2*c
^3 + 2*(88*B*a + 85*A*b)*c^4)*x^3 + 2*(15*B*b^3*c^2 + 1080*A*a*c^4 + 2*(622
*B*a*b + 295*A*b^2)*c^3)*x^2 - (45*B*b^4*c - 8*(368*B*a^2 + 695*A*a*b)*c^3
- 30*(18*B*a*b^2 + 5*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x)]
```

giac [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to divide, perhaps due to rounding er
ror%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,0,0]%%%}+%%%{%%{[-2,0]:[1,0,
%%%{-1,[1]%%%}]%%},[2,0,1,0,0]%%%}+%%%{%%{[1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,
0,2,0,0]%%%} / %%%{%%%{1,[1]%%%},[4,0,0,0,0]%%%}+%%%{%%%{-2,[1]%%%},[2,0,1,
0,0]%%%}+%%%{%%%{1,[1]%%%},[0,0,2,0,0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 615, normalized size = 1.98

$$\frac{15A\,a^{2}\sqrt{c}\,\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{8}-\frac{5A\,a^{\frac{3}{2}}b\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+a}\,\sqrt{a}}{x}\right)}{2}+\frac{15Aa\,b^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{16\sqrt{c}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x)
```

```
[Out] 1/5*B*(c*x^2+b*x+a)^(5/2)+15/16*A/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a*b^2+15/8*A*(c*x^2+b*x+a)^(1/2)*x*a*c+A/a*b*(c*x^2+b*x+a)^(5/2)
-5/2*A*a^(3/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/4*A*c*(c*x
^2+b*x+a)^(3/2)*x+5/32*A*(c*x^2+b*x+a)^(1/2)*x*b^2+5/64*A/c*(c*x^2+b*x+a)^(
1/2)*b^3-5/128*A/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4+55
/16*A*(c*x^2+b*x+a)^(1/2)*b*a-A/a/x*(c*x^2+b*x+a)^(7/2)+15/8*A*c^(1/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+1/8*B*b*(c*x^2+b*x+a)^(3/2)*x+1
/16*B/c*(c*x^2+b*x+a)^(3/2)*b^2-3/128*B/c^2*(c*x^2+b*x+a)^(1/2)*b^4-5/32*B/
c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^3*a+A*c/a*(c*x^2+b*x+
a)^(5/2)*x+3/256*B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^5+
B*a^2*(c*x^2+b*x+a)^(1/2)+35/24*A*b*(c*x^2+b*x+a)^(3/2)-B*a^(5/2)*ln((b*x+2
*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/3*B*a*(c*x^2+b*x+a)^(3/2)+7/16*B*b*(
c*x^2+b*x+a)^(1/2)*x*a-3/64*B/c*(c*x^2+b*x+a)^(1/2)*x*b^3+7/32*B/c*(c*x^2+b
*x+a)^(1/2)*b^2*a+15/16*B*b/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**2,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**2, x)
```

3.942 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^3}\,dx$

Optimal. Leaf size=273

$$-\frac{5\left(-48a^2Bc^2-96aAbc^2-24ab^2Bc-8Ab^3c+b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{3/2}}-\frac{5}{8}\sqrt{a}\,\left(4aAc+4abB+3Ab^2\right)\tanh$$

```
[Out] -5/24*(6*A*b+6*a*B-(4*A*c+B*b)*x)*(c*x^2+b*x+a)^(3/2)/x-1/4*(-B*x+2*A)*(c*x
^2+b*x+a)^(5/2)/x^2-5/128*(-96*A*a*b*c^2-8*A*b^3*c-48*B*a^2*c^2-24*B*a*b^2*
c+B*b^4)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)-5/8*(4*
A*a*c+3*A*b^2+4*B*a*b)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))*a
^(1/2)+5/64*(b^3*B+40*A*b^2*c+44*a*b*B*c+32*a*A*c^2+2*c*(16*A*b*c+12*B*a*c+
B*b^2)*x)*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.26, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.261$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{5\left(-48a^2Bc^2-96aAbc^2-24ab^2Bc-8Ab^3c+b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{3/2}}+5\sqrt{a+bx+cx^2}\,(2cx\,(12aBc+16$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (5*(b^3*B + 40*A*b^2*c + 44*a*b*B*c + 32*a*A*c^2 + 2*c*(b^2*B + 16*A*b*c +
12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(64*c) - (5*(6*(A*b + a*B) - (b*B + 4*A
*c)*x)*(a + b*x + c*x^2)^(3/2))/(24*x) - ((2*A - B*x)*(a + b*x + c*x^2)^(5/
2))/(4*x^2) - (5*Sqrt[a]*(3*A*b^2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/
(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/8 - (5*(b^4*B - 8*A*b^3*c - 24*a*b^2*B*
c - 96*a*A*b*c^2 - 48*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*
x + c*x^2])])/(128*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
```

```
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^3}\,dx = -\frac{(2A-Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^2} - \frac{5}{16}\int \frac{(-4(Ab+aB)-2(bB+4Ac)x)\,(a+}{x^2}$$

$$= -\frac{5(6(Ab+aB)-(bB+4Ac)x)\left(a+bx+cx^2\right)^{3/2}}{24x} - \frac{(2A-Bx)\,(a+bx+cx}{4x^2}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

$$= \frac{5\left(b^3B+40Ab^2c+44abBc+32aAc^2+2c\left(b^2B+16Abc+12aBc\right)x\right)\sqrt{a-}}{64c}$$

Mathematica [A] time = 0.46, size = 254, normalized size = 0.93

$$\frac{\sqrt{a+x(b+cx)}\,\left(-96a^2c(A+2Bx)+4acx(Bx(139b+54cx)-4A(27b-28cx))+x^2\,(2b^2c(132A+59Bx)+8b}{192cx^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-96*a^2*c*(A + 2*B*x) + x^2*(15*b^3*B + 16*c^3*x^2*
(4*A + 3*B*x) + 8*b*c^2*x*(26*A + 17*B*x) + 2*b^2*c*(132*A + 59*B*x)) + 4*a
*c*x*(-4*A*(27*b - 28*c*x) + B*x*(139*b + 54*c*x))))/(192*c*x^2) - (5*Sqrt[
a]*(3*A*b^2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*
(b + c*x)])])/8 + (5*(-(b^4*B) + 8*A*b^3*c + 24*a*b^2*B*c + 96*a*A*b*c^2 +
48*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(128*
c^(3/2))
```

fricas [A] time = 14.08, size = 1269, normalized size = 4.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="fricas")
```

```
[Out] [-1/768*(15*(B*b^4 - 48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sq
rt(c)*x^2*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) - 240*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(a)*x^
2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(a) + 8*a^2)/x^2) - 4*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A
*c^4)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26
*A*b)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*
x^2)*sqrt(c*x^2 + b*x + a))/(c^2*x^2), 1/384*(15*(B*b^4 - 48*(B*a^2 + 2*A*a
*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 120*(4*A*a*c^3 + (4*B
*a*b + 3*A*b^2)*c^2)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt
(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 2*(48*B*c^4*x^5 - 96*
A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2
*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 +
 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)*sqrt(c*x^2 + b*x + a))/(c^2*x^2), 1/768
*(480*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 15*(B*b^4 -
48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*sqrt(c)*x^2*log(-8*c^2*
x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
+ 4*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4)*x^4 - 48*(4*B*a
^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b)*c^3)*x^3 + (15*
B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)*sqrt(c*x^2 + b*x
 + a))/(c^2*x^2), 1/384*(240*(4*A*a*c^3 + (4*B*a*b + 3*A*b^2)*c^2)*sqrt(-a)
*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
 + a^2)) + 15*(B*b^4 - 48*(B*a^2 + 2*A*a*b)*c^2 - 8*(3*B*a*b^2 + A*b^3)*c)*
sqrt(-c)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
 + b*c*x + a*c)) + 2*(48*B*c^4*x^5 - 96*A*a^2*c^2 + 8*(17*B*b*c^3 + 8*A*c^4
)*x^4 - 48*(4*B*a^2 + 9*A*a*b)*c^2*x + 2*(59*B*b^2*c^2 + 4*(27*B*a + 26*A*b
)*c^3)*x^3 + (15*B*b^3*c + 448*A*a*c^3 + 4*(139*B*a*b + 66*A*b^2)*c^2)*x^2)
*sqrt(c*x^2 + b*x + a))/(c^2*x^2)]
```

giac [B] time = 0.42, size = 527, normalized size = 1.93

$$\frac{1}{192}\sqrt{cx^2+bx+a}\Bigg(2\Bigg(4\Bigg(6\,Bc^2x+\frac{17\,Bbc^4+8\,Ac^5}{c^3}\Bigg)x+\frac{59\,Bb^2c^3+108\,Bac^4+104\,Abc^4}{c^3}\Bigg)x+\frac{15\,Bb^3c^2+556\,Ba}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*c^2*x + (17*B*b*c^4 + 8*A*c^5)/c^3)*
x + (59*B*b^2*c^3 + 108*B*a*c^4 + 104*A*b*c^4)/c^3)*x + (15*B*b^3*c^2 + 556
*B*a*b*c^3 + 264*A*b^2*c^3 + 448*A*a*c^4)/c^3) + 5/4*(4*B*a^2*b + 3*A*a*b^2
 + 4*A*a^2*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/sqrt(-a
) + 5/128*(B*b^4 - 24*B*a*b^2*c - 8*A*b^3*c - 48*B*a^2*c^2 - 96*A*a*b*c^2)*
log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) + b))/c^(3/2) + 1/4*(
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b + 9*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*c +
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*sqrt(c) + 24*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*A*a^2*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^3*b - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^2 + 4*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^3*c - 8*B*a^4*sqrt(c) - 16*A*a^3*b*sqrt(c))/(
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2
```

maple [B] time = 0.06, size = 663, normalized size = 2.43

$$-\frac{5 A a^{\frac{3}{2}} c \ln\left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)}{2}+\frac{15 A a b \sqrt{c}\, \ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+b x+a}\right)}{4}-\frac{15 A \sqrt{a}\, b^{2} \ln\left(\frac{b x+2 a+2 \sqrt{c x^{2}+b x+a}\, \sqrt{a}}{x}\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x)
```

```
[Out] 5/4*A/a*b*c*(c*x^2+b*x+a)^(3/2)*x+3/4*A/a^2*b*c*(c*x^2+b*x+a)^(5/2)*x+35/24
*B*b*(c*x^2+b*x+a)^(3/2)+5/6*A*c*(c*x^2+b*x+a)^(3/2)+25/8*A*b^2*(c*x^2+b*x+
a)^(1/2)+15/16*B/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*b^2-
3/4*A/a^2*b/x*(c*x^2+b*x+a)^(7/2)+15/4*A*a*b*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))+5/2*A*b*(c*x^2+b*x+a)^(1/2)*x*c+B*c/a*(c*x^2+b*x+a)^(
5/2)*x+15/8*B*(c*x^2+b*x+a)^(1/2)*x*a*c-5/2*A*c*a^(3/2)*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)+5/16*A*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))+3/4*A/a^2*b^2*(c*x^2+b*x+a)^(5/2)+5/4*A/a*b^2*(c*x^2+b*x+a)^
(3/2)-1/2*A/a/x^2*(c*x^2+b*x+a)^(7/2)-15/8*A*a^(1/2)*b^2*ln((b*x+2*a+2*(c*x
^2+b*x+a)^(1/2)*a^(1/2))/x)+1/2*A*c/a*(c*x^2+b*x+a)^(5/2)+5/2*A*c*a*(c*x^2+
b*x+a)^(1/2)+15/8*B*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2
+5/32*B*(c*x^2+b*x+a)^(1/2)*x*b^2-5/2*B*a^(3/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)+B/a*b*(c*x^2+b*x+a)^(5/2)+55/16*B*(c*x^2+b*x+a)^(1/2)*
b*a+5/64*B/c*(c*x^2+b*x+a)^(1/2)*b^3-5/128*B/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*b^4-B/a/x*(c*x^2+b*x+a)^(7/2)+5/4*B*c*(c*x^2+b*x+a)^(
3/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**3,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**3, x)
```

3.943 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^4}\,dx$

Optimal. Leaf size=255

$$-\frac{5\sqrt{a+bx+cx^2}\,\left(-x\left(4aBc+4Abc+b^2B\right)+A\left(4ac+b^2\right)+4abB\right)}{8x}+\frac{5\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\tan}{16\sqrt{c}}$$

```
[Out] -5/12*(A*b+2*a*B-(2*A*c+B*b)*x)*(c*x^2+b*x+a)^(3/2)/x^2-1/3*(-B*x+A)*(c*x^2
+b*x+a)^(5/2)/x^3-5/16*(2*a*B*(4*a*c+3*b^2)+A*(12*a*b*c+b^3))*arctanh(1/2*(
b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(1/2)+5/16*(8*A*a*c^2+6*A*b^2*c+12*
B*a*b*c+B*b^3)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(1/2)-5
/8*(4*a*b*B+A*(4*a*c+b^2)-(4*A*b*c+4*B*a*c+B*b^2)*x)*(c*x^2+b*x+a)^(1/2)/x
```

Rubi [A] time = 0.32, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {812, 843, 621, 206, 724}

$$\frac{5\left(8aAc^2+12abBc+6Ab^2c+b^3B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{16\sqrt{c}}-\frac{5\sqrt{a+bx+cx^2}\,\left(-x\left(4aBc+4Abc+b^2B\right)+A\left(4\right.\right.}{8x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] (-5*(4*a*b*B + A*(b^2 + 4*a*c) - (b^2*B + 4*A*b*c + 4*a*B*c)*x)*Sqrt[a + b*
x + c*x^2])/(8*x) - (5*(A*b + 2*a*B - (b*B + 2*A*c)*x)*(a + b*x + c*x^2)^(3
/2))/(12*x^2) - ((A - B*x)*(a + b*x + c*x^2)^(5/2))/(3*x^3) - (5*(2*a*B*(3*
b^2 + 4*a*c) + A*(b^3 + 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a +
b*x + c*x^2])])/(16*Sqrt[a]) + (5*(b^3*B + 6*A*b^2*c + 12*a*b*B*c + 8*a*A*c
^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16*Sqrt[c])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^4}\,dx = -\frac{(A-Bx)\left(a+bx+cx^2\right)^{5/2}}{3x^3} - \frac{5}{18}\int \frac{(-3(Ab+2aB)-3(bB+2Ac)x)\left(a+bx\right.}{x^3}$$

$$= -\frac{5(Ab+2aB-(bB+2Ac)x)\left(a+bx+cx^2\right)^{3/2}}{12x^2} - \frac{(A-Bx)\left(a+bx+cx^2\right)^{5/2}}{3x^3}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

$$= -\frac{5\left(4abB+A\left(b^2+4ac\right)-\left(b^2B+4Abc+4aBc\right)x\right)\sqrt{a+bx+cx^2}}{8x} - \frac{5(Ab+}{}$$

Mathematica [A] time = 0.72, size = 236, normalized size = 0.93

$$\frac{1}{48}\left(\frac{2\sqrt{a+x(b+cx)}\left(-4a^2(2A+3Bx)-2ax(A(13b+28cx)+Bx(27b-28cx))+x^2\left(A\left(-33b^2+54bcx+12c^2x\right.\right.\right.}{x^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x]
```

```
[Out] ((2*Sqrt[a + x*(b + c*x)]*(-4*a^2*(2*A + 3*B*x) - 2*a*x*(B*x*(27*b - 28*c*x
) + A*(13*b + 28*c*x)) + x^2*(B*x*(33*b^2 + 26*b*c*x + 8*c^2*x^2) + A*(-33*
b^2 + 54*b*c*x + 12*c^2*x^2))))/x^3 - (15*(2*a*B*(3*b^2 + 4*a*c) + A*(b^3 +
 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a]
 + (15*(b^3*B + 6*A*b^2*c + 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*
Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c])/48
```

fricas [A] time = 7.49, size = 1293, normalized size = 5.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="fricas")
```

```
[Out] [1/96*(15*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(c)*x^3*l
og(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
 - 4*a*c) + 15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(a)*
x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(a) + 8*a^2)/x^2) + 4*(8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6
*A*a*c^3)*x^4 + (33*B*a*b^2*c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a
^3 + 13*A*a^2*b)*c*x - (56*A*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*
sqrt(c*x^2 + b*x + a))/(a*c*x^3), -1/96*(30*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B
*a^2*b + A*a*b^2)*c)*sqrt(-c)*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*
B*a*b^2 + A*b^3)*c)*sqrt(a)*x^3*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(
c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(8*B*a*c^3*x^5 - 8*A
*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 + (33*B*a*b^2*c + 2*(28*B*a^2 + 2
7*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b)*c*x - (56*A*a^2*c^2 + 3*(18*B*
a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*x^3), 1/96*(30*(4*(
2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(-a)*x^3*arctan(1/2*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 15*(B*a*
b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(c)*x^3*log(-8*c^2*x^2 -
 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(
8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 + (33*B*a*b^2*
c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b)*c*x - (56*A
*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*x + a))/(a*c*
x^3), 1/48*(15*(4*(2*B*a^2 + 3*A*a*b)*c^2 + (6*B*a*b^2 + A*b^3)*c)*sqrt(-a)
*x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
 + a^2)) - 15*(B*a*b^3 + 8*A*a^2*c^2 + 6*(2*B*a^2*b + A*a*b^2)*c)*sqrt(-c)*
x^3*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
+ a*c)) + 2*(8*B*a*c^3*x^5 - 8*A*a^3*c + 2*(13*B*a*b*c^2 + 6*A*a*c^3)*x^4 +
 (33*B*a*b^2*c + 2*(28*B*a^2 + 27*A*a*b)*c^2)*x^3 - 2*(6*B*a^3 + 13*A*a^2*b
)*c*x - (56*A*a^2*c^2 + 3*(18*B*a^2*b + 11*A*a*b^2)*c)*x^2)*sqrt(c*x^2 + b*
x + a))/(a*c*x^3)]
```

giac [B] time = 0.62, size = 784, normalized size = 3.07

$$\frac{1}{24}\,\sqrt{cx^{2}+bx+a}\left(2\left(4\,Bc^{2}x+\frac{13\,Bbc^{3}+6\,Ac^{4}}{c^{2}}\right)x+\frac{33\,Bb^{2}c^{2}+56\,Bac^{3}+54\,Abc^{3}}{c^{2}}\right)+\frac{5\left(6\,Bab^{2}+Ab^{3}+8\,Ba^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*c^2*x + (13*B*b*c^3 + 6*A*c^4)/c^2)*x +
(33*B*b^2*c^2 + 56*B*a*c^3 + 54*A*b*c^3)/c^2) + 5/8*(6*B*a*b^2 + A*b^3 + 8*
B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))
/sqrt(-a) - 5/16*(B*b^3 + 12*B*a*b*c + 6*A*b^2*c + 8*A*a*c^2)*log(abs(2*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) + b))/sqrt(c) + 1/24*(54*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*B*a*b^2*sqrt(c) + 33*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^5*A*b^3*sqrt(c) + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2
*c^(3/2) + 108*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c^(3/2) + 144*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*b*c + 144*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*A*a*b^2*c + 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*
c^2 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2*sqrt(c) - 40*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3*sqrt(c) - 48*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^3*A*a^2*b*c^(3/2) - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
2*B*a^3*b*c - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*c - 192*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^2 + 42*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^3*b^2*sqrt(c) + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a
^2*b^3*sqrt(c) - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*c^(3/2) + 36*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c^(3/2) + 96*B*a^4*b*c + 48*A*a
^3*b^2*c + 112*A*a^4*c^2)/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^3*sq
rt(c))
```

maple [B] time = 0.07, size = 840, normalized size = 3.29

$$\frac{5Aac^{\frac{3}{2}}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^{2}+bx+a}\right)}{2}-\frac{15A\sqrt{a}\,bc\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{4}-\frac{5Ab^{3}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16\sqrt{a}}+15A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x)
```

```
[Out] 3/4*B/a^2*b*c*(c*x^2+b*x+a)^(5/2)*x+5/24*A/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)*x+
1/8*A/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)*x+5/8*A/a*b^2*(c*x^2+b*x+a)^(1/2)*x*c+5
/4*B/a*b*c*(c*x^2+b*x+a)^(3/2)*x+5/6*B*c*(c*x^2+b*x+a)^(3/2)+25/8*B*b^2*(c*
x^2+b*x+a)^(1/2)-3/4*B/a^2*b/x*(c*x^2+b*x+a)^(7/2)+5/2*B*b*(c*x^2+b*x+a)^(1
/2)*x*c+5*A*b*c*(c*x^2+b*x+a)^(1/2)-5/16*A/a^(1/2)*b^3*ln((b*x+2*a+2*(c*x^2
+b*x+a)^(1/2)*a^(1/2))/x)-1/3*A/a/x^3*(c*x^2+b*x+a)^(7/2)+5/2*A*c^(3/2)*a*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+5/2*A*c^2*(c*x^2+b*x+a)^(1/2)*x+
5/8*A/a*b^3*(c*x^2+b*x+a)^(1/2)+15/8*A*b^2*c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))+1/8*A/a^3*b^3*(c*x^2+b*x+a)^(5/2)+5/24*A/a^2*b^3*(c*x^2
+b*x+a)^(3/2)+5/2*B*c*a*(c*x^2+b*x+a)^(1/2)+1/2*B*c/a*(c*x^2+b*x+a)^(5/2)-5
/2*B*c*a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/2*B/a/x^2*(c
*x^2+b*x+a)^(7/2)-15/8*B*a^(1/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1
/2))/x)+3/4*B/a^2*b^2*(c*x^2+b*x+a)^(5/2)+5/4*B/a*b^2*(c*x^2+b*x+a)^(3/2)+5
/16*B*b^3/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+15/4*B*a*b*c^
(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/4*A*a^(1/2)*b*c*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/3*A*c^2/a*(c*x^2+b*x+a)^(3/2)*x-4
/3*A*c/a^2/x*(c*x^2+b*x+a)^(7/2)+25/12*A/a*b*c*(c*x^2+b*x+a)^(3/2)-1/12*A/a
^2*b/x^2*(c*x^2+b*x+a)^(7/2)-1/8*A/a^3*b^2/x*(c*x^2+b*x+a)^(7/2)+4/3*A*c^2/
a^2*(c*x^2+b*x+a)^(5/2)*x+17/12*A/a^2*b*c*(c*x^2+b*x+a)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{5}{2}}}{x^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**4,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**4, x)
```

3.944 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^5}\,dx$

Optimal. Leaf size=284

$$-\frac{5\left(8abB\left(12ac+b^2\right)-A\left(-48a^2c^2-24ab^2c+b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{3/2}}+\frac{5}{8}\sqrt{c}\left(4aBc+4Abc+3b^2B\right)\tanh^{-1}$$

```
[Out] -5/96*(4*a*(A*b+4*B*a)+3*(8*a*b*B+A*(4*a*c+b^2))*x)*(c*x^2+b*x+a)^(3/2)/a/x
^3-1/4*(-2*B*x+A)*(c*x^2+b*x+a)^(5/2)/x^4-5/128*(8*a*b*B*(12*a*c+b^2)-A*(-4
8*a^2*c^2-24*a*b^2*c+b^4))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2
))/a^(3/2)+5/8*(4*A*b*c+4*B*a*c+3*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x
^2+b*x+a)^(1/2))*c^(1/2)-5/64*(8*a*B*(4*a*c+b^2)-A*(-20*a*b*c+b^3)-2*c*(16*
a*b*B+A*(12*a*c+b^2))*x)*(c*x^2+b*x+a)^(1/2)/a/x
```

Rubi **[A]** time = 0.39, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{5\left(8abB\left(12ac+b^2\right)-A\left(-48a^2c^2-24ab^2c+b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{3/2}}-\frac{5\left(a+bx+cx^2\right)^{3/2}\left(3x\left(A\left(4ac+b^2\right.\right.\right.}{96ax^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] (-5*(8*a*B*(b^2 + 4*a*c) - A*(b^3 - 20*a*b*c) - 2*c*(16*a*b*B + A*(b^2 + 12
*a*c))*x)*Sqrt[a + b*x + c*x^2])/(64*a*x) - (5*(4*a*(A*b + 4*a*B) + 3*(8*a*
b*B + A*(b^2 + 4*a*c))*x)*(a + b*x + c*x^2)^(3/2))/(96*a*x^3) - ((A - 2*B*x
)*(a + b*x + c*x^2)^(5/2))/(4*x^4) - (5*(8*a*b*B*(b^2 + 12*a*c) - A*(b^4 -
24*a*b^2*c - 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/(128*a^(3/2)) + (5*Sqrt[c]*(3*b^2*B + 4*A*b*c + 4*a*B*c)*ArcTanh[(b
+ 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^5}\,dx = -\frac{(A-2Bx)\left(a+bx+cx^2\right)^{5/2}}{4x^4} - \frac{5}{16}\int \frac{(-2(Ab+4aB)-4(bB+Ac)x)\left(a+\right.}{x^4}$$

$$= -\frac{5\left(4a(Ab+4aB)+3\left(8abB+A\left(b^2+4ac\right)\right)x\right)\left(a+bx+cx^2\right)^{3/2}}{96ax^3} - \frac{(A-}{}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a}}{64ax}$$

$$= -\frac{5\left(8aB\left(b^2+4ac\right)-A\left(b^3-20abc\right)-2c\left(16abB+A\left(b^2+12ac\right)\right)x\right)\sqrt{a}}{64ax}$$

Mathematica [A]   time = 0.69, size = 255, normalized size = 0.90

$$\frac{5\left(A\left(-48a^2c^2-24ab^2c+b^4\right)-8abB\left(12ac+b^2\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{128a^{3/2}} - \frac{\sqrt{a+x(b+cx)}\left(16a^3(3A+4Bx)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x]
```

```
[Out] -1/192*(Sqrt[a + x*(b + c*x)]*(15*A*b^3*x^3 + 16*a^3*(3*A + 4*B*x) + 8*a^2*
x*(17*A*b + 26*b*B*x + 27*A*c*x + 56*B*c*x^2) + 2*a*x^2*(A*(59*b^2 + 278*b*
c*x - 96*c^2*x^2) - 12*B*x*(-11*b^2 + 18*b*c*x + 4*c^2*x^2))))/(a*x^4) + (5
*(-8*a*b*B*(b^2 + 12*a*c) + A*(b^4 - 24*a*b^2*c - 48*a^2*c^2))*ArcTanh[(2*a
 + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)]])])/(128*a^(3/2)) + (5*Sqrt[c]*(3*b
^2*B + 4*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])])/8
```

fricas [**A**] time = 12.28, size = 1305, normalized size = 4.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="fricas")
```

```
[Out] [1/768*(240*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)*c)*sqrt(c)*x^4*log(-8*c^2*x^
2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
15*(8*B*a*b^3 - A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(a)*
x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(a) + 8*a^2)/x^2) + 4*(96*B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b*c +
 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*a^2*
b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a^4 +
 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^4), -1/768*(480*(3*B*a^2*b^2
+ 4*(B*a^3 + A*a^2*b)*c)*sqrt(-c)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c
*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(8*B*a*b^3 - A*b^4 + 48*A*a^
2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*
c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(96*
B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*
b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59
*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*
x + a))/(a^2*x^4), 1/384*(15*(8*B*a*b^3 - A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^
2*b + A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)
*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 120*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)
*c)*sqrt(c)*x^4*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2
*c*x + b)*sqrt(c) - 4*a*c) + 2*(96*B*a^2*c^2*x^5 - 48*A*a^4 + 48*(9*B*a^2*b
*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*a*b^3 + 4*(112*B*a^3 + 139*A*
a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2 + 108*A*a^3*c)*x^2 - 8*(8*B*a
^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^2*x^4), 1/384*(15*(8*B*a*b^3
- A*b^4 + 48*A*a^2*c^2 + 24*(4*B*a^2*b + A*a*b^2)*c)*sqrt(-a)*x^4*arctan(1/
2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 240
*(3*B*a^2*b^2 + 4*(B*a^3 + A*a^2*b)*c)*sqrt(-c)*x^4*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(96*B*a^2*c^2*x
^5 - 48*A*a^4 + 48*(9*B*a^2*b*c + 4*A*a^2*c^2)*x^4 - (264*B*a^2*b^2 + 15*A*
a*b^3 + 4*(112*B*a^3 + 139*A*a^2*b)*c)*x^3 - 2*(104*B*a^3*b + 59*A*a^2*b^2
+ 108*A*a^3*c)*x^2 - 8*(8*B*a^4 + 17*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^
2*x^4)]
```

giac [**B**] time = 0.67, size = 1163, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="giac")
```

```
[Out] 1/4*(2*B*c^2*x + (9*B*b*c^2 + 4*A*c^3)/c)*sqrt(c*x^2 + b*x + a) - 5/8*(3*B*
b^2*c + 4*B*a*c^2 + 4*A*b*c^2)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*sqrt(c) + b))/sqrt(c) + 5/64*(8*B*a*b^3 - A*b^4 + 96*B*a^2*b*c + 24*A*a*b
^2*c + 48*A*a^2*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/
(sqrt(-a)*a) + 1/192*(264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 + 1
5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*b^4 + 864*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^7*B*a^2*b*c + 792*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^
2*c + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*c^2 + 1152*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^6*B*a^2*b^2*sqrt(c) + 384*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^6*A*a*b^3*sqrt(c) + 1152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6
*B*a^3*c^(3/2) + 2304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b*c^(3/2)
 - 584*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*b^3 + 73*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^5*A*a*b^4 - 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5
*B*a^3*b*c - 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^2*c - 48*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*c^2 - 2304*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*B*a^3*b^2*sqrt(c) - 2688*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*B*a^4*c^(3/2) - 3456*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^3*b*c^(3/
2) + 440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 55*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^2*b^4 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^3*B*a^4*b*c + 1320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c - 48
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 1536*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*B*a^4*b^2*sqrt(c) + 2432*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2*B*a^5*c^(3/2) + 3584*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c
^(3/2) - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 + 15*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*B*a^5*b*c - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c + 432*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 384*B*a^5*b^2*sqrt(c) - 896*B*
a^6*c^(3/2) - 896*A*a^5*b*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
- a)^4*a)
```

maple [B] time = 0.07, size = 1094, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x)
```

```
[Out] -19/48*A/a^3*b*c/x*(c*x^2+b*x+a)^(7/2)+35/48*A/a^2*b*c^2*(c*x^2+b*x+a)^(3/2
)*x+25/16*A/a*b*c^2*(c*x^2+b*x+a)^(1/2)*x-5/64*A/a^2*b^3*(c*x^2+b*x+a)^(1/2
)*x*c-5/192*A/a^3*b^3*c*(c*x^2+b*x+a)^(3/2)*x+19/48*A/a^3*b*c^2*(c*x^2+b*x+
a)^(5/2)*x+5/24*B/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)*x-1/64*A/a^4*b^3*c*(c*x^2+b
*x+a)^(5/2)*x+1/8*B/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)*x+5/8*B/a*b^2*(c*x^2+b*x+
a)^(1/2)*x*c+5/8*A*c^2/a*(c*x^2+b*x+a)^(3/2)-1/4*A/a/x^4*(c*x^2+b*x+a)^(7/2
)+5/128*A/a^(3/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15/8*A*
c^2*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/2*B*c^(3/2)*a*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/3*B/a/x^3*(c*x^2+b*x+a)^(7/2)-
5/16*B/a^(1/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5*B*b*c*(c
*x^2+b*x+a)^(1/2)+5/8*B/a*b^3*(c*x^2+b*x+a)^(1/2)+1/8*B/a^3*b^3*(c*x^2+b*x+
a)^(5/2)+5/24*B/a^2*b^3*(c*x^2+b*x+a)^(3/2)+15/8*B*b^2*c^(1/2)*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+15/8*A*c^2*(c*x^2+b*x+a)^(1/2)+5/2*B*c^2*(c
*x^2+b*x+a)^(1/2)*x-15/16*A/a^(1/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+1/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(7/2)+5/2*A*b*c^(3/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/64*A/a^2*b^4*(c*x^2+b*x+a)^(1/2)-1/64*
A/a^4*b^4*(c*x^2+b*x+a)^(5/2)-5/192*A/a^3*b^4*(c*x^2+b*x+a)^(3/2)+3/8*A*c^2
/a^2*(c*x^2+b*x+a)^(5/2)+37/96*A/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)+1/96*A/a^3*b
^2/x^2*(c*x^2+b*x+a)^(7/2)+65/96*A/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)+1/64*A/a^4
*b^3/x*(c*x^2+b*x+a)^(7/2)+55/32*A/a*b^2*c*(c*x^2+b*x+a)^(1/2)-3/8*A*c/a^2/
x^2*(c*x^2+b*x+a)^(7/2)+17/12*B/a^2*b*c*(c*x^2+b*x+a)^(5/2)-1/12*B/a^2*b/x^
2*(c*x^2+b*x+a)^(7/2)+25/12*B/a*b*c*(c*x^2+b*x+a)^(3/2)-1/8*B/a^3*b^2/x*(c*
x^2+b*x+a)^(7/2)-15/4*B*a^(1/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)-4/3*B*c/a^2/x*(c*x^2+b*x+a)^(7/2)+5/3*B*c^2/a*(c*x^2+b*x+a)^(3/2)*x+
4/3*B*c^2/a^2*(c*x^2+b*x+a)^(5/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**5,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**5, x)
```

3.945 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^6}\,dx$

Optimal. Leaf size=346

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(4a\left(-16aAc-10abB+3Ab^2\right)-3x\left(10aB\left(4ac+b^2\right)-A\left(3b^3-20abc\right)\right)\right)}{192a^2x^3}+\frac{\sqrt{a+bx+cx^2}\ \left(\right.}{}$$

```
[Out] 1/192*(4*a*(-16*A*a*c+3*A*b^2-10*B*a*b)-3*(10*a*B*(4*a*c+b^2)-A*(-20*a*b*c+
3*b^3))*x)*(c*x^2+b*x+a)^(3/2)/a^2/x^3-1/40*(8*a*A+5*(A*b+2*B*a)*x)*(c*x^2+
b*x+a)^(5/2)/a/x^5+1/256*(10*a*B*(-48*a^2*c^2-24*a*b^2*c+b^4)-A*(240*a^2*b*
c^2-40*a*b^3*c+3*b^5))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a
^(5/2)+1/2*c^(3/2)*(2*A*c+5*B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a
)^(1/2))+1/128*(10*a*b*B*(-20*a*c+b^2)-A*(128*a^2*c^2-28*a*b^2*c+3*b^4)+2*c
*(10*a*B*(12*a*c+b^2)-A*(-28*a*b*c+3*b^3))*x)*(c*x^2+b*x+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.49, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.261, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\ \left(-A\left(128a^2c^2-28ab^2c+3b^4\right)+2cx\left(10aB\left(12ac+b^2\right)-A\left(3b^3-28abc\right)\right)+10abB\left(b^2-20ac\right.\right.}{128a^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] ((10*a*b*B*(b^2 - 20*a*c) - A*(3*b^4 - 28*a*b^2*c + 128*a^2*c^2) + 2*c*(10*
a*B*(b^2 + 12*a*c) - A*(3*b^3 - 28*a*b*c))*x)*Sqrt[a + b*x + c*x^2])/(128*a
^2*x) + ((4*a*(3*A*b^2 - 10*a*b*B - 16*a*A*c) - 3*(10*a*B*(b^2 + 4*a*c) - A
*(3*b^3 - 20*a*b*c))*x)*(a + b*x + c*x^2)^(3/2))/(192*a^2*x^3) - ((8*a*A +
5*(A*b + 2*a*B)*x)*(a + b*x + c*x^2)^(5/2))/(40*a*x^5) + ((10*a*B*(b^4 - 24
*a*b^2*c - 48*a^2*c^2) - A*(3*b^5 - 40*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2
*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^(5/2)) + (c^(3/2)*(5*b
*B + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^6}\,dx = -\frac{(8aA+5(Ab+2aB)x)\left(a+bx+cx^2\right)^{5/2}}{40ax^5} - \frac{\int \frac{\left(\frac{1}{2}\left(3Ab^2-10abB-16aAc\right)-(Ab+10aB)cx}{x^4}}{8a}$$

$$= \frac{\left(4a\left(3Ab^2-10abB-16aAc\right)-3\left(10aB\left(b^2+4ac\right)-A\left(3b^3-20abc\right)\right)x\right)\left(a+\right.}{192a^2x^3}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

$$= \frac{\left(10abB\left(b^2-20ac\right)-A\left(3b^4-28ab^2c+128a^2c^2\right)+2c\left(10aB\left(b^2+12ac\right)-A\right.\right.}{128a^2x}$$

Mathematica [A] time = 0.85, size = 289, normalized size = 0.84

$$-\frac{\left(A\left(240a^2bc^2-40ab^3c+3b^5\right)+10aB\left(48a^2c^2+24ab^2c-b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{256a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\,\left(96\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x]
```

```
[Out] -1/1920*(Sqrt[a + x*(b + c*x)]*(-45*A*b^4*x^4 + 96*a^4*(4*A + 5*B*x) + 30*a
*b^2*x^3*(5*b*B*x + A*(b + 18*c*x)) + 16*a^3*x*(5*B*x*(17*b + 27*c*x) + A*(
63*b + 88*c*x)) + 4*a^2*x^2*(5*B*x*(59*b^2 + 278*b*c*x - 96*c^2*x^2) + 2*A*
(93*b^2 + 311*b*c*x + 368*c^2*x^2))))/(a^2*x^5) - ((10*a*B*(-b^4 + 24*a*b^2
*c + 48*a^2*c^2) + A*(3*b^5 - 40*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2*a + b
*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(256*a^(5/2)) + (c^(3/2)*(5*b*B + 2
*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/2
```

fricas [A] time = 16.84, size = 1445, normalized size = 4.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="fricas")
```

```
[Out] [1/7680*(1920*(5*B*a^3*b*c + 2*A*a^3*c^2)*sqrt(c)*x^5*log(-8*c^2*x^2 - 8*b*
c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 15*(10*B
*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 + A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)
*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)
*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (1
50*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2
)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)
*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21
*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5), -1/7680*(3840*(5*B*a^3*b*c +
 2*A*a^3*c^2)*sqrt(-c)*x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) + 15*(10*B*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 +
A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b
^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2)
 - 4*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (150*B*a^2*b^3 - 45*A*a*b^4 + 2944*A
*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A
*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b
^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a)
)/(a^3*x^5), -1/3840*(15*(10*B*a*b^4 - 3*A*b^5 - 240*(2*B*a^3 + A*a^2*b)*c^
2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 960*(5*B*a^3*b*c + 2*A
*a^3*c^2)*sqrt(c)*x^5*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(1920*B*a^3*c^2*x^5 - 384*A*a^5 - (150
*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(278*B*a^3*b + 27*A*a^2*b^2)*
c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(270*B*a^4 + 311*A*a^3*b)*c)*x
^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c)*x^2 - 48*(10*B*a^5 + 21*A
*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5), -1/3840*(15*(10*B*a*b^4 - 3*A*
b^5 - 240*(2*B*a^3 + A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - A*a*b^3)*c)*sqrt(-a)*
x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x
+ a^2)) + 1920*(5*B*a^3*b*c + 2*A*a^3*c^2)*sqrt(-c)*x^5*arctan(1/2*sqrt(c*x
^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1920*B*a^3
*c^2*x^5 - 384*A*a^5 - (150*B*a^2*b^3 - 45*A*a*b^4 + 2944*A*a^3*c^2 + 20*(2
78*B*a^3*b + 27*A*a^2*b^2)*c)*x^4 - 2*(590*B*a^3*b^2 + 15*A*a^2*b^3 + 4*(27
0*B*a^4 + 311*A*a^3*b)*c)*x^3 - 8*(170*B*a^4*b + 93*A*a^3*b^2 + 176*A*a^4*c
)*x^2 - 48*(10*B*a^5 + 21*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^5)]
```

giac [B] time = 0.99, size = 1526, normalized size = 4.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B*c^2 - 1/2*(5*B*b*c^(5/2) + 2*A*c^(7/2))*log(abs(-2*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c)))/c - 1/128*(10*B*a*b^4 -
 3*A*b^5 - 240*B*a^2*b^2*c + 40*A*a*b^3*c - 480*B*a^3*c^2 - 240*A*a^2*b*c^2
)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/
1920*(150*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^4 - 45*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^9*A*b^5 + 7920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*
B*a^2*b^2*c + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^3*c + 4320*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 + 7920*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^9*A*a^2*b*c^2 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*
a^2*b^3*sqrt(c) + 23040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^3*b*c^(3/
2) + 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^2*b^2*c^(3/2) + 11520*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*c^(5/2) + 580*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*B*a^2*b^4 + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*
A*a*b^5 - 13920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c + 6160*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c - 4800*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^7*B*a^4*c^2 - 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*
a^3*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^3*b^3*sqrt(c) +
3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^2*b^4*sqrt(c) - 57600*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b*c^(3/2) - 23040*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^6*A*a^4*c^(5/2) - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*B*a^3*b^4 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 + 19200*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*b^2*c + 6400*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a^3*b^3*c + 19200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^4*b*c^2 + 70400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2
) + 19200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^4*b^2*c^(3/2) + 35840*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) + 700*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^3*B*a^4*b^4 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^3*b^5 - 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c + 2800*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c + 4800*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*B*a^6*c^2 + 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^5*b*c^2 - 44800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) -
17920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^6*c^(5/2) - 150*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a^5*b^4 + 45*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*A*a^4*b^5 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 600*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^5*b^3*c - 4320*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^7*c^2 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c
^2 + 8960*B*a^7*b*c^(3/2) + 5888*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2 - a)^5*a^2)
```

maple [B] time = 0.07, size = 1371, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x)
```

```
[Out] -21/320*A/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)+15/8*B*c^2*(c*x^2+b*x+a)^(1/2)+A*c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+19/240*A/a^3*b*c/x^2*(c*x
^2+b*x+a)^(7/2)-13/96*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+35/48*B/a^2*b*c^2
*(c*x^2+b*x+a)^(3/2)*x+25/16*B/a*b*c^2*(c*x^2+b*x+a)^(1/2)*x-7/32*A/a^2*b^2
*c^2*(c*x^2+b*x+a)^(1/2)*x+11/160*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(7/2)+3/128*A
/a^3*b^4*(c*x^2+b*x+a)^(1/2)*x*c-11/160*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(5/2)*x
```

```
+1/128*A/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)*x+3/640*A/a^5*b^4*c*(c*x^2+b*x+a)^(5
/2)*x-19/48*B/a^3*b*c/x*(c*x^2+b*x+a)^(7/2)+19/48*B/a^3*b*c^2*(c*x^2+b*x+a)
^(5/2)*x-5/64*B/a^2*b^3*(c*x^2+b*x+a)^(1/2)*x*c-5/192*B/a^3*b^3*c*(c*x^2+b*
x+a)^(3/2)*x-1/64*B/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)*x+109/240*A/a^3*b*c^2*(c*
x^2+b*x+a)^(5/2)-5/64*B/a^2*b^4*(c*x^2+b*x+a)^(1/2)-5/192*B/a^3*b^4*(c*x^2+
b*x+a)^(3/2)-1/64*B/a^4*b^4*(c*x^2+b*x+a)^(5/2)+5/2*B*b*c^(3/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/8*B*c^2/a^2*(c*x^2+b*x+a)^(5/2)+5/8*B*c^
2/a*(c*x^2+b*x+a)^(3/2)-1/5*A/a/x^5*(c*x^2+b*x+a)^(7/2)-3/256*A/a^(5/2)*b^5
*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+3/128*A/a^3*b^5*(c*x^2+b*x+a
)^(1/2)+1/128*A/a^4*b^5*(c*x^2+b*x+a)^(3/2)+3/640*A/a^5*b^5*(c*x^2+b*x+a)^(
5/2)+5/128*B/a^(3/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/4*
B/a/x^4*(c*x^2+b*x+a)^(7/2)-15/8*B*c^2*a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+23/16*A/a*b*c^2*(c*x^2+b*x+a)^(1/2)+31/48*A/a^2*b*c^2*(c*
x^2+b*x+a)^(3/2)+3/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(7/2)-23/192*A/a^3*b^3*c*(c
*x^2+b*x+a)^(3/2)-1/320*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(7/2)-17/64*A/a^2*b^3*c
*(c*x^2+b*x+a)^(1/2)-1/80*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(7/2)-3/640*A/a^5*b^4
/x*(c*x^2+b*x+a)^(7/2)-2/15*A*c/a^2/x^3*(c*x^2+b*x+a)^(7/2)+A*c^3/a*(c*x^2+
b*x+a)^(1/2)*x-8/15*A*c^2/a^3/x*(c*x^2+b*x+a)^(7/2)+2/3*A*c^3/a^2*(c*x^2+b*
x+a)^(3/2)*x+8/15*A*c^3/a^3*(c*x^2+b*x+a)^(5/2)*x-15/16*A/a^(1/2)*b*c^2*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/32*A/a^(3/2)*b^3*c*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+65/96*B/a^2*b^2*c*(c*x^2+b*x+a)^(3/2)+1/
96*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(7/2)+55/32*B/a*b^2*c*(c*x^2+b*x+a)^(1/2)+1/
24*B/a^2*b/x^3*(c*x^2+b*x+a)^(7/2)+1/64*B/a^4*b^3/x*(c*x^2+b*x+a)^(7/2)+37/
96*B/a^3*b^2*c*(c*x^2+b*x+a)^(5/2)-3/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(7/2)-15/1
6*B/a^(1/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**6,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**6, x)
```

3.946 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx$

Optimal. Leaf size=332

$$-\frac{\left(a+bx+cx^2\right)^{3/2}\left(2a\left(12abB-5A\left(b^2-4ac\right)\right)+x\left(4aB\left(16ac+3b^2\right)-5A\left(b^3-4abc\right)\right)\right)}{192a^2x^4}+\frac{\left(5A\left(b^2-4ac\right)^3-4a}{}$$

```
[Out] -1/192*(2*a*(12*a*b*B-5*A*(-4*a*c+b^2))+(4*a*B*(16*a*c+3*b^2)-5*A*(-4*a*b*c
+b^3))*x)*(c*x^2+b*x+a)^(3/2)/a^2/x^4-1/60*(10*a*A+(5*A*b+12*B*a)*x)*(c*x^2
+b*x+a)^(5/2)/a/x^6+1/1024*(5*A*(-4*a*c+b^2)^3-4*a*b*B*(240*a^2*c^2-40*a*b^
2*c+3*b^4))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(7/2)+B*c^
(5/2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))+1/512*(2*a*(4*a*b*
B*(-28*a*c+3*b^2)-5*A*(-4*a*c+b^2)^2)-(5*A*b*(-4*a*c+b^2)^2-4*a*B*(-128*a^2
*c^2-28*a*b^2*c+3*b^4))*x)*(c*x^2+b*x+a)^(1/2)/a^3/x^2
```

Rubi [A] time = 0.47, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {810, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-x\left(5Ab\left(b^2-4ac\right)^2-4aB\left(-128a^2c^2-28ab^2c+3b^4\right)\right.\right.}{512a^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] ((2*a*(4*a*b*B*(3*b^2 - 28*a*c) - 5*A*(b^2 - 4*a*c)^2) - (5*A*b*(b^2 - 4*a*
c)^2 - 4*a*B*(3*b^4 - 28*a*b^2*c - 128*a^2*c^2))*x)*Sqrt[a + b*x + c*x^2])/
(512*a^3*x^2) - ((2*a*(12*a*b*B - 5*A*(b^2 - 4*a*c)) + (4*a*B*(3*b^2 + 16*a
*c) - 5*A*(b^3 - 4*a*b*c))*x)*(a + b*x + c*x^2)^(3/2))/(192*a^2*x^4) - ((10
*a*A + (5*A*b + 12*a*B)*x)*(a + b*x + c*x^2)^(5/2))/(60*a*x^6) + ((5*A*(b^2
 - 4*a*c)^3 - 4*a*b*B*(3*b^4 - 40*a*b^2*c + 240*a^2*c^2))*ArcTanh[(2*a + b*
x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(1024*a^(7/2)) + B*c^(5/2)*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx = -\frac{(10aA+(5Ab+12aB)x)\left(a+bx+cx^2\right)^{5/2}}{60ax^6} - \frac{\int \frac{\left(\frac{1}{2}\left(-12abB+5A\left(b^2-4ac\right)\right)-12aB}{x^5}}{12a}$$

$$= -\frac{\left(2a\left(12abB-5A\left(b^2-4ac\right)\right)+\left(4aB\left(3b^2+16ac\right)-5A\left(b^3-4abc\right)\right)x\right)(}{192a^2x^4}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4-\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4-\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4-\right.\right.\right.}{512a^3x^2}$$

$$= \frac{\left(2a\left(4abB\left(3b^2-28ac\right)-5A\left(b^2-4ac\right)^2\right)-\left(5Ab\left(b^2-4ac\right)^2-4aB\left(3b^4-\right.\right.\right.}{512a^3x^2}$$

Mathematica [A] time = 0.98, size = 308, normalized size = 0.93

$$\frac{\left(5A\left(b^2-4ac\right)^3-4abB\left(240a^2c^2-40ab^2c+3b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{1024a^{7/2}}-\frac{\sqrt{a+x(b+cx)}\,\left(256a^5(5A+6Bx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x]
```

```
[Out] -1/7680*(Sqrt[a + x*(b + c*x)]*(75*A*b^5*x^5 + 256*a^5*(5*A + 6*B*x) - 10*a
*b^3*x^4*(18*b*B*x + 5*A*(b + 16*c*x)) + 64*a^4*x*(A*(50*b + 65*c*x) + B*x*
(63*b + 88*c*x)) + 40*a^2*b*x^3*(3*b*B*x*(b + 18*c*x) + A*(b^2 + 12*b*c*x +
 66*c^2*x^2)) + 16*a^3*x^2*(15*A*(9*b^2 + 26*b*c*x + 22*c^2*x^2) + 2*B*x*(9
3*b^2 + 311*b*c*x + 368*c^2*x^2))))/(a^3*x^6) + ((5*A*(b^2 - 4*a*c)^3 - 4*a
*b*B*(3*b^4 - 40*a*b^2*c + 240*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqr
t[a + x*(b + c*x)])])/(1024*a^(7/2)) + B*c^(5/2)*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])])]
```

fricas [A] time = 21.58, size = 1659, normalized size = 5.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="fricas")
```

```
[Out] [1/30720*(15360*B*a^4*c^(5/2)*x^6*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 15*(12*B*a*b^5 - 5*A*b^6 + 3
20*A*a^3*c^3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^
4)*c)*sqrt(a)*x^6*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(1280*A*a^6 - (180*B*a^2*b^4 - 75*
A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^
3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4
*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 +
 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 +
 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^6), -1/30720*
(30720*B*a^4*sqrt(-c)*c^2*x^6*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^
3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(
a)*x^6*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2
*a)*sqrt(a) + 8*a^2)/x^2) + 4*(1280*A*a^6 - (180*B*a^2*b^4 - 75*A*a*b^5 - 1
6*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^3)*c)*x^5 +
 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4*b + 15*A*a
^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 + 195*A*a^4*
b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 + 128*(12*B*
a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^6), 1/15360*(7680*B*a^4*
c^(5/2)*x^6*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
 + b)*sqrt(c) - 4*a*c) + 15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^3 + 240*(4*
B*a^3*b - A*a^2*b^2)*c^2 - 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(-a)*x^6*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2))
 - 2*(1280*A*a^6 - (180*B*a^2*b^4 - 75*A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*
b)*c^2 - 80*(27*B*a^3*b^2 - 10*A*a^2*b^3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a
^2*b^4 + 2640*A*a^4*c^2 + 16*(311*B*a^4*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B
*a^4*b^2 + 5*A*a^3*b^3 + 4*(176*B*a^5 + 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5
*b + 135*A*a^4*b^2 + 260*A*a^5*c)*x^2 + 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt
(c*x^2 + b*x + a))/(a^4*x^6), -1/15360*(15360*B*a^4*sqrt(-c)*c^2*x^6*arctan
(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) -
15*(12*B*a*b^5 - 5*A*b^6 + 320*A*a^3*c^3 + 240*(4*B*a^3*b - A*a^2*b^2)*c^2
- 20*(8*B*a^2*b^3 - 3*A*a*b^4)*c)*sqrt(-a)*x^6*arctan(1/2*sqrt(c*x^2 + b*x
+ a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(1280*A*a^6 - (180*B
*a^2*b^4 - 75*A*a*b^5 - 16*(736*B*a^4 + 165*A*a^3*b)*c^2 - 80*(27*B*a^3*b^2
 - 10*A*a^2*b^3)*c)*x^5 + 2*(60*B*a^3*b^3 - 25*A*a^2*b^4 + 2640*A*a^4*c^2 +
 16*(311*B*a^4*b + 15*A*a^3*b^2)*c)*x^4 + 8*(372*B*a^4*b^2 + 5*A*a^3*b^3 +
4*(176*B*a^5 + 195*A*a^4*b)*c)*x^3 + 16*(252*B*a^5*b + 135*A*a^4*b^2 + 260*
A*a^5*c)*x^2 + 128*(12*B*a^6 + 25*A*a^5*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x
^6)]
```

giac [B] time = 1.45, size = 2089, normalized size = 6.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="giac")
```

```
[Out] -B*c^(5/2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*c - b*sqrt(c))) +
 1/512*(12*B*a*b^5 - 5*A*b^6 - 160*B*a^2*b^3*c + 60*A*a*b^4*c + 960*B*a^3*b
*c^2 - 240*A*a^2*b^2*c^2 + 320*A*a^3*c^3)*arctan(-(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/7680*(180*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^11*B*a*b^5 - 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*b^6 - 2
400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^2*b^3*c + 900*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^11*A*a*b^4*c - 31680*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^11*B*a^3*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^2*b^2*
c^2 - 10560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*c^3 - 46080*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^3*b^2*c^(3/2) - 46080*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^10*B*a^4*c^(5/2) - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^10*A*a^3*b*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^2
*b^5 + 425*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a*b^6 - 22240*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^9*B*a^3*b^3*c - 5100*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*A*a^2*b^4*c + 41280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b
*c^2 - 56400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^2*c^2 - 1600*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*c^3 - 15360*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^8*B*a^3*b^4*sqrt(c) + 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^8*B*a^4*b^2*c^(3/2) - 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^3*
b^3*c^(3/2) + 138240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^5*c^(5/2) -
696*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^5 - 990*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*A*a^2*b^6 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*
B*a^4*b^3*c - 34200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^3*b^4*c - 864
00*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^5*b*c^2 - 93600*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^7*A*a^4*b^2*c^2 - 28800*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^7*A*a^5*c^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^4*b^4*
sqrt(c) - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^3*b^5*sqrt(c) - 7
6800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^5*b^2*c^(3/2) - 51200*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^4*b^3*c^(3/2) - 235520*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^6*B*a^6*c^(5/2) - 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^6*A*a^5*b*c^(5/2) + 2376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^4*
b^5 - 990*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^3*b^6 + 14400*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^3*c - 34200*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^5*A*a^4*b^4*c + 67200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6
*b*c^2 - 93600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^5*b^2*c^2 - 28800*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*c^3 + 76800*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^4*B*a^6*b^2*c^(3/2) - 76800*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*A*a^5*b^3*c^(3/2) + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*
a^7*c^(5/2) - 1020*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^5 + 425*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^6 + 13600*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^3*B*a^6*b^3*c - 5100*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^5*b^4*c - 4800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b*c^2 - 56400
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^2*c^2 - 1600*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^3*A*a^7*c^3 - 95232*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*B*a^8*c^(5/2) - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^7*b*c^(
5/2) + 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^5 - 75*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*A*a^5*b^6 - 2400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*B*a^7*b^3*c + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^4*c + 14400*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^8*b*c^2 - 3600*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*A*a^7*b^2*c^2 - 10560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A
*a^8*c^3 + 23552*B*a^9*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a
)^6*a^3)
```

maple [B] time = 0.09, size = 1677, normalized size = 5.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x)
```

```
[Out] -1/32*A/a^4*b^2*c/x^2*(c*x^2+b*x+a)^(7/2)+5/96*A/a^4*b^3*c^2*(c*x^2+b*x+a)^
(3/2)*x-5/1536*A/a^5*b^5*c*(c*x^2+b*x+a)^(3/2)*x-1/512*A/a^6*b^5*c*(c*x^2+b
*x+a)^(5/2)*x+5/64*A/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x+5/192*A/a^5*b^3*c^2*
(c*x^2+b*x+a)^(5/2)*x-5/512*A/a^4*b^5*(c*x^2+b*x+a)^(1/2)*x*c-5/192*A/a^5*b
^3*c/x*(c*x^2+b*x+a)^(7/2)+5/32*A/a^4*b*c^2/x*(c*x^2+b*x+a)^(7/2)+19/240*B/
a^3*b*c/x^2*(c*x^2+b*x+a)^(7/2)-13/96*B/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)*x+1
1/160*B/a^4*b^2*c/x*(c*x^2+b*x+a)^(7/2)+3/640*B/a^5*b^4*c*(c*x^2+b*x+a)^(5/
2)*x+1/128*B/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)*x-11/160*B/a^4*b^2*c^2*(c*x^2+b*
x+a)^(5/2)*x-7/32*B/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)*x+3/128*B/a^3*b^4*(c*x^
2+b*x+a)^(1/2)*x*c-5/32*A/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)*x-5/32*A/a^2*b*c^3*
(c*x^2+b*x+a)^(1/2)*x-5/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)*x+1/16*A/a^3*b*c
/x^3*(c*x^2+b*x+a)^(7/2)+B*c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+1/128*B/a^4*b^5*(c*x^2+b*x+a)^(3/2)+3/640*B/a^5*b^5*(c*x^2+b*x+a)^(5/2)
+3/128*B/a^3*b^5*(c*x^2+b*x+a)^(1/2)-1/5*B/a/x^5*(c*x^2+b*x+a)^(7/2)-3/256*
B/a^(5/2)*b^5*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/1024*A/a^(7/2
)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/16*A*c^3/a^(1/2)*ln((
b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/1536*A/a^5*b^6*(c*x^2+b*x+a)^(3
/2)-1/512*A/a^6*b^6*(c*x^2+b*x+a)^(5/2)-5/512*A/a^4*b^6*(c*x^2+b*x+a)^(1/2)
+5/48*A*c^3/a^2*(c*x^2+b*x+a)^(3/2)+1/16*A*c^3/a^3*(c*x^2+b*x+a)^(5/2)+5/16
*A*c^3/a*(c*x^2+b*x+a)^(1/2)-1/6*A/a/x^6*(c*x^2+b*x+a)^(7/2)+31/48*B/a^2*b*
c^2*(c*x^2+b*x+a)^(3/2)+109/240*B/a^3*b*c^2*(c*x^2+b*x+a)^(5/2)+1/512*A/a^6
*b^5/x*(c*x^2+b*x+a)^(7/2)+1/12*A/a^2*b/x^5*(c*x^2+b*x+a)^(7/2)-1/16*A*c^2/
a^3/x^2*(c*x^2+b*x+a)^(7/2)-15/256*A/a^(5/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x
+a)^(1/2)*a^(1/2))/x)+15/64*A/a^(3/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(
1/2)*a^(1/2))/x)+5/32*B/a^(3/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)-15/16*B/a^(1/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x
)-8/15*B*c^2/a^3/x*(c*x^2+b*x+a)^(7/2)+2/3*B*c^3/a^2*(c*x^2+b*x+a)^(3/2)*x+
B*c^3/a*(c*x^2+b*x+a)^(1/2)*x+8/15*B*c^3/a^3*(c*x^2+b*x+a)^(5/2)*x-2/15*B*c
/a^2/x^3*(c*x^2+b*x+a)^(7/2)-23/192*B/a^3*b^3*c*(c*x^2+b*x+a)^(3/2)-21/320*
B/a^4*b^3*c*(c*x^2+b*x+a)^(5/2)-1/320*B/a^4*b^3/x^2*(c*x^2+b*x+a)^(7/2)-3/6
40*B/a^5*b^4/x*(c*x^2+b*x+a)^(7/2)+23/16*B/a*b*c^2*(c*x^2+b*x+a)^(1/2)+3/40
*B/a^2*b/x^4*(c*x^2+b*x+a)^(7/2)-1/80*B/a^3*b^2/x^3*(c*x^2+b*x+a)^(7/2)-17/
64*B/a^2*b^3*c*(c*x^2+b*x+a)^(1/2)-1/24*A*c/a^2/x^4*(c*x^2+b*x+a)^(7/2)-5/3
2*A/a^3*b^2*c^2*(c*x^2+b*x+a)^(3/2)-1/8*A/a^4*b^2*c^2*(c*x^2+b*x+a)^(5/2)-5
/16*A/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)-1/32*A/a^3*b^2/x^4*(c*x^2+b*x+a)^(7/2
)+1/192*A/a^4*b^3/x^3*(c*x^2+b*x+a)^(7/2)+25/256*A/a^3*b^4*c*(c*x^2+b*x+a)^
(1/2)+35/768*A/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)+19/768*A/a^5*b^4*c*(c*x^2+b*x+
a)^(5/2)+1/768*A/a^5*b^4/x^2*(c*x^2+b*x+a)^(7/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**7,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**7, x)
```

3.947 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx$

Optimal. Leaf size=219

$$-\frac{5\left(b^2-4ac\right)^3(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2048a^{9/2}}+\frac{5\left(b^2-4ac\right)^2(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{1024a^4x^2}-5(b^2-4a$$

```
[Out] -5/384*(A*b-2*B*a)*(-4*a*c+b^2)*(b*x+2*a)*(c*x^2+b*x+a)^(3/2)/a^3/x^4+1/24*
(A*b-2*B*a)*(b*x+2*a)*(c*x^2+b*x+a)^(5/2)/a^2/x^6-1/7*A*(c*x^2+b*x+a)^(7/2)
/a/x^7-5/2048*(A*b-2*B*a)*(-4*a*c+b^2)^3*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x
^2+b*x+a)^(1/2))/a^(9/2)+5/1024*(A*b-2*B*a)*(-4*a*c+b^2)^2*(b*x+2*a)*(c*x^2
+b*x+a)^(1/2)/a^4/x^2
```

Rubi [A] time = 0.13, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {806, 720, 724, 206}

$$-\frac{5\left(b^2-4ac\right)(2a+bx)(Ab-2aB)\left(a+bx+cx^2\right)^{3/2}}{384a^3x^4}+\frac{5\left(b^2-4ac\right)^2(2a+bx)(Ab-2aB)\sqrt{a+bx+cx^2}}{1024a^4x^2}-5(b^2-4$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] (5*(A*b - 2*a*B)*(b^2 - 4*a*c)^2*(2*a + b*x)*Sqrt[a + b*x + c*x^2])/(1024*a
^4*x^2) - (5*(A*b - 2*a*B)*(b^2 - 4*a*c)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2
))/(384*a^3*x^4) + ((A*b - 2*a*B)*(2*a + b*x)*(a + b*x + c*x^2)^(5/2))/(24*
a^2*x^6) - (A*(a + b*x + c*x^2)^(7/2))/(7*a*x^7) - (5*(A*b - 2*a*B)*(b^2 -
4*a*c)^3*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2048*a^(9
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx = -\frac{A\left(a+bx+cx^2\right)^{7/2}}{7ax^7} - \frac{(Ab-2aB)\int \frac{\left(a+bx+cx^2\right)^{5/2}}{x^7}\,dx}{2a}$$

$$= \frac{(Ab-2aB)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{24a^2x^6} - \frac{A\left(a+bx+cx^2\right)^{7/2}}{7ax^7} + \frac{\big(5(Ab-2a}{}$$

$$= -\frac{5(Ab-2aB)\left(b^2-4ac\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{384a^3x^4} + \frac{(Ab-2aB)(2a+b}{24a}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\big(b^2-4ac}{3}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\big(b^2-4ac}{3}$$

$$= \frac{5(Ab-2aB)\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}}{1024a^4x^2} - \frac{5(Ab-2aB)\big(b^2-4ac}{3}$$

Mathematica [A] time = 0.47, size = 198, normalized size = 0.90

$$\frac{(Ab-2aB)\Big(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2} - 5x^2\left(b^2-4ac\right)\Big(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2} - 3x^2\big(b^2-}{6144a^{9/2}x^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x]
```

```
[Out] -1/7*(A*(a + x*(b + c*x))^(7/2))/(a*x^7) + ((A*b - 2*a*B)*(256*a^(5/2)*(2*a
 + b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a^(3/2)*(2*a + b*
x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)*Sqr
t[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[
a + x*(b + c*x)])]))))/(6144*a^(9/2)*x^6)
```

fricas [B] time = 10.91, size = 887, normalized size = 4.05

$$\Bigg[-\frac{105\left(2\,Bab^6 - Ab^7 - 64\left(2\,Ba^4 - Aa^3b\right)c^3 + 48\left(2\,Ba^3b^2 - Aa^2b^3\right)c^2 - 12\left(2\,Ba^2b^4 - Aab^5\right)c\right)\sqrt{a}\,x^7\log\Big(-\frac{8\,a}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="fricas")
```

```
[Out] [-1/86016*(105*(2*B*a*b^6 - A*b^7 - 64*(2*B*a^4 - A*a^3*b)*c^3 + 48*(2*B*a^
3*b^2 - A*a^2*b^3)*c^2 - 12*(2*B*a^2*b^4 - A*a*b^5)*c)*sqrt(a)*x^7*log(-(8*
a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8
*a^2)/x^2) + 4*(3072*A*a^7 + (210*B*a^2*b^5 - 105*A*a*b^6 + 3072*A*a^4*c^3
+ 3696*(2*B*a^4*b - A*a^3*b^2)*c^2 - 1120*(2*B*a^3*b^3 - A*a^2*b^4)*c)*x^6
- 2*(70*B*a^3*b^4 - 35*A*a^2*b^5 - 48*(154*B*a^5 + 19*A*a^4*b)*c^2 - 336*(2
*B*a^4*b^2 - A*a^3*b^3)*c)*x^5 + 8*(14*B*a^4*b^3 - 7*A*a^3*b^4 + 1152*A*a^5
*c^2 + 12*(182*B*a^5*b + 5*A*a^4*b^2)*c)*x^4 + 16*(378*B*a^5*b^2 + 3*A*a^4*
b^3 + 4*(182*B*a^6 + 197*A*a^5*b)*c)*x^3 + 128*(70*B*a^6*b + 37*A*a^5*b^2 +
 72*A*a^6*c)*x^2 + 256*(14*B*a^7 + 29*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a
^5*x^7), -1/43008*(105*(2*B*a*b^6 - A*b^7 - 64*(2*B*a^4 - A*a^3*b)*c^3 + 48
*(2*B*a^3*b^2 - A*a^2*b^3)*c^2 - 12*(2*B*a^2*b^4 - A*a*b^5)*c)*sqrt(-a)*x^7
*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a
^2)) + 2*(3072*A*a^7 + (210*B*a^2*b^5 - 105*A*a*b^6 + 3072*A*a^4*c^3 + 3696
*(2*B*a^4*b - A*a^3*b^2)*c^2 - 1120*(2*B*a^3*b^3 - A*a^2*b^4)*c)*x^6 - 2*(7
0*B*a^3*b^4 - 35*A*a^2*b^5 - 48*(154*B*a^5 + 19*A*a^4*b)*c^2 - 336*(2*B*a^4
*b^2 - A*a^3*b^3)*c)*x^5 + 8*(14*B*a^4*b^3 - 7*A*a^3*b^4 + 1152*A*a^5*c^2 +
 12*(182*B*a^5*b + 5*A*a^4*b^2)*c)*x^4 + 16*(378*B*a^5*b^2 + 3*A*a^4*b^3 +
4*(182*B*a^6 + 197*A*a^5*b)*c)*x^3 + 128*(70*B*a^6*b + 37*A*a^5*b^2 + 72*A*
a^6*c)*x^2 + 256*(14*B*a^7 + 29*A*a^6*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^7
)]
```

giac [B] time = 0.43, size = 2598, normalized size = 11.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="giac")
```

```
[Out] -5/1024*(2*B*a*b^6 - A*b^7 - 24*B*a^2*b^4*c + 12*A*a*b^5*c + 96*B*a^3*b^2*c
^2 - 48*A*a^2*b^3*c^2 - 128*B*a^4*c^3 + 64*A*a^3*b*c^3)*arctan(-(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/21504*(210*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^13*B*a*b^6 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^13*A*b^7 - 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b^4*c + 12
60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a*b^5*c + 10080*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^13*B*a^3*b^2*c^2 - 5040*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^13*A*a^2*b^3*c^2 + 29568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^4
*c^3 + 6720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b*c^3 + 129024*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^4*b*c^(5/2) + 43008*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^12*A*a^4*c^(7/2) - 1400*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^11*B*a^2*b^6 + 700*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a*b^7 + 1
6800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^3*b^4*c - 8400*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^11*A*a^2*b^5*c + 147840*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^11*B*a^4*b^2*c^2 + 33600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*
a^3*b^3*c^2 - 25088*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^5*c^3 + 1415
68*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^4*b*c^3 + 215040*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^10*B*a^4*b^3*c^(3/2) - 129024*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^10*B*a^5*b*c^(5/2) + 387072*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^10*A*a^4*b^2*c^(5/2) + 3962*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3
*b^6 - 1981*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b^7 + 81480*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*b^4*c + 23772*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^9*A*a^3*b^5*c + 104160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*
a^5*b^2*c^2 + 378000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^3*c^2 +
76160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^6*c^3 + 284480*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^9*A*a^5*b*c^3 + 43008*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^8*B*a^4*b^5*sqrt(c) - 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*
a^5*b^3*c^(3/2) + 358400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^4*b^4*c^
(3/2) + 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b*c^(5/2) + 4300
80*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^2*c^(5/2) + 215040*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*c^(7/2) + 3072*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^7*A*a^3*b^7 + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a
^4*b^5*c + 645120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*b^3*c^2 + 430
080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^6*b*c^3 - 43008*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^6*B*a^5*b^5*sqrt(c) + 43008*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^6*A*a^4*b^6*sqrt(c) + 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^6*B*a^6*b^3*c^(3/2) + 286720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^5*b
^4*c^(3/2) - 430080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^7*b*c^(5/2) +
 860160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^6*b^2*c^(5/2) - 3962*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^5*b^6 + 1981*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^5*A*a^4*b^7 - 81480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^6
*b^4*c + 105252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^5*b^5*c - 104160*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^2*c^2 + 482160*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^5*A*a^6*b^3*c^2 - 76160*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^5*B*a^8*c^3 + 360640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^7*b*c
^3 - 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^7*b^3*c^(3/2) + 21504
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^6*b^4*c^(3/2) + 129024*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b*c^(5/2) + 258048*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*A*a^7*b^2*c^(5/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*A*a^8*c^(7/2) + 1400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^6*b^
6 - 700*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^5*b^7 - 16800*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*B*a^7*b^4*c + 8400*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^3*A*a^6*b^5*c - 147840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^8*b
^2*c^2 + 181440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*b^3*c^2 + 25088
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*c^3 + 116480*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*A*a^8*b*c^3 - 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*B*a^9*b*c^(5/2) + 129024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^8*b
^2*c^(5/2) - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*b^6 + 105*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b^7 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*B*a^8*b^4*c - 1260*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^5*c
- 10080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^2*c^2 + 5040*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*A*a^8*b^3*c^2 - 29568*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))*B*a^10*c^3 + 36288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b*c^3
 + 6144*A*a^10*c^(7/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^7*a^4)
```

maple [B] time = 0.11, size = 1874, normalized size = 8.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x)
```

```
[Out] -1/512*B/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)*x-5/1536*B/a^5*b^5*c*(c*x^2+b*x+a)^(
3/2)*x+5/64*B/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)*x+1/16*B/a^3*b*c/x^3*(c*x^2+b
*x+a)^(7/2)-5/192*B/a^5*b^3*c/x*(c*x^2+b*x+a)^(7/2)-5/32*B/a^2*b*c^3*(c*x^2
+b*x+a)^(1/2)*x+5/32*B/a^4*b*c^2/x*(c*x^2+b*x+a)^(7/2)-5/32*B/a^4*b*c^3*(c*
x^2+b*x+a)^(5/2)*x-5/32*B/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)*x-1/32*B/a^4*b^2*c/
x^2*(c*x^2+b*x+a)^(7/2)-5/512*B/a^4*b^5*(c*x^2+b*x+a)^(1/2)*x*c-5/192*A/a^5
*b^4*c^2*(c*x^2+b*x+a)^(3/2)*x-5/64*A/a^5*b^2*c^2/x*(c*x^2+b*x+a)^(7/2)+5/6
4*A/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)*x+1/1024*A/a^7*b^6*c*(c*x^2+b*x+a)^(5/2
)*x-1/32*A/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(7/2)+1/32*A/a^4*b*c^2/x^2*(c*x^2+b*
x+a)^(7/2)+1/48*A/a^3*b*c/x^4*(c*x^2+b*x+a)^(7/2)+5/64*A/a^5*b^2*c^3*(c*x^2
+b*x+a)^(5/2)*x+5/192*B/a^5*b^3*c^2*(c*x^2+b*x+a)^(5/2)*x+5/96*B/a^4*b^3*c^
2*(c*x^2+b*x+a)^(3/2)*x-25/512*A/a^4*b^5*c*(c*x^2+b*x+a)^(1/2)-1/1024*A/a^7
*b^6/x*(c*x^2+b*x+a)^(7/2)-19/1536*A/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)-1/1536*A
/a^6*b^5/x^2*(c*x^2+b*x+a)^(7/2)-35/1536*A/a^5*b^5*c*(c*x^2+b*x+a)^(3/2)+1/
16*A/a^5*b^3*c^2*(c*x^2+b*x+a)^(5/2)+5/32*A/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)
+5/64*A/a^4*b^3*c^2*(c*x^2+b*x+a)^(3/2)+1/64*A/a^4*b^3/x^4*(c*x^2+b*x+a)^(7
/2)-1/32*A/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)-5/32*A/a^2*b*c^3*(c*x^2+b*x+a)^(1/
2)-5/96*A/a^3*b*c^3*(c*x^2+b*x+a)^(3/2)+1/12*A/a^2*b/x^6*(c*x^2+b*x+a)^(7/2
)+5/32*A/a^(3/2)*b*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15/128
*A/a^(5/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/512*A/a
^(7/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/64*A/a^4*b^2*c
^3*(c*x^2+b*x+a)^(3/2)*x+1/64*A/a^5*b^3*c/x^2*(c*x^2+b*x+a)^(7/2)+5/1024*A/
a^5*b^6*(c*x^2+b*x+a)^(1/2)*x*c-5/128*A/a^4*b^4*c^2*(c*x^2+b*x+a)^(1/2)*x+5
```

```
/3072*A/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)*x+5/384*A/a^6*b^4*c/x*(c*x^2+b*x+a)^(
7/2)-5/384*A/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)*x-1/32*B/a^3*b^2/x^4*(c*x^2+b*
x+a)^(7/2)+15/64*B/a^(3/2)*b^2*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2
))/x)-15/256*B/a^(5/2)*b^4*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
1/24*B*c/a^2/x^4*(c*x^2+b*x+a)^(7/2)-1/16*B*c^2/a^3/x^2*(c*x^2+b*x+a)^(7/2)
+1/12*B/a^2*b/x^5*(c*x^2+b*x+a)^(7/2)+1/192*B/a^4*b^3/x^3*(c*x^2+b*x+a)^(7/
2)+25/256*B/a^3*b^4*c*(c*x^2+b*x+a)^(1/2)+1/512*B/a^6*b^5/x*(c*x^2+b*x+a)^(
7/2)+19/768*B/a^5*b^4*c*(c*x^2+b*x+a)^(5/2)+1/768*B/a^5*b^4/x^2*(c*x^2+b*x+
a)^(7/2)+35/768*B/a^4*b^4*c*(c*x^2+b*x+a)^(3/2)-1/8*B/a^4*b^2*c^2*(c*x^2+b*
x+a)^(5/2)-1/24*A/a^3*b^2/x^5*(c*x^2+b*x+a)^(7/2)-1/384*A/a^5*b^4/x^3*(c*x^
2+b*x+a)^(7/2)-5/16*B/a^2*b^2*c^2*(c*x^2+b*x+a)^(1/2)-5/32*B/a^3*b^2*c^2*(c
*x^2+b*x+a)^(3/2)+5/1024*A/a^5*b^7*(c*x^2+b*x+a)^(1/2)+5/3072*A/a^6*b^7*(c*
x^2+b*x+a)^(3/2)-5/2048*A/a^(9/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+1/1024*A/a^7*b^7*(c*x^2+b*x+a)^(5/2)+1/16*B*c^3/a^3*(c*x^2+b*x+a)^
(5/2)+5/16*B*c^3/a*(c*x^2+b*x+a)^(1/2)+5/48*B*c^3/a^2*(c*x^2+b*x+a)^(3/2)+5
/1024*B/a^(7/2)*b^6*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/16*B*c^
3/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/6*B/a/x^6*(c*x^2+
b*x+a)^(7/2)-1/512*B/a^6*b^6*(c*x^2+b*x+a)^(5/2)-5/512*B/a^4*b^6*(c*x^2+b*x
+a)^(1/2)-5/1536*B/a^5*b^6*(c*x^2+b*x+a)^(3/2)-1/7*A*(c*x^2+b*x+a)^(7/2)/a/
x^7
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^8, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**8,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**8, x)
```

3.948 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx$

Optimal. Leaf size=288

$$\frac{5\left(b^2-4ac\right)^3\left(-4aAc-16abB+9Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{32768a^{11/2}}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+cx^2}\,\left(-4aA\right.}{16384a^5x^2}$$

```
[Out] 5/6144*(-4*a*c+b^2)*(-4*A*a*c+9*A*b^2-16*B*a*b)*(b*x+2*a)*(c*x^2+b*x+a)^(3/
2)/a^4/x^4-1/384*(-4*A*a*c+9*A*b^2-16*B*a*b)*(b*x+2*a)*(c*x^2+b*x+a)^(5/2)/
a^3/x^6-1/8*A*(c*x^2+b*x+a)^(7/2)/a/x^8+1/112*(9*A*b-16*B*a)*(c*x^2+b*x+a)^
(7/2)/a^2/x^7+5/32768*(-4*a*c+b^2)^3*(-4*A*a*c+9*A*b^2-16*B*a*b)*arctanh(1/
2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(11/2)-5/16384*(-4*a*c+b^2)^2*(-
4*A*a*c+9*A*b^2-16*B*a*b)*(b*x+2*a)*(c*x^2+b*x+a)^(1/2)/a^5/x^2
```

Rubi **[A]** time = 0.25, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {834, 806, 720, 724, 206}

$$-\frac{(2a+bx)\left(a+bx+cx^2\right)^{5/2}\left(-4aAc-16abB+9Ab^2\right)}{384a^3x^6}+\frac{5\left(b^2-4ac\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}\left(-4aAc-16a\right.}{6144a^4x^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(9*A*b^2 - 16*a*b*B - 4*a*A*c)*(2*a + b*x)*Sqrt[a + b*x
 + c*x^2])/(16384*a^5*x^2) + (5*(b^2 - 4*a*c)*(9*A*b^2 - 16*a*b*B - 4*a*A*c
)*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(6144*a^4*x^4) - ((9*A*b^2 - 16*a*b*
B - 4*a*A*c)*(2*a + b*x)*(a + b*x + c*x^2)^(5/2))/(384*a^3*x^6) - (A*(a + b
*x + c*x^2)^(7/2))/(8*a*x^8) + ((9*A*b - 16*a*B)*(a + b*x + c*x^2)^(7/2))/(
112*a^2*x^7) + (5*(b^2 - 4*a*c)^3*(9*A*b^2 - 16*a*b*B - 4*a*A*c)*ArcTanh[(2
*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(32768*a^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8}-\frac{\int \frac{\left(\frac{1}{2}(9Ab-16aB)+Acx\right)\left(a+bx+cx^2\right)^{5/2}}{x^8}\,dx}{8a}\\
&= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8}+\frac{(9Ab-16aB)\left(a+bx+cx^2\right)^{7/2}}{112a^2x^7}+\frac{\left(9Ab^2-16abB-4\right.}{3}\\
&= -\frac{\left(9Ab^2-16abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{384a^3x^6}-\frac{A\left(a+bx+cx^2\right)^{7/2}}{8ax^8}+\\
&= \frac{5\left(b^2-4ac\right)\left(9Ab^2-16abB-4aAc\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{6144a^4x^4}-\frac{\left(9Ab^2-1\right.}{}\\
&= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2}+\frac{5\left(b^2-4a\right.}{}\\
&= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2}+\frac{5\left(b^2-4a\right.}{}\\
&= -\frac{5\left(b^2-4ac\right)^2\left(9Ab^2-16abB-4aAc\right)(2a+bx)\sqrt{a+bx+cx^2}}{16384a^5x^2}+\frac{5\left(b^2-4a\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.75, size = 242, normalized size = 0.84

$$
-\frac{\frac{\left(-2aAc-8abB+\frac{9Ab^2}{2}\right)\left(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2}-5x^2\left(b^2-4ac\right)\left(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)\left(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}-x^2\left(b^2-4\right.\right.\right.\right.}{6144a^{9/2}x^6}}{8a}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x]
```

```
[Out] -1/8*((A*(a + x*(b + c*x))^(7/2))/x^8 + ((-9*A*b + 16*a*B)*(a + x*(b + c*x)
)^(7/2))/(14*a*x^7) + (((9*A*b^2)/2 - 8*a*b*B - 2*a*A*c)*(256*a^(5/2)*(2*a
+ b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a^(3/2)*(2*a + b*x
)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]*(2*a + b*x)*Sqrt
[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a
 + x*(b + c*x)])])])))/(6144*a^(9/2)*x^6))/a
```

fricas [B] time = 19.44, size = 1091, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="fricas")
```

```
[Out] [-1/1376256*(105*(16*B*a*b^7 - 9*A*b^8 - 256*A*a^4*c^4 - 256*(4*B*a^4*b - 3
*A*a^3*b^2)*c^3 + 96*(8*B*a^3*b^3 - 5*A*a^2*b^4)*c^2 - 16*(12*B*a^2*b^5 - 7
*A*a*b^6)*c)*sqrt(a)*x^8*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 +
 b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(43008*A*a^8 - (1680*B*a^2*
b^6 - 945*A*a*b^7 - 192*(256*B*a^5 - 221*A*a^4*b)*c^3 + 112*(528*B*a^4*b^2
- 337*A*a^3*b^3)*c^2 - 140*(128*B*a^3*b^4 - 75*A*a^2*b^5)*c)*x^7 + 2*(560*B
*a^3*b^5 - 315*A*a^2*b^6 + 6720*A*a^5*c^3 + 48*(304*B*a^5*b - 199*A*a^4*b^2
)*c^2 - 28*(192*B*a^4*b^3 - 113*A*a^3*b^4)*c)*x^6 - 8*(112*B*a^4*b^4 - 63*A
*a^3*b^5 - 48*(384*B*a^6 + 29*A*a^5*b)*c^2 - 8*(120*B*a^5*b^2 - 71*A*a^4*b^
3)*c)*x^5 + 16*(48*B*a^5*b^3 - 27*A*a^4*b^4 + 6608*A*a^6*c^2 + 8*(1576*B*a^
6*b + 27*A*a^5*b^2)*c)*x^4 + 128*(592*B*a^6*b^2 + 3*A*a^5*b^3 + 4*(288*B*a^
7 + 307*A*a^6*b)*c)*x^3 + 256*(464*B*a^7*b + 243*A*a^6*b^2 + 476*A*a^7*c)*x
^2 + 3072*(16*B*a^8 + 33*A*a^7*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^8), 1/68
8128*(105*(16*B*a*b^7 - 9*A*b^8 - 256*A*a^4*c^4 - 256*(4*B*a^4*b - 3*A*a^3*
b^2)*c^3 + 96*(8*B*a^3*b^3 - 5*A*a^2*b^4)*c^2 - 16*(12*B*a^2*b^5 - 7*A*a*b^
6)*c)*sqrt(-a)*x^8*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a
*c*x^2 + a*b*x + a^2)) - 2*(43008*A*a^8 - (1680*B*a^2*b^6 - 945*A*a*b^7 - 1
92*(256*B*a^5 - 221*A*a^4*b)*c^3 + 112*(528*B*a^4*b^2 - 337*A*a^3*b^3)*c^2
- 140*(128*B*a^3*b^4 - 75*A*a^2*b^5)*c)*x^7 + 2*(560*B*a^3*b^5 - 315*A*a^2*
b^6 + 6720*A*a^5*c^3 + 48*(304*B*a^5*b - 199*A*a^4*b^2)*c^2 - 28*(192*B*a^4
*b^3 - 113*A*a^3*b^4)*c)*x^6 - 8*(112*B*a^4*b^4 - 63*A*a^3*b^5 - 48*(384*B*
a^6 + 29*A*a^5*b)*c^2 - 8*(120*B*a^5*b^2 - 71*A*a^4*b^3)*c)*x^5 + 16*(48*B*
a^5*b^3 - 27*A*a^4*b^4 + 6608*A*a^6*c^2 + 8*(1576*B*a^6*b + 27*A*a^5*b^2)*c
)*x^4 + 128*(592*B*a^6*b^2 + 3*A*a^5*b^3 + 4*(288*B*a^7 + 307*A*a^6*b)*c)*x
^3 + 256*(464*B*a^7*b + 243*A*a^6*b^2 + 476*A*a^7*c)*x^2 + 3072*(16*B*a^8 +
 33*A*a^7*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^8)]
```

giac [B] time = 0.47, size = 3603, normalized size = 12.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="giac")
```

```
[Out] 5/16384*(16*B*a*b^7 - 9*A*b^8 - 192*B*a^2*b^5*c + 112*A*a*b^6*c + 768*B*a^3
*b^3*c^2 - 480*A*a^2*b^4*c^2 - 1024*B*a^4*b*c^3 + 768*A*a^3*b^2*c^3 - 256*A
*a^4*c^4)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a
^5) - 1/344064*(1680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a*b^7 - 945*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*b^8 - 20160*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^15*B*a^2*b^5*c + 11760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*
A*a*b^6*c + 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^3*b^3*c^2 - 50
400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^2*b^4*c^2 - 107520*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^15*B*a^4*b*c^3 + 80640*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^15*A*a^3*b^2*c^3 - 26880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*
A*a^4*c^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^14*B*a^5*c^(7/2) - 1
2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^2*b^7 + 7245*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^13*A*a*b^8 + 154560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^13*B*a^3*b^5*c - 90160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^2*b^6*
c - 618240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^4*b^3*c^2 + 386400*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^3*b^4*c^2 - 2157568*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^13*B*a^5*b*c^3 - 618240*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^13*A*a^4*b^2*c^3 - 711424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a
^5*c^4 - 6193152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^5*b^2*c^(5/2) +
 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^6*c^(7/2) - 4816896*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^5*b*c^(7/2) + 42896*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^11*B*a^3*b^7 - 24129*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^11*A*a^2*b^8 - 514752*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^5*c
+ 300272*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^3*b^6*c - 5510400*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^5*b^3*c^2 - 1286880*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^11*A*a^4*b^4*c^2 - 2286592*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^11*B*a^6*b*c^3 - 9639168*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^
5*b^2*c^3 - 1603840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^6*c^4 - 5734
400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^5*b^4*c^(3/2) - 688128*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^6*b^2*c^(5/2) - 16744448*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^10*A*a^5*b^3*c^(5/2) - 3440640*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^10*B*a^7*c^(7/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^10*A*a^6*b*c^(7/2) - 80848*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^4*
b^7 + 45477*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^3*b^8 - 1684032*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^5*b^5*c - 565936*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^9*A*a^4*b^6*c - 4273920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
9*B*a^6*b^3*c^2 - 12811680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^5*b^4*
c^2 - 2329600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^7*b*c^3 - 21477120*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^6*b^2*c^3 - 3162880*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^9*A*a^7*c^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^8*B*a^5*b^6*sqrt(c) + 1146880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*
a^6*b^4*c^(3/2) - 8945664*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^5*b^5*c
^(3/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^7*b^2*c^(5/2) -
22937600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^6*b^3*c^(5/2) + 3440640*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^8*c^(7/2) - 17203200*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^8*A*a^7*b*c^(7/2) + 17456*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^7*B*a^5*b^7 - 52827*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^4*
b^8 + 380352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^6*b^5*c - 2630320*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^5*b^6*c + 2607360*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*B*a^7*b^3*c^2 - 19692960*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^7*A*a^6*b^4*c^2 + 1111040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^
8*b*c^3 - 24917760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^7*b^2*c^3 - 31
62880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^8*c^4 + 688128*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))^6*B*a^6*b^6*sqrt(c) - 688128*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^6*A*a^5*b^7*sqrt(c) + 1146880*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^6*B*a^7*b^4*c^(3/2) - 6881280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*
a^6*b^5*c^(3/2) + 9633792*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^8*b^2*c
^(5/2) - 27066368*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^7*b^3*c^(5/2) -
 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^9*c^(7/2) - 8257536*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^8*b*c^(7/2) + 42896*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^5*B*a^6*b^7 - 24129*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^5*b^8 + 1549632*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^5*c - 1
764112*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^6*c + 4811520*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^5*B*a^8*b^3*c^2 - 11608800*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^5*A*a^7*b^4*c^2 + 3906560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^5*B*a^9*b*c^3 - 15832320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^8*b^2
*c^3 - 1603840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^9*c^4 + 3440640*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^8*b^4*c^(3/2) - 3440640*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^4*A*a^7*b^5*c^(3/2) + 2064384*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*B*a^9*b^2*c^(5/2) - 8257536*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*A*a^8*b^3*c^(5/2) + 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*
B*a^10*c^(7/2) - 6193152*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^9*b*c^(7
/2) - 12880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^7*b^7 + 7245*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^3*A*a^6*b^8 + 154560*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^3*B*a^8*b^5*c - 90160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7
*b^6*c + 2822400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*b^3*c^2 - 3054
240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^8*b^4*c^2 + 1283072*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^3*B*a^10*b*c^3 - 4058880*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*A*a^9*b^2*c^3 - 711424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3
*A*a^10*c^4 + 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^10*b^2*c^(5
/2) - 2064384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^9*b^3*c^(5/2) - 983
04*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^11*c^(7/2) - 589824*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^2*A*a^10*b*c^(7/2) + 1680*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^8*b^7 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^7*b^8
- 20160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^5*c + 11760*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*A*a^8*b^6*c + 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*B*a^10*b^3*c^2 - 50400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b^4*
c^2 + 580608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^11*b*c^3 - 607488*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*A*a^10*b^2*c^3 - 26880*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*A*a^11*c^4 + 98304*B*a^12*c^(7/2) - 98304*A*a^11*b*c^(7/2))
/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^8*a^5)
```

maple [B] time = 0.17, size = 2263, normalized size = 7.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x)
```

```
[Out] -5/2048*B/a^(9/2)*b^7*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/384*B
/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)*x+13/768*A/a^5*b^3*c/x^3*(c*x^2+b*x+a)^(7/
2)-1/96*A*c/a^3*b/x^5*(c*x^2+b*x+a)^(7/2)+31/4096*A/a^7*b^5*c^2*(c*x^2+b*x+
a)^(5/2)*x+1/48*B/a^3*b*c/x^4*(c*x^2+b*x+a)^(7/2)+1/32*B/a^4*b*c^2/x^2*(c*x
^2+b*x+a)^(7/2)-1/32*B/a^4*b^2*c/x^3*(c*x^2+b*x+a)^(7/2)+5/64*B/a^3*b^2*c^3
*(c*x^2+b*x+a)^(1/2)*x-5/64*B/a^5*b^2*c^2/x*(c*x^2+b*x+a)^(7/2)+5/64*B/a^4*
b^2*c^3*(c*x^2+b*x+a)^(3/2)*x+5/64*B/a^5*b^2*c^3*(c*x^2+b*x+a)^(5/2)*x+5/10
24*B/a^5*b^6*(c*x^2+b*x+a)^(1/2)*x*c+5/3072*B/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)
*x+1/1024*B/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)*x-5/128*B/a^4*b^4*c^2*(c*x^2+b*x+
a)^(1/2)*x-31/4096*A/a^7*b^5*c/x*(c*x^2+b*x+a)^(7/2)-55/6144*A/a^6*b^4*c/x^
2*(c*x^2+b*x+a)^(7/2)+185/12288*A/a^6*b^5*c^2*(c*x^2+b*x+a)^(3/2)*x+95/4096
*A/a^5*b^5*c^2*(c*x^2+b*x+a)^(1/2)*x-9/16384*A/a^8*b^7*c*(c*x^2+b*x+a)^(5/2
)*x-45/16384*A/a^6*b^7*(c*x^2+b*x+a)^(1/2)*x*c-15/16384*A/a^7*b^7*c*(c*x^2+
b*x+a)^(3/2)*x-155/3072*A/a^5*b^3*c^3*(c*x^2+b*x+a)^(3/2)*x-145/3072*A/a^6*
b^3*c^3*(c*x^2+b*x+a)^(5/2)*x-1/128*A/a^4*b^2*c/x^4*(c*x^2+b*x+a)^(7/2)+5/2
56*A*c^4/a^5*b*(c*x^2+b*x+a)^(5/2)*x+5/256*A*c^4/a^4*b*(c*x^2+b*x+a)^(3/2)*
x+5/256*A*c^4/a^3*b*(c*x^2+b*x+a)^(1/2)*x-5/256*A*c^3/a^5*b/x*(c*x^2+b*x+a)
^(7/2)-1/128*A*c^2/a^4*b/x^3*(c*x^2+b*x+a)^(7/2)+145/3072*A/a^6*b^3*c^2/x*(
c*x^2+b*x+a)^(7/2)-55/1024*A/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)*x-7/512*A/a^5*
b^2*c^2/x^2*(c*x^2+b*x+a)^(7/2)+5/384*B/a^6*b^4*c/x*(c*x^2+b*x+a)^(7/2)+1/6
4*B/a^5*b^3*c/x^2*(c*x^2+b*x+a)^(7/2)-5/192*B/a^5*b^4*c^2*(c*x^2+b*x+a)^(3/
2)*x-25/512*B/a^4*b^5*c*(c*x^2+b*x+a)^(1/2)-235/6144*A/a^6*b^4*c^2*(c*x^2+b
*x+a)^(5/2)-205/2048*A/a^4*b^4*c^2*(c*x^2+b*x+a)^(1/2)-9/1024*A/a^5*b^4/x^4
*(c*x^2+b*x+a)^(7/2)+3/2048*A/a^6*b^5/x^3*(c*x^2+b*x+a)^(7/2)-35/1536*B/a^5
*b^5*c*(c*x^2+b*x+a)^(3/2)-1/1536*B/a^6*b^5/x^2*(c*x^2+b*x+a)^(7/2)-19/1536
*B/a^6*b^5*c*(c*x^2+b*x+a)^(5/2)+235/8192*A/a^5*b^6*c*(c*x^2+b*x+a)^(1/2)+9
/112*A/a^2*b/x^7*(c*x^2+b*x+a)^(7/2)-15/128*A/a^(5/2)*b^2*c^3*ln((b*x+2*a+2
*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+75/1024*A/a^(7/2)*b^4*c^2*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/2048*A/a^(9/2)*b^6*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+9/16384*A/a^8*b^7/x*(c*x^2+b*x+a)^(7/2)-305/6144*A
/a^5*b^4*c^2*(c*x^2+b*x+a)^(3/2)+1/48*A*c/a^2/x^6*(c*x^2+b*x+a)^(7/2)+1/192
*A*c^2/a^3/x^4*(c*x^2+b*x+a)^(7/2)+1/128*A*c^3/a^4/x^2*(c*x^2+b*x+a)^(7/2)+
325/24576*A/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)+3/8192*A/a^7*b^6/x^2*(c*x^2+b*x+a
)^(7/2)+59/8192*A/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)+3/128*A/a^4*b^3/x^5*(c*x^2+
b*x+a)^(7/2)+25/512*A/a^4*b^2*c^3*(c*x^2+b*x+a)^(3/2)+17/512*A/a^5*b^2*c^3*
```

```
(c*x^2+b*x+a)^(5/2)+65/512*A/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)-3/64*A/a^3*b^2
/x^6*(c*x^2+b*x+a)^(7/2)-1/24*B/a^3*b^2/x^5*(c*x^2+b*x+a)^(7/2)-5/96*B/a^3*
b*c^3*(c*x^2+b*x+a)^(3/2)-1/32*B/a^4*b*c^3*(c*x^2+b*x+a)^(5/2)-5/32*B/a^2*b
*c^3*(c*x^2+b*x+a)^(1/2)+5/32*B/a^(3/2)*b*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(
1/2)*a^(1/2))/x)-15/128*B/a^(5/2)*b^3*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+15/512*B/a^(7/2)*b^5*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)+1/12*B/a^2*b/x^6*(c*x^2+b*x+a)^(7/2)-1/1024*B/a^7*b^6/x*(c*x^2+b*x+a
)^(7/2)+5/64*B/a^4*b^3*c^2*(c*x^2+b*x+a)^(3/2)+1/16*B/a^5*b^3*c^2*(c*x^2+b*
x+a)^(5/2)+5/32*B/a^3*b^3*c^2*(c*x^2+b*x+a)^(1/2)+1/64*B/a^4*b^3/x^4*(c*x^2
+b*x+a)^(7/2)-1/384*B/a^5*b^4/x^3*(c*x^2+b*x+a)^(7/2)-45/16384*A/a^6*b^8*(c
*x^2+b*x+a)^(1/2)-15/16384*A/a^7*b^8*(c*x^2+b*x+a)^(3/2)-9/16384*A/a^8*b^8*
(c*x^2+b*x+a)^(5/2)-5/384*A*c^4/a^3*(c*x^2+b*x+a)^(3/2)-1/128*A*c^4/a^4*(c*
x^2+b*x+a)^(5/2)-5/128*A*c^4/a^2*(c*x^2+b*x+a)^(1/2)+45/32768*A/a^(11/2)*b^
8*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/128*A*c^4/a^(3/2)*ln((b*x
+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/1024*B/a^5*b^7*(c*x^2+b*x+a)^(1/2)
+5/3072*B/a^6*b^7*(c*x^2+b*x+a)^(3/2)+1/1024*B/a^7*b^7*(c*x^2+b*x+a)^(5/2)-
1/7*B/a/x^7*(c*x^2+b*x+a)^(7/2)-1/8*A*(c*x^2+b*x+a)^(7/2)/a/x^8
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^9,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^9, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**9,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**9, x)
```

3.949 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^{10}}\,dx$

Optimal. Leaf size=375

$$\frac{5\left(b^2-4ac\right)^3\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{65536a^{13/2}}-\frac{5\left(b^2-4ac\right)^2(2a+bx)\sqrt{a+bx+}}{3}$$

```
[Out] 5/12288*(-4*a*c+b^2)*(2*a*B*(-4*a*c+9*b^2)-A*(-12*a*b*c+11*b^3))*(b*x+2*a)*
(c*x^2+b*x+a)^(3/2)/a^5/x^4+1/768*(-12*A*a*b*c+11*A*b^3+8*B*a^2*c-18*B*a*b^
2)*(b*x+2*a)*(c*x^2+b*x+a)^(5/2)/a^4/x^6-1/9*A*(c*x^2+b*x+a)^(7/2)/a/x^9+1/
144*(11*A*b-18*B*a)*(c*x^2+b*x+a)^(7/2)/a^2/x^8-1/2016*(-64*A*a*c+99*A*b^2-
162*B*a*b)*(c*x^2+b*x+a)^(7/2)/a^3/x^7+5/65536*(-4*a*c+b^2)^3*(2*a*B*(-4*a*
c+9*b^2)-A*(-12*a*b*c+11*b^3))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^
(1/2))/a^(13/2)-5/32768*(-4*a*c+b^2)^2*(2*a*B*(-4*a*c+9*b^2)-A*(-12*a*b*c+1
1*b^3))*(b*x+2*a)*(c*x^2+b*x+a)^(1/2)/a^6/x^2
```

Rubi [A] time = 0.48, antiderivative size = 375, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{\left(a+bx+cx^2\right)^{7/2}\left(-64aAc-162abB+99Ab^2\right)}{2016a^3x^7}+\frac{(2a+bx)\left(a+bx+cx^2\right)^{5/2}\left(8a^2Bc-12aAbc-18ab^2B+11\right.}{768a^4x^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-5*(b^2 - 4*a*c)^2*(2*a*B*(9*b^2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*(2*a +
b*x)*Sqrt[a + b*x + c*x^2])/(32768*a^6*x^2) + (5*(b^2 - 4*a*c)*(2*a*B*(9*b^
2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*(2*a + b*x)*(a + b*x + c*x^2)^(3/2))/(1
2288*a^5*x^4) + ((11*A*b^3 - 18*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*(2*a + b*
x)*(a + b*x + c*x^2)^(5/2))/(768*a^4*x^6) - (A*(a + b*x + c*x^2)^(7/2))/(9*
a*x^9) + ((11*A*b - 18*a*B)*(a + b*x + c*x^2)^(7/2))/(144*a^2*x^8) - ((99*A
*b^2 - 162*a*b*B - 64*a*A*c)*(a + b*x + c*x^2)^(7/2))/(2016*a^3*x^7) + (5*(
b^2 - 4*a*c)^3*(2*a*B*(9*b^2 - 4*a*c) - A*(11*b^3 - 12*a*b*c))*ArcTanh[(2*a
 + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(65536*a^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{5/2}}{x^{10}}\,dx = -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9}-\frac{\int \frac{\left(\frac{1}{2}(11Ab-18aB)+2Acx\right)\left(a+bx+cx^2\right)^{5/2}}{x^9}\,dx}{9a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9}+\frac{(11Ab-18aB)\left(a+bx+cx^2\right)^{7/2}}{144a^2x^8}+\frac{\int \frac{(\frac{1}{4}(99Ab^2-162abB-}{}}{}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{7/2}}{9ax^9}+\frac{(11Ab-18aB)\left(a+bx+cx^2\right)^{7/2}}{144a^2x^8}-\frac{(99Ab^2-162abB}{}$$

$$= \frac{\left(11Ab^3-18ab^2B-12aAbc+8a^2Bc\right)(2a+bx)\left(a+bx+cx^2\right)^{5/2}}{768a^4x^6}-\frac{A(a+bx}{9a}$$

$$= \frac{5\left(b^2-4ac\right)\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\left(a+bx+cx^2\right)^{3/2}}{12288a^5x^4}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

$$= -\frac{5\left(b^2-4ac\right)^2\left(2aB\left(9b^2-4ac\right)-A\left(11b^3-12abc\right)\right)(2a+bx)\sqrt{a+bx+cx^2}}{32768a^6x^2}$$

Mathematica [A] time = 0.73, size = 292, normalized size = 0.78

$$\frac{\frac{3\left(A\left(11b^3-12abc\right)+2aB\left(4ac-9b^2\right)\right)(256a^{5/2}(2a+bx)(a+x(b+cx))^{5/2}-5x^2\left(b^2-4ac\right)(16a^{3/2}(2a+bx)(a+x(b+cx))^{3/2}-3x^2\left(b^2-4ac\right)(2\sqrt{a}\,(2a+bx)\sqrt{a+x(b+cx)}}{65536a^{11/2}x^6}}{9a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x]
```

```
[Out] (-((A*(a + x*(b + c*x))^(7/2))/x^9) + ((11*A*b - 18*a*B)*(a + x*(b + c*x))^
(7/2))/(16*a*x^8) + ((-99*A*b^2 + 162*a*b*B + 64*a*A*c)*(a + x*(b + c*x))^(
7/2))/(224*a^2*x^7) + (3*(2*a*B*(-9*b^2 + 4*a*c) + A*(11*b^3 - 12*a*b*c))*(
256*a^(5/2)*(2*a + b*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*x^2*(16*a
^(3/2)*(2*a + b*x)*(a + x*(b + c*x))^(3/2) - 3*(b^2 - 4*a*c)*x^2*(2*Sqrt[a]
*(2*a + b*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a*c)*x^2*ArcTanh[(2*a + b*x)/
(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]))))/(65536*a^(11/2)*x^6))/(9*a)
```

fricas [A] time = 23.88, size = 1315, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="fricas")
```

```
[Out] [1/8257536*(315*(18*B*a*b^8 - 11*A*b^9 + 256*(2*B*a^5 - 3*A*a^4*b)*c^4 - 25
6*(6*B*a^4*b^2 - 5*A*a^3*b^3)*c^3 + 96*(10*B*a^3*b^4 - 7*A*a^2*b^5)*c^2 - 1
6*(14*B*a^2*b^6 - 9*A*a*b^7)*c)*sqrt(a)*x^9*log(-(8*a*b*x + (b^2 + 4*a*c)*x
^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(229376*
A*a^9 + (5670*B*a^2*b^7 - 3465*A*a*b^8 - 65536*A*a^5*c^4 - 576*(442*B*a^5*b
 - 407*A*a^4*b^2)*c^3 + 336*(674*B*a^4*b^3 - 483*A*a^3*b^4)*c^2 - 420*(150*
B*a^3*b^5 - 97*A*a^2*b^6)*c)*x^8 - 2*(1890*B*a^3*b^6 - 1155*A*a^2*b^7 - 64*
(630*B*a^6 - 689*A*a^5*b)*c^3 + 144*(398*B*a^5*b^2 - 293*A*a^4*b^3)*c^2 - 8
4*(226*B*a^4*b^4 - 147*A*a^3*b^5)*c)*x^7 + 8*(378*B*a^4*b^5 - 231*A*a^3*b^6
 + 4096*A*a^6*c^3 + 48*(174*B*a^6*b - 133*A*a^5*b^2)*c^2 - 24*(142*B*a^5*b^
3 - 93*A*a^4*b^4)*c)*x^6 - 16*(162*B*a^5*b^4 - 99*A*a^4*b^5 - 48*(826*B*a^7
 + 41*A*a^6*b)*c^2 - 8*(162*B*a^6*b^2 - 107*A*a^5*b^3)*c)*x^5 + 128*(18*B*a
^6*b^3 - 11*A*a^5*b^4 + 3840*A*a^7*c^2 + 12*(614*B*a^7*b + 7*A*a^6*b^2)*c)*
x^4 + 256*(1458*B*a^7*b^2 + 5*A*a^6*b^3 + 12*(238*B*a^8 + 251*A*a^7*b)*c)*x
^3 + 1024*(594*B*a^8*b + 309*A*a^7*b^2 + 608*A*a^8*c)*x^2 + 14336*(18*B*a^9
 + 37*A*a^8*b)*x)*sqrt(c*x^2 + b*x + a))/(a^7*x^9), -1/4128768*(315*(18*B*a
*b^8 - 11*A*b^9 + 256*(2*B*a^5 - 3*A*a^4*b)*c^4 - 256*(6*B*a^4*b^2 - 5*A*a^
3*b^3)*c^3 + 96*(10*B*a^3*b^4 - 7*A*a^2*b^5)*c^2 - 16*(14*B*a^2*b^6 - 9*A*a
*b^7)*c)*sqrt(-a)*x^9*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)
/(a*c*x^2 + a*b*x + a^2)) + 2*(229376*A*a^9 + (5670*B*a^2*b^7 - 3465*A*a*b^
8 - 65536*A*a^5*c^4 - 576*(442*B*a^5*b - 407*A*a^4*b^2)*c^3 + 336*(674*B*a^
4*b^3 - 483*A*a^3*b^4)*c^2 - 420*(150*B*a^3*b^5 - 97*A*a^2*b^6)*c)*x^8 - 2*
(1890*B*a^3*b^6 - 1155*A*a^2*b^7 - 64*(630*B*a^6 - 689*A*a^5*b)*c^3 + 144*(
398*B*a^5*b^2 - 293*A*a^4*b^3)*c^2 - 84*(226*B*a^4*b^4 - 147*A*a^3*b^5)*c)*
x^7 + 8*(378*B*a^4*b^5 - 231*A*a^3*b^6 + 4096*A*a^6*c^3 + 48*(174*B*a^6*b -
 133*A*a^5*b^2)*c^2 - 24*(142*B*a^5*b^3 - 93*A*a^4*b^4)*c)*x^6 - 16*(162*B*
a^5*b^4 - 99*A*a^4*b^5 - 48*(826*B*a^7 + 41*A*a^6*b)*c^2 - 8*(162*B*a^6*b^2
 - 107*A*a^5*b^3)*c)*x^5 + 128*(18*B*a^6*b^3 - 11*A*a^5*b^4 + 3840*A*a^7*c^
2 + 12*(614*B*a^7*b + 7*A*a^6*b^2)*c)*x^4 + 256*(1458*B*a^7*b^2 + 5*A*a^6*b
^3 + 12*(238*B*a^8 + 251*A*a^7*b)*c)*x^3 + 1024*(594*B*a^8*b + 309*A*a^7*b^
2 + 608*A*a^8*c)*x^2 + 14336*(18*B*a^9 + 37*A*a^8*b)*x)*sqrt(c*x^2 + b*x +
a))/(a^7*x^9)]
```

giac [B] time = 0.58, size = 4427, normalized size = 11.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="giac")
```

```
[Out] -5/32768*(18*B*a*b^8 - 11*A*b^9 - 224*B*a^2*b^6*c + 144*A*a*b^7*c + 960*B*a
^3*b^4*c^2 - 672*A*a^2*b^5*c^2 - 1536*B*a^4*b^2*c^3 + 1280*A*a^3*b^3*c^3 +
512*B*a^5*c^4 - 768*A*a^4*b*c^4)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)/sqrt(-a))/(sqrt(-a)*a^6) + 1/2064384*(5670*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^17*B*a*b^8 - 3465*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*b^9 - 7056
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^2*b^6*c + 45360*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^17*A*a*b^7*c + 302400*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^17*B*a^3*b^4*c^2 - 211680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a^2
*b^5*c^2 - 483840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*B*a^4*b^2*c^3 + 40
3200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^17*A*a^3*b^3*c^3 + 161280*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^17*B*a^5*c^4 - 241920*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^17*A*a^4*b*c^4 - 49140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*
a^2*b^8 + 30030*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a*b^9 + 611520*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^3*b^6*c - 393120*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^15*A*a^2*b^7*c - 2620800*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^15*B*a^4*b^4*c^2 + 1834560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^3
*b^5*c^2 + 4193280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^5*b^2*c^3 - 3
494400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^15*A*a^4*b^3*c^3 + 4107264*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^15*B*a^6*c^4 + 2096640*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^15*A*a^5*b*c^4 + 28901376*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^14*B*a^6*b*c^(7/2) + 8257536*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^14*A*a^6
*c^(9/2) + 188244*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^3*b^8 - 115038
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^2*b^9 - 2342592*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^13*B*a^4*b^6*c + 1505952*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^13*A*a^3*b^7*c + 10039680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a
^5*b^4*c^2 - 7027776*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^4*b^5*c^2 +
 54125568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*B*a^6*b^2*c^3 + 13386240*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^13*A*a^5*b^3*c^3 + 5354496*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^13*B*a^7*c^4 + 41513472*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^13*A*a^6*b*c^4 + 100466688*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B
*a^6*b^3*c^(5/2) + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*B*a^7*b*
c^(7/2) + 136249344*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^6*b^2*c^(7/2
) + 13762560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^12*A*a^7*c^(9/2) - 417636*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^4*b^8 + 255222*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^11*A*a^3*b^9 + 5197248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^11*B*a^5*b^6*c - 3341088*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^4*b^
7*c + 69148800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*B*a^6*b^4*c^2 + 15591
744*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^5*b^5*c^2 + 71027712*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^11*B*a^7*b^2*c^3 + 192665088*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^11*A*a^6*b^3*c^3 + 9354240*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^11*B*a^8*c^4 + 109831680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^11*A*a^
7*b*c^4 + 53673984*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^6*b^5*c^(3/2)
 + 37158912*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^7*b^3*c^(5/2) + 2353
39776*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*A*a^6*b^4*c^(5/2) + 61931520*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^10*B*a^8*b*c^(7/2) + 247726080*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^10*A*a^7*b^2*c^(7/2) + 41287680*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^10*A*a^8*c^(9/2) + 589824*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^9*B*a^5*b^8 - 360448*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^4*b^9
 + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^6*b^6*c + 4718592*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^5*b^7*c + 41287680*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^9*B*a^7*b^4*c^2 + 144506880*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^9*A*a^6*b^5*c^2 + 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*
a^8*b^2*c^3 + 405995520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^7*b^3*c^3
 + 165150720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^8*b*c^4 + 4128768*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a^6*b^7*sqrt(c) - 12386304*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^8*B*a^7*b^5*c^(3/2) + 78446592*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^8*A*a^6*b^6*c^(3/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^8*B*a^8*b^3*c^(5/2) + 322043904*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^8*A*a^7*b^4*c^(5/2) - 53673984*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*B*a
^9*b*c^(7/2) + 383975424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^8*b^2*c^
(7/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*A*a^9*c^(9/2) - 1721
```

```
88*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^6*b^8 + 334602*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^7*A*a^5*b^9 - 5197248*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^7*B*a^7*b^6*c + 19266336*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^6*b^
7*c - 48504960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^8*b^4*c^2 + 194975
424*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^7*b^5*c^2 - 54512640*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^7*B*a^9*b^2*c^3 + 389491200*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^7*A*a^8*b^3*c^3 - 9354240*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^7*B*a^10*c^4 + 137894400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^9*b*
c^4 - 4128768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^7*b^7*sqrt(c) + 412
8768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^6*b^8*sqrt(c) - 20643840*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^6*B*a^8*b^5*c^(3/2) + 55050240*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^6*A*a^7*b^6*c^(3/2) - 112852992*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^6*B*a^9*b^3*c^(5/2) + 280756224*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^6*A*a^8*b^4*c^(5/2) - 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^6*B*a^10*b*c^(7/2) + 198180864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a
^9*b^2*c^(7/2) + 24772608*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*A*a^10*c^(9
/2) - 188244*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^7*b^8 + 115038*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^6*b^9 - 10043712*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*B*a^8*b^6*c + 10880352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^7*b^7*c - 51327360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^9*b^4*c
^2 + 93731904*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^8*b^5*c^2 - 7064064
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^10*b^2*c^3 + 193052160*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^5*A*a^9*b^3*c^3 - 5354496*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*B*a^11*c^4 + 57576960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^10*b*c^4 - 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^9*b^5*c
^(3/2) + 20643840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^8*b^6*c^(3/2) -
 37158912*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^10*b^3*c^(5/2) + 743178
24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^9*b^4*c^(5/2) - 33619968*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^11*b*c^(7/2) + 83165184*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^4*A*a^10*b^2*c^(7/2) + 3538944*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^4*A*a^11*c^(9/2) + 49140*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
3*B*a^8*b^8 - 30030*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^7*b^9 - 61152
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^9*b^6*c + 393120*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^3*A*a^8*b^7*c - 18023040*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^3*B*a^10*b^4*c^2 + 18809280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A
*a^9*b^5*c^2 - 20708352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^11*b^2*c^
3 + 37900800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^10*b^3*c^3 - 4107264
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^12*c^4 + 14418432*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^3*A*a^11*b*c^4 - 12386304*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^2*B*a^11*b^3*c^(5/2) + 12386304*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*A*a^10*b^4*c^(5/2) - 2949120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^
12*b*c^(7/2) + 7077888*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^11*b^2*c^(
7/2) + 1179648*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^12*c^(9/2) - 5670*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^9*b^8 + 3465*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))*A*a^8*b^9 + 70560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^10*
b^6*c - 45360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^9*b^7*c - 302400*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))*B*a^11*b^4*c^2 + 211680*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^10*b^5*c^2 - 3644928*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^12*b^2*c^3 + 3725568*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^11*b^3*
c^3 - 161280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^13*c^4 + 241920*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*A*a^12*b*c^4 - 589824*B*a^13*b*c^(7/2) + 5898
24*A*a^12*b^2*c^(7/2) - 131072*A*a^13*c^(9/2))/(((sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^2 - a)^9*a^6)
```

maple [B] time = 0.16, size = 2677, normalized size = 7.14

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x)
```

```
[Out] 3/8192*B/a^7*b^6/x^2*(c*x^2+b*x+a)^(7/2)+1/128*B*c^3/a^4/x^2*(c*x^2+b*x+a)^
(7/2)+5/256*B*c^4/a^4*b*(c*x^2+b*x+a)^(3/2)*x-45/16384*B/a^6*b^7*(c*x^2+b*x
+a)^(1/2)*x*c+5/256*B*c^4/a^3*b*(c*x^2+b*x+a)^(1/2)*x+13/768*B/a^5*b^3*c/x^
3*(c*x^2+b*x+a)^(7/2)+5/256*B*c^4/a^5*b*(c*x^2+b*x+a)^(5/2)*x-145/3072*B/a^
6*b^3*c^3*(c*x^2+b*x+a)^(5/2)*x-55/1024*B/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)*x
-55/6144*B/a^6*b^4*c/x^2*(c*x^2+b*x+a)^(7/2)-155/3072*B/a^5*b^3*c^3*(c*x^2+
b*x+a)^(3/2)*x+145/3072*B/a^6*b^3*c^2/x*(c*x^2+b*x+a)^(7/2)+95/4096*B/a^5*b
^5*c^2*(c*x^2+b*x+a)^(1/2)*x-5/256*B*c^3/a^5*b/x*(c*x^2+b*x+a)^(7/2)+55/983
04*A/a^8*b^8*c*(c*x^2+b*x+a)^(3/2)*x+119/24576*A/a^8*b^6*c/x*(c*x^2+b*x+a)^
(7/2)-3/256*A/a^5*b*c^3/x^2*(c*x^2+b*x+a)^(7/2)-1/128*A/a^4*b*c^2/x^4*(c*x^
2+b*x+a)^(7/2)-1/32*A/a^3*b*c/x^6*(c*x^2+b*x+a)^(7/2)+3/256*A/a^5*b^2*c^2/x
^3*(c*x^2+b*x+a)^(7/2)-15/512*A/a^4*b^2*c^4*(c*x^2+b*x+a)^(1/2)*x+15/512*A/
a^6*b^2*c^3/x*(c*x^2+b*x+a)^(7/2)-15/512*A/a^6*b^2*c^4*(c*x^2+b*x+a)^(5/2)*
x-15/512*A/a^5*b^2*c^4*(c*x^2+b*x+a)^(3/2)*x+55/32768*A/a^7*b^8*(c*x^2+b*x+
a)^(1/2)*x*c-5/512*A/a^6*b^4*c/x^3*(c*x^2+b*x+a)^(7/2)+85/2048*A/a^5*b^4*c^
3*(c*x^2+b*x+a)^(1/2)*x-65/2048*A/a^7*b^4*c^2/x*(c*x^2+b*x+a)^(7/2)+65/2048
*A/a^7*b^4*c^3*(c*x^2+b*x+a)^(5/2)*x+75/2048*A/a^6*b^4*c^3*(c*x^2+b*x+a)^(3
/2)*x+23/4096*A/a^7*b^5*c/x^2*(c*x^2+b*x+a)^(7/2)-125/8192*A/a^6*b^6*c^2*(c
*x^2+b*x+a)^(1/2)*x+1/64*A/a^4*b^2*c/x^5*(c*x^2+b*x+a)^(7/2)+5/1024*A/a^6*b
^3*c^2/x^2*(c*x^2+b*x+a)^(7/2)+1/768*A/a^5*b^3*c/x^4*(c*x^2+b*x+a)^(7/2)-11
9/24576*A/a^8*b^6*c^2*(c*x^2+b*x+a)^(5/2)*x-235/24576*A/a^7*b^6*c^2*(c*x^2+
b*x+a)^(3/2)*x+11/32768*A/a^9*b^8*c*(c*x^2+b*x+a)^(5/2)*x-1/128*B*c^2/a^4*b
/x^3*(c*x^2+b*x+a)^(7/2)-31/4096*B/a^7*b^5*c/x*(c*x^2+b*x+a)^(7/2)-15/16384
*B/a^7*b^7*c*(c*x^2+b*x+a)^(3/2)*x+185/12288*B/a^6*b^5*c^2*(c*x^2+b*x+a)^(3
/2)*x-9/16384*B/a^8*b^7*c*(c*x^2+b*x+a)^(5/2)*x+31/4096*B/a^7*b^5*c^2*(c*x^
2+b*x+a)^(5/2)*x-7/512*B/a^5*b^2*c^2/x^2*(c*x^2+b*x+a)^(7/2)-1/128*B/a^4*b^
2*c/x^4*(c*x^2+b*x+a)^(7/2)-1/96*B*c/a^3*b/x^5*(c*x^2+b*x+a)^(7/2)-15/16384
*B/a^7*b^8*(c*x^2+b*x+a)^(3/2)-9/16384*B/a^8*b^8*(c*x^2+b*x+a)^(5/2)-45/163
84*B/a^6*b^8*(c*x^2+b*x+a)^(1/2)-5/384*B*c^4/a^3*(c*x^2+b*x+a)^(3/2)-1/128*
B*c^4/a^4*(c*x^2+b*x+a)^(5/2)-5/128*B*c^4/a^2*(c*x^2+b*x+a)^(1/2)-1/8*B/a/x
^8*(c*x^2+b*x+a)^(7/2)+45/32768*B/a^(11/2)*b^8*ln((b*x+2*a+2*(c*x^2+b*x+a)^
(1/2)*a^(1/2))/x)+5/128*B*c^4/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)+55/98304*A/a^8*b^9*(c*x^2+b*x+a)^(3/2)+11/32768*A/a^9*b^9*(c*x^2+b
*x+a)^(5/2)+55/32768*A/a^7*b^9*(c*x^2+b*x+a)^(1/2)-55/65536*A/a^(13/2)*b^9*
ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-11/224*A/a^3*b^2/x^7*(c*x^2+b
*x+a)^(7/2)-145/3072*A/a^5*b^3*c^3*(c*x^2+b*x+a)^(3/2)-35/1024*A/a^6*b^3*c^
3*(c*x^2+b*x+a)^(5/2)-115/1024*A/a^4*b^3*c^3*(c*x^2+b*x+a)^(1/2)-227/49152*
A/a^8*b^7*c*(c*x^2+b*x+a)^(5/2)-11/32768*A/a^9*b^8/x*(c*x^2+b*x+a)^(7/2)+11
/2048*A/a^6*b^5/x^4*(c*x^2+b*x+a)^(7/2)+145/4096*A/a^6*b^5*c^2*(c*x^2+b*x+a
)^(3/2)+107/4096*A/a^7*b^5*c^2*(c*x^2+b*x+a)^(5/2)+295/4096*A/a^5*b^5*c^2*(
c*x^2+b*x+a)^(1/2)-11/768*A/a^5*b^4/x^5*(c*x^2+b*x+a)^(7/2)+11/384*A/a^4*b^
3/x^6*(c*x^2+b*x+a)^(7/2)-11/12288*A/a^7*b^6/x^3*(c*x^2+b*x+a)^(7/2)-305/16
384*A/a^6*b^7*c*(c*x^2+b*x+a)^(1/2)-415/49152*A/a^7*b^7*c*(c*x^2+b*x+a)^(3/
2)-11/49152*A/a^8*b^7/x^2*(c*x^2+b*x+a)^(7/2)+2/63*A*c/a^2/x^7*(c*x^2+b*x+a
)^(7/2)+25/256*A/a^(7/2)*b^3*c^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))
/x)+45/4096*A/a^(11/2)*b^7*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-
105/2048*A/a^(9/2)*b^5*c^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-15
/256*A/a^(5/2)*b*c^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+9/112*B/
a^2*b/x^7*(c*x^2+b*x+a)^(7/2)+25/512*B/a^4*b^2*c^3*(c*x^2+b*x+a)^(3/2)+17/5
12*B/a^5*b^2*c^3*(c*x^2+b*x+a)^(5/2)+1/192*B*c^2/a^3/x^4*(c*x^2+b*x+a)^(7/2
)+1/48*B*c/a^2/x^6*(c*x^2+b*x+a)^(7/2)-15/128*B/a^(5/2)*b^2*c^3*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/2048*B/a^(9/2)*b^6*c*ln((b*x+2*a+2*(c
*x^2+b*x+a)^(1/2)*a^(1/2))/x)+75/1024*B/a^(7/2)*b^4*c^2*ln((b*x+2*a+2*(c*x^
2+b*x+a)^(1/2)*a^(1/2))/x)+65/512*B/a^3*b^2*c^3*(c*x^2+b*x+a)^(1/2)+59/8192
*B/a^7*b^6*c*(c*x^2+b*x+a)^(5/2)+9/16384*B/a^8*b^7/x*(c*x^2+b*x+a)^(7/2)-9/
1024*B/a^5*b^4/x^4*(c*x^2+b*x+a)^(7/2)-305/6144*B/a^5*b^4*c^2*(c*x^2+b*x+a)
^(3/2)-235/6144*B/a^6*b^4*c^2*(c*x^2+b*x+a)^(5/2)-205/2048*B/a^4*b^4*c^2*(c
*x^2+b*x+a)^(1/2)+3/128*B/a^4*b^3/x^5*(c*x^2+b*x+a)^(7/2)-3/64*B/a^3*b^2/x^
6*(c*x^2+b*x+a)^(7/2)+3/2048*B/a^6*b^5/x^3*(c*x^2+b*x+a)^(7/2)+235/8192*B/a
```

```
^5*b^6*c*(c*x^2+b*x+a)^(1/2)+325/24576*B/a^6*b^6*c*(c*x^2+b*x+a)^(3/2)+5/25
6*A/a^4*b*c^4*(c*x^2+b*x+a)^(3/2)+3/256*A/a^5*b*c^4*(c*x^2+b*x+a)^(5/2)+15/
256*A/a^3*b*c^4*(c*x^2+b*x+a)^(1/2)+11/144*A/a^2*b/x^8*(c*x^2+b*x+a)^(7/2)-
1/9*A*(c*x^2+b*x+a)^(7/2)/a/x^9
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(5/2)/x^10,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(5/2))/x^10, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{x^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(5/2)/x**10,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**(5/2)/x**10, x)
```

3.950 $\int \frac{x^4(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=281

$$\frac{\sqrt{a+bx+cx^2}\,\big(1024a^2Bc^2-2cx\big(360aAc^2-644abBc-350Ab^2c+315b^3B\big)+2200aAbc^2-2940ab^2Bc-1050}{1920c^5}$$

```
[Out] -1/256*(-96*A*a^2*c^3+240*A*a*b^2*c^2-70*A*b^4*c+240*B*a^2*b*c^2-280*B*a*b^
3*c+63*B*b^5)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(11/2)+1
/240*(-70*A*b*c-64*B*a*c+63*B*b^2)*x^2*(c*x^2+b*x+a)^(1/2)/c^3-1/40*(-10*A*
c+9*B*b)*x^3*(c*x^2+b*x+a)^(1/2)/c^2+1/5*B*x^4*(c*x^2+b*x+a)^(1/2)/c+1/1920
*(945*b^4*B-1050*A*b^3*c-2940*a*b^2*B*c+2200*a*A*b*c^2+1024*a^2*B*c^2-2*c*(
360*A*a*c^2-350*A*b^2*c-644*B*a*b*c+315*B*b^3)*x)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi [A] time = 0.42, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{832, 779, 621, 206\}$

$$\frac{\sqrt{a+bx+cx^2}\,\big(1024a^2Bc^2-2cx\big(360aAc^2-644abBc-350Ab^2c+315b^3B\big)+2200aAbc^2-2940ab^2Bc-1050}{1920c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((63*b^2*B - 70*A*b*c - 64*a*B*c)*x^2*Sqrt[a + b*x + c*x^2])/(240*c^3) - ((
9*b*B - 10*A*c)*x^3*Sqrt[a + b*x + c*x^2])/(40*c^2) + (B*x^4*Sqrt[a + b*x +
 c*x^2])/(5*c) + ((945*b^4*B - 1050*A*b^3*c - 2940*a*b^2*B*c + 2200*a*A*b*c
^2 + 1024*a^2*B*c^2 - 2*c*(315*b^3*B - 350*A*b^2*c - 644*a*b*B*c + 360*a*A*
c^2)*x)*Sqrt[a + b*x + c*x^2])/(1920*c^5) - ((63*b^5*B - 70*A*b^4*c - 280*a
*b^3*B*c + 240*a*A*b^2*c^2 + 240*a^2*b*B*c^2 - 96*a^2*A*c^3)*ArcTanh[(b + 2
*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^4\sqrt{a+bx+cx^2}}{5c} + \frac{\int \frac{x^3\left(-4aB-\frac{1}{2}(9bB-10Ac)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{5c}$$

$$= -\frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + \frac{Bx^4\sqrt{a+bx+cx^2}}{5c} + \frac{\int \frac{x^2\left(\frac{3}{2}a(9bB-10Ac)+\frac{1}{4}\left(63b^2B-70A\right.\right.}{\sqrt{a+bx+cx^2}}}{20c^2}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + Bx^4\sqrt{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + Bx^4\sqrt{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + Bx^4\sqrt{}$$

$$= \frac{\left(63b^2B-70Abc-64aBc\right)x^2\sqrt{a+bx+cx^2}}{240c^3} - \frac{(9bB-10Ac)x^3\sqrt{a+bx+cx^2}}{40c^2} + Bx^4\sqrt{}$$

Mathematica [A] time = 0.39, size = 225, normalized size = 0.80

$$\frac{\sqrt{a+x(b+cx)}\,\left(16c^2\left(64a^2B-acx(45A+32Bx)+6c^2x^3(5A+4Bx)\right)+28b^2c(cx(25A+18Bx)-105aB)+8b\right.}{1920c^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(945*b^4*B - 210*b^3*c*(5*A + 3*B*x) + 28*b^2*c*(-10
5*a*B + c*x*(25*A + 18*B*x)) + 16*c^2*(64*a^2*B + 6*c^2*x^3*(5*A + 4*B*x) -
 a*c*x*(45*A + 32*B*x)) + 8*b*c^2*(-2*c*x^2*(35*A + 27*B*x) + a*(275*A + 16
1*B*x))))/(1920*c^5) + ((-63*b^5*B + 70*A*b^4*c + 280*a*b^3*B*c - 240*a*A*b
^2*c^2 - 240*a^2*b*B*c^2 + 96*a^2*A*c^3)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + x*(b + c*x)])])/(256*c^(11/2))
```

fricas [A] time = 1.22, size = 519, normalized size = 1.85

$$\left[-\frac{15\left(63\,Bb^5-96\,Aa^2c^3+240\left(Ba^2b+Aab^2\right)c^2-70\left(4\,Bab^3+Ab^4\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(63*B*b^5 - 96*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2)*c^2 - 70*(4
*B*a*b^3 + A*b^4)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(384*B*c^5*x^4 + 945*B*b^4*c +
8*(128*B*a^2 + 275*A*a*b)*c^3 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 - 210*(14*B*a
*b^2 + 5*A*b^3)*c^2 + 8*(63*B*b^2*c^3 - 2*(32*B*a + 35*A*b)*c^4)*x^2 - 2*(3
15*B*b^3*c^2 + 360*A*a*c^4 - 14*(46*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c*x^2 +
b*x + a))/c^6, 1/3840*(15*(63*B*b^5 - 96*A*a^2*c^3 + 240*(B*a^2*b + A*a*b^2
)*c^2 - 70*(4*B*a*b^3 + A*b^4)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)
*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(384*B*c^5*x^4 + 945*B*b
^4*c + 8*(128*B*a^2 + 275*A*a*b)*c^3 - 48*(9*B*b*c^4 - 10*A*c^5)*x^3 - 210*
(14*B*a*b^2 + 5*A*b^3)*c^2 + 8*(63*B*b^2*c^3 - 2*(32*B*a + 35*A*b)*c^4)*x^2
 - 2*(315*B*b^3*c^2 + 360*A*a*c^4 - 14*(46*B*a*b + 25*A*b^2)*c^3)*x)*sqrt(c
*x^2 + b*x + a))/c^6]
```

giac [**A**] time = 0.26, size = 249, normalized size = 0.89

$$\frac{1}{1920}\sqrt{cx^2+bx+a}\,\Bigg(2\bigg(4\bigg(6\left(\frac{8\,Bx}{c}-\frac{9\,Bbc^3-10\,Ac^4}{c^5}\right)x+\frac{63\,Bb^2c^2-64\,Bac^3-70\,Abc^3}{c^5}\bigg)x-\frac{315\,Bb^3c-644\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(8*B*x/c - (9*B*b*c^3 - 10*A*c^4)/c^5
)*x + (63*B*b^2*c^2 - 64*B*a*c^3 - 70*A*b*c^3)/c^5)*x - (315*B*b^3*c - 644*
B*a*b*c^2 - 350*A*b^2*c^2 + 360*A*a*c^3)/c^5)*x + (945*B*b^4 - 2940*B*a*b^2
*c - 1050*A*b^3*c + 1024*B*a^2*c^2 + 2200*A*a*b*c^2)/c^5) + 1/256*(63*B*b^5
 - 280*B*a*b^3*c - 70*A*b^4*c + 240*B*a^2*b*c^2 + 240*A*a*b^2*c^2 - 96*A*a^
2*c^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2
)
```

maple [**B**] time = 0.07, size = 531, normalized size = 1.89

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,x^4}{5c}+\frac{\sqrt{c\,x^2+bx+a}\;A\,x^3}{4c}-\frac{9\sqrt{c\,x^2+bx+a}\;Bb\,x^3}{40c^2}-\frac{7\sqrt{c\,x^2+bx+a}\;Ab\,x^2}{24c^2}-\frac{4\sqrt{c\,x^2+bx+a}\;Ba}{15c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/5*B*x^4*(c*x^2+b*x+a)^(1/2)/c-9/40*B*b/c^2*x^3*(c*x^2+b*x+a)^(1/2)+21/80*
B*b^2/c^3*x^2*(c*x^2+b*x+a)^(1/2)-21/64*B*b^3/c^4*x*(c*x^2+b*x+a)^(1/2)+63/
128*B*b^4/c^5*(c*x^2+b*x+a)^(1/2)-63/256*B*b^5/c^(11/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+35/32*B*b^3/c^(9/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))-49/32*B*b^2/c^4*a*(c*x^2+b*x+a)^(1/2)+161/240*B*b/c^3*a*x*(
c*x^2+b*x+a)^(1/2)-15/16*B*b/c^(7/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))-4/15*B*a/c^2*x^2*(c*x^2+b*x+a)^(1/2)+8/15*B*a^2/c^3*(c*x^2+b*x+a)
^(1/2)+1/4*A*x^3/c*(c*x^2+b*x+a)^(1/2)-7/24*A*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)
+35/96*A*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-35/64*A*b^3/c^4*(c*x^2+b*x+a)^(1/2)+
35/128*A*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/16*A*b^
2/c^(7/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*A*b/c^3*a*(c*
x^2+b*x+a)^(1/2)-3/8*A*a/c^2*x*(c*x^2+b*x+a)^(1/2)+3/8*A*a^2/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + Bx\right)}{\sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.951 $\int \frac{x^3(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=206

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{9/2}}-\frac{\sqrt{a+bx+cx^2}\left(-2cx\left(-36aBc-4\right.\right.}{}$$

```
[Out] 1/128*(96*A*a*b*c^2-40*A*b^3*c+48*B*a^2*c^2-120*B*a*b^2*c+35*B*b^4)*arctanh
(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)-1/24*(-8*A*c+7*B*b)*x^2
*(c*x^2+b*x+a)^(1/2)/c^2+1/4*B*x^3*(c*x^2+b*x+a)^(1/2)/c-1/192*(105*b^3*B-1
20*A*b^2*c-220*a*b*B*c+128*a*A*c^2-2*c*(-40*A*b*c-36*B*a*c+35*B*b^2)*x)*(c*
x^2+b*x+a)^(1/2)/c^4
```

Rubi [A] time = 0.24, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{832, 779, 621, 206\}$

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{128c^{9/2}}-\frac{\sqrt{a+bx+cx^2}\left(-2cx\left(-36aBc-4\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((7*b*B - 8*A*c)*x^2*Sqrt[a + b*x + c*x^2])/(24*c^2) + (B*x^3*Sqrt[a + b*x
 + c*x^2])/(4*c) - ((105*b^3*B - 120*A*b^2*c - 220*a*b*B*c + 128*a*A*c^2 -
2*c*(35*b^2*B - 40*A*b*c - 36*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(192*c^4) +
((35*b^4*B - 40*A*b^3*c - 120*a*b^2*B*c + 96*a*A*b*c^2 + 48*a^2*B*c^2)*ArcT
anh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{x^2\left(-3aB-\frac{1}{2}(7bB-8Ac)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{x\left(a(7bB-8Ac)+\frac{1}{4}\left(35b^2B-40Abc-36\right.\right.}{\sqrt{a+bx+cx^2}}}{12c^2}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

$$= -\frac{(7bB-8Ac)x^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{Bx^3\sqrt{a+bx+cx^2}}{4c} - \frac{\left(105b^3B-120Ab^2c-220abB\right.}{}$$

Mathematica [A]   time = 0.27, size = 169, normalized size = 0.82

$$\frac{\left(48a^2Bc^2+96aAbc^2-120ab^2Bc-40Ab^3c+35b^4B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{128c^{9/2}} + \frac{\sqrt{a+x(b+cx)}\,\left(4bc(55aB-2c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-105*b^3*B + 10*b^2*c*(12*A + 7*B*x) + 8*c^2*(-16*a
*A - 9*a*B*x + 8*A*c*x^2 + 6*B*c*x^3) + 4*b*c*(55*a*B - 2*c*x*(10*A + 7*B*x
))))/(192*c^4) + ((35*b^4*B - 40*A*b^3*c - 120*a*b^2*B*c + 96*a*A*b*c^2 + 4
8*a^2*B*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(128*c
^(9/2))
```

fricas [A]   time = 0.93, size = 395, normalized size = 1.92

$$\left[\frac{3\left(35\,Bb^4+48\left(Ba^2+2\,Aab\right)c^2-40\left(3\,Bab^2+Ab^3\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/768*(3*(35*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*
sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b
)*sqrt(c) - 4*a*c) + 4*(48*B*c^4*x^3 - 105*B*b^3*c - 128*A*a*c^3 + 20*(11*B
*a*b + 6*A*b^2)*c^2 - 8*(7*B*b*c^3 - 8*A*c^4)*x^2 + 2*(35*B*b^2*c^2 - 4*(9*
B*a + 10*A*b)*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/384*(3*(35*B*b^4 + 48*
(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*sqrt(-c)*arctan(1/2*sqrt(
c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(48*B*c^
4*x^3 - 105*B*b^3*c - 128*A*a*c^3 + 20*(11*B*a*b + 6*A*b^2)*c^2 - 8*(7*B*b*
c^3 - 8*A*c^4)*x^2 + 2*(35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*x)*sqrt(c*x^
2 + b*x + a))/c^5]
```

giac [A] time = 0.27, size = 183, normalized size = 0.89

$$\frac{1}{192}\sqrt{cx^2+bx+a}\left(2\left(4\left(\frac{6Bx}{c}-\frac{7Bbc^2-8Ac^3}{c^4}\right)x+\frac{35Bb^2c-36Bac^2-40Abc^2}{c^4}\right)x-\frac{105Bb^3-220Babc-12}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x/c - (7*B*b*c^2 - 8*A*c^3)/c^4)*x +
 (35*B*b^2*c - 36*B*a*c^2 - 40*A*b*c^2)/c^4)*x - (105*B*b^3 - 220*B*a*b*c -
 120*A*b^2*c + 128*A*a*c^2)/c^4) - 1/128*(35*B*b^4 - 120*B*a*b^2*c - 40*A*b
^3*c + 48*B*a^2*c^2 + 96*A*a*b*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 379, normalized size = 1.84

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,x^3}{4c}+\frac{\sqrt{c\,x^2+bx+a}\;A\,x^2}{3c}-\frac{7\sqrt{c\,x^2+bx+a}\;Bb\,x^2}{24c^2}+\frac{3Aab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{5}{2}}}-\frac{5A\,b^3\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*B*x^3*(c*x^2+b*x+a)^(1/2)/c-7/24*B*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)+35/96*
B*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-35/64*B*b^3/c^4*(c*x^2+b*x+a)^(1/2)+35/128*
B*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-15/16*B*b^2/c^(7/
2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*B*b/c^3*a*(c*x^2+b*x
+a)^(1/2)-3/8*B*a/c^2*x*(c*x^2+b*x+a)^(1/2)+3/8*B*a^2/c^(5/2)*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/3*A*x^2/c*(c*x^2+b*x+a)^(1/2)-5/12*A*b/c^2
*x*(c*x^2+b*x+a)^(1/2)+5/8*A*b^2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*A*b^3/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/4*A*b/c^(5/2)*a*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-2/3*A*a/c^2*(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^3\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^3 (A + Bx)}{\sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.952 $\int \frac{x^2(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=143

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBc-2cx(5bB-6Ac)-18Abc+15b^2B\right)}{24c^3}-\frac{\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{b}{2\sqrt{c}\sqrt{\ }}\right.}{16c^{7/2}}$$

```
[Out] -1/16*(8*A*a*c^2-6*A*b^2*c-12*B*a*b*c+5*B*b^3)*arctanh(1/2*(2*c*x+b)/c^(1/2
)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+1/3*B*x^2*(c*x^2+b*x+a)^(1/2)/c+1/24*(15*b^2
*B-18*A*b*c-16*a*B*c-2*c*(-6*A*c+5*B*b)*x)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.12, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-16aBc-2cx(5bB-6Ac)-18Abc+15b^2B\right)}{24c^3}-\frac{\left(8aAc^2-12abBc-6Ab^2c+5b^3B\right)\tanh^{-1}\left(\frac{b}{2\sqrt{c}\sqrt{\ }}\right.}{16c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*x^2*Sqrt[a + b*x + c*x^2])/(3*c) + ((15*b^2*B - 18*A*b*c - 16*a*B*c - 2*
c*(5*b*B - 6*A*c)*x)*Sqrt[a + b*x + c*x^2])/(24*c^3) - ((5*b^3*B - 6*A*b^2*
c - 12*a*b*B*c + 8*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c
*x^2])])/(16*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^2(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\int \frac{x\left(-2aB-\frac{1}{2}(5bB-6Ac)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} -$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} -$$

$$= \frac{Bx^2\sqrt{a+bx+cx^2}}{3c} + \frac{\left(15b^2B-18Abc-16aBc-2c(5bB-6Ac)x\right)\sqrt{a+bx+cx^2}}{24c^3} -$$

Mathematica [**A**] time = 0.15, size = 126, normalized size = 0.88

$$\frac{2\sqrt{c}\sqrt{a+x(b+cx)}\left(4c(cx(3A+2Bx)-4aB)-2bc(9A+5Bx)+15b^2B\right)-3\left(8aAc^2-12abBc-6Ab^2c+5b^3\right.}{48c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(15*b^2*B - 2*b*c*(9*A + 5*B*x) + 4*c*(-4*
a*B + c*x*(3*A + 2*B*x))) - 3*(5*b^3*B - 6*A*b^2*c - 12*a*b*B*c + 8*a*A*c^2
)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(48*c^(7/2))
```

fricas [**A**] time = 1.29, size = 295, normalized size = 2.06

$$\left[\frac{3\left(5\,Bb^3+8\,Aac^2-6\left(2\,Bab+Ab^2\right)c\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)+}{96\,c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*sqrt(c)*log(-8*c^2*x
^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
 4*(8*B*c^3*x^2 + 15*B*b^2*c - 2*(8*B*a + 9*A*b)*c^2 - 2*(5*B*b*c^2 - 6*A*c
^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/48*(3*(5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*
b + A*b^2)*c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c
)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*x^2 + 15*B*b^2*c - 2*(8*B*a + 9*A*b
)*c^2 - 2*(5*B*b*c^2 - 6*A*c^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [**A**] time = 0.25, size = 128, normalized size = 0.90

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(\frac{4\,Bx}{c}-\frac{5\,Bbc-6\,Ac^2}{c^3}\right)x+\frac{15\,Bb^2-16\,Bac-18\,Abc}{c^3}\right)+\frac{\left(5\,Bb^3-12\,Babc-6\,Ab^2c+8\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x/c - (5*B*b*c - 6*A*c^2)/c^3)*x + (15*B
*b^2 - 16*B*a*c - 18*A*b*c)/c^3) + 1/16*(5*B*b^3 - 12*B*a*b*c - 6*A*b^2*c +
 8*A*a*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^
(7/2)
```

maple [B] time = 0.06, size = 254, normalized size = 1.78

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,x^2}{3c}-\frac{Aa\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3A\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{3Bab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2}\right.}{4c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*x^2*(c*x^2+b*x+a)^(1/2)/c-5/12*B*b/c^2*x*(c*x^2+b*x+a)^(1/2)+5/8*B*b^
2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*B*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))+3/4*B*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
-2/3*B*a/c^2*(c*x^2+b*x+a)^(1/2)+1/2*A*x/c*(c*x^2+b*x+a)^(1/2)-3/4*A*b/c^2*
(c*x^2+b*x+a)^(1/2)+3/8*A*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))-1/2*A*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^2\,\left(A+B\,x\right)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^2\,(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x**2*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.953 $\int \frac{x(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=92

$$\frac{\left(-4aBc-4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

```
[Out] 1/8*(-4*A*b*c-4*B*a*c+3*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^
(1/2))/c^(5/2)-1/4*(-2*B*c*x-4*A*c+3*B*b)*(c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.04, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{779, 621, 206\}$

$$\frac{\left(-4aBc-4Abc+3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4Ac+3bB-2Bcx)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((3*b*B - 4*A*c - 2*B*c*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) + ((3*b^2*B - 4*
A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{x(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx &= -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{8c^2}\\
&= -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{}{\sqrt{}}\right.}{4c^2}\\
&= -\frac{(3bB-4Ac-2Bcx)\sqrt{a+bx+cx^2}}{4c^2}+\frac{\left(3b^2B-4Abc-4aBc\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{8c^{5/2}}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 90, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\,(4Ac-3bB+2Bcx)}{4c^2}-\frac{\left(4aBc+4Abc-3b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{8c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((-3*b*B + 4*A*c + 2*B*c*x)*Sqrt[a + x*(b + c*x)])/(4*c^2) - ((-3*b^2*B + 4
*A*b*c + 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(
8*c^(5/2))
```

fricas [A] time = 1.00, size = 213, normalized size = 2.32

$$\left[-\frac{\left(3Bb^2-4(Ba+Ab)c\right)\sqrt{c}\,\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-4ac\right)-4\left(2Bc^2x-3Bb\right.}{16c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/16*((3*B*b^2 - 4*(B*a + A*b)*c)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
+ 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*B*c^2*x - 3*B
*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/c^3, -1/8*((3*B*b^2 - 4*(B*a + A*b)*
c)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2
+ b*c*x + a*c)) - 2*(2*B*c^2*x - 3*B*b*c + 4*A*c^2)*sqrt(c*x^2 + b*x + a))/
c^3]
```

giac [A] time = 0.24, size = 90, normalized size = 0.98

$$\frac{1}{4}\sqrt{cx^2+bx+a}\left(\frac{2Bx}{c}-\frac{3Bb-4Ac}{c^2}\right)-\frac{\left(3Bb^2-4Bac-4Abc\right)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{8c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x + a)*(2*B*x/c - (3*B*b - 4*A*c)/c^2) - 1/8*(3*B*b^2 -
4*B*a*c - 4*A*b*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(5/2)
```

maple [A] time = 0.05, size = 155, normalized size = 1.68

$$-\frac{Ab\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}-\frac{Ba\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3B\,b^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{5}{2}}}+\frac{\sqrt{c\,x^2+bx}}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*B*x/c*(c*x^2+b*x+a)^(1/2)-3/4*B*b/c^2*(c*x^2+b*x+a)^(1/2)+3/8*B*b^2/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/2*B*a/c^(3/2)*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+A/c*(c*x^2+b*x+a)^(1/2)-1/2*A*b/c^(3/2)*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x\,(A+B\,x)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((x*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(x*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.954 $\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=67

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

```
[Out] -1/2*(-2*A*c+B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2
)+B*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{2c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\operatorname{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 66, normalized size = 0.99

$$\frac{(2Ac-bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{3/2}}+\frac{B\sqrt{a+x(b+cx)}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + x*(b + c*x)])/c + ((-(b*B) + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)])])/(2*c^(3/2))
```

fricas [A] time = 1.04, size = 162, normalized size = 2.42

$$\left[\frac{4\sqrt{cx^2+bx+a}\,Bc-(Bb-2\,Ac)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)}{4\,c^2},\ 2\,\sqrt{cx}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(4*sqrt(c*x^2 + b*x + a)*B*c - (B*b - 2*A*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/c^2,
1/2*(2*sqrt(c*x^2 + b*x + a)*B*c + (B*b - 2*A*c)*sqrt(-c)*arctan(1/2*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/c^2]
```

giac [A] time = 0.24, size = 62, normalized size = 0.93

$$\frac{\sqrt{cx^2+bx+a}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.06, size = 81, normalized size = 1.21

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx+a}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B*(c*x^2+b*x+a)^(1/2)/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.56, size = 80, normalized size = 1.19

$$\frac{B\sqrt{c\,x^2+b\,x+a}}{c}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(1/2))/c + (A*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x
^2)^(1/2)))/c^(1/2) - (B*b*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2
)))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.955 $\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=77

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}}$$

```
[Out] -A*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(1/2)+B*arctanh(1/2
*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {843, 621, 206, 724}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/Sqrt[a]) + (B*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx = A\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx + B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\left((2A)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx, x, \frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)\right) + (2B)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b}{\sqrt{a+}}\right.$$

$$= -\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+bx+cx^2}}\right)}{\sqrt{a}} + \frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}$$

Mathematica [A] time = 0.02, size = 75, normalized size = 0.97

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}} - \frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\,\sqrt{a+x(b+cx)}}\right)}{\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/Sqrt[a]) + (B*
ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c]
```

fricas [A] time = 1.21, size = 468, normalized size = 6.08

$$\left[\frac{Ba\sqrt{c}\,\log\left(-8\,c^2x^2 - 8\,bcx - b^2 - 4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c} - 4\,ac\right) + A\sqrt{a}\,c\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+}}{x^2}\right.}{2\,ac}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(c) - 4*a*c) + A*sqrt(a)*c*log(-(8*a*b*x + (b^2 + 4*a*c)*x^
2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2))/(a*c), -1/2*
(2*B*a*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) - A*sqrt(a)*c*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2))/(a*c), 1/2*(2*A*sqrt(
-a)*c*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*
x + a^2)) + B*a*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/(a*c), (A*sqrt(-a)*c*arctan(1/2*sqrt(c*
x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - B*a*sqrt(-c)
*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a
*c)))/(a*c)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Value
```

maple [A] time = 0.05, size = 67, normalized size = 0.87

$$-\frac{A\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}+\frac{B\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-A/a^(1/2)*ln((b*x+2*a
+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.47, size = 66, normalized size = 0.86

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{A\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(1/2) - (A*log(b/2
 + a/x + (a^(1/2)*(a + b*x + c*x^2)^(1/2))/x))/a^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x*sqrt(a + b*x + c*x**2)), x)
```

3.956 $\int \frac{A+Bx}{x^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=72

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+bx+cx^2}}{ax}$$

```
[Out] 1/2*(A*b-2*B*a)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(3/2)-
A*(c*x^2+b*x+a)^(1/2)/a/x
```

Rubi [A] time = 0.04, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {806, 724, 206}

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+bx+cx^2}}{ax}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + b*x + c*x^2])/(a*x)) + ((A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*
Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(2*a^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{x^2\sqrt{a+bx+cx^2}}\,dx &= -\frac{A\sqrt{a+bx+cx^2}}{ax}-\frac{(Ab-2aB)\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx}{2a}\\ &= -\frac{A\sqrt{a+bx+cx^2}}{ax}+\frac{(Ab-2aB)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx,x,\frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)}{a}\\ &= -\frac{A\sqrt{a+bx+cx^2}}{ax}+\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 70, normalized size = 0.97

$$\frac{(Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2a^{3/2}}-\frac{A\sqrt{a+x(b+cx)}}{ax}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -((A*Sqrt[a + x*(b + c*x)])/(a*x)) + ((A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*
Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(2*a^(3/2))
```

fricas [A] time = 1.36, size = 177, normalized size = 2.46

$$\left[-\frac{(2\,Ba-Ab)\sqrt{a}\,x\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)+4\,\sqrt{cx^2+bx+a}\,Aa}{4\,a^2x},\ \frac{(2\,Ba-Ab)\sqrt{-a}\,x\,a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((2*B*a - A*b)*sqrt(a)*x*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c
*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*sqrt(c*x^2 + b*x + a)
*A*a)/(a^2*x), 1/2*((2*B*a - A*b)*sqrt(-a)*x*arctan(1/2*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*sqrt(c*x^2 + b*x + a)*
A*a)/(a^2*x)]
```

giac [A] time = 0.23, size = 110, normalized size = 1.53

$$\frac{(2\,Ba-Ab)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)Ab+2\,Aa\sqrt{c}}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^2-a\right)a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*a - A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-
a)*a) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sqrt(c))/(((sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a)
```

maple [A] time = 0.08, size = 94, normalized size = 1.31

$$\frac{Ab\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{B\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{\sqrt{a}}-\frac{\sqrt{c\,x^2+bx+a}\,A}{ax}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -A*(c*x^2+b*x+a)^(1/2)/a/x+1/2*A*b/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2
)*a^(1/2))/x)-B/a^(1/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 1.46, size = 87, normalized size = 1.21

$$\frac{A\,b\,\mathrm{atanh}\left(\frac{a+\frac{b\,x}{2}}{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}\right)}{2\,a^{3/2}}-\frac{A\,\sqrt{c\,x^2+b\,x+a}}{a\,x}-\frac{B\,\ln\left(\frac{b}{2}+\frac{a}{x}+\frac{\sqrt{a}\,\sqrt{c\,x^2+b\,x+a}}{x}\right)}{\sqrt{a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] (A*b*atanh((a + (b*x)/2)/(a^(1/2)*(a + b*x + c*x^2)^(1/2))))/(2*a^(3/2)) -
(A*(a + b*x + c*x^2)^(1/2))/(a*x) - (B*log(b/2 + a/x + (a^(1/2)*(a + b*x +
c*x^2)^(1/2))/x))/a^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^{2} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*sqrt(a + b*x + c*x**2)), x)
```

3.957 $\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=116

$$-\frac{\left(-4aAc-4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{5/2}}+\frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x}-\frac{A\sqrt{a+bx+cx^2}}{2ax^2}$$

```
[Out] -1/8*(-4*A*a*c+3*A*b^2-4*B*a*b)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)
^(1/2))/a^(5/2)-1/2*A*(c*x^2+b*x+a)^(1/2)/a/x^2+1/4*(3*A*b-4*B*a)*(c*x^2+b*
x+a)^(1/2)/a^2/x
```

Rubi [A] time = 0.09, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {834, 806, 724, 206}

$$-\frac{\left(-4aAc-4abB+3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{5/2}}+\frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x}-\frac{A\sqrt{a+bx+cx^2}}{2ax^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(2*a*x^2) + ((3*A*b - 4*a*B)*Sqrt[a + b*x + c*x^
2])/(4*a^2*x) - ((3*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[
a]*Sqrt[a + b*x + c*x^2])])/(8*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} - \frac{\int \frac{\frac{1}{2}(3Ab-4aB)+Acx}{x^2\sqrt{a+bx+cx^2}}\,dx}{2a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} + \frac{\left(3Ab^2-4abB-4aAc\right)\int \frac{1}{x\sqrt{a+bx+c}}}{8a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} - \frac{\left(3Ab^2-4abB-4aAc\right)\text{Subst}\left(\int \right.}{4a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{2ax^2} + \frac{(3Ab-4aB)\sqrt{a+bx+cx^2}}{4a^2x} - \frac{\left(3Ab^2-4abB-4aAc\right)\tanh^{-1}\left(\frac{}{2\sqrt{}}\right.}{8a^{5/2}}$$

Mathematica [A] time = 0.13, size = 95, normalized size = 0.82

$$\frac{\left(4aAc+4abB-3Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{8a^{5/2}} + \frac{\sqrt{a+x(b+cx)}\,(3Abx-2a(A+2Bx))}{4a^2x^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((3*A*b*x - 2*a*(A + 2*B*x))*Sqrt[a + x*(b + c*x)])/(4*a^2*x^2) + ((-3*A*b^
2 + 4*a*b*B + 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)]
)])/(8*a^(5/2))
```

fricas [A] time = 1.23, size = 235, normalized size = 2.03

$$\left[\frac{\left(4\,Bab-3\,Ab^2+4\,Aac\right)\sqrt{a}\,x^2\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-4\left(2\,Aa^2+\left(4\,Ba^2-3\,Aab\right)x\right)\sqrt{}}{16\,a^3x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*B*a*b - 3*A*b^2 + 4*A*a*c)*sqrt(a)*x^2*log(-(8*a*b*x + (b^2 + 4*a
*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(2*
A*a^2 + (4*B*a^2 - 3*A*a*b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^2), -1/8*((4*B
*a*b - 3*A*b^2 + 4*A*a*c)*sqrt(-a)*x^2*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*
x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(2*A*a^2 + (4*B*a^2 - 3*A*a*
b)*x)*sqrt(c*x^2 + b*x + a))/(a^3*x^2)]
```

giac [B] time = 0.29, size = 303, normalized size = 2.61

$$-\frac{\left(4\,Bab-3\,Ab^2+4\,Aac\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{4\,\sqrt{-a}\,a^2}+\frac{4\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)^3Bab-3\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*a*b - 3*A*b^2 + 4*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))/sqrt(-a))/(sqrt(-a)*a^2) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3
*B*a*b - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*A*a*c + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2
*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b + 5*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2
*c - 8*B*a^3*sqrt(c) + 8*A*a^2*b*sqrt(c))/(((sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2 - a)^2*a^2)
```

maple [**A**] time = 0.06, size = 176, normalized size = 1.52

$$\frac{Ac\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{3A\,b^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{Bb\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}+\frac{3\sqrt{c\,x^2+bx+a}}{4a^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/2*A*(c*x^2+b*x+a)^(1/2)/a/x^2+3/4*A/a^2*b/x*(c*x^2+b*x+a)^(1/2)-3/8*A/a^
(5/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+1/2*A*c/a^(3/2)*ln(
(b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x*(c*x^2+b*x+a)^(1/2)+1/2*B*
b/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^3\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*sqrt(a + b*x + c*x**2)), x)
```

3.958 $\int \frac{A+Bx}{x^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=167

$$-\frac{\sqrt{a+bx+cx^2}\left(-16aAc-18abB+15Ab^2\right)}{24a^3x}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}+\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\mathrm{t}}{16a^{7/2}}$$

```
[Out] 1/16*(-12*A*a*b*c+5*A*b^3+8*B*a^2*c-6*B*a*b^2)*arctanh(1/2*(b*x+2*a)/a^(1/2
)/(c*x^2+b*x+a)^(1/2))/a^(7/2)-1/3*A*(c*x^2+b*x+a)^(1/2)/a/x^3+1/12*(5*A*b-
6*B*a)*(c*x^2+b*x+a)^(1/2)/a^2/x^2-1/24*(-16*A*a*c+15*A*b^2-18*B*a*b)*(c*x^
2+b*x+a)^(1/2)/a^3/x
```

Rubi [A] time = 0.16, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {834, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-16aAc-18abB+15Ab^2\right)}{24a^3x}+\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{7/2}}+(5Ab$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(3*a*x^3) + ((5*A*b - 6*a*B)*Sqrt[a + b*x + c*x^
2])/(12*a^2*x^2) - ((15*A*b^2 - 18*a*b*B - 16*a*A*c)*Sqrt[a + b*x + c*x^2])
/(24*a^3*x) + ((5*A*b^3 - 6*a*b^2*B - 12*a*A*b*c + 8*a^2*B*c)*ArcTanh[(2*a
+ b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^4\sqrt{a+bx+cx^2}}\,dx &= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3}-\frac{\int \frac{\frac{1}{2}(5Ab-6aB)+2Acx}{x^3\sqrt{a+bx+cx^2}}\,dx}{3a}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}+\frac{\int \frac{\frac{1}{4}\left(15Ab^2-18abB-16aAc\right)+\frac{1}{2}(5Ab-6aB}{x^2\sqrt{a+bx+cx^2}}}{6a^2}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}-\frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}-\frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}\\
&= -\frac{A\sqrt{a+bx+cx^2}}{3ax^3}+\frac{(5Ab-6aB)\sqrt{a+bx+cx^2}}{12a^2x^2}-\frac{\left(15Ab^2-18abB-16aAc\right)\sqrt{a+}}{24a^3x}
\end{aligned}$$

Mathematica [A] time = 0.14, size = 132, normalized size = 0.79

$$\frac{\left(8a^2Bc-12aAbc-6ab^2B+5Ab^3\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{16a^{7/2}}-\frac{\sqrt{a+x(b+cx)}\left(4a^2(2A+3Bx)-2ax(5Ab+8A\right.}{24a^3x^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/24*(Sqrt[a + x*(b + c*x)]*(15*A*b^2*x^2 + 4*a^2*(2*A + 3*B*x) - 2*a*x*(5
*A*b + 9*b*B*x + 8*A*c*x)))/(a^3*x^3) + ((5*A*b^3 - 6*a*b^2*B - 12*a*A*b*c
+ 8*a^2*B*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(16*a^
(7/2))
```

fricas [A] time = 1.58, size = 321, normalized size = 1.92

$$\left[\frac{3\left(6\,Bab^2-5\,Ab^3-4\left(2\,Ba^2-3\,Aab\right)c\right)\sqrt{a}\,x^3\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-4\left(8\,Aa^3-\left(1\right.\right.}{96\,a^4x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*sqrt(a)*x^3*log(-(
8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) +
 8*a^2)/x^2) - 4*(8*A*a^3 - (18*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*c)*x^2 + 2*
(6*B*a^3 - 5*A*a^2*b)*x)*sqrt(c*x^2 + b*x + a))/(a^4*x^3), 1/48*(3*(6*B*a*b
^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*sqrt(-a)*x^3*arctan(1/2*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(8*A*a^3 - (18
*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*c)*x^2 + 2*(6*B*a^3 - 5*A*a^2*b)*x)*sqrt(c
*x^2 + b*x + a))/(a^4*x^3)]
```

giac [B] time = 0.24, size = 511, normalized size = 3.06

$$\frac{\left(6\,Bab^2 - 5\,Ab^3 - 8\,Ba^2c + 12\,Aabc\right)\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{8\,\sqrt{-a}\,a^3} - \frac{18\left(\sqrt{c}\,x - \sqrt{cx^2 + bx + a}\right)^5 Bab^2 - 15\left(\sqrt{c}\,x - \sqrt{\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*(6*B*a*b^2 - 5*A*b^3 - 8*B*a^2*c + 12*A*a*b*c)*arctan(-(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3) - 1/24*(18*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a*b^2 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^3
 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 36*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*A*a*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^
2*b^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^3 - 96*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*A*a^2*b*c - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*B*a^3*b*sqrt(c) - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^(3/2)
 + 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2 - 33*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*A*a^2*b^3 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*
c - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c + 48*B*a^4*b*sqrt(c) -
 48*A*a^3*b^2*sqrt(c) + 32*A*a^4*c^(3/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2 - a)^3*a^3)
```

maple [A] time = 0.07, size = 283, normalized size = 1.69

$$-\frac{3Abc\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{4a^{\frac{5}{2}}}+\frac{5A\,b^3\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}}+\frac{Bc\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{2a^{\frac{3}{2}}}-\frac{3B\,b^2\ln\left(\frac{bx+2a+}{}\right.}{8a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/3*A*(c*x^2+b*x+a)^(1/2)/a/x^3+5/12*A/a^2*b/x^2*(c*x^2+b*x+a)^(1/2)-5/8*A
/a^3*b^2/x*(c*x^2+b*x+a)^(1/2)+5/16*A/a^(7/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+
a)^(1/2)*a^(1/2))/x)-3/4*A/a^(5/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+2/3*A*c/a^2/x*(c*x^2+b*x+a)^(1/2)-1/2*B/a/x^2*(c*x^2+b*x+a)^(1/2)
+3/4*B/a^2*b/x*(c*x^2+b*x+a)^(1/2)-3/8*B/a^(5/2)*b^2*ln((b*x+2*a+2*(c*x^2+b
*x+a)^(1/2)*a^(1/2))/x)+1/2*B*c/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a
^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^4\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x^4\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**4*sqrt(a + b*x + c*x**2)), x)
```

3.959 $\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=231

$$-\frac{\sqrt{a+bx+cx^2}\left(-36aAc-40abB+35Ab^2\right)}{96a^3x^2}+\frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3}+\frac{\left(8abB\left(5b^2-12ac\right)-A\left(48a^2c^2-1\right.\right.}{12}$$

```
[Out] 1/128*(8*a*b*B*(-12*a*c+5*b^2)-A*(48*a^2*c^2-120*a*b^2*c+35*b^4))*arctanh(1
/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(9/2)-1/4*A*(c*x^2+b*x+a)^(1/2)
/a/x^4+1/24*(7*A*b-8*B*a)*(c*x^2+b*x+a)^(1/2)/a^2/x^3-1/96*(-36*A*a*c+35*A*
b^2-40*B*a*b)*(c*x^2+b*x+a)^(1/2)/a^3/x^2+1/192*(-220*A*a*b*c+105*A*b^3+128
*B*a^2*c-120*B*a*b^2)*(c*x^2+b*x+a)^(1/2)/a^4/x
```

Rubi [A] time = 0.28, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {834, 806, 724, 206}

$$\frac{\left(8abB\left(5b^2-12ac\right)-A\left(48a^2c^2-120ab^2c+35b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{128a^{9/2}}+\frac{\sqrt{a+bx+cx^2}\,\left(128a^2Bc-220aAb\right.}{192a^4x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^5*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(4*a*x^4) + ((7*A*b - 8*a*B)*Sqrt[a + b*x + c*x^
2])/(24*a^2*x^3) - ((35*A*b^2 - 40*a*b*B - 36*a*A*c)*Sqrt[a + b*x + c*x^2])
/(96*a^3*x^2) + ((105*A*b^3 - 120*a*b^2*B - 220*a*A*b*c + 128*a^2*B*c)*Sqrt
[a + b*x + c*x^2])/(192*a^4*x) + ((8*a*b*B*(5*b^2 - 12*a*c) - A*(35*b^4 - 1
20*a*b^2*c + 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x
^2])])/(128*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} - \frac{\int \frac{\frac{1}{2}(7Ab-8aB)+3Acx}{x^4\sqrt{a+bx+cx^2}}\,dx}{4a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} + \frac{\int \frac{\frac{1}{4}\left(35Ab^2-40abB-36aAc\right)+(7Ab-8aB)}{x^3\sqrt{a+bx+cx^2}}}{12a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a -}}{96a^3x^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a -}}{96a^3x^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a -}}{96a^3x^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{4ax^4} + \frac{(7Ab-8aB)\sqrt{a+bx+cx^2}}{24a^2x^3} - \frac{\left(35Ab^2-40abB-36aAc\right)\sqrt{a -}}{96a^3x^2}$$

Mathematica [A] time = 0.23, size = 176, normalized size = 0.76

$$\frac{\sqrt{a+x(b+cx)}\,\left(-16a^3(3A+4Bx)+8a^2x(A(7b+9cx)+2Bx(5b+8cx))-10abx^2(7Ab+22Acx+12bBx)+\right.}{192a^4x^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^5*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(105*A*b^3*x^3 - 16*a^3*(3*A + 4*B*x) - 10*a*b*x^2*(
7*A*b + 12*b*B*x + 22*A*c*x) + 8*a^2*x*(2*B*x*(5*b + 8*c*x) + A*(7*b + 9*c*
x))))/(192*a^4*x^4) - ((8*a*b*B*(-5*b^2 + 12*a*c) + A*(35*b^4 - 120*a*b^2*c
 + 48*a^2*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/(12
8*a^(9/2))
```

fricas [A] time = 2.52, size = 425, normalized size = 1.84

$$\left[-\frac{3\left(40\,Bab^3-35\,Ab^4-48\,Aa^2c^2-24\left(4\,Ba^2b-5\,Aab^2\right)c\right)\sqrt{a}\,x^4\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8}{x^2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(40*B*a*b^3 - 35*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - 5*A*a*b^
2)*c)*sqrt(a)*x^4*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(48*A*a^4 + (120*B*a^2*b^2 - 105*A
*a*b^3 - 4*(32*B*a^3 - 55*A*a^2*b)*c)*x^3 - 2*(40*B*a^3*b - 35*A*a^2*b^2 +
36*A*a^3*c)*x^2 + 8*(8*B*a^4 - 7*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^
4), -1/384*(3*(40*B*a*b^3 - 35*A*b^4 - 48*A*a^2*c^2 - 24*(4*B*a^2*b - 5*A*a
*b^2)*c)*sqrt(-a)*x^4*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)
/(a*c*x^2 + a*b*x + a^2)) + 2*(48*A*a^4 + (120*B*a^2*b^2 - 105*A*a*b^3 - 4*
(32*B*a^3 - 55*A*a^2*b)*c)*x^3 - 2*(40*B*a^3*b - 35*A*a^2*b^2 + 36*A*a^3*c)
*x^2 + 8*(8*B*a^4 - 7*A*a^3*b)*x)*sqrt(c*x^2 + b*x + a))/(a^5*x^4)]
```

giac [**B**] time = 0.30, size = 884, normalized size = 3.83

$$-\frac{\left(40\,Bab^3-35\,Ab^4-96\,Ba^2bc+120\,Aab^2c-48\,Aa^2c^2\right)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{64\,\sqrt{-a}\,a^4}+120\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/64*(40*B*a*b^3 - 35*A*b^4 - 96*B*a^2*b*c + 120*A*a*b^2*c - 48*A*a^2*c^2)
*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/1
92*(120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a*b^3 - 105*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^7*A*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*
a^2*b*c + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a*b^2*c - 144*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*c^2 - 440*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^5*B*a^2*b^3 + 385*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b^4 + 1
056*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b*c - 1320*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^5*A*a^2*b^2*c + 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*A*a^3*c^2 + 768*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^4*c^(3/2) + 58
4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^3*b^3 - 511*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*A*a^2*b^4 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*
a^4*b*c + 1752*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*b^2*c + 528*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*c^2 + 384*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*B*a^4*b^2*sqrt(c) - 1024*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*B*a^5*c^(3/2) + 2048*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a^4*b*c^(3/2)
 - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^4*b^3 + 279*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*A*a^3*b^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a
^5*b*c + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^2*c - 144*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*A*a^5*c^2 - 384*B*a^5*b^2*sqrt(c) + 384*A*a^4*b
^3*sqrt(c) + 256*B*a^6*c^(3/2) - 512*A*a^5*b*c^(3/2))/(((sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2 - a)^4*a^4)
```

maple [**B**] time = 0.06, size = 417, normalized size = 1.81

$$-\frac{3A\,c^2\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{8a^{\frac{5}{2}}}+\frac{15A\,b^2c\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}}-\frac{35A\,b^4\ln\left(\frac{bx+2a+2\sqrt{c\,x^2+bx+a}\,\sqrt{a}}{x}\right)}{128a^{\frac{9}{2}}}-3Bbc\ln$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/4*A*(c*x^2+b*x+a)^(1/2)/a/x^4+7/24*A/a^2*b/x^3*(c*x^2+b*x+a)^(1/2)-35/96
*A/a^3*b^2/x^2*(c*x^2+b*x+a)^(1/2)+35/64*A/a^4*b^3/x*(c*x^2+b*x+a)^(1/2)-35
/128*A/a^(9/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+15/16*A/a^
(7/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-55/48*A/a^3*b*c/x
*(c*x^2+b*x+a)^(1/2)+3/8*A*c/a^2/x^2*(c*x^2+b*x+a)^(1/2)-3/8*A*c^2/a^(5/2)*
ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1/3*B/a/x^3*(c*x^2+b*x+a)^(1/
2)+5/12*B/a^2*b/x^2*(c*x^2+b*x+a)^(1/2)-5/8*B/a^3*b^2/x*(c*x^2+b*x+a)^(1/2)
```

```
+5/16*B/a^(7/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-3/4*B/a^(
5/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+2/3*B*c/a^2/x*(c*x^2
+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^5/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^5\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^5*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^5*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^5\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**5/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**5*sqrt(a + b*x + c*x**2)), x)
```

3.960 $\int \frac{A+Bx}{x^6\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=306

$$-\frac{\sqrt{a+bx+cx^2}\left(-64aAc-70abB+63Ab^2\right)}{240a^3x^3}+\frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4}-\frac{\left(2aB\left(48a^2c^2-120ab^2c+35b^4\right)-\right.}{}$$

```
[Out] -1/256*(2*a*B*(48*a^2*c^2-120*a*b^2*c+35*b^4)-A*(240*a^2*b*c^2-280*a*b^3*c+
63*b^5))*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(11/2)-1/5*A*
(c*x^2+b*x+a)^(1/2)/a/x^5+1/40*(9*A*b-10*B*a)*(c*x^2+b*x+a)^(1/2)/a^2/x^4-1
/240*(-64*A*a*c+63*A*b^2-70*B*a*b)*(c*x^2+b*x+a)^(1/2)/a^3/x^3+1/960*(-644*
A*a*b*c+315*A*b^3+360*B*a^2*c-350*B*a*b^2)*(c*x^2+b*x+a)^(1/2)/a^4/x^2+1/19
20*(50*a*b*B*(-44*a*c+21*b^2)-A*(1024*a^2*c^2-2940*a*b^2*c+945*b^4))*(c*x^2
+b*x+a)^(1/2)/a^5/x
```

Rubi **[A]** time = 0.40, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{834, 806, 724, 206\}$

$$\frac{\sqrt{a+bx+cx^2}\left(50abB\left(21b^2-44ac\right)-A\left(1024a^2c^2-2940ab^2c+945b^4\right)\right)}{1920a^5x}-\frac{\left(2aB\left(48a^2c^2-120ab^2c+35b^4\right)-A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^6*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -(A*Sqrt[a + b*x + c*x^2])/(5*a*x^5) + ((9*A*b - 10*a*B)*Sqrt[a + b*x + c*x
^2])/(40*a^2*x^4) - ((63*A*b^2 - 70*a*b*B - 64*a*A*c)*Sqrt[a + b*x + c*x^2]
)/(240*a^3*x^3) + ((315*A*b^3 - 350*a*b^2*B - 644*a*A*b*c + 360*a^2*B*c)*Sq
rt[a + b*x + c*x^2])/(960*a^4*x^2) + ((50*a*b*B*(21*b^2 - 44*a*c) - A*(945*
b^4 - 2940*a*b^2*c + 1024*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(1920*a^5*x) - (
(2*a*B*(35*b^4 - 120*a*b^2*c + 48*a^2*c^2) - A*(63*b^5 - 280*a*b^3*c + 240*
a^2*b*c^2))*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(256*a^
(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^6\sqrt{a+bx+cx^2}}\,dx = -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} - \frac{\int \frac{\frac{1}{2}(9Ab-10aB)+4Acx}{x^5\sqrt{a+bx+cx^2}}\,dx}{5a}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} + \frac{\int \frac{\frac{1}{4}\left(63Ab^2-70abB-64aAc\right)+\frac{3}{2}(9Ab-1}{x^4\sqrt{a+bx+cx^2}}}{20a^2}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a}}{240a^3x^3}$$

$$= -\frac{A\sqrt{a+bx+cx^2}}{5ax^5} + \frac{(9Ab-10aB)\sqrt{a+bx+cx^2}}{40a^2x^4} - \frac{\left(63Ab^2-70abB-64aAc\right)\sqrt{a}}{240a^3x^3}$$

Mathematica [A] time = 0.30, size = 233, normalized size = 0.76

$$\frac{\left(A\left(240a^2bc^2-280ab^3c+63b^5\right)-2aB\left(48a^2c^2-120ab^2c+35b^4\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{256a^{11/2}} - \sqrt{a+x(b+cx)}\,($$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^6*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/1920*(Sqrt[a + x*(b + c*x)]*(945*A*b^4*x^4 + 96*a^4*(4*A + 5*B*x) - 210*
a*b^2*x^3*(3*A*b + 5*b*B*x + 14*A*c*x) - 16*a^3*x*(5*B*x*(7*b + 9*c*x) + A*
(27*b + 32*c*x)) + 4*a^2*x^2*(25*b*B*x*(7*b + 22*c*x) + 2*A*(63*b^2 + 161*b
*c*x + 128*c^2*x^2))))/(a^5*x^5) + ((-2*a*B*(35*b^4 - 120*a*b^2*c + 48*a^2*
c^2) + A*(63*b^5 - 280*a*b^3*c + 240*a^2*b*c^2))*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)]])])/(256*a^(11/2))
```

fricas [A] time = 4.13, size = 557, normalized size = 1.82

$$\left[-\frac{15\left(70\,Bab^4-63\,Ab^5+48\left(2\,Ba^3-5\,Aa^2b\right)c^2-40\left(6\,Ba^2b^2-7\,Aab^3\right)c\right)\sqrt{a}\,x^5\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2+4\,\sqrt{cx^2+}}{x^2}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(70*B*a*b^4 - 63*A*b^5 + 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(6*
B*a^2*b^2 - 7*A*a*b^3)*c)*sqrt(a)*x^5*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4
*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(384*A*a^5 - (
1050*B*a^2*b^3 - 945*A*a*b^4 - 1024*A*a^3*c^2 - 20*(110*B*a^3*b - 147*A*a^2
*b^2)*c)*x^4 + 2*(350*B*a^3*b^2 - 315*A*a^2*b^3 - 4*(90*B*a^4 - 161*A*a^3*b
)*c)*x^3 - 8*(70*B*a^4*b - 63*A*a^3*b^2 + 64*A*a^4*c)*x^2 + 48*(10*B*a^5 -
9*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x^5), 1/3840*(15*(70*B*a*b^4 - 63
*A*b^5 + 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(6*B*a^2*b^2 - 7*A*a*b^3)*c)*sqr
t(-a)*x^5*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 +
a*b*x + a^2)) - 2*(384*A*a^5 - (1050*B*a^2*b^3 - 945*A*a*b^4 - 1024*A*a^3*c
^2 - 20*(110*B*a^3*b - 147*A*a^2*b^2)*c)*x^4 + 2*(350*B*a^3*b^2 - 315*A*a^2
*b^3 - 4*(90*B*a^4 - 161*A*a^3*b)*c)*x^3 - 8*(70*B*a^4*b - 63*A*a^3*b^2 + 6
4*A*a^4*c)*x^2 + 48*(10*B*a^5 - 9*A*a^4*b)*x)*sqrt(c*x^2 + b*x + a))/(a^6*x
^5)]
```

giac [B] time = 0.27, size = 1266, normalized size = 4.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/128*(70*B*a*b^4 - 63*A*b^5 - 240*B*a^2*b^2*c + 280*A*a*b^3*c + 96*B*a^3*c
^2 - 240*A*a^2*b*c^2)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))
/(sqrt(-a)*a^5) - 1/1920*(1050*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a*b^
4 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*b^5 - 3600*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^9*B*a^2*b^2*c + 4200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^9*A*a*b^3*c + 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*B*a^3*c^2 - 3600
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*A*a^2*b*c^2 - 4900*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*B*a^2*b^4 + 4410*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7
*A*a*b^5 + 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*B*a^3*b^2*c - 19600*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*A*a^2*b^3*c - 6720*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^7*B*a^4*c^2 + 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7
*A*a^3*b*c^2 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^3*b^4 - 8064*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^2*b^5 - 30720*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*B*a^4*b^2*c + 35840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
5*A*a^3*b^3*c - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a^4*b*c^2 - 2
0480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^5*b*c^(3/2) - 20480*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*A*a^5*c^(5/2) - 7900*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^3*B*a^4*b^4 + 7110*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^3*
b^5 + 13920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^5*b^2*c - 31600*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^4*b^3*c + 6720*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*B*a^6*c^2 - 16800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^
5*b*c^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^5*b^3*sqrt(c) + 25
600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^6*b*c^(3/2) - 38400*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*A*a^5*b^2*c^(3/2) + 10240*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^2*A*a^6*c^(5/2) + 2790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*
B*a^5*b^4 - 2895*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^4*b^5 + 3600*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*B*a^6*b^2*c - 4200*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*A*a^5*b^3*c - 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^7*c^2
 + 3600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^6*b*c^2 + 3840*B*a^6*b^3*sq
rt(c) - 3840*A*a^5*b^4*sqrt(c) - 5120*B*a^7*b*c^(3/2) + 7680*A*a^6*b^2*c^(3
/2) - 2048*A*a^7*c^(5/2))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^5*a^
5)
```

maple [B] time = 0.07, size = 578, normalized size = 1.89

$$\frac{15Abc^{2}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{16a^{\frac{7}{2}}}-\frac{35A\,b^{3}c\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{32a^{\frac{9}{2}}}+\frac{63A\,b^{5}\ln\left(\frac{bx+2a+2\sqrt{cx^{2}+bx+a}\,\sqrt{a}}{x}\right)}{256a^{\frac{11}{2}}}-3B\,c^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/5*A*(c*x^2+b*x+a)^(1/2)/a/x^5+9/40*A/a^2*b/x^4*(c*x^2+b*x+a)^(1/2)-21/80
*A/a^3*b^2/x^3*(c*x^2+b*x+a)^(1/2)+21/64*A/a^4*b^3/x^2*(c*x^2+b*x+a)^(1/2)-
63/128*A/a^5*b^4/x*(c*x^2+b*x+a)^(1/2)+63/256*A/a^(11/2)*b^5*ln((b*x+2*a+2*
(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-35/32*A/a^(9/2)*b^3*c*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+49/32*A/a^4*b^2*c/x*(c*x^2+b*x+a)^(1/2)-161/240*A/
a^3*b*c/x^2*(c*x^2+b*x+a)^(1/2)+15/16*A/a^(7/2)*b*c^2*ln((b*x+2*a+2*(c*x^2+
b*x+a)^(1/2)*a^(1/2))/x)+4/15*A*c/a^2/x^3*(c*x^2+b*x+a)^(1/2)-8/15*A*c^2/a^
3/x*(c*x^2+b*x+a)^(1/2)-1/4*B/a/x^4*(c*x^2+b*x+a)^(1/2)+7/24*B/a^2*b/x^3*(c
*x^2+b*x+a)^(1/2)-35/96*B/a^3*b^2/x^2*(c*x^2+b*x+a)^(1/2)+35/64*B/a^4*b^3/x
*(c*x^2+b*x+a)^(1/2)-35/128*B/a^(9/2)*b^4*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)
*a^(1/2))/x)+15/16*B/a^(7/2)*b^2*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2
))/x)-55/48*B/a^3*b*c/x*(c*x^2+b*x+a)^(1/2)+3/8*B*c/a^2/x^2*(c*x^2+b*x+a)^(
1/2)-3/8*B*c^2/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^6/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^6\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^6*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/(x^6*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^6\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**6/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(x**6*sqrt(a + b*x + c*x**2)), x)
```

3.961 $\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=280

$$\frac{\sqrt{a+bx+cx^2}\,\left(256a^2Bc^2-2cx\left(72aAc^2-116abBc-30Ab^2c+35b^3B\right)+312aAbc^2-460ab^2Bc-90Ab^3c+105}{24c^4\left(b^2-4ac\right)}$$

```
[Out] -1/16*(24*A*a*c^2-30*A*b^2*c-60*B*a*b*c+35*B*b^3)*arctanh(1/2*(2*c*x+b)/c^(
1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)-2*x^3*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b
^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+1/3*(-6*A*b*c-16*B*a*c+7*B*b^2)*x
^2*(c*x^2+b*x+a)^(1/2)/c^2/(-4*a*c+b^2)+1/24*(105*b^4*B-90*A*b^3*c-460*a*b^
2*B*c+312*a*A*b*c^2+256*a^2*B*c^2-2*c*(72*A*a*c^2-30*A*b^2*c-116*B*a*b*c+35
*B*b^3)*x)*(c*x^2+b*x+a)^(1/2)/c^4/(-4*a*c+b^2)
```

Rubi [A] time = 0.27, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {818, 832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\,\left(256a^2Bc^2-2cx\left(72aAc^2-116abBc-30Ab^2c+35b^3B\right)+312aAbc^2-460ab^2Bc-90Ab^3c+105}{24c^4\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x^3*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*S
qrt[a + b*x + c*x^2]) + ((7*b^2*B - 6*A*b*c - 16*a*B*c)*x^2*Sqrt[a + b*x +
c*x^2])/(3*c^2*(b^2 - 4*a*c)) + ((105*b^4*B - 90*A*b^3*c - 460*a*b^2*B*c +
312*a*A*b*c^2 + 256*a^2*B*c^2 - 2*c*(35*b^3*B - 30*A*b^2*c - 116*a*b*B*c +
72*a*A*c^2)*x)*Sqrt[a + b*x + c*x^2])/(24*c^4*(b^2 - 4*a*c)) - ((35*b^3*B -
 30*A*b^2*c - 60*a*b*B*c + 24*a*A*c^2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/(16*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{2\int \frac{x^2\left(3a(bB-2Ac)+\frac{1}{2}\left(7b^2B-6Abc-16aBc\right)x\right)}{\sqrt{a+bx+cx^2}}}{c\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(7b^2B-6Abc-16aBc\right)x^2\sqrt{a+bx+}}{3c^2\left(b^2-4ac\right)}$$

Mathematica [A] time = 0.43, size = 300, normalized size = 1.07

$$2\sqrt{c}\left(-256a^3Bc^2+4a^2c\left(-2bc(39A+61Bx)+4c^2x(9A-8Bx)+115b^2B\right)+a\left(10b^3c(9A+53Bx)+4b^2c^2x(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(-256*a^3*B*c^2 + b^2*x*(-105*b^3*B + 5*b^2*c*(18*A - 7*B*x) - 4
*c^3*x^2*(3*A + 2*B*x) + 2*b*c^2*x*(15*A + 7*B*x)) + a*(-105*b^4*B + 16*c^4
*x^3*(3*A + 2*B*x) - 8*b*c^3*x^2*(15*A + 7*B*x) + 4*b^2*c^2*x*(-93*A + 43*B
*x) + 10*b^3*c*(9*A + 53*B*x)) + 4*a^2*c*(115*b^2*B + 4*c^2*x*(9*A - 8*B*x)
 - 2*b*c*(39*A + 61*B*x))) + 3*(b^2 - 4*a*c)*(35*b^3*B - 30*A*b^2*c - 60*a*
b*B*c + 24*a*A*c^2)*Sqrt[a + x*(b + c*x)]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + x*(b + c*x)])])/(48*c^(9/2)*(-b^2 + 4*a*c)*Sqrt[a + x*(b + c*x)])
```

fricas [**A**] time = 1.86, size = 1035, normalized size = 3.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(35*B*a*b^5 - 96*A*a^3*c^3 + 48*(5*B*a^3*b + 3*A*a^2*b^2)*c^2 + (3
5*B*b^5*c - 96*A*a^2*c^4 + 48*(5*B*a^2*b + 3*A*a*b^2)*c^3 - 10*(20*B*a*b^3
+ 3*A*b^4)*c^2)*x^2 - 10*(20*B*a^2*b^3 + 3*A*a*b^4)*c + (35*B*b^6 - 96*A*a^
2*b*c^3 + 48*(5*B*a^2*b^2 + 3*A*a*b^3)*c^2 - 10*(20*B*a*b^4 + 3*A*b^5)*c)*x
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 4*(105*B*a*b^4*c + 8*(B*b^2*c^4 - 4*B*a*c^5)*x^4 + 8
*(32*B*a^3 + 39*A*a^2*b)*c^3 - 2*(7*B*b^3*c^3 + 24*A*a*c^5 - 2*(14*B*a*b +
3*A*b^2)*c^4)*x^3 - 10*(46*B*a^2*b^2 + 9*A*a*b^3)*c^2 + (35*B*b^4*c^2 + 8*(
16*B*a^2 + 15*A*a*b)*c^4 - 2*(86*B*a*b^2 + 15*A*b^3)*c^3)*x^2 + (105*B*b^5*
c - 144*A*a^2*c^4 + 4*(122*B*a^2*b + 93*A*a*b^2)*c^3 - 10*(53*B*a*b^3 + 9*A
*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^5 - 4*a^2*c^6 + (b^2*c^6 - 4*
a*c^7)*x^2 + (b^3*c^5 - 4*a*b*c^6)*x), 1/48*(3*(35*B*a*b^5 - 96*A*a^3*c^3 +
 48*(5*B*a^3*b + 3*A*a^2*b^2)*c^2 + (35*B*b^5*c - 96*A*a^2*c^4 + 48*(5*B*a^
2*b + 3*A*a*b^2)*c^3 - 10*(20*B*a*b^3 + 3*A*b^4)*c^2)*x^2 - 10*(20*B*a^2*b^
3 + 3*A*a*b^4)*c + (35*B*b^6 - 96*A*a^2*b*c^3 + 48*(5*B*a^2*b^2 + 3*A*a*b^3
)*c^2 - 10*(20*B*a*b^4 + 3*A*b^5)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(105*B*a*b^4*c + 8
*(B*b^2*c^4 - 4*B*a*c^5)*x^4 + 8*(32*B*a^3 + 39*A*a^2*b)*c^3 - 2*(7*B*b^3*c
^3 + 24*A*a*c^5 - 2*(14*B*a*b + 3*A*b^2)*c^4)*x^3 - 10*(46*B*a^2*b^2 + 9*A*
a*b^3)*c^2 + (35*B*b^4*c^2 + 8*(16*B*a^2 + 15*A*a*b)*c^4 - 2*(86*B*a*b^2 +
15*A*b^3)*c^3)*x^2 + (105*B*b^5*c - 144*A*a^2*c^4 + 4*(122*B*a^2*b + 93*A*a
*b^2)*c^3 - 10*(53*B*a*b^3 + 9*A*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2
*c^5 - 4*a^2*c^6 + (b^2*c^6 - 4*a*c^7)*x^2 + (b^3*c^5 - 4*a*b*c^6)*x)]
```

giac [**A**] time = 0.31, size = 367, normalized size = 1.31

$$\frac{\left(\left(2\left(\frac{4\left(Bb^2c^3-4\,Bac^4\right)x}{b^2c^4-4\,ac^5}-\frac{7\,Bb^3c^2-28\,Babc^3-6\,Ab^2c^3+24\,Aac^4}{b^2c^4-4\,ac^5}\right)x+\frac{35\,Bb^4c-172\,Bab^2c^2-30\,Ab^3c^2+128\,Ba^2c^3+120\,Aabc^3}{b^2c^4-4\,ac^5}\right)x+\frac{105\,Bb^5-530\,Ba}{}\right.}{24\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/24*(((2*(4*(B*b^2*c^3 - 4*B*a*c^4)*x/(b^2*c^4 - 4*a*c^5) - (7*B*b^3*c^2 -
 28*B*a*b*c^3 - 6*A*b^2*c^3 + 24*A*a*c^4)/(b^2*c^4 - 4*a*c^5))*x + (35*B*b^
4*c - 172*B*a*b^2*c^2 - 30*A*b^3*c^2 + 128*B*a^2*c^3 + 120*A*a*b*c^3)/(b^2*
c^4 - 4*a*c^5))*x + (105*B*b^5 - 530*B*a*b^3*c - 90*A*b^4*c + 488*B*a^2*b*c
^2 + 372*A*a*b^2*c^2 - 144*A*a^2*c^3)/(b^2*c^4 - 4*a*c^5))*x + (105*B*a*b^4
 - 460*B*a^2*b^2*c - 90*A*a*b^3*c + 256*B*a^3*c^2 + 312*A*a^2*b*c^2)/(b^2*c
^4 - 4*a*c^5))/sqrt(c*x^2 + b*x + a) + 1/16*(35*B*b^3 - 60*B*a*b*c - 30*A*b
^2*c + 24*A*a*c^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(9/2)
```

maple [**B**] time = 0.07, size = 800, normalized size = 2.86

$$\frac{B\,x^4}{3\sqrt{c\,x^2+bx+a}\;c}-\frac{13Aa\,b^2x}{2\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c^2}+\frac{15A\,b^4x}{8\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c^3}+\frac{A\,x^3}{2\sqrt{c\,x^2+bx+a}\;c}-\frac{}{3\left(4ac-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 15/16*A*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-13/4*A*b/c^3*a/(c*x^2+b*x+a
)^(1/2)+3/2*A*a/c^2*x/(c*x^2+b*x+a)^(1/2)-7/12*B*b/c^2*x^3/(c*x^2+b*x+a)^(1
/2)-4/3*B*a/c^2*x^2/(c*x^2+b*x+a)^(1/2)+35/24*B*b^2/c^3*x^2/(c*x^2+b*x+a)^(
1/2)+35/16*B*b^3/c^4*x/(c*x^2+b*x+a)^(1/2)-35/32*B*b^6/c^5/(4*a*c-b^2)/(c*x
^2+b*x+a)^(1/2)+15/8*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-16/3*B*a^2
/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+115/12*B*b^3/c^3*a/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x-13/2*A*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*A
*x^3/c/(c*x^2+b*x+a)^(1/2)+15/16*A*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*A*b^2/c
^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/3*B*x^4/c/(c*x^2+b*x+a
)^(1/2)-35/32*B*b^4/c^5/(c*x^2+b*x+a)^(1/2)-35/16*B*b^3/c^(9/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-8/3*B*a^2/c^3/(c*x^2+b*x+a)^(1/2)-3/2*A*a/
c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/4*A*b/c^2*x^2/(c*x^2+
b*x+a)^(1/2)-15/8*A*b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+115/24*B*b^2/c^4*a/(c*x^2
+b*x+a)^(1/2)+15/4*B*b/c^(7/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-13/4*A*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-35/16*B*b^5/c^4/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+115/24*B*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2
)-15/4*B*b/c^3*a*x/(c*x^2+b*x+a)^(1/2)-8/3*B*a^2/c^3*b^2/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{4} \left(A + B x\right)}{\left(a + b x + c x^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**4*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.962 $\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=197

$$\frac{3\left(-4aBc-4Abc+5b^2B\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{8c^{7/2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\sqrt{a+bx+cx^2}$$

```
[Out] 3/8*(-4*A*b*c-4*B*a*c+5*B*b^2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^
(1/2))/c^(7/2)-2*x^2*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^
2)/(c*x^2+b*x+a)^(1/2)-1/4*(15*b^3*B-12*A*b^2*c-52*a*b*B*c+32*a*A*c^2-2*c*(
-4*A*b*c-12*B*a*c+5*B*b^2)*x)*(c*x^2+b*x+a)^(1/2)/c^3/(-4*a*c+b^2)
```

Rubi [A] time = 0.14, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {818, 779, 621, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-2cx\left(-12aBc-4Abc+5b^2B\right)+32aAc^2-52abBc-12Ab^2c+15b^3B\right)}{4c^3\left(b^2-4ac\right)}+3\big(-4aBc-4Abc+5b$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x^2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*S
qrt[a + b*x + c*x^2]) - ((15*b^3*B - 12*A*b^2*c - 52*a*b*B*c + 32*a*A*c^2 -
 2*c*(5*b^2*B - 4*A*b*c - 12*a*B*c)*x)*Sqrt[a + b*x + c*x^2])/(4*c^3*(b^2 -
 4*a*c)) + (3*(5*b^2*B - 4*A*b*c - 4*a*B*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*
Sqrt[a + b*x + c*x^2])])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2\int\frac{x\left(2a(bB-2Ac)+\frac{1}{2}\left(5b^2B-4Abc-12aBc\right)x\right)}{\sqrt{a+bx+cx^2}}}{c\left(b^2-4ac\right)}\\ &= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(15b^3B-12Ab^2c-52abBc+32aAc}{4}\\ &= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(15b^3B-12Ab^2c-52abBc+32aAc}{4}\\ &= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(15b^3B-12Ab^2c-52abBc+32aAc}{4}\end{aligned}$$

Mathematica [A] time = 0.28, size = 221, normalized size = 1.12

$$\frac{2\sqrt{c}\left(4a^2c(8Ac-13bB+6Bcx)+a\left(-2b^2c(6A+31Bx)-20bc^2x(Bx-2A)+8c^3x^2(2A+Bx)+15b^3B\right)+b^2x}{8c^{7/2}(4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[c]*(4*a^2*c*(-13*b*B + 8*A*c + 6*B*c*x) + a*(15*b^3*B - 20*b*c^2*x*
(-2*A + B*x) + 8*c^3*x^2*(2*A + B*x) - 2*b^2*c*(6*A + 31*B*x)) + b^2*x*(15*
b^2*B - 2*c^2*x*(2*A + B*x) + b*(-12*A*c + 5*B*c*x))) - 3*(b^2 - 4*a*c)*(5*
b^2*B - 4*A*b*c - 4*a*B*c)*Sqrt[a + x*(b + c*x)]*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(7/2)*(-b^2 + 4*a*c)*Sqrt[a + x*(b + c*x
)])
```

fricas [B] time = 1.75, size = 793, normalized size = 4.03

$$\Bigg[-\frac{3\left(5Bab^4+16\left(Ba^3+Aa^2b\right)c^2+\left(5Bb^4c+16\left(Ba^2+Aab\right)c^3-4\left(6Bab^2+Ab^3\right)c^2\right)x^2-4\left(6Ba^2b^2+Aab^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*(5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)*c^2 + (5*B*b^4*c + 16*(B*a^2 +
A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*x^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c +
 (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)*x)*sqrt(c
)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt
(c) - 4*a*c) + 4*(15*B*a*b^3*c + 32*A*a^2*c^3 - 2*(B*b^2*c^3 - 4*B*a*c^4)*x
^3 - 4*(13*B*a^2*b + 3*A*a*b^2)*c^2 + (5*B*b^3*c^2 + 16*A*a*c^4 - 4*(5*B*a*
b + A*b^2)*c^3)*x^2 + (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*(31*B*a*b
^2 + 6*A*b^3)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^4 - 4*a^2*c^5 + (b^2*
c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x), -1/8*(3*(5*B*a*b^4 + 16*(B*a
^3 + A*a^2*b)*c^2 + (5*B*b^4*c + 16*(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*
b^3)*c^2)*x^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c + (5*B*b^5 + 16*(B*a^2*b + A*a*
b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(15*B*a*b^3*c + 32*
A*a^2*c^3 - 2*(B*b^2*c^3 - 4*B*a*c^4)*x^3 - 4*(13*B*a^2*b + 3*A*a*b^2)*c^2
+ (5*B*b^3*c^2 + 16*A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*x^2 + (15*B*b^4*c +
8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*(31*B*a*b^2 + 6*A*b^3)*c^2)*x)*sqrt(c*x^2 + b
*x + a))/(a*b^2*c^4 - 4*a^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*
b*c^5)*x)]
```

giac [**A**] time = 0.25, size = 268, normalized size = 1.36

$$\frac{\left(\left(\frac{2\left(Bb^2c^2-4\,Bac^3\right)x}{b^2c^3-4\,ac^4}-\frac{5\,Bb^3c-20\,Babc^2-4\,Ab^2c^2+16\,Aac^3}{b^2c^3-4\,ac^4}\right)x-\frac{15\,Bb^4-62\,Bab^2c-12\,Ab^3c+24\,Ba^2c^2+40\,Aabc^2}{b^2c^3-4\,ac^4}\right)x-\frac{15\,Bab^3-52\,Ba^2bc-12\,Aab^2}{b^2c^3-4\,ac^4}}{4\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*(((2*(B*b^2*c^2 - 4*B*a*c^3)*x/(b^2*c^3 - 4*a*c^4) - (5*B*b^3*c - 20*B*
a*b*c^2 - 4*A*b^2*c^2 + 16*A*a*c^3)/(b^2*c^3 - 4*a*c^4))*x - (15*B*b^4 - 62
*B*a*b^2*c - 12*A*b^3*c + 24*B*a^2*c^2 + 40*A*a*b*c^2)/(b^2*c^3 - 4*a*c^4))
*x - (15*B*a*b^3 - 52*B*a^2*b*c - 12*A*a*b^2*c + 32*A*a^2*c^2)/(b^2*c^3 - 4
*a*c^4))/sqrt(c*x^2 + b*x + a) - 3/8*(5*B*b^2 - 4*B*a*c - 4*A*b*c)*log(abs(
-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.06, size = 576, normalized size = 2.92

$$\frac{4Aabx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c}-\frac{3A\,b^3x}{2\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c^2}-\frac{13Ba\,b^2x}{2\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c^2}+\frac{15B\,b^4x}{8\left(4ac-b^2\right)\sqrt{c\,x^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 1/2*B*x^3/c/(c*x^2+b*x+a)^(1/2)-5/4*B*b/c^2*x^2/(c*x^2+b*x+a)^(1/2)-15/8*B*
b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+15/16*B*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*B*b^
4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+15/16*B*b^5/c^4/(4*a*c-b^2)/(c*x^2+
b*x+a)^(1/2)+15/8*B*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
-13/4*B*b/c^3*a/(c*x^2+b*x+a)^(1/2)-13/2*B*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x
+a)^(1/2)*x-13/4*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+3/2*B*a/c^2*x/
(c*x^2+b*x+a)^(1/2)-3/2*B*a/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))+A*x^2/c/(c*x^2+b*x+a)^(1/2)+3/2*A*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*A*b^
2/c^3/(c*x^2+b*x+a)^(1/2)-3/2*A*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-3
/4*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*A*b/c^(5/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))+2*A*a/c^2/(c*x^2+b*x+a)^(1/2)+4*A*a/c*b/(4*a*
c-b^2)/(c*x^2+b*x+a)^(1/2)*x+2*A*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{3}\left(A+Bx\right)}{\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x**3*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.963 $\int \frac{x^2(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=153

$$\frac{\sqrt{a+bx+cx^2}\left(-8aBc-2Abc+3b^2B\right)}{c^2\left(b^2-4ac\right)}-\frac{2x\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{b}{2\sqrt{c}}\right.}{2c^{5/2}}$$

```
[Out] -1/2*(-2*A*c+3*B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5
/2)-2*x*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x
+a)^(1/2)+(-2*A*b*c-8*B*a*c+3*B*b^2)*(c*x^2+b*x+a)^(1/2)/c^2/(-4*a*c+b^2)
```

Rubi [A] time = 0.14, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {818, 640, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-8aBc-2Abc+3b^2B\right)}{c^2\left(b^2-4ac\right)}-\frac{2x\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(3bB-2Ac)\tanh^{-1}\left(\frac{b}{2\sqrt{c}}\right.}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*x*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*Sqr
t[a + b*x + c*x^2]) + ((3*b^2*B - 2*A*b*c - 8*a*B*c)*Sqrt[a + b*x + c*x^2])
/(c^2*(b^2 - 4*a*c)) - ((3*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt
[a + b*x + c*x^2])])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^2(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2\int\frac{a(bB-2Ac)+\frac{1}{2}\left(3b^2B-2Abc-8aBc\right)x}{\sqrt{a+bx+cx^2}}\,dx}{c\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}\\
&= -\frac{2x\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{\left(3b^2B-2Abc-8aBc\right)\sqrt{a+bx+cx^2}}{c^2\left(b^2-4ac\right)}
\end{aligned}
$$

Mathematica [A] time = 0.23, size = 148, normalized size = 0.97

$$
\frac{\frac{2\sqrt{c}\left(8a^2Bc+a\left(2bc(A+5Bx)+4c^2x(Bx-A)-3b^2B\right)-b^2x(-2Ac+3bB+Bcx)\right)}{\sqrt{a+x(b+cx)}}+\left(b^2-4ac\right)(3bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{5/2}\left(4ac-b^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(8*a^2*B*c - b^2*x*(3*b*B - 2*A*c + B*c*x) + a*(-3*b^2*B + 4*c^
2*x*(-A + B*x) + 2*b*c*(A + 5*B*x))))/Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)
*(3*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(2
*c^(5/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 1.55, size = 603, normalized size = 3.94

$$
\left[-\frac{\left(3\,Bab^3+8\,Aa^2c^2+\left(3\,Bb^3c+8\,Aac^3-2\left(6\,Bab+Ab^2\right)c^2\right)x^2-2\left(6\,Ba^2b+Aab^2\right)c+\left(3\,Bb^4+8\,Aabc^2-2\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((3*B*a*b^3 + 8*A*a^2*c^2 + (3*B*b^3*c + 8*A*a*c^3 - 2*(6*B*a*b + A*b
^2)*c^2)*x^2 - 2*(6*B*a^2*b + A*a*b^2)*c + (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*
a*b^2 + A*b^3)*c)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(3*B*a*b^2*c - 2*(4*B*a^2 + A*a
*b)*c^2 + (B*b^2*c^2 - 4*B*a*c^3)*x^2 + (3*B*b^3*c + 4*A*a*c^3 - 2*(5*B*a*b
 + A*b^2)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4
- 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x), 1/2*((3*B*a*b^3 + 8*A*a^2*c^2 +
(3*B*b^3*c + 8*A*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*x^2 - 2*(6*B*a^2*b + A*a*
b^2)*c + (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*x)*sqrt(-c)*arct
an(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
+ 2*(3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2 + (B*b^2*c^2 - 4*B*a*c^3)*x^2 +
(3*B*b^3*c + 4*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*x)*sqrt(c*x^2 + b*x + a))
/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x
)]
```

giac [A] time = 0.26, size = 177, normalized size = 1.16

$$\frac{\left(\frac{\left(Bb^{2}c-4\,Bac^{2}\right)x}{b^{2}c^{2}-4\,ac^{3}}+\frac{3\,Bb^{3}-10\,Babc-2\,Ab^{2}c+4\,Aac^{2}}{b^{2}c^{2}-4\,ac^{3}}\right)x+\frac{3\,Bab^{2}-8\,Ba^{2}c-2\,Aabc}{b^{2}c^{2}-4\,ac^{3}}}{\sqrt{cx^{2}+bx+a}}+\frac{(3\,Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)\right.\right.}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] (((B*b^2*c - 4*B*a*c^2)*x/(b^2*c^2 - 4*a*c^3) + (3*B*b^3 - 10*B*a*b*c - 2*A
*b^2*c + 4*A*a*c^2)/(b^2*c^2 - 4*a*c^3))*x + (3*B*a*b^2 - 8*B*a^2*c - 2*A*a
*b*c)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a) + 1/2*(3*B*b - 2*A*c)*log(
abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 382, normalized size = 2.50

$$\frac{A\,b^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}+\frac{4Babx}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}-\frac{3B\,b^{3}x}{2\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c^{2}}+\frac{A\,b^{3}}{2\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] B*x^2/c/(c*x^2+b*x+a)^(1/2)+3/2*B*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*B*b^2/c^3
/(c*x^2+b*x+a)^(1/2)-3/2*B*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-3/4*B*
b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*B*b/c^(5/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+2*B*a/c^2/(c*x^2+b*x+a)^(1/2)+4*B*a/c*b/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)*x+2*B*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-A*x/c
/(c*x^2+b*x+a)^(1/2)+1/2*A*b/c^2/(c*x^2+b*x+a)^(1/2)+A*b^2/c/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)*x+1/2*A*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^{2}\,\left(A+B\,x\right)}{{\left(c\,x^{2}+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x^{2} (A + Bx)}{\left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
[Out] Integral(x**2*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.964 $\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

```
[Out] B*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)-2*(a*(-2*A*c+B
*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {777, 621, 206}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*Sqrt[
a + b*x + c*x^2]) + (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2]
)])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{c}$$

$$= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{(2B)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}$$

$$= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Mathematica [A] time = 0.28, size = 102, normalized size = 1.06

$$\frac{\frac{2\sqrt{c}(-2ac(A+Bx)+abB+bx(bB-Ac))}{\sqrt{a+x(b+cx)}}-B\left(b^2-4ac\right)\log\left(2\sqrt{c}\sqrt{a+x(b+cx)}+b+2cx\right)}{c^{3/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(a*b*B + b*(b*B - A*c)*x - 2*a*c*(A + B*x)))/Sqrt[a + x*(b + c*
x)] - B*(b^2 - 4*a*c)*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])/(c^
(3/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 1.25, size = 405, normalized size = 4.22

$$\left[\frac{\left(Bab^2-4\,Ba^2c+\left(Bb^2c-4\,Bac^2\right)x^2+\left(Bb^3-4\,Babc\right)x\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx\right.}{2\left(ab^2c^2-4\,a^2c^3+\left(b^2c^3-4\,ac^4\right)x^2+\left(b^3c^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*a*b^2 - 4*B*a^2*c + (B*b^2*c - 4*B*a*c^2)*x^2 + (B*b^3 - 4*B*a*b*c
)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(c) - 4*a*c) - 4*(B*a*b*c - 2*A*a*c^2 + (B*b^2*c - (2*B*a + A*b)
*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4
)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x), -((B*a*b^2 - 4*B*a^2*c + (B*b^2*c - 4*B*a
*c^2)*x^2 + (B*b^3 - 4*B*a*b*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(B*a*b*c - 2*A*a*c^2 +
(B*b^2*c - (2*B*a + A*b)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*
c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [A] time = 0.25, size = 110, normalized size = 1.15

$$-\frac{2\left(\frac{\left(Bb^2-2\,Bac-Abc\right)x}{b^2c-4\,ac^2}+\frac{Bab-2\,Aac}{b^2c-4\,ac^2}\right)}{\sqrt{cx^2+bx+a}}-\frac{B\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((B*b^2 - 2*B*a*c - A*b*c)*x/(b^2*c - 4*a*c^2) + (B*a*b - 2*A*a*c)/(b^2*
c - 4*a*c^2))/sqrt(c*x^2 + b*x + a) - B*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [B] time = 0.05, size = 216, normalized size = 2.25

$$-\frac{2Abx}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{B\,b^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}-\frac{A\,b^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}+\frac{B\,b^{3}}{2\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -B*x/c/(c*x^2+b*x+a)^(1/2)+1/2*B*b/c^2/(c*x^2+b*x+a)^(1/2)+B*b^2/c/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*B*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+B/c
^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-A/c/(c*x^2+b*x+a)^(1/2)-
2*A*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-A*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.64, size = 111, normalized size = 1.16

$$\frac{B\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}+b\,x+a}\right)}{c^{3/2}}-\frac{A\,\left(4\,a+2\,b\,x\right)}{\left(4\,a\,c-b^{2}\right)\,\sqrt{c\,x^{2}+b\,x+a}}+\frac{B\,\left(\frac{a\,b}{2}-x\,\left(a\,c-\frac{b^{2}}{2}\right)\right)}{c\,\left(a\,c-\frac{b^{2}}{4}\right)\,\sqrt{c\,x^{2}+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(3/2) - (A*(4*a +
2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2)) + (B*((a*b)/2 - x*(a*c - b^
2/2)))/(c*(a*c - b^2/4)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x\,(A+Bx)}{\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral(x*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.965 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=45

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

```
[Out] -2*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {636}

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}} \, dx = -\frac{2(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.16, size = 44, normalized size = 0.98

$$\frac{2B(2a+bx)-2A(b+2cx)}{\left(b^2-4ac\right)\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(2*a + b*x) - 2*A*(b + 2*c*x))/((b^2 - 4*a*c)*Sqrt[a + x*(b + c*x)])
```

fricas [A] time = 1.33, size = 74, normalized size = 1.64

$$\frac{2\sqrt{cx^2+bx+a}\,(2\,Ba-Ab+(Bb-2\,Ac)x)}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)*(2*B*a - A*b + (B*b - 2*A*c)*x)/(a*b^2 - 4*a^2*c +
(b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [**A**] time = 0.24, size = 55, normalized size = 1.22

$$\frac{2\left(\frac{(Bb-2\,Ac)x}{b^2-4\,ac}+\frac{2\,Ba-Ab}{b^2-4\,ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b - 2*A*c)*x/(b^2 - 4*a*c) + (2*B*a - A*b)/(b^2 - 4*a*c))/sqrt(c*x^2
+ b*x + a)
```

maple [**A**] time = 0.05, size = 45, normalized size = 1.00

$$\frac{4Acx-2Bbx+2Ab-4Ba}{\sqrt{c\,x^2+bx+a}\,\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/(c*x^2+b*x+a)^(1/2)*(2*A*c*x-B*b*x+A*b-2*B*a)/(4*a*c-b^2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 1.39, size = 44, normalized size = 0.98

$$\frac{2\,A\,b-4\,B\,a+4\,A\,c\,x-2\,B\,b\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*A*b - 4*B*a + 4*A*c*x - 2*B*b*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.966 $\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=96

$$\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}$$

```
[Out] -A*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(3/2)+2*(A*b^2-a*b*
B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{822, 12, 724, 206\}$

$$\frac{2\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*Sqrt[a +
 b*x + c*x^2]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])
/a^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2\int -\frac{A\left(b^2-4ac\right)}{2x\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{A\int \frac{1}{x\sqrt{a+bx+cx^2}}\,dx}{a}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(2A)\,\mathrm{Subst}\left(\int \frac{1}{4a-x^2}\,dx,x,\frac{2a+bx}{\sqrt{a+bx+cx^2}}\right)}{a}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.12, size = 104, normalized size = 1.08

$$
\frac{\frac{2\sqrt{a}\left(aB(b+2cx)-A\left(-2ac+b^2+bcx\right)\right)}{\sqrt{a+x(b+cx)}}+A\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{3/2}\left(4ac-b^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(a*B*(b + 2*c*x) - A*(b^2 - 2*a*c + b*c*x)))/Sqrt[a + x*(b + c*
x)] + A*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])
])/(a^(3/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 1.63, size = 412, normalized size = 4.29

$$
\left[\frac{\left(Aab^2-4\,Aa^2c+\left(Ab^2c-4\,Aac^2\right)x^2+\left(Ab^3-4\,Aabc\right)x\right)\sqrt{a}\,\log\left(-\frac{8\,abx+\left(b^2+4\,ac\right)x^2-4\,\sqrt{cx^2+bx+a}\,(bx+2\,a)\sqrt{a}+8\,a^2}{x^2}\right)-}{2\left(a^3b^2-4\,a^4c+\left(a^2b^2c-4\,a^3c^2\right)x^2+\left(a^2b^3-4\,a^3bc\right)x\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*((A*a*b^2 - 4*A*a^2*c + (A*b^2*c - 4*A*a*c^2)*x^2 + (A*b^3 - 4*A*a*b*c
)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x + a)*(b
*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(B*a^2*b - A*a*b^2 + 2*A*a^2*c + (2*B*a
^2 - A*a*b)*c*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^2 - 4*a^4*c + (a^2*b^2*c - 4
*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x), ((A*a*b^2 - 4*A*a^2*c + (A*b^2*c
- 4*A*a*c^2)*x^2 + (A*b^3 - 4*A*a*b*c)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 +
b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(B*a^2*b - A*a*b
^2 + 2*A*a^2*c + (2*B*a^2 - A*a*b)*c*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^2 - 4
*a^4*c + (a^2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x)]
```

giac [A] time = 0.27, size = 125, normalized size = 1.30

$$
-\frac{2\left(\frac{\left(2\,Ba^2c-Aabc\right)x}{a^2b^2-4\,a^3c}+\frac{Ba^2b-Aab^2+2\,Aa^2c}{a^2b^2-4\,a^3c}\right)}{\sqrt{cx^2+bx+a}}+\frac{2\,A\arctan\left(-\frac{\sqrt{c}x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((2*B*a^2*c - A*a*b*c)*x/(a^2*b^2 - 4*a^3*c) + (B*a^2*b - A*a*b^2 + 2*A*
a^2*c)/(a^2*b^2 - 4*a^3*c))/sqrt(c*x^2 + b*x + a) + 2*A*arctan(-(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a)
```

maple [A] time = 0.05, size = 153, normalized size = 1.59

$$-\frac{2Abcx}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;a}-\frac{A\,b^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;a}+\frac{2\left(2cx+b\right)B}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}-\frac{A\ln\left(\frac{bx+2a+2\sqrt{c\,x^{2}+bx+}}{x}\right.}{a^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*B*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/a/(c*x^2+b*x+a)^(1/2)-2*A*b
/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-A*b^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1
/2)-A/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{x \left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(a + b*x + c*x**2)**(3/2)), x)
```

3.967 $\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=158

$$\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{5/2}}-\frac{\sqrt{a+bx+cx^2}\left(-8aAc-2abB+3Ab^2\right)}{a^2x\left(b^2-4ac\right)}+\frac{2\left(cx(Ab-2aB)-2aAc-abB+\right.}{ax\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

```
[Out] 1/2*(3*A*b-2*B*a)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(5/2
)+2*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/x/(c*x^2+b*x+a)^(1
/2)-(-8*A*a*c+3*A*b^2-2*B*a*b)*(c*x^2+b*x+a)^(1/2)/a^2/(-4*a*c+b^2)/x
```

Rubi **[A]** time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-8aAc-2abB+3Ab^2\right)}{a^2x\left(b^2-4ac\right)}+\frac{(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{5/2}}+\frac{2\left(cx(Ab-2aB)-2aAc-abB\right.}{ax\left(b^2-4ac\right)\sqrt{a+bx+c}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x*Sqrt[a
 + b*x + c*x^2]) - ((3*A*b^2 - 2*a*b*B - 8*a*A*c)*Sqrt[a + b*x + c*x^2])/(a
^2*(b^2 - 4*a*c)*x) + ((3*A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[
a + b*x + c*x^2])])/(2*a^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
```

```
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(-3Ab^2+2abB+8aAc\right)-(Ab-2aB)cx}{x^2\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x\sqrt{a+bx+cx^2}} - \frac{\left(3Ab^2-2abB-8aAc\right)\sqrt{a+bx+cx^2}}{a^2\left(b^2-4ac\right)x}$$

Mathematica [A] time = 0.18, size = 150, normalized size = 0.95

$$\frac{\frac{2\sqrt{a}\left(-4a^2c(A-Bx)+aA\left(b^2-10bcx-8c^2x^2\right)-2abBx(b+cx)+3Ab^2x(b+cx)\right)}{x\sqrt{a+x(b+cx)}} - \left(b^2-4ac\right)(3Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{2a^{5/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(-4*a^2*c*(A - B*x) + 3*A*b^2*x*(b + c*x) - 2*a*b*B*x*(b + c*x)
 + a*A*(b^2 - 10*b*c*x - 8*c^2*x^2)))/(x*Sqrt[a + x*(b + c*x)]) - (3*A*b -
2*a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])
)/(2*a^(5/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 1.68, size = 657, normalized size = 4.16

$$\left[\left(\left(4\left(2\,Ba^2-3\,Aab\right)c^2-\left(2\,Bab^2-3\,Ab^3\right)c\right)x^3-\left(2\,Bab^3-3\,Ab^4-4\left(2\,Ba^2b-3\,Aab^2\right)c\right)x^2-\left(2\,Ba^2b^2-3\,Aa\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*(((4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*x^3 - (2*B*a*b
^3 - 3*A*b^4 - 4*(2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3
- 4*(2*B*a^3 - 3*A*a^2*b)*c)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 +
 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(A*a^2*b^2 -
 4*A*a^3*c - (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 -
 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^3*b^2
*c - 4*a^4*c^2)*x^3 + (a^3*b^3 - 4*a^4*b*c)*x^2 + (a^4*b^2 - 4*a^5*c)*x), -
1/2*(((4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*x^3 - (2*B*a*b^
3 - 3*A*b^4 - 4*(2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3 -
 4*(2*B*a^3 - 3*A*a^2*b)*c)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b
*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(A*a^2*b^2 - 4*A*a^3*c - (8
*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*x^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 2*
(2*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^3*b^2*c - 4*a^4*c^2)
*x^3 + (a^3*b^3 - 4*a^4*b*c)*x^2 + (a^4*b^2 - 4*a^5*c)*x)]
```

giac [**A**] time = 0.27, size = 220, normalized size = 1.39

$$\frac{2\left(\frac{\left(Ba^3bc-Aa^2b^2c+2\,Aa^3c^2\right)x}{a^4b^2-4\,a^5c}+\frac{Ba^3b^2-Aa^2b^3-2\,Ba^4c+3\,Aa^3bc}{a^4b^2-4\,a^5c}\right)}{\sqrt{cx^2+bx+a}}+\frac{(2\,Ba-3\,Ab)\arctan\left(-\frac{\sqrt{c}\,x-\sqrt{cx^2+bx+a}}{\sqrt{-a}}\right)}{\sqrt{-a}\,a^2}+\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+b\right.}{\left(\left(\sqrt{c}\,x-\sqrt{cx^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*a^3*b*c - A*a^2*b^2*c + 2*A*a^3*c^2)*x/(a^4*b^2 - 4*a^5*c) + (B*a^3*b
^2 - A*a^2*b^3 - 2*B*a^4*c + 3*A*a^3*b*c)/(a^4*b^2 - 4*a^5*c))/sqrt(c*x^2 +
 b*x + a) + (2*B*a - 3*A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqr
t(-a))/(sqrt(-a)*a^2) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sq
rt(c))/(((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a^2)
```

maple [**B**] time = 0.06, size = 330, normalized size = 2.09

$$-\frac{8A\,c^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{3A\,b^2cx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a^2}-\frac{2Bbcx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}-\frac{4Abc}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -A/a/x/(c*x^2+b*x+a)^(1/2)-3/2*A/a^2*b/(c*x^2+b*x+a)^(1/2)+3*A/a^2*b^2/(4*a
*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+3/2*A/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)+3/2*A/a^(5/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-8*A*c^2/a/
(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4*A*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*b
+B/a/(c*x^2+b*x+a)^(1/2)-2*B*b/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-B*b^2/
a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-B/a^(3/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/
2)*a^(1/2))/x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**2*(a + b*x + c*x**2)**(3/2)), x)
```

3.968 $\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=231

$$-\frac{3\left(-4aAc-4abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{7/2}}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(3b^2-8ac\right)-A\left(15b^3-52abc\right)\right)}{4a^3x\left(b^2-4ac\right)}-$$

```
[Out] -3/8*(-4*A*a*c+5*A*b^2-4*B*a*b)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)
^(1/2))/a^(7/2)+2*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/x^2/
(c*x^2+b*x+a)^(1/2)-1/2*(-12*A*a*c+5*A*b^2-4*B*a*b)*(c*x^2+b*x+a)^(1/2)/a^2
/(-4*a*c+b^2)/x^2-1/4*(4*a*B*(-8*a*c+3*b^2)-A*(-52*a*b*c+15*b^3))*(c*x^2+b*
x+a)^(1/2)/a^3/(-4*a*c+b^2)/x
```

Rubi [A] time = 0.20, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {822, 834, 806, 724, 206}

$$-\frac{\sqrt{a+bx+cx^2}\left(-12aAc-4abB+5Ab^2\right)}{2a^2x^2\left(b^2-4ac\right)}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(3b^2-8ac\right)-A\left(15b^3-52abc\right)\right)}{4a^3x\left(b^2-4ac\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x^2*Sqrt
[a + b*x + c*x^2]) - ((5*A*b^2 - 4*a*b*B - 12*a*A*c)*Sqrt[a + b*x + c*x^2])
/(2*a^2*(b^2 - 4*a*c)*x^2) - ((4*a*B*(3*b^2 - 8*a*c) - A*(15*b^3 - 52*a*b*c
))*Sqrt[a + b*x + c*x^2])/(4*a^3*(b^2 - 4*a*c)*x) - (3*(5*A*b^2 - 4*a*b*B -
 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(8*a^(7/2
))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(-5Ab^2+4abB+12aAc\right)-2(Ab-2aB)cx}{x^3\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^2\sqrt{a+bx+cx^2}} - \frac{\left(5Ab^2-4abB-12aAc\right)\sqrt{a+bx+cx^2}}{2a^2\left(b^2-4ac\right)x^2}$$

Mathematica [A] time = 0.29, size = 214, normalized size = 0.93

$$\frac{3\left(b^2-4ac\right)\left(-4aAc-4abB+5Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right) - 2\sqrt{a}\,(8a^3c(A+2Bx)+a^2(4Bx(-b^2+10bcx+8c^2x^2)-2A(b^2+10b}{8a^{7/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((-2*Sqrt[a]*(8*a^3*c*(A + 2*B*x) + 15*A*b^3*x^2*(b + c*x) + a^2*(-2*A*(b^2
 + 10*b*c*x - 12*c^2*x^2) + 4*B*x*(-b^2 + 10*b*c*x + 8*c^2*x^2)) - a*b*x*(1
2*b*B*x*(b + c*x) + A*(-5*b^2 + 62*b*c*x + 52*c^2*x^2))))/(x^2*Sqrt[a + x*(
b + c*x)]) + 3*(b^2 - 4*a*c)*(5*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b
*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])]])/(8*a^(7/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 2.71, size = 869, normalized size = 3.76

$$\Bigg[-\frac{3\left(\left(16\,Aa^{2}c^{3}+8\left(2\,Ba^{2}b-3\,Aab^{2}\right)c^{2}-\left(4\,Bab^{3}-5\,Ab^{4}\right)c\right)x^{4}-\left(4\,Bab^{4}-5\,Ab^{5}-16\,Aa^{2}bc^{2}-8\left(2\,Ba^{2}b^{2}-3\,A\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*((16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (4*B*a*b^3 - 5*A
*b^4)*c)*x^4 - (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8*(2*B*a^2*b^2 - 3*A
*a*b^3)*c)*x^3 - (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3
*A*a^2*b^2)*c)*x^2)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^
2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) + 4*(2*A*a^3*b^2 - 8*A*a^4*c
 - (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*x^3 + (12
*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)*c)*x
^2 + (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*x)*sqrt(c*x^2
+ b*x + a))/((a^4*b^2*c - 4*a^5*c^2)*x^4 + (a^4*b^3 - 4*a^5*b*c)*x^3 + (a^5
*b^2 - 4*a^6*c)*x^2), 1/8*(3*((16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2
 - (4*B*a*b^3 - 5*A*b^4)*c)*x^4 - (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8
*(2*B*a^2*b^2 - 3*A*a*b^3)*c)*x^3 - (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2
 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*x^2)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(2*A*a^3*b^2 - 8*A*
a^4*c - (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*x^3
+ (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)
*c)*x^2 + (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*x)*sqrt(c
*x^2 + b*x + a))/((a^4*b^2*c - 4*a^5*c^2)*x^4 + (a^4*b^3 - 4*a^5*b*c)*x^3 +
 (a^5*b^2 - 4*a^6*c)*x^2)]
```

giac [B] time = 0.26, size = 467, normalized size = 2.02

$$-\frac{2\left(\frac{\left(Ba^{4}b^{2}c-Aa^{3}b^{3}c-2\,Ba^{5}c^{2}+3\,Aa^{4}bc^{2}\right)x}{a^{6}b^{2}-4\,a^{7}c}+\frac{Ba^{4}b^{3}-Aa^{3}b^{4}-3\,Ba^{5}bc+4\,Aa^{4}b^{2}c-2\,Aa^{5}c^{2}}{a^{6}b^{2}-4\,a^{7}c}\right)}{\sqrt{cx^{2}+bx+a}}-\frac{3\left(4\,Bab-5\,Ab^{2}+4\,Aac\right)\arctan\left(-\frac{\sqrt{c}\,x-}{}\right.}{4\,\sqrt{-a}\,a^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*((B*a^4*b^2*c - A*a^3*b^3*c - 2*B*a^5*c^2 + 3*A*a^4*b*c^2)*x/(a^6*b^2 -
4*a^7*c) + (B*a^4*b^3 - A*a^3*b^4 - 3*B*a^5*b*c + 4*A*a^4*b^2*c - 2*A*a^5*c
^2)/(a^6*b^2 - 4*a^7*c))/sqrt(c*x^2 + b*x + a) - 3/4*(4*B*a*b - 5*A*b^2 + 4
*A*a*c)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^3
) + 1/4*(4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b - 7*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c
 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c) - 8*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*B*a^2*b + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c) + 16*A*a^2*b*sqrt(c))/(((
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a^3)
```

maple [B] time = 0.07, size = 506, normalized size = 2.19

$$\frac{13Ab\,c^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a^2}-\frac{15A\,b^3cx}{4\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a^3}-\frac{8B\,c^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;a}+\frac{3B\,b^2c}{\left(4ac-b^2\right)\sqrt{c\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/2*A/a/x^2/(c*x^2+b*x+a)^(1/2)+5/4*A/a^2*b/x/(c*x^2+b*x+a)^(1/2)+15/8*A/a
^3*b^2/(c*x^2+b*x+a)^(1/2)-15/4*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c
*x-15/8*A/a^3*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-15/8*A/a^(7/2)*b^2*ln((b*
x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+13*A/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)*x+13/2*A/a^2*b^2*c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*A*c/a^2/
(c*x^2+b*x+a)^(1/2)+3/2*A*c/a^(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/
2))/x)-B/a/x/(c*x^2+b*x+a)^(1/2)-3/2*B/a^2*b/(c*x^2+b*x+a)^(1/2)+3*B/a^2*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+3/2*B/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+
a)^(1/2)+3/2*B/a^(5/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-8*B*
c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4*B*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x**3*(a + b*x + c*x**2)**(3/2)), x)
```

3.969 $\int \frac{A+Bx}{x^4\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=317

$$-\frac{\left(6aB\left(5b^2-4ac\right)-A\left(35b^3-60abc\right)\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{16a^{9/2}}-\frac{\sqrt{a+bx+cx^2}\,\left(6aB\left(5b^2-12ac\right)-A\,(35b^3-1}{12a^3x^2\left(b^2-4ac\right)}$$

```
[Out] -1/16*(6*a*B*(-4*a*c+5*b^2)-A*(-60*a*b*c+35*b^3))*arctanh(1/2*(b*x+2*a)/a^(
1/2)/(c*x^2+b*x+a)^(1/2))/a^(9/2)+2*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a
/(-4*a*c+b^2)/x^3/(c*x^2+b*x+a)^(1/2)-1/3*(-16*A*a*c+7*A*b^2-6*B*a*b)*(c*x^
2+b*x+a)^(1/2)/a^2/(-4*a*c+b^2)/x^3-1/12*(6*a*B*(-12*a*c+5*b^2)-A*(-116*a*b
*c+35*b^3))*(c*x^2+b*x+a)^(1/2)/a^3/(-4*a*c+b^2)/x^2+1/24*(6*a*b*B*(-52*a*c
+15*b^2)-A*(256*a^2*c^2-460*a*b^2*c+105*b^4))*(c*x^2+b*x+a)^(1/2)/a^4/(-4*a
*c+b^2)/x
```

Rubi **[A]** time = 0.39, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,\left(6abB\left(15b^2-52ac\right)-A\left(256a^2c^2-460ab^2c+105b^4\right)\right)}{24a^4x\left(b^2-4ac\right)}-\frac{\sqrt{a+bx+cx^2}\,(-16aAc-6abB+7Ab^2}{3a^2x^3\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*x^3*Sqrt
[a + b*x + c*x^2]) - ((7*A*b^2 - 6*a*b*B - 16*a*A*c)*Sqrt[a + b*x + c*x^2])
/(3*a^2*(b^2 - 4*a*c)*x^3) - ((6*a*B*(5*b^2 - 12*a*c) - A*(35*b^3 - 116*a*b
*c))*Sqrt[a + b*x + c*x^2])/(12*a^3*(b^2 - 4*a*c)*x^2) + ((6*a*b*B*(15*b^2
- 52*a*c) - A*(105*b^4 - 460*a*b^2*c + 256*a^2*c^2))*Sqrt[a + b*x + c*x^2])
/(24*a^4*(b^2 - 4*a*c)*x) - ((6*a*B*(5*b^2 - 4*a*c) - A*(35*b^3 - 60*a*b*c)
)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])/(16*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{x^4\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{2\int\frac{\frac{1}{2}\left(-7Ab^2+6abB+16aAc\right)-3(Ab-2aB)cx}{x^4\sqrt{a+bx+cx^2}}\,dx}{a\left(b^2-4ac\right)}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3}\\
&= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)x^3\sqrt{a+bx+cx^2}}-\frac{\left(7Ab^2-6abB-16aAc\right)\sqrt{a+bx+cx^2}}{3a^2\left(b^2-4ac\right)x^3}
\end{aligned}
$$

Mathematica [A] time = 0.43, size = 294, normalized size = 0.93

$$
\frac{2\sqrt{a}\,(-16a^4c(2A+3Bx)+4a^3(2A(b^2+7bcx+16c^2x^2)+3Bx(b^2+10bcx-12c^2x^2))+2a^2x(A(-7b^3-86b^2cx+244bc^2x^2+128c^3x^3)+3bBx(-5b^2+62bcx+52}{x^3\sqrt{a+x(b+cx)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] ((2*Sqrt[a]*(-16*a^4*c*(2*A + 3*B*x) + 105*A*b^4*x^3*(b + c*x) + 4*a^3*(3*B
*x*(b^2 + 10*b*c*x - 12*c^2*x^2) + 2*A*(b^2 + 7*b*c*x + 16*c^2*x^2)) - 5*a*
b^2*x^2*(18*b*B*x*(b + c*x) + A*(-7*b^2 + 106*b*c*x + 92*c^2*x^2)) + 2*a^2*
x*(3*b*B*x*(-5*b^2 + 62*b*c*x + 52*c^2*x^2) + A*(-7*b^3 - 86*b^2*c*x + 244*
b*c^2*x^2 + 128*c^3*x^3))))/(x^3*Sqrt[a + x*(b + c*x)]) - 3*(b^2 - 4*a*c)*(
6*a*B*(-5*b^2 + 4*a*c) + 5*A*(7*b^3 - 12*a*b*c))*ArcTanh[(2*a + b*x)/(2*Sqr
t[a]*Sqrt[a + x*(b + c*x)])])/(48*a^(9/2)*(-b^2 + 4*a*c))
```

fricas [A] time = 4.69, size = 1093, normalized size = 3.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*((48*(2*B*a^3 - 5*A*a^2*b)*c^3 - 8*(18*B*a^2*b^2 - 25*A*a*b^3)*c^2
 + 5*(6*B*a*b^4 - 7*A*b^5)*c)*x^5 + (30*B*a*b^5 - 35*A*b^6 + 48*(2*B*a^3*b
- 5*A*a^2*b^2)*c^2 - 8*(18*B*a^2*b^3 - 25*A*a*b^4)*c)*x^4 + (30*B*a^2*b^4 -
 35*A*a*b^5 + 48*(2*B*a^4 - 5*A*a^3*b)*c^2 - 8*(18*B*a^3*b^2 - 25*A*a^2*b^3
)*c)*x^3)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2 + b*x +
a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(8*A*a^4*b^2 - 32*A*a^5*c + (256*A
*a^3*c^3 + 4*(78*B*a^3*b - 115*A*a^2*b^2)*c^2 - 15*(6*B*a^2*b^3 - 7*A*a*b^4
)*c)*x^4 - (90*B*a^2*b^4 - 105*A*a*b^5 + 8*(18*B*a^4 - 61*A*a^3*b)*c^2 - 2*
(186*B*a^3*b^2 - 265*A*a^2*b^3)*c)*x^3 - (30*B*a^3*b^3 - 35*A*a^2*b^4 - 128
*A*a^4*c^2 - 4*(30*B*a^4*b - 43*A*a^3*b^2)*c)*x^2 + 2*(6*B*a^4*b^2 - 7*A*a^
3*b^3 - 4*(6*B*a^5 - 7*A*a^4*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^2*c -
4*a^6*c^2)*x^5 + (a^5*b^3 - 4*a^6*b*c)*x^4 + (a^6*b^2 - 4*a^7*c)*x^3), 1/48
*(3*((48*(2*B*a^3 - 5*A*a^2*b)*c^3 - 8*(18*B*a^2*b^2 - 25*A*a*b^3)*c^2 + 5*
(6*B*a*b^4 - 7*A*b^5)*c)*x^5 + (30*B*a*b^5 - 35*A*b^6 + 48*(2*B*a^3*b - 5*A
*a^2*b^2)*c^2 - 8*(18*B*a^2*b^3 - 25*A*a*b^4)*c)*x^4 + (30*B*a^2*b^4 - 35*A
*a*b^5 + 48*(2*B*a^4 - 5*A*a^3*b)*c^2 - 8*(18*B*a^3*b^2 - 25*A*a^2*b^3)*c)*
x^3)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^
2 + a*b*x + a^2)) - 2*(8*A*a^4*b^2 - 32*A*a^5*c + (256*A*a^3*c^3 + 4*(78*B*
a^3*b - 115*A*a^2*b^2)*c^2 - 15*(6*B*a^2*b^3 - 7*A*a*b^4)*c)*x^4 - (90*B*a^
2*b^4 - 105*A*a*b^5 + 8*(18*B*a^4 - 61*A*a^3*b)*c^2 - 2*(186*B*a^3*b^2 - 26
5*A*a^2*b^3)*c)*x^3 - (30*B*a^3*b^3 - 35*A*a^2*b^4 - 128*A*a^4*c^2 - 4*(30*
B*a^4*b - 43*A*a^3*b^2)*c)*x^2 + 2*(6*B*a^4*b^2 - 7*A*a^3*b^3 - 4*(6*B*a^5
- 7*A*a^4*b)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^2*c - 4*a^6*c^2)*x^5 + (a
^5*b^3 - 4*a^6*b*c)*x^4 + (a^6*b^2 - 4*a^7*c)*x^3)]
```

giac [B] time = 0.28, size = 798, normalized size = 2.52

$$\frac{2\left(\frac{\left(Ba^{5}b^{3}c-Aa^{4}b^{4}c-3\,Ba^{6}bc^{2}+4\,Aa^{5}b^{2}c^{2}-2\,Aa^{6}c^{3}\right)x}{a^{8}b^{2}-4\,a^{9}c}+\frac{Ba^{5}b^{4}-Aa^{4}b^{5}-4\,Ba^{6}b^{2}c+5\,Aa^{5}b^{3}c+2\,Ba^{7}c^{2}-5\,Aa^{6}bc^{2}}{a^{8}b^{2}-4\,a^{9}c}\right)}{\sqrt{cx^{2}+bx+a}}+(30\,Bab^{2}-35\,Ab^{3}-24\,B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*a^5*b^3*c - A*a^4*b^4*c - 3*B*a^6*b*c^2 + 4*A*a^5*b^2*c^2 - 2*A*a^6*c
^3)*x/(a^8*b^2 - 4*a^9*c) + (B*a^5*b^4 - A*a^4*b^5 - 4*B*a^6*b^2*c + 5*A*a^
5*b^3*c + 2*B*a^7*c^2 - 5*A*a^6*b*c^2)/(a^8*b^2 - 4*a^9*c))/sqrt(c*x^2 + b*
x + a) + 1/8*(30*B*a*b^2 - 35*A*b^3 - 24*B*a^2*c + 60*A*a*b*c)*arctan(-(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) - 1/24*(42*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^5*B*a*b^2 - 57*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^5*A*b^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c + 84*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*B*a^2*b*sqrt(c) - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a*b^2*
sqrt(c) + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a^2*c^(3/2) - 96*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2 + 136*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^3*A*a*b^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a^2*b*c -
 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c) + 144*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^2*A*a^2*b^2*sqrt(c) - 192*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^2*A*a^3*c^(3/2) + 54*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3
*b^2 - 87*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3 + 24*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*B*a^4*c - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^
3*b*c + 96*B*a^4*b*sqrt(c) - 144*A*a^3*b^2*sqrt(c) + 80*A*a^4*c^(3/2))/(((s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)^3*a^4)
```

maple [**B**] time = 0.07, size = 708, normalized size = 2.23

$$\frac{32 A\,c^{3} x}{3\left(4 a c-b^{2}\right) \sqrt{c\,x^{2}+b x+a}\;a^{2}}-\frac{115 A\,b^{2} c^{2} x}{6\left(4 a c-b^{2}\right) \sqrt{c\,x^{2}+b x+a}\;a^{3}}+\frac{35 A\,b^{4} c x}{8\left(4 a c-b^{2}\right) \sqrt{c\,x^{2}+b x+a}\;a^{4}}+\frac{13}{\left(4 a c-b^{2}\right) \sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/3*A/a/x^3/(c*x^2+b*x+a)^(1/2)+7/12*A/a^2*b/x^2/(c*x^2+b*x+a)^(1/2)-35/24
*A/a^3*b^2/x/(c*x^2+b*x+a)^(1/2)-35/16*A/a^4*b^3/(c*x^2+b*x+a)^(1/2)+35/8*A
/a^4*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+35/16*A/a^4*b^5/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)+35/16*A/a^(9/2)*b^3*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(
1/2))/x)-115/6*A/a^3*b^2*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-115/12*A/a^3
*b^3*c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+15/4*A/a^3*b*c/(c*x^2+b*x+a)^(1/2)-1
5/4*A/a^(7/2)*b*c*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+4/3*A*c/a^2
/x/(c*x^2+b*x+a)^(1/2)+32/3*A*c^3/a^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+16/
3*A*c^2/a^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*b-1/2*B/a/x^2/(c*x^2+b*x+a)^(1/
2)+5/4*B/a^2*b/x/(c*x^2+b*x+a)^(1/2)+15/8*B/a^3*b^2/(c*x^2+b*x+a)^(1/2)-15/
4*B/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x-15/8*B/a^3*b^4/(4*a*c-b^2)/
(c*x^2+b*x+a)^(1/2)-15/8*B/a^(7/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^
(1/2))/x)+13*B/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+13/2*B/a^2*b^2*c
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/2*B*c/a^2/(c*x^2+b*x+a)^(1/2)+3/2*B*c/a^
(5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^4/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^4\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/(x^4*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**4/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.970 $\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=285

$$-\frac{2x\left(x\left(32a^2Bc^2+16aAbc^2-32ab^2Bc-2Ab^3c+5b^4B\right)+a\left(24aAc^2-28abBc-2Ab^2c+5b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\sqrt{a+bx}$$

```
[Out] -2/3*x^3*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*
x+a)^(3/2)-1/2*(-2*A*c+5*B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(
1/2))/c^(7/2)-2/3*x*(a*(24*A*a*c^2-2*A*b^2*c-28*B*a*b*c+5*B*b^3)+(16*A*a*b*
c^2-2*A*b^3*c+32*B*a^2*c^2-32*B*a*b^2*c+5*B*b^4)*x)/c^2/(-4*a*c+b^2)^2/(c*x
^2+b*x+a)^(1/2)+1/3*(40*A*a*b*c^2-6*A*b^3*c+128*B*a^2*c^2-100*B*a*b^2*c+15*
B*b^4)*(c*x^2+b*x+a)^(1/2)/c^3/(-4*a*c+b^2)^2
```

Rubi [A] time = 0.27, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {818, 640, 621, 206}

$$-\frac{2x\left(x\left(32a^2Bc^2+16aAbc^2-32ab^2Bc-2Ab^3c+5b^4B\right)+a\left(24aAc^2-28abBc-2Ab^2c+5b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\sqrt{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[(x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^3*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)
*(a + b*x + c*x^2)^(3/2)) - (2*x*(a*(5*b^3*B - 2*A*b^2*c - 28*a*b*B*c + 24*
a*A*c^2) + (5*b^4*B - 2*A*b^3*c - 32*a*b^2*B*c + 16*a*A*b*c^2 + 32*a^2*B*c^
2)*x))/(3*c^2*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2]) + ((15*b^4*B - 6*A*b^3
*c - 100*a*b^2*B*c + 40*a*A*b*c^2 + 128*a^2*B*c^2)*Sqrt[a + b*x + c*x^2])/(
3*c^3*(b^2 - 4*a*c)^2) - ((5*b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^4(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\int\frac{x^2\left(3a(bB-2Ac)+\frac{1}{2}\left(5b^2B-2Abc-16aBc\right)x\right)}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3c\left(b^2-4ac\right)}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2x\,(a\,(5b^3B-2Ab^2c-28abBc+24aA}{3c^2\,(b}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2x\,(a\,(5b^3B-2Ab^2c-28abBc+24aA}{3c^2\,(b}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2x\,(a\,(5b^3B-2Ab^2c-28abBc+24aA}{3c^2\,(b}$$

$$= -\frac{2x^3\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2x\,(a\,(5b^3B-2Ab^2c-28abBc+24aA}{3c^2\,(b}$$

Mathematica [A] time = 0.79, size = 414, normalized size = 1.45

$$2\left(\frac{x^5\left(A\left(16a^2c^2-28ab^2c-20abc^2x+7b^4+7b^3cx\right)+2aB\left(16abc+12ac^2x-5b^3-5b^2cx\right)\right)}{a\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}+\frac{3a^2\left(b^2-4ac\right)^2(5bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}\,\sqrt{a+x(b}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*((x^5*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))^
(3/2) + (x^5*(2*a*B*(-5*b^3 + 16*a*b*c - 5*b^2*c*x + 12*a*c^2*x) + A*(7*b^4
 - 28*a*b^2*c + 16*a^2*c^2 + 7*b^3*c*x - 20*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*
Sqrt[a + x*(b + c*x)]) + (-2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(128*a^4*B*c^2 +
 14*A*b^3*c^3*x^4 - 4*a*b*c^3*x^3*(4*A*b + 5*b*B*x + 10*A*c*x) + a^2*(15*b^
4*B + 16*b*c^3*x^2*(A + B*x) + 4*b^2*c^2*x*(A + 2*B*x) + 16*c^4*x^3*(2*A +
3*B*x) - 2*b^3*c*(3*A + 5*B*x)) - 4*a^3*c*(25*b^2*B + 4*c^2*x*(3*A + 4*B*x)
 - 2*b*c*(5*A + 7*B*x))) + 3*a^2*(b^2 - 4*a*c)^2*(5*b*B - 2*A*c)*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*a*c^(7/2)*(-b^2 + 4*a*c)))
)/(3*a*(b^2 - 4*a*c))
```

fricas [B] time = 3.47, size = 1601, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*(5*B*a^2*b^5 - 32*A*a^4*c^3 + (5*B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5
*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*x^4 + 2*(5*B*b^6*c -
32*A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^
2)*x^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 + (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B
*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*x^2 - 2*(20*B*a^3*b^3
 + A*a^2*b^4)*c + 2*(5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b
^3)*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x
 - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(15*B*a^2
*b^4*c + 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*x^4 + 8*(16*B*a^4 + 5
*A*a^3*b)*c^3 + 4*(5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*
c^4 - (37*B*a*b^3 + 2*A*b^4)*c^3)*x^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2
+ 3*(5*B*b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a
*b^4 + A*b^5)*c^2)*x^2 + 6*(5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A
*a^2*b^2)*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(
a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*
c^8)*x^4 + 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^
4*c^5 + 32*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x),
1/6*(3*(5*B*a^2*b^5 - 32*A*a^4*c^3 + (5*B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5*B*
a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*x^4 + 2*(5*B*b^6*c - 32*
A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^2)*
x^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 + (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B*a^
3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*x^2 - 2*(20*B*a^3*b^3 +
A*a^2*b^4)*c + 2*(5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)
*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(15*B*a^2*b^4*c +
3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*x^4 + 8*(16*B*a^4 + 5*A*a^3*b)
*c^3 + 4*(5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*c^4 - (37
*B*a*b^3 + 2*A*b^4)*c^3)*x^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2 + 3*(5*B*
b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*
b^5)*c^2)*x^2 + 6*(5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A*a^2*b^2)
*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c
^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*x^4
+ 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^4*c^5 + 3
2*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x)]
```

giac [A] time = 0.29, size = 458, normalized size = 1.61

$$\frac{\left(\left(\left(\frac{3\left(Bb^4c^2-8\,Bab^2c^3+16\,Ba^2c^4\right)x}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}+\frac{4\left(5\,Bb^5c-37\,Bab^3c^2-2\,Ab^4c^2+64\,Ba^2bc^3+14\,Aab^2c^3-16\,Aa^2c^4\right)}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}\right)x+\frac{3\left(5\,Bb^6-30\,Bab^4c-2\,Ab^5c+16\,Ba^2\right.}{b^4c^3-8\,ab^2c^4+}\right.\right.}{3\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*(B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*x/(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5) + 4*(5*B*b^5*c - 37*B*a*b^3*c^2 - 2*A*b^4*c^2 + 64*B*a^2*b
*c^3 + 14*A*a*b^2*c^3 - 16*A*a^2*c^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))
*x + 3*(5*B*b^6 - 30*B*a*b^4*c - 2*A*b^5*c + 16*B*a^2*b^2*c^2 + 12*A*a*b^3*
c^2 + 64*B*a^3*c^3)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x + 6*(5*B*a*b^5
- 35*B*a^2*b^3*c - 2*A*a*b^4*c + 52*B*a^3*b*c^2 + 14*A*a^2*b^2*c^2 - 8*A*a^
3*c^3)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x + (15*B*a^2*b^4 - 100*B*a^3*
b^2*c - 6*A*a^2*b^3*c + 128*B*a^4*c^2 + 40*A*a^3*b*c^2)/(b^4*c^3 - 8*a*b^2*
c^4 + 16*a^2*c^5))/(c*x^2 + b*x + a)^(3/2) + 1/2*(5*B*b - 2*A*c)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 1262, normalized size = 4.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 4*B*a^2/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-38/3*B*b^3/c^2*a/(4*a*c-b^2
)^2/(c*x^2+b*x+a)^(1/2)*x+1/2*A*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x
+4*A*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+32*B*a^2/c*b/(4*a*c-b^2)^2
/(c*x^2+b*x+a)^(1/2)*x-19/12*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-
5/4*B*b^4/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+A/c^(5/2)*ln((c*x+1/2*b)/c^(1
/2)+(c*x^2+b*x+a)^(1/2))+B*x^4/c/(c*x^2+b*x+a)^(3/2)-1/3*A*x^3/c/(c*x^2+b*x
+a)^(3/2)-1/48*A*b^3/c^4/(c*x^2+b*x+a)^(3/2)-A/c^2*x/(c*x^2+b*x+a)^(1/2)+1/
2*A/c^3*b/(c*x^2+b*x+a)^(1/2)-1/3*A*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*x-1/24*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/6*B*b^5/c^3/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x+B*a/c^3*b*x/(c*x^2+b*x+a)^(3/2)+2*B*a^2/c^3*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-5/2*B*b^3/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)*x-19/24*B*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-19/3*B*b^4/c^3*a/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/4*A*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^
(3/2)+2*A*b^3/c^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+A/c^2*b^2/(4*a*c-b^2)
/(c*x^2+b*x+a)^(1/2)*x+5/6*B*b/c^2*x^3/(c*x^2+b*x+a)^(3/2)+8/3*B*a^2/c^3/(c
*x^2+b*x+a)^(3/2)+5/96*B*b^4/c^5/(c*x^2+b*x+a)^(3/2)-5/4*B*b^2/c^4/(c*x^2+b
*x+a)^(1/2)-5/2*B*b/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+16*
B*a^2/c^2*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+5/48*B*b^5/c^4/(4*a*c-b^2)/
(c*x^2+b*x+a)^(3/2)*x-5/4*B*b^2/c^3*x^2/(c*x^2+b*x+a)^(3/2)+4*B*a/c^2*x^2/(
c*x^2+b*x+a)^(3/2)-5/16*B*b^3/c^4*x/(c*x^2+b*x+a)^(3/2)+5/96*B*b^6/c^5/(4*a
*c-b^2)/(c*x^2+b*x+a)^(3/2)+5/12*B*b^6/c^4/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)-B*b^2/c^4*a/(c*x^2+b*x+a)^(3/2)+5/2*B*b/c^3*x/(c*x^2+b*x+a)^(1/2)+1/3*A*b
/c^3*a/(c*x^2+b*x+a)^(3/2)+1/8*A*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)-1/48*A*b^5/c
^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*A*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a
)^(1/2)+1/2*A/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+1/2*A*b/c^2*x^2/(c*x^
2+b*x+a)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^4*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{x^4\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^4*(A + B*x))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**4*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.971 $\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=189

$$-\frac{2\left(x\left(24a^2Bc^2+8aAbc^2-22ab^2Bc+3b^4B\right)+a\left(16aAc^2-20abBc+3b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(}{3c\left(b^2-4ac\right)\left(a+bx+cx\right.}$$

```
[Out] -2/3*x^2*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*
x+a)^(3/2)+B*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-2/3
*(a*(16*A*a*c^2-20*B*a*b*c+3*B*b^3)+(8*A*a*b*c^2+24*B*a^2*c^2-22*B*a*b^2*c+
3*B*b^4)*x)/c^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{818, 777, 621, 206\}$

$$-\frac{2\left(x\left(24a^2Bc^2+8aAbc^2-22ab^2Bc+3b^4B\right)+a\left(16aAc^2-20abBc+3b^3B\right)\right)}{3c^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2\left(x\left(-2aBc-Abc+b^2B\right)+a(}{3c\left(b^2-4ac\right)\left(a+bx+cx\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)
*(a + b*x + c*x^2)^(3/2)) - (2*(a*(3*b^3*B - 20*a*b*B*c + 16*a*A*c^2) + (3*
b^4*B - 22*a*b^2*B*c + 8*a*A*b*c^2 + 24*a^2*B*c^2)*x))/(3*c^2*(b^2 - 4*a*c)
^2*Sqrt[a + b*x + c*x^2]) + (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x
+ c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{x^3(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\int \frac{x\left(2a(bB-2Ac)+\frac{3}{2}B\left(b^2-4ac\right)x\right)}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3c\left(b^2-4ac\right)}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+(3\right.}{3c^2\left(b^2-4ac\right.}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+(3\right.}{3c^2\left(b^2-4ac\right.}$$

$$= -\frac{2x^2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(a\left(3b^3B-20abBc+16aAc^2\right)+(3\right.}{3c^2\left(b^2-4ac\right.}$$

Mathematica [**A**] time = 0.39, size = 201, normalized size = 1.06

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{5/2}}-\frac{2\left(4a^3c(4Ac-5bB+6Bcx)+a^2\left(24Abc^2x+8c^3x^2(3A+4Bx)+3b^3B-42b^2Bcx\right)\right.}{3c^2\left(b^2-4ac\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(4*a^3*c*(-5*b*B + 4*A*c + 6*B*c*x) + b^3*x^2*(3*b^2*B + 4*b*B*c*x - A*
c^2*x) + 2*a*b*x*(3*b^3*B - 9*b^2*B*c*x + 6*A*c^3*x^2 + b*c^2*x*(3*A - 14*B
*x)) + a^2*(3*b^3*B - 42*b^2*B*c*x + 24*A*b*c^2*x + 8*c^3*x^2*(3*A + 4*B*x)
)))/(3*c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) + (B*ArcTanh[(b + 2*c*x
)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/c^(5/2)
```

fricas [**B**] time = 3.65, size = 1061, normalized size = 5.61

$$\left[\frac{3\left(Ba^2b^4-8\,Ba^3b^2c+16\,Ba^4c^2+\left(Bb^4c^2-8\,Bab^2c^3+16\,Ba^2c^4\right)x^4+2\left(Bb^5c-8\,Bab^3c^2+16\,Ba^2bc^3\right)x^3+(B\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2 + (B*b^4*c^2 - 8*B*a*b^2*
c^3 + 16*B*a^2*c^4)*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*x^3
+ (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 1
6*B*a^3*b*c^2)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b
*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(3*B*a^2*b^3*c - 20*B*a^3*b*c^2 +
16*A*a^3*c^3 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b^2 + A*b
^3)*c^3)*x^3 + 3*(B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2*c^4)*x^
2 + 6*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*x)*sqrt(c*x^2
 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2
*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^
6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a
^3*b*c^5)*x), -1/3*(3*(B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2 + (B*b^4*c^
2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a
^2*b*c^3)*x^3 + (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*x^2 + 2*(B*a*b^5 - 8*B
*a^2*b^3*c + 16*B*a^3*b*c^2)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(
2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(3*B*a^2*b^3*c - 20*B*a^3*
b*c^2 + 16*A*a^3*c^3 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b
^2 + A*b^3)*c^3)*x^3 + 3*(B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2
*c^4)*x^2 + 6*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*x)*sq
rt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 -
 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x
^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^
4 + 16*a^3*b*c^5)*x)]
```

giac [A] time = 0.28, size = 314, normalized size = 1.66

$$-\frac{2\left(\left(\left(\frac{\left(4\,Bb^4c-28\,Bab^2c^2-Ab^3c^2+32\,Ba^2c^3+12\,Aabc^3\right)x}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}+\frac{3\left(Bb^5-6\,Bab^3c+2\,Aab^2c^2+8\,Aa^2c^3\right)}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}\right)x+\frac{6\left(Bab^4-7\,Ba^2b^2c+4\,Ba^3c^2+4\,Aa^2bc^2\right)}{b^4c^2-8\,ab^2c^3+16\,a^2c^4}\right)x+\right.\right.}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((((4*B*b^4*c - 28*B*a*b^2*c^2 - A*b^3*c^2 + 32*B*a^2*c^3 + 12*A*a*b*c
^3)*x/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4) + 3*(B*b^5 - 6*B*a*b^3*c + 2*A*a
*b^2*c^2 + 8*A*a^2*c^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x + 6*(B*a*b^
4 - 7*B*a^2*b^2*c + 4*B*a^3*c^2 + 4*A*a^2*b*c^2)/(b^4*c^2 - 8*a*b^2*c^3 + 1
6*a^2*c^4))*x + (3*B*a^2*b^3 - 20*B*a^3*b*c + 16*A*a^3*c^2)/(b^4*c^2 - 8*a*
b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2) - B*log(abs(-2*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 860, normalized size = 4.55

$$-\frac{8Aabx}{\left(4ac-b^2\right)^2\sqrt{c\,x^2+bx+a}}+\frac{2A\,b^3x}{3\left(4ac-b^2\right)^2\sqrt{c\,x^2+bx+a}\;c}+\frac{4Ba\,b^2x}{\left(4ac-b^2\right)^2\sqrt{c\,x^2+bx+a}\;c}-\frac{B\,b^4x}{3\left(4ac-b^2\right)^2\sqrt{c\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 1/2*B/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-1/4*A*b/c^2*x/(c*x^2+b*x+a)^(
3/2)-4*A*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+2/3*A*b^3/c/(4*a*c-b^2)^
2/(c*x^2+b*x+a)^(1/2)*x+4*B*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-A*b
/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+1/2*B*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*x+1/2*B/c^3*b/(c*x^2+b*x+a)^(1/2)-1/3*B*x^3/c/(c*x^2+b*x+a)^(3/
2)-1/48*B*b^3/c^4/(c*x^2+b*x+a)^(3/2)-B/c^2*x/(c*x^2+b*x+a)^(1/2)-A*x^2/c/(
c*x^2+b*x+a)^(3/2)-2/3*A*a/c^2/(c*x^2+b*x+a)^(3/2)+1/24*A*b^2/c^3/(c*x^2+b*
x+a)^(3/2)+B/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/12*A*b^3
/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+B/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^
```

```
(1/2)*x+1/4*B*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+2*B*b^3/c^2*a/(4*a*
c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/8*B*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)+1/2*B*b/c^
2*x^2/(c*x^2+b*x+a)^(3/2)+1/24*A*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+1/
3*A*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-1/2*A*b^2/c^2*a/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)-8*A*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-1/24*B*b^4/c
^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-1/3*B*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x
+a)^(1/2)*x-1/48*B*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*B*b^5/c^3/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/3*B*b/c^3*a/(c*x^2+b*x+a)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{x^3\,\left(A+B\,x\right)}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((x^3*(A + B*x))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.972 $\int \frac{x^2(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=94

$$\frac{8(2a+bx)(Ab-2aB)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*x^2*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)+8/3*(A
*b-2*B*a)*(b*x+2*a)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {804, 636}

$$\frac{8(2a+bx)(Ab-2aB)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2x^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*x^2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)
^(3/2)) + (8*(A*b - 2*a*B)*(2*a + b*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c
*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x^2(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2x^2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(Ab-2aB))\int \frac{x}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3\left(b^2-4ac\right)}\\ &= -\frac{2x^2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{8(Ab-2aB)(2a+bx)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.25, size = 110, normalized size = 1.17

$$\frac{2\Big(-16a^3B+8a^2(Ab-3Bx(b+cx))+2ax\left(A\left(6b^2+6bcx+4c^2x^2\right)-3bBx(b+2cx)\right)+b^2x^2(3Ab+2Acx+bBx)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(-16*a^3*B + b^2*x^2*(3*A*b + b*B*x + 2*A*c*x) + 8*a^2*(A*b - 3*B*x*(b +
 c*x)) + 2*a*x*(-3*b*B*x*(b + 2*c*x) + A*(6*b^2 + 6*b*c*x + 4*c^2*x^2))))/(
3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 2.85, size = 248, normalized size = 2.64

$$-\frac{2\,\big(16\,Ba^3-8\,Aa^2b-\big(Bb^3+8\,Aac^2-2\,\big(6\,Bab-Ab^2\big)c\big)x^3+3\,\big(2\,Bab^2-Ab^3+4\,\big(2\,Ba^2-Aab\big)c\big)x^2+}{3\,\big(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\big(b^4c^2-8\,ab^2c^3+16\,a^2c^4\big)x^4+2\,\big(b^5c-8\,ab^3c^2+16\,a^2bc^3\big)x^3+\big(b^6-6\,ab^4c+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(16*B*a^3 - 8*A*a^2*b - (B*b^3 + 8*A*a*c^2 - 2*(6*B*a*b - A*b^2)*c)*x^
3 + 3*(2*B*a*b^2 - A*b^3 + 4*(2*B*a^2 - A*a*b)*c)*x^2 + 12*(2*B*a^2*b - A*a
*b^2)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c
^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)
*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3
*b*c^2)*x)
```

giac [B] time = 0.26, size = 195, normalized size = 2.07

$$\frac{2\,\left(\left(\left(\frac{\left(Bb^3-12\,Babc+2\,Ab^2c+8\,Aac^2\right)x}{b^4-8\,ab^2c+16\,a^2c^2}-\frac{3\,\left(2\,Bab^2-Ab^3+8\,Ba^2c-4\,Aabc\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x-\frac{12\,\left(2\,Ba^2b-Aab^2\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)x-\frac{8\,\left(2\,Ba^3-Aa^2b\right)}{b^4-8\,ab^2c+16\,a^2c^2}\right)}{3\,\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((B*b^3 - 12*B*a*b*c + 2*A*b^2*c + 8*A*a*c^2)*x/(b^4 - 8*a*b^2*c + 16
*a^2*c^2) - 3*(2*B*a*b^2 - A*b^3 + 8*B*a^2*c - 4*A*a*b*c)/(b^4 - 8*a*b^2*c
+ 16*a^2*c^2))*x - 12*(2*B*a^2*b - A*a*b^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))
*x - 8*(2*B*a^3 - A*a^2*b)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a
)^(3/2)
```

maple [A] time = 0.06, size = 141, normalized size = 1.50

$$\frac{\frac{16}{3}Aa\,c^2x^3+\frac{4}{3}A\,b^2c\,x^3-8Babc\,x^3+\frac{2}{3}B\,b^3x^3+8Aabc\,x^2+2A\,b^3x^2-16B\,a^2c\,x^2-4Ba\,b^2x^2+8Aa\,b^2x-16B}{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}\left(16a^2c^2-8a\,b^2c+b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(8*A*a*c^2*x^3+2*A*b^2*c*x^3-12*B*a*b*c*x^3+B*b^3*x
^3+12*A*a*b*c*x^2+3*A*b^3*x^2-24*B*a^2*c*x^2-6*B*a*b^2*x^2+12*A*a*b^2*x-24*
B*a^2*b*x+8*A*a^2*b-16*B*a^3)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.73, size = 131, normalized size = 1.39

$$\frac{2 \left(-16\,B\,a^3-24\,B\,a^2\,b\,x+8\,A\,a^2\,b-24\,B\,a^2\,c\,x^2-6\,B\,a\,b^2\,x^2+12\,A\,a\,b^2\,x-12\,B\,a\,b\,c\,x^3+12\,A\,a\,b\,c\,x^2+8\,A\,a\right.}{3\,{\left(4\,a\,c-b^2\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^2*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*A*b^3*x^2 - 16*B*a^3 + B*b^3*x^3 + 8*A*a^2*b + 12*A*a*b^2*x - 24*B*a^
2*b*x - 6*B*a*b^2*x^2 + 8*A*a*c^2*x^3 - 24*B*a^2*c*x^2 + 2*A*b^2*c*x^3 + 12
*A*a*b*c*x^2 - 12*B*a*b*c*x^3))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.973 $\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=114

$$\frac{2(b+2cx)\left(4aBc-4Abc+b^2B\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)
^(3/2)+2/3*(-4*A*b*c+4*B*a*c+B*b^2)*(2*c*x+b)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a
)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(4aBc-4Abc+b^2B\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(3*c*(b^2 - 4*a*c)*(a
+ b*x + c*x^2)^(3/2)) + (2*(b^2*B - 4*A*b*c + 4*a*B*c)*(b + 2*c*x))/(3*c*(b
^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{x(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{\left(b^2B-4Abc+4aBc\right)\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3c\left(b^2-4ac\right)}\\ &= -\frac{2\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\left(b^2B-4Abc+4aBc\right)(b+2cx)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.17, size = 114, normalized size = 1.00

$$\frac{2 (8a^2(bB-Ac)-2aAb(b+6cx)+4aBx (3b^2+3bcx+2c^2x^2)+bx (bBx(3b+2cx)-A (3b^2+12bcx+8c^2x^2}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(8*a^2*(b*B - A*c) - 2*a*A*b*(b + 6*c*x) + 4*a*B*x*(3*b^2 + 3*b*c*x + 2*
c^2*x^2) + b*x*(b*B*x*(3*b + 2*c*x) - A*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(
3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 2.84, size = 244, normalized size = 2.14

$$\frac{2 (8 Ba^2b - 2 Aab^2 - 8 Aa^2c + 2 (Bb^2c + 4 (Ba - Ab)c^2)x^3 + 3 (Bb^3 + 4 (Bab - Ab^2)c)x^2 + 3 (4 Bab^2 - A}{3 (a^2b^4 - 8 a^3b^2c + 16 a^4c^2 + (b^4c^2 - 8 ab^2c^3 + 16 a^2c^4)x^4 + 2 (b^5c - 8 ab^3c^2 + 16 a^2bc^3)x^3 + (b^6 - 6 ab^4c + 32 a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(8*B*a^2*b - 2*A*a*b^2 - 8*A*a^2*c + 2*(B*b^2*c + 4*(B*a - A*b)*c^2)*x^
3 + 3*(B*b^3 + 4*(B*a*b - A*b^2)*c)*x^2 + 3*(4*B*a*b^2 - A*b^3 - 4*A*a*b*c)
*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 -
8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3
+ (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^
2)*x)
```

giac [A] time = 0.25, size = 196, normalized size = 1.72

$$\frac{2 \left(\left(\left(\frac{2 \left(Bb^2c+4 Bac^2-4 Abc^2\right)x}{b^4-8 ab^2c+16 a^2c^2} + \frac{3 \left(Bb^3+4 Babc-4 Ab^2c\right)}{b^4-8 ab^2c+16 a^2c^2}\right)x + \frac{3 \left(4 Bab^2-Ab^3-4 Aabc\right)}{b^4-8 ab^2c+16 a^2c^2}\right)x + \frac{2 \left(4 Ba^2b-Aab^2-4 Aa^2c\right)}{b^4-8 ab^2c+16 a^2c^2}\right)}{3 \left(cx^2 + bx + a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(((2*(B*b^2*c + 4*B*a*c^2 - 4*A*b*c^2)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2)
 + 3*(B*b^3 + 4*B*a*b*c - 4*A*b^2*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*
(4*B*a*b^2 - A*b^3 - 4*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 2*(4*B*
a^2*b - A*a*b^2 - 4*A*a^2*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.05, size = 138, normalized size = 1.21

$$-\frac{2 (8Ab c^2x^3 - 8Ba c^2x^3 - 2B b^2c x^3 + 12A b^2c x^2 - 12Babc x^2 - 3B b^3x^2 + 12Aabcx + 3A b^3x - 12Ba b^2x + 8A a}{3 \left(c x^2 + bx + a\right)^{\frac{3}{2}} \left(16a^2c^2 - 8a b^2c + b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(8*A*b*c^2*x^3-8*B*a*c^2*x^3-2*B*b^2*c*x^3+12*A*b^
2*c*x^2-12*B*a*b*c*x^2-3*B*b^3*x^2+12*A*a*b*c*x+3*A*b^3*x-12*B*a*b^2*x+8*A*
a^2*c+2*A*a*b^2-8*B*a^2*b)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.57, size = 128, normalized size = 1.12

$$\frac{2\left(8\,B\,a^2\,b-8\,A\,a^2\,c+12\,B\,a\,b^2\,x-2\,A\,a\,b^2+12\,B\,a\,b\,c\,x^2-12\,A\,a\,b\,c\,x+8\,B\,a\,c^2\,x^3+3\,B\,b^3\,x^2-3\,A\,b^3\,x+}{3\,{\left(4\,a\,c-b^2\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*B*b^3*x^2 - 2*A*a*b^2 - 8*A*a^2*c + 8*B*a^2*b - 3*A*b^3*x + 12*B*a*b^
2*x - 12*A*b^2*c*x^2 - 8*A*b*c^2*x^3 + 8*B*a*c^2*x^3 + 2*B*b^2*c*x^3 - 12*A
*a*b*c*x + 12*B*a*b*c*x^2))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.974 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=90

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)-8/3*(-2*A*
c+B*b)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (8*(b*B - 2*A*c)*(b + 2*c*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3\left(b^2-4ac\right)}\\ &= -\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 99, normalized size = 1.10

$$-\frac{2\left(B\left(8a^2c+2ab(b+6cx)+bx\left(3b^2+12bcx+8c^2x^2\right)\right)+A(b+2cx)\left(-4c\left(3a+2cx^2\right)+b^2-8bcx\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b + 2*c*x)*(b^2 - 8*b*c*x - 4*c*(3*a + 2*c*x^2)) + B*(8*a^2*c + 2*a
*b*(b + 6*c*x) + b*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(3*(b^2 - 4*a*c)^2*(
a + x*(b + c*x))^(3/2))
```

fricas [B] time = 2.81, size = 245, normalized size = 2.72

$$-\frac{2\left(2\,Bab^{2}+Ab^{3}+8\left(Bbc^{2}-2\,Ac^{3}\right)x^{3}+12\left(Bb^{2}c-2\,Abc^{2}\right)x^{2}+4\left(2\,Ba^{2}-3\,Aab\right)c+3\left(Bb^{3}-8\,Aac^{2}-\right.\right.}{3\left(a^{2}b^{4}-8\,a^{3}b^{2}c+16\,a^{4}c^{2}+\left(b^{4}c^{2}-8\,ab^{2}c^{3}+16\,a^{2}c^{4}\right)x^{4}+2\left(b^{5}c-8\,ab^{3}c^{2}+16\,a^{2}bc^{3}\right)x^{3}+\left(b^{6}-6\,ab^{4}c+3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*B*a*b^2 + A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c
^2)*x^2 + 4*(2*B*a^2 - 3*A*a*b)*c + 3*(B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b
^2)*c)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*
c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^
3*b*c^2)*x)
```

giac [B] time = 0.31, size = 193, normalized size = 2.14

$$-\frac{2\left(\left(4\left(\frac{2\left(Bbc^{2}-2\,Ac^{3}\right)x}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}+\frac{3\left(Bb^{2}c-2\,Abc^{2}\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{3\left(Bb^{3}+4\,Babc-2\,Ab^{2}c-8\,Aac^{2}\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{2\,Bab^{2}+Ab^{3}+8\,Ba^{2}c-12\,Aabc}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*(2*(B*b*c^2 - 2*A*c^3)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(B*b^2
*c - 2*A*b*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3 + 4*B*a*b*c -
2*A*b^2*c - 8*A*a*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2 + A*b
^3 + 8*B*a^2*c - 12*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.06, size = 132, normalized size = 1.47

$$\frac{\frac{32}{3}A\,c^{3}x^{3}-\frac{16}{3}Bb\,c^{2}x^{3}+16Ab\,c^{2}x^{2}-8B\,b^{2}c\,x^{2}+16Aa\,c^{2}x+4A\,b^{2}cx-8Babcx-2B\,b^{3}x+8Aabc-\frac{2}{3}A\,b^{3}-}{\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}\left(16a^{2}c^{2}-8a\,b^{2}c+b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(16*A*c^3*x^3-8*B*b*c^2*x^3+24*A*b*c^2*x^2-12*B*b^2
*c*x^2+24*A*a*c^2*x+6*A*b^2*c*x-12*B*a*b*c*x-3*B*b^3*x+12*A*a*b*c-A*b^3-8*B
*a^2*c-2*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 1.52, size = 121, normalized size = 1.34

$$-\frac{2\left(8Ba^2c+2Bab^2+12Babcx-12Aabc-24Aac^2x+3Bb^3x+Ab^3+12Bb^2cx^2-6Ab^2cx+8Bbc\right.}{3\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 2*B*a*b^2 + 8*B*a^2*c + 3*B*b^3*x - 24*A*a*c^2*
x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B*b^2*c*x^2 + 8*B*b*c^2*x^3 - 12*A*a*
b*c + 12*B*a*b*c*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.975 $\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=184

$$-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{5/2}}+\frac{2\left(cx\left(16a^2Bc-20aAbc+3Ab^3\right)+A\left(24a^2c^2-22ab^2c+3b^4\right)+8a^2bBc\right)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(cx\right.}{3}$$

```
[Out] 2/3*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2
)-A*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^(5/2)+2/3*(8*a^2*b
*B*c+A*(24*a^2*c^2-22*a*b^2*c+3*b^4)+c*(-20*A*a*b*c+3*A*b^3+16*B*a^2*c)*x)/
a^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx\left(16a^2Bc-20aAbc+3Ab^3\right)+A\left(24a^2c^2-22ab^2c+3b^4\right)+8a^2bBc\right)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{a^{5/2}}+\frac{2\left(cx(A\right.}{3a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*(a + b
*x + c*x^2)^(3/2)) + (2*(8*a^2*b*B*c + A*(3*b^4 - 22*a*b^2*c + 24*a^2*c^2)
+ c*(3*A*b^3 - 20*a*A*b*c + 16*a^2*B*c)*x))/(3*a^2*(b^2 - 4*a*c)^2*Sqrt[a +
 b*x + c*x^2]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x + c*x^2])])
/a^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{-\frac{3}{2}A\left(b^2-4ac\right)-2(Ab-2aB)cx}{x\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)+c\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a+}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)+c\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a+}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)+c\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a+}}$$

$$= \frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}} + \frac{2\left(8a^2bBc+A\left(3b^4-22ab^2c+24a^2c^2\right)+c\right.}{3a^2\left(b^2-4ac\right)^2\sqrt{a+}}$$

Mathematica [A] time = 0.13, size = 179, normalized size = 0.97

$$-\frac{A\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{a^{5/2}} + \frac{A\left(48a^2c^2-44ab^2c-40abc^2x+6b^4+6b^3cx\right)+16a^2Bc(b+2cx)}{3a^2\left(b^2-4ac\right)^2\sqrt{a+x(b+cx)}} + \frac{2aB(b+2cx)-}{3a\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*a*B*(b + 2*c*x) - 2*A*(b^2 - 2*a*c + b*c*x))/(3*a*(-b^2 + 4*a*c)*(a + x*
(b + c*x))^(3/2)) + (16*a^2*B*c*(b + 2*c*x) + A*(6*b^4 - 44*a*b^2*c + 48*a^
2*c^2 + 6*b^3*c*x - 40*a*b*c^2*x))/(3*a^2*(b^2 - 4*a*c)^2*Sqrt[a + x*(b + c
*x)]) - (A*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/a^(5/2)
```

fricas [B] time = 5.94, size = 1077, normalized size = 5.85

$$\left[\frac{3\left(Aa^2b^4-8\,Aa^3b^2c+16\,Aa^4c^2+\left(Ab^4c^2-8\,Aab^2c^3+16\,Aa^2c^4\right)x^4+2\left(Ab^5c-8\,Aab^3c^2+16\,Aa^2bc^3\right)x^3+\left(A\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*(A*a^2*b^4 - 8*A*a^3*b^2*c + 16*A*a^4*c^2 + (A*b^4*c^2 - 8*A*a*b^2*
c^3 + 16*A*a^2*c^4)*x^4 + 2*(A*b^5*c - 8*A*a*b^3*c^2 + 16*A*a^2*b*c^3)*x^3
+ (A*b^6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*x^2 + 2*(A*a*b^5 - 8*A*a^2*b^3*c + 1
6*A*a^3*b*c^2)*x)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 - 4*sqrt(c*x^2
+ b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(B*a^3*b^3 - 4*A*a^2*b^4 -
 32*A*a^4*c^2 - (3*A*a*b^3*c^2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*x^3 - 6*(A*a*
b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b^2)*c^2)*x^2 - 4*(3*B*a^4*b - 7
*A*a^3*b^2)*c - 3*(A*a*b^5 + 8*B*a^4*c^2 + 2*(B*a^3*b^2 - 3*A*a^2*b^3)*c)*x
)*sqrt(c*x^2 + b*x + a))/(a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (a^3*b^4*c^2
 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*
b*c^3)*x^3 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b^5 - 8*a^5*
b^3*c + 16*a^6*b*c^2)*x), 1/3*(3*(A*a^2*b^4 - 8*A*a^3*b^2*c + 16*A*a^4*c^2
+ (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*x^4 + 2*(A*b^5*c - 8*A*a*b^3*c
^2 + 16*A*a^2*b*c^3)*x^3 + (A*b^6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*x^2 + 2*(A*
a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 +
 b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^2 + a*b*x + a^2)) - 2*(B*a^3*b^3 - 4*
A*a^2*b^4 - 32*A*a^4*c^2 - (3*A*a*b^3*c^2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*x^
3 - 6*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b^2)*c^2)*x^2 - 4*(3*
B*a^4*b - 7*A*a^3*b^2)*c - 3*(A*a*b^5 + 8*B*a^4*c^2 + 2*(B*a^3*b^2 - 3*A*a^
2*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/(a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (
a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^
2 + 16*a^5*b*c^3)*x^3 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b
^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x)]
```

giac [A] time = 0.25, size = 333, normalized size = 1.81

$$\frac{2\left(\left(\left(\frac{\left(3\,Aa^{5}b^{3}c^{2}+16\,Ba^{7}c^{3}-20\,Aa^{6}bc^{3}\right)x}{a^{7}b^{4}-8\,a^{8}b^{2}c+16\,a^{9}c^{2}}+\frac{6\left(Aa^{5}b^{4}c+4\,Ba^{7}bc^{2}-7\,Aa^{6}b^{2}c^{2}+4\,Aa^{7}c^{3}\right)}{a^{7}b^{4}-8\,a^{8}b^{2}c+16\,a^{9}c^{2}}\right)x+\frac{3\left(Aa^{5}b^{5}+2\,Ba^{7}b^{2}c-6\,Aa^{6}b^{3}c+8\,Ba^{8}c^{2}\right)}{a^{7}b^{4}-8\,a^{8}b^{2}c+16\,a^{9}c^{2}}\right)x-Ba^{7}}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*A*a^5*b^3*c^2 + 16*B*a^7*c^3 - 20*A*a^6*b*c^3)*x/(a^7*b^4 - 8*a^8
*b^2*c + 16*a^9*c^2) + 6*(A*a^5*b^4*c + 4*B*a^7*b*c^2 - 7*A*a^6*b^2*c^2 + 4
*A*a^7*c^3)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2))*x + 3*(A*a^5*b^5 + 2*B*a^
7*b^2*c - 6*A*a^6*b^3*c + 8*B*a^8*c^2)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)
)*x - (B*a^7*b^3 - 4*A*a^6*b^4 - 12*B*a^8*b*c + 28*A*a^7*b^2*c - 32*A*a^8*c
^2)/(a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2))/(c*x^2 + b*x + a)^(3/2) + 2*A*arc
tan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^2)
```

maple [B] time = 0.05, size = 390, normalized size = 2.12

$$-\frac{16Ab\,c^{2}x}{3\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}\;a}+\frac{32B\,c^{2}x}{3\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}}-\frac{8A\,b^{2}c}{3\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}\;a}-\frac{2}{3\left(4ac-b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 4/3*B/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+2/3*B/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*b+32/3*B*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*B*c/(4*a*c-b^2)^
2/(c*x^2+b*x+a)^(1/2)*b+1/3*A/a/(c*x^2+b*x+a)^(3/2)-2/3*A/a*b/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)*c*x-1/3*A/a*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-16/3*A/a
*b*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-8/3*A/a*b^2*c/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)+A/a^2/(c*x^2+b*x+a)^(1/2)-2*A/a^2*b/(4*a*c-b^2)/(c*x^2+b*x+
a)^(1/2)*c*x-A/a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-A/a^(5/2)*ln((b*x+2*
a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{x\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.976 $\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=288

$$\frac{(5Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{2a^{7/2}}-\frac{2\Bigl(-A\left(32a^2c^2-32ab^2c+5b^4\right)-cx\bigl(24a^2Bc-28aAbc-2ab^2B+5Ab^3}{3a^2x\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

```
[Out] 2/3*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/x/(c*x^2+b*x+a)^(3
/2)+1/2*(5*A*b-2*B*a)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b*x+a)^(1/2))/a^
(7/2)-2/3*(2*a*b*B*(-8*a*c+b^2)-A*(32*a^2*c^2-32*a*b^2*c+5*b^4)-c*(-28*A*a*
b*c+5*A*b^3+24*B*a^2*c-2*B*a*b^2)*x)/a^2/(-4*a*c+b^2)^2/x/(c*x^2+b*x+a)^(1/
2)+1/3*(2*a*b*B*(-20*a*c+3*b^2)-A*(128*a^2*c^2-100*a*b^2*c+15*b^4))*(c*x^2+
b*x+a)^(1/2)/a^3/(-4*a*c+b^2)^2/x
```

Rubi [A] time = 0.31, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(2abB\left(3b^2-20ac\right)-A\left(128a^2c^2-100ab^2c+15b^4\right)\right)}{3a^3x\left(b^2-4ac\right)^2}-\frac{2\bigl(-cx\bigl(24a^2Bc-28aAbc-2ab^2B+5A}{3a^2x\bigl(b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*x*(a +
 b*x + c*x^2)^(3/2)) - (2*(2*a*b*B*(b^2 - 8*a*c) - A*(5*b^4 - 32*a*b^2*c +
32*a^2*c^2) - c*(5*A*b^3 - 2*a*b^2*B - 28*a*A*b*c + 24*a^2*B*c)*x))/(3*a^2*
(b^2 - 4*a*c)^2*x*Sqrt[a + b*x + c*x^2]) + ((2*a*b*B*(3*b^2 - 20*a*c) - A*(
15*b^4 - 100*a*b^2*c + 128*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(3*a^3*(b^2 - 4
*a*c)^2*x) + ((5*A*b - 2*a*B)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + b*x +
 c*x^2])])/(2*a^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^2\left(a+bx+cx^2\right)^{5/2}}\,dx=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}}-\frac{2\int\frac{\frac{1}{2}\left(-5Ab^2+2abB+16aAc\right)-3(Ab-2aB)cx}{x^2\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+32\right.\right.}{3a^2\left(b^2-4a\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+32\right.\right.}{3a^2\left(b^2-4a\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+32\right.\right.}{3a^2\left(b^2-4a\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(2abB\left(b^2-8ac\right)-A\left(5b^4-32ab^2c+32\right.\right.}{3a^2\left(b^2-4a\right.}$$

Mathematica [A] time = 0.43, size = 285, normalized size = 0.99

$$\frac{2\left(\frac{3\left(b^2-4ac\right)(5Ab-2aB)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+x(b+cx)}}\right)}{4a^{5/2}}-\frac{\sqrt{a+x(b+cx)}\left(A\left(128a^2c^2-100ab^2c+15b^4\right)+2abB\left(20ac-3b^2\right)\right)}{2a^2x\left(b^2-4ac\right)}+\frac{A\left(-32a^2c^2+32ab^2c+28abc^2x-\right.}{ax\left(4a\right.}\right.}{3a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-1/2*((2*a*b*B*(-3*b^2 + 20*a*c) + A*(15*b^4 - 100*a*b^2*c + 128*a^2*c^
2))*Sqrt[a + x*(b + c*x)])/(a^2*(b^2 - 4*a*c)*x) + (-(a*B*(b + 2*c*x)) + A*
(b^2 - 2*a*c + b*c*x))/(x*(a + x*(b + c*x))^(3/2)) + (2*a*B*(b^3 - 8*a*b*c
+ b^2*c*x - 12*a*c^2*x) + A*(-5*b^4 + 32*a*b^2*c - 32*a^2*c^2 - 5*b^3*c*x +
 28*a*b*c^2*x))/(a*(-b^2 + 4*a*c)*x*Sqrt[a + x*(b + c*x)]) + (3*(5*A*b - 2*
a*B)*(b^2 - 4*a*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x)])])/
(4*a^(5/2))))/(3*a*(b^2 - 4*a*c))
```

fricas [B] time = 8.42, size = 1655, normalized size = 5.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*((16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)*c^3
+ (2*B*a*b^4 - 5*A*b^5)*c^2)*x^5 + 2*(16*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*
(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A*b^6)*c)*x^4 + (2*B*a*b^6 -
 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B*a^2*b^4 - 5*A*a*b^5)*c)*x^
3 + 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b - 5*A*a^3*b^2)*c^2 - 8*(2*B*
a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 + (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 -
5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*x)*sqrt(a)*log(-(8*a*b*x
+ (b^2 + 4*a*c)*x^2 + 4*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/
x^2) + 4*(3*A*a^3*b^4 - 24*A*a^4*b^2*c + 48*A*a^5*c^2 + (128*A*a^3*c^4 + 20
*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2)*x^4 - 6*(
4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 + (2*B*a^2
*b^4 - 5*A*a*b^5)*c)*x^3 - 3*(2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a^3*b^2*c^2 -
64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 - 4*(2*B*a^3*b^4 - 5*A*
a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^3*b^3)*c)*x)*
sqrt(c*x^2 + b*x + a))/((a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*c^4)*x^5 + 2*
(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*x^4 + (a^4*b^6 - 6*a^5*b^4*c + 3
2*a^7*c^3)*x^3 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*x^2 + (a^6*b^4 -
8*a^7*b^2*c + 16*a^8*c^2)*x), 1/6*(3*((16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*
B*a^2*b^2 - 5*A*a*b^3)*c^3 + (2*B*a*b^4 - 5*A*b^5)*c^2)*x^5 + 2*(16*(2*B*a^
3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A
*b^6)*c)*x^4 + (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B
*a^2*b^4 - 5*A*a*b^5)*c)*x^3 + 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b -
 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 + (2*B*a^3*b^4 - 5
*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c
)*x)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(-a)/(a*c*x^
2 + a*b*x + a^2)) - 2*(3*A*a^3*b^4 - 24*A*a^4*b^2*c + 48*A*a^5*c^2 + (128*A
*a^3*c^4 + 20*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c
^2)*x^4 - 6*(4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c
^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*x^3 - 3*(2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a
^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*x^2 - 4*(2*B*a
^3*b^4 - 5*A*a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^
3*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*
c^4)*x^5 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*x^4 + (a^4*b^6 - 6*
a^5*b^4*c + 32*a^7*c^3)*x^3 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*x^2
+ (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*x)]
```

giac [A] time = 0.27, size = 483, normalized size = 1.68

$$\frac{2\left(\left(\left(\frac{\left(3\,Ba^{9}b^{3}c^{2}-6\,Aa^{8}b^{4}c^{2}-20\,Ba^{10}bc^{3}+38\,Aa^{9}b^{2}c^{3}-40\,Aa^{10}c^{4}\right)x}{a^{11}b^{4}-8\,a^{12}b^{2}c+16\,a^{13}c^{2}}+\frac{3\left(2\,Ba^{9}b^{4}c-4\,Aa^{8}b^{5}c-14\,Ba^{10}b^{2}c^{2}+27\,Aa^{9}b^{3}c^{2}+8\,Ba^{11}c^{3}-36\,Aa^{10}bc^{3}\right)}{a^{11}b^{4}-8\,a^{12}b^{2}c+16\,a^{13}c^{2}}\right)\right.\right.}{3\left(cx^{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*B*a^9*b^3*c^2 - 6*A*a^8*b^4*c^2 - 20*B*a^10*b*c^3 + 38*A*a^9*b^2*
c^3 - 40*A*a^10*c^4)*x/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2) + 3*(2*B*a^9
*b^4*c - 4*A*a^8*b^5*c - 14*B*a^10*b^2*c^2 + 27*A*a^9*b^3*c^2 + 8*B*a^11*c^
3 - 36*A*a^10*b*c^3)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))*x + 3*(B*a^9*
b^5 - 2*A*a^8*b^6 - 6*B*a^10*b^3*c + 12*A*a^9*b^4*c - 8*A*a^10*b^2*c^2 - 16
*A*a^11*c^3)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))*x + (4*B*a^10*b^4 - 7
*A*a^9*b^5 - 28*B*a^11*b^2*c + 50*A*a^10*b^3*c + 32*B*a^12*c^2 - 80*A*a^11*
b*c^2)/(a^11*b^4 - 8*a^12*b^2*c + 16*a^13*c^2))/(c*x^2 + b*x + a)^(3/2) + (
2*B*a - 5*A*b)*arctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(
-a)*a^3) + ((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b + 2*A*a*sqrt(c))/(((sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^2 - a)*a^3)
```

maple [B] time = 0.07, size = 709, normalized size = 2.46

$$-\frac{128 A\,c^{3} x}{3\left(4 a c-b^{2}\right)^{2} \sqrt{c\,x^{2}+b x+a}\; a}+\frac{40 A\,b^{2} c^{2} x}{3\left(4 a c-b^{2}\right)^{2} \sqrt{c\,x^{2}+b x+a}\; a^{2}}-\frac{16 B b\,c^{2} x}{3\left(4 a c-b^{2}\right)^{2} \sqrt{c\,x^{2}+b x+a}\; a}-\frac{64}{3\left(4 a c-b^{2}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -A/a/x/(c*x^2+b*x+a)^(3/2)-5/6*A/a^2*b/(c*x^2+b*x+a)^(3/2)+5/3*A/a^2*b^2/(4
*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+5/6*A/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)+40/3*A/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+20/3*A/a^2*b^3*
c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-5/2*A/a^3*b/(c*x^2+b*x+a)^(1/2)+5*A/a^3
*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+5/2*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)+5/2*A/a^(7/2)*b*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-1
6/3*A*c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-8/3*A*c/a/(4*a*c-b^2)/(c*x^2+
b*x+a)^(3/2)*b-128/3*A*c^3/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-64/3*A*c^2
/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b+1/3*B/a/(c*x^2+b*x+a)^(3/2)-2/3*B/a*
b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x-1/3*B/a*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)
^(3/2)-16/3*B/a*b*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-8/3*B/a*b^2*c/(4*
a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+B/a^2/(c*x^2+b*x+a)^(1/2)-2*B/a^2*b/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*c*x-B/a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-B/a^(
5/2)*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.977 $\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=381

$$-\frac{5\left(-4aAc-4abB+7Ab^2\right)\tanh^{-1}\left(\frac{2a+bx}{2\sqrt{a}\sqrt{a+bx+cx^2}}\right)}{8a^{9/2}}-\frac{2\left(-A\left(40a^2c^2-42ab^2c+7b^4\right)-cx\left(32a^2Bc-36aAbc-\right.\right.}{3a^2x^2\left(b^2-4ac\right)^2\sqrt{a+bx}}$$

```
[Out] 2/3*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/x^2/(c*x^2+b*x+a)^
(3/2)-5/8*(-4*A*a*c+7*A*b^2-4*B*a*b)*arctanh(1/2*(b*x+2*a)/a^(1/2)/(c*x^2+b
*x+a)^(1/2))/a^(9/2)-2/3*(4*a*b*B*(-6*a*c+b^2)-A*(40*a^2*c^2-42*a*b^2*c+7*b
^4)-c*(-36*A*a*b*c+7*A*b^3+32*B*a^2*c-4*B*a*b^2)*x)/a^2/(-4*a*c+b^2)^2/x^2/
(c*x^2+b*x+a)^(1/2)+1/6*(4*a*b*B*(-28*a*c+5*b^2)-A*(240*a^2*c^2-216*a*b^2*c
+35*b^4))*(c*x^2+b*x+a)^(1/2)/a^3/(-4*a*c+b^2)^2/x^2-1/12*(4*a*B*(128*a^2*c
^2-100*a*b^2*c+15*b^4)-A*(1296*a^2*b*c^2-760*a*b^3*c+105*b^5))*(c*x^2+b*x+a
)^(1/2)/a^4/(-4*a*c+b^2)^2/x
```

Rubi [A] time = 0.46, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {822, 834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(4abB\left(5b^2-28ac\right)-A\left(240a^2c^2-216ab^2c+35b^4\right)\right)}{6a^3x^2\left(b^2-4ac\right)^2}-\frac{\sqrt{a+bx+cx^2}\left(4aB\left(128a^2c^2-100ab^2\right.\right.}{12a^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(3*a*(b^2 - 4*a*c)*x^2*(a
 + b*x + c*x^2)^(3/2)) - (2*(4*a*b*B*(b^2 - 6*a*c) - A*(7*b^4 - 42*a*b^2*c
+ 40*a^2*c^2) - c*(7*A*b^3 - 4*a*b^2*B - 36*a*A*b*c + 32*a^2*B*c)*x))/(3*a^
2*(b^2 - 4*a*c)^2*x^2*Sqrt[a + b*x + c*x^2]) + ((4*a*b*B*(5*b^2 - 28*a*c) -
 A*(35*b^4 - 216*a*b^2*c + 240*a^2*c^2))*Sqrt[a + b*x + c*x^2])/(6*a^3*(b^2
 - 4*a*c)^2*x^2) - ((4*a*B*(15*b^4 - 100*a*b^2*c + 128*a^2*c^2) - A*(105*b^
5 - 760*a*b^3*c + 1296*a^2*b*c^2))*Sqrt[a + b*x + c*x^2])/(12*a^4*(b^2 - 4*
a*c)^2*x) - (5*(7*A*b^2 - 4*a*b*B - 4*a*A*c)*ArcTanh[(2*a + b*x)/(2*Sqrt[a]
*Sqrt[a + b*x + c*x^2])])/(8*a^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{x^3\left(a+bx+cx^2\right)^{5/2}}\,dx=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\int\frac{\frac{1}{2}\left(-7Ab^2+4abB+20aAc\right)-4(Ab-2aB)cx}{x^3\left(a+bx+cx^2\right)^{3/2}}\,dx}{3a\left(b^2-4ac\right)}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+40\right.\right.}{3a^2\left(b^2-4ac\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+40\right.\right.}{3a^2\left(b^2-4ac\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+40\right.\right.}{3a^2\left(b^2-4ac\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+40\right.\right.}{3a^2\left(b^2-4ac\right.}$$

$$=\frac{2\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{3a\left(b^2-4ac\right)x^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(4abB\left(b^2-6ac\right)-A\left(7b^4-42ab^2c+40\right.\right.}{3a^2\left(b^2-4ac\right.}$$

Mathematica [**A**] time = 0.73, size = 343, normalized size = 0.90

$$\frac{-\frac{8\left(A\left(40a^2c^2-42ab^2c-36abc^2x+7b^4+7b^3cx\right)+4aB\left(6abc+8ac^2x-b^3-b^2cx\right)\right)}{a\left(4ac-b^2\right)\sqrt{a+x(b+cx)}}+\frac{2\sqrt{a}\sqrt{a+x(b+cx)}\left(32a^3c(15Ac+7bB+16Bcx)-8a^2b\left(54Abc+162Ac^2\right.\right.}{}}{12a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] ((-8*a*B*(b + 2*c*x) + 8*A*(b^2 - 2*a*c + b*c*x))/(a + x*(b + c*x))^(3/2) -
 (8*(4*a*B*(-b^3 + 6*a*b*c - b^2*c*x + 8*a*c^2*x) + A*(7*b^4 - 42*a*b^2*c +
 40*a^2*c^2 + 7*b^3*c*x - 36*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*Sqrt[a + x*(b +
 c*x)]) + (2*Sqrt[a]*Sqrt[a + x*(b + c*x)]*(-105*A*b^5*x + 10*a*b^3*(7*A*b
+ 6*b*B*x + 76*A*c*x) + 32*a^3*c*(7*b*B + 15*A*c + 16*B*c*x) - 8*a^2*b*(5*b
^2*B + 54*A*b*c + 50*b*B*c*x + 162*A*c^2*x)) + 15*(b^2 - 4*a*c)^2*(7*A*b^2
- 4*a*b*B - 4*a*A*c)*x^2*ArcTanh[(2*a + b*x)/(2*Sqrt[a]*Sqrt[a + x*(b + c*x
)])])/(2*a^(7/2)*(-b^2 + 4*a*c)))/(12*a*(b^2 - 4*a*c)*x^2)
```

fricas [**B**] time = 21.40, size = 2057, normalized size = 5.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/48*(15*((64*A*a^3*c^5 + 16*(4*B*a^3*b - 9*A*a^2*b^2)*c^4 - 4*(8*B*a^2*b^
3 - 15*A*a*b^4)*c^3 + (4*B*a*b^5 - 7*A*b^6)*c^2)*x^6 + 2*(64*A*a^3*b*c^4 +
16*(4*B*a^3*b^2 - 9*A*a^2*b^3)*c^3 - 4*(8*B*a^2*b^4 - 15*A*a*b^5)*c^2 + (4*
B*a*b^6 - 7*A*b^7)*c)*x^5 + (4*B*a*b^7 - 7*A*b^8 - 24*A*a^2*b^4*c^2 + 128*A
*a^4*c^4 + 32*(4*B*a^4*b - 7*A*a^3*b^2)*c^3 - 2*(12*B*a^2*b^5 - 23*A*a*b^6)
*c)*x^4 + 2*(4*B*a^2*b^6 - 7*A*a*b^7 + 64*A*a^4*b*c^3 + 16*(4*B*a^4*b^2 - 9
*A*a^3*b^3)*c^2 - 4*(8*B*a^3*b^4 - 15*A*a^2*b^5)*c)*x^3 + (4*B*a^3*b^5 - 7*
A*a^2*b^6 + 64*A*a^5*c^3 + 16*(4*B*a^5*b - 9*A*a^4*b^2)*c^2 - 4*(8*B*a^4*b^
3 - 15*A*a^3*b^4)*c)*x^2)*sqrt(a)*log(-(8*a*b*x + (b^2 + 4*a*c)*x^2 + 4*sqr
t(c*x^2 + b*x + a)*(b*x + 2*a)*sqrt(a) + 8*a^2)/x^2) - 4*(6*A*a^4*b^4 - 48*
A*a^5*b^2*c + 96*A*a^6*c^2 + (16*(32*B*a^4 - 81*A*a^3*b)*c^4 - 40*(10*B*a^3
*b^2 - 19*A*a^2*b^3)*c^3 + 15*(4*B*a^2*b^4 - 7*A*a*b^5)*c^2)*x^5 + 6*(80*A*
a^4*c^4 + 8*(26*B*a^4*b - 63*A*a^3*b^2)*c^3 - 5*(28*B*a^3*b^3 - 53*A*a^2*b^
4)*c^2 + 5*(4*B*a^2*b^5 - 7*A*a*b^6)*c)*x^4 + 3*(20*B*a^2*b^6 - 35*A*a*b^7
+ 64*(4*B*a^5 - 7*A*a^4*b)*c^3 + 8*(8*B*a^4*b^2 - 29*A*a^3*b^3)*c^2 - 10*(1
2*B*a^3*b^4 - 23*A*a^2*b^5)*c)*x^3 + 4*(20*B*a^3*b^5 - 35*A*a^2*b^6 + 160*A
*a^5*c^3 + 4*(64*B*a^5*b - 147*A*a^4*b^2)*c^2 - (148*B*a^4*b^3 - 279*A*a^3*
b^4)*c)*x^2 + 3*(4*B*a^4*b^4 - 7*A*a^3*b^5 + 16*(4*B*a^6 - 7*A*a^5*b)*c^2 -
 8*(4*B*a^5*b^2 - 7*A*a^4*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^4*c^2 -
 8*a^6*b^2*c^3 + 16*a^7*c^4)*x^6 + 2*(a^5*b^5*c - 8*a^6*b^3*c^2 + 16*a^7*b*
c^3)*x^5 + (a^5*b^6 - 6*a^6*b^4*c + 32*a^8*c^3)*x^4 + 2*(a^6*b^5 - 8*a^7*b^
3*c + 16*a^8*b*c^2)*x^3 + (a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)*x^2), -1/24*
(15*((64*A*a^3*c^5 + 16*(4*B*a^3*b - 9*A*a^2*b^2)*c^4 - 4*(8*B*a^2*b^3 - 15
*A*a*b^4)*c^3 + (4*B*a*b^5 - 7*A*b^6)*c^2)*x^6 + 2*(64*A*a^3*b*c^4 + 16*(4*
B*a^3*b^2 - 9*A*a^2*b^3)*c^3 - 4*(8*B*a^2*b^4 - 15*A*a*b^5)*c^2 + (4*B*a*b^
6 - 7*A*b^7)*c)*x^5 + (4*B*a*b^7 - 7*A*b^8 - 24*A*a^2*b^4*c^2 + 128*A*a^4*c
^4 + 32*(4*B*a^4*b - 7*A*a^3*b^2)*c^3 - 2*(12*B*a^2*b^5 - 23*A*a*b^6)*c)*x^
4 + 2*(4*B*a^2*b^6 - 7*A*a*b^7 + 64*A*a^4*b*c^3 + 16*(4*B*a^4*b^2 - 9*A*a^3
*b^3)*c^2 - 4*(8*B*a^3*b^4 - 15*A*a^2*b^5)*c)*x^3 + (4*B*a^3*b^5 - 7*A*a^2*
b^6 + 64*A*a^5*c^3 + 16*(4*B*a^5*b - 9*A*a^4*b^2)*c^2 - 4*(8*B*a^4*b^3 - 15
*A*a^3*b^4)*c)*x^2)*sqrt(-a)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(b*x + 2*a)*s
qrt(-a)/(a*c*x^2 + a*b*x + a^2)) + 2*(6*A*a^4*b^4 - 48*A*a^5*b^2*c + 96*A*a
^6*c^2 + (16*(32*B*a^4 - 81*A*a^3*b)*c^4 - 40*(10*B*a^3*b^2 - 19*A*a^2*b^3)
*c^3 + 15*(4*B*a^2*b^4 - 7*A*a*b^5)*c^2)*x^5 + 6*(80*A*a^4*c^4 + 8*(26*B*a^
4*b - 63*A*a^3*b^2)*c^3 - 5*(28*B*a^3*b^3 - 53*A*a^2*b^4)*c^2 + 5*(4*B*a^2*
b^5 - 7*A*a*b^6)*c)*x^4 + 3*(20*B*a^2*b^6 - 35*A*a*b^7 + 64*(4*B*a^5 - 7*A*
a^4*b)*c^3 + 8*(8*B*a^4*b^2 - 29*A*a^3*b^3)*c^2 - 10*(12*B*a^3*b^4 - 23*A*a
^2*b^5)*c)*x^3 + 4*(20*B*a^3*b^5 - 35*A*a^2*b^6 + 160*A*a^5*c^3 + 4*(64*B*a
^5*b - 147*A*a^4*b^2)*c^2 - (148*B*a^4*b^3 - 279*A*a^3*b^4)*c)*x^2 + 3*(4*B
*a^4*b^4 - 7*A*a^3*b^5 + 16*(4*B*a^6 - 7*A*a^5*b)*c^2 - 8*(4*B*a^5*b^2 - 7*
A*a^4*b^3)*c)*x)*sqrt(c*x^2 + b*x + a))/((a^5*b^4*c^2 - 8*a^6*b^2*c^3 + 16*
a^7*c^4)*x^6 + 2*(a^5*b^5*c - 8*a^6*b^3*c^2 + 16*a^7*b*c^3)*x^5 + (a^5*b^6
- 6*a^6*b^4*c + 32*a^8*c^3)*x^4 + 2*(a^6*b^5 - 8*a^7*b^3*c + 16*a^8*b*c^2)*
x^3 + (a^7*b^4 - 8*a^8*b^2*c + 16*a^9*c^2)*x^2)]
```

giac [B] time = 0.28, size = 765, normalized size = 2.01

$$-\frac{2\left(\left(\left(\frac{\left(6\,Ba^{12}b^{4}c^{2}-9\,Aa^{11}b^{5}c^{2}-38\,Ba^{13}b^{2}c^{3}+62\,Aa^{12}b^{3}c^{3}+40\,Ba^{14}c^{4}-96\,Aa^{13}bc^{4}\right)x}{a^{15}b^{4}-8\,a^{16}b^{2}c+16\,a^{17}c^{2}}+\frac{3\left(4\,Ba^{12}b^{5}c-6\,Aa^{11}b^{6}c-27\,Ba^{13}b^{3}c^{2}+44\,Aa^{12}b^{4}c^{2}+36\,Ba^{14}}{a^{15}b^{4}-8\,a^{16}b^{2}c+16\,a^{17}c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((((6*B*a^12*b^4*c^2 - 9*A*a^11*b^5*c^2 - 38*B*a^13*b^2*c^3 + 62*A*a^1
2*b^3*c^3 + 40*B*a^14*c^4 - 96*A*a^13*b*c^4)*x/(a^15*b^4 - 8*a^16*b^2*c + 1
6*a^17*c^2) + 3*(4*B*a^12*b^5*c - 6*A*a^11*b^6*c - 27*B*a^13*b^3*c^2 + 44*A
*a^12*b^4*c^2 + 36*B*a^14*b*c^3 - 80*A*a^13*b^2*c^3 + 16*A*a^14*c^4)/(a^15*
b^4 - 8*a^16*b^2*c + 16*a^17*c^2))*x + 3*(2*B*a^12*b^6 - 3*A*a^11*b^7 - 12*
B*a^13*b^4*c + 20*A*a^12*b^5*c + 8*B*a^14*b^2*c^2 - 25*A*a^13*b^3*c^2 + 16*
B*a^15*c^3 - 20*A*a^14*b*c^3)/(a^15*b^4 - 8*a^16*b^2*c + 16*a^17*c^2))*x +
(7*B*a^13*b^5 - 10*A*a^12*b^6 - 50*B*a^14*b^3*c + 78*A*a^13*b^4*c + 80*B*a^
15*b*c^2 - 162*A*a^14*b^2*c^2 + 56*A*a^15*c^3)/(a^15*b^4 - 8*a^16*b^2*c + 1
6*a^17*c^2))/(c*x^2 + b*x + a)^(3/2) - 5/4*(4*B*a*b - 7*A*b^2 + 4*A*a*c)*ar
ctan(-(sqrt(c)*x - sqrt(c*x^2 + b*x + a))/sqrt(-a))/(sqrt(-a)*a^4) + 1/4*(4
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b - 11*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^3*A*b^2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c + 8*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c) - 16*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*A*a*b*sqrt(c) - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2
*b + 13*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2 + 4*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*A*a^2*c - 8*B*a^3*sqrt(c) + 24*A*a^2*b*sqrt(c))/(((sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2 - a)^2*a^4)
```

maple [B] time = 0.08, size = 1051, normalized size = 2.76

$$\frac{88Ab\,c^{3}x}{\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}\;a^{2}}-\frac{70A\,b^{3}c^{2}x}{3\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}\;a^{3}}-\frac{128B\,c^{3}x}{3\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}\;a}+\frac{40B\,b}{3\left(4ac-b^{2}\right)^{2}\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -35/8*A/a^(9/2)*b^2*ln((b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)-5/6*A*c/a
^2/(c*x^2+b*x+a)^(3/2)-5/2*A*c/a^3/(c*x^2+b*x+a)^(1/2)+5/2*A*c/a^(7/2)*ln((
b*x+2*a+2*(c*x^2+b*x+a)^(1/2)*a^(1/2))/x)+5/2*B/a^(7/2)*b*ln((b*x+2*a+2*(c*
x^2+b*x+a)^(1/2)*a^(1/2))/x)-B/a/x/(c*x^2+b*x+a)^(3/2)-5/6*B/a^2*b/(c*x^2+b
*x+a)^(3/2)-5/2*B/a^3*b/(c*x^2+b*x+a)^(1/2)-1/2*A/a/x^2/(c*x^2+b*x+a)^(3/2)
+35/24*A/a^3*b^2/(c*x^2+b*x+a)^(3/2)+35/8*A/a^4*b^2/(c*x^2+b*x+a)^(1/2)+5/2
*B/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-70/3*A/a^3*b^3*c^2/(4*a*c-b^2)^2
```

```
/(c*x^2+b*x+a)^(1/2)*x-35/4*A/a^4*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+1
1*A/a^2*b*c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/3*B/a^2*b^2/(4*a*c-b^2)/(
c*x^2+b*x+a)^(3/2)*c*x+40/3*B/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)
*x+5*B/a^3*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*c*x+5*A*c^2/a^3*b/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)*x+88*A/a^2*b*c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-
35/12*A/a^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x-35/24*A/a^3*b^4/(4*a*c-
b^2)/(c*x^2+b*x+a)^(3/2)-35/8*A/a^4*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+7/4
*A/a^2*b/x/(c*x^2+b*x+a)^(3/2)+5/6*B/a^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
)-35/3*A/a^3*b^4*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+11/2*A/a^2*b^2*c/(4*a*
c-b^2)/(c*x^2+b*x+a)^(3/2)+20/3*B/a^2*b^3*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)-16/3*B*c^2/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+5/2*A*c/a^3*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)+44*A/a^2*b^2*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-8
/3*B*c/a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-128/3*B*c^3/a/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)*x-64/3*B*c^2/a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{x^3\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/(x^3*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.978 $\int \frac{d+ex}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{128c(b+2cx)(2cd-be)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2ae+x(2cd-be)+bd)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

```
[Out] -2/5*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)+16/15*(-b*
e+2*c*d)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)-128/15*c*(-b*e+2*c*d)
*(2*c*x+b)/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.150$, Rules used = {638, 614, 613}

$$-\frac{128c(b+2cx)(2cd-be)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{16(b+2cx)(2cd-be)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2ae+x(2cd-be)+bd)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/(5*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (16*(2*c*d - b*e)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(3/2)) - (128*c*(2*c*d - b*e)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x
 + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(bd-2ae+(2cd-be)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{(8(2cd-be))\int \frac{1}{\left(a+bx+cx^2\right)^{5/2}}\,dx}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{16(2cd-be)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}} + \frac{(64c(2cd-be))}{15\left(b^2\right.}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{16(2cd-be)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}} - \frac{128c(2cd-}{15\left(b^2-4ac\right)^3}$$

Mathematica [**A**] time = 0.24, size = 119, normalized size = 0.88

$$\frac{2\left(3\left(b^2-4ac\right)^2(2ae-bd+bex-2cdx)-8\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))(be-2cd)+64c(b+2cx)(a+x\right.}{15\left(b^2-4ac\right)^3(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(3*(b^2 - 4*a*c)^2*(-(b*d) + 2*a*e - 2*c*d*x + b*e*x) - 8*(b^2 - 4*a*c)*
(-2*c*d + b*e)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(-2*c*d + b*e)*(b + 2*c
*x)*(a + x*(b + c*x))^2))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas [**B**] time = 10.25, size = 550, normalized size = 4.07

$$-\frac{2\left(128\left(2c^5d-bc^4e\right)x^5+320\left(2bc^4d-b^2c^3e\right)x^4+80\left(2\left(3b^2c^3+4ac^4\right)d-\left(3b\right.\right.\right.}{15\left(a^3b^6-12a^4b^4c+48a^5b^2c^2-64a^6c^3+\left(b^6c^3-12ab^4c^4+48a^2b^2c^5-64a^3c^6\right)x^6+3\left(b^7c^2-12ab^5c^3+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(128*(2*c^5*d - b*c^4*e)*x^5 + 320*(2*b*c^4*d - b^2*c^3*e)*x^4 + 80*(
2*(3*b^2*c^3 + 4*a*c^4)*d - (3*b^3*c^2 + 4*a*b*c^3)*e)*x^3 + 40*(2*(b^3*c^2
 + 12*a*b*c^3)*d - (b^4*c + 12*a*b^2*c^2)*e)*x^2 + (3*b^5 - 40*a*b^3*c + 24
0*a^2*b*c^2)*d + 2*(a*b^4 - 24*a^2*b^2*c - 48*a^3*c^2)*e - 5*(2*(b^4*c - 24
*a*b^2*c^2 - 48*a^2*c^3)*d - (b^5 - 24*a*b^3*c - 48*a^2*b*c^2)*e)*x)*sqrt(c
*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3 + (b^
6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*c^2 - 12*a
*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b^6*c^2 + 3
6*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7*c - 24*a^
2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*a^2*b^6*c
+ 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7 - 12*a^3*b
^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [**B**] time = 0.28, size = 448, normalized size = 3.32

$$-\frac{2\left(\left(8\left(2\left(4\left(\frac{2\left(2c^5d-bc^4e\right)x}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}+\frac{5\left(2bc^4d-b^2c^3e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(6b^2c^3d+8ac^4d-3b^3c^2e-4abc^3e\right)}{b^6-12ab^4c+48a^2b^2c^2-64a^3c^3}\right)x+\frac{5\left(2b^3c^2d+2\right.}{b^6-12ab}\right.\right.\right.\right.}{15\left(cx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*((8*(2*(4*(2*(2*c^5*d - b*c^4*e)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
 - 64*a^3*c^3) + 5*(2*b*c^4*d - b^2*c^3*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c
^2 - 64*a^3*c^3))*x + 5*(6*b^2*c^3*d + 8*a*c^4*d - 3*b^3*c^2*e - 4*a*b*c^3*
e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(2*b^3*c^2*d + 2
4*a*b*c^3*d - b^4*c*e - 12*a*b^2*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
- 64*a^3*c^3))*x - 5*(2*b^4*c*d - 48*a*b^2*c^2*d - 96*a^2*c^3*d - b^5*e + 2
4*a*b^3*c*e + 48*a^2*b*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c
^3))*x + (3*b^5*d - 40*a*b^3*c*d + 240*a^2*b*c^2*d + 2*a*b^4*e - 48*a^2*b^2
*c*e - 96*a^3*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x
^2 + b*x + a)^(5/2)
```

maple [B] time = 0.06, size = 288, normalized size = 2.13

$$-\frac{2 (128 b c^4 e x^5 - 256 c^5 d x^5 + 320 b^2 c^3 e x^4 - 640 b c^4 d x^4 + 320 a b c^3 e x^3 - 640 a c^4 d x^3 + 240 b^3 c^2 e x^3 - 480 b^2 c^3 d x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(128*b*c^4*e*x^5-256*c^5*d*x^5+320*b^2*c^3*e*x^4-
640*b*c^4*d*x^4+320*a*b*c^3*e*x^3-640*a*c^4*d*x^3+240*b^3*c^2*e*x^3-480*b^2
*c^3*d*x^3+480*a*b^2*c^2*e*x^2-960*a*b*c^3*d*x^2+40*b^4*c*e*x^2-80*b^3*c^2*
d*x^2+240*a^2*b*c^2*e*x-480*a^2*c^3*d*x+120*a*b^3*c*e*x-240*a*b^2*c^2*d*x-5
*b^5*e*x+10*b^4*c*d*x+96*a^3*c^2*e+48*a^2*b^2*c*e-240*a^2*b*c^2*d-2*a*b^4*e
+40*a*b^3*c*d-3*b^5*d)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 1.95, size = 395, normalized size = 2.93

$$\frac{x\left(\frac{4c^2 d}{5\left(4ac^2-b^2c\right)}-\frac{2bce}{5\left(4ac^2-b^2c\right)}\right)-\frac{4ace}{5\left(4ac^2-b^2c\right)}+\frac{2bcd}{5\left(4ac^2-b^2c\right)}}{\left(cx^2+bx+a\right)^{5/2}}-\frac{x\left(\frac{2c^2\,(20be-32cd)}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}-\frac{8bc^2e}{15\left(4ac^2-b^2c\right)\left(4ac-b^2\right)}\right)+\frac{bc}{15(4ac}}{\left(cx^2+bx+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((4*c^2*d)/(5*(4*a*c^2 - b^2*c)) - (2*b*c*e)/(5*(4*a*c^2 - b^2*c))) - (4
*a*c*e)/(5*(4*a*c^2 - b^2*c)) + (2*b*c*d)/(5*(4*a*c^2 - b^2*c)))/(a + b*x +
 c*x^2)^(5/2) - (x*((2*c^2*(20*b*e - 32*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c
- b^2)) - (8*b*c^2*e)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(20*b*e
- 32*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*a*c^2*e)/(15*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + ((b*c*(256*c^2*d - 128*
b*c*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (2*c^2*x*(256*c^2*d - 128*
b*c*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a + b*x + c*x^2)^(1/2) - (
4*e)/((60*a*c - 15*b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [**F**(**-1**)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.979 $\int \frac{d+ex}{\left(a+bx+cx^2\right)^{9/2}} \, dx$

Optimal. Leaf size=181

$$\frac{1024c^2(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^4\sqrt{a+bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}}-\frac{2(-2ae+x(2}{7\left(b^2-4ac\right)(a}$$

```
[Out] -2/7*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(7/2)+24/35*(-b*
e+2*c*d)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(5/2)-128/35*c*(-b*e+2*c*d)
*(2*c*x+b)/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(3/2)+1024/35*c^2*(-b*e+2*c*d)*(2*c
*x+b)/(-4*a*c+b^2)^4/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.150$, Rules used = {638, 614, 613}

$$\frac{1024c^2(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^4\sqrt{a+bx+cx^2}}-\frac{128c(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^3\left(a+bx+cx^2\right)^{3/2}}+\frac{24(b+2cx)(2cd-be)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}}-\frac{2(-2ae+x(2}{7\left(b^2-4ac\right)(a}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/(7*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(7/
2)) + (24*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(5/2)) - (128*c*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^3*(a + b*x + c
*x^2)^(3/2)) + (1024*c^2*(2*c*d - b*e)*(b + 2*c*x))/(35*(b^2 - 4*a*c)^4*Sqr
t[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{d+ex}{\left(a+bx+cx^2\right)^{9/2}}dx = -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} - \frac{(12(2cd-be))\int \frac{1}{\left(a+bx+cx^2\right)^{7/2}}dx}{7\left(b^2-4ac\right)}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} + \frac{(192c(2cd-be}{35(b}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} - \frac{128c(2cd-}{35\left(b^2-4ac\right)^3}$$

$$= -\frac{2(bd-2ae+(2cd-be)x)}{7\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{7/2}} + \frac{24(2cd-be)(b+2cx)}{35\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{5/2}} - \frac{128c(2cd-}{35\left(b^2-4ac\right)^3}$$

Mathematica [**A**] time = 0.19, size = 159, normalized size = 0.88

$$\frac{2(5\left(b^2-4ac\right)^3(2ae-bd+bex-2cdx)-12\left(b^2-4ac\right)^2(b+2cx)(a+x(b+cx))(be-2cd)+64c\left(b^2-4ac\right)(b}{35\left(b^2-4ac\right)^4(a+x(b+cx))^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)/(a + b*x + c*x^2)^(9/2),x]
```

```
[Out] (2*(5*(b^2 - 4*a*c)^3*(-(b*d) + 2*a*e - 2*c*d*x + b*e*x) - 12*(b^2 - 4*a*c)
^2*(-2*c*d + b*e)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(b^2 - 4*a*c)*(-2*c*
d + b*e)*(b + 2*c*x)*(a + x*(b + c*x))^2 - 512*c^2*(-2*c*d + b*e)*(b + 2*c*
x)*(a + x*(b + c*x))^3))/(35*(b^2 - 4*a*c)^4*(a + x*(b + c*x))^(7/2))
```

fricas [**B**] time = 41.49, size = 941, normalized size = 5.20

$$\frac{2\left(1024\left(2c^7d-bc^6e\right)x^7+3584\left(2bc^6d-b^2c^5e\right)}{35\left(a^4b^8-16a^5b^6c+96a^6b^4c^2-256a^7b^2c^3+256a^8c^4+\left(b^8c^4-16ab^6c^5+96a^2b^4c^6-256a^3b^2c^7+256a^4c\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(1024*(2*c^7*d - b*c^6*e)*x^7 + 3584*(2*b*c^6*d - b^2*c^5*e)*x^6 + 896
*(2*(5*b^2*c^5 + 4*a*c^6)*d - (5*b^3*c^4 + 4*a*b*c^5)*e)*x^5 + 2240*(2*(b^3
*c^4 + 4*a*b*c^5)*d - (b^4*c^3 + 4*a*b^2*c^4)*e)*x^4 + 280*(2*(b^4*c^3 + 24
*a*b^2*c^4 + 16*a^2*c^5)*d - (b^5*c^2 + 24*a*b^3*c^3 + 16*a^2*b*c^4)*e)*x^3
 - 28*(2*(b^5*c^2 - 40*a*b^3*c^3 - 240*a^2*b*c^4)*d - (b^6*c - 40*a*b^4*c^2
 - 240*a^2*b^2*c^3)*e)*x^2 - (5*b^7 - 84*a*b^5*c + 560*a^2*b^3*c^2 - 2240*a
^3*b*c^3)*d - 2*(a*b^6 - 20*a^2*b^4*c + 240*a^3*b^2*c^2 + 320*a^4*c^3)*e +
7*(2*(b^6*c - 20*a*b^4*c^2 + 240*a^2*b^2*c^3 + 320*a^3*c^4)*d - (b^7 - 20*a
*b^5*c + 240*a^2*b^3*c^2 + 320*a^3*b*c^3)*e)*x)*sqrt(c*x^2 + b*x + a)/(a^4*
b^8 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3 + 256*a^8*c^4 + (b^8*
c^4 - 16*a*b^6*c^5 + 96*a^2*b^4*c^6 - 256*a^3*b^2*c^7 + 256*a^4*c^8)*x^8 +
4*(b^9*c^3 - 16*a*b^7*c^4 + 96*a^2*b^5*c^5 - 256*a^3*b^3*c^6 + 256*a^4*b*c^
7)*x^7 + 2*(3*b^10*c^2 - 46*a*b^8*c^3 + 256*a^2*b^6*c^4 - 576*a^3*b^4*c^5 +
 256*a^4*b^2*c^6 + 512*a^5*c^7)*x^6 + 4*(b^11*c - 13*a*b^9*c^2 + 48*a^2*b^7
*c^3 + 32*a^3*b^5*c^4 - 512*a^4*b^3*c^5 + 768*a^5*b*c^6)*x^5 + (b^12 - 4*a*
b^10*c - 90*a^2*b^8*c^2 + 800*a^3*b^6*c^3 - 2240*a^4*b^4*c^4 + 1536*a^5*b^2
*c^5 + 1536*a^6*c^6)*x^4 + 4*(a*b^11 - 13*a^2*b^9*c + 48*a^3*b^7*c^2 + 32*a
^4*b^5*c^3 - 512*a^5*b^3*c^4 + 768*a^6*b*c^5)*x^3 + 2*(3*a^2*b^10 - 46*a^3*
b^8*c + 256*a^4*b^6*c^2 - 576*a^5*b^4*c^3 + 256*a^6*b^2*c^4 + 512*a^7*c^5)*
x^2 + 4*(a^3*b^9 - 16*a^4*b^7*c + 96*a^5*b^5*c^2 - 256*a^6*b^3*c^3 + 256*a^
7*b*c^4)*x)
```

giac [B] time = 0.32, size = 788, normalized size = 4.35

$$2\Bigl(\Bigl(4\Bigl(2\Bigl(8\Bigl(2\Bigl(4\Bigl(\frac{2\left(2c^7d-bc^6e\right)x}{b^8-16ab^6c+96a^2b^4c^2-256a^3b^2c^3+256a^4c^4}+\frac{7\left(2bc^6d-b^2c^5e\right)}{b^8-16ab^6c+96a^2b^4c^2-256a^3b^2c^3+256a^4c^4}\Bigr)x+\frac{7\bigl(10b^2c^5d+8ac^6d-5}{b^8-16ab^6c+96a^2b^4c^2-256}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="giac")
```

```
[Out] 2/35*((4*(2*(8*(2*(4*(2*(2*c^7*d - b*c^6*e)*x/(b^8 - 16*a*b^6*c + 96*a^2*b^
4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4) + 7*(2*b*c^6*d - b^2*c^5*e)/(b^8 - 1
6*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 7*(10*b^2*
c^5*d + 8*a*c^6*d - 5*b^3*c^4*e - 4*a*b*c^5*e)/(b^8 - 16*a*b^6*c + 96*a^2*b
^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 35*(2*b^3*c^4*d + 8*a*b*c^5*d
- b^4*c^3*e - 4*a*b^2*c^4*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b
^2*c^3 + 256*a^4*c^4))*x + 35*(2*b^4*c^3*d + 48*a*b^2*c^4*d + 32*a^2*c^5*d
- b^5*c^2*e - 24*a*b^3*c^3*e - 16*a^2*b*c^4*e)/(b^8 - 16*a*b^6*c + 96*a^2*b
^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x - 7*(2*b^5*c^2*d - 80*a*b^3*c^3*
d - 480*a^2*b*c^4*d - b^6*c*e + 40*a*b^4*c^2*e + 240*a^2*b^2*c^3*e)/(b^8 -
16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x + 7*(2*b^6*
c*d - 40*a*b^4*c^2*d + 480*a^2*b^2*c^3*d + 640*a^3*c^4*d - b^7*e + 20*a*b^5
*c*e - 240*a^2*b^3*c^2*e - 320*a^3*b*c^3*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*
c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^4))*x - (5*b^7*d - 84*a*b^5*c*d + 560*a^2
*b^3*c^2*d - 2240*a^3*b*c^3*d + 2*a*b^6*e - 40*a^2*b^4*c*e + 480*a^3*b^2*c^
2*e + 640*a^4*c^3*e)/(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 +
 256*a^4*c^4))/(c*x^2 + b*x + a)^(7/2)
```

maple [B] time = 0.06, size = 500, normalized size = 2.76

$$-\frac{2\bigl(1024b\,c^6e\,x^7-2048c^7d\,x^7+3584b^2c^5e\,x^6-7168b\,c^6d\,x^6+3584ab\,c^5e\,x^5-7168a\,c^6d\,x^5+4480b^3c^4e\,x^5-89}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)/(c*x^2+b*x+a)^(9/2),x)
```

```
[Out] -2/35/(c*x^2+b*x+a)^(7/2)*(1024*b*c^6*e*x^7-2048*c^7*d*x^7+3584*b^2*c^5*e*x
^6-7168*b*c^6*d*x^6+3584*a*b*c^5*e*x^5-7168*a*c^6*d*x^5+4480*b^3*c^4*e*x^5-
8960*b^2*c^5*d*x^5+8960*a*b^2*c^4*e*x^4-17920*a*b*c^5*d*x^4+2240*b^4*c^3*e*
x^4-4480*b^3*c^4*d*x^4+4480*a^2*b*c^4*e*x^3-8960*a^2*c^5*d*x^3+6720*a*b^3*c
^3*e*x^3-13440*a*b^2*c^4*d*x^3+280*b^5*c^2*e*x^3-560*b^4*c^3*d*x^3+6720*a^2
*b^2*c^3*e*x^2-13440*a^2*b*c^4*d*x^2+1120*a*b^4*c^2*e*x^2-2240*a*b^3*c^3*d*
x^2-28*b^6*c*e*x^2+56*b^5*c^2*d*x^2+2240*a^3*b*c^3*e*x-4480*a^3*c^4*d*x+168
0*a^2*b^3*c^2*e*x-3360*a^2*b^2*c^3*d*x-140*a*b^5*c*e*x+280*a*b^4*c^2*d*x+7*
b^7*e*x-14*b^6*c*d*x+640*a^4*c^3*e+480*a^3*b^2*c^2*e-2240*a^3*b*c^3*d-40*a^
2*b^4*c*e+560*a^2*b^3*c^2*d+2*a*b^6*e-84*a*b^5*c*d+5*b^7*d)/(256*a^4*c^4-25
6*a^3*b^2*c^3+96*a^2*b^4*c^2-16*a*b^6*c+b^8)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x^2+b*x+a)^(9/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 2.47, size = 599, normalized size = 3.31

$$\frac{x\left(\frac{2c^2\left(768c^2d-368bce\right)}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}-\frac{32bc^3e}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}\right)+\frac{bc\left(768c^2d-368bce\right)}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}-\frac{64ac^3e}{105\left(4ac^2-b^2c\right)\left(4ac-b^2\right)^2}}{\left(cx^2+bx+a\right)^{3/2}}+\frac{x\left(\frac{4c^2}{7\left(4ac^2-\right.}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((d + e*x)/(a + b*x + c*x^2)^(9/2),x)
```

```
[Out] (x*((2*c^2*(768*c^2*d - 368*b*c*e))/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2)
 - (32*b*c^3*e)/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2)) + (b*c*(768*c^2*d
- 368*b*c*e))/(105*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) - (64*a*c^3*e)/(105*(
4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a + b*x + c*x^2)^(3/2) + (x*((4*c^2*d)/
(7*(4*a*c^2 - b^2*c)) - (2*b*c*e)/(7*(4*a*c^2 - b^2*c))) - (4*a*c*e)/(7*(4*
a*c^2 - b^2*c)) + (2*b*c*d)/(7*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(7/2)
- (x*((2*c^2*(28*b*e - 48*c*d))/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b
*c^2*e)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(28*b*e - 48*c*d))/(35
*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*a*c^2*e)/(35*(4*a*c^2 - b^2*c)*(4*a
*c - b^2)))/(a + b*x + c*x^2)^(5/2) + ((2*c^2*x*(2048*c^3*d - 1024*b*c^2*e)
)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^3) + (b*c*(2048*c^3*d - 1024*b*c^2*e)
)/(35*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^3))/(a + b*x + c*x^2)^(1/2) - (4*e)/(
(140*a*c - 35*b^2)*(a + b*x + c*x^2)^(5/2)) + (16*c*e)/(105*(4*a*c - b^2)^2
*(a + b*x + c*x^2)^(3/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)/(c*x**2+b*x+a)**(9/2),x)
```

```
[Out] Timed out
```

3.980 $\int \frac{1-x}{x\sqrt{1+3x+x^2}}\,dx$

Optimal. Leaf size=19

$$-2\tanh^{-1}\left(\frac{x+1}{\sqrt{x^2+3x+1}}\right)$$

```
[Out] -2*arctanh((1+x)/(x^2+3*x+1)^(1/2))
```

Rubi [A] time = 0.01, antiderivative size = 19, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {838, 206}

$$-2\tanh^{-1}\left(\frac{x+1}{\sqrt{x^2+3x+1}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(1 - x)/(x*Sqrt[1 + 3*x + x^2]),x]
```

```
[Out] -2*ArcTanh[(1 + x)/Sqrt[1 + 3*x + x^2]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 838

```
Int[((f_) + (g_.)*(x_))/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_
.)*(x_)^2]), x_Symbol] :> Dist[(4*f*(a - d))/(b*d - a*e), Subst[Int[1/(4*(a
 - d) - x^2), x], x, (2*(a - d) + (b - e)*x)/Sqrt[a + b*x + c*x^2]], x] /;
FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[4*c*(a - d) - (b - e)^2, 0] && EqQ[e
*f*(b - e) - 2*g*(b*d - a*e), 0] && NeQ[b*d - a*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{1-x}{x\sqrt{1+3x+x^2}}\,dx &= -\left(4\,\text{Subst}\left(\int \frac{1}{4-x^2}\,dx, x, \frac{2+2x}{\sqrt{1+3x+x^2}}\right)\right)\\ &= -2\tanh^{-1}\left(\frac{1+x}{\sqrt{1+3x+x^2}}\right)\end{aligned}$$

Mathematica [B] time = 0.01, size = 49, normalized size = 2.58

$$-\tanh^{-1}\left(\frac{2x+3}{2\sqrt{x^2+3x+1}}\right)-\tanh^{-1}\left(\frac{3x+2}{2\sqrt{x^2+3x+1}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - x)/(x*Sqrt[1 + 3*x + x^2]),x]
```

```
[Out] -ArcTanh[(3 + 2*x)/(2*Sqrt[1 + 3*x + x^2])] - ArcTanh[(2 + 3*x)/(2*Sqrt[1 +
 3*x + x^2])]
```

fricas [B] time = 0.68, size = 47, normalized size = 2.47

$$\log\left(4\,x^2-\sqrt{x^2+3\,x+1}\,(4\,x+5)+11\,x+5\right)-\log\left(-x+\sqrt{x^2+3\,x+1}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="fricas")
```

```
[Out] log(4*x^2 - sqrt(x^2 + 3*x + 1)*(4*x + 5) + 11*x + 5) - log(-x + sqrt(x^2 +
 3*x + 1) + 1)
```

giac [B] time = 0.20, size = 56, normalized size = 2.95

$$-\log\left(\left|-x+\sqrt{x^2+3\,x+1}\,+1\right|\right)+\log\left(\left|-x+\sqrt{x^2+3\,x+1}\,-1\right|\right)+\log\left(\left|-2\,x+2\,\sqrt{x^2+3\,x+1}\,-3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="giac")
```

```
[Out] -log(abs(-x + sqrt(x^2 + 3*x + 1) + 1)) + log(abs(-x + sqrt(x^2 + 3*x + 1)
- 1)) + log(abs(-2*x + 2*sqrt(x^2 + 3*x + 1) - 3))
```

maple [B] time = 0.06, size = 38, normalized size = 2.00

$$-\operatorname{arctanh}\left(\frac{3x+2}{2\sqrt{x^2+3x+1}}\right)-\ln\left(x+\frac{3}{2}+\sqrt{x^2+3x+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)/x/(x^2+3*x+1)^(1/2),x)
```

```
[Out] -ln(x+3/2+(x^2+3*x+1)^(1/2))-arctanh(1/2*(3*x+2)/(x^2+3*x+1)^(1/2))
```

maxima [B] time = 0.71, size = 48, normalized size = 2.53

$$-\log\left(2\,x+2\,\sqrt{x^2+3\,x+1}\,+3\right)-\log\left(\frac{2\,\sqrt{x^2+3\,x+1}}{|x|}+\frac{2}{|x|}+3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x^2+3*x+1)^(1/2),x, algorithm="maxima")
```

```
[Out] -log(2*x + 2*sqrt(x^2 + 3*x + 1) + 3) - log(2*sqrt(x^2 + 3*x + 1)/abs(x) +
2/abs(x) + 3)
```

mupad [B] time = 1.83, size = 41, normalized size = 2.16

$$-\ln\left(\frac{3\,x+2\,\sqrt{x^2+3\,x+1}\,+2}{x}\right)-\ln\left(x+\sqrt{x^2+3\,x+1}\,+\frac{3}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 1)/(x*(3*x + x^2 + 1)^(1/2)),x)
```

```
[Out] - log((3*x + 2*(3*x + x^2 + 1)^(1/2) + 2)/x) - log(x + (3*x + x^2 + 1)^(1/2
) + 3/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{1}{x\sqrt{x^2+3x+1}}\right)dx-\int\frac{1}{\sqrt{x^2+3x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)/x/(x**2+3*x+1)**(1/2),x)
```

```
[Out] -Integral(-1/(x*sqrt(x**2 + 3*x + 1)), x) - Integral(1/sqrt(x**2 + 3*x + 1)
, x)
```

3.981 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{11}x^{11/2}(aB+Ab)+\frac{2}{9}aAx^{9/2}+\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{15}Bcx^{15/2}$$

```
[Out] 2/9*a*A*x^(9/2)+2/11*(A*b+B*a)*x^(11/2)+2/13*(A*c+B*b)*x^(13/2)+2/15*B*c*x^
(15/2)
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{11}x^{11/2}(aB+Ab)+\frac{2}{9}aAx^{9/2}+\frac{2}{13}x^{13/2}(Ac+bB)+\frac{2}{15}Bcx^{15/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(9/2))/9 + (2*(A*b + a*B)*x^(11/2))/11 + (2*(b*B + A*c)*x^(13/2))/
13 + (2*B*c*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)\,dx &= \int \left(aAx^{7/2}+(Ab+aB)x^{9/2}+(bB+Ac)x^{11/2}+Bcx^{13/2}\right)\,dx\\ &= \frac{2}{9}aAx^{9/2}+\frac{2}{11}(Ab+aB)x^{11/2}+\frac{2}{13}(bB+Ac)x^{13/2}+\frac{2}{15}Bcx^{15/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 47, normalized size = 0.85

$$\frac{2x^{9/2}\left(65a(11A+9Bx)+45Ax(13b+11cx)+33Bx^2(15b+13cx)\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(9/2)*(65*a*(11*A + 9*B*x) + 45*A*x*(13*b + 11*c*x) + 33*B*x^2*(15*b +
 13*c*x)))/6435
```

fricas [A] time = 0.55, size = 44, normalized size = 0.80

$$\frac{2}{6435}\left(429\,Bcx^7+495\,(Bb+Ac)x^6+715\,Aax^4+585\,(Ba+Ab)x^5\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*x^7 + 495*(B*b + A*c)*x^6 + 715*A*a*x^4 + 585*(B*a + A*b)*x
^5)*sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.78

$$\frac{2}{15}\,Bcx^{\frac{15}{2}} + \frac{2}{13}\,Bbx^{\frac{13}{2}} + \frac{2}{13}\,Acx^{\frac{13}{2}} + \frac{2}{11}\,Bax^{\frac{11}{2}} + \frac{2}{11}\,Abx^{\frac{11}{2}} + \frac{2}{9}\,Aax^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*B*b*x^(13/2) + 2/13*A*c*x^(13/2) + 2/11*B*a*x^(11/
2) + 2/11*A*b*x^(11/2) + 2/9*A*a*x^(9/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(429Bc\,x^{3} + 495Ac\,x^{2} + 495Bb\,x^{2} + 585Abx + 585Bax + 715Aa\right)x^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/6435*x^(9/2)*(429*B*c*x^3+495*A*c*x^2+495*B*b*x^2+585*A*b*x+585*B*a*x+715
*A*a)
```

maxima [A] time = 0.60, size = 39, normalized size = 0.71

$$\frac{2}{15}\,Bcx^{\frac{15}{2}} + \frac{2}{13}\,(Bb + Ac)x^{\frac{13}{2}} + \frac{2}{9}\,Aax^{\frac{9}{2}} + \frac{2}{11}\,(Ba + Ab)x^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/15*B*c*x^(15/2) + 2/13*(B*b + A*c)*x^(13/2) + 2/9*A*a*x^(9/2) + 2/11*(B*a
 + A*b)*x^(11/2)
```

mupad [B] time = 1.26, size = 41, normalized size = 0.75

$$x^{11/2}\,\left(\frac{2\,A\,b}{11}+\frac{2\,B\,a}{11}\right)+x^{13/2}\,\left(\frac{2\,A\,c}{13}+\frac{2\,B\,b}{13}\right)+\frac{2\,A\,a\,x^{9/2}}{9}+\frac{2\,B\,c\,x^{15/2}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(11/2)*((2*A*b)/11 + (2*B*a)/11) + x^(13/2)*((2*A*c)/13 + (2*B*b)/13) + (
2*A*a*x^(9/2))/9 + (2*B*c*x^(15/2))/15
```

sympy [A] time = 8.08, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{9}{2}}}{9} + \frac{2Abx^{\frac{11}{2}}}{11} + \frac{2Acx^{\frac{13}{2}}}{13} + \frac{2Bax^{\frac{11}{2}}}{11} + \frac{2Bbx^{\frac{13}{2}}}{13} + \frac{2Bcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(9/2)/9 + 2*A*b*x**(11/2)/11 + 2*A*c*x**(13/2)/13 + 2*B*a*x**(11/2
)/11 + 2*B*b*x**(13/2)/13 + 2*B*c*x**(15/2)/15
```

3.982 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{9}x^{9/2}(aB+Ab)+\frac{2}{7}aAx^{7/2}+\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{13}Bcx^{13/2}$$

```
[Out] 2/7*a*A*x^(7/2)+2/9*(A*b+B*a)*x^(9/2)+2/11*(A*c+B*b)*x^(11/2)+2/13*B*c*x^(1
3/2)
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{9}x^{9/2}(aB+Ab)+\frac{2}{7}aAx^{7/2}+\frac{2}{11}x^{11/2}(Ac+bB)+\frac{2}{13}Bcx^{13/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(7/2))/7 + (2*(A*b + a*B)*x^(9/2))/9 + (2*(b*B + A*c)*x^(11/2))/11
 + (2*B*c*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^{5/2}+(Ab+aB)x^{7/2}+(bB+Ac)x^{9/2}+Bcx^{11/2}\right)\,dx\\&=\frac{2}{7}aAx^{7/2}+\frac{2}{9}(Ab+aB)x^{9/2}+\frac{2}{11}(bB+Ac)x^{11/2}+\frac{2}{13}Bcx^{13/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 48, normalized size = 0.87

$$\frac{2x^{7/2}(143a(9A+7Bx)+7x(13A(11b+9cx)+9Bx(13b+11cx)))}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(7/2)*(143*a*(9*A + 7*B*x) + 7*x*(13*A*(11*b + 9*c*x) + 9*B*x*(13*b +
11*c*x))))/9009
```

fricas [A] time = 0.61, size = 44, normalized size = 0.80

$$\frac{2}{9009}\left(693\,Bcx^6+819\,(Bb+Ac)x^5+1287\,Aax^3+1001\,(Ba+Ab)x^4\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*x^6 + 819*(B*b + A*c)*x^5 + 1287*A*a*x^3 + 1001*(B*a + A*b)
*x^4)*sqrt(x)
```

giac [A] time = 0.19, size = 43, normalized size = 0.78

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,Bbx^{\frac{11}{2}}+\frac{2}{11}\,Acx^{\frac{11}{2}}+\frac{2}{9}\,Bax^{\frac{9}{2}}+\frac{2}{9}\,Abx^{\frac{9}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*B*b*x^(11/2) + 2/11*A*c*x^(11/2) + 2/9*B*a*x^(9/2)
 + 2/9*A*b*x^(9/2) + 2/7*A*a*x^(7/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(693Bc\,x^{3}+819Ac\,x^{2}+819Bb\,x^{2}+1001Abx+1001Bax+1287Aa\right)x^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/9009*x^(7/2)*(693*B*c*x^3+819*A*c*x^2+819*B*b*x^2+1001*A*b*x+1001*B*a*x+1
287*A*a)
```

maxima [A] time = 0.57, size = 39, normalized size = 0.71

$$\frac{2}{13}\,Bcx^{\frac{13}{2}}+\frac{2}{11}\,(Bb+Ac)x^{\frac{11}{2}}+\frac{2}{7}\,Aax^{\frac{7}{2}}+\frac{2}{9}\,(Ba+Ab)x^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/13*B*c*x^(13/2) + 2/11*(B*b + A*c)*x^(11/2) + 2/7*A*a*x^(7/2) + 2/9*(B*a
+ A*b)*x^(9/2)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.75

$$x^{9/2}\,\left(\frac{2\,A\,b}{9}+\frac{2\,B\,a}{9}\right)+x^{11/2}\,\left(\frac{2\,A\,c}{11}+\frac{2\,B\,b}{11}\right)+\frac{2\,A\,a\,x^{7/2}}{7}+\frac{2\,B\,c\,x^{13/2}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(9/2)*((2*A*b)/9 + (2*B*a)/9) + x^(11/2)*((2*A*c)/11 + (2*B*b)/11) + (2*A
*a*x^(7/2))/7 + (2*B*c*x^(13/2))/13
```

sympy [A] time = 3.97, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{7}{2}}}{7}+\frac{2Abx^{\frac{9}{2}}}{9}+\frac{2Acx^{\frac{11}{2}}}{11}+\frac{2Bax^{\frac{9}{2}}}{9}+\frac{2Bbx^{\frac{11}{2}}}{11}+\frac{2Bcx^{\frac{13}{2}}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(7/2)/7 + 2*A*b*x**(9/2)/9 + 2*A*c*x**(11/2)/11 + 2*B*a*x**(9/2)/9
 + 2*B*b*x**(11/2)/11 + 2*B*c*x**(13/2)/13
```

3.983 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=55

$$\frac{2}{7}x^{7/2}(aB+Ab)+\frac{2}{5}aAx^{5/2}+\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{11}Bcx^{11/2}$$

```
[Out] 2/5*a*A*x^(5/2)+2/7*(A*b+B*a)*x^(7/2)+2/9*(A*c+B*b)*x^(9/2)+2/11*B*c*x^(11/
2)
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{7}x^{7/2}(aB+Ab)+\frac{2}{5}aAx^{5/2}+\frac{2}{9}x^{9/2}(Ac+bB)+\frac{2}{11}Bcx^{11/2}$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(5/2))/5 + (2*(A*b + a*B)*x^(7/2))/7 + (2*(b*B + A*c)*x^(9/2))/9 +
 (2*B*c*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int\left(aAx^{3/2}+(Ab+aB)x^{5/2}+(bB+Ac)x^{7/2}+Bcx^{9/2}\right)dx\\&=\frac{2}{5}aAx^{5/2}+\frac{2}{7}(Ab+aB)x^{7/2}+\frac{2}{9}(bB+Ac)x^{9/2}+\frac{2}{11}Bcx^{11/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 48, normalized size = 0.87

$$\frac{2x^{5/2}(99a(7A+5Bx)+5x(11A(9b+7cx)+7Bx(11b+9cx)))}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(5/2)*(99*a*(7*A + 5*B*x) + 5*x*(11*A*(9*b + 7*c*x) + 7*B*x*(11*b + 9*
c*x))))/3465
```

fricas [A] time = 0.75, size = 44, normalized size = 0.80

$$\frac{2}{3465}\left(315\,Bcx^5+385\,(Bb+Ac)x^4+693\,Aax^2+495\,(Ba+Ab)x^3\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*x^5 + 385*(B*b + A*c)*x^4 + 693*A*a*x^2 + 495*(B*a + A*b)*x
^3)*sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.78

$$\frac{2}{11}Bcx^{\frac{11}{2}}+\frac{2}{9}Bbx^{\frac{9}{2}}+\frac{2}{9}Acx^{\frac{9}{2}}+\frac{2}{7}Bax^{\frac{7}{2}}+\frac{2}{7}Abx^{\frac{7}{2}}+\frac{2}{5}Aax^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*B*b*x^(9/2) + 2/9*A*c*x^(9/2) + 2/7*B*a*x^(7/2) + 2
/7*A*b*x^(7/2) + 2/5*A*a*x^(5/2)
```

maple [A] time = 0.06, size = 42, normalized size = 0.76

$$\frac{2\left(315Bc\,x^{3}+385Ac\,x^{2}+385Bb\,x^{2}+495Abx+495Bax+693Aa\right)x^{\frac{5}{2}}}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 2/3465*x^(5/2)*(315*B*c*x^3+385*A*c*x^2+385*B*b*x^2+495*A*b*x+495*B*a*x+693
*A*a)
```

maxima [A] time = 0.48, size = 39, normalized size = 0.71

$$\frac{2}{11}Bcx^{\frac{11}{2}}+\frac{2}{9}(Bb+Ac)x^{\frac{9}{2}}+\frac{2}{5}Aax^{\frac{5}{2}}+\frac{2}{7}(Ba+Ab)x^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/11*B*c*x^(11/2) + 2/9*(B*b + A*c)*x^(9/2) + 2/5*A*a*x^(5/2) + 2/7*(B*a +
A*b)*x^(7/2)
```

mupad [B] time = 0.04, size = 41, normalized size = 0.75

$$x^{7/2}\left(\frac{2\,A\,b}{7}+\frac{2\,B\,a}{7}\right)+x^{9/2}\left(\frac{2\,A\,c}{9}+\frac{2\,B\,b}{9}\right)+\frac{2\,A\,a\,x^{5/2}}{5}+\frac{2\,B\,c\,x^{11/2}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(7/2)*((2*A*b)/7 + (2*B*a)/7) + x^(9/2)*((2*A*c)/9 + (2*B*b)/9) + (2*A*a*
x^(5/2))/5 + (2*B*c*x^(11/2))/11
```

sympy [A] time = 1.75, size = 70, normalized size = 1.27

$$\frac{2Aax^{\frac{5}{2}}}{5}+\frac{2Abx^{\frac{7}{2}}}{7}+\frac{2Acx^{\frac{9}{2}}}{9}+\frac{2Bax^{\frac{7}{2}}}{7}+\frac{2Bbx^{\frac{9}{2}}}{9}+\frac{2Bcx^{\frac{11}{2}}}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] 2*A*a*x**(5/2)/5 + 2*A*b*x**(7/2)/7 + 2*A*c*x**(9/2)/9 + 2*B*a*x**(7/2)/7 +
 2*B*b*x**(9/2)/9 + 2*B*c*x**(11/2)/11
```

3.984 $\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=55

$$\frac{2}{5}x^{5/2}(aB+Ab)+\frac{2}{3}aAx^{3/2}+\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{9}Bcx^{9/2}$$

```
[Out] 2/3*a*A*x^(3/2)+2/5*(A*b+B*a)*x^(5/2)+2/7*(A*c+B*b)*x^(7/2)+2/9*B*c*x^(9/2)
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{5}x^{5/2}(aB+Ab)+\frac{2}{3}aAx^{3/2}+\frac{2}{7}x^{7/2}(Ac+bB)+\frac{2}{9}Bcx^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*a*A*x^(3/2))/3 + (2*(A*b + a*B)*x^(5/2))/5 + (2*(b*B + A*c)*x^(7/2))/7 +
 (2*B*c*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}(A+Bx)\left(a+bx+cx^2\right)dx &= \int \left(aA\sqrt{x}+(Ab+aB)x^{3/2}+(bB+Ac)x^{5/2}+Bcx^{7/2}\right)dx\\ &= \frac{2}{3}aAx^{3/2}+\frac{2}{5}(Ab+aB)x^{5/2}+\frac{2}{7}(bB+Ac)x^{7/2}+\frac{2}{9}Bcx^{9/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 47, normalized size = 0.85

$$\frac{2}{315}x^{3/2}(21a(5A+3Bx)+x(9A(7b+5cx)+5Bx(9b+7cx)))$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (2*x^(3/2)*(21*a*(5*A + 3*B*x) + x*(9*A*(7*b + 5*c*x) + 5*B*x*(9*b + 7*c*x)
)))/315
```

fricas [A] time = 0.47, size = 42, normalized size = 0.76

$$\frac{2}{315}\left(35\,Bcx^4+45\,(Bb+Ac)x^3+105\,Aax+63\,(Ba+Ab)x^2\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*x^4 + 45*(B*b + A*c)*x^3 + 105*A*a*x + 63*(B*a + A*b)*x^2)*sq
rt(x)
```

giac [**A**] time = 0.22, size = 43, normalized size = 0.78

$$\frac{2}{9}\,Bcx^{\frac{9}{2}}+\frac{2}{7}\,Bbx^{\frac{7}{2}}+\frac{2}{7}\,Acx^{\frac{7}{2}}+\frac{2}{5}\,Bax^{\frac{5}{2}}+\frac{2}{5}\,Abx^{\frac{5}{2}}+\frac{2}{3}\,Aax^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*B*b*x^(7/2) + 2/7*A*c*x^(7/2) + 2/5*B*a*x^(5/2) + 2/5
*A*b*x^(5/2) + 2/3*A*a*x^(3/2)
```

maple [**A**] time = 0.05, size = 42, normalized size = 0.76

$$\frac{2\left(35Bc\,x^{3}+45Ac\,x^{2}+45Bb\,x^{2}+63Abx+63Bax+105Aa\right)x^{\frac{3}{2}}}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x)
```

```
[Out] 2/315*x^(3/2)*(35*B*c*x^3+45*A*c*x^2+45*B*b*x^2+63*A*b*x+63*B*a*x+105*A*a)
```

maxima [**A**] time = 0.50, size = 39, normalized size = 0.71

$$\frac{2}{9}\,Bcx^{\frac{9}{2}}+\frac{2}{7}\,(Bb+Ac)x^{\frac{7}{2}}+\frac{2}{3}\,Aax^{\frac{3}{2}}+\frac{2}{5}\,(Ba+Ab)x^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c*x^(9/2) + 2/7*(B*b + A*c)*x^(7/2) + 2/3*A*a*x^(3/2) + 2/5*(B*a + A*
b)*x^(5/2)
```

mupad [**B**] time = 0.04, size = 41, normalized size = 0.75

$$x^{5/2}\,\left(\frac{2\,A\,b}{5}+\frac{2\,B\,a}{5}\right)+x^{7/2}\,\left(\frac{2\,A\,c}{7}+\frac{2\,B\,b}{7}\right)+\frac{2\,A\,a\,x^{3/2}}{3}+\frac{2\,B\,c\,x^{9/2}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^(5/2)*((2*A*b)/5 + (2*B*a)/5) + x^(7/2)*((2*A*c)/7 + (2*B*b)/7) + (2*A*a*
x^(3/2))/3 + (2*B*c*x^(9/2))/9
```

sympy [**A**] time = 2.79, size = 53, normalized size = 0.96

$$\frac{2Aax^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{9}{2}}}{9}+\frac{2x^{\frac{7}{2}}\,(Ac+Bb)}{7}+\frac{2x^{\frac{5}{2}}\,(Ab+Ba)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)*x**(1/2),x)
```

```
[Out] 2*A*a*x**(3/2)/3 + 2*B*c*x**(9/2)/9 + 2*x**(7/2)*(A*c + B*b)/7 + 2*x**(5/2)
*(A*b + B*a)/5
```

3.985 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{\sqrt{x}}\,dx$

Optimal. Leaf size=53

$$\frac{2}{3}x^{3/2}(aB+Ab)+2aA\sqrt{x}+\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{7}Bcx^{7/2}$$

```
[Out] 2/3*(A*b+B*a)*x^(3/2)+2/5*(A*c+B*b)*x^(5/2)+2/7*B*c*x^(7/2)+2*a*A*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{2}{3}x^{3/2}(aB+Ab)+2aA\sqrt{x}+\frac{2}{5}x^{5/2}(Ac+bB)+\frac{2}{7}Bcx^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] 2*a*A*Sqrt[x] + (2*(A*b + a*B)*x^(3/2))/3 + (2*(b*B + A*c)*x^(5/2))/5 + (2*
B*c*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{\sqrt{x}}\,dx &= \int \left(\frac{aA}{\sqrt{x}}+(Ab+aB)\sqrt{x}+(bB+Ac)x^{3/2}+Bcx^{5/2}\right)dx\\ &= 2aA\sqrt{x}+\frac{2}{3}(Ab+aB)x^{3/2}+\frac{2}{5}(bB+Ac)x^{5/2}+\frac{2}{7}Bcx^{7/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 46, normalized size = 0.87

$$\frac{2}{105}\sqrt{x}\,(35a(3A+Bx)+x(7A(5b+3cx)+3Bx(7b+5cx)))$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(35*a*(3*A + B*x) + x*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b + 5*c*x)))
)/105
```

fricas [A] time = 0.63, size = 39, normalized size = 0.74

$$\frac{2}{105}\left(15\,Bcx^3+21\,(Bb+Ac)x^2+105\,Aa+35\,(Ba+Ab)x\right)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*x^3 + 21*(B*b + A*c)*x^2 + 105*A*a + 35*(B*a + A*b)*x)*sqrt(x
)
```

giac [A]   time = 0.16, size = 43, normalized size = 0.81

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,Bbx^{\frac{5}{2}}+\frac{2}{5}\,Acx^{\frac{5}{2}}+\frac{2}{3}\,Bax^{\frac{3}{2}}+\frac{2}{3}\,Abx^{\frac{3}{2}}+2\,Aa\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*B*b*x^(5/2) + 2/5*A*c*x^(5/2) + 2/3*B*a*x^(3/2) + 2/3
*A*b*x^(3/2) + 2*A*a*sqrt(x)
```

maple [A]   time = 0.05, size = 42, normalized size = 0.79

$$\frac{2\left(15Bc\,x^{3}+21Ac\,x^{2}+21Bb\,x^{2}+35Abx+35Bax+105Aa\right)\sqrt{x}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x)
```

```
[Out] 2/105*x^(1/2)*(15*B*c*x^3+21*A*c*x^2+21*B*b*x^2+35*A*b*x+35*B*a*x+105*A*a)
```

maxima [A]   time = 0.50, size = 39, normalized size = 0.74

$$\frac{2}{7}\,Bcx^{\frac{7}{2}}+\frac{2}{5}\,(Bb+Ac)x^{\frac{5}{2}}+2\,Aa\sqrt{x}+\frac{2}{3}\,(Ba+Ab)x^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c*x^(7/2) + 2/5*(B*b + A*c)*x^(5/2) + 2*A*a*sqrt(x) + 2/3*(B*a + A*b)
*x^(3/2)
```

mupad [B]   time = 0.05, size = 41, normalized size = 0.77

$$x^{3/2}\left(\frac{2\,A\,b}{3}+\frac{2\,B\,a}{3}\right)+x^{5/2}\left(\frac{2\,A\,c}{5}+\frac{2\,B\,b}{5}\right)+2\,A\,a\,\sqrt{x}+\frac{2\,B\,c\,x^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*A*b)/3 + (2*B*a)/3) + x^(5/2)*((2*A*c)/5 + (2*B*b)/5) + 2*A*a*x
^(1/2) + (2*B*c*x^(7/2))/7
```

sympy [A]   time = 0.47, size = 68, normalized size = 1.28

$$2Aa\sqrt{x}+\frac{2Abx^{\frac{3}{2}}}{3}+\frac{2Acx^{\frac{5}{2}}}{5}+\frac{2Bax^{\frac{3}{2}}}{3}+\frac{2Bbx^{\frac{5}{2}}}{5}+\frac{2Bcx^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(1/2),x)
```

```
[Out] 2*A*a*sqrt(x) + 2*A*b*x**(3/2)/3 + 2*A*c*x**(5/2)/5 + 2*B*a*x**(3/2)/3 + 2*
B*b*x**(5/2)/5 + 2*B*c*x**(7/2)/7
```

3.986 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{3/2}}\,dx$

Optimal. Leaf size=51

$$2\sqrt{x}\,(aB+Ab)-\frac{2aA}{\sqrt{x}}+\frac{2}{3}x^{3/2}(Ac+bB)+\frac{2}{5}Bcx^{5/2}$$

```
[Out] 2/3*(A*c+B*b)*x^(3/2)+2/5*B*c*x^(5/2)-2*a*A/x^(1/2)+2*(A*b+B*a)*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}=0.048$, Rules used = {765}

$$2\sqrt{x}\,(aB+Ab)-\frac{2aA}{\sqrt{x}}+\frac{2}{3}x^{3/2}(Ac+bB)+\frac{2}{5}Bcx^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (-2*a*A)/Sqrt[x] + 2*(A*b + a*B)*Sqrt[x] + (2*(b*B + A*c)*x^(3/2))/3 + (2*B
*c*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{3/2}}\,dx &= \int \left(\frac{aA}{x^{3/2}}+\frac{Ab+aB}{\sqrt{x}}+(bB+Ac)\sqrt{x}+Bcx^{3/2}\right)dx\\ &= -\frac{2aA}{\sqrt{x}}+2(Ab+aB)\sqrt{x}+\frac{2}{3}(bB+Ac)x^{3/2}+\frac{2}{5}Bcx^{5/2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 44, normalized size = 0.86

$$\frac{2x(5A(3b+cx)+Bx(5b+3cx))-30a(A-Bx)}{15\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x]
```

```
[Out] (-30*a*(A - B*x) + 2*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)))/(15*Sqrt[x])
```

fricas [A] time = 0.69, size = 39, normalized size = 0.76

$$\frac{2\left(3\,Bcx^3+5\,(Bb+Ac)x^2-15\,Aa+15\,(Ba+Ab)x\right)}{15\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*x^3 + 5*(B*b + A*c)*x^2 - 15*A*a + 15*(B*a + A*b)*x)/sqrt(x)
```

giac [A] time = 0.15, size = 43, normalized size = 0.84

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,Bbx^{\frac{3}{2}}+\frac{2}{3}\,Acx^{\frac{3}{2}}+2\,Ba\sqrt{x}+2\,Ab\sqrt{x}-\frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*B*b*x^(3/2) + 2/3*A*c*x^(3/2) + 2*B*a*sqrt(x) + 2*A*b
*sqrt(x) - 2*A*a/sqrt(x)
```

maple [A] time = 0.06, size = 42, normalized size = 0.82

$$-\frac{2\left(-3Bc\,x^{3}-5Ac\,x^{2}-5Bb\,x^{2}-15Abx-15Bax+15Aa\right)}{15\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x)
```

```
[Out] -2/15*(-3*B*c*x^3-5*A*c*x^2-5*B*b*x^2-15*A*b*x-15*B*a*x+15*A*a)/x^(1/2)
```

maxima [A] time = 0.56, size = 39, normalized size = 0.76

$$\frac{2}{5}\,Bcx^{\frac{5}{2}}+\frac{2}{3}\,(Bb+Ac)x^{\frac{3}{2}}-\frac{2\,Aa}{\sqrt{x}}+2\,(Ba+Ab)\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c*x^(5/2) + 2/3*(B*b + A*c)*x^(3/2) - 2*A*a/sqrt(x) + 2*(B*a + A*b)*s
qrt(x)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.80

$$\sqrt{x}\,\left(2\,A\,b+2\,B\,a\right)+x^{3/2}\,\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)-\frac{2\,A\,a}{\sqrt{x}}+\frac{2\,B\,c\,x^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*A*b + 2*B*a) + x^(3/2)*((2*A*c)/3 + (2*B*b)/3) - (2*A*a)/x^(1/2)
 + (2*B*c*x^(5/2))/5
```

sympy [A] time = 0.64, size = 65, normalized size = 1.27

$$-\frac{2Aa}{\sqrt{x}}+2Ab\sqrt{x}+\frac{2Acx^{\frac{3}{2}}}{3}+2Ba\sqrt{x}+\frac{2Bbx^{\frac{3}{2}}}{3}+\frac{2Bcx^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(3/2),x)
```

```
[Out] -2*A*a/sqrt(x) + 2*A*b*sqrt(x) + 2*A*c*x**(3/2)/3 + 2*B*a*sqrt(x) + 2*B*b*x
**(3/2)/3 + 2*B*c*x**(5/2)/5
```

3.987 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{5/2}}\,dx$

Optimal. Leaf size=51

$$-\frac{2(aB+Ab)}{\sqrt{x}}-\frac{2aA}{3x^{3/2}}+2\sqrt{x}\,(Ac+bB)+\frac{2}{3}Bcx^{3/2}$$

```
[Out] -2/3*a*A/x^(3/2)+2/3*B*c*x^(3/2)-2*(A*b+B*a)/x^(1/2)+2*(A*c+B*b)*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.048$, Rules used = {765}

$$-\frac{2(aB+Ab)}{\sqrt{x}}-\frac{2aA}{3x^{3/2}}+2\sqrt{x}\,(Ac+bB)+\frac{2}{3}Bcx^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*a*A)/(3*x^(3/2)) - (2*(A*b + a*B))/Sqrt[x] + 2*(b*B + A*c)*Sqrt[x] + (2
*B*c*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{5/2}}\,dx &= \int \left(\frac{aA}{x^{5/2}}+\frac{Ab+aB}{x^{3/2}}+\frac{bB+Ac}{\sqrt{x}}+Bc\sqrt{x}\right)dx\\ &= -\frac{2aA}{3x^{3/2}}-\frac{2(Ab+aB)}{\sqrt{x}}+2(bB+Ac)\sqrt{x}+\frac{2}{3}Bcx^{3/2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 42, normalized size = 0.82

$$\frac{2x(Bx(3b+cx)-3A(b-cx))-2a(A+3Bx)}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x]
```

```
[Out] (-2*a*(A + 3*B*x) + 2*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)))/(3*x^(3/2))
```

fricas [A] time = 0.64, size = 38, normalized size = 0.75

$$\frac{2\left(Bcx^3+3\,(Bb+Ac)x^2-Aa-3\,(Ba+Ab)x\right)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*x^3 + 3*(B*b + A*c)*x^2 - A*a - 3*(B*a + A*b)*x)/x^(3/2)
```

giac [A] time = 0.15, size = 41, normalized size = 0.80

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,Bb\sqrt{x} + 2\,Ac\sqrt{x} - \frac{2\,(3\,Bax + 3\,Abx + Aa)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*B*b*sqrt(x) + 2*A*c*sqrt(x) - 2/3*(3*B*a*x + 3*A*b*x +
A*a)/x^(3/2)
```

maple [A] time = 0.06, size = 41, normalized size = 0.80

$$-\frac{2\left(-Bc\,x^{3} - 3Ac\,x^{2} - 3Bb\,x^{2} + 3Abx + 3Bax + Aa\right)}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x)
```

```
[Out] -2/3*(-B*c*x^3-3*A*c*x^2-3*B*b*x^2+3*A*b*x+3*B*a*x+A*a)/x^(3/2)
```

maxima [A] time = 0.66, size = 39, normalized size = 0.76

$$\frac{2}{3}\,Bcx^{\frac{3}{2}} + 2\,(Bb + Ac)\sqrt{x} - \frac{2\,(Aa + 3\,(Ba + Ab)x)}{3\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c*x^(3/2) + 2*(B*b + A*c)*sqrt(x) - 2/3*(A*a + 3*(B*a + A*b)*x)/x^(3/
2)
```

mupad [B] time = 0.05, size = 41, normalized size = 0.80

$$-\frac{2\,A\,a + 6\,A\,b\,x + 6\,B\,a\,x - 6\,A\,c\,x^2 - 6\,B\,b\,x^2 - 2\,B\,c\,x^3}{3\,x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(5/2),x)
```

```
[Out] -(2*A*a + 6*A*b*x + 6*B*a*x - 6*A*c*x^2 - 6*B*b*x^2 - 2*B*c*x^3)/(3*x^(3/2)
)
```

sympy [A] time = 0.81, size = 63, normalized size = 1.24

$$-\frac{2Aa}{3x^{\frac{3}{2}}} - \frac{2Ab}{\sqrt{x}} + 2Ac\sqrt{x} - \frac{2Ba}{\sqrt{x}} + 2Bb\sqrt{x} + \frac{2Bcx^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(5/2),x)
```

```
[Out] -2*A*a/(3*x**(3/2)) - 2*A*b/sqrt(x) + 2*A*c*sqrt(x) - 2*B*a/sqrt(x) + 2*B*b
*sqrt(x) + 2*B*c*x**(3/2)/3
```

3.988 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{7/2}}\,dx$

Optimal. Leaf size=51

$$-\frac{2(aB+Ab)}{3x^{3/2}}-\frac{2aA}{5x^{5/2}}-\frac{2(Ac+bB)}{\sqrt{x}}+2Bc\sqrt{x}$$

```
[Out] -2/5*a*A/x^(5/2)-2/3*(A*b+B*a)/x^(3/2)-2*(A*c+B*b)/x^(1/2)+2*B*c*x^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{2(aB+Ab)}{3x^{3/2}}-\frac{2aA}{5x^{5/2}}-\frac{2(Ac+bB)}{\sqrt{x}}+2Bc\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*a*A)/(5*x^(5/2)) - (2*(A*b + a*B))/(3*x^(3/2)) - (2*(b*B + A*c))/Sqrt[x
] + 2*B*c*Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{7/2}}\,dx &= \int \left(\frac{aA}{x^{7/2}}+\frac{Ab+aB}{x^{5/2}}+\frac{bB+Ac}{x^{3/2}}+\frac{Bc}{\sqrt{x}}\right)dx\\ &= -\frac{2aA}{5x^{5/2}}-\frac{2(Ab+aB)}{3x^{3/2}}-\frac{2(bB+Ac)}{\sqrt{x}}+2Bc\sqrt{x}\end{aligned}$$

Mathematica [A] time = 0.04, size = 42, normalized size = 0.82

$$-\frac{2(a(3A+5Bx)+5x(A(b+3cx)+3Bx(b-cx)))}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x]
```

```
[Out] (-2*(a*(3*A + 5*B*x) + 5*x*(3*B*x*(b - c*x) + A*(b + 3*c*x))))/(15*x^(5/2))
```

fricas [A] time = 0.68, size = 39, normalized size = 0.76

$$\frac{2\left(15\,Bcx^3-15\,(Bb+Ac)x^2-3\,Aa-5\,(Ba+Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*x^3 - 15*(B*b + A*c)*x^2 - 3*A*a - 5*(B*a + A*b)*x)/x^(5/2)
```

giac [A] time = 0.17, size = 42, normalized size = 0.82

$$2\,Bc\sqrt{x} - \frac{2\left(15\,Bbx^2 + 15\,Acx^2 + 5\,Bax + 5\,Abx + 3\,Aa\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="giac")
```

```
[Out] 2*B*c*sqrt(x) - 2/15*(15*B*b*x^2 + 15*A*c*x^2 + 5*B*a*x + 5*A*b*x + 3*A*a)/
x^(5/2)
```

maple [A] time = 0.05, size = 42, normalized size = 0.82

$$-\frac{2\left(-15Bc\,x^3 + 15Ac\,x^2 + 15Bb\,x^2 + 5Abx + 5Bax + 3Aa\right)}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x)
```

```
[Out] -2/15*(-15*B*c*x^3+15*A*c*x^2+15*B*b*x^2+5*A*b*x+5*B*a*x+3*A*a)/x^(5/2)
```

maxima [A] time = 0.69, size = 40, normalized size = 0.78

$$2\,Bc\sqrt{x} - \frac{2\left(15\,(Bb + Ac)x^2 + 3\,Aa + 5\,(Ba + Ab)x\right)}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2*B*c*sqrt(x) - 2/15*(15*(B*b + A*c)*x^2 + 3*A*a + 5*(B*a + A*b)*x)/x^(5/2)
```

mupad [B] time = 1.30, size = 42, normalized size = 0.82

$$2\,B\,c\,\sqrt{x} - \frac{(2\,A\,c + 2\,B\,b)\,x^2 + \left(\frac{2\,A\,b}{3} + \frac{2\,B\,a}{3}\right)\,x + \frac{2\,A\,a}{5}}{x^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(7/2),x)
```

```
[Out] 2*B*c*x^(1/2) - ((2*A*a)/5 + x*((2*A*b)/3 + (2*B*a)/3) + x^2*(2*A*c + 2*B*b
))/x^(5/2)
```

sympy [A] time = 1.43, size = 65, normalized size = 1.27

$$-\frac{2Aa}{5x^{\frac{5}{2}}} - \frac{2Ab}{3x^{\frac{3}{2}}} - \frac{2Ac}{\sqrt{x}} - \frac{2Ba}{3x^{\frac{3}{2}}} - \frac{2Bb}{\sqrt{x}} + 2Bc\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(7/2),x)
```

```
[Out] -2*A*a/(5*x**(5/2)) - 2*A*b/(3*x**(3/2)) - 2*A*c/sqrt(x) - 2*B*a/(3*x**(3/2
)) - 2*B*b/sqrt(x) + 2*B*c*sqrt(x)
```

3.989 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{9/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{2(aB+Ab)}{5x^{5/2}}-\frac{2aA}{7x^{7/2}}-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

```
[Out] -2/7*a*A/x^(7/2)-2/5*(A*b+B*a)/x^(5/2)-2/3*(A*c+B*b)/x^(3/2)-2*B*c/x^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$-\frac{2(aB+Ab)}{5x^{5/2}}-\frac{2aA}{7x^{7/2}}-\frac{2(Ac+bB)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*a*A)/(7*x^(7/2)) - (2*(A*b + a*B))/(5*x^(5/2)) - (2*(b*B + A*c))/(3*x^(
3/2)) - (2*B*c)/Sqrt[x]
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{x^{9/2}}\,dx &= \int \left(\frac{aA}{x^{9/2}}+\frac{Ab+aB}{x^{7/2}}+\frac{bB+Ac}{x^{5/2}}+\frac{Bc}{x^{3/2}}\right)dx\\ &= -\frac{2aA}{7x^{7/2}}-\frac{2(Ab+aB)}{5x^{5/2}}-\frac{2(bB+Ac)}{3x^{3/2}}-\frac{2Bc}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 45, normalized size = 0.85

$$-\frac{2(3a(5A+7Bx)+7x(A(3b+5cx)+5Bx(b+3cx)))}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x]
```

```
[Out] (-2*(3*a*(5*A + 7*B*x) + 7*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x))))/(105*x
^(7/2))
```

fricas [A] time = 0.52, size = 39, normalized size = 0.74

$$-\frac{2\left(105\,Bcx^3+35\,(Bb+Ac)x^2+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="fricas")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*(B*b + A*c)*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/
2)
```

giac [A] time = 0.15, size = 41, normalized size = 0.77

$$-\frac{2\left(105\,Bcx^3+35\,Bbx^2+35\,Acx^2+21\,Bax+21\,Abx+15\,Aa\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="giac")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*B*b*x^2 + 35*A*c*x^2 + 21*B*a*x + 21*A*b*x + 15*A*
a)/x^(7/2)
```

maple [A] time = 0.06, size = 42, normalized size = 0.79

$$-\frac{2\left(105Bc\,x^3+35Ac\,x^2+35Bb\,x^2+21Abx+21Bax+15Aa\right)}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x)
```

```
[Out] -2/105*(105*B*c*x^3+35*A*c*x^2+35*B*b*x^2+21*A*b*x+21*B*a*x+15*A*a)/x^(7/2)
```

maxima [A] time = 0.52, size = 39, normalized size = 0.74

$$-\frac{2\left(105\,Bcx^3+35\,(Bb+Ac)x^2+15\,Aa+21\,(Ba+Ab)x\right)}{105\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -2/105*(105*B*c*x^3 + 35*(B*b + A*c)*x^2 + 15*A*a + 21*(B*a + A*b)*x)/x^(7/
2)
```

mupad [B] time = 0.04, size = 41, normalized size = 0.77

$$-\frac{2\,B\,c\,x^3+\left(\frac{2\,A\,c}{3}+\frac{2\,B\,b}{3}\right)\,x^2+\left(\frac{2\,A\,b}{5}+\frac{2\,B\,a}{5}\right)\,x+\frac{2\,A\,a}{7}}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/x^(9/2),x)
```

```
[Out] -((2*A*a)/7 + x*((2*A*b)/5 + (2*B*a)/5) + x^2*((2*A*c)/3 + (2*B*b)/3) + 2*B
*c*x^3)/x^(7/2)
```

sympy [A] time = 3.09, size = 70, normalized size = 1.32

$$-\frac{2Aa}{7x^{\frac{7}{2}}}-\frac{2Ab}{5x^{\frac{5}{2}}}-\frac{2Ac}{3x^{\frac{3}{2}}}-\frac{2Ba}{5x^{\frac{5}{2}}}-\frac{2Bb}{3x^{\frac{3}{2}}}-\frac{2Bc}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/x**(9/2),x)
```

```
[Out] -2*A*a/(7*x**(7/2)) - 2*A*b/(5*x**(5/2)) - 2*A*c/(3*x**(3/2)) - 2*B*a/(5*x*
*(5/2)) - 2*B*b/(3*x**(3/2)) - 2*B*c/sqrt(x)
```

3.990 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{15}x^{15/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{17}cx^{17/2}\big(Ac+2bB$$

```
[Out] 2/9*a^2*A*x^(9/2)+2/11*a*(2*A*b+B*a)*x^(11/2)+2/13*(2*a*b*B+A*(2*a*c+b^2))*
x^(13/2)+2/15*(2*A*b*c+2*B*a*c+B*b^2)*x^(15/2)+2/17*c*(A*c+2*B*b)*x^(17/2)+
2/19*B*c^2*x^(19/2)
```

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{9}a^2Ax^{9/2}+\frac{2}{15}x^{15/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{11}ax^{11/2}(aB+2Ab)+\frac{2}{17}cx^{17/2}\big(Ac+2bB$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(9/2))/9 + (2*a*(2*A*b + a*B)*x^(11/2))/11 + (2*(2*a*b*B + A*(b^
2 + 2*a*c))*x^(13/2))/13 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(15/2))/15 + (2
*c*(2*b*B + A*c)*x^(17/2))/17 + (2*B*c^2*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \Big(a^2Ax^{7/2}+a(2Ab+aB)x^{9/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{11/2}+\big(b^2B+2A\\ &= \frac{2}{9}a^2Ax^{9/2}+\frac{2}{11}a(2Ab+aB)x^{11/2}+\frac{2}{13}\left(2abB+A\left(b^2+2ac\right)\right)x^{13/2}+\frac{2}{15}\big(b^2\end{aligned}$$

Mathematica [A] time = 0.10, size = 102, normalized size = 0.90

$$\frac{2x^{9/2}\big(20995a^2(11A+9Bx)+1938ax(15A(13b+11cx)+11Bx(15b+13cx))+33x^2\big(19A\big(255b^2+442bcx+195}{2078505}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(9/2)*(20995*a^2*(11*A + 9*B*x) + 1938*a*x*(15*A*(13*b + 11*c*x) + 11*
B*x*(15*b + 13*c*x)) + 33*x^2*(19*A*(255*b^2 + 442*b*c*x + 195*c^2*x^2) + 1
3*B*x*(323*b^2 + 570*b*c*x + 255*c^2*x^2))))/2078505
```

fricas [A] time = 0.69, size = 98, normalized size = 0.87

$$\frac{2}{2078505}\big(109395\,Bc^2x^9+122265\left(2\,Bbc+Ac^2\right)x^8+138567\left(Bb^2+2\,(Ba+Ab)c\right)x^7+230945\,Aa^2x^4+159885$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*x^9 + 122265*(2*B*b*c + A*c^2)*x^8 + 138567*(B*b^2
+ 2*(B*a + A*b)*c)*x^7 + 230945*A*a^2*x^4 + 159885*(2*B*a*b + A*b^2 + 2*A*a
*c)*x^6 + 188955*(B*a^2 + 2*A*a*b)*x^5)*sqrt(x)
```

giac [A] time = 0.15, size = 103, normalized size = 0.91

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{4}{17}\,Bbcx^{\frac{17}{2}}+\frac{2}{17}\,Ac^2x^{\frac{17}{2}}+\frac{2}{15}\,Bb^2x^{\frac{15}{2}}+\frac{4}{15}\,Bacx^{\frac{15}{2}}+\frac{4}{15}\,Abcx^{\frac{15}{2}}+\frac{4}{13}\,Babx^{\frac{13}{2}}+\frac{2}{13}\,Ab^2x^{\frac{13}{2}}+\frac{4}{13}\,Aacx^{\frac{13}{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 4/17*B*b*c*x^(17/2) + 2/17*A*c^2*x^(17/2) + 2/15*B*b^
2*x^(15/2) + 4/15*B*a*c*x^(15/2) + 4/15*A*b*c*x^(15/2) + 4/13*B*a*b*x^(13/2
) + 2/13*A*b^2*x^(13/2) + 4/13*A*a*c*x^(13/2) + 2/11*B*a^2*x^(11/2) + 4/11*
A*a*b*x^(11/2) + 2/9*A*a^2*x^(9/2)
```

maple [A] time = 0.06, size = 102, normalized size = 0.90

$$\frac{2\left(109395B\,c^2x^5+122265A\,c^2x^4+244530x^4bBc+277134x^3Abc+277134Bac\,x^3+138567B\,b^2x^3+319770}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/2078505*x^(9/2)*(109395*B*c^2*x^5+122265*A*c^2*x^4+244530*B*b*c*x^4+27713
4*A*b*c*x^3+277134*B*a*c*x^3+138567*B*b^2*x^3+319770*A*a*c*x^2+159885*A*b^2
*x^2+319770*B*a*b*x^2+377910*A*a*b*x+188955*B*a^2*x+230945*A*a^2)
```

maxima [A] time = 0.52, size = 93, normalized size = 0.82

$$\frac{2}{19}\,Bc^2x^{\frac{19}{2}}+\frac{2}{17}\left(2\,Bbc+Ac^2\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{15}{2}}+\frac{2}{9}\,Aa^2x^{\frac{9}{2}}+\frac{2}{13}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{13}{2}}+\frac{2}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^2*x^(19/2) + 2/17*(2*B*b*c + A*c^2)*x^(17/2) + 2/15*(B*b^2 + 2*(B*
a + A*b)*c)*x^(15/2) + 2/9*A*a^2*x^(9/2) + 2/13*(2*B*a*b + A*b^2 + 2*A*a*c)
*x^(13/2) + 2/11*(B*a^2 + 2*A*a*b)*x^(11/2)
```

mupad [B] time = 1.28, size = 93, normalized size = 0.82

$$x^{11/2}\left(\frac{2\,B\,a^2}{11}+\frac{4\,A\,b\,a}{11}\right)+x^{17/2}\left(\frac{2\,A\,c^2}{17}+\frac{4\,B\,b\,c}{17}\right)+x^{13/2}\left(\frac{2\,A\,b^2}{13}+\frac{4\,B\,a\,b}{13}+\frac{4\,A\,a\,c}{13}\right)+x^{15/2}\left(\frac{2\,B\,b^2}{15}+\frac{4\,A\,c\,b}{15}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(11/2)*((2*B*a^2)/11 + (4*A*a*b)/11) + x^(17/2)*((2*A*c^2)/17 + (4*B*b*c)
/17) + x^(13/2)*((2*A*b^2)/13 + (4*A*a*c)/13 + (4*B*a*b)/13) + x^(15/2)*((2
*B*b^2)/15 + (4*A*b*c)/15 + (4*B*a*c)/15) + (2*A*a^2*x^(9/2))/9 + (2*B*c^2*
x^(19/2))/19
```

sympy [A] time = 16.11, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{9}{2}}}{9}+\frac{4Aabx^{\frac{11}{2}}}{11}+\frac{4Aacx^{\frac{13}{2}}}{13}+\frac{2Ab^2x^{\frac{13}{2}}}{13}+\frac{4Abcx^{\frac{15}{2}}}{15}+\frac{2Ac^2x^{\frac{17}{2}}}{17}+\frac{2Ba^2x^{\frac{11}{2}}}{11}+\frac{4Babx^{\frac{13}{2}}}{13}+\frac{4Bacx^{\frac{15}{2}}}{15}+\frac{2Bb^2x^{\frac{15}{2}}}{15}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(9/2)/9 + 4*A*a*b*x**(11/2)/11 + 4*A*a*c*x**(13/2)/13 + 2*A*b**
2*x**(13/2)/13 + 4*A*b*c*x**(15/2)/15 + 2*A*c**2*x**(17/2)/17 + 2*B*a**2*x*
*(11/2)/11 + 4*B*a*b*x**(13/2)/13 + 4*B*a*c*x**(15/2)/15 + 2*B*b**2*x**(15/
2)/15 + 4*B*b*c*x**(17/2)/17 + 2*B*c**2*x**(19/2)/19
```

3.991 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{13}x^{13/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{15}cx^{15/2}(Ac+2b$$

```
[Out] 2/7*a^2*A*x^(7/2)+2/9*a*(2*A*b+B*a)*x^(9/2)+2/11*(2*a*b*B+A*(2*a*c+b^2))*x^
(11/2)+2/13*(2*A*b*c+2*B*a*c+B*b^2)*x^(13/2)+2/15*c*(A*c+2*B*b)*x^(15/2)+2/
17*B*c^2*x^(17/2)
```

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{7}a^2Ax^{7/2}+\frac{2}{13}x^{13/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{9}ax^{9/2}(aB+2Ab)+\frac{2}{15}cx^{15/2}(Ac+2b$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(7/2))/7 + (2*a*(2*A*b + a*B)*x^(9/2))/9 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(11/2))/11 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(13/2))/13 + (2*c
*(2*b*B + A*c)*x^(15/2))/15 + (2*B*c^2*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ax^{5/2}+a(2Ab+aB)x^{7/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{9/2}+\left(b^2B+2\right.\right.\\ &= \frac{2}{7}a^2Ax^{7/2}+\frac{2}{9}a(2Ab+aB)x^{9/2}+\frac{2}{11}\left(2abB+A\left(b^2+2ac\right)\right)x^{11/2}+\frac{2}{13}\left(b\right.\end{aligned}$$

Mathematica [A] time = 0.10, size = 102, normalized size = 0.90

$$\frac{2x^{7/2}\left(12155a^2(9A+7Bx)+1190ax(13A(11b+9cx)+9Bx(13b+11cx))+21x^2\left(17A\left(195b^2+330bcx+143c\right.\right.\right.}{765765}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(7/2)*(12155*a^2*(9*A + 7*B*x) + 1190*a*x*(13*A*(11*b + 9*c*x) + 9*B*x
*(13*b + 11*c*x)) + 21*x^2*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2) + 11*B
*x*(255*b^2 + 442*b*c*x + 195*c^2*x^2))))/765765
```

fricas [A] time = 0.80, size = 98, normalized size = 0.87

$$\frac{2}{765765}\left(45045\,Bc^2x^8+51051\left(2\,Bbc+Ac^2\right)x^7+58905\left(Bb^2+2\,(Ba+Ab)c\right)x^6+109395\,Aa^2x^3+69615\left(2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*x^8 + 51051*(2*B*b*c + A*c^2)*x^7 + 58905*(B*b^2 + 2*
(B*a + A*b)*c)*x^6 + 109395*A*a^2*x^3 + 69615*(2*B*a*b + A*b^2 + 2*A*a*c)*x
^5 + 85085*(B*a^2 + 2*A*a*b)*x^4)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{17} Bc^2x^{\frac{17}{2}} + \frac{4}{15} Bbcx^{\frac{15}{2}} + \frac{2}{15} Ac^2x^{\frac{15}{2}} + \frac{2}{13} Bb^2x^{\frac{13}{2}} + \frac{4}{13} Bacx^{\frac{13}{2}} + \frac{4}{13} Abcx^{\frac{13}{2}} + \frac{4}{11} Babx^{\frac{11}{2}} + \frac{2}{11} Ab^2x^{\frac{11}{2}} + \frac{4}{11} Aacx^{\frac{11}{2}} + \frac{2}{9} B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 4/15*B*b*c*x^(15/2) + 2/15*A*c^2*x^(15/2) + 2/13*B*b^
2*x^(13/2) + 4/13*B*a*c*x^(13/2) + 4/13*A*b*c*x^(13/2) + 4/11*B*a*b*x^(11/2
) + 2/11*A*b^2*x^(11/2) + 4/11*A*a*c*x^(11/2) + 2/9*B*a^2*x^(9/2) + 4/9*A*a
*b*x^(9/2) + 2/7*A*a^2*x^(7/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(45045Bc^2x^5 + 51051Ac^2x^4 + 102102x^4bBc + 117810x^3Abc + 117810Bacx^3 + 58905Bb^2x^3 + 139230Aacx^2 + \right.}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/765765*x^(7/2)*(45045*B*c^2*x^5+51051*A*c^2*x^4+102102*B*b*c*x^4+117810*A
*b*c*x^3+117810*B*a*c*x^3+58905*B*b^2*x^3+139230*A*a*c*x^2+69615*A*b^2*x^2+
139230*B*a*b*x^2+170170*A*a*b*x+85085*B*a^2*x+109395*A*a^2)
```

maxima [A] time = 0.46, size = 93, normalized size = 0.82

$$\frac{2}{17} Bc^2x^{\frac{17}{2}} + \frac{2}{15}\left(2Bbc + Ac^2\right)x^{\frac{15}{2}} + \frac{2}{13}\left(Bb^2 + 2(Ba + Ab)c\right)x^{\frac{13}{2}} + \frac{2}{7} Aa^2x^{\frac{7}{2}} + \frac{2}{11}\left(2Bab + Ab^2 + 2Aac\right)x^{\frac{11}{2}} + \frac{2}{9}\left(Ba^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/17*B*c^2*x^(17/2) + 2/15*(2*B*b*c + A*c^2)*x^(15/2) + 2/13*(B*b^2 + 2*(B*
a + A*b)*c)*x^(13/2) + 2/7*A*a^2*x^(7/2) + 2/11*(2*B*a*b + A*b^2 + 2*A*a*c)
*x^(11/2) + 2/9*(B*a^2 + 2*A*a*b)*x^(9/2)
```

mupad [B] time = 0.03, size = 93, normalized size = 0.82

$$x^{9/2}\left(\frac{2Ba^2}{9} + \frac{4Aba}{9}\right) + x^{15/2}\left(\frac{2Ac^2}{15} + \frac{4Bbc}{15}\right) + x^{11/2}\left(\frac{2Ab^2}{11} + \frac{4Bab}{11} + \frac{4Aac}{11}\right) + x^{13/2}\left(\frac{2Bb^2}{13} + \frac{4Acb}{13} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(9/2)*((2*B*a^2)/9 + (4*A*a*b)/9) + x^(15/2)*((2*A*c^2)/15 + (4*B*b*c)/15
) + x^(11/2)*((2*A*b^2)/11 + (4*A*a*c)/11 + (4*B*a*b)/11) + x^(13/2)*((2*B*
b^2)/13 + (4*A*b*c)/13 + (4*B*a*c)/13) + (2*A*a^2*x^(7/2))/7 + (2*B*c^2*x^(
17/2))/17
```

sympy [A] time = 9.00, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{7}{2}}}{7} + \frac{4Aabx^{\frac{9}{2}}}{9} + \frac{4Aacx^{\frac{11}{2}}}{11} + \frac{2Ab^2x^{\frac{11}{2}}}{11} + \frac{4Abcx^{\frac{13}{2}}}{13} + \frac{2Ac^2x^{\frac{15}{2}}}{15} + \frac{2Ba^2x^{\frac{9}{2}}}{9} + \frac{4Babx^{\frac{11}{2}}}{11} + \frac{4Bacx^{\frac{13}{2}}}{13} + \frac{2Bb^2x^{\frac{13}{2}}}{13} + \frac{4Bbcx^{\frac{15}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(7/2)/7 + 4*A*a*b*x**(9/2)/9 + 4*A*a*c*x**(11/2)/11 + 2*A*b**2*
x**(11/2)/11 + 4*A*b*c*x**(13/2)/13 + 2*A*c**2*x**(15/2)/15 + 2*B*a**2*x**(
9/2)/9 + 4*B*a*b*x**(11/2)/11 + 4*B*a*c*x**(13/2)/13 + 2*B*b**2*x**(13/2)/1
3 + 4*B*b*c*x**(15/2)/15 + 2*B*c**2*x**(17/2)/17
```

3.992 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{11}x^{11/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{9}x^{9/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{13}cx^{13/2}(Ac+2bB)+$$

```
[Out] 2/5*a^2*A*x^(5/2)+2/7*a*(2*A*b+B*a)*x^(7/2)+2/9*(2*a*b*B+A*(2*a*c+b^2))*x^(
9/2)+2/11*(2*A*b*c+2*B*a*c+B*b^2)*x^(11/2)+2/13*c*(A*c+2*B*b)*x^(13/2)+2/15
*B*c^2*x^(15/2)
```

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{5}a^2Ax^{5/2}+\frac{2}{11}x^{11/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{9}x^{9/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{7}ax^{7/2}(aB+2Ab)+\frac{2}{13}cx^{13/2}(Ac+2bB)+$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(5/2))/5 + (2*a*(2*A*b + a*B)*x^(7/2))/7 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(9/2))/9 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(11/2))/11 + (2*c*(
2*b*B + A*c)*x^(13/2))/13 + (2*B*c^2*x^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^2\,dx&=\int \left(a^2Ax^{3/2}+a(2Ab+aB)x^{5/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{7/2}+\left(b^2B+2Ab\right.\right.\\&=\frac{2}{5}a^2Ax^{5/2}+\frac{2}{7}a(2Ab+aB)x^{7/2}+\frac{2}{9}\left(2abB+A\left(b^2+2ac\right)\right)x^{9/2}+\frac{2}{11}\left(b^2B+\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 102, normalized size = 0.90

$$\frac{2x^{5/2}\left(1287a^2(7A+5Bx)+130ax(11A(9b+7cx)+7Bx(11b+9cx))+7x^2\left(5A\left(143b^2+234bcx+99c^2x^2\right)+3B\right.\right.}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(5/2)*(1287*a^2*(7*A + 5*B*x) + 130*a*x*(11*A*(9*b + 7*c*x) + 7*B*x*(1
1*b + 9*c*x)) + 7*x^2*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) + 3*B*x*(195*
b^2 + 330*b*c*x + 143*c^2*x^2))))/45045
```

fricas [A] time = 0.61, size = 98, normalized size = 0.87

$$\frac{2}{45045}\left(3003\,Bc^2x^7+3465\left(2\,Bbc+Ac^2\right)x^6+4095\left(Bb^2+2\,(Ba+Ab)c\right)x^5+9009\,Aa^2x^2+5005\left(2\,Bab+Ab^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*x^7 + 3465*(2*B*b*c + A*c^2)*x^6 + 4095*(B*b^2 + 2*(B*a
 + A*b)*c)*x^5 + 9009*A*a^2*x^2 + 5005*(2*B*a*b + A*b^2 + 2*A*a*c)*x^4 + 64
35*(B*a^2 + 2*A*a*b)*x^3)*sqrt(x)
```

giac [**A**] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{15}Bc^2x^{\frac{15}{2}}+\frac{4}{13}Bbcx^{\frac{13}{2}}+\frac{2}{13}Ac^2x^{\frac{13}{2}}+\frac{2}{11}Bb^2x^{\frac{11}{2}}+\frac{4}{11}Bacx^{\frac{11}{2}}+\frac{4}{11}Abcx^{\frac{11}{2}}+\frac{4}{9}Babx^{\frac{9}{2}}+\frac{2}{9}Ab^2x^{\frac{9}{2}}+\frac{4}{9}Aacx^{\frac{9}{2}}+\frac{2}{7}Ba^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 4/13*B*b*c*x^(13/2) + 2/13*A*c^2*x^(13/2) + 2/11*B*b^
2*x^(11/2) + 4/11*B*a*c*x^(11/2) + 4/11*A*b*c*x^(11/2) + 4/9*B*a*b*x^(9/2)
+ 2/9*A*b^2*x^(9/2) + 4/9*A*a*c*x^(9/2) + 2/7*B*a^2*x^(7/2) + 4/7*A*a*b*x^(
7/2) + 2/5*A*a^2*x^(5/2)
```

maple [**A**] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(3003Bc^2x^5+3465Ac^2x^4+6930x^4bBc+8190x^3Abc+8190Bacx^3+4095Bb^2x^3+10010Aacx^2+5005A\right.}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/45045*x^(5/2)*(3003*B*c^2*x^5+3465*A*c^2*x^4+6930*B*b*c*x^4+8190*A*b*c*x^
3+8190*B*a*c*x^3+4095*B*b^2*x^3+10010*A*a*c*x^2+5005*A*b^2*x^2+10010*B*a*b*
x^2+12870*A*a*b*x+6435*B*a^2*x+9009*A*a^2)
```

maxima [**A**] time = 0.53, size = 93, normalized size = 0.82

$$\frac{2}{15}Bc^2x^{\frac{15}{2}}+\frac{2}{13}\left(2Bbc+Ac^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Bb^2+2(Ba+Ab)c\right)x^{\frac{11}{2}}+\frac{2}{5}Aa^2x^{\frac{5}{2}}+\frac{2}{9}\left(2Bab+Ab^2+2Aac\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Ba^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/15*B*c^2*x^(15/2) + 2/13*(2*B*b*c + A*c^2)*x^(13/2) + 2/11*(B*b^2 + 2*(B*
a + A*b)*c)*x^(11/2) + 2/5*A*a^2*x^(5/2) + 2/9*(2*B*a*b + A*b^2 + 2*A*a*c)*
x^(9/2) + 2/7*(B*a^2 + 2*A*a*b)*x^(7/2)
```

mupad [**B**] time = 0.03, size = 93, normalized size = 0.82

$$x^{7/2}\left(\frac{2Ba^2}{7}+\frac{4Aba}{7}\right)+x^{13/2}\left(\frac{2Ac^2}{13}+\frac{4Bbc}{13}\right)+x^{9/2}\left(\frac{2Ab^2}{9}+\frac{4Bab}{9}+\frac{4Aac}{9}\right)+x^{11/2}\left(\frac{2Bb^2}{11}+\frac{4Acb}{11}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(7/2)*((2*B*a^2)/7 + (4*A*a*b)/7) + x^(13/2)*((2*A*c^2)/13 + (4*B*b*c)/13
) + x^(9/2)*((2*A*b^2)/9 + (4*A*a*c)/9 + (4*B*a*b)/9) + x^(11/2)*((2*B*b^2)
/11 + (4*A*b*c)/11 + (4*B*a*c)/11) + (2*A*a^2*x^(5/2))/5 + (2*B*c^2*x^(15/2
))/15
```

sympy [**A**] time = 5.77, size = 162, normalized size = 1.43

$$\frac{2Aa^2x^{\frac{5}{2}}}{5}+\frac{4Aabx^{\frac{7}{2}}}{7}+\frac{4Aacx^{\frac{9}{2}}}{9}+\frac{2Ab^2x^{\frac{9}{2}}}{9}+\frac{4Abcx^{\frac{11}{2}}}{11}+\frac{2Ac^2x^{\frac{13}{2}}}{13}+\frac{2Ba^2x^{\frac{7}{2}}}{7}+\frac{4Babx^{\frac{9}{2}}}{9}+\frac{4Bacx^{\frac{11}{2}}}{11}+\frac{2Bb^2x^{\frac{11}{2}}}{11}+\frac{4Bbcx}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] 2*A*a**2*x**(5/2)/5 + 4*A*a*b*x**(7/2)/7 + 4*A*a*c*x**(9/2)/9 + 2*A*b**2*x*
*(9/2)/9 + 4*A*b*c*x**(11/2)/11 + 2*A*c**2*x**(13/2)/13 + 2*B*a**2*x**(7/2)
/7 + 4*B*a*b*x**(9/2)/9 + 4*B*a*c*x**(11/2)/11 + 2*B*b**2*x**(11/2)/11 + 4*
B*b*c*x**(13/2)/13 + 2*B*c**2*x**(15/2)/15
```

3.993 $\int \sqrt{x}\,(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=113

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{9}x^{9/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{11}cx^{11/2}(Ac+2bB)+$$

```
[Out] 2/3*a^2*A*x^(3/2)+2/5*a*(2*A*b+B*a)*x^(5/2)+2/7*(2*a*b*B+A*(2*a*c+b^2))*x^(
7/2)+2/9*(2*A*b*c+2*B*a*c+B*b^2)*x^(9/2)+2/11*c*(A*c+2*B*b)*x^(11/2)+2/13*B
*c^2*x^(13/2)
```

Rubi [A] time = 0.06, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{3}a^2Ax^{3/2}+\frac{2}{9}x^{9/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{5}ax^{5/2}(aB+2Ab)+\frac{2}{11}cx^{11/2}(Ac+2bB)+$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*a^2*A*x^(3/2))/3 + (2*a*(2*A*b + a*B)*x^(5/2))/5 + (2*(2*a*b*B + A*(b^2
+ 2*a*c))*x^(7/2))/7 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(9/2))/9 + (2*c*(2*
b*B + A*c)*x^(11/2))/11 + (2*B*c^2*x^(13/2))/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2A\sqrt{x}+a(2Ab+aB)x^{3/2}+\left(2abB+A\left(b^2+2ac\right)\right)x^{5/2}+\left(b^2B+2\right.\right.\\ &= \frac{2}{3}a^2Ax^{3/2}+\frac{2}{5}a(2Ab+aB)x^{5/2}+\frac{2}{7}\left(2abB+A\left(b^2+2ac\right)\right)x^{7/2}+\frac{2}{9}\left(b^2B\right.\end{aligned}$$

Mathematica [A] time = 0.09, size = 102, normalized size = 0.90

$$\frac{2x^{3/2}\left(3003a^2(5A+3Bx)+286ax(9A(7b+5cx)+5Bx(9b+7cx))+5x^2\left(13A\left(99b^2+154bcx+63c^2x^2\right)+7\right.\right.}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*x^(3/2)*(3003*a^2*(5*A + 3*B*x) + 286*a*x*(9*A*(7*b + 5*c*x) + 5*B*x*(9*
b + 7*c*x)) + 5*x^2*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x*(143*b^
2 + 234*b*c*x + 99*c^2*x^2))))/45045
```

fricas [A] time = 0.75, size = 96, normalized size = 0.85

$$\frac{2}{45045}\left(3465\,Bc^2x^6+4095\left(2\,Bbc+Ac^2\right)x^5+5005\left(Bb^2+2\,(Ba+Ab)c\right)x^4+15015\,Aa^2x+6435\left(2\,Bab+A\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*x^6 + 4095*(2*B*b*c + A*c^2)*x^5 + 5005*(B*b^2 + 2*(B*a
 + A*b)*c)*x^4 + 15015*A*a^2*x + 6435*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 900
9*(B*a^2 + 2*A*a*b)*x^2)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.91

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}}+\frac{4}{11}\,Bbcx^{\frac{11}{2}}+\frac{2}{11}\,Ac^2x^{\frac{11}{2}}+\frac{2}{9}\,Bb^2x^{\frac{9}{2}}+\frac{4}{9}\,Bacx^{\frac{9}{2}}+\frac{4}{9}\,Abcx^{\frac{9}{2}}+\frac{4}{7}\,Babx^{\frac{7}{2}}+\frac{2}{7}\,Ab^2x^{\frac{7}{2}}+\frac{4}{7}\,Aacx^{\frac{7}{2}}+\frac{2}{5}\,Ba^2x^{\frac{5}{2}}+\frac{4}{5}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 4/11*B*b*c*x^(11/2) + 2/11*A*c^2*x^(11/2) + 2/9*B*b^2
*x^(9/2) + 4/9*B*a*c*x^(9/2) + 4/9*A*b*c*x^(9/2) + 4/7*B*a*b*x^(7/2) + 2/7*
A*b^2*x^(7/2) + 4/7*A*a*c*x^(7/2) + 2/5*B*a^2*x^(5/2) + 4/5*A*a*b*x^(5/2) +
 2/3*A*a^2*x^(3/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.90

$$\frac{2\left(3465B\,c^2x^5+4095A\,c^2x^4+8190x^4bBc+10010x^3Abc+10010Bac\,x^3+5005B\,b^2x^3+12870Aac\,x^2+6435A\,b\right.}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x)
```

```
[Out] 2/45045*x^(3/2)*(3465*B*c^2*x^5+4095*A*c^2*x^4+8190*B*b*c*x^4+10010*A*b*c*x
^3+10010*B*a*c*x^3+5005*B*b^2*x^3+12870*A*a*c*x^2+6435*A*b^2*x^2+12870*B*a*
b*x^2+18018*A*a*b*x+9009*B*a^2*x+15015*A*a^2)
```

maxima [A] time = 0.50, size = 93, normalized size = 0.82

$$\frac{2}{13}\,Bc^2x^{\frac{13}{2}}+\frac{2}{11}\left(2\,Bbc+Ac^2\right)x^{\frac{11}{2}}+\frac{2}{9}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{9}{2}}+\frac{2}{3}\,Aa^2x^{\frac{3}{2}}+\frac{2}{7}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Ba^2+2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^2*x^(13/2) + 2/11*(2*B*b*c + A*c^2)*x^(11/2) + 2/9*(B*b^2 + 2*(B*a
 + A*b)*c)*x^(9/2) + 2/3*A*a^2*x^(3/2) + 2/7*(2*B*a*b + A*b^2 + 2*A*a*c)*x^
(7/2) + 2/5*(B*a^2 + 2*A*a*b)*x^(5/2)
```

mupad [B] time = 0.04, size = 93, normalized size = 0.82

$$x^{5/2}\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)+x^{11/2}\left(\frac{2\,A\,c^2}{11}+\frac{4\,B\,b\,c}{11}\right)+x^{7/2}\left(\frac{2\,A\,b^2}{7}+\frac{4\,B\,a\,b}{7}+\frac{4\,A\,a\,c}{7}\right)+x^{9/2}\left(\frac{2\,B\,b^2}{9}+\frac{4\,A\,c\,b}{9}+\frac{4\,B}{9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^(5/2)*((2*B*a^2)/5 + (4*A*a*b)/5) + x^(11/2)*((2*A*c^2)/11 + (4*B*b*c)/11
) + x^(7/2)*((2*A*b^2)/7 + (4*A*a*c)/7 + (4*B*a*b)/7) + x^(9/2)*((2*B*b^2)/
9 + (4*A*b*c)/9 + (4*B*a*c)/9) + (2*A*a^2*x^(3/2))/3 + (2*B*c^2*x^(13/2))/1
3
```

sympy [A] time = 5.60, size = 121, normalized size = 1.07

$$\frac{2Aa^2x^{\frac{3}{2}}}{3}+\frac{2Bc^2x^{\frac{13}{2}}}{13}+\frac{2x^{\frac{11}{2}}\left(Ac^2+2Bbc\right)}{11}+\frac{2x^{\frac{9}{2}}\left(2Abc+2Bac+Bb^2\right)}{9}+\frac{2x^{\frac{7}{2}}\left(2Aac+Ab^2+2Bab\right)}{7}+\frac{2x^{\frac{5}{2}}\left(2Aab+B\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2*x**(1/2),x)
```

```
[Out] 2*A*a**2*x**(3/2)/3 + 2*B*c**2*x**(13/2)/13 + 2*x**(11/2)*(A*c**2 + 2*B*b*c
)/11 + 2*x**(9/2)*(2*A*b*c + 2*B*a*c + B*b**2)/9 + 2*x**(7/2)*(2*A*a*c + A*
b**2 + 2*B*a*b)/7 + 2*x**(5/2)*(2*A*a*b + B*a**2)/5
```

3.994 $\int \frac{(A+Bx)(a+bx+cx^2)^2}{\sqrt{x}}\,dx$

Optimal. Leaf size=111

$$2a^2A\sqrt{x}+\frac{2}{7}x^{7/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{5}x^{5/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{11}Bc^2$$

```
[Out] 2/3*a*(2*A*b+B*a)*x^(3/2)+2/5*(2*a*b*B+A*(2*a*c+b^2))*x^(5/2)+2/7*(2*A*b*c+
2*B*a*c+B*b^2)*x^(7/2)+2/9*c*(A*c+2*B*b)*x^(9/2)+2/11*B*c^2*x^(11/2)+2*a^2*
A*x^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$2a^2A\sqrt{x}+\frac{2}{7}x^{7/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{5}x^{5/2}\left(A\left(2ac+b^2\right)+2abB\right)+\frac{2}{3}ax^{3/2}(aB+2Ab)+\frac{2}{9}cx^{9/2}(Ac+2bB)+\frac{2}{11}Bc^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] 2*a^2*A*Sqrt[x] + (2*a*(2*A*b + a*B)*x^(3/2))/3 + (2*(2*a*b*B + A*(b^2 + 2*
a*c))*x^(5/2))/5 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(7/2))/7 + (2*c*(2*b*B
+ A*c)*x^(9/2))/9 + (2*B*c^2*x^(11/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{\sqrt{x}}\,dx &= \int \left(\frac{a^2A}{\sqrt{x}}+a(2Ab+aB)\sqrt{x}+\left(2abB+A\left(b^2+2ac\right)\right)x^{3/2}+\left(b^2B+2Abc+2a\right.\right.\\ &= 2a^2A\sqrt{x}+\frac{2}{3}a(2Ab+aB)x^{3/2}+\frac{2}{5}\left(2abB+A\left(b^2+2ac\right)\right)x^{5/2}+\frac{2}{7}\left(b^2B+2Ab\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 100, normalized size = 0.90

$$\frac{2\sqrt{x}\left(1155a^2(3A+Bx)+66ax(7A(5b+3cx)+3Bx(7b+5cx))+x^2\left(11A\left(63b^2+90bcx+35c^2x^2\right)+5Bx\left(99b^2\right.\right.\right.}{3465}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(1155*a^2*(3*A + B*x) + 66*a*x*(7*A*(5*b + 3*c*x) + 3*B*x*(7*b +
 5*c*x)) + x^2*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99*b^2 + 154
*b*c*x + 63*c^2*x^2))))/3465
```

fricas [A] time = 0.90, size = 93, normalized size = 0.84

$$\frac{2}{3465}\left(315\,Bc^2x^5+385\left(2\,Bbc+Ac^2\right)x^4+495\left(Bb^2+2\,(Ba+Ab)c\right)x^3+3465\,Aa^2+693\left(2\,Bab+Ab^2+2\,Aac\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*x^5 + 385*(2*B*b*c + A*c^2)*x^4 + 495*(B*b^2 + 2*(B*a + A
*b)*c)*x^3 + 3465*A*a^2 + 693*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 1155*(B*a^2
 + 2*A*a*b)*x)*sqrt(x)
```

giac [A] time = 0.16, size = 103, normalized size = 0.93

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}}+\frac{4}{9}\,Bbcx^{\frac{9}{2}}+\frac{2}{9}\,Ac^2x^{\frac{9}{2}}+\frac{2}{7}\,Bb^2x^{\frac{7}{2}}+\frac{4}{7}\,Bacx^{\frac{7}{2}}+\frac{4}{7}\,Abcx^{\frac{7}{2}}+\frac{4}{5}\,Babx^{\frac{5}{2}}+\frac{2}{5}\,Ab^2x^{\frac{5}{2}}+\frac{4}{5}\,Aacx^{\frac{5}{2}}+\frac{2}{3}\,Ba^2x^{\frac{3}{2}}+\frac{4}{3}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 4/9*B*b*c*x^(9/2) + 2/9*A*c^2*x^(9/2) + 2/7*B*b^2*x^(
7/2) + 4/7*B*a*c*x^(7/2) + 4/7*A*b*c*x^(7/2) + 4/5*B*a*b*x^(5/2) + 2/5*A*b^
2*x^(5/2) + 4/5*A*a*c*x^(5/2) + 2/3*B*a^2*x^(3/2) + 4/3*A*a*b*x^(3/2) + 2*A
*a^2*sqrt(x)
```

maple [A] time = 0.05, size = 102, normalized size = 0.92

$$\frac{2\left(315B\,c^2x^5+385A\,c^2x^4+770x^4bBc+990x^3Abc+990Bac\,x^3+495B\,b^2x^3+1386Aac\,x^2+693A\,b^2x^2+13\right.}{3465}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x)
```

```
[Out] 2/3465*x^(1/2)*(315*B*c^2*x^5+385*A*c^2*x^4+770*B*b*c*x^4+990*A*b*c*x^3+990
*B*a*c*x^3+495*B*b^2*x^3+1386*A*a*c*x^2+693*A*b^2*x^2+1386*B*a*b*x^2+2310*A
*a*b*x+1155*B*a^2*x+3465*A*a^2)
```

maxima [A] time = 0.53, size = 93, normalized size = 0.84

$$\frac{2}{11}\,Bc^2x^{\frac{11}{2}}+\frac{2}{9}\left(2\,Bbc+Ac^2\right)x^{\frac{9}{2}}+\frac{2}{7}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{7}{2}}+2\,Aa^2\sqrt{x}+\frac{2}{5}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{5}{2}}+\frac{2}{3}\left(Ba^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^2*x^(11/2) + 2/9*(2*B*b*c + A*c^2)*x^(9/2) + 2/7*(B*b^2 + 2*(B*a +
 A*b)*c)*x^(7/2) + 2*A*a^2*sqrt(x) + 2/5*(2*B*a*b + A*b^2 + 2*A*a*c)*x^(5/2
) + 2/3*(B*a^2 + 2*A*a*b)*x^(3/2)
```

mupad [B] time = 0.03, size = 93, normalized size = 0.84

$$x^{3/2}\left(\frac{2\,B\,a^2}{3}+\frac{4\,A\,b\,a}{3}\right)+x^{9/2}\left(\frac{2\,A\,c^2}{9}+\frac{4\,B\,b\,c}{9}\right)+x^{5/2}\left(\frac{2\,A\,b^2}{5}+\frac{4\,B\,a\,b}{5}+\frac{4\,A\,a\,c}{5}\right)+x^{7/2}\left(\frac{2\,B\,b^2}{7}+\frac{4\,A\,c\,b}{7}+\frac{4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(1/2),x)
```

```
[Out] x^(3/2)*((2*B*a^2)/3 + (4*A*a*b)/3) + x^(9/2)*((2*A*c^2)/9 + (4*B*b*c)/9) +
 x^(5/2)*((2*A*b^2)/5 + (4*A*a*c)/5 + (4*B*a*b)/5) + x^(7/2)*((2*B*b^2)/7 +
 (4*A*b*c)/7 + (4*B*a*c)/7) + 2*A*a^2*x^(1/2) + (2*B*c^2*x^(11/2))/11
```

sympy [A] time = 2.05, size = 160, normalized size = 1.44

$$2Aa^2\sqrt{x}+\frac{4Aabx^{\frac{3}{2}}}{3}+\frac{4Aacx^{\frac{5}{2}}}{5}+\frac{2Ab^2x^{\frac{5}{2}}}{5}+\frac{4Abcx^{\frac{7}{2}}}{7}+\frac{2Ac^2x^{\frac{9}{2}}}{9}+\frac{2Ba^2x^{\frac{3}{2}}}{3}+\frac{4Babx^{\frac{5}{2}}}{5}+\frac{4Bacx^{\frac{7}{2}}}{7}+\frac{2Bb^2x^{\frac{7}{2}}}{7}+\frac{4Bbcx^{\frac{9}{2}}}{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(1/2),x)
```

```
[Out] 2*A*a**2*sqrt(x) + 4*A*a*b*x**(3/2)/3 + 4*A*a*c*x**(5/2)/5 + 2*A*b**2*x**(5
/2)/5 + 4*A*b*c*x**(7/2)/7 + 2*A*c**2*x**(9/2)/9 + 2*B*a**2*x**(3/2)/3 + 4*
B*a*b*x**(5/2)/5 + 4*B*a*c*x**(7/2)/7 + 2*B*b**2*x**(7/2)/7 + 4*B*b*c*x**(9
/2)/9 + 2*B*c**2*x**(11/2)/11
```

3.995 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{3/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{5}x^{5/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(2ac+b^2\right)+2abB\right)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{9}Bc^2$$

```
[Out] 2/3*(2*a*b*B+A*(2*a*c+b^2))*x^(3/2)+2/5*(2*A*b*c+2*B*a*c+B*b^2)*x^(5/2)+2/7
*c*(A*c+2*B*b)*x^(7/2)+2/9*B*c^2*x^(9/2)-2*a^2*A/x^(1/2)+2*a*(2*A*b+B*a)*x^
(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{\sqrt{x}}+\frac{2}{5}x^{5/2}\left(2aBc+2Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(2ac+b^2\right)+2abB\right)+2a\sqrt{x}\,(aB+2Ab)+\frac{2}{7}cx^{7/2}(Ac+2bB)+\frac{2}{9}Bc^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-2*a^2*A)/Sqrt[x] + 2*a*(2*A*b + a*B)*Sqrt[x] + (2*(2*a*b*B + A*(b^2 + 2*a
*c))*x^(3/2))/3 + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(5/2))/5 + (2*c*(2*b*B +
 A*c)*x^(7/2))/7 + (2*B*c^2*x^(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{3/2}}\,dx &= \int \left(\frac{a^2A}{x^{3/2}}+\frac{a(2Ab+aB)}{\sqrt{x}}+\left(2abB+A\left(b^2+2ac\right)\right)\sqrt{x}+\left(b^2B+2Abc+2a\right.\right.\\ &= -\frac{2a^2A}{\sqrt{x}}+2a(2Ab+aB)\sqrt{x}+\frac{2}{3}\left(2abB+A\left(b^2+2ac\right)\right)x^{3/2}+\frac{2}{5}\left(b^2B+2Ab\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 97, normalized size = 0.89

$$\frac{-630a^2(A-Bx)+84ax(5A(3b+cx)+Bx(5b+3cx))+2x^2\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx\left(63b^2+90bc\right.\right.}{315\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x]
```

```
[Out] (-630*a^2*(A - B*x) + 84*a*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)) + 2*x^2*
(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x + 35*c^2*x^2
)))/(315*Sqrt[x])
```

fricas [A] time = 0.78, size = 93, normalized size = 0.85

$$\frac{2\left(35\,Bc^2x^5+45\left(2\,Bbc+Ac^2\right)x^4+63\left(Bb^2+2\,(Ba+Ab)c\right)x^3-315\,Aa^2+105\left(2\,Bab+Ab^2+2\,Aac\right)x^2+3\right.}{315\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*x^5 + 45*(2*B*b*c + A*c^2)*x^4 + 63*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 - 315*A*a^2 + 105*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 315*(B*a^2 + 2*A
*a*b)*x)/sqrt(x)
```

giac [A]   time = 0.16, size = 103, normalized size = 0.94

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{4}{7}\,Bbcx^{\frac{7}{2}}+\frac{2}{7}\,Ac^2x^{\frac{7}{2}}+\frac{2}{5}\,Bb^2x^{\frac{5}{2}}+\frac{4}{5}\,Bacx^{\frac{5}{2}}+\frac{4}{5}\,Abcx^{\frac{5}{2}}+\frac{4}{3}\,Babx^{\frac{3}{2}}+\frac{2}{3}\,Ab^2x^{\frac{3}{2}}+\frac{4}{3}\,Aacx^{\frac{3}{2}}+2\,Ba^2\sqrt{x}+4\,Aab\sqrt{x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 4/7*B*b*c*x^(7/2) + 2/7*A*c^2*x^(7/2) + 2/5*B*b^2*x^(5/
2) + 4/5*B*a*c*x^(5/2) + 4/5*A*b*c*x^(5/2) + 4/3*B*a*b*x^(3/2) + 2/3*A*b^2*
x^(3/2) + 4/3*A*a*c*x^(3/2) + 2*B*a^2*sqrt(x) + 4*A*a*b*sqrt(x) - 2*A*a^2/s
qrt(x)
```

maple [A]   time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2\,(-35B\,c^2x^5-45A\,c^2x^4-90x^4bBc-126x^3Abc-126Bac\,x^3-63B\,b^2x^3-210Aac\,x^2-105A\,b^2x^2-210Bab\,x^2}{315\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x)
```

```
[Out] -2/315*(-35*B*c^2*x^5-45*A*c^2*x^4-90*B*b*c*x^4-126*A*b*c*x^3-126*B*a*c*x^3
-63*B*b^2*x^3-210*A*a*c*x^2-105*A*b^2*x^2-210*B*a*b*x^2-630*A*a*b*x-315*B*a
^2*x+315*A*a^2)/x^(1/2)
```

maxima [A]   time = 0.56, size = 93, normalized size = 0.85

$$\frac{2}{9}\,Bc^2x^{\frac{9}{2}}+\frac{2}{7}\left(2\,Bbc+Ac^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Bb^2+2\,(Ba+Ab)c\right)x^{\frac{5}{2}}-\frac{2\,Aa^2}{\sqrt{x}}+\frac{2}{3}\left(2\,Bab+Ab^2+2\,Aac\right)x^{\frac{3}{2}}+2\left(Ba^2+2\,Aab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^2*x^(9/2) + 2/7*(2*B*b*c + A*c^2)*x^(7/2) + 2/5*(B*b^2 + 2*(B*a + A
*b)*c)*x^(5/2) - 2*A*a^2/sqrt(x) + 2/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^(3/2)
+ 2*(B*a^2 + 2*A*a*b)*sqrt(x)
```

mupad [B]   time = 0.04, size = 93, normalized size = 0.85

$$\sqrt{x}\,\left(2\,B\,a^2+4\,A\,b\,a\right)+x^{7/2}\,\left(\frac{2\,A\,c^2}{7}+\frac{4\,B\,b\,c}{7}\right)+x^{3/2}\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}+\frac{4\,A\,a\,c}{3}\right)+x^{5/2}\,(\frac{2\,B\,b^2}{5}+\frac{4\,A\,c\,b}{5}+\frac{4\,B\,a\,c}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(3/2),x)
```

```
[Out] x^(1/2)*(2*B*a^2 + 4*A*a*b) + x^(7/2)*((2*A*c^2)/7 + (4*B*b*c)/7) + x^(3/2)
*((2*A*b^2)/3 + (4*A*a*c)/3 + (4*B*a*b)/3) + x^(5/2)*((2*B*b^2)/5 + (4*A*b*
c)/5 + (4*B*a*c)/5) - (2*A*a^2)/x^(1/2) + (2*B*c^2*x^(9/2))/9
```

sympy [**A**] time = 2.30, size = 156, normalized size = 1.43

$$-\frac{2Aa^2}{\sqrt{x}}+4Aab\sqrt{x}+\frac{4Aacx^{\frac{3}{2}}}{3}+\frac{2Ab^2x^{\frac{3}{2}}}{3}+\frac{4Abcx^{\frac{5}{2}}}{5}+\frac{2Ac^2x^{\frac{7}{2}}}{7}+2Ba^2\sqrt{x}+\frac{4Babx^{\frac{3}{2}}}{3}+\frac{4Bacx^{\frac{5}{2}}}{5}+\frac{2Bb^2x^{\frac{5}{2}}}{5}+\frac{4Bbcx^{\frac{7}{2}}}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(3/2),x)
```

```
[Out] -2*A*a**2/sqrt(x) + 4*A*a*b*sqrt(x) + 4*A*a*c*x**(3/2)/3 + 2*A*b**2*x**(3/2
)/3 + 4*A*b*c*x**(5/2)/5 + 2*A*c**2*x**(7/2)/7 + 2*B*a**2*sqrt(x) + 4*B*a*b
*x**(3/2)/3 + 4*B*a*c*x**(5/2)/5 + 2*B*b**2*x**(5/2)/5 + 4*B*b*c*x**(7/2)/7
 + 2*B*c**2*x**(9/2)/9
```

3.996 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{5/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{3x^{3/2}}+\frac{2}{3}x^{3/2}\left(2aBc+2Abc+b^2B\right)+2\sqrt{x}\left(A\left(2ac+b^2\right)+2abB\right)-\frac{2a(aB+2Ab)}{\sqrt{x}}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{7}Bc^2x^{7/2}$$

```
[Out] -2/3*a^2*A/x^(3/2)+2/3*(2*A*b*c+2*B*a*c+B*b^2)*x^(3/2)+2/5*c*(A*c+2*B*b)*x^
(5/2)+2/7*B*c^2*x^(7/2)-2*a*(2*A*b+B*a)/x^(1/2)+2*(2*a*b*B+A*(2*a*c+b^2))*x
^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$-\frac{2a^2A}{3x^{3/2}}+\frac{2}{3}x^{3/2}\left(2aBc+2Abc+b^2B\right)+2\sqrt{x}\left(A\left(2ac+b^2\right)+2abB\right)-\frac{2a(aB+2Ab)}{\sqrt{x}}+\frac{2}{5}cx^{5/2}(Ac+2bB)+\frac{2}{7}Bc^2x^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (-2*a^2*A)/(3*x^(3/2)) - (2*a*(2*A*b + a*B))/Sqrt[x] + 2*(2*a*b*B + A*(b^2
+ 2*a*c))*Sqrt[x] + (2*(b^2*B + 2*A*b*c + 2*a*B*c)*x^(3/2))/3 + (2*c*(2*b*B
 + A*c)*x^(5/2))/5 + (2*B*c^2*x^(7/2))/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{5/2}}\,dx = \int \Bigg(\frac{a^2A}{x^{5/2}}+\frac{a(2Ab+aB)}{x^{3/2}}+\frac{2abB+A\left(b^2+2ac\right)}{\sqrt{x}}+\left(b^2B+2Abc+2aBc\right)\sqrt{x}+$$
$$= -\frac{2a^2A}{3x^{3/2}}-\frac{2a(2Ab+aB)}{\sqrt{x}}+2\left(2abB+A\left(b^2+2ac\right)\right)\sqrt{x}+\frac{2}{3}\Big(b^2B+2Abc+2a$$

Mathematica [A] time = 0.12, size = 94, normalized size = 0.86

$$\frac{2\Big(-35a^2(A+3Bx)+70ax(Bx(3b+cx)-3A(b-cx))+x^2\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\Big(35b^2+42bcx+15}{105x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x]
```

```
[Out] (2*(-35*a^2*(A + 3*B*x) + 70*a*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)) + x^2*(
7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x + 15*c^2*x^2))
))/(105*x^(3/2))
```

fricas [A] time = 0.84, size = 93, normalized size = 0.85

$$\frac{2\Big(15\,Bc^2x^5+21\left(2\,Bbc+Ac^2\right)x^4+35\left(Bb^2+2\,(Ba+Ab)c\right)x^3-35\,Aa^2+105\left(2\,Bab+Ab^2+2\,Aac\right)x^2-105\Big(B}{105\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*x^5 + 21*(2*B*b*c + A*c^2)*x^4 + 35*(B*b^2 + 2*(B*a + A*b)*
c)*x^3 - 35*A*a^2 + 105*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 105*(B*a^2 + 2*A*
a*b)*x)/x^(3/2)
```

giac [A] time = 0.17, size = 101, normalized size = 0.93

$$\frac{2}{7}Bc^2x^{\frac{7}{2}}+\frac{4}{5}Bbcx^{\frac{5}{2}}+\frac{2}{5}Ac^2x^{\frac{5}{2}}+\frac{2}{3}Bb^2x^{\frac{3}{2}}+\frac{4}{3}Bacx^{\frac{3}{2}}+\frac{4}{3}Abcx^{\frac{3}{2}}+4Bab\sqrt{x}+2Ab^2\sqrt{x}+4Aac\sqrt{x}-\frac{2(3Ba^2x+6A}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 4/5*B*b*c*x^(5/2) + 2/5*A*c^2*x^(5/2) + 2/3*B*b^2*x^(3/
2) + 4/3*B*a*c*x^(3/2) + 4/3*A*b*c*x^(3/2) + 4*B*a*b*sqrt(x) + 2*A*b^2*sqrt
(x) + 4*A*a*c*sqrt(x) - 2/3*(3*B*a^2*x + 6*A*a*b*x + A*a^2)/x^(3/2)
```

maple [A] time = 0.06, size = 102, normalized size = 0.94

$$-\frac{2(-15Bc^2x^5-21Ac^2x^4-42x^4bBc-70x^3Abc-70Bacx^3-35Bb^2x^3-210Aacx^2-105Ab^2x^2-210Babx^2}{105x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x)
```

```
[Out] -2/105*(-15*B*c^2*x^5-21*A*c^2*x^4-42*B*b*c*x^4-70*A*b*c*x^3-70*B*a*c*x^3-3
5*B*b^2*x^3-210*A*a*c*x^2-105*A*b^2*x^2-210*B*a*b*x^2+210*A*a*b*x+105*B*a^2
*x+35*A*a^2)/x^(3/2)
```

maxima [A] time = 0.57, size = 93, normalized size = 0.85

$$\frac{2}{7}Bc^2x^{\frac{7}{2}}+\frac{2}{5}(2Bbc+Ac^2)x^{\frac{5}{2}}+\frac{2}{3}(Bb^2+2(Ba+Ab)c)x^{\frac{3}{2}}+2(2Bab+Ab^2+2Aac)\sqrt{x}-\frac{2(Aa^2+3(Ba^2+2A}{3x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^2*x^(7/2) + 2/5*(2*B*b*c + A*c^2)*x^(5/2) + 2/3*(B*b^2 + 2*(B*a + A
*b)*c)*x^(3/2) + 2*(2*B*a*b + A*b^2 + 2*A*a*c)*sqrt(x) - 2/3*(A*a^2 + 3*(B*
a^2 + 2*A*a*b)*x)/x^(3/2)
```

mupad [B] time = 0.04, size = 94, normalized size = 0.86

$$x^{5/2}\left(\frac{2Ac^2}{5}+\frac{4Bbc}{5}\right)+\sqrt{x}\,(2Ab^2+4Bab+4Aac)+x^{3/2}\left(\frac{2Bb^2}{3}+\frac{4Acb}{3}+\frac{4Bac}{3}\right)-\frac{\frac{2Aa^2}{3}+x(2Ba^2+}{x^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(5/2),x)
```

```
[Out] x^(5/2)*((2*A*c^2)/5 + (4*B*b*c)/5) + x^(1/2)*(2*A*b^2 + 4*A*a*c + 4*B*a*b)
 + x^(3/2)*((2*B*b^2)/3 + (4*A*b*c)/3 + (4*B*a*c)/3) - ((2*A*a^2)/3 + x*(2*
B*a^2 + 4*A*a*b))/x^(3/2) + (2*B*c^2*x^(7/2))/7
```

sympy [**A**] time = 2.89, size = 153, normalized size = 1.40

$$-\frac{2Aa^2}{3x^{\frac{3}{2}}}-\frac{4Aab}{\sqrt{x}}+4Aac\sqrt{x}+2Ab^2\sqrt{x}+\frac{4Abcx^{\frac{3}{2}}}{3}+\frac{2Ac^2x^{\frac{5}{2}}}{5}-\frac{2Ba^2}{\sqrt{x}}+4Bab\sqrt{x}+\frac{4Bacx^{\frac{3}{2}}}{3}+\frac{2Bb^2x^{\frac{3}{2}}}{3}+\frac{4Bbcx^{\frac{5}{2}}}{5}+\frac{2Bc^2x^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(5/2),x)
```

```
[Out] -2*A*a**2/(3*x**(3/2)) - 4*A*a*b/sqrt(x) + 4*A*a*c*sqrt(x) + 2*A*b**2*sqrt(
x) + 4*A*b*c*x**(3/2)/3 + 2*A*c**2*x**(5/2)/5 - 2*B*a**2/sqrt(x) + 4*B*a*b*
sqrt(x) + 4*B*a*c*x**(3/2)/3 + 2*B*b**2*x**(3/2)/3 + 4*B*b*c*x**(5/2)/5 + 2
*B*c**2*x**(7/2)/7
```

3.997 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{7/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{5x^{5/2}}+2\sqrt{x}\left(2aBc+2Abc+b^2B\right)-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{3x^{3/2}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+\frac{2}{5}Bc^2x^{5/2}$$

```
[Out] -2/5*a^2*A/x^(5/2)-2/3*a*(2*A*b+B*a)/x^(3/2)+2/3*c*(A*c+2*B*b)*x^(3/2)+2/5*
B*c^2*x^(5/2)-2*(2*a*b*B+A*(2*a*c+b^2))/x^(1/2)+2*(2*A*b*c+2*B*a*c+B*b^2)*x
^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{5x^{5/2}}+2\sqrt{x}\left(2aBc+2Abc+b^2B\right)-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{3x^{3/2}}+\frac{2}{3}cx^{3/2}(Ac+2bB)+\frac{2}{5}Bc^2x^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*A)/(5*x^(5/2)) - (2*a*(2*A*b + a*B))/(3*x^(3/2)) - (2*(2*a*b*B + A*
(b^2 + 2*a*c)))/Sqrt[x] + 2*(b^2*B + 2*A*b*c + 2*a*B*c)*Sqrt[x] + (2*c*(2*b
*B + A*c)*x^(3/2))/3 + (2*B*c^2*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{7/2}}\,dx &= \int \Bigg(\frac{a^2A}{x^{7/2}}+\frac{a(2Ab+aB)}{x^{5/2}}+\frac{2abB+A\left(b^2+2ac\right)}{x^{3/2}}+\frac{b^2B+2Abc+2aBc}{\sqrt{x}}+c(\\ &= -\frac{2a^2A}{5x^{5/2}}-\frac{2a(2Ab+aB)}{3x^{3/2}}-\frac{2\left(2abB+A\left(b^2+2ac\right)\right)}{\sqrt{x}}+2\Big(b^2B+2Abc+2aB\end{aligned}$$

Mathematica [A] time = 0.11, size = 95, normalized size = 0.87

$$\frac{-2a^2(3A+5Bx)-20ax(A(b+3cx)+3Bx(b-cx))+2x^2\left(5A\left(-3b^2+6bcx+c^2x^2\right)+Bx\Big(15b^2+10bcx+3c^2\right.}{15x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x]
```

```
[Out] (-2*a^2*(3*A + 5*B*x) - 20*a*x*(3*B*x*(b - c*x) + A*(b + 3*c*x)) + 2*x^2*(5
*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + B*x*(15*b^2 + 10*b*c*x + 3*c^2*x^2)))/(15
*x^(5/2))
```

fricas [A] time = 0.84, size = 93, normalized size = 0.85

$$\frac{2\left(3\,Bc^{2}x^{5}+5\left(2\,Bbc+Ac^{2}\right)x^{4}+15\left(Bb^{2}+2\,(Ba+Ab)c\right)x^{3}-3\,Aa^{2}-15\left(2\,Bab+Ab^{2}+2\,Aac\right)x^{2}-5\left(Ba^{2}+2\right.\right.}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*x^5 + 5*(2*B*b*c + A*c^2)*x^4 + 15*(B*b^2 + 2*(B*a + A*b)*c)*
x^3 - 3*A*a^2 - 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 5*(B*a^2 + 2*A*a*b)*x)
/x^(5/2)
```

giac [A] time = 0.20, size = 102, normalized size = 0.94

$$\frac{2}{5}\,Bc^{2}x^{\frac{5}{2}}+\frac{4}{3}\,Bbcx^{\frac{3}{2}}+\frac{2}{3}\,Ac^{2}x^{\frac{3}{2}}+2\,Bb^{2}\sqrt{x}+4\,Bac\sqrt{x}+4\,Abc\sqrt{x}-\frac{2\left(30\,Babx^{2}+15\,Ab^{2}x^{2}+30\,Aacx^{2}+5\,Ba^{2}x+10\right.}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 4/3*B*b*c*x^(3/2) + 2/3*A*c^2*x^(3/2) + 2*B*b^2*sqrt(x)
 + 4*B*a*c*sqrt(x) + 4*A*b*c*sqrt(x) - 2/15*(30*B*a*b*x^2 + 15*A*b^2*x^2 +
30*A*a*c*x^2 + 5*B*a^2*x + 10*A*a*b*x + 3*A*a^2)/x^(5/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2\left(-3B\,c^{2}x^{5}-5A\,c^{2}x^{4}-10x^{4}bBc-30x^{3}Abc-30Bac\,x^{3}-15B\,b^{2}x^{3}+30Aac\,x^{2}+15A\,b^{2}x^{2}+30Bab\,x^{2}+10Aa\right.}{15x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*x^5-5*A*c^2*x^4-10*B*b*c*x^4-30*A*b*c*x^3-30*B*a*c*x^3-15*B
*b^2*x^3+30*A*a*c*x^2+15*A*b^2*x^2+30*B*a*b*x^2+10*A*a*b*x+5*B*a^2*x+3*A*a^
2)/x^(5/2)
```

maxima [A] time = 0.62, size = 94, normalized size = 0.86

$$\frac{2}{5}\,Bc^{2}x^{\frac{5}{2}}+\frac{2}{3}\left(2\,Bbc+Ac^{2}\right)x^{\frac{3}{2}}+2\left(Bb^{2}+2\,(Ba+Ab)c\right)\sqrt{x}-\frac{2\left(3\,Aa^{2}+15\left(2\,Bab+Ab^{2}+2\,Aac\right)x^{2}+5\left(Ba^{2}+2\,A\right.\right.}{15\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^2*x^(5/2) + 2/3*(2*B*b*c + A*c^2)*x^(3/2) + 2*(B*b^2 + 2*(B*a + A*b
)*c)*sqrt(x) - 2/15*(3*A*a^2 + 15*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 5*(B*a^
2 + 2*A*a*b)*x)/x^(5/2)
```

mupad [B] time = 0.06, size = 94, normalized size = 0.86

$$x^{3/2}\,\left(\frac{2\,A\,c^{2}}{3}+\frac{4\,B\,b\,c}{3}\right)-\frac{\frac{2\,A\,a^{2}}{5}+x^{2}\,\left(2\,A\,b^{2}+4\,B\,a\,b+4\,A\,a\,c\right)+x\,\left(\frac{2\,B\,a^{2}}{3}+\frac{4\,A\,b\,a}{3}\right)}{x^{5/2}}+\sqrt{x}\,\left(2\,B\,b^{2}+4\,A\,c\,b+4\,B\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(7/2),x)
```

```
[Out] x^(3/2)*((2*A*c^2)/3 + (4*B*b*c)/3) - ((2*A*a^2)/5 + x^2*(2*A*b^2 + 4*A*a*c
 + 4*B*a*b) + x*((2*B*a^2)/3 + (4*A*a*b)/3))/x^(5/2) + x^(1/2)*(2*B*b^2 + 4
*A*b*c + 4*B*a*c) + (2*B*c^2*x^(5/2))/5
```

sympy [**A**] time = 3.94, size = 151, normalized size = 1.39

$$-\frac{2Aa^2}{5x^{\frac{5}{2}}}-\frac{4Aab}{3x^{\frac{3}{2}}}-\frac{4Aac}{\sqrt{x}}-\frac{2Ab^2}{\sqrt{x}}+4Abc\sqrt{x}+\frac{2Ac^2x^{\frac{3}{2}}}{3}-\frac{2Ba^2}{3x^{\frac{3}{2}}}-\frac{4Bab}{\sqrt{x}}+4Bac\sqrt{x}+2Bb^2\sqrt{x}+\frac{4Bbcx^{\frac{3}{2}}}{3}+\frac{2Bc^2x^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(7/2),x)
```

```
[Out] -2*A*a**2/(5*x**(5/2)) - 4*A*a*b/(3*x**(3/2)) - 4*A*a*c/sqrt(x) - 2*A*b**2/
sqrt(x) + 4*A*b*c*sqrt(x) + 2*A*c**2*x**(3/2)/3 - 2*B*a**2/(3*x**(3/2)) - 4
*B*a*b/sqrt(x) + 4*B*a*c*sqrt(x) + 2*B*b**2*sqrt(x) + 4*B*b*c*x**(3/2)/3 +
2*B*c**2*x**(5/2)/5
```

3.998 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{9/2}}\,dx$

Optimal. Leaf size=109

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{3x^{3/2}}-\frac{2\left(2aBc+2Abc+b^2B\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{5x^{5/2}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

```
[Out] -2/7*a^2*A/x^(7/2)-2/5*a*(2*A*b+B*a)/x^(5/2)-2/3*(2*a*b*B+A*(2*a*c+b^2))/x^
(3/2)+2/3*B*c^2*x^(3/2)-2*(2*A*b*c+2*B*a*c+B*b^2)/x^(1/2)+2*c*(A*c+2*B*b)*x
^(1/2)
```

Rubi **[A]** time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2A}{7x^{7/2}}-\frac{2\left(A\left(2ac+b^2\right)+2abB\right)}{3x^{3/2}}-\frac{2\left(2aBc+2Abc+b^2B\right)}{\sqrt{x}}-\frac{2a(aB+2Ab)}{5x^{5/2}}+2c\sqrt{x}\,(Ac+2bB)+\frac{2}{3}Bc^2x^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*a^2*A)/(7*x^(7/2)) - (2*a*(2*A*b + a*B))/(5*x^(5/2)) - (2*(2*a*b*B + A*
(b^2 + 2*a*c)))/(3*x^(3/2)) - (2*(b^2*B + 2*A*b*c + 2*a*B*c))/Sqrt[x] + 2*c
*(2*b*B + A*c)*Sqrt[x] + (2*B*c^2*x^(3/2))/3
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{x^{9/2}}\,dx &= \int \left(\frac{a^2A}{x^{9/2}}+\frac{a(2Ab+aB)}{x^{7/2}}+\frac{2abB+A\left(b^2+2ac\right)}{x^{5/2}}+\frac{b^2B+2Abc+2aBc}{x^{3/2}}+\frac{c(2b\\ &= -\frac{2a^2A}{7x^{7/2}}-\frac{2a(2Ab+aB)}{5x^{5/2}}-\frac{2\left(2abB+A\left(b^2+2ac\right)\right)}{3x^{3/2}}-\frac{2\left(b^2B+2Abc+2aBc\right)}{\sqrt{x}}\end{aligned}$$

Mathematica **[A]** time = 0.08, size = 95, normalized size = 0.87

$$-\frac{2\left(3a^2(5A+7Bx)+14ax(A(3b+5cx)+5Bx(b+3cx))+35x^2\left(A\left(b^2+6bcx-3c^2x^2\right)-Bx\left(-3b^2+6bcx+c^2x\right.\right.\right.}{105x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x]
```

```
[Out] (-2*(3*a^2*(5*A + 7*B*x) + 14*a*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)) + 3
5*x^2*(A*(b^2 + 6*b*c*x - 3*c^2*x^2) - B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))))/
(105*x^(7/2))
```

fricas [A] time = 0.55, size = 93, normalized size = 0.85

$$\frac{2 (35 Bc^2x^5 + 105 (2 Bbc + Ac^2)x^4 - 105 (Bb^2 + 2 (Ba + Ab)c)x^3 - 15 Aa^2 - 35 (2 Bab + Ab^2 + 2 Aac)x^2 - 21}{105 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*x^5 + 105*(2*B*b*c + A*c^2)*x^4 - 105*(B*b^2 + 2*(B*a + A*b
)*c)*x^3 - 15*A*a^2 - 35*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 - 21*(B*a^2 + 2*A*
a*b)*x)/x^(7/2)
```

giac [A] time = 0.16, size = 102, normalized size = 0.94

$$\frac{2}{3} Bc^2x^{\frac{3}{2}} + 4 Bbc\sqrt{x} + 2 Ac^2\sqrt{x} - \frac{2 (105 Bb^2x^3 + 210 Bacx^3 + 210 Abcx^3 + 70 Babx^2 + 35 Ab^2x^2 + 70 Aacx^2 + 2}{105 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 4*B*b*c*sqrt(x) + 2*A*c^2*sqrt(x) - 2/105*(105*B*b^2*x^
3 + 210*B*a*c*x^3 + 210*A*b*c*x^3 + 70*B*a*b*x^2 + 35*A*b^2*x^2 + 70*A*a*c*
x^2 + 21*B*a^2*x + 42*A*a*b*x + 15*A*a^2)/x^(7/2)
```

maple [A] time = 0.05, size = 102, normalized size = 0.94

$$-\frac{2 (-35B c^2x^5 - 105A c^2x^4 - 210x^4bBc + 210x^3Abc + 210Bac x^3 + 105B b^2x^3 + 70Aac x^2 + 35A b^2x^2 + 70Ba}{105x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x)
```

```
[Out] -2/105*(-35*B*c^2*x^5-105*A*c^2*x^4-210*B*b*c*x^4+210*A*b*c*x^3+210*B*a*c*x
^3+105*B*b^2*x^3+70*A*a*c*x^2+35*A*b^2*x^2+70*B*a*b*x^2+42*A*a*b*x+21*B*a^2
*x+15*A*a^2)/x^(7/2)
```

maxima [A] time = 0.48, size = 94, normalized size = 0.86

$$\frac{2}{3} Bc^2x^{\frac{3}{2}} + 2 (2 Bbc + Ac^2)\sqrt{x} - \frac{2 (105 (Bb^2 + 2 (Ba + Ab)c)x^3 + 15 Aa^2 + 35 (2 Bab + Ab^2 + 2 Aac)x^2 + 21 (B}{105 x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*c^2*x^(3/2) + 2*(2*B*b*c + A*c^2)*sqrt(x) - 2/105*(105*(B*b^2 + 2*(B*
a + A*b)*c)*x^3 + 15*A*a^2 + 35*(2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + 21*(B*a^2
 + 2*A*a*b)*x)/x^(7/2)
```

mupad [B] time = 1.28, size = 94, normalized size = 0.86

$$\sqrt{x}\,\left(2\,A\,c^2+4\,B\,b\,c\right)-\frac{\frac{2\,A\,a^2}{7}+x^2\,\left(\frac{2\,A\,b^2}{3}+\frac{4\,B\,a\,b}{3}+\frac{4\,A\,a\,c}{3}\right)+x^3\,\left(2\,B\,b^2+4\,A\,c\,b+4\,B\,a\,c\right)+x\,\left(\frac{2\,B\,a^2}{5}+\frac{4\,A\,b\,a}{5}\right)}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*A*c^2 + 4*B*b*c) - ((2*A*a^2)/7 + x^2*((2*A*b^2)/3 + (4*A*a*c)/3
 + (4*B*a*b)/3) + x^3*(2*B*b^2 + 4*A*b*c + 4*B*a*c) + x*((2*B*a^2)/5 + (4*A
*a*b)/5))/x^(7/2) + (2*B*c^2*x^(3/2))/3
```

sympy [A] time = 5.88, size = 153, normalized size = 1.40

$$-\frac{2Aa^2}{7x^{\frac{7}{2}}}-\frac{4Aab}{5x^{\frac{5}{2}}}-\frac{4Aac}{3x^{\frac{3}{2}}}-\frac{2Ab^2}{3x^{\frac{3}{2}}}-\frac{4Abc}{\sqrt{x}}+2Ac^2\sqrt{x}-\frac{2Ba^2}{5x^{\frac{5}{2}}}-\frac{4Bab}{3x^{\frac{3}{2}}}-\frac{4Bac}{\sqrt{x}}-\frac{2Bb^2}{\sqrt{x}}+4Bbc\sqrt{x}+\frac{2Bc^2x^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/x**(9/2),x)
```

```
[Out] -2*A*a**2/(7*x**(7/2)) - 4*A*a*b/(5*x**(5/2)) - 4*A*a*c/(3*x**(3/2)) - 2*A*
b**2/(3*x**(3/2)) - 4*A*b*c/sqrt(x) + 2*A*c**2*sqrt(x) - 2*B*a**2/(5*x**(5/
2)) - 4*B*a*b/(3*x**(3/2)) - 4*B*a*c/sqrt(x) - 2*B*b**2/sqrt(x) + 4*B*b*c*s
qrt(x) + 2*B*c**2*x**(3/2)/3
```

3.999 $\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^2x^{11/2}(aB+3Ab)+\frac{6}{19}cx^{19/2}\left(aBc+Abc+b^2B\right)+\frac{6}{13}ax^{13/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{17}x^{17/2}\big(3aAc^2+$$

```
[Out] 2/9*a^3*A*x^(9/2)+2/11*a^2*(3*A*b+B*a)*x^(11/2)+6/13*a*(a*b*B+A*(a*c+b^2))*
x^(13/2)+2/15*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(15/2)+2/17*(3*A*a*c^2+3*
A*b^2*c+6*B*a*b*c+B*b^3)*x^(17/2)+6/19*c*(A*b*c+B*a*c+B*b^2)*x^(19/2)+2/21*
c^2*(A*c+3*B*b)*x^(21/2)+2/23*B*c^3*x^(23/2)
```

Rubi [A] time = 0.12, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{11}a^2x^{11/2}(aB+3Ab)+\frac{2}{9}a^3Ax^{9/2}+\frac{2}{17}x^{17/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{19}cx^{19/2}\left(aBc+Abc+b^2B\right)+\frac{2}{15}x$$

Antiderivative was successfully verified.

```
[In] Int[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(9/2))/9 + (2*a^2*(3*A*b + a*B)*x^(11/2))/11 + (6*a*(a*b*B + A*(
b^2 + a*c))*x^(13/2))/13 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(15
/2))/15 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(17/2))/17 + (6*
c*(b^2*B + A*b*c + a*B*c)*x^(19/2))/19 + (2*c^2*(3*b*B + A*c)*x^(21/2))/21
+ (2*B*c^3*x^(23/2))/23
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{7/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \big(a^3Ax^{7/2}+a^2(3Ab+aB)x^{9/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{11/2}+\big(3aB\big(\\ &= \frac{2}{9}a^3Ax^{9/2}+\frac{2}{11}a^2(3Ab+aB)x^{11/2}+\frac{6}{13}a\left(abB+A\left(b^2+ac\right)\right)x^{13/2}+\frac{2}{15}\end{aligned}$$

Mathematica [A] time = 0.20, size = 178, normalized size = 0.98

$$2x^{9/2}\big(3380195a^3(11A+9Bx)+468027a^2x(15A(13b+11cx)+11Bx(15b+13cx))+15939ax^2\big(19A\big(255b^2+$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(9/2)*(3380195*a^3*(11*A + 9*B*x) + 468027*a^2*x*(15*A*(13*b + 11*c*x)
 + 11*B*x*(15*b + 13*c*x)) + 15939*a*x^2*(19*A*(255*b^2 + 442*b*c*x + 195*c
^2*x^2) + 13*B*x*(323*b^2 + 570*b*c*x + 255*c^2*x^2)) + 429*x^3*(23*A*(2261
*b^3 + 5985*b^2*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3) + 15*B*x*(3059*b^3 + 8
211*b^2*c*x + 7429*b*c^2*x^2 + 2261*c^3*x^3))))/334639305
```

fricas [A] time = 0.72, size = 171, normalized size = 0.94

$$\frac{2}{334639305}\left(14549535\,Bc^{3}x^{11}+15935205\left(3\,Bbc^{2}+Ac^{3}\right)x^{10}+52837785\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{9}+19684665\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/334639305*(14549535*B*c^3*x^11 + 15935205*(3*B*b*c^2 + A*c^3)*x^10 + 5283
7785*(B*b^2*c + (B*a + A*b)*c^2)*x^9 + 19684665*(B*b^3 + 3*A*a*c^2 + 3*(2*B
*a*b + A*b^2)*c)*x^8 + 37182145*A*a^3*x^4 + 22309287*(3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*x^7 + 77224455*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^6 + 30
421755*(B*a^3 + 3*A*a^2*b)*x^5)*sqrt(x)
```

giac [A] time = 0.23, size = 193, normalized size = 1.06

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{7}\,Bbc^{2}x^{\frac{21}{2}}+\frac{2}{21}\,Ac^{3}x^{\frac{21}{2}}+\frac{6}{19}\,Bb^{2}cx^{\frac{19}{2}}+\frac{6}{19}\,Bac^{2}x^{\frac{19}{2}}+\frac{6}{19}\,Abc^{2}x^{\frac{19}{2}}+\frac{2}{17}\,Bb^{3}x^{\frac{17}{2}}+\frac{12}{17}\,Babcx^{\frac{17}{2}}+\frac{6}{17}\,Ab^{2}cx^{\frac{17}{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/7*B*b*c^2*x^(21/2) + 2/21*A*c^3*x^(21/2) + 6/19*B*b
^2*c*x^(19/2) + 6/19*B*a*c^2*x^(19/2) + 6/19*A*b*c^2*x^(19/2) + 2/17*B*b^3*
x^(17/2) + 12/17*B*a*b*c*x^(17/2) + 6/17*A*b^2*c*x^(17/2) + 6/17*A*a*c^2*x^
(17/2) + 2/5*B*a*b^2*x^(15/2) + 2/15*A*b^3*x^(15/2) + 2/5*B*a^2*c*x^(15/2)
+ 4/5*A*a*b*c*x^(15/2) + 6/13*B*a^2*b*x^(13/2) + 6/13*A*a*b^2*x^(13/2) + 6/
13*A*a^2*c*x^(13/2) + 2/11*B*a^3*x^(11/2) + 6/11*A*a^2*b*x^(11/2) + 2/9*A*a
^3*x^(9/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$2\left(14549535B\,c^{3}x^{7}+15935205A\,c^{3}x^{6}+47805615x^{6}Bb\,c^{2}+52837785x^{5}Ab\,c^{2}+52837785Ba\,c^{2}x^{5}+52837785x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/334639305*x^(9/2)*(14549535*B*c^3*x^7+15935205*A*c^3*x^6+47805615*B*b*c^2
*x^6+52837785*A*b*c^2*x^5+52837785*B*a*c^2*x^5+52837785*B*b^2*c*x^5+5905399
5*A*a*c^2*x^4+59053995*A*b^2*c*x^4+118107990*B*a*b*c*x^4+19684665*B*b^3*x^4
+133855722*A*a*b*c*x^3+22309287*A*b^3*x^3+66927861*B*a^2*c*x^3+66927861*B*a
*b^2*x^3+77224455*A*a^2*c*x^2+77224455*A*a*b^2*x^2+77224455*B*a^2*b*x^2+912
65265*A*a^2*b*x+30421755*B*a^3*x+37182145*A*a^3)
```

maxima [A] time = 0.56, size = 166, normalized size = 0.91

$$\frac{2}{23}\,Bc^{3}x^{\frac{23}{2}}+\frac{2}{21}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{21}{2}}+\frac{6}{19}\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{\frac{19}{2}}+\frac{2}{17}\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{\frac{17}{2}}+\frac{2}{9}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/23*B*c^3*x^(23/2) + 2/21*(3*B*b*c^2 + A*c^3)*x^(21/2) + 6/19*(B*b^2*c + (
B*a + A*b)*c^2)*x^(19/2) + 2/17*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^(17/2) + 2/9*A*a^3*x^(9/2) + 2/15*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^(15/2) + 6/13*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(13/2) + 2/11*(B*a^3
+ 3*A*a^2*b)*x^(11/2)
```

mupad [B] time = 0.07, size = 169, normalized size = 0.93

$$x^{15/2}\left(\frac{2\,B\,c\,a^2}{5}+\frac{2\,B\,a\,b^2}{5}+\frac{4\,A\,c\,a\,b}{5}+\frac{2\,A\,b^3}{15}\right)+x^{17/2}\left(\frac{2\,B\,b^3}{17}+\frac{6\,A\,b^2\,c}{17}+\frac{12\,B\,a\,b\,c}{17}+\frac{6\,A\,a\,c^2}{17}\right)+x^{11/2}\left(\frac{2\,B\,a}{11}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(15/2)*((2*A*b^3)/15 + (2*B*a*b^2)/5 + (2*B*a^2*c)/5 + (4*A*a*b*c)/5) + x
^(17/2)*((2*B*b^3)/17 + (6*A*a*c^2)/17 + (6*A*b^2*c)/17 + (12*B*a*b*c)/17)
+ x^(11/2)*((2*B*a^3)/11 + (6*A*a^2*b)/11) + x^(21/2)*((2*A*c^3)/21 + (2*B*
b*c^2)/7) + x^(13/2)*((6*A*a*b^2)/13 + (6*A*a^2*c)/13 + (6*B*a^2*b)/13) + x
^(19/2)*((6*A*b*c^2)/19 + (6*B*a*c^2)/19 + (6*B*b^2*c)/19) + (2*A*a^3*x^(9/
2))/9 + (2*B*c^3*x^(23/2))/23
```

sympy [A] time = 36.59, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{9}{2}}}{9}+\frac{6Aa^2bx^{\frac{11}{2}}}{11}+\frac{6Aa^2cx^{\frac{13}{2}}}{13}+\frac{6Aab^2x^{\frac{13}{2}}}{13}+\frac{4Aabcx^{\frac{15}{2}}}{5}+\frac{6Aac^2x^{\frac{17}{2}}}{17}+\frac{2Ab^3x^{\frac{15}{2}}}{15}+\frac{6Ab^2cx^{\frac{17}{2}}}{17}+\frac{6Abc^2x^{\frac{19}{2}}}{19}+\frac{2Ac^3}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(9/2)/9 + 6*A*a**2*b*x**(11/2)/11 + 6*A*a**2*c*x**(13/2)/13 + 6
*A*a*b**2*x**(13/2)/13 + 4*A*a*b*c*x**(15/2)/5 + 6*A*a*c**2*x**(17/2)/17 +
2*A*b**3*x**(15/2)/15 + 6*A*b**2*c*x**(17/2)/17 + 6*A*b*c**2*x**(19/2)/19 +
 2*A*c**3*x**(21/2)/21 + 2*B*a**3*x**(11/2)/11 + 6*B*a**2*b*x**(13/2)/13 +
2*B*a**2*c*x**(15/2)/5 + 2*B*a*b**2*x**(15/2)/5 + 12*B*a*b*c*x**(17/2)/17 +
 6*B*a*c**2*x**(19/2)/19 + 2*B*b**3*x**(17/2)/17 + 6*B*b**2*c*x**(19/2)/19
+ 2*B*b*c**2*x**(21/2)/7 + 2*B*c**3*x**(23/2)/23
```

3.1000 $\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^2x^{9/2}(aB+3Ab)+\frac{6}{17}cx^{17/2}\left(aBc+Abc+b^2B\right)+\frac{6}{11}ax^{11/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{15}x^{15/2}\left(3aAc^2+6ab\right.$$

```
[Out] 2/7*a^3*A*x^(7/2)+2/9*a^2*(3*A*b+B*a)*x^(9/2)+6/11*a*(a*b*B+A*(a*c+b^2))*x^
(11/2)+2/13*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(13/2)+2/15*(3*A*a*c^2+3*A*
b^2*c+6*B*a*b*c+B*b^3)*x^(15/2)+6/17*c*(A*b*c+B*a*c+B*b^2)*x^(17/2)+2/19*c^
2*(A*c+3*B*b)*x^(19/2)+2/21*B*c^3*x^(21/2)
```

Rubi [A] time = 0.12, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{9}a^2x^{9/2}(aB+3Ab)+\frac{2}{7}a^3Ax^{7/2}+\frac{2}{15}x^{15/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{17}cx^{17/2}\left(aBc+Abc+b^2B\right)+\frac{2}{13}x^{13/2}\left(A\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(7/2))/7 + (2*a^2*(3*A*b + a*B)*x^(9/2))/9 + (6*a*(a*b*B + A*(b^
2 + a*c))*x^(11/2))/11 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(13/2
))/13 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(15/2))/15 + (6*c*
(b^2*B + A*b*c + a*B*c)*x^(17/2))/17 + (2*c^2*(3*b*B + A*c)*x^(19/2))/19 +
(2*B*c^3*x^(21/2))/21
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{5/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx&=\int\left(a^3Ax^{5/2}+a^2(3Ab+aB)x^{7/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{9/2}+\left(3aB\left(b^2+\right.\right.\right.\\&=\frac{2}{7}a^3Ax^{7/2}+\frac{2}{9}a^2(3Ab+aB)x^{9/2}+\frac{6}{11}a\left(abB+A\left(b^2+ac\right)\right)x^{11/2}+\frac{2}{13}\left(3aB\right.\end{aligned}$$

Mathematica [A] time = 0.23, size = 178, normalized size = 0.98

$$\frac{2x^{7/2}\left(230945a^3(9A+7Bx)+33915a^2x(13A(11b+9cx)+9Bx(13b+11cx))+1197ax^2\left(17A\left(195b^2+330bcx+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(7/2)*(230945*a^3*(9*A + 7*B*x) + 33915*a^2*x*(13*A*(11*b + 9*c*x) + 9
*B*x*(13*b + 11*c*x)) + 1197*a*x^2*(17*A*(195*b^2 + 330*b*c*x + 143*c^2*x^2
) + 11*B*x*(255*b^2 + 442*b*c*x + 195*c^2*x^2)) + 33*x^3*(21*A*(1615*b^3 +
4199*b^2*c*x + 3705*b*c^2*x^2 + 1105*c^3*x^3) + 13*B*x*(2261*b^3 + 5985*b^2
*c*x + 5355*b*c^2*x^2 + 1615*c^3*x^3))))/14549535
```

fricas [A] time = 0.53, size = 171, normalized size = 0.94

$$\frac{2}{14549535}\left(692835\,Bc^{3}x^{10}+765765\left(3\,Bbc^{2}+Ac^{3}\right)x^{9}+2567565\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{8}+969969\left(Bb^{3}+3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/14549535*(692835*B*c^3*x^10 + 765765*(3*B*b*c^2 + A*c^3)*x^9 + 2567565*(B
*b^2*c + (B*a + A*b)*c^2)*x^8 + 969969*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*x^7 + 2078505*A*a^3*x^3 + 1119195*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2
*A*a*b)*c)*x^6 + 3968055*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^5 + 1616615*(B*a^3
 + 3*A*a^2*b)*x^4)*sqrt(x)
```

giac [A] time = 0.20, size = 193, normalized size = 1.06

$$\frac{2}{21}\,Bc^{3}x^{\frac{21}{2}}+\frac{6}{19}\,Bbc^{2}x^{\frac{19}{2}}+\frac{2}{19}\,Ac^{3}x^{\frac{19}{2}}+\frac{6}{17}\,Bb^{2}cx^{\frac{17}{2}}+\frac{6}{17}\,Bac^{2}x^{\frac{17}{2}}+\frac{6}{17}\,Abc^{2}x^{\frac{17}{2}}+\frac{2}{15}\,Bb^{3}x^{\frac{15}{2}}+\frac{4}{5}\,Babcx^{\frac{15}{2}}+\frac{2}{5}\,Ab^{2}cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 6/19*B*b*c^2*x^(19/2) + 2/19*A*c^3*x^(19/2) + 6/17*B*
b^2*c*x^(17/2) + 6/17*B*a*c^2*x^(17/2) + 6/17*A*b*c^2*x^(17/2) + 2/15*B*b^3
*x^(15/2) + 4/5*B*a*b*c*x^(15/2) + 2/5*A*b^2*c*x^(15/2) + 2/5*A*a*c^2*x^(15
/2) + 6/13*B*a*b^2*x^(13/2) + 2/13*A*b^3*x^(13/2) + 6/13*B*a^2*c*x^(13/2) +
 12/13*A*a*b*c*x^(13/2) + 6/11*B*a^2*b*x^(11/2) + 6/11*A*a*b^2*x^(11/2) + 6
/11*A*a^2*c*x^(11/2) + 2/9*B*a^3*x^(9/2) + 2/3*A*a^2*b*x^(9/2) + 2/7*A*a^3*
x^(7/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(692835B\,c^{3}x^{7}+765765A\,c^{3}x^{6}+2297295x^{6}Bb\,c^{2}+2567565x^{5}Ab\,c^{2}+2567565Ba\,c^{2}x^{5}+2567565x^{5}B\,b^{2}c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/14549535*x^(7/2)*(692835*B*c^3*x^7+765765*A*c^3*x^6+2297295*B*b*c^2*x^6+2
567565*A*b*c^2*x^5+2567565*B*a*c^2*x^5+2567565*B*b^2*c*x^5+2909907*A*a*c^2*
x^4+2909907*A*b^2*c*x^4+5819814*B*a*b*c*x^4+969969*B*b^3*x^4+6715170*A*a*b*
c*x^3+1119195*A*b^3*x^3+3357585*B*a^2*c*x^3+3357585*B*a*b^2*x^3+3968055*A*a
^2*c*x^2+3968055*A*a*b^2*x^2+3968055*B*a^2*b*x^2+4849845*A*a^2*b*x+1616615*
B*a^3*x+2078505*A*a^3)
```

maxima [A] time = 0.68, size = 166, normalized size = 0.91

$$\frac{2}{21}\,Bc^{3}x^{\frac{21}{2}}+\frac{2}{19}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{19}{2}}+\frac{6}{17}\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{\frac{17}{2}}+\frac{2}{15}\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{\frac{15}{2}}+\frac{2}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/21*B*c^3*x^(21/2) + 2/19*(3*B*b*c^2 + A*c^3)*x^(19/2) + 6/17*(B*b^2*c + (
B*a + A*b)*c^2)*x^(17/2) + 2/15*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^(15/2) + 2/7*A*a^3*x^(7/2) + 2/13*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^(13/2) + 6/11*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(11/2) + 2/9*(B*a^3 +
 3*A*a^2*b)*x^(9/2)
```

mupad [B] time = 1.27, size = 169, normalized size = 0.93

$$x^{13/2}\Bigg(\frac{6\,B\,c\,a^2}{13}+\frac{6\,B\,a\,b^2}{13}+\frac{12\,A\,c\,a\,b}{13}+\frac{2\,A\,b^3}{13}\Bigg)+x^{15/2}\Bigg(\frac{2\,B\,b^3}{15}+\frac{2\,A\,b^2\,c}{5}+\frac{4\,B\,a\,b\,c}{5}+\frac{2\,A\,a\,c^2}{5}\Bigg)+x^{9/2}\Bigg(\frac{2\,B\,a^3}{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(13/2)*((2*A*b^3)/13 + (6*B*a*b^2)/13 + (6*B*a^2*c)/13 + (12*A*a*b*c)/13)
 + x^(15/2)*((2*B*b^3)/15 + (2*A*a*c^2)/5 + (2*A*b^2*c)/5 + (4*B*a*b*c)/5)
+ x^(9/2)*((2*B*a^3)/9 + (2*A*a^2*b)/3) + x^(19/2)*((2*A*c^3)/19 + (6*B*b*c
^2)/19) + x^(11/2)*((6*A*a*b^2)/11 + (6*A*a^2*c)/11 + (6*B*a^2*b)/11) + x^(
17/2)*((6*A*b*c^2)/17 + (6*B*a*c^2)/17 + (6*B*b^2*c)/17) + (2*A*a^3*x^(7/2)
)/7 + (2*B*c^3*x^(21/2))/21
```

sympy [A] time = 17.20, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{7}{2}}}{7}+\frac{2Aa^2bx^{\frac{9}{2}}}{3}+\frac{6Aa^2cx^{\frac{11}{2}}}{11}+\frac{6Aab^2x^{\frac{11}{2}}}{11}+\frac{12Aabcx^{\frac{13}{2}}}{13}+\frac{2Aac^2x^{\frac{15}{2}}}{5}+\frac{2Ab^3x^{\frac{13}{2}}}{13}+\frac{2Ab^2cx^{\frac{15}{2}}}{5}+\frac{6Abc^2x^{\frac{17}{2}}}{17}+\frac{2Ac^3x^{\frac{19}{2}}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(7/2)/7 + 2*A*a**2*b*x**(9/2)/3 + 6*A*a**2*c*x**(11/2)/11 + 6*A
*a*b**2*x**(11/2)/11 + 12*A*a*b*c*x**(13/2)/13 + 2*A*a*c**2*x**(15/2)/5 + 2
*A*b**3*x**(13/2)/13 + 2*A*b**2*c*x**(15/2)/5 + 6*A*b*c**2*x**(17/2)/17 + 2
*A*c**3*x**(19/2)/19 + 2*B*a**3*x**(9/2)/9 + 6*B*a**2*b*x**(11/2)/11 + 6*B*
a**2*c*x**(13/2)/13 + 6*B*a*b**2*x**(13/2)/13 + 4*B*a*b*c*x**(15/2)/5 + 6*B
*a*c**2*x**(17/2)/17 + 2*B*b**3*x**(15/2)/15 + 6*B*b**2*c*x**(17/2)/17 + 6*
B*b*c**2*x**(19/2)/19 + 2*B*c**3*x**(21/2)/21
```

3.1001 $\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^2x^{7/2}(aB+3Ab)+\frac{2}{5}cx^{15/2}\left(aBc+Abc+b^2B\right)+\frac{2}{3}ax^{9/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{13}x^{13/2}\left(3aAc^2+6ab\right.$$

```
[Out] 2/5*a^3*A*x^(5/2)+2/7*a^2*(3*A*b+B*a)*x^(7/2)+2/3*a*(a*b*B+A*(a*c+b^2))*x^(
9/2)+2/11*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(11/2)+2/13*(3*A*a*c^2+3*A*b^
2*c+6*B*a*b*c+B*b^3)*x^(13/2)+2/5*c*(A*b*c+B*a*c+B*b^2)*x^(15/2)+2/17*c^2*(
A*c+3*B*b)*x^(17/2)+2/19*B*c^3*x^(19/2)
```

Rubi [A] time = 0.11, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{7}a^2x^{7/2}(aB+3Ab)+\frac{2}{5}a^3Ax^{5/2}+\frac{2}{13}x^{13/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{2}{5}cx^{15/2}\left(aBc+Abc+b^2B\right)+\frac{2}{11}x^{11/2}\left(\right.$$

Antiderivative was successfully verified.

```
[In] Int[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(5/2))/5 + (2*a^2*(3*A*b + a*B)*x^(7/2))/7 + (2*a*(a*b*B + A*(b^
2 + a*c))*x^(9/2))/3 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(11/2))
/11 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(13/2))/13 + (2*c*(b
^2*B + A*b*c + a*B*c)*x^(15/2))/5 + (2*c^2*(3*b*B + A*c)*x^(17/2))/17 + (2*
B*c^3*x^(19/2))/19
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x^{3/2}(A+Bx)\left(a+bx+cx^2\right)^3\,dx&=\int\left(a^3Ax^{3/2}+a^2(3Ab+aB)x^{5/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{7/2}+\left(3aB\left(b\right.\right.\right.\\&=\frac{2}{5}a^3Ax^{5/2}+\frac{2}{7}a^2(3Ab+aB)x^{7/2}+\frac{2}{3}a\left(abB+A\left(b^2+ac\right)\right)x^{9/2}+\frac{2}{11}\left(3aB\right.\end{aligned}$$

Mathematica [A] time = 0.19, size = 178, normalized size = 0.98

$$\frac{2x^{5/2}\left(138567a^3(7A+5Bx)+20995a^2x(11A(9b+7cx)+7Bx(11b+9cx))+2261ax^2\left(5A\left(143b^2+234bcx+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(5/2)*(138567*a^3*(7*A + 5*B*x) + 20995*a^2*x*(11*A*(9*b + 7*c*x) + 7*
B*x*(11*b + 9*c*x)) + 2261*a*x^2*(5*A*(143*b^2 + 234*b*c*x + 99*c^2*x^2) +
3*B*x*(195*b^2 + 330*b*c*x + 143*c^2*x^2)) + 21*x^3*(19*A*(1105*b^3 + 2805*
b^2*c*x + 2431*b*c^2*x^2 + 715*c^3*x^3) + 11*B*x*(1615*b^3 + 4199*b^2*c*x +
 3705*b*c^2*x^2 + 1105*c^3*x^3))))/4849845
```

fricas [A] time = 0.61, size = 171, normalized size = 0.94

$$\frac{2}{4849845}\left(255255\,Bc^3x^9+285285\left(3\,Bbc^2+Ac^3\right)x^8+969969\left(Bb^2c+(Ba+Ab)c^2\right)x^7+373065\left(Bb^3+3\,Aac^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(255255*B*c^3*x^9 + 285285*(3*B*b*c^2 + A*c^3)*x^8 + 969969*(B*b^
2*c + (B*a + A*b)*c^2)*x^7 + 373065*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*x^6 + 969969*A*a^3*x^2 + 440895*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*x^5 + 1616615*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^4 + 692835*(B*a^3 + 3*A
*a^2*b)*x^3)*sqrt(x)
```

giac [A] time = 0.18, size = 193, normalized size = 1.06

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{6}{17}\,Bbc^2x^{\frac{17}{2}}+\frac{2}{17}\,Ac^3x^{\frac{17}{2}}+\frac{2}{5}\,Bb^2cx^{\frac{15}{2}}+\frac{2}{5}\,Bac^2x^{\frac{15}{2}}+\frac{2}{5}\,Abc^2x^{\frac{15}{2}}+\frac{2}{13}\,Bb^3x^{\frac{13}{2}}+\frac{12}{13}\,Babcx^{\frac{13}{2}}+\frac{6}{13}\,Ab^2cx^{\frac{13}{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 6/17*B*b*c^2*x^(17/2) + 2/17*A*c^3*x^(17/2) + 2/5*B*b
^2*c*x^(15/2) + 2/5*B*a*c^2*x^(15/2) + 2/5*A*b*c^2*x^(15/2) + 2/13*B*b^3*x^
(13/2) + 12/13*B*a*b*c*x^(13/2) + 6/13*A*b^2*c*x^(13/2) + 6/13*A*a*c^2*x^(1
3/2) + 6/11*B*a*b^2*x^(11/2) + 2/11*A*b^3*x^(11/2) + 6/11*B*a^2*c*x^(11/2)
+ 12/11*A*a*b*c*x^(11/2) + 2/3*B*a^2*b*x^(9/2) + 2/3*A*a*b^2*x^(9/2) + 2/3*
A*a^2*c*x^(9/2) + 2/7*B*a^3*x^(7/2) + 6/7*A*a^2*b*x^(7/2) + 2/5*A*a^3*x^(5/
2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$\frac{2\left(255255B\,c^3x^7+285285A\,c^3x^6+855855x^6Bb\,c^2+969969x^5Ab\,c^2+969969Ba\,c^2x^5+969969x^5B\,b^2c+11191\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/4849845*x^(5/2)*(255255*B*c^3*x^7+285285*A*c^3*x^6+855855*B*b*c^2*x^6+969
969*A*b*c^2*x^5+969969*B*a*c^2*x^5+969969*B*b^2*c*x^5+1119195*A*a*c^2*x^4+1
119195*A*b^2*c*x^4+2238390*B*a*b*c*x^4+373065*B*b^3*x^4+2645370*A*a*b*c*x^3
+440895*A*b^3*x^3+1322685*B*a^2*c*x^3+1322685*B*a*b^2*x^3+1616615*A*a^2*c*x
^2+1616615*A*a*b^2*x^2+1616615*B*a^2*b*x^2+2078505*A*a^2*b*x+692835*B*a^3*x
+969969*A*a^3)
```

maxima [A] time = 0.66, size = 166, normalized size = 0.91

$$\frac{2}{19}\,Bc^3x^{\frac{19}{2}}+\frac{2}{17}\left(3\,Bbc^2+Ac^3\right)x^{\frac{17}{2}}+\frac{2}{5}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{15}{2}}+\frac{2}{13}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{13}{2}}+\frac{2}{5}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/19*B*c^3*x^(19/2) + 2/17*(3*B*b*c^2 + A*c^3)*x^(17/2) + 2/5*(B*b^2*c + (B
*a + A*b)*c^2)*x^(15/2) + 2/13*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
x^(13/2) + 2/5*A*a^3*x^(5/2) + 2/11*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b
)*c)*x^(11/2) + 2/3*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(9/2) + 2/7*(B*a^3 + 3*
A*a^2*b)*x^(7/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.93

$$x^{11/2}\left(\frac{6\,B\,c\,a^2}{11}+\frac{6\,B\,a\,b^2}{11}+\frac{12\,A\,c\,a\,b}{11}+\frac{2\,A\,b^3}{11}\right)+x^{13/2}\left(\frac{2\,B\,b^3}{13}+\frac{6\,A\,b^2\,c}{13}+\frac{12\,B\,a\,b\,c}{13}+\frac{6\,A\,a\,c^2}{13}\right)+x^{7/2}\left(\frac{2\,B\,a}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(11/2)*((2*A*b^3)/11 + (6*B*a*b^2)/11 + (6*B*a^2*c)/11 + (12*A*a*b*c)/11)
 + x^(13/2)*((2*B*b^3)/13 + (6*A*a*c^2)/13 + (6*A*b^2*c)/13 + (12*B*a*b*c)/
13) + x^(7/2)*((2*B*a^3)/7 + (6*A*a^2*b)/7) + x^(17/2)*((2*A*c^3)/17 + (6*B
*b*c^2)/17) + x^(9/2)*((2*A*a*b^2)/3 + (2*A*a^2*c)/3 + (2*B*a^2*b)/3) + x^(
15/2)*((2*A*b*c^2)/5 + (2*B*a*c^2)/5 + (2*B*b^2*c)/5) + (2*A*a^3*x^(5/2))/5
 + (2*B*c^3*x^(19/2))/19
```

sympy [A] time = 9.59, size = 294, normalized size = 1.62

$$\frac{2Aa^3x^{\frac{5}{2}}}{5}+\frac{6Aa^2bx^{\frac{7}{2}}}{7}+\frac{2Aa^2cx^{\frac{9}{2}}}{3}+\frac{2Aab^2x^{\frac{9}{2}}}{3}+\frac{12Aabcx^{\frac{11}{2}}}{11}+\frac{6Aac^2x^{\frac{13}{2}}}{13}+\frac{2Ab^3x^{\frac{11}{2}}}{11}+\frac{6Ab^2cx^{\frac{13}{2}}}{13}+\frac{2Abc^2x^{\frac{15}{2}}}{5}+\frac{2Ac^3x}{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] 2*A*a**3*x**(5/2)/5 + 6*A*a**2*b*x**(7/2)/7 + 2*A*a**2*c*x**(9/2)/3 + 2*A*a
*b**2*x**(9/2)/3 + 12*A*a*b*c*x**(11/2)/11 + 6*A*a*c**2*x**(13/2)/13 + 2*A*
b**3*x**(11/2)/11 + 6*A*b**2*c*x**(13/2)/13 + 2*A*b*c**2*x**(15/2)/5 + 2*A*
c**3*x**(17/2)/17 + 2*B*a**3*x**(7/2)/7 + 2*B*a**2*b*x**(9/2)/3 + 6*B*a**2*
c*x**(11/2)/11 + 6*B*a*b**2*x**(11/2)/11 + 12*B*a*b*c*x**(13/2)/13 + 2*B*a*
c**2*x**(15/2)/5 + 2*B*b**3*x**(13/2)/13 + 2*B*b**2*c*x**(15/2)/5 + 6*B*b*c
**2*x**(17/2)/17 + 2*B*c**3*x**(19/2)/19
```

3.1002 $\int \sqrt{x}\,(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=182

$$\frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^2x^{5/2}(aB+3Ab)+\frac{6}{13}cx^{13/2}\left(aBc+Abc+b^2B\right)+\frac{6}{7}ax^{7/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{11}x^{11/2}\bigl(3aAc^2+6abBc$$

```
[Out] 2/3*a^3*A*x^(3/2)+2/5*a^2*(3*A*b+B*a)*x^(5/2)+6/7*a*(a*b*B+A*(a*c+b^2))*x^(
7/2)+2/9*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(9/2)+2/11*(3*A*a*c^2+3*A*b^2*
c+6*B*a*b*c+B*b^3)*x^(11/2)+6/13*c*(A*b*c+B*a*c+B*b^2)*x^(13/2)+2/15*c^2*(A
*c+3*B*b)*x^(15/2)+2/17*B*c^3*x^(17/2)
```

Rubi [A] time = 0.11, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$\frac{2}{5}a^2x^{5/2}(aB+3Ab)+\frac{2}{3}a^3Ax^{3/2}+\frac{2}{11}x^{11/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{13}cx^{13/2}\left(aBc+Abc+b^2B\right)+\frac{2}{9}x^{9/2}\bigl(A\bigl($$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a^3*A*x^(3/2))/3 + (2*a^2*(3*A*b + a*B)*x^(5/2))/5 + (6*a*(a*b*B + A*(b^
2 + a*c))*x^(7/2))/7 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(9/2))/
9 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(11/2))/11 + (6*c*(b^2
*B + A*b*c + a*B*c)*x^(13/2))/13 + (2*c^2*(3*b*B + A*c)*x^(15/2))/15 + (2*B
*c^3*x^(17/2))/17
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \sqrt{x}\,(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \Bigl(a^3A\sqrt{x}+a^2(3Ab+aB)x^{3/2}+3a\left(abB+A\left(b^2+ac\right)\right)x^{5/2}+\Bigl(3aB\bigl(b^2+\\ &= \frac{2}{3}a^3Ax^{3/2}+\frac{2}{5}a^2(3Ab+aB)x^{5/2}+\frac{6}{7}a\left(abB+A\left(b^2+ac\right)\right)x^{7/2}+\frac{2}{9}\Bigl(3aB\bigl(b^2\end{aligned}$$

Mathematica [A] time = 0.20, size = 178, normalized size = 0.98

$$2x^{3/2}\left(51051a^3(5A+3Bx)+7293a^2x(9A(7b+5cx)+5Bx(9b+7cx))+255ax^2\left(13A\left(99b^2+154bcx+63c^2x^2\right)\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*x^(3/2)*(51051*a^3*(5*A + 3*B*x) + 7293*a^2*x*(9*A*(7*b + 5*c*x) + 5*B*x
*(9*b + 7*c*x)) + 255*a*x^2*(13*A*(99*b^2 + 154*b*c*x + 63*c^2*x^2) + 7*B*x
*(143*b^2 + 234*b*c*x + 99*c^2*x^2)) + 7*x^3*(17*A*(715*b^3 + 1755*b^2*c*x
+ 1485*b*c^2*x^2 + 429*c^3*x^3) + 9*B*x*(1105*b^3 + 2805*b^2*c*x + 2431*b*c
^2*x^2 + 715*c^3*x^3))))/765765
```

fricas [A] time = 0.50, size = 169, normalized size = 0.93

$$\frac{2}{765765}\Big(45045\,Bc^3x^8+51051\left(3\,Bbc^2+Ac^3\right)x^7+176715\left(Bb^2c+(Ba+Ab)c^2\right)x^6+69615\,\Big(Bb^3+3\,Aac^2+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^3*x^8 + 51051*(3*B*b*c^2 + A*c^3)*x^7 + 176715*(B*b^2*c
 + (B*a + A*b)*c^2)*x^6 + 69615*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^5 + 255255*A*a^3*x + 85085*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x
^4 + 328185*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^3 + 153153*(B*a^3 + 3*A*a^2*b)*
x^2)*sqrt(x)
```

giac [A] time = 0.16, size = 193, normalized size = 1.06

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{5}\,Bbc^2x^{\frac{15}{2}}+\frac{2}{15}\,Ac^3x^{\frac{15}{2}}+\frac{6}{13}\,Bb^2cx^{\frac{13}{2}}+\frac{6}{13}\,Bac^2x^{\frac{13}{2}}+\frac{6}{13}\,Abc^2x^{\frac{13}{2}}+\frac{2}{11}\,Bb^3x^{\frac{11}{2}}+\frac{12}{11}\,Babcx^{\frac{11}{2}}+\frac{6}{11}\,Ab^2cx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="giac")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/5*B*b*c^2*x^(15/2) + 2/15*A*c^3*x^(15/2) + 6/13*B*b
^2*c*x^(13/2) + 6/13*B*a*c^2*x^(13/2) + 6/13*A*b*c^2*x^(13/2) + 2/11*B*b^3*
x^(11/2) + 12/11*B*a*b*c*x^(11/2) + 6/11*A*b^2*c*x^(11/2) + 6/11*A*a*c^2*x^
(11/2) + 2/3*B*a*b^2*x^(9/2) + 2/9*A*b^3*x^(9/2) + 2/3*B*a^2*c*x^(9/2) + 4/
3*A*a*b*c*x^(9/2) + 6/7*B*a^2*b*x^(7/2) + 6/7*A*a*b^2*x^(7/2) + 6/7*A*a^2*c
*x^(7/2) + 2/5*B*a^3*x^(5/2) + 6/5*A*a^2*b*x^(5/2) + 2/3*A*a^3*x^(3/2)
```

maple [A] time = 0.05, size = 192, normalized size = 1.05

$$2\,\Big(45045B\,c^3x^7+51051A\,c^3x^6+153153x^6Bb\,c^2+176715x^5Ab\,c^2+176715Ba\,c^2x^5+176715x^5B\,b^2c+20884$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x)
```

```
[Out] 2/765765*x^(3/2)*(45045*B*c^3*x^7+51051*A*c^3*x^6+153153*B*b*c^2*x^6+176715
*A*b*c^2*x^5+176715*B*a*c^2*x^5+176715*B*b^2*c*x^5+208845*A*a*c^2*x^4+20884
5*A*b^2*c*x^4+417690*B*a*b*c*x^4+69615*B*b^3*x^4+510510*A*a*b*c*x^3+85085*A
*b^3*x^3+255255*B*a^2*c*x^3+255255*B*a*b^2*x^3+328185*A*a^2*c*x^2+328185*A*
a*b^2*x^2+328185*B*a^2*b*x^2+459459*A*a^2*b*x+153153*B*a^3*x+255255*A*a^3)
```

maxima [A] time = 0.53, size = 166, normalized size = 0.91

$$\frac{2}{17}\,Bc^3x^{\frac{17}{2}}+\frac{2}{15}\left(3\,Bbc^2+Ac^3\right)x^{\frac{15}{2}}+\frac{6}{13}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{13}{2}}+\frac{2}{11}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{11}{2}}+\frac{2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3*x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/17*B*c^3*x^(17/2) + 2/15*(3*B*b*c^2 + A*c^3)*x^(15/2) + 6/13*(B*b^2*c + (
B*a + A*b)*c^2)*x^(13/2) + 2/11*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*x^(11/2) + 2/3*A*a^3*x^(3/2) + 2/9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b
)*c)*x^(9/2) + 6/7*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(7/2) + 2/5*(B*a^3 + 3*A
*a^2*b)*x^(5/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.93

$$x^{9/2}\left(\frac{2\,B\,c\,a^2}{3}+\frac{2\,B\,a\,b^2}{3}+\frac{4\,A\,c\,a\,b}{3}+\frac{2\,A\,b^3}{9}\right)+x^{11/2}\left(\frac{2\,B\,b^3}{11}+\frac{6\,A\,b^2\,c}{11}+\frac{12\,B\,a\,b\,c}{11}+\frac{6\,A\,a\,c^2}{11}\right)+x^{5/2}\,\Big(\frac{2\,B\,a^3}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^(9/2)*((2*A*b^3)/9 + (2*B*a*b^2)/3 + (2*B*a^2*c)/3 + (4*A*a*b*c)/3) + x^(
11/2)*((2*B*b^3)/11 + (6*A*a*c^2)/11 + (6*A*b^2*c)/11 + (12*B*a*b*c)/11) +
x^(5/2)*((2*B*a^3)/5 + (6*A*a^2*b)/5) + x^(15/2)*((2*A*c^3)/15 + (2*B*b*c^2
)/5) + x^(7/2)*((6*A*a*b^2)/7 + (6*A*a^2*c)/7 + (6*B*a^2*b)/7) + x^(13/2)*(
(6*A*b*c^2)/13 + (6*B*a*c^2)/13 + (6*B*b^2*c)/13) + (2*A*a^3*x^(3/2))/3 + (
2*B*c^3*x^(17/2))/17
```

sympy [A] time = 9.17, size = 216, normalized size = 1.19

$$\frac{2Aa^3x^{\frac{3}{2}}}{3}+\frac{2Bc^3x^{\frac{17}{2}}}{17}+\frac{2x^{\frac{15}{2}}\left(Ac^3+3Bbc^2\right)}{15}+\frac{2x^{\frac{13}{2}}\left(3Abc^2+3Bac^2+3Bb^2c\right)}{13}+\frac{2x^{\frac{11}{2}}\left(3Aac^2+3Ab^2c+6Babc+Bb^3\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3*x**(1/2),x)
```

```
[Out] 2*A*a**3*x**(3/2)/3 + 2*B*c**3*x**(17/2)/17 + 2*x**(15/2)*(A*c**3 + 3*B*b*c
**2)/15 + 2*x**(13/2)*(3*A*b*c**2 + 3*B*a*c**2 + 3*B*b**2*c)/13 + 2*x**(11/
2)*(3*A*a*c**2 + 3*A*b**2*c + 6*B*a*b*c + B*b**3)/11 + 2*x**(9/2)*(6*A*a*b*
c + A*b**3 + 3*B*a**2*c + 3*B*a*b**2)/9 + 2*x**(7/2)*(3*A*a**2*c + 3*A*a*b*
*2 + 3*B*a**2*b)/7 + 2*x**(5/2)*(3*A*a**2*b + B*a**3)/5
```

3.1003 $\int\frac{(A+Bx)\left(a+bx+cx^2\right)^3}{\sqrt{x}}\,dx$

Optimal. Leaf size=180

$$2a^3A\sqrt{x}+\frac{2}{3}a^2x^{3/2}(aB+3Ab)+\frac{6}{11}cx^{11/2}\left(aBc+Abc+b^2B\right)+\frac{6}{5}ax^{5/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{9}x^{9/2}\left(3aAc^2+6abB\right.$$

```
[Out] 2/3*a^2*(3*A*b+B*a)*x^(3/2)+6/5*a*(a*b*B+A*(a*c+b^2))*x^(5/2)+2/7*(3*a*B*(a
*c+b^2)+A*(6*a*b*c+b^3))*x^(7/2)+2/9*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*
x^(9/2)+6/11*c*(A*b*c+B*a*c+B*b^2)*x^(11/2)+2/13*c^2*(A*c+3*B*b)*x^(13/2)+2
/15*B*c^3*x^(15/2)+2*a^3*A*x^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{2}{3}a^2x^{3/2}(aB+3Ab)+2a^3A\sqrt{x}+\frac{2}{9}x^{9/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{11}cx^{11/2}\left(aBc+Abc+b^2B\right)+\frac{2}{7}x^{7/2}\left(A\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] 2*a^3*A*Sqrt[x] + (2*a^2*(3*A*b + a*B)*x^(3/2))/3 + (6*a*(a*b*B + A*(b^2 +
a*c))*x^(5/2))/5 + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(7/2))/7 +
(2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(9/2))/9 + (6*c*(b^2*B + A
*b*c + a*B*c)*x^(11/2))/11 + (2*c^2*(3*b*B + A*c)*x^(13/2))/13 + (2*B*c^3*x
^(15/2))/15
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int\frac{(A+Bx)\left(a+bx+cx^2\right)^3}{\sqrt{x}}\,dx=\int\left(\frac{a^3A}{\sqrt{x}}+a^2(3Ab+aB)\sqrt{x}+3a\left(abB+A\left(b^2+ac\right)\right)x^{3/2}+\left(3aB\left(b^2+ac\right)\right.\right.$$

$$=2a^3A\sqrt{x}+\frac{2}{3}a^2(3Ab+aB)x^{3/2}+\frac{6}{5}a\left(abB+A\left(b^2+ac\right)\right)x^{5/2}+\frac{2}{7}\left(3aB\left(b^2\right.\right.$$

Mathematica [A] time = 0.20, size = 176, normalized size = 0.98

$$2\sqrt{x}\left(15015a^3(3A+Bx)+1287a^2x(7A(5b+3cx)+3Bx(7b+5cx))+39ax^2\left(11A\left(63b^2+90bcx+35c^2x^2\right)+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/Sqrt[x],x]
```

```
[Out] (2*Sqrt[x]*(15015*a^3*(3*A + B*x) + 1287*a^2*x*(7*A*(5*b + 3*c*x) + 3*B*x*(
7*b + 5*c*x)) + 39*a*x^2*(11*A*(63*b^2 + 90*b*c*x + 35*c^2*x^2) + 5*B*x*(99
*b^2 + 154*b*c*x + 63*c^2*x^2)) + x^3*(15*A*(429*b^3 + 1001*b^2*c*x + 819*b
*c^2*x^2 + 231*c^3*x^3) + 7*B*x*(715*b^3 + 1755*b^2*c*x + 1485*b*c^2*x^2 +
429*c^3*x^3))))/45045
```

fricas [A] time = 0.67, size = 166, normalized size = 0.92

$$\frac{2}{45045}\Big(3003\,Bc^3x^7 + 3465\left(3\,Bbc^2 + Ac^3\right)x^6 + 12285\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 5005\Big(Bb^3 + 3\,Aac^2 + 3\Big(2\,Bab +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^3*x^7 + 3465*(3*B*b*c^2 + A*c^3)*x^6 + 12285*(B*b^2*c + (
B*a + A*b)*c^2)*x^5 + 5005*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4
+ 45045*A*a^3 + 6435*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 2702
7*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 15015*(B*a^3 + 3*A*a^2*b)*x)*sqrt(x)
```

giac [A] time = 0.17, size = 193, normalized size = 1.07

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}} + \frac{6}{13}\,Bbc^2x^{\frac{13}{2}} + \frac{2}{13}\,Ac^3x^{\frac{13}{2}} + \frac{6}{11}\,Bb^2cx^{\frac{11}{2}} + \frac{6}{11}\,Bac^2x^{\frac{11}{2}} + \frac{6}{11}\,Abc^2x^{\frac{11}{2}} + \frac{2}{9}\,Bb^3x^{\frac{9}{2}} + \frac{4}{3}\,Babcx^{\frac{9}{2}} + \frac{2}{3}\,Ab^2cx^{\frac{9}{2}} + \frac{2}{3}\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 6/13*B*b*c^2*x^(13/2) + 2/13*A*c^3*x^(13/2) + 6/11*B*
b^2*c*x^(11/2) + 6/11*B*a*c^2*x^(11/2) + 6/11*A*b*c^2*x^(11/2) + 2/9*B*b^3*
x^(9/2) + 4/3*B*a*b*c*x^(9/2) + 2/3*A*b^2*c*x^(9/2) + 2/3*A*a*c^2*x^(9/2) +
 6/7*B*a*b^2*x^(7/2) + 2/7*A*b^3*x^(7/2) + 6/7*B*a^2*c*x^(7/2) + 12/7*A*a*b
*c*x^(7/2) + 6/5*B*a^2*b*x^(5/2) + 6/5*A*a*b^2*x^(5/2) + 6/5*A*a^2*c*x^(5/2
) + 2/3*B*a^3*x^(3/2) + 2*A*a^2*b*x^(3/2) + 2*A*a^3*sqrt(x)
```

maple [A] time = 0.05, size = 192, normalized size = 1.07

$$2\Big(3003B\,c^3x^7 + 3465A\,c^3x^6 + 10395x^6Bb\,c^2 + 12285x^5Ab\,c^2 + 12285Ba\,c^2x^5 + 12285x^5B\,b^2c + 15015Aa\,c^2x^4 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x)
```

```
[Out] 2/45045*x^(1/2)*(3003*B*c^3*x^7+3465*A*c^3*x^6+10395*B*b*c^2*x^6+12285*A*b*
c^2*x^5+12285*B*a*c^2*x^5+12285*B*b^2*c*x^5+15015*A*a*c^2*x^4+15015*A*b^2*c
*x^4+30030*B*a*b*c*x^4+5005*B*b^3*x^4+38610*A*a*b*c*x^3+6435*A*b^3*x^3+1930
5*B*a^2*c*x^3+19305*B*a*b^2*x^3+27027*A*a^2*c*x^2+27027*A*a*b^2*x^2+27027*B
*a^2*b*x^2+45045*A*a^2*b*x+15015*B*a^3*x+45045*A*a^3)
```

maxima [A] time = 0.56, size = 166, normalized size = 0.92

$$\frac{2}{15}\,Bc^3x^{\frac{15}{2}} + \frac{2}{13}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{13}{2}} + \frac{6}{11}\left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{11}{2}} + \frac{2}{9}\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^{\frac{9}{2}} + 2\,Aa^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*B*c^3*x^(15/2) + 2/13*(3*B*b*c^2 + A*c^3)*x^(13/2) + 6/11*(B*b^2*c + (
B*a + A*b)*c^2)*x^(11/2) + 2/9*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
x^(9/2) + 2*A*a^3*sqrt(x) + 2/7*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
*x^(7/2) + 6/5*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(5/2) + 2/3*(B*a^3 + 3*A*a^2
*b)*x^(3/2)
```

mupad [B] time = 0.05, size = 169, normalized size = 0.94

$$x^{7/2}\left(\frac{6\,B\,c\,a^2}{7} + \frac{6\,B\,a\,b^2}{7} + \frac{12\,A\,c\,a\,b}{7} + \frac{2\,A\,b^3}{7}\right) + x^{9/2}\left(\frac{2\,B\,b^3}{9} + \frac{2\,A\,b^2\,c}{3} + \frac{4\,B\,a\,b\,c}{3} + \frac{2\,A\,a\,c^2}{3}\right) + x^{3/2}\Big(\frac{2\,B\,a^3}{3} + 2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(1/2),x)
```

```
[Out] x^(7/2)*((2*A*b^3)/7 + (6*B*a*b^2)/7 + (6*B*a^2*c)/7 + (12*A*a*b*c)/7) + x^
(9/2)*((2*B*b^3)/9 + (2*A*a*c^2)/3 + (2*A*b^2*c)/3 + (4*B*a*b*c)/3) + x^(3/
2)*((2*B*a^3)/3 + 2*A*a^2*b) + x^(13/2)*((2*A*c^3)/13 + (6*B*b*c^2)/13) + x
^(5/2)*((6*A*a*b^2)/5 + (6*A*a^2*c)/5 + (6*B*a^2*b)/5) + x^(11/2)*((6*A*b*c
^2)/11 + (6*B*a*c^2)/11 + (6*B*b^2*c)/11) + 2*A*a^3*x^(1/2) + (2*B*c^3*x^(1
5/2))/15
```

sympy **[A]** time = 5.90, size = 291, normalized size = 1.62

$$2Aa^3\sqrt{x}+2Aa^2bx^{\frac{3}{2}}+\frac{6Aa^2cx^{\frac{5}{2}}}{5}+\frac{6Aab^2x^{\frac{5}{2}}}{5}+\frac{12Aabcx^{\frac{7}{2}}}{7}+\frac{2Aac^2x^{\frac{9}{2}}}{3}+\frac{2Ab^3x^{\frac{7}{2}}}{7}+\frac{2Ab^2cx^{\frac{9}{2}}}{3}+\frac{6Abc^2x^{\frac{11}{2}}}{11}+\frac{2Ac^3x^{\frac{13}{2}}}{13}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(1/2),x)
```

```
[Out] 2*A*a**3*sqrt(x) + 2*A*a**2*b*x**(3/2) + 6*A*a**2*c*x**(5/2)/5 + 6*A*a*b**2
*x**(5/2)/5 + 12*A*a*b*c*x**(7/2)/7 + 2*A*a*c**2*x**(9/2)/3 + 2*A*b**3*x**(
7/2)/7 + 2*A*b**2*c*x**(9/2)/3 + 6*A*b*c**2*x**(11/2)/11 + 2*A*c**3*x**(13/
2)/13 + 2*B*a**3*x**(3/2)/3 + 6*B*a**2*b*x**(5/2)/5 + 6*B*a**2*c*x**(7/2)/7
 + 6*B*a*b**2*x**(7/2)/7 + 4*B*a*b*c*x**(9/2)/3 + 6*B*a*c**2*x**(11/2)/11 +
 2*B*b**3*x**(9/2)/9 + 6*B*b**2*c*x**(11/2)/11 + 6*B*b*c**2*x**(13/2)/13 +
2*B*c**3*x**(15/2)/15
```

3.1004 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{3/2}}\,dx$

Optimal. Leaf size=176

$$-\frac{2a^3A}{\sqrt{x}}+2a^2\sqrt{x}\,(aB+3Ab)+\frac{2}{3}cx^{9/2}\left(aBc+Abc+b^2B\right)+2ax^{3/2}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{7}x^{7/2}(3aAc^2+6abBc+3Ab$$

```
[Out] 2*a*(a*b*B+A*(a*c+b^2))*x^(3/2)+2/5*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(5/
2)+2/7*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^(7/2)+2/3*c*(A*b*c+B*a*c+B*b
^2)*x^(9/2)+2/11*c^2*(A*c+3*B*b)*x^(11/2)+2/13*B*c^3*x^(13/2)-2*a^3*A/x^(1/
2)+2*a^2*(3*A*b+B*a)*x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 176, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$2a^2\sqrt{x}\,(aB+3Ab)-\frac{2a^3A}{\sqrt{x}}+\frac{2}{7}x^{7/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{2}{3}cx^{9/2}\left(aBc+Abc+b^2B\right)+\frac{2}{5}x^{5/2}(A(6abc+b$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-2*a^3*A)/Sqrt[x] + 2*a^2*(3*A*b + a*B)*Sqrt[x] + 2*a*(a*b*B + A*(b^2 + a*
c))*x^(3/2) + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(5/2))/5 + (2*(b
^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(7/2))/7 + (2*c*(b^2*B + A*b*c
+ a*B*c)*x^(9/2))/3 + (2*c^2*(3*b*B + A*c)*x^(11/2))/11 + (2*B*c^3*x^(13/2)
)/13
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{3/2}}\,dx &= \int (\frac{a^3A}{x^{3/2}}+\frac{a^2(3Ab+aB)}{\sqrt{x}}+3a\left(abB+A\left(b^2+ac\right)\right)\sqrt{x}+(3aB\left(b^2+ac\right)+A(\\ &= -\frac{2a^3A}{\sqrt{x}}+2a^2(3Ab+aB)\sqrt{x}+2a\left(abB+A\left(b^2+ac\right)\right)x^{3/2}+\frac{2}{5}(3aB\left(b^2+ac\right)\end{aligned}$$

Mathematica [A] time = 0.19, size = 173, normalized size = 0.98

$$\underline{-30030a^3(A-Bx)+6006a^2x(5A(3b+cx)+Bx(5b+3cx))+286ax^2\left(3A\left(35b^2+42bcx+15c^2x^2\right)+Bx(63b^2+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x]
```

```
[Out] (-30030*a^3*(A - B*x) + 6006*a^2*x*(5*A*(3*b + c*x) + B*x*(5*b + 3*c*x)) +
286*a*x^2*(3*A*(35*b^2 + 42*b*c*x + 15*c^2*x^2) + B*x*(63*b^2 + 90*b*c*x +
35*c^2*x^2)) + 2*x^3*(13*A*(231*b^3 + 495*b^2*c*x + 385*b*c^2*x^2 + 105*c^3
*x^3) + 5*B*x*(429*b^3 + 1001*b^2*c*x + 819*b*c^2*x^2 + 231*c^3*x^3)))/(150
15*Sqrt[x])
```

fricas [A] time = 0.52, size = 166, normalized size = 0.94

$$2\left(1155\,Bc^3x^7 + 1365\left(3\,Bbc^2 + Ac^3\right)x^6 + 5005\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 2145\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + A\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*x^7 + 1365*(3*B*b*c^2 + A*c^3)*x^6 + 5005*(B*b^2*c + (B
*a + A*b)*c^2)*x^5 + 2145*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 -
 15015*A*a^3 + 3003*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 15015
*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 15015*(B*a^3 + 3*A*a^2*b)*x)/sqrt(x)
```

giac [A] time = 0.17, size = 193, normalized size = 1.10

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}} + \frac{6}{11}\,Bbc^2x^{\frac{11}{2}} + \frac{2}{11}\,Ac^3x^{\frac{11}{2}} + \frac{2}{3}\,Bb^2cx^{\frac{9}{2}} + \frac{2}{3}\,Bac^2x^{\frac{9}{2}} + \frac{2}{3}\,Abc^2x^{\frac{9}{2}} + \frac{2}{7}\,Bb^3x^{\frac{7}{2}} + \frac{12}{7}\,Babcx^{\frac{7}{2}} + \frac{6}{7}\,Ab^2cx^{\frac{7}{2}} + \frac{6}{7}\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="giac")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 6/11*B*b*c^2*x^(11/2) + 2/11*A*c^3*x^(11/2) + 2/3*B*b
^2*c*x^(9/2) + 2/3*B*a*c^2*x^(9/2) + 2/3*A*b*c^2*x^(9/2) + 2/7*B*b^3*x^(7/2
) + 12/7*B*a*b*c*x^(7/2) + 6/7*A*b^2*c*x^(7/2) + 6/7*A*a*c^2*x^(7/2) + 6/5*
B*a*b^2*x^(5/2) + 2/5*A*b^3*x^(5/2) + 6/5*B*a^2*c*x^(5/2) + 12/5*A*a*b*c*x^
(5/2) + 2*B*a^2*b*x^(3/2) + 2*A*a*b^2*x^(3/2) + 2*A*a^2*c*x^(3/2) + 2*B*a^3
*sqrt(x) + 6*A*a^2*b*sqrt(x) - 2*A*a^3/sqrt(x)
```

maple [A] time = 0.05, size = 192, normalized size = 1.09

$$-\frac{2\left(-1155B\,c^3x^7 - 1365A\,c^3x^6 - 4095x^6Bb\,c^2 - 5005x^5Ab\,c^2 - 5005Ba\,c^2x^5 - 5005x^5B\,b^2c - 6435Aa\,c^2x^4 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x)
```

```
[Out] -2/15015*(-1155*B*c^3*x^7-1365*A*c^3*x^6-4095*B*b*c^2*x^6-5005*A*b*c^2*x^5-
5005*B*a*c^2*x^5-5005*B*b^2*c*x^5-6435*A*a*c^2*x^4-6435*A*b^2*c*x^4-12870*B
*a*b*c*x^4-2145*B*b^3*x^4-18018*A*a*b*c*x^3-3003*A*b^3*x^3-9009*B*a^2*c*x^3
-9009*B*a*b^2*x^3-15015*A*a^2*c*x^2-15015*A*a*b^2*x^2-15015*B*a^2*b*x^2-450
45*A*a^2*b*x-15015*B*a^3*x+15015*A*a^3)/x^(1/2)
```

maxima [A] time = 0.59, size = 166, normalized size = 0.94

$$\frac{2}{13}\,Bc^3x^{\frac{13}{2}} + \frac{2}{11}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{11}{2}} + \frac{2}{3}\left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{9}{2}} + \frac{2}{7}\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^{\frac{7}{2}} - \frac{2\,Aa}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(3/2),x, algorithm="maxima")
```

```
[Out] 2/13*B*c^3*x^(13/2) + 2/11*(3*B*b*c^2 + A*c^3)*x^(11/2) + 2/3*(B*b^2*c + (B
*a + A*b)*c^2)*x^(9/2) + 2/7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^
(7/2) - 2*A*a^3/sqrt(x) + 2/5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x
^(5/2) + 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^(3/2) + 2*(B*a^3 + 3*A*a^2*b)*sq
rt(x)
```

mupad [**B**] time = 0.06, size = 169, normalized size = 0.96

$$x^{5/2}\left(\frac{6\,B\,c\,a^2}{5}+\frac{6\,B\,a\,b^2}{5}+\frac{12\,A\,c\,a\,b}{5}+\frac{2\,A\,b^3}{5}\right)+x^{7/2}\left(\frac{2\,B\,b^3}{7}+\frac{6\,A\,b^2\,c}{7}+\frac{12\,B\,a\,b\,c}{7}+\frac{6\,A\,a\,c^2}{7}\right)+\sqrt{x}\ (2\,B\,a^3+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(3/2),x)
```

```
[Out] x^(5/2)*((2*A*b^3)/5 + (6*B*a*b^2)/5 + (6*B*a^2*c)/5 + (12*A*a*b*c)/5) + x^
(7/2)*((2*B*b^3)/7 + (6*A*a*c^2)/7 + (6*A*b^2*c)/7 + (12*B*a*b*c)/7) + x^(1
/2)*(2*B*a^3 + 6*A*a^2*b) + x^(11/2)*((2*A*c^3)/11 + (6*B*b*c^2)/11) + x^(3
/2)*(2*A*a*b^2 + 2*A*a^2*c + 2*B*a^2*b) + x^(9/2)*((2*A*b*c^2)/3 + (2*B*a*c
^2)/3 + (2*B*b^2*c)/3) - (2*A*a^3)/x^(1/2) + (2*B*c^3*x^(13/2))/13
```

sympy [**A**] time = 5.81, size = 284, normalized size = 1.61

$$-\frac{2Aa^3}{\sqrt{x}}+6Aa^2b\sqrt{x}+2Aa^2cx^{\frac{3}{2}}+2Aab^2x^{\frac{3}{2}}+\frac{12Aabcx^{\frac{5}{2}}}{5}+\frac{6Aac^2x^{\frac{7}{2}}}{7}+\frac{2Ab^3x^{\frac{5}{2}}}{5}+\frac{6Ab^2cx^{\frac{7}{2}}}{7}+\frac{2Abc^2x^{\frac{9}{2}}}{3}+\frac{2Ac^3x^{\frac{11}{2}}}{11}+2Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(3/2),x)
```

```
[Out] -2*A*a**3/sqrt(x) + 6*A*a**2*b*sqrt(x) + 2*A*a**2*c*x**(3/2) + 2*A*a*b**2*x
**(3/2) + 12*A*a*b*c*x**(5/2)/5 + 6*A*a*c**2*x**(7/2)/7 + 2*A*b**3*x**(5/2)
/5 + 6*A*b**2*c*x**(7/2)/7 + 2*A*b*c**2*x**(9/2)/3 + 2*A*c**3*x**(11/2)/11
+ 2*B*a**3*sqrt(x) + 2*B*a**2*b*x**(3/2) + 6*B*a**2*c*x**(5/2)/5 + 6*B*a*b*
*2*x**(5/2)/5 + 12*B*a*b*c*x**(7/2)/7 + 2*B*a*c**2*x**(9/2)/3 + 2*B*b**3*x*
*(7/2)/7 + 2*B*b**2*c*x**(9/2)/3 + 6*B*b*c**2*x**(11/2)/11 + 2*B*c**3*x**(1
3/2)/13
```

3.1005 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{5/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{3x^{3/2}}-\frac{2a^2(aB+3Ab)}{\sqrt{x}}+\frac{6}{7}cx^{7/2}\left(aBc+Abc+b^2B\right)+6a\sqrt{x}\left(A\left(ac+b^2\right)+abB\right)+\frac{2}{5}x^{5/2}\left(3aAc^2+6abBc+3A\right.$$

```
[Out] -2/3*a^3*A/x^(3/2)+2/3*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*x^(3/2)+2/5*(3*A*a
*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^(5/2)+6/7*c*(A*b*c+B*a*c+B*b^2)*x^(7/2)+2
/9*c^2*(A*c+3*B*b)*x^(9/2)+2/11*B*c^3*x^(11/2)-2*a^2*(3*A*b+B*a)/x^(1/2)+6*
a*(a*b*B+A*(a*c+b^2))*x^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{\sqrt{x}}-\frac{2a^3A}{3x^{3/2}}+\frac{2}{5}x^{5/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{7}cx^{7/2}\left(aBc+Abc+b^2B\right)+\frac{2}{3}x^{3/2}\left(A\left(6abc\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (-2*a^3*A)/(3*x^(3/2)) - (2*a^2*(3*A*b + a*B))/Sqrt[x] + 6*a*(a*b*B + A*(b^
2 + a*c))*Sqrt[x] + (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^(3/2))/3 +
 (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(5/2))/5 + (6*c*(b^2*B +
A*b*c + a*B*c)*x^(7/2))/7 + (2*c^2*(3*b*B + A*c)*x^(9/2))/9 + (2*B*c^3*x^(1
1/2))/11
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{5/2}}\,dx&=\int\left(\frac{a^3A}{x^{5/2}}+\frac{a^2(3Ab+aB)}{x^{3/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{\sqrt{x}}+\left(3aB\left(b^2+ac\right)+A\left(\right.\right.\right.\\&=-\frac{2a^3A}{3x^{3/2}}-\frac{2a^2(3Ab+aB)}{\sqrt{x}}+6a\left(abB+A\left(b^2+ac\right)\right)\sqrt{x}+\frac{2}{3}\left(3aB\left(b^2+ac\right)\right.\end{aligned}$$

Mathematica [A] time = 0.16, size = 170, normalized size = 0.96

$$\frac{2\left(-1155a^3(A+3Bx)+3465a^2x(Bx(3b+cx)-3A(b-cx))+99ax^2\left(7A\left(15b^2+10bcx+3c^2x^2\right)+Bx\left(35b^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x]
```

```
[Out] (2*(-1155*a^3*(A + 3*B*x) + 3465*a^2*x*(-3*A*(b - c*x) + B*x*(3*b + c*x)) +
 99*a*x^2*(7*A*(15*b^2 + 10*b*c*x + 3*c^2*x^2) + B*x*(35*b^2 + 42*b*c*x + 1
5*c^2*x^2)) + x^3*(11*A*(105*b^3 + 189*b^2*c*x + 135*b*c^2*x^2 + 35*c^3*x^3
) + 3*B*x*(231*b^3 + 495*b^2*c*x + 385*b*c^2*x^2 + 105*c^3*x^3))))/(3465*x^
(3/2))
```

fricas [A]   time = 0.93, size = 166, normalized size = 0.93

$$\frac{2\left(315\,Bc^3x^7+385\left(3\,Bbc^2+Ac^3\right)x^6+1485\left(Bb^2c+(Ba+Ab)c^2\right)x^5+693\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*x^7 + 385*(3*B*b*c^2 + A*c^3)*x^6 + 1485*(B*b^2*c + (B*a
+ A*b)*c^2)*x^5 + 693*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 115
5*A*a^3 + 1155*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 10395*(B*a
^2*b + A*a*b^2 + A*a^2*c)*x^2 - 3465*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2)
```

giac [A]   time = 0.18, size = 191, normalized size = 1.07

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{3}\,Bbc^2x^{\frac{9}{2}}+\frac{2}{9}\,Ac^3x^{\frac{9}{2}}+\frac{6}{7}\,Bb^2cx^{\frac{7}{2}}+\frac{6}{7}\,Bac^2x^{\frac{7}{2}}+\frac{6}{7}\,Abc^2x^{\frac{7}{2}}+\frac{2}{5}\,Bb^3x^{\frac{5}{2}}+\frac{12}{5}\,Babcx^{\frac{5}{2}}+\frac{6}{5}\,Ab^2cx^{\frac{5}{2}}+\frac{6}{5}\,Aac^2x^{\frac{5}{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="giac")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/3*B*b*c^2*x^(9/2) + 2/9*A*c^3*x^(9/2) + 6/7*B*b^2*c
*x^(7/2) + 6/7*B*a*c^2*x^(7/2) + 6/7*A*b*c^2*x^(7/2) + 2/5*B*b^3*x^(5/2) +
12/5*B*a*b*c*x^(5/2) + 6/5*A*b^2*c*x^(5/2) + 6/5*A*a*c^2*x^(5/2) + 2*B*a*b^
2*x^(3/2) + 2/3*A*b^3*x^(3/2) + 2*B*a^2*c*x^(3/2) + 4*A*a*b*c*x^(3/2) + 6*B
*a^2*b*sqrt(x) + 6*A*a*b^2*sqrt(x) + 6*A*a^2*c*sqrt(x) - 2/3*(3*B*a^3*x + 9
*A*a^2*b*x + A*a^3)/x^(3/2)
```

maple [A]   time = 0.05, size = 192, normalized size = 1.08

$$-\frac{2\left(-315B\,c^3x^7-385A\,c^3x^6-1155x^6Bb\,c^2-1485x^5Ab\,c^2-1485Ba\,c^2x^5-1485x^5B\,b^2c-2079Aa\,c^2x^4-2079x^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x)
```

```
[Out] -2/3465*(-315*B*c^3*x^7-385*A*c^3*x^6-1155*B*b*c^2*x^6-1485*A*b*c^2*x^5-148
5*B*a*c^2*x^5-1485*B*b^2*c*x^5-2079*A*a*c^2*x^4-2079*A*b^2*c*x^4-4158*B*a*b
*c*x^4-693*B*b^3*x^4-6930*A*a*b*c*x^3-1155*A*b^3*x^3-3465*B*a^2*c*x^3-3465*
B*a*b^2*x^3-10395*A*a^2*c*x^2-10395*A*a*b^2*x^2-10395*B*a^2*b*x^2+10395*A*a
^2*b*x+3465*B*a^3*x+1155*A*a^3)/x^(3/2)
```

maxima [A]   time = 0.57, size = 166, normalized size = 0.93

$$\frac{2}{11}\,Bc^3x^{\frac{11}{2}}+\frac{2}{9}\left(3\,Bbc^2+Ac^3\right)x^{\frac{9}{2}}+\frac{6}{7}\left(Bb^2c+(Ba+Ab)c^2\right)x^{\frac{7}{2}}+\frac{2}{5}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^{\frac{5}{2}}+\frac{2}{3}\left(3\,Bab^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(5/2),x, algorithm="maxima")
```

```
[Out] 2/11*B*c^3*x^(11/2) + 2/9*(3*B*b*c^2 + A*c^3)*x^(9/2) + 6/7*(B*b^2*c + (B*a
 + A*b)*c^2)*x^(7/2) + 2/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^(5
/2) + 2/3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^(3/2) + 6*(B*a^2*b
+ A*a*b^2 + A*a^2*c)*sqrt(x) - 2/3*(A*a^3 + 3*(B*a^3 + 3*A*a^2*b)*x)/x^(3/2
)
```

mupad [B] time = 0.05, size = 170, normalized size = 0.96

$$x^{3/2}\left(2\,B\,c\,a^2+2\,B\,a\,b^2+4\,A\,c\,a\,b+\frac{2\,A\,b^3}{3}\right)+x^{5/2}\left(\frac{2\,B\,b^3}{5}+\frac{6\,A\,b^2\,c}{5}+\frac{12\,B\,a\,b\,c}{5}+\frac{6\,A\,a\,c^2}{5}\right)-\frac{x\,(2\,B\,a^3+6\,A}{x^{3/}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(5/2),x)
```

```
[Out] x^(3/2)*((2*A*b^3)/3 + 2*B*a*b^2 + 2*B*a^2*c + 4*A*a*b*c) + x^(5/2)*((2*B*b
^3)/5 + (6*A*a*c^2)/5 + (6*A*b^2*c)/5 + (12*B*a*b*c)/5) - (x*(2*B*a^3 + 6*A
*a^2*b) + (2*A*a^3)/3)/x^(3/2) + x^(9/2)*((2*A*c^3)/9 + (2*B*b*c^2)/3) + x^
(1/2)*(6*A*a*b^2 + 6*A*a^2*c + 6*B*a^2*b) + x^(7/2)*((6*A*b*c^2)/7 + (6*B*a
*c^2)/7 + (6*B*b^2*c)/7) + (2*B*c^3*x^(11/2))/11
```

sympy [A] time = 7.05, size = 280, normalized size = 1.57

$$-\frac{2Aa^3}{3x^{\frac{3}{2}}}-\frac{6Aa^2b}{\sqrt{x}}+6Aa^2c\sqrt{x}+6Aab^2\sqrt{x}+4Aabcx^{\frac{3}{2}}+\frac{6Aac^2x^{\frac{5}{2}}}{5}+\frac{2Ab^3x^{\frac{3}{2}}}{3}+\frac{6Ab^2cx^{\frac{5}{2}}}{5}+\frac{6Abc^2x^{\frac{7}{2}}}{7}+\frac{2Ac^3x^{\frac{9}{2}}}{9}-\frac{2Ba^3}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(5/2),x)
```

```
[Out] -2*A*a**3/(3*x**(3/2)) - 6*A*a**2*b/sqrt(x) + 6*A*a**2*c*sqrt(x) + 6*A*a*b*
*2*sqrt(x) + 4*A*a*b*c*x**(3/2) + 6*A*a*c**2*x**(5/2)/5 + 2*A*b**3*x**(3/2)
/3 + 6*A*b**2*c*x**(5/2)/5 + 6*A*b*c**2*x**(7/2)/7 + 2*A*c**3*x**(9/2)/9 -
2*B*a**3/sqrt(x) + 6*B*a**2*b*sqrt(x) + 2*B*a**2*c*x**(3/2) + 2*B*a*b**2*x*
*(3/2) + 12*B*a*b*c*x**(5/2)/5 + 6*B*a*c**2*x**(7/2)/7 + 2*B*b**3*x**(5/2)/
5 + 6*B*b**2*c*x**(7/2)/7 + 2*B*b*c**2*x**(9/2)/3 + 2*B*c**3*x**(11/2)/11
```

3.1006 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{7/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{5x^{5/2}}-\frac{2a^2(aB+3Ab)}{3x^{3/2}}+\frac{6}{5}cx^{5/2}\left(aBc+Abc+b^2B\right)-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{\sqrt{x}}+\frac{2}{3}x^{3/2}\left(3aAc^2+6abBc+3Ab^2c+\right.$$

```
[Out] -2/5*a^3*A/x^(5/2)-2/3*a^2*(3*A*b+B*a)/x^(3/2)+2/3*(3*A*a*c^2+3*A*b^2*c+6*B
*a*b*c+B*b^3)*x^(3/2)+6/5*c*(A*b*c+B*a*c+B*b^2)*x^(5/2)+2/7*c^2*(A*c+3*B*b)
*x^(7/2)+2/9*B*c^3*x^(9/2)-6*a*(a*b*B+A*(a*c+b^2))/x^(1/2)+2*(3*a*B*(a*c+b^
2)+A*(6*a*b*c+b^3))*x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{3x^{3/2}}-\frac{2a^3A}{5x^{5/2}}+\frac{2}{3}x^{3/2}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{6}{5}cx^{5/2}\left(aBc+Abc+b^2B\right)+2\sqrt{x}\left(A\left(6abc+b^3\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (-2*a^3*A)/(5*x^(5/2)) - (2*a^2*(3*A*b + a*B))/(3*x^(3/2)) - (6*a*(a*b*B +
A*(b^2 + a*c)))/Sqrt[x] + 2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*Sqrt[x]
 + (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*x^(3/2))/3 + (6*c*(b^2*B
+ A*b*c + a*B*c)*x^(5/2))/5 + (2*c^2*(3*b*B + A*c)*x^(7/2))/7 + (2*B*c^3*x^
(9/2))/9
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{7/2}}\,dx &= \int \left(\frac{a^3A}{x^{7/2}}+\frac{a^2(3Ab+aB)}{x^{5/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{3/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{\sqrt{x}}\right.\\ &= -\frac{2a^3A}{5x^{5/2}}-\frac{2a^2(3Ab+aB)}{3x^{3/2}}-\frac{6a\left(abB+A\left(b^2+ac\right)\right)}{\sqrt{x}}+2\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.\end{aligned}$$

Mathematica [A] time = 0.18, size = 169, normalized size = 0.95

$$\frac{2\,(-21a^3(3A+5Bx)-315a^2x(A(b+3cx)+3Bx(b-cx))+63ax^2\,(5A\,(-3b^2+6bcx+c^2x^2)+Bx\,(15b^2+10bcx}{315x^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x]
```

```
[Out] (2*(-21*a^3*(3*A + 5*B*x) - 315*a^2*x*(3*B*x*(b - c*x) + A*(b + 3*c*x)) + 6
3*a*x^2*(5*A*(-3*b^2 + 6*b*c*x + c^2*x^2) + B*x*(15*b^2 + 10*b*c*x + 3*c^2*
x^2)) + x^3*(9*A*(35*b^3 + 35*b^2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3) + B*x*(10
5*b^3 + 189*b^2*c*x + 135*b*c^2*x^2 + 35*c^3*x^3))))/(315*x^(5/2))
```

fricas [**A**] time = 0.74, size = 166, normalized size = 0.93

$$\frac{2\,(35\,Bc^3x^7 + 45\,(3\,Bbc^2 + Ac^3)x^6 + 189\,(Bb^2c + (Ba + Ab)c^2)x^5 + 105\,(Bb^3 + 3\,Aac^2 + 3\,(2\,Bab + Ab^2)c)x^4}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*x^7 + 45*(3*B*b*c^2 + A*c^3)*x^6 + 189*(B*b^2*c + (B*a + A*
b)*c^2)*x^5 + 105*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 63*A*a^
3 + 315*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 945*(B*a^2*b + A*
a*b^2 + A*a^2*c)*x^2 - 105*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

giac [**A**] time = 0.20, size = 192, normalized size = 1.08

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}} + \frac{6}{7}\,Bbc^2x^{\frac{7}{2}} + \frac{2}{7}\,Ac^3x^{\frac{7}{2}} + \frac{6}{5}\,Bb^2cx^{\frac{5}{2}} + \frac{6}{5}\,Bac^2x^{\frac{5}{2}} + \frac{6}{5}\,Abc^2x^{\frac{5}{2}} + \frac{2}{3}\,Bb^3x^{\frac{3}{2}} + 4\,Babcx^{\frac{3}{2}} + 2\,Ab^2cx^{\frac{3}{2}} + 2\,Aac^2x^{\frac{3}{2}} + 6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="giac")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 6/7*B*b*c^2*x^(7/2) + 2/7*A*c^3*x^(7/2) + 6/5*B*b^2*c*x
^(5/2) + 6/5*B*a*c^2*x^(5/2) + 6/5*A*b*c^2*x^(5/2) + 2/3*B*b^3*x^(3/2) + 4*
B*a*b*c*x^(3/2) + 2*A*b^2*c*x^(3/2) + 2*A*a*c^2*x^(3/2) + 6*B*a*b^2*sqrt(x)
 + 2*A*b^3*sqrt(x) + 6*B*a^2*c*sqrt(x) + 12*A*a*b*c*sqrt(x) - 2/15*(45*B*a^
2*b*x^2 + 45*A*a*b^2*x^2 + 45*A*a^2*c*x^2 + 5*B*a^3*x + 15*A*a^2*b*x + 3*A*
a^3)/x^(5/2)
```

maple [**A**] time = 0.05, size = 192, normalized size = 1.08

$$-\frac{2\,(-35B\,c^3x^7 - 45A\,c^3x^6 - 135x^6Bb\,c^2 - 189x^5Ab\,c^2 - 189Ba\,c^2x^5 - 189x^5B\,b^2c - 315Aa\,c^2x^4 - 315x^4A\,b^2c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x)
```

```
[Out] -2/315*(-35*B*c^3*x^7-45*A*c^3*x^6-135*B*b*c^2*x^6-189*A*b*c^2*x^5-189*B*a*
c^2*x^5-189*B*b^2*c*x^5-315*A*a*c^2*x^4-315*A*b^2*c*x^4-630*B*a*b*c*x^4-105
*B*b^3*x^4-1890*A*a*b*c*x^3-315*A*b^3*x^3-945*B*a^2*c*x^3-945*B*a*b^2*x^3+9
45*A*a^2*c*x^2+945*A*a*b^2*x^2+945*B*a^2*b*x^2+315*A*a^2*b*x+105*B*a^3*x+63
*A*a^3)/x^(5/2)
```

maxima [**A**] time = 0.50, size = 167, normalized size = 0.94

$$\frac{2}{9}\,Bc^3x^{\frac{9}{2}} + \frac{2}{7}\,(3\,Bbc^2 + Ac^3)x^{\frac{7}{2}} + \frac{6}{5}\,(Bb^2c + (Ba + Ab)c^2)x^{\frac{5}{2}} + \frac{2}{3}\,(Bb^3 + 3\,Aac^2 + 3\,(2\,Bab + Ab^2)c)x^{\frac{3}{2}} + 2\,(3\,Bab^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(7/2),x, algorithm="maxima")
```

```
[Out] 2/9*B*c^3*x^(9/2) + 2/7*(3*B*b*c^2 + A*c^3)*x^(7/2) + 6/5*(B*b^2*c + (B*a +
 A*b)*c^2)*x^(5/2) + 2/3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^(3/2
) + 2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*sqrt(x) - 2/15*(3*A*a^3 +
 45*(B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 5*(B*a^3 + 3*A*a^2*b)*x)/x^(5/2)
```

mupad [**B**] time = 0.05, size = 170, normalized size = 0.96

$$\sqrt{x}\,\left(6\,B\,c\,a^2+6\,B\,a\,b^2+12\,A\,c\,a\,b+2\,A\,b^3\right)-\frac{x\,\left(\frac{2\,B\,a^3}{3}+2\,A\,b\,a^2\right)+\frac{2\,A\,a^3}{5}+x^2\,\left(6\,B\,a^2\,b+6\,A\,c\,a^2+6\,A\,a\,b^2\right)}{x^{5/2}}+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(7/2),x)
```

```
[Out] x^(1/2)*(2*A*b^3 + 6*B*a*b^2 + 6*B*a^2*c + 12*A*a*b*c) - (x*((2*B*a^3)/3 +
2*A*a^2*b) + (2*A*a^3)/5 + x^2*(6*A*a*b^2 + 6*A*a^2*c + 6*B*a^2*b))/x^(5/2)
 + x^(3/2)*((2*B*b^3)/3 + 2*A*a*c^2 + 2*A*b^2*c + 4*B*a*b*c) + x^(7/2)*((2*
A*c^3)/7 + (6*B*b*c^2)/7) + x^(5/2)*((6*A*b*c^2)/5 + (6*B*a*c^2)/5 + (6*B*b
^2*c)/5) + (2*B*c^3*x^(9/2))/9
```

sympy [**A**] time = 10.67, size = 275, normalized size = 1.54

$$-\frac{2Aa^3}{5x^{\frac{5}{2}}}-\frac{2Aa^2b}{x^{\frac{3}{2}}}-\frac{6Aa^2c}{\sqrt{x}}-\frac{6Aab^2}{\sqrt{x}}+12Aabc\sqrt{x}+2Aac^2x^{\frac{3}{2}}+2Ab^3\sqrt{x}+2Ab^2cx^{\frac{3}{2}}+\frac{6Abc^2x^{\frac{5}{2}}}{5}+\frac{2Ac^3x^{\frac{7}{2}}}{7}-\frac{2Ba^3}{3x^{\frac{3}{2}}}-\frac{6Ba^2b}{\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(7/2),x)
```

```
[Out] -2*A*a**3/(5*x**(5/2)) - 2*A*a**2*b/x**(3/2) - 6*A*a**2*c/sqrt(x) - 6*A*a*b
**2/sqrt(x) + 12*A*a*b*c*sqrt(x) + 2*A*a*c**2*x**(3/2) + 2*A*b**3*sqrt(x) +
 2*A*b**2*c*x**(3/2) + 6*A*b*c**2*x**(5/2)/5 + 2*A*c**3*x**(7/2)/7 - 2*B*a*
*3/(3*x**(3/2)) - 6*B*a**2*b/sqrt(x) + 6*B*a**2*c*sqrt(x) + 6*B*a*b**2*sqrt
(x) + 4*B*a*b*c*x**(3/2) + 6*B*a*c**2*x**(5/2)/5 + 2*B*b**3*x**(3/2)/3 + 6*
B*b**2*c*x**(5/2)/5 + 6*B*b*c**2*x**(7/2)/7 + 2*B*c**3*x**(9/2)/9
```

3.1007 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{9/2}}\,dx$

Optimal. Leaf size=174

$$-\frac{2a^3A}{7x^{7/2}}-\frac{2a^2(aB+3Ab)}{5x^{5/2}}+2cx^{3/2}\left(aBc+Abc+b^2B\right)-\frac{2a\left(A\left(ac+b^2\right)+abB\right)}{x^{3/2}}+2\sqrt{x}\left(3aAc^2+6abBc+3Ab^2c+\right.$$

```
[Out] -2/7*a^3*A/x^(7/2)-2/5*a^2*(3*A*b+B*a)/x^(5/2)-2*a*(a*b*B+A*(a*c+b^2))/x^(3
/2)+2*c*(A*b*c+B*a*c+B*b^2)*x^(3/2)+2/5*c^2*(A*c+3*B*b)*x^(5/2)+2/7*B*c^3*x
^(7/2)-2*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))/x^(1/2)+2*(3*A*a*c^2+3*A*b^2*c+6
*B*a*b*c+B*b^3)*x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{5x^{5/2}}-\frac{2a^3A}{7x^{7/2}}+2\sqrt{x}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+2cx^{3/2}\left(aBc+Abc+b^2B\right)-\frac{2a\left(A\left(ac+b^2\right)+\right.}{x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (-2*a^3*A)/(7*x^(7/2)) - (2*a^2*(3*A*b + a*B))/(5*x^(5/2)) - (2*a*(a*b*B +
A*(b^2 + a*c)))/x^(3/2) - (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c)))/Sqrt[
x] + 2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*Sqrt[x] + 2*c*(b^2*B + A
*b*c + a*B*c)*x^(3/2) + (2*c^2*(3*b*B + A*c)*x^(5/2))/5 + (2*B*c^3*x^(7/2))
/7
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{9/2}}\,dx &= \int \left(\frac{a^3A}{x^{9/2}}+\frac{a^2(3Ab+aB)}{x^{7/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{5/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b\right.}{x^{3/2}}\right.\\ &= -\frac{2a^3A}{7x^{7/2}}-\frac{2a^2(3Ab+aB)}{5x^{5/2}}-\frac{2a\left(abB+A\left(b^2+ac\right)\right)}{x^{3/2}}-\frac{2\left(3aB\left(b^2+ac\right)+A\right.}{\sqrt{x}}\end{aligned}$$

Mathematica [A] time = 0.19, size = 168, normalized size = 0.97

$$\frac{2\left(-\left(a^3(5A+7Bx)\right)-7a^2x(A(3b+5cx)+5Bx(b+3cx))-35ax^2\left(A\left(b^2+6bcx-3c^2x^2\right)-Bx\left(-3b^2+6bcx\right.\right.\right.}{35x^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x]
```

```
[Out] (2*(-(a^3*(5*A + 7*B*x)) - 7*a^2*x*(5*B*x*(b + 3*c*x) + A*(3*b + 5*c*x)) -
35*a*x^2*(A*(b^2 + 6*b*c*x - 3*c^2*x^2) - B*x*(-3*b^2 + 6*b*c*x + c^2*x^2))
```

```
 + x^3*(7*A*(-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3) + B*x*(35*b^3 + 3
5*b^2*c*x + 21*b*c^2*x^2 + 5*c^3*x^3))))/(35*x^(7/2))
```

fricas [A] time = 0.60, size = 166, normalized size = 0.95

$$\frac{2\left(5\,Bc^3x^7 + 7\left(3\,Bbc^2 + Ac^3\right)x^6 + 35\left(Bb^2c + (Ba + Ab)c^2\right)x^5 + 35\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)x^4 - 5\,Aa^3}{35\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*x^7 + 7*(3*B*b*c^2 + A*c^3)*x^6 + 35*(B*b^2*c + (B*a + A*b)*c
^2)*x^5 + 35*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 5*A*a^3 - 35
*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 35*(B*a^2*b + A*a*b^2 +
A*a^2*c)*x^2 - 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

giac [A] time = 0.17, size = 192, normalized size = 1.10

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}+\frac{6}{5}\,Bbc^2x^{\frac{5}{2}}+\frac{2}{5}\,Ac^3x^{\frac{5}{2}}+2\,Bb^2cx^{\frac{3}{2}}+2\,Bac^2x^{\frac{3}{2}}+2\,Abc^2x^{\frac{3}{2}}+2\,Bb^3\sqrt{x}+12\,Babc\sqrt{x}+6\,Ab^2c\sqrt{x}+6\,Aac^2\sqrt{x}-\frac{2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="giac")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 6/5*B*b*c^2*x^(5/2) + 2/5*A*c^3*x^(5/2) + 2*B*b^2*c*x^(
3/2) + 2*B*a*c^2*x^(3/2) + 2*A*b*c^2*x^(3/2) + 2*B*b^3*sqrt(x) + 12*B*a*b*c
*sqrt(x) + 6*A*b^2*c*sqrt(x) + 6*A*a*c^2*sqrt(x) - 2/35*(105*B*a*b^2*x^3 +
35*A*b^3*x^3 + 105*B*a^2*c*x^3 + 210*A*a*b*c*x^3 + 35*B*a^2*b*x^2 + 35*A*a*
b^2*x^2 + 35*A*a^2*c*x^2 + 7*B*a^3*x + 21*A*a^2*b*x + 5*A*a^3)/x^(7/2)
```

maple [A] time = 0.06, size = 192, normalized size = 1.10

$$-\frac{2\left(-5B\,c^3x^7-7A\,c^3x^6-21x^6Bb\,c^2-35x^5Ab\,c^2-35Ba\,c^2x^5-35x^5B\,b^2c-105Aa\,c^2x^4-105x^4A\,b^2c-210x^4ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x)
```

```
[Out] -2/35*(-5*B*c^3*x^7-7*A*c^3*x^6-21*B*b*c^2*x^6-35*A*b*c^2*x^5-35*B*a*c^2*x^
5-35*B*b^2*c*x^5-105*A*a*c^2*x^4-105*A*b^2*c*x^4-210*B*a*b*c*x^4-35*B*b^3*x
^4+210*A*a*b*c*x^3+35*A*b^3*x^3+105*B*a^2*c*x^3+105*B*a*b^2*x^3+35*A*a^2*c*
x^2+35*A*a*b^2*x^2+35*B*a^2*b*x^2+21*A*a^2*b*x+7*B*a^3*x+5*A*a^3)/x^(7/2)
```

maxima [A] time = 0.52, size = 167, normalized size = 0.96

$$\frac{2}{7}\,Bc^3x^{\frac{7}{2}}+\frac{2}{5}\left(3\,Bbc^2 + Ac^3\right)x^{\frac{5}{2}}+2\left(Bb^2c + (Ba + Ab)c^2\right)x^{\frac{3}{2}}+2\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)\sqrt{x}-\frac{2\left(5\,Aa^3 + 3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(9/2),x, algorithm="maxima")
```

```
[Out] 2/7*B*c^3*x^(7/2) + 2/5*(3*B*b*c^2 + A*c^3)*x^(5/2) + 2*(B*b^2*c + (B*a + A
*b)*c^2)*x^(3/2) + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*sqrt(x) -
2/35*(5*A*a^3 + 35*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 35*(B*
a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 7*(B*a^3 + 3*A*a^2*b)*x)/x^(7/2)
```

mupad [B] time = 0.06, size = 170, normalized size = 0.98

$$\sqrt{x}\,\left(2\,B\,b^3+6\,A\,b^2\,c+12\,B\,a\,b\,c+6\,A\,a\,c^2\right)-\frac{x^3\,\left(6\,B\,c\,a^2+6\,B\,a\,b^2+12\,A\,c\,a\,b+2\,A\,b^3\right)+x\,\left(\frac{2\,B\,a^3}{5}+\frac{6\,A\,b\,a^2}{5}\right.}{x^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(9/2),x)
```

```
[Out] x^(1/2)*(2*B*b^3 + 6*A*a*c^2 + 6*A*b^2*c + 12*B*a*b*c) - (x^3*(2*A*b^3 + 6*
B*a*b^2 + 6*B*a^2*c + 12*A*a*b*c) + x*((2*B*a^3)/5 + (6*A*a^2*b)/5) + (2*A*
a^3)/7 + x^2*(2*A*a*b^2 + 2*A*a^2*c + 2*B*a^2*b))/x^(7/2) + x^(5/2)*((2*A*c
^3)/5 + (6*B*b*c^2)/5) + x^(3/2)*(2*A*b*c^2 + 2*B*a*c^2 + 2*B*b^2*c) + (2*B
*c^3*x^(7/2))/7
```

sympy [A] time = 12.90, size = 270, normalized size = 1.55

$$-\frac{2Aa^3}{7x^{\frac{7}{2}}}-\frac{6Aa^2b}{5x^{\frac{5}{2}}}-\frac{2Aa^2c}{x^{\frac{3}{2}}}-\frac{2Aab^2}{x^{\frac{3}{2}}}-\frac{12Aabc}{\sqrt{x}}+6Aac^2\sqrt{x}-\frac{2Ab^3}{\sqrt{x}}+6Ab^2c\sqrt{x}+2Abc^2x^{\frac{3}{2}}+\frac{2Ac^3x^{\frac{5}{2}}}{5}-\frac{2Ba^3}{5x^{\frac{5}{2}}}-\frac{2Ba^2b}{x^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(9/2),x)
```

```
[Out] -2*A*a**3/(7*x**(7/2)) - 6*A*a**2*b/(5*x**(5/2)) - 2*A*a**2*c/x**(3/2) - 2*
A*a*b**2/x**(3/2) - 12*A*a*b*c/sqrt(x) + 6*A*a*c**2*sqrt(x) - 2*A*b**3/sqrt
(x) + 6*A*b**2*c*sqrt(x) + 2*A*b*c**2*x**(3/2) + 2*A*c**3*x**(5/2)/5 - 2*B*
a**3/(5*x**(5/2)) - 2*B*a**2*b/x**(3/2) - 6*B*a**2*c/sqrt(x) - 6*B*a*b**2/s
qrt(x) + 12*B*a*b*c*sqrt(x) + 2*B*a*c**2*x**(3/2) + 2*B*b**3*sqrt(x) + 2*B*
b**2*c*x**(3/2) + 6*B*b*c**2*x**(5/2)/5 + 2*B*c**3*x**(7/2)/7
```

3.1008 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11/2}}\,dx$

Optimal. Leaf size=178

$$-\frac{2a^3A}{9x^{9/2}}-\frac{2a^2(aB+3Ab)}{7x^{7/2}}-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{5x^{5/2}}+6c\sqrt{x}\left(aBc+Abc+b^2B\right)-\frac{2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{\sqrt{x}}$$

```
[Out] -2/9*a^3*A/x^(9/2)-2/7*a^2*(3*A*b+B*a)/x^(7/2)-6/5*a*(a*b*B+A*(a*c+b^2))/x^
(5/2)-2/3*(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))/x^(3/2)+2/3*c^2*(A*c+3*B*b)*x^(
3/2)+2/5*B*c^3*x^(5/2)-2*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)/x^(1/2)+6*c*
(A*b*c+B*a*c+B*b^2)*x^(1/2)
```

Rubi [**A**] time = 0.11, antiderivative size = 178, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {765}

$$-\frac{2a^2(aB+3Ab)}{7x^{7/2}}-\frac{2a^3A}{9x^{9/2}}-\frac{2\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{\sqrt{x}}-\frac{6a\left(A\left(ac+b^2\right)+abB\right)}{5x^{5/2}}-\frac{2\left(A\left(6abc+b^3\right)+3aB\left(a\right.\right.}{3x^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*a^3*A)/(9*x^(9/2)) - (2*a^2*(3*A*b + a*B))/(7*x^(7/2)) - (6*a*(a*b*B +
A*(b^2 + a*c)))/(5*x^(5/2)) - (2*(3*a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c)))/(
3*x^(3/2)) - (2*(b^3*B + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2))/Sqrt[x] + 6*c*
(b^2*B + A*b*c + a*B*c)*Sqrt[x] + (2*c^2*(3*b*B + A*c)*x^(3/2))/3 + (2*B*c^
3*x^(5/2))/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{x^{11/2}}\,dx &= \int \left(\frac{a^3A}{x^{11/2}}+\frac{a^2(3Ab+aB)}{x^{9/2}}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)}{x^{7/2}}+\frac{3aB\left(b^2+ac\right)+A\left(b^3+\right.}{x^{5/2}}\right.\\ &= -\frac{2a^3A}{9x^{9/2}}-\frac{2a^2(3Ab+aB)}{7x^{7/2}}-\frac{6a\left(abB+A\left(b^2+ac\right)\right)}{5x^{5/2}}-\frac{2\left(3aB\left(b^2+ac\right)+A\left(b^3\right.\right.}{3x^{3/2}}\end{aligned}$$

Mathematica [**A**] time = 0.20, size = 172, normalized size = 0.97

$$-\frac{2\left(5a^3(7A+9Bx)+9a^2x(3A(5b+7cx)+7Bx(3b+5cx))+63ax^2\left(A\left(3b^2+10bcx+15c^2x^2\right)+5Bx\left(b^2+6bcx\right.\right.\right.}{315x^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x]
```

```
[Out] (-2*(5*a^3*(7*A + 9*B*x) + 9*a^2*x*(7*B*x*(3*b + 5*c*x) + 3*A*(5*b + 7*c*x)
) + 63*a*x^2*(5*B*x*(b^2 + 6*b*c*x - 3*c^2*x^2) + A*(3*b^2 + 10*b*c*x + 15*
c^2*x^2)) + 21*x^3*(5*A*(b^3 + 9*b^2*c*x - 9*b*c^2*x^2 - c^3*x^3) - 3*B*x*(
-5*b^3 + 15*b^2*c*x + 5*b*c^2*x^2 + c^3*x^3))))/(315*x^(9/2))
```

fricas [A] time = 0.72, size = 166, normalized size = 0.93

$$\frac{2\left(63\,Bc^{3}x^{7}+105\left(3\,Bbc^{2}+Ac^{3}\right)x^{6}+945\left(Bb^{2}c+(Ba+Ab)c^{2}\right)x^{5}-315\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*x^7 + 105*(3*B*b*c^2 + A*c^3)*x^6 + 945*(B*b^2*c + (B*a + A
*b)*c^2)*x^5 - 315*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^4 - 35*A*a
^3 - 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 - 189*(B*a^2*b + A
*a*b^2 + A*a^2*c)*x^2 - 45*(B*a^3 + 3*A*a^2*b)*x)/x^(9/2)
```

giac [A] time = 0.17, size = 192, normalized size = 1.08

$$\frac{2}{5}\,Bc^{3}x^{\frac{5}{2}}+2\,Bbc^{2}x^{\frac{3}{2}}+\frac{2}{3}\,Ac^{3}x^{\frac{3}{2}}+6\,Bb^{2}c\sqrt{x}+6\,Bac^{2}\sqrt{x}+6\,Abc^{2}\sqrt{x}-\frac{2\left(315\,Bb^{3}x^{4}+1890\,Babcx^{4}+945\,Ab^{2}cx^{4}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="giac")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2*B*b*c^2*x^(3/2) + 2/3*A*c^3*x^(3/2) + 6*B*b^2*c*sqrt(
x) + 6*B*a*c^2*sqrt(x) + 6*A*b*c^2*sqrt(x) - 2/315*(315*B*b^3*x^4 + 1890*B*
a*b*c*x^4 + 945*A*b^2*c*x^4 + 945*A*a*c^2*x^4 + 315*B*a*b^2*x^3 + 105*A*b^3
*x^3 + 315*B*a^2*c*x^3 + 630*A*a*b*c*x^3 + 189*B*a^2*b*x^2 + 189*A*a*b^2*x^
2 + 189*A*a^2*c*x^2 + 45*B*a^3*x + 135*A*a^2*b*x + 35*A*a^3)/x^(9/2)
```

maple [A] time = 0.06, size = 192, normalized size = 1.08

$$-\frac{2\left(-63B\,c^{3}x^{7}-105A\,c^{3}x^{6}-315x^{6}Bb\,c^{2}-945x^{5}Ab\,c^{2}-945Ba\,c^{2}x^{5}-945x^{5}B\,b^{2}c+945Aa\,c^{2}x^{4}+945x^{4}A\,b^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x)
```

```
[Out] -2/315*(-63*B*c^3*x^7-105*A*c^3*x^6-315*B*b*c^2*x^6-945*A*b*c^2*x^5-945*B*a
*c^2*x^5-945*B*b^2*c*x^5+945*A*a*c^2*x^4+945*A*b^2*c*x^4+1890*B*a*b*c*x^4+3
15*B*b^3*x^4+630*A*a*b*c*x^3+105*A*b^3*x^3+315*B*a^2*c*x^3+315*B*a*b^2*x^3+
189*A*a^2*c*x^2+189*A*a*b^2*x^2+189*B*a^2*b*x^2+135*A*a^2*b*x+45*B*a^3*x+35
*A*a^3)/x^(9/2)
```

maxima [A] time = 0.53, size = 167, normalized size = 0.94

$$\frac{2}{5}\,Bc^{3}x^{\frac{5}{2}}+\frac{2}{3}\left(3\,Bbc^{2}+Ac^{3}\right)x^{\frac{3}{2}}+6\left(Bb^{2}c+(Ba+Ab)c^{2}\right)\sqrt{x}-\frac{2\left(315\left(Bb^{3}+3\,Aac^{2}+3\left(2\,Bab+Ab^{2}\right)c\right)x^{4}+35\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/x^(11/2),x, algorithm="maxima")
```

```
[Out] 2/5*B*c^3*x^(5/2) + 2/3*(3*B*b*c^2 + A*c^3)*x^(3/2) + 6*(B*b^2*c + (B*a + A
*b)*c^2)*sqrt(x) - 2/315*(315*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x
^4 + 35*A*a^3 + 105*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^3 + 189*(
B*a^2*b + A*a*b^2 + A*a^2*c)*x^2 + 45*(B*a^3 + 3*A*a^2*b)*x)/x^(9/2)
```

mupad [B] time = 0.08, size = 170, normalized size = 0.96

$$x^{3/2}\left(\frac{2\,A\,c^3}{3}+2\,B\,b\,c^2\right)-\frac{x^3\,\left(2\,B\,c\,a^2+2\,B\,a\,b^2+4\,A\,c\,a\,b+\frac{2\,A\,b^3}{3}\right)+x^4\,\left(2\,B\,b^3+6\,A\,b^2\,c+12\,B\,a\,b\,c+6\,A\,a\,c^2\right)}{x^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/x^(11/2),x)
```

```
[Out] x^(3/2)*((2*A*c^3)/3 + 2*B*b*c^2) - (x^3*((2*A*b^3)/3 + 2*B*a*b^2 + 2*B*a^2
*c + 4*A*a*b*c) + x^4*(2*B*b^3 + 6*A*a*c^2 + 6*A*b^2*c + 12*B*a*b*c) + x*((
2*B*a^3)/7 + (6*A*a^2*b)/7) + (2*A*a^3)/9 + x^2*((6*A*a*b^2)/5 + (6*A*a^2*c
)/5 + (6*B*a^2*b)/5))/x^(9/2) + x^(1/2)*(6*A*b*c^2 + 6*B*a*c^2 + 6*B*b^2*c)
 + (2*B*c^3*x^(5/2))/5
```

sympy [A] time = 15.38, size = 275, normalized size = 1.54

$$-\frac{2Aa^3}{9x^{\frac{9}{2}}}-\frac{6Aa^2b}{7x^{\frac{7}{2}}}-\frac{6Aa^2c}{5x^{\frac{5}{2}}}-\frac{6Aab^2}{5x^{\frac{5}{2}}}-\frac{4Aabc}{x^{\frac{3}{2}}}-\frac{6Aac^2}{\sqrt{x}}-\frac{2Ab^3}{3x^{\frac{3}{2}}}-\frac{6Ab^2c}{\sqrt{x}}+6Abc^2\sqrt{x}+\frac{2Ac^3x^{\frac{3}{2}}}{3}-\frac{2Ba^3}{7x^{\frac{7}{2}}}-\frac{6Ba^2b}{5x^{\frac{5}{2}}}-\frac{2Ba^2c}{x^{\frac{3}{2}}}-2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/x**(11/2),x)
```

```
[Out] -2*A*a**3/(9*x**(9/2)) - 6*A*a**2*b/(7*x**(7/2)) - 6*A*a**2*c/(5*x**(5/2))
- 6*A*a*b**2/(5*x**(5/2)) - 4*A*a*b*c/x**(3/2) - 6*A*a*c**2/sqrt(x) - 2*A*b
**3/(3*x**(3/2)) - 6*A*b**2*c/sqrt(x) + 6*A*b*c**2*sqrt(x) + 2*A*c**3*x**(3
/2)/3 - 2*B*a**3/(7*x**(7/2)) - 6*B*a**2*b/(5*x**(5/2)) - 2*B*a**2*c/x**(3/
2) - 2*B*a*b**2/x**(3/2) - 12*B*a*b*c/sqrt(x) + 6*B*a*c**2*sqrt(x) - 2*B*b*
*3/sqrt(x) + 6*B*b**2*c*sqrt(x) + 2*B*b*c**2*x**(3/2) + 2*B*c**3*x**(5/2)/5
```

3.1009 $\int \frac{x^{5/2}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=347

$$-\frac{\sqrt{2}\left(-\frac{2a^2Bc^2+3aAbc^2-4ab^2Bc-Ab^3c+b^4B}{\sqrt{b^2-4ac}}+aAc^2-2abBc-Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{7/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{2a^2Bc^2+3aAbc^2-4a}{\sqrt{b^2-}}\right.}{}$$

```
[Out] -2/3*(-A*c+B*b)*x^(3/2)/c^2+2/5*B*x^(5/2)/c+2*(-A*b*c-B*a*c+B*b^2)*x^(1/2)/
c^3-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(b
^3*B-A*b^2*c-2*a*b*B*c+a*A*c^2+(-3*A*a*b*c^2+A*b^3*c-2*B*a^2*c^2+4*B*a*b^2*
c-B*b^4)/(-4*a*c+b^2)^(1/2))/c^(7/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)-arctan(2^
(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(b^3*B-A*b^2*c-
2*a*b*B*c+a*A*c^2+(3*A*a*b*c^2-A*b^3*c+2*B*a^2*c^2-4*B*a*b^2*c+B*b^4)/(-4*a
*c+b^2)^(1/2))/c^(7/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 4.54, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$-\frac{\sqrt{2}\left(-\frac{2a^2Bc^2+3aAbc^2-4ab^2Bc-Ab^3c+b^4B}{\sqrt{b^2-4ac}}+aAc^2-2abBc-Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{7/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{2a^2Bc^2+3aAbc^2-4a}{\sqrt{b^2-}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(b^2*B - A*b*c - a*B*c)*Sqrt[x])/c^3 - (2*(b*B - A*c)*x^(3/2))/(3*c^2) +
 (2*B*x^(5/2))/(5*c) - (Sqrt[2]*(b^3*B - A*b^2*c - 2*a*b*B*c + a*A*c^2 - (b
^4*B - A*b^3*c - 4*a*b^2*B*c + 3*a*A*b*c^2 + 2*a^2*B*c^2)/Sqrt[b^2 - 4*a*c]
)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(7/2)*S
qrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*(b^3*B - A*b^2*c - 2*a*b*B*c + a*A*c
^2 + (b^4*B - A*b^3*c - 4*a*b^2*B*c + 3*a*A*b*c^2 + 2*a^2*B*c^2)/Sqrt[b^2 -
 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^
(7/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{x^{5/2}(A+Bx)}{a+bx+cx^2}\,dx &= \frac{2Bx^{5/2}}{5c}+\frac{\int \frac{x^{3/2}(-aB-(bB-Ac)x)}{a+bx+cx^2}\,dx}{c}\\
&= -\frac{2(bB-Ac)x^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}+\frac{\int \frac{\sqrt{x}\left(a(bB-Ac)+\left(b^2B-Abc-aBc\right)x\right)}{a+bx+cx^2}\,dx}{c^2}\\
&= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3}-\frac{2(bB-Ac)x^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}+\frac{\int \frac{-a\left(b^2B-Abc-aBc\right)-\left(b^3B-Ab^2c-2abBc+aA\right.}{\sqrt{x}\left(a+bx+cx^2\right)}}{c^3}\\
&= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3}-\frac{2(bB-Ac)x^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}+\frac{2\,\mathrm{Subst}\left(\int \frac{-a\left(b^2B-Abc-aBc\right)+\left(-b^3B+Ab\right.}{a+bx^2+cx^4}\right.}{c^3}\\
&= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3}-\frac{2(bB-Ac)x^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}-\frac{\left(b^3B-Ab^2c-2abBc+aAc^2-\frac{b^4B-}{}\right.}{}\\
&= \frac{2\left(b^2B-Abc-aBc\right)\sqrt{x}}{c^3}-\frac{2(bB-Ac)x^{3/2}}{3c^2}+\frac{2Bx^{5/2}}{5c}-\frac{\sqrt{2}\left(b^3B-Ab^2c-2abBc+aAc^2-\right.}{c^{7/2}}
\end{aligned}
$$

Mathematica [A] time = 0.88, size = 480, normalized size = 1.38

$$
\frac{\sqrt{2}\,B\left(\frac{\left(\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}}+2abc-b^3\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(-\frac{2a^2c^2-4ab^2c+b^4}{\sqrt{b^2-4ac}}+2abc-b^3\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{7/2}}+\frac{\sqrt{2}\,A\left(\frac{3abc-b^3}{\sqrt{b^2-4ac}}-ac+b^2\right)}{c^{5/2}\sqrt{b-\sqrt{b^2}}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-2*A*b*Sqrt[x])/c^2 + (2*B*(b^2 - a*c)*Sqrt[x])/c^3 - (2*b*B*x^(3/2))/(3*c
^2) + (2*A*x^(3/2))/(3*c) + (2*B*x^(5/2))/(5*c) + (Sqrt[2]*A*(b^2 - a*c + (
-b^3 + 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
- Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*A*(
b^2 - a*c + (b^3 - 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]]) +
(Sqrt[2]*B*(((-b^3 + 2*a*b*c + (b^4 - 4*a*b^2*c + 2*a^2*c^2)/Sqrt[b^2 - 4*a
*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b
- Sqrt[b^2 - 4*a*c]] + ((-b^3 + 2*a*b*c - (b^4 - 4*a*b^2*c + 2*a^2*c^2)/Sqr
t[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]
]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/c^(7/2)
```

fricas [B] time = 13.87, size = 7707, normalized size = 22.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^
2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^
4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((
B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^
7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*
A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4
 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^
5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6
 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8
 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c
)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*log(sqrt(2)*(B^3*b^10 + 4*(A
^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2
+ 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b
^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6
 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10
*B^3*a*b^8 + 3*A*B^2*b^9)*c - (B*b^5*c^7 - 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*
a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2
*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b +
 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5
*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b
^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^
3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^
2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b
^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(
-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 +
 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*
a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2
*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^
5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^
4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^
4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 +
28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A
^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*
B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/
(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^
3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b
^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3
 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3
*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) - 15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*
A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c
^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b
^6)*c + (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 +
 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^
2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*
A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 +
(46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7
+ A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 +
2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 -
 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*
c^8))*log(-sqrt(2)*(B^3*b^10 + 4*(A^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 +
 28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2
+ 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4
+ 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A
*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a*b^8 + 3*A*B^2*b^9)*c - (B*b^5*c^7
 - 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sq
rt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2
)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 +
 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3
*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^
3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3
*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2
*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^1
1)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^
4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12
*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c + (b^2*c^7 - 4*a*c^
8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^
3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*
b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^
2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B
^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^
4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^
4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^
3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 -
A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^
6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3
 + (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)
*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) +
15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*
b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^
2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^
12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B
^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^
2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*
A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 13
2*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*
A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*
A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2
*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*log(sqrt(2)*(B^3*b^10 + 4*(A^2*B*a
^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A
^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7
*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3
*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a
*b^8 + 3*A*B^2*b^9)*c + (B*b^5*c^7 - 8*A*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)
*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a
^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^
2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 +
 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^
5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*
b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^
8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c
^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*
b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2
*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5
+ 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*
B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b +
54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*
b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^
6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3
*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2
*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^
10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c
^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^
4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 1
1*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*
A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 - (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 -
```

```
 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) - 15*sqrt(2)*c^3*sqrt(-(B^2*b^7 + (4*A*B*a^
3 + 5*A^2*a^2*b)*c^4 - (7*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (
14*B^2*a^2*b^3 + 12*A*B*a*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c
- (b^2*c^7 - 4*a*c^8)*sqrt((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3
*B*a^4*b + 3*A^4*a^3*b^2)*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*
b^2 + 52*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*
a^4*b^3 + 72*A^2*B^2*a^3*b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^
4*a^4*b^4 + 160*A*B^3*a^3*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*
b^8)*c^4 - 2*(31*B^4*a^3*b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*
B*b^9)*c^3 + (37*B^4*a^2*b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*
B^4*a*b^10 + 2*A*B^3*b^11)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8))*
log(-sqrt(2)*(B^3*b^10 + 4*(A^2*B*a^4 + A^3*a^3*b)*c^6 - (4*B^3*a^5 + 28*A*
B^2*a^4*b + 41*A^2*B*a^3*b^2 + 13*A^3*a^2*b^3)*c^5 + (29*B^3*a^4*b^2 + 87*A
*B^2*a^3*b^3 + 58*A^2*B*a^2*b^4 + 7*A^3*a*b^5)*c^4 - (51*B^3*a^3*b^4 + 80*A
*B^2*a^2*b^5 + 24*A^2*B*a*b^6 + A^3*b^7)*c^3 + (35*B^3*a^2*b^6 + 27*A*B^2*a
*b^7 + 3*A^2*B*b^8)*c^2 - (10*B^3*a*b^8 + 3*A*B^2*b^9)*c + (B*b^5*c^7 - 8*A
*a^2*c^10 + 6*(2*B*a^2*b + A*a*b^2)*c^9 - (7*B*a*b^3 + A*b^4)*c^8)*sqrt((B^
4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^7
+ (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 + 11*A^
4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*b^4 +
 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3*b^5
+ 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*b^6 +
 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*b^8 +
 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11)*c)/
(b^2*c^14 - 4*a*c^15)))*sqrt(-(B^2*b^7 + (4*A*B*a^3 + 5*A^2*a^2*b)*c^4 - (7
*B^2*a^3*b + 18*A*B*a^2*b^2 + 5*A^2*a*b^3)*c^3 + (14*B^2*a^2*b^3 + 12*A*B*a
*b^4 + A^2*b^5)*c^2 - (7*B^2*a*b^5 + 2*A*B*b^6)*c - (b^2*c^7 - 4*a*c^8)*sqr
t((B^4*b^12 + A^4*a^4*c^8 - 2*(A^2*B^2*a^5 + 6*A^3*B*a^4*b + 3*A^4*a^3*b^2)
*c^7 + (B^4*a^6 + 12*A*B^3*a^5*b + 54*A^2*B^2*a^4*b^2 + 52*A^3*B*a^3*b^3 +
11*A^4*a^2*b^4)*c^6 - 2*(6*B^4*a^5*b^2 + 44*A*B^3*a^4*b^3 + 72*A^2*B^2*a^3*
b^4 + 32*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c^5 + (46*B^4*a^4*b^4 + 160*A*B^3*a^3
*b^5 + 132*A^2*B^2*a^2*b^6 + 28*A^3*B*a*b^7 + A^4*b^8)*c^4 - 2*(31*B^4*a^3*
b^6 + 58*A*B^3*a^2*b^7 + 24*A^2*B^2*a*b^8 + 2*A^3*B*b^9)*c^3 + (37*B^4*a^2*
b^8 + 36*A*B^3*a*b^9 + 6*A^2*B^2*b^10)*c^2 - 2*(5*B^4*a*b^10 + 2*A*B^3*b^11
)*c)/(b^2*c^14 - 4*a*c^15)))/(b^2*c^7 - 4*a*c^8)) + 4*(B^4*a^3*b^6 - A*B^3*
a^2*b^7 + A^4*a^4*c^5 - (7*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^4 - (B^4*a^6 + 5*
A*B^3*a^5*b - 9*A^2*B^2*a^4*b^2 - 11*A^3*B*a^3*b^3 - A^4*a^2*b^4)*c^3 + (6*
B^4*a^5*b^2 + 2*A*B^3*a^4*b^3 - 12*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5)*c^2 -
 (5*B^4*a^4*b^4 - 3*A*B^3*a^3*b^5 - 3*A^2*B^2*a^2*b^6)*c)*sqrt(x)) + 4*(3*B
*c^2*x^2 + 15*B*b^2 - 15*(B*a + A*b)*c - 5*(B*b*c - A*c^2)*x)*sqrt(x))/c^3
```

giac [B] time = 1.36, size = 5319, normalized size = 15.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*((2*b^6*c^3 - 18*a*b^4*c^4 + 48*a^2*b^2*c^5 - 32*a^3*c^6 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 9*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^4 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a*b^2*c^4 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a^2*c^5 - 2*(b^2 - 4*a*c)*b^4*c^3 + 10*(b^2 - 4*a*c)*a*b^2*c^4
- 8*(b^2 - 4*a*c)*a^2*c^5)*A*c^2 - (2*b^7*c^2 - 20*a*b^5*c^3 + 64*a^2*b^3*c
```

```
^4 - 64*a^3*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^7 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5
*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c - 32
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 12
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 16*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 6*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 8*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5
*c^2 + 12*(b^2 - 4*a*c)*a*b^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^4)*B*c^2 + 2*(
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 - 8*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^4*c^4 + 2*a*b^5*c^4 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*
c^5 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - 16*a^2*b^3*c^5 - 4*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^6 + 32*a^3*b*c^6 - 2*(b^2 - 4*a*c)*a*b^3*c^4
 + 8*(b^2 - 4*a*c)*a^2*b*c^5)*A*abs(c) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a*b^6*c^2 - 9*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^3
 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 + 2*a*b^6*c^3 + 24*sq
rt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^4 + 10*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
*b^4*c^4 - 18*a^2*b^4*c^4 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*
c^5 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 - 5*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + 48*a^3*b^2*c^5 + 4*sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^3*c^6 - 32*a^4*c^6 - 2*(b^2 - 4*a*c)*a*b^4*c^3 +
 10*(b^2 - 4*a*c)*a^2*b^2*c^4 - 8*(b^2 - 4*a*c)*a^3*c^5)*B*abs(c) - (2*b^6*
c^5 - 14*a*b^4*c^6 + 24*a^2*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*b^6*c^3 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a*b^4*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*b^5*c^4 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*b^2*c^5 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^4*c^5 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^2*c^6 - 2*(b^2 - 4*a*c)*b^4*c^5 + 6*(b^2 - 4*a*c)*a*b^2*c^6)*A + (2*b^7*c
^4 - 16*a*b^5*c^5 + 36*a^2*b^3*c^6 - 16*a^3*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*b^5*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^3*b*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*b^2*c^5 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^5 - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^2*b*c^6 - 2*(b^2 - 4*a*c)*b^5*c^4 + 8*(b^2 - 4*a*c)*a*b^3*c^5 - 4*(b
^2 - 4*a*c)*a^2*b*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^5 + sqrt(b^2
*c^10 - 4*a*c^11))/c^6))/((a*b^4*c^5 - 8*a^2*b^2*c^6 - 2*a*b^3*c^6 + 16*a^3
*c^7 + 8*a^2*b*c^7 + a*b^2*c^7 - 4*a^2*c^8)*c^2) - 1/4*((2*b^6*c^3 - 18*a*b
^4*c^4 + 48*a^2*b^2*c^5 - 32*a^3*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*b^6*c + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^5*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^2*b^2*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*b^4*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^3*c^4 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*
c^4 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4
 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^5 - 2*
```

```
(b^2 - 4*a*c)*b^4*c^3 + 10*(b^2 - 4*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^2*c^
5)*A*c^2 - (2*b^7*c^2 - 20*a*b^5*c^3 + 64*a^2*b^3*c^4 - 64*a^3*b*c^5 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 10*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c - 32*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 + 12*(b^2 - 4*a*c)*
a*b^3*c^3 - 16*(b^2 - 4*a*c)*a^2*b*c^4)*B*c^2 - 2*(sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^5*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b
^3*c^4 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 - 2*a*b^5*c^4
+ 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 + 8*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a*b^3*c^5 + 16*a^2*b^3*c^5 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^2*b*c^6 - 32*a^3*b*c^6 + 2*(b^2 - 4*a*c)*a*b^3*c^4 - 8*(b^2 - 4*a*c)*a^2*b
*c^5)*A*abs(c) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^2 - 9*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^3 - 2*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^5*c^3 - 2*a*b^6*c^3 + 24*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^3*b^2*c^4 + 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*
b^3*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^4 + 18*a^2*b^4*c^
4 - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^5 - 8*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^2*b^2*c^5 - 48*a^3*b^2*c^5 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^3*c^6 + 32*a^4*c^6 + 2*(b^2 - 4*a*c)*a*b^4*c^3 - 10*(b^2 - 4*a*c)*a^2*b^
2*c^4 + 8*(b^2 - 4*a*c)*a^3*c^5)*B*abs(c) - (2*b^6*c^5 - 14*a*b^4*c^6 + 24*
a^2*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6
*c^3 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^
4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^4 - 1
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 - 6
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^5 + 3*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^6 - 2*(b^2 - 4*a*c
)*b^4*c^5 + 6*(b^2 - 4*a*c)*a*b^2*c^6)*A + (2*b^7*c^4 - 16*a*b^5*c^5 + 36*a
^2*b^3*c^6 - 16*a^3*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*b^7*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a*b^5*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*b^6*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^2*b^3*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*
b^4*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^4
 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^5 +
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^5 + 4
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^5 - 2*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^6 - 2*(b^2
- 4*a*c)*b^5*c^4 + 8*(b^2 - 4*a*c)*a*b^3*c^5 - 4*(b^2 - 4*a*c)*a^2*b*c^6)*B
)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^5 - sqrt(b^2*c^10 - 4*a*c^11))/c^6))
/((a*b^4*c^5 - 8*a^2*b^2*c^6 - 2*a*b^3*c^6 + 16*a^3*c^7 + 8*a^2*b*c^7 + a*b
^2*c^7 - 4*a^2*c^8)*c^2) + 2/15*(3*B*c^4*x^(5/2) - 5*B*b*c^3*x^(3/2) + 5*A*
c^4*x^(3/2) + 15*B*b^2*c^2*sqrt(x) - 15*B*a*c^3*sqrt(x) - 15*A*b*c^3*sqrt(x
))/c^5
```

maple [B]   time = 0.15, size = 1141, normalized size = 3.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 2/5*B/c*x^(5/2)+2/3*A/c*x^(3/2)-2/3/c^2*B*x^(3/2)*b-2/c^2*A*b*x^(1/2)-2*B*a
/c^2*x^(1/2)+2/c^3*b^2*B*x^(1/2)-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*A*a+1/c^2*2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2))*A*b^2-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))
*a*A*b+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*A*b^3+2/c^2*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2))*a*b*B-1/c^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*b^3*B-2/c/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*a^2*B+4/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2))*a*b^2*B-1/c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctan(c*x^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2))*b
^4*B+1/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*
A*b^2-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
anh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+1/c^2/(-4*a*
c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/c^2*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*a*b*B+1/c^3*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B-2/c/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B+4/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*a*b^2*B-1/c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^
4*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\left(3\,Bcx^{\frac{5}{2}}-5\,(Bb-Ac)x^{\frac{3}{2}}\right)}{15\,c^{2}}-\int\frac{\left(Abc-\left(b^{2}-ac\right)B\right)x^{\frac{3}{2}}-(Bab-Aac)\sqrt{x}}{c^{3}x^{2}+bc^{2}x+ac^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/15*(3*B*c*x^(5/2) - 5*(B*b - A*c)*x^(3/2))/c^2 - integrate(((A*b*c - (b^2
 - a*c)*B)*x^(3/2) - (B*a*b - A*a*c)*sqrt(x))/(c^3*x^2 + b*c^2*x + a*c^2),
x)
```

mupad [B] time = 3.19, size = 14120, normalized size = 40.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^(3/2)*((2*A)/(3*c) - (2*B*b)/(3*c^2)) - x^(1/2)*((b*((2*A)/c - (2*B*b)/c^
2))/c + (2*B*a)/c^2) + atan(((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^
6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*
(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c +
 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5
*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*
c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^
5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(
4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a
*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c
- b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9
+ b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(
-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-
(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*
c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*
B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^
4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 +
 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*
c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^
2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-
(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (
8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^
7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a
*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a
^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2)
 - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2)
+ 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^
(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^
7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2
*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5
*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^
(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b
^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))
/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1i - (((8*(4*B*a^3*c^6 - A
*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/
2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^
3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c -
 b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11
*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^
2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^
2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c -
 b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) +
8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^
3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9
+ A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2
*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B
^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*
c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*
A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/
2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2
)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 -
2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(
1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 -
 8*a*b^2*c^8)))^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 +
 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*
B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14
*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6
*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*
(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^
4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*
A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*
a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3
 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^
2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c -
b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1
i)/((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2
*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2
+ B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2
*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
+ 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3
*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a
^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8))
)^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) +
42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*
c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B
^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1
/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3
*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(
2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (8*x^(1/2)*(B^2*b^8 - 2*A^
2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 +
 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3
- 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^
9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a
^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63
*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*
a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 2
0*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b
^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2
- 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)
^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7
 - 8*a*b^2*c^8)))^(1/2) - (16*(A^3*a^4*c^3 + B^3*a^4*b^3 - A^3*a^3*b^2*c^2
- 2*B^3*a^5*b*c - A*B^2*a^3*b^4 + A*B^2*a^5*c^2 + A*B^2*a^4*b^2*c + 2*A^2*B
*a^3*b^3*c - 3*A^2*B*a^4*b*c^2))/c^5 + (((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*
A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/2)*(b^3*c^7 - 4
*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B
^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2)
- B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c -
9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a
*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
+ 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2
*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(1
6*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 +
 B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*
a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
+ A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/
2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 +
 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2
*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*
A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(
4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^
2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))
^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4
- 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3
 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2
+ 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)
^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 1
1*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B
^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b
^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c
- b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) +
 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)
^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)))*(-(B^2*b^9 + A
^2*b^7*c^2 + B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^
3*c^4 + A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*
a^3*b^3*c^3 + A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^3*c^3*(-(4*a*c -
 b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2
*a^3*b*c^5 + 28*B^2*a^4*b*c^4 + 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
- 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 - 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3
)^(1/2) - 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 - 2*A
*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2
) - 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*
a*b^2*c^8)))^(1/2)*2i + atan(((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c
^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)
*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c
+ 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^
5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3
*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b
^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c -
 b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-
(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*
a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9
 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(
-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4
*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A
*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a
^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3
+ 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2
*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b
^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(
-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) -
(8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b
^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*
a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*
a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2
) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2)
 + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)
^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b
^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^
2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 +
5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)
^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*
b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2)
)/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*1i - (((8*(4*B*a^3*c^6 -
A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1
/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)
^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 1
1*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B
^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b
^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c
- b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) -
 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)
^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9
 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^
2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*
B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a
*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20
*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^
2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 +
 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^
(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7
- 8*a*b^2*c^8)))^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2
+ 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16
*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 1
4*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^
6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4
*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b
^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16
*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2
*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^
3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b
^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c -
 b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3
*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)*
1i)/((((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^
2*b^2*c^5))/c^5 - (8*x^(1/2)*(b^3*c^7 - 4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2
 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^
2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^
3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(
1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a
^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) +
3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(
-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*
a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)
))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) +
 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(
1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7
*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*
c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*
B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(
1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^
3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/
(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2) - (8*x^(1/2)*(B^2*b^8 - 2*A
^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4
+ 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3
 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b
^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*
a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 6
3*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4
*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 -
20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c -
b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2
 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3
)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^
7 - 8*a*b^2*c^8)))^(1/2) - (16*(A^3*a^4*c^3 + B^3*a^4*b^3 - A^3*a^3*b^2*c^2
 - 2*B^3*a^5*b*c - A*B^2*a^3*b^4 + A*B^2*a^5*c^2 + A*B^2*a^4*b^2*c + 2*A^2*
B*a^3*b^3*c - 3*A^2*B*a^4*b*c^2))/c^5 + (((8*(4*B*a^3*c^6 - A*a*b^3*c^5 + 4
*A*a^2*b*c^6 + B*a*b^4*c^4 - 5*B*a^2*b^2*c^5))/c^5 + (8*x^(1/2)*(b^3*c^7 -
4*a*b*c^8)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*
A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*
B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2)
 + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c -
 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*
a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
 + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^
2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(
16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2
 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2
*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3
 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5
 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3
*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a
^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8))
)^(1/2) + (8*x^(1/2)*(B^2*b^8 - 2*A^2*a^3*c^5 + A^2*b^6*c^2 + 2*B^2*a^4*c^4
 - 2*A*B*b^7*c + 9*A^2*a^2*b^2*c^4 + 20*B^2*a^2*b^4*c^2 - 16*B^2*a^3*b^2*c^
3 - 8*B^2*a*b^6*c - 6*A^2*a*b^4*c^3 - 28*A*B*a^2*b^3*c^3 + 14*A*B*a*b^5*c^2
 + 14*A*B*a^3*b*c^4))/c^5)*(-(B^2*b^9 + A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2
)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^4*c^5 -
11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*
B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*
b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c
 - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2)
- 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2
)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8*a*b^2*c^8)))^(1/2)))*(-(B^2*b^9 +
A^2*b^7*c^2 - B^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^8*c + 25*A^2*a^2*b
^3*c^4 - A^2*a^2*c^4*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^2*b^5*c^2 - 63*B^2
*a^3*b^3*c^3 - A^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^3*c^3*(-(4*a*c
- b^2)^3)^(1/2) - 16*A*B*a^4*c^5 - 11*B^2*a*b^7*c - 9*A^2*a*b^5*c^3 - 20*A^
2*a^3*b*c^5 + 28*B^2*a^4*b*c^4 - 6*B^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
 - 66*A*B*a^2*b^4*c^3 + 76*A*B*a^3*b^2*c^4 + 5*B^2*a*b^4*c*(-(4*a*c - b^2)^
3)^(1/2) + 3*A^2*a*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a*b^6*c^2 + 2*
A*B*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a*b^3*c^2*(-(4*a*c - b^2)^3)^(1/
2) + 6*A*B*a^2*b*c^3*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^9 + b^4*c^7 - 8
*a*b^2*c^8)))^(1/2)*2i + (2*B*x^(5/2))/(5*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1010 $\int \frac{x^{3/2}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=275

$$\frac{\sqrt{2}\left(-\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2\right.}{c^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

```
[Out] 2/3*B*x^(3/2)/c-2*(-A*c+B*b)*x^(1/2)/c^2+arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-
(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(b^2*B-A*b*c-a*B*c+(-2*A*a*c^2+A*b^2*c+3
*B*a*b*c-B*b^3)/(-4*a*c+b^2)^(1/2))/c^(5/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+ar
ctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(b^2*B-A
*b*c-a*B*c+(2*A*a*c^2-A*b^2*c-3*B*a*b*c+B*b^3)/(-4*a*c+b^2)^(1/2))/c^(5/2)/
(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [**A**] time = 1.48, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$\frac{\sqrt{2}\left(-\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{2aAc^2-3abBc-Ab^2c+b^3B}{\sqrt{b^2-4ac}}-aBc-Abc+b^2\right.}{c^{5/2}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-2*(b*B - A*c)*Sqrt[x])/c^2 + (2*B*x^(3/2))/(3*c) + (Sqrt[2]*(b^2*B - A*b*
c - a*B*c - (b^3*B - A*b^2*c - 3*a*b*B*c + 2*a*A*c^2)/Sqrt[b^2 - 4*a*c])*Ar
cTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[
b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*(b^2*B - A*b*c - a*B*c + (b^3*B - A*b^2*
c - 3*a*b*B*c + 2*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{x^{3/2}(A+Bx)}{a+bx+cx^2}\,dx &= \frac{2Bx^{3/2}}{3c}+\frac{\int \frac{\sqrt{x}\,(-aB-(bB-Ac)x)}{a+bx+cx^2}\,dx}{c}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{\int \frac{a(bB-Ac)+\left(b^2B-Abc-aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{2\,\mathrm{Subst}\left(\int \frac{a(bB-Ac)+\left(b^2B-Abc-aBc\right)x^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)}{c^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{\left(b^2B-Abc-aBc-\frac{b^3B-Ab^2c-3abBc+2aAc^2}{\sqrt{b^2-4ac}}\right)\mathrm{Subst}\left(\int \frac{}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2}}\right.}{c^2}\\
&= -\frac{2(bB-Ac)\sqrt{x}}{c^2}+\frac{2Bx^{3/2}}{3c}+\frac{\sqrt{2}\left(b^2B-Abc-aBc-\frac{b^3B-Ab^2c-3abBc+2aAc^2}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}}{\sqrt{b-\sqrt{}}}\right.}{c^{5/2}\sqrt{b-\sqrt{b^2-4ac}}}
\end{aligned}$$

Mathematica [A] time = 0.64, size = 413, normalized size = 1.50

$$\frac{\frac{3\sqrt{2}\,Ac\left(\frac{b^2-2ac}{\sqrt{b^2-4ac}}-b\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{3\sqrt{2}\,Ac\left(\frac{2ac-b^2}{\sqrt{b^2-4ac}}-b\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}+3\sqrt{2}\,B\left(\frac{\left(\frac{3abc-b^3}{\sqrt{b^2-4ac}}-ac+b^2\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}\right.}{3c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (-6*b*B*Sqrt[c]*Sqrt[x] + 6*A*c^(3/2)*Sqrt[x] + 2*B*c^(3/2)*x^(3/2) + (3*Sq
rt[2]*A*c*(-b + (b^2 - 2*a*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sq
rt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + (3*Sqrt[
2]*A*c*(-b + (-b^2 + 2*a*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]] + 3*Sqrt[2]*
B*(((b^2 - a*c + (-b^3 + 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c
]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((b^
2 - a*c + (b^3 - 3*a*b*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x
])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(3*c^(5/2))
```

fricas [B] time = 4.93, size = 5148, normalized size = 18.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^
2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 -
```

```
 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^
4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b
^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4
+ 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2
- 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c
^6))*log(sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20*A^2*B*a^2*b +
 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*B*a*b^3 + A^3*
b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^2 - (7*B^3*a*b
^5 + 3*A*B^2*b^6)*c - (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 - (6*B*a*b^2 + A
*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A
^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*
b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4
 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2
 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*sqrt(-(B^2*b^5
- (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 -
 (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*
c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*
a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b
^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b
^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)
/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^4 - A*B^3*a*b^
5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4 + 3*A*B^3*a^3*
b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 - A*B^3*a^2*b^3
 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) - 3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2
 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^
3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2
*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A
^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^
3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^
3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 -
 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))*log(-sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (
4*A*B^2*a^3 + 20*A^2*B*a^2*b + 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a
^2*b^2 + 17*A^2*B*a*b^3 + A^3*b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 +
 3*A^2*B*b^5)*c^2 - (7*B^3*a*b^5 + 3*A*B^2*b^6)*c - (B*b^4*c^5 + 4*(2*B*a^2
 + A*a*b)*c^7 - (6*B*a*b^2 + A*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A
^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24
*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*
B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*
B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10
 - 4*a*c^11)))*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b
+ 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c + (b^2*c^5 - 4*a
*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*
b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 +
 A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*
A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*
(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))
 - 4*(B^4*a^2*b^4 - A*B^3*a*b^5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)
*c^3 + (B^4*a^4 + 3*A*B^3*a^3*b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 -
(3*B^4*a^3*b^2 - A*B^3*a^2*b^3 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) + 3*sqrt(2)*c
^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^
2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((
B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (
B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^
4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c
^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6
 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6))*log(sqrt(2)
*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20*A^2*B*a^2*b + 5*A^3*a*b^2)*c^
4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*B*a*b^3 + A^3*b^4)*c^3 + (13*B
^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^2 - (7*B^3*a*b^5 + 3*A*B^2*b^6
```

```
)*c + (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 - (6*B*a*b^2 + A*b^3)*c^6)*sqrt(
(B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 +
(B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c
^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*
c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^
6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3
*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 +
2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2
*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B
^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^
2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*
b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a
*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^4 - A*B^3*a*b^5 - A^4*a^2*c^4
+ (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4 + 3*A*B^3*a^3*b - 6*A^2*B^2*a^
2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 - A*B^3*a^2*b^3 - 3*A^2*B^2*a*b
^4)*c)*sqrt(x)) - 3*sqrt(2)*c^2*sqrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^
3 + (5*B^2*a^2*b + 8*A*B*a*b^2 + A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c
 - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3
*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 +
 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A
^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*
B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^
2*c^5 - 4*a*c^6))*log(-sqrt(2)*(B^3*b^7 - 4*A^3*a^2*c^5 + (4*A*B^2*a^3 + 20
*A^2*B*a^2*b + 5*A^3*a*b^2)*c^4 - (4*B^3*a^3*b + 29*A*B^2*a^2*b^2 + 17*A^2*
B*a*b^3 + A^3*b^4)*c^3 + (13*B^3*a^2*b^3 + 19*A*B^2*a*b^4 + 3*A^2*B*b^5)*c^
2 - (7*B^3*a*b^5 + 3*A*B^2*b^6)*c + (B*b^4*c^5 + 4*(2*B*a^2 + A*a*b)*c^7 -
(6*B*a*b^2 + A*b^3)*c^6)*sqrt((B^4*b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A
^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2
 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 - 2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12
*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^
2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))*s
qrt(-(B^2*b^5 - (4*A*B*a^2 + 3*A^2*a*b)*c^3 + (5*B^2*a^2*b + 8*A*B*a*b^2 +
A^2*b^3)*c^2 - (5*B^2*a*b^3 + 2*A*B*b^4)*c - (b^2*c^5 - 4*a*c^6)*sqrt((B^4*
b^8 + A^4*a^2*c^6 - 2*(A^2*B^2*a^3 + 4*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (B^4*
a^4 + 8*A*B^3*a^3*b + 24*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4)*c^4 -
2*(3*B^4*a^3*b^2 + 14*A*B^3*a^2*b^3 + 12*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 +
 (11*B^4*a^2*b^4 + 20*A*B^3*a*b^5 + 6*A^2*B^2*b^6)*c^2 - 2*(3*B^4*a*b^6 + 2
*A*B^3*b^7)*c)/(b^2*c^10 - 4*a*c^11)))/(b^2*c^5 - 4*a*c^6)) - 4*(B^4*a^2*b^
4 - A*B^3*a*b^5 - A^4*a^2*c^4 + (5*A^3*B*a^2*b + A^4*a*b^2)*c^3 + (B^4*a^4
+ 3*A*B^3*a^3*b - 6*A^2*B^2*a^2*b^2 - 3*A^3*B*a*b^3)*c^2 - (3*B^4*a^3*b^2 -
 A*B^3*a^2*b^3 - 3*A^2*B^2*a*b^4)*c)*sqrt(x)) + 4*(B*c*x - 3*B*b + 3*A*c)*s
qrt(x))/c^2
```

giac [B] time = 1.38, size = 4399, normalized size = 16.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/4*((2*b^5*c^3 - 16*a*b^3*c^4 + 32*a^2*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*b^3*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^3*c^3 + 8*(b^2 - 4*a*c)*a*b*c^4)*A*c^2 - (
2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*s
```

```
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4
*a*c)*a^2*c^4)*B*c^2 + 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3
 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2
*b*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 16*a^2*b^2*c^5
 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^6 + 32*a^3*c^6 - 2*(b^2
- 4*a*c)*a*b^2*c^4 + 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(c) - 2*(sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*a
*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a*b^3*c^4 - 16*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^2*b*c^5 + 32*a^3*b*c^5 - 2*(b^2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a
*c)*a^2*b*c^4)*B*abs(c) - (2*b^5*c^5 - 12*a*b^3*c^6 + 16*a^2*b*c^7 - sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^3 + 6*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^4 - 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 4*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^5 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^6 - 2*(b^2 - 4*a*c)*b^3*c^5 + 4*(b^2 - 4*a*
c)*a*b*c^6)*A + (2*b^6*c^4 - 14*a*b^4*c^5 + 24*a^2*b^2*c^6 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 + 7*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^4 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 2*(b^2 - 4*a*c)*b^4*c^4 + 6*(b^2 - 4*a*c)*
a*b^2*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c^3 + sqrt(b^2*c^6 - 4*a*c
^7))/c^4))/((a*b^4*c^4 - 8*a^2*b^2*c^5 - 2*a*b^3*c^5 + 16*a^3*c^6 + 8*a^2*b
*c^6 + a*b^2*c^6 - 4*a^2*c^7)*c^2) + 1/4*((2*b^5*c^3 - 16*a*b^3*c^4 + 32*a^
2*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c +
 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 16*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 8*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 4*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^3*c^3
+ 8*(b^2 - 4*a*c)*a*b*c^4)*A*c^2 - (2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c
^4 - 32*a^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*b^6 + 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c
+ 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*
```

```
(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4*a*c)*a^2*c^4)*B*c^2 - 2*(sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 2
*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b^2*c^5 + 16*a^2*b^2*c^5 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^6 - 32*a^3*c^6 + 2*(b^2 - 4*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^
2*c^5)*A*abs(c) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^
2*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 16*a^2*b^3*c^4
- 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 32*a^3*b*c^5 + 2*(b
^2 - 4*a*c)*a*b^3*c^3 - 8*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(c) - (2*b^5*c^5 -
12*a*b^3*c^6 + 16*a^2*b*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^5*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b^3*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^4*c^4 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^2*b*c^5 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b
^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^5
+ 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^6 - 2*(
b^2 - 4*a*c)*b^3*c^5 + 4*(b^2 - 4*a*c)*a*b*c^6)*A + (2*b^6*c^4 - 14*a*b^4*c
^5 + 24*a^2*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^6*c^2 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a*b^4*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5
*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^4 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^
4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^4 + 3*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 - 2*(b^2
 - 4*a*c)*b^4*c^4 + 6*(b^2 - 4*a*c)*a*b^2*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x
)/sqrt((b*c^3 - sqrt(b^2*c^6 - 4*a*c^7))/c^4))/((a*b^4*c^4 - 8*a^2*b^2*c^5
 - 2*a*b^3*c^5 + 16*a^3*c^6 + 8*a^2*b*c^6 + a*b^2*c^6 - 4*a^2*c^7)*c^2) + 2/
3*(B*c^2*x^(3/2) - 3*B*b*c*sqrt(x) + 3*A*c^2*sqrt(x))/c^3
```

maple [B] time = 0.10, size = 855, normalized size = 3.11

$$\frac{2\sqrt{2}\,Aa\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Aa\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}-\frac{\sqrt{2}\,A\,b^2\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right.}}\right.}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 2/3*B/c*x^(3/2)+2*A/c*x^(1/2)-2/c^2*B*x^(1/2)*b-1/c*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*b+2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/c/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B+1/c^2*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*b^2*B-3/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*a*b*B+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B+1/c*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*A*b+2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*
A*a-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan
h(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+1/c*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*B-1/c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B-3/c/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B+1/c^2/(-4*a*c+b^2)^(1/2)*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,Bx^{\frac{3}{2}}}{3\,c} + \int -\frac{Ba\sqrt{x} + (Bb - Ac)x^{\frac{3}{2}}}{c^2x^2 + bcx + ac}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/3*B*x^(3/2)/c + integrate(-(B*a*sqrt(x) + (B*b - A*c)*x^(3/2))/(c^2*x^2 +
 b*c*x + a*c), x)
```

mupad [B] time = 2.64, size = 10204, normalized size = 37.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] x^(1/2)*((2*A)/c - (2*B*b)/c^2) - atan(((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B
*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*
b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2
*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2
*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B
*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 +
2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/
2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*
b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c
^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4
 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c
^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*
c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16
*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2
*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^
2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-
(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 2
5*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 1
2*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 3
6*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c
^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*1i - (((8*(4*A*a^2
*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^
5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) -
 B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*
A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*
B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
 + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/
c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^
6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*
c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*
c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*
a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2
)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*
B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A
*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c
 - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2)
- 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b
*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1
/2)*1i)/((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^
3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^
4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c
 - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^
(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 -
8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2
)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*
a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)
^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b
^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*
A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^
6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*
c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 1
0*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^
4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a
^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(
4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2
*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2
)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c
^5 - 8*a*b^2*c^6)))^(1/2) + (((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 -
 4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^
5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2
 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 +
 A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3
 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*
(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a
^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 - B^
2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 - A^2*b^2
*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A
*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 + A^2*a*c^3
*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a
*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b^3*c*(-(4*a*c -
 b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b
^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b
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^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c -
4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A
^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^
3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*(-(4*a*c - b^2)^
3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*
c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^
2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 + 2*A*B*b
^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*
(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (16*(B^3*a^4*c - B^3*a^3*b^2
 + A*B^2*a^2*b^3 + A^2*B*a^3*c^2 + A^3*a^2*b*c^2 - 2*A^2*B*a^2*b^2*c))/c^3)
)*(-(B^2*b^7 + A^2*b^5*c^2 - B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c
 + 25*B^2*a^2*b^3*c^2 - A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3
 + 12*A^2*a^2*b*c^4 + A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3
 - 36*A*B*a^2*b^2*c^3 + 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b
^4*c^2 + 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 4*A*B*a*b*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*2i - atan(((((
8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/
2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^
3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*
b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(
1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2
)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*
B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)
))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) +
 B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*
A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*
B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
 + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*
(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) -
 (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*
b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*
c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B
^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)
^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) +
 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2
*c^6)))^(1/2)*1i - (((8*(4*A*a^2*c^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*
b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B
^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^
2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*
A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^
3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*
a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c
- b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 +
b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^
4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c
 - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^
(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 -
8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 -
2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b
^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^
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2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A
^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2
*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3
*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4
*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c
^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2)*1i)/((((8*(4*A*a^2*c^5 - A*a*b^2*c^4 +
B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 - (8*x^(1/2)*(b^3*c^5 - 4*a*b*c^6)*(-(B^2
*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^
2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^
2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*
B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 -
 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1
/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^3)*(-(B^2*b^7 + A^2
*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*
c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)
^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^
4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*
c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3
*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(1
6*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) - (8*x^(1/2)*(B^2*b^6 + 2*A^2*a^
2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^2*a^2*b^2*c^2 - 6*B
^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B*a^2*b*c^3))/c^3)*(
-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*c +
25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 +
12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 -
36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*
c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^
3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (((8*(4*A*a^2*c
^5 - A*a*b^2*c^4 + B*a*b^3*c^3 - 4*B*a^2*b*c^4))/c^3 + (8*x^(1/2)*(b^3*c^5
- 4*a*b*c^6)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B
^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^
2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^
2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) +
 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-
(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2))/c^
3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^6*
c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^
3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*B^2*a^3*b*c^
3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a*
b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c^2*(-(4*a*c - b
^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2) + (8*x^(1/2)*
(B^2*b^6 + 2*A^2*a^2*c^4 + A^2*b^4*c^2 - 2*B^2*a^3*c^3 - 2*A*B*b^5*c + 9*B^
2*a^2*b^2*c^2 - 6*B^2*a*b^4*c - 4*A^2*a*b^2*c^3 + 10*A*B*a*b^3*c^2 - 10*A*B
*a^2*b*c^3))/c^3)*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2
) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 - 9*B^2*a*b^5*c -
 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c - b^2)^3)^(1/2) -
20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 4*A*B*a*b*c
^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a*b^2*c^6)))^(1/2
) + (16*(B^3*a^4*c - B^3*a^3*b^2 + A*B^2*a^2*b^3 + A^2*B*a^3*c^2 + A^3*a^2*
b*c^2 - 2*A^2*B*a^2*b^2*c))/c^3))*(-(B^2*b^7 + A^2*b^5*c^2 + B^2*b^4*(-(4*a
*c - b^2)^3)^(1/2) - 2*A*B*b^6*c + 25*B^2*a^2*b^3*c^2 + A^2*b^2*c^2*(-(4*a*
c - b^2)^3)^(1/2) + B^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^3*c^4 -
```

```
 9*B^2*a*b^5*c - 7*A^2*a*b^3*c^3 + 12*A^2*a^2*b*c^4 - A^2*a*c^3*(-(4*a*c -
b^2)^3)^(1/2) - 20*B^2*a^3*b*c^3 - 36*A*B*a^2*b^2*c^3 - 3*B^2*a*b^2*c*(-(4*
a*c - b^2)^3)^(1/2) + 16*A*B*a*b^4*c^2 - 2*A*B*b^3*c*(-(4*a*c - b^2)^3)^(1/
2) + 4*A*B*a*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(16*a^2*c^7 + b^4*c^5 - 8*a
*b^2*c^6)))^(1/2)*2i + (2*B*x^(3/2))/(3*c)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1011 $\int \frac{\sqrt{x}(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=221

$$-\frac{\sqrt{2}\left(-\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+2$$

```
[Out] 2*B*x^(1/2)/c-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*
2^(1/2)*(b*B-A*c+(A*b*c+2*B*a*c-B*b^2)/(-4*a*c+b^2)^(1/2))/c^(3/2)/(b-(-4*a
*c+b^2)^(1/2))^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^
(1/2))*2^(1/2)*(b*B-A*c+(-A*b*c-2*B*a*c+B*b^2)/(-4*a*c+b^2)^(1/2))/c^(3/2)/
(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 0.81, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {824, 826, 1166, 205}

$$-\frac{\sqrt{2}\left(-\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{-2aBc-Abc+b^2B}{\sqrt{b^2-4ac}}-Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{c^{3/2}\sqrt{\sqrt{b^2-4ac}+b}}+2$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (Sqrt[2]*(b*B - A*c - (b^2*B - A*b*c - 2*a*B*c)/Sqrt[b^2
 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c
^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*(b*B - A*c + (b^2*B - A*b*c
 - 2*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{x}(A+Bx)}{a+bx+cx^2}\,dx &= \frac{2B\sqrt{x}}{c}+\frac{\int \frac{-aB-(bB-Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c}\\ &= \frac{2B\sqrt{x}}{c}+\frac{2\,\text{Subst}\left(\int \frac{-aB+(-bB+Ac)x^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)}{c}\\ &= \frac{2B\sqrt{x}}{c}-\frac{\left(bB-Ac+\frac{b^2B-Abc-2aBc}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx,x,\sqrt{x}\right)}{c}+\left(-bB+Ac+\frac{b^2B}{}\right.\\ &= \frac{2B\sqrt{x}}{c}-\frac{\sqrt{2}\left(bB-Ac-\frac{b^2B-Abc-2aBc}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(bB-Ac+\frac{b^2B-Abc-2aBc}{\sqrt{b^2-4ac}}\right)}{c^{3/2}\sqrt{b+\sqrt{b^2}}}\end{aligned}$$

Mathematica [A] time = 0.22, size = 264, normalized size = 1.19

$$-\frac{\sqrt{2}\left(-Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}+2aBc+Abc+b^2(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{c^{3/2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(-Ac\sqrt{b^2-4ac}+bB\sqrt{}\right.}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[x])/c - (Sqrt[2]*(-(b^2*B) + A*b*c + 2*a*B*c + b*B*Sqrt[b^2 - 4*a
*c] - A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt
[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) -
(Sqrt[2]*(b^2*B - A*b*c - 2*a*B*c + b*B*Sqrt[b^2 - 4*a*c] - A*c*Sqrt[b^2 -
4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(
3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

fricas [B] time = 1.45, size = 2642, normalized size = 11.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*
b^2)*c + (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3
*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*
A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(sqrt(2)*(B^3*b
^4 - 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b
^2 + 2*A*B^2*b^3)*c - (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqr
t((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a
*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7
)))*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c + (b
^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 +
 (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*
c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 -
3*A^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x))
 - sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^
2)*c + (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B
*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*
B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-sqrt(2)*(B^3*b^
4 - 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^
2 + 2*A*B^2*b^3)*c - (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt
((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*
b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)
))*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c + (b^
2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 +
(B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c
)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3
*A^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x))
+ sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2
)*c - (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*
b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B
^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(sqrt(2)*(B^3*b^4
- 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^2
+ 2*A*B^2*b^3)*c + (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt((
B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b
+ 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))
*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c - (b^2*
c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B
^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/
(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3*A
^3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x)) -
sqrt(2)*c*sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*
c - (b^2*c^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)
*c^3 + (B^4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3
*b^3)*c)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-sqrt(2)*(B^3*b^4 -
 4*A^2*B*a*c^3 + (4*B^3*a^2 + 8*A*B^2*a*b + A^2*B*b^2)*c^2 - (5*B^3*a*b^2 +
 2*A*B^2*b^3)*c + (B*b^3*c^3 + 8*A*a*c^5 - 2*(2*B*a*b + A*b^2)*c^4)*sqrt((B
^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^4*a^2 + 4*A*B^3*a*b +
 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(b^2*c^6 - 4*a*c^7)))*
sqrt(-(B^2*b^3 + (4*A*B*a + A^2*b)*c^2 - (3*B^2*a*b + 2*A*B*b^2)*c - (b^2*c
^3 - 4*a*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(A^2*B^2*a + 2*A^3*B*b)*c^3 + (B^
4*a^2 + 4*A*B^3*a*b + 6*A^2*B^2*b^2)*c^2 - 2*(B^4*a*b^2 + 2*A*B^3*b^3)*c)/(
b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) + 4*(B^4*a*b^2 - A*B^3*b^3 - 3*A^
3*B*b*c^2 + A^4*c^3 - (B^4*a^2 + A*B^3*a*b - 3*A^2*B^2*b^2)*c)*sqrt(x)) + 4
*B*sqrt(x))/c
```

giac [B] time = 1.18, size = 3186, normalized size = 14.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c + 1/4*((2*b^4*c^3 - 16*a*b^2*c^4 + 32*a^2*c^5 - sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c + 8*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*b^2*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 8*(b^2 - 4*a*c)*a*c^4)*A*c^
2 - (2*b^5*c^2 - 16*a*b^3*c^3 + 32*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*b^4*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^2*b*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^3*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b
*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*B*c^2 - 2*(sqrt(2
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^2*c^3 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*
c^3 + 2*a*b^4*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a*b^2*c^4 - 16*a^2*b^2*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*c^5 + 32*a^3*c^5 - 2*(b^2 - 4*a*c)*a*b^2*c^3 + 8*(b^2 - 4*
a*c)*a^2*c^4)*B*abs(c) - (2*b^4*c^5 - 8*a*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*b^2*c^5 - 2*(b^2 - 4*a*c)*b^2*c^5)*A + (2*b^5*c^4 - 12*
a*b^3*c^5 + 16*a^2*b*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*b^5*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b^3*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^4*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2
*b*c^4 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*
c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^4 + 2
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^5 - 2*(b^2
 - 4*a*c)*b^3*c^4 + 4*(b^2 - 4*a*c)*a*b*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/
sqrt((b*c + sqrt(b^2*c^2 - 4*a*c^3))/c^2))/((a*b^4*c^3 - 8*a^2*b^2*c^4 - 2*
a*b^3*c^4 + 16*a^3*c^5 + 8*a^2*b*c^5 + a*b^2*c^5 - 4*a^2*c^6)*c^2) - 1/4*((
2*b^4*c^3 - 16*a*b^2*c^4 + 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^4*c + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^3*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2
*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^4 -
2*(b^2 - 4*a*c)*b^2*c^3 + 8*(b^2 - 4*a*c)*a*c^4)*A*c^2 - (2*b^5*c^2 - 16*a*
b^3*c^3 + 32*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c
- 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 -
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 4*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)
*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*B*c^2 + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c
^3 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 2*a*b^4*c^3 + 16
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 8*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2
*c^4 + 16*a^2*b^2*c^4 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^5 -
 32*a^3*c^5 + 2*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(b^2 - 4*a*c)*a^2*c^4)*B*abs(c)
 - (2*b^4*c^5 - 8*a*b^2*c^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b^2*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*b^3*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^
2*c^5 - 2*(b^2 - 4*a*c)*b^2*c^5)*A + (2*b^5*c^4 - 12*a*b^3*c^5 + 16*a^2*b*c
^6 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 6*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + 2*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 - 8*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 4*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^5 - 2*(b^2 - 4*a*c)*b^3*c^4 + 4*
(b^2 - 4*a*c)*a*b*c^5)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b*c - sqrt(b^2*c
^2 - 4*a*c^3))/c^2))/((a*b^4*c^3 - 8*a^2*b^2*c^4 - 2*a*b^3*c^4 + 16*a^3*c^5
 + 8*a^2*b*c^5 + a*b^2*c^5 - 4*a^2*c^6)*c^2)
```

maple [B] time = 0.08, size = 581, normalized size = 2.63

$$\frac{\sqrt{2}\,Ab\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}+\frac{\sqrt{2}\,Ab\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}+\frac{2\sqrt{2}\,Ba\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right.}}\right.}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x)
```

```
[Out] 2*B/c*x^(1/2)+2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*A*b-1/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+2/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*a*B-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2
*B-2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*A*b+1/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+2/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*B-1/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{x}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(x)/(c*x^2 + b*x + a), x)
```

mupad [B] time = 2.42, size = 6401, normalized size = 28.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] (2*B*x^(1/2))/c - atan(((((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b
^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*
A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2
*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*
c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c
- 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^
3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a
*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2
*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^
2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)
^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3
 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^
2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16
*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i - (((8*(4*B*a^2*c^3 - B*a*b^2*
c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*
c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2
)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B
*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5
+ A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B
^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b
^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^
(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2
*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 -
A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B
*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c
- b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 1
2*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((8*
(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^
5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c +
 B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c -
 b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))
)^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B
^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*
c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 +
 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^
4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*
c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B
^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c
- b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^
3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*
a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*
c^4)))^(1/2) + (((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 -
4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^
2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c
^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 +
2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4
*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*
a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2)
+ 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)
/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*
A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A
*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
 - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*
a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c
^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5
+ b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (16*(A^3*a*c^2 - B^3*a^2*b + A*B^2*a*b^2
 + A*B^2*a^2*c - 2*A^2*B*a*b*c))/c))*(-(B^2*b^5 + A^2*b^3*c^2 - A^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16
*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c + B^2*a*c*(-(4*a*c - b^2)^3)^(
1/2) + 12*B^2*a^2*b*c^2 + 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2
*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2i - atan(((((8*(4*B*
a^2*c^3 - B*a*b^2*c^2))/c - (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A
^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*
a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)
^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/
2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^
2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 -
 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*
B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3
 - 8*a*b^2*c^4)))^(1/2) - (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 +
 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^
5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c -
 B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c -
 b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))
)^(1/2)*1i - (((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*
a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3
 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*
A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c
^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c -
 b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^
2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) +
12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(
2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^
2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B
*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) +
 B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*
b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2
 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 +
b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((8*(4*B*a^2*c^3 - B*a*b^2*c^2))/c - (
8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*
a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2)
+ 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)
/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-(B^2*b^5 + A^2*b^3*c
^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4
*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2
) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (8*
x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^2*c^2 - 2*A*B*b^3*c
 - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16
*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(
1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2
*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((8*(4*B*a^2*c^3 -
 B*a*b^2*c^2))/c + (8*x^(1/2)*(b^3*c^3 - 4*a*b*c^4)*(-(B^2*b^5 + A^2*b^3*c^
2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - 2
*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*(-(4*
a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^(1/2)
 + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2))/c)*(-
(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*
b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(
4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^
2*c^4)))^(1/2) + (8*x^(1/2)*(B^2*b^4 - 2*A^2*a*c^3 + A^2*b^2*c^2 + 2*B^2*a^
2*c^2 - 2*A*B*b^3*c - 4*B^2*a*b^2*c + 6*A*B*a*b*c^2))/c)*(-(B^2*b^5 + A^2*b
^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^3)^(1/2
) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B^2*a*b^3*c - B^2*a*c*
(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*c*(-(4*a*c - b^2)^3)^
(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) -
 (16*(A^3*a*c^2 - B^3*a^2*b + A*B^2*a*b^2 + A*B^2*a^2*c - 2*A^2*B*a*b*c))/c
))*(-(B^2*b^5 + A^2*b^3*c^2 + A^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - 2*A*B*b^4*c - 16*A*B*a^2*c^3 - 4*A^2*a*b*c^3 - 7*B
^2*a*b^3*c - B^2*a*c*(-(4*a*c - b^2)^3)^(1/2) + 12*B^2*a^2*b*c^2 - 2*A*B*b*
c*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a*b^2*c^2)/(2*(16*a^2*c^5 + b^4*c^3 - 8
*a*b^2*c^4)))^(1/2)*2i
```

sympy [B] time = 22.13, size = 14158, normalized size = 64.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((-I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) +
 I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*sqrt(b)
*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) - I*B*sqrt(b)*log(I*s
qrt(b)*sqrt(1/c) + sqrt(x))/(c**2*sqrt(1/c)) + 2*B*sqrt(x)/c, Eq(a, 0)), (-
8*I*A*sqrt(b)*c**2*sqrt(x)*sqrt(1/c)/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqr
t(b)*c**3*x*sqrt(1/c)) + 2*sqrt(2)*A*b*c*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2
 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) -
2*sqrt(2)*A*b*c*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*
c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) + 4*sqrt(2)*A*c**2*x*log(-sq
rt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*s
qrt(b)*c**3*x*sqrt(1/c)) - 4*sqrt(2)*A*c**2*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/
c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)
) + 12*I*B*b**(3/2)*c*sqrt(x)*sqrt(1/c)/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*
sqrt(b)*c**3*x*sqrt(1/c)) + 16*I*B*sqrt(b)*c**2*x**(3/2)*sqrt(1/c)/(4*I*b**
(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) - 3*sqrt(2)*B*b**2*log
(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8
*I*sqrt(b)*c**3*x*sqrt(1/c)) + 3*sqrt(2)*B*b**2*log(sqrt(2)*I*sqrt(b)*sqrt(
1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/
c)) - 6*sqrt(2)*B*b*c*x*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*
b**(3/2)*c**2*sqrt(1/c) + 8*I*sqrt(b)*c**3*x*sqrt(1/c)) + 6*sqrt(2)*B*b*c*x
*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(4*I*b**(3/2)*c**2*sqrt(1/c)
+ 8*I*sqrt(b)*c**3*x*sqrt(1/c)), Eq(a, b**2/(4*c))), (I*A*sqrt(a)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(b**2*sqrt(1/b)) - I*A*sqrt(a)*log(I*sqrt(a)*sqr
t(1/b) + sqrt(x))/(b**2*sqrt(1/b)) + 2*A*sqrt(x)/b - I*B*a**(3/2)*log(-I*sq
rt(a)*sqrt(1/b) + sqrt(x))/(b**3*sqrt(1/b)) + I*B*a**(3/2)*log(I*sqrt(a)*sq
rt(1/b) + sqrt(x))/(b**3*sqrt(1/b)) - 2*B*a*sqrt(x)/b**2 + 2*B*x**(3/2)/(3*
b), Eq(c, 0)), (2*sqrt(2)*A*a**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*lo
g(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**
2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2
)*A*a**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(
-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a
*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*
c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*A*a**2*c**3*sqrt(-b/c
```

```
+ sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c)) - 2*sqrt(2)*A*a**2*c**3*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*
b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2
)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(
2)*A*a*b**2*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*a*b**2*c**2*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c
**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)) - 4*sqrt(2)*A*a*b**2*c**2*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c
**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) +
4*sqrt(2)*A*a*b**2*c**2*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sq
rt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*
a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*a*b*c**2*sqr
t(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*a*b*c**2*sqrt(-4*a*
c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c +
 b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
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) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*A*a*b*c**2*sqrt(-4*a*c + b
**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c +
b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b
**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)
/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*A*a*b*c**2*sqrt(-4*a*c + b**2)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c
**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) +
 b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b**4*c*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c
**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) -
sqrt(2)*A*b**4*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-
4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b**3*c*sqrt(-4*a*c
+ b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
+ b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*b**3*c*sqrt(-4*a*c + b**2)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c*
*2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) +
b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*a**2*b*c**2*sqrt(-b/c - sqrt(-4*a*c +
 b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a*
*2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a
*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c +
b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
) - sqrt(2)*B*a**2*b*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) +
sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(
-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c*
*3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 5*sqrt(2)*B*a**2*b*c
**2*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)
*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b*
*4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c)) + 5*sqrt(2)*B*a**2*b*c**2*sqrt(-b/c + sqrt(-
4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2
)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4
*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c)) + 8*B*a**2*c**3*sqrt(x)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
+ b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2
)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**
2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*s
qrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4
*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b
/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*
c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*
sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**
3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + s
qrt(-4*a*c + b**2)/c)) - sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - s
qrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2
*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4
*a*c + b**2)/c)) + sqrt(2)*B*a**2*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
 + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(
-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c)) + 5*sqrt(2)*B*a*b**3*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sq
rt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c*
*3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 5*sqrt(2)*B*
a*b**3*c*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c
 - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c +
b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*
sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 10*B*a*b**2*c**2*sqrt(x)*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**
2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(
-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 3*sqrt(2
)*B*a*b**2*c*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqr
t(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c
 - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**
3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3
*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c -
 sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 3*sqrt(2)*B*a
*b**2*c*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x)
+ sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqr
t(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*
c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqr
t(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 6*B*a*b*c**2*sqrt(
x)*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(
-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**
2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b
**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b**5*sqrt(-b/c + sqrt(-4*a*c + b**2)/c
)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*
sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a
*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**
2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sq
rt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt
(2)*B*b**5*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b
/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*
a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c
```

```
+ b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
 b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*B*b**4*c*sqrt(x)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/(4*a**2*c**4*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c*
*3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b*
*4*sqrt(-4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqr
t(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/
c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*
sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + s
qrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a
*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b**4*sqrt(-4*
a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4
*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c
 + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)
/c) + b**4*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) + b**3*c**2*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*B*b**3*c*sqrt(x)*sqrt(-4*a*c + b
**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)/
(4*a**2*c**4*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) - 5*a*b**2*c**3*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - 3*a*b*c**3*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
 + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**4*c**2*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) + b**3*c**2*sqrt(-4*a
*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**
2)/c)), True))
```

3.1012 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=180

$$\frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{\sqrt{b^2-4ac}+b}}$$

```
[Out] arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(B+(2*
A*c-B*b)/(-4*a*c+b^2)^(1/2))/c^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+arctan(2^
(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*(B+(-2*A*c+B*b)
/(-4*a*c+b^2)^(1/2))/c^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {826, 1166, 205}

$$\frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{\sqrt{b^2-4ac}+b}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[2]*(B - (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) +
(Sqrt[2]*(B + (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt
[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{A+Bx^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)\\ &= \left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx,x,\sqrt{x}\right)+\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\\ &= \frac{\sqrt{2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b+\sqrt{b^2-4ac}}}\right)}{\sqrt{c}\sqrt{b+\sqrt{b^2-4ac}}}\end{aligned}$$

Mathematica [**A**] time = 0.28, size = 181, normalized size = 1.01

$$\frac{\sqrt{2}\left(\frac{\left(B\sqrt{b^2-4ac}+2Ac-bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(B\sqrt{b^2-4ac}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{c}\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[2]*(((-(b*B) + 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*S
qrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((b*B -
 2*A*c + B*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

fricas [**B**] time = 1.11, size = 1577, normalized size = 8.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sq
rt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c
 - 4*a^2*c^2))*log(sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*
b^2)*c + (4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b -
 (4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c
+ A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2
- A*B^3*a*b + A^3*B*b*c - A^4*c^2)*sqrt(x)) - 1/2*sqrt(2)*sqrt(-(B^2*a*b -
(4*A*B*a - A^2*b)*c + (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c +
 A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2))*log(-sqrt(2)*(
A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*b^2)*c + (4*(2*B*a^3 - A*a^2
*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^
2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c + (a*b^
2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*
a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2 - A*B^3*a*b + A^3*B*b*c - A^
4*c^2)*sqrt(x)) + 1/2*sqrt(2)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2
*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a
^3*c^3)))/(a*b^2*c - 4*a^2*c^2))*log(sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (
4*A*B^2*a^2 + A^3*b^2)*c - (4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*
b^3)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3))
)*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^
2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c
^2)) - 4*(B^4*a^2 - A*B^3*a*b + A^3*B*b*c - A^4*c^2)*sqrt(x)) - 1/2*sqrt(2)
*sqrt(-(B^2*a*b - (4*A*B*a - A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2
 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^
2))*log(-sqrt(2)*(A*B^2*a*b^2 + 4*A^3*a*c^2 - (4*A*B^2*a^2 + A^3*b^2)*c - (
4*(2*B*a^3 - A*a^2*b)*c^2 - (2*B*a^2*b^2 - A*a*b^3)*c)*sqrt((B^4*a^2 - 2*A^
2*B^2*a*c + A^4*c^2)/(a^2*b^2*c^2 - 4*a^3*c^3)))*sqrt(-(B^2*a*b - (4*A*B*a
- A^2*b)*c - (a*b^2*c - 4*a^2*c^2)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)
/(a^2*b^2*c^2 - 4*a^3*c^3)))/(a*b^2*c - 4*a^2*c^2)) - 4*(B^4*a^2 - A*B^3*a*
b + A^3*B*b*c - A^4*c^2)*sqrt(x))
```

giac [B] time = 0.95, size = 1404, normalized size = 7.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 - 8*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a*b^2*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*
c - 2*b^4*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 8*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*b^2*c^2 + 16*a*b^2*c^2 + 2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*c^3 - 32*a^2*c^3 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*b*c^2 + 2*(b^2 - 4*a*c)*b^2*c - 8*(b^2 - 4*a*c)*a*c^2 - 2*(b^2 - 4*a*c)
*b*c^2)*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b + sqr
t(b^2 - 4*a*c))/c))/((a*b^4 - 8*a^2*b^2*c - 2*a*b^3*c + 16*a^3*c^2 + 8*a^2*
b*c^2 + a*b^2*c^2 - 4*a^2*c^3)*abs(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*b^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - 2*sqr
t(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c + 2*b^4*c + 16*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 - 16*a*b^2*c^2 -
2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 + 32*a^2*c^3 +
8*a*b*c^3 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3 -
 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c - 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c + sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b^2*c
+ 8*(b^2 - 4*a*c)*a*c^2 + 2*(b^2 - 4*a*c)*b*c^2)*A + 2*(2*a*b^2*c^2 - 8*a^2
*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*B)
*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b - sqrt(b^2 - 4*a*c))/c))/((a*b^4 - 8*a^
2*b^2*c - 2*a*b^3*c + 16*a^3*c^2 + 8*a^2*b*c^2 + a*b^2*c^2 - 4*a^2*c^3)*abs
(c))
```

maple [B] time = 0.11, size = 337, normalized size = 1.87

$$-\frac{2\sqrt{2}\,Ac\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}-\frac{2\sqrt{2}\,Ac\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}+\frac{\sqrt{2}\,Bb\,\mathrm{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x)
```

```
[Out] -2*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*B+1/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B-2*c/(-4*a*c+b^2)^(1/2)
*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*A-2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/(-4*a*c+b^2)
^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{2\,A\sqrt{x}}{a} - \int \frac{Acx^{\frac{3}{2}} - (Ba - Ab)\sqrt{x}}{acx^2 + abx + a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)/x^(1/2),x, algorithm="maxima")
```

```
[Out] 2*A*sqrt(x)/a - integrate((A*c*x^(3/2) - (B*a - A*b)*sqrt(x))/(a*c*x^2 + a*
b*x + a^2), x)
```

mupad [B] time = 2.18, size = 4141, normalized size = 23.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)),x)
```

```
[Out] - atan((((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c -
 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*
(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^
2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 -
 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))
^(1/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8
*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) +
 A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^
2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c
)))^(1/2)*1i + ((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c -
 A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^
2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x
^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/
2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*
b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b
^4*c)))^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*
c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^
(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2
*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 +
a*b^4*c)))^(1/2)*1i)/(((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*
b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4
*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(
1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)
^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4
*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^
2 + a*b^4*c)))^(1/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16
*B^2*a*c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c - b
^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2
- 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2
*c^2 + a*b^4*c)))^(1/2) - ((-(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) +
A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2
 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)
))^(1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 + B^2*a*(-(4*a*c -
b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2
 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^
2*c^2 + a*b^4*c)))^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3
- 16*B^2*a*c^2 + 8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 + B^2*a*(-(4*a*c
 - b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*
c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2
*b^2*c^2 + a*b^4*c)))^(1/2) + 16*A^2*B*c^2 + 16*B^3*a*c - 16*A*B^2*b*c))*(-
(B^2*a*b^3 + B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c - A^2*c*(-(4*a*c -
b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^
2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*2i - atan((((-(B^2*a
*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3
)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(
2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*b^3*c^2 - 32*a
*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(
-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c -
4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2) - 8*A*b^2*
c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^2*b^2*c - 16*A
*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*
c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c
 - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*1i + ((
-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c -
 b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b
^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*b^3*c^2
 - 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c +
A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2
*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2) + 8
*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^2*b^2*c
 - 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c
 + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*
a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*
1i)/(((-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*
A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)*(8*
b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b
^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*
B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1
/2) - 8*A*b^2*c^2 + 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 + 8*B^
2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^
2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 -
 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))
^(1/2) - ((-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c
*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c
- 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*(x^(1/2)
*(8*b^3*c^2 - 32*a*b*c^3)*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2) + A
^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c^2
- 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*c))
)^(1/2) + 8*A*b^2*c^2 - 32*A*a*c^3) + x^(1/2)*(16*A^2*c^3 - 16*B^2*a*c^2 +
8*B^2*b^2*c - 16*A*B*b*c^2))*(-(B^2*a*b^3 - B^2*a*(-(4*a*c - b^2)^3)^(1/2)
+ A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*c^2 - 4*A^2*a*b*c
^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c^3 - 8*a^2*b^2*c^2 + a*b^4*
c)))^(1/2) + 16*A^2*B*c^2 + 16*B^3*a*c - 16*A*B^2*b*c))*(-(B^2*a*b^3 - B^2*
a*(-(4*a*c - b^2)^3)^(1/2) + A^2*b^3*c + A^2*c*(-(4*a*c - b^2)^3)^(1/2) + 1
```

```
6*A*B*a^2*c^2 - 4*A^2*a*b*c^2 - 4*B^2*a^2*b*c - 4*A*B*a*b^2*c)/(2*(16*a^3*c
^3 - 8*a^2*b^2*c^2 + a*b^4*c)))^(1/2)*2i
```

sympy [B] time = 24.86, size = 4663, normalized size = 25.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)/x**(1/2),x)
```

```
[Out] Piecewise((-2*A/(b*sqrt(x)) + I*A*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(
3/2)*sqrt(1/c)) - I*A*log(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(b**(3/2)*sqrt(1/c
)) - I*B*log(-I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)) + I*B*lo
g(I*sqrt(b)*sqrt(1/c) + sqrt(x))/(sqrt(b)*c*sqrt(1/c)), Eq(a, 0)), (8*I*A*s
qrt(b)*c**2*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2
*x*sqrt(1/c)) + 2*sqrt(2)*A*b*c*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x
))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - 2*sqrt(2)*A
*b*c*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c)
 + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) + 4*sqrt(2)*A*c**2*x*log(-sqrt(2)*I*sqrt(
b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*s
qrt(1/c)) - 4*sqrt(2)*A*c**2*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))
/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - 4*I*B*b**(3/2
)*c*sqrt(x)*sqrt(1/c)/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(
1/c)) + sqrt(2)*B*b**2*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b
**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) - sqrt(2)*B*b**2*log(s
qrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**
(3/2)*c**2*x*sqrt(1/c)) + 2*sqrt(2)*B*b*c*x*log(-sqrt(2)*I*sqrt(b)*sqrt(1/c
)/2 + sqrt(x))/(2*I*b**(5/2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)) -
 2*sqrt(2)*B*b*c*x*log(sqrt(2)*I*sqrt(b)*sqrt(1/c)/2 + sqrt(x))/(2*I*b**(5/
2)*c*sqrt(1/c) + 4*I*b**(3/2)*c**2*x*sqrt(1/c)), Eq(a, b**2/(4*c))), (-I*A*
log(-I*sqrt(a)*sqrt(1/b) + sqrt(x))/(sqrt(a)*b*sqrt(1/b)) + I*A*log(I*sqrt(
a)*sqrt(1/b) + sqrt(x))/(sqrt(a)*b*sqrt(1/b)) + I*B*sqrt(a)*log(-I*sqrt(a)*
sqrt(1/b) + sqrt(x))/(b**2*sqrt(1/b)) - I*B*sqrt(a)*log(I*sqrt(a)*sqrt(1/b)
 + sqrt(x))/(b**2*sqrt(1/b)) + 2*B*sqrt(x)/b, Eq(c, 0)), (-sqrt(2)*A*b*c*sq
rt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b*c*sqrt(-b/c
- sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*b*c*sqrt(-b/c + sqrt(-
4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2
)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b*
*2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqr
t(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*b*c*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a*c
**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) -
 b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/
c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
 sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c +
b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*
c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*s
qrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*c*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c +
sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c +
b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*A*c*sqrt(-4*a*c + b*
*2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sq
rt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-
b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt
(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*A*c*sqrt(-
4*a*c + b**2)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt
(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)
/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b
**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-
b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2
)*B*a*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c
)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c -
sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*B*a*
c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/
c + sqrt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-
4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + 2*sqrt(2)*B*a*c*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
+ b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - 2*sqrt(2)*B*a*c*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b*
*2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt
(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2
)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b**2*sqrt(-b/c + sqrt(
-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/
2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b
**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
 + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sq
rt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b**2*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)/2)/(4*a
*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)
 - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2
)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
 + sqrt(-4*a*c + b**2)/c)) - sqrt(2)*B*b*sqrt(-4*a*c + b**2)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c)*log(sqrt(x) - sqrt(2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/
c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*a*c
+ b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sqrt(-4*
a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)
*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)) + sqrt(2)*B*b*sqrt(-4*a*c + b**2)*sqrt
(-b/c + sqrt(-4*a*c + b**2)/c)*log(sqrt(x) + sqrt(2)*sqrt(-b/c - sqrt(-4*a*
c + b**2)/c)/2)/(4*a*c**2*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c + sq
rt(-4*a*c + b**2)/c) - b**2*c*sqrt(-b/c - sqrt(-4*a*c + b**2)/c)*sqrt(-b/c
+ sqrt(-4*a*c + b**2)/c) - b*c*sqrt(-4*a*c + b**2)*sqrt(-b/c - sqrt(-4*a*c
+ b**2)/c)*sqrt(-b/c + sqrt(-4*a*c + b**2)/c)), True))
```

3.1013 $\int \frac{A+Bx}{x^{3/2}(a+bx+cx^2)}\,dx$

Optimal. Leaf size=199

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{Ab-2aB}{\sqrt{b^2-4ac}}+A\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2A}{a\sqrt{x}}$$

```
[Out] -2*A/a/x^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))
*2^(1/2)*c^(1/2)*(A+(A*b-2*B*a)/(-4*a*c+b^2)^(1/2))/a/(b-(-4*a*c+b^2)^(1/2)
)^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2
)*c^(1/2)*(A+(-A*b+2*B*a)/(-4*a*c+b^2)^(1/2))/a/(b+(-4*a*c+b^2)^(1/2))^(1/2
)
```

Rubi [A] time = 0.55, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{Ab-2aB}{\sqrt{b^2-4ac}}+A\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{a\sqrt{\sqrt{b^2-4ac}+b}}-\frac{2A}{a\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(a*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(A + (A*b - 2*a*B)/Sqrt[b^2 - 4*a*c])
*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a*Sqrt[b -
 Sqrt[b^2 - 4*a*c]]) - (Sqrt[2]*Sqrt[c]*(A - (A*b - 2*a*B)/Sqrt[b^2 - 4*a*c
])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a*Sqrt[b
 + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx &= -\frac{2A}{a\sqrt{x}}+\frac{\int \frac{-Ab+aB-Acx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a}\\
&= -\frac{2A}{a\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{-Ab+aB-Acx^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)}{a}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\left(c\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx,x,\sqrt{x}\right)}{a}-\frac{\left(c\left(A+\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\right)}{}\\
&= -\frac{2A}{a\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(A+\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(A-\frac{Ab-2aB}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(-\right.}{a\sqrt{b+\sqrt{b^2-4ac}}}
\end{aligned}$$

Mathematica [A] time = 0.21, size = 216, normalized size = 1.09

$$\frac{2\left(-\frac{\sqrt{c}\left(A\left(\sqrt{b^2-4ac}+b\right)-2aB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{c}\left(A\left(\sqrt{b^2-4ac}-b\right)+2aB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}-\frac{A}{\sqrt{x}}\right)}{a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(-(A/Sqrt[x]) - (Sqrt[c]*(-2*a*B + A*(b + Sqrt[b^2 - 4*a*c]))*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[b^2 - 4*
a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[c]*(2*a*B + A*(-b + Sqrt[b^2 - 4*
a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt
[2]*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]])))/a
```

fricas [B] time = 1.59, size = 2925, normalized size = 14.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*
A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*
a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*
a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(sqrt(2
)*(B^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 -
 A^3*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*
b^3)*c - (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)
*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4
*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^
2 - 4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^
2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^
2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c
^3 + (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2
 - A^3*B*b^3)*c)*sqrt(x)) - sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^
2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A
*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*
(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2
 - 4*a^4*c))*log(-sqrt(2)*(B^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 -
A^3*b^5 + 4*(A^2*B*a^3 - A^3*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*
A^2*B*a^2*b^2 - 5*A^3*a*b^3)*c - (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(
2*B*a^5*b - 3*A*a^4*b^2)*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b
^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
 + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2
*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c + (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*
B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(
A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2
- 4*a^4*c)) + 4*(A^4*a*c^3 + (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3
*a^2*b + 3*A^2*B^2*a*b^2 - A^3*B*b^3)*c)*sqrt(x)) + sqrt(2)*a*x*sqrt(-(B^2*
a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c - (a^3*b^2 - 4*a^
4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^
4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b
^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(sqrt(2)*(B^3*a^3*b^2 - 3*A*B^2*a^2
*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 - A^3*a^2*b)*c^2 - (4*B^3*a^4
 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*b^3)*c + (B*a^4*b^3 - A*a^3*
b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)*c)*sqrt((B^4*a^4 - 4*A*B^3*
a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*
B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))*sqrt(-(B^2*a^
2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*b)*c - (a^3*b^2 - 4*a^4*
c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*
b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2
 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c^3 + (A^3*B*a*b - A^4*b^2)*c
^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2 - A^3*B*b^3)*c)*sqrt(x)) -
sqrt(2)*a*x*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a
*b)*c - (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b
^2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
 + A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c))*log(-sqrt(2)*(B
^3*a^3*b^2 - 3*A*B^2*a^2*b^3 + 3*A^2*B*a*b^4 - A^3*b^5 + 4*(A^2*B*a^3 - A^3
*a^2*b)*c^2 - (4*B^3*a^4 - 12*A*B^2*a^3*b + 13*A^2*B*a^2*b^2 - 5*A^3*a*b^3)
*c + (B*a^4*b^3 - A*a^3*b^4 - 8*A*a^5*c^2 - 2*(2*B*a^5*b - 3*A*a^4*b^2)*c)*
sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - 4*A^3*B*a*b^3 + A^4*b^4
 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^2 -
4*a^7*c)))*sqrt(-(B^2*a^2*b - 2*A*B*a*b^2 + A^2*b^3 + (4*A*B*a^2 - 3*A^2*a*
b)*c - (a^3*b^2 - 4*a^4*c)*sqrt((B^4*a^4 - 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^
2 - 4*A^3*B*a*b^3 + A^4*b^4 + A^4*a^2*c^2 - 2*(A^2*B^2*a^3 - 2*A^3*B*a^2*b
+ A^4*a*b^2)*c)/(a^6*b^2 - 4*a^7*c)))/(a^3*b^2 - 4*a^4*c)) + 4*(A^4*a*c^3 +
 (A^3*B*a*b - A^4*b^2)*c^2 - (B^4*a^3 - 3*A*B^3*a^2*b + 3*A^2*B^2*a*b^2 - A
^3*B*b^3)*c)*sqrt(x)) - 4*A*sqrt(x))/(a*x)
```

giac [B] time = 1.23, size = 2809, normalized size = 14.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -2*A/(a*sqrt(x)) - 1/4*((2*b^4*c^2 - 16*a*b^2*c^3 + 32*a^2*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
```

```
(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 8*(b^2 - 4*a*c)*a*c^3)*A*a^2 +
 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*
b^4*c - 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 +
8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 16*a^2*b^3*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^3 - 32*a^3*b*c^3 + 2*(b^2 - 4*a*c)*a*b^3*c - 8*(b^
2 - 4*a*c)*a^2*b*c^2)*A*abs(a) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^2*b^4 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c - 2*sqrt(2)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*a^2*b^4*c + 16*sqrt(2)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^3*b*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 16*a^3
*b^2*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 32*a^4*c^3 +
 2*(b^2 - 4*a*c)*a^2*b^2*c - 8*(b^2 - 4*a*c)*a^3*c^2)*B*abs(a) + (2*a^2*b^4
*c^2 - 8*a^3*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^4 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^3*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b^3*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2)*A - 2*(2*a^3*b^3*c^2 - 8*a^4*b*c^3 - sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3 + 4*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c + 2*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 2*(b^2 - 4*a*c)*a^3*b*
c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b + sqrt(a^2*b^2 - 4*a^3*c))/(a*
c)))/((a^3*b^4 - 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3
*b^2*c^2 - 4*a^4*c^3)*abs(a)*abs(c)) + 1/4*((2*b^4*c^2 - 16*a*b^2*c^3 + 32*
a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 + 8
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 16*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 8*(b^2 - 4
*a*c)*a*c^3)*A*a^2 - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 - 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^4*c + 2*a*b^5*c + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 +
 sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 16*a^2*b^3*c^2 - 4*sqr
t(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 32*a^3*b*c^3 - 2*(b^2 - 4*
a*c)*a*b^3*c + 8*(b^2 - 4*a*c)*a^2*b*c^2)*A*abs(a) + 2*(sqrt(2)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^2*b^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^
3*b^2*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*a^2*b^4*c
 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^2 + 8*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a^2*b^2*c^2 - 16*a^3*b^2*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^
3*c^3 + 32*a^4*c^3 - 2*(b^2 - 4*a*c)*a^2*b^2*c + 8*(b^2 - 4*a*c)*a^3*c^2)*B
*abs(a) + (2*a^2*b^4*c^2 - 8*a^3*b^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b^3*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^2*c^2 - 2*(b^2 - 4*a*c)*a^2*b^2*c^2)*A - 2*(2*a^3*b^3*c^
2 - 8*a^4*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^3*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*
b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c
 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 2*
(b^2 - 4*a*c)*a^3*b*c^2)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b - sqrt(a^2
*b^2 - 4*a^3*c))/(a*c)))/((a^3*b^4 - 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2
 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4*c^3)*abs(a)*abs(c))
```

maple [**B**] time = 0.12, size = 362, normalized size = 1.82

$$\frac{\sqrt{2}\, Abc \operatorname{arctanh}\left(\frac{\sqrt{2}\, c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\; a} + \frac{\sqrt{2}\, Abc \arctan\left(\frac{\sqrt{2}\, c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\,\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\; a} - \frac{2\sqrt{2}\, Bc \operatorname{arctanh}\left(\frac{\sqrt{2}\, c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac}\right.}}\right.}{\sqrt{-4ac+b^2}\,\sqrt{\left(-b+\sqrt{-4ac+}\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] -c/a*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*A*b-2*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+c/a*2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*c*x^(1/2))*A+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-2*
c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-2*A/a/x^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{Aa}{\sqrt{x}} - (Ba - Ab)\sqrt{x}\right)}{a^2} + \int -\frac{(Bac - Abc)x^{\frac{3}{2}} + \left(Bab - \left(b^2 - ac\right)A\right)\sqrt{x}}{a^2cx^2 + a^2bx + a^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2*(A*a/sqrt(x) - (B*a - A*b)*sqrt(x))/a^2 + integrate(-((B*a*c - A*b*c)*x^
(3/2) + (B*a*b - (b^2 - a*c)*A)*sqrt(x))/(a^2*c*x^2 + a^2*b*x + a^3), x)
```

mupad [**B**] time = 2.50, size = 6367, normalized size = 31.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)),x)
```

```
[Out] - atan((((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
 - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*
A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c
^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^
5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*
c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c -
 b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c))
)^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2*c^2
) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a
^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^
2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3
*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 -
2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5
*c^2 - 8*a^4*b^2*c)))^(1/2)*1i + ((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a
*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*
B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*
c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*
c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)*
(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c
 - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a
^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c +
 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/
(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4*
b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A
^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4
*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*
A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*
b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^
2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*1i)/(((-(A^2*b^5 + B^2
*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1
/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2
)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3
)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)
*(x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2
*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4
 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2
*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a
^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*B*a^6*c^3 +
32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c
^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B
^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2*a*c*(-(4*a*c - b
^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*b*(-(4*a*c - b^2)
^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/
2) - ((-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2
*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c -
A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B
*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2
 - 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^
2)*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c - A^2
*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A*B*a*
b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8
*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4*b^3*c^2 - 8*B*a^5*b^2*c^2) +
 x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*
b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a
^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
 - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*A
*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^
2 - 8*a^4*b^2*c)))^(1/2) + 16*A^3*a^3*c^4 + 16*A*B^2*a^4*c^3 - 16*A^2*B*a^3
*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 + A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*
a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c
 - A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 - 2*
A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c
^2 - 8*a^4*b^2*c)))^(1/2)*2i - atan((((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 1
6*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^
3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*
b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c
^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*
A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2
*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4
 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*
a^4*b^3*c^2 + 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 -
 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*
(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 -
 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*
a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^
2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*1i + ((-(A^2*b^5 +
 B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c -
 b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^
2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(
1/2)*(32*B*a^6*c^3 + x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^
2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^
2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^
3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2
) - 32*A*a^5*b*c^3 + 8*A*a^4*b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a
^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5
 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c
 - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c -
b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))
^(1/2)*1i)/(((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b
^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2
+ 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a
^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(x^(1/2)*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^
2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(
4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a
*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2
*c)))^(1/2) - 32*B*a^6*c^3 + 32*A*a^5*b*c^3 - 8*A*a^4*b^3*c^2 + 8*B*a^5*b^2
*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*A^2*a^3*b^2*c^3 + 16*A
*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c - b^2)^3)^(1/2)
- B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*a^3*c^2 - 7*A^2*a
*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c + 12*A^2*a^2*b*c^
2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)/(2*(a^3*b^4 + 16
*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - ((-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*
a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A
*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b
*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2
*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*(32*B*a^6*c^3 + x^(1/2)
*(32*a^6*b*c^3 - 8*a^5*b^3*c^2)*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(4*a*c
 - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16*A*B*
a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3*b*c
+ 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b^2*c)
/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) - 32*A*a^5*b*c^3 + 8*A*a^4
*b^3*c^2 - 8*B*a^5*b^2*c^2) + x^(1/2)*(16*A^2*a^4*c^4 - 16*B^2*a^5*c^3 - 8*
A^2*a^3*b^2*c^3 + 16*A*B*a^4*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-(
4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 16
*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^3
*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*b
^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2) + 16*A^3*a^3*c^4 + 16
*A*B^2*a^4*c^3 - 16*A^2*B*a^3*b*c^3))*(-(A^2*b^5 + B^2*a^2*b^3 - A^2*b^2*(-
(4*a*c - b^2)^3)^(1/2) - B^2*a^2*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^4 - 1
6*A*B*a^3*c^2 - 7*A^2*a*b^3*c + A^2*a*c*(-(4*a*c - b^2)^3)^(1/2) - 4*B^2*a^
3*b*c + 12*A^2*a^2*b*c^2 + 2*A*B*a*b*(-(4*a*c - b^2)^3)^(1/2) + 12*A*B*a^2*
b^2*c)/(2*(a^3*b^4 + 16*a^5*c^2 - 8*a^4*b^2*c)))^(1/2)*2i - (2*A)/(a*x^(1/2
```

```
))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1014 $\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=284

$$-\frac{\sqrt{2}\sqrt{c}\left(aB\left(\sqrt{b^2-4ac}+b\right)-A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\sqrt{c}\left(aB\left(b-\sqrt{b^2-4ac}\right.\right.}{a}$$

```
[Out] -2/3*A/a/x^(3/2)+2*(A*b-B*a)/a^2/x^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-
(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*c^(1/2)*(a*B*(b+(-4*a*c+b^2)^(1/2))-A*(b
^2-2*a*c+b*(-4*a*c+b^2)^(1/2)))/a^2/(-4*a*c+b^2)^(1/2)/(b-(-4*a*c+b^2)^(1/2
))^(1/2)+arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/
2)*c^(1/2)*(a*B*(b-(-4*a*c+b^2)^(1/2))-A*(b^2-2*a*c-b*(-4*a*c+b^2)^(1/2)))/
a^2/(-4*a*c+b^2)^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 0.81, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(aB\left(\sqrt{b^2-4ac}+b\right)-A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\sqrt{2}\sqrt{c}\left(aB\left(b-\sqrt{b^2-4ac}\right.\right.}{a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(3*a*x^(3/2)) + (2*(A*b - a*B))/(a^2*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(a*
B*(b + Sqrt[b^2 - 4*a*c]) - A*(b^2 - 2*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(
Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*
c]*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*Sqrt[c]*(a*B*(b - Sqrt[b^2 - 4*a
*c]) - A*(b^2 - 2*a*c - b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a^2*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2
- 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx=-\frac{2A}{3ax^{3/2}}+\frac{\int \frac{-Ab+aB-Acx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a}$$

$$=-\frac{2A}{3ax^{3/2}}+\frac{2(Ab-aB)}{a^2\sqrt{x}}+\frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a^2}$$

$$=-\frac{2A}{3ax^{3/2}}+\frac{2(Ab-aB)}{a^2\sqrt{x}}+\frac{2\,\text{Subst}\left(\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx^2}{a+bx^2+cx^4}\,dx,x,\sqrt{x}\right)}{a^2}$$

$$=-\frac{2A}{3ax^{3/2}}+\frac{2(Ab-aB)}{a^2\sqrt{x}}+\frac{\left(c\left(Ab-aB-\frac{Ab^2-abB-2aAc}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}+\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\,dx,x\right.}{a^2}$$

$$=-\frac{2A}{3ax^{3/2}}+\frac{2(Ab-aB)}{a^2\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(aB\left(b+\sqrt{b^2-4ac}\right)-A\left(b^2-2ac+b\sqrt{b^2-4ac}\right)\right)}{a^2\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}}$$

Mathematica [A] time = 0.58, size = 258, normalized size = 0.91

$$\frac{\frac{3\sqrt{2}\sqrt{c}\left(\frac{\left(A\left(b\sqrt{b^2-4ac}-2ac+b^2\right)-aB\left(\sqrt{b^2-4ac}+b\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(b\sqrt{b^2-4ac}+2ac-b^2\right)+aB\left(b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}}+\frac{6(Ab-aB)}{\sqrt{x}}-\frac{2aA}{x^{3/2}}}{3a^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-2*a*A)/x^(3/2) + (6*(A*b - a*B))/Sqrt[x] + (3*Sqrt[2]*Sqrt[c]*(((-(a*B*(
b + Sqrt[b^2 - 4*a*c])) + A*(b^2 - 2*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sq
rt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*
a*c]] + ((a*B*(b - Sqrt[b^2 - 4*a*c]) + A*(-b^2 + 2*a*c + b*Sqrt[b^2 - 4*a*
c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b
+ Sqrt[b^2 - 4*a*c]]))/Sqrt[b^2 - 4*a*c])/(3*a^2)
```

fricas [B] time = 1.99, size = 5453, normalized size = 19.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*
      a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a
      ^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 -
       4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3
      *A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*
      B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2
      *B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(
      a^5*b^2 - 4*a^6*c))*log(sqrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*
      b^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*
      b^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*
      b^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b
      ^6)*c - (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2
       - 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6
      - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b +
      3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3
      *B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^
      2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*
      sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2
      - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt(
      (B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^
      8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^
      4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*
      b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B
      *a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4
      *(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b
      + 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a
      ^2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x)) - 3*sqrt(2)*a^2*x^2*sqr
      t(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (
      3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt((B^
      4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 +
       A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a
      ^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4
      )*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^
      2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c))*log(-s
      qrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 - A^3*b^8 - 4*A^3*a^4
      *c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*b^2)*c^3 + (4*B^3*a^5*b -
       25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*b^4)*c^2 - (5*B^3*a^4*b^3
       - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b^6)*c - (B*a^6*b^4 - A*a^
      5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2 - 7*A*a^6*b^3)*c)*sqrt((
      B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8
       + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4
      *a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b
      ^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*
      a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*sqrt(-(B^2*a^2*b^3 - 2*A*
      B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^
      2*b^2 + 5*A^2*a*b^3)*c + (a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^
      3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*
      B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 2
      4*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2
       - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c
      )/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4*(A^4*a^2*c^5 + 3*(A^3*B*
      a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - A^3
      *B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4
      - A^3*B*b^5)*c^2)*sqrt(x)) + 3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a
      *b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b
      ^2 + 5*A^2*a*b^3)*c - (a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b
      ^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2
      *a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A
      ^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 -
6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(
a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c))*log(sqrt(2)*(B^3*a^3*b^5 - 3*A*
B^2*a^2*b^6 + 3*A^2*B*a*b^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A
^2*B*a^4*b + 17*A^3*a^3*b^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2
*B*a^3*b^3 - 20*A^3*a^2*b^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A
^2*B*a^2*b^5 - 8*A^3*a*b^6)*c + (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a
^7*b)*c^2 - (6*B*a^7*b^2 - 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*
b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^
2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*
A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 -
 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/
(a^10*b^2 - 4*a^11*c)))*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B
*a^3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (
a^5*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6
- 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b +
3*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3
*B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^
2*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/
(a^5*b^2 - 4*a^6*c)) + 4*(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (
B^4*a^4 - 5*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 +
(B^4*a^3*b^2 - 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x))
 - 3*sqrt(2)*a^2*x^2*sqrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^
3 - 5*A^2*a^2*b)*c^2 - (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (a^5
*b^2 - 4*a^6*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4
*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A
^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*
a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B
^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^
5*b^2 - 4*a^6*c))*log(-sqrt(2)*(B^3*a^3*b^5 - 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b
^7 - A^3*b^8 - 4*A^3*a^4*c^4 + (4*A*B^2*a^5 - 20*A^2*B*a^4*b + 17*A^3*a^3*b
^2)*c^3 + (4*B^3*a^5*b - 25*A*B^2*a^4*b^2 + 41*A^2*B*a^3*b^3 - 20*A^3*a^2*b
^4)*c^2 - (5*B^3*a^4*b^3 - 18*A*B^2*a^3*b^4 + 21*A^2*B*a^2*b^5 - 8*A^3*a*b^
6)*c + (B*a^6*b^4 - A*a^5*b^5 + 4*(2*B*a^8 - 3*A*a^7*b)*c^2 - (6*B*a^7*b^2
- 7*A*a^6*b^3)*c)*sqrt((B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 -
 4*A^3*B*a*b^7 + A^4*b^8 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3
*A^4*a^3*b^2)*c^3 + (B^4*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*
B*a^3*b^3 + 11*A^4*a^2*b^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2
*B^2*a^3*b^4 - 10*A^3*B*a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))*s
qrt(-(B^2*a^2*b^3 - 2*A*B*a*b^4 + A^2*b^5 - (4*A*B*a^3 - 5*A^2*a^2*b)*c^2 -
 (3*B^2*a^3*b - 8*A*B*a^2*b^2 + 5*A^2*a*b^3)*c - (a^5*b^2 - 4*a^6*c)*sqrt((
B^4*a^4*b^4 - 4*A*B^3*a^3*b^5 + 6*A^2*B^2*a^2*b^6 - 4*A^3*B*a*b^7 + A^4*b^8
 + A^4*a^4*c^4 - 2*(A^2*B^2*a^5 - 4*A^3*B*a^4*b + 3*A^4*a^3*b^2)*c^3 + (B^4
*a^6 - 8*A*B^3*a^5*b + 24*A^2*B^2*a^4*b^2 - 28*A^3*B*a^3*b^3 + 11*A^4*a^2*b
^4)*c^2 - 2*(B^4*a^5*b^2 - 6*A*B^3*a^4*b^3 + 12*A^2*B^2*a^3*b^4 - 10*A^3*B*
a^2*b^5 + 3*A^4*a*b^6)*c)/(a^10*b^2 - 4*a^11*c)))/(a^5*b^2 - 4*a^6*c)) + 4*
(A^4*a^2*c^5 + 3*(A^3*B*a^2*b - A^4*a*b^2)*c^4 - (B^4*a^4 - 5*A*B^3*a^3*b +
 6*A^2*B^2*a^2*b^2 - A^3*B*a*b^3 - A^4*b^4)*c^3 + (B^4*a^3*b^2 - 3*A*B^3*a^
2*b^3 + 3*A^2*B^2*a*b^4 - A^3*B*b^5)*c^2)*sqrt(x)) - 4*(A*a + 3*(B*a - A*b)
*x)*sqrt(x))/(a^2*x^2)
```

giac **[B]** time = 1.29, size = 2874, normalized size = 10.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 9*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*
c - 2*b^6*c + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 10*s
```

```
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*b^4*c^2 + 18*a*b^4*c^2 + 2*b^5*c^2 - 16*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b*c^3 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 48*a^2*b^2*
c^3 - 14*a*b^3*c^3 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 + 32
*a^3*c^4 + 24*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*b^5 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c
 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 -
 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 3*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^3 + 2*(b^2 - 4*a*c
)*b^4*c - 10*(b^2 - 4*a*c)*a*b^2*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2 + 8*(b^2 - 4
*a*c)*a^2*c^3 + 6*(b^2 - 4*a*c)*a*b*c^3)*A - (sqrt(2)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c - 2*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*a*b^5*c + 16*sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 +
16*a^2*b^3*c^2 + 2*a*b^4*c^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b*c^3 - 32*a^3*b*c^3 - 12*a^2*b^2*c^3 + 16*a^3*c^4 - sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^2*c^3 + 2*(b^2 - 4*a*c)*a*b^3*c - 8*(b^2 - 4*a*c)*a^2*b*c^2 - 2
*(b^2 - 4*a*c)*a*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*c^3)*B)*arctan(2*sqrt(1/2)*s
qrt(x)/sqrt((a^2*b + sqrt(a^4*b^2 - 4*a^5*c))/(a^2*c)))/((a^3*b^4 - 8*a^4*b
^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4*c^3)*ab
s(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 - 9*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*b^5*c + 2*b^6*c + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^
2 + 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 18*a*b^4*c^2 + 2*b^5*c^2 - 16*sqrt(2)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^2*b*c^3 - 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 + 48*
a^2*b^2*c^3 - 14*a*b^3*c^3 + 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
c^4 - 32*a^3*c^4 + 24*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*b^5 + 7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^4*c - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2
*b*c^2 - 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*
c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 3
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 2*(b^2
 - 4*a*c)*b^4*c + 10*(b^2 - 4*a*c)*a*b^2*c^2 - 2*(b^2 - 4*a*c)*b^3*c^2 - 8*
(b^2 - 4*a*c)*a^2*c^3 + 6*(b^2 - 4*a*c)*a*b*c^3)*A - (sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a*b^5 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^
3*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*a*b^5*c + 16*sq
rt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^
3*c^2 - 16*a^2*b^3*c^2 + 2*a*b^4*c^2 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^2*b*c^3 + 32*a^3*b*c^3 - 12*a^2*b^2*c^3 + 16*a^3*c^4 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 + 6*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c + 8*(b^2 - 4*a*c)*a^2*b
*c^2 - 2*(b^2 - 4*a*c)*a*b^2*c^2 + 4*(b^2 - 4*a*c)*a^2*c^3)*B)*arctan(2*sqr
t(1/2)*sqrt(x)/sqrt((a^2*b - sqrt(a^4*b^2 - 4*a^5*c))/(a^2*c)))/((a^3*b^4 -
 8*a^4*b^2*c - 2*a^3*b^3*c + 16*a^5*c^2 + 8*a^4*b*c^2 + a^3*b^2*c^2 - 4*a^4
*c^3)*abs(c)) - 2/3*(3*B*a*x - 3*A*b*x + A*a)/(a^2*x^(3/2))
```

maple [**B**] time = 0.12, size = 630, normalized size = 2.22

$$\frac{2\sqrt{2}\;A\,c^2\operatorname{arctanh}\left(\frac{\sqrt{2}\;c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\;\sqrt{\left(-b+\sqrt{-4ac+b^2}\right)c}\;a}+\frac{2\sqrt{2}\;A\,c^2\arctan\left(\frac{\sqrt{2}\;c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}}\right)}{\sqrt{-4ac+b^2}\;\sqrt{\left(b+\sqrt{-4ac+b^2}\right)c}\;a}-\frac{\sqrt{2}\;A\,b^2c\operatorname{arctanh}\left(\frac{\sqrt{2}\;c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+\right.}}}\right.}{\sqrt{-4ac+b^2}\;\sqrt{\left(-b+\sqrt{-4ac+b^2}\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x)
```

```
[Out] c/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)
*c*x^(1/2))*A-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-c/a*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*B+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B
*b-c/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*A-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*A*b^2+c/a*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+c/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*c*x^(1/2))*B*b-2/3*A/a/x^(3/2)+2/a^2/x^(1/2)*A*b-2*B/a/x^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{Aa^2}{x^{\frac{3}{2}}}+3\left(Bab-\left(b^2-ac\right)A\right)\sqrt{x}+\frac{3\left(Ba^2-Aab\right)}{\sqrt{x}}\right)}{3\,a^3}+\int\frac{\left(Babc-\left(b^2c-ac^2\right)A\right)x^{\frac{3}{2}}-\left(\left(b^3-2\,abc\right)A-\left(ab^2-a^2c\right)B\right)}{a^3cx^2+a^3bx+a^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/3*(A*a^2/x^(3/2) + 3*(B*a*b - (b^2 - a*c)*A)*sqrt(x) + 3*(B*a^2 - A*a*b)
/sqrt(x))/a^3 + integrate(((B*a*b*c - (b^2*c - a*c^2)*A)*x^(3/2) - ((b^3 -
2*a*b*c)*A - (a*b^2 - a^2*c)*B)*sqrt(x))/(a^3*c*x^2 + a^3*b*x + a^4), x)
```

mupad [**B**] time = 3.35, size = 10133, normalized size = 35.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^
2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4)
+ (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6
 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*
(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^
3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2)
 - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^
3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4
 - x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*
b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c
^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B
*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*
b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b
^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A
*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7
*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*
b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b
^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^
2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2
*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*
c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c -
b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4
*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2
*c)))^(1/2)*1i + (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*
c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*
a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B
^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A
^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^
2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-
(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32
*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2
*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2
 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/
2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c +
12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2
 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(
1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b
^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2
 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-
(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*
c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2
 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^
2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2
 - 8*a^6*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A
^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^
3 + 48*A*B*a^8*b*c^4) + (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3
)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b
^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-
(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B
*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c))
)^(1/2)*(32*A*a^10*c^4 - x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^
7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a
^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a
^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a
```

```
^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2)
)/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a
^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5
+ A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2
*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^
2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A
^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 +
16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) - (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c
^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^
7*b^3*c^3 + 48*A*B*a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9
*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*
a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c
 + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6
*b^2*c)))^(1/2)*(32*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(
-(A^2*b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 +
25*A^2*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 -
 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) -
36*A*B*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(
-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^
3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3
 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*
a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c
^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c
 + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c
^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*c - b^2)^3
)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^
5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 16*B^3*a^8*c^4 + 16*A^2*B*a^7*c
^5 - 16*A^3*a^6*b*c^5 - 32*A*B^2*a^7*b*c^4 + 16*A^2*B*a^6*b^2*c^4))*(-(A^2*
b^7 + B^2*a^2*b^5 + A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2
*a^2*b^3*c^2 + A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^2*(-(4*a*c
- b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2
*a^3*b^3*c + 12*B^2*a^4*b*c^2 - B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B
*a^3*b^2*c^2 - 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^3*(-(4*a*
c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c + 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/
2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*2i + atan(((x^(1/2)*(16
*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b^2*c^4 + 8*
B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4) + (-(A^2*b^7 + B^2
*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*
c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)
^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*
c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*
c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^
3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a
^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4 - x^(1/2)*(32*a^1
1*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)
^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a
*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*
(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^
2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A
*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c
)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3 - 8*B*a^9*
b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*
a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*
a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^
3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*
A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*
a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*1i + (
x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 32*A^2*a^7*b
^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c^4) - (-(A^
2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A
^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*
c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B
^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A
*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*
a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(
1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10*c^4 + x^(1
/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4
*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^
3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 +
 B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-
(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*
b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 -
8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*a^9*b^2*c^3
 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*
c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*
a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)
^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^
2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(
1/2)*1i)/((x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4*c^3 - 3
2*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B*a^8*b*c
^4) + (-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a
*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*
b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*
b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(
1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*
a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c
- b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(32*A*a^10
*c^4 - x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^2*b^5 -
A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a
^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16
*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*
a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2
*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16
*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2 - 40*A*
a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9
*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*
a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*
c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c
 - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6
*b^2*c)))^(1/2) - (x^(1/2)*(16*A^2*a^8*c^5 - 16*B^2*a^9*c^4 + 8*A^2*a^6*b^4
*c^3 - 32*A^2*a^7*b^2*c^4 + 8*B^2*a^8*b^2*c^3 - 16*A*B*a^7*b^3*c^3 + 48*A*B
*a^8*b*c^4) - (-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) -
 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*
A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b
^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2)
+ 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(
-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*(3
2*A*a^10*c^4 + x^(1/2)*(32*a^11*b*c^3 - 8*a^10*b^3*c^2)*(-(A^2*b^7 + B^2*a^
2*b^5 - A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2
 - A^2*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c +
 12*B^2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2
 + 3*A^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^
(1/2) + 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*
b^4 + 16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2) + 32*B*a^10*b*c^3 + 8*A*a^8*b^4*c^2
 - 40*A*a^9*b^2*c^3 - 8*B*a^9*b^3*c^2))*(-(A^2*b^7 + B^2*a^2*b^5 - A^2*b^4*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2*a^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^4
*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^2*a^4*b*c^
2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A^2*a*b^2*c
*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a
^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 + 16*a^7*c^2
 - 8*a^6*b^2*c)))^(1/2) + 16*B^3*a^8*c^4 + 16*A^2*B*a^7*c^5 - 16*A^3*a^6*b*
c^5 - 32*A*B^2*a^7*b*c^4 + 16*A^2*B*a^6*b^2*c^4))*(-(A^2*b^7 + B^2*a^2*b^5
- A^2*b^4*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^6 + 25*A^2*a^2*b^3*c^2 - A^2
*a^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^3)^(1/2) +
16*A*B*a^4*c^3 - 9*A^2*a*b^5*c - 20*A^2*a^3*b*c^3 - 7*B^2*a^3*b^3*c + 12*B^
2*a^4*b*c^2 + B^2*a^3*c*(-(4*a*c - b^2)^3)^(1/2) - 36*A*B*a^3*b^2*c^2 + 3*A
^2*a*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^2*b^4*c - 4*A*B*a^2*b*c*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^5*b^4 +
16*a^7*c^2 - 8*a^6*b^2*c)))^(1/2)*2i - ((2*A)/(3*a) - (2*x*(A*b - B*a))/a^2
)/x^(3/2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1015 $\int \frac{A+Bx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=307

$$-\frac{2\left(-aAc-abB+Ab^2\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{aB\left(b^2-2ac\right)-A\left(b^3-3abc\right)}{\sqrt{b^2-4ac}}-aAc-abB+Ab^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^3\sqrt{b-\sqrt{b^2-4ac}}}-\sqrt{2}\sqrt{c}\left(\frac{aB(}{}\right.$$

```
[Out] -2/5*A/a/x^(5/2)+2/3*(A*b-B*a)/a^2/x^(3/2)-2*(-A*a*c+A*b^2-B*a*b)/a^3/x^(1/
2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*c^(
1/2)*(A*b^2-a*b*B-a*A*c+(-a*B*(-2*a*c+b^2)+A*(-3*a*b*c+b^3))/(-4*a*c+b^2)^(
1/2))/a^3/(b-(-4*a*c+b^2)^(1/2))^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-
4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*c^(1/2)*(A*b^2-a*b*B-a*A*c+(a*B*(-2*a*c+b^
2)-A*(-3*a*b*c+b^3))/(-4*a*c+b^2)^(1/2))/a^3/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.96, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {828, 826, 1166, 205}

$$-\frac{2\left(-aAc-abB+Ab^2\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{aB\left(b^2-2ac\right)-A\left(b^3-3abc\right)}{\sqrt{b^2-4ac}}-aAc-abB+Ab^2\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^3\sqrt{b-\sqrt{b^2-4ac}}}-\sqrt{2}\sqrt{c}\left(\frac{aB(}{}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(5*a*x^(5/2)) + (2*(A*b - a*B))/(3*a^2*x^(3/2)) - (2*(A*b^2 - a*b*B
 - a*A*c))/(a^3*Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(A*b^2 - a*b*B - a*A*c - (a*B*(b
^2 - 2*a*c) - A*(b^3 - 3*a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]
*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^3*Sqrt[b - Sqrt[b^2 - 4*a*c]]) -
 (Sqrt[2]*Sqrt[c]*(A*b^2 - a*b*B - a*A*c + (a*B*(b^2 - 2*a*c) - A*(b^3 - 3*
a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b
^2 - 4*a*c]]])/(a^3*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx &= -\frac{2A}{5ax^{5/2}}+\frac{\int \frac{-Ab+aB-Acx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a}\\
&= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}+\frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a^2}\\
&= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}+\frac{\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2-abB-aAc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}}{a^3}\\
&= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}+\frac{2\,\mathrm{Subst}\left(\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2\right.}{a+bx^2+cx^4}\right)}{a^3}\\
&= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}-\frac{\left(c\left(Ab^2-abB-aAc-\frac{aB\left(b^2-2ac\right)-A\left(\right.}{\sqrt{b^2-4a}}\right)\right)}{}\\
&= -\frac{2A}{5ax^{5/2}}+\frac{2(Ab-aB)}{3a^2x^{3/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{a^3\sqrt{x}}-\frac{\sqrt{2}\sqrt{c}\left(Ab^2-abB-aAc-\frac{aB\left(b^2-2a\right.}{\sqrt{}}\right)}{a^3\sqrt{b-\sqrt{}}}
\end{aligned}$$

Mathematica [A] time = 0.79, size = 337, normalized size = 1.10

$$\frac{-\frac{6a^2A}{x^{5/2}}+\frac{30\left(aAc+abB-Ab^2\right)}{\sqrt{x}}-\frac{15\sqrt{2}\sqrt{c}\left(-\frac{\left(aB\left(b\sqrt{b^2-4ac}-2ac+b^2\right)-A\left(b^2\sqrt{b^2-4ac}-ac\sqrt{b^2-4ac}-3abc+b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\left(A\left(-b^2\sqrt{b^2-4ac}+ac\sqrt{b^2-4a}\right.\right.}{}\right.}{\sqrt{b^2-4ac}}}{15a^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-6*a^2*A)/x^(5/2) + (10*a*(A*b - a*B))/x^(3/2) + (30*(-(A*b^2) + a*b*B +
a*A*c))/Sqrt[x] - (15*Sqrt[2]*Sqrt[c]*(-(((a*B*(b^2 - 2*a*c + b*Sqrt[b^2 -
4*a*c]) - A*(b^3 - 3*a*b*c + b^2*Sqrt[b^2 - 4*a*c] - a*c*Sqrt[b^2 - 4*a*c])
)*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - S
qrt[b^2 - 4*a*c]]) - ((a*B*(-b^2 + 2*a*c + b*Sqrt[b^2 - 4*a*c]) + A*(b^3 -
3*a*b*c - b^2*Sqrt[b^2 - 4*a*c] + a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*S
qrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))
/Sqrt[b^2 - 4*a*c])/(15*a^3)
```

fricas [B] time = 5.46, size = 7971, normalized size = 25.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/30*(15*sqrt(2)*a^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*
B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*
c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c
)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11
 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)
*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 +
46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*
b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a
^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*
(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 +
 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c))*log(sqrt(2)*
(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 -
 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3
*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77
*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6
 - 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^
8 - 11*A^3*a*b^9)*c - (B*a^8*b^5 - A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b
 - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*
A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^
6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B
^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*
(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 +
 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4
*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^
3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*
b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 -
 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (
5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt(
(B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*
b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 +
(B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*
a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 8
0*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5
+ 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*
a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*
a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 +
(5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*
a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^
3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 -
3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*sqrt(x)) - 15*sqrt(2)*a
^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*
b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b
^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^
8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*
a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 -
12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^
4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4
*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B
^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 1
4*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/
(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c))*log(-sqrt(2)*(B^3*a^3*b^8 - 3*
A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5
 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (
17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3
 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)
*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)
```

```
*c - (B*a^8*b^5 - A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c
^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6
*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^
7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2
*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 -
26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*
c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*
a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^
2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))
*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3
 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 1
2*A*B*a^2*b^4 + 7*A^2*a*b^5)*c + (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*
A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^
6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B
^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*
(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 +
 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4
*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^
3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*
b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b -
6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B
*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^
2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 +
 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*sqrt(x)) + 15*sqrt(2)*a^3*x^3*sqrt(-(B^2
*a^2*b^5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a
^4*b - 18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b
^4 + 7*A^2*a*b^5)*c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b
^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*
B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b +
54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*
b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3
*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*
A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 +
 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^1
5*c)))/(a^7*b^2 - 4*a^8*c))*log(sqrt(2)*(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*
A^2*B*a*b^10 - A^3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32
*A*B^2*a^6*b + 77*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 9
2*A*B^2*a^5*b^3 + 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4
 - 81*A*B^2*a^4*b^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*
b^6 - 27*A*B^2*a^3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)*c + (B*a^8*b^5 -
A*a^7*b^6 + 8*A*a^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3
- 8*A*a^8*b^4)*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10
- 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b
+ 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*
A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 +
 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*
b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a
^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18
*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^
5 - 2*A*B*a*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b -
18*A*B*a^3*b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*
A^2*a*b^5)*c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*
A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7
 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*
B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 2
6*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c
^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a
^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2
*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/
```

```
(a^7*b^2 - 4*a^8*c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6
 - (B^4*a^5 - 7*A*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a
*b^4)*c^5 + (3*B^4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*
B*a*b^5 - A^4*b^6)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 -
 A^3*B*b^7)*c^3)*sqrt(x)) - 15*sqrt(2)*a^3*x^3*sqrt(-(B^2*a^2*b^5 - 2*A*B*a
*b^6 + A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*
b^2 + 14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*
c - (a^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2
*b^10 - 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*
a^6*b + 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2
 - 88*A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6
*b^3 + 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^
4*a^6*b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37
*A^4*a^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^
8 - 18*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 -
4*a^8*c))*log(-sqrt(2)*(B^3*a^3*b^8 - 3*A*B^2*a^2*b^9 + 3*A^2*B*a*b^10 - A^
3*b^11 - 4*(A^2*B*a^6 - 2*A^3*a^5*b)*c^5 + (4*B^3*a^7 - 32*A*B^2*a^6*b + 77
*A^2*B*a^5*b^2 - 54*A^3*a^4*b^3)*c^4 - (17*B^3*a^6*b^2 - 92*A*B^2*a^5*b^3 +
 151*A^2*B*a^4*b^4 - 77*A^3*a^3*b^5)*c^3 + (20*B^3*a^5*b^4 - 81*A*B^2*a^4*b
^5 + 105*A^2*B*a^3*b^6 - 44*A^3*a^2*b^7)*c^2 - (8*B^3*a^4*b^6 - 27*A*B^2*a^
3*b^7 + 30*A^2*B*a^2*b^8 - 11*A^3*a*b^9)*c + (B*a^8*b^5 - A*a^7*b^6 + 8*A*a
^10*c^3 + 6*(2*B*a^10*b - 3*A*a^9*b^2)*c^2 - (7*B*a^9*b^3 - 8*A*a^8*b^4)*c)
*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10 - 4*A^3*B*a*b^11
+ A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b + 6*A^4*a^5*b^2)*
c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*A^3*B*a^5*b^3 + 4
6*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 + 72*A^2*B^2*a^5*b
^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*b^4 - 64*A*B^3*a^
5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a^2*b^8)*c^2 - 2*(
3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18*A^3*B*a^2*b^9 +
5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))*sqrt(-(B^2*a^2*b^5 - 2*A*B*a*b^6 +
 A^2*b^7 + (4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + (5*B^2*a^4*b - 18*A*B*a^3*b^2 +
14*A^2*a^2*b^3)*c^2 - (5*B^2*a^3*b^3 - 12*A*B*a^2*b^4 + 7*A^2*a*b^5)*c - (a
^7*b^2 - 4*a^8*c)*sqrt((B^4*a^4*b^8 - 4*A*B^3*a^3*b^9 + 6*A^2*B^2*a^2*b^10
- 4*A^3*B*a*b^11 + A^4*b^12 + A^4*a^6*c^6 - 2*(A^2*B^2*a^7 - 6*A^3*B*a^6*b
+ 6*A^4*a^5*b^2)*c^5 + (B^4*a^8 - 12*A*B^3*a^7*b + 54*A^2*B^2*a^6*b^2 - 88*
A^3*B*a^5*b^3 + 46*A^4*a^4*b^4)*c^4 - 2*(3*B^4*a^7*b^2 - 26*A*B^3*a^6*b^3 +
 72*A^2*B^2*a^5*b^4 - 80*A^3*B*a^4*b^5 + 31*A^4*a^3*b^6)*c^3 + (11*B^4*a^6*
b^4 - 64*A*B^3*a^5*b^5 + 132*A^2*B^2*a^4*b^6 - 116*A^3*B*a^3*b^7 + 37*A^4*a
^2*b^8)*c^2 - 2*(3*B^4*a^5*b^6 - 14*A*B^3*a^4*b^7 + 24*A^2*B^2*a^3*b^8 - 18
*A^3*B*a^2*b^9 + 5*A^4*a*b^10)*c)/(a^14*b^2 - 4*a^15*c)))/(a^7*b^2 - 4*a^8*
c)) + 4*(A^4*a^3*c^7 + (5*A^3*B*a^3*b - 6*A^4*a^2*b^2)*c^6 - (B^4*a^5 - 7*A
*B^3*a^4*b + 9*A^2*B^2*a^3*b^2 + 2*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^5 + (3*B^
4*a^4*b^2 - 11*A*B^3*a^3*b^3 + 12*A^2*B^2*a^2*b^4 - 3*A^3*B*a*b^5 - A^4*b^6
)*c^4 - (B^4*a^3*b^4 - 3*A*B^3*a^2*b^5 + 3*A^2*B^2*a*b^6 - A^3*B*b^7)*c^3)*
sqrt(x)) - 4*(3*A*a^2 - 15*(B*a*b - A*b^2 + A*a*c)*x^2 + 5*(B*a^2 - A*a*b)*
x)*sqrt(x))/(a^3*x^3)
```

giac [B] time = 2.15, size = 5013, normalized size = 16.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -1/4*((2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3 - 8*(
b^2 - 4*a*c)*a^2*c^4)*A*a^2 - (2*a*b^5*c^2 - 16*a^2*b^3*c^3 + 32*a^3*b*c^4
 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 + 8*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 16*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c^2
 + 8*(b^2 - 4*a*c)*a^2*b*c^3)*B*a^2 + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a*b^7 - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 32*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 20
*a^2*b^5*c^2 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 16*sq
rt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 64*a^3*b^3*c^3 + 8*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*a^4*b*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 12*(b
^2 - 4*a*c)*a^2*b^3*c^2 + 16*(b^2 - 4*a*c)*a^3*b*c^3)*A*abs(a) - 2*(sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6 - 9*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^3*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c -
 2*a^2*b^6*c + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 + 10*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 18*a^3*b^4*c^2 - 16*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^5*c^3 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b
*c^3 - 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 48*a^4*b^2*c
^3 + 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^4 + 32*a^5*c^4 + 2*(b^
2 - 4*a*c)*a^2*b^4*c - 10*(b^2 - 4*a*c)*a^3*b^2*c^2 + 8*(b^2 - 4*a*c)*a^4*c
^3)*B*abs(a) + (2*a^2*b^6*c^2 - 14*a^3*b^4*c^3 + 24*a^4*b^2*c^4 - sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6 + 7*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c + 2*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 12*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - 6*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 2*(b^2 - 4*a*c)*a^2*b^4*c^2
 + 6*(b^2 - 4*a*c)*a^3*b^2*c^3)*A - (2*a^3*b^5*c^2 - 12*a^4*b^3*c^3 + 16*a^
5*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5
 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c +
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c - 8*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^2 - 4*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 2*(b^2 - 4*a*
c)*a^3*b^3*c^2 + 4*(b^2 - 4*a*c)*a^4*b*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/s
qrt((a^3*b + sqrt(a^6*b^2 - 4*a^7*c))/(a^3*c)))/((a^5*b^4 - 8*a^6*b^2*c - 2
*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(a)*abs
(c)) + 1/4*((2*b^6*c^2 - 18*a*b^4*c^3 + 48*a^2*b^2*c^4 - 32*a^3*c^5 - sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 + 9*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 2*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
```

```
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 + 10*(b^2 - 4*a*c)*a*b^2*c^3
 - 8*(b^2 - 4*a*c)*a^2*c^4)*A*a^2 - (2*a*b^5*c^2 - 16*a^2*b^3*c^3 + 32*a^3*
b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5 + 8
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 16*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 8*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 4*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^
3*c^2 + 8*(b^2 - 4*a*c)*a^2*b*c^3)*B*a^2 - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a*b^7 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c + 2*a*b^7*c + 32*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^
2 - 20*a^2*b^5*c^2 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 -
 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 + 64*a^3*b^3*c^3 + 8*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 - 64*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a*b^5*c +
 12*(b^2 - 4*a*c)*a^2*b^3*c^2 - 16*(b^2 - 4*a*c)*a^3*b*c^3)*A*abs(a) + 2*(s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6 - 9*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^3*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b
^5*c + 2*a^2*b^6*c + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2
 + 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 - 18*a^3*b^4*c^2 - 16*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^5*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^4*b*c^3 - 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 + 48*a^4
*b^2*c^3 + 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^4 - 32*a^5*c^4 -
 2*(b^2 - 4*a*c)*a^2*b^4*c + 10*(b^2 - 4*a*c)*a^3*b^2*c^2 - 8*(b^2 - 4*a*c)
*a^4*c^3)*B*abs(a) + (2*a^2*b^6*c^2 - 14*a^3*b^4*c^3 + 24*a^4*b^2*c^4 - sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6 + 7*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c + 2*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 12*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - 6*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 2*(b^2 - 4*a*c)*a^2*b
^4*c^2 + 6*(b^2 - 4*a*c)*a^3*b^2*c^3)*A - (2*a^3*b^5*c^2 - 12*a^4*b^3*c^3 +
 16*a^5*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^3*b^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^
3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c
 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^2 -
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^2 - s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 2*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 2*(b^2
 - 4*a*c)*a^3*b^3*c^2 + 4*(b^2 - 4*a*c)*a^4*b*c^3)*B)*arctan(2*sqrt(1/2)*sqr
t(x)/sqrt((a^3*b - sqrt(a^6*b^2 - 4*a^7*c))/(a^3*c)))/((a^5*b^4 - 8*a^6*b^2
*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(
a)*abs(c)) + 2/15*(15*B*a*b*x^2 - 15*A*b^2*x^2 + 15*A*a*c*x^2 - 5*B*a^2*x +
 5*A*a*b*x - 3*A*a^2)/(a^3*x^(5/2))
```

maple [B] time = 0.10, size = 913, normalized size = 2.97

$$-\frac{3\sqrt{2}\,A b\,c^{2}\operatorname{arctanh}\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}\;a^{2}}-\frac{3\sqrt{2}\,A b\,c^{2}\arctan\left(\frac{\sqrt{2}\,c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}\;a^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x)
```

```
[Out] c^2/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-c/a^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3*c
^2/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+c/a^3/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+c/a^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b+2*c^
2/a/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1
/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-c/a^2/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*B*b^2-c^2/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+c/a^3*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3*c^2/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*c*x^(1/2))*A*b+c/a^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*
b^3-c/a^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b+2*c^2/a/(-4*a*c+b^2)^(1/2)*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*B-c/a^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*B*b^2-2/5*A/a/x^(5/2)+2/3/a^2/x^(3/2)*A*b-2/3*B/a/x^(3/2)+2*A/a^2*c/x^(1/
2)-2/a^3/x^(1/2)*A*b^2+2/a^2/x^(1/2)*B*b
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{3\,Aa^3}{x^{\frac{5}{2}}}+15\left(\left(b^3-2\,abc\right)A-\left(ab^2-a^2c\right)B\right)\sqrt{x}-\frac{15\left(Ba^2b-\left(ab^2-a^2c\right)A\right)}{\sqrt{x}}+\frac{5\left(Ba^3-Aa^2b\right)}{x^{\frac{3}{2}}}\right)}{15\,a^4}-\int-\frac{\big(\big(b^3c-2\,abc^2\big)A-\big(a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(7/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/15*(3*A*a^3/x^(5/2) + 15*((b^3 - 2*a*b*c)*A - (a*b^2 - a^2*c)*B)*sqrt(x)
 - 15*(B*a^2*b - (a*b^2 - a^2*c)*A)/sqrt(x) + 5*(B*a^3 - A*a^2*b)/x^(3/2))/
a^4 - integrate(-(((b^3*c - 2*a*b*c^2)*A - (a*b^2*c - a^2*c^2)*B)*x^(3/2) +
 ((b^4 - 3*a*b^2*c + a^2*c^2)*A - (a*b^3 - 2*a^2*b*c)*B)*sqrt(x))/(a^4*c*x^
2 + a^4*b*x + a^5), x)
```

mupad [B] time = 4.15, size = 13983, normalized size = 45.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(7/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*
A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b
^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (
-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c
^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*
b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4
*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b
^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c -
 b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16
*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(
-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1
/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c
^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*
b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4
*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b
^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c -
 b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16
*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^1
2*b^5*c^2 - 48*A*a^13*b^3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A
^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*
A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2)
 + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c
^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)
^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*
c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*
(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^
2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^
9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i + (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c
^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*
a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*
c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a
^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25
*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 -
11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*
A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*
b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c
 - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c
 + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2
)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4
 + x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b
^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3
*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^
2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 1
6*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^
2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c
^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^
3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 2
0*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^
2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)
 - 64*A*a^14*b*c^4 - 8*A*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^
2 - 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*
c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^
2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*
A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2
*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2
*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c -
b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8
*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*
```

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A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 -
72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^1
0*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2
*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b
^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A
*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2
) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^
3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^
2*c)))^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2
*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(
-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b
^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A
*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2
) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^
3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^
2*c)))^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^
13*b^3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^
7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 6
3*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4
*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*
c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*
a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) -
 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^
(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B
*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c
)))^(1/2) - (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3
 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*
a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^
5) + (-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*
b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)
^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2
*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^
2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a
*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*
c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A
*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4
*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^
4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c
^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^
(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3
*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a
^4*b^3*c^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2
*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^
2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^
3 - 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*
B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(
1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8
*A*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3)
)*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8
 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*c - b^2)^3)
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^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 + B^2*a^
4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a
^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^2*(-(4*a*c
- b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^2*a*b^4*c*(
-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*
a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^3*c*(-(4*a*
c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 +
 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) + 16*A^3*a^10*c^7 - 16*A^3*a^9*b^2*c^6 +
 16*A*B^2*a^11*c^6 + 16*B^3*a^11*b*c^5 - 32*A*B^2*a^10*b^2*c^5 + 16*A^2*B*a
^9*b^3*c^5))*(-(A^2*b^9 + B^2*a^2*b^7 + A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 - A^2*a^3*c^3*(-(4*a*
c - b^2)^3)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c
^2 + B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c
 + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 + 6*A^2*a^2*b^2*c^
2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 - 5*A^
2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c + 8*A*B*a^2*b^
3*c*(-(4*a*c - b^2)^3)^(1/2) - 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2
*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*2i + atan(((x^(1/2)*(16*A^2*a
^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^
2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5
*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7
- A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*
A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a
*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c
- 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3
*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1
/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a
^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c))
)^(1/2)*(x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7
- A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*
A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a
*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c
- 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^
3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3
*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1
/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a
^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c))
)^(1/2) - 32*B*a^15*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^13*b^
3*c^3 - 8*B*a^13*b^4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 - A
^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2
*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c
- b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2)
 - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 2
0*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b
^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^
2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2)
 + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*
b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(
1/2)*1i + (x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 +
 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^
12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5)
 + (-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^
8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3
)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a
^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*
```

```
a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c
 - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*
(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B
*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a
*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4
+ 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c^3
 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1
/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(
-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4
*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a
*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*
b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3
+ 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*
a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/
2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8*A
*a^12*b^5*c^2 + 48*A*a^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3))*
(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 +
 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*
c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4
*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(
4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*
b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c
- b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 1
6*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*1i)/((x^(1/2)*(16*A^2*a^12*c^6 - 16*B^2*a^
13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 - 72*A^2*a^11*b^2*c^5 - 8*
B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^10*b^5*c^3 - 80*A*B*a^11*
b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c
- b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A
^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
+ 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^
4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3
- 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*
a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^
6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2)*(x^(1/2)*(3
2*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c
- b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A
^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2)
+ 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^
4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3
- 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*
a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^
6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 32*B*a^15
*c^4 + 64*A*a^14*b*c^4 + 8*A*a^12*b^5*c^2 - 48*A*a^13*b^3*c^3 - 8*B*a^13*b^
4*c^2 + 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b
^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*
a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 2
5*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 -
 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6
*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4
*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*
c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c
 - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*c)))^(1/2) - (x^(1/2)*(16
*A^2*a^12*c^6 - 16*B^2*a^13*c^5 - 8*A^2*a^9*b^6*c^3 + 48*A^2*a^10*b^4*c^4 -
 72*A^2*a^11*b^2*c^5 - 8*B^2*a^11*b^4*c^3 + 32*B^2*a^12*b^2*c^4 + 16*A*B*a^
10*b^5*c^3 - 80*A*B*a^11*b^3*c^4 + 80*A*B*a^12*b*c^5) + (-(A^2*b^9 + B^2*a^
2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2
 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*
(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)
^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*
b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*
A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/
2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)
^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6
*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b
^2*c)))^(1/2)*(32*B*a^15*c^4 + x^(1/2)*(32*a^16*b*c^3 - 8*a^15*b^3*c^2)*(-(
A^2*b^9 + B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42
*A^2*a^2*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2
) - B^2*a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2
*(-(4*a*c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*
c^4 - 9*B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2
)^3)^(1/2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a
*c - b^2)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5
*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b
^2)^3)^(1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a
^9*c^2 - 8*a^8*b^2*c)))^(1/2) - 64*A*a^14*b*c^4 - 8*A*a^12*b^5*c^2 + 48*A*a
^13*b^3*c^3 + 8*B*a^13*b^4*c^2 - 40*B*a^14*b^2*c^3))*(-(A^2*b^9 + B^2*a^2*b
^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2*b^5*c^2 -
63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^4*(-(
4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*c - b^2)^3)
^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*B^2*a^3*b^5
*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 66*A*B
*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2)^3)^(1/2)
+ 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*c - b^2)^3)
^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(1/2) + 6*A*
B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 - 8*a^8*b^2*
c)))^(1/2) + 16*A^3*a^10*c^7 - 16*A^3*a^9*b^2*c^6 + 16*A*B^2*a^11*c^6 + 16*
B^3*a^11*b*c^5 - 32*A*B^2*a^10*b^2*c^5 + 16*A^2*B*a^9*b^3*c^5))*(-(A^2*b^9
+ B^2*a^2*b^7 - A^2*b^6*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^8 + 42*A^2*a^2
*b^5*c^2 - 63*A^2*a^3*b^3*c^3 + A^2*a^3*c^3*(-(4*a*c - b^2)^3)^(1/2) - B^2*
a^2*b^4*(-(4*a*c - b^2)^3)^(1/2) + 25*B^2*a^4*b^3*c^2 - B^2*a^4*c^2*(-(4*a*
c - b^2)^3)^(1/2) - 16*A*B*a^5*c^4 - 11*A^2*a*b^7*c + 28*A^2*a^4*b*c^4 - 9*
B^2*a^3*b^5*c - 20*B^2*a^5*b*c^3 - 6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^3)^(1/
2) - 66*A*B*a^3*b^4*c^2 + 76*A*B*a^4*b^2*c^3 + 5*A^2*a*b^4*c*(-(4*a*c - b^2
)^3)^(1/2) + 3*B^2*a^3*b^2*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^5*(-(4*a*
c - b^2)^3)^(1/2) + 20*A*B*a^2*b^6*c - 8*A*B*a^2*b^3*c*(-(4*a*c - b^2)^3)^(
1/2) + 6*A*B*a^3*b*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^7*b^4 + 16*a^9*c^2 -
 8*a^8*b^2*c)))^(1/2)*2i + ((2*x^2*(A*a*c - A*b^2 + B*a*b))/a^3 - (2*A)/(5*
a) + (2*x*(A*b - B*a))/(3*a^2))/x^(5/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(7/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1016 $\int \frac{A+Bx}{x^{9/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=381

$$-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}-\frac{2\left(-aAc-abB+Ab^2\right)}{3a^3x^{3/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{\sqrt{2}\sqrt{c}\left(\frac{abB\left(b^2-3ac\right)-A\left(2a^2c^2-4ab^2c+b^4\right)}{\sqrt{b^2-4ac}}-A\right.}{a^4\sqrt{}}$$

```
[Out] -2/7*A/a/x^(7/2)+2/5*(A*b-B*a)/a^2/x^(5/2)-2/3*(-A*a*c+A*b^2-B*a*b)/a^3/x^(
3/2)-2*(a*B*(-a*c+b^2)-A*(-2*a*b*c+b^3))/a^4/x^(1/2)-arctan(2^(1/2)*c^(1/2)
*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*c^(1/2)*(a*B*(-a*c+b^2)-A*(-
2*a*b*c+b^3)+(a*b*B*(-3*a*c+b^2)-A*(2*a^2*c^2-4*a*b^2*c+b^4))/(-4*a*c+b^2)^
(1/2))/a^4/(b-(-4*a*c+b^2)^(1/2))^(1/2)-arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(
-4*a*c+b^2)^(1/2))^(1/2))*2^(1/2)*c^(1/2)*(a*B*(-a*c+b^2)-A*(-2*a*b*c+b^3)+
(-a*b*B*(-3*a*c+b^2)+A*(2*a^2*c^2-4*a*b^2*c+b^4))/(-4*a*c+b^2)^(1/2))/a^4/(
b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.67, antiderivative size = 381, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {828, 826, 1166, 205}

$$-\frac{\sqrt{2}\sqrt{c}\left(\frac{abB\left(b^2-3ac\right)-A\left(2a^2c^2-4ab^2c+b^4\right)}{\sqrt{b^2-4ac}}-A\left(b^3-2abc\right)+aB\left(b^2-ac\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{a^4\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\sqrt{c}\left(-\frac{abB\left(b^2-3ac\right)-A}{\sqrt{b}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*A)/(7*a*x^(7/2)) + (2*(A*b - a*B))/(5*a^2*x^(5/2)) - (2*(A*b^2 - a*b*B
- a*A*c))/(3*a^3*x^(3/2)) - (2*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c)))/(a^4*
Sqrt[x]) - (Sqrt[2]*Sqrt[c]*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c) + (a*b*B*(
b^2 - 3*a*c) - A*(b^4 - 4*a*b^2*c + 2*a^2*c^2))/Sqrt[b^2 - 4*a*c])*ArcTan[(
Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(a^4*Sqrt[b - Sqrt[b
^2 - 4*a*c]]) - (Sqrt[2]*Sqrt[c]*(a*B*(b^2 - a*c) - A*(b^3 - 2*a*b*c) - (a*
b*B*(b^2 - 3*a*c) - A*(b^4 - 4*a*b^2*c + 2*a^2*c^2))/Sqrt[b^2 - 4*a*c])*Arc
Tan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(a^4*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{9/2}\left(a+bx+cx^2\right)}\,dx = -\frac{2A}{7ax^{7/2}}+\frac{\int \frac{-Ab+aB-Acx}{x^{7/2}\left(a+bx+cx^2\right)}\,dx}{a}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}+\frac{\int \frac{-abB+A\left(b^2-ac\right)+(Ab-aB)cx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a^2}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}}+\frac{\int \frac{aB\left(b^2-ac\right)-A\left(b^3-2abc\right)-c\left(Ab^2-abB-a\right.}{x^{3/2}\left(a+bx+cx^2\right)}}{a^3}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}}-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}}-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}}-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

$$= -\frac{2A}{7ax^{7/2}}+\frac{2(Ab-aB)}{5a^2x^{5/2}}-\frac{2\left(Ab^2-abB-aAc\right)}{3a^3x^{3/2}}-\frac{2\left(aB\left(b^2-ac\right)-A\left(b^3-2abc\right)\right)}{a^4\sqrt{x}}$$

Mathematica [A] time = 1.07, size = 430, normalized size = 1.13

$$-\frac{30a^3A}{x^{7/2}}+\frac{105\sqrt{2}\sqrt{c}\left(\frac{\left(A\left(2a^2c^2-4ab^2c-2abc\sqrt{b^2-4ac}+b^3\sqrt{b^2-4ac}+b^4\right)+aB\left(-b^2\sqrt{b^2-4ac}+ac\sqrt{b^2-4ac}+3abc-b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(-2a^2c^2+4ab^2c-2a\right.\right.}{}\right.}{\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x]
```

```
[Out] ((-30*a^3*A)/x^(7/2) + (42*a^2*(A*b - a*B))/x^(5/2) + (70*a*(-(A*b^2) + a*b
*B + a*A*c))/x^(3/2) + (210*(a*B*(-b^2 + a*c) + A*(b^3 - 2*a*b*c)))/Sqrt[x]
 + (105*Sqrt[2]*Sqrt[c]*(((a*B*(-b^3 + 3*a*b*c - b^2*Sqrt[b^2 - 4*a*c] + a*
c*Sqrt[b^2 - 4*a*c]) + A*(b^4 - 4*a*b^2*c + 2*a^2*c^2 + b^3*Sqrt[b^2 - 4*a*
c] - 2*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(b^3 - 3*a*b*c - b
^2*Sqrt[b^2 - 4*a*c] + a*c*Sqrt[b^2 - 4*a*c]) + A*(-b^4 + 4*a*b^2*c - 2*a^2
*c^2 + b^3*Sqrt[b^2 - 4*a*c] - 2*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*
Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]])
)/Sqrt[b^2 - 4*a*c])/(105*a^4)
```

fricas [B] time = 8.45, size = 10514, normalized size = 27.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/210*(105*sqrt(2)*a^4*x^4*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*
A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3
)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3
*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4
*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 +
 A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*
a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^
6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 33
2*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^
5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*
B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 +
 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*
a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 -
22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)
*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c))*log(sqrt(2)*(B^3*a^3*b^11
 - 3*A*B^2*a^2*b^12 + 3*A^2*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*
a^8 - 40*A^2*B*a^7*b + 53*A^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b
^2 + 270*A^2*B*a^6*b^3 - 197*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2
*a^6*b^4 + 545*A^2*B*a^5*b^5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336
*A*B^2*a^5*b^6 + 468*A^2*B*a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7
 - 162*A*B^2*a^4*b^8 + 195*A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a
^4*b^9 - 36*A*B^2*a^3*b^10 + 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c - (B*a^10
*b^6 - A*a^9*b^7 - 4*(2*B*a^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^
11*b^3)*c^2 - (8*B*a^11*b^4 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3
*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3
*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*
(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5
 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2
*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 1
82*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^
10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*
A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^
11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 -
 4*a^19*c)))*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^
2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^
2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*
a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^
3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^
3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2
*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^
5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^
2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 -
182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b
^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268
*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b
^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2
- 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*
A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B
*a^3*b^3 - 15*A^4*a^2*b^4)*c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2
*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B
^3*a^3*b^5 + 18*A^2*B^2*a^2*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b
^6 - 3*A*B^3*a^2*b^7 + 3*A^2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) - 105*sqr
t(2)*a^4*x^4*sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^
2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^
2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*
a^2*b^6 + 9*A^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^
3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 -
 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^
3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2
*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^
5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^
2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 -
182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b
^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268
*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b
^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2
- 4*a^19*c)))/(a^9*b^2 - 4*a^10*c))*log(-sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^
2*b^12 + 3*A^2*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*
B*a^7*b + 53*A^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*
B*a^6*b^3 - 197*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 54
5*A^2*B*a^5*b^5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^
6 + 468*A^2*B*a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*
a^4*b^8 + 195*A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A
*B^2*a^3*b^10 + 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c - (B*a^10*b^6 - A*a^9*
b^7 - 4*(2*B*a^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 -
 (8*B*a^11*b^4 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6
*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^
9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A
^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^
2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^
5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 95
6*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*
b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37
*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^1
1 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B
^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*
sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4
- (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 4
0*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A
^2*a*b^7)*c + (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 +
6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a
^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*
A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b
^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a
^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 9
56*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6
*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (3
7*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^
11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*
B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))
/(a^9*b^2 - 4*a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*
c^8 - (B^4*a^6 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15
*A^4*a^2*b^4)*c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4
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- 3*A^3*B*a^2*b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 +
18*A^2*B^2*a^2*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*
a^2*b^7 + 3*A^2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) + 105*sqrt(2)*a^4*x^4*
sqrt(-(B^2*a^2*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4
- (7*B^2*a^5*b - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 4
0*A*B*a^3*b^4 + 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A
^2*a*b^7)*c - (a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 +
6*A^2*B^2*a^2*b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a
^9 - 8*A^3*B*a^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*
A^2*B^2*a^8*b^2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b
^2 - 68*A*B^3*a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a
^5*b^6)*c^5 + (46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 9
56*A^3*B*a^5*b^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6
*b^7 + 384*A^2*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (3
7*B^4*a^6*b^8 - 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^
11 + 79*A^4*a^2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*
B^2*a^3*b^12 - 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))
/(a^9*b^2 - 4*a^10*c))*log(sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^2*b^12 + 3*A^2
*B*a*b^13 - A^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*B*a^7*b + 53*A
^3*a^6*b^2)*c^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*B*a^6*b^3 - 19
7*A^3*a^5*b^4)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 545*A^2*B*a^5*b^
5 - 294*A^3*a^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^6 + 468*A^2*B*
a^4*b^7 - 210*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*a^4*b^8 + 195*
A^2*B*a^3*b^9 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A*B^2*a^3*b^10
+ 39*A^2*B*a^2*b^11 - 14*A^3*a*b^12)*c + (B*a^10*b^6 - A*a^9*b^7 - 4*(2*B*a
^13 - 5*A*a^12*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 - (8*B*a^11*b^4
 - 9*A*a^10*b^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b
^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^
8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2
 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a
^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (
46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^
7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*
B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 -
 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2
*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 -
26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*sqrt(-(B^2*a^2
*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b
 - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4
+ 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c -
(a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*
b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a
^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^
2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*
a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 +
(46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b
^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2
*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8
- 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^
2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 -
 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*
a^10*c)) + 4*(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*c^8 - (B^4*a^6
 - 9*A*B^3*a^5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15*A^4*a^2*b^4)*
c^7 + (6*B^4*a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*
b^5 - 7*A^4*a*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 + 18*A^2*B^2*a^2
*b^6 - 5*A^3*B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*a^2*b^7 + 3*A^
2*B^2*a*b^8 - A^3*B*b^9)*c^4)*sqrt(x)) - 105*sqrt(2)*a^4*x^4*sqrt(-(B^2*a^2
*b^7 - 2*A*B*a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b
 - 32*A*B*a^4*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4
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+ 27*A^2*a^2*b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c -
(a^9*b^2 - 4*a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*
b^14 - 4*A^3*B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a
^8*b + 10*A^4*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^
2 - 200*A^3*B*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*
a^8*b^3 + 240*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 +
(46*B^4*a^8*b^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b
^7 + 367*A^4*a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2
*B^2*a^5*b^8 - 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8
- 184*A*B^3*a^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^
2*b^12)*c^2 - 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 -
 26*A^3*B*a^2*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*
a^10*c))*log(-sqrt(2)*(B^3*a^3*b^11 - 3*A*B^2*a^2*b^12 + 3*A^2*B*a*b^13 - A
^3*b^14 + 4*A^3*a^7*c^7 - (4*A*B^2*a^8 - 40*A^2*B*a^7*b + 53*A^3*a^6*b^2)*c
^6 - (8*B^3*a^8*b - 101*A*B^2*a^7*b^2 + 270*A^2*B*a^6*b^3 - 197*A^3*a^5*b^4
)*c^5 + (54*B^3*a^7*b^3 - 313*A*B^2*a^6*b^4 + 545*A^2*B*a^5*b^5 - 294*A^3*a
^4*b^6)*c^4 - (77*B^3*a^6*b^5 - 336*A*B^2*a^5*b^6 + 468*A^2*B*a^4*b^7 - 210
*A^3*a^3*b^8)*c^3 + (44*B^3*a^5*b^7 - 162*A*B^2*a^4*b^8 + 195*A^2*B*a^3*b^9
 - 77*A^3*a^2*b^10)*c^2 - (11*B^3*a^4*b^9 - 36*A*B^2*a^3*b^10 + 39*A^2*B*a^
2*b^11 - 14*A^3*a*b^12)*c + (B*a^10*b^6 - A*a^9*b^7 - 4*(2*B*a^13 - 5*A*a^1
2*b)*c^3 + (18*B*a^12*b^2 - 25*A*a^11*b^3)*c^2 - (8*B*a^11*b^4 - 9*A*a^10*b
^5)*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*B
*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4*
a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B*
a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240*
A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b^
4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*a
^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8 -
 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a^
5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 -
2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2*
b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))*sqrt(-(B^2*a^2*b^7 - 2*A*B*
a*b^8 + A^2*b^9 - (4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - (7*B^2*a^5*b - 32*A*B*a^4
*b^2 + 30*A^2*a^3*b^3)*c^3 + (14*B^2*a^4*b^3 - 40*A*B*a^3*b^4 + 27*A^2*a^2*
b^5)*c^2 - (7*B^2*a^3*b^5 - 16*A*B*a^2*b^6 + 9*A^2*a*b^7)*c - (a^9*b^2 - 4*
a^10*c)*sqrt((B^4*a^4*b^12 - 4*A*B^3*a^3*b^13 + 6*A^2*B^2*a^2*b^14 - 4*A^3*
B*a*b^15 + A^4*b^16 + A^4*a^8*c^8 - 2*(A^2*B^2*a^9 - 8*A^3*B*a^8*b + 10*A^4
*a^7*b^2)*c^7 + (B^4*a^10 - 16*A*B^3*a^9*b + 96*A^2*B^2*a^8*b^2 - 200*A^3*B
*a^7*b^3 + 130*A^4*a^6*b^4)*c^6 - 2*(6*B^4*a^9*b^2 - 68*A*B^3*a^8*b^3 + 240
*A^2*B^2*a^7*b^4 - 332*A^3*B*a^6*b^5 + 157*A^4*a^5*b^6)*c^5 + (46*B^4*a^8*b
^4 - 344*A*B^3*a^7*b^5 + 888*A^2*B^2*a^6*b^6 - 956*A^3*B*a^5*b^7 + 367*A^4*
a^4*b^8)*c^4 - 2*(31*B^4*a^7*b^6 - 182*A*B^3*a^6*b^7 + 384*A^2*B^2*a^5*b^8
- 348*A^3*B*a^4*b^9 + 115*A^4*a^3*b^10)*c^3 + (37*B^4*a^6*b^8 - 184*A*B^3*a
^5*b^9 + 336*A^2*B^2*a^4*b^10 - 268*A^3*B*a^3*b^11 + 79*A^4*a^2*b^12)*c^2 -
 2*(5*B^4*a^5*b^10 - 22*A*B^3*a^4*b^11 + 36*A^2*B^2*a^3*b^12 - 26*A^3*B*a^2
*b^13 + 7*A^4*a*b^14)*c)/(a^18*b^2 - 4*a^19*c)))/(a^9*b^2 - 4*a^10*c)) + 4*
(A^4*a^4*c^9 + (7*A^3*B*a^4*b - 10*A^4*a^3*b^2)*c^8 - (B^4*a^6 - 9*A*B^3*a^
5*b + 12*A^2*B^2*a^4*b^2 + 10*A^3*B*a^3*b^3 - 15*A^4*a^2*b^4)*c^7 + (6*B^4*
a^5*b^2 - 26*A*B^3*a^4*b^3 + 30*A^2*B^2*a^3*b^4 - 3*A^3*B*a^2*b^5 - 7*A^4*a
*b^6)*c^6 - (5*B^4*a^4*b^4 - 17*A*B^3*a^3*b^5 + 18*A^2*B^2*a^2*b^6 - 5*A^3*
B*a*b^7 - A^4*b^8)*c^5 + (B^4*a^3*b^6 - 3*A*B^3*a^2*b^7 + 3*A^2*B^2*a*b^8 -
 A^3*B*b^9)*c^4)*sqrt(x)) - 4*(15*A*a^3 + 105*(B*a*b^2 - A*b^3 - (B*a^2 - 2
*A*a*b)*c)*x^3 - 35*(B*a^2*b - A*a*b^2 + A*a^2*c)*x^2 + 21*(B*a^3 - A*a^2*b
)*x)*sqrt(x))/(a^4*x^4)
```

giac **[B]** time = 1.86, size = 4086, normalized size = 10.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8 - 11*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7
*c - 2*b^8*c + 41*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 14*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*b^6*c^2 + 22*a*b^6*c^2 + 2*b^7*c^2 - 56*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 26*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^2*b^3*c^3 - 7*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 - 82*
a^2*b^4*c^3 - 18*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4
*c^4 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 13*sqrt(2)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + 112*a^3*b^2*c^4 + 50*a^2*b^3*c^4
 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 - 32*a^4*c^5 - 40*a^3*
b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 9*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c - 25*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 10*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 20*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 10*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 5*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 2*(b^2 - 4*a*c)*b^6*c - 14*(b^2
 - 4*a*c)*a*b^4*c^2 - 2*(b^2 - 4*a*c)*b^5*c^2 + 26*(b^2 - 4*a*c)*a^2*b^2*c^3
 + 10*(b^2 - 4*a*c)*a*b^3*c^3 - 8*(b^2 - 4*a*c)*a^3*c^4 - 10*(b^2 - 4*a*c)*
a^2*b*c^4)*A - (sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7 - 10*sqrt(2)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 20*a^2*b^5*c^2 + 2*a*b^6*c
^2 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 16*sqrt(2)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^2*b^3*c^3 - 64*a^3*b^3*c^3 - 16*a^2*b^4*c^3 + 8*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*a^4*b*c^4 + 36*a^3*b^2*c^4 - 16*a^4*
c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6 + 8*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c + 2*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 18*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 - 8*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 8*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 2*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 12*(b
^2 - 4*a*c)*a^2*b^3*c^2 - 2*(b^2 - 4*a*c)*a*b^4*c^2 + 16*(b^2 - 4*a*c)*a^3*
b*c^3 + 8*(b^2 - 4*a*c)*a^2*b^2*c^3 - 4*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan(2*
sqrt(1/2)*sqrt(x)/sqrt((a^4*b + sqrt(a^8*b^2 - 4*a^9*c))/(a^4*c)))/((a^5*b^
4 - 8*a^6*b^2*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2 + a^5*b^2*c^2 - 4*
a^6*c^3)*abs(c)) + 1/2*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8 - 11*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*b^7*c + 2*b^8*c + 41*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^4*c^2 + 14*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt
(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 - 22*a*b^6*c^2 - 2*b^7*c^2 - 56
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 26*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 7*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a*b^4*c^3 + 82*a^2*b^4*c^3 + 18*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^4*c^4 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c
^4 + 13*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 112*a^3*b^2*c
^4 - 50*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 3
2*a^4*c^5 + 40*a^3*b*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*b^7 - 9*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a*b^5*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*
c + 25*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^
2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2
+ sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 20*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 5*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + 5*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*
c)*b^6*c + 14*(b^2 - 4*a*c)*a*b^4*c^2 + 2*(b^2 - 4*a*c)*b^5*c^2 - 26*(b^2 -
 4*a*c)*a^2*b^2*c^3 - 10*(b^2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a*c)*a^3*c^4
+ 10*(b^2 - 4*a*c)*a^2*b*c^4)*A - (sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^7 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c + 2*a*b^7*c + 32*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 20*a^2*
b^5*c^2 - 2*a*b^6*c^2 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^
3 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 6*sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 + 64*a^3*b^3*c^3 + 16*a^2*b^4*c^3 +
 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 - 64*a^4*b*c^4 - 36*a^
3*b^2*c^4 + 16*a^4*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b^6 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a^2*b^4*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^5*c + 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^
2*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3
*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2
- 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^3 - 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 4*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 2*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 2*(b^2 - 4*a
*c)*a*b^5*c + 12*(b^2 - 4*a*c)*a^2*b^3*c^2 + 2*(b^2 - 4*a*c)*a*b^4*c^2 - 16
*(b^2 - 4*a*c)*a^3*b*c^3 - 8*(b^2 - 4*a*c)*a^2*b^2*c^3 + 4*(b^2 - 4*a*c)*a^
3*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^4*b - sqrt(a^8*b^2 - 4*a^9*c))
/(a^4*c)))/((a^5*b^4 - 8*a^6*b^2*c - 2*a^5*b^3*c + 16*a^7*c^2 + 8*a^6*b*c^2
 + a^5*b^2*c^2 - 4*a^6*c^3)*abs(c)) - 2/105*(105*B*a*b^2*x^3 - 105*A*b^3*x^
3 - 105*B*a^2*c*x^3 + 210*A*a*b*c*x^3 - 35*B*a^2*b*x^2 + 35*A*a*b^2*x^2 - 3
5*A*a^2*c*x^2 + 21*B*a^3*x - 21*A*a^2*b*x + 15*A*a^3)/(a^4*x^(7/2))
```

maple [B] time = 0.10, size = 1210, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x)
```

```
[Out] -3/a^2*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+1/a^3*c/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3+4/a^3*c^2/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/a^4*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^4-3/a^2*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+1
/a^3*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3+4/a^3*c^2/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-1/a^4*c/(-4*a*c+b^2)^(1/2)*2^(
1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b^4-2/a^2*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*c*x^(1/2))*A+1/a^3*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^
(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+2/3*A/a^2*c/x^(3/2
)-2/7*A/a/x^(7/2)-2/5*B/a/x^(5/2)+1/a^2*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-1/a^
2*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+2*B/a^2*c/x^(1/2)-2/3/a^3/x^(3/2)*A*b^2
+2/3/a^2/x^(3/2)*B*b+2/a^4/x^(1/2)*A*b^3-2/a^3/x^(1/2)*B*b^2+1/a^4*c*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*A*b^3-2/a^2*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*A-1/a^3*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+2/a^3*c^2*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*A*b-1/a^4*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/a^3*c^2*2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*A*b+2/5/a^2/x^(5/2)*A*b-4/a^3/x^(1/2)*A*b*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{2\left(\frac{15\,Aa^4}{x^{\frac{7}{2}}}-105\left(\left(b^4-3\,ab^2c+a^2c^2\right)A-\left(ab^3-2\,a^2bc\right)B\right)\sqrt{x}-\frac{105\left(\left(ab^3-2\,a^2bc\right)A-\left(a^2b^2-a^3c\right)B\right)}{\sqrt{x}}-\frac{35\left(Ba^3b-\left(a^2b^2-a^3c\right)A\right)}{x^{\frac{3}{2}}}\right.}{105\,a^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(9/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] -2/105*(15*A*a^4/x^(7/2) - 105*((b^4 - 3*a*b^2*c + a^2*c^2)*A - (a*b^3 - 2*
a^2*b*c)*B)*sqrt(x) - 105*((a*b^3 - 2*a^2*b*c)*A - (a^2*b^2 - a^3*c)*B)/sqr
t(x) - 35*(B*a^3*b - (a^2*b^2 - a^3*c)*A)/x^(3/2) + 21*(B*a^4 - A*a^3*b)/x^
(5/2))/a^5 - integrate((((b^4*c - 3*a*b^2*c^2 + a^2*c^3)*A - (a*b^3*c - 2*a
^2*b*c^2)*B)*x^(3/2) + ((b^5 - 4*a*b^3*c + 3*a^2*b*c^2)*A - (a*b^4 - 3*a^2*
b^2*c + a^3*c^2)*B)*sqrt(x))/(a^5*c*x^2 + a^5*b*x + a^6), x)
```

mupad [B] time = 5.15, size = 17910, normalized size = 47.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(9/2)*(a + b*x + c*x^2)),x)
```

```
[Out] ((2*x^3*(A*b^3 - B*a*b^2 + B*a^2*c - 2*A*a*b*c))/a^4 - (2*A)/(7*a) + (2*x^2
*(A*a*c - A*b^2 + B*a*b))/(3*a^3) + (2*x*(A*b - B*a))/(5*a^2))/x^(7/2) + at
an((((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a
*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^
2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) +
 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(
1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*
c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2
*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3
)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 -
 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*
a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/
2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2
 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b
^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*
B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 +
 A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2
) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3
)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b
^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*
A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2
)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^
4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2
)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A
*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^
(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*
c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^1
7*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) - x^
(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13
*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3
 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*
B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 +
B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*
b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c
- b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2
 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c
^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^
4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a
*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a
^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4
*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b
^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c
- b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3
*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^
(1/2)*1i - ((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) -
2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c
^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^
(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^
2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a
^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) -
 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c -
 b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^
2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c +
12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)
^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a
^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8
*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2)
 - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^
3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^
3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c -
 b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^
2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2
) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*
c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5
*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c
 + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b
^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 1
6*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 5
6*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^
3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A
^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*
b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 +
 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*
```

```
b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A
^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-
(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*
b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*
B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a
^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3
*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10
4*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6
*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*
A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-
(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*A*B*
a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^
2*c)))^(1/2)*1i)/(((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(
1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^
4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b
^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a
*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 1
1*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^
(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(
4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B
*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b
^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c
 - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4
 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(32*a^21*b*
c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3
)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2
*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c
 - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(
4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5
 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^
3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*
(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*
A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^
2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*
a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*
b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*b^6*
c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*a^18
*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8*c^3
 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 + 8*B^
2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^13*b^
7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^6))*
(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10
 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4
*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B
^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2)
+ 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 2
8*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*
b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/
2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^
2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b
^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) -
20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*
a^10*b^2*c)))^(1/2) + ((-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^
3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^
2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c
 - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-
(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5
 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)
^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2
*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132
*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c
*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a
^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4
*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9
*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^(1/2)*(32*a^2
1*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^
2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129
*A^2*a^4*b^3*c^4 + A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*
a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3
*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*
c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*
c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 -
132*A*B*a^5*b^2*c^4 - 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^
4*c*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*
B*a^2*b^8*c + 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(
-(4*a*c - b^2)^3)^(1/2) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(
a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A*a^16*
b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 - 48*B*
a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^12*b^8
*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*c^6 +
8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A*B*a^1
3*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^16*b*c^
6))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*
b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2
*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) +
42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1
/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c
 + 28*B^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*
a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)
^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 -
7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)
^(1/2) - 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a
^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2
) - 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2
- 8*a^10*b^2*c)))^(1/2) + 16*B^3*a^15*c^7 + 16*A^3*a^12*b^3*c^7 - 16*B^3*a^
14*b^2*c^6 + 16*A^2*B*a^14*c^8 - 32*A^3*a^13*b*c^8 - 48*A*B^2*a^14*b*c^7 +
32*A*B^2*a^13*b^3*c^6 - 16*A^2*B*a^12*b^4*c^6 + 16*A^2*B*a^13*b^2*c^7))*(-(
A^2*b^11 + B^2*a^2*b^9 + A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 +
63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 + A^2*a^4*c^
4*(-(4*a*c - b^2)^3)^(1/2) + B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*
a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 - B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 1
6*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B
^2*a^6*b*c^4 + 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) - 10*A^2*a^3*b^2
*c^3*(-(4*a*c - b^2)^3)^(1/2) + 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2)
- 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 - 7*A^2*a
*b^6*c*(-(4*a*c - b^2)^3)^(1/2) - 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2)
- 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c + 12*A*B*a^2*b^5*
c*(-(4*a*c - b^2)^3)^(1/2) + 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) - 20*
A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^1
0*b^2*c)))^(1/2)*2i + atan((((-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c -
 b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 +
129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-
(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*
c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5
```

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*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c
- b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b
^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3
 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3
*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24
*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^
3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(
2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 + x^(1/2)*(
32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*
c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3
 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6
*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a
^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*
a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a
*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^
4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*
c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*
a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) +
 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b
*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2)
)/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^4 - 8*A
*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^5*c^2 -
 48*B*a^18*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8*A^2*a^
12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^15*b^2*
c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5 - 16*A
*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*A*B*a^1
6*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*
A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4
 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1
/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)
^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3
*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 1
0*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b
^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*
c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b
^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12
*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3
)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^1
1*c^2 - 8*a^10*b^2*c)))^(1/2)*1i - ((-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(
4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5
*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2
*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B
^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*
A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-
(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^
2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*
b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*
B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/
2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a
^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(
1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c^5 - x^
(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*
(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*
b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*
a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3
+ B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c -
36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2
*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6
*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a
```

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^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) +
 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^
(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*
B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3
)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^19*b*c^
4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*a^17*b^
5*c^2 - 48*B*a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*c^6 + 8
*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128*A^2*a^
15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*b^2*c^5
 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5 + 112*
A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/
2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*a^4*
b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c - b^2
)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c
 - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*
B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1
/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*
a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A*B*a
^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*
a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2*b^8
*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c -
 b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b^4 +
 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*1i)/(((-(A^2*b^11 + B^2*a^2*b^9 - A^2*
b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*
a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) -
B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*
c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*
c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4
*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2)
 - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A
*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/
2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)
^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) -
8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^
2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^19*c
^5 + x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9 - A
^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A
^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2)
 - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b
^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b
^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*
b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1
/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 19
2*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^
(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b
^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2)
 - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c -
 b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*B*a^
19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 + 8*B*
a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) - x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a^17*
c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 - 128
*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a^16*
b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3*c^5
 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)
^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A
^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*
c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(
-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^
5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2
)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^
2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 13
2*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*
c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*
a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(
4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^
9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + ((-(A^2*b^11 + B^2*a^2*b^9 -
A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*
A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2
) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*
b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*
b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2
*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(
1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 1
92*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)
^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c -
b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2
) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c
- b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*(32*A*a^
19*c^5 - x^(1/2)*(32*a^21*b*c^3 - 8*a^20*b^3*c^2)*(-(A^2*b^11 + B^2*a^2*b^9
 - A^2*b^8*(-(4*a*c - b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 1
38*A^2*a^3*b^5*c^3 + 129*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(
1/2) - B^2*a^2*b^6*(-(4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a
^5*b^3*c^3 + B^2*a^5*c^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2
*a*b^9*c - 36*A^2*a^5*b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*
a^2*b^4*c^2*(-(4*a*c - b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3
)^(1/2) - 6*B^2*a^4*b^2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2
+ 192*A*B*a^4*b^4*c^3 - 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)
^3)^(1/2) + 5*B^2*a^3*b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c
 - b^2)^3)^(1/2) + 24*A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(
1/2) - 8*A*B*a^4*b*c^3*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a
*c - b^2)^3)^(1/2))/(2*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 64*
B*a^19*b*c^4 - 8*A*a^16*b^6*c^2 + 56*A*a^17*b^4*c^3 - 104*A*a^18*b^2*c^4 +
8*B*a^17*b^5*c^2 - 48*B*a^18*b^3*c^3) + x^(1/2)*(16*A^2*a^16*c^7 - 16*B^2*a
^17*c^6 + 8*A^2*a^12*b^8*c^3 - 64*A^2*a^13*b^6*c^4 + 160*A^2*a^14*b^4*c^5 -
 128*A^2*a^15*b^2*c^6 + 8*B^2*a^14*b^6*c^3 - 48*B^2*a^15*b^4*c^4 + 72*B^2*a
^16*b^2*c^5 - 16*A*B*a^13*b^7*c^3 + 112*A*B*a^14*b^5*c^4 - 224*A*B*a^15*b^3
*c^5 + 112*A*B*a^16*b*c^6))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c -
b^2)^3)^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 1
29*A^2*a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(
4*a*c - b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c
^3*(-(4*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*
b*c^5 - 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c -
 b^2)^3)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^
2*c^2*(-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3
- 132*A*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*
b^4*c*(-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*
A*B*a^2*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3
*(-(4*a*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2
*(a^9*b^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2) + 16*B^3*a^15*c^7 + 16*A^3*
a^12*b^3*c^7 - 16*B^3*a^14*b^2*c^6 + 16*A^2*B*a^14*c^8 - 32*A^3*a^13*b*c^8
- 48*A*B^2*a^14*b*c^7 + 32*A*B^2*a^13*b^3*c^6 - 16*A^2*B*a^12*b^4*c^6 + 16*
A^2*B*a^13*b^2*c^7))*(-(A^2*b^11 + B^2*a^2*b^9 - A^2*b^8*(-(4*a*c - b^2)^3)
^(1/2) - 2*A*B*a*b^10 + 63*A^2*a^2*b^7*c^2 - 138*A^2*a^3*b^5*c^3 + 129*A^2*
a^4*b^3*c^4 - A^2*a^4*c^4*(-(4*a*c - b^2)^3)^(1/2) - B^2*a^2*b^6*(-(4*a*c -
 b^2)^3)^(1/2) + 42*B^2*a^4*b^5*c^2 - 63*B^2*a^5*b^3*c^3 + B^2*a^5*c^3*(-(4
*a*c - b^2)^3)^(1/2) + 16*A*B*a^6*c^5 - 13*A^2*a*b^9*c - 36*A^2*a^5*b*c^5 -
 11*B^2*a^3*b^7*c + 28*B^2*a^6*b*c^4 - 15*A^2*a^2*b^4*c^2*(-(4*a*c - b^2)^3
)^(1/2) + 10*A^2*a^3*b^2*c^3*(-(4*a*c - b^2)^3)^(1/2) - 6*B^2*a^4*b^2*c^2*(
-(4*a*c - b^2)^3)^(1/2) - 104*A*B*a^3*b^6*c^2 + 192*A*B*a^4*b^4*c^3 - 132*A
*B*a^5*b^2*c^4 + 7*A^2*a*b^6*c*(-(4*a*c - b^2)^3)^(1/2) + 5*B^2*a^3*b^4*c*(
-(4*a*c - b^2)^3)^(1/2) + 2*A*B*a*b^7*(-(4*a*c - b^2)^3)^(1/2) + 24*A*B*a^2
*b^8*c - 12*A*B*a^2*b^5*c*(-(4*a*c - b^2)^3)^(1/2) - 8*A*B*a^4*b*c^3*(-(4*a
*c - b^2)^3)^(1/2) + 20*A*B*a^3*b^3*c^2*(-(4*a*c - b^2)^3)^(1/2))/(2*(a^9*b
^4 + 16*a^11*c^2 - 8*a^10*b^2*c)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(9/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1017 $\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=411

$$-\frac{\left(-\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{5/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}-\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2}{\sqrt{b^2-4ac}}\right.$$

```
[Out] -x^(3/2)*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^2+b*
x+a)+(-A*b*c-10*B*a*c+3*B*b^2)*x^(1/2)/c^2/(-4*a*c+b^2)-1/2*arctan(2^(1/2)*
c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(3*b^3*B-A*b^2*c-13*a*b*B*c+6
*a*A*c^2+(-8*A*a*b*c^2+A*b^3*c-20*B*a^2*c^2+19*B*a*b^2*c-3*B*b^4)/(-4*a*c+b
^2)^(1/2))/c^(5/2)/(-4*a*c+b^2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)-1/2*ar
ctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*(3*b^3*B-A*b^2*c
-13*a*b*B*c+6*a*A*c^2+(8*A*a*b*c^2-A*b^3*c+20*B*a^2*c^2-19*B*a*b^2*c+3*B*b^
4)/(-4*a*c+b^2)^(1/2))/c^(5/2)/(-4*a*c+b^2)*2^(1/2)/(b+(-4*a*c+b^2)^(1/2))^
(1/2)
```

Rubi [A] time = 4.17, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {818, 824, 826, 1166, 205}

$$-\frac{\left(-\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,c^{5/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}-\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2}{\sqrt{b^2-4ac}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((3*b^2*B - A*b*c - 10*a*B*c)*Sqrt[x])/(c^2*(b^2 - 4*a*c)) - (x^(3/2)*(a*(b
*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c)*(a + b*x + c*x
^2)) - ((3*b^3*B - A*b^2*c - 13*a*b*B*c + 6*a*A*c^2 - (3*b^4*B - A*b^3*c -
19*a*b^2*B*c + 8*a*A*b*c^2 + 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[
2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*c^(5/2)*(b^2 - 4
*a*c)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - ((3*b^3*B - A*b^2*c - 13*a*b*B*c + 6*a
*A*c^2 + (3*b^4*B - A*b^3*c - 19*a*b^2*B*c + 8*a*A*b*c^2 + 20*a^2*B*c^2)/Sq
rt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c
]]])/(Sqrt[2]*c^(5/2)*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{\sqrt{x}\left(\frac{3}{2}a(bB-2Ac)+\frac{1}{2}\left(3b^2B-Abc-10aBc\right)x\right)}{a+bx+cx^2}\,dx}{c\left(b^2-4ac\right)}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{-\frac{1}{2}a\left(3b^2\right.}{}}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2\,\mathrm{Subst}\left(\right.}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3b^3B-\right.}{}$$

$$=\frac{\left(3b^2B-Abc-10aBc\right)\sqrt{x}}{c^2\left(b^2-4ac\right)}-\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3b^3B-\right.}{}$$

Mathematica [A] time = 1.40, size = 413, normalized size = 1.00

$$\frac{\frac{a\left(-\frac{\sqrt{2}\left(\frac{-20a^2Bc^2-8aAbc^2+19ab^2Bc+Ab^3c-3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c+3b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(\frac{20a^2Bc^2+8aAbc^2-19ab^2Bc-Ab^3c+3b^4B}{\sqrt{b^2-4ac}}+6aAc^2-13abBc-Ab^2c}{\sqrt{\sqrt{b^2-4ac}+b}}}{2c^{5/2}}}{a\left(b^2-4a\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*x^(5/2) + (x^(7/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(-2*Sqrt[c]*(-3*b^2*B + A*b*c + 10*a*B*c)*
Sqrt[x] + 2*c^(3/2)*(-(b*B) + 2*A*c)*x^(3/2) - (Sqrt[2]*(3*b^3*B - A*b^2*c
- 13*a*b*B*c + 6*a*A*c^2 + (-3*b^4*B + A*b^3*c + 19*a*b^2*B*c - 8*a*A*b*c^2
 - 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b
 - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] - (Sqrt[2]*(3*b^3*B - A
*b^2*c - 13*a*b*B*c + 6*a*A*c^2 + (3*b^4*B - A*b^3*c - 19*a*b^2*B*c + 8*a*A
*b*c^2 + 20*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/
Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(2*c^(5/2)))/(a
*(b^2 - 4*a*c))
```

fricas [B] time = 13.89, size = 7251, normalized size = 17.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2
 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28
*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*
b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c
^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(2
5*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3
*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4
*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(1
13*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2
*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))
/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8))*log(sqrt(1/2)*(27*
B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*
a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608
*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4
+ 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6
+ 51*A*B^2*a*b^7 + A^2*B*b^8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c - (3*B*
b^9*c^5 - 768*A*a^4*c^10 + 128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3
*b^3 + A*a^2*b^4)*c^8 + 24*(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b
^8)*c^6)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*
a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2
*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*
b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3
*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10
- 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4
*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*
c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*
A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((8
1*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^
2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^
2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B
^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11
+ 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7
 - 64*a^3*c^8)) + 2*(189*B^4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 -
81*(28*A^3*B*a^3*b + A^4*a^2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b -
5016*A^2*B^2*a^3*b^2 - 647*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^
4*b^2 - 303*A*B^3*a^3*b^3 - 186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(
73*B^4*a^3*b^4 - 49*A*B^3*a^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) - sqrt(1/2
)*(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*
x)*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 2
0*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)
*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c + (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^
2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3
+ 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*
A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798
*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4
 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)
/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12
*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8))*log(-sqrt(1/2)*(27*B^3*b^10 + 14
4*(10*A^2*B*a^4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A
^2*B*a^3*b^2 + 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^
3 + 882*A^2*B*a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*
a^2*b^5 + 153*A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*
b^7 + A^2*B*b^8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c - (3*B*b^9*c^5 - 768
*A*a^4*c^10 + 128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*
b^4)*c^8 + 24*(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt
((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a
*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^
3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2
*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^
2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^
11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^
2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^
2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c +
(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 8
1*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625
*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*
b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A
^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 -
 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*
c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8
)) + 2*(189*B^4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*
a^3*b + A^4*a^2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*
a^3*b^2 - 647*A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A
*B^3*a^3*b^3 - 186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^
4 - 49*A*B^3*a^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) + sqrt(1/2)*(a*b^2*c^2
- 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)*sqrt(-(9*B
^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2
 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*
B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^
3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^
2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b
^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^
3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a
*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 -
12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 +
48*a^2*b^2*c^7 - 64*a^3*c^8))*log(sqrt(1/2)*(27*B^3*b^10 + 144*(10*A^2*B*a^
4 + A^3*a^3*b)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A^2*B*a^3*b^2 +
 11*A^3*a^2*b^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^3 + 882*A^2*B*
a^2*b^4 + 17*A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*a^2*b^5 + 153*
A^2*B*a*b^6 + A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*b^7 + A^2*B*b^
8)*c^2 - 27*(17*B^3*a*b^8 + A*B^2*b^9)*c + (3*B*b^9*c^5 - 768*A*a^4*c^10 +
128*(8*B*a^4*b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*b^4)*c^8 + 24*
(14*B*a^2*b^5 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt((81*B^4*b^8 +
 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (6
25*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^
4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2
*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2
 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^
2*c^12 - 64*a^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 -
 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80
*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*
a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6
 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 220
0*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(
425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3
 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*
b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*
c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^
4*a^2*b^6 - 135*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^
2*b^2)*c^4 - (2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*
A^3*B*a^2*b^3 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 -
 186*A^2*B^2*a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a
^2*b^5 - 5*A^2*B^2*a*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2*c^2 - 4*a^2*c^3 +
(b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)*sqrt(-(9*B^2*b^7 + 60*(4
*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*
c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 + A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*
A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((8
1*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^
2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^
2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B
^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11
+ 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7
 - 64*a^3*c^8))*log(-sqrt(1/2)*(27*B^3*b^10 + 144*(10*A^2*B*a^4 + A^3*a^3*b
)*c^6 - 8*(500*B^3*a^5 + 930*A*B^2*a^4*b + 252*A^2*B*a^3*b^2 + 11*A^3*a^2*b
^3)*c^5 + (11360*B^3*a^4*b^2 + 7608*A*B^2*a^3*b^3 + 882*A^2*B*a^2*b^4 + 17*
A^3*a*b^5)*c^4 - (8818*B^3*a^3*b^4 + 2841*A*B^2*a^2*b^5 + 153*A^2*B*a*b^6 +
 A^3*b^7)*c^3 + 9*(329*B^3*a^2*b^6 + 51*A*B^2*a*b^7 + A^2*B*b^8)*c^2 - 27*(
17*B^3*a*b^8 + A*B^2*b^9)*c + (3*B*b^9*c^5 - 768*A*a^4*c^10 + 128*(8*B*a^4*
b + 5*A*a^3*b^2)*c^9 - 192*(5*B*a^3*b^3 + A*a^2*b^4)*c^8 + 24*(14*B*a^2*b^5
 + A*a*b^6)*c^7 - (52*B*a*b^7 + A*b^8)*c^6)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c
^6 - 18*(25*A^2*B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 +
2200*A*B^3*a^3*b + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 -
6*(425*B^4*a^3*b^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c
^3 + 27*(113*B^4*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4
*a*b^6 + 2*A*B^3*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a
^3*c^13)))*sqrt(-(9*B^2*b^7 + 60*(4*A*B*a^3 + A^2*a^2*b)*c^4 - 15*(28*B^2*a
^3*b + 20*A*B*a^2*b^2 + A^2*a*b^3)*c^3 + (385*B^2*a^2*b^3 + 80*A*B*a*b^4 +
A^2*b^5)*c^2 - 3*(35*B^2*a*b^5 + 2*A*B*b^6)*c - (b^6*c^5 - 12*a*b^4*c^6 + 4
8*a^2*b^2*c^7 - 64*a^3*c^8)*sqrt((81*B^4*b^8 + 81*A^4*a^2*c^6 - 18*(25*A^2*
B^2*a^3 + 44*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (625*B^4*a^4 + 2200*A*B^3*a^3*b
 + 2904*A^2*B^2*a^2*b^2 + 196*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(425*B^4*a^3*b
^2 + 798*A*B^3*a^2*b^3 + 132*A^2*B^2*a*b^4 + 2*A^3*B*b^5)*c^3 + 27*(113*B^4
*a^2*b^4 + 52*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(17*B^4*a*b^6 + 2*A*B^3
*b^7)*c)/(b^6*c^10 - 12*a*b^4*c^11 + 48*a^2*b^2*c^12 - 64*a^3*c^13)))/(b^6*
c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)) + 2*(189*B^4*a^2*b^6 - 1
```

```
35*A*B^3*a*b^7 + 324*A^4*a^3*c^5 - 81*(28*A^3*B*a^3*b + A^4*a^2*b^2)*c^4 -
(2500*B^4*a^5 + 2500*A*B^3*a^4*b - 5016*A^2*B^2*a^3*b^2 - 647*A^3*B*a^2*b^3
 - 5*A^4*a*b^4)*c^3 + 9*(625*B^4*a^4*b^2 - 303*A*B^3*a^3*b^3 - 186*A^2*B^2*
a^2*b^4 - 5*A^3*B*a*b^5)*c^2 - 27*(73*B^4*a^3*b^4 - 49*A*B^3*a^2*b^5 - 5*A^
2*B^2*a*b^6)*c)*sqrt(x)) - 2*(3*B*a*b^2 + 2*(B*b^2*c - 4*B*a*c^2)*x^2 - (10
*B*a^2 + A*a*b)*c + (3*B*b^3 + 2*A*a*c^2 - (11*B*a*b + A*b^2)*c)*x)*sqrt(x)
)/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*
x)
```

giac [B] time = 2.13, size = 5691, normalized size = 13.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*B*sqrt(x)/c^2 + (B*b^3*x^(3/2) - 3*B*a*b*c*x^(3/2) - A*b^2*c*x^(3/2) + 2*
A*a*c^2*x^(3/2) + B*a*b^2*sqrt(x) - 2*B*a^2*c*sqrt(x) - A*a*b*c*sqrt(x))/((
b^2*c^2 - 4*a*c^3)*(c*x^2 + b*x + a)) + 1/8*((2*b^4*c^3 - 20*a*b^2*c^4 + 48
*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c
+ 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 +
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 24*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 12*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 1
2*(b^2 - 4*a*c)*a*c^4)*(b^2*c^2 - 4*a*c^3)^2*A - (6*b^5*c^2 - 50*a*b^3*c^3
+ 104*a^2*b*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*b^5 + 25*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3
*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c - 52
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 26*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 3*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 + 13*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 6*(b^2 - 4*a*c)
*b^3*c^2 + 26*(b^2 - 4*a*c)*a*b*c^3)*(b^2*c^2 - 4*a*c^3)^2*B + 2*(sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c^5 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5
 + 2*a*b^5*c^5 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 + 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^3*c^6 - 16*a^2*b^3*c^6 - 4*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^2*b*c^7 + 32*a^3*b*c^7 - 2*(b^2 - 4*a*c)*a*b^3*c^5 + 8*(b^2
 - 4*a*c)*a^2*b*c^6)*A*abs(-b^2*c^2 + 4*a*c^3) - 2*(3*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a*b^6*c^3 - 34*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^2*b^4*c^4 - 6*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 + 6*a*b^6*
c^4 + 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 44*sqrt(2)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 3*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a*b^4*c^5 - 68*a^2*b^4*c^5 - 160*sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^4*c^6 - 80*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 -
 22*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + 256*a^3*b^2*c^6 +
 40*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^7 - 320*a^4*c^7 - 6*(b^2
- 4*a*c)*a*b^4*c^4 + 44*(b^2 - 4*a*c)*a^2*b^2*c^5 - 80*(b^2 - 4*a*c)*a^3*c^
6)*B*abs(-b^2*c^2 + 4*a*c^3) - (2*b^8*c^7 - 32*a*b^6*c^8 + 160*a^2*b^4*c^9
- 256*a^3*b^2*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*b^8*c^5 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a*b^6*c^6 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7
*c^6 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4
*c^7 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c
^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^7 + 12
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 + 6
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 1
```

```
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^8 - 32*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^9 - 2*(
b^2 - 4*a*c)*b^6*c^7 + 24*(b^2 - 4*a*c)*a*b^4*c^8 - 64*(b^2 - 4*a*c)*a^2*b^
2*c^9)*A + (6*b^9*c^6 - 86*a*b^7*c^7 + 440*a^2*b^5*c^8 - 928*a^3*b^3*c^9 +
640*a^4*b*c^10 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^9*c^4 + 43*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^7*c^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8*c
^5 - 220*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*
c^6 - 62*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^
6 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^6 + 4
64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^7 +
192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 +
 31*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - 3
20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^8 - 16
0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 - 9
6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 8
0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^9 - 6*(
b^2 - 4*a*c)*b^7*c^6 + 62*(b^2 - 4*a*c)*a*b^5*c^7 - 192*(b^2 - 4*a*c)*a^2*b
^3*c^8 + 160*(b^2 - 4*a*c)*a^3*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b
^3*c^2 - 4*a*b*c^3 + sqrt((b^3*c^2 - 4*a*b*c^3)^2 - 4*(a*b^2*c^2 - 4*a^2*c^
3)*(b^2*c^3 - 4*a*c^4)))/(b^2*c^3 - 4*a*c^4)))/((a*b^6*c^5 - 12*a^2*b^4*c^6
 - 2*a*b^5*c^6 + 48*a^3*b^2*c^7 + 16*a^2*b^3*c^7 + a*b^4*c^7 - 64*a^4*c^8 -
 32*a^3*b*c^8 - 8*a^2*b^2*c^8 + 16*a^3*c^9)*abs(-b^2*c^2 + 4*a*c^3)*abs(c))
 - 1/8*((2*b^4*c^3 - 20*a*b^2*c^4 + 48*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*c^3 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*b^2*c^3 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a*c^4 - 2*(b^2 - 4*a*c)*b^2*c^3 + 12*(b^2 - 4*a*c)*a*c^4)*(b^2*c^2 - 4*a
*c^3)^2*A - (6*b^5*c^2 - 50*a*b^3*c^3 + 104*a^2*b*c^4 - 3*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 25*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c - 52*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*b^3*c^2 + 13*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*b*c^3 - 6*(b^2 - 4*a*c)*b^3*c^2 + 26*(b^2 - 4*a*c)*a*b*c^3)*
(b^2*c^2 - 4*a*c^3)^2*B - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*
c^4 - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 - 2*sqrt(2)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 2*a*b^5*c^5 + 16*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*a^2*b^2*c^6 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^6 + 16*a^2*
b^3*c^6 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^7 - 32*a^3*b*c^
7 + 2*(b^2 - 4*a*c)*a*b^3*c^5 - 8*(b^2 - 4*a*c)*a^2*b*c^6)*A*abs(-b^2*c^2 +
 4*a*c^3) + 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 - 34*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 6*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a*b^5*c^4 - 6*a*b^6*c^4 + 128*sqrt(2)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^3*b^2*c^5 + 44*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b
^3*c^5 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 + 68*a^2*b^4*c
^5 - 160*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*c^6 - 80*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 - 22*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^2*c^6 - 256*a^3*b^2*c^6 + 40*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*c^7 + 320*a^4*c^7 + 6*(b^2 - 4*a*c)*a*b^4*c^4 - 44*(b^2 - 4*a*c)
*a^2*b^2*c^5 + 80*(b^2 - 4*a*c)*a^3*c^6)*B*abs(-b^2*c^2 + 4*a*c^3) - (2*b^8
*c^7 - 32*a*b^6*c^8 + 160*a^2*b^4*c^9 - 256*a^3*b^2*c^10 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^5 + 16*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^6 + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^6 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^6*c^7 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^4*c^8 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^9 - 2*(b^2 - 4*a*c)*b^6*c^7 + 24*(b^2 - 4*a*
c)*a*b^4*c^8 - 64*(b^2 - 4*a*c)*a^2*b^2*c^9)*A + (6*b^9*c^6 - 86*a*b^7*c^7
+ 440*a^2*b^5*c^8 - 928*a^3*b^3*c^9 + 640*a^4*b*c^10 - 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^9*c^4 + 43*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^5 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^5 - 220*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^6 - 62*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^6 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^6 + 464*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^7 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^7 + 31*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^7 - 320*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^8 - 160*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^8 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^8 + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^3*b*c^9 - 6*(b^2 - 4*a*c)*b^7*c^6 + 62*(b^2 - 4*a*
c)*a*b^5*c^7 - 192*(b^2 - 4*a*c)*a^2*b^3*c^8 + 160*(b^2 - 4*a*c)*a^3*b*c^9)
*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3*c^2 - 4*a*b*c^3 - sqrt((b^3*c^2 -
4*a*b*c^3)^2 - 4*(a*b^2*c^2 - 4*a^2*c^3)*(b^2*c^3 - 4*a*c^4)))/(b^2*c^3 - 4
*a*c^4)))/((a*b^6*c^5 - 12*a^2*b^4*c^6 - 2*a*b^5*c^6 + 48*a^3*b^2*c^7 + 16*
a^2*b^3*c^7 + a*b^4*c^7 - 64*a^4*c^8 - 32*a^3*b*c^8 - 8*a^2*b^2*c^8 + 16*a^
3*c^9)*abs(-b^2*c^2 + 4*a*c^3)*abs(c))
```

maple [B] time = 0.10, size = 1537, normalized size = 3.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*B/c^2*x^(1/2)+3/2/c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*b^4*B-1/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*A*b^3+13/2/c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh
(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/c/(4*a*c-b^
2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+4/(4*a*c-b^2)/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+4/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b-13/2/c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*a*b*B+3/2/c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))
*b^4*B+3/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*a*b*B+1/c/(c*x^2+b*x+a)*a/(4*a
*c-b^2)*x^(1/2)*A*b+1/2/c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2-3/2
/c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B-1/2/c/(4*a*c-b^2)*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*A*b^2+3/2/c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B
```

```
+2/c/(c*x^2+b*x+a)*a^2/(4*a*c-b^2)*x^(1/2)*B-1/c^2/(c*x^2+b*x+a)/(4*a*c-b^2
)*x^(3/2)*b^3*B-3/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a+3/(4*a*c-b^2)
*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(
1/2))*c)^(1/2)*c*x^(1/2))*A*a+1/c/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*A*b^2-1
9/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1
/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-19
/2/c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-2/(c*x
^2+b*x+a)/(4*a*c-b^2)*x^(3/2)*A*a+10/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a^2*B+10/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
c*x^(1/2))*a^2*B-1/c^2/(c*x^2+b*x+a)*a/(4*a*c-b^2)*x^(1/2)*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(Abc-\left(b^2-2\,ac\right)B\right)x^{\frac{5}{2}}-(Bab-2\,Aac)x^{\frac{3}{2}}}{ab^2c-4\,a^2c^2+\left(b^2c^2-4\,ac^3\right)x^2+\left(b^3c-4\,abc^2\right)x}+\int -\frac{\left(Abc-\left(3\,b^2-10\,ac\right)B\right)x^{\frac{3}{2}}-3\,(Bab-2\,Aac)\sqrt{x}}{2\left(ab^2c-4\,a^2c^2+\left(b^2c^2-4\,ac^3\right)x^2+\left(b^3c-4\,abc^2\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] ((A*b*c - (b^2 - 2*a*c)*B)*x^(5/2) - (B*a*b - 2*A*a*c)*x^(3/2))/(a*b^2*c -
4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x) + integrate(-1
/2*((A*b*c - (3*b^2 - 10*a*c)*B)*x^(3/2) - 3*(B*a*b - 2*A*a*c)*sqrt(x))/(a*
b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x), x)
```

mupad [B] time = 5.14, size = 16631, normalized size = 40.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*B*x^(1/2))/c^2 - atan(((((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c
^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*
c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a
*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2
) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A
^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^
3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B
*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2
*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^
3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 -
51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*
(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(409
6*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8
+ 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 -
 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((
9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12
*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 20
77*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*
B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9
*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^
2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b
^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) -
```

```
152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*
(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 24
0*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^
(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*
c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*
b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B
*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*
B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c
 - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077
*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^
2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*
a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c
^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*
a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4
*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 15
2*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-
(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*
a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1
/2)*1i - (((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c
^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*
b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2
*b^2*c^5) + (2*x^(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2
- 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 -
3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240
*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^
2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c -
 b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*
b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9
)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12
*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^
9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 +
192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*
c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*
b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^
2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 +
 A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a
^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 154
8*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*
B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^
2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9
)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1
280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2
)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c
 + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2
*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*
A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c
- b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^
7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2
+ 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A
^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/
2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5
*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*
A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*
a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2
- 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^
(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 128
0*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i)/((((2560*
B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5
*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*
a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^
(1/2)*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*
A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*
c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4
 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2
*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A
^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) -
26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A
*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^
(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*
a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*
c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*
c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))
/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^
2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3
*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4
*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*
a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*
a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3
 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 5
1*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(
-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096
*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 +
 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72
*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2
*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2
*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(
16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) -
 A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*
a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b
^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a
*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^
6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*
c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 -
 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*
B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(
4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a
^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3
840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (((2560*B*a^5*c^7 - 4*A*a*b^
7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3
*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3
*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x^(1/2)*((9*B^2*b^4*(-
(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2
*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b
^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*
c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)
^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*
A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6
+ 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 307
20*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^
10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b
^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^
7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7
*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c
^3 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*
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B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840
*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2
*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2)
 + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*
b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2
)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*
c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a
*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1
/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5
 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 -
6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b
^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b
^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B
*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3
 - 8*a*b^2*c^4))*((9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^
2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A
^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a
^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) +
 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^
11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^
9)^(1/2) - 26880*B^2*a^6*b*c^6 + 1548*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^
4 + 22400*A*B*a^4*b^4*c^5 - 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c
 - b^2)^9)^(1/2) - 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2
) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 -
 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 61
44*a^5*b^2*c^10)))^(1/2) - (2*(216*A^3*a^4*c^4 - 63*B^3*a^3*b^5 + 5*A^3*a^2
*b^4*c^2 - 66*A^3*a^3*b^2*c^3 + 45*A*B^2*a^2*b^6 + 600*A*B^2*a^5*c^3 + 573*
B^3*a^4*b^3*c - 1300*B^3*a^5*b*c^2 - 402*A*B^2*a^3*b^4*c - 30*A^2*B*a^2*b^5
*c - 924*A^2*B*a^4*b*c^3 + 762*A*B^2*a^4*b^2*c^2 + 339*A^2*B*a^3*b^3*c^2))/
(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)))*((9*B^2*b^4*(-(4*a
*c - b^2)^9)^(1/2) - A^2*b^11*c^2 - 9*B^2*b^13 + 6*A*B*b^12*c - 288*A^2*a^2
*b^7*c^4 + 1504*A^2*a^3*b^5*c^5 - 3840*A^2*a^4*b^3*c^6 - 2077*B^2*a^2*b^9*c
^2 + 10656*B^2*a^3*b^7*c^3 - 30240*B^2*a^4*b^5*c^4 + 44800*B^2*a^5*b^3*c^5
+ A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^
(1/2) + 15360*A*B*a^6*c^7 + 213*B^2*a*b^11*c + 27*A^2*a*b^9*c^3 + 3840*A^2*
a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) - 26880*B^2*a^6*b*c^6 + 15
48*A*B*a^2*b^8*c^3 - 8064*A*B*a^3*b^6*c^4 + 22400*A*B*a^4*b^4*c^5 - 30720*A
*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a*b^10*c
^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^
9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 -
1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*2i - ((x^(
3/2)*(B*b^3 + 2*A*a*c^2 - A*b^2*c - 3*B*a*b*c))/(4*a*c - b^2) - (x^(1/2)*(2
*B*a^2*c - B*a*b^2 + A*a*b*c))/(4*a*c - b^2))/(a*c^2 + c^3*x^2 + b*c^2*x) -
 atan(((((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3
 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^
4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b
^2*c^5) - (2*x^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^
2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3
840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*
B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2
*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c -
b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b
^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(
4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)
^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*
c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9
 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 1
92*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*
```

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b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*
b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^
2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 +
 A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a
^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 154
8*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*
B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^
2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9
)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1
280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2
)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c
 + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2
*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*
A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b
^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b
^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2
 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 +
A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^
5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548
*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B
*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2
 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)
^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 12
80*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i - (((2560
*B*a^5*c^7 - 4*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^
5*c^5 - 192*A*a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B
*a^4*b^2*c^6)/(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x
^(1/2)*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) -
6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^
3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^
4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a
^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27
*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2)
 + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400
*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*
B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^1
0*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^
2*c^10)))^(1/2)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7
))/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B
^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504
*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*
a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A
*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A
^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*
c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6
 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*
c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4
096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^
8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 -
 72*A^2*a^3*c^5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*
b^2*c^4 + 481*B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*
A^2*a*b^4*c^3 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4)
)/(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^
2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*
A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a
```

```
^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*
B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^
2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c
^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 -
 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c
*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(40
96*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8
 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*1i)/((((2560*B*a^5*c^7 - 4
*A*a*b^7*c^4 + 256*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*
a^3*b^3*c^6 - 184*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/
(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) - (2*x^(1/2)*(-(9*B^
2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c +
 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B
^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*
a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*
c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3
 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^
6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c
^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*
A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4
*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^
2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2
)*(4*b^7*c^5 - 48*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5
 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*
c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c
^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 +
30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)
^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 2
13*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*
a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B
*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2
*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b
^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 +
 b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b
^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) - (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^
5 + A^2*b^6*c^2 + 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*
B^2*a^2*b^4*c^2 - 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3
 - 374*A*B*a^2*b^3*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5
 + b^4*c^3 - 8*a*b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c
 - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^
5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 3
0240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^
9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 21
3*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a
*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*
a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*
c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^
2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 +
b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^
4*c^9 - 6144*a^5*b^2*c^10)))^(1/2) + (((2560*B*a^5*c^7 - 4*A*a*b^7*c^4 + 25
6*A*a^4*b*c^7 + 12*B*a*b^8*c^3 + 48*A*a^2*b^5*c^5 - 192*A*a^3*b^3*c^6 - 184
*B*a^2*b^6*c^4 + 1056*B*a^3*b^4*c^5 - 2688*B*a^4*b^2*c^6)/(64*a^3*c^6 - b^6
*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5) + (2*x^(1/2)*(-(9*B^2*b^13 + A^2*b^11
*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*
c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 -
10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2
*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2)
 - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b
*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*
B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^
5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 -
6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1
/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*
a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*(4*b^7*c^5 - 48
*a*b^5*c^6 - 256*a^3*b*c^8 + 192*a^2*b^3*c^7))/(16*a^2*c^5 + b^4*c^3 - 8*a*
b^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4
*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5
*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^
2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c -
 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/
2) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22
400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2
)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44
*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*
b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5
*b^2*c^10)))^(1/2) + (2*x^(1/2)*(9*B^2*b^8 - 72*A^2*a^3*c^5 + A^2*b^6*c^2 +
 200*B^2*a^4*c^4 - 6*A*B*b^7*c + 74*A^2*a^2*b^2*c^4 + 481*B^2*a^2*b^4*c^2 -
 718*B^2*a^3*b^2*c^3 - 114*B^2*a*b^6*c - 16*A^2*a*b^4*c^3 - 374*A*B*a^2*b^3
*c^3 + 86*A*B*a*b^5*c^2 + 472*A*B*a^3*b*c^4))/(16*a^2*c^5 + b^4*c^3 - 8*a*b
^2*c^4))*(-(9*B^2*b^13 + A^2*b^11*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
- 6*A*B*b^12*c + 288*A^2*a^2*b^7*c^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*
b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 10656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*
c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2
*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c -
27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2
) + 26880*B^2*a^6*b*c^6 - 1548*A*B*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 224
00*A*B*a^4*b^4*c^5 + 30720*A*B*a^5*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)
^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*
A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b
^10*c^6 + 240*a^2*b^8*c^7 - 1280*a^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*
b^2*c^10)))^(1/2) - (2*(216*A^3*a^4*c^4 - 63*B^3*a^3*b^5 + 5*A^3*a^2*b^4*c^
2 - 66*A^3*a^3*b^2*c^3 + 45*A*B^2*a^2*b^6 + 600*A*B^2*a^5*c^3 + 573*B^3*a^4
*b^3*c - 1300*B^3*a^5*b*c^2 - 402*A*B^2*a^3*b^4*c - 30*A^2*B*a^2*b^5*c - 92
4*A^2*B*a^4*b*c^3 + 762*A*B^2*a^4*b^2*c^2 + 339*A^2*B*a^3*b^3*c^2))/(64*a^3
*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)))*(-(9*B^2*b^13 + A^2*b^11*
c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*b^12*c + 288*A^2*a^2*b^7*c
^4 - 1504*A^2*a^3*b^5*c^5 + 3840*A^2*a^4*b^3*c^6 + 2077*B^2*a^2*b^9*c^2 - 1
0656*B^2*a^3*b^7*c^3 + 30240*B^2*a^4*b^5*c^4 - 44800*B^2*a^5*b^3*c^5 + A^2*
b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + 25*B^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2)
- 15360*A*B*a^6*c^7 - 213*B^2*a*b^11*c - 27*A^2*a*b^9*c^3 - 3840*A^2*a^5*b*
c^7 - 9*A^2*a*c^3*(-(4*a*c - b^2)^9)^(1/2) + 26880*B^2*a^6*b*c^6 - 1548*A*B
*a^2*b^8*c^3 + 8064*A*B*a^3*b^6*c^4 - 22400*A*B*a^4*b^4*c^5 + 30720*A*B*a^5
*b^2*c^6 - 51*B^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a*b^10*c^2 - 6
*A*B*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 44*A*B*a*b*c^2*(-(4*a*c - b^2)^9)^(1/
2))/(8*(4096*a^6*c^11 + b^12*c^5 - 24*a*b^10*c^6 + 240*a^2*b^8*c^7 - 1280*a
^3*b^6*c^8 + 3840*a^4*b^4*c^9 - 6144*a^5*b^2*c^10)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1018 $\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=321

$$-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4a}}}\right.}{\sqrt{2}c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}$$

```
[Out] -(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)*x^(1/2)/c/(-4*a*c+b^2)/(c*x^2+b*
x+a)+1/2*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(b^2*
B+A*b*c-6*a*B*c+(-4*A*a*c^2-A*b^2*c+8*B*a*b*c-B*b^3)/(-4*a*c+b^2)^(1/2))/c^
(3/2)/(-4*a*c+b^2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+1/2*arctan(2^(1/2)*
c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*(b^2*B+A*b*c-6*a*B*c+(4*A*a*c
^2+A*b^2*c-8*B*a*b*c+B*b^3)/(-4*a*c+b^2)^(1/2))/c^(3/2)/(-4*a*c+b^2)*2^(1/2
)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.43, antiderivative size = 321, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {818, 826, 1166, 205}

$$\frac{\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}-6aBc+Abc+b^2B\right)}{\sqrt{2}c^{3/2}\left(b^2-4ac\right)\sqrt{\sqrt{b^2-4a}}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[x]*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(c*(b^2 - 4*a*c
)*(a + b*x + c*x^2))) + ((b^2*B + A*b*c - 6*a*B*c - (b^3*B + A*b^2*c - 8*a*
b*B*c + 4*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt
[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)*Sqrt[b - Sqrt[b^2
- 4*a*c]]) + ((b^2*B + A*b*c - 6*a*B*c + (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a
*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b
^2 - 4*a*c]]])/(Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\int \frac{\frac{1}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+Abc-6aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+Abc-6aBc\right)x^2}{a+bx^2+cx^4}\,d\right.}{c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^2B+Abc-6aBc-\frac{b^3B+Ab^2c-8abBc+4aAc}{\sqrt{b^2-4ac}}\right.}{2c\left(b^2-\right.}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{c\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(b^2B+Abc-6aBc-\frac{b^3B+Ab^2c-8abBc+4aAc}{\sqrt{b^2-4ac}}\right.}{\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)\sqrt{b-\sqrt{b}}}$$

Mathematica [A] time = 1.08, size = 339, normalized size = 1.06

$$\frac{\frac{x^{5/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)}+\frac{a\left(-\frac{\sqrt{2}\left(\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}+6aBc-Abc+b^2(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-\frac{\sqrt{2}\left(-\frac{4aAc^2-8abBc+Ab^2c+b^3B}{\sqrt{b^2-4ac}}+6aBc-Abc+b\right.}{\sqrt{\sqrt{b^2-4ac}+b}}\right.}{2c^{3/2}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*x^(3/2) + (x^(5/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(2*Sqrt[c]*(-(b*B) + 2*A*c)*Sqrt[x] - (Sqr
t[2]*(-(b^2*B) - A*b*c + 6*a*B*c + (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a*A*c^2
)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4
*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] - (Sqrt[2]*(-(b^2*B) - A*b*c + 6*a*B*c
 - (b^3*B + A*b^2*c - 8*a*b*B*c + 4*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqr
t[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a
*c]]))/(2*c^(3/2)))/(a*(b^2 - 4*a*c))
```

fricas [B] time = 4.40, size = 4653, normalized size = 14.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4
*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b
- 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 1
2*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A
^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c
^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*
c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))
*log(sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*A*B^2*a^
3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2*b^2 - 1
2*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3*A^2*B*b
^5)*c^2 - (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b^2 - 3*A
*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b^7)*c^4)
*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2
- 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6
*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5 - 12*(4
*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15
*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a
^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B
^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*
c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a
*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3*b^5 - 4
*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*A*B^3*a^
2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*B^3*a*b^
3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2
- 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^
2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 -
2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt(
(B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A
*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 -
 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48
*a^2*b^2*c^5 - 64*a^3*c^6))*log(-sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A
^3*a^2*c^5 + 16*(18*A*B^2*a^3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*
a^3*b + 72*A*B^2*a^2*b^2 - 12*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3
+ 18*A*B^2*a*b^4 - 3*A^2*B*b^5)*c^2 - (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*
c^7 - 64*(10*B*a^3*b^2 - 3*A*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5
- 4*(6*B*a*b^6 - A*b^7)*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A
^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*
a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c
^9)))*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*
B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c + (b^6*c^3 - 12*a*b^4
*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*
a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*
(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 6
4*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5
*B^4*a*b^4 - 3*A*B^3*b^5 - 4*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3
*(108*B^4*a^3 - 108*A*B^3*a^2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81
*B^4*a^2*b^2 - 65*A*B^3*a*b^3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) + sqrt(1/2)*(a*b
^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)*sqrt(-(
B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2
*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2
*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b
)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2
- 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/
(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*log(sqrt(1/2)*(B^3*
b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*A*B^2*a^3 - 3*A^2*B*a^2*b +
A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2*b^2 - 12*A^2*B*a*b^3 + A^3*
b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3*A^2*B*b^5)*c^2 + (B*b^8*c^3
 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b^2 - 3*A*a^2*b^3)*c^6 + 48*(
4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b^7)*c^4)*sqrt((B^4*b^4 + A^4
*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A
^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7
 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*
c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b
^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^
4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*
b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b
^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^
2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3*b^5 - 4*A^4*a*c^4 + (20*A^3
*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*A*B^3*a^2*b + 28*A^2*B^2*a*b
^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*B^3*a*b^3 + 9*A^2*B^2*b^4)*c
)*sqrt(x)) - sqrt(1/2)*(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^
3*c - 4*a*b*c^2)*x)*sqrt(-(B^2*b^5 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2
*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*
c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 -
 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2
*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a
^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^
3*c^6))*log(-sqrt(1/2)*(B^3*b^7 - 17*B^3*a*b^5*c - 32*A^3*a^2*c^5 + 16*(18*
A*B^2*a^3 - 3*A^2*B*a^2*b + A^3*a*b^2)*c^4 - 2*(72*B^3*a^3*b + 72*A*B^2*a^2
*b^2 - 12*A^2*B*a*b^3 + A^3*b^4)*c^3 + (88*B^3*a^2*b^3 + 18*A*B^2*a*b^4 - 3
*A^2*B*b^5)*c^2 + (B*b^8*c^3 + 256*(3*B*a^4 - A*a^3*b)*c^7 - 64*(10*B*a^3*b
^2 - 3*A*a^2*b^3)*c^6 + 48*(4*B*a^2*b^4 - A*a*b^5)*c^5 - 4*(6*B*a*b^6 - A*b
^7)*c^4)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 + 3*(27*
B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B^3*b^3)
*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt(-(B^2*b^5
 - 12*(4*A*B*a^2 - A^2*a*b)*c^3 + (60*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c
^2 - (15*B^2*a*b^3 - 2*A*B*b^4)*c - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^
5 - 64*a^3*c^6)*sqrt((B^4*b^4 + A^4*c^4 - 2*(9*A^2*B^2*a - 2*A^3*B*b)*c^3 +
 3*(27*B^4*a^2 - 12*A*B^3*a*b + 2*A^2*B^2*b^2)*c^2 - 2*(9*B^4*a*b^2 - 2*A*B
^3*b^3)*c)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^
3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) - 2*(5*B^4*a*b^4 - 3*A*B^3
*b^5 - 4*A^4*a*c^4 + (20*A^3*B*a*b - 3*A^4*b^2)*c^3 + 3*(108*B^4*a^3 - 108*
A*B^3*a^2*b + 28*A^2*B^2*a*b^2 - 3*A^3*B*b^3)*c^2 - (81*B^4*a^2*b^2 - 65*A*
B^3*a*b^3 + 9*A^2*B^2*b^4)*c)*sqrt(x)) + 2*(B*a*b - 2*A*a*c + (B*b^2 - (2*B
*a + A*b)*c)*x)*sqrt(x))/(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (
b^3*c - 4*a*b*c^2)*x)
```

giac [B] time = 1.83, size = 4544, normalized size = 14.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(B*b^2*x^(3/2) - 2*B*a*c*x^(3/2) - A*b*c*x^(3/2) + B*a*b*sqrt(x) - 2*A*a*c
*sqrt(x))/((b^2*c - 4*a*c^2)*(c*x^2 + b*x + a)) + 1/8*((2*b^3*c^3 - 8*a*b*c
^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c + 4*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 + 2*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^2 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^3 - 2*(b^2 - 4*a*c)*b*c^3)*
(b^2*c - 4*a*c^2)^2*A + (2*b^4*c^2 - 20*a*b^2*c^3 + 48*a^2*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 10*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*b^2*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 12*(b^2 - 4*a*c)*a*c^3)*(b^2
*c - 4*a*c^2)^2*B - 4*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 -
8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 - 2*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 2*a*b^4*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*
c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^5 + 16*a^2*b^2*c^5 -
4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^6 - 32*a^3*c^6 + 2*(b^2 - 4
*a*c)*a*b^2*c^4 - 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(b^2*c - 4*a*c^2) + 2*(sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^
4*c^3 - 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4
+ 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 16*a^2*b^3*c^4 - 4*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^5 - 32*a^3*b*c^5 + 2*(b^2 - 4*a*c)*a*b^3*c^3 - 8
*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(b^2*c - 4*a*c^2) - (2*b^7*c^5 - 8*a*b^5*c^6
 - 32*a^2*b^3*c^7 + 128*a^3*b*c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*b^7*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a*b^5*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*b^6*c^4 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*b^5*c^5 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^3*b*c^6 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b^2*c^6 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
2*b*c^7 - 2*(b^2 - 4*a*c)*b^5*c^5 + 32*(b^2 - 4*a*c)*a^2*b*c^7)*A - (2*b^8*
c^4 - 32*a*b^6*c^5 + 160*a^2*b^4*c^6 - 256*a^3*b^2*c^7 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7*c^3 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 - 2*(b^2 - 4*a*c)*b^6*c^4 + 24*(b^2 - 4*a*c)
*a*b^4*c^5 - 64*(b^2 - 4*a*c)*a^2*b^2*c^6)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sq
rt((b^3*c - 4*a*b*c^2 + sqrt((b^3*c - 4*a*b*c^2)^2 - 4*(a*b^2*c - 4*a^2*c^2
)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/((a*b^6*c^3 - 12*a^2*b^4*c^4
 - 2*a*b^5*c^4 + 48*a^3*b^2*c^5 + 16*a^2*b^3*c^5 + a*b^4*c^5 - 64*a^4*c^6 -
32*a^3*b*c^6 - 8*a^2*b^2*c^6 + 16*a^3*c^7)*abs(b^2*c - 4*a*c^2)*abs(c)) - 1
/8*((2*b^3*c^3 - 8*a*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*b^3*c + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^3 -
 2*(b^2 - 4*a*c)*b*c^3)*(b^2*c - 4*a*c^2)^2*A + (2*b^4*c^2 - 20*a*b^2*c^3 +
 48*a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4
 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 24*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 12*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 6*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 + 12*(
b^2 - 4*a*c)*a*c^3)*(b^2*c - 4*a*c^2)^2*B + 4*(sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a*b^4*c^3 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c
```

```
^4 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 + 2*a*b^4*c^4 + 16
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 8*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^2*b*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2
*c^5 - 16*a^2*b^2*c^5 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^6 +
 32*a^3*c^6 - 2*(b^2 - 4*a*c)*a*b^2*c^4 + 8*(b^2 - 4*a*c)*a^2*c^5)*A*abs(b^
2*c - 4*a*c^2) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 8*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 2*a*b^5*c^3 + 16*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^3*b*c^4 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^4 - 16*a^2*b^3*c^4 -
 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^5 + 32*a^3*b*c^5 - 2*(b^
2 - 4*a*c)*a*b^3*c^3 + 8*(b^2 - 4*a*c)*a^2*b*c^4)*B*abs(b^2*c - 4*a*c^2) -
(2*b^7*c^5 - 8*a*b^5*c^6 - 32*a^2*b^3*c^7 + 128*a^3*b*c^8 - sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^3 + 4*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^5 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^6 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b*c^7 - 2*(b^2 - 4*a*c)*b^5*c^5 + 32*(b^2 - 4*a*c
)*a^2*b*c^7)*A - (2*b^8*c^4 - 32*a*b^6*c^5 + 160*a^2*b^4*c^6 - 256*a^3*b^2*
c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^8*c^2 + 1
6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^3 + 2*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c^3 - 80*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^4 - 24*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^4 - sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^4 + 128*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^5 + 64*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^5 + 12*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^5 - 32*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^6 - 2*(b^2 - 4*a*c)*b^
6*c^4 + 24*(b^2 - 4*a*c)*a*b^4*c^5 - 64*(b^2 - 4*a*c)*a^2*b^2*c^6)*B)*arcta
n(2*sqrt(1/2)*sqrt(x)/sqrt((b^3*c - 4*a*b*c^2 - sqrt((b^3*c - 4*a*b*c^2)^2
- 4*(a*b^2*c - 4*a^2*c^2)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/((a*b
^6*c^3 - 12*a^2*b^4*c^4 - 2*a*b^5*c^4 + 48*a^3*b^2*c^5 + 16*a^2*b^3*c^5 + a
*b^4*c^5 - 64*a^4*c^6 - 32*a^3*b*c^6 - 8*a^2*b^2*c^6 + 16*a^3*c^7)*abs(b^2*
c - 4*a*c^2)*abs(c))
```

maple [B] time = 0.10, size = 1059, normalized size = 3.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*(-1/2*(A*b*c+2*B*a*c-B*b^2)/c/(4*a*c-b^2)*x^(3/2)-1/2*a*(2*A*c-B*b)/(4*a*
c-b^2)/c*x^(1/2))/(c*x^2+b*x+a)-1/2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*
b-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-1/2/(4*a*
c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/(4*a*c-b^2)*2^(1
/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*B-1/2/(4*a*c-b^2)/c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+4
/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/(4*a*c-b
^2)/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*B+1/2/(4*a*c-b^2)*2^(
1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*c*x^(1/2))*A*a-1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b^2-3/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
anh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B+1/2/(4*a*c-b^2
)/c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+4/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*a*b*B-1/2/(4*a*c-b^2)/c/(-4*a*c+b^2)^(1/2)*2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(Bb-2\,Ac)x^{\frac{5}{2}}+(2\,Ba-Ab)x^{\frac{3}{2}}}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x}-\int\frac{(Bb-2\,Ac)x^{\frac{3}{2}}+3\,(2\,Ba-Ab)\sqrt{x}}{2\left(ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] ((B*b - 2*A*c)*x^(5/2) + (2*B*a - A*b)*x^(3/2))/(a*b^2 - 4*a^2*c + (b^2*c -
 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x) - integrate(1/2*((B*b - 2*A*c)*x^(3/2) +
 3*(2*B*a - A*b)*sqrt(x))/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 -
 4*a*b*c)*x), x)
```

mupad [B] time = 6.47, size = 12408, normalized size = 38.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] - ((x^(1/2)*(2*A*a*c - B*a*b))/(c*(4*a*c - b^2)) + (x^(3/2)*(A*b*c - B*b^2
+ 2*B*a*c))/(c*(4*a*c - b^2)))/(a + b*x + c*x^2) - atan(((((512*A*a^4*c^6 -
 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A
*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 -
12*a*b^4*c^2 + 48*a^2*b^2*c^3) - (2*x^(1/2)*(-(B^2*b^11 + A^2*b^9*c^2 + A^2
*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^
10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 150
4*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*
c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b
*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2
*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^
12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*
c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 +
 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^
9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
 + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^
7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27
*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 384
0*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*
b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a
^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 38
40*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^
2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 1
6*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4
*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*
c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^
2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^
5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*
c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A
*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(
4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*
a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a
^5*b^2*c^8)))^(1/2)*1i - (((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 -
 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3
+ 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) +
 (2*x^(1/2)*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) +
B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*
A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4
*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)
^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128
*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2
) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2
*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*
(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a
^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^
9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5
*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3
840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*
c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^
6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b
^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^
4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^
8)))^(1/2) + (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3
*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3
 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*
(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4
*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*
c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3
072*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768
*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4
*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a
*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1
280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((512*
A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*
c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64
*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) - (2*x^(1/2)*(-(B^2*b^11 + A^2*b^
9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
 + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^
7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27
*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 384
0*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*
b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a
^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 38
40*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*
a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^
11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^
2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288
*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a
^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*
b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 15
36*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)
/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b
^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6
 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*
```

```
b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b
*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*
c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^1
0*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504
*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c
 - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*
c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*
A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^1
2*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c
^7 - 6144*a^5*b^2*c^8)))^(1/2) - (2*(3*A*B^2*a*b^5 - 216*B^3*a^4*c^2 - 5*B^
3*a^2*b^4 - 24*A^2*B*a^3*c^3 + 3*A^3*a*b^3*c^2 + 4*A^3*a^2*b*c^3 + 66*B^3*a
^3*b^2*c - 51*A*B^2*a^2*b^3*c + 204*A*B^2*a^3*b*c^2 - 42*A^2*B*a^2*b^2*c^2
 + 6*A^2*B*a*b^4*c))/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) +
(((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a
^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6
*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*(-(B^2*b^11 +
 A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9
)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2
*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c
^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^
6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A
*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*
(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c
^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4
 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-
(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a
*c - b^2)^9)^(1/2) + 2*A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^
5 + 288*B^2*a^2*b^7*c^2 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 307
2*A*B*a^5*c^6 - 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A
^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c
^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b
^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 128
0*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)*(
B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B
^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*
B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*(-(B^2*b^11 + A^2*b^9*c^2
 + A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*
A*B*b^10*c - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2
 - 1504*B^2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*
a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2
*a^5*b*c^5 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c
^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^
9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^
4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)))*(-(B^2*b^11 + A^2*b^9*c^2 + A^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*b^10*c
 - 96*A^2*a^2*b^5*c^4 + 512*A^2*a^3*b^3*c^5 + 288*B^2*a^2*b^7*c^2 - 1504*B^
2*a^3*b^5*c^3 + 3840*B^2*a^4*b^3*c^4 + 3072*A*B*a^5*c^6 - 27*B^2*a*b^9*c -
9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 768*A^2*a^4*b*c^6 - 3840*B^2*a^5*b*c^5
 + 192*A*B*a^2*b^6*c^3 - 128*A*B*a^3*b^4*c^4 - 1536*A*B*a^4*b^2*c^5 + 2*A*B
*b*c*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c
^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7
 - 6144*a^5*b^2*c^8)))^(1/2)*2i - atan(((((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4
*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*
B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*
a^2*b^2*c^3) - (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2
 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b
^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 -
 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*
a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*
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b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c -
 b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*
c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*
c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/
(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^
2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96
*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3
*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2
*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 19
2*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*
(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 -
24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 614
4*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2
- 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^
2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*
a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B
^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A
^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*
b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^
(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*
A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2)
 + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*
b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1
i - (((512*A*a^4*c^6 - 8*A*a*b^6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96
*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/
(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*((A^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2
)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*
B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^
5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b
*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 153
6*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/
(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^
6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*
c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))
*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*
c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3
072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768
*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4
*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1
280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)
*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74
*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*
A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^
2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2
*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^
2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2
*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^
2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*
c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c
^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a
^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((512*A*a^4*c^6 - 8*A*a*b^6*c^
3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*c^5
- 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2
+ 48*a^2*b^2*c^3) - (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9
*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*
a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*
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c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*
(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B
*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*
a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*
b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5
*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b^3*c
^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2)
 - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c
 + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^
2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c -
9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5
 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B
*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c
^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7
- 6144*a^5*b^2*c^8)))^(1/2) - (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2*b^4
*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4*c +
 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2*c^3
 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^1
1 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 -
512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2
*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2
)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 +
 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^
(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240
*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1
/2) - (2*(3*A*B^2*a*b^5 - 216*B^3*a^4*c^2 - 5*B^3*a^2*b^4 - 24*A^2*B*a^3*c^
3 + 3*A^3*a*b^3*c^2 + 4*A^3*a^2*b*c^3 + 66*B^3*a^3*b^2*c - 51*A*B^2*a^2*b^3
*c + 204*A*B^2*a^3*b*c^2 - 42*A^2*B*a^2*b^2*c^2 + 6*A^2*B*a*b^4*c))/(b^6*c
- 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3) + (((512*A*a^4*c^6 - 8*A*a*b^
6*c^3 + 4*B*a*b^7*c^2 - 256*B*a^4*b*c^5 + 96*A*a^2*b^4*c^4 - 384*A*a^3*b^2*
c^5 - 48*B*a^2*b^5*c^3 + 192*B*a^3*b^3*c^4)/(b^6*c - 64*a^3*c^4 - 12*a*b^4*
c^2 + 48*a^2*b^2*c^3) + (2*x^(1/2)*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2
*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*
A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*
b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*
a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192
*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(
-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 2
4*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144
*a^5*b^2*c^8)))^(1/2)*(4*b^7*c^3 - 48*a*b^5*c^4 - 256*a^3*b*c^6 + 192*a^2*b
^3*c^5))/(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(
1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^
10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 150
4*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*
c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b
*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2
*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^
12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*
c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (2*x^(1/2)*(B^2*b^6 + 8*A^2*a^2*c^4 + A^2
*b^4*c^2 - 72*B^2*a^3*c^3 + 2*A*B*b^5*c + 74*B^2*a^2*b^2*c^2 - 16*B^2*a*b^4
*c + 2*A^2*a*b^2*c^3 - 14*A*B*a*b^3*c^2 - 8*A*B*a^2*b*c^3))/(b^4*c + 16*a^2
*c^3 - 8*a*b^2*c^2))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2
*b^11 + B^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^
4 - 512*A^2*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840
*B^2*a^4*b^3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c -
 b^2)^9)^(1/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c
^3 + 128*A*B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)
^9)^(1/2) + 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 +
 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))
```

```
)^(1/2)))*((A^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - A^2*b^9*c^2 - B^2*b^11 + B^2
*b^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*b^10*c + 96*A^2*a^2*b^5*c^4 - 512*A^2
*a^3*b^3*c^5 - 288*B^2*a^2*b^7*c^2 + 1504*B^2*a^3*b^5*c^3 - 3840*B^2*a^4*b^
3*c^4 - 3072*A*B*a^5*c^6 + 27*B^2*a*b^9*c - 9*B^2*a*c*(-(4*a*c - b^2)^9)^(1
/2) + 768*A^2*a^4*b*c^6 + 3840*B^2*a^5*b*c^5 - 192*A*B*a^2*b^6*c^3 + 128*A*
B*a^3*b^4*c^4 + 1536*A*B*a^4*b^2*c^5 + 2*A*B*b*c*(-(4*a*c - b^2)^9)^(1/2) +
 36*A*B*a*b^8*c^2)/(8*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^
8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1019 $\int \frac{\sqrt{x}(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=276

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(-\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+\right.}{\sqrt{2}\sqrt{c}\left(b^2-4ac\right.}$$

```
[Out] -(A*b-2*a*B-(-2*A*c+B*b)*x)*x^(1/2)/(-4*a*c+b^2)/(c*x^2+b*x+a)+1/2*arctan(2
^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(b*B-2*A*c+(4*A*b*c-4*
B*a*c-B*b^2)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)*2^(1/2)/c^(1/2)/(b-(-4*a*c+b^
2)^(1/2))^(1/2)+1/2*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(
1/2))*(b*B-2*A*c+(-4*A*b*c+4*B*a*c+B*b^2)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)*
2^(1/2)/c^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {820, 826, 1166, 205}

$$-\frac{\sqrt{x}(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(-\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+bB\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}-2Ac+\right.}{\sqrt{2}\sqrt{c}\left(b^2-4ac\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[x]*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*(a + b*x + c*x^2
))) + ((b*B - 2*A*c - (b^2*B - 4*A*b*c + 4*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*(
b^2 - 4*a*c)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b*B - 2*A*c + (b^2*B - 4*A*b*
c + 4*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + S
qrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*
c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\int \frac{\frac{1}{2}(-Ab+2aB)-\frac{1}{2}(bB-2Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{-b^2+4ac}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{2\,\text{Subst}\left(\int \frac{\frac{1}{2}(-Ab+2aB)+\frac{1}{2}(-bB+2Ac)x^2}{a+bx^2+cx^4}\,dx, x, \sqrt{x}\right)}{b^2-4ac}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(bB-2Ac-\frac{b^2B-4Abc+4aBc}{\sqrt{b^2-4ac}}\right)\text{Subst}\left(\int \frac{1}{\frac{b}{2}-\frac{1}{2}\sqrt{b^2-4ac}+cx^2}\right.}{2\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{\left(bB-2Ac-\frac{b^2B-4Abc+4aBc}{\sqrt{b^2-4ac}}\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\,\sqrt{c}\,\left(b^2-4ac\right)\sqrt{b-\sqrt{b^2-4ac}}} +$$

Mathematica [A] time = 0.68, size = 295, normalized size = 1.07

$$\frac{\frac{x^{3/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)} + \frac{a\left(\frac{\left(-2Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}+4aBc-4Abc+b^2B\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{\sqrt{b^2-4ac}+b}}\right)}{\sqrt{b^2-4ac}\,\sqrt{\sqrt{b^2-4ac}+b}} - \frac{\left(\frac{4aBc-4Abc+b^2B}{\sqrt{b^2-4ac}}+2Ac-bB\right)\tan^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right.}{\sqrt{b-\sqrt{b^2-4ac}}}\right.}{\sqrt{2}\,\sqrt{c}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((-(A*b) + 2*a*B)*Sqrt[x] + (x^(3/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c +
 b*c*x)))/(a + x*(b + c*x)) + (a*(-((((-(b*B) + 2*A*c + (b^2*B - 4*A*b*c + 4
*a*B*c)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b
^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^2*B - 4*A*b*c + 4*a*B*c +
 b*B*Sqrt[b^2 - 4*a*c] - 2*A*c*Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*S
qrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2
- 4*a*c]])))/(Sqrt[2]*Sqrt[c]))/(a*(b^2 - 4*a*c))
```

fricas [B] time = 2.38, size = 3462, normalized size = 12.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*
x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^2*b - 12*A*
B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*
c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3
 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^
3 - 64*a^4*c^4))*log(sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^5 - 16*(2*A^2*B*a
^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2*B*a^2*b^2 - A^3*
a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a*b^4 - A^3*b^5)*c
 + (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A*a^4*b^2)*c^4 - 8
*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c)*sqrt((B^4*a^2 -
 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 -
64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^
2*b - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^
3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*
a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48
*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b^3 - 4*A^4*a*c^3
+ 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^2*b + A^3*B*b^3)*
c)*sqrt(x)) - sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4
*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*B^2*a^2*b
 - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 -
 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3
*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^2 + 48*a^
3*b^2*c^3 - 64*a^4*c^4))*log(-sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^5 - 16*(
2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2*B*a^2*b
^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a*b^4 - A
^3*b^5)*c + (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A*a^4*b^2
)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c)*sqrt((
B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b
^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (
12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c + (a*b^6*c - 12*a^2*b^4*c^2 + 48*a
^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*
c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4
*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b^3 - 4*A
^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^2*b + A^
3*B*b^3)*c)*sqrt(x)) + sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 +
 (b^3 - 4*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^2 + (12*
B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^2 + 48*a^3*
b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2
 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^2*b^4*c^
2 + 48*a^3*b^2*c^3 - 64*a^4*c^4))*log(sqrt(1/2)*(2*B^3*a^2*b^4 - A*B^2*a*b^
5 - 16*(2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*b + 2*A^2
*B*a^2*b^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 + 2*A^2*B*a
*b^4 - A^3*b^5)*c - (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*a^5*b + A
*a^4*b^2)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A*a*b^8)*c
)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 +
48*a^4*b^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)
*c^2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^
2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(
a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12
*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 - A*B^3*a*b
^3 - 4*A^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12*A*B^3*a^
2*b + A^3*B*b^3)*c)*sqrt(x)) - sqrt(1/2)*(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^
2)*x^2 + (b^3 - 4*a*b*c)*x)*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3*A^2*a*b)*c^
2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a^2*b^4*c^2 +
 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2
*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b^6*c - 12*a^
2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4))*log(-sqrt(1/2)*(2*B^3*a^2*b^4 - A
*B^2*a*b^5 - 16*(2*A^2*B*a^3 - A^3*a^2*b)*c^3 + 8*(4*B^3*a^4 - 2*A*B^2*a^3*
b + 2*A^2*B*a^2*b^2 - A^3*a*b^3)*c^2 - (16*B^3*a^3*b^2 - 8*A*B^2*a^2*b^3 +
2*A^2*B*a*b^4 - A^3*b^5)*c - (192*B*a^4*b^3*c^3 + 256*A*a^5*c^5 - 128*(2*B*
a^5*b + A*a^4*b^2)*c^4 - 8*(6*B*a^3*b^5 - A*a^2*b^6)*c^2 + (4*B*a^2*b^7 - A
*a*b^8)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b
^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))*sqrt(-(B^2*a*b^3 - 4*(4*A*B*a^2 - 3
*A^2*a*b)*c^2 + (12*B^2*a^2*b - 12*A*B*a*b^2 + A^2*b^3)*c - (a*b^6*c - 12*a
^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A
^4*c^2)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5)))/(a*b
^6*c - 12*a^2*b^4*c^2 + 48*a^3*b^2*c^3 - 64*a^4*c^4)) - 2*(3*B^4*a^2*b^2 -
A*B^3*a*b^3 - 4*A^4*a*c^3 + 3*(4*A^3*B*a*b - A^4*b^2)*c^2 + (4*B^4*a^3 - 12
*A*B^3*a^2*b + A^3*B*b^3)*c)*sqrt(x)) - 2*(2*B*a - A*b + (B*b - 2*A*c)*x)*s
qrt(x))/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [B] time = 1.60, size = 3781, normalized size = 13.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*b*x^(3/2) - 2*A*c*x^(3/2) + 2*B*a*sqrt(x) - A*b*sqrt(x))/((c*x^2 + b*x +
 a)*(b^2 - 4*a*c)) - 1/8*(2*(2*b^2*c^3 - 8*a*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*c^3 - 2*(b^2 - 4*a*c)*c^3)*(b^2 - 4*a*c)^2*A - (2*b^3*c^2 - 8*a*
b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(b^
2 - 4*a*c)^2*B - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 8*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*b^4*c^2 - 2*b^5*c^2 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^2*b*c^3 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 + sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 16*a*b^3*c^3 - 4*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 32*a^2*b*c^4 + 2*(b^2 - 4*a*c)*b^3*c^2
 - 8*(b^2 - 4*a*c)*a*b*c^3)*A*abs(b^2 - 4*a*c) + 4*(sqrt(2)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a*b^4*c - 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^
2*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*a*b^4*c^2 +
 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*
b^2*c^3 + 16*a^2*b^2*c^3 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^
4 - 32*a^3*c^4 + 2*(b^2 - 4*a*c)*a*b^2*c^2 - 8*(b^2 - 4*a*c)*a^2*c^3)*B*abs
(b^2 - 4*a*c) - 4*(2*b^6*c^3 - 16*a*b^4*c^4 + 32*a^2*b^2*c^5 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^3 + 8*(b^2 - 4*a*c)*
a*b^2*c^4)*A + (2*b^7*c^2 - 8*a*b^5*c^3 - 32*a^2*b^3*c^4 + 128*a^3*b*c^5 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 + 4*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 16*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 + 32*(b^2
- 4*a*c)*a^2*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3 - 4*a*b*c + sqr
t((b^3 - 4*a*b*c)^2 - 4*(a*b^2 - 4*a^2*c)*(b^2*c - 4*a*c^2)))/(b^2*c - 4*a*
c^2)))/((a*b^6*c - 12*a^2*b^4*c^2 - 2*a*b^5*c^2 + 48*a^3*b^2*c^3 + 16*a^2*b
^3*c^3 + a*b^4*c^3 - 64*a^4*c^4 - 32*a^3*b*c^4 - 8*a^2*b^2*c^4 + 16*a^3*c^5
)*abs(b^2 - 4*a*c)*abs(c)) + 1/8*(2*(2*b^2*c^3 - 8*a*c^4 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c + 4*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^2 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*c^3 - 2*(b^2 - 4*a*c)*c^3)*(b^2 - 4*a*c)^2*A - (2*b^3*c^
2 - 8*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*
c^2)*(b^2 - 4*a*c)^2*B + 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c -
 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 2*b^5*c^2 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a^2*b*c^3 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3
 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^3 - 16*a*b^3*c^3 - 4*sqrt(
2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^4 + 32*a^2*b*c^4 - 2*(b^2 - 4*a*c)
*b^3*c^2 + 8*(b^2 - 4*a*c)*a*b*c^3)*A*abs(b^2 - 4*a*c) - 4*(sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^2*c^2 - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*a*b
^4*c^2 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 8*sqrt(2)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^2*c^3 - 16*a^2*b^2*c^3 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*c^4 + 32*a^3*c^4 - 2*(b^2 - 4*a*c)*a*b^2*c^2 + 8*(b^2 - 4*a*c)*a^2*c^
3)*B*abs(b^2 - 4*a*c) - 4*(2*b^6*c^3 - 16*a*b^4*c^4 + 32*a^2*b^2*c^5 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 8*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 2*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 16*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 8*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 2*(b^2 - 4*a*c)*b^4*c^3 + 8*(b^2 -
 4*a*c)*a*b^2*c^4)*A + (2*b^7*c^2 - 8*a*b^5*c^3 - 32*a^2*b^3*c^4 + 128*a^3*
b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7 + 4*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 16*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 64*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^5*c^2 +
32*(b^2 - 4*a*c)*a^2*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^3 - 4*a*b
*c - sqrt((b^3 - 4*a*b*c)^2 - 4*(a*b^2 - 4*a^2*c)*(b^2*c - 4*a*c^2)))/(b^2*
c - 4*a*c^2)))/((a*b^6*c - 12*a^2*b^4*c^2 - 2*a*b^5*c^2 + 48*a^3*b^2*c^3 +
16*a^2*b^3*c^3 + a*b^4*c^3 - 64*a^4*c^4 - 32*a^3*b*c^4 - 8*a^2*b^2*c^4 + 16
*a^3*c^5)*abs(b^2 - 4*a*c)*abs(c))
```

maple [B] time = 0.09, size = 755, normalized size = 2.74

$$\frac{2\sqrt{2}\, Abc\,\operatorname{arctanh}\left(\frac{\sqrt{2}\, c\sqrt{x}}{\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\left(4ac-b^{2}\right)\sqrt{-4ac+b^{2}}\,\sqrt{\left(-b+\sqrt{-4ac+b^{2}}\right)c}}+\frac{2\sqrt{2}\, Abc\arctan\left(\frac{\sqrt{2}\, c\sqrt{x}}{\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}\right)}{\left(4ac-b^{2}\right)\sqrt{-4ac+b^{2}}\,\sqrt{\left(b+\sqrt{-4ac+b^{2}}\right)c}}-\frac{2\sqrt{2}\, B}{\left(4ac-b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*(1/2*(2*A*c-B*b)/(4*a*c-b^2)*x^(3/2)+1/2*(A*b-2*B*a)/(4*a*c-b^2)*x^(1/2))
/(c*x^2+b*x+a)+1/(4*a*c-b^2)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2/(4*a*c-b^2)*c/(
-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/2/(4*a*c-b^2)*2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*c*x^(1/2))*b*B-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*a*B-1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B-1/(
4*a*c-b^2)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/
2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+1/2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*b*B-2/(4*a*c-b^2)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B-
1/2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{(2\,Bac-Abc)x^{\frac{5}{2}}+\left(Bab-\left(b^2-2\,ac\right)A\right)x^{\frac{3}{2}}}{a^2b^2-4\,a^3c+\left(ab^2c-4\,a^2c^2\right)x^2+\left(ab^3-4\,a^2bc\right)x}+\int\frac{(2\,Bac-Abc)x^{\frac{3}{2}}+\left(3\,Bab-\left(b^2+2\,ac\right)A\right)\sqrt{x}}{2\left(a^2b^2-4\,a^3c+\left(ab^2c-4\,a^2c^2\right)x^2+\left(ab^3-4\,a^2bc\right)x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -((2*B*a*c - A*b*c)*x^(5/2) + (B*a*b - (b^2 - 2*a*c)*A)*x^(3/2))/(a^2*b^2 -
 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x) + integrate(1
/2*((2*B*a*c - A*b*c)*x^(3/2) + (3*B*a*b - (b^2 + 2*a*c)*A)*sqrt(x))/(a^2*b
^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x), x)
```

mupad [B] time = 5.60, size = 9434, normalized size = 34.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((x^(1/2)*(A*b - 2*B*a))/(4*a*c - b^2) + (x^(3/2)*(2*A*c - B*b))/(4*a*c - b
^2))/(a + b*x + c*x^2) - atan(((((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*
c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^
3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (
2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c
*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B
^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5
 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a
*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6
*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 -
 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b
^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*
a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^
8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^
4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) - (2*x^(1/2)*(B
^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2
*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b
```

```
^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^
(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512
*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4
 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7
*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*
c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*1i - (((4*A*b^7*c^2 + 512*B*a^4*
c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4
+ 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2
- 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) +
A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a
^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 -
768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b
^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c
^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(
1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 1
6*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2
*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*
b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768
*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*
c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
- 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2
) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 -
6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b
^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-
(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*
a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^
8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^
4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*1i)/((2*(8*A^3*
a*c^4 + 6*A^3*b^2*c^3 + A*B^2*b^4*c - 3*B^3*a*b^3*c + 8*A*B^2*a^2*c^3 - 5*A
^2*B*b^3*c^2 - 4*B^3*a^2*b*c^2 + 18*A*B^2*a*b^2*c^2 - 28*A^2*B*a*b*c^3))/(b
^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (((4*A*b^7*c^2 + 512*B*a^4
*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4
 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2
 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) +
 A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*
a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 -
 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*
b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*
c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^
(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^
2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3
*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 76
8*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4
*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/
2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 -
 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*
b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(
-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2
*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 -
 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b
^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c
^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (((4*A*b^7*c
^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192
*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 +
48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3
*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)
^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3
 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*
B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 3
84*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 2
40*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a
*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8
*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*
a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b
^9*c + A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^
3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A
^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^
3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 -
1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2))
)*(-(B^2*a*b^9 - B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c + A^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b
^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B
^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/
(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3
840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*2i - atan(((((4*A*b^
7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 - 8*B*a*b^6*c^2 +
192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3
 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9 + B^2*a*(-(4*a*c
- b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b
^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1
024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c
^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c
^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c
^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3*b*c^5 + 192*a^2*
b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4 + 10*A^2*b^2*c^3
+ 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*a*b*c^3))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^
2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3
*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 76
8*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4
*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3
 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/
2)*1i - (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5 -
 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)/
(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2)*(-(B^2*a*b^9
+ B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/
2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^
2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 +
128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^
7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5
 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^3
*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B
^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2)
```

```
- 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a
^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128
*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 -
 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 -
6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4
+ 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B*
a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b
^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*
c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024
*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
- 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
+ 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
+ a*b^12*c)))^(1/2)*1i)/((2*(8*A^3*a*c^4 + 6*A^3*b^2*c^3 + A*B^2*b^4*c - 3*
B^3*a*b^3*c + 8*A*B^2*a^2*c^3 - 5*A^2*B*b^3*c^2 - 4*B^3*a^2*b*c^2 + 18*A*B^
2*a*b^2*c^2 - 28*A^2*B*a*b*c^3))/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*
b^4*c) + (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 256*A*a^3*b*c^5
- 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*B*a^3*b^2*c^4)
/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) - (2*x^(1/2)*(-(B^2*a*b^9
 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1
/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B
^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 +
 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c
^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^
5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^5*c^3 - 256*a^
3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 +
B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2)
 - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*
a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 12
8*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7
- 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 -
 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) - (2*x^(1/2)*(B^2*b^4*c - 8*A^2*a*c^4
 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b^2*c^2 - 8*A*B
*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c -
b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5
*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 102
4*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2
 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2
 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6
 + a*b^12*c)))^(1/2) + (((4*A*b^7*c^2 + 512*B*a^4*c^5 - 48*A*a*b^5*c^3 - 25
6*A*a^3*b*c^5 - 8*B*a*b^6*c^2 + 192*A*a^2*b^3*c^4 + 96*B*a^2*b^4*c^3 - 384*
B*a^3*b^2*c^4)/(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c) + (2*x^(1/2
)*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b
^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B
^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/
(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3
840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2)*(4*b^7*c^2 - 48*a*b^
5*c^3 - 256*a^3*b*c^5 + 192*a^2*b^3*c^4))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(
-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c -
 b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*
c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*
a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*
(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840
*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b^12*c)))^(1/2) + (2*x^(1/2)*(B^2*b^4*c
 - 8*A^2*a*c^4 + 10*A^2*b^2*c^3 + 8*B^2*a^2*c^3 - 6*A*B*b^3*c^2 + 2*B^2*a*b
^2*c^2 - 8*A*B*a*b*c^3))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))*(-(B^2*a*b^9 + B^2
*a*(-(4*a*c - b^2)^9)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) -
96*A^2*a^2*b^5*c^3 + 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4
*b^3*c^3 + 1024*A*B*a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A
```

```
*B*a^2*b^6*c^2 - 384*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 2
4*a^2*b^10*c^2 + 240*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 61
44*a^6*b^2*c^6 + a*b^12*c)))^(1/2)))*(-(B^2*a*b^9 + B^2*a*(-(4*a*c - b^2)^9
)^(1/2) + A^2*b^9*c - A^2*c*(-(4*a*c - b^2)^9)^(1/2) - 96*A^2*a^2*b^5*c^3 +
 512*A^2*a^3*b^3*c^4 - 96*B^2*a^3*b^5*c^2 + 512*B^2*a^4*b^3*c^3 + 1024*A*B*
a^5*c^5 - 768*A^2*a^4*b*c^5 - 768*B^2*a^5*b*c^4 + 128*A*B*a^2*b^6*c^2 - 384
*A*B*a^3*b^4*c^3 - 12*A*B*a*b^8*c)/(8*(4096*a^7*c^7 - 24*a^2*b^10*c^2 + 240
*a^3*b^8*c^3 - 1280*a^4*b^6*c^4 + 3840*a^5*b^4*c^5 - 6144*a^6*b^2*c^6 + a*b
^12*c)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1020 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=304

$$\frac{\sqrt{x}\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)+2aB\left(2b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\right.}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

```
[Out] (A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)*x^(1/2)/a/(-4*a*c+b^2)/(c*x^2+b*x+a)+
1/2*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(2
*a*B*(2*b-(-4*a*c+b^2)^(1/2))+A*(b^2-12*a*c+b*(-4*a*c+b^2)^(1/2)))/a/(-4*a*
c+b^2)^(3/2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+1/2*arctan(2^(1/2)*c^(1/2
)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(A*b-2*a*B+(12*A*a*c-A*b^2-
4*B*a*b)/(-4*a*c+b^2)^(1/2))/a/(-4*a*c+b^2)*2^(1/2)/(b+(-4*a*c+b^2)^(1/2))^
(1/2)
```

Rubi [A] time = 0.83, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(cx(Ab-2aB)-2aAc-abB+Ab^2\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)+2aB\left(2b-\sqrt{b^2-4ac}\right)\right)\tan^{-1}\left(\right.}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] (Sqrt[x]*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a*c)*(a
 + b*x + c*x^2)) + (Sqrt[c]*(2*a*B*(2*b - Sqrt[b^2 - 4*a*c]) + A*(b^2 - 12*
a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[
b^2 - 4*a*c]]])/(Sqrt[2]*a*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]])
 + (Sqrt[c]*(A*b - 2*a*B - (A*b^2 + 4*a*b*B - 12*a*A*c)/Sqrt[b^2 - 4*a*c])*
ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a*(
b^2 - 4*a*c)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx=\frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\int \frac{\frac{1}{2}\left(-Ab^2-abB+6aAc\right)-\frac{1}{2}(Ab-2aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$=\frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}\left(-Ab^2-abB+6aAc\right)-\frac{1}{2}(Ab-2aB)cx^2}{a+bx^2+cx^4}\right.}{a\left(b^2-4ac\right)}$$

$$=\frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(c\left(Ab-2aB-\frac{Ab^2+4abB-12aAc}{\sqrt{b^2-4ac}}\right)\right)\mathrm{Subst}\left(\right.}{2a\left(b^2-4ac\right.}$$

$$=\frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(2aB\left(2b-\sqrt{b^2-4ac}\right)+A\left(b^2-12\right.\right.}{\sqrt{2}\,a\left(b^2-4ac\right)^{3/2}}$$

Mathematica [A] time = 0.63, size = 285, normalized size = 0.94

$$\frac{\frac{\sqrt{x}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{a+x(b+cx)}+\frac{\sqrt{c}\left(\frac{\left(A\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-2aB\left(\sqrt{b^2-4ac}-2b\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\frac{\left(A\left(b\sqrt{b^2-4ac}+12ac-b^2\right)-2aB\left(\sqrt{b^2-4ac}+2b\right)\right)\tan^{-}}{\sqrt{\sqrt{b^2-4ac}+b}}\right.}{\sqrt{2}\sqrt{b^2-4ac}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((Sqrt[x]*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
 + (Sqrt[c]*(((-2*a*B*(-2*b + Sqrt[b^2 - 4*a*c]) + A*(b^2 - 12*a*c + b*Sqrt
[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]
]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((-2*a*B*(2*b + Sqrt[b^2 - 4*a*c]) + A*(-
b^2 + 12*a*c + b*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[
b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sqrt[b^2 -
4*a*c]))/(a*(b^2 - 4*a*c))
```

fricas [B] time = 5.74, size = 4884, normalized size = 16.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*
a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*
A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6
 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*
b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*
B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^
2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3
))*log(sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 + A^3*b^8 +
 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^3*a^3*b^2)*c^3 +
2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2
 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 + 23*A^3*a*b^6)*c -
 (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 - 2*A*a^7*b)*c^4 +
 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt
((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 8
1*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 -
12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*
b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a
^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6
*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A
^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(
a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b
^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4 - 81*(4*A^3*B*a^2
*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2*B^2*a^2*b^2 - 65
*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^
2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c
- 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4
+ A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b
^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3
)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b
^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*
b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c
 + 48*a^5*b^2*c^2 - 64*a^6*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*
b^6 + 3*A^2*B*a*b^7 + A^3*b^8 + 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B
*a^4*b + 14*A^3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*
B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^
2*B*a^2*b^5 + 23*A^3*a*b^6)*c - (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2
- 256*(B*a^8 - 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B
*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^
2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3))
)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)
*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c + (a^3*b^6 - 12*a^4*
b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*
B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 +
2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64
*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(32
4*A^4*a^2*c^4 - 81*(4*A^3*B*a^2*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*
a^3*b - 84*A^2*B^2*a^2*b^2 - 65*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b
^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) + sqrt(1/2)
*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x^2 + (a*b^3 - 4*a^2*b*c)*x)*sq
rt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2
 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*
c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*
a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^
3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9
*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3))*log(sqrt(1/
2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*a*b^7 + A^3*b^8 + 864*A^3*a^4*c
^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b
 + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*
b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 + 23*A^3*a*b^6)*c + (B*a^4*b^8 +
A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 - 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b
^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*
A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2
- 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c +
 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5
- 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2
*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^
4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^
4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a
^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*
b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4 - 81*(4*A^3*B*a^2*b + A^4*a*b^2
)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2*B^2*a^2*b^2 - 65*A^3*B*a*b^3 -
 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*
B*b^5)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2)*x
^2 + (a*b^3 - 4*a^2*b*c)*x)*sqrt(-(B^2*a^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12
*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b
^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^
4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^
2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b
^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*
c^2 - 64*a^6*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^5 + 3*A*B^2*a^2*b^6 + 3*A^2*B*
a*b^7 + A^3*b^8 + 864*A^3*a^4*c^4 - 48*(2*A*B^2*a^5 + 7*A^2*B*a^4*b + 14*A^
3*a^3*b^2)*c^3 + 2*(8*B^3*a^5*b + 48*A*B^2*a^4*b^2 + 108*A^2*B*a^3*b^3 + 95
*A^3*a^2*b^4)*c^2 - (8*B^3*a^4*b^3 + 30*A*B^2*a^3*b^4 + 45*A^2*B*a^2*b^5 +
23*A^3*a*b^6)*c + (B*a^4*b^8 + A*a^3*b^9 + 144*A*a^5*b^5*c^2 - 256*(B*a^8 -
 2*A*a^7*b)*c^4 + 64*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^3 - 4*(2*B*a^5*b^6 + 5*A
*a^4*b^7)*c)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 + 4*A^3*B*a*
b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b + A^4*a*b^
2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))*sqrt(-(B^2*a
^2*b^3 + 2*A*B*a*b^4 + A^2*b^5 - 12*(4*A*B*a^3 - 5*A^2*a^2*b)*c^2 + 3*(4*B^
2*a^3*b - 4*A*B*a^2*b^2 - 5*A^2*a*b^3)*c - (a^3*b^6 - 12*a^4*b^4*c + 48*a^5
*b^2*c^2 - 64*a^6*c^3)*sqrt((B^4*a^4 + 4*A*B^3*a^3*b + 6*A^2*B^2*a^2*b^2 +
4*A^3*B*a*b^3 + A^4*b^4 + 81*A^4*a^2*c^2 - 18*(A^2*B^2*a^3 + 2*A^3*B*a^2*b
+ A^4*a*b^2)*c)/(a^6*b^6 - 12*a^7*b^4*c + 48*a^8*b^2*c^2 - 64*a^9*c^3)))/(a
^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3)) + 2*(324*A^4*a^2*c^4
- 81*(4*A^3*B*a^2*b + A^4*a*b^2)*c^3 - (4*B^4*a^4 - 20*A*B^3*a^3*b - 84*A^2
*B^2*a^2*b^2 - 65*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 - 3*(B^4*a^3*b^2 + 3*A*B^3*a
^2*b^3 + 3*A^2*B^2*a*b^4 + A^3*B*b^5)*c)*sqrt(x)) - 2*(B*a*b - A*b^2 + 2*A*
a*c + (2*B*a - A*b)*c*x)*sqrt(x))/(a^2*b^2 - 4*a^3*c + (a*b^2*c - 4*a^2*c^2
)*x^2 + (a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 1.81, size = 4434, normalized size = 14.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="giac")
```

```
[Out] -(2*B*a*c*x^(3/2) - A*b*c*x^(3/2) + B*a*b*sqrt(x) - A*b^2*sqrt(x) + 2*A*a*c
*sqrt(x))/((a*b^2 - 4*a^2*c)*(c*x^2 + b*x + a)) - 1/8*((2*b^3*c^2 - 8*a*b*c
^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(a*b^2
 - 4*a^2*c)^2*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*(a*b^2 - 4*a^2*c)^2*B - 2*(sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6 - 14*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*a*b
^6*c + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 20*sqrt(2)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^4*c^2 + 28*a^2*b^4*c^2 - 96*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^4*c^3 - 48*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 128*a^3*b^2*c^3 + 24
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 192*a^4*c^4 + 2*(b^2 - 4
*a*c)*a*b^4*c - 20*(b^2 - 4*a*c)*a^2*b^2*c^2 + 48*(b^2 - 4*a*c)*a^3*c^3)*A*
abs(a*b^2 - 4*a^2*c) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5 -
 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c - 2*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c - 2*a^2*b^5*c + 16*sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^4*b*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b
^2*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 16*a^3*b^3*c
^2 - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 32*a^4*b*c^3 + 2
*(b^2 - 4*a*c)*a^2*b^3*c - 8*(b^2 - 4*a*c)*a^3*b*c^2)*B*abs(a*b^2 - 4*a^2*c
) + (2*a^2*b^7*c^2 - 40*a^3*b^5*c^3 + 224*a^4*b^3*c^4 - 384*a^5*b*c^5 - sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7 + 20*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c + 2*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 112*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - 32*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 192*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 + 96*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 + 16*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 48*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^2*
b^5*c^2 + 32*(b^2 - 4*a*c)*a^3*b^3*c^3 - 96*(b^2 - 4*a*c)*a^4*b*c^4)*A + 4*
(2*a^3*b^6*c^2 - 16*a^4*b^4*c^3 + 32*a^5*b^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 2*(b^2 - 4*a*c)*a^3*b^4*c^2 + 8*(b^2 - 4*a
*c)*a^4*b^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^3 - 4*a^2*b*c + sq
rt((a*b^3 - 4*a^2*b*c)^2 - 4*(a^2*b^2 - 4*a^3*c)*(a*b^2*c - 4*a^2*c^2)))/(a
*b^2*c - 4*a^2*c^2)))/((a^3*b^6 - 12*a^4*b^4*c - 2*a^3*b^5*c + 48*a^5*b^2*c
^2 + 16*a^4*b^3*c^2 + a^3*b^4*c^2 - 64*a^6*c^3 - 32*a^5*b*c^3 - 8*a^4*b^2*c
^3 + 16*a^5*c^4)*abs(a*b^2 - 4*a^2*c)*abs(c)) - 1/8*((2*b^3*c^2 - 8*a*b*c^3
 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3 + 4*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c + 2*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b*c^2 - 2*(b^2 - 4*a*c)*b*c^2)*(a*b^2 -
 4*a^2*c)^2*A - 2*(2*a*b^2*c^2 - 8*a^2*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a*b*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*c^2 - 2*(b^2 - 4*a*c)*a*c^2)*(a*b^2 - 4*a^2*c)^2*B - 2*(sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6 - 14*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a^2*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 2*a*b^6
*c + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 20*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a*b^4*c^2 - 28*a^2*b^4*c^2 - 96*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^4*c^3 - 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 10*s
```

```
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 128*a^3*b^2*c^3 + 24*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 192*a^4*c^4 - 2*(b^2 - 4*a
*c)*a*b^4*c + 20*(b^2 - 4*a*c)*a^2*b^2*c^2 - 48*(b^2 - 4*a*c)*a^3*c^3)*A*ab
s(a*b^2 - 4*a^2*c) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5 - 8
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c - 2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^4*c + 2*a^2*b^5*c + 16*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^4*b*c^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2
*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 - 16*a^3*b^3*c^2
 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 32*a^4*b*c^3 - 2*(
b^2 - 4*a*c)*a^2*b^3*c + 8*(b^2 - 4*a*c)*a^3*b*c^2)*B*abs(a*b^2 - 4*a^2*c)
+ (2*a^2*b^7*c^2 - 40*a^3*b^5*c^3 + 224*a^4*b^3*c^4 - 384*a^5*b*c^5 - sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7 + 20*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c + 2*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 112*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - 32*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 192*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 + 96*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 + 16*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 48*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^4 - 2*(b^2 - 4*a*c)*a^2*b^
5*c^2 + 32*(b^2 - 4*a*c)*a^3*b^3*c^3 - 96*(b^2 - 4*a*c)*a^4*b*c^4)*A + 4*(2
*a^3*b^6*c^2 - 16*a^4*b^4*c^3 + 32*a^5*b^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 2*(b^2 - 4*a*c)*a^3*b^4*c^2 + 8*(b^2 - 4*a*c
)*a^4*b^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^3 - 4*a^2*b*c - sqrt
((a*b^3 - 4*a^2*b*c)^2 - 4*(a^2*b^2 - 4*a^3*c)*(a*b^2*c - 4*a^2*c^2)))/(a*b
^2*c - 4*a^2*c^2)))/((a^3*b^6 - 12*a^4*b^4*c - 2*a^3*b^5*c + 48*a^5*b^2*c^2
 + 16*a^4*b^3*c^2 + a^3*b^4*c^2 - 64*a^6*c^3 - 32*a^5*b*c^3 - 8*a^4*b^2*c^3
 + 16*a^5*c^4)*abs(a*b^2 - 4*a^2*c)*abs(c))
```

maple [B] time = 0.37, size = 1796, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x)
```

```
[Out] 1/2/(4*a*c-b^2)*(-4*a*c+b^2)^(1/2)/a*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/
2*b/c)*A-1/2/(4*a*c-b^2)/a*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/2*b/c)*A*b
+1/(4*a*c-b^2)*x^(1/2)/(x+1/2/c*(-4*a*c+b^2)^(1/2)+1/2*b/c)*B-24*c^3/(4*a*c
-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-16*c^2/
(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2
+3/2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/
2))*A*b^4-2*c^2/(4*a*c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-3/2*
c/(4*a*c-b^2)/a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arct
an(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+4*c^2/(4*a*c-b
^2)*a/(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3*c/(4*a*c-b^2)/(4*a*c+3*b^2
)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^
(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+8*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*a/(4*
a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+6*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/
(4*a*c+3*b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3-1/2/(4*a*c-b^2)*(-4*a*c+b^2)^(
1/2)/a*x^(1/2)/(x+1/2*b/c-1/2/c*(-4*a*c+b^2)^(1/2))*A-1/2/(4*a*c-b^2)/a*x^(
1/2)/(x+1/2*b/c-1/2/c*(-4*a*c+b^2)^(1/2))*A*b+1/(4*a*c-b^2)*x^(1/2)/(x+1/2*
b/c-1/2/c*(-4*a*c+b^2)^(1/2))*B-24*c^3/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*
c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a-16*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1
/2)/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/2*c/(4*a*c-b^2)/(-4*a
*c+b^2)^(1/2)/a/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4+2*c^2/(4*a*
c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1
/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+3/2*c/(4*a*c-b^2)/a/(4
*a*c+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-4*c^2/(4*a*c-b^2)*a/(4*a*c+3*
b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-3*c/(4*a*c-b^2)/(4*a*c+3*b^2)*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*B*b^2+8*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*a/(4*a*c+3*b^2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+6*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)/(4*a*c
+3*b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(Babc+\left(b^2c-6\,ac^2\right)A\right)x^{\frac{5}{2}}+2\left(ab^2-4\,a^2c\right)A\sqrt{x}+\left(\left(b^3-5\,abc\right)A+\left(ab^2-2\,a^2c\right)B\right)x^{\frac{3}{2}}}{a^3b^2-4\,a^4c+\left(a^2b^2c-4\,a^3c^2\right)x^2+\left(a^2b^3-4\,a^3bc\right)x}-\int\frac{(Babc+(b^2c-6}{2(a^3b^2-4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^2/x^(1/2),x, algorithm="maxima")
```

```
[Out] ((B*a*b*c + (b^2*c - 6*a*c^2)*A)*x^(5/2) + 2*(a*b^2 - 4*a^2*c)*A*sqrt(x) +
((b^3 - 5*a*b*c)*A + (a*b^2 - 2*a^2*c)*B)*x^(3/2))/(a^3*b^2 - 4*a^4*c + (a^
2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4*a^3*b*c)*x) - integrate(1/2*((B*a*b
*c + (b^2*c - 6*a*c^2)*A)*x^(3/2) + ((b^3 - 7*a*b*c)*A + (a*b^2 + 2*a^2*c)*
B)*sqrt(x))/(a^3*b^2 - 4*a^4*c + (a^2*b^2*c - 4*a^3*c^2)*x^2 + (a^2*b^3 - 4
*a^3*b*c)*x), x)
```

mupad [B] time = 6.00, size = 12364, normalized size = 40.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] atan((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^
3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5
*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2
*c^2) - (2*x^(1/2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(
1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^
2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*
B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c -
b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^
2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^
9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c +
240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))
```

```
^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/
(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(
-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 +
 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2
*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*
A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 +
 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a
*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6
 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 -
6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^
2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*
B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b
^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) +
2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^
3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^
2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B
^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2
*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12
+ 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*
a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*1i - (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*(-(A^2*b^11 + B^2
*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1
/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*
a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 -
 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 -
 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a
^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3
*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^
2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c)
)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*
b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 +
 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3
840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b
^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B
*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 -
 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/
2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*
A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2
- 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2
) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 -
 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2
*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2
)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 -
 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^
(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240
*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1
/2)*1i)/((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6
*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*
b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*
b^2*c^2) - (2*x^(1/2)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9
)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7
*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 5
12*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c
 - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6
*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^
2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c
 + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5
)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4
))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^
2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^1
0 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*
B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c -
 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^
4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*
B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*
c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4
 - 6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8
*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40
*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^
2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2)
 + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4
*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27
*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 76
8*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*
b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^
12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 38
40*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*(-(A^2*b^11 + B^2
*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-(4*a*c - b^2)^9)^(1
/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*b^5*c^3 + 3840*A^2*
a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 -
 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3840*A^2*a^5*b*c^5 -
 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b^4*c^3 - 1536*A*B*a
^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3
*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^
2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c)
)*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*(-
(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*A^2*a^3*
b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b^3*c^3 +
 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) - 3
840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A*B*a^4*b
^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) - 36*A*B
*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 -
 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/
2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*
A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2
 - 8*a^3*b^2*c))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2
) + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 -
 1504*A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2
*a^5*b^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2
)^9)^(1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 -
 128*A*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^
(1/2) - 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240
*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1
/2) + (2*(5*A^3*b^3*c^4 + 8*B^3*a^3*c^4 + 6*B^3*a^2*b^2*c^3 - 36*A^3*a*b*c^
5 + 72*A^2*B*a^2*c^5 - 3*A^2*B*b^4*c^3 + 3*A*B^2*a*b^3*c^3 - 60*A*B^2*a^2*b
*c^4 + 18*A^2*B*a*b^2*c^4))/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b
^2*c^2)))*(-(A^2*b^11 + B^2*a^2*b^9 + A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + B^
2*a^2*(-(4*a*c - b^2)^9)^(1/2) + 2*A*B*a*b^10 + 288*A^2*a^2*b^7*c^2 - 1504*
A^2*a^3*b^5*c^3 + 3840*A^2*a^4*b^3*c^4 - 96*B^2*a^4*b^5*c^2 + 512*B^2*a^5*b
^3*c^3 + 3072*A*B*a^6*c^5 - 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(
1/2) - 3840*A^2*a^5*b*c^5 - 768*B^2*a^6*b*c^4 + 192*A*B*a^3*b^6*c^2 - 128*A
*B*a^4*b^4*c^3 - 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2)
- 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b
^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*2i
 + atan(((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6
*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*
b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*
b^2*c^2) - (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^
2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*
c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 51
2*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c
- b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*
c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2
)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c
+ 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)
))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4)
)/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
- B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10
- 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^
2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9
*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4
- 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*
a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^
6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 -
 6144*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B
^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A
*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b
^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) -
2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^
3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^
2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B
^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2
*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12
+ 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*
a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*1i - (((1536*A*a^5*c^6 + 4*A*a*b^8*
c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b
^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 -
 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*((A^2*b^2*(-(4*a*
c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/
2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a
^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 +
27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 +
768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^
5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*
b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 +
3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2
 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))
*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^
5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3
072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 384
0*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4
*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1
280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/2)
*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^
2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 -
8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 +
 B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 15
```

```
04*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^
5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9
)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 12
8*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/
2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^
5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)
*1i)/((((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 - 256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^
3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5
*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2
*c^2) - (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b
^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2
 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B
^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b
^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2
 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9
)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 2
40*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^
(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(
a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B
^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 2
88*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a
^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^
2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 1
92*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b
*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 -
 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 61
44*a^8*b^2*c^5)))^(1/2) + (2*x^(1/2)*(72*A^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*
a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*
a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2*b^2*(-(4*a*c - b^2)
^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A
*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c
^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a
*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^2*
a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^
4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4
096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a^7
*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (((1536*A*a^5*c^6 + 4*A*a*b^8*c^2 -
256*B*a^5*b*c^5 - 72*A*a^2*b^6*c^3 + 480*A*a^3*b^4*c^4 - 1408*A*a^4*b^2*c^5
 + 4*B*a^2*b^7*c^2 - 48*B*a^3*b^5*c^3 + 192*B*a^4*b^3*c^4)/(a^2*b^6 - 64*a^
5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2) + (2*x^(1/2)*((A^2*b^2*(-(4*a*c - b^
2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c - b^2)^9)^(1/2) - 2
*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3 - 3840*A^2*a^4*b^3
*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*B*a^6*c^5 + 27*A^2
*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*a^5*b*c^5 + 768*B^
2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 + 1536*A*B*a^5*b^2*
c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8*c)/(8*(a^3*b^12 +
 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^6*b^6*c^3 + 3840*a
^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*(256*a^5*b*c^5 - 4*a^2*b^7*c^2 + 48*
a^3*b^5*c^3 - 192*a^4*b^3*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*b^2*c))*((A^2
*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4*a*c -
 b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^5*c^3
- 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3072*A*
B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 3840*A^2*
a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4*c^3 +
 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a^2*b^8
*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1280*a^
6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) - (2*x^(1/2)*(72*A
^2*a^2*c^5 + A^2*b^4*c^3 - 8*B^2*a^3*c^4 + 10*B^2*a^2*b^2*c^3 - 14*A^2*a*b^
2*c^4 + 2*A*B*a*b^3*c^3 - 40*A*B*a^2*b*c^4))/(a^2*b^4 + 16*a^4*c^2 - 8*a^3*
```

```
b^2*c))*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a
^2*(-(4*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2
*a^3*b^5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*
c^3 - 3072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2
) + 3840*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*
a^4*b^4*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 3
6*A*B*a^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*
c^2 - 1280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2) + (2*
(5*A^3*b^3*c^4 + 8*B^3*a^3*c^4 + 6*B^3*a^2*b^2*c^3 - 36*A^3*a*b*c^5 + 72*A^
2*B*a^2*c^5 - 3*A^2*B*b^4*c^3 + 3*A*B^2*a*b^3*c^3 - 60*A*B^2*a^2*b*c^4 + 18
*A^2*B*a*b^2*c^4))/(a^2*b^6 - 64*a^5*c^3 - 12*a^3*b^4*c + 48*a^4*b^2*c^2)))
*((A^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^9 - A^2*b^11 + B^2*a^2*(-(4
*a*c - b^2)^9)^(1/2) - 2*A*B*a*b^10 - 288*A^2*a^2*b^7*c^2 + 1504*A^2*a^3*b^
5*c^3 - 3840*A^2*a^4*b^3*c^4 + 96*B^2*a^4*b^5*c^2 - 512*B^2*a^5*b^3*c^3 - 3
072*A*B*a^6*c^5 + 27*A^2*a*b^9*c - 9*A^2*a*c*(-(4*a*c - b^2)^9)^(1/2) + 384
0*A^2*a^5*b*c^5 + 768*B^2*a^6*b*c^4 - 192*A*B*a^3*b^6*c^2 + 128*A*B*a^4*b^4
*c^3 + 1536*A*B*a^5*b^2*c^4 + 2*A*B*a*b*(-(4*a*c - b^2)^9)^(1/2) + 36*A*B*a
^2*b^8*c)/(8*(a^3*b^12 + 4096*a^9*c^6 - 24*a^4*b^10*c + 240*a^5*b^8*c^2 - 1
280*a^6*b^6*c^3 + 3840*a^7*b^4*c^4 - 6144*a^8*b^2*c^5)))^(1/2)*2i + ((x^(1/
2)*(2*A*a*c - A*b^2 + B*a*b))/(a*(4*a*c - b^2)) - (c*x^(3/2)*(A*b - 2*B*a))
/(a*(4*a*c - b^2)))/(a + b*x + c*x^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**2/x**(1/2),x)
```

```
[Out] Timed out
```

3.1021 $\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=406

$$-\frac{-10aAc-abB+3Ab^2}{a^2\sqrt{x}\left(b^2-4ac\right)}+\frac{\sqrt{c}\left(aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-A\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3\right.\right.}{\sqrt{2}\,a^2\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

```
[Out] (10*A*a*c-3*A*b^2+B*a*b)/a^2/(-4*a*c+b^2)/x^(1/2)+(A*b^2-a*b*B-2*a*A*c+(A*b
-2*B*a)*c*x)/a/(-4*a*c+b^2)/(c*x^2+b*x+a)/x^(1/2)+1/2*arctan(2^(1/2)*c^(1/2
)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(b^2-12*a*c+b*(-4*a*c+
b^2)^(1/2))-A*(3*b^3-16*a*b*c+3*b^2*(-4*a*c+b^2)^(1/2)-10*a*c*(-4*a*c+b^2)^
(1/2)))/a^2/(-4*a*c+b^2)^(3/2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)-1/2*arc
tan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(b^2
-12*a*c-b*(-4*a*c+b^2)^(1/2))-A*(3*b^3-16*a*b*c-3*b^2*(-4*a*c+b^2)^(1/2)+10
*a*c*(-4*a*c+b^2)^(1/2)))/a^2/(-4*a*c+b^2)^(3/2)*2^(1/2)/(b+(-4*a*c+b^2)^(1
/2))^(1/2)
```

Rubi [A] time = 0.98, antiderivative size = 406, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

$$-\frac{-10aAc-abB+3Ab^2}{a^2\sqrt{x}\left(b^2-4ac\right)}+\frac{\sqrt{c}\left(aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)-A\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3\right.\right.}{\sqrt{2}\,a^2\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((3*A*b^2 - a*b*B - 10*a*A*c)/(a^2*(b^2 - 4*a*c)*Sqrt[x])) + (A*b^2 - a*b*
B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(a*(b^2 - 4*a*c)*Sqrt[x]*(a + b*x + c*x^2)
) + (Sqrt[c]*(a*B*(b^2 - 12*a*c + b*Sqrt[b^2 - 4*a*c]) - A*(3*b^3 - 16*a*b*
c + 3*b^2*Sqrt[b^2 - 4*a*c] - 10*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sq
rt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^2*(b^2 - 4*a*c)^(3/
2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (Sqrt[c]*(a*B*(b^2 - 12*a*c - b*Sqrt[b^2
- 4*a*c]) - A*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqrt[b^2
 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/
(Sqrt[2]*a^2*(b^2 - 4*a*c)^(3/2)*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^2}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}-\frac{\int \frac{\frac{1}{2}\left(-3Ab^2+abB+10aAc\right)-\frac{3}{2}(Ab-2aB)cx}{x^{3/2}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}}+\frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}-\frac{\int \frac{\frac{1}{2}(-aB(b^2-6ac)+A(3b^3}{\sqrt{}}}{a^2}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}}+\frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}-\frac{2\,\mathrm{Subst}(\int \frac{\frac{1}{2}(-aB(b^2-}{}}{}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}}+\frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}+\frac{(c(aB(b^2-12ac+}{}$$

$$= -\frac{3Ab^2-abB-10aAc}{a^2\left(b^2-4ac\right)\sqrt{x}}+\frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)\sqrt{x}\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\,(aB(b^2-12ac+}{}$$

Mathematica [A] time = 1.00, size = 367, normalized size = 0.90

$$\frac{\frac{10aAc+abB-3Ab^2}{a\sqrt{x}}+\frac{A\left(-2ac+b^2+bcx\right)-aB(b+2cx)}{\sqrt{x}\,(a+x(b+cx))}+\frac{\sqrt{c}\Bigg(\frac{\left(A\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}+16abc-3b^3\right)+aB\left(b\sqrt{b^2-4ac}-12ac+b^2\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}-}{\sqrt{2}\,a\sqrt{b^2}}}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-3*A*b^2 + a*b*B + 10*a*A*c)/(a*Sqrt[x]) + (-(a*B*(b + 2*c*x)) + A*(b^2 -
 2*a*c + b*c*x))/(Sqrt[x]*(a + x*(b + c*x))) + (Sqrt[c]*(((a*B*(b^2 - 12*a*
c + b*Sqrt[b^2 - 4*a*c]) + A*(-3*b^3 + 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] +
 10*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[
b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(-b^2 + 12*a*c + b*Sqrt
[b^2 - 4*a*c]) + A*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqr
t[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c
]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*a*Sqrt[b^2 - 4*a*c]))/(a*(b^2 -
 4*a*c))
```

fricas [B] time = 20.46, size = 7597, normalized size = 18.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 +
(a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4
*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2
*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6
- 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*
a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c
^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a
^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*
a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 -
702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b
^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c
^3))*log(sqrt(1/2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^
3*b^11 - 400*(6*A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*
a^6*b + 1956*A^2*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 496
8*A*B^2*a^5*b^3 + 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*
a^5*b^4 - 297*A*B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (2
3*B^3*a^4*b^6 - 192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c -
(B*a^6*b^9 - 3*A*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^
2)*c^4 - 448*(B*a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6
)*c^2 - 5*(4*B*a^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*
b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 -
 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 -
 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*
b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*
A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c
^2 - 64*a^13*c^3)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*
B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^
3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 1
2*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3
*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4
- 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6
- 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2
*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702
*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*
c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)
) + 2*(2500*A^4*a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*
B^4*a^5 - 756*A*B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*
A^4*a*b^4)*c^4 + (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4
 - 1323*A^3*B*a*b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 +
 27*A^2*B^2*a*b^6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) - sqrt(1/2)*((a^2*b^2*c - 4
*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B
^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5
*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 -
16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2
 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 -
108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3
*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*
B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2
 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b
^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^
6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3))*log(-sqrt(1/2)*(B^3*a^3*b^
8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^3*b^11 - 400*(6*A^2*B*a^6 - 13
*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*a^6*b + 1956*A^2*B*a^5*b^2 - 1
801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 4968*A*B^2*a^5*b^3 + 12414*A^2*B*
a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*a^5*b^4 - 297*A*B^2*a^4*b^5 +
771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (23*B^3*a^4*b^6 - 192*A*B^2*a^3*
b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c - (B*a^6*b^9 - 3*A*a^5*b^10 + 12
80*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^2)*c^4 - 448*(B*a^9*b^3 - 3*A*
a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6)*c^2 - 5*(4*B*a^7*b^7 - 11*A*
a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108
*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*
a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2
*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 -
98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)
*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))*sqrt(-(B^2
*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(
12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16
*A*B*a^2*b^4 + 21*A^2*a*b^5)*c + (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 -
 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 10
8*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B
*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^
2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 -
 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6
)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6
- 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)) + 2*(2500*A^4*a^3*c^6 + 625*
(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*B^4*a^5 - 756*A*B^3*a^4*b + 16
72*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*A^4*a*b^4)*c^4 + (81*B^4*a^4*b
^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4 - 1323*A^3*B*a*b^5 - 189*A^4*
b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 + 27*A^2*B^2*a*b^6 - 27*A^3*B*b
^7)*c^2)*sqrt(x)) + sqrt(1/2)*((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a
^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A
^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^
2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)
*c - (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b
^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 +
 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3
 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b
^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*
B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4
```

```
*c + 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*
c^2 - 64*a^8*c^3))*log(sqrt(1/2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*
a*b^10 - 27*A^3*b^11 - 400*(6*A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^
7 - 762*A*B^2*a^6*b + 1956*A^2*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3
*a^6*b^2 - 4968*A*B^2*a^5*b^3 + 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^
3 + 5*(38*B^3*a^5*b^4 - 297*A*B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2
*b^7)*c^2 - (23*B^3*a^4*b^6 - 192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A
^3*a*b^9)*c + (B*a^6*b^9 - 3*A*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b
 - 17*A*a^9*b^2)*c^4 - 448*(B*a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5
- 49*A*a^7*b^6)*c^2 - 5*(4*B*a^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 -
 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625
*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3
*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 +
 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*
a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c +
 48*a^12*b^2*c^2 - 64*a^13*c^3)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*
b^7 + 60*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 +
 77*A^2*a^2*b^3)*c^2 - 5*(3*B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c
- (a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4
- 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 62
5*A^4*a^4*c^4 - 50*(9*A^2*B^2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 +
3*(27*B^4*a^6 - 264*A*B^3*a^5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3
+ 1017*A^4*a^2*b^4)*c^2 - 2*(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2
*a^3*b^4 - 702*A^3*B*a^2*b^5 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c
+ 48*a^12*b^2*c^2 - 64*a^13*c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2
 - 64*a^8*c^3)) + 2*(2500*A^4*a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)
*c^5 - 3*(108*B^4*a^5 - 756*A*B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*
a^2*b^3 - 657*A^4*a*b^4)*c^4 + (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A
^2*B^2*a^2*b^4 - 1323*A^3*B*a*b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A
*B^3*a^2*b^5 + 27*A^2*B^2*a*b^6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) - sqrt(1/2)*(
(a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^2 - 4*a^4*
c)*x)*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*
a^3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*
B^2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c - (a^5*b^6 - 12*a^6*b^4*c +
48*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*
B^2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^
2*a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^
5*b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*
(9*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5
 + 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*
c^3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3))*log(-sqrt(1/
2)*(B^3*a^3*b^8 - 9*A*B^2*a^2*b^9 + 27*A^2*B*a*b^10 - 27*A^3*b^11 - 400*(6*
A^2*B*a^6 - 13*A^3*a^5*b)*c^5 + 8*(108*B^3*a^7 - 762*A*B^2*a^6*b + 1956*A^2
*B*a^5*b^2 - 1801*A^3*a^4*b^3)*c^4 - (672*B^3*a^6*b^2 - 4968*A*B^2*a^5*b^3
+ 12414*A^2*B*a^4*b^4 - 10549*A^3*a^3*b^5)*c^3 + 5*(38*B^3*a^5*b^4 - 297*A*
B^2*a^4*b^5 + 771*A^2*B*a^3*b^6 - 666*A^3*a^2*b^7)*c^2 - (23*B^3*a^4*b^6 -
192*A*B^2*a^3*b^7 + 531*A^2*B*a^2*b^8 - 486*A^3*a*b^9)*c + (B*a^6*b^9 - 3*A
*a^5*b^10 + 1280*A*a^10*c^5 + 128*(4*B*a^10*b - 17*A*a^9*b^2)*c^4 - 448*(B*
a^9*b^3 - 3*A*a^8*b^4)*c^3 + 8*(18*B*a^8*b^5 - 49*A*a^7*b^6)*c^2 - 5*(4*B*a
^7*b^7 - 11*A*a^6*b^8)*c)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^2
*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*a
^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*b
 + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9*
B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 +
459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^3
)))*sqrt(-(B^2*a^2*b^5 - 6*A*B*a*b^6 + 9*A^2*b^7 + 60*(4*A*B*a^4 - 7*A^2*a^
3*b)*c^3 + 5*(12*B^2*a^4*b - 60*A*B*a^3*b^2 + 77*A^2*a^2*b^3)*c^2 - 5*(3*B^
2*a^3*b^3 - 16*A*B*a^2*b^4 + 21*A^2*a*b^5)*c - (a^5*b^6 - 12*a^6*b^4*c + 48
*a^7*b^2*c^2 - 64*a^8*c^3)*sqrt((B^4*a^4*b^4 - 12*A*B^3*a^3*b^5 + 54*A^2*B^
2*a^2*b^6 - 108*A^3*B*a*b^7 + 81*A^4*b^8 + 625*A^4*a^4*c^4 - 50*(9*A^2*B^2*
a^5 - 44*A^3*B*a^4*b + 51*A^4*a^3*b^2)*c^3 + 3*(27*B^4*a^6 - 264*A*B^3*a^5*
b + 968*A^2*B^2*a^4*b^2 - 1596*A^3*B*a^3*b^3 + 1017*A^4*a^2*b^4)*c^2 - 2*(9
*B^4*a^5*b^2 - 98*A*B^3*a^4*b^3 + 396*A^2*B^2*a^3*b^4 - 702*A^3*B*a^2*b^5 +
 459*A^4*a*b^6)*c)/(a^10*b^6 - 12*a^11*b^4*c + 48*a^12*b^2*c^2 - 64*a^13*c^
3)))/(a^5*b^6 - 12*a^6*b^4*c + 48*a^7*b^2*c^2 - 64*a^8*c^3)) + 2*(2500*A^4*
a^3*c^6 + 625*(4*A^3*B*a^3*b - 9*A^4*a^2*b^2)*c^5 - 3*(108*B^4*a^5 - 756*A*
B^3*a^4*b + 1672*A^2*B^2*a^3*b^2 - 909*A^3*B*a^2*b^3 - 657*A^4*a*b^4)*c^4 +
 (81*B^4*a^4*b^2 - 647*A*B^3*a^3*b^3 + 1674*A^2*B^2*a^2*b^4 - 1323*A^3*B*a*
b^5 - 189*A^4*b^6)*c^3 - 5*(B^4*a^3*b^4 - 9*A*B^3*a^2*b^5 + 27*A^2*B^2*a*b^
6 - 27*A^3*B*b^7)*c^2)*sqrt(x)) + 2*(2*A*a*b^2 - 8*A*a^2*c - (10*A*a*c^2 +
(B*a*b - 3*A*b^2)*c)*x^2 - (B*a*b^2 - 3*A*b^3 - (2*B*a^2 - 11*A*a*b)*c)*x)*
sqrt(x))/((a^2*b^2*c - 4*a^3*c^2)*x^3 + (a^2*b^3 - 4*a^3*b*c)*x^2 + (a^3*b^
2 - 4*a^4*c)*x)
```

giac [B] time = 2.21, size = 5405, normalized size = 13.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*a*b*c*x^2 - 3*A*b^2*c*x^2 + 10*A*a*c^2*x^2 + B*a*b^2*x - 3*A*b^3*x - 2*B
*a^2*c*x + 11*A*a*b*c*x - 2*A*a*b^2 + 8*A*a^2*c)/((a^2*b^2 - 4*a^3*c)*(c*x^
(5/2) + b*x^(3/2) + a*sqrt(x))) - 1/8*((6*b^4*c^2 - 44*a*b^2*c^3 + 80*a^2*c
^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 + 22*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 6*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^3*c - 40*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 20*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^3 - 6*(b^2 - 4*a*c)*b^2*c^2 + 20*(b^2
- 4*a*c)*a*c^3)*(a^2*b^2 - 4*a^3*c)^2*A - (2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a^2*
b^2 - 4*a^3*c)^2*B + 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7 -
 37*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 6*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c - 6*a^2*b^7*c + 152*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^4*b^3*c^2 + 50*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^3*b^4*c^2 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 + 74*a^
3*b^5*c^2 - 208*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 104*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 25*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^3*b^3*c^3 - 304*a^4*b^3*c^3 + 52*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^4*b*c^4 + 416*a^5*b*c^4 + 6*(b^2 - 4*a*c)*a^2*b^5*c -
50*(b^2 - 4*a*c)*a^3*b^3*c^2 + 104*(b^2 - 4*a*c)*a^4*b*c^3)*A*abs(a^2*b^2 -
 4*a^3*c) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6 - 14*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^3*b^5*c - 2*a^3*b^6*c + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^5*b^2*c^2 + 20*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2
+ sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 + 28*a^4*b^4*c^2 - 96
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*c^3 - 48*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^4*b^2*c^3 - 128*a^5*b^2*c^3 + 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^5*c^4 + 192*a^6*c^4 + 2*(b^2 - 4*a*c)*a^3*b^4*c - 20*(b^2 - 4*a*c)*a^4*b^2
*c^2 + 48*(b^2 - 4*a*c)*a^5*c^3)*B*abs(a^2*b^2 - 4*a^3*c) + (6*a^4*b^8*c^2
- 80*a^5*b^6*c^3 + 352*a^6*b^4*c^4 - 512*a^7*b^2*c^5 - 3*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)
```

```
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^4 - 6*(b^2 - 4*a*c)*a^4*b^6*c^2
+ 56*(b^2 - 4*a*c)*a^5*b^4*c^3 - 128*(b^2 - 4*a*c)*a^6*b^2*c^4)*A - (2*a^5*
b^7*c^2 - 40*a^6*b^5*c^3 + 224*a^7*b^3*c^4 - 384*a^8*b*c^5 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7 + 20*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c - 112*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 + 192*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^3 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b*c^4 - 2*(b^2 - 4*a*c)*a^5*b^5*c^2 + 3
2*(b^2 - 4*a*c)*a^6*b^3*c^3 - 96*(b^2 - 4*a*c)*a^7*b*c^4)*B)*arctan(2*sqrt(
1/2)*sqrt(x)/sqrt((a^2*b^3 - 4*a^3*b*c + sqrt((a^2*b^3 - 4*a^3*b*c)^2 - 4*(
a^3*b^2 - 4*a^4*c)*(a^2*b^2*c - 4*a^3*c^2)))/(a^2*b^2*c - 4*a^3*c^2)))/((a^
5*b^6 - 12*a^6*b^4*c - 2*a^5*b^5*c + 48*a^7*b^2*c^2 + 16*a^6*b^3*c^2 + a^5*
b^4*c^2 - 64*a^8*c^3 - 32*a^7*b*c^3 - 8*a^6*b^2*c^3 + 16*a^7*c^4)*abs(a^2*b
^2 - 4*a^3*c)*abs(c)) + 1/8*((6*b^4*c^2 - 44*a*b^2*c^3 + 80*a^2*c^4 - 3*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 + 22*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 6*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c - 40*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a*c^3 - 6*(b^2 - 4*a*c)*b^2*c^2 + 20*(b^2 - 4*a*c)*a
*c^3)*(a^2*b^2 - 4*a^3*c)^2*A - (2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a^2*b^2 - 4*a^
3*c)^2*B - 2*(3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7 - 37*sqrt(2
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c - 6*sqrt(2)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b^6*c + 6*a^2*b^7*c + 152*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^4*b^3*c^2 + 50*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^
2 + 3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^2 - 74*a^3*b^5*c^2
- 208*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^3 - 104*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3 - 25*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^3*b^3*c^3 + 304*a^4*b^3*c^3 + 52*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^4*b*c^4 - 416*a^5*b*c^4 - 6*(b^2 - 4*a*c)*a^2*b^5*c + 50*(b^2 -
4*a*c)*a^3*b^3*c^2 - 104*(b^2 - 4*a*c)*a^4*b*c^3)*A*abs(a^2*b^2 - 4*a^3*c)
+ 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6 - 14*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^3*b^5*c + 2*a^3*b^6*c + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*
b^2*c^2 + 20*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^2 + sqrt(2)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^2 - 28*a^4*b^4*c^2 - 96*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*c^3 - 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^5*b*c^3 - 10*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^3
 + 128*a^5*b^2*c^3 + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*c^4 - 1
92*a^6*c^4 - 2*(b^2 - 4*a*c)*a^3*b^4*c + 20*(b^2 - 4*a*c)*a^4*b^2*c^2 - 48*
(b^2 - 4*a*c)*a^5*c^3)*B*abs(a^2*b^2 - 4*a^3*c) + (6*a^4*b^8*c^2 - 80*a^5*b
^6*c^3 + 352*a^6*b^4*c^4 - 512*a^7*b^2*c^5 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
```

```
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^4 - 6*(b^2 - 4*a*c)*a^4*b^6*c^2 + 56*(b^2
- 4*a*c)*a^5*b^4*c^3 - 128*(b^2 - 4*a*c)*a^6*b^2*c^4)*A - (2*a^5*b^7*c^2 -
40*a^6*b^5*c^3 + 224*a^7*b^3*c^4 - 384*a^8*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c - 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^2 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^8*b*c^3 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^3 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^3 - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b*c^4 - 2*(b^2 - 4*a*c)*a^5*b^5*c^2 + 32*(b^2 - 4
*a*c)*a^6*b^3*c^3 - 96*(b^2 - 4*a*c)*a^7*b*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(
x)/sqrt((a^2*b^3 - 4*a^3*b*c - sqrt((a^2*b^3 - 4*a^3*b*c)^2 - 4*(a^3*b^2 -
4*a^4*c)*(a^2*b^2*c - 4*a^3*c^2)))/(a^2*b^2*c - 4*a^3*c^2)))/((a^5*b^6 - 12
*a^6*b^4*c - 2*a^5*b^5*c + 48*a^7*b^2*c^2 + 16*a^6*b^3*c^2 + a^5*b^4*c^2 -
64*a^8*c^3 - 32*a^7*b*c^3 - 8*a^6*b^2*c^3 + 16*a^7*c^4)*abs(a^2*b^2 - 4*a^3
*c)*abs(c))
```

maple [**B**] time = 0.10, size = 1273, normalized size = 3.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -2/a/(c*x^2+b*x+a)*c^2/(4*a*c-b^2)*x^(3/2)*A+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b
^2)*x^(3/2)*A*b^2-1/a/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x^(3/2)*B*b-3/a/(c*x^2+b*
x+a)/(4*a*c-b^2)*x^(1/2)*A*b*c+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*A*b^
3+2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*B*c-1/a/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(
1/2)*B*b^2-5/a*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arc
tan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+3/2/a^2*c/(4*a*c-
b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1
/2))*c)^(1/2)*c*x^(1/2))*A*b-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^3-1/2/a*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-
6*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/2/a*c/(4*
a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan
(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+5/a*c^2/(4*a*c-b
^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*A*b-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1
/2))*A*b^3+1/2/a*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-6*c^2/(4*a*c
-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+1/2/a*c/(4*a*c-b^2)/
(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-2*A/a^2/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{\left(\left(3\,b^{3}c-13\,abc^{2}\right)A-\left(ab^{2}c-6\,a^{2}c^{2}\right)B\right)x^{\frac{5}{2}}+\left(\left(3\,b^{4}-10\,ab^{2}c-10\,a^{2}c^{2}\right)A-\left(ab^{3}-5\,a^{2}bc\right)B\right)x^{\frac{3}{2}}+\frac{2\left(a^{2}b^{2}-4\,a^{3}c\right.}{\sqrt{x}}}{a^{4}b^{2}-4\,a^{5}c+\left(a^{3}b^{2}c-4\,a^{4}c^{2}\right)x^{2}+\left(a^{3}b^{3}-4\,a^{4}bc\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -(((3*b^3*c - 13*a*b*c^2)*A - (a*b^2*c - 6*a^2*c^2)*B)*x^(5/2) + ((3*b^4 -
10*a*b^2*c - 10*a^2*c^2)*A - (a*b^3 - 5*a^2*b*c)*B)*x^(3/2) + 2*(a^2*b^2 -
4*a^3*c)*A/sqrt(x) + 2*(3*(a*b^3 - 4*a^2*b*c)*A - (a^2*b^2 - 4*a^3*c)*B)*sq
rt(x))/(a^4*b^2 - 4*a^5*c + (a^3*b^2*c - 4*a^4*c^2)*x^2 + (a^3*b^3 - 4*a^4*
b*c)*x) + integrate(1/2*(((3*b^3*c - 13*a*b*c^2)*A - (a*b^2*c - 6*a^2*c^2)*
B)*x^(3/2) + ((3*b^4 - 16*a*b^2*c + 10*a^2*c^2)*A - (a*b^3 - 7*a^2*b*c)*B)*
sqrt(x))/(a^4*b^2 - 4*a^5*c + (a^3*b^2*c - 4*a^4*c^2)*x^2 + (a^3*b^3 - 4*a^
4*b*c)*x), x)
```

mupad [B] time = 6.70, size = 17623, normalized size = 43.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/a - (x*(3*A*b^3 - B*a*b^2 + 2*B*a^2*c - 11*A*a*b*c))/(a^2*(4*a*c -
 b^2)) + (c*x^2*(10*A*a*c - 3*A*b^2 + B*a*b))/(a^2*(4*a*c - b^2)))/(a*x^(1/
2) + b*x^(3/2) + c*x^(5/2)) - atan(((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2
*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c
^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^
8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B
^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8
*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b
^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(
-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a
^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2
*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*
a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c
^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a
^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 80
64*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2
*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) +
152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12
+ 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840
*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*
b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9
*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^
5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9
)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4
 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*
b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*
B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^
6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c
- b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1
/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*
a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c
^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b
^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 5324
8*A*a^14*b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c
^4 - 16000*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4
*B*a^9*b^12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b
^6*c^5 - 20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*(-(9*A^2*b^13 + B^2*
a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2
*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^
3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^
2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3
*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*
a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 154
8*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*
B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*
a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9
)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1
280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*1i + (x^(1/
2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*
a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^1
0*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^
4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 -
12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*
B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*
b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2
077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800
*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-
(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*
B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^
6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^
(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4
 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a
*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*
b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*
(24576*B*a^15*c^8 + x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a
*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^
7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4
*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b
^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 -
213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*
c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*
B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^
2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A
*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 409
6*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*
b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 -
192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5
*c^6 - 49152*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A
*a^9*b^11*c^3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b
^5*c^6 + 78848*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 11
20*B*a^11*b^8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^
14*b^2*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1
/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A
^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^
(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B
```

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^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*
c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3
*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 -
 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c -
b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c +
 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24
*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*
a^10*b^2*c^5)))^(1/2)*1i)/((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8
 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 1792
0*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2
*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b
^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4
- 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 +
29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c -
 b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^
3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c
 - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c
^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*
A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5
- 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^
4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*
(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a
^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^
11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*
c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*
A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10
656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^
2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) +
 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*
A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3
840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8
*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5
 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)
^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(
a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c
^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^
10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 +
30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14*
b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 1600
0*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b^
12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 -
20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11
+ 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2
- 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 2
5*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/
2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15
360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c
 - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3
*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2
*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2
)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/
(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b
^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) - (x^(1/2)*(25600*A^
2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4
 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 -
57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*
a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b
^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c
^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + (-(9*A^2*b^13 + B^2*a
^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*
b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3
*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2
)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*
c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a
^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548
*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B
*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a
*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)
^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 12
80*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a^1
5*c^8 + x^(1/2)*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)
^(1/2) - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 3024
0*A^2*a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^
9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 150
4*B^2*a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^
11*c + 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*
a^3*c*(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^
3 - 22400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c
 - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*
c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 -
 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 61
44*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^1
1*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152
*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c^
3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 788
48*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b^
8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7))
*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*a^4*b^5*c
^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*
a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*a^5*b^5*c
^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c + 26880*A^
2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c
 - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22400*A*B*a
^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2
) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44*A*B*a^2*
b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c
 + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5
)))^(1/2) + 32000*A^3*a^10*c^9 + 126*A^3*a^6*b^8*c^5 - 2028*A^3*a^7*b^6*c^6
 + 12176*A^3*a^8*b^4*c^7 - 32320*A^3*a^9*b^2*c^8 - 10*B^3*a^8*b^7*c^4 + 152
*B^3*a^9*b^5*c^5 - 736*B^3*a^10*b^3*c^6 + 11520*A*B^2*a^11*c^8 + 1152*B^3*a
^11*b*c^7 - 21120*A^2*B*a^10*b*c^8 + 60*A*B^2*a^7*b^8*c^4 - 948*A*B^2*a^8*b
^6*c^5 + 5424*A*B^2*a^9*b^4*c^6 - 13248*A*B^2*a^10*b^2*c^7 - 90*A^2*B*a^6*b
^9*c^4 + 1434*A^2*B*a^7*b^7*c^5 - 8472*A^2*B*a^8*b^5*c^6 + 21984*A^2*B*a^9*
b^3*c^7))*(-(9*A^2*b^13 + B^2*a^2*b^11 + 9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - 6*A*B*a*b^12 + 2077*A^2*a^2*b^9*c^2 - 10656*A^2*a^3*b^7*c^3 + 30240*A^2*
a^4*b^5*c^4 - 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/
2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) + 288*B^2*a^4*b^7*c^2 - 1504*B^2*
a^5*b^5*c^3 + 3840*B^2*a^6*b^3*c^4 - 15360*A*B*a^7*c^6 - 213*A^2*a*b^11*c +
 26880*A^2*a^6*b*c^6 - 27*B^2*a^3*b^9*c - 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*
(-(4*a*c - b^2)^9)^(1/2) - 1548*A*B*a^3*b^8*c^2 + 8064*A*B*a^4*b^6*c^3 - 22
400*A*B*a^5*b^4*c^4 + 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2
)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) + 152*A*B*a^2*b^10*c + 44
*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^
6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^1
0*b^2*c^5)))^(1/2)*2i - atan(((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*
c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 1
7920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*
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B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^1
1*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c
^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7
 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b
^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*
c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a
*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7
*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 21
3*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^
5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*
a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*
c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B
*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*
a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^
4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^
(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 1
0656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A
^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2)
- 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360
*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c +
3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^
8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^
5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9
)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*
(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*
c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a
^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 +
 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14
*b*c^8 + 12*A*a^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 160
00*A*a^11*b^7*c^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b
^12*c^2 + 104*B*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 -
 20480*B*a^13*b^4*c^6 + 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4*a*c - b^2)^
9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2
+ 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 2
5*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/
2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15
360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c
 + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3
*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2
*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2
)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/
(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b
^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*1i + (x^(1/2)*(25600
*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*
c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7
 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B
^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^
7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^
5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a
*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^
2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b
^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b
^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^
3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2
*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 15
48*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A
*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4
*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^
9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 -
1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a
^15*c^8 + x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A
^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 302
40*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)
^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 15
04*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b
^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2
*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c
^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*
c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10
*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6
- 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6
144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^
11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 4915
2*a^15*b^3*c^7) - 53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c
^3 - 2960*A*a^10*b^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 78
848*A*a^13*b^3*c^7 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b
^8*c^4 - 6400*B*a^12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7)
)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*
a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c
^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*
a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c
^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^
2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c
- b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a
^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2
) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*
b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c
+ 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5
)))^(1/2)*1i)/((x^(1/2)*(25600*A^2*a^12*c^9 - 9216*B^2*a^13*c^8 + 18*A^2*a^
6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8*b^8*c^5 - 17920*A^2*a^9*b^
6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*b^2*c^8 + 2*B^2*a^8*b^10*c^
3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 - 3200*B^2*a^11*b^4*c^6 + 870
4*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A*B*a^8*b^9*c^4 - 2816*A*B*a
^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*a^11*b^3*c^7 + 29696*A*B*a^
12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^1
3 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2
*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2
*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c
- 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c
*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 2
2400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^
2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 4
4*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a
^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^
10*b^2*c^5)))^(1/2)*(x^(1/2)*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2
*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^
7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4
*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b
^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 +
213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*
c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*
B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^
2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A
*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 409
6*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*
b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 -
192*a^11*b^11*c^3 + 1920*a^12*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5
```

```
*c^6 - 49152*a^15*b^3*c^7) - 24576*B*a^15*c^8 + 53248*A*a^14*b*c^8 + 12*A*a
^8*b^13*c^2 - 292*A*a^9*b^11*c^3 + 2960*A*a^10*b^9*c^4 - 16000*A*a^11*b^7*c
^5 + 48640*A*a^12*b^5*c^6 - 78848*A*a^13*b^3*c^7 - 4*B*a^9*b^12*c^2 + 104*B
*a^10*b^10*c^3 - 1120*B*a^11*b^8*c^4 + 6400*B*a^12*b^6*c^5 - 20480*B*a^13*b
^4*c^6 + 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*
a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3
*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^
4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6
 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7
*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064
*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a
*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 15
2*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 +
4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a
^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) - (x^(1/2)*(25600*A^2*a^12*c^9 - 92
16*B^2*a^13*c^8 + 18*A^2*a^6*b^12*c^3 - 408*A^2*a^7*b^10*c^4 + 3764*A^2*a^8
*b^8*c^5 - 17920*A^2*a^9*b^6*c^6 + 45696*A^2*a^10*b^4*c^7 - 57344*A^2*a^11*
b^2*c^8 + 2*B^2*a^8*b^10*c^3 - 52*B^2*a^9*b^8*c^4 + 576*B^2*a^10*b^6*c^5 -
3200*B^2*a^11*b^4*c^6 + 8704*B^2*a^12*b^2*c^7 - 12*A*B*a^7*b^11*c^3 + 292*A
*B*a^8*b^9*c^4 - 2816*A*B*a^9*b^7*c^5 + 13440*A*B*a^10*b^5*c^6 - 31744*A*B*
a^11*b^3*c^7 + 29696*A*B*a^12*b*c^8) + ((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2)
 - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*
A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^
2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288
*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*
a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*
B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2
 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 5
1*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/
2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*
b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 +
 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*(24576*B*a^15*c^8 + x^(1/2)*
((9*A^2*b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*
b^12 - 2077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4
 + 44800*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^
2*b^2*(-(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3
 - 3840*B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*
a^6*b*c^6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c -
b^2)^9)^(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5
*b^4*c^4 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2)
- 6*A*B*a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*
c*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c +
240*a^7*b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5))
)^(1/2)*(32768*a^16*b*c^8 + 8*a^10*b^13*c^2 - 192*a^11*b^11*c^3 + 1920*a^12
*b^9*c^4 - 10240*a^13*b^7*c^5 + 30720*a^14*b^5*c^6 - 49152*a^15*b^3*c^7) -
53248*A*a^14*b*c^8 - 12*A*a^8*b^13*c^2 + 292*A*a^9*b^11*c^3 - 2960*A*a^10*b
^9*c^4 + 16000*A*a^11*b^7*c^5 - 48640*A*a^12*b^5*c^6 + 78848*A*a^13*b^3*c^7
 + 4*B*a^9*b^12*c^2 - 104*B*a^10*b^10*c^3 + 1120*B*a^11*b^8*c^4 - 6400*B*a^
12*b^6*c^5 + 20480*B*a^13*b^4*c^6 - 34816*B*a^14*b^2*c^7))*((9*A^2*b^4*(-(4
*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2077*A^2*
a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800*A^2*a^5
*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
 b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*B^2*a^6*
b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^6 + 27*B
^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^(1/2) +
1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4 - 30720
*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*a*b^3*(-
(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a*c - b^2
)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*b^8*c^2
- 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2) + 32000*
A^3*a^10*c^9 + 126*A^3*a^6*b^8*c^5 - 2028*A^3*a^7*b^6*c^6 + 12176*A^3*a^8*b
^4*c^7 - 32320*A^3*a^9*b^2*c^8 - 10*B^3*a^8*b^7*c^4 + 152*B^3*a^9*b^5*c^5 -
 736*B^3*a^10*b^3*c^6 + 11520*A*B^2*a^11*c^8 + 1152*B^3*a^11*b*c^7 - 21120*
A^2*B*a^10*b*c^8 + 60*A*B^2*a^7*b^8*c^4 - 948*A*B^2*a^8*b^6*c^5 + 5424*A*B^
2*a^9*b^4*c^6 - 13248*A*B^2*a^10*b^2*c^7 - 90*A^2*B*a^6*b^9*c^4 + 1434*A^2*
B*a^7*b^7*c^5 - 8472*A^2*B*a^8*b^5*c^6 + 21984*A^2*B*a^9*b^3*c^7))*((9*A^2*
b^4*(-(4*a*c - b^2)^9)^(1/2) - B^2*a^2*b^11 - 9*A^2*b^13 + 6*A*B*a*b^12 - 2
077*A^2*a^2*b^9*c^2 + 10656*A^2*a^3*b^7*c^3 - 30240*A^2*a^4*b^5*c^4 + 44800
*A^2*a^5*b^3*c^5 + 25*A^2*a^2*c^2*(-(4*a*c - b^2)^9)^(1/2) + B^2*a^2*b^2*(-
(4*a*c - b^2)^9)^(1/2) - 288*B^2*a^4*b^7*c^2 + 1504*B^2*a^5*b^5*c^3 - 3840*
B^2*a^6*b^3*c^4 + 15360*A*B*a^7*c^6 + 213*A^2*a*b^11*c - 26880*A^2*a^6*b*c^
6 + 27*B^2*a^3*b^9*c + 3840*B^2*a^7*b*c^5 - 9*B^2*a^3*c*(-(4*a*c - b^2)^9)^
(1/2) + 1548*A*B*a^3*b^8*c^2 - 8064*A*B*a^4*b^6*c^3 + 22400*A*B*a^5*b^4*c^4
 - 30720*A*B*a^6*b^2*c^5 - 51*A^2*a*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 6*A*B*
a*b^3*(-(4*a*c - b^2)^9)^(1/2) - 152*A*B*a^2*b^10*c + 44*A*B*a^2*b*c*(-(4*a
*c - b^2)^9)^(1/2))/(8*(a^5*b^12 + 4096*a^11*c^6 - 24*a^6*b^10*c + 240*a^7*
b^8*c^2 - 1280*a^8*b^6*c^3 + 3840*a^9*b^4*c^4 - 6144*a^10*b^2*c^5)))^(1/2)*
2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1022 $\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=521

$$-\frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\sqrt{x}\left(b^2-4ac\right)}-\frac{-14aAc-3abB+5Ab^2}{3a^2x^{3/2}\left(b^2-4ac\right)}-\frac{\sqrt{c}\left(aB\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16\right.\right.}{}$$

```
[Out] 1/3*(14*A*a*c-5*A*b^2+3*B*a*b)/a^2/(-4*a*c+b^2)/x^(3/2)+(A*b^2-a*b*B-2*a*A*
c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/x^(3/2)/(c*x^2+b*x+a)+(-a*B*(-10*a*c+3*b^
2)+A*(-19*a*b*c+5*b^3))/a^3/(-4*a*c+b^2)/x^(1/2)-1/2*arctan(2^(1/2)*c^(1/2)
*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(3*b^3-16*a*b*c+3*b^2*(
-4*a*c+b^2)^(1/2)-10*a*c*(-4*a*c+b^2)^(1/2))-A*(5*b^4-29*a*b^2*c+28*a^2*c^2
+5*b^3*(-4*a*c+b^2)^(1/2)-19*a*b*c*(-4*a*c+b^2)^(1/2)))/a^3/(-4*a*c+b^2)^(3
/2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+1/2*arctan(2^(1/2)*c^(1/2)*x^(1/2)
/(b+(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(3*b^3-16*a*b*c-3*b^2*(-4*a*c+b
^2)^(1/2)+10*a*c*(-4*a*c+b^2)^(1/2))-A*(5*b^4-29*a*b^2*c+28*a^2*c^2-5*b^3*(
-4*a*c+b^2)^(1/2)+19*a*b*c*(-4*a*c+b^2)^(1/2)))/a^3/(-4*a*c+b^2)^(3/2)*2^(1
/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.56, antiderivative size = 521, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

$$-\frac{\sqrt{c}\left(aB\left(3b^2\sqrt{b^2-4ac}-10ac\sqrt{b^2-4ac}-16abc+3b^3\right)-A\left(28a^2c^2+5b^3\sqrt{b^2-4ac}-29ab^2c-19abc\sqrt{b^2}\right.\right.}{\sqrt{2}\,a^3\left(b^2-4ac\right)^{3/2}\sqrt{b-\sqrt{b^2-4ac}}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(5*A*b^2 - 3*a*b*B - 14*a*A*c)/(3*a^2*(b^2 - 4*a*c)*x^(3/2)) - (a*B*(3*b^2
 - 10*a*c) - A*(5*b^3 - 19*a*b*c))/(a^3*(b^2 - 4*a*c)*Sqrt[x]) + (A*b^2 - a
*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(a*(b^2 - 4*a*c)*x^(3/2)*(a + b*x + c*x
^2)) - (Sqrt[c]*(a*B*(3*b^3 - 16*a*b*c + 3*b^2*Sqrt[b^2 - 4*a*c] - 10*a*c*S
qrt[b^2 - 4*a*c]) - A*(5*b^4 - 29*a*b^2*c + 28*a^2*c^2 + 5*b^3*Sqrt[b^2 - 4
*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[
b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b - Sqrt[b^2
 - 4*a*c]]) + (Sqrt[c]*(a*B*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 1
0*a*c*Sqrt[b^2 - 4*a*c]) - A*(5*b^4 - 29*a*b^2*c + 28*a^2*c^2 - 5*b^3*Sqrt[
b^2 - 4*a*c] + 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x]
)/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*a^3*(b^2 - 4*a*c)^(3/2)*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{5/2}\left(a+bx+cx^2\right)^2}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)x^{3/2}\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-5Ab^2+3abB+14aAc\right)-\frac{5}{2}(Ab-2aB)cx}{x^{5/2}\left(a+bx+cx^2\right)}\,dx}{a\left(b^2-4ac\right)}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{a\left(b^2-4ac\right)x^{3/2}\left(a+bx+cx^2\right)} - \int \frac{1}{2}\left(-aB\left(3b^2-10ac\right)\right.$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2a}{a\left(b^2-4ac\right)x^3}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2a}{a\left(b^2-4ac\right)x^3}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2a}{a\left(b^2-4ac\right)x^3}$$

$$= -\frac{5Ab^2-3abB-14aAc}{3a^2\left(b^2-4ac\right)x^{3/2}} - \frac{aB\left(3b^2-10ac\right)-A\left(5b^3-19abc\right)}{a^3\left(b^2-4ac\right)\sqrt{x}} + \frac{Ab^2-abB-2a}{a\left(b^2-4ac\right)x^3}$$

Mathematica [A] time = 1.83, size = 473, normalized size = 0.91

$$3\sqrt{c}\left(\frac{\left(A\left(28a^2c^2-29ab^2c-19abc\sqrt{b^2-4ac}+5b^3\sqrt{b^2-4ac}+5b^4\right)+aB\left(-3b^2\sqrt{b^2-4ac}+10ac\sqrt{b^2-4ac}+16abc-3b^3\right)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{b-\sqrt{b^2-4ac}}}+\left(A\left(-28a^2c^2+29ab^2c-19abc\sqrt{b^2-\right.\right.\right.$$

$$\sqrt{2}\sqrt{b^2-4ac}$$

$$a^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-5*A*b^2 + 3*a*b*B + 14*a*A*c)/(a*x^(3/2)) + (-3*a*B*(b + 2*c*x) + 3*A*(b
^2 - 2*a*c + b*c*x))/(x^(3/2)*(a + x*(b + c*x))) + ((3*(a*B*(-3*b^2 + 10*a*
c) + A*(5*b^3 - 19*a*b*c)))/Sqrt[x] + (3*Sqrt[c]*(((a*B*(-3*b^3 + 16*a*b*c
- 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*Sqrt[b^2 - 4*a*c]) + A*(5*b^4 - 29*a*b^2
*c + 28*a^2*c^2 + 5*b^3*Sqrt[b^2 - 4*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*Ar
cTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[
b^2 - 4*a*c]] + ((a*B*(3*b^3 - 16*a*b*c - 3*b^2*Sqrt[b^2 - 4*a*c] + 10*a*c*
Sqrt[b^2 - 4*a*c]) + A*(-5*b^4 + 29*a*b^2*c - 28*a^2*c^2 + 5*b^3*Sqrt[b^2 -
 4*a*c] - 19*a*b*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqr
t[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sqrt[b^2
- 4*a*c]))/a^2)/(3*a*(b^2 - 4*a*c))
```

fricas [B] time = 56.33, size = 10203, normalized size = 19.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3
+ (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9
 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 +
23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5
)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c + (a^7*b^6 - 1
2*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^
3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401
*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5
+ (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^
5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3
+ 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*
(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*
B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^
7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b
^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4
*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(sqrt(1/2)*(27*B^3*a^3*b^11 - 135*A*
B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14 + 10976*A^3*a^7*c^7 - 112*(5
0*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^2)*c^6 - 2*(2600*B^3*a^8*b -
31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86495*A^3*a^5*b^4)*c^5 + (14408
*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A^2*B*a^5*b^5 - 160932*A^3*a^4
*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a^5*b^6 + 16991*A^2*B*a^4*b^7
- 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 - 17889*A*B^2*a^4*b^8 + 31929*
A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486*B^3*a^4*b^9 - 2493*A*B^2*a^3
*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)*c - (3*B*a^8*b^10 - 5*A*a^7*
b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3
)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^3 + 28*(14*B*a^10*b^6 - 25*A*
a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c)*sqrt((81*B^4*a^4*b^8 - 540*
A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 +
2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*
c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*
B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*
b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3
+ 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*
A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^
4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^
14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))*sqrt(-(9*B^2*a^2*
b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(
4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 21
0*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 +
 45*A^2*a*b^7)*c + (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*
sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3
*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*
B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^
2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4
*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^
5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 225
08*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*
B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^
9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^
17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)) + 2*(960
4*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^3*b^2)*c^7 - (2500*B^4*a^6 -
22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 4343*A^3*B*a^3*b^3 - 43410*A^4*
a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3*a^4*b^3 + 52821*A^2*B^2*a^3*
b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c^5 - 3*(657*B^4*a^4*b^4 - 335
1*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*A^3*B*a*b^7 - 375*A^4*b^8)*c^
4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 225*A^2*B^2*a*b^8 - 125*A^3*B*b
^9)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4
*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^
```

```
8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*
A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 1
98*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c
+ (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*
b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A
^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4
*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 1
09544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*
A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3
*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^
6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 318
6*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^
10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^
6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(-sqrt(1/2)*(27*B^3*a^
3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14 + 10976*A^3*a
^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^2)*c^6 - 2*(26
00*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86495*A^3*a^5*b^
4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A^2*B*a^5*b^5 -
 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a^5*b^6 + 16991
*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 - 17889*A*B^2*a
^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486*B^3*a^4*b^9 -
 2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)*c - (3*B*a^8*
b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(34*B*a^12*b^2
- 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^3 + 28*(14*B*a
^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c)*sqrt((81*B^4
*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 +
625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 24
6*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^
2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 1
4086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^
4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a
^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6
- 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4
*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))*sq
rt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4
*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B
^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 5
2*A*B*a^2*b^6 + 45*A^2*a*b^7)*c + (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2
- 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*
b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2
*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a
^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^
4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 774
24*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^
3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8
)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 95
50*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*
b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10
*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^3*b^2)*c^7 - (
2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 4343*A^3*B*a^3*b
^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3*a^4*b^3 + 528
21*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c^5 - 3*(657*B^
4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*A^3*B*a*b^7 -
375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 225*A^2*B^2*a*b^
8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) + 3*sqrt(1/2)*((a^3*b^2*c - 4*a^4*c^2)*x^4
 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(-(9*B^2*a^2*b^
7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*
B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*
A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 4
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5*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sq
rt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B
*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*
a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*
B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a
^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5
+ 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508
*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^
4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9
+ 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17
*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3))*log(sqrt(1
/2)*(27*B^3*a^3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13 - 125*A^3*b^14
 + 10976*A^3*a^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b + 709*A^3*a^6*b^
2)*c^6 - 2*(2600*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2*B*a^6*b^3 - 86
495*A^3*a^5*b^4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6*b^4 + 224705*A
^2*B*a^5*b^5 - 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5 - 8820*A*B^2*a
^5*b^6 + 16991*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (3330*B^3*a^5*b^7 -
 17889*A*B^2*a^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b^10)*c^2 - (486
*B^3*a^4*b^9 - 2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2425*A^3*a*b^12)
*c + (3*B*a^8*b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^12*b)*c^5 + 64*(
34*B*a^12*b^2 - 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23*A*a^10*b^5)*c^
3 + 28*(14*B*a^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 - 94*A*a^8*b^9)*c
)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A
^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^
3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*
A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B
^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*
b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 2
2508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(45
9*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*
b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*
a^17*c^3)))*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a
^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)
*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B
^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 4
8*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 135
0*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 -
98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8
- 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A
^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2
*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b
^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 131
75*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^
2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^
4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2
*c^2 - 64*a^10*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a^4*b - 7*A^4*a^
3*b^2)*c^7 - (2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B^2*a^4*b^2 + 43
43*A^3*B*a^3*b^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^2 - 31137*A*B^3
*a^4*b^3 + 52821*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 12325*A^4*a*b^6)*c
^5 - 3*(657*B^4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*a^2*b^6 - 2775*
A^3*B*a*b^7 - 375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B^3*a^2*b^7 + 22
5*A^2*B^2*a*b^8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^2*c -
4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)*x^2)*sqrt(
-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)
*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 + 23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*
a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A
*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 6
4*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^2*b^1
0 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^
7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3*a^7*
b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*c^4 -
 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 77424*
A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*B^3*a
^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b^8)*c
^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 - 9550*
A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^16*b^2
*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^
3))*log(-sqrt(1/2)*(27*B^3*a^3*b^11 - 135*A*B^2*a^2*b^12 + 225*A^2*B*a*b^13
 - 125*A^3*b^14 + 10976*A^3*a^7*c^7 - 112*(50*A*B^2*a^8 - 463*A^2*B*a^7*b +
 709*A^3*a^6*b^2)*c^6 - 2*(2600*B^3*a^8*b - 31256*A*B^2*a^7*b^2 + 96044*A^2
*B*a^6*b^3 - 86495*A^3*a^5*b^4)*c^5 + (14408*B^3*a^7*b^3 - 101006*A*B^2*a^6
*b^4 + 224705*A^2*B*a^5*b^5 - 160932*A^3*a^4*b^6)*c^4 - 7*(1507*B^3*a^6*b^5
 - 8820*A*B^2*a^5*b^6 + 16991*A^2*B*a^4*b^7 - 10797*A^3*a^3*b^8)*c^3 + (333
0*B^3*a^5*b^7 - 17889*A*B^2*a^4*b^8 + 31929*A^2*B*a^3*b^9 - 18940*A^3*a^2*b
^10)*c^2 - (486*B^3*a^4*b^9 - 2493*A*B^2*a^3*b^10 + 4260*A^2*B*a^2*b^11 - 2
425*A^3*a*b^12)*c + (3*B*a^8*b^10 - 5*A*a^7*b^11 - 256*(5*B*a^13 - 13*A*a^1
2*b)*c^5 + 64*(34*B*a^12*b^2 - 73*A*a^11*b^3)*c^4 - 112*(12*B*a^11*b^4 - 23
*A*a^10*b^5)*c^3 + 28*(14*B*a^10*b^6 - 25*A*a^9*b^7)*c^2 - (55*B*a^9*b^8 -
94*A*a^8*b^9)*c)*sqrt((81*B^4*a^4*b^8 - 540*A*B^3*a^3*b^9 + 1350*A^2*B^2*a^
2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401*A^4*a^6*c^6 - 98*(25*A^2*B
^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5 + (625*B^4*a^8 - 9300*A*B^3
*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^5*b^3 + 76686*A^4*a^4*b^4)*
c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3 + 51336*A^2*B^2*a^5*b^4 - 7
7424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*(1017*B^4*a^6*b^4 - 7872*A*
B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*B*a^3*b^7 + 13175*A^4*a^2*b
^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^7 + 8280*A^2*B^2*a^3*b^8 -
9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b^6 - 12*a^15*b^4*c + 48*a^1
6*b^2*c^2 - 64*a^17*c^3)))*sqrt(-(9*B^2*a^2*b^7 - 30*A*B*a*b^8 + 25*A^2*b^9
 - 140*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 - 105*(4*B^2*a^5*b - 20*A*B*a^4*b^2 +
23*A^2*a^3*b^3)*c^3 + 7*(55*B^2*a^4*b^3 - 210*A*B*a^3*b^4 + 198*A^2*a^2*b^5
)*c^2 - 7*(15*B^2*a^3*b^5 - 52*A*B*a^2*b^6 + 45*A^2*a*b^7)*c - (a^7*b^6 - 1
2*a^8*b^4*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)*sqrt((81*B^4*a^4*b^8 - 540*A*B^
3*a^3*b^9 + 1350*A^2*B^2*a^2*b^10 - 1500*A^3*B*a*b^11 + 625*A^4*b^12 + 2401
*A^4*a^6*c^6 - 98*(25*A^2*B^2*a^7 - 186*A^3*B*a^6*b + 246*A^4*a^5*b^2)*c^5
+ (625*B^4*a^8 - 9300*A*B^3*a^7*b + 51894*A^2*B^2*a^6*b^2 - 109544*A^3*B*a^
5*b^3 + 76686*A^4*a^4*b^4)*c^4 - 2*(1275*B^4*a^7*b^2 - 14086*A*B^3*a^6*b^3
+ 51336*A^2*B^2*a^5*b^4 - 77424*A^3*B*a^4*b^5 + 41815*A^4*a^3*b^6)*c^3 + 3*
(1017*B^4*a^6*b^4 - 7872*A*B^3*a^5*b^5 + 22508*A^2*B^2*a^4*b^6 - 28260*A^3*
B*a^3*b^7 + 13175*A^4*a^2*b^8)*c^2 - 2*(459*B^4*a^5*b^6 - 3186*A*B^3*a^4*b^
7 + 8280*A^2*B^2*a^3*b^8 - 9550*A^3*B*a^2*b^9 + 4125*A^4*a*b^10)*c)/(a^14*b
^6 - 12*a^15*b^4*c + 48*a^16*b^2*c^2 - 64*a^17*c^3)))/(a^7*b^6 - 12*a^8*b^4
*c + 48*a^9*b^2*c^2 - 64*a^10*c^3)) + 2*(9604*A^4*a^4*c^8 + 7203*(4*A^3*B*a
^4*b - 7*A^4*a^3*b^2)*c^7 - (2500*B^4*a^6 - 22500*A*B^3*a^5*b + 43524*A^2*B
^2*a^4*b^2 + 4343*A^3*B*a^3*b^3 - 43410*A^4*a^2*b^4)*c^6 + (5625*B^4*a^5*b^
2 - 31137*A*B^3*a^4*b^3 + 52821*A^2*B^2*a^3*b^4 - 20190*A^3*B*a^2*b^5 - 123
25*A^4*a*b^6)*c^5 - 3*(657*B^4*a^4*b^4 - 3351*A*B^3*a^3*b^5 + 5560*A^2*B^2*
a^2*b^6 - 2775*A^3*B*a*b^7 - 375*A^4*b^8)*c^4 + 7*(27*B^4*a^3*b^6 - 135*A*B
^3*a^2*b^7 + 225*A^2*B^2*a*b^8 - 125*A^3*B*b^9)*c^3)*sqrt(x)) + 2*(2*A*a^2*
b^2 - 8*A*a^3*c - 3*((10*B*a^2 - 19*A*a*b)*c^2 - (3*B*a*b^2 - 5*A*b^3)*c)*x
^3 + (9*B*a*b^3 - 15*A*b^4 - 14*A*a^2*c^2 - (33*B*a^2*b - 62*A*a*b^2)*c)*x^
2 + 2*(3*B*a^2*b^2 - 5*A*a*b^3 - 4*(3*B*a^3 - 5*A*a^2*b)*c)*x)*sqrt(x))/((a
^3*b^2*c - 4*a^4*c^2)*x^4 + (a^3*b^3 - 4*a^4*b*c)*x^3 + (a^4*b^2 - 4*a^5*c)
*x^2)
```

giac [B] time = 2.56, size = 6335, normalized size = 12.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(B*a*b^2*c*x^(3/2) - A*b^3*c*x^(3/2) - 2*B*a^2*c^2*x^(3/2) + 3*A*a*b*c^2*x
^(3/2) + B*a*b^3*sqrt(x) - A*b^4*sqrt(x) - 3*B*a^2*b*c*sqrt(x) + 4*A*a*b^2*
c*sqrt(x) - 2*A*a^2*c^2*sqrt(x))/((a^3*b^2 - 4*a^4*c)*(c*x^2 + b*x + a)) +
1/8*((10*b^5*c^2 - 78*a*b^3*c^3 + 152*a^2*b*c^4 - 5*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 39*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*b^4*c - 76*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^2 - 38*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b^2*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*b^3*c^2 + 19*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b*c^3 - 10*(b^2 - 4*a*c)*b^3*c^2 + 38*(b^2 - 4*a*c)*a*b*c^3)*(a^3
*b^2 - 4*a^4*c)^2*A - (6*a*b^4*c^2 - 44*a^2*b^2*c^3 + 80*a^3*c^4 - 3*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 + 22*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 40*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 6*(b^2 - 4*a*c)*a*b^2*c^2 + 20*(b^2
 - 4*a*c)*a^2*c^3)*(a^3*b^2 - 4*a^4*c)^2*B + 2*(5*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^3*b^8 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6
*c - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c - 10*a^3*b^8*c +
286*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 + 88*sqrt(2)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2 + 5*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*b^6*c^2 + 128*a^4*b^6*c^2 - 496*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^6*b^2*c^3 - 220*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c
^3 - 44*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^3 - 572*a^5*b^4*c
^3 + 224*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*c^4 + 112*sqrt(2)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c^4 + 110*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^5*b^2*c^4 + 992*a^6*b^2*c^4 - 56*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a^6*c^5 - 448*a^7*c^5 + 10*(b^2 - 4*a*c)*a^3*b^6*c - 88*(b^2 - 4*a
*c)*a^4*b^4*c^2 + 220*(b^2 - 4*a*c)*a^5*b^2*c^3 - 112*(b^2 - 4*a*c)*a^6*c^4
)*A*abs(a^3*b^2 - 4*a^4*c) - 2*(3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^4*b^7 - 37*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c - 6*sqrt(2)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c - 6*a^4*b^7*c + 152*sqrt(2)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^2 + 50*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^5*b^4*c^2 + 3*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2
 + 74*a^5*b^5*c^2 - 208*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b*c^3 -
 104*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 - 25*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^3 - 304*a^6*b^3*c^3 + 52*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c^4 + 416*a^7*b*c^4 + 6*(b^2 - 4*a*c)*a^4*
b^5*c - 50*(b^2 - 4*a*c)*a^5*b^3*c^2 + 104*(b^2 - 4*a*c)*a^6*b*c^3)*B*abs(a
^3*b^2 - 4*a^4*c) + (10*a^6*b^9*c^2 - 138*a^7*b^7*c^3 + 680*a^8*b^5*c^4 - 1
376*a^9*b^3*c^5 + 896*a^10*b*c^6 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^6*b^9 + 69*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^7*b^7*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^6*b^8*c - 340*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^8*b^5*c^2 - 98*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^7*b^6*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^6*b^7*c^2 + 688*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^9*b^3*c^3 + 288*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^8*b^4*c^3 + 49*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^7*b^5*c^3 - 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^10*b*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^9*b^2*c^4 - 144*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^8*b^3*c^4 + 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^9*b*c^5 - 10*(b^2 - 4*a*c)*a^6*b^7*c^2 + 98*(b^2 - 4*a*c
)*a^7*b^5*c^3 - 288*(b^2 - 4*a*c)*a^8*b^3*c^4 + 224*(b^2 - 4*a*c)*a^9*b*c^5
```

```
)*A - (6*a^7*b^8*c^2 - 80*a^8*b^6*c^3 + 352*a^9*b^4*c^4 - 512*a^10*b^2*c^5
- 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^8 + 40*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^6*c + 6*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^7*c - 176*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^4*c^2 - 56*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^5*c^2 - 3*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^6*c^2 + 256*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^2*c^3 + 128*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^3*c^3 + 28*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^4*c^3 - 64*sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^2*c^4 - 6*(b^
2 - 4*a*c)*a^7*b^6*c^2 + 56*(b^2 - 4*a*c)*a^8*b^4*c^3 - 128*(b^2 - 4*a*c)*a
^9*b^2*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^3 - 4*a^4*b*c + sqrt(
(a^3*b^3 - 4*a^4*b*c)^2 - 4*(a^4*b^2 - 4*a^5*c)*(a^3*b^2*c - 4*a^4*c^2)))/(
a^3*b^2*c - 4*a^4*c^2)))/((a^7*b^6 - 12*a^8*b^4*c - 2*a^7*b^5*c + 48*a^9*b^
2*c^2 + 16*a^8*b^3*c^2 + a^7*b^4*c^2 - 64*a^10*c^3 - 32*a^9*b*c^3 - 8*a^8*b
^2*c^3 + 16*a^9*c^4)*abs(a^3*b^2 - 4*a^4*c)*abs(c)) - 1/8*((10*b^5*c^2 - 78
*a*b^3*c^3 + 152*a^2*b*c^4 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*b^5 + 39*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^3*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^4*c - 76*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
b*c^2 - 38*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*
c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^2 +
 19*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 - 10*
(b^2 - 4*a*c)*b^3*c^2 + 38*(b^2 - 4*a*c)*a*b*c^3)*(a^3*b^2 - 4*a^4*c)^2*A -
 (6*a*b^4*c^2 - 44*a^2*b^2*c^3 + 80*a^3*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^3*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a*b^2*c^2 + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*c^3 - 6*(b^2 - 4*a*c)*a*b^2*c^2 + 20*(b^2 - 4*a*c)*a^2*c^3)*(a
^3*b^2 - 4*a^4*c)^2*B - 2*(5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^
8 - 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c - 10*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c + 10*a^3*b^8*c + 286*sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 + 88*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^4*b^5*c^2 + 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^2 -
128*a^4*b^6*c^2 - 496*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 -
 220*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^3 - 44*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^3 + 572*a^5*b^4*c^3 + 224*sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*c^4 + 112*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a^6*b*c^4 + 110*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^4
- 992*a^6*b^2*c^4 - 56*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*c^5 + 44
8*a^7*c^5 - 10*(b^2 - 4*a*c)*a^3*b^6*c + 88*(b^2 - 4*a*c)*a^4*b^4*c^2 - 220
*(b^2 - 4*a*c)*a^5*b^2*c^3 + 112*(b^2 - 4*a*c)*a^6*c^4)*A*abs(a^3*b^2 - 4*a
^4*c) + 2*(3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7 - 37*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c - 6*sqrt(2)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^4*b^6*c + 6*a^4*b^7*c + 152*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^6*b^3*c^2 + 50*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^2 +
 3*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^2 - 74*a^5*b^5*c^2 - 2
08*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b*c^3 - 104*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^3 - 25*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^5*b^3*c^3 + 304*a^6*b^3*c^3 + 52*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^6*b*c^4 - 416*a^7*b*c^4 - 6*(b^2 - 4*a*c)*a^4*b^5*c + 50*(b^2 - 4*a
*c)*a^5*b^3*c^2 - 104*(b^2 - 4*a*c)*a^6*b*c^3)*B*abs(a^3*b^2 - 4*a^4*c) + (
10*a^6*b^9*c^2 - 138*a^7*b^7*c^3 + 680*a^8*b^5*c^4 - 1376*a^9*b^3*c^5 + 896
*a^10*b*c^6 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^6*b^9 + 69*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b
```

```
^7*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^8
*c - 340*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^5*
c^2 - 98*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^6*
c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^7*c
^2 + 688*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^3*
c^3 + 288*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^4
*c^3 + 49*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^5
*c^3 - 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b
*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^
2*c^4 - 144*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b
^3*c^4 + 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*
b*c^5 - 10*(b^2 - 4*a*c)*a^6*b^7*c^2 + 98*(b^2 - 4*a*c)*a^7*b^5*c^3 - 288*(
b^2 - 4*a*c)*a^8*b^3*c^4 + 224*(b^2 - 4*a*c)*a^9*b*c^5)*A - (6*a^7*b^8*c^2
- 80*a^8*b^6*c^3 + 352*a^9*b^4*c^4 - 512*a^10*b^2*c^5 - 3*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^8 + 40*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^6*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^7*c - 176*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^4*c^2 - 56*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^5*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^6*c^2 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^2*c^3 + 128*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^3*c^3 + 28*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^4*c^3 - 64*sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^2*c^4 - 6*(b^2 - 4*a*c)*a^7*b^6*c^
2 + 56*(b^2 - 4*a*c)*a^8*b^4*c^3 - 128*(b^2 - 4*a*c)*a^9*b^2*c^4)*B)*arctan
(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^3 - 4*a^4*b*c - sqrt((a^3*b^3 - 4*a^4*b*c)
^2 - 4*(a^4*b^2 - 4*a^5*c)*(a^3*b^2*c - 4*a^4*c^2)))/(a^3*b^2*c - 4*a^4*c^2
)))/((a^7*b^6 - 12*a^8*b^4*c - 2*a^7*b^5*c + 48*a^9*b^2*c^2 + 16*a^8*b^3*c^
2 + a^7*b^4*c^2 - 64*a^10*c^3 - 32*a^9*b*c^3 - 8*a^8*b^2*c^3 + 16*a^9*c^4)*
abs(a^3*b^2 - 4*a^4*c)*abs(c)) - 2/3*(3*B*a*x - 6*A*b*x + A*a)/(a^3*x^(3/2)
)
```

maple [B] time = 0.18, size = 1679, normalized size = 3.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B+4/a^3/x
^(1/2)*A*b+1/a^2/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*B*b^3-1/a^3/(c*x^2+b*x+a
)/(4*a*c-b^2)*x^(1/2)*A*b^4+14/a*c^3/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*A+3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-19
/2/a^2*c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^
(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b+14/a*c^3/(4*a*c-b^2)
/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-2/a/(c*x^2+b*x+a)*c^2/(4*
a*c-b^2)*x^(3/2)*B-3/2/a^2*c/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-
5/2/a^3*c/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+5/2/a^3*c/(4*a*c-b^2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+19/2/a^2*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b-2*B/a^2/x^(1/2)-2/3*A/a^2/x^(3/2)-2/a/(c*x^2+b*x+a)/(4*a*c-b^2
)*x^(1/2)*A*c^2-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*B*b^3-3/2/a^2*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*B*b^3-29/2/a^2*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^2+8/a*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*b*B-29/2/a^2*c^2/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^2+5/2/a^3*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^4+5/2/a^3*c/(4*a*c-b^2)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2
))*A*b^4-3/a/(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*b*B*c-1/a^3/(c*x^2+b*x+a)*c/
(4*a*c-b^2)*x^(3/2)*A*b^3-5/a*c^2/(4*a*c-b^2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+5/
a*c^2/(4*a*c-b^2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3/a^2/(c*x^2+b*x+a)*c^2/(4*
a*c-b^2)*x^(3/2)*A*b+1/a^2/(c*x^2+b*x+a)*c/(4*a*c-b^2)*x^(3/2)*B*b^2+4/a^2/
(c*x^2+b*x+a)/(4*a*c-b^2)*x^(1/2)*A*b^2*c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{3\left(\left(5\,b^4c-24\,ab^2c^2+14\,a^2c^3\right)A-\left(3\,ab^3c-13\,a^2bc^2\right)B\right)x^{\frac{5}{2}}+3\left(\left(5\,b^5-19\,ab^3c-5\,a^2bc^2\right)A-\left(3\,ab^4-10\,a^2b^2\right.\right.}{3\left(a^5b^2-4\,a^6c+\left(a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*(3*((5*b^4*c - 24*a*b^2*c^2 + 14*a^2*c^3)*A - (3*a*b^3*c - 13*a^2*b*c^2
)*B)*x^(5/2) + 3*((5*b^5 - 19*a*b^3*c - 5*a^2*b*c^2)*A - (3*a*b^4 - 10*a^2*
b^2*c - 10*a^3*c^2)*B)*x^(3/2) + 2*((15*a*b^4 - 67*a^2*b^2*c + 28*a^3*c^2)*
A - 9*(a^2*b^3 - 4*a^3*b*c)*B)*sqrt(x) - 2*(a^3*b^2 - 4*a^4*c)*A/x^(3/2) +
2*(5*(a^2*b^3 - 4*a^3*b*c)*A - 3*(a^3*b^2 - 4*a^4*c)*B)/sqrt(x))/(a^5*b^2 -
 4*a^6*c + (a^4*b^2*c - 4*a^5*c^2)*x^2 + (a^4*b^3 - 4*a^5*b*c)*x) + integra
te(-1/2*(((5*b^4*c - 24*a*b^2*c^2 + 14*a^2*c^3)*A - (3*a*b^3*c - 13*a^2*b*c
^2)*B)*x^(3/2) + ((5*b^5 - 29*a*b^3*c + 33*a^2*b*c^2)*A - (3*a*b^4 - 16*a^2
*b^2*c + 10*a^3*c^2)*B)*sqrt(x))/(a^5*b^2 - 4*a^6*c + (a^4*b^2*c - 4*a^5*c^
2)*x^2 + (a^4*b^3 - 4*a^5*b*c)*x), x)
```

mupad [B] time = 6.80, size = 21585, normalized size = 41.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(5/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - ((2*A)/(3*a) - (2*x*(5*A*b - 3*B*a))/(3*a^2) + (x^2*(15*A*b^4 + 14*A*a^2*
c^2 - 9*B*a*b^3 - 62*A*a*b^2*c + 33*B*a^2*b*c))/(3*a^3*(4*a*c - b^2)) + (c*
x^3*(5*A*b^3 - 3*B*a*b^2 + 10*B*a^2*c - 19*A*a*b*c))/(a^3*(4*a*c - b^2)))/(
a*x^(3/2) + b*x^(5/2) + c*x^(7/2)) - atan((((-(25*A^2*b^15 + 9*B^2*a^2*b^13
 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*
c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c
^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B
^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*
b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-
(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a
^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 1
```

```
19616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 1
65*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184
*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2
)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 3
0*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a
^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c
^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077
*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^
2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7
 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*
a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^1
0*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4
*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) +
51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)
^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) +
186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 -
24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6
144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^
11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 4915
2*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A*a^12*b^14*c^
2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*b^8*c^5 + 960
00*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*c^8 - 12*B*a^
13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 16000*B*a^16*b^7*
c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^1
6*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4
- 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^
7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^
3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6
- 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 -
1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 +
183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))
*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30
*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^
4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^
3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*
B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2
*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7
- 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a
^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10
*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*
c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 5
1*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^
(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 1
86*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 2
4*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 61
44*a^12*b^2*c^5)))^(1/2)*1i + ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6
*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A
^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A
^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-
(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 302
40*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)
^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 21
3*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2
)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5
*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*
c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30
```

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*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*
c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8
*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^
6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b
^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14
 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 -
219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c -
 b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*
c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5
 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*
b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 2
46*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132
*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280
*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^
2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*
A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b
*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c
 + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*
c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920
*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^
7) + 57344*A*a^19*c^9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^1
3*b^12*c^3 - 5176*A*a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6
*c^6 + 179200*A*a^17*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 -
 292*B*a^14*b^11*c^3 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B
*a^17*b^5*c^6 - 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 2560
0*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a
^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^
2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a
^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a
^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11
*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^
14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^
15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 +
 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 2
19744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c -
b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c
^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5
- 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b
^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 24
6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*
A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*
A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2
*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A
*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*
c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c
+ 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c
^5)))^(1/2)*1i)/(((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b
^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^
3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^
6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)
^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^
5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 3
5840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^1
1*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) -
7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 20
1600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c -
b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-
(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c -
b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 +
4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*
a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a
^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^
2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^
5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2
) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B
^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4
*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 8064
0*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^
2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*
c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*
c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c
 - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*
c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c
 - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^
8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*
(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4
 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*
a^19*c^9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 -
5176*A*a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200
*A*a^17*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b
^11*c^3 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6
 - 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^
9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5
+ 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^
8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4
- 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 +
 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 1
3228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 -
265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^
2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2
*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5
*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2)
 - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^
2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*
c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640
*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2
*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c
^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c
^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c -
 b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c
 - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c
- b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8
*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) -
 ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 3
0*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a
^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c
^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077
*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^
2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7
 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*
a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^1
0*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4
*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) +
51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)
^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) +
186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 -
24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6
144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2
```

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*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 357
67*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 2150
40*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^
4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 +
 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c -
b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7
- 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c -
 b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B
*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*
b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2)
+ 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*
b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2)
)/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^1
0*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^
8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^
7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248
*B*a^19*b*c^8 + 20*A*a^12*b^14*c^2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10
*c^4 - 29280*A*a^15*b^8*c^5 + 96000*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7
+ 169984*A*a^18*b^2*c^8 - 12*B*a^13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B
*a^15*b^9*c^4 + 16000*B*a^16*b^7*c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*
b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b
^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12
*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a
^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*
b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*
b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^
9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*
b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 - 25*A^2*
b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 3576
7*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 21504
0*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) - 9*B^2*a^2*b^4
*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 +
30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 - 25*B^2*a^4*c^2*(-(4*a*c - b
^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 -
 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 246*A^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*
a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 + 165*A^2*a*b
^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) +
 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c - 184*A*B*a^2*b
^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))
/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10
*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) + 32000*B^3*a^15*
c^9 - 450*A^3*a^9*b^9*c^6 + 7270*A^3*a^10*b^7*c^7 - 44008*A^3*a^11*b^5*c^8
+ 118304*A^3*a^12*b^3*c^9 + 126*B^3*a^11*b^8*c^5 - 2028*B^3*a^12*b^6*c^6 +
12176*B^3*a^13*b^4*c^7 - 32320*B^3*a^14*b^2*c^8 + 62720*A^2*B*a^14*c^10 - 1
19168*A^3*a^13*b*c^10 - 110720*A*B^2*a^14*b*c^9 - 420*A*B^2*a^10*b^9*c^5 +
6794*A*B^2*a^11*b^7*c^6 - 41112*A*B^2*a^12*b^5*c^7 + 110304*A*B^2*a^13*b^3*
c^8 + 350*A^2*B*a^9*b^10*c^5 - 5420*A^2*B*a^10*b^8*c^6 + 30412*A^2*B*a^11*b
^6*c^7 - 68816*A^2*B*a^12*b^4*c^8 + 30272*A^2*B*a^13*b^2*c^9))*(-(25*A^2*b^
15 + 9*B^2*a^2*b^13 - 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 +
 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 2
19744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 + 49*A^2*a^3*c^3*(-(4*a*c -
b^2)^9)^(1/2) - 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c
^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5
- 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b
^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 - 24
6*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*
A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*
A*B*a^7*b^2*c^6 + 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) + 51*B^2*a^3*b^2
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*c*(-(4*a*c - b^2)^9)^(1/2) + 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A
*B*a^2*b^12*c - 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) + 186*A*B*a^3*b*
c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c
 + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c
^5)))^(1/2)*2i - atan((((-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a
*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*
b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*
b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c
 - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*
a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/
2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a
^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1
/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^
4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*
a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*
b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*
a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b
^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 +
 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9
*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*
A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*
A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9
)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 1
0656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B
^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c
 - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*
a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^
4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^
7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(
4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2
*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-
(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*
a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^
(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b
^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) - 57
344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A*a^12*b^14*c^2 - 496*A*a^13*b^12*
c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*b^8*c^5 + 96000*A*a^16*b^6*c^6 -
179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*c^8 - 12*B*a^13*b^13*c^2 + 292*B*
a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 16000*B*a^16*b^7*c^5 - 48640*B*a^17*b
^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a
^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^1
0*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*
b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^1
0*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4
*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c
^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*
c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*
B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A
^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A
^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)
^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10
656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^
2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c -
 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a
^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4
*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7
*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*
b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(
4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a
^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(
1/2)*1i + ((-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^
(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116
928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*
A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/
2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 -
 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*
B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 2
6880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*
B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*
B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)
^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c
- b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)
^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^
13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^
4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13
 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*
c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c
^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B
^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*
b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-
(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a
^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 1
19616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 1
65*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^
9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184
*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*
a^21*b*c^8 + 8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 1024
0*a^18*b^7*c^5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*a^19*c^
9 + 53248*B*a^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 - 5176*A*
a^14*b^10*c^4 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200*A*a^17
*b^4*c^7 - 169984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b^11*c^3
 + 2960*B*a^15*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 7884
8*B*a^18*b^3*c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*
A^2*a^9*b^14*c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012
*A^2*a^12*b^8*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233
984*A^2*a^15*b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*
B^2*a^13*b^8*c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*
B^2*a^16*b^2*c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*
B*a^12*b^9*c^5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*
A*B*a^15*b^3*c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13
+ 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c
^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^
5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^
2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b
^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^
7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 11
9616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 16
5*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^
9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*1i)/(((-
```

```
(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*
B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b
^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(
-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2
*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^
7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 6
15*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*
b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^
2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5
 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B
^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/
2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*
A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a
^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*
a^12*b^2*c^5)))^(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6
*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A
^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A
^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-
(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 302
40*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)
^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 21
3*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2
)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5
*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*
c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30
*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*
c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8
*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^
6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 +
8*a^15*b^13*c^2 - 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^
5 + 30720*a^19*b^5*c^6 - 49152*a^20*b^3*c^7) + 57344*A*a^19*c^9 + 53248*B*a
^19*b*c^8 - 20*A*a^12*b^14*c^2 + 496*A*a^13*b^12*c^3 - 5176*A*a^14*b^10*c^4
 + 29280*A*a^15*b^8*c^5 - 96000*A*a^16*b^6*c^6 + 179200*A*a^17*b^4*c^7 - 16
9984*A*a^18*b^2*c^8 + 12*B*a^13*b^13*c^2 - 292*B*a^14*b^11*c^3 + 2960*B*a^1
5*b^9*c^4 - 16000*B*a^16*b^7*c^5 + 48640*B*a^17*b^5*c^6 - 78848*B*a^18*b^3*
c^7) - x^(1/2)*(50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*
c^3 + 1180*A^2*a^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8
*c^6 - 182336*A^2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*
b^2*c^9 - 18*B^2*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*
c^5 + 17920*B^2*a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*
c^8 + 60*A*B*a^10*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^
5 - 66304*A*B*a^13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*
c^8 + 154624*A*B*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*
(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^
2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^
2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(
4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 3024
0*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^
9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213
*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)
^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*
b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c
*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*
A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c
*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*
(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6
*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) - ((-(25*A^2*b^15 + 9
*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*
A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*
A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9
)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 1
0656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B
^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c
- 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*
a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^
4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^
7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(
4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2
*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-
(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*
a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^
(1/2)*(x^(1/2)*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)
^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 +
 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 -
 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)
^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c
^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 3584
0*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c
 + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 727
8*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 20160
0*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2
)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*
a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2
)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 409
6*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^1
1*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*(32768*a^21*b*c^8 + 8*a^15*b^13*c^2
- 192*a^16*b^11*c^3 + 1920*a^17*b^9*c^4 - 10240*a^18*b^7*c^5 + 30720*a^19*b
^5*c^6 - 49152*a^20*b^3*c^7) - 57344*A*a^19*c^9 - 53248*B*a^19*b*c^8 + 20*A
*a^12*b^14*c^2 - 496*A*a^13*b^12*c^3 + 5176*A*a^14*b^10*c^4 - 29280*A*a^15*
b^8*c^5 + 96000*A*a^16*b^6*c^6 - 179200*A*a^17*b^4*c^7 + 169984*A*a^18*b^2*
c^8 - 12*B*a^13*b^13*c^2 + 292*B*a^14*b^11*c^3 - 2960*B*a^15*b^9*c^4 + 1600
0*B*a^16*b^7*c^5 - 48640*B*a^17*b^5*c^6 + 78848*B*a^18*b^3*c^7) - x^(1/2)*(
50176*A^2*a^16*c^10 - 25600*B^2*a^17*c^9 - 50*A^2*a^9*b^14*c^3 + 1180*A^2*a
^10*b^12*c^4 - 11602*A^2*a^11*b^10*c^5 + 61012*A^2*a^12*b^8*c^6 - 182336*A^
2*a^13*b^6*c^7 + 300160*A^2*a^14*b^4*c^8 - 233984*A^2*a^15*b^2*c^9 - 18*B^2
*a^11*b^12*c^3 + 408*B^2*a^12*b^10*c^4 - 3764*B^2*a^13*b^8*c^5 + 17920*B^2*
a^14*b^6*c^6 - 45696*B^2*a^15*b^4*c^7 + 57344*B^2*a^16*b^2*c^8 + 60*A*B*a^1
0*b^13*c^3 - 1388*A*B*a^11*b^11*c^4 + 13228*A*B*a^12*b^9*c^5 - 66304*A*B*a^
13*b^7*c^6 + 183680*A*B*a^14*b^5*c^7 - 265216*A*B*a^15*b^3*c^8 + 154624*A*B
*a^16*b*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13 + 25*A^2*b^6*(-(4*a*c - b^2)^
9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c^2 - 35767*A^2*a^3*b^9*c^3 +
116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^5 + 215040*A^2*a^6*b^3*c^6 -
49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^2*a^2*b^4*(-(4*a*c - b^2)^9)^
(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b^7*c^3 + 30240*B^2*a^6*b^5*c^
4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(4*a*c - b^2)^9)^(1/2) + 35840
*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^7*b*c^7 - 213*B^2*a^3*b^11*c
+ 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^9)^(1/2) - 7278
*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 119616*A*B*a^5*b^6*c^4 + 201600
*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 165*A^2*a*b^4*c*(-(4*a*c - b^2)
^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^5*(-(4*a
*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*A*B*a^2*b^3*c*(-(4*a*c - b^2)
^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^9)^(1/2))/(8*(a^7*b^12 + 4096
*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 - 1280*a^10*b^6*c^3 + 3840*a^11
*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2) + 32000*B^3*a^15*c^9 - 450*A^3*a^9*b^
9*c^6 + 7270*A^3*a^10*b^7*c^7 - 44008*A^3*a^11*b^5*c^8 + 118304*A^3*a^12*b^
3*c^9 + 126*B^3*a^11*b^8*c^5 - 2028*B^3*a^12*b^6*c^6 + 12176*B^3*a^13*b^4*c
^7 - 32320*B^3*a^14*b^2*c^8 + 62720*A^2*B*a^14*c^10 - 119168*A^3*a^13*b*c^1
0 - 110720*A*B^2*a^14*b*c^9 - 420*A*B^2*a^10*b^9*c^5 + 6794*A*B^2*a^11*b^7*
```

```
c^6 - 41112*A*B^2*a^12*b^5*c^7 + 110304*A*B^2*a^13*b^3*c^8 + 350*A^2*B*a^9*
b^10*c^5 - 5420*A^2*B*a^10*b^8*c^6 + 30412*A^2*B*a^11*b^6*c^7 - 68816*A^2*B
*a^12*b^4*c^8 + 30272*A^2*B*a^13*b^2*c^9))*(-(25*A^2*b^15 + 9*B^2*a^2*b^13
+ 25*A^2*b^6*(-(4*a*c - b^2)^9)^(1/2) - 30*A*B*a*b^14 + 6366*A^2*a^2*b^11*c
^2 - 35767*A^2*a^3*b^9*c^3 + 116928*A^2*a^4*b^7*c^4 - 219744*A^2*a^5*b^5*c^
5 + 215040*A^2*a^6*b^3*c^6 - 49*A^2*a^3*c^3*(-(4*a*c - b^2)^9)^(1/2) + 9*B^
2*a^2*b^4*(-(4*a*c - b^2)^9)^(1/2) + 2077*B^2*a^4*b^9*c^2 - 10656*B^2*a^5*b
^7*c^3 + 30240*B^2*a^6*b^5*c^4 - 44800*B^2*a^7*b^3*c^5 + 25*B^2*a^4*c^2*(-(
4*a*c - b^2)^9)^(1/2) + 35840*A*B*a^8*c^7 - 615*A^2*a*b^13*c - 80640*A^2*a^
7*b*c^7 - 213*B^2*a^3*b^11*c + 26880*B^2*a^8*b*c^6 + 246*A^2*a^2*b^2*c^2*(-
(4*a*c - b^2)^9)^(1/2) - 7278*A*B*a^3*b^10*c^2 + 39132*A*B*a^4*b^8*c^3 - 11
9616*A*B*a^5*b^6*c^4 + 201600*A*B*a^6*b^4*c^5 - 161280*A*B*a^7*b^2*c^6 - 16
5*A^2*a*b^4*c*(-(4*a*c - b^2)^9)^(1/2) - 51*B^2*a^3*b^2*c*(-(4*a*c - b^2)^9
)^(1/2) - 30*A*B*a*b^5*(-(4*a*c - b^2)^9)^(1/2) + 724*A*B*a^2*b^12*c + 184*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^9)^(1/2) - 186*A*B*a^3*b*c^2*(-(4*a*c - b^2)^
9)^(1/2))/(8*(a^7*b^12 + 4096*a^13*c^6 - 24*a^8*b^10*c + 240*a^9*b^8*c^2 -
1280*a^10*b^6*c^3 + 3840*a^11*b^4*c^4 - 6144*a^12*b^2*c^5)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(5/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1023 $\int \frac{x^{7/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=528

$$-\frac{\sqrt{x}\left(x\left(28a^2Bc^2+8aAbc^2-25ab^2Bc+Ab^3c+3b^4B\right)+a\left(20aAc^2-24abBc+Ab^2c+3b^3B\right)\right)}{4c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\left(-\frac{-40a^2Ac^3+}{}\right.}{}$$

```
[Out] -1/2*x^(5/2)*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^
2+b*x+a)^2-1/4*(a*(20*A*a*c^2+A*b^2*c-24*B*a*b*c+3*B*b^3)+(8*A*a*b*c^2+A*b^
3*c+28*B*a^2*c^2-25*B*a*b^2*c+3*B*b^4)*x)*x^(1/2)/c^2/(-4*a*c+b^2)^2/(c*x^2
+b*x+a)+1/8*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(3
*b^4*B+A*b^3*c-27*a*b^2*B*c-16*a*A*b*c^2+84*a^2*B*c^2+(40*A*a^2*c^3+18*A*a*
b^2*c^2-A*b^4*c-132*B*a^2*b*c^2+33*B*a*b^3*c-3*B*b^5)/(-4*a*c+b^2)^(1/2))/c
^(5/2)/(-4*a*c+b^2)^2*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+1/8*arctan(2^(1/
2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*(3*b^4*B+A*b^3*c-27*a*b^2*
B*c-16*a*A*b*c^2+84*a^2*B*c^2+(-40*A*a^2*c^3-18*A*a*b^2*c^2+A*b^4*c+132*B*a
^2*b*c^2-33*B*a*b^3*c+3*B*b^5)/(-4*a*c+b^2)^(1/2))/c^(5/2)/(-4*a*c+b^2)^2*2
^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 9.32, antiderivative size = 528, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = {818, 826, 1166, 205}

$$-\frac{\sqrt{x}\left(x\left(28a^2Bc^2+8aAbc^2-25ab^2Bc+Ab^3c+3b^4B\right)+a\left(20aAc^2-24abBc+Ab^2c+3b^3B\right)\right)}{4c^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\left(-\frac{-40a^2Ac^3+}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(x^(5/2)*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) - (Sqrt[x]*(a*(3*b^3*B + A*b^2*c - 24*a*b*B*c + 20*
a*A*c^2) + (3*b^4*B + A*b^3*c - 25*a*b^2*B*c + 8*a*A*b*c^2 + 28*a^2*B*c^2)*
x))/(4*c^2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + ((3*b^4*B + A*b^3*c - 27*a*
b^2*B*c - 16*a*A*b*c^2 + 84*a^2*B*c^2 - (3*b^5*B + A*b^4*c - 33*a*b^3*B*c -
 18*a*A*b^2*c^2 + 132*a^2*b*B*c^2 - 40*a^2*A*c^3)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(5/2)
*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((3*b^4*B + A*b^3*c - 27*a*
b^2*B*c - 16*a*A*b*c^2 + 84*a^2*B*c^2 + (3*b^5*B + A*b^4*c - 33*a*b^3*B*c -
 18*a*A*b^2*c^2 + 132*a^2*b*B*c^2 - 40*a^2*A*c^3)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(5/2)
*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{7/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\int \frac{x^{3/2}\left(\frac{5}{2}a(bB-2Ac)+\frac{1}{2}\left(3b^2B+Abc-14aBc\right)x\right)}{\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,(a\,(3b^3B+Ab^2c-24abBc+20aAc^2}{4c^2\,(b^2 -}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,(a\,(3b^3B+Ab^2c-24abBc+20aAc^2}{4c^2\,(b^2 -}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,(a\,(3b^3B+Ab^2c-24abBc+20aAc^2}{4c^2\,(b^2 -}$$

$$= -\frac{x^{5/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,(a\,(3b^3B+Ab^2c-24abBc+20aAc^2}{4c^2\,(b^2 -}$$

Mathematica [A] time = 2.58, size = 745, normalized size = 1.41

$$\frac{\frac{x^{9/2}\left(A\left(4a^2c^2-15ab^2c-8abc^2x+5b^4+5b^3cx\right)+3aB\left(8abc+4ac^2x-3b^3-3b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{\frac{2a^2x^{3/2}\left(-28aBc+12Abc+b^2B\right)}{c}-\frac{2a^2\sqrt{x}\left(20aAc^2-24abBc+Ab^2c+3b^3B\right)}{c^2}+\frac{\sqrt{2}\,a^2(4a}{}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(9/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(9/2)*(3*a*B*(-3*b^3 + 8*a*b*c - 3*b^2*c*x + 4*a*c^2*x) + A*(5*b^4
- 15*a*b^2*c + 4*a^2*c^2 + 5*b^3*c*x - 8*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(
a + x*(b + c*x))) + ((-2*a^2*(3*b^3*B + A*b^2*c - 24*a*b*B*c + 20*a*A*c^2)*
Sqrt[x])/c^2 + (2*a^2*(b^2*B + 12*A*b*c - 28*a*B*c)*x^(3/2))/c + 2*a*(-7*A*
b^2 + 12*a*b*B + 4*a*A*c)*x^(5/2) + 2*(3*a*B*(-3*b^2 + 4*a*c) + A*(5*b^3 -
8*a*b*c))*x^(7/2) + (Sqrt[2]*a^2*(-3*b^5*B + b^3*c*(33*a*B + A*Sqrt[b^2 - 4
*a*c]) - 4*a*b*c^2*(33*a*B + 4*A*Sqrt[b^2 - 4*a*c]) + 9*a*b^2*c*(2*A*c - 3*
B*Sqrt[b^2 - 4*a*c]) + b^4*(-(A*c) + 3*B*Sqrt[b^2 - 4*a*c]) + 4*a^2*c^2*(10
*A*c + 21*B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - S
qrt[b^2 - 4*a*c]]])/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 - 4*a*c]])
 + (Sqrt[2]*a^2*(3*b^5*B + 4*a*b*c^2*(33*a*B - 4*A*Sqrt[b^2 - 4*a*c]) + b^4
*(A*c + 3*B*Sqrt[b^2 - 4*a*c]) - 9*a*b^2*c*(2*A*c + 3*B*Sqrt[b^2 - 4*a*c])
+ 4*a^2*c^2*(-10*A*c + 21*B*Sqrt[b^2 - 4*a*c]) + b^3*(-33*a*B*c + A*c*Sqrt[
b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]
])/(c^(5/2)*Sqrt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a
*c)))/(2*a*(b^2 - 4*a*c))
```

fricas [B] time = 50.86, size = 9631, normalized size = 18.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b
^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (
b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16
*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(5
4*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*
A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)
*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*
b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*
b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*
c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3
*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A
^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2
*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^
8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5
*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 128
0*a^4*b^2*c^9 - 1024*a^5*c^10))*log(1/2*sqrt(1/2)*(27*B^3*b^13 + 32000*A^3*
a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3*a^4*b^2)*c^7 + 64*(
10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)
*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746*A^2*B*a^3*b^5 + 49*
A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^3*b^6 - 84*A^2*B*a^2
*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*B^2*a^2*b^8 + 195*A^
2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*B^2*a*b^10 + A^2*B*b
^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*c - (3*B*b^14*c^5 - 4096*(42*B*a
^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b^3)*c^11 - 768*(194*
B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 24
0*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10 - 3*A*a*b^11)*c^7 -
(90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^
2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^
3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553
*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 +
27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b
^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^
3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(-(9*B^2*b^9 - 1680*(
4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b
^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2
*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c +
(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2
*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*
a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*
b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a
^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(65
7*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2
*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*
c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*
a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)) - (1701*
B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 15000*(6*A^3*B*a^4*b -
A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a^5*b + 287712*A^2*B^
2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4 - (1555848*B^4*a^5*b
^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 11277*A^3*B*a^2*b^5 +
 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3*a^3*b^5 + 3066*A^2*
B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^6 - 819*A*B^3*a^2*b^
7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3
+ 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*
b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*
(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*
B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*
c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2
*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^1
0*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9
 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3
- 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b +
17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b
^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^
4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B
^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13
 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*
b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10))*log(-1/2*sqr
t(1/2)*(27*B^3*b^13 + 32000*A^3*a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^
5*b + 37*A^3*a^4*b^2)*c^7 + 64*(10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083
*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^
4*b^4 - 1746*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24
120*A*B^2*a^3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b
^7 - 6993*A*B^2*a^2*b^8 + 195*A^2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2
*b^9 - 79*A*B^2*a*b^10 + A^2*B*b^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*
c - (3*B*b^14*c^5 - 4096*(42*B*a^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2
- 11*A*a^5*b^3)*c^11 - 768*(194*B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B
*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 240*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52
*B*a^2*b^10 - 3*A*a*b^11)*c^7 - (90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^
8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^
5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B
*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2
*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A
^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*
c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c
^15)))*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^
4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*
b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3
*(63*B^2*a*b^7 - 2*A*B*b^8)*c + (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7
- 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 62
5*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (1
94481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3
 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a
*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2
*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 +
 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))
/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^
2*c^9 - 1024*a^5*c^10)) - (1701*B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a
^4*c^6 + 15000*(6*A^3*B*a^4*b - A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 103
7232*A*B^3*a^5*b + 287712*A^2*B^2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a
^2*b^4)*c^4 - (1555848*B^4*a^5*b^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2
*a^3*b^4 - 11277*A^3*B*a^2*b^5 + 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 -
 26973*A*B^3*a^3*b^5 + 3066*A^2*B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(134
1*B^4*a^3*b^6 - 819*A*B^3*a^2*b^7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) + sqrt(1/
2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*
a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*
a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*
x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b
- 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4
+ A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63
*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 64
0*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^
4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (19448
1*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A
^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4
 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6
)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160
*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^
10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^
9 - 1024*a^5*c^10))*log(1/2*sqrt(1/2)*(27*B^3*b^13 + 32000*A^3*a^5*c^8 - 64
0*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3*a^4*b^2)*c^7 + 64*(10584*B^3*a^
6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93
096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)
*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^
3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*B^2*a^2*b^8 + 195*A^2*B*a*b^9 -
A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*B^2*a*b^10 + A^2*B*b^11)*c^2 - 2
7*(31*B^3*a*b^11 - A*B^2*b^12)*c + (3*B*b^14*c^5 - 4096*(42*B*a^7 - 13*A*a^
6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b^3)*c^11 - 768*(194*B*a^5*b^4 -
45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7*A*a^3*b^7)*c^9 - 240*(42*B*a^3*
b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10 - 3*A*a*b^11)*c^7 - (90*B*a*b^12
 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 -
108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17
496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2
 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*
a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3
*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 +
 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 -
A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35
*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 1
68*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 -
20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*
a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^
3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^
2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 444
6*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^
4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*
c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*
a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7
 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)) - (1701*B^4*a^2*b^8
 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 15000*(6*A^3*B*a^4*b - A^4*a^3*b^2)
```

```
*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a^5*b + 287712*A^2*B^2*a^4*b^2 -
32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4 - (1555848*B^4*a^5*b^2 - 1298376
*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 11277*A^3*B*a^2*b^5 + 35*A^4*a*b^
6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3*a^3*b^5 + 3066*A^2*B^2*a^2*b^6
- 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^6 - 819*A*B^3*a^2*b^7 + 35*A^2*B
^2*a*b^8)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4
 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3*c^4 + 16
*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*b^5*c^2 -
 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)*sqrt(-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*
a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(21
6*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A
*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a
*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*
c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*
a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^
2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*
B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 -
116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(
b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*
b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 64
0*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10))*log(-1/2*sqrt(1/2)*(27*B
^3*b^13 + 32000*A^3*a^5*c^8 - 640*(882*A*B^2*a^6 - 156*A^2*B*a^5*b + 37*A^3
*a^4*b^2)*c^7 + 64*(10584*B^3*a^6*b + 5562*A*B^2*a^5*b^2 - 1083*A^2*B*a^4*b
^3 + 89*A^3*a^3*b^4)*c^6 - 8*(93096*B^3*a^5*b^3 + 3816*A*B^2*a^4*b^4 - 1746
*A^2*B*a^3*b^5 + 49*A^3*a^2*b^6)*c^5 + (337392*B^3*a^4*b^5 - 24120*A*B^2*a^
3*b^6 - 84*A^2*B*a^2*b^7 - 17*A^3*a*b^8)*c^4 - (81324*B^3*a^3*b^7 - 6993*A*
B^2*a^2*b^8 + 195*A^2*B*a*b^9 - A^3*b^10)*c^3 + 9*(1239*B^3*a^2*b^9 - 79*A*
B^2*a*b^10 + A^2*B*b^11)*c^2 - 27*(31*B^3*a*b^11 - A*B^2*b^12)*c + (3*B*b^1
4*c^5 - 4096*(42*B*a^7 - 13*A*a^6*b)*c^12 + 6144*(40*B*a^6*b^2 - 11*A*a^5*b
^3)*c^11 - 768*(194*B*a^5*b^4 - 45*A*a^4*b^5)*c^10 + 1280*(39*B*a^4*b^6 - 7
*A*a^3*b^7)*c^9 - 240*(42*B*a^3*b^8 - 5*A*a^2*b^9)*c^8 + 24*(52*B*a^2*b^10
- 3*A*a*b^11)*c^7 - (90*B*a*b^12 - A*b^13)*c^6)*sqrt((81*B^4*b^8 + 625*A^4*
a^2*c^6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*
B^4*a^4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4
*b^4)*c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 -
 2*A^3*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*
c^2 - 54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a
^2*b^6*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))*sqrt(
-(9*B^2*b^9 - 1680*(4*A*B*a^4 - A^2*a^3*b)*c^5 + 280*(54*B^2*a^4*b - 12*A*B
*a^3*b^2 + A^2*a^2*b^3)*c^4 - 35*(216*B^2*a^3*b^3 - 36*A*B*a^2*b^4 + A^2*a*
b^5)*c^3 + (1701*B^2*a^2*b^5 - 168*A*B*a*b^6 + A^2*b^7)*c^2 - 3*(63*B^2*a*b
^7 - 2*A*B*b^8)*c - (b^10*c^5 - 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^
4*c^8 + 1280*a^4*b^2*c^9 - 1024*a^5*c^10)*sqrt((81*B^4*b^8 + 625*A^4*a^2*c^
6 - 50*(441*A^2*B^2*a^3 - 108*A^3*B*a^2*b + A^4*a*b^2)*c^5 + (194481*B^4*a^
4 - 95256*A*B^3*a^3*b + 17496*A^2*B^2*a^2*b^2 - 516*A^3*B*a*b^3 + A^4*b^4)*
c^4 - 6*(14553*B^4*a^3*b^2 - 4446*A*B^3*a^2*b^3 + 324*A^2*B^2*a*b^4 - 2*A^3
*B*b^5)*c^3 + 27*(657*B^4*a^2*b^4 - 116*A*B^3*a*b^5 + 2*A^2*B^2*b^6)*c^2 -
54*(33*B^4*a*b^6 - 2*A*B^3*b^7)*c)/(b^10*c^10 - 20*a*b^8*c^11 + 160*a^2*b^6
*c^12 - 640*a^3*b^4*c^13 + 1280*a^4*b^2*c^14 - 1024*a^5*c^15)))/(b^10*c^5 -
 20*a*b^8*c^6 + 160*a^2*b^6*c^7 - 640*a^3*b^4*c^8 + 1280*a^4*b^2*c^9 - 1024
*a^5*c^10)) - (1701*B^4*a^2*b^8 - 945*A*B^3*a*b^9 - 10000*A^4*a^4*c^6 + 150
00*(6*A^3*B*a^4*b - A^4*a^3*b^2)*c^5 + 3*(1037232*B^4*a^6 - 1037232*A*B^3*a
^5*b + 287712*A^2*B^2*a^4*b^2 - 32952*A^3*B*a^3*b^3 + 497*A^4*a^2*b^4)*c^4
- (1555848*B^4*a^5*b^2 - 1298376*A*B^3*a^4*b^3 + 238464*A^2*B^2*a^3*b^4 - 1
1277*A^3*B*a^2*b^5 + 35*A^4*a*b^6)*c^3 + 9*(37701*B^4*a^4*b^4 - 26973*A*B^3
*a^3*b^5 + 3066*A^2*B^2*a^2*b^6 - 35*A^3*B*a*b^7)*c^2 - 27*(1341*B^4*a^3*b^
6 - 819*A*B^3*a^2*b^7 + 35*A^2*B^2*a*b^8)*c)*sqrt(x)) - 2*(3*B*a^2*b^3 + 20
*A*a^3*c^2 + (5*B*b^4*c + 4*(11*B*a^2 + 4*A*a*b)*c^3 - (37*B*a*b^2 + A*b^3)
*c^2)*x^3 + (3*B*b^5 + 36*A*a^2*c^3 - (4*B*a^2*b - 5*A*a*b^2)*c^2 - (20*B*a
*b^3 - A*b^4)*c)*x^2 - (24*B*a^3*b - A*a^2*b^2)*c + (6*B*a*b^4 + 28*(B*a^3
+ A*a^2*b)*c^2 - (49*B*a^2*b^2 - 2*A*a*b^3)*c)*x)*sqrt(x))/(a^2*b^4*c^2 - 8
*a^3*b^2*c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b
^5*c^3 - 8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*
c^5)*x^2 + 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)
```

giac [B] time = 2.41, size = 3997, normalized size = 7.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/16*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c + 12*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*b^5*c^2 - 2*b^6*c^2 - 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2
*c^3 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 + sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^3 - 24*a*b^4*c^3 - 2*b^5*c^3 + 320*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 160*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*b*c^4 + 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^
4 + 288*a^2*b^2*c^4 + 112*a*b^3*c^4 - 80*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^5 - 640*a^3*c^5 - 416*a^2*b*c^5 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*b^4*c^2 + 208*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^2*b*c^3 + 104*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^2*c^3 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*b^3*c^3 - 52*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a*b*c^4 + 2*(b^2 - 4*a*c)*b^4*c^2 + 32*(b^2 - 4*a*c)*a*b^2*c^3 + 2*(
b^2 - 4*a*c)*b^3*c^3 - 160*(b^2 - 4*a*c)*a^2*c^4 - 104*(b^2 - 4*a*c)*a*b*c^
4)*A + 3*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^7 - 16*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*b^6*c - 2*b^7*c + 80*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 +
 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 32*a*b^5*c^2 - 2*b^6*c^2 - 128*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^2*c^3 - 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 -
 160*a^2*b^3*c^3 + 28*a*b^4*c^3 + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*a^2*b*c^4 + 256*a^3*b*c^4 - 192*a^2*b^2*c^4 + 448*a^3*c^5 + sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 14*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^3*c^3 - 112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^2*b*c^3 - 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a*b^2*c^3 + 56*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a^2*c^4 + 2*(b^2 - 4*a*c)*b^5*c - 24*(b^2 - 4*a*c)*a*b^3*c^2 + 2
*(b^2 - 4*a*c)*b^4*c^2 + 64*(b^2 - 4*a*c)*a^2*b*c^3 - 20*(b^2 - 4*a*c)*a*b^
2*c^3 + 112*(b^2 - 4*a*c)*a^2*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5*
c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4 + sqrt((b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
^4)^2 - 4*(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*(b^4*c^3 - 8*a*b^2*c^4 +
 16*a^2*c^5)))/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)))/((b^8*c^2 - 16*a*b^6*
c^3 - 2*b^7*c^3 + 96*a^2*b^4*c^4 + 24*a*b^5*c^4 + b^6*c^4 - 256*a^3*b^2*c^5
 - 96*a^2*b^3*c^5 - 12*a*b^4*c^5 + 256*a^4*c^6 + 128*a^3*b*c^6 + 48*a^2*b^2
*c^6 - 64*a^3*c^7)*abs(c)) + 1/16*((sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*b^6*c + 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 - 2*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 2*b^6*c^2 - 144*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*a*b^3*c^3 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^3 + 24*a*b^4*
c^3 + 2*b^5*c^3 + 320*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 + 160
*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 16*sqrt(2)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a*b^2*c^4 - 288*a^2*b^2*c^4 - 112*a*b^3*c^4 - 80*sqrt(
2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^5 + 640*a^3*c^5 + 416*a^2*b*c^5 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 56*sqrt(2
)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 2*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 208*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 104*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c^3 + 52*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^4 - 2*(b^2 - 4*a*c)*b^4*c^2 - 32*
(b^2 - 4*a*c)*a*b^2*c^3 - 2*(b^2 - 4*a*c)*b^3*c^3 + 160*(b^2 - 4*a*c)*a^2*c
^4 + 104*(b^2 - 4*a*c)*a*b*c^4)*A + 3*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)
*c)*b^7 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 2*b^7*c + 80*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b^4*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c^2 - 32*a*b^5*c^2 +
2*b^6*c^2 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 64*sqrt
(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 12*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b^3*c^3 + 160*a^2*b^3*c^3 - 28*a*b^4*c^3 + 32*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 - 256*a^3*b*c^4 + 192*a^2*b^2*c^4
- 448*a^3*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^6 + 14*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c +
 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c - 96*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 20*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - sqrt(2)*
sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 224*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 112*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 10*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 56*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 2*(b^2 - 4*a*c)*b^5*c + 2
4*(b^2 - 4*a*c)*a*b^3*c^2 - 2*(b^2 - 4*a*c)*b^4*c^2 - 64*(b^2 - 4*a*c)*a^2*
b*c^3 + 20*(b^2 - 4*a*c)*a*b^2*c^3 - 112*(b^2 - 4*a*c)*a^2*c^4)*B)*arctan(2
*sqrt(1/2)*sqrt(x)/sqrt((b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4 - sqrt((b^5*c
^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)^2 - 4*(a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*
c^4)*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)))/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2
*c^5)))/((b^8*c^2 - 16*a*b^6*c^3 - 2*b^7*c^3 + 96*a^2*b^4*c^4 + 24*a*b^5*c^
4 + b^6*c^4 - 256*a^3*b^2*c^5 - 96*a^2*b^3*c^5 - 12*a*b^4*c^5 + 256*a^4*c^6
 + 128*a^3*b*c^6 + 48*a^2*b^2*c^6 - 64*a^3*c^7)*abs(c)) - 1/4*(5*B*b^4*c*x^
(7/2) - 37*B*a*b^2*c^2*x^(7/2) - A*b^3*c^2*x^(7/2) + 44*B*a^2*c^3*x^(7/2) +
 16*A*a*b*c^3*x^(7/2) + 3*B*b^5*x^(5/2) - 20*B*a*b^3*c*x^(5/2) + A*b^4*c*x^
(5/2) - 4*B*a^2*b*c^2*x^(5/2) + 5*A*a*b^2*c^2*x^(5/2) + 36*A*a^2*c^3*x^(5/2
) + 6*B*a*b^4*x^(3/2) - 49*B*a^2*b^2*c*x^(3/2) + 2*A*a*b^3*c*x^(3/2) + 28*B
*a^3*c^2*x^(3/2) + 28*A*a^2*b*c^2*x^(3/2) + 3*B*a^2*b^3*sqrt(x) - 24*B*a^3*
b*c*sqrt(x) + A*a^2*b^2*c*sqrt(x) + 20*A*a^3*c^2*sqrt(x))/((b^4*c^2 - 8*a*b
^2*c^3 + 16*a^2*c^4)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.13, size = 2061, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(-1/8*(16*A*a*b*c^2-A*b^3*c+44*B*a^2*c^2-37*B*a*b^2*c+5*B*b^4)/(16*a^2*c^
2-8*a*b^2*c+b^4)/c*x^(7/2)-1/8*(36*A*a^2*c^3+5*A*a*b^2*c^2+A*b^4*c-4*B*a^2*
b*c^2-20*B*a*b^3*c+3*B*b^5)/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)-1/8*a/c^
2*(28*A*a*b*c^2+2*A*b^3*c+28*B*a^2*c^2-49*B*a*b^2*c+6*B*b^4)/(16*a^2*c^2-8*
a*b^2*c+b^4)*x^(3/2)-1/8*a^2*(20*A*a*c^2+A*b^2*c-24*B*a*b*c+3*B*b^3)/c^2/(1
6*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2-2/(16*a^2*c^2-8*a*b^2*c+b
^4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*A*b^3-5*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*a^2*A-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a*b^2+1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*
a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4+21/2/(16*a^2*c^2-8*a*b^2*c+b^
4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B-27/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*b^2*B+3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
c*x^(1/2))*b^4*B+33/2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*B*a^2*b-33/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a*b^3+3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4
*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^5+2/(16*a^2*c^2-8*a*b^2*c+b^4)
*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b-1/8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*A*b^3-5*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*A-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a*b^2+1/8/c/(16*a^2*c^2-8*a*b^2*c+
b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2
^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4-21/2/(16*a^2*c^2-
8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a^2*B+27/8/c/(16*a^2*c^2-8*a*b^2
*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B-3/8/c^2/(16*a^2*c^2-8*a*b^2*c+b
^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B+33/2/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a^2*b-33/8/c/(16*a^2*c^2-8*a*b^
2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*a*b^3+3/8/c^2/(16
*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^
5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\left(\left(b^2c^2+20\,ac^3\right)A+3\left(b^3c-8\,abc^2\right)B\right)x^{\frac{9}{2}}+\left(3\left(b^3c+8\,abc^2\right)A+\left(b^4-11\,ab^2c-44\,a^2c^2\right)B\right)x^{\frac{7}{2}}+((17\,ab^2c+4}{4\,(a^2b^4c-8\,a^3b^2c^2+16\,a^4c^3+\left(b^4c^3-8\,ab^2c^4+16\,a^2c^5\right)x^4+2\left(b^5c^2-8\,ab^3c^3+16\,a^2bc^4\right)x^3+(b^6c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(7/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(((b^2*c^2 + 20*a*c^3)*A + 3*(b^3*c - 8*a*b*c^2)*B)*x^(9/2) + (3*(b^3*c
 + 8*a*b*c^2)*A + (b^4 - 11*a*b^2*c - 44*a^2*c^2)*B)*x^(7/2) + ((17*a*b^2*c
 + 4*a^2*c^2)*A + 2*(a*b^3 - 22*a^2*b*c)*B)*x^(5/2) + (12*A*a^2*b*c + (a^2*
b^2 - 28*a^3*c)*B)*x^(3/2))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*
c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c
^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c
^2 + 16*a^3*b*c^3)*x) - integrate(1/8*(((b^2*c + 20*a*c^2)*A + 3*(b^3 - 8*a
*b*c)*B)*x^(3/2) + 3*(12*A*a*b*c + (a*b^2 - 28*a^2*c)*B)*sqrt(x))/(a*b^4*c
- 8*a^2*b^2*c^2 + 16*a^3*c^3 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^2 + (
b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x), x)
```

mupad [B] time = 5.96, size = 22943, normalized size = 43.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(7/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] - ((x^(5/2)*(3*B*b^5 + 36*A*a^2*c^3 + A*b^4*c - 20*B*a*b^3*c + 5*A*a*b^2*c^
2 - 4*B*a^2*b*c^2))/(4*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(7/2)*(5*B*
b^4 + 44*B*a^2*c^2 - A*b^3*c + 16*A*a*b*c^2 - 37*B*a*b^2*c))/(4*c*(b^4 + 16
*a^2*c^2 - 8*a*b^2*c)) + (x^(3/2)*(28*B*a^3*c^2 + 6*B*a*b^4 + 2*A*a*b^3*c +
 28*A*a^2*b*c^2 - 49*B*a^2*b^2*c))/(4*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) +
 (a^2*x^(1/2)*(3*B*b^3 + 20*A*a*c^2 + A*b^2*c - 24*B*a*b*c))/(4*c^2*(b^4 +
16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*
b*c*x^3) - atan(((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3
 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 73728
0*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3
*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3
*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280
*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^
19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 11
40*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 4377
6*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921
*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851
776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 +
27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*
a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c
 - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2
)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^
3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*
B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*
a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a
*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048
576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14
*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 19
66080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(
64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960
*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4
 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2
*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 101
60*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 68096
0*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580
*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 962
8416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8
+ A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^1
5)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 17
20320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^
2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a
^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A
*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^1
5)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108
*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5
- 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9
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 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949
120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 8
00*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^
2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c
^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*
a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))
/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^
6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6
*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^
4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^
7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4
*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^
2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^
(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 -
369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^
3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^
3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*
c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b
^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*
A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(
1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7
 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a
^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2
*c^14)))^(1/2)*1i - (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*
c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 73
7280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*
a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*
b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1
280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2
*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c +
 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 4
3776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6
921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2
851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7
 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B
^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^1
7*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c -
b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B
*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032
*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B
^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(
4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1
048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b
^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 -
 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2
)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40
960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*
c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*
B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 -
10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 68
0960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77
580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 +
9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c
^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2
)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 -
 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880
*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*
B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 129024
0*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2
)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) -
108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c
^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*
c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2
949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10
+ 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2
*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^
4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A
*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^
5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2
*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
+ 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2
*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2
*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*
a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424
*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^1
5)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10
 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a
*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14
*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b
^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^
8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 +
 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15
)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*
c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 86016
0*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*
b^2*c^14)))^(1/2)*1i)/((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^
13*c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 -
 737280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440
*B*a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a
^6*b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5
- 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*
B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*
c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6
+ 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9
+ 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4
- 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*
c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 44
1*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*
b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c
 - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*
A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860
032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 9
9*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*
(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128
*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^
3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^1
1 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(
1/2)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 -
 40960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b
^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 +
 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4
 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 -
 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 -
 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5
 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^
3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c -
b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^
3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482
```

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880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280
*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 129
0240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c -
b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2)
 - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^2
0*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^
12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12
+ 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^
10 + 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*
A^2*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3
*b^4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 142
2*A*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b
*c^5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*
b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*
A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*
A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B
^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095
424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2
)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c
^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^
2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b
^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^
5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B
*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^
2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)
^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^
16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 86
0160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a
^9*b^2*c^14)))^(1/2) + (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^
13*c^3 + 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 -
 737280*A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440
*B*a^3*b^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a
^6*b^3*c^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5
- 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*
B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*
c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6
+ 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9
+ 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4
- 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*
c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 44
1*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*
b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c
 - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*
A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860
032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 9
9*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*
(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128
*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^
3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^1
1 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(
1/2)*(64*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 -
 40960*a^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b
^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 +
 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4
 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 -
 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 -
 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5
 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^
```

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3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c -
b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^
3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482
880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280
*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 129
0240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c -
b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2)
 - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^2
0*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^
12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12
+ 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^
10 + 800*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*
A^2*a^2*b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3
*b^4*c^3 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 142
2*A*B*a^2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b
*c^5))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*
b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*
A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*
A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B
^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095
424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2
)^15)^(1/2) + 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c
^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^
2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b
^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^
5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B
*a^8*b^2*c^9 - 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^
2 + 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)
^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^
16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 86
0160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a
^9*b^2*c^14)))^(1/2) + (35*A^3*a^2*b^7*c^2 - 592704*B^3*a^7*c^4 - 567*B^3*a
^3*b^8 - 1176*A^3*a^3*b^5*c^3 + 9456*A^3*a^4*b^3*c^4 - 89532*B^3*a^5*b^4*c^
2 + 353808*B^3*a^6*b^2*c^3 + 315*A*B^2*a^2*b^9 - 33600*A^2*B*a^6*c^5 + 6400
*A^3*a^5*b*c^5 + 10935*B^3*a^4*b^6*c - 6552*A*B^2*a^3*b^7*c + 560448*A*B^2*
a^6*b*c^4 + 210*A^2*B*a^2*b^8*c + 61524*A*B^2*a^4*b^5*c^2 - 280800*A*B^2*a^
5*b^3*c^3 - 5649*A^2*B*a^3*b^6*c^2 + 42516*A^2*B*a^4*b^4*c^3 - 126192*A^2*B
*a^5*b^2*c^4)/(32*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^
5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))))*(-(9*B^2*b^1
9 + A^2*b^17*c^2 + 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 114
0*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776
*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*
B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 28517
76*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 2
7095040*B^2*a^8*b^3*c^8 + A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 441*B^2*a
^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c
 - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 - 25*A^2*a*c^3*(-(4*a*c - b^2)
^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3
*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B
*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 - 99*B^2*a
*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 + 6*A*B*b^3*c*(-(4*a*
c - b^2)^15)^(1/2) - 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(10485
76*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*
c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 196
6080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*2i
 - atan(((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 15728
64*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a^5*
b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*c^5
```

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 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)/(6
4*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6
*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^19 + A^2
*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a
^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^
5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2
*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*
a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040
*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*
(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^
2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1
/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c
^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^
6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*
(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2
)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10
*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 5
3760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^
7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^11*
c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*b^5
*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^
2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(
4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a
^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^
6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3
*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2
*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2)
 + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^
2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*
c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*
c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b
^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b
*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b
^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 25804
8*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*
b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 800*A^2*a
^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4*c^
4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 + 213
12*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b^5*
c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(256
*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(
9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^1
8*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^
6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^
9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^
4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^
5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) -
441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*
a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a
*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 5928
0*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 28
60032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 +
 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*
c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(1
28*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*
a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c
^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))
```

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^(1/2)*1i - (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 + 15
72864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*A*a
^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b^9*
c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c^8)
/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*
b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2*b^19 +
A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^
2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2
*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*
a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B
^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095
040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c
^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55
*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)
^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^1
2*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6
*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2
*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c -
b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a
^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8
+ 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080
*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64*b^
11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a^3*
b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96
*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*
(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^
2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2
*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*
a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*
B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2
*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320
*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9
*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^
10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^
7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1
/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*
a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*
a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 25
8048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a
^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10 + 800*A^
2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*b^4
*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3 +
21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^2*b
^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(8*(
256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*
(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*
b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9
*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3
*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11
*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7
*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2)
 - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B
^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(
4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 5
9280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 +
 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^
9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b
^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))
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/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 76
80*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^
8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14
)))^(1/2)*1i)/((((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 +
 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*
A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b
^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c
^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a
^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) - (x^(1/2)*(-(9*B^2*b^19
 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140
*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*
A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B
^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 285177
6*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27
095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c -
 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^
15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*
b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*
a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*
b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c
 - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(104857
6*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c
^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966
080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64
*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a
^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 +
 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b
^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160
*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*
A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B
^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 96284
16*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 -
A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)
^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720
320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*
a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4
*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B
*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A
*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 -
40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 -
 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 294912
0*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) - (x^(1/2)*(9*B^2*b^10 + 800
*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*
b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3
 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^
2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(
8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)
))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*
b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*
b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b
^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*
a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 36
9*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*
(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3
- 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^
```

```
6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2
*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*
B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/
2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 -
 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6
*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c
^14)))^(1/2) + (((64*A*a*b^12*c^4 - 1310720*A*a^7*c^10 + 192*B*a*b^13*c^3 +
 1572864*B*a^7*b*c^9 - 15360*A*a^3*b^8*c^6 + 163840*A*a^4*b^6*c^7 - 737280*
A*a^5*b^4*c^8 + 1572864*A*a^6*b^2*c^9 - 5376*B*a^2*b^11*c^4 + 61440*B*a^3*b
^9*c^5 - 368640*B*a^4*b^7*c^6 + 1228800*B*a^5*b^5*c^7 - 2162688*B*a^6*b^3*c
^8)/(64*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a
^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)) + (x^(1/2)*(-(9*B^2*b^19
 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140
*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*
A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B
^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 285177
6*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27
095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c -
 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^
15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*
b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*
a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*
b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c
 - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(104857
6*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c
^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966
080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*(64
*b^11*c^5 - 1280*a*b^9*c^6 - 65536*a^5*b*c^10 + 10240*a^2*b^7*c^7 - 40960*a
^3*b^5*c^8 + 81920*a^4*b^3*c^9))/(8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 +
 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b
^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160
*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*
A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B
^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 96284
16*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 -
A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)
^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720
320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*
a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4
*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B
*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A
*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*c^15 + b^20*c^5 -
40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 -
 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7*b^6*c^12 + 294912
0*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2) + (x^(1/2)*(9*B^2*b^10 + 800
*A^2*a^4*c^6 + A^2*b^8*c^2 - 14112*B^2*a^5*c^5 + 6*A*B*b^9*c + 314*A^2*a^2*
b^4*c^4 + 208*A^2*a^3*b^2*c^5 + 1881*B^2*a^2*b^6*c^2 - 9090*B^2*a^3*b^4*c^3
 + 21312*B^2*a^4*b^2*c^4 - 198*B^2*a*b^8*c - 36*A^2*a*b^6*c^3 + 1422*A*B*a^
2*b^5*c^3 - 4464*A*B*a^3*b^3*c^4 - 174*A*B*a*b^7*c^2 + 96*A*B*a^4*b*c^5))/(
8*(256*a^4*c^7 + b^8*c^3 - 16*a*b^6*c^4 + 96*a^2*b^4*c^5 - 256*a^3*b^2*c^6)
))*(-(9*B^2*b^19 + A^2*b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*b^18*c + 1140*A^2*a^2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*
b^9*c^6 + 43776*A^2*a^5*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*
b^3*c^9 + 6921*B^2*a^2*b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b
^11*c^4 - 2851776*B^2*a^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*
a^7*b^5*c^7 + 27095040*B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) - 441*B^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 36
```

```
9*B^2*a*b^17*c - 55*A^2*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*
(-(4*a*c - b^2)^15)^(1/2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3
- 59280*A*B*a^3*b^12*c^4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^
6 + 2860032*A*B*a^6*b^6*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2
*c^9 + 99*B^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*
B*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/
2))/(128*(1048576*a^10*c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 -
 7680*a^3*b^14*c^8 + 53760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6
*b^8*c^11 - 1966080*a^7*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c
^14)))^(1/2) + (35*A^3*a^2*b^7*c^2 - 592704*B^3*a^7*c^4 - 567*B^3*a^3*b^8 -
 1176*A^3*a^3*b^5*c^3 + 9456*A^3*a^4*b^3*c^4 - 89532*B^3*a^5*b^4*c^2 + 3538
08*B^3*a^6*b^2*c^3 + 315*A*B^2*a^2*b^9 - 33600*A^2*B*a^6*c^5 + 6400*A^3*a^5
*b*c^5 + 10935*B^3*a^4*b^6*c - 6552*A*B^2*a^3*b^7*c + 560448*A*B^2*a^6*b*c^
4 + 210*A^2*B*a^2*b^8*c + 61524*A*B^2*a^4*b^5*c^2 - 280800*A*B^2*a^5*b^3*c^
3 - 5649*A^2*B*a^3*b^6*c^2 + 42516*A^2*B*a^4*b^4*c^3 - 126192*A^2*B*a^5*b^2
*c^4)/(32*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280
*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8))))*(-(9*B^2*b^19 + A^2*
b^17*c^2 - 9*B^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^18*c + 1140*A^2*a^
2*b^13*c^4 - 10160*A^2*a^3*b^11*c^5 + 34880*A^2*a^4*b^9*c^6 + 43776*A^2*a^5
*b^7*c^7 - 680960*A^2*a^6*b^5*c^8 + 1863680*A^2*a^7*b^3*c^9 + 6921*B^2*a^2*
b^15*c^2 - 77580*B^2*a^3*b^13*c^3 + 570960*B^2*a^4*b^11*c^4 - 2851776*B^2*a
^5*b^9*c^5 + 9628416*B^2*a^6*b^7*c^6 - 21095424*B^2*a^7*b^5*c^7 + 27095040*
B^2*a^8*b^3*c^8 - A^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 441*B^2*a^2*c^2*(
-(4*a*c - b^2)^15)^(1/2) + 6881280*A*B*a^9*c^10 - 369*B^2*a*b^17*c - 55*A^2
*a*b^15*c^3 - 1720320*A^2*a^8*b*c^10 + 25*A^2*a*c^3*(-(4*a*c - b^2)^15)^(1/
2) - 15482880*B^2*a^9*b*c^9 + 5580*A*B*a^2*b^14*c^3 - 59280*A*B*a^3*b^12*c^
4 + 377280*A*B*a^4*b^10*c^5 - 1430784*A*B*a^5*b^8*c^6 + 2860032*A*B*a^6*b^6
*c^7 - 1290240*A*B*a^7*b^4*c^8 - 5160960*A*B*a^8*b^2*c^9 + 99*B^2*a*b^2*c*(
-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a*b^16*c^2 - 6*A*B*b^3*c*(-(4*a*c - b^2)
^15)^(1/2) + 108*A*B*a*b*c^2*(-(4*a*c - b^2)^15)^(1/2))/(128*(1048576*a^10*
c^15 + b^20*c^5 - 40*a*b^18*c^6 + 720*a^2*b^16*c^7 - 7680*a^3*b^14*c^8 + 53
760*a^4*b^12*c^9 - 258048*a^5*b^10*c^10 + 860160*a^6*b^8*c^11 - 1966080*a^7
*b^6*c^12 + 2949120*a^8*b^4*c^13 - 2621440*a^9*b^2*c^14)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(7/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1024 $\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=459

$$\frac{\left(-\frac{-40a^2Bc^2+36aAbc^2-18ab^2Bc+3Ab^3c+b^4B}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\left(\frac{-40a^2Bc^2+36aAbc^2-1}{\sqrt{b^2-}}\right.$$

```
[Out] -1/2*x^(3/2)*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)/c/(-4*a*c+b^2)/(c*x^
2+b*x+a)^2-1/4*(a*(-12*A*b*c+20*B*a*c+B*b^2)-(12*A*a*c^2+3*A*b^2*c-16*B*a*b
*c+B*b^3)*x)*x^(1/2)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)+1/8*arctan(2^(1/2)*c^(1
/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(b^3*B+3*A*b^2*c-16*a*b*B*c+12*a*
A*c^2+(-36*A*a*b*c^2-3*A*b^3*c+40*B*a^2*c^2+18*B*a*b^2*c-B*b^4)/(-4*a*c+b^2
)^(1/2))/c^(3/2)/(-4*a*c+b^2)^2*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+1/8*ar
ctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*(b^3*B+3*A*b^2*c
-16*a*b*B*c+12*a*A*c^2+(36*A*a*b*c^2+3*A*b^3*c-40*B*a^2*c^2-18*B*a*b^2*c+B*
b^4)/(-4*a*c+b^2)^(1/2))/c^(3/2)/(-4*a*c+b^2)^2*2^(1/2)/(b+(-4*a*c+b^2)^(1/
2))^(1/2)
```

Rubi **[A]** time = 4.69, antiderivative size = 459, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {818, 820, 826, 1166, 205}

$$\frac{\left(-\frac{-40a^2Bc^2+36aAbc^2-18ab^2Bc+3Ab^3c+b^4B}{\sqrt{b^2-4ac}}+12aAc^2-16abBc+3Ab^2c+b^3B\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{b^2-4ac}}}+\left(\frac{-40a^2Bc^2+36aAbc^2-1}{\sqrt{b^2-}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(x^(3/2)*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) - (Sqrt[x]*(a*(b^2*B - 12*A*b*c + 20*a*B*c) - (b^3*
B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2)*x))/(4*c*(b^2 - 4*a*c)^2*(a + b*x
+ c*x^2)) + ((b^3*B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2 - (b^4*B + 3*A*b^
3*c - 18*a*b^2*B*c + 36*a*A*b*c^2 - 40*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan
[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)
*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + ((b^3*B + 3*A*b^2*c - 16*a*
b*B*c + 12*a*A*c^2 + (b^4*B + 3*A*b^3*c - 18*a*b^2*B*c + 36*a*A*b*c^2 - 40*
a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqr
t[b^2 - 4*a*c]]])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4*
a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{5/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\int \frac{\sqrt{x}\left(\frac{3}{2}a(bB-2Ac)+\frac{1}{2}\left(b^2B+3Abc-10aBc\right)x\right)}{\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\,(a(b^2B-12Abc+20aBc)-(b^3B}{4c\left(b^2-4ac\right)^2(a}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\,(a(b^2B-12Abc+20aBc)-(b^3B}{4c\left(b^2-4ac\right)^2(a}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\,(a(b^2B-12Abc+20aBc)-(b^3B}{4c\left(b^2-4ac\right)^2(a}$$

$$= -\frac{x^{3/2}\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\sqrt{x}\,(a(b^2B-12Abc+20aBc)-(b^3B}{4c\left(b^2-4ac\right)^2(a}$$

Mathematica [A] time = 2.15, size = 589, normalized size = 1.28

$$\frac{\frac{x^{7/2}\left(A\left(-4a^2c^2-5ab^2c+3b^4+3b^3cx\right)+aB\left(16abc+4ac^2x-7b^3-7b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{-\frac{2a^2\sqrt{x}\left(20aBc-12Abc+b^2B\right)}{c}+\frac{\sqrt{2}a^2\left(\frac{40a^2Bc^2-36aAbc^2+18ab^2Bc-3Ab^3c+b^4(-B)}{\sqrt{b^2-4ac}}+12aA\right.}{c^{3/2}\sqrt{b-\sqrt{b^2-}}}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(7/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(7/2)*(A*(3*b^4 - 5*a*b^2*c - 4*a^2*c^2 + 3*b^3*c*x) + a*B*(-7*b^3
+ 16*a*b*c - 7*b^2*c*x + 4*a*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*(b + c*x))
) + ((-2*a^2*(b^2*B - 12*A*b*c + 20*a*B*c)*Sqrt[x])/c - 2*a*(5*A*b^2 - 12*a
*b*B + 4*a*A*c)*x^(3/2) + 6*A*b^3*x^(5/2) + 2*a*B*(-7*b^2 + 4*a*c)*x^(5/2)
+ (Sqrt[2]*a^2*(b^3*B + 3*A*b^2*c - 16*a*b*B*c + 12*a*A*c^2 + (-(b^4*B) - 3
*A*b^3*c + 18*a*b^2*B*c - 36*a*A*b*c^2 + 40*a^2*B*c^2)/Sqrt[b^2 - 4*a*c])*A
rcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt
[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[2]*a^2*(b^4*B + 3*b^2*c*(-6*a*B + A*Sqrt[b
^2 - 4*a*c]) + 4*a*c^2*(-10*a*B + 3*A*Sqrt[b^2 - 4*a*c]) + 4*a*b*c*(9*A*c -
 4*B*Sqrt[b^2 - 4*a*c]) + b^3*(3*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2
]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]
*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a*c)))/(2*a*(b^2 - 4*a*c))
```

fricas [B] time = 17.22, size = 7056, normalized size = 15.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/8*(sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^
2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b
^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*
b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*
a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4
 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4
 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqr
t((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2
- 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(
b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*
c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^
3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8))*log(1/2*sqrt(1/2)*(B^3*b^10 -
 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 - 420*A*B^2*a^4*b +
 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^
2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1
332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 -
492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*B^2*b^9)*c - (B*b
^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44
*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*
(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18
*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a -
 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(2
5*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 -
640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240
*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2
*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*
b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b
^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(
25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b
^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*
a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*
c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 -
 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14
*A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A*B^3*a^3*b + 9936
*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^
2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B
^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a^2
*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*
x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 +
 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2
*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b
^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 -
(35*B^2*a*b^5 - 6*A*B*b^6)*c + (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 -
 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*
c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54
*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*
c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11
)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4
*b^2*c^7 - 1024*a^5*c^8))*log(-1/2*sqrt(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4
- 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 - 420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2
- 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2
*B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 +
 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 6
3*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*B^2*b^9)*c - (B*b^13*c^3 - 24576*A*a
^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^
4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15*
A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^
12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (
625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B
^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1
280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2
*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*
B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c
+ (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b
^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^
3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4
*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a
^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4
+ 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (
35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^
4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 +
1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2*
b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A*
B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x)) + sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2*
c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 -
8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 +
2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a
^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c
^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A
*B*b^6)*c - (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 +
1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^
2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 -
 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c
^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*
a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5
```

```
*c^8))*log(1/2*sqrt(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 +
 64*(500*B^3*a^5 - 420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^
5 - 16*(1480*B^3*a^4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*
a*b^5)*c^4 + 4*(1424*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 2
7*A^3*b^7)*c^3 - (392*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (
17*B^3*a*b^8 + 6*A*B^2*b^9)*c + (B*b^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B
*a^6*b + 3*A*a^5*b^2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9
*B*a^4*b^5 - 2*A*a^3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*
(25*B*a^2*b^9 - 7*A*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b
^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*
B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6
 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1
024*a^5*c^11)))*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(1
4*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B
*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^3 - 20*a*b
^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^
8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^
4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3
)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^
4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 -
640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*
B^3*b^7 - 1296*A^4*a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (1000
0*B^4*a^4 - 30000*A*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 4
05*A^4*b^4)*c^3 + 3*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a
*b^4 - 135*A^3*B*b^5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B
^2*b^6)*c)*sqrt(x)) - sqrt(1/2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (
b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2
*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b
^3*c^2 + 16*a^3*b*c^3)*x)*sqrt(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^
4 + 120*(14*B^2*a^3*b - 16*A*B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^
3 - 60*A*B*a*b^4 + 9*A^2*b^5)*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^
3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1
024*a^5*c^8)*sqrt((B^4*b^4 + 81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3
 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6
*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9
 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*
b^6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8))*log(-1/2*sqrt
(1/2)*(B^3*b^10 - 2304*(5*A^2*B*a^4 - 3*A^3*a^3*b)*c^6 + 64*(500*B^3*a^5 -
420*A*B^2*a^4*b + 198*A^2*B*a^3*b^2 - 81*A^3*a^2*b^3)*c^5 - 16*(1480*B^3*a^
4*b^2 - 1284*A*B^2*a^3*b^3 + 324*A^2*B*a^2*b^4 - 81*A^3*a*b^5)*c^4 + 4*(142
4*B^3*a^3*b^4 - 1332*A*B^2*a^2*b^5 + 234*A^2*B*a*b^6 - 27*A^3*b^7)*c^3 - (3
92*B^3*a^2*b^6 - 492*A*B^2*a*b^7 + 63*A^2*B*b^8)*c^2 - (17*B^3*a*b^8 + 6*A*
B^2*b^9)*c + (B*b^13*c^3 - 24576*A*a^6*c^10 + 4096*(13*B*a^6*b + 3*A*a^5*b^
2)*c^9 - 1536*(44*B*a^5*b^3 - 5*A*a^4*b^4)*c^8 + 3840*(9*B*a^4*b^5 - 2*A*a^
3*b^6)*c^7 - 160*(56*B*a^3*b^7 - 15*A*a^2*b^8)*c^6 + 48*(25*B*a^2*b^9 - 7*A
*a*b^10)*c^5 - 18*(4*B*a*b^11 - A*b^12)*c^4)*sqrt((B^4*b^4 + 81*A^4*c^4 - 1
8*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a*b + 54*A^2*B^
2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20*a*b^8*c^7 + 1
60*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a^5*c^11)))*sqr
t(-(B^2*b^7 - 240*(4*A*B*a^3 - 3*A^2*a^2*b)*c^4 + 120*(14*B^2*a^3*b - 16*A*
B*a^2*b^2 + 3*A^2*a*b^3)*c^3 + (280*B^2*a^2*b^3 - 60*A*B*a*b^4 + 9*A^2*b^5)
*c^2 - (35*B^2*a*b^5 - 6*A*B*b^6)*c - (b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^
6*c^5 - 640*a^3*b^4*c^6 + 1280*a^4*b^2*c^7 - 1024*a^5*c^8)*sqrt((B^4*b^4 +
81*A^4*c^4 - 18*(25*A^2*B^2*a - 6*A^3*B*b)*c^3 + (625*B^4*a^2 - 300*A*B^3*a
*b + 54*A^2*B^2*b^2)*c^2 - 2*(25*B^4*a*b^2 - 6*A*B^3*b^3)*c)/(b^10*c^6 - 20
*a*b^8*c^7 + 160*a^2*b^6*c^8 - 640*a^3*b^4*c^9 + 1280*a^4*b^2*c^10 - 1024*a
^5*c^11)))/(b^10*c^3 - 20*a*b^8*c^4 + 160*a^2*b^6*c^5 - 640*a^3*b^4*c^6 + 1
280*a^4*b^2*c^7 - 1024*a^5*c^8)) - (35*B^4*a*b^6 - 15*A*B^3*b^7 - 1296*A^4*
a^2*c^5 + 648*(14*A^3*B*a^2*b - 5*A^4*a*b^2)*c^4 + (10000*B^4*a^4 - 30000*A
*B^3*a^3*b + 9936*A^2*B^2*a^2*b^2 + 1080*A^3*B*a*b^3 - 405*A^4*b^4)*c^3 + 3
*(5000*B^4*a^3*b^2 - 3864*A*B^3*a^2*b^3 + 1080*A^2*B^2*a*b^4 - 135*A^3*B*b^
5)*c^2 - 3*(497*B^4*a^2*b^4 - 315*A*B^3*a*b^5 + 45*A^2*B^2*b^6)*c)*sqrt(x))
 + 2*(B*a^2*b^2 - (B*b^3*c + 12*A*a*c^3 - (16*B*a*b - 3*A*b^2)*c^2)*x^3 + (
B*b^4 + 4*(9*B*a^2 - 4*A*a*b)*c^2 + 5*(B*a*b^2 - A*b^3)*c)*x^2 + 4*(5*B*a^3
 - 3*A*a^2*b)*c + (2*B*a*b^3 + 4*A*a^2*c^2 + (28*B*a^2*b - 19*A*a*b^2)*c)*x
)*sqrt(x))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4
 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c
- 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3
)*x)
```

giac **[B]** time = 3.36, size = 7586, normalized size = 16.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*(3*(2*b^4*c^3 - 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*c^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^2*c^
3 - 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(
b^2 - 4*a*c)*b^2*c^3 - 8*(b^2 - 4*a*c)*a*c^4)*(b^4*c - 8*a*b^2*c^2 + 16*a^2
*c^3)^2*A + (2*b^5*c^2 - 40*a*b^3*c^3 + 128*a^2*b*c^4 - sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^4*c - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4
*a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2 - 4*a*c)*a*b*c^3)*(b^4
*c - 8*a*b^2*c^2 + 16*a^2*c^3)^2*B - 24*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a*b^7*c^3 - 12*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^4 -
2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 - 2*a*b^7*c^4 + 48*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 16*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^2*b^4*c^5 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b
^5*c^5 + 24*a^2*b^5*c^5 - 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*
c^6 - 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 - 8*sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^6 - 96*a^3*b^3*c^6 + 16*sqrt(2)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^7 + 128*a^4*b*c^7 + 2*(b^2 - 4*a*c)*a*
b^5*c^4 - 16*(b^2 - 4*a*c)*a^2*b^3*c^5 + 32*(b^2 - 4*a*c)*a^3*b*c^6)*A*abs(
b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3) + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^8*c^2 + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^3 - 2*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^3 - 2*a*b^8*c^3 - 192*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^4 - 24*sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^2*b^5*c^4 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6
*c^4 - 16*a^2*b^6*c^4 + 896*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2
*c^5 + 288*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 12*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^5 + 384*a^3*b^4*c^5 - 1280*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*c^6 - 640*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^4*b*c^6 - 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b
^2*c^6 - 1792*a^4*b^2*c^6 + 320*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4
*c^7 + 2560*a^5*c^7 + 2*(b^2 - 4*a*c)*a*b^6*c^3 + 24*(b^2 - 4*a*c)*a^2*b^4*
c^4 - 288*(b^2 - 4*a*c)*a^3*b^2*c^5 + 640*(b^2 - 4*a*c)*a^4*c^6)*B*abs(b^4*
c - 8*a*b^2*c^2 + 16*a^2*c^3) - 3*(2*b^12*c^5 - 8*a*b^10*c^6 - 192*a^2*b^8*
c^7 + 1792*a^3*b^6*c^8 - 5632*a^4*b^4*c^9 + 6144*a^5*b^2*c^10 - sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^12*c^3 + 4*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 + 2*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 96*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 - sqrt(2)*sqrt(b^2 - 4*a*
c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^10*c^5 - 896*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 192*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 + 2816*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 1024*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 96*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^7 - 3072*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 - 1536*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 512*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^8 + 768*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^9 - 2*(b^2 - 4*a*c)*b
^10*c^5 + 192*(b^2 - 4*a*c)*a^2*b^6*c^7 - 1024*(b^2 - 4*a*c)*a^3*b^4*c^8 +
1536*(b^2 - 4*a*c)*a^4*b^2*c^9)*A - (2*b^13*c^4 - 68*a*b^11*c^5 + 688*a^2*b
^9*c^6 - 2688*a^3*b^7*c^7 + 2048*a^4*b^5*c^8 + 11264*a^5*b^3*c^9 - 20480*a^
6*b*c^10 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^13*c
^2 + 34*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^11*c^
3 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^12*c^3 -
344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^9*c^4 -
 60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 1344*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c^5 + 448*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 + 30*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^9*c^5 - 1024*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^6 - 896
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 22
4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 - 5
632*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^7 -
 1536*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7
 + 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^
7 + 10240*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b*c
^8 + 5120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2
*c^8 + 768*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^
3*c^8 - 2560*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*
b*c^9 - 2*(b^2 - 4*a*c)*b^11*c^4 + 60*(b^2 - 4*a*c)*a*b^9*c^5 - 448*(b^2 -
4*a*c)*a^2*b^7*c^6 + 896*(b^2 - 4*a*c)*a^3*b^5*c^7 + 1536*(b^2 - 4*a*c)*a^4
*b^3*c^8 - 5120*(b^2 - 4*a*c)*a^5*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt
((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3 + sqrt((b^5*c - 8*a*b^3*c^2 + 16*a^2*b
*c^3)^2 - 4*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*(b^4*c^2 - 8*a*b^2*c^3 +
 16*a^2*c^4)))/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)))/((a*b^10*c^3 - 20*a^2
*b^8*c^4 - 2*a*b^9*c^4 + 160*a^3*b^6*c^5 + 32*a^2*b^7*c^5 + a*b^8*c^5 - 640
*a^4*b^4*c^6 - 192*a^3*b^5*c^6 - 16*a^2*b^6*c^6 + 1280*a^5*b^2*c^7 + 512*a^
4*b^3*c^7 + 96*a^3*b^4*c^7 - 1024*a^6*c^8 - 512*a^5*b*c^8 - 256*a^4*b^2*c^8
 + 256*a^5*c^9)*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*abs(c)) - 1/32*(3*(2*
b^4*c^3 - 32*a^2*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b
^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c
^3 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^3 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^2*c^3 - 4*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*c^4 - 2*(b^2 - 4*a*c
)*b^2*c^3 - 8*(b^2 - 4*a*c)*a*c^4)*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)^2*A +
 (2*b^5*c^2 - 40*a*b^3*c^3 + 128*a^2*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*b^4*c - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^2*b*c^2 - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*b^3*c^2 + 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*
b*c^3 - 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2 - 4*a*c)*a*b*c^3)*(b^4*c - 8*a*b^
```

```
2*c^2 + 16*a^2*c^3)^2*B + 24*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7
*c^3 - 12*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c^4 - 2*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 + 2*a*b^7*c^4 + 48*sqrt(2)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a^2*b^4*c^5 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c^5 - 24
*a^2*b^5*c^5 - 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^6 - 32*sq
rt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 - 8*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b^3*c^6 + 96*a^3*b^3*c^6 + 16*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^3*b*c^7 - 128*a^4*b*c^7 - 2*(b^2 - 4*a*c)*a*b^5*c^4 + 1
6*(b^2 - 4*a*c)*a^2*b^3*c^5 - 32*(b^2 - 4*a*c)*a^3*b*c^6)*A*abs(b^4*c - 8*a
*b^2*c^2 + 16*a^2*c^3) - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^8*c
^2 + 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^3 - 2*sqrt(2)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7*c^3 + 2*a*b^8*c^3 - 192*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^4 - 24*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^2*b^5*c^4 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c^4 + 16*a
^2*b^6*c^4 + 896*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^5 + 288*
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^5 + 12*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^5 - 384*a^3*b^4*c^5 - 1280*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^5*c^6 - 640*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*
c)*a^4*b*c^6 - 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^6 + 17
92*a^4*b^2*c^6 + 320*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^7 - 2560
*a^5*c^7 - 2*(b^2 - 4*a*c)*a*b^6*c^3 - 24*(b^2 - 4*a*c)*a^2*b^4*c^4 + 288*(
b^2 - 4*a*c)*a^3*b^2*c^5 - 640*(b^2 - 4*a*c)*a^4*c^6)*B*abs(b^4*c - 8*a*b^2
*c^2 + 16*a^2*c^3) - 3*(2*b^12*c^5 - 8*a*b^10*c^6 - 192*a^2*b^8*c^7 + 1792*
a^3*b^6*c^8 - 5632*a^4*b^4*c^9 + 6144*a^5*b^2*c^10 - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^12*c^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*b^10*c^5 - 896*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 + 2816*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^7 - 3072*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 - 1536*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^8 + 768*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^9 - 2*(b^2 - 4*a*c)*b^10*c^5 + 1
92*(b^2 - 4*a*c)*a^2*b^6*c^7 - 1024*(b^2 - 4*a*c)*a^3*b^4*c^8 + 1536*(b^2 -
 4*a*c)*a^4*b^2*c^9)*A - (2*b^13*c^4 - 68*a*b^11*c^5 + 688*a^2*b^9*c^6 - 26
88*a^3*b^7*c^7 + 2048*a^4*b^5*c^8 + 11264*a^5*b^3*c^9 - 20480*a^6*b*c^10 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^13*c^2 + 34*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^11*c^3 + 2*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^12*c^3 - 344*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^9*c^4 - 60*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^10*c^4 - sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^11*c^4 + 1344*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^7*c^5 + 448*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8*c^5 + 30*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^9*c^5 - 1024*sqrt(2)*sqr
t(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^5*c^6 - 896*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c^6 - 224*sqrt(2)*s
qrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c^6 - 5632*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^3*c^7 - 1536*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^4*c^7 + 448*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^5*c^7 + 10240*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b*c^8 + 5120*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^8 + 768*
```

```
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^8 - 256
0*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*c^9 - 2*(
b^2 - 4*a*c)*b^11*c^4 + 60*(b^2 - 4*a*c)*a*b^9*c^5 - 448*(b^2 - 4*a*c)*a^2*
b^7*c^6 + 896*(b^2 - 4*a*c)*a^3*b^5*c^7 + 1536*(b^2 - 4*a*c)*a^4*b^3*c^8 -
5120*(b^2 - 4*a*c)*a^5*b*c^9)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5*c - 8
*a*b^3*c^2 + 16*a^2*b*c^3 - sqrt((b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)^2 - 4
*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4
)))/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)))/((a*b^10*c^3 - 20*a^2*b^8*c^4 -
2*a*b^9*c^4 + 160*a^3*b^6*c^5 + 32*a^2*b^7*c^5 + a*b^8*c^5 - 640*a^4*b^4*c^
6 - 192*a^3*b^5*c^6 - 16*a^2*b^6*c^6 + 1280*a^5*b^2*c^7 + 512*a^4*b^3*c^7 +
 96*a^3*b^4*c^7 - 1024*a^6*c^8 - 512*a^5*b*c^8 - 256*a^4*b^2*c^8 + 256*a^5*
c^9)*abs(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*abs(c)) + 1/4*(B*b^3*c*x^(7/2) -
 16*B*a*b*c^2*x^(7/2) + 3*A*b^2*c^2*x^(7/2) + 12*A*a*c^3*x^(7/2) - B*b^4*x^
(5/2) - 5*B*a*b^2*c*x^(5/2) + 5*A*b^3*c*x^(5/2) - 36*B*a^2*c^2*x^(5/2) + 16
*A*a*b*c^2*x^(5/2) - 2*B*a*b^3*x^(3/2) - 28*B*a^2*b*c*x^(3/2) + 19*A*a*b^2*
c*x^(3/2) - 4*A*a^2*c^2*x^(3/2) - B*a^2*b^2*sqrt(x) - 20*B*a^3*c*sqrt(x) +
12*A*a^2*b*c*sqrt(x))/((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*(c*x^2 + b*x + a)
^2)
```

maple [B] time = 0.18, size = 1669, normalized size = 3.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(1/8*(12*A*a*c^2+3*A*b^2*c-16*B*a*b*c+B*b^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x
^(7/2)+1/8*(16*A*a*b*c^2+5*A*b^3*c-36*B*a^2*c^2-5*B*a*b^2*c-B*b^4)/c/(16*a^
2*c^2-8*a*b^2*c+b^4)*x^(5/2)-1/8*a/c*(4*A*a*c^2-19*A*b^2*c+28*B*a*b*c+2*B*b
^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)+1/8*a^2*(12*A*b*c-20*B*a*c-B*b^2)/c/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2+3/2/(16*a^2*c^2-8*a*b^2
*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^2+9/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/
2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*A*b+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^
2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2
)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*a*b*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c*2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*b^3*B-5/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*a^2*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*a*b^2*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c/(-4*a*c+b^2)^(
1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2
)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*c*x^(1/2))*A*a-3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*A*b^2+9/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)
/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*c*x^(1/2))*a*A*b+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2
)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^
2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+2/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((
-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)
^(1/2)*c*x^(1/2))*a*b*B-1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c*2^(1/2)/((-b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c
*x^(1/2))*b^3*B-5/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/(
(-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c
)^(1/2)*c*x^(1/2))*a^2*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*a*b^2*B+1/8/(16*a^2*c^2-8*a*b^2*c+b^4)/c/(-4*a*
c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^4*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{(12\,Abc^2 - (b^2c + 20\,ac^2)B)x^{\frac{9}{2}} + 3\,((7\,b^2c - 4\,ac^2)A - (b^3 + 8\,abc)B)x^{\frac{7}{2}} + ((7\,b^3 + 8\,abc)A - (17\,ab^2 + 4\,a^2}{4\,(a^2b^4 - 8\,a^3b^2c + 16\,a^4c^2 + (b^4c^2 - 8\,ab^2c^3 + 16\,a^2c^4)x^4 + 2\,(b^5c - 8\,ab^3c^2 + 16\,a^2bc^3)x^3 + (b^6 - 6\,ab^4c + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(5/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/4*((12*A*b*c^2 - (b^2*c + 20*a*c^2)*B)*x^(9/2) + 3*((7*b^2*c - 4*a*c^2)*
A - (b^3 + 8*a*b*c)*B)*x^(7/2) + ((7*b^3 + 8*a*b*c)*A - (17*a*b^2 + 4*a^2*c
)*B)*x^(5/2) - (12*B*a^2*b - (5*a*b^2 + 4*a^2*c)*A)*x^(3/2))/(a^2*b^4 - 8*a
^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c
 - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2
*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x) + integrate(1/8*((12*A*b*c - (b^2
+ 20*a*c)*B)*x^(3/2) - 3*(12*B*a*b - (5*b^2 + 4*a*c)*A)*sqrt(x))/(a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2 + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*x^2 + (b^5 - 8
*a*b^3*c + 16*a^2*b*c^2)*x), x)
```

mupad [B] time = 4.98, size = 19073, normalized size = 41.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(5/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] atan(((((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a
*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c
^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 73
7280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24
*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*
a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c
- b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*
A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^
2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*
a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a
^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c
 - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a
^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^1
0*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b
^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180
*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a
^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8
+ 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 262144
0*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 1
0240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*
a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 +
9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b
^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^
5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8
+ 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 +
43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 +
983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2)
 + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*
A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256
*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B
*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^1
3 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760
*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*
c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) - (x^(1/2)*(B^2
*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 57
6*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^
6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*
a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a
^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^
(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^1
1*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c
^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^
3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6
+ 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a
*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 -
1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241
920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 73
7280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14
*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5
 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^
6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c
^12)))^(1/2)*1i - (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*
c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520
*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*
b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*
a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4
*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c
^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^
16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c
^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2
- 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 -
680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*
B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 -
737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000
*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 17817
60*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)
^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18
*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a
^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c
^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a
^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(
b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-
(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*
(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^
2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*
a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^
4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^
7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^
2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*
b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*
c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2
*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048
576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14
*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966
080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (
x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*
B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 -
 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^
2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4
*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c
 - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040
*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A
^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2
*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*
a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*
c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*
a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^
10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*
b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 18
0*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*
a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8
 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 26214
40*a^9*b^2*c^12)))^(1/2)*1i)/((1728*A^3*a^4*c^5 - 35*B^3*a^2*b^7 + 1620*A^3
*a^2*b^4*c^3 + 4752*A^3*a^3*b^2*c^4 - 9456*B^3*a^4*b^3*c^2 + 15*A*B^2*a*b^8
 + 4800*A*B^2*a^5*c^4 + 135*A^3*a*b^6*c^2 + 1176*B^3*a^3*b^5*c - 6400*B^3*a
^5*b*c^3 - 705*A*B^2*a^2*b^6*c - 15552*A^2*B*a^4*b*c^4 + 6084*A*B^2*a^3*b^4
*c^2 + 26256*A*B^2*a^4*b^2*c^3 - 1260*A^2*B*a^2*b^5*c^2 - 13248*A^2*B*a^3*b
^3*c^3 + 90*A^2*B*a*b^7*c)/(32*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240
*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (
((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c
^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 98
3040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*
a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10
*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2
*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^
15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2
*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b
^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^1
1*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*
c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B
^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^
9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 -
 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7
+ 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*
b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16
*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 86016
0*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b
^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^
2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5
 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b
^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)
^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103
680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*
B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B
^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*
A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*
A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2
*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^
5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-
(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^2
0*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^
12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 +
2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) - (x^(1/2)*(B^2*b^8 -
288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a
^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 1
26*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c
^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*
c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) +
 B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 +
 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 55
2960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 348
80*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 18636
80*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4
*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320
*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B
*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*
B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(
128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680
*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c
^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^
(1/2) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*a^6*b*c^8 - 64*B
*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 - 491520*A*a^4*b^5
*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*B*a^4*b^6*c^5 +
737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c + 4096*a^6*c^7 -
24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 614
4*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*
c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 504
0*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*
A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^
2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2
*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15
*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2
*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b
^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6
*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 1
80*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720
*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^
8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621
440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 65536*a^5*b*c^8 +
 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7))/(8*(b^8*c + 25
6*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17
+ 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*b^2*(-(4*a*c -
 b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*
c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^
8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4
+ 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7
+ 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/
2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 24
0*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 9922
56*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 + 6*A
*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c
^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 537
60*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^
6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2) + (x^(1/2)*(B
^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c +
576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*
b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*
B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256
*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^15
)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b
^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5
*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*
c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^
```

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6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^2
*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9
- 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 2
41920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 +
737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^
14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c
^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*
a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2
*c^12)))^(1/2)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 + 9*A^2*c^2*(-(4*a*c - b^2)^1
5)^(1/2) + B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*
b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^
5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11
*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c
^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c - 25*B^
2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9
 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 -
241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 +
 737280*A*B*a^7*b^2*c^8 + 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b
^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*
c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160
*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^
2*c^12)))^(1/2)*2i - ((x^(5/2)*(B*b^4 + 36*B*a^2*c^2 - 5*A*b^3*c - 16*A*a*b
*c^2 + 5*B*a*b^2*c))/(4*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^(7/2)*(B*b^3
 + 12*A*a*c^2 + 3*A*b^2*c - 16*B*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))
 + (x^(3/2)*(4*A*a^2*c^2 + 2*B*a*b^3 - 19*A*a*b^2*c + 28*B*a^2*b*c))/(4*c*(
b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (a^2*x^(1/2)*(B*b^2 - 12*A*b*c + 20*B*a*c)
)/(4*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4
+ 2*a*b*x + 2*b*c*x^3) + atan(((((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 78
6432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7
*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 -
163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b
^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 +
 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*
c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*
A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*
a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a
^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*
a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*
a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^1
2*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^
6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a
*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^
3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c
^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949
120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*
c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b
^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*
b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/
2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c
^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7
+ 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 +
 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1
863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*
(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 172
0320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920
*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 73728
0*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^
2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 -
7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b
^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12
)))^(1/2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a
^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*
a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66
*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2
 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2
*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*
b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7
*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^
2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5
 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 5
5*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3
 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 240
00*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 178
1760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^1
5)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^
18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048
*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4
*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*1i - (((1310720*B*a^7*c^8 + 768*A*a*b
^11*c^3 - 786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 1228
80*A*a^3*b^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^
3*b^8*c^4 - 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2
*c^7)/(64*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a
^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 +
 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c -
b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c
^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8
 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 +
 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 +
 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2
) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240
*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 99225
6*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*
B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^
13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 5376
0*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6
*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 -
 1280*a*b^9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 +
 81920*a^4*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^
3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c -
b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^
2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*
a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^
3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6
*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c +
 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7
*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*
c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4
*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A
*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2
*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 +
860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*
a^9*b^2*c^12)))^(1/2) + (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2
 + 800*B^2*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^
2 + 208*B^2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*
b^3*c^3 - 66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 -
16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15
*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680
*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2
*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*
a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B
*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2
*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^
12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b
^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*
a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c
^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*
c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 294
9120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*1i)/((1728*A^3*a^4*c^5 -
35*B^3*a^2*b^7 + 1620*A^3*a^2*b^4*c^3 + 4752*A^3*a^3*b^2*c^4 - 9456*B^3*a^4
*b^3*c^2 + 15*A*B^2*a*b^8 + 4800*A*B^2*a^5*c^4 + 135*A^3*a*b^6*c^2 + 1176*B
^3*a^3*b^5*c - 6400*B^3*a^5*b*c^3 - 705*A*B^2*a^2*b^6*c - 15552*A^2*B*a^4*b
*c^4 + 6084*A*B^2*a^3*b^4*c^2 + 26256*A*B^2*a^4*b^2*c^3 - 1260*A^2*B*a^2*b^
5*c^2 - 13248*A^2*B*a^3*b^3*c^3 + 90*A^2*B*a*b^7*c)/(32*(b^12*c + 4096*a^6*
c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5
 - 6144*a^5*b^2*c^6)) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 - 786432*A*
a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b^7*c^5 -
491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4 - 163840*
B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*(b^12*c +
 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a
^4*b^4*c^5 - 6144*a^5*b^2*c^6)) - (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9
*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*
A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4
*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^1
3*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*
c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9
 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*
c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 +
 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 -
 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^
2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*
a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 25
8048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8
*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^9*c^4 - 6
5536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4*b^3*c^7)
)/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4
)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^
2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37
440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 55296
0*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*
B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*
B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*
c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^
2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^
4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a
^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128
*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^
3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9
 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/
2) - (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2*a^4*c^4
+ 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^2*a^3*b^2
*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 - 66*A*B*a*
b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a
^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-
(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c
- 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 -
```

```
9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 101
60*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 68096
0*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a
*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 73728
0*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*
a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*
B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2
) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4
+ 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^
10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 -
 2621440*a^9*b^2*c^12)))^(1/2) + (((1310720*B*a^7*c^8 + 768*A*a*b^11*c^3 -
786432*A*a^6*b*c^8 - 64*B*a*b^12*c^2 - 15360*A*a^2*b^9*c^4 + 122880*A*a^3*b
^7*c^5 - 491520*A*a^4*b^5*c^6 + 983040*A*a^5*b^3*c^7 + 15360*B*a^3*b^8*c^4
- 163840*B*a^4*b^6*c^5 + 737280*B*a^5*b^4*c^6 - 1572864*B*a^6*b^2*c^7)/(64*
(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4
 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)) + (x^(1/2)*(-(B^2*b^17 + 9*A^2*b^1
5*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(
1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 10368
0*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^
2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2
*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*
B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^
2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b
^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*
b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4
*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*
c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12
*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 29
49120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*(64*b^11*c^3 - 1280*a*b^
9*c^4 - 65536*a^5*b*c^8 + 10240*a^2*b^7*c^5 - 40960*a^3*b^5*c^6 + 81920*a^4
*b^3*c^7))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^
3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A^2*c^2*(-(4*a*c - b^2)^15)^(
1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*b^16*c - 5040*A^2*a^2*b^11
*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b^7*c^6 - 9216*A^2*a^5*b^5*c^
7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*c^2 - 10160*B^2*a^3*b^11*c^3
 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^5 - 680960*B^2*a^6*b^5*c^6 +
 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 - 55*B^2*a*b^15*c + 25*B^2*a*
c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^3 - 737280*A^2*a^7*b*c^9 - 1
720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 24000*A*B*a^3*b^10*c^4 - 2419
20*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1781760*A*B*a^6*b^4*c^7 + 737
280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a*b^14*
c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*b^18*c^4 + 720*a^2*b^16*c^5
- 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258048*a^5*b^10*c^8 + 860160*a^6
*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b^4*c^11 - 2621440*a^9*b^2*c^
12)))^(1/2) + (x^(1/2)*(B^2*b^8 - 288*A^2*a^3*c^5 + 9*A^2*b^6*c^2 + 800*B^2
*a^4*c^4 + 6*A*B*b^7*c + 576*A^2*a^2*b^2*c^4 + 314*B^2*a^2*b^4*c^2 + 208*B^
2*a^3*b^2*c^3 - 36*B^2*a*b^6*c + 126*A^2*a*b^4*c^3 - 816*A*B*a^2*b^3*c^3 -
66*A*B*a*b^5*c^2 - 672*A*B*a^3*b*c^4))/(8*(b^8*c + 256*a^4*c^5 - 16*a*b^6*c
^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*A
^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*
B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*b
^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13*
c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c^
5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9 -
 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c^
3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 + 2
4000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 - 1
781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2)
^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a*
b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 2580
48*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*b
^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)))*(-(B^2*b^17 + 9*A^2*b^15*c^2 - 9*
A^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*b^16*c - 5040*A^2*a^2*b^11*c^4 + 37440*A^2*a^3*b^9*c^5 - 103680*A^2*a^4*
b^7*c^6 - 9216*A^2*a^5*b^5*c^7 + 552960*A^2*a^6*b^3*c^8 + 1140*B^2*a^2*b^13
*c^2 - 10160*B^2*a^3*b^11*c^3 + 34880*B^2*a^4*b^9*c^4 + 43776*B^2*a^5*b^7*c
^5 - 680960*B^2*a^6*b^5*c^6 + 1863680*B^2*a^7*b^3*c^7 + 983040*A*B*a^8*c^9
- 55*B^2*a*b^15*c + 25*B^2*a*c*(-(4*a*c - b^2)^15)^(1/2) + 180*A^2*a*b^13*c
^3 - 737280*A^2*a^7*b*c^9 - 1720320*B^2*a^8*b*c^8 + 240*A*B*a^2*b^12*c^3 +
24000*A*B*a^3*b^10*c^4 - 241920*A*B*a^4*b^8*c^5 + 992256*A*B*a^5*b^6*c^6 -
1781760*A*B*a^6*b^4*c^7 + 737280*A*B*a^7*b^2*c^8 - 6*A*B*b*c*(-(4*a*c - b^2
)^15)^(1/2) - 180*A*B*a*b^14*c^2)/(128*(1048576*a^10*c^13 + b^20*c^3 - 40*a
*b^18*c^4 + 720*a^2*b^16*c^5 - 7680*a^3*b^14*c^6 + 53760*a^4*b^12*c^7 - 258
048*a^5*b^10*c^8 + 860160*a^6*b^8*c^9 - 1966080*a^7*b^6*c^10 + 2949120*a^8*
b^4*c^11 - 2621440*a^9*b^2*c^12)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(5/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1025 $\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=414

$$-\frac{\sqrt{x}\left(x\left(-2aBc-Abc+b^2B\right)+a(bB-2Ac)\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+\frac{\sqrt{x}\left(3cx\left(4aBc-4Abc+b^2B\right)+4aAc^2+4abBc-7Ab^2c+2b^3B\right.}{4c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

```
[Out] -1/2*(a*(-2*A*c+B*b)+(-A*b*c-2*B*a*c+B*b^2)*x)*x^(1/2)/c/(-4*a*c+b^2)/(c*x^
2+b*x+a)^2+1/4*(2*b^3*B-7*A*b^2*c+4*a*b*B*c+4*a*A*c^2+3*c*(-4*A*b*c+4*B*a*c
+B*b^2)*x)*x^(1/2)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)+3/8*arctan(2^(1/2)*c^(1/2
)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*(b^2*B-4*A*b*c+4*a*B*c+(8*A*a*c^2+6
*A*b^2*c-12*B*a*b*c-B*b^3)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^2*2^(1/2)/c^(1/
2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)+3/8*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a
*c+b^2)^(1/2))^(1/2))*(b^2*B-4*A*b*c+4*a*B*c+(-8*A*a*c^2-6*A*b^2*c+12*B*a*b
*c+B*b^3)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^2*2^(1/2)/c^(1/2)/(b+(-4*a*c+b^2
)^(1/2))^(1/2)
```

Rubi **[A]** time = 2.04, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {818, 822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(3cx\left(4aBc-4Abc+b^2B\right)+4aAc^2+4abBc-7Ab^2c+2b^3B\right)}{4c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{3\left(-\frac{-8aAc^2+12abBc-6Ab^2c+b^3B}{\sqrt{b^2-4ac}}+4aBc-4Abc+\right.}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^2\sqrt{b-\sqrt{}}}$$

Antiderivative was successfully verified.

```
[In] Int[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(a*(b*B - 2*A*c) + (b^2*B - A*b*c - 2*a*B*c)*x))/(2*c*(b^2 - 4*a*
c)*(a + b*x + c*x^2)^2) + (Sqrt[x]*(2*b^3*B - 7*A*b^2*c + 4*a*b*B*c + 4*a*A
*c^2 + 3*c*(b^2*B - 4*A*b*c + 4*a*B*c)*x))/(4*c*(b^2 - 4*a*c)^2*(a + b*x +
c*x^2)) + (3*(b^2*B - 4*A*b*c + 4*a*B*c - (b^3*B - 6*A*b^2*c + 12*a*b*B*c -
 8*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sq
rt[b^2 - 4*a*c]]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4
*a*c]]) + (3*(b^2*B - 4*A*b*c + 4*a*B*c + (b^3*B - 6*A*b^2*c + 12*a*b*B*c -
 8*a*A*c^2)/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sq
rt[b^2 - 4*a*c]]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^2*Sqrt[b + Sqrt[b^2 - 4
*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{x^{3/2}(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\int \frac{\frac{1}{2}a(bB-2Ac)-\frac{1}{2}\left(b^2B-5Abc+6aBc\right)x}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2c\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\,\big(2b^3B-7Ab^2c+4abBc+4aAc^2+}{4c\left(b^2-4ac\right)^2\big(a+bx}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\,\big(2b^3B-7Ab^2c+4abBc+4aAc^2+}{4c\left(b^2-4ac\right)^2\big(a+bx}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\,\big(2b^3B-7Ab^2c+4abBc+4aAc^2+}{4c\left(b^2-4ac\right)^2\big(a+bx}$$

$$= -\frac{\sqrt{x}\,\left(a(bB-2Ac)+\left(b^2B-Abc-2aBc\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\,\big(2b^3B-7Ab^2c+4abBc+4aAc^2+}{4c\left(b^2-4ac\right)^2\big(a+bx}$$

Mathematica [A] time = 1.66, size = 558, normalized size = 1.35

$$\frac{\frac{9a^2\left(b^2\left(B\sqrt{b^2-4ac}+6Ac\right)-4bc\left(A\sqrt{b^2-4ac}+3aB\right)+4ac\left(B\sqrt{b^2-4ac}+2Ac\right)+b^3(-B)\right)\tan^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{x}}{\sqrt{b-\sqrt{b^2-4ac}}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}\sqrt{b-\sqrt{b^2-4ac}}} + \frac{9a^2\big(b^2\left(B\sqrt{b^2-4ac}-6Ac\right)+4bc\left(3aB-A\sqrt{b^2-4ac}\right)+4ac\big(B\sqrt{b^2-4ac}-2}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}\sqrt{\sqrt{b^2-4ac}+b}}}{6a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(5/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 + (x^(5/2)*(a*B*(-5*b^3 + 8*a*b*c - 5*b^2*c*x - 4*a*c^2*x) + A*(b^4 + 5*
a*b^2*c - 12*a^2*c^2 + b^3*c*x + 8*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*
(b + c*x))) + (36*a^2*b*B*Sqrt[x] - 9*a*A*(b^2 + 4*a*c)*Sqrt[x] - 3*a*B*(5*
b^2 + 4*a*c)*x^(3/2) + 3*A*(b^3 + 8*a*b*c)*x^(3/2) + (9*a^2*(-(b^3*B) - 4*b
*c*(3*a*B + A*Sqrt[b^2 - 4*a*c]) + 4*a*c*(2*A*c + B*Sqrt[b^2 - 4*a*c]) + b^
2*(6*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b -
Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt[b^2 -
 4*a*c]]) + (9*a^2*(b^3*B + 4*b*c*(3*a*B - A*Sqrt[b^2 - 4*a*c]) + b^2*(-6*A
*c + B*Sqrt[b^2 - 4*a*c]) + 4*a*c*(-2*A*c + B*Sqrt[b^2 - 4*a*c]))*ArcTan[(S
qrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sqrt[2]*Sqrt[c]*Sqrt
[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(6*a*(b^2 - 4*a*c)))/(2*a*(b^2
- 4*a*c))
```

fricas [B] time = 11.66, size = 5646, normalized size = 13.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/8*(3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*
c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 -
```

```
 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sq
rt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B
*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c + (
a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^
2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^
2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 -
 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4
*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))*log(27/2*sqrt(1/2)*(4*B^3*a^2*b^7
- A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^
3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(
24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B
^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c - (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 -
 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^
5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3
+ 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B
^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*
b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a
*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 +
 A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c + (a*b^10*c -
 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 10
24*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3
*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*
c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 128
0*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a
^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b
+ 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^
3*B*b^5)*c)*sqrt(x)) - 3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b
^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*
c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16
*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*
B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4
 + A^2*b^5)*c + (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*
c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*
c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1
280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*
c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))*log(-27/2*sqrt(1/
2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^
2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*
a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B
^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c - (4096*(2*B*a^8
- 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4
 + 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8
 + A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*
a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*
b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c
^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b
 - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^
5)*c + (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 128
0*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2
*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b
^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640
*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^
3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4
 - 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*
A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) + 3*sqrt(1/2)*(a^2*b^4 - 8*a^3*b^2*c
 + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b
^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5
- 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a
^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*
b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*
c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*
A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 6
40*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*
c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6))
*log(27/2*sqrt(1/2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^3*a^4*c^5 + 128*(2
*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3*a^5*b + 2*A*B^2*a
^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2*B*a^2*b^5 - A^3*a
*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a*b^7 - A^3*b^8)*c
 + (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7*A*a^6*b^3)*c^6 -
1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6 + A*a^4*b^7)*c^4 -
 80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A*a^2*b^11)*c^2 - (
6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b
^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2
*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 - 5*A^2*a^2*b)*c^3
 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*B^2*a^2*b^3 - 20*A
*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*
a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*a^2 - 2*A^2*B^2*a*
c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4
*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*a^2*b^8*c^2 + 160*
a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)) - 27*(5*B
^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a^2*b - A^4*a*b^2)*
c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A^4*b^4)*c^2 + (40*
B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) - 3*sqrt(1/2)*(a^2*
b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 +
 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3
)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)*sqrt(-(B^2*a*b^5 - 16*(4*
A*B*a^3 - 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c
^2 + (40*B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c
^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*s
qrt((B^4*a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 16
0*a^4*b^6*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^1
0*c - 20*a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5
 - 1024*a^6*c^6))*log(-27/2*sqrt(1/2)*(4*B^3*a^2*b^7 - A*B^2*a*b^8 - 256*A^
3*a^4*c^5 + 128*(2*A*B^2*a^5 + 2*A^2*B*a^4*b + A^3*a^3*b^2)*c^4 - 64*(4*B^3
*a^5*b + 2*A*B^2*a^4*b^2 + 3*A^2*B*a^3*b^3)*c^3 + 8*(24*B^3*a^4*b^3 + 6*A^2
*B*a^2*b^5 - A^3*a*b^6)*c^2 - (48*B^3*a^3*b^5 - 8*A*B^2*a^2*b^6 + 4*A^2*B*a
*b^7 - A^3*b^8)*c + (4096*(2*B*a^8 - 3*A*a^7*b)*c^7 - 2048*(2*B*a^7*b^2 - 7
*A*a^6*b^3)*c^6 - 1280*(2*B*a^6*b^4 + 5*A*a^5*b^5)*c^5 + 1280*(2*B*a^5*b^6
 + A*a^4*b^7)*c^4 - 80*(10*B*a^4*b^8 + A*a^3*b^9)*c^3 + 8*(14*B*a^3*b^10 - A
*a^2*b^11)*c^2 - (6*B*a^2*b^12 - A*a*b^13)*c)*sqrt((B^4*a^2 - 2*A^2*B^2*a*c
 + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6*c^4 - 640*a^5*b^4*
c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))*sqrt(-(B^2*a*b^5 - 16*(4*A*B*a^3 -
 5*A^2*a^2*b)*c^3 + 40*(2*B^2*a^3*b - 4*A*B*a^2*b^2 + A^2*a*b^3)*c^2 + (40*
B^2*a^2*b^3 - 20*A*B*a*b^4 + A^2*b^5)*c - (a*b^10*c - 20*a^2*b^8*c^2 + 160*
a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a^6*c^6)*sqrt((B^4*
a^2 - 2*A^2*B^2*a*c + A^4*c^2)/(a^2*b^10*c^2 - 20*a^3*b^8*c^3 + 160*a^4*b^6
*c^4 - 640*a^5*b^4*c^5 + 1280*a^6*b^2*c^6 - 1024*a^7*c^7)))/(a*b^10*c - 20*
a^2*b^8*c^2 + 160*a^3*b^6*c^3 - 640*a^4*b^4*c^4 + 1280*a^5*b^2*c^5 - 1024*a
^6*c^6)) - 27*(5*B^4*a^2*b^4 - A*B^3*a*b^5 - 16*A^4*a^2*c^4 + 40*(2*A^3*B*a
^2*b - A^4*a*b^2)*c^3 + (16*B^4*a^4 - 80*A*B^3*a^3*b + 40*A^3*B*a*b^3 - 5*A
^4*b^4)*c^2 + (40*B^4*a^3*b^2 - 40*A*B^3*a^2*b^3 + A^3*B*b^5)*c)*sqrt(x)) -
 2*(12*B*a^2*b - 3*A*a*b^2 - 12*A*a^2*c + 3*(B*b^2*c + 4*(B*a - A*b)*c^2)*x
^3 + (5*B*b^3 + 4*A*a*c^2 + (16*B*a*b - 19*A*b^2)*c)*x^2 + (19*B*a*b^2 - 5*
A*b^3 - 4*(B*a^2 + 4*A*a*b)*c)*x)*sqrt(x))/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*
c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 1
6*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^
3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 2.33, size = 3170, normalized size = 7.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 3/16*((sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 - 4*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5
*c - 2*b^6*c - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 8*a*b^4*c^2 + 2*b^5*c^2 + 64
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 32*sqrt(2)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 32*a^2*b^2*c^3 + 16*a*b^3*c^3 - 16*sqrt(2)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 128*a^3*c^4 - 96*a^2*b*c^4 - sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5 - 8*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 2*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c + 48*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 + 24*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*b^3*c^2 - 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a*b*c^3 + 2*(b^2 - 4*a*c)*b^4*c - 2*(b^2 - 4*a*c)*b^3
*c^2 - 32*(b^2 - 4*a*c)*a^2*c^3 - 24*(b^2 - 4*a*c)*a*b*c^3)*A - 2*(2*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 - 16*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c - 4*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 4
*a*b^5*c + 32*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 16*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 2*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a*b^3*c^2 + 32*a^2*b^3*c^2 + 6*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 64*a^3*b*c^3 - 16*a^2*b^2*c^3 - 32*a^3
*c^4 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4 +
8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c + 6*s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c + 16*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^2 + 8*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 3*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 - 4*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*c^3 + 4*(b^2 - 4*a*c)*a*b^3*c
 - 16*(b^2 - 4*a*c)*a^2*b*c^2 - 6*(b^2 - 4*a*c)*a*b^2*c^2 - 8*(b^2 - 4*a*c)
*a^2*c^3)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^
2 + sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^2)^2 - 4*(a*b^4 - 8*a^2*b^2*c + 16*a
^3*c^2)*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)))/(b^4*c - 8*a*b^2*c^2 + 16*a^2*
c^3)))/((a*b^8 - 16*a^2*b^6*c - 2*a*b^7*c + 96*a^3*b^4*c^2 + 24*a^2*b^5*c^2
 + a*b^6*c^2 - 256*a^4*b^2*c^3 - 96*a^3*b^3*c^3 - 12*a^2*b^4*c^3 + 256*a^5*
c^4 + 128*a^4*b*c^4 + 48*a^3*b^2*c^4 - 64*a^4*c^5)*abs(c)) + 3/16*((sqrt(2)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6 - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^4*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5*c + 2*b^6*c -
 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*b^4*c^2 - 8*a*b^4*c^2 - 2*b^5*c^2 + 64*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a^2*b*c^3 - 32*a^2*b^2*c^3 - 16*a*b^3*c^3 - 16*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^2*c^4 + 128*a^3*c^4 + 96*a^2*b*c^4 + sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^5 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*b^4*c - 48*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^2 - 24*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a*b^2*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*b^3*c^2 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a*b*c^3 - 2*(b^2 - 4*a*c)*b^4*c + 2*(b^2 - 4*a*c)*b^3*c^2 + 32*(b^2
 - 4*a*c)*a^2*c^3 + 24*(b^2 - 4*a*c)*a*b*c^3)*A - 2*(2*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a*b^5 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
b^3*c - 4*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 4*a*b^5*c + 32*
sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 + 16*sqrt(2)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 + 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*a*b^3*c^2 - 32*a^2*b^3*c^2 - 6*a*b^4*c^2 - 8*sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^2*b*c^3 + 64*a^3*b*c^3 + 16*a^2*b^2*c^3 + 32*a^3*c^4 + 3*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4 - 8*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c - 6*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c - 16*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^2 - 8*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^2 + 3*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^2 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^3 - 4*(b^2 - 4*a*c)*a*b^3*c + 16*(b^2 - 4
*a*c)*a^2*b*c^2 + 6*(b^2 - 4*a*c)*a*b^2*c^2 + 8*(b^2 - 4*a*c)*a^2*c^3)*B)*a
rctan(2*sqrt(1/2)*sqrt(x)/sqrt((b^5 - 8*a*b^3*c + 16*a^2*b*c^2 - sqrt((b^5
- 8*a*b^3*c + 16*a^2*b*c^2)^2 - 4*(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*(b^4*c
 - 8*a*b^2*c^2 + 16*a^2*c^3)))/(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)))/((a*b^8
 - 16*a^2*b^6*c - 2*a*b^7*c + 96*a^3*b^4*c^2 + 24*a^2*b^5*c^2 + a*b^6*c^2 -
 256*a^4*b^2*c^3 - 96*a^3*b^3*c^3 - 12*a^2*b^4*c^3 + 256*a^5*c^4 + 128*a^4*
b*c^4 + 48*a^3*b^2*c^4 - 64*a^4*c^5)*abs(c)) + 1/4*(3*B*b^2*c*x^(7/2) + 12*
B*a*c^2*x^(7/2) - 12*A*b*c^2*x^(7/2) + 5*B*b^3*x^(5/2) + 16*B*a*b*c*x^(5/2)
 - 19*A*b^2*c*x^(5/2) + 4*A*a*c^2*x^(5/2) + 19*B*a*b^2*x^(3/2) - 5*A*b^3*x^
(3/2) - 4*B*a^2*c*x^(3/2) - 16*A*a*b*c*x^(3/2) + 12*B*a^2*b*sqrt(x) - 3*A*a
*b^2*sqrt(x) - 12*A*a^2*c*sqrt(x))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*(c*x^2 +
 b*x + a)^2)
```

maple [B] time = 0.11, size = 1312, normalized size = 3.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(-3/8*c*(4*A*b*c-4*B*a*c-B*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)+1/8*(4
*A*a*c^2-19*A*b^2*c+16*B*a*b*c+5*B*b^3)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)-
1/8*(16*A*a*b*c+5*A*b^3+4*B*a^2*c-19*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^
(3/2)-3/8*a*(4*A*a*c+A*b^2-4*B*a*b)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*
x^2+b*x+a)^2-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-
3/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*a-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*A*b^2+3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*B
+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*ar
ctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+9/2/(16*a^2*
c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b*B+3/8/
(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^3*
B+3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-3/(16*a^
2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*a
-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*A*b^2-3/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*
B-3/8/(16*a^2*c^2-8*a*b^2*c+b^4)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*
arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b^2*B+9/2/(16*
a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2)
)*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*a*b
*B+3/8/(16*a^2*c^2-8*a*b^2*c+b^4)/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b
^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(
1/2))*b^3*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\frac{3\left(4\,Babc^{2}-\left(b^{2}c^{2}+4\,ac^{3}\right)A\right)x^{\frac{9}{2}}-3\left(2\left(b^{3}c+2\,abc^{2}\right)A-\left(7\,ab^{2}c-4\,a^{2}c^{2}\right)B\right)x^{\frac{7}{2}}-\left(\left(3\,b^{4}-ab^{2}c+28\,a^{2}c^{2}\right)A}{4\left(a^{3}b^{4}-8\,a^{4}b^{2}c+16\,a^{5}c^{2}+\left(ab^{4}c^{2}-8\,a^{2}b^{2}c^{3}+16\,a^{3}c^{4}\right)x^{4}+2\left(ab^{5}c-8\,a^{2}b^{3}c^{2}+16\,a^{3}bc^{3}\right)x^{3}+\left(ab\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^(3/2)*(B*x+A)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(3*(4*B*a*b*c^2 - (b^2*c^2 + 4*a*c^3)*A)*x^(9/2) - 3*(2*(b^3*c + 2*a*b
*c^2)*A - (7*a*b^2*c - 4*a^2*c^2)*B)*x^(7/2) - ((3*b^4 - a*b^2*c + 28*a^2*c
^2)*A - (7*a*b^3 + 8*a^2*b*c)*B)*x^(5/2) - ((a*b^3 + 8*a^2*b*c)*A - (5*a^2*
b^2 + 4*a^3*c)*B)*x^(3/2))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2
 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*
c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*
c + 16*a^4*b*c^2)*x) - integrate(-3/8*((4*B*a*b*c - (b^2*c + 4*a*c^2)*A)*x^
(3/2) - ((b^3 + 8*a*b*c)*A - (5*a*b^2 + 4*a^2*c)*B)*sqrt(x))/(a^2*b^4 - 8*a
^3*b^2*c + 16*a^4*c^2 + (a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)*x^2 + (a*b^5
 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), x)
```

mupad [B] time = 4.71, size = 16720, normalized size = 40.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(3/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] atan(((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*
b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 -
262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*
a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8
*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c
)) - (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
+ 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B
*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 -
7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b
^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10
+ a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240
*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^
4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2
*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
- 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) - (x^(1/2)*(9*B^
2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2
*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B
*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 2
56*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)
^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^
3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 6
1440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*
B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*
a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 819
20*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a
^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7
*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 72
0*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c
^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 26214
40*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i - (((3*(262144*A*a^6*c^8 - 64*A*b^1
2*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*
a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c
^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(6
4*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*
c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*
(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) -
560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*
A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a
^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b
^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B
^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^1
0*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*
c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 4
0*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5
- 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*
a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280
*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 8192
0*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 -
16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
+ 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B
*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 -
7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b
^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10
+ a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4
*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b
^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^
8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^
2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c -
b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^
4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11
*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5
+ 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2
*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2
 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 14
3360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048
```

```
576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53
760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b
^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i
)/((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^1
1*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262
144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4
*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^
2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))
- (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c
- A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9
*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7
 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 10
24*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b
^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 2
40*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A
*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*
b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 768
0*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*
c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a
*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^
2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 +
 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*
(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) -
560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*
A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a
^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b
^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B
^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^1
0*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*
c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 4
0*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5
- 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*
a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) - (x^(1/2)*(9*B^2*b
^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^
2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*
b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*
a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1
/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 +
 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 6144
0*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2
*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8
*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*
B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*
b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^
2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a
^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6
+ 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*
a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2
+ 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^
8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 4
0960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^1
2 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 -
6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a
*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^
2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^
5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9
*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6
 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2
*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3
- 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 +
81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*
b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 2580
48*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^
4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9
*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*
b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b
^6*c)))*(-(9*(B^2*a*b^15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A
^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^
4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 -
560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*
B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13
*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*
A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*
a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^1
4*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a
^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7
 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^
20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 -
 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4
 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 25
6*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^
15 + B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^1
5)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*
c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 +
 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 6144
0*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b
*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*
A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A
*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^
11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^
5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8
 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (3*(57
6*B^3*a^4*c^4 - 180*A^3*b^5*c^3 + 540*B^3*a^2*b^4*c^2 + 1584*B^3*a^3*b^2*c^
3 - 9*A*B^2*b^7*c + 45*B^3*a*b^6*c + 576*A^2*B*a^3*c^5 + 81*A^2*B*b^6*c^2 -
 1440*A^3*a*b^3*c^4 - 576*A^3*a^2*b*c^5 - 576*A*B^2*a*b^5*c^2 - 3456*A*B^2*
a^3*b*c^4 + 1980*A^2*B*a*b^4*c^3 - 3600*A*B^2*a^2*b^3*c^3 + 4464*A^2*B*a^2*
b^2*c^4))/(32*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3
840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))))*(-(9*(B^2*a*b^15 + B^2
*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c - A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
- 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*2i - ((x^(3/2)*(
5*A*b^3 - 19*B*a*b^2 + 4*B*a^2*c + 16*A*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)) - (x^(5/2)*(5*B*b^3 + 4*A*a*c^2 - 19*A*b^2*c + 16*B*a*b*c))/(4*(b^4
 + 16*a^2*c^2 - 8*a*b^2*c)) + (3*a*x^(1/2)*(A*b^2 + 4*A*a*c - 4*B*a*b))/(4*
(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (3*c*x^(7/2)*(B*b^2 - 4*A*b*c + 4*B*a*c))
/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2
*a*b*x + 2*b*c*x^3) + atan(((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A
*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 +
81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a
^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096
```

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*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5
*b^2*c^5 - 24*a*b^10*c)) - (x^(1/2)*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2
)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^
11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^
6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 1
1520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536
*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c
- 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*
A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*
B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2
 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b
^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 -
2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 6
5536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6)
)/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*
(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(
4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 1152
0*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*
a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*
b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8
1920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*
b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*
c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(1
28*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*
c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 19660
80*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^
(1/2) - (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2
*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B
^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^
4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2
*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 10
24*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^
2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^
7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 2
0*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*
b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b
^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11
- 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c
^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 29491
20*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*1i - (((3*(26214
4*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144
*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*
c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327
680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b
^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(
9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a
*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A
^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3
*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5
*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8192
0*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^1
2*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5
 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*
(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4
 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*
a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/
2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40
960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^
```

```
2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2
)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^
11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^
6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 1
1520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536
*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c
 - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*
A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*
B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2
 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b
^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 -
2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2
*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B
*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*
A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 -
16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15
*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*
b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*
c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 -
 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*
a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7
 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 6656
0*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B
*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 -
7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b
^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10
 + a*b^20*c)))^(1/2)*1i)/((((3*(262144*A*a^6*c^8 - 64*A*b^12*c^2 + 1024*A*a*
b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6*b*c^7 - 5120*A*a^2*b^8*c^4 + 819
20*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 - 5120*B*a^2*b^9*c^3 + 40960*B*a^3*
b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*a^5*b^3*c^6))/(64*(b^12 + 4096*a^
6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^
2*c^5 - 24*a*b^10*c)) - (x^(1/2)*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^1
5)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*
c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 +
 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 1152
0*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*
B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 8
1920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B
*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a
^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 +
720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10
*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 262
1440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64*b^11*c^2 - 1280*a*b^9*c^3 - 6553
6*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^3*b^5*c^5 + 81920*a^4*b^3*c^6))/(
8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(
9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a
*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A
^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3
*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5
*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8192
0*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^1
2*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5
 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*
(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4
 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*
a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/
2) - (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c^5 + 234*A^2*b^4*c^3 - 288*B^2*a^
3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c^2 + 144*A^2*a*b^2*c^4 + 126*B^2*
a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^2*b*c^4))/(8*(b^8 + 256*a^4*c^4 +
 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*
(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) -
560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*
A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a
^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b
^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B
^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^1
0*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*
c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 4
0*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5
- 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*
a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (((3*(262144*A*a^
6*c^8 - 64*A*b^12*c^2 + 1024*A*a*b^10*c^3 + 256*B*a*b^11*c^2 - 262144*B*a^6
*b*c^7 - 5120*A*a^2*b^8*c^4 + 81920*A*a^4*b^4*c^6 - 262144*A*a^5*b^2*c^7 -
5120*B*a^2*b^9*c^3 + 40960*B*a^3*b^7*c^4 - 163840*B*a^4*b^5*c^5 + 327680*B*
a^5*b^3*c^6))/(64*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2 - 1280*a^3*b^6*c^3
 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c)) + (x^(1/2)*(-(9*(B^2
*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b
^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4
*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*
c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 +
 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*
a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2
- 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143
360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(128*(10485
76*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 537
60*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^
6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c)))^(1/2)*(64
*b^11*c^2 - 1280*a*b^9*c^3 - 65536*a^5*b*c^7 + 10240*a^2*b^7*c^4 - 40960*a^
3*b^5*c^5 + 81920*a^4*b^3*c^6))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 25
6*a^3*b^2*c^3 - 16*a*b^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^
(1/2) + A^2*b^15*c + A^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3
 + 4160*A^2*a^3*b^9*c^4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61
440*A^2*a^6*b^3*c^7 - 560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B
^2*a^5*b^7*c^4 - 1024*B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a
^8*c^8 + 20*A^2*a*b^13*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 8192
0*B^2*a^8*b*c^7 + 240*A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^
4*b^8*c^4 + 66560*A*B*a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*
b^2*c^7 - 20*A*B*a*b^14*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720
*a^3*b^16*c^3 - 7680*a^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^
6 + 860160*a^7*b^8*c^7 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 262144
0*a^10*b^2*c^10 + a*b^20*c)))^(1/2) + (x^(1/2)*(9*B^2*b^6*c + 288*A^2*a^2*c
^5 + 234*A^2*b^4*c^3 - 288*B^2*a^3*c^4 + 576*B^2*a^2*b^2*c^3 - 90*A*B*b^5*c
^2 + 144*A^2*a*b^2*c^4 + 126*B^2*a*b^4*c^2 - 720*A*B*a*b^3*c^3 - 288*A*B*a^
2*b*c^4))/(8*(b^8 + 256*a^4*c^4 + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 - 16*a*b
^6*c)))*(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A
^2*c*(-(4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^
4 - 11520*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 -
560*B^2*a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*
B^2*a^6*b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13
*c^2 - 81920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*
A*B*a^2*b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*
a^5*b^6*c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^1
4*c))/(128*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a
^4*b^14*c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7
 - 1966080*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^
20*c)))^(1/2) + (3*(576*B^3*a^4*c^4 - 180*A^3*b^5*c^3 + 540*B^3*a^2*b^4*c^2
 + 1584*B^3*a^3*b^2*c^3 - 9*A*B^2*b^7*c + 45*B^3*a*b^6*c + 576*A^2*B*a^3*c^
5 + 81*A^2*B*b^6*c^2 - 1440*A^3*a*b^3*c^4 - 576*A^3*a^2*b*c^5 - 576*A*B^2*a
```

```
*b^5*c^2 - 3456*A*B^2*a^3*b*c^4 + 1980*A^2*B*a*b^4*c^3 - 3600*A*B^2*a^2*b^3
*c^3 + 4464*A^2*B*a^2*b^2*c^4))/(32*(b^12 + 4096*a^6*c^6 + 240*a^2*b^8*c^2
- 1280*a^3*b^6*c^3 + 3840*a^4*b^4*c^4 - 6144*a^5*b^2*c^5 - 24*a*b^10*c))))*
(-(9*(B^2*a*b^15 - B^2*a*(-(4*a*c - b^2)^15)^(1/2) + A^2*b^15*c + A^2*c*(-(
4*a*c - b^2)^15)^(1/2) - 560*A^2*a^2*b^11*c^3 + 4160*A^2*a^3*b^9*c^4 - 1152
0*A^2*a^4*b^7*c^5 - 1024*A^2*a^5*b^5*c^6 + 61440*A^2*a^6*b^3*c^7 - 560*B^2*
a^3*b^11*c^2 + 4160*B^2*a^4*b^9*c^3 - 11520*B^2*a^5*b^7*c^4 - 1024*B^2*a^6*
b^5*c^5 + 61440*B^2*a^7*b^3*c^6 + 65536*A*B*a^8*c^8 + 20*A^2*a*b^13*c^2 - 8
1920*A^2*a^7*b*c^8 + 20*B^2*a^2*b^13*c - 81920*B^2*a^8*b*c^7 + 240*A*B*a^2*
b^12*c^2 - 64*A*B*a^3*b^10*c^3 - 11520*A*B*a^4*b^8*c^4 + 66560*A*B*a^5*b^6*
c^5 - 143360*A*B*a^6*b^4*c^6 + 81920*A*B*a^7*b^2*c^7 - 20*A*B*a*b^14*c))/(1
28*(1048576*a^11*c^11 - 40*a^2*b^18*c^2 + 720*a^3*b^16*c^3 - 7680*a^4*b^14*
c^4 + 53760*a^5*b^12*c^5 - 258048*a^6*b^10*c^6 + 860160*a^7*b^8*c^7 - 19660
80*a^8*b^6*c^8 + 2949120*a^9*b^4*c^9 - 2621440*a^10*b^2*c^10 + a*b^20*c))^
(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**(3/2)*(B*x+A)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1026 $\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=426

$$-\frac{\sqrt{x}\,(-2aB-x(bB-2Ac)+Ab)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(-A\left(8abc+b^3\right)+cx\left(12abB-A\left(20ac+b^2\right)\right)+aB\left(7b^2-4ac\right)\right)}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\sqrt{c}$$

```
[Out] -1/2*(A*b-2*a*B-(-2*A*c+B*b)*x)*x^(1/2)/(-4*a*c+b^2)/(c*x^2+b*x+a)^2-1/4*(a
*B*(-4*a*c+7*b^2)-A*(8*a*b*c+b^3)+c*(12*a*b*B-A*(20*a*c+b^2))*x)*x^(1/2)/a/
(-4*a*c+b^2)^2/(c*x^2+b*x+a)+1/8*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+
b^2)^(1/2))^(1/2))*c^(1/2)*(6*a*B*(3*b^2+4*a*c-2*b*(-4*a*c+b^2)^(1/2))+A*(b
^3-52*a*b*c+b^2*(-4*a*c+b^2)^(1/2)+20*a*c*(-4*a*c+b^2)^(1/2)))/a/(-4*a*c+b^
2)^(5/2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)-1/8*arctan(2^(1/2)*c^(1/2)*x^
(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(12*a*b*B-A*(20*a*c+b^2)+(6*a*B
*(4*a*c+3*b^2)+A*(-52*a*b*c+b^3))/(-4*a*c+b^2)^(1/2))/a/(-4*a*c+b^2)^2*2^(1
/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.25, antiderivative size = 426, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {820, 822, 826, 1166, 205}

$$-\frac{\sqrt{x}\,(-2aB-x(bB-2Ac)+Ab)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(cx\left(12abB-A\left(20ac+b^2\right)\right)-A\left(8abc+b^3\right)+aB\left(7b^2-4ac\right)\right)}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\sqrt{c}\,($$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[x]*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(2*(b^2 - 4*a*c)*(a + b*x + c*x^
2)^2) - (Sqrt[x]*(a*B*(7*b^2 - 4*a*c) - A*(b^3 + 8*a*b*c) + c*(12*a*b*B - A
*(b^2 + 20*a*c))*x))/(4*a*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + (Sqrt[c]*(6*
a*B*(3*b^2 + 4*a*c - 2*b*Sqrt[b^2 - 4*a*c]) + A*(b^3 - 52*a*b*c + b^2*Sqrt[
b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/
Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a*(b^2 - 4*a*c)^(5/2)*Sqrt[b - Sqr
t[b^2 - 4*a*c]]) - (Sqrt[c]*(12*a*b*B - A*(b^2 + 20*a*c) + (6*a*B*(3*b^2 +
4*a*c) + A*(b^3 - 52*a*b*c))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqr
t[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a*(b^2 - 4*a*c)^2*Sqrt[b + S
qrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{\sqrt{x}\,(A+Bx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\int \frac{\frac{1}{2}(-Ab+2aB)-\frac{5}{2}(bB-2Ac)x}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-A\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-A\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-A\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{\sqrt{x}\,(Ab-2aB-(bB-2Ac)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{\sqrt{x}\,\left(aB\left(7b^2-4ac\right)-A\left(b^3+8abc\right)+c\left(12abB-A\right.\right.}{4a\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Mathematica [**A**] time = 1.44, size = 510, normalized size = 1.20

$$\frac{-\frac{x^{3/2}\left(A\left(20a^2c^2-15ab^2c-16abc^2x+b^4+b^3cx\right)+3aB\left(4ac^2x+b^3+b^2cx\right)\right)}{2a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{x^{3/2}\left(A\left(-2ac+b^2+bcx\right)-aB(b+2cx)\right)}{(a+x(b+cx))^2}+\frac{-2A\sqrt{x}\left(b^3-16abc\right)+\frac{\sqrt{2}\,a\,\sqrt{c}\left(A\left(b\right.\right.}{}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[x]*(A + B*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((x^(3/2)*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x))
^2 - (x^(3/2)*(3*a*B*(b^3 + b^2*c*x + 4*a*c^2*x) + A*(b^4 - 15*a*b^2*c + 20
*a^2*c^2 + b^3*c*x - 16*a*b*c^2*x)))/(2*a*(-b^2 + 4*a*c)*(a + x*(b + c*x)))
 + (-6*a*B*(b^2 + 4*a*c)*Sqrt[x] - 2*A*(b^3 - 16*a*b*c)*Sqrt[x] + (Sqrt[2]*
a*Sqrt[c]*(6*a*B*(3*b^2 + 4*a*c - 2*b*Sqrt[b^2 - 4*a*c]) + A*(b^3 - 52*a*b*
c + b^2*Sqrt[b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt
[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(Sqrt[b^2 - 4*a*c]*Sqrt[b - Sqrt
[b^2 - 4*a*c]]) + (Sqrt[2]*a*Sqrt[c]*(-6*a*B*(3*b^2 + 4*a*c + 2*b*Sqrt[b^2
- 4*a*c]) + A*(-b^3 + 52*a*b*c + b^2*Sqrt[b^2 - 4*a*c] + 20*a*c*Sqrt[b^2 -
4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(Sq
rt[b^2 - 4*a*c]*Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(4*a*(b^2 - 4*a*c)))/(2*a*(b^
2 - 4*a*c))
```

fricas [**B**] time = 23.31, size = 7267, normalized size = 17.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2
*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (
a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b
*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*
A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5
*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8
*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*s
qrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A
^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c
)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*
b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640
*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5))*log(1/2*sqrt(1/2)*(27*B^3*
a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6
- 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 -
341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*
a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6
+ 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^
2*b^8 + 53*A^3*a*b^9)*c - (3*B*a^4*b^13 + A*a^3*b^14 + 40960*A*a^10*c^7 - 4
096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 -
6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3
- 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)
*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 +
 A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)
*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^1
0*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 -
 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*
A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a
^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c
^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2
+ 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*
a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*
b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 1
60*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)) + (100
00*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b - A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 -
 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b
^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 18
9*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*
A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) - sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c +
 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8
*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 +
 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a
*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*
A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A
^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3
+ 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*
A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^
2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^
6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 -
20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*
a^8*c^5))*log(-1/2*sqrt(1/2)*(27*B^3*a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a
*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 - 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 -
 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6
*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(1
08*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 + 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b
^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*b^8 + 53*A^3*a*b^9)*c - (3*B*a^4*b^1
3 + A*a^3*b^14 + 40960*A*a^10*c^7 - 4096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1
536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 1
60*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 - 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 -
 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b +
54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2
*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8
*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*
B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 4
0*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 -
 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c + (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c
^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 +
108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a
^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a
^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^1
1*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 128
0*a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b
- A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b
^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B
^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(2
7*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x))
 + sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c
^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*
b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c
^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^
2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(
72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c
 + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqr
t((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4
*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/
(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^
2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a
```

```
^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5))*log(1/2*sqrt(1/2)*(27*B^3*a^
3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 -
4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 72*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 34
1*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^
4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 +
47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*
b^8 + 53*A^3*a*b^9)*c + (3*B*a^4*b^13 + A*a^3*b^14 + 40960*A*a^10*c^7 - 409
6*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 1536*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 64
00*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 -
240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*s
qrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A
^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c
)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*
b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 2
40*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^
2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3
*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4
 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 +
12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^
2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^
4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160
*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000
*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b - A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3
024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4
)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*
A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^
2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) - sqrt(1/2)*(a^3*b^4 - 8*a^4*b^2*c + 1
6*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3 + 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a
^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2
*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x)*sqrt(-(9*B^2*a^2*b^5 + 6*A*B*a*b
^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*(18*B^2*a^4*b - 48*A*
B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 12*A*B*a^2*b^4 - 7*A^2
*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 +
1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54*A^
2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B^2*
a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b^6*
c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))/(a^3*b^10 - 20
*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^
8*c^5))*log(-1/2*sqrt(1/2)*(27*B^3*a^3*b^8 + 27*A*B^2*a^2*b^9 + 9*A^2*B*a*b
^10 + A^3*b^11 + 6400*(3*A^2*B*a^6 - 4*A^3*a^5*b)*c^5 - 64*(108*B^3*a^7 - 7
2*A*B^2*a^6*b + 66*A^2*B*a^5*b^2 - 341*A^3*a^4*b^3)*c^4 + 16*(216*B^3*a^6*b
^2 - 324*A*B^2*a^5*b^3 - 288*A^2*B*a^4*b^4 - 427*A^3*a^3*b^5)*c^3 + 20*(108
*A*B^2*a^4*b^5 + 102*A^2*B*a^3*b^6 + 47*A^3*a^2*b^7)*c^2 - (216*B^3*a^4*b^6
 + 396*A*B^2*a^3*b^7 + 267*A^2*B*a^2*b^8 + 53*A^3*a*b^9)*c + (3*B*a^4*b^13
+ A*a^3*b^14 + 40960*A*a^10*c^7 - 4096*(9*B*a^10*b + 8*A*a^9*b^2)*c^6 + 153
6*(28*B*a^9*b^3 + A*a^8*b^4)*c^5 - 6400*(3*B*a^8*b^5 - A*a^7*b^6)*c^4 + 160
*(24*B*a^7*b^7 - 17*A*a^6*b^8)*c^3 - 240*(B*a^6*b^9 - 2*A*a^5*b^10)*c^2 - 2
*(12*B*a^5*b^11 + 19*A*a^4*b^12)*c)*sqrt((81*B^4*a^4 + 108*A*B^3*a^3*b + 54
*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2*c^2 - 50*(9*A^2*B
^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7*b^8*c + 160*a^8*b
^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*c^5)))*sqrt(-(9*B^
2*a^2*b^5 + 6*A*B*a*b^6 + A^2*b^7 - 240*(4*A*B*a^4 - 7*A^2*a^3*b)*c^3 + 40*
(18*B^2*a^4*b - 48*A*B*a^3*b^2 + 7*A^2*a^2*b^3)*c^2 + 5*(72*B^2*a^3*b^3 - 1
2*A*B*a^2*b^4 - 7*A^2*a*b^5)*c - (a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2
 - 640*a^6*b^4*c^3 + 1280*a^7*b^2*c^4 - 1024*a^8*c^5)*sqrt((81*B^4*a^4 + 10
8*A*B^3*a^3*b + 54*A^2*B^2*a^2*b^2 + 12*A^3*B*a*b^3 + A^4*b^4 + 625*A^4*a^2
*c^2 - 50*(9*A^2*B^2*a^3 + 6*A^3*B*a^2*b + A^4*a*b^2)*c)/(a^6*b^10 - 20*a^7
*b^8*c + 160*a^8*b^6*c^2 - 640*a^9*b^4*c^3 + 1280*a^10*b^2*c^4 - 1024*a^11*
c^5)))/(a^3*b^10 - 20*a^4*b^8*c + 160*a^5*b^6*c^2 - 640*a^6*b^4*c^3 + 1280*
a^7*b^2*c^4 - 1024*a^8*c^5)) + (10000*A^4*a^3*c^5 - 15000*(2*A^3*B*a^3*b -
A^4*a^2*b^2)*c^4 - 3*(432*B^4*a^5 - 3024*A*B^3*a^4*b - 3312*A^2*B^2*a^3*b^2
 + 3864*A^3*B*a^2*b^3 + 497*A^4*a*b^4)*c^3 - 5*(648*B^4*a^4*b^2 - 216*A*B^3
*a^3*b^3 - 648*A^2*B^2*a^2*b^4 - 189*A^3*B*a*b^5 - 7*A^4*b^6)*c^2 - 15*(27*
B^4*a^3*b^4 + 27*A*B^3*a^2*b^5 + 9*A^2*B^2*a*b^6 + A^3*B*b^7)*c)*sqrt(x)) -
 2*(3*B*a^2*b^2 + A*a*b^3 - (20*A*a*c^3 - (12*B*a*b - A*b^2)*c^2)*x^3 - (4*
(B*a^2 + 7*A*a*b)*c^2 - (19*B*a*b^2 - 2*A*b^3)*c)*x^2 + 4*(3*B*a^3 - 4*A*a^
2*b)*c + (5*B*a*b^3 - A*b^4 - 36*A*a^2*c^2 + (16*B*a^2*b - 5*A*a*b^2)*c)*x)
*sqrt(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a*b^4*c^2 - 8*a^2*b^2*c^3
+ 16*a^3*c^4)*x^4 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x^3 + (a*b^6
 - 6*a^2*b^4*c + 32*a^4*c^3)*x^2 + 2*(a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)
*x)
```

giac [B] time = 3.20, size = 7277, normalized size = 17.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*((2*b^4*c^2 + 32*a*b^2*c^3 - 160*a^2*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*b^3*c + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*c^2 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*b^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*c
^3 - 2*(b^2 - 4*a*c)*b^2*c^2 - 40*(b^2 - 4*a*c)*a*c^3)*(a*b^4 - 8*a^2*b^2*c
 + 16*a^3*c^2)^2*A - 12*(2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a*b^4 - 8*a^2*b^2*c +
16*a^3*c^2)^2*B + 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^9 - 28*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c - 2*sqrt(2)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a*b^8*c - 2*a*b^9*c + 240*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*b^5*c^2 + 48*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2
 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^7*c^2 + 56*a^2*b^7*c^2 - 832
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 288*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^2*b^5*c^3 - 480*a^3*b^5*c^3 + 1024*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^5*b*c^4 + 512*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4
 + 144*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^4 + 1664*a^4*b^3*c
^4 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b*c^5 - 2048*a^5*b*c^5
 + 2*(b^2 - 4*a*c)*a*b^7*c - 48*(b^2 - 4*a*c)*a^2*b^5*c^2 + 288*(b^2 - 4*a*
c)*a^3*b^3*c^3 - 512*(b^2 - 4*a*c)*a^4*b*c^4)*A*abs(a*b^4 - 8*a^2*b^2*c + 1
6*a^3*c^2) + 6*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^8 - 8*sqrt(2)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2
- 4*a*c)*c)*a^2*b^7*c - 2*a^2*b^8*c + 8*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^3*b^5*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^6*c^2 + 16
*a^3*b^6*c^2 + 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^2*c^3 + 32
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 4*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^6*c^4 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b*c^4 - 16*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4 - 256*a^5*b^2*c^4 + 64*s
qrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*c^5 + 512*a^6*c^5 + 2*(b^2 - 4*a
*c)*a^2*b^6*c - 8*(b^2 - 4*a*c)*a^3*b^4*c^2 - 32*(b^2 - 4*a*c)*a^4*b^2*c^3
+ 128*(b^2 - 4*a*c)*a^5*c^4)*B*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2) + (2*a
^2*b^12*c^2 - 136*a^3*b^10*c^3 + 1856*a^4*b^8*c^4 - 10496*a^5*b^6*c^5 + 271
36*a^6*b^4*c^6 - 26624*a^7*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^2*b^12 + 68*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^3*b^10*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^2*b^11*c - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^4*b^8*c^2 - 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^3*b^9*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^2*b^10*c^2 + 5248*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(
b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 1344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^3*b^8*c^3 - 13568*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 - 5120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 672*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^4 + 13312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 2560*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^5 - 3328*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^6 - 2*(b^2 - 4*a*c)*a^2*b^10*c^2
 + 128*(b^2 - 4*a*c)*a^3*b^8*c^3 - 1344*(b^2 - 4*a*c)*a^4*b^6*c^4 + 5120*(b
^2 - 4*a*c)*a^5*b^4*c^5 - 6656*(b^2 - 4*a*c)*a^6*b^2*c^6)*A + 6*(6*a^3*b^11
*c^2 - 88*a^4*b^9*c^3 + 448*a^5*b^7*c^4 - 768*a^6*b^5*c^5 - 512*a^7*b^3*c^6
 + 2048*a^8*b*c^7 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^3*b^11 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*a^4*b^9*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^3*b^10*c - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^5*b^7*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^4*b^8*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
3*b^9*c^2 + 384*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^6*b^5*c^3 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^5*b^6*c^3 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^4*b^7*c^3 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^7*b^3*c^4 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)
*a^5*b^5*c^4 - 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^8*b*c^5 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c
)*a^7*b^2*c^5 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^7*b*c^6 - 6*(b^2 - 4*a*c)*a^3*b^9*c^2 + 64*(b^2 - 4*a*c)*a^4*b^7*c^3 -
 192*(b^2 - 4*a*c)*a^5*b^5*c^4 + 512*(b^2 - 4*a*c)*a^7*b*c^6)*B)*arctan(2*s
qrt(1/2)*sqrt(x)/sqrt((a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2 + sqrt((a*b^5 - 8
*a^2*b^3*c + 16*a^3*b*c^2)^2 - 4*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*(a*b^
4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)))/(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3))
)/((a^3*b^10 - 20*a^4*b^8*c - 2*a^3*b^9*c + 160*a^5*b^6*c^2 + 32*a^4*b^7*c^
2 + a^3*b^8*c^2 - 640*a^6*b^4*c^3 - 192*a^5*b^5*c^3 - 16*a^4*b^6*c^3 + 1280
*a^7*b^2*c^4 + 512*a^6*b^3*c^4 + 96*a^5*b^4*c^4 - 1024*a^8*c^5 - 512*a^7*b*
c^5 - 256*a^6*b^2*c^5 + 256*a^7*c^6)*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c^2)*
abs(c)) - 1/32*((2*b^4*c^2 + 32*a*b^2*c^3 - 160*a^2*c^4 - sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*b^3*c + 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*c^2 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a*b*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*b^2*c^2 - 20*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a
*c)*c)*a*c^3 - 2*(b^2 - 4*a*c)*b^2*c^2 - 40*(b^2 - 4*a*c)*a*c^3)*(a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2)^2*A - 12*(2*a*b^3*c^2 - 8*a^2*b*c^3 - sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3 + 4*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a*b*c^2 - 2*(b^2 - 4*a*c)*a*b*c^2)*(a*b^4 - 8*a^
2*b^2*c + 16*a^3*c^2)^2*B - 2*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^
9 - 28*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c - 2*sqrt(2)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a*b^8*c + 2*a*b^9*c + 240*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^3*b^5*c^2 + 48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
```

```
^2*b^6*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7*c^2 - 56*a^2*b^7
*c^2 - 832*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 288*sqrt(2
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 24*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^2*b^5*c^3 + 480*a^3*b^5*c^3 + 1024*sqrt(2)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^5*b*c^4 + 512*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
^4*b^2*c^4 + 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^4 - 1664
*a^4*b^3*c^4 - 256*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^5 + 2048
*a^5*b*c^5 - 2*(b^2 - 4*a*c)*a*b^7*c + 48*(b^2 - 4*a*c)*a^2*b^5*c^2 - 288*(
b^2 - 4*a*c)*a^3*b^3*c^3 + 512*(b^2 - 4*a*c)*a^4*b*c^4)*A*abs(a*b^4 - 8*a^2
*b^2*c + 16*a^3*c^2) - 6*(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^8 -
 8*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^6*c - 2*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^2*b^7*c + 2*a^2*b^8*c + 8*sqrt(2)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a^3*b^5*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^
6*c^2 - 16*a^3*b^6*c^2 + 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^
2*c^3 + 32*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^3*c^3 - 4*sqrt(2)*
sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^4*c^3 - 256*sqrt(2)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a^6*c^4 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b*
c^4 - 16*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^2*c^4 + 256*a^5*b^2*
c^4 + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*c^5 - 512*a^6*c^5 - 2*
(b^2 - 4*a*c)*a^2*b^6*c + 8*(b^2 - 4*a*c)*a^3*b^4*c^2 + 32*(b^2 - 4*a*c)*a^
4*b^2*c^3 - 128*(b^2 - 4*a*c)*a^5*c^4)*B*abs(a*b^4 - 8*a^2*b^2*c + 16*a^3*c
^2) + (2*a^2*b^12*c^2 - 136*a^3*b^10*c^3 + 1856*a^4*b^8*c^4 - 10496*a^5*b^6
*c^5 + 27136*a^6*b^4*c^6 - 26624*a^7*b^2*c^7 - sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^12 + 68*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^11*c - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 - 128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^2*b^10*c^2 + 5248*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 1344*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^8*c^3 - 13568*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 - 5120*sqrt(2)*sqrt(b^2 - 4*a*c)
*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 - 672*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^6*c^4 + 13312*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 6656*sqrt(2)*sqrt(b^2 -
4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 2560*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^4*c^5 - 3328*sqrt(2)*sqrt(b^
2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^2*c^6 - 2*(b^2 - 4*a*c)*a^
2*b^10*c^2 + 128*(b^2 - 4*a*c)*a^3*b^8*c^3 - 1344*(b^2 - 4*a*c)*a^4*b^6*c^4
 + 5120*(b^2 - 4*a*c)*a^5*b^4*c^5 - 6656*(b^2 - 4*a*c)*a^6*b^2*c^6)*A + 6*(
6*a^3*b^11*c^2 - 88*a^4*b^9*c^3 + 448*a^5*b^7*c^4 - 768*a^6*b^5*c^5 - 512*a
^7*b^3*c^6 + 2048*a^8*b*c^7 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a^3*b^11 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a^4*b^9*c + 6*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^3*b^10*c - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^5*b^7*c^2 - 64*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^4*b^8*c^2 - 3*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*
a*c)*c)*a^3*b^9*c^2 + 384*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4
*a*c)*c)*a^6*b^5*c^3 + 192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^5*b^6*c^3 + 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
4*a*c)*c)*a^4*b^7*c^3 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^7*b^3*c^4 - 96*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^5*b^5*c^4 - 1024*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^8*b*c^5 - 512*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
- 4*a*c)*c)*a^7*b^2*c^5 + 256*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^7*b*c^6 - 6*(b^2 - 4*a*c)*a^3*b^9*c^2 + 64*(b^2 - 4*a*c)*a^4
*b^7*c^3 - 192*(b^2 - 4*a*c)*a^5*b^5*c^4 + 512*(b^2 - 4*a*c)*a^7*b*c^6)*B)*
arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2 - sqrt(
(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)^2 - 4*(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*
c^2)*(a*b^4*c - 8*a^2*b^2*c^2 + 16*a^3*c^3)))/(a*b^4*c - 8*a^2*b^2*c^2 + 16
*a^3*c^3)))/((a^3*b^10 - 20*a^4*b^8*c - 2*a^3*b^9*c + 160*a^5*b^6*c^2 + 32*
a^4*b^7*c^2 + a^3*b^8*c^2 - 640*a^6*b^4*c^3 - 192*a^5*b^5*c^3 - 16*a^4*b^6*
c^3 + 1280*a^7*b^2*c^4 + 512*a^6*b^3*c^4 + 96*a^5*b^4*c^4 - 1024*a^8*c^5 -
512*a^7*b*c^5 - 256*a^6*b^2*c^5 + 256*a^7*c^6)*abs(a*b^4 - 8*a^2*b^2*c + 16
*a^3*c^2)*abs(c)) - 1/4*(12*B*a*b*c^2*x^(7/2) - A*b^2*c^2*x^(7/2) - 20*A*a*
c^3*x^(7/2) + 19*B*a*b^2*c*x^(5/2) - 2*A*b^3*c*x^(5/2) - 4*B*a^2*c^2*x^(5/2
) - 28*A*a*b*c^2*x^(5/2) + 5*B*a*b^3*x^(3/2) - A*b^4*x^(3/2) + 16*B*a^2*b*c
*x^(3/2) - 5*A*a*b^2*c*x^(3/2) - 36*A*a^2*c^2*x^(3/2) + 3*B*a^2*b^2*sqrt(x)
 + A*a*b^3*sqrt(x) + 12*B*a^3*c*sqrt(x) - 16*A*a^2*b*c*sqrt(x))/((a*b^4 - 8
*a^2*b^2*c + 16*a^3*c^2)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.11, size = 1364, normalized size = 3.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 2*(1/8*c^2*(20*A*a*c+A*b^2-12*B*a*b)/a/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)+1
/8/a*c*(28*A*a*b*c+2*A*b^3+4*B*a^2*c-19*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
*x^(5/2)+1/8*(36*A*a^2*c^2+5*A*a*b^2*c+A*b^4-16*B*a^2*b*c-5*B*a*b^3)/a/(16*
a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)+1/8*(16*A*a*b*c-A*b^3-12*B*a^2*c-3*B*a*b^2)/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2))/(c*x^2+b*x+a)^2+5/2/(16*a^2*c^2-8*a*b^2
*c+b^4)*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4
*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A+1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2
^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*c*x^(1/2))*A*b^2+13/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b
^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a
*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(
-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/(
(b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3-3/2/(16*a^2*c^2-8*a*b^2*c+
b^4)*c*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-3*a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*
a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-9/4/(16*a^2*c^2-8*a*b^2*c+b^4)*c/
(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/
((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-5/2/(16*a^2*c^2-8*a*b^2*c
+b^4)*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-
4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-1/8/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c*
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)
^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+13/2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a
*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-
b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b-1/8/a/(16*a^2*c^2-8*a*b^2*c+b
^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(
2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+3/2/(16*a^2*c^2-
8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/
((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b-3*a/(16*a^2*c^2-8*a*b^2*c+
b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-9/4/(16*a^2*c^2-8
*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2
)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{\Big(\big(b^{3} c^{2} - 16 \, a b c^{3}\big) A + 3 \, \big(a b^{2} c^{2} + 4 \, a^{2} c^{3}\big) B\Big) x^{\frac{9}{2}} + \Big(\big(2 \, b^{4} c - 31 \, a b^{2} c^{2} + 20 \, a^{2} c^{3}\big) A + 6 \, \big(a b^{3} c + 2 \, a^{2} b c^{2}\big) B\Big) x^{\frac{7}{2}} + \Big(\big(b}{4 \, \Big(a^{4} b^{4} - 8 \, a^{5} b^{2} c + 16 \, a^{6} c^{2} + \big(a^{2} b^{4} c^{2} - 8 \, a^{3} b^{2} c^{3} + 16 \, a^{4} c^{4}\big) x^{4} + 2 \, \big(a^{2} b^{5} c - 8 \, a^{3} b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(((b^3*c^2 - 16*a*b*c^3)*A + 3*(a*b^2*c^2 + 4*a^2*c^3)*B)*x^(9/2) + ((2
*b^4*c - 31*a*b^2*c^2 + 20*a^2*c^3)*A + 6*(a*b^3*c + 2*a^2*b*c^2)*B)*x^(7/2
) + ((b^5 - 12*a*b^3*c - 4*a^2*b*c^2)*A + (3*a*b^4 - a^2*b^2*c + 28*a^3*c^2
)*B)*x^(5/2) + (3*(a*b^4 - 9*a^2*b^2*c + 12*a^3*c^2)*A + (a^2*b^3 + 8*a^3*b
*c)*B)*x^(3/2))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 - 8*a^3*
b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*c^3)*x^
3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^3*c + 1
6*a^5*b*c^2)*x) + integrate(-1/8*(((b^3*c - 16*a*b*c^2)*A + 3*(a*b^2*c + 4*
a^2*c^2)*B)*x^(3/2) + ((b^4 - 17*a*b^2*c - 20*a^2*c^2)*A + 3*(a*b^3 + 8*a^2
*b*c)*B)*sqrt(x))/(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2 + (a^2*b^4*c - 8*a^3*
b^2*c^2 + 16*a^4*c^3)*x^2 + (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*x), x)
```

mupad [B] time = 5.05, size = 19024, normalized size = 44.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x^(1/2)*(A + B*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((x^(3/2)*(A*b^4 + 36*A*a^2*c^2 - 5*B*a*b^3 + 5*A*a*b^2*c - 16*B*a^2*b*c))/
(4*a*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^(1/2)*(A*b^3 + 3*B*a*b^2 + 12*B*a
^2*c - 16*A*a*b*c))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(5/2)*(4*B*a^2*
c^2 + 2*A*b^3*c + 28*A*a*b*c^2 - 19*B*a*b^2*c))/(4*a*(b^4 + 16*a^2*c^2 - 8*
a*b^2*c)) + (c*x^(7/2)*(20*A*a*c^2 + A*b^2*c - 12*B*a*b*c))/(4*a*(b^4 + 16*
a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c
*x^3) + atan(((((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A*a^7*b*c^8 -
 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c^5 + 737280*
A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^1
0*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/
(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b
^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x^(1/2)*(-(A^2*b^17 + 9*B
^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)
^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3
+ 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 +
1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 1
03680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983
040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) -
1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B
*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*
B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*
b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*
a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^
7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^
7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 -
 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5
 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^
4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c
- b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 114
0*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776
*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*
B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^
2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15
*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2
*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b
^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7
*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 1
80*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720
*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^
5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621
440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B
^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c
^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^
3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a
^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1
/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^1
3*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*
c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*
c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5
 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a
*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c -
 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241
920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 73
7280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^
14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2
 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^
9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*
c^9)))^(1/2)*1i - (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A*a^7*b*c
^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c^5 + 737
280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3072*B*a^3
*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a^7*b^2*c
^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a
^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (x^(1/2)*(-(A^2*b^17 +
 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c -
b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*
c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^
6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3
 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 +
 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2
) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240
*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 99225
6*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*
B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048
576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 5376
0*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^
6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536*a^7*b*c
^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960*a^5*b^5
*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^
4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*
a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 +
 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 4
3776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5
040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 921
6*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*
b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180
*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a
^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B
*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2)
 - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c +
 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^1
0*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 -
2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 2
88*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b
^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*
B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 2
56*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15
)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2
*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*
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b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b
^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5
*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A
^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13
*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 -
 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6
+ 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^
2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16
*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 86016
0*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*
b^2*c^9)))^(1/2)*1i)/((35*A^3*b^6*c^4 - 8000*A^3*a^3*c^7 - 12720*A^3*a^2*b^
2*c^6 + 540*B^3*a^2*b^5*c^3 + 4320*B^3*a^3*b^3*c^4 - 2880*A*B^2*a^4*c^6 - 1
5*A^2*B*b^7*c^3 + 84*A^3*a*b^4*c^5 + 1728*B^3*a^4*b*c^5 + 135*A*B^2*a*b^6*c
^3 - 360*A^2*B*a*b^5*c^4 + 26880*A^2*B*a^3*b*c^6 - 5580*A*B^2*a^2*b^4*c^4 -
 20592*A*B^2*a^3*b^2*c^5 + 15696*A^2*B*a^2*b^3*c^5)/(32*(a^2*b^12 + 4096*a^
8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c
^4 - 6144*a^7*b^2*c^5)) + (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*A
*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*c
^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 30
72*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*a
^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2
 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x^(1/2)*(-(A^
2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(
4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a
^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^
6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5
*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b
^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^
15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c
^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4
 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^
7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^2
0 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^
3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080
*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(65536
*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 40960
*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c
 + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b
^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*
a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9
*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3
*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c
^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 5
5*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c
^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 240
00*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 178
1760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^1
5)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*
b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048
*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^
4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^3
*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*B
^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3
 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4
*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c -
 b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140
*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*
A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B
^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2
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*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*
c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*
a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^
10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*
b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 18
0*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*
a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5
 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 26214
40*a^12*b^2*c^9)))^(1/2) + (((64*A*a*b^13*c^2 - 786432*B*a^8*c^8 + 1048576*
A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800*A*a^4*b^7*
c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b^12*c^2 - 3
072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6 + 786432*B*
a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2
 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (x^(1/2)*(-(A
^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-
(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*
a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a
^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^
5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*
b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)
^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*
c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^
4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c
^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^
20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c
^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 196608
0*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*(6553
6*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7*c^4 + 4096
0*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*
c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*
b^2*(-(4*a*c - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B
*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^
9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^
3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*
c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 -
55*A^2*a*b^15*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*
c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24
000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 17
81760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^
15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4
*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 25804
8*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b
^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c^3 - 800*A^2*a^
3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4*c^3 + 144*
B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*B*a*b^5*c^3
 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^
4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c
- b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 114
0*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776
*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*
B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^
2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15
*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2
*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b
^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7
*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 1
80*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720
*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^
5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621
440*a^12*b^2*c^9)))^(1/2)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 + A^2*b^2*(-(4*a*c
 - b^2)^15)^(1/2) + 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 11
40*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 4377
6*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040
*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B
^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^1
5*c - 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^
2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*
b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^
7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 + 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) -
180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 72
0*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c
^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 262
1440*a^12*b^2*c^9)))^(1/2)*2i + atan(((((64*A*a*b^13*c^2 - 786432*B*a^8*c^8
 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 204800
*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a^2*b
^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*c^6
+ 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*
a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) - (x
^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9
*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 -
 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 6
80960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 3
7440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 5529
60*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4
*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280
*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B
*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*
B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(
128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680
*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c
^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^
(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4*b^7
*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^4 -
16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*
b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880
*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680
*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B
^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B
*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320
*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^
12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b
^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*
a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^
10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*
c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 294
9120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A^2*b^6*c^3 -
 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2*b^4
*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 + 6*A*
B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^6*c
+ 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^
2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a
*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*
c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*
c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^
4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55
*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^
8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 2400
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0*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781
760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15
)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b
^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*
a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4
*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*1i - (((64*A*a*b^13*c^2 - 786432*B*a^8
*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*c^4 - 20
4800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 + 192*B*a
^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*a^6*b^4*
c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c +
240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5))
+ (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2)
 - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c
^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5
 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2
 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 +
552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*
(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 73
7280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920
*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 73728
0*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*
c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 -
7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b
^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9
)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 10240*a^4
*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 256*a^6*c^
4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*
a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15
)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 3
4880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 186
3680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 1036
80*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040
*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 172
0320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^
3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a
^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(
-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^1
3*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b
^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 +
 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(A^2*b^6*c
^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234*B^2*a^2
*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^3*c^4 +
6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 16*a^3*b^
6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^
2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*
b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*
b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^
7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8
- 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*
b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 +
24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 -
1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2
)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a
^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258
048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11
*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*1i)/((35*A^3*b^6*c^4 - 8000*A^3*a^
3*c^7 - 12720*A^3*a^2*b^2*c^6 + 540*B^3*a^2*b^5*c^3 + 4320*B^3*a^3*b^3*c^4
- 2880*A*B^2*a^4*c^6 - 15*A^2*B*b^7*c^3 + 84*A^3*a*b^4*c^5 + 1728*B^3*a^4*b
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*c^5 + 135*A*B^2*a*b^6*c^3 - 360*A^2*B*a*b^5*c^4 + 26880*A^2*B*a^3*b*c^6 -
5580*A*B^2*a^2*b^4*c^4 - 20592*A*B^2*a^3*b^2*c^5 + 15696*A^2*B*a^2*b^3*c^5)
/(32*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*
b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^2*c^5)) + (((64*A*a*b^13*c^2 - 7864
32*B*a^8*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9*
c^4 - 204800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7 +
 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B*
a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*b
^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b^
2*c^5)) - (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^1
5)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^
2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5
*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*
b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^
5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*
A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^1
3*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3
- 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6
 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a
^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^1
6*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 8601
60*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12
*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 - 1
0240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 25
6*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17
+ 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c -
 b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11
*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c
^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^
3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6
+ 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/
2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 24
0*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 9922
56*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A
*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 104
8576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 537
60*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b
^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (x^(1/2)*(A
^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 234
*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b^
3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 - 1
6*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*b
^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*
A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*
A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^
2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*
a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*
A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^1
2*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^
6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a
*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^1
0 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c
^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949
120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) + (((64*A*a*b^13*c^2 - 786
432*B*a^8*c^8 + 1048576*A*a^7*b*c^8 - 2304*A*a^2*b^11*c^3 + 30720*A*a^3*b^9
*c^4 - 204800*A*a^4*b^7*c^5 + 737280*A*a^5*b^5*c^6 - 1376256*A*a^6*b^3*c^7
+ 192*B*a^2*b^12*c^2 - 3072*B*a^3*b^10*c^3 + 15360*B*a^4*b^8*c^4 - 245760*B
*a^6*b^4*c^6 + 786432*B*a^7*b^2*c^7)/(64*(a^2*b^12 + 4096*a^8*c^6 - 24*a^3*
b^10*c + 240*a^4*b^8*c^2 - 1280*a^5*b^6*c^3 + 3840*a^6*b^4*c^4 - 6144*a^7*b
^2*c^5)) + (x^(1/2)*(-(A^2*b^17 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^
15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a
^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^
5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4
*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b
^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25
*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^
13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3
 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^
6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*
a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^
16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860
160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^1
2*b^2*c^9)))^(1/2)*(65536*a^7*b*c^7 - 64*a^2*b^11*c^2 + 1280*a^3*b^9*c^3 -
10240*a^4*b^7*c^4 + 40960*a^5*b^5*c^5 - 81920*a^6*b^3*c^6))/(8*(a^2*b^8 + 2
56*a^6*c^4 - 16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17
 + 9*B^2*a^2*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c
- b^2)^15)^(1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^1
1*c^3 + 34880*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*
c^6 + 1863680*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c
^3 - 103680*B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6
 + 983040*A*B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1
/2) - 1720320*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 2
40*A*B*a^3*b^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992
256*A*B*a^6*b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*
A*B*a*b*(-(4*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 10
48576*a^13*c^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53
760*a^7*b^12*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*
b^6*c^7 + 2949120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2) - (x^(1/2)*(
A^2*b^6*c^3 - 800*A^2*a^3*c^6 + 288*B^2*a^4*c^5 + 1472*A^2*a^2*b^2*c^5 + 23
4*B^2*a^2*b^4*c^3 + 144*B^2*a^3*b^2*c^4 - 34*A^2*a*b^4*c^4 - 1104*A*B*a^2*b
^3*c^4 + 6*A*B*a*b^5*c^3 - 288*A*B*a^3*b*c^5))/(8*(a^2*b^8 + 256*a^6*c^4 -
16*a^3*b^6*c + 96*a^4*b^4*c^2 - 256*a^5*b^2*c^3)))*(-(A^2*b^17 + 9*B^2*a^2*
b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 34880
*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 1863680
*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*B
^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*B
*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 1720320
*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b^
12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*b
^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4*
a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c^
10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12*
c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 294
9120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)))*(-(A^2*b^17 + 9*B^2*a^2
*b^15 - A^2*b^2*(-(4*a*c - b^2)^15)^(1/2) - 9*B^2*a^2*(-(4*a*c - b^2)^15)^(
1/2) + 6*A*B*a*b^16 + 1140*A^2*a^2*b^13*c^2 - 10160*A^2*a^3*b^11*c^3 + 3488
0*A^2*a^4*b^9*c^4 + 43776*A^2*a^5*b^7*c^5 - 680960*A^2*a^6*b^5*c^6 + 186368
0*A^2*a^7*b^3*c^7 - 5040*B^2*a^4*b^11*c^2 + 37440*B^2*a^5*b^9*c^3 - 103680*
B^2*a^6*b^7*c^4 - 9216*B^2*a^7*b^5*c^5 + 552960*B^2*a^8*b^3*c^6 + 983040*A*
B*a^9*c^8 - 55*A^2*a*b^15*c + 25*A^2*a*c*(-(4*a*c - b^2)^15)^(1/2) - 172032
0*A^2*a^8*b*c^8 + 180*B^2*a^3*b^13*c - 737280*B^2*a^9*b*c^7 + 240*A*B*a^3*b
^12*c^2 + 24000*A*B*a^4*b^10*c^3 - 241920*A*B*a^5*b^8*c^4 + 992256*A*B*a^6*
b^6*c^5 - 1781760*A*B*a^7*b^4*c^6 + 737280*A*B*a^8*b^2*c^7 - 6*A*B*a*b*(-(4
*a*c - b^2)^15)^(1/2) - 180*A*B*a^2*b^14*c)/(128*(a^3*b^20 + 1048576*a^13*c
^10 - 40*a^4*b^18*c + 720*a^5*b^16*c^2 - 7680*a^6*b^14*c^3 + 53760*a^7*b^12
*c^4 - 258048*a^8*b^10*c^5 + 860160*a^9*b^8*c^6 - 1966080*a^10*b^6*c^7 + 29
```

```
49120*a^11*b^4*c^8 - 2621440*a^12*b^2*c^9)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1027 $\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=468

$$\frac{\sqrt{x}\left(A\left(28a^2c^2-25ab^2c+3b^4\right)+cx\left(3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)+abB\left(8ac+b^2\right)\right)}{4a^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(\frac{3A\left(56a^2c^2-10a\right.}{}\right.}{}$$

```
[Out] 1/2*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)*x^(1/2)/a/(-4*a*c+b^2)/(c*x^2+b*x
+a)^2+1/4*(a*b*B*(8*a*c+b^2)+A*(28*a^2*c^2-25*a*b^2*c+3*b^4)+c*(a*B*(20*a*c
+b^2)+3*A*(-8*a*b*c+b^3))*x)*x^(1/2)/a^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)+1/8*a
rctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(2
0*a*c+b^2)+3*A*(-8*a*b*c+b^3)+(a*b*B*(-52*a*c+b^2)+3*A*(56*a^2*c^2-10*a*b^2
*c+b^4))/(-4*a*c+b^2)^(1/2))/a^2/(-4*a*c+b^2)^2*2^(1/2)/(b-(-4*a*c+b^2)^(1/
2))^(1/2)+1/8*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*
c^(1/2)*(a*B*(20*a*c+b^2)+3*A*(-8*a*b*c+b^3)+(-a*b*B*(-52*a*c+b^2)-3*A*(56*
a^2*c^2-10*a*b^2*c+b^4))/(-4*a*c+b^2)^(1/2))/a^2/(-4*a*c+b^2)^2*2^(1/2)/(b+
(-4*a*c+b^2)^(1/2))^(1/2)
```

Rubi [A] time = 1.66, antiderivative size = 468, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {822, 826, 1166, 205}

$$\frac{\sqrt{x}\left(A\left(28a^2c^2-25ab^2c+3b^4\right)+cx\left(3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right)\right)+abB\left(8ac+b^2\right)\right)}{4a^2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\left(\frac{3A\left(56a^2c^2-10a\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] (Sqrt[x]*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(2*a*(b^2 - 4*a*c)*
(a + b*x + c*x^2)^2) + (Sqrt[x]*(a*b*B*(b^2 + 8*a*c) + A*(3*b^4 - 25*a*b^2*
c + 28*a^2*c^2) + c*(a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c))*x))/(4*a^2*(
b^2 - 4*a*c)^2*(a + b*x + c*x^2)) + (Sqrt[c]*(a*B*(b^2 + 20*a*c) + 3*A*(b^3
 - 8*a*b*c) + (a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/
Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a
*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^2*Sqrt[b - Sqrt[b^2 - 4*a*c]]) + (Sqrt[
c]*(a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c) - (a*b*B*(b^2 - 52*a*c) + 3*A*
(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]
*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^2*(b^2 - 4*a*c)^2*Sqrt
[b + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{x}\left(a+bx+cx^2\right)^3}\,dx = \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-3Ab^2-abB+14aAc\right)-\frac{5}{2}(Ab-2aB)cx}{\sqrt{x}\left(a+bx+cx^2\right)^2}\,dx}{2a\left(b^2-4ac\right)}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab^2c\right.\right.}{4a^2\left(b^2-\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab^2c\right.\right.}{4a^2\left(b^2-\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab^2c\right.\right.}{4a^2\left(b^2-\right.}$$

$$= \frac{\sqrt{x}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{2a\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\sqrt{x}\left(abB\left(b^2+8ac\right)+A\left(3b^4-25ab^2c\right.\right.}{4a^2\left(b^2-\right.}$$

Mathematica [A] time = 1.69, size = 440, normalized size = 0.94

$$\frac{-\frac{2\sqrt{x}\left(A\left(28a^2c^2-25ab^2c-24abc^2x+3b^4+3b^3cx\right)+aB\left(8abc+20ac^2x+b^3+b^2cx\right)\right)}{a\left(4ac-b^2\right)(a+x(b+cx))}+\frac{\sqrt{2}\sqrt{c}\left(\frac{\left(\frac{3A\left(56a^2c^2-10ab^2c+b^4\right)+abB\left(b^2-52ac\right)}{\sqrt{b^2-4ac}}+3A\left(b^3-8abc\right)+aB\left(20ac+b^2\right.\right.}{\sqrt{b-\sqrt{b^2-4ac}}}\right.}{}}{8a\left(b^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((4*Sqrt[x]*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*x
))^2 - (2*Sqrt[x]*(a*B*(b^3 + 8*a*b*c + b^2*c*x + 20*a*c^2*x) + A*(3*b^4 -
25*a*b^2*c + 28*a^2*c^2 + 3*b^3*c*x - 24*a*b*c^2*x)))/(a*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))) + (Sqrt[2]*Sqrt[c]*(((a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b
*c) + (a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2
 - 4*a*c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/S
qrt[b - Sqrt[b^2 - 4*a*c]] + ((a*B*(b^2 + 20*a*c) + 3*A*(b^3 - 8*a*b*c) - (
a*b*B*(b^2 - 52*a*c) + 3*A*(b^4 - 10*a*b^2*c + 56*a^2*c^2))/Sqrt[b^2 - 4*a*
c])*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b +
 Sqrt[b^2 - 4*a*c]]))/(a*(b^2 - 4*a*c)))/(8*a*(b^2 - 4*a*c))
```

fricas [B] time = 60.51, size = 9907, normalized size = 21.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="fricas")
```

```
[Out] -1/8*(sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 - 8*a^3*
b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*c^3)*x^
3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^3*c + 1
6*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*(4*A*B*
a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^3*b^3)*
c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7*(5*B^2
*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^8*c + 16
0*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*sqrt((B
^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A
^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^
4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 +
26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^
3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a
^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*
b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640
*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(1/2*sqrt(1/2)*(B^3*a^
3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 - 2370816*A^3*a^7
*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b^2)*c^6 - 64*(4
00*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26865*A^3*a^5*b^4
)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^2*B*a^5*b^5 + 6
7797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*b^6 + 16884*A^2
*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 6591*A*B^2*a^4*b^8
 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a^4*b^9 + 414*A*
B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c - (B*a^6*b^14 + 3*A*
a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a^12*b^2 - 99*A*
a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 1280*(5*B*a^10*b^
6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^3 + 24*(20*B*a^
8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13)*c)*sqrt((B^4*
a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*
b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a
^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b^2 + 266
76*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a
^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10
*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*a^14*b^2
*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680
*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a
^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 -
7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^
8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)
*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^
7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b
 + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^
4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 +
258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^
6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 12
80*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c
^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) + (3111696*A^4*a^
4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6 - 90000*
A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 339309*A^4*a
^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2*B^2*a^3
*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*b^4 + 53
7*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*b^8)*c^3
 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27*A^3*B*b^9)*c^2
)*sqrt(x)) - sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b^4*c^2 -
 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 16*a^4*b*
c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 - 8*a^4*b^
3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9 - 1680*
(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 - 9*A^2*a^
3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)*c^2 - 7
*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 20*a^6*b^8
*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)*
sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7
 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b
+ 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4
*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 2
58*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6
)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 128
0*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^
2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(-1/2*sqrt(1/2)
*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 - 2370816
*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b^2)*c^6
 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26865*A^3
*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^2*B*a^5
*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*b^6 + 1
6884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 6591*A*B^2
*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a^4*b^9
+ 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c - (B*a^6*b^1
4 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a^12*b^2
 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 1280*(5*B
*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^3 + 24*
(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13)*c)*sq
rt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*a*b^7 +
 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a^4*b +
99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^2*a^4*b
^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^2 + 258
*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*a*b^6)*
c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3 + 1280*
a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^
9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 -
 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5
)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c + (a^5*b^10 - 2
0*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a
^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^
3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3
*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^
2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^
5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*
A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*
c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a
```

```
^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) + (311169
6*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B^4*a^6
- 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3 - 3393
09*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79488*A^2
*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B^4*a^4*
b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 + 81*A^4*
b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27*A^3*B*
b^9)*c^2)*sqrt(x)) + sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^2*b
^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*c^2 + 1
6*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3*b^5 -
8*a^4*b^3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*A^2*b^9
 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4*b^2 -
9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a^2*b^5)
*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b^10 - 20
*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^
10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3
*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*
B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2
*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5
*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A
^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c
^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c + 160*a^
7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log(1/2*sq
rt(1/2)*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3*b^14 -
2370816*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A^3*a^6*b
^2)*c^6 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*b^3 + 26
865*A^3*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 + 62694*A^
2*B*a^5*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*B^2*a^5*
b^6 + 16884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b^7 + 659
1*A*B^2*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (53*B^3*a
^4*b^9 + 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)*c + (B*
a^6*b^14 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048*(16*B*a
^12*b^2 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*c^5 + 12
80*(5*B*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8*b^9)*c^
3 + 24*(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*a^6*b^13
)*c)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 108*A^3*B*
a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108*A^3*B*a
^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17496*A^2*B^
2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^4*a^5*b^
2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 + 891*A^4*
a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*b^4*c^3
+ 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9
*A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^
4*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*
a^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b
^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 -
 1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 +
 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 +
108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 1
7496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25
*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5
 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^
13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c
+ 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5)) +
(3111696*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 - (10000*B
^4*a^6 - 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B*a^3*b^3
 - 339309*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*b^3 + 79
488*A^2*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 + 21*(71*B
^4*a^4*b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*a*b^7 +
81*A^4*b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*b^8 + 27
*A^3*B*b^9)*c^2)*sqrt(x)) - sqrt(1/2)*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 +
 (a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3*
c^2 + 16*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^3
*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)*x)*sqrt(-(B^2*a^2*b^7 + 6*A*B*a*b^8 + 9*
A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b - 4*A*B*a^4
*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 + 243*A^2*a
^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c - (a^5*b^
10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 -
1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 +
108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 1
08*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 17
496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*
B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5
+ 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^1
3*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^6*b^8*c +
 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*c^5))*log
(-1/2*sqrt(1/2)*(B^3*a^3*b^11 + 9*A*B^2*a^2*b^12 + 27*A^2*B*a*b^13 + 27*A^3
*b^14 - 2370816*A^3*a^7*c^7 + 2688*(50*A*B^2*a^8 + 384*A^2*B*a^7*b + 1143*A
^3*a^6*b^2)*c^6 - 64*(400*B^3*a^8*b + 4062*A*B^2*a^7*b^2 + 17541*A^2*B*a^6*
b^3 + 26865*A^3*a^5*b^4)*c^5 + 8*(2728*B^3*a^7*b^3 + 20520*A*B^2*a^6*b^4 +
62694*A^2*B*a^5*b^5 + 67797*A^3*a^4*b^6)*c^4 - 7*(976*B^3*a^6*b^5 + 6744*A*
B^2*a^5*b^6 + 16884*A^2*B*a^4*b^7 + 14985*A^3*a^3*b^8)*c^3 + (940*B^3*a^5*b
^7 + 6591*A*B^2*a^4*b^8 + 15489*A^2*B*a^3*b^9 + 12528*A^3*a^2*b^10)*c^2 - (
53*B^3*a^4*b^9 + 414*A*B^2*a^3*b^10 + 1053*A^2*B*a^2*b^11 + 864*A^3*a*b^12)
*c + (B*a^6*b^14 + 3*A*a^5*b^15 + 4096*(10*B*a^13 - 33*A*a^12*b)*c^7 - 2048
*(16*B*a^12*b^2 - 99*A*a^11*b^3)*c^6 + 768*(2*B*a^11*b^4 - 169*A*a^10*b^5)*
c^5 + 1280*(5*B*a^10*b^6 + 36*A*a^9*b^7)*c^4 - 80*(34*B*a^9*b^8 + 123*A*a^8
*b^9)*c^3 + 24*(20*B*a^8*b^10 + 53*A*a^7*b^11)*c^2 - (38*B*a^7*b^12 + 93*A*
a^6*b^13)*c)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a^2*b^6 + 10
8*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^2*a^5 + 108
*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a^5*b + 1749
6*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2 - 2*(25*B^
4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B*a^2*b^5 +
891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2 - 640*a^13*
b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))*sqrt(-(B^2*a^2*b^7 + 6*A*B*a
*b^8 + 9*A^2*b^9 - 1680*(4*A*B*a^5 - 9*A^2*a^4*b)*c^4 + 840*(2*B^2*a^5*b -
4*A*B*a^4*b^2 - 9*A^2*a^3*b^3)*c^3 + 7*(40*B^2*a^4*b^3 + 180*A*B*a^3*b^4 +
243*A^2*a^2*b^5)*c^2 - 7*(5*B^2*a^3*b^5 + 24*A*B*a^2*b^6 + 27*A^2*a*b^7)*c
- (a^5*b^10 - 20*a^6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b
^2*c^4 - 1024*a^10*c^5)*sqrt((B^4*a^4*b^4 + 12*A*B^3*a^3*b^5 + 54*A^2*B^2*a
^2*b^6 + 108*A^3*B*a*b^7 + 81*A^4*b^8 + 194481*A^4*a^4*c^4 - 882*(25*A^2*B^
2*a^5 + 108*A^3*B*a^4*b + 99*A^4*a^3*b^2)*c^3 + (625*B^4*a^6 + 5400*A*B^3*a
^5*b + 17496*A^2*B^2*a^4*b^2 + 26676*A^3*B*a^3*b^3 + 17739*A^4*a^2*b^4)*c^2
 - 2*(25*B^4*a^5*b^2 + 258*A*B^3*a^4*b^3 + 972*A^2*B^2*a^3*b^4 + 1566*A^3*B
*a^2*b^5 + 891*A^4*a*b^6)*c)/(a^10*b^10 - 20*a^11*b^8*c + 160*a^12*b^6*c^2
- 640*a^13*b^4*c^3 + 1280*a^14*b^2*c^4 - 1024*a^15*c^5)))/(a^5*b^10 - 20*a^
6*b^8*c + 160*a^7*b^6*c^2 - 640*a^8*b^4*c^3 + 1280*a^9*b^2*c^4 - 1024*a^10*
c^5)) + (3111696*A^4*a^4*c^7 - 1555848*(2*A^3*B*a^4*b + A^4*a^3*b^2)*c^6 -
(10000*B^4*a^6 - 90000*A*B^3*a^5*b - 863136*A^2*B^2*a^4*b^2 - 1298376*A^3*B
*a^3*b^3 - 339309*A^4*a^2*b^4)*c^5 - 3*(5000*B^4*a^5*b^2 + 32952*A*B^3*a^4*
b^3 + 79488*A^2*B^2*a^3*b^4 + 80919*A^3*B*a^2*b^5 + 12069*A^4*a*b^6)*c^4 +
21*(71*B^4*a^4*b^4 + 537*A*B^3*a^3*b^5 + 1314*A^2*B^2*a^2*b^6 + 1053*A^3*B*
a*b^7 + 81*A^4*b^8)*c^3 - 35*(B^4*a^3*b^6 + 9*A*B^3*a^2*b^7 + 27*A^2*B^2*a*
b^8 + 27*A^3*B*b^9)*c^2)*sqrt(x)) + 2*(B*a^2*b^3 - 5*A*a*b^4 - 44*A*a^3*c^2
 - (4*(5*B*a^2 - 6*A*a*b)*c^3 + (B*a*b^2 + 3*A*b^3)*c^2)*x^3 - (28*A*a^2*c^
3 + 7*(4*B*a^2*b - 7*A*a*b^2)*c^2 + 2*(B*a*b^3 + 3*A*b^4)*c)*x^2 - (16*B*a^
3*b - 37*A*a^2*b^2)*c - (B*a*b^4 + 3*A*b^5 + 4*(9*B*a^3 - A*a^2*b)*c^2 + 5*
(B*a^2*b^2 - 4*A*a*b^3)*c)*x)*sqrt(x))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2
```

```
+ (a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 16*a^4*c^4)*x^4 + 2*(a^2*b^5*c - 8*a^3*b^3
*c^2 + 16*a^4*b*c^3)*x^3 + (a^2*b^6 - 6*a^3*b^4*c + 32*a^5*c^3)*x^2 + 2*(a^
3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)*x)
```

giac [**B**] time = 2.46, size = 4621, normalized size = 9.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="giac")
```

```
[Out] 1/16*(3*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^8 - 17*sqrt(2)*sqrt(b*c
+ sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
b^7*c - 2*b^8*c + 116*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 +
 26*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*b^6*c^2 + 34*a*b^6*c^2 + 2*b^7*c^2 - 368*sqrt(2)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 -
4*a*c)*c)*a^2*b^3*c^3 - 13*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^
3 - 232*a^2*b^4*c^3 - 30*a*b^5*c^3 + 448*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*
c)*c)*a^4*c^4 + 224*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*
sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^4 + 736*a^3*b^2*c^4 + 176
*a^2*b^3*c^4 - 112*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^5 - 896*a^
4*c^5 - 352*a^3*b*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*b^7 + 15*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
*b^5*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6*c
- 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2
- 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 -
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c^2 + 176*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 + 88*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 + 11*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^3 - 44*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^4 + 2*(b^2 - 4*a
*c)*b^6*c - 26*(b^2 - 4*a*c)*a*b^4*c^2 - 2*(b^2 - 4*a*c)*b^5*c^2 + 128*(b^2
 - 4*a*c)*a^2*b^2*c^3 + 22*(b^2 - 4*a*c)*a*b^3*c^3 - 224*(b^2 - 4*a*c)*a^3*
c^4 - 88*(b^2 - 4*a*c)*a^2*b*c^4)*A + (sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^7 - 24*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*a*b^7*c + 144*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 + 40*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 + 48
*a^2*b^5*c^2 + 2*a*b^6*c^2 - 256*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^
4*b*c^3 - 128*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 20*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 288*a^3*b^3*c^3 - 44*a^2*
b^4*c^3 + 64*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 512*a^4*b*
c^4 + 64*a^3*b^2*c^4 + 320*a^4*c^5 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a*b^6 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^2*b^4*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a*b^5*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^3*b^2*c^2 - 36*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^2*b^3*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a*b^4*c^2 - 160*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^4*c^3 - 80*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a
^3*b*c^3 + 18*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2
*b^2*c^3 + 40*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3
*c^4 + 2*(b^2 - 4*a*c)*a*b^5*c - 40*(b^2 - 4*a*c)*a^2*b^3*c^2 - 2*(b^2 - 4*
a*c)*a*b^4*c^2 + 128*(b^2 - 4*a*c)*a^3*b*c^3 + 36*(b^2 - 4*a*c)*a^2*b^2*c^3
 + 80*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^2*b^5 -
8*a^3*b^3*c + 16*a^4*b*c^2 + sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)^2
- 4*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^
4*c^3)))/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/((a^3*b^8 - 16*a^4*b^6*
c - 2*a^3*b^7*c + 96*a^5*b^4*c^2 + 24*a^4*b^5*c^2 + a^3*b^6*c^2 - 256*a^6*b
^2*c^3 - 96*a^5*b^3*c^3 - 12*a^4*b^4*c^3 + 256*a^7*c^4 + 128*a^6*b*c^4 + 48
*a^5*b^2*c^4 - 64*a^6*c^5)*abs(c)) + 1/16*(3*(sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*b^8 - 17*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6*c - 2*sqr
t(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7*c + 2*b^8*c + 116*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + 26*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a*b^5*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c^2 - 34*a*b^
6*c^2 - 2*b^7*c^2 - 368*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^3
 - 128*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^3 - 13*sqrt(2)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^3 + 232*a^2*b^4*c^3 + 30*a*b^5*c^3 + 4
48*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^4 + 224*sqrt(2)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^3*b*c^4 + 64*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c
)*a^2*b^2*c^4 - 736*a^3*b^2*c^4 - 176*a^2*b^3*c^4 - 112*sqrt(2)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^3*c^5 + 896*a^4*c^5 + 352*a^3*b*c^5 + sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^7 - 15*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c - 2*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^6*c + 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*b^5*c^2 - 176*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^3*b*c^3 - 88*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a^2*b^2*c^3 - 11*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a*b^3*c^3 + 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*a^2*b*c^4 - 2*(b^2 - 4*a*c)*b^6*c + 26*(b^2 - 4*a*c)*a*b^4*c^2
 + 2*(b^2 - 4*a*c)*b^5*c^2 - 128*(b^2 - 4*a*c)*a^2*b^2*c^3 - 22*(b^2 - 4*a*
c)*a*b^3*c^3 + 224*(b^2 - 4*a*c)*a^3*c^4 + 88*(b^2 - 4*a*c)*a^2*b*c^4)*A +
(sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^7 - 24*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^2*b^5*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^
6*c + 2*a*b^7*c + 144*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^3*c^2 +
 40*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c^2 + sqrt(2)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a*b^5*c^2 - 48*a^2*b^5*c^2 - 2*a*b^6*c^2 - 256*sqrt(
2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b*c^3 - 128*sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^3*b^2*c^3 - 20*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^
2*b^3*c^3 + 288*a^3*b^3*c^3 + 44*a^2*b^4*c^3 + 64*sqrt(2)*sqrt(b*c - sqrt(b
^2 - 4*a*c)*c)*a^3*b*c^4 - 512*a^4*b*c^4 - 64*a^3*b^2*c^4 - 320*a^4*c^5 + s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^6 - 22*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^4*c - 2*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^5*c + 32*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^2*c^2 + 36*sqrt(2)*sqrt(b
^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c^2 + sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c^2 + 160*sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*c^3 + 80*sqrt(2)*sqrt(b^2 - 4*a
*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^3 - 18*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^3 - 40*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^4 - 2*(b^2 - 4*a*c)*a*b^5*c + 40*(b
^2 - 4*a*c)*a^2*b^3*c^2 + 2*(b^2 - 4*a*c)*a*b^4*c^2 - 128*(b^2 - 4*a*c)*a^3
*b*c^3 - 36*(b^2 - 4*a*c)*a^2*b^2*c^3 - 80*(b^2 - 4*a*c)*a^3*c^4)*B)*arctan
(2*sqrt(1/2)*sqrt(x)/sqrt((a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2 - sqrt((a^2
*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)^2 - 4*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^
2)*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)))/(a^2*b^4*c - 8*a^3*b^2*c^2 +
16*a^4*c^3)))/((a^3*b^8 - 16*a^4*b^6*c - 2*a^3*b^7*c + 96*a^5*b^4*c^2 + 24*
a^4*b^5*c^2 + a^3*b^6*c^2 - 256*a^6*b^2*c^3 - 96*a^5*b^3*c^3 - 12*a^4*b^4*c
^3 + 256*a^7*c^4 + 128*a^6*b*c^4 + 48*a^5*b^2*c^4 - 64*a^6*c^5)*abs(c)) + 1
/4*(B*a*b^2*c^2*x^(7/2) + 3*A*b^3*c^2*x^(7/2) + 20*B*a^2*c^3*x^(7/2) - 24*A
*a*b*c^3*x^(7/2) + 2*B*a*b^3*c*x^(5/2) + 6*A*b^4*c*x^(5/2) + 28*B*a^2*b*c^2
*x^(5/2) - 49*A*a*b^2*c^2*x^(5/2) + 28*A*a^2*c^3*x^(5/2) + B*a*b^4*x^(3/2)
+ 3*A*b^5*x^(3/2) + 5*B*a^2*b^2*c*x^(3/2) - 20*A*a*b^3*c*x^(3/2) + 36*B*a^3
*c^2*x^(3/2) - 4*A*a^2*b*c^2*x^(3/2) - B*a^2*b^3*sqrt(x) + 5*A*a*b^4*sqrt(x
) + 16*B*a^3*b*c*sqrt(x) - 37*A*a^2*b^2*c*sqrt(x) + 44*A*a^3*c^2*sqrt(x))/(
(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*(c*x^2 + b*x + a)^2)
```

maple [B] time = 0.84, size = 11936, normalized size = 25.50

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\frac{(3(b^4c^2 - 9ab^2c^3 + 28a^2c^4)A + (ab^3c^2 - 16a^2bc^3)B)x^{\frac{9}{2}} + (3(2b^5c - 17ab^3c^2 + 48a^2bc^3)A + (2ab^4c - 31a^2}{4(a^5b^4 - 8a^6b^2c + 16a^7c^2 + (a^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^3/x^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*((3*(b^4*c^2 - 9*a*b^2*c^3 + 28*a^2*c^4)*A + (a*b^3*c^2 - 16*a^2*b*c^3)
*B)*x^(9/2) + (3*(2*b^5*c - 17*a*b^3*c^2 + 48*a^2*b*c^3)*A + (2*a*b^4*c - 3
1*a^2*b^2*c^2 + 20*a^3*c^3)*B)*x^(7/2) + ((3*b^6 - 15*a*b^4*c - 19*a^2*b^2*
c^2 + 196*a^3*c^3)*A + (a*b^5 - 12*a^2*b^3*c - 4*a^3*b*c^2)*B)*x^(5/2) + 8*
(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2)*A*sqrt(x) + ((9*a*b^5 - 74*a^2*b^3*c +
 164*a^3*b*c^2)*A + 3*(a^2*b^4 - 9*a^3*b^2*c + 12*a^4*c^2)*B)*x^(3/2))/(a^5
*b^4 - 8*a^6*b^2*c + 16*a^7*c^2 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4
)*x^4 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^3 + (a^3*b^6 - 6*a^4
*b^4*c + 32*a^6*c^3)*x^2 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x) - in
tegrate(1/8*((3*(b^4*c - 9*a*b^2*c^2 + 28*a^2*c^3)*A + (a*b^3*c - 16*a^2*b*
c^2)*B)*x^(3/2) + (3*(b^5 - 10*a*b^3*c + 36*a^2*b*c^2)*A + (a*b^4 - 17*a^2*
b^2*c - 20*a^3*c^2)*B)*sqrt(x))/(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2 + (a^3*
b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)*x^2 + (a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b
*c^2)*x), x)
```

mupad [B] time = 5.81, size = 22946, normalized size = 49.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(1/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] ((x^(3/2)*(3*A*b^5 + 36*B*a^3*c^2 + B*a*b^4 - 20*A*a*b^3*c - 4*A*a^2*b*c^2
+ 5*B*a^2*b^2*c))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^(1/2)*(5*A*b^
4 + 44*A*a^2*c^2 - B*a*b^3 - 37*A*a*b^2*c + 16*B*a^2*b*c))/(4*a*(b^4 + 16*a
^2*c^2 - 8*a*b^2*c)) + (x^(5/2)*(28*A*a^2*c^3 + 6*A*b^4*c + 2*B*a*b^3*c - 4
9*A*a*b^2*c^2 + 28*B*a^2*b*c^2))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (
c*x^(7/2)*(20*B*a^2*c^2 + 3*A*b^3*c - 24*A*a*b*c^2 + B*a*b^2*c))/(4*a^2*(b^
4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x
+ 2*b*c*x^3) + atan(((((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2
*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c
^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8
+ 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*
a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 +
 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*
a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 +
9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2
- 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^
5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b
^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
 b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^
```

```
2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^
2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*
b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c
 - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*
A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290
240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b
^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c
 - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*
c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^1
2*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 +
 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64
*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 -
81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c
^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c -
 b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13
*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*
b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2
*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 11
40*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 4377
6*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881
280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b
^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5
580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1
430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7
 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*
B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-
(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c
 + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*
b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^
8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8
*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*
a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4
 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*
a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256
*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15
)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 5
70960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6
 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(
4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a
^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^
7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*
a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c -
1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*
a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A
*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 516096
0*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*
(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c -
 b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a
^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5
 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621
440*a^14*b^2*c^9)))^(1/2)*1i - (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 +
 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A
*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^
8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 -
 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(
a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c
^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a
^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2
*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*
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a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040
*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*
(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3
+ 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 +
1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 1548288
0*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c
*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3
 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*
c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-
(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a
^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 104
8576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 537
60*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12
*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*
b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*
b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96
*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*
(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^
2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 962841
6*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 4
41*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^
(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*
c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*
c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55
*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)
^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^
10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^
8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1
/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*
a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*
a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 25
8048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a
^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 +
 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*
c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2
*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 -
 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4
*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c
 - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^
13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^
6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a
^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) +
1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43
776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 68
81280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3
*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) +
 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 -
 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^
7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*
A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*
(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18
*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^1
0*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*
c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i)/((((1048576*B*a^9*b*c^8 - 5505024*A
*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4
- 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 86
50752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5
*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*
c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280
*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^
19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 69
21*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 28
51776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7
 + 27095040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^
2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5
*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*
b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c
 - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25
*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^
4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*
B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*
a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) -
 288*A*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*
b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14
*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 19
66080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(
65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 +
40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*
b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 +
9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2
- 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^
5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b
^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c -
 b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^
2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^
2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*
b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c
- b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*
A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290
240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b
^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c
- 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*
c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^1
2*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 +
 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2
*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^
2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5
 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a
*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c +
96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^
4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*
A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628
416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 +
 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15
)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^
9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^
3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 -
55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^1
5)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*
b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*
a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^
(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*
B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 4
0*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 -
258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120
*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (567*A^3*b^7*c^5 + 8000*B^3
*a^5*c^7 + 67824*A^3*a^2*b^3*c^7 - 35*B^3*a^2*b^6*c^4 - 84*B^3*a^3*b^4*c^5
+ 12720*B^3*a^4*b^2*c^6 + 141120*A^2*B*a^4*c^8 - 315*A^2*B*b^8*c^4 - 10368*
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A^3*a*b^5*c^6 - 169344*A^3*a^3*b*c^8 - 210*A*B^2*a*b^7*c^4 - 116160*A*B^2*a
^4*b*c^7 + 6237*A^2*B*a*b^6*c^5 + 1764*A*B^2*a^2*b^5*c^5 + 4608*A*B^2*a^3*b
^3*c^6 - 42372*A^2*B*a^2*b^4*c^6 + 96048*A^2*B*a^3*b^2*c^7)/(32*(a^4*b^12 +
 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*
a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c
^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 5068
80*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*
A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c
^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(
64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b
^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B
^2*a^2*b^17 + 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2
*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*
A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 2709
5040*A^2*a^8*b^3*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*
b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*
c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^
6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 154
82880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a
^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12
*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*
b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*
c*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A
*B*a^2*b^16*c - 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 +
 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 +
 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*
a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*
a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*
a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c
 + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*
b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 7758
0*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 96
28416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8
 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^
15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*
b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*
b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9
 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)
^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^
5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*
B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15
)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*
A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 -
 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4
 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 29491
20*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c
^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*
b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180
*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c
^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6
*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*A^2*b^4*(-(4
*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^
3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^
2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 + 441*A
^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2
) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4
+ 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7
+ 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2
*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/
2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c
^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^
4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
+ 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c - 108*A*B*a^2*
b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*
b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048
*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*
b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)))*(-(9*A^2*b^19 + B^2*a^2*b^17 + 9*
A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 -
77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5
+ 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3
*c^8 + 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^2*(-(4*a*c - b
^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*
a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*
a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*
c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 - 25*B^2*a^3*c*(-(4*a*c -
b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*
B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 129024
0*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 - 99*A^2*a*b^2*c*(-(4*a*c - b^2
)^15)^(1/2) + 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c -
108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^
10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*
c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2
949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*2i + atan(((((1048576*B
*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*b^12*c^3 +
 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*c^6 - 5849
088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2304*B*a^4*
b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*a^7*b^5*c^
6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c +
240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5))
- (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960
*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 210
95424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c
 - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^
13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7
*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*
c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 17203
20*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b
^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^
6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B
*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*
a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)
^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^
16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 86
0160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a
^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^5*b^9*c^3
- 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*(a^4*b^8 +
 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*
b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 +
6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 -
2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^
7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) -
B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a
^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^
8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17
*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 +
25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*
a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*
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A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^
2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2)
 - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^
5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^
14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 -
1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)
 + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6 + 1530*A^2
*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^3*b^4*c^4
+ 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4 + 1104*A*B
*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8 + 256*a^8
*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^2*b^19 + B
^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2
*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*
A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 2709
5040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*
b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*
c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^
6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 154
82880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a
^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12
*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*
b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*
c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A
*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 +
 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 +
 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*
a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*1i - ((
(1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*a^3*
b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*b^6*
c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2 - 2
304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 737280*B*
a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5
*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*
b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^
2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^
3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7
*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^
2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*
B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B
^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280
*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15
*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580
*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430
784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5
160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a
*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*
a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c +
720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^1
0*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 -
 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 1280*a^
5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))/(8*
(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))
*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B
*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b
^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*
a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15
)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 1
0160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680
960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*
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A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^1
0*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 -
59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5
+ 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c
^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)
^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2)
)/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7
680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*
b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^
9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*c^6
+ 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^2*a^
3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*c^4
+ 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4*b^8
 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(9*A^
2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18
+ 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4
- 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*
c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2)
- B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2
*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*
a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^
17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8
+ 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*
B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 286003
2*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*
A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/
2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(
a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*
b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*c^6
- 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/
2)*1i)/((((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5
568*A*a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*
A*a^6*b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^
13*c^2 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 +
 737280*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^
6 - 24*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 -
 6144*a^9*b^2*c^5)) - (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(
4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a
^3*b^13*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A
^2*a^6*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*
A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/
2) + 1140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4
 + 43776*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7
 + 6881280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^
2*a^3*b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1
/2) + 5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*
c^4 - 1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b
^4*c^7 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2
*b*c*(-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6
*b^18*c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 25804
8*a^10*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13
*b^4*c^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2
 + 1280*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3
*c^6))/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*
b^2*c^3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/
2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960
*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 210
95424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c
 - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^
13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7
*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*
c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 17203
20*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b
^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^
6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B
*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*
a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)
^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^
16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 86
0160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a
^14*b^2*c^9)))^(1/2) + (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^
2*a^5*c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 -
 34*B^2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^
2*b^5*c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(
8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)
))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A
*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4
*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^
2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^
15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 -
 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 6
80960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 36
9*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a
^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2
- 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^
5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2
*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^
2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/
2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 -
 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^1
1*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*
c^9)))^(1/2) - (567*A^3*b^7*c^5 + 8000*B^3*a^5*c^7 + 67824*A^3*a^2*b^3*c^7
- 35*B^3*a^2*b^6*c^4 - 84*B^3*a^3*b^4*c^5 + 12720*B^3*a^4*b^2*c^6 + 141120*
A^2*B*a^4*c^8 - 315*A^2*B*b^8*c^4 - 10368*A^3*a*b^5*c^6 - 169344*A^3*a^3*b*
c^8 - 210*A*B^2*a*b^7*c^4 - 116160*A*B^2*a^4*b*c^7 + 6237*A^2*B*a*b^6*c^5 +
 1764*A*B^2*a^2*b^5*c^5 + 4608*A*B^2*a^3*b^3*c^6 - 42372*A^2*B*a^2*b^4*c^6
+ 96048*A^2*B*a^3*b^2*c^7)/(32*(a^4*b^12 + 4096*a^10*c^6 - 24*a^5*b^10*c +
240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*a^9*b^2*c^5))
+ (((1048576*B*a^9*b*c^8 - 5505024*A*a^9*c^9 + 192*A*a^2*b^14*c^2 - 5568*A*
a^3*b^12*c^3 + 70656*A*a^4*b^10*c^4 - 506880*A*a^5*b^8*c^5 + 2211840*A*a^6*
b^6*c^6 - 5849088*A*a^7*b^4*c^7 + 8650752*A*a^8*b^2*c^8 + 64*B*a^3*b^13*c^2
 - 2304*B*a^4*b^11*c^3 + 30720*B*a^5*b^9*c^4 - 204800*B*a^6*b^7*c^5 + 73728
0*B*a^7*b^5*c^6 - 1376256*B*a^8*b^3*c^7)/(64*(a^4*b^12 + 4096*a^10*c^6 - 24
*a^5*b^10*c + 240*a^6*b^8*c^2 - 1280*a^7*b^6*c^3 + 3840*a^8*b^4*c^4 - 6144*
a^9*b^2*c^5)) + (x^(1/2)*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c
- b^2)^15)^(1/2) + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^1
3*c^3 + 570960*A^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6
*b^7*c^6 - 21095424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^
2*c^2*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1
140*B^2*a^4*b^13*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 437
76*B^2*a^7*b^7*c^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 688
1280*A*B*a^10*c^9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*
b^15*c - 1720320*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) +
5580*A*B*a^3*b^14*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 -
1430784*A*B*a^6*b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7
 - 5160960*A*B*a^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A
*B*a*b^3*(-(4*a*c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(
-(4*a*c - b^2)^15)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*
c + 720*a^7*b^16*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10
*b^10*c^5 + 860160*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c
^8 - 2621440*a^14*b^2*c^9)))^(1/2)*(65536*a^9*b*c^7 - 64*a^4*b^11*c^2 + 128
0*a^5*b^9*c^3 - 10240*a^6*b^7*c^4 + 40960*a^7*b^5*c^5 - 81920*a^8*b^3*c^6))
/(8*(a^4*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^
3)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6
*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a
^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*
A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2
)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2
 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 -
 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 -
369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2
*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^
2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*
c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b
^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c -
b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(
1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2
 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a
^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^
2*c^9)))^(1/2) - (x^(1/2)*(14112*A^2*a^4*c^7 + 9*A^2*b^8*c^3 - 800*B^2*a^5*
c^6 + 1530*A^2*a^2*b^4*c^5 - 6192*A^2*a^3*b^2*c^6 + B^2*a^2*b^6*c^3 - 34*B^
2*a^3*b^4*c^4 + 1472*B^2*a^4*b^2*c^5 - 180*A^2*a*b^6*c^4 - 162*A*B*a^2*b^5*
c^4 + 1104*A*B*a^3*b^3*c^5 + 6*A*B*a*b^7*c^3 - 6816*A*B*a^4*b*c^6))/(8*(a^4
*b^8 + 256*a^8*c^4 - 16*a^5*b^6*c + 96*a^6*b^4*c^2 - 256*a^7*b^2*c^3)))*(-(
9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 6*A*B*a*b
^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A^2*a^4*b^11*
c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095424*A^2*a^7*
b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c - b^2)^15)^(1
/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13*c^2 - 10160
*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c^5 - 680960*
B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^9 - 369*A^2*
a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320*B^2*a^10*b*
c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^14*c^2 - 5928
0*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*b^8*c^5 + 28
60032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a^9*b^2*c^8 +
 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*c - b^2)^15)
^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^15)^(1/2))/(1
28*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16*c^2 - 7680*
a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 860160*a^11*b^8*
c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^14*b^2*c^9)))
^(1/2)))*(-(9*A^2*b^19 + B^2*a^2*b^17 - 9*A^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
 + 6*A*B*a*b^18 + 6921*A^2*a^2*b^15*c^2 - 77580*A^2*a^3*b^13*c^3 + 570960*A
^2*a^4*b^11*c^4 - 2851776*A^2*a^5*b^9*c^5 + 9628416*A^2*a^6*b^7*c^6 - 21095
424*A^2*a^7*b^5*c^7 + 27095040*A^2*a^8*b^3*c^8 - 441*A^2*a^2*c^2*(-(4*a*c -
 b^2)^15)^(1/2) - B^2*a^2*b^2*(-(4*a*c - b^2)^15)^(1/2) + 1140*B^2*a^4*b^13
*c^2 - 10160*B^2*a^5*b^11*c^3 + 34880*B^2*a^6*b^9*c^4 + 43776*B^2*a^7*b^7*c
^5 - 680960*B^2*a^8*b^5*c^6 + 1863680*B^2*a^9*b^3*c^7 + 6881280*A*B*a^10*c^
9 - 369*A^2*a*b^17*c - 15482880*A^2*a^9*b*c^9 - 55*B^2*a^3*b^15*c - 1720320
*B^2*a^10*b*c^8 + 25*B^2*a^3*c*(-(4*a*c - b^2)^15)^(1/2) + 5580*A*B*a^3*b^1
4*c^2 - 59280*A*B*a^4*b^12*c^3 + 377280*A*B*a^5*b^10*c^4 - 1430784*A*B*a^6*
b^8*c^5 + 2860032*A*B*a^7*b^6*c^6 - 1290240*A*B*a^8*b^4*c^7 - 5160960*A*B*a
^9*b^2*c^8 + 99*A^2*a*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 6*A*B*a*b^3*(-(4*a*
c - b^2)^15)^(1/2) - 288*A*B*a^2*b^16*c + 108*A*B*a^2*b*c*(-(4*a*c - b^2)^1
5)^(1/2))/(128*(a^5*b^20 + 1048576*a^15*c^10 - 40*a^6*b^18*c + 720*a^7*b^16
*c^2 - 7680*a^8*b^14*c^3 + 53760*a^9*b^12*c^4 - 258048*a^10*b^10*c^5 + 8601
60*a^11*b^8*c^6 - 1966080*a^12*b^6*c^7 + 2949120*a^13*b^4*c^8 - 2621440*a^1
```

```
4*b^2*c^9)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**3/x**(1/2),x)
```

```
[Out] Timed out
```

3.1028 $\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=664

$$-\frac{-A\left(36a^2c^2-35ab^2c+5b^4\right)+cx\left(aB\left(b^2-28ac\right)-A\left(5b^3-32abc\right)\right)+abB\left(b^2-16ac\right)}{4a^2\sqrt{x}\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{3\left(abB\left(b^2-8ac\right)-A\right.}{4a^3\sqrt{x}}$$

```
[Out] 3/4*(a*b*B*(-8*a*c+b^2)-A*(60*a^2*c^2-37*a*b^2*c+5*b^4))/a^3/(-4*a*c+b^2)^2
/x^(1/2)+1/2*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/(c*x^2+b*
x+a)^2/x^(1/2)+1/4*(-a*b*B*(-16*a*c+b^2)+A*(36*a^2*c^2-35*a*b^2*c+5*b^4)-c*
(a*B*(-28*a*c+b^2)-A*(-32*a*b*c+5*b^3))*x)/a^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)
/x^(1/2)+3/8*arctan(2^(1/2)*c^(1/2)*x^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2))*c
^(1/2)*(a*B*(b^4-10*a*b^2*c+56*a^2*c^2+b^3*(-4*a*c+b^2)^(1/2)-8*a*b*c*(-4*a
*c+b^2)^(1/2))-A*(5*b^5-47*a*b^3*c+124*a^2*b*c^2+5*b^4*(-4*a*c+b^2)^(1/2)-3
7*a*b^2*c*(-4*a*c+b^2)^(1/2)+60*a^2*c^2*(-4*a*c+b^2)^(1/2)))/a^3/(-4*a*c+b^
2)^(5/2)*2^(1/2)/(b-(-4*a*c+b^2)^(1/2))^(1/2)-3/8*arctan(2^(1/2)*c^(1/2)*x^
(1/2)/(b+(-4*a*c+b^2)^(1/2))^(1/2))*c^(1/2)*(a*B*(b^4-10*a*b^2*c+56*a^2*c^2
-b^3*(-4*a*c+b^2)^(1/2)+8*a*b*c*(-4*a*c+b^2)^(1/2))-A*(5*b^5-47*a*b^3*c+124
*a^2*b*c^2-5*b^4*(-4*a*c+b^2)^(1/2)+37*a*b^2*c*(-4*a*c+b^2)^(1/2)-60*a^2*c^
2*(-4*a*c+b^2)^(1/2)))/a^3/(-4*a*c+b^2)^(5/2)*2^(1/2)/(b+(-4*a*c+b^2)^(1/2)
)^(1/2)
```

Rubi [A] time = 1.71, antiderivative size = 664, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.217, Rules used = {822, 828, 826, 1166, 205}

$$-\frac{-A\left(36a^2c^2-35ab^2c+5b^4\right)+cx\left(aB\left(b^2-28ac\right)-A\left(5b^3-32abc\right)\right)+abB\left(b^2-16ac\right)}{4a^2\sqrt{x}\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{3\left(abB\left(b^2-8ac\right)-A\right.}{4a^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x]
```

```
[Out] (3*(a*b*B*(b^2 - 8*a*c) - A*(5*b^4 - 37*a*b^2*c + 60*a^2*c^2)))/(4*a^3*(b^2
 - 4*a*c)^2*Sqrt[x]) + (A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x)/(2*a*(
b^2 - 4*a*c)*Sqrt[x]*(a + b*x + c*x^2)^2) - (a*b*B*(b^2 - 16*a*c) - A*(5*b^
4 - 35*a*b^2*c + 36*a^2*c^2) + c*(a*B*(b^2 - 28*a*c) - A*(5*b^3 - 32*a*b*c)
)*x)/(4*a^2*(b^2 - 4*a*c)^2*Sqrt[x]*(a + b*x + c*x^2)) + (3*Sqrt[c]*(a*B*(b
^4 - 10*a*b^2*c + 56*a^2*c^2 + b^3*Sqrt[b^2 - 4*a*c] - 8*a*b*c*Sqrt[b^2 - 4
*a*c]) - A*(5*b^5 - 47*a*b^3*c + 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] -
37*a*b^2*c*Sqrt[b^2 - 4*a*c] + 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[
2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^3*(b^2 - 4*a
*c)^(5/2)*Sqrt[b - Sqrt[b^2 - 4*a*c]]) - (3*Sqrt[c]*(a*B*(b^4 - 10*a*b^2*c
+ 56*a^2*c^2 - b^3*Sqrt[b^2 - 4*a*c] + 8*a*b*c*Sqrt[b^2 - 4*a*c]) - A*(5*b^
5 - 47*a*b^3*c + 124*a^2*b*c^2 - 5*b^4*Sqrt[b^2 - 4*a*c] + 37*a*b^2*c*Sqrt[
b^2 - 4*a*c] - 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/(4*Sqrt[2]*a^3*(b^2 - 4*a*c)^(5/2)*Sqrt[b
 + Sqrt[b^2 - 4*a*c]])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{x^{3/2}\left(a+bx+cx^2\right)^3}\,dx = \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-5Ab^2+abB+18aAc\right)-\frac{7}{2}(Ab-2aB)cx}{x^{3/2}\left(a+bx+cx^2\right)^2}\,dx}{2a\left(b^2-4ac\right)}$$

$$= \frac{Ab^2-abB-2aAc+(Ab-2aB)cx}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)^2} - \frac{abB\left(b^2-16ac\right)-A\left(5b^4-35ab^2c+36a^2c^2\right)}{4a^2\left(b^2-4ac\right)^2\sqrt{x}}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)c}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)c}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)c}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)}$$

$$= \frac{3\left(abB\left(b^2-8ac\right)-A\left(5b^4-37ab^2c+60a^2c^2\right)\right)}{4a^3\left(b^2-4ac\right)^2\sqrt{x}} + \frac{Ab^2-abB-2aAc+(Ab-2aB)c}{2a\left(b^2-4ac\right)\sqrt{x}\,\left(a+bx+cx^2\right)}$$

Mathematica [**A**] time = 2.31, size = 628, normalized size = 0.95

$$\frac{\frac{A\left(-36a^2c^2+35ab^2c+32abc^2x-5b^4-5b^3cx\right)+aB\left(-16abc-28ac^2x+b^3+b^2cx\right)}{a\sqrt{x}\left(4ac-b^2\right)(a+x(b+cx))} + \frac{\frac{3\left(A\left(-60a^2c^2+37ab^2c-5b^4\right)+abB\left(b^2-8ac\right)\right)}{\sqrt{x}} + \frac{3\sqrt{c}\left(-\frac{\left(A\left(60a^2c^2\sqrt{b^2-4ac}+124a^2bc^2\right.\right.}{}\right.}{}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((2*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(Sqrt[x]*(a + x*(b + c*
x))^2) + (a*B*(b^3 - 16*a*b*c + b^2*c*x - 28*a*c^2*x) + A*(-5*b^4 + 35*a*b^
2*c - 36*a^2*c^2 - 5*b^3*c*x + 32*a*b*c^2*x))/(a*(-b^2 + 4*a*c)*Sqrt[x]*(a
+ x*(b + c*x))) + ((3*(a*b*B*(b^2 - 8*a*c) + A*(-5*b^4 + 37*a*b^2*c - 60*a^
2*c^2)))/Sqrt[x] + (3*Sqrt[c]*(-(((-(a*B*(b^4 - 10*a*b^2*c + 56*a^2*c^2 + b
^3*Sqrt[b^2 - 4*a*c] - 8*a*b*c*Sqrt[b^2 - 4*a*c])) + A*(5*b^5 - 47*a*b^3*c
+ 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] - 37*a*b^2*c*Sqrt[b^2 - 4*a*c] +
60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[x])/Sqrt[b - Sq
rt[b^2 - 4*a*c]]])/Sqrt[b - Sqrt[b^2 - 4*a*c]]) - ((a*B*(b^4 - 10*a*b^2*c +
 56*a^2*c^2 - b^3*Sqrt[b^2 - 4*a*c] + 8*a*b*c*Sqrt[b^2 - 4*a*c]) + A*(-5*b^
5 + 47*a*b^3*c - 124*a^2*b*c^2 + 5*b^4*Sqrt[b^2 - 4*a*c] - 37*a*b^2*c*Sqrt[
b^2 - 4*a*c] + 60*a^2*c^2*Sqrt[b^2 - 4*a*c]))*ArcTan[(Sqrt[2]*Sqrt[c]*Sqrt[
x])/Sqrt[b + Sqrt[b^2 - 4*a*c]]])/Sqrt[b + Sqrt[b^2 - 4*a*c]]))/(Sqrt[2]*Sq
rt[b^2 - 4*a*c]))/(a^2*(b^2 - 4*a*c)))/(4*a*(b^2 - 4*a*c))
```

fricas [**B**] time = 139.07, size = 12534, normalized size = 18.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")

[Out] 1/8*(3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^5 + 2*(a^3*b
^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*
c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^2 + (a^5*b^4 - 8*a^6*
b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1
680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33
*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*
c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^
2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a^8*b^8*c +
160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5)*sqr
t((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11
 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b
 + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^
2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7
*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 +
175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2
*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5
*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125
*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^
4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c + 160
*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5))*log(2
7/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75*A^2*B*a*b^16 - 125*A^3
*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*(1372*B^3*a^10 - 15204*
A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^3)*c^7 + 16*(7112*B^3*a
^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4 - 446671*A^3*a^6*b^5)*c
^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 811446*A^2*B*a^6*b^6 - 1
115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 87308*A*B^2*a^6*b^7 + 37747
1*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*B^3*a^6*b^8 - 17704*A*B
^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b^11)*c^3 + (464*B^3*a^5
*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 - 49360*A^3*a^2*b^13)*c^
2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2*B*a^2*b^14 - 3775*A^3*
a*b^15)*c - (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^15*c^8 - 4096*(11*B*a^1
5*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223*A*a^13*b^4)*c^6 - 256*
(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^12*b^7 - 143*A*a^11*b^8
)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2*(212*B*a^10*b^11 - 100
3*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)*c)*sqrt((B^4*a^4*b^8 -
 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12
+ 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b
^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 5770
16*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^
3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b
^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 2
7980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3
*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/
(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^1
8*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^
11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^
2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3
*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3
*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a^8*b^
8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^
5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*
a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B
*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*
A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B
^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*
b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 92
28*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B
^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9
+ 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a
^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c
 + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5))
 + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b - 7*A^4*a^4*b^2)*c^8 - (3
8416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*a^5*b^2 - 1018856*A^3*B
*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6*b^2 - 239896*A*B^3*a^5
*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^5 - 571030*A^4*a^2*b^6)
*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251349*A^2*B^2*a^3*b^6 - 3
44630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*B^4*a^4*b^6 - 2161*A*B^
3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^9 - 1375*A^4*b^10)*c^4
- 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*b^10 - 125*A^3*B*b^11)*
c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*x^5
 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6 - 6*a^4*b^4*
c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*x^2 + (a^5*b
^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10 + 25*A
^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 16*A*B*a
^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 + 143*A^
2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*b^7)*c^
2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10 - 20*a
^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^
12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A
^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*
A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 21
8886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(
539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B
*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5
 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*
(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2
*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 -
640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 - 20*a^8*
b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 1024*a^12*
c^5))*log(-27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75*A^2*B*a*b^
16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*(1372*B^3*a
^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^3)*c^7 + 16
*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4 - 446671*A^
3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 811446*A^2*B
*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 87308*A*B^2*a^6
*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*B^3*a^6*b^8
 - 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b^11)*c^3 +
(464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 - 49360*A^3*
a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2*B*a^2*b^14
 - 3775*A^3*a*b^15)*c - (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^15*c^8 - 40
96*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223*A*a^13*b^4
)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^12*b^7 - 14
3*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2*(212*B*a^1
0*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)*c)*sqrt((B
^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 6
25*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 6
94*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^
6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2
 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 1756
55*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2
*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6
 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4
*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^
3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10*A*B*a*b^10
 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*b - 1
6*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*b^4 +
 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2*a^2*
b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c + (a^7*b^10
 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 -
1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10
- 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7
 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7
*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^
4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 16801
6*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*
a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c
^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^
3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6
*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^10 -
20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4 - 102
4*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b - 7*A^4*a^4*b
^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*a^5*b^2 - 1
018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6*b^2 - 2398
96*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^5 - 571030*
A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251349*A^2*B^2
*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*B^4*a^4*b^6
 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^9 - 1375*A^
4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*b^10 - 125*
A^3*B*b^11)*c^3)*sqrt(x)) + 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*
a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*b^6
- 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*
x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9 - 10*A*B*a
*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^2*a^6*
b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*B*a^4*
b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 1298*A^2
*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c - (a^7
*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c
^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*
b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^
2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^
3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^
4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 -
168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A
*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b
^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 50
50*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^1
6*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(a^7*b^
10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^2*c^4
- 1024*a^12*c^5))*log(27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a^2*b^15 + 75
*A^2*B*a*b^16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*b)*c^8 - 64*
(1372*B^3*a^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 88823*A^3*a^7*b^
3)*c^7 + 16*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^2*B*a^7*b^4
- 446671*A^3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2*a^7*b^5 + 8
11446*A^2*B*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^7*b^6 - 8730
8*A*B^2*a^6*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^4 - 3*(1295*
B^3*a^6*b^8 - 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 120911*A^3*a^3*b
^11)*c^3 + (464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*B*a^3*b^12 -
 49360*A^3*a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^13 + 2310*A^2
*B*a^2*b^14 - 3775*A^3*a*b^15)*c + (B*a^8*b^15 - 5*A*a^7*b^16 - 122880*A*a^
15*c^8 - 4096*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^14*b^3 - 223
*A*a^13*b^4)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 + 480*(32*B*a^
12*b^7 - 143*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b^10)*c^3 + 2
*(212*B*a^10*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152*A*a^8*b^14)
*c)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10 - 500*A^3*B
*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^7 - 382*A^3*
B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^7*b + 218886
*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c^4 - 2*(539*
B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4
*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9
228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*
B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9
 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^6*c^2 - 640*
a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*a^2*b^9 - 10
*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*(2*B^
2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 - 68*A*
B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6 + 12
98*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^9)*c
 - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11
*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^
2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*
A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 3743
6*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*
a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*
b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 -
1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4
*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^
8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 1
60*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))/(
a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^11*b^
2*c^4 - 1024*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^3*B*a^5*b -
7*A^4*a^4*b^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439376*A^2*B^2*
a^5*b^2 - 1018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (19208*B^4*a^6
*b^2 - 239896*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*A^3*B*a^3*b^
5 - 571030*A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a^4*b^5 + 251
349*A^2*B^2*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c^5 + 3*(149*
B^4*a^4*b^6 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 16225*A^3*B*a*b^
9 - 1375*A^4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 75*A^2*B^2*a*
b^10 - 125*A^3*B*b^11)*c^3)*sqrt(x)) - 3*sqrt(1/2)*((a^3*b^4*c^2 - 8*a^4*b^
2*c^3 + 16*a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4
 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*
a^6*b*c^2)*x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)*sqrt(-(B^2*a^2*b^9
 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5 + 840*
(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5*b^3 -
68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*a^3*b^6
 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A^2*a*b^
9)*c - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280
*a^11*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A
^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450
*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 -
 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886
*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2
*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b
^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 3157
5*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a
^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*
c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5
)))/(a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 + 1280*a^
11*b^2*c^4 - 1024*a^12*c^5))*log(-27/2*sqrt(1/2)*(B^3*a^3*b^14 - 15*A*B^2*a
^2*b^15 + 75*A^2*B*a*b^16 - 125*A^3*b^17 + 57600*(7*A^2*B*a^9 - 23*A^3*a^8*
b)*c^8 - 64*(1372*B^3*a^10 - 15204*A*B^2*a^9*b + 61326*A^2*B*a^8*b^2 - 8882
3*A^3*a^7*b^3)*c^7 + 16*(7112*B^3*a^9*b^2 - 83292*A*B^2*a^8*b^3 + 330300*A^
2*B*a^7*b^4 - 446671*A^3*a^6*b^5)*c^6 - 4*(15920*B^3*a^8*b^4 - 197004*A*B^2
*a^7*b^5 + 811446*A^2*B*a^6*b^6 - 1115785*A^3*a^5*b^7)*c^5 + 3*(6696*B^3*a^
```

```
7*b^6 - 87308*A*B^2*a^6*b^7 + 377471*A^2*B*a^5*b^8 - 541178*A^3*a^4*b^9)*c^
4 - 3*(1295*B^3*a^6*b^8 - 17704*A*B^2*a^5*b^9 + 80329*A^2*B*a^4*b^10 - 1209
11*A^3*a^3*b^11)*c^3 + (464*B^3*a^5*b^10 - 6609*A*B^2*a^4*b^11 + 31317*A^2*
B*a^3*b^12 - 49360*A^3*a^2*b^13)*c^2 - (32*B^3*a^4*b^12 - 471*A*B^2*a^3*b^1
3 + 2310*A^2*B*a^2*b^14 - 3775*A^3*a*b^15)*c + (B*a^8*b^15 - 5*A*a^7*b^16 -
 122880*A*a^15*c^8 - 4096*(11*B*a^15*b - 79*A*a^14*b^2)*c^7 + 1536*(44*B*a^
14*b^3 - 223*A*a^13*b^4)*c^6 - 256*(169*B*a^13*b^5 - 770*A*a^12*b^6)*c^5 +
480*(32*B*a^12*b^7 - 143*A*a^11*b^8)*c^4 - 80*(41*B*a^11*b^9 - 187*A*a^10*b
^10)*c^3 + 2*(212*B*a^10*b^11 - 1003*A*a^9*b^12)*c^2 - (31*B*a^9*b^13 - 152
*A*a^8*b^14)*c)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9 + 150*A^2*B^2*a^2*b^10
 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^6 - 450*(49*A^2*B^2*a^
7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^4*a^8 - 37436*A*B^3*a^
7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 + 591886*A^4*a^4*b^4)*c
^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*A^2*B^2*a^5*b^4 - 1680
16*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^4*a^6*b^4 - 1344*A*B^3
*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7 + 31575*A^4*a^2*b^8)*
c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^2*B^2*a^3*b^8 - 5050*A
^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^15*b^8*c + 160*a^16*b^
6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a^19*c^5)))*sqrt(-(B^2*
a^2*b^9 - 10*A*B*a*b^10 + 25*A^2*b^11 + 1680*(4*A*B*a^6 - 11*A^2*a^5*b)*c^5
 + 840*(2*B^2*a^6*b - 16*A*B*a^5*b^2 + 33*A^2*a^4*b^3)*c^4 - 105*(8*B^2*a^5
*b^3 - 68*A*B*a^4*b^4 + 143*A^2*a^3*b^5)*c^3 + 3*(63*B^2*a^4*b^5 - 574*A*B*
a^3*b^6 + 1298*A^2*a^2*b^7)*c^2 - 3*(7*B^2*a^3*b^7 - 68*A*B*a^2*b^8 + 165*A
^2*a*b^9)*c - (a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3
 + 1280*a^11*b^2*c^4 - 1024*a^12*c^5)*sqrt((B^4*a^4*b^8 - 20*A*B^3*a^3*b^9
+ 150*A^2*B^2*a^2*b^10 - 500*A^3*B*a*b^11 + 625*A^4*b^12 + 50625*A^4*a^6*c^
6 - 450*(49*A^2*B^2*a^7 - 382*A^3*B*a^6*b + 694*A^4*a^5*b^2)*c^5 + (2401*B^
4*a^8 - 37436*A*B^3*a^7*b + 218886*A^2*B^2*a^6*b^2 - 577016*A^3*B*a^5*b^3 +
 591886*A^4*a^4*b^4)*c^4 - 2*(539*B^4*a^7*b^2 - 9298*A*B^3*a^6*b^3 + 59592*
A^2*B^2*a^5*b^4 - 168016*A^3*B*a^4*b^5 + 175655*A^4*a^3*b^6)*c^3 + 3*(73*B^
4*a^6*b^4 - 1344*A*B^3*a^5*b^5 + 9228*A^2*B^2*a^4*b^6 - 27980*A^3*B*a^3*b^7
 + 31575*A^4*a^2*b^8)*c^2 - 2*(11*B^4*a^5*b^6 - 214*A*B^3*a^4*b^7 + 1560*A^
2*B^2*a^3*b^8 - 5050*A^3*B*a^2*b^9 + 6125*A^4*a*b^10)*c)/(a^14*b^10 - 20*a^
15*b^8*c + 160*a^16*b^6*c^2 - 640*a^17*b^4*c^3 + 1280*a^18*b^2*c^4 - 1024*a
^19*c^5)))/(a^7*b^10 - 20*a^8*b^8*c + 160*a^9*b^6*c^2 - 640*a^10*b^4*c^3 +
1280*a^11*b^2*c^4 - 1024*a^12*c^5)) + 27*(810000*A^4*a^5*c^9 + 405000*(2*A^
3*B*a^5*b - 7*A^4*a^4*b^2)*c^8 - (38416*B^4*a^7 - 422576*A*B^3*a^6*b + 1439
376*A^2*B^2*a^5*b^2 - 1018856*A^3*B*a^4*b^3 - 1957349*A^4*a^3*b^4)*c^7 + (1
9208*B^4*a^6*b^2 - 239896*A*B^3*a^5*b^3 + 955704*A^2*B^2*a^4*b^4 - 1067347*
A^3*B*a^3*b^5 - 571030*A^4*a^2*b^6)*c^6 - (4189*B^4*a^5*b^4 - 56807*A*B^3*a
^4*b^5 + 251349*A^2*B^2*a^3*b^6 - 344630*A^3*B*a^2*b^7 - 77825*A^4*a*b^8)*c
^5 + 3*(149*B^4*a^4*b^6 - 2161*A*B^3*a^3*b^7 + 10380*A^2*B^2*a^2*b^8 - 1622
5*A^3*B*a*b^9 - 1375*A^4*b^10)*c^4 - 21*(B^4*a^3*b^8 - 15*A*B^3*a^2*b^9 + 7
5*A^2*B^2*a*b^10 - 125*A^3*B*b^11)*c^3)*sqrt(x)) - 2*(8*A*a^2*b^4 - 64*A*a^
3*b^2*c + 128*A*a^4*c^2 + 3*(60*A*a^2*c^4 + (8*B*a^2*b - 37*A*a*b^2)*c^3 -
(B*a*b^3 - 5*A*b^4)*c^2)*x^4 - (28*(B*a^3 - 14*A*a^2*b)*c^3 - (49*B*a^2*b^2
 - 227*A*a*b^3)*c^2 + 6*(B*a*b^4 - 5*A*b^5)*c)*x^3 - (3*B*a*b^5 - 15*A*b^6
- 324*A*a^3*c^3 - (4*B*a^3*b + 25*A*a^2*b^2)*c^2 - (20*B*a^2*b^3 - 91*A*a*b
^4)*c)*x^2 - (5*B*a^2*b^4 - 25*A*a*b^5 + 4*(11*B*a^4 - 91*A*a^3*b)*c^2 - (3
7*B*a^3*b^2 - 194*A*a^2*b^3)*c)*x)*sqrt(x))/((a^3*b^4*c^2 - 8*a^4*b^2*c^3 +
 16*a^5*c^4)*x^5 + 2*(a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*x^4 + (a^3*
b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*x^3 + 2*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c
^2)*x^2 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*x)
```

giac [B] time = 3.36, size = 9534, normalized size = 14.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -3/32*((10*b^6*c^2 - 114*a*b^4*c^3 + 416*a^2*b^2*c^4 - 480*a^3*c^5 - 5*sqrt
(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^6 + 57*sqrt(2)*sqrt
(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c + 10*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^5*c - 208*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - 74*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*b^4*c^2 + 240*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*c^3 + 120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 37*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c + sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 60*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 10*(b^2 - 4*a*c)*b^4*c^2 + 74*(b^2 - 4*a*
c)*a*b^2*c^3 - 120*(b^2 - 4*a*c)*a^2*c^4)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c
^2)^2*A - (2*a*b^5*c^2 - 24*a^2*b^3*c^3 + 64*a^3*b*c^4 - sqrt(2)*sqrt(b^2 -
 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^2*b^3*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c + sqrt(b^2 - 4*a*c)*c)*a*b^4*c - 32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 16*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 8*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sq
rt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4*a*c)*a*b^3*c^2 + 16*(b^2 - 4*a*c)
*a^2*b*c^3)*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)^2*B + 2*(5*sqrt(2)*sqrt(b*
c + sqrt(b^2 - 4*a*c)*c)*a^3*b^11 - 102*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c
)*c)*a^4*b^9*c - 10*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^3*b^10*c - 10
*a^3*b^11*c + 836*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + 164
*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 + 5*sqrt(2)*sqrt(b*c +
 sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 + 204*a^4*b^9*c^2 - 3440*sqrt(2)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 1016*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^5*b^6*c^3 - 82*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^
3 - 1672*a^5*b^7*c^3 + 7104*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^3
*c^4 + 2816*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 + 508*sqrt(
2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^5*c^4 + 6880*a^6*b^5*c^4 - 5888*sq
rt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 2944*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 1408*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^6*b^3*c^5 - 14208*a^7*b^3*c^5 + 1472*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^7*b*c^6 + 11776*a^8*b*c^6 + 10*(b^2 - 4*a*c)*a^3*b^9*c - 164*(b^2
 - 4*a*c)*a^4*b^7*c^2 + 1016*(b^2 - 4*a*c)*a^5*b^5*c^3 - 2816*(b^2 - 4*a*c)
*a^6*b^3*c^4 + 2944*(b^2 - 4*a*c)*a^7*b*c^5)*A*abs(a^3*b^4 - 8*a^4*b^2*c +
16*a^5*c^2) - 2*(sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^10 - 21*sqrt
(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^8*c - 2*sqrt(2)*sqrt(b*c + sqrt(b
^2 - 4*a*c)*c)*a^4*b^9*c - 2*a^4*b^10*c + 184*sqrt(2)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a^6*b^6*c^2 + 34*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^5*b^7
*c^2 + sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^4*b^8*c^2 + 42*a^5*b^8*c^2
 - 832*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^4*c^3 - 232*sqrt(2)*sq
rt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 17*sqrt(2)*sqrt(b*c + sqrt(b^2
 - 4*a*c)*c)*a^5*b^6*c^3 - 368*a^6*b^6*c^3 + 1920*sqrt(2)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^8*b^2*c^4 + 736*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7
*b^3*c^4 + 116*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^4*c^4 + 1664*a
^7*b^4*c^4 - 1792*sqrt(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*c^5 - 896*sqr
t(2)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b*c^5 - 368*sqrt(2)*sqrt(b*c + sqr
t(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 3840*a^8*b^2*c^5 + 448*sqrt(2)*sqrt(b*c + s
qrt(b^2 - 4*a*c)*c)*a^8*c^6 + 3584*a^9*c^6 + 2*(b^2 - 4*a*c)*a^4*b^8*c - 34
*(b^2 - 4*a*c)*a^5*b^6*c^2 + 232*(b^2 - 4*a*c)*a^6*b^4*c^3 - 736*(b^2 - 4*a
*c)*a^7*b^2*c^4 + 896*(b^2 - 4*a*c)*a^8*c^5)*B*abs(a^3*b^4 - 8*a^4*b^2*c +
16*a^5*c^2) + (10*a^6*b^14*c^2 - 254*a^7*b^12*c^3 + 2712*a^8*b^10*c^4 - 155
52*a^9*b^8*c^5 + 50432*a^10*b^6*c^6 - 87552*a^11*b^4*c^7 + 63488*a^12*b^2*c
^8 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^14 +
 127*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c +
 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^13*c -
1356*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2
```

```
 - 214*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c
^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^6*b^12*c
^2 + 7776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^8
*c^3 + 1856*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b
^9*c^3 + 107*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*
b^10*c^3 - 25216*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^10*b^6*c^4 - 8128*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^9*b^7*c^4 - 928*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)
*c)*a^8*b^8*c^4 + 43776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^11*b^4*c^5 + 17920*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a^10*b^5*c^5 + 4064*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^9*b^6*c^5 - 31744*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt
(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 15872*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c +
sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 - 8960*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 + sqrt(b^2 - 4*a*c)*c)*a^10*b^4*c^6 + 7936*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^2*c^7 - 10*(b^2 - 4*a*c)*a^6*b^12*c^2 + 2
14*(b^2 - 4*a*c)*a^7*b^10*c^3 - 1856*(b^2 - 4*a*c)*a^8*b^8*c^4 + 8128*(b^2
 - 4*a*c)*a^9*b^6*c^5 - 17920*(b^2 - 4*a*c)*a^10*b^4*c^6 + 15872*(b^2 - 4*a*
c)*a^11*b^2*c^7)*A - (2*a^7*b^13*c^2 - 52*a^8*b^11*c^3 + 624*a^9*b^9*c^4 -
4224*a^10*b^7*c^5 + 16384*a^11*b^5*c^6 - 33792*a^12*b^3*c^7 + 28672*a^13*b*
c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^13 +
26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^11*c + 2
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c - 312
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^9*c^2 - 44
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - s
qrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c^2 + 211
2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^7*c^3 +
448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 +
 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 -
 8192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^11*b^5*c^
4 - 2432*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^10*b^6
*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^9*b^
7*c^4 + 16896*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*a^1
2*b^3*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*c)*
a^11*b^4*c^5 + 1216*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a*c)*
c)*a^10*b^5*c^5 - 14336*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*a
*c)*c)*a^13*b*c^6 - 7168*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 - 4*
a*c)*c)*a^12*b^2*c^6 - 3328*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^2 -
 4*a*c)*c)*a^11*b^3*c^6 + 3584*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c + sqrt(b^
2 - 4*a*c)*c)*a^12*b*c^7 - 2*(b^2 - 4*a*c)*a^7*b^11*c^2 + 44*(b^2 - 4*a*c)*
a^8*b^9*c^3 - 448*(b^2 - 4*a*c)*a^9*b^7*c^4 + 2432*(b^2 - 4*a*c)*a^10*b^5*c
^5 - 6656*(b^2 - 4*a*c)*a^11*b^3*c^6 + 7168*(b^2 - 4*a*c)*a^12*b*c^7)*B)*ar
ctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2 + sqrt(
(a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)^2 - 4*(a^4*b^4 - 8*a^5*b^2*c + 16*a^
6*c^2)*(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)))/(a^3*b^4*c - 8*a^4*b^2*c^
2 + 16*a^5*c^3)))/((a^7*b^10 - 20*a^8*b^8*c - 2*a^7*b^9*c + 160*a^9*b^6*c^2
 + 32*a^8*b^7*c^2 + a^7*b^8*c^2 - 640*a^10*b^4*c^3 - 192*a^9*b^5*c^3 - 16*a
^8*b^6*c^3 + 1280*a^11*b^2*c^4 + 512*a^10*b^3*c^4 + 96*a^9*b^4*c^4 - 1024*a
^12*c^5 - 512*a^11*b*c^5 - 256*a^10*b^2*c^5 + 256*a^11*c^6)*abs(a^3*b^4 - 8
*a^4*b^2*c + 16*a^5*c^2)*abs(c)) + 3/32*((10*b^6*c^2 - 114*a*b^4*c^3 + 416*
a^2*b^2*c^4 - 480*a^3*c^5 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2
 - 4*a*c)*c)*b^6 + 57*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c
)*c)*a*b^4*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)
*b^5*c - 208*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*
b^2*c^2 - 74*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^
3*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*b^4*c^2
 + 240*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*c^3 +
120*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 + 3
7*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^2*c^3 - 60*
```

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sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*c^4 - 10*(b^2
 - 4*a*c)*b^4*c^2 + 74*(b^2 - 4*a*c)*a*b^2*c^3 - 120*(b^2 - 4*a*c)*a^2*c^4)
*(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)^2*A - (2*a*b^5*c^2 - 24*a^2*b^3*c^3 +
 64*a^3*b*c^4 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a
*b^5 + 12*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^3
*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^4*c -
32*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b*c^2 - 16
*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b^2*c^2 - sq
rt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a*b^3*c^2 + 8*sqrt(
2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^2*b*c^3 - 2*(b^2 - 4
*a*c)*a*b^3*c^2 + 16*(b^2 - 4*a*c)*a^2*b*c^3)*(a^3*b^4 - 8*a^4*b^2*c + 16*a
^5*c^2)^2*B - 2*(5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^11 - 102*s
qrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c - 10*sqrt(2)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^3*b^10*c + 10*a^3*b^11*c + 836*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + 164*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*
a^4*b^8*c^2 + 5*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^3*b^9*c^2 - 204*a
^4*b^9*c^2 - 3440*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3 - 101
6*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 - 82*sqrt(2)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^4*b^7*c^3 + 1672*a^5*b^7*c^3 + 7104*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 + 2816*sqrt(2)*sqrt(b*c - sqrt(b^2 -
 4*a*c)*c)*a^6*b^4*c^4 + 508*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^
5*c^4 - 6880*a^6*b^5*c^4 - 5888*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8
*b*c^5 - 2944*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 - 1408*sq
rt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^3*c^5 + 14208*a^7*b^3*c^5 + 147
2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b*c^6 - 11776*a^8*b*c^6 - 10*
(b^2 - 4*a*c)*a^3*b^9*c + 164*(b^2 - 4*a*c)*a^4*b^7*c^2 - 1016*(b^2 - 4*a*c
)*a^5*b^5*c^3 + 2816*(b^2 - 4*a*c)*a^6*b^3*c^4 - 2944*(b^2 - 4*a*c)*a^7*b*c
^5)*A*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2) + 2*(sqrt(2)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^4*b^10 - 21*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b
^8*c - 2*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^4*b^9*c + 2*a^4*b^10*c +
 184*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^6*c^2 + 34*sqrt(2)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^7*c^2 + sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^4*b^8*c^2 - 42*a^5*b^8*c^2 - 832*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*
c)*c)*a^7*b^4*c^3 - 232*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^6*b^5*c^3
 - 17*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^5*b^6*c^3 + 368*a^6*b^6*c^3
 + 1920*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^2*c^4 + 736*sqrt(2)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^3*c^4 + 116*sqrt(2)*sqrt(b*c - sqrt(b^
2 - 4*a*c)*c)*a^6*b^4*c^4 - 1664*a^7*b^4*c^4 - 1792*sqrt(2)*sqrt(b*c - sqrt
(b^2 - 4*a*c)*c)*a^9*c^5 - 896*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*
b*c^5 - 368*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^2*c^5 + 3840*a^8*
b^2*c^5 + 448*sqrt(2)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*c^6 - 3584*a^9*c^
6 - 2*(b^2 - 4*a*c)*a^4*b^8*c + 34*(b^2 - 4*a*c)*a^5*b^6*c^2 - 232*(b^2 - 4
*a*c)*a^6*b^4*c^3 + 736*(b^2 - 4*a*c)*a^7*b^2*c^4 - 896*(b^2 - 4*a*c)*a^8*c
^5)*B*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2) + (10*a^6*b^14*c^2 - 254*a^7*
b^12*c^3 + 2712*a^8*b^10*c^4 - 15552*a^9*b^8*c^5 + 50432*a^10*b^6*c^6 - 875
52*a^11*b^4*c^7 + 63488*a^12*b^2*c^8 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^6*b^14 + 127*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^7*b^12*c + 10*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^6*b^13*c - 1356*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
 sqrt(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - 214*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^7*b^11*c^2 - 5*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
 - sqrt(b^2 - 4*a*c)*c)*a^6*b^12*c^2 + 7776*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(
b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 + 1856*sqrt(2)*sqrt(b^2 - 4*a*c)*sqr
t(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 + 107*sqrt(2)*sqrt(b^2 - 4*a*c)*sq
rt(b*c - sqrt(b^2 - 4*a*c)*c)*a^7*b^10*c^3 - 25216*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^6*c^4 - 8128*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^7*c^4 - 928*sqrt(2)*sqrt(b^2 - 4
*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^8*b^8*c^4 + 43776*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^4*c^5 + 17920*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^5*c^5 + 4064*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^6*c^5 - 31744*sqrt(2)
*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 15872*sqr
t(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 - 8960*
sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^4*c^6 + 79
36*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^2*c^7 -
 10*(b^2 - 4*a*c)*a^6*b^12*c^2 + 214*(b^2 - 4*a*c)*a^7*b^10*c^3 - 1856*(b^2
 - 4*a*c)*a^8*b^8*c^4 + 8128*(b^2 - 4*a*c)*a^9*b^6*c^5 - 17920*(b^2 - 4*a*c
)*a^10*b^4*c^6 + 15872*(b^2 - 4*a*c)*a^11*b^2*c^7)*A - (2*a^7*b^13*c^2 - 52
*a^8*b^11*c^3 + 624*a^9*b^9*c^4 - 4224*a^10*b^7*c^5 + 16384*a^11*b^5*c^6 -
33792*a^12*b^3*c^7 + 28672*a^13*b*c^8 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^7*b^13 + 26*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - s
qrt(b^2 - 4*a*c)*c)*a^8*b^11*c + 2*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^7*b^12*c - 312*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^9*b^9*c^2 - 44*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqr
t(b^2 - 4*a*c)*c)*a^8*b^10*c^2 - sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sqrt(
b^2 - 4*a*c)*c)*a^7*b^11*c^2 + 2112*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c - sq
rt(b^2 - 4*a*c)*c)*a^10*b^7*c^3 + 448*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^9*b^8*c^3 + 22*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c -
sqrt(b^2 - 4*a*c)*c)*a^8*b^9*c^3 - 8192*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b*c
- sqrt(b^2 - 4*a*c)*c)*a^11*b^5*c^4 - 2432*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt(b
*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^6*c^4 - 224*sqrt(2)*sqrt(b^2 - 4*a*c)*sqrt
(b*c - sqrt(b^2 - 4*a*c)*c)*a^9*b^7*c^4 + 16896*sqrt(2)*sqrt(b^2 - 4*a*c)*s
qrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^3*c^5 + 6656*sqrt(2)*sqrt(b^2 - 4*a*c
)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^4*c^5 + 1216*sqrt(2)*sqrt(b^2 - 4*
a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^10*b^5*c^5 - 14336*sqrt(2)*sqrt(b^2
- 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^13*b*c^6 - 7168*sqrt(2)*sqrt(b^2
 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b^2*c^6 - 3328*sqrt(2)*sqrt(
b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^11*b^3*c^6 + 3584*sqrt(2)*sq
rt(b^2 - 4*a*c)*sqrt(b*c - sqrt(b^2 - 4*a*c)*c)*a^12*b*c^7 - 2*(b^2 - 4*a*c
)*a^7*b^11*c^2 + 44*(b^2 - 4*a*c)*a^8*b^9*c^3 - 448*(b^2 - 4*a*c)*a^9*b^7*c
^4 + 2432*(b^2 - 4*a*c)*a^10*b^5*c^5 - 6656*(b^2 - 4*a*c)*a^11*b^3*c^6 + 71
68*(b^2 - 4*a*c)*a^12*b*c^7)*B)*arctan(2*sqrt(1/2)*sqrt(x)/sqrt((a^3*b^5 -
8*a^4*b^3*c + 16*a^5*b*c^2 - sqrt((a^3*b^5 - 8*a^4*b^3*c + 16*a^5*b*c^2)^2
- 4*(a^4*b^4 - 8*a^5*b^2*c + 16*a^6*c^2)*(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^
5*c^3)))/(a^3*b^4*c - 8*a^4*b^2*c^2 + 16*a^5*c^3)))/((a^7*b^10 - 20*a^8*b^8
*c - 2*a^7*b^9*c + 160*a^9*b^6*c^2 + 32*a^8*b^7*c^2 + a^7*b^8*c^2 - 640*a^1
0*b^4*c^3 - 192*a^9*b^5*c^3 - 16*a^8*b^6*c^3 + 1280*a^11*b^2*c^4 + 512*a^10
*b^3*c^4 + 96*a^9*b^4*c^4 - 1024*a^12*c^5 - 512*a^11*b*c^5 - 256*a^10*b^2*c
^5 + 256*a^11*c^6)*abs(a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*abs(c)) + 1/4*(3
*B*a*b^3*c^2*x^(7/2) - 7*A*b^4*c^2*x^(7/2) - 24*B*a^2*b*c^3*x^(7/2) + 47*A*
a*b^2*c^3*x^(7/2) - 52*A*a^2*c^4*x^(7/2) + 6*B*a*b^4*c*x^(5/2) - 14*A*b^5*c
*x^(5/2) - 49*B*a^2*b^2*c^2*x^(5/2) + 99*A*a*b^3*c^2*x^(5/2) + 28*B*a^3*c^3
*x^(5/2) - 136*A*a^2*b*c^3*x^(5/2) + 3*B*a*b^5*x^(3/2) - 7*A*b^6*x^(3/2) -
20*B*a^2*b^3*c*x^(3/2) + 43*A*a*b^4*c*x^(3/2) - 4*B*a^3*b*c^2*x^(3/2) - 25*
A*a^2*b^2*c^2*x^(3/2) - 68*A*a^3*c^3*x^(3/2) + 5*B*a^2*b^4*sqrt(x) - 9*A*a*
b^5*sqrt(x) - 37*B*a^3*b^2*c*sqrt(x) + 66*A*a^2*b^3*c*sqrt(x) + 44*B*a^4*c^
2*sqrt(x) - 108*A*a^3*b*c^2*sqrt(x))/((a^3*b^4 - 8*a^4*b^2*c + 16*a^5*c^2)*
(c*x^2 + b*x + a)^2) - 2*A/(a^3*sqrt(x))
```

maple [B] time = 0.12, size = 2918, normalized size = 4.39

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*
c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^
(1/2))*B*b^4+93/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1/2)*2^(1/
```

```
2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*A*b-141/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c
+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+
(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^3+15/4/a/(16*a^2*c^2-8*a*b^2*c+
b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arcta
nh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2-3/8/a^2/(16*a
^2*c^2-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))
*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^
4+93/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*
x^(1/2))*A*b-141/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+b^2)^(1/2)*2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*A*b^3+15/4/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2/(-4*a*c+
b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*
a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B*b^2+15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^
4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(
1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^5+15/8/a^3/(16*a^2*c^2
-8*a*b^2*c+b^4)*c/(-4*a*c+b^2)^(1/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1
/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^5+5/4/
a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*B*b^4-13/a/(c*x^2+b*x+
a)^2*c^4/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A-7/4/a^3/(c*x^2+b*x+a)^2/(16*a
^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*A*b^6+3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^
(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2
))*c)^(1/2)*c*x^(1/2))*B*b^3+111/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/
2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*c*x^(1/2))*A*b^2+3/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((-b+(
-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/
2)*c*x^(1/2))*b*B-3/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c
+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x
^(1/2))*B*b^3-15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((b+(-4*a*c+b^2
)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2)
)*A*b^4-3/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*
c)^(1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*b*B-111
/8/a^2/(16*a^2*c^2-8*a*b^2*c+b^4)*c^2*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^2+3/4
/a^2/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*B*b^5-9/4/a^2/(c*x^
2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b^5+11*a/(c*x^2+b*x+a)^2/(1
6*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*B*c^2-1/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^
2*c+b^4)*x^(3/2)*B*b*c^2-37/4/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^
(1/2)*B*b^2*c-27/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b*c^2
+15/8/a^3/(16*a^2*c^2-8*a*b^2*c+b^4)*c*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^
(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A*b^4-2*
A/a^3/x^(1/2)+7/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B-17
/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*A*c^3+99/4/a^2/(c*x^2+b
*x+a)^2*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*A*b^3-49/4/a/(c*x^2+b*x+a)^2
*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B*b^2+3/2/a^2/(c*x^2+b*x+a)^2*c/(16
*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*B*b^4-21/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4
*a*c+b^2)^(1/2)*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctan(2^(1/2)/((b
+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B+3/4/a^2/(c*x^2+b*x+a)^2*c^2/(16*
a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*B*b^3-34/a/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8
*a*b^2*c+b^4)*x^(5/2)*A*b-21/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3/(-4*a*c+b^2)^(1
/2)*2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+
b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*B-25/4/a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^
2*c+b^4)*x^(3/2)*A*b^2*c^2+43/4/a^2/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b
^4)*x^(3/2)*A*b^4*c-5/a/(c*x^2+b*x+a)^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(3/2)*
B*b^3*c+45/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3*2^(1/2)/((-b+(-4*a*c+b^2)^(1/
2))*c)^(1/2)*arctanh(2^(1/2)/((-b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A
-45/2/a/(16*a^2*c^2-8*a*b^2*c+b^4)*c^3*2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(
1/2)*arctan(2^(1/2)/((b+(-4*a*c+b^2)^(1/2))*c)^(1/2)*c*x^(1/2))*A-7/2/a^3/(
c*x^2+b*x+a)^2*c/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(5/2)*A*b^5-7/4/a^3/(c*x^2+b*
x+a)^2*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A*b^4+33/2/a/(c*x^2+b*x+a)^2/
(16*a^2*c^2-8*a*b^2*c+b^4)*x^(1/2)*A*b^3*c+47/4/a^2/(c*x^2+b*x+a)^2*c^3/(16
*a^2*c^2-8*a*b^2*c+b^4)*x^(7/2)*A*b^2-6/a/(c*x^2+b*x+a)^2*c^3/(16*a^2*c^2-8
*a*b^2*c+b^4)*x^(7/2)*b*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: RuntimeError >> ECL says: THROW: The catch RAT-ERR is und
efined.
```

mupad [B] time = 8.04, size = 29137, normalized size = 43.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(x^(3/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] - atan(((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28
800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c
^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 111718563
84*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^1
6*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^1
2 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^1
2*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 10174
4640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*
b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14
344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^1
9*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856
*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^
9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 899
92986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^
21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 +
17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4
 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b
^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*
c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769
*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864
*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010
560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A
*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^1
7*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2
) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^
4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b
^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b
^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^
2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(
1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^
2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 86016
0*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16
*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-
(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A
^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 199
05600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8
```

```
 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B
^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*
b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^
8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4
*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c +
 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 69
4*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620
*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 92
67456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8
 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) -
11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^1
5)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2)
 - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a
^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^
11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6
*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^
26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c
^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^1
3*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*
a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) - 2
2548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b^23*c^2
 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a^15*b^17
*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 3104833536
0*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^20*b^7*c^
10 + 246826401792*A*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 + 3072*B*a
^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 35536896*
B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^12*c^7 +
7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 47714402304*B*a^2
1*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c^12))*(-
(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*
A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2
*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904
256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 -
 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15
)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11
*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b
^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2
) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 4
1*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c -
b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*
B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579
328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9
 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b
^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c
 + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c
 - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 72
0*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^1
0*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 -
 2621440*a^16*b^2*c^9)))^(1/2)*1i + (x^(1/2)*(33973862400*A^2*a^20*c^14 - 7
398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^
4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A
^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^1
0*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 2
18414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a
^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 124968
96*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^1
0*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 126080
77824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^
21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A
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*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c
^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 8735057
5104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^
20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^
15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^
3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*
b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^
2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(
4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 634
40*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 23
43936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c
- b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*
a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*
c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*
c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*
b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*
B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2
*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404
*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3
*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*
a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 -
258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120
*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 +
B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794
*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 61
26640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^
7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(
-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*
a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*
a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B
^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^
11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c -
 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7
402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2
791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^
7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*
(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10
*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3
*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2))
)/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7
680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^1
3*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*
c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^
21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^
15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240
*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94
489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c
^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19
*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*
A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9*c^9
+ 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 20052128563
2*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816
*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1
750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20
*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 5798
2058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(
4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^
2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 1990
5600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8
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- 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^
2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b
^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8
*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*
c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c +
18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694
*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*
A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 926
7456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8
+ 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 1
1*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15
)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2)
- 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^
17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^1
1*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*
c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i)/((x^(1/2)*(3
3973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^
3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*
a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^
8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980
975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^
2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 102528
0*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*
c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 665321472
0*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*
b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B
*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7
- 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112
*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b
^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 +
 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*
c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*
b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A
^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)
^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 -
 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 +
1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^
8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*
A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a
^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^
16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6
*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A
*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2
)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(
4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c -
b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^
20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*
c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 19
66080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(
x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(
1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1
299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c
^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9
*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c
 - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^
2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936
*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2
)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*
b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(
-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 -
 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c
^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^1
0*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-
(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*
a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^
2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b
^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 25804
8*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15
*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^
15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*
b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584
*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118
111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) - 22548578304*B*a^24*c
^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b^23*c^2 + 681984*A*a^13*b^2
1*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a^15*b^17*c^5 - 1351876608*A
*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31048335360*A*a^18*b^11*c^8 +
 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^20*b^7*c^10 + 246826401792*A
*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 + 3072*B*a^13*b^22*c^2 - 1382
40*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 35536896*B*a^16*b^16*c^5 + 2
97271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^12*c^7 + 7398752256*B*a^19*b
^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 47714402304*B*a^21*b^6*c^10 - 678470
61504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B
^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*
A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 612
6640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7
 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-
(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a
^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a
^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^
2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^1
1*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c -
1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 74
02*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 27
91360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7
 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(
-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*
A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*
c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))
/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 76
80*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13
*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c
^9)))^(1/2) - (x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^1
3 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*
b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 111
71856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A
^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b
^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B
^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 -
 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2
*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^1
1 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^
11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925
433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a
^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11
 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*
A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b
^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^
13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2
```

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*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^
2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
 + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 -
316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7
+ 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 688
1280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a
^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15
)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b
^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B
*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A
^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b
^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 +
 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 262144
0*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*
b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 18
8095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5
 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b
^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/
2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^
2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*
B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B
^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^
19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^
9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 +
 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^
5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b
^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1
/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c -
b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)
^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 104
8576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53
760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^
14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738
368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*
b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^
20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 885837
00480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^1
2) + 22548578304*B*a^24*c^13 - 74088185856*A*a^23*b*c^13 + 15360*A*a^12*b^2
3*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14*b^19*c^4 - 167067648*A*a^1
5*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 7662993408*A*a^17*b^13*c^7 + 3104
8335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9*c^9 + 182401892352*A*a^20*
b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 200521285632*A*a^22*b^3*c^12 - 30
72*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 2850816*B*a^15*b^18*c^4 + 355
36896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^6 + 1750597632*B*a^18*b^12*
c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B*a^20*b^8*c^9 - 47714402304
*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 - 57982058496*B*a^23*b^2*c^1
2))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2)
 - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 12998
60*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 -
 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3
*c^9 - 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b
^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^
6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2
*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15
)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^
10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*
a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575
120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 +
 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^
2*c^9 - 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a
*c - b^2)^15)^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*
b^18*c + 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-
(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*
c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^
12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4
*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) + 47775744000*A^3*a^17*c^14 + 712800*A
^3*a^9*b^16*c^6 - 23142240*A^3*a^10*b^14*c^7 + 328157568*A^3*a^11*b^12*c^8
- 2652784128*A^3*a^12*b^10*c^9 + 13361338368*A^3*a^13*b^8*c^10 - 4289797324
8*A^3*a^14*b^6*c^11 + 85645099008*A^3*a^15*b^4*c^12 - 97090928640*A^3*a^16*
b^2*c^13 - 18144*B^3*a^11*b^15*c^5 + 622080*B^3*a^12*b^13*c^6 - 9220608*B^3
*a^13*b^11*c^7 + 76640256*B^3*a^14*b^9*c^8 - 384638976*B^3*a^15*b^7*c^9 + 1
160773632*B^3*a^16*b^5*c^10 - 1942880256*B^3*a^17*b^3*c^11 + 10404495360*A*
B^2*a^18*c^13 + 1387266048*B^3*a^18*b*c^12 - 26966753280*A^2*B*a^17*b*c^13
+ 181440*A*B^2*a^10*b^16*c^5 - 6083424*A*B^2*a^11*b^14*c^6 + 88656768*A*B^2
*a^12*b^12*c^7 - 731026944*A*B^2*a^13*b^10*c^8 + 3713071104*A*B^2*a^14*b^8*
c^9 - 11822505984*A*B^2*a^15*b^6*c^10 + 22839459840*A*B^2*a^16*b^4*c^11 - 2
4132059136*A*B^2*a^17*b^2*c^12 - 453600*A^2*B*a^9*b^17*c^5 + 14722560*A^2*B
*a^10*b^15*c^6 - 208303488*A^2*B*a^11*b^13*c^7 + 1675717632*A^2*B*a^12*b^11
*c^8 - 8368883712*A^2*B*a^13*b^9*c^9 + 26512883712*A^2*B*a^14*b^7*c^10 - 51
887112192*A^2*B*a^15*b^5*c^11 + 57139789824*A^2*B*a^16*b^3*c^12))*(-(9*(25*
A^2*b^21 + B^2*a^2*b^19 + 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b
^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^
13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2
*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 - 225*A^
2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) + B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2)
 + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 -
316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7
+ 3010560*B^2*a^10*b^3*c^8 + 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 688
1280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a
^3*b^17*c - 1720320*B^2*a^11*b*c^9 + 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15
)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b
^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B
*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 - 245*A
^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) - 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)
^(1/2) - 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c + 104*
A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) - 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)
^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b
^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 +
 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 262144
0*a^16*b^2*c^9)))^(1/2)*2i - atan(((x^(1/2)*(33973862400*A^2*a^20*c^14 - 73
98752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4
 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^
2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10
*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 21
8414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^
11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 1249689
6*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10
*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 1260807
7824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^2
1*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*
B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^
8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575
104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^2
0*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^1
5)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3
```

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 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b
^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2
*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4
*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 6344
0*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 234
3936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c -
 b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a
^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c
^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c
^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b
^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B
*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*
c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*
A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*
b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a
^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 2
58048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*
a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B
^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*
A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 612
6640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7
 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-
(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a
^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a
^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^
2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^1
1*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c -
1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 74
02*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 27
91360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7
 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(
-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*
A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*
c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))
/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 76
80*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13
*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c
^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^2
1*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^1
5*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*
a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 944
89280512*a^25*b^3*c^12) - 22548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^
13 - 15360*A*a^12*b^23*c^2 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*
c^4 + 167067648*A*a^15*b^17*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A
*a^17*b^13*c^7 - 31048335360*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 -
 182401892352*A*a^20*b^7*c^10 + 246826401792*A*a^21*b^5*c^11 - 200521285632
*A*a^22*b^3*c^12 + 3072*B*a^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*
B*a^15*b^18*c^4 - 35536896*B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 17
50597632*B*a^18*b^12*c^7 + 7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*
b^8*c^9 + 47714402304*B*a^21*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982
058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4
*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2
*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905
600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 -
 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2
*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^
13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*
b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c
^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 1
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8923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*
A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A
*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267
456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 +
 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11
*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)
^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) +
 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^1
7*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11
*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c
^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*1i + (x^(1/2)*(33
973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3
 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a
^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8
 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 1929809
75616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2
*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280
*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c
^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720
*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b
^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*
a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 -
 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*
A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^
3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 -
25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c
^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b
^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^
2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^
15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 -
8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1
069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8
 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A
^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^
11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^1
6*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*
b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*
B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)
^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4
*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b
^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^2
0 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c
^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 196
6080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x
^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1
/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 12
99860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^
6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*
b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c
- b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2
*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*
B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)
^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b
*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-
(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 -
575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^
6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10
*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(
4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a
^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2
*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^
18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048
*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*
b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^1
5*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b
^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*
a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 1181
11600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^
13 - 74088185856*A*a^23*b*c^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21
*c^3 + 13774848*A*a^14*b^19*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*
a^16*b^15*c^6 - 7662993408*A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 -
89917489152*A*a^19*b^9*c^9 + 182401892352*A*a^20*b^7*c^10 - 246826401792*A*
a^21*b^5*c^11 + 200521285632*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 13824
0*B*a^14*b^20*c^3 - 2850816*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 29
7271296*B*a^17*b^14*c^6 + 1750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^
10*c^8 + 22422749184*B*a^20*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 6784706
1504*B*a^22*b^4*c^11 - 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^
2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A
^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126
640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7
+ 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(
4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^
4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^
7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2
*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11
*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1
720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 740
2*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 279
1360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7
- 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-
(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A
*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c
*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/
(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 768
0*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*
b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^
9)))^(1/2)*1i)/((x^(1/2)*(33973862400*A^2*a^20*c^14 - 7398752256*B^2*a^21*c
^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^20*c^4 - 23879808*A^2*a^1
1*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763584*A^2*a^13*b^14*c^7 + 1
1171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^15*b^10*c^9 + 108726976512
*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^11 + 218414186496*A^2*a^18
*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*B^2*a^11*b^20*c^3 + 50688
*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 12496896*B^2*a^14*b^14*c^6
 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^16*b^10*c^8 - 2346319872*B
^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 12608077824*B^2*a^19*b^4*c
^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^10*b^21*c^3 - 499968*A*B*
a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559296*A*B*a^13*b^15*c^6 + 9
25433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b^11*c^8 + 19191693312*A*B
*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87350575104*A*B*a^18*b^5*c^
11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A*B*a^20*b*c^13) + (-(9*(2
5*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a
*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*
b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A
^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*
A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/
2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4
- 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^
7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6
```

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881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2
*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^
15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5
*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A
*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245
*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^1
5)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 10
4*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^
2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9
*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5
 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621
440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^
2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 -
188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c
^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8
*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(
1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*
B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 106982
4*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49
*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*
b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*
c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2
 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*
c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9
*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^
(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c
- b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^1
5)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1
048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 +
53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*
a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(343597
38368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^16*b^21*c^3 - 7208960*a^1
7*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^19*b^15*c^6 + 3875536896*
a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 44291850240*a^22*b^9*c^9 - 8858
3700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11 - 94489280512*a^25*b^3*c
^12) - 22548578304*B*a^24*c^13 + 74088185856*A*a^23*b*c^13 - 15360*A*a^12*b
^23*c^2 + 681984*A*a^13*b^21*c^3 - 13774848*A*a^14*b^19*c^4 + 167067648*A*a
^15*b^17*c^5 - 1351876608*A*a^16*b^15*c^6 + 7662993408*A*a^17*b^13*c^7 - 31
048335360*A*a^18*b^11*c^8 + 89917489152*A*a^19*b^9*c^9 - 182401892352*A*a^2
0*b^7*c^10 + 246826401792*A*a^21*b^5*c^11 - 200521285632*A*a^22*b^3*c^12 +
3072*B*a^13*b^22*c^2 - 138240*B*a^14*b^20*c^3 + 2850816*B*a^15*b^18*c^4 - 3
5536896*B*a^16*b^16*c^5 + 297271296*B*a^17*b^14*c^6 - 1750597632*B*a^18*b^1
2*c^7 + 7398752256*B*a^19*b^10*c^8 - 22422749184*B*a^20*b^8*c^9 + 477144023
04*B*a^21*b^6*c^10 - 67847061504*B*a^22*b^4*c^11 + 57982058496*B*a^23*b^2*c
^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/
2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 129
9860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6
 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b
^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c -
 b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*
a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B
^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^
15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*
c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(
4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 5
75120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6
 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*
b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4
*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^
```

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2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*
(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^1
8*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*
a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b
^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) - (x^(1/2)*(33973862400*A^2*a^20*c^1
4 - 7398752256*B^2*a^21*c^13 - 28800*A^2*a^9*b^22*c^3 + 1232640*A^2*a^10*b^
20*c^4 - 23879808*A^2*a^11*b^18*c^5 + 275975424*A^2*a^12*b^16*c^6 - 2109763
584*A^2*a^13*b^14*c^7 + 11171856384*A^2*a^14*b^12*c^8 - 41653370880*A^2*a^1
5*b^10*c^9 + 108726976512*A^2*a^16*b^8*c^10 - 192980975616*A^2*a^17*b^6*c^1
1 + 218414186496*A^2*a^18*b^4*c^12 - 137631891456*A^2*a^19*b^2*c^13 - 1152*
B^2*a^11*b^20*c^3 + 50688*B^2*a^12*b^18*c^4 - 1025280*B^2*a^13*b^16*c^5 + 1
2496896*B^2*a^14*b^14*c^6 - 101744640*B^2*a^15*b^12*c^7 + 579796992*B^2*a^1
6*b^10*c^8 - 2346319872*B^2*a^17*b^8*c^9 + 6653214720*B^2*a^18*b^6*c^10 - 1
2608077824*B^2*a^19*b^4*c^11 + 14344519680*B^2*a^20*b^2*c^12 + 11520*A*B*a^
10*b^21*c^3 - 499968*A*B*a^11*b^19*c^4 + 9900288*A*B*a^12*b^17*c^5 - 117559
296*A*B*a^13*b^15*c^6 + 925433856*A*B*a^14*b^13*c^7 - 5038866432*A*B*a^15*b
^11*c^8 + 19191693312*A*B*a^16*b^9*c^9 - 50422874112*A*B*a^17*b^7*c^10 + 87
350575104*A*B*a^18*b^5*c^11 - 89992986624*A*B*a^19*b^3*c^12 + 41825599488*A
*B*a^20*b*c^13) + (-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c -
b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^
15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2
*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 520396
80*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^
4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3
+ 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6
 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4
*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520
*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2
*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*
b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B
*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 223641
60*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^
3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2)
+ 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*
B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10
- 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c
^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 29
49120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*(x^(1/2)*(-(9*(25*A^2*b^
21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 +
17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4
 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b
^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*
c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769
*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864
*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010
560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A
*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^1
7*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2
) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^
4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b
^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b
^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2)
 + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^
2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(
1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^
2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 86016
0*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16
*b^2*c^9)))^(1/2)*(34359738368*a^26*b*c^13 - 8192*a^15*b^23*c^2 + 360448*a^
16*b^21*c^3 - 7208960*a^17*b^19*c^4 + 86507520*a^18*b^17*c^5 - 692060160*a^
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19*b^15*c^6 + 3875536896*a^20*b^13*c^7 - 15502147584*a^21*b^11*c^8 + 442918
50240*a^22*b^9*c^9 - 88583700480*a^23*b^7*c^10 + 118111600640*a^24*b^5*c^11
 - 94489280512*a^25*b^3*c^12) + 22548578304*B*a^24*c^13 - 74088185856*A*a^2
3*b*c^13 + 15360*A*a^12*b^23*c^2 - 681984*A*a^13*b^21*c^3 + 13774848*A*a^14
*b^19*c^4 - 167067648*A*a^15*b^17*c^5 + 1351876608*A*a^16*b^15*c^6 - 766299
3408*A*a^17*b^13*c^7 + 31048335360*A*a^18*b^11*c^8 - 89917489152*A*a^19*b^9
*c^9 + 182401892352*A*a^20*b^7*c^10 - 246826401792*A*a^21*b^5*c^11 + 200521
285632*A*a^22*b^3*c^12 - 3072*B*a^13*b^22*c^2 + 138240*B*a^14*b^20*c^3 - 28
50816*B*a^15*b^18*c^4 + 35536896*B*a^16*b^16*c^5 - 297271296*B*a^17*b^14*c^
6 + 1750597632*B*a^18*b^12*c^7 - 7398752256*B*a^19*b^10*c^8 + 22422749184*B
*a^20*b^8*c^9 - 47714402304*B*a^21*b^6*c^10 + 67847061504*B*a^22*b^4*c^11 -
 57982058496*B*a^23*b^2*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^
6*(-(4*a*c - b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 1880
95*A^2*a^3*b^15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 +
 19905600*A^2*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5
*c^8 - 52039680*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2)
 - B^2*a^2*b^4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*
a^5*b^13*c^3 + 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^
2*a^8*b^7*c^6 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2
*a^4*c^2*(-(4*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19
*c + 18923520*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9
- 694*A^2*a^2*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 8
0620*A*B*a^4*b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5
- 9267456*A*B*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4
*c^8 + 22364160*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2
) + 11*B^2*a^3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^
2)^15)^(1/2) + 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(
1/2) + 382*A*B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 10485
76*a^17*c^10 - 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 5376
0*a^11*b^12*c^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14
*b^6*c^7 + 2949120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2) + 477757440
00*A^3*a^17*c^14 + 712800*A^3*a^9*b^16*c^6 - 23142240*A^3*a^10*b^14*c^7 + 3
28157568*A^3*a^11*b^12*c^8 - 2652784128*A^3*a^12*b^10*c^9 + 13361338368*A^3
*a^13*b^8*c^10 - 42897973248*A^3*a^14*b^6*c^11 + 85645099008*A^3*a^15*b^4*c
^12 - 97090928640*A^3*a^16*b^2*c^13 - 18144*B^3*a^11*b^15*c^5 + 622080*B^3*
a^12*b^13*c^6 - 9220608*B^3*a^13*b^11*c^7 + 76640256*B^3*a^14*b^9*c^8 - 384
638976*B^3*a^15*b^7*c^9 + 1160773632*B^3*a^16*b^5*c^10 - 1942880256*B^3*a^1
7*b^3*c^11 + 10404495360*A*B^2*a^18*c^13 + 1387266048*B^3*a^18*b*c^12 - 269
66753280*A^2*B*a^17*b*c^13 + 181440*A*B^2*a^10*b^16*c^5 - 6083424*A*B^2*a^1
1*b^14*c^6 + 88656768*A*B^2*a^12*b^12*c^7 - 731026944*A*B^2*a^13*b^10*c^8 +
 3713071104*A*B^2*a^14*b^8*c^9 - 11822505984*A*B^2*a^15*b^6*c^10 + 22839459
840*A*B^2*a^16*b^4*c^11 - 24132059136*A*B^2*a^17*b^2*c^12 - 453600*A^2*B*a^
9*b^17*c^5 + 14722560*A^2*B*a^10*b^15*c^6 - 208303488*A^2*B*a^11*b^13*c^7 +
 1675717632*A^2*B*a^12*b^11*c^8 - 8368883712*A^2*B*a^13*b^9*c^9 + 265128837
12*A^2*B*a^14*b^7*c^10 - 51887112192*A^2*B*a^15*b^5*c^11 + 57139789824*A^2*
B*a^16*b^3*c^12))*(-(9*(25*A^2*b^21 + B^2*a^2*b^19 - 25*A^2*b^6*(-(4*a*c -
b^2)^15)^(1/2) - 10*A*B*a*b^20 + 17794*A^2*a^2*b^17*c^2 - 188095*A^2*a^3*b^
15*c^3 + 1299860*A^2*a^4*b^13*c^4 - 6126640*A^2*a^5*b^11*c^5 + 19905600*A^2
*a^6*b^9*c^6 - 43904256*A^2*a^7*b^7*c^7 + 62684160*A^2*a^8*b^5*c^8 - 520396
80*A^2*a^9*b^3*c^9 + 225*A^2*a^3*c^3*(-(4*a*c - b^2)^15)^(1/2) - B^2*a^2*b^
4*(-(4*a*c - b^2)^15)^(1/2) + 769*B^2*a^4*b^15*c^2 - 8620*B^2*a^5*b^13*c^3
+ 63440*B^2*a^6*b^11*c^4 - 316864*B^2*a^7*b^9*c^5 + 1069824*B^2*a^8*b^7*c^6
 - 2343936*B^2*a^9*b^5*c^7 + 3010560*B^2*a^10*b^3*c^8 - 49*B^2*a^4*c^2*(-(4
*a*c - b^2)^15)^(1/2) - 6881280*A*B*a^11*c^10 - 995*A^2*a*b^19*c + 18923520
*A^2*a^10*b*c^10 - 41*B^2*a^3*b^17*c - 1720320*B^2*a^11*b*c^9 - 694*A^2*a^2
*b^2*c^2*(-(4*a*c - b^2)^15)^(1/2) - 7402*A*B*a^3*b^16*c^2 + 80620*A*B*a^4*
b^14*c^3 - 575120*A*B*a^5*b^12*c^4 + 2791360*A*B*a^6*b^10*c^5 - 9267456*A*B
*a^7*b^8*c^6 + 20579328*A*B*a^8*b^6*c^7 - 28815360*A*B*a^9*b^4*c^8 + 223641
60*A*B*a^10*b^2*c^9 + 245*A^2*a*b^4*c*(-(4*a*c - b^2)^15)^(1/2) + 11*B^2*a^
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3*b^2*c*(-(4*a*c - b^2)^15)^(1/2) + 10*A*B*a*b^5*(-(4*a*c - b^2)^15)^(1/2)
+ 404*A*B*a^2*b^18*c - 104*A*B*a^2*b^3*c*(-(4*a*c - b^2)^15)^(1/2) + 382*A*
B*a^3*b*c^2*(-(4*a*c - b^2)^15)^(1/2)))/(128*(a^7*b^20 + 1048576*a^17*c^10
- 40*a^8*b^18*c + 720*a^9*b^16*c^2 - 7680*a^10*b^14*c^3 + 53760*a^11*b^12*c
^4 - 258048*a^12*b^10*c^5 + 860160*a^13*b^8*c^6 - 1966080*a^14*b^6*c^7 + 29
49120*a^15*b^4*c^8 - 2621440*a^16*b^2*c^9)))^(1/2)*2i - ((2*A)/a - (x^3*(28
*B*a^3*c^3 - 30*A*b^5*c + 6*B*a*b^4*c + 227*A*a*b^3*c^2 - 392*A*a^2*b*c^3 -
 49*B*a^2*b^2*c^2))/(4*a^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(25*A*b^5 -
 44*B*a^3*c^2 - 5*B*a*b^4 - 194*A*a*b^3*c + 364*A*a^2*b*c^2 + 37*B*a^2*b^2*
c))/(4*a^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^2*(15*A*b^6 + 324*A*a^3*c^3
 - 3*B*a*b^5 - 91*A*a*b^4*c + 20*B*a^2*b^3*c + 4*B*a^3*b*c^2 + 25*A*a^2*b^2
*c^2))/(4*a^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (3*c*x^4*(60*A*a^2*c^3 + 5*
A*b^4*c - B*a*b^3*c - 37*A*a*b^2*c^2 + 8*B*a^2*b*c^2))/(4*a^3*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)))/(x^(5/2)*(2*a*c + b^2) + a^2*x^(1/2) + c^2*x^(9/2) + 2*
a*b*x^(3/2) + 2*b*c*x^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/x**(3/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1029 $\int \sqrt{x}\,(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=454

$$-\frac{2\sqrt{x}\sqrt{a+bx+cx^2}\left(5abBc-2\left(b^2-3ac\right)(4bB-7Ac)\right)}{105c^{5/2}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{\sqrt[4]{a}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(-\sqrt{a}\sqrt{c}\left(-10aBc-\right.\right.}{}$$

```
[Out] 2/7*B*(c*x^2+b*x+a)^(3/2)*x^(1/2)/c-2/105*(4*b^2*B-7*A*b*c+5*a*B*c+3*c*(-7*
A*c+4*B*b)*x)*x^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2-2/105*(5*a*b*B*c-2*(-3*a*c+b^
2)*(-7*A*c+4*B*b))*x^(1/2)*(c*x^2+b*x+a)^(1/2)/c^(5/2)/(a^(1/2)+x*c^(1/2))+
2/105*a^(1/4)*(5*a*b*B*c-2*(-3*a*c+b^2)*(-7*A*c+4*B*b))*(cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*Ellipt
icE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))
*(a^(1/2)+x*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(
c*x^2+b*x+a)^(1/2)-1/105*a^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)
^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*(5
*a*b*B*c-2*(-3*a*c+b^2)*(-7*A*c+4*B*b)-(-7*A*b*c-10*B*a*c+4*B*b^2)*a^(1/2)*
c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(11/4)/(c*x^2+b*x+a)
^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 454, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1197, 1103, 1195}

$$-\frac{2\sqrt{x}\sqrt{a+bx+cx^2}\left(5aBc+3cx(4bB-7Ac)-7Abc+4b^2B\right)}{105c^2}-\frac{2\sqrt{x}\sqrt{a+bx+cx^2}\left(5abBc-2\left(b^2-3ac\right)(4b\right.}{105c^{5/2}\left(\sqrt{a}+\sqrt{c}\,x\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[x]*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-2*(5*a*b*B*c - 2*(b^2 - 3*a*c)*(4*b*B - 7*A*c))*Sqrt[x]*Sqrt[a + b*x + c*
x^2])/(105*c^(5/2)*(Sqrt[a] + Sqrt[c]*x)) - (2*Sqrt[x]*(4*b^2*B - 7*A*b*c +
 5*a*B*c + 3*c*(4*b*B - 7*A*c)*x)*Sqrt[a + b*x + c*x^2])/(105*c^2) + (2*B*S
qrt[x]*(a + b*x + c*x^2)^(3/2))/(7*c) + (2*a^(1/4)*(5*a*b*B*c - 2*(b^2 - 3*
a*c)*(4*b*B - 7*A*c))*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a]
 + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqr
t[a]*Sqrt[c]))/4])/(105*c^(11/4)*Sqrt[a + b*x + c*x^2]) - (a^(1/4)*(5*a*b*B
*c - 2*(b^2 - 3*a*c)*(4*b*B - 7*A*c) - Sqrt[a]*Sqrt[c]*(4*b^2*B - 7*A*b*c -
 10*a*B*c))*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] + Sqrt[c]
*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[a]*Sqrt[
c]))/4])/(105*c^(11/4)*Sqrt[a + b*x + c*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) && !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\int \sqrt{x}\,(A+Bx)\sqrt{a+bx+cx^2}\,dx = \frac{2B\sqrt{x}\,\left(a+bx+cx^2\right)^{3/2}}{7c} + \frac{2\int \frac{\left(-\frac{aB}{2}-\frac{1}{2}(4bB-7Ac)x\right)\sqrt{a+bx+cx^2}}{\sqrt{x}}\,dx}{7c}$$

$$= -\frac{2\sqrt{x}\,\left(4b^2B-7Abc+5aBc+3c(4bB-7Ac)x\right)\sqrt{a+bx+cx^2}}{105c^2} + \frac{2B\sqrt{x}}{}$$

$$= -\frac{2\sqrt{x}\,\left(4b^2B-7Abc+5aBc+3c(4bB-7Ac)x\right)\sqrt{a+bx+cx^2}}{105c^2} + \frac{2B\sqrt{x}}{}$$

$$= -\frac{2\sqrt{x}\,\left(4b^2B-7Abc+5aBc+3c(4bB-7Ac)x\right)\sqrt{a+bx+cx^2}}{105c^2} + \frac{2B\sqrt{x}}{}$$

$$= -\frac{2\left(5abBc-2\left(b^2-3ac\right)(4bB-7Ac)\right)\sqrt{x}\,\sqrt{a+bx+cx^2}}{105c^{5/2}\left(\sqrt{a}+\sqrt{c}\,x\right)} - \frac{2\sqrt{x}\,\left(4b^2B-\right.}{}$$

Mathematica [C] time = 4.92, size = 638, normalized size = 1.41

$$\frac{2\sqrt{x}\,\sqrt{a+x(b+cx)}\,\left(c(10aB+3cx(7A+5Bx))+bc(7A+3Bx)-4b^2B\right)}{105c^2} - \frac{ix^{3/2}\left(\sqrt{b^2-4ac}-b\right)\sqrt{\frac{2a}{x\left(\sqrt{b^2-4ac}+b\right.}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[x]*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x]*Sqrt[a + x*(b + c*x)]*(-4*b^2*B + b*c*(7*A + 3*B*x) + c*(10*a*B
+ 3*c*x*(7*A + 5*B*x))))/(105*c^2) - (-4*(8*b^3*B - 14*A*b^2*c - 29*a*b*B*c
 + 42*a*A*c^2)*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]*(a + x*(b + c*x)) + I*(8*b^3
*B - 14*A*b^2*c - 29*a*b*B*c + 42*a*A*c^2)*(-b + Sqrt[b^2 - 4*a*c])*Sqrt[1
+ (2*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x^(3/2)*Sqrt[(4*a + 2*b*x - 2*Sqrt[b^2
 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt
[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^
2 - 4*a*c])] + I*(8*b^4*B + 2*a*c^2*(10*a*B - 21*A*Sqrt[b^2 - 4*a*c]) - 2*b
^3*(7*A*c + 4*B*Sqrt[b^2 - 4*a*c]) + a*b*c*(56*A*c + 29*B*Sqrt[b^2 - 4*a*c]
) + b^2*(-37*a*B*c + 14*A*c*Sqrt[b^2 - 4*a*c]))*Sqrt[1 + (2*a)/((b + Sqrt[b
^2 - 4*a*c])*x)]*x^(3/2)*Sqrt[(4*a + 2*b*x - 2*Sqrt[b^2 - 4*a*c]*x)/(b*x -
Sqrt[b^2 - 4*a*c]*x)]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4
*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/(210*c
^3*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]*Sqrt[x]*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{x}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2 + bx + a}\,(Bx + A)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(x), x)
```

maple [B] time = 0.16, size = 2884, normalized size = 6.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*x^(1/2)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/105*(-8*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b
+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+
(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)
^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*
b^5-8*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4
*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*
a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/
2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*(-4*
a*c+b^2)^(1/2)*b^4+14*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^
(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/
(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1
/2)))^(1/2)*b^4*c-84*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(
1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(
-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))^(1/2)*a^2*c^3+168*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))
^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))
/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(
1/2)))^(1/2)*a^2*c^3+50*B*x^3*a*c^4-2*B*x^3*b^2*c^3+42*A*x^2*a*c^4+14*A*x^2
*b^2*c^3-8*B*x^2*b^3*c^2+20*B*x*a^2*c^3+36*B*x^4*b*c^4+56*A*x^3*b*c^4-42*A*
((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2
)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)
^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*(-4*a*c+b^2)
^(1/2)*a*b*c^2+4*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)
*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/
2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a
*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))
^(1/2)*(-4*a*c+b^2)^(1/2)*a*b^2*c+29*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a
*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+
(-4*a*c+b^2)^(1/2)))^(1/2)*(-4*a*c+b^2)^(1/2)*a*b^2*c-7*A*((-2*c*x-b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/
2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/
2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*
a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*(-4*a*c+b^2)^(1/2)*a*b*c^2+26
*B*x^2*a*b*c^3-12*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*
a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))
)^(1/2)*a*b^3*c-116*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1
/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^
(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-
4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2
)))^(1/2)*a^2*b*c^2+21*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))
^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))
/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(
1/2)))^(1/2)*a*b^2*c^2+14*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/
2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/
2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2
)^(1/2)))^(1/2)*(-4*a*c+b^2)^(1/2)*b^3*c-10*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF
(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((
b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/
2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*(-4*a*c+b^2)^(1/2)*a^2*c^2+48*B*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*
c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*a^2*b*c^2-98*A*((-2*c
*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2
))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)
))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2
*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*a*b^2*c^2+61*B*((-
2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(
1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1
/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*a*b^3*c+30*B*x^
5*c^5+42*A*x^4*c^5+14*A*x*a*b*c^3-8*B*x*a*b^2*c^2)/x^(1/2)/(c*x^2+b*x+a)^(1
/2)/c^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2 + bx + a}\,(Bx + A)\sqrt{x}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x}\;\,(A + B\,x)\;\sqrt{c\,x^2 + b\,x + a}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(x^(1/2)*(A + B*x)*(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x}\,(A + Bx)\sqrt{a + bx + cx^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*x**(1/2)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral(sqrt(x)*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.1030 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=373

$$-\frac{2\sqrt{x}\sqrt{a+bx+cx^2}\left(-6aBc-5Abc+2b^2B\right)}{15c^{3/2}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{2\sqrt[4]{a}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(-6aBc-5Abc+2b^2B\right)E\left(2\tan\right.}{15c^{7/4}\sqrt{a+bx+cx^2}}$$

```
[Out] 2/15*(3*B*c*x+5*A*c+B*b)*x^(1/2)*(c*x^2+b*x+a)^(1/2)/c-2/15*(-5*A*b*c-6*B*a
*c+2*B*b^2)*x^(1/2)*(c*x^2+b*x+a)^(1/2)/c^(3/2)/(a^(1/2)+x*c^(1/2))+2/15*a^
(1/4)*(-5*A*b*c-6*B*a*c+2*B*b^2)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)
^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4
)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*((
c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(7/4)/(c*x^2+b*x+a)^(1/2)-1/15*
a^(1/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/
4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(
2-b/a^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*(b+2*a^(1/2)*c^(1/2))*(2*b*
B-5*A*c-3*B*a^(1/2)*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^
(7/4)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 373, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {814, 839, 1197, 1103, 1195}

$$-\frac{2\sqrt{x}\sqrt{a+bx+cx^2}\left(-6aBc-5Abc+2b^2B\right)}{15c^{3/2}\left(\sqrt{a}+\sqrt{c}\,x\right)}+\frac{2\sqrt[4]{a}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(-6aBc-5Abc+2b^2B\right)E\left(2\tan\right.}{15c^{7/4}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] (-2*(2*b^2*B - 5*A*b*c - 6*a*B*c)*Sqrt[x]*Sqrt[a + b*x + c*x^2])/(15*c^(3/2
)*(Sqrt[a] + Sqrt[c]*x)) + (2*Sqrt[x]*(b*B + 5*A*c + 3*B*c*x)*Sqrt[a + b*x
+ c*x^2])/(15*c) + (2*a^(1/4)*(2*b^2*B - 5*A*b*c - 6*a*B*c)*(Sqrt[a] + Sqrt
[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(
c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[a]*Sqrt[c]))/4])/(15*c^(7/4)*Sqrt[a
 + b*x + c*x^2]) - (a^(1/4)*(b + 2*Sqrt[a]*Sqrt[c])*(2*b*B - 3*Sqrt[a]*B*Sq
rt[c] - 5*A*c)*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] + Sqrt
[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[a]*Sq
rt[c]))/4])/(15*c^(7/4)*Sqrt[a + b*x + c*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{\sqrt{x}}\,dx = \frac{2\sqrt{x}\,(bB+5Ac+3Bcx)\sqrt{a+bx+cx^2}}{15c} - \frac{2\int \frac{\frac{1}{2}a(bB-10Ac)+\frac{1}{2}\left(2b^2B-5Abc-6aBc\right)x}{\sqrt{x}\,\sqrt{a+bx+cx^2}}\,d}{15c}$$

$$= \frac{2\sqrt{x}\,(bB+5Ac+3Bcx)\sqrt{a+bx+cx^2}}{15c} - \frac{4\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}a(bB-10Ac)+\frac{1}{2}\left(2b^2B-5Abc-\right.}{\sqrt{a+bx^2+cx^4}}\right.}{15c}$$

$$= \frac{2\sqrt{x}\,(bB+5Ac+3Bcx)\sqrt{a+bx+cx^2}}{15c} - \frac{\left(2\sqrt{a}\,\left(b+2\sqrt{a}\,\sqrt{c}\right)\left(2bB-3\sqrt{a}\,B\right.\right.}{}$$

$$= -\frac{2\left(2b^2B-5Abc-6aBc\right)\sqrt{x}\,\sqrt{a+bx+cx^2}}{15c^{3/2}\left(\sqrt{a}+\sqrt{c}\,x\right)} + \frac{2\sqrt{x}\,(bB+5Ac+3Bcx)\sqrt{a+}}{15c}$$

Mathematica [C] time = 3.98, size = 550, normalized size = 1.47

$$\frac{\frac{4\sqrt{x}\,(a+x(b+cx))(5Ac+bB+3Bcx)}{c} + \frac{x\left(-\frac{4(a+x(b+cx))\left(-6aBc-5Abc+2b^2B\right)}{x^{3/2}} + \frac{i\left(\sqrt{b^2-4ac}-b\right)\sqrt{\frac{4a}{x\left(\sqrt{b^2-4ac}+b\right)}+2}\,\sqrt{\frac{-x\sqrt{b^2-4ac}+2a+bx}{bx-x\sqrt{b^2-4ac}}}\left(-6aBc-5Abc+2b^2B\right)E\left(i\,\mathrm{s}\right.}{\sqrt{\frac{a}{\sqrt{b^2-4ac}+b}}}\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/Sqrt[x],x]
```

```
[Out] ((4*Sqrt[x]*(b*B + 5*A*c + 3*B*c*x)*(a + x*(b + c*x)))/c + (x*((-4*(2*b^2*B
 - 5*A*b*c - 6*a*B*c)*(a + x*(b + c*x)))/x^(3/2) + (I*(2*b^2*B - 5*A*b*c -
6*a*B*c)*(-b + Sqrt[b^2 - 4*a*c])*Sqrt[2 + (4*a)/((b + Sqrt[b^2 - 4*a*c])*x
)]*Sqrt[(2*a + b*x - Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*Elli
pticE[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sq
rt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]
+ (I*(2*b^3*B - b^2*(5*A*c + 2*B*Sqrt[b^2 - 4*a*c]) + 2*a*c*(10*A*c + 3*B*S
qrt[b^2 - 4*a*c]) + b*(-8*a*B*c + 5*A*c*Sqrt[b^2 - 4*a*c]))*Sqrt[2 + (4*a)/
((b + Sqrt[b^2 - 4*a*c])*x)]*Sqrt[(2*a + b*x - Sqrt[b^2 - 4*a*c]*x)/(b*x -
Sqrt[b^2 - 4*a*c]*x)]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4
*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[a
/(b + Sqrt[b^2 - 4*a*c])]))/c^2)/(30*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2 + bx + a}\,(Bx + A)}{\sqrt{x}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)/sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(Bx + A)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/sqrt(x), x)
```

maple [B] time = 0.15, size = 2012, normalized size = 5.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(1/2),x)
```

```
[Out] 1/15*(20*A*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*a
*b*c^2-5*A*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*b
^3*c-5*A*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1
/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+
b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)
^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*(-4
*a*c+b^2)^(1/2)*b^2*c+10*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1
/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b
+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+
(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)
^(1/2))^(1/2))*(-4*a*c+b^2)^(1/2)*a*c^2+24*B*EllipticE(((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))
/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(
1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(
b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*a^2*c^2-14*B*EllipticE(((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/
(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*a*b^2*c-6*B*EllipticE(((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/
(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*(-4*a*c+b^2)^(1/2)*a*b*c+2*B*EllipticE(((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(
-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^
(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*b^4+2*B*EllipticE(((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+
(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2
))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*(-4*a*c+b^2)^(1/2)*b^3-12*B*
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*
a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(
1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),
1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*a^2*c^2+3*B*
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*
a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(
1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),
1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*a*b^2*c-B*((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/
2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/
2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*(-4*a*c+b^2)^(
1/2)*a*b*c+6*B*x^4*c^4+10*A*x^3*c^4+8*B*x^3*b*c^3+10*A*x^2*b*c^3+6*B*x^2*a*
c^3+2*B*x^2*b^2*c^2+10*A*x*a*c^3+2*B*x*a*b*c^2)/(c*x^2+b*x+a)^(1/2)/x^(1/2)
/c^3
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/sqrt(x), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(1/2),x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/sqrt(x), x)
```

3.1031 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=341

$$\frac{\left(2\sqrt{a}\sqrt{c}+b\right)\left(\sqrt{a}+\sqrt{c}x\right)\left(\sqrt{a}B+3A\sqrt{c}\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{3\sqrt[4]{a}c^{3/4}\sqrt{a+bx+cx^2}} - 2\sqrt[4]{a}\left(\sqrt{a}+\sqrt{c}\right.$$

```
[Out] -2/3*(-B*x+3*A)*(c*x^2+b*x+a)^(1/2)/x^(1/2)+2/3*(6*A*c+B*b)*x^(1/2)*(c*x^2+
b*x+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))-2/3*a^(1/4)*(6*A*c+B*b)*(cos(2*arc
tan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)
))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2
))^(1/2))*(a^(1/2)+x*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c
^(3/4)/(c*x^2+b*x+a)^(1/2)+1/3*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(
1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*
x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))*(B*a^(1/2)+3*A*c^(1/2))*
(a^(1/2)+x*c^(1/2))*(b+2*a^(1/2)*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2)
)^2)^(1/2)/a^(1/4)/c^(3/4)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {812, 839, 1197, 1103, 1195}

$$\frac{\left(2\sqrt{a}\sqrt{c}+b\right)\left(\sqrt{a}+\sqrt{c}x\right)\left(\sqrt{a}B+3A\sqrt{c}\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{3\sqrt[4]{a}c^{3/4}\sqrt{a+bx+cx^2}} - 2\sqrt[4]{a}\left(\sqrt{a}+\sqrt{c}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(3/2),x]
```

```
[Out] (-2*(3*A - B*x)*Sqrt[a + b*x + c*x^2])/(3*Sqrt[x]) + (2*(b*B + 6*A*c)*Sqrt[
x]*Sqrt[a + b*x + c*x^2])/(3*Sqrt[c]*(Sqrt[a] + Sqrt[c]*x)) - (2*a^(1/4)*(b
*B + 6*A*c)*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] + Sqrt[c]
*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[a]*Sqrt[
c]))/4])/(3*c^(3/4)*Sqrt[a + b*x + c*x^2]) + ((b + 2*Sqrt[a]*Sqrt[c])*(Sqrt
[a]*B + 3*A*Sqrt[c])*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a]
+ Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt
[a]*Sqrt[c]))/4])/(3*a^(1/4)*c^(3/4)*Sqrt[a + b*x + c*x^2])
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{3/2}}\,dx &= -\frac{2(3A-Bx)\sqrt{a+bx+cx^2}}{3\sqrt{x}}-\frac{2}{3}\int \frac{\frac{1}{2}(-3Ab-2aB)-\frac{1}{2}(bB+6Ac)x}{\sqrt{x}\,\sqrt{a+bx+cx^2}}\,dx\\ &= -\frac{2(3A-Bx)\sqrt{a+bx+cx^2}}{3\sqrt{x}}-\frac{4}{3}\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}(-3Ab-2aB)+\frac{1}{2}(-bB-6Ac)x^2}{\sqrt{a+bx^2+cx^4}}\,d\right.\\ &= -\frac{2(3A-Bx)\sqrt{a+bx+cx^2}}{3\sqrt{x}}+\frac{\left(2\left(b+2\sqrt{a}\,\sqrt{c}\right)\left(\sqrt{a}\,B+3A\sqrt{c}\right)\right)\mathrm{Subst}\left(\int \frac{}{\sqrt{a+}}\right.}{3\sqrt{c}}\\ &= -\frac{2(3A-Bx)\sqrt{a+bx+cx^2}}{3\sqrt{x}}+\frac{2(bB+6Ac)\sqrt{x}\,\sqrt{a+bx+cx^2}}{3\sqrt{c}\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\sqrt[4]{a}\,(bB+6A}{}\end{aligned}$$

Mathematica [C] time = 2.36, size = 491, normalized size = 1.44

$$\frac{\frac{ix\sqrt{\frac{4a}{x\left(\sqrt{b^2-4ac}+b\right)}+2}\sqrt{\frac{-x\sqrt{b^2-4ac}+2a+bx}{bx-x\sqrt{b^2-4ac}}}\left(6Ac\sqrt{b^2-4ac}+bB\sqrt{b^2-4ac}+4aBc+b^2(-B)\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}}{\sqrt{x}}\right)\middle|\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right)}{c\sqrt{\frac{a}{\sqrt{b^2-4ac}+b}}}-\frac{ix\left(\sqrt{b^2-4ac}-b\right)}{}}{6\sqrt{a+x(b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(3/2),x]
```

```
[Out] ((4*(b*B + 6*A*c)*(a + x*(b + c*x)))/(c*Sqrt[x]) + (4*(-3*A + B*x)*(a + x*(
b + c*x)))/Sqrt[x] - (I*(b*B + 6*A*c)*(-b + Sqrt[b^2 - 4*a*c])*Sqrt[2 + (4*
a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x*Sqrt[(2*a + b*x - Sqrt[b^2 - 4*a*c]*x)/(b
*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^
2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/(
c*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]) + (I*(-(b^2*B) + 4*a*B*c + b*B*Sqrt[b^2
- 4*a*c] + 6*A*c*Sqrt[b^2 - 4*a*c])*Sqrt[2 + (4*a)/((b + Sqrt[b^2 - 4*a*c])
*x)]*x*Sqrt[(2*a + b*x - Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*
EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b
+ Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/(c*Sqrt[a/(b + Sqrt[b^2 - 4*
a*c])])))/(6*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 1.10, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{3}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(3/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(3/2), x)
```

maple [B] time = 0.19, size = 1652, normalized size = 4.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(3/2),x)
```

```
[Out] -1/3*(12*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2
*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1
/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*a
*c^2-3*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c
*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2
))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)
))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*b^2
*c-3*A*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+
(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(
-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^
(1/2))^(1/2))*b*c-24*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))
)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4
*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*
a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/
2))^(1/2))*a*c^2+6*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a
*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*
c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2))*b^2*c+6*A*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*
a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(
1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(
-4*a*c+b^2)^(1/2))^(1/2))*b*c-2*B*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*a*c-4*B*((2*c*x+b+(-4*a*c+b^2)^(1/
2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^
2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(
-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*a*b*c+B*((2*c*x+b+(-4*a*c+b^2)^(1/2))/
(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(
1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(
1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*b^3+B*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(
-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(
-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*b^2-2*B*c^3*x^3+6*A*x^2*c^3-2
*B*x^2*b*c^2+6*A*x*b*c^2-2*B*x*a*c^2+6*A*a*c^2)/(c*x^2+b*x+a)^(1/2)/x^(1/2)
/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(Bx + A)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{c\,x^2 + b\,x + a}}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(3/2),x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,\sqrt{a + bx + cx^2}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**(3/2), x)
```

3.1032 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=353

$$\frac{\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{c}\,(6aB+Ab)+\sqrt{a}\,(2Ac+3bB)\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{3a^{3/4}\sqrt[4]{c}\sqrt{a+bx+cx^2}}-2\sqrt[4]{c}\,\Big(\sqrt{a}$$

```
[Out] -2/3*(a*A+(A*b+3*B*a)*x)*(c*x^2+b*x+a)^(1/2)/a/x^(3/2)+2/3*(A*b+6*B*a)*c^(1
/2)*x^(1/2)*(c*x^2+b*x+a)^(1/2)/a/(a^(1/2)+x*c^(1/2))-2/3*(A*b+6*B*a)*c^(1/
4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a
^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2
))^2)^(1/2)/a^(3/4)/(c*x^2+b*x+a)^(1/2)+1/3*(cos(2*arctan(c^(1/4)*x^(1/2)/a
^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticF(sin(2*ar
ctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))*((2*A*c+3*B
*b)*a^(1/2)+(A*b+6*B*a)*c^(1/2))*(a^(1/2)+x*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2
)+x*c^(1/2))^2)^(1/2)/a^(3/4)/c^(1/4)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 353, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {810, 839, 1197, 1103, 1195}

$$\frac{\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(\sqrt{c}\,(6aB+Ab)+\sqrt{a}\,(2Ac+3bB)\right)F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{3a^{3/4}\sqrt[4]{c}\sqrt{a+bx+cx^2}}-2\sqrt[4]{c}\,\Big(\sqrt{a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(5/2),x]
```

```
[Out] (-2*(a*A + (A*b + 3*a*B)*x)*Sqrt[a + b*x + c*x^2])/(3*a*x^(3/2)) + (2*(A*b
+ 6*a*B)*Sqrt[c]*Sqrt[x]*Sqrt[a + b*x + c*x^2])/(3*a*(Sqrt[a] + Sqrt[c]*x))
 - (2*(A*b + 6*a*B)*c^(1/4)*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(S
qrt[a] + Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 -
b/(Sqrt[a]*Sqrt[c]))/4])/(3*a^(3/4)*Sqrt[a + b*x + c*x^2]) + (((A*b + 6*a*B
)*Sqrt[c] + Sqrt[a]*(3*b*B + 2*A*c))*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x +
c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4
)], (2 - b/(Sqrt[a]*Sqrt[c]))/4])/(3*a^(3/4)*c^(1/4)*Sqrt[a + b*x + c*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{5/2}}\,dx = -\frac{2(aA+(Ab+3aB)x)\sqrt{a+bx+cx^2}}{3ax^{3/2}} - \frac{2\int \frac{-\frac{1}{2}a(3bB+2Ac)-\frac{1}{2}(Ab+6aB)cx}{\sqrt{x}\,\sqrt{a+bx+cx^2}}\,dx}{3a}$$

$$= -\frac{2(aA+(Ab+3aB)x)\sqrt{a+bx+cx^2}}{3ax^{3/2}} - \frac{4\,\mathrm{Subst}\Big(\int \frac{-\frac{1}{2}a(3bB+2Ac)-\frac{1}{2}(Ab+6aB)cx^2}{\sqrt{a+bx^2+cx^4}}\,dx}{3a}$$

$$= -\frac{2(aA+(Ab+3aB)x)\sqrt{a+bx+cx^2}}{3ax^{3/2}} - \frac{\left(2(Ab+6aB)\sqrt{c}\right)\mathrm{Subst}\Bigg(\int \frac{1-\frac{\sqrt{c}\,x^2}{\sqrt{a}}}{\sqrt{a+bx^2+cx^4}}}{3\sqrt{a}}$$

$$= -\frac{2(aA+(Ab+3aB)x)\sqrt{a+bx+cx^2}}{3ax^{3/2}} + \frac{2(Ab+6aB)\sqrt{c}\,\sqrt{x}\,\sqrt{a+bx+cx^2}}{3a\left(\sqrt{a}+\sqrt{c}\,x\right)} - 2$$

Mathematica [C] time = 2.80, size = 499, normalized size = 1.41

$$-4(a+x(b+cx))(a(A+3Bx)+Abx) + \frac{x\Bigg(ix^{3/2}\sqrt{\frac{2a}{x\left(\sqrt{b^2-4ac}+b\right)}+1}\,\sqrt{\frac{-2x\sqrt{b^2-4ac}+4a+2bx}{bx-x\sqrt{b^2-4ac}}}\left(A\left(b\sqrt{b^2-4ac}+4ac-b^2\right)+6aB\sqrt{b^2-4ac}\right)F\Bigg(i\sin}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(5/2),x]
```

```
[Out] (-4*(A*b*x + a*(A + 3*B*x))*(a + x*(b + c*x)) + (x*(4*(A*b + 6*a*B)*Sqrt[a/
(b + Sqrt[b^2 - 4*a*c])]*(a + x*(b + c*x)) + I*(A*b + 6*a*B)*(b - Sqrt[b^2
- 4*a*c])*Sqrt[1 + (2*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x^(3/2)*Sqrt[(4*a + 2
*b*x - 2*Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticE[I*ArcS
inh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a
*c])/(b - Sqrt[b^2 - 4*a*c])] + I*(6*a*B*Sqrt[b^2 - 4*a*c] + A*(-b^2 + 4*a*
c + b*Sqrt[b^2 - 4*a*c]))*Sqrt[1 + (2*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x^(3/
2)*Sqrt[(4*a + 2*b*x - 2*Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*
EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b
+ Sqrt[b^2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])]))/Sqrt[a/(b + Sqrt[b^2 - 4*a*
c])])/(6*a*x^(3/2)*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{5}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(5/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(5/2), x)
```

maple [B] time = 0.13, size = 1687, normalized size = 4.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(5/2),x)
```

```
[Out] 1/3*(2*A*(-4*a*c+b^2)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/
2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/
2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2
)^(1/2)))^(1/2)*x*a*c+4*A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))^(1/2)*x*a*b*c-A*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^
(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/
(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1
/2)))^(1/2)*x*b^3-A*(-4*a*c+b^2)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a
*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+
(-4*a*c+b^2)^(1/2)))^(1/2)*x*b^2-12*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(
-4*a*c+b^2)^(1/2)))^(1/2)*x*a^2*c+3*B*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(
-4*a*c+b^2)^(1/2)))^(1/2)*x*a*b^2+3*B*(-4*a*c+b^2)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2
)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2
*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*x*a*b+24*B*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)
*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*
2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*
c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*x*a^2*c-6*B*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)
*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*
2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*((2*c*x+b+(-4*a*
c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*x*a*b^2-6*B*(-4*a*c+b^2)^(1/2)*
((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2
)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)
^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
))*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*x*a*b-2*A*b*
c^2*x^3-6*B*a*c^2*x^3-2*A*a*c^2*x^2-2*A*b^2*c*x^2-6*B*a*b*c*x^2-4*A*a*b*c*x
-6*B*a^2*c*x-2*A*a^2*c)/(c*x^2+b*x+a)^(1/2)/x^(3/2)/a/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(Bx + A)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{c\,x^2 + b\,x + a}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(5/2),x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,\sqrt{a + bx + cx^2}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**(5/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**(5/2), x)
```

3.1033 $\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=421

$$-\frac{2\sqrt[4]{c}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\left(5abB-2A\left(b^2-3ac\right)\right)E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{15a^{7/4}\sqrt{a+bx+cx^2}}-\frac{\sqrt[4]{c}\left(2\sqrt{a}\sqrt{c}+b\right.}{}$$

```
[Out] -2/15*(3*a*A+(A*b+5*B*a)*x)*(c*x^2+b*x+a)^(1/2)/a/x^(5/2)+2/15*(-6*A*a*c+2*
A*b^2-5*B*a*b)*(c*x^2+b*x+a)^(1/2)/a^2/x^(1/2)+2/15*(5*a*b*B-2*A*(-3*a*c+b^
2))*c^(1/2)*x^(1/2)*(c*x^2+b*x+a)^(1/2)/a^2/(a^(1/2)+x*c^(1/2))-2/15*c^(1/4
)*(5*a*b*B-2*A*(-3*a*c+b^2))*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/
2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*((c*x^
2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4)/(c*x^2+b*x+a)^(1/2)-1/15*c^(1
/4)*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x
^(1/2)/a^(1/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/
a^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*(b+2*a^(1/2)*c^(1/2))*(2*A*b-5*
a*B-3*A*a^(1/2)*c^(1/2))*((c*x^2+b*x+a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/a^(7/4
)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {810, 834, 839, 1197, 1103, 1195}

$$\frac{2\sqrt{a+bx+cx^2}\left(-6aAc-5abB+2Ab^2\right)}{15a^2\sqrt{x}}+\frac{2\sqrt{c}\sqrt{x}\sqrt{a+bx+cx^2}\left(5abB-2A\left(b^2-3ac\right)\right)}{15a^2\left(\sqrt{a}+\sqrt{c}\,x\right)}-\frac{2\sqrt[4]{c}\left(\sqrt{a}+\sqrt{c}\,x\right)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(7/2),x]
```

```
[Out] (2*(2*A*b^2 - 5*a*b*B - 6*a*A*c)*Sqrt[a + b*x + c*x^2])/(15*a^2*Sqrt[x]) -
(2*(3*a*A + (A*b + 5*a*B)*x)*Sqrt[a + b*x + c*x^2])/(15*a*x^(5/2)) + (2*Sqr
t[c]*(5*a*b*B - 2*A*(b^2 - 3*a*c))*Sqrt[x]*Sqrt[a + b*x + c*x^2])/(15*a^2*(
Sqrt[a] + Sqrt[c]*x)) - (2*c^(1/4)*(5*a*b*B - 2*A*(b^2 - 3*a*c))*(Sqrt[a] +
 Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] + Sqrt[c]*x)^2]*EllipticE[2*Arc
Tan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[a]*Sqrt[c]))/4])/(15*a^(7/4)*S
qrt[a + b*x + c*x^2]) - ((b + 2*Sqrt[a]*Sqrt[c])*(2*A*b - 5*a*B - 3*Sqrt[a]
*A*Sqrt[c])*c^(1/4)*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] +
 Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[
a]*Sqrt[c]))/4])/(15*a^(7/4)*Sqrt[a + b*x + c*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+bx+cx^2}}{x^{7/2}}\,dx = -\frac{2(3aA+(Ab+5aB)x)\sqrt{a+bx+cx^2}}{15ax^{5/2}} - \frac{2\int \frac{\frac{1}{2}\left(-5abB+2A\left(b^2-3ac\right)\right)+\frac{1}{2}(Ab-10aB)cx}{x^{3/2}\sqrt{a+bx+cx^2}}}{15a}$$

$$= \frac{2\left(2Ab^2-5abB-6aAc\right)\sqrt{a+bx+cx^2}}{15a^2\sqrt{x}} - \frac{2(3aA+(Ab+5aB)x)\sqrt{a+bx+}}{15ax^{5/2}}$$

$$= \frac{2\left(2Ab^2-5abB-6aAc\right)\sqrt{a+bx+cx^2}}{15a^2\sqrt{x}} - \frac{2(3aA+(Ab+5aB)x)\sqrt{a+bx+}}{15ax^{5/2}}$$

$$= \frac{2\left(2Ab^2-5abB-6aAc\right)\sqrt{a+bx+cx^2}}{15a^2\sqrt{x}} - \frac{2(3aA+(Ab+5aB)x)\sqrt{a+bx+}}{15ax^{5/2}}$$

$$= \frac{2\left(2Ab^2-5abB-6aAc\right)\sqrt{a+bx+cx^2}}{15a^2\sqrt{x}} - \frac{2(3aA+(Ab+5aB)x)\sqrt{a+bx+}}{15ax^{5/2}}$$

Mathematica [C] time = 4.05, size = 576, normalized size = 1.37

$$-4(a+x(b+cx))\left(a^2(3A+5Bx)+ax(A(b+6cx)+5bBx)-2Ab^2x^2\right)+\frac{x^2\left(ix^{3/2}\left(\sqrt{b^2-4ac}-b\right)\sqrt{\frac{2a}{x\left(\sqrt{b^2-4ac}+b\right)}+1}\sqrt{\frac{-2x\sqrt{}}{bx}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + b*x + c*x^2])/x^(7/2),x]
```

```
[Out] (-4*(a + x*(b + c*x))*(-2*A*b^2*x^2 + a^2*(3*A + 5*B*x) + a*x*(5*b*B*x + A*
(b + 6*c*x))) + (x^2*(4*(-2*A*b^2 + 5*a*b*B + 6*a*A*c)*Sqrt[a/(b + Sqrt[b^2
 - 4*a*c])]*(a + x*(b + c*x)) + I*(-b + Sqrt[b^2 - 4*a*c])*(-5*a*b*B + 2*A*
(b^2 - 3*a*c))*Sqrt[1 + (2*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x^(3/2)*Sqrt[(4*
a + 2*b*x - 2*Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticE[I
*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2
- 4*a*c])/(b - Sqrt[b^2 - 4*a*c])] - I*(5*a*B*(b^2 - 4*a*c - b*Sqrt[b^2 - 4
*a*c]) + 2*A*(-b^3 + 4*a*b*c + b^2*Sqrt[b^2 - 4*a*c] - 3*a*c*Sqrt[b^2 - 4*a
*c]))*Sqrt[1 + (2*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*x^(3/2)*Sqrt[(4*a + 2*b*x
 - 2*Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticF[I*ArcSinh[
(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])
/(b - Sqrt[b^2 - 4*a*c])]))/Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/(30*a^2*x^(5/2
)*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 1.19, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{7}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(7/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(Bx+A)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(7/2), x)
```

maple [B] time = 0.13, size = 2109, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(7/2),x)
```

```
[Out] 1/15*(-12*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-
2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(
1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1
/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*
x^2*a^2*c^2+24*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2
)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b
^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^
2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1
/2))*x^2*a^2*c^2-5*B*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a
*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*
c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2))*x^2*a*b^3-6*A*a^3*c+2*A*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^
(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c
+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+
b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c
+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*x^2*b^3-10*B*x^4*a*b*c^2+4*A*x^4*b^
2*c^2+4*A*x^3*b^3*c+3*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)
))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-
4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4
*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1
/2))^(1/2))*x^2*a*b^2*c-14*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^
(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/
(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(
b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^
2)^(1/2))^(1/2))*x^2*a*b^2*c+10*B*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*x^2*a^2*c-5*B*(-4*a*c+b^2)^(1/2)*(
(2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1
/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1
/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*x^2*a*b^2+20*
B*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-
4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)
^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2
),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*x^2*a^2*b*
c+2*A*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*
c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^
(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*x^2*b^
4-12*A*a*c^3*x^4-14*A*x^3*a*b*c^2-10*B*x^3*a*b^2*c+2*A*x^2*a*b^2*c-20*B*x^2
*a^2*b*c-8*A*x*a^2*b*c-10*B*a^3*c*x-18*A*a^2*c^2*x^2-10*B*a^2*c^2*x^3-A*(-4
*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2)
*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*a*c+b^
2)^(1/2))*c*x)^(1/2)*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2
)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/
2))*x^2*a*b*c-6*A*(-4*a*c+b^2)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a
*c+b^2)^(1/2)))^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1
/2)*(-1/(b+(-4*a*c+b^2)^(1/2))*c*x)^(1/2)*EllipticE(((2*c*x+b+(-4*a*c+b^2)^
(1/2))/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-
4*a*c+b^2)^(1/2))^(1/2))*x^2*a*b*c)/(c*x^2+b*x+a)^(1/2)/x^(5/2)/a^2/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(Bx + A)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)/x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{c\,x^2 + b\,x + a}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(7/2),x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^(1/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,\sqrt{a + bx + cx^2}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**(1/2)/x**(7/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + b*x + c*x**2)/x**(7/2), x)
```

3.1034 $\int (2-5x)x^{7/2}\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=251

$$\frac{157160\left(3x^2+5x+2\right)^{3/2}\sqrt{x}}{243243}-\frac{8(502911x+397265)\sqrt{3x^2+5x+2}\,\sqrt{x}}{2189187}+\frac{1543648(3x+2)\sqrt{x}}{6567561\sqrt{3x^2+5x+2}}+\frac{349240\sqrt{2}\,(x}{21}$$

```
[Out] -21620/34749*x^(3/2)*(3*x^2+5*x+2)^(3/2)+656/1287*x^(5/2)*(3*x^2+5*x+2)^(3/
2)-10/39*x^(7/2)*(3*x^2+5*x+2)^(3/2)+157160/243243*(3*x^2+5*x+2)^(3/2)*x^(1
/2)+1543648/6567561*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-1543648/6567561*(1+
x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/
2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+349240/2189187*(1+x)^(3/2)*(1/
(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/
(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-8/2189187*(397265+502911*x)*x^(1/2)*(3*x^2
+5*x+2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{39}\left(3x^2+5x+2\right)^{3/2}x^{7/2}+\frac{656\left(3x^2+5x+2\right)^{3/2}x^{5/2}}{1287}-\frac{21620\left(3x^2+5x+2\right)^{3/2}x^{3/2}}{34749}+\frac{157160\left(3x^2+5x+2\right)^{3/2}\sqrt{}}{243243}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*x^(7/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (1543648*Sqrt[x]*(2 + 3*x))/(6567561*Sqrt[2 + 5*x + 3*x^2]) - (8*Sqrt[x]*(3
97265 + 502911*x)*Sqrt[2 + 5*x + 3*x^2])/2189187 + (157160*Sqrt[x]*(2 + 5*x
 + 3*x^2)^(3/2))/243243 - (21620*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2))/34749 + (
656*x^(5/2)*(2 + 5*x + 3*x^2)^(3/2))/1287 - (10*x^(7/2)*(2 + 5*x + 3*x^2)^(
3/2))/39 - (1543648*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTa
n[Sqrt[x]], -1/2])/(6567561*Sqrt[2 + 5*x + 3*x^2]) + (349240*Sqrt[2]*(1 + x
)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(2189187*Sqrt[2
 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (2-5x)x^{7/2}\sqrt{2+5x+3x^2}\,dx = -\frac{10}{39}x^{7/2}\left(2+5x+3x^2\right)^{3/2} + \frac{2}{39}\int x^{5/2}(35+164x)\sqrt{2+5x+3x^2}\,dx$$

$$= \frac{656x^{5/2}\left(2+5x+3x^2\right)^{3/2}}{1287} - \frac{10}{39}x^{7/2}\left(2+5x+3x^2\right)^{3/2} + \frac{4\int\left(-820-\frac{5405x}{2}\right)x^{3/}}{128}$$

$$= -\frac{21620x^{3/2}\left(2+5x+3x^2\right)^{3/2}}{34749} + \frac{656x^{5/2}\left(2+5x+3x^2\right)^{3/2}}{1287} - \frac{10}{39}x^{7/2}\left(2+5x+\right.$$

$$= \frac{157160\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{243243} - \frac{21620x^{3/2}\left(2+5x+3x^2\right)^{3/2}}{34749} + \frac{656x^{5/2}\left(2+5x\right.}{1287}$$

$$= -\frac{8\sqrt{x}(397265+502911x)\sqrt{2+5x+3x^2}}{2189187} + \frac{157160\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{243243} -$$

$$= -\frac{8\sqrt{x}(397265+502911x)\sqrt{2+5x+3x^2}}{2189187} + \frac{157160\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{243243} -$$

$$= -\frac{8\sqrt{x}(397265+502911x)\sqrt{2+5x+3x^2}}{2189187} + \frac{157160\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{243243} -$$

$$= \frac{1543648\sqrt{x}(2+3x)}{6567561\sqrt{2+5x+3x^2}} - \frac{8\sqrt{x}(397265+502911x)\sqrt{2+5x+3x^2}}{2189187} + 157160$$

Mathematica [C] time = 0.22, size = 178, normalized size = 0.71

$$\frac{-495928i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 1543648i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 2}{6567561\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*x^(7/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (2*(1543648 + 2811400*x + 670548*x^2 - 141444*x^3 + 58374*x^4 + 2892348*x^5
 + 671895*x^6 - 10195794*x^7 - 7577955*x^8) + (1543648*I)*Sqrt[2]*Sqrt[1 +
x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]
- (495928*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*Arc
Sinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(6567561*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(5x^4-2x^3\right)\sqrt{3x^2+5x+2}\,\sqrt{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^4 - 2*x^3)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3x^2+5x+2}\,(5x-2)x^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(7/2), x)
```

maple [A] time = 0.08, size = 137, normalized size = 0.55

$$-\frac{2\left(22733865x^{8}+30587382x^{7}-2015685x^{6}-8677044x^{5}-175122x^{4}+424332x^{3}+4934772x^{2}+3143160x\right.}{19702}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(7/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/19702683/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(22733865*x^8+30587382*x^7-2015685*
x^6-8677044*x^5+633876*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-385912*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2
)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-175122*x^4+424332*x^3+4
934772*x^2+3143160*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^2+5\,x+2}\,(5\,x-2)x^{\frac{7}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int x^{7/2}\,\left(5\,x-2\right)\,\sqrt{3\,x^2+5\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(7/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(x^(7/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-2x^{\frac{7}{2}}\sqrt{3x^2+5x+2}\right)dx-\int 5x^{\frac{9}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(7/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(7/2)*sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(9/2)*sqrt
(3*x**2 + 5*x + 2), x)
```

3.1035 $\int (2-5x)x^{5/2}\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=228

$$-\frac{4420\left(3x^2+5x+2\right)^{3/2}\sqrt{x}}{6237}+\frac{8(74313x+57860)\sqrt{3x^2+5x+2}\,\sqrt{x}}{280665}-\frac{261784(3x+2)\sqrt{x}}{841995\sqrt{3x^2+5x+2}}-\frac{13016\sqrt{2}\,(x+1)}{56133}$$

```
[Out] 532/891*x^(3/2)*(3*x^2+5*x+2)^(3/2)-10/33*x^(5/2)*(3*x^2+5*x+2)^(3/2)-4420/
6237*(3*x^2+5*x+2)^(3/2)*x^(1/2)-261784/841995*(2+3*x)*x^(1/2)/(3*x^2+5*x+2
)^(1/2)+261784/841995*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(
1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-13016
/56133*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1
/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+8/280665*(57860+7431
3*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{33}\left(3x^2+5x+2\right)^{3/2}x^{5/2}+\frac{532}{891}\left(3x^2+5x+2\right)^{3/2}x^{3/2}-\frac{4420\left(3x^2+5x+2\right)^{3/2}\sqrt{x}}{6237}+\frac{8(74313x+57860)\sqrt{3x^2+5}}{280665}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*x^(5/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-261784*Sqrt[x]*(2 + 3*x))/(841995*Sqrt[2 + 5*x + 3*x^2]) + (8*Sqrt[x]*(57
860 + 74313*x)*Sqrt[2 + 5*x + 3*x^2])/280665 - (4420*Sqrt[x]*(2 + 5*x + 3*x
^2)^(3/2))/6237 + (532*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2))/891 - (10*x^(5/2)*(
2 + 5*x + 3*x^2)^(3/2))/33 + (261784*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)
]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(841995*Sqrt[2 + 5*x + 3*x^2]) - (13016
*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/
(56133*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (2-5x)x^{5/2}\sqrt{2+5x+3x^2}\,dx &= -\frac{10}{33}x^{5/2}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{33}\int x^{3/2}(25+133x)\sqrt{2+5x+3x^2}\,dx \\
&= \frac{532}{891}x^{3/2}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{33}x^{5/2}\left(2+5x+3x^2\right)^{3/2}+\frac{4}{891}\int \Bigg(-399- \\
&= -\frac{4420\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{6237}+\frac{532}{891}x^{3/2}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{33}x^{5/2}\left(2+5x \right. \\
&= \frac{8\sqrt{x}(57860+74313x)\sqrt{2+5x+3x^2}}{280665}-\frac{4420\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{6237}+\frac{532}{891} \\
&= \frac{8\sqrt{x}(57860+74313x)\sqrt{2+5x+3x^2}}{280665}-\frac{4420\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{6237}+\frac{532}{891} \\
&= \frac{8\sqrt{x}(57860+74313x)\sqrt{2+5x+3x^2}}{280665}-\frac{4420\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}{6237}+\frac{532}{891} \\
&= -\frac{261784\sqrt{x}(2+3x)}{841995\sqrt{2+5x+3x^2}}+\frac{8\sqrt{x}(57860+74313x)\sqrt{2+5x+3x^2}}{280665}-4420
\end{aligned}$$

Mathematica [C] time = 0.17, size = 170, normalized size = 0.75

$$\frac{66544i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-261784i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2296}{841995\sqrt{x}\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*x^(5/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-523568 - 918440*x - 198168*x^2 + 39780*x^3 + 947916*x^4 + 271350*x^5 - 31
29840*x^6 - 2296350*x^7 - (261784*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]
*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (66544*I)*Sqrt[2]*S
qrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]
], 3/2])/(841995*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(5\,x^3-2\,x^2\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^3 - 2*x^2)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(5/2), x)
```

maple [A] time = 0.07, size = 132, normalized size = 0.58

$$\frac{-\frac{30x^7}{11}-\frac{368x^6}{99}+\frac{670x^5}{2079}+\frac{35108x^4}{31185}+\frac{884x^3}{18711}+\frac{195728x^2}{280665}+\frac{26032x}{56133}-\frac{130892\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)}{2525985}+\frac{65812\sqrt{}}{}}{\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 2/2525985/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(-3444525*x^7-4694760*x^6+407025*x^5+
98718*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^
(1/2),I*2^(1/2))-65446*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+1421874*x^4+59670*x^3+880776*x^2+585720*x
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^2+5\,x+2}\,(5\,x-2)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int x^{5/2}\,(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(5/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(x^(5/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-2x^{\frac{5}{2}}\sqrt{3x^2+5x+2}\right)dx-\int 5x^{\frac{7}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(5/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(5/2)*sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(7/2)*sqrt
(3*x**2 + 5*x + 2), x)
```

3.1036 $\int (2-5x)x^{3/2}\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=205

$$\frac{136}{189}\sqrt{x}\left(3x^2+5x+2\right)^{3/2}-\frac{4\sqrt{x}(1035x+779)\sqrt{3x^2+5x+2}}{1701}+\frac{2360\sqrt{x}(3x+2)}{5103\sqrt{3x^2+5x+2}}+\frac{668\sqrt{2}(x+1)\sqrt{\frac{3x+2}{x+1}}F\Big(\tan}{1701\sqrt{3x^2+5x}}$$

```
[Out] -10/27*x^(3/2)*(3*x^2+5*x+2)^(3/2)+136/189*(3*x^2+5*x+2)^(3/2)*x^(1/2)+2360
/5103*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-2360/5103*(1+x)^(3/2)*(1/(1+x))^(
1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(
1/2)/(3*x^2+5*x+2)^(1/2)+668/1701*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(
1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)
^(1/2)-4/1701*(779+1035*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{27}x^{3/2}\left(3x^2+5x+2\right)^{3/2}+\frac{136}{189}\sqrt{x}\left(3x^2+5x+2\right)^{3/2}-\frac{4\sqrt{x}(1035x+779)\sqrt{3x^2+5x+2}}{1701}+\frac{2360\sqrt{x}(3x+2)}{5103\sqrt{3x^2+5x+2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*x^(3/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (2360*Sqrt[x]*(2 + 3*x))/(5103*Sqrt[2 + 5*x + 3*x^2]) - (4*Sqrt[x]*(779 + 1
035*x)*Sqrt[2 + 5*x + 3*x^2])/1701 + (136*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))/
189 - (10*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2))/27 - (2360*Sqrt[2]*(1 + x)*Sqrt[
(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(5103*Sqrt[2 + 5*x + 3
*x^2]) + (668*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt
[x]], -1/2])/(1701*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (2-5x)x^{3/2}\sqrt{2+5x+3x^2}\,dx = -\frac{10}{27}x^{3/2}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{27}\int \sqrt{x}\,(15+102x)\sqrt{2+5x+3x^2}\,dx$$

$$= \frac{136}{189}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{27}x^{3/2}\left(2+5x+3x^2\right)^{3/2}+\frac{4}{567}\int \frac{(-102-\frac{172}{2}}{}$$

$$= -\frac{4\sqrt{x}\,(779+1035x)\sqrt{2+5x+3x^2}}{1701}+\frac{136}{189}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{27}x^{3/2}($$

$$= -\frac{4\sqrt{x}\,(779+1035x)\sqrt{2+5x+3x^2}}{1701}+\frac{136}{189}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{27}x^{3/2}($$

$$= -\frac{4\sqrt{x}\,(779+1035x)\sqrt{2+5x+3x^2}}{1701}+\frac{136}{189}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{10}{27}x^{3/2}($$

$$= \frac{2360\sqrt{x}\,(2+3x)}{5103\sqrt{2+5x+3x^2}}-\frac{4\sqrt{x}\,(779+1035x)\sqrt{2+5x+3x^2}}{1701}+\frac{136}{189}\sqrt{x}\,(2+5$$

Mathematica [C] time = 0.16, size = 165, normalized size = 0.80

$$\frac{-356i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+2360i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-1701}{5103\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*x^(3/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (4720 + 7792*x + 1380*x^2 + 7920*x^3 + 2970*x^4 - 23652*x^5 - 17010*x^6 + (
2360*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[
Sqrt[2/3]/Sqrt[x]], 3/2] - (356*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x
^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(5103*Sqrt[x]*Sqrt[2 +
 5*x + 3*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(5\,x^2-2\,x\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^2 - 2*x)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(3/2), x)
```

maple [A] time = 0.07, size = 127, normalized size = 0.62

$$-\frac{2\left(25515x^6+35478x^5-4455x^4-11880x^3+8550x^2+6012x-590\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\text{EllipticE}\left(\frac{\sqrt{6x}}{2}\right.\right.}{15309\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/15309/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(25515*x^6+35478*x^5+768*(6*x+4)^(1/2)
*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-59
0*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2
),I*2^(1/2))-4455*x^4-11880*x^3+8550*x^2+6012*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^2+5\,x+2}\,(5\,x-2)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*x^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int x^{3/2}\,\left(5\,x-2\right)\,\sqrt{3\,x^2+5\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(3/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(x^(3/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-2x^{\frac{3}{2}}\sqrt{3x^2+5x+2}\right)dx-\int 5x^{\frac{5}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(3/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(3/2)*sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(5/2)*sqrt
(3*x**2 + 5*x + 2), x)
```

3.1037 $\int (2-5x)\sqrt{x}\,\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=182

$$-\frac{10}{21}\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}+\frac{4}{945}\sqrt{x}\,(639x+430)\sqrt{3x^2+5x+2}-\frac{2476\sqrt{x}\,(3x+2)}{2835\sqrt{3x^2+5x+2}}-\frac{164\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\Big(\mathrm{tar}}{189\sqrt{3x^2+5x}}$$

```
[Out] -10/21*(3*x^2+5*x+2)^(3/2)*x^(1/2)-2476/2835*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^
(1/2)+2476/2835*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1
/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-164/189*(1+
x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/
2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+4/945*(430+639*x)*x^(1/2)*(3*x
^2+5*x+2)^(1/2)
```

Rubi **[A]** time = 0.13, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{21}\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}+\frac{4}{945}\sqrt{x}\,(639x+430)\sqrt{3x^2+5x+2}-\frac{2476\sqrt{x}\,(3x+2)}{2835\sqrt{3x^2+5x+2}}-\frac{164\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\Big(\mathrm{tar}}{189\sqrt{3x^2+5x}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2476*Sqrt[x]*(2 + 3*x))/(2835*Sqrt[2 + 5*x + 3*x^2]) + (4*Sqrt[x]*(430 +
639*x)*Sqrt[2 + 5*x + 3*x^2])/945 - (10*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))/21
 + (2476*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]],
 -1/2])/(2835*Sqrt[2 + 5*x + 3*x^2]) - (164*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/
(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(189*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (2-5x)\sqrt{x}\sqrt{2+5x+3x^2}\,dx &= -\frac{10}{21}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{21}\int\frac{(5+71x)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx\\
&= \frac{4}{945}\sqrt{x}\,(430+639x)\sqrt{2+5x+3x^2}-\frac{10}{21}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{4}{945}\int\\
&= \frac{4}{945}\sqrt{x}\,(430+639x)\sqrt{2+5x+3x^2}-\frac{10}{21}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{8}{945}\,\text{Subs}\\
&= \frac{4}{945}\sqrt{x}\,(430+639x)\sqrt{2+5x+3x^2}-\frac{10}{21}\sqrt{x}\left(2+5x+3x^2\right)^{3/2}-\frac{328}{189}\,\text{Subs}\\
&= -\frac{2476\sqrt{x}\,(2+3x)}{2835\sqrt{2+5x+3x^2}}+\frac{4}{945}\sqrt{x}\,(430+639x)\sqrt{2+5x+3x^2}-\frac{10}{21}\sqrt{x}\,(2+
\end{aligned}$$

Mathematica [C] time = 0.17, size = 163, normalized size = 0.90

$$\frac{16i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2476i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(6075x\right.}{2835\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*(2476 + 3730*x - 3354*x^2 - 1935*x^3 + 8748*x^4 + 6075*x^5) - (2476*I)*
Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3
]/Sqrt[x]], 3/2] + (16*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*El
lipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(2835*Sqrt[x]*Sqrt[2 + 5*x + 3*
x^2])
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\sqrt{3\,x^{2} + 5\,x + 2}\,(5\,x - 2)\sqrt{x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3\,x^{2} + 5\,x + 2}\,(5\,x - 2)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x), x)
```

maple [A] time = 0.07, size = 122, normalized size = 0.67

$$\frac{-\frac{30x^{5}}{7} - \frac{216x^{4}}{35} + \frac{86x^{3}}{63} + \frac{4712x^{2}}{945} + \frac{328x}{189} - \frac{1238\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)}{8505} + \frac{418\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\mathrm{EllipticF}(}{2835}}{\sqrt{x}\,\sqrt{3x^{2} + 5x + 2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 2/8505/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(-18225*x^5+627*(6*x+4)^(1/2)*(3*x+3)^(1
/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-619*(6*x+4)^(
1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2)
)-26244*x^4+5805*x^3+21204*x^2+7380*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^{2} + 5\,x + 2}\,(5\,x - 2)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \sqrt{x}\,\left(5\,x - 2\right)\,\sqrt{3\,x^{2} + 5\,x + 2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(1/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(x^(1/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-2\sqrt{x}\,\sqrt{3x^2+5x+2}\right)\,dx-\int 5x^{\frac{3}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(1/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*sqrt(x)*sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(3/2)*sqrt(
3*x**2 + 5*x + 2), x)
```

3.1038 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=159

$$\frac{2}{9}\sqrt{x}\sqrt{3x^2+5x+2}\,(1-9x)+\frac{88\sqrt{x}\,(3x+2)}{27\sqrt{3x^2+5x+2}}+\frac{34\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}-\frac{88\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E}{27\sqrt{3x^2+}}$$

```
[Out] 88/27*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-88/27*(1+x)^(3/2)*(1/(1+x))^(1/2)
*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)
/(3*x^2+5*x+2)^(1/2)+34/9*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+
x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+2
/9*(1-9*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {814, 839, 1189, 1100, 1136}

$$\frac{2}{9}\sqrt{x}\sqrt{3x^2+5x+2}\,(1-9x)+\frac{88\sqrt{x}\,(3x+2)}{27\sqrt{3x^2+5x+2}}+\frac{34\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}-\frac{88\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E}{27\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/Sqrt[x],x]
```

```
[Out] (88*Sqrt[x]*(2 + 3*x))/(27*Sqrt[2 + 5*x + 3*x^2]) + (2*(1 - 9*x)*Sqrt[x]*Sq
rt[2 + 5*x + 3*x^2])/9 - (88*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellipt
icE[ArcTan[Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x^2]) + (34*Sqrt[2]*(1 + x
)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x
 + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
```

```
FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx &= \frac{2}{9}(1-9x)\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{2}{45}\int \frac{-85-110x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{2}{9}(1-9x)\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{4}{45}\,\text{Subst}\left(\int \frac{-85-110x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\
&= \frac{2}{9}(1-9x)\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{68}{9}\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)+\frac{88}{9}\\
&= \frac{88\sqrt{x}\,(2+3x)}{27\sqrt{2+5x+3x^2}}+\frac{2}{9}(1-9x)\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{88\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\text{ta}\right.}{27\sqrt{2+5x+}}
\end{aligned}
$$

Mathematica [C] time = 0.16, size = 158, normalized size = 0.99

$$
\frac{14i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+88i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+2\left(-81x^4-\right.}{27\sqrt{x}\,\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/Sqrt[x],x]
```

```
[Out] (2*(88 + 226*x + 93*x^2 - 126*x^3 - 81*x^4) + (88*I)*Sqrt[2]*Sqrt[1 + x^(-1
)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (14
*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt
[2/3]/Sqrt[x]], 3/2])/(27*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$
\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{\sqrt{x}},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/sqrt(x), x)
```

maple [A] time = 0.07, size = 117, normalized size = 0.74

$$-\frac{2\Bigg(243x^4+378x^3+117x^2-18x-22\sqrt{6x+4}\ \sqrt{3x+3}\ \sqrt{6}\ \sqrt{-x}\ \mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+15\sqrt{6x+4}\ \sqrt{3x+}}{81\sqrt{3x^2+5x+2}\ \sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2),x)
```

```
[Out] -2/81/(3*x^2+5*x+2)^(1/2)/x^(1/2)*(15*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(
-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-22*(6*x+4)^(1/2)*(3*x+3)^(
1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+243*x^4+378*
x^3+117*x^2-18*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/sqrt(x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(5\,x-2)\ \sqrt{3\,x^2+5\,x+2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(1/2),x)
```

```
[Out] -int(((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2\sqrt{3x^2+5x+2}}{\sqrt{x}}\right)dx-\int 5\sqrt{x}\ \sqrt{3x^2+5x+2}\ dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(1/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/sqrt(x), x) - Integral(5*sqrt(x)*sqrt(3
*x**2 + 5*x + 2), x)
```

3.1039 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{3/2}}\,dx$

Optimal. Leaf size=159

$$\frac{22\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}-\frac{2(5x+6)\sqrt{3x^2+5x+2}}{3\sqrt{x}}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}-\frac{22\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\right.}{9\sqrt{3x^2+5}}$$

```
[Out] 22/9*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-22/9*(1+x)^(3/2)*(1/(1+x))^(1/2)*E
llipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(
3*x^2+5*x+2)^(1/2)+10/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)
^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-2/3
*(6+5*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {812, 839, 1189, 1100, 1136}

$$\frac{22\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}-\frac{2(5x+6)\sqrt{3x^2+5x+2}}{3\sqrt{x}}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}-\frac{22\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\right.}{9\sqrt{3x^2+5}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(3/2),x]
```

```
[Out] (22*Sqrt[x]*(2 + 3*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (2*(6 + 5*x)*Sqrt[2 + 5*
x + 3*x^2])/(3*Sqrt[x]) - (22*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellip
ticE[ArcTan[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x + 3*x^2]) + (10*Sqrt[2]*(1 + x
)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x
 + 3*x^2])
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{3/2}}\,dx = -\frac{2(6+5x)\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{2}{3}\int \frac{-5-\frac{11x}{2}}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(6+5x)\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{4}{3}\,\text{Subst}\left(\int \frac{-5-\frac{11x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right)$$

$$= -\frac{2(6+5x)\sqrt{2+5x+3x^2}}{3\sqrt{x}} + \frac{20}{3}\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) + \frac{22}{3}\,\text{Sul}$$

$$= \frac{22\sqrt{x}(2+3x)}{9\sqrt{2+5x+3x^2}} - \frac{2(6+5x)\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{22\sqrt{2}(1+x)\sqrt{\frac{2+3x}{1+x}}\,E(\tan^{-1}(\sqrt{x}}{9\sqrt{2+5x+3x^2}}$$

Mathematica [C] time = 0.17, size = 153, normalized size = 0.96

$$\frac{8i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 22i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 2(45x^3+96x^2}{9\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(3/2),x]
```

```
[Out] (-2*(14 + 65*x + 96*x^2 + 45*x^3) + (22*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3
+ 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (8*I)*Sqrt[2]
*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[
x]], 3/2])/(9*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(3/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(3/2), x)
```

maple [A] time = 0.08, size = 113, normalized size = 0.71

$$-\frac{270x^3+774x^2+720x-11\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+3\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}}{27\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(3/2),x)
```

```
[Out] -1/27*(3*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))-11*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+270*x^3+774*x^2+720*x+216)/(3*x^2+5*x+2)^
(1/2)/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int-\frac{(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}}{x^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(3/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2\sqrt{3x^2+5x+2}}{x^{\frac{3}{2}}}\right)dx-\int\frac{5\sqrt{3x^2+5x+2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(3/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/x**(3/2), x) - Integral(5*sqrt(3*x**2 +
 5*x + 2)/sqrt(x), x)
```

3.1040 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{5/2}}\,dx$

Optimal. Leaf size=157

$$-\frac{50\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{21\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{50\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}-4\sqrt{3x^2}$$

```
[Out] -50/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+50/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*
EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/
(3*x^2+5*x+2)^(1/2)-21*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^
(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-4/3*
(1-5*x)*(3*x^2+5*x+2)^(1/2)/x^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {810, 839, 1189, 1100, 1136}

$$-\frac{4\sqrt{3x^2+5x+2}\,(1-5x)}{3x^{3/2}}-\frac{50\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{21\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{50\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E}{3\sqrt{3x^2+5x}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(5/2),x]
```

```
[Out] (-50*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) - (4*(1 - 5*x)*Sqrt[2 + 5
*x + 3*x^2])/(3*x^(3/2)) + (50*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Elli
pticE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x^2]) - (21*Sqrt[2]*(1 +
x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x +
 3*x^2]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
```

```
FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{5/2}}\,dx &= -\frac{4(1-5x)\sqrt{2+5x+3x^2}}{3x^{3/2}}-\frac{1}{3}\int \frac{63+75x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{4(1-5x)\sqrt{2+5x+3x^2}}{3x^{3/2}}-\frac{2}{3}\,\mathrm{Subst}\left(\int \frac{63+75x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\
&= -\frac{4(1-5x)\sqrt{2+5x+3x^2}}{3x^{3/2}}-42\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)-50\,\mathrm{Su}\\
&= -\frac{50\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}-\frac{4(1-5x)\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{50\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\right.}{3\sqrt{2+5x+3x^2}}
\end{aligned}$$

Mathematica [C] time = 0.17, size = 153, normalized size = 0.97

$$\frac{-13i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{5/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-50i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{5/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(45x^3+\right.}{3x^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(5/2),x]
```

```
[Out] (-2*(4 + 40*x + 81*x^2 + 45*x^3) - (50*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 +
 2/x]*x^(5/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (13*I)*Sqrt[2]
*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(5/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[
x]], 3/2])/(3*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{5}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(5/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(5/2), x)
```

maple [A] time = 0.08, size = 115, normalized size = 0.73

$$\frac{180x^3+264x^2-25\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+12\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{Ellip}}{9\sqrt{3x^2+5x+2}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(5/2),x)
```

```
[Out] 1/9*(12*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4
)^(1/2),I*2^(1/2))*x-25*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Elli
pticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x+180*x^3+264*x^2+60*x-24)/(3*x^2+5*x+2)
^(1/2)/x^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(5/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2\sqrt{3x^2+5x+2}}{x^{\frac{5}{2}}}\right)dx-\int \frac{5\sqrt{3x^2+5x+2}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(5/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/x**(5/2), x) - Integral(5*sqrt(3*x**2 +
 5*x + 2)/x**(3/2), x)
```

3.1041 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{7/2}}\,dx$

Optimal. Leaf size=180

$$\frac{139\sqrt{3x^2+5x+2}}{15\sqrt{x}}-\frac{139\sqrt{x}\,(3x+2)}{15\sqrt{3x^2+5x+2}}-\frac{11\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\Big(\tan^{-1}\big(\sqrt{x}\big)\,|-\frac{1}{2}\Big)}{\sqrt{3x^2+5x+2}}+\frac{139\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan}{15\sqrt{3x^2+5x+}}$$

```
[Out] -139/15*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+139/15*(1+x)^(3/2)*(1/(1+x))^(1
/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1
/2)/(3*x^2+5*x+2)^(1/2)-11*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1
+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-
4/15*(3-10*x)*(3*x^2+5*x+2)^(1/2)/x^(5/2)+139/15*(3*x^2+5*x+2)^(1/2)/x^(1/2
)
```

Rubi [A] time = 0.11, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4\sqrt{3x^2+5x+2}\,(3-10x)}{15x^{5/2}}+\frac{139\sqrt{3x^2+5x+2}}{15\sqrt{x}}-\frac{139\sqrt{x}\,(3x+2)}{15\sqrt{3x^2+5x+2}}-\frac{11\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\Big(\tan^{-1}\big(\sqrt{x}\big)\,|-\frac{1}{2}\Big)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(7/2),x]
```

```
[Out] (-139*Sqrt[x]*(2 + 3*x))/(15*Sqrt[2 + 5*x + 3*x^2]) - (4*(3 - 10*x)*Sqrt[2
+ 5*x + 3*x^2])/(15*x^(5/2)) + (139*Sqrt[2 + 5*x + 3*x^2])/(15*Sqrt[x]) + (
139*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2
])/(15*Sqrt[2 + 5*x + 3*x^2]) - (11*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]
*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{7/2}}\,dx &= -\frac{4(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}} - \frac{1}{15}\int \frac{139+165x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{4(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}} + \frac{139\sqrt{2+5x+3x^2}}{15\sqrt{x}} + \frac{1}{15}\int \frac{-165-\frac{417x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{4(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}} + \frac{139\sqrt{2+5x+3x^2}}{15\sqrt{x}} + \frac{2}{15}\,\mathrm{Subst}\left(\int \frac{-165-\frac{417x^2}{2}}{\sqrt{2+5x^2+3x}}\right. \\
&= -\frac{4(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}} + \frac{139\sqrt{2+5x+3x^2}}{15\sqrt{x}} - 22\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x}}\right. \\
&= -\frac{139\sqrt{x}\,(2+3x)}{15\sqrt{2+5x+3x^2}} - \frac{4(3-10x)\sqrt{2+5x+3x^2}}{15x^{5/2}} + \frac{139\sqrt{2+5x+3x^2}}{15\sqrt{x}} + \frac{139\sqrt{2}}{}
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 153, normalized size = 0.85

$$
\frac{-26i\sqrt{2}\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{7/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-139i\sqrt{2}\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{7/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+4\left(30x^3+\right.}{15x^{5/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(7/2),x]
```

```
[Out] (4*(-6 + 5*x + 41*x^2 + 30*x^3) - (139*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 +
 2/x]*x^(7/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (26*I)*Sqrt[2]
*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(7/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[
x]], 3/2])/(15*x^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{7}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(7/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(7/2), x)
```

maple [A] time = 0.08, size = 124, normalized size = 0.69

$$\frac{2502x^4+4890x^3-139\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)+87\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}}{90\sqrt{3x^2+5x+2}\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2),x)
```

```
[Out] 1/90*(87*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))*x^2-139*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+2502*x^4+4890*x^3+2652*x^2+120*x
-144)/(3*x^2+5*x+2)^(1/2)/x^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(7/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2\sqrt{3x^2+5x+2}}{x^{\frac{7}{2}}}\right)dx-\int\frac{5\sqrt{3x^2+5x+2}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(7/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/x**(7/2), x) - Integral(5*sqrt(3*x**2 +
 5*x + 2)/x**(5/2), x)
```

3.1042 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{9/2}}\,dx$

Optimal. Leaf size=205

$$-\frac{62\sqrt{3x^2+5x+2}}{21\sqrt{x}}+\frac{62\sqrt{x}\,(3x+2)}{21\sqrt{3x^2+5x+2}}+\frac{43(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{7\sqrt{2}\,\sqrt{3x^2+5x+2}}-\frac{62\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\right.\right.}{21\sqrt{3x^2+5x+2}}$$

```
[Out] 62/21*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+43/14*(1+x)^(3/2)*(1/(1+x))^(1/2)
*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)
/(3*x^2+5*x+2)^(1/2)-62/21*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1
+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-
4/7*(1-3*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2)+43/21*(3*x^2+5*x+2)^(1/2)/x^(3/2)-6
2/21*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4\sqrt{3x^2+5x+2}\,(1-3x)}{7x^{7/2}}-\frac{62\sqrt{3x^2+5x+2}}{21\sqrt{x}}+\frac{43\sqrt{3x^2+5x+2}}{21x^{3/2}}+\frac{62\sqrt{x}\,(3x+2)}{21\sqrt{3x^2+5x+2}}+\frac{43(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan\right.}{7\sqrt{2}\,\sqrt{3x^2+5}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(9/2),x]
```

```
[Out] (62*Sqrt[x]*(2 + 3*x))/(21*Sqrt[2 + 5*x + 3*x^2]) - (4*(1 - 3*x)*Sqrt[2 + 5
*x + 3*x^2])/(7*x^(7/2)) + (43*Sqrt[2 + 5*x + 3*x^2])/(21*x^(3/2)) - (62*Sq
rt[2 + 5*x + 3*x^2])/(21*Sqrt[x]) - (62*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 +
 x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(21*Sqrt[2 + 5*x + 3*x^2]) + (43*(1
+ x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(7*Sqrt[2]*S
qrt[2 + 5*x + 3*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{9/2}}\,dx &= -\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}-\frac{1}{35}\int \frac{215+255x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}+\frac{1}{105}\int \frac{310+\frac{645x}{2}}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}-\frac{62\sqrt{2+5x+3x^2}}{21\sqrt{x}}-\frac{1}{105}\int \\
&= -\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}-\frac{62\sqrt{2+5x+3x^2}}{21\sqrt{x}}-\frac{2}{105}\text{Subs} \\
&= -\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}-\frac{62\sqrt{2+5x+3x^2}}{21\sqrt{x}}+\frac{43}{7}\text{Subst} \\
&= \frac{62\sqrt{x}\,(2+3x)}{21\sqrt{2+5x+3x^2}}-\frac{4(1-3x)\sqrt{2+5x+3x^2}}{7x^{7/2}}+\frac{43\sqrt{2+5x+3x^2}}{21x^{3/2}}-\frac{62\sqrt{2+5x}}{21\sqrt{x}}
\end{aligned}
$$

Mathematica [C] time = 0.16, size = 155, normalized size = 0.76

$$
\frac{5i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{9/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+124i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{9/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+258x^4+646x}{42x^{7/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(9/2),x]
```

```
[Out] (-48 + 24*x + 460*x^2 + 646*x^3 + 258*x^4 + (124*I)*Sqrt[2]*Sqrt[1 + x^(-1)
]*Sqrt[3 + 2/x]*x^(9/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (5*I
)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(9/2)*EllipticF[I*ArcSinh[Sqrt[2
/3]/Sqrt[x]], 3/2])/(42*x^(7/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{9}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(9/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(9/2), x)
```

maple [A] time = 0.08, size = 129, normalized size = 0.63

$$-\frac{1116x^5+1086x^4-62\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^3\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+57\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}}{126\sqrt{3x^2+5x+2}\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2),x)
```

```
[Out] -1/126*(57*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*
x+4)^(1/2),I*2^(1/2))*x^3-62*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)
*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^3+1116*x^5+1086*x^4-1194*x^3-1380
*x^2-72*x+144)/(3*x^2+5*x+2)^(1/2)/x^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(9/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2\sqrt{3x^2+5x+2}}{x^{\frac{9}{2}}}\right)dx-\int\frac{5\sqrt{3x^2+5x+2}}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(9/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/x**(9/2), x) - Integral(5*sqrt(3*x**2 +
 5*x + 2)/x**(7/2), x)
```

3.1043 $\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{11/2}}\,dx$

Optimal. Leaf size=228

$$\frac{1331\sqrt{3x^2+5x+2}}{630\sqrt{x}}-\frac{1331\sqrt{x}\,(3x+2)}{630\sqrt{3x^2+5x+2}}-\frac{79(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{21\sqrt{2}\,\sqrt{3x^2+5x+2}}+\frac{1331(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{315\sqrt{2}\,\sqrt{3x^2+5x+}}$$

```
[Out] -1331/630*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+1331/630*(1+x)^(3/2)*(1/(1+x)
)^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x)
)^(1/2)/(3*x^2+5*x+2)^(1/2)-79/42*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(
1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)
^(1/2)-4/63*(7-20*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2)+97/105*(3*x^2+5*x+2)^(1/2)
/x^(5/2)-79/63*(3*x^2+5*x+2)^(1/2)/x^(3/2)+1331/630*(3*x^2+5*x+2)^(1/2)/x^(
1/2)
```

Rubi [A] time = 0.16, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4\sqrt{3x^2+5x+2}\,(7-20x)}{63x^{9/2}}+\frac{1331\sqrt{3x^2+5x+2}}{630\sqrt{x}}-\frac{79\sqrt{3x^2+5x+2}}{63x^{3/2}}+\frac{97\sqrt{3x^2+5x+2}}{105x^{5/2}}-\frac{1331\sqrt{x}\,(3x+2)}{630\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(11/2),x]
```

```
[Out] (-1331*Sqrt[x]*(2 + 3*x))/(630*Sqrt[2 + 5*x + 3*x^2]) - (4*(7 - 20*x)*Sqrt[
2 + 5*x + 3*x^2])/(63*x^(9/2)) + (97*Sqrt[2 + 5*x + 3*x^2])/(105*x^(5/2)) -
 (79*Sqrt[2 + 5*x + 3*x^2])/(63*x^(3/2)) + (1331*Sqrt[2 + 5*x + 3*x^2])/(63
0*Sqrt[x]) + (1331*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]
], -1/2])/(315*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2]) - (79*(1 + x)*Sqrt[(2 + 3*x)/
(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(21*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2
])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)\sqrt{2+5x+3x^2}}{x^{11/2}}\,dx &= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}-\frac{1}{63}\int \frac{291+345x}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}+\frac{1}{315}\int \frac{1185+\frac{2619x}{2}}{x^{5/2}\sqrt{2+5x+3x^2}}\,d\\
&= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}-\frac{79\sqrt{2+5x+3x^2}}{63x^{3/2}}-\frac{1}{945}\int\\
&= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}-\frac{79\sqrt{2+5x+3x^2}}{63x^{3/2}}+\frac{1331\sqrt{2}}{6}\\
&= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}-\frac{79\sqrt{2+5x+3x^2}}{63x^{3/2}}+\frac{1331\sqrt{2}}{6}\\
&= -\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}-\frac{79\sqrt{2+5x+3x^2}}{63x^{3/2}}+\frac{1331\sqrt{2}}{6}\\
&= -\frac{1331\sqrt{x}\,(2+3x)}{630\sqrt{2+5x+3x^2}}-\frac{4(7-20x)\sqrt{2+5x+3x^2}}{63x^{9/2}}+\frac{97\sqrt{2+5x+3x^2}}{105x^{5/2}}-\frac{79\sqrt{2}}{6}
\end{aligned}$$

Mathematica [C] time = 0.17, size = 160, normalized size = 0.70

$$\frac{146i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{11/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-1331i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{11/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2370x}{630x^{9/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[2 + 5*x + 3*x^2])/x^(11/2),x]
```

```
[Out] (-560 + 200*x + 4324*x^2 + 3730*x^3 - 2204*x^4 - 2370*x^5 - (1331*I)*Sqrt[2
]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(11/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqr
t[x]], 3/2] + (146*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(11/2)*Ellip
ticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(630*x^(9/2)*Sqrt[2 + 5*x + 3*x^2]
)
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{11}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(11/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(11/2), x)
```

maple [A] time = 0.10, size = 134, normalized size = 0.59

$$\frac{23958x^6+25710x^5-1331\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^4\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+1623\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}}{3780\sqrt{3x^2+5x+2}\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(11/2),x)
```

```
[Out] 1/3780*(1623*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(
6*x+4)^(1/2),I*2^(1/2))*x^4-1331*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(
1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^4+23958*x^6+25710*x^5+2748*x^
4+22380*x^3+25944*x^2+1200*x-3360)/(3*x^2+5*x+2)^(1/2)/x^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(1/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(5*x - 2)/x^(11/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{(5\,x-2)\,\sqrt{3\,x^2+5\,x+2}}{x^{11/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(11/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(1/2))/x^(11/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2\sqrt{3x^2+5x+2}}{x^{\frac{11}{2}}}\right) dx - \int \frac{5\sqrt{3x^2+5x+2}}{x^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(1/2)/x**(11/2),x)
```

```
[Out] -Integral(-2*sqrt(3*x**2 + 5*x + 2)/x**(11/2), x) - Integral(5*sqrt(3*x**2
+ 5*x + 2)/x**(9/2), x)
```

3.1044 $\int (2-5x)x^{5/2}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=256

$$-\frac{4660\sqrt{x}\left(3x^2+5x+2\right)^{5/2}}{11583}+\frac{8\sqrt{x}\,(32921x+27010)\left(3x^2+5x+2\right)^{3/2}}{243243}-\frac{8\sqrt{x}\,(205407x+190465)\sqrt{3x^2+5x+}}{10945935}$$

```
[Out] 136/351*x^(3/2)*(3*x^2+5*x+2)^(5/2)-2/9*x^(5/2)*(3*x^2+5*x+2)^(5/2)+8/24324
3*(27010+32921*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2)-4660/11583*(3*x^2+5*x+2)^(5/2
)*x^(1/2)-497824/32837805*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+497824/328378
05*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))
*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-61736/2189187*(1+x)^(3/2
)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+
3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-8/10945935*(190465+205407*x)*x^(1/2)*
(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{2}{9}x^{5/2}\left(3x^2+5x+2\right)^{5/2}+\frac{136}{351}x^{3/2}\left(3x^2+5x+2\right)^{5/2}-\frac{4660\sqrt{x}\left(3x^2+5x+2\right)^{5/2}}{11583}+\frac{8\sqrt{x}\,(32921x+27010)\left(3x^2\right.}{243243}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*x^(5/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-497824*Sqrt[x]*(2 + 3*x))/(32837805*Sqrt[2 + 5*x + 3*x^2]) - (8*Sqrt[x]*(
190465 + 205407*x)*Sqrt[2 + 5*x + 3*x^2])/10945935 + (8*Sqrt[x]*(27010 + 32
921*x)*(2 + 5*x + 3*x^2)^(3/2))/243243 - (4660*Sqrt[x]*(2 + 5*x + 3*x^2)^(5
/2))/11583 + (136*x^(3/2)*(2 + 5*x + 3*x^2)^(5/2))/351 - (2*x^(5/2)*(2 + 5*
x + 3*x^2)^(5/2))/9 + (497824*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellip
ticE[ArcTan[Sqrt[x]], -1/2])/(32837805*Sqrt[2 + 5*x + 3*x^2]) - (61736*Sqrt
[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(2189
187*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (2-5x)x^{5/2}\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{2}{9}x^{5/2}\left(2+5x+3x^2\right)^{5/2}+\frac{2}{45}\int x^{3/2}(25+170x)\left(2+5x+3x^2\right)^{3/2}\,dx$$

$$= \frac{136}{351}x^{3/2}\left(2+5x+3x^2\right)^{5/2}-\frac{2}{9}x^{5/2}\left(2+5x+3x^2\right)^{5/2}+\frac{4\int \Big(-510-\frac{5825x}{2}}{}$$

$$= -\frac{4660\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}{11583}+\frac{136}{351}x^{3/2}\left(2+5x+3x^2\right)^{5/2}-\frac{2}{9}x^{5/2}\Big(2+5$$

$$= \frac{8\sqrt{x}(27010+32921x)\left(2+5x+3x^2\right)^{3/2}}{243243}-\frac{4660\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}{11583}+$$

$$= -\frac{8\sqrt{x}(190465+205407x)\sqrt{2+5x+3x^2}}{10945935}+\frac{8\sqrt{x}(27010+32921x)\Big(2}{243243}$$

$$= -\frac{8\sqrt{x}(190465+205407x)\sqrt{2+5x+3x^2}}{10945935}+\frac{8\sqrt{x}(27010+32921x)\Big(2}{243243}$$

$$= -\frac{8\sqrt{x}(190465+205407x)\sqrt{2+5x+3x^2}}{10945935}+\frac{8\sqrt{x}(27010+32921x)\Big(2}{243243}$$

$$= -\frac{497824\sqrt{x}(2+3x)}{32837805\sqrt{2+5x+3x^2}}-\frac{8\sqrt{x}(190465+205407x)\sqrt{2+5x+3x^2}}{10945935}$$

Mathematica [C] time = 0.20, size = 183, normalized size = 0.71

$$-497824i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\Bigg(214108i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*x^(5/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] ((-497824*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*Arc
Sinh[Sqrt[2/3]/Sqrt[x]], 3/2] - 2*(497824 + 318520*x - 273876*x^2 + 91620*x
^3 - 37601118*x^4 - 83323080*x^5 + 69664455*x^6 + 337486905*x^7 + 320800095
*x^8 + 98513415*x^9 + (214108*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(
3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]))/(32837805*Sqrt[x]*Sqrt[
2 + 5*x + 3*x^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(15\,x^5+19\,x^4-4\,x^2\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^5 + 19*x^4 - 4*x^2)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*x^(5/2), x)
```

maple [**A**] time = 0.08, size = 142, normalized size = 0.55

$$-\frac{2\left(295540245x^{9}+962400285x^{8}+1012460715x^{7}+208993365x^{6}-249969240x^{5}-112803354x^{4}+274860x^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -2/98513415/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(295540245*x^9+962400285*x^8+101246
0715*x^7+208993365*x^6-249969240*x^5+89652*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1
/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))+124456*(6*x+4)^(1/2)*
(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-112
803354*x^4+274860*x^3-3061836*x^2-2778120*x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)x^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*x^(5/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$-\int x^{5/2}\,\left(5\,x-2\right)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(5/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(x^(5/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-4x^{\frac{5}{2}}\sqrt{3x^{2}+5x+2}\right)dx-\int 19x^{\frac{9}{2}}\sqrt{3x^{2}+5x+2}\,dx-\int 15x^{\frac{11}{2}}\sqrt{3x^{2}+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(5/2)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-4*x**(5/2)*sqrt(3*x**2 + 5*x + 2), x) - Integral(19*x**(9/2)*sqr
t(3*x**2 + 5*x + 2), x) - Integral(15*x**(11/2)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1045 $\int (2-5x)x^{3/2}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=233

$$\frac{556\sqrt{x}\left(3x^2+5x+2\right)^{5/2}}{1287}-\frac{4\sqrt{x}(8575x+6959)\left(3x^2+5x+2\right)^{3/2}}{27027}+\frac{8\sqrt{x}(6381x+6908)\sqrt{3x^2+5x+2}}{243243}+$$

```
[Out] -10/39*x^(3/2)*(3*x^2+5*x+2)^(5/2)-4/27027*(6959+8575*x)*(3*x^2+5*x+2)^(3/2
)*x^(1/2)+556/1287*(3*x^2+5*x+2)^(5/2)*x^(1/2)+55112/729729*(2+3*x)*x^(1/2)
/(3*x^2+5*x+2)^(1/2)-55112/729729*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(
1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)
^(1/2)+25448/243243*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/
2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+8/24324
3*(6908+6381*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{39}x^{3/2}\left(3x^2+5x+2\right)^{5/2}+\frac{556\sqrt{x}\left(3x^2+5x+2\right)^{5/2}}{1287}-\frac{4\sqrt{x}(8575x+6959)\left(3x^2+5x+2\right)^{3/2}}{27027}+$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (55112*Sqrt[x]*(2 + 3*x))/(729729*Sqrt[2 + 5*x + 3*x^2]) + (8*Sqrt[x]*(6908
 + 6381*x)*Sqrt[2 + 5*x + 3*x^2])/243243 - (4*Sqrt[x]*(6959 + 8575*x)*(2 +
5*x + 3*x^2)^(3/2))/27027 + (556*Sqrt[x]*(2 + 5*x + 3*x^2)^(5/2))/1287 - (1
0*x^(3/2)*(2 + 5*x + 3*x^2)^(5/2))/39 - (55112*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*
x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(729729*Sqrt[2 + 5*x + 3*x^2]
) + (25448*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]
], -1/2])/(243243*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (2-5x)x^{3/2}\left(2+5x+3x^2\right)^{3/2}\,dx &= -\frac{10}{39}x^{3/2}\left(2+5x+3x^2\right)^{5/2}+\frac{2}{39}\int \sqrt{x}\,(15+139x)\left(2+5x+3x^2\right)^{3/2}\,dx\\
&= \frac{556\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}{1287}-\frac{10}{39}x^{3/2}\left(2+5x+3x^2\right)^{5/2}+\frac{4\int \frac{\left(-139-\frac{3675x}{2}\right)(2+5x}{\sqrt{x}}}{1287}\\
&= -\frac{4\sqrt{x}\,(6959+8575x)\left(2+5x+3x^2\right)^{3/2}}{27027}+\frac{556\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}{1287}-\frac{10}{39}x\\
&= \frac{8\sqrt{x}\,(6908+6381x)\sqrt{2+5x+3x^2}}{243243}-\frac{4\sqrt{x}\,(6959+8575x)\left(2+5x+3x^2\right)}{27027}\\
&= \frac{8\sqrt{x}\,(6908+6381x)\sqrt{2+5x+3x^2}}{243243}-\frac{4\sqrt{x}\,(6959+8575x)\left(2+5x+3x^2\right)}{27027}\\
&= \frac{8\sqrt{x}\,(6908+6381x)\sqrt{2+5x+3x^2}}{243243}-\frac{4\sqrt{x}\,(6959+8575x)\left(2+5x+3x^2\right)}{27027}\\
&= \frac{55112\sqrt{x}\,(2+3x)}{729729\sqrt{2+5x+3x^2}}+\frac{8\sqrt{x}\,(6908+6381x)\sqrt{2+5x+3x^2}}{243243}-\frac{4\sqrt{x}\,(695}{}
\end{aligned}
$$

Mathematica [C] time = 0.19, size = 178, normalized size = 0.76

$$\frac{21232i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+55112i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\,(2}{729729\sqrt{x}\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(-55112 - 61436*x + 8508*x^2 - 1171602*x^3 - 2497986*x^4 + 1830195*x^5
+ 8989785*x^6 + 8374023*x^7 + 2525985*x^8) + (55112*I)*Sqrt[2]*Sqrt[1 + x^(
-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (
21232*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh
[Sqrt[2/3]/Sqrt[x]], 3/2])/(729729*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(15\,x^{4}+19\,x^{3}-4\,x\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^4 + 19*x^3 - 4*x)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*x^(3/2), x)
```

maple [A] time = 0.06, size = 137, normalized size = 0.59

$$-\frac{2\left(7577955x^{8}+25122069x^{7}+26969355x^{6}+5490585x^{5}-7493958x^{4}-3514806x^{3}+273528x^{2}+229032x\right.}{218918}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -2/2189187/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(7577955*x^8+25122069*x^7+26969355*x
^6+5490585*x^5+3162*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Elliptic
F(1/2*(6*x+4)^(1/2),I*2^(1/2))-13778*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-
x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-7493958*x^4-3514806*x^3+273
528*x^2+229032*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)x^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*x^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int x^{3/2}\,(5\,x-2)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(3/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(x^(3/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-4x^{\frac{3}{2}}\sqrt{3x^2+5x+2}\right)dx-\int 19x^{\frac{7}{2}}\sqrt{3x^2+5x+2}\,dx-\int 15x^{\frac{9}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(3/2)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-4*x**(3/2)*sqrt(3*x**2 + 5*x + 2), x) - Integral(19*x**(7/2)*sqr
t(3*x**2 + 5*x + 2), x) - Integral(15*x**(9/2)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1046 $\int (2-5x)\sqrt{x}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=210

$$-\frac{10}{33}\sqrt{x}\left(3x^2+5x+2\right)^{5/2}+\frac{4}{231}\sqrt{x}\,(84x+65)\left(3x^2+5x+2\right)^{3/2}-\frac{4}{385}\sqrt{x}\,(39x+55)\sqrt{3x^2+5x+2}-\frac{424\sqrt{x}\,(3}{1155\sqrt{3x^2+}}$$

```
[Out] 4/231*(65+84*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2)-10/33*(3*x^2+5*x+2)^(5/2)*x^(1/
2)-424/1155*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+424/1155*(1+x)^(3/2)*(1/(1+
x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+
x))^(1/2)/(3*x^2+5*x+2)^(1/2)-36/77*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x
^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+
2)^(1/2)-4/385*(55+39*x)*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {832, 814, 839, 1189, 1100, 1136}

$$-\frac{10}{33}\sqrt{x}\left(3x^2+5x+2\right)^{5/2}+\frac{4}{231}\sqrt{x}\,(84x+65)\left(3x^2+5x+2\right)^{3/2}-\frac{4}{385}\sqrt{x}\,(39x+55)\sqrt{3x^2+5x+2}-\frac{424\sqrt{x}\,(3}{1155\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-424*Sqrt[x]*(2 + 3*x))/(1155*Sqrt[2 + 5*x + 3*x^2]) - (4*Sqrt[x]*(55 + 39
*x)*Sqrt[2 + 5*x + 3*x^2])/385 + (4*Sqrt[x]*(65 + 84*x)*(2 + 5*x + 3*x^2)^(
3/2))/231 - (10*Sqrt[x]*(2 + 5*x + 3*x^2)^(5/2))/33 + (424*Sqrt[2]*(1 + x)*
Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(1155*Sqrt[2 + 5*
x + 3*x^2]) - (36*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[
Sqrt[x]], -1/2])/(77*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (2-5x)\sqrt{x}\left(2+5x+3x^2\right)^{3/2}\,dx &= -\frac{10}{33}\sqrt{x}\left(2+5x+3x^2\right)^{5/2}+\frac{2}{33}\int\frac{(5+108x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{x}}\,dx\\
&= \frac{4}{231}\sqrt{x}\,(65+84x)\left(2+5x+3x^2\right)^{3/2}-\frac{10}{33}\sqrt{x}\left(2+5x+3x^2\right)^{5/2}-\frac{4\int\frac{(270+}{}}{}\\
&= -\frac{4}{385}\sqrt{x}\,(55+39x)\sqrt{2+5x+3x^2}+\frac{4}{231}\sqrt{x}\,(65+84x)\left(2+5x+3x^2\right)^{3/2}\\
&= -\frac{4}{385}\sqrt{x}\,(55+39x)\sqrt{2+5x+3x^2}+\frac{4}{231}\sqrt{x}\,(65+84x)\left(2+5x+3x^2\right)^{3/2}\\
&= -\frac{4}{385}\sqrt{x}\,(55+39x)\sqrt{2+5x+3x^2}+\frac{4}{231}\sqrt{x}\,(65+84x)\left(2+5x+3x^2\right)^{3/2}\\
&= -\frac{424\sqrt{x}\,(2+3x)}{1155\sqrt{2+5x+3x^2}}-\frac{4}{385}\sqrt{x}\,(55+39x)\sqrt{2+5x+3x^2}+\frac{4}{231}\sqrt{x}\,(65+
\end{aligned}
$$

Mathematica [C] time = 0.19, size = 173, normalized size = 0.82

$$
\frac{-424i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(58i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+4725x^7}{1155\sqrt{x}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] ((-424*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSin
h[Sqrt[2/3]/Sqrt[x]], 3/2] - 2*(424 + 520*x - 3106*x^2 - 6140*x^3 + 3497*x^
4 + 17775*x^5 + 16065*x^6 + 4725*x^7 + (58*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt
[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]))/(1155*Sqrt
[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)*sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*sqrt(x), x)
```

maple [A] time = 0.06, size = 132, normalized size = 0.63

$$\frac{-\frac{90x^{7}}{11}-\frac{306x^{6}}{11}-\frac{2370x^{5}}{77}-\frac{6994x^{4}}{1155}+\frac{2456x^{3}}{231}+\frac{7484x^{2}}{1155}+\frac{72x}{77}-\frac{212\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)}{3465}+\frac{32\sqrt{6x+4}\,\sqrt{3}}{}}{\sqrt{x}\,\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2),x)
```

```
[Out] 2/3465/(3*x^2+5*x+2)^(1/2)/x^(1/2)*(-14175*x^7-48195*x^6-53325*x^5+48*(6*x+
4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(
1/2))-106*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x
+4)^(1/2),I*2^(1/2))-10491*x^4+18420*x^3+11226*x^2+1620*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)\sqrt{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)*sqrt(x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \sqrt{x}\,\left(5\,x-2\right)\,{\left(3\,x^2+5\,x+2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-x^(1/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(x^(1/2)*(5*x - 2)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-4\sqrt{x}\,\sqrt{3x^2+5x+2}\right)dx-\int 19x^{\frac{5}{2}}\sqrt{3x^2+5x+2}\,dx-\int 15x^{\frac{7}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)*x**(1/2),x)
```

```
[Out] -Integral(-4*sqrt(x)*sqrt(3*x**2 + 5*x + 2), x) - Integral(19*x**(5/2)*sqrt
(3*x**2 + 5*x + 2), x) - Integral(15*x**(7/2)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1047 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{x}}\,dx$

Optimal. Leaf size=187

$$-\frac{2}{9}\sqrt{x}\,(5x+1)\left(3x^2+5x+2\right)^{3/2}+\frac{4}{81}\sqrt{x}\,(45x+82)\sqrt{3x^2+5x+2}+\frac{860\sqrt{x}\,(3x+2)}{243\sqrt{3x^2+5x+2}}+\frac{356\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F}{81\sqrt{3x^2+}}$$

```
[Out] -2/9*(1+5*x)*(3*x^2+5*x+2)^(3/2)*x^(1/2)+860/243*(2+3*x)*x^(1/2)/(3*x^2+5*x
+2)^(1/2)-860/243*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2)
,1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+356/81*(1
+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1
/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+4/81*(82+45*x)*x^(1/2)*(3*x^2
+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {814, 839, 1189, 1100, 1136}

$$-\frac{2}{9}\sqrt{x}\,(5x+1)\left(3x^2+5x+2\right)^{3/2}+\frac{4}{81}\sqrt{x}\,(45x+82)\sqrt{3x^2+5x+2}+\frac{860\sqrt{x}\,(3x+2)}{243\sqrt{3x^2+5x+2}}+\frac{356\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F}{81\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (860*Sqrt[x]*(2 + 3*x))/(243*Sqrt[2 + 5*x + 3*x^2]) + (4*Sqrt[x]*(82 + 45*x
)*Sqrt[2 + 5*x + 3*x^2])/81 - (2*Sqrt[x]*(1 + 5*x)*(2 + 5*x + 3*x^2)^(3/2))
/9 - (860*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]]
, -1/2])/(243*Sqrt[2 + 5*x + 3*x^2]) + (356*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/
(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(81*Sqrt[2 + 5*x + 3*x^2])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{x}}\,dx &= -\frac{2}{9}\sqrt{x}\,(1+5x)\left(2+5x+3x^2\right)^{3/2}-\frac{2}{63}\int \frac{(-133-175x)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx\\ &= \frac{4}{81}\sqrt{x}\,(82+45x)\sqrt{2+5x+3x^2}-\frac{2}{9}\sqrt{x}\,(1+5x)\left(2+5x+3x^2\right)^{3/2}+\frac{4\int \frac{3115}{\sqrt{x}\sqrt{2}}}{28}\\ &= \frac{4}{81}\sqrt{x}\,(82+45x)\sqrt{2+5x+3x^2}-\frac{2}{9}\sqrt{x}\,(1+5x)\left(2+5x+3x^2\right)^{3/2}+\frac{8\,\mathrm{Subst}\Big(}{}\\ &= \frac{4}{81}\sqrt{x}\,(82+45x)\sqrt{2+5x+3x^2}-\frac{2}{9}\sqrt{x}\,(1+5x)\left(2+5x+3x^2\right)^{3/2}+\frac{712}{81}\,\mathrm{Subs}\\ &= \frac{860\sqrt{x}\,(2+3x)}{243\sqrt{2+5x+3x^2}}+\frac{4}{81}\sqrt{x}\,(82+45x)\sqrt{2+5x+3x^2}-\frac{2}{9}\sqrt{x}\,(1+5x)\Big(2+5x\end{aligned}$$

Mathematica [C] time = 0.16, size = 165, normalized size = 0.88

$$\frac{208i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+860i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2430x^6-8}{243\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/Sqrt[x],x]
```

```
[Out] (1720 + 6052*x + 6420*x^2 - 1746*x^3 - 9990*x^4 - 8586*x^5 - 2430*x^6 + (86
0*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqr
t[2/3]/Sqrt[x]], 3/2] + (208*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3
/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(243*Sqrt[x]*Sqrt[2 + 5*x
 + 3*x^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{\sqrt{x}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/sqrt(x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/sqrt(x), x)
```

maple [A] time = 0.07, size = 127, normalized size = 0.68

$$-\frac{2\left(3645x^6+12879x^5+14985x^4+2619x^3-5760x^2-2628x-215\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\ \mathrm{EllipticE}\left(\frac{\sqrt{}}{}\right.\right.}{729\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] -2/729/(3*x^2+5*x+2)^(1/2)/x^(1/2)*(3645*x^6+12879*x^5+111*(6*x+4)^(1/2)*(3
*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-215*(
6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I
*2^(1/2))+14985*x^4+2619*x^3-5760*x^2-2628*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/sqrt(x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(5\,x-2)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(1/2),x)
```

```
[Out] -int(((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{4\sqrt{3x^2+5x+2}}{\sqrt{x}}\right)dx-\int 19x^{\frac{3}{2}}\sqrt{3x^2+5x+2}\,dx-\int 15x^{\frac{5}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/sqrt(x), x) - Integral(19*x**(3/2)*sqrt
(3*x**2 + 5*x + 2), x) - Integral(15*x**(5/2)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1048 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{3/2}}\,dx$

Optimal. Leaf size=187

$$-\frac{2(5x+14)\left(3x^2+5x+2\right)^{3/2}}{7\sqrt{x}}+\frac{2}{105}\sqrt{x}(531x+1045)\sqrt{3x^2+5x+2}+\frac{5848\sqrt{x}(3x+2)}{315\sqrt{3x^2+5x+2}}+\frac{482\sqrt{2}(x+1)\sqrt{\frac{3x+2}{x+1}}\,F}{21\sqrt{3x^2+}}$$

```
[Out] -2/7*(14+5*x)*(3*x^2+5*x+2)^(3/2)/x^(1/2)+5848/315*(2+3*x)*x^(1/2)/(3*x^2+5
*x+2)^(1/2)-5848/315*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1
/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+482/21
*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2
^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+2/105*(1045+531*x)*x^(1/2)
*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = $\{812, 814, 839, 1189, 1100, 1136\}$

$$-\frac{2(5x+14)\left(3x^2+5x+2\right)^{3/2}}{7\sqrt{x}}+\frac{2}{105}\sqrt{x}(531x+1045)\sqrt{3x^2+5x+2}+\frac{5848\sqrt{x}(3x+2)}{315\sqrt{3x^2+5x+2}}+\frac{482\sqrt{2}(x+1)\sqrt{\frac{3x+2}{x+1}}\,F}{21\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (5848*Sqrt[x]*(2 + 3*x))/(315*Sqrt[2 + 5*x + 3*x^2]) + (2*Sqrt[x]*(1045 + 5
31*x)*Sqrt[2 + 5*x + 3*x^2])/105 - (2*(14 + 5*x)*(2 + 5*x + 3*x^2)^(3/2))/(
7*Sqrt[x]) - (5848*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan
[Sqrt[x]], -1/2])/(315*Sqrt[2 + 5*x + 3*x^2]) + (482*Sqrt[2]*(1 + x)*Sqrt[(
2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(21*Sqrt[2 + 5*x + 3*x^
2])
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{3/2}}\,dx &= -\frac{2(14+5x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{x}}-\frac{6}{7}\int \frac{\left(-25-\frac{59x}{2}\right)\sqrt{2+5x+3x^2}}{\sqrt{x}}\,dx\\ &= \frac{2}{105}\sqrt{x}\,(1045+531x)\sqrt{2+5x+3x^2}-\frac{2(14+5x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{x}}+\frac{4}{105}\\ &= \frac{2}{105}\sqrt{x}\,(1045+531x)\sqrt{2+5x+3x^2}-\frac{2(14+5x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{x}}+\frac{8}{105}\\ &= \frac{2}{105}\sqrt{x}\,(1045+531x)\sqrt{2+5x+3x^2}-\frac{2(14+5x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{x}}+\frac{964}{21}\\ &= \frac{5848\sqrt{x}\,(2+3x)}{315\sqrt{2+5x+3x^2}}+\frac{2}{105}\sqrt{x}\,(1045+531x)\sqrt{2+5x+3x^2}-\frac{2(14+5x)\left(2\right.}{7}\end{aligned}$$

Mathematica [C] time = 0.18, size = 163, normalized size = 0.87

$$\frac{1382i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+5848i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(202\right.}{315\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(3/2),x]
```

```
[Out] (-2*(-3328 - 7390*x + 177*x^2 + 9855*x^3 + 7641*x^4 + 2025*x^5) + (5848*I)*
Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3
]/Sqrt[x]], 3/2] + (1382*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*
EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(315*Sqrt[x]*Sqrt[2 + 5*x + 3
*x^2])
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{x^{\frac{3}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(3/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(3/2), x)
```

maple [A] time = 0.12, size = 123, normalized size = 0.66

$$-\frac{2\left(6075x^{5}+22923x^{4}+29565x^{3}+26847x^{2}+21690x-1462\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{}\right.\right.}{945\sqrt{3x^{2}+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(3/2),x)
```

```
[Out] -2/945*(6075*x^5+771*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellipti
cF(1/2*(6*x+4)^(1/2),I*2^(1/2))-1462*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-
x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+22923*x^4+29565*x^3+26847*x
^2+21690*x+7560)/(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{\left(5\,x-2\right)\,{\left(3\,x^2+5\,x+2\right)}^{3/2}}{x^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(3/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{4\sqrt{3x^2+5x+2}}{x^{\frac{3}{2}}}\right)dx-\int 19\sqrt{x}\,\sqrt{3x^2+5x+2}\,dx-\int 15x^{\frac{3}{2}}\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(3/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/x**(3/2), x) - Integral(19*sqrt(x)*sqrt
(3*x**2 + 5*x + 2), x) - Integral(15*x**(3/2)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1049 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{5/2}}\,dx$

Optimal. Leaf size=183

$$\frac{2(2-x)\sqrt{3x^2+5x+2}}{\sqrt{x}}-\frac{34\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{14\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{34\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan\right.}{3\sqrt{3x^2+5x+}}$$

```
[Out] -2/3*(2+3*x)*(3*x^2+5*x+2)^(3/2)/x^(3/2)-34/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)
^(1/2)+34/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I
*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-14*(1+x)^(3/2)*
(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*
x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+2*(2-x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {812, 839, 1189, 1100, 1136}

$$-\frac{2(3x+2)\left(3x^2+5x+2\right)^{3/2}}{3x^{3/2}}+\frac{2(2-x)\sqrt{3x^2+5x+2}}{\sqrt{x}}-\frac{34\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{14\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\right.}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] (-34*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (2*(2 - x)*Sqrt[2 + 5*x
 + 3*x^2])/Sqrt[x] - (2*(2 + 3*x)*(2 + 5*x + 3*x^2)^(3/2))/(3*x^(3/2)) + (3
4*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])
/(3*Sqrt[2 + 5*x + 3*x^2]) - (14*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*El
lipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{5/2}}\,dx &= -\frac{2(2+3x)\left(2+5x+3x^2\right)^{3/2}}{3x^{3/2}}-\frac{2}{5}\int \frac{\left(5+\frac{15x}{2}\right)\sqrt{2+5x+3x^2}}{x^{3/2}}\,dx\\
&= \frac{2(2-x)\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{2(2+3x)\left(2+5x+3x^2\right)^{3/2}}{3x^{3/2}}+\frac{4}{15}\int \frac{-\frac{105}{2}-}{\sqrt{x}\sqrt{2+5x}}\\
&= \frac{2(2-x)\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{2(2+3x)\left(2+5x+3x^2\right)^{3/2}}{3x^{3/2}}+\frac{8}{15}\operatorname{Subst}\left(\int \frac{-}{\sqrt{2}}\right.\\
&= \frac{2(2-x)\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{2(2+3x)\left(2+5x+3x^2\right)^{3/2}}{3x^{3/2}}-28\operatorname{Subst}\left(\int \frac{}{\sqrt{2+}}\right.\\
&= -\frac{34\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}+\frac{2(2-x)\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{2(2+3x)\left(2+5x+3x^2\right)^{3/2}}{3x^{3/2}}
\end{aligned}$$

Mathematica [C] time = 0.20, size = 163, normalized size = 0.89

$$\frac{-34i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(4i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+27x^5+\right.}{3x^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(5/2),x]
```

```
[Out] ((-34*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(5/2)*EllipticE[I*ArcSinh
[Sqrt[2/3]/Sqrt[x]], 3/2] - 2*(8 + 74*x + 195*x^2 + 219*x^3 + 117*x^4 + 27*
x^5 + (4*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(5/2)*EllipticF[I*ArcS
inh[Sqrt[2/3]/Sqrt[x]], 3/2]))/(3*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{x^{\frac{5}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(5/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(5/2), x)
```

maple [A] time = 0.09, size = 125, normalized size = 0.68

$$\frac{-162x^5-702x^4-1008x^3-660x^2-17\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+9\sqrt{6x+4}\,\sqrt{3x+}}{9\sqrt{3x^2+5x+2}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(5/2),x)
```

```
[Out] 1/9*(9*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)
^(1/2),I*2^(1/2))*x-17*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-162*x^5-702*x^4-1008*x^3-660*x^2-240*x-
48)/(3*x^2+5*x+2)^(1/2)/x^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{(5\,x-2)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{x^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(5/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{4\sqrt{3x^2+5x+2}}{x^{\frac{5}{2}}}\right)dx-\int \frac{19\sqrt{3x^2+5x+2}}{\sqrt{x}}\,dx-\int 15\sqrt{x}\,\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(5/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/x**(5/2), x) - Integral(19*sqrt(3*x**2
+ 5*x + 2)/sqrt(x), x) - Integral(15*sqrt(x)*sqrt(3*x**2 + 5*x + 2), x)
```

3.1050 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{7/2}}\,dx$

Optimal. Leaf size=185

$$\frac{2(89-35x)\sqrt{3x^2+5x+2}}{5\sqrt{x}}-\frac{1418\sqrt{x}\,(3x+2)}{15\sqrt{3x^2+5x+2}}-\frac{117\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{1418\sqrt{2}\,(x+1)\sqrt{}}{15\sqrt{3}}$$

```
[Out] -4/15*(3-5*x)*(3*x^2+5*x+2)^(3/2)/x^(5/2)-1418/15*(2+3*x)*x^(1/2)/(3*x^2+5*
x+2)^(1/2)+1418/15*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2
),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-117*(1+x
)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2
)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+2/5*(89-35*x)*(3*x^2+5*x+2)^(1/
2)/x^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {810, 812, 839, 1189, 1100, 1136}

$$-\frac{4(3-5x)\left(3x^2+5x+2\right)^{3/2}}{15x^{5/2}}+\frac{2(89-35x)\sqrt{3x^2+5x+2}}{5\sqrt{x}}-\frac{1418\sqrt{x}\,(3x+2)}{15\sqrt{3x^2+5x+2}}-\frac{117\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\right(}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-1418*Sqrt[x]*(2 + 3*x))/(15*Sqrt[2 + 5*x + 3*x^2]) + (2*(89 - 35*x)*Sqrt[
2 + 5*x + 3*x^2])/(5*Sqrt[x]) - (4*(3 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/(15*x
^(5/2)) + (1418*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sq
rt[x]], -1/2])/(15*Sqrt[2 + 5*x + 3*x^2]) - (117*Sqrt[2]*(1 + x)*Sqrt[(2 +
3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{7/2}}\,dx &= -\frac{4(3-5x)\left(2+5x+3x^2\right)^{3/2}}{15x^{5/2}}-\frac{1}{5}\int \frac{(89+105x)\sqrt{2+5x+3x^2}}{x^{3/2}}\,dx \\
&= \frac{2(89-35x)\sqrt{2+5x+3x^2}}{5\sqrt{x}}-\frac{4(3-5x)\left(2+5x+3x^2\right)^{3/2}}{15x^{5/2}}+\frac{2}{15}\int \frac{-\frac{1755}{2}-}{\sqrt{x}\,\sqrt{2+5}} \\
&= \frac{2(89-35x)\sqrt{2+5x+3x^2}}{5\sqrt{x}}-\frac{4(3-5x)\left(2+5x+3x^2\right)^{3/2}}{15x^{5/2}}+\frac{4}{15}\,\mathrm{Subst}\left(\int \frac{-\frac{1}{}}{\sqrt{2}}\right. \\
&= \frac{2(89-35x)\sqrt{2+5x+3x^2}}{5\sqrt{x}}-\frac{4(3-5x)\left(2+5x+3x^2\right)^{3/2}}{15x^{5/2}}-234\,\mathrm{Subst}\left(\int \frac{}{\sqrt{2}}\right. \\
&= -\frac{1418\sqrt{x}\,(2+3x)}{15\sqrt{2+5x+3x^2}}+\frac{2(89-35x)\sqrt{2+5x+3x^2}}{5\sqrt{x}}-\frac{4(3-5x)\left(2+5x+3x^2\right)^{3}}{15x^{5/2}}
\end{aligned}$$

Mathematica [C] time = 0.19, size = 163, normalized size = 0.88

$$\frac{-337i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{7/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-1418i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{7/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(225x^{5}\right.}{15x^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(7/2),x]
```

```
[Out] (-2*(24 + 80*x + 906*x^2 + 2230*x^3 + 1605*x^4 + 225*x^5) - (1418*I)*Sqrt[2
]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(7/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt
[x]], 3/2] - (337*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(7/2)*Ellipti
cF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(15*x^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{x^{\frac{7}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(7/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(7/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(7/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(7/2), x)
```

maple [A] time = 0.11, size = 129, normalized size = 0.70

$$\frac{-1350x^{5}+3132x^{4}+7890x^{3}-709\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^{2}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)+372\sqrt{6x+4}\,\sqrt{3x}}{45\sqrt{3x^{2}+5x+2}\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(7/2),x)
```

```
[Out] 1/45*(372*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x
+4)^(1/2),I*2^(1/2))*x^2-709*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)
*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2-1350*x^5+3132*x^4+7890*x^3+3072
*x^2-480*x-144)/(3*x^2+5*x+2)^(1/2)/x^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}\left(5\,x-2\right)}{x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(7/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{\left(5\,x-2\right)\,{\left(3\,x^2+5\,x+2\right)}^{3/2}}{x^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(7/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(7/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{4\sqrt{3x^2+5x+2}}{x^{\frac{7}{2}}}\right)dx-\int\frac{19\sqrt{3x^2+5x+2}}{x^{\frac{3}{2}}}\,dx-\int\frac{15\sqrt{3x^2+5x+2}}{\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(7/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/x**(7/2), x) - Integral(19*sqrt(3*x**2
+ 5*x + 2)/x**(3/2), x) - Integral(15*sqrt(3*x**2 + 5*x + 2)/sqrt(x), x)
```

3.1051 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{9/2}}\,dx$

Optimal. Leaf size=187

$$-\frac{633\sqrt{x}\,(3x+2)}{7\sqrt{3x^2+5x+2}}-\frac{783\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{7\sqrt{3x^2+5x+2}}+\frac{633\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{7\sqrt{3x^2+5x+2}}-4($$

```
[Out] -4/7*(1-2*x)*(3*x^2+5*x+2)^(3/2)/x^(7/2)-633/7*(2+3*x)*x^(1/2)/(3*x^2+5*x+2
)^(1/2)+633/7*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2
*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-783/7*(1+x)^(
3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*(
(2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+3/7*(22+133*x)*(3*x^2+5*x+2)^(1/2)
/x^(3/2)
```

Rubi [A] time = 0.12, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {810, 839, 1189, 1100, 1136}

$$-\frac{4(1-2x)\left(3x^2+5x+2\right)^{3/2}}{7x^{7/2}}+\frac{3(133x+22)\sqrt{3x^2+5x+2}}{7x^{3/2}}-\frac{633\sqrt{x}\,(3x+2)}{7\sqrt{3x^2+5x+2}}-\frac{783\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F(\tan^{-1}(}{7\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-633*Sqrt[x]*(2 + 3*x))/(7*Sqrt[2 + 5*x + 3*x^2]) + (3*(22 + 133*x)*Sqrt[2
 + 5*x + 3*x^2])/(7*x^(3/2)) - (4*(1 - 2*x)*(2 + 5*x + 3*x^2)^(3/2))/(7*x^(
7/2)) + (633*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[
x]], -1/2])/(7*Sqrt[2 + 5*x + 3*x^2]) - (783*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)
/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(7*Sqrt[2 + 5*x + 3*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
```

```
FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{9/2}}\,dx = -\frac{4(1-2x)\left(2+5x+3x^2\right)^{3/2}}{7x^{7/2}} - \frac{3}{35}\int \frac{(165+195x)\sqrt{2+5x+3x^2}}{x^{5/2}}\,dx$$

$$= \frac{3(22+133x)\sqrt{2+5x+3x^2}}{7x^{3/2}} - \frac{4(1-2x)\left(2+5x+3x^2\right)^{3/2}}{7x^{7/2}} + \frac{1}{35}\int \frac{-3915}{\sqrt{x}\sqrt{2+}}$$

$$= \frac{3(22+133x)\sqrt{2+5x+3x^2}}{7x^{3/2}} - \frac{4(1-2x)\left(2+5x+3x^2\right)^{3/2}}{7x^{7/2}} + \frac{2}{35}\text{Subst}\left(\int\right.$$

$$= \frac{3(22+133x)\sqrt{2+5x+3x^2}}{7x^{3/2}} - \frac{4(1-2x)\left(2+5x+3x^2\right)^{3/2}}{7x^{7/2}} - \frac{1566}{7}\text{Subst}\left(\int\right.$$

$$= -\frac{633\sqrt{x}\,(2+3x)}{7\sqrt{2+5x+3x^2}} + \frac{3(22+133x)\sqrt{2+5x+3x^2}}{7x^{3/2}} - \frac{4(1-2x)\left(2+5x+3x^2\right)^{3}}{7x^{7/2}}$$

Mathematica [C] time = 0.18, size = 163, normalized size = 0.87

$$\frac{-150i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{9/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 633i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{9/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 2\left(315x^5\right.}{7x^{7/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(9/2),x]
```

```
[Out] (-2*(8 + 24*x - 72*x^2 - 19*x^3 + 384*x^4 + 315*x^5) - (633*I)*Sqrt[2]*Sqrt
[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(9/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]],
3/2] - (150*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(9/2)*EllipticF[I*A
rcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(7*x^(7/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{x^{\frac{9}{2}}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(9/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(9/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(9/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(9/2), x)
```

maple [A] time = 0.09, size = 129, normalized size = 0.69

$$\frac{2538x^{5}+4794x^{4}-211\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^{3}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+111\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-}}{14\sqrt{3x^{2}+5x+2}\,x^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(9/2),x)
```

```
[Out] 1/14*(111*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x
+4)^(1/2),I*2^(1/2))*x^3-211*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)
*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^3+2538*x^5+4794*x^4+2608*x^3+288*
x^2-96*x-32)/(3*x^2+5*x+2)^(1/2)/x^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(9/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{(5\,x-2)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{x^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(9/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{4\sqrt{3x^{2}+5x+2}}{x^{\frac{9}{2}}}\right)dx-\int \frac{19\sqrt{3x^{2}+5x+2}}{x^{\frac{5}{2}}}\,dx-\int \frac{15\sqrt{3x^{2}+5x+2}}{x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(9/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/x**(9/2), x) - Integral(19*sqrt(3*x**2
+ 5*x + 2)/x**(5/2), x) - Integral(15*sqrt(3*x**2 + 5*x + 2)/x**(3/2), x)
```

3.1052 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{11/2}} \, dx$

Optimal. Leaf size=210

$$\frac{5438\sqrt{3x^2+5x+2}}{315\sqrt{x}}-\frac{5438\sqrt{x}\,(3x+2)}{315\sqrt{3x^2+5x+2}}-\frac{899(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{21\sqrt{2}\,\sqrt{3x^2+5x+2}}+\frac{5438\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan\right.}{315\sqrt{3x^2+5x+}}$$

```
[Out] -4/63*(7-15*x)*(3*x^2+5*x+2)^(3/2)/x^(9/2)-5438/315*(2+3*x)*x^(1/2)/(3*x^2+
5*x+2)^(1/2)-899/42*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/
2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+5438/31
5*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*
2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+1/315*(1446+4055*x)*(3*x^
2+5*x+2)^(1/2)/x^(5/2)+5438/315*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi **[A]** time = 0.13, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4(7-15x)\left(3x^2+5x+2\right)^{3/2}}{63x^{9/2}}+\frac{(4055x+1446)\sqrt{3x^2+5x+2}}{315x^{5/2}}+\frac{5438\sqrt{3x^2+5x+2}}{315\sqrt{x}}-\frac{5438\sqrt{x}\,(3x+2)}{315\sqrt{3x^2+5x+2}}-\frac{899(x}{}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] (-5438*Sqrt[x]*(2 + 3*x))/(315*Sqrt[2 + 5*x + 3*x^2]) + (5438*Sqrt[2 + 5*x
+ 3*x^2])/(315*Sqrt[x]) + ((1446 + 4055*x)*Sqrt[2 + 5*x + 3*x^2])/(315*x^(5
/2)) - (4*(7 - 15*x)*(2 + 5*x + 3*x^2)^(3/2))/(63*x^(9/2)) + (5438*Sqrt[2]*
(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(315*Sqrt
[2 + 5*x + 3*x^2]) - (899*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[
Sqrt[x]], -1/2])/(21*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{11/2}}\,dx = -\frac{4(7-15x)\left(2+5x+3x^2\right)^{3/2}}{63x^{9/2}} - \frac{1}{21}\int \frac{(241+285x)\sqrt{2+5x+3x^2}}{x^{7/2}}\,dx$$

$$= \frac{(1446+4055x)\sqrt{2+5x+3x^2}}{315x^{5/2}} - \frac{4(7-15x)\left(2+5x+3x^2\right)^{3/2}}{63x^{9/2}} + \frac{1}{315}\int$$

$$= \frac{5438\sqrt{2+5x+3x^2}}{315\sqrt{x}} + \frac{(1446+4055x)\sqrt{2+5x+3x^2}}{315x^{5/2}} -$$

$$= \frac{5438\sqrt{2+5x+3x^2}}{315\sqrt{x}} + \frac{(1446+4055x)\sqrt{2+5x+3x^2}}{315x^{5/2}} -$$

$$= \frac{5438\sqrt{2+5x+3x^2}}{315\sqrt{x}} + \frac{(1446+4055x)\sqrt{2+5x+3x^2}}{315x^{5/2}} -$$

$$= -\frac{5438\sqrt{x}\,(2+3x)}{315\sqrt{2+5x+3x^2}} + \frac{5438\sqrt{2+5x+3x^2}}{315\sqrt{x}} +$$

Mathematica [C] time = 0.17, size = 160, normalized size = 0.76

$$\frac{-2609i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{11/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 10876i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{11/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 2}{630x^{9/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(11/2),x]
```

```
[Out] (-1120 - 3200*x + 7424*x^2 + 44480*x^3 + 64706*x^4 + 29730*x^5 - (10876*I)*
Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(11/2)*EllipticE[I*ArcSinh[Sqrt[2/
3]/Sqrt[x]], 3/2] - (2609*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(11/2
)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(630*x^(9/2)*Sqrt[2 + 5*x +
 3*x^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(15\,x^{3}+19\,x^{2}-4\right)\sqrt{3\,x^{2}+5\,x+2}}{x^{\frac{11}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(11/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(11/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(11/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(11/2), x)
```

maple [A] time = 0.08, size = 134, normalized size = 0.64

$$\frac{97884x^{6}+252330x^{5}-5438\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^{4}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+2829\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}}{1890\sqrt{3x^{2}+5x+2}\,x^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(11/2),x)
```

```
[Out] 1/1890*(2829*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(
6*x+4)^(1/2),I*2^(1/2))*x^4-5438*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(
1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^4+97884*x^6+252330*x^5+259374
*x^4+133440*x^3+22272*x^2-9600*x-3360)/(3*x^2+5*x+2)^(1/2)/x^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(11/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{(5\,x-2)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{x^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(11/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(11/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{4\sqrt{3x^2+5x+2}}{x^{\frac{11}{2}}}\right)dx-\int\frac{19\sqrt{3x^2+5x+2}}{x^{\frac{7}{2}}}\,dx-\int\frac{15\sqrt{3x^2+5x+2}}{x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(11/2),x)
```

```
[Out] -Integral(-4*sqrt(3*x**2 + 5*x + 2)/x**(11/2), x) - Integral(19*sqrt(3*x**2
 + 5*x + 2)/x**(7/2), x) - Integral(15*sqrt(3*x**2 + 5*x + 2)/x**(5/2), x)
```

3.1053 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{13/2}}\,dx$

Optimal. Leaf size=233

$$-\frac{3229\sqrt{3x^2+5x+2}}{1386\sqrt{x}}+\frac{3229\sqrt{x}\,(3x+2)}{1386\sqrt{3x^2+5x+2}}+\frac{1357(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{231\sqrt{2}\,\sqrt{3x^2+5x+2}}-\frac{3229(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan\right.}{693\sqrt{2}\,\sqrt{3x^2+5}}$$

```
[Out] -4/99*(9-20*x)*(3*x^2+5*x+2)^(3/2)/x^(11/2)+3229/1386*(2+3*x)*x^(1/2)/(3*x^
2+5*x+2)^(1/2)-3229/1386*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x
)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+13
57/462*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1
/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+1357/693*(3*x^2+5*x+
2)^(1/2)/x^(3/2)+1/231*(634+1367*x)*(3*x^2+5*x+2)^(1/2)/x^(7/2)-3229/1386*(
3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4(9-20x)\left(3x^2+5x+2\right)^{3/2}}{99x^{11/2}}+\frac{(1367x+634)\sqrt{3x^2+5x+2}}{231x^{7/2}}-\frac{3229\sqrt{3x^2+5x+2}}{1386\sqrt{x}}+\frac{1357\sqrt{3x^2+5x+2}}{693x^{3/2}}+\frac{322}{1386}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] (3229*Sqrt[x]*(2 + 3*x))/(1386*Sqrt[2 + 5*x + 3*x^2]) + (1357*Sqrt[2 + 5*x
 + 3*x^2])/(693*x^(3/2)) - (3229*Sqrt[2 + 5*x + 3*x^2])/(1386*Sqrt[x]) + ((6
34 + 1367*x)*Sqrt[2 + 5*x + 3*x^2])/(231*x^(7/2)) - (4*(9 - 20*x)*(2 + 5*x
 + 3*x^2)^(3/2))/(99*x^(11/2)) - (3229*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellip
ticE[ArcTan[Sqrt[x]], -1/2])/(693*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2]) + (1357*(1
 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(231*Sqrt[2
]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{13/2}}\,dx = -\frac{4(9-20x)\left(2+5x+3x^2\right)^{3/2}}{99x^{11/2}} - \frac{1}{33}\int \frac{(317+375x)\sqrt{2+5x+3x^2}}{x^{9/2}}\,dx$$

$$= \frac{(634+1367x)\sqrt{2+5x+3x^2}}{231x^{7/2}} - \frac{4(9-20x)\left(2+5x+3x^2\right)^{3/2}}{99x^{11/2}} + \frac{\int \frac{-6785-\frac{17235x}{2}}{x^{5/2}\sqrt{2+5x+3x}}}{1155}$$

$$= \frac{1357\sqrt{2+5x+3x^2}}{693x^{3/2}} + \frac{(634+1367x)\sqrt{2+5x+3x^2}}{231x^{7/2}} - \frac{4(9-20x)\left(2+5x+3\right.}{99x^{11/2}}$$

$$= \frac{1357\sqrt{2+5x+3x^2}}{693x^{3/2}} - \frac{3229\sqrt{2+5x+3x^2}}{1386\sqrt{x}} + \frac{(634+1367x)\sqrt{2+5x+3x^2}}{231x^{7/2}} -$$

$$= \frac{1357\sqrt{2+5x+3x^2}}{693x^{3/2}} - \frac{3229\sqrt{2+5x+3x^2}}{1386\sqrt{x}} + \frac{(634+1367x)\sqrt{2+5x+3x^2}}{231x^{7/2}} -$$

$$= \frac{1357\sqrt{2+5x+3x^2}}{693x^{3/2}} - \frac{3229\sqrt{2+5x+3x^2}}{1386\sqrt{x}} + \frac{(634+1367x)\sqrt{2+5x+3x^2}}{231x^{7/2}} -$$

$$= \frac{3229\sqrt{x}\,(2+3x)}{1386\sqrt{2+5x+3x^2}} + \frac{1357\sqrt{2+5x+3x^2}}{693x^{3/2}} - \frac{3229\sqrt{2+5x+3x^2}}{1386\sqrt{x}} + (634+1$$

Mathematica [C] time = 0.17, size = 165, normalized size = 0.71

$$\frac{842i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{13/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+3229i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{13/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+8142x^6}{1386x^{11/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(13/2),x]
```

```
[Out] (-2016 - 5600*x + 11360*x^2 + 61744*x^3 + 86914*x^4 + 48256*x^5 + 8142*x^6
+ (3229*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(13/2)*EllipticE[I*ArcS
inh[Sqrt[2/3]/Sqrt[x]], 3/2] + (842*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/
x]*x^(13/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(1386*x^(11/2)*Sq
rt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(15\,x^3+19\,x^2-4\right)\sqrt{3\,x^2+5\,x+2}}{x^{\frac{13}{2}}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(13/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(13/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(13/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(13/2), x)
```

maple [A] time = 0.09, size = 139, normalized size = 0.60

$$-\frac{58122x^{7}+48018x^{6}-3229\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^{5}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+1545\sqrt{6x+4}\,\sqrt{3x+3}}{8316\sqrt{3x^{2}+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(13/2),x)
```

```
[Out] -1/8316*(1545*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*
(6*x+4)^(1/2),I*2^(1/2))*x^5-3229*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^
(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^5+58122*x^7+48018*x^6-250788
*x^5-521484*x^4-370464*x^3-68160*x^2+33600*x+12096)/(3*x^2+5*x+2)^(1/2)/x^(
11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(13/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{(5\,x-2)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{x^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(13/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(13/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(13/2),x)
```

```
[Out] Timed out
```

3.1054 $\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{15/2}} dx$

Optimal. Leaf size=256

$$\frac{6907\sqrt{3x^2+5x+2}}{10010\sqrt{x}}-\frac{6907\sqrt{x}\,(3x+2)}{10010\sqrt{3x^2+5x+2}}-\frac{3693(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{2002\sqrt{2}\,\sqrt{3x^2+5x+2}}+\frac{6907(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan\right.}{5005\sqrt{2}\,\sqrt{3x^2+5}}$$

```
[Out] -4/143*(11-25*x)*(3*x^2+5*x+2)^(3/2)/x^(13/2)-6907/10010*(2+3*x)*x^(1/2)/(3
*x^2+5*x+2)^(1/2)+6907/10010*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/
(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2
)-3693/4004*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I
*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+204/385*(3*x^2+
5*x+2)^(1/2)/x^(5/2)-1231/2002*(3*x^2+5*x+2)^(1/2)/x^(3/2)+1/1001*(1834+344
5*x)*(3*x^2+5*x+2)^(1/2)/x^(9/2)+6907/10010*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {810, 834, 839, 1189, 1100, 1136}

$$-\frac{4(11-25x)\left(3x^2+5x+2\right)^{3/2}}{143x^{13/2}}+\frac{(3445x+1834)\sqrt{3x^2+5x+2}}{1001x^{9/2}}+\frac{6907\sqrt{3x^2+5x+2}}{10010\sqrt{x}}-\frac{1231\sqrt{3x^2+5x+2}}{2002x^{3/2}}+20$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] (-6907*Sqrt[x]*(2 + 3*x))/(10010*Sqrt[2 + 5*x + 3*x^2]) + (204*Sqrt[2 + 5*x
 + 3*x^2])/(385*x^(5/2)) - (1231*Sqrt[2 + 5*x + 3*x^2])/(2002*x^(3/2)) + (6
907*Sqrt[2 + 5*x + 3*x^2])/(10010*Sqrt[x]) + ((1834 + 3445*x)*Sqrt[2 + 5*x
+ 3*x^2])/(1001*x^(9/2)) - (4*(11 - 25*x)*(2 + 5*x + 3*x^2)^(3/2))/(143*x^(
13/2)) + (6907*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -
1/2])/(5005*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2]) - (3693*(1 + x)*Sqrt[(2 + 3*x)/(
1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(2002*Sqrt[2]*Sqrt[2 + 5*x + 3*x^
2])
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)\left(2+5x+3x^2\right)^{3/2}}{x^{15/2}}\,dx &= -\frac{4(11-25x)\left(2+5x+3x^2\right)^{3/2}}{143x^{13/2}} - \frac{3}{143}\int \frac{(393+465x)\sqrt{2+5x+3x^2}}{x^{11/2}}\,dx \\
&= \frac{(1834+3445x)\sqrt{2+5x+3x^2}}{1001x^{9/2}} - \frac{4(11-25x)\left(2+5x+3x^2\right)^{3/2}}{143x^{13/2}} + \frac{\int \frac{-7956-\frac{207}{}}{x^{7/2}\sqrt{2+5x+}}}{3003} \\
&= \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} + \frac{(1834+3445x)\sqrt{2+5x+3x^2}}{1001x^{9/2}} - \frac{4(11-25x)\left(2+5x+\right.}{143x^{13/2}} \\
&= \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} - \frac{1231\sqrt{2+5x+3x^2}}{2002x^{3/2}} + \frac{(1834+3445x)\sqrt{2+5x+3x^2}}{1001x^{9/2}} - \\
&= \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} - \frac{1231\sqrt{2+5x+3x^2}}{2002x^{3/2}} + \frac{6907\sqrt{2+5x+3x^2}}{10010\sqrt{x}} + (1834+3 \\
&= \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} - \frac{1231\sqrt{2+5x+3x^2}}{2002x^{3/2}} + \frac{6907\sqrt{2+5x+3x^2}}{10010\sqrt{x}} + (1834+3 \\
&= \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} - \frac{1231\sqrt{2+5x+3x^2}}{2002x^{3/2}} + \frac{6907\sqrt{2+5x+3x^2}}{10010\sqrt{x}} + (1834+3 \\
&= -\frac{6907\sqrt{x}\,(2+3x)}{10010\sqrt{2+5x+3x^2}} + \frac{204\sqrt{2+5x+3x^2}}{385x^{5/2}} - \frac{1231\sqrt{2+5x+3x^2}}{2002x^{3/2}} + \frac{6907\sqrt{}}{1}
\end{aligned}
$$

Mathematica [C] time = 0.18, size = 170, normalized size = 0.66

$$
\frac{-4651i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{15/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 13814i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{15/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 3693}{20020x^{13/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*(2 + 5*x + 3*x^2)^(3/2))/x^(15/2),x]
```

```
[Out] (-24640 - 67200*x + 125440*x^2 + 654400*x^3 + 840316*x^4 + 361120*x^5 - 297
26*x^6 - 36930*x^7 - (13814*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(15
/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (4651*I)*Sqrt[2]*Sqrt[1
+ x^(-1)]*Sqrt[3 + 2/x]*x^(15/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/
2])/(20020*x^(13/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(-\frac{\left(15\,x^3+19\,x^2-4\right)\sqrt{3\,x^2+5\,x+2}}{x^{\frac{15}{2}}}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(15/2),x, algorithm="fricas")
```

```
[Out] integral(-(15*x^3 + 19*x^2 - 4)*sqrt(3*x^2 + 5*x + 2)/x^(15/2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$
\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{15}{2}}}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(15/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(15/2), x)
```

maple [A] time = 0.08, size = 144, normalized size = 0.56

$$\frac{124326x^8 + 96420x^7 - 6907\sqrt{6x+4}\ \sqrt{3x+3}\ \sqrt{6}\ \sqrt{-x}\ x^6\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right) + 2256\sqrt{6x+4}\ \sqrt{3x+3}}{60060\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(15/2),x)
```

```
[Out] 1/60060*(2256*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*
(6*x+4)^(1/2),I*2^(1/2))*x^6-6907*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^
(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^6+124326*x^8+96420*x^7-6294*
x^6+1083360*x^5+2520948*x^4+1963200*x^3+376320*x^2-201600*x-73920)/(3*x^2+5
*x+2)^(1/2)/x^(13/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(5\,x-2)}{x^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x^2+5*x+2)^(3/2)/x^(15/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(5*x - 2)/x^(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{(5\,x-2)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{x^{15/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(15/2),x)
```

```
[Out] int(-((5*x - 2)*(5*x + 3*x^2 + 2)^(3/2))/x^(15/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*(3*x**2+5*x+2)**(3/2)/x**(15/2),x)
```

```
[Out] Timed out
```

3.1055 $\int \frac{A+Bx}{\sqrt{ex}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=300

$$\frac{\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{c^{3/4}\sqrt{ex}\sqrt{a+bx+cx^2}}-\frac{2\sqrt[4]{a}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx}{(\sqrt{a}+}}}{c^{3/4}\sqrt{ex}}$$

```
[Out] 2*B*x*(c*x^2+b*x+a)^(1/2)/c^(1/2)/(a^(1/2)+x*c^(1/2))/(e*x)^(1/2)-2*a^(1/4)
*B*(cos(2*arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^
(1/2)/a^(1/4)))*EllipticE(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a
^(1/2)/c^(1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*x^(1/2)*((c*x^2+b*x+a)/(a^(1/2)+
x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2)+a^(1/4)*(cos(2*
arctan(c^(1/4)*x^(1/2)/a^(1/4)))^2)^(1/2)/cos(2*arctan(c^(1/4)*x^(1/2)/a^(1
/4)))*EllipticF(sin(2*arctan(c^(1/4)*x^(1/2)/a^(1/4))),1/2*(2-b/a^(1/2)/c^(
1/2))^(1/2))*(a^(1/2)+x*c^(1/2))*(B+A*c^(1/2)/a^(1/2))*x^(1/2)*((c*x^2+b*x+
a)/(a^(1/2)+x*c^(1/2))^2)^(1/2)/c^(3/4)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {841, 839, 1197, 1103, 1195}

$$\frac{\sqrt[4]{a}\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}\,x\right)^2}}\,F\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\frac{1}{4}\left(2-\frac{b}{\sqrt{a}\sqrt{c}}\right)\right)}{c^{3/4}\sqrt{ex}\sqrt{a+bx+cx^2}}-\frac{2\sqrt[4]{a}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}\,x\right)\sqrt{\frac{a+bx}{(\sqrt{a}+}}}{c^{3/4}\sqrt{ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*B*x*Sqrt[a + b*x + c*x^2])/(Sqrt[c]*Sqrt[e*x]*(Sqrt[a] + Sqrt[c]*x)) - (
2*a^(1/4)*B*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(Sqrt[a] +
 Sqrt[c]*x)^2]*EllipticE[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 - b/(Sqrt[
a]*Sqrt[c]))/4])/(c^(3/4)*Sqrt[e*x]*Sqrt[a + b*x + c*x^2]) + (a^(1/4)*(B +
(A*Sqrt[c])/Sqrt[a])*Sqrt[x]*(Sqrt[a] + Sqrt[c]*x)*Sqrt[(a + b*x + c*x^2)/(
Sqrt[a] + Sqrt[c]*x)^2]*EllipticF[2*ArcTan[(c^(1/4)*Sqrt[x])/a^(1/4)], (2 -
 b/(Sqrt[a]*Sqrt[c]))/4])/(c^(3/4)*Sqrt[e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 841

```
Int[((f_) + (g_.)*(x_))/(Sqrt[(e_)*(x_)]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_
)^2]), x_Symbol] :> Dist[Sqrt[x]/Sqrt[e*x], Int[(f + g*x)/(Sqrt[x]*Sqrt[a +
 b*x + c*x^2]), x], x] /; FreeQ[{a, b, c, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0]
```

Rule 1103

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[c
/a, 4]}, Simp[((1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^2)^2)]*
EllipticF[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(2*q*Sqrt[a + b*x^2 + c*x^4]
), x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[c/a]
```

Rule 1195

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 4]}, -Simp[(d*x*Sqrt[a + b*x^2 + c*x^4])/(a*(1 + q^
2*x^2)), x] + Simp[(d*(1 + q^2*x^2)*Sqrt[(a + b*x^2 + c*x^4)/(a*(1 + q^2*x^
2)^2)]*EllipticE[2*ArcTan[q*x], 1/2 - (b*q^2)/(4*c)])/(q*Sqrt[a + b*x^2 + c
*x^4]), x] /; EqQ[e + d*q^2, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
4*a*c, 0] && PosQ[c/a]
```

Rule 1197

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[c/a, 2]}, Dist[(e + d*q)/q, Int[1/Sqrt[a + b*x^2 + c*x^4
], x], x] - Dist[e/q, Int[(1 - q*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x] /; Ne
Q[e + d*q, 0]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && PosQ[
c/a]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{ex}\sqrt{a+bx+cx^2}}\,dx = \frac{\sqrt{x}\int \frac{A+Bx}{\sqrt{x}\sqrt{a+bx+cx^2}}\,dx}{\sqrt{ex}}$$

$$= \frac{\left(2\sqrt{x}\right)\text{Subst}\left(\int \frac{A+Bx^2}{\sqrt{a+bx^2+cx^4}}\,dx, x, \sqrt{x}\right)}{\sqrt{ex}}$$

$$= \frac{\left(2\left(A+\frac{\sqrt{a}B}{\sqrt{c}}\right)\sqrt{x}\right)\text{Subst}\left(\int \frac{1}{\sqrt{a+bx^2+cx^4}}\,dx, x, \sqrt{x}\right)}{\sqrt{ex}} - \frac{\left(2\sqrt{a}B\sqrt{x}\right)\text{Subst}\left(\int \frac{1-}{\sqrt{a+bx}}\right.}{\sqrt{c}\sqrt{ex}}$$

$$= \frac{2Bx\sqrt{a+bx+cx^2}}{\sqrt{c}\sqrt{ex}\left(\sqrt{a}+\sqrt{c}x\right)} - \frac{2\sqrt[4]{a}B\sqrt{x}\left(\sqrt{a}+\sqrt{c}x\right)\sqrt{\frac{a+bx+cx^2}{\left(\sqrt{a}+\sqrt{c}x\right)^2}}E\left(2\tan^{-1}\left(\frac{\sqrt[4]{c}\sqrt{x}}{\sqrt[4]{a}}\right)|\right.}{c^{3/4}\sqrt{ex}\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 1.70, size = 444, normalized size = 1.48

$$-\frac{x^2\left(-\frac{i\sqrt{\frac{4a}{x\left(\sqrt{b^2-4ac}+b\right)}+2}\sqrt{\frac{-x\sqrt{b^2-4ac}+2a+bx}{bx-x\sqrt{b^2-4ac}}}\left(B\sqrt{b^2-4ac}+2Ac-bB\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{2}\sqrt{\frac{a}{b+\sqrt{b^2-4ac}}}}{\sqrt{x}}\right)|\frac{b+\sqrt{b^2-4ac}}{b-\sqrt{b^2-4ac}}\right)}{\sqrt{x}} - \frac{4B\sqrt{\frac{a}{\sqrt{b^2-4ac}+b}}(a+x(b+cx}{x^2}\right.}{2c\sqrt{ex}\sqrt{\frac{a}{\sqrt{b^2-4ac}+b}}\sqrt{a+x(b+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/2*(x^2*((-4*B*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]*(a + x*(b + c*x)))/x^2 + (
I*B*(-b + Sqrt[b^2 - 4*a*c])*Sqrt[2 + (4*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*Sq
rt[(2*a + b*x - Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticE
[I*ArcSinh[(Sqrt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^
2 - 4*a*c])/(b - Sqrt[b^2 - 4*a*c])])/Sqrt[x] - (I*(-(b*B) + 2*A*c + B*Sqrt
[b^2 - 4*a*c])*Sqrt[2 + (4*a)/((b + Sqrt[b^2 - 4*a*c])*x)]*Sqrt[(2*a + b*x
- Sqrt[b^2 - 4*a*c]*x)/(b*x - Sqrt[b^2 - 4*a*c]*x)]*EllipticF[I*ArcSinh[(Sq
rt[2]*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])])/Sqrt[x]], (b + Sqrt[b^2 - 4*a*c])/(b
```

```
 - Sqrt[b^2 - 4*a*c])])/Sqrt[x]))/(c*Sqrt[a/(b + Sqrt[b^2 - 4*a*c])]*Sqrt[e
*x]*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex}}{cex^3+bex^2+aex},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x)/(c*e*x^3 + b*e*x^2 + a*e
*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x)), x)
```

maple [A] time = 0.12, size = 538, normalized size = 1.79

$$\frac{\sqrt{\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}}\,\sqrt{\frac{-2cx-b+\sqrt{-4ac+b^2}}{\sqrt{-4ac+b^2}}}\,\sqrt{-\frac{cx}{b+\sqrt{-4ac+b^2}}}\,\left(Abc\,\mathrm{EllipticF}\left(\sqrt{\frac{2cx+b+\sqrt{-4ac+b^2}}{b+\sqrt{-4ac+b^2}}},\frac{\sqrt{2}\,\sqrt{\frac{b+\sqrt{-4ac+b^2}}{\sqrt{-4ac+b^2}}}}{2}\right)+4Bac\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/(c*x^2+b*x+a)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2)))
^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*(-1/(b+(-4*
a*c+b^2)^(1/2))*c*x)^(1/2)*(A*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-
4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(
1/2))^(1/2))*c*(-4*a*c+b^2)^(1/2)+A*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b+(-4*a*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+
b^2)^(1/2))^(1/2))*c*b-2*B*EllipticF(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a
*c+b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2
))^(1/2))*a*c-B*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/
2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*(
-4*a*c+b^2)^(1/2)*b+4*B*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+
b^2)^(1/2)))^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^
(1/2))*a*c-B*EllipticE(((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b+(-4*a*c+b^2)^(1/2))
)^(1/2),1/2*2^(1/2)*((b+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2))*b^2)
/(e*x)^(1/2)/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,\sqrt{ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{e\,x}\,\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)),x)
[Out] int((A + B*x)/((e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{ex}\,\sqrt{a + bx + cx^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x)**(1/2)/(c*x**2+b*x+a)**(1/2),x)
[Out] Integral((A + B*x)/(sqrt(e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.1056 $\int \frac{(2-5x)x^{7/2}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=223

$$\frac{11320\sqrt{3x^2+5x+2}\,\sqrt{x}}{5103}-\frac{68920(3x+2)\sqrt{x}}{15309\sqrt{3x^2+5x+2}}-\frac{11320\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{5103\sqrt{3x^2+5x+2}}+\frac{68920\sqrt{2}\,(x+1)}{1530}$$

```
[Out] -68920/15309*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+68920/15309*(1+x)^(3/2)*(1
/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)
/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-11320/5103*(1+x)^(3/2)*(1/(1+x))^(1/2)*El
lipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3
*x^2+5*x+2)^(1/2)-820/567*x^(3/2)*(3*x^2+5*x+2)^(1/2)+508/567*x^(5/2)*(3*x^
2+5*x+2)^(1/2)-10/27*x^(7/2)*(3*x^2+5*x+2)^(1/2)+11320/5103*x^(1/2)*(3*x^2+
5*x+2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {832, 839, 1189, 1100, 1136}

$$-\frac{10}{27}\sqrt{3x^2+5x+2}\,x^{7/2}+\frac{508}{567}\sqrt{3x^2+5x+2}\,x^{5/2}-\frac{820}{567}\sqrt{3x^2+5x+2}\,x^{3/2}+\frac{11320\sqrt{3x^2+5x+2}\,\sqrt{x}}{5103}-\frac{68920(3x}{15309\sqrt{3x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(7/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-68920*Sqrt[x]*(2 + 3*x))/(15309*Sqrt[2 + 5*x + 3*x^2]) + (11320*Sqrt[x]*S
qrt[2 + 5*x + 3*x^2])/5103 - (820*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])/567 + (508
*x^(5/2)*Sqrt[2 + 5*x + 3*x^2])/567 - (10*x^(7/2)*Sqrt[2 + 5*x + 3*x^2])/27
 + (68920*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]]
, -1/2])/(15309*Sqrt[2 + 5*x + 3*x^2]) - (11320*Sqrt[2]*(1 + x)*Sqrt[(2 + 3
*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(5103*Sqrt[2 + 5*x + 3*x^2])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(2-5x)x^{7/2}}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{10}{27}x^{7/2}\sqrt{2+5x+3x^2} + \frac{2}{27}\int \frac{x^{5/2}(35+127x)}{\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2} - \frac{10}{27}x^{7/2}\sqrt{2+5x+3x^2} + \frac{4}{567}\int \frac{\left(-635-\frac{3075x}{2}\right)x^{3/2}}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2} + \frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2} - \frac{10}{27}x^{7/2}\sqrt{2+5x+3x^2} + 8\int\\ &= \frac{11320\sqrt{x}\,\sqrt{2+5x+3x^2}}{5103} - \frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2} + \frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2} - \frac{10}{27}x^{7/}\\ &= \frac{11320\sqrt{x}\,\sqrt{2+5x+3x^2}}{5103} - \frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2} + \frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2} - \frac{10}{27}x^{7/}\\ &= \frac{11320\sqrt{x}\,\sqrt{2+5x+3x^2}}{5103} - \frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2} + \frac{508}{567}x^{5/2}\sqrt{2+5x+3x^2} - \frac{10}{27}x^{7/}\\ &= -\frac{68920\sqrt{x}\,(2+3x)}{15309\sqrt{2+5x+3x^2}} + \frac{11320\sqrt{x}\,\sqrt{2+5x+3x^2}}{5103} - \frac{820}{567}x^{3/2}\sqrt{2+5x+3x^2} + \frac{508}{567}x\end{aligned}$$

Mathematica [C] time = 0.19, size = 168, normalized size = 0.75

$$\frac{34960i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 68920i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 2(}{15309\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(7/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*(68920 + 138340*x + 40620*x^2 - 9306*x^3 + 4590*x^4 - 6399*x^5 + 8505*x
^6) - (68920*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*
ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (34960*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[
3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(15309*Sqrt[
x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^{4}-2\,x^{3}\right)\sqrt{x}}{\sqrt{3\,x^{2}+5\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^4 - 2*x^3)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{7}{2}}}{\sqrt{3\,x^{2}+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(7/2)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.09, size = 127, normalized size = 0.57

$$\frac{-\frac{10x^{6}}{9}+\frac{158x^{5}}{189}-\frac{340x^{4}}{567}+\frac{2068x^{3}}{1701}+\frac{41840x^{2}}{5103}+\frac{22640x}{5103}-\frac{34460\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)}{45927}+\frac{23140\sqrt{6x+4}\,\sqrt{3x+3}}{}}{\sqrt{x}\,\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 2/45927/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(-25515*x^6+19197*x^5+34710*(6*x+4)^(1/
2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-
17230*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^
(1/2),I*2^(1/2))-13770*x^4+27918*x^3+188280*x^2+101880*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{7}{2}}}{\sqrt{3\,x^{2}+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(7/2)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x^{7/2}\,\left(5\,x-2\right)}{\sqrt{3\,x^{2}+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2x^{\frac{7}{2}}}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{5x^{\frac{9}{2}}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(7/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(7/2)/sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(9/2)/sqrt
(3*x**2 + 5*x + 2), x)
```

3.1057 $\int \frac{(2-5x)x^{5/2}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=200

$$-\frac{412}{189}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{13688(3x+2)\sqrt{x}}{2835\sqrt{3x^2+5x+2}}+\frac{412\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{189\sqrt{3x^2+5x+2}}-\frac{13688\sqrt{2}\,(x+1)\sqrt{\frac{3x}{x}}}{2835\sqrt{3x}}$$

```
[Out] 13688/2835*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-13688/2835*(1+x)^(3/2)*(1/(1
+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1
+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+412/189*(1+x)^(3/2)*(1/(1+x))^(1/2)*Elliptic
F(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5
*x+2)^(1/2)+128/105*x^(3/2)*(3*x^2+5*x+2)^(1/2)-10/21*x^(5/2)*(3*x^2+5*x+2)
^(1/2)-412/189*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {832, 839, 1189, 1100, 1136}

$$-\frac{10}{21}\sqrt{3x^2+5x+2}\,x^{5/2}+\frac{128}{105}\sqrt{3x^2+5x+2}\,x^{3/2}-\frac{412}{189}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{13688(3x+2)\sqrt{x}}{2835\sqrt{3x^2+5x+2}}+\frac{412\sqrt{2}\,(x+1)\sqrt{}}{189\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(5/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (13688*Sqrt[x]*(2 + 3*x))/(2835*Sqrt[2 + 5*x + 3*x^2]) - (412*Sqrt[x]*Sqrt[
2 + 5*x + 3*x^2])/189 + (128*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])/105 - (10*x^(5/
2)*Sqrt[2 + 5*x + 3*x^2])/21 - (13688*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x
)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(2835*Sqrt[2 + 5*x + 3*x^2]) + (412*Sq
rt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(18
9*Sqrt[2 + 5*x + 3*x^2])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)x^{5/2}}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}+\frac{2}{21}\int \frac{x^{3/2}(25+96x)}{\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}+\frac{4}{315}\int \frac{\left(-288-\frac{1545x}{2}\right)\sqrt{x}}{\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{412}{189}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}+\frac{8\int \frac{\frac{154}{2}}{\sqrt{x}\sqrt{}}}{2}\\
&= -\frac{412}{189}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}+\frac{16\,\mathrm{Subs}}{}\\
&= -\frac{412}{189}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-\frac{10}{21}x^{5/2}\sqrt{2+5x+3x^2}+\frac{824}{189}\,\mathrm{Sub}\\
&= \frac{13688\sqrt{x}\,(2+3x)}{2835\sqrt{2+5x+3x^2}}-\frac{412}{189}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{128}{105}x^{3/2}\sqrt{2+5x+3x^2}-\frac{10}{21}x^{5/2}\sqrt{2+
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 160, normalized size = 0.80

$$
\frac{-7508i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+13688i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-405}{2835\sqrt{x}\,\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(5/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (27376 + 56080*x + 17076*x^2 - 3960*x^3 + 3618*x^4 - 4050*x^5 + (13688*I)*S
qrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]
/Sqrt[x]], 3/2] - (7508*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*E
llipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(2835*Sqrt[x]*Sqrt[2 + 5*x + 3
*x^2])
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(-\frac{\left(5\,x^{3}-2\,x^{2}\right)\sqrt{x}}{\sqrt{3\,x^{2}+5\,x+2}},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^3 - 2*x^2)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{5}{2}}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(5/2)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.15, size = 122, normalized size = 0.61

$$-\frac{2\left(6075x^5-5427x^4+5940x^3+35982x^2+18540x-3422\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\ \operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)\right.}{8505\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/8505/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(6075*x^5+7176*(6*x+4)^(1/2)*(3*x+3)^(1
/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-3422*(6*x+4)^
(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2
))-5427*x^4+5940*x^3+35982*x^2+18540*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{5}{2}}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(5/2)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x^{5/2}\,(5\,x-2)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2x^{\frac{5}{2}}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5x^{\frac{7}{2}}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(5/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(5/2)/sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(7/2)/sqrt
(3*x**2 + 5*x + 2), x)
```

3.1058 $\int \frac{(2-5x)x^{3/2}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=177

$$\frac{52}{27}\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{412(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}-\frac{52\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}+$$

```
[Out] -412/81*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+412/81*(1+x)^(3/2)*(1/(1+x))^(1
/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1
/2)/(3*x^2+5*x+2)^(1/2)-52/27*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)
/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/
2)-2/3*x^(3/2)*(3*x^2+5*x+2)^(1/2)+52/27*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {832, 839, 1189, 1100, 1136}

$$-\frac{2}{3}\sqrt{3x^2+5x+2}\,x^{3/2}+\frac{52}{27}\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{412(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}-\frac{52\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(3/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-412*Sqrt[x]*(2 + 3*x))/(81*Sqrt[2 + 5*x + 3*x^2]) + (52*Sqrt[x]*Sqrt[2 +
5*x + 3*x^2])/27 - (2*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])/3 + (412*Sqrt[2]*(1 +
x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(81*Sqrt[2 + 5
*x + 3*x^2]) - (52*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan
[Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x^2])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{3/2}}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{2}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{2}{15}\int \frac{\sqrt{x}\,(15+65x)}{\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{52}{27}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{2}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{4}{135}\int \frac{-65-\frac{515x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{52}{27}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{2}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{8}{135}\mathrm{Subst}\left(\int \frac{-65-\frac{515x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right.\\
&= \frac{52}{27}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{2}{3}x^{3/2}\sqrt{2+5x+3x^2}-\frac{104}{27}\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right.\\
&= -\frac{412\sqrt{x}\,(2+3x)}{81\sqrt{2+5x+3x^2}}+\frac{52}{27}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{2}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{412\sqrt{2}\,(1+x)\sqrt{\frac{2+}{1+}}}{81\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.17, size = 158, normalized size = 0.89

$$\frac{256i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-412i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(81x^4-9\right.}{81\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(3/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*(412 + 874*x + 282*x^2 - 99*x^3 + 81*x^4) - (412*I)*Sqrt[2]*Sqrt[1 + x^
(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] +
(256*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[
Sqrt[2/3]/Sqrt[x]], 3/2])/(81*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 1.02, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(5\,x^2-2\,x\right)\sqrt{x}}{\sqrt{3\,x^2+5\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^2 - 2*x)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{3}{2}}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(3/2)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.11, size = 117, normalized size = 0.66

$$\frac{-2x^4+\frac{22x^3}{9}+\frac{224x^2}{27}+\frac{104x}{27}-\frac{206\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\text{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)}{243}+\frac{154\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\text{EllipticF}\left(\frac{\sqrt{6x+4}}{2}, i\right.}{81}}{\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 2/243/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(231*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*
(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-103*(6*x+4)^(1/2)*(3*x+3)
^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-243*x^4+29
7*x^3+1008*x^2+468*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{3}{2}}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(3/2)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{3/2}\,(5\,x-2)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2x^{\frac{3}{2}}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5x^{\frac{5}{2}}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(3/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*x**(3/2)/sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(5/2)/sqrt
(3*x**2 + 5*x + 2), x)
```

3.1059 $\int \frac{(2-5x)\sqrt{x}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=154

$$\frac{136\sqrt{x}\,(3x+2)}{27\sqrt{3x^2+5x+2}}-\frac{10}{9}\sqrt{x}\,\sqrt{3x^2+5x+2}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}-\frac{136\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan}{27\sqrt{3x^2+5x+}}$$

```
[Out] 136/27*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-136/27*(1+x)^(3/2)*(1/(1+x))^(1/
2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/
2)/(3*x^2+5*x+2)^(1/2)+10/9*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(
1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)
-10/9*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = $\{832, 839, 1189, 1100, 1136\}$

$$\frac{136\sqrt{x}\,(3x+2)}{27\sqrt{3x^2+5x+2}}-\frac{10}{9}\sqrt{x}\,\sqrt{3x^2+5x+2}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}-\frac{136\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan}{27\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[x])/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (136*Sqrt[x]*(2 + 3*x))/(27*Sqrt[2 + 5*x + 3*x^2]) - (10*Sqrt[x]*Sqrt[2 + 5
*x + 3*x^2])/9 - (136*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[Arc
Tan[Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x^2]) + (10*Sqrt[2]*(1 + x)*Sqrt[
(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x + 3*x^
2])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(2-5x)\sqrt{x}}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{10}{9}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{2}{9}\int \frac{5+34x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{10}{9}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{4}{9}\operatorname{Subst}\left(\int \frac{5+34x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\ &= -\frac{10}{9}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{20}{9}\operatorname{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)+\frac{136}{9}\operatorname{Subst}\left(\int\right.\\ &= \frac{136\sqrt{x}\,(2+3x)}{27\sqrt{2+5x+3x^2}}-\frac{10}{9}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{136\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right.}{27\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [C] time = 0.16, size = 150, normalized size = 0.97

$$\frac{-106i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+136i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-90x^3+}{27\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[x])/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (272 + 620*x + 258*x^2 - 90*x^3 + (136*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 +
 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (106*I)*Sqrt[2
]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt
[x]], 3/2])/(27*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{(5\,x-2)\sqrt{x}}{\sqrt{3\,x^2+5\,x+2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x - 2)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)\sqrt{x}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.07, size = 112, normalized size = 0.73

$$-\frac{2\left(135x^3+225x^2+90x-34\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+87\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-}\right.}{81\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/81/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(87*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(
-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-34*(6*x+4)^(1/2)*(3*x+3)^(
1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+135*x^3+225*
x^2+90*x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)\sqrt{x}}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*sqrt(x)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{x}\,\left(5\,x-2\right)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2\sqrt{x}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5x^{\frac{3}{2}}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(1/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2*sqrt(x)/sqrt(3*x**2 + 5*x + 2), x) - Integral(5*x**(3/2)/sqrt(
3*x**2 + 5*x + 2), x)
```

3.1060 $\int \frac{2-5x}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=129

$$-\frac{10\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{2\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}$$

```
[Out] -10/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+10/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*
EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/
(3*x^2+5*x+2)^(1/2)+2*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(
1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 129, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {839, 1189, 1100, 1136}

$$-\frac{10\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{2\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{10\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(Sqrt[x]*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-10*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (10*Sqrt[2]*(1 + x)*Sqr
t[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*
x^2]) + (2*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]
], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{2-5x}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx &= 2\,\text{Subst}\left(\int \frac{2-5x^2}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right)\\
&= 4\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) - 10\,\text{Subst}\left(\int \frac{x^2}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right)\\
&= -\frac{10\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}} + \frac{10\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{2+5x+3x^2}} + \frac{2\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,F}{\sqrt{2+5}}
\end{aligned}
$$

Mathematica [**C**] time = 0.15, size = 150, normalized size = 1.16

$$
-\frac{2x^{3/2}\left(5\left(\frac{2}{x^2}+\frac{5}{x}+3\right) - \frac{8i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)}{\sqrt{x}} + \frac{5i\sqrt{2}\,\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)}{\sqrt{x}}\right)}{3\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(Sqrt[x]*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-2*x^(3/2)*(5*(3 + 2/x^2 + 5/x) + ((5*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 +
 2/x]*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/Sqrt[x] - ((8*I)*Sqrt[2
]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/
2])/Sqrt[x]))/(3*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**] time = 0.91, size = 0, normalized size = 0.00

$$
\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{3\,x^3+5\,x^2+2\,x}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(3*x^3 + 5*x^2 + 2*x), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$
\int -\frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}\,dx
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*sqrt(x)), x)
```

maple [**A**] time = 0.09, size = 77, normalized size = 0.60

$$
\frac{\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\left(-5\,\text{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right) + 21\,\text{EllipticF}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)\right)}{9\sqrt{3x^2+5x+2}\,\sqrt{x}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/9/x^(1/2)/(3*x^2+5*x+2)^(1/2)*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1
/2)*(21*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-5*EllipticE(1/2*(6*x+4)^(1/2
),I*2^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x - 2}{\sqrt{3\,x^{2} + 5\,x + 2}\,\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*sqrt(x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{5\,x-2}{\sqrt{x}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(- \frac{2}{\sqrt{x}\,\sqrt{3x^{2} + 5x + 2}}\right)\,dx - \int \frac{5\sqrt{x}}{\sqrt{3x^{2} + 5x + 2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(1/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2/(sqrt(x)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5*sqrt(x)/sqrt
(3*x**2 + 5*x + 2), x)
```

3.1061 $\int \frac{2-5x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=146

$$\frac{2\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{3x^2+5x+2}}{\sqrt{x}}-\frac{5\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\right.}{\sqrt{3x^2+5x+2}}$$

```
[Out] 2*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-2*(1+x)^(3/2)*(1/(1+x))^(1/2)*Ellipti
cE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+
5*x+2)^(1/2)-5*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/
2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-2*(3*x^2+5*x
+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {834, 839, 1189, 1100, 1136}

$$\frac{2\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{3x^2+5x+2}}{\sqrt{x}}-\frac{5\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\right.}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(3/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (2*Sqrt[x]*(2 + 3*x))/Sqrt[2 + 5*x + 3*x^2] - (2*Sqrt[2 + 5*x + 3*x^2])/Sqr
t[x] - (2*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]]
, -1/2])/Sqrt[2 + 5*x + 3*x^2] - (5*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]
*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{2-5x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx &= -\frac{2\sqrt{2+5x+3x^2}}{\sqrt{x}} - \int \frac{5-3x}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx \\ &= -\frac{2\sqrt{2+5x+3x^2}}{\sqrt{x}} - 2\,\text{Subst}\left(\int \frac{5-3x^2}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) \\ &= -\frac{2\sqrt{2+5x+3x^2}}{\sqrt{x}} + 6\,\text{Subst}\left(\int \frac{x^2}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) - 10\,\text{Subst}\Bigg(\int \frac{}{\sqrt{2+}} \\ &= \frac{2\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}} - \frac{2\sqrt{2+5x+3x^2}}{\sqrt{x}} - \frac{2\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2+5x+3x^2}} - \frac{5}{}\end{aligned}$$

Mathematica [C] time = 0.14, size = 90, normalized size = 0.62

$$\frac{i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\,x\left(2E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-7F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)\right)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(3/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (I*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x*(2*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]],
 3/2] - 7*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]))/Sqrt[2 + 5*x + 3*x
^2]
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{3\,x^4+5\,x^3+2\,x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(3*x^4 + 5*x^3 + 2*x^2),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(3/2)), x)
```

maple [A] time = 0.08, size = 108, normalized size = 0.74

$$-\frac{18x^2+30x-\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+8\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticF}\left(\frac{\sqrt{6}}{}\right.}{3\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/3*(8*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4
)^(1/2),I*2^(1/2))-(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE
(1/2*(6*x+4)^(1/2),I*2^(1/2))+18*x^2+30*x+12)/x^(1/2)/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{5\,x-2}{x^{3/2}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2}{x^{\frac{3}{2}}\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5}{\sqrt{x}\,\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(3/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2/(x**(3/2)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5/(sqrt(x)*sq
rt(3*x**2 + 5*x + 2)), x)
```

3.1062 $\int \frac{2-5x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=175

$$-\frac{25\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{25\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{25\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\right.\right.}{3\sqrt{3x^2+5x+2}}$$

```
[Out] -25/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+25/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*
EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/
(3*x^2+5*x+2)^(1/2)-(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/
2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-2/3*(3*
x^2+5*x+2)^(1/2)/x^(3/2)+25/3*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {834, 839, 1189, 1100, 1136}

$$-\frac{25\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{25\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{2\sqrt{3x^2+5x+2}}{3x^{3/2}}-\frac{\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+25\sqrt{2}\,(x+1$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(5/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-25*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) - (2*Sqrt[2 + 5*x + 3*x^2
])/(3*x^(3/2)) + (25*Sqrt[2 + 5*x + 3*x^2])/(3*Sqrt[x]) + (25*Sqrt[2]*(1 +
x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*
x + 3*x^2]) - (Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqr
t[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{2-5x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx &= -\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}-\frac{1}{3}\int \frac{25+3x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{25\sqrt{2+5x+3x^2}}{3\sqrt{x}}+\frac{1}{3}\int \frac{-3-\frac{75x}{2}}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{25\sqrt{2+5x+3x^2}}{3\sqrt{x}}+\frac{2}{3}\operatorname{Subst}\left(\int \frac{-3-\frac{75x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\ &= -\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{25\sqrt{2+5x+3x^2}}{3\sqrt{x}}-2\operatorname{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)-\\ &= -\frac{25\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}}-\frac{2\sqrt{2+5x+3x^2}}{3x^{3/2}}+\frac{25\sqrt{2+5x+3x^2}}{3\sqrt{x}}+\frac{25\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\big(}{3\sqrt{2+5x}}\end{aligned}$$

Mathematica [C] time = 0.16, size = 148, normalized size = 0.85

$$\frac{22i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-25i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(3x^2+5x+\right.}{3x^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(5/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-2*(2 + 5*x + 3*x^2) - (25*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(5/
2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (22*I)*Sqrt[2]*Sqrt[1 + x
^(-1)]*Sqrt[3 + 2/x]*x^(5/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/
(3*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{3\,x^5+5\,x^4+2\,x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(3*x^5 + 5*x^4 + 2*x^3),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(5/2)), x)
```

maple [A] time = 0.08, size = 115, normalized size = 0.66

$$\frac{450x^3+714x^2-25\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+69\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{El}}{18\sqrt{3x^2+5x+2}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/18*(69*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))*x-25*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ell
ipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x+450*x^3+714*x^2+240*x-24)/(3*x^2+5*x+
2)^(1/2)/x^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{5\,x-2}{x^{5/2}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2}{x^{\frac{5}{2}}\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5}{x^{\frac{3}{2}}\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(5/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2/(x**(5/2)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5/(x**(3/2)*s
qrt(3*x**2 + 5*x + 2)), x)
```

3.1063 $\int \frac{2-5x}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=196

$$\frac{66\sqrt{x}\,(3x+2)}{5\sqrt{3x^2+5x+2}}-\frac{66\sqrt{3x^2+5x+2}}{5\sqrt{x}}+\frac{9(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2}\,\sqrt{3x^2+5x+2}}-\frac{66\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\right.}{5\sqrt{3x^2+5x+2}}$$

```
[Out] 66/5*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+9/2*(1+x)^(3/2)*(1/(1+x))^(1/2)*El
lipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3
*x^2+5*x+2)^(1/2)-66/5*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^
(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-2/5*
(3*x^2+5*x+2)^(1/2)/x^(5/2)+3*(3*x^2+5*x+2)^(1/2)/x^(3/2)-66/5*(3*x^2+5*x+2
)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {834, 839, 1189, 1100, 1136}

$$\frac{66\sqrt{x}\,(3x+2)}{5\sqrt{3x^2+5x+2}}-\frac{66\sqrt{3x^2+5x+2}}{5\sqrt{x}}+\frac{3\sqrt{3x^2+5x+2}}{x^{3/2}}-\frac{2\sqrt{3x^2+5x+2}}{5x^{5/2}}+\frac{9(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2}\,\sqrt{3x^2+5x+2}}-$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(7/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (66*Sqrt[x]*(2 + 3*x))/(5*Sqrt[2 + 5*x + 3*x^2]) - (2*Sqrt[2 + 5*x + 3*x^2]
)/(5*x^(5/2)) + (3*Sqrt[2 + 5*x + 3*x^2])/x^(3/2) - (66*Sqrt[2 + 5*x + 3*x^
2])/(5*Sqrt[x]) - (66*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[Arc
Tan[Sqrt[x]], -1/2])/(5*Sqrt[2 + 5*x + 3*x^2]) + (9*(1 + x)*Sqrt[(2 + 3*x)/
(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{2-5x}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx = -\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1}{5}\int \frac{45+9x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{3\sqrt{2+5x+3x^2}}{x^{3/2}} + \frac{1}{15}\int \frac{198+\frac{135x}{2}}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{3\sqrt{2+5x+3x^2}}{x^{3/2}} - \frac{66\sqrt{2+5x+3x^2}}{5\sqrt{x}} - \frac{1}{15}\int \frac{-\frac{135}{2}-297}{\sqrt{x}\,\sqrt{2+5x+}}$$

$$= -\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{3\sqrt{2+5x+3x^2}}{x^{3/2}} - \frac{66\sqrt{2+5x+3x^2}}{5\sqrt{x}} - \frac{2}{15}\operatorname{Subst}\Bigg(\int \frac{-\frac{135}{2}}{\sqrt{2+}}$$

$$= -\frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{3\sqrt{2+5x+3x^2}}{x^{3/2}} - \frac{66\sqrt{2+5x+3x^2}}{5\sqrt{x}} + 9\operatorname{Subst}\Bigg(\int \frac{}{\sqrt{2+5}}$$

$$= \frac{66\sqrt{x}\,(2+3x)}{5\sqrt{2+5x+3x^2}} - \frac{2\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{3\sqrt{2+5x+3x^2}}{x^{3/2}} - \frac{66\sqrt{2+5x+3x^2}}{5\sqrt{x}} - \frac{66}{}$$

Mathematica [C] time = 0.16, size = 150, normalized size = 0.77

$$\frac{-87i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{7/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+132i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{7/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+90x^3+}{10x^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(7/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-8 + 40*x + 138*x^2 + 90*x^3 + (132*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2
/x]*x^(7/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (87*I)*Sqrt[2]*S
qrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(7/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]
], 3/2])/(10*x^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{3\,x^6+5\,x^5+2\,x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(3*x^6 + 5*x^5 + 2*x^4),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(7/2)), x)
```

maple [A] time = 0.08, size = 124, normalized size = 0.63

$$-\frac{396x^4+570x^3-22\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+51\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{E}}{10\sqrt{3x^2+5x+2}\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/10*(51*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x
+4)^(1/2),I*2^(1/2))*x^2-22*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+396*x^4+570*x^3+126*x^2-40*x+8)/
(3*x^2+5*x+2)^(1/2)/x^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\sqrt{3\,x^2+5\,x+2}\,x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/(sqrt(3*x^2 + 5*x + 2)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{5\,x-2}{x^{7/2}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2}{x^{\frac{7}{2}}\sqrt{3x^2+5x+2}}\right)dx-\int \frac{5}{x^{\frac{5}{2}}\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(7/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-2/(x**(7/2)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5/(x**(5/2)*s
qrt(3*x**2 + 5*x + 2)), x)
```

3.1064 $\int \frac{(2-5x)x^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=197

$$20\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{24(3x+2)\sqrt{x}}{\sqrt{3x^2+5x+2}}-\frac{20\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{24\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan^{-}}{\sqrt{3x^2+5x+2}}$$

```
[Out] 2/3*x^(5/2)*(74+95*x)/(3*x^2+5*x+2)^(1/2)-24*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^
(1/2)+24*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^
(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-20*(1+x)^(3/2)*(1/
(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/
(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-64/3*x^(3/2)*(3*x^2+5*x+2)^(1/2)+20*x^(1/2
)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 832, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{5/2}}{3\sqrt{3x^2+5x+2}}-\frac{64}{3}\sqrt{3x^2+5x+2}\,x^{3/2}+20\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{24(3x+2)\sqrt{x}}{\sqrt{3x^2+5x+2}}-\frac{20\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\Big(\tan^{-1}}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(7/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-24*Sqrt[x]*(2 + 3*x))/Sqrt[2 + 5*x + 3*x^2] + (2*x^(5/2)*(74 + 95*x))/(3*
Sqrt[2 + 5*x + 3*x^2]) + 20*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2] - (64*x^(3/2)*Sqr
t[2 + 5*x + 3*x^2])/3 + (24*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellipti
cE[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2] - (20*Sqrt[2]*(1 + x)*Sqrt
[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)x^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{(-185-240x)x^{3/2}}{\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{64}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{4}{45}\int \frac{\sqrt{x}\left(720+\frac{2025x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+20\sqrt{x}\sqrt{2+5x+3x^2}-\frac{64}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{8}{405}\int \frac{-\frac{2025}{2}-}{\sqrt{x}\sqrt{2+5}} \\
&= \frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+20\sqrt{x}\sqrt{2+5x+3x^2}-\frac{64}{3}x^{3/2}\sqrt{2+5x+3x^2}+\frac{16}{405}\operatorname{Subst}\left(\int \frac{-}{\sqrt{2}}\right. \\
&= \frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+20\sqrt{x}\sqrt{2+5x+3x^2}-\frac{64}{3}x^{3/2}\sqrt{2+5x+3x^2}-40\operatorname{Subst}\left(\int \frac{}{\sqrt{2+}}\right. \\
&= -\frac{24\sqrt{x}(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2x^{5/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+20\sqrt{x}\sqrt{2+5x+3x^2}-\frac{64}{3}x^{3/2}\sqrt{2+5x+3x^2}
\end{aligned}
$$

Mathematica [C] time = 0.18, size = 156, normalized size = 0.79

$$
\frac{12i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-72i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-2\left(x^4-4x^3+\right.}{3\sqrt{x}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(7/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(72 + 120*x + 22*x^2 - 4*x^3 + x^4) - (72*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*S
qrt[3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (12*I)*
Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3
]/Sqrt[x]], 3/2])/(3*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^{4}-2\,x^{3}\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{x}}{9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^4 - 2*x^3)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(9*x^4 + 30*x^3 + 3
7*x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{7}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(7/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.11, size = 117, normalized size = 0.59

$$\frac{-\frac{2x^{4}}{3}+\frac{8x^{3}}{3}+\frac{172x^{2}}{3}+40x-4\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\ \mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+\frac{16\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\ \mathrm{Ellipti}}{3}}{\sqrt{x}\,\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 2/3*(8*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)
^(1/2),I*2^(1/2))-6*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Elliptic
E(1/2*(6*x+4)^(1/2),I*2^(1/2))-x^4+4*x^3+86*x^2+60*x)/x^(1/2)/(3*x^2+5*x+2)
^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{7}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(7/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{7/2}\,\left(5\,x-2\right)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(7/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1065 $\int \frac{(2-5x)x^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=182

$$-\frac{580}{27}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{1804(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}+\frac{580\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}-\frac{1804\sqrt{2}\,(x+1)\sqrt{\frac{3x+}{x+}}}{81\sqrt{3x^2}}$$

```
[Out] 2/3*x^(3/2)*(74+95*x)/(3*x^2+5*x+2)^(1/2)+1804/81*(2+3*x)*x^(1/2)/(3*x^2+5*
x+2)^(1/2)-1804/81*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2
),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+580/27*(
1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(
1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-580/27*x^(1/2)*(3*x^2+5*x+2)
^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 832, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{3/2}}{3\sqrt{3x^2+5x+2}}-\frac{580}{27}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{1804(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}+\frac{580\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}-180$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(5/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (1804*Sqrt[x]*(2 + 3*x))/(81*Sqrt[2 + 5*x + 3*x^2]) + (2*x^(3/2)*(74 + 95*x
))/(3*Sqrt[2 + 5*x + 3*x^2]) - (580*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])/27 - (18
04*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2]
)/(81*Sqrt[2 + 5*x + 3*x^2]) + (580*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]
*EllipticF[ArcTan[Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)x^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2x^{3/2}(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{(-111-145x)\sqrt{x}}{\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2x^{3/2}(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{580}{27}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{4}{27}\int \frac{145+\frac{451x}{2}}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2x^{3/2}(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{580}{27}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{8}{27}\text{Subst}\left(\int \frac{145+\frac{451x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right) \\
&= \frac{2x^{3/2}(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{580}{27}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{1160}{27}\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{\right. \\
&= \frac{1804\sqrt{x}\,(2+3x)}{81\sqrt{2+5x+3x^2}}+\frac{2x^{3/2}(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{580}{27}\sqrt{x}\sqrt{2+5x+3x^2}-\frac{1804\sqrt{2}\,(1+x)\sqrt{\frac{2+3}{1+}}}{81\sqrt{2+}}
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 150, normalized size = 0.82

$$
\frac{-64i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+1804i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-90x^3+70}{81\sqrt{x}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(5/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (3608 + 5540*x + 708*x^2 - 90*x^3 + (1804*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[
3 + 2/x]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (64*I)*Sqrt
[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sq
rt[x]], 3/2])/(81*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(5\,x^{3}-2\,x^{2}\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{x}}{9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^3 - 2*x^2)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(9*x^4 + 30*x^3 + 3
7*x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{5}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(5/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.08, size = 112, normalized size = 0.62

$$-\frac{2\Bigl(135x^{3}+7056x^{2}+5220x-451\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+483\sqrt{6x+4}\,\sqrt{3x+}}{243\sqrt{3x^{2}+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -2/243*(483*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6
*x+4)^(1/2),I*2^(1/2))-451*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*E
llipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+135*x^3+7056*x^2+5220*x)/x^(1/2)/(3*x
^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{5}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(5/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{5/2}\,\left(5\,x-2\right)}{{\left(3\,x^{2}+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2x^{\frac{5}{2}}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{5x^{\frac{7}{2}}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(5/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-2*x**(5/2)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*
x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5*x**(7/2)/(3*x**2*sqrt(3
*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)),
x)
```

3.1066 $\int \frac{(2-5x)x^{3/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=159

$$-\frac{200\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(95x+74)}{3\sqrt{3x^2+5x+2}}-\frac{74\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}+\frac{200\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{9\sqrt{3x^2+5x+2}}$$

```
[Out] -200/9*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+2/3*(74+95*x)*x^(1/2)/(3*x^2+5*x
+2)^(1/2)+200/9*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1
/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-74/3*(1+x)^
(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*
((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {818, 839, 1189, 1100, 1136}

$$-\frac{200\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(95x+74)}{3\sqrt{3x^2+5x+2}}-\frac{74\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}+\frac{200\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{9\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(3/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-200*Sqrt[x]*(2 + 3*x))/(9*Sqrt[2 + 5*x + 3*x^2]) + (2*Sqrt[x]*(74 + 95*x)
)/(3*Sqrt[2 + 5*x + 3*x^2]) + (200*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*
EllipticE[ArcTan[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x + 3*x^2]) - (74*Sqrt[2]*(
1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2
+ 5*x + 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
```

```
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{3/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2\sqrt{x}\,(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{-37-50x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{2\sqrt{x}\,(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{4}{3}\,\text{Subst}\left(\int \frac{-37-50x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\
&= \frac{2\sqrt{x}\,(74+95x)}{3\sqrt{2+5x+3x^2}}-\frac{148}{3}\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)-\frac{200}{3}\,\text{Subst}\Bigg(\int \\
&= -\frac{200\sqrt{x}\,(2+3x)}{9\sqrt{2+5x+3x^2}}+\frac{2\sqrt{x}\,(74+95x)}{3\sqrt{2+5x+3x^2}}+\frac{200\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{2+5x+3x^2}}-
\end{aligned}$$

Mathematica [C] time = 0.16, size = 145, normalized size = 0.91

$$\frac{-22i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-200i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-30x^2-556}{9\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(3/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-400 - 556*x - 30*x^2 - (200*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(
3/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (22*I)*Sqrt[2]*Sqrt[1 +
 x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]
)/(9*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^2-2\,x\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^2 - 2*x)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(9*x^4 + 30*x^3 + 37*
x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{3}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(3/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.08, size = 107, normalized size = 0.67

$$\frac{\frac{190x^2}{3}+\frac{148x}{3}-\frac{100\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)}{27}+\frac{26\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticF}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)}{9}}{\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 2/27*(39*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))-50*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+855*x^2+666*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{3}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(3/2)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{3/2}\,(5\,x-2)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2x^{\frac{3}{2}}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{5x^{\frac{5}{2}}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(3/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-2*x**(3/2)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*
x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5*x**(5/2)/(3*x**2*sqrt(3
*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)),
x)
```

3.1067 $\int \frac{(2-5x)\sqrt{x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=155

$$\frac{74\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(37x+30)}{\sqrt{3x^2+5x+2}}+\frac{30\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{74\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan^{-1}\Big(\surd}{3\sqrt{3x^2+5x+2}}$$

```
[Out] 74/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-2*(30+37*x)*x^(1/2)/(3*x^2+5*x+2)^
(1/2)-74/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*
2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+30*(1+x)^(3/2)*(
1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x
)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {820, 839, 1189, 1100, 1136}

$$\frac{74\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(37x+30)}{\sqrt{3x^2+5x+2}}+\frac{30\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{74\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\Big(\tan^{-1}\Big(\surd}{3\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[x])/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (74*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) - (2*Sqrt[x]*(30 + 37*x))/
Sqrt[2 + 5*x + 3*x^2] - (74*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*Ellipti
cE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x^2]) + (30*Sqrt[2]*(1 + x)*
Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*
x^2]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(2-5x)\sqrt{x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2\sqrt{x}\,(30+37x)}{\sqrt{2+5x+3x^2}} - 2\int \frac{-15-\frac{37x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{2\sqrt{x}\,(30+37x)}{\sqrt{2+5x+3x^2}} - 4\,\mathrm{Subst}\left(\int \frac{-15-\frac{37x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) \\
&= -\frac{2\sqrt{x}\,(30+37x)}{\sqrt{2+5x+3x^2}} + 60\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx, x, \sqrt{x}\right) + 74\,\mathrm{Subst}\Bigg(\\
&= \frac{74\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}} - \frac{2\sqrt{x}\,(30+37x)}{\sqrt{2+5x+3x^2}} - \frac{74\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)\middle|-\frac{1}{2}\right)}{3\sqrt{2+5x+3x^2}} +
\end{aligned}
$$

Mathematica [C] time = 0.15, size = 140, normalized size = 0.90

$$
\frac{16i\sqrt{2}\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)\middle|\frac{3}{2}\right)+74i\sqrt{2}\sqrt{\frac{1}{x}+1}\,\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)\middle|\frac{3}{2}\right)+190x+148}{3\sqrt{x}\,\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[x])/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (148 + 190*x + (74*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*Ellipt
icE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (16*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sq
rt[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(3*Sqrt[x
]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(9*x^4 + 30*x^3 + 37*x^2
+ 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)\sqrt{x}}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*sqrt(x)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.12, size = 107, normalized size = 0.69

$$-\frac{666x^2+540x-37\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+21\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\mathrm{Elli}}{9\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/9*(21*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))-37*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+666*x^2+540*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)\sqrt{x}}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*sqrt(x)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{x}\,\left(5\,x-2\right)}{\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{2\sqrt{x}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{5x^{\frac{3}{2}}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(1/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-2*sqrt(x)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x
 + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5*x**(3/2)/(3*x**2*sqrt(3*
x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x
)
```

3.1068 $\int \frac{2-5x}{\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=151

$$-\frac{30\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(45x+38)}{\sqrt{3x^2+5x+2}}-\frac{37\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{30\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right.\right.}{\sqrt{3x^2+5x+2}}$$

```
[Out] -30*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+2*(38+45*x)*x^(1/2)/(3*x^2+5*x+2)^(
1/2)+30*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(
1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-37*(1+x)^(3/2)*(1/(
1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(
1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {822, 839, 1189, 1100, 1136}

$$-\frac{30\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(45x+38)}{\sqrt{3x^2+5x+2}}-\frac{37\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{30\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right.\right.}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-30*Sqrt[x]*(2 + 3*x))/Sqrt[2 + 5*x + 3*x^2] + (2*Sqrt[x]*(38 + 45*x))/Sqr
t[2 + 5*x + 3*x^2] + (30*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[
ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2] - (37*Sqrt[2]*(1 + x)*Sqrt[(2
 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{2-5x}{\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2\sqrt{x}\,(38+45x)}{\sqrt{2+5x+3x^2}}-\int \frac{37+45x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{2\sqrt{x}\,(38+45x)}{\sqrt{2+5x+3x^2}}-2\,\text{Subst}\left(\int \frac{37+45x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\ &= \frac{2\sqrt{x}\,(38+45x)}{\sqrt{2+5x+3x^2}}-74\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)-90\,\text{Subst}\Bigg(\int \frac{}{\sqrt{2}}\\ &= -\frac{30\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2\sqrt{x}\,(38+45x)}{\sqrt{2+5x+3x^2}}+\frac{30\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [C] time = 0.16, size = 137, normalized size = 0.91

$$\frac{-7i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-30i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-74x-60}{\sqrt{x}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-60 - 74*x - (30*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*Ellipti
cE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (7*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt
[3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(Sqrt[x]*Sq
rt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{9\,x^5+30\,x^4+37\,x^3+20\,x^2+4\,x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(9*x^5 + 30*x^4 + 37*x^3
+ 20*x^2 + 4*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*sqrt(x)), x)
```

maple [A] time = 0.09, size = 107, normalized size = 0.71

$$\frac{270x^2+228x-15\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+8\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticF}}{3\sqrt{3x^2+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/(3*x^2+5*x+2)^(3/2)/x^(1/2),x)
```

```
[Out] 1/3*(8*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)
^(1/2),I*2^(1/2))-15*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellipti
cE(1/2*(6*x+4)^(1/2),I*2^(1/2))+270*x^2+228*x)/(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(3/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*sqrt(x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{5\,x-2}{\sqrt{x}\,\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\sqrt{x}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{2}{3x^{\frac{5}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{3}{2}}\sqrt{3x^2+5x+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x**2+5*x+2)**(3/2)/x**(1/2),x)
```

```
[Out] -Integral(5*sqrt(x)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x
+ 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-2/(3*x**(5/2)*sqrt(3*x**2
+ 5*x + 2) + 5*x**(3/2)*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(x)*sqrt(3*x**2 + 5*
x + 2)), x)
```

3.1069 $\int \frac{2-5x}{x^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=172

$$\frac{39\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}-\frac{39\sqrt{3x^2+5x+2}}{\sqrt{x}}+\frac{2(45x+38)}{\sqrt{x}\,\sqrt{3x^2+5x+2}}+\frac{45\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-39\sqrt{2}\,(x$$

```
[Out] 2*(38+45*x)/x^(1/2)/(3*x^2+5*x+2)^(1/2)+39*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1
/2)-39*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1
/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+45*(1+x)^(3/2)*(1/(1
+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1
+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-39*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {822, 834, 839, 1189, 1100, 1136}

$$\frac{39\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}-\frac{39\sqrt{3x^2+5x+2}}{\sqrt{x}}+\frac{2(45x+38)}{\sqrt{x}\,\sqrt{3x^2+5x+2}}+\frac{45\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-39\sqrt{2}\,(x$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(3/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (39*Sqrt[x]*(2 + 3*x))/Sqrt[2 + 5*x + 3*x^2] + (2*(38 + 45*x))/(Sqrt[x]*Sqr
t[2 + 5*x + 3*x^2]) - (39*Sqrt[2 + 5*x + 3*x^2])/Sqrt[x] - (39*Sqrt[2]*(1 +
 x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x
+ 3*x^2] + (45*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqr
t[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{2-5x}{x^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\int \frac{-39-45x}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\frac{39\sqrt{2+5x+3x^2}}{\sqrt{x}}+\int \frac{45+\frac{117x}{2}}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\frac{39\sqrt{2+5x+3x^2}}{\sqrt{x}}+2\,\text{Subst}\left(\int \frac{45+\frac{117x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right) \\
&= \frac{2(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\frac{39\sqrt{2+5x+3x^2}}{\sqrt{x}}+90\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right. \\
&= \frac{39\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2(38+45x)}{\sqrt{x}\sqrt{2+5x+3x^2}}-\frac{39\sqrt{2+5x+3x^2}}{\sqrt{x}}-\frac{39\sqrt{2}\,(1+x)\sqrt{\frac{2+3x}{1+x}}\,E}{\sqrt{2+5x}}
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 137, normalized size = 0.80

$$\frac{6i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+39i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{3/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+90x+76}{\sqrt{x}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(3/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (76 + 90*x + (39*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(3/2)*Elliptic
E[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (6*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[
3 + 2/x]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(Sqrt[x]*Sqr
t[2 + 5*x + 3*x^2])
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^{2}+5\,x+2}\,(5\,x-2)\sqrt{x}}{9\,x^{6}+30\,x^{5}+37\,x^{4}+20\,x^{3}+4\,x^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(9*x^6 + 30*x^5 + 37*x^4
+ 20*x^3 + 4*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(3/2)), x)
```

maple [A] time = 0.10, size = 108, normalized size = 0.63

$$\frac{-234x^{2}-210x+13\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)-9\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,\operatorname{Ellip}}{2\sqrt{3x^{2}+5x+2}\,\sqrt{x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/2*(13*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4
)^(1/2),I*2^(1/2))-9*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellipti
cF(1/2*(6*x+4)^(1/2),I*2^(1/2))-234*x^2-210*x-4)/(3*x^2+5*x+2)^(1/2)/x^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\frac{5\,x-2}{x^{3/2}\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5}{3x^{\frac{5}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{3}{2}}\sqrt{3x^2+5x+2}+2\sqrt{x}\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{2}{3x^{\frac{7}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{5}{2}}\sqrt{3x^2+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(3/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(5/(3*x**(5/2)*sqrt(3*x**2 + 5*x + 2) + 5*x**(3/2)*sqrt(3*x**2 + 5
*x + 2) + 2*sqrt(x)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-2/(3*x**(7/2)*s
qrt(3*x**2 + 5*x + 2) + 5*x**(5/2)*sqrt(3*x**2 + 5*x + 2) + 2*x**(3/2)*sqrt
(3*x**2 + 5*x + 2)), x)
```

3.1070 $\int \frac{2-5x}{x^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=201

$$-\frac{170\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{170\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{115(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2}\,\sqrt{3x^2+5x+2}}+\frac{170\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{3\sqrt{3x^2+5x+2}}$$

```
[Out] 2*(38+45*x)/x^(3/2)/(3*x^2+5*x+2)^(1/2)-170/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)
^(1/2)-115/2*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*
I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+170/3*(1+x)^(3
/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((
2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-115/3*(3*x^2+5*x+2)^(1/2)/x^(3/2)+1
70/3*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi **[A]** time = 0.12, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {822, 834, 839, 1189, 1100, 1136}

$$-\frac{170\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{170\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{115\sqrt{3x^2+5x+2}}{3x^{3/2}}+\frac{2(45x+38)}{x^{3/2}\sqrt{3x^2+5x+2}}-\frac{115(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\right.\left(\right.}{\sqrt{2}\,\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(5/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-170*Sqrt[x]*(2 + 3*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (2*(38 + 45*x))/(x^(3/
2)*Sqrt[2 + 5*x + 3*x^2]) - (115*Sqrt[2 + 5*x + 3*x^2])/(3*x^(3/2)) + (170*
Sqrt[2 + 5*x + 3*x^2])/(3*Sqrt[x]) + (170*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1
 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x^2]) - (115*(
1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(Sqrt[2]*S
qrt[2 + 5*x + 3*x^2])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{2-5x}{x^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \int \frac{-115-135x}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \frac{115\sqrt{2+5x+3x^2}}{3x^{3/2}} + \frac{1}{3}\int \frac{-170-\frac{345x}{2}}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \frac{115\sqrt{2+5x+3x^2}}{3x^{3/2}} + \frac{170\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{1}{3}\int \frac{\frac{345}{2}+2}{\sqrt{x}\sqrt{2+5}} \\
&= \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \frac{115\sqrt{2+5x+3x^2}}{3x^{3/2}} + \frac{170\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{2}{3}\,\text{Subst}\left(\int \frac{\frac{34}{2}}{\sqrt{2}}\right. \\
&= \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \frac{115\sqrt{2+5x+3x^2}}{3x^{3/2}} + \frac{170\sqrt{2+5x+3x^2}}{3\sqrt{x}} - 115\,\text{Subst}\left(\int \right. \\
&= -\frac{170\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}} + \frac{2(38+45x)}{x^{3/2}\sqrt{2+5x+3x^2}} - \frac{115\sqrt{2+5x+3x^2}}{3x^{3/2}} + \frac{170\sqrt{2+5x+3x}}{3\sqrt{x}}
\end{aligned}
$$

Mathematica [C] time = 0.17, size = 145, normalized size = 0.72

$$
\frac{-5i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 340i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{5/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 690x^2 - 610}{6x^{3/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(5/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-4 - 610*x - 690*x^2 - (340*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(5
/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (5*I)*Sqrt[2]*Sqrt[1 + x
^(-1)]*Sqrt[3 + 2/x]*x^(5/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/
(6*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 1.11, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^{2}+5\,x+2}\,(5\,x-2)\sqrt{x}}{9\,x^{7}+30\,x^{6}+37\,x^{5}+20\,x^{4}+4\,x^{3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(9*x^7 + 30*x^6 + 37*x^5
+ 20*x^4 + 4*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(5/2)), x)
```

maple [A] time = 0.09, size = 115, normalized size = 0.57

$$\frac{3060x^{3}+3030x^{2}-170\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+165\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}}{18\sqrt{3x^{2}+5x+2}\,x^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/18*(165*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x
+4)^(1/2),I*2^(1/2))*x-170*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*E
llipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x+3060*x^3+3030*x^2+210*x-12)/x^(3/2)
/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{5\,x-2}{x^{5/2}\,{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5}{3x^{\frac{7}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{5}{2}}\sqrt{3x^2+5x+2}+2x^{\frac{3}{2}}\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{2}{3x^{\frac{9}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{7}{2}}\sqrt{3x^2+5}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(5/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(5/(3*x**(7/2)*sqrt(3*x**2 + 5*x + 2) + 5*x**(5/2)*sqrt(3*x**2 + 5
*x + 2) + 2*x**(3/2)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-2/(3*x**(9/2)*
sqrt(3*x**2 + 5*x + 2) + 5*x**(7/2)*sqrt(3*x**2 + 5*x + 2) + 2*x**(5/2)*sqr
t(3*x**2 + 5*x + 2)), x)
```

3.1071 $\int \frac{2-5x}{x^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=224

$$\frac{2693\sqrt{x}\,(3x+2)}{30\sqrt{3x^2+5x+2}}-\frac{2693\sqrt{3x^2+5x+2}}{30\sqrt{x}}+\frac{157(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2}\,\sqrt{3x^2+5x+2}}-\frac{2693(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{15\sqrt{2}\,\sqrt{3x^2+5x+}}$$

```
[Out] 2*(38+45*x)/x^(5/2)/(3*x^2+5*x+2)^(1/2)+2693/30*(2+3*x)*x^(1/2)/(3*x^2+5*x+
2)^(1/2)-2693/30*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),
1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+157/2*(1+x
)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2
)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-191/5*(3*x^2+5*x+2)^(1/2)/x^(5/
2)+157/3*(3*x^2+5*x+2)^(1/2)/x^(3/2)-2693/30*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {822, 834, 839, 1189, 1100, 1136}

$$\frac{2693\sqrt{x}\,(3x+2)}{30\sqrt{3x^2+5x+2}}-\frac{2693\sqrt{3x^2+5x+2}}{30\sqrt{x}}+\frac{157\sqrt{3x^2+5x+2}}{3x^{3/2}}-\frac{191\sqrt{3x^2+5x+2}}{5x^{5/2}}+\frac{2(45x+38)}{x^{5/2}\sqrt{3x^2+5x+2}}+\frac{157(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(7/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (2693*Sqrt[x]*(2 + 3*x))/(30*Sqrt[2 + 5*x + 3*x^2]) + (2*(38 + 45*x))/(x^(5
/2)*Sqrt[2 + 5*x + 3*x^2]) - (191*Sqrt[2 + 5*x + 3*x^2])/(5*x^(5/2)) + (157
*Sqrt[2 + 5*x + 3*x^2])/(3*x^(3/2)) - (2693*Sqrt[2 + 5*x + 3*x^2])/(30*Sqrt
[x]) - (2693*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/
2])/(15*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2]) + (157*(1 + x)*Sqrt[(2 + 3*x)/(1 + x
)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{2-5x}{x^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx &= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \int \frac{-191-225x}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{1}{5}\int \frac{-785-\frac{1719x}{2}}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{157\sqrt{2+5x+3x^2}}{3x^{3/2}} - \frac{1}{15}\int \frac{-\frac{2693}{2}-}{x^{3/2}\sqrt{2+}} \\
&= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{157\sqrt{2+5x+3x^2}}{3x^{3/2}} - \frac{2693\sqrt{2+5x+}}{30\sqrt{x}} \\
&= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{157\sqrt{2+5x+3x^2}}{3x^{3/2}} - \frac{2693\sqrt{2+5x+}}{30\sqrt{x}} \\
&= \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{157\sqrt{2+5x+3x^2}}{3x^{3/2}} - \frac{2693\sqrt{2+5x+}}{30\sqrt{x}} \\
&= \frac{2693\sqrt{x}\,(2+3x)}{30\sqrt{2+5x+3x^2}} + \frac{2(38+45x)}{x^{5/2}\sqrt{2+5x+3x^2}} - \frac{191\sqrt{2+5x+3x^2}}{5x^{5/2}} + \frac{157\sqrt{2+5x+3x}}{3x^{3/2}}
\end{aligned}$$

Mathematica [C] time = 0.17, size = 150, normalized size = 0.67

$$\frac{-338i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{7/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+2693i\sqrt{2}\sqrt{\frac{1}{x}+1}\sqrt{\frac{2}{x}+3}\,x^{7/2}E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+4710}{30x^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(7/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-12 + 110*x + 4412*x^2 + 4710*x^3 + (2693*I)*Sqrt[2]*Sqrt[1 + x^(-1)]*Sqrt
[3 + 2/x]*x^(7/2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (338*I)*Sq
rt[2]*Sqrt[1 + x^(-1)]*Sqrt[3 + 2/x]*x^(7/2)*EllipticF[I*ArcSinh[Sqrt[2/3]/
Sqrt[x]], 3/2])/(30*x^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{9\,x^8+30\,x^7+37\,x^6+20\,x^5+4\,x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(9*x^8 + 30*x^7 + 37*x^6
+ 20*x^5 + 4*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(7/2)), x)
```

maple [A] time = 0.11, size = 124, normalized size = 0.55

$$-\frac{48474x^4+52530x^3-2693\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+3369\sqrt{6x+4}\,\sqrt{3x+3}}{180\sqrt{3x^2+5x+2}\,x^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/180*(3369*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(
6*x+4)^(1/2),I*2^(1/2))*x^2-2693*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(
1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+48474*x^4+52530*x^3+5844*x^
2-660*x+72)/x^(5/2)/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(3/2)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{5\,x-2}{x^{7/2}\,{\left(3\,x^2+5\,x+2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5}{3x^{\frac{9}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{7}{2}}\sqrt{3x^2+5x+2}+2x^{\frac{5}{2}}\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{2}{3x^{\frac{11}{2}}\sqrt{3x^2+5x+2}+5x^{\frac{9}{2}}\sqrt{3x^2+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(7/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(5/(3*x**(9/2)*sqrt(3*x**2 + 5*x + 2) + 5*x**(7/2)*sqrt(3*x**2 + 5
*x + 2) + 2*x**(5/2)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-2/(3*x**(11/2)
*sqrt(3*x**2 + 5*x + 2) + 5*x**(9/2)*sqrt(3*x**2 + 5*x + 2) + 2*x**(7/2)*sq
rt(3*x**2 + 5*x + 2)), x)
```

3.1072 $\int \frac{(2-5x)x^{13/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=256

$$\frac{211144\sqrt{3x^2+5x+2}\,\sqrt{x}}{5103}-\frac{1521056(3x+2)\sqrt{x}}{76545\sqrt{3x^2+5x+2}}-\frac{211144\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{5103\sqrt{3x^2+5x+2}}+1521056\sqrt{2}$$

```
[Out] 2/9*x^(11/2)*(74+95*x)/(3*x^2+5*x+2)^(3/2)-4/27*x^(7/2)*(1484+1685*x)/(3*x^
2+5*x+2)^(1/2)-1521056/76545*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+1521056/76
545*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2)
)*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-211144/5103*(1+x)^(3/2)
*(1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3
*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-167336/2835*x^(3/2)*(3*x^2+5*x+2)^(1/2
)+45820/567*x^(5/2)*(3*x^2+5*x+2)^(1/2)+211144/5103*x^(1/2)*(3*x^2+5*x+2)^(
1/2)
```

Rubi [A] time = 0.19, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 832, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{11/2}}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{4(1685x+1484)x^{7/2}}{27\sqrt{3x^2+5x+2}}+\frac{45820}{567}\sqrt{3x^2+5x+2}\,x^{5/2}-\frac{167336\sqrt{3x^2+5x+2}\,x^{3/2}}{2835}+211144\sqrt{3}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(13/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*x^(11/2)*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) - (1521056*Sqrt[x]*(2
+ 3*x))/(76545*Sqrt[2 + 5*x + 3*x^2]) - (4*x^(7/2)*(1484 + 1685*x))/(27*Sqr
t[2 + 5*x + 3*x^2]) + (211144*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])/5103 - (167336
*x^(3/2)*Sqrt[2 + 5*x + 3*x^2])/2835 + (45820*x^(5/2)*Sqrt[2 + 5*x + 3*x^2]
)/567 + (1521056*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[S
qrt[x]], -1/2])/(76545*Sqrt[2 + 5*x + 3*x^2]) - (211144*Sqrt[2]*(1 + x)*Sqr
t[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(5103*Sqrt[2 + 5*x +
 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)x^{13/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx = \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{2}{9}\int \frac{(-407-340x)x^{9/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{4}{27}\int \frac{x^{5/2}\left(5194+\frac{11455x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{45820}{567}x^{5/2}\sqrt{2+5x+3x^2} + \frac{8}{567}\int$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} - \frac{167336x^{3/2}\sqrt{2+5x+3x^2}}{2835} + \frac{45820}{567}x$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{211144\sqrt{x}\sqrt{2+5x+3x^2}}{5103} - 167336x$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{211144\sqrt{x}\sqrt{2+5x+3x^2}}{5103} - 167336x$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{211144\sqrt{x}\sqrt{2+5x+3x^2}}{5103} - 167336x$$

$$= \frac{2x^{11/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{1521056\sqrt{x}(2+3x)}{76545\sqrt{2+5x+3x^2}} - \frac{4x^{7/2}(1484+1685x)}{27\sqrt{2+5x+3x^2}} + \frac{211144\sqrt{x}\sqrt{}}{51}$$

Mathematica [C] time = 0.27, size = 187, normalized size = 0.73

$$\frac{-1646104i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) - 1521056i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)}{7654}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(13/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3042112 + 8876240*x + 5504080*x^2 - 2967300*x^3 - 2106756*x^4 + 262710
*x^5 - 70956*x^6 + 18225*x^7) - (1521056*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(
3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (1646
104*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticF[I*Ar
cSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(76545*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^7-2\,x^6\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(13/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^7 - 2*x^6)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 +
 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{13}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(13/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(13/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.12, size = 312, normalized size = 1.22

$$-\frac{2\left(54675x^7-212868x^6+788130x^5-26854524x^4-77349420x^3+1140792\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{Elli}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(13/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -2/229635*(1328364*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF
(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+1140792*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/
2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+54675*x^7+2213940*
(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),
I*2^(1/2))*x+1901320*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellipti
cE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-212868*x^6+885576*(6*x+4)^(1/2)*(3*x+3)^(
1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))+760528*(6*x+
4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(
1/2))+788130*x^5-26854524*x^4-77349420*x^3-67906368*x^2-19002960*x)*(3*x^2+
5*x+2)^(1/2)/x^(1/2)/(3*x+2)^2/(x+1)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{13}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(13/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(13/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x^{13/2}\,\left(5\,x-2\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(13/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((x^(13/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(13/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1073 $\int \frac{(2-5x)x^{11/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=233

$$-\frac{16040}{243}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{33608(3x+2)\sqrt{x}}{729\sqrt{3x^2+5x+2}}+\frac{16040\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{243\sqrt{3x^2+5x+2}}-\frac{33608\sqrt{2}\,(x+1)}{729}$$

```
[Out] 2/9*x^(9/2)*(74+95*x)/(3*x^2+5*x+2)^(3/2)-8/27*x^(5/2)*(773+905*x)/(3*x^2+5
*x+2)^(1/2)+33608/729*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-33608/729*(1+x)^(
3/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*(
(2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+16040/243*(1+x)^(3/2)*(1/(1+x))^(1
/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1
/2)/(3*x^2+5*x+2)^(1/2)+2348/27*x^(3/2)*(3*x^2+5*x+2)^(1/2)-16040/243*x^(1/
2)*(3*x^2+5*x+2)^(1/2)
```

Rubi **[A]** time = 0.16, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 832, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{9/2}}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{8(905x+773)x^{5/2}}{27\sqrt{3x^2+5x+2}}+\frac{2348}{27}\sqrt{3x^2+5x+2}\,x^{3/2}-\frac{16040}{243}\sqrt{3x^2+5x+2}\,\sqrt{x}+\frac{33608(3x+2)\sqrt{x}}{729\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(11/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*x^(9/2)*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (33608*Sqrt[x]*(2 + 3
*x))/(729*Sqrt[2 + 5*x + 3*x^2]) - (8*x^(5/2)*(773 + 905*x))/(27*Sqrt[2 + 5
*x + 3*x^2]) - (16040*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])/243 + (2348*x^(3/2)*Sq
rt[2 + 5*x + 3*x^2])/27 - (33608*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*El
lipticE[ArcTan[Sqrt[x]], -1/2])/(729*Sqrt[2 + 5*x + 3*x^2]) + (16040*Sqrt[2
]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(243*Sq
rt[2 + 5*x + 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
```

```
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{11/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-333-245x)x^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}+\frac{4}{27}\int \frac{x^{3/2}\left(3865+\frac{8805x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}+\frac{2348}{27}x^{3/2}\sqrt{2+5x+3x^2}+\frac{8}{405}\int \frac{\left(-\frac{26415}{2}\right.}{\sqrt{2+}} \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}-\frac{16040}{243}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{2348}{27}x^{3/2}\sqrt{2+} \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}-\frac{16040}{243}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{2348}{27}x^{3/2}\sqrt{2+} \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}-\frac{16040}{243}\sqrt{x}\sqrt{2+5x+3x^2}+\frac{2348}{27}x^{3/2}\sqrt{2+} \\
&= \frac{2x^{9/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{33608\sqrt{x}(2+3x)}{729\sqrt{2+5x+3x^2}}-\frac{8x^{5/2}(773+905x)}{27\sqrt{2+5x+3x^2}}-\frac{16040}{243}\sqrt{x}\sqrt{2+5x+}
\end{aligned}$$

Mathematica [C] time = 0.26, size = 179, normalized size = 0.77

$$\frac{-486x^6+2484x^5-21276x^4+161784x^3+534680x^2+14512i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{}}{\sqrt{}}\right.\right.}{729\sqrt{x}\left(3x^2+5x+2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(11/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (134432 + 479680*x + 534680*x^2 + 161784*x^3 - 21276*x^4 + 2484*x^5 - 486*x
^6 + (33608*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*Ellipt
icE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2] + (14512*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2
/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])
/(729*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^6-2\,x^5\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(11/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^6 - 2*x^5)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 +
 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{11}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(11/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(11/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.09, size = 307, normalized size = 1.32

$$-\frac{2\left(729x^6-3726x^5+485622x^4+1269684x^3-25206\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\operatorname{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(11/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -2/2187*(3438*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*
(6*x+4)^(1/2),I*2^(1/2))*x^2-25206*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)
^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+5730*(6*x+4)^(1/2)*(3*x+3
)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-42010*(
6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I
*2^(1/2))*x+729*x^6+2292*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ell
ipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-16804*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/
2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-3726*x^5+485622*x^4+12
69684*x^3+1063224*x^2+288720*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)
^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{11}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(11/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(11/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x^{11/2}\,\left(5\,x-2\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(11/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((x^(11/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(11/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1074 $\int \frac{(2-5x)x^{9/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=210

$$\frac{7540}{81}\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{17512(3x+2)\sqrt{x}}{243\sqrt{3x^2+5x+2}}-\frac{7540\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{81\sqrt{3x^2+5x+2}}+$$

```
[Out] 2/9*x^(7/2)*(74+95*x)/(3*x^2+5*x+2)^(3/2)-4/9*x^(3/2)*(536+645*x)/(3*x^2+5*
x+2)^(1/2)-17512/243*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+17512/243*(1+x)^(3
/2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((
2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-7540/81*(1+x)^(3/2)*(1/(1+x))^(1/2)
*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)
/(3*x^2+5*x+2)^(1/2)+7540/81*x^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 832, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{7/2}}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{4(645x+536)x^{3/2}}{9\sqrt{3x^2+5x+2}}+\frac{7540}{81}\sqrt{3x^2+5x+2}\,\sqrt{x}-\frac{17512(3x+2)\sqrt{x}}{243\sqrt{3x^2+5x+2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(9/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*x^(7/2)*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) - (17512*Sqrt[x]*(2 + 3
*x))/(243*Sqrt[2 + 5*x + 3*x^2]) - (4*x^(3/2)*(536 + 645*x))/(9*Sqrt[2 + 5*
x + 3*x^2]) + (7540*Sqrt[x]*Sqrt[2 + 5*x + 3*x^2])/81 + (17512*Sqrt[2]*(1 +
 x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(243*Sqrt[2 +
 5*x + 3*x^2]) - (7540*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[Ar
cTan[Sqrt[x]], -1/2])/(81*Sqrt[2 + 5*x + 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{9/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-259-150x)x^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{4x^{3/2}(536+645x)}{9\sqrt{2+5x+3x^2}}+\frac{4}{27}\int \frac{\sqrt{x}\left(2412+\frac{5655x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{4x^{3/2}(536+645x)}{9\sqrt{2+5x+3x^2}}+\frac{7540}{81}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{8}{243}\int\\
&= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{4x^{3/2}(536+645x)}{9\sqrt{2+5x+3x^2}}+\frac{7540}{81}\sqrt{x}\,\sqrt{2+5x+3x^2}+\frac{16}{243}\,\mathrm{Subst}\\
&= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{4x^{3/2}(536+645x)}{9\sqrt{2+5x+3x^2}}+\frac{7540}{81}\sqrt{x}\,\sqrt{2+5x+3x^2}-\frac{15080}{81}\,\mathrm{Subst}\\
&= \frac{2x^{7/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{17512\sqrt{x}\,(2+3x)}{243\sqrt{2+5x+3x^2}}-\frac{4x^{3/2}(536+645x)}{9\sqrt{2+5x+3x^2}}+\frac{7540}{81}\sqrt{x}\,\sqrt{2+5x}
\end{aligned}$$

Mathematica [C] time = 0.26, size = 177, normalized size = 0.84

$$\frac{-5108i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{3/2}F\Bigg(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\Bigg)-17512i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{3/2}E\Bigg(i\,\mathrm{s}}{243\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(9/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(35024 + 129880*x + 155660*x^2 + 58590*x^3 - 1512*x^4 + 135*x^5) - (175
12*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*Arc
Sinh[Sqrt[2/3]/Sqrt[x]], 3/2] - (5108*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2
)*(2 + 5*x + 3*x^2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(243*Sqrt
[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(5\,x^5-2\,x^4\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^5 - 2*x^4)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 +
 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{9}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(9/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.09, size = 302, normalized size = 1.44

$$2\sqrt{3x^2+5x+2}\,\Bigg(-405x^5+240948x^4+612270x^3-13134\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\Bigg(\frac{\sqrt{6x+4}}{2},i\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(9/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/729*(3*x^2+5*x+2)^(1/2)*(5472*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1
/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2-13134*(6*x+4)^(1/2)*(3*x+3)^
(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+9120*(6
*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*
2^(1/2))*x-21890*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1
/2*(6*x+4)^(1/2),I*2^(1/2))*x+3648*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)
^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))-8756*(6*x+4)^(1/2)*(3*x+3)^(1
/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))-405*x^5+24094
8*x^4+612270*x^3+504936*x^2+135720*x)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{9}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(9/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x^{9/2}\,\left(5\,x-2\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(9/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((x^(9/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(9/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1075 $\int \frac{(2-5x)x^{7/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=187

$$\frac{8020(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}-\frac{40(206x+167)\sqrt{x}}{27\sqrt{3x^2+5x+2}}+\frac{3340\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}-\frac{8020\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\mathrm{ta}\right.}{81\sqrt{3x^2+5x\,-}}$$

```
[Out] 2/9*x^(5/2)*(74+95*x)/(3*x^2+5*x+2)^(3/2)+8020/81*(2+3*x)*x^(1/2)/(3*x^2+5*
x+2)^(1/2)-40/27*(167+206*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-8020/81*(1+x)^(3/2
)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+
3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+3340/27*(1+x)^(3/2)*(1/(1+x))^(1/2)*E
llipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(
3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {818, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{5/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{8020(3x+2)\sqrt{x}}{81\sqrt{3x^2+5x+2}}-\frac{40(206x+167)\sqrt{x}}{27\sqrt{3x^2+5x+2}}+\frac{3340\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{27\sqrt{3x^2+5x+2}}-8020$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(7/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*x^(5/2)*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (8020*Sqrt[x]*(2 + 3*
x))/(81*Sqrt[2 + 5*x + 3*x^2]) - (40*Sqrt[x]*(167 + 206*x))/(27*Sqrt[2 + 5*
x + 3*x^2]) - (8020*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTa
n[Sqrt[x]], -1/2])/(81*Sqrt[2 + 5*x + 3*x^2]) + (3340*Sqrt[2]*(1 + x)*Sqrt[
(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x
^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{7/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= \frac{2x^{5/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-185-55x)x^{3/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= \frac{2x^{5/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{40\sqrt{x}\,(167+206x)}{27\sqrt{2+5x+3x^2}}+\frac{4}{27}\int \frac{835+\frac{2005x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{2x^{5/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{40\sqrt{x}\,(167+206x)}{27\sqrt{2+5x+3x^2}}+\frac{8}{27}\,\text{Subst}\left(\int \frac{835+\frac{2005x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\right.\\
&= \frac{2x^{5/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{40\sqrt{x}\,(167+206x)}{27\sqrt{2+5x+3x^2}}+\frac{6680}{27}\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\right.\\
&= \frac{2x^{5/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{8020\sqrt{x}\,(2+3x)}{81\sqrt{2+5x+3x^2}}-\frac{40\sqrt{x}\,(167+206x)}{27\sqrt{2+5x+3x^2}}-\frac{8020\sqrt{2}\,(1+x)\sqrt{}}{81\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.25, size = 169, normalized size = 0.90

$$\frac{-270x^4+58212x^3+147100x^2+2000i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)\middle|\frac{3}{2}\right)+8020i\sqrt{\frac{2}{x}+}}{81\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(7/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (32080 + 120320*x + 147100*x^2 + 58212*x^3 - 270*x^4 + (8020*I)*Sqrt[2 + 2/
x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sq
rt[x]], 3/2] + (2000*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^
2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(81*Sqrt[x]*(2 + 5*x + 3*x
^2)^(3/2))
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(5\,x^{4}-2\,x^{3}\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{x}}{27\,x^{6}+135\,x^{5}+279\,x^{4}+305\,x^{3}+186\,x^{2}+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^4 - 2*x^3)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 +
 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{7}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(7/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.08, size = 297, normalized size = 1.59

$$-\frac{2\left(108675x^{4}+273582x^{3}-6015\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^{2}\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+3015\sqrt{6x+4}\,\sqrt{3x+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -2/243*(3015*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(
6*x+4)^(1/2),I*2^(1/2))*x^2-6015*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(
1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+5025*(6*x+4)^(1/2)*(3*x+3)^
(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-10025*(6*
x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2
^(1/2))*x+2010*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2
*(6*x+4)^(1/2),I*2^(1/2))-4010*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/
2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+108675*x^4+273582*x^3+224460*x^2+
60120*x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{7}{2}}}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*x^(7/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{7/2}\,\left(5\,x-2\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int((x^(7/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(7/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.1076 $\int \frac{(2-5x)x^{5/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=187

$$-\frac{3464(3x+2)\sqrt{x}}{27\sqrt{3x^2+5x+2}}+\frac{4(866x+715)\sqrt{x}}{9\sqrt{3x^2+5x+2}}-\frac{1430\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}+\frac{3464\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\mathrm{t}\right.}{27\sqrt{3x^2+5x}}$$

```
[Out] 2/9*x^(3/2)*(74+95*x)/(3*x^2+5*x+2)^(3/2)-3464/27*(2+3*x)*x^(1/2)/(3*x^2+5*
x+2)^(1/2)+4/9*(715+866*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+3464/27*(1+x)^(3/2)*
(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*
x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-1430/9*(1+x)^(3/2)*(1/(1+x))^(1/2)*Elli
pticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x
^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 820, 839, 1189, 1100, 1136}

$$\frac{2(95x+74)x^{3/2}}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{3464(3x+2)\sqrt{x}}{27\sqrt{3x^2+5x+2}}+\frac{4(866x+715)\sqrt{x}}{9\sqrt{3x^2+5x+2}}-\frac{1430\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{9\sqrt{3x^2+5x+2}}+3464\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(5/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*x^(3/2)*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) - (3464*Sqrt[x]*(2 + 3*
x))/(27*Sqrt[2 + 5*x + 3*x^2]) + (4*Sqrt[x]*(715 + 866*x))/(9*Sqrt[2 + 5*x
+ 3*x^2]) + (3464*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[
Sqrt[x]], -1/2])/(27*Sqrt[2 + 5*x + 3*x^2]) - (1430*Sqrt[2]*(1 + x)*Sqrt[(2
 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x + 3*x^2]
)
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)x^{5/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= \frac{2x^{3/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{\sqrt{x}\,(-111+40x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= \frac{2x^{3/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{x}\,(715+866x)}{9\sqrt{2+5x+3x^2}}-\frac{4}{9}\int \frac{\frac{715}{2}+433x}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{2x^{3/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{x}\,(715+866x)}{9\sqrt{2+5x+3x^2}}-\frac{8}{9}\operatorname{Subst}\left(\int \frac{\frac{715}{2}+433x^2}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right)\\
&= \frac{2x^{3/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{x}\,(715+866x)}{9\sqrt{2+5x+3x^2}}-\frac{2860}{9}\operatorname{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\right.\\
&= \frac{2x^{3/2}(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{3464\sqrt{x}\,(2+3x)}{27\sqrt{2+5x+3x^2}}+\frac{4\sqrt{x}\,(715+866x)}{9\sqrt{2+5x+3x^2}}+\frac{3464\sqrt{2}\,(1+x)\sqrt{\frac{2}{1}}}{27\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.25, size = 167, normalized size = 0.89

$$\frac{-826i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-3464i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{3/2}E\left(i\right.}{27\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(5/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(6928 + 26060*x + 32020*x^2 + 12825*x^3) - (3464*I)*Sqrt[2 + 2/x]*Sqrt[
3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]],
3/2] - (826*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*Ellipt
icF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(27*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2)
)
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(5\,x^3-2\,x^2\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^3 - 2*x^2)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 +
 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{5}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(5/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.09, size = 297, normalized size = 1.59

$$2\left(46764x^4+117405x^3-2598\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+1359\sqrt{6x+4}\,\sqrt{3x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/81*(1359*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*
x+4)^(1/2),I*2^(1/2))*x^2-2598*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/
2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+2265*(6*x+4)^(1/2)*(3*x+3)^(1
/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-4330*(6*x+4
)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1
/2))*x+906*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*
x+4)^(1/2),I*2^(1/2))-1732*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*E
llipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+46764*x^4+117405*x^3+96192*x^2+25740*
x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)x^{\frac{5}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
[Out] -integrate((5*x - 2)*x^(5/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{5/2}\,(5\,x-2)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int((x^(5/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(5/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.1077 $\int \frac{(2-5x)x^{3/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=187

$$\frac{1450\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(2175x+1831)}{9\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(95x+74)}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{598\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}-1450\sqrt{\ }$$

```
[Out] 2/9*(74+95*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2)+1450/9*(2+3*x)*x^(1/2)/(3*x^2+5*x
+2)^(1/2)-2/9*(1831+2175*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-1450/9*(1+x)^(3/2)*
(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*
x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+598/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*Ellip
ticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^
2+5*x+2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {818, 822, 839, 1189, 1100, 1136}

$$\frac{1450\sqrt{x}\,(3x+2)}{9\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(2175x+1831)}{9\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(95x+74)}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{598\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{3\sqrt{3x^2+5x+2}}-1450\sqrt{\ }$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*x^(3/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[x]*(74 + 95*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (1450*Sqrt[x]*(2 + 3*
x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (2*Sqrt[x]*(1831 + 2175*x))/(9*Sqrt[2 + 5*x
 + 3*x^2]) - (1450*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan
[Sqrt[x]], -1/2])/(9*Sqrt[2 + 5*x + 3*x^2]) + (598*Sqrt[2]*(1 + x)*Sqrt[(2
+ 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x^2])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(2-5x)x^{3/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx = \frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{2}{9}\int \frac{-37+135x}{\sqrt{x}\,\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= \frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{2\sqrt{x}\,(1831+2175x)}{9\sqrt{2+5x+3x^2}} - \frac{2}{9}\int \frac{-897-\frac{2175x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{2\sqrt{x}\,(1831+2175x)}{9\sqrt{2+5x+3x^2}} - \frac{4}{9}\,\text{Subst}\left(\int \frac{-897-\frac{2175x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx, x,\right.$$

$$= \frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} - \frac{2\sqrt{x}\,(1831+2175x)}{9\sqrt{2+5x+3x^2}} + \frac{1196}{3}\,\text{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx, x\right.$$

$$= \frac{2\sqrt{x}\,(74+95x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{1450\sqrt{x}\,(2+3x)}{9\sqrt{2+5x+3x^2}} - \frac{2\sqrt{x}\,(1831+2175x)}{9\sqrt{2+5x+3x^2}} - \frac{1450\sqrt{2}\,(1+x)}{9}$$

Mathematica [C] time = 0.25, size = 164, normalized size = 0.88

$$\frac{10764x^3 + 26830x^2 + 344i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 1450i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2\right.}{9\sqrt{x}\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*x^(3/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (5800 + 21824*x + 26830*x^2 + 10764*x^3 + (1450*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2
/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]
+ (344*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticF[I
*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(9*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.94, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(5\,x^2-2\,x\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(5*x^2 - 2*x)*sqrt(3*x^2 + 5*x + 2)*sqrt(x)/(27*x^6 + 135*x^5 + 2
79*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)x^{\frac{3}{2}}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*x^(3/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.13, size = 297, normalized size = 1.59

$$-\frac{\left(39150x^4 + 98208x^3 - 2175\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\text{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right) + 1143\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -1/27*(1143*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6
*x+4)^(1/2),I*2^(1/2))*x^2-2175*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1
/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+1905*(6*x+4)^(1/2)*(3*x+3)^(
1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-3625*(6*x+
4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(
1/2))*x+762*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6
*x+4)^(1/2),I*2^(1/2))-1450*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+39150*x^4+98208*x^3+80460*x^2+21528*
x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5x-2)x^{\frac{3}{2}}}{\left(3x^2+5x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
[Out] -integrate((5*x - 2)*x^(3/2)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x^{3/2}\,(5x-2)}{\left(3x^2+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int((x^(3/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(3/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.1078 $\int \frac{(2-5x)\sqrt{x}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=179

$$-\frac{198\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(297x+250)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(37x+30)}{3\left(3x^2+5x+2\right)^{3/2}}-\frac{245\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{198\sqrt{2}\,(x$$

```
[Out] -2/3*(30+37*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2)-198*(2+3*x)*x^(1/2)/(3*x^2+5*x+2
)^(1/2)+2*(250+297*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+198*(1+x)^(3/2)*(1/(1+x))
^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))
^(1/2)/(3*x^2+5*x+2)^(1/2)-245*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x^(1/2
)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1
/2)
```

Rubi [A] time = 0.11, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {820, 822, 839, 1189, 1100, 1136}

$$-\frac{198\sqrt{x}\,(3x+2)}{\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(297x+250)}{\sqrt{3x^2+5x+2}}-\frac{2\sqrt{x}\,(37x+30)}{3\left(3x^2+5x+2\right)^{3/2}}-\frac{245\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}+\frac{198\sqrt{2}\,(x$$

Antiderivative was successfully verified.

```
[In] Int[((2 - 5*x)*Sqrt[x])/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[x]*(30 + 37*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) - (198*Sqrt[x]*(2 + 3*
x))/Sqrt[2 + 5*x + 3*x^2] + (2*Sqrt[x]*(250 + 297*x))/Sqrt[2 + 5*x + 3*x^2]
 + (198*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]],
-1/2])/Sqrt[2 + 5*x + 3*x^2] - (245*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]
*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(2-5x)\sqrt{x}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2\sqrt{x}\,(30+37x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{3}\int \frac{-15+\frac{111x}{2}}{\sqrt{x}\,\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2\sqrt{x}\,(30+37x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{2\sqrt{x}\,(250+297x)}{\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{-\frac{735}{2}-\frac{891x}{2}}{\sqrt{x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{2\sqrt{x}\,(30+37x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{2\sqrt{x}\,(250+297x)}{\sqrt{2+5x+3x^2}}+\frac{4}{3}\,\mathrm{Subst}\left(\int \frac{-\frac{735}{2}-\frac{891x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx,x,\sqrt{x}\right.\\
&= -\frac{2\sqrt{x}\,(30+37x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{2\sqrt{x}\,(250+297x)}{\sqrt{2+5x+3x^2}}-490\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx,x,\right.\\
&= -\frac{2\sqrt{x}\,(30+37x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{198\sqrt{x}\,(2+3x)}{\sqrt{2+5x+3x^2}}+\frac{2\sqrt{x}\,(250+297x)}{\sqrt{2+5x+3x^2}}+\frac{198\sqrt{2}\,(1+x)\sqrt{\frac{2+3}{1+}}}{\sqrt{2+}}
\end{aligned}$$

Mathematica [C] time = 0.30, size = 165, normalized size = 0.92

$$-\frac{47i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,xF\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{198i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,xE\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{2\left(2205x^3+5494x^2\right.}{3\sqrt{x}\left(3x^2+5\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((2 - 5*x)*Sqrt[x])/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(1188 + 4470*x + 5494*x^2 + 2205*x^3))/(3*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/
2)) - ((198*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x*EllipticE[I*ArcSinh[Sqrt[2/3]/
Sqrt[x]], 3/2])/Sqrt[2 + 5*x + 3*x^2] - ((47*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]
*x*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/Sqrt[2 + 5*x + 3*x^2]
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(27*x^6 + 135*x^5 + 279*x
^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(5\,x-2)\sqrt{x}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)*sqrt(x)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A] time = 0.09, size = 297, normalized size = 1.66

$$\left(5346x^4+13410x^3-297\sqrt{6x+4}\;\sqrt{3x+3}\;\sqrt{6}\;\sqrt{-x}\;x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right)+156\sqrt{6x+4}\;\sqrt{3x+3}\;\sqrt{6}\;\sqrt{-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/3*(156*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+
4)^(1/2),I*2^(1/2))*x^2-297*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+260*(6*x+4)^(1/2)*(3*x+3)^(1/2)*
6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-495*(6*x+4)^(1/
2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*
x+104*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^
(1/2),I*2^(1/2))-198*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellipti
cE(1/2*(6*x+4)^(1/2),I*2^(1/2))+5346*x^4+13410*x^3+10990*x^2+2940*x)*(3*x^2
+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(5\,x-2)\sqrt{x}}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)*sqrt(x)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{x}\ (5\,x-2)}{\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((x^(1/2)*(5*x - 2))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{2\sqrt{x}}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)*x**(1/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-2*sqrt(x)/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 +
 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) +
4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(5*x**(3/2)/(9*x**4*sqrt(3*x**2 + 5
*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) +
 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.1079 $\int \frac{2-5x}{\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=185

$$\frac{715\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{5\sqrt{x}\,(429x+361)}{3\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(45x+38)}{3\left(3x^2+5x+2\right)^{3/2}}+\frac{295\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{715\sqrt{2}\,(x}{}$$

```
[Out] 2/3*(38+45*x)*x^(1/2)/(3*x^2+5*x+2)^(3/2)+715/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+
2)^(1/2)-5/3*(361+429*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-715/3*(1+x)^(3/2)*(1/(
1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(
1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+295*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x
^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+
2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {822, 839, 1189, 1100, 1136}

$$\frac{715\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}-\frac{5\sqrt{x}\,(429x+361)}{3\sqrt{3x^2+5x+2}}+\frac{2\sqrt{x}\,(45x+38)}{3\left(3x^2+5x+2\right)^{3/2}}+\frac{295\sqrt{2}\,(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{3x^2+5x+2}}-\frac{715\sqrt{2}\,(x}{}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(Sqrt[x]*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*Sqrt[x]*(38 + 45*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (715*Sqrt[x]*(2 + 3*x
))/(3*Sqrt[2 + 5*x + 3*x^2]) - (5*Sqrt[x]*(361 + 429*x))/(3*Sqrt[2 + 5*x +
3*x^2]) - (715*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqr
t[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x^2]) + (295*Sqrt[2]*(1 + x)*Sqrt[(2 + 3*
x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/Sqrt[2 + 5*x + 3*x^2]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
```

```
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{2-5x}{\sqrt{x}\left(2+5x+3x^2\right)^{5/2}}\,dx = \frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}} - \frac{1}{3}\int \frac{35-135x}{\sqrt{x}\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= \frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}} - \frac{5\sqrt{x}\,(361+429x)}{3\sqrt{2+5x+3x^2}} + \frac{1}{3}\int \frac{885+\frac{2145x}{2}}{\sqrt{x}\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}} - \frac{5\sqrt{x}\,(361+429x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\,\mathrm{Subst}\left(\int \frac{885+\frac{2145x^2}{2}}{\sqrt{2+5x^2+3x^4}}\,dx, x,\right.$$

$$= \frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}} - \frac{5\sqrt{x}\,(361+429x)}{3\sqrt{2+5x+3x^2}} + 590\,\mathrm{Subst}\left(\int \frac{1}{\sqrt{2+5x^2+3x^4}}\,dx, x\right.$$

$$= \frac{2\sqrt{x}\,(38+45x)}{3\left(2+5x+3x^2\right)^{3/2}} + \frac{715\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}} - \frac{5\sqrt{x}\,(361+429x)}{3\sqrt{2+5x+3x^2}} - \frac{715\sqrt{2}\,(1+x)\sqrt{}}{3\sqrt{}}$$

Mathematica [C] time = 0.24, size = 167, normalized size = 0.90

$$\frac{170i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)+715i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}E\left(i\sin\right.}{3\sqrt{x}\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(Sqrt[x]*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(1430 + 5383*x + 6615*x^2 + 2655*x^3) + (715*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2
/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2]
+ (170*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticF[I
*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(3*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{27\,x^7+135\,x^6+279\,x^5+305\,x^4+186\,x^3+60\,x^2+8\,x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(5/2)/x^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(27*x^7 + 135*x^6 + 279*x
^5 + 305*x^4 + 186*x^3 + 60*x^2 + 8*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(5/2)/x^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*sqrt(x)), x)
```

maple [A] time = 0.11, size = 297, normalized size = 1.61

$$-\frac{\left(38610x^4+96840x^3-2145\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+1125\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/(3*x^2+5*x+2)^(5/2)/x^(1/2),x)
```

```
[Out] -1/18*(1125*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6
*x+4)^(1/2),I*2^(1/2))*x^2-2145*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1
/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+1875*(6*x+4)^(1/2)*(3*x+3)^(
1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-3575*(6*x+
4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(
1/2))*x+750*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6
*x+4)^(1/2),I*2^(1/2))-1430*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+38610*x^4+96840*x^3+79350*x^2+21204*
x)*(3*x^2+5*x+2)^(1/2)/x^(1/2)/(x+1)^2/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x^2+5*x+2)^(5/2)/x^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*sqrt(x)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{5\,x-2}{\sqrt{x}\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((5*x - 2)/(x^(1/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\sqrt{x}}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/(3*x**2+5*x+2)**(5/2)/x**(1/2),x)
```

```
[Out] -Integral(5*sqrt(x)/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 +
5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4
*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-2/(9*x**(9/2)*sqrt(3*x**2 + 5*x +
2) + 30*x**(7/2)*sqrt(3*x**2 + 5*x + 2) + 37*x**(5/2)*sqrt(3*x**2 + 5*x + 2
) + 20*x**(3/2)*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(x)*sqrt(3*x**2 + 5*x + 2)),
 x)
```

3.1080 $\int \frac{2-5x}{x^{3/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{838\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{838\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{2085x+1717}{3\sqrt{x}\,\sqrt{3x^2+5x+2}}+\frac{2(45x+38)}{3\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}}-\frac{695(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^-\right.}{\sqrt{2}\,\sqrt{3x^2+5x-}}$$

```
[Out] 2/3*(38+45*x)/(3*x^2+5*x+2)^(3/2)/x^(1/2)+1/3*(-1717-2085*x)/x^(1/2)/(3*x^2
+5*x+2)^(1/2)-838/3*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-695/2*(1+x)^(3/2)*(
1/(1+x))^(1/2)*EllipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x
)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)+838/3*(1+x)^(3/2)*(1/(1+x))^(1/2)*Ellipt
icE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2
+5*x+2)^(1/2)+838/3*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi **[A]** time = 0.12, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = $\{822, 834, 839, 1189, 1100, 1136\}$

$$-\frac{838\sqrt{x}\,(3x+2)}{3\sqrt{3x^2+5x+2}}+\frac{838\sqrt{3x^2+5x+2}}{3\sqrt{x}}-\frac{2085x+1717}{3\sqrt{x}\,\sqrt{3x^2+5x+2}}+\frac{2(45x+38)}{3\sqrt{x}\,\left(3x^2+5x+2\right)^{3/2}}-\frac{695(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^-\right.}{\sqrt{2}\,\sqrt{3x^2+5x-}}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(3/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(38 + 45*x))/(3*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2)) - (838*Sqrt[x]*(2 + 3*x
))/(3*Sqrt[2 + 5*x + 3*x^2]) - (1717 + 2085*x)/(3*Sqrt[x]*Sqrt[2 + 5*x + 3*
x^2]) + (838*Sqrt[2 + 5*x + 3*x^2])/(3*Sqrt[x]) + (838*Sqrt[2]*(1 + x)*Sqrt
[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(3*Sqrt[2 + 5*x + 3*x
^2]) - (695*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[ArcTan[Sqrt[x]], -1/2
])/(Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{2-5x}{x^{3/2}\left(2+5x+3x^2\right)^{5/2}}\,dx = \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{1}{3}\int \frac{-41-225x}{x^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{1717+2085x}{3\sqrt{x}\sqrt{2+5x+3x^2}} + \frac{1}{3}\int \frac{-838-\frac{2085x}{2}}{x^{3/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{1717+2085x}{3\sqrt{x}\sqrt{2+5x+3x^2}} + \frac{838\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{1}{3}\int$$

$$= \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{1717+2085x}{3\sqrt{x}\sqrt{2+5x+3x^2}} + \frac{838\sqrt{2+5x+3x^2}}{3\sqrt{x}} - \frac{2}{3}\,\mathrm{Subst}$$

$$= \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{1717+2085x}{3\sqrt{x}\sqrt{2+5x+3x^2}} + \frac{838\sqrt{2+5x+3x^2}}{3\sqrt{x}} - 695\,\mathrm{Sub}$$

$$= \frac{2(38+45x)}{3\sqrt{x}\left(2+5x+3x^2\right)^{3/2}} - \frac{838\sqrt{x}\,(2+3x)}{3\sqrt{2+5x+3x^2}} - \frac{1717+2085x}{3\sqrt{x}\sqrt{2+5x+3x^2}} +$$

Mathematica [C] time = 0.25, size = 167, normalized size = 0.80

$$\frac{-409i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-1676i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{3/2}E\left(i\right.}{6\sqrt{x}\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(3/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(3358 + 12665*x + 15576*x^2 + 6255*x^3) - (1676*I)*Sqrt[2 + 2/x]*Sqrt[3
 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3
/2] - (409*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(3/2)*(2 + 5*x + 3*x^2)*Ellipti
cF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(6*Sqrt[x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{27\,x^8+135\,x^7+279\,x^6+305\,x^5+186\,x^4+60\,x^3+8\,x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(27*x^8 + 135*x^7 + 279*x
^6 + 305*x^5 + 186*x^4 + 60*x^3 + 8*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(3/2)), x)
```

maple [A] time = 0.10, size = 298, normalized size = 1.43

$$\frac{45252x^4+113310x^3-2514\sqrt{6x+4}\;\sqrt{3x+3}\;\sqrt{6}\;\sqrt{-x}\;x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+1287\sqrt{6x+4}\;\sqrt{3x+3}\;\sqrt{6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/18*(1287*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*
x+4)^(1/2),I*2^(1/2))*x^2-2514*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/
2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+2145*(6*x+4)^(1/2)*(3*x+3)^(1
/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-4190*(6*x+4
)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1
/2))*x+858*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*
x+4)^(1/2),I*2^(1/2))-1676*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*E
llipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))+45252*x^4+113310*x^3+92580*x^2+24570*
x-36)/(x+1)/(3*x+2)/x^(1/2)/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{5\,x-2}{x^{3/2}\,{\left(3\,x^2+5\,x+2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
[Out] int(-(5*x - 2)/(x^(3/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(3/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.1081 $\int \frac{2-5x}{x^{5/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=225

$$\frac{625\sqrt{x}\,(3x+2)}{2\sqrt{3x^2+5x+2}}-\frac{625\sqrt{3x^2+5x+2}}{2\sqrt{x}}+\frac{795(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{\sqrt{2}\,\sqrt{3x^2+5x+2}}-\frac{625(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\left(\sqrt{x}\right)|\right.}{\sqrt{2}\,\sqrt{3x^2+5x+2}}$$

```
[Out] 2/3*(38+45*x)/x^(3/2)/(3*x^2+5*x+2)^(3/2)-3*(181+225*x)/x^(3/2)/(3*x^2+5*x+
2)^(1/2)+625/2*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)-625/2*(1+x)^(3/2)*(1/(1+
x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+
x))^(1/2)/(3*x^2+5*x+2)^(1/2)+795/2*(1+x)^(3/2)*(1/(1+x))^(1/2)*EllipticF(x
^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(3*x^2+5*x+
2)^(1/2)+265*(3*x^2+5*x+2)^(1/2)/x^(3/2)-625/2*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = {822, 834, 839, 1189, 1100, 1136}

$$\frac{625\sqrt{x}\,(3x+2)}{2\sqrt{3x^2+5x+2}}-\frac{625\sqrt{3x^2+5x+2}}{2\sqrt{x}}+\frac{265\sqrt{3x^2+5x+2}}{x^{3/2}}-\frac{3(225x+181)}{x^{3/2}\sqrt{3x^2+5x+2}}+\frac{2(45x+38)}{3x^{3/2}\left(3x^2+5x+2\right)^{3/2}}+\frac{795(x}{}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(5/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(38 + 45*x))/(3*x^(3/2)*(2 + 5*x + 3*x^2)^(3/2)) + (625*Sqrt[x]*(2 + 3*x
))/(2*Sqrt[2 + 5*x + 3*x^2]) - (3*(181 + 225*x))/(x^(3/2)*Sqrt[2 + 5*x + 3*
x^2]) + (265*Sqrt[2 + 5*x + 3*x^2])/x^(3/2) - (625*Sqrt[2 + 5*x + 3*x^2])/(
2*Sqrt[x]) - (625*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]]
, -1/2])/(Sqrt[2]*Sqrt[2 + 5*x + 3*x^2]) + (795*(1 + x)*Sqrt[(2 + 3*x)/(1 +
 x)]*EllipticF[ArcTan[Sqrt[x]], -1/2])/(Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{2-5x}{x^{5/2}\left(2+5x+3x^2\right)^{5/2}}\,dx &= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{1}{3}\int \frac{-117-315x}{x^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+\frac{1}{3}\int \frac{-2385-\frac{6075x}{2}}{x^{5/2}\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+\frac{265\sqrt{2+5x+3x^2}}{x^{3/2}}-\frac{1}{9}\int \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+\frac{265\sqrt{2+5x+3x^2}}{x^{3/2}}- \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+\frac{265\sqrt{2+5x+3x^2}}{x^{3/2}}- \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+\frac{265\sqrt{2+5x+3x^2}}{x^{3/2}}- \\
&= \frac{2(38+45x)}{3x^{3/2}\left(2+5x+3x^2\right)^{3/2}}+\frac{625\sqrt{x}\,(2+3x)}{2\sqrt{2+5x+3x^2}}-\frac{3(181+225x)}{x^{3/2}\sqrt{2+5x+3x^2}}+
\end{aligned}
$$

Mathematica [C] time = 0.25, size = 169, normalized size = 0.75

$$\frac{14310x^4 + 35550x^3 + 28806x^2 + 510i\sqrt{\frac{2}{x}+2}\sqrt{\frac{2}{x}+3}\left(3x^2+5x+2\right)x^{5/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right) + 1875i\sqrt{\frac{2}{x}+2}}{6x^{3/2}\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(5/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-4 + 7590*x + 28806*x^2 + 35550*x^3 + 14310*x^4 + (1875*I)*Sqrt[2 + 2/x]*S
qrt[3 + 2/x]*x^(5/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSinh[Sqrt[2/3]/Sqrt[x
]], 3/2] + (510*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(5/2)*(2 + 5*x + 3*x^2)*El
lipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(6*x^(3/2)*(2 + 5*x + 3*x^2)^(3
/2))
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3x^2+5x+2}\,(5x-2)\sqrt{x}}{27x^9+135x^8+279x^7+305x^6+186x^5+60x^4+8x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(27*x^9 + 135*x^8 + 279*x
^7 + 305*x^6 + 186*x^5 + 60*x^4 + 8*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5x-2}{\left(3x^2+5x+2\right)^{\frac{5}{2}}x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(5/2)), x)
```

maple [A] time = 0.10, size = 309, normalized size = 1.37

$$-\frac{33750x^5 + 83880x^4 - 1875\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^3\,\text{EllipticE}\left(\frac{\sqrt{6x+4}}{2}, i\sqrt{2}\right) + 855\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -1/12/x^(3/2)*(855*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF
(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^3-1875*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*
(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^3+1425*(6*x+4)^(1/2)*(3
*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2-3
125*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1
/2),I*2^(1/2))*x^2+570*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Ellip
ticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x-1250*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2
)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x+33750*x^5+83880*x^4+6
7650*x^3+17388*x^2-180*x+8)/(x+1)/(3*x+2)/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}} x^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{5\,x-2}{x^{5/2}\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(5/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(5/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1082 $\int \frac{2-5x}{x^{7/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=256

$$-\frac{9521\sqrt{x}\,(3x+2)}{30\sqrt{3x^2+5x+2}}+\frac{9521\sqrt{3x^2+5x+2}}{30\sqrt{x}}-\frac{1733(x+1)\sqrt{\frac{3x+2}{x+1}}\,F\left(\tan^{-1}\left(\sqrt{x}\right)|-\frac{1}{2}\right)}{2\sqrt{2}\,\sqrt{3x^2+5x+2}}+\frac{9521(x+1)\sqrt{\frac{3x+2}{x+1}}\,E\left(\tan^{-1}\right.}{15\sqrt{2}\,\sqrt{3x^2+5x+}}$$

```
[Out] 2/3*(38+45*x)/x^(5/2)/(3*x^2+5*x+2)^(3/2)+1/3*(-1541-1965*x)/x^(5/2)/(3*x^2
+5*x+2)^(1/2)-9521/30*(2+3*x)*x^(1/2)/(3*x^2+5*x+2)^(1/2)+9521/30*(1+x)^(3/
2)*(1/(1+x))^(1/2)*EllipticE(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2
+3*x)/(1+x))^(1/2)/(3*x^2+5*x+2)^(1/2)-1733/4*(1+x)^(3/2)*(1/(1+x))^(1/2)*E
llipticF(x^(1/2)/(1+x)^(1/2),1/2*I*2^(1/2))*2^(1/2)*((2+3*x)/(1+x))^(1/2)/(
3*x^2+5*x+2)^(1/2)+1252/5*(3*x^2+5*x+2)^(1/2)/x^(5/2)-1733/6*(3*x^2+5*x+2)^
(1/2)/x^(3/2)+9521/30*(3*x^2+5*x+2)^(1/2)/x^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {822, 834, 839, 1189, 1100, 1136}

$$-\frac{9521\sqrt{x}\,(3x+2)}{30\sqrt{3x^2+5x+2}}+\frac{9521\sqrt{3x^2+5x+2}}{30\sqrt{x}}-\frac{1733\sqrt{3x^2+5x+2}}{6x^{3/2}}+\frac{1252\sqrt{3x^2+5x+2}}{5x^{5/2}}-\frac{1965x+1541}{3x^{5/2}\sqrt{3x^2+5x+2}}+\frac{}{3x}$$

Antiderivative was successfully verified.

```
[In] Int[(2 - 5*x)/(x^(7/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(38 + 45*x))/(3*x^(5/2)*(2 + 5*x + 3*x^2)^(3/2)) - (9521*Sqrt[x]*(2 + 3*
x))/(30*Sqrt[2 + 5*x + 3*x^2]) - (1541 + 1965*x)/(3*x^(5/2)*Sqrt[2 + 5*x +
3*x^2]) + (1252*Sqrt[2 + 5*x + 3*x^2])/(5*x^(5/2)) - (1733*Sqrt[2 + 5*x + 3
*x^2])/(6*x^(3/2)) + (9521*Sqrt[2 + 5*x + 3*x^2])/(30*Sqrt[x]) + (9521*(1 +
 x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticE[ArcTan[Sqrt[x]], -1/2])/(15*Sqrt[2]*S
qrt[2 + 5*x + 3*x^2]) - (1733*(1 + x)*Sqrt[(2 + 3*x)/(1 + x)]*EllipticF[Arc
Tan[Sqrt[x]], -1/2])/(2*Sqrt[2]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 839

```
Int[((f_) + (g_.)*(x_))/(Sqrt[x_]*Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2]),
x_Symbol] :> Dist[2, Subst[Int[(f + g*x^2)/Sqrt[a + b*x^2 + c*x^4], x], x,
Sqrt[x]], x] /; FreeQ[{a, b, c, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 1100

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q = Rt[b
^2 - 4*a*c, 2]}, Simp[((2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q)*x^2)/(2*a +
(b - q)*x^2)]*EllipticF[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q)/(b - q)])/(2
*a*Rt[(b - q)/(2*a), 2]*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /;
 FreeQ[{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1136

```
Int[(x_)^2/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbol] :> With[{q =
 Rt[b^2 - 4*a*c, 2]}, Simp[(x*(b - q + 2*c*x^2))/(2*c*Sqrt[a + b*x^2 + c*x^
4]), x] - Simp[(Rt[(b - q)/(2*a), 2]*(2*a + (b - q)*x^2)*Sqrt[(2*a + (b + q
)*x^2)/(2*a + (b - q)*x^2)]*EllipticE[ArcTan[Rt[(b - q)/(2*a), 2]*x], (-2*q
)/(b - q)])/(2*c*Sqrt[a + b*x^2 + c*x^4]), x] /; PosQ[(b - q)/a]] /; FreeQ[
{a, b, c}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rule 1189

```
Int[((d_) + (e_.)*(x_)^2)/Sqrt[(a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4], x_Symbo
l] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[d, Int[1/Sqrt[a + b*x^2 + c*x^4],
 x], x] + Dist[e, Int[x^2/Sqrt[a + b*x^2 + c*x^4], x], x] /; PosQ[(b + q)/a
] || PosQ[(b - q)/a]] /; FreeQ[{a, b, c, d, e}, x] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{2-5x}{x^{7/2}\left(2+5x+3x^2\right)^{5/2}}\,dx = \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1}{3}\int \frac{-193-405x}{x^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1}{3}\int \frac{-3756-\frac{9825x}{2}}{x^{7/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1}{15}\int \frac{-2}{x^{5/2}}$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1733\sqrt{2+}}{6x}$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1733\sqrt{2+}}{6x}$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1733\sqrt{2+}}{6x}$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5x+3x^2}}{5x^{5/2}} - \frac{1733\sqrt{2+}}{6x}$$

$$= \frac{2(38+45x)}{3x^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{9521\sqrt{x}\,(2+3x)}{30\sqrt{2+5x+3x^2}} - \frac{1541+1965x}{3x^{5/2}\sqrt{2+5x+3x^2}} + \frac{1252\sqrt{2+5}}{5x^{5/2}}$$

Mathematica [C] time = 0.26, size = 177, normalized size = 0.69

$$\frac{-6953i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{7/2}F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{2}{3}}}{\sqrt{x}}\right)|\frac{3}{2}\right)-19042i\sqrt{\frac{2}{x}+2}\,\sqrt{\frac{2}{x}+3}\,\left(3x^2+5x+2\right)x^{7/2}E\left(i\,\mathrm{s}\right.}{60x^{5/2}\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 - 5*x)/(x^(7/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(12 - 130*x + 39836*x^2 + 154195*x^3 + 192342*x^4 + 77985*x^5) - (19042
*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(7/2)*(2 + 5*x + 3*x^2)*EllipticE[I*ArcSi
nh[Sqrt[2/3]/Sqrt[x]], 3/2] - (6953*I)*Sqrt[2 + 2/x]*Sqrt[3 + 2/x]*x^(7/2)*
(2 + 5*x + 3*x^2)*EllipticF[I*ArcSinh[Sqrt[2/3]/Sqrt[x]], 3/2])/(60*x^(5/2)
*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(5\,x-2)\sqrt{x}}{27\,x^{10}+135\,x^9+279\,x^8+305\,x^7+186\,x^6+60\,x^5+8\,x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(5*x - 2)*sqrt(x)/(27*x^10 + 135*x^9 + 279*
x^8 + 305*x^7 + 186*x^6 + 60*x^5 + 8*x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(7/2)), x)
```

maple [A] time = 0.10, size = 318, normalized size = 1.24

$$514134x^6+1245870x^5-28563\sqrt{6x+4}\,\sqrt{3x+3}\,\sqrt{6}\,\sqrt{-x}\,x^4\,\mathrm{EllipticE}\left(\frac{\sqrt{6x+4}}{2},i\sqrt{2}\right)+7704\sqrt{6x+4}\,\sqrt{3x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/180/x^(5/2)*(7704*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*Elliptic
F(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^4-28563*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2
)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^4+12840*(6*x+4)^(1/2)
*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^
3-47605*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4
)^(1/2),I*2^(1/2))*x^3+5136*(6*x+4)^(1/2)*(3*x+3)^(1/2)*6^(1/2)*(-x)^(1/2)*
EllipticF(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2-19042*(6*x+4)^(1/2)*(3*x+3)^(1/2
)*6^(1/2)*(-x)^(1/2)*EllipticE(1/2*(6*x+4)^(1/2),I*2^(1/2))*x^2+514134*x^6+
1245870*x^5+959610*x^4+217350*x^3-10512*x^2+780*x-72)/(x+1)/(3*x+2)/(3*x^2+
5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{5\,x-2}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((5*x - 2)/((3*x^2 + 5*x + 2)^(5/2)*x^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int -\frac{5\,x-2}{x^{7/2}\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] int(-(5*x - 2)/(x^(7/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2-5*x)/x**(7/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1083 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=240

$$\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{a^2(ex)^{m+2}(aB+3Ab)}{e^2(m+2)}+\frac{3c(ex)^{m+6}\left(aBc+Abc+b^2B\right)}{e^6(m+6)}+\frac{3a(ex)^{m+3}\left(A\left(ac+b^2\right)+abB\right)}{e^3(m+3)}+\frac{(ex)^{m+5}\left(3a\right.}{}$$

```
[Out] a^3*A*(e*x)^(1+m)/e/(1+m)+a^2*(3*A*b+B*a)*(e*x)^(2+m)/e^2/(2+m)+3*a*(a*b*B+
A*(a*c+b^2))*(e*x)^(3+m)/e^3/(3+m)+(3*a*B*(a*c+b^2)+A*(6*a*b*c+b^3))*(e*x)^
(4+m)/e^4/(4+m)+(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*(e*x)^(5+m)/e^5/(5+m)
+3*c*(A*b*c+B*a*c+B*b^2)*(e*x)^(6+m)/e^6/(6+m)+c^2*(A*c+3*B*b)*(e*x)^(7+m)/
e^7/(7+m)+B*c^3*(e*x)^(8+m)/e^8/(8+m)
```

Rubi [A] time = 0.19, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{a^2(ex)^{m+2}(aB+3Ab)}{e^2(m+2)}+\frac{a^3A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+5}\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)}{e^5(m+5)}+\frac{3a(ex)^{m+3}\left(A\left(ac+b^2\right)+abB\right)}{e^3(m+3)}+$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a^3*A*(e*x)^(1 + m))/(e*(1 + m)) + (a^2*(3*A*b + a*B)*(e*x)^(2 + m))/(e^2*
(2 + m)) + (3*a*(a*b*B + A*(b^2 + a*c))*(e*x)^(3 + m))/(e^3*(3 + m)) + ((3*
a*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*(e*x)^(4 + m))/(e^4*(4 + m)) + ((b^3*B
 + 3*A*b^2*c + 6*a*b*B*c + 3*a*A*c^2)*(e*x)^(5 + m))/(e^5*(5 + m)) + (3*c*(
b^2*B + A*b*c + a*B*c)*(e*x)^(6 + m))/(e^6*(6 + m)) + (c^2*(3*b*B + A*c)*(e
*x)^(7 + m))/(e^7*(7 + m)) + (B*c^3*(e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3A(ex)^m+\frac{a^2(3Ab+aB)(ex)^{1+m}}{e}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)(ex)^{2+m}}{e^2}+\right.\\ &= \frac{a^3A(ex)^{1+m}}{e(1+m)}+\frac{a^2(3Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{3a\left(abB+A\left(b^2+ac\right)\right)(ex)^{3+m}}{e^3(3+m)}+\end{aligned}$$

Mathematica [B] time = 1.42, size = 672, normalized size = 2.80

$$\frac{(ex)^m\left(3\left(\frac{2x\left(-\frac{2a^2c(m+4)\left(2ac(m+6)(bB(m+1)-2Ac(m+8))-b(m+1)\left(-2aBc(m+7)-Abc(m+8)+b^2B(m+4)\right)\right)}{m+1}-\frac{abc(m+4)x\left(2ac(m+6)(bB(m+1)-2Ac(m+8))-b(m+1)\left(-2aBc(m+7)-\right.\right.}{m+2}\right.}{}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((e*x)^m*(x*(3*b*B + A*c*(8 + m) + B*c*(7 + m)*x)*(a + x*(b + c*x))^3 + (3*
(-(x*(a*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m)) + 2*b*(b^2*B*(4 + m) - 2*a*
B*c*(7 + m) - A*b*c*(8 + m)) + c*(5 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) -
 A*b*c*(8 + m))*x)*(a + x*(b + c*x))^2) + (2*x*((-2*a^2*c*(4 + m)*(2*a*c*(6
 + m)*(b*B*(1 + m) - 2*A*c*(8 + m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7
 + m) - A*b*c*(8 + m))))/(1 + m) + a*b*(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*
(8 + m)) - (b^2*(3 + m) - 2*a*c*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) -
 A*b*c*(8 + m))) - (a*b*c*(4 + m)*(2*a*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 +
m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m)))*x)/(2 +
m) + ((b^2*(2 + m) - 2*a*c*(3 + m))*(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8
+ m)) - (b^2*(3 + m) - 2*a*c*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*
b*c*(8 + m)))*x)/(2 + m) + (-(a*c*(4 + m)*(2*a*c*(6 + m)*(b*B*(1 + m) - 2*A
*c*(8 + m)) - b*(1 + m)*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m))))
 + b*(-(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m))) + (b^2*(3 + m) - 2*a*c
*(5 + m))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m))) + c*(3 + m)*(-
(a*b*c*(6 + m)*(b*B*(1 + m) - 2*A*c*(8 + m))) + (b^2*(3 + m) - 2*a*c*(5 + m
))*(b^2*B*(4 + m) - 2*a*B*c*(7 + m) - A*b*c*(8 + m)))*x)*(a + x*(b + c*x)))
)/(c*(3 + m)*(4 + m))))/(c*(5 + m)*(6 + m))))/(c*(7 + m)*(8 + m))
```

fricas [B] time = 0.96, size = 1350, normalized size = 5.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] ((B*c^3*m^7 + 28*B*c^3*m^6 + 322*B*c^3*m^5 + 1960*B*c^3*m^4 + 6769*B*c^3*m^
3 + 13132*B*c^3*m^2 + 13068*B*c^3*m + 5040*B*c^3)*x^8 + ((3*B*b*c^2 + A*c^3
)*m^7 + 29*(3*B*b*c^2 + A*c^3)*m^6 + 343*(3*B*b*c^2 + A*c^3)*m^5 + 2135*(3*
B*b*c^2 + A*c^3)*m^4 + 17280*B*b*c^2 + 5760*A*c^3 + 7504*(3*B*b*c^2 + A*c^3
)*m^3 + 14756*(3*B*b*c^2 + A*c^3)*m^2 + 14832*(3*B*b*c^2 + A*c^3)*m)*x^7 +
3*((B*b^2*c + (B*a + A*b)*c^2)*m^7 + 30*(B*b^2*c + (B*a + A*b)*c^2)*m^6 + 3
66*(B*b^2*c + (B*a + A*b)*c^2)*m^5 + 2340*(B*b^2*c + (B*a + A*b)*c^2)*m^4 +
 6720*B*b^2*c + 8409*(B*b^2*c + (B*a + A*b)*c^2)*m^3 + 6720*(B*a + A*b)*c^2
 + 16830*(B*b^2*c + (B*a + A*b)*c^2)*m^2 + 17144*(B*b^2*c + (B*a + A*b)*c^2
)*m)*x^6 + ((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^7 + 31*(B*b^3 + 3
*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^6 + 391*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*m^5 + 2581*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^4 + 8
064*B*b^3 + 24192*A*a*c^2 + 9544*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*m^3 + 19564*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m^2 + 24192*(2*B*
a*b + A*b^2)*c + 20304*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*m)*x^5 +
 ((3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^7 + 32*(3*B*a*b^2 + A*b^3 +
 3*(B*a^2 + 2*A*a*b)*c)*m^6 + 418*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*
c)*m^5 + 2864*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^4 + 30240*B*a*b
^2 + 10080*A*b^3 + 10993*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^3 +
23312*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m^2 + 30240*(B*a^2 + 2*A*
a*b)*c + 24876*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*m)*x^4 + 3*((B*a
^2*b + A*a*b^2 + A*a^2*c)*m^7 + 33*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^6 + 447*
(B*a^2*b + A*a*b^2 + A*a^2*c)*m^5 + 3195*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^4
+ 13440*B*a^2*b + 13440*A*a*b^2 + 13440*A*a^2*c + 12864*(B*a^2*b + A*a*b^2
+ A*a^2*c)*m^3 + 28692*(B*a^2*b + A*a*b^2 + A*a^2*c)*m^2 + 32048*(B*a^2*b +
 A*a*b^2 + A*a^2*c)*m)*x^3 + ((B*a^3 + 3*A*a^2*b)*m^7 + 34*(B*a^3 + 3*A*a^2
*b)*m^6 + 478*(B*a^3 + 3*A*a^2*b)*m^5 + 3580*(B*a^3 + 3*A*a^2*b)*m^4 + 2016
0*B*a^3 + 60480*A*a^2*b + 15289*(B*a^3 + 3*A*a^2*b)*m^3 + 36706*(B*a^3 + 3*
A*a^2*b)*m^2 + 44712*(B*a^3 + 3*A*a^2*b)*m)*x^2 + (A*a^3*m^7 + 35*A*a^3*m^6
 + 511*A*a^3*m^5 + 4025*A*a^3*m^4 + 18424*A*a^3*m^3 + 48860*A*a^3*m^2 + 692
64*A*a^3*m + 40320*A*a^3)*x)*(e*x)^m/(m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 2
2449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

giac [B] time = 0.34, size = 2736, normalized size = 11.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (B*c^3*m^7*x^8*x^m*e^m + 3*B*b*c^2*m^7*x^7*x^m*e^m + A*c^3*m^7*x^7*x^m*e^m
+ 28*B*c^3*m^6*x^8*x^m*e^m + 3*B*b^2*c*m^7*x^6*x^m*e^m + 3*B*a*c^2*m^7*x^6*
x^m*e^m + 3*A*b*c^2*m^7*x^6*x^m*e^m + 87*B*b*c^2*m^6*x^7*x^m*e^m + 29*A*c^3
*m^6*x^7*x^m*e^m + 322*B*c^3*m^5*x^8*x^m*e^m + B*b^3*m^7*x^5*x^m*e^m + 6*B*
a*b*c*m^7*x^5*x^m*e^m + 3*A*b^2*c*m^7*x^5*x^m*e^m + 3*A*a*c^2*m^7*x^5*x^m*e
^m + 90*B*b^2*c*m^6*x^6*x^m*e^m + 90*B*a*c^2*m^6*x^6*x^m*e^m + 90*A*b*c^2*m
^6*x^6*x^m*e^m + 1029*B*b*c^2*m^5*x^7*x^m*e^m + 343*A*c^3*m^5*x^7*x^m*e^m +
 1960*B*c^3*m^4*x^8*x^m*e^m + 3*B*a*b^2*m^7*x^4*x^m*e^m + A*b^3*m^7*x^4*x^m
*e^m + 3*B*a^2*c*m^7*x^4*x^m*e^m + 6*A*a*b*c*m^7*x^4*x^m*e^m + 31*B*b^3*m^6
*x^5*x^m*e^m + 186*B*a*b*c*m^6*x^5*x^m*e^m + 93*A*b^2*c*m^6*x^5*x^m*e^m + 9
3*A*a*c^2*m^6*x^5*x^m*e^m + 1098*B*b^2*c*m^5*x^6*x^m*e^m + 1098*B*a*c^2*m^5
*x^6*x^m*e^m + 1098*A*b*c^2*m^5*x^6*x^m*e^m + 6405*B*b*c^2*m^4*x^7*x^m*e^m
+ 2135*A*c^3*m^4*x^7*x^m*e^m + 6769*B*c^3*m^3*x^8*x^m*e^m + 3*B*a^2*b*m^7*x
^3*x^m*e^m + 3*A*a*b^2*m^7*x^3*x^m*e^m + 3*A*a^2*c*m^7*x^3*x^m*e^m + 96*B*a
*b^2*m^6*x^4*x^m*e^m + 32*A*b^3*m^6*x^4*x^m*e^m + 96*B*a^2*c*m^6*x^4*x^m*e^
m + 192*A*a*b*c*m^6*x^4*x^m*e^m + 391*B*b^3*m^5*x^5*x^m*e^m + 2346*B*a*b*c*
m^5*x^5*x^m*e^m + 1173*A*b^2*c*m^5*x^5*x^m*e^m + 1173*A*a*c^2*m^5*x^5*x^m*e
^m + 7020*B*b^2*c*m^4*x^6*x^m*e^m + 7020*B*a*c^2*m^4*x^6*x^m*e^m + 7020*A*b
*c^2*m^4*x^6*x^m*e^m + 22512*B*b*c^2*m^3*x^7*x^m*e^m + 7504*A*c^3*m^3*x^7*x
^m*e^m + 13132*B*c^3*m^2*x^8*x^m*e^m + B*a^3*m^7*x^2*x^m*e^m + 3*A*a^2*b*m^
7*x^2*x^m*e^m + 99*B*a^2*b*m^6*x^3*x^m*e^m + 99*A*a*b^2*m^6*x^3*x^m*e^m + 9
9*A*a^2*c*m^6*x^3*x^m*e^m + 1254*B*a*b^2*m^5*x^4*x^m*e^m + 418*A*b^3*m^5*x^
4*x^m*e^m + 1254*B*a^2*c*m^5*x^4*x^m*e^m + 2508*A*a*b*c*m^5*x^4*x^m*e^m + 2
581*B*b^3*m^4*x^5*x^m*e^m + 15486*B*a*b*c*m^4*x^5*x^m*e^m + 7743*A*b^2*c*m^
4*x^5*x^m*e^m + 7743*A*a*c^2*m^4*x^5*x^m*e^m + 25227*B*b^2*c*m^3*x^6*x^m*e^
m + 25227*B*a*c^2*m^3*x^6*x^m*e^m + 25227*A*b*c^2*m^3*x^6*x^m*e^m + 44268*B
*b*c^2*m^2*x^7*x^m*e^m + 14756*A*c^3*m^2*x^7*x^m*e^m + 13068*B*c^3*m*x^8*x^
m*e^m + A*a^3*m^7*x*x^m*e^m + 34*B*a^3*m^6*x^2*x^m*e^m + 102*A*a^2*b*m^6*x^
2*x^m*e^m + 1341*B*a^2*b*m^5*x^3*x^m*e^m + 1341*A*a*b^2*m^5*x^3*x^m*e^m + 1
341*A*a^2*c*m^5*x^3*x^m*e^m + 8592*B*a*b^2*m^4*x^4*x^m*e^m + 2864*A*b^3*m^4
*x^4*x^m*e^m + 8592*B*a^2*c*m^4*x^4*x^m*e^m + 17184*A*a*b*c*m^4*x^4*x^m*e^m
 + 9544*B*b^3*m^3*x^5*x^m*e^m + 57264*B*a*b*c*m^3*x^5*x^m*e^m + 28632*A*b^2
*c*m^3*x^5*x^m*e^m + 28632*A*a*c^2*m^3*x^5*x^m*e^m + 50490*B*b^2*c*m^2*x^6*
x^m*e^m + 50490*B*a*c^2*m^2*x^6*x^m*e^m + 50490*A*b*c^2*m^2*x^6*x^m*e^m + 4
4496*B*b*c^2*m*x^7*x^m*e^m + 14832*A*c^3*m*x^7*x^m*e^m + 5040*B*c^3*x^8*x^m
*e^m + 35*A*a^3*m^6*x*x^m*e^m + 478*B*a^3*m^5*x^2*x^m*e^m + 1434*A*a^2*b*m^
5*x^2*x^m*e^m + 9585*B*a^2*b*m^4*x^3*x^m*e^m + 9585*A*a*b^2*m^4*x^3*x^m*e^m
 + 9585*A*a^2*c*m^4*x^3*x^m*e^m + 32979*B*a*b^2*m^3*x^4*x^m*e^m + 10993*A*b
^3*m^3*x^4*x^m*e^m + 32979*B*a^2*c*m^3*x^4*x^m*e^m + 65958*A*a*b*c*m^3*x^4*
x^m*e^m + 19564*B*b^3*m^2*x^5*x^m*e^m + 117384*B*a*b*c*m^2*x^5*x^m*e^m + 58
692*A*b^2*c*m^2*x^5*x^m*e^m + 58692*A*a*c^2*m^2*x^5*x^m*e^m + 51432*B*b^2*c
*m*x^6*x^m*e^m + 51432*B*a*c^2*m*x^6*x^m*e^m + 51432*A*b*c^2*m*x^6*x^m*e^m
+ 17280*B*b*c^2*x^7*x^m*e^m + 5760*A*c^3*x^7*x^m*e^m + 511*A*a^3*m^5*x*x^m*
e^m + 3580*B*a^3*m^4*x^2*x^m*e^m + 10740*A*a^2*b*m^4*x^2*x^m*e^m + 38592*B*
a^2*b*m^3*x^3*x^m*e^m + 38592*A*a*b^2*m^3*x^3*x^m*e^m + 38592*A*a^2*c*m^3*x
^3*x^m*e^m + 69936*B*a*b^2*m^2*x^4*x^m*e^m + 23312*A*b^3*m^2*x^4*x^m*e^m +
69936*B*a^2*c*m^2*x^4*x^m*e^m + 139872*A*a*b*c*m^2*x^4*x^m*e^m + 20304*B*b^
3*m*x^5*x^m*e^m + 121824*B*a*b*c*m*x^5*x^m*e^m + 60912*A*b^2*c*m*x^5*x^m*e^
m + 60912*A*a*c^2*m*x^5*x^m*e^m + 20160*B*b^2*c*x^6*x^m*e^m + 20160*B*a*c^2
*x^6*x^m*e^m + 20160*A*b*c^2*x^6*x^m*e^m + 4025*A*a^3*m^4*x*x^m*e^m + 15289
*B*a^3*m^3*x^2*x^m*e^m + 45867*A*a^2*b*m^3*x^2*x^m*e^m + 86076*B*a^2*b*m^2*
x^3*x^m*e^m + 86076*A*a*b^2*m^2*x^3*x^m*e^m + 86076*A*a^2*c*m^2*x^3*x^m*e^m
 + 74628*B*a*b^2*m*x^4*x^m*e^m + 24876*A*b^3*m*x^4*x^m*e^m + 74628*B*a^2*c*
m*x^4*x^m*e^m + 149256*A*a*b*c*m*x^4*x^m*e^m + 8064*B*b^3*x^5*x^m*e^m + 483
84*B*a*b*c*x^5*x^m*e^m + 24192*A*b^2*c*x^5*x^m*e^m + 24192*A*a*c^2*x^5*x^m*
e^m + 18424*A*a^3*m^3*x*x^m*e^m + 36706*B*a^3*m^2*x^2*x^m*e^m + 110118*A*a^
2*b*m^2*x^2*x^m*e^m + 96144*B*a^2*b*m*x^3*x^m*e^m + 96144*A*a*b^2*m*x^3*x^m
*e^m + 96144*A*a^2*c*m*x^3*x^m*e^m + 30240*B*a*b^2*x^4*x^m*e^m + 10080*A*b^
3*x^4*x^m*e^m + 30240*B*a^2*c*x^4*x^m*e^m + 60480*A*a*b*c*x^4*x^m*e^m + 488
60*A*a^3*m^2*x*x^m*e^m + 44712*B*a^3*m*x^2*x^m*e^m + 134136*A*a^2*b*m*x^2*x
^m*e^m + 40320*B*a^2*b*x^3*x^m*e^m + 40320*A*a*b^2*x^3*x^m*e^m + 40320*A*a^
2*c*x^3*x^m*e^m + 69264*A*a^3*m*x*x^m*e^m + 20160*B*a^3*x^2*x^m*e^m + 60480
*A*a^2*b*x^2*x^m*e^m + 40320*A*a^3*x*x^m*e^m)/(m^8 + 36*m^7 + 546*m^6 + 453
6*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)
```

maple [B] time = 0.05, size = 1903, normalized size = 7.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] x*(B*c^3*m^7*x^7+A*c^3*m^7*x^6+3*B*b*c^2*m^7*x^6+28*B*c^3*m^6*x^7+3*A*b*c^2
*m^7*x^5+29*A*c^3*m^6*x^6+3*B*a*c^2*m^7*x^5+3*B*b^2*c*m^7*x^5+87*B*b*c^2*m^
6*x^6+322*B*c^3*m^5*x^7+3*A*a*c^2*m^7*x^4+3*A*b^2*c*m^7*x^4+90*A*b*c^2*m^6*
x^5+343*A*c^3*m^5*x^6+6*B*a*b*c*m^7*x^4+90*B*a*c^2*m^6*x^5+B*b^3*m^7*x^4+90
*B*b^2*c*m^6*x^5+1029*B*b*c^2*m^5*x^6+1960*B*c^3*m^4*x^7+6*A*a*b*c*m^7*x^3+
93*A*a*c^2*m^6*x^4+A*b^3*m^7*x^3+93*A*b^2*c*m^6*x^4+1098*A*b*c^2*m^5*x^5+21
35*A*c^3*m^4*x^6+3*B*a^2*c*m^7*x^3+3*B*a*b^2*m^7*x^3+186*B*a*b*c*m^6*x^4+10
98*B*a*c^2*m^5*x^5+31*B*b^3*m^6*x^4+1098*B*b^2*c*m^5*x^5+6405*B*b*c^2*m^4*x
^6+6769*B*c^3*m^3*x^7+3*A*a^2*c*m^7*x^2+3*A*a*b^2*m^7*x^2+192*A*a*b*c*m^6*x
^3+1173*A*a*c^2*m^5*x^4+32*A*b^3*m^6*x^3+1173*A*b^2*c*m^5*x^4+7020*A*b*c^2*
m^4*x^5+7504*A*c^3*m^3*x^6+3*B*a^2*b*m^7*x^2+96*B*a^2*c*m^6*x^3+96*B*a*b^2*
m^6*x^3+2346*B*a*b*c*m^5*x^4+7020*B*a*c^2*m^4*x^5+391*B*b^3*m^5*x^4+7020*B*
b^2*c*m^4*x^5+22512*B*b*c^2*m^3*x^6+13132*B*c^3*m^2*x^7+3*A*a^2*b*m^7*x+99*
A*a^2*c*m^6*x^2+99*A*a*b^2*m^6*x^2+2508*A*a*b*c*m^5*x^3+7743*A*a*c^2*m^4*x^
4+418*A*b^3*m^5*x^3+7743*A*b^2*c*m^4*x^4+25227*A*b*c^2*m^3*x^5+14756*A*c^3*
m^2*x^6+B*a^3*m^7*x+99*B*a^2*b*m^6*x^2+1254*B*a^2*c*m^5*x^3+1254*B*a*b^2*m^
5*x^3+15486*B*a*b*c*m^4*x^4+25227*B*a*c^2*m^3*x^5+2581*B*b^3*m^4*x^4+25227*
B*b^2*c*m^3*x^5+44268*B*b*c^2*m^2*x^6+13068*B*c^3*m*x^7+A*a^3*m^7+102*A*a^2
*b*m^6*x+1341*A*a^2*c*m^5*x^2+1341*A*a*b^2*m^5*x^2+17184*A*a*b*c*m^4*x^3+28
632*A*a*c^2*m^3*x^4+2864*A*b^3*m^4*x^3+28632*A*b^2*c*m^3*x^4+50490*A*b*c^2*
m^2*x^5+14832*A*c^3*m*x^6+34*B*a^3*m^6*x+1341*B*a^2*b*m^5*x^2+8592*B*a^2*c*
m^4*x^3+8592*B*a*b^2*m^4*x^3+57264*B*a*b*c*m^3*x^4+50490*B*a*c^2*m^2*x^5+95
44*B*b^3*m^3*x^4+50490*B*b^2*c*m^2*x^5+44496*B*b*c^2*m*x^6+5040*B*c^3*x^7+3
5*A*a^3*m^6+1434*A*a^2*b*m^5*x+9585*A*a^2*c*m^4*x^2+9585*A*a*b^2*m^4*x^2+65
958*A*a*b*c*m^3*x^3+58692*A*a*c^2*m^2*x^4+10993*A*b^3*m^3*x^3+58692*A*b^2*c
*m^2*x^4+51432*A*b*c^2*m*x^5+5760*A*c^3*x^6+478*B*a^3*m^5*x+9585*B*a^2*b*m^
4*x^2+32979*B*a^2*c*m^3*x^3+32979*B*a*b^2*m^3*x^3+117384*B*a*b*c*m^2*x^4+51
432*B*a*c^2*m*x^5+19564*B*b^3*m^2*x^4+51432*B*b^2*c*m*x^5+17280*B*b*c^2*x^6
+511*A*a^3*m^5+10740*A*a^2*b*m^4*x+38592*A*a^2*c*m^3*x^2+38592*A*a*b^2*m^3*
x^2+139872*A*a*b*c*m^2*x^3+60912*A*a*c^2*m*x^4+23312*A*b^3*m^2*x^3+60912*A*
b^2*c*m*x^4+20160*A*b*c^2*x^5+3580*B*a^3*m^4*x+38592*B*a^2*b*m^3*x^2+69936*
B*a^2*c*m^2*x^3+69936*B*a*b^2*m^2*x^3+121824*B*a*b*c*m*x^4+20160*B*a*c^2*x^
5+20304*B*b^3*m*x^4+20160*B*b^2*c*x^5+4025*A*a^3*m^4+45867*A*a^2*b*m^3*x+86
076*A*a^2*c*m^2*x^2+86076*A*a*b^2*m^2*x^2+149256*A*a*b*c*m*x^3+24192*A*a*c^
2*x^4+24876*A*b^3*m*x^3+24192*A*b^2*c*x^4+15289*B*a^3*m^3*x+86076*B*a^2*b*m
^2*x^2+74628*B*a^2*c*m*x^3+74628*B*a*b^2*m*x^3+48384*B*a*b*c*x^4+8064*B*b^3
*x^4+18424*A*a^3*m^3+110118*A*a^2*b*m^2*x+96144*A*a^2*c*m*x^2+96144*A*a*b^2
*m*x^2+60480*A*a*b*c*x^3+10080*A*b^3*x^3+36706*B*a^3*m^2*x+96144*B*a^2*b*m*
x^2+30240*B*a^2*c*x^3+30240*B*a*b^2*x^3+48860*A*a^3*m^2+134136*A*a^2*b*m*x+
40320*A*a^2*c*x^2+40320*A*a*b^2*x^2+44712*B*a^3*m*x+40320*B*a^2*b*x^2+69264
*A*a^3*m+60480*A*a^2*b*x+20160*B*a^3*x+40320*A*a^3)*(e*x)^m/(m+8)/(m+7)/(m+
6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [**A**] time = 1.01, size = 408, normalized size = 1.70

$$\frac{Bc^3e^mx^8x^m}{m+8}+\frac{3\,Bbc^2e^mx^7x^m}{m+7}+\frac{Ac^3e^mx^7x^m}{m+7}+\frac{3\,Bb^2ce^mx^6x^m}{m+6}+\frac{3\,Bac^2e^mx^6x^m}{m+6}+\frac{3\,Abc^2e^mx^6x^m}{m+6}+\frac{Bb^3e^mx^5x^m}{m+5}+\frac{6\,Babce}{m+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] B*c^3*e^m*x^8*x^m/(m + 8) + 3*B*b*c^2*e^m*x^7*x^m/(m + 7) + A*c^3*e^m*x^7*x
^m/(m + 7) + 3*B*b^2*c*e^m*x^6*x^m/(m + 6) + 3*B*a*c^2*e^m*x^6*x^m/(m + 6)
+ 3*A*b*c^2*e^m*x^6*x^m/(m + 6) + B*b^3*e^m*x^5*x^m/(m + 5) + 6*B*a*b*c*e^m
*x^5*x^m/(m + 5) + 3*A*b^2*c*e^m*x^5*x^m/(m + 5) + 3*A*a*c^2*e^m*x^5*x^m/(m
 + 5) + 3*B*a*b^2*e^m*x^4*x^m/(m + 4) + A*b^3*e^m*x^4*x^m/(m + 4) + 3*B*a^2
*c*e^m*x^4*x^m/(m + 4) + 6*A*a*b*c*e^m*x^4*x^m/(m + 4) + 3*B*a^2*b*e^m*x^3*
x^m/(m + 3) + 3*A*a*b^2*e^m*x^3*x^m/(m + 3) + 3*A*a^2*c*e^m*x^3*x^m/(m + 3)
 + B*a^3*e^m*x^2*x^m/(m + 2) + 3*A*a^2*b*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1
)*A*a^3/(e*(m + 1))
```

mupad [**B**] time = 2.03, size = 769, normalized size = 3.20

$$\frac{x^4\,(e\,x)^m\,\left(3\,B\,c\,a^2+3\,B\,a\,b^2+6\,A\,c\,a\,b+A\,b^3\right)\,\left(m^7+32\,m^6+418\,m^5+2864\,m^4+10993\,m^3+23312\,m^2+248\right.}{m^8+36\,m^7+546\,m^6+4536\,m^5+22449\,m^4+67284\,m^3+118124\,m^2+109584\,m+40320}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] (x^4*(e*x)^m*(A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)*(24876*m + 23312*m
^2 + 10993*m^3 + 2864*m^4 + 418*m^5 + 32*m^6 + m^7 + 10080))/(109584*m + 11
8124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4032
0) + (x^5*(e*x)^m*(B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)*(20304*m + 19
564*m^2 + 9544*m^3 + 2581*m^4 + 391*m^5 + 31*m^6 + m^7 + 8064))/(109584*m +
 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4
0320) + (A*a^3*x*(e*x)^m*(69264*m + 48860*m^2 + 18424*m^3 + 4025*m^4 + 511*
m^5 + 35*m^6 + m^7 + 40320))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*a*x^3*(e*x)^m*(A*b^2 + A
*a*c + B*a*b)*(32048*m + 28692*m^2 + 12864*m^3 + 3195*m^4 + 447*m^5 + 33*m^
6 + m^7 + 13440))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
 + 546*m^6 + 36*m^7 + m^8 + 40320) + (3*c*x^6*(e*x)^m*(B*b^2 + A*b*c + B*a*
c)*(17144*m + 16830*m^2 + 8409*m^3 + 2340*m^4 + 366*m^5 + 30*m^6 + m^7 + 67
20))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 +
36*m^7 + m^8 + 40320) + (B*c^3*x^8*(e*x)^m*(13068*m + 13132*m^2 + 6769*m^3
+ 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284
*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (a^2*x^2*(e
*x)^m*(3*A*b + B*a)*(44712*m + 36706*m^2 + 15289*m^3 + 3580*m^4 + 478*m^5 +
 34*m^6 + m^7 + 20160))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 45
36*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (c^2*x^7*(e*x)^m*(A*c + 3*B*b)*(
14832*m + 14756*m^2 + 7504*m^3 + 2135*m^4 + 343*m^5 + 29*m^6 + m^7 + 5760))
/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m
^7 + m^8 + 40320)
```

sympy [**A**] time = 5.52, size = 11388, normalized size = 47.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] Piecewise(((-A*a**3/(7*x**7) - A*a**2*b/(2*x**6) - 3*A*a**2*c/(5*x**5) - 3*
A*a*b**2/(5*x**5) - 3*A*a*b*c/(2*x**4) - A*a*c**2/x**3 - A*b**3/(4*x**4) -
A*b**2*c/x**3 - 3*A*b*c**2/(2*x**2) - A*c**3/x - B*a**3/(6*x**6) - 3*B*a**2
*b/(5*x**5) - 3*B*a**2*c/(4*x**4) - 3*B*a*b**2/(4*x**4) - 2*B*a*b*c/x**3 -
3*B*a*c**2/(2*x**2) - B*b**3/(3*x**3) - 3*B*b**2*c/(2*x**2) - 3*B*b*c**2/x
+ B*c**3*log(x))/e**8, Eq(m, -8)), ((-A*a**3/(6*x**6) - 3*A*a**2*b/(5*x**5)
 - 3*A*a**2*c/(4*x**4) - 3*A*a*b**2/(4*x**4) - 2*A*a*b*c/x**3 - 3*A*a*c**2/
(2*x**2) - A*b**3/(3*x**3) - 3*A*b**2*c/(2*x**2) - 3*A*b*c**2/x + A*c**3*lo
g(x) - B*a**3/(5*x**5) - 3*B*a**2*b/(4*x**4) - B*a**2*c/x**3 - B*a*b**2/x**
3 - 3*B*a*b*c/x**2 - 3*B*a*c**2/x - B*b**3/(2*x**2) - 3*B*b**2*c/x + 3*B*b*
c**2*log(x) + B*c**3*x)/e**7, Eq(m, -7)), ((-A*a**3/(5*x**5) - 3*A*a**2*b/(
4*x**4) - A*a**2*c/x**3 - A*a*b**2/x**3 - 3*A*a*b*c/x**2 - 3*A*a*c**2/x - A
*b**3/(2*x**2) - 3*A*b**2*c/x + 3*A*b*c**2*log(x) + A*c**3*x - B*a**3/(4*x*
*4) - B*a**2*b/x**3 - 3*B*a**2*c/(2*x**2) - 3*B*a*b**2/(2*x**2) - 6*B*a*b*c
/x + 3*B*a*c**2*log(x) - B*b**3/x + 3*B*b**2*c*log(x) + 3*B*b*c**2*x + B*c*
*3*x**2/2)/e**6, Eq(m, -6)), ((-A*a**3/(4*x**4) - A*a**2*b/x**3 - 3*A*a**2*
c/(2*x**2) - 3*A*a*b**2/(2*x**2) - 6*A*a*b*c/x + 3*A*a*c**2*log(x) - A*b**3
/x + 3*A*b**2*c*log(x) + 3*A*b*c**2*x + A*c**3*x**2/2 - B*a**3/(3*x**3) - 3
*B*a**2*b/(2*x**2) - 3*B*a**2*c/x - 3*B*a*b**2/x + 6*B*a*b*c*log(x) + 3*B*a
*c**2*x + B*b**3*log(x) + 3*B*b**2*c*x + 3*B*b*c**2*x**2/2 + B*c**3*x**3/3)
/e**5, Eq(m, -5)), ((-A*a**3/(3*x**3) - 3*A*a**2*b/(2*x**2) - 3*A*a**2*c/x
- 3*A*a*b**2/x + 6*A*a*b*c*log(x) + 3*A*a*c**2*x + A*b**3*log(x) + 3*A*b**2
*c*x + 3*A*b*c**2*x**2/2 + A*c**3*x**3/3 - B*a**3/(2*x**2) - 3*B*a**2*b/x +
 3*B*a**2*c*log(x) + 3*B*a*b**2*log(x) + 6*B*a*b*c*x + 3*B*a*c**2*x**2/2 +
B*b**3*x + 3*B*b**2*c*x**2/2 + B*b*c**2*x**3 + B*c**3*x**4/4)/e**4, Eq(m, -
4)), ((-A*a**3/(2*x**2) - 3*A*a**2*b/x + 3*A*a**2*c*log(x) + 3*A*a*b**2*log
(x) + 6*A*a*b*c*x + 3*A*a*c**2*x**2/2 + A*b**3*x + 3*A*b**2*c*x**2/2 + A*b*
c**2*x**3 + A*c**3*x**4/4 - B*a**3/x + 3*B*a**2*b*log(x) + 3*B*a**2*c*x + 3
*B*a*b**2*x + 3*B*a*b*c*x**2 + B*a*c**2*x**3 + B*b**3*x**2/2 + B*b**2*c*x**
3 + 3*B*b*c**2*x**4/4 + B*c**3*x**5/5)/e**3, Eq(m, -3)), ((-A*a**3/x + 3*A*
a**2*b*log(x) + 3*A*a**2*c*x + 3*A*a*b**2*x + 3*A*a*b*c*x**2 + A*a*c**2*x**
3 + A*b**3*x**2/2 + A*b**2*c*x**3 + 3*A*b*c**2*x**4/4 + A*c**3*x**5/5 + B*a
**3*log(x) + 3*B*a**2*b*x + 3*B*a**2*c*x**2/2 + 3*B*a*b**2*x**2/2 + 2*B*a*b
*c*x**3 + 3*B*a*c**2*x**4/4 + B*b**3*x**3/3 + 3*B*b**2*c*x**4/4 + 3*B*b*c**
2*x**5/5 + B*c**3*x**6/6)/e**2, Eq(m, -2)), ((A*a**3*log(x) + 3*A*a**2*b*x
+ 3*A*a**2*c*x**2/2 + 3*A*a*b**2*x**2/2 + 2*A*a*b*c*x**3 + 3*A*a*c**2*x**4/
4 + A*b**3*x**3/3 + 3*A*b**2*c*x**4/4 + 3*A*b*c**2*x**5/5 + A*c**3*x**6/6 +
 B*a**3*x + 3*B*a**2*b*x**2/2 + B*a**2*c*x**3 + B*a*b**2*x**3 + 3*B*a*b*c*x
**4/2 + 3*B*a*c**2*x**5/5 + B*b**3*x**4/4 + 3*B*b**2*c*x**5/5 + B*b*c**2*x*
*6/2 + B*c**3*x**7/7)/e, Eq(m, -1)), (A*a**3*e**m*m**7*x*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 35*A*a**3*e**m*m**6*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 511*A*a**
3*e**m*m**5*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 4025*A*a**3*e**m*m**4*x*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 18424*A*a**3*e**m*m**3*x*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + 48860*A*a**3*e**m*m**2*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 69264*A*a**3*
e**m*m*x*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m
**3 + 118124*m**2 + 109584*m + 40320) + 40320*A*a**3*e**m*x*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 3*A*a**2*b*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 10
2*A*a**2*b*e**m*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1434*A*a**2*b*e**m
*m**5*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 10740*A*a**2*b*e**m*m**4*x**2*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 45867*A*a**2*b*e**m*m**3*x**2*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 110118*A*a**2*b*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 134136*A*a**2*b*e**m*m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 60480*A*a**2*b*
e**m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a**2*c*e**m*m**7*x**3*x**m/(m*
*8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
 + 109584*m + 40320) + 99*A*a**2*c*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + 1341*A*a**2*c*e**m*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m
**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*A*a*
*2*c*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 38592*A*a**2*c*e**m*m**3
*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 86076*A*a**2*c*e**m*m**2*x**3*x**m/(m*
*8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
 + 109584*m + 40320) + 96144*A*a**2*c*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 54
6*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 403
20) + 40320*A*a**2*c*e**m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*a*b**2*e*
*m*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 99*A*a*b**2*e**m*m**6*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 1341*A*a*b**2*e**m*m**5*x**3*x**m/(m**8 + 36*m**
7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m
 + 40320) + 9585*A*a*b**2*e**m*m**4*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 385
92*A*a*b**2*e**m*m**3*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 86076*A*a*b**2*e*
*m*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 96144*A*a*b**2*e**m*m*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 40320*A*a*b**2*e**m*x**3*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 6*A*a*b*c*e**m*m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 192*A*a*b*c
*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2508*A*a*b*c*e**m*m**5*x**4*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 17184*A*a*b*c*e**m*m**4*x**4*x**m/(m**8 + 36
*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1095
84*m + 40320) + 65958*A*a*b*c*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**
6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) +
 139872*A*a*b*c*e**m*m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 149256*A*a*b*
c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 60480*A*a*b*c*e**m*x**4*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 3*A*a*c**2*e**m*m**7*x**5*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 93*A*a*c**2*e**m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1173*A*a*c
**2*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7743*A*a*c**2*e**m*m**4*x
**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
 118124*m**2 + 109584*m + 40320) + 28632*A*a*c**2*e**m*m**3*x**5*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 58692*A*a*c**2*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 + 5
46*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40
320) + 60912*A*a*c**2*e**m*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 24192*A*a*
c**2*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + A*b**3*e**m*m**7*x**4*x**m/(m
**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 32*A*b**3*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 418*A*b**3*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2864*A*b**3*e
**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67
284*m**3 + 118124*m**2 + 109584*m + 40320) + 10993*A*b**3*e**m*m**3*x**4*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 23312*A*b**3*e**m*m**2*x**4*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 24876*A*b**3*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 10080*
A*b**3*e**m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*b**2*c*e**m*m**7*x**5*x
**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 93*A*b**2*c*e**m*m**6*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 1173*A*b**2*c*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 77
43*A*b**2*c*e**m*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22
449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28632*A*b**2*c*e*
*m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 58692*A*b**2*c*e**m*m**2*x**5*x
**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 1181
24*m**2 + 109584*m + 40320) + 60912*A*b**2*c*e**m*m*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 24192*A*b**2*c*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*A*b*
c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 90*A*b*c**2*e**m*m**6*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 1098*A*b*c**2*e**m*m**5*x**6*x**m/(m**8 +
 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 1
09584*m + 40320) + 7020*A*b*c**2*e**m*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 25227*A*b*c**2*e**m*m**3*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 50490*A*b*
c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 51432*A*b*c**2*e**m*m*x*
*6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 20160*A*b*c**2*e**m*x**6*x**m/(m**8 + 36*
m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10958
4*m + 40320) + A*c**3*e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 29*A*c*
*3*e**m*m**6*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 343*A*c**3*e**m*m**5*x**7*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 2135*A*c**3*e**m*m**4*x**7*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 7504*A*c**3*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 +
4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 147
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56*A*c**3*e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2244
9*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 14832*A*c**3*e**m*m
*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3
 + 118124*m**2 + 109584*m + 40320) + 5760*A*c**3*e**m*x**7*x**m/(m**8 + 36*
m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10958
4*m + 40320) + B*a**3*e**m*m**7*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 34*B*a*
*3*e**m*m**6*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4
+ 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 478*B*a**3*e**m*m**5*x**2*
x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118
124*m**2 + 109584*m + 40320) + 3580*B*a**3*e**m*m**4*x**2*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 15289*B*a**3*e**m*m**3*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 36
706*B*a**3*e**m*m**2*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44712*B*a**3*e**m*
m*x**2*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a**3*e**m*x**2*x**m/(m**8 + 3
6*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109
584*m + 40320) + 3*B*a**2*b*e**m*m**7*x**3*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9
9*B*a**2*b*e**m*m**6*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1341*B*a**2*b*e**m
*m**5*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 9585*B*a**2*b*e**m*m**4*x**3*x**m
/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*
m**2 + 109584*m + 40320) + 38592*B*a**2*b*e**m*m**3*x**3*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 86076*B*a**2*b*e**m*m**2*x**3*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 9
6144*B*a**2*b*e**m*m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 224
49*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 40320*B*a**2*b*e**
m*x**3*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**
3 + 118124*m**2 + 109584*m + 40320) + 3*B*a**2*c*e**m*m**7*x**4*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 96*B*a**2*c*e**m*m**6*x**4*x**m/(m**8 + 36*m**7 + 546*m
**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 1254*B*a**2*c*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8592*B*a**2*
c*e**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 32979*B*a**2*c*e**m*m**3*x*
*4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 +
118124*m**2 + 109584*m + 40320) + 69936*B*a**2*c*e**m*m**2*x**4*x**m/(m**8
+ 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
109584*m + 40320) + 74628*B*a**2*c*e**m*m*x**4*x**m/(m**8 + 36*m**7 + 546*m
**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
 + 30240*B*a**2*c*e**m*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*a*b**2*e**m*
m**7*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 96*B*a*b**2*e**m*m**6*x**4*x**m/(m
**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 1254*B*a*b**2*e**m*m**5*x**4*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 8592*B*a*b**2*e**m*m**4*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 453
6*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 32979*
B*a*b**2*e**m*m**3*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449
*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 69936*B*a*b**2*e**m*
m**2*x**4*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*
m**3 + 118124*m**2 + 109584*m + 40320) + 74628*B*a*b**2*e**m*m*x**4*x**m/(m
```

```
**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**
2 + 109584*m + 40320) + 30240*B*a*b**2*e**m*x**4*x**m/(m**8 + 36*m**7 + 546
*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4032
0) + 6*B*a*b*c*e**m*m**7*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 186*B*a*b*c*e*
*m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 2346*B*a*b*c*e**m*m**5*x**5*x**
m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124
*m**2 + 109584*m + 40320) + 15486*B*a*b*c*e**m*m**4*x**5*x**m/(m**8 + 36*m*
*7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*
m + 40320) + 57264*B*a*b*c*e**m*m**3*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 +
 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 11
7384*B*a*b*c*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 121824*B*a*b*c*e
**m*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 48384*B*a*b*c*e**m*x**5*x**m/(m**
8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2
+ 109584*m + 40320) + 3*B*a*c**2*e**m*m**7*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 90*B*a*c**2*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 1098*B*a*c**2
*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 +
67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*a*c**2*e**m*m**4*x**6
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 25227*B*a*c**2*e**m*m**3*x**6*x**m/(m**8 +
36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 10
9584*m + 40320) + 50490*B*a*c**2*e**m*m**2*x**6*x**m/(m**8 + 36*m**7 + 546*
m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320
) + 51432*B*a*c**2*e**m*m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
+ 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 20160*B*a*c**
2*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + B*b**3*e**m*m**7*x**5*x**m/(m**8
 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 +
 109584*m + 40320) + 31*B*b**3*e**m*m**6*x**5*x**m/(m**8 + 36*m**7 + 546*m*
*6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320)
+ 391*B*b**3*e**m*m**5*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 2
2449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2581*B*b**3*e**m
*m**4*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284
*m**3 + 118124*m**2 + 109584*m + 40320) + 9544*B*b**3*e**m*m**3*x**5*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 19564*B*b**3*e**m*m**2*x**5*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 20304*B*b**3*e**m*m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m*
*5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 8064*B*b**
3*e**m*x**5*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6728
4*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*b**2*c*e**m*m**7*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 90*B*b**2*c*e**m*m**6*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 1098*B*b**2*c*e**m*m**5*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536
*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 7020*B*
b**2*c*e**m*m**4*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m
**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 25227*B*b**2*c*e**m*m*
*3*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m*
*3 + 118124*m**2 + 109584*m + 40320) + 50490*B*b**2*c*e**m*m**2*x**6*x**m/(
m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m*
*2 + 109584*m + 40320) + 51432*B*b**2*c*e**m*m*x**6*x**m/(m**8 + 36*m**7 +
546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 4
0320) + 20160*B*b**2*c*e**m*x**6*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**
```

```
5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 3*B*b*c**2*
e**m*m**7*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 87*B*b*c**2*e**m*m**6*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 1029*B*b*c**2*e**m*m**5*x**7*x**m/(m**8 + 36*m
**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584
*m + 40320) + 6405*B*b*c**2*e**m*m**4*x**7*x**m/(m**8 + 36*m**7 + 546*m**6
+ 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 2
2512*B*b*c**2*e**m*m**3*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 +
22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 44268*B*b*c**2*
e**m*m**2*x**7*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 6
7284*m**3 + 118124*m**2 + 109584*m + 40320) + 44496*B*b*c**2*e**m*m*x**7*x*
*m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11812
4*m**2 + 109584*m + 40320) + 17280*B*b*c**2*e**m*x**7*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320) + B*c**3*e**m*m**7*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5
 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 28*B*c**3*e*
*m*m**6*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 672
84*m**3 + 118124*m**2 + 109584*m + 40320) + 322*B*c**3*e**m*m**5*x**8*x**m/
(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m
**2 + 109584*m + 40320) + 1960*B*c**3*e**m*m**4*x**8*x**m/(m**8 + 36*m**7 +
 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
40320) + 6769*B*c**3*e**m*m**3*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*
m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13132*B*
c**3*e**m*m**2*x**8*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**
4 + 67284*m**3 + 118124*m**2 + 109584*m + 40320) + 13068*B*c**3*e**m*m*x**8
*x**m/(m**8 + 36*m**7 + 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 11
8124*m**2 + 109584*m + 40320) + 5040*B*c**3*e**m*x**8*x**m/(m**8 + 36*m**7
+ 546*m**6 + 4536*m**5 + 22449*m**4 + 67284*m**3 + 118124*m**2 + 109584*m +
 40320), True))
```

3.1084 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=155

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+4}\left(2aBc+2Abc+b^2B\right)}{e^4(m+4)}+\frac{(ex)^{m+3}\left(A\left(2ac+b^2\right)+2abB\right)}{e^3(m+3)}+\frac{a(ex)^{m+2}(aB+2Ab)}{e^2(m+2)}+\frac{c(ex)^{m+5}(}{e^5(m}$$

```
[Out] a^2*A*(e*x)^(1+m)/e/(1+m)+a*(2*A*b+B*a)*(e*x)^(2+m)/e^2/(2+m)+(2*a*b*B+A*(2
*a*c+b^2))*(e*x)^(3+m)/e^3/(3+m)+(2*A*b*c+2*B*a*c+B*b^2)*(e*x)^(4+m)/e^4/(4
+m)+c*(A*c+2*B*b)*(e*x)^(5+m)/e^5/(5+m)+B*c^2*(e*x)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.10, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {765}

$$\frac{a^2A(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}\left(A\left(2ac+b^2\right)+2abB\right)}{e^3(m+3)}+\frac{(ex)^{m+4}\left(2aBc+2Abc+b^2B\right)}{e^4(m+4)}+\frac{a(ex)^{m+2}(aB+2Ab)}{e^2(m+2)}+\frac{c(ex)^{m+5}(}{e^5(n}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a^2*A*(e*x)^(1 + m))/(e*(1 + m)) + (a*(2*A*b + a*B)*(e*x)^(2 + m))/(e^2*(2
 + m)) + ((2*a*b*B + A*(b^2 + 2*a*c))*(e*x)^(3 + m))/(e^3*(3 + m)) + ((b^2*
B + 2*A*b*c + 2*a*B*c)*(e*x)^(4 + m))/(e^4*(4 + m)) + (c*(2*b*B + A*c)*(e*x
)^(5 + m))/(e^5*(5 + m)) + (B*c^2*(e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^2\,dx&=\int \Bigg(a^2A(ex)^m+\frac{a(2Ab+aB)(ex)^{1+m}}{e}+\frac{\left(2abB+A\left(b^2+2ac\right)\right)(ex)^{2+m}}{e^2}\\&=\frac{a^2A(ex)^{1+m}}{e(1+m)}+\frac{a(2Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{\left(2abB+A\left(b^2+2ac\right)\right)(ex)^{3+m}}{e^3(3+m)}\end{aligned}$$

Mathematica [A] time = 0.48, size = 289, normalized size = 1.86

$$(ex)^m\Bigg(\frac{2x\left(-\frac{2a^2c(m+4)(bB(m+1)-2Ac(m+6))}{m+1}+\frac{x\left(b^2(m+2)-2ac(m+3)\right)\left(-2aBc(m+5)-Abc(m+6)+b^2B(m+3)\right)}{m+2}-(a+x(b+cx))\left(c(m+3)x\left(-2aBc(m+5)-Abc(m+6)+b\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e*x)^m*(x*(2*b*B + A*c*(6 + m) + B*c*(5 + m)*x)*(a + x*(b + c*x))^2 + (2*
x*((-2*a^2*c*(4 + m)*(b*B*(1 + m) - 2*A*c*(6 + m)))/(1 + m) + a*b*(b^2*B*(3
 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m)) - (a*b*c*(4 + m)*(b*B*(1 + m) - 2*
A*c*(6 + m))*x)/(2 + m) + ((b^2*(2 + m) - 2*a*c*(3 + m))*(b^2*B*(3 + m) - 2
*a*B*c*(5 + m) - A*b*c*(6 + m))*x)/(2 + m) - (a*c*(4 + m)*(b*B*(1 + m) - 2*
A*c*(6 + m)) + b*(b^2*B*(3 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m)) + c*(3 +
 m)*(b^2*B*(3 + m) - 2*a*B*c*(5 + m) - A*b*c*(6 + m))*x)*(a + x*(b + c*x)))
)/(c*(3 + m)*(4 + m))))/(c*(5 + m)*(6 + m))
```

fricas [B] time = 0.91, size = 573, normalized size = 3.70

$$\frac{((Bc^2m^5 + 15\,Bc^2m^4 + 85\,Bc^2m^3 + 225\,Bc^2m^2 + 274\,Bc^2m + 120\,Bc^2)x^6 + ((2\,Bbc + Ac^2)m^5 + 16\,(2\,Bbc + Ac^2)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] ((B*c^2*m^5 + 15*B*c^2*m^4 + 85*B*c^2*m^3 + 225*B*c^2*m^2 + 274*B*c^2*m + 1
20*B*c^2)*x^6 + ((2*B*b*c + A*c^2)*m^5 + 16*(2*B*b*c + A*c^2)*m^4 + 95*(2*B
*b*c + A*c^2)*m^3 + 288*B*b*c + 144*A*c^2 + 260*(2*B*b*c + A*c^2)*m^2 + 324
*(2*B*b*c + A*c^2)*m)*x^5 + ((B*b^2 + 2*(B*a + A*b)*c)*m^5 + 17*(B*b^2 + 2*
(B*a + A*b)*c)*m^4 + 107*(B*b^2 + 2*(B*a + A*b)*c)*m^3 + 180*B*b^2 + 307*(B
*b^2 + 2*(B*a + A*b)*c)*m^2 + 360*(B*a + A*b)*c + 396*(B*b^2 + 2*(B*a + A*b
)*c)*m)*x^4 + ((2*B*a*b + A*b^2 + 2*A*a*c)*m^5 + 18*(2*B*a*b + A*b^2 + 2*A*
a*c)*m^4 + 121*(2*B*a*b + A*b^2 + 2*A*a*c)*m^3 + 480*B*a*b + 240*A*b^2 + 48
0*A*a*c + 372*(2*B*a*b + A*b^2 + 2*A*a*c)*m^2 + 508*(2*B*a*b + A*b^2 + 2*A*
a*c)*m)*x^3 + ((B*a^2 + 2*A*a*b)*m^5 + 19*(B*a^2 + 2*A*a*b)*m^4 + 137*(B*a^
2 + 2*A*a*b)*m^3 + 360*B*a^2 + 720*A*a*b + 461*(B*a^2 + 2*A*a*b)*m^2 + 702*
(B*a^2 + 2*A*a*b)*m)*x^2 + (A*a^2*m^5 + 20*A*a^2*m^4 + 155*A*a^2*m^3 + 580*
A*a^2*m^2 + 1044*A*a^2*m + 720*A*a^2)*x)*(e*x)^m/(m^6 + 21*m^5 + 175*m^4 +
735*m^3 + 1624*m^2 + 1764*m + 720)
```

giac [B] time = 0.25, size = 1142, normalized size = 7.37

$$\frac{Bc^2m^5x^6x^me^m + 2\,Bbcm^5x^5x^me^m + Ac^2m^5x^5x^me^m + 15\,Bc^2m^4x^6x^me^m + Bb^2m^5x^4x^me^m + 2\,Bacm^5x^4x^me^m + 2\,Ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (B*c^2*m^5*x^6*x^m*e^m + 2*B*b*c*m^5*x^5*x^m*e^m + A*c^2*m^5*x^5*x^m*e^m +
15*B*c^2*m^4*x^6*x^m*e^m + B*b^2*m^5*x^4*x^m*e^m + 2*B*a*c*m^5*x^4*x^m*e^m
+ 2*A*b*c*m^5*x^4*x^m*e^m + 32*B*b*c*m^4*x^5*x^m*e^m + 16*A*c^2*m^4*x^5*x^m
*e^m + 85*B*c^2*m^3*x^6*x^m*e^m + 2*B*a*b*m^5*x^3*x^m*e^m + A*b^2*m^5*x^3*x
^m*e^m + 2*A*a*c*m^5*x^3*x^m*e^m + 17*B*b^2*m^4*x^4*x^m*e^m + 34*B*a*c*m^4*
x^4*x^m*e^m + 34*A*b*c*m^4*x^4*x^m*e^m + 190*B*b*c*m^3*x^5*x^m*e^m + 95*A*c
^2*m^3*x^5*x^m*e^m + 225*B*c^2*m^2*x^6*x^m*e^m + B*a^2*m^5*x^2*x^m*e^m + 2*
A*a*b*m^5*x^2*x^m*e^m + 36*B*a*b*m^4*x^3*x^m*e^m + 18*A*b^2*m^4*x^3*x^m*e^m
 + 36*A*a*c*m^4*x^3*x^m*e^m + 107*B*b^2*m^3*x^4*x^m*e^m + 214*B*a*c*m^3*x^4
*x^m*e^m + 214*A*b*c*m^3*x^4*x^m*e^m + 520*B*b*c*m^2*x^5*x^m*e^m + 260*A*c^
2*m^2*x^5*x^m*e^m + 274*B*c^2*m*x^6*x^m*e^m + A*a^2*m^5*x*x^m*e^m + 19*B*a^
2*m^4*x^2*x^m*e^m + 38*A*a*b*m^4*x^2*x^m*e^m + 242*B*a*b*m^3*x^3*x^m*e^m +
121*A*b^2*m^3*x^3*x^m*e^m + 242*A*a*c*m^3*x^3*x^m*e^m + 307*B*b^2*m^2*x^4*x
^m*e^m + 614*B*a*c*m^2*x^4*x^m*e^m + 614*A*b*c*m^2*x^4*x^m*e^m + 648*B*b*c*
m*x^5*x^m*e^m + 324*A*c^2*m*x^5*x^m*e^m + 120*B*c^2*x^6*x^m*e^m + 20*A*a^2*
m^4*x*x^m*e^m + 137*B*a^2*m^3*x^2*x^m*e^m + 274*A*a*b*m^3*x^2*x^m*e^m + 744
*B*a*b*m^2*x^3*x^m*e^m + 372*A*b^2*m^2*x^3*x^m*e^m + 744*A*a*c*m^2*x^3*x^m*
e^m + 396*B*b^2*m*x^4*x^m*e^m + 792*B*a*c*m*x^4*x^m*e^m + 792*A*b*c*m*x^4*x
^m*e^m + 288*B*b*c*x^5*x^m*e^m + 144*A*c^2*x^5*x^m*e^m + 155*A*a^2*m^3*x*x^
m*e^m + 461*B*a^2*m^2*x^2*x^m*e^m + 922*A*a*b*m^2*x^2*x^m*e^m + 1016*B*a*b*
m*x^3*x^m*e^m + 508*A*b^2*m*x^3*x^m*e^m + 1016*A*a*c*m*x^3*x^m*e^m + 180*B*
b^2*x^4*x^m*e^m + 360*B*a*c*x^4*x^m*e^m + 360*A*b*c*x^4*x^m*e^m + 580*A*a^2
*m^2*x*x^m*e^m + 702*B*a^2*m*x^2*x^m*e^m + 1404*A*a*b*m*x^2*x^m*e^m + 480*B
*a*b*x^3*x^m*e^m + 240*A*b^2*x^3*x^m*e^m + 480*A*a*c*x^3*x^m*e^m + 1044*A*a
^2*m*x*x^m*e^m + 360*B*a^2*x^2*x^m*e^m + 720*A*a*b*x^2*x^m*e^m + 720*A*a^2*
x*x^m*e^m)/(m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)
```

maple [B] time = 0.05, size = 759, normalized size = 4.90

$$\left(B c^2 m^5 x^5 + A c^2 m^5 x^4 + 2Bbc\, m^5 x^4 + 15B c^2 m^4 x^5 + 2Abc\, m^5 x^3 + 16A c^2 m^4 x^4 + 2Bac\, m^5 x^3 + B b^2 m^5 x^3 + 32\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] x*(B*c^2*m^5*x^5+A*c^2*m^5*x^4+2*B*b*c*m^5*x^4+15*B*c^2*m^4*x^5+2*A*b*c*m^5
*x^3+16*A*c^2*m^4*x^4+2*B*a*c*m^5*x^3+B*b^2*m^5*x^3+32*B*b*c*m^4*x^4+85*B*c
^2*m^3*x^5+2*A*a*c*m^5*x^2+A*b^2*m^5*x^2+34*A*b*c*m^4*x^3+95*A*c^2*m^3*x^4+
2*B*a*b*m^5*x^2+34*B*a*c*m^4*x^3+17*B*b^2*m^4*x^3+190*B*b*c*m^3*x^4+225*B*c
^2*m^2*x^5+2*A*a*b*m^5*x+36*A*a*c*m^4*x^2+18*A*b^2*m^4*x^2+214*A*b*c*m^3*x^
3+260*A*c^2*m^2*x^4+B*a^2*m^5*x+36*B*a*b*m^4*x^2+214*B*a*c*m^3*x^3+107*B*b^
2*m^3*x^3+520*B*b*c*m^2*x^4+274*B*c^2*m*x^5+A*a^2*m^5+38*A*a*b*m^4*x+242*A*
a*c*m^3*x^2+121*A*b^2*m^3*x^2+614*A*b*c*m^2*x^3+324*A*c^2*m*x^4+19*B*a^2*m^
4*x+242*B*a*b*m^3*x^2+614*B*a*c*m^2*x^3+307*B*b^2*m^2*x^3+648*B*b*c*m*x^4+1
20*B*c^2*x^5+20*A*a^2*m^4+274*A*a*b*m^3*x+744*A*a*c*m^2*x^2+372*A*b^2*m^2*x
^2+792*A*b*c*m*x^3+144*A*c^2*x^4+137*B*a^2*m^3*x+744*B*a*b*m^2*x^2+792*B*a*
c*m*x^3+396*B*b^2*m*x^3+288*B*b*c*x^4+155*A*a^2*m^3+922*A*a*b*m^2*x+1016*A*
a*c*m*x^2+508*A*b^2*m*x^2+360*A*b*c*x^3+461*B*a^2*m^2*x+1016*B*a*b*m*x^2+36
0*B*a*c*x^3+180*B*b^2*x^3+580*A*a^2*m^2+1404*A*a*b*m*x+480*A*a*c*x^2+240*A*
b^2*x^2+702*B*a^2*m*x+480*B*a*b*x^2+1044*A*a^2*m+720*A*a*b*x+360*B*a^2*x+72
0*A*a^2)*(e*x)^m/(m+6)/(m+5)/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.79, size = 230, normalized size = 1.48

$$\frac{Bc^2e^mx^6x^m}{m+6}+\frac{2\,Bbce^mx^5x^m}{m+5}+\frac{Ac^2e^mx^5x^m}{m+5}+\frac{Bb^2e^mx^4x^m}{m+4}+\frac{2\,Bace^mx^4x^m}{m+4}+\frac{2\,Abce^mx^4x^m}{m+4}+\frac{2\,Babe^mx^3x^m}{m+3}+\frac{Ab^2e^mx^3}{m+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] B*c^2*e^m*x^6*x^m/(m + 6) + 2*B*b*c*e^m*x^5*x^m/(m + 5) + A*c^2*e^m*x^5*x^m
/(m + 5) + B*b^2*e^m*x^4*x^m/(m + 4) + 2*B*a*c*e^m*x^4*x^m/(m + 4) + 2*A*b*
c*e^m*x^4*x^m/(m + 4) + 2*B*a*b*e^m*x^3*x^m/(m + 3) + A*b^2*e^m*x^3*x^m/(m
+ 3) + 2*A*a*c*e^m*x^3*x^m/(m + 3) + B*a^2*e^m*x^2*x^m/(m + 2) + 2*A*a*b*e^
m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a^2/(e*(m + 1))
```

mupad [B] time = 1.66, size = 405, normalized size = 2.61

$$(e\,x)^m\left(\frac{x^3\,\left(A\,b^2+2\,B\,a\,b+2\,A\,a\,c\right)\,\left(m^5+18\,m^4+121\,m^3+372\,m^2+508\,m+240\right)}{m^6+21\,m^5+175\,m^4+735\,m^3+1624\,m^2+1764\,m+720}+\frac{x^4\,\left(B\,b^2+2\,A\,c\,b+2\right.}{m^6+21\,m^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] (e*x)^m*((x^3*(A*b^2 + 2*A*a*c + 2*B*a*b)*(508*m + 372*m^2 + 121*m^3 + 18*m
^4 + m^5 + 240))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 72
0) + (x^4*(B*b^2 + 2*A*b*c + 2*B*a*c)*(396*m + 307*m^2 + 107*m^3 + 17*m^4 +
 m^5 + 180))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) +
 (A*a^2*x*(1044*m + 580*m^2 + 155*m^3 + 20*m^4 + m^5 + 720))/(1764*m + 1624
*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (a*x^2*(2*A*b + B*a)*(702*
m + 461*m^2 + 137*m^3 + 19*m^4 + m^5 + 360))/(1764*m + 1624*m^2 + 735*m^3 +
 175*m^4 + 21*m^5 + m^6 + 720) + (c*x^5*(A*c + 2*B*b)*(324*m + 260*m^2 + 95
*m^3 + 16*m^4 + m^5 + 144))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5
 + m^6 + 720) + (B*c^2*x^6*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))
/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [A] time = 2.63, size = 4150, normalized size = 26.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] Piecewise(((-A*a**2/(5*x**5) - A*a*b/(2*x**4) - 2*A*a*c/(3*x**3) - A*b**2/(
3*x**3) - A*b*c/x**2 - A*c**2/x - B*a**2/(4*x**4) - 2*B*a*b/(3*x**3) - B*a*
c/x**2 - B*b**2/(2*x**2) - 2*B*b*c/x + B*c**2*log(x))/e**6, Eq(m, -6)), ((-
A*a**2/(4*x**4) - 2*A*a*b/(3*x**3) - A*a*c/x**2 - A*b**2/(2*x**2) - 2*A*b*c
/x + A*c**2*log(x) - B*a**2/(3*x**3) - B*a*b/x**2 - 2*B*a*c/x - B*b**2/x +
2*B*b*c*log(x) + B*c**2*x)/e**5, Eq(m, -5)), ((-A*a**2/(3*x**3) - A*a*b/x**
2 - 2*A*a*c/x - A*b**2/x + 2*A*b*c*log(x) + A*c**2*x - B*a**2/(2*x**2) - 2*
B*a*b/x + 2*B*a*c*log(x) + B*b**2*log(x) + 2*B*b*c*x + B*c**2*x**2/2)/e**4,
 Eq(m, -4)), ((-A*a**2/(2*x**2) - 2*A*a*b/x + 2*A*a*c*log(x) + A*b**2*log(x
) + 2*A*b*c*x + A*c**2*x**2/2 - B*a**2/x + 2*B*a*b*log(x) + 2*B*a*c*x + B*b
**2*x + B*b*c*x**2 + B*c**2*x**3/3)/e**3, Eq(m, -3)), ((-A*a**2/x + 2*A*a*b
*log(x) + 2*A*a*c*x + A*b**2*x + A*b*c*x**2 + A*c**2*x**3/3 + B*a**2*log(x)
 + 2*B*a*b*x + B*a*c*x**2 + B*b**2*x**2/2 + 2*B*b*c*x**3/3 + B*c**2*x**4/4)
/e**2, Eq(m, -2)), ((A*a**2*log(x) + 2*A*a*b*x + A*a*c*x**2 + A*b**2*x**2/2
 + 2*A*b*c*x**3/3 + A*c**2*x**4/4 + B*a**2*x + B*a*b*x**2 + 2*B*a*c*x**3/3
+ B*b**2*x**3/3 + B*b*c*x**4/2 + B*c**2*x**5/5)/e, Eq(m, -1)), (A*a**2*e**m
*m**5*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 7
20) + 20*A*a**2*e**m*m**4*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 16
24*m**2 + 1764*m + 720) + 155*A*a**2*e**m*m**3*x*x**m/(m**6 + 21*m**5 + 175
*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 580*A*a**2*e**m*m**2*x*x**m/
(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1044*A*
a**2*e**m*m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764
*m + 720) + 720*A*a**2*e**m*x*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 2*A*a*b*e**m*m**5*x**2*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 38*A*a*b*e**m*m**4*x**2*x*
*m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*
A*a*b*e**m*m**3*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2
 + 1764*m + 720) + 922*A*a*b*e**m*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4
 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1404*A*a*b*e**m*m*x**2*x**m/(m**6
 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 720*A*a*b*e*
*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 7
20) + 2*A*a*c*e**m*m**5*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 36*A*a*c*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 1
75*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 242*A*a*c*e**m*m**3*x**3*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 744
*A*a*c*e**m*m**2*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**
2 + 1764*m + 720) + 1016*A*a*c*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + 480*A*a*c*e**m*x**3*x**m/(m**6 + 2
1*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + A*b**2*e**m*m**5
*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720
) + 18*A*b**2*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1
624*m**2 + 1764*m + 720) + 121*A*b**2*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 372*A*b**2*e**m*m**2*x**
3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
508*A*b**2*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720) + 240*A*b**2*e**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*A*b*c*e**m*m**5*x**4*x**m/(m**6 +
 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*A*b*c*e**m*
m**4*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 214*A*b*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
 + 1624*m**2 + 1764*m + 720) + 614*A*b*c*e**m*m**2*x**4*x**m/(m**6 + 21*m**
5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*A*b*c*e**m*m*x**4
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3
60*A*b*c*e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
 1764*m + 720) + A*c**2*e**m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 73
5*m**3 + 1624*m**2 + 1764*m + 720) + 16*A*c**2*e**m*m**4*x**5*x**m/(m**6 +
21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 95*A*c**2*e**m*
m**3*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + 260*A*c**2*e**m*m**2*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 324*A*c**2*e**m*m*x**5*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 144*A*c**2*e**m*x**5*x
**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + B*a
**2*e**m*m**5*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 +
 1764*m + 720) + 19*B*a**2*e**m*m**4*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 +
 735*m**3 + 1624*m**2 + 1764*m + 720) + 137*B*a**2*e**m*m**3*x**2*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 461*B*a**2*
e**m*m**2*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 702*B*a**2*e**m*m*x**2*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m
**3 + 1624*m**2 + 1764*m + 720) + 360*B*a**2*e**m*x**2*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*a*b*e**m*m**5*x**3
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 3
6*B*a*b*e**m*m**4*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720) + 242*B*a*b*e**m*m**3*x**3*x**m/(m**6 + 21*m**5 + 175*m*
*4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 744*B*a*b*e**m*m**2*x**3*x**m/(
m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 1016*B*a
*b*e**m*m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 176
4*m + 720) + 480*B*a*b*e**m*x**3*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3
 + 1624*m**2 + 1764*m + 720) + 2*B*a*c*e**m*m**5*x**4*x**m/(m**6 + 21*m**5
 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 34*B*a*c*e**m*m**4*x**4
*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2
14*B*a*c*e**m*m**3*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m
**2 + 1764*m + 720) + 614*B*a*c*e**m*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 792*B*a*c*e**m*m*x**4*x**m/(m*
*6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 360*B*a*c*
e**m*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m +
 720) + B*b**2*e**m*m**5*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 +
1624*m**2 + 1764*m + 720) + 17*B*b**2*e**m*m**4*x**4*x**m/(m**6 + 21*m**5 +
 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 107*B*b**2*e**m*m**3*x**
4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) +
307*B*b**2*e**m*m**2*x**4*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624
*m**2 + 1764*m + 720) + 396*B*b**2*e**m*m*x**4*x**m/(m**6 + 21*m**5 + 175*m
**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 180*B*b**2*e**m*x**4*x**m/(m**
6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 2*B*b*c*e**
m*m**5*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
 + 720) + 32*B*b*c*e**m*m**4*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 190*B*b*c*e**m*m**3*x**5*x**m/(m**6 + 21*m*
*5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 520*B*b*c*e**m*m**2*
x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
 + 648*B*b*c*e**m*m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*
m**2 + 1764*m + 720) + 288*B*b*c*e**m*x**5*x**m/(m**6 + 21*m**5 + 175*m**4
+ 735*m**3 + 1624*m**2 + 1764*m + 720) + B*c**2*e**m*m**5*x**6*x**m/(m**6 +
 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 15*B*c**2*e**m
*m**4*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m
+ 720) + 85*B*c**2*e**m*m**3*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**
3 + 1624*m**2 + 1764*m + 720) + 225*B*c**2*e**m*m**2*x**6*x**m/(m**6 + 21*m
**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720) + 274*B*c**2*e**m*m*x
```

```
**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m**2 + 1764*m + 720)
+ 120*B*c**2*e**m*x**6*x**m/(m**6 + 21*m**5 + 175*m**4 + 735*m**3 + 1624*m*
*2 + 1764*m + 720), True))
```

3.1085 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=83

$$\frac{(ex)^{m+2}(aB+Ab)}{e^2(m+2)}+\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}(Ac+bB)}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

```
[Out] a*A*(e*x)^(1+m)/e/(1+m)+(A*b+B*a)*(e*x)^(2+m)/e^2/(2+m)+(A*c+B*b)*(e*x)^(3+
m)/e^3/(3+m)+B*c*(e*x)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {765}

$$\frac{(ex)^{m+2}(aB+Ab)}{e^2(m+2)}+\frac{aA(ex)^{m+1}}{e(m+1)}+\frac{(ex)^{m+3}(Ac+bB)}{e^3(m+3)}+\frac{Bc(ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*A*(e*x)^(1 + m))/(e*(1 + m)) + ((A*b + a*B)*(e*x)^(2 + m))/(e^2*(2 + m))
 + ((b*B + A*c)*(e*x)^(3 + m))/(e^3*(3 + m)) + (B*c*(e*x)^(4 + m))/(e^4*(4
+ m))
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)\,dx&=\int \left(aA(ex)^m+\frac{(Ab+aB)(ex)^{1+m}}{e}+\frac{(bB+Ac)(ex)^{2+m}}{e^2}+\frac{Bc(ex)^{3+m}}{e^3}\right)\,dx\\&=\frac{aA(ex)^{1+m}}{e(1+m)}+\frac{(Ab+aB)(ex)^{2+m}}{e^2(2+m)}+\frac{(bB+Ac)(ex)^{3+m}}{e^3(3+m)}+\frac{Bc(ex)^{4+m}}{e^4(4+m)}\end{aligned}$$

Mathematica [A] time = 0.11, size = 91, normalized size = 1.10

$$\frac{x(ex)^m\left(a\left(m^2+7m+12\right)(A(m+2)+B(m+1)x)+(m+1)x(A(m+4)(b(m+3)+c(m+2)x)+B(m+2)x(}{(m+1)(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] (x*(e*x)^m*(a*(12 + 7*m + m^2)*(A*(2 + m) + B*(1 + m)*x) + (1 + m)*x*(A*(4
+ m)*(b*(3 + m) + c*(2 + m)*x) + B*(2 + m)*x*(b*(4 + m) + c*(3 + m)*x))))/(
(1 + m)*(2 + m)*(3 + m)*(4 + m))
```

fricas [B] time = 0.94, size = 171, normalized size = 2.06

$$\frac{\left(\left(Bcm^3+6\,Bcm^2+11\,Bcm+6\,Bc\right)x^4+\left((Bb+Ac)m^3+7\,(Bb+Ac)m^2+8\,Bb+8\,Ac+14\,(Bb+Ac)m\right)x^3+}{m^4+10\,m^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] ((B*c*m^3 + 6*B*c*m^2 + 11*B*c*m + 6*B*c)*x^4 + ((B*b + A*c)*m^3 + 7*(B*b +
 A*c)*m^2 + 8*B*b + 8*A*c + 14*(B*b + A*c)*m)*x^3 + ((B*a + A*b)*m^3 + 8*(B
*a + A*b)*m^2 + 12*B*a + 12*A*b + 19*(B*a + A*b)*m)*x^2 + (A*a*m^3 + 9*A*a*
m^2 + 26*A*a*m + 24*A*a)*x)*(e*x)^m/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

giac [B] time = 0.17, size = 338, normalized size = 4.07

$$Bcm^3x^4x^me^m + Bbm^3x^3x^me^m + Acm^3x^3x^me^m + 6\,Bcm^2x^4x^me^m + Bam^3x^2x^me^m + Abm^3x^2x^me^m + 7\,Bbm^2x^3x^me^m$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] (B*c*m^3*x^4*x^m*e^m + B*b*m^3*x^3*x^m*e^m + A*c*m^3*x^3*x^m*e^m + 6*B*c*m^
2*x^4*x^m*e^m + B*a*m^3*x^2*x^m*e^m + A*b*m^3*x^2*x^m*e^m + 7*B*b*m^2*x^3*x
^m*e^m + 7*A*c*m^2*x^3*x^m*e^m + 11*B*c*m*x^4*x^m*e^m + A*a*m^3*x*x^m*e^m +
 8*B*a*m^2*x^2*x^m*e^m + 8*A*b*m^2*x^2*x^m*e^m + 14*B*b*m*x^3*x^m*e^m + 14*
A*c*m*x^3*x^m*e^m + 6*B*c*x^4*x^m*e^m + 9*A*a*m^2*x*x^m*e^m + 19*B*a*m*x^2*
x^m*e^m + 19*A*b*m*x^2*x^m*e^m + 8*B*b*x^3*x^m*e^m + 8*A*c*x^3*x^m*e^m + 26
*A*a*m*x*x^m*e^m + 12*B*a*x^2*x^m*e^m + 12*A*b*x^2*x^m*e^m + 24*A*a*x*x^m*e
^m)/(m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
```

maple [B] time = 0.04, size = 205, normalized size = 2.47

$$\Big(Bc\,m^3x^3 + Ac\,m^3x^2 + Bb\,m^3x^2 + 6Bc\,m^2x^3 + Ab\,m^3x + 7Ac\,m^2x^2 + Ba\,m^3x + 7Bb\,m^2x^2 + 11Bcm\,x^3 + Aa\,m^3 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] x*(B*c*m^3*x^3+A*c*m^3*x^2+B*b*m^3*x^2+6*B*c*m^2*x^3+A*b*m^3*x+7*A*c*m^2*x^
2+B*a*m^3*x+7*B*b*m^2*x^2+11*B*c*m*x^3+A*a*m^3+8*A*b*m^2*x+14*A*c*m*x^2+8*B
*a*m^2*x+14*B*b*m*x^2+6*B*c*x^3+9*A*a*m^2+19*A*b*m*x+8*A*c*x^2+19*B*a*m*x+8
*B*b*x^2+26*A*a*m+12*A*b*x+12*B*a*x+24*A*a)*(e*x)^m/(m+4)/(m+3)/(m+2)/(m+1)
```

maxima [A] time = 0.69, size = 104, normalized size = 1.25

$$\frac{Bce^mx^4x^m}{m+4} + \frac{Bbe^mx^3x^m}{m+3} + \frac{Ace^mx^3x^m}{m+3} + \frac{Bae^mx^2x^m}{m+2} + \frac{Abe^mx^2x^m}{m+2} + \frac{(ex)^{m+1}\,Aa}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] B*c*e^m*x^4*x^m/(m + 4) + B*b*e^m*x^3*x^m/(m + 3) + A*c*e^m*x^3*x^m/(m + 3)
 + B*a*e^m*x^2*x^m/(m + 2) + A*b*e^m*x^2*x^m/(m + 2) + (e*x)^(m + 1)*A*a/(e
*(m + 1))
```

mupad [B] time = 1.44, size = 171, normalized size = 2.06

$$(e\,x)^m\,\left(\frac{x^2\,\left(A\,b+B\,a\right)\,\left(m^3+8\,m^2+19\,m+12\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{x^3\,\left(A\,c+B\,b\right)\,\left(m^3+7\,m^2+14\,m+8\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}+\frac{A\,a\,x\,\left(m^3+9\,m^2+\right.}{m^4+10\,m^3+35\,m^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] (e*x)^m*((x^2*(A*b + B*a)*(19*m + 8*m^2 + m^3 + 12))/(50*m + 35*m^2 + 10*m^
3 + m^4 + 24) + (x^3*(A*c + B*b)*(14*m + 7*m^2 + m^3 + 8))/(50*m + 35*m^2 +
10*m^3 + m^4 + 24) + (A*a*x*(26*m + 9*m^2 + m^3 + 24))/(50*m + 35*m^2 + 10
*m^3 + m^4 + 24) + (B*c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m
^3 + m^4 + 24))
```

sympy [A] time = 1.02, size = 1022, normalized size = 12.31

$$\begin{cases} \frac{-\frac{Aa}{3x^{3}}-\frac{Ab}{2x^{2}}-\frac{Ac}{x}-\frac{Ba}{2x^{2}}-\frac{Bb}{x}+Bc\log\left(x\right)}{e^{4}} \\ \frac{-\frac{Aa}{2x^{2}}-\frac{Ab}{x}+Ac\log\left(x\right)-\frac{Ba}{x}+Bb\log\left(x\right)+Bcx}{e^{3}} \\ \frac{-\frac{Aa}{x}+Ab\log\left(x\right)+Acx+Ba\log\left(x\right)+Bbx+\frac{Bcx^{2}}{2}}{e^{2}} \\ \frac{Aa\log\left(x\right)+Abx+\frac{Acx^{2}}{2}+Bax+\frac{Bbx^{2}}{2}+\frac{Bcx^{3}}{3}}{e} \\ \frac{Aae^{m}m^{3}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{9Aae^{m}m^{2}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{26Aae^{m}mxx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{24Aae^{m}xx^{m}}{m^{4}+10m^{3}+35m^{2}+50m+24}+\frac{Abe^{m}m^{3}x^{2}x}{m^{4}+10m^{3}+35m^{2}+} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise(((-A*a/(3*x**3) - A*b/(2*x**2) - A*c/x - B*a/(2*x**2) - B*b/x + B
*c*log(x))/e**4, Eq(m, -4)), ((-A*a/(2*x**2) - A*b/x + A*c*log(x) - B*a/x +
 B*b*log(x) + B*c*x)/e**3, Eq(m, -3)), ((-A*a/x + A*b*log(x) + A*c*x + B*a*
log(x) + B*b*x + B*c*x**2/2)/e**2, Eq(m, -2)), ((A*a*log(x) + A*b*x + A*c*x
**2/2 + B*a*x + B*b*x**2/2 + B*c*x**3/3)/e, Eq(m, -1)), (A*a*e**m*m**3*x*x*
*m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 9*A*a*e**m*m**2*x*x**m/(m**4 +
10*m**3 + 35*m**2 + 50*m + 24) + 26*A*a*e**m*m*x*x**m/(m**4 + 10*m**3 + 35*
m**2 + 50*m + 24) + 24*A*a*e**m*x*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 2
4) + A*b*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*A*b
*e**m*m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*A*b*e**m*m
*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*A*b*e**m*x**2*x**m/(
m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + A*c*e**m*m**3*x**3*x**m/(m**4 + 10*
m**3 + 35*m**2 + 50*m + 24) + 7*A*c*e**m*m**2*x**3*x**m/(m**4 + 10*m**3 + 3
5*m**2 + 50*m + 24) + 14*A*c*e**m*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 5
0*m + 24) + 8*A*c*e**m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B
*a*e**m*m**3*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 8*B*a*e**m*
m**2*x**2*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 19*B*a*e**m*m*x**2*
x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 12*B*a*e**m*x**2*x**m/(m**4 +
 10*m**3 + 35*m**2 + 50*m + 24) + B*b*e**m*m**3*x**3*x**m/(m**4 + 10*m**3 +
 35*m**2 + 50*m + 24) + 7*B*b*e**m*m**2*x**3*x**m/(m**4 + 10*m**3 + 35*m**2
 + 50*m + 24) + 14*B*b*e**m*m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m +
24) + 8*B*b*e**m*x**3*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + B*c*e**
m*m**3*x**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*m**2*x
**4*x**m/(m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 11*B*c*e**m*m*x**4*x**m/(
m**4 + 10*m**3 + 35*m**2 + 50*m + 24) + 6*B*c*e**m*x**4*x**m/(m**4 + 10*m**
3 + 35*m**2 + 50*m + 24), True))
```

3.1086 $\int \frac{(ex)^m(A+Bx)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=172

$$\frac{(ex)^{m+1}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{e(m+1)\left(b-\sqrt{b^2-4ac}\right)}+\frac{(ex)^{m+1}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}}\right.}{e(m+1)\left(\sqrt{b^2-4ac}+b\right)}$$

```
[Out] (e*x)^(1+m)*hypergeom([1, 1+m],[2+m],-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(B+(2*A
*c-B*b)/(-4*a*c+b^2)^(1/2))/e/(1+m)/(b-(-4*a*c+b^2)^(1/2))+(e*x)^(1+m)*hype
rgeom([1, 1+m],[2+m],-2*c*x/(b+(-4*a*c+b^2)^(1/2)))*(B+(-2*A*c+B*b)/(-4*a*c
+b^2)^(1/2))/e/(1+m)/(b+(-4*a*c+b^2)^(1/2))
```

Rubi [A] time = 0.31, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = $\{830, 64\}$

$$\frac{(ex)^{m+1}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{e(m+1)\left(b-\sqrt{b^2-4ac}\right)}+\frac{(ex)^{m+1}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}}\right.}{e(m+1)\left(\sqrt{b^2-4ac}+b\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] ((B - (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*(e*x)^(1 + m)*Hypergeometric2F1[1, 1
 + m, 2 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/((b - Sqrt[b^2 - 4*a*c])*e*
(1 + m)) + ((B + (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*(e*x)^(1 + m)*Hypergeomet
ric2F1[1, 1 + m, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/((b + Sqrt[b^2 -
 4*a*c])*e*(1 + m))
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !RationalQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(ex)^m(A+Bx)}{a+bx+cx^2}\,dx &= \int \left(\frac{\left(B+\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(ex)^m}{b-\sqrt{b^2-4ac}+2cx}+\frac{\left(B-\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(ex)^m}{b+\sqrt{b^2-4ac}+2cx}\right)dx\\
&= \left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(ex)^m}{b-\sqrt{b^2-4ac}+2cx}\,dx+\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(ex)^m}{b+\sqrt{b^2-4ac}+2c}\\
&= \frac{\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)(ex)^{1+m}{}_2F_1\left(1,1+m;2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{\left(b-\sqrt{b^2-4ac}\right)e(1+m)}+\frac{\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)(ex)^{1+m}{}_2F_1\left(1,1\right.}{\left(b+\sqrt{b^2-4ac}\right.}
\end{aligned}$$

Mathematica [**A**] time = 0.28, size = 135, normalized size = 0.78

$$\frac{x(ex)^m \Big(\Big(A\Big(\sqrt{b^2-4ac}+b\Big)-2aB\Big)\, {}_2F_1\Big(1,m+1;m+2;\frac{2cx}{\sqrt{b^2-4ac}-b}\Big)+\Big(A\Big(\sqrt{b^2-4ac}-b\Big)+2aB\Big)\, {}_2F_1\Big(1,m -}{2a(m+1)\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + b*x + c*x^2),x]
```

```
[Out] (x*(e*x)^m*((-2*a*B + A*(b + Sqrt[b^2 - 4*a*c]))*Hypergeometric2F1[1, 1 + m
, 2 + m, (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (2*a*B + A*(-b + Sqrt[b^2 - 4*
a*c]))*Hypergeometric2F1[1, 1 + m, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])]
))/(2*a*Sqrt[b^2 - 4*a*c]*(1 + m))
```

fricas [**F**] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\,(ex)^m}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/(c*x^2 + b*x + a), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a), x)
```

maple [**F**] time = 1.50, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{c\,x^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a),x)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(e\,x)^m\,\left(A+B\,x\right)}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex)^m (A + Bx)}{a + bx + cx^2} \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] Integral((e*x)**m*(A + B*x)/(a + b*x + c*x**2), x)
```

3.1087 $\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=318

$$-\frac{c(ex)^{m+1}\left(Abm\left(\sqrt{b^2-4ac}+b\right)-2a\left(Bm\sqrt{b^2-4ac}-2Ac(1-m)+bB\right)\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{ae(m+1)\left(b^2-4ac\right)^{3/2}\left(b-\sqrt{b^2-4ac}\right)}$$

```
[Out] (e*x)^(1+m)*(A*b^2-a*b*B-2*a*A*c+(A*b-2*B*a)*c*x)/a/(-4*a*c+b^2)/e/(c*x^2+b
*x+a)-c*(e*x)^(1+m)*hypergeom([1, 1+m],[2+m],-2*c*x/(b+(-4*a*c+b^2)^(1/2)))
*((A*b-2*B*a)*m+(2*a*(b*B-2*A*c*(1-m))-A*b^2*m)/(-4*a*c+b^2)^(1/2))/a/(-4*a
*c+b^2)/e/(1+m)/(b+(-4*a*c+b^2)^(1/2))-c*(e*x)^(1+m)*hypergeom([1, 1+m],[2+
m],-2*c*x/(b-(-4*a*c+b^2)^(1/2)))*(A*b*m*(b+(-4*a*c+b^2)^(1/2))-2*a*(b*B-2*
A*c*(1-m)+B*m*(-4*a*c+b^2)^(1/2)))/a/(-4*a*c+b^2)^(3/2)/e/(1+m)/(b-(-4*a*c+
b^2)^(1/2))
```

Rubi [A] time = 0.88, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.130$, Rules used = {822, 830, 64}

$$-\frac{c(ex)^{m+1}\left(Abm\left(\sqrt{b^2-4ac}+b\right)-2a\left(Bm\sqrt{b^2-4ac}-2Ac(1-m)+bB\right)\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}}\right)}{ae(m+1)\left(b^2-4ac\right)^{3/2}\left(b-\sqrt{b^2-4ac}\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e*x)^(1 + m)*(A*b^2 - a*b*B - 2*a*A*c + (A*b - 2*a*B)*c*x))/(a*(b^2 - 4*a
*c)*e*(a + b*x + c*x^2)) - (c*(A*b*(b + Sqrt[b^2 - 4*a*c])*m - 2*a*(b*B - 2
*A*c*(1 - m) + B*Sqrt[b^2 - 4*a*c]*m))*(e*x)^(1 + m)*Hypergeometric2F1[1, 1
 + m, 2 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c])])/(a*(b^2 - 4*a*c)^(3/2)*(b -
 Sqrt[b^2 - 4*a*c])*e*(1 + m)) - (c*((A*b - 2*a*B)*m + (2*a*b*B - 4*a*A*c*(
1 - m) - A*b^2*m)/Sqrt[b^2 - 4*a*c])*(e*x)^(1 + m)*Hypergeometric2F1[1, 1 +
 m, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(a*(b^2 - 4*a*c)*(b + Sqrt[b^
2 - 4*a*c])*e*(1 + m))
```

Rule 64

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[(c^n*(b*x
)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*x)/c)])/(b*(m + 1)), x]
/; FreeQ[{b, c, d, m, n}, x] &&  !IntegerQ[m] && (IntegerQ[n] || (GtQ[c, 0]
 &&  !(EqQ[n, -2^(-1)] && EqQ[c^2 - d^2, 0] && GtQ[-(d/(b*c)), 0])))
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && !RationalQ[m]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^2}\,dx = \frac{(ex)^{1+m}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)e\left(a+bx+cx^2\right)} - \frac{\int \frac{(ex)^m\left(e^2\left(2aAc(1-m)+Ab^2m-abB(1+m)\right)+(Ab-2a}{a+bx+cx^2}}{a\left(b^2-4ac\right)e^2}$$

$$= \frac{(ex)^{1+m}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)e\left(a+bx+cx^2\right)} - \frac{\int \left(\frac{\left((Ab-2aB)ce^2m+\frac{ce^2\left(-2abB+4aAc+Ab^2m-4aAcm\right)}{\sqrt{b^2-4ac}}\right)(}{b-\sqrt{b^2-4ac}+2cx}\right.}{a}$$

$$= \frac{(ex)^{1+m}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)e\left(a+bx+cx^2\right)} - \frac{\left(c\left((Ab-2aB)m-\frac{2a(bB-2Ac(1-m))-Ab^2m}{\sqrt{b^2-4ac}}\right)\right.}{a\left(b^2-4ac\right)}$$

$$= \frac{(ex)^{1+m}\left(Ab^2-abB-2aAc+(Ab-2aB)cx\right)}{a\left(b^2-4ac\right)e\left(a+bx+cx^2\right)} - \frac{c\left(Ab\left(b+\sqrt{b^2-4ac}\right)m-2a\left(bB-2A\right.\right.}{a\left(b^2\right.}$$

Mathematica [A] time = 1.00, size = 253, normalized size = 0.80

$$\frac{(ex)^m\left(\frac{cx\left(-\frac{\left(\frac{Ab^2m-2a(2Ac(m-1)+bB)}{\sqrt{b^2-4ac}}+m(Ab-2aB)\right){}_2F_1\left(1,m+1;m+2;\frac{2cx}{\sqrt{b^2-4ac}-b}\right)}{b-\sqrt{b^2-4ac}}-\frac{\left(\frac{4aAc(m-1)+2abB-Ab^2m}{\sqrt{b^2-4ac}}+m(Ab-2aB)\right){}_2F_1\left(1,m+1;m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}+b}\right)}{m+1}+\frac{x(A}{}\right.}{a\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e*x)^m*((x*(-(a*B*(b + 2*c*x)) + A*(b^2 - 2*a*c + b*c*x)))/(a + x*(b + c*
x)) + (c*x*(-((((A*b - 2*a*B)*m + (-2*a*(b*B + 2*A*c*(-1 + m)) + A*b^2*m)/S
qrt[b^2 - 4*a*c])*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*x)/(-b + Sqrt[b^2
 - 4*a*c])])/(b - Sqrt[b^2 - 4*a*c])) - (((A*b - 2*a*B)*m + (2*a*b*B + 4*a*
A*c*(-1 + m) - A*b^2*m)/Sqrt[b^2 - 4*a*c])*Hypergeometric2F1[1, 1 + m, 2 +
m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(b + Sqrt[b^2 - 4*a*c])))/(1 + m)))/(
a*(b^2 - 4*a*c))
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{(Bx+A)\,(ex)^m}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x
^2 + a^2), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^m}{\left(cx^2 + bx + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="giac")
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^2, x)
```

maple **[F]** time = 1.41, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^m}{\left(c\,x^2 + bx + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^2,x)
[Out] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^2,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^m}{\left(cx^2 + bx + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^2, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^m\,(A + B\,x)}{\left(c\,x^2 + b\,x + a\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^2,x)
[Out] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^2, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+b*x+a)**2,x)
[Out] Timed out
```

3.1088 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\left(a+bx+cx^2\right)^{5/2}F_1\left(m+1;-\frac{5}{2},-\frac{5}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{5/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{5/2}}+\frac{B(ex)^{m+2}\left(a+bx+cx^2\right)^{5/2}F_1\left(m\right.}{e^2(m+2)\left(\frac{2cx}{b-\sqrt{b^2-4}}\right.}$$

```
[Out] A*(e*x)^(1+m)*(c*x^2+b*x+a)^(5/2)*AppellF1(1+m,-5/2,-5/2,2+m,-2*c*x/(b-(-4*
a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1/2)))/e/(1+m)/(1+2*c*x/(b-(-4*a*c+
b^2)^(1/2)))^(5/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(5/2)+B*(e*x)^(2+m)*(c*
x^2+b*x+a)^(5/2)*AppellF1(2+m,-5/2,-5/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-
2*c*x/(b+(-4*a*c+b^2)^(1/2)))/e^2/(2+m)/(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(5
/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(5/2)
```

Rubi [A] time = 0.55, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\left(a+bx+cx^2\right)^{5/2}F_1\left(m+1;-\frac{5}{2},-\frac{5}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{5/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{5/2}}+\frac{B(ex)^{m+2}\left(a+bx+cx^2\right)^{5/2}F_1\left(m\right.}{e^2(m+2)\left(\frac{2cx}{b-\sqrt{b^2-4}}\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*(a + b*x + c*x^2)^(5/2)*AppellF1[1 + m, -5/2, -5/2, 2 + m,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1
 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(5/2)*(1 + (2*c*x)/(b + Sqrt[b^
2 - 4*a*c]))^(5/2)) + (B*(e*x)^(2 + m)*(a + b*x + c*x^2)^(5/2)*AppellF1[2 +
 m, -5/2, -5/2, 3 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt
[b^2 - 4*a*c])])/(e^2*(2 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(5/2)*(
1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^(5/2))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^{5/2}\,dx = A\int (ex)^m\left(a+bx+cx^2\right)^{5/2}\,dx + \frac{B\int (ex)^{1+m}\left(a+bx+cx^2\right)^{5/2}\,dx}{e}$$

$$= \frac{\left(B\left(a+bx+cx^2\right)^{5/2}\right)\operatorname{Subst}\left(\int x^{1+m}\left(1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}\right)^{5/2}\left(1+\frac{2cx}{\left(b+\sqrt{b^2-\right.}\right.}\right.\right.}{e^2\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{5/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{5/2}}$$

$$= \frac{A(ex)^{1+m}\left(a+bx+cx^2\right)^{5/2}F_1\left(1+m;-\frac{5}{2},-\frac{5}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{}{b+}\right.}{e(1+m)\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{5/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{5/2}}$$

Mathematica [B] time = 1.33, size = 618, normalized size = 2.20

$$\frac{x(ex)^m\sqrt{a+x(b+cx)}\left(a^2A\left(m^5+20m^4+155m^3+580m^2+1044m+720\right)F_1\left(m+1;-\frac{1}{2},-\frac{1}{2};m+2;-\frac{2cx}{b+\sqrt{b^2-}}\right.\right.}{}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(e*x)^m*Sqrt[a + x*(b + c*x)]*(a^2*A*(720 + 1044*m + 580*m^2 + 155*m^3 +
 20*m^4 + m^5)*AppellF1[1 + m, -1/2, -1/2, 2 + m, (-2*c*x)/(b + Sqrt[b^2 -
4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (1 + m)*x*(a*(2*A*b + a*B)*(36
0 + 342*m + 119*m^2 + 18*m^3 + m^4)*AppellF1[2 + m, -1/2, -1/2, 3 + m, (-2*
c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + (2 + m)*x
*((2*a*b*B + A*(b^2 + 2*a*c))*(120 + 74*m + 15*m^2 + m^3)*AppellF1[3 + m, -
1/2, -1/2, 4 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2
- 4*a*c])] + (3 + m)*x*((b^2*B + 2*A*b*c + 2*a*B*c)*(30 + 11*m + m^2)*Appel
lF1[4 + m, -1/2, -1/2, 5 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b
 + Sqrt[b^2 - 4*a*c])] + c*(4 + m)*x*((2*b*B + A*c)*(6 + m)*AppellF1[5 + m,
 -1/2, -1/2, 6 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^
2 - 4*a*c])] + B*c*(5 + m)*x*AppellF1[6 + m, -1/2, -1/2, 7 + m, (-2*c*x)/(b
 + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))))))/((1 + m)*(2
+ m)*(3 + m)*(4 + m)*(5 + m)*(6 + m)*Sqrt[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(
b - Sqrt[b^2 - 4*a*c])]*Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2
- 4*a*c])])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\left(Bc^2x^5+\left(2\,Bbc+Ac^2\right)x^4+\left(Bb^2+2\,(Ba+Ab)c\right)x^3+Aa^2+\left(2\,Bab+Ab^2+2\,Aac\right)x^2+\left(Ba^2+2\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c^2*x^5 + (2*B*b*c + A*c^2)*x^4 + (B*b^2 + 2*(B*a + A*b)*c)*x^3
 + A*a^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*x^2 + (B*a^2 + 2*A*a*b)*x)*sqrt(c*x^
2 + b*x + a)*(e*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+bx+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
[Out] integrate((c*x^2 + b*x + a)^(5/2)*(B*x + A)*(e*x)^m, x)
```

maple [F] time = 1.71, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(c\,x^2+bx+a\right)^{\frac{5}{2}}(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
[Out] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+bx+a\right)^{\frac{5}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
[Out] integrate((c*x^2 + b*x + a)^(5/2)*(B*x + A)*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^m\,(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(5/2),x)
[Out] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex)^m\,(A+Bx)\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**(5/2),x)
[Out] Integral((e*x)**m*(A + B*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.1089 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\left(a+bx+cx^2\right)^{3/2}F_1\left(m+1;-\frac{3}{2},-\frac{3}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{3/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{3/2}}+\frac{B(ex)^{m+2}\left(a+bx+cx^2\right)^{3/2}F_1(}{e^2(m+2)(\frac{2}{b-\sqrt{b}}}$$

```
[Out] A*(e*x)^(1+m)*(c*x^2+b*x+a)^(3/2)*AppellF1(1+m,-3/2,-3/2,2+m,-2*c*x/(b-(-4*
a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1/2)))/e/(1+m)/(1+2*c*x/(b-(-4*a*c+
b^2)^(1/2)))^(3/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(3/2)+B*(e*x)^(2+m)*(c*
x^2+b*x+a)^(3/2)*AppellF1(2+m,-3/2,-3/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-
2*c*x/(b+(-4*a*c+b^2)^(1/2)))/e^2/(2+m)/(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(3
/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(3/2)
```

Rubi [A] time = 0.41, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\left(a+bx+cx^2\right)^{3/2}F_1\left(m+1;-\frac{3}{2},-\frac{3}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{3/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{3/2}}+\frac{B(ex)^{m+2}\left(a+bx+cx^2\right)^{3/2}F_1(}{e^2(m+2)(\frac{2}{b-\sqrt{b}}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*(a + b*x + c*x^2)^(3/2)*AppellF1[1 + m, -3/2, -3/2, 2 + m,
 (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1
 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(3/2)*(1 + (2*c*x)/(b + Sqrt[b^
2 - 4*a*c]))^(3/2)) + (B*(e*x)^(2 + m)*(a + b*x + c*x^2)^(3/2)*AppellF1[2 +
 m, -3/2, -3/2, 3 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt
[b^2 - 4*a*c])])/(e^2*(2 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(3/2)*(
1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^(3/2))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^{3/2}\,dx = A\int (ex)^m\left(a+bx+cx^2\right)^{3/2}\,dx + \frac{B\int (ex)^{1+m}\left(a+bx+cx^2\right)^{3/2}\,dx}{e}$$

$$= \frac{\left(B\left(a+bx+cx^2\right)^{3/2}\right)\text{Subst}\left(\int x^{1+m}\left(1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}\right)^{3/2}\left(1+\frac{2cx}{\left(b+\sqrt{b^2-4ac}\right.}\right.\right.}{e^2\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}}$$

$$= \frac{A(ex)^{1+m}\left(a+bx+cx^2\right)^{3/2}F_1\left(1+m;-\frac{3}{2},-\frac{3}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2c}{b+\sqrt{b^2}}\right.}{e(1+m)\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}}$$

Mathematica [A] time = 0.45, size = 405, normalized size = 1.44

$$x(ex)^m\sqrt{a+x(b+cx)}\left((m+1)x\left(\left(m^2+7m+12\right)(aB+Ab)F_1\left(m+2;-\frac{1}{2},-\frac{1}{2};m+3;-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+(\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (x*(e*x)^m*Sqrt[a + x*(b + c*x)]*(a*A*(24 + 26*m + 9*m^2 + m^3)*AppellF1[1
+ m, -1/2, -1/2, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqr
t[b^2 - 4*a*c])] + (1 + m)*x*((A*b + a*B)*(12 + 7*m + m^2)*AppellF1[2 + m,
-1/2, -1/2, 3 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2
 - 4*a*c])] + (2 + m)*x*((b*B + A*c)*(4 + m)*AppellF1[3 + m, -1/2, -1/2, 4
+ m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] +
B*c*(3 + m)*x*AppellF1[4 + m, -1/2, -1/2, 5 + m, (-2*c*x)/(b + Sqrt[b^2 - 4
*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))))/((1 + m)*(2 + m)*(3 + m)*(4 +
 m)*Sqrt[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sqrt[(b +
 Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bcx^3+(Bb+Ac)x^2+Aa+(Ba+Ab)x\right)\sqrt{cx^2+bx+a}\,(ex)^m\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + (B*b + A*c)*x^2 + A*a + (B*a + A*b)*x)*sqrt(c*x^2 + b*x
 + a)*(e*x)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^2+bx+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(B*x + A)*(e*x)^m, x)
```

maple [F]   time = 1.44, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}(ex)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(3/2),x)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \left(cx^{2}+bx+a\right)^{\frac{3}{2}}(Bx+A)\,(ex)^{m}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(B*x + A)*(e*x)^m, x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int {\left(e\,x\right)}^m\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int (ex)^{m}\,(A+Bx)\left(a+bx+cx^{2}\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((e*x)**m*(A + B*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.1090 $\int (ex)^m(A+Bx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\sqrt{a+bx+cx^2}\,F_1\left(m+1;-\frac{1}{2},-\frac{1}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\sqrt{\frac{2cx}{b-\sqrt{b^2-4ac}}+1}\sqrt{\frac{2cx}{\sqrt{b^2-4ac}+b}+1}}+\frac{B(ex)^{m+2}\sqrt{a+bx+cx^2}\,F_1\left(m+2;-\right.}{e^2(m+2)\sqrt{\frac{2cx}{b-\sqrt{b^2-4a}}}}$$

```
[Out] A*(e*x)^(1+m)*AppellF1(1+m,-1/2,-1/2,2+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c
*x/(b+(-4*a*c+b^2)^(1/2)))*(c*x^2+b*x+a)^(1/2)/e/(1+m)/(1+2*c*x/(b-(-4*a*c+
b^2)^(1/2)))^(1/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(1/2)+B*(e*x)^(2+m)*App
ellF1(2+m,-1/2,-1/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2
)^(1/2)))*(c*x^2+b*x+a)^(1/2)/e^2/(2+m)/(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(1
/2)/(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\sqrt{a+bx+cx^2}\,F_1\left(m+1;-\frac{1}{2},-\frac{1}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\sqrt{\frac{2cx}{b-\sqrt{b^2-4ac}}+1}\sqrt{\frac{2cx}{\sqrt{b^2-4ac}+b}+1}}+\frac{B(ex)^{m+2}\sqrt{a+bx+cx^2}\,F_1\left(m+2;-\right.}{e^2(m+2)\sqrt{\frac{2cx}{b-\sqrt{b^2-4a}}}}$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[a + b*x + c*x^2]*AppellF1[1 + m, -1/2, -1/2, 2 + m, (
-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1 +
 m)*Sqrt[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sqrt[1 + (2*c*x)/(b + Sqrt[b^
2 - 4*a*c])]) + (B*(e*x)^(2 + m)*Sqrt[a + b*x + c*x^2]*AppellF1[2 + m, -1/2
, -1/2, 3 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4
*a*c])])/(e^2*(2 + m)*Sqrt[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sqrt[1 + (2
*c*x)/(b + Sqrt[b^2 - 4*a*c])])
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (ex)^m(A+Bx)\sqrt{a+bx+cx^2}\,dx = A\int (ex)^m\sqrt{a+bx+cx^2}\,dx + \frac{B\int (ex)^{1+m}\sqrt{a+bx+cx^2}\,dx}{e}$$

$$= \frac{\left(B\sqrt{a+bx+cx^2}\right)\text{Subst}\left(\int x^{1+m}\sqrt{1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}}\sqrt{1+\frac{2cx}{\left(b+\sqrt{b^2-4ac}\right)e}}\,d}{e^2\sqrt{1+\frac{2cx}{b-\sqrt{b^2-4ac}}}\sqrt{1+\frac{2cx}{b+\sqrt{b^2-4ac}}}}$$

$$= \frac{A(ex)^{1+m}\sqrt{a+bx+cx^2}\,F_1\left(1+m;-\frac{1}{2},-\frac{1}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4a}}\right.}{e(1+m)\sqrt{1+\frac{2cx}{b-\sqrt{b^2-4ac}}}\sqrt{1+\frac{2cx}{b+\sqrt{b^2-4ac}}}}$$

Mathematica [**A**]   time = 0.18, size = 234, normalized size = 0.83

$$\frac{x(ex)^m\sqrt{a+x(b+cx)}\left(A(m+2)F_1\left(m+1;-\frac{1}{2},-\frac{1}{2};m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+B(m+1)xF_1\left(m+2;-\frac{1}{2},\right.\right.}{(m+1)(m+2)\sqrt{\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}}\sqrt{\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(e*x)^m*(A + B*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (x*(e*x)^m*Sqrt[a + x*(b + c*x)]*(A*(2 + m)*AppellF1[1 + m, -1/2, -1/2, 2 +
 m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + B
*(1 + m)*x*AppellF1[2 + m, -1/2, -1/2, 3 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*
c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/((1 + m)*(2 + m)*Sqrt[(b - Sqrt[b^
2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sqrt[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/(b + Sqrt[b^2 - 4*a*c])])
```

fricas [**F**]   time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+bx+a}\,(Bx+A)\,(ex)^m\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*(e*x)^m, x)
```

giac [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+bx+a}\,(Bx+A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)*(e*x)^m, x)
```

maple [**F**]   time = 1.19, size = 0, normalized size = 0.00

$$\int (Bx+A)\sqrt{c\,x^2+bx+a}\;(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2 + bx + a}\,(Bx + A)\,(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(B*x + A)*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^m\,(A+B\,x)\,\sqrt{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (ex)^m\,(A + Bx)\,\sqrt{a + bx + cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((e*x)**m*(A + B*x)*sqrt(a + b*x + c*x**2), x)
```

3.1091 $\int \frac{(ex)^m(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\sqrt{\frac{2cx}{b-\sqrt{b^2-4ac}}+1}\sqrt{\frac{2cx}{\sqrt{b^2-4ac}+b}+1}F_1\left(m+1;\frac{1}{2},\frac{1}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\sqrt{a+bx+cx^2}}+\frac{B(ex)^{m+2}\sqrt{\frac{2cx}{b-\sqrt{b^2-}}}}{}$$

```
[Out] A*(e*x)^(1+m)*AppellF1(1+m,1/2,1/2,2+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x
/(b+(-4*a*c+b^2)^(1/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(1/2)*(1+2*c*x/(b
+(-4*a*c+b^2)^(1/2)))^(1/2)/e/(1+m)/(c*x^2+b*x+a)^(1/2)+B*(e*x)^(2+m)*Appel
lF1(2+m,1/2,1/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1
/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(1/2)*(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)
))^(1/2)/e^2/(2+m)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\sqrt{\frac{2cx}{b-\sqrt{b^2-4ac}}+1}\sqrt{\frac{2cx}{\sqrt{b^2-4ac}+b}+1}F_1\left(m+1;\frac{1}{2},\frac{1}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\sqrt{a+bx+cx^2}}+\frac{B(ex)^{m+2}\sqrt{\frac{2cx}{b-\sqrt{b^2-}}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (A*(e*x)^(1 + m)*Sqrt[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sqrt[1 + (2*c*x)
/(b + Sqrt[b^2 - 4*a*c])]*AppellF1[1 + m, 1/2, 1/2, 2 + m, (-2*c*x)/(b - Sq
rt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1 + m)*Sqrt[a + b*
x + c*x^2]) + (B*(e*x)^(2 + m)*Sqrt[1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sq
rt[1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c])]*AppellF1[2 + m, 1/2, 1/2, 3 + m, (-
2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e^2*(2
+ m)*Sqrt[a + b*x + c*x^2])
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx = A\int \frac{(ex)^m}{\sqrt{a+bx+cx^2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\sqrt{a+bx+cx^2}}\,dx}{e}$$

$$= \frac{\left(B\sqrt{1+\frac{2cx}{b-\sqrt{b^2-4ac}}}\sqrt{1+\frac{2cx}{b+\sqrt{b^2-4ac}}}\right)\text{Subst}\left(\int \frac{x^{1+m}}{\sqrt{1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}}\sqrt{1+\frac{2cx}{\left(b+\sqrt{b^2-4ac}\right)e}}}\,dx,x,ex\right)}{e^2\sqrt{a+bx+cx^2}} +$$

$$= \frac{A(ex)^{1+m}\sqrt{1+\frac{2cx}{b-\sqrt{b^2-4ac}}}\sqrt{1+\frac{2cx}{b+\sqrt{b^2-4ac}}}\,F_1\left(1+m;\frac{1}{2},\frac{1}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right.}{e(1+m)\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.21, size = 234, normalized size = 0.83

$$\frac{x(ex)^m\sqrt{\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}}\sqrt{\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}}\left(A(m+2)F_1\left(m+1;\frac{1}{2},\frac{1}{2};m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+B(m+1)xF_1\right.}{(m+1)(m+2)\sqrt{a+x(b+cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e*x)^m*(A + B*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (x*(e*x)^m*Sqrt[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sq
rt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]*(A*(2 + m)*Appe
llF1[1 + m, 1/2, 1/2, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b
+ Sqrt[b^2 - 4*a*c])] + B*(1 + m)*x*AppellF1[2 + m, 1/2, 1/2, 3 + m, (-2*c*
x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/((1 + m)*(2
 + m)*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\,(ex)^m}{\sqrt{cx^2+bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x)^m/sqrt(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/sqrt(c*x^2 + b*x + a), x)
```

maple [F] time = 1.16, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\sqrt{c\,x^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^m}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^m\,(A+B\,x)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex)^m\,(A+Bx)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((e*x)**m*(A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.1092 $\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{3/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{3/2}F_1\left(m+1;\frac{3}{2},\frac{3}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(a+bx+cx^2\right)^{3/2}}+\frac{B(ex)^{m+2}\left(\frac{2cx}{b-\sqrt{b^2-}}\right.}{}$$

```
[Out] A*(e*x)^(1+m)*AppellF1(1+m,3/2,3/2,2+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x
/(b+(-4*a*c+b^2)^(1/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(3/2)*(1+2*c*x/(b
+(-4*a*c+b^2)^(1/2)))^(3/2)/e/(1+m)/(c*x^2+b*x+a)^(3/2)+B*(e*x)^(2+m)*Appel
lF1(2+m,3/2,3/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1
/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(3/2)*(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)
))^(3/2)/e^2/(2+m)/(c*x^2+b*x+a)^(3/2)
```

Rubi [A] time = 0.41, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{3/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{3/2}F_1\left(m+1;\frac{3}{2},\frac{3}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(a+bx+cx^2\right)^{3/2}}+\frac{B(ex)^{m+2}\left(\frac{2cx}{b-\sqrt{b^2-}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(3/2)*(1 + (2*c*x)/(
b + Sqrt[b^2 - 4*a*c]))^(3/2)*AppellF1[1 + m, 3/2, 3/2, 2 + m, (-2*c*x)/(b
- Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1 + m)*(a + b*
x + c*x^2)^(3/2)) + (B*(e*x)^(2 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^
(3/2)*(1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^(3/2)*AppellF1[2 + m, 3/2, 3/2,
 3 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])]
)/(e^2*(2 + m)*(a + b*x + c*x^2)^(3/2))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = A\int \frac{(ex)^m}{\left(a+bx+cx^2\right)^{3/2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{e}$$

$$= \frac{\left(B\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}\right)\text{Subst}\left(\int \frac{x^{1+m}}{\left(1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}\right)^{3/2}\left(1+\frac{2cx}{\left(b+\sqrt{b^2-4ac}\right)e}\right)^{3/2}}\right.}{e^2\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{A(ex)^{1+m}\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{3/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{3/2}F_1\left(1+m;\frac{3}{2},\frac{3}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\right.}{e(1+m)\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 0.35, size = 272, normalized size = 0.97

$$\frac{x(ex)^m\left(\sqrt{b^2-4ac}-b-2cx\right)\sqrt{\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)^{3/2}\left(A(m+2)F_1\left(m+1;\frac{3}{2},\frac{3}{2};m+2;-\frac{2cx}{b+\sqrt{b^2-4a}}\right.\right.}{(m+1)(m+2)\left(\sqrt{b^2-4ac}-b\right)(a+x(b+}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (x*(e*x)^m*(-b + Sqrt[b^2 - 4*a*c] - 2*c*x)*Sqrt[(b - Sqrt[b^2 - 4*a*c] + 2
*c*x)/(b - Sqrt[b^2 - 4*a*c])]*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b
^2 - 4*a*c]))^(3/2)*(A*(2 + m)*AppellF1[1 + m, 3/2, 3/2, 2 + m, (-2*c*x)/(b
 + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + B*(1 + m)*x*Appe
llF1[2 + m, 3/2, 3/2, 3 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b
+ Sqrt[b^2 - 4*a*c])]))/((-b + Sqrt[b^2 - 4*a*c])*(1 + m)*(2 + m)*(a + x*(b
 + c*x))^(3/2))
```

fricas [F] time = 0.87, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\,(ex)^m}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*(e*x)^m/(c^2*x^4 + 2*b*c*x^3 + 2*a
*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^(3/2), x)
```

maple [F] time = 1.24, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{m}}{\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex)^{m}}{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{m}\,(A+B\,x)}{\left(c\,x^{2}+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex)^{m}(A+Bx)}{\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((e*x)**m*(A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.1093 $\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=281

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{5/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{5/2}F_1\left(m+1;\frac{5}{2},\frac{5}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(a+bx+cx^2\right)^{5/2}}+\frac{B(ex)^{m+2}\Big(\frac{}{b-}}{}$$

```
[Out] A*(e*x)^(1+m)*AppellF1(1+m,5/2,5/2,2+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x
/(b+(-4*a*c+b^2)^(1/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(5/2)*(1+2*c*x/(b
+(-4*a*c+b^2)^(1/2)))^(5/2)/e/(1+m)/(c*x^2+b*x+a)^(5/2)+B*(e*x)^(2+m)*Appel
lF1(2+m,5/2,5/2,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1
/2)))*(1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^(5/2)*(1+2*c*x/(b+(-4*a*c+b^2)^(1/2)
))^(5/2)/e^2/(2+m)/(c*x^2+b*x+a)^(5/2)
```

Rubi [A] time = 0.41, antiderivative size = 281, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{5/2}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{5/2}F_1\left(m+1;\frac{5}{2},\frac{5}{2};m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)\left(a+bx+cx^2\right)^{5/2}}+\frac{B(ex)^{m+2}\Big(\frac{}{b-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (A*(e*x)^(1 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^(5/2)*(1 + (2*c*x)/(
b + Sqrt[b^2 - 4*a*c]))^(5/2)*AppellF1[1 + m, 5/2, 5/2, 2 + m, (-2*c*x)/(b
- Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1 + m)*(a + b*
x + c*x^2)^(5/2)) + (B*(e*x)^(2 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^
(5/2)*(1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^(5/2)*AppellF1[2 + m, 5/2, 5/2,
 3 + m, (-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])]
)/(e^2*(2 + m)*(a + b*x + c*x^2)^(5/2))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(ex)^m(A+Bx)}{\left(a+bx+cx^2\right)^{5/2}}\,dx = A\int \frac{(ex)^m}{\left(a+bx+cx^2\right)^{5/2}}\,dx + \frac{B\int \frac{(ex)^{1+m}}{\left(a+bx+cx^2\right)^{5/2}}\,dx}{e}$$

$$= \frac{\left(B\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{5/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{5/2}\right)\text{Subst}\left(\int \frac{x^{1+m}}{\left(1+\frac{2cx}{\left(b-\sqrt{b^2-4ac}\right)e}\right)^{5/2}\left(1+\frac{2cx}{\left(b+\sqrt{b^2-4ac}\right)e}\right)^{5/2}}\,dx,\right.}{e^2\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{A(ex)^{1+m}\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{5/2}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{5/2}F_1\left(1+m;\frac{5}{2},\frac{5}{2};2+m;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{}{b+}\right.}{e(1+m)\left(a+bx+cx^2\right)^{5/2}}$$

Mathematica [A] time = 0.33, size = 237, normalized size = 0.84

$$\frac{x(ex)^m\sqrt{\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}}\sqrt{\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}}\left(A(m+2)F_1\left(m+1;\frac{5}{2},\frac{5}{2};m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{2cx}{\sqrt{b^2-4ac}-b}\right)+B(m+1)xF_1\right.}{a^2(m+1)(m+2)\sqrt{a+x(b+cx)}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (x*(e*x)^m*Sqrt[(b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c])]*Sq
rt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c])]*(A*(2 + m)*Appe
llF1[1 + m, 5/2, 5/2, 2 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b
+ Sqrt[b^2 - 4*a*c])] + B*(1 + m)*x*AppellF1[2 + m, 5/2, 5/2, 3 + m, (-2*c*
x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/(a^2*(1 + m
)*(2 + m)*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\,(ex)^m}{c^3x^6+3\,bc^2x^5+3\left(b^2c+ac^2\right)x^4+3\,a^2bx+\left(b^3+6\,abc\right)x^3+a^3+3\left(ab^2+a^2c\right)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*(e*x)^m/(c^3*x^6 + 3*b*c^2*x^5 + 3
*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a*b*c)*x^3 + a^3 + 3*(a*b^2 + a
^2*c)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex)^m}{\left(cx^2+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^(5/2), x)
```

maple [F] time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^{m}}{\left(c\,x^{2} + bx + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] int((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex)^{m}}{\left(cx^{2} + bx + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x)^m/(c*x^2 + b*x + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(e\,x)^{m}\,(A + B\,x)}{\left(c\,x^{2} + b\,x + a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((e*x)^m*(A + B*x))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1094 $\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=277

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{-p}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{-p}\left(a+bx+cx^2\right)^pF_1\left(m+1;-p,-p;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)}-$$

```
[Out] A*(e*x)^(1+m)*(c*x^2+b*x+a)^p*AppellF1(1+m,-p,-p,2+m,-2*c*x/(b-(-4*a*c+b^2)
^(1/2)),-2*c*x/(b+(-4*a*c+b^2)^(1/2)))/e/(1+m)/((1+2*c*x/(b-(-4*a*c+b^2)^(1
/2)))^p)/((1+2*c*x/(b+(-4*a*c+b^2)^(1/2)))^p)+B*(e*x)^(2+m)*(c*x^2+b*x+a)^p
*AppellF1(2+m,-p,-p,3+m,-2*c*x/(b-(-4*a*c+b^2)^(1/2)),-2*c*x/(b+(-4*a*c+b^2
)^(1/2)))/e^2/(2+m)/((1+2*c*x/(b-(-4*a*c+b^2)^(1/2)))^p)/((1+2*c*x/(b+(-4*a
*c+b^2)^(1/2)))^p)
```

Rubi [A] time = 0.40, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {843, 759, 133}

$$\frac{A(ex)^{m+1}\left(\frac{2cx}{b-\sqrt{b^2-4ac}}+1\right)^{-p}\left(\frac{2cx}{\sqrt{b^2-4ac}+b}+1\right)^{-p}\left(a+bx+cx^2\right)^pF_1\left(m+1;-p,-p;m+2;-\frac{2cx}{b-\sqrt{b^2-4ac}},-\frac{2cx}{b+\sqrt{b^2-4ac}}\right)}{e(m+1)}-$$

Antiderivative was successfully verified.

```
[In] Int[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (A*(e*x)^(1 + m)*(a + b*x + c*x^2)^p*AppellF1[1 + m, -p, -p, 2 + m, (-2*c*x
)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e*(1 + m)*(1
 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*(1 + (2*c*x)/(b + Sqrt[b^2 - 4*a*c]))
^p) + (B*(e*x)^(2 + m)*(a + b*x + c*x^2)^p*AppellF1[2 + m, -p, -p, 3 + m, (
-2*c*x)/(b - Sqrt[b^2 - 4*a*c]), (-2*c*x)/(b + Sqrt[b^2 - 4*a*c])])/(e^2*(2
 + m)*(1 + (2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*(1 + (2*c*x)/(b + Sqrt[b^2 -
4*a*c]))^p)
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 759

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(a + b*x + c*x^2)^p/(e*(1 - (
d + e*x)/(d - (e*(b - q))/(2*c)))^p*(1 - (d + e*x)/(d - (e*(b + q))/(2*c)))
^p), Subst[Int[x^m*Simp[1 - x/(d - (e*(b - q))/(2*c)), x]^p*Simp[1 - x/(d -
 (e*(b + q))/(2*c)), x]^p, x], x, d + e*x], x]] /; FreeQ[{a, b, c, d, e, m,
 p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*
d - b*e, 0] &&  !IntegerQ[p]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (ex)^m(A+Bx)\left(a+bx+cx^2\right)^p\,dx = A\int (ex)^m\left(a+bx+cx^2\right)^p\,dx+\frac{B\int (ex)^{1+m}\left(a+bx+cx^2\right)^p\,dx}{e}$$

$$=\frac{\left(B\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{-p}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{-p}\left(a+bx+cx^2\right)^p\right)\text{Subst}\left(\int x^{1+m}\right.}{e^2}$$

$$=\frac{A(ex)^{1+m}\left(1+\frac{2cx}{b-\sqrt{b^2-4ac}}\right)^{-p}\left(1+\frac{2cx}{b+\sqrt{b^2-4ac}}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(1+\right.}{e(1+m)}$$

Mathematica [**A**] time = 0.35, size = 232, normalized size = 0.84

$$\frac{x(ex)^m\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)^{-p}(a+x(b+cx))^p\left(A(m+2)F_1\left(m+1;-p,-p;m+2;-\frac{2cx}{b+\sqrt{b^2-4ac}},\right.\right.}{(m+1)(m+2)}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(e*x)^m*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (x*(e*x)^m*(a + x*(b + c*x))^p*(A*(2 + m)*AppellF1[1 + m, -p, -p, 2 + m, (-
2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + B*(1 +
m)*x*AppellF1[2 + m, -p, -p, 3 + m, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*
x)/(-b + Sqrt[b^2 - 4*a*c])]))/((1 + m)*(2 + m)*((b - Sqrt[b^2 - 4*a*c] + 2
*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt
[b^2 - 4*a*c]))^p)
```

fricas [**F**] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left((Bx+A)\left(cx^2+bx+a\right)^p(ex)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p*(e*x)^m, x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p(ex)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*(e*x)^m, x)
```

maple [**F**] time = 1.25, size = 0, normalized size = 0.00

$$\int (Bx+A)(ex)^m\left(c\,x^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p (ex)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)^m*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*(e*x)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (e\,x)^m\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^p \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^p,x)
```

```
[Out] int((e*x)^m*(A + B*x)*(a + b*x + c*x^2)^p, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x)**m*(B*x+A)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Timed out
```

3.1095 $\int x^3(A+Bx)\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=442

$$-\frac{2^{p-1}\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(12a^2Bc^2+6aAbc^2(2p+5)-12ab^2Bc(p+3)-Ab^3c\left(2p^2+11\right.\right.}{c^4(p+1)(2p+3)(2p+5)\sqrt{b^2-4ac}}$$

```
[Out] -1/2*(b*B*(4+p)-A*c*(5+2*p))*x^2*(c*x^2+b*x+a)^(1+p)/c^2/(2+p)/(5+2*p)+B*x^
3*(c*x^2+b*x+a)^(1+p)/c/(5+2*p)+1/4*(2*a*c*(3+2*p)*(b*B*(4+p)-A*c*(5+2*p))+
b*(2+p)*(6*a*B*c*(2+p)-b^2*B*(p^2+7*p+12)+A*b*c*(2*p^2+11*p+15))-2*c*(1+p)*
(6*a*B*c*(2+p)-b^2*B*(p^2+7*p+12)+A*b*c*(2*p^2+11*p+15))*x)*(c*x^2+b*x+a)^(
1+p)/c^4/(4*p^4+28*p^3+71*p^2+77*p+30)-2^(-1+p)*(12*a^2*B*c^2-12*a*b^2*B*c*
(3+p)+6*a*A*b*c^2*(5+2*p)+b^4*B*(p^2+7*p+12)-A*b^3*c*(2*p^2+11*p+15))*(c*x^
2+b*x+a)^(1+p)*hypergeom([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(
-4*a*c+b^2)^(1/2))*((-b-2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(-1-p
)/c^4/(1+p)/(3+2*p)/(5+2*p)/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.74, antiderivative size = 442, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {832, 779, 624}

$$-\frac{2^{p-1}\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(12a^2Bc^2+6aAbc^2(2p+5)-12ab^2Bc(p+3)-Ab^3c\left(2p^2+11\right.\right.}{c^4(p+1)(2p+3)(2p+5)\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[x^3*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] -((b*B*(4 + p) - A*c*(5 + 2*p))*x^2*(a + b*x + c*x^2)^(1 + p))/(2*c^2*(2 +
p)*(5 + 2*p)) + (B*x^3*(a + b*x + c*x^2)^(1 + p))/(c*(5 + 2*p)) + ((2*a*c*(
3 + 2*p)*(b*B*(4 + p) - A*c*(5 + 2*p)) + b*(2 + p)*(6*a*B*c*(2 + p) - b^2*B
*(12 + 7*p + p^2) + A*b*c*(15 + 11*p + 2*p^2)) - 2*c*(1 + p)*(6*a*B*c*(2 +
p) - b^2*B*(12 + 7*p + p^2) + A*b*c*(15 + 11*p + 2*p^2))*x)*(a + b*x + c*x^
2)^(1 + p))/(4*c^4*(1 + p)*(2 + p)*(3 + 2*p)*(5 + 2*p)) - (2^(-1 + p)*(12*a
^2*B*c^2 - 12*a*b^2*B*c*(3 + p) + 6*a*A*b*c^2*(5 + 2*p) + b^4*B*(12 + 7*p +
 p^2) - A*b^3*c*(15 + 11*p + 2*p^2))*(-((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqr
t[b^2 - 4*a*c]))^(-1 - p)*(a + b*x + c*x^2)^(1 + p)*Hypergeometric2F1[-p, 1
 + p, 2 + p, (b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(c^4*S
qrt[b^2 - 4*a*c]*(1 + p)*(3 + 2*p)*(5 + 2*p))
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int x^3(A+Bx)\left(a+bx+cx^2\right)^p\,dx &= \frac{Bx^3\left(a+bx+cx^2\right)^{1+p}}{c(5+2p)}+\frac{\int x^2(-3aB-(bB(4+p)-Ac(5+2p))x)(a+bx+}{c(5+2p)}\\ &= -\frac{(bB(4+p)-Ac(5+2p))x^2\left(a+bx+cx^2\right)^{1+p}}{2c^2(2+p)(5+2p)}+\frac{Bx^3\left(a+bx+cx^2\right)^{1+p}}{c(5+2p)}+\\ &= -\frac{(bB(4+p)-Ac(5+2p))x^2\left(a+bx+cx^2\right)^{1+p}}{2c^2(2+p)(5+2p)}+\frac{Bx^3\left(a+bx+cx^2\right)^{1+p}}{c(5+2p)}+\\ &= -\frac{(bB(4+p)-Ac(5+2p))x^2\left(a+bx+cx^2\right)^{1+p}}{2c^2(2+p)(5+2p)}+\frac{Bx^3\left(a+bx+cx^2\right)^{1+p}}{c(5+2p)}+\end{aligned}$$

Mathematica [C] time = 0.40, size = 210, normalized size = 0.48

$$\frac{1}{20}x^4\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)^{-p}(a+x(b+cx))^p\,(5AF_1(4;-p,-p;5;-\frac{2cx}{b+\sqrt{b^2-4ac}},$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^3*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (x^4*(a + x*(b + c*x))^p*(5*A*AppellF1[4, -p, -p, 5, (-2*c*x)/(b + Sqrt[b^2
 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 4*B*x*AppellF1[5, -p, -p, 6
, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/(20
*((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*((b + Sqrt[b^2
 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^p)
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(Bx^4+Ax^3\right)\left(cx^2+bx+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x^4 + A*x^3)*(c*x^2 + b*x + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p x^3\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x^3, x)
```

maple **[F]** time = 1.57, size = 0, normalized size = 0.00

$$\int (Bx+A)\,x^{3}\left(c\,x^{2}+bx+a\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int(x^3*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^{2}+bx+a\right)^{p}x^{3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^3*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x^3, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^{3}\,\left(A+B\,x\right)\,\left(c\,x^{2}+b\,x+a\right)^{p}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^3*(A + B*x)*(a + b*x + c*x^2)^p,x)
```

```
[Out] int(x^3*(A + B*x)*(a + b*x + c*x^2)^p, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**3*(B*x+A)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Timed out
```

3.1096 $\int x^2(A+Bx)\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=287

$$-\frac{2^{p-1}\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(-4aAc^2+6abBc+2Ab^2c(p+2)+b^3(-B)(p+3)\right){}_2F_1\Big(-p,p+1}{c^3(p+1)(2p+3)\sqrt{b^2-4ac}}$$

```
[Out] 1/2*B*x^2*(c*x^2+b*x+a)^(1+p)/c/(2+p)-1/4*(2*a*B*c*(3+2*p)+b*(2+p)*(2*A*c*(
2+p)-b*B*(3+p))-2*c*(1+p)*(2*A*c*(2+p)-b*B*(3+p))*x)*(c*x^2+b*x+a)^(1+p)/c^
3/(2+p)/(2*p^2+5*p+3)-2^(-1+p)*(6*a*b*B*c-4*a*A*c^2+2*A*b^2*c*(2+p)-b^3*B*(
3+p))*(c*x^2+b*x+a)^(1+p)*hypergeom([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))*((-b-2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(
1/2))^(-1-p)/c^3/(1+p)/(3+2*p)/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {832, 779, 624}

$$-\frac{2^{p-1}\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(-4aAc^2+6abBc+2Ab^2c(p+2)+b^3(-B)(p+3)\right){}_2F_1\Big(-p,p+1}{c^3(p+1)(2p+3)\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[x^2*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (B*x^2*(a + b*x + c*x^2)^(1 + p))/(2*c*(2 + p)) - ((2*a*B*c*(3 + 2*p) + b*(
2 + p)*(2*A*c*(2 + p) - b*B*(3 + p)) - 2*c*(1 + p)*(2*A*c*(2 + p) - b*B*(3
+ p))*x)*(a + b*x + c*x^2)^(1 + p))/(4*c^3*(1 + p)*(2 + p)*(3 + 2*p)) - (2^
(-1 + p)*(6*a*b*B*c - 4*a*A*c^2 + 2*A*b^2*c*(2 + p) - b^3*B*(3 + p))*(-((b
- Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]))^(-1 - p)*(a + b*x + c*x^2)
^(1 + p)*Hypergeometric2F1[-p, 1 + p, 2 + p, (b + Sqrt[b^2 - 4*a*c] + 2*c*x
)/(2*Sqrt[b^2 - 4*a*c])])/(c^3*Sqrt[b^2 - 4*a*c]*(1 + p)*(3 + 2*p))
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int x^2(A+Bx)\left(a+bx+cx^2\right)^p\,dx = \frac{Bx^2\left(a+bx+cx^2\right)^{1+p}}{2c(2+p)} + \frac{\int x(-2aB+(2Ac(2+p)-bB(3+p))x)\left(a+bx\right.}{2c(2+p)}$$

$$= \frac{Bx^2\left(a+bx+cx^2\right)^{1+p}}{2c(2+p)} - \frac{(2aBc(3+2p)+b(2+p)(2Ac(2+p)-bB(3+p}{4c^3(1+}$$

$$= \frac{Bx^2\left(a+bx+cx^2\right)^{1+p}}{2c(2+p)} - \frac{(2aBc(3+2p)+b(2+p)(2Ac(2+p)-bB(3+p}{4c^3(1+}$$

Mathematica [C] time = 0.31, size = 210, normalized size = 0.73

$$\frac{1}{12}x^3\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\right)^{-p}(a+x(b+cx))^p\left(4AF_1\left(3;-p,-p;4;-\frac{2cx}{b+\sqrt{b^2-4ac}},\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x^2*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (x^3*(a + x*(b + c*x))^p*(4*A*AppellF1[3, -p, -p, 4, (-2*c*x)/(b + Sqrt[b^2
 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 3*B*x*AppellF1[4, -p, -p, 5
, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/(12
*((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*((b + Sqrt[b^2
 - 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^p)
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\left(Bx^3+Ax^2\right)\left(cx^2+bx+a\right)^p, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x^3 + A*x^2)*(c*x^2 + b*x + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x^2, x)
```

maple [F] time = 1.55, size = 0, normalized size = 0.00

$$\int (Bx+A)\,x^2\left(c\,x^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int(x^2*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx + A)\left(cx^2 + bx + a\right)^p x^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x^2*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x^2, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int x^2\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^p \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x^2*(A + B*x)*(a + b*x + c*x^2)^p,x)
```

```
[Out] int(x^2*(A + B*x)*(a + b*x + c*x^2)^p, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x**2*(B*x+A)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Timed out
```

3.1097 $\int x(A+Bx)\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=211

$$\frac{2^p\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(a+bx+cx^2\right)^{p+1}\left(2aBc+Abc(2p+3)+b^2(-B)(p+2)\right)\,{}_2F_1\left(-p,p+1;p+2;\frac{b+2cx+}{2\sqrt{b}}\right.}{c^2(p+1)(2p+3)\sqrt{b^2-4ac}}$$

```
[Out] -1/2*(b*B*(2+p)-A*c*(3+2*p)-2*B*c*(1+p)*x)*(c*x^2+b*x+a)^(1+p)/c^2/(2*p^2+5
*p+3)+2^p*(2*a*B*c-b^2*B*(2+p)+A*b*c*(3+2*p))*(c*x^2+b*x+a)^(1+p)*hypergeom
([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))*((-b-
2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(-1-p)/c^2/(1+p)/(3+2*p)/(-4*
a*c+b^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 211, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.105$, Rules used = {779, 624}

$$\frac{2^p\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}\left(a+bx+cx^2\right)^{p+1}\left(2aBc+Abc(2p+3)+b^2(-B)(p+2)\right)\,{}_2F_1\left(-p,p+1;p+2;\frac{b+2cx+}{2\sqrt{b}}\right.}{c^2(p+1)(2p+3)\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[x*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] -((b*B*(2 + p) - A*c*(3 + 2*p) - 2*B*c*(1 + p)*x)*(a + b*x + c*x^2)^(1 + p)
)/(2*c^2*(1 + p)*(3 + 2*p)) + (2^p*(2*a*B*c - b^2*B*(2 + p) + A*b*c*(3 + 2*
p))*(-((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]))^(-1 - p)*(a + b*
x + c*x^2)^(1 + p)*Hypergeometric2F1[-p, 1 + p, 2 + p, (b + Sqrt[b^2 - 4*a*
c] + 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(c^2*Sqrt[b^2 - 4*a*c]*(1 + p)*(3 + 2*p
))
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int x(A+Bx)\left(a+bx+cx^2\right)^p\,dx &= -\frac{(bB(2+p)-Ac(3+2p)-2Bc(1+p)x)\left(a+bx+cx^2\right)^{1+p}}{2c^2(1+p)(3+2p)}-\frac{\left(2aBc-b^2B\right.}{}\\ &= -\frac{(bB(2+p)-Ac(3+2p)-2Bc(1+p)x)\left(a+bx+cx^2\right)^{1+p}}{2c^2(1+p)(3+2p)}+\frac{2^p\left(2aBc-b\right.}{}\end{aligned}$$

Mathematica [C] time = 0.28, size = 210, normalized size = 1.00

$$\frac{1}{6}x^2\Bigg(\frac{-\sqrt{b^2-4ac}+b+2cx}{b-\sqrt{b^2-4ac}}\Bigg)^{-p}\Bigg(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}+b}\Bigg)^{-p}(a+x(b+cx))^p\Bigg(3AF_1\Bigg(2;-p,-p;3;-\frac{2cx}{b+\sqrt{b^2-4ac}},\frac{}{\sqrt{b}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[x*(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (x^2*(a + x*(b + c*x))^p*(3*A*AppellF1[2, -p, -p, 3, (-2*c*x)/(b + Sqrt[b^2
 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])] + 2*B*x*AppellF1[3, -p, -p, 4
, (-2*c*x)/(b + Sqrt[b^2 - 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])]))/(6*
((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*((b + Sqrt[b^2
- 4*a*c] + 2*c*x)/(b + Sqrt[b^2 - 4*a*c]))^p)
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(Bx^2+Ax\right)\left(cx^2+bx+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x^2 + A*x)*(c*x^2 + b*x + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x, x)
```

maple [F] time = 1.33, size = 0, normalized size = 0.00

$$\int (Bx+A)\,x\left(c\,x^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int(x*(B*x+A)*(c*x^2+b*x+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p x\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*x, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int x\,\left(A+B\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(A + B*x)*(a + b*x + c*x^2)^p,x)
```

```
[Out] int(x*(A + B*x)*(a + b*x + c*x^2)^p, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int x(A+Bx)\left(a+bx+cx^2\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(B*x+A)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Integral(x*(A + B*x)*(a + b*x + c*x**2)**p, x)
```

3.1098 $\int (A+Bx)\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=158

$$\frac{2^p(bB-2Ac)\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}{}_2F_1\left(-p,p+1;p+2;\frac{b+2cx+\sqrt{b^2-4ac}}{2\sqrt{b^2-4ac}}\right)}{c(p+1)\sqrt{b^2-4ac}}+\frac{B\left(a+bx+cx^2\right)^{p+1}}{2c(p+1)}$$

```
[Out] 1/2*B*(c*x^2+b*x+a)^(1+p)/c/(1+p)+2^p*(-2*A*c+B*b)*(c*x^2+b*x+a)^(1+p)*hype
rgeom([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))*
((-b-2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(-1-p)/c/(1+p)/(-4*a*c+b
^2)^(1/2)
```

Rubi **[A]** time = 0.05, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {640, 624}

$$\frac{2^p(bB-2Ac)\left(a+bx+cx^2\right)^{p+1}\left(-\frac{-\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p-1}{}_2F_1\left(-p,p+1;p+2;\frac{b+2cx+\sqrt{b^2-4ac}}{2\sqrt{b^2-4ac}}\right)}{c(p+1)\sqrt{b^2-4ac}}+\frac{B\left(a+bx+cx^2\right)^{p+1}}{2c(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] (B*(a + b*x + c*x^2)^(1 + p))/(2*c*(1 + p)) + (2^p*(b*B - 2*A*c)*(-((b - Sq
rt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]))^(-1 - p)*(a + b*x + c*x^2)^(1
+ p)*Hypergeometric2F1[-p, 1 + p, 2 + p, (b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(2
*Sqrt[b^2 - 4*a*c])])/(c*Sqrt[b^2 - 4*a*c]*(1 + p))
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^p\,dx&=\frac{B\left(a+bx+cx^2\right)^{1+p}}{2c(1+p)}+\frac{(-bB+2Ac)\int\left(a+bx+cx^2\right)^p\,dx}{2c}\\&=\frac{B\left(a+bx+cx^2\right)^{1+p}}{2c(1+p)}+\frac{2^p(bB-2Ac)\left(-\frac{b-\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}\right)^{-1-p}\left(a+bx+cx^2\right)^{1+p}{}_2F}{c\sqrt{b^2-4ac}\,(1+p)}\end{aligned}$$

Mathematica [C] time = 0.40, size = 268, normalized size = 1.70

$$\frac{1}{2}(a+x(b+cx))^p\left(\frac{A2^p\left(-\sqrt{b^2-4ac}+b+2cx\right)\left(\frac{\sqrt{b^2-4ac}+b+2cx}{\sqrt{b^2-4ac}}\right)^{-p}\,{}_2F_1\left(-p,p+1;p+2;\frac{-b-2cx+\sqrt{b^2-4ac}}{2\sqrt{b^2-4ac}}\right)}{c(p+1)}+Bx^2\left(\right.\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^p,x]
```

```
[Out] ((a + x*(b + c*x))^p*((B*x^2*AppellF1[2, -p, -p, 3, (-2*c*x)/(b + Sqrt[b^2
- 4*a*c]), (2*c*x)/(-b + Sqrt[b^2 - 4*a*c])])/(((b - Sqrt[b^2 - 4*a*c] + 2*
c*x)/(b - Sqrt[b^2 - 4*a*c]))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(b + Sqrt[
b^2 - 4*a*c]))^p) + (2^p*A*(b - Sqrt[b^2 - 4*a*c] + 2*c*x)*Hypergeometric2F
1[-p, 1 + p, 2 + p, (-b + Sqrt[b^2 - 4*a*c] - 2*c*x)/(2*Sqrt[b^2 - 4*a*c])]
)/(c*(1 + p)*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c])^p)))/2
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left((Bx+A)\left(cx^2+bx+a\right)^p,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p, x)
```

maple [F] time = 1.18, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(c\,x^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int((B*x+A)*(c*x^2+b*x+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(c\,x^2+b\,x+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^p,x)
```

```
[Out] int((A + B*x)*(a + b*x + c*x^2)^p, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left(a+bx+cx^2\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**p, x)
```

3.1099 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x}\,dx$

Optimal. Leaf size=273

$$\frac{A2^{2p-1}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(-2p;-p,-p;1-2p;-\frac{b-\sqrt{b^2-4ac}}{2cx},-\frac{b+\sqrt{b^2-4ac}}{2cx}\right)}{p}$$

```
[Out] -2^(1+p)*B*(c*x^2+b*x+a)^(1+p)*hypergeom([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))*((-b-2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b
^2)^(1/2))^(-1-p)/(1+p)/(-4*a*c+b^2)^(1/2)+2^(-1+2*p)*A*(c*x^2+b*x+a)^p*App
ellF1(-2*p,-p,-p,1-2*p,1/2*(-b-(-4*a*c+b^2)^(1/2))/c/x,1/2*(-b+(-4*a*c+b^2)
^(1/2))/c/x)/p/(((b+2*c*x-(-4*a*c+b^2)^(1/2))/c/x)^p)/(((b+2*c*x+(-4*a*c+b^
2)^(1/2))/c/x)^p)
```

Rubi [A] time = 0.15, antiderivative size = 273, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.190$, Rules used = {843, 624, 758, 133}

$$\frac{A2^{2p-1}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(-2p;-p,-p;1-2p;-\frac{b-\sqrt{b^2-4ac}}{2cx},-\frac{b+\sqrt{b^2-4ac}}{2cx}\right)}{p}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^p)/x,x]
```

```
[Out] (2^(-1 + 2*p)*A*(a + b*x + c*x^2)^p*AppellF1[-2*p, -p, -p, 1 - 2*p, -(b - S
qrt[b^2 - 4*a*c])/(2*c*x), -(b + Sqrt[b^2 - 4*a*c])/(2*c*x)])/(p*((b - Sqrt
[b^2 - 4*a*c] + 2*c*x)/(c*x))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p)
- (2^(1 + p)*B*(-((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]))^(-1 -
 p)*(a + b*x + c*x^2)^(1 + p)*Hypergeometric2F1[-p, 1 + p, 2 + p, (b + Sqrt
[b^2 - 4*a*c] + 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(Sqrt[b^2 - 4*a*c]*(1 + p))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 758

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, -Dist[((1/(d + e*x))^(2*p)*(a + b*
x + c*x^2)^p)/(e*((e*(b - q + 2*c*x))/(2*c*(d + e*x)))^p*((e*(b + q + 2*c*x
))/(2*c*(d + e*x)))^p), Subst[Int[x^(-m - 2*(p + 1))*Simp[1 - (d - (e*(b -
q))/(2*c))*x, x]^p*Simp[1 - (d - (e*(b + q))/(2*c))*x, x]^p, x], x, 1/(d +
e*x)], x]] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*
d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] &&  !IntegerQ[p] && ILtQ[m,
0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x}\,dx &= A\int \frac{\left(a+bx+cx^2\right)^p}{x}\,dx + B\int \left(a+bx+cx^2\right)^p\,dx\\ &= -\frac{2^{1+p}B\left(-\frac{b-\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}\right)^{-1-p}\left(a+bx+cx^2\right)^{1+p}\,{}_2F_1\left(-p,1+p;2+p;\frac{b+\sqrt{b^2-4ac}}{2\sqrt{b^2-4a}}\right.}{\sqrt{b^2-4ac}\,(1+p)}\\ &= \frac{2^{-1+2p}A\left(\frac{b-\sqrt{b^2-4ac}+2cx}{cx}\right)^{-p}\left(\frac{b+\sqrt{b^2-4ac}+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(-2p;-p,-p;1\right.}{p}\end{aligned}$$

Mathematica [A] time = 0.38, size = 263, normalized size = 0.96

$$\frac{1}{2}(a+x(b+cx))^p\left(\frac{A4^p\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}F_1\left(-2p;-p,-p;1-2p;-\frac{b+\sqrt{b^2-4ac}}{2cx},\frac{\sqrt{b^2-4ac}-b}{2cx}\right)}{p}+\frac{B2^p}{}\right.$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^p)/x,x]
```

```
[Out] ((a + x*(b + c*x))^p*((4^p*A*AppellF1[-2*p, -p, -p, 1 - 2*p, -1/2*(b + Sqrt
[b^2 - 4*a*c])/(c*x), (-b + Sqrt[b^2 - 4*a*c])/(2*c*x)])/(p*((b - Sqrt[b^2
- 4*a*c] + 2*c*x)/(c*x))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p) + (2^
p*B*(b - Sqrt[b^2 - 4*a*c] + 2*c*x)*Hypergeometric2F1[-p, 1 + p, 2 + p, (-b
 + Sqrt[b^2 - 4*a*c] - 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(c*(1 + p)*((b + Sqrt
[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c])^p)))/2
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p/x, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x, x)
```

maple **[F]** time = 1.23, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(c\,x^{2}+bx+a\right)^{p}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^p/x,x)
```

```
[Out] int((B*x+A)*(c*x^2+b*x+a)^p/x,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^{2}+bx+a\right)^{p}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^p}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^p)/x,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^p)/x, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^{2}\right)^{p}}{x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**p/x,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**p/x, x)
```

3.1100 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^2}\,dx$

Optimal. Leaf size=315

$$\frac{2^{2p-1}(aB+Abp)\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(-2p;-p,-p;1-2p;-\frac{b-\sqrt{b^2-4ac}}{2cx},-\frac{b+\sqrt{b}}{2c}\right.}{ap}$$

```
[Out] -A*(c*x^2+b*x+a)^(1+p)/a/x-2^(1+p)*A*c*(1+2*p)*(c*x^2+b*x+a)^(1+p)*hypergeo
m([-p, 1+p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))*((-b
-2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(-1-p)/a/(1+p)/(-4*a*c+b^2)^
(1/2)+2^(-1+2*p)*(A*b*p+B*a)*(c*x^2+b*x+a)^p*AppellF1(-2*p,-p,-p,1-2*p,1/2*
(-b-(-4*a*c+b^2)^(1/2))/c/x,1/2*(-b+(-4*a*c+b^2)^(1/2))/c/x)/a/p/(((b+2*c*x
-(-4*a*c+b^2)^(1/2))/c/x)^p)/(((b+2*c*x+(-4*a*c+b^2)^(1/2))/c/x)^p)
```

Rubi [A] time = 0.20, antiderivative size = 315, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {834, 843, 624, 758, 133}

$$\frac{2^{2p-1}(aB+Abp)\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p F_1\left(-2p;-p,-p;1-2p;-\frac{b-\sqrt{b^2-4ac}}{2cx},-\frac{b+\sqrt{b}}{2c}\right.}{ap}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^p)/x^2,x]
```

```
[Out] -((A*(a + b*x + c*x^2)^(1 + p))/(a*x)) + (2^(-1 + 2*p)*(a*B + A*b*p)*(a + b
*x + c*x^2)^p*AppellF1[-2*p, -p, -p, 1 - 2*p, -(b - Sqrt[b^2 - 4*a*c])/(2*c
*x), -(b + Sqrt[b^2 - 4*a*c])/(2*c*x)])/(a*p*((b - Sqrt[b^2 - 4*a*c] + 2*c*
x)/(c*x))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p) - (2^(1 + p)*A*c*(1
+ 2*p)*(-((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]))^(-1 - p)*(a +
 b*x + c*x^2)^(1 + p)*Hypergeometric2F1[-p, 1 + p, 2 + p, (b + Sqrt[b^2 - 4
*a*c] + 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(a*Sqrt[b^2 - 4*a*c]*(1 + p))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 758

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, -Dist[((1/(d + e*x))^(2*p)*(a + b*
x + c*x^2)^p)/(e*((e*(b - q + 2*c*x))/(2*c*(d + e*x)))^p*((e*(b + q + 2*c*x
))/(2*c*(d + e*x)))^p), Subst[Int[x^(-m - 2*(p + 1))*Simp[1 - (d - (e*(b -
q))/(2*c))*x, x]^p*Simp[1 - (d - (e*(b + q))/(2*c))*x, x]^p, x], x, 1/(d +
e*x)], x]] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*
d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] &&  !IntegerQ[p] && ILtQ[m,
0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^2}\,dx = -\frac{A\left(a+bx+cx^2\right)^{1+p}}{ax} - \frac{\int \frac{(-aB-Abp-Ac(1+2p)x)\left(a+bx+cx^2\right)^p}{x}\,dx}{a}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{ax} + \frac{(Ac(1+2p))\int\left(a+bx+cx^2\right)^p\,dx}{a} + \frac{(aB+Abp)\int}{}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{ax} - \frac{2^{1+p}Ac(1+2p)\left(-\frac{b-\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}\right)^{-1-p}\left(a+bx+cx^2\right.}{a\sqrt{b^2-4ac}\,(1}$$

$$= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{ax} + \frac{2^{-1+2p}(aB+Abp)\left(\frac{b-\sqrt{b^2-4ac}+2cx}{cx}\right)^{-p}\left(\frac{b+\sqrt{b^2-4ac}+2cx}{cx}\right.}{}$$

Mathematica [A] time = 0.24, size = 289, normalized size = 0.92

$$\frac{\left(\frac{b-\sqrt{b^2-4ac}}{2cx}+1\right)^{-p}\left(\frac{b-\sqrt{b^2-4ac}}{2c}+x\right)^{-p}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{c}\right)^{p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}(a+x(b+cx))^p\left(2ApF_1\left(1-2p;-p,\right.\right.}{2p(2p-1)x}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^p)/x^2,x]
```

```
[Out] (((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/c)^p*(a + x*(b + c*x))^p*(2*A*p*AppellF1[
1 - 2*p, -p, -p, 2 - 2*p, -1/2*(b + Sqrt[b^2 - 4*a*c])/(c*x), (-b + Sqrt[b^
2 - 4*a*c])/(2*c*x)] + B*(-1 + 2*p)*x*AppellF1[-2*p, -p, -p, 1 - 2*p, -1/2*
(b + Sqrt[b^2 - 4*a*c])/(c*x), (-b + Sqrt[b^2 - 4*a*c])/(2*c*x)]))/(2*p*(-1
 + 2*p)*(1 + (b - Sqrt[b^2 - 4*a*c])/(2*c*x))^p*x*((b - Sqrt[b^2 - 4*a*c])/
(2*c) + x)^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p)
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p/x^2, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x^2, x)
```

maple [F] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(c\,x^2+bx+a\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^p/x^2,x)
```

```
[Out] int((B*x+A)*(c*x^2+b*x+a)^p/x^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^p)/x^2,x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^p)/x^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**p/x**2,x)
```

```
[Out] Integral((A + B*x)*(a + b*x + c*x**2)**p/x**2, x)
```

3.1101 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^3}\,dx$

Optimal. Leaf size=376

$$\frac{4^{p-1}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p\left(A\left(2ac-b^2(1-p)\right)+2abB\right)F_1\left(-2p;-p,-p;1-2\right.}{a^2}$$

```
[Out] -1/2*A*(c*x^2+b*x+a)^(1+p)/a/x^2-1/2*(2*a*B-A*b*(1-p))*(c*x^2+b*x+a)^(1+p)/
a^2/x-2^p*c*(2*a*B-A*b*(1-p))*(1+2*p)*(c*x^2+b*x+a)^(1+p)*hypergeom([-p, 1+
p],[2+p],1/2*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))*((-b-2*c*x+(-
4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(-1-p)/a^2/(1+p)/(-4*a*c+b^2)^(1/2)+4
^(-1+p)*(2*a*b*B+A*(2*a*c-b^2*(1-p)))*(c*x^2+b*x+a)^p*AppellF1(-2*p,-p,-p,1
-2*p,1/2*(-b-(-4*a*c+b^2)^(1/2))/c/x,1/2*(-b+(-4*a*c+b^2)^(1/2))/c/x)/a^2/(
((b+2*c*x-(-4*a*c+b^2)^(1/2))/c/x)^p)/(((b+2*c*x+(-4*a*c+b^2)^(1/2))/c/x)^p
)
```

Rubi [A] time = 0.36, antiderivative size = 375, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}} = 0.238$, Rules used = {834, 843, 624, 758, 133}

$$\frac{4^{p-1}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}\left(a+bx+cx^2\right)^p\left(2aAc+2abB-Ab^2(1-p)\right)F_1\left(-2p;-p,-p;1-2p\right.}{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^p)/x^3,x]
```

```
[Out] -(A*(a + b*x + c*x^2)^(1 + p))/(2*a*x^2) - ((2*a*B - A*b*(1 - p))*(a + b*x
+ c*x^2)^(1 + p))/(2*a^2*x) + (4^(-1 + p)*(2*a*b*B + 2*a*A*c - A*b^2*(1 - p
))*(a + b*x + c*x^2)^p*AppellF1[-2*p, -p, -p, 1 - 2*p, -(b - Sqrt[b^2 - 4*a
*c])/(2*c*x), -(b + Sqrt[b^2 - 4*a*c])/(2*c*x)])/(a^2*((b - Sqrt[b^2 - 4*a*
c] + 2*c*x)/(c*x))^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p) - (2^p*c*(2
*a*B - A*b*(1 - p))*(1 + 2*p)*(-((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 -
 4*a*c]))^(-1 - p)*(a + b*x + c*x^2)^(1 + p)*Hypergeometric2F1[-p, 1 + p, 2
 + p, (b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(2*Sqrt[b^2 - 4*a*c])])/(a^2*Sqrt[b^2
 - 4*a*c]*(1 + p))
```

Rule 133

```
Int[((b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_)*((e_) + (f_.)*(x_))^(p_), x_
Symbol] :> Simp[(c^n*e^p*(b*x)^(m + 1)*AppellF1[m + 1, -n, -p, m + 2, -((d*
x)/c), -((f*x)/e)])/(b*(m + 1)), x] /; FreeQ[{b, c, d, e, f, m, n, p}, x] &
&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[c, 0] && (IntegerQ[p] || GtQ[e, 0])
```

Rule 624

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, -Simp[((a + b*x + c*x^2)^(p + 1)*Hypergeometric2F1[-p, p + 1
, p + 2, (b + q + 2*c*x)/(2*q)])/(q*(p + 1)*((q - b - 2*c*x)/(2*q))^(p + 1)
), x]] /; FreeQ[{a, b, c, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !IntegerQ[4*p]
```

Rule 758

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> With[{q = Rt[b^2 - 4*a*c, 2]}, -Dist[((1/(d + e*x))^(2*p)*(a + b*
x + c*x^2)^p)/(e*((e*(b - q + 2*c*x))/(2*c*(d + e*x)))^p*((e*(b + q + 2*c*x
))/(2*c*(d + e*x)))^p), Subst[Int[x^(-m - 2*(p + 1))*Simp[1 - (d - (e*(b -
q))/(2*c))*x, x]^p*Simp[1 - (d - (e*(b + q))/(2*c))*x, x]^p, x], x, 1/(d +
e*x)], x]] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*
d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] &&  !IntegerQ[p] && ILtQ[m,
0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(a+bx+cx^2\right)^p}{x^3}\,dx &= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{2ax^2}-\frac{\int \frac{(-2aB+A(b-bp)-2Acpx)\left(a+bx+cx^2\right)^p}{x^2}\,dx}{2a}\\
&= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{2ax^2}-\frac{(2aB-Ab(1-p))\left(a+bx+cx^2\right)^{1+p}}{2a^2x}+\int \frac{\left(\left(2abB+2aAc-A\right.\right.}{}\\
&= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{2ax^2}-\frac{(2aB-Ab(1-p))\left(a+bx+cx^2\right)^{1+p}}{2a^2x}+\frac{\left(\left(2abB+2aA\right.\right.}{}\\
&= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{2ax^2}-\frac{(2aB-Ab(1-p))\left(a+bx+cx^2\right)^{1+p}}{2a^2x}-\frac{2^pc(2aB-Ab(}{}\\
&= -\frac{A\left(a+bx+cx^2\right)^{1+p}}{2ax^2}-\frac{(2aB-Ab(1-p))\left(a+bx+cx^2\right)^{1+p}}{2a^2x}+\frac{4^{-1+p}\left(2abB+\right.}{}
\end{aligned}
$$

Mathematica [A] time = 0.30, size = 295, normalized size = 0.78

$$
\frac{\left(\frac{b-\sqrt{b^2-4ac}}{2cx}+1\right)^{-p}\left(\frac{b-\sqrt{b^2-4ac}}{2c}+x\right)^{-p}\left(\frac{-\sqrt{b^2-4ac}+b+2cx}{c}\right)^{p}\left(\frac{\sqrt{b^2-4ac}+b+2cx}{cx}\right)^{-p}(a+x(b+cx))^p\left(A(2p-1)F_1\left(2-2p;-\right.\right.}{2(p-1)(2p-1)}
$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^p)/x^3,x]
```

```
[Out] (((b - Sqrt[b^2 - 4*a*c] + 2*c*x)/c)^p*(a + x*(b + c*x))^p*(2*B*(-1 + p)*x*
AppellF1[1 - 2*p, -p, -p, 2 - 2*p, -1/2*(b + Sqrt[b^2 - 4*a*c])/(c*x), (-b
+ Sqrt[b^2 - 4*a*c])/(2*c*x)] + A*(-1 + 2*p)*AppellF1[2 - 2*p, -p, -p, 3 -
2*p, -1/2*(b + Sqrt[b^2 - 4*a*c])/(c*x), (-b + Sqrt[b^2 - 4*a*c])/(2*c*x)])
)/(2*(-1 + p)*(-1 + 2*p)*(1 + (b - Sqrt[b^2 - 4*a*c])/(2*c*x))^p*x^2*((b -
Sqrt[b^2 - 4*a*c])/(2*c) + x)^p*((b + Sqrt[b^2 - 4*a*c] + 2*c*x)/(c*x))^p)
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^3,x, algorithm="fricas")
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p/x^3, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^3,x, algorithm="giac")
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x^3, x)
```

maple [F] time = 1.20, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(c\,x^2+bx+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^p/x^3,x)
[Out] int((B*x+A)*(c*x^2+b*x+a)^p/x^3,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\left(cx^2+bx+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^p/x^3,x, algorithm="maxima")
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p/x^3, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(c\,x^2+b\,x+a\right)^p}{x^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^p)/x^3,x)
[Out] int(((A + B*x)*(a + b*x + c*x^2)^p)/x^3, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**p/x**3,x)
```

```
[Out] Timed out
```

3.1102 $\int (A+Bx)(d+ex)^m \left(bx+cx^2\right) dx$

Optimal. Leaf size=136

$$-\frac{d(Bd-Ae)(cd-be)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}(Bd(3cd-2be)-Ae(2cd-be))}{e^4(m+2)}-\frac{(d+ex)^{m+3}(-Ace-bBe+3Bc}{e^4(m+3)}$$

```
[Out] -d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^(1+m)/e^4/(1+m)+(B*d*(-2*b*e+3*c*d)-A*e*(-
b*e+2*c*d))*(e*x+d)^(2+m)/e^4/(2+m)-(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(3+m)/e^
4/(3+m)+B*c*(e*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.10, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{d(Bd-Ae)(cd-be)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}(Bd(3cd-2be)-Ae(2cd-be))}{e^4(m+2)}-\frac{(d+ex)^{m+3}(-Ace-bBe+3Bc}{e^4(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2),x]
```

```
[Out] -((d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((B*d*(3*c
*d - 2*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^4*(2 + m)) - ((3*B*c
*d - b*B*e - A*c*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (B*c*(d + e*x)^(4 +
m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m \left(bx+cx^2\right) dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^m}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d}{e^3}\right.\\ &= -\frac{d(Bd-Ae)(cd-be)(d+ex)^{1+m}}{e^4(1+m)}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+}{e^4(2+m)}\end{aligned}$$

Mathematica [A] time = 0.12, size = 118, normalized size = 0.87

$$\frac{(d+ex)^{m+1}\left(-\frac{(d+ex)^2(-Ace-bBe+3Bcd)}{m+3}+\frac{(d+ex)(Ae(be-2cd)+Bd(3cd-2be))}{m+2}-\frac{d(Bd-Ae)(cd-be)}{m+1}+\frac{Bc(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((d*(B*d - A*e)*(c*d - b*e))/(1 + m)) + ((B*d*(3*c*d -
 2*b*e) + A*e*(-2*c*d + b*e))*(d + e*x))/(2 + m) - ((3*B*c*d - b*B*e - A*c*
e)*(d + e*x)^2)/(3 + m) + (B*c*(d + e*x)^3)/(4 + m)))/e^4
```

fricas [B] time = 0.89, size = 427, normalized size = 3.14

$$-\frac{\left(Abd^2e^2m^2+6\,Bcd^4+12\,Abd^2e^2-8\,(Bb+Ac)d^3e-\left(Bce^4m^3+6\,Bce^4m^2+11\,Bce^4m+6\,Bce^4\right)x^4-\left(8\,(Bb+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] -(A*b*d^2*e^2*m^2 + 6*B*c*d^4 + 12*A*b*d^2*e^2 - 8*(B*b + A*c)*d^3*e - (B*c
*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^4 - (8*(B*b + A*c)*e
^4 + (B*c*d*e^3 + (B*b + A*c)*e^4)*m^3 + (3*B*c*d*e^3 + 7*(B*b + A*c)*e^4)*
m^2 + 2*(B*c*d*e^3 + 7*(B*b + A*c)*e^4)*m)*x^3 - (12*A*b*e^4 + (A*b*e^4 + (
B*b + A*c)*d*e^3)*m^3 - (3*B*c*d^2*e^2 - 8*A*b*e^4 - 5*(B*b + A*c)*d*e^3)*m
^2 - (3*B*c*d^2*e^2 - 19*A*b*e^4 - 4*(B*b + A*c)*d*e^3)*m)*x^2 + (7*A*b*d^2
*e^2 - 2*(B*b + A*c)*d^3*e)*m - (A*b*d*e^3*m^3 + (7*A*b*d*e^3 - 2*(B*b + A*
c)*d^2*e^2)*m^2 + 2*(3*B*c*d^3*e + 6*A*b*d*e^3 - 4*(B*b + A*c)*d^2*e^2)*m)*
x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.18, size = 847, normalized size = 6.23

$$\frac{(xe+d)^m Bcm^3x^4e^4 + (xe+d)^m Bcdm^3x^3e^3 + (xe+d)^m Bbm^3x^3e^4 + (xe+d)^m Acm^3x^3e^4 + 6\,(xe+d)^m Bcm^2x^4e^4 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*
B*b*m^3*x^3*e^4 + (x*e + d)^m*A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e
^4 + (x*e + d)^m*B*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*c*d*m^3*x^2*e^3 + 3*(x*e
 + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2 + (x*e + d)^m
*A*b*m^3*x^2*e^4 + 7*(x*e + d)^m*B*b*m^2*x^3*e^4 + 7*(x*e + d)^m*A*c*m^2*x^
3*e^4 + 11*(x*e + d)^m*B*c*m*x^4*e^4 + (x*e + d)^m*A*b*d*m^3*x*e^3 + 5*(x*e
 + d)^m*B*b*d*m^2*x^2*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x^2*e^3 + 2*(x*e + d)^m
*B*c*d*m*x^3*e^3 - 2*(x*e + d)^m*B*b*d^2*m^2*x*e^2 - 2*(x*e + d)^m*A*c*d^2*
m^2*x*e^2 - 3*(x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e +
 8*(x*e + d)^m*A*b*m^2*x^2*e^4 + 14*(x*e + d)^m*B*b*m*x^3*e^4 + 14*(x*e + d
)^m*A*c*m*x^3*e^4 + 6*(x*e + d)^m*B*c*x^4*e^4 + 7*(x*e + d)^m*A*b*d*m^2*x*e
^3 + 4*(x*e + d)^m*B*b*d*m*x^2*e^3 + 4*(x*e + d)^m*A*c*d*m*x^2*e^3 - (x*e +
 d)^m*A*b*d^2*m^2*e^2 - 8*(x*e + d)^m*B*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*c*d
^2*m*x*e^2 + 2*(x*e + d)^m*B*b*d^3*m*e + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e
 + d)^m*B*c*d^4 + 19*(x*e + d)^m*A*b*m*x^2*e^4 + 8*(x*e + d)^m*B*b*x^3*e^4
+ 8*(x*e + d)^m*A*c*x^3*e^4 + 12*(x*e + d)^m*A*b*d*m*x*e^3 - 7*(x*e + d)^m*
A*b*d^2*m*e^2 + 8*(x*e + d)^m*B*b*d^3*e + 8*(x*e + d)^m*A*c*d^3*e + 12*(x*e
 + d)^m*A*b*x^2*e^4 - 12*(x*e + d)^m*A*b*d^2*e^2)/(m^4*e^4 + 10*m^3*e^4 + 3
5*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 402, normalized size = 2.96

$$-\frac{\left(-Bc\,e^3m^3x^3 - Ac\,e^3m^3x^2 - Bb\,e^3m^3x^2 - 6Bc\,e^3m^2x^3 - Ab\,e^3m^3x - 7Ac\,e^3m^2x^2 - 7Bb\,e^3m^2x^2 + 3Bcd\,e^2m^2x^2 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x)
```

```
[Out] -(e*x+d)^(m+1)*(-B*c*e^3*m^3*x^3-A*c*e^3*m^3*x^2-B*b*e^3*m^3*x^2-6*B*c*e^3*
m^2*x^3-A*b*e^3*m^3*x-7*A*c*e^3*m^2*x^2-7*B*b*e^3*m^2*x^2+3*B*c*d*e^2*m^2*x
^2-11*B*c*e^3*m*x^3-8*A*b*e^3*m^2*x+2*A*c*d*e^2*m^2*x-14*A*c*e^3*m*x^2+2*B*
b*d*e^2*m^2*x-14*B*b*e^3*m*x^2+9*B*c*d*e^2*m*x^2-6*B*c*e^3*x^3+A*b*d*e^2*m^
2-19*A*b*e^3*m*x+10*A*c*d*e^2*m*x-8*A*c*e^3*x^2+10*B*b*d*e^2*m*x-8*B*b*e^3*
x^2-6*B*c*d^2*e*m*x+6*B*c*d*e^2*x^2+7*A*b*d*e^2*m-12*A*b*e^3*x-2*A*c*d^2*e*
m+8*A*c*d*e^2*x-2*B*b*d^2*e*m+8*B*b*d*e^2*x-6*B*c*d^2*e*x+12*A*b*d*e^2-8*A*
c*d^2*e-8*B*b*d^2*e+6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [B] time = 0.76, size = 288, normalized size = 2.12

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^mAb}{\left(m^2+3\,m+2\right)e^2}+\frac{\left(\left(m^2+3\,m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2\,d^2emx+2\,d^3\right)(ex+d)^mB}{\left(m^3+6\,m^2+11\,m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*b/((m^2 + 3*m + 2)*e^2) + (
(m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x +
 d)^m*B*b/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2
+ m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x
^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 +
 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 1.64, size = 400, normalized size = 2.94

$$\frac{x^2\,\left(m+1\right)\,\left(d+e\,x\right)^m\,\left(12\,A\,b\,e^2+7\,A\,b\,e^2\,m-3\,B\,c\,d^2\,m+A\,b\,e^2\,m^2+4\,A\,c\,d\,e\,m+4\,B\,b\,d\,e\,m+A\,c\,d\,e\,m^2+\right.}{e^2\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] (x^2*(m + 1)*(d + e*x)^m*(12*A*b*e^2 + 7*A*b*e^2*m - 3*B*c*d^2*m + A*b*e^2*
m^2 + 4*A*c*d*e*m + 4*B*b*d*e*m + A*c*d*e*m^2 + B*b*d*e*m^2))/(e^2*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) - (d^2*(d + e*x)^m*(12*A*b*e^2 + 6*B*c*d^2 + 7
*A*b*e^2*m + A*b*e^2*m^2 - 8*A*c*d*e - 8*B*b*d*e - 2*A*c*d*e*m - 2*B*b*d*e*
m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^3*(d + e*x)^m*(3*m + m^2
 + 2)*(4*A*c*e + 4*B*b*e + A*c*e*m + B*b*e*m + B*c*d*m))/(e*(50*m + 35*m^2
+ 10*m^3 + m^4 + 24)) + (B*c*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*
m + 35*m^2 + 10*m^3 + m^4 + 24) + (d*m*x*(d + e*x)^m*(12*A*b*e^2 + 6*B*c*d^
2 + 7*A*b*e^2*m + A*b*e^2*m^2 - 8*A*c*d*e - 8*B*b*d*e - 2*A*c*d*e*m - 2*B*b
*d*e*m))/(e^3*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.75, size = 4537, normalized size = 33.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x),x)
```

```
[Out] Piecewise((d**m*(A*b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4), Eq(e,
0)), (-A*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x
**3) - 3*A*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7
*x**3) - 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x*
*2 + 6*e**7*x**3) - 2*B*b*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*
x**2 + 6*e**7*x**3) - 6*B*b*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e
**6*x**2 + 6*e**7*x**3) - 6*B*b*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 1
8*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d*
*2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d**3/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d**2*e*x*log(d/e + x)/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*c*d**2*
e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*
d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6
*e**7*x**3) + 18*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*
x**2 + 6*e**7*x**3) + 6*B*c*e**3*x**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e
**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*b*d*e**2/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x
**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2
*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*b*d**2*e*log(d/e + x)/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) + 3*B*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2
*e**6*x**2) + 4*B*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**
6*x**2) + 4*B*b*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*b*e
**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*c*d**3
*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*c*d**3/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x*log(d/e + x)/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2), E
q(m, -3)), (2*A*b*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b*d*e**2/
(2*d*e**4 + 2*e**5*x) + 2*A*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4
*A*c*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2
*e**5*x) - 4*A*c*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x
**2/(2*d*e**4 + 2*e**5*x) - 4*B*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x)
 - 4*B*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*B*b*d*e**2*x*log(d/e + x)/(2*d*e*
*4 + 2*e**5*x) + 2*B*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3*log(d/e
 + x)/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**2
*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**2/(2*d*e**4 + 2*e
**5*x) + B*c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (-A*b*d*log(d/e +
 x)/e**2 + A*b*x/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**2/(
2*e) + B*b*d**2*log(d/e + x)/e**3 - B*b*d*x/e**2 + B*b*x**2/(2*e) - B*c*d**
3*log(d/e + x)/e**4 + B*c*d**2*x/e**3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e
), Eq(m, -1)), (-A*b*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*A*b*d**2*e**2*m*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*A*b*d**2*e
**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + A*b*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + 7*A*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*A*b*d*e**3*m*x*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
 A*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) + 8*A*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*A*b*e**4*m*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*
A*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 2*A*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*
x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) - 8*A*c*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x*
*2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 4*A*c*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + 14*A*c*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*b*d**3*e*m*(d + e*x)**m/
```

```
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*d**
3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) - 2*B*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*
e**4*m**2 + 50*e**4*m + 24*e**4) - 8*B*b*d**2*e**2*m*x*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*b*d*e**3*m**3*
x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 5*B*b*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35
*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*B*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*
m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*b*e**4*m**3*x
**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 7*B*b*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + 14*B*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*e**4*x**3*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) -
 6*B*c*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*c*d**3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m**2*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d*
*2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + B*c*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*B*c*d*e**3*m**2*x**3*(d + e*x
)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*
c*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + B*c*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4*m**2*x**4*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*c*
e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*c*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35
*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1103 $\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right) \, dx$

Optimal. Leaf size=118

$$-\frac{(d+ex)^7(-Ace-bBe+3Bcd)}{7e^4}+\frac{(d+ex)^6(Bd(3cd-2be)-Ae(2cd-be))}{6e^4}-\frac{d(d+ex)^5(Bd-Ae)(cd-be)}{5e^4}+\frac{Bc(d+}{8e}$$

```
[Out] -1/5*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^5/e^4+1/6*(B*d*(-2*b*e+3*c*d)-A*e*(-b*
e+2*c*d))*(e*x+d)^6/e^4-1/7*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^7/e^4+1/8*B*c*(e
*x+d)^8/e^4
```

Rubi [A] time = 0.18, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$-\frac{(d+ex)^7(-Ace-bBe+3Bcd)}{7e^4}+\frac{(d+ex)^6(Bd(3cd-2be)-Ae(2cd-be))}{6e^4}-\frac{d(d+ex)^5(Bd-Ae)(cd-be)}{5e^4}+\frac{Bc(d+}{8e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(b*x + c*x^2),x]
```

```
[Out] -(d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^5)/(5*e^4) + ((B*d*(3*c*d - 2*b*e) -
A*e*(2*c*d - b*e))*(d + e*x)^6)/(6*e^4) - ((3*B*c*d - b*B*e - A*c*e)*(d + e
*x)^7)/(7*e^4) + (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right) \, dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^4}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+e}{e^3}\right. \\ &= -\frac{d(Bd-Ae)(cd-be)(d+ex)^5}{5e^4}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^6}{6e^4}-\end{aligned}$$

Mathematica [A] time = 0.06, size = 177, normalized size = 1.50

$$\frac{1}{3}d^3x^3(4Abe+Acd+bBd)+\frac{1}{4}d^2x^4(2Ae(3be+2cd)+Bd(4be+cd))+\frac{1}{7}e^3x^7(Ace+bBe+4Bcd)+\frac{1}{6}e^2x^6(Ae(be+4cd)+2Bd$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^4*x^2)/2 + (d^3*(b*B*d + A*c*d + 4*A*b*e)*x^3)/3 + (d^2*(2*A*e*(2*c*
d + 3*b*e) + B*d*(c*d + 4*b*e))*x^4)/4 + (2*d*e*(A*e*(3*c*d + 2*b*e) + B*d*
(2*c*d + 3*b*e))*x^5)/5 + (e^2*(A*e*(4*c*d + b*e) + 2*B*d*(3*c*d + 2*b*e))*
x^6)/6 + (e^3*(4*B*c*d + b*B*e + A*c*e)*x^7)/7 + (B*c*e^4*x^8)/8
```

fricas [A] time = 0.81, size = 218, normalized size = 1.85

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4bB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{2}{3}x^6e^3dbB+\frac{2}{3}x^6e^3dcA+\frac{1}{6}x^6e^4bA+\frac{4}{5}x^5ed^3cB+\frac{6}{5}x^5e^2d^2bB+\frac{6}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*b*B + 1/7*x^7*e^4*c*A + x
^6*e^2*d^2*c*B + 2/3*x^6*e^3*d*b*B + 2/3*x^6*e^3*d*c*A + 1/6*x^6*e^4*b*A +
4/5*x^5*e*d^3*c*B + 6/5*x^5*e^2*d^2*b*B + 6/5*x^5*e^2*d^2*c*A + 4/5*x^5*e^3
*d*b*A + 1/4*x^4*d^4*c*B + x^4*e*d^3*b*B + x^4*e*d^3*c*A + 3/2*x^4*e^2*d^2*
b*A + 1/3*x^3*d^4*b*B + 1/3*x^3*d^4*c*A + 4/3*x^3*e*d^3*b*A + 1/2*x^2*d^4*b
*A
```

giac [**A**] time = 0.17, size = 210, normalized size = 1.78

$$\frac{1}{8}Bcx^{8}e^{4}+\frac{4}{7}Bcdx^{7}e^{3}+Bcd^{2}x^{6}e^{2}+\frac{4}{5}Bcd^{3}x^{5}e+\frac{1}{4}Bcd^{4}x^{4}+\frac{1}{7}Bbx^{7}e^{4}+\frac{1}{7}Acx^{7}e^{4}+\frac{2}{3}Bbdx^{6}e^{3}+\frac{2}{3}Acdx^{6}e^{3}+\frac{6}{5}Bbd^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*B*b*x^7*e^4 + 1/7*A*c*x^7*e^4 + 2/3*B*b*d*x^6*e^3 +
2/3*A*c*d*x^6*e^3 + 6/5*B*b*d^2*x^5*e^2 + 6/5*A*c*d^2*x^5*e^2 + B*b*d^3*x^4
*e + A*c*d^3*x^4*e + 1/3*B*b*d^4*x^3 + 1/3*A*c*d^4*x^3 + 1/6*A*b*x^6*e^4 +
4/5*A*b*d*x^5*e^3 + 3/2*A*b*d^2*x^4*e^2 + 4/3*A*b*d^3*x^3*e + 1/2*A*b*d^4*x
^2
```

maple [**A**] time = 0.04, size = 200, normalized size = 1.69

$$\frac{Bc\,e^{4}x^{8}}{8}+\frac{Ab\,d^{4}x^{2}}{2}+\frac{\left(Bb\,e^{4}+\left(A\,e^{4}+4Bd\,e^{3}\right)c\right)x^{7}}{7}+\frac{\left(\left(A\,e^{4}+4Bd\,e^{3}\right)b+\left(4Ad\,e^{3}+6B\,d^{2}e^{2}\right)c\right)x^{6}}{6}+((4Ad\,e^{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*((A*e^4+4*B*d*e^3)*c+B*e^4*b)*x^7+1/6*((4*A*d*e^3+6*B*d
^2*e^2)*c+(A*e^4+4*B*d*e^3)*b)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(4*A*d*e^
3+6*B*d^2*e^2)*b)*x^5+1/4*((4*A*d^3*e+B*d^4)*c+(6*A*d^2*e^2+4*B*d^3*e)*b)*x
^4+1/3*(A*d^4*c+(4*A*d^3*e+B*d^4)*b)*x^3+1/2*A*d^4*b*x^2
```

maxima [**A**] time = 0.48, size = 178, normalized size = 1.51

$$\frac{1}{8}Bce^{4}x^{8}+\frac{1}{2}Abd^{4}x^{2}+\frac{1}{7}\left(4\,Bcde^{3}+(Bb+Ac)e^{4}\right)x^{7}+\frac{1}{6}\left(6\,Bcd^{2}e^{2}+Abe^{4}+4\,(Bb+Ac)de^{3}\right)x^{6}+\frac{2}{5}(2\,Bcd^{3}e+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/2*A*b*d^4*x^2 + 1/7*(4*B*c*d*e^3 + (B*b + A*c)*e^4)*x^7
 + 1/6*(6*B*c*d^2*e^2 + A*b*e^4 + 4*(B*b + A*c)*d*e^3)*x^6 + 2/5*(2*B*c*d^3
*e + 2*A*b*d*e^3 + 3*(B*b + A*c)*d^2*e^2)*x^5 + 1/4*(B*c*d^4 + 6*A*b*d^2*e^
2 + 4*(B*b + A*c)*d^3*e)*x^4 + 1/3*(4*A*b*d^3*e + (B*b + A*c)*d^4)*x^3
```

mupad [**B**] time = 0.10, size = 182, normalized size = 1.54

$$x^{4}\left(\frac{B\,c\,d^{4}}{4}+A\,c\,d^{3}\,e+B\,b\,d^{3}\,e+\frac{3\,A\,b\,d^{2}\,e^{2}}{2}\right)+x^{6}\left(\frac{A\,b\,e^{4}}{6}+\frac{2\,A\,c\,d\,e^{3}}{3}+\frac{2\,B\,b\,d\,e^{3}}{3}+B\,c\,d^{2}\,e^{2}\right)+x^{3}(\frac{A\,c\,d^{4}}{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^4*((B*c*d^4)/4 + A*c*d^3*e + B*b*d^3*e + (3*A*b*d^2*e^2)/2) + x^6*((A*b*e
^4)/6 + (2*A*c*d*e^3)/3 + (2*B*b*d*e^3)/3 + B*c*d^2*e^2) + x^3*((A*c*d^4)/3
 + (B*b*d^4)/3 + (4*A*b*d^3*e)/3) + x^7*((A*c*e^4)/7 + (B*b*e^4)/7 + (4*B*c
*d*e^3)/7) + (2*d*e*x^5*(2*A*b*e^2 + 2*B*c*d^2 + 3*A*c*d*e + 3*B*b*d*e))/5
+ (A*b*d^4*x^2)/2 + (B*c*e^4*x^8)/8
```

sympy [B] time = 0.10, size = 230, normalized size = 1.95

$$\frac{Abd^4x^2}{2}+\frac{Bce^4x^8}{8}+x^7\left(\frac{Ace^4}{7}+\frac{Bbe^4}{7}+\frac{4Bcde^3}{7}\right)+x^6\left(\frac{Abe^4}{6}+\frac{2Acde^3}{3}+\frac{2Bbde^3}{3}+Bcd^2e^2\right)+x^5\left(\frac{4Abde^3}{5}+\frac{6Acd^2}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x),x)
```

```
[Out] A*b*d**4*x**2/2 + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + B*b*e**4/7 + 4*B*c*d
*e**3/7) + x**6*(A*b*e**4/6 + 2*A*c*d*e**3/3 + 2*B*b*d*e**3/3 + B*c*d**2*e*
*2) + x**5*(4*A*b*d*e**3/5 + 6*A*c*d**2*e**2/5 + 6*B*b*d**2*e**2/5 + 4*B*c*
d**3*e/5) + x**4*(3*A*b*d**2*e**2/2 + A*c*d**3*e + B*b*d**3*e + B*c*d**4/4)
 + x**3*(4*A*b*d**3*e/3 + A*c*d**4/3 + B*b*d**4/3)
```

3.1104 $\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=118

$$-\frac{(d+ex)^6(-Ace-bBe+3Bcd)}{6e^4}+\frac{(d+ex)^5(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{d(d+ex)^4(Bd-Ae)(cd-be)}{4e^4}+Bc($$

```
[Out] -1/4*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^4/e^4+1/5*(B*d*(-2*b*e+3*c*d)-A*e*(-b*
e+2*c*d))*(e*x+d)^5/e^4-1/6*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^6/e^4+1/7*B*c*(e
*x+d)^7/e^4
```

Rubi [A] time = 0.14, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$-\frac{(d+ex)^6(-Ace-bBe+3Bcd)}{6e^4}+\frac{(d+ex)^5(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{d(d+ex)^4(Bd-Ae)(cd-be)}{4e^4}+Bc($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2),x]
```

```
[Out] -(d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^4)/(4*e^4) + ((B*d*(3*c*d - 2*b*e) -
A*e*(2*c*d - b*e))*(d + e*x)^5)/(5*e^4) - ((3*B*c*d - b*B*e - A*c*e)*(d + e
*x)^6)/(6*e^4) + (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^3}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d-}{e^3}\right.\\ &= -\frac{d(Bd-Ae)(cd-be)(d+ex)^4}{4e^4}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+ex}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 135, normalized size = 1.14

$$\frac{1}{3}d^2x^3(3Abe+Acd+bBd)+\frac{1}{6}e^2x^6(Ace+bBe+3Bcd)+\frac{1}{5}ex^5(Ae(be+3cd)+3Bd(be+cd))+\frac{1}{4}dx^4(3Ae(be+cd)+Bd(3$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^3*x^2)/2 + (d^2*(b*B*d + A*c*d + 3*A*b*e)*x^3)/3 + (d*(3*A*e*(c*d +
b*e) + B*d*(c*d + 3*b*e))*x^4)/4 + (e*(3*B*d*(c*d + b*e) + A*e*(3*c*d + b*e
))*x^5)/5 + (e^2*(3*B*c*d + b*B*e + A*c*e)*x^6)/6 + (B*c*e^3*x^7)/7
```

fricas [A] time = 0.80, size = 168, normalized size = 1.42

$$\frac{1}{7}x^7e^3cB+\frac{1}{2}x^6e^2dcB+\frac{1}{6}x^6e^3bB+\frac{1}{6}x^6e^3cA+\frac{3}{5}x^5ed^2cB+\frac{3}{5}x^5e^2dbB+\frac{3}{5}x^5e^2dcA+\frac{1}{5}x^5e^3bA+\frac{1}{4}x^4d^3cB+\frac{3}{4}x^4ed^2bB+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*b*B + 1/6*x^6*e^3*c*A + 3
/5*x^5*e*d^2*c*B + 3/5*x^5*e^2*d*b*B + 3/5*x^5*e^2*d*c*A + 1/5*x^5*e^3*b*A
+ 1/4*x^4*d^3*c*B + 3/4*x^4*e*d^2*b*B + 3/4*x^4*e*d^2*c*A + 3/4*x^4*e^2*d*b
*A + 1/3*x^3*d^3*b*B + 1/3*x^3*d^3*c*A + x^3*e*d^2*b*A + 1/2*x^2*d^3*b*A
```

giac [A] time = 0.16, size = 164, normalized size = 1.39

$$\frac{1}{7}\,Bcx^7e^3+\frac{1}{2}\,Bcdx^6e^2+\frac{3}{5}\,Bcd^2x^5e+\frac{1}{4}\,Bcd^3x^4+\frac{1}{6}\,Bbx^6e^3+\frac{1}{6}\,Acx^6e^3+\frac{3}{5}\,Bbdx^5e^2+\frac{3}{5}\,Acdx^5e^2+\frac{3}{4}\,Bbd^2x^4e+\frac{3}{4}\,Acd^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*B*b*x^6*e^3 + 1/6*A*c*x^6*e^3 + 3/5*B*b*d*x^5*e^2 + 3/5*A*c*d*x^5*e^2
+ 3/4*B*b*d^2*x^4*e + 3/4*A*c*d^2*x^4*e + 1/3*B*b*d^3*x^3 + 1/3*A*c*d^3*x^3
 + 1/5*A*b*x^5*e^3 + 3/4*A*b*d*x^4*e^2 + A*b*d^2*x^3*e + 1/2*A*b*d^3*x^2
```

maple [A] time = 0.05, size = 152, normalized size = 1.29

$$\frac{Bc\,e^3x^7}{7}+\frac{Ab\,d^3x^2}{2}+\frac{\left(Bb\,e^3+\left(A\,e^3+3Bd\,e^2\right)c\right)x^6}{6}+\frac{\left(\left(A\,e^3+3Bd\,e^2\right)b+\left(3Ad\,e^2+3B\,d^2e\right)c\right)x^5}{5}+\frac{\left(\left(3Ad\,e^2+3B\,d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*((A*e^3+3*B*d*e^2)*c+B*e^3*b)*x^6+1/5*((3*A*d*e^2+3*B*d
^2*e)*c+(A*e^3+3*B*d*e^2)*b)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(3*A*d*e^2+3*B*d^
2*e)*b)*x^4+1/3*(A*d^3*c+(3*A*d^2*e+B*d^3)*b)*x^3+1/2*A*d^3*b*x^2
```

maxima [A] time = 0.61, size = 137, normalized size = 1.16

$$\frac{1}{7}\,Bce^3x^7+\frac{1}{2}\,Abd^3x^2+\frac{1}{6}\,\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^6+\frac{1}{5}\,\left(3\,Bcd^2e+Abe^3+3\,(Bb+Ac)de^2\right)x^5+\frac{1}{4}\,\left(Bcd^3+3\,Abde^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/2*A*b*d^3*x^2 + 1/6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^6
 + 1/5*(3*B*c*d^2*e + A*b*e^3 + 3*(B*b + A*c)*d*e^2)*x^5 + 1/4*(B*c*d^3 + 3
*A*b*d*e^2 + 3*(B*b + A*c)*d^2*e)*x^4 + 1/3*(3*A*b*d^2*e + (B*b + A*c)*d^3)
*x^3
```

mupad [B] time = 1.37, size = 146, normalized size = 1.24

$$x^3\,\left(\frac{A\,c\,d^3}{3}+\frac{B\,b\,d^3}{3}+A\,b\,d^2\,e\right)+x^6\,\left(\frac{A\,c\,e^3}{6}+\frac{B\,b\,e^3}{6}+\frac{B\,c\,d\,e^2}{2}\right)+x^4\,\left(\frac{B\,c\,d^3}{4}+\frac{3\,A\,b\,d\,e^2}{4}+\frac{3\,A\,c\,d^2\,e}{4}+\frac{3\,B\,b\,d^2\,e}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^3*((A*c*d^3)/3 + (B*b*d^3)/3 + A*b*d^2*e) + x^6*((A*c*e^3)/6 + (B*b*e^3)/
6 + (B*c*d*e^2)/2) + x^4*((B*c*d^3)/4 + (3*A*b*d*e^2)/4 + (3*A*c*d^2*e)/4 +
 (3*B*b*d^2*e)/4) + x^5*((A*b*e^3)/5 + (3*A*c*d*e^2)/5 + (3*B*b*d*e^2)/5 +
(3*B*c*d^2*e)/5) + (A*b*d^3*x^2)/2 + (B*c*e^3*x^7)/7
```

sympy [A] time = 0.09, size = 177, normalized size = 1.50

$$\frac{Abd^3x^2}{2}+\frac{Bce^3x^7}{7}+x^6\left(\frac{Ace^3}{6}+\frac{Bbe^3}{6}+\frac{Bcde^2}{2}\right)+x^5\left(\frac{Abe^3}{5}+\frac{3Acde^2}{5}+\frac{3Bbde^2}{5}+\frac{3Bcd^2e}{5}\right)+x^4\left(\frac{3Abde^2}{4}+\frac{3Acd^2e}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x),x)
```

```
[Out] A*b*d**3*x**2/2 + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*b*e**3/6 + B*c*d*e
**2/2) + x**5*(A*b*e**3/5 + 3*A*c*d*e**2/5 + 3*B*b*d*e**2/5 + 3*B*c*d**2*e/
5) + x**4*(3*A*b*d*e**2/4 + 3*A*c*d**2*e/4 + 3*B*b*d**2*e/4 + B*c*d**3/4) +
 x**3*(A*b*d**2*e + A*c*d**3/3 + B*b*d**3/3)
```

3.1105 $\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=99

$$\frac{1}{5}ex^5(Ace+bBe+2Bcd)+\frac{1}{4}x^4(Ae(be+2cd)+Bd(2be+cd))+\frac{1}{3}dx^3(2Abe+Acd+bBd)+\frac{1}{2}Abd^2x^2+\frac{1}{6}Bce^2x^6$$

```
[Out] 1/2*A*b*d^2*x^2+1/3*d*(2*A*b*e+A*c*d+B*b*d)*x^3+1/4*(A*e*(b*e+2*c*d)+B*d*(2
*b*e+c*d))*x^4+1/5*e*(A*c*e+B*b*e+2*B*c*d)*x^5+1/6*B*c*e^2*x^6
```

Rubi [A] time = 0.10, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$\frac{1}{5}ex^5(Ace+bBe+2Bcd)+\frac{1}{4}x^4(Ae(be+2cd)+Bd(2be+cd))+\frac{1}{3}dx^3(2Abe+Acd+bBd)+\frac{1}{2}Abd^2x^2+\frac{1}{6}Bce^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2),x]
```

```
[Out] (A*b*d^2*x^2)/2 + (d*(b*B*d + A*c*d + 2*A*b*e)*x^3)/3 + ((A*e*(2*c*d + b*e)
 + B*d*(c*d + 2*b*e))*x^4)/4 + (e*(2*B*c*d + b*B*e + A*c*e)*x^5)/5 + (B*c*e
^2*x^6)/6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)\,dx = \int \left(Abd^2x + d(bBd+Acd+2Abe)x^2 + (Ae(2cd+be)+Bd(cd+2be))x^3 +\right.$$
$$= \frac{1}{2}Abd^2x^2 + \frac{1}{3}d(bBd+Acd+2Abe)x^3 + \frac{1}{4}(Ae(2cd+be)+Bd(cd+2be))x^4$$

Mathematica [A] time = 0.04, size = 91, normalized size = 0.92

$$\frac{1}{60}x^2\left(12ex^3(Ace+bBe+2Bcd)+15x^2(Ae(be+2cd)+Bd(2be+cd))+20dx(2Abe+Acd+bBd)+30Abd^2+1\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2),x]
```

```
[Out] (x^2*(30*A*b*d^2 + 20*d*(b*B*d + A*c*d + 2*A*b*e)*x + 15*(A*e*(2*c*d + b*e)
 + B*d*(c*d + 2*b*e))*x^2 + 12*e*(2*B*c*d + b*B*e + A*c*e)*x^3 + 10*B*c*e^2
*x^4))/60
```

fricas [A] time = 0.57, size = 117, normalized size = 1.18

$$\frac{1}{6}x^6e^2cB+\frac{2}{5}x^5edcB+\frac{1}{5}x^5e^2bB+\frac{1}{5}x^5e^2cA+\frac{1}{4}x^4d^2cB+\frac{1}{2}x^4edbB+\frac{1}{2}x^4edcA+\frac{1}{4}x^4e^2bA+\frac{1}{3}x^3d^2bB+\frac{1}{3}x^3d^2cA+\frac{2}{3}x^3edb$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*b*B + 1/5*x^5*e^2*c*A + 1/4
*x^4*d^2*c*B + 1/2*x^4*e*d*b*B + 1/2*x^4*e*d*c*A + 1/4*x^4*e^2*b*A + 1/3*x^
3*d^2*b*B + 1/3*x^3*d^2*c*A + 2/3*x^3*e*d*b*A + 1/2*x^2*d^2*b*A
```

giac [A] time = 0.16, size = 117, normalized size = 1.18

$$\frac{1}{6}Bcx^6e^2+\frac{2}{5}Bcdx^5e+\frac{1}{4}Bcd^2x^4+\frac{1}{5}Bbx^5e^2+\frac{1}{5}Acx^5e^2+\frac{1}{2}Bbdx^4e+\frac{1}{2}Acdx^4e+\frac{1}{3}Bbd^2x^3+\frac{1}{3}Acd^2x^3+\frac{1}{4}Abx^4e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*B*b*x^5*e^2 + 1/5
*A*c*x^5*e^2 + 1/2*B*b*d*x^4*e + 1/2*A*c*d*x^4*e + 1/3*B*b*d^2*x^3 + 1/3*A*
c*d^2*x^3 + 1/4*A*b*x^4*e^2 + 2/3*A*b*d*x^3*e + 1/2*A*b*d^2*x^2
```

maple [A] time = 0.05, size = 104, normalized size = 1.05

$$\frac{Bc\,e^2x^6}{6}+\frac{Ab\,d^2x^2}{2}+\frac{\left(Bb\,e^2+\left(A\,e^2+2Bde\right)c\right)x^5}{5}+\frac{\left(\left(A\,e^2+2Bde\right)b+\left(2Ade+B\,d^2\right)c\right)x^4}{4}+\frac{\left(Ac\,d^2+\left(2Ade+\right.\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*((A*e^2+2*B*d*e)*c+B*e^2*b)*x^5+1/4*((2*A*d*e+B*d^2)*c+
(A*e^2+2*B*d*e)*b)*x^4+1/3*(A*c*d^2+(2*A*d*e+B*d^2)*b)*x^3+1/2*A*b*d^2*x^2
```

maxima [A] time = 0.52, size = 96, normalized size = 0.97

$$\frac{1}{6}Bce^2x^6+\frac{1}{2}Abd^2x^2+\frac{1}{5}\left(2\,Bcde+(Bb+Ac)e^2\right)x^5+\frac{1}{4}\left(Bcd^2+Abe^2+2\,(Bb+Ac)de\right)x^4+\frac{1}{3}\left(2\,Abde+(Bb+A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/2*A*b*d^2*x^2 + 1/5*(2*B*c*d*e + (B*b + A*c)*e^2)*x^5 +
 1/4*(B*c*d^2 + A*b*e^2 + 2*(B*b + A*c)*d*e)*x^4 + 1/3*(2*A*b*d*e + (B*b +
A*c)*d^2)*x^3
```

mupad [B] time = 0.05, size = 102, normalized size = 1.03

$$x^4\left(\frac{A\,b\,e^2}{4}+\frac{B\,c\,d^2}{4}+\frac{A\,c\,d\,e}{2}+\frac{B\,b\,d\,e}{2}\right)+x^3\left(\frac{A\,c\,d^2}{3}+\frac{B\,b\,d^2}{3}+\frac{2\,A\,b\,d\,e}{3}\right)+x^5\left(\frac{A\,c\,e^2}{5}+\frac{B\,b\,e^2}{5}+\frac{2\,B\,c\,d\,e}{5}\right)+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^4*((A*b*e^2)/4 + (B*c*d^2)/4 + (A*c*d*e)/2 + (B*b*d*e)/2) + x^3*((A*c*d^2
)/3 + (B*b*d^2)/3 + (2*A*b*d*e)/3) + x^5*((A*c*e^2)/5 + (B*b*e^2)/5 + (2*B*
c*d*e)/5) + (A*b*d^2*x^2)/2 + (B*c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 121, normalized size = 1.22

$$\frac{Abd^2x^2}{2}+\frac{Bce^2x^6}{6}+x^5\left(\frac{Ace^2}{5}+\frac{Bbe^2}{5}+\frac{2Bcde}{5}\right)+x^4\left(\frac{Abe^2}{4}+\frac{Acde}{2}+\frac{Bbde}{2}+\frac{Bcd^2}{4}\right)+x^3\left(\frac{2Abde}{3}+\frac{Acd^2}{3}+\frac{Bb}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x),x)
```

```
[Out] A*b*d**2*x**2/2 + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + B*b*e**2/5 + 2*B*c*d
*e/5) + x**4*(A*b*e**2/4 + A*c*d*e/2 + B*b*d*e/2 + B*c*d**2/4) + x**3*(2*A*
b*d*e/3 + A*c*d**2/3 + B*b*d**2/3)
```

3.1106 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=61

$$\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{3}x^3(Abe+Acd+bBd)+\frac{1}{2}Abdx^2+\frac{1}{5}Bcex^5$$

```
[Out] 1/2*A*b*d*x^2+1/3*(A*b*e+A*c*d+B*b*d)*x^3+1/4*(A*c*e+B*b*e+B*c*d)*x^4+1/5*B
*c*e*x^5
```

Rubi [A] time = 0.06, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {771}

$$\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{3}x^3(Abe+Acd+bBd)+\frac{1}{2}Abdx^2+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*d*x^2)/2 + ((b*B*d + A*c*d + A*b*e)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*
x^4)/4 + (B*c*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(bx+cx^2\right)\,dx&=\int \left(Abdx+(bBd+Acd+Abe)x^2+(Bcd+bBe+Ace)x^3+Bcex^4\right)\,dx\\&=\frac{1}{2}Abdx^2+\frac{1}{3}(bBd+Acd+Abe)x^3+\frac{1}{4}(Bcd+bBe+Ace)x^4+\frac{1}{5}Bcex^5\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.90

$$\frac{1}{60}x^2\left(15x^2(Ace+bBe+Bcd)+20x(Abe+Acd+bBd)+30Abd+12Bcex^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(30*A*b*d + 20*(b*B*d + A*c*d + A*b*e)*x + 15*(B*c*d + b*B*e + A*c*e)*
x^2 + 12*B*c*e*x^3))/60
```

fricas [A] time = 0.46, size = 65, normalized size = 1.07

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ebB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3dbB+\frac{1}{3}x^3dcA+\frac{1}{3}x^3ebA+\frac{1}{2}x^2dbA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*b*B + 1/4*x^4*e*c*A + 1/3*x^3*d*b
*B + 1/3*x^3*d*c*A + 1/3*x^3*e*b*A + 1/2*x^2*d*b*A
```

giac [**A**] time = 0.15, size = 69, normalized size = 1.13

$$\frac{1}{5}\,Bcx^5e+\frac{1}{4}\,Bcdx^4+\frac{1}{4}\,Bbx^4e+\frac{1}{4}\,Acx^4e+\frac{1}{3}\,Bbdx^3+\frac{1}{3}\,Acdx^3+\frac{1}{3}\,Abx^3e+\frac{1}{2}\,Abdx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*B*b*x^4*e + 1/4*A*c*x^4*e + 1/3*B*b*d*x
^3 + 1/3*A*c*d*x^3 + 1/3*A*b*x^3*e + 1/2*A*b*d*x^2
```

maple [**A**] time = 0.04, size = 56, normalized size = 0.92

$$\frac{Bce\,x^5}{5}+\frac{Abd\,x^2}{2}+\frac{(Bbe+(Ae+Bd)\,c)\,x^4}{4}+\frac{(Acd+(Ae+Bd)\,b)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x),x)
```

```
[Out] 1/5*B*c*e*x^5+1/4*(c*(A*e+B*d)+b*B*e)*x^4+1/3*(A*c*d+b*(A*e+B*d))*x^3+1/2*A
*b*d*x^2
```

maxima [**A**] time = 0.56, size = 55, normalized size = 0.90

$$\frac{1}{5}\,Bcex^5+\frac{1}{2}\,Abdx^2+\frac{1}{4}\,(Bcd+(Bb+Ac)e)x^4+\frac{1}{3}\,(Abe+(Bb+Ac)d)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/2*A*b*d*x^2 + 1/4*(B*c*d + (B*b + A*c)*e)*x^4 + 1/3*(A*b*
e + (B*b + A*c)*d)*x^3
```

mupad [**B**] time = 1.35, size = 57, normalized size = 0.93

$$\frac{B\,c\,e\,x^5}{5}+\left(\frac{A\,c\,e}{4}+\frac{B\,b\,e}{4}+\frac{B\,c\,d}{4}\right)\,x^4+\left(\frac{A\,b\,e}{3}+\frac{A\,c\,d}{3}+\frac{B\,b\,d}{3}\right)\,x^3+\frac{A\,b\,d\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((A*b*e)/3 + (A*c*d)/3 + (B*b*d)/3) + x^4*((A*c*e)/4 + (B*b*e)/4 + (B*c
*d)/4) + (A*b*d*x^2)/2 + (B*c*e*x^5)/5
```

sympy [**A**] time = 0.07, size = 66, normalized size = 1.08

$$\frac{Abdx^2}{2}+\frac{Bcex^5}{5}+x^4\left(\frac{Ace}{4}+\frac{Bbe}{4}+\frac{Bcd}{4}\right)+x^3\left(\frac{Abe}{3}+\frac{Acd}{3}+\frac{Bbd}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x),x)
```

```
[Out] A*b*d*x**2/2 + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*b*e/4 + B*c*d/4) + x**3*(A*
b*e/3 + A*c*d/3 + B*b*d/3)
```

3.1107 $\int (A+Bx)\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=33

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

```
[Out] 1/2*A*b*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

Rubi [A] time = 0.02, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.067, Rules used = {631}

$$\frac{1}{3}x^3(Ac+bB)+\frac{1}{2}Abx^2+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (A*b*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)\,dx &= \int \left(Abx+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= \frac{1}{2}Abx^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.00, size = 29, normalized size = 0.88

$$\frac{1}{12}x^2(A(6b+4cx)+Bx(4b+3cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2),x]
```

```
[Out] (x^2*(B*x*(4*b + 3*c*x) + A*(6*b + 4*c*x)))/12
```

fricas [A] time = 0.88, size = 29, normalized size = 0.88

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2bA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*b*A
```

giac [A] time = 0.15, size = 29, normalized size = 0.88

$$\frac{1}{4}Bcx^4+\frac{1}{3}Bbx^3+\frac{1}{3}Acx^3+\frac{1}{2}Abx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*A*b*x^2
```

maple [A] time = 0.04, size = 28, normalized size = 0.85

$$\frac{Bc\,x^4}{4}+\frac{Ab\,x^2}{2}+\frac{(Ac+bB)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x),x)
```

```
[Out] 1/4*B*c*x^4+1/2*A*b*x^2+1/3*(A*c+B*b)*x^3
```

maxima [A] time = 0.58, size = 27, normalized size = 0.82

$$\frac{1}{4}\,Bcx^4+\frac{1}{2}\,Abx^2+\frac{1}{3}\,(Bb+Ac)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/2*A*b*x^2 + 1/3*(B*b + A*c)*x^3
```

mupad [B] time = 1.34, size = 28, normalized size = 0.85

$$\frac{B\,c\,x^4}{4}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^3+\frac{A\,b\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x),x)
```

```
[Out] x^3*((A*c)/3 + (B*b)/3) + (A*b*x^2)/2 + (B*c*x^4)/4
```

sympy [A] time = 0.07, size = 29, normalized size = 0.88

$$\frac{Abx^2}{2}+\frac{Bcx^4}{4}+x^3\left(\frac{Ac}{3}+\frac{Bb}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x),x)
```

```
[Out] A*b*x**2/2 + B*c*x**4/4 + x**3*(A*c/3 + B*b/3)
```

3.1108 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{d+ex}\,dx$

Optimal. Leaf size=87

$$-\frac{d(Bd-Ae)(cd-be)\log(d+ex)}{e^4}+\frac{x(Bd-Ae)(cd-be)}{e^3}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bcx^3}{3e}$$

```
[Out] (-A*e+B*d)*(-b*e+c*d)*x/e^3-1/2*(-A*c*e-B*b*e+B*c*d)*x^2/e^2+1/3*B*c*x^3/e-
d*(-A*e+B*d)*(-b*e+c*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.10, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{x(Bd-Ae)(cd-be)}{e^3}-\frac{d(Bd-Ae)(cd-be)\log(d+ex)}{e^4}+\frac{Bcx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*d - A*e)*(c*d - b*e)*x)/e^3 - ((B*c*d - b*B*e - A*c*e)*x^2)/(2*e^2) + (
B*c*x^3)/(3*e) - (d*(B*d - A*e)*(c*d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{(-Bd+Ae)(-cd+be)}{e^3}+\frac{(-Bcd+bBe+Ace)x}{e^2}+\frac{Bcx^2}{e}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)}\right)\\ &= \frac{(Bd-Ae)(cd-be)x}{e^3}-\frac{(Bcd-bBe-Ace)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{d(Bd-Ae)(cd-be)\log(d+}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 88, normalized size = 1.01

$$\frac{ex\left(3Ae(2be-2cd+cex)+3bBe(ex-2d)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6d(Bd-Ae)(cd-be)\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*b*B*e*(-2*d + e*x) + 3*A*e*(-2*c*d + 2*b*e + c*e*x) + B*c*(6*d^2 -
3*d*e*x + 2*e^2*x^2)) - 6*d*(B*d - A*e)*(c*d - b*e)*Log[d + e*x])/(6*e^4)
```

fricas [A] time = 0.69, size = 106, normalized size = 1.22

$$\frac{2\,Bce^3x^3-3\left(Bcde^2-(Bb+Ac)e^3\right)x^2+6\left(Bcd^2e+Abe^3-(Bb+Ac)de^2\right)x-6\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)\mathrm{lc}}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + A
*b*e^3 - (B*b + A*c)*d*e^2)*x - 6*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)
*log(e*x + d))/e^4
```

giac [A] time = 0.16, size = 117, normalized size = 1.34

$$-\left(Bcd^3 - Bbd^2e - Acd^2e + Abde^2\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bcx^3e^2 - 3\,Bcdx^2e + 6\,Bcd^2x + 3\,Bbx^2e^2 + 3\,Acx^2e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + A*b*d*e^2)*e^(-4)*log(abs(x*e + d)) + 1
/6*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*B*b*x^2*e^2 + 3*A*c*x^2
*e^2 - 6*B*b*d*x*e - 6*A*c*d*x*e + 6*A*b*x*e^2)*e^(-3)
```

maple [A] time = 0.04, size = 138, normalized size = 1.59

$$\frac{Bc\,x^3}{3e}+\frac{Ac\,x^2}{2e}+\frac{Bb\,x^2}{2e}-\frac{Bcd\,x^2}{2e^2}-\frac{Abd\ln(ex+d)}{e^2}+\frac{Abx}{e}+\frac{Ac\,d^2\ln(ex+d)}{e^3}-\frac{Acdx}{e^2}+\frac{Bb\,d^2\ln(ex+d)}{e^3}-\frac{Bbdx}{e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d),x)
```

```
[Out] 1/3*B*c*x^3/e+1/2/e*A*x^2*c+1/2/e*B*x^2*b-1/2/e^2*B*x^2*c*d+1/e*A*x*b-1/e^2
*A*x*c*d-1/e^2*B*x*b*d+1/e^3*B*x*c*d^2-d/e^2*ln(e*x+d)*A*b+d^2/e^3*ln(e*x+d
)*A*c+d^2/e^3*ln(e*x+d)*B*b-d^3/e^4*ln(e*x+d)*B*c
```

maxima [A] time = 0.54, size = 105, normalized size = 1.21

$$\frac{2\,Bce^2x^3-3\left(Bcde-(Bb+Ac)e^2\right)x^2+6\left(Bcd^2+Abe^2-(Bb+Ac)de\right)x}{6\,e^3}-\frac{\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)\log}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - (B*b + A*c)*e^2)*x^2 + 6*(B*c*d^2 + A*b*e
^2 - (B*b + A*c)*d*e)*x)/e^3 - (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*lo
g(e*x + d)/e^4
```

mupad [B] time = 0.08, size = 113, normalized size = 1.30

$$x^2\left(\frac{A\,c+B\,b}{2\,e}-\frac{B\,c\,d}{2\,e^2}\right)-x\left(\frac{d\left(\frac{A\,c+B\,b}{e}-\frac{B\,c\,d}{e^2}\right)}{e}-\frac{A\,b}{e}\right)-\frac{\ln(d+e\,x)\left(B\,c\,d^3+A\,b\,d\,e^2-A\,c\,d^2\,e-B\,b\,d^2\,e\right)}{e^4}+\frac{B\,c}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((A*c + B*b)/(2*e) - (B*c*d)/(2*e^2)) - x*((d*((A*c + B*b)/e - (B*c*d)/
e^2))/e - (A*b)/e) - (log(d + e*x)*(B*c*d^3 + A*b*d*e^2 - A*c*d^2*e - B*b*d
^2*e))/e^4 + (B*c*x^3)/(3*e)
```

sympy [A] time = 0.34, size = 95, normalized size = 1.09

$$\frac{Bcx^3}{3e}+\frac{d\,(-Ae+Bd)\,(be-cd)\log(d+ex)}{e^4}+x^2\left(\frac{Ac}{2e}+\frac{Bb}{2e}-\frac{Bcd}{2e^2}\right)+x\left(\frac{Ab}{e}-\frac{Acd}{e^2}-\frac{Bbd}{e^2}+\frac{Bcd^2}{e^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + d*(-A*e + B*d)*(b*e - c*d)*log(d + e*x)/e**4 + x**2*(A*c/(
2*e) + B*b/(2*e) - B*c*d/(2*e**2)) + x*(A*b/e - A*c*d/e**2 - B*b*d/e**2 + B
*c*d**2/e**3)
```

3.1109 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=99

$$\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{\log(d+ex)(Bd(3cd-2be)-Ae(2cd-be))}{e^4}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx^2}{2e^2}$$

```
[Out] -(-A*c*e-B*b*e+2*B*c*d)*x/e^3+1/2*B*c*x^2/e^2+d*(-A*e+B*d)*(-b*e+c*d)/e^4/(
e*x+d)+(B*d*(-2*b*e+3*c*d)-A*e*(-b*e+2*c*d))*ln(e*x+d)/e^4
```

Rubi [A] time = 0.11, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{\log(d+ex)(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -(((2*B*c*d - b*B*e - A*c*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + (d*(B*d - A*e)*(
c*d - b*e))/(e^4*(d + e*x)) + ((B*d*(3*c*d - 2*b*e) - A*e*(2*c*d - b*e))*Lo
g[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^2}\,dx = \int \left(\frac{-2Bcd+bBe+Ace}{e^3}+\frac{Bcx}{e^2}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^2}+\frac{Bd(3cd-2be)-Ae(2cd}{e^3(d+ex)}\right.$$

$$= -\frac{(2Bcd-bBe-Ace)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{d(Bd-Ae)(cd-be)}{e^4(d+ex)}+\frac{(Bd(3cd-2be)-Ae(2c}{e^4}$$

Mathematica [A] time = 0.08, size = 93, normalized size = 0.94

$$\frac{2ex(Ace+bBe-2Bcd)+\frac{2d(Bd-Ae)(cd-be)}{d+ex}+2\log(d+ex)(Ae(be-2cd)+Bd(3cd-2be))+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*B*c*d + b*B*e + A*c*e)*x + B*c*e^2*x^2 + (2*d*(B*d - A*e)*(c*d - b
*e))/(d + e*x) + 2*(B*d*(3*c*d - 2*b*e) + A*e*(-2*c*d + b*e))*Log[d + e*x])
/(2*e^4)
```

fricas [A] time = 0.85, size = 170, normalized size = 1.72

$$\frac{Bce^3x^3+2\,Bcd^3+2\,Abde^2-2\,(Bb+Ac)d^2e-\left(3\,Bcde^2-2\,(Bb+Ac)e^3\right)x^2-2\left(2\,Bcd^2e-(Bb+Ac)de^2\right)x+2}{2\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 + 2*A*b*d*e^2 - 2*(B*b + A*c)*d^2*e - (3*B*c*d
*e^2 - 2*(B*b + A*c)*e^3)*x^2 - 2*(2*B*c*d^2*e - (B*b + A*c)*d*e^2)*x + 2*(
3*B*c*d^3 + A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + (3*B*c*d^2*e + A*b*e^3 - 2*(B
*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A]   time = 0.16, size = 167, normalized size = 1.69

$$\frac{1}{2}\left(Bc - \frac{2\left(3\,Bcde - Bbe^2 - Ace^2\right)e^{(-1)}}{xe+d}\right)(xe+d)^2e^{(-4)} - \left(3\,Bcd^2 - 2\,Bbde - 2\,Acde + Abe^2\right)e^{(-4)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*
e^(-4) - (3*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e + A*b*e^2)*e^(-4)*log(abs(x*e +
 d)*e^(-1)/(x*e + d)^2) + (B*c*d^3*e^2/(x*e + d) - B*b*d^2*e^3/(x*e + d) -
A*c*d^2*e^3/(x*e + d) + A*b*d*e^4/(x*e + d))*e^(-6)
```

maple [A]   time = 0.06, size = 155, normalized size = 1.57

$$\frac{Bc\,x^2}{2e^2} + \frac{Abd}{(ex+d)\,e^2} + \frac{Ab\ln(ex+d)}{e^2} - \frac{Ac\,d^2}{(ex+d)\,e^3} - \frac{2Acd\ln(ex+d)}{e^3} + \frac{Acx}{e^2} - \frac{Bb\,d^2}{(ex+d)\,e^3} - \frac{2Bbd\ln(ex+d)}{e^3} + \frac{Bbx}{e^2} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c*x^2/e^2+1/e^2*A*c*x+1/e^2*B*b*x-2/e^3*B*c*d*x+d/e^2/(e*x+d)*A*b-d^2
/e^3/(e*x+d)*A*c-d^2/e^3/(e*x+d)*B*b+d^3/e^4/(e*x+d)*B*c+1/e^2*ln(e*x+d)*A*
b-2/e^3*ln(e*x+d)*A*c*d-2/e^3*ln(e*x+d)*B*b*d+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [A]   time = 0.61, size = 109, normalized size = 1.10

$$\frac{Bcd^3 + Abde^2 - (Bb + Ac)d^2e}{e^5x + de^4} + \frac{Bcex^2 - 2\,(2\,Bcd - (Bb + Ac)e)x}{2\,e^3} + \frac{\left(3\,Bcd^2 + Abe^2 - 2\,(Bb + Ac)de\right)\log(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)/(e^5*x + d*e^4) + 1/2*(B*c*e*x^2
- 2*(2*B*c*d - (B*b + A*c)*e)*x)/e^3 + (3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)
*d*e)*log(e*x + d)/e^4
```

mupad [B]   time = 1.39, size = 116, normalized size = 1.17

$$x\left(\frac{A\,c + B\,b}{e^2} - \frac{2\,B\,c\,d}{e^3}\right) + \frac{\ln(d + e\,x)\,\left(A\,b\,e^2 + 3\,B\,c\,d^2 - 2\,A\,c\,d\,e - 2\,B\,b\,d\,e\right)}{e^4} + \frac{B\,c\,d^3 + A\,b\,d\,e^2 - A\,c\,d^2\,e - B\,b\,d^2}{e\,\left(x\,e^4 + d\,e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*c + B*b)/e^2 - (2*B*c*d)/e^3) + (log(d + e*x)*(A*b*e^2 + 3*B*c*d^2 -
2*A*c*d*e - 2*B*b*d*e))/e^4 + (B*c*d^3 + A*b*d*e^2 - A*c*d^2*e - B*b*d^2*e)
/(e*(d*e^3 + e^4*x)) + (B*c*x^2)/(2*e^2)
```

sympy [**A**] time = 0.66, size = 121, normalized size = 1.22

$$\frac{Bcx^2}{2e^2}+x\left(\frac{Ac}{e^2}+\frac{Bb}{e^2}-\frac{2Bcd}{e^3}\right)+\frac{Abde^2-Acd^2e-Bbd^2e+Bcd^3}{de^4+e^5x}-\frac{\left(-Abe^2+2Acde+2Bbde-3Bcd^2\right)\log(d+ex}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 + B*b/e**2 - 2*B*c*d/e**3) + (A*b*d*e**2 -
A*c*d**2*e - B*b*d**2*e + B*c*d**3)/(d*e**4 + e**5*x) - (-A*b*e**2 + 2*A*c*
d*e + 2*B*b*d*e - 3*B*c*d**2)*log(d + e*x)/e**4
```

3.1110 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=104

$$\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

```
[Out] B*c*x/e^3+1/2*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^2+(-B*d*(-2*b*e+3*c*d)+A*
e*(-b*e+2*c*d))/e^4/(e*x+d)-(-A*c*e-B*b*e+3*B*c*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.11, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + (d*(B*d - A*e)*(c*d - b*e))/(2*e^4*(d + e*x)^2) - (B*d*(3*c*d
 - 2*b*e) - A*e*(2*c*d - b*e))/(e^4*(d + e*x)) - ((3*B*c*d - b*B*e - A*c*e)
*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{Bc}{e^3}-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^3}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^2}+\frac{-3Bcd+bBe+A}{e^3(d+ex)}\right.\\ &= \frac{Bcx}{e^3}+\frac{d(Bd-Ae)(cd-be)}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^4(d+ex)}-\frac{(3Bcd-bBe-Ace)\,\mathrm{l}}{e^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 96, normalized size = 0.92

$$\frac{\frac{-2Abe^2+4Acde+4bBde-6Bcd^2}{d+ex}+\frac{d(Bd-Ae)(cd-be)}{(d+ex)^2}+2\log(d+ex)(Ace+bBe-3Bcd)+2Bcex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*B*c*e*x + (d*(B*d - A*e)*(c*d - b*e))/(d + e*x)^2 + (-6*B*c*d^2 + 4*b*B*
d*e + 4*A*c*d*e - 2*A*b*e^2)/(d + e*x) + 2*(-3*B*c*d + b*B*e + A*c*e)*Log[d
 + e*x])/(2*e^4)
```

fricas [A] time = 0.66, size = 186, normalized size = 1.79

$$\frac{2\,Bce^3x^3+4\,Bcde^2x^2-5\,Bcd^3-Abde^2+3\,(Bb+Ac)d^2e-2\left(2\,Bcd^2e+Abe^3-2\,(Bb+Ac)de^2\right)x-2\left(3\,Bcd^3-(\right.}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 - A*b*d*e^2 + 3*(B*b + A*c
)*d^2*e - 2*(2*B*c*d^2*e + A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x - 2*(3*B*c*d^3
- (B*b + A*c)*d^2*e + (3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 2*(3*B*c*d^2*e
- (B*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.16, size = 113, normalized size = 1.09

$$Bcxe^{(-3)} - (3\,Bcd - Bbe - Ace)e^{(-4)}\log\left(|xe+d|\right) - \frac{(5\,Bcd^3 - 3\,Bbd^2e - 3\,Acd^2e + Abde^2 + 2\,(3\,Bcd^2e - 2\,Bbde^2}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - B*b*e - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*
B*c*d^3 - 3*B*b*d^2*e - 3*A*c*d^2*e + A*b*d*e^2 + 2*(3*B*c*d^2*e - 2*B*b*d*
e^2 - 2*A*c*d*e^2 + A*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.06, size = 174, normalized size = 1.67

$$\frac{Abd}{2\,(ex+d)^2\,e^2} - \frac{Ac\,d^2}{2\,(ex+d)^2\,e^3} - \frac{Bb\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bc\,d^3}{2\,(ex+d)^2\,e^4} - \frac{Ab}{(ex+d)\,e^2} + \frac{2Acd}{(ex+d)\,e^3} + \frac{Ac\ln(ex+d)}{e^3} + \frac{2Bbd}{(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x)
```

```
[Out] B*c*x/e^3-1/e^2/(e*x+d)*A*b+2/e^3/(e*x+d)*A*c*d+2/e^3/(e*x+d)*B*b*d-3/e^4/(
e*x+d)*B*c*d^2+1/2*d/e^2/(e*x+d)^2*A*b-1/2*d^2/e^3/(e*x+d)^2*A*c-1/2*d^2/e^
3/(e*x+d)^2*B*b+1/2*d^3/e^4/(e*x+d)^2*B*c+1/e^3*ln(e*x+d)*A*c+1/e^3*ln(e*x+
d)*B*b-3/e^4*ln(e*x+d)*B*c*d
```

maxima [A] time = 0.49, size = 120, normalized size = 1.15

$$-\frac{5\,Bcd^3 + Abde^2 - 3\,(Bb+Ac)d^2e + 2\left(3\,Bcd^2e + Abe^3 - 2\,(Bb+Ac)de^2\right)x}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)} + \frac{Bcx}{e^3} - \frac{(3\,Bcd - (Bb+Ac)e)\log{(e}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 + A*b*d*e^2 - 3*(B*b + A*c)*d^2*e + 2*(3*B*c*d^2*e + A*b*e^
3 - 2*(B*b + A*c)*d*e^2)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + B*c*x/e^3 - (
3*B*c*d - (B*b + A*c)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.11, size = 123, normalized size = 1.18

$$\frac{\ln(d+e\,x)\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^4} - \frac{x\,\left(A\,b\,e^2+3\,B\,c\,d^2-2\,A\,c\,d\,e-2\,B\,b\,d\,e\right)+\frac{5\,B\,c\,d^3+A\,b\,d\,e^2-3\,A\,c\,d^2\,e-3\,B\,b\,d^2\,e}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*c*e + B*b*e - 3*B*c*d))/e^4 - (x*(A*b*e^2 + 3*B*c*d^2 - 2*
A*c*d*e - 2*B*b*d*e) + (5*B*c*d^3 + A*b*d*e^2 - 3*A*c*d^2*e - 3*B*b*d^2*e)/
(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B*c*x)/e^3
```

sympy [**A**] time = 1.49, size = 138, normalized size = 1.33

$$\frac{Bcx}{e^3}+\frac{-Abde^2+3Acd^2e+3Bbd^2e-5Bcd^3+x\left(-2Abe^3+4Acde^2+4Bbde^2-6Bcd^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}+\frac{(Ace+Bbe-3Bcd)\log}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**3,x)
```

```
[Out] B*c*x/e**3 + (-A*b*d*e**2 + 3*A*c*d**2*e + 3*B*b*d**2*e - 5*B*c*d**3 + x*(-
2*A*b*e**3 + 4*A*c*d*e**2 + 4*B*b*d*e**2 - 6*B*c*d**2*e))/(2*d**2*e**4 + 4*
d*e**5*x + 2*e**6*x**2) + (A*c*e + B*b*e - 3*B*c*d)*log(d + e*x)/e**4
```

3.1111 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=111

$$\frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{Bc\log(d+ex)}{e^4}$$

```
[Out] 1/3*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^3+1/2*(-B*d*(-2*b*e+3*c*d)+A*e*(-b*
e+2*c*d))/e^4/(e*x+d)^2+(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d)+B*c*ln(e*x+d)/e^
4
```

Rubi [A] time = 0.11, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(3*e^4*(d + e*x)^3) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(2*e^4*(d + e*x)^2) + (3*B*c*d - b*B*e - A*c*e)/(e^4*(d +
e*x)) + (B*c*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^4}\,dx&=\int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^4}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^3}+\frac{-3Bcd+bBe+Ac}{e^3(d+ex)^2}\right.\\&=\frac{d(Bd-Ae)(cd-be)}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{3Bcd-bBe-Ace}{e^4(d+ex)}+\frac{Bc\,l}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 112, normalized size = 1.01

$$\frac{-Ae\left(be(d+3ex)+2c\left(d^2+3dex+3e^2x^2\right)\right)+B\left(cd\left(11d^2+27dex+18e^2x^2\right)-2be\left(d^2+3dex+3e^2x^2\right)\right)+6B}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(A*e*(b*e*(d + 3*e*x) + 2*c*(d^2 + 3*d*e*x + 3*e^2*x^2))) + B*(-2*b*e*(d^
2 + 3*d*e*x + 3*e^2*x^2) + c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*B*c*(d
 + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

fricas [A] time = 0.86, size = 168, normalized size = 1.51

$$\frac{11\,Bcd^3-Abde^2-2\,(Bb+Ac)d^2e+6\left(3\,Bcde^2-(Bb+Ac)e^3\right)x^2+3\left(9\,Bcd^2e-Abe^3-2\,(Bb+Ac)de^2\right)x+6}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*c*d^3 - A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + 6*(3*B*c*d*e^2 - (B*b +
 A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x + 6*(B*c
*e^3*x^3 + 3*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*c*d^3)*log(e*x + d))/(e^7*x^
3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.15, size = 119, normalized size = 1.07

$$Bce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,Bcde-Bbe^2-Ace^2\right)x^2+3\left(9\,Bcd^2-2\,Bbde-2\,Acde-Abe^2\right)x+\left(11\,Bcd^3-2\,Bbd^2e\right.}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*x^2 +
 3*(9*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e - A*b*e^2)*x + (11*B*c*d^3 - 2*B*b*d^
2*e - 2*A*c*d^2*e - A*b*d*e^2)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [A] time = 0.05, size = 182, normalized size = 1.64

$$\frac{Abd}{3\,(ex+d)^3\,e^2}-\frac{Ac\,d^2}{3\,(ex+d)^3\,e^3}-\frac{Bb\,d^2}{3\,(ex+d)^3\,e^3}+\frac{Bc\,d^3}{3\,(ex+d)^3\,e^4}-\frac{Ab}{2\,(ex+d)^2\,e^2}+\frac{Acd}{(ex+d)^2\,e^3}+\frac{Bbd}{(ex+d)^2\,e^3}-\frac{3Bc\,d^2}{2\,(ex+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*A*c-1/e^3/(e*x+d)*B*b+3/e^4/(e*x+d)*B*c*d-1/2/e^2/(e*x+d)^2*
A*b+1/e^3/(e*x+d)^2*A*c*d+1/e^3/(e*x+d)^2*B*d*b-3/2/e^4/(e*x+d)^2*B*c*d^2+1
/3*d/e^2/(e*x+d)^3*A*b-1/3*d^2/e^3/(e*x+d)^3*A*c-1/3*d^2/e^3/(e*x+d)^3*B*b+
1/3*d^3/e^4/(e*x+d)^3*B*c+B*c*ln(e*x+d)/e^4
```

maxima [A] time = 0.55, size = 137, normalized size = 1.23

$$\frac{11\,Bcd^3-Abde^2-2\,(Bb+Ac)d^2e+6\left(3\,Bcde^2-(Bb+Ac)e^3\right)x^2+3\left(9\,Bcd^2e-Abe^3-2\,(Bb+Ac)de^2\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{Bc\log}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*c*d^3 - A*b*d*e^2 - 2*(B*b + A*c)*d^2*e + 6*(3*B*c*d*e^2 - (B*b +
 A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - A*b*e^3 - 2*(B*b + A*c)*d*e^2)*x)/(e^7*x^
3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*log(e*x + d)/e^4
```

mupad [B] time = 1.41, size = 134, normalized size = 1.21

$$\frac{B\,c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{A\,b\,d\,e^2-11\,B\,c\,d^3+2\,A\,c\,d^2\,e+2\,B\,b\,d^2\,e}{6\,e^4}+\frac{x\,\left(A\,b\,e^2-9\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{2\,e^3}+\frac{x^2\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((A*b*d*e^2 - 11*B*c*d^3 + 2*A*c*d^2*e + 2*B*b*d^2
*e)/(6*e^4) + (x*(A*b*e^2 - 9*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(2*e^3) + (
x^2*(A*c*e + B*b*e - 3*B*c*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*
x)
```

sympy [A] time = 3.20, size = 158, normalized size = 1.42

$$\frac{Bc\log\left(d+ex\right)}{e^4}+\frac{-Abde^2-2Acd^2e-2Bbd^2e+11Bcd^3+x^2\left(-6Ace^3-6Bbe^3+18Bcde^2\right)+x\left(-3Abe^3-6Ac\right.}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-A*b*d*e**2 - 2*A*c*d**2*e - 2*B*b*d**2*e + 11*B*c
*d**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 + 18*B*c*d*e**2) + x*(-3*A*b*e**3 -
6*A*c*d*e**2 - 6*B*b*d*e**2 + 27*B*c*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x
 + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.1112 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=116

$$\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bc}{e^4(d+ex)}$$

```
[Out] 1/4*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^4+1/3*(-B*d*(-2*b*e+3*c*d)+A*e*(-b*
e+2*c*d))/e^4/(e*x+d)^3+1/2*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d)^2-B*c/e^4/(e
*x+d)
```

Rubi [A] time = 0.10, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(4*e^4*(d + e*x)^4) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(3*e^4*(d + e*x)^3) + (3*B*c*d - b*B*e - A*c*e)/(2*e^4*(d
+ e*x)^2) - (B*c)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^5}\,dx &= \int \Bigg(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^5}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^4}+\frac{-3Bcd+bBe+Ace}{e^3(d+ex)^3}+\\ &= \frac{d(Bd-Ae)(cd-be)}{4e^4(d+ex)^4}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{3Bcd-bBe-Ace}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+}\end{aligned}$$

Mathematica [A] time = 0.04, size = 101, normalized size = 0.87

$$-\frac{Ae\left(be(d+4ex)+c\left(d^2+4dex+6e^2x^2\right)\right)+B\left(be\left(d^2+4dex+6e^2x^2\right)+3c\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(b*e*(d + 4*e*x) + c*(d^2 + 4*d*e*x + 6*e^2*x^2)) + B*(b*e*(d^2
+ 4*d*e*x + 6*e^2*x^2) + 3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)))/
(e^4*(d + e*x)^4)
```

fricas [A] time = 0.87, size = 140, normalized size = 1.21

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+Abde^2+(Bb+Ac)d^2e+6\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^2+4\Big(3\,Bcd^2e+Abe^3+(Bb+Ac)de^2}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*b*d*e^2 + (B*b + A*c)*d^2*e + 6*(3*B*
c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + A*b*e^3 + (B*b + A*c)*d*e
^2)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.23, size = 177, normalized size = 1.53

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d}-\frac{18\,Bcde^{(-1)}}{(xe+d)^2}+\frac{12\,Bcd^2e^{(-1)}}{(xe+d)^3}-\frac{3\,Bcd^3e^{(-1)}}{(xe+d)^4}+\frac{6\,Bb}{(xe+d)^2}+\frac{6\,Ac}{(xe+d)^2}-\frac{8\,Bbd}{(xe+d)^3}-\frac{8\,Acd}{(xe+d)^3}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*B*b/(x*e + d)^2 + 6*A*
c/(x*e + d)^2 - 8*B*b*d/(x*e + d)^3 - 8*A*c*d/(x*e + d)^3 + 3*B*b*d^2/(x*e
+ d)^4 + 3*A*c*d^2/(x*e + d)^4 + 4*A*b*e/(x*e + d)^3 - 3*A*b*d*e/(x*e + d)^
4)*e^(-3)
```

maple [A] time = 0.05, size = 118, normalized size = 1.02

$$-\frac{Bc}{(ex+d)\,e^4}+\frac{\left(Ab\,e^2-Acde-Bdbe+Bc\,d^2\right)d}{4\,(ex+d)^4\,e^4}-\frac{Ace+Bbe-3Bcd}{2\,(ex+d)^2\,e^4}-\frac{Ab\,e^2-2Acde-2Bdbe+3Bc\,d^2}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x)
```

```
[Out] -B*c/e^4/(e*x+d)+1/4*d*(A*b*e^2-A*c*d*e-B*b*d*e+B*c*d^2)/e^4/(e*x+d)^4-1/2*
(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^2-1/3*(A*b*e^2-2*A*c*d*e-2*B*b*d*e+3*B*c*
d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.59, size = 140, normalized size = 1.21

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+Abde^2+(Bb+Ac)d^2e+6\left(3\,Bcde^2+(Bb+Ac)e^3\right)x^2+4\left(3\,Bcd^2e+Abe^3+(Bb+Ac)\right.}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*b*d*e^2 + (B*b + A*c)*d^2*e + 6*(3*B*
c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + A*b*e^3 + (B*b + A*c)*d*e
^2)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.07, size = 134, normalized size = 1.16

$$-\frac{\frac{d\left(A\,b\,e^2+3\,B\,c\,d^2+A\,c\,d\,e+B\,b\,d\,e\right)}{12\,e^4}+\frac{x\left(A\,b\,e^2+3\,B\,c\,d^2+A\,c\,d\,e+B\,b\,d\,e\right)}{3\,e^3}+\frac{x^2\,\left(A\,c\,e+B\,b\,e+3\,B\,c\,d\right)}{2\,e^2}+\frac{B\,c\,x^3}{e}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -((d*(A*b*e^2 + 3*B*c*d^2 + A*c*d*e + B*b*d*e))/(12*e^4) + (x*(A*b*e^2 + 3*
B*c*d^2 + A*c*d*e + B*b*d*e))/(3*e^3) + (x^2*(A*c*e + B*b*e + 3*B*c*d))/(2*
e^2) + (B*c*x^3)/e)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*
x)
```

sympy [A] time = 6.11, size = 168, normalized size = 1.45

$$\frac{-Abde^2 - Acd^2e - Bbd^2e - 3Bcd^3 - 12Bce^3x^3 + x^2 \left(-6Ace^3 - 6Bbe^3 - 18Bcde^2\right) + x \big(-4Abe^3 - 4Acde^2 - 4Bbde^2}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**5,x)
```

```
[Out] (-A*b*d*e**2 - A*c*d**2*e - B*b*d**2*e - 3*B*c*d**3 - 12*B*c*e**3*x**3 + x*
*2*(-6*A*c*e**3 - 6*B*b*e**3 - 18*B*c*d*e**2) + x*(-4*A*b*e**3 - 4*A*c*d*e*
*2 - 4*B*b*d*e**2 - 12*B*c*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**
2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.1113 $\int \frac{(A+Bx)(bx+cx^2)}{(d+ex)^6}\,dx$

Optimal. Leaf size=118

$$\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bc}{2e^4(d+ex)^2}$$

```
[Out] 1/5*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^5+1/4*(-B*d*(-2*b*e+3*c*d)+A*e*(-b*
e+2*c*d))/e^4/(e*x+d)^4+1/3*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d)^3-1/2*B*c/e^
4/(e*x+d)^2
```

Rubi [A] time = 0.10, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e))/(5*e^4*(d + e*x)^5) - (B*d*(3*c*d - 2*b*e) - A*
e*(2*c*d - b*e))/(4*e^4*(d + e*x)^4) + (3*B*c*d - b*B*e - A*c*e)/(3*e^4*(d
+ e*x)^3) - (B*c)/(2*e^4*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^6}\,dx &= \int \Bigg(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^6}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^5}+\frac{-3Bcd+bBe+Ac}{e^3(d+ex)^4}\\ &= \frac{d(Bd-Ae)(cd-be)}{5e^4(d+ex)^5}-\frac{Bd(3cd-2be)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{3Bcd-bBe-Ace}{3e^4(d+ex)^3}-\frac{}{2e^4(}\end{aligned}$$

Mathematica [A] time = 0.05, size = 104, normalized size = 0.88

$$-\frac{Ae(3be(d+5ex)+2c(d^2+5dex+10e^2x^2))+B(2be(d^2+5dex+10e^2x^2)+3c(d^3+5d^2ex+10de^2x^2+10}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(A*e*(3*b*e*(d + 5*e*x) + 2*c*(d^2 + 5*d*e*x + 10*e^2*x^2)) + B*(2*b*
e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e
^3*x^3)))/(e^4*(d + e*x)^5)
```

fricas [A] time = 0.82, size = 156, normalized size = 1.32

$$-\frac{30Bce^3x^3+3Bcd^3+3Abde^2+2(Bb+Ac)d^2e+10(3Bcde^2+2(Bb+Ac)e^3)x^2+5(3Bcd^2e+3Abe^3+2(}{60\left(e^9x^5+5de^8x^4+10d^2e^7x^3+10d^3e^6x^2+5d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 2*(B*b + A*c)*d^2*e + 10*
(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e + 3*A*b*e^3 + 2*(B*b
 + A*c)*d*e^2)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2
+ 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.15, size = 115, normalized size = 0.97

$$-\frac{(30\,Bcx^3e^3+30\,Bcdx^2e^2+15\,Bcd^2xe+3\,Bcd^3+20\,Bbx^2e^3+20\,Acx^2e^3+10\,Bbdxe^2+10\,Acdxe^2+2\,Bbd^2e+2}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
B*b*x^2*e^3 + 20*A*c*x^2*e^3 + 10*B*b*d*x*e^2 + 10*A*c*d*x*e^2 + 2*B*b*d^2*
e + 2*A*c*d^2*e + 15*A*b*x*e^3 + 3*A*b*d*e^2)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.06, size = 118, normalized size = 1.00

$$-\frac{Bc}{2\,(ex+d)^2\,e^4}+\frac{\left(Ab\,e^2-Acde-Bdbe+Bc\,d^2\right)d}{5\,(ex+d)^5\,e^4}-\frac{Ab\,e^2-2Acde-2Bdbe+3Bc\,d^2}{4\,(ex+d)^4\,e^4}-\frac{Ace+Bbe-3Bcd}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x)
```

```
[Out] -1/4*(A*b*e^2-2*A*c*d*e-2*B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^4+1/5*d*(A*b*e^2-A
*c*d*e-B*b*d*e+B*c*d^2)/e^4/(e*x+d)^5-1/2*B*c/e^4/(e*x+d)^2-1/3*(A*c*e+B*b*
e-3*B*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.62, size = 156, normalized size = 1.32

$$-\frac{30\,Bce^3x^3+3\,Bcd^3+3\,Abde^2+2\,(Bb+Ac)d^2e+10\left(3\,Bcde^2+2\,(Bb+Ac)e^3\right)x^2+5\,(3\,Bcd^2e+3\,Abe^3+2\,(Bb}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 2*(B*b + A*c)*d^2*e + 10*
(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e + 3*A*b*e^3 + 2*(B*b
 + A*c)*d*e^2)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2
+ 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.08, size = 154, normalized size = 1.31

$$-\frac{\frac{d\,\left(3\,A\,b\,e^2+3\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{60\,e^4}+\frac{x\,\left(3\,A\,b\,e^2+3\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{12\,e^3}+\frac{x^2\,\left(2\,A\,c\,e+2\,B\,b\,e+3\,B\,c\,d\right)}{6\,e^2}+\frac{B\,c\,x^3}{2\,e}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -((d*(3*A*b*e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(60*e^4) + (x*(3*A*b*
e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(12*e^3) + (x^2*(2*A*c*e + 2*B*b*
e + 3*B*c*d))/(6*e^2) + (B*c*x^3)/(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*
d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 10.37, size = 185, normalized size = 1.57

$$\frac{-3Abde^2-2Acd^2e-2Bbd^2e-3Bcd^3-30Bce^3x^3+x^2\left(-20Ace^3-20Bbe^3-30Bcde^2\right)+x\left(-15Abe^3-10Acd\right.}{60d^5e^4+300d^4e^5x+600d^3e^6x^2+600d^2e^7x^3+300de^8x^4+60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**6,x)
```

```
[Out] (-3*A*b*d*e**2 - 2*A*c*d**2*e - 2*B*b*d**2*e - 3*B*c*d**3 - 30*B*c*e**3*x**
3 + x**2*(-20*A*c*e**3 - 20*B*b*e**3 - 30*B*c*d*e**2) + x*(-15*A*b*e**3 - 1
0*A*c*d*e**2 - 10*B*b*d*e**2 - 15*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**
5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x
**5)
```

3.1114 $\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=282

$$\frac{(d+ex)^{m+3}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(b^2e^2\right.\right.}{e^6(m+4)}$$

```
[Out] -d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(1+m)/e^6/(1+m)+d*(-b*e+c*d)*(B*d*(-3*
b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(2+m)/e^6/(2+m)+(A*e*(b^2*e^2-6*b*c*
d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(3+m)/e^6/(3+
m)-(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(4+m)/e^
6/(4+m)-c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(5+m)/e^6/(5+m)+B*c^2*(e*x+d)^(6
+m)/e^6/(6+m)
```

Rubi [**A**] time = 0.23, antiderivative size = 282, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^{m+3}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(b^2e^2\right.\right.}{e^6(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2,x]
```

```
[Out] -((d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))) + (d*(c*
d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^
6*(2 + m)) + ((A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12
*b*c*d*e + 3*b^2*e^2))*(d + e*x)^(3 + m))/(e^6*(3 + m)) - ((2*A*c*e*(2*c*d
- b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(4 + m))/(e^6*(4 +
 m)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B
*c^2*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(bx+cx^2\right)^2\,dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^m}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2}{e^5}\right.\\ &= -\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd}{e^6(2+m)}\end{aligned}$$

Mathematica [**A**] time = 0.44, size = 309, normalized size = 1.10

$$\frac{(d+ex)^{m+1}\left(Ae\left(\frac{(d+ex)^2\left(b^2e^2-6bcde+6c^2d^2\right)}{m+3}+\frac{d^2(cd-be)^2}{m+1}-\frac{2c(d+ex)^3(2cd-be)}{m+4}-\frac{2d(d+ex)(cd-be)(2cd-be)}{m+2}+\frac{c^2(d+ex)^4}{m+5}\right)+B\left(\frac{(d+ex)^3}{}\right.\right.}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(A*e*((d^2*(c*d - b*e)^2)/(1 + m) - (2*d*(c*d - b*e)*(2*
c*d - b*e)*(d + e*x))/(2 + m) + ((6*c^2*d^2 - 6*b*c*d*e + b^2*e^2)*(d + e*x
)^2)/(3 + m) - (2*c*(2*c*d - b*e)*(d + e*x)^3)/(4 + m) + (c^2*(d + e*x)^4)/
(5 + m)) + B*(-((d^3*(c*d - b*e)^2)/(1 + m)) + (d^2*(5*c*d - 3*b*e)*(c*d -
b*e)*(d + e*x))/(2 + m) - (d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2)*(d + e*x
)^2)/(3 + m) + ((10*c^2*d^2 - 8*b*c*d*e + b^2*e^2)*(d + e*x)^3)/(4 + m) - (
c*(5*c*d - 2*b*e)*(d + e*x)^4)/(5 + m) + (c^2*(d + e*x)^5)/(6 + m))))/e^6
```

fricas [B] time = 0.79, size = 1417, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (2*A*b^2*d^3*e^3*m^3 - 120*B*c^2*d^6 + 240*A*b^2*d^3*e^3 + 144*(2*B*b*c + A
*c^2)*d^5*e - 180*(B*b^2 + 2*A*b*c)*d^4*e^2 + (B*c^2*e^6*m^5 + 15*B*c^2*e^6
*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 120*B*c^2*e
^6)*x^6 + (144*(2*B*b*c + A*c^2)*e^6 + (B*c^2*d*e^5 + (2*B*b*c + A*c^2)*e^6
)*m^5 + 2*(5*B*c^2*d*e^5 + 8*(2*B*b*c + A*c^2)*e^6)*m^4 + 5*(7*B*c^2*d*e^5
+ 19*(2*B*b*c + A*c^2)*e^6)*m^3 + 10*(5*B*c^2*d*e^5 + 26*(2*B*b*c + A*c^2)*
e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*(2*B*b*c + A*c^2)*e^6)*m)*x^5 + (180*(B*b
^2 + 2*A*b*c)*e^6 + ((2*B*b*c + A*c^2)*d*e^5 + (B*b^2 + 2*A*b*c)*e^6)*m^5 -
 (5*B*c^2*d^2*e^4 - 12*(2*B*b*c + A*c^2)*d*e^5 - 17*(B*b^2 + 2*A*b*c)*e^6)*
m^4 - (30*B*c^2*d^2*e^4 - 47*(2*B*b*c + A*c^2)*d*e^5 - 107*(B*b^2 + 2*A*b*c
)*e^6)*m^3 - (55*B*c^2*d^2*e^4 - 72*(2*B*b*c + A*c^2)*d*e^5 - 307*(B*b^2 +
2*A*b*c)*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*(2*B*b*c + A*c^2)*d*e^5 - 66*(B*
b^2 + 2*A*b*c)*e^6)*m)*x^4 + (240*A*b^2*e^6 + (A*b^2*e^6 + (B*b^2 + 2*A*b*c
)*d*e^5)*m^5 + 2*(9*A*b^2*e^6 - 2*(2*B*b*c + A*c^2)*d^2*e^4 + 7*(B*b^2 + 2*
A*b*c)*d*e^5)*m^4 + (20*B*c^2*d^3*e^3 + 121*A*b^2*e^6 - 36*(2*B*b*c + A*c^2
)*d^2*e^4 + 65*(B*b^2 + 2*A*b*c)*d*e^5)*m^3 + 4*(15*B*c^2*d^3*e^3 + 93*A*b^
2*e^6 - 20*(2*B*b*c + A*c^2)*d^2*e^4 + 28*(B*b^2 + 2*A*b*c)*d*e^5)*m^2 + 4*
(10*B*c^2*d^3*e^3 + 127*A*b^2*e^6 - 12*(2*B*b*c + A*c^2)*d^2*e^4 + 15*(B*b^
2 + 2*A*b*c)*d*e^5)*m)*x^3 + 6*(5*A*b^2*d^3*e^3 - (B*b^2 + 2*A*b*c)*d^4*e^2
)*m^2 + (A*b^2*d*e^5*m^5 + (16*A*b^2*d*e^5 - 3*(B*b^2 + 2*A*b*c)*d^2*e^4)*m
^4 + (89*A*b^2*d*e^5 + 12*(2*B*b*c + A*c^2)*d^3*e^3 - 36*(B*b^2 + 2*A*b*c)*
d^2*e^4)*m^3 - (60*B*c^2*d^4*e^2 - 194*A*b^2*d*e^5 - 84*(2*B*b*c + A*c^2)*d
^3*e^3 + 123*(B*b^2 + 2*A*b*c)*d^2*e^4)*m^2 - 6*(10*B*c^2*d^4*e^2 - 20*A*b^
2*d*e^5 - 12*(2*B*b*c + A*c^2)*d^3*e^3 + 15*(B*b^2 + 2*A*b*c)*d^2*e^4)*m)*x
^2 + 2*(74*A*b^2*d^3*e^3 + 12*(2*B*b*c + A*c^2)*d^5*e - 33*(B*b^2 + 2*A*b*c
)*d^4*e^2)*m - 2*(A*b^2*d^2*e^4*m^4 + 3*(5*A*b^2*d^2*e^4 - (B*b^2 + 2*A*b*c
)*d^3*e^3)*m^3 + (74*A*b^2*d^2*e^4 + 12*(2*B*b*c + A*c^2)*d^4*e^2 - 33*(B*b
^2 + 2*A*b*c)*d^3*e^3)*m^2 - 6*(10*B*c^2*d^5*e - 20*A*b^2*d^2*e^4 - 12*(2*B
*b*c + A*c^2)*d^4*e^2 + 15*(B*b^2 + 2*A*b*c)*d^3*e^3)*m)*x)*(e*x + d)^m/(e^
6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m
+ 720*e^6)
```

giac [B] time = 0.27, size = 2827, normalized size = 10.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + 2*(x*e +
 d)^m*B*b*c*m^5*x^5*e^6 + (x*e + d)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*
c^2*m^4*x^6*e^6 + 2*(x*e + d)^m*B*b*c*d*m^5*x^4*e^5 + (x*e + d)^m*A*c^2*d*m
^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*d^2*m
^4*x^4*e^4 + (x*e + d)^m*B*b^2*m^5*x^4*e^6 + 2*(x*e + d)^m*A*b*c*m^5*x^4*e^
6 + 32*(x*e + d)^m*B*b*c*m^4*x^5*e^6 + 16*(x*e + d)^m*A*c^2*m^4*x^5*e^6 + 8
5*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + (x*e + d)^m*B*b^2*d*m^5*x^3*e^5 + 2*(x*e
+ d)^m*A*b*c*d*m^5*x^3*e^5 + 24*(x*e + d)^m*B*b*c*d*m^4*x^4*e^5 + 12*(x*e +
 d)^m*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5*e^5 - 8*(x*e + d
)^m*B*b*c*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e +
 d)^m*B*c^2*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + (x*e +
 d)^m*A*b^2*m^5*x^3*e^6 + 17*(x*e + d)^m*B*b^2*m^4*x^4*e^6 + 34*(x*e + d)^m
*A*b*c*m^4*x^4*e^6 + 190*(x*e + d)^m*B*b*c*m^3*x^5*e^6 + 95*(x*e + d)^m*A*c
^2*m^3*x^5*e^6 + 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 + (x*e + d)^m*A*b^2*d*m^
5*x^2*e^5 + 14*(x*e + d)^m*B*b^2*d*m^4*x^3*e^5 + 28*(x*e + d)^m*A*b*c*d*m^4
*x^3*e^5 + 94*(x*e + d)^m*B*b*c*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*
x^4*e^5 + 50*(x*e + d)^m*B*c^2*d*m^2*x^5*e^5 - 3*(x*e + d)^m*B*b^2*d^2*m^4*
x^2*e^4 - 6*(x*e + d)^m*A*b*c*d^2*m^4*x^2*e^4 - 72*(x*e + d)^m*B*b*c*d^2*m^
3*x^3*e^4 - 36*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*c^2*d^2
*m^2*x^4*e^4 + 24*(x*e + d)^m*B*b*c*d^3*m^3*x^2*e^3 + 12*(x*e + d)^m*A*c^2*
d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^3 - 60*(x*e + d)^m*B*c
^2*d^4*m^2*x^2*e^2 + 18*(x*e + d)^m*A*b^2*m^4*x^3*e^6 + 107*(x*e + d)^m*B*b
^2*m^3*x^4*e^6 + 214*(x*e + d)^m*A*b*c*m^3*x^4*e^6 + 520*(x*e + d)^m*B*b*c*
m^2*x^5*e^6 + 260*(x*e + d)^m*A*c^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x
^6*e^6 + 16*(x*e + d)^m*A*b^2*d*m^4*x^2*e^5 + 65*(x*e + d)^m*B*b^2*d*m^3*x^
3*e^5 + 130*(x*e + d)^m*A*b*c*d*m^3*x^3*e^5 + 144*(x*e + d)^m*B*b*c*d*m^2*x
^4*e^5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*c^2*d*m*x^5*
e^5 - 2*(x*e + d)^m*A*b^2*d^2*m^4*x*e^4 - 36*(x*e + d)^m*B*b^2*d^2*m^3*x^2*
e^4 - 72*(x*e + d)^m*A*b*c*d^2*m^3*x^2*e^4 - 160*(x*e + d)^m*B*b*c*d^2*m^2*
x^3*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B*c^2*d^2*m
*x^4*e^4 + 6*(x*e + d)^m*B*b^2*d^3*m^3*x*e^3 + 12*(x*e + d)^m*A*b*c*d^3*m^3
*x*e^3 + 168*(x*e + d)^m*B*b*c*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*c^2*d^3*m
^2*x^2*e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 48*(x*e + d)^m*B*b*c*d^4*
m^2*x*e^2 - 24*(x*e + d)^m*A*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m
*x^2*e^2 + 120*(x*e + d)^m*B*c^2*d^5*m*x*e + 121*(x*e + d)^m*A*b^2*m^3*x^3*
e^6 + 307*(x*e + d)^m*B*b^2*m^2*x^4*e^6 + 614*(x*e + d)^m*A*b*c*m^2*x^4*e^6
 + 648*(x*e + d)^m*B*b*c*m*x^5*e^6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*
(x*e + d)^m*B*c^2*x^6*e^6 + 89*(x*e + d)^m*A*b^2*d*m^3*x^2*e^5 + 112*(x*e +
 d)^m*B*b^2*d*m^2*x^3*e^5 + 224*(x*e + d)^m*A*b*c*d*m^2*x^3*e^5 + 72*(x*e +
 d)^m*B*b*c*d*m*x^4*e^5 + 36*(x*e + d)^m*A*c^2*d*m*x^4*e^5 - 30*(x*e + d)^m
*A*b^2*d^2*m^3*x*e^4 - 123*(x*e + d)^m*B*b^2*d^2*m^2*x^2*e^4 - 246*(x*e + d
)^m*A*b*c*d^2*m^2*x^2*e^4 - 96*(x*e + d)^m*B*b*c*d^2*m*x^3*e^4 - 48*(x*e +
d)^m*A*c^2*d^2*m*x^3*e^4 + 2*(x*e + d)^m*A*b^2*d^3*m^3*e^3 + 66*(x*e + d)^m
*B*b^2*d^3*m^2*x*e^3 + 132*(x*e + d)^m*A*b*c*d^3*m^2*x*e^3 + 144*(x*e + d)^
m*B*b*c*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*c^2*d^3*m*x^2*e^3 - 6*(x*e + d)^m*
B*b^2*d^4*m^2*e^2 - 12*(x*e + d)^m*A*b*c*d^4*m^2*e^2 - 288*(x*e + d)^m*B*b*
c*d^4*m*x*e^2 - 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 48*(x*e + d)^m*B*b*c*d^
5*m*e + 24*(x*e + d)^m*A*c^2*d^5*m*e - 120*(x*e + d)^m*B*c^2*d^6 + 372*(x*e
 + d)^m*A*b^2*m^2*x^3*e^6 + 396*(x*e + d)^m*B*b^2*m*x^4*e^6 + 792*(x*e + d)
^m*A*b*c*m*x^4*e^6 + 288*(x*e + d)^m*B*b*c*x^5*e^6 + 144*(x*e + d)^m*A*c^2*
x^5*e^6 + 194*(x*e + d)^m*A*b^2*d*m^2*x^2*e^5 + 60*(x*e + d)^m*B*b^2*d*m*x^
3*e^5 + 120*(x*e + d)^m*A*b*c*d*m*x^3*e^5 - 148*(x*e + d)^m*A*b^2*d^2*m^2*x
*e^4 - 90*(x*e + d)^m*B*b^2*d^2*m*x^2*e^4 - 180*(x*e + d)^m*A*b*c*d^2*m*x^2
*e^4 + 30*(x*e + d)^m*A*b^2*d^3*m^2*e^3 + 180*(x*e + d)^m*B*b^2*d^3*m*x*e^3
 + 360*(x*e + d)^m*A*b*c*d^3*m*x*e^3 - 66*(x*e + d)^m*B*b^2*d^4*m*e^2 - 132
*(x*e + d)^m*A*b*c*d^4*m*e^2 + 288*(x*e + d)^m*B*b*c*d^5*e + 144*(x*e + d)^
m*A*c^2*d^5*e + 508*(x*e + d)^m*A*b^2*m*x^3*e^6 + 180*(x*e + d)^m*B*b^2*x^4
*e^6 + 360*(x*e + d)^m*A*b*c*x^4*e^6 + 120*(x*e + d)^m*A*b^2*d*m*x^2*e^5 -
240*(x*e + d)^m*A*b^2*d^2*m*x*e^4 + 148*(x*e + d)^m*A*b^2*d^3*m*e^3 - 180*(
x*e + d)^m*B*b^2*d^4*e^2 - 360*(x*e + d)^m*A*b*c*d^4*e^2 + 240*(x*e + d)^m*
A*b^2*x^3*e^6 + 240*(x*e + d)^m*A*b^2*d^3*e^3)/(m^6*e^6 + 21*m^5*e^6 + 175*
m^4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1616, normalized size = 5.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+2*B*b*c*e^5*m^5*x^4+15*B
*c^2*e^5*m^4*x^5+2*A*b*c*e^5*m^5*x^3+16*A*c^2*e^5*m^4*x^4+B*b^2*e^5*m^5*x^3
+32*B*b*c*e^5*m^4*x^4-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^5*m^3*x^5+A*b^2*e^5*
m^5*x^2+34*A*b*c*e^5*m^4*x^3-4*A*c^2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+17*
B*b^2*e^5*m^4*x^3-8*B*b*c*d*e^4*m^4*x^3+190*B*b*c*e^5*m^3*x^4-50*B*c^2*d*e^
4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+18*A*b^2*e^5*m^4*x^2-6*A*b*c*d*e^4*m^4*x^2+
214*A*b*c*e^5*m^3*x^3-48*A*c^2*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4-3*B*b^2*
d*e^4*m^4*x^2+107*B*b^2*e^5*m^3*x^3-96*B*b*c*d*e^4*m^3*x^3+520*B*b*c*e^5*m^
2*x^4+20*B*c^2*d^2*e^3*m^3*x^3-175*B*c^2*d*e^4*m^2*x^4+274*B*c^2*e^5*m*x^5-
2*A*b^2*d*e^4*m^4*x+121*A*b^2*e^5*m^3*x^2-84*A*b*c*d*e^4*m^3*x^2+614*A*b*c*
e^5*m^2*x^3+12*A*c^2*d^2*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*
m*x^4-42*B*b^2*d*e^4*m^3*x^2+307*B*b^2*e^5*m^2*x^3+24*B*b*c*d^2*e^3*m^3*x^2
-376*B*b*c*d*e^4*m^2*x^3+648*B*b*c*e^5*m*x^4+120*B*c^2*d^2*e^3*m^2*x^3-250*
B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5-32*A*b^2*d*e^4*m^3*x+372*A*b^2*e^5*m^2*
x^2+12*A*b*c*d^2*e^3*m^3*x-390*A*b*c*d*e^4*m^2*x^2+792*A*b*c*e^5*m*x^3+108*
A*c^2*d^2*e^3*m^2*x^2-288*A*c^2*d*e^4*m*x^3+144*A*c^2*e^5*x^4+6*B*b^2*d^2*e
^3*m^3*x-195*B*b^2*d*e^4*m^2*x^2+396*B*b^2*e^5*m*x^3+216*B*b*c*d^2*e^3*m^2*
x^2-576*B*b*c*d*e^4*m*x^3+288*B*b*c*e^5*x^4-60*B*c^2*d^3*e^2*m^2*x^2+220*B*
c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+2*A*b^2*d^2*e^3*m^3-178*A*b^2*d*e^4*m
^2*x+508*A*b^2*e^5*m*x^2+144*A*b*c*d^2*e^3*m^2*x-672*A*b*c*d*e^4*m*x^2+360*
A*b*c*e^5*x^3-24*A*c^2*d^3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^
4*x^3+72*B*b^2*d^2*e^3*m^2*x-336*B*b^2*d*e^4*m*x^2+180*B*b^2*e^5*x^3-48*B*b
*c*d^3*e^2*m^2*x+480*B*b*c*d^2*e^3*m*x^2-288*B*b*c*d*e^4*x^3-180*B*c^2*d^3*
e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+30*A*b^2*d^2*e^3*m^2-388*A*b^2*d*e^4*m*x+24
0*A*b^2*e^5*x^2-12*A*b*c*d^3*e^2*m^2+492*A*b*c*d^2*e^3*m*x-360*A*b*c*d*e^4*
x^2-168*A*c^2*d^3*e^2*m*x+144*A*c^2*d^2*e^3*x^2-6*B*b^2*d^3*e^2*m^2+246*B*b
^2*d^2*e^3*m*x-180*B*b^2*d*e^4*x^2-336*B*b*c*d^3*e^2*m*x+288*B*b*c*d^2*e^3*
x^2+120*B*c^2*d^4*e*m*x-120*B*c^2*d^3*e^2*x^2+148*A*b^2*d^2*e^3*m-240*A*b^2
*d*e^4*x-132*A*b*c*d^3*e^2*m+360*A*b*c*d^2*e^3*x+24*A*c^2*d^4*e*m-144*A*c^2
*d^3*e^2*x-66*B*b^2*d^3*e^2*m+180*B*b^2*d^2*e^3*x+48*B*b*c*d^4*e*m-288*B*b*
c*d^3*e^2*x+120*B*c^2*d^4*e*x+240*A*b^2*d^2*e^3-360*A*b*c*d^3*e^2+144*A*c^2
*d^4*e-180*B*b^2*d^3*e^2+288*B*b*c*d^4*e-120*B*c^2*d^5)/e^6/(m^6+21*m^5+175
*m^4+735*m^3+1624*m^2+1764*m+720)
```

<u>maxima</u> [B] time = 0.76, size = 755, normalized size = 2.68

$$\frac{\left(\left(m^{2}+3\,m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2\,d^{2}emx+2\,d^{3}\right)(ex+d)^{m}Ab^{2}}{\left(m^{3}+6\,m^{2}+11\,m+6\right)e^{3}}+\frac{\left(\left(m^{3}+6\,m^{2}+11\,m+6\right)e^{4}x^{4}+\left(m^{3}+\right.\right.}{\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x
+ d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4
*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*
x - 6*d^4)*(e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*
((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b*c/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + 2*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 +
 (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3
 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b*c/((m^
5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^4 + 10*m^3 + 35*m^2
 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3
*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)
*(e*x + d)^m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) +
((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 +
35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*
x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d
^5*e*m*x - 120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 2.10, size = 1176, normalized size = 4.17

$$\frac{(d+e\,x)^m\,\Big(-6\,B\,b^2\,d^4\,e^2\,m^2-66\,B\,b^2\,d^4\,e^2\,m-180\,B\,b^2\,d^4\,e^2+2\,A\,b^2\,d^3\,e^3\,m^3+30\,A\,b^2\,d^3\,e^3\,m^2+148\,A\,b^2\,d^3\,e^3}{e^6\,\Big(m^6+21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(144*A*c^2*d^5*e - 120*B*c^2*d^6 + 240*A*b^2*d^3*e^3 - 180*B*b
^2*d^4*e^2 + 148*A*b^2*d^3*e^3*m - 66*B*b^2*d^4*e^2*m + 288*B*b*c*d^5*e + 3
0*A*b^2*d^3*e^3*m^2 + 2*A*b^2*d^3*e^3*m^3 - 6*B*b^2*d^4*e^2*m^2 - 360*A*b*c
*d^4*e^2 + 24*A*c^2*d^5*e*m - 132*A*b*c*d^4*e^2*m - 12*A*b*c*d^4*e^2*m^2 +
48*B*b*c*d^5*e*m))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(120*A*b^2*e^3 + 74*A*b^2*e^3
*m + 20*B*c^2*d^3*m + 15*A*b^2*e^3*m^2 + A*b^2*e^3*m^3 - 4*A*c^2*d^2*e*m^2
+ 11*B*b^2*d*e^2*m^2 + B*b^2*d*e^2*m^3 - 24*A*c^2*d^2*e*m + 30*B*b^2*d*e^2*
m + 22*A*b*c*d*e^2*m^2 + 2*A*b*c*d*e^2*m^3 - 8*B*b*c*d^2*e*m^2 + 60*A*b*c*d
*e^2*m - 48*B*b*c*d^2*e*m))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 2
1*m^5 + m^6 + 720)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(30*B*b^2*e
^2 + 60*A*b*c*e^2 + 11*B*b^2*e^2*m - 5*B*c^2*d^2*m + B*b^2*e^2*m^2 + 22*A*b
*c*e^2*m + 6*A*c^2*d*e*m + 2*A*b*c*e^2*m^2 + A*c^2*d*e*m^2 + 12*B*b*c*d*e*m
 + 2*B*b*c*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 +
 m^6 + 720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 +
m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) +
(c*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(6*A*c*e + 12*B*b*e
+ A*c*e*m + 2*B*b*e*m + B*c*d*m))/(e*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4
 + 21*m^5 + m^6 + 720)) - (2*d^2*m*x*(d + e*x)^m*(120*A*b^2*e^3 - 60*B*c^2*
d^3 + 72*A*c^2*d^2*e - 90*B*b^2*d*e^2 + 74*A*b^2*e^3*m + 15*A*b^2*e^3*m^2 +
 A*b^2*e^3*m^3 - 3*B*b^2*d*e^2*m^2 - 180*A*b*c*d*e^2 + 144*B*b*c*d^2*e + 12
*A*c^2*d^2*e*m - 33*B*b^2*d*e^2*m - 6*A*b*c*d*e^2*m^2 - 66*A*b*c*d*e^2*m +
24*B*b*c*d^2*e*m))/(e^5*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (d*m*x^2*(m + 1)*(d + e*x)^m*(120*A*b^2*e^3 - 60*B*c^2*d^3 + 7
2*A*c^2*d^2*e - 90*B*b^2*d*e^2 + 74*A*b^2*e^3*m + 15*A*b^2*e^3*m^2 + A*b^2*
e^3*m^3 - 3*B*b^2*d*e^2*m^2 - 180*A*b*c*d*e^2 + 144*B*b*c*d^2*e + 12*A*c^2*
d^2*e*m - 33*B*b^2*d*e^2*m - 6*A*b*c*d*e^2*m^2 - 66*A*b*c*d*e^2*m + 24*B*b*
c*d^2*e*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 72
0))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1115 $\int (A+Bx)(d+ex)^3 \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=228

$$\frac{1}{7}ex^7 \left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6 \Big(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\Big(3b^2e^2+6bcde+c^2d$$

```
[Out] 1/3*A*b^2*d^3*x^3+1/4*b*d^2*(3*A*b*e+2*A*c*d+B*b*d)*x^4+1/5*d*(A*c^2*d^2+3*
b^2*e*(A*e+B*d)+2*b*c*d*(3*A*e+B*d))*x^5+1/6*(A*e*(b^2*e^2+6*b*c*d*e+3*c^2*
d^2)+B*d*(3*b^2*e^2+6*b*c*d*e+c^2*d^2))*x^6+1/7*e*(A*c*e*(2*b*e+3*c*d)+B*(b
^2*e^2+6*b*c*d*e+3*c^2*d^2))*x^7+1/8*c*e^2*(A*c*e+2*B*b*e+3*B*c*d)*x^8+1/9*
B*c^2*e^3*x^9
```

Rubi [A] time = 0.25, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{1}{7}ex^7 \left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6 \Big(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\Big(3b^2e^2+6bcde+c^2d$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^3*x^3)/3 + (b*d^2*(b*B*d + 2*A*c*d + 3*A*b*e)*x^4)/4 + (d*(A*c^2*d
^2 + 3*b^2*e*(B*d + A*e) + 2*b*c*d*(B*d + 3*A*e))*x^5)/5 + ((A*e*(3*c^2*d^2
 + 6*b*c*d*e + b^2*e^2) + B*d*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^6)/6 + (
e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + 6*b*c*d*e + b^2*e^2))*x^7)/7 + (c
*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned} \int (A+Bx)(d+ex)^3 \left(bx+cx^2\right)^2 \, dx &= \int \Big(Ab^2d^3x^2+bd^2(bBd+2Acd+3Abe)x^3+d\Big(Ac^2d^2+3b^2e(Bd+Ae) \\ &= \frac{1}{3}Ab^2d^3x^3+\frac{1}{4}bd^2(bBd+2Acd+3Abe)x^4+\frac{1}{5}d\Big(Ac^2d^2+3b^2e(Bd+A \end{aligned}$$

Mathematica [A] time = 0.08, size = 228, normalized size = 1.00

$$\frac{1}{7}ex^7 \left(Ace(2be+3cd)+B\left(b^2e^2+6bcde+3c^2d^2\right)\right)+\frac{1}{6}x^6 \Big(Ae\left(b^2e^2+6bcde+3c^2d^2\right)+Bd\Big(3b^2e^2+6bcde+c^2d$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^3*x^3)/3 + (b*d^2*(b*B*d + 2*A*c*d + 3*A*b*e)*x^4)/4 + (d*(A*c^2*d
^2 + 3*b^2*e*(B*d + A*e) + 2*b*c*d*(B*d + 3*A*e))*x^5)/5 + ((A*e*(3*c^2*d^2
 + 6*b*c*d*e + b^2*e^2) + B*d*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^6)/6 + (
e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + 6*b*c*d*e + b^2*e^2))*x^7)/7 + (c
*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^9)/9
```

fricas [A] time = 0.75, size = 291, normalized size = 1.28

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{4}x^8e^3cbB+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{6}{7}x^7e^2dcbB+\frac{1}{7}x^7e^3b^2B+\frac{3}{7}x^7e^2dc^2A+\frac{2}{7}x^7e^3cbA+\frac{1}{6}x^6d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/4*x^8*e^3*c*b*B + 1/8*x^8*e^3*c
^2*A + 3/7*x^7*e*d^2*c^2*B + 6/7*x^7*e^2*d*c*b*B + 1/7*x^7*e^3*b^2*B + 3/7*
x^7*e^2*d*c^2*A + 2/7*x^7*e^3*c*b*A + 1/6*x^6*d^3*c^2*B + x^6*e*d^2*c*b*B +
 1/2*x^6*e^2*d*b^2*B + 1/2*x^6*e*d^2*c^2*A + x^6*e^2*d*c*b*A + 1/6*x^6*e^3*
b^2*A + 2/5*x^5*d^3*c*b*B + 3/5*x^5*e*d^2*b^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x
^5*e*d^2*c*b*A + 3/5*x^5*e^2*d*b^2*A + 1/4*x^4*d^3*b^2*B + 1/2*x^4*d^3*c*b*
A + 3/4*x^4*e*d^2*b^2*A + 1/3*x^3*d^3*b^2*A
```

giac [A] time = 0.16, size = 285, normalized size = 1.25

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{4}Bbcx^8e^3+\frac{1}{8}Ac^2x^8e^3+\frac{6}{7}Bbcdx^7e^2+\frac{3}{7}Ac^2dx^7e^2+Bbcd^2x^6e+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/4*B*b*c*x^8*e^3 + 1/8*A*c^2*x^8*e^3 + 6/7*B*b*c*d*x^7*e^2 + 3/7*
A*c^2*d*x^7*e^2 + B*b*c*d^2*x^6*e + 1/2*A*c^2*d^2*x^6*e + 2/5*B*b*c*d^3*x^5
 + 1/5*A*c^2*d^3*x^5 + 1/7*B*b^2*x^7*e^3 + 2/7*A*b*c*x^7*e^3 + 1/2*B*b^2*d*
x^6*e^2 + A*b*c*d*x^6*e^2 + 3/5*B*b^2*d^2*x^5*e + 6/5*A*b*c*d^2*x^5*e + 1/4
*B*b^2*d^3*x^4 + 1/2*A*b*c*d^3*x^4 + 1/6*A*b^2*x^6*e^3 + 3/5*A*b^2*d*x^5*e^
2 + 3/4*A*b^2*d^2*x^4*e + 1/3*A*b^2*d^3*x^3
```

maple [A] time = 0.04, size = 247, normalized size = 1.08

$$\frac{B\,c^2e^3x^9}{9}+\frac{A\,b^2d^3x^3}{3}+\frac{\left(2Bbc\,e^3+\left(A\,e^3+3Bd\,e^2\right)c^2\right)x^8}{8}+\frac{\left(B\,b^2e^3+2\left(A\,e^3+3Bd\,e^2\right)bc+\left(3Ad\,e^2+3B\,d^2e\right)c^2\right)x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*c^2+2*B*e^3*b*c)*x^8+1/7*((3*A*d*e
^2+3*B*d^2*e)*c^2+2*(A*e^3+3*B*d*e^2)*b*c+B*e^3*b^2)*x^7+1/6*((3*A*d^2*e+B*
d^3)*c^2+2*(3*A*d*e^2+3*B*d^2*e)*b*c+(A*e^3+3*B*d*e^2)*b^2)*x^6+1/5*(A*d^3*
c^2+2*(3*A*d^2*e+B*d^3)*b*c+(3*A*d*e^2+3*B*d^2*e)*b^2)*x^5+1/4*(2*A*d^3*b*c
+(3*A*d^2*e+B*d^3)*b^2)*x^4+1/3*A*b^2*d^3*x^3
```

maxima [A] time = 0.58, size = 239, normalized size = 1.05

$$\frac{1}{9}\,Bc^2e^3x^9+\frac{1}{3}\,Ab^2d^3x^3+\frac{1}{8}\left(3\,Bc^2de^2+\left(2\,Bbc+Ac^2\right)e^3\right)x^8+\frac{1}{7}\left(3\,Bc^2d^2e+3\left(2\,Bbc+Ac^2\right)de^2+\left(Bb^2+2\,Abc\right)e^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/3*A*b^2*d^3*x^3 + 1/8*(3*B*c^2*d*e^2 + (2*B*b*c + A*c
^2)*e^3)*x^8 + 1/7*(3*B*c^2*d^2*e + 3*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*
A*b*c)*e^3)*x^7 + 1/6*(B*c^2*d^3 + A*b^2*e^3 + 3*(2*B*b*c + A*c^2)*d^2*e +
3*(B*b^2 + 2*A*b*c)*d*e^2)*x^6 + 1/5*(3*A*b^2*d*e^2 + (2*B*b*c + A*c^2)*d^3
```

```
 + 3*(B*b^2 + 2*A*b*c)*d^2*e)*x^5 + 1/4*(3*A*b^2*d^2*e + (B*b^2 + 2*A*b*c)*
d^3)*x^4
```

mupad [B] time = 0.11, size = 234, normalized size = 1.03

$$x^6\left(\frac{B\,b^2\,d\,e^2}{2}+\frac{A\,b^2\,e^3}{6}+B\,b\,c\,d^2\,e+A\,b\,c\,d\,e^2+\frac{B\,c^2\,d^3}{6}+\frac{A\,c^2\,d^2\,e}{2}\right)+x^5\left(\frac{3\,B\,b^2\,d^2\,e}{5}+\frac{3\,A\,b^2\,d\,e^2}{5}+\frac{2\,B\,b\,c\,d^3}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^6*((A*b^2*e^3)/6 + (B*c^2*d^3)/6 + (A*c^2*d^2*e)/2 + (B*b^2*d*e^2)/2 + A*
b*c*d*e^2 + B*b*c*d^2*e) + x^5*((A*c^2*d^3)/5 + (2*B*b*c*d^3)/5 + (3*A*b^2*
d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*A*b*c*d^2*e)/5) + x^7*((B*b^2*e^3)/7 + (2
*A*b*c*e^3)/7 + (3*A*c^2*d*e^2)/7 + (3*B*c^2*d^2*e)/7 + (6*B*b*c*d*e^2)/7)
+ (b*d^2*x^4*(3*A*b*e + 2*A*c*d + B*b*d))/4 + (c*e^2*x^8*(A*c*e + 2*B*b*e +
 3*B*c*d))/8 + (A*b^2*d^3*x^3)/3 + (B*c^2*e^3*x^9)/9
```

sympy [A] time = 0.11, size = 301, normalized size = 1.32

$$\frac{Ab^2d^3x^3}{3}+\frac{Bc^2e^3x^9}{9}+x^8\left(\frac{Ac^2e^3}{8}+\frac{Bbce^3}{4}+\frac{3Bc^2de^2}{8}\right)+x^7\left(\frac{2Abce^3}{7}+\frac{3Ac^2de^2}{7}+\frac{Bb^2e^3}{7}+\frac{6Bbcde^2}{7}+\frac{3Bc^2d^2e}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d**3*x**3/3 + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + B*b*c*e**3/
4 + 3*B*c**2*d*e**2/8) + x**7*(2*A*b*c*e**3/7 + 3*A*c**2*d*e**2/7 + B*b**2*
e**3/7 + 6*B*b*c*d*e**2/7 + 3*B*c**2*d**2*e/7) + x**6*(A*b**2*e**3/6 + A*b*
c*d*e**2 + A*c**2*d**2*e/2 + B*b**2*d*e**2/2 + B*b*c*d**2*e + B*c**2*d**3/6
) + x**5*(3*A*b**2*d*e**2/5 + 6*A*b*c*d**2*e/5 + A*c**2*d**3/5 + 3*B*b**2*d
**2*e/5 + 2*B*b*c*d**3/5) + x**4*(3*A*b**2*d**2*e/4 + A*b*c*d**3/2 + B*b**2
*d**3/4)
```

3.1116 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=162

$$\frac{1}{6}x^6\left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5\left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}$$

```
[Out] 1/3*A*b^2*d^2*x^3+1/4*b*d*(2*A*b*e+2*A*c*d+B*b*d)*x^4+1/5*(A*c^2*d^2+b^2*e*
(A*e+2*B*d)+2*b*c*d*(2*A*e+B*d))*x^5+1/6*(2*A*c*e*(b*e+c*d)+B*(b^2*e^2+4*b*
c*d*e+c^2*d^2))*x^6+1/7*c*e*(A*c*e+2*B*(b*e+c*d))*x^7+1/8*B*c^2*e^2*x^8
```

Rubi [A] time = 0.22, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{6}x^6\left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5\left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^2*x^3)/3 + (b*d*(b*B*d + 2*A*c*d + 2*A*b*e)*x^4)/4 + ((A*c^2*d^2 +
 b^2*e*(2*B*d + A*e) + 2*b*c*d*(B*d + 2*A*e))*x^5)/5 + ((2*A*c*e*(c*d + b*e
) + B*(c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d + b*
e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^2 \, dx &= \int \left(Ab^2d^2x^2+bd(bBd+2Acd+2Abe)x^3+\left(Ac^2d^2+b^2e(2Bd+Ae)+2b\right.\right.\\ &=\frac{1}{3}Ab^2d^2x^3+\frac{1}{4}bd(bBd+2Acd+2Abe)x^4+\frac{1}{5}\left(Ac^2d^2+b^2e(2Bd+Ae)+2\right.\end{aligned}$$

Mathematica [A] time = 0.05, size = 162, normalized size = 1.00

$$\frac{1}{6}x^6\left(2Ace(be+cd)+B\left(b^2e^2+4bcde+c^2d^2\right)\right)+\frac{1}{5}x^5\left(b^2e(Ae+2Bd)+2bcd(2Ae+Bd)+Ac^2d^2\right)+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d^2*x^3)/3 + (b*d*(b*B*d + 2*A*c*d + 2*A*b*e)*x^4)/4 + ((A*c^2*d^2 +
 b^2*e*(2*B*d + A*e) + 2*b*c*d*(B*d + 2*A*e))*x^5)/5 + ((2*A*c*e*(c*d + b*e
) + B*(c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d + b*
e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

fricas [A] time = 0.72, size = 205, normalized size = 1.27

$$\frac{1}{8}x^8e^2c^2B+\frac{2}{7}x^7edc^2B+\frac{2}{7}x^7e^2cbB+\frac{1}{7}x^7e^2c^2A+\frac{1}{6}x^6d^2c^2B+\frac{2}{3}x^6edcbB+\frac{1}{6}x^6e^2b^2B+\frac{1}{3}x^6edc^2A+\frac{1}{3}x^6e^2cbA+\frac{2}{5}x^5d^2cb$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 2/7*x^7*e^2*c*b*B + 1/7*x^7*e^2*c^2
*A + 1/6*x^6*d^2*c^2*B + 2/3*x^6*e*d*c*b*B + 1/6*x^6*e^2*b^2*B + 1/3*x^6*e*
d*c^2*A + 1/3*x^6*e^2*c*b*A + 2/5*x^5*d^2*c*b*B + 2/5*x^5*e*d*b^2*B + 1/5*x
^5*d^2*c^2*A + 4/5*x^5*e*d*c*b*A + 1/5*x^5*e^2*b^2*A + 1/4*x^4*d^2*b^2*B +
1/2*x^4*d^2*c*b*A + 1/2*x^4*e*d*b^2*A + 1/3*x^3*d^2*b^2*A
```

giac [A] time = 0.15, size = 205, normalized size = 1.27

$$\frac{1}{8}Bc^2x^8e^2+\frac{2}{7}Bc^2dx^7e+\frac{1}{6}Bc^2d^2x^6+\frac{2}{7}Bbcx^7e^2+\frac{1}{7}Ac^2x^7e^2+\frac{2}{3}Bbcdx^6e+\frac{1}{3}Ac^2dx^6e+\frac{2}{5}Bbcd^2x^5+\frac{1}{5}Ac^2d^2x^5+\frac{1}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 2/7*B*b*c*x^7*e
^2 + 1/7*A*c^2*x^7*e^2 + 2/3*B*b*c*d*x^6*e + 1/3*A*c^2*d*x^6*e + 2/5*B*b*c*
d^2*x^5 + 1/5*A*c^2*d^2*x^5 + 1/6*B*b^2*x^6*e^2 + 1/3*A*b*c*x^6*e^2 + 2/5*B
*b^2*d*x^5*e + 4/5*A*b*c*d*x^5*e + 1/4*B*b^2*d^2*x^4 + 1/2*A*b*c*d^2*x^4 +
1/5*A*b^2*x^5*e^2 + 1/2*A*b^2*d*x^4*e + 1/3*A*b^2*d^2*x^3
```

maple [A] time = 0.04, size = 172, normalized size = 1.06

$$\frac{Bc^2e^2x^8}{8}+\frac{Ab^2d^2x^3}{3}+\frac{\left(2Bbce^2+\left(Ae^2+2Bde\right)c^2\right)x^7}{7}+\frac{\left(Bb^2e^2+2\left(Ae^2+2Bde\right)bc+\left(2Ade+Bd^2\right)c^2\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*((A*e^2+2*B*d*e)*c^2+2*B*e^2*b*c)*x^7+1/6*((2*A*d*e+B
*d^2)*c^2+2*(A*e^2+2*B*d*e)*b*c+B*e^2*b^2)*x^6+1/5*(A*c^2*d^2+2*(2*A*d*e+B*
d^2)*b*c+(A*e^2+2*B*d*e)*b^2)*x^5+1/4*(2*A*d^2*b*c+(2*A*d*e+B*d^2)*b^2)*x^4
+1/3*A*b^2*d^2*x^3
```

maxima [A] time = 0.64, size = 171, normalized size = 1.06

$$\frac{1}{8}Bc^2e^2x^8+\frac{1}{3}Ab^2d^2x^3+\frac{1}{7}\left(2Bc^2de+\left(2Bbc+Ac^2\right)e^2\right)x^7+\frac{1}{6}\left(Bc^2d^2+2\left(2Bbc+Ac^2\right)de+\left(Bb^2+2Abc\right)e^2\right)x^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/3*A*b^2*d^2*x^3 + 1/7*(2*B*c^2*d*e + (2*B*b*c + A*c^2
)*e^2)*x^7 + 1/6*(B*c^2*d^2 + 2*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*e
^2)*x^6 + 1/5*(A*b^2*e^2 + (2*B*b*c + A*c^2)*d^2 + 2*(B*b^2 + 2*A*b*c)*d*e)
*x^5 + 1/4*(2*A*b^2*d*e + (B*b^2 + 2*A*b*c)*d^2)*x^4
```

mupad [B] time = 0.06, size = 161, normalized size = 0.99

$$x^5\left(\frac{2Bb^2de}{5}+\frac{Ab^2e^2}{5}+\frac{2Bbcd^2}{5}+\frac{4Abcde}{5}+\frac{Ac^2d^2}{5}\right)+x^6\left(\frac{Bb^2e^2}{6}+\frac{2Bbcde}{3}+\frac{Abce^2}{3}+\frac{Bc^2d^2}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^5*((A*b^2*e^2)/5 + (A*c^2*d^2)/5 + (2*B*b*c*d^2)/5 + (2*B*b^2*d*e)/5 + (4
*A*b*c*d*e)/5) + x^6*((B*b^2*e^2)/6 + (B*c^2*d^2)/6 + (A*b*c*e^2)/3 + (A*c^
2*d*e)/3 + (2*B*b*c*d*e)/3) + (b*d*x^4*(2*A*b*e + 2*A*c*d + B*b*d))/4 + (c*
e*x^7*(A*c*e + 2*B*b*e + 2*B*c*d))/7 + (A*b^2*d^2*x^3)/3 + (B*c^2*e^2*x^8)/
8
```

sympy [A] time = 0.10, size = 212, normalized size = 1.31

$$\frac{Ab^2d^2x^3}{3}+\frac{Bc^2e^2x^8}{8}+x^7\left(\frac{Ac^2e^2}{7}+\frac{2Bbce^2}{7}+\frac{2Bc^2de}{7}\right)+x^6\left(\frac{Abce^2}{3}+\frac{Ac^2de}{3}+\frac{Bb^2e^2}{6}+\frac{2Bbcde}{3}+\frac{Bc^2d^2}{6}\right)+x^5\Bigg(\frac{Ab^2}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d**2*x**3/3 + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*b*c*e**
2/7 + 2*B*c**2*d*e/7) + x**6*(A*b*c*e**2/3 + A*c**2*d*e/3 + B*b**2*e**2/6 +
 2*B*b*c*d*e/3 + B*c**2*d**2/6) + x**5*(A*b**2*e**2/5 + 4*A*b*c*d*e/5 + A*c
**2*d**2/5 + 2*B*b**2*d*e/5 + 2*B*b*c*d**2/5) + x**4*(A*b**2*d*e/2 + A*b*c*
d**2/2 + B*b**2*d**2/4)
```

3.1117 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=100

$$\frac{1}{5}x^5\left(2bc(Ae+Bd)+Ac^2d+b^2Be\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

```
[Out] 1/3*A*b^2*d*x^3+1/4*b*(A*b*e+2*A*c*d+B*b*d)*x^4+1/5*(A*c^2*d+b^2*B*e+2*b*c*
(A*e+B*d))*x^5+1/6*c*(A*c*e+2*B*b*e+B*c*d)*x^6+1/7*B*c^2*e*x^7
```

Rubi [A] time = 0.11, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{5}x^5\left(2bc(Ae+Bd)+Ac^2d+b^2Be\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d*x^3)/3 + (b*(b*B*d + 2*A*c*d + A*b*e)*x^4)/4 + ((A*c^2*d + b^2*B*e
 + 2*b*c*(B*d + A*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2
*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(bx+cx^2\right)^2\,dx &= \int \left(Ab^2dx^2+b(bBd+2Acd+Abe)x^3+\left(Ac^2d+b^2Be+2bc(Bd+Ae)\right)\right.\\ &= \frac{1}{3}Ab^2dx^3+\frac{1}{4}b(bBd+2Acd+Abe)x^4+\frac{1}{5}\left(Ac^2d+b^2Be+2bc(Bd+Ae\right.\end{aligned}$$

Mathematica [A] time = 0.03, size = 101, normalized size = 1.01

$$\frac{1}{5}x^5\left(2Abce+Ac^2d+b^2Be+2bBcd\right)+\frac{1}{3}Ab^2dx^3+\frac{1}{6}cx^6(Ace+2bBe+Bcd)+\frac{1}{4}bx^4(Abe+2Acd+bBd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*d*x^3)/3 + (b*(b*B*d + 2*A*c*d + A*b*e)*x^4)/4 + ((2*b*B*c*d + A*c^2
*d + b^2*B*e + 2*A*b*c*e)*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B
*c^2*e*x^7)/7
```

fricas [A] time = 0.54, size = 117, normalized size = 1.17

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{3}x^6ecbB+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5dcbB+\frac{1}{5}x^5eb^2B+\frac{1}{5}x^5dc^2A+\frac{2}{5}x^5ecbA+\frac{1}{4}x^4db^2B+\frac{1}{2}x^4dcbA+\frac{1}{4}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/3*x^6*e*c*b*B + 1/6*x^6*e*c^2*A + 2/5
*x^5*d*c*b*B + 1/5*x^5*e*b^2*B + 1/5*x^5*d*c^2*A + 2/5*x^5*e*c*b*A + 1/4*x^
4*d*b^2*B + 1/2*x^4*d*c*b*A + 1/4*x^4*e*b^2*A + 1/3*x^3*d*b^2*A
```

giac [A] time = 0.15, size = 123, normalized size = 1.23

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{3}Bbcx^6e+\frac{1}{6}Ac^2x^6e+\frac{2}{5}Bbcdx^5+\frac{1}{5}Ac^2dx^5+\frac{1}{5}Bb^2x^5e+\frac{2}{5}Abcx^5e+\frac{1}{4}Bb^2dx^4+\frac{1}{2}Abcdx^4+\frac{1}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/3*B*b*c*x^6*e + 1/6*A*c^2*x^6*e + 2/5
*B*b*c*d*x^5 + 1/5*A*c^2*d*x^5 + 1/5*B*b^2*x^5*e + 2/5*A*b*c*x^5*e + 1/4*B*
b^2*d*x^4 + 1/2*A*b*c*d*x^4 + 1/4*A*b^2*x^4*e + 1/3*A*b^2*d*x^3
```

maple [A] time = 0.04, size = 97, normalized size = 0.97

$$\frac{B\,c^2e\,x^7}{7}+\frac{A\,b^2d\,x^3}{3}+\frac{\left(2Bbce+(Ae+Bd)\,c^2\right)x^6}{6}+\frac{\left(A\,c^2d+B\,b^2e+2\,(Ae+Bd)\,bc\right)x^5}{5}+\frac{\left(2Abcd+(Ae+Bd)\,b^2\right)x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*((A*e+B*d)*c^2+2*B*e*b*c)*x^6+1/5*(A*c^2*d+b^2*B*e+2*b*
c*(A*e+B*d))*x^5+1/4*(2*A*b*c*d+b^2*(A*e+B*d))*x^4+1/3*A*b^2*d*x^3
```

maxima [A] time = 0.49, size = 103, normalized size = 1.03

$$\frac{1}{7}Bc^2ex^7+\frac{1}{3}Ab^2dx^3+\frac{1}{6}\left(Bc^2d+\left(2\,Bbc+Ac^2\right)e\right)x^6+\frac{1}{5}\left(\left(2\,Bbc+Ac^2\right)d+\left(Bb^2+2\,Abc\right)e\right)x^5+\frac{1}{4}\left(Ab^2e+\left(Bb^2+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/3*A*b^2*d*x^3 + 1/6*(B*c^2*d + (2*B*b*c + A*c^2)*e)*x^6
 + 1/5*((2*B*b*c + A*c^2)*d + (B*b^2 + 2*A*b*c)*e)*x^5 + 1/4*(A*b^2*e + (B*
b^2 + 2*A*b*c)*d)*x^4
```

mupad [B] time = 0.05, size = 102, normalized size = 1.02

$$x^5\left(\frac{A\,c^2\,d}{5}+\frac{B\,b^2\,e}{5}+\frac{2\,A\,b\,c\,e}{5}+\frac{2\,B\,b\,c\,d}{5}\right)+x^4\left(\frac{A\,b^2\,e}{4}+\frac{B\,b^2\,d}{4}+\frac{A\,b\,c\,d}{2}\right)+x^6\left(\frac{A\,c^2\,e}{6}+\frac{B\,c^2\,d}{6}+\frac{B\,b\,c\,e}{3}\right)+\frac{A\,b^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x),x)
```

```
[Out] x^5*((A*c^2*d)/5 + (B*b^2*e)/5 + (2*A*b*c*e)/5 + (2*B*b*c*d)/5) + x^4*((A*b
^2*e)/4 + (B*b^2*d)/4 + (A*b*c*d)/2) + x^6*((A*c^2*e)/6 + (B*c^2*d)/6 + (B*
b*c*e)/3) + (A*b^2*d*x^3)/3 + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.09, size = 121, normalized size = 1.21

$$\frac{Ab^2dx^3}{3}+\frac{Bc^2ex^7}{7}+x^6\left(\frac{Ac^2e}{6}+\frac{Bbce}{3}+\frac{Bc^2d}{6}\right)+x^5\left(\frac{2Abce}{5}+\frac{Ac^2d}{5}+\frac{Bb^2e}{5}+\frac{2Bbcd}{5}\right)+x^4\left(\frac{Ab^2e}{4}+\frac{Abcd}{2}+\frac{Bb^2d}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*d*x**3/3 + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*b*c*e/3 + B*c**2*d
/6) + x**5*(2*A*b*c*e/5 + A*c**2*d/5 + B*b**2*e/5 + 2*B*b*c*d/5) + x**4*(A*
b**2*e/4 + A*b*c*d/2 + B*b**2*d/4)
```

3.1118 $\int (A+Bx)\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=55

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

```
[Out] 1/3*A*b^2*x^3+1/4*b*(2*A*c+B*b)*x^4+1/5*c*(A*c+2*B*b)*x^5+1/6*B*c^2*x^6
```

Rubi [A] time = 0.04, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{3}Ab^2x^3+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{4}bx^4(2Ac+bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (A*b^2*x^3)/3 + (b*(b*B + 2*A*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*
x^6)/6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^2\,dx&=\int \left(Ab^2x^2+b(bB+2Ac)x^3+c(2bB+Ac)x^4+Bc^2x^5\right)\,dx\\&=\frac{1}{3}Ab^2x^3+\frac{1}{4}b(bB+2Ac)x^4+\frac{1}{5}c(2bB+Ac)x^5+\frac{1}{6}Bc^2x^6\end{aligned}$$

Mathematica [A] time = 0.01, size = 49, normalized size = 0.89

$$\frac{1}{60}x^3\left(20Ab^2+12cx^2(Ac+2bB)+15bx(2Ac+bB)+10Bc^2x^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^2,x]
```

```
[Out] (x^3*(20*A*b^2 + 15*b*(b*B + 2*A*c)*x + 12*c*(2*b*B + A*c)*x^2 + 10*B*c^2*x
^3))/60
```

fricas [A] time = 0.71, size = 53, normalized size = 0.96

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4cbA+\frac{1}{3}x^3b^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*b
*A + 1/3*x^3*b^2*A
```

giac [A] time = 0.16, size = 53, normalized size = 0.96

$$\frac{1}{6}\,Bc^{2}x^{6}+\frac{2}{5}\,Bbcx^{5}+\frac{1}{5}\,Ac^{2}x^{5}+\frac{1}{4}\,Bb^{2}x^{4}+\frac{1}{2}\,Abcx^{4}+\frac{1}{3}\,Ab^{2}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*A*b*c*x
^4 + 1/3*A*b^2*x^3
```

maple [A] time = 0.04, size = 52, normalized size = 0.95

$$\frac{B\,c^{2}x^{6}}{6}+\frac{A\,b^{2}x^{3}}{3}+\frac{\left(A\,c^{2}+2bBc\right)x^{5}}{5}+\frac{\left(2Abc+b^{2}B\right)x^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*b^2)*x^4+1/3*A*b^2*x^3
```

maxima [A] time = 0.47, size = 51, normalized size = 0.93

$$\frac{1}{6}\,Bc^{2}x^{6}+\frac{1}{3}\,Ab^{2}x^{3}+\frac{1}{5}\,\left(2\,Bbc+Ac^{2}\right)x^{5}+\frac{1}{4}\,\left(Bb^{2}+2\,Abc\right)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/3*A*b^2*x^3 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*
A*b*c)*x^4
```

mupad [B] time = 1.34, size = 51, normalized size = 0.93

$$x^{4}\,\left(\frac{B\,b^{2}}{4}+\frac{A\,c\,b}{2}\right)+x^{5}\,\left(\frac{A\,c^{2}}{5}+\frac{2\,B\,b\,c}{5}\right)+\frac{A\,b^{2}\,x^{3}}{3}+\frac{B\,c^{2}\,x^{6}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x),x)
```

```
[Out] x^4*((B*b^2)/4 + (A*b*c)/2) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + (A*b^2*x^3)/3
 + (B*c^2*x^6)/6
```

sympy [A] time = 0.08, size = 54, normalized size = 0.98

$$\frac{Ab^{2}x^{3}}{3}+\frac{Bc^{2}x^{6}}{6}+x^{5}\left(\frac{Ac^{2}}{5}+\frac{2Bbc}{5}\right)+x^{4}\left(\frac{Abc}{2}+\frac{Bb^{2}}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2,x)
```

```
[Out] A*b**2*x**3/3 + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2
 + B*b**2/4)
```

3.1119 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=161

$$-\frac{d^2(Bd-Ae)(cd-be)^2\log(d+ex)}{e^6}+\frac{dx(Bd-Ae)(cd-be)^2}{e^5}-\frac{x^2(Bd-Ae)(cd-be)^2}{2e^4}-\frac{x^3\left(Ace(cd-2be)-B(c\right.}{3e^3}$$

```
[Out] d*(-A*e+B*d)*(-b*e+c*d)^2*x/e^5-1/2*(-A*e+B*d)*(-b*e+c*d)^2*x^2/e^4-1/3*(A*
c*e*(-2*b*e+c*d)-B*(-b*e+c*d)^2)*x^3/e^3-1/4*c*(-A*c*e-2*B*b*e+B*c*d)*x^4/e
^2+1/5*B*c^2*x^5/e-d^2*(-A*e+B*d)*(-b*e+c*d)^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.23, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{d^2(Bd-Ae)(cd-be)^2\log(d+ex)}{e^6}-\frac{cx^4(-Ace-2bBe+Bcd)}{4e^2}-\frac{x^3\left(Ace(cd-2be)-B(cd-be)^2\right)}{3e^3}-\frac{x^2(Bd-Ae}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (d*(B*d - A*e)*(c*d - b*e)^2*x)/e^5 - ((B*d - A*e)*(c*d - b*e)^2*x^2)/(2*e^
4) - ((A*c*e*(c*d - 2*b*e) - B*(c*d - b*e)^2)*x^3)/(3*e^3) - (c*(B*c*d - 2*
b*B*e - A*c*e)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - (d^2*(B*d - A*e)*(c*d - b
*e)^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{d+ex}\,dx&=\int \left(\frac{d(Bd-Ae)(cd-be)^2}{e^5}+\frac{(-Bd+Ae)(-cd+be)^2x}{e^4}+\frac{\left(-Ace(cd-2be)+B(cd\right.}{e^3}\right.\\&=\frac{d(Bd-Ae)(cd-be)^2x}{e^5}-\frac{(Bd-Ae)(cd-be)^2x^2}{2e^4}-\frac{\left(Ace(cd-2be)-B(cd-be)^2\right)}{3e^3}\end{aligned}$$

Mathematica [A] time = 0.14, size = 156, normalized size = 0.97

$$\frac{-60d^2(Bd-Ae)(cd-be)^2\log(d+ex)+15ce^4x^4(Ace+2bBe-Bcd)+20e^3x^3\left(Ace(2be-cd)+B(cd-be)^2\right)+}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (60*d*e*(B*d - A*e)*(c*d - b*e)^2*x + 30*e^2*(-(B*d) + A*e)*(c*d - b*e)^2*x
^2 + 20*e^3*(B*(c*d - b*e)^2 + A*c*e*(-(c*d) + 2*b*e))*x^3 + 15*c*e^4*(-(B*
c*d) + 2*b*B*e + A*c*e)*x^4 + 12*B*c^2*e^5*x^5 - 60*d^2*(B*d - A*e)*(c*d -
b*e)^2*Log[d + e*x])/(60*e^6)
```

fricas [A] time = 0.89, size = 283, normalized size = 1.76

$$12\,Bc^2e^5x^5 - 15\left(Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 20\left(Bc^2d^2e^3 - \left(2\,Bbc + Ac^2\right)de^4 + \left(Bb^2 + 2\,Abc\right)e^5\right)x^3 - 30\left(Bc^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 20*
(B*c^2*d^2*e^3 - (2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 - 30*
(B*c^2*d^3*e^2 - A*b^2*e^5 - (2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*A*b*c)*
d*e^4)*x^2 + 60*(B*c^2*d^4*e - A*b^2*d*e^4 - (2*B*b*c + A*c^2)*d^3*e^2 + (B
*b^2 + 2*A*b*c)*d^2*e^3)*x - 60*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c
^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*log(e*x + d))/e^6
```

giac [B] time = 0.16, size = 322, normalized size = 2.00

$$-\left(Bc^2d^5 - 2\,Bbcd^4e - Ac^2d^4e + Bb^2d^3e^2 + 2\,Abcd^3e^2 - Ab^2d^2e^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{60}\left(12\,Bc^2x^5e^4 - 15\,Bc^2dx^4e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2
 - A*b^2*d^2*e^3)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*c^2*x^5*e^4 - 15*B*
c^2*d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^2*e + 60*B*c^2*d^4*x
+ 30*B*b*c*x^4*e^4 + 15*A*c^2*x^4*e^4 - 40*B*b*c*d*x^3*e^3 - 20*A*c^2*d*x^3
*e^3 + 60*B*b*c*d^2*x^2*e^2 + 30*A*c^2*d^2*x^2*e^2 - 120*B*b*c*d^3*x*e - 60
*A*c^2*d^3*x*e + 20*B*b^2*x^3*e^4 + 40*A*b*c*x^3*e^4 - 30*B*b^2*d*x^2*e^3 -
 60*A*b*c*d*x^2*e^3 + 60*B*b^2*d^2*x*e^2 + 120*A*b*c*d^2*x*e^2 + 30*A*b^2*x
^2*e^4 - 60*A*b^2*d*x*e^3)*e^(-5)
```

maple [B] time = 0.05, size = 369, normalized size = 2.29

$$\frac{B\,c^2x^5}{5e} + \frac{A\,c^2x^4}{4e} + \frac{Bbc\,x^4}{2e} - \frac{B\,c^2d\,x^4}{4e^2} + \frac{2Abc\,x^3}{3e} - \frac{A\,c^2d\,x^3}{3e^2} + \frac{B\,b^2x^3}{3e} - \frac{2Bbcd\,x^3}{3e^2} + \frac{B\,c^2d^2x^3}{3e^3} + \frac{A\,b^2x^2}{2e} - \frac{Abcd\,x^2}{e^2} + \frac{A\,c^2d^2x}{2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x)
```

```
[Out] 1/e^3*B*x*b^2*d^2-1/e^2*A*x*b^2*d-1/e^4*A*x*c^2*d^3+1/3/e^3*B*x^3*c^2*d^2+1
/2/e^3*A*x^2*c^2*d^2-1/2/e^2*B*x^2*b^2*d-1/2/e^4*B*x^2*c^2*d^3+2/3/e*A*x^3*
b*c-1/3/e^2*A*x^3*c^2*d-1/4/e^2*B*x^4*c^2*d+1/2/e*B*x^4*b*c+2/e^3*A*x*b*c*d
^2-1/e^2*A*x^2*b*c*d+1/e^3*B*x^2*b*c*d^2-2/e^4*B*x*b*c*d^3-2/3/e^2*B*x^3*b*
c*d-2*d^3/e^4*ln(e*x+d)*A*b*c+2*d^4/e^5*ln(e*x+d)*B*b*c+1/3/e*B*x^3*b^2+1/2
/e*A*x^2*b^2+1/4/e*A*x^4*c^2+d^4/e^5*ln(e*x+d)*A*c^2+1/e^5*B*x*c^2*d^4+d^2/
e^3*ln(e*x+d)*A*b^2-d^3/e^4*ln(e*x+d)*B*b^2-d^5/e^6*ln(e*x+d)*B*c^2+1/5*B*c
^2*x^5/e
```

maxima [A] time = 0.54, size = 282, normalized size = 1.75

$$12\,Bc^2e^4x^5 - 15\left(Bc^2de^3 - \left(2\,Bbc + Ac^2\right)e^4\right)x^4 + 20\left(Bc^2d^2e^2 - \left(2\,Bbc + Ac^2\right)de^3 + \left(Bb^2 + 2\,Abc\right)e^4\right)x^3 - 30\left(Bc^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - (2*B*b*c + A*c^2)*e^4)*x^4 + 20*
(B*c^2*d^2*e^2 - (2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*A*b*c)*e^4)*x^3 - 30*
(B*c^2*d^3*e - A*b^2*e^4 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*
e^3)*x^2 + 60*(B*c^2*d^4 - A*b^2*d*e^3 - (2*B*b*c + A*c^2)*d^3*e + (B*b^2 +
 2*A*b*c)*d^2*e^2)*x)/e^5 - (B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*
d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.37, size = 308, normalized size = 1.91

$$x^4\left(\frac{A\,c^2+2\,B\,b\,c}{4\,e}-\frac{B\,c^2\,d}{4\,e^2}\right)+x^3\left(\frac{B\,b^2+2\,A\,c\,b}{3\,e}-\frac{d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e}-\frac{B\,c^2\,d}{e^2}\right)}{3\,e}\right)+x^2\left(\frac{A\,b^2}{2\,e}-\frac{d\,\left(\frac{B\,b^2+2\,A\,c\,b}{e}-\frac{d\,\left(\frac{A\,c^2+2\,B}{e}\right.}{}\right.}{2\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x),x)
```

```
[Out] x^4*((A*c^2 + 2*B*b*c)/(4*e) - (B*c^2*d)/(4*e^2)) + x^3*((B*b^2 + 2*A*b*c)/
(3*e) - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/(3*e)) + x^2*((A*b^2)/(2*
e) - (d*((B*b^2 + 2*A*b*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e)
)/(2*e)) - (log(d + e*x)*(B*c^2*d^5 - A*c^2*d^4*e - A*b^2*d^2*e^3 + B*b^2*d
^3*e^2 - 2*B*b*c*d^4*e + 2*A*b*c*d^3*e^2))/e^6 - (d*x*((A*b^2)/e - (d*((B*b
^2 + 2*A*b*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e))/e))/e + (B*
c^2*x^5)/(5*e)
```

sympy [A] time = 0.62, size = 280, normalized size = 1.74

$$\frac{Bc^2x^5}{5e}-\frac{d^2\left(-Ae+Bd\right)\left(be-cd\right)^2\log\left(d+ex\right)}{e^6}+x^4\left(\frac{Ac^2}{4e}+\frac{Bbc}{2e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(\frac{2Abc}{3e}-\frac{Ac^2d}{3e^2}+\frac{Bb^2}{3e}-\frac{2Bbcd}{3e^2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) - d**2*(-A*e + B*d)*(b*e - c*d)**2*log(d + e*x)/e**6 + x*
*4*(A*c**2/(4*e) + B*b*c/(2*e) - B*c**2*d/(4*e**2)) + x**3*(2*A*b*c/(3*e) -
 A*c**2*d/(3*e**2) + B*b**2/(3*e) - 2*B*b*c*d/(3*e**2) + B*c**2*d**2/(3*e**
3)) + x**2*(A*b**2/(2*e) - A*b*c*d/e**2 + A*c**2*d**2/(2*e**3) - B*b**2*d/(
2*e**2) + B*b*c*d**2/e**3 - B*c**2*d**3/(2*e**4)) + x*(-A*b**2*d/e**2 + 2*A
*b*c*d**2/e**3 - A*c**2*d**3/e**4 + B*b**2*d**2/e**3 - 2*B*b*c*d**3/e**4 +
B*c**2*d**4/e**5)
```

3.1120 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=194

$$\frac{d^2(Bd-Ae)(cd-be)^2}{e^6(d+ex)}+\frac{d(cd-be)\log(d+ex)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6}-\frac{x(cd-be)(2Bd(2cd-be)-Ae(3c}{e^5}$$

```
[Out] -(-b*e+c*d)*(2*B*d*(-b*e+2*c*d)-A*e*(-b*e+3*c*d))*x/e^5+1/2*(-b*e+c*d)*(-2*
A*c*e-B*b*e+3*B*c*d)*x^2/e^4-1/3*c*(-A*c*e-2*B*b*e+2*B*c*d)*x^3/e^3+1/4*B*c
^2*x^4/e^2+d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)+d*(-b*e+c*d)*(B*d*(-3*b*
e+5*c*d)-2*A*e*(-b*e+2*c*d))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.28, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{d^2(Bd-Ae)(cd-be)^2}{e^6(d+ex)}-\frac{cx^3(-Ace-2bBe+2Bcd)}{3e^3}+\frac{x^2(cd-be)(-2Ace-bBe+3Bcd)}{2e^4}-\frac{x(cd-be)(2Bd(2cd-be)-}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -(((c*d - b*e)*(2*B*d*(2*c*d - b*e) - A*e*(3*c*d - b*e))*x)/e^5) + ((c*d -
b*e)*(3*B*c*d - b*B*e - 2*A*c*e)*x^2)/(2*e^4) - (c*(2*B*c*d - 2*b*B*e - A*c
*e)*x^3)/(3*e^3) + (B*c^2*x^4)/(4*e^2) + (d^2*(B*d - A*e)*(c*d - b*e)^2)/(e
^6*(d + e*x)) + (d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*
Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^2}\,dx &= \int \left(\frac{(cd-be)(-2Bd(2cd-be)+Ae(3cd-be))}{e^5}+\frac{(-cd+be)(-3Bcd+bBe+2Ace)x}{e^4}\right.\\ &= -\frac{(cd-be)(2Bd(2cd-be)-Ae(3cd-be))x}{e^5}+\frac{(cd-be)(3Bcd-bBe-2Ace)x^2}{2e^4}-c(\end{aligned}$$

Mathematica [A] time = 0.08, size = 184, normalized size = 0.95

$$\frac{\frac{12d^2(Bd-Ae)(cd-be)^2}{d+ex}+4ce^3x^3(Ace+2bBe-2Bcd)+6e^2x^2(be-cd)(2Ace+bBe-3Bcd)+12ex(be-cd)(Ae(be-3c}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*e*(-(c*d) + b*e)*(2*B*d*(2*c*d - b*e) + A*e*(-3*c*d + b*e))*x + 6*e^2*(
-(c*d) + b*e)*(-3*B*c*d + b*B*e + 2*A*c*e)*x^2 + 4*c*e^3*(-2*B*c*d + 2*b*B*
e + A*c*e)*x^3 + 3*B*c^2*e^4*x^4 + (12*d^2*(B*d - A*e)*(c*d - b*e)^2)/(d +
e*x) + 12*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*e*(-2*c*d + b*e))*Log[d
+ e*x])/(12*e^6)
```

fricas [B] time = 0.92, size = 420, normalized size = 2.16

$$\frac{3 Bc^2e^5x^5 + 12 Bc^2d^5 - 12 Ab^2d^2e^3 - 12 \left(2 Bbc + Ac^2\right)d^4e + 12 \left(Bb^2 + 2 Abc\right)d^3e^2 - (5 Bc^2de^4 - 4 (2 Bbc + Ac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c
^2)*d^4*e + 12*(B*b^2 + 2*A*b*c)*d^3*e^2 - (5*B*c^2*d*e^4 - 4*(2*B*b*c + A*
c^2)*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
 2*A*b*c)*e^5)*x^3 - 6*(5*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 4*(2*B*b*c + A*c^2)
*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 - 12*(4*B*c^2*d^4*e - A*b^2*d*e^4
 - 3*(2*B*b*c + A*c^2)*d^3*e^2 + 2*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 12*(5*B*c
^2*d^5 - 2*A*b^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*
d^3*e^2 + (5*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*
(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.17, size = 380, normalized size = 1.96

$$\frac{1}{12}\left(3 Bc^2 - \frac{4 \left(5 Bc^2de - 2 Bbce^2 - Ac^2e^2\right)e^{(-1)}}{xe + d} + \frac{6 \left(10 Bc^2d^2e^2 - 8 Bbcde^3 - 4 Ac^2de^3 + Bb^2e^4 + 2 Abce^4\right)e^{(-2)}}{(xe + d)^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - 2*B*b*c*e^2 - A*c^2*e^2)*e^(-1)/(x*e + d)
+ 6*(10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 + B*b^2*e^4 + 2*A*b*c
*e^4)*e^(-2)/(x*e + d)^2 - 12*(10*B*c^2*d^3*e^3 - 12*B*b*c*d^2*e^4 - 6*A*c^
2*d^2*e^4 + 3*B*b^2*d*e^5 + 6*A*b*c*d*e^5 - A*b^2*e^6)*e^(-3)/(x*e + d)^3)*
(x*e + d)^4*e^(-6) - (5*B*c^2*d^4 - 8*B*b*c*d^3*e - 4*A*c^2*d^3*e + 3*B*b^2
*d^2*e^2 + 6*A*b*c*d^2*e^2 - 2*A*b^2*d*e^3)*e^(-6)*log(abs(x*e + d)*e^(-1)/
(x*e + d)^2) + (B*c^2*d^5*e^4/(x*e + d) - 2*B*b*c*d^4*e^5/(x*e + d) - A*c^2
*d^4*e^5/(x*e + d) + B*b^2*d^3*e^6/(x*e + d) + 2*A*b*c*d^3*e^6/(x*e + d) -
A*b^2*d^2*e^7/(x*e + d))*e^(-10)
```

maple [B] time = 0.05, size = 394, normalized size = 2.03

$$\frac{B c^2x^4}{4e^2} + \frac{A c^2x^3}{3e^2} + \frac{2Bbc x^3}{3e^2} - \frac{2B c^2d x^3}{3e^3} + \frac{Abc x^2}{e^2} - \frac{A c^2d x^2}{e^3} + \frac{B b^2x^2}{2e^2} - \frac{2Bbcd x^2}{e^3} + \frac{3B c^2d^2x^2}{2e^4} - \frac{A b^2d^2}{(ex + d) e^3} - \frac{2A b^2d \ln}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x)
```

```
[Out] -8*d^3/e^5*ln(e*x+d)*B*b*c+6*d^2/e^4*ln(e*x+d)*A*b*c+2*d^3/e^4/(e*x+d)*A*b*
c-2*d^4/e^5/(e*x+d)*B*b*c-2/e^3*B*x^2*b*c*d-4/e^3*A*b*c*d*x+6/e^4*B*b*c*d^2
*x+1/3/e^2*A*x^3*c^2+1/e^2*A*b^2*x+3/2/e^4*B*x^2*c^2*d^2+3/e^4*A*c^2*d^2*x+
2/3/e^2*B*x^3*b*c-2/3/e^3*B*x^3*c^2*d-2*d/e^3*ln(e*x+d)*A*b^2-4*d^3/e^5*ln(
e*x+d)*A*c^2+3*d^2/e^4*ln(e*x+d)*B*b^2+5*d^4/e^6*ln(e*x+d)*B*c^2-2/e^3*B*b^
2*d*x-4/e^5*B*c^2*d^3*x+d^5/e^6/(e*x+d)*B*c^2-d^2/e^3/(e*x+d)*A*b^2+d^3/e^4
/(e*x+d)*B*b^2+1/e^2*A*x^2*b*c-1/e^3*A*x^2*c^2*d-d^4/e^5/(e*x+d)*A*c^2+1/4*
B*c^2*x^4/e^2+1/2*b^2*B*x^2/e^2
```

maxima [A] time = 0.53, size = 291, normalized size = 1.50

$$\frac{Bc^2d^5 - Ab^2d^2e^3 - \left(2 Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2 Abc\right)d^3e^2}{e^7x + de^6} + \frac{3 Bc^2e^3x^4 - 4 \left(2 Bc^2de^2 - \left(2 Bbc + Ac^2\right)e^3\right)x^3 + 6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^
3*e^2)/(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - (2*B*b*
c + A*c^2)*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2
 + 2*A*b*c)*e^3)*x^2 - 12*(4*B*c^2*d^3 - A*b^2*e^3 - 3*(2*B*b*c + A*c^2)*d^
2*e + 2*(B*b^2 + 2*A*b*c)*d*e^2)*x)/e^5 + (5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*
(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.43, size = 371, normalized size = 1.91

$$x\left(\frac{A\,b^2}{e^2}-\frac{d^2\,\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e^2}+\frac{2\,d\,\left(\frac{2\,d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b}{e^2}+\frac{B\,c^2\,d^2}{e^4}\right)}{e}\right)+x^3\,\left(\frac{A\,c^2+2\,B\,b\,c}{3\,e^2}-\frac{2\,B\,c^2}{3\,e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2)/e^2 - (d^2*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e^2 + (2*d
*((2*d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (B*b^2 + 2*A*b*c)/e^2
 + (B*c^2*d^2)/e^4))/e) + x^3*((A*c^2 + 2*B*b*c)/(3*e^2) - (2*B*c^2*d)/(3*e
^3)) - x^2*((d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (B*b^2 + 2*A*
b*c)/(2*e^2) + (B*c^2*d^2)/(2*e^4)) + (B*c^2*d^5 - A*c^2*d^4*e - A*b^2*d^2*
e^3 + B*b^2*d^3*e^2 - 2*B*b*c*d^4*e + 2*A*b*c*d^3*e^2)/(e*(d*e^5 + e^6*x))
+ (log(d + e*x)*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e + 3*B*b^2*d^2*
e^2 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/e^6 + (B*c^2*x^4)/(4*e^2)
```

sympy [A] time = 1.39, size = 316, normalized size = 1.63

$$\frac{Bc^2x^4}{4e^2}+\frac{d\,(be-cd)\left(-2Abe^2+4Acde+3Bbde-5Bcd^2\right)\log{(d+ex)}}{e^6}+x^3\left(\frac{Ac^2}{3e^2}+\frac{2Bbc}{3e^2}-\frac{2Bc^2d}{3e^3}\right)+x^2\left(\frac{Abc}{e^2}-\frac{Ac^2}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + d*(b*e - c*d)*(-2*A*b*e**2 + 4*A*c*d*e + 3*B*b*d*e -
 5*B*c*d**2)*log(d + e*x)/e**6 + x**3*(A*c**2/(3*e**2) + 2*B*b*c/(3*e**2) -
 2*B*c**2*d/(3*e**3)) + x**2*(A*b*c/e**2 - A*c**2*d/e**3 + B*b**2/(2*e**2)
- 2*B*b*c*d/e**3 + 3*B*c**2*d**2/(2*e**4)) + x*(A*b**2/e**2 - 4*A*b*c*d/e**
3 + 3*A*c**2*d**2/e**4 - 2*B*b**2*d/e**3 + 6*B*b*c*d**2/e**4 - 4*B*c**2*d**
3/e**5) + (-A*b**2*d**2*e**3 + 2*A*b*c*d**3*e**2 - A*c**2*d**4*e + B*b**2*d
**3*e**2 - 2*B*b*c*d**4*e + B*c**2*d**5)/(d*e**6 + e**7*x)
```

3.1121 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=232

$$\frac{\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{e^6}-\frac{x\left(Ace(3cd-2be)-B\left(b^2e^2-6bcde\right.\right.}{e^5}$$

```
[Out] -(A*c*e*(-2*b*e+3*c*d)-B*(b^2*e^2-6*b*c*d*e+6*c^2*d^2))*x/e^5-1/2*c*(-A*c*e
-2*B*b*e+3*B*c*d)*x^2/e^4+1/3*B*c^2*x^3/e^3+1/2*d^2*(-A*e+B*d)*(-b*e+c*d)^2
/e^6/(e*x+d)^2-d*(-b*e+c*d)*(B*d*(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*
x+d)+(A*e*(b^2*e^2-6*b*c*d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^
2))*ln(e*x+d)/e^6
```

Rubi **[A]** time = 0.32, antiderivative size = 232, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{x\left(Ace(3cd-2be)-B\left(b^2e^2-6bcde+6c^2d^2\right)\right)}{e^5}+\frac{\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde\right.\right.}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] -(((A*c*e*(3*c*d - 2*b*e) - B*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*x)/e^5) -
(c*(3*B*c*d - 2*b*B*e - A*c*e)*x^2)/(2*e^4) + (B*c^2*x^3)/(3*e^3) + (d^2*(B
*d - A*e)*(c*d - b*e)^2)/(2*e^6*(d + e*x)^2) - (d*(c*d - b*e)*(B*d*(5*c*d -
 3*b*e) - 2*A*e*(2*c*d - b*e)))/(e^6*(d + e*x)) + ((A*e*(6*c^2*d^2 - 6*b*c*
d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/e
^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^3}\,dx &= \int \left(\frac{-Ace(3cd-2be)+B\left(6c^2d^2-6bcde+b^2e^2\right)}{e^5}+\frac{c(-3Bcd+2bBe+Ace)x}{e^4}+\right.\\ &= -\frac{\left(Ace(3cd-2be)-B\left(6c^2d^2-6bcde+b^2e^2\right)\right)x}{e^5}-\frac{c(3Bcd-2bBe-Ace)x^2}{2e^4}+B\end{aligned}$$

Mathematica **[A]** time = 0.16, size = 219, normalized size = 0.94

$$\frac{6ex\left(Ace(2be-3cd)+B\left(b^2e^2-6bcde+6c^2d^2\right)\right)+6\log(d+ex)\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)+Bd\left(-3b^2e^2+1\right.\right.}{6e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*e*(A*c*e*(-3*c*d + 2*b*e) + B*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*x + 3*c
*e^2*(-3*B*c*d + 2*b*B*e + A*c*e)*x^2 + 2*B*c^2*e^3*x^3 + (3*d^2*(B*d - A*e
)*(c*d - b*e)^2)/(d + e*x)^2 - (6*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*
e*(-2*c*d + b*e)))/(d + e*x) + 6*(B*d*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*e^2
) + A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*Log[d + e*x])/(6*e^6)
```

fricas [**B**] time = 0.61, size = 483, normalized size = 2.08

$$\frac{2\,Bc^2e^5x^5 - 27\,Bc^2d^5 + 9\,Ab^2d^2e^3 + 21\left(2\,Bbc + Ac^2\right)d^4e - 15\left(Bb^2 + 2\,Abc\right)d^3e^2 - \left(5\,Bc^2de^4 - 3\left(2\,Bbc + Ac^2\right)e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 + 9*A*b^2*d^2*e^3 + 21*(2*B*b*c + A*c^2
)*d^4*e - 15*(B*b^2 + 2*A*b*c)*d^3*e^2 - (5*B*c^2*d*e^4 - 3*(2*B*b*c + A*c^
2)*e^5)*x^4 + 2*(10*B*c^2*d^2*e^3 - 6*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
2*A*b*c)*e^5)*x^3 + 3*(21*B*c^2*d^3*e^2 - 11*(2*B*b*c + A*c^2)*d^2*e^3 + 4*
(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(B*c^2*d^4*e + 2*A*b^2*d*e^4 + (2*B*b*c +
A*c^2)*d^3*e^2 - 2*(B*b^2 + 2*A*b*c)*d^2*e^3)*x - 6*(10*B*c^2*d^5 - A*b^2*d
^2*e^3 - 6*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + (10*B*c^
2*d^3*e^2 - A*b^2*e^5 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d
*e^4)*x^2 + 2*(10*B*c^2*d^4*e - A*b^2*d*e^4 - 6*(2*B*b*c + A*c^2)*d^3*e^2 +
 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x + d^2*e
^6)
```

giac [**A**] time = 0.16, size = 307, normalized size = 1.32

$$-\left(10\,Bc^2d^3 - 12\,Bbcd^2e - 6\,Ac^2d^2e + 3\,Bb^2de^2 + 6\,Abcde^2 - Ab^2e^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,Bc^2x^3e^6 - 9\,Bc^2dx^2e^5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(10*B*c^2*d^3 - 12*B*b*c*d^2*e - 6*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d
*e^2 - A*b^2*e^3)*e^(-6)*log(abs(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2
*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4 + 6*B*b*c*x^2*e^6 + 3*A*c^2*x^2*e^6 - 36*B*
b*c*d*x*e^5 - 18*A*c^2*d*x*e^5 + 6*B*b^2*x*e^6 + 12*A*b*c*x*e^6)*e^(-9) - 1
/2*(9*B*c^2*d^5 - 14*B*b*c*d^4*e - 7*A*c^2*d^4*e + 5*B*b^2*d^3*e^2 + 10*A*b
*c*d^3*e^2 - 3*A*b^2*d^2*e^3 + 2*(5*B*c^2*d^4*e - 8*B*b*c*d^3*e^2 - 4*A*c^2
*d^3*e^2 + 3*B*b^2*d^2*e^3 + 6*A*b*c*d^2*e^3 - 2*A*b^2*d*e^4)*x)*e^(-6)/(x*
e + d)^2
```

maple [**A**] time = 0.06, size = 420, normalized size = 1.81

$$\frac{B\,c^2x^3}{3e^3} - \frac{A\,b^2d^2}{2\left(ex+d\right)^2e^3} + \frac{Abc\,d^3}{\left(ex+d\right)^2e^4} - \frac{A\,c^2d^4}{2\left(ex+d\right)^2e^5} + \frac{A\,c^2x^2}{2e^3} + \frac{B\,b^2d^3}{2\left(ex+d\right)^2e^4} - \frac{Bbc\,d^4}{\left(ex+d\right)^2e^5} + \frac{Bbc\,x^2}{e^3} + \frac{B\,c^2d^5}{2\left(ex+d\right)^2e^6} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x)
```

```
[Out] -6/e^4*ln(e*x+d)*A*b*c*d+12/e^5*ln(e*x+d)*B*b*c*d^2+d^3/e^4/(e*x+d)^2*A*b*c
-d^4/e^5/(e*x+d)^2*B*b*c-6*d^2/e^4/(e*x+d)*A*b*c+8*d^3/e^5/(e*x+d)*B*b*c-6/
e^4*B*b*c*d*x+1/e^3*ln(e*x+d)*A*b^2+1/2/e^3*A*x^2*c^2+2*d/e^3/(e*x+d)*A*b^2
+4*d^3/e^5/(e*x+d)*A*c^2-3*d^2/e^4/(e*x+d)*B*b^2-5*d^4/e^6/(e*x+d)*B*c^2-1/
2*d^2/e^3/(e*x+d)^2*A*b^2-1/2*d^4/e^5/(e*x+d)^2*A*c^2+1/2*d^3/e^4/(e*x+d)^2
*B*b^2+1/2*d^5/e^6/(e*x+d)^2*B*c^2+1/e^3*B*x^2*b*c-3/2/e^4*B*x^2*c^2*d-10/e
```

```
^6*ln(e*x+d)*B*c^2*d^3+2/e^3*A*b*c*x-3/e^4*A*c^2*d*x+6/e^5*B*c^2*d^2*x+6/e^
5*ln(e*x+d)*A*c^2*d^2-3/e^4*ln(e*x+d)*B*b^2*d+b^2*B*x/e^3+1/3*B*c^2*x^3/e^3
```

maxima [A] time = 0.62, size = 302, normalized size = 1.30

$$-\frac{9\,Bc^2d^5 - 3\,Ab^2d^2e^3 - 7\left(2\,Bbc + Ac^2\right)d^4e + 5\left(Bb^2 + 2\,Abc\right)d^3e^2 + 2\,\big(5\,Bc^2d^4e - 2\,Ab^2de^4 - 4\left(2\,Bbc + Ac^2\right)}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*c^2*d^5 - 3*A*b^2*d^2*e^3 - 7*(2*B*b*c + A*c^2)*d^4*e + 5*(B*b^2
+ 2*A*b*c)*d^3*e^2 + 2*(5*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 4*(2*B*b*c + A*c^2)
*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
+ 1/6*(2*B*c^2*e^2*x^3 - 3*(3*B*c^2*d*e - (2*B*b*c + A*c^2)*e^2)*x^2 + 6*(6
*B*c^2*d^2 - 3*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*e^2)*x)/e^5 - (10*
B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e
^2)*log(e*x + d)/e^6
```

mupad [B] time = 0.14, size = 334, normalized size = 1.44

$$x^2\left(\frac{A\,c^2+2\,B\,b\,c}{2\,e^3}-\frac{3\,B\,c^2\,d}{2\,e^4}\right)-x\left(\frac{3\,d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e^3}-\frac{3\,B\,c^2\,d}{e^4}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b}{e^3}+\frac{3\,B\,c^2\,d^2}{e^5}\right)-\frac{5\,B\,b^2\,d^3\,e^2-3\,A\,b^2\,d^2\,e^3-1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^2*((A*c^2 + 2*B*b*c)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - x*((3*d*((A*c^2 + 2
*B*b*c)/e^3 - (3*B*c^2*d)/e^4))/e - (B*b^2 + 2*A*b*c)/e^3 + (3*B*c^2*d^2)/e
^5) - ((9*B*c^2*d^5 - 7*A*c^2*d^4*e - 3*A*b^2*d^2*e^3 + 5*B*b^2*d^3*e^2 - 1
4*B*b*c*d^4*e + 10*A*b*c*d^3*e^2)/(2*e) + x*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 -
4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/(d^2*e^
5 + e^7*x^2 + 2*d*e^6*x) + (log(d + e*x)*(A*b^2*e^3 - 10*B*c^2*d^3 + 6*A*c^
2*d^2*e - 3*B*b^2*d*e^2 - 6*A*b*c*d*e^2 + 12*B*b*c*d^2*e))/e^6 + (B*c^2*x^3
)/(3*e^3)
```

sympy [A] time = 4.07, size = 362, normalized size = 1.56

$$\frac{Bc^2x^3}{3e^3}+x^2\left(\frac{Ac^2}{2e^3}+\frac{Bbc}{e^3}-\frac{3Bc^2d}{2e^4}\right)+x\left(\frac{2Abc}{e^3}-\frac{3Ac^2d}{e^4}+\frac{Bb^2}{e^3}-\frac{6Bbcd}{e^4}+\frac{6Bc^2d^2}{e^5}\right)+\frac{3Ab^2d^2e^3-10Abcd^3e^2+7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**3,x)
```

```
[Out] B*c**2*x**3/(3*e**3) + x**2*(A*c**2/(2*e**3) + B*b*c/e**3 - 3*B*c**2*d/(2*e
**4)) + x*(2*A*b*c/e**3 - 3*A*c**2*d/e**4 + B*b**2/e**3 - 6*B*b*c*d/e**4 +
6*B*c**2*d**2/e**5) + (3*A*b**2*d**2*e**3 - 10*A*b*c*d**3*e**2 + 7*A*c**2*d
**4*e - 5*B*b**2*d**3*e**2 + 14*B*b*c*d**4*e - 9*B*c**2*d**5 + x*(4*A*b**2*
d*e**4 - 12*A*b*c*d**2*e**3 + 8*A*c**2*d**3*e**2 - 6*B*b**2*d**2*e**3 + 16*
B*b*c*d**3*e**2 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**
2) - (-A*b**2*e**3 + 6*A*b*c*d*e**2 - 6*A*c**2*d**2*e + 3*B*b**2*d*e**2 - 1
2*B*b*c*d**2*e + 10*B*c**2*d**3)*log(d + e*x)/e**6
```

3.1122 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=238

$$-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\,(b^2e^2-8bcde+10\right.}{e^6}$$

```
[Out] -c*(-A*c*e-2*B*b*e+4*B*c*d)*x/e^5+1/2*B*c^2*x^2/e^4+1/3*d^2*(-A*e+B*d)*(-b*
e+c*d)^2/e^6/(e*x+d)^3-1/2*d*(-b*e+c*d)*(B*d*(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c
*d))/e^6/(e*x+d)^2+(-A*e*(b^2*e^2-6*b*c*d*e+6*c^2*d^2)+B*d*(3*b^2*e^2-12*b*
c*d*e+10*c^2*d^2))/e^6/(e*x+d)-(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+1
0*c^2*d^2))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.30, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\,(b^2e^2-8bcde+10\right.}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c*(4*B*c*d - 2*b*B*e - A*c*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + (d^2*(B*d
- A*e)*(c*d - b*e)^2)/(3*e^6*(d + e*x)^3) - (d*(c*d - b*e)*(B*d*(5*c*d - 3*
b*e) - 2*A*e*(2*c*d - b*e)))/(2*e^6*(d + e*x)^2) - (A*e*(6*c^2*d^2 - 6*b*c*
d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(e^6*(d + e*x))
 - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*Log[d +
e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^4}\,dx &= \int \left(\frac{c(-4Bcd+2bBe+Ace)}{e^5}+\frac{Bc^2x}{e^4}-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^4}+\frac{d(cd-be)(Bd(5cd}{e^5(}\right.\\ &= -\frac{c(4Bcd-2bBe-Ace)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^3}-\frac{d(cd-be)(Bd(5cd-}{2e^6(d}\end{aligned}$$

Mathematica [A] time = 0.16, size = 220, normalized size = 0.92

$$\frac{-\frac{6\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)+Bd\left(-3b^2e^2+12bcde-10c^2d^2\right)\right)}{d+ex}+6\log(d+ex)\left(2Ace(be-2cd)+B\left(b^2e^2-8bcde+10c^2d^2\right)\right)+\frac{2d^2(}{}}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (6*c*e*(-4*B*c*d + 2*b*B*e + A*c*e)*x + 3*B*c^2*e^2*x^2 + (2*d^2*(B*d - A*e
)*(c*d - b*e)^2)/(d + e*x)^3 - (3*d*(c*d - b*e)*(B*d*(5*c*d - 3*b*e) + 2*A*
e*(-2*c*d + b*e)))/(d + e*x)^2 - (6*(B*d*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*
e^2) + A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2)))/(d + e*x) + 6*(2*A*c*e*(-2*c
*d + b*e) + B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*Log[d + e*x])/(6*e^6)
```

fricas [B] time = 0.90, size = 505, normalized size = 2.12

$$\frac{3\,Bc^2e^5x^5 + 47\,Bc^2d^5 - 2\,Ab^2d^2e^3 - 26\,(2\,Bbc + Ac^2)d^4e + 11\,(Bb^2 + 2\,Abc)d^3e^2 - 3\,(5\,Bc^2de^4 - 2\,(2\,Bbc + Ac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 26*(2*B*b*c + A*c^2
)*d^4*e + 11*(B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(5*B*c^2*d*e^4 - 2*(2*B*b*c + A*
c^2)*e^5)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*(2*B*b*c + A*c^2)*d*e^4)*x^3 - 3*(3*
B*c^2*d^3*e^2 + 2*A*b^2*e^5 + 6*(2*B*b*c + A*c^2)*d^2*e^3 - 6*(B*b^2 + 2*A*
b*c)*d*e^4)*x^2 + 3*(27*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 18*(2*B*b*c + A*c^2)*
d^3*e^2 + 9*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 6*(10*B*c^2*d^5 - 4*(2*B*b*c + A
*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + (10*B*c^2*d^2*e^3 - 4*(2*B*b*c +
A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 + 3*(10*B*c^2*d^3*e^2 - 4*(2*B*b*
c + A*c^2)*d^2*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 3*(10*B*c^2*d^4*e - 4*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)*log(e*x + d))/(e^9
*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.16, size = 299, normalized size = 1.26

$$(10\,Bc^2d^2 - 8\,Bbcde - 4\,Ac^2de + Bb^2e^2 + 2\,Abce^2)e^{(-6)}\log(|xe + d|) + \frac{1}{2}\,(Bc^2x^2e^4 - 8\,Bc^2dxe^3 + 4\,Bbcxe^4 + 2\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (10*B*c^2*d^2 - 8*B*b*c*d*e - 4*A*c^2*d*e + B*b^2*e^2 + 2*A*b*c*e^2)*e^(-6)
*log(abs(x*e + d)) + 1/2*(B*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 4*B*b*c*x*e^4 +
 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5 - 52*B*b*c*d^4*e - 26*A*c^2*d^4*
e + 11*B*b^2*d^3*e^2 + 22*A*b*c*d^3*e^2 - 2*A*b^2*d^2*e^3 + 6*(10*B*c^2*d^3
*e^2 - 12*B*b*c*d^2*e^3 - 6*A*c^2*d^2*e^3 + 3*B*b^2*d*e^4 + 6*A*b*c*d*e^4 -
 A*b^2*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 40*B*b*c*d^3*e^2 - 20*A*c^2*d^3*e^2 +
 9*B*b^2*d^2*e^3 + 18*A*b*c*d^2*e^3 - 2*A*b^2*d*e^4)*x)*e^(-6)/(x*e + d)^3
```

maple [A] time = 0.07, size = 446, normalized size = 1.87

$$-\frac{A\,b^2d^2}{3\,(ex+d)^3\,e^3} + \frac{2Abc\,d^3}{3\,(ex+d)^3\,e^4} - \frac{A\,c^2d^4}{3\,(ex+d)^3\,e^5} + \frac{B\,b^2d^3}{3\,(ex+d)^3\,e^4} - \frac{2Bbc\,d^4}{3\,(ex+d)^3\,e^5} + \frac{B\,c^2d^5}{3\,(ex+d)^3\,e^6} + \frac{A\,b^2d}{(ex+d)^2\,e^3} - \frac{3A}{(ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x)
```

```
[Out] c^2/e^4*A*x-1/e^3/(e*x+d)*A*b^2-12/e^5/(e*x+d)*B*b*c*d^2-8/e^5*ln(e*x+d)*B*
b*c*d-2/3*d^4/e^5/(e*x+d)^3*B*b*c+2/3*d^3/e^4/(e*x+d)^3*A*b*c+4*d^3/e^5/(e*
x+d)^2*B*b*c-3*d^2/e^4/(e*x+d)^2*A*b*c+6/e^4/(e*x+d)*A*b*c*d-1/3*d^2/e^3/(e
*x+d)^3*A*b^2-1/3*d^4/e^5/(e*x+d)^3*A*c^2-5/2*d^4/e^6/(e*x+d)^2*B*c^2+2/e^4
*ln(e*x+d)*A*b*c-4/e^5*ln(e*x+d)*A*c^2*d+10/e^6*ln(e*x+d)*B*c^2*d^2-4*c^2/e
^5*B*d*x-6/e^5/(e*x+d)*A*c^2*d^2+3/e^4/(e*x+d)*B*b^2*d+10/e^6/(e*x+d)*B*c^2
*d^3+d/e^3/(e*x+d)^2*A*b^2+2*d^3/e^5/(e*x+d)^2*A*c^2-3/2*d^2/e^4/(e*x+d)^2*
```

```
B*b^2+1/3*d^3/e^4/(e*x+d)^3*B*b^2+1/3*d^5/e^6/(e*x+d)^3*B*c^2+2*c/e^4*B*b*x
+1/2*B*c^2*x^2/e^4+b^2*B*ln(e*x+d)/e^4
```

maxima [**A**] time = 0.54, size = 311, normalized size = 1.31

$$\frac{47\,Bc^2d^5 - 2\,Ab^2d^2e^3 - 26\left(2\,Bbc + Ac^2\right)d^4e + 11\left(Bb^2 + 2\,Abc\right)d^3e^2 + 6\left(10\,Bc^2d^3e^2 - Ab^2e^5 - 6\left(2\,Bbc + Ac^2\right)d^2}{6\left(e^9x^3 + 3\,de^8x^2 + 3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 26*(2*B*b*c + A*c^2)*d^4*e + 11*(B*b^
2 + 2*A*b*c)*d^3*e^2 + 6*(10*B*c^2*d^3*e^2 - A*b^2*e^5 - 6*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 3*(35*B*c^2*d^4*e - 2*A*b^2*d*
e^4 - 20*(2*B*b*c + A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^9*x
^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c^2*d
 - (2*B*b*c + A*c^2)*e)*x)/e^5 + (10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e +
(B*b^2 + 2*A*b*c)*e^2)*log(e*x + d)/e^6
```

mupad [**B**] time = 0.14, size = 328, normalized size = 1.38

$$x\left(\frac{A\,c^2 + 2\,B\,b\,c}{e^4} - \frac{4\,B\,c^2\,d}{e^5}\right) + \frac{\frac{11\,B\,b^2\,d^3\,e^2 - 2\,A\,b^2\,d^2\,e^3 - 52\,B\,b\,c\,d^4\,e + 22\,A\,b\,c\,d^3\,e^2 + 47\,B\,c^2\,d^5 - 26\,A\,c^2\,d^4\,e}{6\,e} - x^2\,\left(-3\,B\,b^2\,d\,e^3 + A\,b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x*((A*c^2 + 2*B*b*c)/e^4 - (4*B*c^2*d)/e^5) + ((47*B*c^2*d^5 - 26*A*c^2*d^4
*e - 2*A*b^2*d^2*e^3 + 11*B*b^2*d^3*e^2 - 52*B*b*c*d^4*e + 22*A*b*c*d^3*e^2
)/(6*e) - x^2*(A*b^2*e^4 - 3*B*b^2*d*e^3 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2
 - 6*A*b*c*d*e^3 + 12*B*b*c*d^2*e^2) + x*((35*B*c^2*d^4)/2 - A*b^2*d*e^3 -
10*A*c^2*d^3*e + (9*B*b^2*d^2*e^2)/2 - 20*B*b*c*d^3*e + 9*A*b*c*d^2*e^2))/(
d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(B*b^2*e^2 +
 10*B*c^2*d^2 + 2*A*b*c*e^2 - 4*A*c^2*d*e - 8*B*b*c*d*e))/e^6 + (B*c^2*x^2)
/(2*e^4)
```

sympy [**A**] time = 11.73, size = 374, normalized size = 1.57

$$\frac{Bc^2x^2}{2e^4} + x\left(\frac{Ac^2}{e^4} + \frac{2Bbc}{e^4} - \frac{4Bc^2d}{e^5}\right) + \frac{-2Ab^2d^2e^3 + 22Abcd^3e^2 - 26Ac^2d^4e + 11Bb^2d^3e^2 - 52Bbcd^4e + 47Bc^2d^5 + x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**4,x)
```

```
[Out] B*c**2*x**2/(2*e**4) + x*(A*c**2/e**4 + 2*B*b*c/e**4 - 4*B*c**2*d/e**5) + (
-2*A*b**2*d**2*e**3 + 22*A*b*c*d**3*e**2 - 26*A*c**2*d**4*e + 11*B*b**2*d**
3*e**2 - 52*B*b*c*d**4*e + 47*B*c**2*d**5 + x**2*(-6*A*b**2*e**5 + 36*A*b*c
*d*e**4 - 36*A*c**2*d**2*e**3 + 18*B*b**2*d*e**4 - 72*B*b*c*d**2*e**3 + 60*
B*c**2*d**3*e**2) + x*(-6*A*b**2*d*e**4 + 54*A*b*c*d**2*e**3 - 60*A*c**2*d*
*3*e**2 + 27*B*b**2*d**2*e**3 - 120*B*b*c*d**3*e**2 + 105*B*c**2*d**4*e))/(
6*d**3*e**6 + 18*d**2*e**7*x + 18*d*e**8*x**2 + 6*e**9*x**3) + (2*A*b*c*e**
2 - 4*A*c**2*d*e + B*b**2*e**2 - 8*B*b*c*d*e + 10*B*c**2*d**2)*log(d + e*x)
/e**6
```

3.1123 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=240

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{2e^6(d+ex)^2}+ d^2(B$$

```
[Out] B*c^2*x/e^5+1/4*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^4-1/3*d*(-b*e+c*d)*
(B*d*(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^3+1/2*(-A*e*(b^2*e^2-6*
b*c*d*e+6*c^2*d^2)+B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^2+(2*
A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)-c*(-A*c*e-
2*B*b*e+5*B*c*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.28, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{e^6(d+ex)}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{2e^6(d+ex)^2}+ d^2(B$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + (d^2*(B*d - A*e)*(c*d - b*e)^2)/(4*e^6*(d + e*x)^4) - (d*(c
*d - b*e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(3*e^6*(d + e*x)^3)
- (A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))/(2*e^6*(d + e*x)^2) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8
*b*c*d*e + b^2*e^2))/(e^6*(d + e*x)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*Log[d
 + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^5}\,dx=\int \left(\frac{Bc^2}{e^5}-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^4}\right.$$

$$=\frac{Bc^2x}{e^5}+\frac{d^2(Bd-Ae)(cd-be)^2}{4e^6(d+ex)^4}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^3}-$$

Mathematica [A] time = 0.14, size = 275, normalized size = 1.15

$$-\frac{Ae\left(b^2e^2\left(d^2+4dex+6e^2x^2\right)+6bce\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)+c^2(-d)\left(25d^3+88d^2ex+108de^2x^2+4\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(b^2*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + 6*b*c*e*(d^3 + 4*d^2*e*x
+ 6*d*e^2*x^2 + 4*e^3*x^3) - c^2*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 4
8*e^3*x^3)) + B*(3*b^2*e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - 2*
b*c*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + c^2*(77*d^5 +
248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)
) + 12*c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^4*Log[d + e*x])/(e^6*(d + e*
x)^4)
```

fricas [B] time = 0.61, size = 475, normalized size = 1.98

$$\frac{12\,Bc^2e^5x^5 + 48\,Bc^2de^4x^4 - 77\,Bc^2d^5 - Ab^2d^2e^3 + 25\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,Abc\right)d^3e^2 - 12\left(4\,Bc^2d^2e^3 - 4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 - A*b^2*d^2*e^3
+ 25*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2 + 2*A*b*c)*d^3*e^2 - 12*(4*B*c^2*d^
2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A*b*c)*e^5)*x^3 - 6*(42*B*c^
2*d^3*e^2 + A*b^2*e^5 - 18*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*
d*e^4)*x^2 - 4*(62*B*c^2*d^4*e + A*b^2*d*e^4 - 22*(2*B*b*c + A*c^2)*d^3*e^2
 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x - 12*(5*B*c^2*d^5 - (2*B*b*c + A*c^2)*d^4
*e + (5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 4*(5*B*c^2*d^2*e^3 - (2*
B*b*c + A*c^2)*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - (2*B*b*c + A*c^2)*d^2*e^3)
*x^2 + 4*(5*B*c^2*d^4*e - (2*B*b*c + A*c^2)*d^3*e^2)*x)*log(e*x + d))/(e^10
*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.18, size = 474, normalized size = 1.98

$$(xe + d)Bc^2e^{(-6)} + \left(5\,Bc^2d - 2\,Bbce - Ac^2e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bc^2d^2e^{22}}{xe + d} - \frac{60\,Bc^2d^3e^{22}}{(xe + d)^2} + \frac{20\,Bc^2d^4e^{2}}{(xe + d)^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - 2*B*b*c*e - A*c^2*e)*e^(-6)*log(abs(x
*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2
*d^3*e^22/(x*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x
*e + d)^4 - 96*B*b*c*d*e^23/(x*e + d) - 48*A*c^2*d*e^23/(x*e + d) + 72*B*b*
c*d^2*e^23/(x*e + d)^2 + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 32*B*b*c*d^3*e^23/
(x*e + d)^3 - 16*A*c^2*d^3*e^23/(x*e + d)^3 + 6*B*b*c*d^4*e^23/(x*e + d)^4
+ 3*A*c^2*d^4*e^23/(x*e + d)^4 + 12*B*b^2*e^24/(x*e + d) + 24*A*b*c*e^24/(x
*e + d) - 18*B*b^2*d*e^24/(x*e + d)^2 - 36*A*b*c*d*e^24/(x*e + d)^2 + 12*B*
b^2*d^2*e^24/(x*e + d)^3 + 24*A*b*c*d^2*e^24/(x*e + d)^3 - 3*B*b^2*d^3*e^24
/(x*e + d)^4 - 6*A*b*c*d^3*e^24/(x*e + d)^4 + 6*A*b^2*e^25/(x*e + d)^2 - 8*
A*b^2*d*e^25/(x*e + d)^3 + 3*A*b^2*d^2*e^25/(x*e + d)^4)*e^(-28)
```

maple [A] time = 0.06, size = 465, normalized size = 1.94

$$-\frac{A\,b^2d^2}{4\,(ex + d)^4\,e^3} + \frac{Abc\,d^3}{2\,(ex + d)^4\,e^4} - \frac{A\,c^2d^4}{4\,(ex + d)^4\,e^5} + \frac{B\,b^2d^3}{4\,(ex + d)^4\,e^4} - \frac{Bbc\,d^4}{2\,(ex + d)^4\,e^5} + \frac{B\,c^2d^5}{4\,(ex + d)^4\,e^6} + \frac{2A\,b^2d}{3\,(ex + d)^3\,e^3} - \frac{2Ab}{(ex +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x)
```

```
[Out] -1/e^4/(e*x+d)*B*b^2+c^2/e^5*ln(e*x+d)*A-1/2/e^3/(e*x+d)^2*A*b^2+2*c/e^5*ln
(e*x+d)*B*b-5*c^2/e^6*ln(e*x+d)*B*d-d^2/e^4/(e*x+d)^3*B*b^2-5/3*d^4/e^6/(e*
x+d)^3*B*c^2-2/e^4/(e*x+d)*A*b*c+4/e^5/(e*x+d)*A*c^2*d-1/2*d^4/e^5/(e*x+d)^
```

```
4*B*b*c+8/e^5/(e*x+d)*B*b*c*d+1/2*d^3/e^4/(e*x+d)^4*A*b*c+3/e^4/(e*x+d)^2*A
*b*c*d-6/e^5/(e*x+d)^2*B*b*c*d^2+8/3*d^3/e^5/(e*x+d)^3*B*b*c-2*d^2/e^4/(e*x
+d)^3*A*b*c+5/e^6/(e*x+d)^2*B*c^2*d^3+2/3*d/e^3/(e*x+d)^3*A*b^2+4/3*d^3/e^5
/(e*x+d)^3*A*c^2-10/e^6/(e*x+d)*B*c^2*d^2+1/4*d^3/e^4/(e*x+d)^4*B*b^2+1/4*d
^5/e^6/(e*x+d)^4*B*c^2-3/e^5/(e*x+d)^2*A*c^2*d^2+3/2/e^4/(e*x+d)^2*B*b^2*d-
1/4*d^2/e^3/(e*x+d)^4*A*b^2-1/4*d^4/e^5/(e*x+d)^4*A*c^2+B*c^2*x/e^5
```

maxima [A] time = 0.58, size = 321, normalized size = 1.34

$$-\frac{77\,Bc^2d^5 + Ab^2d^2e^3 - 25\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,Abc\right)d^3e^2 + 12\left(10\,Bc^2d^2e^3 - 4\left(2\,Bbc + Ac^2\right)de^4 + \left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 + A*b^2*d^2*e^3 - 25*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2
 + 2*A*b*c)*d^3*e^2 + 12*(10*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B
*b^2 + 2*A*b*c)*e^5)*x^3 + 6*(50*B*c^2*d^3*e^2 + A*b^2*e^5 - 18*(2*B*b*c +
A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(65*B*c^2*d^4*e + A*b^2
*d*e^4 - 22*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^
10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6) + B*c^2*x/e^5
 - (5*B*c^2*d - (2*B*b*c + A*c^2)*e)*log(e*x + d)/e^6
```

mupad [B] time = 1.47, size = 338, normalized size = 1.41

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^2\,e-5\,B\,c^2\,d+2\,B\,b\,c\,e\right)}{e^6}-\frac{x^2\,\left(\frac{3\,B\,b^2\,d\,e^3}{2}+\frac{A\,b^2\,e^4}{2}-18\,B\,b\,c\,d^2\,e^2+3\,A\,b\,c\,d\,e^3+25\,B\,c^2\,d^3\,e-9\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d + 2*B*b*c*e))/e^6 - (x^2*((A*b^2*e^4)/2
+ (3*B*b^2*d*e^3)/2 + 25*B*c^2*d^3*e - 9*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 - 18
*B*b*c*d^2*e^2) + (77*B*c^2*d^5 - 25*A*c^2*d^4*e + A*b^2*d^2*e^3 + 3*B*b^2*
d^3*e^2 - 50*B*b*c*d^4*e + 6*A*b*c*d^3*e^2)/(12*e) + x*((65*B*c^2*d^4)/3 +
(A*b^2*d*e^3)/3 - (22*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 - (44*B*b*c*d^3*e)/3 +
 2*A*b*c*d^2*e^2) + x^3*(B*b^2*e^4 + 2*A*b*c*e^4 - 4*A*c^2*d*e^3 + 10*B*c^2
*d^2*e^2 - 8*B*b*c*d*e^3))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 +
 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [A] time = 32.26, size = 381, normalized size = 1.59

$$\frac{Bc^2x}{e^5}+\frac{c\left(Ace+2Bbe-5Bcd\right)\log\left(d+ex\right)}{e^6}+\frac{-Ab^2d^2e^3-6Abcd^3e^2+25Ac^2d^4e-3Bb^2d^3e^2+50Bbcd^4e-77Bc}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**5,x)
```

```
[Out] B*c**2*x/e**5 + c*(A*c*e + 2*B*b*e - 5*B*c*d)*log(d + e*x)/e**6 + (-A*b**2*
d**2*e**3 - 6*A*b*c*d**3*e**2 + 25*A*c**2*d**4*e - 3*B*b**2*d**3*e**2 + 50*
B*b*c*d**4*e - 77*B*c**2*d**5 + x**3*(-24*A*b*c*e**5 + 48*A*c**2*d*e**4 - 1
2*B*b**2*e**5 + 96*B*b*c*d*e**4 - 120*B*c**2*d**2*e**3) + x**2*(-6*A*b**2*e
**5 - 36*A*b*c*d*e**4 + 108*A*c**2*d**2*e**3 - 18*B*b**2*d*e**4 + 216*B*b*c
*d**2*e**3 - 300*B*c**2*d**3*e**2) + x*(-4*A*b**2*d*e**4 - 24*A*b*c*d**2*e*
*3 + 88*A*c**2*d**3*e**2 - 12*B*b**2*d**2*e**3 + 176*B*b*c*d**3*e**2 - 260*
B*c**2*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e
**9*x**3 + 12*e**10*x**4)
```

3.1124 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=248

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{d^2(Bd-}{5e}$$

```
[Out] 1/5*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^5-1/4*d*(-b*e+c*d)*(B*d*(-3*b*e
+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^4+1/3*(-A*e*(b^2*e^2-6*b*c*d*e+6*c^
2*d^2)+B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^3+1/2*(2*A*c*e*(-
b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^2+c*(-A*c*e-2*B*b*
e+5*B*c*d)/e^6/(e*x+d)+B*c^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.24, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{d^2(Bd-}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(5*e^6*(d + e*x)^5) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(4*e^6*(d + e*x)^4) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(3*e^
6*(d + e*x)^3) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(2*e^6*(d + e*x)^2) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(e^6*(d + e*x))
+ (B*c^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^6}\,dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^6}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^5}+\frac{Ae(6c}{}\right.\\ &= \frac{d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^5}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{4e^6(d+ex)^4}-\frac{Ae(6c^2d^2-}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 269, normalized size = 1.08

$$\frac{-2Ae\left(b^2e^2\left(d^2+5dex+10e^2x^2\right)+3bce\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+6c^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(b^2*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*b*c*e*(d^3 + 5*d^2*e*x +
10*d*e^2*x^2 + 10*e^3*x^3) + 6*c^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d
*e^3*x^3 + 5*e^4*x^4)) + B*(-3*b^2*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10
*e^3*x^3) - 24*b*c*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e
^4*x^4) + c^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 +
 300*e^4*x^4)) + 60*B*c^2*(d + e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

fricas [**A**] time = 0.70, size = 407, normalized size = 1.64

$$\frac{137\,Bc^2d^5 - 2\,Ab^2d^2e^3 - 12\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,Abc\right)d^3e^2 + 60\left(5\,Bc^2de^4 - \left(2\,Bbc + Ac^2\right)e^5\right)x^4 + 3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b
^2 + 2*A*b*c)*d^3*e^2 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30
*(30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*A*b*c)*e^5)*x^3
 + 10*(110*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(
B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 5*(125*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 12*(2*B*
b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x + 60*(B*c^2*e^5*x^5 +
 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e^2*x^2 + 5*B*c^2*
d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^
3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [**A**] time = 0.16, size = 301, normalized size = 1.21

$$Bc^2e^{(-6)}\log\left(|xe + d|\right) + \frac{\left(60\left(5\,Bc^2de^3 - 2\,Bbce^4 - Ac^2e^4\right)x^4 + 30\left(30\,Bc^2d^2e^2 - 8\,Bbcde^3 - 4\,Ac^2de^3 - Bb^2e^4 -\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - 2*B*b*c*e^4 - A*
c^2*e^4)*x^4 + 30*(30*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 - B*b^2
*e^4 - 2*A*b*c*e^4)*x^3 + 10*(110*B*c^2*d^3*e - 24*B*b*c*d^2*e^2 - 12*A*c^2
*d^2*e^2 - 3*B*b^2*d*e^3 - 6*A*b*c*d*e^3 - 2*A*b^2*e^4)*x^2 + 5*(125*B*c^2*
d^4 - 24*B*b*c*d^3*e - 12*A*c^2*d^3*e - 3*B*b^2*d^2*e^2 - 6*A*b*c*d^2*e^2 -
 2*A*b^2*d*e^3)*x + (137*B*c^2*d^5 - 24*B*b*c*d^4*e - 12*A*c^2*d^4*e - 3*B*
b^2*d^3*e^2 - 6*A*b*c*d^3*e^2 - 2*A*b^2*d^2*e^3)*e^(-1))*e^(-5)/(x*e + d)^5
```

maple [**A**] time = 0.06, size = 472, normalized size = 1.90

$$-\frac{A\,b^2d^2}{5\left(ex+d\right)^5e^3} + \frac{2Abc\,d^3}{5\left(ex+d\right)^5e^4} - \frac{A\,c^2d^4}{5\left(ex+d\right)^5e^5} + \frac{B\,b^2d^3}{5\left(ex+d\right)^5e^4} - \frac{2Bbc\,d^4}{5\left(ex+d\right)^5e^5} + \frac{B\,c^2d^5}{5\left(ex+d\right)^5e^6} + \frac{A\,b^2d}{2\left(ex+d\right)^4e^3} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x)
```

```
[Out] -1/3/e^3/(e*x+d)^3*A*b^2-c^2/e^5/(e*x+d)*A-2/5*d^4/e^5/(e*x+d)^5*B*b*c+2*d^
3/e^5/(e*x+d)^4*B*b*c-3/2*d^2/e^4/(e*x+d)^4*A*b*c-4/e^5/(e*x+d)^3*B*d^2*b*c
+2/e^4/(e*x+d)^3*A*b*c*d+4/e^5/(e*x+d)^2*B*d*b*c+2/5*d^3/e^4/(e*x+d)^5*A*b*
c-1/5*d^4/e^5/(e*x+d)^5*A*c^2+1/5*d^3/e^4/(e*x+d)^5*B*b^2-5/4*d^4/e^6/(e*x+
d)^4*B*c^2-1/5*d^2/e^3/(e*x+d)^5*A*b^2+d^3/e^5/(e*x+d)^4*A*c^2-3/4*d^2/e^4/
(e*x+d)^4*B*b^2+5*c^2/e^6/(e*x+d)*B*d+1/2*d/e^3/(e*x+d)^4*A*b^2+1/5*d^5/e^6
/(e*x+d)^5*B*c^2+10/3/e^6/(e*x+d)^3*B*c^2*d^3-1/e^4/(e*x+d)^2*A*b*c+2/e^5/(
e*x+d)^2*A*c^2*d-5/e^6/(e*x+d)^2*B*d^2*c^2-2*c/e^5/(e*x+d)*B*b-2/e^5/(e*x+d
)^3*A*c^2*d^2+1/e^4/(e*x+d)^3*B*d*b^2+B*c^2*ln(e*x+d)/e^6-1/2*b^2*B/e^4/(e*
x+d)^2
```

maxima [**A**] time = 0.67, size = 340, normalized size = 1.37

$$\frac{137\,Bc^2d^5 - 2\,Ab^2d^2e^3 - 12\,(2\,Bbc + Ac^2)d^4e - 3\,(Bb^2 + 2\,Abc)d^3e^2 + 60\,(5\,Bc^2de^4 - (2\,Bbc + Ac^2)e^5)x^4 + 30\,(3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 2*A*b^2*d^2*e^3 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b
^2 + 2*A*b*c)*d^3*e^2 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30
*(30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*A*b*c)*e^5)*x^3
 + 10*(110*B*c^2*d^3*e^2 - 2*A*b^2*e^5 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(
B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 5*(125*B*c^2*d^4*e - 2*A*b^2*d*e^4 - 12*(2*B*
b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^11*x^5 + 5*d*e^10
*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6) + B*c^2*log
(e*x + d)/e^6
```

mupad [**B**] time = 1.46, size = 343, normalized size = 1.38

$$\frac{B\,c^2\,\ln(d+e\,x)}{e^6} - \frac{\frac{3\,B\,b^2\,d^3\,e^2+2\,A\,b^2\,d^2\,e^3+24\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2-137\,B\,c^2\,d^5+12\,A\,c^2\,d^4\,e}{60\,e^6} + \frac{x^3\,(B\,b^2\,e^2+8\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2-30\,B\,c^2\,d^2+4\,A}{2\,e^3}}{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - ((12*A*c^2*d^4*e - 137*B*c^2*d^5 + 2*A*b^2*d^2*e
^3 + 3*B*b^2*d^3*e^2 + 24*B*b*c*d^4*e + 6*A*b*c*d^3*e^2)/(60*e^6) + (x^3*(B
*b^2*e^2 - 30*B*c^2*d^2 + 2*A*b*c*e^2 + 4*A*c^2*d*e + 8*B*b*c*d*e))/(2*e^3)
 + (x*(2*A*b^2*d*e^3 - 125*B*c^2*d^4 + 12*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 2
4*B*b*c*d^3*e + 6*A*b*c*d^2*e^2))/(12*e^5) + (x^2*(2*A*b^2*e^3 - 110*B*c^2*
d^3 + 12*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(6*
e^4) + (c*x^4*(A*c*e + 2*B*b*e - 5*B*c*d))/e^2)/(d^5 + e^5*x^5 + 5*d*e^4*x^
4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [**A**] time = 94.46, size = 405, normalized size = 1.63

$$\frac{Bc^2\log(d+ex)}{e^6} + \frac{-2Ab^2d^2e^3 - 6Abcd^3e^2 - 12Ac^2d^4e - 3Bb^2d^3e^2 - 24Bbcd^4e + 137Bc^2d^5 + x^4\,(-60Ac^2e^5 - 120B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**6,x)
```

```
[Out] B*c**2*log(d + e*x)/e**6 + (-2*A*b**2*d**2*e**3 - 6*A*b*c*d**3*e**2 - 12*A*
c**2*d**4*e - 3*B*b**2*d**3*e**2 - 24*B*b*c*d**4*e + 137*B*c**2*d**5 + x**4
*(-60*A*c**2*e**5 - 120*B*b*c*e**5 + 300*B*c**2*d*e**4) + x**3*(-60*A*b*c*e
**5 - 120*A*c**2*d*e**4 - 30*B*b**2*e**5 - 240*B*b*c*d*e**4 + 900*B*c**2*d*
*2*e**3) + x**2*(-20*A*b**2*e**5 - 60*A*b*c*d*e**4 - 120*A*c**2*d**2*e**3 -
 30*B*b**2*d*e**4 - 240*B*b*c*d**2*e**3 + 1100*B*c**2*d**3*e**2) + x*(-10*A
*b**2*d*e**4 - 30*A*b*c*d**2*e**3 - 60*A*c**2*d**3*e**2 - 15*B*b**2*d**2*e*
*3 - 120*B*b*c*d**3*e**2 + 625*B*c**2*d**4*e))/(60*d**5*e**6 + 300*d**4*e**
7*x + 600*d**3*e**8*x**2 + 600*d**2*e**9*x**3 + 300*d*e**10*x**4 + 60*e**11
*x**5)
```

3.1125 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^7}\,dx$

Optimal. Leaf size=253

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{3e^6(d+ex)^3}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{4e^6(d+ex)^4}+ d^2(B$$

```
[Out] 1/6*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^6-1/5*d*(-b*e+c*d)*(B*d*(-3*b*e
+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^5+1/4*(-A*e*(b^2*e^2-6*b*c*d*e+6*c^
2*d^2)+B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^4+1/3*(2*A*c*e*(-
b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^3+1/2*c*(-A*c*e-2*
B*b*e+5*B*c*d)/e^6/(e*x+d)^2-B*c^2/e^6/(e*x+d)
```

Rubi **[A]** time = 0.23, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{3e^6(d+ex)^3}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{4e^6(d+ex)^4}+ d^2(B$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(6*e^6*(d + e*x)^6) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(5*e^6*(d + e*x)^5) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(4*e^
6*(d + e*x)^4) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(3*e^6*(d + e*x)^3) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(2*e^6*(d + e*x)
^2) - (B*c^2)/(e^6*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^7}\,dx = \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^7}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^6}+ Ae\right.$$

$$=\frac{d^2(Bd-Ae)(cd-be)^2}{6e^6(d+ex)^6}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{5e^6(d+ex)^5}- Ae\left(6c^2d^2\right.$$

Mathematica **[A]** time = 0.11, size = 257, normalized size = 1.02

$$-Ae\left(b^2e^2\left(d^2+6dex+15e^2x^2\right)+2bce\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)+2c^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(b^2*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 2*b*c*e*(d^3 + 6*d^2*e*x
 + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*c^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 2
0*d*e^3*x^3 + 15*e^4*x^4)) + B*(b^2*e^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 2
0*e^3*x^3) + 4*b*c*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*
e^4*x^4) + 10*c^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d
*e^4*x^4 + 6*e^5*x^5)))/(e^6*(d + e*x)^6)
```

fricas [A] time = 0.83, size = 340, normalized size = 1.34

$$-\frac{60\,Bc^2e^5x^5 + 10\,Bc^2d^5 + Ab^2d^2e^3 + 2\left(2\,Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2\,Abc\right)d^3e^2 + 30\left(5\,Bc^2de^4 + \left(2\,Bbc + Ac^2\right)e^5\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + A*b^2*d^2*e^3 + 2*(2*B*b*c + A*c^2
)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)
*e^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A
*b*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + A*b^2*e^5 + 2*(2*B*b*c + A*c^2)*d^2
*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(10*B*c^2*d^4*e + A*b^2*d*e^4 + 2*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^12*x^6 + 6*d*e^
11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x +
d^6*e^6)
```

giac [A] time = 0.18, size = 318, normalized size = 1.26

$$-\frac{\left(60\,Bc^2x^5e^5 + 150\,Bc^2dx^4e^4 + 200\,Bc^2d^2x^3e^3 + 150\,Bc^2d^3x^2e^2 + 60\,Bc^2d^4xe + 10\,Bc^2d^5 + 60\,Bbcx^4e^5 + 30\,Ac^2x^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5*e^5 + 150*B*c^2*d*x^4*e^4 + 200*B*c^2*d^2*x^3*e^3 + 150
*B*c^2*d^3*x^2*e^2 + 60*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 60*B*b*c*x^4*e^5 + 3
0*A*c^2*x^4*e^5 + 80*B*b*c*d*x^3*e^4 + 40*A*c^2*d*x^3*e^4 + 60*B*b*c*d^2*x^
2*e^3 + 30*A*c^2*d^2*x^2*e^3 + 24*B*b*c*d^3*x*e^2 + 12*A*c^2*d^3*x*e^2 + 4*
B*b*c*d^4*e + 2*A*c^2*d^4*e + 20*B*b^2*x^3*e^5 + 40*A*b*c*x^3*e^5 + 15*B*b^
2*d*x^2*e^4 + 30*A*b*c*d*x^2*e^4 + 6*B*b^2*d^2*x*e^3 + 12*A*b*c*d^2*x*e^3 +
 B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2 + 15*A*b^2*x^2*e^5 + 6*A*b^2*d*x*e^4 + A*b
^2*d^2*e^3)*e^(-6)/(x*e + d)^6
```

maple [A] time = 0.05, size = 307, normalized size = 1.21

$$-\frac{B\,c^2}{(ex+d)\,e^6}-\frac{\left(A\,b^2e^3-2Abcd\,e^2+A\,c^2d^2e-Bd\,b^2e^2+2B\,d^2bce-B\,c^2d^3\right)d^2}{6\,(ex+d)^6\,e^6}-\frac{(Ace+2Bbe-5Bcd)\,c}{2\,(ex+d)^2\,e^6}+\frac{\left(2A\,b^2e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x)
```

```
[Out] -B*c^2/e^6/(e*x+d)-1/4*(A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e-3*B*b^2*d*e^2
+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^6/(e*x+d)^4+1/5*d*(2*A*b^2*e^3-6*A*b*c*d*e^
2+4*A*c^2*d^2*e-3*B*b^2*d*e^2+8*B*b*c*d^2*e-5*B*c^2*d^3)/e^6/(e*x+d)^5-1/6*
d^2*(A*b^2*e^3-2*A*b*c*d*e^2+A*c^2*d^2*e-B*b^2*d*e^2+2*B*b*c*d^2*e-B*c^2*d^
3)/e^6/(e*x+d)^6-1/2*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^2-1/3*(2*A*b*c*e
^2-4*A*c^2*d*e+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^3
```

maxima [A] time = 0.64, size = 340, normalized size = 1.34

$$-\frac{60\,Bc^2e^5x^5 + 10\,Bc^2d^5 + Ab^2d^2e^3 + 2\left(2\,Bbc + Ac^2\right)d^4e + \left(Bb^2 + 2\,Abc\right)d^3e^2 + 30\left(5\,Bc^2de^4 + \left(2\,Bbc + Ac^2\right)e^5\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + A*b^2*d^2*e^3 + 2*(2*B*b*c + A*c^2
)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)
*e^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*A
*b*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + A*b^2*e^5 + 2*(2*B*b*c + A*c^2)*d^2
*e^3 + (B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 6*(10*B*c^2*d^4*e + A*b^2*d*e^4 + 2*(
2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*A*b*c)*d^2*e^3)*x)/(e^12*x^6 + 6*d*e^
11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x +
d^6*e^6)
```

mupad [**B**] time = 0.13, size = 337, normalized size = 1.33

$$-\frac{\frac{x^3\left(B\,b^2\,e^2+4\,B\,b\,c\,d\,e+2\,A\,b\,c\,e^2+10\,B\,c^2\,d^2+2\,A\,c^2\,d\,e\right)}{3\,e^3}+\frac{d^2\left(B\,b^2\,d\,e^2+A\,b^2\,e^3+4\,B\,b\,c\,d^2\,e+2\,A\,b\,c\,d\,e^2+10\,B\,c^2\,d^3+2\,A\,c^2\,d^2\,e\right)}{60\,e^6}+\frac{x^2\left(B\,b^2\,d\,e^2+\right.}{}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((x^3*(B*b^2*e^2 + 10*B*c^2*d^2 + 2*A*b*c*e^2 + 2*A*c^2*d*e + 4*B*b*c*d*e)
)/(3*e^3) + (d^2*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*c^2*d^2*e + B*b^2*d*e^2 +
2*A*b*c*d*e^2 + 4*B*b*c*d^2*e))/(60*e^6) + (x^2*(A*b^2*e^3 + 10*B*c^2*d^3 +
 2*A*c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2 + 4*B*b*c*d^2*e))/(4*e^4) + (d
*x*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2
+ 4*B*b*c*d^2*e))/(10*e^5) + (c*x^4*(A*c*e + 2*B*b*e + 5*B*c*d))/(2*e^2) +
(B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x
^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1126 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=255

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{4e^6(d+ex)^4}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{d^2(Bd-}{7e}$$

```
[Out] 1/7*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^7-1/6*d*(-b*e+c*d)*(B*d*(-3*b*e
+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^6+1/5*(-A*e*(b^2*e^2-6*b*c*d*e+6*c^
2*d^2)+B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^5+1/4*(2*A*c*e*(-
b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^4+1/3*c*(-A*c*e-2*
B*b*e+5*B*c*d)/e^6/(e*x+d)^3-1/2*B*c^2/e^6/(e*x+d)^2
```

Rubi **[A]** time = 0.22, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)}{4e^6(d+ex)^4}-\frac{Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{d^2(Bd-}{7e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^2)/(7*e^6*(d + e*x)^7) - (d*(c*d - b*e)*(B*d*(
5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(6*e^6*(d + e*x)^6) - (A*e*(6*c^2*d^
2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))/(5*e^
6*(d + e*x)^5) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e
^2))/(4*e^6*(d + e*x)^4) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(3*e^6*(d + e*x)
^3) - (B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^8}\,dx&=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^8}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^7}+\frac{Ae\left(6c\right.}{}\right.\\&=\frac{d^2(Bd-Ae)(cd-be)^2}{7e^6(d+ex)^7}-\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{6e^6(d+ex)^6}-\frac{Ae\left(6c^2d^2-\right.}{}\end{aligned}$$

Mathematica **[A]** time = 0.11, size = 260, normalized size = 1.02

$$-\frac{2Ae\left(2b^2e^2\left(d^2+7dex+21e^2x^2\right)+3bce\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+2c^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/420*(2*A*e*(2*b^2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b*c*e*(d^3 + 7*d^
2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 2*c^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^
2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + B*(3*b^2*e^2*(d^3 + 7*d^2*e*x + 21*d*e^2*
x^2 + 35*e^3*x^3) + 8*b*c*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^
3 + 35*e^4*x^4) + 10*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3
 + 35*d*e^4*x^4 + 21*e^5*x^5)))/(e^6*(d + e*x)^7)
```

fricas [**A**] time = 0.92, size = 359, normalized size = 1.41

$$-\frac{210\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 4\,Ab^2d^2e^3 + 4\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,Abc\right)d^3e^2 + 70\left(5\,Bc^2de^4 + 2\left(2\,Bbc +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 4*A*b^2*d^2*e^3 + 4*(2*B*b*c + A
*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c
+ A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B
*b^2 + 2*A*b*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*A*b^2*e^5 + 4*(2*B*b*c
+ A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 7*(10*B*c^2*d^4*e + 4*A
*b^2*d*e^4 + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/
(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x
^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [**A**] time = 0.16, size = 320, normalized size = 1.25

$$-\frac{\left(210\,Bc^2x^5e^5 + 350\,Bc^2dx^4e^4 + 350\,Bc^2d^2x^3e^3 + 210\,Bc^2d^3x^2e^2 + 70\,Bc^2d^4xe + 10\,Bc^2d^5 + 280\,Bbcx^4e^5 + 14\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/420*(210*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 350*B*c^2*d^2*x^3*e^3 + 2
10*B*c^2*d^3*x^2*e^2 + 70*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 280*B*b*c*x^4*e^5
+ 140*A*c^2*x^4*e^5 + 280*B*b*c*d*x^3*e^4 + 140*A*c^2*d*x^3*e^4 + 168*B*b*c
*d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 56*B*b*c*d^3*x*e^2 + 28*A*c^2*d^3*x*e
^2 + 8*B*b*c*d^4*e + 4*A*c^2*d^4*e + 105*B*b^2*x^3*e^5 + 210*A*b*c*x^3*e^5
+ 63*B*b^2*d*x^2*e^4 + 126*A*b*c*d*x^2*e^4 + 21*B*b^2*d^2*x*e^3 + 42*A*b*c*
d^2*x*e^3 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 + 84*A*b^2*x^2*e^5 + 28*A*b^2
*d*x*e^4 + 4*A*b^2*d^2*e^3)*e^(-6)/(x*e + d)^7
```

maple [**A**] time = 0.05, size = 307, normalized size = 1.20

$$-\frac{B\,c^2}{2\,(ex+d)^2\,e^6} - \frac{\left(A\,b^2e^3 - 2Abcd\,e^2 + A\,c^2d^2e - Bd\,b^2e^2 + 2B\,d^2bce - B\,c^2d^3\right)d^2}{7\,(ex+d)^7\,e^6} - \frac{(Ace + 2Bbe - 5Bcd)\,c}{3\,(ex+d)^3\,e^6} + \frac{\left(2A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x)
```

```
[Out] -1/4*(2*A*b*c*e^2-4*A*c^2*d*e+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+
d)^4-1/5*(A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e-3*B*b^2*d*e^2+12*B*b*c*d^2*
e-10*B*c^2*d^3)/e^6/(e*x+d)^5+1/6*d*(2*A*b^2*e^3-6*A*b*c*d*e^2+4*A*c^2*d^2*
e-3*B*b^2*d*e^2+8*B*b*c*d^2*e-5*B*c^2*d^3)/e^6/(e*x+d)^6-1/2*B*c^2/e^6/(e*x
+d)^2-1/7*d^2*(A*b^2*e^3-2*A*b*c*d*e^2+A*c^2*d^2*e-B*b^2*d*e^2+2*B*b*c*d^2*
e-B*c^2*d^3)/e^6/(e*x+d)^7-1/3*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^3
```

maxima [**A**] time = 0.70, size = 359, normalized size = 1.41

$$-\frac{210\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 4\,Ab^2d^2e^3 + 4\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,Abc\right)d^3e^2 + 70\left(5\,Bc^2de^4 + 2\left(2\,Bbc +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 4*A*b^2*d^2*e^3 + 4*(2*B*b*c + A
*c^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c
+ A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B
*b^2 + 2*A*b*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*A*b^2*e^5 + 4*(2*B*b*c
+ A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 7*(10*B*c^2*d^4*e + 4*A
*b^2*d*e^4 + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)/
(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x
^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad **[B]** time = 0.12, size = 357, normalized size = 1.40

$$-\frac{\frac{x^3\,\left(3\,B\,b^2\,e^2+8\,B\,b\,c\,d\,e+6\,A\,b\,c\,e^2+10\,B\,c^2\,d^2+4\,A\,c^2\,d\,e\right)}{12\,e^3}+\frac{d^2\,\left(3\,B\,b^2\,d\,e^2+4\,A\,b^2\,e^3+8\,B\,b\,c\,d^2\,e+6\,A\,b\,c\,d\,e^2+10\,B\,c^2\,d^3+4\,A\,c^2\,d^2\,e\right)}{420\,e^6}+\frac{x^2\,(3\,B\,b^2\,d\,e}{}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] -((x^3*(3*B*b^2*e^2 + 10*B*c^2*d^2 + 6*A*b*c*e^2 + 4*A*c^2*d*e + 8*B*b*c*d*
e))/(12*e^3) + (d^2*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d
*e^2 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/(420*e^6) + (x^2*(4*A*b^2*e^3 + 10*B
*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/
(20*e^4) + (d*x*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2
 + 6*A*b*c*d*e^2 + 8*B*b*c*d^2*e))/(60*e^5) + (c*x^4*(2*A*c*e + 4*B*b*e + 5
*B*c*d))/(6*e^2) + (B*c^2*x^5)/(2*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^5
*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1127 $\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=484

$$\frac{3d(cd-be)(d+ex)^{m+3}\Big(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\Big)}{e^8(m+3)}-\frac{3c(d+ex)^{m+6}\Big(Ace(2cd-}{e^8(}$$

```
[Out] -d^3*(-A*e+B*d)*(-b*e+c*d)^3*(e*x+d)^(1+m)/e^8/(1+m)+d^2*(-b*e+c*d)^2*(B*d*
(-4*b*e+7*c*d)-3*A*e*(-b*e+2*c*d))*(e*x+d)^(2+m)/e^8/(2+m)+3*d*(-b*e+c*d)*(
A*e*(b^2*e^2-5*b*c*d*e+5*c^2*d^2)-B*d*(2*b^2*e^2-8*b*c*d*e+7*c^2*d^2))*(e*x
+d)^(3+m)/e^8/(3+m)+(B*d*(-4*b^3*e^3+30*b^2*c*d*e^2-60*b*c^2*d^2*e+35*c^3*d
^3)-A*e*(-b^3*e^3+12*b^2*c*d*e^2-30*b*c^2*d^2*e+20*c^3*d^3))*(e*x+d)^(4+m)/
e^8/(4+m)+(3*A*c*e*(b^2*e^2-5*b*c*d*e+5*c^2*d^2)-B*(-b^3*e^3+15*b^2*c*d*e^2
-45*b*c^2*d^2*e+35*c^3*d^3))*(e*x+d)^(5+m)/e^8/(5+m)-3*c*(A*c*e*(-b*e+2*c*d
)-B*(b^2*e^2-6*b*c*d*e+7*c^2*d^2))*(e*x+d)^(6+m)/e^8/(6+m)-c^2*(-A*c*e-3*B*
b*e+7*B*c*d)*(e*x+d)^(7+m)/e^8/(7+m)+B*c^3*(e*x+d)^(8+m)/e^8/(8+m)
```

Rubi [A] time = 0.41, antiderivative size = 484, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{3d(cd-be)(d+ex)^{m+3}\Big(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\Big)}{e^8(m+3)}+\frac{(d+ex)^{m+4}\Big(Bd\big(30b^2cde^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3,x]
```

```
[Out] -((d^3*(B*d - A*e)*(c*d - b*e)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))) + (d^2*(
c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))
/(e^8*(2 + m)) + (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) -
B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2))*(d + e*x)^(3 + m))/(e^8*(3 + m)) +
 ((B*d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) - A*e*(20
*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 - b^3*e^3))*(d + e*x)^(4 + m))/(
e^8*(4 + m)) + ((3*A*c*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) - B*(35*c^3*d^3
- 45*b*c^2*d^2*e + 15*b^2*c*d*e^2 - b^3*e^3))*(d + e*x)^(5 + m))/(e^8*(5 +
m)) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 - 6*b*c*d*e + b^2*e^2))*(d +
 e*x)^(6 + m))/(e^8*(6 + m)) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*x)^(
7 + m))/(e^8*(7 + m)) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(bx+cx^2\right)^3 \, dx = \int \Bigg(-\frac{d^3(Bd-Ae)(cd-be)^3(d+ex)^m}{e^7}+\frac{d^2(cd-be)^2(Bd(7cd-4be)-3}{e^7}$$

$$=-\frac{d^3(Bd-Ae)(cd-be)^3(d+ex)^{1+m}}{e^8(1+m)}+\frac{d^2(cd-be)^2(Bd(7cd-4be)-3A}{e^8(2+m}$$

Mathematica [**A**]   time = 0.98, size = 525, normalized size = 1.08

$$(d+ex)^{m+1}\left(Ae\left(\frac{3c(d+ex)^4\left(b^2e^2-5bcde+5c^2d^2\right)}{m+5}-\frac{(d+ex)^3(2cd-be)\left(b^2e^2-10bcde+10c^2d^2\right)}{m+4}+\frac{3d(d+ex)^2(cd-be)\left(b^2e^2-5bcde+5c^2d^2\right)}{m+3}-3c^2(d+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(A*e*((d^3*(c*d - b*e)^3)/(1 + m) - (3*d^2*(c*d - b*e)^2
*(2*c*d - b*e)*(d + e*x))/(2 + m) + (3*d*(c*d - b*e)*(5*c^2*d^2 - 5*b*c*d*e
 + b^2*e^2)*(d + e*x)^2)/(3 + m) - ((2*c*d - b*e)*(10*c^2*d^2 - 10*b*c*d*e
+ b^2*e^2)*(d + e*x)^3)/(4 + m) + (3*c*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2)*(d
 + e*x)^4)/(5 + m) - (3*c^2*(2*c*d - b*e)*(d + e*x)^5)/(6 + m) + (c^3*(d +
e*x)^6)/(7 + m)) + B*(-((d^4*(c*d - b*e)^3)/(1 + m)) + (d^3*(7*c*d - 4*b*e)
*(c*d - b*e)^2*(d + e*x))/(2 + m) - (3*d^2*(c*d - b*e)*(7*c^2*d^2 - 8*b*c*d
*e + 2*b^2*e^2)*(d + e*x)^2)/(3 + m) + (d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30
*b^2*c*d*e^2 - 4*b^3*e^3)*(d + e*x)^3)/(4 + m) - ((35*c^3*d^3 - 45*b*c^2*d^
2*e + 15*b^2*c*d*e^2 - b^3*e^3)*(d + e*x)^4)/(5 + m) + (3*c*(7*c^2*d^2 - 6*
b*c*d*e + b^2*e^2)*(d + e*x)^5)/(6 + m) - (c^2*(7*c*d - 3*b*e)*(d + e*x)^6)
/(7 + m) + (c^3*(d + e*x)^7)/(8 + m))))/e^8
```

fricas [**B**]   time = 1.09, size = 3254, normalized size = 6.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -(6*A*b^3*d^4*e^4*m^4 + 5040*B*c^3*d^8 + 10080*A*b^3*d^4*e^4 - 5760*(3*B*b*
c^2 + A*c^3)*d^7*e + 20160*(B*b^2*c + A*b*c^2)*d^6*e^2 - 8064*(B*b^3 + 3*A*
b^2*c)*d^5*e^3 - (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^6 + 322*B*c^3*e^8*m^5 + 19
60*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c^3*e^8*m^2 + 13068*B*c^3*e
^8*m + 5040*B*c^3*e^8)*x^8 - (5760*(3*B*b*c^2 + A*c^3)*e^8 + (B*c^3*d*e^7 +
 (3*B*b*c^2 + A*c^3)*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*(3*B*b*c^2 + A*c^3)*e^
8)*m^6 + 7*(25*B*c^3*d*e^7 + 49*(3*B*b*c^2 + A*c^3)*e^8)*m^5 + 35*(21*B*c^3
*d*e^7 + 61*(3*B*b*c^2 + A*c^3)*e^8)*m^4 + 56*(29*B*c^3*d*e^7 + 134*(3*B*b*
c^2 + A*c^3)*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*(3*B*b*c^2 + A*c^3)*e^8)*m
^2 + 144*(5*B*c^3*d*e^7 + 103*(3*B*b*c^2 + A*c^3)*e^8)*m)*x^7 - (20160*(B*b
^2*c + A*b*c^2)*e^8 + ((3*B*b*c^2 + A*c^3)*d*e^7 + 3*(B*b^2*c + A*b*c^2)*e^
8)*m^7 - (7*B*c^3*d^2*e^6 - 23*(3*B*b*c^2 + A*c^3)*d*e^7 - 90*(B*b^2*c + A*
b*c^2)*e^8)*m^6 - (105*B*c^3*d^2*e^6 - 205*(3*B*b*c^2 + A*c^3)*d*e^7 - 1098
*(B*b^2*c + A*b*c^2)*e^8)*m^5 - 5*(119*B*c^3*d^2*e^6 - 181*(3*B*b*c^2 + A*c
^3)*d*e^7 - 1404*(B*b^2*c + A*b*c^2)*e^8)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*
(3*B*b*c^2 + A*c^3)*d*e^7 - 25227*(B*b^2*c + A*b*c^2)*e^8)*m^3 - 2*(959*B*c
^3*d^2*e^6 - 1156*(3*B*b*c^2 + A*c^3)*d*e^7 - 25245*(B*b^2*c + A*b*c^2)*e^8
)*m^2 - 24*(35*B*c^3*d^2*e^6 - 40*(3*B*b*c^2 + A*c^3)*d*e^7 - 2143*(B*b^2*c
 + A*b*c^2)*e^8)*m)*x^6 - (8064*(B*b^3 + 3*A*b^2*c)*e^8 + (3*(B*b^2*c + A*b
*c^2)*d*e^7 + (B*b^3 + 3*A*b^2*c)*e^8)*m^7 - (6*(3*B*b*c^2 + A*c^3)*d^2*e^6
 - 75*(B*b^2*c + A*b*c^2)*d*e^7 - 31*(B*b^3 + 3*A*b^2*c)*e^8)*m^6 + (42*B*c
^3*d^3*e^5 - 108*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 723*(B*b^2*c + A*b*c^2)*d*e^
7 + 391*(B*b^3 + 3*A*b^2*c)*e^8)*m^5 + (420*B*c^3*d^3*e^5 - 690*(3*B*b*c^2
+ A*c^3)*d^2*e^6 + 3405*(B*b^2*c + A*b*c^2)*d*e^7 + 2581*(B*b^3 + 3*A*b^2*c
)*e^8)*m^4 + 2*(735*B*c^3*d^3*e^5 - 990*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 4101*
(B*b^2*c + A*b*c^2)*d*e^7 + 4772*(B*b^3 + 3*A*b^2*c)*e^8)*m^3 + 4*(525*B*c^
3*d^3*e^5 - 636*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 2370*(B*b^2*c + A*b*c^2)*d*e^
7 + 4891*(B*b^3 + 3*A*b^2*c)*e^8)*m^2 + 144*(7*B*c^3*d^3*e^5 - 8*(3*B*b*c^2
 + A*c^3)*d^2*e^6 + 28*(B*b^2*c + A*b*c^2)*d*e^7 + 141*(B*b^3 + 3*A*b^2*c)*
e^8)*m)*x^5 - (10080*A*b^3*e^8 + (A*b^3*e^8 + (B*b^3 + 3*A*b^2*c)*d*e^7)*m^
7 + (32*A*b^3*e^8 - 15*(B*b^2*c + A*b*c^2)*d^2*e^6 + 27*(B*b^3 + 3*A*b^2*c)
*d*e^7)*m^6 + (418*A*b^3*e^8 + 30*(3*B*b*c^2 + A*c^3)*d^3*e^5 - 315*(B*b^2*
c + A*b*c^2)*d^2*e^6 + 283*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^5 - (210*B*c^3*d^4*
e^4 - 2864*A*b^3*e^8 - 420*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 2355*(B*b^2*c + A*
b*c^2)*d^2*e^6 - 1449*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^4 - (1260*B*c^3*d^4*e^4
 - 10993*A*b^3*e^8 - 1770*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 7605*(B*b^2*c + A*b*
c^2)*d^2*e^6 - 3748*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^3 - 2*(1155*B*c^3*d^4*e^4
 - 11656*A*b^3*e^8 - 1410*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 5295*(B*b^2*c + A*b*
c^2)*d^2*e^6 - 2286*(B*b^3 + 3*A*b^2*c)*d*e^7)*m^2 - 36*(35*B*c^3*d^4*e^4 -
 691*A*b^3*e^8 - 40*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 140*(B*b^2*c + A*b*c^2)*d
^2*e^6 - 56*(B*b^3 + 3*A*b^2*c)*d*e^7)*m)*x^4 + 12*(13*A*b^3*d^4*e^4 - 2*(B
*b^3 + 3*A*b^2*c)*d^5*e^3)*m^3 - (A*b^3*d*e^7*m^7 + (29*A*b^3*d*e^7 - 4*(B*
b^3 + 3*A*b^2*c)*d^2*e^6)*m^6 + (331*A*b^3*d*e^7 + 60*(B*b^2*c + A*b*c^2)*d
^3*e^5 - 96*(B*b^3 + 3*A*b^2*c)*d^2*e^6)*m^5 + (1871*A*b^3*d*e^7 - 120*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 1080*(B*b^2*c + A*b*c^2)*d^3*e^5 - 844*(B*b^3 + 3
*A*b^2*c)*d^2*e^6)*m^4 + 4*(210*B*c^3*d^5*e^3 + 1345*A*b^3*d*e^7 - 330*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 1545*(B*b^2*c + A*b*c^2)*d^3*e^5 - 816*(B*b^3 + 3
*A*b^2*c)*d^2*e^6)*m^3 + 4*(630*B*c^3*d^5*e^3 + 1793*A*b^3*d*e^7 - 780*(3*B
*b*c^2 + A*c^3)*d^4*e^4 + 2970*(B*b^2*c + A*b*c^2)*d^3*e^5 - 1300*(B*b^3 +
3*A*b^2*c)*d^2*e^6)*m^2 + 48*(35*B*c^3*d^5*e^3 + 70*A*b^3*d*e^7 - 40*(3*B*b
*c^2 + A*c^3)*d^4*e^4 + 140*(B*b^2*c + A*b*c^2)*d^3*e^5 - 56*(B*b^3 + 3*A*b
^2*c)*d^2*e^6)*m)*x^3 + 6*(251*A*b^3*d^4*e^4 + 60*(B*b^2*c + A*b*c^2)*d^6*e
^2 - 84*(B*b^3 + 3*A*b^2*c)*d^5*e^3)*m^2 + 3*(A*b^3*d^2*e^6*m^6 + (27*A*b^3
*d^2*e^6 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^5 + (277*A*b^3*d^2*e^6 + 60*(B*
b^2*c + A*b*c^2)*d^4*e^4 - 88*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^4 + (1317*A*b^
3*d^2*e^6 - 120*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 960*(B*b^2*c + A*b*c^2)*d^4*e
^4 - 668*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^3 + 2*(420*B*c^3*d^6*e^2 + 1373*A*b
^3*d^2*e^6 - 540*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 2130*(B*b^2*c + A*b*c^2)*d^4
*e^4 - 964*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m^2 + 24*(35*B*c^3*d^6*e^2 + 70*A*b
^3*d^2*e^6 - 40*(3*B*b*c^2 + A*c^3)*d^5*e^3 + 140*(B*b^2*c + A*b*c^2)*d^4*e
^4 - 56*(B*b^3 + 3*A*b^2*c)*d^3*e^5)*m)*x^2 + 12*(533*A*b^3*d^4*e^4 - 60*(3
*B*b*c^2 + A*c^3)*d^7*e + 450*(B*b^2*c + A*b*c^2)*d^6*e^2 - 292*(B*b^3 + 3*
A*b^2*c)*d^5*e^3)*m - 6*(A*b^3*d^3*e^5*m^5 + 2*(13*A*b^3*d^3*e^5 - 2*(B*b^3
 + 3*A*b^2*c)*d^4*e^4)*m^4 + (251*A*b^3*d^3*e^5 + 60*(B*b^2*c + A*b*c^2)*d^
5*e^3 - 84*(B*b^3 + 3*A*b^2*c)*d^4*e^4)*m^3 + 2*(533*A*b^3*d^3*e^5 - 60*(3*
B*b*c^2 + A*c^3)*d^6*e^2 + 450*(B*b^2*c + A*b*c^2)*d^5*e^3 - 292*(B*b^3 + 3
*A*b^2*c)*d^4*e^4)*m^2 + 24*(35*B*c^3*d^7*e + 70*A*b^3*d^3*e^5 - 40*(3*B*b*
c^2 + A*c^3)*d^6*e^2 + 140*(B*b^2*c + A*b*c^2)*d^5*e^3 - 56*(B*b^3 + 3*A*b^
2*c)*d^4*e^4)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*
e^8*m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 4
0320*e^8)
```

giac [**B**] time = 0.39, size = 6663, normalized size = 13.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + 3*(x*e +
 d)^m*B*b*c^2*m^7*x^7*e^8 + (x*e + d)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*
B*c^3*m^6*x^8*e^8 + 3*(x*e + d)^m*B*b*c^2*d*m^7*x^6*e^7 + (x*e + d)^m*A*c^3
*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*d
^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*b^2*c*m^7*x^6*e^8 + 3*(x*e + d)^m*A*b*c^2*
m^7*x^6*e^8 + 87*(x*e + d)^m*B*b*c^2*m^6*x^7*e^8 + 29*(x*e + d)^m*A*c^3*m^6
*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^8*e^8 + 3*(x*e + d)^m*B*b^2*c*d*m^7*
x^5*e^7 + 3*(x*e + d)^m*A*b*c^2*d*m^7*x^5*e^7 + 69*(x*e + d)^m*B*b*c^2*d*m^
6*x^6*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m^
5*x^7*e^7 - 18*(x*e + d)^m*B*b*c^2*d^2*m^6*x^5*e^6 - 6*(x*e + d)^m*A*c^3*d^
2*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^
```

```
3*d^3*m^5*x^5*e^5 + (x*e + d)^m*B*b^3*m^7*x^5*e^8 + 3*(x*e + d)^m*A*b^2*c*m
^7*x^5*e^8 + 90*(x*e + d)^m*B*b^2*c*m^6*x^6*e^8 + 90*(x*e + d)^m*A*b*c^2*m^
6*x^6*e^8 + 1029*(x*e + d)^m*B*b*c^2*m^5*x^7*e^8 + 343*(x*e + d)^m*A*c^3*m^
5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8*e^8 + (x*e + d)^m*B*b^3*d*m^7*x^
4*e^7 + 3*(x*e + d)^m*A*b^2*c*d*m^7*x^4*e^7 + 75*(x*e + d)^m*B*b^2*c*d*m^6*
x^5*e^7 + 75*(x*e + d)^m*A*b*c^2*d*m^6*x^5*e^7 + 615*(x*e + d)^m*B*b*c^2*d*
m^5*x^6*e^7 + 205*(x*e + d)^m*A*c^3*d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d
*m^4*x^7*e^7 - 15*(x*e + d)^m*B*b^2*c*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*A*b*
c^2*d^2*m^6*x^4*e^6 - 324*(x*e + d)^m*B*b*c^2*d^2*m^5*x^5*e^6 - 108*(x*e +
d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m*B*c^3*d^2*m^4*x^6*e^6 + 90*(x*
e + d)^m*B*b*c^2*d^3*m^5*x^4*e^5 + 30*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 4
20*(x*e + d)^m*B*c^3*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^
4 + (x*e + d)^m*A*b^3*m^7*x^4*e^8 + 31*(x*e + d)^m*B*b^3*m^6*x^5*e^8 + 93*(
x*e + d)^m*A*b^2*c*m^6*x^5*e^8 + 1098*(x*e + d)^m*B*b^2*c*m^5*x^6*e^8 + 109
8*(x*e + d)^m*A*b*c^2*m^5*x^6*e^8 + 6405*(x*e + d)^m*B*b*c^2*m^4*x^7*e^8 +
2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 6769*(x*e + d)^m*B*c^3*m^3*x^8*e^8 + (
x*e + d)^m*A*b^3*d*m^7*x^3*e^7 + 27*(x*e + d)^m*B*b^3*d*m^6*x^4*e^7 + 81*(x
*e + d)^m*A*b^2*c*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*b^2*c*d*m^5*x^5*e^7 + 7
23*(x*e + d)^m*A*b*c^2*d*m^5*x^5*e^7 + 2715*(x*e + d)^m*B*b*c^2*d*m^4*x^6*e
^7 + 905*(x*e + d)^m*A*c^3*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7
*e^7 - 4*(x*e + d)^m*B*b^3*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*b^2*c*d^2*m^6
*x^3*e^6 - 315*(x*e + d)^m*B*b^2*c*d^2*m^5*x^4*e^6 - 315*(x*e + d)^m*A*b*c^
2*d^2*m^5*x^4*e^6 - 2070*(x*e + d)^m*B*b*c^2*d^2*m^4*x^5*e^6 - 690*(x*e + d
)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m^3*x^6*e^6 + 60*(x*
e + d)^m*B*b^2*c*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*A*b*c^2*d^3*m^5*x^3*e^5 +
 1260*(x*e + d)^m*B*b*c^2*d^3*m^4*x^4*e^5 + 420*(x*e + d)^m*A*c^3*d^3*m^4*x
^4*e^5 + 1470*(x*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 360*(x*e + d)^m*B*b*c^2*d
^4*m^4*x^3*e^4 - 120*(x*e + d)^m*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B
*c^3*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*B*c^3*d^5*m^3*x^3*e^3 + 32*(x*e + d)
^m*A*b^3*m^6*x^4*e^8 + 391*(x*e + d)^m*B*b^3*m^5*x^5*e^8 + 1173*(x*e + d)^m
*A*b^2*c*m^5*x^5*e^8 + 7020*(x*e + d)^m*B*b^2*c*m^4*x^6*e^8 + 7020*(x*e + d
)^m*A*b*c^2*m^4*x^6*e^8 + 22512*(x*e + d)^m*B*b*c^2*m^3*x^7*e^8 + 7504*(x*e
 + d)^m*A*c^3*m^3*x^7*e^8 + 13132*(x*e + d)^m*B*c^3*m^2*x^8*e^8 + 29*(x*e +
 d)^m*A*b^3*d*m^6*x^3*e^7 + 283*(x*e + d)^m*B*b^3*d*m^5*x^4*e^7 + 849*(x*e
+ d)^m*A*b^2*c*d*m^5*x^4*e^7 + 3405*(x*e + d)^m*B*b^2*c*d*m^4*x^5*e^7 + 340
5*(x*e + d)^m*A*b*c^2*d*m^4*x^5*e^7 + 6222*(x*e + d)^m*B*b*c^2*d*m^3*x^6*e^
7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7
*e^7 - 3*(x*e + d)^m*A*b^3*d^2*m^6*x^2*e^6 - 96*(x*e + d)^m*B*b^3*d^2*m^5*x
^3*e^6 - 288*(x*e + d)^m*A*b^2*c*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*b^2*c
*d^2*m^4*x^4*e^6 - 2355*(x*e + d)^m*A*b*c^2*d^2*m^4*x^4*e^6 - 5940*(x*e + d
)^m*B*b*c^2*d^2*m^3*x^5*e^6 - 1980*(x*e + d)^m*A*c^3*d^2*m^3*x^5*e^6 - 1918
*(x*e + d)^m*B*c^3*d^2*m^2*x^6*e^6 + 12*(x*e + d)^m*B*b^3*d^3*m^5*x^2*e^5 +
 36*(x*e + d)^m*A*b^2*c*d^3*m^5*x^2*e^5 + 1080*(x*e + d)^m*B*b^2*c*d^3*m^4*
x^3*e^5 + 1080*(x*e + d)^m*A*b*c^2*d^3*m^4*x^3*e^5 + 5310*(x*e + d)^m*B*b*c
^2*d^3*m^3*x^4*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 + 2100*(x*e + d
)^m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*b^2*c*d^4*m^4*x^2*e^4 - 180*(
x*e + d)^m*A*b*c^2*d^4*m^4*x^2*e^4 - 3960*(x*e + d)^m*B*b*c^2*d^4*m^3*x^3*e
^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4*m^
2*x^4*e^4 + 1080*(x*e + d)^m*B*b*c^2*d^5*m^3*x^2*e^3 + 360*(x*e + d)^m*A*c^
3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*B*c^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)
^m*B*c^3*d^6*m^2*x^2*e^2 + 418*(x*e + d)^m*A*b^3*m^5*x^4*e^8 + 2581*(x*e +
d)^m*B*b^3*m^4*x^5*e^8 + 7743*(x*e + d)^m*A*b^2*c*m^4*x^5*e^8 + 25227*(x*e
+ d)^m*B*b^2*c*m^3*x^6*e^8 + 25227*(x*e + d)^m*A*b*c^2*m^3*x^6*e^8 + 44268*
(x*e + d)^m*B*b*c^2*m^2*x^7*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8 + 130
68*(x*e + d)^m*B*c^3*m*x^8*e^8 + 331*(x*e + d)^m*A*b^3*d*m^5*x^3*e^7 + 1449
*(x*e + d)^m*B*b^3*d*m^4*x^4*e^7 + 4347*(x*e + d)^m*A*b^2*c*d*m^4*x^4*e^7 +
 8202*(x*e + d)^m*B*b^2*c*d*m^3*x^5*e^7 + 8202*(x*e + d)^m*A*b*c^2*d*m^3*x^
5*e^7 + 6936*(x*e + d)^m*B*b*c^2*d*m^2*x^6*e^7 + 2312*(x*e + d)^m*A*c^3*d*m
^2*x^6*e^7 + 720*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 81*(x*e + d)^m*A*b^3*d^2*m
```

```
^5*x^2*e^6 - 844*(x*e + d)^m*B*b^3*d^2*m^4*x^3*e^6 - 2532*(x*e + d)^m*A*b^2
*c*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*b^2*c*d^2*m^3*x^4*e^6 - 7605*(x*e +
 d)^m*A*b*c^2*d^2*m^3*x^4*e^6 - 7632*(x*e + d)^m*B*b*c^2*d^2*m^2*x^5*e^6 -
2544*(x*e + d)^m*A*c^3*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m*x^6*e^
6 + 6*(x*e + d)^m*A*b^3*d^3*m^5*x*e^5 + 264*(x*e + d)^m*B*b^3*d^3*m^4*x^2*e
^5 + 792*(x*e + d)^m*A*b^2*c*d^3*m^4*x^2*e^5 + 6180*(x*e + d)^m*B*b^2*c*d^3
*m^3*x^3*e^5 + 6180*(x*e + d)^m*A*b*c^2*d^3*m^3*x^3*e^5 + 8460*(x*e + d)^m*
B*b*c^2*d^3*m^2*x^4*e^5 + 2820*(x*e + d)^m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*
e + d)^m*B*c^3*d^3*m*x^5*e^5 - 24*(x*e + d)^m*B*b^3*d^4*m^4*x*e^4 - 72*(x*e
 + d)^m*A*b^2*c*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*b^2*c*d^4*m^3*x^2*e^4 -
2880*(x*e + d)^m*A*b*c^2*d^4*m^3*x^2*e^4 - 9360*(x*e + d)^m*B*b*c^2*d^4*m^2
*x^3*e^4 - 3120*(x*e + d)^m*A*c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*
d^4*m*x^4*e^4 + 360*(x*e + d)^m*B*b^2*c*d^5*m^3*x*e^3 + 360*(x*e + d)^m*A*b
*c^2*d^5*m^3*x*e^3 + 9720*(x*e + d)^m*B*b*c^2*d^5*m^2*x^2*e^3 + 3240*(x*e +
 d)^m*A*c^3*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^3 - 2160*(
x*e + d)^m*B*b*c^2*d^6*m^2*x*e^2 - 720*(x*e + d)^m*A*c^3*d^6*m^2*x*e^2 - 25
20*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7*m*x*e + 286
4*(x*e + d)^m*A*b^3*m^4*x^4*e^8 + 9544*(x*e + d)^m*B*b^3*m^3*x^5*e^8 + 2863
2*(x*e + d)^m*A*b^2*c*m^3*x^5*e^8 + 50490*(x*e + d)^m*B*b^2*c*m^2*x^6*e^8 +
 50490*(x*e + d)^m*A*b*c^2*m^2*x^6*e^8 + 44496*(x*e + d)^m*B*b*c^2*m*x^7*e^
8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*B*c^3*x^8*e^8 + 18
71*(x*e + d)^m*A*b^3*d*m^4*x^3*e^7 + 3748*(x*e + d)^m*B*b^3*d*m^3*x^4*e^7 +
 11244*(x*e + d)^m*A*b^2*c*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*b^2*c*d*m^2*x
^5*e^7 + 9480*(x*e + d)^m*A*b*c^2*d*m^2*x^5*e^7 + 2880*(x*e + d)^m*B*b*c^2*
d*m*x^6*e^7 + 960*(x*e + d)^m*A*c^3*d*m*x^6*e^7 - 831*(x*e + d)^m*A*b^3*d^2
*m^4*x^2*e^6 - 3264*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^6 - 9792*(x*e + d)^m*A*
b^2*c*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*b^2*c*d^2*m^2*x^4*e^6 - 10590*(
x*e + d)^m*A*b*c^2*d^2*m^2*x^4*e^6 - 3456*(x*e + d)^m*B*b*c^2*d^2*m*x^5*e^6
 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5*e^6 + 156*(x*e + d)^m*A*b^3*d^3*m^4*x*e
^5 + 2004*(x*e + d)^m*B*b^3*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*A*b^2*c*d^3*
m^3*x^2*e^5 + 11880*(x*e + d)^m*B*b^2*c*d^3*m^2*x^3*e^5 + 11880*(x*e + d)^m
*A*b*c^2*d^3*m^2*x^3*e^5 + 4320*(x*e + d)^m*B*b*c^2*d^3*m*x^4*e^5 + 1440*(x
*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 6*(x*e + d)^m*A*b^3*d^4*m^4*e^4 - 504*(x*e
+ d)^m*B*b^3*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*b^2*c*d^4*m^3*x*e^4 - 12780
*(x*e + d)^m*B*b^2*c*d^4*m^2*x^2*e^4 - 12780*(x*e + d)^m*A*b*c^2*d^4*m^2*x^
2*e^4 - 5760*(x*e + d)^m*B*b*c^2*d^4*m*x^3*e^4 - 1920*(x*e + d)^m*A*c^3*d^4
*m*x^3*e^4 + 24*(x*e + d)^m*B*b^3*d^5*m^3*e^3 + 72*(x*e + d)^m*A*b^2*c*d^5*
m^3*e^3 + 5400*(x*e + d)^m*B*b^2*c*d^5*m^2*x*e^3 + 5400*(x*e + d)^m*A*b*c^2
*d^5*m^2*x*e^3 + 8640*(x*e + d)^m*B*b*c^2*d^5*m*x^2*e^3 + 2880*(x*e + d)^m*
A*c^3*d^5*m*x^2*e^3 - 360*(x*e + d)^m*B*b^2*c*d^6*m^2*e^2 - 360*(x*e + d)^m
*A*b*c^2*d^6*m^2*e^2 - 17280*(x*e + d)^m*B*b*c^2*d^6*m*x*e^2 - 5760*(x*e +
d)^m*A*c^3*d^6*m*x*e^2 + 2160*(x*e + d)^m*B*b*c^2*d^7*m*e + 720*(x*e + d)^m
*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B*c^3*d^8 + 10993*(x*e + d)^m*A*b^3*m^3*x
^4*e^8 + 19564*(x*e + d)^m*B*b^3*m^2*x^5*e^8 + 58692*(x*e + d)^m*A*b^2*c*m^
2*x^5*e^8 + 51432*(x*e + d)^m*B*b^2*c*m*x^6*e^8 + 51432*(x*e + d)^m*A*b*c^2
*m*x^6*e^8 + 17280*(x*e + d)^m*B*b*c^2*x^7*e^8 + 5760*(x*e + d)^m*A*c^3*x^7
*e^8 + 5380*(x*e + d)^m*A*b^3*d*m^3*x^3*e^7 + 4572*(x*e + d)^m*B*b^3*d*m^2*
x^4*e^7 + 13716*(x*e + d)^m*A*b^2*c*d*m^2*x^4*e^7 + 4032*(x*e + d)^m*B*b^2*
c*d*m*x^5*e^7 + 4032*(x*e + d)^m*A*b*c^2*d*m*x^5*e^7 - 3951*(x*e + d)^m*A*b
^3*d^2*m^3*x^2*e^6 - 5200*(x*e + d)^m*B*b^3*d^2*m^2*x^3*e^6 - 15600*(x*e +
d)^m*A*b^2*c*d^2*m^2*x^3*e^6 - 5040*(x*e + d)^m*B*b^2*c*d^2*m*x^4*e^6 - 504
0*(x*e + d)^m*A*b*c^2*d^2*m*x^4*e^6 + 1506*(x*e + d)^m*A*b^3*d^3*m^3*x*e^5
+ 5784*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^5 + 17352*(x*e + d)^m*A*b^2*c*d^3*m^
2*x^2*e^5 + 6720*(x*e + d)^m*B*b^2*c*d^3*m*x^3*e^5 + 6720*(x*e + d)^m*A*b*c
^2*d^3*m*x^3*e^5 - 156*(x*e + d)^m*A*b^3*d^4*m^3*e^4 - 3504*(x*e + d)^m*B*b
^3*d^4*m^2*x*e^4 - 10512*(x*e + d)^m*A*b^2*c*d^4*m^2*x*e^4 - 10080*(x*e + d
)^m*B*b^2*c*d^4*m*x^2*e^4 - 10080*(x*e + d)^m*A*b*c^2*d^4*m*x^2*e^4 + 504*(
x*e + d)^m*B*b^3*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*b^2*c*d^5*m^2*e^3 + 20160
*(x*e + d)^m*B*b^2*c*d^5*m*x*e^3 + 20160*(x*e + d)^m*A*b*c^2*d^5*m*x*e^3 -
```

```
5400*(x*e + d)^m*B*b^2*c*d^6*m*e^2 - 5400*(x*e + d)^m*A*b*c^2*d^6*m*e^2 + 1
7280*(x*e + d)^m*B*b*c^2*d^7*e + 5760*(x*e + d)^m*A*c^3*d^7*e + 23312*(x*e
+ d)^m*A*b^3*m^2*x^4*e^8 + 20304*(x*e + d)^m*B*b^3*m*x^5*e^8 + 60912*(x*e +
 d)^m*A*b^2*c*m*x^5*e^8 + 20160*(x*e + d)^m*B*b^2*c*x^6*e^8 + 20160*(x*e +
d)^m*A*b*c^2*x^6*e^8 + 7172*(x*e + d)^m*A*b^3*d*m^2*x^3*e^7 + 2016*(x*e + d
)^m*B*b^3*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*b^2*c*d*m*x^4*e^7 - 8238*(x*e +
d)^m*A*b^3*d^2*m^2*x^2*e^6 - 2688*(x*e + d)^m*B*b^3*d^2*m*x^3*e^6 - 8064*(x
*e + d)^m*A*b^2*c*d^2*m*x^3*e^6 + 6396*(x*e + d)^m*A*b^3*d^3*m^2*x*e^5 + 40
32*(x*e + d)^m*B*b^3*d^3*m*x^2*e^5 + 12096*(x*e + d)^m*A*b^2*c*d^3*m*x^2*e^
5 - 1506*(x*e + d)^m*A*b^3*d^4*m^2*e^4 - 8064*(x*e + d)^m*B*b^3*d^4*m*x*e^4
 - 24192*(x*e + d)^m*A*b^2*c*d^4*m*x*e^4 + 3504*(x*e + d)^m*B*b^3*d^5*m*e^3
 + 10512*(x*e + d)^m*A*b^2*c*d^5*m*e^3 - 20160*(x*e + d)^m*B*b^2*c*d^6*e^2
- 20160*(x*e + d)^m*A*b*c^2*d^6*e^2 + 24876*(x*e + d)^m*A*b^3*m*x^4*e^8 + 8
064*(x*e + d)^m*B*b^3*x^5*e^8 + 24192*(x*e + d)^m*A*b^2*c*x^5*e^8 + 3360*(x
*e + d)^m*A*b^3*d*m*x^3*e^7 - 5040*(x*e + d)^m*A*b^3*d^2*m*x^2*e^6 + 10080*
(x*e + d)^m*A*b^3*d^3*m*x*e^5 - 6396*(x*e + d)^m*A*b^3*d^4*m*e^4 + 8064*(x*
e + d)^m*B*b^3*d^5*e^3 + 24192*(x*e + d)^m*A*b^2*c*d^5*e^3 + 10080*(x*e + d
)^m*A*b^3*x^4*e^8 - 10080*(x*e + d)^m*A*b^3*d^4*e^4)/(m^8*e^8 + 36*m^7*e^8
+ 546*m^6*e^8 + 4536*m^5*e^8 + 22449*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e
^8 + 109584*m*e^8 + 40320*e^8)
```

maple [**B**] time = 0.07, size = 4138, normalized size = 8.55

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x)
```

```
[Out] -(e*x+d)^(m+1)*(-B*c^3*e^7*m^7*x^7-A*c^3*e^7*m^7*x^6-3*B*b*c^2*e^7*m^7*x^6-
28*B*c^3*e^7*m^6*x^7-3*A*b*c^2*e^7*m^7*x^5-29*A*c^3*e^7*m^6*x^6-3*B*b^2*c*e
^7*m^7*x^5-87*B*b*c^2*e^7*m^6*x^6+7*B*c^3*d*e^6*m^6*x^6-322*B*c^3*e^7*m^5*x
^7-3*A*b^2*c*e^7*m^7*x^4-90*A*b*c^2*e^7*m^6*x^5+6*A*c^3*d*e^6*m^6*x^5-343*A
*c^3*e^7*m^5*x^6-B*b^3*e^7*m^7*x^4-90*B*b^2*c*e^7*m^6*x^5+18*B*b*c^2*d*e^6*
m^6*x^5-1029*B*b*c^2*e^7*m^5*x^6+147*B*c^3*d*e^6*m^5*x^6-1960*B*c^3*e^7*m^4
*x^7-A*b^3*e^7*m^7*x^3-93*A*b^2*c*e^7*m^6*x^4+15*A*b*c^2*d*e^6*m^6*x^4-1098
*A*b*c^2*e^7*m^5*x^5+138*A*c^3*d*e^6*m^5*x^5-2135*A*c^3*e^7*m^4*x^6-31*B*b^
3*e^7*m^6*x^4+15*B*b^2*c*d*e^6*m^6*x^4-1098*B*b^2*c*e^7*m^5*x^5+414*B*b*c^2
*d*e^6*m^5*x^5-6405*B*b*c^2*e^7*m^4*x^6-42*B*c^3*d^2*e^5*m^5*x^5+1225*B*c^3
*d*e^6*m^4*x^6-6769*B*c^3*e^7*m^3*x^7-32*A*b^3*e^7*m^6*x^3+12*A*b^2*c*d*e^6
*m^6*x^3-1173*A*b^2*c*e^7*m^5*x^4+375*A*b*c^2*d*e^6*m^5*x^4-7020*A*b*c^2*e^
7*m^4*x^5-30*A*c^3*d^2*e^5*m^5*x^4+1230*A*c^3*d*e^6*m^4*x^5-7504*A*c^3*e^7*
m^3*x^6+4*B*b^3*d*e^6*m^6*x^3-391*B*b^3*e^7*m^5*x^4+375*B*b^2*c*d*e^6*m^5*x
^4-7020*B*b^2*c*e^7*m^4*x^5-90*B*b*c^2*d^2*e^5*m^5*x^4+3690*B*b*c^2*d*e^6*m
^4*x^5-22512*B*b*c^2*e^7*m^3*x^6-630*B*c^3*d^2*e^5*m^4*x^5+5145*B*c^3*d*e^6
*m^3*x^6-13132*B*c^3*e^7*m^2*x^7+3*A*b^3*d*e^6*m^6*x^2-418*A*b^3*e^7*m^5*x^
3+324*A*b^2*c*d*e^6*m^5*x^3-7743*A*b^2*c*e^7*m^4*x^4-60*A*b*c^2*d^2*e^5*m^5
*x^3+3615*A*b*c^2*d*e^6*m^4*x^4-25227*A*b*c^2*e^7*m^3*x^5-540*A*c^3*d^2*e^5
*m^4*x^4+5430*A*c^3*d*e^6*m^3*x^5-14756*A*c^3*e^7*m^2*x^6+108*B*b^3*d*e^6*m
^5*x^3-2581*B*b^3*e^7*m^4*x^4-60*B*b^2*c*d^2*e^5*m^5*x^3+3615*B*b^2*c*d*e^6
*m^4*x^4-25227*B*b^2*c*e^7*m^3*x^5-1620*B*b*c^2*d^2*e^5*m^4*x^4+16290*B*b*c
^2*d*e^6*m^3*x^5-44268*B*b*c^2*e^7*m^2*x^6+210*B*c^3*d^3*e^4*m^4*x^4-3570*B
*c^3*d^2*e^5*m^3*x^5+11368*B*c^3*d*e^6*m^2*x^6-13068*B*c^3*e^7*m*x^7+87*A*b
^3*d*e^6*m^5*x^2-2864*A*b^3*e^7*m^4*x^3-36*A*b^2*c*d^2*e^5*m^5*x^2+3396*A*b
^2*c*d*e^6*m^4*x^3-28632*A*b^2*c*e^7*m^3*x^4-1260*A*b*c^2*d^2*e^5*m^4*x^3+1
7025*A*b*c^2*d*e^6*m^3*x^4-50490*A*b*c^2*e^7*m^2*x^5+120*A*c^3*d^3*e^4*m^4*
x^3-3450*A*c^3*d^2*e^5*m^3*x^4+12444*A*c^3*d*e^6*m^2*x^5-14832*A*c^3*e^7*m*
x^6-12*B*b^3*d^2*e^5*m^5*x^2+1132*B*b^3*d*e^6*m^4*x^3-9544*B*b^3*e^7*m^3*x^
4-1260*B*b^2*c*d^2*e^5*m^4*x^3+17025*B*b^2*c*d*e^6*m^3*x^4-50490*B*b^2*c*e^
7*m^2*x^5+360*B*b*c^2*d^3*e^4*m^4*x^3-10350*B*b*c^2*d^2*e^5*m^3*x^4+37332*B
*b*c^2*d*e^6*m^2*x^5-44496*B*b*c^2*e^7*m*x^6+2100*B*c^3*d^3*e^4*m^3*x^4-945
0*B*c^3*d^2*e^5*m^2*x^5+12348*B*c^3*d*e^6*m*x^6-5040*B*c^3*e^7*x^7-6*A*b^3*
d^2*e^5*m^5*x+993*A*b^3*d*e^6*m^4*x^2-10993*A*b^3*e^7*m^3*x^3-864*A*b^2*c*d
^2*e^5*m^4*x^2+17388*A*b^2*c*d*e^6*m^3*x^3-58692*A*b^2*c*e^7*m^2*x^4+180*A*
b*c^2*d^3*e^4*m^4*x^2-9420*A*b*c^2*d^2*e^5*m^3*x^3+41010*A*b*c^2*d*e^6*m^2*
x^4-51432*A*b*c^2*e^7*m*x^5+1680*A*c^3*d^3*e^4*m^3*x^3-9900*A*c^3*d^2*e^5*m
^2*x^4+13872*A*c^3*d*e^6*m*x^5-5760*A*c^3*e^7*x^6-288*B*b^3*d^2*e^5*m^4*x^2
+5796*B*b^3*d*e^6*m^3*x^3-19564*B*b^3*e^7*m^2*x^4+180*B*b^2*c*d^3*e^4*m^4*x
^2-9420*B*b^2*c*d^2*e^5*m^3*x^3+41010*B*b^2*c*d*e^6*m^2*x^4-51432*B*b^2*c*e
^7*m*x^5+5040*B*b*c^2*d^3*e^4*m^3*x^3-29700*B*b*c^2*d^2*e^5*m^2*x^4+41616*B
*b*c^2*d*e^6*m*x^5-17280*B*b*c^2*e^7*x^6-840*B*c^3*d^4*e^3*m^3*x^3+7350*B*c
^3*d^3*e^4*m^2*x^4-11508*B*c^3*d^2*e^5*m*x^5+5040*B*c^3*d*e^6*x^6-162*A*b^3
*d^2*e^5*m^4*x+5613*A*b^3*d*e^6*m^3*x^2-23312*A*b^3*e^7*m^2*x^3+72*A*b^2*c*
d^3*e^4*m^4*x-7596*A*b^2*c*d^2*e^5*m^3*x^2+44976*A*b^2*c*d*e^6*m^2*x^3-6091
2*A*b^2*c*e^7*m*x^4+3240*A*b*c^2*d^3*e^4*m^3*x^2-30420*A*b*c^2*d^2*e^5*m^2*
x^3+47400*A*b*c^2*d*e^6*m*x^4-20160*A*b*c^2*e^7*x^5-360*A*c^3*d^4*e^3*m^3*x
^2+7080*A*c^3*d^3*e^4*m^2*x^3-12720*A*c^3*d^2*e^5*m*x^4+5760*A*c^3*d*e^6*x^
5+24*B*b^3*d^3*e^4*m^4*x-2532*B*b^3*d^2*e^5*m^3*x^2+14992*B*b^3*d*e^6*m^2*x
^3-20304*B*b^3*e^7*m*x^4+3240*B*b^2*c*d^3*e^4*m^3*x^2-30420*B*b^2*c*d^2*e^5
*m^2*x^3+47400*B*b^2*c*d*e^6*m*x^4-20160*B*b^2*c*e^7*x^5-1080*B*b*c^2*d^4*e
^3*m^3*x^2+21240*B*b*c^2*d^3*e^4*m^2*x^3-38160*B*b*c^2*d^2*e^5*m*x^4+17280*
B*b*c^2*d*e^6*x^5-5040*B*c^3*d^4*e^3*m^2*x^3+10500*B*c^3*d^3*e^4*m*x^4-5040
*B*c^3*d^2*e^5*x^5+6*A*b^3*d^3*e^4*m^4-1662*A*b^3*d^2*e^5*m^3*x+16140*A*b^3
*d*e^6*m^2*x^2-24876*A*b^3*e^7*m*x^3+1584*A*b^2*c*d^3*e^4*m^3*x-29376*A*b^2
*c*d^2*e^5*m^2*x^2+54864*A*b^2*c*d*e^6*m*x^3-24192*A*b^2*c*e^7*x^4-360*A*b*
c^2*d^4*e^3*m^3*x+18540*A*b*c^2*d^3*e^4*m^2*x^2-42360*A*b*c^2*d^2*e^5*m*x^3
+20160*A*b*c^2*d*e^6*x^4-3960*A*c^3*d^4*e^3*m^2*x^2+11280*A*c^3*d^3*e^4*m*x
^3-5760*A*c^3*d^2*e^5*x^4+528*B*b^3*d^3*e^4*m^3*x-9792*B*b^3*d^2*e^5*m^2*x^
2+18288*B*b^3*d*e^6*m*x^3-8064*B*b^3*e^7*x^4-360*B*b^2*c*d^4*e^3*m^3*x+1854
0*B*b^2*c*d^3*e^4*m^2*x^2-42360*B*b^2*c*d^2*e^5*m*x^3+20160*B*b^2*c*d*e^6*x
^4-11880*B*b*c^2*d^4*e^3*m^2*x^2+33840*B*b*c^2*d^3*e^4*m*x^3-17280*B*b*c^2*
d^2*e^5*x^4+2520*B*c^3*d^5*e^2*m^2*x^2-9240*B*c^3*d^4*e^3*m*x^3+5040*B*c^3*
d^3*e^4*x^4+156*A*b^3*d^3*e^4*m^3-7902*A*b^3*d^2*e^5*m^2*x+21516*A*b^3*d*e^
6*m*x^2-10080*A*b^3*e^7*x^3-72*A*b^2*c*d^4*e^3*m^3+12024*A*b^2*c*d^3*e^4*m^
2*x-46800*A*b^2*c*d^2*e^5*m*x^2+24192*A*b^2*c*d*e^6*x^3-5760*A*b*c^2*d^4*e^
3*m^2*x+35640*A*b*c^2*d^3*e^4*m*x^2-20160*A*b*c^2*d^2*e^5*x^3+720*A*c^3*d^5
*e^2*m^2*x-9360*A*c^3*d^4*e^3*m*x^2+5760*A*c^3*d^3*e^4*x^3-24*B*b^3*d^4*e^3
*m^3+4008*B*b^3*d^3*e^4*m^2*x-15600*B*b^3*d^2*e^5*m*x^2+8064*B*b^3*d*e^6*x^
3-5760*B*b^2*c*d^4*e^3*m^2*x+35640*B*b^2*c*d^3*e^4*m*x^2-20160*B*b^2*c*d^2*
e^5*x^3+2160*B*b*c^2*d^5*e^2*m^2*x-28080*B*b*c^2*d^4*e^3*m*x^2+17280*B*b*c^
2*d^3*e^4*x^3+7560*B*c^3*d^5*e^2*m*x^2-5040*B*c^3*d^4*e^3*x^3+1506*A*b^3*d^
3*e^4*m^2-16476*A*b^3*d^2*e^5*m*x+10080*A*b^3*d*e^6*x^2-1512*A*b^2*c*d^4*e^
3*m^2+34704*A*b^2*c*d^3*e^4*m*x-24192*A*b^2*c*d^2*e^5*x^2+360*A*b*c^2*d^5*e
^2*m^2-25560*A*b*c^2*d^4*e^3*m*x+20160*A*b*c^2*d^3*e^4*x^2+6480*A*c^3*d^5*e
^2*m*x-5760*A*c^3*d^4*e^3*x^2-504*B*b^3*d^4*e^3*m^2+11568*B*b^3*d^3*e^4*m*x
-8064*B*b^3*d^2*e^5*x^2+360*B*b^2*c*d^5*e^2*m^2-25560*B*b^2*c*d^4*e^3*m*x+2
0160*B*b^2*c*d^3*e^4*x^2+19440*B*b*c^2*d^5*e^2*m*x-17280*B*b*c^2*d^4*e^3*x^
2-5040*B*c^3*d^6*e*m*x+5040*B*c^3*d^5*e^2*x^2+6396*A*b^3*d^3*e^4*m-10080*A*
b^3*d^2*e^5*x-10512*A*b^2*c*d^4*e^3*m+24192*A*b^2*c*d^3*e^4*x+5400*A*b*c^2*
d^5*e^2*m-20160*A*b*c^2*d^4*e^3*x-720*A*c^3*d^6*e*m+5760*A*c^3*d^5*e^2*x-35
04*B*b^3*d^4*e^3*m+8064*B*b^3*d^3*e^4*x+5400*B*b^2*c*d^5*e^2*m-20160*B*b^2*
c*d^4*e^3*x-2160*B*b*c^2*d^6*e*m+17280*B*b*c^2*d^5*e^2*x-5040*B*c^3*d^6*e*x
+10080*A*b^3*d^3*e^4-24192*A*b^2*c*d^4*e^3+20160*A*b*c^2*d^5*e^2-5760*A*c^3
*d^6*e-8064*B*b^3*d^4*e^3+20160*B*b^2*c*d^5*e^2-17280*B*b*c^2*d^6*e+5040*B*
c^3*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+22449*m^4+67284*m^3+118124*m^2+10
9584*m+40320)
```

maxima [B] time = 0.98, size = 1527, normalized size = 3.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b^3/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (
m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 +
 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b^3/((m^5
+ 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^4 + 10*m^3 + 35*m^2
 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3
*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)
*(e*x + d)^m*A*b^2*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
+ 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^
4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*
e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 1
20*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*b^2*c/((m^6 + 21*m^5 + 175*m^4 + 735*
m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 +
 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 -
 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^
3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*A*b
*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3
*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m
^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m
^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*
d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x
^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*B*b*c^2/((m^7 + 28*m^6 + 322*m^5
+ 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^6 + 21*m^5 +
 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*
m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120
*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*
x + 720*d^7)*(e*x + d)^m*A*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m
^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4
 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5
 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 +
50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 +
 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^
7*e*m*x - 5040*d^8)*(e*x + d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 +
 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 2.88, size = 2500, normalized size = 5.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] (B*c^3*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5
 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4
536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) - ((d + e*x)^m*(5040*B*c^3*d^8 -
5760*A*c^3*d^7*e + 10080*A*b^3*d^4*e^4 - 8064*B*b^3*d^5*e^3 + 20160*A*b*c^2
*d^6*e^2 - 24192*A*b^2*c*d^5*e^3 + 20160*B*b^2*c*d^6*e^2 + 6396*A*b^3*d^4*e
^4*m - 3504*B*b^3*d^5*e^3*m + 1506*A*b^3*d^4*e^4*m^2 + 156*A*b^3*d^4*e^4*m^
3 + 6*A*b^3*d^4*e^4*m^4 - 504*B*b^3*d^5*e^3*m^2 - 24*B*b^3*d^5*e^3*m^3 - 17
280*B*b*c^2*d^7*e - 720*A*c^3*d^7*e*m + 360*A*b*c^2*d^6*e^2*m^2 - 1512*A*b^
2*c*d^5*e^3*m^2 - 72*A*b^2*c*d^5*e^3*m^3 + 360*B*b^2*c*d^6*e^2*m^2 - 2160*B
*b*c^2*d^7*e*m + 5400*A*b*c^2*d^6*e^2*m - 10512*A*b^2*c*d^5*e^3*m + 5400*B*
b^2*c*d^6*e^2*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 453
6*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^5*(d + e*x)^m*(50*m + 35*m^2
+ 10*m^3 + m^4 + 24)*(336*B*b^3*e^3 + 1008*A*b^2*c*e^3 + 146*B*b^3*e^3*m +
42*B*c^3*d^3*m + 21*B*b^3*e^3*m^2 + B*b^3*e^3*m^3 + 63*A*b^2*c*e^3*m^2 + 3*
A*b^2*c*e^3*m^3 - 6*A*c^3*d^2*e*m^2 + 438*A*b^2*c*e^3*m - 48*A*c^3*d^2*e*m
+ 168*A*b*c^2*d*e^2*m - 144*B*b*c^2*d^2*e*m + 168*B*b^2*c*d*e^2*m + 45*A*b*
c^2*d*e^2*m^2 + 3*A*b*c^2*d*e^2*m^3 - 18*B*b*c^2*d^2*e*m^2 + 45*B*b^2*c*d*e
^2*m^2 + 3*B*b^2*c*d*e^2*m^3))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 22
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^4*(d + e*x)^m*(1
1*m + 6*m^2 + m^3 + 6)*(1680*A*b^3*e^4 + 1066*A*b^3*e^4*m - 210*B*c^3*d^4*m
 + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 30*A*c^3*d^3*e*m^
2 + 146*B*b^3*d*e^3*m^2 + 21*B*b^3*d*e^3*m^3 + B*b^3*d*e^3*m^4 + 240*A*c^3*
d^3*e*m + 336*B*b^3*d*e^3*m - 225*A*b*c^2*d^2*e^2*m^2 - 15*A*b*c^2*d^2*e^2*
m^3 - 225*B*b^2*c*d^2*e^2*m^2 - 15*B*b^2*c*d^2*e^2*m^3 + 1008*A*b^2*c*d*e^3
*m + 720*B*b*c^2*d^3*e*m - 840*A*b*c^2*d^2*e^2*m + 438*A*b^2*c*d*e^3*m^2 +
63*A*b^2*c*d*e^3*m^3 + 3*A*b^2*c*d*e^3*m^4 - 840*B*b^2*c*d^2*e^2*m + 90*B*b
*c^2*d^3*e*m^2))/(e^4*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536
*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (6*d^3*m*x*(d + e*x)^m*(1680*A*b^
3*e^4 + 840*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*B*b^3*d*e^3 + 1066*A*b^3*e^4
*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 3360*A*b*c^2*d^
2*e^2 + 3360*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m^2 - 4*B*b^3*d*e^3*m^3 - 403
2*A*b^2*c*d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^3*d^3*e*m - 584*B*b^3*d*e^3*
m + 60*A*b*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2*m^2 - 1752*A*b^2*c*d*e^3*m
- 360*B*b*c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m - 252*A*b^2*c*d*e^3*m^2 - 12*
A*b^2*c*d*e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^7*(109584*m + 118124*m^2 + 6
7284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c^2*x
^7*(d + e*x)^m*(8*A*c*e + 24*B*b*e + A*c*e*m + 3*B*b*e*m + B*c*d*m)*(1764*m
 + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(109584*m + 11812
4*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
 + (c*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*
B*b^2*e^2 + 168*A*b*c*e^2 + 45*B*b^2*e^2*m - 7*B*c^2*d^2*m + 3*B*b^2*e^2*m^
2 + 45*A*b*c*e^2*m + 8*A*c^2*d*e*m + 3*A*b*c*e^2*m^2 + A*c^2*d*e*m^2 + 24*B
*b*c*d*e*m + 3*B*b*c*d*e*m^2))/(e^2*(109584*m + 118124*m^2 + 67284*m^3 + 22
449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (d*m*x^3*(d + e*x)^
m*(3*m + m^2 + 2)*(1680*A*b^3*e^4 + 840*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*
B*b^3*d*e^3 + 1066*A*b^3*e^4*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b
^3*e^4*m^4 + 3360*A*b*c^2*d^2*e^2 + 3360*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m
^2 - 4*B*b^3*d*e^3*m^3 - 4032*A*b^2*c*d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^
3*d^3*e*m - 584*B*b^3*d*e^3*m + 60*A*b*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2
*m^2 - 1752*A*b^2*c*d*e^3*m - 360*B*b*c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m -
 252*A*b^2*c*d*e^3*m^2 - 12*A*b^2*c*d*e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^
5*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*
m^7 + m^8 + 40320)) - (3*d^2*m*x^2*(m + 1)*(d + e*x)^m*(1680*A*b^3*e^4 + 84
0*B*c^3*d^4 - 960*A*c^3*d^3*e - 1344*B*b^3*d*e^3 + 1066*A*b^3*e^4*m + 251*A
*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 + 3360*A*b*c^2*d^2*e^2 + 33
60*B*b^2*c*d^2*e^2 - 84*B*b^3*d*e^3*m^2 - 4*B*b^3*d*e^3*m^3 - 4032*A*b^2*c*
d*e^3 - 2880*B*b*c^2*d^3*e - 120*A*c^3*d^3*e*m - 584*B*b^3*d*e^3*m + 60*A*b
*c^2*d^2*e^2*m^2 + 60*B*b^2*c*d^2*e^2*m^2 - 1752*A*b^2*c*d*e^3*m - 360*B*b*
c^2*d^3*e*m + 900*A*b*c^2*d^2*e^2*m - 252*A*b^2*c*d*e^3*m^2 - 12*A*b^2*c*d*
e^3*m^3 + 900*B*b^2*c*d^2*e^2*m))/(e^6*(109584*m + 118124*m^2 + 67284*m^3 +
 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1128 $\int (A+Bx)(d+ex)^4 \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=412

$$\frac{1}{4}Ab^3d^4x^4+\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{6}bd^2x^6\,(2b^2e(3Ae+2Bd)+3bcd(4Ae+Bd$$

```
[Out] 1/4*A*b^3*d^4*x^4+1/5*b^2*d^3*(4*A*b*e+3*A*c*d+B*b*d)*x^5+1/6*b*d^2*(3*A*c^
2*d^2+2*b^2*e*(3*A*e+2*B*d)+3*b*c*d*(4*A*e+B*d))*x^6+1/7*d*(A*c^3*d^3+2*b^3
*e^2*(2*A*e+3*B*d)+6*b^2*c*d*e*(3*A*e+2*B*d)+3*b*c^2*d^2*(4*A*e+B*d))*x^7+1
/8*(A*e*(b^3*e^3+12*b^2*c*d*e^2+18*b*c^2*d^2*e+4*c^3*d^3)+B*d*(4*b^3*e^3+18
*b^2*c*d*e^2+12*b*c^2*d^2*e+c^3*d^3))*x^8+1/9*e*(3*A*c*e*(b^2*e^2+4*b*c*d*e
+2*c^2*d^2)+B*(b^3*e^3+12*b^2*c*d*e^2+18*b*c^2*d^2*e+4*c^3*d^3))*x^9+1/10*c
*e^2*(A*c*e*(3*b*e+4*c*d)+3*B*(b^2*e^2+4*b*c*d*e+2*c^2*d^2))*x^10+1/11*c^2*
e^3*(A*c*e+3*B*b*e+4*B*c*d)*x^11+1/12*B*c^3*e^4*x^12
```

Rubi [A] time = 0.51, antiderivative size = 412, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{9}ex^9\,(3Ace\left(b^2e^2+4bcde+2c^2d^2\right)+B\,(12b^2cde^2+b^3e$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^4*x^4)/4 + (b^2*d^3*(b*B*d + 3*A*c*d + 4*A*b*e)*x^5)/5 + (b*d^2*(3
*A*c^2*d^2 + 2*b^2*e*(2*B*d + 3*A*e) + 3*b*c*d*(B*d + 4*A*e))*x^6)/6 + (d*(
A*c^3*d^3 + 2*b^3*e^2*(3*B*d + 2*A*e) + 6*b^2*c*d*e*(2*B*d + 3*A*e) + 3*b*c
^2*d^2*(B*d + 4*A*e))*x^7)/7 + ((A*e*(4*c^3*d^3 + 18*b*c^2*d^2*e + 12*b^2*c
*d*e^2 + b^3*e^3) + B*d*(c^3*d^3 + 12*b*c^2*d^2*e + 18*b^2*c*d*e^2 + 4*b^3*
e^3))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3
 + 18*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*x^9)/9 + (c*e^2*(A*c*e*(4*c*
d + 3*b*e) + 3*B*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^10)/10 + (c^2*e^3*(4*
B*c*d + 3*b*B*e + A*c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4\left(bx+cx^2\right)^3\,dx &= \int \,(Ab^3d^4x^3+b^2d^3(bBd+3Acd+4Abe)x^4+bd^2\,(3Ac^2d^2+2b^2e(2Bd+\\ &= \frac{1}{4}Ab^3d^4x^4+\frac{1}{5}b^2d^3(bBd+3Acd+4Abe)x^5+\frac{1}{6}bd^2\,(3Ac^2d^2+2b^2e(2Bd+\end{aligned}$$

Mathematica [A] time = 0.16, size = 412, normalized size = 1.00

$$\frac{1}{4}Ab^3d^4x^4+\frac{1}{10}ce^2x^{10}\left(Ace(3be+4cd)+3B\left(b^2e^2+4bcde+2c^2d^2\right)\right)+\frac{1}{6}bd^2x^6\,(2b^2e(3Ae+2Bd)+3bcd(4Ae+Bd$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^4*x^4)/4 + (b^2*d^3*(b*B*d + 3*A*c*d + 4*A*b*e)*x^5)/5 + (b*d^2*(3
*A*c^2*d^2 + 2*b^2*e*(2*B*d + 3*A*e) + 3*b*c*d*(B*d + 4*A*e))*x^6)/6 + (d*(
A*c^3*d^3 + 2*b^3*e^2*(3*B*d + 2*A*e) + 6*b^2*c*d*e*(2*B*d + 3*A*e) + 3*b*c
^2*d^2*(B*d + 4*A*e))*x^7)/7 + ((A*e*(4*c^3*d^3 + 18*b*c^2*d^2*e + 12*b^2*c
*d*e^2 + b^3*e^3) + B*d*(c^3*d^3 + 12*b*c^2*d^2*e + 18*b^2*c*d*e^2 + 4*b^3*
e^3))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3
 + 18*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*x^9)/9 + (c*e^2*(A*c*e*(4*c*
d + 3*b*e) + 3*B*(2*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*x^10)/10 + (c^2*e^3*(4*
B*c*d + 3*b*B*e + A*c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

fricas [**A**] time = 0.68, size = 540, normalized size = 1.31

$$\frac{1}{12}x^{12}e^4c^3B+\frac{4}{11}x^{11}e^3dc^3B+\frac{3}{11}x^{11}e^4c^2bB+\frac{1}{11}x^{11}e^4c^3A+\frac{3}{5}x^{10}e^2d^2c^3B+\frac{6}{5}x^{10}e^3dc^2bB+\frac{3}{10}x^{10}e^4cb^2B+\frac{2}{5}x^{10}e^3dc^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 3/11*x^11*e^4*c^2*b*B + 1/11*
x^11*e^4*c^3*A + 3/5*x^10*e^2*d^2*c^3*B + 6/5*x^10*e^3*d*c^2*b*B + 3/10*x^1
0*e^4*c*b^2*B + 2/5*x^10*e^3*d*c^3*A + 3/10*x^10*e^4*c^2*b*A + 4/9*x^9*e*d^
3*c^3*B + 2*x^9*e^2*d^2*c^2*b*B + 4/3*x^9*e^3*d*c*b^2*B + 1/9*x^9*e^4*b^3*B
 + 2/3*x^9*e^2*d^2*c^3*A + 4/3*x^9*e^3*d*c^2*b*A + 1/3*x^9*e^4*c*b^2*A + 1/
8*x^8*d^4*c^3*B + 3/2*x^8*e*d^3*c^2*b*B + 9/4*x^8*e^2*d^2*c*b^2*B + 1/2*x^8
*e^3*d*b^3*B + 1/2*x^8*e*d^3*c^3*A + 9/4*x^8*e^2*d^2*c^2*b*A + 3/2*x^8*e^3*
d*c*b^2*A + 1/8*x^8*e^4*b^3*A + 3/7*x^7*d^4*c^2*b*B + 12/7*x^7*e*d^3*c*b^2*
B + 6/7*x^7*e^2*d^2*b^3*B + 1/7*x^7*d^4*c^3*A + 12/7*x^7*e*d^3*c^2*b*A + 18
/7*x^7*e^2*d^2*c*b^2*A + 4/7*x^7*e^3*d*b^3*A + 1/2*x^6*d^4*c*b^2*B + 2/3*x^
6*e*d^3*b^3*B + 1/2*x^6*d^4*c^2*b*A + 2*x^6*e*d^3*c*b^2*A + x^6*e^2*d^2*b^3
*A + 1/5*x^5*d^4*b^3*B + 3/5*x^5*d^4*c*b^2*A + 4/5*x^5*e*d^3*b^3*A + 1/4*x^
4*d^4*b^3*A
```

giac [**A**] time = 0.16, size = 524, normalized size = 1.27

$$\frac{1}{12}\,Bc^3x^{12}e^4+\frac{4}{11}\,Bc^3dx^{11}e^3+\frac{3}{5}\,Bc^3d^2x^{10}e^2+\frac{4}{9}\,Bc^3d^3x^9e+\frac{1}{8}\,Bc^3d^4x^8+\frac{3}{11}\,Bbc^2x^{11}e^4+\frac{1}{11}\,Ac^3x^{11}e^4+\frac{6}{5}\,Bbc^2dx^{10}e^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 3/11*B*b*c^2*x^11*e^4 + 1/11*A*c^3*x^
11*e^4 + 6/5*B*b*c^2*d*x^10*e^3 + 2/5*A*c^3*d*x^10*e^3 + 2*B*b*c^2*d^2*x^9*
e^2 + 2/3*A*c^3*d^2*x^9*e^2 + 3/2*B*b*c^2*d^3*x^8*e + 1/2*A*c^3*d^3*x^8*e +
 3/7*B*b*c^2*d^4*x^7 + 1/7*A*c^3*d^4*x^7 + 3/10*B*b^2*c*x^10*e^4 + 3/10*A*b
*c^2*x^10*e^4 + 4/3*B*b^2*c*d*x^9*e^3 + 4/3*A*b*c^2*d*x^9*e^3 + 9/4*B*b^2*c
*d^2*x^8*e^2 + 9/4*A*b*c^2*d^2*x^8*e^2 + 12/7*B*b^2*c*d^3*x^7*e + 12/7*A*b*
c^2*d^3*x^7*e + 1/2*B*b^2*c*d^4*x^6 + 1/2*A*b*c^2*d^4*x^6 + 1/9*B*b^3*x^9*e
^4 + 1/3*A*b^2*c*x^9*e^4 + 1/2*B*b^3*d*x^8*e^3 + 3/2*A*b^2*c*d*x^8*e^3 + 6/
7*B*b^3*d^2*x^7*e^2 + 18/7*A*b^2*c*d^2*x^7*e^2 + 2/3*B*b^3*d^3*x^6*e + 2*A*
b^2*c*d^3*x^6*e + 1/5*B*b^3*d^4*x^5 + 3/5*A*b^2*c*d^4*x^5 + 1/8*A*b^3*x^8*e
^4 + 4/7*A*b^3*d*x^7*e^3 + A*b^3*d^2*x^6*e^2 + 4/5*A*b^3*d^3*x^5*e + 1/4*A*
b^3*d^4*x^4
```

maple [**A**] time = 0.04, size = 444, normalized size = 1.08

$$\frac{B\,c^3e^4x^{12}}{12}+\frac{A\,b^3d^4x^4}{4}+\frac{\left(3Bb\,c^2e^4+\left(A\,e^4+4Bd\,e^3\right)c^3\right)x^{11}}{11}+\frac{\left(3B\,b^2c\,e^4+3\left(A\,e^4+4Bd\,e^3\right)b\,c^2+\left(4Ad\,e^3+6B\right.\right.}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*((A*e^4+4*B*d*e^3)*c^3+3*B*e^4*b*c^2)*x^11+1/10*((
4*A*d*e^3+6*B*d^2*e^2)*c^3+3*(A*e^4+4*B*d*e^3)*b*c^2+3*B*e^4*b^2*c)*x^10+1/
9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(4*A*d*e^3+6*B*d^2*e^2)*b*c^2+3*(A*e^4+4*B
*d*e^3)*b^2*c+B*e^4*b^3)*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(6*A*d^2*e^2+4*B*
d^3*e)*b*c^2+3*(4*A*d*e^3+6*B*d^2*e^2)*b^2*c+(A*e^4+4*B*d*e^3)*b^3)*x^8+1/7
*(A*d^4*c^3+3*(4*A*d^3*e+B*d^4)*b*c^2+3*(6*A*d^2*e^2+4*B*d^3*e)*b^2*c+(4*A*
d*e^3+6*B*d^2*e^2)*b^3)*x^7+1/6*(3*A*d^4*b*c^2+3*(4*A*d^3*e+B*d^4)*b^2*c+(6
*A*d^2*e^2+4*B*d^3*e)*b^3)*x^6+1/5*(3*A*d^4*b^2*c+(4*A*d^3*e+B*d^4)*b^3)*x^
5+1/4*A*b^3*d^4*x^4
```

maxima [A] time = 0.51, size = 428, normalized size = 1.04

$$\frac{1}{12}\,Bc^3e^4x^{12}+\frac{1}{4}\,Ab^3d^4x^4+\frac{1}{11}\left(4\,Bc^3de^3+\left(3\,Bbc^2+Ac^3\right)e^4\right)x^{11}+\frac{1}{10}\left(6\,Bc^3d^2e^2+4\left(3\,Bbc^2+Ac^3\right)de^3+3\left(Bb^2c+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/4*A*b^3*d^4*x^4 + 1/11*(4*B*c^3*d*e^3 + (3*B*b*c^2
+ A*c^3)*e^4)*x^11 + 1/10*(6*B*c^3*d^2*e^2 + 4*(3*B*b*c^2 + A*c^3)*d*e^3 +
3*(B*b^2*c + A*b*c^2)*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*(3*B*b*c^2 + A*c^3
)*d^2*e^2 + 12*(B*b^2*c + A*b*c^2)*d*e^3 + (B*b^3 + 3*A*b^2*c)*e^4)*x^9 + 1
/8*(B*c^3*d^4 + A*b^3*e^4 + 4*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + A*b
*c^2)*d^2*e^2 + 4*(B*b^3 + 3*A*b^2*c)*d*e^3)*x^8 + 1/7*(4*A*b^3*d*e^3 + (3*
B*b*c^2 + A*c^3)*d^4 + 12*(B*b^2*c + A*b*c^2)*d^3*e + 6*(B*b^3 + 3*A*b^2*c)
*d^2*e^2)*x^7 + 1/6*(6*A*b^3*d^2*e^2 + 3*(B*b^2*c + A*b*c^2)*d^4 + 4*(B*b^3
 + 3*A*b^2*c)*d^3*e)*x^6 + 1/5*(4*A*b^3*d^3*e + (B*b^3 + 3*A*b^2*c)*d^4)*x^
5
```

mupad [B] time = 0.16, size = 445, normalized size = 1.08

$$x^6\left(\frac{2\,B\,b^3\,d^3\,e}{3}+A\,b^3\,d^2\,e^2+\frac{B\,b^2\,c\,d^4}{2}+2\,A\,b^2\,c\,d^3\,e+\frac{A\,b\,c^2\,d^4}{2}\right)+x^{10}\left(\frac{3\,B\,b^2\,c\,e^4}{10}+\frac{6\,B\,b\,c^2\,d\,e^3}{5}+\frac{3\,A\,b\,c^2\,e^4}{10}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^6*((A*b*c^2*d^4)/2 + (B*b^2*c*d^4)/2 + (2*B*b^3*d^3*e)/3 + A*b^3*d^2*e^2
+ 2*A*b^2*c*d^3*e) + x^10*((3*A*b*c^2*e^4)/10 + (3*B*b^2*c*e^4)/10 + (2*A*c
^3*d*e^3)/5 + (3*B*c^3*d^2*e^2)/5 + (6*B*b*c^2*d*e^3)/5) + x^8*((A*b^3*e^4)
/8 + (B*c^3*d^4)/8 + (A*c^3*d^3*e)/2 + (B*b^3*d*e^3)/2 + (9*A*b*c^2*d^2*e^2
)/4 + (9*B*b^2*c*d^2*e^2)/4 + (3*A*b^2*c*d*e^3)/2 + (3*B*b*c^2*d^3*e)/2) +
x^7*((A*c^3*d^4)/7 + (3*B*b*c^2*d^4)/7 + (4*A*b^3*d*e^3)/7 + (6*B*b^3*d^2*e
^2)/7 + (18*A*b^2*c*d^2*e^2)/7 + (12*A*b*c^2*d^3*e)/7 + (12*B*b^2*c*d^3*e)/
7) + x^9*((B*b^3*e^4)/9 + (A*b^2*c*e^4)/3 + (4*B*c^3*d^3*e)/9 + (2*A*c^3*d^
2*e^2)/3 + 2*B*b*c^2*d^2*e^2 + (4*A*b*c^2*d*e^3)/3 + (4*B*b^2*c*d*e^3)/3) +
 (b^2*d^3*x^5*(4*A*b*e + 3*A*c*d + B*b*d))/5 + (c^2*e^3*x^11*(A*c*e + 3*B*b
*e + 4*B*c*d))/11 + (A*b^3*d^4*x^4)/4 + (B*c^3*e^4*x^12)/12
```

sympy [A] time = 0.15, size = 564, normalized size = 1.37

$$\frac{Ab^3d^4x^4}{4}+\frac{Bc^3e^4x^{12}}{12}+x^{11}\left(\frac{Ac^3e^4}{11}+\frac{3Bbc^2e^4}{11}+\frac{4Bc^3de^3}{11}\right)+x^{10}\left(\frac{3Abc^2e^4}{10}+\frac{2Ac^3de^3}{5}+\frac{3Bb^2ce^4}{10}+\frac{6Bbc^2de^3}{5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**4*x**4/4 + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 3*B*b*c
**2*e**4/11 + 4*B*c**3*d*e**3/11) + x**10*(3*A*b*c**2*e**4/10 + 2*A*c**3*d*
e**3/5 + 3*B*b**2*c*e**4/10 + 6*B*b*c**2*d*e**3/5 + 3*B*c**3*d**2*e**2/5) +
 x**9*(A*b**2*c*e**4/3 + 4*A*b*c**2*d*e**3/3 + 2*A*c**3*d**2*e**2/3 + B*b**
3*e**4/9 + 4*B*b**2*c*d*e**3/3 + 2*B*b*c**2*d**2*e**2 + 4*B*c**3*d**3*e/9)
+ x**8*(A*b**3*e**4/8 + 3*A*b**2*c*d*e**3/2 + 9*A*b*c**2*d**2*e**2/4 + A*c*
*3*d**3*e/2 + B*b**3*d*e**3/2 + 9*B*b**2*c*d**2*e**2/4 + 3*B*b*c**2*d**3*e/
2 + B*c**3*d**4/8) + x**7*(4*A*b**3*d*e**3/7 + 18*A*b**2*c*d**2*e**2/7 + 12
*A*b*c**2*d**3*e/7 + A*c**3*d**4/7 + 6*B*b**3*d**2*e**2/7 + 12*B*b**2*c*d**
3*e/7 + 3*B*b*c**2*d**4/7) + x**6*(A*b**3*d**2*e**2 + 2*A*b**2*c*d**3*e + A
*b*c**2*d**4/2 + 2*B*b**3*d**3*e/3 + B*b**2*c*d**4/2) + x**5*(4*A*b**3*d**3
*e/5 + 3*A*b**2*c*d**4/5 + B*b**3*d**4/5)
```

3.1129 $\int (A+Bx)(d+ex)^3 \left(bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=305

$$\frac{1}{4}Ab^3d^3x^4+\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{2}bdx^6\left(b^2e(Ae+Bd)+bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{5}$$

```
[Out] 1/4*A*b^3*d^3*x^4+1/5*b^2*d^2*(3*A*b*e+3*A*c*d+B*b*d)*x^5+1/2*b*d*(A*c^2*d^
2+b^2*e*(A*e+B*d)+b*c*d*(3*A*e+B*d))*x^6+1/7*(A*c^3*d^3+9*b^2*c*d*e*(A*e+B*
d)+b^3*e^2*(A*e+3*B*d)+3*b*c^2*d^2*(3*A*e+B*d))*x^7+1/8*(3*A*c*e*(b^2*e^2+3
*b*c*d*e+c^2*d^2)+B*(b^3*e^3+9*b^2*c*d*e^2+9*b*c^2*d^2*e+c^3*d^3))*x^8+1/3*
c*e*(A*c*e*(b*e+c*d)+B*(b^2*e^2+3*b*c*d*e+c^2*d^2))*x^9+1/10*c^2*e^2*(A*c*e
+3*B*(b*e+c*d))*x^10+1/11*B*c^3*e^3*x^11
```

Rubi [A] time = 0.48, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = $\{771\}$

$$\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{8}x^8\left(3Ace\left(b^2e^2+3bcde+c^2d^2\right)+B\left(9b^2cde^2+b^3e^3+9bc^2d^2e\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^3*x^4)/4 + (b^2*d^2*(b*B*d + 3*A*c*d + 3*A*b*e)*x^5)/5 + (b*d*(A*c
^2*d^2 + b^2*e*(B*d + A*e) + b*c*d*(B*d + 3*A*e))*x^6)/2 + ((A*c^3*d^3 + 9*
b^2*c*d*e*(B*d + A*e) + b^3*e^2*(3*B*d + A*e) + 3*b*c^2*d^2*(B*d + 3*A*e))*
x^7)/7 + ((3*A*c*e*(c^2*d^2 + 3*b*c*d*e + b^2*e^2) + B*(c^3*d^3 + 9*b*c^2*d
^2*e + 9*b^2*c*d*e^2 + b^3*e^3))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*
d^2 + 3*b*c*d*e + b^2*e^2))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^1
0)/10 + (B*c^3*e^3*x^11)/11
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3d^3x^3+b^2d^2(bBd+3Acd+3Abe)x^4+3bd\left(Ac^2d^2+b^2e(Bd+Ae)\right.\right.\\ &= \frac{1}{4}Ab^3d^3x^4+\frac{1}{5}b^2d^2(bBd+3Acd+3Abe)x^5+\frac{1}{2}bd\left(Ac^2d^2+b^2e(Bd+Ae)\right.\end{aligned}$$

Mathematica [A] time = 0.12, size = 305, normalized size = 1.00

$$\frac{1}{4}Ab^3d^3x^4+\frac{1}{3}cex^9\left(Ace(be+cd)+B\left(b^2e^2+3bcde+c^2d^2\right)\right)+\frac{1}{2}bdx^6\left(b^2e(Ae+Bd)+bcd(3Ae+Bd)+Ac^2d^2\right)+\frac{1}{5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^3*x^4)/4 + (b^2*d^2*(b*B*d + 3*A*c*d + 3*A*b*e)*x^5)/5 + (b*d*(A*c
^2*d^2 + b^2*e*(B*d + A*e) + b*c*d*(B*d + 3*A*e))*x^6)/2 + ((A*c^3*d^3 + 9*
b^2*c*d*e*(B*d + A*e) + b^3*e^2*(3*B*d + A*e) + 3*b*c^2*d^2*(B*d + 3*A*e))*
x^7)/7 + ((3*A*c*e*(c^2*d^2 + 3*b*c*d*e + b^2*e^2) + B*(c^3*d^3 + 9*b*c^2*d
^2*e + 9*b^2*c*d*e^2 + b^3*e^3))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*
d^2 + 3*b*c*d*e + b^2*e^2))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^1
0)/10 + (B*c^3*e^3*x^11)/11
```

fricas [A] time = 0.84, size = 416, normalized size = 1.36

$$\frac{1}{11}x^{11}e^3c^3B+\frac{3}{10}x^{10}e^2dc^3B+\frac{3}{10}x^{10}e^3c^2bB+\frac{1}{10}x^{10}e^3c^3A+\frac{1}{3}x^9ed^2c^3B+x^9e^2dc^2bB+\frac{1}{3}x^9e^3cb^2B+\frac{1}{3}x^9e^2dc^3A+\frac{1}{3}x^9e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 3/10*x^10*e^3*c^2*b*B + 1/10*
x^10*e^3*c^3*A + 1/3*x^9*e*d^2*c^3*B + x^9*e^2*d*c^2*b*B + 1/3*x^9*e^3*c*b^
2*B + 1/3*x^9*e^2*d*c^3*A + 1/3*x^9*e^3*c^2*b*A + 1/8*x^8*d^3*c^3*B + 9/8*x
^8*e*d^2*c^2*b*B + 9/8*x^8*e^2*d*c*b^2*B + 1/8*x^8*e^3*b^3*B + 3/8*x^8*e*d^
2*c^3*A + 9/8*x^8*e^2*d*c^2*b*A + 3/8*x^8*e^3*c*b^2*A + 3/7*x^7*d^3*c^2*b*B
 + 9/7*x^7*e*d^2*c*b^2*B + 3/7*x^7*e^2*d*b^3*B + 1/7*x^7*d^3*c^3*A + 9/7*x^
7*e*d^2*c^2*b*A + 9/7*x^7*e^2*d*c*b^2*A + 1/7*x^7*e^3*b^3*A + 1/2*x^6*d^3*c
*b^2*B + 1/2*x^6*e*d^2*b^3*B + 1/2*x^6*d^3*c^2*b*A + 3/2*x^6*e*d^2*c*b^2*A
+ 1/2*x^6*e^2*d*b^3*A + 1/5*x^5*d^3*b^3*B + 3/5*x^5*d^3*c*b^2*A + 3/5*x^5*e
*d^2*b^3*A + 1/4*x^4*d^3*b^3*A
```

giac [A] time = 0.20, size = 408, normalized size = 1.34

$$\frac{1}{11}Bc^3x^{11}e^3+\frac{3}{10}Bc^3dx^{10}e^2+\frac{1}{3}Bc^3d^2x^9e+\frac{1}{8}Bc^3d^3x^8+\frac{3}{10}Bbc^2x^{10}e^3+\frac{1}{10}Ac^3x^{10}e^3+Bbc^2dx^9e^2+\frac{1}{3}Ac^3dx^9e^2+\frac{9}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 3/10*B*b*c^2*x^10*e^3 + 1/10*A*c^3*x^10*e^3 + B*b*c^2*d*x^9*e^
2 + 1/3*A*c^3*d*x^9*e^2 + 9/8*B*b*c^2*d^2*x^8*e + 3/8*A*c^3*d^2*x^8*e + 3/7
*B*b*c^2*d^3*x^7 + 1/7*A*c^3*d^3*x^7 + 1/3*B*b^2*c*x^9*e^3 + 1/3*A*b*c^2*x^
9*e^3 + 9/8*B*b^2*c*d*x^8*e^2 + 9/8*A*b*c^2*d*x^8*e^2 + 9/7*B*b^2*c*d^2*x^7
*e + 9/7*A*b*c^2*d^2*x^7*e + 1/2*B*b^2*c*d^3*x^6 + 1/2*A*b*c^2*d^3*x^6 + 1/
8*B*b^3*x^8*e^3 + 3/8*A*b^2*c*x^8*e^3 + 3/7*B*b^3*d*x^7*e^2 + 9/7*A*b^2*c*d
*x^7*e^2 + 1/2*B*b^3*d^2*x^6*e + 3/2*A*b^2*c*d^2*x^6*e + 1/5*B*b^3*d^3*x^5
+ 3/5*A*b^2*c*d^3*x^5 + 1/7*A*b^3*x^7*e^3 + 1/2*A*b^3*d*x^6*e^2 + 3/5*A*b^3
*d^2*x^5*e + 1/4*A*b^3*d^3*x^4
```

maple [A] time = 0.04, size = 342, normalized size = 1.12

$$\frac{Bc^3e^3x^{11}}{11}+\frac{Ab^3d^3x^4}{4}+\frac{\left(3Bbc^2e^3+\left(Ae^3+3Bde^2\right)c^3\right)x^{10}}{10}+\frac{(3Bb^2ce^3+3\left(Ae^3+3Bde^2\right)bc^2+(3Ade^2+3B}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*((A*e^3+3*B*d*e^2)*c^3+3*B*e^3*b*c^2)*x^10+1/9*((3
*A*d*e^2+3*B*d^2*e)*c^3+3*(A*e^3+3*B*d*e^2)*b*c^2+3*B*e^3*b^2*c)*x^9+1/8*((
3*A*d^2*e+B*d^3)*c^3+3*(3*A*d*e^2+3*B*d^2*e)*b*c^2+3*(A*e^3+3*B*d*e^2)*b^2*
c+B*e^3*b^3)*x^8+1/7*(A*c^3*d^3+3*(3*A*d^2*e+B*d^3)*b*c^2+3*(3*A*d*e^2+3*B*
d^2*e)*b^2*c+(A*e^3+3*B*d*e^2)*b^3)*x^7+1/6*(3*A*d^3*b*c^2+3*(3*A*d^2*e+B*d
^3)*b^2*c+(3*A*d*e^2+3*B*d^2*e)*b^3)*x^6+1/5*(3*A*d^3*b^2*c+(3*A*d^2*e+B*d^
3)*b^3)*x^5+1/4*A*b^3*d^3*x^4
```

maxima [A] time = 0.59, size = 329, normalized size = 1.08

$$\frac{1}{11}Bc^3e^3x^{11}+\frac{1}{4}Ab^3d^3x^4+\frac{1}{10}\big(3Bc^3de^2+\big(3Bbc^2+Ac^3\big)e^3\big)x^{10}+\frac{1}{3}\big(Bc^3d^2e+\big(3Bbc^2+Ac^3\big)de^2+\big(Bb^2c+Abc^2\big)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/4*A*b^3*d^3*x^4 + 1/10*(3*B*c^3*d*e^2 + (3*B*b*c^2
+ A*c^3)*e^3)*x^10 + 1/3*(B*c^3*d^2*e + (3*B*b*c^2 + A*c^3)*d*e^2 + (B*b^2*
c + A*b*c^2)*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*(3*B*b*c^2 + A*c^3)*d^2*e + 9*(B
*b^2*c + A*b*c^2)*d*e^2 + (B*b^3 + 3*A*b^2*c)*e^3)*x^8 + 1/7*(A*b^3*e^3 + (
3*B*b*c^2 + A*c^3)*d^3 + 9*(B*b^2*c + A*b*c^2)*d^2*e + 3*(B*b^3 + 3*A*b^2*c
)*d*e^2)*x^7 + 1/2*(A*b^3*d*e^2 + (B*b^2*c + A*b*c^2)*d^3 + (B*b^3 + 3*A*b^
2*c)*d^2*e)*x^6 + 1/5*(3*A*b^3*d^2*e + (B*b^3 + 3*A*b^2*c)*d^3)*x^5
```

mupad [B] time = 1.42, size = 340, normalized size = 1.11

$$x^6\left(\frac{B\,b^3\,d^2\,e}{2}+\frac{A\,b^3\,d\,e^2}{2}+\frac{B\,b^2\,c\,d^3}{2}+\frac{3\,A\,b^2\,c\,d^2\,e}{2}+\frac{A\,b\,c^2\,d^3}{2}\right)+x^9\,\Big(\frac{B\,b^2\,c\,e^3}{3}+B\,b\,c^2\,d\,e^2+\frac{A\,b\,c^2\,e^3}{3}+\frac{B\,c^3\,d^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^6*((A*b*c^2*d^3)/2 + (B*b^2*c*d^3)/2 + (A*b^3*d*e^2)/2 + (B*b^3*d^2*e)/2
+ (3*A*b^2*c*d^2*e)/2) + x^9*((A*b*c^2*e^3)/3 + (B*b^2*c*e^3)/3 + (A*c^3*d*
e^2)/3 + (B*c^3*d^2*e)/3 + B*b*c^2*d*e^2) + x^7*((A*b^3*e^3)/7 + (A*c^3*d^3
)/7 + (3*B*b*c^2*d^3)/7 + (3*B*b^3*d*e^2)/7 + (9*A*b*c^2*d^2*e)/7 + (9*A*b^
2*c*d*e^2)/7 + (9*B*b^2*c*d^2*e)/7) + x^8*((B*b^3*e^3)/8 + (B*c^3*d^3)/8 +
(3*A*b^2*c*e^3)/8 + (3*A*c^3*d^2*e)/8 + (9*A*b*c^2*d*e^2)/8 + (9*B*b*c^2*d^
2*e)/8 + (9*B*b^2*c*d*e^2)/8) + (b^2*d^2*x^5*(3*A*b*e + 3*A*c*d + B*b*d))/5
 + (c^2*e^2*x^10*(A*c*e + 3*B*b*e + 3*B*c*d))/10 + (A*b^3*d^3*x^4)/4 + (B*c
^3*e^3*x^11)/11
```

sympy [A] time = 0.13, size = 430, normalized size = 1.41

$$\frac{Ab^3d^3x^4}{4}+\frac{Bc^3e^3x^{11}}{11}+x^{10}\left(\frac{Ac^3e^3}{10}+\frac{3Bbc^2e^3}{10}+\frac{3Bc^3de^2}{10}\right)+x^9\left(\frac{Abc^2e^3}{3}+\frac{Ac^3de^2}{3}+\frac{Bb^2ce^3}{3}+Bbc^2de^2+\frac{Bc^3d^2e}{3}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**3*x**4/4 + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*b*c
**2*e**3/10 + 3*B*c**3*d*e**2/10) + x**9*(A*b*c**2*e**3/3 + A*c**3*d*e**2/3
 + B*b**2*c*e**3/3 + B*b*c**2*d*e**2 + B*c**3*d**2*e/3) + x**8*(3*A*b**2*c*
e**3/8 + 9*A*b*c**2*d*e**2/8 + 3*A*c**3*d**2*e/8 + B*b**3*e**3/8 + 9*B*b**2
*c*d*e**2/8 + 9*B*b*c**2*d**2*e/8 + B*c**3*d**3/8) + x**7*(A*b**3*e**3/7 +
9*A*b**2*c*d*e**2/7 + 9*A*b*c**2*d**2*e/7 + A*c**3*d**3/7 + 3*B*b**3*d*e**2
/7 + 9*B*b**2*c*d**2*e/7 + 3*B*b*c**2*d**3/7) + x**6*(A*b**3*d*e**2/2 + 3*A
*b**2*c*d**2*e/2 + A*b*c**2*d**3/2 + B*b**3*d**2*e/2 + B*b**2*c*d**3/2) + x
**5*(3*A*b**3*d**2*e/5 + 3*A*b**2*c*d**3/5 + B*b**3*d**3/5)
```

3.1130 $\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=225

$$\frac{1}{4}Ab^3d^2x^4+\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{6}bx^6\left(b^2e(Ae+2Bd)+3bcd(2Ae+Bd)+3A\right.$$

```
[Out] 1/4*A*b^3*d^2*x^4+1/5*b^2*d*(2*A*b*e+3*A*c*d+B*b*d)*x^5+1/6*b*(3*A*c^2*d^2+
b^2*e*(A*e+2*B*d)+3*b*c*d*(2*A*e+B*d))*x^6+1/7*(A*c^3*d^2+b^3*B*e^2+3*b^2*c
*e*(A*e+2*B*d)+3*b*c^2*d*(2*A*e+B*d))*x^7+1/8*c*(A*c*e*(3*b*e+2*c*d)+B*(3*b
^2*e^2+6*b*c*d*e+c^2*d^2))*x^8+1/9*c^2*e*(A*c*e+3*B*b*e+2*B*c*d)*x^9+1/10*B
*c^3*e^2*x^10
```

Rubi [A] time = 0.30, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{7}x^7\left(3b^2ce(Ae+2Bd)+3bc^2d(2Ae+Bd)+Ac^3d^2+b^3Be\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^2*x^4)/4 + (b^2*d*(b*B*d + 3*A*c*d + 2*A*b*e)*x^5)/5 + (b*(3*A*c^2
*d^2 + b^2*e*(2*B*d + A*e) + 3*b*c*d*(B*d + 2*A*e))*x^6)/6 + ((A*c^3*d^2 +
b^3*B*e^2 + 3*b^2*c*e*(2*B*d + A*e) + 3*b*c^2*d*(B*d + 2*A*e))*x^7)/7 + (c*
(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^8)/8 + (c^2
*e*(2*B*c*d + 3*b*B*e + A*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3d^2x^3+b^2d(bBd+3Acd+2Abe)x^4+b\left(3Ac^2d^2+b^2e(2Bd+A\right.\right.\\ &= \frac{1}{4}Ab^3d^2x^4+\frac{1}{5}b^2d(bBd+3Acd+2Abe)x^5+\frac{1}{6}b\left(3Ac^2d^2+b^2e(2Bd+\right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 225, normalized size = 1.00

$$\frac{1}{4}Ab^3d^2x^4+\frac{1}{8}cx^8\left(Ace(3be+2cd)+B\left(3b^2e^2+6bcde+c^2d^2\right)\right)+\frac{1}{6}bx^6\left(b^2e(Ae+2Bd)+3bcd(2Ae+Bd)+3A\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d^2*x^4)/4 + (b^2*d*(b*B*d + 3*A*c*d + 2*A*b*e)*x^5)/5 + (b*(3*A*c^2
*d^2 + b^2*e*(2*B*d + A*e) + 3*b*c*d*(B*d + 2*A*e))*x^6)/6 + ((A*c^3*d^2 +
b^3*B*e^2 + 3*b^2*c*e*(2*B*d + A*e) + 3*b*c^2*d*(B*d + 2*A*e))*x^7)/7 + (c*
(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2 + 6*b*c*d*e + 3*b^2*e^2))*x^8)/8 + (c^2
*e*(2*B*c*d + 3*b*B*e + A*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

fricas [A] time = 0.77, size = 292, normalized size = 1.30

$$\frac{1}{10}x^{10}e^2c^3B+\frac{2}{9}x^9edc^3B+\frac{1}{3}x^9e^2c^2bB+\frac{1}{9}x^9e^2c^3A+\frac{1}{8}x^8d^2c^3B+\frac{3}{4}x^8edc^2bB+\frac{3}{8}x^8e^2cb^2B+\frac{1}{4}x^8edc^3A+\frac{3}{8}x^8e^2c^2bA+\frac{3}{7}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/3*x^9*e^2*c^2*b*B + 1/9*x^9*e^2
*c^3*A + 1/8*x^8*d^2*c^3*B + 3/4*x^8*e*d*c^2*b*B + 3/8*x^8*e^2*c*b^2*B + 1/
4*x^8*e*d*c^3*A + 3/8*x^8*e^2*c^2*b*A + 3/7*x^7*d^2*c^2*b*B + 6/7*x^7*e*d*c
*b^2*B + 1/7*x^7*e^2*b^3*B + 1/7*x^7*d^2*c^3*A + 6/7*x^7*e*d*c^2*b*A + 3/7*
x^7*e^2*c*b^2*A + 1/2*x^6*d^2*c*b^2*B + 1/3*x^6*e*d*b^3*B + 1/2*x^6*d^2*c^2
*b*A + x^6*e*d*c*b^2*A + 1/6*x^6*e^2*b^3*A + 1/5*x^5*d^2*b^3*B + 3/5*x^5*d^
2*c*b^2*A + 2/5*x^5*e*d*b^3*A + 1/4*x^4*d^2*b^3*A
```

giac [A] time = 0.18, size = 292, normalized size = 1.30

$$\frac{1}{10}Bc^3x^{10}e^2+\frac{2}{9}Bc^3dx^9e+\frac{1}{8}Bc^3d^2x^8+\frac{1}{3}Bbc^2x^9e^2+\frac{1}{9}Ac^3x^9e^2+\frac{3}{4}Bbc^2dx^8e+\frac{1}{4}Ac^3dx^8e+\frac{3}{7}Bbc^2d^2x^7+\frac{1}{7}Ac^3d^2x^7+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/3*B*b*c^2*x
^9*e^2 + 1/9*A*c^3*x^9*e^2 + 3/4*B*b*c^2*d*x^8*e + 1/4*A*c^3*d*x^8*e + 3/7*
B*b*c^2*d^2*x^7 + 1/7*A*c^3*d^2*x^7 + 3/8*B*b^2*c*x^8*e^2 + 3/8*A*b*c^2*x^8
*e^2 + 6/7*B*b^2*c*d*x^7*e + 6/7*A*b*c^2*d*x^7*e + 1/2*B*b^2*c*d^2*x^6 + 1/
2*A*b*c^2*d^2*x^6 + 1/7*B*b^3*x^7*e^2 + 3/7*A*b^2*c*x^7*e^2 + 1/3*B*b^3*d*x
^6*e + A*b^2*c*d*x^6*e + 1/5*B*b^3*d^2*x^5 + 3/5*A*b^2*c*d^2*x^5 + 1/6*A*b^
3*x^6*e^2 + 2/5*A*b^3*d*x^5*e + 1/4*A*b^3*d^2*x^4
```

maple [A] time = 0.04, size = 240, normalized size = 1.07

$$\frac{Bc^3e^2x^{10}}{10}+\frac{Ab^3d^2x^4}{4}+\frac{\left(3Bbc^2e^2+\left(Ae^2+2Bde\right)c^3\right)x^9}{9}+\frac{\left(3Bb^2ce^2+3\left(Ae^2+2Bde\right)bc^2+\left(2Ade+Bd^2\right)c^3\right)x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*((A*e^2+2*B*d*e)*c^3+3*B*e^2*b*c^2)*x^9+1/8*((2*A*d
*e+B*d^2)*c^3+3*(A*e^2+2*B*d*e)*b*c^2+3*B*e^2*b^2*c)*x^8+1/7*(A*c^3*d^2+3*(
2*A*d*e+B*d^2)*b*c^2+3*(A*e^2+2*B*d*e)*b^2*c+b^3*B*e^2)*x^7+1/6*(3*A*d^2*b*
c^2+3*(2*A*d*e+B*d^2)*b^2*c+(A*e^2+2*B*d*e)*b^3)*x^6+1/5*(3*A*d^2*b^2*c+(2*
A*d*e+B*d^2)*b^3)*x^5+1/4*A*b^3*d^2*x^4
```

maxima [A] time = 0.47, size = 242, normalized size = 1.08

$$\frac{1}{10}Bc^3e^2x^{10}+\frac{1}{4}Ab^3d^2x^4+\frac{1}{9}\left(2Bc^3de+\left(3Bbc^2+Ac^3\right)e^2\right)x^9+\frac{1}{8}\left(Bc^3d^2+2\left(3Bbc^2+Ac^3\right)de+3\left(Bb^2c+Abc^2\right)e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/4*A*b^3*d^2*x^4 + 1/9*(2*B*c^3*d*e + (3*B*b*c^2 + A
*c^3)*e^2)*x^9 + 1/8*(B*c^3*d^2 + 2*(3*B*b*c^2 + A*c^3)*d*e + 3*(B*b^2*c +
A*b*c^2)*e^2)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^2 + 6*(B*b^2*c + A*b*c^2)*d*
e + (B*b^3 + 3*A*b^2*c)*e^2)*x^7 + 1/6*(A*b^3*e^2 + 3*(B*b^2*c + A*b*c^2)*d
^2 + 2*(B*b^3 + 3*A*b^2*c)*d*e)*x^6 + 1/5*(2*A*b^3*d*e + (B*b^3 + 3*A*b^2*c
)*d^2)*x^5
```

mupad [B]   time = 0.09, size = 235, normalized size = 1.04

$$x^7\left(\frac{B\,b^3\,e^2}{7}+\frac{6\,B\,b^2\,c\,d\,e}{7}+\frac{3\,A\,b^2\,c\,e^2}{7}+\frac{3\,B\,b\,c^2\,d^2}{7}+\frac{6\,A\,b\,c^2\,d\,e}{7}+\frac{A\,c^3\,d^2}{7}\right)+x^6\left(\frac{B\,b^3\,d\,e}{3}+\frac{A\,b^3\,e^2}{6}+\frac{B\,b^2\,c}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^7*((A*c^3*d^2)/7 + (B*b^3*e^2)/7 + (3*A*b^2*c*e^2)/7 + (3*B*b*c^2*d^2)/7
+ (6*A*b*c^2*d*e)/7 + (6*B*b^2*c*d*e)/7) + x^6*((A*b^3*e^2)/6 + (B*b^3*d*e)
/3 + (A*b*c^2*d^2)/2 + (B*b^2*c*d^2)/2 + A*b^2*c*d*e) + x^8*((B*c^3*d^2)/8
+ (A*c^3*d*e)/4 + (3*A*b*c^2*e^2)/8 + (3*B*b^2*c*e^2)/8 + (3*B*b*c^2*d*e)/4
) + (b^2*d*x^5*(2*A*b*e + 3*A*c*d + B*b*d))/5 + (c^2*e*x^9*(A*c*e + 3*B*b*e
 + 2*B*c*d))/9 + (A*b^3*d^2*x^4)/4 + (B*c^3*e^2*x^10)/10
```

sympy [A]   time = 0.11, size = 303, normalized size = 1.35

$$\frac{Ab^3d^2x^4}{4}+\frac{Bc^3e^2x^{10}}{10}+x^9\left(\frac{Ac^3e^2}{9}+\frac{Bbc^2e^2}{3}+\frac{2Bc^3de}{9}\right)+x^8\left(\frac{3Abc^2e^2}{8}+\frac{Ac^3de}{4}+\frac{3Bb^2ce^2}{8}+\frac{3Bbc^2de}{4}+\frac{Bc^3d^2}{8}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d**2*x**4/4 + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + B*b*c**2*
e**2/3 + 2*B*c**3*d*e/9) + x**8*(3*A*b*c**2*e**2/8 + A*c**3*d*e/4 + 3*B*b**
2*c*e**2/8 + 3*B*b*c**2*d*e/4 + B*c**3*d**2/8) + x**7*(3*A*b**2*c*e**2/7 +
6*A*b*c**2*d*e/7 + A*c**3*d**2/7 + B*b**3*e**2/7 + 6*B*b**2*c*d*e/7 + 3*B*b
*c**2*d**2/7) + x**6*(A*b**3*e**2/6 + A*b**2*c*d*e + A*b*c**2*d**2/2 + B*b*
*3*d*e/3 + B*b**2*c*d**2/2) + x**5*(2*A*b**3*d*e/5 + 3*A*b**2*c*d**2/5 + B*
b**3*d**2/5)
```

3.1131 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=139

$$\frac{1}{4}Ab^3dx^4+\frac{1}{7}cx^7\left(3bc(Ae+Bd)+Ac^2d+3b^2Be\right)+\frac{1}{6}bx^6\left(3bc(Ae+Bd)+3Ac^2d+b^2Be\right)+\frac{1}{5}b^2x^5(Abe+3Acd+bBd$$

```
[Out] 1/4*A*b^3*d*x^4+1/5*b^2*(A*b*e+3*A*c*d+B*b*d)*x^5+1/6*b*(3*A*c^2*d+b^2*B*e+
3*b*c*(A*e+B*d))*x^6+1/7*c*(A*c^2*d+3*b^2*B*e+3*b*c*(A*e+B*d))*x^7+1/8*c^2*
(A*c*e+3*B*b*e+B*c*d)*x^8+1/9*B*c^3*e*x^9
```

Rubi [A] time = 0.16, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {771}

$$\frac{1}{7}cx^7\left(3bc(Ae+Bd)+Ac^2d+3b^2Be\right)+\frac{1}{6}bx^6\left(3bc(Ae+Bd)+3Ac^2d+b^2Be\right)+\frac{1}{5}b^2x^5(Abe+3Acd+bBd)+\frac{1}{4}Ab^3dx$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d*x^4)/4 + (b^2*(b*B*d + 3*A*c*d + A*b*e)*x^5)/5 + (b*(3*A*c^2*d + b
^2*B*e + 3*b*c*(B*d + A*e))*x^6)/6 + (c*(A*c^2*d + 3*b^2*B*e + 3*b*c*(B*d +
 A*e))*x^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3dx^3+b^2(bBd+3Acd+Abe)x^4+b\left(3Ac^2d+b^2Be+3bc(Bd+Ae)\right.\right.\\ &= \frac{1}{4}Ab^3dx^4+\frac{1}{5}b^2(bBd+3Acd+Abe)x^5+\frac{1}{6}b\left(3Ac^2d+b^2Be+3bc(Bd+Ae\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 141, normalized size = 1.01

$$\frac{1}{4}Ab^3dx^4+\frac{1}{7}cx^7\left(3Abce+Ac^2d+3b^2Be+3bBcd\right)+\frac{1}{6}bx^6\left(3Abce+3Ac^2d+b^2Be+3bBcd\right)+\frac{1}{5}b^2x^5(Abe+3Acd+$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*d*x^4)/4 + (b^2*(b*B*d + 3*A*c*d + A*b*e)*x^5)/5 + (b*(3*b*B*c*d + 3
*A*c^2*d + b^2*B*e + 3*A*b*c*e)*x^6)/6 + (c*(3*b*B*c*d + A*c^2*d + 3*b^2*B*
e + 3*A*b*c*e)*x^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^
9)/9
```

fricas [A] time = 0.80, size = 169, normalized size = 1.22

$$\frac{1}{9}x^9ec^3B+\frac{1}{8}x^8dc^3B+\frac{3}{8}x^8ec^2bB+\frac{1}{8}x^8ec^3A+\frac{3}{7}x^7dc^2bB+\frac{3}{7}x^7ecb^2B+\frac{1}{7}x^7dc^3A+\frac{3}{7}x^7ec^2bA+\frac{1}{2}x^6dcb^2B+\frac{1}{6}x^6eb^3B+\frac{1}{2}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 3/8*x^8*e*c^2*b*B + 1/8*x^8*e*c^3*A + 3
/7*x^7*d*c^2*b*B + 3/7*x^7*e*c*b^2*B + 1/7*x^7*d*c^3*A + 3/7*x^7*e*c^2*b*A
+ 1/2*x^6*d*c*b^2*B + 1/6*x^6*e*b^3*B + 1/2*x^6*d*c^2*b*A + 1/2*x^6*e*c*b^2
*A + 1/5*x^5*d*b^3*B + 3/5*x^5*d*c*b^2*A + 1/5*x^5*e*b^3*A + 1/4*x^4*d*b^3*
A
```

giac [A] time = 0.19, size = 177, normalized size = 1.27

$$\frac{1}{9}Bc^3x^9e+\frac{1}{8}Bc^3dx^8+\frac{3}{8}Bbc^2x^8e+\frac{1}{8}Ac^3x^8e+\frac{3}{7}Bbc^2dx^7+\frac{1}{7}Ac^3dx^7+\frac{3}{7}Bb^2cx^7e+\frac{3}{7}Abc^2x^7e+\frac{1}{2}Bb^2cdx^6+\frac{1}{2}Abc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 3/8*B*b*c^2*x^8*e + 1/8*A*c^3*x^8*e + 3
/7*B*b*c^2*d*x^7 + 1/7*A*c^3*d*x^7 + 3/7*B*b^2*c*x^7*e + 3/7*A*b*c^2*x^7*e
+ 1/2*B*b^2*c*d*x^6 + 1/2*A*b*c^2*d*x^6 + 1/6*B*b^3*x^6*e + 1/2*A*b^2*c*x^6
*e + 1/5*B*b^3*d*x^5 + 3/5*A*b^2*c*d*x^5 + 1/5*A*b^3*x^5*e + 1/4*A*b^3*d*x^
4
```

maple [A] time = 0.04, size = 138, normalized size = 0.99

$$\frac{Bc^3ex^9}{9}+\frac{Ab^3dx^4}{4}+\frac{\left(3Bbc^2e+(Ae+Bd)c^3\right)x^8}{8}+\frac{\left(Ac^3d+3Bb^2ce+3(Ae+Bd)bc^2\right)x^7}{7}+\bigl(3Abc^2d+Bb^3e+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*((A*e+B*d)*c^3+3*B*e*b*c^2)*x^8+1/7*(A*d*c^3+3*(A*e+B*d
)*b*c^2+3*B*e*b^2*c)*x^7+1/6*(3*A*d*b*c^2+3*b^2*c*(A*e+B*d)+b^3*B*e)*x^6+1/
5*(3*A*d*b^2*c+b^3*(A*e+B*d))*x^5+1/4*A*b^3*d*x^4
```

maxima [A] time = 0.53, size = 149, normalized size = 1.07

$$\frac{1}{9}Bc^3ex^9+\frac{1}{4}Ab^3dx^4+\frac{1}{8}\left(Bc^3d+\left(3Bbc^2+Ac^3\right)e\right)x^8+\frac{1}{7}\left(\left(3Bbc^2+Ac^3\right)d+3\left(Bb^2c+Abc^2\right)e\right)x^7+\frac{1}{6}\bigl(3\bigl(Bb^2c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/4*A*b^3*d*x^4 + 1/8*(B*c^3*d + (3*B*b*c^2 + A*c^3)*e)*x
^8 + 1/7*((3*B*b*c^2 + A*c^3)*d + 3*(B*b^2*c + A*b*c^2)*e)*x^7 + 1/6*(3*(B*
b^2*c + A*b*c^2)*d + (B*b^3 + 3*A*b^2*c)*e)*x^6 + 1/5*(A*b^3*e + (B*b^3 + 3
*A*b^2*c)*d)*x^5
```

mupad [B] time = 1.37, size = 147, normalized size = 1.06

$$x^5\left(\frac{Ab^3e}{5}+\frac{Bb^3d}{5}+\frac{3Ab^2cd}{5}\right)+x^8\left(\frac{Ac^3e}{8}+\frac{Bc^3d}{8}+\frac{3Bbc^2e}{8}\right)+x^6\left(\frac{Bb^3e}{6}+\frac{Abc^2d}{2}+\frac{Ab^2ce}{2}+\frac{Bb^2c}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x)*(d + e*x),x)
```

```
[Out] x^5*((A*b^3*e)/5 + (B*b^3*d)/5 + (3*A*b^2*c*d)/5) + x^8*((A*c^3*e)/8 + (B*c
^3*d)/8 + (3*B*b*c^2*e)/8) + x^6*((B*b^3*e)/6 + (A*b*c^2*d)/2 + (A*b^2*c*e)
/2 + (B*b^2*c*d)/2) + x^7*((A*c^3*d)/7 + (3*A*b*c^2*e)/7 + (3*B*b*c^2*d)/7
+ (3*B*b^2*c*e)/7) + (A*b^3*d*x^4)/4 + (B*c^3*e*x^9)/9
```

sympy [A] time = 0.09, size = 177, normalized size = 1.27

$$\frac{Ab^3dx^4}{4}+\frac{Bc^3ex^9}{9}+x^8\left(\frac{Ac^3e}{8}+\frac{3Bbc^2e}{8}+\frac{Bc^3d}{8}\right)+x^7\left(\frac{3Abc^2e}{7}+\frac{Ac^3d}{7}+\frac{3Bb^2ce}{7}+\frac{3Bbc^2d}{7}\right)+x^6\left(\frac{Ab^2ce}{2}+\frac{Abc^2d}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*d*x**4/4 + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + 3*B*b*c**2*e/8 + B*c
**3*d/8) + x**7*(3*A*b*c**2*e/7 + A*c**3*d/7 + 3*B*b**2*c*e/7 + 3*B*b*c**2*
d/7) + x**6*(A*b**2*c*e/2 + A*b*c**2*d/2 + B*b**3*e/6 + B*b**2*c*d/2) + x**
5*(A*b**3*e/5 + 3*A*b**2*c*d/5 + B*b**3*d/5)
```

3.1132 $\int (A+Bx)\left(bx+cx^2\right)^3\,dx$

Optimal. Leaf size=75

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

```
[Out] 1/4*A*b^3*x^4+1/5*b^2*(3*A*c+B*b)*x^5+1/2*b*c*(A*c+B*b)*x^6+1/7*c^2*(A*c+3*
B*b)*x^7+1/8*B*c^3*x^8
```

Rubi [A] time = 0.07, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{4}Ab^3x^4+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^3\,dx &= \int \left(Ab^3x^3+b^2(bB+3Ac)x^4+3bc(bB+Ac)x^5+c^2(3bB+Ac)x^6+Bc^3x^7\right)dx\\ &= \frac{1}{4}Ab^3x^4+\frac{1}{5}b^2(bB+3Ac)x^5+\frac{1}{2}bc(bB+Ac)x^6+\frac{1}{7}c^2(3bB+Ac)x^7+\frac{1}{8}Bc^3x^8\end{aligned}$$

Mathematica [A] time = 0.01, size = 75, normalized size = 1.00

$$\frac{1}{4}Ab^3x^4+\frac{1}{5}b^2x^5(3Ac+bB)+\frac{1}{7}c^2x^7(Ac+3bB)+\frac{1}{2}bcx^6(Ac+bB)+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^3,x]
```

```
[Out] (A*b^3*x^4)/4 + (b^2*(b*B + 3*A*c)*x^5)/5 + (b*c*(b*B + A*c)*x^6)/2 + (c^2*
(3*b*B + A*c)*x^7)/7 + (B*c^3*x^8)/8
```

fricas [A] time = 0.75, size = 77, normalized size = 1.03

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{3}{5}x^5cb^2A+\frac{1}{4}x^4b^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*b*A + 1/5*x^5*b^3*B + 3/5*x^5*c*b^2*A + 1/4*x^4*b^3*A
```

giac [A] time = 0.15, size = 77, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8 + \frac{3}{7}Bbc^2x^7 + \frac{1}{7}Ac^3x^7 + \frac{1}{2}Bb^2cx^6 + \frac{1}{2}Abc^2x^6 + \frac{1}{5}Bb^3x^5 + \frac{3}{5}Ab^2cx^5 + \frac{1}{4}Ab^3x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*A*b
*c^2*x^6 + 1/5*B*b^3*x^5 + 3/5*A*b^2*c*x^5 + 1/4*A*b^3*x^4
```

maple [A] time = 0.04, size = 76, normalized size = 1.01

$$\frac{B\,c^3x^8}{8} + \frac{A\,b^3x^4}{4} + \frac{\left(A\,c^3 + 3Bb\,c^2\right)x^7}{7} + \frac{\left(3Ab\,c^2 + 3B\,b^2c\right)x^6}{6} + \frac{\left(3A\,b^2c + b^3B\right)x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+3*B*b^2*c)*x^6+1/5*(
3*A*b^2*c+B*b^3)*x^5+1/4*A*b^3*x^4
```

maxima [A] time = 0.55, size = 73, normalized size = 0.97

$$\frac{1}{8}Bc^3x^8 + \frac{1}{4}Ab^3x^4 + \frac{1}{7}\left(3\,Bbc^2 + Ac^3\right)x^7 + \frac{1}{2}\left(Bb^2c + Abc^2\right)x^6 + \frac{1}{5}\left(Bb^3 + 3\,Ab^2c\right)x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/4*A*b^3*x^4 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c
+ A*b*c^2)*x^6 + 1/5*(B*b^3 + 3*A*b^2*c)*x^5
```

mupad [B] time = 0.04, size = 69, normalized size = 0.92

$$x^5\left(\frac{B\,b^3}{5} + \frac{3\,A\,c\,b^2}{5}\right) + x^7\left(\frac{A\,c^3}{7} + \frac{3\,B\,b\,c^2}{7}\right) + \frac{A\,b^3\,x^4}{4} + \frac{B\,c^3\,x^8}{8} + \frac{b\,c\,x^6\,\left(A\,c + B\,b\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^3*(A + B*x),x)
```

```
[Out] x^5*((B*b^3)/5 + (3*A*b^2*c)/5) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + (A*b^3*
x^4)/4 + (B*c^3*x^8)/8 + (b*c*x^6*(A*c + B*b))/2
```

sympy [A] time = 0.08, size = 80, normalized size = 1.07

$$\frac{Ab^3x^4}{4} + \frac{Bc^3x^8}{8} + x^7\left(\frac{Ac^3}{7} + \frac{3Bbc^2}{7}\right) + x^6\left(\frac{Abc^2}{2} + \frac{Bb^2c}{2}\right) + x^5\left(\frac{3Ab^2c}{5} + \frac{Bb^3}{5}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3,x)
```

```
[Out] A*b**3*x**4/4 + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*
c**2/2 + B*b**2*c/2) + x**5*(3*A*b**2*c/5 + B*b**3/5)
```

3.1133 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=257

$$-\frac{x^4\left(B(cd-be)^3-Ace\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{4e^4}-\frac{cx^5\left(Ace(cd-3be)-B\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{5e^3}-\frac{c^2x^6(-Ace -}{6}$$

```
[Out] d^2*(-A*e+B*d)*(-b*e+c*d)^3*x/e^7-1/2*d*(-A*e+B*d)*(-b*e+c*d)^3*x^2/e^6+1/3
*(-A*e+B*d)*(-b*e+c*d)^3*x^3/e^5-1/4*(B*(-b*e+c*d)^3-A*c*e*(3*b^2*e^2-3*b*c
*d*e+c^2*d^2))*x^4/e^4-1/5*c*(A*c*e*(-3*b*e+c*d)-B*(3*b^2*e^2-3*b*c*d*e+c^2
*d^2))*x^5/e^3-1/6*c^2*(-A*c*e-3*B*b*e+B*c*d)*x^6/e^2+1/7*B*c^3*x^7/e-d^3*(
-A*e+B*d)*(-b*e+c*d)^3*ln(e*x+d)/e^8
```

Rubi [A] time = 0.45, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{cx^5\left(Ace(cd-3be)-B\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{5e^3}-\frac{x^4\left(B(cd-be)^3-Ace\left(3b^2e^2-3bcde+c^2d^2\right)\right)}{4e^4}-\frac{c^2x^6(-Ace -}{6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (d^2*(B*d - A*e)*(c*d - b*e)^3*x)/e^7 - (d*(B*d - A*e)*(c*d - b*e)^3*x^2)/(
2*e^6) + ((B*d - A*e)*(c*d - b*e)^3*x^3)/(3*e^5) - ((B*(c*d - b*e)^3 - A*c*
e*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^4)/(4*e^4) - (c*(A*c*e*(c*d - 3*b*e)
 - B*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^5)/(5*e^3) - (c^2*(B*c*d - 3*b*B*
e - A*c*e)*x^6)/(6*e^2) + (B*c^3*x^7)/(7*e) - (d^3*(B*d - A*e)*(c*d - b*e)^
3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{d+ex}\,dx &= \int \left(\frac{d^2(Bd-Ae)(cd-be)^3}{e^7}-\frac{d(Bd-Ae)(cd-be)^3x}{e^6}+\frac{(-Bd+Ae)(-cd+be)^3x^2}{e^5}\right.\\ &= \frac{d^2(Bd-Ae)(cd-be)^3x}{e^7}-\frac{d(Bd-Ae)(cd-be)^3x^2}{2e^6}+\frac{(Bd-Ae)(cd-be)^3x^3}{3e^5}-\end{aligned}$$

Mathematica [A] time = 0.10, size = 248, normalized size = 0.96

$$84ce^5x^5\left(Ace(3be-cd)+B\left(3b^2e^2-3bcde+c^2d^2\right)\right)+105e^4x^4\left(Ace\left(3b^2e^2-3bcde+c^2d^2\right)-B(cd-be)^3\right)+7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (420*d^2*e*(B*d - A*e)*(c*d - b*e)^3*x - 210*d*e^2*(B*d - A*e)*(c*d - b*e)^
3*x^2 + 140*e^3*(-(B*d) + A*e)*(-(c*d) + b*e)^3*x^3 + 105*e^4*(-(B*(c*d - b
*e)^3) + A*c*e*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^4 + 84*c*e^5*(A*c*e*(-(
c*d) + 3*b*e) + B*(c^2*d^2 - 3*b*c*d*e + 3*b^2*e^2))*x^5 + 70*c^2*e^6*(-(B*
c*d) + 3*b*B*e + A*c*e)*x^6 + 60*B*c^3*e^7*x^7 - 420*d^3*(B*d - A*e)*(c*d -
 b*e)^3*Log[d + e*x])/(420*e^8)
```

fricas [B] time = 0.85, size = 531, normalized size = 2.07

$$60\,Bc^3e^7x^7 - 70\left(Bc^3de^6 - \left(3\,Bbc^2 + Ac^3\right)e^7\right)x^6 + 84\left(Bc^3d^2e^5 - \left(3\,Bbc^2 + Ac^3\right)de^6 + 3\left(Bb^2c + Abc^2\right)e^7\right)x^5 - 105$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 +
84*(B*c^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + A*b*c^2)*e^7)*
x^5 - 105*(B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^2*e^5 + 3*(B*b^2*c + A*b*c
^2)*d*e^6 - (B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 140*(B*c^3*d^4*e^3 + A*b^3*e^7 -
 (3*B*b*c^2 + A*c^3)*d^3*e^4 + 3*(B*b^2*c + A*b*c^2)*d^2*e^5 - (B*b^3 + 3*A
*b^2*c)*d*e^6)*x^3 - 210*(B*c^3*d^5*e^2 + A*b^3*d*e^6 - (3*B*b*c^2 + A*c^3)
*d^4*e^3 + 3*(B*b^2*c + A*b*c^2)*d^3*e^4 - (B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2
 + 420*(B*c^3*d^6*e + A*b^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^
2*c + A*b*c^2)*d^4*e^3 - (B*b^3 + 3*A*b^2*c)*d^3*e^4)*x - 420*(B*c^3*d^7 +
A*b^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c^2)*d^5*e^2 -
 (B*b^3 + 3*A*b^2*c)*d^4*e^3)*log(e*x + d))/e^8
```

giac [B] time = 0.18, size = 629, normalized size = 2.45

$$-\left(Bc^3d^7 - 3\,Bbc^2d^6e - Ac^3d^6e + 3\,Bb^2cd^5e^2 + 3\,Abc^2d^5e^2 - Bb^3d^4e^3 - 3\,Ab^2cd^4e^3 + Ab^3d^3e^4\right)e^{(-8)}\log\left(|xe + d|\right) +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - 3*B*b*c^2*d^6*e - A*c^3*d^6*e + 3*B*b^2*c*d^5*e^2 + 3*A*b*c^2
*d^5*e^2 - B*b^3*d^4*e^3 - 3*A*b^2*c*d^4*e^3 + A*b^3*d^3*e^4)*e^(-8)*log(ab
s(x*e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x
^5*e^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*
e + 420*B*c^3*d^6*x + 210*B*b*c^2*x^6*e^6 + 70*A*c^3*x^6*e^6 - 252*B*b*c^2*
d*x^5*e^5 - 84*A*c^3*d*x^5*e^5 + 315*B*b*c^2*d^2*x^4*e^4 + 105*A*c^3*d^2*x^
4*e^4 - 420*B*b*c^2*d^3*x^3*e^3 - 140*A*c^3*d^3*x^3*e^3 + 630*B*b*c^2*d^4*x
^2*e^2 + 210*A*c^3*d^4*x^2*e^2 - 1260*B*b*c^2*d^5*x*e - 420*A*c^3*d^5*x*e +
 252*B*b^2*c*x^5*e^6 + 252*A*b*c^2*x^5*e^6 - 315*B*b^2*c*d*x^4*e^5 - 315*A*
b*c^2*d*x^4*e^5 + 420*B*b^2*c*d^2*x^3*e^4 + 420*A*b*c^2*d^2*x^3*e^4 - 630*B
*b^2*c*d^3*x^2*e^3 - 630*A*b*c^2*d^3*x^2*e^3 + 1260*B*b^2*c*d^4*x*e^2 + 126
0*A*b*c^2*d^4*x*e^2 + 105*B*b^3*x^4*e^6 + 315*A*b^2*c*x^4*e^6 - 140*B*b^3*d
*x^3*e^5 - 420*A*b^2*c*d*x^3*e^5 + 210*B*b^3*d^2*x^2*e^4 + 630*A*b^2*c*d^2*
x^2*e^4 - 420*B*b^3*d^3*x*e^3 - 1260*A*b^2*c*d^3*x*e^3 + 140*A*b^3*x^3*e^6
- 210*A*b^3*d*x^2*e^5 + 420*A*b^3*d^2*x*e^4)*e^(-7)
```

maple [B] time = 0.06, size = 708, normalized size = 2.75

$$\frac{B\,c^3x^7}{7e}+\frac{A\,c^3x^6}{6e}+\frac{Bb\,c^2x^6}{2e}-\frac{B\,c^3d\,x^6}{6e^2}+\frac{3Ab\,c^2x^5}{5e}-\frac{A\,c^3d\,x^5}{5e^2}+\frac{3B\,b^2c\,x^5}{5e}-\frac{3Bb\,c^2d\,x^5}{5e^2}+\frac{B\,c^3d^2x^5}{5e^3}+\frac{3A\,b^2c\,x^4}{4e}-\frac{3Ab\,c^2d}{4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x)
```

```
[Out] 3*d^4/e^5*ln(e*x+d)*A*b^2*c+1/4/e*B*x^4*b^3+1/6/e*A*x^6*c^3+1/3/e*A*x^3*b^3
-1/6/e^2*B*x^6*c^3*d+3/5/e*A*x^5*b*c^2-1/3/e^2*B*x^3*b^3*d-1/3/e^4*A*x^3*c^
```

```
3*d^3+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*b^2*c-1/4/e^4*B*x^4*c^3*d^3-1/5/e^2
*A*x^5*c^3*d+3/5/e*B*x^5*b^2*c-1/e^6*A*x*c^3*d^5+1/4/e^3*A*x^4*c^3*d^2+1/2/
e*B*x^6*b*c^2-1/e^4*B*x*b^3*d^3+1/e^3*A*x*b^3*d^2-1/2/e^6*B*x^2*c^3*d^5+1/e
^7*B*x*c^3*d^6+1/3/e^5*B*x^3*c^3*d^4+1/2/e^5*A*x^2*c^3*d^4-d^3/e^4*ln(e*x+d
)*A*b^3+d^6/e^7*ln(e*x+d)*A*c^3+d^4/e^5*ln(e*x+d)*B*b^3-d^7/e^8*ln(e*x+d)*B
*c^3+1/2/e^3*B*x^2*b^3*d^2-1/2/e^2*A*x^2*b^3*d+1/e^3*B*x^3*b^2*c*d^2-3*d^5/
e^6*ln(e*x+d)*A*b*c^2-3*d^5/e^6*ln(e*x+d)*B*b^2*c+3*d^6/e^7*ln(e*x+d)*B*b*c
^2-3/e^4*A*x*b^2*c*d^3+3/e^5*A*x*b*c^2*d^4-3/4/e^2*A*x^4*b*c^2*d-3/4/e^2*B*
x^4*b^2*c*d-3/5/e^2*B*x^5*b*c^2*d-3/e^6*B*x*b*c^2*d^5+3/e^5*B*x*b^2*c*d^4-1
/e^4*B*x^3*b*c^2*d^3-1/e^2*A*x^3*b^2*c*d+3/4/e^3*B*x^4*b*c^2*d^2-3/2/e^4*A*
x^2*b*c^2*d^3+3/2/e^3*A*x^2*b^2*c*d^2+3/2/e^5*B*x^2*b*c^2*d^4-3/2/e^4*B*x^2
*b^2*c*d^3+1/e^3*A*x^3*b*c^2*d^2+1/7*B*c^3*x^7/e
```

maxima [**B**] time = 0.55, size = 530, normalized size = 2.06

$$\frac{60\,Bc^3e^6x^7 - 70\left(Bc^3de^5 - \left(3\,Bbc^2 + Ac^3\right)e^6\right)x^6 + 84\left(Bc^3d^2e^4 - \left(3\,Bbc^2 + Ac^3\right)de^5 + 3\left(Bb^2c + Abc^2\right)e^6\right)x^5 - 1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - (3*B*b*c^2 + A*c^3)*e^6)*x^6 +
84*(B*c^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d*e^5 + 3*(B*b^2*c + A*b*c^2)*e^6)*
x^5 - 105*(B*c^3*d^3*e^3 - (3*B*b*c^2 + A*c^3)*d^2*e^4 + 3*(B*b^2*c + A*b*c
^2)*d*e^5 - (B*b^3 + 3*A*b^2*c)*e^6)*x^4 + 140*(B*c^3*d^4*e^2 + A*b^3*e^6 -
 (3*B*b*c^2 + A*c^3)*d^3*e^3 + 3*(B*b^2*c + A*b*c^2)*d^2*e^4 - (B*b^3 + 3*A
*b^2*c)*d*e^5)*x^3 - 210*(B*c^3*d^5*e + A*b^3*d*e^5 - (3*B*b*c^2 + A*c^3)*d
^4*e^2 + 3*(B*b^2*c + A*b*c^2)*d^3*e^3 - (B*b^3 + 3*A*b^2*c)*d^2*e^4)*x^2 +
 420*(B*c^3*d^6 + A*b^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d^5*e + 3*(B*b^2*c +
A*b*c^2)*d^4*e^2 - (B*b^3 + 3*A*b^2*c)*d^3*e^3)*x)/e^7 - (B*c^3*d^7 + A*b^3
*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c^2)*d^5*e^2 - (B*b
^3 + 3*A*b^2*c)*d^4*e^3)*log(e*x + d)/e^8
```

mupad [**B**] time = 1.39, size = 560, normalized size = 2.18

$$x^4\left(\frac{B\,b^3+3\,A\,c\,b^2}{4\,e}+\frac{d\left(\frac{d\left(\frac{A\,c^3+3\,B\,b\,c^2}{e}-\frac{B\,c^3\,d}{e^2}\right)}{e}-\frac{3\,b\,c\,\left(A\,c+B\,b\right)}{e}\right)}{4\,e}\right)-x^5\left(\frac{d\,\left(\frac{A\,c^3+3\,B\,b\,c^2}{e}-\frac{B\,c^3\,d}{e^2}\right)}{5\,e}-\frac{3\,b\,c\,\left(A\,c+B\,b\right)}{5\,e}\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x),x)
```

```
[Out] x^4*((B*b^3 + 3*A*b^2*c)/(4*e) + (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/
e^2))/e - (3*b*c*(A*c + B*b))/e))/(4*e)) - x^5*((d*((A*c^3 + 3*B*b*c^2)/e -
 (B*c^3*d)/e^2))/(5*e) - (3*b*c*(A*c + B*b))/(5*e)) + x^3*((A*b^3)/(3*e) -
(d*((B*b^3 + 3*A*b^2*c)/e + (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))
/e - (3*b*c*(A*c + B*b))/e))/e))/(3*e)) + x^6*((A*c^3 + 3*B*b*c^2)/(6*e) -
(B*c^3*d)/(6*e^2)) - (log(d + e*x)*(B*c^3*d^7 - A*c^3*d^6*e + A*b^3*d^3*e^4
 - B*b^3*d^4*e^3 + 3*A*b*c^2*d^5*e^2 - 3*A*b^2*c*d^4*e^3 + 3*B*b^2*c*d^5*e^
2 - 3*B*b*c^2*d^6*e))/e^8 - (d*x^2*((A*b^3)/e - (d*((B*b^3 + 3*A*b^2*c)/e +
 (d*((d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e - (3*b*c*(A*c + B*b))/e)
)/e))/e))/(2*e) + (d^2*x*((A*b^3)/e - (d*((B*b^3 + 3*A*b^2*c)/e + (d*((d*((
A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e - (3*b*c*(A*c + B*b))/e))/e))/e))/
e^2 + (B*c^3*x^7)/(7*e)
```

sympy [B] time = 1.01, size = 578, normalized size = 2.25

$$\frac{Bc^3x^7}{7e}+\frac{d^3\left(-Ae+Bd\right)\left(be-cd\right)^3\log\left(d+ex\right)}{e^8}+x^6\left(\frac{Ac^3}{6e}+\frac{Bbc^2}{2e}-\frac{Bc^3d}{6e^2}\right)+x^5\left(\frac{3Abc^2}{5e}-\frac{Ac^3d}{5e^2}+\frac{3Bb^2c}{5e}-\frac{3Bbc^2d}{5e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + d**3*(-A*e + B*d)*(b*e - c*d)**3*log(d + e*x)/e**8 + x*
*6*(A*c**3/(6*e) + B*b*c**2/(2*e) - B*c**3*d/(6*e**2)) + x**5*(3*A*b*c**2/(
5*e) - A*c**3*d/(5*e**2) + 3*B*b**2*c/(5*e) - 3*B*b*c**2*d/(5*e**2) + B*c**
3*d**2/(5*e**3)) + x**4*(3*A*b**2*c/(4*e) - 3*A*b*c**2*d/(4*e**2) + A*c**3*
d**2/(4*e**3) + B*b**3/(4*e) - 3*B*b**2*c*d/(4*e**2) + 3*B*b*c**2*d**2/(4*e
**3) - B*c**3*d**3/(4*e**4)) + x**3*(A*b**3/(3*e) - A*b**2*c*d/e**2 + A*b*c
**2*d**2/e**3 - A*c**3*d**3/(3*e**4) - B*b**3*d/(3*e**2) + B*b**2*c*d**2/e*
*3 - B*b*c**2*d**3/e**4 + B*c**3*d**4/(3*e**5)) + x**2*(-A*b**3*d/(2*e**2)
+ 3*A*b**2*c*d**2/(2*e**3) - 3*A*b*c**2*d**3/(2*e**4) + A*c**3*d**4/(2*e**5
) + B*b**3*d**2/(2*e**3) - 3*B*b**2*c*d**3/(2*e**4) + 3*B*b*c**2*d**4/(2*e*
*5) - B*c**3*d**5/(2*e**6)) + x*(A*b**3*d**2/e**3 - 3*A*b**2*c*d**3/e**4 +
3*A*b*c**2*d**4/e**5 - A*c**3*d**5/e**6 - B*b**3*d**3/e**4 + 3*B*b**2*c*d**
4/e**5 - 3*B*b*c**2*d**5/e**6 + B*c**3*d**6/e**7)
```

3.1134 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^2} \, dx$

Optimal. Leaf size=287

$$-\frac{c^2x^5(-Ace-3bBe+2Bcd)}{5e^3}+\frac{d^3(Bd-Ae)(cd-be)^3}{e^8(d+ex)}+\frac{d^2(cd-be)^2\log(d+ex)(Bd(7cd-4be)-3Ae(2cd-be)}{e^8}$$

```
[Out] d*(-b*e+c*d)^2*(A*e*(-2*b*e+5*c*d)-3*B*d*(-b*e+2*c*d))*x/e^7+1/2*(-b*e+c*d)
^2*(B*d*(-2*b*e+5*c*d)-A*e*(-b*e+4*c*d))*x^2/e^6-1/3*(-b*e+c*d)^2*(-3*A*c*e
-B*b*e+4*B*c*d)*x^3/e^5-1/4*c*(A*c*e*(-3*b*e+2*c*d)-3*B*(-b*e+c*d)^2)*x^4/e
^4-1/5*c^2*(-A*c*e-3*B*b*e+2*B*c*d)*x^5/e^3+1/6*B*c^3*x^6/e^2+d^3*(-A*e+B*d
)*(-b*e+c*d)^3/e^8/(e*x+d)+d^2*(-b*e+c*d)^2*(B*d*(-4*b*e+7*c*d)-3*A*e*(-b*e
+2*c*d))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.55, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = $\{771\}$

$$-\frac{c^2x^5(-Ace-3bBe+2Bcd)}{5e^3}+\frac{d^3(Bd-Ae)(cd-be)^3}{e^8(d+ex)}+\frac{d^2(cd-be)^2\log(d+ex)(Bd(7cd-4be)-3Ae(2cd-be)}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (d*(c*d - b*e)^2*(A*e*(5*c*d - 2*b*e) - 3*B*d*(2*c*d - b*e))*x)/e^7 + ((c*d
 - b*e)^2*(B*d*(5*c*d - 2*b*e) - A*e*(4*c*d - b*e))*x^2)/(2*e^6) - ((c*d -
b*e)^2*(4*B*c*d - b*B*e - 3*A*c*e)*x^3)/(3*e^5) - (c*(A*c*e*(2*c*d - 3*b*e)
 - 3*B*(c*d - b*e)^2)*x^4)/(4*e^4) - (c^2*(2*B*c*d - 3*b*B*e - A*c*e)*x^5)/
(5*e^3) + (B*c^3*x^6)/(6*e^2) + (d^3*(B*d - A*e)*(c*d - b*e)^3)/(e^8*(d + e
*x)) + (d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^2} \, dx = \int \left(\frac{d(cd-be)^2(Ae(5cd-2be)-3Bd(2cd-be))}{e^7}+\frac{(cd-be)^2(Bd(5cd-2be)-A}{e^6}\right.$$

$$=\frac{d(cd-be)^2(Ae(5cd-2be)-3Bd(2cd-be))x}{e^7}+\frac{(cd-be)^2(Bd(5cd-2be)-Ae(4}{2e^6}$$

Mathematica [A] time = 0.12, size = 274, normalized size = 0.95

$$\frac{12c^2e^5x^5(Ace+3bBe-2Bcd)+\frac{60d^3(Bd-Ae)(cd-be)^3}{d+ex}+60d^2(cd-be)^2\log(d+ex)(3Ae(be-2cd)+Bd(7cd-4be)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-60*d*e*(c*d - b*e)^2*(3*B*d*(2*c*d - b*e) + A*e*(-5*c*d + 2*b*e))*x + 30*
e^2*(c*d - b*e)^2*(B*d*(5*c*d - 2*b*e) + A*e*(-4*c*d + b*e))*x^2 + 20*e^3*(
c*d - b*e)^2*(-4*B*c*d + b*B*e + 3*A*c*e)*x^3 - 15*c*e^4*(A*c*e*(2*c*d - 3*
b*e) - 3*B*(c*d - b*e)^2)*x^4 + 12*c^2*e^5*(-2*B*c*d + 3*b*B*e + A*c*e)*x^5
 + 10*B*c^3*e^6*x^6 + (60*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d + e*x) + 60*d^2
*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e))*Log[d + e*x])/(
60*e^8)
```

fricas [B] time = 0.86, size = 722, normalized size = 2.52

$$\frac{10\,Bc^3e^7x^7 + 60\,Bc^3d^7 + 60\,Ab^3d^3e^4 - 60\left(3\,Bbc^2 + Ac^3\right)d^6e + 180\left(Bb^2c + Abc^2\right)d^5e^2 - 60\left(Bb^3 + 3\,Ab^2c\right)d^4e^3 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 + 60*A*b^3*d^3*e^4 - 60*(3*B*b*c^2 +
A*c^3)*d^6*e + 180*(B*b^2*c + A*b*c^2)*d^5*e^2 - 60*(B*b^3 + 3*A*b^2*c)*d^4
*e^3 - 2*(7*B*c^3*d*e^6 - 6*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3*d^2*e
^5 - 6*(3*B*b*c^2 + A*c^3)*d*e^6 + 15*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 5*(7*B
*c^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + A*b*c^2)*d*e^6
 - 4*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 + 3*A*b^3*e^7 - 6*(
3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^2*c + A*b*c^2)*d^2*e^5 - 4*(B*b^3 + 3*
A*b^2*c)*d*e^6)*x^3 - 30*(7*B*c^3*d^5*e^2 + 3*A*b^3*d*e^6 - 6*(3*B*b*c^2 +
A*c^3)*d^4*e^3 + 15*(B*b^2*c + A*b*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*b^2*c)*d^2
*e^5)*x^2 - 60*(6*B*c^3*d^6*e + 2*A*b^3*d^2*e^5 - 5*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 12*(B*b^2*c + A*b*c^2)*d^4*e^3 - 3*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x +
60*(7*B*c^3*d^7 + 3*A*b^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^6*e + 15*(B*b^2
*c + A*b*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (7*B*c^3*d^6*e + 3*
A*b^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + A*b*c^2)*d^4*
e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)*log(e*x + d))/(e^9*x + d*e^8)
```

giac [B] time = 0.20, size = 673, normalized size = 2.34

$$\frac{1}{60}\left(10\,Bc^3 - \frac{12\left(7\,Bc^3de - 3\,Bbc^2e^2 - Ac^3e^2\right)e^{(-1)}}{xe + d} + \frac{45\left(7\,Bc^3d^2e^2 - 6\,Bbc^2de^3 - 2\,Ac^3de^3 + Bb^2ce^4 + Abc^2e^4\right)e^{(-}}{(xe + d)^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e +
 d) + 45*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 +
 A*b*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*d^3*e^3 - 45*B*b*c^2*d^2*e^
4 - 15*A*c^3*d^2*e^4 + 15*B*b^2*c*d*e^5 + 15*A*b*c^2*d*e^5 - B*b^3*e^6 - 3*
A*b^2*c*e^6)*e^(-3)/(x*e + d)^3 + 30*(35*B*c^3*d^4*e^4 - 60*B*b*c^2*d^3*e^5
 - 20*A*c^3*d^3*e^5 + 30*B*b^2*c*d^2*e^6 + 30*A*b*c^2*d^2*e^6 - 4*B*b^3*d*e
^7 - 12*A*b^2*c*d*e^7 + A*b^3*e^8)*e^(-4)/(x*e + d)^4 - 180*(7*B*c^3*d^5*e^
5 - 15*B*b*c^2*d^4*e^6 - 5*A*c^3*d^4*e^6 + 10*B*b^2*c*d^3*e^7 + 10*A*b*c^2*
d^3*e^7 - 2*B*b^3*d^2*e^8 - 6*A*b^2*c*d^2*e^8 + A*b^3*d*e^9)*e^(-5)/(x*e +
d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 - 18*B*b*c^2*d^5*e - 6*A*c^3*d^5*e
+ 15*B*b^2*c*d^4*e^2 + 15*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^3 - 12*A*b^2*c*d^
3*e^3 + 3*A*b^3*d^2*e^4)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c
^3*d^7*e^6/(x*e + d) - 3*B*b*c^2*d^6*e^7/(x*e + d) - A*c^3*d^6*e^7/(x*e + d
) + 3*B*b^2*c*d^5*e^8/(x*e + d) + 3*A*b*c^2*d^5*e^8/(x*e + d) - B*b^3*d^4*e
^9/(x*e + d) - 3*A*b^2*c*d^4*e^9/(x*e + d) + A*b^3*d^3*e^10/(x*e + d))*e^(-
14)
```

maple [**B**] time = 0.07, size = 742, normalized size = 2.59

$$\frac{B c^3x^6}{6e^2}+\frac{A c^3x^5}{5e^2}+\frac{3Bb c^2x^5}{5e^2}-\frac{2B c^3d x^5}{5e^3}+\frac{3Ab c^2x^4}{4e^2}-\frac{A c^3d x^4}{2e^3}+\frac{3B b^2c x^4}{4e^2}-\frac{3Bb c^2d x^4}{2e^3}+\frac{3B c^3d^2x^4}{4e^4}+\frac{A b^2c x^3}{e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x)
```

```
[Out] -3*d^6/e^7/(e*x+d)*B*b*c^2-3/2/e^3*B*x^4*b*c^2*d-2/e^3*A*x^3*b*c^2*d-2/e^3*
B*x^3*b^2*c*d+3/e^4*B*x^3*b*c^2*d^2-12*d^3/e^5*ln(e*x+d)*A*b^2*c+3*d^5/e^6/
(e*x+d)*A*b*c^2+3*d^5/e^6/(e*x+d)*B*b^2*c-6/e^7*B*c^3*d^5*x+1/2/e^2*A*x^2*b
^3+1/3/e^2*B*x^3*b^3+1/5/e^2*A*x^5*c^3+1/e^4*A*x^3*c^3*d^2-2/e^3*A*b^3*d*x+
3/5/e^2*B*x^5*b*c^2-2/5/e^3*B*x^5*c^3*d+d^3/e^4/(e*x+d)*A*b^3-d^6/e^7/(e*x+
d)*A*c^3-d^4/e^5/(e*x+d)*B*b^3+d^7/e^8/(e*x+d)*B*c^3+3*d^2/e^4*ln(e*x+d)*A*
b^3-1/e^3*B*x^2*b^3*d+5/2/e^6*B*x^2*c^3*d^4+9/2/e^4*B*x^2*b^2*c*d^2-3*d^4/e
^5/(e*x+d)*A*b^2*c+15*d^4/e^6*ln(e*x+d)*A*b*c^2+15*d^4/e^6*ln(e*x+d)*B*b^2*
c-18*d^5/e^7*ln(e*x+d)*B*b*c^2-6*d^5/e^7*ln(e*x+d)*A*c^3-4*d^3/e^5*ln(e*x+d
)*B*b^3+7*d^6/e^8*ln(e*x+d)*B*c^3-2/e^5*A*x^2*c^3*d^3-12/e^5*A*b*c^2*d^3*x-
12/e^5*B*b^2*c*d^3*x+15/e^6*B*b*c^2*d^4*x-6/e^5*B*x^2*b*c^2*d^3+9/e^4*A*b^2
*c*d^2*x-3/e^3*A*x^2*b^2*c*d+9/2/e^4*A*x^2*b*c^2*d^2+3/4/e^2*B*x^4*b^2*c+3/
4/e^4*B*x^4*c^3*d^2-1/2/e^3*A*x^4*c^3*d+3/4/e^2*A*x^4*b*c^2+5/e^6*A*c^3*d^4
*x+3/e^4*B*b^3*d^2*x-4/3/e^5*B*x^3*c^3*d^3+1/e^2*A*x^3*b^2*c+1/6*B*c^3*x^6/
e^2
```

maxima [**A**] time = 0.53, size = 541, normalized size = 1.89

$$\frac{Bc^3d^7+Ab^3d^3e^4-\left(3\,Bbc^2+Ac^3\right)d^6e+3\left(Bb^2c+Abc^2\right)d^5e^2-\left(Bb^3+3\,Ab^2c\right)d^4e^3}{e^9x+de^8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 + A*b^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + A*b*c
^2)*d^5*e^2 - (B*b^3 + 3*A*b^2*c)*d^4*e^3)/(e^9*x + d*e^8) + 1/60*(10*B*c^3
*e^5*x^6 - 12*(2*B*c^3*d*e^4 - (3*B*b*c^2 + A*c^3)*e^5)*x^5 + 15*(3*B*c^3*d
^2*e^3 - 2*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + A*b*c^2)*e^5)*x^4 - 20*
(4*B*c^3*d^3*e^2 - 3*(3*B*b*c^2 + A*c^3)*d^2*e^3 + 6*(B*b^2*c + A*b*c^2)*d*
e^4 - (B*b^3 + 3*A*b^2*c)*e^5)*x^3 + 30*(5*B*c^3*d^4*e + A*b^3*e^5 - 4*(3*B
*b*c^2 + A*c^3)*d^3*e^2 + 9*(B*b^2*c + A*b*c^2)*d^2*e^3 - 2*(B*b^3 + 3*A*b^
2*c)*d*e^4)*x^2 - 60*(6*B*c^3*d^5 + 2*A*b^3*d*e^4 - 5*(3*B*b*c^2 + A*c^3)*d
^4*e + 12*(B*b^2*c + A*b*c^2)*d^3*e^2 - 3*(B*b^3 + 3*A*b^2*c)*d^2*e^3)*x)/e
^7 + (7*B*c^3*d^6 + 3*A*b^3*d^2*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^5*e + 15*(B*b
^2*c + A*b*c^2)*d^4*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.44, size = 997, normalized size = 3.47

$$x^3\left(\frac{B\,b^3+3\,A\,c\,b^2}{3\,e^2}+\frac{2\,d\left(\frac{2\,d\left(\frac{A\,c^3+3\,B\,b\,c^2}{e^2}-\frac{2\,B\,c^3\,d}{e^3}\right)}{e}-\frac{3\,b\,c\,(A\,c+B\,b)}{e^2}+\frac{B\,c^3\,d^2}{e^4}\right)}{3\,e}-\frac{d^2\left(\frac{A\,c^3+3\,B\,b\,c^2}{e^2}-\frac{2\,B\,c^3\,d}{e^3}\right)}{3\,e^2}\right)+x^2\left(\frac{A\,b^3}{2\,e^2}-\frac{d}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((B*b^3 + 3*A*b^2*c)/(3*e^2) + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2
*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2)/e^4))/(3*e) - (d^
2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2)) + x^2*((A*b^3)/(2*e
^2) - (d*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (
2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*(
(A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2))/e + (d^2*((2*d*((A*c^3 +
3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*d^2
)/e^4))/(2*e^2)) + x^5*((A*c^3 + 3*B*b*c^2)/(5*e^2) - (2*B*c^3*d)/(5*e^3))
- x*((2*d*((A*b^3)/e^2 - (2*d*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d*((2*d*((A*c^3
 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))/e^2 + (B*c^3*
d^2)/e^4))/e - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2))/e +
(d^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B
*b))/e^2 + (B*c^3*d^2)/e^4))/e^2))/e + (d^2*((B*b^3 + 3*A*b^2*c)/e^2 + (2*d
*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*b*c*(A*c + B*b))
/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^
3))/e^2))/e^2) - x^4*((d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(2*e)
 - (3*b*c*(A*c + B*b))/(4*e^2) + (B*c^3*d^2)/(4*e^4)) + (log(d + e*x)*(7*B*
c^3*d^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b^3*d^3*e^3 + 15*A*b*c^2*d^
4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*b^2*c*d^4*e^2 - 18*B*b*c^2*d^5*e))/e^8 +
(B*c^3*d^7 - A*c^3*d^6*e + A*b^3*d^3*e^4 - B*b^3*d^4*e^3 + 3*A*b*c^2*d^5*e^
2 - 3*A*b^2*c*d^4*e^3 + 3*B*b^2*c*d^5*e^2 - 3*B*b*c^2*d^6*e)/(e*(d*e^7 + e^
8*x)) + (B*c^3*x^6)/(6*e^2)
```

sympy [B] time = 2.29, size = 619, normalized size = 2.16

$$\frac{Bc^3x^6}{6e^2}-\frac{d^2\left(be-cd\right)^2\left(-3Abe^2+6Acde+4Bbde-7Bcd^2\right)\log\left(d+ex\right)}{e^8}+x^5\left(\frac{Ac^3}{5e^2}+\frac{3Bbc^2}{5e^2}-\frac{2Bc^3d}{5e^3}\right)+x^4\left(\frac{3Abc^2}{4e^2}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) - d**2*(b*e - c*d)**2*(-3*A*b*e**2 + 6*A*c*d*e + 4*B*b
*d*e - 7*B*c*d**2)*log(d + e*x)/e**8 + x**5*(A*c**3/(5*e**2) + 3*B*b*c**2/(
5*e**2) - 2*B*c**3*d/(5*e**3)) + x**4*(3*A*b*c**2/(4*e**2) - A*c**3*d/(2*e*
*3) + 3*B*b**2*c/(4*e**2) - 3*B*b*c**2*d/(2*e**3) + 3*B*c**3*d**2/(4*e**4))
 + x**3*(A*b**2*c/e**2 - 2*A*b*c**2*d/e**3 + A*c**3*d**2/e**4 + B*b**3/(3*e
**2) - 2*B*b**2*c*d/e**3 + 3*B*b*c**2*d**2/e**4 - 4*B*c**3*d**3/(3*e**5)) +
 x**2*(A*b**3/(2*e**2) - 3*A*b**2*c*d/e**3 + 9*A*b*c**2*d**2/(2*e**4) - 2*A
*c**3*d**3/e**5 - B*b**3*d/e**3 + 9*B*b**2*c*d**2/(2*e**4) - 6*B*b*c**2*d**
3/e**5 + 5*B*c**3*d**4/(2*e**6)) + x*(-2*A*b**3*d/e**3 + 9*A*b**2*c*d**2/e*
*4 - 12*A*b*c**2*d**3/e**5 + 5*A*c**3*d**4/e**6 + 3*B*b**3*d**2/e**4 - 12*B
*b**2*c*d**3/e**5 + 15*B*b*c**2*d**4/e**6 - 6*B*c**3*d**5/e**7) + (A*b**3*d
**3*e**4 - 3*A*b**2*c*d**4*e**3 + 3*A*b*c**2*d**5*e**2 - A*c**3*d**6*e - B*
b**3*d**4*e**3 + 3*B*b**2*c*d**5*e**2 - 3*B*b*c**2*d**6*e + B*c**3*d**7)/(d
*e**8 + e**9*x)
```

3.1135 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=359

$$\frac{3d(cd-be)\log(d+ex)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8}-\frac{x(cd-be)\left(Ae\left(b^2e^2-8bcde+\right.\right.}{}$$

```
[Out] -(-b*e+c*d)*(A*e*(b^2*e^2-8*b*c*d*e+10*c^2*d^2)-3*B*d*(b^2*e^2-5*b*c*d*e+5*
c^2*d^2))*x/e^7+1/2*(-b*e+c*d)*(3*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+1
0*c^2*d^2))*x^2/e^6+c*(-b*e+c*d)*(-A*c*e-B*b*e+2*B*c*d)*x^3/e^5-1/4*c^2*(-A
*c*e-3*B*b*e+3*B*c*d)*x^4/e^4+1/5*B*c^3*x^5/e^3+1/2*d^3*(-A*e+B*d)*(-b*e+c*
d)^3/e^8/(e*x+d)^2-d^2*(-b*e+c*d)^2*(B*d*(-4*b*e+7*c*d)-3*A*e*(-b*e+2*c*d))
/e^8/(e*x+d)+3*d*(-b*e+c*d)*(A*e*(b^2*e^2-5*b*c*d*e+5*c^2*d^2)-B*d*(2*b^2*e
^2-8*b*c*d*e+7*c^2*d^2))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.58, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{x^2(cd-be)\left(3Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{2e^6}-\frac{x(cd-be)\left(Ae\left(b^2e^2-8bcde+10c^2d^2\right)-3Bd\left(b^2e^2-\right.\right.}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -((((c*d - b*e)*(A*e*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - 3*B*d*(5*c^2*d^2 -
 5*b*c*d*e + b^2*e^2))*x)/e^7) + ((c*d - b*e)*(3*A*c*e*(2*c*d - b*e) - B*(1
0*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*x^2)/(2*e^6) + (c*(c*d - b*e)*(2*B*c*d -
b*B*e - A*c*e)*x^3)/e^5 - (c^2*(3*B*c*d - 3*b*B*e - A*c*e)*x^4)/(4*e^4) + (
B*c^3*x^5)/(5*e^3) + (d^3*(B*d - A*e)*(c*d - b*e)^3)/(2*e^8*(d + e*x)^2) -
(d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2*c*d - b*e)))/(e^8*(d + e
*x)) + (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2) - B*d*(7*c^2
*d^2 - 8*b*c*d*e + 2*b^2*e^2))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^3}\,dx &= \int \left(\frac{(cd-be)\left(-Ae\left(10c^2d^2-8bcde+b^2e^2\right)+3Bd\left(5c^2d^2-5bcde+b^2e^2\right)\right)}{e^7}+\frac{(cd-}{}\right.\\ &= -\frac{(cd-be)\left(Ae\left(10c^2d^2-8bcde+b^2e^2\right)-3Bd\left(5c^2d^2-5bcde+b^2e^2\right)\right)x}{e^7}+\frac{(cd-be}{}\end{aligned}$$

Mathematica [A] time = 0.15, size = 342, normalized size = 0.95

$$\frac{10e^2x^2(be-cd)\left(3Ace(be-2cd)+B\left(b^2e^2-8bcde+10c^2d^2\right)\right)+20ex(be-cd)\left(Ae\left(b^2e^2-8bcde+10c^2d^2\right)-3Bd\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(-(c*d) + b*e)*(A*e*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - 3*B*d*(5*c^2
*d^2 - 5*b*c*d*e + b^2*e^2))*x + 10*e^2*(-(c*d) + b*e)*(3*A*c*e*(-2*c*d + b
*e) + B*(10*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*x^2 - 20*c*e^3*(c*d - b*e)*(-2*
B*c*d + b*B*e + A*c*e)*x^3 + 5*c^2*e^4*(-3*B*c*d + 3*b*B*e + A*c*e)*x^4 + 4
*B*c^3*e^5*x^5 + (10*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d + e*x)^2 - (20*d^2*(
c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x) - 60*d
*(c*d - b*e)*(-(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2)) + B*d*(7*c^2*d^2 - 8
*b*c*d*e + 2*b^2*e^2))*Log[d + e*x])/(20*e^8)
```

fricas [B] time = 0.89, size = 819, normalized size = 2.28

$$\frac{4\,Bc^3e^7x^7 - 130\,Bc^3d^7 - 50\,Ab^3d^3e^4 + 110\left(3\,Bbc^2 + Ac^3\right)d^6e - 270\left(Bb^2c + Abc^2\right)d^5e^2 + 70\left(Bb^3 + 3\,Ab^2c\right)d^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 - 50*A*b^3*d^3*e^4 + 110*(3*B*b*c^2 +
 A*c^3)*d^6*e - 270*(B*b^2*c + A*b*c^2)*d^5*e^2 + 70*(B*b^3 + 3*A*b^2*c)*d^
4*e^3 - (7*B*c^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 2*(7*B*c^3*d^2*e^
5 - 5*(3*B*b*c^2 + A*c^3)*d*e^6 + 10*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 5*(7*B*
c^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 10*(B*b^2*c + A*b*c^2)*d*e^6
- 2*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 + 20*(7*B*c^3*d^4*e^3 + A*b^3*e^7 - 5*(3*B
*b*c^2 + A*c^3)*d^3*e^4 + 10*(B*b^2*c + A*b*c^2)*d^2*e^5 - 2*(B*b^3 + 3*A*b
^2*c)*d*e^6)*x^3 + 10*(50*B*c^3*d^5*e^2 + 4*A*b^3*d*e^6 - 34*(3*B*b*c^2 + A
*c^3)*d^4*e^3 + 63*(B*b^2*c + A*b*c^2)*d^3*e^4 - 11*(B*b^3 + 3*A*b^2*c)*d^2
*e^5)*x^2 + 20*(8*B*c^3*d^6*e - 2*A*b^3*d^2*e^5 - 4*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 3*(B*b^2*c + A*b*c^2)*d^4*e^3 + (B*b^3 + 3*A*b^2*c)*d^3*e^4)*x - 60*
(7*B*c^3*d^7 + A*b^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^6*e + 10*(B*b^2*c +
A*b*c^2)*d^5*e^2 - 2*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (7*B*c^3*d^5*e^2 + A*b^3
*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + A*b*c^2)*d^3*e^4 - 2
*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2 + 2*(7*B*c^3*d^6*e + A*b^3*d^2*e^5 - 5*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 10*(B*b^2*c + A*b*c^2)*d^4*e^3 - 2*(B*b^3 + 3*A
*b^2*c)*d^3*e^4)*x)*log(e*x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.19, size = 599, normalized size = 1.67

$$-3\left(7\,Bc^3d^5 - 15\,Bbc^2d^4e - 5\,Ac^3d^4e + 10\,Bb^2cd^3e^2 + 10\,Abc^2d^3e^2 - 2\,Bb^3d^2e^3 - 6\,Ab^2cd^2e^3 + Ab^3de^4\right)e^{(-8)}\,\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(7*B*c^3*d^5 - 15*B*b*c^2*d^4*e - 5*A*c^3*d^4*e + 10*B*b^2*c*d^3*e^2 + 1
0*A*b*c^2*d^3*e^2 - 2*B*b^3*d^2*e^3 - 6*A*b^2*c*d^2*e^3 + A*b^3*d*e^4)*e^(-
8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5*e^12 - 15*B*c^3*d*x^4*e^11 + 40*B*
c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9 + 300*B*c^3*d^4*x*e^8 + 15*B*b*c^2
*x^4*e^12 + 5*A*c^3*x^4*e^12 - 60*B*b*c^2*d*x^3*e^11 - 20*A*c^3*d*x^3*e^11
+ 180*B*b*c^2*d^2*x^2*e^10 + 60*A*c^3*d^2*x^2*e^10 - 600*B*b*c^2*d^3*x*e^9
- 200*A*c^3*d^3*x*e^9 + 20*B*b^2*c*x^3*e^12 + 20*A*b*c^2*x^3*e^12 - 90*B*b^
2*c*d*x^2*e^11 - 90*A*b*c^2*d*x^2*e^11 + 360*B*b^2*c*d^2*x*e^10 + 360*A*b*c
^2*d^2*x*e^10 + 10*B*b^3*x^2*e^12 + 30*A*b^2*c*x^2*e^12 - 60*B*b^3*d*x*e^11
 - 180*A*b^2*c*d*x*e^11 + 20*A*b^3*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7 - 33
*B*b*c^2*d^6*e - 11*A*c^3*d^6*e + 27*B*b^2*c*d^5*e^2 + 27*A*b*c^2*d^5*e^2 -
 7*B*b^3*d^4*e^3 - 21*A*b^2*c*d^4*e^3 + 5*A*b^3*d^3*e^4 + 2*(7*B*c^3*d^6*e
- 18*B*b*c^2*d^5*e^2 - 6*A*c^3*d^5*e^2 + 15*B*b^2*c*d^4*e^3 + 15*A*b*c^2*d^
4*e^3 - 4*B*b^3*d^3*e^4 - 12*A*b^2*c*d^3*e^4 + 3*A*b^3*d^2*e^5)*x)*e^(-8)/(
x*e + d)^2
```

maple [B] time = 0.10, size = 775, normalized size = 2.16

$$\frac{B\,c^{3}x^{5}}{5e^{3}}+\frac{A\,c^{3}x^{4}}{4e^{3}}+\frac{3Bb\,c^{2}x^{4}}{4e^{3}}-\frac{3B\,c^{3}d\,x^{4}}{4e^{4}}+\frac{Ab\,c^{2}x^{3}}{e^{3}}-\frac{A\,c^{3}d\,x^{3}}{e^{4}}+\frac{B\,b^{2}c\,x^{3}}{e^{3}}-\frac{3Bb\,c^{2}d\,x^{3}}{e^{4}}+\frac{2B\,c^{3}d^{2}x^{3}}{e^{5}}+\frac{A\,b^{3}d^{3}}{2\left(ex+d\right)^{2}e^{4}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x)
```

```
[Out] -30*d^3/e^6*ln(e*x+d)*B*b^2*c+45*d^4/e^7*ln(e*x+d)*B*b*c^2-3/e^4*B*x^3*b*c^
2*d-7*d^6/e^8/(e*x+d)*B*c^3+3/e^5*A*x^2*c^3*d^2-5/e^6*B*x^2*c^3*d^3-10/e^6*
A*c^3*d^3*x-3/e^4*B*b^3*d*x+15/e^7*B*c^3*d^4*x-3*d^2/e^4/(e*x+d)*A*b^3+6*d^
5/e^7/(e*x+d)*A*c^3+4*d^3/e^5/(e*x+d)*B*b^3+1/4/e^3*A*x^4*c^3+1/2/e^3*B*x^2
*b^3+1/e^3*A*b^3*x+6*d^2/e^5*ln(e*x+d)*B*b^3-21*d^5/e^8*ln(e*x+d)*B*c^3-1/e
^4*A*x^3*c^3*d+1/e^3*B*x^3*b^2*c+2/e^5*B*x^3*c^3*d^2+3/2/e^3*A*x^2*b^2*c-9/
2/e^4*A*x^2*b*c^2*d-9/2/e^4*B*x^2*b^2*c*d+9/e^5*B*x^2*b*c^2*d^2-9/e^4*A*b^2
*c*d*x+18/e^5*A*b*c^2*d^2*x+18/e^5*B*b^2*c*d^2*x-30/e^6*B*b*c^2*d^3*x+12*d^
3/e^5/(e*x+d)*A*b^2*c-15*d^4/e^6/(e*x+d)*A*b*c^2-15*d^4/e^6/(e*x+d)*B*b^2*c
+18*d^5/e^7/(e*x+d)*B*b*c^2-3/2*d^4/e^5/(e*x+d)^2*A*b^2*c+3/2*d^5/e^6/(e*x+
d)^2*A*b*c^2+3/2*d^5/e^6/(e*x+d)^2*B*b^2*c-3/2*d^6/e^7/(e*x+d)^2*B*b*c^2+18
*d^2/e^5*ln(e*x+d)*A*b^2*c-30*d^3/e^6*ln(e*x+d)*A*b*c^2-3*d/e^4*ln(e*x+d)*A
*b^3+15*d^4/e^7*ln(e*x+d)*A*c^3-1/2*d^4/e^5/(e*x+d)^2*B*b^3+1/2*d^7/e^8/(e*
x+d)^2*B*c^3+3/4/e^3*B*x^4*b*c^2-3/4/e^4*B*x^4*c^3*d+1/e^3*A*x^3*b*c^2+1/2*
d^3/e^4/(e*x+d)^2*A*b^3-1/2*d^6/e^7/(e*x+d)^2*A*c^3+1/5*B*c^3*x^5/e^3
```

maxima [A] time = 0.67, size = 550, normalized size = 1.53

$$-\frac{13\,Bc^{3}d^{7}+5\,Ab^{3}d^{3}e^{4}-11\left(3\,Bbc^{2}+Ac^{3}\right)d^{6}e+27\left(Bb^{2}c+Abc^{2}\right)d^{5}e^{2}-7\left(Bb^{3}+3\,Ab^{2}c\right)d^{4}e^{3}+2\left(7\,Bc^{3}d^{6}e+3\right.}{2\left(e^{10}x^{2}+2\,de^{9}x+d^{2}e^{8}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 + 5*A*b^3*d^3*e^4 - 11*(3*B*b*c^2 + A*c^3)*d^6*e + 27*(B
*b^2*c + A*b*c^2)*d^5*e^2 - 7*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + 2*(7*B*c^3*d^6*
e + 3*A*b^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + A*b*c^2
)*d^4*e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)/(e^10*x^2 + 2*d*e^9*x + d^2*e
^8) + 1/20*(4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - (3*B*b*c^2 + A*c^3)*e^4)*x
^4 + 20*(2*B*c^3*d^2*e^2 - (3*B*b*c^2 + A*c^3)*d*e^3 + (B*b^2*c + A*b*c^2)*
e^4)*x^3 - 10*(10*B*c^3*d^3*e - 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 + 9*(B*b^2*c
+ A*b*c^2)*d*e^3 - (B*b^3 + 3*A*b^2*c)*e^4)*x^2 + 20*(15*B*c^3*d^4 + A*b^3*
e^4 - 10*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + A*b*c^2)*d^2*e^2 - 3*(B*
b^3 + 3*A*b^2*c)*d*e^3)*x)/e^7 - 3*(7*B*c^3*d^5 + A*b^3*d*e^4 - 5*(3*B*b*c^
2 + A*c^3)*d^4*e + 10*(B*b^2*c + A*b*c^2)*d^3*e^2 - 2*(B*b^3 + 3*A*b^2*c)*d
^2*e^3)*log(e*x + d)/e^8
```

mupad [**B**] time = 0.19, size = 828, normalized size = 2.31

$$x\left(\frac{A\,b^3}{e^3}-\frac{3\,d\left(\frac{B\,b^3+3\,A\,c\,b^2}{e^3}+\frac{3\,d\left(\frac{3\,d\left(\frac{A\,c^3+3\,B\,b\,c^2}{e^3}-\frac{3\,B\,c^3\,d}{e^4}\right)}{e}-\frac{3\,b\,c\,(A\,c+B\,b)}{e^3}+\frac{3\,B\,c^3\,d^2}{e^5}\right)}{e}-\frac{3\,d^2\left(\frac{A\,c^3+3\,B\,b\,c^2}{e^3}-\frac{3\,B\,c^3\,d}{e^4}\right)}{e^2}-\frac{B\,c^3\,d^3}{e^6}\right)}{e}-d^3\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x*((A*b^3)/e^3 - (3*d*((B*b^3 + 3*A*b^2*c)/e^3 + (3*d*((3*d*((A*c^3 + 3*B*b
*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*b*c*(A*c + B*b))/e^3 + (3*B*c^3*d^2)/e
^5))/e - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^2 - (B*c^3*d
^3)/e^6))/e - (d^3*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^3 + (3*d^
2*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*b*c*(A*c + B*b)
)/e^3 + (3*B*c^3*d^2)/e^5))/e^2) + x^4*((A*c^3 + 3*B*b*c^2)/(4*e^3) - (3*B*
c^3*d)/(4*e^4)) - (x*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b
^3*d^3*e^3 + 15*A*b*c^2*d^4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*b^2*c*d^4*e^2 -
 18*B*b*c^2*d^5*e) + (13*B*c^3*d^7 - 11*A*c^3*d^6*e + 5*A*b^3*d^3*e^4 - 7*B
*b^3*d^4*e^3 + 27*A*b*c^2*d^5*e^2 - 21*A*b^2*c*d^4*e^3 + 27*B*b^2*c*d^5*e^2
 - 33*B*b*c^2*d^6*e)/(2*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) + x^2*((B*b^3 +
 3*A*b^2*c)/(2*e^3) + (3*d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4
))/e - (3*b*c*(A*c + B*b))/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (3*d^2*((A*c^3
 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/(2*e^2) - (B*c^3*d^3)/(2*e^6)) - x^3*
((d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (b*c*(A*c + B*b))/e^3
+ (B*c^3*d^2)/e^5) - (log(d + e*x)*(21*B*c^3*d^5 + 3*A*b^3*d*e^4 - 15*A*c^3
*d^4*e - 6*B*b^3*d^2*e^3 + 30*A*b*c^2*d^3*e^2 - 18*A*b^2*c*d^2*e^3 + 30*B*b
^2*c*d^3*e^2 - 45*B*b*c^2*d^4*e))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [**A**] time = 7.27, size = 660, normalized size = 1.84

$$\frac{Bc^3x^5}{5e^3}+\frac{3d\,(be-cd)\left(-Ab^2e^3+5Abcde^2-5Ac^2d^2e+2Bb^2de^2-8Bbcd^2e+7Bc^2d^3\right)\log{(d+ex)}}{e^8}+x^4\left(\frac{Ac^3}{4e^3}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) + 3*d*(b*e - c*d)*(-A*b**2*e**3 + 5*A*b*c*d*e**2 - 5*A
*c**2*d**2*e + 2*B*b**2*d*e**2 - 8*B*b*c*d**2*e + 7*B*c**2*d**3)*log(d + e*
x)/e**8 + x**4*(A*c**3/(4*e**3) + 3*B*b*c**2/(4*e**3) - 3*B*c**3*d/(4*e**4)
) + x**3*(A*b*c**2/e**3 - A*c**3*d/e**4 + B*b**2*c/e**3 - 3*B*b*c**2*d/e**4
 + 2*B*c**3*d**2/e**5) + x**2*(3*A*b**2*c/(2*e**3) - 9*A*b*c**2*d/(2*e**4)
+ 3*A*c**3*d**2/e**5 + B*b**3/(2*e**3) - 9*B*b**2*c*d/(2*e**4) + 9*B*b*c**2
*d**2/e**5 - 5*B*c**3*d**3/e**6) + x*(A*b**3/e**3 - 9*A*b**2*c*d/e**4 + 18*
A*b*c**2*d**2/e**5 - 10*A*c**3*d**3/e**6 - 3*B*b**3*d/e**4 + 18*B*b**2*c*d*
*2/e**5 - 30*B*b*c**2*d**3/e**6 + 15*B*c**3*d**4/e**7) + (-5*A*b**3*d**3*e*
*4 + 21*A*b**2*c*d**4*e**3 - 27*A*b*c**2*d**5*e**2 + 11*A*c**3*d**6*e + 7*B
*b**3*d**4*e**3 - 27*B*b**2*c*d**5*e**2 + 33*B*b*c**2*d**6*e - 13*B*c**3*d*
*7 + x*(-6*A*b**3*d**2*e**5 + 24*A*b**2*c*d**3*e**4 - 30*A*b*c**2*d**4*e**3
 + 12*A*c**3*d**5*e**2 + 8*B*b**3*d**3*e**4 - 30*B*b**2*c*d**4*e**3 + 36*B*
b*c**2*d**5*e**2 - 14*B*c**3*d**6*e))/(2*d**2*e**8 + 4*d*e**9*x + 2*e**10*x
**2)
```

3.1136 $\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=422

$$-\frac{3d(cd-be)\left(Ae\left(b^2e^2-5bcde+5c^2d^2\right)-Bd\left(2b^2e^2-8bcde+7c^2d^2\right)\right)}{e^8(d+ex)}-\frac{cx^2\left(Ace(4cd-3be)-B\left(3b^2e^2-12bcde\right.\right.}{2e^6}$$

```
[Out] (A*c*e*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2)-B*(-b^3*e^3+12*b^2*c*d*e^2-30*b*c^
2*d^2*e+20*c^3*d^3))*x/e^7-1/2*c*(A*c*e*(-3*b*e+4*c*d)-B*(3*b^2*e^2-12*b*c*
d*e+10*c^2*d^2))*x^2/e^6-1/3*c^2*(-A*c*e-3*B*b*e+4*B*c*d)*x^3/e^5+1/4*B*c^3
*x^4/e^4+1/3*d^3*(-A*e+B*d)*(-b*e+c*d)^3/e^8/(e*x+d)^3-1/2*d^2*(-b*e+c*d)^2
*(B*d*(-4*b*e+7*c*d)-3*A*e*(-b*e+2*c*d))/e^8/(e*x+d)^2-3*d*(-b*e+c*d)*(A*e*
(b^2*e^2-5*b*c*d*e+5*c^2*d^2)-B*d*(2*b^2*e^2-8*b*c*d*e+7*c^2*d^2))/e^8/(e*x
+d)+(B*d*(-4*b^3*e^3+30*b^2*c*d*e^2-60*b*c^2*d^2*e+35*c^3*d^3)-A*e*(-b^3*e^
3+12*b^2*c*d*e^2-30*b*c^2*d^2*e+20*c^3*d^3))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.64, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{cx^2\left(Ace(4cd-3be)-B\left(3b^2e^2-12bcde+10c^2d^2\right)\right)}{2e^6}+\frac{x\left(Ace\left(3b^2e^2-12bcde+10c^2d^2\right)-B\left(12b^2cde^2-b^3e^3-\right.\right.}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] ((A*c*e*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2) - B*(20*c^3*d^3 - 30*b*c^2*d^
2*e + 12*b^2*c*d*e^2 - b^3*e^3))*x)/e^7 - (c*(A*c*e*(4*c*d - 3*b*e) - B*(10
*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*x^2)/(2*e^6) - (c^2*(4*B*c*d - 3*b*B*e
- A*c*e)*x^3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + (d^3*(B*d - A*e)*(c*d - b*e)^
3)/(3*e^8*(d + e*x)^3) - (d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) - 3*A*e*(2
*c*d - b*e)))/(2*e^8*(d + e*x)^2) - (3*d*(c*d - b*e)*(A*e*(5*c^2*d^2 - 5*b*
c*d*e + b^2*e^2) - B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2)))/(e^8*(d + e*x)
) + ((B*d*(35*c^3*d^3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) - A*e*
(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 - b^3*e^3))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^3}{(d+ex)^4}\,dx &= \int \left(\frac{Ace\left(10c^2d^2-12bcde+3b^2e^2\right)-B\left(20c^3d^3-30bc^2d^2e+12b^2cde^2-b^3e^3\right)}{e^7}+\frac{c}{}\right.\\ &= \frac{\left(Ace\left(10c^2d^2-12bcde+3b^2e^2\right)-B\left(20c^3d^3-30bc^2d^2e+12b^2cde^2-b^3e^3\right)\right)x}{e^7}-\frac{c\left(\right.}{}\end{aligned}$$

Mathematica [A] time = 0.16, size = 400, normalized size = 0.95

$$\frac{-6ce^2x^2\left(Ace(4cd-3be)+B\left(-3b^2e^2+12bcde-10c^2d^2\right)\right)+\frac{36d(cd-be)\left(Bd\left(2b^2e^2-8bcde+7c^2d^2\right)-Ae\left(b^2e^2-5bcde+5c^2d^2\right)\right)}{d+ex}+12}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (12*e*(A*c*e*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2) + B*(-20*c^3*d^3 + 30*b*
c^2*d^2*e - 12*b^2*c*d*e^2 + b^3*e^3))*x - 6*c*e^2*(A*c*e*(4*c*d - 3*b*e) +
 B*(-10*c^2*d^2 + 12*b*c*d*e - 3*b^2*e^2))*x^2 + 4*c^2*e^3*(-4*B*c*d + 3*b*
B*e + A*c*e)*x^3 + 3*B*c^3*e^4*x^4 + (4*d^3*(B*d - A*e)*(c*d - b*e)^3)/(d +
 e*x)^3 - (6*d^2*(c*d - b*e)^2*(B*d*(7*c*d - 4*b*e) + 3*A*e*(-2*c*d + b*e))
)/(d + e*x)^2 + (36*d*(c*d - b*e)*(-(A*e*(5*c^2*d^2 - 5*b*c*d*e + b^2*e^2))
 + B*d*(7*c^2*d^2 - 8*b*c*d*e + 2*b^2*e^2)))/(d + e*x) + 12*(B*d*(35*c^3*d^
3 - 60*b*c^2*d^2*e + 30*b^2*c*d*e^2 - 4*b^3*e^3) + A*e*(-20*c^3*d^3 + 30*b*
c^2*d^2*e - 12*b^2*c*d*e^2 + b^3*e^3))*Log[d + e*x])/(12*e^8)
```

fricas [B] time = 0.97, size = 910, normalized size = 2.16

$$\frac{3\,Bc^{3}e^{7}x^{7}+214\,Bc^{3}d^{7}+22\,Ab^{3}d^{3}e^{4}-148\left(3\,Bbc^{2}+Ac^{3}\right)d^{6}e+282\left(Bb^{2}c+Abc^{2}\right)d^{5}e^{2}-52\left(Bb^{3}+3\,Ab^{2}c\right)d^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 + 22*A*b^3*d^3*e^4 - 148*(3*B*b*c^2 +
 A*c^3)*d^6*e + 282*(B*b^2*c + A*b*c^2)*d^5*e^2 - 52*(B*b^3 + 3*A*b^2*c)*d^
4*e^3 - (7*B*c^3*d*e^6 - 4*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3*d^2*e^
5 - 4*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + A*b*c^2)*e^7)*x^5 - 3*(35*B*
c^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 30*(B*b^2*c + A*b*c^2)*d*e^6
 - 4*(B*b^3 + 3*A*b^2*c)*e^7)*x^4 - 2*(278*B*c^3*d^4*e^3 - 146*(3*B*b*c^2 +
 A*c^3)*d^3*e^4 + 189*(B*b^2*c + A*b*c^2)*d^2*e^5 - 18*(B*b^3 + 3*A*b^2*c)*
d*e^6)*x^3 - 6*(68*B*c^3*d^5*e^2 - 6*A*b^3*d*e^6 - 26*(3*B*b*c^2 + A*c^3)*d
^4*e^3 + 9*(B*b^2*c + A*b*c^2)*d^3*e^4 + 6*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2
 + 6*(37*B*c^3*d^6*e + 9*A*b^3*d^2*e^5 - 34*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 8
1*(B*b^2*c + A*b*c^2)*d^4*e^3 - 18*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x + 12*(35*
B*c^3*d^7 + A*b^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B*b^2*c + A*
b*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + (35*B*c^3*d^4*e^3 + A*b^3*
e^7 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + A*b*c^2)*d^2*e^5 - 4*(
B*b^3 + 3*A*b^2*c)*d*e^6)*x^3 + 3*(35*B*c^3*d^5*e^2 + A*b^3*d*e^6 - 20*(3*B
*b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + A*b*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*b
^2*c)*d^2*e^5)*x^2 + 3*(35*B*c^3*d^6*e + A*b^3*d^2*e^5 - 20*(3*B*b*c^2 + A*
c^3)*d^5*e^2 + 30*(B*b^2*c + A*b*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*b^2*c)*d^3*e
^4)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A] time = 0.16, size = 581, normalized size = 1.38

$$\left(35\,Bc^{3}d^{4}-60\,Bbc^{2}d^{3}e-20\,Ac^{3}d^{3}e+30\,Bb^{2}cd^{2}e^{2}+30\,Abc^{2}d^{2}e^{2}-4\,Bb^{3}de^{3}-12\,Ab^{2}cde^{3}+Ab^{3}e^{4}\right)e^{(-8)}\log($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 60*B*b*c^2*d^3*e - 20*A*c^3*d^3*e + 30*B*b^2*c*d^2*e^2 + 30
*A*b*c^2*d^2*e^2 - 4*B*b^3*d*e^3 - 12*A*b^2*c*d*e^3 + A*b^3*e^4)*e^(-8)*log
(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 16*B*c^3*d*x^3*e^11 + 60*B*c^3*d^
2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 12*B*b*c^2*x^3*e^12 + 4*A*c^3*x^3*e^12 -
 72*B*b*c^2*d*x^2*e^11 - 24*A*c^3*d*x^2*e^11 + 360*B*b*c^2*d^2*x*e^10 + 120
*A*c^3*d^2*x*e^10 + 18*B*b^2*c*x^2*e^12 + 18*A*b*c^2*x^2*e^12 - 144*B*b^2*c
*d*x*e^11 - 144*A*b*c^2*d*x*e^11 + 12*B*b^3*x*e^12 + 36*A*b^2*c*x*e^12)*e^(
-16) + 1/6*(107*B*c^3*d^7 - 222*B*b*c^2*d^6*e - 74*A*c^3*d^6*e + 141*B*b^2*
c*d^5*e^2 + 141*A*b*c^2*d^5*e^2 - 26*B*b^3*d^4*e^3 - 78*A*b^2*c*d^4*e^3 + 1
1*A*b^3*d^3*e^4 + 18*(7*B*c^3*d^5*e^2 - 15*B*b*c^2*d^4*e^3 - 5*A*c^3*d^4*e^
3 + 10*B*b^2*c*d^3*e^4 + 10*A*b*c^2*d^3*e^4 - 2*B*b^3*d^2*e^5 - 6*A*b^2*c*d
^2*e^5 + A*b^3*d*e^6)*x^2 + 3*(77*B*c^3*d^6*e - 162*B*b*c^2*d^5*e^2 - 54*A*
c^3*d^5*e^2 + 105*B*b^2*c*d^4*e^3 + 105*A*b*c^2*d^4*e^3 - 20*B*b^3*d^3*e^4
- 60*A*b^2*c*d^3*e^4 + 9*A*b^3*d^2*e^5)*x)*e^(-8)/(x*e + d)^3
```

maple [A] time = 0.07, size = 807, normalized size = 1.91

$$\frac{Bc^3x^4}{4e^4}+\frac{Ab^3d^3}{3(ex+d)^3e^4}-\frac{Ab^2cd^4}{(ex+d)^3e^5}+\frac{Abc^2d^5}{(ex+d)^3e^6}-\frac{Ac^3d^6}{3(ex+d)^3e^7}+\frac{Ac^3x^3}{3e^4}-\frac{Bb^3d^4}{3(ex+d)^3e^5}+\frac{Bb^2cd^5}{(ex+d)^3e^6}-\frac{Bbc^2d^6}{(ex+d)^3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x)
```

```
[Out] 1/e^4*B*x^3*b*c^2-4/3/e^5*B*x^3*c^3*d+1/3/e^4*A*x^3*c^3+1/e^4*B*b^3*x+1/e^4
*ln(e*x+d)*A*b^3-6/e^5*B*x^2*b*c^2*d-12/e^5*A*b*c^2*d*x-12/e^5*B*b^2*c*d*x+
30/e^6*B*b*c^2*d^2*x-18*d^2/e^5/(e*x+d)*A*b^2*c+30*d^3/e^6/(e*x+d)*A*b*c^2+
30*d^3/e^6/(e*x+d)*B*b^2*c-45*d^4/e^7/(e*x+d)*B*b*c^2+6*d^3/e^5/(e*x+d)^2*A
*b^2*c-15/2*d^4/e^6/(e*x+d)^2*A*b*c^2-15/2*d^4/e^6/(e*x+d)^2*B*b^2*c+9*d^5/
e^7/(e*x+d)^2*B*b*c^2-d^4/e^5/(e*x+d)^3*A*b^2*c+d^5/e^6/(e*x+d)^3*A*b*c^2+d
^5/e^6/(e*x+d)^3*B*b^2*c-d^6/e^7/(e*x+d)^3*B*b*c^2-12/e^5*ln(e*x+d)*A*b^2*c
*d+30/e^6*ln(e*x+d)*A*b*c^2*d^2+30/e^6*ln(e*x+d)*B*b^2*c*d^2+1/3*d^3/e^4/(e
*x+d)^3*A*b^3-60/e^7*ln(e*x+d)*B*b*c^2*d^3+5/e^6*B*x^2*c^3*d^2+3/e^4*A*b^2*
c*x+10/e^6*A*c^3*d^2*x-20/e^7*B*c^3*d^3*x+3*d/e^4/(e*x+d)*A*b^3-15*d^4/e^7/
(e*x+d)*A*c^3-6*d^2/e^5/(e*x+d)*B*b^3+21*d^5/e^8/(e*x+d)*B*c^3-3/2*d^2/e^4/
(e*x+d)^2*A*b^3+3*d^5/e^7/(e*x+d)^2*A*c^3+3/2/e^4*A*x^2*b*c^2-2/e^5*A*x^2*c
^3*d+3/2/e^4*B*x^2*b^2*c+2*d^3/e^5/(e*x+d)^2*B*b^3-7/2*d^6/e^8/(e*x+d)^2*B*
c^3-1/3*d^6/e^7/(e*x+d)^3*A*c^3-1/3*d^4/e^5/(e*x+d)^3*B*b^3+1/3*d^7/e^8/(e*
x+d)^3*B*c^3-20/e^7*ln(e*x+d)*A*c^3*d^3-4/e^5*ln(e*x+d)*B*b^3*d+35/e^8*ln(e
*x+d)*B*c^3*d^4+1/4*B*c^3*x^4/e^4
```

maxima [A] time = 0.57, size = 561, normalized size = 1.33

$$107\,Bc^3d^7+11\,Ab^3d^3e^4-74\left(3\,Bbc^2+Ac^3\right)d^6e+141\left(Bb^2c+Abc^2\right)d^5e^2-26\left(Bb^3+3\,Ab^2c\right)d^4e^3+18\left(7\,Bc^3d^5e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 + 11*A*b^3*d^3*e^4 - 74*(3*B*b*c^2 + A*c^3)*d^6*e + 141*
(B*b^2*c + A*b*c^2)*d^5*e^2 - 26*(B*b^3 + 3*A*b^2*c)*d^4*e^3 + 18*(7*B*c^3*
d^5*e^2 + A*b^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + A*b*c
^2)*d^3*e^4 - 2*(B*b^3 + 3*A*b^2*c)*d^2*e^5)*x^2 + 3*(77*B*c^3*d^6*e + 9*A*
b^3*d^2*e^5 - 54*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 105*(B*b^2*c + A*b*c^2)*d^4*
e^3 - 20*(B*b^3 + 3*A*b^2*c)*d^3*e^4)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e
^9*x + d^3*e^8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d*e^2 - (3*B*b*c^2 + A
*c^3)*e^3)*x^3 + 6*(10*B*c^3*d^2*e - 4*(3*B*b*c^2 + A*c^3)*d*e^2 + 3*(B*b^2
*c + A*b*c^2)*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10*(3*B*b*c^2 + A*c^3)*d^2*e +
12*(B*b^2*c + A*b*c^2)*d*e^2 - (B*b^3 + 3*A*b^2*c)*e^3)*x)/e^7 + (35*B*c^3*
d^4 + A*b^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^3*e + 30*(B*b^2*c + A*b*c^2)*d^2
*e^2 - 4*(B*b^3 + 3*A*b^2*c)*d*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 0.20, size = 676, normalized size = 1.60

$$x\left(-10\,B\,b^3\,d^3\,e^3+\frac{9\,A\,b^3\,d^2\,e^4}{2}+\frac{105\,B\,b^2\,c\,d^4\,e^2}{2}-30\,A\,b^2\,c\,d^3\,e^3-81\,B\,b\,c^2\,d^5\,e+\frac{105\,A\,b\,c^2\,d^4\,e^2}{2}+\frac{77\,B\,c^3\,d^6}{2}-27\,A\,c^3\,d^5\,e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^3*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (x*((77*B*c^3*d^6)/2 - 27*A*c^3*d^5*e + (9*A*b^3*d^2*e^4)/2 - 10*B*b^3*d^3*
e^3 + (105*A*b*c^2*d^4*e^2)/2 - 30*A*b^2*c*d^3*e^3 + (105*B*b^2*c*d^4*e^2)/
2 - 81*B*b*c^2*d^5*e) + x^2*(3*A*b^3*d*e^5 + 21*B*c^3*d^5*e - 15*A*c^3*d^4*
e^2 - 6*B*b^3*d^2*e^4 + 30*A*b*c^2*d^3*e^3 - 18*A*b^2*c*d^2*e^4 - 45*B*b*c^
2*d^4*e^2 + 30*B*b^2*c*d^3*e^3) + (107*B*c^3*d^7 - 74*A*c^3*d^6*e + 11*A*b^
3*d^3*e^4 - 26*B*b^3*d^4*e^3 + 141*A*b*c^2*d^5*e^2 - 78*A*b^2*c*d^4*e^3 + 1
41*B*b^2*c*d^5*e^2 - 222*B*b*c^2*d^6*e)/(6*e))/(d^3*e^7 + e^10*x^3 + 3*d^2*
e^8*x + 3*d*e^9*x^2) + x*((B*b^3 + 3*A*b^2*c)/e^4 + (4*d*((4*d*((A*c^3 + 3*
B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e - (3*b*c*(A*c + B*b))/e^4 + (6*B*c^3*d^2
)/e^6))/e - (6*d^2*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e^2 - (4*B*
c^3*d^3)/e^7) + x^3*((A*c^3 + 3*B*b*c^2)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) - x
^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*c^3*d)/e^5))/e - (3*b*c*(A*c + B*b
))/(2*e^4) + (3*B*c^3*d^2)/e^6) + (log(d + e*x)*(A*b^3*e^4 + 35*B*c^3*d^4 -
 20*A*c^3*d^3*e - 4*B*b^3*d*e^3 + 30*A*b*c^2*d^2*e^2 + 30*B*b^2*c*d^2*e^2 -
 12*A*b^2*c*d*e^3 - 60*B*b*c^2*d^3*e))/e^8 + (B*c^3*x^4)/(4*e^4)
```

sympy [A] time = 23.06, size = 700, normalized size = 1.66

$$\frac{Bc^3x^4}{4e^4}+x^3\left(\frac{Ac^3}{3e^4}+\frac{Bbc^2}{e^4}-\frac{4Bc^3d}{3e^5}\right)+x^2\left(\frac{3Abc^2}{2e^4}-\frac{2Ac^3d}{e^5}+\frac{3Bb^2c}{2e^4}-\frac{6Bbc^2d}{e^5}+\frac{5Bc^3d^2}{e^6}\right)+x\left(\frac{3Ab^2c}{e^4}-\frac{12Abc^2d}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**3/(e*x+d)**4,x)
```

```
[Out] B*c**3*x**4/(4*e**4) + x**3*(A*c**3/(3*e**4) + B*b*c**2/e**4 - 4*B*c**3*d/(
3*e**5)) + x**2*(3*A*b*c**2/(2*e**4) - 2*A*c**3*d/e**5 + 3*B*b**2*c/(2*e**4
) - 6*B*b*c**2*d/e**5 + 5*B*c**3*d**2/e**6) + x*(3*A*b**2*c/e**4 - 12*A*b*c
**2*d/e**5 + 10*A*c**3*d**2/e**6 + B*b**3/e**4 - 12*B*b**2*c*d/e**5 + 30*B*
b*c**2*d**2/e**6 - 20*B*c**3*d**3/e**7) + (11*A*b**3*d**3*e**4 - 78*A*b**2*
c*d**4*e**3 + 141*A*b*c**2*d**5*e**2 - 74*A*c**3*d**6*e - 26*B*b**3*d**4*e*
*3 + 141*B*b**2*c*d**5*e**2 - 222*B*b*c**2*d**6*e + 107*B*c**3*d**7 + x**2*
(18*A*b**3*d*e**6 - 108*A*b**2*c*d**2*e**5 + 180*A*b*c**2*d**3*e**4 - 90*A*
c**3*d**4*e**3 - 36*B*b**3*d**2*e**5 + 180*B*b**2*c*d**3*e**4 - 270*B*b*c**
2*d**4*e**3 + 126*B*c**3*d**5*e**2) + x*(27*A*b**3*d**2*e**5 - 180*A*b**2*c
*d**3*e**4 + 315*A*b*c**2*d**4*e**3 - 162*A*c**3*d**5*e**2 - 60*B*b**3*d**3
*e**4 + 315*B*b**2*c*d**4*e**3 - 486*B*b*c**2*d**5*e**2 + 231*B*c**3*d**6*e
))/(6*d**3*e**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3) - (-A*b*
*3*e**4 + 12*A*b**2*c*d*e**3 - 30*A*b*c**2*d**2*e**2 + 20*A*c**3*d**3*e + 4
*B*b**3*d*e**3 - 30*B*b**2*c*d**2*e**2 + 60*B*b*c**2*d**3*e - 35*B*c**3*d**
4)*log(d + e*x)/e**8
```

3.1137 $\int \frac{(A+Bx)(d+ex)^4}{bx+cx^2}\,dx$

Optimal. Leaf size=207

$$\frac{e^2x^2\left(Ace(4cd-be)+B\left(b^2e^2-4bcde+6c^2d^2\right)\right)}{2c^3}+\frac{ex\left(Ace\left(b^2e^2-4bcde+6c^2d^2\right)+B\left(-b^3e^3+4b^2cde^2-6bc^2d^2e\right.\right.}{c^4}$$

```
[Out] e*(A*c*e*(b^2*e^2-4*b*c*d*e+6*c^2*d^2)+B*(-b^3*e^3+4*b^2*c*d*e^2-6*b*c^2*d^
2*e+4*c^3*d^3))*x/c^4+1/2*e^2*(A*c*e*(-b*e+4*c*d)+B*(b^2*e^2-4*b*c*d*e+6*c^
2*d^2))*x^2/c^3+1/3*e^3*(A*c*e-B*b*e+4*B*c*d)*x^3/c^2+1/4*B*e^4*x^4/c+A*d^4
*ln(x)/b+(-A*c+B*b)*(-b*e+c*d)^4*ln(c*x+b)/b/c^5
```

Rubi [A] time = 0.26, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{e^2x^2\left(Ace(4cd-be)+B\left(b^2e^2-4bcde+6c^2d^2\right)\right)}{2c^3}+\frac{ex\left(Ace\left(b^2e^2-4bcde+6c^2d^2\right)+B\left(4b^2cde^2-b^3e^3-6bc^2d^2e+\right.\right.}{c^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(6*c^2*d^2 - 4*b*c*d*e + b^2*e^2) + B*(4*c^3*d^3 - 6*b*c^2*d^2*e
+ 4*b^2*c*d*e^2 - b^3*e^3))*x)/c^4 + (e^2*(A*c*e*(4*c*d - b*e) + B*(6*c^2*d
^2 - 4*b*c*d*e + b^2*e^2))*x^2)/(2*c^3) + (e^3*(4*B*c*d - b*B*e + A*c*e)*x^
3)/(3*c^2) + (B*e^4*x^4)/(4*c) + (A*d^4*Log[x])/b + ((b*B - A*c)*(c*d - b*e
)^4*Log[b + c*x])/(b*c^5)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^4}{bx+cx^2}\,dx &= \int \left(\frac{e\left(Ace\left(6c^2d^2-4bcde+b^2e^2\right)+B\left(4c^3d^3-6bc^2d^2e+4b^2cde^2-b^3e^3\right)\right)}{c^4}+\frac{Ad^4}{bx}+\right.\\ &= \frac{e\left(Ace\left(6c^2d^2-4bcde+b^2e^2\right)+B\left(4c^3d^3-6bc^2d^2e+4b^2cde^2-b^3e^3\right)\right)x}{c^4}+\end{aligned}$$

Mathematica [A] time = 0.13, size = 187, normalized size = 0.90

$$\frac{ex\left(2Ace\left(6b^2e^2-3bce(8d+ex)+2c^2\left(18d^2+6dex+e^2x^2\right)\right)+B\left(-12b^3e^3+6b^2ce^2(8d+ex)-4bc^2e\left(18d^2+6de\right.\right.\right.}{12c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x]
```

```
[Out] (e*x*(2*A*c*e*(6*b^2*e^2 - 3*b*c*e*(8*d + e*x) + 2*c^2*(18*d^2 + 6*d*e*x +
e^2*x^2)) + B*(-12*b^3*e^3 + 6*b^2*c*e^2*(8*d + e*x) - 4*b*c^2*e*(18*d^2 +
6*d*e*x + e^2*x^2) + c^3*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)))
)/(12*c^4) + (A*d^4*Log[x])/b + ((b*B - A*c)*(c*d - b*e)^4*Log[b + c*x])/(b
*c^5)
```

fricas [**A**] time = 0.98, size = 331, normalized size = 1.60

$$\frac{3\,Bbc^4e^4x^4 + 12\,Ac^5d^4\log(x) + 4\left(4\,Bbc^4de^3 - \left(Bb^2c^3 - Abc^4\right)e^4\right)x^3 + 6\left(6\,Bbc^4d^2e^2 - 4\left(Bb^2c^3 - Abc^4\right)de^3 + (}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b*c^4*e^4*x^4 + 12*A*c^5*d^4*log(x) + 4*(4*B*b*c^4*d*e^3 - (B*b^2
*c^3 - A*b*c^4)*e^4)*x^3 + 6*(6*B*b*c^4*d^2*e^2 - 4*(B*b^2*c^3 - A*b*c^4)*d
*e^3 + (B*b^3*c^2 - A*b^2*c^3)*e^4)*x^2 + 12*(4*B*b*c^4*d^3*e - 6*(B*b^2*c^
3 - A*b*c^4)*d^2*e^2 + 4*(B*b^3*c^2 - A*b^2*c^3)*d*e^3 - (B*b^4*c - A*b^3*c
^2)*e^4)*x + 12*((B*b*c^4 - A*c^5)*d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e + 6*
(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5 -
A*b^4*c)*e^4)*log(c*x + b))/(b*c^5)
```

giac [**A**] time = 0.16, size = 330, normalized size = 1.59

$$\frac{Ad^4\log\left(|x|\right)}{b} + \frac{3\,Bc^3x^4e^4 + 16\,Bc^3dx^3e^3 + 36\,Bc^3d^2x^2e^2 + 48\,Bc^3d^3xe - 4\,Bbc^2x^3e^4 + 4\,Ac^3x^3e^4 - 24\,Bbc^2dx^2e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^4*log(abs(x))/b + 1/12*(3*B*c^3*x^4*e^4 + 16*B*c^3*d*x^3*e^3 + 36*B*c^3
*d^2*x^2*e^2 + 48*B*c^3*d^3*x*e - 4*B*b*c^2*x^3*e^4 + 4*A*c^3*x^3*e^4 - 24*
B*b*c^2*d*x^2*e^3 + 24*A*c^3*d*x^2*e^3 - 72*B*b*c^2*d^2*x*e^2 + 72*A*c^3*d^
2*x*e^2 + 6*B*b^2*c*x^2*e^4 - 6*A*b*c^2*x^2*e^4 + 48*B*b^2*c*d*x*e^3 - 48*A
*b*c^2*d*x*e^3 - 12*B*b^3*x*e^4 + 12*A*b^2*c*x*e^4)/c^4 + (B*b*c^4*d^4 - A*
c^5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e + 6*B*b^3*c^2*d^2*e^2 - 6*A*b
^2*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^2*d*e^3 + B*b^5*e^4 - A*b^4*c*
e^4)*log(abs(c*x + b))/(b*c^5)
```

maple [**A**] time = 0.05, size = 396, normalized size = 1.91

$$\frac{B\,e^4x^4}{4c} + \frac{A\,e^4x^3}{3c} - \frac{Bb\,e^4x^3}{3c^2} + \frac{4Bd\,e^3x^3}{3c} - \frac{Ab\,e^4x^2}{2c^2} + \frac{2Ad\,e^3x^2}{c} + \frac{B\,b^2e^4x^2}{2c^3} - \frac{2Bbd\,e^3x^2}{c^2} + \frac{3B\,d^2e^2x^2}{c} - \frac{A\,b^3e^4\ln\left(cx+b\right)}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x)
```

```
[Out] 1/3*e^4/c*A*x^3+1/c*ln(c*x+b)*B*d^4-1/b*ln(c*x+b)*A*d^4-1/3*e^4/c^2*B*x^3*b
+4/3*e^3/c*B*x^3*d-b^3/c^4*ln(c*x+b)*A*e^4+6*e^2/c*A*d^2*x-e^4/c^4*B*b^3*x+
4*e/c*B*d^3*x+b^4/c^5*ln(c*x+b)*B*e^4-4*e^3/c^2*A*b*d*x+4*e^3/c^3*B*b^2*d*x
-6*e^2/c^2*B*b*d^2*x-2*e^3/c^2*B*x^2*b*d+4*b^2/c^3*ln(c*x+b)*A*d*e^3+e^4/c^
3*A*b^2*x+6*b^2/c^3*ln(c*x+b)*B*d^2*e^2-4*b/c^2*ln(c*x+b)*B*d^3*e+4/c*ln(c*
x+b)*A*d^3*e-1/2*e^4/c^2*A*x^2*b+2*e^3/c*A*x^2*d+1/2*e^4/c^3*B*x^2*b^2+3*e^
2/c*B*x^2*d^2-6*b/c^2*ln(c*x+b)*A*d^2*e^2-4*b^3/c^4*ln(c*x+b)*B*d*e^3+A*d^4
*ln(x)/b+1/4*B*e^4*x^4/c
```

maxima [**A**] time = 0.50, size = 309, normalized size = 1.49

$$\frac{Ad^4\log(x)}{b} + \frac{3\,Bc^3e^4x^4 + 4\left(4\,Bc^3de^3 - \left(Bbc^2 - Ac^3\right)e^4\right)x^3 + 6\left(6\,Bc^3d^2e^2 - 4\left(Bbc^2 - Ac^3\right)de^3 + (Bb^2c - Abc^2)}{12\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^4*log(x)/b + 1/12*(3*B*c^3*e^4*x^4 + 4*(4*B*c^3*d*e^3 - (B*b*c^2 - A*c^
3)*e^4)*x^3 + 6*(6*B*c^3*d^2*e^2 - 4*(B*b*c^2 - A*c^3)*d*e^3 + (B*b^2*c - A
*b*c^2)*e^4)*x^2 + 12*(4*B*c^3*d^3*e - 6*(B*b*c^2 - A*c^3)*d^2*e^2 + 4*(B*b
^2*c - A*b*c^2)*d*e^3 - (B*b^3 - A*b^2*c)*e^4)*x)/c^4 + ((B*b*c^4 - A*c^5)*
d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e + 6*(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4
*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5 - A*b^4*c)*e^4)*log(c*x + b)/(b*c^5)
```

mupad **[B]** time = 1.67, size = 322, normalized size = 1.56

$$x\left(\frac{b\left(\frac{b\left(\frac{A\,e^4+4\,B\,d\,e^3}{c}-\frac{B\,b\,e^4}{c^2}\right)}{c}-\frac{2\,d\,e^2\,(2\,A\,e+3\,B\,d)}{c}\right)}{c}+\frac{2\,d^2\,e\,(3\,A\,e+2\,B\,d)}{c}\right)-x^2\left(\frac{b\,\left(\frac{A\,e^4+4\,B\,d\,e^3}{c}-\frac{B\,b\,e^4}{c^2}\right)}{2\,c}-\frac{d\,e^2\,(2\,A\,e+3}{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2),x)
```

```
[Out] x*((b*((b*((A*e^4 + 4*B*d*e^3)/c - (B*b*e^4)/c^2))/c - (2*d*e^2*(2*A*e + 3*
B*d))/c))/c + (2*d^2*e*(3*A*e + 2*B*d))/c) - x^2*((b*((A*e^4 + 4*B*d*e^3)/c
 - (B*b*e^4)/c^2))/(2*c) - (d*e^2*(2*A*e + 3*B*d))/c) + x^3*((A*e^4 + 4*B*d
*e^3)/(3*c) - (B*b*e^4)/(3*c^2)) - log(b + c*x)*((A*d^4)/b - (c^4*(B*b*d^4
+ 4*A*b*d^3*e) - c*(A*b^4*e^4 + 4*B*b^4*d*e^3) - c^3*(4*B*b^2*d^3*e + 6*A*b
^2*d^2*e^2) + c^2*(4*A*b^3*d*e^3 + 6*B*b^3*d^2*e^2) + B*b^5*e^4)/(b*c^5)) +
 (A*d^4*log(x))/b + (B*e^4*x^4)/(4*c)
```

sympy **[A]** time = 7.18, size = 396, normalized size = 1.91

$$\frac{Ad^4\log{(x)}}{b}+\frac{Be^4x^4}{4c}+x^3\left(\frac{Ae^4}{3c}-\frac{Bbe^4}{3c^2}+\frac{4Bde^3}{3c}\right)+x^2\left(-\frac{Abe^4}{2c^2}+\frac{2Ade^3}{c}+\frac{Bb^2e^4}{2c^3}-\frac{2Bbde^3}{c^2}+\frac{3Bd^2e^2}{c}\right)+x\left(\frac{Ab^2e^4}{c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x),x)
```

```
[Out] A*d**4*log(x)/b + B*e**4*x**4/(4*c) + x**3*(A*e**4/(3*c) - B*b*e**4/(3*c**2
) + 4*B*d*e**3/(3*c)) + x**2*(-A*b*e**4/(2*c**2) + 2*A*d*e**3/c + B*b**2*e*
*4/(2*c**3) - 2*B*b*d*e**3/c**2 + 3*B*d**2*e**2/c) + x*(A*b**2*e**4/c**3 -
4*A*b*d*e**3/c**2 + 6*A*d**2*e**2/c - B*b**3*e**4/c**4 + 4*B*b**2*d*e**3/c*
*3 - 6*B*b*d**2*e**2/c**2 + 4*B*d**3*e/c) + (-A*c + B*b)*(b*e - c*d)**4*log
(x + (-A*b*c**4*d**4 + b*(-A*c + B*b)*(b*e - c*d)**4/c)/(-A*b**4*c*e**4 + 4
*A*b**3*c**2*d*e**3 - 6*A*b**2*c**3*d**2*e**2 + 4*A*b*c**4*d**3*e - 2*A*c**
5*d**4 + B*b**5*e**4 - 4*B*b**4*c*d*e**3 + 6*B*b**3*c**2*d**2*e**2 - 4*B*b*
*2*c**3*d**3*e + B*b*c**4*d**4))/(b*c**5)
```

3.1138 $\int \frac{(A+Bx)(d+ex)^3}{bx+cx^2}\,dx$

Optimal. Leaf size=128

$$\frac{ex\left(Ace(3cd-be)+B\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{c^3}+\frac{(bB-Ac)(cd-be)^3\log(b+cx)}{bc^4}+\frac{e^2x^2(Ace-bBe+3Bcd)}{2c^2}+$$

```
[Out] e*(A*c*e*(-b*e+3*c*d)+B*(b^2*e^2-3*b*c*d*e+3*c^2*d^2))*x/c^3+1/2*e^2*(A*c*e
-B*b*e+3*B*c*d)*x^2/c^2+1/3*B*e^3*x^3/c+A*d^3*ln(x)/b+(-A*c+B*b)*(-b*e+c*d)
^3*ln(c*x+b)/b/c^4
```

Rubi [A] time = 0.16, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{ex\left(Ace(3cd-be)+B\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{c^3}+\frac{e^2x^2(Ace-bBe+3Bcd)}{2c^2}+\frac{(bB-Ac)(cd-be)^3\log(b+cx)}{bc^4}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 - 3*b*c*d*e + b^2*e^2))*x)/c^3 + (e^
2*(3*B*c*d - b*B*e + A*c*e)*x^2)/(2*c^2) + (B*e^3*x^3)/(3*c) + (A*d^3*Log[x
])/b + ((b*B - A*c)*(c*d - b*e)^3*Log[b + c*x])/(b*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{bx+cx^2}\,dx &= \int \left(\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2-3bcde+b^2e^2\right)\right)}{c^3}+\frac{Ad^3}{bx}+\frac{e^2(3Bcd-bBe+Ace)x}{c^2}\right.\\ &= \frac{e\left(Ace(3cd-be)+B\left(3c^2d^2-3bcde+b^2e^2\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+\frac{Be^3x^3}{3c}\end{aligned}$$

Mathematica [A] time = 0.08, size = 118, normalized size = 0.92

$$\frac{bcex\left(3Ace(-2be+6cd+cex)+B\left(6b^2e^2-3bce(6d+ex)+c^2\left(18d^2+9dex+2e^2x^2\right)\right)\right)-6(bB-Ac)(be-cd)^3}{6bc^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x]
```

```
[Out] (b*c*e*x*(3*A*c*e*(6*c*d - 2*b*e + c*e*x) + B*(6*b^2*e^2 - 3*b*c*e*(6*d + e
*x) + c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2))) + 6*A*c^4*d^3*Log[x] - 6*(b*B -
A*c)*(-(c*d) + b*e)^3*Log[b + c*x])/(6*b*c^4)
```

fricas [A] time = 0.89, size = 216, normalized size = 1.69

$$2\,Bbc^3e^3x^3+6\,Ac^4d^3\log(x)+3\left(3\,Bbc^3de^2-\left(Bb^2c^2-Abc^3\right)e^3\right)x^2+6\left(3\,Bbc^3d^2e-3\left(Bb^2c^2-Abc^3\right)de^2+\left(B\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b*c^3*e^3*x^3 + 6*A*c^4*d^3*log(x) + 3*(3*B*b*c^3*d*e^2 - (B*b^2*c
^2 - A*b*c^3)*e^3)*x^2 + 6*(3*B*b*c^3*d^2*e - 3*(B*b^2*c^2 - A*b*c^3)*d*e^2
 + (B*b^3*c - A*b^2*c^2)*e^3)*x + 6*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 -
 A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*lo
g(c*x + b))/(b*c^4)
```

giac [A] time = 0.15, size = 207, normalized size = 1.62

$$\frac{Ad^3\log\left(|x|\right)}{b}+\frac{2\,Bc^2x^3e^3+9\,Bc^2dx^2e^2+18\,Bc^2d^2xe-3\,Bbcx^2e^3+3\,Ac^2x^2e^3-18\,Bbcdxe^2+18\,Ac^2dxe^2+6\,Bb^2x}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^3*log(abs(x))/b + 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d
^2*x*e - 3*B*b*c*x^2*e^3 + 3*A*c^2*x^2*e^3 - 18*B*b*c*d*x*e^2 + 18*A*c^2*d*
x*e^2 + 6*B*b^2*x*e^3 - 6*A*b*c*x*e^3)/c^3 + (B*b*c^3*d^3 - A*c^4*d^3 - 3*B
*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^2*d*e^2 - B*
b^4*e^3 + A*b^3*c*e^3)*log(abs(c*x + b))/(b*c^4)
```

maple [B] time = 0.06, size = 252, normalized size = 1.97

$$\frac{B\,e^3x^3}{3c}+\frac{A\,e^3x^2}{2c}-\frac{Bb\,e^3x^2}{2c^2}+\frac{3Bd\,e^2x^2}{2c}+\frac{A\,b^2e^3\ln\left(cx+b\right)}{c^3}-\frac{3Abd\,e^2\ln\left(cx+b\right)}{c^2}-\frac{Ab\,e^3x}{c^2}+\frac{A\,d^3\ln(x)}{b}-\frac{A\,d^3\ln\left(cx+b\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x)
```

```
[Out] 1/3*B*e^3*x^3/c+1/2*e^3/c*A*x^2-1/2*e^3/c^2*B*x^2*b+3/2*e^2/c*B*x^2*d-e^3/c
^2*A*b*x+3*e^2/c*A*d*x+e^3/c^3*B*b^2*x-3*e^2/c^2*B*b*d*x+3*e/c*B*d^2*x+1/c^
3*b^2*ln(c*x+b)*A*e^3-3/c^2*b*ln(c*x+b)*A*d*e^2+3/c*ln(c*x+b)*A*d^2*e-1/b*l
n(c*x+b)*A*d^3-1/c^4*b^3*ln(c*x+b)*B*e^3+3/c^3*b^2*ln(c*x+b)*B*d*e^2-3/c^2*
b*ln(c*x+b)*B*d^2*e+1/c*ln(c*x+b)*B*d^3+A*d^3*ln(x)/b
```

maxima [A] time = 0.61, size = 200, normalized size = 1.56

$$\frac{Ad^3\log(x)}{b}+\frac{2\,Bc^2e^3x^3+3\left(3\,Bc^2de^2-\left(Bbc-Ac^2\right)e^3\right)x^2+6\left(3\,Bc^2d^2e-3\left(Bbc-Ac^2\right)de^2+\left(Bb^2-Abc\right)e^3\right)x}{6\,c^3}+\frac{\left(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^3*log(x)/b + 1/6*(2*B*c^2*e^3*x^3 + 3*(3*B*c^2*d*e^2 - (B*b*c - A*c^2)*
e^3)*x^2 + 6*(3*B*c^2*d^2*e - 3*(B*b*c - A*c^2)*d*e^2 + (B*b^2 - A*b*c)*e^3
)*x)/c^3 + ((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^
3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*log(c*x + b)/(b*c^4)
```

mupad [B] time = 1.58, size = 208, normalized size = 1.62

$$x^2\left(\frac{A\,e^3+3\,B\,d\,e^2}{2\,c}-\frac{B\,b\,e^3}{2\,c^2}\right)-x\left(\frac{b\left(\frac{A\,e^3+3\,B\,d\,e^2}{c}-\frac{B\,b\,e^3}{c^2}\right)}{c}-\frac{3\,d\,e\,\left(A\,e+B\,d\right)}{c}\right)-\ln\left(b+c\,x\right)\left(\frac{A\,d^3}{b}-\frac{c^3\,\left(B\,b\,d^3+3\,A\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*c) - (B*b*e^3)/(2*c^2)) - x*((b*((A*e^3 + 3*B*d
*e^2)/c - (B*b*e^3)/c^2))/c - (3*d*e*(A*e + B*d))/c) - log(b + c*x)*((A*d^3
)/b - (c^3*(B*b*d^3 + 3*A*b*d^2*e) - c^2*(3*A*b^2*d*e^2 + 3*B*b^2*d^2*e) +
c*(A*b^3*e^3 + 3*B*b^3*d*e^2) - B*b^4*e^3)/(b*c^4)) + (A*d^3*log(x))/b + (B
*e^3*x^3)/(3*c)
```

sympy [B] time = 4.59, size = 264, normalized size = 2.06

$$\frac{Ad^3\log{(x)}}{b}+\frac{Be^3x^3}{3c}+x^2\left(\frac{Ae^3}{2c}-\frac{Bbe^3}{2c^2}+\frac{3Bde^2}{2c}\right)+x\left(-\frac{Abe^3}{c^2}+\frac{3Ade^2}{c}+\frac{Bb^2e^3}{c^3}-\frac{3Bbde^2}{c^2}+\frac{3Bd^2e}{c}\right)-\frac{(-Ac+B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x),x)
```

```
[Out] A*d**3*log(x)/b + B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) - B*b*e**3/(2*c**2
) + 3*B*d*e**2/(2*c)) + x*(-A*b*e**3/c**2 + 3*A*d*e**2/c + B*b**2*e**3/c**3
 - 3*B*b*d*e**2/c**2 + 3*B*d**2*e/c) - (-A*c + B*b)*(b*e - c*d)**3*log(x +
(A*b*c**3*d**3 + b*(-A*c + B*b)*(b*e - c*d)**3/c)/(-A*b**3*c*e**3 + 3*A*b**
2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + B*b**4*e**3 - 3*B*b**3*
c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3))/(b*c**4)
```

3.1139 $\int \frac{(A+Bx)(d+ex)^2}{bx+cx^2} \, dx$

Optimal. Leaf size=77

$$\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}+\frac{ex(Ace-bBe+2Bcd)}{c^2}+\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}$$

```
[Out] e*(A*c*e-B*b*e+2*B*c*d)*x/c^2+1/2*B*e^2*x^2/c+A*d^2*ln(x)/b+(-A*c+B*b)*(-b*
e+c*d)^2*ln(c*x+b)/b/c^3
```

Rubi [A] time = 0.09, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{ex(Ace-bBe+2Bcd)}{c^2}+\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}+\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x]
```

```
[Out] (e*(2*B*c*d - b*B*e + A*c*e)*x)/c^2 + (B*e^2*x^2)/(2*c) + (A*d^2*Log[x])/b
+ ((b*B - A*c)*(c*d - b*e)^2*Log[b + c*x])/(b*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{bx+cx^2}\,dx &= \int \left(\frac{e(2Bcd-bBe+Ace)}{c^2}+\frac{Ad^2}{bx}+\frac{Be^2x}{c}+\frac{(bB-Ac)(-cd+be)^2}{bc^2(b+cx)}\right)dx\\ &= \frac{e(2Bcd-bBe+Ace)x}{c^2}+\frac{Be^2x^2}{2c}+\frac{Ad^2\log(x)}{b}+\frac{(bB-Ac)(cd-be)^2\log(b+cx)}{bc^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.96

$$\frac{bcex(2Ace+B(-2be+4cd+cex))+2(bB-Ac)(cd-be)^2\log(b+cx)+2Ac^3d^2\log(x)}{2bc^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x]
```

```
[Out] (b*c*e*x*(2*A*c*e + B*(4*c*d - 2*b*e + c*e*x)) + 2*A*c^3*d^2*Log[x] + 2*(b*
B - A*c)*(c*d - b*e)^2*Log[b + c*x])/(2*b*c^3)
```

fricas [A] time = 0.83, size = 125, normalized size = 1.62

$$\frac{Bbc^2e^2x^2+2\,Ac^3d^2\log(x)+2\,\big(2\,Bbc^2de-\big(Bb^2c-Abc^2\big)e^2\big)x+2\,\big(\big(Bbc^2-Ac^3\big)d^2-2\,\big(Bb^2c-Abc^2\big)de+\big(Bb^3-}{2\,bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b*c^2*e^2*x^2 + 2*A*c^3*d^2*log(x) + 2*(2*B*b*c^2*d*e - (B*b^2*c - A
*b*c^2)*e^2)*x + 2*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*
b^3 - A*b^2*c)*e^2)*log(c*x + b))/(b*c^3)
```

giac [**A**] time = 0.15, size = 117, normalized size = 1.52

$$\frac{Ad^2\log(|x|)}{b}+\frac{Bcx^2e^2+4\,Bcdxe-2\,Bbxe^2+2\,Acxe^2}{2\,c^2}+\frac{\left(Bbc^2d^2-Ac^3d^2-2\,Bb^2cde+2\,Abc^2de+Bb^3e^2-Ab^2}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*d^2*log(abs(x))/b + 1/2*(B*c*x^2*e^2 + 4*B*c*d*x*e - 2*B*b*x*e^2 + 2*A*c*
x*e^2)/c^2 + (B*b*c^2*d^2 - A*c^3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b
^3*e^2 - A*b^2*c*e^2)*log(abs(c*x + b))/(b*c^3)
```

maple [**A**] time = 0.05, size = 144, normalized size = 1.87

$$\frac{B\,e^2x^2}{2c}-\frac{Ab\,e^2\ln(cx+b)}{c^2}+\frac{A\,d^2\ln(x)}{b}-\frac{A\,d^2\ln(cx+b)}{b}+\frac{2Ade\ln(cx+b)}{c}+\frac{A\,e^2x}{c}+\frac{B\,b^2e^2\ln(cx+b)}{c^3}-\frac{2Bbde\ln}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x)
```

```
[Out] 1/2*B*e^2*x^2/c+1/c*e^2*A*x-1/c^2*e^2*B*b*x+2/c*e*B*d*x-b/c^2*ln(c*x+b)*A*e
^2+2/c*ln(c*x+b)*A*d*e-1/b*ln(c*x+b)*A*d^2+b^2/c^3*ln(c*x+b)*B*e^2-2*b/c^2*
ln(c*x+b)*B*d*e+1/c*ln(c*x+b)*B*d^2+A*d^2*ln(x)/b
```

maxima [**A**] time = 0.59, size = 115, normalized size = 1.49

$$\frac{Ad^2\log(x)}{b}+\frac{Bce^2x^2+2\left(2\,Bcde-(Bb-Ac)e^2\right)x}{2\,c^2}+\frac{\left(\left(Bbc^2-Ac^3\right)d^2-2\left(Bb^2c-Abc^2\right)de+\left(Bb^3-Ab^2c\right)e^2\right)\log}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*d^2*log(x)/b + 1/2*(B*c*e^2*x^2 + 2*(2*B*c*d*e - (B*b - A*c)*e^2)*x)/c^2
+ ((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^
2)*log(c*x + b)/(b*c^3)
```

mupad [**B**] time = 0.19, size = 122, normalized size = 1.58

$$x\left(\frac{A\,e^2+2\,B\,d\,e}{c}-\frac{B\,b\,e^2}{c^2}\right)-\ln(b+c\,x)\left(\frac{A\,d^2}{b}-\frac{c^2\,\left(B\,b\,d^2+2\,A\,b\,e\,d\right)-c\,\left(A\,b^2\,e^2+2\,B\,d\,b^2\,e\right)+B\,b^3\,e^2}{b\,c^3}\right)+\frac{A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/c - (B*b*e^2)/c^2) - log(b + c*x)*((A*d^2)/b - (c^2*(B
*b*d^2 + 2*A*b*d*e) - c*(A*b^2*e^2 + 2*B*b^2*d*e) + B*b^3*e^2)/(b*c^3)) + (
A*d^2*log(x))/b + (B*e^2*x^2)/(2*c)
```

sympy [**B**] time = 2.80, size = 163, normalized size = 2.12

$$\frac{Ad^2\log(x)}{b}+\frac{Be^2x^2}{2c}+x\left(\frac{Ae^2}{c}-\frac{Bbe^2}{c^2}+\frac{2Bde}{c}\right)+\frac{(-Ac+Bb)\,(be-cd)^2\log\left(x+\frac{-Abc^2d^2+\frac{b(-Ac+Bb)(be-cd)^2}{c}}{-Ab^2ce^2+2Abc^2de-2Ac^3d^2+Bb^3e^2-2Bb^2}\right.}{bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x),x)
```

```
[Out] A*d**2*log(x)/b + B*e**2*x**2/(2*c) + x*(A*e**2/c - B*b*e**2/c**2 + 2*B*d*e
/c) + (-A*c + B*b)*(b*e - c*d)**2*log(x + (-A*b*c**2*d**2 + b*(-A*c + B*b)*
(b*e - c*d)**2/c)/(-A*b**2*c*e**2 + 2*A*b*c**2*d*e - 2*A*c**3*d**2 + B*b**3
*e**2 - 2*B*b**2*c*d*e + B*b*c**2*d**2))/(b*c**3)
```

3.1140 $\int \frac{(A+Bx)(d+ex)}{bx+cx^2}\,dx$

Optimal. Leaf size=45

$$\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}+\frac{Ad\log(x)}{b}+\frac{Bex}{c}$$

```
[Out] B*e*x/c+A*d*ln(x)/b+(-A*c+B*b)*(-b*e+c*d)*ln(c*x+b)/b/c^2
```

Rubi [A] time = 0.04, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}+\frac{Ad\log(x)}{b}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (B*e*x)/c + (A*d*Log[x])/b + ((b*B - A*c)*(c*d - b*e)*Log[b + c*x])/(b*c^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{bx+cx^2}\,dx &= \int \left(\frac{Be}{c}+\frac{Ad}{bx}-\frac{(bB-Ac)(-cd+be)}{bc(b+cx)}\right)dx\\ &= \frac{Bex}{c}+\frac{Ad\log(x)}{b}+\frac{(bB-Ac)(cd-be)\log(b+cx)}{bc^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 46, normalized size = 1.02

$$\frac{-(bB-Ac)(be-cd)\log(b+cx)+Ac^2d\log(x)+bBcex}{bc^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2),x]
```

```
[Out] (b*B*c*e*x + A*c^2*d*Log[x] - (b*B - A*c)*(-(c*d) + b*e)*Log[b + c*x])/(b*c
^2)
```

fricas [A] time = 0.81, size = 57, normalized size = 1.27

$$\frac{Bbcex+Ac^2d\log(x)+\left(\left(Bbc-Ac^2\right)d-\left(Bb^2-Abc\right)e\right)\log\left(cx+b\right)}{bc^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (B*b*c*e*x + A*c^2*d*log(x) + ((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*log(c
*x + b))/(b*c^2)
```

giac [A] time = 0.15, size = 59, normalized size = 1.31

$$\frac{Bxe}{c}+\frac{Ad\log\left(|x|\right)}{b}+\frac{\left(Bbcd-Ac^{2}d-Bb^{2}e+Abce\right)\log\left(|cx+b|\right)}{bc^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] B*x*e/c + A*d*log(abs(x))/b + (B*b*c*d - A*c^2*d - B*b^2*e + A*b*c*e)*log(a
bs(c*x + b))/(b*c^2)
```

maple [A] time = 0.05, size = 68, normalized size = 1.51

$$\frac{Ad\ln(x)}{b}-\frac{Ad\ln\left(cx+b\right)}{b}+\frac{Ae\ln\left(cx+b\right)}{c}-\frac{Bbe\ln\left(cx+b\right)}{c^{2}}+\frac{Bd\ln\left(cx+b\right)}{c}+\frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] B*e*x/c+1/c*ln(c*x+b)*A*e-1/b*ln(c*x+b)*A*d-1/c^2*b*ln(c*x+b)*B*e+1/c*ln(c*
x+b)*B*d+A*d*ln(x)/b
```

maxima [A] time = 0.50, size = 57, normalized size = 1.27

$$\frac{Bex}{c}+\frac{Ad\log(x)}{b}+\frac{\left(\left(Bbc-Ac^{2}\right)d-\left(Bb^{2}-Abc\right)e\right)\log\left(cx+b\right)}{bc^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] B*e*x/c + A*d*log(x)/b + ((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*log(c*x +
b)/(b*c^2)
```

mupad [B] time = 0.18, size = 58, normalized size = 1.29

$$\frac{B\,e\,x}{c}-\ln\left(b+c\,x\right)\,\left(\frac{A\,d}{b}-\frac{c\,\left(A\,b\,e+B\,b\,d\right)-B\,b^2\,e}{b\,c^2}\right)+\frac{A\,d\,\ln(x)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2),x)
```

```
[Out] (B*e*x)/c - log(b + c*x)*((A*d)/b - (c*(A*b*e + B*b*d) - B*b^2*e)/(b*c^2))
+ (A*d*log(x))/b
```

sympy [B] time = 1.36, size = 88, normalized size = 1.96

$$\frac{Ad\log\left(x\right)}{b}+\frac{Bex}{c}-\frac{\left(-Ac+Bb\right)\left(be-cd\right)\log\left(x+\frac{Abcd+\frac{b(-Ac+Bb)(be-cd)}{c}}{-Abce+2Ac^{2}d+Bb^{2}e-Bbcd}\right)}{bc^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] A*d*log(x)/b + B*e*x/c - (-A*c + B*b)*(b*e - c*d)*log(x + (A*b*c*d + b*(-A*
c + B*b)*(b*e - c*d)/c)/(-A*b*c*e + 2*A*c**2*d + B*b**2*e - B*b*c*d))/(b*c*
*2)
```

3.1141 $\int \frac{A+Bx}{bx+cx^2} \, dx$

Optimal. Leaf size=29

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

```
[Out] A*ln(x)/b+(-A*c+B*b)*ln(c*x+b)/b/c
```

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2),x]
```

```
[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x])/(b*c)
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{bx+cx^2} \, dx &= \int \left(\frac{A}{bx}+\frac{bB-Ac}{b(b+cx)}\right) dx\\ &= \frac{A\log(x)}{b}+\frac{(bB-Ac)\log(b+cx)}{bc}\end{aligned}$$

Mathematica [A] time = 0.01, size = 29, normalized size = 1.00

$$\frac{(bB-Ac)\log(b+cx)}{bc}+\frac{A\log(x)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2),x]
```

```
[Out] (A*Log[x])/b + ((b*B - A*c)*Log[b + c*x])/(b*c)
```

fricas [A] time = 0.74, size = 28, normalized size = 0.97

$$\frac{Ac\log(x)+(Bb-Ac)\log(cx+b)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (A*c*log(x) + (B*b - A*c)*log(c*x + b))/(b*c)
```

giac [A] time = 0.18, size = 31, normalized size = 1.07

$$\frac{A\log(|x|)}{b}+\frac{(Bb-Ac)\log(|cx+b|)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] A*log(abs(x))/b + (B*b - A*c)*log(abs(c*x + b))/(b*c)
```

maple [A] time = 0.05, size = 32, normalized size = 1.10

$$\frac{A\ln(x)}{b}-\frac{A\ln\left(cx+b\right)}{b}+\frac{B\ln\left(cx+b\right)}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x),x)
```

```
[Out] -1/b*ln(c*x+b)*A+1/c*ln(c*x+b)*B+A/b*ln(x)
```

maxima [A] time = 0.47, size = 29, normalized size = 1.00

$$\frac{A\log(x)}{b}+\frac{(Bb-Ac)\log\left(cx+b\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] A*log(x)/b + (B*b - A*c)*log(c*x + b)/(b*c)
```

mupad [B] time = 1.40, size = 28, normalized size = 0.97

$$\frac{A\ \ln(x)}{b}-\ln\left(b+c\,x\right)\,\left(\frac{A}{b}-\frac{B}{c}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2),x)
```

```
[Out] (A*log(x))/b - log(b + c*x)*(A/b - B/c)
```

sympy [A] time = 0.41, size = 41, normalized size = 1.41

$$\frac{A\log\left(x\right)}{b}+\frac{(-Ac+Bb)\log\left(x+\frac{-Ab+\frac{b(-Ac+Bb)}{c}}{-2Ac+Bb}\right)}{bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x),x)
```

```
[Out] A*log(x)/b + (-A*c + B*b)*log(x + (-A*b + b*(-A*c + B*b)/c)/(-2*A*c + B*b))
/(b*c)
```

3.1142 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=68

$$\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}+\frac{A\log(x)}{bd}$$

```
[Out] A*ln(x)/b/d+(-A*c+B*b)*ln(c*x+b)/b/(-b*e+c*d)-(-A*e+B*d)*ln(e*x+d)/d/(-b*e+
c*d)
```

Rubi [A] time = 0.07, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}+\frac{A\log(x)}{bd}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)),x]
```

```
[Out] (A*Log[x])/(b*d) + ((b*B - A*c)*Log[b + c*x])/(b*(c*d - b*e)) - ((B*d - A*e
)*Log[d + e*x])/(d*(c*d - b*e))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bdx}-\frac{c(bB-Ac)}{b(-cd+be)(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)}\right)dx\\ &= \frac{A\log(x)}{bd}+\frac{(bB-Ac)\log(b+cx)}{b(cd-be)}-\frac{(Bd-Ae)\log(d+ex)}{d(cd-be)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.93

$$\frac{\log(b+cx)(Acd-bBd)+b(Bd-Ae)\log(d+ex)+A\log(x)(be-cd)}{bd(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)),x]
```

```
[Out] (A*(-(c*d) + b*e)*Log[x] + (-(b*B*d) + A*c*d)*Log[b + c*x] + b*(B*d - A*e)*
Log[d + e*x])/(b*d*(-(c*d) + b*e))
```

fricas [A] time = 3.17, size = 65, normalized size = 0.96

$$\frac{(Bb-Ac)d\log(cx+b)-(Bbd-Abe)\log(ex+d)+(Acd-Abe)\log(x)}{bcd^2-b^2de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] ((B*b - A*c)*d*log(c*x + b) - (B*b*d - A*b*e)*log(e*x + d) + (A*c*d - A*b*e
)*log(x))/(b*c*d^2 - b^2*d*e)
```

giac [A] time = 0.16, size = 85, normalized size = 1.25

$$\frac{\left(Bbc-Ac^{2}\right)\log\left(|cx+b|\right)}{bc^{2}d-b^{2}ce}-\frac{\left(Bde-Ae^{2}\right)\log\left(|xe+d|\right)}{cd^{2}e-bde^{2}}+\frac{A\log\left(|x|\right)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c - A*c^2)*log(abs(c*x + b))/(b*c^2*d - b^2*c*e) - (B*d*e - A*e^2)*log
(abs(x*e + d))/(c*d^2*e - b*d*e^2) + A*log(abs(x))/(b*d)
```

maple [A] time = 0.06, size = 94, normalized size = 1.38

$$\frac{Ac\ln\left(cx+b\right)}{\left(be-cd\right)b}-\frac{Ae\ln\left(ex+d\right)}{\left(be-cd\right)d}-\frac{B\ln\left(cx+b\right)}{be-cd}+\frac{B\ln\left(ex+d\right)}{be-cd}+\frac{A\ln(x)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x),x)
```

```
[Out] 1/(b*e-c*d)/b*ln(c*x+b)*A*c-1/(b*e-c*d)*ln(c*x+b)*B-1/(b*e-c*d)/d*ln(e*x+d)
*A*e+1/(b*e-c*d)*ln(e*x+d)*B+A*ln(x)/b/d
```

maxima [A] time = 0.53, size = 68, normalized size = 1.00

$$\frac{\left(Bb-Ac\right)\log\left(cx+b\right)}{bcd-b^{2}e}-\frac{\left(Bd-Ae\right)\log\left(ex+d\right)}{cd^{2}-bde}+\frac{A\log(x)}{bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b - A*c)*log(c*x + b)/(b*c*d - b^2*e) - (B*d - A*e)*log(e*x + d)/(c*d^2
- b*d*e) + A*log(x)/(b*d)
```

mupad [B] time = 1.67, size = 67, normalized size = 0.99

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,e-B\,d\right)}{c\,d^2-b\,d\,e}+\frac{\ln\left(b+c\,x\right)\,\left(A\,c-B\,b\right)}{b^2\,e-b\,c\,d}+\frac{A\,\ln(x)}{b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(c*d^2 - b*d*e) + (log(b + c*x)*(A*c - B*b))/(b^
2*e - b*c*d) + (A*log(x))/(b*d)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1143 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=110

$$-\frac{\log(d+ex)\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2}+\frac{Bd-Ae}{d(d+ex)(cd-be)}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}+\frac{A\log(x)}{bd^2}$$

```
[Out] (-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)+A*ln(x)/b/d^2+c*(-A*c+B*b)*ln(c*x+b)/b/(-b*
e+c*d)^2-(B*c*d^2-A*e*(-b*e+2*c*d))*ln(e*x+d)/d^2/(-b*e+c*d)^2
```

Rubi [**A**] time = 0.13, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{\log(d+ex)\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2}+\frac{Bd-Ae}{d(d+ex)(cd-be)}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}+\frac{A\log(x)}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(d*(c*d - b*e)*(d + e*x)) + (A*Log[x])/(b*d^2) + (c*(b*B - A*c)
*Log[b + c*x])/(b*(c*d - b*e)^2) - ((B*c*d^2 - A*e*(2*c*d - b*e))*Log[d + e
*x])/(d^2*(c*d - b*e)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bd^2x}+\frac{c^2(bB-Ac)}{b(-cd+be)^2(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)^2}+\frac{e\left(-Bcd^2+Ae(2cd-be\right.}{d^2(cd-be)^2(d+ex)}\right.\\ &= \frac{Bd-Ae}{d(cd-be)(d+ex)}+\frac{A\log(x)}{bd^2}+\frac{c(bB-Ac)\log(b+cx)}{b(cd-be)^2}-\frac{\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 106, normalized size = 0.96

$$\frac{\frac{cd^2(d+ex)(bB-Ac)\log(b+cx)-b(d+ex)\log(d+ex)\left(Ae(be-2cd)+Bcd^2\right)+bd(Bd-Ae)(cd-be)}{(d+ex)(cd-be)^2}+A\log(x)}{bd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)),x]
```

```
[Out] (A*Log[x] + (b*d*(B*d - A*e)*(c*d - b*e) + c*(b*B - A*c)*d^2*(d + e*x)*Log[
b + c*x] - b*(B*c*d^2 + A*e*(-2*c*d + b*e))*(d + e*x)*Log[d + e*x])/((c*d -
 b*e)^2*(d + e*x)))/(b*d^2)
```

fricas [**B**] time = 20.77, size = 260, normalized size = 2.36

$$\frac{Bbcd^3+Ab^2de^2-\left(Bb^2+Abc\right)d^2e+\left(\left(Bbc-Ac^2\right)d^2ex+\left(Bbc-Ac^2\right)d^3\right)\log\left(cx+b\right)-\left(Bbcd^3-2\,Abcd^2e+\right.}{bc^2d^5-2\,b^2cd^4e+b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] (B*b*c*d^3 + A*b^2*d*e^2 - (B*b^2 + A*b*c)*d^2*e + ((B*b*c - A*c^2)*d^2*e*x
 + (B*b*c - A*c^2)*d^3)*log(c*x + b) - (B*b*c*d^3 - 2*A*b*c*d^2*e + A*b^2*d
*e^2 + (B*b*c*d^2*e - 2*A*b*c*d*e^2 + A*b^2*e^3)*x)*log(e*x + d) + (A*c^2*d
^3 - 2*A*b*c*d^2*e + A*b^2*d*e^2 + (A*c^2*d^2*e - 2*A*b*c*d*e^2 + A*b^2*e^3
)*x)*log(x))/(b*c^2*d^5 - 2*b^2*c*d^4*e + b^3*d^3*e^2 + (b*c^2*d^4*e - 2*b^
2*c*d^3*e^2 + b^3*d^2*e^3)*x)
```

giac [B] time = 0.24, size = 323, normalized size = 2.94

$$-\frac{\left(Bbcd^2e^2 - 2\,Ac^2d^2e^2 + 2\,Abcde^3 - Ab^2e^4\right)e^{(-2)}\log\left(\frac{\left|2\,cde - \frac{2\,cd^2e}{xe+d} - be^2 + \frac{2\,bde^2}{xe+d} - |b|e^2\right|}{\left|2\,cde - \frac{2\,cd^2e}{xe+d} - be^2 + \frac{2\,bde^2}{xe+d} + |b|e^2\right|}\right)}{2\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2\right)|b|} + \frac{\left(Bcd^2 - 2\,Acde + Abe^2\right)\log\left(\left|c\right.\right.}{2\left(c^2d^4 - 2\,b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] -1/2*(B*b*c*d^2*e^2 - 2*A*c^2*d^2*e^2 + 2*A*b*c*d*e^3 - A*b^2*e^4)*e^(-2)*l
og(abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) - abs(b)
*e^2)/abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) + abs
(b)*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*abs(b)) + 1/2*(B*c*d^2 - 2
*A*c*d*e + A*b*e^2)*log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(
x*e + d) - b*d*e/(x*e + d)^2))/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2) + (B*d
*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 - b*d*e^3)
```

maple [A] time = 0.06, size = 169, normalized size = 1.54

$$-\frac{Ab\,e^2\ln\left(ex+d\right)}{\left(be-cd\right)^2d^2} - \frac{A\,c^2\ln\left(cx+b\right)}{\left(be-cd\right)^2b} + \frac{2Ace\ln\left(ex+d\right)}{\left(be-cd\right)^2d} + \frac{Bc\ln\left(cx+b\right)}{\left(be-cd\right)^2} - \frac{Bc\ln\left(ex+d\right)}{\left(be-cd\right)^2} + \frac{Ae}{\left(be-cd\right)\left(ex+d\right)d} - \frac{}{(be-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x)
```

```
[Out] -c^2/(b*e-c*d)^2/b*ln(c*x+b)*A+c/(b*e-c*d)^2*ln(c*x+b)*B-1/(b*e-c*d)^2/d^2*
ln(e*x+d)*A*b*e^2+2/(b*e-c*d)^2/d*ln(e*x+d)*A*c*e-1/(b*e-c*d)^2*ln(e*x+d)*B
*c+1/(b*e-c*d)/d/(e*x+d)*A*e-1/(b*e-c*d)/(e*x+d)*B+A*ln(x)/b/d^2
```

maxima [A] time = 0.63, size = 150, normalized size = 1.36

$$\frac{\left(Bbc - Ac^2\right)\log\left(cx+b\right)}{bc^2d^2 - 2\,b^2cde + b^3e^2} - \frac{\left(Bcd^2 - 2\,Acde + Abe^2\right)\log\left(ex+d\right)}{c^2d^4 - 2\,bcd^3e + b^2d^2e^2} + \frac{Bd - Ae}{cd^3 - bd^2e + \left(cd^2e - bde^2\right)x} + \frac{A\log\left(x\right)}{bd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c - A*c^2)*log(c*x + b)/(b*c^2*d^2 - 2*b^2*c*d*e + b^3*e^2) - (B*c*d^2
 - 2*A*c*d*e + A*b*e^2)*log(e*x + d)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)
+ (B*d - A*e)/(c*d^3 - b*d^2*e + (c*d^2*e - b*d*e^2)*x) + A*log(x)/(b*d^2)
```

mupad [B] time = 1.81, size = 141, normalized size = 1.28

$$\frac{A\,\ln\left(x\right)}{b\,d^2} - \frac{\ln\left(d+e\,x\right)\,\left(c\,\left(B\,d^2 - 2\,A\,d\,e\right) + A\,b\,e^2\right)}{b^2\,d^2\,e^2 - 2\,b\,c\,d^3\,e + c^2\,d^4} - \frac{\ln\left(b+c\,x\right)\,\left(A\,c^2 - B\,b\,c\right)}{b^3\,e^2 - 2\,b^2\,c\,d\,e + b\,c^2\,d^2} + \frac{A\,e - B\,d}{d\,\left(b\,e - c\,d\right)\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^2),x)
```

```
[Out] (A*log(x))/(b*d^2) - (log(d + e*x)*(c*(B*d^2 - 2*A*d*e) + A*b*e^2))/(c^2*d^
4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (log(b + c*x)*(A*c^2 - B*b*c))/(b^3*e^2 +
b*c^2*d^2 - 2*b^2*c*d*e) + (A*e - B*d)/(d*(b*e - c*d)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1144 $\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=171

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(bB-Ac)\log(b+cx)}{b(cd-be)^3}+\frac{Bcd^2-Ae(2cd-be)}{d^2(d+ex)(cd-be)^2}+\frac{Bd-A}{2d(d+ex)^2(}$$

```
[Out] 1/2*(-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)^2+(B*c*d^2-A*e*(-b*e+2*c*d))/d^2/(-b*e+
c*d)^2/(e*x+d)+A*ln(x)/b/d^3+c^2*(-A*c+B*b)*ln(c*x+b)/b/(-b*e+c*d)^3-(B*c^2
*d^3-A*e*(b^2*e^2-3*b*c*d*e+3*c^2*d^2))*ln(e*x+d)/d^3/(-b*e+c*d)^3
```

Rubi [A] time = 0.23, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(bB-Ac)\log(b+cx)}{b(cd-be)^3}+\frac{Bcd^2-Ae(2cd-be)}{d^2(d+ex)(cd-be)^2}+\frac{Bd-A}{2d(d+ex)^2(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*d*(c*d - b*e)*(d + e*x)^2) + (B*c*d^2 - A*e*(2*c*d - b*e))/(
d^2*(c*d - b*e)^2*(d + e*x)) + (A*Log[x])/(b*d^3) + (c^2*(b*B - A*c)*Log[b
+ c*x])/(b*(c*d - b*e)^3) - ((B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e + b^2*
e^2))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bd^3x}-\frac{c^3(bB-Ac)}{b(-cd+be)^3(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)^3}+\frac{e\left(-Bcd^2+Ae(2cd-be)\right)}{d^2(cd-be)^2(d+ex)^2}\right.\\ &= \frac{Bd-Ae}{2d(cd-be)(d+ex)^2}+\frac{Bcd^2-Ae(2cd-be)}{d^2(cd-be)^2(d+ex)}+\frac{A\log(x)}{bd^3}+\frac{c^2(bB-Ac)\log(b+cx)}{b(cd-be)^3}\end{aligned}$$

Mathematica [A] time = 0.20, size = 169, normalized size = 0.99

$$-\frac{\log(d+ex)\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3(cd-be)^3}+\frac{c^2(Ac-bB)\log(b+cx)}{b(be-cd)^3}+\frac{Ae(be-2cd)+Bcd^2}{d^2(d+ex)(cd-be)^2}+\frac{Bd-A}{2d(d+ex)^2(}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*d*(c*d - b*e)*(d + e*x)^2) + (B*c*d^2 + A*e*(-2*c*d + b*e))/
(d^2*(c*d - b*e)^2*(d + e*x)) + (A*Log[x])/(b*d^3) + (c^2*(-(b*B) + A*c)*Lo
g[b + c*x])/(b*(-(c*d) + b*e)^3) - ((B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
 + b^2*e^2))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

fricas [B] time = 76.91, size = 644, normalized size = 3.77

$$\frac{3\,Bbc^2d^5 - 3\,Ab^3d^2e^3 - \left(4\,Bb^2c + 5\,Abc^2\right)d^4e + \left(Bb^3 + 8\,Ab^2c\right)d^3e^2 + 2\left(Bbc^2d^4e + 3\,Ab^2cd^2e^3 - Ab^3de^4 - \left(B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*b*c^2*d^5 - 3*A*b^3*d^2*e^3 - (4*B*b^2*c + 5*A*b*c^2)*d^4*e + (B*b
^3 + 8*A*b^2*c)*d^3*e^2 + 2*(B*b*c^2*d^4*e + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^
4 - (B*b^2*c + 2*A*b*c^2)*d^3*e^2)*x + 2*((B*b*c^2 - A*c^3)*d^3*e^2*x^2 + 2
*(B*b*c^2 - A*c^3)*d^4*e*x + (B*b*c^2 - A*c^3)*d^5)*log(c*x + b) - 2*(B*b*c
^2*d^5 - 3*A*b*c^2*d^4*e + 3*A*b^2*c*d^3*e^2 - A*b^3*d^2*e^3 + (B*b*c^2*d^3
*e^2 - 3*A*b*c^2*d^2*e^3 + 3*A*b^2*c*d*e^4 - A*b^3*e^5)*x^2 + 2*(B*b*c^2*d^
4*e - 3*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^4)*x)*log(e*x + d)
+ 2*(A*c^3*d^5 - 3*A*b*c^2*d^4*e + 3*A*b^2*c*d^3*e^2 - A*b^3*d^2*e^3 + (A*c
^3*d^3*e^2 - 3*A*b*c^2*d^2*e^3 + 3*A*b^2*c*d*e^4 - A*b^3*e^5)*x^2 + 2*(A*c^
3*d^4*e - 3*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 - A*b^3*d*e^4)*x)*log(x))/(
b*c^3*d^8 - 3*b^2*c^2*d^7*e + 3*b^3*c*d^6*e^2 - b^4*d^5*e^3 + (b*c^3*d^6*e^
2 - 3*b^2*c^2*d^5*e^3 + 3*b^3*c*d^4*e^4 - b^4*d^3*e^5)*x^2 + 2*(b*c^3*d^7*e
 - 3*b^2*c^2*d^6*e^2 + 3*b^3*c*d^5*e^3 - b^4*d^4*e^4)*x)
```

giac [A] time = 0.16, size = 308, normalized size = 1.80

$$\frac{\left(Bbc^3 - Ac^4\right)\log\left(|cx + b|\right)}{bc^4d^3 - 3\,b^2c^3d^2e + 3\,b^3c^2de^2 - b^4ce^3} - \frac{\left(Bc^2d^3e - 3\,Ac^2d^2e^2 + 3\,Abcde^3 - Ab^2e^4\right)\log\left(|xe + d|\right)}{c^3d^6e - 3\,bc^2d^5e^2 + 3\,b^2cd^4e^3 - b^3d^3e^4} + \frac{A\log\left(|x|\right)}{bd^3} + \frac{3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c^3 - A*c^4)*log(abs(c*x + b))/(b*c^4*d^3 - 3*b^2*c^3*d^2*e + 3*b^3*c^
2*d*e^2 - b^4*c*e^3) - (B*c^2*d^3*e - 3*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 - A*b
^2*e^4)*log(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 -
b^3*d^3*e^4) + A*log(abs(x))/(b*d^3) + 1/2*(3*B*c^2*d^5 - 4*B*b*c*d^4*e - 5
*A*c^2*d^4*e + B*b^2*d^3*e^2 + 8*A*b*c*d^3*e^2 - 3*A*b^2*d^2*e^3 + 2*(B*c^2
*d^4*e - B*b*c*d^3*e^2 - 2*A*c^2*d^3*e^2 + 3*A*b*c*d^2*e^3 - A*b^2*d*e^4)*x
)/((c*d - b*e)^3*(x*e + d)^2*d^3)
```

maple [A] time = 0.05, size = 275, normalized size = 1.61

$$-\frac{A\,b^2e^3\ln\left(ex + d\right)}{\left(be - cd\right)^3 d^3} + \frac{3Abc\,e^2\ln\left(ex + d\right)}{\left(be - cd\right)^3 d^2} + \frac{A\,c^3\ln\left(cx + b\right)}{\left(be - cd\right)^3 b} - \frac{3A\,c^2e\ln\left(ex + d\right)}{\left(be - cd\right)^3 d} - \frac{B\,c^2\ln\left(cx + b\right)}{\left(be - cd\right)^3} + \frac{B\,c^2\ln\left(ex + d\right.}{\left(be - cd\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x)
```

```
[Out] c^3/(b*e-c*d)^3/b*ln(c*x+b)*A-c^2/(b*e-c*d)^3*ln(c*x+b)*B+1/(b*e-c*d)^2/d^2
/(e*x+d)*A*b*e^2-2/(b*e-c*d)^2/d/(e*x+d)*A*c*e+1/(b*e-c*d)^2/(e*x+d)*B*c-1/
(b*e-c*d)^3/d^3*ln(e*x+d)*A*b^2*e^3+3/(b*e-c*d)^3/d^2*ln(e*x+d)*A*b*c*e^2-3
/(b*e-c*d)^3/d*ln(e*x+d)*A*c^2*e+1/(b*e-c*d)^3*ln(e*x+d)*B*c^2+1/2/(b*e-c*d
)/d/(e*x+d)^2*A*e-1/2/(b*e-c*d)/(e*x+d)^2*B+A*ln(x)/b/d^3
```

maxima [A] time = 0.71, size = 312, normalized size = 1.82

$$\frac{\left(Bbc^2 - Ac^3\right)\log\left(cx + b\right)}{bc^3d^3 - 3\,b^2c^2d^2e + 3\,b^3cde^2 - b^4e^3} - \frac{\left(Bc^2d^3 - 3\,Ac^2d^2e + 3\,Abcde^2 - Ab^2e^3\right)\log\left(ex + d\right)}{c^3d^6 - 3\,bc^2d^5e + 3\,b^2cd^4e^2 - b^3d^3e^3} + \frac{3\,Bcd}{2\left(c^2d^6 - 2\,bcd^5e + \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c^2 - A*c^3)*log(c*x + b)/(b*c^3*d^3 - 3*b^2*c^2*d^2*e + 3*b^3*c*d*e^2
 - b^4*e^3) - (B*c^2*d^3 - 3*A*c^2*d^2*e + 3*A*b*c*d*e^2 - A*b^2*e^3)*log(e
*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) + 1/2*(3*
B*c*d^3 + 3*A*b*d*e^2 - (B*b + 5*A*c)*d^2*e + 2*(B*c*d^2*e - 2*A*c*d*e^2 +
A*b*e^3)*x)/(c^2*d^6 - 2*b*c*d^5*e + b^2*d^4*e^2 + (c^2*d^4*e^2 - 2*b*c*d^3
*e^3 + b^2*d^2*e^4)*x^2 + 2*(c^2*d^5*e - 2*b*c*d^4*e^2 + b^2*d^3*e^3)*x) +
A*log(x)/(b*d^3)
```

mupad [B] time = 1.96, size = 284, normalized size = 1.66

$$\frac{\frac{3\,A\,b\,e^2+3\,B\,c\,d^2-5\,A\,c\,d\,e-B\,b\,d\,e}{2\,d\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}+\frac{x\,\left(B\,c\,d^2\,e-2\,A\,c\,d\,e^2+A\,b\,e^3\right)}{d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}}{d^2+2\,d\,e\,x+e^2\,x^2}-\frac{\ln\left(d+e\,x\right)\,\left(c^2\,\left(B\,d^3-3\,A\,d^2\,e\right)-A\,b^2\,e^3+3\,A\,b\,c\,d\,e^2\right)}{-b^3\,d^3\,e^3+3\,b^2\,c\,d^4\,e^2-3\,b\,c^2\,d^5\,e+c^3\,d^6}+\frac{}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^3),x)
```

```
[Out] ((3*A*b*e^2 + 3*B*c*d^2 - 5*A*c*d*e - B*b*d*e)/(2*d*(b^2*e^2 + c^2*d^2 - 2*
b*c*d*e)) + (x*(A*b*e^3 - 2*A*c*d*e^2 + B*c*d^2*e))/(d^2*(b^2*e^2 + c^2*d^2
 - 2*b*c*d*e)))/(d^2 + e^2*x^2 + 2*d*e*x) - (log(d + e*x)*(c^2*(B*d^3 - 3*A
*d^2*e) - A*b^2*e^3 + 3*A*b*c*d*e^2))/(c^3*d^6 - b^3*d^3*e^3 + 3*b^2*c*d^4*
e^2 - 3*b*c^2*d^5*e) + (log(b + c*x)*(A*c^3 - B*b*c^2))/(b^4*e^3 - b*c^3*d^
3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + (A*log(x))/(b*d^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1145 $\int \frac{A+Bx}{(d+ex)^4\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=245

$$\frac{Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)}{d^3(d+ex)(cd-be)^3}-\frac{\log(d+ex)\left(Bc^3d^4-Ae\left(-b^3e^3+4b^2cde^2-6bc^2d^2e+4c^3d^3\right)\right)}{d^4(cd-be)^4}+\frac{c^3(bB-}{b(}$$

```
[Out] 1/3*(-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)^3+1/2*(B*c*d^2-A*e*(-b*e+2*c*d))/d^2/(-
b*e+c*d)^2/(e*x+d)^2+(B*c^2*d^3-A*e*(b^2*e^2-3*b*c*d*e+3*c^2*d^2))/d^3/(-b*
e+c*d)^3/(e*x+d)+A*ln(x)/b/d^4+c^3*(-A*c+B*b)*ln(c*x+b)/b/(-b*e+c*d)^4-(B*c
^3*d^4-A*e*(-b^3*e^3+4*b^2*c*d*e^2-6*b*c^2*d^2*e+4*c^3*d^3))*ln(e*x+d)/d^4/
(-b*e+c*d)^4
```

Rubi [A] time = 0.30, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)}{d^3(d+ex)(cd-be)^3}-\frac{\log(d+ex)\left(Bc^3d^4-Ae\left(4b^2cde^2-b^3e^3-6bc^2d^2e+4c^3d^3\right)\right)}{d^4(cd-be)^4}+\frac{c^3(bB-Ac}{b(cd}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(3*d*(c*d - b*e)*(d + e*x)^3) + (B*c*d^2 - A*e*(2*c*d - b*e))/(
2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
+ b^2*e^2))/(d^3*(c*d - b*e)^3*(d + e*x)) + (A*Log[x])/(b*d^4) + (c^3*(b*B
- A*c)*Log[b + c*x])/(b*(c*d - b*e)^4) - ((B*c^3*d^4 - A*e*(4*c^3*d^3 - 6*b
*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3))*Log[d + e*x])/(d^4*(c*d - b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^4\left(bx+cx^2\right)}\,dx &= \int \left(\frac{A}{bd^4x}+\frac{c^4(bB-Ac)}{b(-cd+be)^4(b+cx)}-\frac{e(Bd-Ae)}{d(cd-be)(d+ex)^4}+\frac{e\left(-Bcd^2+Ae(2cd-be\right.}{d^2(cd-be)^2(d+ex)^3}\right.\\ &= \frac{Bd-Ae}{3d(cd-be)(d+ex)^3}+\frac{Bcd^2-Ae(2cd-be)}{2d^2(cd-be)^2(d+ex)^2}+\frac{Bc^2d^3-Ae\left(3c^2d^2-3bcde+b^2\right.}{d^3(cd-be)^3(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.34, size = 241, normalized size = 0.98

$$\frac{Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)}{d^3(d+ex)(cd-be)^3}-\frac{\log(d+ex)\left(Ae\left(b^3e^3-4b^2cde^2+6bc^2d^2e-4c^3d^3\right)+Bc^3d^4\right)}{d^4(cd-be)^4}+\frac{c^3(bB-Ac}{b(cd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*(b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(3*d*(c*d - b*e)*(d + e*x)^3) + (B*c*d^2 + A*e*(-2*c*d + b*e))/
(2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (B*c^2*d^3 - A*e*(3*c^2*d^2 - 3*b*c*d*e
 + b^2*e^2))/(d^3*(c*d - b*e)^3*(d + e*x)) + (A*Log[x])/(b*d^4) + (c^3*(b*B
 - A*c)*Log[b + c*x])/(b*(c*d - b*e)^4) - ((B*c^3*d^4 + A*e*(-4*c^3*d^3 + 6
*b*c^2*d^2*e - 4*b^2*c*d*e^2 + b^3*e^3))*Log[d + e*x])/(d^4*(c*d - b*e)^4)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.17, size = 475, normalized size = 1.94

$$\frac{\left(Bbc^{4}-Ac^{5}\right)\log\left(|cx+b|\right)}{bc^{5}d^{4}-4\,b^{2}c^{4}d^{3}e+6\,b^{3}c^{3}d^{2}e^{2}-4\,b^{4}c^{2}de^{3}+b^{5}ce^{4}}-\frac{\left(Bc^{3}d^{4}e-4\,Ac^{3}d^{3}e^{2}+6\,Abc^{2}d^{2}e^{3}-4\,Ab^{2}cde^{4}+Ab^{3}e^{5}\right)\log}{c^{4}d^{8}e-4\,bc^{3}d^{7}e^{2}+6\,b^{2}c^{2}d^{6}e^{3}-4\,b^{3}cd^{5}e^{4}+b^{4}d^{4}e^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] (B*b*c^4 - A*c^5)*log(abs(c*x + b))/(b*c^5*d^4 - 4*b^2*c^4*d^3*e + 6*b^3*c^
3*d^2*e^2 - 4*b^4*c^2*d*e^3 + b^5*c*e^4) - (B*c^3*d^4*e - 4*A*c^3*d^3*e^2 +
 6*A*b*c^2*d^2*e^3 - 4*A*b^2*c*d*e^4 + A*b^3*e^5)*log(abs(x*e + d))/(c^4*d^
8*e - 4*b*c^3*d^7*e^2 + 6*b^2*c^2*d^6*e^3 - 4*b^3*c*d^5*e^4 + b^4*d^4*e^5)
+ A*log(abs(x))/(b*d^4) + 1/6*(11*B*c^3*d^7 - 18*B*b*c^2*d^6*e - 26*A*c^3*d
^6*e + 9*B*b^2*c*d^5*e^2 + 57*A*b*c^2*d^5*e^2 - 2*B*b^3*d^4*e^3 - 42*A*b^2*
c*d^4*e^3 + 11*A*b^3*d^3*e^4 + 6*(B*c^3*d^5*e^2 - B*b*c^2*d^4*e^3 - 3*A*c^3
*d^4*e^3 + 6*A*b*c^2*d^3*e^4 - 4*A*b^2*c*d^2*e^5 + A*b^3*d*e^6)*x^2 + 3*(5*
B*c^3*d^6*e - 6*B*b*c^2*d^5*e^2 - 14*A*c^3*d^5*e^2 + B*b^2*c*d^4*e^3 + 29*A
*b*c^2*d^4*e^3 - 20*A*b^2*c*d^3*e^4 + 5*A*b^3*d^2*e^5)*x)/((c*d - b*e)^4*(x
*e + d)^3*d^4)
```

maple [A] time = 0.08, size = 415, normalized size = 1.69

$$-\frac{A\,b^{3}e^{4}\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d^{4}}+\frac{4A\,b^{2}c\,e^{3}\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d^{3}}-\frac{6Ab\,c^{2}e^{2}\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d^{2}}-\frac{A\,c^{4}\ln\left(cx+b\right)}{\left(be-cd\right)^{4}b}+\frac{4A\,c^{3}e\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d}+\frac{B\,c^{3}\ln(cx}{(be-cd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x)
```

```
[Out] -c^4/(b*e-c*d)^4/b*ln(c*x+b)*A+c^3/(b*e-c*d)^4*ln(c*x+b)*B+1/2/(b*e-c*d)^2/
d^2/(e*x+d)^2*A*b*e^2-1/(b*e-c*d)^2/d/(e*x+d)^2*A*c*e+1/2/(b*e-c*d)^2/(e*x+
d)^2*B*c+1/(b*e-c*d)^3/d^3/(e*x+d)*A*b^2*e^3-3/(b*e-c*d)^3/d^2/(e*x+d)*A*b*
c*e^2+3/(b*e-c*d)^3/d/(e*x+d)*A*c^2*e-1/(b*e-c*d)^3/(e*x+d)*B*c^2-1/(b*e-c*
d)^4/d^4*ln(e*x+d)*A*b^3*e^4+4/(b*e-c*d)^4/d^3*ln(e*x+d)*A*b^2*c*e^3-6/(b*e
-c*d)^4/d^2*ln(e*x+d)*A*b*c^2*e^2+4/(b*e-c*d)^4/d*ln(e*x+d)*A*c^3*e-1/(b*e-
c*d)^4*ln(e*x+d)*B*c^3+1/3/(b*e-c*d)/d/(e*x+d)^3*A*e-1/3/(b*e-c*d)/(e*x+d)^
3*B+A*ln(x)/b/d^4
```

maxima [B] time = 0.78, size = 553, normalized size = 2.26

$$\frac{\left(Bbc^{3}-Ac^{4}\right)\log\left(cx+b\right)}{bc^{4}d^{4}-4\,b^{2}c^{3}d^{3}e+6\,b^{3}c^{2}d^{2}e^{2}-4\,b^{4}cde^{3}+b^{5}e^{4}}-\frac{\left(Bc^{3}d^{4}-4\,Ac^{3}d^{3}e+6\,Abc^{2}d^{2}e^{2}-4\,Ab^{2}cde^{3}+Ab^{3}e^{4}\right)\log(ex}{c^{4}d^{8}-4\,bc^{3}d^{7}e+6\,b^{2}c^{2}d^{6}e^{2}-4\,b^{3}cd^{5}e^{3}+b^{4}d^{4}e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] (B*b*c^3 - A*c^4)*log(c*x + b)/(b*c^4*d^4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2
*e^2 - 4*b^4*c*d*e^3 + b^5*e^4) - (B*c^3*d^4 - 4*A*c^3*d^3*e + 6*A*b*c^2*d^
2*e^2 - 4*A*b^2*c*d*e^3 + A*b^3*e^4)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e
+ 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4) + 1/6*(11*B*c^2*d^5 -
11*A*b^2*d^2*e^3 - (7*B*b*c + 26*A*c^2)*d^4*e + (2*B*b^2 + 31*A*b*c)*d^3*e^
2 + 6*(B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*A*b*c*d*e^4 - A*b^2*e^5)*x^2 + 3
*(5*B*c^2*d^4*e + 15*A*b*c*d^2*e^3 - 5*A*b^2*d*e^4 - (B*b*c + 14*A*c^2)*d^3
*e^2)*x)/(c^3*d^9 - 3*b*c^2*d^8*e + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^
6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*c*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e
^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d^5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e -
3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^3 - b^3*d^5*e^4)*x) + A*log(x)/(b*d^4)
```

mupad [B] time = 2.25, size = 471, normalized size = 1.92

$$\frac{\frac{-2\,B\,b^2\,d\,e^2+11\,A\,b^2\,e^3+7\,B\,b\,c\,d^2\,e-31\,A\,b\,c\,d\,e^2-11\,B\,c^2\,d^3+26\,A\,c^2\,d^2\,e}{6\,d\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{x^2\,\left(A\,b^2\,e^5-3\,A\,b\,c\,d\,e^4-B\,c^2\,d^3\,e^2+3\,A\,c^2\,d^2\,e^3\right)}{d^3\,\left(b^3\,e^3-3\,b^2\,c\,d\,e^2+3\,b\,c^2\,d^2\,e-c^3\,d^3\right)}+\frac{x\,(5\,A\,b^2\,e^4+B\,b\,c\,d}{2\,d^2\,(b^3}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^4),x)
```

```
[Out] ((11*A*b^2*e^3 - 11*B*c^2*d^3 + 26*A*c^2*d^2*e - 2*B*b^2*d*e^2 - 31*A*b*c*d
*e^2 + 7*B*b*c*d^2*e)/(6*d*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e
^2)) + (x^2*(A*b^2*e^5 + 3*A*c^2*d^2*e^3 - B*c^2*d^3*e^2 - 3*A*b*c*d*e^4))/
(d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (x*(5*A*b^2*e^4
 - 5*B*c^2*d^3*e + 14*A*c^2*d^2*e^2 - 15*A*b*c*d*e^3 + B*b*c*d^2*e^2))/(2*d
^2*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)))/(d^3 + e^3*x^3 + 3
*d*e^2*x^2 + 3*d^2*e*x) - (log(b + c*x)*(A*c^4 - B*b*c^3))/(b^5*e^4 + b*c^4
*d^4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2*e^2 - 4*b^4*c*d*e^3) + (A*log(x))/(b
*d^4) - (log(d + e*x)*(A*b^3*e^4 + B*c^3*d^4 - 4*A*c^3*d^3*e + 6*A*b*c^2*d^
2*e^2 - 4*A*b^2*c*d*e^3))/(d^4*(b*e - c*d)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1146 $\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=156

$$\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}-\frac{Ad^4}{b^2x}+\frac{(cd-be)^3\log(b+cx)\,(-bc(Bd-2Ae)+2Ac^2d-3b}{b^3c^4}$$

```
[Out] -A*d^4/b^2/x+e^3*(A*c*e-2*B*b*e+4*B*c*d)*x/c^3+1/2*B*e^4*x^2/c^2+(-A*c+B*b)
*(-b*e+c*d)^4/b^2/c^4/(c*x+b)+d^3*(4*A*b*e-2*A*c*d+B*b*d)*ln(x)/b^3+(-b*e+c
*d)^3*(2*A*c^2*d-3*b^2*B*e-b*c*(-2*A*e+B*d))*ln(c*x+b)/b^3/c^4
```

Rubi [A] time = 0.23, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}+\frac{(cd-be)^3\log(b+cx)\left(-bc(Bd-2Ae)+2Ac^2d-3b^2Be\right)}{b^3c^4}+\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^4)/(b^2*x)) + (e^3*(4*B*c*d - 2*b*B*e + A*c*e)*x)/c^3 + (B*e^4*x^2)/
(2*c^2) + ((b*B - A*c)*(c*d - b*e)^4)/(b^2*c^4*(b + c*x)) + (d^3*(b*B*d - 2
*A*c*d + 4*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^3*(2*A*c^2*d - 3*b^2*B*e - b*c
*(B*d - 2*A*e))*Log[b + c*x])/(b^3*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{e^3(4Bcd-2bBe+Ace)}{c^3}+\frac{Ad^4}{b^2x^2}+\frac{d^3(bBd-2Acd+4Abe)}{b^3x}+\frac{Be^4x}{c^2}-\frac{(bB-Ac)(-}{b^2c^3(b+}\right.\\ &= -\frac{Ad^4}{b^2x}+\frac{e^3(4Bcd-2bBe+Ace)x}{c^3}+\frac{Be^4x^2}{2c^2}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}+\frac{d^3(bBd-2Acd+}{b^3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 155, normalized size = 0.99

$$\frac{d^3\log(x)(4Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^4}{b^2c^4(b+cx)}-\frac{Ad^4}{b^2x}+\frac{(be-cd)^3\log(b+cx)\,(bc(Bd-2Ae)-2Ac^2d+3b^2}{b^3c^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^4)/(b^2*x)) + (e^3*(4*B*c*d - 2*b*B*e + A*c*e)*x)/c^3 + (B*e^4*x^2)/
(2*c^2) + ((b*B - A*c)*(c*d - b*e)^4)/(b^2*c^4*(b + c*x)) + (d^3*(b*B*d - 2
*A*c*d + 4*A*b*e)*Log[x])/b^3 + ((-(c*d) + b*e)^3*(-2*A*c^2*d + 3*b^2*B*e +
 b*c*(B*d - 2*A*e))*Log[b + c*x])/(b^3*c^4)
```

fricas [B] time = 1.31, size = 517, normalized size = 3.31

$$\frac{Bb^3c^3e^4x^4 - 2\,Ab^2c^4d^4 + \left(8\,Bb^3c^3de^3 - \left(3\,Bb^4c^2 - 2\,Ab^3c^3\right)e^4\right)x^3 + 2\left(4\,Bb^4c^2de^3 - \left(2\,Bb^5c - Ab^4c^2\right)e^4\right)x^2 + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*c^3*e^4*x^4 - 2*A*b^2*c^4*d^4 + (8*B*b^3*c^3*d*e^3 - (3*B*b^4*c^
2 - 2*A*b^3*c^3)*e^4)*x^3 + 2*(4*B*b^4*c^2*d*e^3 - (2*B*b^5*c - A*b^4*c^2)*
e^4)*x^2 + 2*((B*b^2*c^4 - 2*A*b*c^5)*d^4 - 4*(B*b^3*c^3 - A*b^2*c^4)*d^3*e
 + 6*(B*b^4*c^2 - A*b^3*c^3)*d^2*e^2 - 4*(B*b^5*c - A*b^4*c^2)*d*e^3 + (B*b
^6 - A*b^5*c)*e^4)*x - 2*((4*A*b*c^5*d^3*e - 6*B*b^3*c^3*d^2*e^2 + (B*b*c^5
 - 2*A*c^6)*d^4 + 4*(2*B*b^4*c^2 - A*b^3*c^3)*d*e^3 - (3*B*b^5*c - 2*A*b^4*
c^2)*e^4)*x^2 + (4*A*b^2*c^4*d^3*e - 6*B*b^4*c^2*d^2*e^2 + (B*b^2*c^4 - 2*A
*b*c^5)*d^4 + 4*(2*B*b^5*c - A*b^4*c^2)*d*e^3 - (3*B*b^6 - 2*A*b^5*c)*e^4)*
x)*log(c*x + b) + 2*((4*A*b*c^5*d^3*e + (B*b*c^5 - 2*A*c^6)*d^4)*x^2 + (4*A
*b^2*c^4*d^3*e + (B*b^2*c^4 - 2*A*b*c^5)*d^4)*x)*log(x))/(b^3*c^5*x^2 + b^4
*c^4*x)
```

giac [B] time = 0.16, size = 315, normalized size = 2.02

$$\frac{\left(Bbd^4 - 2\,Acd^4 + 4\,Abd^3e\right)\log\left(|x|\right)}{b^3} + \frac{Bc^2x^2e^4 + 8\,Bc^2dxe^3 - 4\,Bbcxe^4 + 2\,Ac^2xe^4}{2\,c^4} - \frac{\left(Bbc^4d^4 - 2\,Ac^5d^4 + 4\,Abc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d^4 - 2*A*c*d^4 + 4*A*b*d^3*e)*log(abs(x))/b^3 + 1/2*(B*c^2*x^2*e^4 +
8*B*c^2*d*x*e^3 - 4*B*b*c*x*e^4 + 2*A*c^2*x*e^4)/c^4 - (B*b*c^4*d^4 - 2*A*c
^5*d^4 + 4*A*b*c^4*d^3*e - 6*B*b^3*c^2*d^2*e^2 + 8*B*b^4*c*d*e^3 - 4*A*b^3*
c^2*d*e^3 - 3*B*b^5*e^4 + 2*A*b^4*c*e^4)*log(abs(c*x + b))/(b^3*c^4) - (A*b
*c^4*d^4 - (B*b*c^4*d^4 - 2*A*c^5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e
 + 6*B*b^3*c^2*d^2*e^2 - 6*A*b^2*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^
2*d*e^3 + B*b^5*e^4 - A*b^4*c*e^4)*x)/((c*x + b)*b^2*c^4*x)
```

maple [B] time = 0.06, size = 403, normalized size = 2.58

$$\frac{B\,e^4x^2}{2c^2} - \frac{A\,b^2e^4}{(cx+b)\,c^3} + \frac{4Abd\,e^3}{(cx+b)\,c^2} - \frac{2Ab\,e^4\ln\left(cx+b\right)}{c^3} + \frac{4A\,d^3e}{(cx+b)\,b} - \frac{Ac\,d^4}{(cx+b)\,b^2} + \frac{4A\,d^3e\ln(x)}{b^2} - \frac{4A\,d^3e\ln\left(cx+b\right)}{b^2} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x)
```

```
[Out] d^4/b^2*ln(x)*B+e^4/c^2*A*x-1/b^2*ln(c*x+b)*B*d^4+1/b/(c*x+b)*B*d^4-8/c^3*b
*ln(c*x+b)*B*d*e^3+4/c^2*b/(c*x+b)*A*d*e^3-4/c^3*b^2/(c*x+b)*B*d*e^3+6/c^2*
b/(c*x+b)*B*d^2*e^2+4/b/(c*x+b)*A*d^3*e-4/c/(c*x+b)*B*d^3*e+6/c^2*ln(c*x+b)
*B*d^2*e^2-1/c^3*b^2/(c*x+b)*A*e^4-c/b^2/(c*x+b)*A*d^4+1/c^4*b^3/(c*x+b)*B*
e^4+4*d^3/b^2*ln(x)*A*e-2*d^4/b^3*ln(x)*A*c-2*e^4/c^3*B*b*x+4*e^3/c^2*B*d*x
-4/b^2*ln(c*x+b)*A*d^3*e+2*c/b^3*ln(c*x+b)*A*d^4+3/c^4*b^2*ln(c*x+b)*B*e^4+
4/c^2*ln(c*x+b)*A*d*e^3-6/c/(c*x+b)*A*d^2*e^2-2/c^3*b*ln(c*x+b)*A*e^4-A*d^4
/b^2/x+1/2*B*e^4*x^2/c^2
```

maxima [B] time = 0.50, size = 310, normalized size = 1.99

$$-\frac{Abc^4d^4 - \left(\left(Bbc^4 - 2\,Ac^5\right)d^4 - 4\left(Bb^2c^3 - Abc^4\right)d^3e + 6\left(Bb^3c^2 - Ab^2c^3\right)d^2e^2 - 4\left(Bb^4c - Ab^3c^2\right)de^3 + \left(Bb^5 -\right.\right.}{b^2c^5x^2 + b^3c^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c^4*d^4 - ((B*b*c^4 - 2*A*c^5)*d^4 - 4*(B*b^2*c^3 - A*b*c^4)*d^3*e +
6*(B*b^3*c^2 - A*b^2*c^3)*d^2*e^2 - 4*(B*b^4*c - A*b^3*c^2)*d*e^3 + (B*b^5
- A*b^4*c)*e^4)*x)/(b^2*c^5*x^2 + b^3*c^4*x) + (4*A*b*d^3*e + (B*b - 2*A*c)
*d^4)*log(x)/b^3 + 1/2*(B*c*e^4*x^2 + 2*(4*B*c*d*e^3 - (2*B*b - A*c)*e^4)*x
)/c^3 - (4*A*b*c^4*d^3*e - 6*B*b^3*c^2*d^2*e^2 + (B*b*c^4 - 2*A*c^5)*d^4 +
4*(2*B*b^4*c - A*b^3*c^2)*d*e^3 - (3*B*b^5 - 2*A*b^4*c)*e^4)*log(c*x + b)/(
b^3*c^4)
```

mupad [B] time = 1.74, size = 331, normalized size = 2.12

$$\ln\left(b+c\,x\right)\left(\frac{c^2\,\left(6\,B\,b^3\,d^2\,e^2+4\,A\,b^3\,d\,e^3\right)-c\,\left(2\,A\,b^4\,e^4+8\,B\,d\,b^4\,e^3\right)+3\,B\,b^5\,e^4}{b^3\,c^4}-\frac{B\,b\,d^4+4\,A\,b\,e\,d^3}{b^3}+\frac{2\,A\,c\,d^4}{b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^2,x)
```

```
[Out] log(b + c*x)*((c^2*(4*A*b^3*d*e^3 + 6*B*b^3*d^2*e^2) - c*(2*A*b^4*e^4 + 8*B
*b^4*d*e^3) + 3*B*b^5*e^4)/(b^3*c^4) - (B*b*d^4 + 4*A*b*d^3*e)/b^3 + (2*A*c
*d^4)/b^3) - ((A*c^3*d^4)/b + (x*(2*A*c^5*d^4 - B*b^5*e^4 + A*b^4*c*e^4 - B
*b*c^4*d^4 - 4*A*b^3*c^2*d*e^3 + 4*B*b^2*c^3*d^3*e + 6*A*b^2*c^3*d^2*e^2 -
6*B*b^3*c^2*d^2*e^2 - 4*A*b*c^4*d^3*e + 4*B*b^4*c*d*e^3))/(b^2*c))/(c^4*x^2
 + b*c^3*x) + x*((A*e^4 + 4*B*d*e^3)/c^2 - (2*B*b*e^4)/c^3) + (log(x)*(b*(B
*d^4 + 4*A*d^3*e) - 2*A*c*d^4))/b^3 + (B*e^4*x^2)/(2*c^2)
```

sympy [B] time = 15.98, size = 644, normalized size = 4.13

$$\frac{Be^4x^2}{2c^2}+x\left(\frac{Ae^4}{c^2}-\frac{2Bbe^4}{c^3}+\frac{4Bde^3}{c^2}\right)+\frac{-Abc^4d^4+x\left(-Ab^4ce^4+4Ab^3c^2de^3-6Ab^2c^3d^2e^2+4Abc^4d^3e-2Ac^5d^4+B\right.}{b^3c^4x+b^2c^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**2,x)
```

```
[Out] B*e**4*x**2/(2*c**2) + x*(A*e**4/c**2 - 2*B*b*e**4/c**3 + 4*B*d*e**3/c**2)
+ (-A*b*c**4*d**4 + x*(-A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 6*A*b**2*c**
3*d**2*e**2 + 4*A*b*c**4*d**3*e - 2*A*c**5*d**4 + B*b**5*e**4 - 4*B*b**4*c*
d*e**3 + 6*B*b**3*c**2*d**2*e**2 - 4*B*b**2*c**3*d**3*e + B*b*c**4*d**4))/(
b**3*c**4*x + b**2*c**5*x**2) + d**3*(4*A*b*e - 2*A*c*d + B*b*d)*log(x + (-
4*A*b**2*c**3*d**3*e + 2*A*b*c**4*d**4 - B*b**2*c**3*d**4 + b*c**3*d**3*(4*
A*b*e - 2*A*c*d + B*b*d))/(-2*A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 8*A*b*
c**4*d**3*e + 4*A*c**5*d**4 + 3*B*b**5*e**4 - 8*B*b**4*c*d*e**3 + 6*B*b**3*
c**2*d**2*e**2 - 2*B*b*c**4*d**4))/b**3 + (b*e - c*d)**3*(-2*A*b*c*e - 2*A*
c**2*d + 3*B*b**2*e + B*b*c*d)*log(x + (-4*A*b**2*c**3*d**3*e + 2*A*b*c**4*
d**4 - B*b**2*c**3*d**4 + b*(b*e - c*d)**3*(-2*A*b*c*e - 2*A*c**2*d + 3*B*b
**2*e + B*b*c*d)/c)/(-2*A*b**4*c*e**4 + 4*A*b**3*c**2*d*e**3 - 8*A*b*c**4*d
**3*e + 4*A*c**5*d**4 + 3*B*b**5*e**4 - 8*B*b**4*c*d*e**3 + 6*B*b**3*c**2*d
**2*e**2 - 2*B*b*c**4*d**4))/(b**3*c**4)
```

3.1147 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=128

$$\frac{d^2 \log(x)(3Abe - 2Acd + bBd)}{b^3}+\frac{(bB - Ac)(cd - be)^3}{b^2c^3(b + cx)}-\frac{Ad^3}{b^2x}+\frac{(cd - be)^2 \log(b + cx) \left(-bc(Bd - Ae) + 2Ac^2d - 2\right.}{b^3c^3}$$

```
[Out] -A*d^3/b^2/x+B*e^3*x/c^2+(-A*c+B*b)*(-b*e+c*d)^3/b^2/c^3/(c*x+b)+d^2*(3*A*b
*e-2*A*c*d+B*b*d)*ln(x)/b^3+(-b*e+c*d)^2*(2*A*c^2*d-2*b^2*B*e-b*c*(-A*e+B*d
))*ln(c*x+b)/b^3/c^3
```

Rubi [A] time = 0.16, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB - Ac)(cd - be)^3}{b^2c^3(b + cx)}+\frac{(cd - be)^2 \log(b + cx) \left(-bc(Bd - Ae) + 2Ac^2d - 2b^2Be\right)}{b^3c^3}+\frac{d^2 \log(x)(3Abe - 2Acd + bBd)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^3)/(b^2*x)) + (B*e^3*x)/c^2 + ((b*B - A*c)*(c*d - b*e)^3)/(b^2*c^3*(
b + c*x)) + (d^2*(b*B*d - 2*A*c*d + 3*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^2*(
2*A*c^2*d - 2*b^2*B*e - b*c*(B*d - A*e))*Log[b + c*x])/(b^3*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A + Bx)(d + ex)^3}{\left(bx + cx^2\right)^2} \, dx &= \int \left(\frac{Be^3}{c^2}+\frac{Ad^3}{b^2x^2}+\frac{d^2(bBd - 2Acd + 3Abe)}{b^3x}+\frac{(bB - Ac)(-cd + be)^3}{b^2c^2(b + cx)^2}+\frac{(cd - be)^2 \left(2\right.}{}\right.\\ &= -\frac{Ad^3}{b^2x}+\frac{Be^3x}{c^2}+\frac{(bB - Ac)(cd - be)^3}{b^2c^3(b + cx)}+\frac{d^2(bBd - 2Acd + 3Abe) \log(x)}{b^3}+\frac{(cd - be)}{}\end{aligned}$$

Mathematica [A] time = 0.07, size = 128, normalized size = 1.00

$$\frac{d^2 \log(x)(3Abe - 2Acd + bBd)}{b^3}-\frac{(bB - Ac)(be - cd)^3}{b^2c^3(b + cx)}-\frac{Ad^3}{b^2x}+\frac{(cd - be)^2 \log(b + cx) \left(Abce + 2Ac^2d - 2b^2Be - b\right.}{b^3c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^3)/(b^2*x)) + (B*e^3*x)/c^2 - ((b*B - A*c)*(-(c*d) + b*e)^3)/(b^2*c^
3*(b + c*x)) + (d^2*(b*B*d - 2*A*c*d + 3*A*b*e)*Log[x])/b^3 + ((c*d - b*e)^
2*(-(b*B*c*d) + 2*A*c^2*d - 2*b^2*B*e + A*b*c*e)*Log[b + c*x])/(b^3*c^3)
```

fricas [B] time = 1.24, size = 362, normalized size = 2.83

$$\frac{Bb^3c^2e^3x^3 + Bb^4ce^3x^2 - Ab^2c^3d^3 + \left(\left(Bb^2c^3 - 2\,Abc^4\right)d^3 - 3\left(Bb^3c^2 - Ab^2c^3\right)d^2e + 3\left(Bb^4c - Ab^3c^2\right)de^2 - \left(Bb^5 - \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] (B*b^3*c^2*e^3*x^3 + B*b^4*c*e^3*x^2 - A*b^2*c^3*d^3 + ((B*b^2*c^3 - 2*A*b*
c^4)*d^3 - 3*(B*b^3*c^2 - A*b^2*c^3)*d^2*e + 3*(B*b^4*c - A*b^3*c^2)*d*e^2
- (B*b^5 - A*b^4*c)*e^3)*x - ((3*A*b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 + (B*b*c
^4 - 2*A*c^5)*d^3 + (2*B*b^4*c - A*b^3*c^2)*e^3)*x^2 + (3*A*b^2*c^3*d^2*e -
 3*B*b^4*c*d*e^2 + (B*b^2*c^3 - 2*A*b*c^4)*d^3 + (2*B*b^5 - A*b^4*c)*e^3)*x
)*log(c*x + b) + ((3*A*b*c^4*d^2*e + (B*b*c^4 - 2*A*c^5)*d^3)*x^2 + (3*A*b^
2*c^3*d^2*e + (B*b^2*c^3 - 2*A*b*c^4)*d^3)*x)*log(x))/(b^3*c^4*x^2 + b^4*c^
3*x)
```

giac [A] time = 0.19, size = 229, normalized size = 1.79

$$\frac{Bxe^3}{c^2} + \frac{\left(Bbd^3 - 2\,Acd^3 + 3\,Abd^2e\right)\log\left(|x|\right)}{b^3} - \frac{\left(Bbc^3d^3 - 2\,Ac^4d^3 + 3\,Abc^3d^2e - 3\,Bb^3cde^2 + 2\,Bb^4e^3 - Ab^3ce^3\right)\log}{b^3c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] B*x*e^3/c^2 + (B*b*d^3 - 2*A*c*d^3 + 3*A*b*d^2*e)*log(abs(x))/b^3 - (B*b*c^
3*d^3 - 2*A*c^4*d^3 + 3*A*b*c^3*d^2*e - 3*B*b^3*c*d*e^2 + 2*B*b^4*e^3 - A*b
^3*c*e^3)*log(abs(c*x + b))/(b^3*c^3) - (A*b*c^2*d^3 - (B*b*c^3*d^3 - 2*A*c
^4*d^3 - 3*B*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^
2*d*e^2 - B*b^4*e^3 + A*b^3*c*e^3)*x/c)/((c*x + b)*b^2*c^2*x)
```

maple [B] time = 0.06, size = 286, normalized size = 2.23

$$\frac{Ab\,e^3}{(cx+b)\,c^2} + \frac{3A\,d^2e}{(cx+b)\,b} - \frac{Ac\,d^3}{(cx+b)\,b^2} + \frac{3A\,d^2e\ln(x)}{b^2} - \frac{3A\,d^2e\ln(cx+b)}{b^2} - \frac{2Ac\,d^3\ln(x)}{b^3} + \frac{2Ac\,d^3\ln(cx+b)}{b^3} - \frac{3Ad\,e^2}{(cx+b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x)
```

```
[Out] B*e^3*x/c^2+1/c^2*ln(c*x+b)*A*e^3-3/b^2*ln(c*x+b)*A*d^2*e+2*c/b^3*ln(c*x+b)
*A*d^3-2/c^3*b*ln(c*x+b)*B*e^3+3/c^2*ln(c*x+b)*B*d*e^2-1/b^2*ln(c*x+b)*B*d^
3+b/c^2/(c*x+b)*A*e^3-3/c/(c*x+b)*A*d*e^2+3/b/(c*x+b)*A*d^2*e-1/b^2*c/(c*x+
b)*A*d^3-b^2/c^3/(c*x+b)*B*e^3+3*b/c^2/(c*x+b)*B*d*e^2-3/c/(c*x+b)*B*d^2*e+
1/b/(c*x+b)*B*d^3-A*d^3/b^2/x+3*d^2/b^2*ln(x)*A*e-2*d^3/b^3*ln(x)*A*c+d^3/b
^2*ln(x)*B
```

maxima [A] time = 0.51, size = 225, normalized size = 1.76

$$\frac{Be^3x}{c^2} - \frac{Abc^3d^3 - \left(\left(Bbc^3 - 2\,Ac^4\right)d^3 - 3\left(Bb^2c^2 - Abc^3\right)d^2e + 3\left(Bb^3c - Ab^2c^2\right)de^2 - \left(Bb^4 - Ab^3c\right)e^3\right)x}{b^2c^4x^2 + b^3c^3x} + \frac{\left(3\,Abd^2e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/c^2 - (A*b*c^3*d^3 - ((B*b*c^3 - 2*A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*
c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*x)/(b^2
*c^4*x^2 + b^3*c^3*x) + (3*A*b*d^2*e + (B*b - 2*A*c)*d^3)*log(x)/b^3 - (3*A
*b*c^3*d^2*e - 3*B*b^3*c*d*e^2 + (B*b*c^3 - 2*A*c^4)*d^3 + (2*B*b^4 - A*b^3
*c)*e^3)*log(c*x + b)/(b^3*c^3)
```

mupad [B] time = 1.59, size = 212, normalized size = 1.66

$$\frac{\ln(x)\,\left(b\,\left(B\,d^3+3\,A\,e\,d^2\right)-2\,A\,c\,d^3\right)}{b^3}-\frac{\frac{x\,\left(B\,b^4\,e^3-3\,B\,b^3\,c\,d\,e^2-A\,b^3\,c\,e^3+3\,B\,b^2\,c^2\,d^2\,e+3\,A\,b^2\,c^2\,d\,e^2-B\,b\,c^3\,d^3-3\,A\,b\,c^3\,d^2\,e+2\,A\,c^4\,d^3\right)}{b^2\,c}}{c^3\,x^2+b\,c^2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^2,x)
```

```
[Out] (log(x)*(b*(B*d^3 + 3*A*d^2*e) - 2*A*c*d^3))/b^3 - ((x*(2*A*c^4*d^3 + B*b^4
*e^3 - A*b^3*c*e^3 - B*b*c^3*d^3 + 3*A*b^2*c^2*d*e^2 + 3*B*b^2*c^2*d^2*e -
3*A*b*c^3*d^2*e - 3*B*b^3*c*d*e^2))/(b^2*c) + (A*c^2*d^3)/b)/(c^3*x^2 + b*c
^2*x) + (B*e^3*x)/c^2 + (log(b + c*x)*(b*e - c*d)^2*(2*A*c^2*d - 2*B*b^2*e
+ A*b*c*e - B*b*c*d))/(b^3*c^3)
```

sympy [B] time = 9.38, size = 502, normalized size = 3.92

$$\frac{Be^3x}{c^2}+\frac{-Abc^3d^3+x\left(Ab^3ce^3-3Ab^2c^2de^2+3Abc^3d^2e-2Ac^4d^3-Bb^4e^3+3Bb^3cde^2-3Bb^2c^2d^2e+Bbc^3d^3\right)}{b^3c^3x+b^2c^4x^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**2,x)
```

```
[Out] B*e**3*x/c**2 + (-A*b*c**3*d**3 + x*(A*b**3*c*e**3 - 3*A*b**2*c**2*d*e**2 +
 3*A*b*c**3*d**2*e - 2*A*c**4*d**3 - B*b**4*e**3 + 3*B*b**3*c*d*e**2 - 3*B*
b**2*c**2*d**2*e + B*b*c**3*d**3))/(b**3*c**3*x + b**2*c**4*x**2) + d**2*(3
*A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**2*c**2*d**2*e - 2*A*b*c**3*d**3 +
 B*b**2*c**2*d**3 - b*c**2*d**2*(3*A*b*e - 2*A*c*d + B*b*d))/(-A*b**3*c*e**
3 + 6*A*b*c**3*d**2*e - 4*A*c**4*d**3 + 2*B*b**4*e**3 - 3*B*b**3*c*d*e**2 +
 2*B*b*c**3*d**3))/b**3 - (b*e - c*d)**2*(-A*b*c*e - 2*A*c**2*d + 2*B*b**2*
e + B*b*c*d)*log(x + (3*A*b**2*c**2*d**2*e - 2*A*b*c**3*d**3 + B*b**2*c**2*
d**3 + b*(b*e - c*d)**2*(-A*b*c*e - 2*A*c**2*d + 2*B*b**2*e + B*b*c*d)/c)/(
-A*b**3*c*e**3 + 6*A*b*c**3*d**2*e - 4*A*c**4*d**3 + 2*B*b**4*e**3 - 3*B*b*
*3*c*d*e**2 + 2*B*b*c**3*d**3))/(b**3*c**3)
```

3.1148 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=108

$$\frac{d\log(x)(2Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}-\frac{Ad^2}{b^2x}-\frac{(cd-be)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{b^3c^2}$$

```
[Out] -A*d^2/b^2/x+(-A*c+B*b)*(-b*e+c*d)^2/b^2/c^2/(c*x+b)+d*(2*A*b*e-2*A*c*d+B*b
*d)*ln(x)/b^3-(-b*e+c*d)*(-2*A*c^2*d+B*b^2*e+B*b*c*d)*ln(c*x+b)/b^3/c^2
```

Rubi [**A**] time = 0.12, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}-\frac{(cd-be)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{b^3c^2}+\frac{d\log(x)(2Abe-2Acd+bBd)}{b^3}-\frac{Ad^2}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d^2)/(b^2*x)) + ((b*B - A*c)*(c*d - b*e)^2)/(b^2*c^2*(b + c*x)) + (d*(
b*B*d - 2*A*c*d + 2*A*b*e)*Log[x])/b^3 - ((c*d - b*e)*(b*B*c*d - 2*A*c^2*d
+ b^2*B*e)*Log[b + c*x])/(b^3*c^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^2}\,dx=\int \Bigg(\frac{Ad^2}{b^2x^2}+\frac{d(bBd-2Acd+2Abe)}{b^3x}-\frac{(bB-Ac)(-cd+be)^2}{b^2c(b+cx)^2}+\frac{(-cd+be)\,(bBcd-2Ac}{b^3c(b+cx)}$$

$$=-\frac{Ad^2}{b^2x}+\frac{(bB-Ac)(cd-be)^2}{b^2c^2(b+cx)}+\frac{d(bBd-2Acd+2Abe)\log(x)}{b^3}-\frac{(cd-be)\,(bBcd-2A}{b}$$

Mathematica [**A**] time = 0.11, size = 101, normalized size = 0.94

$$\frac{\frac{(be-cd)\log(b+cx)\left(-2Ac^2d+b^2Be+bBcd\right)}{c^2}+\frac{b(bB-Ac)(cd-be)^2}{c^2(b+cx)}+d\log(x)(2Abe-2Acd+bBd)-\frac{Abd^2}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((A*b*d^2)/x) + (b*(b*B - A*c)*(c*d - b*e)^2)/(c^2*(b + c*x)) + d*(b*B*d
- 2*A*c*d + 2*A*b*e)*Log[x] + ((-(c*d) + b*e)*(b*B*c*d - 2*A*c^2*d + b^2*B*
e)*Log[b + c*x])/c^2)/b^3
```

fricas [**B**] time = 0.94, size = 258, normalized size = 2.39

$$-\frac{Ab^2c^2d^2-\left(\left(Bb^2c^2-2\,Abc^3\right)d^2-2\left(Bb^3c-Ab^2c^2\right)de+\left(Bb^4-Ab^3c\right)e^2\right)x+\Big(\Big(2\,Abc^3de-Bb^3ce^2+\Big(Bbc^3-2\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^2*d^2 - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*b^3*c - A*b^2*c^2)*d*
e + (B*b^4 - A*b^3*c)*e^2)*x + ((2*A*b*c^3*d*e - B*b^3*c*e^2 + (B*b*c^3 - 2
*A*c^4)*d^2)*x^2 + (2*A*b^2*c^2*d*e - B*b^4*e^2 + (B*b^2*c^2 - 2*A*b*c^3)*d
^2)*x)*log(c*x + b) - ((2*A*b*c^3*d*e + (B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (2*A
*b^2*c^2*d*e + (B*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*log(x))/(b^3*c^3*x^2 + b^4*c
^2*x)
```

giac [**A**] time = 0.15, size = 167, normalized size = 1.55

$$\frac{\left(Bbd^2 - 2\,Acd^2 + 2\,Abde\right)\log\left(|x|\right)}{b^3} - \frac{\left(Bbc^2d^2 - 2\,Ac^3d^2 + 2\,Abc^2de - Bb^3e^2\right)\log\left(|cx+b|\right)}{b^3c^2} - \frac{Abc^2d^2 - \left(Bbc^2d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d^2 - 2*A*c*d^2 + 2*A*b*d*e)*log(abs(x))/b^3 - (B*b*c^2*d^2 - 2*A*c^3*
d^2 + 2*A*b*c^2*d*e - B*b^3*e^2)*log(abs(c*x + b))/(b^3*c^2) - (A*b*c^2*d^2
 - (B*b*c^2*d^2 - 2*A*c^3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 -
 A*b^2*c*e^2)*x)/((c*x + b)*b^2*c^2*x)
```

maple [**A**] time = 0.05, size = 199, normalized size = 1.84

$$\frac{2Ade}{(cx+b)\,b} - \frac{Ac\,d^2}{(cx+b)\,b^2} + \frac{2Ade\ln(x)}{b^2} - \frac{2Ade\ln(cx+b)}{b^2} - \frac{2Ac\,d^2\ln(x)}{b^3} + \frac{2Ac\,d^2\ln(cx+b)}{b^3} - \frac{A\,e^2}{(cx+b)\,c} + \frac{Bb\,e^2}{(cx+b)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x)
```

```
[Out] -2/b^2*ln(c*x+b)*A*d*e+2/b^3*c*ln(c*x+b)*A*d^2+1/c^2*ln(c*x+b)*B*e^2-1/b^2*
ln(c*x+b)*B*d^2-1/c/(c*x+b)*A*e^2+2/b/(c*x+b)*A*d*e-c/b^2/(c*x+b)*A*d^2+1/c
^2*b/(c*x+b)*B*e^2-2/c/(c*x+b)*B*d*e+1/b/(c*x+b)*B*d^2-A*d^2/b^2/x+2*d/b^2*
ln(x)*A*e-2*d^2/b^3*ln(x)*A*c+d^2/b^2*ln(x)*B
```

maxima [**A**] time = 0.47, size = 165, normalized size = 1.53

$$-\frac{Abc^2d^2 - \left(\left(Bbc^2 - 2\,Ac^3\right)d^2 - 2\left(Bb^2c - Abc^2\right)de + \left(Bb^3 - Ab^2c\right)e^2\right)x}{b^2c^3x^2 + b^3c^2x} + \frac{\left(2\,Abde + (Bb - 2\,Ac)d^2\right)\log(x)}{b^3} - \frac{(2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c^2*d^2 - ((B*b*c^2 - 2*A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b
^3 - A*b^2*c)*e^2)*x)/(b^2*c^3*x^2 + b^3*c^2*x) + (2*A*b*d*e + (B*b - 2*A*c
)*d^2)*log(x)/b^3 - (2*A*b*c^2*d*e - B*b^3*e^2 + (B*b*c^2 - 2*A*c^3)*d^2)*l
og(c*x + b)/(b^3*c^2)
```

mupad [**B**] time = 0.27, size = 154, normalized size = 1.43

$$\frac{\ln(x)\,\left(b\,\left(B\,d^2 + 2\,A\,e\,d\right) - 2\,A\,c\,d^2\right)}{b^3} - \frac{\frac{A\,d^2}{b} + \frac{x\,\left(-B\,b^3\,e^2+2\,B\,b^2\,c\,d\,e+A\,b^2\,c\,e^2-B\,b\,c^2\,d^2-2\,A\,b\,c^2\,d\,e+2\,A\,c^3\,d^2\right)}{b^2\,c^2}}{c\,x^2 + b\,x} + \frac{\ln\left(b + c\,x\right)\,(b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^2,x)
```

```
[Out] (log(x)*(b*(B*d^2 + 2*A*d*e) - 2*A*c*d^2))/b^3 - ((A*d^2)/b + (x*(2*A*c^3*d
^2 - B*b^3*e^2 + A*b^2*c*e^2 - B*b*c^2*d^2 - 2*A*b*c^2*d*e + 2*B*b^2*c*d*e)
)/(b^2*c^2))/(b*x + c*x^2) + (log(b + c*x)*(b*e - c*d)*(B*b^2*e - 2*A*c^2*d
 + B*b*c*d))/(b^3*c^2)
```

sympy [B] time = 3.86, size = 367, normalized size = 3.40

$$\frac{-Abc^2d^2 + x\left(-Ab^2ce^2 + 2Abc^2de - 2Ac^3d^2 + Bb^3e^2 - 2Bb^2cde + Bbc^2d^2\right)}{b^3c^2x + b^2c^3x^2} + \frac{d\left(2Abe - 2Acd + Bbd\right)\log\left(x + \frac{-2A}{}\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b*c**2*d**2 + x*(-A*b**2*c*e**2 + 2*A*b*c**2*d*e - 2*A*c**3*d**2 + B*b*
*3*e**2 - 2*B*b**2*c*d*e + B*b*c**2*d**2))/(b**3*c**2*x + b**2*c**3*x**2) +
 d*(2*A*b*e - 2*A*c*d + B*b*d)*log(x + (-2*A*b**2*c*d*e + 2*A*b*c**2*d**2 -
 B*b**2*c*d**2 + b*c*d*(2*A*b*e - 2*A*c*d + B*b*d))/(-4*A*b*c**2*d*e + 4*A*
c**3*d**2 + B*b**3*e**2 - 2*B*b*c**2*d**2))/b**3 + (b*e - c*d)*(-2*A*c**2*d
 + B*b**2*e + B*b*c*d)*log(x + (-2*A*b**2*c*d*e + 2*A*b*c**2*d**2 - B*b**2*
c*d**2 + b*(b*e - c*d)*(-2*A*c**2*d + B*b**2*e + B*b*c*d)/c)/(-4*A*b*c**2*d
*e + 4*A*c**3*d**2 + B*b**3*e**2 - 2*B*b*c**2*d**2))/(b**3*c**2)
```

3.1149 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^2} dx$

Optimal. Leaf size=86

$$\frac{\log(x)(Abe-2Acd+bBd)}{b^3}-\frac{\log(b+cx)(Abe-2Acd+bBd)}{b^3}+\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}-\frac{Ad}{b^2x}$$

```
[Out] -A*d/b^2/x+(-A*c+B*b)*(-b*e+c*d)/b^2/c/(c*x+b)+(A*b*e-2*A*c*d+B*b*d)*ln(x)/
b^3-(A*b*e-2*A*c*d+B*b*d)*ln(c*x+b)/b^3
```

Rubi [A] time = 0.08, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}+\frac{\log(x)(Abe-2Acd+bBd)}{b^3}-\frac{\log(b+cx)(Abe-2Acd+bBd)}{b^3}-\frac{Ad}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -((A*d)/(b^2*x)) + ((b*B - A*c)*(c*d - b*e))/(b^2*c*(b + c*x)) + ((b*B*d -
2*A*c*d + A*b*e)*Log[x])/b^3 - ((b*B*d - 2*A*c*d + A*b*e)*Log[b + c*x])/b^3
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^2} dx &= \int \left(\frac{Ad}{b^2x^2}+\frac{bBd-2Acd+Abe}{b^3x}+\frac{(bB-Ac)(-cd+be)}{b^2(b+cx)^2}-\frac{c(bBd-2Acd+Abe)}{b^3(b+cx)}\right) dx\\ &= -\frac{Ad}{b^2x}+\frac{(bB-Ac)(cd-be)}{b^2c(b+cx)}+\frac{(bBd-2Acd+Abe)\log(x)}{b^3}-\frac{(bBd-2Acd+Abe)\,\mathrm{lo}}{b^3}\end{aligned}$$

Mathematica [A] time = 0.10, size = 80, normalized size = 0.93

$$-\frac{\frac{b(bB-Ac)(be-cd)}{c(b+cx)}-\log(x)(Abe-2Acd+bBd)+\log(b+cx)(Abe-2Acd+bBd)+\frac{Abd}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((A*b*d)/x + (b*(b*B - A*c)*(-(c*d) + b*e))/(c*(b + c*x)) - (b*B*d - 2*A*
c*d + A*b*e)*Log[x] + (b*B*d - 2*A*c*d + A*b*e)*Log[b + c*x])/b^3)
```

fricas [B] time = 0.95, size = 184, normalized size = 2.14

$$-\frac{Ab^2cd-\left(\left(Bb^2c-2\,Abc^2\right)d-\left(Bb^3-Ab^2c\right)e\right)x+\left(\left(Abc^2e+\left(Bbc^2-2\,Ac^3\right)d\right)x^2+\left(Ab^2ce+\left(Bb^2c-2\,Abc^2\right)\right.\right.}{b^3c^2x^2+b^4cx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c*d - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x + ((A*b*c^2
*e + (B*b*c^2 - 2*A*c^3)*d)*x^2 + (A*b^2*c*e + (B*b^2*c - 2*A*b*c^2)*d)*x)*
log(c*x + b) - ((A*b*c^2*e + (B*b*c^2 - 2*A*c^3)*d)*x^2 + (A*b^2*c*e + (B*b
^2*c - 2*A*b*c^2)*d)*x)*log(x))/(b^3*c^2*x^2 + b^4*c*x)
```

giac [A] time = 0.16, size = 112, normalized size = 1.30

$$\frac{(Bbd-2\,Acd+Abe)\log\left(|x|\right)}{b^3}-\frac{\left(Bbcd-2\,Ac^2d+Abce\right)\log\left(|cx+b|\right)}{b^3c}+\frac{Bbcdx-2\,Ac^2dx-Bb^2xe+Abcxe-Abcd}{\left(cx^2+bx\right)b^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b*d - 2*A*c*d + A*b*e)*log(abs(x))/b^3 - (B*b*c*d - 2*A*c^2*d + A*b*c*e)
*log(abs(c*x + b))/(b^3*c) + (B*b*c*d*x - 2*A*c^2*d*x - B*b^2*x*e + A*b*c*x
*e - A*b*c*d)/((c*x^2 + b*x)*b^2*c)
```

maple [A] time = 0.06, size = 133, normalized size = 1.55

$$\frac{Ae}{(cx+b)\,b}-\frac{Acd}{(cx+b)\,b^2}+\frac{Ae\ln(x)}{b^2}-\frac{Ae\ln\left(cx+b\right)}{b^2}-\frac{2Acd\ln(x)}{b^3}+\frac{2Acd\ln\left(cx+b\right)}{b^3}+\frac{Bd}{(cx+b)\,b}+\frac{Bd\ln(x)}{b^2}-\frac{Bd\ln\left(cx\right.}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] 1/b/(c*x+b)*A*e-1/b^2*c/(c*x+b)*A*d-1/c/(c*x+b)*B*e+1/b/(c*x+b)*B*d-1/b^2*l
n(c*x+b)*A*e+2/b^3*ln(c*x+b)*A*c*d-1/b^2*ln(c*x+b)*B*d+1/b^2*ln(x)*A*e-2/b^
3*ln(x)*A*c*d+1/b^2*ln(x)*B*d-A*d/b^2/x
```

maxima [A] time = 0.47, size = 106, normalized size = 1.23

$$-\frac{Abcd-\left(\left(Bbc-2\,Ac^2\right)d-\left(Bb^2-Abc\right)e\right)x}{b^2c^2x^2+b^3cx}-\frac{(Abe+(Bb-2\,Ac)d)\log\left(cx+b\right)}{b^3}+\frac{(Abe+(Bb-2\,Ac)d)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b*c*d - ((B*b*c - 2*A*c^2)*d - (B*b^2 - A*b*c)*e)*x)/(b^2*c^2*x^2 + b^3
*c*x) - (A*b*e + (B*b - 2*A*c)*d)*log(c*x + b)/b^3 + (A*b*e + (B*b - 2*A*c)
*d)*log(x)/b^3
```

mupad [B] time = 1.44, size = 117, normalized size = 1.36

$$-\frac{\frac{A\,d}{b}+\frac{x\,\left(2\,A\,c^2\,d+B\,b^2\,e-A\,b\,c\,e-B\,b\,c\,d\right)}{b^2\,c}}{c\,x^2+b\,x}-\frac{2\,\mathrm{atanh}\left(\frac{\left(b\,\left(A\,e+B\,d\right)-2\,A\,c\,d\right)\,\left(b+2\,c\,x\right)}{b\,\left(A\,b\,e-2\,A\,c\,d+B\,b\,d\right)}\right)\,\left(b\,\left(A\,e+B\,d\right)-2\,A\,c\,d\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^2,x)
```

```
[Out] - ((A*d)/b + (x*(2*A*c^2*d + B*b^2*e - A*b*c*e - B*b*c*d))/(b^2*c))/(b*x +
c*x^2) - (2*atanh(((b*(A*e + B*d) - 2*A*c*d)*(b + 2*c*x))/(b*(A*b*e - 2*A*c
*d + B*b*d)))*(b*(A*e + B*d) - 2*A*c*d))/b^3
```

sympy [B] time = 1.22, size = 233, normalized size = 2.71

$$\frac{-Abcd+x\left(Abce-2Ac^2d-Bb^2e+Bbcd\right)}{b^3cx+b^2c^2x^2}+\frac{(Abe-2Acd+Bbd)\log\left(x+\frac{Ab^2e-2Abcd+Bb^2d-b(Abe-2Acd+Bbd)}{2Abce-4Ac^2d+2Bbcd}\right)}{b^3}-\frac{(Abe}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b*c*d + x*(A*b*c*e - 2*A*c**2*d - B*b**2*e + B*b*c*d))/(b**3*c*x + b**2
*c**2*x**2) + (A*b*e - 2*A*c*d + B*b*d)*log(x + (A*b**2*e - 2*A*b*c*d + B*b
**2*d - b*(A*b*e - 2*A*c*d + B*b*d))/(2*A*b*c*e - 4*A*c**2*d + 2*B*b*c*d))/
b**3 - (A*b*e - 2*A*c*d + B*b*d)*log(x + (A*b**2*e - 2*A*b*c*d + B*b**2*d +
 b*(A*b*e - 2*A*c*d + B*b*d))/(2*A*b*c*e - 4*A*c**2*d + 2*B*b*c*d))/b**3
```

3.1150 $\int \frac{A+Bx}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=62

$$\frac{\log(x)(bB-2Ac)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}+\frac{bB-Ac}{b^2(b+cx)}-\frac{A}{b^2x}$$

```
[Out] -A/b^2/x+(-A*c+B*b)/b^2/(c*x+b)+(-2*A*c+B*b)*ln(x)/b^3-(-2*A*c+B*b)*ln(c*x+
b)/b^3
```

Rubi [A] time = 0.05, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$\frac{bB-Ac}{b^2(b+cx)}+\frac{\log(x)(bB-2Ac)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}-\frac{A}{b^2x}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^2,x]
```

```
[Out] -(A/(b^2*x)) + (b*B - A*c)/(b^2*(b + c*x)) + ((b*B - 2*A*c)*Log[x])/b^3 - (
(b*B - 2*A*c)*Log[b + c*x])/b^3
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{A}{b^2x^2}+\frac{bB-2Ac}{b^3x}-\frac{c(bB-Ac)}{b^2(b+cx)^2}-\frac{c(bB-2Ac)}{b^3(b+cx)}\right)dx\\ &= -\frac{A}{b^2x}+\frac{bB-Ac}{b^2(b+cx)}+\frac{(bB-2Ac)\log(x)}{b^3}-\frac{(bB-2Ac)\log(b+cx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 56, normalized size = 0.90

$$\frac{\frac{b(bB-Ac)}{b+cx}+\log(x)(bB-2Ac)+(2Ac-bB)\log(b+cx)-\frac{Ab}{x}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^2,x]
```

```
[Out] (-((A*b)/x) + (b*(b*B - A*c))/(b + c*x) + (b*B - 2*A*c)*Log[x] + (-(b*B) +
2*A*c)*Log[b + c*x])/b^3
```

fricas [A] time = 0.81, size = 107, normalized size = 1.73

$$-\frac{Ab^2-\left(Bb^2-2\,Abc\right)x+\left(\left(Bbc-2\,Ac^2\right)x^2+\left(Bb^2-2\,Abc\right)x\right)\log\left(cx+b\right)-\big(\left(Bbc-2\,Ac^2\right)x^2+\left(Bb^2-2\,Abc\right)x}{b^3cx^2+b^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2 - (B*b^2 - 2*A*b*c)*x + ((B*b*c - 2*A*c^2)*x^2 + (B*b^2 - 2*A*b*c)*
x)*log(c*x + b) - ((B*b*c - 2*A*c^2)*x^2 + (B*b^2 - 2*A*b*c)*x)*log(x))/(b^
3*c*x^2 + b^4*x)
```

giac [**A**] time = 0.16, size = 71, normalized size = 1.15

$$\frac{(Bb-2\,Ac)\log\left(|x|\right)}{b^3}+\frac{Bbx-2\,Acx-Ab}{\left(cx^2+bx\right)b^2}-\frac{\left(Bbc-2\,Ac^2\right)\log\left(|cx+b|\right)}{b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (B*b - 2*A*c)*log(abs(x))/b^3 + (B*b*x - 2*A*c*x - A*b)/((c*x^2 + b*x)*b^2)
 - (B*b*c - 2*A*c^2)*log(abs(c*x + b))/(b^3*c)
```

maple [**A**] time = 0.06, size = 78, normalized size = 1.26

$$-\frac{Ac}{(cx+b)\,b^2}-\frac{2Ac\ln(x)}{b^3}+\frac{2Ac\ln\left(cx+b\right)}{b^3}+\frac{B}{(cx+b)\,b}+\frac{B\ln(x)}{b^2}-\frac{B\ln\left(cx+b\right)}{b^2}-\frac{A}{b^2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^2,x)
```

```
[Out] 2/b^3*ln(c*x+b)*A*c-1/b^2*ln(c*x+b)*B-1/b^2/(c*x+b)*A*c+1/b/(c*x+b)*B-A/b^2
/x-2/b^3*ln(x)*A*c+1/b^2*ln(x)*B
```

maxima [**A**] time = 0.64, size = 67, normalized size = 1.08

$$-\frac{Ab-(Bb-2\,Ac)x}{b^2cx^2+b^3x}-\frac{(Bb-2\,Ac)\log\left(cx+b\right)}{b^3}+\frac{(Bb-2\,Ac)\log(x)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x) - (B*b - 2*A*c)*log(c*x + b)/b
^3 + (B*b - 2*A*c)*log(x)/b^3
```

mupad [**B**] time = 1.42, size = 58, normalized size = 0.94

$$\frac{2\,\mathrm{atanh}\left(\frac{2\,c\,x}{b}+1\right)\,\left(2\,A\,c-B\,b\right)}{b^3}-\frac{\frac{A}{b}+\frac{x\,\left(2\,A\,c-B\,b\right)}{b^2}}{c\,x^2+b\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^2,x)
```

```
[Out] (2*atanh((2*c*x)/b + 1)*(2*A*c - B*b))/b^3 - (A/b + (x*(2*A*c - B*b))/b^2)/
(b*x + c*x^2)
```

sympy [**B**] time = 0.47, size = 128, normalized size = 2.06

$$\frac{-Ab+x\left(-2Ac+Bb\right)}{b^3x+b^2cx^2}+\frac{\left(-2Ac+Bb\right)\log\left(x+\frac{-2Abc+Bb^2-b(-2Ac+Bb)}{-4Ac^2+2Bbc}\right)}{b^3}-\frac{\left(-2Ac+Bb\right)\log\left(x+\frac{-2Abc+Bb^2+b(-2Ac+B}{-4Ac^2+2Bbc}\right.}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**2,x)
```

```
[Out] (-A*b + x*(-2*A*c + B*b))/(b**3*x + b**2*c*x**2) + (-2*A*c + B*b)*log(x + (
-2*A*b*c + B*b**2 - b*(-2*A*c + B*b))/(-4*A*c**2 + 2*B*b*c))/b**3 - (-2*A*c
 + B*b)*log(x + (-2*A*b*c + B*b**2 + b*(-2*A*c + B*b))/(-4*A*c**2 + 2*B*b*c
))/b**3
```

3.1151 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=147

$$\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(bB-Ac)}{b^2(b+cx)(cd-be)}-\frac{A}{b^2dx}+\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}-\frac{e^2}{}$$

```
[Out] -A/b^2/d/x+c*(-A*c+B*b)/b^2/(-b*e+c*d)/(c*x+b)+(-A*b*e-2*A*c*d+B*b*d)*ln(x)
/b^3/d^2+c*(2*A*c^2*d+2*b^2*B*e-b*c*(3*A*e+B*d))*ln(c*x+b)/b^3/(-b*e+c*d)^2
-e^2*(-A*e+B*d)*ln(e*x+d)/d^2/(-b*e+c*d)^2
```

Rubi [A] time = 0.20, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}+\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(bB-Ac)}{b^2(b+cx)(cd-be)}-\frac{A}{b^2dx}-\frac{e^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d*x)) + (c*(b*B - A*c))/(b^2*(c*d - b*e)*(b + c*x)) + ((b*B*d - 2*
A*c*d - A*b*e)*Log[x])/(b^3*d^2) + (c*(2*A*c^2*d + 2*b^2*B*e - b*c*(B*d + 3
*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^2) - (e^2*(B*d - A*e)*Log[d + e*x])/(
d^2*(c*d - b*e)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^2}\,dx&=\int \left(\frac{A}{b^2dx^2}+\frac{bBd-2Acd-Abe}{b^3d^2x}+\frac{c^2(bB-Ac)}{b^2(-cd+be)(b+cx)^2}+\frac{c^2\left(2Ac^2d+2b^2Be-\right.}{b^3(cd-be)^2(}\right.\\&=-\frac{A}{b^2dx}+\frac{c(bB-Ac)}{b^2(cd-be)(b+cx)}+\frac{(bBd-2Acd-Abe)\log(x)}{b^3d^2}+\frac{c\left(2Ac^2d+2b^2Be-\right.}{b^3}\end{aligned}$$

Mathematica [A] time = 0.16, size = 146, normalized size = 0.99

$$\frac{\log(x)(-Abe-2Acd+bBd)}{b^3d^2}+\frac{c(Ac-bB)}{b^2(b+cx)(be-cd)}-\frac{A}{b^2dx}+\frac{c\log(b+cx)\left(-bc(3Ae+Bd)+2Ac^2d+2b^2Be\right)}{b^3(cd-be)^2}+\frac{e^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d*x)) + (c*(-(b*B) + A*c))/(b^2*(-(c*d) + b*e)*(b + c*x)) + ((b*B*
d - 2*A*c*d - A*b*e)*Log[x])/(b^3*d^2) + (c*(2*A*c^2*d + 2*b^2*B*e - b*c*(B
*d + 3*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^2) + (e^2*(-(B*d) + A*e)*Log[d
+ e*x])/(d^2*(c*d - b*e)^2)
```

fricas [B] time = 67.63, size = 450, normalized size = 3.06

$$-\frac{Ab^2c^2d^3 - 2\,Ab^3cd^2e + Ab^4de^2 + (Ab^3cde^2 - (Bb^2c^2 - 2\,Abc^3)d^3 + (Bb^3c - 3\,Ab^2c^2)d^2e)x + (((Bbc^3 - 2\,Ac^4)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] -(A*b^2*c^2*d^3 - 2*A*b^3*c*d^2*e + A*b^4*d*e^2 + (A*b^3*c*d*e^2 - (B*b^2*c
^2 - 2*A*b*c^3)*d^3 + (B*b^3*c - 3*A*b^2*c^2)*d^2*e)*x + (((B*b*c^3 - 2*A*c
^4)*d^3 - (2*B*b^2*c^2 - 3*A*b*c^3)*d^2*e)*x^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d
^3 - (2*B*b^3*c - 3*A*b^2*c^2)*d^2*e)*x)*log(c*x + b) + ((B*b^3*c*d*e^2 - A
*b^3*c*e^3)*x^2 + (B*b^4*d*e^2 - A*b^4*e^3)*x)*log(e*x + d) - ((B*b^3*c*d*e
^2 - A*b^3*c*e^3 + (B*b*c^3 - 2*A*c^4)*d^3 - (2*B*b^2*c^2 - 3*A*b*c^3)*d^2*
e)*x^2 + (B*b^4*d*e^2 - A*b^4*e^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^3 - (2*B*b^3*
c - 3*A*b^2*c^2)*d^2*e)*x)*log(x))/((b^3*c^3*d^4 - 2*b^4*c^2*d^3*e + b^5*c*
d^2*e^2)*x^2 + (b^4*c^2*d^4 - 2*b^5*c*d^3*e + b^6*d^2*e^2)*x)
```

giac [A] time = 0.16, size = 268, normalized size = 1.82

$$-\frac{(Bbc^3d - 2\,Ac^4d - 2\,Bb^2c^2e + 3\,Abc^3e)\log(|cx+b|)}{b^3c^3d^2 - 2\,b^4c^2de + b^5ce^2} - \frac{(Bde^3 - Ae^4)\log(|xe+d|)}{c^2d^4e - 2\,bcd^3e^2 + b^2d^2e^3} + \frac{(Bbd - 2\,Acd - Abe)\log(|x|}{b^3d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(B*b*c^3*d - 2*A*c^4*d - 2*B*b^2*c^2*e + 3*A*b*c^3*e)*log(abs(c*x + b))/(b
^3*c^3*d^2 - 2*b^4*c^2*d*e + b^5*c*e^2) - (B*d*e^3 - A*e^4)*log(abs(x*e + d
))/(c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3) + (B*b*d - 2*A*c*d - A*b*e)*lo
g(abs(x))/(b^3*d^2) - (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 - (B*b*c
^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e + 3*A*b*c^2*d^2*e - A*b^2*c*d*e^2)*x)/
((c*d - b*e)^2*(c*x + b)*b^2*d^2*x)
```

maple [A] time = 0.06, size = 248, normalized size = 1.69

$$-\frac{3A\,c^2e\ln(cx+b)}{(be-cd)^2\,b^2} + \frac{2A\,c^3d\ln(cx+b)}{(be-cd)^2\,b^3} + \frac{A\,e^3\ln(ex+d)}{(be-cd)^2\,d^2} + \frac{2Bce\ln(cx+b)}{(be-cd)^2\,b} - \frac{B\,c^2d\ln(cx+b)}{(be-cd)^2\,b^2} - \frac{B\,e^2\ln(ex+d)}{(be-cd)^2\,d} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x)
```

```
[Out] -3*c^2/(b*e-c*d)^2/b^2*ln(c*x+b)*A*e+2*c^3/(b*e-c*d)^2/b^3*ln(c*x+b)*A*d+2*
c/(b*e-c*d)^2/b*ln(c*x+b)*B*e-c^2/(b*e-c*d)^2/b^2*ln(c*x+b)*B*d+c^2/(b*e-c*
d)/b^2/(c*x+b)*A-c/(b*e-c*d)/b/(c*x+b)*B+e^3/(b*e-c*d)^2/d^2*ln(e*x+d)*A-e^
2/(b*e-c*d)^2/d*ln(e*x+d)*B-A/b^2/d/x-1/b^2/d^2*ln(x)*A*e-2/b^3/d*ln(x)*A*c
+1/b^2/d*ln(x)*B
```

maxima [A] time = 0.71, size = 227, normalized size = 1.54

$$-\frac{((Bbc^2 - 2\,Ac^3)d - (2\,Bb^2c - 3\,Abc^2)e)\log(cx+b)}{b^3c^2d^2 - 2\,b^4cde + b^5e^2} - \frac{(Bde^2 - Ae^3)\log(ex+d)}{c^2d^4 - 2\,bcd^3e + b^2d^2e^2} - \frac{Abcd - Ab^2e - (Abce + (Bbc}{(b^2c^2d^2 - b^3cde)x^2 + (b^3cd^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^2 - 2*A*c^3)*d - (2*B*b^2*c - 3*A*b*c^2)*e)*log(c*x + b)/(b^3*c^2*
d^2 - 2*b^4*c*d*e + b^5*e^2) - (B*d*e^2 - A*e^3)*log(e*x + d)/(c^2*d^4 - 2*
b*c*d^3*e + b^2*d^2*e^2) - (A*b*c*d - A*b^2*e - (A*b*c*e + (B*b*c - 2*A*c^2
)*d)*x)/((b^2*c^2*d^2 - b^3*c*d*e)*x^2 + (b^3*c*d^2 - b^4*d*e)*x) - (A*b*e
- (B*b - 2*A*c)*d)*log(x)/(b^3*d^2)
```

mupad [B] time = 2.04, size = 201, normalized size = 1.37

$$\frac{\ln\left(b+cx\right)\left(d\left(2Ac^3-Bbc^2\right)-3Abc^2e+2Bb^2ce\right)}{b^5e^2-2b^4cde+b^3c^2d^2}-\frac{\frac{A}{bd}+\frac{x\left(Abce-2Ac^2d+Bbcd\right)}{b^2d\left(be-cd\right)}}{cx^2+bx}+\frac{\ln\left(d+ex\right)\left(Ae^3-Bde^2\right.}{b^2d^2e^2-2bcd^3e+c^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)),x)
```

```
[Out] (log(b + c*x)*(d*(2*A*c^3 - B*b*c^2) - 3*A*b*c^2*e + 2*B*b^2*c*e))/(b^5*e^2
 + b^3*c^2*d^2 - 2*b^4*c*d*e) - (A/(b*d) + (x*(A*b*c*e - 2*A*c^2*d + B*b*c*
d))/(b^2*d*(b*e - c*d)))/(b*x + c*x^2) + (log(d + e*x)*(A*e^3 - B*d*e^2))/(
c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (log(x)*(b*(A*e - B*d) + 2*A*c*d))/(
b^3*d^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1152 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=201

$$\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}+\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}-\frac{A}{b^2d^2x}+\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(cd-be)^3}+$$

```
[Out] -A/b^2/d^2/x+c^2*(-A*c+B*b)/b^2/(-b*e+c*d)^2/(c*x+b)+e^2*(-A*e+B*d)/d^2/(-b
*e+c*d)^2/(e*x+d)+(-2*A*b*e-2*A*c*d+B*b*d)*ln(x)/b^3/d^3+c^2*(2*A*c^2*d+3*b
^2*B*e-b*c*(4*A*e+B*d))*ln(c*x+b)/b^3/(-b*e+c*d)^3+e^2*(2*A*e*(-b*e+2*c*d)-
B*d*(-b*e+3*c*d))*ln(e*x+d)/d^3/(-b*e+c*d)^3
```

Rubi [A] time = 0.33, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}+\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(cd-be)^3}+\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}-\frac{A}{b^2d^2x}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^2*x)) + (c^2*(b*B - A*c))/(b^2*(c*d - b*e)^2*(b + c*x)) + (e^2*(
B*d - A*e))/(d^2*(c*d - b*e)^2*(d + e*x)) + ((b*B*d - 2*A*c*d - 2*A*b*e)*Lo
g[x])/(b^3*d^3) + (c^2*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + 4*A*e))*Log[b +
c*x])/(b^3*(c*d - b*e)^3) + (e^2*(2*A*e*(2*c*d - b*e) - B*d*(3*c*d - b*e))*
Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^2}\,dx = \int \left(\frac{A}{b^2d^2x^2}+\frac{bBd-2Acd-2Abe}{b^3d^3x}-\frac{c^3(bB-Ac)}{b^2(-cd+be)^2(b+cx)^2}+\frac{c^3\left(2Ac^2d+3b^2Be-\right.}{b^3(cd-be)^3}\right.$$

$$=-\frac{A}{b^2d^2x}+\frac{c^2(bB-Ac)}{b^2(cd-be)^2(b+cx)}+\frac{e^2(Bd-Ae)}{d^2(cd-be)^2(d+ex)}+\frac{(bBd-2Acd-2Abe)\log(}{b^3d^3}$$

Mathematica [A] time = 0.32, size = 201, normalized size = 1.00

$$\frac{\log(x)(-2Abe-2Acd+bBd)}{b^3d^3}+\frac{c^2(bB-Ac)}{b^2(b+cx)(cd-be)^2}-\frac{A}{b^2d^2x}-\frac{c^2\log(b+cx)\left(-bc(4Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^3(be-cd)^3}-$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^2*x)) + (c^2*(b*B - A*c))/(b^2*(c*d - b*e)^2*(b + c*x)) + (e^2*(
B*d - A*e))/(d^2*(c*d - b*e)^2*(d + e*x)) + ((b*B*d - 2*A*c*d - 2*A*b*e)*Lo
g[x])/(b^3*d^3) - (c^2*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + 4*A*e))*Log[b +
c*x])/(b^3*(-(c*d) + b*e)^3) - (e^2*(B*d*(3*c*d - b*e) + 2*A*e*(-2*c*d + b*
e))*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.28, size = 670, normalized size = 3.33

$$\frac{\left(2 \, B b c^{3} d^{4} e^{2} - 4 \, A c^{4} d^{4} e^{2} - 6 \, B b^{2} c^{2} d^{3} e^{3} + 8 \, A b c^{3} d^{3} e^{3} + 3 \, B b^{3} c d^{2} e^{4} - B b^{4} d e^{5} - 4 \, A b^{3} c d e^{5} + 2 \, A b^{4} e^{6}\right) e^{\left(-2\right)} \log}{2 \, {\left(b^{2} c^{3} d^{6} - 3 \, b^{3} c^{2} d^{5} e + 3 \, b^{4} c d^{4} e^{2} - b^{5} d^{3} e^{3}\right)} {\left| b \right|}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*B*b*c^3*d^4*e^2 - 4*A*c^4*d^4*e^2 - 6*B*b^2*c^2*d^3*e^3 + 8*A*b*c^3*
d^3*e^3 + 3*B*b^3*c*d^2*e^4 - B*b^4*d*e^5 - 4*A*b^3*c*d*e^5 + 2*A*b^4*e^6)*
e^(-2)*log(abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d)
- abs(b)*e^2)/abs(2*c*d*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e +
d) + abs(b)*e^2))/((b^2*c^3*d^6 - 3*b^3*c^2*d^5*e + 3*b^4*c*d^4*e^2 - b^5*d
^3*e^3)*abs(b)) + 1/2*(3*B*c*d^2*e^2 - B*b*d*e^3 - 4*A*c*d*e^3 + 2*A*b*e^4)
*log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x
*e + d)^2))/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) + (B*
d*e^6/(x*e + d) - A*e^7/(x*e + d))/(c^2*d^4*e^4 - 2*b*c*d^3*e^5 + b^2*d^2*e
^6) + ((B*b*c^3*d^3*e - 2*A*c^4*d^3*e + 3*A*b*c^3*d^2*e^2 - 3*A*b^2*c^2*d*e
^3 + A*b^3*c*e^4)/(c*d^2 - b*d*e) - (B*b*c^3*d^4*e^2 - 2*A*c^4*d^4*e^2 + 4*
A*b*c^3*d^3*e^3 - 6*A*b^2*c^2*d^2*e^4 + 4*A*b^3*c*d*e^5 - A*b^4*e^6)*e^(-1)
/((c*d^2 - b*d*e)*(x*e + d)))/((c*d - b*e)^2*b^2*(c - 2*c*d/(x*e + d) + c*d
^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2)*d^2)
```

maple [A] time = 0.08, size = 357, normalized size = 1.78

$$\frac{2 A b \,e^{4} \ln \left(e x +d \right)}{\left(b e -c d \right)^{3} d^{3}}+\frac{4 A \,c^{3} e \ln \left(c x +b \right)}{\left(b e -c d \right)^{3} b^{2}}-\frac{2 A \,c^{4} d \ln \left(c x +b \right)}{\left(b e -c d \right)^{3} b^{3}}-\frac{4 A c \,e^{3} \ln \left(e x +d \right)}{\left(b e -c d \right)^{3} d^{2}}-\frac{B b \,e^{3} \ln \left(e x +d \right)}{\left(b e -c d \right)^{3} d^{2}}-\frac{3 B \,c^{2} e \ln \left(c x\right.}{\left(b e -c d \right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x)
```

```
[Out] 4*c^3/(b*e-c*d)^3/b^2*ln(c*x+b)*A*e-2*c^4/(b*e-c*d)^3/b^3*ln(c*x+b)*A*d-3*c
^2/(b*e-c*d)^3/b*ln(c*x+b)*B*e+c^3/(b*e-c*d)^3/b^2*ln(c*x+b)*B*d-c^3/(b*e-c
*d)^2/b^2/(c*x+b)*A+c^2/(b*e-c*d)^2/b/(c*x+b)*B+2*e^4/(b*e-c*d)^3/d^3*ln(e*
x+d)*A*b-4*e^3/(b*e-c*d)^3/d^2*ln(e*x+d)*A*c-e^3/(b*e-c*d)^3/d^2*ln(e*x+d)*
B*b+3*e^2/(b*e-c*d)^3/d*ln(e*x+d)*B*c-e^3/(b*e-c*d)^2/d^2/(e*x+d)*A+e^2/(b*
e-c*d)^2/d/(e*x+d)*B-A/b^2/d^2/x-2/b^2/d^3*ln(x)*A*e-2/b^3/d^2*ln(x)*A*c+1/
b^2/d^2*ln(x)*B
```

maxima [B] time = 0.71, size = 467, normalized size = 2.32

$$-\frac{{\left({\left(B b c^{3} - 2 \, A c^{4}\right)} d - {\left(3 \, B b^{2} c^{2} - 4 \, A b c^{3}\right)} e\right)} \log\left(c x + b\right)}{b^{3} c^{3} d^{3} - 3 \, b^{4} c^{2} d^{2} e + 3 \, b^{5} c d e^{2} - b^{6} e^{3}} - \frac{{\left(3 \, B c d^{2} e^{2} + 2 \, A b e^{4} - {\left(B b + 4 \, A c\right)} d e^{3}\right)} \log\left(e x + d\right)}{c^{3} d^{6} - 3 \, b c^{2} d^{5} e + 3 \, b^{2} c d^{4} e^{2} - b^{3} d^{3} e^{3}} - A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^3 - 2*A*c^4)*d - (3*B*b^2*c^2 - 4*A*b*c^3)*e)*log(c*x + b)/(b^3*c^
3*d^3 - 3*b^4*c^2*d^2*e + 3*b^5*c*d*e^2 - b^6*e^3) - (3*B*c*d^2*e^2 + 2*A*b
*e^4 - (B*b + 4*A*c)*d*e^3)*log(e*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c
*d^4*e^2 - b^3*d^3*e^3) - (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 + (2
*A*b^2*c*e^3 - (B*b*c^2 - 2*A*c^3)*d^2*e - (B*b^2*c + 2*A*b*c^2)*d*e^2)*x^2
 - (A*b*c^2*d^2*e - 2*A*b^3*e^3 + (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^3 + A*b^2*
c)*d*e^2)*x)/((b^2*c^3*d^4*e - 2*b^3*c^2*d^3*e^2 + b^4*c*d^2*e^3)*x^3 + (b^
2*c^3*d^5 - b^3*c^2*d^4*e - b^4*c*d^3*e^2 + b^5*d^2*e^3)*x^2 + (b^3*c^2*d^5
 - 2*b^4*c*d^4*e + b^5*d^3*e^2)*x) - (2*A*b*e - (B*b - 2*A*c)*d)*log(x)/(b^
3*d^3)
```

mupad [**B**] time = 2.41, size = 410, normalized size = 2.04

$$\frac{\frac{x\,\left(B\,b^3\,d\,e^2-2\,A\,b^3\,e^3+A\,b^2\,c\,d\,e^2+B\,b\,c^2\,d^3+A\,b\,c^2\,d^2\,e-2\,A\,c^3\,d^3\right)}{b^2\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}-\frac{A}{b\,d}+\frac{x^2\,\left(B\,b^2\,c\,d\,e^2-2\,A\,b^2\,c\,e^3+B\,b\,c^2\,d^2\,e+2\,A\,b\,c^2\,d\,e^2-2\,A\,c^3\,d^2\,e\right)}{b^2\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}}{c\,e\,x^3+\left(b\,e+c\,d\right)\,x^2+b\,d\,x}-\frac{\ln (b +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^2),x)
```

```
[Out] ((x*(B*b*c^2*d^3 - 2*A*c^3*d^3 - 2*A*b^3*e^3 + B*b^3*d*e^2 + A*b*c^2*d^2*e
+ A*b^2*c*d*e^2))/(b^2*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)) - A/(b*d) + (x^
2*(2*A*b*c^2*d*e^2 - 2*A*c^3*d^2*e - 2*A*b^2*c*e^3 + B*b*c^2*d^2*e + B*b^2*
c*d*e^2))/(b^2*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)))/(x^2*(b*e + c*d) + b*d
*x + c*e*x^3) - (log(b + c*x)*(e*(3*B*b^2*c^2 - 4*A*b*c^3) + d*(2*A*c^4 - B
*b*c^3)))/(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2) - (log(
d + e*x)*(c*(3*B*d^2*e^2 - 4*A*d*e^3) + b*(2*A*e^4 - B*d*e^3)))/(c^3*d^6 -
b^3*d^3*e^3 + 3*b^2*c*d^4*e^2 - 3*b*c^2*d^5*e) - (log(x)*(d*(2*A*c - B*b) +
 2*A*b*e))/(b^3*d^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1153 $\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=283

$$\frac{\log(x)(-3Abe-2Acd+bBd)}{b^3d^4}+\frac{c^3(bB-Ac)}{b^2(b+cx)(cd-be)^3}-\frac{e^2\log(d+ex)\,(Bd\,(b^2e^2-4bcde+6c^2d^2)-Ae\,(3b^2e^2-}{d^4(cd-be)^4}$$

```
[Out] -A/b^2/d^3/x+c^3*(-A*c+B*b)/b^2/(-b*e+c*d)^3/(c*x+b)+1/2*e^2*(-A*e+B*d)/d^2
/(-b*e+c*d)^2/(e*x+d)^2-e^2*(2*A*e*(-b*e+2*c*d)-B*d*(-b*e+3*c*d))/d^3/(-b*e
+c*d)^3/(e*x+d)+(-3*A*b*e-2*A*c*d+B*b*d)*ln(x)/b^3/d^4+c^3*(2*A*c^2*d+4*b^2
*B*e-b*c*(5*A*e+B*d))*ln(c*x+b)/b^3/(-b*e+c*d)^4-e^2*(B*d*(b^2*e^2-4*b*c*d*
e+6*c^2*d^2)-A*e*(3*b^2*e^2-10*b*c*d*e+10*c^2*d^2))*ln(e*x+d)/d^4/(-b*e+c*d
)^4
```

Rubi [A] time = 0.46, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{e^2\log(d+ex)\left(Bd\left(b^2e^2-4bcde+6c^2d^2\right)-Ae\left(3b^2e^2-10bcde+10c^2d^2\right)\right)}{d^4(cd-be)^4}+\frac{c^3(bB-Ac)}{b^2(b+cx)(cd-be)^3}+\frac{c^3\log(b+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^3*x)) + (c^3*(b*B - A*c))/(b^2*(c*d - b*e)^3*(b + c*x)) + (e^2*(
B*d - A*e))/(2*d^2*(c*d - b*e)^2*(d + e*x)^2) - (e^2*(2*A*e*(2*c*d - b*e) -
 B*d*(3*c*d - b*e)))/(d^3*(c*d - b*e)^3*(d + e*x)) + ((b*B*d - 2*A*c*d - 3*
A*b*e)*Log[x])/(b^3*d^4) + (c^3*(2*A*c^2*d + 4*b^2*B*e - b*c*(B*d + 5*A*e))
*Log[b + c*x])/(b^3*(c*d - b*e)^4) - (e^2*(B*d*(6*c^2*d^2 - 4*b*c*d*e + b^2
*e^2) - A*e*(10*c^2*d^2 - 10*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/(d^4*(c*d
- b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^2}\,dx &= \int \left(\frac{A}{b^2d^3x^2}+\frac{bBd-2Acd-3Abe}{b^3d^4x}+\frac{c^4(bB-Ac)}{b^2(-cd+be)^3(b+cx)^2}+\frac{c^4\left(2Ac^2d+4b^2\right.}{b^3(cd-b}\right.\\ &= -\frac{A}{b^2d^3x}+\frac{c^3(bB-Ac)}{b^2(cd-be)^3(b+cx)}+\frac{e^2(Bd-Ae)}{2d^2(cd-be)^2(d+ex)^2}-\frac{e^2(2Ae(2cd-be)-B}{d^3(cd-be)^3(d}\end{aligned}$$

Mathematica [A] time = 0.49, size = 279, normalized size = 0.99

$$\frac{\log(x)(-3Abe-2Acd+bBd)}{b^3d^4}+\frac{c^3(Ac-bB)}{b^2(b+cx)(be-cd)^3}+\frac{e^2\log(d+ex)\,(Ae\,(3b^2e^2-10bcde+10c^2d^2)-Bd\,(b^2e^2}{d^4(cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^2),x]
```

```
[Out] -(A/(b^2*d^3*x)) + (c^3*(-(b*B) + A*c))/(b^2*(-(c*d) + b*e)^3*(b + c*x)) +
(e^2*(B*d - A*e))/(2*d^2*(c*d - b*e)^2*(d + e*x)^2) + (e^2*(B*d*(3*c*d - b*
e) + 2*A*e*(-2*c*d + b*e)))/(d^3*(c*d - b*e)^3*(d + e*x)) + ((b*B*d - 2*A*c
*d - 3*A*b*e)*Log[x])/(b^3*d^4) + (c^3*(2*A*c^2*d + 4*b^2*B*e - b*c*(B*d +
5*A*e))*Log[b + c*x])/(b^3*(c*d - b*e)^4) + (e^2*(-(B*d*(6*c^2*d^2 - 4*b*c*
d*e + b^2*e^2)) + A*e*(10*c^2*d^2 - 10*b*c*d*e + 3*b^2*e^2))*Log[d + e*x])/
(d^4*(c*d - b*e)^4)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.20, size = 745, normalized size = 2.63

$$-\frac{\left(Bbc^5d - 2\,Ac^6d - 4\,Bb^2c^4e + 5\,Abc^5e\right)\log\left(|cx + b|\right)}{b^3c^5d^4 - 4\,b^4c^4d^3e + 6\,b^5c^3d^2e^2 - 4\,b^6c^2de^3 + b^7ce^4} - \frac{\left(6\,Bc^2d^3e^3 - 4\,Bbcd^2e^4 - 10\,Ac^2d^2e^4 + Bb^2de^5 + 10\,Abcd}{c^4d^8e - 4\,bc^3d^7e^2 + 6\,b^2c^2d^6e^3 - 4\,b^3cd^5e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(B*b*c^5*d - 2*A*c^6*d - 4*B*b^2*c^4*e + 5*A*b*c^5*e)*log(abs(c*x + b))/(b
^3*c^5*d^4 - 4*b^4*c^4*d^3*e + 6*b^5*c^3*d^2*e^2 - 4*b^6*c^2*d*e^3 + b^7*c*
e^4) - (6*B*c^2*d^3*e^3 - 4*B*b*c*d^2*e^4 - 10*A*c^2*d^2*e^4 + B*b^2*d*e^5
+ 10*A*b*c*d*e^5 - 3*A*b^2*e^6)*log(abs(x*e + d))/(c^4*d^8*e - 4*b*c^3*d^7*
e^2 + 6*b^2*c^2*d^6*e^3 - 4*b^3*c*d^5*e^4 + b^4*d^4*e^5) + (B*b*d - 2*A*c*d
 - 3*A*b*e)*log(abs(x))/(b^3*d^4) - 1/2*(2*A*b*c^4*d^7 - 8*A*b^2*c^3*d^6*e
+ 12*A*b^3*c^2*d^5*e^2 - 8*A*b^4*c*d^4*e^3 + 2*A*b^5*d^3*e^4 - 2*(B*b*c^4*d
^5*e^2 - 2*A*c^5*d^5*e^2 + 2*B*b^2*c^3*d^4*e^3 + 5*A*b*c^4*d^4*e^3 - 4*B*b^
3*c^2*d^3*e^4 - 10*A*b^2*c^3*d^3*e^4 + B*b^4*c*d^2*e^5 + 10*A*b^3*c^2*d^2*e
^5 - 3*A*b^4*c*d*e^6)*x^3 - (4*B*b*c^4*d^6*e - 8*A*c^5*d^6*e + 3*B*b^2*c^3*
d^5*e^2 + 18*A*b*c^4*d^5*e^2 - 4*B*b^3*c^2*d^4*e^3 - 25*A*b^2*c^3*d^4*e^3 -
 5*B*b^4*c*d^3*e^4 + 10*A*b^3*c^2*d^3*e^4 + 2*B*b^5*d^2*e^5 + 11*A*b^4*c*d^
2*e^5 - 6*A*b^5*d*e^6)*x^2 - (2*B*b*c^4*d^7 - 4*A*c^5*d^7 - 2*B*b^2*c^3*d^6
*e + 6*A*b*c^4*d^6*e + 7*B*b^3*c^2*d^5*e^2 + 4*A*b^2*c^3*d^5*e^2 - 10*B*b^4
*c*d^4*e^3 - 25*A*b^3*c^2*d^4*e^3 + 3*B*b^5*d^3*e^4 + 28*A*b^4*c*d^3*e^4 -
9*A*b^5*d^2*e^5)*x)/((c*d - b*e)^4*(c*x + b)*(x*e + d)^2*b^2*d^4*x)
```

maple [A] time = 0.10, size = 528, normalized size = 1.87

$$\frac{3A\,b^2e^5\ln(ex+d)}{(be-cd)^4\,d^4} - \frac{10Abc\,e^4\ln(ex+d)}{(be-cd)^4\,d^3} - \frac{5A\,c^4e\ln(cx+b)}{(be-cd)^4\,b^2} + \frac{2A\,c^5d\ln(cx+b)}{(be-cd)^4\,b^3} + \frac{10A\,c^2e^3\ln(ex+d)}{(be-cd)^4\,d^2} - \frac{B\,b^2e^4\ln}{(be-c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x)
```

```
[Out] -5*c^4/(b*e-c*d)^4/b^2*ln(c*x+b)*A*e+2*c^5/(b*e-c*d)^4/b^3*ln(c*x+b)*A*d+4*
c^3/(b*e-c*d)^4/b*ln(c*x+b)*B*e-c^4/(b*e-c*d)^4/b^2*ln(c*x+b)*B*d+c^4/(b*e-
c*d)^3/b^2/(c*x+b)*A-c^3/(b*e-c*d)^3/b/(c*x+b)*B-2*e^4/(b*e-c*d)^3/d^3/(e*x
+d)*A*b+4*e^3/(b*e-c*d)^3/d^2/(e*x+d)*A*c+e^3/(b*e-c*d)^3/d^2/(e*x+d)*B*b-3
*e^2/(b*e-c*d)^3/d/(e*x+d)*B*c+3*e^5/(b*e-c*d)^4/d^4*ln(e*x+d)*A*b^2-10*e^4
/(b*e-c*d)^4/d^3*ln(e*x+d)*A*b*c+10*e^3/(b*e-c*d)^4/d^2*ln(e*x+d)*A*c^2-e^4
/(b*e-c*d)^4/d^3*ln(e*x+d)*B*b^2+4*e^3/(b*e-c*d)^4/d^2*ln(e*x+d)*B*b*c-6*e^
```

```
2/(b*e-c*d)^4/d*ln(e*x+d)*B*c^2-1/2*e^3/(b*e-c*d)^2/d^2/(e*x+d)^2*A+1/2*e^2
/(b*e-c*d)^2/d/(e*x+d)^2*B-A/b^2/d^3/x-3/b^2/d^4*ln(x)*A*e-2/b^3/d^3*ln(x)*
A*c+1/b^2/d^3*ln(x)*B
```

maxima [**B**] time = 1.11, size = 813, normalized size = 2.87

$$-\frac{\left(\left(Bbc^4-2\,Ac^5\right)d-\left(4\,Bb^2c^3-5\,Abc^4\right)e\right)\log\left(cx+b\right)}{b^3c^4d^4-4\,b^4c^3d^3e+6\,b^5c^2d^2e^2-4\,b^6cde^3+b^7e^4}-\frac{\left(6\,Bc^2d^3e^2-3\,Ab^2e^5-2\left(2\,Bbc+5\,Ac^2\right)d^2e^3+\left(Bb^2\right.}{c^4d^8-4\,bc^3d^7e+6\,b^2c^2d^6e^2-4\,b^3cd^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] -((B*b*c^4 - 2*A*c^5)*d - (4*B*b^2*c^3 - 5*A*b*c^4)*e)*log(c*x + b)/(b^3*c^
4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2*e^2 - 4*b^6*c*d*e^3 + b^7*e^4) - (6
*B*c^2*d^3*e^2 - 3*A*b^2*e^5 - 2*(2*B*b*c + 5*A*c^2)*d^2*e^3 + (B*b^2 + 10*
A*b*c)*d*e^4)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4
*b^3*c*d^5*e^3 + b^4*d^4*e^4) - 1/2*(2*A*b*c^3*d^5 - 6*A*b^2*c^2*d^4*e + 6*
A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - 2*(3*A*b^3*c*e^5 + (B*b*c^3 - 2*A*c^4)*
d^3*e^2 + 3*(B*b^2*c^2 + A*b*c^3)*d^2*e^3 - (B*b^3*c + 7*A*b^2*c^2)*d*e^4)*
x^3 - (6*A*b^4*e^5 + 4*(B*b*c^3 - 2*A*c^4)*d^4*e + (7*B*b^2*c^2 + 10*A*b*c^
3)*d^3*e^2 + 3*(B*b^3*c - 5*A*b^2*c^2)*d^2*e^3 - (2*B*b^4 + 5*A*b^3*c)*d*e^
4)*x^2 - (2*A*b*c^3*d^4*e + 9*A*b^4*d*e^4 + 2*(B*b*c^3 - 2*A*c^4)*d^5 + (7*
B*b^3*c + 6*A*b^2*c^2)*d^3*e^2 - (3*B*b^4 + 19*A*b^3*c)*d^2*e^3)*x)/((b^2*c
^4*d^6*e^2 - 3*b^3*c^3*d^5*e^3 + 3*b^4*c^2*d^4*e^4 - b^5*c*d^3*e^5)*x^4 + (
2*b^2*c^4*d^7*e - 5*b^3*c^3*d^6*e^2 + 3*b^4*c^2*d^5*e^3 + b^5*c*d^4*e^4 - b
^6*d^3*e^5)*x^3 + (b^2*c^4*d^8 - b^3*c^3*d^7*e - 3*b^4*c^2*d^6*e^2 + 5*b^5*
c*d^5*e^3 - 2*b^6*d^4*e^4)*x^2 + (b^3*c^3*d^8 - 3*b^4*c^2*d^7*e + 3*b^5*c*d
^6*e^2 - b^6*d^5*e^3)*x) - (3*A*b*e - (B*b - 2*A*c)*d)*log(x)/(b^3*d^4)
```

mupad [**B**] time = 2.94, size = 726, normalized size = 2.57

$$\frac{\ln\left(d+e\,x\right)\,\left(\left(3\,A\,e^5-B\,d\,e^4\right)\,b^2+\left(4\,B\,d^2\,e^3-10\,A\,d\,e^4\right)\,b\,c+\left(10\,A\,d^2\,e^3-6\,B\,d^3\,e^2\right)\,c^2\right)}{b^4\,d^4\,e^4-4\,b^3\,c\,d^5\,e^3+6\,b^2\,c^2\,d^6\,e^2-4\,b\,c^3\,d^7\,e+c^4\,d^8}-\frac{\frac{A}{b\,d}+\frac{x^2\,\left(-2\,B\,b^4\,d\,e^4+6\right.}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^3),x)
```

```
[Out] (log(d + e*x)*(b^2*(3*A*e^5 - B*d*e^4) + c^2*(10*A*d^2*e^3 - 6*B*d^3*e^2) +
 b*c*(4*B*d^2*e^3 - 10*A*d*e^4)))/(c^4*d^8 + b^4*d^4*e^4 - 4*b^3*c*d^5*e^3
+ 6*b^2*c^2*d^6*e^2 - 4*b*c^3*d^7*e) - (A/(b*d) + (x^2*(6*A*b^4*e^5 - 8*A*c
^4*d^4*e - 2*B*b^4*d*e^4 + 10*A*b*c^3*d^3*e^2 + 3*B*b^3*c*d^2*e^3 - 15*A*b^
2*c^2*d^2*e^3 + 7*B*b^2*c^2*d^3*e^2 - 5*A*b^3*c*d*e^4 + 4*B*b*c^3*d^4*e))/(
2*b^2*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (x*(9*A*b^
4*e^4 - 4*A*c^4*d^4 + 2*B*b*c^3*d^4 - 3*B*b^4*d*e^3 + 7*B*b^3*c*d^2*e^2 + 6
*A*b^2*c^2*d^2*e^2 + 2*A*b*c^3*d^3*e - 19*A*b^3*c*d*e^3))/(2*b^2*d^2*(b^3*e
^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (c*e^2*x^3*(3*A*b^3*e^3 -
2*A*c^3*d^3 + B*b*c^2*d^3 - B*b^3*d*e^2 + 3*A*b*c^2*d^2*e - 7*A*b^2*c*d*e^2
 + 3*B*b^2*c*d^2*e))/(b^2*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*
d*e^2)))/(x^2*(c*d^2 + 2*b*d*e) + x^3*(b*e^2 + 2*c*d*e) + c*e^2*x^4 + b*d^2
*x) + (log(b + c*x)*(e*(4*B*b^2*c^3 - 5*A*b*c^4) + d*(2*A*c^5 - B*b*c^4)))/
(b^7*e^4 + b^3*c^4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2*e^2 - 4*b^6*c*d*e^
3) - (log(x)*(d*(2*A*c - B*b) + 3*A*b*e))/(b^3*d^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1154 $\int \frac{(A+Bx)(d+ex)^5}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=257

$$-\frac{d^4(5Abe-3Acd+bBd)}{b^4x}-\frac{(bB-Ac)(cd-be)^5}{2b^3c^4(b+cx)^2}-\frac{Ad^5}{2b^3x^2}+\frac{d^3\log(x)\big(5b^2e(2Ae+Bd)-3bcd(5Ae+Bd)+6Ac^2}{b^5}$$

```
[Out] -1/2*A*d^5/b^3/x^2-d^4*(5*A*b*e-3*A*c*d+B*b*d)/b^4/x+B*e^5*x/c^3-1/2*(-A*c+
B*b)*(-b*e+c*d)^5/b^3/c^4/(c*x+b)^2-(-b*e+c*d)^4*(-2*A*b*c*e-3*A*c^2*d+3*B*
b^2*e+2*B*b*c*d)/b^4/c^4/(c*x+b)+d^3*(6*A*c^2*d^2+5*b^2*e*(2*A*e+B*d)-3*b*c
*d*(5*A*e+B*d))*ln(x)/b^5-(-b*e+c*d)^3*(6*A*c^3*d^2-3*b^3*B*e^2-3*b*c^2*d*(
-A*e+B*d)-b^2*c*e*(-A*e+4*B*d))*ln(c*x+b)/b^5/c^4
```

Rubi [A] time = 0.43, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{(cd-be)^3\log(b+cx)\left(-b^2ce(4Bd-Ae)-3bc^2d(Bd-Ae)+6Ac^3d^2-3b^3Be^2\right)}{b^5c^4}+\frac{d^3\log(x)\big(5b^2e(2Ae+Bd)-}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^5)/(2*b^3*x^2) - (d^4*(b*B*d - 3*A*c*d + 5*A*b*e))/(b^4*x) + (B*e^5*x
)/c^3 - ((b*B - A*c)*(c*d - b*e)^5)/(2*b^3*c^4*(b + c*x)^2) - ((c*d - b*e)^
4*(2*b*B*c*d - 3*A*c^2*d + 3*b^2*B*e - 2*A*b*c*e))/(b^4*c^4*(b + c*x)) + (d
^3*(6*A*c^2*d^2 + 5*b^2*e*(B*d + 2*A*e) - 3*b*c*d*(B*d + 5*A*e))*Log[x])/b^
5 - ((c*d - b*e)^3*(6*A*c^3*d^2 - 3*b^3*B*e^2 - 3*b*c^2*d*(B*d - A*e) - b^2
*c*e*(4*B*d - A*e))*Log[b + c*x])/(b^5*c^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(bx+cx^2\right)^3}\,dx=\int \bigg(\frac{Be^5}{c^3}+\frac{Ad^5}{b^3x^3}+\frac{d^4(bBd-3Acd+5Abe)}{b^4x^2}+\frac{d^3\big(6Ac^2d^2+5b^2e(Bd+2Ae)-3bcd}{b^5x}$$

$$=-\frac{Ad^5}{2b^3x^2}-\frac{d^4(bBd-3Acd+5Abe)}{b^4x}+\frac{Be^5x}{c^3}-\frac{(bB-Ac)(cd-be)^5}{2b^3c^4(b+cx)^2}-\frac{(cd-be)^4\big(2bB}{}$$

Mathematica [A] time = 0.13, size = 254, normalized size = 0.99

$$-\frac{d^4(5Abe-3Acd+bBd)}{b^4x}+\frac{(bB-Ac)(be-cd)^5}{2b^3c^4(b+cx)^2}-\frac{Ad^5}{2b^3x^2}+\frac{d^3\log(x)\big(5b^2e(2Ae+Bd)-3bcd(5Ae+Bd)+6Ac^2}{b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*(A*d^5)/(b^3*x^2) - (d^4*(b*B*d - 3*A*c*d + 5*A*b*e))/(b^4*x) + (B*e^5
*x)/c^3 + ((b*B - A*c)*(-(c*d) + b*e)^5)/(2*b^3*c^4*(b + c*x)^2) + ((c*d -
b*e)^4*(-2*b*B*c*d + 3*A*c^2*d - 3*b^2*B*e + 2*A*b*c*e))/(b^4*c^4*(b + c*x)
) + (d^3*(6*A*c^2*d^2 + 5*b^2*e*(B*d + 2*A*e) - 3*b*c*d*(B*d + 5*A*e))*Log[
x])/b^5 - ((c*d - b*e)^3*(6*A*c^3*d^2 - 3*b^3*B*e^2 + b^2*c*e*(-4*B*d + A*e
) + 3*b*c^2*d*(-(B*d) + A*e))*Log[b + c*x])/(b^5*c^4)
```

fricas [B] time = 1.56, size = 889, normalized size = 3.46

$$2\,Bb^5c^3e^5x^5 + 4\,Bb^6c^2e^5x^4 - Ab^4c^4d^5 + 2\left(10\,Ab^3c^5d^3e^2 - 10\,Bb^5c^3d^2e^3 - 3\left(Bb^2c^6 - 2\,Abc^7\right)d^5 + 5\left(Bb^3c^5 - 3\,Ab\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^5*c^3*e^5*x^5 + 4*B*b^6*c^2*e^5*x^4 - A*b^4*c^4*d^5 + 2*(10*A*b^
3*c^5*d^3*e^2 - 10*B*b^5*c^3*d^2*e^3 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d^5 + 5*(B
*b^3*c^5 - 3*A*b^2*c^6)*d^4*e + 5*(2*B*b^6*c^2 - A*b^5*c^3)*d*e^4 - 2*(B*b^
7*c - A*b^6*c^2)*e^5)*x^3 - (9*(B*b^3*c^5 - 2*A*b^2*c^6)*d^5 - 15*(B*b^4*c^
4 - 3*A*b^3*c^5)*d^4*e + 10*(B*b^5*c^3 - 3*A*b^4*c^4)*d^3*e^2 + 10*(B*b^6*c
^2 + A*b^5*c^3)*d^2*e^3 - 5*(3*B*b^7*c - A*b^6*c^2)*d*e^4 + (5*B*b^8 - 3*A*
b^7*c)*e^5)*x^2 - 2*(5*A*b^4*c^4*d^4*e + (B*b^4*c^4 - 2*A*b^3*c^5)*d^5)*x -
 2*((10*A*b^2*c^6*d^3*e^2 - 5*B*b^5*c^3*d*e^4 - 3*(B*b*c^7 - 2*A*c^8)*d^5 +
 5*(B*b^2*c^6 - 3*A*b*c^7)*d^4*e + (3*B*b^6*c^2 - A*b^5*c^3)*e^5)*x^4 + 2*(
10*A*b^3*c^5*d^3*e^2 - 5*B*b^6*c^2*d*e^4 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d^5 +
5*(B*b^3*c^5 - 3*A*b^2*c^6)*d^4*e + (3*B*b^7*c - A*b^6*c^2)*e^5)*x^3 + (10*
A*b^4*c^4*d^3*e^2 - 5*B*b^7*c*d*e^4 - 3*(B*b^3*c^5 - 2*A*b^2*c^6)*d^5 + 5*(
B*b^4*c^4 - 3*A*b^3*c^5)*d^4*e + (3*B*b^8 - A*b^7*c)*e^5)*x^2)*log(c*x + b)
 + 2*((10*A*b^2*c^6*d^3*e^2 - 3*(B*b*c^7 - 2*A*c^8)*d^5 + 5*(B*b^2*c^6 - 3*
A*b*c^7)*d^4*e)*x^4 + 2*(10*A*b^3*c^5*d^3*e^2 - 3*(B*b^2*c^6 - 2*A*b*c^7)*d
^5 + 5*(B*b^3*c^5 - 3*A*b^2*c^6)*d^4*e)*x^3 + (10*A*b^4*c^4*d^3*e^2 - 3*(B*
b^3*c^5 - 2*A*b^2*c^6)*d^5 + 5*(B*b^4*c^4 - 3*A*b^3*c^5)*d^4*e)*x^2)*log(x)
)/(b^5*c^6*x^4 + 2*b^6*c^5*x^3 + b^7*c^4*x^2)
```

giac [B] time = 0.16, size = 511, normalized size = 1.99

$$\frac{Bxe^5}{c^3} - \frac{\left(3\,Bbcd^5 - 6\,Ac^2d^5 - 5\,Bb^2d^4e + 15\,Abcd^4e - 10\,Ab^2d^3e^2\right)\log\left(|x|\right)}{b^5} + \frac{\left(3\,Bbc^5d^5 - 6\,Ac^6d^5 - 5\,Bb^2c^4d^4e + 1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] B*x*e^5/c^3 - (3*B*b*c*d^5 - 6*A*c^2*d^5 - 5*B*b^2*d^4*e + 15*A*b*c*d^4*e -
 10*A*b^2*d^3*e^2)*log(abs(x))/b^5 + (3*B*b*c^5*d^5 - 6*A*c^6*d^5 - 5*B*b^2
*c^4*d^4*e + 15*A*b*c^5*d^4*e - 10*A*b^2*c^4*d^3*e^2 + 5*B*b^5*c*d*e^4 - 3*
B*b^6*e^5 + A*b^5*c*e^5)*log(abs(c*x + b))/(b^5*c^4) - 1/2*(A*b^3*c^4*d^5 +
 2*(3*B*b*c^6*d^5 - 6*A*c^7*d^5 - 5*B*b^2*c^5*d^4*e + 15*A*b*c^6*d^4*e - 10
*A*b^2*c^5*d^3*e^2 + 10*B*b^4*c^3*d^2*e^3 - 10*B*b^5*c^2*d*e^4 + 5*A*b^4*c^
3*d*e^4 + 3*B*b^6*c*e^5 - 2*A*b^5*c^2*e^5)*x^3 + (9*B*b^2*c^5*d^5 - 18*A*b*
c^6*d^5 - 15*B*b^3*c^4*d^4*e + 45*A*b^2*c^5*d^4*e + 10*B*b^4*c^3*d^3*e^2 -
30*A*b^3*c^4*d^3*e^2 + 10*B*b^5*c^2*d^2*e^3 + 10*A*b^4*c^3*d^2*e^3 - 15*B*b
^6*c*d*e^4 + 5*A*b^5*c^2*d*e^4 + 5*B*b^7*e^5 - 3*A*b^6*c*e^5)*x^2 + 2*(B*b^
3*c^4*d^5 - 2*A*b^2*c^5*d^5 + 5*A*b^3*c^4*d^4*e)*x)/((c*x + b)^2*b^4*c^4*x^
2)
```

maple [B] time = 0.07, size = 661, normalized size = 2.57

$$-\frac{A\,b^2e^5}{2\left(cx+b\right)^2c^3} + \frac{5Abd\,e^4}{2\left(cx+b\right)^2c^2} + \frac{5A\,d^3e^2}{\left(cx+b\right)^2b} - \frac{5Ac\,d^4e}{2\left(cx+b\right)^2b^2} + \frac{A\,c^2d^5}{2\left(cx+b\right)^2b^3} - \frac{5A\,d^2e^3}{\left(cx+b\right)^2c} + \frac{B\,b^3e^5}{2\left(cx+b\right)^2c^4} - \frac{5B\,b^2d\,e^4}{2\left(cx+b\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x)
```

```
[Out] 15*c/b^4*ln(c*x+b)*A*d^4*e-15*d^4/b^4*ln(x)*A*e*c+5/c^2*b/(c*x+b)^2*B*d^2*e
^3+5/2/c^2*b/(c*x+b)^2*A*d*e^4-5/2*c/b^2/(c*x+b)^2*A*d^4*e-5/2/c^3*b^2/(c*x
+b)^2*B*d*e^4-10*c/b^3/(c*x+b)*A*d^4*e+10/c^3*b/(c*x+b)*B*d*e^4-d^5/b^3/x*B
+1/c^3*ln(c*x+b)*A*e^5-2*c/b^3/(c*x+b)*B*d^5-1/2/c^3*b^2/(c*x+b)^2*A*e^5+1/
2*c^2/b^3/(c*x+b)^2*A*d^5+1/2/c^4*b^3/(c*x+b)^2*B*e^5-1/2*c/b^2/(c*x+b)^2*B
*d^5-10/b^3*ln(c*x+b)*A*d^3*e^2-5*d^4/b^3/x*A*e+3*d^5/b^4/x*A*c-5/c^2/(c*x+
b)*A*d*e^4-10/c^2/(c*x+b)*B*d^2*e^3-5/c/(c*x+b)^2*B*d^3*e^2+5/2/b/(c*x+b)^2
*B*d^4*e+5/b^2/(c*x+b)*B*d^4*e-5/c/(c*x+b)^2*A*d^2*e^3+5/b/(c*x+b)^2*A*d^3*
e^2+10/b^2/(c*x+b)*A*d^3*e^2+10*d^3/b^3*ln(x)*A*e^2+6*d^5/b^5*ln(x)*A*c^2+5
*d^4/b^3*ln(x)*B*e-3*d^5/b^4*ln(x)*B*c-6*c^2/b^5*ln(c*x+b)*A*d^5-3/c^4*b*ln
(c*x+b)*B*e^5+5/c^3*ln(c*x+b)*B*d*e^4-5/b^3*ln(c*x+b)*B*d^4*e+3*c/b^4*ln(c*
x+b)*B*d^5+2/c^3*b/(c*x+b)*A*e^5+3*c^2/b^4/(c*x+b)*A*d^5-3/c^4*b^2/(c*x+b)*
B*e^5-1/2*A*d^5/b^3/x^2+B*e^5*x/c^3
```

maxima [B] time = 0.80, size = 513, normalized size = 2.00

$$\frac{Be^5x}{c^3} - \frac{Ab^3c^4d^5 - 2\left(10\,Ab^2c^5d^3e^2 - 10\,Bb^4c^3d^2e^3 - 3\left(Bbc^6 - 2\,Ac^7\right)d^5 + 5\left(Bb^2c^5 - 3\,Abc^6\right)d^4e + 5\left(2\,Bb^5c^2 -\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] B*e^5*x/c^3 - 1/2*(A*b^3*c^4*d^5 - 2*(10*A*b^2*c^5*d^3*e^2 - 10*B*b^4*c^3*d
^2*e^3 - 3*(B*b*c^6 - 2*A*c^7)*d^5 + 5*(B*b^2*c^5 - 3*A*b*c^6)*d^4*e + 5*(2
*B*b^5*c^2 - A*b^4*c^3)*d*e^4 - (3*B*b^6*c - 2*A*b^5*c^2)*e^5)*x^3 + (9*(B*
b^2*c^5 - 2*A*b*c^6)*d^5 - 15*(B*b^3*c^4 - 3*A*b^2*c^5)*d^4*e + 10*(B*b^4*c
^3 - 3*A*b^3*c^4)*d^3*e^2 + 10*(B*b^5*c^2 + A*b^4*c^3)*d^2*e^3 - 5*(3*B*b^6
*c - A*b^5*c^2)*d*e^4 + (5*B*b^7 - 3*A*b^6*c)*e^5)*x^2 + 2*(5*A*b^3*c^4*d^4
*e + (B*b^3*c^4 - 2*A*b^2*c^5)*d^5)*x)/(b^4*c^6*x^4 + 2*b^5*c^5*x^3 + b^6*c
^4*x^2) + (10*A*b^2*d^3*e^2 - 3*(B*b*c - 2*A*c^2)*d^5 + 5*(B*b^2 - 3*A*b*c)
*d^4*e)*log(x)/b^5 - (10*A*b^2*c^4*d^3*e^2 - 5*B*b^5*c*d*e^4 - 3*(B*b*c^5 -
 2*A*c^6)*d^5 + 5*(B*b^2*c^4 - 3*A*b*c^5)*d^4*e + (3*B*b^6 - A*b^5*c)*e^5)*
log(c*x + b)/(b^5*c^4)
```

mupad [B] time = 1.83, size = 498, normalized size = 1.94

$$\frac{\ln(x)\,\left(b^2\,\left(5\,B\,d^4\,e+10\,A\,d^3\,e^2\right)-b\,\left(3\,B\,c\,d^5+15\,A\,c\,e\,d^4\right)+6\,A\,c^2\,d^5\right)}{b^5} - \frac{x^2\,\left(5\,B\,b^6\,e^5-15\,B\,b^5\,c\,d\,e^4-3\,A\,b^5\,c\,e^5+10\,B\,b^4\,c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(b*x + c*x^2)^3,x)
```

```
[Out] (log(x)*(b^2*(10*A*d^3*e^2 + 5*B*d^4*e) - b*(3*B*c*d^5 + 15*A*c*d^4*e) + 6*
A*c^2*d^5))/b^5 - ((x^2*(5*B*b^6*e^5 - 18*A*c^6*d^5 - 3*A*b^5*c*e^5 + 9*B*b
*c^5*d^5 + 5*A*b^4*c^2*d*e^4 - 15*B*b^2*c^4*d^4*e - 30*A*b^2*c^4*d^3*e^2 +
10*A*b^3*c^3*d^2*e^3 + 10*B*b^3*c^3*d^3*e^2 + 10*B*b^4*c^2*d^2*e^3 + 45*A*b
*c^5*d^4*e - 15*B*b^5*c*d*e^4))/(2*b^3*c) - (x^3*(6*A*c^6*d^5 - 3*B*b^6*e^5
 + 2*A*b^5*c*e^5 - 3*B*b*c^5*d^5 - 5*A*b^4*c^2*d*e^4 + 5*B*b^2*c^4*d^4*e +
10*A*b^2*c^4*d^3*e^2 - 10*B*b^4*c^2*d^2*e^3 - 15*A*b*c^5*d^4*e + 10*B*b^5*c
*d*e^4))/b^4 + (A*c^3*d^5)/(2*b) + (c^3*d^4*x*(5*A*b*e - 2*A*c*d + B*b*d))/
b^2)/(c^5*x^4 + 2*b*c^4*x^3 + b^2*c^3*x^2) + (B*e^5*x)/c^3 + (log(b + c*x)*
(b*e - c*d)^3*(6*A*c^3*d^2 - 3*B*b^3*e^2 + A*b^2*c*e^2 - 3*B*b*c^2*d^2 + 3*
A*b*c^2*d*e - 4*B*b^2*c*d*e))/(b^5*c^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1155 $\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=235

$$-\frac{d^3(4Abe-3Acd+bBd)}{b^4x}-\frac{(bB-Ac)(cd-be)^4}{2b^3c^3(b+cx)^2}-\frac{Ad^4}{2b^3x^2}+\frac{d^2\log(x)\big(2b^2e(3Ae+2Bd)-3bcd(4Ae+Bd)+6Ac}{b^5}$$

```
[Out] -1/2*A*d^4/b^3/x^2-d^3*(4*A*b*e-3*A*c*d+B*b*d)/b^4/x-1/2*(-A*c+B*b)*(-b*e+c
*d)^4/b^3/c^3/(c*x+b)^2-(-b*e+c*d)^3*(-A*b*c*e-3*A*c^2*d+2*B*b^2*e+2*B*b*c*
d)/b^4/c^3/(c*x+b)+d^2*(6*A*c^2*d^2+2*b^2*e*(3*A*e+2*B*d)-3*b*c*d*(4*A*e+B*
d))*ln(x)/b^5+(-b*e+c*d)^2*(-6*A*c^3*d^2+B*b^3*e^2+2*B*b^2*c*d*e+3*B*b*c^2*
d^2)*ln(c*x+b)/b^5/c^3
```

Rubi [A] time = 0.33, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(cd-be)^2\log(b+cx)\left(-6Ac^3d^2+2b^2Bcde+b^3Be^2+3bBc^2d^2\right)}{b^5c^3}+\frac{d^2\log(x)\big(2b^2e(3Ae+2Bd)-3bcd(4Ae+B}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^4)/(2*b^3*x^2) - (d^3*(b*B*d - 3*A*c*d + 4*A*b*e))/(b^4*x) - ((b*B -
A*c)*(c*d - b*e)^4)/(2*b^3*c^3*(b + c*x)^2) - ((c*d - b*e)^3*(2*b*B*c*d - 3
*A*c^2*d + 2*b^2*B*e - A*b*c*e))/(b^4*c^3*(b + c*x)) + (d^2*(6*A*c^2*d^2 +
2*b^2*e*(2*B*d + 3*A*e) - 3*b*c*d*(B*d + 4*A*e))*Log[x])/b^5 + ((c*d - b*e)
^2*(3*b*B*c^2*d^2 - 6*A*c^3*d^2 + 2*b^2*B*c*d*e + b^3*B*e^2)*Log[b + c*x])/
(b^5*c^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^3}\,dx &= \int \bigg(\frac{Ad^4}{b^3x^3}+\frac{d^3(bBd-3Acd+4Abe)}{b^4x^2}+\frac{d^2\big(6Ac^2d^2+2b^2e(2Bd+3Ae)-3bcd(Bd+}{b^5x}\\ &= -\frac{Ad^4}{2b^3x^2}-\frac{d^3(bBd-3Acd+4Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^4}{2b^3c^3(b+cx)^2}-\frac{(cd-be)^3\big(2bBcd-3A}{b^4c^3(b}\end{aligned}$$

Mathematica [A] time = 0.16, size = 228, normalized size = 0.97

$$-\frac{\frac{b^2(bB-Ac)(cd-be)^4}{c^3(b+cx)^2}-2d^2\log(x)\left(2b^2e(3Ae+2Bd)-3bcd(4Ae+Bd)+6Ac^2d^2\right)-\frac{2b(be-cd)^3\big(bc(2Bd-Ae)-3Ac^2d+2b^2Be}{c^3(b+cx)}}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^4)/x^2 + (2*b*d^3*(b*B*d - 3*A*c*d + 4*A*b*e))/x + (b^2*(b*B
 - A*c)*(c*d - b*e)^4)/(c^3*(b + c*x)^2) - (2*b*(-(c*d) + b*e)^3*(-3*A*c^2*
d + 2*b^2*B*e + b*c*(2*B*d - A*e)))/(c^3*(b + c*x)) - 2*d^2*(6*A*c^2*d^2 +
2*b^2*e*(2*B*d + 3*A*e) - 3*b*c*d*(B*d + 4*A*e))*Log[x] - (2*(c*d - b*e)^2*
(3*b*B*c^2*d^2 - 6*A*c^3*d^2 + 2*b^2*B*c*d*e + b^3*B*e^2)*Log[b + c*x])/c^3
)/b^5
```

fricas [**B**] time = 1.46, size = 736, normalized size = 3.13

$$-\frac{Ab^4c^3d^4 - 2\left(6\,Ab^3c^4d^2e^2 - 4\,Bb^5c^2de^3 - 3\left(Bb^2c^5 - 2\,Abc^6\right)d^4 + 4\left(Bb^3c^4 - 3\,Ab^2c^5\right)d^3e + \left(2\,Bb^6c - Ab^5c^2\right)e^4\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*c^3*d^4 - 2*(6*A*b^3*c^4*d^2*e^2 - 4*B*b^5*c^2*d*e^3 - 3*(B*b^2
*c^5 - 2*A*b*c^6)*d^4 + 4*(B*b^3*c^4 - 3*A*b^2*c^5)*d^3*e + (2*B*b^6*c - A*
b^5*c^2)*e^4)*x^3 + (9*(B*b^3*c^4 - 2*A*b^2*c^5)*d^4 - 12*(B*b^4*c^3 - 3*A*
b^3*c^4)*d^3*e + 6*(B*b^5*c^2 - 3*A*b^4*c^3)*d^2*e^2 + 4*(B*b^6*c + A*b^5*c
^2)*d*e^3 - (3*B*b^7 - A*b^6*c)*e^4)*x^2 + 2*(4*A*b^4*c^3*d^3*e + (B*b^4*c^
3 - 2*A*b^3*c^4)*d^4)*x + 2*((6*A*b^2*c^5*d^2*e^2 - B*b^5*c^2*e^4 - 3*(B*b*
c^6 - 2*A*c^7)*d^4 + 4*(B*b^2*c^5 - 3*A*b*c^6)*d^3*e)*x^4 + 2*(6*A*b^3*c^4*
d^2*e^2 - B*b^6*c*e^4 - 3*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 4*(B*b^3*c^4 - 3*A*
b^2*c^5)*d^3*e)*x^3 + (6*A*b^4*c^3*d^2*e^2 - B*b^7*e^4 - 3*(B*b^3*c^4 - 2*A
*b^2*c^5)*d^4 + 4*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e)*x^2)*log(c*x + b) - 2*((
6*A*b^2*c^5*d^2*e^2 - 3*(B*b*c^6 - 2*A*c^7)*d^4 + 4*(B*b^2*c^5 - 3*A*b*c^6)
*d^3*e)*x^4 + 2*(6*A*b^3*c^4*d^2*e^2 - 3*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 4*(B
*b^3*c^4 - 3*A*b^2*c^5)*d^3*e)*x^3 + (6*A*b^4*c^3*d^2*e^2 - 3*(B*b^3*c^4 -
2*A*b^2*c^5)*d^4 + 4*(B*b^4*c^3 - 3*A*b^3*c^4)*d^3*e)*x^2)*log(x))/(b^5*c^5
*x^4 + 2*b^6*c^4*x^3 + b^7*c^3*x^2)
```

giac [**A**] time = 0.16, size = 428, normalized size = 1.82

$$-\frac{\left(3\,Bbcd^4 - 6\,Ac^2d^4 - 4\,Bb^2d^3e + 12\,Abcd^3e - 6\,Ab^2d^2e^2\right)\log\left(|x|\right)}{b^5} + \frac{\left(3\,Bbc^4d^4 - 6\,Ac^5d^4 - 4\,Bb^2c^3d^3e + 12\,Abc^4\right.}{b^5c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d^4 - 6*A*c^2*d^4 - 4*B*b^2*d^3*e + 12*A*b*c*d^3*e - 6*A*b^2*d^2*
e^2)*log(abs(x))/b^5 + (3*B*b*c^4*d^4 - 6*A*c^5*d^4 - 4*B*b^2*c^3*d^3*e + 1
2*A*b*c^4*d^3*e - 6*A*b^2*c^3*d^2*e^2 + B*b^5*e^4)*log(abs(c*x + b))/(b^5*c
^3) - 1/2*(A*b^3*c^3*d^4 + 2*(3*B*b*c^5*d^4 - 6*A*c^6*d^4 - 4*B*b^2*c^4*d^3
*e + 12*A*b*c^5*d^3*e - 6*A*b^2*c^4*d^2*e^2 + 4*B*b^4*c^2*d*e^3 - 2*B*b^5*c
*e^4 + A*b^4*c^2*e^4)*x^3 + (9*B*b^2*c^4*d^4 - 18*A*b*c^5*d^4 - 12*B*b^3*c^
3*d^3*e + 36*A*b^2*c^4*d^3*e + 6*B*b^4*c^2*d^2*e^2 - 18*A*b^3*c^3*d^2*e^2 +
 4*B*b^5*c*d*e^3 + 4*A*b^4*c^2*d*e^3 - 3*B*b^6*e^4 + A*b^5*c*e^4)*x^2 + 2*(
B*b^3*c^3*d^4 - 2*A*b^2*c^4*d^4 + 4*A*b^3*c^3*d^3*e)*x)/((c*x + b)^2*b^4*c^
3*x^2)
```

maple [**B**] time = 0.06, size = 536, normalized size = 2.28

$$\frac{Ab\,e^4}{2\left(cx+b\right)^2c^2} + \frac{3A\,d^2e^2}{\left(cx+b\right)^2b} - \frac{2Ac\,d^3e}{\left(cx+b\right)^2b^2} + \frac{A\,c^2d^4}{2\left(cx+b\right)^2b^3} - \frac{2Ad\,e^3}{\left(cx+b\right)^2c} - \frac{B\,b^2e^4}{2\left(cx+b\right)^2c^3} + \frac{2Bbd\,e^3}{\left(cx+b\right)^2c^2} + \frac{2B\,d^3e}{\left(cx+b\right)^2b} - \frac{}{2(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x)
```

```
[Out] -8*c/b^3/(c*x+b)*A*d^3*e+2*b/c^2/(c*x+b)^2*B*d*e^3-12*d^3/b^4*ln(x)*A*e*c+1
2/b^4*c*ln(c*x+b)*A*d^3*e-2/b^2*c/(c*x+b)^2*A*d^3*e-2/c/(c*x+b)^2*A*d*e^3+3
/b/(c*x+b)^2*A*d^2*e^2+1/c^3*ln(c*x+b)*B*e^4-d^4/b^3/x*B-1/c^2/(c*x+b)*A*e^
4-3/c/(c*x+b)^2*B*d^2*e^2+2/b/(c*x+b)^2*B*d^3*e+6/b^2/(c*x+b)*A*d^2*e^2-4/c
^2/(c*x+b)*B*d*e^3+4/b^2/(c*x+b)*B*d^3*e-6/b^3*ln(c*x+b)*A*d^2*e^2-6/b^5*c^
2*ln(c*x+b)*A*d^4+6*d^2/b^3*ln(x)*A*e^2+6*d^4/b^5*ln(x)*A*c^2+4*d^3/b^3*ln(
x)*B*e-3*d^4/b^4*ln(x)*B*c-4*d^3/b^3/x*A*e+3*d^4/b^4/x*A*c-4/b^3*ln(c*x+b)*
B*d^3*e+3/b^4*c*ln(c*x+b)*B*d^4+1/2*b/c^2/(c*x+b)^2*A*e^4+1/2/b^3*c^2/(c*x+
b)^2*A*d^4-1/2*b^2/c^3/(c*x+b)^2*B*e^4-1/2/b^2*c/(c*x+b)^2*B*d^4+3*c^2/b^4/
(c*x+b)*A*d^4+2/c^3*b/(c*x+b)*B*e^4-2*c/b^3/(c*x+b)*B*d^4-1/2*A*d^4/b^3/x^2
```

maxima [A] time = 0.60, size = 430, normalized size = 1.83

$$-\frac{Ab^3c^3d^4 - 2\,(6\,Ab^2c^4d^2e^2 - 4\,Bb^4c^2de^3 - 3\,(Bbc^5 - 2\,Ac^6)d^4 + 4\,(Bb^2c^4 - 3\,Abc^5)d^3e + (2\,Bb^5c - Ab^4c^2)e^4)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*c^3*d^4 - 2*(6*A*b^2*c^4*d^2*e^2 - 4*B*b^4*c^2*d*e^3 - 3*(B*b*c
^5 - 2*A*c^6)*d^4 + 4*(B*b^2*c^4 - 3*A*b*c^5)*d^3*e + (2*B*b^5*c - A*b^4*c^
2)*e^4)*x^3 + (9*(B*b^2*c^4 - 2*A*b*c^5)*d^4 - 12*(B*b^3*c^3 - 3*A*b^2*c^4)
*d^3*e + 6*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^2 + 4*(B*b^5*c + A*b^4*c^2)*d*e^
3 - (3*B*b^6 - A*b^5*c)*e^4)*x^2 + 2*(4*A*b^3*c^3*d^3*e + (B*b^3*c^3 - 2*A*
b^2*c^4)*d^4)*x)/(b^4*c^5*x^4 + 2*b^5*c^4*x^3 + b^6*c^3*x^2) + (6*A*b^2*d^2
*e^2 - 3*(B*b*c - 2*A*c^2)*d^4 + 4*(B*b^2 - 3*A*b*c)*d^3*e)*log(x)/b^5 - (6
*A*b^2*c^3*d^2*e^2 - B*b^5*e^4 - 3*(B*b*c^4 - 2*A*c^5)*d^4 + 4*(B*b^2*c^3 -
 3*A*b*c^4)*d^3*e)*log(c*x + b)/(b^5*c^3)
```

mupad [B] time = 1.80, size = 403, normalized size = 1.71

$$\frac{\ln(x)\,(b^2\,(4\,B\,d^3\,e+6\,A\,d^2\,e^2)-b\,(3\,B\,c\,d^4+12\,A\,c\,e\,d^3)+6\,A\,c^2\,d^4)}{b^5}-\frac{\frac{A\,d^4}{2\,b}+\frac{x^2\,(-3\,B\,b^5\,e^4+4\,B\,b^4\,c\,d\,e^3+A\,b^4\,c\,e^4+6\,B}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^3,x)
```

```
[Out] (log(x)*(b^2*(6*A*d^2*e^2 + 4*B*d^3*e) - b*(3*B*c*d^4 + 12*A*c*d^3*e) + 6*A
*c^2*d^4))/b^5 - ((A*d^4)/(2*b) + (x^2*(A*b^4*c*e^4 - 3*B*b^5*e^4 - 18*A*c^
5*d^4 + 9*B*b*c^4*d^4 + 4*A*b^3*c^2*d*e^3 - 12*B*b^2*c^3*d^3*e - 18*A*b^2*c
^3*d^2*e^2 + 6*B*b^3*c^2*d^2*e^2 + 36*A*b*c^4*d^3*e + 4*B*b^4*c*d*e^3))/(2*
b^3*c^3) - (x^3*(6*A*c^5*d^4 + 2*B*b^5*e^4 - A*b^4*c*e^4 - 3*B*b*c^4*d^4 +
4*B*b^2*c^3*d^3*e + 6*A*b^2*c^3*d^2*e^2 - 12*A*b*c^4*d^3*e - 4*B*b^4*c*d*e^
3))/(b^4*c^2) + (d^3*x*(4*A*b*e - 2*A*c*d + B*b*d))/b^2)/(b^2*x^2 + c^2*x^4
 + 2*b*c*x^3) + (log(b + c*x)*(b*e - c*d)^2*(B*b^3*e^2 - 6*A*c^3*d^2 + 3*B*
b*c^2*d^2 + 2*B*b^2*c*d*e))/(b^5*c^3)
```

sympy [B] time = 77.98, size = 881, normalized size = 3.75

$$\frac{-Ab^3c^3d^4 + x^3\,(-2Ab^4c^2e^4 + 12Ab^2c^4d^2e^2 - 24Abc^5d^3e + 12Ac^6d^4 + 4Bb^5ce^4 - 8Bb^4c^2de^3 + 8Bb^2c^4d^3e - 6B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*c**3*d**4 + x**3*(-2*A*b**4*c**2*e**4 + 12*A*b**2*c**4*d**2*e**2 -
 24*A*b*c**5*d**3*e + 12*A*c**6*d**4 + 4*B*b**5*c*e**4 - 8*B*b**4*c**2*d*e*
*3 + 8*B*b**2*c**4*d**3*e - 6*B*b*c**5*d**4) + x**2*(-A*b**5*c*e**4 - 4*A*b
**4*c**2*d*e**3 + 18*A*b**3*c**3*d**2*e**2 - 36*A*b**2*c**4*d**3*e + 18*A*b
*c**5*d**4 + 3*B*b**6*e**4 - 4*B*b**5*c*d*e**3 - 6*B*b**4*c**2*d**2*e**2 +
12*B*b**3*c**3*d**3*e - 9*B*b**2*c**4*d**4) + x*(-8*A*b**3*c**3*d**3*e + 4*
A*b**2*c**4*d**4 - 2*B*b**3*c**3*d**4))/(2*b**6*c**3*x**2 + 4*b**5*c**4*x**
3 + 2*b**4*c**5*x**4) + d**2*(6*A*b**2*e**2 - 12*A*b*c*d*e + 6*A*c**2*d**2
+ 4*B*b**2*d*e - 3*B*b*c*d**2)*log(x + (-6*A*b**3*c**2*d**2*e**2 + 12*A*b**
2*c**3*d**3*e - 6*A*b*c**4*d**4 - 4*B*b**3*c**2*d**3*e + 3*B*b**2*c**3*d**4
 + b*c**2*d**2*(6*A*b**2*e**2 - 12*A*b*c*d*e + 6*A*c**2*d**2 + 4*B*b**2*d*e
 - 3*B*b*c*d**2))/(-12*A*b**2*c**3*d**2*e**2 + 24*A*b*c**4*d**3*e - 12*A*c*
*5*d**4 + B*b**5*e**4 - 8*B*b**2*c**3*d**3*e + 6*B*b*c**4*d**4))/b**5 + (b*
e - c*d)**2*(-6*A*c**3*d**2 + B*b**3*e**2 + 2*B*b**2*c*d*e + 3*B*b*c**2*d**
2)*log(x + (-6*A*b**3*c**2*d**2*e**2 + 12*A*b**2*c**3*d**3*e - 6*A*b*c**4*d
**4 - 4*B*b**3*c**2*d**3*e + 3*B*b**2*c**3*d**4 + b*(b*e - c*d)**2*(-6*A*c*
*3*d**2 + B*b**3*e**2 + 2*B*b**2*c*d*e + 3*B*b*c**2*d**2)/c)/(-12*A*b**2*c*
*3*d**2*e**2 + 24*A*b*c**4*d**3*e - 12*A*c**5*d**4 + B*b**5*e**4 - 8*B*b**2
*c**3*d**3*e + 6*B*b*c**4*d**4))/(b**5*c**3)
```

3.1156 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{3d\log(x)(cd-be)(Abe-2Acd+bBd)}{b^5}+\frac{3d(cd-be)\log(b+cx)(Abe-2Acd+bBd)}{b^5}-\frac{d^2(3Abe-3Acd+bB}{b^4x}$$

```
[Out] -1/2*A*d^3/b^3/x^2-d^2*(3*A*b*e-3*A*c*d+B*b*d)/b^4/x-1/2*(-A*c+B*b)*(-b*e+c
*d)^3/b^3/c^2/(c*x+b)^2-(-b*e+c*d)^2*(-3*A*c^2*d+B*b^2*e+2*B*b*c*d)/b^4/c^2
/(c*x+b)-3*d*(-b*e+c*d)*(A*b*e-2*A*c*d+B*b*d)*ln(x)/b^5+3*d*(-b*e+c*d)*(A*b
*e-2*A*c*d+B*b*d)*ln(c*x+b)/b^5
```

Rubi [A] time = 0.25, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{(cd-be)^2\left(-3Ac^2d+b^2Be+2bBcd\right)}{b^4c^2(b+cx)}-\frac{(bB-Ac)(cd-be)^3}{2b^3c^2(b+cx)^2}-\frac{d^2(3Abe-3Acd+bBd)}{b^4x}-\frac{3d\log(x)(cd-be)(Ab}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^3)/(2*b^3*x^2) - (d^2*(b*B*d - 3*A*c*d + 3*A*b*e))/(b^4*x) - ((b*B -
A*c)*(c*d - b*e)^3)/(2*b^3*c^2*(b + c*x)^2) - ((c*d - b*e)^2*(2*b*B*c*d - 3
*A*c^2*d + b^2*B*e))/(b^4*c^2*(b + c*x)) - (3*d*(c*d - b*e)*(b*B*d - 2*A*c*
d + A*b*e)*Log[x])/b^5 + (3*d*(c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e)*Log[b +
 c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{Ad^3}{b^3x^3}+\frac{d^2(bBd-3Acd+3Abe)}{b^4x^2}+\frac{3d(-cd+be)(bBd-2Acd+Abe)}{b^5x}-\frac{(bB-}{b^3}\right.\\ &= -\frac{Ad^3}{2b^3x^2}-\frac{d^2(bBd-3Acd+3Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^3}{2b^3c^2(b+cx)^2}-\frac{(cd-be)^2\left(2bBcd-3A\right.}{b^4c^2(b+cx}\end{aligned}$$

Mathematica [A] time = 0.12, size = 177, normalized size = 0.96

$$-\frac{\frac{2b(cd-be)^2\left(-3Ac^2d+b^2Be+2bBcd\right)}{c^2(b+cx)}-\frac{b^2(bB-Ac)(be-cd)^3}{c^2(b+cx)^2}+\frac{Ab^2d^3}{x^2}+\frac{2bd^2(3Abe-3Acd+bBd)}{x}-6d\log(x)(be-cd)(Abe-2Acd+}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^3)/x^2 + (2*b*d^2*(b*B*d - 3*A*c*d + 3*A*b*e))/x - (b^2*(b*B
 - A*c)*(-(c*d) + b*e)^3)/(c^2*(b + c*x)^2) + (2*b*(c*d - b*e)^2*(2*b*B*c*d
 - 3*A*c^2*d + b^2*B*e))/(c^2*(b + c*x)) - 6*d*(-(c*d) + b*e)*(b*B*d - 2*A*
c*d + A*b*e)*Log[x] + 6*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e)*Log[b +
c*x])/b^5
```

fricas [B] time = 1.36, size = 627, normalized size = 3.39

$$-\frac{Ab^4c^2d^3 - 2\left(3\,Ab^3c^3de^2 - Bb^5ce^3 - 3\left(Bb^2c^4 - 2\,Abc^5\right)d^3 + 3\left(Bb^3c^3 - 3\,Ab^2c^4\right)d^2e\right)x^3 + \left(9\left(Bb^3c^3 - 2\,Ab^2c^4\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*c^2*d^3 - 2*(3*A*b^3*c^3*d*e^2 - B*b^5*c*e^3 - 3*(B*b^2*c^4 - 2
*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (9*(B*b^3*c^3 - 2*
A*b^2*c^4)*d^3 - 9*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e + 3*(B*b^5*c - 3*A*b^4*c
^2)*d*e^2 + (B*b^6 + A*b^5*c)*e^3)*x^2 + 2*(3*A*b^4*c^2*d^2*e + (B*b^4*c^2
- 2*A*b^3*c^3)*d^3)*x + 6*((A*b^2*c^4*d*e^2 - (B*b*c^5 - 2*A*c^6)*d^3 + (B*
b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(A*b^3*c^3*d*e^2 - (B*b^2*c^4 - 2*A*b*c
^5)*d^3 + (B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (A*b^4*c^2*d*e^2 - (B*b^3*
c^3 - 2*A*b^2*c^4)*d^3 + (B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*log(c*x + b)
 - 6*((A*b^2*c^4*d*e^2 - (B*b*c^5 - 2*A*c^6)*d^3 + (B*b^2*c^4 - 3*A*b*c^5)*
d^2*e)*x^4 + 2*(A*b^3*c^3*d*e^2 - (B*b^2*c^4 - 2*A*b*c^5)*d^3 + (B*b^3*c^3
- 3*A*b^2*c^4)*d^2*e)*x^3 + (A*b^4*c^2*d*e^2 - (B*b^3*c^3 - 2*A*b^2*c^4)*d^
3 + (B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*log(x))/(b^5*c^4*x^4 + 2*b^6*c^3*
x^3 + b^7*c^2*x^2)
```

giac [B] time = 0.18, size = 391, normalized size = 2.11

$$-\frac{3\left(Bbcd^3 - 2\,Ac^2d^3 - Bb^2d^2e + 3\,Abcd^2e - Ab^2de^2\right)\log\left(|x|\right)}{b^5} + \frac{3\left(Bbc^2d^3 - 2\,Ac^3d^3 - Bb^2cd^2e + 3\,Abc^2d^2e - Ab^2\right.}{b^5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -3*(B*b*c*d^3 - 2*A*c^2*d^3 - B*b^2*d^2*e + 3*A*b*c*d^2*e - A*b^2*d*e^2)*lo
g(abs(x))/b^5 + 3*(B*b*c^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e + 3*A*b*c^2*d^
2*e - A*b^2*c*d*e^2)*log(abs(c*x + b))/(b^5*c) - 1/2*(6*B*b*c^4*d^3*x^3 - 1
2*A*c^5*d^3*x^3 - 6*B*b^2*c^3*d^2*x^3*e + 18*A*b*c^4*d^2*x^3*e + 9*B*b^2*c^
3*d^3*x^2 - 18*A*b*c^4*d^3*x^2 - 6*A*b^2*c^3*d*x^3*e^2 - 9*B*b^3*c^2*d^2*x^
2*e + 27*A*b^2*c^3*d^2*x^2*e + 2*B*b^3*c^2*d^3*x - 4*A*b^2*c^3*d^3*x + 2*B*
b^4*c*x^3*e^3 + 3*B*b^4*c*d*x^2*e^2 - 9*A*b^3*c^2*d*x^2*e^2 + 6*A*b^3*c^2*d
^2*x*e + A*b^3*c^2*d^3 + B*b^5*x^2*e^3 + A*b^4*c*x^2*e^3)/((c*x^2 + b*x)^2*
b^4*c^2)
```

maple [B] time = 0.06, size = 440, normalized size = 2.38

$$\frac{3Ad\,e^2}{2\left(cx+b\right)^2 b} - \frac{3Ac\,d^2e}{2\left(cx+b\right)^2 b^2} + \frac{A\,c^2d^3}{2\left(cx+b\right)^2 b^3} - \frac{A\,e^3}{2\left(cx+b\right)^2 c} + \frac{Bb\,e^3}{2\left(cx+b\right)^2 c^2} + \frac{3B\,d^2e}{2\left(cx+b\right)^2 b} - \frac{Bc\,d^3}{2\left(cx+b\right)^2 b^2} - \frac{3Bd\,e^2}{2\left(cx+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x)
```

```
[Out] -9*d^2/b^4*ln(x)*A*e*c-3/2*c/b^2/(c*x+b)^2*A*d^2*e-6/b^3*c/(c*x+b)*A*d^2*e+
9*d^2/b^4*ln(c*x+b)*A*e*c-1/c^2/(c*x+b)*B*e^3-1/2/c/(c*x+b)^2*A*e^3-d^3/b^3
/x*B+3/2/b/(c*x+b)^2*A*d*e^2+3/b^2/(c*x+b)*B*d^2*e+3/b^4*c^2/(c*x+b)*A*d^3-
2/b^3*c/(c*x+b)*B*d^3+1/2*c^2/b^3/(c*x+b)^2*A*d^3+1/2/c^2*b/(c*x+b)^2*B*e^3
+3*d/b^3*ln(x)*A*e^2+6*d^3/b^5*ln(x)*A*c^2+3*d^2/b^3*ln(x)*B*e-3*d^3/b^4*ln
```

```
(x)*B*c-1/2*c/b^2/(c*x+b)^2*B*d^3+3/b^2/(c*x+b)*A*d*e^2-3*d^2/b^3*ln(c*x+b)
*B*e-3/2/c/(c*x+b)^2*B*d*e^2+3/2/b/(c*x+b)^2*B*d^2*e+3*d^3/b^4*ln(c*x+b)*B*
c-3*d^2/b^3/x*A*e+3*d^3/b^4/x*A*c-6*d^3/b^5*ln(c*x+b)*A*c^2-3*d/b^3*ln(c*x+
b)*A*e^2-1/2*A*d^3/b^3/x^2
```

maxima [**A**] time = 0.55, size = 347, normalized size = 1.88

$$-\frac{Ab^3c^2d^3 - 2\left(3\,Ab^2c^3de^2 - Bb^4ce^3 - 3\left(Bbc^4 - 2\,Ac^5\right)d^3 + 3\left(Bb^2c^3 - 3\,Abc^4\right)d^2e\right)x^3 + \left(9\left(Bb^2c^3 - 2\,Abc^4\right)d^3}{2\left(b^4c^4x^4 +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*c^2*d^3 - 2*(3*A*b^2*c^3*d*e^2 - B*b^4*c*e^3 - 3*(B*b*c^4 - 2*A
*c^5)*d^3 + 3*(B*b^2*c^3 - 3*A*b*c^4)*d^2*e)*x^3 + (9*(B*b^2*c^3 - 2*A*b*c^
4)*d^3 - 9*(B*b^3*c^2 - 3*A*b^2*c^3)*d^2*e + 3*(B*b^4*c - 3*A*b^3*c^2)*d*e^
2 + (B*b^5 + A*b^4*c)*e^3)*x^2 + 2*(3*A*b^3*c^2*d^2*e + (B*b^3*c^2 - 2*A*b^
2*c^3)*d^3)*x)/(b^4*c^4*x^4 + 2*b^5*c^3*x^3 + b^6*c^2*x^2) - 3*(A*b^2*d*e^2
 - (B*b*c - 2*A*c^2)*d^3 + (B*b^2 - 3*A*b*c)*d^2*e)*log(c*x + b)/b^5 + 3*(A
*b^2*d*e^2 - (B*b*c - 2*A*c^2)*d^3 + (B*b^2 - 3*A*b*c)*d^2*e)*log(x)/b^5
```

mupad [**B**] time = 1.62, size = 345, normalized size = 1.86

$$-\frac{\frac{A\,d^3}{2\,b}-\frac{x^3\,\left(-B\,b^4\,e^3+3\,B\,b^2\,c^2\,d^2\,e+3\,A\,b^2\,c^2\,d\,e^2-3\,B\,b\,c^3\,d^3-9\,A\,b\,c^3\,d^2\,e+6\,A\,c^4\,d^3\right)}{b^4\,c}+\frac{x^2\,\left(B\,b^4\,e^3+3\,B\,b^3\,c\,d\,e^2+A\,b^3\,c\,e^3-9\,B\,b^2\,c^2\,d^2\,e-9\,A\,b^2\right.}{2\,b^3\,c^2}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^3,x)
```

```
[Out] - ((A*d^3)/(2*b) - (x^3*(6*A*c^4*d^3 - B*b^4*e^3 - 3*B*b*c^3*d^3 + 3*A*b^2*
c^2*d*e^2 + 3*B*b^2*c^2*d^2*e - 9*A*b*c^3*d^2*e))/(b^4*c) + (x^2*(B*b^4*e^3
 - 18*A*c^4*d^3 + A*b^3*c*e^3 + 9*B*b*c^3*d^3 - 9*A*b^2*c^2*d*e^2 - 9*B*b^2
*c^2*d^2*e + 27*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2))/(2*b^3*c^2) + (d^2*x*(3*A
*b*e - 2*A*c*d + B*b*d))/b^2)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*d*atanh(
(3*d*(b*e - c*d)*(b + 2*c*x)*(A*b*e - 2*A*c*d + B*b*d))/(b*(6*A*c^2*d^3 - 3
*B*b*c*d^3 + 3*A*b^2*d*e^2 + 3*B*b^2*d^2*e - 9*A*b*c*d^2*e)))*(b*e - c*d)*(
A*b*e - 2*A*c*d + B*b*d))/b^5
```

sympy [**B**] time = 28.93, size = 653, normalized size = 3.53

$$\frac{-Ab^3c^2d^3 + x^3\left(6Ab^2c^3de^2 - 18Abc^4d^2e + 12Ac^5d^3 - 2Bb^4ce^3 + 6Bb^2c^3d^2e - 6Bbc^4d^3\right) + x^2\left(-Ab^4ce^3 + 9Ab^3\right.}{2b^6c^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*c**2*d**3 + x**3*(6*A*b**2*c**3*d*e**2 - 18*A*b*c**4*d**2*e + 12*A
*c**5*d**3 - 2*B*b**4*c*e**3 + 6*B*b**2*c**3*d**2*e - 6*B*b*c**4*d**3) + x*
*2*(-A*b**4*c*e**3 + 9*A*b**3*c**2*d*e**2 - 27*A*b**2*c**3*d**2*e + 18*A*b*
c**4*d**3 - B*b**5*e**3 - 3*B*b**4*c*d*e**2 + 9*B*b**3*c**2*d**2*e - 9*B*b*
*2*c**3*d**3) + x*(-6*A*b**3*c**2*d**2*e + 4*A*b**2*c**3*d**3 - 2*B*b**3*c*
*2*d**3))/(2*b**6*c**2*x**2 + 4*b**5*c**3*x**3 + 2*b**4*c**4*x**4) + 3*d*(b
*e - c*d)*(A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**3*d*e**2 - 9*A*b**2*c*d
**2*e + 6*A*b*c**2*d**3 + 3*B*b**3*d**2*e - 3*B*b**2*c*d**3 - 3*b*d*(b*e -
c*d)*(A*b*e - 2*A*c*d + B*b*d))/(6*A*b**2*c*d*e**2 - 18*A*b*c**2*d**2*e + 1
2*A*c**3*d**3 + 6*B*b**2*c*d**2*e - 6*B*b*c**2*d**3))/b**5 - 3*d*(b*e - c*d
)*(A*b*e - 2*A*c*d + B*b*d)*log(x + (3*A*b**3*d*e**2 - 9*A*b**2*c*d**2*e +
6*A*b*c**2*d**3 + 3*B*b**3*d**2*e - 3*B*b**2*c*d**3 + 3*b*d*(b*e - c*d)*(A*
b*e - 2*A*c*d + B*b*d))/(6*A*b**2*c*d*e**2 - 18*A*b*c**2*d**2*e + 12*A*c**3
*d**3 + 6*B*b**2*c*d**2*e - 6*B*b*c**2*d**3))/b**5
```

3.1157 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=198

$$-\frac{d(2Abe-3Acd+bBd)}{b^4x}-\frac{(cd-be)(Abe-3Acd+2bBd)}{b^4(b+cx)}-\frac{(bB-Ac)(cd-be)^2}{2b^3c(b+cx)^2}-\frac{Ad^2}{2b^3x^2}+\frac{\log(x)\left(b^2e(Ae+2Bd\right.}{}$$

```
[Out] -1/2*A*d^2/b^3/x^2-d*(2*A*b*e-3*A*c*d+B*b*d)/b^4/x-1/2*(-A*c+B*b)*(-b*e+c*d
)^2/b^3/c/(c*x+b)^2-(-b*e+c*d)*(A*b*e-3*A*c*d+2*B*b*d)/b^4/(c*x+b)+(6*A*c^2
*d^2+b^2*e*(A*e+2*B*d)-3*b*c*d*(2*A*e+B*d))*ln(x)/b^5-(6*A*c^2*d^2+b^2*e*(A
*e+2*B*d)-3*b*c*d*(2*A*e+B*d))*ln(c*x+b)/b^5
```

Rubi [A] time = 0.24, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{\log(x)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{b^5}-\frac{\log(b+cx)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right.}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d^2)/(2*b^3*x^2) - (d*(b*B*d - 3*A*c*d + 2*A*b*e))/(b^4*x) - ((b*B - A*
c)*(c*d - b*e)^2)/(2*b^3*c*(b + c*x)^2) - ((c*d - b*e)*(2*b*B*d - 3*A*c*d +
 A*b*e))/(b^4*(b + c*x)) + ((6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B
*d + 2*A*e))*Log[x])/b^5 - ((6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B
*d + 2*A*e))*Log[b + c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{Ad^2}{b^3x^3}+\frac{d(bBd-3Acd+2Abe)}{b^4x^2}+\frac{6Ac^2d^2+b^2e(2Bd+Ae)-3bcd(Bd+2Ae)}{b^5x}\right.\\ &= -\frac{Ad^2}{2b^3x^2}-\frac{d(bBd-3Acd+2Abe)}{b^4x}-\frac{(bB-Ac)(cd-be)^2}{2b^3c(b+cx)^2}-\frac{(cd-be)(2bBd-3Acd}{b^4(b+cx)}\end{aligned}$$

Mathematica [A] time = 0.27, size = 190, normalized size = 0.96

$$-\frac{-2\log(x)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+6Ac^2d^2\right)+2\log(b+cx)\left(b^2e(Ae+2Bd)-3bcd(2Ae+Bd)+\right.}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((A*b^2*d^2)/x^2 + (2*b*d*(b*B*d - 3*A*c*d + 2*A*b*e))/x + (b^2*(b*B -
 A*c)*(c*d - b*e)^2)/(c*(b + c*x)^2) - (2*b*(-(c*d) + b*e)*(2*b*B*d - 3*A*c
*d + A*b*e))/(b + c*x) - 2*(6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B*
d + 2*A*e))*Log[x] + 2*(6*A*c^2*d^2 + b^2*e*(2*B*d + A*e) - 3*b*c*d*(B*d +
2*A*e))*Log[b + c*x])/b^5
```

fricas [B] time = 1.33, size = 558, normalized size = 2.82

$$-\frac{Ab^4cd^2 - 2\left(Ab^3c^2e^2 - 3\left(Bb^2c^3 - 2\,Abc^4\right)d^2 + 2\left(Bb^3c^2 - 3\,Ab^2c^3\right)de\right)x^3 + \left(9\left(Bb^3c^2 - 2\,Ab^2c^3\right)d^2 - 6\left(Bb^4c - \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*c*d^2 - 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 2*(B
*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (9*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 6*(B*
b^4*c - 3*A*b^3*c^2)*d*e + (B*b^5 - 3*A*b^4*c)*e^2)*x^2 + 2*(2*A*b^4*c*d*e
+ (B*b^4*c - 2*A*b^3*c^2)*d^2)*x + 2*((A*b^2*c^3*e^2 - 3*(B*b*c^4 - 2*A*c^5
)*d^2 + 2*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^
3 - 2*A*b*c^4)*d^2 + 2*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (A*b^4*c*e^2 -
3*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 2*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*log(c
*x + b) - 2*((A*b^2*c^3*e^2 - 3*(B*b*c^4 - 2*A*c^5)*d^2 + 2*(B*b^2*c^3 - 3*
A*b*c^4)*d*e)*x^4 + 2*(A*b^3*c^2*e^2 - 3*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 2*(B
*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (A*b^4*c*e^2 - 3*(B*b^3*c^2 - 2*A*b^2*c^
3)*d^2 + 2*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*log(x))/(b^5*c^3*x^4 + 2*b^6*c
^2*x^3 + b^7*c*x^2)
```

giac [A] time = 0.19, size = 324, normalized size = 1.64

$$-\frac{\left(3\,Bbcd^2 - 6\,Ac^2d^2 - 2\,Bb^2de + 6\,Abcde - Ab^2e^2\right)\log\left(|x|\right)}{b^5} + \frac{\left(3\,Bbc^2d^2 - 6\,Ac^3d^2 - 2\,Bb^2cde + 6\,Abc^2de - Ab^2c\right.}{b^5c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d^2 - 6*A*c^2*d^2 - 2*B*b^2*d*e + 6*A*b*c*d*e - A*b^2*e^2)*log(ab
s(x))/b^5 + (3*B*b*c^2*d^2 - 6*A*c^3*d^2 - 2*B*b^2*c*d*e + 6*A*b*c^2*d*e -
A*b^2*c*e^2)*log(abs(c*x + b))/(b^5*c) - 1/2*(6*B*b*c^3*d^2*x^3 - 12*A*c^4*
d^2*x^3 - 4*B*b^2*c^2*d*x^3*e + 12*A*b*c^3*d*x^3*e + 9*B*b^2*c^2*d^2*x^2 -
18*A*b*c^3*d^2*x^2 - 2*A*b^2*c^2*x^3*e^2 - 6*B*b^3*c*d*x^2*e + 18*A*b^2*c^2
*d*x^2*e + 2*B*b^3*c*d^2*x - 4*A*b^2*c^2*d^2*x + B*b^4*x^2*e^2 - 3*A*b^3*c*
x^2*e^2 + 4*A*b^3*c*d*x*e + A*b^3*c*d^2)/((c*x^2 + b*x)^2*b^4*c)
```

maple [A] time = 0.06, size = 365, normalized size = 1.84

$$\frac{A\,e^2}{2\left(cx+b\right)^2 b}-\frac{Acde}{\left(cx+b\right)^2 b^2}+\frac{A\,c^2d^2}{2\left(cx+b\right)^2 b^3}+\frac{Bde}{\left(cx+b\right)^2 b}-\frac{Bc\,d^2}{2\left(cx+b\right)^2 b^2}-\frac{B\,e^2}{2\left(cx+b\right)^2 c}+\frac{A\,e^2}{\left(cx+b\right) b^2}-\frac{4Acde}{\left(cx+b\right) b^3}+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x)
```

```
[Out] 1/b^2/(c*x+b)*A*e^2+1/2/b/(c*x+b)^2*A*e^2-1/2/c/(c*x+b)^2*B*e^2-d^2/b^3/x*B
+1/b^3*ln(x)*A*e^2-1/b^3*ln(c*x+b)*A*e^2+6/b^4*ln(c*x+b)*A*d*e*c-1/b^2*c/(c
*x+b)^2*A*d*e-4/b^3/(c*x+b)*A*d*e*c-6/b^4*ln(x)*A*d*e*c-6/b^5*ln(c*x+b)*A*c
^2*d^2+1/b/(c*x+b)^2*B*d*e-3/b^4*ln(x)*B*d^2*c+1/2/b^3*c^2/(c*x+b)^2*A*d^2-
1/2/b^2*c/(c*x+b)^2*B*d^2+2/b^2/(c*x+b)*B*d*e-2/b^3/(c*x+b)*B*d^2*c+3/b^4/(
c*x+b)*A*c^2*d^2-2*d/b^3/x*A*e+3*d^2/b^4/x*A*c+6/b^5*ln(x)*A*c^2*d^2+2/b^3*
ln(x)*B*d*e-2/b^3*ln(c*x+b)*B*d*e+3/b^4*ln(c*x+b)*B*d^2*c-1/2*A*d^2/b^3/x^2
```

maxima [A] time = 0.59, size = 293, normalized size = 1.48

$$-\frac{Ab^3cd^2 - 2\,(Ab^2c^2e^2 - 3\,(Bbc^3 - 2\,Ac^4)d^2 + 2\,(Bb^2c^2 - 3\,Abc^3)de)x^3 + (9\,(Bb^2c^2 - 2\,Abc^3)d^2 - 6\,(Bb^3c - 3}{2\,(b^4c^3x^4 + 2\,b^5c^2x^3 + b^6cx^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*c*d^2 - 2*(A*b^2*c^2*e^2 - 3*(B*b*c^3 - 2*A*c^4)*d^2 + 2*(B*b^2
*c^2 - 3*A*b*c^3)*d*e)*x^3 + (9*(B*b^2*c^2 - 2*A*b*c^3)*d^2 - 6*(B*b^3*c -
3*A*b^2*c^2)*d*e + (B*b^4 - 3*A*b^3*c)*e^2)*x^2 + 2*(2*A*b^3*c*d*e + (B*b^3
*c - 2*A*b^2*c^2)*d^2)*x)/(b^4*c^3*x^4 + 2*b^5*c^2*x^3 + b^6*c*x^2) - (A*b^
2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 + 2*(B*b^2 - 3*A*b*c)*d*e)*log(c*x + b)/b^5
 + (A*b^2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 + 2*(B*b^2 - 3*A*b*c)*d*e)*log(x)/b
^5
```

mupad [B] time = 0.26, size = 319, normalized size = 1.61

$$-\frac{\frac{A\,d^2}{2\,b}-\frac{c\,x^3\,(2\,B\,b^2\,d\,e+A\,b^2\,e^2-3\,B\,b\,c\,d^2-6\,A\,b\,c\,d\,e+6\,A\,c^2\,d^2)}{b^4}+\frac{d\,x\,(2\,A\,b\,e-2\,A\,c\,d+B\,b\,d)}{b^2}-\frac{x^2\,(-B\,b^3\,e^2+6\,B\,b^2\,c\,d\,e+3\,A\,b^2\,c\,e^2-9\,B\,b\,c^2\,d^2}{2\,b^3\,c}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^3,x)
```

```
[Out] - ((A*d^2)/(2*b) - (c*x^3*(A*b^2*e^2 + 6*A*c^2*d^2 - 3*B*b*c*d^2 + 2*B*b^2*
d*e - 6*A*b*c*d*e))/b^4 + (d*x*(2*A*b*e - 2*A*c*d + B*b*d))/b^2 - (x^2*(18*
A*c^3*d^2 - B*b^3*e^2 + 3*A*b^2*c*e^2 - 9*B*b*c^2*d^2 - 18*A*b*c^2*d*e + 6*
B*b^2*c*d*e))/(2*b^3*c))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (2*atanh(((b + 2
*c*x)*(b^2*(A*e^2 + 2*B*d*e) - b*(3*B*c*d^2 + 6*A*c*d*e) + 6*A*c^2*d^2))/(b
*(A*b^2*e^2 + 6*A*c^2*d^2 - 3*B*b*c*d^2 + 2*B*b^2*d*e - 6*A*b*c*d*e)))*(b^2
*(A*e^2 + 2*B*d*e) - b*(3*B*c*d^2 + 6*A*c*d*e) + 6*A*c^2*d^2))/b^5
```

sympy [B] time = 10.67, size = 660, normalized size = 3.33

$$\frac{-Ab^3cd^2 + x^3\,(2Ab^2c^2e^2 - 12Abc^3de + 12Ac^4d^2 + 4Bb^2c^2de - 6Bbc^3d^2) + x^2\,(3Ab^3ce^2 - 18Ab^2c^2de + 18Abc^3}{2b^6cx^2 + 4b^5c^2x^3 + 2b^4c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*c*d**2 + x**3*(2*A*b**2*c**2*e**2 - 12*A*b*c**3*d*e + 12*A*c**4*d*
*2 + 4*B*b**2*c**2*d*e - 6*B*b*c**3*d**2) + x**2*(3*A*b**3*c*e**2 - 18*A*b*
*2*c**2*d*e + 18*A*b*c**3*d**2 - B*b**4*e**2 + 6*B*b**3*c*d*e - 9*B*b**2*c*
*2*d**2) + x*(-4*A*b**3*c*d*e + 4*A*b**2*c**2*d**2 - 2*B*b**3*c*d**2))/(2*b
**6*c*x**2 + 4*b**5*c**2*x**3 + 2*b**4*c**3*x**4) + (A*b**2*e**2 - 6*A*b*c*
d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e - 3*B*b*c*d**2)*log(x + (A*b**3*e**2 - 6
*A*b**2*c*d*e + 6*A*b*c**2*d**2 + 2*B*b**3*d*e - 3*B*b**2*c*d**2 - b*(A*b**
2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e - 3*B*b*c*d**2))/(2*A*b
**2*c*e**2 - 12*A*b*c**2*d*e + 12*A*c**3*d**2 + 4*B*b**2*c*d*e - 6*B*b*c**2
*d**2))/b**5 - (A*b**2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2 + 2*B*b**2*d*e -
3*B*b*c*d**2)*log(x + (A*b**3*e**2 - 6*A*b**2*c*d*e + 6*A*b*c**2*d**2 + 2*B
*b**3*d*e - 3*B*b**2*c*d**2 + b*(A*b**2*e**2 - 6*A*b*c*d*e + 6*A*c**2*d**2
+ 2*B*b**2*d*e - 3*B*b*c*d**2))/(2*A*b**2*c*e**2 - 12*A*b*c**2*d*e + 12*A*c
**3*d**2 + 4*B*b**2*c*d*e - 6*B*b*c**2*d**2))/b**5
```

3.1158 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=168

$$-\frac{Abe-3Acd+bBd}{b^4x}-\frac{(bB-Ac)(cd-be)}{2b^3(b+cx)^2}-\frac{Ad}{2b^3x^2}+\frac{\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)}{b^5}-\log(b+cx)\left(-3bc(\right.$$

```
[Out] -1/2*A*d/b^3/x^2+(-A*b*e+3*A*c*d-B*b*d)/b^4/x-1/2*(-A*c+B*b)*(-b*e+c*d)/b^3
/(c*x+b)^2+(3*A*c^2*d+b^2*B*e-2*b*c*(A*e+B*d))/b^4/(c*x+b)+(6*A*c^2*d+b^2*B
*e-3*b*c*(A*e+B*d))*ln(x)/b^5-(6*A*c^2*d+b^2*B*e-3*b*c*(A*e+B*d))*ln(c*x+b)
/b^5
```

Rubi [A] time = 0.21, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{-2bc(Ae+Bd)+3Ac^2d+b^2Be}{b^4(b+cx)}+\frac{\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)}{b^5}-\frac{\log(b+cx)\left(-3bc(Ae+Bd)+6Ac^2\right.}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] -(A*d)/(2*b^3*x^2) - (b*B*d - 3*A*c*d + A*b*e)/(b^4*x) - ((b*B - A*c)*(c*d
- b*e))/(2*b^3*(b + c*x)^2) + (3*A*c^2*d + b^2*B*e - 2*b*c*(B*d + A*e))/(b^
4*(b + c*x)) + ((6*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[x])/b^5 - ((6
*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[b + c*x])/b^5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^3}dx &= \int \left(\frac{Ad}{b^3x^3}+\frac{bBd-3Acd+Abe}{b^4x^2}+\frac{6Ac^2d+b^2Be-3bc(Bd+Ae)}{b^5x}-\frac{c(bB-Ac)(-cd+b}{b^3(b+cx)^3}\right.\\ &= -\frac{Ad}{2b^3x^2}-\frac{bBd-3Acd+Abe}{b^4x}-\frac{(bB-Ac)(cd-be)}{2b^3(b+cx)^2}+\frac{3Ac^2d+b^2Be-2bc(Bd+Ae)}{b^4(b+cx)}+\end{aligned}$$

Mathematica [A] time = 0.14, size = 162, normalized size = 0.96

$$\frac{\frac{2b\left(-2bc(Ae+Bd)+3Ac^2d+b^2Be\right)}{b+cx}+2\log(x)\left(-3bc(Ae+Bd)+6Ac^2d+b^2Be\right)-2\log(b+cx)\left(-3bc(Ae+Bd)+6Ac^2d+\right.}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x]
```

```
[Out] (-((A*b^2*d)/x^2) - (2*b*(b*B*d - 3*A*c*d + A*b*e))/x + (b^2*(b*B - A*c)*(-
(c*d) + b*e))/(b + c*x)^2 + (2*b*(3*A*c^2*d + b^2*B*e - 2*b*c*(B*d + A*e)))
/(b + c*x) + 2*(6*A*c^2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[x] - 2*(6*A*c^
2*d + b^2*B*e - 3*b*c*(B*d + A*e))*Log[b + c*x])/(2*b^5)
```

fricas [B] time = 1.37, size = 410, normalized size = 2.44

$$-\frac{Ab^4d + 2\left(3\left(Bb^2c^2 - 2\,Abc^3\right)d - \left(Bb^3c - 3\,Ab^2c^2\right)e\right)x^3 + 3\left(3\left(Bb^3c - 2\,Ab^2c^2\right)d - \left(Bb^4 - 3\,Ab^3c\right)e\right)x^2 + 2\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4*d + 2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c^2)*e)
*x^3 + 3*(3*(B*b^3*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2 + 2*(A*b
^4*e + (B*b^4 - 2*A*b^3*c)*d)*x - 2*((3*(B*b*c^3 - 2*A*c^4)*d - (B*b^2*c^2
- 3*A*b*c^3)*e)*x^4 + 2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c
^2)*e)*x^3 + (3*(B*b^3*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2)*log
(c*x + b) + 2*((3*(B*b*c^3 - 2*A*c^4)*d - (B*b^2*c^2 - 3*A*b*c^3)*e)*x^4 +
2*(3*(B*b^2*c^2 - 2*A*b*c^3)*d - (B*b^3*c - 3*A*b^2*c^2)*e)*x^3 + (3*(B*b^3
*c - 2*A*b^2*c^2)*d - (B*b^4 - 3*A*b^3*c)*e)*x^2)*log(x))/(b^5*c^2*x^4 + 2*
b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.16, size = 225, normalized size = 1.34

$$-\frac{\left(3\,Bbcd - 6\,Ac^2d - Bb^2e + 3\,Abce\right)\log\left(|x|\right)}{b^5} + \frac{\left(3\,Bbc^2d - 6\,Ac^3d - Bb^2ce + 3\,Abc^2e\right)\log\left(|cx + b|\right)}{b^5c} - \frac{6\,Bbc^2dx^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -(3*B*b*c*d - 6*A*c^2*d - B*b^2*e + 3*A*b*c*e)*log(abs(x))/b^5 + (3*B*b*c^2
*d - 6*A*c^3*d - B*b^2*c*e + 3*A*b*c^2*e)*log(abs(c*x + b))/(b^5*c) - 1/2*(
6*B*b*c^2*d*x^3 - 12*A*c^3*d*x^3 - 2*B*b^2*c*x^3*e + 6*A*b*c^2*x^3*e + 9*B*
b^2*c*d*x^2 - 18*A*b*c^2*d*x^2 - 3*B*b^3*x^2*e + 9*A*b^2*c*x^2*e + 2*B*b^3*
d*x - 4*A*b^2*c*d*x + 2*A*b^3*x*e + A*b^3*d)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.06, size = 261, normalized size = 1.55

$$-\frac{Ace}{2\left(cx + b\right)^2 b^2} + \frac{A\,c^2d}{2\left(cx + b\right)^2 b^3} + \frac{Be}{2\left(cx + b\right)^2 b} - \frac{Bcd}{2\left(cx + b\right)^2 b^2} - \frac{2Ace}{\left(cx + b\right) b^3} + \frac{3A\,c^2d}{\left(cx + b\right) b^4} - \frac{3Ace\ln(x)}{b^4} + \frac{3Ace\ln(c}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -2/b^3/(c*x+b)*A*e*c+3/b^4/(c*x+b)*A*c^2*d+1/b^2/(c*x+b)*B*e-2/b^3/(c*x+b)*
B*d*c+3/b^4*ln(c*x+b)*A*e*c-6/b^5*ln(c*x+b)*A*c^2*d-1/b^3*ln(c*x+b)*B*e+3/b
^4*ln(c*x+b)*B*d*c-1/2/b^2/(c*x+b)^2*A*e*c+1/2/b^3/(c*x+b)^2*A*c^2*d+1/2/b/
(c*x+b)^2*B*e-1/2/b^2/(c*x+b)^2*B*d*c-1/b^3/x*A*e+3/b^4/x*A*c*d-1/b^3/x*B*d
-3/b^4*ln(x)*A*e*c+6/b^5*ln(x)*A*c^2*d+1/b^3*ln(x)*B*e-3/b^4*ln(x)*B*d*c-1/
2*A*d/b^3/x^2
```

maxima [A] time = 0.50, size = 217, normalized size = 1.29

$$-\frac{Ab^3d + 2\left(3\left(Bbc^2 - 2\,Ac^3\right)d - \left(Bb^2c - 3\,Abc^2\right)e\right)x^3 + 3\left(3\left(Bb^2c - 2\,Abc^2\right)d - \left(Bb^3 - 3\,Ab^2c\right)e\right)x^2 + 2\left(Ab^3e\right.}{2\left(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3*d + 2*(3*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - 3*A*b*c^2)*e)*x^3 +
 3*(3*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - 3*A*b^2*c)*e)*x^2 + 2*(A*b^3*e + (
B*b^3 - 2*A*b^2*c)*d)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) + (3*(B*b*c
- 2*A*c^2)*d - (B*b^2 - 3*A*b*c)*e)*log(c*x + b)/b^5 - (3*(B*b*c - 2*A*c^2)
*d - (B*b^2 - 3*A*b*c)*e)*log(x)/b^5
```

mupad [B] time = 1.53, size = 223, normalized size = 1.33

$$-\frac{\frac{x\,(A\,b\,e-2\,A\,c\,d+B\,b\,d)}{b^2}-\frac{3\,x^2\,\left(6\,A\,c^2\,d+B\,b^2\,e-3\,A\,b\,c\,e-3\,B\,b\,c\,d\right)}{2\,b^3}+\frac{A\,d}{2\,b}-\frac{c\,x^3\,\left(6\,A\,c^2\,d+B\,b^2\,e-3\,A\,b\,c\,e-3\,B\,b\,c\,d\right)}{b^4}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}-\frac{2\,\mathrm{atanh}\left(\frac{(b+2\,c\,x)\,\left(6\,A\,c^2}{b\,\left(6\,A\,c^2\,d+}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^3,x)
```

```
[Out] - ((x*(A*b*e - 2*A*c*d + B*b*d))/b^2 - (3*x^2*(6*A*c^2*d + B*b^2*e - 3*A*b*
c*e - 3*B*b*c*d))/(2*b^3) + (A*d)/(2*b) - (c*x^3*(6*A*c^2*d + B*b^2*e - 3*A
*b*c*e - 3*B*b*c*d))/b^4)/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (2*atanh(((b +
2*c*x)*(6*A*c^2*d - b*(3*A*c*e + 3*B*c*d) + B*b^2*e))/(b*(6*A*c^2*d + B*b^2
*e - 3*A*b*c*e - 3*B*b*c*d)))*(6*A*c^2*d - b*(3*A*c*e + 3*B*c*d) + B*b^2*e)
)/b^5
```

sympy [B] time = 2.87, size = 449, normalized size = 2.67

$$\frac{-Ab^3d+x^3\left(-6Abc^2e+12Ac^3d+2Bb^2ce-6Bbc^2d\right)+x^2\left(-9Ab^2ce+18Abc^2d+3Bb^3e-9Bb^2cd\right)+x\left(-2Ab^3e\right.}{2b^6x^2+4b^5cx^3+2b^4c^2x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3*d + x**3*(-6*A*b*c**2*e + 12*A*c**3*d + 2*B*b**2*c*e - 6*B*b*c**2*
d) + x**2*(-9*A*b**2*c*e + 18*A*b*c**2*d + 3*B*b**3*e - 9*B*b**2*c*d) + x*(
-2*A*b**3*e + 4*A*b**2*c*d - 2*B*b**3*d))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*
b**4*c**2*x**4) + (-3*A*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d)*log(x +
(-3*A*b**2*c*e + 6*A*b*c**2*d + B*b**3*e - 3*B*b**2*c*d - b*(-3*A*b*c*e + 6
*A*c**2*d + B*b**2*e - 3*B*b*c*d))/(-6*A*b*c**2*e + 12*A*c**3*d + 2*B*b**2*
c*e - 6*B*b*c**2*d))/b**5 - (-3*A*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d
)*log(x + (-3*A*b**2*c*e + 6*A*b*c**2*d + B*b**3*e - 3*B*b**2*c*d + b*(-3*A
*b*c*e + 6*A*c**2*d + B*b**2*e - 3*B*b*c*d))/(-6*A*b*c**2*e + 12*A*c**3*d +
 2*B*b**2*c*e - 6*B*b*c**2*d))/b**5
```

3.1159 $\int \frac{A+Bx}{\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=109

$$-\frac{3c\log(x)(bB-2Ac)}{b^5}+\frac{3c(bB-2Ac)\log(b+cx)}{b^5}-\frac{bB-3Ac}{b^4x}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{A}{2b^3x^2}$$

```
[Out] -1/2*A/b^3/x^2+(3*A*c-B*b)/b^4/x-1/2*c*(-A*c+B*b)/b^3/(c*x+b)^2-c*(-3*A*c+2
*B*b)/b^4/(c*x+b)-3*c*(-2*A*c+B*b)*ln(x)/b^5+3*c*(-2*A*c+B*b)*ln(c*x+b)/b^5
```

Rubi [A] time = 0.10, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {631}

$$-\frac{bB-3Ac}{b^4x}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{3c\log(x)(bB-2Ac)}{b^5}+\frac{3c(bB-2Ac)\log(b+cx)}{b^5}-\frac{A}{2b^3x^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^3,x]
```

```
[Out] -A/(2*b^3*x^2) - (b*B - 3*A*c)/(b^4*x) - (c*(b*B - A*c))/(2*b^3*(b + c*x)^2
) - (c*(2*b*B - 3*A*c))/(b^4*(b + c*x)) - (3*c*(b*B - 2*A*c)*Log[x])/b^5 +
(3*c*(b*B - 2*A*c)*Log[b + c*x])/b^5
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\int \frac{A+Bx}{\left(bx+cx^2\right)^3} dx = \int \left(\frac{A}{b^3x^3}+\frac{bB-3Ac}{b^4x^2}-\frac{3c(bB-2Ac)}{b^5x}+\frac{c^2(bB-Ac)}{b^3(b+cx)^3}+\frac{c^2(2bB-3Ac)}{b^4(b+cx)^2}+\frac{3c^2(bB-2Ac)}{b^5(b+cx)}\right)$$

$$= -\frac{A}{2b^3x^2}-\frac{bB-3Ac}{b^4x}-\frac{c(bB-Ac)}{2b^3(b+cx)^2}-\frac{c(2bB-3Ac)}{b^4(b+cx)}-\frac{3c(bB-2Ac)\log(x)}{b^5}+\frac{3c(bB-2}{}$$

Mathematica [A] time = 0.08, size = 106, normalized size = 0.97

$$\frac{-\frac{b\left(A\left(b^3-4b^2cx-18bc^2x^2-12c^3x^3\right)+bBx\left(2b^2+9bcx+6c^2x^2\right)\right)}{x^2(b+cx)^2}+6c\log(x)(2Ac-bB)+6c(bB-2Ac)\log(b+cx)}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^3,x]
```

```
[Out] (-((b*(b*B*x*(2*b^2 + 9*b*c*x + 6*c^2*x^2) + A*(b^3 - 4*b^2*c*x - 18*b*c^2*
x^2 - 12*c^3*x^3)))/(x^2*(b + c*x)^2)) + 6*c*(-(b*B) + 2*A*c)*Log[x] + 6*c*
(b*B - 2*A*c)*Log[b + c*x])/(2*b^5)
```

fricas [B] time = 0.87, size = 225, normalized size = 2.06

$$-\frac{Ab^4+6\,(Bb^2c^2-2\,Abc^3)x^3+9\,(Bb^3c-2\,Ab^2c^2)x^2+2\,(Bb^4-2\,Ab^3c)x-6\,((Bbc^3-2\,Ac^4)x^4+2\,(Bb^2c^2-}{2\,(b^5c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] -1/2*(A*b^4 + 6*(B*b^2*c^2 - 2*A*b*c^3)*x^3 + 9*(B*b^3*c - 2*A*b^2*c^2)*x^2
 + 2*(B*b^4 - 2*A*b^3*c)*x - 6*((B*b*c^3 - 2*A*c^4)*x^4 + 2*(B*b^2*c^2 - 2*
A*b*c^3)*x^3 + (B*b^3*c - 2*A*b^2*c^2)*x^2)*log(c*x + b) + 6*((B*b*c^3 - 2*
A*c^4)*x^4 + 2*(B*b^2*c^2 - 2*A*b*c^3)*x^3 + (B*b^3*c - 2*A*b^2*c^2)*x^2)*l
og(x))/(b^5*c^2*x^4 + 2*b^6*c*x^3 + b^7*x^2)
```

giac [A] time = 0.15, size = 124, normalized size = 1.14

$$-\frac{3\left(Bbc-2\,Ac^{2}\right)\log\left(|x|\right)}{b^{5}}+\frac{3\left(Bbc^{2}-2\,Ac^{3}\right)\log\left(|cx+b|\right)}{b^{5}c}-\frac{6\,Bbc^{2}x^{3}-12\,Ac^{3}x^{3}+9\,Bb^{2}cx^{2}-18\,Abc^{2}x^{2}+2\,Bb^{3}x}{2\left(cx^{2}+bx\right)^{2}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -3*(B*b*c - 2*A*c^2)*log(abs(x))/b^5 + 3*(B*b*c^2 - 2*A*c^3)*log(abs(c*x +
b))/(b^5*c) - 1/2*(6*B*b*c^2*x^3 - 12*A*c^3*x^3 + 9*B*b^2*c*x^2 - 18*A*b*c^
2*x^2 + 2*B*b^3*x - 4*A*b^2*c*x + A*b^3)/((c*x^2 + b*x)^2*b^4)
```

maple [A] time = 0.05, size = 138, normalized size = 1.27

$$\frac{A\,c^{2}}{2\,(cx+b)^{2}\,b^{3}}-\frac{Bc}{2\,(cx+b)^{2}\,b^{2}}+\frac{3A\,c^{2}}{(cx+b)\,b^{4}}+\frac{6A\,c^{2}\ln(x)}{b^{5}}-\frac{6A\,c^{2}\ln\left(cx+b\right)}{b^{5}}-\frac{2Bc}{(cx+b)\,b^{3}}-\frac{3Bc\ln(x)}{b^{4}}+\frac{3Bc\ln\left(cx+b\right.}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^3,x)
```

```
[Out] -6*c^2/b^5*ln(c*x+b)*A+3*c/b^4*ln(c*x+b)*B+3*c^2/b^4/(c*x+b)*A-2*c/b^3/(c*x
+b)*B+1/2*c^2/b^3/(c*x+b)^2*A-1/2*c/b^2/(c*x+b)^2*B-1/2*A/b^3/x^2+3/b^4/x*A
*c-1/b^3/x*B+6*c^2/b^5*ln(x)*A-3*c/b^4*ln(x)*B
```

maxima [A] time = 0.51, size = 131, normalized size = 1.20

$$-\frac{Ab^{3}+6\left(Bbc^{2}-2\,Ac^{3}\right)x^{3}+9\left(Bb^{2}c-2\,Abc^{2}\right)x^{2}+2\left(Bb^{3}-2\,Ab^{2}c\right)x}{2\left(b^{4}c^{2}x^{4}+2\,b^{5}cx^{3}+b^{6}x^{2}\right)}+\frac{3\left(Bbc-2\,Ac^{2}\right)\log\left(cx+b\right)}{b^{5}}-\frac{3\left(Bbc-2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(A*b^3 + 6*(B*b*c^2 - 2*A*c^3)*x^3 + 9*(B*b^2*c - 2*A*b*c^2)*x^2 + 2*(
B*b^3 - 2*A*b^2*c)*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2) + 3*(B*b*c - 2*
A*c^2)*log(c*x + b)/b^5 - 3*(B*b*c - 2*A*c^2)*log(x)/b^5
```

mupad [B] time = 0.11, size = 136, normalized size = 1.25

$$\frac{\frac{x\,(2\,A\,c-B\,b)}{b^{2}}-\frac{A}{2\,b}+\frac{3\,c^{2}\,x^{3}\,(2\,A\,c-B\,b)}{b^{4}}+\frac{9\,c\,x^{2}\,(2\,A\,c-B\,b)}{2\,b^{3}}}{b^{2}\,x^{2}+2\,b\,c\,x^{3}+c^{2}\,x^{4}}-\frac{6\,c\,\mathrm{atanh}\left(\frac{3\,c\,(2\,A\,c-B\,b)\,(b+2\,c\,x)}{b\,\left(6\,A\,c^{2}-3\,B\,b\,c\right)}\right)\,(2\,A\,c-B\,b)}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^3,x)
```

```
[Out] ((x*(2*A*c - B*b))/b^2 - A/(2*b) + (3*c^2*x^3*(2*A*c - B*b))/b^4 + (9*c*x^2
*(2*A*c - B*b))/(2*b^3))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) - (6*c*atanh((3*c*
(2*A*c - B*b)*(b + 2*c*x))/(b*(6*A*c^2 - 3*B*b*c)))*(2*A*c - B*b))/b^5
```

sympy [B] time = 0.72, size = 219, normalized size = 2.01

$$\frac{-Ab^3 + x^3\left(12Ac^3 - 6Bbc^2\right) + x^2\left(18Abc^2 - 9Bb^2c\right) + x\left(4Ab^2c - 2Bb^3\right)}{2b^6x^2 + 4b^5cx^3 + 2b^4c^2x^4} - \frac{3c\left(-2Ac + Bb\right)\log\left(x + \frac{-6Abc^2+3Bb^2}{-12A}\right.}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**3,x)
```

```
[Out] (-A*b**3 + x**3*(12*A*c**3 - 6*B*b*c**2) + x**2*(18*A*b*c**2 - 9*B*b**2*c)
+ x*(4*A*b**2*c - 2*B*b**3))/(2*b**6*x**2 + 4*b**5*c*x**3 + 2*b**4*c**2*x**
4) - 3*c*(-2*A*c + B*b)*log(x + (-6*A*b*c**2 + 3*B*b**2*c - 3*b*c*(-2*A*c +
 B*b))/(-12*A*c**3 + 6*B*b*c**2))/b**5 + 3*c*(-2*A*c + B*b)*log(x + (-6*A*b
*c**2 + 3*B*b**2*c + 3*b*c*(-2*A*c + B*b))/(-12*A*c**3 + 6*B*b*c**2))/b**5
```

3.1160 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=279

$$-\frac{-Abe-3Acd+bBd}{b^4d^2x}-\frac{c^2(bB-Ac)}{2b^3(b+cx)^2(cd-be)}-\frac{A}{2b^3dx^2}+\frac{\log(x)\left(b^2(-e)(Bd-Ae)-3bcd(Bd-Ae)+6Ac^2d^2\right)}{b^5d^3}+\frac{c^2}{}$$

```
[Out] -1/2*A/b^3/d/x^2+(A*b*e+3*A*c*d-B*b*d)/b^4/d^2/x-1/2*c^2*(-A*c+B*b)/b^3/(-b
*e+c*d)/(c*x+b)^2+c^2*(3*A*c^2*d+3*b^2*B*e-2*b*c*(2*A*e+B*d))/b^4/(-b*e+c*d
)^2/(c*x+b)+(6*A*c^2*d^2-3*b*c*d*(-A*e+B*d)-b^2*e*(-A*e+B*d))*ln(x)/b^5/d^3
-c^2*(6*A*c^3*d^2-6*b^3*B*e^2-3*b*c^2*d*(5*A*e+B*d)+2*b^2*c*e*(5*A*e+4*B*d)
)*ln(c*x+b)/b^5/(-b*e+c*d)^3-e^4*(-A*e+B*d)*ln(e*x+d)/d^3/(-b*e+c*d)^3
```

Rubi [A] time = 0.50, antiderivative size = 279, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{c^2\log(b+cx)\left(2b^2ce(5Ae+4Bd)-3bc^2d(5Ae+Bd)+6Ac^3d^2-6b^3Be^2\right)}{b^5(cd-be)^3}+\frac{\log(x)\left(b^2(-e)(Bd-Ae)-3bcd(Bd\right.}{b^5d^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3),x]
```

```
[Out] -A/(2*b^3*d*x^2) - (b*B*d - 3*A*c*d - A*b*e)/(b^4*d^2*x) - (c^2*(b*B - A*c)
)/(2*b^3*(c*d - b*e)*(b + c*x)^2) + (c^2*(3*A*c^2*d + 3*b^2*B*e - 2*b*c*(B*
d + 2*A*e)))/(b^4*(c*d - b*e)^2*(b + c*x)) + ((6*A*c^2*d^2 - 3*b*c*d*(B*d -
 A*e) - b^2*e*(B*d - A*e))*Log[x])/(b^5*d^3) - (c^2*(6*A*c^3*d^2 - 6*b^3*B*
e^2 - 3*b*c^2*d*(B*d + 5*A*e) + 2*b^2*c*e*(4*B*d + 5*A*e))*Log[b + c*x])/(b
^5*(c*d - b*e)^3) - (e^4*(B*d - A*e)*Log[d + e*x])/(d^3*(c*d - b*e)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^3}\,dx &= \int \left(\frac{A}{b^3dx^3}+\frac{bBd-3Acd-Abe}{b^4d^2x^2}+\frac{6Ac^2d^2-3bcd(Bd-Ae)-b^2e(Bd-Ae)}{b^5d^3x}-\frac{c}{b^3(-c}\right.\\ &= -\frac{A}{2b^3dx^2}-\frac{bBd-3Acd-Abe}{b^4d^2x}-\frac{c^2(bB-Ac)}{2b^3(cd-be)(b+cx)^2}+\frac{c^2\left(3Ac^2d+3b^2Be-2bc(\right.}{b^4(cd-be)^2(b+c}\end{aligned}$$

Mathematica [A] time = 1.05, size = 276, normalized size = 0.99

$$\frac{Abe+3Acd-bBd}{b^4d^2x}+\frac{c^2(bB-Ac)}{2b^3(b+cx)^2(be-cd)}-\frac{A}{2b^3dx^2}-\frac{\log(x)\left(b^2e(Bd-Ae)+3bcd(Bd-Ae)-6Ac^2d^2\right)}{b^5d^3}+\frac{c^2\left(-2bc\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^3),x]
```

```
[Out] -1/2*A/(b^3*d*x^2) + (-(b*B*d) + 3*A*c*d + A*b*e)/(b^4*d^2*x) + (c^2*(b*B -
 A*c))/(2*b^3*(-(c*d) + b*e)*(b + c*x)^2) + (c^2*(3*A*c^2*d + 3*b^2*B*e - 2
*b*c*(B*d + 2*A*e)))/(b^4*(c*d - b*e)^2*(b + c*x)) - ((-6*A*c^2*d^2 + 3*b*c
*d*(B*d - A*e) + b^2*e*(B*d - A*e))*Log[x])/(b^5*d^3) + (c^2*(6*A*c^3*d^2 -
 6*b^3*B*e^2 - 3*b*c^2*d*(B*d + 5*A*e) + 2*b^2*c*e*(4*B*d + 5*A*e))*Log[b +
 c*x])/(b^5*(-(c*d) + b*e)^3) + (e^4*(-(B*d) + A*e)*Log[d + e*x])/(d^3*(c*d
 - b*e)^3)
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**] time = 0.24, size = 649, normalized size = 2.33

$$\frac{\left(3\,Bbc^5d^2-6\,Ac^6d^2-8\,Bb^2c^4de+15\,Abc^5de+6\,Bb^3c^3e^2-10\,Ab^2c^4e^2\right)\log\left(|cx+b|\right)}{b^5c^4d^3-3\,b^6c^3d^2e+3\,b^7c^2de^2-b^8ce^3}-\frac{\left(Bde^5-Ae^6\right)\log}{c^3d^6e-3\,bc^2d^5e^2+3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] (3*B*b*c^5*d^2 - 6*A*c^6*d^2 - 8*B*b^2*c^4*d*e + 15*A*b*c^5*d*e + 6*B*b^3*c
^3*e^2 - 10*A*b^2*c^4*e^2)*log(abs(c*x + b))/(b^5*c^4*d^3 - 3*b^6*c^3*d^2*e
 + 3*b^7*c^2*d*e^2 - b^8*c*e^3) - (B*d*e^5 - A*e^6)*log(abs(x*e + d))/(c^3*
d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 - b^3*d^3*e^4) - (3*B*b*c*d^2 - 6
*A*c^2*d^2 + B*b^2*d*e - 3*A*b*c*d*e - A*b^2*e^2)*log(abs(x))/(b^5*d^3) - 1
/2*(A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 +
 2*(3*B*b*c^5*d^5 - 6*A*c^6*d^5 - 8*B*b^2*c^4*d^4*e + 15*A*b*c^5*d^4*e + 6*
B*b^3*c^3*d^3*e^2 - 10*A*b^2*c^4*d^3*e^2 - B*b^4*c^2*d^2*e^3 + A*b^4*c^2*d*
e^4)*x^3 + (9*B*b^2*c^4*d^5 - 18*A*b*c^5*d^5 - 24*B*b^3*c^3*d^4*e + 45*A*b^
2*c^4*d^4*e + 19*B*b^4*c^2*d^3*e^2 - 30*A*b^3*c^3*d^3*e^2 - 4*B*b^5*c*d^2*e
^3 - A*b^4*c^2*d^2*e^3 + 4*A*b^5*c*d*e^4)*x^2 + 2*(B*b^3*c^3*d^5 - 2*A*b^2*
c^4*d^5 - 3*B*b^4*c^2*d^4*e + 5*A*b^3*c^3*d^4*e + 3*B*b^5*c*d^3*e^2 - 3*A*b
^4*c^2*d^3*e^2 - B*b^6*d^2*e^3 - A*b^5*c*d^2*e^3 + A*b^6*d*e^4)*x)/((c*d -
b*e)^3*(c*x + b)^2*b^4*d^3*x^2)
```

maple [**A**] time = 0.07, size = 490, normalized size = 1.76

$$\frac{10A\,c^3e^2\ln\left(cx+b\right)}{\left(be-cd\right)^3b^3}-\frac{15A\,c^4de\ln\left(cx+b\right)}{\left(be-cd\right)^3b^4}+\frac{6A\,c^5d^2\ln\left(cx+b\right)}{\left(be-cd\right)^3b^5}-\frac{A\,e^5\ln\left(ex+d\right)}{\left(be-cd\right)^3d^3}-\frac{6B\,c^2e^2\ln\left(cx+b\right)}{\left(be-cd\right)^3b^2}+\frac{8B\,c^3de}{(be-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x)
```

```
[Out] -4*c^3/(b*e-c*d)^2/b^3/(c*x+b)*A*e+3*c^4/(b*e-c*d)^2/b^4/(c*x+b)*A*d+3*c^2/
(b*e-c*d)^2/b^2/(c*x+b)*B*e-2*c^3/(b*e-c*d)^2/b^3/(c*x+b)*B*d+10*c^3/(b*e-c
*d)^3/b^3*ln(c*x+b)*A*e^2-15*c^4/(b*e-c*d)^3/b^4*ln(c*x+b)*A*d*e+6*c^5/(b*e
-c*d)^3/b^5*ln(c*x+b)*A*d^2-6*c^2/(b*e-c*d)^3/b^2*ln(c*x+b)*B*e^2+8*c^3/(b*
e-c*d)^3/b^3*ln(c*x+b)*B*d*e-3*c^4/(b*e-c*d)^3/b^4*ln(c*x+b)*B*d^2-1/2*c^3/
(b*e-c*d)/b^3/(c*x+b)^2*A+1/2*c^2/(b*e-c*d)/b^2/(c*x+b)^2*B-e^5/(b*e-c*d)^3
/d^3*ln(e*x+d)*A+e^4/(b*e-c*d)^3/d^2*ln(e*x+d)*B-1/2*A/b^3/d/x^2+1/b^3/d^2/
x*A*e+3/b^4/d/x*A*c-1/b^3/d/x*B+1/b^3/d^3*ln(x)*A*e^2+3/b^4/d^2*ln(x)*A*e*c
+6/b^5/d*ln(x)*A*c^2-1/b^3/d^2*ln(x)*B*e-3/b^4/d*ln(x)*B*c
```

maxima [B] time = 0.71, size = 612, normalized size = 2.19

$$\frac{\left(3\left(Bbc^4-2\,Ac^5\right)d^2-\left(8\,Bb^2c^3-15\,Abc^4\right)de+2\left(3\,Bb^3c^2-5\,Ab^2c^3\right)e^2\right)\log\left(cx+b\right)}{b^5c^3d^3-3\,b^6c^2d^2e+3\,b^7cde^2-b^8e^3}-\frac{\left(Bde^4-Ae^5\right)\log\left(ex\right.}{c^3d^6-3\,bc^2d^5e+3\,b^2cd^4e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] (3*(B*b*c^4 - 2*A*c^5)*d^2 - (8*B*b^2*c^3 - 15*A*b*c^4)*d*e + 2*(3*B*b^3*c^
2 - 5*A*b^2*c^3)*e^2)*log(c*x + b)/(b^5*c^3*d^3 - 3*b^6*c^2*d^2*e + 3*b^7*c
*d*e^2 - b^8*e^3) - (B*d*e^4 - A*e^5)*log(e*x + d)/(c^3*d^6 - 3*b*c^2*d^5*e
 + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3) - 1/2*(A*b^3*c^2*d^3 - 2*A*b^4*c*d^2*e +
A*b^5*d*e^2 - 2*(A*b^3*c^2*e^3 - 3*(B*b*c^4 - 2*A*c^5)*d^3 + (5*B*b^2*c^3 -
 9*A*b*c^4)*d^2*e - (B*b^3*c^2 - A*b^2*c^3)*d*e^2)*x^3 - (4*A*b^4*c*e^3 - 9
*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 3*(5*B*b^3*c^2 - 9*A*b^2*c^3)*d^2*e - (4*B*b
^4*c - 3*A*b^3*c^2)*d*e^2)*x^2 + 2*(B*b^5*d*e^2 - A*b^5*e^3 + (B*b^3*c^2 -
2*A*b^2*c^3)*d^3 - (2*B*b^4*c - 3*A*b^3*c^2)*d^2*e)*x)/((b^4*c^4*d^4 - 2*b^
5*c^3*d^3*e + b^6*c^2*d^2*e^2)*x^4 + 2*(b^5*c^3*d^4 - 2*b^6*c^2*d^3*e + b^7
*c*d^2*e^2)*x^3 + (b^6*c^2*d^4 - 2*b^7*c*d^3*e + b^8*d^2*e^2)*x^2) + (A*b^2
*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 - (B*b^2 - 3*A*b*c)*d*e)*log(x)/(b^5*d^3)
```

mupad [B] time = 2.61, size = 512, normalized size = 1.84

$$\frac{\frac{x\,\left(A\,b\,e+2\,A\,c\,d-B\,b\,d\right)}{b^2\,d^2}-\frac{A}{2\,b\,d}+\frac{x^3\,\left(-B\,b^3\,c^2\,d\,e^2+A\,b^3\,c^2\,e^3+5\,B\,b^2\,c^3\,d^2\,e+A\,b^2\,c^3\,d\,e^2-3\,B\,b\,c^4\,d^3-9\,A\,b\,c^4\,d^2\,e+6\,A\,c^5\,d^3\right)}{b^4\,d^2\,\left(b^2\,e^2-2\,b\,c\,d\,e+c^2\,d^2\right)}+\frac{x^2\,\left(-4\,B\,b^3\,c\,d\,e^2+4\,A\right.}{}}{b^2\,x^2+2\,b\,c\,x^3+c^2\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)),x)
```

```
[Out] ((x*(A*b*e + 2*A*c*d - B*b*d))/(b^2*d^2) - A/(2*b*d) + (x^3*(6*A*c^5*d^3 -
3*B*b*c^4*d^3 + A*b^3*c^2*e^3 + A*b^2*c^3*d*e^2 + 5*B*b^2*c^3*d^2*e - B*b^3
*c^2*d*e^2 - 9*A*b*c^4*d^2*e))/(b^4*d^2*(b^2*e^2 + c^2*d^2 - 2*b*c*d*e)) +
(x^2*(18*A*c^4*d^3 + 4*A*b^3*c*e^3 - 9*B*b*c^3*d^3 + 3*A*b^2*c^2*d*e^2 + 15
*B*b^2*c^2*d^2*e - 27*A*b*c^3*d^2*e - 4*B*b^3*c*d*e^2))/(2*b^3*d^2*(b^2*e^2
 + c^2*d^2 - 2*b*c*d*e)))/(b^2*x^2 + c^2*x^4 + 2*b*c*x^3) + (log(d + e*x)*(
A*e^5 - B*d*e^4))/(c^3*d^6 - b^3*d^3*e^3 + 3*b^2*c*d^4*e^2 - 3*b*c^2*d^5*e)
 + (log(b + c*x)*(d^2*(6*A*c^5 - 3*B*b*c^4) - d*(15*A*b*c^4*e - 8*B*b^2*c^3
*e) + 10*A*b^2*c^3*e^2 - 6*B*b^3*c^2*e^2))/(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c
^2*d^2*e - 3*b^7*c*d*e^2) + (log(x)*(d^2*(6*A*c^2 - 3*B*b*c) - d*(B*b^2*e -
 3*A*b*c*e) + A*b^2*e^2))/(b^5*d^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1161 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=331

$$-\frac{-2Abe-3Acd+bBd}{b^4d^3x}-\frac{c^3(bB-Ac)}{2b^3(b+cx)^2(cd-be)^2}-\frac{A}{2b^3d^2x^2}+\frac{\log(x)\big(b^2(-e)(2Bd-3Ae)-3bcd(Bd-2Ae)+6A}{b^5d^4}$$

```
[Out] -1/2*A/b^3/d^2/x^2+(2*A*b*e+3*A*c*d-B*b*d)/b^4/d^3/x-1/2*c^3*(-A*c+B*b)/b^3
/(-b*e+c*d)^2/(c*x+b)^2-c^3*(5*A*b*c*e-3*A*c^2*d-4*B*b^2*e+2*B*b*c*d)/b^4/(
-b*e+c*d)^3/(c*x+b)+e^4*(-A*e+B*d)/d^3/(-b*e+c*d)^3/(e*x+d)+(6*A*c^2*d^2-b^
2*e*(-3*A*e+2*B*d)-3*b*c*d*(-2*A*e+B*d))*ln(x)/b^5/d^4-c^3*(6*A*c^3*d^2-10*
b^3*B*e^2+5*b^2*c*e*(3*A*e+2*B*d)-3*b*c^2*d*(6*A*e+B*d))*ln(c*x+b)/b^5/(-b*
e+c*d)^4-e^4*(B*d*(-2*b*e+5*c*d)-3*A*e*(-b*e+2*c*d))*ln(e*x+d)/d^4/(-b*e+c*
d)^4
```

Rubi [A] time = 0.67, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{c^3\log(b+cx)\left(5b^2ce(3Ae+2Bd)-3bc^2d(6Ae+Bd)+6Ac^3d^2-10b^3Be^2\right)}{b^5(cd-be)^4}+\frac{\log(x)\big(b^2(-e)(2Bd-3Ae)-3b}{b^5d^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3),x]
```

```
[Out] -A/(2*b^3*d^2*x^2) - (b*B*d - 3*A*c*d - 2*A*b*e)/(b^4*d^3*x) - (c^3*(b*B -
A*c))/(2*b^3*(c*d - b*e)^2*(b + c*x)^2) - (c^3*(2*b*B*c*d - 3*A*c^2*d - 4*b
^2*B*e + 5*A*b*c*e))/(b^4*(c*d - b*e)^3*(b + c*x)) + (e^4*(B*d - A*e))/(d^3
*(c*d - b*e)^3*(d + e*x)) + ((6*A*c^2*d^2 - b^2*e*(2*B*d - 3*A*e) - 3*b*c*d
*(B*d - 2*A*e))*Log[x])/(b^5*d^4) - (c^3*(6*A*c^3*d^2 - 10*b^3*B*e^2 + 5*b^
2*c*e*(2*B*d + 3*A*e) - 3*b*c^2*d*(B*d + 6*A*e))*Log[b + c*x])/(b^5*(c*d -
b*e)^4) - (e^4*(B*d*(5*c*d - 2*b*e) - 3*A*e*(2*c*d - b*e))*Log[d + e*x])/(d
^4*(c*d - b*e)^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^3}\,dx &= \int \bigg(\frac{A}{b^3d^2x^3}+\frac{bBd-3Acd-2Abe}{b^4d^3x^2}+\frac{6Ac^2d^2-b^2e(2Bd-3Ae)-3bcd(Bd-2A}{b^5d^4x}\\ &= -\frac{A}{2b^3d^2x^2}-\frac{bBd-3Acd-2Abe}{b^4d^3x}-\frac{c^3(bB-Ac)}{2b^3(cd-be)^2(b+cx)^2}-\frac{c^3\big(2bBcd-3Ac^2d}{b^4(cd-be}\end{aligned}$$

Mathematica [A] time = 0.55, size = 328, normalized size = 0.99

$$\frac{2Abe+3Acd-bBd}{b^4d^3x}+\frac{c^3(Ac-bB)}{2b^3(b+cx)^2(cd-be)^2}-\frac{A}{2b^3d^2x^2}-\frac{\log(x)\left(b^2e(2Bd-3Ae)+3bcd(Bd-2Ae)-6Ac^2d^2\right)}{b^5d^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^3),x]
```

```
[Out] -1/2*A/(b^3*d^2*x^2) + (-(b*B*d) + 3*A*c*d + 2*A*b*e)/(b^4*d^3*x) + (c^3*(-
(b*B) + A*c))/(2*b^3*(c*d - b*e)^2*(b + c*x)^2) + (c^3*(-3*A*c^2*d - 4*b^2*
B*e + b*c*(2*B*d + 5*A*e)))/(b^4*(-(c*d) + b*e)^3*(b + c*x)) + (e^4*(B*d -
A*e))/(d^3*(c*d - b*e)^3*(d + e*x)) - ((-6*A*c^2*d^2 + b^2*e*(2*B*d - 3*A*e
) + 3*b*c*d*(B*d - 2*A*e))*Log[x])/(b^5*d^4) + (c^3*(-6*A*c^3*d^2 + 10*b^3*
B*e^2 - 5*b^2*c*e*(2*B*d + 3*A*e) + 3*b*c^2*d*(B*d + 6*A*e))*Log[b + c*x])/
(b^5*(c*d - b*e)^4) - (e^4*(B*d*(5*c*d - 2*b*e) + 3*A*e*(-2*c*d + b*e))*Log
[d + e*x])/(d^4*(c*d - b*e)^4)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.37, size = 1292, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/2*(6*B*b*c^5*d^6*e^2 - 12*A*c^6*d^6*e^2 - 20*B*b^2*c^4*d^5*e^3 + 36*A*b*
c^5*d^5*e^3 + 20*B*b^3*c^3*d^4*e^4 - 30*A*b^2*c^4*d^4*e^4 - 5*B*b^5*c*d^2*e
^6 + 2*B*b^6*d*e^7 + 6*A*b^5*c*d*e^7 - 3*A*b^6*e^8)*e^(-2)*log(abs(2*c*d*e
- 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) - abs(b)*e^2)/abs(2*c*d
*e - 2*c*d^2*e/(x*e + d) - b*e^2 + 2*b*d*e^2/(x*e + d) + abs(b)*e^2))/((b^4
*c^4*d^8 - 4*b^5*c^3*d^7*e + 6*b^6*c^2*d^6*e^2 - 4*b^7*c*d^5*e^3 + b^8*d^4*
e^4)*abs(b)) + 1/2*(5*B*c*d^2*e^4 - 2*B*b*d*e^5 - 6*A*c*d*e^5 + 3*A*b*e^6)*
log(abs(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*
e + d)^2))/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 +
 b^4*d^4*e^4) + (B*d*e^10/(x*e + d) - A*e^11/(x*e + d))/(c^3*d^6*e^6 - 3*b*
c^2*d^5*e^7 + 3*b^2*c*d^4*e^8 - b^3*d^3*e^9) - 1/2*(6*B*b*c^6*d^5*e - 12*A*
c^7*d^5*e - 17*B*b^2*c^5*d^4*e^2 + 30*A*b*c^6*d^4*e^2 + 12*B*b^3*c^4*d^3*e^
3 - 16*A*b^2*c^5*d^3*e^3 - 8*B*b^4*c^3*d^2*e^4 - 6*A*b^3*c^4*d^2*e^4 + 2*B*
b^5*c^2*d*e^5 + 14*A*b^4*c^3*d*e^5 - 5*A*b^5*c^2*e^6 - 2*(9*B*b*c^6*d^6*e^2
 - 18*A*c^7*d^6*e^2 - 30*B*b^2*c^5*d^5*e^3 + 54*A*b*c^6*d^5*e^3 + 31*B*b^3*
c^4*d^4*e^4 - 47*A*b^2*c^5*d^4*e^4 - 24*B*b^4*c^3*d^3*e^5 + 4*A*b^3*c^4*d^3
*e^5 + 11*B*b^5*c^2*d^2*e^6 + 29*A*b^4*c^3*d^2*e^6 - 2*B*b^6*c*d*e^7 - 22*A
*b^5*c^2*d*e^7 + 5*A*b^6*c*e^8)*e^(-1)/(x*e + d) + (18*B*b*c^6*d^7*e^3 - 36
*A*c^7*d^7*e^3 - 69*B*b^2*c^5*d^6*e^4 + 126*A*b*c^6*d^6*e^4 + 90*B*b^3*c^4*
d^5*e^5 - 144*A*b^2*c^5*d^5*e^5 - 80*B*b^4*c^3*d^4*e^6 + 45*A*b^3*c^4*d^4*e
^6 + 50*B*b^5*c^2*d^3*e^7 + 70*A*b^4*c^3*d^3*e^7 - 16*B*b^6*c*d^2*e^8 - 87*
A*b^5*c^2*d^2*e^8 + 2*B*b^7*d*e^9 + 36*A*b^6*c*d*e^9 - 5*A*b^7*e^10)*e^(-2)
/(x*e + d)^2 - 2*(3*B*b*c^6*d^8*e^4 - 6*A*c^7*d^8*e^4 - 13*B*b^2*c^5*d^7*e^
5 + 24*A*b*c^6*d^7*e^5 + 20*B*b^3*c^4*d^6*e^6 - 33*A*b^2*c^5*d^6*e^6 - 20*B
*b^4*c^3*d^5*e^7 + 15*A*b^3*c^4*d^5*e^7 + 15*B*b^5*c^2*d^4*e^8 + 15*A*b^4*c
^3*d^4*e^8 - 6*B*b^6*c*d^3*e^9 - 27*A*b^5*c^2*d^3*e^9 + B*b^7*d^2*e^10 + 15
*A*b^6*c*d^2*e^10 - 3*A*b^7*d*e^11)*e^(-3)/(x*e + d)^3)/((c*d - b*e)^4*b^4*
(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^
2)^2*d^4)
```

maple [A] time = 0.08, size = 598, normalized size = 1.81

$$-\frac{3Ab\,e^{6}\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d^{4}}-\frac{15A\,c^{4}e^{2}\ln\left(cx+b\right)}{\left(be-cd\right)^{4}b^{3}}+\frac{18A\,c^{5}de\ln\left(cx+b\right)}{\left(be-cd\right)^{4}b^{4}}-\frac{6A\,c^{6}d^{2}\ln\left(cx+b\right)}{\left(be-cd\right)^{4}b^{5}}+\frac{6Ac\,e^{5}\ln\left(ex+d\right)}{\left(be-cd\right)^{4}d^{3}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x)
```

```
[Out] -1/b^3/d^2/x*B-10*c^4/(b*e-c*d)^4/b^3*ln(c*x+b)*B*d*e+18*c^5/(b*e-c*d)^4/b^
4*ln(c*x+b)*A*d*e-2/d^3/b^3*ln(x)*B*e-3/d^2/b^4*ln(x)*B*c+1/2*c^4/(b*e-c*d)
^2/b^3/(c*x+b)^2*A-1/2*c^3/(b*e-c*d)^2/b^2/(c*x+b)^2*B+e^5/(b*e-c*d)^3/d^3/
(e*x+d)*A-e^4/(b*e-c*d)^3/d^2/(e*x+d)*B+2/b^3/d^3/x*A*e+3/b^4/d^2/x*A*c+2*c
^4/(b*e-c*d)^3/b^3/(c*x+b)*B*d+6/d^3/b^4*ln(x)*A*e*c-3*e^6/(b*e-c*d)^4/d^4*
ln(e*x+d)*A*b+6*e^5/(b*e-c*d)^4/d^3*ln(e*x+d)*A*c+2*e^5/(b*e-c*d)^4/d^3*ln(
e*x+d)*B*b-5*e^4/(b*e-c*d)^4/d^2*ln(e*x+d)*B*c-6*c^6/(b*e-c*d)^4/b^5*ln(c*x
+b)*A*d^2+10*c^3/(b*e-c*d)^4/b^2*ln(c*x+b)*B*e^2+3*c^5/(b*e-c*d)^4/b^4*ln(c
*x+b)*B*d^2+5*c^4/(b*e-c*d)^3/b^3/(c*x+b)*A*e-3*c^5/(b*e-c*d)^3/b^4/(c*x+b)
*A*d-15*c^4/(b*e-c*d)^4/b^3*ln(c*x+b)*A*e^2-4*c^3/(b*e-c*d)^3/b^2/(c*x+b)*B
*e+3/d^4/b^3*ln(x)*A*e^2+6/d^2/b^5*ln(x)*A*c^2-1/2*A/b^3/d^2/x^2
```

maxima [**B**] time = 0.91, size = 1043, normalized size = 3.15

$$\frac{\left(3\left(Bbc^5-2\,Ac^6\right)d^2-2\left(5\,Bb^2c^4-9\,Abc^5\right)de+5\left(2\,Bb^3c^3-3\,Ab^2c^4\right)e^2\right)\log\left(cx+b\right)}{b^5c^4d^4-4\,b^6c^3d^3e+6\,b^7c^2d^2e^2-4\,b^8cde^3+b^9e^4}-\frac{\left(5\,Bcd^2e^4+3\,Abe^6-2}{c^4d^8-4\,bc^3d^7e+6\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] (3*(B*b*c^5 - 2*A*c^6)*d^2 - 2*(5*B*b^2*c^4 - 9*A*b*c^5)*d*e + 5*(2*B*b^3*c
^3 - 3*A*b^2*c^4)*e^2)*log(c*x + b)/(b^5*c^4*d^4 - 4*b^6*c^3*d^3*e + 6*b^7*
c^2*d^2*e^2 - 4*b^8*c*d*e^3 + b^9*e^4) - (5*B*c*d^2*e^4 + 3*A*b*e^6 - 2*(B*
b + 3*A*c)*d*e^5)*log(e*x + d)/(c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2
 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4) - 1/2*(A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e
+ 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 + 2*(3*A*b^4*c^2*e^5 + 3*(B*b*c^5 - 2*A
*c^6)*d^4*e - (7*B*b^2*c^4 - 12*A*b*c^5)*d^3*e^2 + 3*(B*b^3*c^3 - A*b^2*c^4
)*d^2*e^3 - (2*B*b^4*c^2 + 3*A*b^3*c^3)*d*e^4)*x^4 + (12*A*b^5*c*e^5 + 6*(B
*b*c^5 - 2*A*c^6)*d^5 - (5*B*b^2*c^4 - 6*A*b*c^5)*d^4*e - 15*(B*b^3*c^3 - 2
*A*b^2*c^4)*d^3*e^2 + 5*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^3 - (8*B*b^5*c +
9*A*b^4*c^2)*d*e^4)*x^3 - (4*B*b^6*d*e^4 - 6*A*b^6*e^5 - 9*(B*b^2*c^4 - 2*A
*b*c^5)*d^5 + (19*B*b^3*c^3 - 32*A*b^2*c^4)*d^4*e - (6*B*b^4*c^2 - A*b^3*c^
3)*d^3*e^2 - (2*B*b^5*c - 13*A*b^4*c^2)*d^2*e^3)*x^2 + (3*A*b^6*d*e^4 + 2*(
B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 3*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^4*e + 3*(2*B
*b^5*c - A*b^4*c^2)*d^3*e^2 - (2*B*b^6 + 5*A*b^5*c)*d^2*e^3)*x)/((b^4*c^5*d
^6*e - 3*b^5*c^4*d^5*e^2 + 3*b^6*c^3*d^4*e^3 - b^7*c^2*d^3*e^4)*x^5 + (b^4*
c^5*d^7 - b^5*c^4*d^6*e - 3*b^6*c^3*d^5*e^2 + 5*b^7*c^2*d^4*e^3 - 2*b^8*c*d
^3*e^4)*x^4 + (2*b^5*c^4*d^7 - 5*b^6*c^3*d^6*e + 3*b^7*c^2*d^5*e^2 + b^8*c*
d^4*e^3 - b^9*d^3*e^4)*x^3 + (b^6*c^3*d^7 - 3*b^7*c^2*d^6*e + 3*b^8*c*d^5*e
^2 - b^9*d^4*e^3)*x^2) + (3*A*b^2*e^2 - 3*(B*b*c - 2*A*c^2)*d^2 - 2*(B*b^2
- 3*A*b*c)*d*e)*log(x)/(b^5*d^4)
```

mupad [**B**] time = 3.26, size = 879, normalized size = 2.66

$$\frac{\ln(x)\,\left(b^2\,\left(3\,A\,e^2-2\,B\,d\,e\right)-b\,\left(3\,B\,c\,d^2-6\,A\,c\,d\,e\right)+6\,A\,c^2\,d^2\right)}{b^5\,d^4}-\frac{\ln\left(b+c\,x\right)\,\left(d^2\,\left(6\,A\,c^6-3\,B\,b\,c^5\right)-d\,\left(18\,A\right.\right.}{b^9\,e^4-4\,b^8\,c\,d\,e^3+6\,b^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^2),x)
```

```
[Out] (log(x)*(b^2*(3*A*e^2 - 2*B*d*e) - b*(3*B*c*d^2 - 6*A*c*d*e) + 6*A*c^2*d^2)
)/(b^5*d^4) - (log(b + c*x)*(d^2*(6*A*c^6 - 3*B*b*c^5) - d*(18*A*b*c^5*e -
10*B*b^2*c^4*e) + 15*A*b^2*c^4*e^2 - 10*B*b^3*c^3*e^2))/(b^9*e^4 + b^5*c^4*
d^4 - 4*b^6*c^3*d^3*e + 6*b^7*c^2*d^2*e^2 - 4*b^8*c*d*e^3) - (log(d + e*x)*
(c*(5*B*d^2*e^4 - 6*A*d*e^5) + b*(3*A*e^6 - 2*B*d*e^5)))/(c^4*d^8 + b^4*d^4
*e^4 - 4*b^3*c*d^5*e^3 + 6*b^2*c^2*d^6*e^2 - 4*b*c^3*d^7*e) - (A/(2*b*d) -
(x*(3*A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^2*d^2) + (x^3*(12*A*c^6*d^5 - 12*A*b
^5*c*e^5 - 6*B*b*c^5*d^5 + 9*A*b^4*c^2*d*e^4 + 5*B*b^2*c^4*d^4*e - 30*A*b^2
*c^4*d^3*e^2 + 15*A*b^3*c^3*d^2*e^3 + 15*B*b^3*c^3*d^3*e^2 - 10*B*b^4*c^2*d
^2*e^3 - 6*A*b*c^5*d^4*e + 8*B*b^5*c*d*e^4))/(2*b^4*d^3*(b^3*e^3 - c^3*d^3
+ 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) - (x^2*(6*A*b^5*e^5 - 18*A*c^5*d^5 + 9*B*
b*c^4*d^5 - 4*B*b^5*d*e^4 - 19*B*b^2*c^3*d^4*e + 2*B*b^4*c*d^2*e^3 - A*b^2*
c^3*d^3*e^2 - 13*A*b^3*c^2*d^2*e^3 + 6*B*b^3*c^2*d^3*e^2 + 32*A*b*c^4*d^4*e
))/(2*b^3*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)) + (c^2*e
*x^4*(6*A*c^4*d^4 - 3*A*b^4*e^4 - 3*B*b*c^3*d^4 + 2*B*b^4*d*e^3 + 7*B*b^2*c
^2*d^3*e - 3*B*b^3*c*d^2*e^2 + 3*A*b^2*c^2*d^2*e^2 - 12*A*b*c^3*d^3*e + 3*A
*b^3*c*d*e^3))/(b^4*d^3*(b^3*e^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2)
))/(x^3*(b^2*e + 2*b*c*d) + x^4*(c^2*d + 2*b*c*e) + b^2*d*x^2 + c^2*e*x^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1162 $\int (A+Bx)(d+ex)^3\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=404

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex\left(28Ace(2cd-be)+B\left(21b^2e^2-36bcde+8c^2d^2\right)\right)+4Ace\left(35b^2e^2-150bcde+192c^2d^2\right)+\right.}{960c^4}$$

```
[Out] 1/20*(4*A*c*e-3*B*b*e+2*B*c*d)*(e*x+d)^2*(c*x^2+b*x)^(3/2)/c^2+1/6*B*(e*x+d
)^3*(c*x^2+b*x)^(3/2)/c+1/960*(4*A*c*e*(35*b^2*e^2-150*b*c*d*e+192*c^2*d^2)
+B*(-105*b^3*e^3+420*b^2*c*d*e^2-456*b*c^2*d^2*e+64*c^3*d^3)+6*c*e*(28*A*c*
e*(-b*e+2*c*d)+B*(21*b^2*e^2-36*b*c*d*e+8*c^2*d^2))*x)*(c*x^2+b*x)^(3/2)/c^
4-1/512*b^2*(128*A*c^4*d^3+21*b^4*B*e^3+120*b^2*c^2*d*e*(A*e+B*d)-28*b^3*c*
e^2*(A*e+3*B*d)-64*b*c^3*d^2*(3*A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/
2))/c^(11/2)+1/512*(128*A*c^4*d^3+21*b^4*B*e^3+120*b^2*c^2*d*e*(A*e+B*d)-28
*b^3*c*e^2*(A*e+3*B*d)-64*b*c^3*d^2*(3*A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(1/2
)/c^5
```

Rubi **[A]** time = 0.55, antiderivative size = 404, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex\left(28Ace(2cd-be)+B\left(21b^2e^2-36bcde+8c^2d^2\right)\right)+4Ace\left(35b^2e^2-150bcde+192c^2d^2\right)+\right.}{960c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((128*A*c^4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2
*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])
/(512*c^5) + ((2*B*c*d - 3*b*B*e + 4*A*c*e)*(d + e*x)^2*(b*x + c*x^2)^(3/2)
)/(20*c^2) + (B*(d + e*x)^3*(b*x + c*x^2)^(3/2))/(6*c) + ((4*A*c*e*(192*c^2
*d^2 - 150*b*c*d*e + 35*b^2*e^2) + B*(64*c^3*d^3 - 456*b*c^2*d^2*e + 420*b^
2*c*d*e^2 - 105*b^3*e^3) + 6*c*e*(28*A*c*e*(2*c*d - b*e) + B*(8*c^2*d^2 - 3
6*b*c*d*e + 21*b^2*e^2))*x)*(b*x + c*x^2)^(3/2))/(960*c^4) - (b^2*(128*A*c^
4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2*(3*B*d +
A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/
(512*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\sqrt{bx+cx^2}\,dx = \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + \frac{\int (d+ex)^2\left(-\frac{3}{2}(bB-4Ac)d+\frac{3}{2}(2Bcd-3bBe+4}{6c}$$

$$= \frac{(2Bcd-3bBe+4Ace)(d+ex)^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + $$

$$= \frac{(2Bcd-3bBe+4Ace)(d+ex)^2\left(bx+cx^2\right)^{3/2}}{20c^2} + \frac{B(d+ex)^3\left(bx+cx^2\right)^{3/2}}{6c} + $$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\right.}{512c^5}$$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\right.}{512c^5}$$

$$= \frac{\left(128Ac^4d^3+21b^4Be^3+120b^2c^2de(Bd+Ae)-28b^3ce^2(3Bd+Ae)-64bc^3d\right.}{512c^5}$$

Mathematica [A] time = 1.08, size = 422, normalized size = 1.04

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-210b^4ce^2(2Ae+6Bd+Bex)+8b^3c^2e\left(5Ae(45d+7ex)+3B\left(75d^2+35dex+7e^2x^2\right)\right)-16b^2c^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(315*b^5*B*e^3 - 210*b^4*c*e^2*(6*B*d + 2*A*e +
 B*e*x) + 8*b^3*c^2*e*(5*A*e*(45*d + 7*e*x) + 3*B*(75*d^2 + 35*d*e*x + 7*e^
2*x^2)) + 64*b*c^4*(3*A*(10*d^3 + 10*d^2*e*x + 5*d*e^2*x^2 + e^3*x^3) + B*x
*(10*d^3 + 15*d^2*e*x + 9*d*e^2*x^2 + 2*e^3*x^3)) - 16*b^2*c^3*(A*e*(180*d^
2 + 75*d*e*x + 14*e^2*x^2) + B*(60*d^3 + 75*d^2*e*x + 42*d*e^2*x^2 + 9*e^3*
x^3)) + 128*c^5*x*(3*A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B
*x*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3))) - (15*b^(3/2)*(128*A
*c^4*d^3 + 21*b^4*B*e^3 + 120*b^2*c^2*d*e*(B*d + A*e) - 28*b^3*c*e^2*(3*B*d
 + A*e) - 64*b*c^3*d^2*(B*d + 3*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(
Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(11/2))
```

fricas [A] time = 1.27, size = 1022, normalized size = 2.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(64*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 24*(5*B*b^4*c^2 - 8*A*b^3*
c^3)*d^2*e + 12*(7*B*b^5*c - 10*A*b^4*c^2)*d*e^2 - 7*(3*B*b^6 - 4*A*b^5*c)*
e^3)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(1280*B*c^6*e
^3*x^5 + 128*(36*B*c^6*d*e^2 + (B*b*c^5 + 12*A*c^6)*e^3)*x^4 - 960*(B*b^2*c
^4 - 2*A*b*c^5)*d^3 + 360*(5*B*b^3*c^3 - 8*A*b^2*c^4)*d^2*e - 180*(7*B*b^4*
c^2 - 10*A*b^3*c^3)*d*e^2 + 105*(3*B*b^5*c - 4*A*b^4*c^2)*e^3 + 48*(120*B*c
^6*d^2*e + 12*(B*b*c^5 + 10*A*c^6)*d*e^2 - (3*B*b^2*c^4 - 4*A*b*c^5)*e^3)*x
^3 + 8*(320*B*c^6*d^3 + 120*(B*b*c^5 + 8*A*c^6)*d^2*e - 12*(7*B*b^2*c^4 - 1
0*A*b*c^5)*d*e^2 + 7*(3*B*b^3*c^3 - 4*A*b^2*c^4)*e^3)*x^2 + 10*(64*(B*b*c^5
 + 6*A*c^6)*d^3 - 24*(5*B*b^2*c^4 - 8*A*b*c^5)*d^2*e + 12*(7*B*b^3*c^3 - 10
*A*b^2*c^4)*d*e^2 - 7*(3*B*b^4*c^2 - 4*A*b^3*c^3)*e^3)*x)*sqrt(c*x^2 + b*x)
)/c^6, -1/7680*(15*(64*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 24*(5*B*b^4*c^2 - 8*
A*b^3*c^3)*d^2*e + 12*(7*B*b^5*c - 10*A*b^4*c^2)*d*e^2 - 7*(3*B*b^6 - 4*A*b
^5*c)*e^3)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (1280*B*c^6*
e^3*x^5 + 128*(36*B*c^6*d*e^2 + (B*b*c^5 + 12*A*c^6)*e^3)*x^4 - 960*(B*b^2*
c^4 - 2*A*b*c^5)*d^3 + 360*(5*B*b^3*c^3 - 8*A*b^2*c^4)*d^2*e - 180*(7*B*b^4
*c^2 - 10*A*b^3*c^3)*d*e^2 + 105*(3*B*b^5*c - 4*A*b^4*c^2)*e^3 + 48*(120*B*
c^6*d^2*e + 12*(B*b*c^5 + 10*A*c^6)*d*e^2 - (3*B*b^2*c^4 - 4*A*b*c^5)*e^3)*
x^3 + 8*(320*B*c^6*d^3 + 120*(B*b*c^5 + 8*A*c^6)*d^2*e - 12*(7*B*b^2*c^4 -
10*A*b*c^5)*d*e^2 + 7*(3*B*b^3*c^3 - 4*A*b^2*c^4)*e^3)*x^2 + 10*(64*(B*b*c^
5 + 6*A*c^6)*d^3 - 24*(5*B*b^2*c^4 - 8*A*b*c^5)*d^2*e + 12*(7*B*b^3*c^3 - 1
0*A*b^2*c^4)*d*e^2 - 7*(3*B*b^4*c^2 - 4*A*b^3*c^3)*e^3)*x)*sqrt(c*x^2 + b*x
))/c^6]
```

giac [A] time = 0.23, size = 521, normalized size = 1.29

$$\frac{1}{7680}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\,Bxe^3+\frac{36\,Bc^5de^2+Bbc^4e^3+12\,Ac^5e^3}{c^5}\Bigg)x+\frac{3\Big(120\,Bc^5d^2e+12\,Bbc^4de^2+120}{c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*x*e^3 + (36*B*c^5*d*e^2 + B*b*c^
4*e^3 + 12*A*c^5*e^3)/c^5)*x + 3*(120*B*c^5*d^2*e + 12*B*b*c^4*d*e^2 + 120*
A*c^5*d*e^2 - 3*B*b^2*c^3*e^3 + 4*A*b*c^4*e^3)/c^5)*x + (320*B*c^5*d^3 + 12
0*B*b*c^4*d^2*e + 960*A*c^5*d^2*e - 84*B*b^2*c^3*d*e^2 + 120*A*b*c^4*d*e^2
+ 21*B*b^3*c^2*e^3 - 28*A*b^2*c^3*e^3)/c^5)*x + 5*(64*B*b*c^4*d^3 + 384*A*c
^5*d^3 - 120*B*b^2*c^3*d^2*e + 192*A*b*c^4*d^2*e + 84*B*b^3*c^2*d*e^2 - 120
*A*b^2*c^3*d*e^2 - 21*B*b^4*c*e^3 + 28*A*b^3*c^2*e^3)/c^5)*x - 15*(64*B*b^2
*c^3*d^3 - 128*A*b*c^4*d^3 - 120*B*b^3*c^2*d^2*e + 192*A*b^2*c^3*d^2*e + 84
*B*b^4*c*d*e^2 - 120*A*b^3*c^2*d*e^2 - 21*B*b^5*e^3 + 28*A*b^4*c*e^3)/c^5)
- 1/1024*(64*B*b^3*c^3*d^3 - 128*A*b^2*c^4*d^3 - 120*B*b^4*c^2*d^2*e + 192*
A*b^3*c^3*d^2*e + 84*B*b^5*c*d*e^2 - 120*A*b^4*c^2*d*e^2 - 21*B*b^6*e^3 + 2
8*A*b^5*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(
11/2)
```

maple [B] time = 0.06, size = 1027, normalized size = 2.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 15/32*b^2/c^2*x*(c*x^2+b*x)^(1/2)*A*d*e^2-21/40*b/c^2*x*(c*x^2+b*x)^(3/2)*B
*d*e^2-21/64*b^3/c^3*x*(c*x^2+b*x)^(1/2)*B*d*e^2+15/32*b^2/c^2*x*(c*x^2+b*x
)^(1/2)*B*d^2*e-3/4*b/c*x*(c*x^2+b*x)^(1/2)*A*d^2*e+21/160*B*e^3*b^2/c^3*x*
(c*x^2+b*x)^(3/2)+3/5*x^2*(c*x^2+b*x)^(3/2)/c*B*d*e^2+21/256*B*e^3*b^4/c^4*
x*(c*x^2+b*x)^(1/2)-3/20*B*e^3*b/c^2*x^2*(c*x^2+b*x)^(3/2)-7/40*b/c^2*x*(c*
x^2+b*x)^(3/2)*A*e^3+7/16*b^2/c^3*(c*x^2+b*x)^(3/2)*B*d*e^2-7/64*b^3/c^3*x*
(c*x^2+b*x)^(1/2)*A*e^3+3/4*x*(c*x^2+b*x)^(3/2)/c*B*d^2*e+21/256*b^5/c^(9/2
)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2-21/128*b^4/c^4*(c*x^2+b
*x)^(1/2)*B*d*e^2-5/8*b/c^2*(c*x^2+b*x)^(3/2)*A*d*e^2-5/8*b/c^2*(c*x^2+b*x)
^(3/2)*B*d^2*e+15/64*b^3/c^3*(c*x^2+b*x)^(1/2)*A*d*e^2+15/64*b^3/c^3*(c*x^2
+b*x)^(1/2)*B*d^2*e-15/128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))*A*d*e^2-15/128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*
B*d^2*e+3/4*x*(c*x^2+b*x)^(3/2)/c*A*d*e^2-3/8*b^2/c^2*(c*x^2+b*x)^(1/2)*A*d
^2*e+3/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d^2*e-1/4
*b/c*x*(c*x^2+b*x)^(1/2)*B*d^3-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*B*d^3+1/2*A*d^
3*x*(c*x^2+b*x)^(1/2)+1/3*(c*x^2+b*x)^(3/2)/c*B*d^3+1/16*b^3/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^3+(c*x^2+b*x)^(3/2)/c*A*d^2*e+7/256
*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3+1/6*B*e^3*x^3*
(c*x^2+b*x)^(3/2)/c-7/64*B*e^3*b^3/c^4*(c*x^2+b*x)^(3/2)+21/512*B*e^3*b^5/c
^5*(c*x^2+b*x)^(1/2)-21/1024*B*e^3*b^6/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))+7/48*b^2/c^3*(c*x^2+b*x)^(3/2)*A*e^3+1/4*A*d^3/c*(c*x^2+b*x)
^(1/2)*b-7/128*b^4/c^4*(c*x^2+b*x)^(1/2)*A*e^3-1/8*A*d^3*b^2/c^(3/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*x^2*(c*x^2+b*x)^(3/2)/c*A*e^3
```

maxima [**A**] time = 0.76, size = 760, normalized size = 1.88

$$\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Be^3x^3}{6c} - \frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bbe^3x^2}{20c^2} + \frac{1}{2}\sqrt{cx^2+bx}\,Ad^3x + \frac{21\sqrt{cx^2+bx}\,Bb^4e^3x}{256c^4} + \frac{21\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2e^3x}{160c^3} - Ab^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(3/2)*B*e^3*x^3/c - 3/20*(c*x^2 + b*x)^(3/2)*B*b*e^3*x^2/
c^2 + 1/2*sqrt(c*x^2 + b*x)*A*d^3*x + 21/256*sqrt(c*x^2 + b*x)*B*b^4*e^3*x/
c^4 + 21/160*(c*x^2 + b*x)^(3/2)*B*b^2*e^3*x/c^3 - 1/8*A*b^2*d^3*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 21/1024*B*b^6*e^3*log(2*c*x +
b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 1/4*sqrt(c*x^2 + b*x)*A*b*d^3/c
 + 21/512*sqrt(c*x^2 + b*x)*B*b^5*e^3/c^5 - 7/64*(c*x^2 + b*x)^(3/2)*B*b^3*
e^3/c^4 + 1/5*(3*B*d*e^2 + A*e^3)*(c*x^2 + b*x)^(3/2)*x^2/c - 7/64*(3*B*d*e
^2 + A*e^3)*sqrt(c*x^2 + b*x)*b^3*x/c^3 - 7/40*(3*B*d*e^2 + A*e^3)*(c*x^2 +
 b*x)^(3/2)*b*x/c^2 + 15/32*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b^2*x/c^2
 + 3/4*(B*d^2*e + A*d*e^2)*(c*x^2 + b*x)^(3/2)*x/c - 1/4*(B*d^3 + 3*A*d^2*e
)*sqrt(c*x^2 + b*x)*b*x/c + 7/256*(3*B*d*e^2 + A*e^3)*b^5*log(2*c*x + b + 2
*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 15/128*(B*d^2*e + A*d*e^2)*b^4*log(2*
c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 1/16*(B*d^3 + 3*A*d^2*e)*b
^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 7/128*(3*B*d*e^2
+ A*e^3)*sqrt(c*x^2 + b*x)*b^4/c^4 + 7/48*(3*B*d*e^2 + A*e^3)*(c*x^2 + b*x)
^(3/2)*b^2/c^3 + 15/64*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b^3/c^3 - 5/8*
(B*d^2*e + A*d*e^2)*(c*x^2 + b*x)^(3/2)*b/c^2 - 1/8*(B*d^3 + 3*A*d^2*e)*sqr
t(c*x^2 + b*x)*b^2/c^2 + 1/3*(B*d^3 + 3*A*d^2*e)*(c*x^2 + b*x)^(3/2)/c
```

mupad [B] time = 3.84, size = 827, normalized size = 2.05

$$A\,d^3\,\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{7\,A\,b\,e^3\,\left(\frac{x\,{\left(c\,x^2+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,b\,\left(\frac{b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}\right)}{10\,c}+\frac{A\,e^3\,x^2\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] A*d^3*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (7*A*b*e^3*((x*(b*x + c*x^2)^(3
/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(
16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2))
)/(8*c)))/(10*c) + (A*e^3*x^2*(b*x + c*x^2)^(3/2))/(5*c) + (B*e^3*x^3*(b*x
+ c*x^2)^(3/2))/(6*c) - (A*b^2*d^3*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^
(1/2)))/(8*c^(3/2)) + (B*b^3*d^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^
(1/2)))/(16*c^(5/2)) + (B*d^3*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*
c*x))/(24*c^2) + (3*B*b*e^3*((7*b*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b
^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x +
 c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) - (x
^2*(b*x + c*x^2)^(3/2))/(5*c)))/(4*c) + (3*A*b^3*d^2*e*log((b + 2*c*x)/c^(1
/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (A*d^2*e*(b*x + c*x^2)^(1/2)*(
8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(8*c^2) + (3*A*d*e^2*x*(b*x + c*x^2)^(3/2))/(
4*c) + (3*B*d^2*e*x*(b*x + c*x^2)^(3/2))/(4*c) - (15*A*b*d*e^2*((b^3*log((b
 + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(
1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (15*B*b*d^2*e*((b^3*
log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*
x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (21*B*b*d*e^2*
((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*
x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 +
 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (3*B*d*e^2*x^2*(b*x + c*x^2)^(3/2))/
(5*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x\,(b+cx)}\;(A+Bx)\,(d+ex)^3\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x)**3, x)
```

3.1163 $\int (A+Bx)(d+ex)^2\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=267

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(10Ace-7bBe+4Bcd)+10Ace(16cd-5be)+B\left(35b^2e^2-100bcde+32c^2d^2\right)\right)}{240c^3}-\frac{b^2\tanh^{-1}\left(\right.}{}$$

```
[Out] 1/5*B*(e*x+d)^2*(c*x^2+b*x)^(3/2)/c+1/240*(10*A*c*e*(-5*b*e+16*c*d)+B*(35*b
^2*e^2-100*b*c*d*e+32*c^2*d^2)+6*c*e*(10*A*c*e-7*B*b*e+4*B*c*d)*x)*(c*x^2+b
*x)^(3/2)/c^3-1/128*b^2*(32*A*c^3*d^2-7*b^3*B*e^2+10*b^2*c*e*(A*e+2*B*d)-16
*b*c^2*d*(2*A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)+1/128*(3
2*A*c^3*d^2-7*b^3*B*e^2+10*b^2*c*e*(A*e+2*B*d)-16*b*c^2*d*(2*A*e+B*d))*(2*c
*x+b)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi [A] time = 0.27, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {832, 779, 612, 620, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(10Ace-7bBe+4Bcd)+10Ace(16cd-5be)+B\left(35b^2e^2-100bcde+32c^2d^2\right)\right)}{240c^3}+\frac{(b+2cx)\sqrt{b}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((32*A*c^3*d^2 - 7*b^3*B*e^2 + 10*b^2*c*e*(2*B*d + A*e) - 16*b*c^2*d*(B*d +
 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^4) + (B*(d + e*x)^2*(b*x + c
*x^2)^(3/2))/(5*c) + ((10*A*c*e*(16*c*d - 5*b*e) + B*(32*c^2*d^2 - 100*b*c*
d*e + 35*b^2*e^2) + 6*c*e*(4*B*c*d - 7*b*B*e + 10*A*c*e)*x)*(b*x + c*x^2)^(
3/2))/(240*c^3) - (b^2*(32*A*c^3*d^2 - 7*b^3*B*e^2 + 10*b^2*c*e*(2*B*d + A*
e) - 16*b*c^2*d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128
*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\sqrt{bx+cx^2}\,dx = \frac{B(d+ex)^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{\int (d+ex)\bigl(-\frac{1}{2}(3bB-10Ac)d+\frac{1}{2}(4Bcd-7bB}{5c}$$

$$= \frac{B(d+ex)^2\left(bx+cx^2\right)^{3/2}}{5c} + \frac{\bigl(10Ace(16cd-5be)+B\bigl(32c^2d^2-100bcde+}{}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

$$= \frac{\left(32Ac^3d^2-7b^3Be^2+10b^2ce(2Bd+Ae)-16bc^2d(Bd+2Ae)\right)(b+2cx)\sqrt{}}{128c^4}$$

Mathematica [**A**] time = 0.58, size = 293, normalized size = 1.10

$$\frac{\sqrt{x(b+cx)}\Biggl(\frac{15b^{3/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-10b^2ce(Ae+2Bd)+16bc^2d(2Ae+Bd)-32Ac^3d^2+7b^3Be^2\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\,\bigl(10b^3ce(15Ae+30Bd+7Bex)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^4*B*e^2 + 10*b^3*c*e*(30*B*d + 15*A*e +
 7*B*e*x) + 16*b*c^3*(5*A*(6*d^2 + 4*d*e*x + e^2*x^2) + B*x*(10*d^2 + 10*d*
e*x + 3*e^2*x^2)) + 32*c^4*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2*B*x*(10
*d^2 + 15*d*e*x + 6*e^2*x^2)) - 4*b^2*c^2*(5*A*e*(24*d + 5*e*x) + 2*B*(30*d
^2 + 25*d*e*x + 7*e^2*x^2))) + (15*b^(3/2)*(-32*A*c^3*d^2 + 7*b^3*B*e^2 - 1
0*b^2*c*e*(2*B*d + A*e) + 16*b*c^2*d*(B*d + 2*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x
])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(1920*c^(9/2))
```

fricas [**A**] time = 0.61, size = 684, normalized size = 2.56

$$\Biggl[-\frac{15\left(16\left(Bb^3c^2-2\,Ab^2c^3\right)d^2-4\left(5\,Bb^4c-8\,Ab^3c^2\right)de+\left(7\,Bb^5-10\,Ab^4c\right)e^2\right)\sqrt{c}\,\log\bigl(2\,cx+b-2\,\sqrt{cx^2+bx}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3840*(15*(16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(5*B*b^4*c - 8*A*b^3*c^2
)*d*e + (7*B*b^5 - 10*A*b^4*c)*e^2)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 +
b*x)*sqrt(c)) - 2*(384*B*c^5*e^2*x^4 + 48*(20*B*c^5*d*e + (B*b*c^4 + 10*A*c
^5)*e^2)*x^3 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 60*(5*B*b^3*c^2 - 8*A*b^2*
c^3)*d*e - 15*(7*B*b^4*c - 10*A*b^3*c^2)*e^2 + 8*(80*B*c^5*d^2 + 20*(B*b*c^
4 + 8*A*c^5)*d*e - (7*B*b^2*c^3 - 10*A*b*c^4)*e^2)*x^2 + 10*(16*(B*b*c^4 +
6*A*c^5)*d^2 - 4*(5*B*b^2*c^3 - 8*A*b*c^4)*d*e + (7*B*b^3*c^2 - 10*A*b^2*c^
3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^5, -1/1920*(15*(16*(B*b^3*c^2 - 2*A*b^2*c^3
)*d^2 - 4*(5*B*b^4*c - 8*A*b^3*c^2)*d*e + (7*B*b^5 - 10*A*b^4*c)*e^2)*sqrt(
-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (384*B*c^5*e^2*x^4 + 48*(20*
B*c^5*d*e + (B*b*c^4 + 10*A*c^5)*e^2)*x^3 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^2
 + 60*(5*B*b^3*c^2 - 8*A*b^2*c^3)*d*e - 15*(7*B*b^4*c - 10*A*b^3*c^2)*e^2 +
 8*(80*B*c^5*d^2 + 20*(B*b*c^4 + 8*A*c^5)*d*e - (7*B*b^2*c^3 - 10*A*b*c^4)*
e^2)*x^2 + 10*(16*(B*b*c^4 + 6*A*c^5)*d^2 - 4*(5*B*b^2*c^3 - 8*A*b*c^4)*d*e
 + (7*B*b^3*c^2 - 10*A*b^2*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [**A**]   time = 0.22, size = 349, normalized size = 1.31

$$\frac{1}{1920}\sqrt{cx^2+bx}\left(2\left(4\left(6\left(8\,Bxe^2+\frac{20\,Bc^4de+Bbc^3e^2+10\,Ac^4e^2}{c^4}\right)x+\frac{80\,Bc^4d^2+20\,Bbc^3de+160\,Ac^4de-7\,Bb^2}{c^4}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/1920*sqrt(c*x^2 + b*x)*(2*(4*(6*(8*B*x*e^2 + (20*B*c^4*d*e + B*b*c^3*e^2
+ 10*A*c^4*e^2)/c^4)*x + (80*B*c^4*d^2 + 20*B*b*c^3*d*e + 160*A*c^4*d*e - 7
*B*b^2*c^2*e^2 + 10*A*b*c^3*e^2)/c^4)*x + 5*(16*B*b*c^3*d^2 + 96*A*c^4*d^2
- 20*B*b^2*c^2*d*e + 32*A*b*c^3*d*e + 7*B*b^3*c*e^2 - 10*A*b^2*c^2*e^2)/c^4
)*x - 15*(16*B*b^2*c^2*d^2 - 32*A*b*c^3*d^2 - 20*B*b^3*c*d*e + 32*A*b^2*c^2
*d*e + 7*B*b^4*e^2 - 10*A*b^3*c*e^2)/c^4) - 1/256*(16*B*b^3*c^2*d^2 - 32*A*
b^2*c^3*d^2 - 20*B*b^4*c*d*e + 32*A*b^3*c^2*d*e + 7*B*b^5*e^2 - 10*A*b^4*c*
e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [**B**]   time = 0.06, size = 671, normalized size = 2.51

$$-\frac{5A\,b^4e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{A\,b^3de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{A\,b^2d^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{3}{2}}}+\frac{7B\,b^5e^2\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x)
```

```
[Out] -5/24*b/c^2*(c*x^2+b*x)^(3/2)*A*e^2+5/64*b^3/c^3*(c*x^2+b*x)^(1/2)*A*e^2-5/
128*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2+7/256*B*e^2
*b^5/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+7/48*B*e^2*b^2/c^3*(
c*x^2+b*x)^(3/2)-7/128*B*e^2*b^4/c^4*(c*x^2+b*x)^(1/2)+1/5*B*e^2*x^2*(c*x^2
+b*x)^(3/2)/c-7/40*B*e^2*b/c^2*x*(c*x^2+b*x)^(3/2)-7/64*B*e^2*b^3/c^3*x*(c*
x^2+b*x)^(1/2)+5/16*b^2/c^2*x*(c*x^2+b*x)^(1/2)*B*d*e-1/2*b/c*x*(c*x^2+b*x)
^(1/2)*A*d*e-5/12*b/c^2*(c*x^2+b*x)^(3/2)*B*d*e+5/32*b^2/c^2*x*(c*x^2+b*x)^
(1/2)*A*e^2+5/32*b^3/c^3*(c*x^2+b*x)^(1/2)*B*d*e+1/2*x*(c*x^2+b*x)^(3/2)/c*
B*d*e-5/64*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+1/8*
b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-1/4*b^2/c^2*(c*
x^2+b*x)^(1/2)*A*d*e-1/4*b/c*x*(c*x^2+b*x)^(1/2)*B*d^2+1/4*x*(c*x^2+b*x)^(3
/2)/c*A*e^2+1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^
2-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*B*d^2+2/3*(c*x^2+b*x)^(3/2)/c*A*d*e+1/4*A*d
^2/c*(c*x^2+b*x)^(1/2)*b-1/8*A*d^2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))+1/3*(c*x^2+b*x)^(3/2)/c*B*d^2+1/2*A*d^2*x*(c*x^2+b*x)^(1/2)
```

maxima [**B**] time = 0.61, size = 512, normalized size = 1.92

$$\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}Be^{2}x^{2}}{5\,c}+\frac{1}{2}\,\sqrt{cx^{2}+bx}\,Ad^{2}x-\frac{7\,\sqrt{cx^{2}+bx}\,Bb^{3}e^{2}x}{64\,c^{3}}-\frac{7\left(cx^{2}+bx\right)^{\frac{3}{2}}Bbe^{2}x}{40\,c^{2}}-\frac{Ab^{2}d^{2}\log\left(2\,cx+b+2\,\sqrt{c}\right.}{8\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/5*(c*x^2 + b*x)^(3/2)*B*e^2*x^2/c + 1/2*sqrt(c*x^2 + b*x)*A*d^2*x - 7/64*
sqrt(c*x^2 + b*x)*B*b^3*e^2*x/c^3 - 7/40*(c*x^2 + b*x)^(3/2)*B*b*e^2*x/c^2
- 1/8*A*b^2*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + 7/25
6*B*b^5*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) + 1/4*sqrt
(c*x^2 + b*x)*A*b*d^2/c - 7/128*sqrt(c*x^2 + b*x)*B*b^4*e^2/c^4 + 7/48*(c*x
^2 + b*x)^(3/2)*B*b^2*e^2/c^3 + 5/32*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b^
2*x/c^2 + 1/4*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*x/c - 1/4*(B*d^2 + 2*A*
d*e)*sqrt(c*x^2 + b*x)*b*x/c - 5/128*(2*B*d*e + A*e^2)*b^4*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 1/16*(B*d^2 + 2*A*d*e)*b^3*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 5/64*(2*B*d*e + A*e^2)*sqrt(c
*x^2 + b*x)*b^3/c^3 - 5/24*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b/c^2 - 1/
8*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^2/c^2 + 1/3*(B*d^2 + 2*A*d*e)*(c*x^
2 + b*x)^(3/2)/c
```

mupad [**B**] time = 3.03, size = 537, normalized size = 2.01

$$A\,d^{2}\,\sqrt{c\,x^{2}+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)+\frac{A\,e^{2}\,x\,{\left(c\,x^{2}+b\,x\right)}^{3/2}}{4\,c}-\frac{5\,A\,b\,e^{2}\,\left(\frac{b^{3}\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^{2}+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^{2}+b\,x}\,\left(-3\,b^{2}+2\,b\,c\,x+8\,c^{2}\,x^{2}\right)}{24\,c^{2}}\right.}{8\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] A*d^2*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (A*e^2*x*(b*x + c*x^2)^(3/2))/(
4*c) - (5*A*b*e^2*((b^3*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(
16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2))
)/(8*c) - (7*B*b*e^2*((x*(b*x + c*x^2)^(3/2))/(4*c) - (5*b*((b^3*log((b + 2
*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)
*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c)))/(10*c) + (B*e^2*x^2*(b*x
 + c*x^2)^(3/2))/(5*c) - (A*b^2*d^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)
^(1/2)))/(8*c^(3/2)) + (B*b^3*d^2*log((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)
^(1/2)))/(16*c^(5/2)) + (B*d^2*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b
*c*x))/(24*c^2) + (B*d*e*x*(b*x + c*x^2)^(3/2))/(2*c) - (5*B*b*d*e*((b^3*lo
g((b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^
2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(4*c) + (A*b^3*d*e*log((
b + 2*c*x)/c^(1/2) + 2*(b*x + c*x^2)^(1/2)))/(8*c^(5/2)) + (A*d*e*(b*x + c*
x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 + 2*b*c*x))/(12*c^2)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{x\left(b+cx\right)}\,\left(A+Bx\right)\left(d+ex\right)^{2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x)**2, x)
```

3.1164 $\int (A+Bx)(d+ex)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=154

$$-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{64c^{7/2}}+\frac{(b+2cx)\sqrt{bx+cx^2}\left(-8bc(Ae+Bd)+16Ac^2d+5b^2\right.}{64c^3}$$

```
[Out] -1/24*(5*b*B*e-8*c*(A*e+B*d)-6*B*c*e*x)*(c*x^2+b*x)^(3/2)/c^2-1/64*b^2*(16*
A*c^2*d+5*b^2*B*e-8*b*c*(A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(
7/2)+1/64*(16*A*c^2*d+5*b^2*B*e-8*b*c*(A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(1/2
)/c^3
```

Rubi [A] time = 0.14, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {779, 612, 620, 206}

$$\frac{(b+2cx)\sqrt{bx+cx^2}\left(-8bc(Ae+Bd)+16Ac^2d+5b^2Be\right)}{64c^3}-\frac{b^2\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(-8bc(Ae+Bd)+16Ac^2d+5b^2B\right.}{64c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] ((16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2]
)/(64*c^3) - ((5*b*B*e - 8*c*(B*d + A*e) - 6*B*c*e*x)*(b*x + c*x^2)^(3/2))/
(24*c^2) - (b^2*(16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d + A*e))*ArcTanh[(Sqrt[
c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\sqrt{bx+cx^2}\,dx = -\frac{(5bBe-8c(Bd+Ae)-6Bcex)\left(bx+cx^2\right)^{3/2}}{24c^2} + \frac{\left(\frac{5}{2}b^2Be+4c(2Acd-b(Bc}{8c}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd+}{}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd+}{}$$

$$= \frac{\left(16Ac^2d+5b^2Be-8bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{64c^3} - \frac{(5bBe-8c(Bd+}{}$$

Mathematica [**A**] time = 0.43, size = 177, normalized size = 1.15

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-2b^2c(12Ae+12Bd+5Bex)+8bc^2(2A(3d+ex)+Bx(2d+ex))+16c^3x(A(6d+4ex)+Bx(\right.\right.}{192c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^3*B*e - 2*b^2*c*(12*B*d + 12*A*e + 5*B*e*
x) + 8*b*c^2*(B*x*(2*d + e*x) + 2*A*(3*d + e*x)) + 16*c^3*x*(B*x*(4*d + 3*e
*x) + A*(6*d + 4*e*x))) - (3*b^(3/2)*(16*A*c^2*d + 5*b^2*B*e - 8*b*c*(B*d +
 A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(1
92*c^(7/2))
```

fricas [**A**] time = 0.72, size = 408, normalized size = 2.65

$$\left[\frac{3\left(8\left(Bb^3c-2Ab^2c^2\right)d-\left(5Bb^4-8Ab^3c\right)e\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)+2\left(48Bc^4ex^3+8\left(8Bc^4d+\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(8*(B*b^3*c - 2*A*b^2*c^2)*d - (5*B*b^4 - 8*A*b^3*c)*e)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(48*B*c^4*e*x^3 + 8*(8*B*c^
4*d + (B*b*c^3 + 8*A*c^4)*e)*x^2 - 24*(B*b^2*c^2 - 2*A*b*c^3)*d + 3*(5*B*b^
3*c - 8*A*b^2*c^2)*e + 2*(8*(B*b*c^3 + 6*A*c^4)*d - (5*B*b^2*c^2 - 8*A*b*c^
3)*e)*x)*sqrt(c*x^2 + b*x))/c^4, -1/192*(3*(8*(B*b^3*c - 2*A*b^2*c^2)*d - (
5*B*b^4 - 8*A*b^3*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) -
 (48*B*c^4*e*x^3 + 8*(8*B*c^4*d + (B*b*c^3 + 8*A*c^4)*e)*x^2 - 24*(B*b^2*c^
2 - 2*A*b*c^3)*d + 3*(5*B*b^3*c - 8*A*b^2*c^2)*e + 2*(8*(B*b*c^3 + 6*A*c^4)
*d - (5*B*b^2*c^2 - 8*A*b*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [**A**] time = 0.23, size = 205, normalized size = 1.33

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(6Bxe+\frac{8Bc^3d+Bbc^2e+8Ac^3e}{c^3}\right)x+\frac{8Bbc^2d+48Ac^3d-5Bb^2ce+8Abc^2e}{c^3}\right)x-\frac{3\left(8B\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x*e + (8*B*c^3*d + B*b*c^2*e + 8*A*c^3*e
)/c^3)*x + (8*B*b*c^2*d + 48*A*c^3*d - 5*B*b^2*c*e + 8*A*b*c^2*e)/c^3)*x -
3*(8*B*b^2*c*d - 16*A*b*c^2*d - 5*B*b^3*e + 8*A*b^2*c*e)/c^3) - 1/128*(8*B*
b^3*c*d - 16*A*b^2*c^2*d - 5*B*b^4*e + 8*A*b^3*c*e)*log(abs(-2*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 372, normalized size = 2.42

$$\frac{A\,b^3 e \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{16c^{\frac{5}{2}}}-\frac{A\,b^2 d \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{3}{2}}}-\frac{5B\,b^4 e \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{B\,b^3 d \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\right.}{16c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*e*x*(c*x^2+b*x)^(3/2)/c-5/24*B*e*b/c^2*(c*x^2+b*x)^(3/2)+5/32*B*e*b^2
/c^2*x*(c*x^2+b*x)^(1/2)+5/64*B*e*b^3/c^3*(c*x^2+b*x)^(1/2)-5/128*B*e*b^4/c
^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*(c*x^2+b*x)^(3/2)/c*A*
e+1/3*(c*x^2+b*x)^(3/2)/c*B*d-1/4*b/c*x*(c*x^2+b*x)^(1/2)*A*e-1/4*b/c*x*(c*
x^2+b*x)^(1/2)*B*d-1/8*b^2/c^2*(c*x^2+b*x)^(1/2)*A*e-1/8*b^2/c^2*(c*x^2+b*x
)^(1/2)*B*d+1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e+
1/16*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+1/2*A*d*x*(c
*x^2+b*x)^(1/2)+1/4*A*d/c*(c*x^2+b*x)^(1/2)*b-1/8*A*d*b^2/c^(3/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.54, size = 295, normalized size = 1.92

$$\frac{1}{2}\sqrt{cx^2+bx}\,Adx+\frac{5\sqrt{cx^2+bx}\,Bb^2ex}{32\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{3}{2}}Bex}{4\,c}-\frac{Ab^2d\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{3}{2}}}-\frac{5\,Bb^4e\log\left(2\,cx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*A*d*x + 5/32*sqrt(c*x^2 + b*x)*B*b^2*e*x/c^2 + 1/4*(c
*x^2 + b*x)^(3/2)*B*e*x/c - 1/8*A*b^2*d*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(3/2) - 5/128*B*b^4*e*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(
c))/c^(7/2) + 1/4*sqrt(c*x^2 + b*x)*A*b*d/c + 5/64*sqrt(c*x^2 + b*x)*B*b^3*
e/c^3 - 5/24*(c*x^2 + b*x)^(3/2)*B*b*e/c^2 - 1/4*sqrt(c*x^2 + b*x)*(B*d + A
*e)*b*x/c + 1/16*(B*d + A*e)*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c
))/c^(5/2) - 1/8*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^2/c^2 + 1/3*(c*x^2 + b*x)^
(3/2)*(B*d + A*e)/c
```

mupad [B] time = 2.44, size = 299, normalized size = 1.94

$$A\,d\,\sqrt{c\,x^2+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)-\frac{5\,B\,b\,e\,\left(\frac{b^3\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x}\right)}{16\,c^{5/2}}+\frac{\sqrt{c\,x^2+b\,x}\,\left(-3\,b^2+2\,b\,c\,x+8\,c^2\,x^2\right)}{24\,c^2}\right)}{8\,c}-\frac{A\,b^2\,d\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2}\right.}{8\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] A*d*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) - (5*B*b*e*((b^3*log((b + 2*c*x)/c^
(1/2) + 2*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + ((b*x + c*x^2)^(1/2)*(8*c^2*
x^2 - 3*b^2 + 2*b*c*x))/(24*c^2)))/(8*c) - (A*b^2*d*log((b/2 + c*x)/c^(1/2)
 + (b*x + c*x^2)^(1/2)))/(8*c^(3/2)) + (A*b^3*e*log((b + 2*c*x)/c^(1/2) + 2
*(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*b^3*d*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (A*e*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 -
3*b^2 + 2*b*c*x))/(24*c^2) + (B*d*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*b^2 +
2*b*c*x))/(24*c^2) + (B*e*x*(b*x + c*x^2)^(3/2))/(4*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x(b+cx)}\,(A+Bx)(d+ex)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*(d + e*x), x)
```

3.1165 $\int (A+Bx)\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=97

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

```
[Out] 1/3*B*(c*x^2+b*x)^(3/2)/c+1/8*b^2*(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x
)^(1/2))/c^(5/2)-1/8*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [**A**] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.210$, Rules used = $\{640, 612, 620, 206\}$

$$\frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{8c^{5/2}}-\frac{(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{8c^2}+\frac{B\left(bx+cx^2\right)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] -((b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(8*c^2) + (B*(b*x + c*x^2)^(
3/2))/(3*c) + (b^2*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8
*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\sqrt{bx+cx^2}\,dx = \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{(-bB+2Ac)\int \sqrt{bx+cx^2}\,dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\int \frac{1}{\sqrt{bx+cx^2}}\,d}{16c^2}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{\left(b^2(bB-2Ac)\right)\mathrm{Subst}\left(\int \frac{}{1-}\right.}{8c^2}$$

$$= -\frac{(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{8c^2} + \frac{B\left(bx+cx^2\right)^{3/2}}{3c} + \frac{b^2(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}}{\sqrt{bx+c}}\right.}{8c^{5/2}}$$

Mathematica [**A**]   time = 0.18, size = 108, normalized size = 1.11

$$\frac{\sqrt{x(b+cx)}\left(\frac{3b^{3/2}(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}} + \sqrt{c}\left(2bc(3A+Bx)+4c^2x(3A+2Bx)-3b^2B\right)\right)}{24c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-3*b^2*B + 2*b*c*(3*A + B*x) + 4*c^2*x*(3*A +
2*B*x)) + (3*b^(3/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[x]*Sqrt[1 + (c*x)/b])))/(24*c^(5/2))
```

fricas [**A**]   time = 0.65, size = 204, normalized size = 2.10

$$\left[-\frac{3\left(Bb^3-2\,Ab^2c\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(8\,Bc^3x^2-3\,Bb^2c+6\,Abc^2+2\left(Bbc^2+6\,Ac^3\right)x\right)\sqrt{}}{48\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(B*b^3 - 2*A*b^2*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*b*c^2 + 6*A*c^3)*x)
*sqrt(c*x^2 + b*x))/c^3, -1/24*(3*(B*b^3 - 2*A*b^2*c)*sqrt(-c)*arctan(sqrt(
c*x^2 + b*x)*sqrt(-c)/(c*x)) - (8*B*c^3*x^2 - 3*B*b^2*c + 6*A*b*c^2 + 2*(B*
b*c^2 + 6*A*c^3)*x)*sqrt(c*x^2 + b*x))/c^3]
```

giac [**A**]   time = 0.27, size = 102, normalized size = 1.05

$$\frac{1}{24}\sqrt{cx^2+bx}\left(2\left(4\,Bx+\frac{Bbc+6\,Ac^2}{c^2}\right)x-\frac{3\left(Bb^2-2\,Abc\right)}{c^2}\right)-\frac{\left(Bb^3-2\,Ab^2c\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}\right.\right.}{16\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x + (B*b*c + 6*A*c^2)/c^2)*x - 3*(B*b^2 - 2*
A*b*c)/c^2) - 1/16*(B*b^3 - 2*A*b^2*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.05, size = 157, normalized size = 1.62

$$-\frac{A b^{2} \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+bx}\right)}{8c^{\frac{3}{2}}}+\frac{B b^{3} \ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c x^{2}+bx}\right)}{16c^{\frac{5}{2}}}+\frac{\sqrt{c x^{2}+bx}\,Ax}{2}-\frac{\sqrt{c x^{2}+bx}\,Bbx}{4c}+\frac{\sqrt{c x^{2}+bx}\,Ab}{4c}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*(c*x^2+b*x)^(3/2)*B/c-1/4*B*b/c*x*(c*x^2+b*x)^(1/2)-1/8*B*b^2/c^2*(c*x^
2+b*x)^(1/2)+1/16*B*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1
/2*A*x*(c*x^2+b*x)^(1/2)+1/4*A/c*(c*x^2+b*x)^(1/2)*b-1/8*A*b^2/c^(3/2)*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [A] time = 0.56, size = 154, normalized size = 1.59

$$\frac{1}{2}\sqrt{cx^{2}+bx}\,Ax-\frac{\sqrt{cx^{2}+bx}\,Bbx}{4\,c}+\frac{Bb^{3}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{16\,c^{\frac{5}{2}}}-\frac{Ab^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{8\,c^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*A*x - 1/4*sqrt(c*x^2 + b*x)*B*b*x/c + 1/16*B*b^3*log(
2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/8*A*b^2*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 1/8*sqrt(c*x^2 + b*x)*B*b^2/c^2 +
1/3*(c*x^2 + b*x)^(3/2)*B/c + 1/4*sqrt(c*x^2 + b*x)*A*b/c
```

mupad [B] time = 1.69, size = 127, normalized size = 1.31

$$A\,\sqrt{c\,x^{2}+b\,x}\,\left(\frac{x}{2}+\frac{b}{4\,c}\right)+\frac{B\,b^{3}\,\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^{2}+b\,x}\right)}{16\,c^{5/2}}+\frac{B\,\sqrt{c\,x^{2}+b\,x}\,\left(-3\,b^{2}+2\,b\,c\,x+8\,c^{2}\,x^{2}\right)}{24\,c^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x),x)
```

```
[Out] A*(b*x + c*x^2)^(1/2)*(x/2 + b/(4*c)) + (B*b^3*log((b + 2*c*x)/c^(1/2) + 2*
(b*x + c*x^2)^(1/2)))/(16*c^(5/2)) + (B*(b*x + c*x^2)^(1/2)*(8*c^2*x^2 - 3*
b^2 + 2*b*c*x))/(24*c^2) - (A*b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(
1/2)))/(8*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x\,(b+cx)}\,\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x), x)
```

3.1166 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{d+ex}\,dx$

Optimal. Leaf size=200

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{4c^{3/2}e^3}-\frac{\sqrt{d}\,(Bd-Ae)\sqrt{cd-be}\,\tanh^{-1}\Bigg(\frac{x(2cd-be)}{2\sqrt{d}\,\sqrt{bx+cx^2}}}{e^3}$$

```
[Out] -1/4*(4*A*c*e*(-b*e+2*c*d)-B*(-b^2*e^2-4*b*c*d*e+8*c^2*d^2))*arctanh(x*c^(1
/2)/(c*x^2+b*x)^(1/2))/c^(3/2)/e^3-(-A*e+B*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)
*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))*d^(1/2)*(-b*e+c*d)^(1/2)/e^
3-1/4*(-2*B*c*e*x-4*A*c*e-B*b*e+4*B*c*d)*(c*x^2+b*x)^(1/2)/c/e^2
```

Rubi [A] time = 0.28, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {814, 843, 620, 206, 724}

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{4c^{3/2}e^3}-\frac{\sqrt{bx+cx^2}\,(-4Ace-bBe+4Bcd-2Bcex)}{4ce^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x),x]
```

```
[Out] -((4*B*c*d - b*B*e - 4*A*c*e - 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c*e^2) - ((
4*A*c*e*(2*c*d - b*e) - B*(8*c^2*d^2 - 4*b*c*d*e - b^2*e^2))*ArcTanh[(Sqrt[
c]*x)/Sqrt[b*x + c*x^2]])/(4*c^(3/2)*e^3) - (Sqrt[d]*(B*d - A*e)*Sqrt[c*d -
 b*e]*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x +
 c*x^2])])/e^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{bx+cx^2}}{d+ex}\,dx &= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2}-\frac{\int \frac{-\frac{1}{2}bd(4Bcd-bBe-4Ace)+\frac{1}{2}\left(4Ace(2cd-be)-B\left(8c^2\right.\right.}{(d+ex)\sqrt{bx+cx^2}}}{4ce^2}\\
&= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2}-\frac{(d(Bd-Ae)(cd-be))\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,d}{e^3}\\
&= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2}+\frac{(2d(Bd-Ae)(cd-be))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4}\right.}{e^3}\\
&= -\frac{(4Bcd-bBe-4Ace-2Bcex)\sqrt{bx+cx^2}}{4ce^2}-\frac{\left(4Ace(2cd-be)-B\left(8c^2d^2-4bcde-b\right.\right.}{4c^{3/2}e^3}
\end{aligned}$$

Mathematica [A] time = 0.69, size = 208, normalized size = 1.04

$$\frac{\sqrt{x(b+cx)}\left(\frac{\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(4Ace(be-2cd)+B\left(-b^2e^2-4bcde+8c^2d^2\right)\right)}{\sqrt{b}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\left(e\sqrt{x}\,(4Ace+B(be-4cd+2cex))-\frac{8c\sqrt{d}\,(Bd-Ae)\sqrt{cd}}{}\right.\right.}{4c^{3/2}e^3\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(((4*A*c*e*(-2*c*d + b*e) + B*(8*c^2*d^2 - 4*b*c*d*e - b
^2*e^2))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) +
Sqrt[c]*(e*Sqrt[x]*(4*A*c*e + B*(-4*c*d + b*e + 2*c*e*x)) - (8*c*Sqrt[d]*(B
*d - A*e)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b
 + c*x])])/Sqrt[b + c*x])))/(4*c^(3/2)*e^3*Sqrt[x])
```

fricas [A] time = 1.92, size = 800, normalized size = 4.00

$$\left[\frac{\left(8\,Bc^2d^2-4\left(Bbc+2\,Ac^2\right)de-\left(Bb^2-4\,Abc\right)e^2\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-8\left(Bc^2d-Ac^2e\right)\sqrt{cd^2-b}}{8\,c^2e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [1/8*((8*B*c^2*d^2 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(
c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 8*(B*c^2*d - A*c^2*e)*sqr
t(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*
x^2 + b*x))/(e*x + d)) + 2*(2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)
*e^2)*sqrt(c*x^2 + b*x))/(c^2*e^3), -1/8*(16*(B*c^2*d - A*c^2*e)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
- (8*B*c^2*d^2 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(2*B*c^2*e^2*x - 4*B*c^2*d*
e + (B*b*c + 4*A*c^2)*e^2)*sqrt(c*x^2 + b*x))/(c^2*e^3), -1/4*((8*B*c^2*d^2
 - 4*(B*b*c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(-c)*arctan(sqrt(c*
x^2 + b*x)*sqrt(-c)/(c*x)) + 4*(B*c^2*d - A*c^2*e)*sqrt(c*d^2 - b*d*e)*log(
(b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)
) - (2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)*e^2)*sqrt(c*x^2 + b*x)
)/(c^2*e^3), -1/4*(8*(B*c^2*d - A*c^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(
-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (8*B*c^2*d^2 - 4*(B*b*
c + 2*A*c^2)*d*e - (B*b^2 - 4*A*b*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)
*sqrt(-c)/(c*x)) - (2*B*c^2*e^2*x - 4*B*c^2*d*e + (B*b*c + 4*A*c^2)*e^2)*sq
rt(c*x^2 + b*x))/(c^2*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 1069, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*B/e*(c*x^2+b*x)^(1/2)*x+1/4*B/e/c*(c*x^2+b*x)^(1/2)*b-1/8*B/e*b^2/c^(3/
2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/e*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-1/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*B*d+1/2/e*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b*A-1/2/e
^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b*B*d-1/e^2*ln(((x+d/e)*c+1/2*(b*e-2*c*
d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^
(1/2)*d*A+1/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*d^2*B+1/e^2*d/(-(b*e-c*d)*
d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e
^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e
))*b*A-1/e^3*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*B-1/e^3*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((
-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A+1/e^4*d^3/
(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(
b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2))/(x+d/e))*c*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\left(b+cx\right)}\left(A+Bx\right)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x), x)
```

3.1167 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=185

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)(-2Ace-bBe+4Bcd)}{\sqrt{c}\,e^3}+\frac{(Bd(4cd-3be)-Ae(2cd-be))\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{2\sqrt{d}\,e^3\sqrt{cd-be}}+\sqrt{bx}$$

```
[Out] -(-2*A*c*e-B*b*e+4*B*c*d)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/e^3/c^(1/2)+
1/2*(B*d*(-3*b*e+4*c*d)-A*e*(-b*e+2*c*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/
d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e^3/d^(1/2)/(-b*e+c*d)^(1/2)+(B
*e*x-A*e+2*B*d)*(c*x^2+b*x)^(1/2)/e^2/(e*x+d)
```

Rubi [A] time = 0.19, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {812, 843, 620, 206, 724}

$$\frac{\sqrt{bx+cx^2}\,(-Ae+2Bd+Bex)}{e^2(d+ex)}-\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)(-2Ace-bBe+4Bcd)}{\sqrt{c}\,e^3}+\frac{(Bd(4cd-3be)-Ae(2cd-be))\tan}{2\sqrt{d}\,e^3\sqrt{cd-}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((2*B*d - A*e + B*e*x)*Sqrt[b*x + c*x^2])/(e^2*(d + e*x)) - ((4*B*c*d - b*B
*e - 2*A*c*e)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(Sqrt[c]*e^3) + ((B*d
*(4*c*d - 3*b*e) - A*e*(2*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sq
rt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*Sqrt[d]*e^3*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx &= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)}-\frac{\int \frac{b(2Bd-Ae)+(4Bcd-bBe-2Ace)x}{(d+ex)\sqrt{bx+cx^2}}\,dx}{2e^2}\\ &= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)}-\frac{(4Bcd-bBe-2Ace)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2e^3}+\frac{(Bd(4cd-3be)}{}\\ &= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)}-\frac{(4Bcd-bBe-2Ace)\,\mathrm{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{e^3}\\ &= \frac{(2Bd-Ae+Bex)\sqrt{bx+cx^2}}{e^2(d+ex)}-\frac{(4Bcd-bBe-2Ace)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e^3}+\frac{(Bd(4cd-}{}\end{aligned}$$

Mathematica [A] time = 1.26, size = 252, normalized size = 1.36

$$\frac{\sqrt{x(b+cx)}\left(\frac{e\sqrt{x}\,(Bd(2be-2cd+cex)-Ae(be-cd+cex))+\frac{d(be-cd)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)(2Ace+bBe-4Bcd)}{\sqrt{b}\,\sqrt{c}\,\sqrt{\frac{cx}{b}+1}}-\frac{\sqrt{d}\,\sqrt{cd-be}\,(Ae(be-2cd)+Bd(4cd-3be))\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)}{\sqrt{b+cx}}}{e^3}\right.}{d\sqrt{x}\,(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(-(((B*d - A*e)*x^(3/2)*(b + c*x))/(d + e*x)) + (e*Sqrt[
x]*(-(A*e*(-(c*d) + b*e + c*e*x)) + B*d*(-2*c*d + 2*b*e + c*e*x)) + (d*(-(c
*d) + b*e)*(-4*B*c*d + b*B*e + 2*A*c*e)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]) - (Sqrt[d]*Sqrt[c*d - b*e]*(B*d*(4*c*d
 - 3*b*e) + A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*
Sqrt[b + c*x])])/Sqrt[b + c*x])/e^3))/(d*(-(c*d) + b*e)*Sqrt[x])
```

fricas [B] time = 1.71, size = 1513, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*((4*B*c^2*d^4 - (5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2
 + (4*B*c^2*d^3*e - (5*B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*
x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - (4*B*c^2*d^3 + A*
b*c*d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b
*c + 2*A*c^2)*d*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*
sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2*B*c^2*d^3*e + A*b*
c*d*e^3 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt
(c*x^2 + b*x))/(c^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), 1
/2*(2*(4*B*c^2*d^3 + A*b*c*d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2
*e + A*b*c*e^3 - (3*B*b*c + 2*A*c^2)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(
-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - (4*B*c^2*d^4 - (
5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e - (5*
B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(c)*log(2*c*x +
b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*
c + A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c
^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), 1/2*(2*(4*B*c^2*d^
4 - (5*B*b*c + 2*A*c^2)*d^3*e + (B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e
- (5*B*b*c + 2*A*c^2)*d^2*e^2 + (B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(-c)*arctan
(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (4*B*c^2*d^3 + A*b*c*d*e^2 - (3*B*b*c
+ 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b*c + 2*A*c^2)*d*e^2)*
x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*s
qrt(c*x^2 + b*x))/(e*x + d)) + 2*(2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*c +
A*c^2)*d^2*e^2 + (B*c^2*d^2*e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c^2*d
^3*e^3 - b*c*d^2*e^4 + (c^2*d^2*e^4 - b*c*d*e^5)*x), ((4*B*c^2*d^3 + A*b*c*
d*e^2 - (3*B*b*c + 2*A*c^2)*d^2*e + (4*B*c^2*d^2*e + A*b*c*e^3 - (3*B*b*c +
 2*A*c^2)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(
c*x^2 + b*x)/((c*d - b*e)*x)) + (4*B*c^2*d^4 - (5*B*b*c + 2*A*c^2)*d^3*e +
(B*b^2 + 2*A*b*c)*d^2*e^2 + (4*B*c^2*d^3*e - (5*B*b*c + 2*A*c^2)*d^2*e^2 +
(B*b^2 + 2*A*b*c)*d*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + (2*B*c^2*d^3*e + A*b*c*d*e^3 - (2*B*b*c + A*c^2)*d^2*e^2 + (B*c^2*d^2*
e^2 - B*b*c*d*e^3)*x)*sqrt(c*x^2 + b*x))/(c^2*d^3*e^3 - b*c*d^2*e^4 + (c^2*
d^2*e^4 - b*c*d*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 2285, normalized size = 12.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x)
```

```
[Out] 1/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
3/2)*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*B-1/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*A+1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*b*B+1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2)*c*A-1/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*c*B*d+1/e/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*A-1/
e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*B*d-1/e^2/(b*e-c*d)*d*ln((
(x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2))*c^(3/2)*A+1/e^3/(b*e-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2
*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))
*c^(3/2)*B-1/2/e/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+1/2/e^2/(b*e-c*d)/(-(b*e-c*
d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*
d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+
d/e))*b^2*B*d+3/2/e^2/(b*e-c*d)*d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-3/2/e^3/(b*e-c*d)*d^
2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(
-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))/(x+d/e))*b*c*B-1/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*A+1/e^4/(b*e-
c*d)*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2))/(x+d/e))*c^2*B-c/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+1/e*c/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+B/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)+1/2*B/e^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b-B/e^3*l
n(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*d+B/e^3*d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b-B/e^4*d^2/(-(b*e
-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*
d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/
(x+d/e))*c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + c x\right)} \left(A + B x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**2,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**2, x)
```

3.1168 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=235

$$-\frac{\left(Ab^2e^3+Bd\left(3b^2e^2-12bcde+8c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{3/2}e^3(cd-be)^{3/2}}+\frac{\sqrt{bx+cx^2}\left(d\left(Abe^2-Bd(4cd-3be)\right)-\right.}{4de^2(d+ex)^2}$$

```
[Out] -1/8*(A*b^2*e^3+B*d*(3*b^2*e^2-12*b*c*d*e+8*c^2*d^2))*arctanh(1/2*(b*d+(-b*
e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(3/2)/e^3/(-b*e+c
*d)^(3/2)+2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))*c^(1/2)/e^3+1/4*(d*(A*b*
e^2-B*d*(-3*b*e+4*c*d))-e*(B*d*(-5*b*e+6*c*d)-A*e*(-b*e+2*c*d))*x)*(c*x^2+b
*x)^(1/2)/d/e^2/(-b*e+c*d)/(e*x+d)^2
```

Rubi [A] time = 0.32, antiderivative size = 235, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {810, 843, 620, 206, 724}

$$-\frac{\left(Ab^2e^3+Bd\left(3b^2e^2-12bcde+8c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{3/2}e^3(cd-be)^{3/2}}+\frac{\sqrt{bx+cx^2}\left(d\left(Abe^2-Bd(4cd-3be)\right)-\right.}{4de^2(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] ((d*(A*b*e^2 - B*d*(4*c*d - 3*b*e)) - e*(B*d*(6*c*d - 5*b*e) - A*e*(2*c*d -
 b*e))*x)*Sqrt[b*x + c*x^2])/(4*d*e^2*(c*d - b*e)*(d + e*x)^2) + (2*B*Sqrt[
c]*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^3 - ((A*b^2*e^3 + B*d*(8*c^2*d
^2 - 12*b*c*d*e + 3*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sq
rt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(8*d^(3/2)*e^3*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^3}\,dx = \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} - \int \frac{1}{2}b(A$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + (Bc)\int$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + (2Bc)$$

$$= \frac{\left(d\left(Abe^2-Bd(4cd-3be)\right)-e(Bd(6cd-5be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{4de^2(cd-be)(d+ex)^2} + 2B\sqrt{c}$$

Mathematica [B] time = 3.65, size = 690, normalized size = 2.94

$$x\Bigg(\frac{(d+ex)\Big((d+ex)\Big(b\sqrt{c}\,e\sqrt{x}\,\big(A\big(b^2e^2+4bcde-8c^2d^2\big)+3b^2Bde\big)\Big(e(b+cx)\Big(b\sqrt{c}\,\sqrt{x}\,\big(\frac{cx}{b}+1\big)^{3/2}+\sqrt{b}\,(b+cx)\sinh^{-1}\Big(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\Big)\Big)-2b\sqrt{c}\,\sqrt{d}\,\big(\frac{cx}{b}+1\big)^{3/2}\Big(\sqrt{b}\,\sqrt{c}\,\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] (x*(-4*(B*d - A*e)*x^2*(b + c*x)^3 + ((d + e*x)*(-2*b*c*e^3*(A*e*(-2*c*d +
b*e) + B*d*(-2*c*d + 3*b*e))*x^2*(b + c*x)^3*Sqrt[1 + (c*x)/b] + (d + e*x)*
(b*Sqrt[c]*e*(3*b^2*B*d*e + A*(-8*c^2*d^2 + 4*b*c*d*e + b^2*e^2))*Sqrt[x]*(
e*(b + c*x)*(b*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2) + Sqrt[b]*(b + c*x)*ArcS
inh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]) - 2*b*Sqrt[c]*Sqrt[d]*(1 + (c*x)/b)^(3/2)*(
Sqrt[b]*Sqrt[c]*Sqrt[d]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]
] - Sqrt[c*d - b*e]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d
]*Sqrt[b + c*x])])) - (B*d*(2*c*d - 3*b*e) + A*e*(2*c*d - b*e))*(e^2*(b + c
*x)^2*(b*c*x*(b + 2*c*x)*Sqrt[1 + (c*x)/b] - b^(5/2)*Sqrt[c]*Sqrt[x]*ArcSin
h[(Sqrt[c]*Sqrt[x])/Sqrt[b]]) - 4*b*c^(3/2)*d*Sqrt[x]*(e*(b + c*x)*(b*Sqrt[
c]*Sqrt[x]*(1 + (c*x)/b)^(3/2) + Sqrt[b]*(b + c*x)*ArcSinh[(Sqrt[c]*Sqrt[x]
)/Sqrt[b]]) - 2*b*Sqrt[c]*Sqrt[d]*(1 + (c*x)/b)^(3/2)*(Sqrt[b]*Sqrt[c]*Sqrt
[d]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]] - Sqrt[c*d - b*e]*
Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])))
)))/(b*c*d*e^3*(c*d - b*e)*Sqrt[1 + (c*x)/b])))/(8*d*(-(c*d) + b*e)*(x*(b +
 c*x))^(3/2)*(d + e*x)^2)
```

fricas [B] time = 3.35, size = 2234, normalized size = 9.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(8*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b
*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*
d^3*e^3)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - (8*B*c^2
*d^5 - 12*B*b*c*d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2
- 12*B*b*c*d^2*e^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12
*B*b*c*d^3*e^2 + 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(c*d^2 - b*d*e)*log(
(b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)
) - 2*(4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 + (3*B*b^2 - A*b*c)*
d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2*A*c^2)*d^3*e^3 + (
5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^6*e^3 - 2*b*c*d^5*
e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d^2*e^7)*x^2 + 2*(c^
2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/4*((8*B*c^2*d^5 - 12*B*b*c*
d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e
^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*c*d^3*e^2 +
 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2
 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 4*(B*c^2*d^6 - 2*B*b*c*d^5*e
 + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 +
2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^3*e^3)*x)*sqrt(c)*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d
^2*e^4 + (3*B*b^2 - A*b*c)*d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B
*b*c + 2*A*c^2)*d^3*e^3 + (5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x)
)/(c^2*d^6*e^3 - 2*b*c*d^5*e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6
 + b^2*d^2*e^7)*x^2 + 2*(c^2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/
8*(16*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c
*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^
3*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B*c^2*d^5
- 12*B*b*c*d^4*e + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*
B*b*c*d^2*e^3 + 3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*
c*d^3*e^2 + 3*B*b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
+ (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2
*(4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 + (3*B*b^2 - A*b*c)*d^3*e
^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2*A*c^2)*d^3*e^3 + (5*B*b
^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^6*e^3 - 2*b*c*d^5*e^4 +
 b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d^2*e^7)*x^2 + 2*(c^2*d^5
*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x), -1/4*((8*B*c^2*d^5 - 12*B*b*c*d^4*e
 + 3*B*b^2*d^3*e^2 + A*b^2*d^2*e^3 + (8*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e^3 +
3*B*b^2*d*e^4 + A*b^2*e^5)*x^2 + 2*(8*B*c^2*d^4*e - 12*B*b*c*d^3*e^2 + 3*B*
b^2*d^2*e^3 + A*b^2*d*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*
d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 8*(B*c^2*d^6 - 2*B*b*c*d^5*e + B*
b^2*d^4*e^2 + (B*c^2*d^4*e^2 - 2*B*b*c*d^3*e^3 + B*b^2*d^2*e^4)*x^2 + 2*(B*
c^2*d^5*e - 2*B*b*c*d^4*e^2 + B*b^2*d^3*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2
+ b*x)*sqrt(-c)/(c*x)) + (4*B*c^2*d^5*e - 7*B*b*c*d^4*e^2 + A*b^2*d^2*e^4 +
 (3*B*b^2 - A*b*c)*d^3*e^3 + (6*B*c^2*d^4*e^2 - A*b^2*d*e^5 - (11*B*b*c + 2
*A*c^2)*d^3*e^3 + (5*B*b^2 + 3*A*b*c)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d
^6*e^3 - 2*b*c*d^5*e^4 + b^2*d^4*e^5 + (c^2*d^4*e^5 - 2*b*c*d^3*e^6 + b^2*d
^2*e^7)*x^2 + 2*(c^2*d^5*e^4 - 2*b*c*d^4*e^5 + b^2*d^3*e^6)*x)]
```

giac [B] time = 0.40, size = 819, normalized size = 3.49

$$-B\sqrt{c}\,e^{(-3)}\log\left(\left|2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}+b\right|\right)-\frac{\left(8\,Bc^2d^3-12\,Bbcd^2e+3\,Bb^2de^2+Ab^2e^3\right)\arctan\left(-\frac{\left(\sqrt{c}\,x-\sqrt{cx}\right.}{\sqrt{-c}}\right.}{4\left(cd^2e^3-bde^4\right)\sqrt{-cd^2+bde}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -B*sqrt(c)*e^(-3)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b)) -
 1/4*(8*B*c^2*d^3 - 12*B*b*c*d^2*e + 3*B*b^2*d*e^2 + A*b^2*e^3)*arctan(-((s
qrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c*d^2*
e^3 - b*d*e^4)*sqrt(-c*d^2 + b*d*e)) - 1/4*(16*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*B*c^(5/2)*d^3*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*c^3*d^4 - 20
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^2*d^3*e - 8*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^2*A*c^3*d^3*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^(5/2)*d^
4 - 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b*c^(3/2)*d^2*e^2 - 8*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*A*c^(5/2)*d^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*
x))*B*b^2*c^(3/2)*d^3*e - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^(5/2)*d^3
*e + 6*B*b^2*c^2*d^4 - (sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c*d^2*e^2 -
5*B*b^3*c*d^3*e - 2*A*b^2*c^2*d^3*e + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^2*sqrt(c)*d*e^3 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(3/2)*d*e^3
+ 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*sqrt(c)*d^2*e^2 + 4*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^2*c^(3/2)*d^2*e^2 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*A*b^2*c*d*e^3 + A*b^3*c*d^2*e^2 - (sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b
^2*sqrt(c)*e^4 + (sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*sqrt(c)*d*e^3)/((c^(
3/2)*d^2*e^3 - b*sqrt(c)*d*e^4)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2)
```

maple [B] time = 0.07, size = 4316, normalized size = 18.37

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -1/4/e*c^(1/2)/(b*e-c*d)/d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b*A-3/2*B/e^4/(b*e-c*d)
*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+
2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2))/(x+d/e))*c^2-1/2/e^4/(b*e-c*d)^2*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-1/2/e^
2*c/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A+1/2/e^3*c^2/(b*e-c*d)*d/(-(b*e-c*d)*d/e^2)
^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1
/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+1
/4*e/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*b*A+3/4/e^2/(b*e-c*d)^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*B*d+
5/8/e/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*A+3/4/(b*e-c*d)^2/d*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+1/2/(b*e-c*d)^2/d*c^2*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+1/4/(b*e-c*d)^2/d*
ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A+1/e^3/(b*e-c*d)^2*d^2/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*b*c^2*B-5/8/e^2/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B*d+2*B/e^3/(b*e-c*d)*d/(
-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b
*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1
/2))/(x+d/e))*b*c-1/4*e/(b*e-c*d)^2/d^2*c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*x*b*A-1/e^2/(b*e-c*d)^2*d/(-(b*e-c*d)*d/e^2)^(1/2)
*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-1
/4/(b*e-c*d)^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(3/2)*b*B-1/2/(b*e-c*d)^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(3/2)*c*A-1/8/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A+1/2/e/(b*e-
c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*
A-1/4*e/(b*e-c*d)^2/d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*b^2*A+1/2/e^2/(b*e-c*d)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*c^2*B*d+1/2/e^2/(b*e-c*d)^2*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)
/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5
/2)*A-1/2/e^3/(b*e-c*d)^2*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5/2)*B-1/2/e*c/(b
*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-3/4/e
/(b*e-c*d)^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*A-3/2*B/e^3/(b*e-c*d)*d*ln(
((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(1/2))*c^(3/2)-1/2*B/e^2/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*
ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2+1/8/e/
(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-3/4/e/(b*e-c*d)^2*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-1/2/e/(b*e-c*d)^2*c^2*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B-1/4/e/(b*e-c*d)^2*ln(((x+d
/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2))*c^(1/2)*b^2*B-B/e/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b+5/4*B/e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)*c^(1/2)*b+B/e/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(3/2)+1/2/e/(b*e-c*d)^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B-1/2/e^2/(b*e-c*d)/(x+d/e)^2*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B-1/2/e/(b*e-c*d)^2*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A-B/e*c/(b*e-c*d)/d*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x+1/2/e^3/(b*e-c*d)^2*
d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2
*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))/(x+d/e))*c^3*A+1/4/(b*e-c*d)^2/d*c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*B+1/2/e^2*c^(3/2)/(b*e-c*d)*ln(((x+d/e)*c+1
/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))*A+1/4/(b*e-c*d)^2/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2)*b^2*B+3/2*B/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + c x\right)} \left(A + B x\right)}{\left(d + e x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**3,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**3, x)
```

3.1169 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=200

$$\frac{b^2(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{8d^2(d+ex)^2(cd-be)^2}+\frac{\left(bx+\right.}{3d(d}$$

```
[Out] 1/3*(-A*e+B*d)*(c*x^2+b*x)^(3/2)/d/(-b*e+c*d)/(e*x+d)^3+1/16*b^2*(A*b*e-2*A
*c*d+B*b*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^
2+b*x)^(1/2))/d^(5/2)/(-b*e+c*d)^(5/2)-1/8*(A*b*e-2*A*c*d+B*b*d)*(b*d+(-b*e
+2*c*d)*x)*(c*x^2+b*x)^(1/2)/d^2/(-b*e+c*d)^2/(e*x+d)^2
```

Rubi [A] time = 0.18, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {806, 720, 724, 206}

$$\frac{b^2(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{16d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{8d^2(d+ex)^2(cd-be)^2}+\frac{\left(bx+\right.}{3d(d}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] -((b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(8*d
^2*(c*d - b*e)^2*(d + e*x)^2) + ((B*d - A*e)*(b*x + c*x^2)^(3/2))/(3*d*(c*d
 - b*e)*(d + e*x)^3) + (b^2*(b*B*d - 2*A*c*d + A*b*e)*ArcTanh[(b*d + (2*c*d
 - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(5/2)*(c*d
 - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx &= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} - \frac{(bBd-2Acd+Abe)\int \frac{\sqrt{bx+cx^2}}{(d+ex)^3}\,dx}{2d(cd-be)}\\
&= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} + \left(b^2\right.\\
&= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} - \left(b^2\right.\\
&= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{8d^2(cd-be)^2(d+ex)^2} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{3d(cd-be)(d+ex)^3} + b^2(\end{aligned}$$

Mathematica [A] time = 0.39, size = 199, normalized size = 1.00

$$\frac{\sqrt{x(b+cx)}\left(8x^{3/2}(b+cx)(Ae-Bd) - \frac{3(d+ex)(Abe-2Acd+bBd)\left(b^2(d+ex)^2\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}(-bd+bex-2cdx)\right)}{d^{3/2}\sqrt{b+cx}(cd-be)^{3/2}}\right.}{24d\sqrt{x}(d+ex)^3(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(8*(-(B*d) + A*e)*x^(3/2)*(b + c*x) - (3*(b*B*d - 2*A*c*
d + A*b*e)*(d + e*x)*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x]*(-(b*d)
 - 2*c*d*x + b*e*x) + b^2*(d + e*x)^2*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sq
rt[d]*Sqrt[b + c*x])]))/(d^(3/2)*(c*d - b*e)^(3/2)*Sqrt[b + c*x])))/(24*d*(
-(c*d) + b*e)*Sqrt[x]*(d + e*x)^3)
```

fricas [B] time = 1.01, size = 1216, normalized size = 6.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [1/48*(3*(A*b^3*d^3*e + (B*b^3 - 2*A*b^2*c)*d^4 + (A*b^3*e^4 + (B*b^3 - 2*A
*b^2*c)*d*e^3)*x^3 + 3*(A*b^3*d*e^3 + (B*b^3 - 2*A*b^2*c)*d^2*e^2)*x^2 + 3*
(A*b^3*d^2*e^2 + (B*b^3 - 2*A*b^2*c)*d^3*e)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) +
2*(3*A*b^3*d^3*e^2 - 3*(B*b^2*c - 2*A*b*c^2)*d^5 + 3*(B*b^3 - 3*A*b^2*c)*d^
4*e + (8*B*c^3*d^5 - 3*A*b^3*d*e^4 - 2*(11*B*b*c^2 - 2*A*c^3)*d^4*e + (17*B
*b^2*c - 8*A*b*c^2)*d^3*e^2 - (3*B*b^3 - 7*A*b^2*c)*d^2*e^3)*x^2 - 2*(4*A*b
^3*d^2*e^3 - (B*b*c^2 + 6*A*c^3)*d^5 + (5*B*b^2*c + 13*A*b*c^2)*d^4*e - (4*
B*b^3 + 11*A*b^2*c)*d^3*e^2)*x)*sqrt(c*x^2 + b*x))/(c^3*d^9 - 3*b*c^2*d^8*e
 + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*c
*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d^
5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^3
 - b^3*d^5*e^4)*x), 1/24*(3*(A*b^3*d^3*e + (B*b^3 - 2*A*b^2*c)*d^4 + (A*b^3
*e^4 + (B*b^3 - 2*A*b^2*c)*d*e^3)*x^3 + 3*(A*b^3*d*e^3 + (B*b^3 - 2*A*b^2*c
)*d^2*e^2)*x^2 + 3*(A*b^3*d^2*e^2 + (B*b^3 - 2*A*b^2*c)*d^3*e)*x)*sqrt(-c*d
^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
 + (3*A*b^3*d^3*e^2 - 3*(B*b^2*c - 2*A*b*c^2)*d^5 + 3*(B*b^3 - 3*A*b^2*c)*d
^4*e + (8*B*c^3*d^5 - 3*A*b^3*d*e^4 - 2*(11*B*b*c^2 - 2*A*c^3)*d^4*e + (17*
B*b^2*c - 8*A*b*c^2)*d^3*e^2 - (3*B*b^3 - 7*A*b^2*c)*d^2*e^3)*x^2 - 2*(4*A*
b^3*d^2*e^3 - (B*b*c^2 + 6*A*c^3)*d^5 + (5*B*b^2*c + 13*A*b*c^2)*d^4*e - (4
*B*b^3 + 11*A*b^2*c)*d^3*e^2)*x)*sqrt(c*x^2 + b*x))/(c^3*d^9 - 3*b*c^2*d^8*
e + 3*b^2*c*d^7*e^2 - b^3*d^6*e^3 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 + 3*b^2*
c*d^4*e^5 - b^3*d^3*e^6)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 + 3*b^2*c*d
^5*e^4 - b^3*d^4*e^5)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 + 3*b^2*c*d^6*e^
3 - b^3*d^5*e^4)*x)]
```

giac [B] time = 0.34, size = 1555, normalized size = 7.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 1/8*(B*b^3*d - 2*A*b^2*c*d + A*b^3*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*
x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*
e^2)*sqrt(-c*d^2 + b*d*e)) + 1/24*(96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c
^(7/2)*d^5*e + 64*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^4*d^6 + 48*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*B*c^3*d^4*e^2 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*B*b*c^3*d^5*e + 32*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^4*d^5*e + 96*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^(7/2)*d^6 - 144*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^4*B*b*c^(5/2)*d^4*e^2 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*
c^(7/2)*d^4*e^2 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^(5/2)*d^5*e
 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(7/2)*d^5*e + 48*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*B*b^2*c^3*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*
b*c^2*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^2*d^4*e^2 + 1
6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^3*d^4*e^2 - 84*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*B*b^3*c^2*d^5*e + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^
3*d^5*e + 8*B*b^3*c^(5/2)*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^
(5/2)*d^3*e^3 - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^(3/2)*d^4*e^2 -
 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^(5/2)*d^4*e^2 - 14*B*b^4*c^(3
/2)*d^5*e + 4*A*b^3*c^(5/2)*d^5*e + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*
b^2*c*d^2*e^4 + 58*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c*d^3*e^3 - 84*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^2*d^3*e^3 + 18*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*B*b^4*c*d^4*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^2
*d^4*e^2 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*sqrt(c)*d^2*e^4 + 78*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(3/2)*d^2*e^4 + 24*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)*d^3*e^3 - 6*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b^3*c^(3/2)*d^3*e^3 + 3*B*b^5*sqrt(c)*d^4*e^2 - 4*A*b^4*c^(3/2)*d^4*
e^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*d*e^5 + 6*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^5*A*b^2*c*d*e^5 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*
d^2*e^4 + 74*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c*d^2*e^4 + 3*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*B*b^5*d^3*e^3 + 12*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^4*c*d^3*e^3 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*sqrt(c)*d*e^5
+ 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*sqrt(c)*d^2*e^4 + 3*A*b^5*sqrt
(c)*d^3*e^3 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*e^6 - 8*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*A*b^4*d*e^5 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^
5*d^2*e^4)/((c^2*d^4*e^3 - 2*b*c*d^3*e^4 + b^2*d^2*e^5)*((sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.07, size = 6956, normalized size = 34.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + c x\right)} \left(A + B x\right)}{\left(d + e x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**4, x)
```

3.1170 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=310

$$-\frac{b^2\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{128d^{7/2}(cd-be)^{7/2}}+\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd}{6}$$

```
[Out] 1/4*(-A*e+B*d)*(c*x^2+b*x)^(3/2)/d/(-b*e+c*d)/(e*x+d)^4-1/24*(5*A*e*(-b*e+2
*c*d)-B*d*(3*b*e+2*c*d))*(c*x^2+b*x)^(3/2)/d^2/(-b*e+c*d)^2/(e*x+d)^3-1/128
*b^2*(16*A*c^2*d^2-8*b*c*d*(2*A*e+B*d)+b^2*e*(5*A*e+3*B*d))*arctanh(1/2*(b*
d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(7/2)/(-b*e
+c*d)^(7/2)+1/64*(16*A*c^2*d^2-8*b*c*d*(2*A*e+B*d)+b^2*e*(5*A*e+3*B*d))*(b*
d+(-b*e+2*c*d)*x)*(c*x^2+b*x)^(1/2)/d^3/(-b*e+c*d)^3/(e*x+d)^2
```

Rubi [**A**] time = 0.41, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {834, 806, 720, 724, 206}

$$\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)}{64d^3(d+ex)^2(cd-be)^3}-\frac{b^2\left(b^2e(5Ae+3Bd)-8bcd(2A\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] ((16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*A*e))*(b*d + (2*c
*d - b*e)*x)*Sqrt[b*x + c*x^2])/(64*d^3*(c*d - b*e)^3*(d + e*x)^2) + ((B*d
- A*e)*(b*x + c*x^2)^(3/2))/(4*d*(c*d - b*e)*(d + e*x)^4) - ((5*A*e*(2*c*d
- b*e) - B*d*(2*c*d + 3*b*e))*(b*x + c*x^2)^(3/2))/(24*d^2*(c*d - b*e)^2*(d
 + e*x)^3) - (b^2*(16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*
A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x +
 c*x^2]])])/(128*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{4d(cd-be)(d+ex)^4} - \frac{\int \frac{\left(\frac{1}{2}(3bBd-8Acd+5Abe)-c(Bd-Ae)x\right)\sqrt{bx+cx^2}}{(d+ex)^4}\,dx}{4d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{4d(cd-be)(d+ex)^4} - \frac{(5Ae(2cd-be)-Bd(2cd+3be))\left(bx+cx^2\right)^{3/2}}{24d^2(cd-be)^2(d+ex)^3} +$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} +$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} +$$

$$= \frac{\left(16Ac^2d^2-8bcd(Bd+2Ae)+b^2e(3Bd+5Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{64d^3(cd-be)^3(d+ex)^2} +$$

Mathematica [A] time = 0.75, size = 279, normalized size = 0.90

$$\frac{\sqrt{x(b+cx)}\left(\frac{3(d+ex)^2\left(b^2e(5Ae+3Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\left(b^2(d+ex)^2\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{x}\sqrt{b+cx}\sqrt{cd-be}(-bd+bex-2cdx)\right)}{d^{5/2}\sqrt{b+cx}(cd-be)^{5/2}} - \right.}{192d\sqrt{x}(d+ex)^4(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(48*(-(B*d) + A*e)*x^(3/2)*(b + c*x) - (8*(5*A*e*(-2*c*d
 + b*e) + B*d*(2*c*d + 3*b*e))*x^(3/2)*(b + c*x)*(d + e*x))/(d*(c*d - b*e))
 + (3*(16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(3*B*d + 5*A*e))*(d + e
*x)^2*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x]*(-(b*d) - 2*c*d*x + b*
e*x) + b^2*(d + e*x)^2*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b +
c*x])]))/(d^(5/2)*(c*d - b*e)^(5/2)*Sqrt[b + c*x])))/(192*d*(-(c*d) + b*e)*
Sqrt[x]*(d + e*x)^4)
```

fricas [B] time = 0.75, size = 2190, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(5*A*b^4*d^4*e^2 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^6 + (3*B*b^4 - 16
*A*b^3*c)*d^5*e + (5*A*b^4*e^6 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^2*e^4 + (3*B*b
^4 - 16*A*b^3*c)*d*e^5)*x^4 + 4*(5*A*b^4*d*e^5 - 8*(B*b^3*c - 2*A*b^2*c^2)*
d^3*e^3 + (3*B*b^4 - 16*A*b^3*c)*d^2*e^4)*x^3 + 6*(5*A*b^4*d^2*e^4 - 8*(B*b
^3*c - 2*A*b^2*c^2)*d^4*e^2 + (3*B*b^4 - 16*A*b^3*c)*d^3*e^3)*x^2 + 4*(5*A*
b^4*d^3*e^3 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^5*e + (3*B*b^4 - 16*A*b^3*c)*d^4*
e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d
*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(15*A*b^4*d^4*e^3 + 24*(B*b^2*c^2 - 2
*A*b*c^3)*d^7 - 3*(11*B*b^3*c - 32*A*b^2*c^2)*d^6*e + 9*(B*b^4 - 7*A*b^3*c)
*d^5*e^2 - (16*B*c^4*d^6*e + 15*A*b^4*d*e^6 - 8*(7*B*b*c^3 - 2*A*c^4)*d^5*e
^2 + 2*(29*B*b^2*c^2 - 20*A*b*c^3)*d^4*e^3 - (27*B*b^3*c - 62*A*b^2*c^2)*d^
3*e^4 + (9*B*b^4 - 53*A*b^3*c)*d^2*e^5)*x^3 - (64*B*c^4*d^7 + 55*A*b^4*d^2*
e^5 - 8*(29*B*b*c^3 - 8*A*c^4)*d^6*e + 4*(65*B*b^2*c^2 - 42*A*b*c^3)*d^5*e^
2 - (125*B*b^3*c - 244*A*b^2*c^2)*d^4*e^3 + 3*(11*B*b^4 - 65*A*b^3*c)*d^3*e
^4)*x^2 - (73*A*b^4*d^3*e^4 + 16*(B*b*c^3 + 6*A*c^4)*d^7 - 2*(55*B*b^2*c^2
+ 136*A*b*c^3)*d^6*e + (127*B*b^3*c + 374*A*b^2*c^2)*d^5*e^2 - (33*B*b^4 +
271*A*b^3*c)*d^4*e^3)*x)*sqrt(c*x^2 + b*x))/(c^4*d^12 - 4*b*c^3*d^11*e + 6*
b^2*c^2*d^10*e^2 - 4*b^3*c*d^9*e^3 + b^4*d^8*e^4 + (c^4*d^8*e^4 - 4*b*c^3*d
^7*e^5 + 6*b^2*c^2*d^6*e^6 - 4*b^3*c*d^5*e^7 + b^4*d^4*e^8)*x^4 + 4*(c^4*d^
9*e^3 - 4*b*c^3*d^8*e^4 + 6*b^2*c^2*d^7*e^5 - 4*b^3*c*d^6*e^6 + b^4*d^5*e^7
)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3 + 6*b^2*c^2*d^8*e^4 - 4*b^3*c*d^7
*e^5 + b^4*d^6*e^6)*x^2 + 4*(c^4*d^11*e - 4*b*c^3*d^10*e^2 + 6*b^2*c^2*d^9*
e^3 - 4*b^3*c*d^8*e^4 + b^4*d^7*e^5)*x), -1/192*(3*(5*A*b^4*d^4*e^2 - 8*(B*
b^3*c - 2*A*b^2*c^2)*d^6 + (3*B*b^4 - 16*A*b^3*c)*d^5*e + (5*A*b^4*e^6 - 8*
(B*b^3*c - 2*A*b^2*c^2)*d^2*e^4 + (3*B*b^4 - 16*A*b^3*c)*d*e^5)*x^4 + 4*(5*
A*b^4*d*e^5 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^3*e^3 + (3*B*b^4 - 16*A*b^3*c)*d^
2*e^4)*x^3 + 6*(5*A*b^4*d^2*e^4 - 8*(B*b^3*c - 2*A*b^2*c^2)*d^4*e^2 + (3*B*
b^4 - 16*A*b^3*c)*d^3*e^3)*x^2 + 4*(5*A*b^4*d^3*e^3 - 8*(B*b^3*c - 2*A*b^2*
c^2)*d^5*e + (3*B*b^4 - 16*A*b^3*c)*d^4*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan
(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (15*A*b^4*d^4*e
^3 + 24*(B*b^2*c^2 - 2*A*b*c^3)*d^7 - 3*(11*B*b^3*c - 32*A*b^2*c^2)*d^6*e +
 9*(B*b^4 - 7*A*b^3*c)*d^5*e^2 - (16*B*c^4*d^6*e + 15*A*b^4*d*e^6 - 8*(7*B*
b*c^3 - 2*A*c^4)*d^5*e^2 + 2*(29*B*b^2*c^2 - 20*A*b*c^3)*d^4*e^3 - (27*B*b^
3*c - 62*A*b^2*c^2)*d^3*e^4 + (9*B*b^4 - 53*A*b^3*c)*d^2*e^5)*x^3 - (64*B*c
^4*d^7 + 55*A*b^4*d^2*e^5 - 8*(29*B*b*c^3 - 8*A*c^4)*d^6*e + 4*(65*B*b^2*c^
2 - 42*A*b*c^3)*d^5*e^2 - (125*B*b^3*c - 244*A*b^2*c^2)*d^4*e^3 + 3*(11*B*b
^4 - 65*A*b^3*c)*d^3*e^4)*x^2 - (73*A*b^4*d^3*e^4 + 16*(B*b*c^3 + 6*A*c^4)*
d^7 - 2*(55*B*b^2*c^2 + 136*A*b*c^3)*d^6*e + (127*B*b^3*c + 374*A*b^2*c^2)*
d^5*e^2 - (33*B*b^4 + 271*A*b^3*c)*d^4*e^3)*x)*sqrt(c*x^2 + b*x))/(c^4*d^12
 - 4*b*c^3*d^11*e + 6*b^2*c^2*d^10*e^2 - 4*b^3*c*d^9*e^3 + b^4*d^8*e^4 + (c
^4*d^8*e^4 - 4*b*c^3*d^7*e^5 + 6*b^2*c^2*d^6*e^6 - 4*b^3*c*d^5*e^7 + b^4*d^
4*e^8)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 + 6*b^2*c^2*d^7*e^5 - 4*b^3*c
*d^6*e^6 + b^4*d^5*e^7)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3 + 6*b^2*c^2
*d^8*e^4 - 4*b^3*c*d^7*e^5 + b^4*d^6*e^6)*x^2 + 4*(c^4*d^11*e - 4*b*c^3*d^1
0*e^2 + 6*b^2*c^2*d^9*e^3 - 4*b^3*c*d^8*e^4 + b^4*d^7*e^5)*x)]
```

giac [B] time = 1.37, size = 1720, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/384*(2*sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*
d*e/(x*e + d)^2)*(2*(4*((10*B*c^3*d^6*e^11*sgn(1/(x*e + d)) - 29*B*b*c^2*d^
5*e^12*sgn(1/(x*e + d)) - 2*A*c^3*d^5*e^12*sgn(1/(x*e + d)) + 28*B*b^2*c*d^
4*e^13*sgn(1/(x*e + d)) + 5*A*b*c^2*d^4*e^13*sgn(1/(x*e + d)) - 9*B*b^3*d^3
*e^14*sgn(1/(x*e + d)) - 4*A*b^2*c*d^3*e^14*sgn(1/(x*e + d)) + A*b^3*d^2*e^
15*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^2*c*d^4*e^16 -
b^3*d^3*e^17) - 6*(B*c^3*d^7*e^12*sgn(1/(x*e + d)) - 3*B*b*c^2*d^6*e^13*sgn
(1/(x*e + d)) - A*c^3*d^6*e^13*sgn(1/(x*e + d)) + 3*B*b^2*c*d^5*e^14*sgn(1/
(x*e + d)) + 3*A*b*c^2*d^5*e^14*sgn(1/(x*e + d)) - B*b^3*d^4*e^15*sgn(1/(x*
e + d)) - 3*A*b^2*c*d^4*e^15*sgn(1/(x*e + d)) + A*b^3*d^3*e^16*sgn(1/(x*e +
 d)))*e^(-1)/((c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^2*c*d^4*e^16 - b^3*d^3
*e^17)*(x*e + d)))*e^(-1)/(x*e + d) - (8*B*c^3*d^5*e^10*sgn(1/(x*e + d)) -
24*B*b*c^2*d^4*e^11*sgn(1/(x*e + d)) + 8*A*c^3*d^4*e^11*sgn(1/(x*e + d)) +
19*B*b^2*c*d^3*e^12*sgn(1/(x*e + d)) - 16*A*b*c^2*d^3*e^12*sgn(1/(x*e + d))
 - 3*B*b^3*d^2*e^13*sgn(1/(x*e + d)) + 13*A*b^2*c*d^2*e^13*sgn(1/(x*e + d))
 - 5*A*b^3*d*e^14*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15 + 3*b^
2*c*d^4*e^16 - b^3*d^3*e^17))*e^(-1)/(x*e + d) - (16*B*c^3*d^4*e^9*sgn(1/(x
*e + d)) - 40*B*b*c^2*d^3*e^10*sgn(1/(x*e + d)) + 16*A*c^3*d^3*e^10*sgn(1/(
x*e + d)) + 18*B*b^2*c*d^2*e^11*sgn(1/(x*e + d)) - 24*A*b*c^2*d^2*e^11*sgn(
1/(x*e + d)) - 9*B*b^3*d*e^12*sgn(1/(x*e + d)) + 38*A*b^2*c*d*e^12*sgn(1/(x
*e + d)) - 15*A*b^3*e^13*sgn(1/(x*e + d)))/(c^3*d^6*e^14 - 3*b*c^2*d^5*e^15
 + 3*b^2*c*d^4*e^16 - b^3*d^3*e^17)) + (32*sqrt(c*d^2 - b*d*e)*B*c^(7/2)*d^
4 - 80*sqrt(c*d^2 - b*d*e)*B*b*c^(5/2)*d^3*e + 32*sqrt(c*d^2 - b*d*e)*A*c^(
7/2)*d^3*e - 24*B*b^3*c*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)
*sqrt(c))) + 48*A*b^2*c^2*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*
e)*sqrt(c))) + 36*sqrt(c*d^2 - b*d*e)*B*b^2*c^(3/2)*d^2*e^2 - 48*sqrt(c*d^2
 - b*d*e)*A*b*c^(5/2)*d^2*e^2 + 9*B*b^4*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(
c*d^2 - b*d*e)*sqrt(c))) - 48*A*b^3*c*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*
d^2 - b*d*e)*sqrt(c))) - 18*sqrt(c*d^2 - b*d*e)*B*b^3*sqrt(c)*d*e^3 + 76*sq
rt(c*d^2 - b*d*e)*A*b^2*c^(3/2)*d*e^3 + 15*A*b^4*e^5*log(abs(2*c*d - b*e -
2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 30*sqrt(c*d^2 - b*d*e)*A*b^3*sqrt(c)*e^4)
*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e)*c^3*d^6*e^5 - 3*sqrt(c*d^2 - b*d*e)*
b*c^2*d^5*e^6 + 3*sqrt(c*d^2 - b*d*e)*b^2*c*d^4*e^7 - sqrt(c*d^2 - b*d*e)*b
^3*d^3*e^8) + 3*(8*B*b^3*c*d^2*sgn(1/(x*e + d)) - 16*A*b^2*c^2*d^2*sgn(1/(x
*e + d)) - 3*B*b^4*d*e*sgn(1/(x*e + d)) + 16*A*b^3*c*d*e*sgn(1/(x*e + d)) -
 5*A*b^4*e^2*sgn(1/(x*e + d)))*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*
(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e
+ d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e + d))))/((c^3*d^6*e^2 - 3*b
*c^2*d^5*e^3 + 3*b^2*c*d^4*e^4 - b^3*d^3*e^5)*sqrt(c*d^2 - b*d*e)))*e^2
```

maple [B] time = 0.10, size = 10550, normalized size = 34.03

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x (b + cx)} (A + Bx)}{(d + ex)^5}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**5,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**5, x)
```

3.1171 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=449

$$\frac{\left(bx+cx^2\right)^{3/2}\left(Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)-Ae\left(35b^2e^2-108bcde+108c^2d^2\right)\right)}{240d^3(d+ex)^3(cd-be)^3}-\frac{b^2\left(b^3\left(-e^2\right)(7Ae+3Bd)+6\right.}{}$$

```
[Out] 1/5*(-A*e+B*d)*(c*x^2+b*x)^(3/2)/d/(-b*e+c*d)/(e*x+d)^5-1/40*(7*A*e*(-b*e+2
*c*d)-B*d*(3*b*e+4*c*d))*(c*x^2+b*x)^(3/2)/d^2/(-b*e+c*d)^2/(e*x+d)^4+1/240
*(B*d*(-15*b^2*e^2+42*b*c*d*e+8*c^2*d^2)-A*e*(35*b^2*e^2-108*b*c*d*e+108*c^
2*d^2))*(c*x^2+b*x)^(3/2)/d^3/(-b*e+c*d)^3/(e*x+d)^3-1/256*b^2*(32*A*c^3*d^
3-16*b*c^2*d^2*(3*A*e+B*d)+6*b^2*c*d*e*(5*A*e+2*B*d)-b^3*e^2*(7*A*e+3*B*d))
*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2
))/d^(9/2)/(-b*e+c*d)^(9/2)+1/128*(32*A*c^3*d^3-16*b*c^2*d^2*(3*A*e+B*d)+6*
b^2*c*d*e*(5*A*e+2*B*d)-b^3*e^2*(7*A*e+3*B*d))*(b*d+(-b*e+2*c*d)*x)*(c*x^2+
b*x)^(1/2)/d^4/(-b*e+c*d)^4/(e*x+d)^2
```

Rubi **[A]** time = 0.78, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {834, 806, 720, 724, 206}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)-Ae\left(35b^2e^2-108bcde+108c^2d^2\right)\right)}{240d^3(d+ex)^3(cd-be)^3}+\frac{\sqrt{bx+cx^2}\,(x(2cd-be)+bd}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] ((32*A*c^3*d^3 - 16*b*c^2*d^2*(B*d + 3*A*e) + 6*b^2*c*d*e*(2*B*d + 5*A*e) -
 b^3*e^2*(3*B*d + 7*A*e))*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(128*d
^4*(c*d - b*e)^4*(d + e*x)^2) + ((B*d - A*e)*(b*x + c*x^2)^(3/2))/(5*d*(c*d
 - b*e)*(d + e*x)^5) - ((7*A*e*(2*c*d - b*e) - B*d*(4*c*d + 3*b*e))*(b*x +
c*x^2)^(3/2))/(40*d^2*(c*d - b*e)^2*(d + e*x)^4) + ((B*d*(8*c^2*d^2 + 42*b*
c*d*e - 15*b^2*e^2) - A*e*(108*c^2*d^2 - 108*b*c*d*e + 35*b^2*e^2))*(b*x +
c*x^2)^(3/2))/(240*d^3*(c*d - b*e)^3*(d + e*x)^3) - (b^2*(32*A*c^3*d^3 - 16
*b*c^2*d^2*(B*d + 3*A*e) + 6*b^2*c*d*e*(2*B*d + 5*A*e) - b^3*e^2*(3*B*d + 7
*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x
+ c*x^2])])/(256*d^(9/2)*(c*d - b*e)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^6}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{\int \frac{\left(\frac{1}{2}(-10Acd+b(3Bd+7Ae))-2c(Bd-Ae)x\right)\sqrt{bx+cx^2}}{(d+ex)^5}\,dx}{5d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{(7Ae(2cd-be)-Bd(4cd+3be))\left(bx+cx^2\right)^{3/2}}{40d^2(cd-be)^2(d+ex)^4} + \int \frac{\left(\frac{1}{4}\right.}{}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{3/2}}{5d(cd-be)(d+ex)^5} - \frac{(7Ae(2cd-be)-Bd(4cd+3be))\left(bx+cx^2\right)^{3/2}}{40d^2(cd-be)^2(d+ex)^4} + \frac{\left(Bd\left(\right.\right.}{}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

$$= \frac{\left(32Ac^3d^3-16bc^2d^2(Bd+3Ae)+6b^2cde(2Bd+5Ae)-b^3e^2(3Bd+7Ae)\right)(bd+}{128d^4(cd-be)^4(d+ex)^2}$$

Mathematica [A] time = 2.71, size = 387, normalized size = 0.86

$$-\frac{\sqrt{x(b+cx)}\left(\frac{8x^{3/2}(b+cx)(d+ex)^2\left(Ae\left(-35b^2e^2+108bcde-108c^2d^2\right)+Bd\left(-15b^2e^2+42bcde+8c^2d^2\right)\right)}{d^2(cd-be)^2}+\frac{15(d+ex)^3\left(b^3e^2(7Ae+3Bd)-6b^2cde(5Ae\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/1920*(Sqrt[x*(b + c*x)]*(384*(B*d - A*e)*x^(3/2)*(b + c*x) + (48*(7*A*e*
(-2*c*d + b*e) + B*d*(4*c*d + 3*b*e))*x^(3/2)*(b + c*x)*(d + e*x))/(d*(c*d
- b*e)) + (8*(A*e*(-108*c^2*d^2 + 108*b*c*d*e - 35*b^2*e^2) + B*d*(8*c^2*d^
2 + 42*b*c*d*e - 15*b^2*e^2))*x^(3/2)*(b + c*x)*(d + e*x)^2)/(d^2*(c*d - b*
e)^2) + (15*(-32*A*c^3*d^3 + 16*b*c^2*d^2*(B*d + 3*A*e) - 6*b^2*c*d*e*(2*B*
d + 5*A*e) + b^3*e^2*(3*B*d + 7*A*e))*(d + e*x)^3*(Sqrt[d]*Sqrt[c*d - b*e]*
Sqrt[x]*Sqrt[b + c*x]*(-(b*d) - 2*c*d*x + b*e*x) + b^2*(d + e*x)^2*ArcTanh[
(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]))/(d^(7/2)*(c*d - b*e)^(
7/2)*Sqrt[b + c*x])))/(d*(-(c*d) + b*e)*Sqrt[x]*(d + e*x)^5)
```

fricas [B] time = 1.09, size = 3454, normalized size = 7.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [1/3840*(15*(7*A*b^5*d^5*e^3 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^8 - 12*(B*b^4
*c - 4*A*b^3*c^2)*d^7*e + 3*(B*b^5 - 10*A*b^4*c)*d^6*e^2 + (7*A*b^5*e^8 + 1
6*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3*e^5 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^2*e^6 +
3*(B*b^5 - 10*A*b^4*c)*d*e^7)*x^5 + 5*(7*A*b^5*d*e^7 + 16*(B*b^3*c^2 - 2*A*
b^2*c^3)*d^4*e^4 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^3*e^5 + 3*(B*b^5 - 10*A*b^4
*c)*d^2*e^6)*x^4 + 10*(7*A*b^5*d^2*e^6 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^5*e
^3 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^4*e^4 + 3*(B*b^5 - 10*A*b^4*c)*d^3*e^5)*x
^3 + 10*(7*A*b^5*d^3*e^5 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^6*e^2 - 12*(B*b^4
*c - 4*A*b^3*c^2)*d^5*e^3 + 3*(B*b^5 - 10*A*b^4*c)*d^4*e^4)*x^2 + 5*(7*A*b^
5*d^4*e^4 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^7*e - 12*(B*b^4*c - 4*A*b^3*c^2)
*d^6*e^2 + 3*(B*b^5 - 10*A*b^4*c)*d^5*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
+ (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2
*(105*A*b^5*d^5*e^4 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^9 + 60*(7*B*b^3*c^2 - 2
0*A*b^2*c^3)*d^8*e - 45*(5*B*b^4*c - 26*A*b^3*c^2)*d^7*e^2 + 15*(3*B*b^5 -
37*A*b^4*c)*d^6*e^3 + (64*B*c^5*d^7*e^2 - 105*A*b^5*d*e^8 - 16*(17*B*b*c^4
- 6*A*c^5)*d^6*e^3 + 32*(11*B*b^2*c^3 - 9*A*b*c^4)*d^5*e^4 - 2*(147*B*b^3*c
^2 - 334*A*b^2*c^3)*d^4*e^5 + (195*B*b^4*c - 856*A*b^3*c^2)*d^3*e^6 - 5*(9*
B*b^5 - 97*A*b^4*c)*d^2*e^7)*x^4 + 2*(160*B*c^5*d^8*e - 245*A*b^5*d^2*e^7 -
 24*(29*B*b*c^4 - 10*A*c^5)*d^7*e^2 + 12*(79*B*b^2*c^3 - 62*A*b*c^4)*d^6*e^
3 - (763*B*b^3*c^2 - 1622*A*b^2*c^3)*d^5*e^4 + 3*(152*B*b^4*c - 669*A*b^3*c
^2)*d^4*e^5 - 21*(5*B*b^5 - 54*A*b^4*c)*d^3*e^6)*x^3 + 2*(320*B*c^5*d^9 - 4
48*A*b^5*d^3*e^6 - 480*(3*B*b*c^4 - A*c^5)*d^8*e + 24*(88*B*b^2*c^3 - 65*A*
b*c^4)*d^7*e^2 - (1691*B*b^3*c^2 - 3178*A*b^2*c^3)*d^6*e^3 + 33*(27*B*b^4*c
 - 113*A*b^3*c^2)*d^5*e^4 - 3*(64*B*b^5 - 693*A*b^4*c)*d^4*e^5)*x^2 - 10*(7
9*A*b^5*d^4*e^5 - 16*(B*b*c^4 + 6*A*c^5)*d^9 + 28*(5*B*b^2*c^3 + 12*A*b*c^4
)*d^8*e - (211*B*b^3*c^2 + 642*A*b^2*c^3)*d^7*e^2 + (108*B*b^4*c + 697*A*b^
3*c^2)*d^6*e^3 - (21*B*b^5 + 374*A*b^4*c)*d^5*e^4)*x)*sqrt(c*x^2 + b*x))/(c
^5*d^15 - 5*b*c^4*d^14*e + 10*b^2*c^3*d^13*e^2 - 10*b^3*c^2*d^12*e^3 + 5*b^
4*c*d^11*e^4 - b^5*d^10*e^5 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*
d^8*e^7 - 10*b^3*c^2*d^7*e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*x^5 + 5*(c^5
*d^11*e^4 - 5*b*c^4*d^10*e^5 + 10*b^2*c^3*d^9*e^6 - 10*b^3*c^2*d^8*e^7 + 5*
b^4*c*d^7*e^8 - b^5*d^6*e^9)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 + 10
*b^2*c^3*d^10*e^5 - 10*b^3*c^2*d^9*e^6 + 5*b^4*c*d^8*e^7 - b^5*d^7*e^8)*x^3
 + 10*(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 + 10*b^2*c^3*d^11*e^4 - 10*b^3*c^2*d
^10*e^5 + 5*b^4*c*d^9*e^6 - b^5*d^8*e^7)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13
*e^2 + 10*b^2*c^3*d^12*e^3 - 10*b^3*c^2*d^11*e^4 + 5*b^4*c*d^10*e^5 - b^5*d
^9*e^6)*x), 1/1920*(15*(7*A*b^5*d^5*e^3 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^8
- 12*(B*b^4*c - 4*A*b^3*c^2)*d^7*e + 3*(B*b^5 - 10*A*b^4*c)*d^6*e^2 + (7*A*
b^5*e^8 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3*e^5 - 12*(B*b^4*c - 4*A*b^3*c^2)
*d^2*e^6 + 3*(B*b^5 - 10*A*b^4*c)*d*e^7)*x^5 + 5*(7*A*b^5*d*e^7 + 16*(B*b^3
*c^2 - 2*A*b^2*c^3)*d^4*e^4 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^3*e^5 + 3*(B*b^5
 - 10*A*b^4*c)*d^2*e^6)*x^4 + 10*(7*A*b^5*d^2*e^6 + 16*(B*b^3*c^2 - 2*A*b^2
*c^3)*d^5*e^3 - 12*(B*b^4*c - 4*A*b^3*c^2)*d^4*e^4 + 3*(B*b^5 - 10*A*b^4*c)
*d^3*e^5)*x^3 + 10*(7*A*b^5*d^3*e^5 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^6*e^2
- 12*(B*b^4*c - 4*A*b^3*c^2)*d^5*e^3 + 3*(B*b^5 - 10*A*b^4*c)*d^4*e^4)*x^2
+ 5*(7*A*b^5*d^4*e^4 + 16*(B*b^3*c^2 - 2*A*b^2*c^3)*d^7*e - 12*(B*b^4*c - 4
*A*b^3*c^2)*d^6*e^2 + 3*(B*b^5 - 10*A*b^4*c)*d^5*e^3)*x)*sqrt(-c*d^2 + b*d*
e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (105*A
*b^5*d^5*e^4 - 240*(B*b^2*c^3 - 2*A*b*c^4)*d^9 + 60*(7*B*b^3*c^2 - 20*A*b^2
*c^3)*d^8*e - 45*(5*B*b^4*c - 26*A*b^3*c^2)*d^7*e^2 + 15*(3*B*b^5 - 37*A*b^
4*c)*d^6*e^3 + (64*B*c^5*d^7*e^2 - 105*A*b^5*d*e^8 - 16*(17*B*b*c^4 - 6*A*c
^5)*d^6*e^3 + 32*(11*B*b^2*c^3 - 9*A*b*c^4)*d^5*e^4 - 2*(147*B*b^3*c^2 - 33
4*A*b^2*c^3)*d^4*e^5 + (195*B*b^4*c - 856*A*b^3*c^2)*d^3*e^6 - 5*(9*B*b^5 -
 97*A*b^4*c)*d^2*e^7)*x^4 + 2*(160*B*c^5*d^8*e - 245*A*b^5*d^2*e^7 - 24*(29
*B*b*c^4 - 10*A*c^5)*d^7*e^2 + 12*(79*B*b^2*c^3 - 62*A*b*c^4)*d^6*e^3 - (76
3*B*b^3*c^2 - 1622*A*b^2*c^3)*d^5*e^4 + 3*(152*B*b^4*c - 669*A*b^3*c^2)*d^4
*e^5 - 21*(5*B*b^5 - 54*A*b^4*c)*d^3*e^6)*x^3 + 2*(320*B*c^5*d^9 - 448*A*b^
5*d^3*e^6 - 480*(3*B*b*c^4 - A*c^5)*d^8*e + 24*(88*B*b^2*c^3 - 65*A*b*c^4)*
d^7*e^2 - (1691*B*b^3*c^2 - 3178*A*b^2*c^3)*d^6*e^3 + 33*(27*B*b^4*c - 113*
A*b^3*c^2)*d^5*e^4 - 3*(64*B*b^5 - 693*A*b^4*c)*d^4*e^5)*x^2 - 10*(79*A*b^5
*d^4*e^5 - 16*(B*b*c^4 + 6*A*c^5)*d^9 + 28*(5*B*b^2*c^3 + 12*A*b*c^4)*d^8*e
 - (211*B*b^3*c^2 + 642*A*b^2*c^3)*d^7*e^2 + (108*B*b^4*c + 697*A*b^3*c^2)*
d^6*e^3 - (21*B*b^5 + 374*A*b^4*c)*d^5*e^4)*x)*sqrt(c*x^2 + b*x))/(c^5*d^15
 - 5*b*c^4*d^14*e + 10*b^2*c^3*d^13*e^2 - 10*b^3*c^2*d^12*e^3 + 5*b^4*c*d^1
1*e^4 - b^5*d^10*e^5 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*d^8*e^7
 - 10*b^3*c^2*d^7*e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*x^5 + 5*(c^5*d^11*e
^4 - 5*b*c^4*d^10*e^5 + 10*b^2*c^3*d^9*e^6 - 10*b^3*c^2*d^8*e^7 + 5*b^4*c*d
^7*e^8 - b^5*d^6*e^9)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 + 10*b^2*c^
3*d^10*e^5 - 10*b^3*c^2*d^9*e^6 + 5*b^4*c*d^8*e^7 - b^5*d^7*e^8)*x^3 + 10*(
c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 + 10*b^2*c^3*d^11*e^4 - 10*b^3*c^2*d^10*e^5
 + 5*b^4*c*d^9*e^6 - b^5*d^8*e^7)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13*e^2 +
10*b^2*c^3*d^12*e^3 - 10*b^3*c^2*d^11*e^4 + 5*b^4*c*d^10*e^5 - b^5*d^9*e^6)
*x)]
```

giac [B] time = 0.54, size = 4102, normalized size = 9.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 1/128*(16*B*b^3*c^2*d^3 - 32*A*b^2*c^3*d^3 - 12*B*b^4*c*d^2*e + 48*A*b^3*c^
2*d^2*e + 3*B*b^5*d*e^2 - 30*A*b^4*c*d*e^2 + 7*A*b^5*e^3)*arctan(-((sqrt(c)
*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^4*d^8 - 4*
b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*sqrt(-c*d^
2 + b*d*e)) + 1/1920*(5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c^(13/2)*d^9
*e + 2048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^7*d^10 + 5120*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*B*c^6*d^8*e^2 + 3584*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5
*B*b*c^6*d^9*e + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^7*d^9*e + 5120*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^(13/2)*d^10 - 8960*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*B*b*c^(11/2)*d^8*e^2 + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*A*c^(13/2)*d^8*e^2 - 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(1
1/2)*d^9*e + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(13/2)*d^9*e + 51
20*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^6*d^10 - 20480*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^7*B*b*c^5*d^7*e^3 - 24832*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*b^2*c^5*d^8*e^2 + 9216*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^6*d^8*e^
2 - 14080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^5*d^9*e + 7680*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^6*d^9*e + 2560*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^2*B*b^3*c^(11/2)*d^10 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2
*c^(9/2)*d^7*e^3 - 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b*c^(11/2)*d^7
*e^3 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(9/2)*d^8*e^2 - 3840
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(11/2)*d^8*e^2 - 8000*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*B*b^4*c^(9/2)*d^9*e + 3840*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^2*A*b^3*c^(11/2)*d^9*e + 640*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*
c^5*d^10 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^4*d^6*e^4 + 1376
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^4*d^7*e^3 - 50048*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*A*b^2*c^5*d^7*e^3 + 3200*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^3*B*b^4*c^4*d^8*e^2 - 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^5*
d^8*e^2 - 2080*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^4*d^9*e + 960*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*A*b^4*c^5*d^9*e + 64*B*b^5*c^(9/2)*d^10 + 36320*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(7/2)*d^6*e^4 + 70720*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^6*A*b^2*c^(9/2)*d^6*e^4 + 15520*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^4*B*b^4*c^(7/2)*d^7*e^3 - 17600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*
A*b^3*c^(9/2)*d^7*e^3 + 4720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(7/2
)*d^8*e^2 - 7200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c^(9/2)*d^8*e^2 -
208*B*b^6*c^(7/2)*d^9*e + 96*A*b^5*c^(9/2)*d^9*e - 28000*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^7*B*b^3*c^3*d^5*e^5 + 15040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*A*b^2*c^4*d^5*e^5 + 2000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^3*d^6*e
^4 + 129280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^4*d^6*e^4 + 1280*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^3*d^7*e^3 + 14080*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^3*A*b^4*c^4*d^7*e^3 + 1440*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b
^6*c^3*d^8*e^2 - 1920*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*c^4*d^8*e^2 - 2
160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(5/2)*d^4*e^6 + 4320*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(7/2)*d^4*e^6 - 39560*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^6*B*b^4*c^(5/2)*d^5*e^5 - 52000*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^6*A*b^3*c^(7/2)*d^5*e^5 - 14360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c
^(5/2)*d^6*e^4 + 81920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^(7/2)*d^6*
e^4 - 3120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6*c^(5/2)*d^7*e^3 + 13760*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(7/2)*d^7*e^3 + 144*B*b^7*c^(5/2)
*d^8*e^2 - 192*A*b^6*c^(7/2)*d^8*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
9*B*b^3*c^2*d^3*e^7 + 480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^2*c^3*d^3*e
^7 + 9640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^2*d^4*e^6 - 20320*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^3*d^4*e^6 - 17284*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^5*B*b^5*c^2*d^5*e^5 - 120680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*b^4*c^3*d^5*e^5 - 6920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*c^2*d^6*e^
4 + 14080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c^3*d^6*e^4 - 1260*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^2*d^7*e^3 + 4280*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*A*b^6*c^3*d^7*e^3 + 1620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^4*c^
(3/2)*d^3*e^7 - 6480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^3*c^(5/2)*d^3*e^
7 + 15090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^5*c^(3/2)*d^4*e^6 + 7260*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*c^(5/2)*d^4*e^6 + 330*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^6*c^(3/2)*d^5*e^5 - 85780*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^5*c^(5/2)*d^5*e^5 - 570*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7
*c^(3/2)*d^6*e^4 - 6340*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(5/2)*d^6
*e^4 - 150*B*b^8*c^(3/2)*d^7*e^3 + 476*A*b^7*c^(5/2)*d^7*e^3 + 180*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^9*B*b^4*c*d^2*e^8 - 720*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^9*A*b^3*c^2*d^2*e^8 - 570*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c*d^
3*e^7 + 10740*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^2*d^3*e^7 + 7878*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^6*c*d^4*e^6 + 47944*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*A*b^5*c^2*d^4*e^6 + 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^7*c*d^5*e^5 - 25220*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^2*d^5*e^5
+ 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c*d^6*e^4 - 3080*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*A*b^7*c^2*d^6*e^4 - 405*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8
*B*b^5*sqrt(c)*d^2*e^8 + 4050*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(3/
2)*d^2*e^8 - 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*sqrt(c)*d^3*e^7 +
 9310*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(3/2)*d^3*e^7 + 1920*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^4*B*b^7*sqrt(c)*d^4*e^6 + 35330*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*A*b^6*c^(3/2)*d^4*e^6 + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^8*sqrt(c)*d^5*e^5 - 1750*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^
(3/2)*d^5*e^5 + 45*B*b^9*sqrt(c)*d^6*e^4 - 380*A*b^8*c^(3/2)*d^6*e^4 - 45*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*d*e^9 + 450*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^9*A*b^4*c*d*e^9 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*d^2*e
```

```
^8 - 1190*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^5*c*d^2*e^8 - 384*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^5*B*b^7*d^3*e^7 - 4658*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^5*A*b^6*c*d^3*e^7 + 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*d^4*e^6
+ 10510*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c*d^4*e^6 + 45*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))*B*b^9*d^5*e^5 + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b
^8*c*d^5*e^5 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*sqrt(c)*d*e^9 -
3430*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*sqrt(c)*d^2*e^8 - 4480*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^4*A*b^7*sqrt(c)*d^3*e^7 + 1470*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*A*b^8*sqrt(c)*d^4*e^6 + 105*A*b^9*sqrt(c)*d^5*e^5 - 105*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^9*A*b^5*e^10 - 490*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^7*A*b^6*d*e^9 - 896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^7*d^2*e^8 - 7
90*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^8*d^3*e^7 + 105*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*A*b^9*d^4*e^6)/((c^4*d^8*e^3 - 4*b*c^3*d^7*e^4 + 6*b^2*c^2*d^
6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e
 + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^5)
```

maple [**B**] time = 0.09, size = 15015, normalized size = 33.44

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)}{{\left(d+e\,x\right)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^6, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x \left(b + c x\right)} \left(A + B x\right)}{\left(d + e x\right)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**6,x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**6, x)
```

3.1172 $\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=345

$$\frac{\left(bx+cx^2\right)^{5/2}\left(10cex(14Ace-9bBe+4Bcd)+14Ace(24cd-7be)+B\left(63b^2e^2-196bcde+48c^2d^2\right)\right)}{840c^3}-\frac{b^2(b+2cx)}{}$$

```
[Out] 1/384*(48*A*c^3*d^2-9*b^3*B*e^2+14*b^2*c*e*(A*e+2*B*d)-24*b*c^2*d*(2*A*e+B*
d))*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^4+1/7*B*(e*x+d)^2*(c*x^2+b*x)^(5/2)/c+1/8
40*(14*A*c*e*(-7*b*e+24*c*d)+B*(63*b^2*e^2-196*b*c*d*e+48*c^2*d^2)+10*c*e*(
14*A*c*e-9*B*b*e+4*B*c*d)*x)*(c*x^2+b*x)^(5/2)/c^3+1/1024*b^4*(48*A*c^3*d^2
-9*b^3*B*e^2+14*b^2*c*e*(A*e+2*B*d)-24*b*c^2*d*(2*A*e+B*d))*arctanh(x*c^(1/
2)/(c*x^2+b*x)^(1/2))/c^(11/2)-1/1024*b^2*(48*A*c^3*d^2-9*b^3*B*e^2+14*b^2*
c*e*(A*e+2*B*d)-24*b*c^2*d*(2*A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^5
```

Rubi [A] time = 0.34, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {832, 779, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\left(14b^2ce(Ae+2Bd)-24bc^2d(2Ae+Bd)+48Ac^3d^2-9b^3Be^2\right)}{1024c^5}+\frac{\left(bx+cx^2\right)^{5/2}\left(10cex(14A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^2*(48*A*c^3*d^2 - 9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*d*(
B*d + 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^5) + ((48*A*c^3*d^2 -
9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*d*(B*d + 2*A*e))*(b + 2*c
*x)*(b*x + c*x^2)^(3/2))/(384*c^4) + (B*(d + e*x)^2*(b*x + c*x^2)^(5/2))/(7
*c) + ((14*A*c*e*(24*c*d - 7*b*e) + B*(48*c^2*d^2 - 196*b*c*d*e + 63*b^2*e^
2) + 10*c*e*(4*B*c*d - 9*b*B*e + 14*A*c*e)*x)*(b*x + c*x^2)^(5/2))/(840*c^3
) + (b^4*(48*A*c^3*d^2 - 9*b^3*B*e^2 + 14*b^2*c*e*(2*B*d + A*e) - 24*b*c^2*
d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^{3/2}\,dx &= \frac{B(d+ex)^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{\int (d+ex)\left(-\frac{1}{2}(5bB-14Ac)d+\frac{1}{2}(4Bcd-9\right.}{7c} \\
&= \frac{B(d+ex)^2\left(bx+cx^2\right)^{5/2}}{7c} + \frac{\left(14Ace(24cd-7be)+B\left(48c^2d^2-196bcde\right.\right.}{} \\
&= \frac{\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b+2c}{384c^4} \\
&= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b-}{1024c^5} \\
&= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b-}{1024c^5} \\
&= -\frac{b^2\left(48Ac^3d^2-9b^3Be^2+14b^2ce(2Bd+Ae)-24bc^2d(Bd+2Ae)\right)(b-}{1024c^5}
\end{aligned}$$

Mathematica [A] time = 1.60, size = 415, normalized size = 1.20

$$\frac{\sqrt{x(b+cx)}\left(14Ac\left(\frac{5}{4}\left(7b^2e^2-24bcde+24c^2d^2\right)\left(3b^{9/2}\sqrt{c}\sqrt{x}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)+bcx\sqrt{\frac{cx}{b}+1}\left(-3b^3+2b^2cx+2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(14*A*c*(-224*b*c^3*e*(-2*c*d + b*e)*x^3*(b + c*x)^2*Sqr
t[1 + (c*x)/b] + 320*b*c^4*e*x^3*(b + c*x)^2*Sqrt[1 + (c*x)/b]*(d + e*x) +
(5*(24*c^2*d^2 - 24*b*c*d*e + 7*b^2*e^2)*(b*c*x*Sqrt[1 + (c*x)/b]*(-3*b^3 +
 2*b^2*c*x + 24*b*c^2*x^2 + 16*c^3*x^3) + 3*b^(9/2)*Sqrt[c]*Sqrt[x]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/4) + B*(320*b*c^4*e*(16*c*d - 9*b*e)*x^4*(b +
 c*x)^2*Sqrt[1 + (c*x)/b] + 3840*b*c^5*e*x^4*(b + c*x)^2*Sqrt[1 + (c*x)/b]*
(d + e*x) + (7*(24*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2)*(b*c*x*Sqrt[1 + (c*x)/
b]*(15*b^4 - 10*b^3*c*x + 8*b^2*c^2*x^2 + 176*b*c^3*x^3 + 128*c^4*x^4) - 15
*b^(11/2)*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]))/4)))/(26880*
b*c^6*x*Sqrt[1 + (c*x)/b])
```

fricas [A] time = 0.96, size = 987, normalized size = 2.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^2 - 4*(7*B*b^6*c - 12*A*b^5
*c^2)*d*e + (9*B*b^7 - 14*A*b^6*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^
2 + b*x)*sqrt(c)) - 2*(15360*B*c^7*e^2*x^6 + 1280*(28*B*c^7*d*e + (15*B*b*c
^6 + 14*A*c^7)*e^2)*x^5 + 128*(168*B*c^7*d^2 + 28*(13*B*b*c^6 + 12*A*c^7)*d
*e + (3*B*b^2*c^5 + 182*A*b*c^6)*e^2)*x^4 + 48*(56*(11*B*b*c^6 + 10*A*c^7)*
d^2 + 28*(B*b^2*c^5 + 44*A*b*c^6)*d*e - (9*B*b^3*c^4 - 14*A*b^2*c^5)*e^2)*x
^3 + 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^2 - 420*(7*B*b^5*c^2 - 12*A*b^4*c^3)*
d*e + 105*(9*B*b^6*c - 14*A*b^5*c^2)*e^2 + 56*(24*(B*b^2*c^5 + 30*A*b*c^6)*
d^2 - 4*(7*B*b^3*c^4 - 12*A*b^2*c^5)*d*e + (9*B*b^4*c^3 - 14*A*b^3*c^4)*e^2
)*x^2 - 70*(24*(B*b^3*c^4 - 2*A*b^2*c^5)*d^2 - 4*(7*B*b^4*c^3 - 12*A*b^3*c^
4)*d*e + (9*B*b^5*c^2 - 14*A*b^4*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^6, 1/107
520*(105*(24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^2 - 4*(7*B*b^6*c - 12*A*b^5*c^2)*d
*e + (9*B*b^7 - 14*A*b^6*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)
/(c*x)) + (15360*B*c^7*e^2*x^6 + 1280*(28*B*c^7*d*e + (15*B*b*c^6 + 14*A*c^
7)*e^2)*x^5 + 128*(168*B*c^7*d^2 + 28*(13*B*b*c^6 + 12*A*c^7)*d*e + (3*B*b^
2*c^5 + 182*A*b*c^6)*e^2)*x^4 + 48*(56*(11*B*b*c^6 + 10*A*c^7)*d^2 + 28*(B*
b^2*c^5 + 44*A*b*c^6)*d*e - (9*B*b^3*c^4 - 14*A*b^2*c^5)*e^2)*x^3 + 2520*(B
*b^4*c^3 - 2*A*b^3*c^4)*d^2 - 420*(7*B*b^5*c^2 - 12*A*b^4*c^3)*d*e + 105*(9
*B*b^6*c - 14*A*b^5*c^2)*e^2 + 56*(24*(B*b^2*c^5 + 30*A*b*c^6)*d^2 - 4*(7*B
*b^3*c^4 - 12*A*b^2*c^5)*d*e + (9*B*b^4*c^3 - 14*A*b^3*c^4)*e^2)*x^2 - 70*(
24*(B*b^3*c^4 - 2*A*b^2*c^5)*d^2 - 4*(7*B*b^4*c^3 - 12*A*b^3*c^4)*d*e + (9*
B*b^5*c^2 - 14*A*b^4*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.25, size = 518, normalized size = 1.50

$$\frac{1}{107520}\sqrt{cx^2+bx}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\left(12\,Bcxe^2+\frac{28\,Bc^7de+15\,Bbc^6e^2+14\,Ac^7e^2}{c^6}\right)x+\frac{168\,Bc^7d^2+364\,Bbc^6de+33}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/107520*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*(12*B*c*x*e^2 + (28*B*c^7*d*e +
15*B*b*c^6*e^2 + 14*A*c^7*e^2)/c^6)*x + (168*B*c^7*d^2 + 364*B*b*c^6*d*e +
336*A*c^7*d*e + 3*B*b^2*c^5*e^2 + 182*A*b*c^6*e^2)/c^6)*x + 3*(616*B*b*c^6*
d^2 + 560*A*c^7*d^2 + 28*B*b^2*c^5*d*e + 1232*A*b*c^6*d*e - 9*B*b^3*c^4*e^2
 + 14*A*b^2*c^5*e^2)/c^6)*x + 7*(24*B*b^2*c^5*d^2 + 720*A*b*c^6*d^2 - 28*B*
b^3*c^4*d*e + 48*A*b^2*c^5*d*e + 9*B*b^4*c^3*e^2 - 14*A*b^3*c^4*e^2)/c^6)*x
 - 35*(24*B*b^3*c^4*d^2 - 48*A*b^2*c^5*d^2 - 28*B*b^4*c^3*d*e + 48*A*b^3*c^
4*d*e + 9*B*b^5*c^2*e^2 - 14*A*b^4*c^3*e^2)/c^6)*x + 105*(24*B*b^4*c^3*d^2
- 48*A*b^3*c^4*d^2 - 28*B*b^5*c^2*d*e + 48*A*b^4*c^3*d*e + 9*B*b^6*c*e^2 -
14*A*b^5*c^2*e^2)/c^6) + 1/2048*(24*B*b^5*c^2*d^2 - 48*A*b^4*c^3*d^2 - 28*B
*b^6*c*d*e + 48*A*b^5*c^2*d*e + 9*B*b^7*e^2 - 14*A*b^6*c*e^2)*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 949, normalized size = 2.75

$$\frac{7A\,b^6e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{9}{2}}}-\frac{3A\,b^5de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{7}{2}}}+\frac{3A\,b^4d^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{5}{2}}}-\frac{9B\,b^7e^2\ln\Big(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x)
```

```
[Out] -3/128*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-3/32*A*d
^2*b^2/c*(c*x^2+b*x)^(1/2)*x+7/512*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))*B*d*e+1/5*(c*x^2+b*x)^(5/2)/c*B*d^2+1/4*A*d^2*x*(c*x^2+b*x)^(
3/2)-9/2048*B*e^2*b^7/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+9/
1024*B*e^2*b^6/c^5*(c*x^2+b*x)^(1/2)-3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))*B*d^2+7/1024*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x)^(1/2))*A*e^2-7/60*b/c^2*(c*x^2+b*x)^(5/2)*A*e^2+7/192*b^3/c^3*(c*x^2
+b*x)^(3/2)*A*e^2-7/512*b^5/c^4*(c*x^2+b*x)^(1/2)*A*e^2+3/128*A*d^2*b^4/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+7/48*b^2/c^2*x*(c*x^2+b*x)^(
3/2)*B*d*e-7/128*b^4/c^3*(c*x^2+b*x)^(1/2)*x*B*d*e-1/4*b/c*x*(c*x^2+b*x)^(3
/2)*A*d*e+2/5*(c*x^2+b*x)^(5/2)/c*A*d*e+3/128*b^4/c^3*(c*x^2+b*x)^(1/2)*B*d
^2+1/7*B*e^2*x^2*(c*x^2+b*x)^(5/2)/c+3/32*b^3/c^2*(c*x^2+b*x)^(1/2)*x*A*d*e
-3/128*B*e^2*b^4/c^4*(c*x^2+b*x)^(3/2)+3/40*B*e^2*b^2/c^3*(c*x^2+b*x)^(5/2)
+1/8*A*d^2/c*(c*x^2+b*x)^(3/2)*b+1/6*x*(c*x^2+b*x)^(5/2)/c*A*e^2-1/16*b^2/c
^2*(c*x^2+b*x)^(3/2)*B*d^2-3/64*A*d^2*b^3/c^2*(c*x^2+b*x)^(1/2)+3/64*b^3/c^
2*(c*x^2+b*x)^(1/2)*x*B*d^2+3/64*b^4/c^3*(c*x^2+b*x)^(1/2)*A*d*e-3/64*B*e^2
*b^3/c^3*x*(c*x^2+b*x)^(3/2)-1/8*b/c*x*(c*x^2+b*x)^(3/2)*B*d^2-1/8*b^2/c^2*
(c*x^2+b*x)^(3/2)*A*d*e-7/256*b^5/c^4*(c*x^2+b*x)^(1/2)*B*d*e+7/96*b^3/c^3*
(c*x^2+b*x)^(3/2)*B*d*e+1/3*x*(c*x^2+b*x)^(5/2)/c*B*d*e-7/30*b/c^2*(c*x^2+b
*x)^(5/2)*B*d*e+7/96*b^2/c^2*x*(c*x^2+b*x)^(3/2)*A*e^2+9/512*B*e^2*b^5/c^4*
(c*x^2+b*x)^(1/2)*x-3/28*B*e^2*b/c^2*x*(c*x^2+b*x)^(5/2)-7/256*b^4/c^3*(c*x
^2+b*x)^(1/2)*x*A*e^2
```

maxima [B] time = 0.60, size = 728, normalized size = 2.11

$$\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Be^2x^2}{7c}+\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Ad^2x-\frac{3\sqrt{cx^2+bx}\,Ab^2d^2x}{32c}+\frac{9\sqrt{cx^2+bx}\,Bb^5e^2x}{512c^4}-\frac{3\left(cx^2+bx\right)^{\frac{3}{2}}Bb^3e^2x}{64c^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/7*(c*x^2 + b*x)^(5/2)*B*e^2*x^2/c + 1/4*(c*x^2 + b*x)^(3/2)*A*d^2*x - 3/3
2*sqrt(c*x^2 + b*x)*A*b^2*d^2*x/c + 9/512*sqrt(c*x^2 + b*x)*B*b^5*e^2*x/c^4
 - 3/64*(c*x^2 + b*x)^(3/2)*B*b^3*e^2*x/c^3 - 3/28*(c*x^2 + b*x)^(5/2)*B*b*
e^2*x/c^2 + 3/128*A*b^4*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(5/2) - 9/2048*B*b^7*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11
/2) - 3/64*sqrt(c*x^2 + b*x)*A*b^3*d^2/c^2 + 1/8*(c*x^2 + b*x)^(3/2)*A*b*d^
2/c + 9/1024*sqrt(c*x^2 + b*x)*B*b^6*e^2/c^5 - 3/128*(c*x^2 + b*x)^(3/2)*B*
b^4*e^2/c^4 + 3/40*(c*x^2 + b*x)^(5/2)*B*b^2*e^2/c^3 - 7/256*(2*B*d*e + A*e
^2)*sqrt(c*x^2 + b*x)*b^4*x/c^3 + 7/96*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2
)*b^2*x/c^2 + 3/64*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^3*x/c^2 + 1/6*(2*B
*d*e + A*e^2)*(c*x^2 + b*x)^(5/2)*x/c - 1/8*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)
^(3/2)*b*x/c + 7/1024*(2*B*d*e + A*e^2)*b^6*log(2*c*x + b + 2*sqrt(c*x^2 +
b*x)*sqrt(c))/c^(9/2) - 3/256*(B*d^2 + 2*A*d*e)*b^5*log(2*c*x + b + 2*sqrt(
c*x^2 + b*x)*sqrt(c))/c^(7/2) - 7/512*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b
^5/c^4 + 7/192*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b^3/c^3 + 3/128*(B*d^2
 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^4/c^3 - 7/60*(2*B*d*e + A*e^2)*(c*x^2 + b*x
)^(5/2)*b/c^2 - 1/16*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(3/2)*b^2/c^2 + 1/5*(B
*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(5/2)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x (b + cx))^{\frac{3}{2}} (A + Bx) (d + ex)^2 \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)*(d + e*x)**2, x)
```

3.1173 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=209

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{512c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}\,(-12bc(Ae+Bd)+24A}{192c^3}$$

```
[Out] 1/192*(24*A*c^2*d+7*b^2*B*e-12*b*c*(A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c
^3-1/60*(7*b*B*e-12*c*(A*e+B*d)-10*B*c*e*x)*(c*x^2+b*x)^(5/2)/c^2+1/512*b^4
*(24*A*c^2*d+7*b^2*B*e-12*b*c*(A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2
))/c^(9/2)-1/512*b^2*(24*A*c^2*d+7*b^2*B*e-12*b*c*(A*e+B*d))*(2*c*x+b)*(c*x
^2+b*x)^(1/2)/c^4
```

Rubi [**A**] time = 0.19, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {779, 612, 620, 206}

$$-\frac{b^2(b+2cx)\sqrt{bx+cx^2}\,\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{512c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}\,(-12bc(Ae+Bd)+24A}{192c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] -(b^2*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x +
c*x^2])/(512*c^4) + ((24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*(b + 2*c
*x)*(b*x + c*x^2)^(3/2))/(192*c^3) - ((7*b*B*e - 12*c*(B*d + A*e) - 10*B*c*
e*x)*(b*x + c*x^2)^(5/2))/(60*c^2) + (b^4*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*
(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{3/2}\,dx = -\frac{(7bBe-12c(Bd+Ae)-10Bcex)\left(bx+cx^2\right)^{5/2}}{60c^2} + \frac{\left(\frac{7}{2}b^2Be+6c(2Acd-b(\right.}{}$$

$$= \frac{\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{3/2}}{192c^3} - \frac{(7bBe-12c}{}$$

$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\right.}{}$$

$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\right.}{}$$

$$= -\frac{b^2\left(24Ac^2d+7b^2Be-12bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{512c^4} + \frac{\left(24Ac^2d+\right.}{}$$

Mathematica [**A**]   time = 0.59, size = 245, normalized size = 1.17

$$\frac{\sqrt{x(b+cx)}\left(\frac{15b^{7/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-12bc(Ae+Bd)+24Ac^2d+7b^2Be\right)}{\sqrt{x}\sqrt{\frac{cx}{b}+1}} + \sqrt{c}\,\left(10b^4c(18Ae+18Bd+7Bex)-8b^3c^2(15A(3d+ex)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(-105*b^5*B*e + 10*b^4*c*(18*B*d + 18*A*e + 7*B
*e*x) + 48*b^2*c^3*x*(B*x*(2*d + e*x) + A*(5*d + 2*e*x)) + 128*c^5*x^3*(3*A
*(5*d + 4*e*x) + 2*B*x*(6*d + 5*e*x)) - 8*b^3*c^2*(15*A*(3*d + e*x) + B*x*(
15*d + 7*e*x)) + 64*b*c^4*x^2*(B*x*(33*d + 26*e*x) + A*(45*d + 33*e*x))) +
(15*b^(7/2)*(24*A*c^2*d + 7*b^2*B*e - 12*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*
Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(7680*c^(9/2))
```

fricas [**A**]   time = 0.74, size = 603, normalized size = 2.89

$$\left[\frac{15\left(12\left(Bb^5c-2\,Ab^4c^2\right)d-\left(7\,Bb^6-12\,Ab^5c\right)e\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(1280\,Bc^6ex^5+128\left(12\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(12*(B*b^5*c - 2*A*b^4*c^2)*d - (7*B*b^6 - 12*A*b^5*c)*e)*sqrt
(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(1280*B*c^6*e*x^5 + 12
8*(12*B*c^6*d + (13*B*b*c^5 + 12*A*c^6)*e)*x^4 + 48*(4*(11*B*b*c^5 + 10*A*c
^6)*d + (B*b^2*c^4 + 44*A*b*c^5)*e)*x^3 + 8*(12*(B*b^2*c^4 + 30*A*b*c^5)*d
- (7*B*b^3*c^3 - 12*A*b^2*c^4)*e)*x^2 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d - 1
5*(7*B*b^5*c - 12*A*b^4*c^2)*e - 10*(12*(B*b^3*c^3 - 2*A*b^2*c^4)*d - (7*B*
b^4*c^2 - 12*A*b^3*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^5, 1/7680*(15*(12*(B*b^5
*c - 2*A*b^4*c^2)*d - (7*B*b^6 - 12*A*b^5*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2
+ b*x)*sqrt(-c)/(c*x)) + (1280*B*c^6*e*x^5 + 128*(12*B*c^6*d + (13*B*b*c^5
+ 12*A*c^6)*e)*x^4 + 48*(4*(11*B*b*c^5 + 10*A*c^6)*d + (B*b^2*c^4 + 44*A*b*
c^5)*e)*x^3 + 8*(12*(B*b^2*c^4 + 30*A*b*c^5)*d - (7*B*b^3*c^3 - 12*A*b^2*c^
4)*e)*x^2 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d - 15*(7*B*b^5*c - 12*A*b^4*c^2)
*e - 10*(12*(B*b^3*c^3 - 2*A*b^2*c^4)*d - (7*B*b^4*c^2 - 12*A*b^3*c^3)*e)*x
)*sqrt(c*x^2 + b*x))/c^5]
```

giac [A] time = 0.24, size = 317, normalized size = 1.52

$$\frac{1}{7680}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(10\,Bcxe+\frac{12\,Bc^6d+13\,Bbc^5e+12\,Ac^6e}{c^5}\right)x+\frac{3\left(44\,Bbc^5d+40\,Ac^6d+Bb^2c^4e+4\right.}{c^5}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/7680*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(10*B*c*x*e + (12*B*c^6*d + 13*B*b*c^5
*e + 12*A*c^6*e)/c^5)*x + 3*(44*B*b*c^5*d + 40*A*c^6*d + B*b^2*c^4*e + 44*A
*b*c^5*e)/c^5)*x + (12*B*b^2*c^4*d + 360*A*b*c^5*d - 7*B*b^3*c^3*e + 12*A*b
^2*c^4*e)/c^5)*x - 5*(12*B*b^3*c^3*d - 24*A*b^2*c^4*d - 7*B*b^4*c^2*e + 12*
A*b^3*c^3*e)/c^5)*x + 15*(12*B*b^4*c^2*d - 24*A*b^3*c^3*d - 7*B*b^5*c*e + 1
2*A*b^4*c^2*e)/c^5) + 1/1024*(12*B*b^5*c*d - 24*A*b^4*c^2*d - 7*B*b^6*e + 1
2*A*b^5*c*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/
2)
```

maple [B] time = 0.06, size = 544, normalized size = 2.60

$$-\frac{3A\,b^5e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{256c^{\frac{7}{2}}}+\frac{3A\,b^4d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{128c^{\frac{5}{2}}}+\frac{7B\,b^6e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{9}{2}}}-\frac{3B\,b^5d\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/6*B*e*x*(c*x^2+b*x)^(5/2)/c-7/60*B*e*b/c^2*(c*x^2+b*x)^(5/2)+7/96*B*e*b^2
/c^2*x*(c*x^2+b*x)^(3/2)+7/192*B*e*b^3/c^3*(c*x^2+b*x)^(3/2)-7/256*B*e*b^4/
c^3*(c*x^2+b*x)^(1/2)*x-7/512*B*e*b^5/c^4*(c*x^2+b*x)^(1/2)+7/1024*B*e*b^6/
c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/5*(c*x^2+b*x)^(5/2)/c*A
*e+1/5*(c*x^2+b*x)^(5/2)/c*B*d-1/8*b/c*x*(c*x^2+b*x)^(3/2)*A*e-1/8*b/c*x*(c
*x^2+b*x)^(3/2)*B*d-1/16*b^2/c^2*(c*x^2+b*x)^(3/2)*A*e-1/16*b^2/c^2*(c*x^2+
b*x)^(3/2)*B*d+3/64*b^3/c^2*(c*x^2+b*x)^(1/2)*x*A*e+3/64*b^3/c^2*(c*x^2+b*x
)^(1/2)*x*B*d+3/128*b^4/c^3*(c*x^2+b*x)^(1/2)*A*e+3/128*b^4/c^3*(c*x^2+b*x)
^(1/2)*B*d-3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e-
3/256*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+1/4*A*d*x*(
c*x^2+b*x)^(3/2)+1/8*A*d/c*(c*x^2+b*x)^(3/2)*b-3/32*A*d*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*d*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*d*b^4/c^(5/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.54, size = 434, normalized size = 2.08

$$\frac{1}{4}\left(cx^2+bx\right)^{\frac{3}{2}}Adx-\frac{3\sqrt{cx^2+bx}\,Ab^2dx}{32\,c}-\frac{7\sqrt{cx^2+bx}\,Bb^4ex}{256\,c^3}+\frac{7\left(cx^2+bx\right)^{\frac{3}{2}}Bb^2ex}{96\,c^2}+\frac{\left(cx^2+bx\right)^{\frac{5}{2}}Bex}{6\,c}+\frac{3\,Ab^4d\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*d*x - 3/32*sqrt(c*x^2 + b*x)*A*b^2*d*x/c - 7/256*
sqrt(c*x^2 + b*x)*B*b^4*e*x/c^3 + 7/96*(c*x^2 + b*x)^(3/2)*B*b^2*e*x/c^2 +
1/6*(c*x^2 + b*x)^(5/2)*B*e*x/c + 3/128*A*b^4*d*log(2*c*x + b + 2*sqrt(c*x^
2 + b*x)*sqrt(c))/c^(5/2) + 7/1024*B*b^6*e*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c))/c^(9/2) - 3/64*sqrt(c*x^2 + b*x)*A*b^3*d/c^2 + 1/8*(c*x^2 + b*
x)^(3/2)*A*b*d/c - 7/512*sqrt(c*x^2 + b*x)*B*b^5*e/c^4 + 7/192*(c*x^2 + b*x
)^(3/2)*B*b^3*e/c^3 - 7/60*(c*x^2 + b*x)^(5/2)*B*b*e/c^2 + 3/64*sqrt(c*x^2
+ b*x)*(B*d + A*e)*b^3*x/c^2 - 1/8*(c*x^2 + b*x)^(3/2)*(B*d + A*e)*b*x/c -
```

```
3/256*(B*d + A*e)*b^5*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2)
+ 3/128*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^4/c^3 - 1/16*(c*x^2 + b*x)^(3/2)*(B
*d + A*e)*b^2/c^2 + 1/5*(c*x^2 + b*x)^(5/2)*(B*d + A*e)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] int((b*x + c*x^2)^(3/2)*(A + B*x)*(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)\left(d+ex\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)*(d + e*x), x)
```

3.1174 $\int (A+Bx)\left(bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=134

$$-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}+\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+$$

```
[Out] -1/16*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^2+1/5*B*(c*x^2+b*x)^(5/2)/
c-3/128*b^4*(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+3/128
*b^2*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.05, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.210, Rules used = {640, 612, 620, 206}

$$\frac{3b^2(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{128c^3}-\frac{3b^4(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{128c^{7/2}}-\frac{(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{16c^2}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (3*b^2*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(128*c^3) - ((b*B - 2*A
*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(16*c^2) + (B*(b*x + c*x^2)^(5/2))/(5*
c) - (3*b^4*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(128*c^(7
/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)\left(bx+cx^2\right)^{3/2}dx = \frac{B\left(bx+cx^2\right)^{5/2}}{5c}+\frac{(-bB+2Ac)\int\left(bx+cx^2\right)^{3/2}dx}{2c}$$

$$= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2}+\frac{B\left(bx+cx^2\right)^{5/2}}{5c}+\frac{\left(3b^2(bB-2Ac)\right)\int\sqrt{bx+}}{32c^2}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2}+\frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2}+\frac{B\left(bx+\right.}{5}$$

$$= \frac{3b^2(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{128c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{16c^2}+\frac{B\left(bx+\right.}{5}$$

Mathematica [A] time = 0.25, size = 146, normalized size = 1.09

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-10b^3c(3A+Bx)+4b^2c^2x(5A+2Bx)+16bc^3x^2(15A+11Bx)+32c^4x^3(5A+4Bx)+15b^4B\right)-\right.}{640c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(15*b^4*B - 10*b^3*c*(3*A + B*x) + 4*b^2*c^2*x*
(5*A + 2*B*x) + 32*c^4*x^3*(5*A + 4*B*x) + 16*b*c^3*x^2*(15*A + 11*B*x)) -
(15*b^(7/2)*(b*B - 2*A*c)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[x]*Sqrt
[1 + (c*x)/b])))/(640*c^(7/2))
```

fricas [A] time = 0.87, size = 297, normalized size = 2.22

$$\left[-\frac{15\left(Bb^5-2Ab^4c\right)\sqrt{c}\log\left(2cx+b+2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(128Bc^5x^4+15Bb^4c-30Ab^3c^2+16\left(11Bbc^4+10\right.\right.}{1280c^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(B*b^5 - 2*A*b^4*c)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c)) - 2*(128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b^3*c^2 + 16*(11*B*b*c^4
+ 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 - 10*(B*b^3*c^2 - 2*A*b^2*
c^3)*x)*sqrt(c*x^2 + b*x))/c^4, 1/640*(15*(B*b^5 - 2*A*b^4*c)*sqrt(-c)*arct
an(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (128*B*c^5*x^4 + 15*B*b^4*c - 30*A*b
^3*c^2 + 16*(11*B*b*c^4 + 10*A*c^5)*x^3 + 8*(B*b^2*c^3 + 30*A*b*c^4)*x^2 -
10*(B*b^3*c^2 - 2*A*b^2*c^3)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A] time = 0.22, size = 162, normalized size = 1.21

$$\frac{1}{640}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8Bcx+\frac{11Bbc^4+10Ac^5}{c^4}\right)x+\frac{Bb^2c^3+30Abc^4}{c^4}\right)x-\frac{5\left(Bb^3c^2-2Ab^2c^3\right)}{c^4}\right)x+\frac{15\left(Bb^4c-\right.}{c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 1/640*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*B*c*x + (11*B*b*c^4 + 10*A*c^5)/c^4)*x
+ (B*b^2*c^3 + 30*A*b*c^4)/c^4)*x - 5*(B*b^3*c^2 - 2*A*b^2*c^3)/c^4)*x + 15
*(B*b^4*c - 2*A*b^3*c^2)/c^4) + 3/256*(B*b^5 - 2*A*b^4*c)*log(abs(-2*(sqrt(
c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.05, size = 239, normalized size = 1.78

$$\frac{3A\,b^{4}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{128c^{\frac{5}{2}}}-\frac{3B\,b^{5}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{256c^{\frac{7}{2}}}-\frac{3\sqrt{c\,x^{2}+bx}\;A\,b^{2}x}{32c}+\frac{3\sqrt{c\,x^{2}+bx}\;B\,b^{3}x}{64c^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/5*(c*x^2+b*x)^(5/2)*B/c-1/8*B*b/c*x*(c*x^2+b*x)^(3/2)-1/16*B*b^2/c^2*(c*x
^2+b*x)^(3/2)+3/64*B*b^3/c^2*(c*x^2+b*x)^(1/2)*x+3/128*B*b^4/c^3*(c*x^2+b*x
)^(1/2)-3/256*B*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/4*A
*x*(c*x^2+b*x)^(3/2)+1/8*A/c*(c*x^2+b*x)^(3/2)*b-3/32*A*b^2/c*(c*x^2+b*x)^(
1/2)*x-3/64*A*b^3/c^2*(c*x^2+b*x)^(1/2)+3/128*A*b^4/c^(5/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.55, size = 236, normalized size = 1.76

$$\frac{1}{4}\left(cx^{2}+bx\right)^{\frac{3}{2}}Ax+\frac{3\sqrt{cx^{2}+bx}\,Bb^{3}x}{64\,c^{2}}-\frac{\left(cx^{2}+bx\right)^{\frac{3}{2}}Bbx}{8\,c}-\frac{3\sqrt{cx^{2}+bx}\,Ab^{2}x}{32\,c}-\frac{3\,Bb^{5}\log\left(2\,cx+b+2\sqrt{cx^{2}+bx}\right.}{256\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x)^(3/2)*A*x + 3/64*sqrt(c*x^2 + b*x)*B*b^3*x/c^2 - 1/8*(c*x
^2 + b*x)^(3/2)*B*b*x/c - 3/32*sqrt(c*x^2 + b*x)*A*b^2*x/c - 3/256*B*b^5*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 3/128*A*b^4*log(2*c*x
+ b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3/128*sqrt(c*x^2 + b*x)*B*b^4/
c^3 - 1/16*(c*x^2 + b*x)^(3/2)*B*b^2/c^2 - 3/64*sqrt(c*x^2 + b*x)*A*b^3/c^2
 + 1/5*(c*x^2 + b*x)^(5/2)*B/c + 1/8*(c*x^2 + b*x)^(3/2)*A*b/c
```

mupad [B] time = 1.85, size = 208, normalized size = 1.55

$$\frac{B\left(c\,x^{2}+b\,x\right)^{5/2}}{5\,c}+\frac{A\left(c\,x^{2}+b\,x\right)^{3/2}\left(\frac{b}{2}+c\,x\right)}{4\,c}-\frac{B\,b\left(\frac{x\left(c\,x^{2}+b\,x\right)^{3/2}}{4}+\frac{b\left(c\,x^{2}+b\,x\right)^{3/2}}{8\,c}-\frac{3\,b^{2}\left(\frac{\sqrt{c\,x^{2}+b\,x}\,\left(b+2\,c\,x\right)}{4\,c}-\frac{b^{2}\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}}\right.}{8\,c^{3/2}}\right.}{16\,c}\right.}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(3/2)*(A + B*x),x)
```

```
[Out] (B*(b*x + c*x^2)^(5/2))/(5*c) + (A*(b*x + c*x^2)^(3/2)*(b/2 + c*x))/(4*c) -
 (B*b*((x*(b*x + c*x^2)^(3/2))/4 + (b*(b*x + c*x^2)^(3/2))/(8*c) - (3*b^2*(
((b*x + c*x^2)^(1/2)*(b + 2*c*x))/(4*c) - (b^2*log((b/2 + c*x)/c^(1/2) + (b
*x + c*x^2)^(1/2)))/(8*c^(3/2))))/(16*c)))/(2*c) - (3*A*b^2*((b*x + c*x^2)^
(1/2)*(x/2 + b/(4*c)) - (b^2*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2))
)/(8*c^(3/2))))/(16*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x (b + cx))^{\frac{3}{2}} (A + Bx) \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x), x)
```

3.1175 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=392

$$\frac{\sqrt{bx+cx^2}\,\Big(-2cex\Big(8Ace(2cd-be)-B\Big(-3b^2e^2-8bcde+16c^2d^2\Big)\Big)+8Ace\Big(b^2e^2-10bcde+8c^2d^2\Big)-B\Big(3b^3e^3}{64c^2e^4}$$

```
[Out] -1/24*(-6*B*c*e*x-8*A*c*e-3*B*b*e+8*B*c*d)*(c*x^2+b*x)^(3/2)/c/e^2-1/64*(8*
A*c*e*(b^3*e^3+6*b^2*c*d*e^2-24*b*c^2*d^2*e+16*c^3*d^3)-B*(3*b^4*e^4+8*b^3*
c*d*e^3+48*b^2*c^2*d^2*e^2-192*b*c^3*d^3*e+128*c^4*d^4))*arctanh(x*c^(1/2)/
(c*x^2+b*x)^(1/2))/c^(5/2)/e^5-d^(3/2)*(-A*e+B*d)*(-b*e+c*d)^(3/2)*arctanh(
1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e^5+1/
64*(8*A*c*e*(b^2*e^2-10*b*c*d*e+8*c^2*d^2)-B*(3*b^3*e^3+8*b^2*c*d*e^2-80*b*
c^2*d^2*e+64*c^3*d^3)-2*c*e*(8*A*c*e*(-b*e+2*c*d)-B*(-3*b^2*e^2-8*b*c*d*e+1
6*c^2*d^2))*x)*(c*x^2+b*x)^(1/2)/c^2/e^4
```

Rubi [A] time = 0.59, antiderivative size = 392, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {814, 843, 620, 206, 724}

$$\frac{\sqrt{bx+cx^2}\,\Big(-2cex\Big(8Ace(2cd-be)-B\Big(-3b^2e^2-8bcde+16c^2d^2\Big)\Big)+8Ace\Big(b^2e^2-10bcde+8c^2d^2\Big)-B\Big(8b^2c}{64c^2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] ((8*A*c*e*(8*c^2*d^2 - 10*b*c*d*e + b^2*e^2) - B*(64*c^3*d^3 - 80*b*c^2*d^2
*e + 8*b^2*c*d*e^2 + 3*b^3*e^3) - 2*c*e*(8*A*c*e*(2*c*d - b*e) - B*(16*c^2*
d^2 - 8*b*c*d*e - 3*b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(64*c^2*e^4) - ((8*B*c*
d - 3*b*B*e - 8*A*c*e - 6*B*c*e*x)*(b*x + c*x^2)^(3/2))/(24*c*e^2) - ((8*A*
c*e*(16*c^3*d^3 - 24*b*c^2*d^2*e + 6*b^2*c*d*e^2 + b^3*e^3) - B*(128*c^4*d^
4 - 192*b*c^3*d^3*e + 48*b^2*c^2*d^2*e^2 + 8*b^3*c*d*e^3 + 3*b^4*e^4))*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(5/2)*e^5) - (d^(3/2)*(B*d - A*e)
*(c*d - b*e)^(3/2)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*
e]*Sqrt[b*x + c*x^2])])/e^5
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx = -\frac{(8Bcd-3bBe-8Ace-6Bcex)\left(bx+cx^2\right)^{3/2}}{24ce^2} - \int \frac{\left(-\frac{1}{2}bd(8Bcd-3bBe-8Ace)+\frac{1}{2}\left(8Ace(2cd-\right.\right.}{d}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

$$= \frac{\left(8Ace\left(8c^2d^2-10bcde+b^2e^2\right)-B\left(64c^3d^3-80bc^2d^2e+8b^2cde^2+3b^3e^3\right)-2ce\left(\right.\right.}{64c^2e^4}$$

Mathematica [**A**]   time = 1.41, size = 386, normalized size = 0.98

$$\sqrt{x(b+cx)}\left(\sqrt{c}\left(e\sqrt{x}\left(8Ace\left(3b^2e^2+2bce(7ex-15d)+4c^2\left(6d^2-3dex+2e^2x^2\right)\right)+B\left(-9b^3e^3+6b^2ce^2(ex-4d\right.\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((3*(-8*A*c*e*(16*c^3*d^3 - 24*b*c^2*d^2*e + 6*b^2*c*d*e
^2 + b^3*e^3) + B*(128*c^4*d^4 - 192*b*c^3*d^3*e + 48*b^2*c^2*d^2*e^2 + 8*b
^3*c*d*e^3 + 3*b^4*e^4))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[
1 + (c*x)/b]) + Sqrt[c]*(e*Sqrt[x]*(8*A*c*e*(3*b^2*e^2 + 2*b*c*e*(-15*d + 7
*e*x) + 4*c^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + B*(-9*b^3*e^3 + 6*b^2*c*e^2*
(-4*d + e*x) + 8*b*c^2*e*(30*d^2 - 14*d*e*x + 9*e^2*x^2) - 16*c^3*(12*d^3 -
 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3))) - (384*c^2*d^(3/2)*(B*d - A*e)*(c*d
 - b*e)^(3/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/S
qrt[b + c*x])))/(192*c^(5/2)*e^5*Sqrt[x])
```

fricas [**A**] time = 50.27, size = 1695, normalized size = 4.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [-1/384*(3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e + 48*(B*b^2*c^2
+ 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B*b^4 - 8*A*b^3
*c)*e^4)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 384*(B*c^4*
d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*d^2*e)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2 -
24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*(8*
B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(7*B
*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2 + b
*x))/(c^3*e^5), -1/384*(768*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*
d^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/
((c*d - b*e)*x)) + 3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e + 48*(
B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B*b^4
 - 8*A*b^3*c)*e^4)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2
*(48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2 - 2
4*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*(8*B
*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(7*B*
b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2 + b*
x))/(c^3*e^5), -1/192*(3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3*e +
48*(B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 + (3*B
*b^4 - 8*A*b^3*c)*e^4)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) +
192*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3 + A*c^4)*d^2*e)*sqrt(c*d^2 - b*d*
e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e
*x + d)) - (48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d
^2*e^2 - 24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^
4 - 8*(8*B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2
 - 8*(7*B*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(
c*x^2 + b*x))/(c^3*e^5), -1/192*(384*(B*c^4*d^3 + A*b*c^3*d*e^2 - (B*b*c^3
+ A*c^4)*d^2*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^
2 + b*x)/((c*d - b*e)*x)) + 3*(128*B*c^4*d^4 - 64*(3*B*b*c^3 + 2*A*c^4)*d^3
*e + 48*(B*b^2*c^2 + 4*A*b*c^3)*d^2*e^2 + 8*(B*b^3*c - 6*A*b^2*c^2)*d*e^3 +
 (3*B*b^4 - 8*A*b^3*c)*e^4)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) - (48*B*c^4*e^4*x^3 - 192*B*c^4*d^3*e + 48*(5*B*b*c^3 + 4*A*c^4)*d^2*e^2
 - 24*(B*b^2*c^2 + 10*A*b*c^3)*d*e^3 - 3*(3*B*b^3*c - 8*A*b^2*c^2)*e^4 - 8*
(8*B*c^4*d*e^3 - (9*B*b*c^3 + 8*A*c^4)*e^4)*x^2 + 2*(48*B*c^4*d^2*e^2 - 8*(
7*B*b*c^3 + 6*A*c^4)*d*e^3 + (3*B*b^2*c^2 + 56*A*b*c^3)*e^4)*x)*sqrt(c*x^2
+ b*x))/(c^3*e^5)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.05, size = 2334, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x)
```

```
[Out] -3/8/e^2*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2*A+1/2/e^3*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*d^2*B-1/e^5*d^4/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*c^2*A-1/2/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*
c*d*A-1/4/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b
*B*d+1/16/e^2/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^3*B*d-1/e^3*d^2/(-(b*e-c*d
)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d
/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d
/e))*b^2*A+3/8/e^3*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2*B-1/8/e^2/c*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B*d+3/2/e^3*d^2*
ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*A+2/e^4*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln(
(-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-2/e^5*d
^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*
(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2))/(x+d/e))*b*c*B+1/3/e*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(3/2)*A-1/3/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*B*d+1/4*B/e*(c*x^2+b*x)^(3/2)*x-3/32*B/e*b^2/c*(c*x^2+b*x)^(1/2)*x-3/
2/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b*B+3/128*B/e*b^4/c^(5/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/8*B/e/c*(c*x^2+b*x)^(3/2)*b+1/e^4*d^3
/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-
(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))/(x+d/e))*b^2*B+1/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*B-3/64*B/e*b^3/c^2*(c*x^
2+b*x)^(1/2)+1/e^3*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*c*A-1/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)*c*B-1/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*A+1/4/e*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*A+1/e^5*d^4*ln(((x+d/e)*c+1/2*
(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))*c^(3/2)*B-1/16/e/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^3*A+1/8/e/c*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A-5/4/e^2*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d*A+5/4/e^3*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d^2*B
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x), x)
```

3.1176 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=323

$$-\frac{\sqrt{bx+cx^2}\,\left(2cex(-6Ace-bBe+8Bcd)+6Ace(4cd-3be)-B\left(b^2e^2-28bcde+32c^2d^2\right)\right)}{8ce^4}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4\right.}{}$$

```
[Out] 1/3*(B*e*x-3*A*e+4*B*d)*(c*x^2+b*x)^(3/2)/e^2/(e*x+d)+1/8*(4*b*c*e*(-3*A*e+
4*B*d)*(-b*e+2*c*d)-(-6*A*c*e-B*b*e+8*B*c*d)*(-b^2*e^2-4*b*c*d*e+8*c^2*d^2)
)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)/e^5+1/2*(B*d*(-5*b*e+8*c*d)-
3*A*e*(-b*e+2*c*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/
2)/(c*x^2+b*x)^(1/2))*d^(1/2)*(-b*e+c*d)^(1/2)/e^5-1/8*(6*A*c*e*(-3*b*e+4*c
*d)-B*(b^2*e^2-28*b*c*d*e+32*c^2*d^2)+2*c*e*(-6*A*c*e-B*b*e+8*B*c*d)*x)*(c*
x^2+b*x)^(1/2)/c/e^4
```

Rubi [A] time = 0.42, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {812, 814, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\,\left(2cex(-6Ace-bBe+8Bcd)+6Ace(4cd-3be)-B\left(b^2e^2-28bcde+32c^2d^2\right)\right)}{8ce^4}+\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] -((6*A*c*e*(4*c*d - 3*b*e) - B*(32*c^2*d^2 - 28*b*c*d*e + b^2*e^2) + 2*c*e*
(8*B*c*d - b*B*e - 6*A*c*e)*x)*Sqrt[b*x + c*x^2])/(8*c*e^4) + ((4*B*d - 3*A
*e + B*e*x)*(b*x + c*x^2)^(3/2))/(3*e^2*(d + e*x)) + ((4*b*c*e*(4*B*d - 3*A
*e)*(2*c*d - b*e) - (8*B*c*d - b*B*e - 6*A*c*e)*(8*c^2*d^2 - 4*b*c*d*e - b^
2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(8*c^(3/2)*e^5) + (Sqrt[d]*
Sqrt[c*d - b*e]*(B*d*(8*c*d - 5*b*e) - 3*A*e*(2*c*d - b*e))*ArcTanh[(b*d +
(2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*e^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx &= \frac{(4Bd-3Ae+Bex)\left(bx+cx^2\right)^{3/2}}{3e^2(d+ex)} - \frac{\int \frac{(b(4Bd-3Ae)+(8Bcd-bBe-6Ace)x)\sqrt{bx+cx^2}}{d+ex}\,dx}{2e^2}\\
&= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}\\
&= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}\\
&= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}\\
&= -\frac{\left(6Ace(4cd-3be)-B\left(32c^2d^2-28bcde+b^2e^2\right)+2ce(8Bcd-bBe-6Ace)x\right)}{8ce^4}
\end{aligned}
$$

Mathematica [A] time = 1.64, size = 353, normalized size = 1.09

$$
\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(\frac{e\sqrt{x}\left(6Ace\left(be(9d+5ex)-2c\left(6d^2+3dex-e^2x^2\right)\right)+B\left(3b^2e^2(d+ex)+2bce\left(-42d^2-23dex+7e^2x^2\right)+8c^2\left(12d^3+6d^2ex-2de^2x^2+e^3x^3\right)\right.\right.}{d+ex}\right.\right.}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((-3*(-6*A*c*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) + B*(64
*c^3*d^3 - 72*b*c^2*d^2*e + 12*b^2*c*d*e^2 + b^3*e^3))*ArcSinh[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqrt[c]*((e*Sqrt[x]*(6*A*c*e*
(b*e*(9*d + 5*e*x) - 2*c*(6*d^2 + 3*d*e*x - e^2*x^2)) + B*(3*b^2*e^2*(d + e
*x) + 2*b*c*e*(-42*d^2 - 23*d*e*x + 7*e^2*x^2) + 8*c^2*(12*d^3 + 6*d^2*e*x
- 2*d*e^2*x^2 + e^3*x^3))))/(d + e*x) + (24*c*Sqrt[d]*Sqrt[c*d - b*e]*(B*d*
(8*c*d - 5*b*e) + 3*A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(
Sqrt[d]*Sqrt[b + c*x])])/Sqrt[b + c*x])))/(24*c^(3/2)*e^5*Sqrt[x])
```

fricas [A] time = 5.95, size = 2017, normalized size = 6.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*
A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24*(3*B*b*
c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*
c)*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 24*(8*B*c
^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c^3)*d^2*e + (8*B*c^3*d^2*e + 3
*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(8*B*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*
(B*b^2*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4
)*x^2 + (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c +
10*A*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6*x + c^2*d*e^5), 1/48*(48*(8
*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c^3)*d^2*e + (8*B*c^3*d^2*e
 + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arc
tan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 3*(64*B*c^3*
d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*A*b*c^2)*d^2*e^2 + (
B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24*(3*B*b*c^2 + 2*A*c^3)*d^2*e
^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*c)*e^4)*x)*sqrt(c)*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(8*B*c^3*e^4*x^3 + 96*B*c^3
*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2*c + 18*A*b*c^2)*d*e^3
- 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2 + (48*B*c^3*d^2*e^2 - 2
*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b*c^2)*e^4)*x)*sqrt(c*x^
2 + b*x))/(c^2*e^6*x + c^2*d*e^5), 1/24*(3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 +
2*A*c^3)*d^3*e + 12*(B*b^2*c + 4*A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e
^3 + (64*B*c^3*d^3*e - 24*(3*B*b*c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A
*b*c^2)*d*e^3 + (B*b^3 - 6*A*b^2*c)*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + 12*(8*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A*c
^3)*d^2*e + (8*B*c^3*d^2*e + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)*x
)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sq
rt(c*x^2 + b*x))/(e*x + d)) + (8*B*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b
*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3
 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2 + (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*
A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6
*x + c^2*d*e^5), 1/24*(24*(8*B*c^3*d^3 + 3*A*b*c^2*d*e^2 - (5*B*b*c^2 + 6*A
*c^3)*d^2*e + (8*B*c^3*d^2*e + 3*A*b*c^2*e^3 - (5*B*b*c^2 + 6*A*c^3)*d*e^2)
*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c
*d - b*e)*x)) + 3*(64*B*c^3*d^4 - 24*(3*B*b*c^2 + 2*A*c^3)*d^3*e + 12*(B*b^
2*c + 4*A*b*c^2)*d^2*e^2 + (B*b^3 - 6*A*b^2*c)*d*e^3 + (64*B*c^3*d^3*e - 24
*(3*B*b*c^2 + 2*A*c^3)*d^2*e^2 + 12*(B*b^2*c + 4*A*b*c^2)*d*e^3 + (B*b^3 -
6*A*b^2*c)*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (8*B
*c^3*e^4*x^3 + 96*B*c^3*d^3*e - 12*(7*B*b*c^2 + 6*A*c^3)*d^2*e^2 + 3*(B*b^2
*c + 18*A*b*c^2)*d*e^3 - 2*(8*B*c^3*d*e^3 - (7*B*b*c^2 + 6*A*c^3)*e^4)*x^2
+ (48*B*c^3*d^2*e^2 - 2*(23*B*b*c^2 + 18*A*c^3)*d*e^3 + 3*(B*b^2*c + 10*A*b
*c^2)*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*e^6*x + c^2*d*e^5)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 4283, normalized size = 13.26

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A
+1/4*B/e^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b+2*
B/e^5*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*b*c-6/e^4/(b*e-c*d)*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c
*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c
^(3/2)*b*B-3/2/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-3/2/e^2/(b*e-c*d)*d*(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+6/e^3/(b*e
-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)*b*A-1/e^2/(b*e-c*d)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B*d+3/8/e/(b*e-c*d)*ln(((x+
d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/c^(1/2)*b^3*A-3/e^4/(b*e-c*d)*d^3*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)*c^(5/2)*A+1/e*c/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(3/2)*x*B-c/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(3/2)*x*A+9/4/e/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*b^2*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(5/2)*B-1/(b*e-c*d)/d*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(3/2)*b*A+1/8*B/e^2/c*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2)*b^2-3/2/e^2/(b*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*B*d-6/e^3/(b*e-c*d)*d^2/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b
^2*c*A+6/e^4/(b*e-c*d)*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B+15/2/e^4/(b*e-c*d)*d^3/(-
(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*
e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2))/(x+d/e))*b*c^2*A-15/2/e^5/(b*e-c*d)*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2
*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^
2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B+1/3*B/e^
2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)-1/2*B/e^3*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*d-3/8*B/e^3*d*ln((
(x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^2+3/2*B/e^4*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d
)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(
1/2)*b+3/e^5/(b*e-c*d)*d^4*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(5/2)*B-9/4/e^2/(b*e-
c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B*d+3/e^
3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c
```

```
^2*A-3/e^4/(b*e-c*d)*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2)*c^2*B+3/2/e^3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2)*x*c^2*B+21/4/e^3/(b*e-c*d)*d^2*((x+d/e)^2*c-(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-3/e^5/(b*e-c*d)*d^4/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c
^3*A+27/8/e^3/(b*e-c*d)*d^2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*B+3/2/e/(b
*e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*A-3
/8/e^2/(b*e-c*d)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/c^(1/2)*b^3*B*d-27/8/e^2/(b*e-c*d
)*d*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A-21/4/e^2/(b*e-c*d)*d*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+3/2/e^2/(b*e-c*d)*d/(-
(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*
e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2))/(x+d/e))*b^3*A+3/e^6/(b*e-c*d)*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-5/4*B/e^3*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*d-1/16*B/e^2/c^(3/2)
*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2))*b^3+B/e^4*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*c-B/e^5*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)
+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3/2)+1/e/(b*
e-c*d)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*B+1/(b*e
-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*A
-B/e^4*d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2))/(x+d/e))*b^2-B/e^6*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**2, x)
```

3.1177 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=314

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)}{4\sqrt{c}e^5}+\frac{3\left(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(5b^2e^2-\right.\right.}{8\sqrt{d}e^5}$$

```
[Out] 1/2*(B*e*x-A*e+2*B*d)*(c*x^2+b*x)^(3/2)/e^2/(e*x+d)^2-3/4*(4*A*c*e*(-b*e+2*
c*d)-B*(b^2*e^2-12*b*c*d*e+16*c^2*d^2))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2)
)/e^5/c^(1/2)+3/8*(A*e*(b^2*e^2-8*b*c*d*e+8*c^2*d^2)-B*d*(5*b^2*e^2-20*b*c*
d*e+16*c^2*d^2))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/
(c*x^2+b*x)^(1/2))/e^5/d^(1/2)/(-b*e+c*d)^(1/2)-3/4*(4*B*d*(-b*e+2*c*d)-A*e
*(-b*e+4*c*d)+e*(-2*A*c*e-B*b*e+4*B*c*d)*x)*(c*x^2+b*x)^(1/2)/e^4/(e*x+d)
```

Rubi [A] time = 0.43, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {812, 843, 620, 206, 724}

$$-\frac{3\tanh^{-1}\left(\frac{\sqrt{c}x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)}{4\sqrt{c}e^5}+\frac{3\left(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(5b^2e^2-\right.\right.}{8\sqrt{d}e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(4*B*d*(2*c*d - b*e) - A*e*(4*c*d - b*e) + e*(4*B*c*d - b*B*e - 2*A*c*e
)*x)*Sqrt[b*x + c*x^2])/(4*e^4*(d + e*x)) + ((2*B*d - A*e + B*e*x)*(b*x + c
*x^2)^(3/2))/(2*e^2*(d + e*x)^2) - (3*(4*A*c*e*(2*c*d - b*e) - B*(16*c^2*d^
2 - 12*b*c*d*e + b^2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*Sqrt[
c]*e^5) + (3*(A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*d*(16*c^2*d^2 - 20*
b*c*d*e + 5*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d -
 b*e]*Sqrt[b*x + c*x^2])])/(8*Sqrt[d]*e^5*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{(2Bd-Ae+Bex)\left(bx+cx^2\right)^{3/2}}{2e^2(d+ex)^2} - \frac{3\int \frac{(2b(2Bd-Ae)+2(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{(d+ex)^2}\,dx}{8e^2}$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + (2B$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + (2B$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + (2B$$

$$= -\frac{3(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\sqrt{bx+cx^2}}{4e^4(d+ex)} + (2B$$

Mathematica [B] time = 6.12, size = 1358, normalized size = 4.32

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(2*d*(-(c*d) + b*e)*(d + e
*x)^2) + ((x*(b + c*x))^(3/2)*(((-3*c*d*(B*d - A*e) + (e*(5*b*B*d - 4*A*c*d
 - A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(c*d) + b*e)*(d + e*x)) + (((8*
A*c^2*d^2 + 4*b*c*d*(5*B*d - 4*A*e) - 3*b^2*e*(5*B*d - A*e))*((2*b*x^(3/2)*
Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))
/2 + (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[
b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (
d*((2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1
+ (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt
[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
(c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sq
rt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x
]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b +
 c*x])])/(Sqrt[d]*e)))/e))/e))/e))/4 + 2*c*(B*d*(6*c*d - 5*b*e) - A*e*(2*c*
d - b*e))*((2*b*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/
b)^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) -
 (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (
c*x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b
+ c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3
*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(S
qrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b
*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)
/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqr
t[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b
)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sq
rt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*S
qrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2
*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]
)/(Sqrt[d]*e)))/e))/e))/e))/e))/(d*(-(c*d) + b*e))))/(2*d*(-(c*d) + b*e)*x^
(3/2)*(b + c*x)^(3/2))
```

fricas [B] time = 2.90, size = 3342, normalized size = 10.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c + 12*A*
b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b
*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*
b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (
13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(c)*
log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 3*(16*B*c^3*d^5 - A*b^2*c*d^
2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c^2)*d^3*e^2 + (
16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2
*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e^4 - 4*(5*B*b*c
^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) - 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d^2*e^4 - 12*(3*B*b*c^2 + A*c^3)
*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d
*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 + 4*A*c^3)*d^2*e^4 + (5*B*b^2*c
+ 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2 - 5*A*b^2*c*d*e^5 - (55*B*b*c^2
 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b
*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^
3*e^6 - b*c*d^2*e^7)*x), -1/8*(6*(16*B*c^3*d^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b
*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c^2)*d^3*e^2 + (16*B*c^3*d^3*e^2
 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2*c + 8*A*b*c^2)*
d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^
3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sq
rt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 3*(16*B*c^3*d^6 - 4
*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c + 12*A*b*c^2)*d^4*e^2 - (B*b^3 +
 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 +
 (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*b^2*c)*d*e^5)*x^2 + 2*(16
*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (13*B*b^2*c + 12*A*b*c^2)*
d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c)) + 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d^2*e^4 - 12*(3*B*b*c^2
 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3 - 2*(B*c^3*d^2*e^4 -
B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 + 4*A*c^3)*d^2*e^4 + (5
*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2 - 5*A*b^2*c*d*e^5 - (5
5*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*c^2)*d^2*e^4)*x)*sqrt(
c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e^7 - b*c*d*e^8)*x^2 +
2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x), -1/8*(6*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*
A*c^3)*d^5*e + (13*B*b^2*c + 12*A*b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*
e^3 + (16*B*c^3*d^4*e^2 - 4*(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 1
2*A*b*c^2)*d^2*e^4 - (B*b^3 + 4*A*b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4
*(7*B*b*c^2 + 2*A*c^3)*d^4*e^2 + (13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3
 + 4*A*b^2*c)*d^2*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - 3*(16*B*c^3*d^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B
*b^2*c + 8*A*b*c^2)*d^3*e^2 + (16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^
2 + 2*A*c^3)*d^2*e^3 + (5*B*b^2*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4
*e - A*b^2*c*d*e^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c
^2)*d^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d
^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(24*B*c^3*d^5*e - 3*A*b^2*c*d
^2*e^4 - 12*(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3*e^3
 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c^2 +
 4*A*c^3)*d^2*e^4 + (5*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*e^2
- 5*A*b^2*c*d*e^5 - (55*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*A*b*
c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d^2*e
^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x), -1/4*(3*(16*B*c^3*d
^5 - A*b^2*c*d^2*e^3 - 4*(5*B*b*c^2 + 2*A*c^3)*d^4*e + (5*B*b^2*c + 8*A*b*c
^2)*d^3*e^2 + (16*B*c^3*d^3*e^2 - A*b^2*c*e^5 - 4*(5*B*b*c^2 + 2*A*c^3)*d^2
*e^3 + (5*B*b^2*c + 8*A*b*c^2)*d*e^4)*x^2 + 2*(16*B*c^3*d^4*e - A*b^2*c*d*e
^4 - 4*(5*B*b*c^2 + 2*A*c^3)*d^3*e^2 + (5*B*b^2*c + 8*A*b*c^2)*d^2*e^3)*x)*
sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d -
 b*e)*x)) + 3*(16*B*c^3*d^6 - 4*(7*B*b*c^2 + 2*A*c^3)*d^5*e + (13*B*b^2*c +
 12*A*b*c^2)*d^4*e^2 - (B*b^3 + 4*A*b^2*c)*d^3*e^3 + (16*B*c^3*d^4*e^2 - 4*
(7*B*b*c^2 + 2*A*c^3)*d^3*e^3 + (13*B*b^2*c + 12*A*b*c^2)*d^2*e^4 - (B*b^3
+ 4*A*b^2*c)*d*e^5)*x^2 + 2*(16*B*c^3*d^5*e - 4*(7*B*b*c^2 + 2*A*c^3)*d^4*e
^2 + (13*B*b^2*c + 12*A*b*c^2)*d^3*e^3 - (B*b^3 + 4*A*b^2*c)*d^2*e^4)*x)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (24*B*c^3*d^5*e - 3*A*b^2
*c*d^2*e^4 - 12*(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(4*B*b^2*c + 5*A*b*c^2)*d^3
*e^3 - 2*(B*c^3*d^2*e^4 - B*b*c^2*d*e^5)*x^3 + (8*B*c^3*d^3*e^3 - (13*B*b*c
^2 + 4*A*c^3)*d^2*e^4 + (5*B*b^2*c + 4*A*b*c^2)*d*e^5)*x^2 + (36*B*c^3*d^4*
e^2 - 5*A*b^2*c*d*e^5 - (55*B*b*c^2 + 18*A*c^3)*d^3*e^3 + (19*B*b^2*c + 23*
A*b*c^2)*d^2*e^4)*x)*sqrt(c*x^2 + b*x))/(c^2*d^4*e^5 - b*c*d^3*e^6 + (c^2*d
^2*e^7 - b*c*d*e^8)*x^2 + 2*(c^2*d^3*e^6 - b*c*d^2*e^7)*x)]
```

giac [B] time = 0.52, size = 936, normalized size = 2.98

$$-\frac{3\left(16\,Bc^2d^3-20\,Bbcd^2e-8\,Ac^2d^2e+5\,Bb^2de^2+8\,Abcde^2-Ab^2e^3\right)\arctan\left(-\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)e+\sqrt{c}\,d}{\sqrt{-cd^2+bde}}\right)e^{(-5)}}{4\,\sqrt{-cd^2+bde}}-3\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3/4*(16*B*c^2*d^3 - 20*B*b*c*d^2*e - 8*A*c^2*d^2*e + 5*B*b^2*d*e^2 + 8*A*b
*c*d*e^2 - A*b^2*e^3)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*
d)/sqrt(-c*d^2 + b*d*e))*e^(-5)/sqrt(-c*d^2 + b*d*e) - 3/8*(16*B*c^2*d^2 -
12*B*b*c*d*e - 8*A*c^2*d*e + B*b^2*e^2 + 4*A*b*c*e^2)*e^(-5)*log(abs(2*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/4*(2*B*c*x*e^(-3) - (
12*B*c^2*d*e^8 - 5*B*b*c*e^9 - 4*A*c^2*e^9)*e^(-12)/c)*sqrt(c*x^2 + b*x) -
1/4*(32*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(5/2)*d^3*e + 56*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^2*B*c^3*d^4 - 44*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*
c^2*d^3*e - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^3*d^3*e + 56*(sqrt(c)*
x - sqrt(c*x^2 + b*x))*B*b*c^(5/2)*d^4 - 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^3*B*b*c^(3/2)*d^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(5/2)*d^2
*e^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(3/2)*d^3*e - 40*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*A*b*c^(5/2)*d^3*e + 14*B*b^2*c^2*d^4 + 3*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*B*b^2*c*d^2*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*A*b*c^2*d^2*e^2 - 9*B*b^3*c*d^3*e - 10*A*b^2*c^2*d^3*e + 9*(sqrt(c)*x -
```

```
 sqrt(c*x^2 + b*x))^3*B*b^2*sqrt(c)*d*e^3 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*A*b*c^(3/2)*d*e^3 + 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*sqrt(c)*d
^2*e^2 + 28*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^(3/2)*d^2*e^2 + (sqrt(c
)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c*d*e^3 + 5*A*b^3*c*d^2*e^2 - 5*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*A*b^2*sqrt(c)*e^4 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x
))*A*b^3*sqrt(c)*d*e^3)*e^(-5)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2*sqrt(c))
```

maple [B] time = 0.06, size = 7365, normalized size = 23.46

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**3, x)
```

3.1178 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=426

$$-\frac{\sqrt{bx+cx^2}\ \big(Ae\left(-b^2e^2-6bcde+8c^2d^2\right)-2cex(Bd(8cd-7be)-Ae(2cd-be))-Bd\big(5b^2e^2-36bcde+32c^2d}{8de^4(d+ex)(cd-be)}$$

```
[Out] -1/12*(d*(B*d*(-5*b*e+8*c*d)-A*e*(b*e+2*c*d))+3*e*(B*d*(-3*b*e+4*c*d)-A*e*(
-b*e+2*c*d))*x)*(c*x^2+b*x)^(3/2)/d/e^2/(-b*e+c*d)/(e*x+d)^3+1/16*(B*d*(-5*
b^3*e^3+60*b^2*c*d*e^2-120*b*c^2*d^2*e+64*c^3*d^3)-A*e*(b^3*e^3+6*b^2*c*d*e
^2-24*b*c^2*d^2*e+16*c^3*d^3))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b
*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(3/2)/e^5/(-b*e+c*d)^(3/2)-(-2*A*c*e-3*B
*b*e+8*B*c*d)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))*c^(1/2)/e^5-1/8*(A*e*(-b
^2*e^2-6*b*c*d*e+8*c^2*d^2)-B*d*(5*b^2*e^2-36*b*c*d*e+32*c^2*d^2)-2*c*e*(B*
d*(-7*b*e+8*c*d)-A*e*(-b*e+2*c*d))*x)*(c*x^2+b*x)^(1/2)/d/e^4/(-b*e+c*d)/(e
*x+d)
```

Rubi [**A**] time = 0.53, antiderivative size = 426, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {810, 812, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\ \big(Ae\left(-b^2e^2-6bcde+8c^2d^2\right)-2cex(Bd(8cd-7be)-Ae(2cd-be))-Bd\big(5b^2e^2-36bcde+32c^2d}{8de^4(d+ex)(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -((A*e*(8*c^2*d^2 - 6*b*c*d*e - b^2*e^2) - B*d*(32*c^2*d^2 - 36*b*c*d*e + 5
*b^2*e^2) - 2*c*e*(B*d*(8*c*d - 7*b*e) - A*e*(2*c*d - b*e))*x)*Sqrt[b*x + c
*x^2])/(8*d*e^4*(c*d - b*e)*(d + e*x)) - ((d*(B*d*(8*c*d - 5*b*e) - A*e*(2*
c*d + b*e)) + 3*e*(B*d*(4*c*d - 3*b*e) - A*e*(2*c*d - b*e))*x)*(b*x + c*x^2
)^(3/2))/(12*d*e^2*(c*d - b*e)*(d + e*x)^3) - (Sqrt[c]*(8*B*c*d - 3*b*B*e -
 2*A*c*e)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^5 + ((B*d*(64*c^3*d^3 -
 120*b*c^2*d^2*e + 60*b^2*c*d*e^2 - 5*b^3*e^3) - A*e*(16*c^3*d^3 - 24*b*c^2
*d^2*e + 6*b^2*c*d*e^2 + b^3*e^3))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(3/2)*e^5*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx = -\frac{(d(Bd(8cd-5be)-Ae(2cd+be))+3e(Bd(4cd-3be)-Ae(2cd-be))x)\,\big(bx+c}{12de^2(cd-be)(d+ex)^3}$$

$$= -\frac{\big(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\big(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\big(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be}{8de^4(cd-be)(d+ex)}$$

$$= -\frac{\big(Ae\left(8c^2d^2-6bcde-b^2e^2\right)-Bd\left(32c^2d^2-36bcde+5b^2e^2\right)-2ce(Bd(8cd-7be}{8de^4(cd-be)(d+ex)}$$

Mathematica [B] time = 6.19, size = 1533, normalized size = 3.60

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(3*d*(-(c*d) + b*e)*(d + e
*x)^3) + ((x*(b + c*x))^(3/2)*(((-2*c*d*(B*d - A*e) + (e*(5*b*B*d - 6*A*c*d
 + A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + (
(((-3*c*d*(B*d*(4*c*d - 5*b*e) + A*e*(2*c*d - b*e)))/2 + (e*(-5*b^2*B*d*e +
 A*(24*c^2*d^2 - 18*b*c*d*e - b^2*e^2)))/4)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(
c*d) + b*e)*(d + e*x)) + (((-48*A*c^3*d^3 - 2*b^2*c*d*e*(70*B*d - 13*A*e) +
 24*b*c^2*d^2*(5*B*d + A*e) + 3*b^3*e^2*(5*B*d + A*e))*((2*b*x^(3/2)*Sqrt[b
 + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (
3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(
Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*
b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x
)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sq
rt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/
b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*S
qrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*
Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (
2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])
])/(Sqrt[d]*e)))/e))/e))/e))/8 - c*(A*e*(12*c^2*d^2 - 12*b*c*d*e - b^2*e^2)
 - B*d*(24*c^2*d^2 - 30*b*c*d*e + 5*b^2*e^2))*((2*b*x^(5/2)*Sqrt[b + c*x]*(
1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^
3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sq
rt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2
)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x
)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2
*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*
((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[
c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*
c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSi
nh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e
- ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[
x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*
e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/(d*(-(c
*d) + b*e)))/(2*d*(-(c*d) + b*e))))/(3*d*(-(c*d) + b*e)*x^(3/2)*(b + c*x)^(
3/2))
```

<u>fricas</u> [B] time = 10.21, size = 5005, normalized size = 11.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(24*(8*B*c^3*d^8 - (19*B*b*c^2 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A
*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*
b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2
*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^
3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2
+ 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*
c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*
sqrt(c*x^2 + b*x)*sqrt(c)) - 3*(64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^
2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^
2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3
*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^
3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 +
12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3
```

```
*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5
*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(c*d^
2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 +
b*x))/(e*x + d)) - 2*(96*B*c^3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2
*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c
)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 +
(176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (
239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 +
2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 +
 (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8
 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2
*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x), 1/24*(3*(
64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2
*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3
 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2
)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*
d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e
^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3*(64*B*c^3*d^6*e - A*b^3*d^2*e^5
 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^4*e^3 -
(5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2
+ b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 12*(8*B*c^3*d^8 - (19*B*b*c^2
 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*
c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2
*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d
^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4
 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*
A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*
d^4*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (96*B*c^
3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 3*(41*B*b^2
*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c)*d^4*e^4 + 24*(B*c^3*d^4*e^4
 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 + (176*B*c^3*d^5*e^3 + 3*A*b^3*
d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (239*B*b^2*c + 88*A*b*c^2)*d^3
*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 + 2*(120*B*c^3*d^6*e^2 - 4*A*b^
3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 + (157*B*b^2*c + 53*A*b*c^2)*d
^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^7*e^
5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8 - 2*b*c*d^3*e^9 + b^2*d^2*e^
10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2*d^3*e^9)*x^2 + 3*(c^2*d^6*e^
6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x), 1/48*(48*(8*B*c^3*d^8 - (19*B*b*c^2 +
2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*
d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c
+ 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*
e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 -
(3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c
^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4
*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + 3*(64*B*c^3*d^
7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*
c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^
7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 -
 (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(
15*B*b*c^2 + 2*A*c^3)*d^4*e^3 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b
^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*
b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 +
6*A*b^2*c)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*s
qrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(96*B*c^3*d^7*e - 3*A*
b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^
2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d
^3*e^5 + B*b^2*c*d^2*e^6)*x^3 + (176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191
*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b
^3 + 47*A*b^2*c)*d^2*e^6)*x^2 + 2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (2
57*B*b*c^2 + 30*A*c^3)*d^5*e^3 + (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B
*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*
e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c
^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*
e^7 + b^2*d^4*e^8)*x), 1/24*(3*(64*B*c^3*d^7 - A*b^3*d^3*e^4 - 8*(15*B*b*c^
2 + 2*A*c^3)*d^6*e + 12*(5*B*b^2*c + 2*A*b*c^2)*d^5*e^2 - (5*B*b^3 + 6*A*b^
2*c)*d^4*e^3 + (64*B*c^3*d^4*e^3 - A*b^3*e^7 - 8*(15*B*b*c^2 + 2*A*c^3)*d^3
*e^4 + 12*(5*B*b^2*c + 2*A*b*c^2)*d^2*e^5 - (5*B*b^3 + 6*A*b^2*c)*d*e^6)*x^
3 + 3*(64*B*c^3*d^5*e^2 - A*b^3*d*e^6 - 8*(15*B*b*c^2 + 2*A*c^3)*d^4*e^3 +
12*(5*B*b^2*c + 2*A*b*c^2)*d^3*e^4 - (5*B*b^3 + 6*A*b^2*c)*d^2*e^5)*x^2 + 3
*(64*B*c^3*d^6*e - A*b^3*d^2*e^5 - 8*(15*B*b*c^2 + 2*A*c^3)*d^5*e^2 + 12*(5
*B*b^2*c + 2*A*b*c^2)*d^4*e^3 - (5*B*b^3 + 6*A*b^2*c)*d^3*e^4)*x)*sqrt(-c*d
^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
 + 24*(8*B*c^3*d^8 - (19*B*b*c^2 + 2*A*c^3)*d^7*e + 2*(7*B*b^2*c + 2*A*b*c^
2)*d^6*e^2 - (3*B*b^3 + 2*A*b^2*c)*d^5*e^3 + (8*B*c^3*d^5*e^3 - (19*B*b*c^2
 + 2*A*c^3)*d^4*e^4 + 2*(7*B*b^2*c + 2*A*b*c^2)*d^3*e^5 - (3*B*b^3 + 2*A*b^
2*c)*d^2*e^6)*x^3 + 3*(8*B*c^3*d^6*e^2 - (19*B*b*c^2 + 2*A*c^3)*d^5*e^3 + 2
*(7*B*b^2*c + 2*A*b*c^2)*d^4*e^4 - (3*B*b^3 + 2*A*b^2*c)*d^3*e^5)*x^2 + 3*(
8*B*c^3*d^7*e - (19*B*b*c^2 + 2*A*c^3)*d^6*e^2 + 2*(7*B*b^2*c + 2*A*b*c^2)*
d^5*e^3 - (3*B*b^3 + 2*A*b^2*c)*d^4*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (96*B*c^3*d^7*e - 3*A*b^3*d^3*e^5 - 12*(17*B*b*c^2 + 2
*A*c^3)*d^6*e^2 + 3*(41*B*b^2*c + 14*A*b*c^2)*d^5*e^3 - 15*(B*b^3 + A*b^2*c
)*d^4*e^4 + 24*(B*c^3*d^4*e^4 - 2*B*b*c^2*d^3*e^5 + B*b^2*c*d^2*e^6)*x^3 +
(176*B*c^3*d^5*e^3 + 3*A*b^3*d*e^7 - 2*(191*B*b*c^2 + 22*A*c^3)*d^4*e^4 + (
239*B*b^2*c + 88*A*b*c^2)*d^3*e^5 - (33*B*b^3 + 47*A*b^2*c)*d^2*e^6)*x^2 +
2*(120*B*c^3*d^6*e^2 - 4*A*b^3*d^2*e^6 - (257*B*b*c^2 + 30*A*c^3)*d^5*e^3 +
 (157*B*b^2*c + 53*A*b*c^2)*d^4*e^4 - (20*B*b^3 + 19*A*b^2*c)*d^3*e^5)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^7*e^5 - 2*b*c*d^6*e^6 + b^2*d^5*e^7 + (c^2*d^4*e^8
 - 2*b*c*d^3*e^9 + b^2*d^2*e^10)*x^3 + 3*(c^2*d^5*e^7 - 2*b*c*d^4*e^8 + b^2
*d^3*e^9)*x^2 + 3*(c^2*d^6*e^6 - 2*b*c*d^5*e^7 + b^2*d^4*e^8)*x)]
```

giac **[B]** time = 0.67, size = 1788, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B*c*e^(-4) + 1/2*(8*B*c^2*d - 3*B*b*c*e - 2*A*c^2*e)*e^(-
5)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/8*(6
4*B*c^3*d^4 - 120*B*b*c^2*d^3*e - 16*A*c^3*d^3*e + 60*B*b^2*c*d^2*e^2 + 24*
A*b*c^2*d^2*e^2 - 5*B*b^3*d*e^3 - 6*A*b^2*c*d*e^3 - A*b^3*e^4)*arctan(-((sq
rt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c*d^2*e
^5 - b*d*e^6)*sqrt(-c*d^2 + b*d*e)) + 1/24*(960*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^4*B*c^4*d^5*e + 832*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(9/2)*d^6 +
288*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*c^(7/2)*d^4*e^2 - 400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b*c^(7/2)*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*A*c^(9/2)*d^5*e + 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^4*d^6 -
1464*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b*c^3*d^4*e^2 - 432*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*A*c^4*d^4*e^2 - 1656*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
B*b^2*c^3*d^5*e - 528*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^4*d^5*e + 624
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(7/2)*d^6 - 504*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*B*b*c^(5/2)*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5
*A*c^(7/2)*d^3*e^3 - 840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(5/2)*d^
4*e^2 + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(7/2)*d^4*e^2 - 876*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c^(5/2)*d^5*e - 264*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*A*b^2*c^(7/2)*d^5*e + 104*B*b^3*c^3*d^6 + 540*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^4*B*b^2*c^2*d^3*e^3 + 504*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A
*b*c^3*d^3*e^3 + 414*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^2*d^4*e^2 +
516*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^3*d^4*e^2 - 134*B*b^4*c^2*d^5
*e - 44*A*b^3*c^3*d^5*e + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/
2)*d^2*e^4 + 216*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2)*d^2*e^4 + 47
8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^(3/2)*d^3*e^3 + 420*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*A*b^2*c^(5/2)*d^3*e^3 + 282*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*B*b^4*c^(3/2)*d^4*e^2 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c
^(5/2)*d^4*e^2 - 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c*d^2*e^4 - 54*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^2*d^2*e^4 + 24*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b^4*c*d^3*e^3 + 6*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3
*c^2*d^3*e^3 + 33*B*b^5*c*d^4*e^2 + 44*A*b^4*c^2*d^4*e^2 - 33*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*B*b^3*sqrt(c)*d*e^5 - 78*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^5*A*b^2*c^(3/2)*d*e^5 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(
c)*d^2*e^4 - 106*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^(3/2)*d^2*e^4 -
15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*sqrt(c)*d^3*e^3 - 36*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^4*c^(3/2)*d^3*e^3 - 33*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^4*A*b^3*c*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c*d^2*e^4 -
 3*A*b^5*c*d^3*e^3 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*sqrt(c)*e^6
- 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*sqrt(c)*d*e^5 - 3*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^5*sqrt(c)*d^2*e^4)/((c^(3/2)*d^2*e^5 - b*sqrt(c)*d*e
^6)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.07, size = 11396, normalized size = 26.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**4, x)
```

3.1179 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=421

$$-\frac{\sqrt{bx+cx^2}\,\big(ex\,\big(3Ab^2e^3(2cd-be)+Bd\,\big(-5b^3e^3+98b^2cde^2-192bc^2d^2e+96c^3d^3\big)\big)+d\,\big(3Ab^3e^4+Bd\,\big(5b^3e^3+}{64d^2e^4(d+ex)^2(cd-be)^2}$$

```
[Out] 1/24*(d*(3*A*b*e^2-B*d*(-5*b*e+8*c*d))-e*(B*d*(-11*b*e+14*c*d)-3*A*e*(-b*e+
2*c*d))*x)*(c*x^2+b*x)^(3/2)/d/e^2/(-b*e+c*d)/(e*x+d)^4+2*B*c^(3/2)*arctanh
(x*c^(1/2)/(c*x^2+b*x)^(1/2))/e^5+1/128*(3*A*b^4*e^5-B*d*(-5*b^4*e^4-40*b^3
*c*d*e^3+240*b^2*c^2*d^2*e^2-320*b*c^3*d^3*e+128*c^4*d^4))*arctanh(1/2*(b*d
+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(5/2)/e^5/(-
b*e+c*d)^(5/2)-1/64*(d*(3*A*b^3*e^4+B*d*(5*b^3*e^3+40*b^2*c*d*e^2-112*b*c^2
*d^2*e+64*c^3*d^3))+e*(3*A*b^2*e^3*(-b*e+2*c*d)+B*d*(-5*b^3*e^3+98*b^2*c*d*
e^2-192*b*c^2*d^2*e+96*c^3*d^3))*x)*(c*x^2+b*x)^(1/2)/d^2/e^4/(-b*e+c*d)^2/
(e*x+d)^2
```

Rubi [A] time = 0.54, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {810, 843, 620, 206, 724}

$$-\frac{\sqrt{bx+cx^2}\,\big(ex\,\big(3Ab^2e^3(2cd-be)+Bd\,\big(98b^2cde^2-5b^3e^3-192bc^2d^2e+96c^3d^3\big)\big)+d\,\big(3Ab^3e^4+Bd\,\big(40b^2cde^2+}{64d^2e^4(d+ex)^2(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((d*(3*A*b^3*e^4 + B*d*(64*c^3*d^3 - 112*b*c^2*d^2*e + 40*b^2*c*d*e^2 + 5*
b^3*e^3)) + e*(3*A*b^2*e^3*(2*c*d - b*e) + B*d*(96*c^3*d^3 - 192*b*c^2*d^2*
e + 98*b^2*c*d*e^2 - 5*b^3*e^3))*x)*Sqrt[b*x + c*x^2])/(64*d^2*e^4*(c*d - b
*e)^2*(d + e*x)^2) + ((d*(3*A*b*e^2 - B*d*(8*c*d - 5*b*e)) - e*(B*d*(14*c*d
 - 11*b*e) - 3*A*e*(2*c*d - b*e))*x)*(b*x + c*x^2)^(3/2))/(24*d*e^2*(c*d -
b*e)*(d + e*x)^4) + (2*B*c^(3/2)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/e^
5 + ((3*A*b^4*e^5 - B*d*(128*c^4*d^4 - 320*b*c^3*d^3*e + 240*b^2*c^2*d^2*e^
2 - 40*b^3*c*d*e^3 - 5*b^4*e^4))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]
*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(128*d^(5/2)*e^5*(c*d - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\Big(d\Big(3Abe^2-Bd(8cd-5be)\Big)-e(Bd(14cd-11be)-3Ae(2cd-be))x\Big)\Big(bx+cx^2}{24de^2(cd-be)(d+ex)^4}$$

$$= -\frac{\Big(d\Big(3Ab^3e^4+Bd\Big(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\Big)\Big)+e\Big(3Ab^2e^3(2cd}{64d^2e^4(cd-be)^2(}$$

$$= -\frac{\Big(d\Big(3Ab^3e^4+Bd\Big(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\Big)\Big)+e\Big(3Ab^2e^3(2cd}{64d^2e^4(cd-be)^2(}$$

$$= -\frac{\Big(d\Big(3Ab^3e^4+Bd\Big(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\Big)\Big)+e\Big(3Ab^2e^3(2cd}{64d^2e^4(cd-be)^2(}$$

$$= -\frac{\Big(d\Big(3Ab^3e^4+Bd\Big(64c^3d^3-112bc^2d^2e+40b^2cde^2+5b^3e^3\Big)\Big)+e\Big(3Ab^2e^3(2cd}{64d^2e^4(cd-be)^2(}$$

Mathematica [B] time = 6.21, size = 1984, normalized size = 4.71

result too large to display

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(3/2))/(4*d*(-(c*d) + b*e)*(d + e
*x)^4) + ((x*(b + c*x))^(3/2)*(((-(c*d*(B*d - A*e)) + (e*(5*b*B*d - 8*A*c*d
 + 3*A*b*e))/2)*x^(5/2)*(b + c*x)^(5/2))/(3*d*(-(c*d) + b*e)*(d + e*x)^3) +
 ((((e*(48*A*c^2*d^2 + b^2*e*(5*B*d + 3*A*e) - 4*b*c*d*(5*B*d + 9*A*e)))/4
- c*d*(B*d*(2*c*d - 5*b*e) + 3*A*e*(2*c*d - b*e)))*x^(5/2)*(b + c*x)^(5/2))
/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + ((((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d
+ 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8
+ (3*c*d*(3*A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*
e^2)))/4)*x^(5/2)*(b + c*x)^(5/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-1/8*(c
*d*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d + 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e)
 - 4*b^2*c*d*e*(25*B*d + 9*A*e))) + (b*e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d +
 3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 -
 (5*b*((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d + 3*A*e) + 24*b*c^2*d^2*(5*B*d +
 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 + (3*c*d*(3*A*e*(8*c^2*d^2 - 8*b
*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*e^2)))/4))/2)*((2*b*x^(3/2)*Sqrt
[b + c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 +
 (3*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((
2*b*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c
*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*
Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x
)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2
*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c
]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) -
 (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x
])])/(Sqrt[d]*e)))/e))/e))/e) - 4*c*((e*(-192*A*c^3*d^3 - b^3*e^2*(5*B*d +
3*A*e) + 24*b*c^2*d^2*(5*B*d + 9*A*e) - 4*b^2*c*d*e*(25*B*d + 9*A*e)))/8 +
(3*c*d*(3*A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*(8*c^2*d^3 - 5*b^2*d*e^
2)))/4)*((2*b*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((5*(1/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1)))/8 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (
2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*
x)/b])))/(256*c^3*x^3*(1 + (c*x)/b)^2)))/(5*e) - (d*((2*b*x^(3/2)*Sqrt[b +
c*x]*(1 + (c*x)/b)^2*((3/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 + (3*b
^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqr
t[b]*Sqrt[1 + (c*x)/b])))/(32*c^2*x^2*(1 + (c*x)/b)^2)))/(3*e) - (d*((2*b*S
qrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b
)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[
x]*(1 + (c*x)/b)^(5/2))))/e - (d*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*
(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt
[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqr
t[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*S
qrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/
(Sqrt[d]*e)))/e))/e))/e))/e))/(d*(-(c*d) + b*e)))/(2*d*(-(c*d) + b*e)))/(3*
d*(-(c*d) + b*e))))/(4*d*(-(c*d) + b*e)*x^(3/2)*(b + c*x)^(3/2))
```

fricas [B] time = 32.63, size = 5781, normalized size = 13.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [1/384*(384*(B*c^4*d^10 - 3*B*b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d
^7*e^3 + (B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c
*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5
- B*b^3*c*d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2
*d^6*e^4 - B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*
b^2*c^2*d^7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2
+ b*x)*sqrt(c)) - 3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*
e^2 - 40*B*b^3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d
^5*e^4 - 320*B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 -
 5*B*b^4*d*e^8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*
e^4 + 240*B*b^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^
4*d*e^8)*x^3 + 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d
^5*e^4 - 40*B*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(1
28*B*c^4*d^8*e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d
^5*e^4 - 5*B*b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(c*d^2 - b*d*e)*log((b*d
 + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) -
2*(192*B*c^4*d^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^
3*c*d^6*e^4 - 9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^
4*d^6*e^4 + 9*A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^
2*c^2 + 20*A*b*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B
*b^4 - A*b^3*c)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 +
33*A*b^4*d^2*e^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c -
204*A*b^2*c^2)*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4
*d^8*e^2 - 1856*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7
 - 3*(125*B*b^3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)
*x)*sqrt(c*x^2 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 -
b^3*d^7*e^8 + (c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*
e^12)*x^4 + 4*(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e
^11)*x^3 + 6*(c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^1
0)*x^2 + 4*(c^3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*
x), -1/192*(3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 -
40*B*b^3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4
 - 320*B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b
^4*d*e^8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 +
240*B*b^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^
8)*x^3 + 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4
 - 40*B*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c
^4*d^8*e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4
 - 5*B*b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(
-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 192*(B*c^4*d^10 - 3*B*
b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (B*c^4*d^6*e^4 - 3*B*
b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e
^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*d^4*e^6)*x^3 + 6*(B*
c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 - B*b^3*c*d^5*e^5)*x^
2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^7*e^3 - B*b^3*c*d^6*
e^4)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (192*B*c^4*d
^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 -
9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9*
A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*b
*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*c
)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*e
^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2)
*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 185
6*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b^
3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2
 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 +
(c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4*
(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*(
c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c^
3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x), -1/384*(76
8*(B*c^4*d^10 - 3*B*b*c^3*d^9*e + 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (
B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*
x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*
d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 - 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 -
 B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^
7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x
)) + 3*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 - 40*B*b^
3*c*d^6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4 - 320*
B*b*c^3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b^4*d*e^
8 - 3*A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 + 240*B*b
^2*c^2*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^8)*x^3
+ 6*(128*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4 - 40*B
*b^3*c*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c^4*d^8*
e - 320*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4 - 5*B*
b^4*d^4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b
*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(192*B*c^4*
```

```
d^9*e - 528*B*b*c^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 -
 9*A*b^4*d^4*e^6 - 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9
*A*b^4*d*e^9 - 24*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*
b*c^3)*d^4*e^6 - (397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*
c)*d^2*e^8)*x^3 + (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*
e^8 + 12*(169*B*b^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2
)*d^4*e^6 - (73*B*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 18
56*B*b*c^3*d^7*e^3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b
^3*c + 2*A*b^2*c^2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^
2 + b*x))/(c^3*d^10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 +
 (c^3*d^6*e^9 - 3*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4
*(c^3*d^7*e^8 - 3*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*
(c^3*d^8*e^7 - 3*b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c
^3*d^9*e^6 - 3*b*c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x), -1/192*(3
*(128*B*c^4*d^9 - 320*B*b*c^3*d^8*e + 240*B*b^2*c^2*d^7*e^2 - 40*B*b^3*c*d^
6*e^3 - 5*B*b^4*d^5*e^4 - 3*A*b^4*d^4*e^5 + (128*B*c^4*d^5*e^4 - 320*B*b*c^
3*d^4*e^5 + 240*B*b^2*c^2*d^3*e^6 - 40*B*b^3*c*d^2*e^7 - 5*B*b^4*d*e^8 - 3*
A*b^4*e^9)*x^4 + 4*(128*B*c^4*d^6*e^3 - 320*B*b*c^3*d^5*e^4 + 240*B*b^2*c^2
*d^4*e^5 - 40*B*b^3*c*d^3*e^6 - 5*B*b^4*d^2*e^7 - 3*A*b^4*d*e^8)*x^3 + 6*(1
28*B*c^4*d^7*e^2 - 320*B*b*c^3*d^6*e^3 + 240*B*b^2*c^2*d^5*e^4 - 40*B*b^3*c
*d^4*e^5 - 5*B*b^4*d^3*e^6 - 3*A*b^4*d^2*e^7)*x^2 + 4*(128*B*c^4*d^8*e - 32
0*B*b*c^3*d^7*e^2 + 240*B*b^2*c^2*d^6*e^3 - 40*B*b^3*c*d^5*e^4 - 5*B*b^4*d^
4*e^5 - 3*A*b^4*d^3*e^6)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*
e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 384*(B*c^4*d^10 - 3*B*b*c^3*d^9*e +
 3*B*b^2*c^2*d^8*e^2 - B*b^3*c*d^7*e^3 + (B*c^4*d^6*e^4 - 3*B*b*c^3*d^5*e^5
 + 3*B*b^2*c^2*d^4*e^6 - B*b^3*c*d^3*e^7)*x^4 + 4*(B*c^4*d^7*e^3 - 3*B*b*c^
3*d^6*e^4 + 3*B*b^2*c^2*d^5*e^5 - B*b^3*c*d^4*e^6)*x^3 + 6*(B*c^4*d^8*e^2 -
 3*B*b*c^3*d^7*e^3 + 3*B*b^2*c^2*d^6*e^4 - B*b^3*c*d^5*e^5)*x^2 + 4*(B*c^4*
d^9*e - 3*B*b*c^3*d^8*e^2 + 3*B*b^2*c^2*d^7*e^3 - B*b^3*c*d^6*e^4)*x)*sqrt(
-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (192*B*c^4*d^9*e - 528*B*b*c
^3*d^8*e^2 + 456*B*b^2*c^2*d^7*e^3 - 105*B*b^3*c*d^6*e^4 - 9*A*b^4*d^4*e^6
- 3*(5*B*b^4 - 3*A*b^3*c)*d^5*e^5 + (400*B*c^4*d^6*e^4 + 9*A*b^4*d*e^9 - 24
*(49*B*b*c^3 + 2*A*c^4)*d^5*e^5 + 6*(193*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 -
(397*B*b^3*c + 78*A*b^2*c^2)*d^3*e^7 + 3*(5*B*b^4 - A*b^3*c)*d^2*e^8)*x^3 +
 (832*B*c^4*d^7*e^3 - 2312*B*b*c^3*d^6*e^4 + 33*A*b^4*d^2*e^8 + 12*(169*B*b
^2*c^2 - 6*A*b*c^3)*d^5*e^5 - (475*B*b^3*c - 204*A*b^2*c^2)*d^4*e^6 - (73*B
*b^4 + 165*A*b^3*c)*d^3*e^7)*x^2 + (672*B*c^4*d^8*e^2 - 1856*B*b*c^3*d^7*e^
3 + 1614*B*b^2*c^2*d^6*e^4 - 33*A*b^4*d^3*e^7 - 3*(125*B*b^3*c + 2*A*b^2*c^
2)*d^5*e^5 - (55*B*b^4 - 39*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^3*d^
10*e^5 - 3*b*c^2*d^9*e^6 + 3*b^2*c*d^8*e^7 - b^3*d^7*e^8 + (c^3*d^6*e^9 - 3
*b*c^2*d^5*e^10 + 3*b^2*c*d^4*e^11 - b^3*d^3*e^12)*x^4 + 4*(c^3*d^7*e^8 - 3
*b*c^2*d^6*e^9 + 3*b^2*c*d^5*e^10 - b^3*d^4*e^11)*x^3 + 6*(c^3*d^8*e^7 - 3*
b*c^2*d^7*e^8 + 3*b^2*c*d^6*e^9 - b^3*d^5*e^10)*x^2 + 4*(c^3*d^9*e^6 - 3*b*
c^2*d^8*e^7 + 3*b^2*c*d^7*e^8 - b^3*d^6*e^9)*x)]
```

giac [B] time = 1.19, size = 1255, normalized size = 2.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/192*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*
e/(x*e + d)^2)*(2*(4*((26*B*c^4*d^8*e^23*sgn(1/(x*e + d)) - 95*B*b*c^3*d^7*
e^24*sgn(1/(x*e + d)) - 18*A*c^4*d^7*e^24*sgn(1/(x*e + d)) + 129*B*b^2*c^2*
d^6*e^25*sgn(1/(x*e + d)) + 63*A*b*c^3*d^6*e^25*sgn(1/(x*e + d)) - 77*B*b^3
*c*d^5*e^26*sgn(1/(x*e + d)) - 81*A*b^2*c^2*d^5*e^26*sgn(1/(x*e + d)) + 17*
B*b^4*d^4*e^27*sgn(1/(x*e + d)) + 45*A*b^3*c*d^4*e^27*sgn(1/(x*e + d)) - 9*
A*b^4*d^3*e^28*sgn(1/(x*e + d)))/(c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c
*d^4*e^30 - b^3*d^3*e^31) - 6*(B*c^4*d^9*e^24*sgn(1/(x*e + d)) - 4*B*b*c^3*
d^8*e^25*sgn(1/(x*e + d)) - A*c^4*d^8*e^25*sgn(1/(x*e + d)) + 6*B*b^2*c^2*d
^7*e^26*sgn(1/(x*e + d)) + 4*A*b*c^3*d^7*e^26*sgn(1/(x*e + d)) - 4*B*b^3*c*
d^6*e^27*sgn(1/(x*e + d)) - 6*A*b^2*c^2*d^6*e^27*sgn(1/(x*e + d)) + B*b^4*d
^5*e^28*sgn(1/(x*e + d)) + 4*A*b^3*c*d^5*e^28*sgn(1/(x*e + d)) - A*b^4*d^4*
e^29*sgn(1/(x*e + d)))*e^(-1)/((c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d
^4*e^30 - b^3*d^3*e^31)*(x*e + d)))*e^(-1)/(x*e + d) - (184*B*c^4*d^7*e^22*
sgn(1/(x*e + d)) - 608*B*b*c^3*d^6*e^23*sgn(1/(x*e + d)) - 72*A*c^4*d^6*e^2
3*sgn(1/(x*e + d)) + 723*B*b^2*c^2*d^5*e^24*sgn(1/(x*e + d)) + 216*A*b*c^3*
d^5*e^24*sgn(1/(x*e + d)) - 358*B*b^3*c*d^4*e^25*sgn(1/(x*e + d)) - 219*A*b
^2*c^2*d^4*e^25*sgn(1/(x*e + d)) + 59*B*b^4*d^3*e^26*sgn(1/(x*e + d)) + 78*
A*b^3*c*d^3*e^26*sgn(1/(x*e + d)) - 3*A*b^4*d^2*e^27*sgn(1/(x*e + d)))/(c^3
*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d^4*e^30 - b^3*d^3*e^31))*e^(-1)/(x*
e + d) + (400*B*c^4*d^6*e^21*sgn(1/(x*e + d)) - 1176*B*b*c^3*d^5*e^22*sgn(1
/(x*e + d)) - 48*A*c^4*d^5*e^22*sgn(1/(x*e + d)) + 1158*B*b^2*c^2*d^4*e^23*
sgn(1/(x*e + d)) + 120*A*b*c^3*d^4*e^23*sgn(1/(x*e + d)) - 397*B*b^3*c*d^3*
e^24*sgn(1/(x*e + d)) - 78*A*b^2*c^2*d^3*e^24*sgn(1/(x*e + d)) + 15*B*b^4*d
^2*e^25*sgn(1/(x*e + d)) - 3*A*b^3*c*d^2*e^25*sgn(1/(x*e + d)) + 9*A*b^4*d*
e^26*sgn(1/(x*e + d)))/(c^3*d^6*e^28 - 3*b*c^2*d^5*e^29 + 3*b^2*c*d^4*e^30
- b^3*d^3*e^31)) - (400*B*c^(7/2)*d^4 - 776*B*b*c^(5/2)*d^3*e - 48*A*c^(7/2
)*d^3*e + 382*B*b^2*c^(3/2)*d^2*e^2 + 72*A*b*c^(5/2)*d^2*e^2 - 15*B*b^3*sqr
t(c)*d*e^3 - 6*A*b^2*c^(3/2)*d*e^3 - 9*A*b^3*sqrt(c)*e^4)*sgn(1/(x*e + d))/
(c^2*d^4*e^7 - 2*b*c*d^3*e^8 + b^2*d^2*e^9))*e^2
```

maple [B] time = 0.08, size = 16396, normalized size = 38.95

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**5, x)
```

3.1180 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=269

$$-\frac{3b^4(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{256d^{7/2}(cd-be)^{7/2}}+\frac{3b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{128d^3(d+ex)^2(cd-be)^3}-$$

```
[Out] -1/16*(A*b*e-2*A*c*d+B*b*d)*(b*d+(-b*e+2*c*d)*x)*(c*x^2+b*x)^(3/2)/d^2/(-b*
e+c*d)^2/(e*x+d)^4+1/5*(-A*e+B*d)*(c*x^2+b*x)^(5/2)/d/(-b*e+c*d)/(e*x+d)^5-
3/256*b^4*(A*b*e-2*A*c*d+B*b*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-
b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(7/2)/(-b*e+c*d)^(7/2)+3/128*b^2*(A*b*e
-2*A*c*d+B*b*d)*(b*d+(-b*e+2*c*d)*x)*(c*x^2+b*x)^(1/2)/d^3/(-b*e+c*d)^3/(e*
x+d)^2
```

Rubi [A] time = 0.23, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {806, 720, 724, 206}

$$\frac{3b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)(Abe-2Acd+bBd)}{128d^3(d+ex)^2(cd-be)^3}-\frac{3b^4(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{256d^{7/2}(cd-be)^{7/2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] (3*b^2*(b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])
/(128*d^3*(c*d - b*e)^3*(d + e*x)^2) - ((b*B*d - 2*A*c*d + A*b*e)*(b*d + (2
*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(16*d^2*(c*d - b*e)^2*(d + e*x)^4) + ((
B*d - A*e)*(b*x + c*x^2)^(5/2))/(5*d*(c*d - b*e)*(d + e*x)^5) - (3*b^4*(b*B
*d - 2*A*c*d + A*b*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d -
 b*e]*Sqrt[b*x + c*x^2])])/(256*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{5d(cd-be)(d+ex)^5} - \frac{(bBd-2Acd+Abe)\int \frac{\left(bx+cx^2\right)^{3/2}}{(d+ex)^5}\,dx}{2d(cd-be)}$$

$$= -\frac{(bBd-2Acd+Abe)(bd+(2cd-be)x)\left(bx+cx^2\right)^{3/2}}{16d^2(cd-be)^2(d+ex)^4} + \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{5d(cd-be)(d+ex)^5}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

$$= \frac{3b^2(bBd-2Acd+Abe)(bd+(2cd-be)x)\sqrt{bx+cx^2}}{128d^3(cd-be)^3(d+ex)^2} - \frac{(bBd-2Acd+Abe)(bd+}{16d^2(cd-b}$$

Mathematica [A] time = 1.04, size = 268, normalized size = 1.00

$$\frac{(x(b+cx))^{3/2}\left(\frac{5(Abe-2Acd+bBd)\left(-\frac{3b^4\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{8d^{5/2}(cd-be)^{3/2}}-\frac{b^2\sqrt{x}\sqrt{b+cx}(5bd+3bex+2cdx)}{8d^2(d+ex)^2(cd-be)}-\frac{2x^{3/2}(b+cx)^{5/2}}{(d+ex)^4}+\frac{b\sqrt{x}(b+cx)^{5/2}}{(d+ex)^3(cd-be)}\right)}{8(b+cx)^{3/2}(be-cd)}+\frac{2x^{5/2}(b+cx)(Ae-Bd)}{(d+ex)^5}\right)}{10dx^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*((2*(-(B*d) + A*e)*x^(5/2)*(b + c*x))/(d + e*x)^5 + (5
*(b*B*d - 2*A*c*d + A*b*e)*((-2*x^(3/2)*(b + c*x)^(5/2))/(d + e*x)^4 + (b*S
qrt[x]*(b + c*x)^(5/2))/((c*d - b*e)*(d + e*x)^3) - (b^2*Sqrt[x]*Sqrt[b + c
*x]*(5*b*d + 2*c*d*x + 3*b*e*x))/(8*d^2*(c*d - b*e)*(d + e*x)^2) - (3*b^4*A
rcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(8*d^(5/2)*(c*d
- b*e)^(3/2))))/(8*(-(c*d) + b*e)*(b + c*x)^(3/2))))/(10*d*(-(c*d) + b*e)*x
^(3/2))
```

fricas [B] time = 0.72, size = 2338, normalized size = 8.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [-1/1280*(15*(A*b^5*d^5*e + (B*b^5 - 2*A*b^4*c)*d^6 + (A*b^5*e^6 + (B*b^5 -
 2*A*b^4*c)*d*e^5)*x^5 + 5*(A*b^5*d*e^5 + (B*b^5 - 2*A*b^4*c)*d^2*e^4)*x^4
+ 10*(A*b^5*d^2*e^4 + (B*b^5 - 2*A*b^4*c)*d^3*e^3)*x^3 + 10*(A*b^5*d^3*e^3
+ (B*b^5 - 2*A*b^4*c)*d^4*e^2)*x^2 + 5*(A*b^5*d^4*e^2 + (B*b^5 - 2*A*b^4*c)
*d^5*e)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 -
b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(15*A*b^5*d^5*e^2 - 15*(B*b^4*c -
2*A*b^3*c^2)*d^7 + 15*(B*b^5 - 3*A*b^4*c)*d^6*e - (128*B*c^5*d^7 + 15*A*b^5
*d*e^6 - 16*(29*B*b*c^4 - 2*A*c^5)*d^6*e + 8*(73*B*b^2*c^3 - 12*A*b*c^4)*d^
5*e^2 - 2*(129*B*b^3*c^2 - 38*A*b^2*c^3)*d^4*e^3 - (5*B*b^4*c - 8*A*b^3*c^2
)*d^3*e^4 + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^5)*x^4 - 2*(35*A*b^5*d^2*e^5 + 8*
(11*B*b*c^4 + 10*A*c^5)*d^7 - 8*(43*B*b^2*c^3 + 31*A*b*c^4)*d^6*e + (489*B*
b^3*c^2 + 214*A*b^2*c^3)*d^5*e^2 - (268*B*b^4*c - A*b^3*c^2)*d^4*e^3 + (35*
B*b^5 - 82*A*b^4*c)*d^3*e^4)*x^3 - 2*(64*A*b^5*d^3*e^4 + 4*(B*b^2*c^3 + 30*
A*b*c^4)*d^7 - (27*B*b^3*c^2 + 454*A*b^2*c^3)*d^6*e + 3*(29*B*b^4*c + 189*A
*b^3*c^2)*d^5*e^2 - (64*B*b^5 + 297*A*b^4*c)*d^4*e^3)*x^2 + 10*(7*A*b^5*d^4
*e^3 + (B*b^3*c^2 - 2*A*b^2*c^3)*d^7 - (8*B*b^4*c - 17*A*b^3*c^2)*d^6*e + (
7*B*b^5 - 22*A*b^4*c)*d^5*e^2)*x)*sqrt(c*x^2 + b*x))/(c^4*d^13 - 4*b*c^3*d^
12*e + 6*b^2*c^2*d^11*e^2 - 4*b^3*c*d^10*e^3 + b^4*d^9*e^4 + (c^4*d^8*e^5 -
 4*b*c^3*d^7*e^6 + 6*b^2*c^2*d^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*x^5 +
 5*(c^4*d^9*e^4 - 4*b*c^3*d^8*e^5 + 6*b^2*c^2*d^7*e^6 - 4*b^3*c*d^6*e^7 + b
^4*d^5*e^8)*x^4 + 10*(c^4*d^10*e^3 - 4*b*c^3*d^9*e^4 + 6*b^2*c^2*d^8*e^5 -
4*b^3*c*d^7*e^6 + b^4*d^6*e^7)*x^3 + 10*(c^4*d^11*e^2 - 4*b*c^3*d^10*e^3 +
6*b^2*c^2*d^9*e^4 - 4*b^3*c*d^8*e^5 + b^4*d^7*e^6)*x^2 + 5*(c^4*d^12*e - 4*
b*c^3*d^11*e^2 + 6*b^2*c^2*d^10*e^3 - 4*b^3*c*d^9*e^4 + b^4*d^8*e^5)*x), -1
/640*(15*(A*b^5*d^5*e + (B*b^5 - 2*A*b^4*c)*d^6 + (A*b^5*e^6 + (B*b^5 - 2*A
*b^4*c)*d*e^5)*x^5 + 5*(A*b^5*d*e^5 + (B*b^5 - 2*A*b^4*c)*d^2*e^4)*x^4 + 10
*(A*b^5*d^2*e^4 + (B*b^5 - 2*A*b^4*c)*d^3*e^3)*x^3 + 10*(A*b^5*d^3*e^3 + (B
*b^5 - 2*A*b^4*c)*d^4*e^2)*x^2 + 5*(A*b^5*d^4*e^2 + (B*b^5 - 2*A*b^4*c)*d^5
*e)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/
((c*d - b*e)*x)) + (15*A*b^5*d^5*e^2 - 15*(B*b^4*c - 2*A*b^3*c^2)*d^7 + 15*
(B*b^5 - 3*A*b^4*c)*d^6*e - (128*B*c^5*d^7 + 15*A*b^5*d*e^6 - 16*(29*B*b*c^
4 - 2*A*c^5)*d^6*e + 8*(73*B*b^2*c^3 - 12*A*b*c^4)*d^5*e^2 - 2*(129*B*b^3*c
^2 - 38*A*b^2*c^3)*d^4*e^3 - (5*B*b^4*c - 8*A*b^3*c^2)*d^3*e^4 + 5*(3*B*b^5
 - 7*A*b^4*c)*d^2*e^5)*x^4 - 2*(35*A*b^5*d^2*e^5 + 8*(11*B*b*c^4 + 10*A*c^5
)*d^7 - 8*(43*B*b^2*c^3 + 31*A*b*c^4)*d^6*e + (489*B*b^3*c^2 + 214*A*b^2*c^
3)*d^5*e^2 - (268*B*b^4*c - A*b^3*c^2)*d^4*e^3 + (35*B*b^5 - 82*A*b^4*c)*d^
3*e^4)*x^3 - 2*(64*A*b^5*d^3*e^4 + 4*(B*b^2*c^3 + 30*A*b*c^4)*d^7 - (27*B*b
^3*c^2 + 454*A*b^2*c^3)*d^6*e + 3*(29*B*b^4*c + 189*A*b^3*c^2)*d^5*e^2 - (6
4*B*b^5 + 297*A*b^4*c)*d^4*e^3)*x^2 + 10*(7*A*b^5*d^4*e^3 + (B*b^3*c^2 - 2*
A*b^2*c^3)*d^7 - (8*B*b^4*c - 17*A*b^3*c^2)*d^6*e + (7*B*b^5 - 22*A*b^4*c)*
d^5*e^2)*x)*sqrt(c*x^2 + b*x))/(c^4*d^13 - 4*b*c^3*d^12*e + 6*b^2*c^2*d^11*
e^2 - 4*b^3*c*d^10*e^3 + b^4*d^9*e^4 + (c^4*d^8*e^5 - 4*b*c^3*d^7*e^6 + 6*b
^2*c^2*d^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*x^5 + 5*(c^4*d^9*e^4 - 4*b*
c^3*d^8*e^5 + 6*b^2*c^2*d^7*e^6 - 4*b^3*c*d^6*e^7 + b^4*d^5*e^8)*x^4 + 10*(
c^4*d^10*e^3 - 4*b*c^3*d^9*e^4 + 6*b^2*c^2*d^8*e^5 - 4*b^3*c*d^7*e^6 + b^4*
d^6*e^7)*x^3 + 10*(c^4*d^11*e^2 - 4*b*c^3*d^10*e^3 + 6*b^2*c^2*d^9*e^4 - 4*
b^3*c*d^8*e^5 + b^4*d^7*e^6)*x^2 + 5*(c^4*d^12*e - 4*b*c^3*d^11*e^2 + 6*b^2
*c^2*d^10*e^3 - 4*b^3*c*d^9*e^4 + b^4*d^8*e^5)*x)]
```

giac [B] time = 0.70, size = 4214, normalized size = 15.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -3/128*(B*b^5*d - 2*A*b^4*c*d + A*b^5*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
 b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b
^2*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/640*(10240*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^6*B*c^(13/2)*d^9*e + 4096*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*c^7*d^10 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*c^6*d^8*e^2 +
 9728*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^6*d^9*e + 1024*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*A*c^7*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B
*b*c^(13/2)*d^10 + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^(11/2)*d^7*e^
3 - 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(11/2)*d^8*e^2 + 2560*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*c^(13/2)*d^8*e^2 - 11520*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^4*B*b^2*c^(11/2)*d^9*e + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^4*A*b*c^(13/2)*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^6*
d^10 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^5*d^6*e^4 - 21760*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^7*B*b*c^5*d^7*e^3 + 2560*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^7*A*c^6*d^7*e^3 - 38144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^5*
d^8*e^2 + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^6*d^8*e^2 - 21760*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^5*d^9*e + 2560*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^2*c^6*d^9*e + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^
3*c^(11/2)*d^10 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(9/2)*d^6*e
^4 + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^(11/2)*d^6*e^4 - 19200*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^(9/2)*d^7*e^3 - 1280*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^6*A*b*c^(11/2)*d^7*e^3 - 19200*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^4*B*b^3*c^(9/2)*d^8*e^2 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*
c^(11/2)*d^8*e^2 - 12800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*c^(9/2)*d^
9*e + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(11/2)*d^9*e + 1280*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c^5*d^10 - 3840*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^9*B*b*c^4*d^5*e^5 + 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c
^4*d^6*e^4 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b*c^5*d^6*e^4 + 19200
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^4*d^7*e^3 - 7936*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^5*A*b^2*c^5*d^7*e^3 + 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^3*B*b^4*c^4*d^8*e^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^5*d^8
*e^2 - 3360*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^4*d^9*e + 320*(sqrt(c)*
x - sqrt(c*x^2 + b*x))*A*b^4*c^5*d^9*e + 128*B*b^5*c^(9/2)*d^10 + 7680*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^8*B*b^2*c^(7/2)*d^5*e^5 - 3840*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^8*A*b*c^(9/2)*d^5*e^5 + 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*B*b^3*c^(7/2)*d^6*e^4 - 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c
^(9/2)*d^6*e^4 + 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c^(7/2)*d^7*
e^3 - 6400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^(9/2)*d^7*e^3 + 8240*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(7/2)*d^8*e^2 - 2400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^2*A*b^4*c^(9/2)*d^8*e^2 - 336*B*b^6*c^(7/2)*d^9*e + 32*A
*b^5*c^(9/2)*d^9*e + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^3*d^4*e
^6 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^3*c^3*d^5*e^5 - 3840*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^4*d^5*e^5 + 12800*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b^4*c^3*d^6*e^4 - 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b
^3*c^4*d^6*e^4 + 9120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^3*d^7*e^3 -
 1600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^4*d^7*e^3 + 2480*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))*B*b^6*c^3*d^8*e^2 - 640*(sqrt(c)*x - sqrt(c*x^2 + b*x
))*A*b^5*c^4*d^8*e^2 + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(5/2)
*d^4*e^6 + 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(7/2)*d^4*e^6 + 1
280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(7/2)*d^5*e^5 + 80*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^4*B*b^5*c^(5/2)*d^6*e^4 + 2400*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^4*A*b^4*c^(7/2)*d^6*e^4 + 840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6*c^(5/2)*d^7*e^3 + 160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(7/2)*
d^7*e^3 + 248*B*b^7*c^(5/2)*d^8*e^2 - 64*A*b^6*c^(7/2)*d^8*e^2 - 1280*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^2*d^3*e^7 - 1280*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^7*B*b^4*c^2*d^4*e^6 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b
^3*c^3*d^4*e^6 - 3548*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^5*c^2*d^5*e^5 +
 4280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^3*d^5*e^5 - 1600*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*B*b^6*c^2*d^6*e^4 + 2080*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^3*A*b^5*c^3*d^6*e^4 - 100*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^2*d
^7*e^3 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*c^3*d^7*e^3 - 2560*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^8*B*b^4*c^(3/2)*d^3*e^7 - 1280*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^8*A*b^3*c^(5/2)*d^3*e^7 - 3070*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^6*B*b^5*c^(3/2)*d^4*e^6 + 7420*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*c
^(5/2)*d^4*e^6 - 2670*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(3/2)*d^5*e
```

```
^5 + 2860*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(5/2)*d^5*e^5 - 650*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(3/2)*d^6*e^4 + 860*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^2*A*b^6*c^(5/2)*d^6*e^4 - 10*B*b^8*c^(3/2)*d^7*e^3 + 12*A*b
^7*c^(5/2)*d^7*e^3 - 2090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c*d^3*e^7
 - 4780*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^2*d^3*e^7 - 2114*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^5*B*b^6*c*d^4*e^6 + 1448*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*A*b^5*c^2*d^4*e^6 - 1070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*c*
d^5*e^5 + 540*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^2*d^5*e^5 - 150*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c*d^6*e^4 + 200*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*A*b^7*c^2*d^6*e^4 + 135*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^5*sqr
t(c)*d^2*e^8 - 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(3/2)*d^2*e^8
- 790*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*sqrt(c)*d^3*e^7 - 5330*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(3/2)*d^3*e^7 - 640*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^4*B*b^7*sqrt(c)*d^4*e^6 - 1390*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^4*A*b^6*c^(3/2)*d^4*e^6 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^8*sqrt
(c)*d^5*e^5 - 230*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^(3/2)*d^5*e^5 -
 15*B*b^9*sqrt(c)*d^6*e^4 + 20*A*b^8*c^(3/2)*d^6*e^4 + 15*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^9*B*b^5*d*e^9 - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^4*c
*d*e^9 + 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*d^2*e^8 + 330*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^7*A*b^5*c*d^2*e^8 - 128*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^5*B*b^7*d^3*e^7 - 2626*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c*d^3*e^
7 - 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*d^4*e^6 - 930*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^3*A*b^7*c*d^4*e^6 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*
b^9*d^5*e^5 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*c*d^5*e^5 + 135*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*sqrt(c)*d*e^9 + 490*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^6*A*b^6*sqrt(c)*d^2*e^8 - 640*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^4*A*b^7*sqrt(c)*d^3*e^7 - 210*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*sqrt
(c)*d^4*e^6 - 15*A*b^9*sqrt(c)*d^5*e^5 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^9*A*b^5*e^10 + 70*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*d*e^9 + 128*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^5*A*b^7*d^2*e^8 - 70*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^3*A*b^8*d^3*e^7 - 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*d^4*e^6)/(
(c^3*d^6*e^5 - 3*b*c^2*d^5*e^6 + 3*b^2*c*d^4*e^7 - b^3*d^3*e^8)*((sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b
*d)^5)
```

maple [**B**] time = 0.09, size = 22107, normalized size = 82.18

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^6, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x(b+cx))^{\frac{3}{2}}(A+Bx)}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**6, x)
```

3.1181 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=402

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)}{512d^4(d+ex)^2(cd-be)^4}+\left(bx+cx^2\right)^{3/2}(x(2cd-be)$$

```
[Out] 1/192*(24*A*c^2*d^2-12*b*c*d*(2*A*e+B*d)+b^2*e*(7*A*e+5*B*d))*(b*d+(-b*e+2*
c*d)*x)*(c*x^2+b*x)^(3/2)/d^3/(-b*e+c*d)^3/(e*x+d)^4+1/6*(-A*e+B*d)*(c*x^2+
b*x)^(5/2)/d/(-b*e+c*d)/(e*x+d)^6-1/60*(7*A*e*(-b*e+2*c*d)-B*d*(5*b*e+2*c*d
))*(c*x^2+b*x)^(5/2)/d^2/(-b*e+c*d)^2/(e*x+d)^5+1/1024*b^4*(24*A*c^2*d^2-12
*b*c*d*(2*A*e+B*d)+b^2*e*(7*A*e+5*B*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^
(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(9/2)/(-b*e+c*d)^(9/2)-1/512*b^
2*(24*A*c^2*d^2-12*b*c*d*(2*A*e+B*d)+b^2*e*(7*A*e+5*B*d))*(b*d+(-b*e+2*c*d)
*x)*(c*x^2+b*x)^(1/2)/d^4/(-b*e+c*d)^4/(e*x+d)^2
```

Rubi [A] time = 0.58, antiderivative size = 402, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = $\{834, 806, 720, 724, 206\}$

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)}{512d^4(d+ex)^2(cd-be)^4}+\left(bx+cx^2\right)^{3/2}(x(2cd-be)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -(b^2*(24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d + 7*A*e))*(b*d
+ (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])/(512*d^4*(c*d - b*e)^4*(d + e*x)^2) +
 ((24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d + 7*A*e))*(b*d + (2
*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(192*d^3*(c*d - b*e)^3*(d + e*x)^4) + (
(B*d - A*e)*(b*x + c*x^2)^(5/2))/(6*d*(c*d - b*e)*(d + e*x)^6) - ((7*A*e*(2
*c*d - b*e) - B*d*(2*c*d + 5*b*e))*(b*x + c*x^2)^(5/2))/(60*d^2*(c*d - b*e)
^2*(d + e*x)^5) + (b^4*(24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*
d + 7*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt
[b*x + c*x^2])])/(1024*d^(9/2)*(c*d - b*e)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx &= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{6d(cd-be)(d+ex)^6}-\frac{\int \frac{\left(\frac{1}{2}(-12Acd+b(5Bd+7Ae))-c(Bd-Ae)x\right)\left(bx+cx^2\right)^{3/2}}{(d+ex)^6}\,dx}{6d(cd-be)}\\ &= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{6d(cd-be)(d+ex)^6}-\frac{(7Ae(2cd-be)-Bd(2cd+5be))\left(bx+cx^2\right)^{5/2}}{60d^2(cd-be)^2(d+ex)^5}+\frac{\left(24A\right.}{}\\ &= \frac{\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\left(bx+cx^2\right)^{3/2}}{192d^3(cd-be)^3(d+ex)^4}\\ &= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx}}{512d^4(cd-be)^4(d+ex)^2}\\ &= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx}}{512d^4(cd-be)^4(d+ex)^2}\\ &= -\frac{b^2\left(24Ac^2d^2-12bcd(Bd+2Ae)+b^2e(5Bd+7Ae)\right)(bd+(2cd-be)x)\sqrt{bx+cx}}{512d^4(cd-be)^4(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 1.33, size = 352, normalized size = 0.88

$$\frac{(x(b+cx))^{3/2}\left(\frac{\left(b^2e(7Ae+5Bd)-12bcd(2Ae+Bd)+24Ac^2d^2\right)\left(-\frac{3b^4\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{8d^{5/2}(cd-be)^{3/2}}-\frac{b^2\sqrt{x}\sqrt{b+cx}(5bd+3bex+2cdx)}{8d^2(d+ex)^2(cd-be)}-\frac{2x^{3/2}(b+cx)^{5/2}}{(d+ex)^4}+\frac{b\sqrt{x}(b+cx)^{5/2}}{(d+ex)^3(cd-be)}\right)}{32d(b+cx)^{3/2}(cd-be)^2}-\right.}{6dx^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*(((-(B*d) + A*e)*x^(5/2)*(b + c*x))/(d + e*x)^6 - ((7*
A*e*(-2*c*d + b*e) + B*d*(2*c*d + 5*b*e))*x^(5/2)*(b + c*x))/(10*d*(c*d - b
*e)*(d + e*x)^5) + ((24*A*c^2*d^2 - 12*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d +
 7*A*e))*((-2*x^(3/2)*(b + c*x)^(5/2))/(d + e*x)^4 + (b*Sqrt[x]*(b + c*x)^(
5/2))/((c*d - b*e)*(d + e*x)^3) - (b^2*Sqrt[x]*Sqrt[b + c*x]*(5*b*d + 2*c*d
*x + 3*b*e*x))/(8*d^2*(c*d - b*e)*(d + e*x)^2) - (3*b^4*ArcTanh[(Sqrt[c*d -
 b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(8*d^(5/2)*(c*d - b*e)^(3/2))))/(3
2*d*(c*d - b*e)^2*(b + c*x)^(3/2))))/(6*d*(-(c*d) + b*e)*x^(3/2))
```

fricas [B] time = 0.73, size = 3734, normalized size = 9.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] [1/15360*(15*(7*A*b^6*d^6*e^2 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^8 + (5*B*b^6 -
 24*A*b^5*c)*d^7*e + (7*A*b^6*e^8 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^2*e^6 + (5
*B*b^6 - 24*A*b^5*c)*d*e^7)*x^6 + 6*(7*A*b^6*d*e^7 - 12*(B*b^5*c - 2*A*b^4*
c^2)*d^3*e^5 + (5*B*b^6 - 24*A*b^5*c)*d^2*e^6)*x^5 + 15*(7*A*b^6*d^2*e^6 -
12*(B*b^5*c - 2*A*b^4*c^2)*d^4*e^4 + (5*B*b^6 - 24*A*b^5*c)*d^3*e^5)*x^4 +
20*(7*A*b^6*d^3*e^5 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^5*e^3 + (5*B*b^6 - 24*A*
b^5*c)*d^4*e^4)*x^3 + 15*(7*A*b^6*d^4*e^4 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^6*
e^2 + (5*B*b^6 - 24*A*b^5*c)*d^5*e^3)*x^2 + 6*(7*A*b^6*d^5*e^3 - 12*(B*b^5*
c - 2*A*b^4*c^2)*d^7*e + (5*B*b^6 - 24*A*b^5*c)*d^6*e^2)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) + 2*(105*A*b^6*d^6*e^3 + 180*(B*b^4*c^2 - 2*A*b^3*c^3)*d^9 - 15*
(17*B*b^5*c - 48*A*b^4*c^2)*d^8*e + 15*(5*B*b^6 - 31*A*b^5*c)*d^7*e^2 + (25
6*B*c^6*d^8*e - 105*A*b^6*d*e^8 - 64*(17*B*b*c^5 - 2*A*c^6)*d^7*e^2 + 16*(1
03*B*b^2*c^4 - 28*A*b*c^5)*d^6*e^3 - 32*(28*B*b^3*c^3 - 13*A*b^2*c^4)*d^5*e
^4 - 10*(5*B*b^4*c^2 - 8*A*b^3*c^3)*d^4*e^5 + (205*B*b^5*c - 466*A*b^4*c^2)
*d^3*e^6 - 5*(15*B*b^6 - 79*A*b^5*c)*d^2*e^7)*x^5 + (1536*B*c^6*d^9 - 595*A
*b^6*d^2*e^7 - 256*(26*B*b*c^5 - 3*A*c^6)*d^8*e + 64*(163*B*b^2*c^4 - 43*A*
b*c^5)*d^7*e^2 - 40*(155*B*b^3*c^3 - 68*A*b^2*c^4)*d^6*e^3 + 4*(37*B*b^4*c^
2 + 68*A*b^3*c^3)*d^5*e^4 + (1165*B*b^5*c - 2656*A*b^4*c^2)*d^4*e^5 - (425*
B*b^6 - 2243*A*b^5*c)*d^3*e^6)*x^4 - 6*(231*A*b^6*d^3*e^6 - 32*(11*B*b*c^5
+ 10*A*c^6)*d^9 + 8*(215*B*b^2*c^4 + 148*A*b*c^5)*d^8*e - 4*(817*B*b^3*c^3
+ 318*A*b^2*c^4)*d^7*e^2 + 2*(1387*B*b^4*c^2 + 18*A*b^3*c^3)*d^6*e^3 - (103
9*B*b^5*c - 1014*A*b^4*c^2)*d^5*e^4 + 3*(55*B*b^6 - 291*A*b^5*c)*d^4*e^5)*x
^3 - 2*(843*A*b^6*d^4*e^5 - 48*(B*b^2*c^4 + 30*A*b*c^5)*d^9 + 4*(101*B*b^3*
c^3 + 1704*A*b^2*c^4)*d^8*e - 4*(421*B*b^4*c^2 + 2879*A*b^3*c^3)*d^7*e^2 +
(1823*B*b^5*c + 9712*A*b^4*c^2)*d^6*e^3 - 5*(99*B*b^6 + 883*A*b^5*c)*d^5*e^
4)*x^2 + 5*(119*A*b^6*d^5*e^4 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^9 + 14*(17*B
*b^4*c^2 - 36*A*b^3*c^3)*d^8*e - (299*B*b^5*c - 878*A*b^4*c^2)*d^7*e^2 + (8
5*B*b^6 - 541*A*b^5*c)*d^6*e^3)*x)*sqrt(c*x^2 + b*x))/(c^5*d^16 - 5*b*c^4*d
^15*e + 10*b^2*c^3*d^14*e^2 - 10*b^3*c^2*d^13*e^3 + 5*b^4*c*d^12*e^4 - b^5*
d^11*e^5 + (c^5*d^10*e^6 - 5*b*c^4*d^9*e^7 + 10*b^2*c^3*d^8*e^8 - 10*b^3*c^
2*d^7*e^9 + 5*b^4*c*d^6*e^10 - b^5*d^5*e^11)*x^6 + 6*(c^5*d^11*e^5 - 5*b*c^
4*d^10*e^6 + 10*b^2*c^3*d^9*e^7 - 10*b^3*c^2*d^8*e^8 + 5*b^4*c*d^7*e^9 - b^
5*d^6*e^10)*x^5 + 15*(c^5*d^12*e^4 - 5*b*c^4*d^11*e^5 + 10*b^2*c^3*d^10*e^6
 - 10*b^3*c^2*d^9*e^7 + 5*b^4*c*d^8*e^8 - b^5*d^7*e^9)*x^4 + 20*(c^5*d^13*e
^3 - 5*b*c^4*d^12*e^4 + 10*b^2*c^3*d^11*e^5 - 10*b^3*c^2*d^10*e^6 + 5*b^4*c
*d^9*e^7 - b^5*d^8*e^8)*x^3 + 15*(c^5*d^14*e^2 - 5*b*c^4*d^13*e^3 + 10*b^2*
c^3*d^12*e^4 - 10*b^3*c^2*d^11*e^5 + 5*b^4*c*d^10*e^6 - b^5*d^9*e^7)*x^2 +
6*(c^5*d^15*e - 5*b*c^4*d^14*e^2 + 10*b^2*c^3*d^13*e^3 - 10*b^3*c^2*d^12*e^
4 + 5*b^4*c*d^11*e^5 - b^5*d^10*e^6)*x), 1/7680*(15*(7*A*b^6*d^6*e^2 - 12*(
B*b^5*c - 2*A*b^4*c^2)*d^8 + (5*B*b^6 - 24*A*b^5*c)*d^7*e + (7*A*b^6*e^8 -
12*(B*b^5*c - 2*A*b^4*c^2)*d^2*e^6 + (5*B*b^6 - 24*A*b^5*c)*d*e^7)*x^6 + 6*
(7*A*b^6*d*e^7 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^3*e^5 + (5*B*b^6 - 24*A*b^5*c
)*d^2*e^6)*x^5 + 15*(7*A*b^6*d^2*e^6 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^4*e^4 +
 (5*B*b^6 - 24*A*b^5*c)*d^3*e^5)*x^4 + 20*(7*A*b^6*d^3*e^5 - 12*(B*b^5*c -
2*A*b^4*c^2)*d^5*e^3 + (5*B*b^6 - 24*A*b^5*c)*d^4*e^4)*x^3 + 15*(7*A*b^6*d^
4*e^4 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^6*e^2 + (5*B*b^6 - 24*A*b^5*c)*d^5*e^3
)*x^2 + 6*(7*A*b^6*d^5*e^3 - 12*(B*b^5*c - 2*A*b^4*c^2)*d^7*e + (5*B*b^6 -
24*A*b^5*c)*d^6*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*s
qrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (105*A*b^6*d^6*e^3 + 180*(B*b^4*c^2 - 2
*A*b^3*c^3)*d^9 - 15*(17*B*b^5*c - 48*A*b^4*c^2)*d^8*e + 15*(5*B*b^6 - 31*A
*b^5*c)*d^7*e^2 + (256*B*c^6*d^8*e - 105*A*b^6*d*e^8 - 64*(17*B*b*c^5 - 2*A
*c^6)*d^7*e^2 + 16*(103*B*b^2*c^4 - 28*A*b*c^5)*d^6*e^3 - 32*(28*B*b^3*c^3
- 13*A*b^2*c^4)*d^5*e^4 - 10*(5*B*b^4*c^2 - 8*A*b^3*c^3)*d^4*e^5 + (205*B*b
^5*c - 466*A*b^4*c^2)*d^3*e^6 - 5*(15*B*b^6 - 79*A*b^5*c)*d^2*e^7)*x^5 + (1
536*B*c^6*d^9 - 595*A*b^6*d^2*e^7 - 256*(26*B*b*c^5 - 3*A*c^6)*d^8*e + 64*(
163*B*b^2*c^4 - 43*A*b*c^5)*d^7*e^2 - 40*(155*B*b^3*c^3 - 68*A*b^2*c^4)*d^6
*e^3 + 4*(37*B*b^4*c^2 + 68*A*b^3*c^3)*d^5*e^4 + (1165*B*b^5*c - 2656*A*b^4
*c^2)*d^4*e^5 - (425*B*b^6 - 2243*A*b^5*c)*d^3*e^6)*x^4 - 6*(231*A*b^6*d^3*
e^6 - 32*(11*B*b*c^5 + 10*A*c^6)*d^9 + 8*(215*B*b^2*c^4 + 148*A*b*c^5)*d^8*
e - 4*(817*B*b^3*c^3 + 318*A*b^2*c^4)*d^7*e^2 + 2*(1387*B*b^4*c^2 + 18*A*b^
3*c^3)*d^6*e^3 - (1039*B*b^5*c - 1014*A*b^4*c^2)*d^5*e^4 + 3*(55*B*b^6 - 29
1*A*b^5*c)*d^4*e^5)*x^3 - 2*(843*A*b^6*d^4*e^5 - 48*(B*b^2*c^4 + 30*A*b*c^5
)*d^9 + 4*(101*B*b^3*c^3 + 1704*A*b^2*c^4)*d^8*e - 4*(421*B*b^4*c^2 + 2879*
A*b^3*c^3)*d^7*e^2 + (1823*B*b^5*c + 9712*A*b^4*c^2)*d^6*e^3 - 5*(99*B*b^6
+ 883*A*b^5*c)*d^5*e^4)*x^2 + 5*(119*A*b^6*d^5*e^4 - 24*(B*b^3*c^3 - 2*A*b^
2*c^4)*d^9 + 14*(17*B*b^4*c^2 - 36*A*b^3*c^3)*d^8*e - (299*B*b^5*c - 878*A*
b^4*c^2)*d^7*e^2 + (85*B*b^6 - 541*A*b^5*c)*d^6*e^3)*x)*sqrt(c*x^2 + b*x))/
(c^5*d^16 - 5*b*c^4*d^15*e + 10*b^2*c^3*d^14*e^2 - 10*b^3*c^2*d^13*e^3 + 5*
b^4*c*d^12*e^4 - b^5*d^11*e^5 + (c^5*d^10*e^6 - 5*b*c^4*d^9*e^7 + 10*b^2*c^
3*d^8*e^8 - 10*b^3*c^2*d^7*e^9 + 5*b^4*c*d^6*e^10 - b^5*d^5*e^11)*x^6 + 6*(
c^5*d^11*e^5 - 5*b*c^4*d^10*e^6 + 10*b^2*c^3*d^9*e^7 - 10*b^3*c^2*d^8*e^8 +
 5*b^4*c*d^7*e^9 - b^5*d^6*e^10)*x^5 + 15*(c^5*d^12*e^4 - 5*b*c^4*d^11*e^5
+ 10*b^2*c^3*d^10*e^6 - 10*b^3*c^2*d^9*e^7 + 5*b^4*c*d^8*e^8 - b^5*d^7*e^9)
*x^4 + 20*(c^5*d^13*e^3 - 5*b*c^4*d^12*e^4 + 10*b^2*c^3*d^11*e^5 - 10*b^3*c
^2*d^10*e^6 + 5*b^4*c*d^9*e^7 - b^5*d^8*e^8)*x^3 + 15*(c^5*d^14*e^2 - 5*b*c
^4*d^13*e^3 + 10*b^2*c^3*d^12*e^4 - 10*b^3*c^2*d^11*e^5 + 5*b^4*c*d^10*e^6
- b^5*d^9*e^7)*x^2 + 6*(c^5*d^15*e - 5*b*c^4*d^14*e^2 + 10*b^2*c^3*d^13*e^3
 - 10*b^3*c^2*d^12*e^4 + 5*b^4*c*d^11*e^5 - b^5*d^10*e^6)*x)]
```

giac [B] time = 0.81, size = 5748, normalized size = 14.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/512*(12*B*b^5*c*d^2 - 24*A*b^4*c^2*d^2 - 5*B*b^6*d*e + 24*A*b^5*c*d*e -
7*A*b^6*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-
c*d^2 + b*d*e))/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5
*e^3 + b^4*d^4*e^4)*sqrt(-c*d^2 + b*d*e)) + 1/7680*(49152*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^7*B*c^8*d^11*e + 16384*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*c
^(17/2)*d^12 + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*c^(15/2)*d^10*e^2
+ 69632*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b*c^(15/2)*d^11*e + 8192*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^6*A*c^(17/2)*d^11*e + 49152*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^5*B*b*c^8*d^12 + 40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^7*d
^9*e^3 - 36864*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b*c^7*d^10*e^2 + 24576*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*c^8*d^10*e^2 - 36864*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*B*b^2*c^7*d^11*e + 24576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A
*b*c^8*d^11*e + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(15/2)*d^12
 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^(13/2)*d^8*e^4 - 138240*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(13/2)*d^9*e^3 + 30720*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^8*A*c^(15/2)*d^9*e^3 - 254976*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^6*B*b^2*c^(13/2)*d^10*e^2 + 40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b
*c^(15/2)*d^10*e^2 - 138240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(13/2
)*d^11*e + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(15/2)*d^11*e +
40960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*c^7*d^12 - 117760*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^9*B*b*c^6*d^8*e^4 + 20480*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^9*A*c^7*d^8*e^4 - 211968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^2*c^6*d^
9*e^3 - 211968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^6*d^10*e^2 - 11776
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c^6*d^11*e + 20480*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^3*A*b^3*c^7*d^11*e + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*B*b^4*c^(13/2)*d^12 - 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b*c^(1
1/2)*d^7*e^5 - 46080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b*c^(13/2)*d^8*e^4
 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(11/2)*d^9*e^3 - 101376*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^(13/2)*d^9*e^3 - 46080*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^4*A*b^3*c^(13/2)*d^10*e^2 - 48384*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*B*b^5*c^(11/2)*d^11*e + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*A*b^4*c^(13/2)*d^11*e + 3072*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*c^6*d
^12 + 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^2*c^5*d^7*e^5 - 81920*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^6*d^7*e^5 + 276480*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^7*B*b^3*c^5*d^8*e^4 - 119808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*A*b^2*c^6*d^8*e^4 + 276480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^4*c^5*d^9
*e^3 - 119808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*c^6*d^9*e^3 + 80640*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5*c^5*d^10*e^2 - 43520*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^3*A*b^4*c^6*d^10*e^2 - 9984*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^6*c^5*d^11*e + 1536*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*c^6*d^11*e
 + 256*B*b^6*c^(11/2)*d^12 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^2*
c^(9/2)*d^6*e^6 + 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^3*c^(9/2)*d^
7*e^5 - 122880*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^2*c^(11/2)*d^7*e^5 + 2
30400*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^4*c^(9/2)*d^8*e^4 - 55296*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(11/2)*d^8*e^4 + 164160*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^4*B*b^5*c^(9/2)*d^9*e^3 - 51840*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*A*b^4*c^(11/2)*d^9*e^3 + 43968*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^6*c^(9/2)*d^10*e^2 - 18432*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(11
/2)*d^10*e^2 - 832*B*b^7*c^(9/2)*d^11*e + 128*A*b^6*c^(11/2)*d^11*e + 11264
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^4*d^6*e^6 + 122880*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^9*A*b^2*c^5*d^6*e^6 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^7*B*b^4*c^4*d^7*e^5 - 12288*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^
5*d^7*e^5 + 34560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^5*c^4*d^8*e^4 + 414
72*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^4*c^5*d^8*e^4 + 36160*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^3*B*b^6*c^4*d^9*e^3 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^3*A*b^5*c^5*d^9*e^3 + 9792*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^4*d^
10*e^2 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^6*c^5*d^10*e^2 - 61440*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^3*c^(7/2)*d^5*e^7 + 337920*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^8*A*b^3*c^(9/2)*d^6*e^6 - 84192*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^6*B*b^5*c^(7/2)*d^7*e^5 + 100800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*A*b^4*c^(9/2)*d^7*e^5 - 38160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(
7/2)*d^8*e^4 + 60480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(9/2)*d^8*e^
4 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(7/2)*d^9*e^3 + 3840*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(9/2)*d^9*e^3 + 816*B*b^8*c^(7/2)*d^10
*e^2 - 320*A*b^7*c^(9/2)*d^10*e^2 - 143360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
9*B*b^4*c^3*d^5*e^7 - 81920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^3*c^4*d^5
*e^7 - 85536*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^3*d^6*e^6 + 336960*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^4*d^6*e^6 - 82656*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^5*B*b^6*c^3*d^7*e^5 + 87360*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*A*b^5*c^4*d^7*e^5 - 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^7*c^3*d^
8*e^4 + 33920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^4*d^8*e^4 - 960*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c^3*d^9*e^3 + 1152*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*A*b^7*c^4*d^9*e^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b
^4*c^(5/2)*d^4*e^8 - 117720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^5*c^(5/2)
```

```
*d^5*e^7 - 317520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c^(7/2)*d^5*e^7 -
 58936*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*c^(5/2)*d^6*e^6 + 95424*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(7/2)*d^6*e^6 - 34920*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^7*c^(5/2)*d^7*e^5 + 15120*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^6*c^(7/2)*d^7*e^5 - 8280*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^
8*c^(5/2)*d^8*e^4 + 11136*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^7*c^(7/2)*d
^8*e^4 - 80*B*b^9*c^(5/2)*d^9*e^3 + 96*A*b^8*c^(7/2)*d^9*e^3 + 54960*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*c^2*d^4*e^8 + 2720*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^9*A*b^4*c^3*d^4*e^8 - 18408*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b
^6*c^2*d^5*e^7 - 419328*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^5*c^3*d^5*e^7
 - 1128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^7*c^2*d^6*e^6 - 71808*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c^3*d^6*e^6 - 4680*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^3*B*b^8*c^2*d^7*e^5 - 18080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^
7*c^3*d^7*e^5 - 1560*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^9*c^2*d^8*e^4 + 21
12*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^8*c^3*d^8*e^4 + 1980*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^10*B*b^5*c^(3/2)*d^3*e^9 - 3960*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^10*A*b^4*c^(5/2)*d^3*e^9 + 62070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*
b^6*c^(3/2)*d^4*e^8 + 99480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*c^(5/2)
*d^4*e^8 + 29608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^7*c^(3/2)*d^5*e^7 -
242840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*c^(5/2)*d^5*e^7 + 15420*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^4*B*b^8*c^(3/2)*d^6*e^6 - 64440*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*A*b^7*c^(5/2)*d^6*e^6 + 1740*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^2*B*b^9*c^(3/2)*d^7*e^5 - 12384*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^
8*c^(5/2)*d^7*e^5 - 130*B*b^10*c^(3/2)*d^8*e^4 + 176*A*b^9*c^(5/2)*d^8*e^4
+ 180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^5*c*d^2*e^10 - 360*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^11*A*b^4*c^2*d^2*e^10 - 2680*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^9*B*b^6*c*d^3*e^9 + 15720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^5*c^
2*d^3*e^9 + 32064*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^7*c*d^4*e^8 + 17052
0*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*c^2*d^4*e^8 + 19944*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^5*B*b^8*c*d^5*e^7 - 47400*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^5*A*b^7*c^2*d^5*e^7 + 7180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^9*c*d^6*
e^6 - 16320*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^8*c^2*d^6*e^6 + 720*(sqrt
(c)*x - sqrt(c*x^2 + b*x))*B*b^10*c*d^7*e^5 - 3120*(sqrt(c)*x - sqrt(c*x^2
+ b*x))*A*b^9*c^2*d^7*e^5 - 825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^6*sq
rt(c)*d^2*e^10 + 3960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^5*c^(3/2)*d^2*
e^10 - 3825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^7*sqrt(c)*d^3*e^9 + 6390*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^6*c^(3/2)*d^3*e^9 + 8430*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^6*B*b^8*sqrt(c)*d^4*e^8 + 115328*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^6*A*b^7*c^(3/2)*d^4*e^8 + 4950*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*
B*b^9*sqrt(c)*d^5*e^7 + 14460*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^8*c^(3/
2)*d^5*e^7 + 1275*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^10*sqrt(c)*d^6*e^6
+ 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^9*c^(3/2)*d^6*e^6 + 75*B*b^11*s
qrt(c)*d^7*e^5 - 290*A*b^10*c^(3/2)*d^7*e^5 - 75*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^11*B*b^6*d*e^11 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A*b^5*c*d*e^
11 - 425*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^7*d^2*e^10 - 3140*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^9*A*b^6*c*d^2*e^10 - 990*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^7*B*b^8*d^3*e^9 - 13896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^7*c*d^3*e
^9 + 990*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^9*d^4*e^8 + 38784*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^5*A*b^8*c*d^4*e^8 + 425*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^3*B*b^10*d^5*e^7 + 9440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^9*c*d^5*e^
7 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^11*d^6*e^6 + 900*(sqrt(c)*x - sq
rt(c*x^2 + b*x))*A*b^10*c*d^6*e^6 - 1155*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10
*A*b^6*sqrt(c)*d*e^11 - 5355*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^7*sqrt(c
)*d^2*e^10 - 9702*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^8*sqrt(c)*d^3*e^9 +
 6930*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^9*sqrt(c)*d^4*e^8 + 1785*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^2*A*b^10*sqrt(c)*d^5*e^7 + 105*A*b^11*sqrt(c)*d^6
*e^6 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A*b^6*e^12 - 595*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^9*A*b^7*d*e^11 - 1386*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*A*b^8*d^2*e^10 - 1686*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^9*d^3*e^9 + 59
```

```
5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^10*d^4*e^8 + 105*(sqrt(c)*x - sqrt(
c*x^2 + b*x))*A*b^11*d^5*e^7)/((c^4*d^8*e^5 - 4*b*c^3*d^7*e^6 + 6*b^2*c^2*d
^6*e^7 - 4*b^3*c*d^5*e^8 + b^4*d^4*e^9)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^6)
```

maple [B] time = 0.10, size = 29243, normalized size = 72.74

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{7}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**7, x)
```

3.1182 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=565

$$\frac{\left(bx+cx^2\right)^{5/2}\left(Bd\left(-35b^2e^2+90bcde+8c^2d^2\right)-3Ae\left(21b^2e^2-68bcde+68c^2d^2\right)\right)}{840d^3(d+ex)^5(cd-be)^3}-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+b}{}$$

```
[Out] 1/384*(48*A*c^3*d^3-24*b*c^2*d^2*(3*A*e+B*d)-b^3*e^2*(9*A*e+5*B*d)+2*b^2*c*
d*e*(21*A*e+10*B*d))*(b*d+(-b*e+2*c*d)*x)*(c*x^2+b*x)^(3/2)/d^4/(-b*e+c*d)^
4/(e*x+d)^4+1/7*(-A*e+B*d)*(c*x^2+b*x)^(5/2)/d/(-b*e+c*d)/(e*x+d)^7-1/84*(9
*A*e*(-b*e+2*c*d)-B*d*(5*b*e+4*c*d))*(c*x^2+b*x)^(5/2)/d^2/(-b*e+c*d)^2/(e*
x+d)^6+1/840*(B*d*(-35*b^2*e^2+90*b*c*d*e+8*c^2*d^2)-3*A*e*(21*b^2*e^2-68*b
*c*d*e+68*c^2*d^2))*(c*x^2+b*x)^(5/2)/d^3/(-b*e+c*d)^3/(e*x+d)^5+1/2048*b^4
*(48*A*c^3*d^3-24*b*c^2*d^2*(3*A*e+B*d)-b^3*e^2*(9*A*e+5*B*d)+2*b^2*c*d*e*(
21*A*e+10*B*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(
c*x^2+b*x)^(1/2))/d^(11/2)/(-b*e+c*d)^(11/2)-1/1024*b^2*(48*A*c^3*d^3-24*b*
c^2*d^2*(3*A*e+B*d)-b^3*e^2*(9*A*e+5*B*d)+2*b^2*c*d*e*(21*A*e+10*B*d))*(b*d
+(-b*e+2*c*d)*x)*(c*x^2+b*x)^(1/2)/d^5/(-b*e+c*d)^5/(e*x+d)^2
```

Rubi [A] time = 1.01, antiderivative size = 565, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {834, 806, 720, 724, 206}

$$-\frac{b^2\sqrt{bx+cx^2}\,(x(2cd-be)+bd)\left(2b^2cde(21Ae+10Bd)+b^3\left(-e^2\right)(9Ae+5Bd)-24bc^2d^2(3Ae+Bd)+48Ac^3d^3}{1024d^5(d+ex)^2(cd-be)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -(b^2*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(5*B*d + 9*A*e)
+ 2*b^2*c*d*e*(10*B*d + 21*A*e))*(b*d + (2*c*d - b*e)*x)*Sqrt[b*x + c*x^2])
/(1024*d^5*(c*d - b*e)^5*(d + e*x)^2) + ((48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d
+ 3*A*e) - b^3*e^2*(5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*(b*d +
(2*c*d - b*e)*x)*(b*x + c*x^2)^(3/2))/(384*d^4*(c*d - b*e)^4*(d + e*x)^4) +
 ((B*d - A*e)*(b*x + c*x^2)^(5/2))/(7*d*(c*d - b*e)*(d + e*x)^7) - ((9*A*e*
(2*c*d - b*e) - B*d*(4*c*d + 5*b*e))*(b*x + c*x^2)^(5/2))/(84*d^2*(c*d - b*
e)^2*(d + e*x)^6) + ((B*d*(8*c^2*d^2 + 90*b*c*d*e - 35*b^2*e^2) - 3*A*e*(68
*c^2*d^2 - 68*b*c*d*e + 21*b^2*e^2))*(b*x + c*x^2)^(5/2))/(840*d^3*(c*d - b
*e)^3*(d + e*x)^5) + (b^4*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*
e^2*(5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*ArcTanh[(b*d + (2*c*d
- b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2048*d^(11/2)*(c
*d - b*e)^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^8}\,dx = \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{\int \frac{\left(\frac{1}{2}(-14Acd+b(5Bd+9Ae))-2c(Bd-Ae)x\right)\left(bx+cx^2\right)^{3/2}}{(d+ex)^7}\,dx}{7d(cd-be)}$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{(9Ae(2cd-be)-Bd(4cd+5be))\left(bx+cx^2\right)^{5/2}}{84d^2(cd-be)^2(d+ex)^6} +$$

$$= \frac{(Bd-Ae)\left(bx+cx^2\right)^{5/2}}{7d(cd-be)(d+ex)^7} - \frac{(9Ae(2cd-be)-Bd(4cd+5be))\left(bx+cx^2\right)^{5/2}}{84d^2(cd-be)^2(d+ex)^6} +$$

$$= \frac{\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae)\right)}{384d^4(cd-be)^4(d+ex)^4}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

$$= -\frac{b^2\left(48Ac^3d^3-24bc^2d^2(Bd+3Ae)-b^3e^2(5Bd+9Ae)+2b^2cde(10Bd+21Ae}{1024d^5(cd-be)^5(d+ex)^2}$$

Mathematica [**A**] time = 3.51, size = 505, normalized size = 0.89

$$\frac{(x(b+cx))^{3/2}\Bigg(-\frac{x^{5/2}(b+cx)\left(Bd\left(-35b^2e^2+90bcde+8c^2d^2\right)-3Ae\left(21b^2e^2-68bcde+68c^2d^2\right)\right)}{120d^2(d+ex)^5(cd-be)^2}-\frac{7\left(b^3\left(-e^2\right)(9Ae+5Bd)+2b^2cde(21Ae+10Bd)-24bc^2d^2(}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] ((x*(b + c*x))^(3/2)*(-(((B*d - A*e)*x^(5/2)*(b + c*x))/(d + e*x)^7) - ((9*
A*e*(-2*c*d + b*e) + B*d*(4*c*d + 5*b*e))*x^(5/2)*(b + c*x))/(12*d*(c*d - b
*e)*(d + e*x)^6) - ((B*d*(8*c^2*d^2 + 90*b*c*d*e - 35*b^2*e^2) - 3*A*e*(68*
c^2*d^2 - 68*b*c*d*e + 21*b^2*e^2))*x^(5/2)*(b + c*x))/(120*d^2*(c*d - b*e)
^2*(d + e*x)^5) - (7*(48*A*c^3*d^3 - 24*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(
5*B*d + 9*A*e) + 2*b^2*c*d*e*(10*B*d + 21*A*e))*(16*d^(5/2)*(c*d - b*e)^(3/
2)*x^(3/2)*(b + c*x)^(5/2) - b*(d + e*x)*(8*d^(5/2)*Sqrt[c*d - b*e]*Sqrt[x]
*(b + c*x)^(5/2) - b*(d + e*x)*(2*d^(3/2)*Sqrt[c*d - b*e]*Sqrt[x]*(b + c*x)
^(3/2) + 3*b*(d + e*x)*(Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[x]*Sqrt[b + c*x] + b*(
d + e*x)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])))))/(3
072*d^(9/2)*(c*d - b*e)^(9/2)*(b + c*x)^(3/2)*(d + e*x)^4)))/(7*d*(-(c*d) +
 b*e)*x^(3/2))
```

fricas [**B**] time = 0.88, size = 5398, normalized size = 9.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] [-1/215040*(105*(9*A*b^7*d^7*e^3 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^10 - 4*(5
*B*b^6*c - 18*A*b^5*c^2)*d^9*e + (5*B*b^7 - 42*A*b^6*c)*d^8*e^2 + (9*A*b^7*
e^10 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^3*e^7 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*
d^2*e^8 + (5*B*b^7 - 42*A*b^6*c)*d*e^9)*x^7 + 7*(9*A*b^7*d*e^9 + 24*(B*b^5*
c^2 - 2*A*b^4*c^3)*d^4*e^6 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^3*e^7 + (5*B*b^
7 - 42*A*b^6*c)*d^2*e^8)*x^6 + 21*(9*A*b^7*d^2*e^8 + 24*(B*b^5*c^2 - 2*A*b^
4*c^3)*d^5*e^5 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^4*e^6 + (5*B*b^7 - 42*A*b^6
*c)*d^3*e^7)*x^5 + 35*(9*A*b^7*d^3*e^7 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^6*e
^4 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^5*e^5 + (5*B*b^7 - 42*A*b^6*c)*d^4*e^6)
*x^4 + 35*(9*A*b^7*d^4*e^6 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^7*e^3 - 4*(5*B*
b^6*c - 18*A*b^5*c^2)*d^6*e^4 + (5*B*b^7 - 42*A*b^6*c)*d^5*e^5)*x^3 + 21*(9
*A*b^7*d^5*e^5 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^8*e^2 - 4*(5*B*b^6*c - 18*A
*b^5*c^2)*d^7*e^3 + (5*B*b^7 - 42*A*b^6*c)*d^6*e^4)*x^2 + 7*(9*A*b^7*d^6*e^
4 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^9*e - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^8*e
^2 + (5*B*b^7 - 42*A*b^6*c)*d^7*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c
*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(945*
A*b^7*d^7*e^4 - 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^11 + 420*(11*B*b^5*c^2 - 3
0*A*b^4*c^3)*d^10*e - 105*(25*B*b^6*c - 114*A*b^5*c^2)*d^9*e^2 + 105*(5*B*b
^7 - 51*A*b^6*c)*d^8*e^3 - (1024*B*c^7*d^9*e^2 + 945*A*b^7*d*e^10 - 384*(13
*B*b*c^6 - 2*A*c^7)*d^8*e^3 + 384*(23*B*b^2*c^5 - 8*A*b*c^6)*d^7*e^4 - 96*(
59*B*b^3*c^4 - 34*A*b^2*c^5)*d^6*e^5 - 120*(5*B*b^4*c^3 - 8*A*b^3*c^4)*d^5*
e^6 + 6*(525*B*b^5*c^2 - 1174*A*b^4*c^3)*d^4*e^7 - 7*(325*B*b^6*c - 1272*A*
b^5*c^2)*d^3*e^8 + 525*(B*b^7 - 9*A*b^6*c)*d^2*e^9)*x^6 - 2*(3584*B*c^7*d^1
0*e + 3150*A*b^7*d^2*e^9 - 64*(277*B*b*c^6 - 42*A*c^7)*d^9*e^2 + 96*(335*B*
b^2*c^5 - 114*A*b*c^6)*d^8*e^3 - 48*(459*B*b^3*c^4 - 254*A*b^2*c^5)*d^7*e^4
 - 12*(57*B*b^4*c^3 - 212*A*b^3*c^4)*d^6*e^5 + 3*(3515*B*b^5*c^2 - 7878*A*b
^4*c^3)*d^5*e^6 - 5*(1519*B*b^6*c - 5955*A*b^5*c^2)*d^4*e^7 + 7*(250*B*b^7
 - 2253*A*b^6*c)*d^3*e^8)*x^5 - (21504*B*c^7*d^11 + 17829*A*b^7*d^3*e^8 - 89
6*(121*B*b*c^6 - 18*A*c^7)*d^10*e + 192*(1059*B*b^2*c^5 - 350*A*b*c^6)*d^9*
```

```
e^2 - 48*(3161*B*b^3*c^4 - 1658*A*b^2*c^5)*d^8*e^3 + 24*(439*B*b^4*c^3 + 31
6*A*b^3*c^4)*d^7*e^4 + 48*(1207*B*b^5*c^2 - 2785*A*b^4*c^3)*d^6*e^5 - 33*(1
305*B*b^6*c - 5126*A*b^5*c^2)*d^5*e^6 + (9905*B*b^7 - 89403*A*b^6*c)*d^4*e^
7)*x^4 - 4*(6912*A*b^7*d^4*e^7 + 672*(11*B*b*c^6 + 10*A*c^7)*d^11 - 14448*(
3*B*b^2*c^5 + 2*A*b*c^6)*d^10*e + 4*(25775*B*b^3*c^4 + 9282*A*b^2*c^5)*d^9*
e^2 - 12*(9883*B*b^4*c^3 + 187*A*b^3*c^4)*d^8*e^3 + 3*(24291*B*b^5*c^2 - 16
846*A*b^4*c^3)*d^7*e^4 - (25265*B*b^6*c - 65643*A*b^5*c^2)*d^6*e^5 + 15*(25
6*B*b^7 - 2315*A*b^6*c)*d^5*e^6)*x^3 - 7*(3597*A*b^7*d^5*e^6 + 192*(B*b^2*c
^5 + 30*A*b*c^6)*d^11 - 176*(11*B*b^3*c^4 + 186*A*b^2*c^5)*d^10*e + 8*(1237
*B*b^4*c^3 + 8718*A*b^3*c^4)*d^9*e^2 - 6*(2357*B*b^5*c^2 + 13498*A*b^4*c^3)
*d^8*e^3 + 5*(1481*B*b^6*c + 11292*A*b^5*c^2)*d^7*e^4 - (1415*B*b^7 + 21837
*A*b^6*c)*d^6*e^5)*x^2 + 70*(90*A*b^7*d^6*e^5 + 24*(B*b^3*c^4 - 2*A*b^2*c^5
)*d^11 - 4*(71*B*b^4*c^3 - 150*A*b^3*c^4)*d^10*e + 3*(155*B*b^5*c^2 - 438*A
*b^4*c^3)*d^9*e^2 - 3*(85*B*b^6*c - 397*A*b^5*c^2)*d^8*e^3 + (50*B*b^7 - 51
9*A*b^6*c)*d^7*e^4)*x)*sqrt(c*x^2 + b*x))/(c^6*d^19 - 6*b*c^5*d^18*e + 15*b
^2*c^4*d^17*e^2 - 20*b^3*c^3*d^16*e^3 + 15*b^4*c^2*d^15*e^4 - 6*b^5*c*d^14*
e^5 + b^6*d^13*e^6 + (c^6*d^12*e^7 - 6*b*c^5*d^11*e^8 + 15*b^2*c^4*d^10*e^9
 - 20*b^3*c^3*d^9*e^10 + 15*b^4*c^2*d^8*e^11 - 6*b^5*c*d^7*e^12 + b^6*d^6*e
^13)*x^7 + 7*(c^6*d^13*e^6 - 6*b*c^5*d^12*e^7 + 15*b^2*c^4*d^11*e^8 - 20*b^
3*c^3*d^10*e^9 + 15*b^4*c^2*d^9*e^10 - 6*b^5*c*d^8*e^11 + b^6*d^7*e^12)*x^6
 + 21*(c^6*d^14*e^5 - 6*b*c^5*d^13*e^6 + 15*b^2*c^4*d^12*e^7 - 20*b^3*c^3*d
^11*e^8 + 15*b^4*c^2*d^10*e^9 - 6*b^5*c*d^9*e^10 + b^6*d^8*e^11)*x^5 + 35*(
c^6*d^15*e^4 - 6*b*c^5*d^14*e^5 + 15*b^2*c^4*d^13*e^6 - 20*b^3*c^3*d^12*e^7
 + 15*b^4*c^2*d^11*e^8 - 6*b^5*c*d^10*e^9 + b^6*d^9*e^10)*x^4 + 35*(c^6*d^1
6*e^3 - 6*b*c^5*d^15*e^4 + 15*b^2*c^4*d^14*e^5 - 20*b^3*c^3*d^13*e^6 + 15*b
^4*c^2*d^12*e^7 - 6*b^5*c*d^11*e^8 + b^6*d^10*e^9)*x^3 + 21*(c^6*d^17*e^2 -
 6*b*c^5*d^16*e^3 + 15*b^2*c^4*d^15*e^4 - 20*b^3*c^3*d^14*e^5 + 15*b^4*c^2*
d^13*e^6 - 6*b^5*c*d^12*e^7 + b^6*d^11*e^8)*x^2 + 7*(c^6*d^18*e - 6*b*c^5*d
^17*e^2 + 15*b^2*c^4*d^16*e^3 - 20*b^3*c^3*d^15*e^4 + 15*b^4*c^2*d^14*e^5 -
 6*b^5*c*d^13*e^6 + b^6*d^12*e^7)*x), -1/107520*(105*(9*A*b^7*d^7*e^3 + 24*
(B*b^5*c^2 - 2*A*b^4*c^3)*d^10 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^9*e + (5*B*
b^7 - 42*A*b^6*c)*d^8*e^2 + (9*A*b^7*e^10 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^
3*e^7 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^2*e^8 + (5*B*b^7 - 42*A*b^6*c)*d*e^9
)*x^7 + 7*(9*A*b^7*d*e^9 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^4*e^6 - 4*(5*B*b^
6*c - 18*A*b^5*c^2)*d^3*e^7 + (5*B*b^7 - 42*A*b^6*c)*d^2*e^8)*x^6 + 21*(9*A
*b^7*d^2*e^8 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^5*e^5 - 4*(5*B*b^6*c - 18*A*b
^5*c^2)*d^4*e^6 + (5*B*b^7 - 42*A*b^6*c)*d^3*e^7)*x^5 + 35*(9*A*b^7*d^3*e^7
 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^6*e^4 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^5*
e^5 + (5*B*b^7 - 42*A*b^6*c)*d^4*e^6)*x^4 + 35*(9*A*b^7*d^4*e^6 + 24*(B*b^5
*c^2 - 2*A*b^4*c^3)*d^7*e^3 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^6*e^4 + (5*B*b
^7 - 42*A*b^6*c)*d^5*e^5)*x^3 + 21*(9*A*b^7*d^5*e^5 + 24*(B*b^5*c^2 - 2*A*b
^4*c^3)*d^8*e^2 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^7*e^3 + (5*B*b^7 - 42*A*b^
6*c)*d^6*e^4)*x^2 + 7*(9*A*b^7*d^6*e^4 + 24*(B*b^5*c^2 - 2*A*b^4*c^3)*d^9*e
 - 4*(5*B*b^6*c - 18*A*b^5*c^2)*d^8*e^2 + (5*B*b^7 - 42*A*b^6*c)*d^7*e^3)*x
)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d
 - b*e)*x)) + (945*A*b^7*d^7*e^4 - 2520*(B*b^4*c^3 - 2*A*b^3*c^4)*d^11 + 42
0*(11*B*b^5*c^2 - 30*A*b^4*c^3)*d^10*e - 105*(25*B*b^6*c - 114*A*b^5*c^2)*d
^9*e^2 + 105*(5*B*b^7 - 51*A*b^6*c)*d^8*e^3 - (1024*B*c^7*d^9*e^2 + 945*A*b
^7*d*e^10 - 384*(13*B*b*c^6 - 2*A*c^7)*d^8*e^3 + 384*(23*B*b^2*c^5 - 8*A*b*
c^6)*d^7*e^4 - 96*(59*B*b^3*c^4 - 34*A*b^2*c^5)*d^6*e^5 - 120*(5*B*b^4*c^3
 - 8*A*b^3*c^4)*d^5*e^6 + 6*(525*B*b^5*c^2 - 1174*A*b^4*c^3)*d^4*e^7 - 7*(32
5*B*b^6*c - 1272*A*b^5*c^2)*d^3*e^8 + 525*(B*b^7 - 9*A*b^6*c)*d^2*e^9)*x^6
 - 2*(3584*B*c^7*d^10*e + 3150*A*b^7*d^2*e^9 - 64*(277*B*b*c^6 - 42*A*c^7)*d
^9*e^2 + 96*(335*B*b^2*c^5 - 114*A*b*c^6)*d^8*e^3 - 48*(459*B*b^3*c^4 - 254
*A*b^2*c^5)*d^7*e^4 - 12*(57*B*b^4*c^3 - 212*A*b^3*c^4)*d^6*e^5 + 3*(3515*B
*b^5*c^2 - 7878*A*b^4*c^3)*d^5*e^6 - 5*(1519*B*b^6*c - 5955*A*b^5*c^2)*d^4*
e^7 + 7*(250*B*b^7 - 2253*A*b^6*c)*d^3*e^8)*x^5 - (21504*B*c^7*d^11 + 17829
*A*b^7*d^3*e^8 - 896*(121*B*b*c^6 - 18*A*c^7)*d^10*e + 192*(1059*B*b^2*c^5
 - 350*A*b*c^6)*d^9*e^2 - 48*(3161*B*b^3*c^4 - 1658*A*b^2*c^5)*d^8*e^3 + 24*
```

```
(439*B*b^4*c^3 + 316*A*b^3*c^4)*d^7*e^4 + 48*(1207*B*b^5*c^2 - 2785*A*b^4*c
^3)*d^6*e^5 - 33*(1305*B*b^6*c - 5126*A*b^5*c^2)*d^5*e^6 + (9905*B*b^7 - 89
403*A*b^6*c)*d^4*e^7)*x^4 - 4*(6912*A*b^7*d^4*e^7 + 672*(11*B*b*c^6 + 10*A*
c^7)*d^11 - 14448*(3*B*b^2*c^5 + 2*A*b*c^6)*d^10*e + 4*(25775*B*b^3*c^4 + 9
282*A*b^2*c^5)*d^9*e^2 - 12*(9883*B*b^4*c^3 + 187*A*b^3*c^4)*d^8*e^3 + 3*(2
4291*B*b^5*c^2 - 16846*A*b^4*c^3)*d^7*e^4 - (25265*B*b^6*c - 65643*A*b^5*c^
2)*d^6*e^5 + 15*(256*B*b^7 - 2315*A*b^6*c)*d^5*e^6)*x^3 - 7*(3597*A*b^7*d^5
*e^6 + 192*(B*b^2*c^5 + 30*A*b*c^6)*d^11 - 176*(11*B*b^3*c^4 + 186*A*b^2*c^
5)*d^10*e + 8*(1237*B*b^4*c^3 + 8718*A*b^3*c^4)*d^9*e^2 - 6*(2357*B*b^5*c^2
 + 13498*A*b^4*c^3)*d^8*e^3 + 5*(1481*B*b^6*c + 11292*A*b^5*c^2)*d^7*e^4 -
(1415*B*b^7 + 21837*A*b^6*c)*d^6*e^5)*x^2 + 70*(90*A*b^7*d^6*e^5 + 24*(B*b^
3*c^4 - 2*A*b^2*c^5)*d^11 - 4*(71*B*b^4*c^3 - 150*A*b^3*c^4)*d^10*e + 3*(15
5*B*b^5*c^2 - 438*A*b^4*c^3)*d^9*e^2 - 3*(85*B*b^6*c - 397*A*b^5*c^2)*d^8*e
^3 + (50*B*b^7 - 519*A*b^6*c)*d^7*e^4)*x)*sqrt(c*x^2 + b*x))/(c^6*d^19 - 6*
b*c^5*d^18*e + 15*b^2*c^4*d^17*e^2 - 20*b^3*c^3*d^16*e^3 + 15*b^4*c^2*d^15*
e^4 - 6*b^5*c*d^14*e^5 + b^6*d^13*e^6 + (c^6*d^12*e^7 - 6*b*c^5*d^11*e^8 +
15*b^2*c^4*d^10*e^9 - 20*b^3*c^3*d^9*e^10 + 15*b^4*c^2*d^8*e^11 - 6*b^5*c*d
^7*e^12 + b^6*d^6*e^13)*x^7 + 7*(c^6*d^13*e^6 - 6*b*c^5*d^12*e^7 + 15*b^2*c
^4*d^11*e^8 - 20*b^3*c^3*d^10*e^9 + 15*b^4*c^2*d^9*e^10 - 6*b^5*c*d^8*e^11
+ b^6*d^7*e^12)*x^6 + 21*(c^6*d^14*e^5 - 6*b*c^5*d^13*e^6 + 15*b^2*c^4*d^12
*e^7 - 20*b^3*c^3*d^11*e^8 + 15*b^4*c^2*d^10*e^9 - 6*b^5*c*d^9*e^10 + b^6*d
^8*e^11)*x^5 + 35*(c^6*d^15*e^4 - 6*b*c^5*d^14*e^5 + 15*b^2*c^4*d^13*e^6 -
20*b^3*c^3*d^12*e^7 + 15*b^4*c^2*d^11*e^8 - 6*b^5*c*d^10*e^9 + b^6*d^9*e^10
)*x^4 + 35*(c^6*d^16*e^3 - 6*b*c^5*d^15*e^4 + 15*b^2*c^4*d^14*e^5 - 20*b^3*
c^3*d^13*e^6 + 15*b^4*c^2*d^12*e^7 - 6*b^5*c*d^11*e^8 + b^6*d^10*e^9)*x^3 +
 21*(c^6*d^17*e^2 - 6*b*c^5*d^16*e^3 + 15*b^2*c^4*d^15*e^4 - 20*b^3*c^3*d^1
4*e^5 + 15*b^4*c^2*d^13*e^6 - 6*b^5*c*d^12*e^7 + b^6*d^11*e^8)*x^2 + 7*(c^6
*d^18*e - 6*b*c^5*d^17*e^2 + 15*b^2*c^4*d^16*e^3 - 20*b^3*c^3*d^15*e^4 + 15
*b^4*c^2*d^14*e^5 - 6*b^5*c*d^13*e^6 + b^6*d^12*e^7)*x)]
```

giac [B] time = 0.98, size = 7914, normalized size = 14.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/1024*(24*B*b^5*c^2*d^3 - 48*A*b^4*c^3*d^3 - 20*B*b^6*c*d^2*e + 72*A*b^5*
c^2*d^2*e + 5*B*b^7*d*e^2 - 42*A*b^6*c*d*e^2 + 9*A*b^7*e^3)*arctan(-((sqrt(
c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^5*d^10 -
 5*b*c^4*d^9*e + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 + 5*b^4*c*d^6*e^4
- b^5*d^5*e^5)*sqrt(-c*d^2 + b*d*e)) + 1/107520*(458752*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^8*B*c^(19/2)*d^13*e + 131072*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7
*B*c^10*d^14 + 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*c^9*d^12*e^2 + 86
8352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b*c^9*d^13*e + 98304*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^7*A*c^10*d^13*e + 458752*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^6*B*b*c^(19/2)*d^14 + 573440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*c^(17/2)
*d^11*e^3 - 57344*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b*c^(17/2)*d^12*e^2 +
 344064*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*c^(19/2)*d^12*e^2 - 57344*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*B*b^2*c^(17/2)*d^13*e + 344064*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^6*A*b*c^(19/2)*d^13*e + 688128*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*b^2*c^9*d^14 + 286720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*c^8*d^1
0*e^4 - 1519616*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b*c^8*d^11*e^3 + 516096
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*c^9*d^11*e^3 - 2990080*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^7*B*b^2*c^8*d^12*e^2 + 737280*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^7*A*b*c^9*d^12*e^2 - 1519616*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*c^
8*d^13*e + 516096*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c^9*d^13*e + 5734
40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c^(17/2)*d^14 - 1792000*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^10*B*b*c^(15/2)*d^10*e^4 + 430080*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^10*A*c^(17/2)*d^10*e^4 - 3627008*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^8*B*b^2*c^(15/2)*d^11*e^3 + 258048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A
*b*c^(17/2)*d^11*e^3 - 3627008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^3*c^(1
5/2)*d^12*e^2 + 258048*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^2*c^(17/2)*d^1
2*e^2 - 1792000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^4*c^(15/2)*d^13*e + 4
30080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3*c^(17/2)*d^13*e + 286720*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*c^8*d^14 - 1433600*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^11*B*b*c^7*d^9*e^5 - 960512*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B
*b^2*c^7*d^10*e^4 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b*c^8*d^10*e
^4 + 55296*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^3*c^7*d^11*e^3 - 1683456*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^2*c^8*d^11*e^3 - 960512*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^5*B*b^4*c^7*d^12*e^2 - 688128*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*A*b^3*c^8*d^12*e^2 - 1025024*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^5
*c^7*d^13*e + 215040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*c^8*d^13*e + 8
6016*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^5*c^(15/2)*d^14 + 358400*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^10*B*b^2*c^(13/2)*d^9*e^5 - 2150400*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^10*A*b*c^(15/2)*d^9*e^5 + 4515840*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^8*B*b^3*c^(13/2)*d^10*e^4 - 2795520*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^8*A*b^2*c^(15/2)*d^10*e^4 + 4515840*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b
^4*c^(13/2)*d^11*e^3 - 2795520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^3*c^(1
5/2)*d^11*e^3 + 1078784*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^5*c^(13/2)*d^
12*e^2 - 967680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^4*c^(15/2)*d^12*e^2 -
 326144*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^6*c^(13/2)*d^13*e + 64512*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^5*c^(15/2)*d^13*e + 14336*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*B*b^6*c^7*d^14 + 2867200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
11*B*b^2*c^6*d^8*e^6 + 3512320*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^3*c^6*
d^9*e^5 - 4300800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^2*c^7*d^9*e^5 + 580
6080*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^4*c^6*d^10*e^4 - 2119680*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^7*A*b^3*c^7*d^10*e^4 + 4076800*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^5*B*b^5*c^6*d^11*e^3 - 1774080*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^5*A*b^4*c^7*d^11*e^3 + 1028608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^6*c^6
*d^12*e^2 - 580608*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^5*c^7*d^12*e^2 - 5
5552*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^7*c^6*d^13*e + 10752*(sqrt(c)*x -
sqrt(c*x^2 + b*x))*A*b^6*c^7*d^13*e + 1024*B*b^7*c^(13/2)*d^14 + 5017600*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^3*c^(11/2)*d^8*e^6 + 4300800*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^10*A*b^2*c^(13/2)*d^8*e^6 + 1720320*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^8*B*b^4*c^(11/2)*d^9*e^5 - 1935360*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^8*A*b^3*c^(13/2)*d^9*e^5 + 1975680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
6*B*b^5*c^(11/2)*d^10*e^4 + 564480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^4*
c^(13/2)*d^10*e^4 + 1511552*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^6*c^(11/2
)*d^11*e^3 - 413952*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^5*c^(13/2)*d^11*e
^3 + 380800*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^7*c^(11/2)*d^12*e^2 - 188
160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^6*c^(13/2)*d^12*e^2 - 3968*B*b^8*
c^(11/2)*d^13*e + 768*A*b^7*c^(13/2)*d^13*e - 2867200*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^11*B*b^3*c^5*d^7*e^7 + 1863680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9
*B*b^4*c^5*d^8*e^6 + 13762560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^3*c^6*d
^8*e^6 - 2088576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^5*c^5*d^9*e^5 + 2327
808*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^4*c^6*d^9*e^5 - 815360*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^5*B*b^6*c^5*d^10*e^4 + 1881600*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^5*A*b^5*c^6*d^10*e^4 + 184576*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^7*c^5*d^11*e^3 + 75264*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^6*c^6*d^11*
e^3 + 68096*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^8*c^5*d^12*e^2 - 32256*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*A*b^7*c^6*d^12*e^2 - 7884800*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^10*B*b^4*c^(9/2)*d^7*e^7 - 4300800*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^10*A*b^3*c^(11/2)*d^7*e^7 - 2283456*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8
*B*b^5*c^(9/2)*d^8*e^6 + 16695168*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^4*c
^(11/2)*d^8*e^6 - 2968896*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^6*c^(9/2)*d
^9*e^5 + 3067008*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^5*c^(11/2)*d^9*e^5 -
 1017856*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^7*c^(9/2)*d^10*e^4 + 1430016
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^6*c^(11/2)*d^10*e^4 - 33152*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*B*b^8*c^(9/2)*d^11*e^3 + 64512*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^7*c^(11/2)*d^11*e^3 + 4864*B*b^9*c^(9/2)*d^12*e^2 - 230
4*A*b^8*c^(11/2)*d^12*e^2 + 1433600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^
4*c^4*d^6*e^8 - 7790944*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^5*c^4*d^7*e^7
 - 18193728*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^4*c^5*d^7*e^7 - 2131136*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^6*c^4*d^8*e^6 + 7469952*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^7*A*b^5*c^5*d^8*e^6 - 1485344*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^5*B*b^7*c^4*d^9*e^5 + 716352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^6*c
^5*d^9*e^5 - 459200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^8*c^4*d^10*e^4 +
618240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^7*c^5*d^10*e^4 - 11200*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*B*b^9*c^4*d^11*e^3 + 13440*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^8*c^5*d^11*e^3 + 5338480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*
b^5*c^(7/2)*d^6*e^8 + 1078560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^4*c^(9
/2)*d^6*e^8 - 2001328*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^6*c^(7/2)*d^7*e
^7 - 28144032*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^5*c^(9/2)*d^7*e^7 + 333
872*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^7*c^(7/2)*d^8*e^6 - 2198112*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^6*A*b^6*c^(9/2)*d^8*e^6 - 160720*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^4*B*b^8*c^(7/2)*d^9*e^5 - 971040*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*A*b^7*c^(9/2)*d^9*e^5 - 123200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B
*b^9*c^(7/2)*d^10*e^4 + 168000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^8*c^(9
/2)*d^10*e^4 - 800*B*b^10*c^(7/2)*d^11*e^3 + 960*A*b^9*c^(9/2)*d^11*e^3 - 1
06960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^5*c^3*d^5*e^9 - 359520*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^11*A*b^4*c^4*d^5*e^9 + 6953408*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^9*B*b^6*c^3*d^6*e^8 + 10063872*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^9*A*b^5*c^4*d^6*e^8 + 1909360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^7*c^3*
d^7*e^7 - 20156640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^6*c^4*d^7*e^7 + 12
55408*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^8*c^3*d^8*e^6 - 3698688*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^5*A*b^7*c^4*d^8*e^6 + 192640*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^3*B*b^9*c^3*d^9*e^5 - 913920*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^8*c^4*d^9*e^5 - 19600*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^10*c^3*d^10*e^
4 + 26880*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^9*c^4*d^10*e^4 + 32760*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^12*B*b^5*c^(5/2)*d^4*e^10 - 65520*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^12*A*b^4*c^(7/2)*d^4*e^10 - 1337000*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^10*B*b^6*c^(5/2)*d^5*e^9 + 808080*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^10*A*b^5*c^(7/2)*d^5*e^9 + 3935624*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^7
*c^(5/2)*d^6*e^8 + 19619376*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^6*c^(7/2)
*d^6*e^8 + 1520624*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^8*c^(5/2)*d^7*e^7
- 5499984*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^7*c^(7/2)*d^7*e^7 + 673400*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^9*c^(5/2)*d^8*e^6 - 1233120*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^4*A*b^8*c^(7/2)*d^8*e^6 + 104440*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^2*B*b^10*c^(5/2)*d^9*e^5 - 351456*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*A*b^9*c^(7/2)*d^9*e^5 - 1400*B*b^11*c^(5/2)*d^10*e^4 + 1920*A*b^10*c^
(7/2)*d^10*e^4 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*B*b^5*c^2*d^3*e^11
 - 5040*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*A*b^4*c^3*d^3*e^11 - 133000*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^11*B*b^6*c^2*d^4*e^10 + 505680*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^11*A*b^5*c^3*d^4*e^10 - 2213764*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^9*B*b^7*c^2*d^5*e^9 - 1120056*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^6*
c^3*d^5*e^9 + 595552*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^8*c^2*d^6*e^8 +
16718928*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^7*c^3*d^6*e^8 + 229936*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^5*B*b^9*c^2*d^7*e^7 + 1320144*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^5*A*b^8*c^3*d^7*e^7 + 133000*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
3*B*b^10*c^2*d^8*e^6 + 122304*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^9*c^3*d
^8*e^6 + 21980*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^11*c^2*d^9*e^5 - 66696*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^10*c^3*d^9*e^5 - 27300*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^12*B*b^6*c^(3/2)*d^3*e^11 + 98280*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^12*A*b^5*c^(5/2)*d^3*e^11 - 42350*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*
B*b^7*c^(3/2)*d^4*e^10 - 383460*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^6*c^
(5/2)*d^4*e^10 - 1534330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*B*b^8*c^(3/2)*d^
5*e^9 - 5388180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^7*c^(5/2)*d^5*e^9 - 4
```

```
22380*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*B*b^9*c^(3/2)*d^6*e^8 + 7011480*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^8*c^(5/2)*d^6*e^8 - 141400*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^4*B*b^10*c^(3/2)*d^7*e^7 + 1334256*(sqrt(c)*x - sqrt(c*x
^2 + b*x))^4*A*b^9*c^(5/2)*d^7*e^7 - 4550*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2
*B*b^11*c^(3/2)*d^8*e^6 + 183372*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^10*c
^(5/2)*d^8*e^6 + 1750*B*b^12*c^(3/2)*d^9*e^5 - 5124*A*b^11*c^(5/2)*d^9*e^5
- 2100*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*B*b^6*c*d^2*e^12 + 7560*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^13*A*b^5*c^2*d^2*e^12 + 23450*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^11*B*b^7*c*d^3*e^11 - 264180*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*A
*b^6*c^2*d^3*e^11 + 133070*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*B*b^8*c*d^4*e^
10 - 960960*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^7*c^2*d^4*e^10 - 549660*(
sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^9*c*d^5*e^9 - 5471640*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^7*A*b^8*c^2*d^5*e^9 - 243320*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^5*B*b^10*c*d^6*e^8 + 1126440*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^9*c^2*
d^6*e^8 - 67550*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^11*c*d^7*e^7 + 317100
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^10*c^2*d^7*e^7 - 5250*(sqrt(c)*x - s
qrt(c*x^2 + b*x))*B*b^12*c*d^8*e^6 + 45360*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^11*c^2*d^8*e^6 + 6825*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*B*b^7*sqrt(c)*
d^2*e^12 - 57330*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*A*b^6*c^(3/2)*d^2*e^12
+ 38500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*B*b^8*sqrt(c)*d^3*e^11 - 122430*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^7*c^(3/2)*d^3*e^11 + 89145*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^8*B*b^9*sqrt(c)*d^4*e^10 - 30240*(sqrt(c)*x - sqrt(c
*x^2 + b*x))^8*A*b^8*c^(3/2)*d^4*e^10 - 107520*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^6*B*b^10*sqrt(c)*d^5*e^9 - 2566620*(sqrt(c)*x - sqrt(c*x^2 + b*x))^6*A*
b^9*c^(3/2)*d^5*e^9 - 49525*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^11*sqrt(c
)*d^6*e^8 - 195090*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^10*c^(3/2)*d^6*e^8
 - 10500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^12*sqrt(c)*d^7*e^7 + 4410*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^11*c^(3/2)*d^7*e^7 - 525*B*b^13*sqrt(c)
*d^8*e^6 + 3780*A*b^12*c^(3/2)*d^8*e^6 + 525*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^13*B*b^7*d*e^13 - 4410*(sqrt(c)*x - sqrt(c*x^2 + b*x))^13*A*b^6*c*d*e^13
+ 3500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^11*B*b^8*d^2*e^12 + 38010*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^11*A*b^7*c*d^2*e^12 + 9905*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^9*B*b^9*d^3*e^11 + 227640*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^8*c*d
^3*e^11 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*B*b^10*d^4*e^10 + 429876*
(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^9*c*d^4*e^10 - 9905*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^5*B*b^11*d^5*e^9 - 641130*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*
A*b^10*c*d^5*e^9 - 3500*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^12*d^6*e^8 -
117390*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^11*c*d^6*e^8 - 525*(sqrt(c)*x
- sqrt(c*x^2 + b*x))*B*b^13*d^7*e^7 - 8820*(sqrt(c)*x - sqrt(c*x^2 + b*x))*
A*b^12*c*d^7*e^7 + 12285*(sqrt(c)*x - sqrt(c*x^2 + b*x))^12*A*b^7*sqrt(c)*d
*e^13 + 69300*(sqrt(c)*x - sqrt(c*x^2 + b*x))^10*A*b^8*sqrt(c)*d^2*e^12 + 1
60461*(sqrt(c)*x - sqrt(c*x^2 + b*x))^8*A*b^9*sqrt(c)*d^3*e^11 + 193536*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^6*A*b^10*sqrt(c)*d^4*e^10 - 89145*(sqrt(c)*x -
 sqrt(c*x^2 + b*x))^4*A*b^11*sqrt(c)*d^5*e^9 - 18900*(sqrt(c)*x - sqrt(c*x^
2 + b*x))^2*A*b^12*sqrt(c)*d^6*e^8 - 945*A*b^13*sqrt(c)*d^7*e^7 + 945*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^13*A*b^7*e^14 + 6300*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^11*A*b^8*d*e^13 + 17829*(sqrt(c)*x - sqrt(c*x^2 + b*x))^9*A*b^9*d^2*e^
12 + 27648*(sqrt(c)*x - sqrt(c*x^2 + b*x))^7*A*b^10*d^3*e^11 + 25179*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^5*A*b^11*d^4*e^10 - 6300*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^3*A*b^12*d^5*e^9 - 945*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^13*d^6*e
^8)/((c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 + 10*b^2*c^3*d^8*e^7 - 10*b^3*c^2*d^7*
e^8 + 5*b^4*c*d^6*e^9 - b^5*d^5*e^10)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e
+ 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^7)
```

maple [B] time = 0.41, size = 37630, normalized size = 66.60

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^8} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^8, x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1183 $\int (A+Bx)(d+ex)^2 \left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=423

$$\frac{\left(bx+cx^2\right)^{7/2}\left(14cex(18Ace-11bBe+4Bcd)+18Ace(32cd-9be)+B\left(99b^2e^2-324bcde+64c^2d^2\right)\right)}{2016c^3}-\frac{5b^2(b+}{}$$

```
[Out] -5/12288*b^2*(64*A*c^3*d^2-11*b^3*B*e^2+18*b^2*c*e*(A*e+2*B*d)-32*b*c^2*d*(
2*A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^5+1/768*(64*A*c^3*d^2-11*b^3*B*e^
2+18*b^2*c*e*(A*e+2*B*d)-32*b*c^2*d*(2*A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(5/2
)/c^4+1/9*B*(e*x+d)^2*(c*x^2+b*x)^(7/2)/c+1/2016*(18*A*c*e*(-9*b*e+32*c*d)+
B*(99*b^2*e^2-324*b*c*d*e+64*c^2*d^2)+14*c*e*(18*A*c*e-11*B*b*e+4*B*c*d)*x)
*(c*x^2+b*x)^(7/2)/c^3-5/32768*b^6*(64*A*c^3*d^2-11*b^3*B*e^2+18*b^2*c*e*(A
*e+2*B*d)-32*b*c^2*d*(2*A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(1
3/2)+5/32768*b^4*(64*A*c^3*d^2-11*b^3*B*e^2+18*b^2*c*e*(A*e+2*B*d)-32*b*c^2
*d*(2*A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^6
```

Rubi [A] time = 0.43, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {832, 779, 612, 620, 206}

$$\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\left(18b^2ce(Ae+2Bd)-32bc^2d(2Ae+Bd)+64Ac^3d^2-11b^3Be^2\right)}{32768c^6}-\frac{5b^2(b+2cx)\left(bx+cx\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^4*(64*A*c^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d
*(B*d + 2*A*e))*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(32768*c^6) - (5*b^2*(64*A*c
^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(B*d + 2*A*e)
)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(12288*c^5) + ((64*A*c^3*d^2 - 11*b^3*B*
e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(B*d + 2*A*e))*(b + 2*c*x)*(b*x
 + c*x^2)^(5/2))/(768*c^4) + (B*(d + e*x)^2*(b*x + c*x^2)^(7/2))/(9*c) + ((
18*A*c*e*(32*c*d - 9*b*e) + B*(64*c^2*d^2 - 324*b*c*d*e + 99*b^2*e^2) + 14*
c*e*(4*B*c*d - 11*b*B*e + 18*A*c*e)*x)*(b*x + c*x^2)^(7/2))/(2016*c^3) - (5
*b^6*(64*A*c^3*d^2 - 11*b^3*B*e^2 + 18*b^2*c*e*(2*B*d + A*e) - 32*b*c^2*d*(
B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(32768*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(bx+cx^2\right)^{5/2}\,dx = \frac{B(d+ex)^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{\int (d+ex)\Big(-\frac{1}{2}(7bB-18Ac)d+\frac{1}{2}(4Bcd-11b}{9c}$$

$$= \frac{B(d+ex)^2\left(bx+cx^2\right)^{7/2}}{9c} + \frac{\Big(18Ace(32cd-9be)+B\Big(64c^2d^2-324bcde+}{}$$

$$= \frac{\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2cx)}{768c^4}$$

$$= -\frac{5b^2\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+}{12288c^5}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2}{32768c^6}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2}{32768c^6}$$

$$= \frac{5b^4\left(64Ac^3d^2-11b^3Be^2+18b^2ce(2Bd+Ae)-32bc^2d(Bd+2Ae)\right)(b+2}{32768c^6}$$

Mathematica [A] time = 1.45, size = 417, normalized size = 0.99

$$(x(b+cx))^{7/2}\Bigg(\frac{1323A\left(9b^2e^2-32bcde+32c^2d^2\right)\left(\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)-15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\right)}{1024c^{9/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*((5103*A*e*(2*c*d - b*e)*(b + c*x)^3)/c + (441*B*e*(20
*c*d - 11*b*e)*x*(b + c*x)^3)/c + 7938*A*e*(b + c*x)^3*(d + e*x) + 7056*B*e
*x*(b + c*x)^3*(d + e*x) + (1323*A*(32*c^2*d^2 - 32*b*c*d*e + 9*b^2*e^2)*(S
qrt[c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432
*b^2*c^3*x^3 + 640*b*c^4*x^4 + 256*c^5*x^5) - 15*b^(11/2)*ArcSinh[(Sqrt[c]*
Sqrt[x])/Sqrt[b]]))/(1024*c^(9/2)*x^(7/2)*Sqrt[1 + (c*x)/b]) + (189*B*(32*c
^2*d^2 - 36*b*c*d*e + 11*b^2*e^2)*(Sqrt[c]*Sqrt[x]*Sqrt[1 + (c*x)/b]*(-105*
b^6 + 70*b^5*c*x - 56*b^4*c^2*x^2 + 48*b^3*c^3*x^3 + 4736*b^2*c^4*x^4 + 742
4*b*c^5*x^5 + 3072*c^6*x^6) + 105*b^(13/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]]))/(2048*c^(11/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(63504*c*(b + c*x)^3)
```

fricas [A] time = 0.67, size = 1292, normalized size = 3.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/4128768*(315*(32*(B*b^7*c^2 - 2*A*b^6*c^3)*d^2 - 4*(9*B*b^8*c - 16*A*b^7
*c^2)*d*e + (11*B*b^9 - 18*A*b^8*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x
^2 + b*x)*sqrt(c)) + 2*(229376*B*c^9*e^2*x^8 + 14336*(36*B*c^9*d*e + (37*B*
b*c^8 + 18*A*c^9)*e^2)*x^7 + 3072*(96*B*c^9*d^2 + 12*(33*B*b*c^8 + 16*A*c^9
)*d*e + (103*B*b^2*c^7 + 198*A*b*c^8)*e^2)*x^6 + 256*(96*(29*B*b*c^8 + 14*A
*c^9)*d^2 + 12*(243*B*b^2*c^7 + 464*A*b*c^8)*d*e + (5*B*b^3*c^6 + 1458*A*b^
2*c^7)*e^2)*x^5 + 128*(96*(37*B*b^2*c^7 + 70*A*b*c^8)*d^2 + 12*(3*B*b^3*c^6
 + 592*A*b^2*c^7)*d*e - (11*B*b^4*c^5 - 18*A*b^3*c^6)*e^2)*x^4 + 144*(32*(B
*b^3*c^6 + 126*A*b^2*c^7)*d^2 - 4*(9*B*b^4*c^5 - 16*A*b^3*c^6)*d*e + (11*B*
b^5*c^4 - 18*A*b^4*c^5)*e^2)*x^3 - 10080*(B*b^6*c^3 - 2*A*b^5*c^4)*d^2 + 12
60*(9*B*b^7*c^2 - 16*A*b^6*c^3)*d*e - 315*(11*B*b^8*c - 18*A*b^7*c^2)*e^2 -
 168*(32*(B*b^4*c^5 - 2*A*b^3*c^6)*d^2 - 4*(9*B*b^5*c^4 - 16*A*b^4*c^5)*d*e
 + (11*B*b^6*c^3 - 18*A*b^5*c^4)*e^2)*x^2 + 210*(32*(B*b^5*c^4 - 2*A*b^4*c^
5)*d^2 - 4*(9*B*b^6*c^3 - 16*A*b^5*c^4)*d*e + (11*B*b^7*c^2 - 18*A*b^6*c^3)
*e^2)*x)*sqrt(c*x^2 + b*x))/c^7, -1/2064384*(315*(32*(B*b^7*c^2 - 2*A*b^6*c
^3)*d^2 - 4*(9*B*b^8*c - 16*A*b^7*c^2)*d*e + (11*B*b^9 - 18*A*b^8*c)*e^2)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (229376*B*c^9*e^2*x^8 +
14336*(36*B*c^9*d*e + (37*B*b*c^8 + 18*A*c^9)*e^2)*x^7 + 3072*(96*B*c^9*d^2
 + 12*(33*B*b*c^8 + 16*A*c^9)*d*e + (103*B*b^2*c^7 + 198*A*b*c^8)*e^2)*x^6
+ 256*(96*(29*B*b*c^8 + 14*A*c^9)*d^2 + 12*(243*B*b^2*c^7 + 464*A*b*c^8)*d*
e + (5*B*b^3*c^6 + 1458*A*b^2*c^7)*e^2)*x^5 + 128*(96*(37*B*b^2*c^7 + 70*A*
b*c^8)*d^2 + 12*(3*B*b^3*c^6 + 592*A*b^2*c^7)*d*e - (11*B*b^4*c^5 - 18*A*b^
3*c^6)*e^2)*x^4 + 144*(32*(B*b^3*c^6 + 126*A*b^2*c^7)*d^2 - 4*(9*B*b^4*c^5
- 16*A*b^3*c^6)*d*e + (11*B*b^5*c^4 - 18*A*b^4*c^5)*e^2)*x^3 - 10080*(B*b^6
*c^3 - 2*A*b^5*c^4)*d^2 + 1260*(9*B*b^7*c^2 - 16*A*b^6*c^3)*d*e - 315*(11*B
*b^8*c - 18*A*b^7*c^2)*e^2 - 168*(32*(B*b^4*c^5 - 2*A*b^3*c^6)*d^2 - 4*(9*B
*b^5*c^4 - 16*A*b^4*c^5)*d*e + (11*B*b^6*c^3 - 18*A*b^5*c^4)*e^2)*x^2 + 210
*(32*(B*b^5*c^4 - 2*A*b^4*c^5)*d^2 - 4*(9*B*b^6*c^3 - 16*A*b^5*c^4)*d*e + (
11*B*b^7*c^2 - 18*A*b^6*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^7]
```

giac [A] time = 0.30, size = 681, normalized size = 1.61

$$\frac{1}{2064384}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(4\Bigg(14\Bigg(16\,Bc^2xe^2+\frac{36\,Bc^{10}de+37\,Bbc^9e^2+18\,Ac^{10}e^2}{c^8}\Bigg)x+\frac{3\big(96\,Bc^{10}d^2+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/2064384*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(4*(14*(16*B*c^2*x*e^2 + (36*B*c
^10*d*e + 37*B*b*c^9*e^2 + 18*A*c^10*e^2)/c^8)*x + 3*(96*B*c^10*d^2 + 396*B
*b*c^9*d*e + 192*A*c^10*d*e + 103*B*b^2*c^8*e^2 + 198*A*b*c^9*e^2)/c^8)*x +
 (2784*B*b*c^9*d^2 + 1344*A*c^10*d^2 + 2916*B*b^2*c^8*d*e + 5568*A*b*c^9*d*
e + 5*B*b^3*c^7*e^2 + 1458*A*b^2*c^8*e^2)/c^8)*x + (3552*B*b^2*c^8*d^2 + 67
20*A*b*c^9*d^2 + 36*B*b^3*c^7*d*e + 7104*A*b^2*c^8*d*e - 11*B*b^4*c^6*e^2 +
 18*A*b^3*c^7*e^2)/c^8)*x + 9*(32*B*b^3*c^7*d^2 + 4032*A*b^2*c^8*d^2 - 36*B
*b^4*c^6*d*e + 64*A*b^3*c^7*d*e + 11*B*b^5*c^5*e^2 - 18*A*b^4*c^6*e^2)/c^8)
*x - 21*(32*B*b^4*c^6*d^2 - 64*A*b^3*c^7*d^2 - 36*B*b^5*c^5*d*e + 64*A*b^4*
c^6*d*e + 11*B*b^6*c^4*e^2 - 18*A*b^5*c^5*e^2)/c^8)*x + 105*(32*B*b^5*c^5*d
^2 - 64*A*b^4*c^6*d^2 - 36*B*b^6*c^4*d*e + 64*A*b^5*c^5*d*e + 11*B*b^7*c^3*
e^2 - 18*A*b^6*c^4*e^2)/c^8)*x - 315*(32*B*b^6*c^4*d^2 - 64*A*b^5*c^5*d^2 -
 36*B*b^7*c^3*d*e + 64*A*b^6*c^4*d*e + 11*B*b^8*c^2*e^2 - 18*A*b^7*c^3*e^2)
/c^8) - 5/65536*(32*B*b^7*c^2*d^2 - 64*A*b^6*c^3*d^2 - 36*B*b^8*c*d*e + 64*
A*b^7*c^2*d*e + 11*B*b^9*e^2 - 18*A*b^8*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*sqrt(c) - b))/c^(13/2)
```

maple [B] time = 0.08, size = 1227, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x)
```

```
[Out] -45/16384*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+45/8
192*b^6/c^4*(c*x^2+b*x)^(1/2)*x*A*e^2+45/8192*b^7/c^5*(c*x^2+b*x)^(1/2)*B*d
*e-15/1024*b^5/c^4*(c*x^2+b*x)^(3/2)*B*d*e+5/96*b^3/c^2*(c*x^2+b*x)^(3/2)*x
*A*d*e+3/32*b^2/c^2*x*(c*x^2+b*x)^(5/2)*B*d*e-9/56*b/c^2*(c*x^2+b*x)^(7/2)*
B*d*e+3/64*b^2/c^2*x*(c*x^2+b*x)^(5/2)*A*e^2+1/4*x*(c*x^2+b*x)^(7/2)/c*B*d*
e+1/6*A*d^2*x*(c*x^2+b*x)^(5/2)+1/7*(c*x^2+b*x)^(7/2)/c*B*d^2-1/12*b/c*x*(c
*x^2+b*x)^(5/2)*B*d^2-1/12*b^2/c^2*(c*x^2+b*x)^(5/2)*A*d*e+5/192*b^3/c^2*(c
*x^2+b*x)^(3/2)*x*B*d^2+5/192*b^4/c^3*(c*x^2+b*x)^(3/2)*A*d*e-5/512*b^5/c^3
*(c*x^2+b*x)^(1/2)*x*B*d^2-5/512*b^6/c^4*(c*x^2+b*x)^(1/2)*A*d*e+5/1024*b^7
/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e-5/96*A*d^2*b^2/c*(
c*x^2+b*x)^(3/2)*x+5/256*A*d^2*b^4/c^2*(c*x^2+b*x)^(1/2)*x+55/65536*B*e^2*b
^9/c^(13/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+3/128*b^3/c^3*(c*x^2+
b*x)^(5/2)*A*e^2-15/2048*b^5/c^4*(c*x^2+b*x)^(3/2)*A*e^2+1/8*x*(c*x^2+b*x)^
(7/2)/c*A*e^2-9/112*b/c^2*(c*x^2+b*x)^(7/2)*A*e^2+5/2048*b^7/c^(9/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^2-11/384*B*e^2*b^3/c^3*x*(c*x^2+b*x
)^(5/2)+55/6144*B*e^2*b^5/c^4*(c*x^2+b*x)^(3/2)*x-55/16384*B*e^2*b^7/c^5*(c
*x^2+b*x)^(1/2)*x-11/144*B*e^2*b/c^2*x*(c*x^2+b*x)^(7/2)+55/12288*B*e^2*b^6
/c^5*(c*x^2+b*x)^(3/2)-55/32768*B*e^2*b^8/c^6*(c*x^2+b*x)^(1/2)+45/4096*b^6
/c^4*(c*x^2+b*x)^(1/2)*x*B*d*e-1/6*b/c*x*(c*x^2+b*x)^(5/2)*A*d*e-5/256*b^5/
c^3*(c*x^2+b*x)^(1/2)*x*A*d*e-15/512*b^4/c^3*(c*x^2+b*x)^(3/2)*x*B*d*e+3/64
*b^3/c^3*(c*x^2+b*x)^(5/2)*B*d*e+11/224*B*e^2*b^2/c^3*(c*x^2+b*x)^(7/2)-45/
32768*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2-5/1024*A
*d^2*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-5/192*A*d^2*b^3/
c^2*(c*x^2+b*x)^(3/2)+1/9*B*e^2*x^2*(c*x^2+b*x)^(7/2)/c+45/16384*b^7/c^5*(c
*x^2+b*x)^(1/2)*A*e^2-15/1024*b^4/c^3*(c*x^2+b*x)^(3/2)*x*A*e^2-1/24*b^2/c^
2*(c*x^2+b*x)^(5/2)*B*d^2+5/384*b^4/c^3*(c*x^2+b*x)^(3/2)*B*d^2-5/1024*b^6/
c^4*(c*x^2+b*x)^(1/2)*B*d^2-11/768*B*e^2*b^4/c^4*(c*x^2+b*x)^(5/2)+2/7*(c*x
^2+b*x)^(7/2)/c*A*d*e+5/512*A*d^2*b^5/c^3*(c*x^2+b*x)^(1/2)+1/12*A*d^2/c*(c
*x^2+b*x)^(5/2)*b
```

maxima [B] time = 0.60, size = 944, normalized size = 2.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/9*(c*x^2 + b*x)^(7/2)*B*e^2*x^2/c + 1/6*(c*x^2 + b*x)^(5/2)*A*d^2*x + 5/2
56*sqrt(c*x^2 + b*x)*A*b^4*d^2*x/c^2 - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*d^2*x
/c - 55/16384*sqrt(c*x^2 + b*x)*B*b^7*e^2*x/c^5 + 55/6144*(c*x^2 + b*x)^(3/
2)*B*b^5*e^2*x/c^4 - 11/384*(c*x^2 + b*x)^(5/2)*B*b^3*e^2*x/c^3 - 11/144*(c
*x^2 + b*x)^(7/2)*B*b*e^2*x/c^2 - 5/1024*A*b^6*d^2*log(2*c*x + b + 2*sqrt(c
*x^2 + b*x)*sqrt(c))/c^(7/2) + 55/65536*B*b^9*e^2*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/c^(13/2) + 5/512*sqrt(c*x^2 + b*x)*A*b^5*d^2/c^3 - 5/19
```

```
2*(c*x^2 + b*x)^(3/2)*A*b^3*d^2/c^2 + 1/12*(c*x^2 + b*x)^(5/2)*A*b*d^2/c -
55/32768*sqrt(c*x^2 + b*x)*B*b^8*e^2/c^6 + 55/12288*(c*x^2 + b*x)^(3/2)*B*b
^6*e^2/c^5 - 11/768*(c*x^2 + b*x)^(5/2)*B*b^4*e^2/c^4 + 11/224*(c*x^2 + b*x
)^(7/2)*B*b^2*e^2/c^3 + 45/8192*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b^6*x/c
^4 - 15/1024*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b^4*x/c^3 - 5/512*(B*d^2
 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^5*x/c^3 + 3/64*(2*B*d*e + A*e^2)*(c*x^2 + b
*x)^(5/2)*b^2*x/c^2 + 5/192*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(3/2)*b^3*x/c^2
 + 1/8*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(7/2)*x/c - 1/12*(B*d^2 + 2*A*d*e)*(
c*x^2 + b*x)^(5/2)*b*x/c - 45/32768*(2*B*d*e + A*e^2)*b^8*log(2*c*x + b + 2
*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/2048*(B*d^2 + 2*A*d*e)*b^7*log(2*c
*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) + 45/16384*(2*B*d*e + A*e^2)*
sqrt(c*x^2 + b*x)*b^7/c^5 - 15/2048*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(3/2)*b
^5/c^4 - 5/1024*(B*d^2 + 2*A*d*e)*sqrt(c*x^2 + b*x)*b^6/c^4 + 3/128*(2*B*d*
e + A*e^2)*(c*x^2 + b*x)^(5/2)*b^3/c^3 + 5/384*(B*d^2 + 2*A*d*e)*(c*x^2 + b
*x)^(3/2)*b^4/c^3 - 9/112*(2*B*d*e + A*e^2)*(c*x^2 + b*x)^(7/2)*b/c^2 - 1/2
4*(B*d^2 + 2*A*d*e)*(c*x^2 + b*x)^(5/2)*b^2/c^2 + 1/7*(B*d^2 + 2*A*d*e)*(c*
x^2 + b*x)^(7/2)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (x(b+cx))^{\frac{5}{2}}(A+Bx)(d+ex)^2\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)*(d + e*x)**2, x)
```

3.1184 $\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=264

$$-\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{6144c^4}+\frac{(b+2cx)\left(bx+cx^2\right)^{5/2}\left(-16bc(Ae+Bd)+32\right.}{384c^3}$$

```
[Out] -5/6144*b^2*(32*A*c^2*d+9*b^2*B*e-16*b*c*(A*e+B*d))*(2*c*x+b)*(c*x^2+b*x)^(
3/2)/c^4+1/384*(32*A*c^2*d+9*b^2*B*e-16*b*c*(A*e+B*d))*(2*c*x+b)*(c*x^2+b*x
)^(5/2)/c^3-1/112*(9*b*B*e-16*c*(A*e+B*d)-14*B*c*e*x)*(c*x^2+b*x)^(7/2)/c^2
-5/16384*b^6*(32*A*c^2*d+9*b^2*B*e-16*b*c*(A*e+B*d))*arctanh(x*c^(1/2)/(c*x
^2+b*x)^(1/2))/c^(11/2)+5/16384*b^4*(32*A*c^2*d+9*b^2*B*e-16*b*c*(A*e+B*d))
*(2*c*x+b)*(c*x^2+b*x)^(1/2)/c^5
```

Rubi [A] time = 0.25, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {779, 612, 620, 206}

$$\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\left(-16bc(Ae+Bd)+32Ac^2d+9b^2Be\right)}{16384c^5}-\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}\left(-16bc(Ae+Bd)+32A\right.}{6144c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*b^4*(32*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*(b + 2*c*x)*Sqrt[b*x +
 c*x^2])/(16384*c^5) - (5*b^2*(32*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))
*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(6144*c^4) + ((32*A*c^2*d + 9*b^2*B*e - 1
6*b*c*(B*d + A*e))*(b + 2*c*x)*(b*x + c*x^2)^(5/2))/(384*c^3) - ((9*b*B*e -
 16*c*(B*d + A*e) - 14*B*c*e*x)*(b*x + c*x^2)^(7/2))/(112*c^2) - (5*b^6*(32
*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c
*x^2]])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(bx+cx^2\right)^{5/2}\,dx=-\frac{(9bBe-16c(Bd+Ae)-14Bcex)\left(bx+cx^2\right)^{7/2}}{112c^2}+\frac{\left(\frac{9}{2}b^2Be+8c(2Acd-\right.}{}$$

$$=\frac{\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{5/2}}{384c^3}-\frac{(9bBe-1}{}$$

$$=-\frac{5b^2\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\left(bx+cx^2\right)^{3/2}}{6144c^4}+\frac{(32}{}$$

$$=\frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^2(32}{}$$

$$=\frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^2(32}{}$$

$$=\frac{5b^4\left(32Ac^2d+9b^2Be-16bc(Bd+Ae)\right)(b+2cx)\sqrt{bx+cx^2}}{16384c^5}-\frac{5b^2(32}{}$$

Mathematica [A] time = 0.80, size = 315, normalized size = 1.19

$$\frac{\sqrt{x(b+cx)}\left(\sqrt{c}\left(-210b^6c(8Ae+8Bd+3Bex)+56b^5c^2(20A(3d+ex)+Bx(20d+9ex))-16b^4c^3x(28A(5d+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(945*b^7*B*e - 210*b^6*c*(8*B*d + 8*A*e + 3*B*e
*x) + 128*b^3*c^4*x^2*(3*B*x*(2*d + e*x) + 2*A*(7*d + 3*e*x)) + 2048*c^7*x^
5*(4*A*(7*d + 6*e*x) + 3*B*x*(8*d + 7*e*x)) + 56*b^5*c^2*(20*A*(3*d + e*x)
+ B*x*(20*d + 9*e*x)) - 16*b^4*c^3*x*(28*A*(5*d + 2*e*x) + B*x*(56*d + 27*e
*x)) + 1024*b*c^6*x^4*(4*A*(35*d + 29*e*x) + B*x*(116*d + 99*e*x)) + 256*b^
2*c^5*x^3*(B*x*(296*d + 243*e*x) + A*(378*d + 296*e*x))) - (105*b^(11/2)*(3
2*A*c^2*d + 9*b^2*B*e - 16*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[
b]])/(Sqrt[x]*Sqrt[1 + (c*x)/b])))/(344064*c^(11/2))
```

fricas [A] time = 0.68, size = 802, normalized size = 3.04

$$\left[\frac{105\left(16\left(Bb^7c-2\,Ab^6c^2\right)d-\left(9\,Bb^8-16\,Ab^7c\right)e\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(43008\,Bc^8ex^7+30\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/688128*(105*(16*(B*b^7*c - 2*A*b^6*c^2)*d - (9*B*b^8 - 16*A*b^7*c)*e)*sq
rt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(43008*B*c^8*e*x^7 +
 3072*(16*B*c^8*d + (33*B*b*c^7 + 16*A*c^8)*e)*x^6 + 256*(16*(29*B*b*c^7 +
14*A*c^8)*d + (243*B*b^2*c^6 + 464*A*b*c^7)*e)*x^5 + 128*(16*(37*B*b^2*c^6
+ 70*A*b*c^7)*d + (3*B*b^3*c^5 + 592*A*b^2*c^6)*e)*x^4 + 48*(16*(B*b^3*c^5
+ 126*A*b^2*c^6)*d - (9*B*b^4*c^4 - 16*A*b^3*c^5)*e)*x^3 - 56*(16*(B*b^4*c^
4 - 2*A*b^3*c^5)*d - (9*B*b^5*c^3 - 16*A*b^4*c^4)*e)*x^2 - 1680*(B*b^6*c^2
- 2*A*b^5*c^3)*d + 105*(9*B*b^7*c - 16*A*b^6*c^2)*e + 70*(16*(B*b^5*c^3 - 2
*A*b^4*c^4)*d - (9*B*b^6*c^2 - 16*A*b^5*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^6,
-1/344064*(105*(16*(B*b^7*c - 2*A*b^6*c^2)*d - (9*B*b^8 - 16*A*b^7*c)*e)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (43008*B*c^8*e*x^7 + 3072
*(16*B*c^8*d + (33*B*b*c^7 + 16*A*c^8)*e)*x^6 + 256*(16*(29*B*b*c^7 + 14*A*
c^8)*d + (243*B*b^2*c^6 + 464*A*b*c^7)*e)*x^5 + 128*(16*(37*B*b^2*c^6 + 70*
A*b*c^7)*d + (3*B*b^3*c^5 + 592*A*b^2*c^6)*e)*x^4 + 48*(16*(B*b^3*c^5 + 126
*A*b^2*c^6)*d - (9*B*b^4*c^4 - 16*A*b^3*c^5)*e)*x^3 - 56*(16*(B*b^4*c^4 - 2
*A*b^3*c^5)*d - (9*B*b^5*c^3 - 16*A*b^4*c^4)*e)*x^2 - 1680*(B*b^6*c^2 - 2*A
*b^5*c^3)*d + 105*(9*B*b^7*c - 16*A*b^6*c^2)*e + 70*(16*(B*b^5*c^3 - 2*A*b^
4*c^4)*d - (9*B*b^6*c^2 - 16*A*b^5*c^3)*e)*x)*sqrt(c*x^2 + b*x))/c^6]
```

giac [A] time = 0.27, size = 425, normalized size = 1.61

$$\frac{1}{344064}\sqrt{cx^2+bx}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(12\Bigg(14\,Bc^2xe+\frac{16\,Bc^9d+33\,Bbc^8e+16\,Ac^9e}{c^7}\Bigg)x+\frac{464\,Bbc^8d+224\,Ac^9d+243}{c^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/344064*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*(14*B*c^2*x*e + (16*B*c^9*d +
 33*B*b*c^8*e + 16*A*c^9*e)/c^7)*x + (464*B*b*c^8*d + 224*A*c^9*d + 243*B*b
^2*c^7*e + 464*A*b*c^8*e)/c^7)*x + (592*B*b^2*c^7*d + 1120*A*b*c^8*d + 3*B*
b^3*c^6*e + 592*A*b^2*c^7*e)/c^7)*x + 3*(16*B*b^3*c^6*d + 2016*A*b^2*c^7*d
- 9*B*b^4*c^5*e + 16*A*b^3*c^6*e)/c^7)*x - 7*(16*B*b^4*c^5*d - 32*A*b^3*c^6
*d - 9*B*b^5*c^4*e + 16*A*b^4*c^5*e)/c^7)*x + 35*(16*B*b^5*c^4*d - 32*A*b^4
*c^5*d - 9*B*b^6*c^3*e + 16*A*b^5*c^4*e)/c^7)*x - 105*(16*B*b^6*c^3*d - 32*
A*b^5*c^4*d - 9*B*b^7*c^2*e + 16*A*b^6*c^3*e)/c^7) - 5/32768*(16*B*b^7*c*d
- 32*A*b^6*c^2*d - 9*B*b^8*e + 16*A*b^7*c*e)*log(abs(-2*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.05, size = 716, normalized size = 2.71

$$\frac{5A\,b^7e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2048c^{\frac{9}{2}}}-\frac{5A\,b^6d\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{1024c^{\frac{7}{2}}}-\frac{45B\,b^8e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{32768c^{\frac{11}{2}}}+\frac{5B\,b^7d\ln\Bigg(\frac{cx+}{\sqrt{c}}}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] -15/2048*B*e*b^5/c^4*(c*x^2+b*x)^(3/2)+45/16384*B*e*b^7/c^5*(c*x^2+b*x)^(1/
2)+1/6*A*d*x*(c*x^2+b*x)^(5/2)+1/7*(c*x^2+b*x)^(7/2)/c*B*d+1/7*(c*x^2+b*x)^
(7/2)/c*A*e+45/8192*B*e*b^6/c^4*(c*x^2+b*x)^(1/2)*x+3/64*B*e*b^2/c^2*x*(c*x
^2+b*x)^(5/2)-15/1024*B*e*b^4/c^3*(c*x^2+b*x)^(3/2)*x-1/12*b/c*x*(c*x^2+b*x
)^(5/2)*B*d+5/192*b^3/c^2*(c*x^2+b*x)^(3/2)*x*A*e-1/12*b/c*x*(c*x^2+b*x)^(5
/2)*A*e-5/96*A*d*b^2/c*(c*x^2+b*x)^(3/2)*x+5/256*A*d*b^4/c^2*(c*x^2+b*x)^(1
/2)*x-5/512*b^5/c^3*(c*x^2+b*x)^(1/2)*x*A*e-5/512*b^5/c^3*(c*x^2+b*x)^(1/2)
*x*B*d+5/192*b^3/c^2*(c*x^2+b*x)^(3/2)*x*B*d+5/384*b^4/c^3*(c*x^2+b*x)^(3/2
)*A*e+5/384*b^4/c^3*(c*x^2+b*x)^(3/2)*B*d-1/24*b^2/c^2*(c*x^2+b*x)^(5/2)*A*
e-1/24*b^2/c^2*(c*x^2+b*x)^(5/2)*B*d-5/1024*b^6/c^4*(c*x^2+b*x)^(1/2)*A*e-5
/1024*b^6/c^4*(c*x^2+b*x)^(1/2)*B*d+5/2048*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))*A*e+1/12*A*d/c*(c*x^2+b*x)^(5/2)*b-5/192*A*d*b^3/c^2*
(c*x^2+b*x)^(3/2)+1/8*B*e*x*(c*x^2+b*x)^(7/2)/c-9/112*B*e*b/c^2*(c*x^2+b*x)
^(7/2)+3/128*B*e*b^3/c^3*(c*x^2+b*x)^(5/2)-5/1024*A*d*b^6/c^(7/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+5/2048*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x)^(1/2))*B*d-45/32768*B*e*b^8/c^(11/2)*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x)^(1/2))+5/512*A*d*b^5/c^3*(c*x^2+b*x)^(1/2)
```

maxima [B] time = 0.54, size = 573, normalized size = 2.17

$$\frac{1}{6}\left(cx^2+bx\right)^{\frac{5}{2}}Adx+\frac{5\sqrt{cx^2+bx}\,Ab^4dx}{256\,c^2}-\frac{5\left(cx^2+bx\right)^{\frac{3}{2}}Ab^2dx}{96\,c}+\frac{45\sqrt{cx^2+bx}\,Bb^6ex}{8192\,c^4}-\frac{15\left(cx^2+bx\right)^{\frac{3}{2}}Bb^4ex}{1024\,c^3}+3($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*d*x + 5/256*sqrt(c*x^2 + b*x)*A*b^4*d*x/c^2 - 5/9
6*(c*x^2 + b*x)^(3/2)*A*b^2*d*x/c + 45/8192*sqrt(c*x^2 + b*x)*B*b^6*e*x/c^4
 - 15/1024*(c*x^2 + b*x)^(3/2)*B*b^4*e*x/c^3 + 3/64*(c*x^2 + b*x)^(5/2)*B*b
^2*e*x/c^2 + 1/8*(c*x^2 + b*x)^(7/2)*B*e*x/c - 5/1024*A*b^6*d*log(2*c*x + b
 + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 45/32768*B*b^8*e*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(11/2) + 5/512*sqrt(c*x^2 + b*x)*A*b^5*d/c^3
 - 5/192*(c*x^2 + b*x)^(3/2)*A*b^3*d/c^2 + 1/12*(c*x^2 + b*x)^(5/2)*A*b*d/c
 + 45/16384*sqrt(c*x^2 + b*x)*B*b^7*e/c^5 - 15/2048*(c*x^2 + b*x)^(3/2)*B*b
^5*e/c^4 + 3/128*(c*x^2 + b*x)^(5/2)*B*b^3*e/c^3 - 9/112*(c*x^2 + b*x)^(7/2
)*B*b*e/c^2 - 5/512*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^5*x/c^3 + 5/192*(c*x^2
+ b*x)^(3/2)*(B*d + A*e)*b^3*x/c^2 - 1/12*(c*x^2 + b*x)^(5/2)*(B*d + A*e)*b
*x/c + 5/2048*(B*d + A*e)*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/
c^(9/2) - 5/1024*sqrt(c*x^2 + b*x)*(B*d + A*e)*b^6/c^4 + 5/384*(c*x^2 + b*x
)^(3/2)*(B*d + A*e)*b^4/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*(B*d + A*e)*b^2/c^2
+ 1/7*(c*x^2 + b*x)^(7/2)*(B*d + A*e)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x)*(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)\left(d+ex\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)*(d + e*x), x)
```

3.1185 $\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=171

$$\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}-\frac{(b}{}$$

```
[Out] 5/384*b^2*(-2*A*c+B*b)*(2*c*x+b)*(c*x^2+b*x)^(3/2)/c^3-1/24*(-2*A*c+B*b)*(2
*c*x+b)*(c*x^2+b*x)^(5/2)/c^2+1/7*B*(c*x^2+b*x)^(7/2)/c+5/1024*b^6*(-2*A*c+
B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(9/2)-5/1024*b^4*(-2*A*c+B*b)*(
2*c*x+b)*(c*x^2+b*x)^(1/2)/c^4
```

Rubi [A] time = 0.07, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.210$, Rules used = {640, 612, 620, 206}

$$-\frac{5b^4(b+2cx)\sqrt{bx+cx^2}\,(bB-2Ac)}{1024c^4}+\frac{5b^2(b+2cx)\left(bx+cx^2\right)^{3/2}(bB-2Ac)}{384c^3}+\frac{5b^6(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{1024c^{9/2}}-\frac{(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-5*b^4*(b*B - 2*A*c)*(b + 2*c*x)*Sqrt[b*x + c*x^2])/(1024*c^4) + (5*b^2*(b
*B - 2*A*c)*(b + 2*c*x)*(b*x + c*x^2)^(3/2))/(384*c^3) - ((b*B - 2*A*c)*(b
+ 2*c*x)*(b*x + c*x^2)^(5/2))/(24*c^2) + (B*(b*x + c*x^2)^(7/2))/(7*c) + (5
*b^6*(b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(1024*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(bx+cx^2\right)^{5/2}\,dx &= \frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{(-bB+2Ac)\int \left(bx+cx^2\right)^{5/2}\,dx}{2c}\\ &= -\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B\left(bx+cx^2\right)^{7/2}}{7c}+\frac{\left(5b^2(bB-2Ac)\right)\int \left(bx\right.}{48c^2}\\ &= \frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\frac{(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{5/2}}{24c^2}+\frac{B}{}\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\\ &= -\frac{5b^4(bB-2Ac)(b+2cx)\sqrt{bx+cx^2}}{1024c^4}+\frac{5b^2(bB-2Ac)(b+2cx)\left(bx+cx^2\right)^{3/2}}{384c^3}-\end{aligned}$$

Mathematica [**A**] time = 0.34, size = 171, normalized size = 1.00

$$\frac{(x(b+cx))^{7/2}\left(\frac{49(bB-2Ac)\left(15b^{11/2}\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\left(15b^5-10b^4cx+8b^3c^2x^2+432b^2c^3x^3+640bc^4x^4+256c^5x^5\right)\right)}{3072c^{7/2}x^{7/2}\sqrt{\frac{cx}{b}+1}}+7B(b+c\right.}{49c(b+cx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(b*x + c*x^2)^(5/2),x]
```

```
[Out] ((x*(b + c*x))^(7/2)*(7*B*(b + c*x)^3 + (49*(b*B - 2*A*c)*(-(Sqrt[c]*Sqrt[x
]*Sqrt[1 + (c*x)/b]*(15*b^5 - 10*b^4*c*x + 8*b^3*c^2*x^2 + 432*b^2*c^3*x^3
+ 640*b*c^4*x^4 + 256*c^5*x^5)) + 15*b^(11/2)*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqr
t[b]]))/(3072*c^(7/2)*x^(7/2)*Sqrt[1 + (c*x)/b])))/(49*c*(b + c*x)^3)
```

fricas [**A**] time = 0.64, size = 392, normalized size = 2.29

$$\left[-\frac{105\left(Bb^7-2Ab^6c\right)\sqrt{c}\log\left(2cx+b-2\sqrt{cx^2+bx}\sqrt{c}\right)-2\left(3072Bc^7x^6-105Bb^6c+210Ab^5c^2+256\left(29\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/43008*(105*(B*b^7 - 2*A*b^6*c)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b
*x)*sqrt(c)) - 2*(3072*B*c^7*x^6 - 105*B*b^6*c + 210*A*b^5*c^2 + 256*(29*B*
b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4
 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 -
2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5, -1/21504*(105*(B*b^7 - 2*A*b^6*c)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3072*B*c^7*x^6 - 105*B*
b^6*c + 210*A*b^5*c^2 + 256*(29*B*b*c^6 + 14*A*c^7)*x^5 + 128*(37*B*b^2*c^5
 + 70*A*b*c^6)*x^4 + 48*(B*b^3*c^4 + 126*A*b^2*c^5)*x^3 - 56*(B*b^4*c^3 - 2
*A*b^3*c^4)*x^2 + 70*(B*b^5*c^2 - 2*A*b^4*c^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [**A**] time = 0.26, size = 221, normalized size = 1.29

$$\frac{1}{21504}\sqrt{cx^2+bx}\left(2\left(4\left(2\left(8\left(2\left(12Bc^2x+\frac{29Bbc^7+14Ac^8}{c^6}\right)x+\frac{37Bb^2c^6+70Abc^7}{c^6}\right)x+\frac{3\left(Bb^3c^5+126Ab^2\right.}{c^6}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/21504*sqrt(c*x^2 + b*x)*(2*(4*(2*(8*(2*(12*B*c^2*x + (29*B*b*c^7 + 14*A*c
^8)/c^6)*x + (37*B*b^2*c^6 + 70*A*b*c^7)/c^6)*x + 3*(B*b^3*c^5 + 126*A*b^2*
c^6)/c^6)*x - 7*(B*b^4*c^4 - 2*A*b^3*c^5)/c^6)*x + 35*(B*b^5*c^3 - 2*A*b^4*
c^4)/c^6)*x - 105*(B*b^6*c^2 - 2*A*b^5*c^3)/c^6) - 5/2048*(B*b^7 - 2*A*b^6*
c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 321, normalized size = 1.88

$$-\frac{5A\,b^{6}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{1024c^{\frac{7}{2}}}+\frac{5B\,b^{7}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{2048c^{\frac{9}{2}}}+\frac{5\sqrt{c\,x^{2}+bx}\;A\,b^{4}x}{256c^{2}}-\frac{5\sqrt{c\,x^{2}+bx}\;B\,b^{5}x}{512c^{3}}+\frac{5\sqrt{c\,x^{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2),x)
```

```
[Out] 1/7*(c*x^2+b*x)^(7/2)*B/c-1/12*B*b/c*x*(c*x^2+b*x)^(5/2)-1/24*B*b^2/c^2*(c*
x^2+b*x)^(5/2)+5/192*B*b^3/c^2*(c*x^2+b*x)^(3/2)*x+5/384*B*b^4/c^3*(c*x^2+b
*x)^(3/2)-5/512*B*b^5/c^3*(c*x^2+b*x)^(1/2)*x-5/1024*B*b^6/c^4*(c*x^2+b*x)^
(1/2)+5/2048*B*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/6*A*
x*(c*x^2+b*x)^(5/2)+1/12*A/c*(c*x^2+b*x)^(5/2)*b-5/96*A*b^2/c*(c*x^2+b*x)^(
3/2)*x-5/192*A*b^3/c^2*(c*x^2+b*x)^(3/2)+5/256*A*b^4/c^2*(c*x^2+b*x)^(1/2)*
x+5/512*A*b^5/c^3*(c*x^2+b*x)^(1/2)-5/1024*A*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x)^(1/2))
```

maxima [B] time = 0.62, size = 318, normalized size = 1.86

$$\frac{1}{6}\left(cx^{2}+bx\right)^{\frac{5}{2}}Ax-\frac{5\sqrt{cx^{2}+bx}\,Bb^{5}x}{512\,c^{3}}+\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Bb^{3}x}{192\,c^{2}}+\frac{5\sqrt{cx^{2}+bx}\,Ab^{4}x}{256\,c^{2}}-\frac{\left(cx^{2}+bx\right)^{\frac{5}{2}}Bbx}{12\,c}-\frac{5\left(cx^{2}+bx\right)^{\frac{3}{2}}Ab}{96\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(c*x^2 + b*x)^(5/2)*A*x - 5/512*sqrt(c*x^2 + b*x)*B*b^5*x/c^3 + 5/192*(
c*x^2 + b*x)^(3/2)*B*b^3*x/c^2 + 5/256*sqrt(c*x^2 + b*x)*A*b^4*x/c^2 - 1/12
*(c*x^2 + b*x)^(5/2)*B*b*x/c - 5/96*(c*x^2 + b*x)^(3/2)*A*b^2*x/c + 5/2048*
B*b^7*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(9/2) - 5/1024*A*b^6*l
og(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 5/1024*sqrt(c*x^2 + b
*x)*B*b^6/c^4 + 5/384*(c*x^2 + b*x)^(3/2)*B*b^4/c^3 + 5/512*sqrt(c*x^2 + b*
x)*A*b^5/c^3 - 1/24*(c*x^2 + b*x)^(5/2)*B*b^2/c^2 - 5/192*(c*x^2 + b*x)^(3/
2)*A*b^3/c^2 + 1/7*(c*x^2 + b*x)^(7/2)*B/c + 1/12*(c*x^2 + b*x)^(5/2)*A*b/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \left(c\,x^{2}+b\,x\right)^{5/2}\,\left(A+B\,x\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(5/2)*(A + B*x),x)
```

```
[Out] int((b*x + c*x^2)^(5/2)*(A + B*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x), x)
```

3.1186 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=703

$$\frac{\left(bx+cx^2\right)^{3/2}\left(-2cex\left(12Ace(2cd-be)-B\left(-5b^2e^2-12bcde+24c^2d^2\right)\right)+4Ace\left(3b^2e^2-22bcde+16c^2d^2\right)-B\,(5\right.\right.}{192c^2e^4}$$

```
[Out] 1/192*(4*A*c*e*(3*b^2*e^2-22*b*c*d*e+16*c^2*d^2)-B*(5*b^3*e^3+12*b^2*c*d*e^
2-88*b*c^2*d^2*e+64*c^3*d^3)-2*c*e*(12*A*c*e*(-b*e+2*c*d)-B*(-5*b^2*e^2-12*
b*c*d*e+24*c^2*d^2))*x)*(c*x^2+b*x)^(3/2)/c^2/e^4-1/60*(-10*B*c*e*x-12*A*c*
e-5*B*b*e+12*B*c*d)*(c*x^2+b*x)^(5/2)/c/e^2-1/512*(4*A*c*e*(-3*b^5*e^5-10*b
^4*c*d*e^4-80*b^3*c^2*d^2*e^3+480*b^2*c^3*d^3*e^2-640*b*c^4*d^4*e+256*c^5*d
^5)-B*(-5*b^6*e^6-12*b^5*c*d*e^5-40*b^4*c^2*d^2*e^4-320*b^3*c^3*d^3*e^3+192
0*b^2*c^4*d^4*e^2-2560*b*c^5*d^5*e+1024*c^6*d^6))*arctanh(x*c^(1/2)/(c*x^2+
b*x)^(1/2))/c^(7/2)/e^7-d^(5/2)*(-A*e+B*d)*(-b*e+c*d)^(5/2)*arctanh(1/2*(b*
d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e^7+1/1536*(1
2*A*c*e*(-3*b^4*e^4-10*b^3*c*d*e^3+176*b^2*c^2*d^2*e^2-288*b*c^3*d^3*e+128*
c^4*d^4)-3*B*(-5*b^5*e^5-12*b^4*c*d*e^4-40*b^3*c^2*d^2*e^3+704*b^2*c^3*d^3*
e^2-1152*b*c^4*d^4*e+512*c^5*d^5)-2*c*e*(8*b*c*d*e*(-b*e+2*c*d)*(-12*A*c*e-
5*B*b*e+12*B*c*d)+(-3*b^2*e^2-8*b*c*d*e+16*c^2*d^2)*(12*A*c*e*(-b*e+2*c*d)-
B*(-5*b^2*e^2-12*b*c*d*e+24*c^2*d^2)))*x)*(c*x^2+b*x)^(1/2)/c^3/e^6
```

Rubi [A] time = 1.12, antiderivative size = 703, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {814, 843, 620, 206, 724}

$$\frac{\left(bx+cx^2\right)^{3/2}\left(-2cex\left(12Ace(2cd-be)-B\left(-5b^2e^2-12bcde+24c^2d^2\right)\right)+4Ace\left(3b^2e^2-22bcde+16c^2d^2\right)-B\,(1\right.\right.}{192c^2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] ((3*(4*A*c*e*(128*c^4*d^4 - 288*b*c^3*d^3*e + 176*b^2*c^2*d^2*e^2 - 10*b^3*
c*d*e^3 - 3*b^4*e^4) - B*(512*c^5*d^5 - 1152*b*c^4*d^4*e + 704*b^2*c^3*d^3*
e^2 - 40*b^3*c^2*d^2*e^3 - 12*b^4*c*d*e^4 - 5*b^5*e^5)) - 2*c*e*(8*b*c*d*e*
(2*c*d - b*e)*(12*B*c*d - 5*b*B*e - 12*A*c*e) + (16*c^2*d^2 - 8*b*c*d*e - 3
*b^2*e^2)*(12*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 12*b*c*d*e - 5*b^2*e^2)
))*x)*Sqrt[b*x + c*x^2])/(1536*c^3*e^6) + ((4*A*c*e*(16*c^2*d^2 - 22*b*c*d*
e + 3*b^2*e^2) - B*(64*c^3*d^3 - 88*b*c^2*d^2*e + 12*b^2*c*d*e^2 + 5*b^3*e^
3) - 2*c*e*(12*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 12*b*c*d*e - 5*b^2*e^2
))*x)*(b*x + c*x^2)^(3/2))/(192*c^2*e^4) - ((12*B*c*d - 5*b*B*e - 12*A*c*e
 - 10*B*c*e*x)*(b*x + c*x^2)^(5/2))/(60*c*e^2) - ((4*A*c*e*(256*c^5*d^5 - 64
0*b*c^4*d^4*e + 480*b^2*c^3*d^3*e^2 - 80*b^3*c^2*d^2*e^3 - 10*b^4*c*d*e^4 -
 3*b^5*e^5) - B*(1024*c^6*d^6 - 2560*b*c^5*d^5*e + 1920*b^2*c^4*d^4*e^2 - 3
20*b^3*c^3*d^3*e^3 - 40*b^4*c^2*d^2*e^4 - 12*b^5*c*d*e^5 - 5*b^6*e^6))*ArcT
anh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(512*c^(7/2)*e^7) - (d^(5/2)*(B*d - A*e
)*(c*d - b*e)^(5/2)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b
*e]*Sqrt[b*x + c*x^2])])/e^7
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{d+ex}\,dx = -\frac{(12Bcd-5bBe-12Ace-10Bcex)\left(bx+cx^2\right)^{5/2}}{60ce^2} - \int \frac{\left(-\frac{1}{2}bd(12Bcd-5bBe-12Ace)+\frac{1}{2}\right.}{}$$

$$= \frac{\left(4Ace\left(16c^2d^2-22bcde+3b^2e^2\right)-B\left(64c^3d^3-88bc^2d^2e+12b^2cde^2+5b^3e^3\right)\right.}{192c^2e^4}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\right.\right.}{}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\right.\right.}{}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\right.\right.}{}$$

$$= \frac{\left(3\left(4Ace\left(128c^4d^4-288bc^3d^3e+176b^2c^2d^2e^2-10b^3cde^3-3b^4e^4\right)-B\left(512c^5\right.\right.}{}$$

Mathematica [A] time = 2.47, size = 650, normalized size = 0.92

$$\frac{\sqrt{x(b+cx)}\Bigg(\sqrt{c}\Bigg(e\sqrt{x}\,\big(4Ace\big(-45b^4e^4+30b^3ce^3(ex-5d)+4b^2c^2e^2\big(660d^2-295dex+186e^2x^2\big)+16bc^3e\big(-270}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((15*(4*A*c*e*(-256*c^5*d^5 + 640*b*c^4*d^4*e - 480*b^2*
c^3*d^3*e^2 + 80*b^3*c^2*d^2*e^3 + 10*b^4*c*d*e^4 + 3*b^5*e^5) + B*(1024*c^
6*d^6 - 2560*b*c^5*d^5*e + 1920*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 - 40*
b^4*c^2*d^2*e^4 - 12*b^5*c*d*e^5 - 5*b^6*e^6))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sq
rt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqrt[c]*(e*Sqrt[x]*(4*A*c*e*(-45*b^4*
e^4 + 30*b^3*c*e^3*(-5*d + e*x) + 4*b^2*c^2*e^2*(660*d^2 - 295*d*e*x + 186*
e^2*x^2) + 16*b*c^3*e*(-270*d^3 + 130*d^2*e*x - 85*d*e^2*x^2 + 63*e^3*x^3)
+ 32*c^4*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)
) + B*(75*b^5*e^5 + 10*b^4*c*e^4*(18*d - 5*e*x) + 40*b^3*c^2*e^3*(15*d^2 -
3*d*e*x + e^2*x^2) + 16*b^2*c^3*e^2*(-660*d^3 + 295*d^2*e*x - 186*d*e^2*x^2
 + 135*e^3*x^3) + 64*b*c^4*e*(270*d^4 - 130*d^3*e*x + 85*d^2*e^2*x^2 - 63*d
*e^3*x^3 + 50*e^4*x^4) - 128*c^5*(60*d^5 - 30*d^4*e*x + 20*d^3*e^2*x^2 - 15
*d^2*e^3*x^3 + 12*d*e^4*x^4 - 10*e^5*x^5))) - (15360*c^3*d^(5/2)*(B*d - A*e
)*(c*d - b*e)^(5/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x
])])/Sqrt[b + c*x])))/(7680*c^(7/2)*e^7*Sqrt[x])
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 4097, normalized size = 5.83

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x)
```

```
[Out] 5/256*B/e*b^4/c^2*(c*x^2+b*x)^(1/2)*x-5/96*B/e*b^2/c*(c*x^2+b*x)^(3/2)*x-3/
e^5*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(1/2))/(x+d/e))*b^2*c*A+3/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B+3/64/e^2/c*
```

```
b^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B*d+3/4/e^3
*d^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*A-3/4/
e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*b*c*B+3
/e^6*d^5/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-3/e^7*d^6/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B+3/128/e^2/
c^2*b^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B*d-3/256
/e^2/c^(5/2)*b^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*B*d+5/32/e^3*b^2*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*d^2*B-5/64/e^2/c*b^3*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*d*A+5/64/e^3/c*b^3*((x+d/e)
^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*d^2*B-1/4/e^2*((x+d/e)^2*
c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*c*d*A+5/16/e^3*d^2*ln(((x+
d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/c^(1/2)*b^3*A-9/4/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+9/4/e^5*d^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-5/2/e^6*d^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)
/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(3
/2)*b*B-1/e^5*d^4/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-5/16/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-
2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
)/c^(1/2)*b^3*B-5/1024*B/e*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))-3/128/e/c^2*b^4*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*A+3/256/e/c^(5/2)*b^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*A+1/8/e*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*b*A+1/e^5*d^4*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A-1/e^6*d^5*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B-1/e^6*d^5*ln(((x+d/e)*c+1/2*
(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2))*c^(5/2)*A+1/6*B/e*(c*x^2+b*x)^(5/2)*x-1/5/e^2*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*B*d+1/e^7*d^6*ln(((x+d/e)*c+1/2*(b*e-2*
c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*
c^(5/2)*B-1/2/e^4*d^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*x*c^2*A+1/12*B/e/c*(c*x^2+b*x)^(5/2)*b-5/192*B/e*b^3/c^2*(c*x^2+b*x)^(
3/2)+1/5/e*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(5/2)*A+1/4/
e^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*c*d^2*B+15/
8/e^5*d^4*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*B+5/2/e^5*d^4*ln(((x+d/e)*c+
1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2))*c^(3/2)*b*A-15/8/e^4*d^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2
)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))*c^(1/2)*b^2*A-
1/e^7*d^6/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*c^3*A+1/e^8*d^7/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B-1/8/e^2*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*b*B*d+1/2/e^5*d^4*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+5/512*B/e*b
^5/c^3*(c*x^2+b*x)^(1/2)+1/e^4*d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A-5/32/e^2*b^2*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*d*A+11/8/e^3*d^2*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A-11/8/e^4*d^3*((
x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B-11/24/e^2*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*d*A+11/24/e^3*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*d^2*B+1/16/e/c*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b^2*A+1/3/e^3*d^2*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A-1/3/e^4*d^3*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*B-1/16/e^2/c*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b^2*B*d+5/128/e^2*d/c^(
3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2))*b^4*A-5/128/e^3*d^2/c^(3/2)*ln(((x+d/e)*c+1/2
*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))*b^4*B-3/64/e/c*b^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*x*A
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{d + e x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x), x)
```

3.1187 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=574

$$-\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(-10Ace-bBe+12Bcd)+10Ace(8cd-7be)-B\left(3b^2e^2-92bcde+96c^2d^2\right)\right)}{48ce^4}-\frac{\sqrt{bx+cx^2}}{}$$

```
[Out] -1/48*(10*A*c*e*(-7*b*e+8*c*d)-B*(3*b^2*e^2-92*b*c*d*e+96*c^2*d^2)+6*c*e*(-
10*A*c*e-B*b*e+12*B*c*d)*x)*(c*x^2+b*x)^(3/2)/c/e^4+1/5*(B*e*x-5*A*e+6*B*d)
*(c*x^2+b*x)^(5/2)/e^2/(e*x+d)+1/128*(10*A*c*e*(-b^4*e^4-16*b^3*c*d*e^3+144
*b^2*c^2*d^2*e^2-256*b*c^3*d^3*e+128*c^4*d^4)-B*(-3*b^5*e^5-20*b^4*c*d*e^4-
240*b^3*c^2*d^2*e^3+1920*b^2*c^3*d^3*e^2-3200*b*c^4*d^4*e+1536*c^5*d^5))*ar
ctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)/e^7+1/2*d^(3/2)*(-b*e+c*d)^(3/2)
*(B*d*(-7*b*e+12*c*d)-5*A*e*(-b*e+2*c*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/
d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e^7-1/128*(10*A*c*e*(-b^3*e^3+4
8*b^2*c*d*e^2-112*b*c^2*d^2*e+64*c^3*d^3)-B*(-3*b^4*e^4-20*b^3*c*d*e^3+656*
b^2*c^2*d^2*e^2-1408*b*c^3*d^3*e+768*c^4*d^4)-2*c*e*(8*b*c*e*(-5*A*e+6*B*d)
*(-b*e+2*c*d)-(-10*A*c*e-B*b*e+12*B*c*d)*(-3*b^2*e^2-8*b*c*d*e+16*c^2*d^2))
*x)*(c*x^2+b*x)^(1/2)/c^2/e^6
```

Rubi [A] time = 0.93, antiderivative size = 574, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {812, 814, 843, 620, 206, 724}

$$-\frac{\left(bx+cx^2\right)^{3/2}\left(6cex(-10Ace-bBe+12Bcd)+10Ace(8cd-7be)-B\left(3b^2e^2-92bcde+96c^2d^2\right)\right)}{48ce^4}-\frac{\sqrt{bx+cx^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] -((10*A*c*e*(64*c^3*d^3 - 112*b*c^2*d^2*e + 48*b^2*c*d*e^2 - b^3*e^3) - B*(
768*c^4*d^4 - 1408*b*c^3*d^3*e + 656*b^2*c^2*d^2*e^2 - 20*b^3*c*d*e^3 - 3*b
^4*e^4) - 2*c*e*(8*b*c*e*(6*B*d - 5*A*e)*(2*c*d - b*e) - (12*B*c*d - b*B*e
- 10*A*c*e)*(16*c^2*d^2 - 8*b*c*d*e - 3*b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(12
8*c^2*e^6) - ((10*A*c*e*(8*c*d - 7*b*e) - B*(96*c^2*d^2 - 92*b*c*d*e + 3*b^
2*e^2) + 6*c*e*(12*B*c*d - b*B*e - 10*A*c*e)*x)*(b*x + c*x^2)^(3/2))/(48*c*
e^4) + ((6*B*d - 5*A*e + B*e*x)*(b*x + c*x^2)^(5/2))/(5*e^2*(d + e*x)) + ((
10*A*c*e*(128*c^4*d^4 - 256*b*c^3*d^3*e + 144*b^2*c^2*d^2*e^2 - 16*b^3*c*d*
e^3 - b^4*e^4) - B*(1536*c^5*d^5 - 3200*b*c^4*d^4*e + 1920*b^2*c^3*d^3*e^2
- 240*b^3*c^2*d^2*e^3 - 20*b^4*c*d*e^4 - 3*b^5*e^5))*ArcTanh[(Sqrt[c]*x)/Sq
rt[b*x + c*x^2]])/(128*c^(5/2)*e^7) + (d^(3/2)*(c*d - b*e)^(3/2)*(B*d*(12*c
*d - 7*b*e) - 5*A*e*(2*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{(6Bd-5Ae+Bex)\left(bx+cx^2\right)^{5/2}}{5e^2(d+ex)} - \frac{\int \frac{(b(6Bd-5Ae)+(12Bcd-bBe-10Ace)x)\left(bx+cx^2\right)^{3/2}}{d+ex}\,dx}{2e^2}$$

$$= -\frac{(10Ace(8cd-7be) - B\left(96c^2d^2-92bcde+3b^2e^2\right) + 6ce(12Bcd-bBe-10Ac}{48ce^4}$$

$$= -\frac{(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right) - B(768c^4d^4-1408bc^3d^3e +}{}$$

$$= -\frac{(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right) - B(768c^4d^4-1408bc^3d^3e +}{}$$

$$= -\frac{(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right) - B(768c^4d^4-1408bc^3d^3e +}{}$$

$$= -\frac{(10Ace\left(64c^3d^3-112bc^2d^2e+48b^2cde^2-b^3e^3\right) - B(768c^4d^4-1408bc^3d^3e +}{}$$

Mathematica [**A**] time = 3.20, size = 618, normalized size = 1.08

$$\frac{\sqrt{x(b+cx)}\,(\sqrt{c}\,(\frac{e\sqrt{x}\left(10Ace\left(15b^3e^3(d+ex)+2b^2ce^2\left(-360d^2-205dex+59e^2x^2\right)+8bc^2e\left(210d^3+110d^2ex-35de^2x^2+17e^3x^3\right)-16c^3(60d^4+30d^3e\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[x*(b + c*x)]*((15*(-10*A*c*e*(-128*c^4*d^4 + 256*b*c^3*d^3*e - 144*b^
2*c^2*d^2*e^2 + 16*b^3*c*d*e^3 + b^4*e^4) + B*(-1536*c^5*d^5 + 3200*b*c^4*d
^4*e - 1920*b^2*c^3*d^3*e^2 + 240*b^3*c^2*d^2*e^3 + 20*b^4*c*d*e^4 + 3*b^5*
e^5))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]) + Sqr
t[c]*((e*Sqrt[x]*(10*A*c*e*(15*b^3*e^3*(d + e*x) + 2*b^2*c*e^2*(-360*d^2 -
205*d*e*x + 59*e^2*x^2) + 8*b*c^2*e*(210*d^3 + 110*d^2*e*x - 35*d*e^2*x^2 +
 17*e^3*x^3) - 16*c^3*(60*d^4 + 30*d^3*e*x - 10*d^2*e^2*x^2 + 5*d*e^3*x^3 -
 3*e^4*x^4)) + B*(-45*b^4*e^4*(d + e*x) + 30*b^3*c*e^3*(-10*d^2 - 9*d*e*x +
 e^2*x^2) + 8*b^2*c^2*e^2*(1230*d^3 + 695*d^2*e*x - 202*d*e^2*x^2 + 93*e^3*
x^3) + 16*b*c^3*e*(-1320*d^4 - 690*d^3*e*x + 220*d^2*e^2*x^2 - 107*d*e^3*x^
3 + 63*e^4*x^4) + 192*c^4*(60*d^5 + 30*d^4*e*x - 10*d^3*e^2*x^2 + 5*d^2*e^3
*x^3 - 3*d*e^4*x^4 + 2*e^5*x^5))))/(d + e*x) + (1920*c^2*d^(3/2)*(c*d - b*e
)^(3/2)*(B*d*(12*c*d - 7*b*e) + 5*A*e*(-2*c*d + b*e))*ArcTanh[(Sqrt[c*d - b
*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/Sqrt[b + c*x])))/(1920*c^(5/2)*e^7*S
qrt[x])
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 7095, normalized size = 12.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{\left(d + e x\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**2, x)
```

3.1188 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=508

$$\frac{5\sqrt{d}\,\sqrt{cd-be}\,\left(Ae\left(3b^2e^2-16bcde+16c^2d^2\right)-Bd\left(7b^2e^2-28bcde+24c^2d^2\right)\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{8e^7}+$$

```
[Out] -5/24*(B*d*(-13*b*e+24*c*d)-2*A*e*(-3*b*e+8*c*d)+e*(-4*A*c*e-B*b*e+6*B*c*d)
*x)*(c*x^2+b*x)^(3/2)/e^4/(e*x+d)+1/4*(B*e*x-2*A*e+3*B*d)*(c*x^2+b*x)^(5/2)
/e^2/(e*x+d)^2-5/64*(8*A*c*e*(-b^3*e^3+18*b^2*c*d*e^2-48*b*c^2*d^2*e+32*c^3
*d^3)-B*(-b^4*e^4-24*b^3*c*d*e^3+288*b^2*c^2*d^2*e^2-640*b*c^3*d^3*e+384*c^
4*d^4))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)/e^7+5/8*(A*e*(3*b^2*e^
2-16*b*c*d*e+16*c^2*d^2)-B*d*(7*b^2*e^2-28*b*c*d*e+24*c^2*d^2))*arctanh(1/2
*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))*d^(1/2)*(
-b*e+c*d)^(1/2)/e^7+5/64*(8*A*c*e*(5*b^2*e^2-20*b*c*d*e+16*c^2*d^2)-B*(-b^3
*e^3+88*b^2*c*d*e^2-272*b*c^2*d^2*e+192*c^3*d^3)-2*c*e*(16*A*c*e*(-b*e+2*c*
d)-B*(b^2*e^2-32*b*c*d*e+48*c^2*d^2))*x)*(c*x^2+b*x)^(1/2)/c/e^6
```

Rubi [A] time = 0.75, antiderivative size = 508, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {812, 814, 843, 620, 206, 724}

$$\frac{5\sqrt{bx+cx^2}\,\left(-2cex\left(16Ace(2cd-be)-B\left(b^2e^2-32bcde+48c^2d^2\right)\right)+8Ace\left(5b^2e^2-20bcde+16c^2d^2\right)-B\left(8\right.\right.}{64ce^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (5*(8*A*c*e*(16*c^2*d^2 - 20*b*c*d*e + 5*b^2*e^2) - B*(192*c^3*d^3 - 272*b*
c^2*d^2*e + 88*b^2*c*d*e^2 - b^3*e^3) - 2*c*e*(16*A*c*e*(2*c*d - b*e) - B*(
48*c^2*d^2 - 32*b*c*d*e + b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(64*c*e^6) - (5*(
B*d*(24*c*d - 13*b*e) - 2*A*e*(8*c*d - 3*b*e) + e*(6*B*c*d - b*B*e - 4*A*c*
e)*x)*(b*x + c*x^2)^(3/2))/(24*e^4*(d + e*x)) + ((3*B*d - 2*A*e + B*e*x)*(b
*x + c*x^2)^(5/2))/(4*e^2*(d + e*x)^2) - (5*(8*A*c*e*(32*c^3*d^3 - 48*b*c^2
*d^2*e + 18*b^2*c*d*e^2 - b^3*e^3) - B*(384*c^4*d^4 - 640*b*c^3*d^3*e + 288
*b^2*c^2*d^2*e^2 - 24*b^3*c*d*e^3 - b^4*e^4))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x
+ c*x^2]])/(64*c^(3/2)*e^7) + (5*Sqrt[d]*Sqrt[c*d - b*e]*(A*e*(16*c^2*d^2 -
 16*b*c*d*e + 3*b^2*e^2) - B*d*(24*c^2*d^2 - 28*b*c*d*e + 7*b^2*e^2))*ArcTa
nh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/
(8*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] && !RationalQ[m])) && NeQ[m, -1] && !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] || !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) && !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{(3Bd-2Ae+Bex)\left(bx+cx^2\right)^{5/2}}{4e^2(d+ex)^2} - \frac{5\int \frac{(2b(3Bd-2Ae)+2(6Bcd-bBe-4Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^2}\,d}{16e^2}$$

$$= -\frac{5(Bd(24cd-13be)-2Ae(8cd-3be)+e(6Bcd-bBe-4Ace)x)\left(bx+cx^2\right)^{3/2}}{24e^4(d+ex)}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e\right.\right.}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e\right.\right.}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e\right.\right.}{64ce^6}$$

$$= \frac{5\left(8Ace\left(16c^2d^2-20bcde+5b^2e^2\right)-B\left(192c^3d^3-272bc^2d^2e+88b^2cde^2-b^3e\right.\right.}{64ce^6}$$

Mathematica [B] time = 6.17, size = 2047, normalized size = 4.03

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(2*d*(-(c*d) + b*e)*(d + e
*x)^2) + ((x*(b + c*x))^(5/2)*(((-5*c*d*(B*d - A*e) + (e*(7*b*B*d - 4*A*c*d
 - 3*A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(d*(-(c*d) + b*e)*(d + e*x)) + (((
8*A*c^2*d^2 + 4*b*c*d*(14*B*d - 11*A*e) - 5*b^2*e*(7*B*d - 3*A*e))*((2*b^2*
x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 +
(c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b
^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[
1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*
Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/
b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^
2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)
^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6
 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 +
(c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/
(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e
)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2)
)))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]
*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*
d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e
))/4 + 3*c*(B*d*(10*c*d - 7*b*e) - 3*A*e*(2*c*d - b*e))*((2*b^2*x^(7/2)*Sqr
t[b + c*x]*(1 + (c*x)/b)^3*((7*(3/(16*(1 + (c*x)/b)^3) + 1/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1)))/12 + (35*b^4*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) +
(16*c^3*x^3)/(15*b^3) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(2048*c^4*x^4*(1 + (c*x)/b)^3)))/(7*e) -
(d*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) +
 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^
2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sq
rt[b]*Sqrt[1 + (c*x)/b]))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b
^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*
(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]
*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/
(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1
 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)
/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sq
rt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x
)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh
[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e -
((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b))
 + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*
x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSi
nh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTa
nh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e)
)/e))/e))/e))/e))/(d*(-(c*d) + b*e))))/(2*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x
)^(5/2))
```

fricas **[B]** time = 27.29, size = 4075, normalized size = 8.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] [-1/384*(15*(384*B*c^4*d^6 - 128*(5*B*b*c^3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*
c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*
A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 128*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 +
 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 -
(B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^
4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c
^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x)*sqrt(c)*log(2*c*x + b - 2*sqrt(
c*x^2 + b*x)*sqrt(c)) - 240*(24*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*
c^3 + 4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e
^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*
A*b*c^3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3
+ 4*A*c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(c*d^2 - b*
d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/
(e*x + d)) - 2*(48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A
*c^4)*d^4*e^2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*
A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 +
2*(120*B*c^4*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 10
4*A*b*c^3)*e^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e
^4 + 4*(139*B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e
^6)*x^2 - 10*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*
B*b^2*c^2 + 368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqr
t(c*x^2 + b*x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*d^2*e^7), -1/384*(480*(2
4*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 + 4*A*c^4)*d^4*e + (7*B*b^
2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*
b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^3)*d*e^4)*x^2 + 2*(24*B*
c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*c^4)*d^3*e^2 + (7*B*b^2*
c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*
d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(384*B*c^4*d^6 - 128*(5*B*b*c^
3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6
*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 12
8*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24
*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^
4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*
d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x
)*sqrt(c)*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(48*B*c^4*e^6*x^
5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^2 - 120*(11*B*b^2*c
^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^
4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4*d^2*e^4 - 16*(11*B
*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e^6)*x^3 - (960*B*c^
4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*B*b^2*c^2 + 220*A*b
*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10*(432*B*c^4*d^4*e^2
 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 + 368*A*b*c^3)*d^2*e^
4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*e^9*x^2 +
2*c^2*d*e^8*x + c^2*d^2*e^7), -1/192*(15*(384*B*c^4*d^6 - 128*(5*B*b*c^3 +
2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^4*e^2 - 24*(B*b^3*c + 6*A*b
^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 + (384*B*c^4*d^4*e^2 - 128*(5
*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^2*e^4 - 24*(B*
b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c)*e^6)*x^2 + 2*(384*B*c^4*d^
5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d^3*
e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b^4 - 8*A*b^3*c)*d*e^5)*x)*sq
rt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - 120*(24*B*c^4*d^5 - 3*A*b
^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 + 4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)
*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^
2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2
*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d
^2*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 -
b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - (48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e
 + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3
*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^
3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*
e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B
*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B
*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 +
6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 + 368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*
A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*
d^2*e^7), -1/192*(240*(24*B*c^4*d^5 - 3*A*b^2*c^2*d^2*e^3 - 4*(7*B*b*c^3 +
4*A*c^4)*d^4*e + (7*B*b^2*c^2 + 16*A*b*c^3)*d^3*e^2 + (24*B*c^4*d^3*e^2 - 3
*A*b^2*c^2*e^5 - 4*(7*B*b*c^3 + 4*A*c^4)*d^2*e^3 + (7*B*b^2*c^2 + 16*A*b*c^
3)*d*e^4)*x^2 + 2*(24*B*c^4*d^4*e - 3*A*b^2*c^2*d*e^4 - 4*(7*B*b*c^3 + 4*A*
c^4)*d^3*e^2 + (7*B*b^2*c^2 + 16*A*b*c^3)*d^2*e^3)*x)*sqrt(-c*d^2 + b*d*e)*
arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(384*B
*c^4*d^6 - 128*(5*B*b*c^3 + 2*A*c^4)*d^5*e + 96*(3*B*b^2*c^2 + 4*A*b*c^3)*d
^4*e^2 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^3*e^3 - (B*b^4 - 8*A*b^3*c)*d^2*e^4 +
 (384*B*c^4*d^4*e^2 - 128*(5*B*b*c^3 + 2*A*c^4)*d^3*e^3 + 96*(3*B*b^2*c^2 +
 4*A*b*c^3)*d^2*e^4 - 24*(B*b^3*c + 6*A*b^2*c^2)*d*e^5 - (B*b^4 - 8*A*b^3*c
)*e^6)*x^2 + 2*(384*B*c^4*d^5*e - 128*(5*B*b*c^3 + 2*A*c^4)*d^4*e^2 + 96*(3
*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^3 - 24*(B*b^3*c + 6*A*b^2*c^2)*d^2*e^4 - (B*b
^4 - 8*A*b^3*c)*d*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x))
 - (48*B*c^4*e^6*x^5 - 2880*B*c^4*d^5*e + 240*(17*B*b*c^3 + 8*A*c^4)*d^4*e^
2 - 120*(11*B*b^2*c^2 + 20*A*b*c^3)*d^3*e^3 + 15*(B*b^3*c + 40*A*b^2*c^2)*d
^2*e^4 - 8*(12*B*c^4*d*e^5 - (17*B*b*c^3 + 8*A*c^4)*e^6)*x^4 + 2*(120*B*c^4
*d^2*e^4 - 16*(11*B*b*c^3 + 5*A*c^4)*d*e^5 + (59*B*b^2*c^2 + 104*A*b*c^3)*e
^6)*x^3 - (960*B*c^4*d^3*e^3 - 40*(37*B*b*c^3 + 16*A*c^4)*d^2*e^4 + 4*(139*
B*b^2*c^2 + 220*A*b*c^3)*d*e^5 - 3*(5*B*b^3*c + 88*A*b^2*c^2)*e^6)*x^2 - 10
*(432*B*c^4*d^4*e^2 - 48*(13*B*b*c^3 + 6*A*c^4)*d^3*e^3 + (209*B*b^2*c^2 +
368*A*b*c^3)*d^2*e^4 - 3*(B*b^3*c + 32*A*b^2*c^2)*d*e^5)*x)*sqrt(c*x^2 + b*
x))/(c^2*e^9*x^2 + 2*c^2*d*e^8*x + c^2*d^2*e^7)]
```

giac **[B]** time = 0.63, size = 1425, normalized size = 2.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -5/4*(24*B*c^3*d^5 - 52*B*b*c^2*d^4*e - 16*A*c^3*d^4*e + 35*B*b^2*c*d^3*e^2
 + 32*A*b*c^2*d^3*e^2 - 7*B*b^3*d^2*e^3 - 19*A*b^2*c*d^2*e^3 + 3*A*b^3*d*e^
4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*
d*e))*e^(-7)/sqrt(-c*d^2 + b*d*e) + 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*c^2*
x*e^(-3) - (24*B*c^5*d*e^21 - 17*B*b*c^4*e^22 - 8*A*c^5*e^22)*e^(-25)/c^3)*
x + (288*B*c^5*d^2*e^20 - 312*B*b*c^4*d*e^21 - 144*A*c^5*d*e^21 + 59*B*b^2*
c^3*e^22 + 104*A*b*c^4*e^22)*e^(-25)/c^3)*x - 3*(640*B*c^5*d^3*e^19 - 864*B
*b*c^4*d^2*e^20 - 384*A*c^5*d^2*e^20 + 264*B*b^2*c^3*d*e^21 + 432*A*b*c^4*d
*e^21 - 5*B*b^3*c^2*e^22 - 88*A*b^2*c^3*e^22)*e^(-25)/c^3) - 5/128*(384*B*c
^4*d^4 - 640*B*b*c^3*d^3*e - 256*A*c^4*d^3*e + 288*B*b^2*c^2*d^2*e^2 + 384*
A*b*c^3*d^2*e^2 - 24*B*b^3*c*d*e^3 - 144*A*b^2*c^2*d*e^3 - B*b^4*e^4 + 8*A*
b^3*c*e^4)*e^(-7)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/c
^(3/2) - 1/4*(48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c^(7/2)*d^5*e + 88*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^2*B*c^4*d^6 - 156*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^2*B*b*c^3*d^5*e - 72*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^4*d^5*e + 88
*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^(7/2)*d^6 - 100*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*B*b*c^(5/2)*d^4*e^2 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*
c^(7/2)*d^4*e^2 - 160*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c^(5/2)*d^5*e -
 72*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^(7/2)*d^5*e + 22*B*b^2*c^3*d^6 +
75*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^2*d^4*e^2 + 120*(sqrt(c)*x - s
qrt(c*x^2 + b*x))^2*A*b*c^3*d^4*e^2 - 35*B*b^3*c^2*d^5*e - 18*A*b^2*c^3*d^5
*e + 65*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(3/2)*d^3*e^3 + 80*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^3*A*b*c^(5/2)*d^3*e^3 + 83*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*B*b^3*c^(3/2)*d^4*e^2 + 124*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2
*c^(5/2)*d^4*e^2 - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c*d^3*e^3 - 51
*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*c^2*d^3*e^3 + 13*B*b^4*c*d^4*e^2 +
 27*A*b^3*c^2*d^4*e^2 - 13*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^3*sqrt(c)*
d^2*e^4 - 49*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^(3/2)*d^2*e^4 - 11*(
sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*sqrt(c)*d^3*e^3 - 59*(sqrt(c)*x - sqrt
(c*x^2 + b*x))*A*b^3*c^(3/2)*d^3*e^3 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
A*b^3*c*d^2*e^4 - 9*A*b^4*c*d^3*e^3 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^3*sqrt(c)*d*e^5 + 7*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^4*sqrt(c)*d^2*e^
4)*e^(-7)/(((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*sqrt(c)*d + b*d)^2*sqrt(c))
```

maple [B] time = 0.07, size = 11558, normalized size = 22.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(x\,(b+cx))^{\frac{5}{2}}\,(A+Bx)}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**3, x)
```

3.1189 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=495

$$-\frac{5\sqrt{bx+cx^2}\left(ex\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)+Ae\left(b^2e^2-12bcde+16c^2d^2\right)-2Bd\left(3b^2e^2-1\right.}{8e^6(d+ex)}$$

```
[Out] -5/12*(4*B*d*(-b*e+2*c*d)-A*e*(-b*e+4*c*d)+e*(-2*A*c*e-B*b*e+4*B*c*d)*x)*(c
*x^2+b*x)^(3/2)/e^4/(e*x+d)^2+1/3*(B*e*x-A*e+2*B*d)*(c*x^2+b*x)^(5/2)/e^2/(
e*x+d)^3+5/8*(2*A*c*e*(3*b^2*e^2-16*b*c*d*e+16*c^2*d^2)-B*(-b^3*e^3+24*b^2*
c*d*e^2-80*b*c^2*d^2*e+64*c^3*d^3))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/e^
7/c^(1/2)+5/16*(B*d*(-7*b^3*e^3+56*b^2*c*d*e^2-112*b*c^2*d^2*e+64*c^3*d^3)-
A*e*(-b^3*e^3+18*b^2*c*d*e^2-48*b*c^2*d^2*e+32*c^3*d^3))*arctanh(1/2*(b*d+(
-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e^7/d^(1/2)/(-b*
e+c*d)^(1/2)-5/8*(A*e*(b^2*e^2-12*b*c*d*e+16*c^2*d^2)-2*B*d*(3*b^2*e^2-16*b
*c*d*e+16*c^2*d^2)+e*(4*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-12*b*c*d*e+16*c^2*d^2
))*x)*(c*x^2+b*x)^(1/2)/e^6/(e*x+d)
```

Rubi **[A]** time = 0.66, antiderivative size = 495, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {812, 843, 620, 206, 724}

$$-\frac{5\sqrt{bx+cx^2}\left(ex\left(4Ace(2cd-be)-B\left(b^2e^2-12bcde+16c^2d^2\right)\right)+Ae\left(b^2e^2-12bcde+16c^2d^2\right)-2Bd\left(3b^2e^2-1\right.}{8e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (-5*(A*e*(16*c^2*d^2 - 12*b*c*d*e + b^2*e^2) - 2*B*d*(16*c^2*d^2 - 16*b*c*d
*e + 3*b^2*e^2) + e*(4*A*c*e*(2*c*d - b*e) - B*(16*c^2*d^2 - 12*b*c*d*e + b
^2*e^2))*x)*Sqrt[b*x + c*x^2])/(8*e^6*(d + e*x)) - (5*(4*B*d*(2*c*d - b*e)
- A*e*(4*c*d - b*e) + e*(4*B*c*d - b*B*e - 2*A*c*e)*x)*(b*x + c*x^2)^(3/2))
/(12*e^4*(d + e*x)^2) + ((2*B*d - A*e + B*e*x)*(b*x + c*x^2)^(5/2))/(3*e^2*
(d + e*x)^3) + (5*(2*A*c*e*(16*c^2*d^2 - 16*b*c*d*e + 3*b^2*e^2) - B*(64*c^
3*d^3 - 80*b*c^2*d^2*e + 24*b^2*c*d*e^2 - b^3*e^3))*ArcTanh[(Sqrt[c]*x)/Sqr
t[b*x + c*x^2]])/(8*Sqrt[c]*e^7) + (5*(B*d*(64*c^3*d^3 - 112*b*c^2*d^2*e +
56*b^2*c*d*e^2 - 7*b^3*e^3) - A*e*(32*c^3*d^3 - 48*b*c^2*d^2*e + 18*b^2*c*d
*e^2 - b^3*e^3))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]
*Sqrt[b*x + c*x^2])])/(16*Sqrt[d]*e^7*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{(2Bd-Ae+Bex)\left(bx+cx^2\right)^{5/2}}{3e^2(d+ex)^3} - \frac{5\int \frac{(3b(2Bd-Ae)+3(4Bcd-bBe-2Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx}{18e^2}$$

$$= -\frac{5(4Bd(2cd-be)-Ae(4cd-be)+e(4Bcd-bBe-2Ace)x)\left(bx+cx^2\right)^{3/2}}{12e^4(d+ex)^2} + \frac{(2}{}$$

$$= -\frac{5\,(Ae\,(16c^2d^2-12bcde+b^2e^2)-2Bd\,(16c^2d^2-16bcde+3b^2e^2)+e\,(4Ace(2}{8e^6(d+ex)}$$

$$= -\frac{5\,(Ae\,(16c^2d^2-12bcde+b^2e^2)-2Bd\,(16c^2d^2-16bcde+3b^2e^2)+e\,(4Ace(2}{8e^6(d+ex)}$$

$$= -\frac{5\,(Ae\,(16c^2d^2-12bcde+b^2e^2)-2Bd\,(16c^2d^2-16bcde+3b^2e^2)+e\,(4Ace(2}{8e^6(d+ex)}$$

$$= -\frac{5\,(Ae\,(16c^2d^2-12bcde+b^2e^2)-2Bd\,(16c^2d^2-16bcde+3b^2e^2)+e\,(4Ace(2}{8e^6(d+ex)}$$

Mathematica [B] time = 6.26, size = 2233, normalized size = 4.51

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(3*d*(-(c*d) + b*e)*(d + e
*x)^3) + ((x*(b + c*x))^(5/2)*(((-4*c*d*(B*d - A*e) + (e*(7*b*B*d - 6*A*c*d
 - A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(2*d*(-(c*d) + b*e)*(d + e*x)^2) + (
(((e*(24*A*c^2*d^2 + 2*b*c*d*(14*B*d - 17*A*e) - 3*b^2*e*(7*B*d - A*e)))/4
- (5*c*d*(B*d*(8*c*d - 7*b*e) - A*e*(2*c*d - b*e)))/2)*x^(7/2)*(b + c*x)^(7
/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-3*(16*A*c^3*d^3 + 2*b^2*c*d*e*(98*B*
d - 39*A*e) - 8*b*c^2*d^2*(21*B*d - 8*A*e) - 5*b^3*e^2*(7*B*d - A*e))*((2*b
^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1
 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(
3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sq
rt[1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/
2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*
x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]
*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2
*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)
/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)
)/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1
 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*(
(3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c
]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d -
b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt
[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3
/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt
[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt
[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e)
)/e))/8 - (3*c*(A*e*(44*c^2*d^2 - 44*b*c*d*e + 3*b^2*e^2) - B*d*(80*c^2*d^2
 - 98*b*c*d*e + 21*b^2*e^2))*((2*b^2*x^(7/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*
((7*(3/(16*(1 + (c*x)/b)^3) + 1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/
12 + (35*b^4*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) + (16*c^3*x^3)/(15*b^3) - (2*
Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)
/b])))/(2048*c^4*x^4*(1 + (c*x)/b)^3)))/(7*e) - (d*((2*b^2*x^(5/2)*Sqrt[b +
 c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 + (c*x)/b)^2) + (1
 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]
*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/
(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*Sqrt[b + c*x]*(1
 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/b)^2) + (1 + (c*
x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*S
qrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^2*(1 + (c*x)/b)^
3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((15/(8*(1 +
(c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6 + (5*Sqrt[b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(7/2)))
)/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)
^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e)*((2*c*Sqrt[x]*
Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c
]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d -
b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b
]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x]
)/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e))/e))/2)/(d*(-(
c*d) + b*e)))/(2*d*(-(c*d) + b*e))))/(3*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x)^
(5/2))
```

fricas [B] time = 10.96, size = 5934, normalized size = 11.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [-1/48*(15*(64*B*c^4*d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2
 + 8*A*b*c^3)*d^6*e^2 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*
b^3*c)*d^4*e^4 + (64*B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(
13*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (
B*b^4 + 6*A*b^3*c)*d*e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c
^4)*d^5*e^3 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2
*c^2)*d^3*e^5 + (B*b^4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(
9*B*b*c^3 + 2*A*c^4)*d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B
*b^3*c + 38*A*b^2*c^2)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(c)*lo
g(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 15*(64*B*c^4*d^7 + A*b^3*c*d^3
*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2
 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 1
6*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*
B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 -
16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7
*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5
 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 -
 (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c
*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(480*
B*c^4*d^7*e + 15*A*b^3*c*d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19
*B*b^2*c^2 + 14*A*b*c^3)*d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 +
8*(B*c^4*d^2*e^6 - B*b*c^3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 +
 6*A*c^4)*d^2*e^6 + (13*B*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4
*e^4 - 2*(43*B*b*c^3 + 10*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2
*e^6 - (11*B*b^3*c + 18*A*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b
^3*c*d*e^7 - 40*(45*B*b*c^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*
c^3)*d^3*e^5 - (186*B*b^3*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^
6*e^2 + 8*A*b^3*c*d^2*e^6 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2
*c^2 + 212*A*b*c^3)*d^4*e^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt
(c*x^2 + b*x))/(c^2*d^5*e^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3
 + 3*(c^2*d^3*e^9 - b*c*d^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1
/48*(30*(64*B*c^4*d^7 + A*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e +
8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 +
(64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B
*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(
64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*
B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 +
3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*
(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*
sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d -
 b*e)*x)) - 15*(64*B*c^4*d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2
*c^2 + 8*A*b*c^3)*d^6*e^2 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 +
6*A*b^3*c)*d^4*e^4 + (64*B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 +
 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6
 + (B*b^4 + 6*A*b^3*c)*d*e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2
*A*c^4)*d^5*e^3 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A
*b^2*c^2)*d^3*e^5 + (B*b^4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e -
16*(9*B*b*c^3 + 2*A*c^4)*d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (
25*B*b^3*c + 38*A*b^2*c^2)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(c
)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(480*B*c^4*d^7*e + 15*A*
b^3*c*d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b
*c^3)*d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 -
B*b*c^3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 +
 (13*B*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^
3 + 10*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c
+ 18*A*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45
*B*b*c^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186
*B*b^3*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d
^2*e^6 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)
*d^4*e^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2
*d^5*e^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 -
 b*c*d^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1/48*(30*(64*B*c^4*d
^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^6*e^2
 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*b^3*c)*d^4*e^4 + (64*B
*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(13*B*b^2*c^2 + 8*A*b*c
^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (B*b^4 + 6*A*b^3*c)*d*e
^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c^4)*d^5*e^3 + 8*(13*B*
b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2*c^2)*d^3*e^5 + (B*b^4
 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(9*B*b*c^3 + 2*A*c^4)*d
^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B*b^3*c + 38*A*b^2*c^2)
*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x
)*sqrt(-c)/(c*x)) - 15*(64*B*c^4*d^7 + A*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*
A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*
c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d
^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d
*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*
d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*
d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^
4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^
2)*d^3*e^4)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^
2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(480*B*c^4*d^7*e + 15*A*b^3*c*
d^3*e^5 - 240*(4*B*b*c^3 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*
d^5*e^3 - 15*(6*B*b^3*c + 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^
3*d*e^7)*x^5 - 2*(12*B*c^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B
*b^2*c^2 + 6*A*b*c^3)*d*e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10
*A*c^4)*d^3*e^5 + 19*(3*B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A
*b^2*c^2)*d*e^7)*x^3 + (880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c
^3 + 11*A*c^4)*d^4*e^4 + 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3
*c + 383*A*b^2*c^2)*d^2*e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6
 - 4*(121*B*b*c^3 + 30*A*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e
^4 - (47*B*b^3*c + 100*A*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e
^7 - b*c*d^4*e^8 + (c^2*d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d
^2*e^10)*x^2 + 3*(c^2*d^4*e^8 - b*c*d^3*e^9)*x), 1/24*(15*(64*B*c^4*d^7 + A
*b^3*c*d^3*e^4 - 16*(7*B*b*c^3 + 2*A*c^4)*d^6*e + 8*(7*B*b^2*c^2 + 6*A*b*c^
3)*d^5*e^2 - (7*B*b^3*c + 18*A*b^2*c^2)*d^4*e^3 + (64*B*c^4*d^4*e^3 + A*b^3
*c*e^7 - 16*(7*B*b*c^3 + 2*A*c^4)*d^3*e^4 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^2
*e^5 - (7*B*b^3*c + 18*A*b^2*c^2)*d*e^6)*x^3 + 3*(64*B*c^4*d^5*e^2 + A*b^3*
c*d*e^6 - 16*(7*B*b*c^3 + 2*A*c^4)*d^4*e^3 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)*d^
3*e^4 - (7*B*b^3*c + 18*A*b^2*c^2)*d^2*e^5)*x^2 + 3*(64*B*c^4*d^6*e + A*b^3
*c*d^2*e^5 - 16*(7*B*b*c^3 + 2*A*c^4)*d^5*e^2 + 8*(7*B*b^2*c^2 + 6*A*b*c^3)
*d^4*e^3 - (7*B*b^3*c + 18*A*b^2*c^2)*d^3*e^4)*x)*sqrt(-c*d^2 + b*d*e)*arct
an(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + 15*(64*B*c^4*
d^8 - 16*(9*B*b*c^3 + 2*A*c^4)*d^7*e + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^6*e^2
 - (25*B*b^3*c + 38*A*b^2*c^2)*d^5*e^3 + (B*b^4 + 6*A*b^3*c)*d^4*e^4 + (64*
B*c^4*d^5*e^3 - 16*(9*B*b*c^3 + 2*A*c^4)*d^4*e^4 + 8*(13*B*b^2*c^2 + 8*A*b*
c^3)*d^3*e^5 - (25*B*b^3*c + 38*A*b^2*c^2)*d^2*e^6 + (B*b^4 + 6*A*b^3*c)*d*
e^7)*x^3 + 3*(64*B*c^4*d^6*e^2 - 16*(9*B*b*c^3 + 2*A*c^4)*d^5*e^3 + 8*(13*B
*b^2*c^2 + 8*A*b*c^3)*d^4*e^4 - (25*B*b^3*c + 38*A*b^2*c^2)*d^3*e^5 + (B*b^
4 + 6*A*b^3*c)*d^2*e^6)*x^2 + 3*(64*B*c^4*d^7*e - 16*(9*B*b*c^3 + 2*A*c^4)*
d^6*e^2 + 8*(13*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^3 - (25*B*b^3*c + 38*A*b^2*c^2
)*d^4*e^4 + (B*b^4 + 6*A*b^3*c)*d^3*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (480*B*c^4*d^7*e + 15*A*b^3*c*d^3*e^5 - 240*(4*B*b*c^3
 + A*c^4)*d^6*e^2 + 30*(19*B*b^2*c^2 + 14*A*b*c^3)*d^5*e^3 - 15*(6*B*b^3*c
+ 13*A*b^2*c^2)*d^4*e^4 + 8*(B*c^4*d^2*e^6 - B*b*c^3*d*e^7)*x^5 - 2*(12*B*c
^4*d^3*e^5 - (25*B*b*c^3 + 6*A*c^4)*d^2*e^6 + (13*B*b^2*c^2 + 6*A*b*c^3)*d*
e^7)*x^4 + 3*(40*B*c^4*d^4*e^4 - 2*(43*B*b*c^3 + 10*A*c^4)*d^3*e^5 + 19*(3*
B*b^2*c^2 + 2*A*b*c^3)*d^2*e^6 - (11*B*b^3*c + 18*A*b^2*c^2)*d*e^7)*x^3 + (
880*B*c^4*d^5*e^3 + 33*A*b^3*c*d*e^7 - 40*(45*B*b*c^3 + 11*A*c^4)*d^4*e^4 +
 158*(7*B*b^2*c^2 + 5*A*b*c^3)*d^3*e^5 - (186*B*b^3*c + 383*A*b^2*c^2)*d^2*
e^6)*x^2 + 5*(240*B*c^4*d^6*e^2 + 8*A*b^3*c*d^2*e^6 - 4*(121*B*b*c^3 + 30*A
*c^4)*d^5*e^3 + (291*B*b^2*c^2 + 212*A*b*c^3)*d^4*e^4 - (47*B*b^3*c + 100*A
*b^2*c^2)*d^3*e^5)*x)*sqrt(c*x^2 + b*x))/(c^2*d^5*e^7 - b*c*d^4*e^8 + (c^2*
d^2*e^10 - b*c*d*e^11)*x^3 + 3*(c^2*d^3*e^9 - b*c*d^2*e^10)*x^2 + 3*(c^2*d^
```

```
4*e^8 - b*c*d^3*e^9)*x)]
```

giac [**B**] time = 0.80, size = 1907, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 5/8*(64*B*c^3*d^4 - 112*B*b*c^2*d^3*e - 32*A*c^3*d^3*e + 56*B*b^2*c*d^2*e^2
 + 48*A*b*c^2*d^2*e^2 - 7*B*b^3*d*e^3 - 18*A*b^2*c*d*e^3 + A*b^3*e^4)*arcta
n(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))*e^
(-7)/sqrt(-c*d^2 + b*d*e) + 5/16*(64*B*c^3*d^3 - 80*B*b*c^2*d^2*e - 32*A*c^
3*d^2*e + 24*B*b^2*c*d*e^2 + 32*A*b*c^2*d*e^2 - B*b^3*e^3 - 6*A*b^2*c*e^3)*
e^(-7)*log(abs(2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) + b))/sqrt(c) + 1/
24*sqrt(c*x^2 + b*x)*(2*(4*B*c^2*x*e^(-4) - (24*B*c^4*d*e^17 - 13*B*b*c^3*e
^18 - 6*A*c^4*e^18)*e^(-22)/c^2)*x + 3*(80*B*c^4*d^2*e^16 - 72*B*b*c^3*d*e^
17 - 32*A*c^4*d*e^17 + 11*B*b^2*c^2*e^18 + 18*A*b*c^3*e^18)*e^(-22)/c^2) +
1/24*(2592*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*c^4*d^5*e + 2368*(sqrt(c)*x
- sqrt(c*x^2 + b*x))^3*B*c^(9/2)*d^6 + 720*(sqrt(c)*x - sqrt(c*x^2 + b*x))^
5*B*c^(7/2)*d^4*e^2 - 1168*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b*c^(7/2)*d^
5*e - 1504*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^(9/2)*d^5*e + 3552*(sqrt(c
)*x - sqrt(c*x^2 + b*x))^2*B*b*c^4*d^6 - 3840*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^4*B*b*c^3*d^4*e^2 - 1680*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^4*d^4*e^2
 - 4512*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^3*d^5*e - 2256*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^2*A*b*c^4*d^5*e + 1776*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^2*c^(7/2)*d^6 - 1200*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^(5/2)*d^
3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^(7/2)*d^3*e^3 - 1920*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^(5/2)*d^4*e^2 + 400*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*A*b*c^(7/2)*d^4*e^2 - 2340*(sqrt(c)*x - sqrt(c*x^2 + b*x))
*B*b^3*c^(5/2)*d^5*e - 1128*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^(7/2)*d
^5*e + 296*B*b^3*c^3*d^6 + 1560*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^2
*d^3*e^3 + 2160*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^3*d^3*e^3 + 1314*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^3*c^2*d^4*e^2 + 2412*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*A*b^2*c^3*d^4*e^2 - 350*B*b^4*c^2*d^5*e - 188*A*b^3*c^3*d^5
*e + 600*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c^(3/2)*d^2*e^4 + 720*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^5*A*b*c^(5/2)*d^2*e^4 + 1186*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*B*b^3*c^(3/2)*d^3*e^3 + 1308*(sqrt(c)*x - sqrt(c*x^2 + b*x)
)^3*A*b^2*c^(5/2)*d^3*e^3 + 786*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c^(3/
2)*d^4*e^2 + 1272*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*c^(5/2)*d^4*e^2 - 1
47*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3*c*d^2*e^4 - 666*(sqrt(c)*x - sqr
t(c*x^2 + b*x))^4*A*b^2*c^2*d^2*e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*
B*b^4*c*d^3*e^3 - 462*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^2*d^3*e^3 +
 87*B*b^5*c*d^4*e^2 + 188*A*b^4*c^2*d^4*e^2 - 87*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^5*B*b^3*sqrt(c)*d*e^5 - 306*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c
^(3/2)*d*e^5 - 136*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^4*sqrt(c)*d^2*e^4
- 574*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^3*c^(3/2)*d^2*e^4 - 57*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*B*b^5*sqrt(c)*d^3*e^3 - 324*(sqrt(c)*x - sqrt(c*x^2
 + b*x))*A*b^4*c^(3/2)*d^3*e^3 + 21*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^3
*c*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*c*d^2*e^4 - 33*A*b^5*
c*d^3*e^3 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^3*sqrt(c)*e^6 + 40*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*sqrt(c)*d*e^5 + 15*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^5*sqrt(c)*d^2*e^4)*e^(-7)/(((sqrt(c)*x - sqrt(c*x^2 + b*x)
)^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3*sqrt(c))
```

maple [**B**] time = 0.09, size = 17133, normalized size = 34.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^4, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{5}{2}} \left(A + B x\right)}{\left(d + e x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**4, x)
```

3.1190 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=633

$$-\frac{5\sqrt{c}\,\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)-B\left(3b^2e^2-20bcde+24c^2d^2\right)\right)}{4e^7}-\frac{5\left(bx+cx^2\right)^{3/2}\,(3ex\,(Ae\,(b^2e^2-8bc}{}$$

```
[Out] -5/96*(d*(A*e*(-b^2*e^2-12*b*c*d*e+16*c^2*d^2)-B*d*(7*b^2*e^2-52*b*c*d*e+48
*c^2*d^2))+3*e*(A*e*(b^2*e^2-8*b*c*d*e+8*c^2*d^2)-B*d*(9*b^2*e^2-32*b*c*d*e
+24*c^2*d^2))*x)*(c*x^2+b*x)^(3/2)/d/e^4/(-b*e+c*d)/(e*x+d)^3+1/4*(2*B*e*x-
A*e+3*B*d)*(c*x^2+b*x)^(5/2)/e^2/(e*x+d)^4+5/128*(A*e*(-b^4*e^4-16*b^3*c*d*
e^3+144*b^2*c^2*d^2*e^2-256*b*c^3*d^3*e+128*c^4*d^4)-B*d*(7*b^4*e^4-168*b^3
*c*d*e^3+672*b^2*c^2*d^2*e^2-896*b*c^3*d^3*e+384*c^4*d^4))*arctanh(1/2*(b*d
+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(3/2)/e^7/(-
b*e+c*d)^(3/2)-5/4*(4*A*c*e*(-b*e+2*c*d)-B*(3*b^2*e^2-20*b*c*d*e+24*c^2*d^2
))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))*c^(1/2)/e^7-5/64*(B*d*(-7*b^3*e^3+1
20*b^2*c*d*e^2-304*b*c^2*d^2*e+192*c^3*d^3)-A*e*(b^3*e^3+16*b^2*c*d*e^2-80*
b*c^2*d^2*e+64*c^3*d^3)-2*c*e*(A*e*(b^2*e^2-16*b*c*d*e+16*c^2*d^2)-B*d*(17*
b^2*e^2-64*b*c*d*e+48*c^2*d^2))*x)*(c*x^2+b*x)^(1/2)/d/e^6/(-b*e+c*d)/(e*x+
d)
```

Rubi [A] time = 0.90, antiderivative size = 633, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {812, 810, 843, 620, 206, 724}

$$-\frac{5\left(bx+cx^2\right)^{3/2}\,(3ex\,(Ae\left(b^2e^2-8bcde+8c^2d^2\right)-Bd\left(9b^2e^2-32bcde+24c^2d^2\right))+d\,(Ae\,(-b^2e^2-12bcde+1}{96de^4(d+ex)^3(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] (-5*(B*d*(192*c^3*d^3 - 304*b*c^2*d^2*e + 120*b^2*c*d*e^2 - 7*b^3*e^3) - A*
e*(64*c^3*d^3 - 80*b*c^2*d^2*e + 16*b^2*c*d*e^2 + b^3*e^3) - 2*c*e*(A*e*(16
*c^2*d^2 - 16*b*c*d*e + b^2*e^2) - B*d*(48*c^2*d^2 - 64*b*c*d*e + 17*b^2*e^
2))*x)*Sqrt[b*x + c*x^2])/(64*d*e^6*(c*d - b*e)*(d + e*x)) - (5*(d*(A*e*(16
*c^2*d^2 - 12*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 52*b*c*d*e + 7*b^2*e^2
)) + 3*e*(A*e*(8*c^2*d^2 - 8*b*c*d*e + b^2*e^2) - B*d*(24*c^2*d^2 - 32*b*c*
d*e + 9*b^2*e^2))*x)*(b*x + c*x^2)^(3/2))/(96*d*e^4*(c*d - b*e)*(d + e*x)^3
) + ((3*B*d - A*e + 2*B*e*x)*(b*x + c*x^2)^(5/2))/(4*e^2*(d + e*x)^4) - (5*
Sqrt[c]*(4*A*c*e*(2*c*d - b*e) - B*(24*c^2*d^2 - 20*b*c*d*e + 3*b^2*e^2))*A
rcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(4*e^7) + (5*(A*e*(128*c^4*d^4 - 256
*b*c^3*d^3*e + 144*b^2*c^2*d^2*e^2 - 16*b^3*c*d*e^3 - b^4*e^4) - B*d*(384*c
^4*d^4 - 896*b*c^3*d^3*e + 672*b^2*c^2*d^2*e^2 - 168*b^3*c*d*e^3 + 7*b^4*e^
4))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c
*x^2])])/(128*d^(3/2)*e^7*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{5/2}}{(d+ex)^5}\,dx = \frac{(3Bd-Ae+2Bex)\left(bx+cx^2\right)^{5/2}}{4e^2(d+ex)^4} - \frac{5\int \frac{(2b(3Bd-Ae)+4(3Bcd-bBe-Ace)x)\left(bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx}{16e^2}$$

$$= -\frac{5\left(d\left(Ae\left(16c^2d^2-12bcde-b^2e^2\right)-Bd\left(48c^2d^2-52bcde+7b^2e^2\right)\right)+3e\,(Ae}{96de^4(cd-be}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\,(64c^3d^3-80bc^2d^2e+}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\,(64c^3d^3-80bc^2d^2e+}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\,(64c^3d^3-80bc^2d^2e+}{}$$

$$= -\frac{5\left(Bd\left(192c^3d^3-304bc^2d^2e+120b^2cde^2-7b^3e^3\right)-Ae\,(64c^3d^3-80bc^2d^2e+}{}$$

Mathematica [B] time = 6.29, size = 2680, normalized size = 4.23

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] ((-(B*d) + A*e)*x*(b + c*x)*(x*(b + c*x))^(5/2))/(4*d*(-(c*d) + b*e)*(d + e
*x)^4) + ((x*(b + c*x))^(5/2)*(((-3*c*d*(B*d - A*e) + (e*(7*b*B*d - 8*A*c*d
 + A*b*e))/2)*x^(7/2)*(b + c*x)^(7/2))/(3*d*(-(c*d) + b*e)*(d + e*x)^3) + (
((-2*c*d*(B*d*(6*c*d - 7*b*e) + A*e*(2*c*d - b*e)) + (e*(-7*b^2*B*d*e + A*(
48*c^2*d^2 - 40*b*c*d*e - b^2*e^2)))/4)*x^(7/2)*(b + c*x)^(7/2))/(2*d*(-(c*
d) + b*e)*(d + e*x)^2) + ((((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A
*e) + 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*
(A*e*(32*c^2*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7
*b^2*e^2)))/4)*x^(7/2)*(b + c*x)^(7/2))/(d*(-(c*d) + b*e)*(d + e*x)) + ((-1
/8*(c*d*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e) + 3*b^3*e^2*(7*B*d
+ A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e))) + (b*e*(-192*A*c^3*d^3 - 4*b^2*c*d
*e*(91*B*d - 17*A*e) + 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A
*e)))/8 - (7*b*((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e) + 3*b^3*
e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*(A*e*(32*c^2
*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7*b^2*e^2)))/
4))/2)*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((5/(16*(1 + (c*x)/b)^
3) + 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/2 - (15*b^3*((2*c*x)/b - (
4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(512*c^3*x^3*(1 + (c*x)/b)^3)))/(5*e) - (d*(
(2*b^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*(5/(8*(1 + (c*x)/b)^3) + 5
/(6*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (15*b^2*((2*c*x)/b - (2*Sqr
t[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b]
)))/(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((2*b^2*Sqrt[x]*Sqrt[b + c*x
]*(1 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4*(1 + (c*x)/b)^2) + (1 + (
c*x)/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(16*Sqrt[c
]*Sqrt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
(c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/4 + (3*Sqrt[b]*Arc
Sinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(5/2))))/
e - ((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)*(1/(2*(1 + (c*x)
/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(2*Sqrt[c]*Sqrt[x]*(1 +
 (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*Sqrt[c]*Sqrt[1 + (c*x)/b]*A
rcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*x]) - (2*Sqrt[c*d - b*e]*A
rcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*e)))/e)
)/e))/e))/e))/e) - 6*c*((e*(-192*A*c^3*d^3 - 4*b^2*c*d*e*(91*B*d - 17*A*e)
+ 3*b^3*e^2*(7*B*d + A*e) + 16*b*c^2*d^2*(21*B*d + 8*A*e)))/8 + (5*c*d*(A*e
*(32*c^2*d^2 - 32*b*c*d*e - b^2*e^2) - B*d*(48*c^2*d^2 - 56*b*c*d*e + 7*b^2
*e^2)))/4)*((2*b^2*x^(7/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((7*(3/(16*(1 + (c
*x)/b)^3) + 1/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/12 + (35*b^4*((2*c
*x)/b - (4*c^2*x^2)/(3*b^2) + (16*c^3*x^3)/(15*b^3) - (2*Sqrt[c]*Sqrt[x]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(2048*c^4*x
^4*(1 + (c*x)/b)^3)))/(7*e) - (d*((2*b^2*x^(5/2)*Sqrt[b + c*x]*(1 + (c*x)/b
)^3*((5/(16*(1 + (c*x)/b)^3) + 5/(8*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/
2 - (15*b^3*((2*c*x)/b - (4*c^2*x^2)/(3*b^2) - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(
Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(512*c^3*x^3*(1 +
(c*x)/b)^3)))/(5*e) - (d*((2*b^2*x^(3/2)*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((3*
(5/(8*(1 + (c*x)/b)^3) + 5/(6*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1)))/8 + (
15*b^2*((2*c*x)/b - (2*Sqrt[c]*Sqrt[x]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/
(Sqrt[b]*Sqrt[1 + (c*x)/b])))/(256*c^2*x^2*(1 + (c*x)/b)^3)))/(3*e) - (d*((
2*b^2*Sqrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^3*((15/(8*(1 + (c*x)/b)^3) + 5/(4
*(1 + (c*x)/b)^2) + (1 + (c*x)/b)^(-1))/6 + (5*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqr
t[x])/Sqrt[b]])/(16*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(7/2))))/e - (d*((2*b*c*S
qrt[x]*Sqrt[b + c*x]*(1 + (c*x)/b)^2*((3/(2*(1 + (c*x)/b)^2) + (1 + (c*x)/b
)^(-1))/4 + (3*Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(8*Sqrt[c]*Sqrt[
x]*(1 + (c*x)/b)^(5/2))))/e - ((c*d - b*e)*((2*c*Sqrt[x]*Sqrt[b + c*x]*(1 +
 (c*x)/b)*(1/(2*(1 + (c*x)/b)) + (Sqrt[b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]
])/(2*Sqrt[c]*Sqrt[x]*(1 + (c*x)/b)^(3/2))))/e - ((c*d - b*e)*((2*Sqrt[b]*S
qrt[c]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(e*Sqrt[b + c*
x]) - (2*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b
+ c*x])])/(Sqrt[d]*e)))/e))/e))/e))/e))/e))/e))/(d*(-(c*d) + b*e)))/(2*d*(-
(c*d) + b*e)))/(3*d*(-(c*d) + b*e))))/(4*d*(-(c*d) + b*e)*x^(5/2)*(b + c*x)
^(5/2))
```

fricas [B] time = 31.82, size = 8045, normalized size = 12.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [1/384*(240*(24*B*c^4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2
 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 +
4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 +
 (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7
 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3
 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c +
 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^
8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*
e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)
*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2
 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 +
4*A*b^3*c)*d^5*e^5)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
 - 15*(384*B*c^4*d^9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(
21*B*b^2*c^2 + 8*A*b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 +
(7*B*b^4 + 16*A*b^3*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*
b*c^3 + A*c^4)*d^4*e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^
3*c + 6*A*b^2*c^2)*d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c
^4*d^6*e^3 + A*b^4*d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c
^2 + 8*A*b*c^3)*d^4*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 +
 16*A*b^3*c)*d^2*e^7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B
```

```
*b*c^3 + A*c^4)*d^6*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b
^3*c + 6*A*b^2*c^2)*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*
B*c^4*d^8*e + A*b^4*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^
2*c^2 + 8*A*b*c^3)*d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^
4 + 16*A*b^3*c)*d^4*e^5)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x
+ 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2880*B*c^4*d^9*e
 + 15*A*b^4*d^4*e^6 - 240*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^
2 + 18*A*b*c^3)*d^7*e^3 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B
*b^4 + 15*A*b^3*c)*d^5*e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*
c^2*d^2*e^8)*x^5 + 48*(12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 +
2*(15*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x
^4 + (6000*B*c^4*d^6*e^4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^
5*e^5 + 2*(6995*B*b^2*c^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*
b^2*c^2)*d^3*e^7 + (279*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^
7*e^3 + 73*A*b^4*d^2*e^8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B
*b^2*c^2 + 2370*A*b*c^3)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6
+ (511*B*b^4 + 1059*A*b^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^
4*d^3*e^7 - 48*(109*B*b*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A
*b*c^3)*d^6*e^4 - (1363*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163
*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2
*d^6*e^9 + (c^2*d^4*e^11 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*
e^10 - 2*b*c*d^4*e^11 + b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10
 + b^2*d^4*e^11)*x^2 + 4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -
1/192*(15*(384*B*c^4*d^9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e +
32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^
3 + (7*B*b^4 + 16*A*b^3*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(
7*B*b*c^3 + A*c^4)*d^4*e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*
B*b^3*c + 6*A*b^2*c^2)*d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384
*B*c^4*d^6*e^3 + A*b^4*d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b
^2*c^2 + 8*A*b*c^3)*d^4*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b
^4 + 16*A*b^3*c)*d^2*e^7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*
(7*B*b*c^3 + A*c^4)*d^6*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7
*B*b^3*c + 6*A*b^2*c^2)*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(
384*B*c^4*d^8*e + A*b^4*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*
B*b^2*c^2 + 8*A*b*c^3)*d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*
B*b^4 + 16*A*b^3*c)*d^4*e^5)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 +
b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - 120*(24*B*c^4*d^10 - 4*(17*B*b*
c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4
- 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 -
2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 +
 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 2
0*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*
b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^
3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*
e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^
3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*x)*sqrt(c)*log(2*c*
x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) + (2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6
 - 240*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7
*e^3 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*
d^5*e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 +
48*(12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4
*A*b*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^
6*e^4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b
^2*c^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 +
(279*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^
2*e^8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b
*c^3)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059
```

```
*A*b^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109
*B*b*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (
1363*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*
x)*sqrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4
*e^11 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^
11 + b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^
2 + 4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -1/384*(480*(24*B*c^
4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e + (67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e
^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3 + (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 +
 (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*
A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^
3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 - 4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4
+ (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^
6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^
3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c
+ 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d
^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e
^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4 + (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*
x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + 15*(384*B*c^4*d^9 +
A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(21*B*b^2*c^2 + 8*A*b*c^
3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 + (7*B*b^4 + 16*A*b^3*c)*
d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*b*c^3 + A*c^4)*d^4*e^5
+ 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^2*
e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c^4*d^6*e^3 + A*b^4*d*e^
8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^4*e^5
 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 + 16*A*b^3*c)*d^2*e^7)*x
^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B*b*c^3 + A*c^4)*d^6*e^3
 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^4
*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*B*c^4*d^8*e + A*b^4*d^3
*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^6*
e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^4 + 16*A*b^3*c)*d^4*e^5
)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)
*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6 - 2
40*(31*B*b*c^3 + 4*A*c^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7*e^3
 - 15*(127*B*b^3*c + 96*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*d^5*
e^5 - 96*(B*c^4*d^4*e^6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 + 48*(
12*B*c^4*d^5*e^5 - (33*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4*A*b
*c^3)*d^3*e^7 - (9*B*b^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^6*e^
4 - 15*A*b^4*d*e^9 - 8*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b^2*c
^2 + 2308*A*b*c^3)*d^4*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 + (279
*B*b^4 + 661*A*b^3*c)*d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^2*e^
8 - 40*(815*B*b*c^3 + 104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b*c^3
)*d^5*e^5 - (8707*B*b^3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059*A*b
^3*c)*d^3*e^7)*x^2 + 5*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109*B*b
*c^3 + 14*A*c^4)*d^7*e^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (1363
*B*b^3*c + 1022*A*b^2*c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*x)*s
qrt(c*x^2 + b*x))/(c^2*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4*e^1
1 - 2*b*c*d^3*e^12 + b^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^11 +
 b^2*d^3*e^12)*x^3 + 6*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^2 +
4*(c^2*d^7*e^8 - 2*b*c*d^6*e^9 + b^2*d^5*e^10)*x), -1/192*(15*(384*B*c^4*d^
9 + A*b^4*d^4*e^5 - 128*(7*B*b*c^3 + A*c^4)*d^8*e + 32*(21*B*b^2*c^2 + 8*A*
b*c^3)*d^7*e^2 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^6*e^3 + (7*B*b^4 + 16*A*b^3
*c)*d^5*e^4 + (384*B*c^4*d^5*e^4 + A*b^4*e^9 - 128*(7*B*b*c^3 + A*c^4)*d^4*
e^5 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^3*e^6 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*
d^2*e^7 + (7*B*b^4 + 16*A*b^3*c)*d*e^8)*x^4 + 4*(384*B*c^4*d^6*e^3 + A*b^4*
d*e^8 - 128*(7*B*b*c^3 + A*c^4)*d^5*e^4 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^4
*e^5 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^3*e^6 + (7*B*b^4 + 16*A*b^3*c)*d^2*e^
7)*x^3 + 6*(384*B*c^4*d^7*e^2 + A*b^4*d^2*e^7 - 128*(7*B*b*c^3 + A*c^4)*d^6
*e^3 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*d^5*e^4 - 24*(7*B*b^3*c + 6*A*b^2*c^2)
```

```
*d^4*e^5 + (7*B*b^4 + 16*A*b^3*c)*d^3*e^6)*x^2 + 4*(384*B*c^4*d^8*e + A*b^4
*d^3*e^6 - 128*(7*B*b*c^3 + A*c^4)*d^7*e^2 + 32*(21*B*b^2*c^2 + 8*A*b*c^3)*
d^6*e^3 - 24*(7*B*b^3*c + 6*A*b^2*c^2)*d^5*e^4 + (7*B*b^4 + 16*A*b^3*c)*d^4
*e^5)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x
)/((c*d - b*e)*x)) + 240*(24*B*c^4*d^10 - 4*(17*B*b*c^3 + 2*A*c^4)*d^9*e +
(67*B*b^2*c^2 + 20*A*b*c^3)*d^8*e^2 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^7*e^3
+ (3*B*b^4 + 4*A*b^3*c)*d^6*e^4 + (24*B*c^4*d^6*e^4 - 4*(17*B*b*c^3 + 2*A*c
^4)*d^5*e^5 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^4*e^6 - 2*(13*B*b^3*c + 8*A*b^2
*c^2)*d^3*e^7 + (3*B*b^4 + 4*A*b^3*c)*d^2*e^8)*x^4 + 4*(24*B*c^4*d^7*e^3 -
4*(17*B*b*c^3 + 2*A*c^4)*d^6*e^4 + (67*B*b^2*c^2 + 20*A*b*c^3)*d^5*e^5 - 2*
(13*B*b^3*c + 8*A*b^2*c^2)*d^4*e^6 + (3*B*b^4 + 4*A*b^3*c)*d^3*e^7)*x^3 + 6
*(24*B*c^4*d^8*e^2 - 4*(17*B*b*c^3 + 2*A*c^4)*d^7*e^3 + (67*B*b^2*c^2 + 20*
A*b*c^3)*d^6*e^4 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^5*e^5 + (3*B*b^4 + 4*A*b^
3*c)*d^4*e^6)*x^2 + 4*(24*B*c^4*d^9*e - 4*(17*B*b*c^3 + 2*A*c^4)*d^8*e^2 +
(67*B*b^2*c^2 + 20*A*b*c^3)*d^7*e^3 - 2*(13*B*b^3*c + 8*A*b^2*c^2)*d^6*e^4
+ (3*B*b^4 + 4*A*b^3*c)*d^5*e^5)*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(
-c)/(c*x)) + (2880*B*c^4*d^9*e + 15*A*b^4*d^4*e^6 - 240*(31*B*b*c^3 + 4*A*c
^4)*d^8*e^2 + 120*(53*B*b^2*c^2 + 18*A*b*c^3)*d^7*e^3 - 15*(127*B*b^3*c + 9
6*A*b^2*c^2)*d^6*e^4 + 15*(7*B*b^4 + 15*A*b^3*c)*d^5*e^5 - 96*(B*c^4*d^4*e^
6 - 2*B*b*c^3*d^3*e^7 + B*b^2*c^2*d^2*e^8)*x^5 + 48*(12*B*c^4*d^5*e^5 - (33
*B*b*c^3 + 4*A*c^4)*d^4*e^6 + 2*(15*B*b^2*c^2 + 4*A*b*c^3)*d^3*e^7 - (9*B*b
^3*c + 4*A*b^2*c^2)*d^2*e^8)*x^4 + (6000*B*c^4*d^6*e^4 - 15*A*b^4*d*e^9 - 8
*(1981*B*b*c^3 + 250*A*c^4)*d^5*e^5 + 2*(6995*B*b^2*c^2 + 2308*A*b*c^3)*d^4
*e^6 - (4421*B*b^3*c + 3262*A*b^2*c^2)*d^3*e^7 + (279*B*b^4 + 661*A*b^3*c)*
d^2*e^8)*x^3 + (12480*B*c^4*d^7*e^3 + 73*A*b^4*d^2*e^8 - 40*(815*B*b*c^3 +
104*A*c^4)*d^6*e^4 + 4*(7079*B*b^2*c^2 + 2370*A*b*c^3)*d^5*e^5 - (8707*B*b^
3*c + 6452*A*b^2*c^2)*d^4*e^6 + (511*B*b^4 + 1059*A*b^3*c)*d^3*e^7)*x^2 + 5
*(2016*B*c^4*d^8*e^2 + 11*A*b^4*d^3*e^7 - 48*(109*B*b*c^3 + 14*A*c^4)*d^7*e
^3 + 2*(2251*B*b^2*c^2 + 760*A*b*c^3)*d^6*e^4 - (1363*B*b^3*c + 1022*A*b^2*
c^2)*d^5*e^5 + (77*B*b^4 + 163*A*b^3*c)*d^4*e^6)*x)*sqrt(c*x^2 + b*x))/(c^2
*d^8*e^7 - 2*b*c*d^7*e^8 + b^2*d^6*e^9 + (c^2*d^4*e^11 - 2*b*c*d^3*e^12 + b
^2*d^2*e^13)*x^4 + 4*(c^2*d^5*e^10 - 2*b*c*d^4*e^11 + b^2*d^3*e^12)*x^3 + 6
*(c^2*d^6*e^9 - 2*b*c*d^5*e^10 + b^2*d^4*e^11)*x^2 + 4*(c^2*d^7*e^8 - 2*b*c
*d^6*e^9 + b^2*d^5*e^10)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="giac")
[Out] Timed out
```

maple [B] time = 0.09, size = 23819, normalized size = 37.63

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x)
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(5/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{5/2}\,\left(A+B\,x\right)}{\left(d+e\,x\right)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] int(((b*x + c*x^2)^(5/2)*(A + B*x))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{5}{2}}\left(A+Bx\right)}{\left(d+ex\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((x*(b + c*x))**(5/2)*(A + B*x)/(d + e*x)**5, x)
```

3.1191 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=305

$$\frac{\sqrt{bx+cx^2}\,\bigl(2cex\bigl(40Ace(2cd-be)+B\bigl(35b^2e^2-64bcde+24c^2d^2\bigr)\bigr)+8Ace\bigl(15b^2e^2-54bcde+64c^2d^2\bigr)+B\bigl(}{192c^4}$$

```
[Out] 1/64*(128*A*c^4*d^3+35*b^4*B*e^3+144*b^2*c^2*d*e*(A*e+B*d)-40*b^3*c*e^2*(A*
e+3*B*d)-64*b*c^3*d^2*(3*A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(
9/2)+1/24*(8*A*c*e-7*B*b*e+6*B*c*d)*(e*x+d)^2*(c*x^2+b*x)^(1/2)/c^2+1/4*B*(
e*x+d)^3*(c*x^2+b*x)^(1/2)/c+1/192*(8*A*c*e*(15*b^2*e^2-54*b*c*d*e+64*c^2*d
^2)+B*(-105*b^3*e^3+360*b^2*c*d*e^2-376*b*c^2*d^2*e+96*c^3*d^3)+2*c*e*(40*A
*c*e*(-b*e+2*c*d)+B*(35*b^2*e^2-64*b*c*d*e+24*c^2*d^2))*x)*(c*x^2+b*x)^(1/2
)/c^4
```

Rubi **[A]** time = 0.44, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {832, 779, 620, 206}

$$\frac{\sqrt{bx+cx^2}\,\bigl(2cex\bigl(40Ace(2cd-be)+B\bigl(35b^2e^2-64bcde+24c^2d^2\bigr)\bigr)+8Ace\bigl(15b^2e^2-54bcde+64c^2d^2\bigr)+B\bigl(}{192c^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[b*x + c*x^2],x]
```

```
[Out] ((6*B*c*d - 7*b*B*e + 8*A*c*e)*(d + e*x)^2*Sqrt[b*x + c*x^2])/(24*c^2) + (B
*(d + e*x)^3*Sqrt[b*x + c*x^2])/(4*c) + ((8*A*c*e*(64*c^2*d^2 - 54*b*c*d*e
+ 15*b^2*e^2) + B*(96*c^3*d^3 - 376*b*c^2*d^2*e + 360*b^2*c*d*e^2 - 105*b^3
*e^3) + 2*c*e*(40*A*c*e*(2*c*d - b*e) + B*(24*c^2*d^2 - 64*b*c*d*e + 35*b^2
*e^2))*x)*Sqrt[b*x + c*x^2])/(192*c^4) + ((128*A*c^4*d^3 + 35*b^4*B*e^3 + 1
44*b^2*c^2*d*e*(B*d + A*e) - 40*b^3*c*e^2*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d
 + 3*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(64*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\sqrt{bx+cx^2}}\,dx = \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)^2\left(-\frac{1}{2}(bB-8Ac)d+\frac{1}{2}(6Bcd-7bBe+8Ace)x\right)}{\sqrt{bx+cx^2}}\,dx}{4c}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \int (d+ex)\Big(-\frac{1}{4}d\Big(12bB$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \Big(8Ace\Big(64c^2d^2 -$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \Big(8Ace\Big(64c^2d^2 -$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{bx+cx^2}}{4c} + \Big(8Ace\Big(64c^2d^2 -$$

Mathematica [**A**]   time = 0.79, size = 278, normalized size = 0.91

$$\sqrt{x(b+cx)}\,\Big(\sqrt{c}\,\left(8Ace\left(15b^2e^2-2bce(27d+5ex)+4c^2\left(18d^2+9dex+2e^2x^2\right)\right)+B\Big(-105b^3e^3+10b^2ce^2(36d+7$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(8*A*c*e*(15*b^2*e^2 - 2*b*c*e*(27*d + 5*e*x) +
 4*c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + B*(-105*b^3*e^3 + 10*b^2*c*e^2*(36
*d + 7*e*x) - 8*b*c^2*e*(54*d^2 + 30*d*e*x + 7*e^2*x^2) + 48*c^3*(4*d^3 + 6
*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3))) + (3*(128*A*c^4*d^3 + 35*b^4*B*e^3 + 14
4*b^2*c^2*d*e*(B*d + A*e) - 40*b^3*c*e^2*(3*B*d + A*e) - 64*b*c^3*d^2*(B*d
+ 3*A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(Sqrt[b]*Sqrt[x]*Sqrt[1 + (c*
x)/b])))/(192*c^(9/2))
```

fricas [**A**]   time = 0.93, size = 621, normalized size = 2.04

$$\Big[3\left(64\left(Bbc^3-2\,Ac^4\right)d^3-48\left(3\,Bb^2c^2-4\,Abc^3\right)d^2e+24\left(5\,Bb^3c-6\,Ab^2c^2\right)de^2-5\left(7\,Bb^4-8\,Ab^3c\right)e^3\right)\sqrt{c}\,\log\Big(2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*A*b*c^3)*d^2*e
+ 24*(5*B*b^3*c - 6*A*b^2*c^2)*d*e^2 - 5*(7*B*b^4 - 8*A*b^3*c)*e^3)*sqrt(c)
*log(2*c*x + b - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(48*B*c^4*e^3*x^3 + 192*B
*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4)*d^2*e + 72*(5*B*b^2*c^2 - 6*A*b*c^3)*d
*e^2 - 15*(7*B*b^3*c - 8*A*b^2*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*c^3 -
8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e^2 + 5
*(7*B*b^2*c^2 - 8*A*b*c^3)*e^3)*x)*sqrt(c*x^2 + b*x))/c^5, 1/192*(3*(64*(B*
b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*A*b*c^3)*d^2*e + 24*(5*B*b^3*c -
 6*A*b^2*c^2)*d*e^2 - 5*(7*B*b^4 - 8*A*b^3*c)*e^3)*sqrt(-c)*arctan(sqrt(c*x
^2 + b*x)*sqrt(-c)/(c*x)) + (48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*
c^3 - 4*A*c^4)*d^2*e + 72*(5*B*b^2*c^2 - 6*A*b*c^3)*d*e^2 - 15*(7*B*b^3*c -
 8*A*b^2*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*c^3 - 8*A*c^4)*e^3)*x^2 + 2*
(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e^2 + 5*(7*B*b^2*c^2 - 8*A*b*
c^3)*e^3)*x)*sqrt(c*x^2 + b*x))/c^5]
```

giac [**A**] time = 0.33, size = 311, normalized size = 1.02

$$\frac{1}{192}\sqrt{cx^2+bx}\left(2\left(4\left(\frac{6\,Bxe^3}{c}+\frac{24\,Bc^3de^2-7\,Bbc^2e^3+8\,Ac^3e^3}{c^4}\right)x+\frac{144\,Bc^3d^2e-120\,Bbc^2de^2+144\,Ac^3de^2+}{c^4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x)*(2*(4*(6*B*x*e^3/c + (24*B*c^3*d*e^2 - 7*B*b*c^2*e^
3 + 8*A*c^3*e^3)/c^4)*x + (144*B*c^3*d^2*e - 120*B*b*c^2*d*e^2 + 144*A*c^3*
d*e^2 + 35*B*b^2*c*e^3 - 40*A*b*c^2*e^3)/c^4)*x + 3*(64*B*c^3*d^3 - 144*B*b
*c^2*d^2*e + 192*A*c^3*d^2*e + 120*B*b^2*c*d*e^2 - 144*A*b*c^2*d*e^2 - 35*B
*b^3*e^3 + 40*A*b^2*c*e^3)/c^4) + 1/128*(64*B*b*c^3*d^3 - 128*A*c^4*d^3 - 1
44*B*b^2*c^2*d^2*e + 192*A*b*c^3*d^2*e + 120*B*b^3*c*d*e^2 - 144*A*b^2*c^2*
d*e^2 - 35*B*b^4*e^3 + 40*A*b^3*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))*sqrt(c) - b))/c^(9/2)
```

maple [**B**] time = 0.06, size = 646, normalized size = 2.12

$$\frac{\sqrt{c\,x^2+bx}\;B\,e^3x^3}{4c}+\frac{\sqrt{c\,x^2+bx}\;A\,e^3x^2}{3c}-\frac{7\sqrt{c\,x^2+bx}\;Bb\,e^3x^2}{24c^2}+\frac{\sqrt{c\,x^2+bx}\;Bd\,e^2x^2}{c}-\frac{5A\,b^3e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2}\right.}{16c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/4*B*e^3*x^3/c*(c*x^2+b*x)^(1/2)-7/24*B*e^3*b/c^2*x^2*(c*x^2+b*x)^(1/2)+35
/96*B*e^3*b^2/c^3*x*(c*x^2+b*x)^(1/2)-35/64*B*e^3*b^3/c^4*(c*x^2+b*x)^(1/2)
+35/128*B*e^3*b^4/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/3*x^2
/c*(c*x^2+b*x)^(1/2)*A*e^3+x^2/c*(c*x^2+b*x)^(1/2)*B*d*e^2-5/12*b/c^2*x*(c*
x^2+b*x)^(1/2)*A*e^3-5/4*b/c^2*x*(c*x^2+b*x)^(1/2)*B*d*e^2+5/8*b^2/c^3*(c*x
^2+b*x)^(1/2)*A*e^3+15/8*b^2/c^3*(c*x^2+b*x)^(1/2)*B*d*e^2-5/16*b^3/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3-15/16*b^3/c^(7/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2+3/2*x/c*(c*x^2+b*x)^(1/2)*A*d*e^2
+3/2*x/c*(c*x^2+b*x)^(1/2)*B*d^2*e-9/4*b/c^2*(c*x^2+b*x)^(1/2)*A*d*e^2-9/4*
b/c^2*(c*x^2+b*x)^(1/2)*B*d^2*e+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x)^(1/2))*A*d*e^2+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(
1/2))*B*d^2*e+3/c*(c*x^2+b*x)^(1/2)*A*d^2*e+1/c*(c*x^2+b*x)^(1/2)*B*d^3-3/2
*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*d^2*e-1/2*b/c^(3/2)*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d^3+A*d^3*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [**A**] time = 0.59, size = 474, normalized size = 1.55

$$\frac{\sqrt{cx^2+bx}\,Be^3x^3}{4\,c}-\frac{7\,\sqrt{cx^2+bx}\,Bbe^3x^2}{24\,c^2}+\frac{35\,\sqrt{cx^2+bx}\,Bb^2e^3x}{96\,c^3}+\frac{Ad^3\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{35\,Bb^4e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*B*e^3*x^3/c - 7/24*sqrt(c*x^2 + b*x)*B*b*e^3*x^2/c^2
+ 35/96*sqrt(c*x^2 + b*x)*B*b^2*e^3*x/c^3 + A*d^3*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c))/sqrt(c) + 35/128*B*b^4*e^3*log(2*c*x + b + 2*sqrt(c*x^2
 + b*x)*sqrt(c))/c^(9/2) - 35/64*sqrt(c*x^2 + b*x)*B*b^3*e^3/c^4 + 1/3*(3*B
*d*e^2 + A*e^3)*sqrt(c*x^2 + b*x)*x^2/c - 5/12*(3*B*d*e^2 + A*e^3)*sqrt(c*x
^2 + b*x)*b*x/c^2 + 3/2*(B*d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*x/c - 5/16*(3
*B*d*e^2 + A*e^3)*b^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2)
+ 9/8*(B*d^2*e + A*d*e^2)*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/
c^(5/2) - 1/2*(B*d^3 + 3*A*d^2*e)*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/c^(3/2) + 5/8*(3*B*d*e^2 + A*e^3)*sqrt(c*x^2 + b*x)*b^2/c^3 - 9/4*(B*
d^2*e + A*d*e^2)*sqrt(c*x^2 + b*x)*b/c^2 + (B*d^3 + 3*A*d^2*e)*sqrt(c*x^2 +
 b*x)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/sqrt(x*(b + c*x)), x)
```

3.1192 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=189

$$\frac{\sqrt{bx+cx^2}\left(2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)+B\left(15b^2e^2-36bcde+16c^2d^2\right)\right)}{24c^3}+\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right.$$

```
[Out] 1/8*(16*A*c^3*d^2-5*b^3*B*e^2+6*b^2*c*e*(A*e+2*B*d)-8*b*c^2*d*(2*A*e+B*d))*
arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)+1/3*B*(e*x+d)^2*(c*x^2+b*x)^(1
/2)/c+1/24*(6*A*c*e*(-3*b*e+8*c*d)+B*(15*b^2*e^2-36*b*c*d*e+16*c^2*d^2)+2*c
*e*(6*A*c*e-5*B*b*e+4*B*c*d)*x)*(c*x^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.19, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {832, 779, 620, 206}

$$\frac{\sqrt{bx+cx^2}\left(2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)+B\left(15b^2e^2-36bcde+16c^2d^2\right)\right)}{24c^3}+\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[b*x + c*x^2])/(3*c) + ((6*A*c*e*(8*c*d - 3*b*e) + B*(16
*c^2*d^2 - 36*b*c*d*e + 15*b^2*e^2) + 2*c*e*(4*B*c*d - 5*b*B*e + 6*A*c*e)*x
)*Sqrt[b*x + c*x^2])/(24*c^3) + ((16*A*c^3*d^2 - 5*b^3*B*e^2 + 6*b^2*c*e*(2
*B*d + A*e) - 8*b*c^2*d*(B*d + 2*A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2
]])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\sqrt{bx+cx^2}}\,dx &= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c}+\frac{\int \frac{(d+ex)\left(-\frac{1}{2}(bB-6Ac)d+\frac{1}{2}(4Bcd-5bBe+6Ace)x\right)}{\sqrt{bx+cx^2}}\,dx}{3c}\\
&= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c}+\frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4Bc}{24c^3}\\
&= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c}+\frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4Bc}{24c^3}\\
&= \frac{B(d+ex)^2\sqrt{bx+cx^2}}{3c}+\frac{\left(6Ace(8cd-3be)+B\left(16c^2d^2-36bcde+15b^2e^2\right)+2ce(4Bc}{24c^3}\end{aligned}$$

Mathematica [A]   time = 0.22, size = 190, normalized size = 1.01

$$\frac{\sqrt{c}\,x(b+cx)\left(6Ace(-3be+8cd+2cex)+B\left(15b^2e^2-2bce(18d+5ex)+8c^2\left(3d^2+3dex+e^2x^2\right)\right)\right)-3\sqrt{b}\,\sqrt{x}\,\sqrt{}}{24c^{7/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*x*(b + c*x)*(6*A*c*e*(8*c*d - 3*b*e + 2*c*e*x) + B*(15*b^2*e^2 - 2
*b*c*e*(18*d + 5*e*x) + 8*c^2*(3*d^2 + 3*d*e*x + e^2*x^2))) - 3*Sqrt[b]*(-1
6*A*c^3*d^2 + 5*b^3*B*e^2 - 6*b^2*c*e*(2*B*d + A*e) + 8*b*c^2*d*(B*d + 2*A*
e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(24*c^(7/
2)*Sqrt[x*(b + c*x)])
```

fricas [A]   time = 0.85, size = 391, normalized size = 2.07

$$\left[-\frac{3\left(8\left(Bbc^2-2\,Ac^3\right)d^2-4\left(3\,Bb^2c-4\,Abc^2\right)de+\left(5\,Bb^3-6\,Ab^2c\right)e^2\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,(}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c - 4*A*b*c^2)*d*e + (5*B
*b^3 - 6*A*b^2*c)*e^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
 - 2*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A*c^3)*d*e + 3*(5*
B*b^2*c - 6*A*b*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 - 6*A*c^3)*e^2)*x)*
sqrt(c*x^2 + b*x))/c^4, 1/24*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c -
 4*A*b*c^2)*d*e + (5*B*b^3 - 6*A*b^2*c)*e^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b
*x)*sqrt(-c)/(c*x)) + (8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A
*c^3)*d*e + 3*(5*B*b^2*c - 6*A*b*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 -
6*A*c^3)*e^2)*x)*sqrt(c*x^2 + b*x))/c^4]
```

giac [A]   time = 0.28, size = 196, normalized size = 1.04

$$\frac{1}{24}\,\sqrt{cx^2+bx}\left(2\left(\frac{4\,Bxe^2}{c}+\frac{12\,Bc^2de-5\,Bbce^2+6\,Ac^2e^2}{c^3}\right)x+\frac{3\left(8\,Bc^2d^2-12\,Bbcde+16\,Ac^2de+5\,Bb^2e^2-6\,Ab}{c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x)*(2*(4*B*x*e^2/c + (12*B*c^2*d*e - 5*B*b*c*e^2 + 6*A*
c^2*e^2)/c^3)*x + 3*(8*B*c^2*d^2 - 12*B*b*c*d*e + 16*A*c^2*d*e + 5*B*b^2*e^
2 - 6*A*b*c*e^2)/c^3) + 1/16*(8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 12*B*b^2*c*d*e
 + 16*A*b*c^2*d*e + 5*B*b^3*e^2 - 6*A*b^2*c*e^2)*log(abs(-2*(sqrt(c)*x - sq
rt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 395, normalized size = 2.09

$$\frac{\sqrt{c\,x^{2}+bx}\;B\,e^{2}x^{2}}{3c}+\frac{3A\,b^{2}e^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Abde\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx}\right)}{c^{\frac{3}{2}}}+\frac{A\,d^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+b}\right.}{\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/3*B*e^2*x^2/c*(c*x^2+b*x)^(1/2)-5/12*B*e^2*b/c^2*x*(c*x^2+b*x)^(1/2)+5/8*
B*e^2*b^2/c^3*(c*x^2+b*x)^(1/2)-5/16*B*e^2*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x)^(1/2))+1/2*x/c*(c*x^2+b*x)^(1/2)*A*e^2+x/c*(c*x^2+b*x)^(1/2)
*B*d*e-3/4*b/c^2*(c*x^2+b*x)^(1/2)*A*e^2-3/2*b/c^2*(c*x^2+b*x)^(1/2)*B*d*e+
3/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^2+3/4*b^2/c^(
5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e+2/c*(c*x^2+b*x)^(1/2)*
A*d*e+1/c*(c*x^2+b*x)^(1/2)*B*d^2-b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x)^(1/2))*A*d*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*
d^2+A*d^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.68, size = 299, normalized size = 1.58

$$\frac{\sqrt{cx^{2}+bx}\,Be^{2}x^{2}}{3\,c}-\frac{5\,\sqrt{cx^{2}+bx}\,Bbe^{2}x}{12\,c^{2}}+\frac{Ad^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right)}{\sqrt{c}}-\frac{5\,Bb^{3}e^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+}\right.}{16\,c^{\frac{7}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(c*x^2 + b*x)*B*e^2*x^2/c - 5/12*sqrt(c*x^2 + b*x)*B*b*e^2*x/c^2 +
A*d^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) - 5/16*B*b^3*e^2
*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) + 5/8*sqrt(c*x^2 + b*
x)*B*b^2*e^2/c^3 + 1/2*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*x/c + 3/8*(2*B*d
*e + A*e^2)*b^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) - 1/2*
(B*d^2 + 2*A*d*e)*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) -
3/4*(2*B*d*e + A*e^2)*sqrt(c*x^2 + b*x)*b/c^2 + (B*d^2 + 2*A*d*e)*sqrt(c*x^
2 + b*x)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^2}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{2}}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/sqrt(x*(b + c*x)), x)
```

3.1193 $\int \frac{(A+Bx)(d+ex)}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=99

$$\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bcex)}{4c^2}$$

```
[Out] 1/4*(8*A*c^2*d+3*b^2*B*e-4*b*c*(A*e+B*d))*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/
2))/c^(5/2)-1/4*(3*b*B*e-4*c*(A*e+B*d)-2*B*c*e*x)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.08, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {779, 620, 206}

$$\frac{\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{4c^{5/2}}-\frac{\sqrt{bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bcex)}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] -((3*b*B*e - 4*c*(B*d + A*e) - 2*B*c*e*x)*Sqrt[b*x + c*x^2])/(4*c^2) + ((8*
A*c^2*d + 3*b^2*B*e - 4*b*c*(B*d + A*e))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\sqrt{bx+cx^2}}\,dx &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(\frac{3}{2}b^2Be+2c(2Acd-b(Bd+Ae))\right)\int}{4c^2}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(\frac{3}{2}b^2Be+2c(2Acd-b(Bd+Ae))\right)\text{Su}}{2c^2}\\ &= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{bx+cx^2}}{4c^2}+\frac{\left(8Ac^2d+3b^2Be-4bc(Bd+Ae)\right)\tanh}{4c^{5/2}}\end{aligned}$$

Mathematica [A]   time = 0.33, size = 115, normalized size = 1.16

$$\frac{\sqrt{x(b+cx)}\left(\frac{\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{\sqrt{b}\sqrt{x}\sqrt{\frac{cx}{b}+1}}+\sqrt{c}\,(4Ace+B(-3be+4cd+2cex))\right)}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (Sqrt[x*(b + c*x)]*(Sqrt[c]*(4*A*c*e + B*(4*c*d - 3*b*e + 2*c*e*x)) + ((8*A
*c^2*d + 3*b^2*B*e - 4*b*c*(B*d + A*e))*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])
/(Sqrt[b]*Sqrt[x]*Sqrt[1 + (c*x)/b])))/(4*c^(5/2))
```

fricas [A]   time = 0.97, size = 217, normalized size = 2.19

$$\left[\frac{\left(4\left(Bbc-2\,Ac^2\right)d-\left(3\,Bb^2-4\,Abc\right)e\right)\sqrt{c}\,\log\left(2\,cx+b-2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)+2\left(2\,Bc^2ex+4\,Bc^2d-\left(3\,Bbc-4\,A\right.\right.}{8\,c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/8*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*A*b*c)*e)*sqrt(c)*log(2*c*x + b
 - 2*sqrt(c*x^2 + b*x)*sqrt(c)) + 2*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4
*A*c^2)*e)*sqrt(c*x^2 + b*x))/c^3, 1/4*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 -
 4*A*b*c)*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (2*B*c^2*e
*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x^2 + b*x))/c^3]
```

giac [A]   time = 0.28, size = 110, normalized size = 1.11

$$\frac{1}{4}\sqrt{cx^2+bx}\left(\frac{2\,Bxe}{c}+\frac{4\,Bcd-3\,Bbe+4\,Ace}{c^2}\right)+\frac{\left(4\,Bbcd-8\,Ac^2d-3\,Bb^2e+4\,Abce\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right.\right.\right.}{8\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x)*(2*B*x*e/c + (4*B*c*d - 3*B*b*e + 4*A*c*e)/c^2) + 1/8
*(4*B*b*c*d - 8*A*c^2*d - 3*B*b^2*e + 4*A*b*c*e)*log(abs(-2*(sqrt(c)*x - sq
rt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [B]   time = 0.05, size = 202, normalized size = 2.04

$$-\frac{Abe\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{Ad\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}+\frac{3B\,b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{8c^{\frac{5}{2}}}-\frac{Bbd\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x\right.}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/2*B*e*x/c*(c*x^2+b*x)^(1/2)-3/4*B*e*b/c^2*(c*x^2+b*x)^(1/2)+3/8*B*e*b^2/c
^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+1/c*(c*x^2+b*x)^(1/2)*A*e+
1/c*(c*x^2+b*x)^(1/2)*B*d-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^
(1/2))*A*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d+A*d*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.70, size = 159, normalized size = 1.61

$$\frac{\sqrt{cx^2+bx}\,Bex}{2\,c}+\frac{Ad\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{3\,Bb^2e\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{8\,c^{\frac{5}{2}}}-\frac{3\,\sqrt{cx^2+bx}\,B}{4\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x)*B*e*x/c + A*d*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqr
t(c))/sqrt(c) + 3/8*B*b^2*e*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^
(5/2) - 3/4*sqrt(c*x^2 + b*x)*B*b*e/c^2 - 1/2*(B*d + A*e)*b*log(2*c*x + b +
 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + sqrt(c*x^2 + b*x)*(B*d + A*e)/c
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/sqrt(x*(b + c*x)), x)
```

3.1194 $\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=55

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

```
[Out] -(-2*A*c+B*b)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)+B*(c*x^2+b*x)^(1
/2)/c
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.158, Rules used = {640, 620, 206}

$$\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x
^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{bx+cx^2}}\,dx&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{2c}\\&=\frac{B\sqrt{bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\&=\frac{B\sqrt{bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 80, normalized size = 1.45

$$\frac{B\sqrt{c}\,x(b+cx)-\sqrt{b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,(bB-2Ac)\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[c]*x*(b + c*x) - Sqrt[b]*(b*B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Ar
cSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(c^(3/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 0.76, size = 115, normalized size = 2.09

$$\left[\frac{2\,\sqrt{cx^2+bx}\,Bc-(Bb-2\,Ac)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^2},\frac{\sqrt{cx^2+bx}\,Bc+(Bb-2\,Ac)\sqrt{-c}\,\arctan\left(\right.}{c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*sqrt(c*x^2 + b*x)*B*c - (B*b - 2*A*c)*sqrt(c)*log(2*c*x + b + 2*sqr
t(c*x^2 + b*x)*sqrt(c)))/c^2, (sqrt(c*x^2 + b*x)*B*c + (B*b - 2*A*c)*sqrt(-
c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/c^2]
```

giac [A] time = 0.27, size = 60, normalized size = 1.09

$$\frac{\sqrt{cx^2+bx}\,B}{c}+\frac{(Bb-2\,Ac)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{2\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^
2 + b*x))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 78, normalized size = 1.42

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{c\,x^2+bx}\;B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] (c*x^2+b*x)^(1/2)*B/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1
/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)
```

maxima [A] time = 0.59, size = 75, normalized size = 1.36

$$-\frac{Bb\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\,c^{\frac{3}{2}}}+\frac{A\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{\sqrt{c}}+\frac{\sqrt{cx^2+bx}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/2*B*b*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) + A*log(2*c*x
 + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/sqrt(c) + sqrt(c*x^2 + b*x)*B/c
```

mupad [**B**] time = 2.12, size = 77, normalized size = 1.40

$$\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{\sqrt{c}}+\frac{B\,\sqrt{c\,x^2+b\,x}}{c}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(1/2),x)
```

```
[Out] (A*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(1/2) + (B*(b*x + c*x^
2)^(1/2))/c - (B*b*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/(2*c^(3/
2))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(x*(b + c*x)), x)
```

3.1195 $\int \frac{A+Bx}{(d+ex)\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=113

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}$$

```
[Out] 2*B*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/e/c^(1/2)-(-A*e+B*d)*arctanh(1/2*(
b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/e/d^(1/2)/(
-b*e+c*d)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 113, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {843, 620, 206, 724}

$$\frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*B*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/(Sqrt[c]*e) - ((B*d - A*e)*Arc
Tanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])]
)/(Sqrt[d]*e*Sqrt[c*d - b*e])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\sqrt{bx+cx^2}}\,dx = \frac{B\int \frac{1}{\sqrt{bx+cx^2}}\,dx}{e} + \frac{(-Bd+Ae)\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{e}$$

$$= \frac{(2B)\,\text{Subst}\left(\int \frac{1}{1-cx^2}\,dx, x, \frac{x}{\sqrt{bx+cx^2}}\right)}{e} - \frac{(2(-Bd+Ae))\,\text{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,dx, x, \frac{-bd-(}{\sqrt{b}}\right.}{e}$$

$$= \frac{2B\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{\sqrt{c}\,e} - \frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\,\sqrt{cd-be}\,\sqrt{bx+cx^2}}\right)}{\sqrt{d}\,e\sqrt{cd-be}}$$

Mathematica [A] time = 0.17, size = 131, normalized size = 1.16

$$\frac{2\sqrt{x}\left(\frac{\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)}{\sqrt{d}\,\sqrt{cd-be}} + \frac{\sqrt{b}\,B\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{b}}\right)}{\sqrt{c}}\right)}{e\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[x]*((Sqrt[b]*B*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]]
)/Sqrt[c] + ((-(B*d) + A*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])
/(Sqrt[d]*Sqrt[b + c*x])])/(Sqrt[d]*Sqrt[c*d - b*e])))/(e*Sqrt[x*(b + c*x)]
)
```

fricas [A] time = 1.06, size = 534, normalized size = 4.73

$$\Bigg[\frac{\left(Bcd^2-Bbde\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-(Bcd-Ace)\sqrt{cd^2-bde}\,\log\left(\frac{bd+(2\,cd-be)x+2\,\sqrt{cd^2-bde}\,\sqrt{cx^2+bx}}{ex+d}\right)}{c^2d^2e-bcde^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [((B*c*d^2 - B*b*d*e)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))
- (B*c*d - A*c*e)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c
*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)))/(c^2*d^2*e - b*c*d*e^2), -(2*(
B*c*d - A*c*e)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2
 + b*x)/((c*d - b*e)*x)) - (B*c*d^2 - B*b*d*e)*sqrt(c)*log(2*c*x + b + 2*sq
rt(c*x^2 + b*x)*sqrt(c)))/(c^2*d^2*e - b*c*d*e^2), -(2*(B*c*d^2 - B*b*d*e)*
sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (B*c*d - A*c*e)*sqrt(c*
d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2
+ b*x))/(e*x + d)))/(c^2*d^2*e - b*c*d*e^2), -2*((B*c*d - A*c*e)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
+ (B*c*d^2 - B*b*d*e)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)))/(c
^2*d^2*e - b*c*d*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.05, size = 298, normalized size = 2.64

$$-\frac{A\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{\sqrt{-\frac{(be-cd)d}{e^2}}\;e}+\frac{Bd\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x\right.}}{x+\frac{d}{e}}\right.}{\sqrt{-\frac{(be-cd)d}{e^2}}\;e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))/c^(1/2)-1/e/(-(b*e-c*d)*d/e^2
)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(
1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+
1/e^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2))/(x+d/e))*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x\left(b+cx\right)}\left(d+ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)), x)
```

3.1196 $\int \frac{A+Bx}{(d+ex)^2\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=128

$$\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{d(d+ex)(cd-be)}-\frac{(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{2d^{3/2}(cd-be)^{3/2}}$$

```
[Out] -1/2*(A*b*e-2*A*c*d+B*b*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c
*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(3/2)/(-b*e+c*d)^(3/2)+(-A*e+B*d)*(c*x^2+b*x
)^(1/2)/d/(-b*e+c*d)/(e*x+d)
```

Rubi [A] time = 0.08, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {806, 724, 206}

$$\frac{\sqrt{bx+cx^2}\,(Bd-Ae)}{d(d+ex)(cd-be)}-\frac{(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{2d^{3/2}(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(d*(c*d - b*e)*(d + e*x)) - ((b*B*d - 2*A*c
*d + A*b*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt
[b*x + c*x^2])])/(2*d^(3/2)*(c*d - b*e)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)} - \frac{(bBd-2Acd+Abe)\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{2d(cd-be)}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)} + \frac{(bBd-2Acd+Abe)\,\text{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,dx, x, \frac{-bd-(2cd-}{\sqrt{bx+cx^2}}\right.}{d(cd-be)}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)(d+ex)} - \frac{(bBd-2Acd+Abe)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\,\sqrt{cd-be}\,\sqrt{bx+cx^2}}\right)}{2d^{3/2}(cd-be)^{3/2}}$$

Mathematica [A] time = 0.07, size = 133, normalized size = 1.04

$$\frac{\sqrt{x}\left(\frac{\sqrt{d}\,\sqrt{x}\,(b+cx)(Ae-Bd)}{d+ex}+\frac{\sqrt{b+cx}\,(Abe-2Acd+bBd)\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)}{\sqrt{cd-be}}\right)}{d^{3/2}\sqrt{x(b+cx)}\,(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x]*((Sqrt[d]*(-(B*d) + A*e)*Sqrt[x]*(b + c*x))/(d + e*x) + ((b*B*d -
2*A*c*d + A*b*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*S
qrt[b + c*x])])/Sqrt[c*d - b*e]))/(d^(3/2)*(-(c*d) + b*e)*Sqrt[x*(b + c*x)]
)
```

fricas [A] time = 0.89, size = 399, normalized size = 3.12

$$\left[-\frac{\left(Abde+(Bb-2\,Ac)d^2+\left(Abe^2+(Bb-2\,Ac)de\right)x\right)\sqrt{cd^2-bde}\,\log\left(\frac{bd+(2\,cd-be)x+2\,\sqrt{cd^2-bde}\,\sqrt{cx^2+bx}}{ex+d}\right)-2\left(Bcd\right.}{2\left(c^2d^5-2\,bcd^4e+b^2d^3e^2+\left(c^2d^4e-2\,bcd^3e^2+b^2d^2e^3\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((A*b*d*e + (B*b - 2*A*c)*d^2 + (A*b*e^2 + (B*b - 2*A*c)*d*e)*x)*sqrt
(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x
^2 + b*x))/(e*x + d)) - 2*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(c*
x^2 + b*x))/(c^2*d^5 - 2*b*c*d^4*e + b^2*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e
^2 + b^2*d^2*e^3)*x), -((A*b*d*e + (B*b - 2*A*c)*d^2 + (A*b*e^2 + (B*b - 2*
A*c)*d*e)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 +
 b*x)/((c*d - b*e)*x)) - (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(c*x
^2 + b*x))/(c^2*d^5 - 2*b*c*d^4*e + b^2*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^
2 + b^2*d^2*e^3)*x)]
```

giac [B] time = 1.10, size = 509, normalized size = 3.98

$$-\frac{1}{2}\left(\frac{\left(Bbde^2\log\left(\left|2\,cd-be-2\,\sqrt{cd^2-bde}\,\sqrt{c}\right|\right)-2\,Acde^2\log\left(\left|2\,cd-be-2\,\sqrt{cd^2-bde}\,\sqrt{c}\right|\right)+2\,\sqrt{cd^2-bde}\right.}{\sqrt{cd^2-bde}\,cd^2-\sqrt{cd^2-b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*((B*b*d*e^2*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 2*
A*c*d*e^2*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 2*sqrt(c*
d^2 - b*d*e)*B*sqrt(c)*d*e + A*b*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b
*d*e)*sqrt(c))) - 2*sqrt(c*d^2 - b*d*e)*A*sqrt(c)*e^2)*sgn(1/(x*e + d))/(sq
rt(c*d^2 - b*d*e)*c*d^2 - sqrt(c*d^2 - b*d*e)*b*d*e) - 2*(B*d*e*sgn(1/(x*e
+ d)) - A*e^2*sgn(1/(x*e + d)))*sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^
2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2)/(c*d^2*sgn(1/(x*e + d))^2 - b*d*e*sg
n(1/(x*e + d))^2) - (B*b*d*e^3 - 2*A*c*d*e^3 + A*b*e^4)*log(abs(2*c*d - b*e
 - 2*sqrt(c*d^2 - b*d*e)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*
e/(x*e + d) - b*d*e/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e +
d))))/((c*d^2*e - b*d*e^2)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple [**B**]   time = 0.06, size = 849, normalized size = 6.63

$$-\frac{Ab\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2c-\frac{(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}}{x+\frac{d}{e}}\right)}{2\left(be-cd\right)\sqrt{-\frac{(be-cd)d}{e^2}}\;d}+\frac{Ac\ln\left(\frac{-\frac{2(be-cd)d}{e^2}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+2\sqrt{-\frac{(be-cd)d}{e^2}}\,\sqrt{\left(x+\right.}}{x+\frac{d}{e}}\right.}{\left(be-cd\right)\sqrt{-\frac{(be-cd)d}{e^2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 1/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*A-1/e/(b*e-c*d)/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*B-1/2/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A+1/2/e/(b*e-c*d)/(-(b*e-c*d
)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d
/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d
/e))*b*B+1/e/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A-1/e^2/(b*e-c*d)/(-(b*e-c*d)*d/e^2
)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(
1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*
B*d-B/e^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [**F**]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x\left(b + cx\right)}\left(d + ex\right)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**2), x)
```

3.1197 $\int \frac{A+Bx}{(d+ex)^3\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=216

$$\frac{\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(3Ae(2cd-be)-Bd(be+2}{4d^2(d+ex)(cd-be)^2}$$

```
[Out] 1/8*(8*A*c^2*d^2-4*b*c*d*(2*A*e+B*d)+b^2*e*(3*A*e+B*d))*arctanh(1/2*(b*d+(-
b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(5/2)/(-b*e+c*d
)^(5/2)+1/2*(-A*e+B*d)*(c*x^2+b*x)^(1/2)/d/(-b*e+c*d)/(e*x+d)^2-1/4*(3*A*e*
(-b*e+2*c*d)-B*d*(b*e+2*c*d))*(c*x^2+b*x)^(1/2)/d^2/(-b*e+c*d)^2/(e*x+d)
```

Rubi [A] time = 0.26, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {834, 806, 724, 206}

$$\frac{\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\sqrt{bx+cx^2}\sqrt{cd-be}}\right)}{8d^{5/2}(cd-be)^{5/2}}-\frac{\sqrt{bx+cx^2}\,(3Ae(2cd-be)-Bd(be+2}{4d^2(d+ex)(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(2*d*(c*d - b*e)*(d + e*x)^2) - ((3*A*e*(2*
c*d - b*e) - B*d*(2*c*d + b*e))*Sqrt[b*x + c*x^2])/(4*d^2*(c*d - b*e)^2*(d
+ e*x)) + ((8*A*c^2*d^2 - 4*b*c*d*(B*d + 2*A*e) + b^2*e*(B*d + 3*A*e))*ArcT
anh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])
/(8*d^(5/2)*(c*d - b*e)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\sqrt{bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{\int \frac{\frac{1}{2}(bBd-4Acd+3Abe)-c(Bd-Ae)x}{(d+ex)^2\sqrt{bx+cx^2}}\,dx}{2d(cd-be)}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} + \frac{\left(8Ac^2d^2 -\right.}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} - \frac{\left(8Ac^2d^2 -\right.}{}$$

$$= \frac{(Bd-Ae)\sqrt{bx+cx^2}}{2d(cd-be)(d+ex)^2} - \frac{(3Ae(2cd-be)-Bd(2cd+be))\sqrt{bx+cx^2}}{4d^2(cd-be)^2(d+ex)} + \frac{\left(8Ac^2d^2 -\right.}{}$$

Mathematica [A] time = 0.39, size = 217, normalized size = 1.00

$$\frac{\sqrt{x}\left(-\frac{\sqrt{b+cx}\left(b^2e(3Ae+Bd)-4bcd(2Ae+Bd)+8Ac^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)}{2d^{3/2}(cd-be)^{3/2}}-\frac{\sqrt{x}(b+cx)(3Ae(be-2cd)+Bd(be+2cd))}{2d(d+ex)(cd-be)}+\frac{\sqrt{x}(b+cx)(Ae-Bd)}{(d+ex)^2}\right)}{2d\sqrt{x(b+cx)}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (Sqrt[x]*(((-(B*d) + A*e)*Sqrt[x]*(b + c*x))/(d + e*x)^2 - ((3*A*e*(-2*c*d
+ b*e) + B*d*(2*c*d + b*e))*Sqrt[x]*(b + c*x))/(2*d*(c*d - b*e)*(d + e*x))
- ((8*A*c^2*d^2 - 4*b*c*d*(B*d + 2*A*e) + b^2*e*(B*d + 3*A*e))*Sqrt[b + c*x
]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])/(2*d^(3/2)*(c
*d - b*e)^(3/2))))/(2*d*(-(c*d) + b*e)*Sqrt[x*(b + c*x)])
```

fricas [B] time = 0.71, size = 954, normalized size = 4.42

$$\left[\frac{\left(3\,Ab^2d^2e^2 - 4\left(Bbc - 2\,Ac^2\right)d^4 + \left(Bb^2 - 8\,Abc\right)d^3e + \left(3\,Ab^2e^4 - 4\left(Bbc - 2\,Ac^2\right)d^2e^2 + \left(Bb^2 - 8\,Abc\right)de^3\right)x^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/8*((3*A*b^2*d^2*e^2 - 4*(B*b*c - 2*A*c^2)*d^4 + (B*b^2 - 8*A*b*c)*d^3*e
+ (3*A*b^2*e^4 - 4*(B*b*c - 2*A*c^2)*d^2*e^2 + (B*b^2 - 8*A*b*c)*d*e^3)*x^2
 + 2*(3*A*b^2*d*e^3 - 4*(B*b*c - 2*A*c^2)*d^3*e + (B*b^2 - 8*A*b*c)*d^2*e^2
)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)
*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(4*B*c^2*d^5 - 5*A*b^2*d^2*e^3 - (5*B*b*
c + 8*A*c^2)*d^4*e + (B*b^2 + 13*A*b*c)*d^3*e^2 + (2*B*c^2*d^4*e - 3*A*b^2*
d*e^4 - (B*b*c + 6*A*c^2)*d^3*e^2 - (B*b^2 - 9*A*b*c)*d^2*e^3)*x)*sqrt(c*x^
2 + b*x))/(c^3*d^8 - 3*b*c^2*d^7*e + 3*b^2*c*d^6*e^2 - b^3*d^5*e^3 + (c^3*d
^6*e^2 - 3*b*c^2*d^5*e^3 + 3*b^2*c*d^4*e^4 - b^3*d^3*e^5)*x^2 + 2*(c^3*d^7*
e - 3*b*c^2*d^6*e^2 + 3*b^2*c*d^5*e^3 - b^3*d^4*e^4)*x), 1/4*((3*A*b^2*d^2*
e^2 - 4*(B*b*c - 2*A*c^2)*d^4 + (B*b^2 - 8*A*b*c)*d^3*e + (3*A*b^2*e^4 - 4*
(B*b*c - 2*A*c^2)*d^2*e^2 + (B*b^2 - 8*A*b*c)*d*e^3)*x^2 + 2*(3*A*b^2*d*e^3
 - 4*(B*b*c - 2*A*c^2)*d^3*e + (B*b^2 - 8*A*b*c)*d^2*e^2)*x)*sqrt(-c*d^2 +
b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (4
*B*c^2*d^5 - 5*A*b^2*d^2*e^3 - (5*B*b*c + 8*A*c^2)*d^4*e + (B*b^2 + 13*A*b*
c)*d^3*e^2 + (2*B*c^2*d^4*e - 3*A*b^2*d*e^4 - (B*b*c + 6*A*c^2)*d^3*e^2 - (
B*b^2 - 9*A*b*c)*d^2*e^3)*x)*sqrt(c*x^2 + b*x))/(c^3*d^8 - 3*b*c^2*d^7*e +
3*b^2*c*d^6*e^2 - b^3*d^5*e^3 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 + 3*b^2*c*d^
4*e^4 - b^3*d^3*e^5)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 + 3*b^2*c*d^5*e^3
 - b^3*d^4*e^4)*x)]
```

giac [B] time = 0.31, size = 769, normalized size = 3.56

$$-\frac{\left(4\,Bbcd^2-8\,Ac^2d^2-Bb^2de+8\,Abcde-3\,Ab^2e^2\right)\arctan\left(-\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)e+\sqrt{c}\,d}{\sqrt{-cd^2+bde}}\right)}{4\left(c^2d^4-2\,bcd^3e+b^2d^2e^2\right)\sqrt{-cd^2+bde}}+\frac{8\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)^2Bc^{\frac{5}{2}}d^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*b*c*d^2 - 8*A*c^2*d^2 - B*b^2*d*e + 8*A*b*c*d*e - 3*A*b^2*e^2)*ar
ctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))
/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*sqrt(-c*d^2 + b*d*e)) + 1/4*(8*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^2*B*c^(5/2)*d^4 - 4*(sqrt(c)*x - sqrt(c*x^2 + b
*x))^2*B*b*c^(3/2)*d^3*e - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*c^(5/2)*d
^3*e + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^2*d^4 + 4*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^3*B*b*c*d^2*e^2 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^2*d
^2*e^2 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b*c^2*d^3*e + 2*B*b^2*c^(3/2)
*d^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*sqrt(c)*d^2*e^2 + 24*(sqrt
(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2)*d^2*e^2 + B*b^3*sqrt(c)*d^3*e - 6*
A*b^2*c^(3/2)*d^3*e - (sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*d*e^3 + 8*(sq
rt(c)*x - sqrt(c*x^2 + b*x))^3*A*b*c*d*e^3 + (sqrt(c)*x - sqrt(c*x^2 + b*x)
)*B*b^3*d^2*e^2 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c*d^2*e^2 - 9*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^2*sqrt(c)*d*e^3 + 3*A*b^3*sqrt(c)*d^2*e
^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*e^4 - 5*(sqrt(c)*x - sqrt(c*
x^2 + b*x))*A*b^3*d*e^3)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3)*((sqrt(
c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d
 + b*d)^2)
```

maple [B] time = 0.06, size = 1821, normalized size = 8.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x)
```

```
[Out] B/e/(b*e-c*d)/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)-1/2*B/e/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b+3/2*B/e^2/(b*e-c*d)/(-(b*e-c*d)
*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/
e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/
e))*c+1/2/e/(b*e-c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*A-1/2/e^2/(b*e-c*d)/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+3/4*e/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*A-3/4/(b*e-c*d)^2/d/(x+d/e)*
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*B-3/2/(b*e-c*d)
^2/d/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A+
3/2/e/(b*e-c*d)^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2)*c*B-3/8*e/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+3/8/(b*e-c*d)^2/d/(
-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b
*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1
/2))/(x+d/e))*b^2*B+3/2/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A-3/2/e/(b*e-c*d)^
2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(
-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2))/(x+d/e))*b*c*B-3/2/e/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*A+3/2/e^2/(b*e-
c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*c^2*B*d-1/2/e*c/(b*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*
ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^3),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^3), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x \left(b + cx\right)} \left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**3), x)
```

3.1198 $\int \frac{A+Bx}{(d+ex)^4\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=331

$$\frac{\sqrt{bx+cx^2}\left(Bd\left(-3b^2e^2+10bcde+8c^2d^2\right)-Ae\left(15b^2e^2-44bcde+44c^2d^2\right)\right)}{24d^3(d+ex)(cd-be)^3}+\frac{\left(b^3\left(-e^2\right)(5Ae+Bd)+2b^2cde(9A}{}$$

```
[Out] 1/16*(16*A*c^3*d^3-8*b*c^2*d^2*(3*A*e+B*d)-b^3*e^2*(5*A*e+B*d)+2*b^2*c*d*e*
(9*A*e+2*B*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c
*x^2+b*x)^(1/2))/d^(7/2)/(-b*e+c*d)^(7/2)+1/3*(-A*e+B*d)*(c*x^2+b*x)^(1/2)/
d/(-b*e+c*d)/(e*x+d)^3-1/12*(5*A*e*(-b*e+2*c*d)-B*d*(b*e+4*c*d))*(c*x^2+b*x
)^(1/2)/d^2/(-b*e+c*d)^2/(e*x+d)^2+1/24*(B*d*(-3*b^2*e^2+10*b*c*d*e+8*c^2*d
^2)-A*e*(15*b^2*e^2-44*b*c*d*e+44*c^2*d^2))*(c*x^2+b*x)^(1/2)/d^3/(-b*e+c*d
)^3/(e*x+d)
```

Rubi [A] time = 0.50, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{bx+cx^2}\left(Bd\left(-3b^2e^2+10bcde+8c^2d^2\right)-Ae\left(15b^2e^2-44bcde+44c^2d^2\right)\right)}{24d^3(d+ex)(cd-be)^3}+\frac{\left(2b^2cde(9Ae+2Bd)+b^3\left(-e^2\right)(5.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[b*x + c*x^2])/(3*d*(c*d - b*e)*(d + e*x)^3) - ((5*A*e*(2*
c*d - b*e) - B*d*(4*c*d + b*e))*Sqrt[b*x + c*x^2])/(12*d^2*(c*d - b*e)^2*(d
 + e*x)^2) + ((B*d*(8*c^2*d^2 + 10*b*c*d*e - 3*b^2*e^2) - A*e*(44*c^2*d^2 -
 44*b*c*d*e + 15*b^2*e^2))*Sqrt[b*x + c*x^2])/(24*d^3*(c*d - b*e)^3*(d + e*
x)) + ((16*A*c^3*d^3 - 8*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2*(B*d + 5*A*e) +
2*b^2*c*d*e*(2*B*d + 9*A*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqr
t[c*d - b*e]*Sqrt[b*x + c*x^2])])/(16*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int\frac{A+Bx}{(d+ex)^4\sqrt{bx+cx^2}}\,dx=\frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3}-\frac{\int\frac{\frac{1}{2}(bBd-6Acd+5Abe)-2c(Bd-Ae)x}{(d+ex)^3\sqrt{bx+cx^2}}\,dx}{3d(cd-be)}$$

$$=\frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3}-\frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2}+\frac{\int\frac{1}{4}\left(24Ac^2d^2+\right.}{}$$

$$=\frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3}-\frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2}+\frac{\left(Bd\left(8c^2d^2\right.\right.}{}$$

$$=\frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3}-\frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2}+\frac{\left(Bd\left(8c^2d^2\right.\right.}{}$$

$$=\frac{(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^3}-\frac{(5Ae(2cd-be)-Bd(4cd+be))\sqrt{bx+cx^2}}{12d^2(cd-be)^2(d+ex)^2}+\frac{\left(Bd\left(8c^2d^2\right.\right.}{}$$

Mathematica [A] time = 1.72, size = 345, normalized size = 1.04

$$-\frac{\sqrt{x}\left(\frac{\sqrt{b+cx}\,(d+ex)\left(2d^{3/2}\sqrt{x}\,\sqrt{b+cx}\,(cd-be)^{3/2}(5Ae(be-2cd)+Bd(be+4cd))-(d+ex)\left(-\sqrt{d}\,\sqrt{x}\,\sqrt{b+cx}\,\sqrt{cd-be}\,\left(Ae\left(-15b^2e^2+44bcde-44c^2d^2\right)+Bd\right.\right.\right.}{d^{5/2}(cd-be)^{5/2}}\right.}{24d\sqrt{x(b+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[b*x + c*x^2]),x]
```

```
[Out] -1/24*(Sqrt[x]*(8*(B*d - A*e)*Sqrt[x]*(b + c*x) + (Sqrt[b + c*x]*(d + e*x)*
(2*d^(3/2)*(c*d - b*e)^(3/2)*(5*A*e*(-2*c*d + b*e) + B*d*(4*c*d + b*e))*Sqr
t[x]*Sqrt[b + c*x] - (d + e*x)*(-(Sqrt[d]*Sqrt[c*d - b*e]*(A*e*(-44*c^2*d^2
 + 44*b*c*d*e - 15*b^2*e^2) + B*d*(8*c^2*d^2 + 10*b*c*d*e - 3*b^2*e^2))*Sqr
t[x]*Sqrt[b + c*x]) - 3*(16*A*c^3*d^3 - 8*b*c^2*d^2*(B*d + 3*A*e) - b^3*e^2
*(B*d + 5*A*e) + 2*b^2*c*d*e*(2*B*d + 9*A*e))*(d + e*x)*ArcTanh[(Sqrt[c*d -
 b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])])))/(d^(5/2)*(c*d - b*e)^(5/2))))/(d
*(-(c*d) + b*e)*Sqrt[x*(b + c*x)]*(d + e*x)^3)
```

fricas [B] time = 1.04, size = 1781, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/48*(3*(5*A*b^3*d^3*e^3 + 8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c - 6*A*b
*c^2)*d^5*e + (B*b^3 - 18*A*b^2*c)*d^4*e^2 + (5*A*b^3*e^6 + 8*(B*b*c^2 - 2*
A*c^3)*d^3*e^3 - 4*(B*b^2*c - 6*A*b*c^2)*d^2*e^4 + (B*b^3 - 18*A*b^2*c)*d*e
^5)*x^3 + 3*(5*A*b^3*d*e^5 + 8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B*b^2*c - 6
*A*b*c^2)*d^3*e^3 + (B*b^3 - 18*A*b^2*c)*d^2*e^4)*x^2 + 3*(5*A*b^3*d^2*e^4
+ 8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c - 6*A*b*c^2)*d^4*e^2 + (B*b^3 -
18*A*b^2*c)*d^3*e^3)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*
sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(24*B*c^3*d^7 + 33*A*
b^3*d^3*e^4 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + 3*(5*B*b^2*c + 54*A*b*c^2)*d^5
*e^2 - 3*(B*b^3 + 41*A*b^2*c)*d^4*e^3 + (8*B*c^3*d^5*e^2 + 15*A*b^3*d*e^6 +
 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c - 88*A*b*c^2)*d^3*e^4 + (3*B*
b^3 - 59*A*b^2*c)*d^2*e^5)*x^2 + 2*(12*B*c^3*d^6*e + 20*A*b^3*d^2*e^5 - (5*
B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^2*c - 113*A*b*c^2)*d^4*e^3 + (4*B*b^3
 - 79*A*b^2*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/(c^4*d^11 - 4*b*c^3*d^10*e +
6*b^2*c^2*d^9*e^2 - 4*b^3*c*d^8*e^3 + b^4*d^7*e^4 + (c^4*d^8*e^3 - 4*b*c^3*
d^7*e^4 + 6*b^2*c^2*d^6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x^3 + 3*(c^4*d
^9*e^2 - 4*b*c^3*d^8*e^3 + 6*b^2*c^2*d^7*e^4 - 4*b^3*c*d^6*e^5 + b^4*d^5*e^
6)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 + 6*b^2*c^2*d^8*e^3 - 4*b^3*c*d^7*
e^4 + b^4*d^6*e^5)*x), -1/24*(3*(5*A*b^3*d^3*e^3 + 8*(B*b*c^2 - 2*A*c^3)*d^
6 - 4*(B*b^2*c - 6*A*b*c^2)*d^5*e + (B*b^3 - 18*A*b^2*c)*d^4*e^2 + (5*A*b^3
*e^6 + 8*(B*b*c^2 - 2*A*c^3)*d^3*e^3 - 4*(B*b^2*c - 6*A*b*c^2)*d^2*e^4 + (B
*b^3 - 18*A*b^2*c)*d*e^5)*x^3 + 3*(5*A*b^3*d*e^5 + 8*(B*b*c^2 - 2*A*c^3)*d^
4*e^2 - 4*(B*b^2*c - 6*A*b*c^2)*d^3*e^3 + (B*b^3 - 18*A*b^2*c)*d^2*e^4)*x^2
 + 3*(5*A*b^3*d^2*e^4 + 8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c - 6*A*b*c^
2)*d^4*e^2 + (B*b^3 - 18*A*b^2*c)*d^3*e^3)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-
sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) - (24*B*c^3*d^7 + 3
3*A*b^3*d^3*e^4 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + 3*(5*B*b^2*c + 54*A*b*c^2)
*d^5*e^2 - 3*(B*b^3 + 41*A*b^2*c)*d^4*e^3 + (8*B*c^3*d^5*e^2 + 15*A*b^3*d*e
^6 + 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c - 88*A*b*c^2)*d^3*e^4 + (
3*B*b^3 - 59*A*b^2*c)*d^2*e^5)*x^2 + 2*(12*B*c^3*d^6*e + 20*A*b^3*d^2*e^5 -
 (5*B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^2*c - 113*A*b*c^2)*d^4*e^3 + (4*B
*b^3 - 79*A*b^2*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/(c^4*d^11 - 4*b*c^3*d^10*
e + 6*b^2*c^2*d^9*e^2 - 4*b^3*c*d^8*e^3 + b^4*d^7*e^4 + (c^4*d^8*e^3 - 4*b*
c^3*d^7*e^4 + 6*b^2*c^2*d^6*e^5 - 4*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x^3 + 3*(c
^4*d^9*e^2 - 4*b*c^3*d^8*e^3 + 6*b^2*c^2*d^7*e^4 - 4*b^3*c*d^6*e^5 + b^4*d^
5*e^6)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 + 6*b^2*c^2*d^8*e^3 - 4*b^3*c*
d^7*e^4 + b^4*d^6*e^5)*x)]
```

giac [B] time = 0.39, size = 1667, normalized size = 5.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(8*B*b*c^2*d^3 - 16*A*c^3*d^3 - 4*B*b^2*c*d^2*e + 24*A*b*c^2*d^2*e + B
*b^3*d*e^2 - 18*A*b^2*c*d*e^2 + 5*A*b^3*e^3)*arctan(-((sqrt(c)*x - sqrt(c*x
^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e +
 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/24*(64*(sqrt(c)*x
 - sqrt(c*x^2 + b*x))^3*B*c^4*d^6 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*
b*c^3*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^4*d^5*e + 96*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^2*B*b*c^(7/2)*d^6 + 120*(sqrt(c)*x - sqrt(c*x^2 +
 b*x))^4*B*b*c^(5/2)*d^4*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*c^(7
/2)*d^4*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^2*c^(5/2)*d^5*e - 52
8*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(7/2)*d^5*e + 48*(sqrt(c)*x - sqr
t(c*x^2 + b*x))*B*b^2*c^3*d^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b*c^
2*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*c^3*d^3*e^3 + 168*(sqrt(
c)*x - sqrt(c*x^2 + b*x))^3*B*b^2*c^2*d^4*e^2 + 400*(sqrt(c)*x - sqrt(c*x^2
 + b*x))^3*A*b*c^3*d^4*e^2 + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*c^2*d
^5*e - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^2*c^3*d^5*e + 8*B*b^3*c^(5/2
)*d^6 - 60*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^2*c^(3/2)*d^3*e^3 + 360*(s
qrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b*c^(5/2)*d^3*e^3 + 54*(sqrt(c)*x - sqrt(
c*x^2 + b*x))^2*B*b^3*c^(3/2)*d^4*e^2 + 756*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*A*b^2*c^(5/2)*d^4*e^2 + 10*B*b^4*c^(3/2)*d^5*e - 44*A*b^3*c^(5/2)*d^5*e
- 12*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^2*c*d^2*e^4 + 72*(sqrt(c)*x - sq
rt(c*x^2 + b*x))^5*A*b*c^2*d^2*e^4 - 74*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B
*b^3*c*d^3*e^3 - 204*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^2*c^2*d^3*e^3 -
6*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^4*c*d^4*e^2 + 336*(sqrt(c)*x - sqrt(c
*x^2 + b*x))*A*b^3*c^2*d^4*e^2 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*B*b^3
*sqrt(c)*d^2*e^4 - 270*(sqrt(c)*x - sqrt(c*x^2 + b*x))^4*A*b^2*c^(3/2)*d^2*
e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*B*b^4*sqrt(c)*d^3*e^3 - 498*(sqr
t(c)*x - sqrt(c*x^2 + b*x))^2*A*b^3*c^(3/2)*d^3*e^3 - 3*B*b^5*sqrt(c)*d^4*e
^2 + 44*A*b^4*c^(3/2)*d^4*e^2 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*B*b^3*d
*e^5 - 54*(sqrt(c)*x - sqrt(c*x^2 + b*x))^5*A*b^2*c*d*e^5 + 8*(sqrt(c)*x -
sqrt(c*x^2 + b*x))^3*B*b^4*d^2*e^4 - 34*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A
*b^3*c*d^2*e^4 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^5*d^3*e^3 - 180*(sqr
t(c)*x - sqrt(c*x^2 + b*x))*A*b^4*c*d^3*e^3 + 75*(sqrt(c)*x - sqrt(c*x^2 +
b*x))^4*A*b^3*sqrt(c)*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b^4*s
qrt(c)*d^2*e^4 - 15*A*b^5*sqrt(c)*d^3*e^3 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*
x))^5*A*b^3*e^6 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*b^4*d*e^5 + 33*(sq
rt(c)*x - sqrt(c*x^2 + b*x))*A*b^5*d^2*e^4)/((c^3*d^6*e - 3*b*c^2*d^5*e^2 +
 3*b^2*c*d^4*e^3 - b^3*d^3*e^4)*((sqrt(c)*x - sqrt(c*x^2 + b*x))^2*e + 2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^3)
```

maple [B] time = 0.13, size = 3242, normalized size = 9.79

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 9/4*B/e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c+15/8*e/(b*e-c*d)^3/d^2/(-(b*e-c*d)
*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/
e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/
e))*b^2*c*A-5/2*e/(b*e-c*d)^3/d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A+5/2/(b*e-c*d)^3/d/(x+d/e)*((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*A+1/3/e^2/(b*e-c*d)/d/(x+d/e)^3
*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+5/2/e/(b*e-c*d
)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2
*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2))/(x+d/e))*c^3*A+5/6/e^2/(b*e-c*d)^2/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B-5/2/e/(b*e-c*d)^3/(x+d/e)*((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B+2/3*c/(b*e-c*d)^2/
d^2/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+5/1
2/(b*e-c*d)^2/d^2/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*A+1/2*B/e^2/(b*e-c*d)/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)+3/4*B/(b*e-c*d)^2/d^2/(x+d/e)*((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b-3/8*B/(b*e-c*d)^2/d^2/(-(b*e-c
*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)
*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x
+d/e))*b^2-3*B/e^2/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2-1/3/e^3/(b*e-c*d)/(x+d/e)
^3*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-5/6/e/(b*e-c
*d)^2/d/(x+d/e)^2*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
*c*A+5/8*e^2/(b*e-c*d)^3/d^3/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2)*b^2*A+5/16*e/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*l
n((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*B-5/2/e
^2/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^3*B*d-13/6*B/e/(b*e-c*d)^2/d/(x+d/e)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c-1/2*B/e^2*c/(b*e-c*d)
/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*
(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2))/(x+d/e))-15/4/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*
e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*A-3/4/(b*e-c*d)^2
/d^2*c/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*b*A-15/8/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-
2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)
^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*c*B-5/16*e^
2/(b*e-c*d)^3/d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^3*A+5/2/(b*e-c*d)^3/d/(x+d/e)*((x+d/e)^2
*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B-5/8*e/(b*e-c*d)^3/d^2
/(x+d/e)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B+15
/4/e/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c^2*B-5/12/e/(b*e-c*d)^2/d/(x+d/e)^2*((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*B+3/2/e/(b*e-c*d)^2
/d*c^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^4),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^4), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x \left(b + cx\right)} \left(d + ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**4), x)
```

3.1199 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=238

$$-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{3e\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)\left(4Ace(2cd-be)+B\left(5b^2e^2-1\right.\right.}{4c^{7/2}}$$

```
[Out] 3/4*e*(4*A*c*e*(-b*e+2*c*d)+B*(5*b^2*e^2-12*b*c*d*e+8*c^2*d^2))*arctanh(x*c
^(1/2)/(c*x^2+b*x)^(1/2))/c^(7/2)-2*(e*x+d)^2*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b
*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b*x)^(1/2)+1/4*e*(32*A*c^3*d^2-15*b^3*B*e^2+1
2*b^2*c*e*(A*e+3*B*d)-8*b*c^2*d*(3*A*e+2*B*d)+2*c*e*(8*A*c^2*d+5*b^2*B*e-4*
b*c*(A*e+B*d))*x)*(c*x^2+b*x)^(1/2)/b^2/c^3
```

Rubi [A] time = 0.22, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {818, 779, 620, 206}

$$\frac{e\sqrt{bx+cx^2}\,\left(2cex\left(-4bc(Ae+Bd)+8Ac^2d+5b^2Be\right)+12b^2ce(Ae+3Bd)-8bc^2d(3Ae+2Bd)+32Ac^3d^2-1\right.}{4b^2c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2
*c*Sqrt[b*x + c*x^2]) + (e*(32*A*c^3*d^2 - 15*b^3*B*e^2 + 12*b^2*c*e*(3*B*d
 + A*e) - 8*b*c^2*d*(2*B*d + 3*A*e) + 2*c*e*(8*A*c^2*d + 5*b^2*B*e - 4*b*c*
(B*d + A*e))*x)*Sqrt[b*x + c*x^2])/(4*b^2*c^3) + (3*e*(4*A*c*e*(2*c*d - b*e
) + B*(8*c^2*d^2 - 12*b*c*d*e + 5*b^2*e^2))*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x +
c*x^2]])/(4*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2\int\frac{(d+ex)\left(\frac{1}{2}b(bB+4Ac)de+\frac{1}{2}e(8A}{\sqrt{bx+c}}}{b^2c}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\left(32Ac^3d^2-15b^3Be^2+12b\right.}{}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\left(32Ac^3d^2-15b^3Be^2+12b\right.}{}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\left(32Ac^3d^2-15b^3Be^2+12b\right.}{}$$

Mathematica [A] time = 0.23, size = 229, normalized size = 0.96

$$\frac{3b^{5/2}e\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)\left(4Ace(2cd-be)+B\left(5b^2e^2-12bcde+8c^2d^2\right)\right)+\sqrt{c}\left(4Ac\left(3b^3e^3x+b^2ce^2x(ex\right.\right.}{4b^2c^{7/2}\sqrt{x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*(4*A*c*(-4*c^3*d^3*x + 3*b^3*e^3*x - 2*b*c^2*d^2*(d - 3*e*x) + b^2
*c*e^2*x*(-6*d + e*x)) + b*B*x*(8*c^3*d^3 - 15*b^3*e^3 + b^2*c*e^2*(36*d -
5*e*x) + 2*b*c^2*e*(-12*d^2 + 6*d*e*x + e^2*x^2))) + 3*b^(5/2)*e*(4*A*c*e*(
2*c*d - b*e) + B*(8*c^2*d^2 - 12*b*c*d*e + 5*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*
x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(4*b^2*c^(7/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 1.02, size = 694, normalized size = 2.92

$$\left[\frac{3\left(\left(8\,Bb^2c^3d^2e-4\left(3\,Bb^3c^2-2\,Ab^2c^3\right)de^2+\left(5\,Bb^4c-4\,Ab^3c^2\right)e^3\right)x^2+\left(8\,Bb^3c^2d^2e-4\left(3\,Bb^4c-2\,Ab^3c^2\right)de^2+\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/8*(3*((8*B*b^2*c^3*d^2*e - 4*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 + (5*B*b^
4*c - 4*A*b^3*c^2)*e^3)*x^2 + (8*B*b^3*c^2*d^2*e - 4*(3*B*b^4*c - 2*A*b^3*c
^2)*d*e^2 + (5*B*b^5 - 4*A*b^4*c)*e^3)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*
x^2 + b*x)*sqrt(c)) + 2*(2*B*b^2*c^3*e^3*x^3 - 8*A*b*c^4*d^3 + (12*B*b^2*c^
3*d*e^2 - (5*B*b^3*c^2 - 4*A*b^2*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^3
```

```
 - 24*(B*b^2*c^3 - A*b*c^4)*d^2*e + 12*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 -
3*(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x)*sqrt(c*x^2 + b*x))/(b^2*c^5*x^2 + b^3*c
^4*x), -1/4*(3*((8*B*b^2*c^3*d^2*e - 4*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2 +
(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x^2 + (8*B*b^3*c^2*d^2*e - 4*(3*B*b^4*c - 2*
A*b^3*c^2)*d*e^2 + (5*B*b^5 - 4*A*b^4*c)*e^3)*x)*sqrt(-c)*arctan(sqrt(c*x^2
 + b*x)*sqrt(-c)/(c*x)) - (2*B*b^2*c^3*e^3*x^3 - 8*A*b*c^4*d^3 + (12*B*b^2*
c^3*d*e^2 - (5*B*b^3*c^2 - 4*A*b^2*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d
^3 - 24*(B*b^2*c^3 - A*b*c^4)*d^2*e + 12*(3*B*b^3*c^2 - 2*A*b^2*c^3)*d*e^2
- 3*(5*B*b^4*c - 4*A*b^3*c^2)*e^3)*x)*sqrt(c*x^2 + b*x))/(b^2*c^5*x^2 + b^3
*c^4*x)]
```

giac [**A**] time = 0.31, size = 251, normalized size = 1.05

$$-\frac{\frac{8\,Ad^3}{b} - \Big(\Big(\Big(\frac{2\,Bxe^3}{c} + \frac{12\,Bb^2c^2de^2-5\,Bb^3ce^3+4\,Ab^2c^2e^3}{b^2c^3}\Big)x + \frac{8\,Bbc^3d^3-16\,Ac^4d^3-24\,Bb^2c^2d^2e+24\,Abc^3d^2e+36\,Bb^3cde^2-24\,Ab^2c^2de^2-15\,Bb^4}{b^2c^3}}{4\,\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/4*(8*A*d^3/b - ((2*B*x*e^3/c + (12*B*b^2*c^2*d*e^2 - 5*B*b^3*c*e^3 + 4*A
*b^2*c^2*e^3)/(b^2*c^3))*x + (8*B*b*c^3*d^3 - 16*A*c^4*d^3 - 24*B*b^2*c^2*d
^2*e + 24*A*b*c^3*d^2*e + 36*B*b^3*c*d*e^2 - 24*A*b^2*c^2*d*e^2 - 15*B*b^4*
e^3 + 12*A*b^3*c*e^3)/(b^2*c^3))*x)/sqrt(c*x^2 + b*x) - 3/8*(8*B*c^2*d^2*e
- 12*B*b*c*d*e^2 + 8*A*c^2*d*e^2 + 5*B*b^2*e^3 - 4*A*b*c*e^3)*log(abs(-2*(s
qrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.06, size = 450, normalized size = 1.89

$$\frac{B\,e^3x^3}{2\sqrt{c\,x^2+bx}\;c}+\frac{A\,e^3x^2}{\sqrt{c\,x^2+bx}\;c}-\frac{5Bb\,e^3x^2}{4\sqrt{c\,x^2+bx}\;c^2}+\frac{3Bd\,e^2x^2}{\sqrt{c\,x^2+bx}\;c}+\frac{3Ab\,e^3x}{\sqrt{c\,x^2+bx}\;c^2}+\frac{6A\,d^2ex}{\sqrt{c\,x^2+bx}\;b}-\frac{6Ad\,e^2x}{\sqrt{c\,x^2+bx}\;c}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 1/2*B*e^3*x^3/c/(c*x^2+b*x)^(1/2)-5/4*B*e^3*b/c^2*x^2/(c*x^2+b*x)^(1/2)-15/
4*B*e^3*b^2/c^3/(c*x^2+b*x)^(1/2)*x+15/8*B*e^3*b^2/c^(7/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x)^(1/2))+x^2/c/(c*x^2+b*x)^(1/2)*A*e^3+3*x^2/c/(c*x^2+b*x)
^(1/2)*B*d*e^2+3*b/c^2/(c*x^2+b*x)^(1/2)*x*A*e^3+9*b/c^2/(c*x^2+b*x)^(1/2)*
x*B*d*e^2-3/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^3-9/2
*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*e^2-6/c/(c*x^2+b*x
)^(1/2)*x*A*d*e^2-6/c/(c*x^2+b*x)^(1/2)*x*B*d^2*e+3/c^(3/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x)^(1/2))*A*d*e^2+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x)^(1/2))*B*d^2*e+6/b/(c*x^2+b*x)^(1/2)*x*A*d^2*e+2/b/(c*x^2+b*x)^(1/2)*x
*B*d^3-2*A*d^3*(2*c*x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [**A**] time = 0.72, size = 367, normalized size = 1.54

$$\frac{Be^3x^3}{2\,\sqrt{cx^2+bx}\,c}-\frac{5\,Bbe^3x^2}{4\,\sqrt{cx^2+bx}\,c^2}+\frac{2\,Bd^3x}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acd^3x}{\sqrt{cx^2+bx}\,b^2}+\frac{6\,Ad^2ex}{\sqrt{cx^2+bx}\,b}-\frac{15\,Bb^2e^3x}{4\,\sqrt{cx^2+bx}\,c^3}+\frac{15\,Bb^2e^3\log\big(2\,cx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*e^3*x^3/(sqrt(c*x^2 + b*x)*c) - 5/4*B*b*e^3*x^2/(sqrt(c*x^2 + b*x)*c^
2) + 2*B*d^3*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d^3*x/(sqrt(c*x^2 + b*x)*b^2)
```

```
+ 6*A*d^2*e*x/(sqrt(c*x^2 + b*x)*b) - 15/4*B*b^2*e^3*x/(sqrt(c*x^2 + b*x)*c
^3) + 15/8*B*b^2*e^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) -
 2*A*d^3/(sqrt(c*x^2 + b*x)*b) + (3*B*d*e^2 + A*e^3)*x^2/(sqrt(c*x^2 + b*x)
*c) + 3*(3*B*d*e^2 + A*e^3)*b*x/(sqrt(c*x^2 + b*x)*c^2) - 6*(B*d^2*e + A*d*
e^2)*x/(sqrt(c*x^2 + b*x)*c) - 3/2*(3*B*d*e^2 + A*e^3)*b*log(2*c*x + b + 2*
sqrt(c*x^2 + b*x)*sqrt(c))/c^(5/2) + 3*(B*d^2*e + A*d*e^2)*log(2*c*x + b +
2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^3}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/(x*(b + c*x))**(3/2), x)
```

3.1200 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=151

$$\frac{e\sqrt{bx+cx^2}\left(-2bc(Ae+Bd)+4Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{2(d+ex)\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\tan}{}$$

```
[Out] e*(2*A*c*e-3*B*b*e+4*B*c*d)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)-2*
(e*x+d)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b*x)^(1/
2)+e*(4*A*c^2*d+3*b^2*B*e-2*b*c*(A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/c^2
```

Rubi [A] time = 0.15, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {818, 640, 620, 206}

$$\frac{e\sqrt{bx+cx^2}\left(-2bc(Ae+Bd)+4Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{2(d+ex)\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{e\tan}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c
*Sqrt[b*x + c*x^2]) + (e*(4*A*c^2*d + 3*b^2*B*e - 2*b*c*(B*d + A*e))*Sqrt[b
*x + c*x^2])/(b^2*c^2) + (e*(4*B*c*d - 3*b*B*e + 2*A*c*e)*ArcTanh[(Sqrt[c]*
x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2\int \frac{\frac{1}{2}b(bB+2Ac)de+\frac{1}{2}e\left(4Ac^2d+3b^2B\right.}{\sqrt{bx+cx^2}}}{b^2c}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(Bd+\right.}{b^2c^2}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(Bd+\right.}{b^2c^2}$$

$$= -\frac{2(d+ex)\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{e\left(4Ac^2d+3b^2Be-2bc(Bd+\right.}{b^2c^2}$$

Mathematica [**A**] time = 0.20, size = 150, normalized size = 0.99

$$\frac{\sqrt{c}\left(bBx\left(3b^2e^2+bce(ex-4d)+2c^2d^2\right)-2Ac\left(b^2e^2x+bcd(d-2ex)+2c^2d^2x\right)\right)-b^{5/2}e\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{}}{\sqrt{b}}\right.}{b^2c^{5/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[c]*(-2*A*c*(2*c^2*d^2*x + b^2*e^2*x + b*c*d*(d - 2*e*x)) + b*B*x*(2*c
^2*d^2 + 3*b^2*e^2 + b*c*e*(-4*d + e*x))) - b^(5/2)*e*(-4*B*c*d + 3*b*B*e -
 2*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^
2*c^(5/2)*Sqrt[x*(b + c*x)])
```

fricas [**A**] time = 0.90, size = 446, normalized size = 2.95

$$\left[\frac{\left(\left(4\,Bb^2c^2de-\left(3\,Bb^3c-2\,Ab^2c^2\right)e^2\right)x^2+\left(4\,Bb^3cde-\left(3\,Bb^4-2\,Ab^3c\right)e^2\right)x\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{2\left(b^2c^4x^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((4*B*b^2*c^2*d*e - (3*B*b^3*c - 2*A*b^2*c^2)*e^2)*x^2 + (4*B*b^3*c*d
*e - (3*B*b^4 - 2*A*b^3*c)*e^2)*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b
*x)*sqrt(c)) + 2*(B*b^2*c^2*e^2*x^2 - 2*A*b*c^3*d^2 + (2*(B*b*c^3 - 2*A*c^4
)*d^2 - 4*(B*b^2*c^2 - A*b*c^3)*d*e + (3*B*b^3*c - 2*A*b^2*c^2)*e^2)*x)*sqr
t(c*x^2 + b*x))/(b^2*c^4*x^2 + b^3*c^3*x), -(((4*B*b^2*c^2*d*e - (3*B*b^3*c
 - 2*A*b^2*c^2)*e^2)*x^2 + (4*B*b^3*c*d*e - (3*B*b^4 - 2*A*b^3*c)*e^2)*x)*s
qrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (B*b^2*c^2*e^2*x^2 - 2*A
*b*c^3*d^2 + (2*(B*b*c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - A*b*c^3)*d*e + (3*
B*b^3*c - 2*A*b^2*c^2)*e^2)*x)*sqrt(c*x^2 + b*x))/(b^2*c^4*x^2 + b^3*c^3*x)
]
```

giac [**A**] time = 0.32, size = 155, normalized size = 1.03

$$-\frac{\frac{2\,Ad^2}{b}-\left(\frac{Bxe^2}{c}+\frac{2\,Bbc^2d^2-4\,Ac^3d^2-4\,Bb^2cde+4\,Abc^2de+3\,Bb^3e^2-2\,Ab^2ce^2}{b^2c^2}\right)x}{\sqrt{cx^2+bx}}-\frac{\left(4\,Bcde-3\,Bbe^2+2\,Ace^2\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx}\right.\right.\right.}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -(2*A*d^2/b - (B*x*e^2/c + (2*B*b*c^2*d^2 - 4*A*c^3*d^2 - 4*B*b^2*c*d*e + 4
*A*b*c^2*d*e + 3*B*b^3*e^2 - 2*A*b^2*c*e^2)/(b^2*c^2))*x)/sqrt(c*x^2 + b*x)
 - 1/2*(4*B*c*d*e - 3*B*b*e^2 + 2*A*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x
^2 + b*x))*sqrt(c) - b))/c^(5/2)
```

maple [A] time = 0.06, size = 252, normalized size = 1.67

$$\frac{B\,e^{2}x^{2}}{\sqrt{c\,x^{2}+b x}\;c}+\frac{4 A d e x}{\sqrt{c\,x^{2}+b x}\;b}-\frac{2 A\,e^{2} x}{\sqrt{c\,x^{2}+b x}\;c}+\frac{3 B b\,e^{2} x}{\sqrt{c\,x^{2}+b x}\;c^{2}}+\frac{2 B\,d^{2} x}{\sqrt{c\,x^{2}+b x}\;b}-\frac{4 B d e x}{\sqrt{c\,x^{2}+b x}\;c}+\frac{A\,e^{2}\ln\left(\frac{c x+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x}\right.}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x)
```

```
[Out] B*e^2*x^2/c/(c*x^2+b*x)^(1/2)+3*B*e^2*b/c^2/(c*x^2+b*x)^(1/2)*x-3/2*B*e^2*b
/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-2/c/(c*x^2+b*x)^(1/2)*x*
A*e^2-4/c/(c*x^2+b*x)^(1/2)*x*B*d*e+1/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))*A*e^2+2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*B*d*
e+4/b/(c*x^2+b*x)^(1/2)*x*A*d*e+2/b/(c*x^2+b*x)^(1/2)*x*B*d^2-2*A*d^2*(2*c*
x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.59, size = 227, normalized size = 1.50

$$\frac{Be^{2}x^{2}}{\sqrt{cx^{2}+bx}\,c}+\frac{2\,Bd^{2}x}{\sqrt{cx^{2}+bx}\,b}-\frac{4\,Acd^{2}x}{\sqrt{cx^{2}+bx}\,b^{2}}+\frac{4\,Adex}{\sqrt{cx^{2}+bx}\,b}+\frac{3\,Bbe^{2}x}{\sqrt{cx^{2}+bx}\,c^{2}}-\frac{3\,Bbe^{2}\log\left(2\,cx+b+2\,\sqrt{cx^{2}+bx}\,\sqrt{c}\right.}{2\,c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] B*e^2*x^2/(sqrt(c*x^2 + b*x)*c) + 2*B*d^2*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d
^2*x/(sqrt(c*x^2 + b*x)*b^2) + 4*A*d*e*x/(sqrt(c*x^2 + b*x)*b) + 3*B*b*e^2*
x/(sqrt(c*x^2 + b*x)*c^2) - 3/2*B*b*e^2*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)
*sqrt(c))/c^(5/2) - 2*A*d^2/(sqrt(c*x^2 + b*x)*b) - 2*(2*B*d*e + A*e^2)*x/(
sqrt(c*x^2 + b*x)*c) + (2*B*d*e + A*e^2)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^2}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + Bx\right) \left(d + ex\right)^{2}}{\left(x \left(b + cx\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(x*(b + c*x))**(3/2), x)
```

3.1201 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=85

$$\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}$$

```
[Out] 2*B*e*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(3/2)-2*(A*b*c*d+(2*A*c^2*d+b^
2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {777, 620, 206}

$$\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*Sqrt[b*x
+ c*x^2]) + (2*B*e*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{3/2}}\,dx&=-\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{(Be)\int\frac{1}{\sqrt{bx+cx^2}}\,dx}{c}\\&=-\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{(2Be)\,\text{Subst}\left(\int\frac{1}{1-cx^2}\,dx,x,\frac{x}{\sqrt{bx+cx^2}}\right)}{c}\\&=-\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2Be\tanh^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{bx+cx^2}}\right)}{c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 101, normalized size = 1.19

$$\frac{2b^{5/2}Be\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sinh^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{b}}\right)-2\sqrt{c}\,(Ac(bd-bex+2cdx)+bBx(be-cd))}{b^2c^{3/2}\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[c]*(b*B*(-(c*d) + b*e)*x + A*c*(b*d + 2*c*d*x - b*e*x)) + 2*b^(5/2
)*B*e*Sqrt[x]*Sqrt[1 + (c*x)/b]*ArcSinh[(Sqrt[c]*Sqrt[x])/Sqrt[b]])/(b^2*c^
(3/2)*Sqrt[x*(b + c*x)])
```

fricas [A] time = 1.15, size = 254, normalized size = 2.99

$$\left[\frac{\left(Bb^2cex^2+Bb^3ex\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\,\left(Abc^2d-\left(\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c-Abc^2\right)e\right)x\right)}{b^2c^3x^2+b^3c^2x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [((B*b^2*c*e*x^2 + B*b^3*e*x)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) - 2*(A*b*c^2*d - ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - A*b*c^2)*e)*x)
*sqrt(c*x^2 + b*x))/(b^2*c^3*x^2 + b^3*c^2*x), -2*((B*b^2*c*e*x^2 + B*b^3*e
*x)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) + (A*b*c^2*d - ((B*b*
c^2 - 2*A*c^3)*d - (B*b^2*c - A*b*c^2)*e)*x)*sqrt(c*x^2 + b*x))/(b^2*c^3*x^
2 + b^3*c^2*x)]
```

giac [A] time = 0.30, size = 95, normalized size = 1.12

$$-\frac{Be\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}-\frac{2\left(\frac{Ad}{b}-\frac{\left(Bbcd-2\,Ac^2d-Bb^2e+Abce\right)x}{b^2c}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -B*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(3/2) - 2*(
A*d/b - (B*b*c*d - 2*A*c^2*d - B*b^2*e + A*b*c*e)*x/(b^2*c))/sqrt(c*x^2 + b
*x)
```

maple [A] time = 0.05, size = 113, normalized size = 1.33

$$\frac{2Aex}{\sqrt{c\,x^2+bx}\;b}+\frac{2Bdx}{\sqrt{c\,x^2+bx}\;b}-\frac{2Bex}{\sqrt{c\,x^2+bx}\;c}+\frac{Be\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx}\right)}{c^{\frac{3}{2}}}-\frac{2\,(2cx+b)\,Ad}{\sqrt{c\,x^2+bx}\;b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B*e/c/(c*x^2+b*x)^(1/2)*x+B*e/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)
^(1/2))+2/b/(c*x^2+b*x)^(1/2)*x*A*e+2/b/(c*x^2+b*x)^(1/2)*x*B*d-2*A*d*(2*c*
x+b)/b^2/(c*x^2+b*x)^(1/2)
```

maxima [A] time = 0.57, size = 125, normalized size = 1.47

$$\frac{2\,Bdx}{\sqrt{cx^2+bx}\,b}-\frac{4\,Acdx}{\sqrt{cx^2+bx}\,b^2}+\frac{2\,Aex}{\sqrt{cx^2+bx}\,b}-\frac{2\,Bex}{\sqrt{cx^2+bx}\,c}+\frac{Be\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)}{c^{\frac{3}{2}}}-\frac{2\,Ad}{\sqrt{cx^2+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*d*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*d*x/(sqrt(c*x^2 + b*x)*b^2) + 2*A*e*x
/(sqrt(c*x^2 + b*x)*b) - 2*B*e*x/(sqrt(c*x^2 + b*x)*c) + B*e*log(2*c*x + b
+ 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(3/2) - 2*A*d/(sqrt(c*x^2 + b*x)*b)
```

mupad [B] time = 2.27, size = 101, normalized size = 1.19

$$\frac{B\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x}\right)}{c^{3/2}}-\frac{2\,A\,b\,d-2\,A\,b\,e\,x+4\,A\,c\,d\,x}{b^2\,\sqrt{c\,x^2+b\,x}}+\frac{2\,B\,d\,x}{b\,\sqrt{x\,\left(b+c\,x\right)}}-\frac{2\,B\,e\,x}{c\,\sqrt{c\,x^2+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*e*log((b/2 + c*x)/c^(1/2) + (b*x + c*x^2)^(1/2)))/c^(3/2) - (2*A*b*d - 2
*A*b*e*x + 4*A*c*d*x)/(b^2*(b*x + c*x^2)^(1/2)) + (2*B*d*x)/(b*(x*(b + c*x)
)^(1/2)) - (2*B*e*x)/(c*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{(x\,(b+cx))^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(x*(b + c*x))**(3/2), x)
```

3.1202 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=33

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

```
[Out] -2*(A*b-(-2*A*c+B*b)*x)/b^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {636}

$$-\frac{2(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(b^2*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\left(bx+cx^2\right)^{3/2}} \, dx = -\frac{2(Ab-(bB-2Ac)x)}{b^2\sqrt{bx+cx^2}}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.91

$$\frac{2bBx-2A(b+2cx)}{b^2\sqrt{x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*b*B*x - 2*A*(b + 2*c*x))/(b^2*Sqrt[x*(b + c*x)])
```

fricas [A] time = 1.08, size = 44, normalized size = 1.33

$$-\frac{2\sqrt{cx^2+bx}\,(Ab-(Bb-2\,Ac)x)}{b^2cx^2+b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*sqrt(c*x^2 + b*x)*(A*b - (B*b - 2*A*c)*x)/(b^2*c*x^2 + b^3*x)
```

giac [A] time = 0.28, size = 33, normalized size = 1.00

$$-\frac{2\left(\frac{A}{b}-\frac{(Bb-2\,Ac)x}{b^2}\right)}{\sqrt{cx^2+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(A/b - (B*b - 2*A*c)*x/b^2)/sqrt(c*x^2 + b*x)
```

maple [A] time = 0.05, size = 37, normalized size = 1.12

$$-\frac{2\,(cx+b)\,(2Acx-Bbx+Ab)\,x}{\left(c\,x^{2}+bx\right)^{\frac{3}{2}}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*(c*x+b)*x*(2*A*c*x-B*b*x+A*b)/b^2/(c*x^2+b*x)^(3/2)
```

maxima [A] time = 0.60, size = 55, normalized size = 1.67

$$\frac{2\,Bx}{\sqrt{cx^{2}+bx}\,b}-\frac{4\,Acx}{\sqrt{cx^{2}+bx}\,b^{2}}-\frac{2\,A}{\sqrt{cx^{2}+bx}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*B*x/(sqrt(c*x^2 + b*x)*b) - 4*A*c*x/(sqrt(c*x^2 + b*x)*b^2) - 2*A/(sqrt(c
*x^2 + b*x)*b)
```

mupad [B] time = 1.65, size = 31, normalized size = 0.94

$$-\frac{2\,A\,b+4\,A\,c\,x-2\,B\,b\,x}{b^{2}\,\sqrt{c\,x^{2}+b\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(3/2),x)
```

```
[Out] -(2*A*b + 4*A*c*x - 2*B*b*x)/(b^2*(b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\,(b+cx)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(3/2), x)
```

3.1203 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=141

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}$$

```
[Out] -e*(-A*e+B*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*
x^2+b*x)^(1/2))/d^(3/2)/(-b*e+c*d)^(3/2)-2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*
e+B*d))*x)/b^2/d/(-b*e+c*d)/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {822, 12, 724, 206}

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{x(2cd-be)+bd}{2\sqrt{d}\,\sqrt{bx+cx^2}\,\sqrt{cd-be}}\right)}{d^{3/2}(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*S
qrt[b*x + c*x^2]) - (e*(B*d - A*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[
d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(d^(3/2)*(c*d - b*e)^(3/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}}-\frac{2\int \frac{b^2e(Bd-Ae)}{2(d+ex)\sqrt{bx+cx^2}}\,dx}{b^2d(cd-be)}\\
&= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}}-\frac{(e(Bd-Ae))\int \frac{1}{(d+ex)\sqrt{bx+cx^2}}\,dx}{d(cd-be)}\\
&= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}}+\frac{(2e(Bd-Ae))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4bde-x^2}\,d\right.}{d(cd-be)}\\
&= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{bd+(2cd-be)x}{2\sqrt{d}\,\sqrt{cd-be}\,\sqrt{bx+cx^2}}\right.}{d^{3/2}(cd-be)^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 144, normalized size = 1.02

$$\frac{2\left(\sqrt{d}\,\sqrt{cd-be}\,\left(A\left(b^2e-bcd+bcex-2c^2dx\right)+bBcdx\right)+b^2e\sqrt{x}\,\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)\right)}{b^2d^{3/2}\sqrt{x(b+cx)}\,(cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(Sqrt[d]*Sqrt[c*d - b*e]*(b*B*c*d*x + A*(-(b*c*d) + b^2*e - 2*c^2*d*x +
b*c*e*x)) + b^2*e*(-(B*d) + A*e)*Sqrt[x]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d -
b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*x])]))/(b^2*d^(3/2)*(c*d - b*e)^(3/2)*Sqr
t[x*(b + c*x)])
```

fricas [B] time = 1.07, size = 543, normalized size = 3.85

$$\left[\frac{\sqrt{cd^2-bde}\left(\left(Bb^2cde-Ab^2ce^2\right)x^2+\left(Bb^3de-Ab^3e^2\right)x\right)\log\left(\frac{bd+(2\,cd-be)x-2\,\sqrt{cd^2-bde}\,\sqrt{cx^2+bx}}{ex+d}\right)-2\left(Abc^2d^3-2\,Ab^2c\right.}{\left(b^2c^3d^4-2\,b^3c^2d^3e+b^4cd^2e^2\right)x^2+\left(b^3c^2d^4-2\,b\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [(sqrt(c*d^2 - b*d*e)*((B*b^2*c*d*e - A*b^2*c*e^2)*x^2 + (B*b^3*d*e - A*b^3
*e^2)*x)*log((b*d + (2*c*d - b*e)*x - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*
x))/(e*x + d)) - 2*(A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A*b^3*d*e^2 + (A*b^2*c*
d*e^2 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c - 3*A*b*c^2)*d^2*e)*x)*sqrt(c*x^
2 + b*x))/((b^2*c^3*d^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2*e^2)*x^2 + (b^3*c^2*d
^4 - 2*b^4*c*d^3*e + b^5*d^2*e^2)*x), -2*(sqrt(-c*d^2 + b*d*e)*((B*b^2*c*d*
e - A*b^2*c*e^2)*x^2 + (B*b^3*d*e - A*b^3*e^2)*x)*arctan(-sqrt(-c*d^2 + b*d
*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (A*b*c^2*d^3 - 2*A*b^2*c*d^2*e + A
*b^3*d*e^2 + (A*b^2*c*d*e^2 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c - 3*A*b*c^
2)*d^2*e)*x)*sqrt(c*x^2 + b*x))/((b^2*c^3*d^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2
*e^2)*x^2 + (b^3*c^2*d^4 - 2*b^4*c*d^3*e + b^5*d^2*e^2)*x)]
```

giac [A] time = 0.28, size = 187, normalized size = 1.33

$$\frac{2\left(\frac{\left(Bbcd^2-2\,Ac^2d^2+Abcde\right)x}{b^2cd^3-b^3d^2e}-\frac{Abcd^2-Ab^2de}{b^2cd^3-b^3d^2e}\right)}{\sqrt{cx^2+bx}}+\frac{2\left(Bde-Ae^2\right)\arctan\left(\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)e+\sqrt{c}\,d}{\sqrt{-cd^2+bde}}\right)}{\left(cd^2-bde\right)\sqrt{-cd^2+bde}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c*d^2 - 2*A*c^2*d^2 + A*b*c*d*e)*x/(b^2*c*d^3 - b^3*d^2*e) - (A*b*c
*d^2 - A*b^2*d*e)/(b^2*c*d^3 - b^3*d^2*e))/sqrt(c*x^2 + b*x) + 2*(B*d*e - A
*e^2)*arctan(((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/sqrt(-c*d^2 +
b*d*e))/((c*d^2 - b*d*e)*sqrt(-c*d^2 + b*d*e))
```

maple [B] time = 0.06, size = 837, normalized size = 5.94

$$-\frac{2Acex}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,bd}+\frac{4A\,c^{2}x}{(be-cd)\sqrt{\left(x+\frac{d}{e}\right)^{2}c-\frac{(be-cd)d}{e^{2}}+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}}\,b^{2}}+\frac{Ae\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2*B/e*(2*c*x+b)/b^2/(c*x^2+b*x)^(1/2)-2*e/(b*e-c*d)/d/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+2/(b*e-c*d)/((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-2*e/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A+2/(b*e-c*d)/b/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+4/(b*e-c*d)/b^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A-4/e/(b*e-c*d)/b^2/((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B*d+2/(b*e-c*d
)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A-2/e/(b*e-
c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B*d+e/(b
*e-c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))*A-1/(b*e-c*d)/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\left(c\,x^2+b\,x\right)^{3/2}\,\left(d+e\,x\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)), x)
```

3.1204 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=245

$$-\frac{e\sqrt{bx+cx^2}\left(b^2(-e)(Bd-3Ae)-2bcd(2Ae+Bd)+4Ac^2d^2\right)}{b^2d^2(d+ex)(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(d+ex)(cd-be)}+\frac{e(3}{}$$

```
[Out] 1/2*e*(3*A*e*(-b*e+2*c*d)-B*d*(-b*e+4*c*d))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x
)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(5/2)/(-b*e+c*d)^(5/2)-2*(A
*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(e*x+d)/(c*x^2+b*
x)^(1/2)-e*(4*A*c^2*d^2-b^2*e*(-3*A*e+B*d)-2*b*c*d*(2*A*e+B*d))*(c*x^2+b*x)
^(1/2)/b^2/d^2/(-b*e+c*d)^2/(e*x+d)
```

Rubi [A] time = 0.31, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 806, 724, 206}

$$-\frac{e\sqrt{bx+cx^2}\left(b^2(-e)(Bd-3Ae)-2bcd(2Ae+Bd)+4Ac^2d^2\right)}{b^2d^2(d+ex)(cd-be)^2}-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(d+ex)(cd-be)}+\frac{e(3}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*(
d + e*x)*Sqrt[b*x + c*x^2]) - (e*(4*A*c^2*d^2 - b^2*e*(B*d - 3*A*e) - 2*b*c
*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(b^2*d^2*(c*d - b*e)^2*(d + e*x)) + (e
*(3*A*e*(2*c*d - b*e) - B*d*(4*c*d - b*e))*ArcTanh[(b*d + (2*c*d - b*e)*x)/
(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(2*d^(5/2)*(c*d - b*e)^(5/2
))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+2Acd-3Abe)-ce(bBd-2Acd+Ab}{(d+ex)^2\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\big(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B}{b^2d^2(cd-be)^2(d+}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\big(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B}{b^2d^2(cd-be)^2(d+}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)\sqrt{bx+cx^2}} - \frac{e\big(4Ac^2d^2-b^2e(Bd-3Ae)-2bcd(B}{b^2d^2(cd-be)^2(d+}$$

Mathematica [A] time = 0.59, size = 226, normalized size = 0.92

$$\frac{x\Bigg(\frac{cx(b+cx)\left(b^2e(Bd-3Ae)+2bcd(2Ae+Bd)-4Ac^2d^2\right)}{b^2d(be-cd)} + \frac{e\sqrt{x}\,(b+cx)^{3/2}(3Ae(be-2cd)+Bd(4cd-be))\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)}{d^{3/2}(cd-be)^{3/2}} + \frac{(b+cx)(-3Abe+2Acd+bBd)}{bd}}{d(x(b+cx))^{3/2}(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (x*(((b*B*d + 2*A*c*d - 3*A*b*e)*(b + c*x))/(b*d) + (c*(-4*A*c^2*d^2 + b^2*
e*(B*d - 3*A*e) + 2*b*c*d*(B*d + 2*A*e))*x*(b + c*x))/(b^2*d*(-(c*d) + b*e)
) + ((-(B*d) + A*e)*(b + c*x))/(d + e*x) + (e*(B*d*(4*c*d - b*e) + 3*A*e*(-
2*c*d + b*e))*Sqrt[x]*(b + c*x)^(3/2)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sq
rt[d]*Sqrt[b + c*x])])/(d^(3/2)*(c*d - b*e)^(3/2))))/(d*(-(c*d) + b*e)*(x*(
b + c*x))^(3/2))
```

fricas [B] time = 1.23, size = 1240, normalized size = 5.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((4*B*b^2*c^2*d^2*e^2 + 3*A*b^3*c*e^4 - (B*b^3*c + 6*A*b^2*c^2)*d*e^3
)*x^3 + (4*B*b^2*c^2*d^3*e + 3*A*b^4*e^4 + 3*(B*b^3*c - 2*A*b^2*c^2)*d^2*e^
2 - (B*b^4 + 3*A*b^3*c)*d*e^3)*x^2 + (4*B*b^3*c*d^3*e + 3*A*b^4*d*e^3 - (B*
b^4 + 6*A*b^3*c)*d^2*e^2)*x)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x
 - 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) - 2*(2*A*b*c^3*d^5 -
 6*A*b^2*c^2*d^4*e + 6*A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - (3*A*b^3*c*d*e^4
 + 2*(B*b*c^3 - 2*A*c^4)*d^4*e - (B*b^2*c^2 - 8*A*b*c^3)*d^3*e^2 - (B*b^3*c
 + 7*A*b^2*c^2)*d^2*e^3)*x^2 - (B*b^3*c*d^3*e^2 + 3*A*b^4*d*e^4 + 2*(B*b*c^
3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 - 3*A*b*c^3)*d^4*e - (B*b^4 + 5*A*b^3*c)*d^
2*e^3)*x)*sqrt(c*x^2 + b*x))/((b^2*c^4*d^6*e - 3*b^3*c^3*d^5*e^2 + 3*b^4*c^
2*d^4*e^3 - b^5*c*d^3*e^4)*x^3 + (b^2*c^4*d^7 - 2*b^3*c^3*d^6*e + 2*b^5*c*d
^4*e^3 - b^6*d^3*e^4)*x^2 + (b^3*c^3*d^7 - 3*b^4*c^2*d^6*e + 3*b^5*c*d^5*e^
2 - b^6*d^4*e^3)*x), -(((4*B*b^2*c^2*d^2*e^2 + 3*A*b^3*c*e^4 - (B*b^3*c + 6
*A*b^2*c^2)*d*e^3)*x^3 + (4*B*b^2*c^2*d^3*e + 3*A*b^4*e^4 + 3*(B*b^3*c - 2*
A*b^2*c^2)*d^2*e^2 - (B*b^4 + 3*A*b^3*c)*d*e^3)*x^2 + (4*B*b^3*c*d^3*e + 3*
A*b^4*d*e^3 - (B*b^4 + 6*A*b^3*c)*d^2*e^2)*x)*sqrt(-c*d^2 + b*d*e)*arctan(-
sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x)) + (2*A*b*c^3*d^5 -
6*A*b^2*c^2*d^4*e + 6*A*b^3*c*d^3*e^2 - 2*A*b^4*d^2*e^3 - (3*A*b^3*c*d*e^4
+ 2*(B*b*c^3 - 2*A*c^4)*d^4*e - (B*b^2*c^2 - 8*A*b*c^3)*d^3*e^2 - (B*b^3*c
+ 7*A*b^2*c^2)*d^2*e^3)*x^2 - (B*b^3*c*d^3*e^2 + 3*A*b^4*d*e^4 + 2*(B*b*c^3
 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 - 3*A*b*c^3)*d^4*e - (B*b^4 + 5*A*b^3*c)*d^2
*e^3)*x)*sqrt(c*x^2 + b*x))/((b^2*c^4*d^6*e - 3*b^3*c^3*d^5*e^2 + 3*b^4*c^2
*d^4*e^3 - b^5*c*d^3*e^4)*x^3 + (b^2*c^4*d^7 - 2*b^3*c^3*d^6*e + 2*b^5*c*d^
4*e^3 - b^6*d^3*e^4)*x^2 + (b^3*c^3*d^7 - 3*b^4*c^2*d^6*e + 3*b^5*c*d^5*e^2
 - b^6*d^4*e^3)*x)]
```

giac **[B]** time = 1.62, size = 1181, normalized size = 4.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/2*((4*B*b^2*c*d^2*e^3*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c
))) + 4*sqrt(c*d^2 - b*d*e)*B*b*c^(3/2)*d^2*e^2 - 8*sqrt(c*d^2 - b*d*e)*A*c
^(5/2)*d^2*e^2 - B*b^3*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sq
rt(c))) - 6*A*b^2*c*d*e^4*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(
c))) + 2*sqrt(c*d^2 - b*d*e)*B*b^2*sqrt(c)*d*e^3 + 8*sqrt(c*d^2 - b*d*e)*A*
b*c^(3/2)*d*e^3 + 3*A*b^3*e^5*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*s
qrt(c))) - 6*sqrt(c*d^2 - b*d*e)*A*b^2*sqrt(c)*e^4)*sgn(1/(x*e + d))/(sqrt(
c*d^2 - b*d*e)*b^2*c^2*d^4 - 2*sqrt(c*d^2 - b*d*e)*b^3*c*d^3*e + sqrt(c*d^2
 - b*d*e)*b^4*d^2*e^2) + 2*(((2*B*b*c^2*d^3*e^8*sgn(1/(x*e + d)) - 4*A*c^3*
d^3*e^8*sgn(1/(x*e + d)) + 2*B*b^2*c*d^2*e^9*sgn(1/(x*e + d)) + 6*A*b*c^2*d
^2*e^9*sgn(1/(x*e + d)) - B*b^3*d*e^10*sgn(1/(x*e + d)) - 8*A*b^2*c*d*e^10*
sgn(1/(x*e + d)) + 3*A*b^3*e^11*sgn(1/(x*e + d)))/(b^2*c^2*d^4*e^5*sgn(1/(x
*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1/(x*e + d))^2 + b^4*d^2*e^7*sgn(1/(x*e +
d))^2) - (B*b^2*c*d^3*e^10*sgn(1/(x*e + d)) - B*b^3*d^2*e^11*sgn(1/(x*e + d
)) - A*b^2*c*d^2*e^11*sgn(1/(x*e + d)) + A*b^3*d*e^12*sgn(1/(x*e + d)))*e^(
-1)/((b^2*c^2*d^4*e^5*sgn(1/(x*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1/(x*e + d))
^2 + b^4*d^2*e^7*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) - (2*B*b*
c^2*d^2*e^7*sgn(1/(x*e + d)) - 4*A*c^3*d^2*e^7*sgn(1/(x*e + d)) + B*b^2*c*d
*e^8*sgn(1/(x*e + d)) + 4*A*b*c^2*d*e^8*sgn(1/(x*e + d)) - 3*A*b^2*c*e^9*sg
n(1/(x*e + d)))/(b^2*c^2*d^4*e^5*sgn(1/(x*e + d))^2 - 2*b^3*c*d^3*e^6*sgn(1
/(x*e + d))^2 + b^4*d^2*e^7*sgn(1/(x*e + d))^2))/sqrt(c - 2*c*d/(x*e + d) +
 c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2) - (4*B*c*d^2*e^4 -
B*b*d*e^5 - 6*A*c*d*e^5 + 3*A*b*e^6)*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b
*d*e)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e
/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e^3)*e^(-1)/(x*e + d))))/((c^2*d^4*e -
 2*b*c*d^3*e^2 + b^2*d^2*e^3)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple **[B]** time = 0.06, size = 2069, normalized size = 8.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -1/e/(b*e-c*d)/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*B-6/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*c^2*A+3/(b*e-c*d)^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*B-3*e^2/(b*e-c*d)^2/d^2/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A+3*e/(b*e-c*d)^2/d/
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+6/e/(b*e-c*
d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B*d+3/
2*e^2/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*A-3/2*e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/
e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2
)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))
*b*B-8*c^2/(b*e-c*d)/d/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*x*A+12/e*c^2/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e)^(1/2)*x*B-2*B/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e
-2*c*d)*(x+d/e)/e)^(1/2)*x*c+9*e/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*A-12/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B-2*B/(b*e-c*d)/d/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-9/(b*e-c*d)^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B+12/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B*d+12*e/(b*e-c*d)^2/d/
b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+B/(b*e-
c*d)/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2))/(x+d/e))+1/(b*e-c*d)/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(1/2)*A-3*e/(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln(
(-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A+6/e*c/(b*
e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-4*c/(b
*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-12/
(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
*c^3*A-3*e^2/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*b*A+3*e/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*b*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{3/2}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x\left(b + cx\right)\right)^{\frac{3}{2}}\left(d + ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)**2), x)
```

3.1205 $\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=374

$$-\frac{e\sqrt{bx+cx^2}\,\left(b^2(-e)(Bd-5Ae)-4bcd(2Ae+Bd)+8Ac^2d^2\right)}{2b^2d^2(d+ex)^2(cd-be)^2}-\frac{3e(Bd(b^2e^2-4bcde+8c^2d^2)-Ae(5b^2e^2-16bc}{8d^{7/2}(cd-b}$$

```
[Out] -3/8*e*(B*d*(b^2*e^2-4*b*c*d*e+8*c^2*d^2)-A*e*(5*b^2*e^2-16*b*c*d*e+16*c^2*
d^2))*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)
^(1/2))/d^(7/2)/(-b*e+c*d)^(7/2)-2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*
x)/b^2/d/(-b*e+c*d)/(e*x+d)^2/(c*x^2+b*x)^(1/2)-1/2*e*(8*A*c^2*d^2-b^2*e*(-
5*A*e+B*d)-4*b*c*d*(2*A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/d^2/(-b*e+c*d)^2/(e*x
+d)^2-1/4*e*(16*A*c^3*d^3-2*b^2*c*d*e*(-19*A*e+5*B*d)+3*b^3*e^2*(-5*A*e+B*d
)-8*b*c^2*d^2*(3*A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/d^3/(-b*e+c*d)^3/(e*x+d)
```

Rubi [A] time = 0.59, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 834, 806, 724, 206}

$$-\frac{e\sqrt{bx+cx^2}\,\left(-2b^2cde(5Bd-19Ae)+3b^3e^2(Bd-5Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)}{4b^2d^3(d+ex)(cd-be)^3}-\frac{3e(Bd(b^2e^2-4bcde+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*(
d + e*x)^2*Sqrt[b*x + c*x^2]) - (e*(8*A*c^2*d^2 - b^2*e*(B*d - 5*A*e) - 4*b
*c*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(2*b^2*d^2*(c*d - b*e)^2*(d + e*x)^2
) - (e*(16*A*c^3*d^3 - 2*b^2*c*d*e*(5*B*d - 19*A*e) + 3*b^3*e^2*(B*d - 5*A*
e) - 8*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[b*x + c*x^2])/(4*b^2*d^3*(c*d - b*e)^3
*(d + e*x)) - (3*e*(B*d*(8*c^2*d^2 - 4*b*c*d*e + b^2*e^2) - A*e*(16*c^2*d^2
 - 16*b*c*d*e + 5*b^2*e^2))*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt
[c*d - b*e]*Sqrt[b*x + c*x^2])])/(8*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+4Acd-5Abe)-2ce(bBd-2Acd}{(d+ex)^3\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc}{2b^2d^2(cd-be)^2(}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^2\sqrt{bx+cx^2}} - \frac{e\left(8Ac^2d^2-b^2e(Bd-5Ae)-4bc}{2b^2d^2(cd-be)^2(}$$

Mathematica [A] time = 1.50, size = 377, normalized size = 1.01

$$\frac{2b^2d^{5/2}(Bd-Ae)(cd-be)^{5/2}+(d+ex)\left(b^2d^{3/2}(cd-be)^{3/2}(5Ae(be-2cd)+Bd(6cd-be))-(d+ex)\left(3b^2e\sqrt{x}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*b^2*d^(5/2)*(B*d - A*e)*(c*d - b*e)^(5/2) + (d + e*x)*(b^2*d^(3/2)*(c*d
- b*e)^(3/2)*(B*d*(6*c*d - b*e) + 5*A*e*(-2*c*d + b*e)) - (d + e*x)*(b*Sqrt
[d]*(c*d - b*e)^(3/2)*(8*A*c^2*d^2 + 4*b*c*d*(2*B*d - 7*A*e) + 3*b^2*e*(-(B
*d) + 5*A*e)) + c*Sqrt[d]*Sqrt[c*d - b*e]*(16*A*c^3*d^3 + 3*b^3*e^2*(B*d -
5*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e) + 2*b^2*c*d*e*(-5*B*d + 19*A*e))*x + 3*b
^2*e*(A*e*(-16*c^2*d^2 + 16*b*c*d*e - 5*b^2*e^2) + B*d*(8*c^2*d^2 - 4*b*c*d
*e + b^2*e^2))*Sqrt[x]*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqr
t[d]*Sqrt[b + c*x])])))/(4*b^2*d^(7/2)*(c*d - b*e)^(7/2)*Sqrt[x*(b + c*x)]*
(d + e*x)^2)
```

fricas [B] time = 1.00, size = 2282, normalized size = 6.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*((8*B*b^2*c^3*d^3*e^3 - 5*A*b^4*c*e^6 - 4*(B*b^3*c^2 + 4*A*b^2*c^3
)*d^2*e^4 + (B*b^4*c + 16*A*b^3*c^2)*d*e^5)*x^4 + (16*B*b^2*c^3*d^4*e^2 - 3
2*A*b^2*c^3*d^3*e^3 - 5*A*b^5*e^6 - 2*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 + (B*
b^5 + 6*A*b^4*c)*d*e^5)*x^3 + (8*B*b^2*c^3*d^5*e - 10*A*b^5*d*e^5 + 4*(3*B*
b^3*c^2 - 4*A*b^2*c^3)*d^4*e^2 - (7*B*b^4*c + 16*A*b^3*c^2)*d^3*e^3 + (2*B*
b^5 + 27*A*b^4*c)*d^2*e^4)*x^2 + (8*B*b^3*c^2*d^5*e - 5*A*b^5*d^2*e^4 - 4*(
B*b^4*c + 4*A*b^3*c^2)*d^4*e^2 + (B*b^5 + 16*A*b^4*c)*d^3*e^3)*x)*sqrt(c*d^
2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 +
b*x))/(e*x + d)) + 2*(8*A*b*c^4*d^7 - 32*A*b^2*c^3*d^6*e + 48*A*b^3*c^2*d^5
*e^2 - 32*A*b^4*c*d^4*e^3 + 8*A*b^5*d^3*e^4 + (15*A*b^4*c*d*e^6 - 8*(B*b*c^
4 - 2*A*c^5)*d^5*e^2 - 2*(B*b^2*c^3 + 20*A*b*c^4)*d^4*e^3 + (13*B*b^3*c^2 +
 62*A*b^2*c^3)*d^3*e^4 - (3*B*b^4*c + 53*A*b^3*c^2)*d^2*e^5)*x^3 + (15*A*b^
5*d*e^6 - 16*(B*b*c^4 - 2*A*c^5)*d^6*e + 4*(B*b^2*c^3 - 18*A*b*c^4)*d^5*e^2
 + (7*B*b^3*c^2 + 80*A*b^2*c^3)*d^4*e^3 + (8*B*b^4*c - 27*A*b^3*c^2)*d^3*e^
4 - (3*B*b^5 + 28*A*b^4*c)*d^2*e^5)*x^2 + (25*A*b^5*d^2*e^5 - 8*(B*b*c^4 -
2*A*c^5)*d^7 + 8*(B*b^2*c^3 - 3*A*b*c^4)*d^6*e - 4*(3*B*b^3*c^2 + 4*A*b^2*c
^3)*d^5*e^2 + (17*B*b^4*c + 80*A*b^3*c^2)*d^4*e^3 - (5*B*b^5 + 81*A*b^4*c)*
d^3*e^4)*x)*sqrt(c*x^2 + b*x))/((b^2*c^5*d^8*e^2 - 4*b^3*c^4*d^7*e^3 + 6*b^
4*c^3*d^6*e^4 - 4*b^5*c^2*d^5*e^5 + b^6*c*d^4*e^6)*x^4 + (2*b^2*c^5*d^9*e -
 7*b^3*c^4*d^8*e^2 + 8*b^4*c^3*d^7*e^3 - 2*b^5*c^2*d^6*e^4 - 2*b^6*c*d^5*e^
5 + b^7*d^4*e^6)*x^3 + (b^2*c^5*d^10 - 2*b^3*c^4*d^9*e - 2*b^4*c^3*d^8*e^2
+ 8*b^5*c^2*d^7*e^3 - 7*b^6*c*d^6*e^4 + 2*b^7*d^5*e^5)*x^2 + (b^3*c^4*d^10
- 4*b^4*c^3*d^9*e + 6*b^5*c^2*d^8*e^2 - 4*b^6*c*d^7*e^3 + b^7*d^6*e^4)*x),
-1/4*(3*((8*B*b^2*c^3*d^3*e^3 - 5*A*b^4*c*e^6 - 4*(B*b^3*c^2 + 4*A*b^2*c^3)
*d^2*e^4 + (B*b^4*c + 16*A*b^3*c^2)*d*e^5)*x^4 + (16*B*b^2*c^3*d^4*e^2 - 32
*A*b^2*c^3*d^3*e^3 - 5*A*b^5*e^6 - 2*(B*b^4*c - 8*A*b^3*c^2)*d^2*e^4 + (B*b
^5 + 6*A*b^4*c)*d*e^5)*x^3 + (8*B*b^2*c^3*d^5*e - 10*A*b^5*d*e^5 + 4*(3*B*b
^3*c^2 - 4*A*b^2*c^3)*d^4*e^2 - (7*B*b^4*c + 16*A*b^3*c^2)*d^3*e^3 + (2*B*b
^5 + 27*A*b^4*c)*d^2*e^4)*x^2 + (8*B*b^3*c^2*d^5*e - 5*A*b^5*d^2*e^4 - 4*(B
*b^4*c + 4*A*b^3*c^2)*d^4*e^2 + (B*b^5 + 16*A*b^4*c)*d^3*e^3)*x)*sqrt(-c*d^
2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d - b*e)*x))
+ (8*A*b*c^4*d^7 - 32*A*b^2*c^3*d^6*e + 48*A*b^3*c^2*d^5*e^2 - 32*A*b^4*c*d
^4*e^3 + 8*A*b^5*d^3*e^4 + (15*A*b^4*c*d*e^6 - 8*(B*b*c^4 - 2*A*c^5)*d^5*e^
2 - 2*(B*b^2*c^3 + 20*A*b*c^4)*d^4*e^3 + (13*B*b^3*c^2 + 62*A*b^2*c^3)*d^3*
e^4 - (3*B*b^4*c + 53*A*b^3*c^2)*d^2*e^5)*x^3 + (15*A*b^5*d*e^6 - 16*(B*b*c
^4 - 2*A*c^5)*d^6*e + 4*(B*b^2*c^3 - 18*A*b*c^4)*d^5*e^2 + (7*B*b^3*c^2 + 8
0*A*b^2*c^3)*d^4*e^3 + (8*B*b^4*c - 27*A*b^3*c^2)*d^3*e^4 - (3*B*b^5 + 28*A
*b^4*c)*d^2*e^5)*x^2 + (25*A*b^5*d^2*e^5 - 8*(B*b*c^4 - 2*A*c^5)*d^7 + 8*(B
*b^2*c^3 - 3*A*b*c^4)*d^6*e - 4*(3*B*b^3*c^2 + 4*A*b^2*c^3)*d^5*e^2 + (17*B
*b^4*c + 80*A*b^3*c^2)*d^4*e^3 - (5*B*b^5 + 81*A*b^4*c)*d^3*e^4)*x)*sqrt(c*
x^2 + b*x))/((b^2*c^5*d^8*e^2 - 4*b^3*c^4*d^7*e^3 + 6*b^4*c^3*d^6*e^4 - 4*b
^5*c^2*d^5*e^5 + b^6*c*d^4*e^6)*x^4 + (2*b^2*c^5*d^9*e - 7*b^3*c^4*d^8*e^2
+ 8*b^4*c^3*d^7*e^3 - 2*b^5*c^2*d^6*e^4 - 2*b^6*c*d^5*e^5 + b^7*d^4*e^6)*x^
3 + (b^2*c^5*d^10 - 2*b^3*c^4*d^9*e - 2*b^4*c^3*d^8*e^2 + 8*b^5*c^2*d^7*e^3
- 7*b^6*c*d^6*e^4 + 2*b^7*d^5*e^5)*x^2 + (b^3*c^4*d^10 - 4*b^4*c^3*d^9*e +
6*b^5*c^2*d^8*e^2 - 4*b^6*c*d^7*e^3 + b^7*d^6*e^4)*x)]
```

giac [B] time = 0.39, size = 1095, normalized size = 2.93

$$\frac{2\left(\frac{\left(Bbc^{3}d^{6}-2\,Ac^{4}d^{6}+3\,Abc^{3}d^{5}e-3\,Ab^{2}c^{2}d^{4}e^{2}+Ab^{3}cd^{3}e^{3}\right)x}{b^{2}c^{3}d^{9}-3\,b^{3}c^{2}d^{8}e+3\,b^{4}cd^{7}e^{2}-b^{5}d^{6}e^{3}}-\frac{Abc^{3}d^{6}-3\,Ab^{2}c^{2}d^{5}e+3\,Ab^{3}cd^{4}e^{2}-Ab^{4}d^{3}e^{3}}{b^{2}c^{3}d^{9}-3\,b^{3}c^{2}d^{8}e+3\,b^{4}cd^{7}e^{2}-b^{5}d^{6}e^{3}}\right)}{\sqrt{cx^{2}+bx}}-\frac{3\left(8\,Bc^{2}d^{3}e-4\,Bbcd^{2}e^{2}-1\right.}{4\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c^3*d^6 - 2*A*c^4*d^6 + 3*A*b*c^3*d^5*e - 3*A*b^2*c^2*d^4*e^2 + A*b
^3*c*d^3*e^3)*x/(b^2*c^3*d^9 - 3*b^3*c^2*d^8*e + 3*b^4*c*d^7*e^2 - b^5*d^6*
e^3) - (A*b*c^3*d^6 - 3*A*b^2*c^2*d^5*e + 3*A*b^3*c*d^4*e^2 - A*b^4*d^3*e^3
)/(b^2*c^3*d^9 - 3*b^3*c^2*d^8*e + 3*b^4*c*d^7*e^2 - b^5*d^6*e^3))/sqrt(c*x
^2 + b*x) - 3/4*(8*B*c^2*d^3*e - 4*B*b*c*d^2*e^2 - 16*A*c^2*d^2*e^2 + B*b^2
*d*e^3 + 16*A*b*c*d*e^3 - 5*A*b^2*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b
*x))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2
*c*d^4*e^2 - b^3*d^3*e^3)*sqrt(-c*d^2 + b*d*e)) + 1/4*(40*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^2*B*c^(5/2)*d^4*e + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*B*c
^2*d^3*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b*c^2*d^4*e - 28*(sqrt(c)
*x - sqrt(c*x^2 + b*x))^2*B*b*c^(3/2)*d^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2
+ b*x))^2*A*c^(5/2)*d^3*e^2 + 10*B*b^2*c^(3/2)*d^4*e - 12*(sqrt(c)*x - sqrt
(c*x^2 + b*x))^3*B*b*c*d^2*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3*A*c^2
*d^2*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^2*c*d^3*e^2 - 56*(sqrt(c)
*x - sqrt(c*x^2 + b*x))*A*b*c^2*d^3*e^2 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))
^2*B*b^2*sqrt(c)*d^2*e^3 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x))^2*A*b*c^(3/2)
*d^2*e^3 - 3*B*b^3*sqrt(c)*d^3*e^2 - 14*A*b^2*c^(3/2)*d^3*e^2 + 3*(sqrt(c)*
x - sqrt(c*x^2 + b*x))^3*B*b^2*d*e^4 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x))^3
*A*b*c*d*e^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x))*B*b^3*d^2*e^3 + 44*(sqrt(c
)*x - sqrt(c*x^2 + b*x))*A*b^2*c*d^2*e^3 - 13*(sqrt(c)*x - sqrt(c*x^2 + b*x
))^2*A*b^2*sqrt(c)*d*e^4 + 7*A*b^3*sqrt(c)*d^2*e^3 - 7*(sqrt(c)*x - sqrt(c*
x^2 + b*x))^3*A*b^2*e^5 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x))*A*b^3*d*e^4)/((
c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*((sqrt(c)*x - sqrt
(c*x^2 + b*x))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c)*d + b*d)^2)
```

maple [B] time = 0.07, size = 3735, normalized size = 9.99

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -15/2/(b*e-c*d)^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*
d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c^2*B+17*B/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c+30/(b*e-c*d)^3/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2*B-45*e/(b*e-c*d)^3/d/b/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*A-13*e/(b*e-c*d)^2
/d^2*c^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-15
/4*e^3/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*x*c*b*A-30/e/(b*e-c*d)^3/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)
*(x+d/e)/e)^(1/2)*x*c^4*B*d-15/2*e^2/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/
2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*A+1
5/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
```

```
^(1/2)*x*c*b*B+15/2*e/(b*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*c*B+B/e/(b*e-c*d)/d/(x
+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-3*B*e/(b*e-
c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b-30*e
/(b*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^
2*A-8*e/(b*e-c*d)^2/d^2*c/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/
e)^(1/2)*A+1/2/e/(b*e-c*d)/d/(x+d/e)^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*A-15/4*e^3/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*A+15/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b^2*B+5/2/e/(b*e-c*d)^2/(x+d/
e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B-8*B/e*c^2/
(b*e-c*d)/d/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
-5/4/(b*e-c*d)^2/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)
/e)^(1/2)*b*B-5/2/(b*e-c*d)^2/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2
*c*d)*(x+d/e)/e)^(1/2)*c*A+30/(b*e-c*d)^3/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+
(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^4*A+45/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B+13/(b*e-c*d)^2/d*c^2/b/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-19*B/e/(b*e-c*d)^2/b/(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^2-9/2*B/(b*e-c*d
)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2))/(x+d/e))*c-1/2/e^2/(b*e-c*d)/(x+d/e)^2/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+15/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c^3*A-45/2*e/(b*e-c*d)^3/d/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+26/(b*e-c*d)^2/d*c^3/
b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-75/4*e/(b
*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*B
-3*B*e/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(1/2)*x*c+25*B/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e)^(1/2)*x*c^2-38*B/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3+3/2*B*e/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^
(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/
2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b-4*
B/e*c/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)+5/4*e/(b*e-c*d)^2/d^2/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e)^(1/2)*b*A+75/4*e^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(
b*e-2*c*d)*(x+d/e)/e)^(1/2)*b*c*A-15/8*e^2/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^
2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^
(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b
^2*B+3/2*e*c/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+15/2*e/(b*e-c*d)^3/d/(-(b*e-c
*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)
*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x
+d/e))*c^2*A-15/e/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*c^3*B*d+15/8*e^3/(b*e-c*d)^3/d^3/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b^2*A+45/2*e
^2/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2
)*x*c^2*A
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
```

```
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(c\,x^2 + b\,x\right)}^{3/2}\,{\left(d + e\,x\right)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^3),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)**3), x)
```

3.1206 $\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{2(d+ex)^3\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{e\sqrt{bx+cx^2}\left(2b^3ce^2(3Ae+7Bd)+4b^2c^2de(Ae+2Bd)\right.}{3b^4c^3}$$

```
[Out] -2/3*(e*x+d)^3*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b
*x)^(3/2)+e^3*(2*A*c*e-5*B*b*e+8*B*c*d)*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2)
)/c^(7/2)-2/3*(e*x+d)*(b*c*d^2*(10*A*b*c*e-8*A*c^2*d-B*b^2*e+4*B*b*c*d)-(16
*A*c^4*d^3-5*b^4*B*e^3+4*b^2*c^2*d*e*(A*e+B*d)+2*b^3*c*e^2*(A*e+3*B*d)-8*b*
c^3*d^2*(3*A*e+B*d))*x)/b^4/c^2/(c*x^2+b*x)^(1/2)-1/3*e*(32*A*c^4*d^3-15*b^
4*B*e^3+4*b^2*c^2*d*e*(A*e+2*B*d)-16*b*c^3*d^2*(3*A*e+B*d)+2*b^3*c*e^2*(3*A
*e+7*B*d))*(c*x^2+b*x)^(1/2)/b^4/c^3
```

Rubi [A] time = 0.46, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 640, 620, 206}

$$-\frac{e\sqrt{bx+cx^2}\left(4b^2c^2de(Ae+2Bd)+2b^3ce^2(3Ae+7Bd)-16bc^3d^2(3Ae+Bd)+32Ac^4d^3-15b^4Be^3\right)}{3b^4c^3}-\frac{2(d+ex)\big(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^3*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b
^2*c*(b*x + c*x^2)^(3/2)) - (2*(d + e*x)*(b*c*d^2*(4*b*B*c*d - 8*A*c^2*d -
b^2*B*e + 10*A*b*c*e) - (16*A*c^4*d^3 - 5*b^4*B*e^3 + 4*b^2*c^2*d*e*(B*d +
A*e) + 2*b^3*c*e^2*(3*B*d + A*e) - 8*b*c^3*d^2*(B*d + 3*A*e))*x))/(3*b^4*c^
2*Sqrt[b*x + c*x^2]) - (e*(32*A*c^4*d^3 - 15*b^4*B*e^3 + 4*b^2*c^2*d*e*(2*B
*d + A*e) - 16*b*c^3*d^2*(B*d + 3*A*e) + 2*b^3*c*e^2*(7*B*d + 3*A*e))*Sqrt[
b*x + c*x^2])/(3*b^4*c^3) + (e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(Sqr
t[c]*x)/Sqrt[b*x + c*x^2]])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\int \frac{(d+ex)^2\left(\frac{1}{2}d\left(4bBcd-8Ac^2d-\right.\right.}{}}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} - \frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} - \frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} - \frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

$$= -\frac{2(d+ex)^3\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} - \frac{2(d+ex)\left(bcd^2\left(4bBcd-\right.\right.}{}$$

Mathematica [A] time = 5.37, size = 237, normalized size = 0.70

$$\frac{x^{5/2}\left(\frac{e^3(b+cx)^{5/2}\log\left(\sqrt{c}\sqrt{b+cx}+c\sqrt{x}\right)(2Ace-5bBe+8Bcd)}{c^{7/2}} - \frac{(b+cx)\left(2x^2(b+cx)(cd-be)^3\left(bc(5Bd-4Ae)-8Ac^2d+7b^2Be\right)+2c^3d^3x(b+cx)^2(3b(4Ae+\right.}{3b^4c^3x^{3/2}}\right.}{(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*(-1/3*((b + c*x)*(2*b*(b*B - A*c)*(c*d - b*e)^4*x^2 + 2*(c*d - b*e
)^3*(-8*A*c^2*d + 7*b^2*B*e + b*c*(5*B*d - 4*A*e))*x^2*(b + c*x) + 2*A*b*c^
3*d^4*(b + c*x)^2 + 2*c^3*d^3*(-8*A*c*d + 3*b*(B*d + 4*A*e))*x*(b + c*x)^2
- 3*b^4*B*e^4*x^2*(b + c*x)^2))/(b^4*c^3*x^(3/2)) + (e^3*(8*B*c*d - 5*b*B*e
 + 2*A*c*e)*(b + c*x)^(5/2)*Log[c*Sqrt[x] + Sqrt[c]*Sqrt[b + c*x]])/c^(7/2)
))/(x*(b + c*x))^(5/2)
```

fricas [A] time = 1.31, size = 974, normalized size = 2.86

$$\left[\frac{3\left(\left(8\,Bb^4c^3de^3-\left(5\,Bb^5c^2-2\,Ab^4c^3\right)e^4\right)x^4+2\left(8\,Bb^5c^2de^3-\left(5\,Bb^6c-2\,Ab^5c^2\right)e^4\right)x^3+\left(8\,Bb^6cde^3-\left(5\,Bb^7-\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*((8*B*b^4*c^3*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^4 + 2*(8*B
*b^5*c^2*d*e^3 - (5*B*b^6*c - 2*A*b^5*c^2)*e^4)*x^3 + (8*B*b^6*c*d*e^3 - (5
*B*b^7 - 2*A*b^6*c)*e^4)*x^2)*sqrt(c)*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*s
qrt(c)) + 2*(3*B*b^4*c^3*e^4*x^4 - 2*A*b^3*c^4*d^4 - 4*(4*(B*b*c^6 - 2*A*c^
7)*d^4 - 4*(B*b^2*c^5 - 4*A*b*c^6)*d^3*e - 3*(B*b^3*c^4 + 2*A*b^2*c^5)*d^2*
e^2 + 2*(4*B*b^4*c^3 - A*b^3*c^4)*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*
x^3 + 3*(12*A*b^3*c^4*d^2*e^2 - 8*B*b^5*c^2*d*e^3 - 8*(B*b^2*c^5 - 2*A*b*c^
6)*d^4 + 8*(B*b^3*c^4 - 4*A*b^2*c^5)*d^3*e + (5*B*b^6*c - 2*A*b^5*c^2)*e^4)
*x^2 - 6*(4*A*b^3*c^4*d^3*e + (B*b^3*c^4 - 2*A*b^2*c^5)*d^4)*x)*sqrt(c*x^2
+ b*x))/(b^4*c^6*x^4 + 2*b^5*c^5*x^3 + b^6*c^4*x^2), -1/3*(3*((8*B*b^4*c^3*
d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^4 + 2*(8*B*b^5*c^2*d*e^3 - (5*B*
b^6*c - 2*A*b^5*c^2)*e^4)*x^3 + (8*B*b^6*c*d*e^3 - (5*B*b^7 - 2*A*b^6*c)*e^
4)*x^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*x)*sqrt(-c)/(c*x)) - (3*B*b^4*c^3*e^
4*x^4 - 2*A*b^3*c^4*d^4 - 4*(4*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(B*b^2*c^5 - 4*A
*b*c^6)*d^3*e - 3*(B*b^3*c^4 + 2*A*b^2*c^5)*d^2*e^2 + 2*(4*B*b^4*c^3 - A*b^
3*c^4)*d*e^3 - (5*B*b^5*c^2 - 2*A*b^4*c^3)*e^4)*x^3 + 3*(12*A*b^3*c^4*d^2*e
^2 - 8*B*b^5*c^2*d*e^3 - 8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 + 8*(B*b^3*c^4 - 4*A
*b^2*c^5)*d^3*e + (5*B*b^6*c - 2*A*b^5*c^2)*e^4)*x^2 - 6*(4*A*b^3*c^4*d^3*e
 + (B*b^3*c^4 - 2*A*b^2*c^5)*d^4)*x)*sqrt(c*x^2 + b*x))/(b^4*c^6*x^4 + 2*b^
5*c^5*x^3 + b^6*c^4*x^2)]
```

giac [**A**] time = 0.30, size = 370, normalized size = 1.09

$$-\frac{\frac{2\,Ad^4}{b} - \left(\left(\left(\frac{3\,Bxe^4}{c} - \frac{4\left(4\,Bbc^5d^4 - 8\,Ac^6d^4 - 4\,Bb^2c^4d^3e + 16\,Abc^5d^3e - 3\,Bb^3c^3d^2e^2 - 6\,Ab^2c^4d^2e^2 + 8\,Bb^4c^2de^3 - 2\,Ab^3c^3de^3 - 5\,Bb^5ce^4 + 2\,Ab^4c^2e^4\right)}{b^4c^3}\right)x}{3\left(cx^2 +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3*(2*A*d^4/b - (((3*B*x*e^4/c - 4*(4*B*b*c^5*d^4 - 8*A*c^6*d^4 - 4*B*b^2
*c^4*d^3*e + 16*A*b*c^5*d^3*e - 3*B*b^3*c^3*d^2*e^2 - 6*A*b^2*c^4*d^2*e^2 +
 8*B*b^4*c^2*d*e^3 - 2*A*b^3*c^3*d*e^3 - 5*B*b^5*c*e^4 + 2*A*b^4*c^2*e^4)/(
b^4*c^3))*x - 3*(8*B*b^2*c^4*d^4 - 16*A*b*c^5*d^4 - 8*B*b^3*c^3*d^3*e + 32*
A*b^2*c^4*d^3*e - 12*A*b^3*c^3*d^2*e^2 + 8*B*b^5*c*d*e^3 - 5*B*b^6*e^4 + 2*
A*b^5*c*e^4)/(b^4*c^3))*x - 6*(B*b^3*c^3*d^4 - 2*A*b^2*c^4*d^4 + 4*A*b^3*c^
3*d^3*e)/(b^4*c^3))*x)/(c*x^2 + b*x)^(3/2) - 1/2*(8*B*c*d*e^3 - 5*B*b*e^4 +
 2*A*c*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(7/2
)
```

maple [**B**] time = 0.06, size = 1026, normalized size = 3.01

$$\frac{B\,e^4x^4}{\left(c\,x^2+bx\right)^{\frac{3}{2}}c} - \frac{A\,e^4x^3}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}c} + \frac{5Bb\,e^4x^3}{6\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2} - \frac{4Bd\,e^3x^3}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}c} + \frac{Ab\,e^4x^2}{2\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2} - \frac{4Ad\,e^3x^2}{\left(c\,x^2+bx\right)^{\frac{3}{2}}c} - \frac{5B\,b^2e}{4\left(c\,x^2+b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -8/3/b^2/(c*x^2+b*x)^(1/2)*B*d^4-2/3*A*d^4/b/(c*x^2+b*x)^(3/2)+1/c^(5/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))*A*e^4+5/6*B*e^4*b/c^2*x^3/(c*x^2+b*
x)^(3/2)-5/4*B*e^4*b^2/c^3*x^2/(c*x^2+b*x)^(3/2)-6*x^2/c/(c*x^2+b*x)^(3/2)*
B*d^2*e^2+8/3/b/(c*x^2+b*x)^(3/2)*x*A*d^3*e-16/3/b^3*c/(c*x^2+b*x)^(1/2)*x*
B*d^4+8/3/b/c/(c*x^2+b*x)^(1/2)*B*d^3*e-5/12*B*e^4*b^3/c^4/(c*x^2+b*x)^(3/2
)*x+35/6*B*e^4*b/c^3/(c*x^2+b*x)^(1/2)*x+8/3/b/c/(c*x^2+b*x)^(1/2)*x*A*d*e^
```

```
3+4/b/c/(c*x^2+b*x)^(1/2)*x*B*d^2*e^2-64/3/b^3*c/(c*x^2+b*x)^(1/2)*x*A*d^3*
e-4/3*b/c^2/(c*x^2+b*x)^(3/2)*x*A*d*e^3+2*b/c^2*x^2/(c*x^2+b*x)^(3/2)*B*d*e
^3+2/3*b^2/c^3/(c*x^2+b*x)^(3/2)*x*B*d*e^3-4/3*x^3/c/(c*x^2+b*x)^(3/2)*B*d*
e^3+1/2*b/c^2*x^2/(c*x^2+b*x)^(3/2)*A*e^4+1/6*b^2/c^3/(c*x^2+b*x)^(3/2)*x*A
*e^4-4/c/(c*x^2+b*x)^(3/2)*x*A*d^2*e^2-8/3/c/(c*x^2+b*x)^(3/2)*x*B*d^3*e-4/
3*A*d^4/b^2/(c*x^2+b*x)^(3/2)*c*x+32/3*A*d^4*c^2/b^4/(c*x^2+b*x)^(1/2)*x-2*
b/c^2/(c*x^2+b*x)^(3/2)*x*B*d^2*e^2+4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x)^(1/2))*B*d*e^3-7/3/c^2/(c*x^2+b*x)^(1/2)*x*A*e^4+8/b^2/(c*x^2+b*x)^(1
/2)*x*A*d^2*e^2+16/3/b^2/(c*x^2+b*x)^(1/2)*x*B*d^3*e+4/b/c/(c*x^2+b*x)^(1/2
)*A*d^2*e^2-28/3/c^2/(c*x^2+b*x)^(1/2)*x*B*d*e^3-2/3*b/c^3/(c*x^2+b*x)^(1/2
)*B*d*e^3-4*x^2/c/(c*x^2+b*x)^(3/2)*A*d*e^3+16/3*A*d^4*c/b^3/(c*x^2+b*x)^(1
/2)+2/3/b/(c*x^2+b*x)^(3/2)*x*B*d^4-1/3*x^3/c/(c*x^2+b*x)^(3/2)*A*e^4+B*e^4
*x^4/c/(c*x^2+b*x)^(3/2)-1/6*b/c^3/(c*x^2+b*x)^(1/2)*A*e^4-32/3/b^2/(c*x^2+
b*x)^(1/2)*A*d^3*e+5/12*B*e^4*b^2/c^4/(c*x^2+b*x)^(1/2)-5/2*B*e^4*b/c^(7/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))+4/3/c^2/(c*x^2+b*x)^(1/2)*A*d*e^
3+2/c^2/(c*x^2+b*x)^(1/2)*B*d^2*e^2
```

maxima [B] time = 0.65, size = 795, normalized size = 2.33

$$\frac{5\,Bbe^4x\left(\frac{3\,x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\,x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)}{6\,c}+\frac{Be^4x^4}{\left(cx^2+bx\right)^{\frac{3}{2}}c}-\frac{4\,Acd^4x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2d^4x}{3\sqrt{cx^2+bx}\,b^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 5/6*B*b*e^4*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2
) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2))/c + B*e^4*x^4/
((c*x^2 + b*x)^(3/2)*c) - 4/3*A*c*d^4*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*
c^2*d^4*x/(sqrt(c*x^2 + b*x)*b^4) + 10/3*B*b*e^4*x/(sqrt(c*x^2 + b*x)*c^3)
- 5/2*B*b*e^4*log(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c))/c^(7/2) - 1/3*(4
*B*d*e^3 + A*e^4)*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/
2)*c^2) - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - 2/3*A*
d^4/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d^4/(sqrt(c*x^2 + b*x)*b^3) + 5/3*sq
rt(c*x^2 + b*x)*B*e^4/c^3 - 2*(3*B*d^2*e^2 + 2*A*d*e^3)*x^2/((c*x^2 + b*x)^
(3/2)*c) + 8/3*(2*B*d^3*e + 3*A*d^2*e^2)*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(B
*d^4 + 4*A*d^3*e)*x/((c*x^2 + b*x)^(3/2)*b) - 4/3*(4*B*d*e^3 + A*e^4)*x/(sq
rt(c*x^2 + b*x)*c^2) - 2/3*(3*B*d^2*e^2 + 2*A*d*e^3)*b*x/((c*x^2 + b*x)^(3/
2)*c^2) - 4/3*(2*B*d^3*e + 3*A*d^2*e^2)*x/((c*x^2 + b*x)^(3/2)*c) + 4/3*(3*
B*d^2*e^2 + 2*A*d*e^3)*x/(sqrt(c*x^2 + b*x)*b*c) - 16/3*(B*d^4 + 4*A*d^3*e)
*c*x/(sqrt(c*x^2 + b*x)*b^3) + (4*B*d*e^3 + A*e^4)*log(2*c*x + b + 2*sqrt(c
*x^2 + b*x)*sqrt(c))/c^(5/2) - 8/3*(B*d^4 + 4*A*d^3*e)/(sqrt(c*x^2 + b*x)*b
^2) + 2/3*(3*B*d^2*e^2 + 2*A*d*e^3)/(sqrt(c*x^2 + b*x)*c^2) - 2/3*(4*B*d*e^
3 + A*e^4)*sqrt(c*x^2 + b*x)/(b*c^2) + 4/3*(2*B*d^3*e + 3*A*d^2*e^2)/(sqrt(
c*x^2 + b*x)*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^4}{\left(c\,x^2+b\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^4}{(x(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4/(x*(b + c*x))**(5/2), x)
```

3.1207 $\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=220

$$-\frac{2(d+ex)^2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(bcd^2\left(-4bc(2Ae+Bd)+8Ac^2d+b^2Be\right)+x\left(2b^2\right.\right.}{}$$

```
[Out] -2/3*(e*x+d)^2*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b
*x)^(3/2)+2*B*e^3*arctanh(x*c^(1/2)/(c*x^2+b*x)^(1/2))/c^(5/2)+2/3*(b*c*d^2
*(8*A*c^2*d+b^2*B*e-4*b*c*(2*A*e+B*d))+(16*A*c^4*d^3+2*b^3*B*c*d*e^2-3*b^4*
B*e^3-8*b*c^3*d^2*(3*A*e+B*d)+2*b^2*c^2*d*e*(4*A*e+3*B*d))*x)/b^4/c^2/(c*x^
2+b*x)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {818, 777, 620, 206}

$$\frac{2\left(x\left(2b^2c^2de(4Ae+3Bd)-8bc^3d^2(3Ae+Bd)+16Ac^4d^3+2b^3Bcde^2-3b^4Be^3\right)+bcd^2\left(-4bc(2Ae+Bd)+8\right.\right.}{3b^4c^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b
^2*c*(b*x + c*x^2)^(3/2)) + (2*(b*c*d^2*(8*A*c^2*d + b^2*B*e - 4*b*c*(B*d +
 2*A*e)) + (16*A*c^4*d^3 + 2*b^3*B*c*d*e^2 - 3*b^4*B*e^3 - 8*b*c^3*d^2*(B*d
 + 3*A*e) + 2*b^2*c^2*d*e*(3*B*d + 4*A*e))*x))/(3*b^4*c^2*Sqrt[b*x + c*x^2]
) + (2*B*e^3*ArcTanh[(Sqrt[c]*x)/Sqrt[b*x + c*x^2]])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 620

```
Int[1/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[Int[1/(1
- c*x^2), x], x, x/Sqrt[b*x + c*x^2]], x] /; FreeQ[{b, c}, x]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\int \frac{(d+ex)\left(-\frac{1}{2}d\left(8Ac^2d+b^2Be-4bc(\right.\right.}{\left(bx+cx^2\right)^{3/}}}{3b^2c}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\right.\right.}{}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\right.\right.}{}$$

$$= -\frac{2(d+ex)^2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(bcd^2\left(8Ac^2d+b^2Be-4b\right.\right.}{}$$

Mathematica [A] time = 5.48, size = 199, normalized size = 0.90

$$\frac{x^{5/2}\left(\frac{2Be^3(b+cx)^{5/2}\log\left(\sqrt{c}\sqrt{b+cx}+c\sqrt{x}\right)}{c^{5/2}}-\frac{2(b+cx)\left(x^2(b+cx)(cd-be)^2\left(bc(5Bd-Ae)-8Ac^2d+4b^2Be\right)+c^2d^2x(b+cx)^2(9Abe-8Acd+3bBd)+bx^2(bB-A\right.}{3b^4c^2x^{3/2}}\right.}{(x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (x^(5/2)*((-2*(b + c*x)*(b*(b*B - A*c)*(c*d - b*e)^3*x^2 + (c*d - b*e)^2*(-
8*A*c^2*d + 4*b^2*B*e + b*c*(5*B*d - A*e))*x^2*(b + c*x) + A*b*c^2*d^3*(b +
 c*x)^2 + c^2*d^2*x*(3*b*B*d - 8*A*c*d + 9*A*b*e)*x*(b + c*x)^2))/(3*b^4*c^2*
x^(3/2)) + (2*B*e^3*(b + c*x)^(5/2)*Log[c*Sqrt[x] + Sqrt[c]*Sqrt[b + c*x]])
/c^(5/2)))/(x*(b + c*x))^(5/2)
```

fricas [A] time = 1.00, size = 671, normalized size = 3.05

$$\left[\frac{3\left(Bb^4c^2e^3x^4+2\,Bb^5ce^3x^3+Bb^6e^3x^2\right)\sqrt{c}\,\log\left(2\,cx+b+2\,\sqrt{cx^2+bx}\,\sqrt{c}\right)-2\left(Ab^3c^3d^3+\left(8\left(Bbc^5-2\,Ac^6\right)d^3-\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*(B*b^4*c^2*e^3*x^4 + 2*B*b^5*c*e^3*x^3 + B*b^6*e^3*x^2)*sqrt(c)*log
(2*c*x + b + 2*sqrt(c*x^2 + b*x)*sqrt(c)) - 2*(A*b^3*c^3*d^3 + (8*(B*b*c^5
- 2*A*c^6)*d^3 - 6*(B*b^2*c^4 - 4*A*b*c^5)*d^2*e - 3*(B*b^3*c^3 + 2*A*b^2*c
^4)*d*e^2 + (4*B*b^4*c^2 - A*b^3*c^3)*e^3)*x^3 - 3*(3*A*b^3*c^3*d*e^2 - B*b
^5*c*e^3 - 4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 4*A*b^2*c^4)*d^2*
e)*x^2 + 3*(3*A*b^3*c^3*d^2*e + (B*b^3*c^3 - 2*A*b^2*c^4)*d^3)*x)*sqrt(c*x^
2 + b*x))/(b^4*c^5*x^4 + 2*b^5*c^4*x^3 + b^6*c^3*x^2), -2/3*(3*(B*b^4*c^2*e
^3*x^4 + 2*B*b^5*c*e^3*x^3 + B*b^6*e^3*x^2)*sqrt(-c)*arctan(sqrt(c*x^2 + b*
x)*sqrt(-c)/(c*x)) + (A*b^3*c^3*d^3 + (8*(B*b*c^5 - 2*A*c^6)*d^3 - 6*(B*b^2
*c^4 - 4*A*b*c^5)*d^2*e - 3*(B*b^3*c^3 + 2*A*b^2*c^4)*d*e^2 + (4*B*b^4*c^2
- A*b^3*c^3)*e^3)*x^3 - 3*(3*A*b^3*c^3*d*e^2 - B*b^5*c*e^3 - 4*(B*b^2*c^4 -
 2*A*b*c^5)*d^3 + 3*(B*b^3*c^3 - 4*A*b^2*c^4)*d^2*e)*x^2 + 3*(3*A*b^3*c^3*d
^2*e + (B*b^3*c^3 - 2*A*b^2*c^4)*d^3)*x)*sqrt(c*x^2 + b*x))/(b^4*c^5*x^4 +
2*b^5*c^4*x^3 + b^6*c^3*x^2)]
```

giac [**A**] time = 0.31, size = 289, normalized size = 1.31

$$-\frac{Be^3\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}-\frac{2\left(\frac{Ad^3}{b}+\left(x\left(\frac{(8\,Bbc^4d^3-16\,Ac^5d^3-6\,Bb^2c^3d^2e+24\,Abc^4d^2e-3\,Bb^3c^2de^2-6\,Ab^2c^3de}{b^4c^2}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -B*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x))*sqrt(c) - b))/c^(5/2) - 2
/3*(A*d^3/b + (x*((8*B*b*c^4*d^3 - 16*A*c^5*d^3 - 6*B*b^2*c^3*d^2*e + 24*A*
b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 - 6*A*b^2*c^3*d*e^2 + 4*B*b^4*c*e^3 - A*b^3
*c^2*e^3)*x/(b^4*c^2) + 3*(4*B*b^2*c^3*d^3 - 8*A*b*c^4*d^3 - 3*B*b^3*c^2*d^
2*e + 12*A*b^2*c^3*d^2*e - 3*A*b^3*c^2*d*e^2 + B*b^5*e^3)/(b^4*c^2)) + 3*(B
*b^3*c^2*d^3 - 2*A*b^2*c^3*d^3 + 3*A*b^3*c^2*d^2*e)/(b^4*c^2))*x)/(c*x^2 +
b*x)^(3/2)
```

maple [**B**] time = 0.06, size = 680, normalized size = 3.09

$$-\frac{B\,e^3x^3}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}c}-\frac{A\,e^3x^2}{\left(c\,x^2+bx\right)^{\frac{3}{2}}c}+\frac{Bb\,e^3x^2}{2\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2}-\frac{3Bd\,e^2x^2}{\left(c\,x^2+bx\right)^{\frac{3}{2}}c}-\frac{Ab\,e^3x}{3\left(c\,x^2+bx\right)^{\frac{3}{2}}c^2}+\frac{2A\,d^2ex}{\left(c\,x^2+bx\right)^{\frac{3}{2}}b}-\frac{4A}{3\left(c\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3/b/c/(c*x^2+b*x)^(1/2)*x*A*e^3-2/c/(c*x^2+b*x)^(3/2)*x*B*d^2*e-2/c/(c*x^
2+b*x)^(3/2)*x*A*d*e^2+4/b^2/(c*x^2+b*x)^(1/2)*x*A*d*e^2+2/b/c/(c*x^2+b*x)^
(1/2)*A*d*e^2+2/b/c/(c*x^2+b*x)^(1/2)*B*d^2*e+4/b^2/(c*x^2+b*x)^(1/2)*x*B*d
^2*e-b/c^2/(c*x^2+b*x)^(3/2)*x*B*d*e^2+2/b/c/(c*x^2+b*x)^(1/2)*x*B*d*e^2-16
/b^3*c/(c*x^2+b*x)^(1/2)*x*A*d^2*e-x^2/c/(c*x^2+b*x)^(3/2)*A*e^3+16/3*A*d^3
*c/b^3/(c*x^2+b*x)^(1/2)-1/3*B*e^3*x^3/c/(c*x^2+b*x)^(3/2)-2/3*A*d^3/b/(c*x
^2+b*x)^(3/2)-8/3/b^2/(c*x^2+b*x)^(1/2)*B*d^3+1/3/c^2/(c*x^2+b*x)^(1/2)*A*e
^3+B*e^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x)^(1/2))-1/6*B*e^3*b/c^3/
(c*x^2+b*x)^(1/2)-7/3*B*e^3/c^2/(c*x^2+b*x)^(1/2)*x+1/c^2/(c*x^2+b*x)^(1/2)
*B*d*e^2+2/3/b/(c*x^2+b*x)^(3/2)*x*B*d^3-8/b^2/(c*x^2+b*x)^(1/2)*A*d^2*e-3*
x^2/c/(c*x^2+b*x)^(3/2)*B*d*e^2-1/3*b/c^2/(c*x^2+b*x)^(3/2)*x*A*e^3+1/6*B*e
^3*b^2/c^3/(c*x^2+b*x)^(3/2)*x+1/2*B*e^3*b/c^2*x^2/(c*x^2+b*x)^(3/2)-16/3/b
^3*c/(c*x^2+b*x)^(1/2)*x*B*d^3+2/b/(c*x^2+b*x)^(3/2)*x*A*d^2*e-4/3*A*d^3/b^
2/(c*x^2+b*x)^(3/2)*c*x+32/3*A*d^3*c^2/b^4/(c*x^2+b*x)^(1/2)*x
```

maxima [**B**] time = 0.72, size = 550, normalized size = 2.50

$$-\frac{1}{3}\,Be^3x\left(\frac{3\,x^2}{\left(cx^2+bx\right)^{\frac{3}{2}}c}+\frac{bx}{\left(cx^2+bx\right)^{\frac{3}{2}}c^2}-\frac{2\,x}{\sqrt{cx^2+bx}\,bc}-\frac{1}{\sqrt{cx^2+bx}\,c^2}\right)-\frac{4\,Acd^3x}{3\left(cx^2+bx\right)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2d^3x}{3\sqrt{cx^2+bx}\,b^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B*e^3*x*(3*x^2/((c*x^2 + b*x)^(3/2)*c) + b*x/((c*x^2 + b*x)^(3/2)*c^2)
 - 2*x/(sqrt(c*x^2 + b*x)*b*c) - 1/(sqrt(c*x^2 + b*x)*c^2)) - 4/3*A*c*d^3*x
/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*d^3*x/(sqrt(c*x^2 + b*x)*b^4) - 4/3
*B*e^3*x/(sqrt(c*x^2 + b*x)*c^2) + B*e^3*log(2*c*x + b + 2*sqrt(c*x^2 + b*x
)*sqrt(c))/c^(5/2) - 2/3*A*d^3/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d^3/(sqrt
(c*x^2 + b*x)*b^3) - 2/3*sqrt(c*x^2 + b*x)*B*e^3/(b*c^2) - (3*B*d*e^2 + A*e
^3)*x^2/((c*x^2 + b*x)^(3/2)*c) + 4*(B*d^2*e + A*d*e^2)*x/(sqrt(c*x^2 + b*x
)*b^2) + 2/3*(B*d^3 + 3*A*d^2*e)*x/((c*x^2 + b*x)^(3/2)*b) - 1/3*(3*B*d*e^2
 + A*e^3)*b*x/((c*x^2 + b*x)^(3/2)*c^2) - 2*(B*d^2*e + A*d*e^2)*x/((c*x^2 +
 b*x)^(3/2)*c) + 2/3*(3*B*d*e^2 + A*e^3)*x/(sqrt(c*x^2 + b*x)*b*c) - 16/3*(
B*d^3 + 3*A*d^2*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d^3 + 3*A*d^2*e)/(s
qrt(c*x^2 + b*x)*b^2) + 1/3*(3*B*d*e^2 + A*e^3)/(sqrt(c*x^2 + b*x)*c^2) + 2
*(B*d^2*e + A*d*e^2)/(sqrt(c*x^2 + b*x)*b*c)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(b*x + c*x^2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,(d + ex)^{3}}{(x\,(b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/(x*(b + c*x))**(5/2), x)
```

3.1208 $\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=92

$$-\frac{8(x(2cd-be)+bd)(Abe-2Acd+bBd)}{3b^4\sqrt{bx+cx^2}}-\frac{2(d+ex)^2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b-(-2*A*c+B*b)*x)*(e*x+d)^2/b^2/(c*x^2+b*x)^(3/2)-8/3*(A*b*e-2*A*c*
d+B*b*d)*(b*d+(-b*e+2*c*d)*x)/b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {804, 636}

$$-\frac{2(d+ex)^2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(x(2cd-be)+bd)(Abe-2Acd+bBd)}{3b^4\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x)*(d + e*x)^2)/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(
b*B*d - 2*A*c*d + A*b*e)*(b*d + (2*c*d - b*e)*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)(d+ex)^2}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bBd-2Acd+Abe))\int \frac{d+ex}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2}\\ &= -\frac{2(Ab-(bB-2Ac)x)(d+ex)^2}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bBd-2Acd+Abe)(bd+(2cd-be)x)}{3b^4\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 149, normalized size = 1.62

$$\frac{2 (A (-(b^3 (d^2+6dex-3e^2x^2))+2b^2cx (3d^2-12dex+e^2x^2)+8bc^2dx^2(3d-2ex)+16c^3d^2x^3)+bBx (b^2 (-}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(A*(16*c^3*d^2*x^3 + 8*b*c^2*d*x^2*(3*d - 2*e*x) - b^3*(d^2 + 6*d*e*x -
3*e^2*x^2) + 2*b^2*c*x*(3*d^2 - 12*d*e*x + e^2*x^2)) + b*B*x*(-8*c^2*d^2*x^
2 + 4*b*c*d*x*(-3*d + e*x) + b^2*(-3*d^2 + 6*d*e*x + e^2*x^2))))/(3*b^4*(x*
(b + c*x))^(3/2))
```

fricas [B] time = 1.01, size = 189, normalized size = 2.05

$$-\frac{2\,(Ab^3d^2 + (8\,(Bbc^2 - 2\,Ac^3)d^2 - 4\,(Bb^2c - 4\,Abc^2)de - (Bb^3 + 2\,Ab^2c)e^2)x^3 - 3\,(Ab^3e^2 - 4\,(Bb^2c - 2\,Abc^2)d^2}{3\,(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3*d^2 + (8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(B*b^2*c - 4*A*b*c^2)*d*e
- (B*b^3 + 2*A*b^2*c)*e^2)*x^3 - 3*(A*b^3*e^2 - 4*(B*b^2*c - 2*A*b*c^2)*d^2
 + 2*(B*b^3 - 4*A*b^2*c)*d*e)*x^2 + 3*(2*A*b^3*d*e + (B*b^3 - 2*A*b^2*c)*d^
2)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x^2)
```

giac [B] time = 0.29, size = 176, normalized size = 1.91

$$-\frac{2\left(\frac{Ad^2}{b} + \left(x\left(\frac{(8\,Bbc^2d^2 - 16\,Ac^3d^2 - 4\,Bb^2cde + 16\,Abc^2de - Bb^3e^2 - 2\,Ab^2ce^2)x}{b^4} + \frac{3\,(4\,Bb^2cd^2 - 8\,Abc^2d^2 - 2\,Bb^3de + 8\,Ab^2cde - Ab^3e^2)}{b^4}\right) + \frac{3\,(Bb^3d^2 -}{}\right.\right.}{3\,(cx^2 + bx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(A*d^2/b + (x*((8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 4*B*b^2*c*d*e + 16*A*b*
c^2*d*e - B*b^3*e^2 - 2*A*b^2*c*e^2)*x/b^4 + 3*(4*B*b^2*c*d^2 - 8*A*b*c^2*d
^2 - 2*B*b^3*d*e + 8*A*b^2*c*d*e - A*b^3*e^2)/b^4) + 3*(B*b^3*d^2 - 2*A*b^2
*c*d^2 + 2*A*b^3*d*e)/b^4)*x)/(c*x^2 + b*x)^(3/2)
```

maple [B] time = 0.05, size = 197, normalized size = 2.14

$$-\frac{2\,(cx + b)\,(-2A\,b^2c\,e^2x^3 + 16Ab\,c^2de\,x^3 - 16A\,c^3d^2x^3 - B\,b^3e^2x^3 - 4B\,b^2cde\,x^3 + 8Bb\,c^2d^2x^3 - 3A\,b^3e^2x^2 + 24A}{3\,(c\,x^2 + bx)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-2*A*b^2*c*e^2*x^3+16*A*b*c^2*d*e*x^3-16*A*c^3*d^2*x^3-B*b^
3*e^2*x^3-4*B*b^2*c*d*e*x^3+8*B*b*c^2*d^2*x^3-3*A*b^3*e^2*x^2+24*A*b^2*c*d*
e*x^2-24*A*b*c^2*d^2*x^2-6*B*b^3*d*e*x^2+12*B*b^2*c*d^2*x^2+6*A*b^3*d*e*x-6
*A*b^2*c*d^2*x+3*B*b^3*d^2*x+A*b^3*d^2)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.52, size = 347, normalized size = 3.77

$$-\frac{Be^2x^2}{(cx^2 + bx)^{\frac{3}{2}}c} - \frac{4\,Acd^2x}{3\,(cx^2 + bx)^{\frac{3}{2}}b^2} + \frac{32\,Ac^2d^2x}{3\,\sqrt{cx^2 + bx}\,b^4} - \frac{Bbe^2x}{3\,(cx^2 + bx)^{\frac{3}{2}}c^2} + \frac{2\,Be^2x}{3\,\sqrt{cx^2 + bx}\,bc} - \frac{2\,Ad^2}{3\,(cx^2 + bx)^{\frac{3}{2}}b} + \frac{16\,Acd^2}{3\,\sqrt{cx^2 + b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -B*e^2*x^2/((c*x^2 + b*x)^(3/2)*c) - 4/3*A*c*d^2*x/((c*x^2 + b*x)^(3/2)*b^2
) + 32/3*A*c^2*d^2*x/(sqrt(c*x^2 + b*x)*b^4) - 1/3*B*b*e^2*x/((c*x^2 + b*x)
^(3/2)*c^2) + 2/3*B*e^2*x/(sqrt(c*x^2 + b*x)*b*c) - 2/3*A*d^2/((c*x^2 + b*x
)^(3/2)*b) + 16/3*A*c*d^2/(sqrt(c*x^2 + b*x)*b^3) + 1/3*B*e^2/(sqrt(c*x^2 +
 b*x)*c^2) + 4/3*(2*B*d*e + A*e^2)*x/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(B*d^2 +
 2*A*d*e)*x/((c*x^2 + b*x)^(3/2)*b) - 2/3*(2*B*d*e + A*e^2)*x/((c*x^2 + b*x
)^(3/2)*c) - 16/3*(B*d^2 + 2*A*d*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d^
2 + 2*A*d*e)/(sqrt(c*x^2 + b*x)*b^2) + 2/3*(2*B*d*e + A*e^2)/(sqrt(c*x^2 +
b*x)*b*c)
```

mupad [B] time = 1.91, size = 190, normalized size = 2.07

$$\frac{2\,\bigl(-3\,B\,b^3\,d^2\,x-A\,b^3\,d^2+6\,B\,b^3\,d\,e\,x^2-6\,A\,b^3\,d\,e\,x+B\,b^3\,e^2\,x^3+3\,A\,b^3\,e^2\,x^2-12\,B\,b^2\,c\,d^2\,x^2+6\,A\,b^2\,c\,d^2\,x}{3\,b^4\,\bigl(c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(3*A*b^3*e^2*x^2 - 3*B*b^3*d^2*x - A*b^3*d^2 + 16*A*c^3*d^2*x^3 + B*b^3*
e^2*x^3 + 6*A*b^2*c*d^2*x + 6*B*b^3*d*e*x^2 + 24*A*b*c^2*d^2*x^2 - 12*B*b^2
*c*d^2*x^2 + 2*A*b^2*c*e^2*x^3 - 8*B*b*c^2*d^2*x^3 - 6*A*b^3*d*e*x - 24*A*b
^2*c*d*e*x^2 - 16*A*b*c^2*d*e*x^3 + 4*B*b^2*c*d*e*x^3))/(3*b^4*(b*x + c*x^2
)^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^2}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(x*(b + c*x))**(5/2), x)
```

3.1209 $\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=111

$$\frac{2(b+2cx)\left(-4bc(Ae+Bd)+8Ac^2d+b^2Be\right)}{3b^4c\sqrt{bx+cx^2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b*x)^(3/2)+
2/3*(8*A*c^2*d+b^2*B*e-4*b*c*(A*e+B*d))*(2*c*x+b)/b^4/c/(c*x^2+b*x)^(1/2)
```

Rubi [**A**] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(-4bc(Ae+Bd)+8Ac^2d+b^2Be\right)}{3b^4c\sqrt{bx+cx^2}}-\frac{2\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3*b^2*c*(b*x +
c*x^2)^(3/2)) + (2*(8*A*c^2*d + b^2*B*e - 4*b*c*(B*d + A*e))*(b + 2*c*x))/(
3*b^4*c*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}-\frac{\left(8Ac^2d+b^2Be-4bc(Bd+Ae)\right)\int}{3b^2c}\\ &= -\frac{2\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\left(8Ac^2d+b^2Be-4bc(Bd+Ae)\right)(b\,+}{3b^4c\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 107, normalized size = 0.96

$$-\frac{2\left(A\left(b^3(d+3ex)-6b^2cx(d-2ex)+8bc^2x^2(ex-3d)-16c^3dx^3\right)+bBx\left(3b^2(d-ex)-2bcx(ex-6d)+8c^2dx^2\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(8*c^2*d*x^2 + 3*b^2*(d - e*x) - 2*b*c*x*(-6*d + e*x)) + A*(-16*
c^3*d*x^3 - 6*b^2*c*x*(d - 2*e*x) + 8*b*c^2*x^2*(-3*d + e*x) + b^3*(d + 3*e
*x))))/(3*b^4*(x*(b + c*x))^(3/2))
```

fricas [A]   time = 0.58, size = 152, normalized size = 1.37

$$-\frac{2\,(Ab^3d + 2\,(4\,(Bbc^2 - 2\,Ac^3)d - (Bb^2c - 4\,Abc^2)e)x^3 + 3\,(4\,(Bb^2c - 2\,Abc^2)d - (Bb^3 - 4\,Ab^2c)e)x^2 + 3\,(A}{3\,(b^4c^2x^4 + 2\,b^5cx^3 + b^6x^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3*d + 2*(4*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - 4*A*b*c^2)*e)*x^3 +
 3*(4*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - 4*A*b^2*c)*e)*x^2 + 3*(A*b^3*e + (
B*b^3 - 2*A*b^2*c)*d)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6
*x^2)
```

giac [A]   time = 0.30, size = 132, normalized size = 1.19

$$-\frac{2\left(\left(x\left(\frac{2\,(4\,Bbc^2d-8\,Ac^3d-Bb^2ce+4\,Abc^2e)x}{b^4}+\frac{3\,(4\,Bb^2cd-8\,Abc^2d-Bb^3e+4\,Ab^2ce)}{b^4}\right)+\frac{3\,(Bb^3d-2\,Ab^2cd+Ab^3e)}{b^4}\right)x+\frac{Ad}{b}\right)}{3\,(cx^2+bx)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((x*(2*(4*B*b*c^2*d - 8*A*c^3*d - B*b^2*c*e + 4*A*b*c^2*e)*x/b^4 + 3*(
4*B*b^2*c*d - 8*A*b*c^2*d - B*b^3*e + 4*A*b^2*c*e)/b^4) + 3*(B*b^3*d - 2*A*
b^2*c*d + A*b^3*e)/b^4)*x + A*d/b)/(c*x^2 + b*x)^(3/2)
```

maple [A]   time = 0.05, size = 141, normalized size = 1.27

$$-\frac{2\,(cx+b)\,(8Ab\,c^2e\,x^3-16A\,c^3d\,x^3-2B\,b^2ce\,x^3+8Bb\,c^2d\,x^3+12A\,b^2ce\,x^2-24Ab\,c^2d\,x^2-3B\,b^3e\,x^2+12B}{3\,(c\,x^2+bx)^{\frac{5}{2}}\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(8*A*b*c^2*e*x^3-16*A*c^3*d*x^3-2*B*b^2*c*e*x^3+8*B*b*c^2*d*
x^3+12*A*b^2*c*e*x^2-24*A*b*c^2*d*x^2-3*B*b^3*e*x^2+12*B*b^2*c*d*x^2+3*A*b^
3*e*x-6*A*b^2*c*d*x+3*B*b^3*d*x+A*b^3*d)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B]   time = 0.54, size = 211, normalized size = 1.90

$$-\frac{4\,Acdx}{3\,(cx^2+bx)^{\frac{3}{2}}b^2}+\frac{32\,Ac^2dx}{3\,\sqrt{cx^2+bx}\,b^4}+\frac{4\,Bex}{3\,\sqrt{cx^2+bx}\,b^2}-\frac{2\,Bex}{3\,(cx^2+bx)^{\frac{3}{2}}c}-\frac{2\,Ad}{3\,(cx^2+bx)^{\frac{3}{2}}b}+\frac{16\,Acd}{3\,\sqrt{cx^2+bx}\,b^3}+\frac{2}{3\,\sqrt{cx^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/3*A*c*d*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*d*x/(sqrt(c*x^2 + b*x)*
b^4) + 4/3*B*e*x/(sqrt(c*x^2 + b*x)*b^2) - 2/3*B*e*x/((c*x^2 + b*x)^(3/2)*c
) - 2/3*A*d/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c*d/(sqrt(c*x^2 + b*x)*b^3) +
2/3*B*e/(sqrt(c*x^2 + b*x)*b*c) + 2/3*(B*d + A*e)*x/((c*x^2 + b*x)^(3/2)*b)
 - 16/3*(B*d + A*e)*c*x/(sqrt(c*x^2 + b*x)*b^3) - 8/3*(B*d + A*e)/(sqrt(c*x
^2 + b*x)*b^2)
```

mupad [B]   time = 1.73, size = 134, normalized size = 1.21

$$-\frac{2\left(A\,b^3\,d+3\,A\,b^3\,e\,x+3\,B\,b^3\,d\,x-16\,A\,c^3\,d\,x^3-3\,B\,b^3\,e\,x^2-24\,A\,b\,c^2\,d\,x^2+12\,A\,b^2\,c\,e\,x^2+12\,B\,b^2\,c\,d\,x^2+8\right.}{3\,b^4\,{\left(c\,x^2+b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d + 3*A*b^3*e*x + 3*B*b^3*d*x - 16*A*c^3*d*x^3 - 3*B*b^3*e*x^2 -
 24*A*b*c^2*d*x^2 + 12*A*b^2*c*e*x^2 + 12*B*b^2*c*d*x^2 + 8*A*b*c^2*e*x^3 +
 8*B*b*c^2*d*x^3 - 2*B*b^2*c*e*x^3 - 6*A*b^2*c*d*x))/(3*b^4*(b*x + c*x^2)^(
3/2))
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{(x\,(b+cx))^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(x*(b + c*x))**(5/2), x)
```

3.1210 $\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=70

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b-(-2*A*c+B*b)*x)/b^2/(c*x^2+b*x)^(3/2)-8/3*(-2*A*c+B*b)*(2*c*x+b)/
b^4/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.105, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3b^4\sqrt{bx+cx^2}}-\frac{2(Ab-x(bB-2Ac))}{3b^2\left(bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x))/(3*b^2*(b*x + c*x^2)^(3/2)) - (8*(b*B - 2*A*c)
*(b + 2*c*x))/(3*b^4*Sqrt[b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(bx+cx^2\right)^{3/2}}\,dx}{3b^2}\\ &= -\frac{2(Ab-(bB-2Ac)x)}{3b^2\left(bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3b^4\sqrt{bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 1.03

$$-\frac{2\left(A\left(b^3-6b^2cx-24bc^2x^2-16c^3x^3\right)+bBx\left(3b^2+12bcx+8c^2x^2\right)\right)}{3b^4(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*B*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2) + A*(b^3 - 6*b^2*c*x - 24*b*c^2*x
^2 - 16*c^3*x^3)))/(3*b^4*(x*(b + c*x))^(3/2))
```

fricas [A] time = 0.67, size = 101, normalized size = 1.44

$$-\frac{2\left(Ab^{3}+8\left(Bbc^{2}-2\,Ac^{3}\right)x^{3}+12\left(Bb^{2}c-2\,Abc^{2}\right)x^{2}+3\left(Bb^{3}-2\,Ab^{2}c\right)x\right)\sqrt{cx^{2}+bx}}{3\left(b^{4}c^{2}x^{4}+2\,b^{5}cx^{3}+b^{6}x^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c^2)*x^2 + 3*
(B*b^3 - 2*A*b^2*c)*x)*sqrt(c*x^2 + b*x)/(b^4*c^2*x^4 + 2*b^5*c*x^3 + b^6*x
^2)
```

giac [A] time = 0.24, size = 82, normalized size = 1.17

$$-\frac{2\left(\left(4\,x\left(\frac{2\left(Bbc^{2}-2\,Ac^{3}\right)x}{b^{4}}+\frac{3\left(Bb^{2}c-2\,Abc^{2}\right)}{b^{4}}\right)+\frac{3\left(Bb^{3}-2\,Ab^{2}c\right)}{b^{4}}\right)x+\frac{A}{b}\right)}{3\left(cx^{2}+bx\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*x*(2*(B*b*c^2 - 2*A*c^3)*x/b^4 + 3*(B*b^2*c - 2*A*b*c^2)/b^4) + 3*
(B*b^3 - 2*A*b^2*c)/b^4)*x + A/b)/(c*x^2 + b*x)^(3/2)
```

maple [A] time = 0.05, size = 83, normalized size = 1.19

$$-\frac{2\left(cx+b\right)\left(-16A\,c^{3}x^{3}+8Bb\,c^{2}x^{3}-24Ab\,c^{2}x^{2}+12B\,b^{2}c\,x^{2}-6A\,b^{2}cx+3B\,b^{3}x+A\,b^{3}\right)x}{3\left(c\,x^{2}+bx\right)^{\frac{5}{2}}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3*(c*x+b)*x*(-16*A*c^3*x^3+8*B*b*c^2*x^3-24*A*b*c^2*x^2+12*B*b^2*c*x^2-6
*A*b^2*c*x+3*B*b^3*x+A*b^3)/b^4/(c*x^2+b*x)^(5/2)
```

maxima [B] time = 0.53, size = 130, normalized size = 1.86

$$\frac{2\,Bx}{3\left(cx^{2}+bx\right)^{\frac{3}{2}}b}-\frac{16\,Bcx}{3\,\sqrt{cx^{2}+bx}\,b^{3}}-\frac{4\,Acx}{3\left(cx^{2}+bx\right)^{\frac{3}{2}}b^{2}}+\frac{32\,Ac^{2}x}{3\,\sqrt{cx^{2}+bx}\,b^{4}}-\frac{8\,B}{3\,\sqrt{cx^{2}+bx}\,b^{2}}-\frac{2\,A}{3\left(cx^{2}+bx\right)^{\frac{3}{2}}b}+\frac{16\,Ac}{3\,\sqrt{cx^{2}+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*B*x/((c*x^2 + b*x)^(3/2)*b) - 16/3*B*c*x/(sqrt(c*x^2 + b*x)*b^3) - 4/3*
A*c*x/((c*x^2 + b*x)^(3/2)*b^2) + 32/3*A*c^2*x/(sqrt(c*x^2 + b*x)*b^4) - 8/
3*B/(sqrt(c*x^2 + b*x)*b^2) - 2/3*A/((c*x^2 + b*x)^(3/2)*b) + 16/3*A*c/(sqr
t(c*x^2 + b*x)*b^3)
```

mupad [B] time = 1.63, size = 76, normalized size = 1.09

$$-\frac{2\,\left(3\,B\,b^{3}\,x+A\,b^{3}+12\,B\,b^{2}\,c\,x^{2}-6\,A\,b^{2}\,c\,x+8\,B\,b\,c^{2}\,x^{3}-24\,A\,b\,c^{2}\,x^{2}-16\,A\,c^{3}\,x^{3}\right)}{3\,b^{4}\,{\left(c\,x^{2}+b\,x\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 3*B*b^3*x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B
*b^2*c*x^2 + 8*B*b*c^2*x^3))/(3*b^4*(b*x + c*x^2)^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(x(b + cx))^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/(x*(b + c*x))**(5/2), x)
```

3.1211 $\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=287

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(cd-be)}+\frac{2\left(b(cd-be)\left(3b^2e(Bd-Ae)-4bcd(Ae+Bd)+8Ac^2d^2\right)+cx\left(-3b^3\right.\right.}{3b^4d^2\sqrt{bx+c}}$$

```
[Out] -2/3*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(c*x^2+b*x
)^(3/2)-e^3*(-A*e+B*d)*arctanh(1/2*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^
(1/2)/(c*x^2+b*x)^(1/2))/d^(5/2)/(-b*e+c*d)^(5/2)+2/3*(b*(-b*e+c*d)*(8*A*c^
2*d^2+3*b^2*e*(-A*e+B*d)-4*b*c*d*(A*e+B*d))+c*(16*A*c^3*d^3-3*b^3*e^2*(-A*e
+B*d)+2*b^2*c*d*e*(A*e+7*B*d)-8*b*c^2*d^2*(3*A*e+B*d))*x)/b^4/d^2/(-b*e+c*d
)^2/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 12, 724, 206}

$$\frac{2\left(cx\left(2b^2cde(Ae+7Bd)-3b^3e^2(Bd-Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)+b(cd-be)\left(3b^2e(Bd-Ae)-4bcd(A\right.\right.}{3b^4d^2\sqrt{bx+cx^2}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2*d*(c*d - b*e)
*(b*x + c*x^2)^(3/2)) + (2*(b*(c*d - b*e)*(8*A*c^2*d^2 + 3*b^2*e*(B*d - A*e
) - 4*b*c*d*(B*d + A*e)) + c*(16*A*c^3*d^3 - 3*b^3*e^2*(B*d - A*e) + 2*b^2*
c*d*e*(7*B*d + A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*x))/(3*b^4*d^2*(c*d - b*e)
^2*Sqrt[b*x + c*x^2]) - (e^3*(B*d - A*e)*ArcTanh[(b*d + (2*c*d - b*e)*x)/(2
*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2])])/(d^(5/2)*(c*d - b*e)^(5/2))
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(8Ac^2d^2+3b^2e(Bd-Ae)-4bcd(Bd+Ae)\right.}{(d+ex)\left(bx+cx^2\right)^{3/}}}{3b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\left(b(cd-be)\left(8Ac^2d^2+3b^2e(Bd-\right.\right.}{}$$

Mathematica [A] time = 0.77, size = 277, normalized size = 0.97

$$\frac{2\left(-\frac{3cx^2\left(3b^2e(Bd-Ae)-4bcd(Ae+Bd)+8Ac^2d^2\right)}{b^2d(be-cd)} + \frac{3x^{3/2}(b+cx)\left(3b^4e^3\sqrt{b+cx}\,(Ae-Bd)\tanh^{-1}\left(\frac{\sqrt{x}\,\sqrt{cd-be}}{\sqrt{d}\,\sqrt{b+cx}}\right)+c\sqrt{d}\,\sqrt{x}\,\sqrt{cd-be}\left(3b^3e^2(Ae-Bd)+2b^2\right.\right.}{b^3d^{3/2}(cd-be)^{5/2}}\right.}{9bd(x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-3*A + 9*(-B + (2*A*c)/b + (A*e)/d)*x - (3*c*(8*A*c^2*d^2 + 3*b^2*e*(B*
d - A*e) - 4*b*c*d*(B*d + A*e))*x^2)/(b^2*d*(-(c*d) + b*e)) + (3*x^(3/2)*(b
 + c*x)*(c*Sqrt[d]*Sqrt[c*d - b*e]*(16*A*c^3*d^3 + 3*b^3*e^2*(-(B*d) + A*e)
 + 2*b^2*c*d*e*(7*B*d + A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[x] + 3*b^4*e
^3*(-(B*d) + A*e)*Sqrt[b + c*x]*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*
Sqrt[b + c*x])]))/(b^3*d^(3/2)*(c*d - b*e)^(5/2))))/(9*b*d*(x*(b + c*x))^(3
/2))
```

fricas [B] time = 0.78, size = 1390, normalized size = 4.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*b^4*c^2*d*e^3 - A*b^4*c^2*e^4)*x^4 + 2*(B*b^5*c*d*e^3 - A*b^5*
c*e^4)*x^3 + (B*b^6*d*e^3 - A*b^6*e^4)*x^2)*sqrt(c*d^2 - b*d*e)*log((b*d +
(2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(
A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*c*d^3*e^2 - A*b^6*d^2*e^3 + (3*
A*b^4*c^2*d*e^4 + 8*(B*b*c^5 - 2*A*c^6)*d^5 - 2*(11*B*b^2*c^4 - 20*A*b*c^5)
*d^4*e + (17*B*b^3*c^3 - 26*A*b^2*c^4)*d^3*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*
d^2*e^3)*x^3 + 3*(2*A*b^5*c*d*e^4 + 4*(B*b^2*c^4 - 2*A*b*c^5)*d^5 - (11*B*b
^3*c^3 - 20*A*b^2*c^4)*d^4*e + (9*B*b^4*c^2 - 13*A*b^3*c^3)*d^3*e^2 - (2*B*
b^5*c + A*b^4*c^2)*d^2*e^3)*x^2 + 3*(A*b^6*d*e^4 + (B*b^3*c^3 - 2*A*b^2*c^4
)*d^5 - (3*B*b^4*c^2 - 5*A*b^3*c^3)*d^4*e + 3*(B*b^5*c - A*b^4*c^2)*d^3*e^2
 - (B*b^6 + A*b^5*c)*d^2*e^3)*x)*sqrt(c*x^2 + b*x))/((b^4*c^5*d^6 - 3*b^5*c
^4*d^5*e + 3*b^6*c^3*d^4*e^2 - b^7*c^2*d^3*e^3)*x^4 + 2*(b^5*c^4*d^6 - 3*b^
6*c^3*d^5*e + 3*b^7*c^2*d^4*e^2 - b^8*c*d^3*e^3)*x^3 + (b^6*c^3*d^6 - 3*b^7
*c^2*d^5*e + 3*b^8*c*d^4*e^2 - b^9*d^3*e^3)*x^2), -2/3*(3*((B*b^4*c^2*d*e^3
 - A*b^4*c^2*e^4)*x^4 + 2*(B*b^5*c*d*e^3 - A*b^5*c*e^4)*x^3 + (B*b^6*d*e^3
- A*b^6*e^4)*x^2)*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*
x^2 + b*x)/((c*d - b*e)*x)) + (A*b^3*c^3*d^5 - 3*A*b^4*c^2*d^4*e + 3*A*b^5*
c*d^3*e^2 - A*b^6*d^2*e^3 + (3*A*b^4*c^2*d*e^4 + 8*(B*b*c^5 - 2*A*c^6)*d^5
- 2*(11*B*b^2*c^4 - 20*A*b*c^5)*d^4*e + (17*B*b^3*c^3 - 26*A*b^2*c^4)*d^3*e
^2 - (3*B*b^4*c^2 + A*b^3*c^3)*d^2*e^3)*x^3 + 3*(2*A*b^5*c*d*e^4 + 4*(B*b^2
*c^4 - 2*A*b*c^5)*d^5 - (11*B*b^3*c^3 - 20*A*b^2*c^4)*d^4*e + (9*B*b^4*c^2
- 13*A*b^3*c^3)*d^3*e^2 - (2*B*b^5*c + A*b^4*c^2)*d^2*e^3)*x^2 + 3*(A*b^6*d
*e^4 + (B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - (3*B*b^4*c^2 - 5*A*b^3*c^3)*d^4*e +
3*(B*b^5*c - A*b^4*c^2)*d^3*e^2 - (B*b^6 + A*b^5*c)*d^2*e^3)*x)*sqrt(c*x^2
+ b*x))/((b^4*c^5*d^6 - 3*b^5*c^4*d^5*e + 3*b^6*c^3*d^4*e^2 - b^7*c^2*d^3*e
^3)*x^4 + 2*(b^5*c^4*d^6 - 3*b^6*c^3*d^5*e + 3*b^7*c^2*d^4*e^2 - b^8*c*d^3*
e^3)*x^3 + (b^6*c^3*d^6 - 3*b^7*c^2*d^5*e + 3*b^8*c*d^4*e^2 - b^9*d^3*e^3)*
x^2)]
```

giac [**B**] time = 0.28, size = 853, normalized size = 2.97

$$\frac{2\left(Bde^3 - Ae^4\right)\arctan\left(\frac{\left(\sqrt{c}\,x-\sqrt{cx^2+bx}\right)e+\sqrt{c}\,d}{\sqrt{-cd^2+bde}}\right)}{\left(c^2d^4 - 2\,bcd^3e + b^2d^2e^2\right)\sqrt{-cd^2 + bde}} - \frac{2\left(\left(\left(\frac{(8\,Bbc^6d^{10}-16\,Ac^7d^{10}-30\,Bb^2c^5d^9e+56\,Abc^6d^9e+39\,Bb^3c^4d^8e^2-66\,Ab^2c^5d^8e^2-20}{b^4c^4d^{11}-4\,b^5c^3d^{10}e+6\,b^6c^2d^9e^2-}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 2*(B*d*e^3 - A*e^4)*arctan(((sqrt(c)*x - sqrt(c*x^2 + b*x))*e + sqrt(c)*d)/
sqrt(-c*d^2 + b*d*e))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*sqrt(-c*d^2 +
b*d*e)) - 2/3*((((8*B*b*c^6*d^10 - 16*A*c^7*d^10 - 30*B*b^2*c^5*d^9*e + 56*
A*b*c^6*d^9*e + 39*B*b^3*c^4*d^8*e^2 - 66*A*b^2*c^5*d^8*e^2 - 20*B*b^4*c^3*
d^7*e^3 + 25*A*b^3*c^4*d^7*e^3 + 3*B*b^5*c^2*d^6*e^4 + 4*A*b^4*c^3*d^6*e^4
- 3*A*b^5*c^2*d^5*e^5)*x/(b^4*c^4*d^11 - 4*b^5*c^3*d^10*e + 6*b^6*c^2*d^9*e
^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4) + 3*(4*B*b^2*c^5*d^10 - 8*A*b*c^6*d^10
- 15*B*b^3*c^4*d^9*e + 28*A*b^2*c^5*d^9*e + 20*B*b^4*c^3*d^8*e^2 - 33*A*b^3
*c^4*d^8*e^2 - 11*B*b^5*c^2*d^7*e^3 + 12*A*b^4*c^3*d^7*e^3 + 2*B*b^6*c*d^6*
e^4 + 3*A*b^5*c^2*d^6*e^4 - 2*A*b^6*c*d^5*e^5)/(b^4*c^4*d^11 - 4*b^5*c^3*d^
10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4))*x + 3*(B*b^3*c^4
*d^10 - 2*A*b^2*c^5*d^10 - 4*B*b^4*c^3*d^9*e + 7*A*b^3*c^4*d^9*e + 6*B*b^5*
c^2*d^8*e^2 - 8*A*b^4*c^3*d^8*e^2 - 4*B*b^6*c*d^7*e^3 + 2*A*b^5*c^2*d^7*e^3
 + B*b^7*d^6*e^4 + 2*A*b^6*c*d^6*e^4 - A*b^7*d^5*e^5)/(b^4*c^4*d^11 - 4*b^5
*c^3*d^10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7*c*d^8*e^3 + b^8*d^7*e^4))*x + (A*b^
3*c^4*d^10 - 4*A*b^4*c^3*d^9*e + 6*A*b^5*c^2*d^8*e^2 - 4*A*b^6*c*d^7*e^3 +
A*b^7*d^6*e^4)/(b^4*c^4*d^11 - 4*b^5*c^3*d^10*e + 6*b^6*c^2*d^9*e^2 - 4*b^7
*c*d^8*e^3 + b^8*d^7*e^4))/(c*x^2 + b*x)^(3/2)
```

maple [**B**] time = 0.06, size = 2000, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 32/3/e/(b*e-c*d)*c^3/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e
)^(1/2)*x*B*d+16/3*e/(b*e-c*d)/d*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(1/2)*x*A-2*e^2/(b*e-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+2*e^3/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+16/3*B/e*c/b^3/(c*x^2+b*x)^(1/2)+2/
3/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A
-2/3*B/e/b/(c*x^2+b*x)^(3/2)-8/3/(b*e-c*d)*c/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-e^3/(b*e-c*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1
/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)
*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*A+e^2/
(b*e-c*d)^2/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(
x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d
)*(x+d/e)/e)^(1/2))/(x+d/e))*B+2*e/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e
^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*c*B+32/3*B/e*c^2/b^4/(c*x^2+b*x)^(1/2)*x-4/
3*B/e/b^2/(c*x^2+b*x)^(3/2)*c*x-4/3/e/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*
d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^2*x*B*d-4*e^2/(b*e-c*d)^2/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*A-2*e^2/(b*e-c*d)
^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*B+4*e/
(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x
*c^2*B-2*e^2/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*c*A-2/3/e/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(3/2)*c*B*d+2*e^3/(b*e-c*d)^2/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2
+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c*A-2/3*e/(b*e-c*d)/d/b/((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*A-2/3*e/(b*e-c*d)/d/((x+d/e)^2*c
-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*A-16/3/(b*e-c*d)*c^2/b^3/((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+2/3/(b*e-c*d)/b/(
(x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*B-32/3/(b*e-c*
d)*c^3/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A+2/
3/(b*e-c*d)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B+4/3
/(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^
2*x*A-16/3/(b*e-c*d)*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e)^(1/2)*A+16/3/e/(b*e-c*d)*c^2/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*B*d+8/3*e/(b*e-c*d)/d*c/b^2/((x+d/e)^2*c-(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((c*d^2)/e^2
     -(b*d)/e))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{5/2}\,\left(d+e\,x\right)} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x\left(b + cx\right)\right)^{\frac{5}{2}}\left(d + ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(5/2)*(d + e*x)), x)
```

3.1212 $\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=449

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}(d+ex)(cd-be)}+\frac{2\left(b(cd-be)\left(b^2e(3Bd-5Ae)-2bcd(Ae+2Bd)+8Ac^2d^2\right)+cx\,(}{3b^4d^2\sqrt{bx+}}$$

```
[Out] -2/3*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(e*x+d)/(c
*x^2+b*x)^(3/2)-1/2*e^3*(B*d*(-3*b*e+8*c*d)-5*A*e*(-b*e+2*c*d))*arctanh(1/2
*(b*d+(-b*e+2*c*d)*x)/d^(1/2)/(-b*e+c*d)^(1/2)/(c*x^2+b*x)^(1/2))/d^(7/2)/(
-b*e+c*d)^(7/2)+2/3*(b*(-b*e+c*d)*(8*A*c^2*d^2+b^2*e*(-5*A*e+3*B*d)-2*b*c*d
*(A*e+2*B*d))+c*(16*A*c^3*d^3-b^3*e^2*(-5*A*e+3*B*d)+2*b^2*c*d*e*(-A*e+8*B*
d)-8*b*c^2*d^2*(3*A*e+B*d))*x)/b^4/d^2/(-b*e+c*d)^2/(e*x+d)/(c*x^2+b*x)^(1/
2)+1/3*e*(32*A*c^4*d^4-2*b^3*c*d*e^2*(-10*A*e+9*B*d)+3*b^4*e^3*(-5*A*e+3*B*
d)+4*b^2*c^2*d^2*e*(3*A*e+10*B*d)-16*b*c^3*d^3*(4*A*e+B*d))*(c*x^2+b*x)^(1/
2)/b^4/d^3/(-b*e+c*d)^3/(e*x+d)
```

Rubi [A] time = 0.72, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = $\{822, 806, 724, 206\}$

$$\frac{e\sqrt{bx+cx^2}\,\left(4b^2c^2d^2e(3Ae+10Bd)-2b^3cde^2(9Bd-10Ae)+3b^4e^3(3Bd-5Ae)-16bc^3d^3(4Ae+Bd)+32Ac\right.}{3b^4d^3(d+ex)(cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2*d*(c*d - b*e)
*(d + e*x)*(b*x + c*x^2)^(3/2)) + (2*(b*(c*d - b*e)*(8*A*c^2*d^2 + b^2*e*(3
*B*d - 5*A*e) - 2*b*c*d*(2*B*d + A*e)) + c*(16*A*c^3*d^3 - b^3*e^2*(3*B*d -
 5*A*e) + 2*b^2*c*d*e*(8*B*d - A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*x))/(3*b^4
*d^2*(c*d - b*e)^2*(d + e*x)*Sqrt[b*x + c*x^2]) + (e*(32*A*c^4*d^4 - 2*b^3*
c*d*e^2*(9*B*d - 10*A*e) + 3*b^4*e^3*(3*B*d - 5*A*e) + 4*b^2*c^2*d^2*e*(10*
B*d + 3*A*e) - 16*b*c^3*d^3*(B*d + 4*A*e))*Sqrt[b*x + c*x^2])/(3*b^4*d^3*(c
*d - b*e)^3*(d + e*x)) - (e^3*(B*d*(8*c*d - 3*b*e) - 5*A*e*(2*c*d - b*e))*A
rcTanh[(b*d + (2*c*d - b*e)*x)/(2*Sqrt[d]*Sqrt[c*d - b*e]*Sqrt[b*x + c*x^2]
)])/(2*d^(7/2)*(c*d - b*e)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(8Ac^2d^2+b^2e(3Bd-5Ae)-2bcd(2Bd+Ae)\right)}{(d+ex)^2\left(bx+cx^2\right)^{3/2}}}{3b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\,(b(cd-be)\,(8Ac^2d^2+b^2e(3Bd-5}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\,(b(cd-be)\,(8Ac^2d^2+b^2e(3Bd-5}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\,(b(cd-be)\,(8Ac^2d^2+b^2e(3Bd-5}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)(d+ex)\left(bx+cx^2\right)^{3/2}} + \frac{2\,(b(cd-be)\,(8Ac^2d^2+b^2e(3Bd-5}{}$$

Mathematica [A] time = 0.83, size = 557, normalized size = 1.24

$$\frac{3b^4e^3x^{3/2}(b+cx)^{3/2}(d+ex)(Bd(3be-8cd)-5Ae(be-2cd))\tanh^{-1}\left(\frac{\sqrt{x}\sqrt{cd-be}}{\sqrt{d}\sqrt{b+cx}}\right)+\sqrt{d}\sqrt{cd-be}\,(A\,(b^6e^3\,(2d^2-1}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[d]*Sqrt[c*d - b*e]*(b*B*d*x*(-16*c^5*d^3*x^2*(d + e*x) + 3*b^5*e^3*(2
*d + 3*e*x) - 6*b^4*c*e^2*(3*d^2 + d*e*x - 3*e^2*x^2) + 8*b*c^4*d^2*x*(-3*d
^2 + 2*d*e*x + 5*e^2*x^2) + 3*b^3*c^2*e*(6*d^3 - 6*d^2*e*x - 10*d*e^2*x^2 +
 3*e^3*x^3) - 6*b^2*c^3*d*(d^3 - 9*d^2*e*x - 7*d*e^2*x^2 + 3*e^3*x^3)) + A*
(32*c^6*d^4*x^3*(d + e*x) + b^6*e^3*(2*d^2 - 10*d*e*x - 15*e^2*x^2) - 16*b*
c^5*d^3*x^2*(-3*d^2 + d*e*x + 4*e^2*x^2) + 12*b^2*c^4*d^2*x*(d^3 - 7*d^2*e*
x - 7*d*e^2*x^2 + e^3*x^3) - 6*b^5*c*e^2*(d^3 - 3*d^2*e*x + 5*e^3*x^3) - 2*
b^3*c^3*d*(d^4 + 13*d^3*e*x + 3*d^2*e^2*x^2 - 19*d*e^3*x^3 - 10*e^4*x^4) +
3*b^4*c^2*e*(2*d^4 + 2*d^3*e*x + 14*d^2*e^2*x^2 + 10*d*e^3*x^3 - 5*e^4*x^4)
)) + 3*b^4*e^3*(-5*A*e*(-2*c*d + b*e) + B*d*(-8*c*d + 3*b*e))*x^(3/2)*(b +
c*x)^(3/2)*(d + e*x)*ArcTanh[(Sqrt[c*d - b*e]*Sqrt[x])/(Sqrt[d]*Sqrt[b + c*
x])])/(3*b^4*d^(7/2)*(c*d - b*e)^(7/2)*(x*(b + c*x))^(3/2)*(d + e*x))
```

fricas [B] time = 0.85, size = 2582, normalized size = 5.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((8*B*b^4*c^3*d^2*e^4 + 5*A*b^5*c^2*e^6 - (3*B*b^5*c^2 + 10*A*b^4*
c^3)*d*e^5)*x^5 + (8*B*b^4*c^3*d^3*e^3 + 10*A*b^6*c*e^6 + (13*B*b^5*c^2 - 1
0*A*b^4*c^3)*d^2*e^4 - 3*(2*B*b^6*c + 5*A*b^5*c^2)*d*e^5)*x^4 + (16*B*b^5*c
^2*d^3*e^3 - 3*B*b^7*d*e^5 + 5*A*b^7*e^6 + 2*(B*b^6*c - 10*A*b^5*c^2)*d^2*e
^4)*x^3 + (8*B*b^6*c*d^3*e^3 + 5*A*b^7*d*e^5 - (3*B*b^7 + 10*A*b^6*c)*d^2*e
^4)*x^2)*sqrt(c*d^2 - b*d*e)*log((b*d + (2*c*d - b*e)*x + 2*sqrt(c*d^2 - b*
d*e)*sqrt(c*x^2 + b*x))/(e*x + d)) + 2*(2*A*b^3*c^4*d^7 - 8*A*b^4*c^3*d^6*e
 + 12*A*b^5*c^2*d^5*e^2 - 8*A*b^6*c*d^4*e^3 + 2*A*b^7*d^3*e^4 - (15*A*b^5*c
^2*d*e^6 - 16*(B*b*c^6 - 2*A*c^7)*d^6*e + 8*(7*B*b^2*c^5 - 12*A*b*c^6)*d^5*
e^2 - 2*(29*B*b^3*c^4 - 38*A*b^2*c^5)*d^4*e^3 + (27*B*b^4*c^3 + 8*A*b^3*c^4
)*d^3*e^4 - (9*B*b^5*c^2 + 35*A*b^4*c^3)*d^2*e^5)*x^4 - 2*(15*A*b^6*c*d*e^6
 - 8*(B*b*c^6 - 2*A*c^7)*d^7 + 8*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e + (13*B*b^
3*c^4 - 34*A*b^2*c^5)*d^5*e^2 - (36*B*b^4*c^3 - 61*A*b^3*c^4)*d^4*e^3 + 4*(
6*B*b^5*c^2 - A*b^4*c^3)*d^3*e^4 - 3*(3*B*b^6*c + 10*A*b^5*c^2)*d^2*e^5)*x^
3 - 3*(5*A*b^7*d*e^6 - 8*(B*b^2*c^5 - 2*A*b*c^6)*d^7 + 2*(13*B*b^3*c^4 - 22
*A*b^2*c^5)*d^6*e - 2*(12*B*b^4*c^3 - 13*A*b^3*c^4)*d^5*e^2 + 4*(B*b^5*c^2
+ 4*A*b^4*c^3)*d^4*e^3 + (5*B*b^6*c - 14*A*b^5*c^2)*d^3*e^4 - (3*B*b^7 + 5*
A*b^6*c)*d^2*e^5)*x^2 - 2*(5*A*b^7*d^2*e^5 - 3*(B*b^3*c^4 - 2*A*b^2*c^5)*d^
7 + (12*B*b^4*c^3 - 19*A*b^3*c^4)*d^6*e - 2*(9*B*b^5*c^2 - 8*A*b^4*c^3)*d^5
*e^2 + 6*(2*B*b^6*c + A*b^5*c^2)*d^4*e^3 - (3*B*b^7 + 14*A*b^6*c)*d^3*e^4)*
x)*sqrt(c*x^2 + b*x))/((b^4*c^6*d^8*e - 4*b^5*c^5*d^7*e^2 + 6*b^6*c^4*d^6*e
^3 - 4*b^7*c^3*d^5*e^4 + b^8*c^2*d^4*e^5)*x^5 + (b^4*c^6*d^9 - 2*b^5*c^5*d^
8*e - 2*b^6*c^4*d^7*e^2 + 8*b^7*c^3*d^6*e^3 - 7*b^8*c^2*d^5*e^4 + 2*b^9*c*d
^4*e^5)*x^4 + (2*b^5*c^5*d^9 - 7*b^6*c^4*d^8*e + 8*b^7*c^3*d^7*e^2 - 2*b^8*
c^2*d^6*e^3 - 2*b^9*c*d^5*e^4 + b^10*d^4*e^5)*x^3 + (b^6*c^4*d^9 - 4*b^7*c^
3*d^8*e + 6*b^8*c^2*d^7*e^2 - 4*b^9*c*d^6*e^3 + b^10*d^5*e^4)*x^2), -1/3*(3
*((8*B*b^4*c^3*d^2*e^4 + 5*A*b^5*c^2*e^6 - (3*B*b^5*c^2 + 10*A*b^4*c^3)*d*e
^5)*x^5 + (8*B*b^4*c^3*d^3*e^3 + 10*A*b^6*c*e^6 + (13*B*b^5*c^2 - 10*A*b^4*
c^3)*d^2*e^4 - 3*(2*B*b^6*c + 5*A*b^5*c^2)*d*e^5)*x^4 + (16*B*b^5*c^2*d^3*e
^3 - 3*B*b^7*d*e^5 + 5*A*b^7*e^6 + 2*(B*b^6*c - 10*A*b^5*c^2)*d^2*e^4)*x^3
+ (8*B*b^6*c*d^3*e^3 + 5*A*b^7*d*e^5 - (3*B*b^7 + 10*A*b^6*c)*d^2*e^4)*x^2)
*sqrt(-c*d^2 + b*d*e)*arctan(-sqrt(-c*d^2 + b*d*e)*sqrt(c*x^2 + b*x)/((c*d
- b*e)*x)) + (2*A*b^3*c^4*d^7 - 8*A*b^4*c^3*d^6*e + 12*A*b^5*c^2*d^5*e^2 -
8*A*b^6*c*d^4*e^3 + 2*A*b^7*d^3*e^4 - (15*A*b^5*c^2*d*e^6 - 16*(B*b*c^6 - 2
*A*c^7)*d^6*e + 8*(7*B*b^2*c^5 - 12*A*b*c^6)*d^5*e^2 - 2*(29*B*b^3*c^4 - 38
*A*b^2*c^5)*d^4*e^3 + (27*B*b^4*c^3 + 8*A*b^3*c^4)*d^3*e^4 - (9*B*b^5*c^2 +
 35*A*b^4*c^3)*d^2*e^5)*x^4 - 2*(15*A*b^6*c*d*e^6 - 8*(B*b*c^6 - 2*A*c^7)*d
^7 + 8*(2*B*b^2*c^5 - 3*A*b*c^6)*d^6*e + (13*B*b^3*c^4 - 34*A*b^2*c^5)*d^5*
e^2 - (36*B*b^4*c^3 - 61*A*b^3*c^4)*d^4*e^3 + 4*(6*B*b^5*c^2 - A*b^4*c^3)*d
^3*e^4 - 3*(3*B*b^6*c + 10*A*b^5*c^2)*d^2*e^5)*x^3 - 3*(5*A*b^7*d*e^6 - 8*(
B*b^2*c^5 - 2*A*b*c^6)*d^7 + 2*(13*B*b^3*c^4 - 22*A*b^2*c^5)*d^6*e - 2*(12*
B*b^4*c^3 - 13*A*b^3*c^4)*d^5*e^2 + 4*(B*b^5*c^2 + 4*A*b^4*c^3)*d^4*e^3 + (
5*B*b^6*c - 14*A*b^5*c^2)*d^3*e^4 - (3*B*b^7 + 5*A*b^6*c)*d^2*e^5)*x^2 - 2*
(5*A*b^7*d^2*e^5 - 3*(B*b^3*c^4 - 2*A*b^2*c^5)*d^7 + (12*B*b^4*c^3 - 19*A*b
^3*c^4)*d^6*e - 2*(9*B*b^5*c^2 - 8*A*b^4*c^3)*d^5*e^2 + 6*(2*B*b^6*c + A*b^
5*c^2)*d^4*e^3 - (3*B*b^7 + 14*A*b^6*c)*d^3*e^4)*x)*sqrt(c*x^2 + b*x))/((b^
4*c^6*d^8*e - 4*b^5*c^5*d^7*e^2 + 6*b^6*c^4*d^6*e^3 - 4*b^7*c^3*d^5*e^4 + b
^8*c^2*d^4*e^5)*x^5 + (b^4*c^6*d^9 - 2*b^5*c^5*d^8*e - 2*b^6*c^4*d^7*e^2 +
8*b^7*c^3*d^6*e^3 - 7*b^8*c^2*d^5*e^4 + 2*b^9*c*d^4*e^5)*x^4 + (2*b^5*c^5*d
^9 - 7*b^6*c^4*d^8*e + 8*b^7*c^3*d^7*e^2 - 2*b^8*c^2*d^6*e^3 - 2*b^9*c*d^5*
e^4 + b^10*d^4*e^5)*x^3 + (b^6*c^4*d^9 - 4*b^7*c^3*d^8*e + 6*b^8*c^2*d^7*e^
2 - 4*b^9*c*d^6*e^3 + b^10*d^5*e^4)*x^2)]
```

giac [B] time = 2.30, size = 2413, normalized size = 5.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*((32*sqrt(c*d^2 - b*d*e)*B*b*c^4*d^4*e^2 - 64*sqrt(c*d^2 - b*d*e)*A*c^5
*d^4*e^2 - 80*sqrt(c*d^2 - b*d*e)*B*b^2*c^3*d^3*e^3 + 128*sqrt(c*d^2 - b*d*
e)*A*b*c^4*d^3*e^3 - 24*B*b^4*c^(3/2)*d^2*e^5*log(abs(2*c*d - b*e - 2*sqrt(
c*d^2 - b*d*e)*sqrt(c))) + 36*sqrt(c*d^2 - b*d*e)*B*b^3*c^2*d^2*e^4 - 24*sq
rt(c*d^2 - b*d*e)*A*b^2*c^3*d^2*e^4 + 9*B*b^5*sqrt(c)*d*e^6*log(abs(2*c*d -
 b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 30*A*b^4*c^(3/2)*d*e^6*log(abs(2*c
*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) - 18*sqrt(c*d^2 - b*d*e)*B*b^4*c
*d*e^5 - 40*sqrt(c*d^2 - b*d*e)*A*b^3*c^2*d*e^5 - 15*A*b^5*sqrt(c)*e^7*log(
abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*sqrt(c))) + 30*sqrt(c*d^2 - b*d*e)*
A*b^4*c*e^6)*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e)*b^4*c^(7/2)*d^6 - 3*sqrt
(c*d^2 - b*d*e)*b^5*c^(5/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e)*b^6*c^(3/2)*d^4*e
^2 - sqrt(c*d^2 - b*d*e)*b^7*sqrt(c)*d^3*e^3) + 2*((((4*(4*B*b*c^5*d^7*e^16
*sgn(1/(x*e + d)) - 8*A*c^6*d^7*e^16*sgn(1/(x*e + d)) - 16*B*b^2*c^4*d^6*e^
17*sgn(1/(x*e + d)) + 28*A*b*c^5*d^6*e^17*sgn(1/(x*e + d)) + 21*B*b^3*c^3*d
^5*e^18*sgn(1/(x*e + d)) - 30*A*b^2*c^4*d^5*e^18*sgn(1/(x*e + d)) - 18*B*b^
4*c^2*d^4*e^19*sgn(1/(x*e + d)) + 5*A*b^3*c^3*d^4*e^19*sgn(1/(x*e + d)) + 1
2*B*b^5*c*d^3*e^20*sgn(1/(x*e + d)) + 18*A*b^4*c^2*d^3*e^20*sgn(1/(x*e + d)
) - 3*B*b^6*d^2*e^21*sgn(1/(x*e + d)) - 18*A*b^5*c*d^2*e^21*sgn(1/(x*e + d)
) + 5*A*b^6*d*e^22*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 -
 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^
2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2) + 3*(B*b^4*c^2*d^5*e^20*sgn(1/(x*e + d
)) - 2*B*b^5*c*d^4*e^21*sgn(1/(x*e + d)) - A*b^4*c^2*d^4*e^21*sgn(1/(x*e +
d)) + B*b^6*d^3*e^22*sgn(1/(x*e + d)) + 2*A*b^5*c*d^3*e^22*sgn(1/(x*e + d))
 - A*b^6*d^2*e^23*sgn(1/(x*e + d)))*e^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e +
d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e
 + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) -
3*(16*B*b*c^5*d^6*e^15*sgn(1/(x*e + d)) - 32*A*c^6*d^6*e^15*sgn(1/(x*e + d)
) - 56*B*b^2*c^4*d^5*e^16*sgn(1/(x*e + d)) + 96*A*b*c^5*d^5*e^16*sgn(1/(x*e
 + d)) + 60*B*b^3*c^3*d^4*e^17*sgn(1/(x*e + d)) - 80*A*b^2*c^4*d^4*e^17*sgn
(1/(x*e + d)) - 42*B*b^4*c^2*d^3*e^18*sgn(1/(x*e + d)) + 20*B*b^5*c*d^2*e^1
9*sgn(1/(x*e + d)) + 46*A*b^4*c^2*d^2*e^19*sgn(1/(x*e + d)) - 3*B*b^6*d*e^2
0*sgn(1/(x*e + d)) - 30*A*b^5*c*d*e^20*sgn(1/(x*e + d)) + 5*A*b^6*e^21*sgn(
1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn
(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/
(x*e + d))^2))*e^(-1)/(x*e + d) + 6*(8*B*b*c^5*d^5*e^14*sgn(1/(x*e + d)) -
16*A*c^6*d^5*e^14*sgn(1/(x*e + d)) - 24*B*b^2*c^4*d^4*e^15*sgn(1/(x*e + d))
 + 40*A*b*c^5*d^4*e^15*sgn(1/(x*e + d)) + 19*B*b^3*c^3*d^3*e^16*sgn(1/(x*e
+ d)) - 22*A*b^2*c^4*d^3*e^16*sgn(1/(x*e + d)) - 11*B*b^4*c^2*d^2*e^17*sgn(
1/(x*e + d)) - 7*A*b^3*c^3*d^2*e^17*sgn(1/(x*e + d)) + 3*B*b^5*c*d*e^18*sgn
(1/(x*e + d)) + 15*A*b^4*c^2*d*e^18*sgn(1/(x*e + d)) - 5*A*b^5*c*e^19*sgn(1
/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(
1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(
x*e + d))^2))*e^(-1)/(x*e + d) - (16*B*b*c^5*d^4*e^13*sgn(1/(x*e + d)) - 32
*A*c^6*d^4*e^13*sgn(1/(x*e + d)) - 40*B*b^2*c^4*d^3*e^14*sgn(1/(x*e + d)) +
 64*A*b*c^5*d^3*e^14*sgn(1/(x*e + d)) + 18*B*b^3*c^3*d^2*e^15*sgn(1/(x*e +
d)) - 12*A*b^2*c^4*d^2*e^15*sgn(1/(x*e + d)) - 9*B*b^4*c^2*d*e^16*sgn(1/(x*
e + d)) - 20*A*b^3*c^3*d*e^16*sgn(1/(x*e + d)) + 15*A*b^4*c^2*e^17*sgn(1/(x
*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(
x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e
 + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e
/(x*e + d)^2)^(3/2) + 3*(8*B*c*d^2*e^6 - 3*B*b*d*e^7 - 10*A*c*d*e^7 + 5*A*b
*e^8)*log(abs(2*c*d - b*e - 2*sqrt(c*d^2 - b*d*e)*(sqrt(c - 2*c*d/(x*e + d)
 + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2) + sqrt(c*d^2*e^2
- b*d*e^3)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*
e^3 - b^3*d^3*e^4)*sqrt(c*d^2 - b*d*e)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.07, size = 4295, normalized size = 9.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 20/3*e/(b*e-c*d)^2/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*c^2*x*A-20*e^3/(b*e-c*d)^3/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*x*c^2*A+20*e^2/(b*e-c*d)^3/d/b/((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^2*B+20*e^2/(b*e-c*d)^3/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*A-160/3*e/(b*e-c*
d)^2/d*c^3/b^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*
A+2*B*e^2/(b*e-c*d)^2/d^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*x*c-160/3/e/(b*e-c*d)^2*c^4/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*
e-2*c*d)*(x+d/e)/e)^(1/2)*x*B*d+20/3/e/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b*e-c*
d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^3*x*B*d+40/3*e^2/(b*e-c*d)^2/d^2*c^
2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-52/3*e/
(b*e-c*d)^2/d*c^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(
1/2)*x*B-5/(b*e-c*d)^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^
(3/2)*c*B-2/3*B/(b*e-c*d)/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(3/2)-10/3/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d
/e)/e)^(3/2)*c^2*A+1/(b*e-c*d)/d/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-
2*c*d)*(x+d/e)/e)^(3/2)*A+64/3*c^2/(b*e-c*d)/d/b^3/((x+d/e)^2*c-(b*e-c*d)*d
/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+160/3/(b*e-c*d)^2*c^3/b^3/((x+d/e)^2*c-
(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*B+160/3/(b*e-c*d)^2*c^4/b^4/
((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-20/3/(b*e-c*d
)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^2*x*B-15*
e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/
2)*c*A+15*e^2/(b*e-c*d)^3/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*c*B-5/3*e^2/(b*e-c*d)^2/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(3/2)*b*A-1/e/(b*e-c*d)/(x+d/e)/((x+d/e)^2*c-(b*e-c*d)*d/e^
2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*B+80/3/(b*e-c*d)^2*c^2/b^2/((x+d/e)^2*c-(b*e
-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B+80/3/(b*e-c*d)^2*c^3/b^3/((x+d/e
)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A+2*B*e^2/(b*e-c*d)^2/d^
2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)+5/3*e/(b*e-c*d)
^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*b*B+5*e/(b*e
-c*d)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*A+5*e
^4/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2
)*b*A-5*e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*b*B-10*e/(b*e-c*d)^3/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2)*c^2*B+10/3/e*c/(b*e-c*d)/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b
*e-2*c*d)*(x+d/e)/e)^(3/2)*B-80/3/e*c^2/(b*e-c*d)/b^3/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B-20/3/(b*e-c*d)^2/b^2/((x+d/e)^2*c-(b
*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c^3*x*A-8/3*c/(b*e-c*d)/d/b/((x+
d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*A+8/3*B/(b*e-c*d)/d*c
/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)-B*e^2/(b*e-c
*d)^2/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/
e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2))/(x+d/e))+20/3*e^2/(b*e-c*d)^2/d^2*c/b/((x+d/e)^2*c-(b*e-c*d
)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*A-5/2*e^4/(b*e-c*d)^3/d^3/(-(b*e-c*d)*
d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e
^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e
))*b*A+5/2*e^3/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/
e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)
*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*b*B-80/3/e/(b*e-c*d)^2*c^3/b^
3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*B*d+20/3/e*c^2/
(b*e-c*d)/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*B
+10*e^2/(b*e-c*d)^3/d/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)
^(1/2)*c^2*A-160/3/e*c^3/(b*e-c*d)/b^4/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*
c*d)*(x+d/e)/e)^(1/2)*x*B+5*e^3/(b*e-c*d)^3/d^2/(-(b*e-c*d)*d/e^2)^(1/2)*ln
((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d
/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2))/(x+d/e))*c*A-5*e^2/(b
*e-c*d)^3/d/(-(b*e-c*d)*d/e^2)^(1/2)*ln((-2*(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+
d/e)/e+2*(-(b*e-c*d)*d/e^2)^(1/2)*((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*
(x+d/e)/e)^(1/2))/(x+d/e))*c*B+128/3*c^3/(b*e-c*d)/d/b^4/((x+d/e)^2*c-(b*e-
c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*A-16/3*c^2/(b*e-c*d)/d/b^2/((x+d/
e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*x*A-20*e/(b*e-c*d)^3/b^
2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x*c^3*B-26/3*e/
(b*e-c*d)^2/d*c/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)
*B-80/3*e/(b*e-c*d)^2/d*c^2/b^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x
+d/e)/e)^(1/2)*A+10/3/e/(b*e-c*d)^2/b/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c
*d)*(x+d/e)/e)^(3/2)*c^2*B*d+16/3*B/(b*e-c*d)/d*c^2/b^3/((x+d/e)^2*c-(b*e-c
*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*x-2/3*B/(b*e-c*d)/d/b/((x+d/e)^2*c-(
b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x-5/3*e^2/(b*e-c*d)^2/d^2/((x
+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*A+5/3*e/(b*e-c*d
)^2/d/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(3/2)*c*x*B+5*e^4
/(b*e-c*d)^3/d^3/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e)/e)^(1/2)*
x*c*A-5*e^3/(b*e-c*d)^3/d^2/((x+d/e)^2*c-(b*e-c*d)*d/e^2+(b*e-2*c*d)*(x+d/e
)/e)^(1/2)*x*c*B
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{5/2}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1213 $\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{13/2}(-Ace-bBe+3Bcd)}{13e^4}+\frac{2(d+ex)^{11/2}(Bd(3cd-2be)-Ae(2cd-be))}{11e^4}-\frac{2d(d+ex)^{9/2}(Bd-Ae)(cd}{9e^4}$$

```
[Out] -2/9*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^(9/2)/e^4+2/11*(B*d*(-2*b*e+3*c*d)-A*e
*(-b*e+2*c*d))*(e*x+d)^(11/2)/e^4-2/13*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(13/2
)/e^4+2/15*B*c*(e*x+d)^(15/2)/e^4
```

Rubi [A] time = 0.09, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{2(d+ex)^{13/2}(-Ace-bBe+3Bcd)}{13e^4}+\frac{2(d+ex)^{11/2}(Bd(3cd-2be)-Ae(2cd-be))}{11e^4}-\frac{2d(d+ex)^{9/2}(Bd-Ae)(cd}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(9/2))/(9*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(11/2))/(11*e^4) - (2*(3*B*c*d - b*B*e
 - A*c*e)*(d + e*x)^(13/2))/(13*e^4) + (2*B*c*(d + e*x)^(15/2))/(15*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)\,dx=\int \Bigl(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{7/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(}{e^3}$$

$$=-\frac{2d(Bd-Ae)(cd-be)(d+ex)^{9/2}}{9e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d}{11e^4}$$

Mathematica [A] time = 0.14, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{9/2}\Bigl(5Ae\bigl(13be(9ex-2d)+c\left(8d^2-36dex+99e^2x^2\right)\bigr)+B\bigl(5be\left(8d^2-36dex+99e^2x^2\right)+c\bigl(-16d^3+}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(5*A*e*(13*b*e*(-2*d + 9*e*x) + c*(8*d^2 - 36*d*e*x + 99
*e^2*x^2)) + B*(5*b*e*(8*d^2 - 36*d*e*x + 99*e^2*x^2) + c*(-16*d^3 + 72*d^2
*e*x - 198*d*e^2*x^2 + 429*e^3*x^3))))/(6435*e^4)
```

fricas [B] time = 0.58, size = 271, normalized size = 2.15

$$\frac{2\bigl(429\,Bce^7x^7-16\,Bcd^7-130\,Abd^5e^2+40\,(Bb+Ac)d^6e+33\left(46\,Bcde^6+15\,(Bb+Ac)e^7\right)x^6+9\bigl(206\,Bcd^2e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/6435*(429*B*c*e^7*x^7 - 16*B*c*d^7 - 130*A*b*d^5*e^2 + 40*(B*b + A*c)*d^6
*e + 33*(46*B*c*d*e^6 + 15*(B*b + A*c)*e^7)*x^6 + 9*(206*B*c*d^2*e^5 + 65*A
*b*e^7 + 200*(B*b + A*c)*d*e^6)*x^5 + 10*(80*B*c*d^3*e^4 + 221*A*b*d*e^6 +
229*(B*b + A*c)*d^2*e^5)*x^4 + 5*(B*c*d^4*e^3 + 598*A*b*d^2*e^5 + 212*(B*b
+ A*c)*d^3*e^4)*x^3 - 3*(2*B*c*d^5*e^2 - 520*A*b*d^3*e^4 - 5*(B*b + A*c)*d^
4*e^3)*x^2 + (8*B*c*d^6*e + 65*A*b*d^4*e^3 - 20*(B*b + A*c)*d^5*e^2)*x)*sqr
t(e*x + d)/e^4
```

giac **[B]** time = 0.24, size = 1383, normalized size = 10.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^4*e^(-1) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^4*e
^(-2) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*A*c*d^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^4*e^(-3) + 12012*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^3*e^(-1) + 51
48*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*b*d^3*e^(-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d^3*e^(-2) + 5
72*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d^3*e^(-3) + 7722*(5*(
x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*
e + d)*d^3)*A*b*d^2*e^(-1) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*b*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*
(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*
d^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*c*d^2*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*A*b*d*e^(-1) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*b*d*e^(-2) + 260*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c*d*e^(-2) + 60*(231*(x*e
+ d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*
e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 30
03*sqrt(x*e + d)*d^6)*B*c*d*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*e^(-1) + 15*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*B*b*e^(-2) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c*e^(-2) + 7
*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d
^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d
)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c*e^(-3
))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{9}{2}}\left(-429Bc\,x^{3}e^{3}-495Ac\,e^{3}x^{2}-495Bb\,e^{3}x^{2}+198Bcd\,e^{2}x^{2}-585Ab\,e^{3}x+180Acd\,e^{2}x+180Bbd\,e^{2}x}{6435e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x)
```

```
[Out] -2/6435*(e*x+d)^(9/2)*(-429*B*c*e^3*x^3-495*A*c*e^3*x^2-495*B*b*e^3*x^2+198
*B*c*d*e^2*x^2-585*A*b*e^3*x+180*A*c*d*e^2*x+180*B*b*d*e^2*x-72*B*c*d^2*e*x
+130*A*b*d*e^2-40*A*c*d^2*e-40*B*b*d^2*e+16*B*c*d^3)/e^4
```

maxima [A] time = 0.57, size = 112, normalized size = 0.89

$$\frac{2\left(429\,(ex+d)^{\frac{15}{2}}Bc-495\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{13}{2}}+585\left(3\,Bcd^{2}+Abe^{2}-2\,(Bb+Ac)de\right)(ex+d)^{\frac{11}{2}}-}{6435\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*B*c - 495*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(13/2) + 585*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(11/2) - 7
15*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 0.10, size = 111, normalized size = 0.88

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{11\,e^4}+\frac{(d+e\,x)^{13/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{13\,e^4}+\frac{2\,B\,c\,(d+e\,x)}{15\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(11*e^4)
 + ((d + e*x)^(13/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(13*e^4) + (2*B*c*(d +
e*x)^(15/2))/(15*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(9/2))/(9*e^
4)
```

sympy [A] time = 9.27, size = 683, normalized size = 5.42

$$\begin{cases} -\frac{4Abd^{5}\sqrt{d+ex}}{99e^{2}}+\frac{2Abd^{4}x\sqrt{d+ex}}{99e}+\frac{16Abd^{3}x^{2}\sqrt{d+ex}}{33}+\frac{92Abd^{2}ex^{3}\sqrt{d+ex}}{99}+\frac{68Abde^{2}x^{4}\sqrt{d+ex}}{99}+\frac{2Abe^{3}x^{5}\sqrt{d+ex}}{11}+\frac{16Acd^{6}\sqrt{d+ex}}{1287e^{3}} - \\ d^{\frac{7}{2}}\left(\frac{Abx^{2}}{2}+\frac{Acx^{3}}{3}+\frac{Bbx^{3}}{3}+\frac{Bcx^{4}}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-4*A*b*d**5*sqrt(d + e*x)/(99*e**2) + 2*A*b*d**4*x*sqrt(d + e*x)
/(99*e) + 16*A*b*d**3*x**2*sqrt(d + e*x)/33 + 92*A*b*d**2*e*x**3*sqrt(d + e
*x)/99 + 68*A*b*d*e**2*x**4*sqrt(d + e*x)/99 + 2*A*b*e**3*x**5*sqrt(d + e*x
)/11 + 16*A*c*d**6*sqrt(d + e*x)/(1287*e**3) - 8*A*c*d**5*x*sqrt(d + e*x)/(
1287*e**2) + 2*A*c*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*c*d**3*x**3*sqrt
(d + e*x)/1287 + 916*A*c*d**2*e*x**4*sqrt(d + e*x)/1287 + 80*A*c*d*e**2*x**
5*sqrt(d + e*x)/143 + 2*A*c*e**3*x**6*sqrt(d + e*x)/13 + 16*B*b*d**6*sqrt(d
 + e*x)/(1287*e**3) - 8*B*b*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2*B*b*d**4*x
**2*sqrt(d + e*x)/(429*e) + 424*B*b*d**3*x**3*sqrt(d + e*x)/1287 + 916*B*b*
d**2*e*x**4*sqrt(d + e*x)/1287 + 80*B*b*d*e**2*x**5*sqrt(d + e*x)/143 + 2*B
*b*e**3*x**6*sqrt(d + e*x)/13 - 32*B*c*d**7*sqrt(d + e*x)/(6435*e**4) + 16*
B*c*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*B*c*d**5*x**2*sqrt(d + e*x)/(2145*
e**2) + 2*B*c*d**4*x**3*sqrt(d + e*x)/(1287*e) + 320*B*c*d**3*x**4*sqrt(d +
 e*x)/1287 + 412*B*c*d**2*e*x**5*sqrt(d + e*x)/715 + 92*B*c*d*e**2*x**6*sqr
t(d + e*x)/195 + 2*B*c*e**3*x**7*sqrt(d + e*x)/15, Ne(e, 0)), (d**(7/2)*(A*
b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4), True))
```

3.1214 $\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)\,dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{11/2}(-Ace-bBe+3Bcd)}{11e^4}+\frac{2(d+ex)^{9/2}(Bd(3cd-2be)-Ae(2cd-be))}{9e^4}-\frac{2d(d+ex)^{7/2}(Bd-Ae)(cd-}{7e^4}$$

```
[Out] -2/7*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^(7/2)/e^4+2/9*(B*d*(-2*b*e+3*c*d)-A*e*
(-b*e+2*c*d))*(e*x+d)^(9/2)/e^4-2/11*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(11/2)/
e^4+2/13*B*c*(e*x+d)^(13/2)/e^4
```

Rubi [**A**] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{2(d+ex)^{11/2}(-Ace-bBe+3Bcd)}{11e^4}+\frac{2(d+ex)^{9/2}(Bd(3cd-2be)-Ae(2cd-be))}{9e^4}-\frac{2d(d+ex)^{7/2}(Bd-Ae)(cd-}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(7/2))/(7*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(9/2))/(9*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(11/2))/(11*e^4) + (2*B*c*(d + e*x)^(13/2))/(13*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)\,dx&=\int \left(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{5/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(}{e^3}\right.\\&=-\frac{2d(Bd-Ae)(cd-be)(d+ex)^{7/2}}{7e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d}{9e^4}\end{aligned}$$

Mathematica [**A**] time = 0.12, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{7/2}\left(13Ae\left(11be(7ex-2d)+c\left(8d^2-28dex+63e^2x^2\right)\right)+B\left(13be\left(8d^2-28dex+63e^2x^2\right)+c\left(-48d^3\right.\right.\right.}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(13*A*e*(11*b*e*(-2*d + 7*e*x) + c*(8*d^2 - 28*d*e*x + 6
3*e^2*x^2)) + B*(13*b*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + c*(-48*d^3 + 168*
d^2*e*x - 378*d*e^2*x^2 + 693*e^3*x^3))))/(9009*e^4)
```

fricas [**B**] time = 0.72, size = 230, normalized size = 1.83

$$\frac{2\left(693\,Bce^6x^6-48\,Bcd^6-286\,Abd^4e^2+104\,(Bb+Ac)d^5e+63\left(27\,Bcde^5+13\,(Bb+Ac)e^6\right)x^5+7\left(159\,Bcd^2e\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/9009*(693*B*c*e^6*x^6 - 48*B*c*d^6 - 286*A*b*d^4*e^2 + 104*(B*b + A*c)*d^
5*e + 63*(27*B*c*d*e^5 + 13*(B*b + A*c)*e^6)*x^5 + 7*(159*B*c*d^2*e^4 + 143
*A*b*e^6 + 299*(B*b + A*c)*d*e^5)*x^4 + (15*B*c*d^3*e^3 + 2717*A*b*d*e^5 +
1469*(B*b + A*c)*d^2*e^4)*x^3 - 3*(6*B*c*d^4*e^2 - 715*A*b*d^2*e^4 - 13*(B*
b + A*c)*d^3*e^3)*x^2 + (24*B*c*d^5*e + 143*A*b*d^3*e^3 - 52*(B*b + A*c)*d^
4*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [**B**] time = 0.21, size = 999, normalized size = 7.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^3*e^(-1) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^3*e
^(-2) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*A*c*d^3*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^3*e^(-3) + 9009*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^2*e^(-1) + 386
1*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*s
qrt(x*e + d)*d^3)*B*b*d^2*e^(-2) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d^2*e^(-2) + 42
9*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d^2*e^(-3) + 3861*(5*(x
*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
 + d)*d^3)*A*b*d*e^(-1) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*b*d*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*d*e^(
-2) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*c*d*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
A*b*e^(-1) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*B*b*e^(-2) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*
d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/
2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c*e^(-2) + 15*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*c*e^(-3))*e^(-1)
```

maple [**A**] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{7}{2}}\left(-693Bc\,x^{3}e^{3}-819Ac\,e^{3}x^{2}-819Bb\,e^{3}x^{2}+378Bcd\,e^{2}x^{2}-1001Ab\,e^{3}x+364Acd\,e^{2}x+364Bbd\,e^{2}x-\right.}{9009e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x)
```

```
[Out] -2/9009*(e*x+d)^(7/2)*(-693*B*c*e^3*x^3-819*A*c*e^3*x^2-819*B*b*e^3*x^2+378
*B*c*d*e^2*x^2-1001*A*b*e^3*x+364*A*c*d*e^2*x+364*B*b*d*e^2*x-168*B*c*d^2*e
*x+286*A*b*d*e^2-104*A*c*d^2*e-104*B*b*d^2*e+48*B*c*d^3)/e^4
```

maxima [A] time = 0.46, size = 112, normalized size = 0.89

$$\frac{2\,(693\,(ex+d)^{\frac{13}{2}}Bc - 819\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{11}{2}} + 1001\,\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)^{\frac{9}{2}} -}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*B*c - 819*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(11/2) + 1001*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(9/2) - 1
287*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{9\,e^4}+\frac{(d+e\,x)^{11/2}\,(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d)}{11\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{13}}{13\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(9*e^4) +
 ((d + e*x)^(11/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(11*e^4) + (2*B*c*(d + e*
x)^(13/2))/(13*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(7/2))/(7*e^4)
```

sympy [A] time = 4.64, size = 581, normalized size = 4.61

$$\begin{cases} -\frac{4Abd^4\sqrt{d+ex}}{63e^2}+\frac{2Abd^3x\sqrt{d+ex}}{63e}+\frac{10Abd^2x^2\sqrt{d+ex}}{21}+\frac{38Abdex^3\sqrt{d+ex}}{63}+\frac{2Abe^2x^4\sqrt{d+ex}}{9}+\frac{16Acd^5\sqrt{d+ex}}{693e^3}-\frac{8Acd^4x\sqrt{d+ex}}{693e^2}+2A \\ d^{\frac{5}{2}}\left(\frac{Abx^2}{2}+\frac{Acx^3}{3}+\frac{Bbx^3}{3}+\frac{Bcx^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(c*x**2+b*x),x)
```

```
[Out] Piecewise((-4*A*b*d**4*sqrt(d + e*x)/(63*e**2) + 2*A*b*d**3*x*sqrt(d + e*x)
/(63*e) + 10*A*b*d**2*x**2*sqrt(d + e*x)/21 + 38*A*b*d*e*x**3*sqrt(d + e*x)
/63 + 2*A*b*e**2*x**4*sqrt(d + e*x)/9 + 16*A*c*d**5*sqrt(d + e*x)/(693*e**3
) - 8*A*c*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*A*c*d**3*x**2*sqrt(d + e*x)/(
231*e) + 226*A*c*d**2*x**3*sqrt(d + e*x)/693 + 46*A*c*d*e*x**4*sqrt(d + e*x
)/99 + 2*A*c*e**2*x**5*sqrt(d + e*x)/11 + 16*B*b*d**5*sqrt(d + e*x)/(693*e*
*3) - 8*B*b*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*B*b*d**3*x**2*sqrt(d + e*x)
/(231*e) + 226*B*b*d**2*x**3*sqrt(d + e*x)/693 + 46*B*b*d*e*x**4*sqrt(d + e
*x)/99 + 2*B*b*e**2*x**5*sqrt(d + e*x)/11 - 32*B*c*d**6*sqrt(d + e*x)/(3003
*e**4) + 16*B*c*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*B*c*d**4*x**2*sqrt(d +
 e*x)/(1001*e**2) + 10*B*c*d**3*x**3*sqrt(d + e*x)/(3003*e) + 106*B*c*d**2*
x**4*sqrt(d + e*x)/429 + 54*B*c*d*e*x**5*sqrt(d + e*x)/143 + 2*B*c*e**2*x**
6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(A*b*x**2/2 + A*c*x**3/3 + B*b*x**
3/3 + B*c*x**4/4), True))
```

3.1215 $\int (A+Bx)(d+ex)^{3/2}\left(bx+cx^2\right)dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{9/2}(-Ace-bBe+3Bcd)}{9e^4}+\frac{2(d+ex)^{7/2}(Bd(3cd-2be)-Ae(2cd-be))}{7e^4}-\frac{2d(d+ex)^{5/2}(Bd-Ae)(cd-be)}{5e^4}$$

```
[Out] -2/5*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^(5/2)/e^4+2/7*(B*d*(-2*b*e+3*c*d)-A*e*
(-b*e+2*c*d))*(e*x+d)^(7/2)/e^4-2/9*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(9/2)/e^
4+2/11*B*c*(e*x+d)^(11/2)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{9/2}(-Ace-bBe+3Bcd)}{9e^4}+\frac{2(d+ex)^{7/2}(Bd(3cd-2be)-Ae(2cd-be))}{7e^4}-\frac{2d(d+ex)^{5/2}(Bd-Ae)(cd-be)}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(5/2))/(5*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(7/2))/(7*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(9/2))/(9*e^4) + (2*B*c*(d + e*x)^(11/2))/(11*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2}\left(bx+cx^2\right)dx &= \int \Bigg(-\frac{d(Bd-Ae)(cd-be)(d+ex)^{3/2}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+}{e^3}\\ &= -\frac{2d(Bd-Ae)(cd-be)(d+ex)^{5/2}}{5e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+}{7e^4}\end{aligned}$$

Mathematica [A] time = 0.11, size = 114, normalized size = 0.90

$$\frac{2(d+ex)^{5/2}\Big(11Ae\big(9be(5ex-2d)+c\big(8d^2-20dex+35e^2x^2\big)\big)+B\big(11be\big(8d^2-20dex+35e^2x^2\big)-3c\big(16d^3-40}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(11*A*e*(9*b*e*(-2*d + 5*e*x) + c*(8*d^2 - 20*d*e*x + 35
*e^2*x^2)) + B*(11*b*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) - 3*c*(16*d^3 - 40*d
^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3))))/(3465*e^4)
```

fricas [A] time = 0.65, size = 190, normalized size = 1.51

$$2\Big(315\,Bce^5x^5-48\,Bcd^5-198\,Abd^3e^2+88\,(Bb+Ac)d^4e+35\,\big(12\,Bcde^4+11\,(Bb+Ac)e^5\big)x^4+5\,\big(3\,Bcd^2e^3+99$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*e^5*x^5 - 48*B*c*d^5 - 198*A*b*d^3*e^2 + 88*(B*b + A*c)*d^4
*e + 35*(12*B*c*d*e^4 + 11*(B*b + A*c)*e^5)*x^4 + 5*(3*B*c*d^2*e^3 + 99*A*b
*e^5 + 110*(B*b + A*c)*d*e^4)*x^3 - 3*(6*B*c*d^3*e^2 - 264*A*b*d*e^4 - 11*(
B*b + A*c)*d^2*e^3)*x^2 + (24*B*c*d^4*e + 99*A*b*d^2*e^3 - 44*(B*b + A*c)*d
^3*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.19, size = 667, normalized size = 5.29

$$\frac{2}{3465}\Big(1155\Big((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\Big)Abd^2e^{(-1)} + 231\Big(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\Big)Bbd^2e^{(-2)} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^2*e^(-1) + 231*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d^2*e^(-
2) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
A*c*d^2*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*c*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d*e^(-1) + 198*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*B*b*d*e^(-2) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*d*e^(-2) + 22*(35*(x*e + d)^
(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/
2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d*e^(-3) + 99*(5*(x*e + d)^(7/2) - 21*(
x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b*e^(-1
) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*e^(-2) + 11*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c*e^(-2) + 5*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{5}{2}}\Big(-315Bc\,x^3e^3 - 385Ac\,e^3x^2 - 385Bb\,e^3x^2 + 210Bcd\,e^2x^2 - 495Ab\,e^3x + 220Acd\,e^2x + 220Bbd\,e^2x}{3465e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x)
```

```
[Out] -2/3465*(e*x+d)^(5/2)*(-315*B*c*e^3*x^3-385*A*c*e^3*x^2-385*B*b*e^3*x^2+210
*B*c*d*e^2*x^2-495*A*b*e^3*x+220*A*c*d*e^2*x+220*B*b*d*e^2*x-120*B*c*d^2*e*
x+198*A*b*d*e^2-88*A*c*d^2*e-88*B*b*d^2*e+48*B*c*d^3)/e^4
```

maxima [A] time = 0.49, size = 112, normalized size = 0.89

$$\frac{2\Big(315\,(ex+d)^{\frac{11}{2}}Bc - 385\,(3\,Bcd - (Bb+Ac)e)(ex+d)^{\frac{9}{2}} + 495\Big(3\,Bcd^2 + Abe^2 - 2\,(Bb+Ac)de\Big)(ex+d)^{\frac{7}{2}} - 69}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c - 385*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^
(9/2) + 495*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(7/2) - 693
*(B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+ex)^{7/2}\left(2Abe^2+6Bcd^2-4Acde-4Bbde\right)}{7e^4}+\frac{(d+ex)^{9/2}\left(2Ace+2Bbe-6Bcd\right)}{9e^4}+\frac{2Bc(d+ex)^{11/2}}{11e^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(7*e^4) +
 ((d + e*x)^(9/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(9*e^4) + (2*B*c*(d + e*x)
^(11/2))/(11*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(5/2))/(5*e^4)
```

sympy [B] time = 17.82, size = 434, normalized size = 3.44

$$\frac{2Abd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{2Ab\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^2}+\frac{2Acd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+2Ac($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+b*x),x)
```

```
[Out] 2*A*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*A*b*(d**2*(d
+ e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*A*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**3 + 2*A*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*b*d*(d**2*(d + e*x)**(3/2
)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 2*B*b*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**3 + 2*B*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)*
*(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*c*(d**4*
(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
- 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1216 $\int (A+Bx)\sqrt{d+ex}\left(bx+cx^2\right)dx$

Optimal. Leaf size=126

$$-\frac{2(d+ex)^{7/2}(-Ace-bBe+3Bcd)}{7e^4}+\frac{2(d+ex)^{5/2}(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{2d(d+ex)^{3/2}(Bd-Ae)(cd-}{3e^4}$$

```
[Out] -2/3*d*(-A*e+B*d)*(-b*e+c*d)*(e*x+d)^(3/2)/e^4+2/5*(B*d*(-2*b*e+3*c*d)-A*e*
(-b*e+2*c*d))*(e*x+d)^(5/2)/e^4-2/7*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(7/2)/e^
4+2/9*B*c*(e*x+d)^(9/2)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{7/2}(-Ace-bBe+3Bcd)}{7e^4}+\frac{2(d+ex)^{5/2}(Bd(3cd-2be)-Ae(2cd-be))}{5e^4}-\frac{2d(d+ex)^{3/2}(Bd-Ae)(cd-}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2),x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*(d + e*x)^(3/2))/(3*e^4) + (2*(B*d*(3*c*d - 2
*b*e) - A*e*(2*c*d - b*e))*(d + e*x)^(5/2))/(5*e^4) - (2*(3*B*c*d - b*B*e -
 A*c*e)*(d + e*x)^(7/2))/(7*e^4) + (2*B*c*(d + e*x)^(9/2))/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\left(bx+cx^2\right)dx&=\int\left(-\frac{d(Bd-Ae)(cd-be)\sqrt{d+ex}}{e^3}+\frac{(Bd(3cd-2be)-Ae(2cd-be))(d+}{e^3}\right.\\&=-\frac{2d(Bd-Ae)(cd-be)(d+ex)^{3/2}}{3e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.10, size = 113, normalized size = 0.90

$$\frac{2(d+ex)^{3/2}\left(3Ae\left(7be(3ex-2d)+c\left(8d^2-12dex+15e^2x^2\right)\right)+B\left(3be\left(8d^2-12dex+15e^2x^2\right)+c\left(-16d^3+24\right.\right.\right.}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(3*A*e*(7*b*e*(-2*d + 3*e*x) + c*(8*d^2 - 12*d*e*x + 15*
e^2*x^2)) + B*(3*b*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + c*(-16*d^3 + 24*d^2*
e*x - 30*d*e^2*x^2 + 35*e^3*x^3))))/(315*e^4)
```

fricas [A] time = 0.70, size = 148, normalized size = 1.17

$$\frac{2\left(35\,Bce^4x^4-16\,Bcd^4-42\,Abd^2e^2+24\,(Bb+Ac)d^3e+5\left(Bcde^3+9\,(Bb+Ac)e^4\right)x^3-3\left(2\,Bcd^2e^2-21\,Abe^4\right.\right.}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*e^4*x^4 - 16*B*c*d^4 - 42*A*b*d^2*e^2 + 24*(B*b + A*c)*d^3*e
+ 5*(B*c*d*e^3 + 9*(B*b + A*c)*e^4)*x^3 - 3*(2*B*c*d^2*e^2 - 21*A*b*e^4 - 3
*(B*b + A*c)*d*e^3)*x^2 + (8*B*c*d^3*e + 21*A*b*d*e^3 - 12*(B*b + A*c)*d^2*
e^2)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.17, size = 386, normalized size = 3.06

$$\frac{2}{315}\Big(105\Big((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\Big)Abde^{(-1)} + 21\Big(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d\,d^2\Big)Bbde^{(-2)} + 21\Big(3\,(x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d*e^(-1) + 21*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d*e^(-2) + 21
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d*e^
(-2) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*B*c*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*e^(-1) + 9*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b*e^(-2)
 + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*A*c*e^(-2) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.04, size = 121, normalized size = 0.96

$$-\frac{2\,(ex+d)^{\frac{3}{2}}\Big(-35Bc\,x^3e^3 - 45Ac\,e^3x^2 - 45Bb\,e^3x^2 + 30Bcd\,e^2x^2 - 63Ab\,e^3x + 36Acd\,e^2x + 36Bbd\,e^2x - 24Bc\,d^2e}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x)
```

```
[Out] -2/315*(e*x+d)^(3/2)*(-35*B*c*e^3*x^3-45*A*c*e^3*x^2-45*B*b*e^3*x^2+30*B*c*
d*e^2*x^2-63*A*b*e^3*x+36*A*c*d*e^2*x+36*B*b*d*e^2*x-24*B*c*d^2*e*x+42*A*b*
d*e^2-24*A*c*d^2*e-24*B*b*d^2*e+16*B*c*d^3)/e^4
```

maxima [A] time = 0.51, size = 112, normalized size = 0.89

$$\frac{2\Big(35\,(ex+d)^{\frac{9}{2}}Bc - 45\,(3\,Bcd - (Bb+Ac)e)(ex+d)^{\frac{7}{2}} + 63\,\Big(3\,Bcd^2 + Abe^2 - 2\,(Bb+Ac)de\Big)(ex+d)^{\frac{5}{2}} - 105\,\Big(Bcd^3}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*c - 45*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(7/2
) + 63*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(5/2) - 105*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.88

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{5\,e^4}+\frac{(d+e\,x)^{7/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{7\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{9/2}}{9\,e^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(5*e^4) +
 ((d + e*x)^(7/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(7*e^4) + (2*B*c*(d + e*x)
^(9/2))/(9*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 4.18, size = 146, normalized size = 1.16

$$\frac{2\left(\frac{Bc(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}(Ace+Bbe-3Bcd)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(Abe^2-2Acde-2Bbde+3Bcd^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(-Abde^2+Acd^2e+Bbd^2e-Bcd^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+b*x),x)
```

```
[Out] 2*(B*c*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*c*e + B*b*e - 3*B*c*
d)/(7*e**3) + (d + e*x)**(5/2)*(A*b*e**2 - 2*A*c*d*e - 2*B*b*d*e + 3*B*c*d*
*2)/(5*e**3) + (d + e*x)**(3/2)*(-A*b*d*e**2 + A*c*d**2*e + B*b*d**2*e - B*
c*d**3)/(3*e**3))/e
```

3.1217 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=124

$$-\frac{2(d+ex)^{5/2}(-Ace-bBe+3Bcd)}{5e^4}+\frac{2(d+ex)^{3/2}(Bd(3cd-2be)-Ae(2cd-be))}{3e^4}-\frac{2d\sqrt{d+ex}\,(Bd-Ae)(cd-be)}{e^4}+$$

```
[Out] 2/3*(B*d*(-2*b*e+3*c*d)-A*e*(-b*e+2*c*d))*(e*x+d)^(3/2)/e^4-2/5*(-A*c*e-B*b
*e+3*B*c*d)*(e*x+d)^(5/2)/e^4+2/7*B*c*(e*x+d)^(7/2)/e^4-2*d*(-A*e+B*d)*(-b*
e+c*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{5/2}(-Ace-bBe+3Bcd)}{5e^4}+\frac{2(d+ex)^{3/2}(Bd(3cd-2be)-Ae(2cd-be))}{3e^4}-\frac{2d\sqrt{d+ex}\,(Bd-Ae)(cd-be)}{e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*d*(B*d - A*e)*(c*d - b*e)*Sqrt[d + e*x])/e^4 + (2*(B*d*(3*c*d - 2*b*e)
- A*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*e^4) - (2*(3*B*c*d - b*B*e - A*c*e
)*(d + e*x)^(5/2))/(5*e^4) + (2*B*c*(d + e*x)^(7/2))/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)}{\sqrt{d+ex}}\,dx=\int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3\sqrt{d+ex}}+\frac{(Bd(3cd-2be)-Ae(2cd-be))\sqrt{d+ex}}{e^3}+\frac{(-3Bcd+b$$

$$=-\frac{2d(Bd-Ae)(cd-be)\sqrt{d+ex}}{e^4}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))(d+ex)^{3/2}}{3e^4}-\frac{2(3$$

Mathematica [A] time = 0.09, size = 113, normalized size = 0.91

$$\frac{2\sqrt{d+ex}\,\left(7Ae\left(5be(ex-2d)+c\left(8d^2-4dex+3e^2x^2\right)\right)+B\left(7be\left(8d^2-4dex+3e^2x^2\right)-3c\left(16d^3-8d^2ex+6de^2\right.\right.\right.}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(7*A*e*(5*b*e*(-2*d + e*x) + c*(8*d^2 - 4*d*e*x + 3*e^2*x^
2)) + B*(7*b*e*(8*d^2 - 4*d*e*x + 3*e^2*x^2) - 3*c*(16*d^3 - 8*d^2*e*x + 6*
d*e^2*x^2 - 5*e^3*x^3))))/(105*e^4)
```

fricas [A] time = 0.70, size = 108, normalized size = 0.87

$$\frac{2\left(15\,Bce^3x^3-48\,Bcd^3-70\,Abde^2+56\,(Bb+Ac)d^2e-3\left(6\,Bcde^2-7\,(Bb+Ac)e^3\right)x^2+\left(24\,Bcd^2e+35\,Abe^3-2\right.\right.}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*e^3*x^3 - 48*B*c*d^3 - 70*A*b*d*e^2 + 56*(B*b + A*c)*d^2*e -
3*(6*B*c*d*e^2 - 7*(B*b + A*c)*e^3)*x^2 + (24*B*c*d^2*e + 35*A*b*e^3 - 28*(
B*b + A*c)*d*e^2)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.18, size = 167, normalized size = 1.35

$$\frac{2}{105}\Big(35\Big((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\Big)Abe^{(-1)} + 7\Big(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d\,d^2\Big)Bbe^{(-2)} + 7\Big(3\,(xe+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*e^(-1) + 7*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*e^(-2) + 7*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*e^(-2) + 3*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*c*e^(-3))*e^(-1)
```

maple [A] time = 0.05, size = 121, normalized size = 0.98

$$-\frac{2\Big(-15Bc\,x^3e^3 - 21Ac\,e^3x^2 - 21Bb\,e^3x^2 + 18Bcd\,e^2x^2 - 35Ab\,e^3x + 28Acd\,e^2x + 28Bbd\,e^2x - 24Bc\,d^2ex + 70}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x)
```

```
[Out] -2/105*(-15*B*c*e^3*x^3-21*A*c*e^3*x^2-21*B*b*e^3*x^2+18*B*c*d*e^2*x^2-35*A
*b*e^3*x+28*A*c*d*e^2*x+28*B*b*d*e^2*x-24*B*c*d^2*e*x+70*A*b*d*e^2-56*A*c*d
^2*e-56*B*b*d^2*e+48*B*c*d^3)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.60, size = 112, normalized size = 0.90

$$\frac{2\Big(15\,(ex+d)^{\frac{7}{2}}Bc - 21\,(3\,Bcd - (Bb+Ac)e)(ex+d)^{\frac{5}{2}} + 35\,\Big(3\,Bcd^2 + Abe^2 - 2\,(Bb+Ac)de\Big)(ex+d)^{\frac{3}{2}} - 105\,\Big(B}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*c - 21*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(5/2
) + 35*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*(e*x + d)^(3/2) - 105*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 111, normalized size = 0.90

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,b\,e^2 + 6\,B\,c\,d^2 - 4\,A\,c\,d\,e - 4\,B\,b\,d\,e\right)}{3\,e^4} + \frac{(d+e\,x)^{5/2}\,\left(2\,A\,c\,e + 2\,B\,b\,e - 6\,B\,c\,d\right)}{5\,e^4} + \frac{2\,B\,c\,(d+e\,x)^{7/2}}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/(3*e^4) +
 ((d + e*x)^(5/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(5*e^4) + (2*B*c*(d + e*x)
^(7/2))/(7*e^4) - (2*d*(A*e - B*d)*(b*e - c*d)*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 47.60, size = 430, normalized size = 3.47

$$\begin{cases} \frac{-\frac{2Abd\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{2Ab\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{2Acd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{2Ac\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Bbd\left(\frac{d^2}{\sqrt{d+ex}}\right.}{}}{} \\ \frac{\frac{Abx^2}{2}+\frac{Bcx^4}{4}+\frac{x^3(Ac+Bb)}{3}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*A*b*(d**2/sqr
t(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*A*c*d*(d**2/sqrt
(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 2*A*c*(-d**3/sqr
t(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5
)/e**2 - 2*B*b*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)
/3)/e**2 - 2*B*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)*
*(3/2) - (d + e*x)**(5/2)/5)/e**2 - 2*B*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*s
qrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*B*c*(d**4/
sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e
*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((A*b*x**2/2 + B*c*x
**4/4 + x**3*(A*c + B*b)/3)/sqrt(d), True))
```

3.1218 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=122

$$-\frac{2(d+ex)^{3/2}(-Ace-bBe+3Bcd)}{3e^4}+\frac{2\sqrt{d+ex}\,(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2Bc(d}{5}$$

```
[Out] -2/3*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^(3/2)/e^4+2/5*B*c*(e*x+d)^(5/2)/e^4+2*d
*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^(1/2)+2*(B*d*(-2*b*e+3*c*d)-A*e*(-b*e+2*
c*d))*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2(d+ex)^{3/2}(-Ace-bBe+3Bcd)}{3e^4}+\frac{2\sqrt{d+ex}\,(Bd(3cd-2be)-Ae(2cd-be))}{e^4}+\frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2Bc(d}{5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(e^4*Sqrt[d + e*x]) + (2*(B*d*(3*c*d - 2*b*e)
 - A*e*(2*c*d - b*e))*Sqrt[d + e*x])/e^4 - (2*(3*B*c*d - b*B*e - A*c*e)*(d
+ e*x)^(3/2))/(3*e^4) + (2*B*c*(d + e*x)^(5/2))/(5*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{3/2}}\,dx &= \int \left(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{3/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3\sqrt{d+ex}}+\frac{(-3Bcd+bBe+Ac}{e^3}\right.\\ &= \frac{2d(Bd-Ae)(cd-be)}{e^4\sqrt{d+ex}}+\frac{2(Bd(3cd-2be)-Ae(2cd-be))\sqrt{d+ex}}{e^4}-\frac{2(3Bcd-bB}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 110, normalized size = 0.90

$$\frac{2\left(5Ae\left(3be(2d+ex)+c\left(-8d^2-4dex+e^2x^2\right)\right)+B\left(5be\left(-8d^2-4dex+e^2x^2\right)+3c\left(16d^3+8d^2ex-2de^2x^2+\right.\right.\right.}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*A*e*(3*b*e*(2*d + e*x) + c*(-8*d^2 - 4*d*e*x + e^2*x^2)) + B*(5*b*e*(
-8*d^2 - 4*d*e*x + e^2*x^2) + 3*c*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x
^3))))/(15*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.69, size = 118, normalized size = 0.97

$$\frac{2\left(3\,Bce^3x^3+48\,Bcd^3+30\,Abde^2-40\,(Bb+Ac)d^2e-\left(6\,Bcde^2-5\,(Bb+Ac)e^3\right)x^2+\left(24\,Bcd^2e+15\,Abe^3-2\right.\right.}{15\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*e^3*x^3 + 48*B*c*d^3 + 30*A*b*d*e^2 - 40*(B*b + A*c)*d^2*e - (6
*B*c*d*e^2 - 5*(B*b + A*c)*e^3)*x^2 + (24*B*c*d^2*e + 15*A*b*e^3 - 20*(B*b
+ A*c)*d*e^2)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.18, size = 167, normalized size = 1.37

$$\frac{2}{15}\Big(3\,(xe+d)^{\frac{5}{2}}Bce^{16} - 15\,(xe+d)^{\frac{3}{2}}Bcde^{16} + 45\,\sqrt{xe+d}\,Bcd^2e^{16} + 5\,(xe+d)^{\frac{3}{2}}Bbe^{17} + 5\,(xe+d)^{\frac{3}{2}}Ace^{17} - 30\,\sqrt{xe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c*e^16 - 15*(x*e + d)^(3/2)*B*c*d*e^16 + 45*sqrt(
x*e + d)*B*c*d^2*e^16 + 5*(x*e + d)^(3/2)*B*b*e^17 + 5*(x*e + d)^(3/2)*A*c*
e^17 - 30*sqrt(x*e + d)*B*b*d*e^17 - 30*sqrt(x*e + d)*A*c*d*e^17 + 15*sqrt(
x*e + d)*A*b*e^18)*e^(-20) + 2*(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + A*b*d*e^2
)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.06, size = 121, normalized size = 0.99

$$\frac{\frac{2}{5}Bc\,x^3e^3 + \frac{2}{3}Ac\,e^3x^2 + \frac{2}{3}Bb\,e^3x^2 - \frac{4}{5}Bcd\,e^2x^2 + 2Ab\,e^3x - \frac{8}{3}Acd\,e^2x - \frac{8}{3}Bbd\,e^2x + \frac{16}{5}Bc\,d^2ex + 4Abd\,e^2 - \frac{16}{3}Ac\,d^2}{\sqrt{ex+d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x)
```

```
[Out] 2/15*(3*B*c*e^3*x^3+5*A*c*e^3*x^2+5*B*b*e^3*x^2-6*B*c*d*e^2*x^2+15*A*b*e^3*
x-20*A*c*d*e^2*x-20*B*b*d*e^2*x+24*B*c*d^2*e*x+30*A*b*d*e^2-40*A*c*d^2*e-40
*B*b*d^2*e+48*B*c*d^3)/(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.57, size = 120, normalized size = 0.98

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc-5\,(3\,Bcd-(Bb+Ac)e)(ex+d)^{\frac{3}{2}}+15\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)\sqrt{ex+d}}{e^3}+\frac{15\left(Bcd^3+Abde^2-(Bb+Ac)d^2e\right)}{\sqrt{ex+d}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c - 5*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^(3/2)
+ 15*(3*B*c*d^2 + A*b*e^2 - 2*(B*b + A*c)*d*e)*sqrt(e*x + d))/e^3 + 15*(B*c
*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 1.55, size = 124, normalized size = 1.02

$$\frac{\sqrt{d+e\,x}\,\left(2\,A\,b\,e^2+6\,B\,c\,d^2-4\,A\,c\,d\,e-4\,B\,b\,d\,e\right)}{e^4}+\frac{{\left(d+e\,x\right)}^{3/2}\,\left(2\,A\,c\,e+2\,B\,b\,e-6\,B\,c\,d\right)}{3\,e^4}+\frac{2\,B\,c\,d^3+2\,A\,b\,d\,e^2}{e^4\,\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(2*A*b*e^2 + 6*B*c*d^2 - 4*A*c*d*e - 4*B*b*d*e))/e^4 + ((d
 + e*x)^(3/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d))/(3*e^4) + (2*B*c*d^3 + 2*A*b*d
*e^2 - 2*A*c*d^2*e - 2*B*b*d^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*c*(d + e*x)^
(5/2))/(5*e^4)
```

sympy [A] time = 24.16, size = 126, normalized size = 1.03

$$\frac{2Bc(d+ex)^{\frac{5}{2}}}{5e^4} - \frac{2d(-Ae+Bd)(be-cd)}{e^4\sqrt{d+ex}} + \frac{(d+ex)^{\frac{3}{2}}(2Ace+2Bbe-6Bcd)}{3e^4} + \frac{\sqrt{d+ex}\left(2Abe^2-4Acde-4Bbde\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c*(d + e*x)**(5/2)/(5*e**4) - 2*d*(-A*e + B*d)*(b*e - c*d)/(e**4*sqrt(d
 + e*x)) + (d + e*x)**(3/2)*(2*A*c*e + 2*B*b*e - 6*B*c*d)/(3*e**4) + sqrt(d
 + e*x)*(2*A*b*e**2 - 4*A*c*d*e - 4*B*b*d*e + 6*B*c*d**2)/e**4
```

3.1219 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=122

$$-\frac{2\sqrt{d+ex}\,(-Ace-bBe+3Bcd)}{e^4}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}+\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

```
[Out] 2/3*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^(3/2)+2/3*B*c*(e*x+d)^(3/2)/e^4-2*(
B*d*(-2*b*e+3*c*d)-A*e*(-b*e+2*c*d))/e^4/(e*x+d)^(1/2)-2*(-A*c*e-B*b*e+3*B*
c*d)*(e*x+d)^(1/2)/e^4
```

Rubi **[A]** time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{2\sqrt{d+ex}\,(-Ace-bBe+3Bcd)}{e^4}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}+\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(3*e^4*(d + e*x)^(3/2)) - (2*(B*d*(3*c*d - 2*
b*e) - A*e*(2*c*d - b*e)))/(e^4*Sqrt[d + e*x]) - (2*(3*B*c*d - b*B*e - A*c*
e)*Sqrt[d + e*x])/e^4 + (2*B*c*(d + e*x)^(3/2))/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{5/2}}\,dx&=\int \Bigg(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{5/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^{3/2}}+\frac{-3Bcd+bBe+Ace}{e^3\sqrt{d+ex}}+\\&=\frac{2d(Bd-Ae)(cd-be)}{3e^4(d+ex)^{3/2}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{e^4\sqrt{d+ex}}-\frac{2(3Bcd-bBe-Ace)\sqrt{d}}{e^4}\end{aligned}$$

Mathematica **[A]** time = 0.05, size = 110, normalized size = 0.90

$$\frac{2\left(Ae\left(c\left(8d^2+12dex+3e^2x^2\right)-be(2d+3ex)\right)+B\left(be\left(8d^2+12dex+3e^2x^2\right)+c\left(-16d^3-24d^2ex-6de^2x^2+e^3\right.\right.\right.}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(A*e*(-(b*e*(2*d + 3*e*x)) + c*(8*d^2 + 12*d*e*x + 3*e^2*x^2)) + B*(b*e*
(8*d^2 + 12*d*e*x + 3*e^2*x^2) + c*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^
3*x^3))))/(3*e^4*(d + e*x)^(3/2))
```

fricas **[A]** time = 0.63, size = 128, normalized size = 1.05

$$\frac{2\left(Bce^3x^3-16\,Bcd^3-2\,Abde^2+8\,(Bb+Ac)d^2e-3\left(2\,Bcde^2-(Bb+Ac)e^3\right)x^2-3\left(8\,Bcd^2e+Abe^3-4\,(Bb+Ac\right.\right.}{3\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*e^3*x^3 - 16*B*c*d^3 - 2*A*b*d*e^2 + 8*(B*b + A*c)*d^2*e - 3*(2*B*
c*d*e^2 - (B*b + A*c)*e^3)*x^2 - 3*(8*B*c*d^2*e + A*b*e^3 - 4*(B*b + A*c)*d
*e^2)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 156, normalized size = 1.28

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bce^8 - 9\sqrt{xe+d}\,Bcde^8 + 3\sqrt{xe+d}\,Bbe^9 + 3\sqrt{xe+d}\,Ace^9\right)e^{(-12)} - \frac{2(9(xe+d)Bcd^2 - Bcd^3 - 6(x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c*e^8 - 9*sqrt(x*e + d)*B*c*d*e^8 + 3*sqrt(x*e + d)*
B*b*e^9 + 3*sqrt(x*e + d)*A*c*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*c*d^2 - B*c
*d^3 - 6*(x*e + d)*B*b*d*e - 6*(x*e + d)*A*c*d*e + B*b*d^2*e + A*c*d^2*e +
3*(x*e + d)*A*b*e^2 - A*b*d*e^2)*e^(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 121, normalized size = 0.99

$$-\frac{2(-Bcx^3e^3 - 3Ace^3x^2 - 3Bbe^3x^2 + 6Bcde^2x^2 + 3Abe^3x - 12Acde^2x - 12Bbde^2x + 24Bcd^2ex + 2Abde^2 -}{3(ex+d)^{\frac{3}{2}}e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-B*c*e^3*x^3-3*A*c*e^3*x^2-3*B*b*e^3*x^2+6*B*c*d*e^2*x^2+3*A*b*e^3*x-
12*A*c*d*e^2*x-12*B*b*d*e^2*x+24*B*c*d^2*e*x+2*A*b*d*e^2-8*A*c*d^2*e-8*B*b*
d^2*e+16*B*c*d^3)/(e*x+d)^(3/2)/e^4
```

maxima [A] time = 0.64, size = 116, normalized size = 0.95

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}Bc - 3(3Bcd-(Bb+Ac)e)\sqrt{ex+d}}{e^3} + \frac{Bcd^3 + Abde^2 - (Bb+Ac)d^2e - 3\left(3Bcd^2 + Abe^2 - 2(Bb+Ac)de\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*c - 3*(3*B*c*d - (B*b + A*c)*e)*sqrt(e*x + d))/e^3
+ (B*c*d^3 + A*b*d*e^2 - (B*b + A*c)*d^2*e - 3*(3*B*c*d^2 + A*b*e^2 - 2*(B*
b + A*c)*d*e)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 0.09, size = 137, normalized size = 1.12

$$\frac{2Bc(d+ex)^3 + 2Bcd^3 + 2Abde^2 - 2Acd^2e - 2Bbd^2e - 6Abe^2(d+ex) + 6Ace(d+ex)^2 + 6Bbe(d}{3e^4(d+ex)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*c*(d + e*x)^3 + 2*B*c*d^3 + 2*A*b*d*e^2 - 2*A*c*d^2*e - 2*B*b*d^2*e -
6*A*b*e^2*(d + e*x) + 6*A*c*e*(d + e*x)^2 + 6*B*b*e*(d + e*x)^2 - 18*B*c*d*
(d + e*x)^2 - 18*B*c*d^2*(d + e*x) + 12*A*c*d*e*(d + e*x) + 12*B*b*d*e*(d +
 e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.56, size = 539, normalized size = 4.42

$$\begin{cases} -\frac{4Abde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{6Abe^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{16Acd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{24Acde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{6Ace^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \\ \frac{\frac{Abx^2}{2}+\frac{Acx^3}{3}+\frac{Bbx^3}{3}+\frac{Bcx^4}{4}}{d^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-4*A*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
- 6*A*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*A*c*d
**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*c*d*e**2*x/(
3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*c*e**3*x**2/(3*d*e**
4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*B*b*d**2*e/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*B*b*d*e**2*x/(3*d*e**4*sqrt(d + e*x)
+ 3*e**5*x*sqrt(d + e*x)) + 6*B*b*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**
5*x*sqrt(d + e*x)) - 32*B*c*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
+ e*x)) - 48*B*c*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
 - 12*B*c*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 2
*B*c*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)), Ne(e, 0))
, ((A*b*x**2/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4)/d**(5/2), True))
```

3.1220 $\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=122

$$\frac{2(-Ace-bBe+3Bcd)}{e^4\sqrt{d+ex}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

```
[Out] 2/5*d*(-A*e+B*d)*(-b*e+c*d)/e^4/(e*x+d)^(5/2)-2/3*(B*d*(-2*b*e+3*c*d)-A*e*(
-b*e+2*c*d))/e^4/(e*x+d)^(3/2)+2*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d)^(1/2)+2
*B*c*(e*x+d)^(1/2)/e^4
```

Rubi [**A**] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{2(-Ace-bBe+3Bcd)}{e^4\sqrt{d+ex}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*d*(B*d - A*e)*(c*d - b*e))/(5*e^4*(d + e*x)^(5/2)) - (2*(B*d*(3*c*d - 2*
b*e) - A*e*(2*c*d - b*e)))/(3*e^4*(d + e*x)^(3/2)) + (2*(3*B*c*d - b*B*e -
A*c*e))/(e^4*Sqrt[d + e*x]) + (2*B*c*Sqrt[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)}{(d+ex)^{7/2}}\,dx &= \int \Big(-\frac{d(Bd-Ae)(cd-be)}{e^3(d+ex)^{7/2}}+\frac{Bd(3cd-2be)-Ae(2cd-be)}{e^3(d+ex)^{5/2}}+\frac{-3Bcd+bBe+Ac}{e^3(d+ex)^{3/2}}\\ &= \frac{2d(Bd-Ae)(cd-be)}{5e^4(d+ex)^{5/2}}-\frac{2(Bd(3cd-2be)-Ae(2cd-be))}{3e^4(d+ex)^{3/2}}+\frac{2(3Bcd-bBe-Ace)}{e^4\sqrt{d+ex}}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 111, normalized size = 0.91

$$-\frac{2\Big(Ae\big(be(2d+5ex)+c\left(8d^2+20dex+15e^2x^2\right)\big)+B\Big(be\left(8d^2+20dex+15e^2x^2\right)-3c\Big(16d^3+40d^2ex+30de}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(A*e*(b*e*(2*d + 5*e*x) + c*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) + B*(b*e*(
8*d^2 + 20*d*e*x + 15*e^2*x^2) - 3*c*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 +
5*e^3*x^3))))/(15*e^4*(d + e*x)^(5/2))
```

fricas [**A**] time = 0.80, size = 141, normalized size = 1.16

$$\frac{2\Big(15\,Bce^3x^3+48\,Bcd^3-2\,Abde^2-8\,(Bb+Ac)d^2e+15\left(6\,Bcde^2-(Bb+Ac)e^3\right)x^2+5\Big(24\,Bcd^2e-Abe^3-4\,(}{15\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*e^3*x^3 + 48*B*c*d^3 - 2*A*b*d*e^2 - 8*(B*b + A*c)*d^2*e + 15*
(6*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 5*(24*B*c*d^2*e - A*b*e^3 - 4*(B*b +
A*c)*d*e^2)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4
)
```

giac [A] time = 0.19, size = 152, normalized size = 1.25

$$2\sqrt{xe+d}\,Bce^{(-4)}+\frac{2\left(45\,(xe+d)^2Bcd-15\,(xe+d)Bcd^2+3\,Bcd^3-15\,(xe+d)^2Bbe-15\,(xe+d)^2Ace+10\,(xe+\right.}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*c*e^(-4) + 2/15*(45*(x*e + d)^2*B*c*d - 15*(x*e + d)*B*c*
d^2 + 3*B*c*d^3 - 15*(x*e + d)^2*B*b*e - 15*(x*e + d)^2*A*c*e + 10*(x*e + d
)*B*b*d*e + 10*(x*e + d)*A*c*d*e - 3*B*b*d^2*e - 3*A*c*d^2*e - 5*(x*e + d)*
A*b*e^2 + 3*A*b*d*e^2)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 121, normalized size = 0.99

$$-\frac{2\left(-15Bc\,x^3e^3+15Ac\,e^3x^2+15Bb\,e^3x^2-90Bcd\,e^2x^2+5Ab\,e^3x+20Acd\,e^2x+20Bbd\,e^2x-120Bc\,d^2ex+2Abd\right.}{15\,(ex+d)^{\frac{5}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-15*B*c*e^3*x^3+15*A*c*e^3*x^2+15*B*b*e^3*x^2-90*B*c*d*e^2*x^2+5*A*b
*e^3*x+20*A*c*d*e^2*x+20*B*b*d*e^2*x-120*B*c*d^2*e*x+2*A*b*d*e^2+8*A*c*d^2*
e+8*B*b*d^2*e-48*B*c*d^3)/(e*x+d)^(5/2)/e^4
```

maxima [A] time = 0.58, size = 117, normalized size = 0.96

$$\frac{2\left(\frac{15\,\sqrt{ex+d}\,Bc}{e^3}+\frac{3\,Bcd^3+3\,Abde^2-3\,(Bb+Ac)d^2e+15\,(3\,Bcd-(Bb+Ac)e)(ex+d)^2-5\,\left(3\,Bcd^2+Abe^2-2\,(Bb+Ac)de\right)(ex+d)}{(ex+d)^{\frac{5}{2}}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*c/e^3 + (3*B*c*d^3 + 3*A*b*d*e^2 - 3*(B*b + A*c)*d
^2*e + 15*(3*B*c*d - (B*b + A*c)*e)*(e*x + d)^2 - 5*(3*B*c*d^2 + A*b*e^2 -
2*(B*b + A*c)*d*e)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 0.09, size = 120, normalized size = 0.98

$$-\frac{2\,\left(2\,A\,b\,d\,e^2-48\,B\,c\,d^3+8\,A\,c\,d^2\,e+8\,B\,b\,d^2\,e+5\,A\,b\,e^3\,x+15\,A\,c\,e^3\,x^2+15\,B\,b\,e^3\,x^2-15\,B\,c\,e^3\,x^3-90\,B\,c\,d\,e\right.}{15\,e^4\,{(d+e\,x)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(2*A*b*d*e^2 - 48*B*c*d^3 + 8*A*c*d^2*e + 8*B*b*d^2*e + 5*A*b*e^3*x + 1
5*A*c*e^3*x^2 + 15*B*b*e^3*x^2 - 15*B*c*e^3*x^3 - 90*B*c*d*e^2*x^2 + 20*A*c
*d*e^2*x + 20*B*b*d*e^2*x - 120*B*c*d^2*e*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [**A**] time = 3.43, size = 784, normalized size = 6.43

$$\begin{cases} -\frac{4Abde^{2}}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}}-\frac{10Abe^{3}x}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d+ex}}-\frac{16Acd^{2}e}{15d^{2}e^{4}\sqrt{d+ex}+30de^{5}x\sqrt{d+ex}+15e^{6}x^{2}\sqrt{d}} \\ \frac{\frac{Abx^{2}}{2}+\frac{Acx^{3}}{3}+\frac{Bbx^{3}}{3}+\frac{Bcx^{4}}{4}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-4*A*b*d*e**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
 e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10*A*b*e**3*x/(15*d**2*e**4*sqrt(d +
e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 16*A*c*d**
2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*
sqrt(d + e*x)) - 40*A*c*d*e**2*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*
sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 30*A*c*e**3*x**2/(15*d**2*e**
4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) -
 16*B*b*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15
*e**6*x**2*sqrt(d + e*x)) - 40*B*b*d*e**2*x/(15*d**2*e**4*sqrt(d + e*x) + 3
0*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 30*B*b*e**3*x**2/(
15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(
d + e*x)) + 96*B*c*d**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B*c*d**2*e*x/(15*d**2*e**4*sqrt(d
+ e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 180*B*c*
d*e**2*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) + 30*B*c*e**3*x**3/(15*d**2*e**4*sqrt(d + e*x) + 30*
d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*b*x**2
/2 + A*c*x**3/3 + B*b*x**3/3 + B*c*x**4/4)/d**(7/2), True))
```

3.1221 $\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{15/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{15e^6}+\frac{2(d+ex)^{13/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2\right.\right.}{13e^6}$$

```
[Out] -2/9*d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(9/2)/e^6+2/11*d*(-b*e+c*d)*(B*d*(
-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(11/2)/e^6+2/13*(A*e*(b^2*e^2-6*b
*c*d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(13/2)/e^6
-2/15*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(15/2
)/e^6-2/17*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(17/2)/e^6+2/19*B*c^2*(e*x+d)
^(19/2)/e^6
```

Rubi [A] time = 0.21, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{2(d+ex)^{15/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{15e^6}+\frac{2(d+ex)^{13/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2\right.\right.}{13e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(9/2))/(9*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(11/2))/(11*e^6) +
 (2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e +
 3*b^2*e^2))*(d + e*x)^(13/2))/(13*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10
*c^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(15/2))/(15*e^6) - (2*c*(5*B*c*d
 - 2*b*B*e - A*c*e)*(d + e*x)^(17/2))/(17*e^6) + (2*B*c^2*(d + e*x)^(19/2))
/(19*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(bx+cx^2\right)^2\,dx=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{7/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae}{e^5}\right.$$

$$=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{9/2}}{9e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(}{11e^6}$$

Mathematica [A] time = 0.23, size = 273, normalized size = 1.02

$$\frac{2(d+ex)^{9/2}\left(19Ae\left(85b^2e^2\left(8d^2-36dex+99e^2x^2\right)+34bce\left(-16d^3+72d^2ex-198de^2x^2+429e^3x^3\right)+c^2\left(128d^4\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(19*A*e*(85*b^2*e^2*(8*d^2 - 36*d*e*x + 99*e^2*x^2) + 34
*b*c*e*(-16*d^3 + 72*d^2*e*x - 198*d*e^2*x^2 + 429*e^3*x^3) + c^2*(128*d^4
- 576*d^3*e*x + 1584*d^2*e^2*x^2 - 3432*d*e^3*x^3 + 6435*e^4*x^4)) + B*(323
*b^2*e^2*(-16*d^3 + 72*d^2*e*x - 198*d*e^2*x^2 + 429*e^3*x^3) + 38*b*c*e*(1
28*d^4 - 576*d^3*e*x + 1584*d^2*e^2*x^2 - 3432*d*e^3*x^3 + 6435*e^4*x^4) -
5*c^2*(256*d^5 - 1152*d^4*e*x + 3168*d^3*e^2*x^2 - 6864*d^2*e^3*x^3 + 12870
*d*e^4*x^4 - 21879*e^5*x^5))))/(2078505*e^6)
```

fricas [B] time = 0.68, size = 562, normalized size = 2.10

$$\frac{2\left(109395\,Bc^{2}e^{9}x^{9}-1280\,Bc^{2}d^{9}+12920\,Ab^{2}d^{6}e^{3}+2432\left(2\,Bbc+Ac^{2}\right)d^{8}e-5168\left(Bb^{2}+2\,Abc\right)d^{7}e^{2}+6435\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/2078505*(109395*B*c^2*e^9*x^9 - 1280*B*c^2*d^9 + 12920*A*b^2*d^6*e^3 + 24
32*(2*B*b*c + A*c^2)*d^8*e - 5168*(B*b^2 + 2*A*b*c)*d^7*e^2 + 6435*(58*B*c^
2*d*e^8 + 19*(2*B*b*c + A*c^2)*e^9)*x^8 + 429*(1010*B*c^2*d^2*e^7 + 988*(2*
B*b*c + A*c^2)*d*e^8 + 323*(B*b^2 + 2*A*b*c)*e^9)*x^7 + 33*(5240*B*c^2*d^3*
e^6 + 4845*A*b^2*e^9 + 15238*(2*B*b*c + A*c^2)*d^2*e^7 + 14858*(B*b^2 + 2*A
*b*c)*d*e^8)*x^6 + 9*(35*B*c^2*d^4*e^5 + 64600*A*b^2*d*e^8 + 23028*(2*B*b*c
 + A*c^2)*d^3*e^6 + 66538*(B*b^2 + 2*A*b*c)*d^2*e^7)*x^5 - 5*(70*B*c^2*d^5*
e^4 - 147934*A*b^2*d^2*e^7 - 133*(2*B*b*c + A*c^2)*d^4*e^5 - 51680*(B*b^2 +
 2*A*b*c)*d^3*e^6)*x^4 + 5*(80*B*c^2*d^6*e^3 + 68476*A*b^2*d^3*e^6 - 152*(2
*B*b*c + A*c^2)*d^5*e^4 + 323*(B*b^2 + 2*A*b*c)*d^4*e^5)*x^3 - 3*(160*B*c^2
*d^7*e^2 - 1615*A*b^2*d^4*e^5 - 304*(2*B*b*c + A*c^2)*d^6*e^3 + 646*(B*b^2
+ 2*A*b*c)*d^5*e^4)*x^2 + 4*(160*B*c^2*d^8*e - 1615*A*b^2*d^5*e^4 - 304*(2*
B*b*c + A*c^2)*d^7*e^2 + 646*(B*b^2 + 2*A*b*c)*d^6*e^3)*x)*sqrt(e*x + d)/e^
6
```

giac [B] time = 0.34, size = 2710, normalized size = 10.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/14549535*(969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
+ d)*d^2)*A*b^2*d^4*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^4*e^(-3) + 8314
02*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*A*b*c*d^4*e^(-3) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*B*b*c*d^4*e^(-4) + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*c^2*d^4*e^(-4) + 20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9
/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)
^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d^4*e^(-5) + 1662804*(5*(x*e + d)
^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d
^3)*A*b^2*d^3*e^(-2) + 184756*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*b^2*d^3*e^(-3) + 369512*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*
b*c*d^3*e^(-3) + 167960*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*B*b*c*d^3*e^(-4) + 83980*(63*(x*e + d)^(11/2) - 385
*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1
155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*d^3*e^(-4) + 19380*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*d^3*e^(-5) + 277134*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*d^2*e^(-2) + 125970*(63*(x*e + d)^(11/2)
- 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^
3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*d^2*e^(-3) + 25
1940*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*
d^5)*A*b*c*d^2*e^(-3) + 58140*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*d^2*e^(
-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d
)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x
*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c^2*d^2*e^(-4) + 13566*(429*(
x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25
025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)
*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c^2*d^2*e^(-5)
 + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*A*b^2*d*e^(-2) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/
2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)
^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^2*d*e^(
-3) + 38760*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d
)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x
*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b*c*d*e^(-3) + 18088*(429*(x*
e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 2502
5*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d
^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b*c*d*e^(-4) + 9
044*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2
)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
+ d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*c^2*
d*e^(-4) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(
x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*
d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e
 + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*c^2*d*e^(-5) + 4845*(231*(x*e
 + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x
*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3
003*sqrt(x*e + d)*d^6)*A*b^2*e^(-2) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*
e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 +
32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/
2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^2*e^(-3) + 4522*(429*(x*e + d)^(15/2)
- 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9
/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*
e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b*c*e^(-3) + 266*(6435*(x*e +
d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920
*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)
*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqr
t(x*e + d)*d^8)*B*b*c*e^(-4) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)
^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850
850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/
2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*c^2*e^(-4
) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e +
d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4
 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e
 + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*
c^2*e^(-5))*e^(-1)
```

maple [A] time = 0.07, size = 341, normalized size = 1.28

$$2\,(ex+d)^{\frac{9}{2}}\left(109395B\,c^{2}x^{5}e^{5}+122265A\,c^{2}e^{5}x^{4}+244530Bbc\,e^{5}x^{4}-64350B\,c^{2}d\,e^{4}x^{4}+277134Abc\,e^{5}x^{3}-652\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/2078505*(e*x+d)^(9/2)*(109395*B*c^2*e^5*x^5+122265*A*c^2*e^5*x^4+244530*B
*b*c*e^5*x^4-64350*B*c^2*d*e^4*x^4+277134*A*b*c*e^5*x^3-65208*A*c^2*d*e^4*x
^3+138567*B*b^2*e^5*x^3-130416*B*b*c*d*e^4*x^3+34320*B*c^2*d^2*e^3*x^3+1598
85*A*b^2*e^5*x^2-127908*A*b*c*d*e^4*x^2+30096*A*c^2*d^2*e^3*x^2-63954*B*b^2
*d*e^4*x^2+60192*B*b*c*d^2*e^3*x^2-15840*B*c^2*d^3*e^2*x^2-58140*A*b^2*d*e^
4*x+46512*A*b*c*d^2*e^3*x-10944*A*c^2*d^3*e^2*x+23256*B*b^2*d^2*e^3*x-21888
*B*b*c*d^3*e^2*x+5760*B*c^2*d^4*e*x+12920*A*b^2*d^2*e^3-10336*A*b*c*d^3*e^2
+2432*A*c^2*d^4*e-5168*B*b^2*d^3*e^2+4864*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.49, size = 291, normalized size = 1.09

$$2\left(109395\,(ex+d)^{\frac{19}{2}}Bc^{2}-122265\left(5\,Bc^{2}d-\left(2\,Bbc+Ac^{2}\right)e\right)(ex+d)^{\frac{17}{2}}+138567\left(10\,Bc^{2}d^{2}-4\left(2\,Bbc+Ac^{2}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/2078505*(109395*(e*x + d)^(19/2)*B*c^2 - 122265*(5*B*c^2*d - (2*B*b*c + A
*c^2)*e)*(e*x + d)^(17/2) + 138567*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e
+ (B*b^2 + 2*A*b*c)*e^2)*(e*x + d)^(15/2) - 159885*(10*B*c^2*d^3 - A*b^2*e^
3 - 6*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(13/2)
 + 188955*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b
^2 + 2*A*b*c)*d^2*e^2)*(e*x + d)^(11/2) - 230945*(B*c^2*d^5 - A*b^2*d^2*e^3
 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(9/2))/e^
6
```

mupad [B] time = 1.62, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{17/2}\,\left(2\,A\,c^{2}\,e-10\,B\,c^{2}\,d+4\,B\,b\,c\,e\right)}{17\,e^{6}}+\frac{(d+e\,x)^{13/2}\,\left(-6\,B\,b^{2}\,d\,e^{2}+2\,A\,b^{2}\,e^{3}+24\,B\,b\,c\,d^{2}\,e-12\,A\,b\,c\,d\,e^{2}\right.}{13\,e^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(17*e^6) + ((d + e*
x)^(13/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12
*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(13*e^6) + ((d + e*x)^(15/2)*(2*B*b^2*e^2 +
 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(15*e^6) + (2*B*
c^2*(d + e*x)^(19/2))/(19*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(11/2)*(2*A*b*e
^2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(11*e^6) + (2*d^2*(A*e - B*d)*(b*e
 - c*d)^2*(d + e*x)^(9/2))/(9*e^6)
```

sympy [A] time = 15.94, size = 1352, normalized size = 5.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(c*x**2+b*x)**2,x)
```

```
[Out] Piecewise((16*A*b**2*d**6*sqrt(d + e*x)/(1287*e**3) - 8*A*b**2*d**5*x*sqrt(
d + e*x)/(1287*e**2) + 2*A*b**2*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*b**
2*d**3*x**3*sqrt(d + e*x)/1287 + 916*A*b**2*d**2*e*x**4*sqrt(d + e*x)/1287
+ 80*A*b**2*d*e**2*x**5*sqrt(d + e*x)/143 + 2*A*b**2*e**3*x**6*sqrt(d + e*x
)/13 - 64*A*b*c*d**7*sqrt(d + e*x)/(6435*e**4) + 32*A*b*c*d**6*x*sqrt(d + e
*x)/(6435*e**3) - 8*A*b*c*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 4*A*b*c*d**
4*x**3*sqrt(d + e*x)/(1287*e) + 640*A*b*c*d**3*x**4*sqrt(d + e*x)/1287 + 82
4*A*b*c*d**2*e*x**5*sqrt(d + e*x)/715 + 184*A*b*c*d*e**2*x**6*sqrt(d + e*x)
/195 + 4*A*b*c*e**3*x**7*sqrt(d + e*x)/15 + 256*A*c**2*d**8*sqrt(d + e*x)/(
109395*e**5) - 128*A*c**2*d**7*x*sqrt(d + e*x)/(109395*e**4) + 32*A*c**2*d*
*6*x**2*sqrt(d + e*x)/(36465*e**3) - 16*A*c**2*d**5*x**3*sqrt(d + e*x)/(218
79*e**2) + 14*A*c**2*d**4*x**4*sqrt(d + e*x)/(21879*e) + 2424*A*c**2*d**3*x
**5*sqrt(d + e*x)/12155 + 1604*A*c**2*d**2*e*x**6*sqrt(d + e*x)/3315 + 104*
A*c**2*d*e**2*x**7*sqrt(d + e*x)/255 + 2*A*c**2*e**3*x**8*sqrt(d + e*x)/17
- 32*B*b**2*d**7*sqrt(d + e*x)/(6435*e**4) + 16*B*b**2*d**6*x*sqrt(d + e*x)
/(6435*e**3) - 4*B*b**2*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 2*B*b**2*d**4
*x**3*sqrt(d + e*x)/(1287*e) + 320*B*b**2*d**3*x**4*sqrt(d + e*x)/1287 + 41
2*B*b**2*d**2*e*x**5*sqrt(d + e*x)/715 + 92*B*b**2*d*e**2*x**6*sqrt(d + e*x
)/195 + 2*B*b**2*e**3*x**7*sqrt(d + e*x)/15 + 512*B*b*c*d**8*sqrt(d + e*x)/
(109395*e**5) - 256*B*b*c*d**7*x*sqrt(d + e*x)/(109395*e**4) + 64*B*b*c*d**
6*x**2*sqrt(d + e*x)/(36465*e**3) - 32*B*b*c*d**5*x**3*sqrt(d + e*x)/(21879
*e**2) + 28*B*b*c*d**4*x**4*sqrt(d + e*x)/(21879*e) + 4848*B*b*c*d**3*x**5*
sqrt(d + e*x)/12155 + 3208*B*b*c*d**2*e*x**6*sqrt(d + e*x)/3315 + 208*B*b*c
*d*e**2*x**7*sqrt(d + e*x)/255 + 4*B*b*c*e**3*x**8*sqrt(d + e*x)/17 - 512*B
*c**2*d**9*sqrt(d + e*x)/(415701*e**6) + 256*B*c**2*d**8*x*sqrt(d + e*x)/(4
15701*e**5) - 64*B*c**2*d**7*x**2*sqrt(d + e*x)/(138567*e**4) + 160*B*c**2*
d**6*x**3*sqrt(d + e*x)/(415701*e**3) - 140*B*c**2*d**5*x**4*sqrt(d + e*x)/
(415701*e**2) + 14*B*c**2*d**4*x**5*sqrt(d + e*x)/(46189*e) + 2096*B*c**2*d
**3*x**6*sqrt(d + e*x)/12597 + 404*B*c**2*d**2*e*x**7*sqrt(d + e*x)/969 + 1
16*B*c**2*d*e**2*x**8*sqrt(d + e*x)/323 + 2*B*c**2*e**3*x**9*sqrt(d + e*x)/
19, Ne(e, 0)), (d**(7/2)*(A*b**2*x**3/3 + A*b*c*x**4/2 + A*c**2*x**5/5 + B*
b**2*x**4/4 + 2*B*b*c*x**5/5 + B*c**2*x**6/6), True))
```

3.1222 $\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{13/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{13e^6}+\frac{2(d+ex)^{11/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3\right.\right.}{11e^6}$$

```
[Out] -2/7*d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(7/2)/e^6+2/9*d*(-b*e+c*d)*(B*d*(-
3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(9/2)/e^6+2/11*(A*e*(b^2*e^2-6*b*c
*d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(11/2)/e^6-2
/13*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(13/2)/
e^6-2/15*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(15/2)/e^6+2/17*B*c^2*(e*x+d)^(
17/2)/e^6
```

Rubi [A] time = 0.15, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{2(d+ex)^{13/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{13e^6}+\frac{2(d+ex)^{11/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3\right.\right.}{11e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(7/2))/(7*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(9/2))/(9*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(11/2))/(11*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c
^2*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(13/2))/(13*e^6) - (2*c*(5*B*c*d -
 2*b*B*e - A*c*e)*(d + e*x)^(15/2))/(15*e^6) + (2*B*c^2*(d + e*x)^(17/2))/(
17*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(bx+cx^2\right)^2\,dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{5/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2}{e^5}\right.\\ &= -\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{7/2}}{7e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2A}{9e^6}\end{aligned}$$

Mathematica [A] time = 0.20, size = 273, normalized size = 1.02

$$2(d+ex)^{7/2}\left(17Ae\left(65b^2e^2\left(8d^2-28dex+63e^2x^2\right)+30bce\left(-16d^3+56d^2ex-126de^2x^2+231e^3x^3\right)+c^2\left(128\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(17*A*e*(65*b^2*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 30
*b*c*e*(-16*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + c^2*(128*d^4
- 448*d^3*e*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)) + B*(255
*b^2*e^2*(-16*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + 34*b*c*e*(1
28*d^4 - 448*d^3*e*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4) -
5*c^2*(256*d^5 - 896*d^4*e*x + 2016*d^3*e^2*x^2 - 3696*d^2*e^3*x^3 + 6006*d
*e^4*x^4 - 9009*e^5*x^5))))/(765765*e^6)
```

fricas [B] time = 0.68, size = 494, normalized size = 1.85

$$2\left(45045\,Bc^2e^8x^8 - 1280\,Bc^2d^8 + 8840\,Ab^2d^5e^3 + 2176\left(2\,Bbc + Ac^2\right)d^7e - 4080\left(Bb^2 + 2\,Abc\right)d^6e^2 + 3003\left(35\,B\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/765765*(45045*B*c^2*e^8*x^8 - 1280*B*c^2*d^8 + 8840*A*b^2*d^5*e^3 + 2176*
(2*B*b*c + A*c^2)*d^7*e - 4080*(B*b^2 + 2*A*b*c)*d^6*e^2 + 3003*(35*B*c^2*d
*e^7 + 17*(2*B*b*c + A*c^2)*e^8)*x^7 + 231*(275*B*c^2*d^2*e^6 + 527*(2*B*b*
c + A*c^2)*d*e^7 + 255*(B*b^2 + 2*A*b*c)*e^8)*x^6 + 63*(5*B*c^2*d^3*e^5 + 1
105*A*b^2*e^8 + 1207*(2*B*b*c + A*c^2)*d^2*e^6 + 2295*(B*b^2 + 2*A*b*c)*d*e
^7)*x^5 - 35*(10*B*c^2*d^4*e^4 - 5083*A*b^2*d*e^7 - 17*(2*B*b*c + A*c^2)*d^
3*e^5 - 2703*(B*b^2 + 2*A*b*c)*d^2*e^6)*x^4 + 5*(80*B*c^2*d^5*e^3 + 24973*A
*b^2*d^2*e^6 - 136*(2*B*b*c + A*c^2)*d^4*e^4 + 255*(B*b^2 + 2*A*b*c)*d^3*e^
5)*x^3 - 3*(160*B*c^2*d^6*e^2 - 1105*A*b^2*d^3*e^5 - 272*(2*B*b*c + A*c^2)*
d^5*e^3 + 510*(B*b^2 + 2*A*b*c)*d^4*e^4)*x^2 + 4*(160*B*c^2*d^7*e - 1105*A*
b^2*d^4*e^4 - 272*(2*B*b*c + A*c^2)*d^6*e^2 + 510*(B*b^2 + 2*A*b*c)*d^5*e^3
)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.29, size = 2007, normalized size = 7.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/765765*(51051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*A*b^2*d^3*e^(-2) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^3*e^(-3) + 43758*(5
*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(
x*e + d)*d^3)*A*b*c*d^3*e^(-3) + 4862*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*B*b*c*d^3*e^(-4) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*A*c^2*d^3*e^(-4) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d^3*e^(-5) + 65637*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*
d^2*e^(-2) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d^2*e
^(-3) + 14586*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*d^2*e^(-3
) + 6630*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*B*b*c*d^2*e^(-4) + 3315*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*d^2*e^(-4) + 765*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*B*c^2*d^2*e^(-5) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*b^2*d*e^(-2) + 3315*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*d*e^(-3) + 6630*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*c*d*e^(-3) + 1530*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*d*e^(-4) + 765*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*A*c^2*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*B*c^2*d*e^(-5) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e +
 d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*e^(-2) + 255*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*b^2*e^(-3) + 510*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b*c*
e^(-3) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
 d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27
027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^
7)*B*b*c*e^(-4) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 122
85*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)
*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*
e + d)*d^7)*A*c^2*e^(-4) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2
)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x
*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6
 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*c^2*e^(-5))*e^(
-1)
```

maple [A] time = 0.05, size = 341, normalized size = 1.28

$$\frac{2\,(ex+d)^{\frac{7}{2}}\,\big(45045B\,c^2x^5e^5+51051A\,c^2e^5x^4+102102Bbc\,e^5x^4-30030B\,c^2d\,e^4x^4+117810Abc\,e^5x^3-31416A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/765765*(e*x+d)^(7/2)*(45045*B*c^2*e^5*x^5+51051*A*c^2*e^5*x^4+102102*B*b*
c*e^5*x^4-30030*B*c^2*d*e^4*x^4+117810*A*b*c*e^5*x^3-31416*A*c^2*d*e^4*x^3+
58905*B*b^2*e^5*x^3-62832*B*b*c*d*e^4*x^3+18480*B*c^2*d^2*e^3*x^3+69615*A*b
^2*e^5*x^2-64260*A*b*c*d*e^4*x^2+17136*A*c^2*d^2*e^3*x^2-32130*B*b^2*d*e^4*
x^2+34272*B*b*c*d^2*e^3*x^2-10080*B*c^2*d^3*e^2*x^2-30940*A*b^2*d*e^4*x+285
60*A*b*c*d^2*e^3*x-7616*A*c^2*d^3*e^2*x+14280*B*b^2*d^2*e^3*x-15232*B*b*c*d
^3*e^2*x+4480*B*c^2*d^4*e*x+8840*A*b^2*d^2*e^3-8160*A*b*c*d^3*e^2+2176*A*c^
2*d^4*e-4080*B*b^2*d^3*e^2+4352*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.61, size = 291, normalized size = 1.09

$$\frac{2\,\Big(45045\,(ex+d)^{\frac{17}{2}}\,Bc^2-51051\,\big(5\,Bc^2d-\big(2\,Bbc+Ac^2\big)e\big)(ex+d)^{\frac{15}{2}}+58905\,\big(10\,Bc^2d^2-4\,\big(2\,Bbc+Ac^2\big)de+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*c^2 - 51051*(5*B*c^2*d - (2*B*b*c + A*c^
2)*e)*(e*x + d)^(15/2) + 58905*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B
*b^2 + 2*A*b*c)*e^2)*(e*x + d)^(13/2) - 69615*(10*B*c^2*d^3 - A*b^2*e^3 - 6
*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(11/2) + 85
085*(5*B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2
*A*b*c)*d^2*e^2)*(e*x + d)^(9/2) - 109395*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B
*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(7/2))/e^6
```

mupad [B] time = 1.62, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{15/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{15\,e^6}+\frac{(d+e\,x)^{11/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-\right.}{11\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(15*e^6) + ((d + e*
x)^(11/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12
*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(11*e^6) + ((d + e*x)^(13/2)*(2*B*b^2*e^2 +
 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(13*e^6) + (2*B*
c^2*(d + e*x)^(17/2))/(17*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(9/2)*(2*A*b*e^
2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(9*e^6) + (2*d^2*(A*e - B*d)*(b*e -
 c*d)^2*(d + e*x)^(7/2))/(7*e^6)
```

sympy [B] time = 52.79, size = 1556, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)
**(7/2)/7)/e**3 + 4*A*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**
(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*A*b**2*(d**
4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/
7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 4*A*b*c*d**2*(-d*
*3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
+ (d + e*x)**(9/2)/9)/e**4 + 8*A*b*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
 + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
+ e*x)**(11/2)/11)/e**4 + 4*A*b*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x
)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
 + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 2*A*c**2*d**2*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 4*A*c**2*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5
 + 2*A*c**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*
(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)
/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*b**2*d**2
*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/
2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*B*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d
**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
 + (d + e*x)**(11/2)/11)/e**4 + 2*B*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(
d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 -
 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 4*B*b*c*d**2*(d**4
*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 8*B*b*c*d*(-d**5*(
d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10
*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)
/e**5 + 4*B*b*c*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d
**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(1
1/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*c**2*
d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)*
*(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x
)**(13/2)/13)/e**6 + 4*B*c**2*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 2*B*c**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d
**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/
2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)
**(17/2)/17)/e**6
```

3.1223 $\int (A+Bx)(d+ex)^{3/2} \left(bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{11/2} \left(2Ace(2cd-be)-B \left(b^2e^2-8bcde+10c^2d^2\right)\right)}{11e^6}+\frac{2(d+ex)^{9/2} \left(Ae \left(b^2e^2-6bcde+6c^2d^2\right)-Bd (3b^2e}{9e^6}$$

```
[Out] -2/5*d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(5/2)/e^6+2/7*d*(-b*e+c*d)*(B*d*(-
3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(7/2)/e^6+2/9*(A*e*(b^2*e^2-6*b*c*
d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(9/2)/e^6-2/1
1*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(11/2)/e^
6-2/13*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(13/2)/e^6+2/15*B*c^2*(e*x+d)^(15
/2)/e^6
```

Rubi [A] time = 0.16, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{2(d+ex)^{11/2} \left(2Ace(2cd-be)-B \left(b^2e^2-8bcde+10c^2d^2\right)\right)}{11e^6}+\frac{2(d+ex)^{9/2} \left(Ae \left(b^2e^2-6bcde+6c^2d^2\right)-Bd (3b^2e}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(5/2))/(5*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(7/2))/(7*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(9/2))/(9*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2
*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(11/2))/(11*e^6) - (2*c*(5*B*c*d - 2
*b*B*e - A*c*e)*(d + e*x)^(13/2))/(13*e^6) + (2*B*c^2*(d + e*x)^(15/2))/(15
*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2} \left(bx+cx^2\right)^2 \, dx &= \int \Bigg(-\frac{d^2(Bd-Ae)(cd-be)^2(d+ex)^{3/2}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae}{e^5} \\ &= -\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{5/2}}{5e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.19, size = 272, normalized size = 1.02

$$2(d+ex)^{5/2} \left(Ae \left(143b^2e^2 \left(8d^2-20dex+35e^2x^2\right)+78bce \left(-16d^3+40d^2ex-70de^2x^2+105e^3x^3\right)+3c^2 (128d^4-\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(A*e*(143*b^2*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 78*b
*c*e*(-16*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 3*c^2*(128*d^4 -
 320*d^3*e*x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)) + B*(39*b^2
*e^2*(-16*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 6*b*c*e*(128*d^4
 - 320*d^3*e*x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4) + c^2*(-25
6*d^5 + 640*d^4*e*x - 1120*d^3*e^2*x^2 + 1680*d^2*e^3*x^3 - 2310*d*e^4*x^4
+ 3003*e^5*x^5))))/(45045*e^6)
```

fricas [A] time = 0.63, size = 425, normalized size = 1.59

$$\frac{2\left(3003\,Bc^{2}e^{7}x^{7} - 256\,Bc^{2}d^{7} + 1144\,Ab^{2}d^{4}e^{3} + 384\left(2\,Bbc + Ac^{2}\right)d^{6}e - 624\left(Bb^{2} + 2\,Abc\right)d^{5}e^{2} + 231\left(16\,Bc^{2}d\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^2*e^7*x^7 - 256*B*c^2*d^7 + 1144*A*b^2*d^4*e^3 + 384*(2*B
*b*c + A*c^2)*d^6*e - 624*(B*b^2 + 2*A*b*c)*d^5*e^2 + 231*(16*B*c^2*d*e^6 +
 15*(2*B*b*c + A*c^2)*e^7)*x^6 + 63*(B*c^2*d^2*e^5 + 70*(2*B*b*c + A*c^2)*d
*e^6 + 65*(B*b^2 + 2*A*b*c)*e^7)*x^5 - 35*(2*B*c^2*d^3*e^4 - 143*A*b^2*e^7
- 3*(2*B*b*c + A*c^2)*d^2*e^5 - 156*(B*b^2 + 2*A*b*c)*d*e^6)*x^4 + 5*(16*B*
c^2*d^4*e^3 + 1430*A*b^2*d*e^6 - 24*(2*B*b*c + A*c^2)*d^3*e^4 + 39*(B*b^2 +
 2*A*b*c)*d^2*e^5)*x^3 - 3*(32*B*c^2*d^5*e^2 - 143*A*b^2*d^2*e^5 - 48*(2*B*
b*c + A*c^2)*d^4*e^3 + 78*(B*b^2 + 2*A*b*c)*d^3*e^4)*x^2 + 4*(32*B*c^2*d^6*
e - 143*A*b^2*d^3*e^4 - 48*(2*B*b*c + A*c^2)*d^5*e^2 + 78*(B*b^2 + 2*A*b*c)
*d^4*e^3)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.24, size = 1382, normalized size = 5.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*A*b^2*d^2*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^2*e^(-3) + 2574*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*A*b*c*d^2*e^(-3) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*b*c*d^2*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*
c^2*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
 + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693
*sqrt(x*e + d)*d^5)*B*c^2*d^2*e^(-5) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*d*e^(-2)
+ 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d*e^(-3) + 572*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*d*e^(-3) + 260*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*c*d*e^
(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/
2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
 + d)*d^5)*A*c^2*d*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*d*e^(-
5) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*
d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*e^(-2) + 65*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*
b^2*e^(-3) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*A*b*c*e^(-3) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b*c*e^
(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*c^2*e^(-4) + 7*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*c^2*e^(-5))*e^(-1)
```

maple [A] time = 0.05, size = 341, normalized size = 1.28

$$2\,(ex+d)^{\frac{5}{2}}\left(3003B\,c^2x^5e^5+3465A\,c^2e^5x^4+6930Bbc\,e^5x^4-2310B\,c^2d\,e^4x^4+8190Abc\,e^5x^3-2520A\,c^2d\,e^4x^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*B*c^2*e^5*x^5+3465*A*c^2*e^5*x^4+6930*B*b*c*e^5
*x^4-2310*B*c^2*d*e^4*x^4+8190*A*b*c*e^5*x^3-2520*A*c^2*d*e^4*x^3+4095*B*b^
2*e^5*x^3-5040*B*b*c*d*e^4*x^3+1680*B*c^2*d^2*e^3*x^3+5005*A*b^2*e^5*x^2-54
60*A*b*c*d*e^4*x^2+1680*A*c^2*d^2*e^3*x^2-2730*B*b^2*d*e^4*x^2+3360*B*b*c*d
^2*e^3*x^2-1120*B*c^2*d^3*e^2*x^2-2860*A*b^2*d*e^4*x+3120*A*b*c*d^2*e^3*x-9
60*A*c^2*d^3*e^2*x+1560*B*b^2*d^2*e^3*x-1920*B*b*c*d^3*e^2*x+640*B*c^2*d^4*
e*x+1144*A*b^2*d^2*e^3-1248*A*b*c*d^3*e^2+384*A*c^2*d^4*e-624*B*b^2*d^3*e^2
+768*B*b*c*d^4*e-256*B*c^2*d^5)/e^6
```

maxima [A] time = 0.54, size = 291, normalized size = 1.09

$$2\left(3003\,(ex+d)^{\frac{15}{2}}Bc^2-3465\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{13}{2}}+4095\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*c^2 - 3465*(5*B*c^2*d - (2*B*b*c + A*c^2)*
e)*(e*x + d)^(13/2) + 4095*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2
 + 2*A*b*c)*e^2)*(e*x + d)^(11/2) - 5005*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B
*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(9/2) + 6435*(5*
B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)
*d^2*e^2)*(e*x + d)^(7/2) - 9009*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*
c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(5/2))/e^6
```

mupad [B] time = 0.06, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{13\,e^6}+\frac{(d+e\,x)^{9/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-\right.}{9\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(13*e^6) + ((d + e*
x)^(9/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*
A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(9*e^6) + ((d + e*x)^(11/2)*(2*B*b^2*e^2 + 2
0*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(11*e^6) + (2*B*c^
2*(d + e*x)^(15/2))/(15*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(7/2)*(2*A*b*e^2
+ 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(7*e^6) + (2*d^2*(A*e - B*d)*(b*e - c
*d)^2*(d + e*x)^(5/2))/(5*e^6)
```

sympy [**B**] time = 33.46, size = 937, normalized size = 3.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(
7/2)/7)/e**3 + 2*A*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 4*A*b*c*d*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**4 + 4*A*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x
)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)
**(11/2)/11)/e**4 + 2*A*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)*
*(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**
(11/2)/11)/e**5 + 2*A*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2
) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)
**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*b**2*d*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**4 + 2*B*b**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 +
 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)
/e**4 + 4*B*b*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*
d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e*
*5 + 4*B*b*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
 + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 +
(d + e*x)**(13/2)/13)/e**5 + 2*B*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
 + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 -
5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*B*c**2*(d**6*(d +
 e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 2
0*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(
13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1224 $\int (A+Bx)\sqrt{d+ex}\,\left(bx+cx^2\right)^2\,dx$

Optimal. Leaf size=267

$$-\frac{2(d+ex)^{9/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{9e^6}+\frac{2(d+ex)^{7/2}\Big(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\Big(3b^2e^2}{7e^6}$$

```
[Out] -2/3*d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(3/2)/e^6+2/5*d*(-b*e+c*d)*(B*d*(-
3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(5/2)/e^6+2/7*(A*e*(b^2*e^2-6*b*c*
d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(7/2)/e^6-2/9
*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(9/2)/e^6-
2/11*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(11/2)/e^6+2/13*B*c^2*(e*x+d)^(13/2
)/e^6
```

Rubi [A] time = 0.15, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{9/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{9e^6}+\frac{2(d+ex)^{7/2}\Big(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\Big(3b^2e^2}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2)^2,x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*(d + e*x)^(3/2))/(3*e^6) + (2*d*(c*d - b*
e)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(5/2))/(5*e^6) + (
2*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3
*b^2*e^2))*(d + e*x)^(7/2))/(7*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2
*d^2 - 8*b*c*d*e + b^2*e^2))*(d + e*x)^(9/2))/(9*e^6) - (2*c*(5*B*c*d - 2*b
*B*e - A*c*e)*(d + e*x)^(11/2))/(11*e^6) + (2*B*c^2*(d + e*x)^(13/2))/(13*e
^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(bx+cx^2\right)^2\,dx&=\int\Big(-\frac{d^2(Bd-Ae)(cd-be)^2\sqrt{d+ex}}{e^5}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2c}{e^5}\\&=-\frac{2d^2(Bd-Ae)(cd-be)^2(d+ex)^{3/2}}{3e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2c}{5e^6}\end{aligned}$$

Mathematica [A] time = 0.18, size = 273, normalized size = 1.02

$$2(d+ex)^{3/2}\Big(13Ae\Big(33b^2e^2\left(8d^2-12dex+15e^2x^2\right)+22bce\left(-16d^3+24d^2ex-30de^2x^2+35e^3x^3\right)+c^2\Big(128d^4-1$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(13*A*e*(33*b^2*e^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 22
*b*c*e*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + c^2*(128*d^4 -
192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4)) + B*(143*b^2*
e^2*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + 26*b*c*e*(128*d^4
- 192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4) - 5*c^2*(256
*d^5 - 384*d^4*e*x + 480*d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 69
3*e^5*x^5))))/(45045*e^6)
```

fricas [A] time = 0.66, size = 357, normalized size = 1.34

$$2\left(3465\,Bc^{2}e^{6}x^{6} - 1280\,Bc^{2}d^{6} + 3432\,Ab^{2}d^{3}e^{3} + 1664\left(2\,Bbc + Ac^{2}\right)d^{5}e - 2288\left(Bb^{2} + 2\,Abc\right)d^{4}e^{2} + 315\left(Bc^{2}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*e^6*x^6 - 1280*B*c^2*d^6 + 3432*A*b^2*d^3*e^3 + 1664*(2
*B*b*c + A*c^2)*d^5*e - 2288*(B*b^2 + 2*A*b*c)*d^4*e^2 + 315*(B*c^2*d*e^5 +
 13*(2*B*b*c + A*c^2)*e^6)*x^5 - 35*(10*B*c^2*d^2*e^4 - 13*(2*B*b*c + A*c^2
)*d*e^5 - 143*(B*b^2 + 2*A*b*c)*e^6)*x^4 + 5*(80*B*c^2*d^3*e^3 + 1287*A*b^2
*e^6 - 104*(2*B*b*c + A*c^2)*d^2*e^4 + 143*(B*b^2 + 2*A*b*c)*d*e^5)*x^3 - 3
*(160*B*c^2*d^4*e^2 - 429*A*b^2*d*e^5 - 208*(2*B*b*c + A*c^2)*d^3*e^3 + 286
*(B*b^2 + 2*A*b*c)*d^2*e^4)*x^2 + 4*(160*B*c^2*d^5*e - 429*A*b^2*d^2*e^4 -
208*(2*B*b*c + A*c^2)*d^4*e^2 + 286*(B*b^2 + 2*A*b*c)*d^3*e^3)*x)*sqrt(e*x
+ d)/e^6
```

giac [B] time = 0.21, size = 835, normalized size = 3.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*A*b^2*d*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d*e^(-3) + 2574*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*b*c*d*e^(-3) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*
b*c*d*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
 d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c^2*d*e^
(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*c^2*d*e^(-5) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*e^(-2) + 143*(35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*e^(-3) + 286*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*A*b*c*e^(-3) + 130*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*c*e^(-4) + 65*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*c^2*e^(-
4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9
/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
 d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*c^2*e^(-5))*e^(-1)
```

maple [A] time = 0.05, size = 341, normalized size = 1.28

$$2\left(ex+d\right)^{\frac{3}{2}}\left(3465B\,c^{2}x^{5}e^{5} + 4095A\,c^{2}e^{5}x^{4} + 8190Bbc\,e^{5}x^{4} - 3150B\,c^{2}d\,e^{4}x^{4} + 10010Abc\,e^{5}x^{3} - 3640A\,c^{2}d\,e^{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*c^2*e^5*x^5+4095*A*c^2*e^5*x^4+8190*B*b*c*e^5
*x^4-3150*B*c^2*d*e^4*x^4+10010*A*b*c*e^5*x^3-3640*A*c^2*d*e^4*x^3+5005*B*b
^2*e^5*x^3-7280*B*b*c*d*e^4*x^3+2800*B*c^2*d^2*e^3*x^3+6435*A*b^2*e^5*x^2-8
580*A*b*c*d*e^4*x^2+3120*A*c^2*d^2*e^3*x^2-4290*B*b^2*d*e^4*x^2+6240*B*b*c*
d^2*e^3*x^2-2400*B*c^2*d^3*e^2*x^2-5148*A*b^2*d*e^4*x+6864*A*b*c*d^2*e^3*x-
2496*A*c^2*d^3*e^2*x+3432*B*b^2*d^2*e^3*x-4992*B*b*c*d^3*e^2*x+1920*B*c^2*d
^4*e*x+3432*A*b^2*d^2*e^3-4576*A*b*c*d^3*e^2+1664*A*c^2*d^4*e-2288*B*b^2*d^
3*e^2+3328*B*b*c*d^4*e-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.51, size = 291, normalized size = 1.09

$$2\left(3465\,(ex+d)^{\frac{13}{2}}Bc^2-4095\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{11}{2}}+5005\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*c^2 - 4095*(5*B*c^2*d - (2*B*b*c + A*c^2)*
e)*(e*x + d)^(11/2) + 5005*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2
 + 2*A*b*c)*e^2)*(e*x + d)^(9/2) - 6435*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*
b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(7/2) + 9009*(5*B
*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*
d^2*e^2)*(e*x + d)^(5/2) - 15015*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*
c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*(e*x + d)^(3/2))/e^6
```

mupad [B] time = 1.53, size = 254, normalized size = 0.95

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{11\,e^6}+\frac{(d+e\,x)^{7/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-2\right.}{7\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^2*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(11*e^6) + ((d + e*
x)^(7/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*
A*b*c*d*e^2 + 24*B*b*c*d^2*e))/(7*e^6) + ((d + e*x)^(9/2)*(2*B*b^2*e^2 + 20
*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(9*e^6) + (2*B*c^2*
(d + e*x)^(13/2))/(13*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(5/2)*(2*A*b*e^2 +
5*B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(5*e^6) + (2*d^2*(A*e - B*d)*(b*e - c*d
)^2*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A] time = 7.01, size = 377, normalized size = 1.41

$$2\left(\frac{Bc^2(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(Ac^2e+2Bbce-5Bc^2d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(2Abce^2-4Ac^2de+Bb^2e^2-8Bbcde+10Bc^2d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(Ab^2e^3-6Abcde^2+6Ac^2d^2e-\right.}{7e^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+b*x)**2,x)
```

```
[Out] 2*(B*c**2*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*c**2*e + 2*B*b
*c*e - 5*B*c**2*d)/(11*e**5) + (d + e*x)**(9/2)*(2*A*b*c*e**2 - 4*A*c**2*d*
e + B*b**2*e**2 - 8*B*b*c*d*e + 10*B*c**2*d**2)/(9*e**5) + (d + e*x)**(7/2)
*(A*b**2*e**3 - 6*A*b*c*d*e**2 + 6*A*c**2*d**2*e - 3*B*b**2*d*e**2 + 12*B*b
*c*d**2*e - 10*B*c**2*d**3)/(7*e**5) + (d + e*x)**(5/2)*(-2*A*b**2*d*e**3 +
 6*A*b*c*d**2*e**2 - 4*A*c**2*d**3*e + 3*B*b**2*d**2*e**2 - 8*B*b*c*d**3*e
+ 5*B*c**2*d**4)/(5*e**5) + (d + e*x)**(3/2)*(A*b**2*d**2*e**3 - 2*A*b*c*d*
*3*e**2 + A*c**2*d**4*e - B*b**2*d**3*e**2 + 2*B*b*c*d**4*e - B*c**2*d**5)/
(3*e**5))/e
```

3.1225 $\int \frac{(A+Bx)(bx+cx^2)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=265

$$-\frac{2(d+ex)^{7/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{7e^6}+\frac{2(d+ex)^{5/2}\,(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\,(3b^2e^2}{5e^6}$$

```
[Out] 2/3*d*(-b*e+c*d)*(B*d*(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(3/2)/e^6+
2/5*(A*e*(b^2*e^2-6*b*c*d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2
))*(e*x+d)^(5/2)/e^6-2/7*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*
d^2))*(e*x+d)^(7/2)/e^6-2/9*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(9/2)/e^6+2/
11*B*c^2*(e*x+d)^(11/2)/e^6-2*d^2*(-A*e+B*d)*(-b*e+c*d)^2*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.16, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{7/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{7e^6}+\frac{2(d+ex)^{5/2}\,(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\,(3b^2e^2}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*d^2*(B*d - A*e)*(c*d - b*e)^2*Sqrt[d + e*x])/e^6 + (2*d*(c*d - b*e)*(B*
d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*e^6) + (2*(A*e
*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e
^2))*(d + e*x)^(5/2))/(5*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 -
 8*b*c*d*e + b^2*e^2))*(d + e*x)^(7/2))/(7*e^6) - (2*c*(5*B*c*d - 2*b*B*e -
 A*c*e)*(d + e*x)^(9/2))/(9*e^6) + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \Bigg(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5\sqrt{d+ex}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))\sqrt{d+ex}}{e^5}\\ &= -\frac{2d^2(Bd-Ae)(cd-be)^2\sqrt{d+ex}}{e^6}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))(d}{3e^6}\end{aligned}$$

Mathematica [A] time = 0.20, size = 273, normalized size = 1.03

$$\frac{2\sqrt{d+ex}\,(11Ae\left(21b^2e^2\left(8d^2-4dex+3e^2x^2\right)+18bce\left(-16d^3+8d^2ex-6de^2x^2+5e^3x^3\right)+c^2\,(128d^4-64d^3ex+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(11*A*e*(21*b^2*e^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 18*b*c
*e*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + c^2*(128*d^4 - 64*d^3*
e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)) + B*(99*b^2*e^2*(-16*d^3
 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + 22*b*c*e*(128*d^4 - 64*d^3*e*x +
48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4) - 5*c^2*(256*d^5 - 128*d^4*e*x
+ 96*d^3*e^2*x^2 - 80*d^2*e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5))))/(3465*e^6
)
```

fricas [**A**] time = 0.57, size = 290, normalized size = 1.09

$$\frac{2\left(315\,Bc^2e^5x^5 - 1280\,Bc^2d^5 + 1848\,Ab^2d^2e^3 + 1408\left(2\,Bbc + Ac^2\right)d^4e - 1584\left(Bb^2 + 2\,Abc\right)d^3e^2 - 35\left(10\,Bc^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 1848*A*b^2*d^2*e^3 + 1408*(2*B
*b*c + A*c^2)*d^4*e - 1584*(B*b^2 + 2*A*b*c)*d^3*e^2 - 35*(10*B*c^2*d*e^4 -
 11*(2*B*b*c + A*c^2)*e^5)*x^4 + 5*(80*B*c^2*d^2*e^3 - 88*(2*B*b*c + A*c^2)
*d*e^4 + 99*(B*b^2 + 2*A*b*c)*e^5)*x^3 - 3*(160*B*c^2*d^3*e^2 - 231*A*b^2*e
^5 - 176*(2*B*b*c + A*c^2)*d^2*e^3 + 198*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(
160*B*c^2*d^4*e - 231*A*b^2*d*e^4 - 176*(2*B*b*c + A*c^2)*d^3*e^2 + 198*(B*
b^2 + 2*A*b*c)*d^2*e^3)*x)*sqrt(e*x + d)/e^6
```

giac [**A**] time = 0.19, size = 378, normalized size = 1.43

$$\frac{2}{3465}\left(231\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\,\sqrt{xe+d}\,d^2\right)Ab^2e^{(-2)} + 99\left(5\,(xe+d)^{\frac{7}{2}} - 21\,(xe+d)^{\frac{5}{2}}d + 35\,(xe+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^
2)*A*b^2*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*e^(-3) + 198*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b
*c*e^(-3) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*c*e^(-4) +
 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*c^2*e^(-4) + 5*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*e^
(-5))*e^(-1)
```

maple [**A**] time = 0.05, size = 341, normalized size = 1.29

$$\frac{2\left(315B\,c^2x^5e^5 + 385A\,c^2e^5x^4 + 770Bbc\,e^5x^4 - 350B\,c^2d\,e^4x^4 + 990Abc\,e^5x^3 - 440A\,c^2d\,e^4x^3 + 495B\,b^2e^5x^3 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5+385*A*c^2*e^5*x^4+770*B*b*c*e^5*x^4-350*B*c^2*d*e
^4*x^4+990*A*b*c*e^5*x^3-440*A*c^2*d*e^4*x^3+495*B*b^2*e^5*x^3-880*B*b*c*d*
e^4*x^3+400*B*c^2*d^2*e^3*x^3+693*A*b^2*e^5*x^2-1188*A*b*c*d*e^4*x^2+528*A*
c^2*d^2*e^3*x^2-594*B*b^2*d*e^4*x^2+1056*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^
2*x^2-924*A*b^2*d*e^4*x+1584*A*b*c*d^2*e^3*x-704*A*c^2*d^3*e^2*x+792*B*b^2*
d^2*e^3*x-1408*B*b*c*d^3*e^2*x+640*B*c^2*d^4*e*x+1848*A*b^2*d^2*e^3-3168*A*
b*c*d^3*e^2+1408*A*c^2*d^4*e-1584*B*b^2*d^3*e^2+2816*B*b*c*d^4*e-1280*B*c^2
*d^5)*(e*x+d)^(1/2)/e^6
```

maxima [A] time = 0.48, size = 291, normalized size = 1.10

$$2\left(315\,(ex+d)^{\frac{11}{2}}Bc^2 - 385\left(5\,Bc^2d - \left(2\,Bbc + Ac^2\right)e\right)(ex+d)^{\frac{9}{2}} + 495\left(10\,Bc^2d^2 - 4\left(2\,Bbc + Ac^2\right)de + \left(Bb^2 + 2\,A\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c^2 - 385*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*
(e*x + d)^(9/2) + 495*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*
A*b*c)*e^2)*(e*x + d)^(7/2) - 693*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c +
A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(5/2) + 1155*(5*B*c^2*d
^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^
2)*(e*x + d)^(3/2) - 3465*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^
4*e + (B*b^2 + 2*A*b*c)*d^3*e^2)*sqrt(e*x + d))/e^6
```

mupad [B] time = 1.51, size = 254, normalized size = 0.96

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{9\,e^6}+\frac{(d+e\,x)^{5/2}\,\left(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-2\right.}{5\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(9*e^6) + ((d + e*x)
^(5/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*
b*c*d*e^2 + 24*B*b*c*d^2*e))/(5*e^6) + ((d + e*x)^(7/2)*(2*B*b^2*e^2 + 20*B
*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(7*e^6) + (2*B*c^2*(d
 + e*x)^(11/2))/(11*e^6) - (2*d*(b*e - c*d)*(d + e*x)^(3/2)*(2*A*b*e^2 + 5*
B*c*d^2 - 4*A*c*d*e - 3*B*b*d*e))/(3*e^6) + (2*d^2*(A*e - B*d)*(b*e - c*d)^
2*(d + e*x)^(1/2))/e^6
```

sympy [A] time = 106.60, size = 944, normalized size = 3.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*b**2*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)
**(3/2)/3)/e**2 - 2*A*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*
(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 4*A*b*c*d*(-d**3/sqrt(d + e*x
) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 -
4*A*b*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2
) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 2*A*c**2*d*(d**4/sq
rt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x
)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 2*A*c**2*(-d**5/sqrt(d + e*x) - 5*d
**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) +
5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*b**2*d*(-d**3/sqrt(
d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/
e**3 - 2*B*b**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*
x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 4*B*b*c*d*(
d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(
d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 4*B*b*c*(-d**5/sqrt(d + e*x)
 - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5
/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*c**2*d*(-d**5
/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2
*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*B
*c**2*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2)
+ 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/
2)/3 - (d + e*x)**(11/2)/11)/e**5)/e, Ne(e, 0)), ((A*b**2*x**3/3 + B*c**2*x
**6/6 + x**5*(A*c**2 + 2*B*b*c)/5 + x**4*(2*A*b*c + B*b**2)/4)/sqrt(d), Tru
e))
```

3.1226 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2(d+ex)^{5/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{3e^6}$$

```
[Out] 2/3*(A*e*(b^2*e^2-6*b*c*d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2
))*(e*x+d)^(3/2)/e^6-2/5*(2*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*
d^2))*(e*x+d)^(5/2)/e^6-2/7*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*x+d)^(7/2)/e^6+2/
9*B*c^2*(e*x+d)^(9/2)/e^6+2*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^(1/2)+2
*d*(-b*e+c*d)*(B*d*(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.16, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{5/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2\right.\right.}{3e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(e^6*Sqrt[d + e*x]) + (2*d*(c*d - b*e)*(B
*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e))*Sqrt[d + e*x])/e^6 + (2*(A*e*(6*c
^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*e^2))*
(d + e*x)^(3/2))/(3*e^6) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*
c*d*e + b^2*e^2))*(d + e*x)^(5/2))/(5*e^6) - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(7/2))/(7*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx&=\int\left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{3/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5\sqrt{d+ex}}+\frac{\left(Ae\left(6\right.\right.}{}\right.\\&=\frac{2d^2(Bd-Ae)(cd-be)^2}{e^6\sqrt{d+ex}}+\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))\sqrt{d+ex}}{e^6}+\end{aligned}$$

Mathematica [A] time = 0.17, size = 273, normalized size = 1.04

$$\frac{2B\left(63b^2e^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+18bce\left(-128d^4-64d^3ex+16d^2e^2x^2-8de^3x^3+5e^4x^4\right)+5c^2\left(256d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (-6*A*e*(35*b^2*e^2*(8*d^2 + 4*d*e*x - e^2*x^2) - 42*b*c*e*(16*d^3 + 8*d^2*
e*x - 2*d*e^2*x^2 + e^3*x^3) + 3*c^2*(128*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2
 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 2*B*(63*b^2*e^2*(16*d^3 + 8*d^2*e*x - 2*d*e^
2*x^2 + e^3*x^3) + 18*b*c*e*(-128*d^4 - 64*d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e
^3*x^3 + 5*e^4*x^4) + 5*c^2*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^
2*e^3*x^3 - 10*d*e^4*x^4 + 7*e^5*x^5)))/(315*e^6*Sqrt[d + e*x])
```

fricas [A] time = 0.61, size = 299, normalized size = 1.14

$$2\left(35\,Bc^{2}e^{5}x^{5}+1280\,Bc^{2}d^{5}-840\,Ab^{2}d^{2}e^{3}-1152\left(2\,Bbc+Ac^{2}\right)d^{4}e+1008\left(Bb^{2}+2\,Abc\right)d^{3}e^{2}-5\left(10\,Bc^{2}de^{4}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*e^5*x^5 + 1280*B*c^2*d^5 - 840*A*b^2*d^2*e^3 - 1152*(2*B*b*
c + A*c^2)*d^4*e + 1008*(B*b^2 + 2*A*b*c)*d^3*e^2 - 5*(10*B*c^2*d*e^4 - 9*(
2*B*b*c + A*c^2)*e^5)*x^4 + (80*B*c^2*d^2*e^3 - 72*(2*B*b*c + A*c^2)*d*e^4
+ 63*(B*b^2 + 2*A*b*c)*e^5)*x^3 - (160*B*c^2*d^3*e^2 - 105*A*b^2*e^5 - 144*
(2*B*b*c + A*c^2)*d^2*e^3 + 126*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 4*(160*B*c^2
*d^4*e - 105*A*b^2*d*e^4 - 144*(2*B*b*c + A*c^2)*d^3*e^2 + 126*(B*b^2 + 2*A
*b*c)*d^2*e^3)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [A] time = 0.56, size = 441, normalized size = 1.68

$$\frac{2}{315}\left(35\,(xe+d)^{\frac{9}{2}}Bc^{2}e^{48}-225\,(xe+d)^{\frac{7}{2}}Bc^{2}de^{48}+630\,(xe+d)^{\frac{5}{2}}Bc^{2}d^{2}e^{48}-1050\,(xe+d)^{\frac{3}{2}}Bc^{2}d^{3}e^{48}+1575\,\sqrt{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^2*e^48 - 225*(x*e + d)^(7/2)*B*c^2*d*e^48 + 6
30*(x*e + d)^(5/2)*B*c^2*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*c^2*d^3*e^48 + 1
575*sqrt(x*e + d)*B*c^2*d^4*e^48 + 90*(x*e + d)^(7/2)*B*b*c*e^49 + 45*(x*e
+ d)^(7/2)*A*c^2*e^49 - 504*(x*e + d)^(5/2)*B*b*c*d*e^49 - 252*(x*e + d)^(5
/2)*A*c^2*d*e^49 + 1260*(x*e + d)^(3/2)*B*b*c*d^2*e^49 + 630*(x*e + d)^(3/2
)*A*c^2*d^2*e^49 - 2520*sqrt(x*e + d)*B*b*c*d^3*e^49 - 1260*sqrt(x*e + d)*A
*c^2*d^3*e^49 + 63*(x*e + d)^(5/2)*B*b^2*e^50 + 126*(x*e + d)^(5/2)*A*b*c*e
^50 - 315*(x*e + d)^(3/2)*B*b^2*d*e^50 - 630*(x*e + d)^(3/2)*A*b*c*d*e^50 +
 945*sqrt(x*e + d)*B*b^2*d^2*e^50 + 1890*sqrt(x*e + d)*A*b*c*d^2*e^50 + 105
*(x*e + d)^(3/2)*A*b^2*e^51 - 630*sqrt(x*e + d)*A*b^2*d*e^51)*e^(-54) + 2*(
B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*A*b*c*d^3*e^2 -
 A*b^2*d^2*e^3)*e^(-6)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 341, normalized size = 1.30

$$-\frac{2\left(-35B\,c^{2}x^{5}e^{5}-45A\,c^{2}e^{5}x^{4}-90Bbc\,e^{5}x^{4}+50B\,c^{2}d\,e^{4}x^{4}-126Abc\,e^{5}x^{3}+72A\,c^{2}d\,e^{4}x^{3}-63B\,b^{2}e^{5}x^{3}+144\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315*(-35*B*c^2*e^5*x^5-45*A*c^2*e^5*x^4-90*B*b*c*e^5*x^4+50*B*c^2*d*e^4*
x^4-126*A*b*c*e^5*x^3+72*A*c^2*d*e^4*x^3-63*B*b^2*e^5*x^3+144*B*b*c*d*e^4*x
^3-80*B*c^2*d^2*e^3*x^3-105*A*b^2*e^5*x^2+252*A*b*c*d*e^4*x^2-144*A*c^2*d^2
*e^3*x^2+126*B*b^2*d*e^4*x^2-288*B*b*c*d^2*e^3*x^2+160*B*c^2*d^3*e^2*x^2+42
0*A*b^2*d*e^4*x-1008*A*b*c*d^2*e^3*x+576*A*c^2*d^3*e^2*x-504*B*b^2*d^2*e^3*
x+1152*B*b*c*d^3*e^2*x-640*B*c^2*d^4*e*x+840*A*b^2*d^2*e^3-2016*A*b*c*d^3*e
^2+1152*A*c^2*d^4*e-1008*B*b^2*d^3*e^2+2304*B*b*c*d^4*e-1280*B*c^2*d^5)/(e*
x+d)^(1/2)/e^6
```

maxima [A] time = 0.49, size = 299, normalized size = 1.14

$$2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bc^2-45\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{7}{2}}+63\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)(ex+d)^{\frac{5}{2}}-105\,(10\,Bc^2d^3-Ab^2e^3-6\,(2\,Bbc+Ac^2}{e^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^2 - 45*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*
x + d)^(7/2) + 63*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*
c)*e^2)*(e*x + d)^(5/2) - 105*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^
2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^(3/2) + 315*(5*B*c^2*d^4 -
2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^2*e^2)*sq
rt(e*x + d))/e^5 + 315*(B*c^2*d^5 - A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e
 + (B*b^2 + 2*A*b*c)*d^3*e^2)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 1.53, size = 296, normalized size = 1.13

$$\frac{{\left(d+e\,x\right)}^{7/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{7\,e^6}+\frac{{\left(d+e\,x\right)}^{3/2}\,(-6\,B\,b^2\,d\,e^2+2\,A\,b^2\,e^3+24\,B\,b\,c\,d^2\,e-12\,A\,b\,c\,d\,e^2-2}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(7*e^6) + ((d + e*x)
^(3/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*
b*c*d*e^2 + 24*B*b*c*d^2*e))/(3*e^6) + ((d + e*x)^(5/2)*(2*B*b^2*e^2 + 20*B
*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d*e))/(5*e^6) + (2*B*c^2*d^
5 - 2*A*c^2*d^4*e - 2*A*b^2*d^2*e^3 + 2*B*b^2*d^3*e^2 - 4*B*b*c*d^4*e + 4*A
*b*c*d^3*e^2)/(e^6*(d + e*x)^(1/2)) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6) - (
2*d*(b*e - c*d)*(d + e*x)^(1/2)*(2*A*b*e^2 + 5*B*c*d^2 - 4*A*c*d*e - 3*B*b*
d*e))/e^6
```

sympy [A] time = 62.03, size = 321, normalized size = 1.22

$$\frac{2Bc^2\left(d+ex\right)^{\frac{9}{2}}}{9e^6}+\frac{2d^2\left(-Ae+Bd\right)\left(be-cd\right)^2}{e^6\sqrt{d+ex}}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(2Ac^2e+4Bbce-10Bc^2d\right)}{7e^6}+\frac{\left(d+ex\right)^{\frac{5}{2}}(4Abce^2-8Ac^2de+}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(9/2)/(9*e**6) + 2*d**2*(-A*e + B*d)*(b*e - c*d)**2/(e*
*6*sqrt(d + e*x)) + (d + e*x)**(7/2)*(2*A*c**2*e + 4*B*b*c*e - 10*B*c**2*d)
/(7*e**6) + (d + e*x)**(5/2)*(4*A*b*c*e**2 - 8*A*c**2*d*e + 2*B*b**2*e**2 -
 16*B*b*c*d*e + 20*B*c**2*d**2)/(5*e**6) + (d + e*x)**(3/2)*(2*A*b**2*e**3
- 12*A*b*c*d*e**2 + 12*A*c**2*d**2*e - 6*B*b**2*d*e**2 + 24*B*b*c*d**2*e -
20*B*c**2*d**3)/(3*e**6) + sqrt(d + e*x)*(-4*A*b**2*d*e**3 + 12*A*b*c*d**2*
e**2 - 8*A*c**2*d**3*e + 6*B*b**2*d**2*e**2 - 16*B*b*c*d**3*e + 10*B*c**2*d
**4)/e**6
```

3.1227 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2(d+ex)^{3/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{3e^6}+\frac{2\sqrt{d+ex}\,(Ae(b^2e^2-6bcde+6c^2d^2)-Bd(3b^2e}{e^6}$$

```
[Out] 2/3*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^(3/2)-2/3*(2*A*c*e*(-b*e+2*c*d)
-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(3/2)/e^6-2/5*c*(-A*c*e-2*B*b*e+
5*B*c*d)*(e*x+d)^(5/2)/e^6+2/7*B*c^2*(e*x+d)^(7/2)/e^6-2*d*(-b*e+c*d)*(B*d*
(-3*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^(1/2)+2*(A*e*(b^2*e^2-6*b*c*
d*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.15, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2(d+ex)^{3/2}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{3e^6}+\frac{2\sqrt{d+ex}\,(Ae(b^2e^2-6bcde+6c^2d^2)-Bd(3b^2e}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(3*e^6*(d + e*x)^(3/2)) - (2*d*(c*d - b*e
)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(e^6*Sqrt[d + e*x]) + (2*(A*
e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*b^2*
e^2))*Sqrt[d + e*x])/e^6 - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 - 8*b*
c*d*e + b^2*e^2))*(d + e*x)^(3/2))/(3*e^6) - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(5/2))/(5*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \Bigg(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{5/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^{3/2}}+\frac{Ae}{} \\ &= \frac{2d^2(Bd-Ae)(cd-be)^2}{3e^6(d+ex)^{3/2}}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^6\sqrt{d+ex}}+\frac{2\,(Ae\,(}{}\end{aligned}$$

Mathematica [A] time = 0.16, size = 271, normalized size = 1.03

$$\frac{2\left(7Ae\left(5b^2e^2\left(8d^2+12dex+3e^2x^2\right)+10bce\left(-16d^3-24d^2ex-6de^2x^2+e^3x^3\right)+c^2\,(128d^4+192d^3ex+48d^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(7*A*e*(5*b^2*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 10*b*c*e*(-16*d^3 - 2
4*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + c^2*(128*d^4 + 192*d^3*e*x + 48*d^2*e^
2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) + B*(35*b^2*e^2*(-16*d^3 - 24*d^2*e*x - 6
*d*e^2*x^2 + e^3*x^3) + 14*b*c*e*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 -
8*d*e^3*x^3 + 3*e^4*x^4) - 5*c^2*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 -
16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3*e^5*x^5))))/(105*e^6*(d + e*x)^(3/2))
```

fricas [A] time = 0.61, size = 310, normalized size = 1.18

$$2 (15 Bc^2e^5x^5 - 1280 Bc^2d^5 + 280 Ab^2d^2e^3 + 896 (2 Bbc + Ac^2)d^4e - 560 (Bb^2 + 2 Abc)d^3e^2 - 3 (10 Bc^2de^4 - 7 (2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 280*A*b^2*d^2*e^3 + 896*(2*B*b*c
 + A*c^2)*d^4*e - 560*(B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(10*B*c^2*d*e^4 - 7*(2*
B*b*c + A*c^2)*e^5)*x^4 + (80*B*c^2*d^2*e^3 - 56*(2*B*b*c + A*c^2)*d*e^4 +
35*(B*b^2 + 2*A*b*c)*e^5)*x^3 - 3*(160*B*c^2*d^3*e^2 - 35*A*b^2*e^5 - 112*(
2*B*b*c + A*c^2)*d^2*e^3 + 70*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 - 12*(160*B*c^2*
d^4*e - 35*A*b^2*d*e^4 - 112*(2*B*b*c + A*c^2)*d^3*e^2 + 70*(B*b^2 + 2*A*b*
c)*d^2*e^3)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [A] time = 0.26, size = 427, normalized size = 1.62

$$\frac{2}{105} (15 (xe + d)^{\frac{7}{2}} Bc^2e^{36} - 105 (xe + d)^{\frac{5}{2}} Bc^2de^{36} + 350 (xe + d)^{\frac{3}{2}} Bc^2d^2e^{36} - 1050 \sqrt{xe + d} Bc^2d^3e^{36} + 42 (xe + d)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*c^2*e^36 - 105*(x*e + d)^(5/2)*B*c^2*d*e^36 + 3
50*(x*e + d)^(3/2)*B*c^2*d^2*e^36 - 1050*sqrt(x*e + d)*B*c^2*d^3*e^36 + 42*
(x*e + d)^(5/2)*B*b*c*e^37 + 21*(x*e + d)^(5/2)*A*c^2*e^37 - 280*(x*e + d)^
(3/2)*B*b*c*d*e^37 - 140*(x*e + d)^(3/2)*A*c^2*d*e^37 + 1260*sqrt(x*e + d)*
B*b*c*d^2*e^37 + 630*sqrt(x*e + d)*A*c^2*d^2*e^37 + 35*(x*e + d)^(3/2)*B*b^
2*e^38 + 70*(x*e + d)^(3/2)*A*b*c*e^38 - 315*sqrt(x*e + d)*B*b^2*d*e^38 - 6
30*sqrt(x*e + d)*A*b*c*d*e^38 + 105*sqrt(x*e + d)*A*b^2*e^39)*e^(-42) - 2/3
*(15*(x*e + d)*B*c^2*d^4 - B*c^2*d^5 - 24*(x*e + d)*B*b*c*d^3*e - 12*(x*e +
 d)*A*c^2*d^3*e + 2*B*b*c*d^4*e + A*c^2*d^4*e + 9*(x*e + d)*B*b^2*d^2*e^2 +
 18*(x*e + d)*A*b*c*d^2*e^2 - B*b^2*d^3*e^2 - 2*A*b*c*d^3*e^2 - 6*(x*e + d)
*A*b^2*d*e^3 + A*b^2*d^2*e^3)*e^(-6)/(x*e + d)^(3/2)
```

maple [A] time = 0.06, size = 341, normalized size = 1.30

$$\frac{512}{15} Bbc d^4e - \frac{4}{7} B c^2d e^4x^4 + 2A b^2e^5x^2 + \frac{16}{3} A b^2d^2e^3 + \frac{256}{15} A c^2d^4e - \frac{32}{3} B b^2d^3e^2 + \frac{2}{3} B b^2e^5x^3 + \frac{2}{5} A c^2e^5x^4 + \frac{256}{5} Bbc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x)
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5+21*A*c^2*e^5*x^4+42*B*b*c*e^5*x^4-30*B*c^2*d*e^4*x^
4+70*A*b*c*e^5*x^3-56*A*c^2*d*e^4*x^3+35*B*b^2*e^5*x^3-112*B*b*c*d*e^4*x^3+
80*B*c^2*d^2*e^3*x^3+105*A*b^2*e^5*x^2-420*A*b*c*d*e^4*x^2+336*A*c^2*d^2*e^
3*x^2-210*B*b^2*d*e^4*x^2+672*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^2*x^2+420*A
*b^2*d*e^4*x-1680*A*b*c*d^2*e^3*x+1344*A*c^2*d^3*e^2*x-840*B*b^2*d^2*e^3*x+
2688*B*b*c*d^3*e^2*x-1920*B*c^2*d^4*e*x+280*A*b^2*d^2*e^3-1120*A*b*c*d^3*e^
2+896*A*c^2*d^4*e-560*B*b^2*d^3*e^2+1792*B*b*c*d^4*e-1280*B*c^2*d^5)/(e*x+d
)^(3/2)/e^6
```

maxima [**A**] time = 0.54, size = 297, normalized size = 1.13

$$2\Bigg(\frac{15\,(ex+d)^{\frac{7}{2}}Bc^2-21\,\big(5\,Bc^2d-\big(2\,Bbc+Ac^2\big)e\big)(ex+d)^{\frac{5}{2}}+35\,\big(10\,Bc^2d^2-4\,\big(2\,Bbc+Ac^2\big)de+\big(Bb^2+2\,Abc\big)e^2\big)(ex+d)^{\frac{3}{2}}-105\,\big(10\,Bc^2d^3-Ab^2e^3-6\,\big(2\,Bbc+}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*c^2 - 21*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*
x + d)^(5/2) + 35*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*
c)*e^2)*(e*x + d)^(3/2) - 105*(10*B*c^2*d^3 - A*b^2*e^3 - 6*(2*B*b*c + A*c^
2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*sqrt(e*x + d))/e^5 + 35*(B*c^2*d^5 -
A*b^2*d^2*e^3 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*A*b*c)*d^3*e^2 - 3*(5*
B*c^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)
*d^2*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [**B**] time = 0.07, size = 316, normalized size = 1.20

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{5\,e^6}-\frac{(d+e\,x)\,\big(6\,B\,b^2\,d^2\,e^2-4\,A\,b^2\,d\,e^3-16\,B\,b\,c\,d^3\,e+12\,A\,b\,c\,d^2\,e^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(5*e^6) - ((d + e*x)
*(10*B*c^2*d^4 - 4*A*b^2*d*e^3 - 8*A*c^2*d^3*e + 6*B*b^2*d^2*e^2 - 16*B*b*c
*d^3*e + 12*A*b*c*d^2*e^2) - (2*B*c^2*d^5)/3 + (2*A*c^2*d^4*e)/3 + (2*A*b^2
*d^2*e^3)/3 - (2*B*b^2*d^3*e^2)/3 + (4*B*b*c*d^4*e)/3 - (4*A*b*c*d^3*e^2)/3
)/(e^6*(d + e*x)^(3/2)) + ((d + e*x)^(1/2)*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12
*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*b*c*d*e^2 + 24*B*b*c*d^2*e))/e^6 + ((d
+ e*x)^(3/2)*(2*B*b^2*e^2 + 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B
*b*c*d*e))/(3*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

sympy [**A**] time = 75.51, size = 292, normalized size = 1.11

$$\frac{2Bc^2\,(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{2d^2\,(-Ae+Bd)\,(be-cd)^2}{3e^6\,(d+ex)^{\frac{3}{2}}}-\frac{2d\,(be-cd)\left(-2Abe^2+4Acde+3Bbde-5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{(d+ex)^{\frac{5}{2}}\,\big(2Ac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(7/2)/(7*e**6) + 2*d**2*(-A*e + B*d)*(b*e - c*d)**2/(3*
e**6*(d + e*x)**(3/2)) - 2*d*(b*e - c*d)*(-2*A*b*e**2 + 4*A*c*d*e + 3*B*b*d
*e - 5*B*c*d**2)/(e**6*sqrt(d + e*x)) + (d + e*x)**(5/2)*(2*A*c**2*e + 4*B*
b*c*e - 10*B*c**2*d)/(5*e**6) + (d + e*x)**(3/2)*(4*A*b*c*e**2 - 8*A*c**2*d
*e + 2*B*b**2*e**2 - 16*B*b*c*d*e + 20*B*c**2*d**2)/(3*e**6) + sqrt(d + e*x
)*(2*A*b**2*e**3 - 12*A*b*c*d*e**2 + 12*A*c**2*d**2*e - 6*B*b**2*d*e**2 + 2
4*B*b*c*d**2*e - 20*B*c**2*d**3)/e**6
```

3.1228 $\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=263

$$-\frac{2\sqrt{d+ex}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6}-\frac{2\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+1\right.\right.}{e^6\sqrt{d+ex}}$$

```
[Out] 2/5*d^2*(-A*e+B*d)*(-b*e+c*d)^2/e^6/(e*x+d)^(5/2)-2/3*d*(-b*e+c*d)*(B*d*(-3
*b*e+5*c*d)-2*A*e*(-b*e+2*c*d))/e^6/(e*x+d)^(3/2)-2/3*c*(-A*c*e-2*B*b*e+5*B
*c*d)*(e*x+d)^(3/2)/e^6+2/5*B*c^2*(e*x+d)^(5/2)/e^6-2*(A*e*(b^2*e^2-6*b*c*d
*e+6*c^2*d^2)-B*d*(3*b^2*e^2-12*b*c*d*e+10*c^2*d^2))/e^6/(e*x+d)^(1/2)-2*(2
*A*c*e*(-b*e+2*c*d)-B*(b^2*e^2-8*b*c*d*e+10*c^2*d^2))*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.16, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$-\frac{2\sqrt{d+ex}\left(2Ace(2cd-be)-B\left(b^2e^2-8bcde+10c^2d^2\right)\right)}{e^6}-\frac{2\left(Ae\left(b^2e^2-6bcde+6c^2d^2\right)-Bd\left(3b^2e^2-12bcde+1\right.\right.}{e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*d^2*(B*d - A*e)*(c*d - b*e)^2)/(5*e^6*(d + e*x)^(5/2)) - (2*d*(c*d - b*e
)*(B*d*(5*c*d - 3*b*e) - 2*A*e*(2*c*d - b*e)))/(3*e^6*(d + e*x)^(3/2)) - (2
*(A*e*(6*c^2*d^2 - 6*b*c*d*e + b^2*e^2) - B*d*(10*c^2*d^2 - 12*b*c*d*e + 3*
b^2*e^2)))/(e^6*Sqrt[d + e*x]) - (2*(2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2
- 8*b*c*d*e + b^2*e^2))*Sqrt[d + e*x])/e^6 - (2*c*(5*B*c*d - 2*b*B*e - A*c*
e)*(d + e*x)^(3/2))/(3*e^6) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(bx+cx^2\right)^2}{(d+ex)^{7/2}}\,dx &= \int \left(-\frac{d^2(Bd-Ae)(cd-be)^2}{e^5(d+ex)^{7/2}}+\frac{d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{e^5(d+ex)^{5/2}}+\frac{Ae\left(6c\right.}{}\right.\\ &= \frac{2d^2(Bd-Ae)(cd-be)^2}{5e^6(d+ex)^{5/2}}-\frac{2d(cd-be)(Bd(5cd-3be)-2Ae(2cd-be))}{3e^6(d+ex)^{3/2}}-\frac{2\left(Ae\left(6c^2\right.\right.}{}\end{aligned}$$

Mathematica [A] time = 0.15, size = 272, normalized size = 1.03

$$\frac{2\left(Ae\left(-b^2e^2\left(8d^2+20dex+15e^2x^2\right)+6bce\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)-\left(c^2\left(128d^4+320d^3ex+240d^2e\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(A*e*(-(b^2*e^2*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) + 6*b*c*e*(16*d^3 + 40*
d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) - c^2*(128*d^4 + 320*d^3*e*x + 240*d^2*
e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4)) + B*(3*b^2*e^2*(16*d^3 + 40*d^2*e*x +
30*d*e^2*x^2 + 5*e^3*x^3) - 2*b*c*e*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^
2 + 40*d*e^3*x^3 - 5*e^4*x^4) + c^2*(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^
2 + 80*d^2*e^3*x^3 - 10*d*e^4*x^4 + 3*e^5*x^5))))/(15*e^6*(d + e*x)^(5/2))
```

fricas [A] time = 0.66, size = 322, normalized size = 1.22

$$2\,(3\,Bc^2e^5x^5 + 256\,Bc^2d^5 - 8\,Ab^2d^2e^3 - 128\,(2\,Bbc + Ac^2)d^4e + 48\,(Bb^2 + 2\,Abc)d^3e^2 - 5\,(2\,Bc^2de^4 - (2\,Bbc +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*e^5*x^5 + 256*B*c^2*d^5 - 8*A*b^2*d^2*e^3 - 128*(2*B*b*c + A*
c^2)*d^4*e + 48*(B*b^2 + 2*A*b*c)*d^3*e^2 - 5*(2*B*c^2*d*e^4 - (2*B*b*c + A
*c^2)*e^5)*x^4 + 5*(16*B*c^2*d^2*e^3 - 8*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2
 + 2*A*b*c)*e^5)*x^3 + 15*(32*B*c^2*d^3*e^2 - A*b^2*e^5 - 16*(2*B*b*c + A*c
^2)*d^2*e^3 + 6*(B*b^2 + 2*A*b*c)*d*e^4)*x^2 + 20*(32*B*c^2*d^4*e - A*b^2*d
*e^4 - 16*(2*B*b*c + A*c^2)*d^3*e^2 + 6*(B*b^2 + 2*A*b*c)*d^2*e^3)*x)*sqrt(
e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.23, size = 427, normalized size = 1.62

$$\frac{2}{15}\,(3\,(xe+d)^{\frac{5}{2}}Bc^2e^{24} - 25\,(xe+d)^{\frac{3}{2}}Bc^2de^{24} + 150\,\sqrt{xe+d}\,Bc^2d^2e^{24} + 10\,(xe+d)^{\frac{3}{2}}Bbce^{25} + 5\,(xe+d)^{\frac{3}{2}}Ac^2e^{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^2*e^24 - 25*(x*e + d)^(3/2)*B*c^2*d*e^24 + 150*
sqrt(x*e + d)*B*c^2*d^2*e^24 + 10*(x*e + d)^(3/2)*B*b*c*e^25 + 5*(x*e + d)^
(3/2)*A*c^2*e^25 - 120*sqrt(x*e + d)*B*b*c*d*e^25 - 60*sqrt(x*e + d)*A*c^2*
d*e^25 + 15*sqrt(x*e + d)*B*b^2*e^26 + 30*sqrt(x*e + d)*A*b*c*e^26)*e^(-30)
 + 2/15*(150*(x*e + d)^2*B*c^2*d^3 - 25*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 -
 180*(x*e + d)^2*B*b*c*d^2*e - 90*(x*e + d)^2*A*c^2*d^2*e + 40*(x*e + d)*B*
b*c*d^3*e + 20*(x*e + d)*A*c^2*d^3*e - 6*B*b*c*d^4*e - 3*A*c^2*d^4*e + 45*(
x*e + d)^2*B*b^2*d*e^2 + 90*(x*e + d)^2*A*b*c*d*e^2 - 15*(x*e + d)*B*b^2*d^
2*e^2 - 30*(x*e + d)*A*b*c*d^2*e^2 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 - 15
*(x*e + d)^2*A*b^2*e^3 + 10*(x*e + d)*A*b^2*d*e^3 - 3*A*b^2*d^2*e^3)*e^(-6)
/(x*e + d)^(5/2)
```

maple [A] time = 0.06, size = 341, normalized size = 1.30

$$-2\,(-3B\,c^2x^5e^5 - 5A\,c^2e^5x^4 - 10Bbc\,e^5x^4 + 10B\,c^2d\,e^4x^4 - 30Abc\,e^5x^3 + 40A\,c^2d\,e^4x^3 - 15B\,b^2e^5x^3 + 80Bbcd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*B*c^2*e^5*x^5-5*A*c^2*e^5*x^4-10*B*b*c*e^5*x^4+10*B*c^2*d*e^4*x^4
-30*A*b*c*e^5*x^3+40*A*c^2*d*e^4*x^3-15*B*b^2*e^5*x^3+80*B*b*c*d*e^4*x^3-80
*B*c^2*d^2*e^3*x^3+15*A*b^2*e^5*x^2-180*A*b*c*d*e^4*x^2+240*A*c^2*d^2*e^3*x
^2-90*B*b^2*d*e^4*x^2+480*B*b*c*d^2*e^3*x^2-480*B*c^2*d^3*e^2*x^2+20*A*b^2*
d*e^4*x-240*A*b*c*d^2*e^3*x+320*A*c^2*d^3*e^2*x-120*B*b^2*d^2*e^3*x+640*B*b
*c*d^3*e^2*x-640*B*c^2*d^4*e*x+8*A*b^2*d^2*e^3-96*A*b*c*d^3*e^2+128*A*c^2*d
^4*e-48*B*b^2*d^3*e^2+256*B*b*c*d^4*e-256*B*c^2*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [A] time = 0.58, size = 298, normalized size = 1.13

$$2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc^2-5\left(5\,Bc^2d-\left(2\,Bbc+Ac^2\right)e\right)(ex+d)^{\frac{3}{2}}+15\left(10\,Bc^2d^2-4\left(2\,Bbc+Ac^2\right)de+\left(Bb^2+2\,Abc\right)e^2\right)\sqrt{ex+d}}{e^5}+\frac{3\,Bc^2d^5-3\,Ab^2d^2e^3-3\left(2\,Bbc+Ac^2\right)d^4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^2/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c^2 - 5*(5*B*c^2*d - (2*B*b*c + A*c^2)*e)*(e*x +
 d)^(3/2) + 15*(10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*A*b*c)*
e^2)*sqrt(e*x + d))/e^5 + (3*B*c^2*d^5 - 3*A*b^2*d^2*e^3 - 3*(2*B*b*c + A*c
^2)*d^4*e + 3*(B*b^2 + 2*A*b*c)*d^3*e^2 + 15*(10*B*c^2*d^3 - A*b^2*e^3 - 6*
(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*A*b*c)*d*e^2)*(e*x + d)^2 - 5*(5*B*c
^2*d^4 - 2*A*b^2*d*e^3 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*A*b*c)*d^
2*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B] time = 1.56, size = 312, normalized size = 1.19

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,c^2\,e-10\,B\,c^2\,d+4\,B\,b\,c\,e\right)}{3\,e^6}+\frac{\sqrt{d+e\,x}\,\left(2\,B\,b^2\,e^2-16\,B\,b\,c\,d\,e+4\,A\,b\,c\,e^2+20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e\right)}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^2*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*c^2*e - 10*B*c^2*d + 4*B*b*c*e))/(3*e^6) + ((d + e*x)
^(1/2)*(2*B*b^2*e^2 + 20*B*c^2*d^2 + 4*A*b*c*e^2 - 8*A*c^2*d*e - 16*B*b*c*d
*e))/e^6 - ((d + e*x)*((10*B*c^2*d^4)/3 - (4*A*b^2*d*e^3)/3 - (8*A*c^2*d^3*
e)/3 + 2*B*b^2*d^2*e^2 - (16*B*b*c*d^3*e)/3 + 4*A*b*c*d^2*e^2) + (d + e*x)^
2*(2*A*b^2*e^3 - 20*B*c^2*d^3 + 12*A*c^2*d^2*e - 6*B*b^2*d*e^2 - 12*A*b*c*d
*e^2 + 24*B*b*c*d^2*e) - (2*B*c^2*d^5)/5 + (2*A*c^2*d^4*e)/5 + (2*A*b^2*d^2
*e^3)/5 - (2*B*b^2*d^3*e^2)/5 + (4*B*b*c*d^4*e)/5 - (4*A*b*c*d^3*e^2)/5)/(e
^6*(d + e*x)^(5/2)) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

sympy [A] time = 4.86, size = 1833, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-16*A*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*s
qrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 40*A*b**2*d*e**4*x/(15*d**2*e*
*6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
- 30*A*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)) + 192*A*b*c*d**3*e**2/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 480*A*b
*c*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15
*e**8*x**2*sqrt(d + e*x)) + 360*A*b*c*d*e**4*x**2/(15*d**2*e**6*sqrt(d + e*
x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 60*A*b*c*e**
5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 256*A*c**2*d**4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e*
*7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 640*A*c**2*d**3*e**2*x/(
15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(
d + e*x)) - 480*A*c**2*d**2*e**3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e*
*7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 80*A*c**2*d*e**4*x**3/(1
5*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d
 + e*x)) + 10*A*c**2*e**5*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 96*B*b**2*d**3*e**2/(15*d**2*e*
*6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
+ 240*B*b**2*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d +
 e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 180*B*b**2*d*e**4*x**2/(15*d**2*e**6*
sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 3
0*B*b**2*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x)
+ 15*e**8*x**2*sqrt(d + e*x)) - 512*B*b*c*d**4*e/(15*d**2*e**6*sqrt(d + e*x
) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1280*B*b*c*d*
*3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8
*x**2*sqrt(d + e*x)) - 960*B*b*c*d**2*e**3*x**2/(15*d**2*e**6*sqrt(d + e*x)
 + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 160*B*b*c*d*e*
*4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x
**2*sqrt(d + e*x)) + 20*B*b*c*e**5*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*
e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 512*B*c**2*d**5/(15*d*
*2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e
*x)) + 1280*B*c**2*d**4*e*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(
d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*c**2*d**3*e**2*x**2/(15*d**2
*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x
)) + 160*B*c**2*d**2*e**3*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B*c**2*d*e**4*x**4/(15*d**2*
e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)
) + 6*B*c**2*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e
*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*b**2*x**3/3 + A*b*c*x**4/
2 + A*c**2*x**5/5 + B*b**2*x**4/4 + 2*B*b*c*x**5/5 + B*c**2*x**6/6)/d**(7/2
), True))
```

3.1229 $\int \frac{(A+Bx)(d+ex)^{7/2}}{bx+cx^2}\,dx$

Optimal. Leaf size=228

$$\frac{2\sqrt{d+ex}\left(Ace\left(b^2e^2-3bcde+3c^2d^2\right)+B(cd-be)^3\right)}{c^4}-\frac{2(bB-Ac)(cd-be)^{7/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{9/2}}+\frac{2(d+ex)^{3/2}\left(A}{}$$

```
[Out] 2/3*(B*(-b*e+c*d)^2+A*c*e*(-b*e+2*c*d))*(e*x+d)^(3/2)/c^3+2/5*(A*c*e-B*b*e+
B*c*d)*(e*x+d)^(5/2)/c^2+2/7*B*(e*x+d)^(7/2)/c-2*A*d^(7/2)*arctanh((e*x+d)^
(1/2)/d^(1/2))/b-2*(-A*c+B*b)*(-b*e+c*d)^(7/2)*arctanh(c^(1/2)*(e*x+d)^(1/2
)/(-b*e+c*d)^(1/2))/b/c^(9/2)+2*(B*(-b*e+c*d)^3+A*c*e*(b^2*e^2-3*b*c*d*e+3*
c^2*d^2))*(e*x+d)^(1/2)/c^4
```

Rubi [A] time = 0.56, antiderivative size = 228, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {824, 826, 1166, 208}

$$\frac{2\sqrt{d+ex}\left(Ace\left(b^2e^2-3bcde+3c^2d^2\right)+B(cd-be)^3\right)}{c^4}+\frac{2(d+ex)^{5/2}(Ace-bBe+Bcd)}{5c^2}+\frac{2(d+ex)^{3/2}\left(Ace(2cd-b\right.}{3c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*(c*d - b*e)^3 + A*c*e*(3*c^2*d^2 - 3*b*c*d*e + b^2*e^2))*Sqrt[d + e*x
])/c^4 + (2*(B*(c*d - b*e)^2 + A*c*e*(2*c*d - b*e))*(d + e*x)^(3/2))/(3*c^3
) + (2*(B*c*d - b*B*e + A*c*e)*(d + e*x)^(5/2))/(5*c^2) + (2*B*(d + e*x)^(7
/2))/(7*c) - (2*A*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c
)*(c*d - b*e)^(7/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^
(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{bx+cx^2}\,dx = \frac{2B(d+ex)^{7/2}}{7c} + \frac{\int \frac{(d+ex)^{5/2}(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c}$$

$$= \frac{2(Bcd-bBe+Ace)(d+ex)^{5/2}}{5c^2} + \frac{2B(d+ex)^{7/2}}{7c} + \frac{\int \frac{(d+ex)^{3/2}\left(Ac^2d^2+\left(B(cd-be)^2+Ace(2c\right.\right.}{bx+cx^2}}{c^2}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)(d+ex)^{3/2}}{3c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{5/2}}{5c^2} + 2$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

$$= \frac{2\left(B(cd-be)^3+Ace\left(3c^2d^2-3bcde+b^2e^2\right)\right)\sqrt{d+ex}}{c^4} + \frac{2\left(B(cd-be)^2+Ace(2c\right.}{3c^3}$$

Mathematica [**A**] time = 0.50, size = 212, normalized size = 0.93

$$\frac{2\left(\frac{(bB-Ac)\left(7(cd-be)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}\,(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)+15c^{7/2}(d+ex)^{7/2}\right)}{c^{9/2}}-105Ad^{7/2}\,t\right.}{105b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(A*Sqrt[d + e*x]*(176*d^3 + 122*d^2*e*x + 66*d*e^2*x^2 + 15*e^3*x^3) - 1
05*A*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]] + ((b*B - A*c)*(15*c^(7/2)*(d +
 e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*(Sqr
t[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTanh[(S
qrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))))/c^(9/2)))/(105*b)
```

fricas [**A**] time = 25.01, size = 1474, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/105*(105*A*c^4*d^(7/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 10
5*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b
^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c
*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(15*B*b*c^
3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*
c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*
(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*
c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4), 1/105
*(105*A*c^4*d^(7/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 210*((B*
b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2
)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)
*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + 2*(15*B*b*c^3*e^3*x^3 + 176*B*b*c^3*
d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*c - A*b^2*c^2)*d*e^2 - 1
05*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*(B*b^2*c^2 - A*b*c^3)*e^
3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*c^3)*d*e^2 + 35*(B*b^3*c
 - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4), 1/105*(210*A*c^4*sqrt(-d)*d^3
*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c
^2 - A*b*c^3)*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3
)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*
d - b*e)/c))/(c*x + b)) + 2*(15*B*b*c^3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*
b^2*c^2 - A*b*c^3)*d^2*e + 350*(B*b^3*c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A
*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2 - 7*(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122
*B*b*c^3*d^2*e - 112*(B*b^2*c^2 - A*b*c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)
*e^3)*x)*sqrt(e*x + d))/(b*c^4), 2/105*(105*A*c^4*sqrt(-d)*d^3*arctan(sqrt(
e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^4)*d^3 - 3*(B*b^2*c^2 - A*b*c^3)
*d^2*e + 3*(B*b^3*c - A*b^2*c^2)*d*e^2 - (B*b^4 - A*b^3*c)*e^3)*sqrt(-(c*d
- b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + (15*B
*b*c^3*e^3*x^3 + 176*B*b*c^3*d^3 - 406*(B*b^2*c^2 - A*b*c^3)*d^2*e + 350*(B
*b^3*c - A*b^2*c^2)*d*e^2 - 105*(B*b^4 - A*b^3*c)*e^3 + 3*(22*B*b*c^3*d*e^2
 - 7*(B*b^2*c^2 - A*b*c^3)*e^3)*x^2 + (122*B*b*c^3*d^2*e - 112*(B*b^2*c^2 -
 A*b*c^3)*d*e^2 + 35*(B*b^3*c - A*b^2*c^2)*e^3)*x)*sqrt(e*x + d))/(b*c^4)]
```

giac [B] time = 0.30, size = 476, normalized size = 2.09

$$\frac{2\,Ad^4\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\,(Bbc^4d^4-Ac^5d^4-4\,Bb^2c^3d^3e+4\,Abc^4d^3e+6\,Bb^3c^2d^2e^2-6\,Ab^2c^3d^2e^2-4\,Bb^4cde^3+}{\sqrt{-c^2d+bce}\,bc^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^4*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^4*d^4 - A*c^
5*d^4 - 4*B*b^2*c^3*d^3*e + 4*A*b*c^4*d^3*e + 6*B*b^3*c^2*d^2*e^2 - 6*A*b^2
*c^3*d^2*e^2 - 4*B*b^4*c*d*e^3 + 4*A*b^3*c^2*d*e^3 + B*b^5*e^4 - A*b^4*c*e^
4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c^4
) + 2/105*(15*(x*e + d)^(7/2)*B*c^6 + 21*(x*e + d)^(5/2)*B*c^6*d + 35*(x*e
+ d)^(3/2)*B*c^6*d^2 + 105*sqrt(x*e + d)*B*c^6*d^3 - 21*(x*e + d)^(5/2)*B*b
*c^5*e + 21*(x*e + d)^(5/2)*A*c^6*e - 70*(x*e + d)^(3/2)*B*b*c^5*d*e + 70*(
x*e + d)^(3/2)*A*c^6*d*e - 315*sqrt(x*e + d)*B*b*c^5*d^2*e + 315*sqrt(x*e +
 d)*A*c^6*d^2*e + 35*(x*e + d)^(3/2)*B*b^2*c^4*e^2 - 35*(x*e + d)^(3/2)*A*b
*c^5*e^2 + 315*sqrt(x*e + d)*B*b^2*c^4*d*e^2 - 315*sqrt(x*e + d)*A*b*c^5*d*
e^2 - 105*sqrt(x*e + d)*B*b^3*c^3*e^3 + 105*sqrt(x*e + d)*A*b^2*c^4*e^3)/c^
7
```

maple [B] time = 0.12, size = 741, normalized size = 3.25

$$-\frac{2A\,b^3e^4\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c^3}+\frac{8A\,b^2d\,e^3\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c^2}-\frac{12Ab\,d^2e^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}-\frac{2Ac\,d^4\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{(be-cd)}}\right)}{\sqrt{(be-cd)\,c}\;b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2/5/c*A*(e*x+d)^(5/2)*e+2/5/c*B*(e*x+d)^(5/2)*d+2/3/c*B*(e*x+d)^(3/2)*d^2+2
/c*B*d^3*(e*x+d)^(1/2)+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*d^4+8*b^2/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*A*d*e^3-12*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*A*d^2*e^2-8*b^3/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+
d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d*e^3+12*b^2/c^2/((b*e-c*d)*c)^(1/2)*arct
an((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2*e^2-8*b/c/((b*e-c*d)*c)^(1/2)
*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3*e-2/5/c^2*B*(e*x+d)^(5/2
)*b*e-2/3/c^2*A*(e*x+d)^(3/2)*b*e^2+4/3/c*A*(e*x+d)^(3/2)*d*e+2/3/c^3*B*(e*
x+d)^(3/2)*b^2*e^2+2/c^3*A*b^2*e^3*(e*x+d)^(1/2)+6/c*A*d^2*e*(e*x+d)^(1/2)-
2/c^4*B*b^3*e^3*(e*x+d)^(1/2)+8/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
b*e-c*d)*c)^(1/2)*c)*A*d^3*e+2*b^4/c^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*e^4-4/3/c^2*B*(e*x+d)^(3/2)*b*d*e-6/c^2*A*b*d
*e^2*(e*x+d)^(1/2)+6/c^3*B*b^2*d*e^2*(e*x+d)^(1/2)-6/c^2*B*b*d^2*e*(e*x+d)^
(1/2)-2*b^3/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2
)*c)*A*e^4-2/b*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*d^4+2/7*B*(e*x+d)^(7/2)/c-2*A*d^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2)
)/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.36, size = 6515, normalized size = 28.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/(5*c) - (2*B*(b*e - 2*c*d))/(5*c^2))*(d + e*x)^(5/2) - (((
c*d^2 - b*d*e)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c - ((b*e - 2
*c*d)*(((b*e - 2*c*d)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c + (2
*B*(c*d^2 - b*d*e))/c^2))/c)*(d + e*x)^(1/2) - (((b*e - 2*c*d)*((2*A*e - 2*
B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/(3*c) + (2*B*(c*d^2 - b*d*e))/(3*c^2))*(
d + e*x)^(3/2) + (2*B*(d + e*x)^(7/2))/(7*c) - (A*atan(((A*((8*(d + e*x)^(1
/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8
*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5
*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7
*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4
*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9
- 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^
9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*
d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c
^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d
*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^
4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e
^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7
)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2)*1i)/b + (A*((8*(d + e*x)^
(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c
^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c
^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d
^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d
^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^
```

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9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*
c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^
7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6
*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - (A*(d^7)^(1/2)*((8*(B*b^6*c^5
*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*
b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3
*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d
^7)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2)*1i)/b)/((16*(4*A^3*c^9*
d^11*e^3 + 52*A^3*b^2*c^7*d^9*e^5 - 69*A^3*b^3*c^6*d^8*e^6 + 56*A^3*b^4*c^5
*d^7*e^7 - 28*A^3*b^5*c^4*d^6*e^8 + 8*A^3*b^6*c^3*d^5*e^9 - A^3*b^7*c^2*d^4
*e^10 - A*B^2*b^9*d^4*e^10 + A^2*B*c^9*d^12*e^2 - 22*A^3*b*c^8*d^10*e^4 + 8
*A*B^2*b^2*c^7*d^11*e^3 - 28*A*B^2*b^3*c^6*d^10*e^4 + 56*A*B^2*b^4*c^5*d^9*
e^5 - 70*A*B^2*b^5*c^4*d^8*e^6 + 56*A*B^2*b^6*c^3*d^7*e^7 - 28*A*B^2*b^7*c^
2*d^6*e^8 + 50*A^2*B*b^2*c^7*d^10*e^4 - 108*A^2*B*b^3*c^6*d^9*e^5 + 139*A^2
*B*b^4*c^5*d^8*e^6 - 112*A^2*B*b^5*c^4*d^7*e^7 + 56*A^2*B*b^6*c^3*d^6*e^8 -
 16*A^2*B*b^7*c^2*d^5*e^9 - A*B^2*b*c^8*d^12*e^2 + 8*A*B^2*b^8*c*d^5*e^9 -
12*A^2*B*b*c^8*d^11*e^3 + 2*A^2*B*b^8*c*d^4*e^10))/c^7 + (A*((8*(d + e*x)^(
1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^
8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^
5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^
7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^
4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9
 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c
^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7
*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*
c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + (A*(d^7)^(1/2)*((8*(B*b^6*c^5*
d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b
^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*
e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^
7)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2))/b - (A*((8*(d + e*x)^(1
/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8
*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5
*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7
*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4
*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9
 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^
9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*
d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c
^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - (A*(d^7)^(1/2)*((8*(B*b^6*c^5*d
*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^
4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e
^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*A*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(d^7
)^(1/2)*(d + e*x)^(1/2))/(b*c^7)))/b)*(d^7)^(1/2))/b))*(d^7)^(1/2)*2i)/b -
(atan((((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2
*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^
7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^
4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^
6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^
3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 -
8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c
^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^
6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*
c^3*d^2*e^8))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((8*(B*b^6*c^5*
d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b
^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*
e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(-c^9
*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^16)))/(b*c^9))*(A*c
 - B*b)*1i)/(b*c^9) + ((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)^(1/2)*(B^2*
b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*c^8*d^6*e^4
```

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- 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*c^5*d^3*e^7
+ 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*d^7*e^3 + 28
*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*d^4*e^6 - 56
*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e^9 - 8*A^2*b
*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b*c^9*d^8*e^2
 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c^7*d^6*e^4 +
 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^6*c^4*d^3*e^
7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - ((-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*
((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 - 6*A*b^3*c^8*
d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8*d^4*e^3 + 6
*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8*(b^3*c^9*e^3 - 2*b^2*c^
10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^16))
)/(b*c^9))*(A*c - B*b)*1i)/(b*c^9))/((16*(4*A^3*c^9*d^11*e^3 + 52*A^3*b^2*c
^7*d^9*e^5 - 69*A^3*b^3*c^6*d^8*e^6 + 56*A^3*b^4*c^5*d^7*e^7 - 28*A^3*b^5*c
^4*d^6*e^8 + 8*A^3*b^6*c^3*d^5*e^9 - A^3*b^7*c^2*d^4*e^10 - A*B^2*b^9*d^4*e
^10 + A^2*B*c^9*d^12*e^2 - 22*A^3*b*c^8*d^10*e^4 + 8*A*B^2*b^2*c^7*d^11*e^3
 - 28*A*B^2*b^3*c^6*d^10*e^4 + 56*A*B^2*b^4*c^5*d^9*e^5 - 70*A*B^2*b^5*c^4*
d^8*e^6 + 56*A*B^2*b^6*c^3*d^7*e^7 - 28*A*B^2*b^7*c^2*d^6*e^8 + 50*A^2*B*b^
2*c^7*d^10*e^4 - 108*A^2*B*b^3*c^6*d^9*e^5 + 139*A^2*B*b^4*c^5*d^8*e^6 - 11
2*A^2*B*b^5*c^4*d^7*e^7 + 56*A^2*B*b^6*c^3*d^6*e^8 - 16*A^2*B*b^7*c^2*d^5*e
^9 - A*B^2*b*c^8*d^12*e^2 + 8*A*B^2*b^8*c*d^5*e^9 - 12*A^2*B*b*c^8*d^11*e^3
 + 2*A^2*B*b^8*c*d^4*e^10))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*((8*(d + e*x)
^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 + 28*A^2*b^2*
c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 - 56*A^2*b^5*
c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*B^2*b^3*c^7*
d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*B^2*b^6*c^4*
d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B^2*b^9*c*d*e
^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^10 - 2*A*B*b
*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 - 56*A*B*b^3*c
^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6 + 112*A*B*b^
6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 + ((-c^9*(b*e - c*d)^7)^(1/2)*
(A*c - B*b)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^9*d^4*e^3 -
6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 - 4*B*b^3*c^8
*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 + (8*(b^3*c^9*e^
3 - 2*b^2*c^10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2
))/(b*c^16)))/(b*c^9))*(A*c - B*b))/(b*c^9) - ((-c^9*(b*e - c*d)^7)^(1/2)*(
(8*(d + e*x)^(1/2)*(B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 2*A^2*c^10*d^8*e^2 +
 28*A^2*b^2*c^8*d^6*e^4 - 56*A^2*b^3*c^7*d^5*e^5 + 70*A^2*b^4*c^6*d^4*e^6 -
 56*A^2*b^5*c^5*d^3*e^7 + 28*A^2*b^6*c^4*d^2*e^8 + B^2*b^2*c^8*d^8*e^2 - 8*
B^2*b^3*c^7*d^7*e^3 + 28*B^2*b^4*c^6*d^6*e^4 - 56*B^2*b^5*c^5*d^5*e^5 + 70*
B^2*b^6*c^4*d^4*e^6 - 56*B^2*b^7*c^3*d^3*e^7 + 28*B^2*b^8*c^2*d^2*e^8 - 8*B
^2*b^9*c*d*e^9 - 8*A^2*b*c^9*d^7*e^3 - 8*A^2*b^7*c^3*d*e^9 - 2*A*B*b^9*c*e^
10 - 2*A*B*b*c^9*d^8*e^2 + 16*A*B*b^8*c^2*d*e^9 + 16*A*B*b^2*c^8*d^7*e^3 -
56*A*B*b^3*c^7*d^6*e^4 + 112*A*B*b^4*c^6*d^5*e^5 - 140*A*B*b^5*c^5*d^4*e^6
+ 112*A*B*b^6*c^4*d^3*e^7 - 56*A*B*b^7*c^3*d^2*e^8))/c^7 - ((-c^9*(b*e - c*
d)^7)^(1/2)*(A*c - B*b)*((8*(B*b^6*c^5*d*e^6 - A*b^5*c^6*d*e^6 + 3*A*b^2*c^
9*d^4*e^3 - 6*A*b^3*c^8*d^3*e^4 + 4*A*b^4*c^7*d^2*e^5 + B*b^2*c^9*d^5*e^2 -
 4*B*b^3*c^8*d^4*e^3 + 6*B*b^4*c^7*d^3*e^4 - 4*B*b^5*c^6*d^2*e^5))/c^7 - (8
*(b^3*c^9*e^3 - 2*b^2*c^10*d*e^2)*(-c^9*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d
 + e*x)^(1/2))/(b*c^16)))/(b*c^9))*(A*c - B*b))/(b*c^9)))*(-c^9*(b*e - c*d)
^7)^(1/2)*(A*c - B*b)*2i)/(b*c^9)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x),x)
```

```
[Out] Timed out
```

3.1230 $\int \frac{(A+Bx)(d+ex)^{5/2}}{bx+cx^2} dx$

Optimal. Leaf size=173

$$-\frac{2(bB-Ac)(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{7/2}}+\frac{2\sqrt{d+ex}\left(Ace(2cd-be)+B(cd-be)^2\right)}{c^3}+\frac{2(d+ex)^{3/2}(Ace-bBe+}{3c^2}$$

```
[Out] 2/3*(A*c*e-B*b*e+B*c*d)*(e*x+d)^(3/2)/c^2+2/5*B*(e*x+d)^(5/2)/c-2*A*d^(5/2)
*arctanh((e*x+d)^(1/2)/d^(1/2))/b-2*(-A*c+B*b)*(-b*e+c*d)^(5/2)*arctanh(c^(
1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b/c^(7/2)+2*(B*(-b*e+c*d)^2+A*c*e*(-b*
e+2*c*d))*(e*x+d)^(1/2)/c^3
```

Rubi [A] time = 0.36, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$\frac{2(d+ex)^{3/2}(Ace-bBe+Bcd)}{3c^2}+\frac{2\sqrt{d+ex}\left(Ace(2cd-be)+B(cd-be)^2\right)}{c^3}-\frac{2(bB-Ac)(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+e}}{\sqrt{cd-be}}\right.}{bc^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*(c*d - b*e)^2 + A*c*e*(2*c*d - b*e))*Sqrt[d + e*x])/c^3 + (2*(B*c*d -
 b*B*e + A*c*e)*(d + e*x)^(3/2))/(3*c^2) + (2*B*(d + e*x)^(5/2))/(5*c) - (2
*A*d^(5/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c)*(c*d - b*e)^(
5/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{bx+cx^2}\,dx = \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{(d+ex)^{3/2}(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c}$$

$$= \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{\sqrt{d+ex}\left(Ac^2d^2+\left(B(cd-be)^2+Ace(2cd-\right.\right.}{bx+cx^2}}{c^2}$$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + 2B($$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + 2B($$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + 2B($$

$$= \frac{2\left(B(cd-be)^2+Ace(2cd-be)\right)\sqrt{d+ex}}{c^3} + \frac{2(Bcd-bBe+Ace)(d+ex)^{3/2}}{3c^2} + 2B($$

Mathematica [A] time = 0.23, size = 174, normalized size = 1.01

$$\frac{2\left(\frac{(bB-Ac)\left(5(cd-be)\left(\sqrt{c}\sqrt{d+ex}(-3be+4cd+cex)-3(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)+3c^{5/2}(d+ex)^{5/2}\right)}{c^{7/2}} - 15Ad^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right) + A\sqrt{d}\right.}{15b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(A*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2) - 15*A*d^(5/2)*ArcTanh[
Sqrt[d + e*x]/Sqrt[d]] + ((b*B - A*c)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d -
 b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*
ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))/c^(7/2)))/(15*b)
```

fricas [A] time = 6.80, size = 1006, normalized size = 5.82

$$\left[\frac{15\,Ac^3d^{\frac{5}{2}}\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right)+15\left(\left(Bbc^2-Ac^3\right)d^2-2\left(Bb^2c-Abc^2\right)de+\left(Bb^3-Ab^2c\right)e^2\right)\sqrt{\frac{cd-be}{c}}\,\log\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/15*(15*A*c^3*d^(5/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 15*(
(B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*
sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d
- b*e)/c))/(c*x + b)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c
 - A*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c -
 A*b*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3), 1/15*(15*A*c^3*d^(5/2)*log((e*x -
 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 30*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c
 - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(
e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*
b*c^2*d^2 - 35*(B*b^2*c - A*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b
*c^2*d*e - 5*(B*b^2*c - A*b*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3), 1/15*(30*A
*c^3*sqrt(-d)*d^2*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 15*((B*b*c^2 - A*c^3)*
d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3 - A*b^2*c)*e^2)*sqrt((c*d - b*e)/c
)*log((c*e*x + 2*c*d - b*e - 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x +
b)) + 2*(3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c - A*b*c^2)*d*e +
15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c - A*b*c^2)*e^2)*x)*
sqrt(e*x + d))/(b*c^3), 2/15*(15*A*c^3*sqrt(-d)*d^2*arctan(sqrt(e*x + d)*sq
rt(-d)/d) - 15*((B*b*c^2 - A*c^3)*d^2 - 2*(B*b^2*c - A*b*c^2)*d*e + (B*b^3
- A*b^2*c)*e^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b
*e)/c)/(c*d - b*e)) + (3*B*b*c^2*e^2*x^2 + 23*B*b*c^2*d^2 - 35*(B*b^2*c - A
*b*c^2)*d*e + 15*(B*b^3 - A*b^2*c)*e^2 + (11*B*b*c^2*d*e - 5*(B*b^2*c - A*b
*c^2)*e^2)*x)*sqrt(e*x + d))/(b*c^3)]
```

giac [B] time = 0.24, size = 316, normalized size = 1.83

$$\frac{2\,Ad^3\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\,\big(Bbc^3d^3-Ac^4d^3-3\,Bb^2c^2d^2e+3\,Abc^3d^2e+3\,Bb^3cde^2-3\,Ab^2c^2de^2-Bb^4e^3+Ab^3ce^3}{\sqrt{-c^2d+bce}\,bc^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^3*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^3*d^3 - A*c^
4*d^3 - 3*B*b^2*c^2*d^2*e + 3*A*b*c^3*d^2*e + 3*B*b^3*c*d*e^2 - 3*A*b^2*c^2
*d*e^2 - B*b^4*e^3 + A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*
e))/(sqrt(-c^2*d + b*c*e)*b*c^3) + 2/15*(3*(x*e + d)^(5/2)*B*c^4 + 5*(x*e +
 d)^(3/2)*B*c^4*d + 15*sqrt(x*e + d)*B*c^4*d^2 - 5*(x*e + d)^(3/2)*B*b*c^3*
e + 5*(x*e + d)^(3/2)*A*c^4*e - 30*sqrt(x*e + d)*B*b*c^3*d*e + 30*sqrt(x*e
+ d)*A*c^4*d*e + 15*sqrt(x*e + d)*B*b^2*c^2*e^2 - 15*sqrt(x*e + d)*A*b*c^3*
e^2)/c^5
```

maple [B] time = 0.08, size = 516, normalized size = 2.98

$$\frac{2A\,b^2e^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c^2}-\frac{6Abd\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}-\frac{2Ac\,d^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}+\frac{6A\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x)
```

```
[Out] 2/5*B*(e*x+d)^(5/2)/c+2/3/c*A*(e*x+d)^(3/2)*e-2/3/c^2*B*(e*x+d)^(3/2)*b*e+2
/3/c*B*(e*x+d)^(3/2)*d-2/c^2*A*b*e^2*(e*x+d)^(1/2)+4/c*A*d*e*(e*x+d)^(1/2)+
2/c^3*B*b^2*e^2*(e*x+d)^(1/2)-4/c^2*B*b*d*e*(e*x+d)^(1/2)+2/c*B*d^2*(e*x+d)
^(1/2)+2/c^2*b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*e^3-6/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A*d*e^2+6/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/
2)*c)*A*d^2*e-2*c/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d^3-2/c^3*b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*e^3+6/c^2*b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d*e^2-6/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*B*d^2*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
b*e-c*d)*c)^(1/2)*c)*B*d^3-2*A*d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.19, size = 5138, normalized size = 29.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/(3*c) - (2*B*(b*e - 2*c*d))/(3*c^2))*(d + e*x)^(3/2) - (((
b*e - 2*c*d)*((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2))/c + (2*B*(c*d^2
 - b*d*e))/c^2)*(d + e*x)^(1/2) + (2*B*(d + e*x)^(5/2))/(5*c) - (A*atan(((A
*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 1
5*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B
^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^
2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^
7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 1
2*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*
A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 + (A*((8*(A*b^4*c^5*d*e^
5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7
*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 + (8*A*(b^3*c^7*
e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))/(b*c^5))*(d^5)^(1/2))/b
)*(d^5)^(1/2)*1i)/b + (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8
 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15
*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2
*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*
b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 -
 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A
*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5
- (A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3
*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^
4))/c^5 - (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))
/(b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2)*1i)/b)/((16*(3*A^3*c^7*d^8*e^3 + 19*A
^3*b^2*c^5*d^6*e^5 - 15*A^3*b^3*c^4*d^5*e^6 + 6*A^3*b^4*c^3*d^4*e^7 - A^3*b
^5*c^2*d^3*e^8 - A*B^2*b^7*d^3*e^8 + A^2*B*c^7*d^9*e^2 - 12*A^3*b*c^6*d^7*e
^4 + 6*A*B^2*b^2*c^5*d^8*e^3 - 15*A*B^2*b^3*c^4*d^7*e^4 + 20*A*B^2*b^4*c^3*
d^6*e^5 - 15*A*B^2*b^5*c^2*d^5*e^6 + 27*A^2*B*b^2*c^5*d^7*e^4 - 39*A^2*B*b^
3*c^4*d^6*e^5 + 30*A^2*B*b^4*c^3*d^5*e^6 - 12*A^2*B*b^5*c^2*d^4*e^7 - A*B^2
*b*c^6*d^9*e^2 + 6*A*B^2*b^6*c*d^4*e^7 - 9*A^2*B*b*c^6*d^8*e^3 + 2*A^2*B*b^
6*c*d^3*e^8))/c^5 + (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 +
 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A
^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b
^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^
7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2
*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B
*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 +
(A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c
^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4)
)/c^5 + (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2))/(
b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2))/b - (A*((8*(d + e*x)^(1/2)*(B^2*b^8*e^
8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b
^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c
^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c
^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7
- 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2
*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5
*c^3*d^2*e^6))/c^5 - (A*((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^
7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 +
 3*B*b^4*c^5*d^2*e^4))/c^5 - (8*A*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(d^5)^(1/
2)*(d + e*x)^(1/2))/(b*c^5))*(d^5)^(1/2))/b)*(d^5)^(1/2))/b))*(d^5)^(1/2)*2
i)/b - (atan((((-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(
B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4
 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6
*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15
*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*
c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 +
12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 -
30*A*B*b^5*c^3*d^2*e^6))/c^5 + (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*
A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d
^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 + (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c
^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e -
 c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7))*1i)/(b*c^7) + ((-c^7*(b*e - c*d)^5)^(1
/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*
c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*
c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*
d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e
^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*
c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^
5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 - (((8*(A
*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^
4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 - (
8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d
 + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7))*1
i)/(b*c^7))/((16*(3*A^3*c^7*d^8*e^3 + 19*A^3*b^2*c^5*d^6*e^5 - 15*A^3*b^3*c
^4*d^5*e^6 + 6*A^3*b^4*c^3*d^4*e^7 - A^3*b^5*c^2*d^3*e^8 - A*B^2*b^7*d^3*e^
8 + A^2*B*c^7*d^9*e^2 - 12*A^3*b*c^6*d^7*e^4 + 6*A*B^2*b^2*c^5*d^8*e^3 - 15
*A*B^2*b^3*c^4*d^7*e^4 + 20*A*B^2*b^4*c^3*d^6*e^5 - 15*A*B^2*b^5*c^2*d^5*e^
6 + 27*A^2*B*b^2*c^5*d^7*e^4 - 39*A^2*B*b^3*c^4*d^6*e^5 + 30*A^2*B*b^4*c^3*
d^5*e^6 - 12*A^2*B*b^5*c^2*d^4*e^7 - A*B^2*b*c^6*d^9*e^2 + 6*A*B^2*b^6*c*d^
4*e^7 - 9*A^2*B*b*c^6*d^8*e^3 + 2*A^2*B*b^6*c*d^3*e^8))/c^5 + ((-c^7*(b*e -
 c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e
^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 +
15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B
^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^
2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8
 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30
*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^
5 + (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3
*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^
4))/c^5 + (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*
c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b))
/(b*c^7)))/(b*c^7) - ((-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((8*(d + e*x)^
(1/2)*(B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 2*A^2*c^8*d^6*e^2 + 15*A^2*b^2*c^6*d
^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 + 15*A^2*b^4*c^4*d^2*e^6 + B^2*b^2*c^6*d^6*
e^2 - 6*B^2*b^3*c^5*d^5*e^3 + 15*B^2*b^4*c^4*d^4*e^4 - 20*B^2*b^5*c^3*d^3*e
^5 + 15*B^2*b^6*c^2*d^2*e^6 - 6*B^2*b^7*c*d*e^7 - 6*A^2*b*c^7*d^5*e^3 - 6*A
^2*b^5*c^3*d*e^7 - 2*A*B*b^7*c*e^8 - 2*A*B*b*c^7*d^6*e^2 + 12*A*B*b^6*c^2*d
*e^7 + 12*A*B*b^2*c^6*d^5*e^3 - 30*A*B*b^3*c^5*d^4*e^4 + 40*A*B*b^4*c^4*d^3
*e^5 - 30*A*B*b^5*c^3*d^2*e^6))/c^5 - (((8*(A*b^4*c^5*d*e^5 - B*b^5*c^4*d*e
^5 + 2*A*b^2*c^7*d^3*e^3 - 3*A*b^3*c^6*d^2*e^4 + B*b^2*c^7*d^4*e^2 - 3*B*b^
3*c^6*d^3*e^3 + 3*B*b^4*c^5*d^2*e^4))/c^5 - (8*(b^3*c^7*e^3 - 2*b^2*c^8*d*e
^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*c^12))*(-c^7
*(b*e - c*d)^5)^(1/2)*(A*c - B*b))/(b*c^7)))/(b*c^7)))*(-c^7*(b*e - c*d)^5)
^(1/2)*(A*c - B*b)*2i)/(b*c^7)
```

sympy [A] time = 136.77, size = 199, normalized size = 1.15

$$\frac{2Ad^3\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2B(d+ex)^{\frac{5}{2}}}{5c}+\frac{(d+ex)^{\frac{3}{2}}(2Ace-2Bbe+2Bcd)}{3c^2}+\frac{\sqrt{d+ex}\left(-2Abce^2+4Ac^2de+2Bb^2e^2-\right.}{c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*d**3*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + 2*B*(d + e*x)**(5/2)/(
5*c) + (d + e*x)**(3/2)*(2*A*c*e - 2*B*b*e + 2*B*c*d)/(3*c**2) + sqrt(d + e
*x)*(-2*A*b*c*e**2 + 4*A*c**2*d*e + 2*B*b**2*e**2 - 4*B*b*c*d*e + 2*B*c**2*
d**2)/c**3 - 2*(-A*c + B*b)*(b*e - c*d)**3*atan(sqrt(d + e*x)/sqrt((b*e - c
*d)/c))/(b*c**4*sqrt((b*e - c*d)/c))
```

3.1231 $\int \frac{(A+Bx)(d+ex)^{3/2}}{bx+cx^2}\,dx$

Optimal. Leaf size=131

$$-\frac{2(bB-Ac)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}}+\frac{2\sqrt{d+ex}\,(Ace-bBe+Bcd)}{c^2}-\frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex)^{3/2}}{3c}$$

```
[Out] 2/3*B*(e*x+d)^(3/2)/c-2*A*d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))/b-2*(-A*c+
B*b)*(-b*e+c*d)^(3/2)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b/c^(
5/2)+2*(A*c*e-B*b*e+B*c*d)*(e*x+d)^(1/2)/c^2
```

Rubi **[A]** time = 0.30, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$\frac{2\sqrt{d+ex}\,(Ace-bBe+Bcd)}{c^2}-\frac{2(bB-Ac)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}}-\frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B(d+ex)^{3/2}}{3c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x]
```

```
[Out] (2*(B*c*d - b*B*e + A*c*e)*Sqrt[d + e*x])/c^2 + (2*B*(d + e*x)^(3/2))/(3*c)
 - (2*A*d^(3/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2*(b*B - A*c)*(c*d - b
*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^{3/2}}{bx+cx^2}\,dx &= \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{\sqrt{d+ex}\,(Acd+(Bcd-bBe+Ace)x)}{bx+cx^2}\,dx}{c} \\ &= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{Ac^2d^2+\left(B(cd-be)^2+Ace(2cd-be)\right)x}{\sqrt{d+ex}\,\left(bx+cx^2\right)}\,dx}{c^2} \\ &= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{2\,\mathrm{Subst}\left(\int \frac{Ac^2d^2e-d\left(B(cd-be)^2+Ace(2}{cd^2-bde+}\right.}{} \\ &= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(2Acd^2\right)\mathrm{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+}\right.}{b} \\ &= \frac{2(Bcd-bBe+Ace)\sqrt{d+ex}}{c^2} + \frac{2B(d+ex)^{3/2}}{3c} - \frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} - \frac{2(bB-}{}\end{aligned}$$

Mathematica [**A**] time = 0.15, size = 123, normalized size = 0.94

$$\frac{2(Ac-bB)(cd-be)^{3/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{5/2}} + \frac{2\sqrt{d+ex}\,(3Ace+B(-3be+4cd+cex))}{3c^2} - \frac{2Ad^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*A*c*e + B*(4*c*d - 3*b*e + c*e*x)))/(3*c^2) - (2*A*d^(3
/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b + (2*(-(b*B) + A*c)*(c*d - b*e)^(3/2)
*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*c^(5/2))
```

fricas [**A**] time = 2.21, size = 646, normalized size = 4.93

$$\left[\frac{3\,Ac^2d^{\frac{3}{2}}\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right) - 3\left(\left(Bbc-Ac^2\right)d-\left(Bb^2-Abc\right)e\right)\sqrt{\frac{cd-be}{c}}\,\log\left(\frac{cex+2\,cd-be+2\,\sqrt{ex+d}\,c\sqrt{\frac{cd-be}{c}}}{cx+b}\right)+2}{3\,bc^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/3*(3*A*c^2*d^(3/2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 3*((B*
b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d
- b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(B*b*c*e*x +
4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(e*x + d))/(b*c^2), 1/3*(3*A*c^2*d^(3/
2)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 6*((B*b*c - A*c^2)*d - (B
*b^2 - A*b*c)*e)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d -
b*e)/c)/(c*d - b*e)) + 2*(B*b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt
(e*x + d))/(b*c^2), 1/3*(6*A*c^2*sqrt(-d)*d*arctan(sqrt(e*x + d)*sqrt(-d)/d
) - 3*((B*b*c - A*c^2)*d - (B*b^2 - A*b*c)*e)*sqrt((c*d - b*e)/c)*log((c*e*
x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + 2*(B*
b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(e*x + d))/(b*c^2), 2/3*(3*A
*c^2*sqrt(-d)*d*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((B*b*c - A*c^2)*d - (
B*b^2 - A*b*c)*e)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d -
 b*e)/c)/(c*d - b*e)) + (B*b*c*e*x + 4*B*b*c*d - 3*(B*b^2 - A*b*c)*e)*sqrt(
e*x + d))/(b*c^2)]
```

giac [**A**] time = 0.19, size = 197, normalized size = 1.50

$$\frac{2\,Ad^{2}\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2\left(Bbc^{2}d^{2}-Ac^{3}d^{2}-2\,Bb^{2}cde+2\,Abc^{2}de+Bb^{3}e^{2}-Ab^{2}ce^{2}\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\sqrt{-c^{2}d+bce}\,bc^{2}}+2\left((xe\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d^2*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*(B*b*c^2*d^2 - A*c^
3*d^2 - 2*B*b^2*c*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 - A*b^2*c*e^2)*arctan(sqr
t(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c^2) + 2/3*((x*e
 + d)^(3/2)*B*c^2 + 3*sqrt(x*e + d)*B*c^2*d - 3*sqrt(x*e + d)*B*b*c*e + 3*s
qrt(x*e + d)*A*c^2*e)/c^3
```

maple [**B**] time = 0.09, size = 335, normalized size = 2.56

$$-\frac{2Ab\,e^{2}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}-\frac{2Ac\,d^{2}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}+\frac{4Ade\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}+\frac{2B\,b^{2}e^{2}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c^{2}}-4B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2/3*B*(e*x+d)^(3/2)/c+2/c*A*e*(e*x+d)^(1/2)-2/c^2*B*b*e*(e*x+d)^(1/2)+2/c*B
*d*(e*x+d)^(1/2)-2*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*e^2+4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d*e-2/b*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A*d^2+2*b^2/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*
d)*c)^(1/2)*c)*B*e^2-4*b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c
*d)*c)^(1/2)*c)*B*d*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*B*d^2-2*A*d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))/b
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 0.59, size = 3810, normalized size = 29.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2),x)
```

```
[Out] ((2*A*e - 2*B*d)/c - (2*B*(b*e - 2*c*d))/c^2)*(d + e*x)^(1/2) + (2*B*(d + e
*x)^(3/2))/(3*c) - (A*atan(((A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c
^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 -
4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b
*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2
+ 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^
```

```
3 + (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c
^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 + (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^
2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2)*1i)/b
+ (A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2
 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*
B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c
^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*
A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - (A*((8*(B*b^4*c^3*d*e^
4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d
^2*e^3))/c^3 - (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(
1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2)*1i)/b)/((16*(2*A^3*c^5*d^5*e^3 +
 4*A^3*b^2*c^3*d^3*e^5 - A^3*b^3*c^2*d^2*e^6 - A*B^2*b^5*d^2*e^6 + A^2*B*c^
5*d^6*e^2 - 5*A^3*b*c^4*d^4*e^4 + 4*A*B^2*b^2*c^3*d^5*e^3 - 6*A*B^2*b^3*c^2
*d^4*e^4 + 11*A^2*B*b^2*c^3*d^4*e^4 - 8*A^2*B*b^3*c^2*d^3*e^5 - A*B^2*b*c^4
*d^6*e^2 + 4*A*B^2*b^4*c*d^3*e^5 - 6*A^2*B*b*c^4*d^5*e^3 + 2*A^2*B*b^4*c*d^
2*e^6))/c^3 + (A*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2
*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*
d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 -
 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^
2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 + (A*((8*(B*
b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2
*B*b^3*c^4*d^2*e^3))/c^3 + (8*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)
*(d + e*x)^(1/2))/(b*c^3))*(d^3)^(1/2))/b)*(d^3)^(1/2))/b - (A*((8*(d + e*x
)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*
d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e
^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*
b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e
^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - (A*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e
^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8
*A*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2))/(b*c^3))*(d
^3)^(1/2))/b)*(d^3)^(1/2))/b))*(d^3)^(1/2)*2i)/b - (atan((((-c^5*(b*e - c*d
)^3)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 +
 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^
3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3
*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*
b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 + ((-c
^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4
+ A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 + (8*(b
^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e
*x)^(1/2))/(b*c^8)))/(b*c^5))*1i)/(b*c^5) + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*
c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*c^6*d^4
*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3
+ 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 - 4*A^2*b
^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2*d*e^5
+ 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - ((-c^5*(b*e - c*d)
^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2*c^5*d^
2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*(b^3*c^5*e^3 - 2
*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2))/(b*
c^8)))/(b*c^5))*1i)/(b*c^5))/((16*(2*A^3*c^5*d^5*e^3 + 4*A^3*b^2*c^3*d^3*e^
5 - A^3*b^3*c^2*d^2*e^6 - A*B^2*b^5*d^2*e^6 + A^2*B*c^5*d^6*e^2 - 5*A^3*b*c
^4*d^4*e^4 + 4*A*B^2*b^2*c^3*d^5*e^3 - 6*A*B^2*b^3*c^2*d^4*e^4 + 11*A^2*B*b
^2*c^3*d^4*e^4 - 8*A^2*B*b^3*c^2*d^3*e^5 - A*B^2*b*c^4*d^6*e^2 + 4*A*B^2*b^
4*c*d^3*e^5 - 6*A^2*B*b*c^4*d^5*e^3 + 2*A^2*B*b^4*c*d^2*e^6))/c^3 + ((-c^5*
(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4
*c^2*e^6 + 2*A^2*c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2
- 4*B^2*b^3*c^3*d^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2
*b*c^5*d^3*e^3 - 4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^
2 + 8*A*B*b^4*c^2*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/
c^3 + ((-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*
c^4*d*e^4 + A*b^2*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c
^3 + (8*(b^3*c^5*e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B
*b)*(d + e*x)^(1/2))/(b*c^8)))/(b*c^5)))/(b*c^5) - ((-c^5*(b*e - c*d)^3)^(1
/2)*(A*c - B*b)*((8*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 2*A^2*
c^6*d^4*e^2 + 6*A^2*b^2*c^4*d^2*e^4 + B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d
^3*e^3 + 6*B^2*b^4*c^2*d^2*e^4 - 4*B^2*b^5*c*d*e^5 - 4*A^2*b*c^5*d^3*e^3 -
4*A^2*b^3*c^3*d*e^5 - 2*A*B*b^5*c*e^6 - 2*A*B*b*c^5*d^4*e^2 + 8*A*B*b^4*c^2
*d*e^5 + 8*A*B*b^2*c^4*d^3*e^3 - 12*A*B*b^3*c^3*d^2*e^4))/c^3 - ((-c^5*(b*e
 - c*d)^3)^(1/2)*(A*c - B*b)*((8*(B*b^4*c^3*d*e^4 - A*b^3*c^4*d*e^4 + A*b^2
*c^5*d^2*e^3 + B*b^2*c^5*d^3*e^2 - 2*B*b^3*c^4*d^2*e^3))/c^3 - (8*(b^3*c^5*
e^3 - 2*b^2*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*(d + e*x)^(1/
2))/(b*c^8)))/(b*c^5)))/(b*c^5)))*(-c^5*(b*e - c*d)^3)^(1/2)*(A*c - B*b)*2i
)/(b*c^5)
```

sympy [A] time = 82.05, size = 134, normalized size = 1.02

$$\frac{2Ad^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{2B\,(d+ex)^{\frac{3}{2}}}{3c}+\frac{\sqrt{d+ex}\,\left(2Ace-2Bbe+2Bcd\right)}{c^2}+\frac{2\,(-Ac+Bb)\,(be-cd)^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{bc^3\sqrt{\frac{be-cd}{c}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*d**2*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + 2*B*(d + e*x)**(3/2)/(
3*c) + sqrt(d + e*x)*(2*A*c*e - 2*B*b*e + 2*B*c*d)/c**2 + 2*(-A*c + B*b)*(b
*e - c*d)**2*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*c**3*sqrt((b*e - c*
d)/c))
```

3.1232 $\int \frac{(A+Bx)\sqrt{d+ex}}{bx+cx^2}\,dx$

Optimal. Leaf size=101

$$-\frac{2(bB-Ac)\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}-\frac{2A\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B\sqrt{d+ex}}{c}$$

```
[Out] -2*A*arctanh((e*x+d)^(1/2)/d^(1/2))*d^(1/2)/b-2*(-A*c+B*b)*arctanh(c^(1/2)*
(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))*(-b*e+c*d)^(1/2)/b/c^(3/2)+2*B*(e*x+d)^(1/2
)/c
```

Rubi [A] time = 0.18, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {824, 826, 1166, 208}

$$-\frac{2(bB-Ac)\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}-\frac{2A\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b}+\frac{2B\sqrt{d+ex}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[d + e*x])/c - (2*A*Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b - (2
*(b*B - A*c)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e
]])/(b*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{d+ex}}{bx+cx^2}\,dx &= \frac{2B\sqrt{d+ex}}{c} + \frac{\int \frac{Acd+(Bcd-bBe+Ace)x}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{c} \\
&= \frac{2B\sqrt{d+ex}}{c} + \frac{2\,\text{Subst}\left(\int \frac{Acde-d(Bcd-bBe+Ace)+(Bcd-bBe+Ace)x^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)}{c} \\
&= \frac{2B\sqrt{d+ex}}{c} + \frac{(2Acd)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)}{b} + \frac{(2(bB-Ac)(cd-}{} \\
&= \frac{2B\sqrt{d+ex}}{c} - \frac{2A\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} - \frac{2(bB-Ac)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.11, size = 101, normalized size = 1.00

$$
\frac{2(Ac-bB)\sqrt{cd-be}\,\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{bc^{3/2}} - \frac{2A\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b} + \frac{2B\sqrt{d+ex}}{c}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2),x]
```

```
[Out] (2*B*Sqrt[d + e*x])/c - (2*A*Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b + (2
*(-(b*B) + A*c)*Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d -
b*e]])/(b*c^(3/2))
```

fricas [**A**] time = 1.16, size = 450, normalized size = 4.46

$$
\left[\frac{Ac\sqrt{d}\,\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right) + 2\,\sqrt{ex+d}\,Bb - (Bb-Ac)\sqrt{\frac{cd-be}{c}}\,\log\left(\frac{cex+2\,cd-be+2\,\sqrt{ex+d}\,c\sqrt{\frac{cd-be}{c}}}{cx+b}\right)}{bc}, \frac{Ac\sqrt{d}\,\log\left(\frac{ex-}{}\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(A*c*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*sqrt(e*x + d
)*B*b - (B*b - A*c)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e
*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)))/(b*c), (A*c*sqrt(d)*log((e*x - 2
*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*sqrt(e*x + d)*B*b - 2*(B*b - A*c)*sqrt
(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)))
/(b*c), (2*A*c*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 2*sqrt(e*x + d)*
B*b - (B*b - A*c)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x
 + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)))/(b*c), 2*(A*c*sqrt(-d)*arctan(sqrt
(e*x + d)*sqrt(-d)/d) + sqrt(e*x + d)*B*b - (B*b - A*c)*sqrt(-(c*d - b*e)/c
)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)))/(b*c)]
```

giac [**A**] time = 0.20, size = 116, normalized size = 1.15

$$
\frac{2\,Ad\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}} + \frac{2\,\sqrt{xe+d}\,B}{c} + \frac{2\left(Bbcd-Ac^2d-Bb^2e+Abce\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,bc}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*A*d*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)) + 2*sqrt(x*e + d)*B/c + 2
*(B*b*c*d - A*c^2*d - B*b^2*e + A*b*c*e)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d
 + b*c*e))/(sqrt(-c^2*d + b*c*e)*b*c)
```

maple [B] time = 0.06, size = 196, normalized size = 1.94

$$-\frac{2Acd\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}+\frac{2Ae\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2Bbe\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}+\frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-2A\sqrt{d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x)
```

```
[Out] 2*B*(e*x+d)^(1/2)/c+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*A*e-2*c/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A*d-2/c*b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*B*e+2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))*d^(1/2)/b
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 1.91, size = 2368, normalized size = 23.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2),x)
```

```
[Out] (2*B*(d + e*x)^(1/2))/c - (A*d^(1/2)*atan(((A*d^(1/2)*((8*(d + e*x)^(1/2)*(
B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2
*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^
2 + 4*A*B*b^2*c^2*d*e^3))/c + (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d
^2*e^2))/c + (8*A*d^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/
(b*c)))/b)*1i)/b + (A*d^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^
2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2
*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3)
)/c - (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c - (8*A*d^(1/2
)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b)*1i)/b)/((16*(
A^3*c^3*d^2*e^3 - A*B^2*b^3*d*e^4 - A^3*b*c^2*d*e^4 + A^2*B*c^3*d^3*e^2 + 2
*A^2*B*b^2*c*d*e^4 - A*B^2*b*c^2*d^3*e^2 + 2*A*B^2*b^2*c*d^2*e^3 - 3*A^2*B*
b*c^2*d^2*e^3))/c - (A*d^(1/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c
^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^
2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3
))/c + (A*d^(1/2)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c + (8*A*d^(1/
2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b))/b + (A*d^(1
/2)*((8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2
+ B^2*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c
*e^4 - 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c - (A*d^(1/2)*((8*(B*b^
3*c^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c - (8*A*d^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4
*d*e^2)*(d + e*x)^(1/2))/(b*c)))/b))/b))*2i)/b - (atan(((((8*(d + e*x)^(1/2
)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2
- 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2
*e^2 + 4*A*B*b^2*c^2*d*e^3))/c + ((A*c - B*b)*((8*(B*b^3*c^2*d*e^3 - B*b^2*
c^3*d^2*e^2))/c + (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2))/(b*c^3))
*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2)*1i)/(b*c^3) + (((8*(d + e*x)^(1/2)*(B
^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^2*d^2*e^2 - 2*
A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B*b*c^3*d^2*e^2
 + 4*A*B*b^2*c^2*d*e^3))/c - ((A*c - B*b)*((8*(B*b^3*c^2*d*e^3 - B*b^2*c^3*
d^2*e^2))/c - (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*(-c^3*(b*e - c
*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2))/(b*c^3))*(A*
c - B*b)*(-c^3*(b*e - c*d))^(1/2)*1i)/(b*c^3))/((16*(A^3*c^3*d^2*e^3 - A*B^
2*b^3*d*e^4 - A^3*b*c^2*d*e^4 + A^2*B*c^3*d^3*e^2 + 2*A^2*B*b^2*c*d*e^4 - A
*B^2*b*c^2*d^3*e^2 + 2*A*B^2*b^2*c*d^2*e^3 - 3*A^2*B*b*c^2*d^2*e^3))/c - ((
(8*(d + e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2
*b^2*c^2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4
- 2*A*B*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c + ((A*c - B*b)*((8*(B*b^3*c
^2*d*e^3 - B*b^2*c^3*d^2*e^2))/c + (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c
- B*b)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d)
)^(1/2))/(b*c^3))*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2))/(b*c^3) + (((8*(d +
 e*x)^(1/2)*(B^2*b^4*e^4 + A^2*b^2*c^2*e^4 + 2*A^2*c^4*d^2*e^2 + B^2*b^2*c^
2*d^2*e^2 - 2*A^2*b*c^3*d*e^3 - 2*B^2*b^3*c*d*e^3 - 2*A*B*b^3*c*e^4 - 2*A*B
*b*c^3*d^2*e^2 + 4*A*B*b^2*c^2*d*e^3))/c - ((A*c - B*b)*((8*(B*b^3*c^2*d*e^
3 - B*b^2*c^3*d^2*e^2))/c - (8*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2)*(A*c - B*b)*
(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^4))*(-c^3*(b*e - c*d))^(1/2)
)/(b*c^3))*(A*c - B*b)*(-c^3*(b*e - c*d))^(1/2))/(b*c^3)))*(A*c - B*b)*(-c^
3*(b*e - c*d))^(1/2)*2i)/(b*c^3)
```

sympy [A] time = 17.77, size = 104, normalized size = 1.03

$$\frac{2\left(\frac{Ade\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{b\sqrt{-d}}+\frac{Be\sqrt{d+ex}}{c}-\frac{e(-Ac+Bb)(be-cd)\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{bc^2\sqrt{\frac{be-cd}{c}}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x),x)
```

```
[Out] 2*(A*d*e*atan(sqrt(d + e*x)/sqrt(-d))/(b*sqrt(-d)) + B*e*sqrt(d + e*x)/c -
e*(-A*c + B*b)*(b*e - c*d)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*c**2*
sqrt((b*e - c*d)/c)))/e
```

3.1233 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=86

$$-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

```
[Out] -2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(1/2)-2*(-A*c+B*b)*arctanh(c^(1/2)*
(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b/c^(1/2)/(-b*e+c*d)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {826, 1166, 208}

$$-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)),x]
```

```
[Out] (-2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*Sqrt[d]) - (2*(b*B - A*c)*ArcTanh[
(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx=2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx,x,\sqrt{d+ex}\right)$$

$$=\frac{(2Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx,x,\sqrt{d+ex}\right)}{b}+\Bigg(2\Bigg(\frac{B}{2}-\frac{2c(-Bd+Ae)-B(-}{2be}$$

$$=-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b\sqrt{d}}-\frac{2(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b\sqrt{c}\sqrt{cd-be}}$$

Mathematica [**A**] time = 0.15, size = 84, normalized size = 0.98

$$\frac{2\left(\frac{(Ac-bB)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{\sqrt{c}\sqrt{cd-be}}-\frac{A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{\sqrt{d}}\right)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)),x]
```

```
[Out] (2*(-((A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/Sqrt[d]) + ((-(b*B) + A*c)*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(Sqrt[c]*Sqrt[c*d - b*e])))/b
```

fricas [**A**] time = 0.74, size = 489, normalized size = 5.69

$$\left[-\frac{\sqrt{c^2d-bce}\,(Bb-Ac)d\log\left(\frac{cex+2\,cd-be+2\,\sqrt{c^2d-bce}\,\sqrt{ex+d}}{cx+b}\right)-\left(Ac^2d-Abce\right)\sqrt{d}\,\log\left(\frac{ex-2\,\sqrt{ex+d}\,\sqrt{d}+2\,d}{x}\right)}{bc^2d^2-b^2cde},\ \frac{2\,\sqrt{-c^2d+}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-(sqrt(c^2*d - b*c*e)*(B*b - A*c)*d*log((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*
d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - (A*c^2*d - A*b*c*e)*sqrt(d)*log((e*x
 - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x))/(b*c^2*d^2 - b^2*c*d*e), (2*sqrt(-c^2
*d + b*c*e)*(B*b - A*c)*d*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e*x
+ c*d)) + (A*c^2*d - A*b*c*e)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) +
2*d)/x))/(b*c^2*d^2 - b^2*c*d*e), -(sqrt(c^2*d - b*c*e)*(B*b - A*c)*d*log((
c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - 2*(
A*c^2*d - A*b*c*e)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d))/(b*c^2*d^2 -
b^2*c*d*e), 2*(sqrt(-c^2*d + b*c*e)*(B*b - A*c)*d*arctan(sqrt(-c^2*d + b*c*
e)*sqrt(e*x + d)/(c*e*x + c*d)) + (A*c^2*d - A*b*c*e)*sqrt(-d)*arctan(sqrt(
e*x + d)*sqrt(-d)/d))/(b*c^2*d^2 - b^2*c*d*e)]
```

giac [**A**] time = 0.19, size = 79, normalized size = 0.92

$$\frac{2\,(Bb-Ac)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\sqrt{-c^2d+bce}\,b}+\frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b - A*c)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b
*c*e)*b) + 2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d))
```

maple [**A**] time = 0.06, size = 101, normalized size = 1.17

$$-\frac{2Ac\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,b}+\frac{2B\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}}-\frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d}}\right)}{b\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x)
```

```
[Out] -2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c+2/
((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*A*arcta
nh((e*x+d)^(1/2)/d^(1/2))/b/d^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 1.92, size = 1130, normalized size = 13.14

$$-\frac{2\,A\,\mathrm{atanh}\left(\frac{16\,A^3\,c^2\,e^3\,\sqrt{d+e\,x}}{d^{3/2}\,\left(\frac{16\,A^3\,c^2\,e^3}{d}-32\,A^2\,B\,c^2\,e^2+16\,A\,B^2\,b\,c\,e^2\right)}-\frac{32\,A^2\,B\,c^2\,e^2\,\sqrt{d+e\,x}}{\sqrt{d}\,\left(\frac{16\,A^3\,c^2\,e^3}{d}-32\,A^2\,B\,c^2\,e^2+16\,A\,B^2\,b\,c\,e^2\right)}+\frac{16\,A\,B^2\,b\,c\,e^2\,\sqrt{d+}}{\sqrt{d}\,\left(\frac{16\,A^3\,c^2\,e^3}{d}-32\,A^2\,B\,c^2\,e^2-\right.}\right.}{b\,\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(1/2)),x)
```

```
[Out] - (2*A*atanh((16*A^3*c^2*e^3*(d + e*x)^(1/2))/(d^(3/2)*((16*A^3*c^2*e^3)/d
- 32*A^2*B*c^2*e^2 + 16*A*B^2*b*c*e^2)) - (32*A^2*B*c^2*e^2*(d + e*x)^(1/2)
)/(d^(1/2)*((16*A^3*c^2*e^3)/d - 32*A^2*B*c^2*e^2 + 16*A*B^2*b*c*e^2)) + (1
6*A*B^2*b*c*e^2*(d + e*x)^(1/2))/(d^(1/2)*((16*A^3*c^2*e^3)/d - 32*A^2*B*c^
2*e^2 + 16*A*B^2*b*c*e^2))))/(b*d^(1/2)) - (atan(((((d + e*x)^(1/2)*(16*A^2
*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*
d))^(1/2)*(8*B*b^2*c^2*d*e^2 - 8*A*b^2*c^2*e^3 + ((8*b^3*c^2*e^3 - 16*b^2*c
^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^
2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*1i)/(b*c^2
*d - b^2*c*e) + (((d + e*x)^(1/2)*(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*
B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(8*A*b^2*c^2*e^3 - 8*B*b
^2*c^2*d*e^2 + ((8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c
*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c
 - B*b)*(-c*(b*e - c*d))^(1/2)*1i)/(b*c^2*d - b^2*c*e))/((((d + e*x)^(1/2)*
(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 16*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b
*e - c*d))^(1/2)*(8*B*b^2*c^2*d*e^2 - 8*A*b^2*c^2*e^3 + ((8*b^3*c^2*e^3 - 1
6*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2
*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2))/(b
*c^2*d - b^2*c*e) - (((d + e*x)^(1/2)*(16*A^2*c^3*e^2 + 8*B^2*b^2*c*e^2 - 1
6*A*B*b*c^2*e^2) + ((A*c - B*b)*(-c*(b*e - c*d))^(1/2)*(8*A*b^2*c^2*e^3 - 8
*B*b^2*c^2*d*e^2 + ((8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2)*(A*c - B*b)*(-c*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2))/(b*c^2*d - b^2*c*e)))/(b*c^2*d - b^2*c*e))*
(A*c - B*b)*(-c*(b*e - c*d))^(1/2))/(b*c^2*d - b^2*c*e) + 16*A^2*B*c^2*e^2
- 16*A*B^2*b*c*e^2))*(A*c - B*b)*(-c*(b*e - c*d))^(1/2)*2i)/(b*c^2*d - b^2*
c*e)
```

sympy [**A**] time = 69.75, size = 87, normalized size = 1.01

$$\frac{2A\,\mathrm{atan}\left(\frac{1}{\sqrt{-\frac{1}{d}}\,\sqrt{d+ex}}\right)}{bd\sqrt{-\frac{1}{d}}}-\frac{2\left(-Ac+Bb\right)\mathrm{atan}\left(\frac{1}{\sqrt{\frac{c}{be-cd}}\,\sqrt{d+ex}}\right)}{b\sqrt{\frac{c}{be-cd}}\,\left(be-cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(1/(sqrt(-1/d)*sqrt(d + e*x)))/(b*d*sqrt(-1/d)) - 2*(-A*c + B*b)*at
an(1/(sqrt(c/(b*e - c*d))*sqrt(d + e*x)))/(b*sqrt(c/(b*e - c*d))*(b*e - c*d
))
```

3.1234 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=118

$$\frac{2(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}}$$

```
[Out] -2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(3/2)-2*(-A*c+B*b)*arctanh(c^(1/2)*
(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))*c^(1/2)/b/(-b*e+c*d)^(3/2)+2*(-A*e+B*d)/d/(
-b*e+c*d)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {828, 826, 1166, 208}

$$\frac{2(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(d*(c*d - b*e)*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/
Sqrt[d]])/(b*d^(3/2)) - (2*Sqrt[c]*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*
x])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx &= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{d(cd-be)} \\
&= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{2\,\text{Subst}\left(\int \frac{-cd(Bd-Ae)+Ae(cd-be)+c(Bd-Ae)x^2}{cd^2-bde+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)}{d(cd-be)} \\
&= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} + \frac{(2Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)}{bd} + \frac{(2c(bB -}{} \\
&= \frac{2(Bd-Ae)}{d(cd-be)\sqrt{d+ex}} - \frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{3/2}} - \frac{2\sqrt{c}\,(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 89, normalized size = 0.75

$$
\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{ex}{d}+1\right)\right)}{bd\sqrt{d+ex}\,(cd-be)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-1/2, 1, 1/2, (c*(d + e*x))/(c*d - b*e)
] + A*(c*d - b*e)*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (e*x)/d]))/(b*d*(c*d
- b*e)*Sqrt[d + e*x])
```

fricas [B] time = 1.46, size = 835, normalized size = 7.08

$$
\left[\frac{\left((Bb-Ac)d^2ex+(Bb-Ac)d^3\right)\sqrt{\frac{c}{cd-be}}\,\log\left(\frac{cex+2\,cd-be-2\,(cd-be)\sqrt{ex+d}\,\sqrt{\frac{c}{cd-be}}}{cx+b}\right)+\left(Acd^2-Abde+\left(Acde-Abe^2\right)x\right)}{bcd^4-b^2d^3e+\left(bcd^3e-b^2d^2e^2\right)x}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [(((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(c/(c*d - b*e))*log((c*e*x +
2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) +
 (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x
+ d)*sqrt(d) + 2*d)/x) + 2*(B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^
2*d^3*e + (b*c*d^3*e - b^2*d^2*e^2)*x), -(2*((B*b - A*c)*d^2*e*x + (B*b - A
*c)*d^3)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*
d - b*e))/(c*e*x + c*d)) - (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt
(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(B*b*d^2 - A*b*d*e)*sq
rt(e*x + d))/(b*c*d^4 - b^2*d^3*e + (b*c*d^3*e - b^2*d^2*e^2)*x), (2*(A*c*d
^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d
)/d) + ((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(c/(c*d - b*e))*log((c*e
*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x +
b)) + 2*(B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^2*d^3*e + (b*c*d^3*
e - b^2*d^2*e^2)*x), -2*(((B*b - A*c)*d^2*e*x + (B*b - A*c)*d^3)*sqrt(-c/(c
*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x +
c*d)) - (A*c*d^2 - A*b*d*e + (A*c*d*e - A*b*e^2)*x)*sqrt(-d)*arctan(sqrt(e*
x + d)*sqrt(-d)/d) - (B*b*d^2 - A*b*d*e)*sqrt(e*x + d))/(b*c*d^4 - b^2*d^3*
e + (b*c*d^3*e - b^2*d^2*e^2)*x)]
```

giac [A] time = 0.22, size = 129, normalized size = 1.09

$$\frac{2\left(Bbc - Ac^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bcd - b^2e\right)\sqrt{-c^2d + bce}} + \frac{2\left(Bd - Ae\right)}{\left(cd^2 - bde\right)\sqrt{xe + d}} + \frac{2\,A\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b\sqrt{-d}\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c - A*c^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c*d - b^
2*e)*sqrt(-c^2*d + b*c*e)) + 2*(B*d - A*e)/((c*d^2 - b*d*e)*sqrt(x*e + d))
+ 2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d)
```

maple [A] time = 0.07, size = 168, normalized size = 1.42

$$\frac{2A\,c^2\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)\,c}\;b} - \frac{2Bc\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\sqrt{(be-cd)\,c}} + \frac{2Ae}{(be-cd)\sqrt{ex+d}\;d} - \frac{2B}{(be-cd)\sqrt{ex+d}} - \frac{2A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+}}{\sqrt{d}}\right.}{b\,d^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x)
```

```
[Out] 2/(b*e-c*d)*c^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A-2/(b*e-c*d)*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(3/2)+2/(b*e-c*d)/d/(e
*x+d)^(1/2)*A*e-2/(b*e-c*d)/(e*x+d)^(1/2)*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.12, size = 3674, normalized size = 31.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(3/2)),x)
```

```
[Out] (atan((((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d
^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*
d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^
7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e
^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4
 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c -
 B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^
3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^
7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b
^2*c^2*d^2*e - 3*b^3*c*d*e^2) - 16*A*b^2*c^7*d^9*e^3 + 72*A*b^3*c^6*d^8*e^4
 - 128*A*b^4*c^5*d^7*e^5 + 112*A*b^5*c^4*d^6*e^6 - 48*A*b^6*c^3*d^5*e^7 + 8
*A*b^7*c^2*d^4*e^8 + 8*B*b^2*c^7*d^10*e^2 - 32*B*b^3*c^6*d^9*e^3 + 48*B*b^4
*c^5*d^8*e^4 - 32*B*b^5*c^4*d^7*e^5 + 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^
3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))*1i)/(b^4*e^3 - b*c^3*d^3 + 3*b^2*
c^2*d^2*e - 3*b^3*c*d*e^2) + ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*
x)^(1/2)*(16*A^2*c^8*d^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5
*e^5 + 40*A^2*b^4*c^4*d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e
^2 - 24*B^2*b^3*c^5*d^7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^
5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 -
48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e -
c*d)^3)^(1/2)*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^
2*c^8*d^11*e^2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^
8*e^5 + 160*b^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4
*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 16*A*b^2*c^7*d^9*e^3
- 72*A*b^3*c^6*d^8*e^4 + 128*A*b^4*c^5*d^7*e^5 - 112*A*b^5*c^4*d^6*e^6 + 48
*A*b^6*c^3*d^5*e^7 - 8*A*b^7*c^2*d^4*e^8 - 8*B*b^2*c^7*d^10*e^2 + 32*B*b^3*
c^6*d^9*e^3 - 48*B*b^4*c^5*d^8*e^4 + 32*B*b^5*c^4*d^7*e^5 - 8*B*b^6*c^3*d^6
*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))*1i)/(b^4*e^
3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2))/(16*A^3*c^7*d^6*e^3 + ((A
*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*A^2*c^8*d^8*e^2 + 1
04*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2*b^4*c^4*d^4*e^6 -
8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b^3*c^5*d^7*e^3 + 24
*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*c^7*d^7*e^3 - 16*A*
B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^5*d^6*e^4 + 16*A*B*
b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(((A*c - B*b)*(-c*
(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^2 - 88*b^3*c^7*d^10
*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b^6*c^4*d^7*e^6 - 56
*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2
*e - 3*b^3*c*d*e^2) - 16*A*b^2*c^7*d^9*e^3 + 72*A*b^3*c^6*d^8*e^4 - 128*A*b
^4*c^5*d^7*e^5 + 112*A*b^5*c^4*d^6*e^6 - 48*A*b^6*c^3*d^5*e^7 + 8*A*b^7*c^2
*d^4*e^8 + 8*B*b^2*c^7*d^10*e^2 - 32*B*b^3*c^6*d^9*e^3 + 48*B*b^4*c^5*d^8*e
^4 - 32*B*b^5*c^4*d^7*e^5 + 8*B*b^6*c^3*d^6*e^6))/(b^4*e^3 - b*c^3*d^3 + 3*
b^2*c^2*d^2*e - 3*b^3*c*d*e^2)))/(b^4*e^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3
*b^3*c*d*e^2) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*((d + e*x)^(1/2)*(16*
A^2*c^8*d^8*e^2 + 104*A^2*b^2*c^6*d^6*e^4 - 88*A^2*b^3*c^5*d^5*e^5 + 40*A^2
*b^4*c^4*d^4*e^6 - 8*A^2*b^5*c^3*d^3*e^7 + 8*B^2*b^2*c^6*d^8*e^2 - 24*B^2*b
^3*c^5*d^7*e^3 + 24*B^2*b^4*c^4*d^6*e^4 - 8*B^2*b^5*c^3*d^5*e^5 - 64*A^2*b*
c^7*d^7*e^3 - 16*A*B*b*c^7*d^8*e^2 + 48*A*B*b^2*c^6*d^7*e^3 - 48*A*B*b^3*c^
5*d^6*e^4 + 16*A*B*b^4*c^4*d^5*e^5) - ((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)
*(((A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(16*b^2*c^8*d^11*e^
2 - 88*b^3*c^7*d^10*e^3 + 200*b^4*c^6*d^9*e^4 - 240*b^5*c^5*d^8*e^5 + 160*b
^6*c^4*d^7*e^6 - 56*b^7*c^3*d^6*e^7 + 8*b^8*c^2*d^5*e^8))/(b^4*e^3 - b*c^3*
d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 16*A*b^2*c^7*d^9*e^3 - 72*A*b^3*c^
6*d^8*e^4 + 128*A*b^4*c^5*d^7*e^5 - 112*A*b^5*c^4*d^6*e^6 + 48*A*b^6*c^3*d^
5*e^7 - 8*A*b^7*c^2*d^4*e^8 - 8*B*b^2*c^7*d^10*e^2 + 32*B*b^3*c^6*d^9*e^3 -
 48*B*b^4*c^5*d^8*e^4 + 32*B*b^5*c^4*d^7*e^5 - 8*B*b^6*c^3*d^6*e^6))/(b^4*e
^3 - b*c^3*d^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2)))/(b^4*e^3 - b*c^3*d^3 +
3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) + 48*A^3*b^2*c^5*d^4*e^5 - 16*A^3*b^3*c^4*
d^3*e^6 - 16*A^2*B*c^7*d^7*e^2 - 48*A^3*b*c^6*d^5*e^4 - 48*A*B^2*b^2*c^5*d^
6*e^3 + 48*A*B^2*b^3*c^4*d^5*e^4 - 16*A*B^2*b^4*c^3*d^4*e^5 - 32*A^2*B*b^3*
c^4*d^4*e^5 + 16*A^2*B*b^4*c^3*d^3*e^6 + 16*A*B^2*b*c^6*d^7*e^2 + 32*A^2*B*
b*c^6*d^6*e^3))*(A*c - B*b)*(-c*(b*e - c*d)^3)^(1/2)*2i)/(b^4*e^3 - b*c^3*d
^3 + 3*b^2*c^2*d^2*e - 3*b^3*c*d*e^2) - (2*(A*e - B*d))/((c*d^2 - b*d*e)*(d
 + e*x)^(1/2)) + (A*atan((B^2*b^2*c^4*d^11*(d + e*x)^(1/2)*1i - A^2*b^6*d^5
*e^6*(d + e*x)^(1/2)*1i + A^2*b^5*c*d^6*e^5*(d + e*x)^(1/2)*6i - B^2*b^3*c^
3*d^10*e*(d + e*x)^(1/2)*3i - B^2*b^5*c*d^8*e^3*(d + e*x)^(1/2)*1i - A*B*b*
c^5*d^11*(d + e*x)^(1/2)*2i - A^2*b^2*c^4*d^9*e^2*(d + e*x)^(1/2)*12i + A^2
*b^3*c^3*d^8*e^3*(d + e*x)^(1/2)*19i - A^2*b^4*c^2*d^7*e^4*(d + e*x)^(1/2)*
15i + B^2*b^4*c^2*d^9*e^2*(d + e*x)^(1/2)*3i + A^2*b*c^5*d^10*e*(d + e*x)^(
1/2)*3i - A*B*b^3*c^3*d^9*e^2*(d + e*x)^(1/2)*6i + A*B*b^4*c^2*d^8*e^3*(d +
 e*x)^(1/2)*2i + A*B*b^2*c^4*d^10*e*(d + e*x)^(1/2)*6i)/(d^3*(d^3)^(1/2)*(d
```

```
^3*(d^3*(3*A^2*b*c^5*e + B^2*b^2*c^4*d - 3*B^2*b^3*c^3*e - 2*A*B*b*c^5*d +
6*A*B*b^2*c^4*e) - 15*A^2*b^4*c^2*e^4 - 12*A^2*b^2*c^4*d^2*e^2 + 3*B^2*b^4*
c^2*d^2*e^2 - B^2*b^5*c*d*e^3 + 19*A^2*b^3*c^3*d*e^3 + 2*A*B*b^4*c^2*d*e^3
- 6*A*B*b^3*c^3*d^2*e^2) - A^2*b^6*d*e^6 + 6*A^2*b^5*c*d^2*e^5)))*2i)/(b*(d
^3)^(1/2))
```

sympy [**A**] time = 61.49, size = 107, normalized size = 0.91

$$\frac{2A\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd\sqrt{-d}}-\frac{2\left(-Ae+Bd\right)}{d\sqrt{d+ex}\,\left(be-cd\right)}-\frac{2\left(-Ac+Bb\right)\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\,\left(be-cd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d*sqrt(-d)) - 2*(-A*e + B*d)/(d*sqrt(d
+ e*x)*(b*e - c*d)) - 2*(-A*c + B*b)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c)
)/(b*sqrt((b*e - c*d)/c)*(b*e - c*d))
```

3.1235 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=164

$$-\frac{2c^{3/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{5/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2(Bd-Ae)}{3d(d+ex)^{3/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}$$

```
[Out] 2/3*(-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)^(3/2)-2*A*arctanh((e*x+d)^(1/2)/d^(1/2)
)/b/d^(5/2)-2*c^(3/2)*(-A*c+B*b)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(
1/2))/b/(-b*e+c*d)^(5/2)+2*(B*c*d^2-A*e*(-b*e+2*c*d))/d^2/(-b*e+c*d)^2/(e*x
+d)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {828, 826, 1166, 208}

$$-\frac{2c^{3/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{5/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2(Bd-Ae)}{3d(d+ex)^{3/2}(cd-be)}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(3*d*(c*d - b*e)*(d + e*x)^(3/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(d^2*(c*d - b*e)^2*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/S
qrt[d]])/(b*d^(5/2)) - (2*c^(3/2)*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x
])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx &= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}}+\frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{3/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}\\
&= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}}+\frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)x}{\sqrt{d+ex}\left(bx+cx^2\right)}}{d^2(cd-be)^2}\\
&= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}}+\frac{2\,\text{Subst}\left(\int \frac{Ae(cd-be)^2-cd\left(Bcd^2}{cd^2-}\right.}{}\\
&= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}}+\frac{(2Ac)\,\text{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+}\right.}{bd^2}\\
&= \frac{2(Bd-Ae)}{3d(cd-be)(d+ex)^{3/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{d^2(cd-be)^2\sqrt{d+ex}}-\frac{2A\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{bd^{5/2}}-2c^{3/2}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 91, normalized size = 0.55

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{ex}{d}+1\right)\right)}{3bd(d+ex)^{3/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (e*x)/d]))/(3*b*d*(
c*d - b*e)*(d + e*x)^(3/2))
```

fricas [B] time = 4.25, size = 1709, normalized size = 10.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c
- A*c^2)*d^5)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*
sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*
e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*
c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x
 + d)*sqrt(d) + 2*d)/x) - 2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b
*c)*d^3*e + 3*(B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d
))/(b*c^2*d^7 - 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*
e^3 + b^3*d^3*e^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x)
, -1/3*(6*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c
 - A*c^2)*d^5)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(
-c/(c*d - b*e))/(c*e*x + c*d)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e
^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A
*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) +
 2*d)/x) - 2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(
B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 -
```

```
 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e
^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x), 1/3*(6*(A*c^2
*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*b*c*d*e^3 + A*b
^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(-d)*a
rctan(sqrt(e*x + d)*sqrt(-d)/d) - 3*((B*b*c - A*c^2)*d^3*e^2*x^2 + 2*(B*b*c
 - A*c^2)*d^4*e*x + (B*b*c - A*c^2)*d^5)*sqrt(c/(c*d - b*e))*log((c*e*x + 2
*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) +
2*(4*B*b*c*d^4 + 4*A*b^2*d^2*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(B*b*c*d^3*e
 - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 - 2*b^2*c*d^
6*e + b^3*d^5*e^2 + (b*c^2*d^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e^4)*x^2 + 2
*(b*c^2*d^6*e - 2*b^2*c*d^5*e^2 + b^3*d^4*e^3)*x), -2/3*(3*((B*b*c - A*c^2)
*d^3*e^2*x^2 + 2*(B*b*c - A*c^2)*d^4*e*x + (B*b*c - A*c^2)*d^5)*sqrt(-c/(c*
d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c
*d)) - 3*(A*c^2*d^4 - 2*A*b*c*d^3*e + A*b^2*d^2*e^2 + (A*c^2*d^2*e^2 - 2*A*
b*c*d*e^3 + A*b^2*e^4)*x^2 + 2*(A*c^2*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d*e^3
)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (4*B*b*c*d^4 + 4*A*b^2*d^2
*e^2 - (B*b^2 + 7*A*b*c)*d^3*e + 3*(B*b*c*d^3*e - 2*A*b*c*d^2*e^2 + A*b^2*d
*e^3)*x)*sqrt(e*x + d))/(b*c^2*d^7 - 2*b^2*c*d^6*e + b^3*d^5*e^2 + (b*c^2*d
^5*e^2 - 2*b^2*c*d^4*e^3 + b^3*d^3*e^4)*x^2 + 2*(b*c^2*d^6*e - 2*b^2*c*d^5*
e^2 + b^3*d^4*e^3)*x)]
```

giac [**A**] time = 0.22, size = 217, normalized size = 1.32

$$\frac{2\left(Bbc^{2}-Ac^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\left(bc^{2}d^{2}-2\,b^{2}cde+b^{3}e^{2}\right)\sqrt{-c^{2}d+bce}}+\frac{2\left(3\,(xe+d)Bcd^{2}+Bcd^{3}-6\,(xe+d)Acde-Bbd^{2}e-Acd^{2}e+3\,(xe+d)A\right.}{3\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^2 - A*c^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^2*d^
2 - 2*b^2*c*d*e + b^3*e^2)*sqrt(-c^2*d + b*c*e)) + 2/3*(3*(x*e + d)*B*c*d^2
 + B*c*d^3 - 6*(x*e + d)*A*c*d*e - B*b*d^2*e - A*c*d^2*e + 3*(x*e + d)*A*b*
e^2 + A*b*d*e^2)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2)*(x*e + d)^(3/2)) +
2*A*arctan(sqrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d^2)
```

maple [**A**] time = 0.07, size = 243, normalized size = 1.48

$$-\frac{2A\,c^{3}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\,\sqrt{(be-cd)\,c}\;b}+\frac{2B\,c^{2}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\,\sqrt{(be-cd)\,c}}+\frac{2Ab\,e^{2}}{(be-cd)^{2}\,\sqrt{ex+d}\;d^{2}}-\frac{4Ace}{(be-cd)^{2}\,\sqrt{ex+d}\;d}+\frac{2Bc}{(be-cd)^{2}\,\sqrt{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x)
```

```
[Out] -2/(b*e-c*d)^2*c^3/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A+2/(b*e-c*d)^2*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(5/2)+2/3/(b*e-
c*d)/d/(e*x+d)^(3/2)*A*e-2/3/(b*e-c*d)/(e*x+d)^(3/2)*B+2/(b*e-c*d)^2/d^2/(e
*x+d)^(1/2)*A*b*e^2-4/(b*e-c*d)^2/d/(e*x+d)^(1/2)*A*c*e+2/(b*e-c*d)^2/(e*x+
d)^(1/2)*B*c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.92, size = 6340, normalized size = 38.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(5/2)),x)
```

```
[Out] (atan((((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^1
3*d^16*e^2 + 480*A^2*b^2*c^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*
A^2*b^4*c^9*d^12*e^6 - 2064*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^
8 - 960*A^2*b^7*c^6*d^9*e^9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7
*e^11 + 8*A^2*b^10*c^3*d^6*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10
*d^15*e^3 + 120*B^2*b^4*c^9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b
^6*c^7*d^12*e^6 - 48*B^2*b^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^
2*b*c^12*d^15*e^3 - 16*A*B*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240
*A*B*b^3*c^10*d^14*e^4 + 320*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^
6 + 96*A*B*b^6*c^7*d^11*e^7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)
^5)^(1/2)*(A*c - B*b)*(((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1
/2)*(16*b^2*c^13*d^21*e^2 - 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 -
 2280*b^5*c^10*d^18*e^5 + 4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5
376*b^8*c^7*d^15*e^8 - 3600*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 52
0*b^11*c^4*d^12*e^11 + 96*b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*
e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3
 - 5*b^5*c*d*e^4) - 24*A*b^2*c^12*d^18*e^3 + 216*A*b^3*c^11*d^17*e^4 - 872*
A*b^4*c^10*d^16*e^5 + 2080*A*b^5*c^9*d^15*e^6 - 3248*A*b^6*c^8*d^14*e^7 + 3
472*A*b^7*c^7*d^13*e^8 - 2576*A*b^8*c^6*d^12*e^9 + 1312*A*b^9*c^5*d^11*e^10
 - 440*A*b^10*c^4*d^10*e^11 + 88*A*b^11*c^3*d^9*e^12 - 8*A*b^12*c^2*d^8*e^1
3 + 8*B*b^2*c^12*d^19*e^2 - 64*B*b^3*c^11*d^18*e^3 + 224*B*b^4*c^10*d^17*e^
4 - 448*B*b^5*c^9*d^16*e^5 + 560*B*b^6*c^8*d^15*e^6 - 448*B*b^7*c^7*d^14*e^
7 + 224*B*b^8*c^6*d^13*e^8 - 64*B*b^9*c^5*d^12*e^9 + 8*B*b^10*c^4*d^11*e^10
))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2
*d^2*e^3 - 5*b^5*c*d*e^4))*1i)/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*
b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + ((-c^3*(b*e - c*d)^
5)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c
^11*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 206
4*A^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^
9 + 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6
*e^12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^
9*d^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b
^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B
*b*c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 3
20*A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^
7 - 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-
c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2
- 168*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 +
4320*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 360
0*b^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*
b^12*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^
4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 24*A*b
^2*c^12*d^18*e^3 - 216*A*b^3*c^11*d^17*e^4 + 872*A*b^4*c^10*d^16*e^5 - 2080
*A*b^5*c^9*d^15*e^6 + 3248*A*b^6*c^8*d^14*e^7 - 3472*A*b^7*c^7*d^13*e^8 + 2
576*A*b^8*c^6*d^12*e^9 - 1312*A*b^9*c^5*d^11*e^10 + 440*A*b^10*c^4*d^10*e^1
1 - 88*A*b^11*c^3*d^9*e^12 + 8*A*b^12*c^2*d^8*e^13 - 8*B*b^2*c^12*d^19*e^2
+ 64*B*b^3*c^11*d^18*e^3 - 224*B*b^4*c^10*d^17*e^4 + 448*B*b^5*c^9*d^16*e^5
 - 560*B*b^6*c^8*d^15*e^6 + 448*B*b^7*c^7*d^14*e^7 - 224*B*b^8*c^6*d^13*e^8
 + 64*B*b^9*c^5*d^12*e^9 - 8*B*b^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 +
5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4))
*1i)/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c
^2*d^2*e^3 - 5*b^5*c*d*e^4))/(32*A^3*c^12*d^13*e^3 + ((-c^3*(b*e - c*d)^5)^
(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c^11
*d^14*e^4 - 1120*A^2*b^3*c^10*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 2064*A
^2*b^5*c^8*d^11*e^7 + 1688*A^2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^9 +
 360*A^2*b^8*c^5*d^8*e^10 - 80*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6*e^
12 + 8*B^2*b^2*c^11*d^16*e^2 - 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^9*d
^14*e^4 - 160*B^2*b^5*c^8*d^13*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b^7*
c^6*d^11*e^7 + 8*B^2*b^8*c^5*d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B*b*
c^12*d^16*e^2 + 96*A*B*b^2*c^11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 320*
A*B*b^4*c^9*d^13*e^5 - 240*A*B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^7 -
 16*A*B*b^7*c^6*d^10*e^8) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-c^3
*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2 - 1
68*b^3*c^12*d^20*e^3 + 800*b^4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 + 432
0*b^6*c^9*d^17*e^6 - 5712*b^7*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 3600*b
^9*c^6*d^14*e^9 + 1680*b^10*c^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*b^1
2*c^3*d^11*e^12 - 8*b^13*c^2*d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d
^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) - 24*A*b^2*
c^12*d^18*e^3 + 216*A*b^3*c^11*d^17*e^4 - 872*A*b^4*c^10*d^16*e^5 + 2080*A*
b^5*c^9*d^15*e^6 - 3248*A*b^6*c^8*d^14*e^7 + 3472*A*b^7*c^7*d^13*e^8 - 2576
*A*b^8*c^6*d^12*e^9 + 1312*A*b^9*c^5*d^11*e^10 - 440*A*b^10*c^4*d^10*e^11 +
 88*A*b^11*c^3*d^9*e^12 - 8*A*b^12*c^2*d^8*e^13 + 8*B*b^2*c^12*d^19*e^2 - 6
4*B*b^3*c^11*d^18*e^3 + 224*B*b^4*c^10*d^17*e^4 - 448*B*b^5*c^9*d^16*e^5 +
560*B*b^6*c^8*d^15*e^6 - 448*B*b^7*c^7*d^14*e^7 + 224*B*b^8*c^6*d^13*e^8 -
64*B*b^9*c^5*d^12*e^9 + 8*B*b^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 + 5*b
^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4)))/(
b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2
*e^3 - 5*b^5*c*d*e^4) - ((-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*((d + e*x)^
(1/2)*(16*A^2*c^13*d^16*e^2 + 480*A^2*b^2*c^11*d^14*e^4 - 1120*A^2*b^3*c^10
*d^13*e^5 + 1800*A^2*b^4*c^9*d^12*e^6 - 2064*A^2*b^5*c^8*d^11*e^7 + 1688*A^
2*b^6*c^7*d^10*e^8 - 960*A^2*b^7*c^6*d^9*e^9 + 360*A^2*b^8*c^5*d^8*e^10 - 8
0*A^2*b^9*c^4*d^7*e^11 + 8*A^2*b^10*c^3*d^6*e^12 + 8*B^2*b^2*c^11*d^16*e^2
- 48*B^2*b^3*c^10*d^15*e^3 + 120*B^2*b^4*c^9*d^14*e^4 - 160*B^2*b^5*c^8*d^1
3*e^5 + 120*B^2*b^6*c^7*d^12*e^6 - 48*B^2*b^7*c^6*d^11*e^7 + 8*B^2*b^8*c^5*
d^10*e^8 - 128*A^2*b*c^12*d^15*e^3 - 16*A*B*b*c^12*d^16*e^2 + 96*A*B*b^2*c^
11*d^15*e^3 - 240*A*B*b^3*c^10*d^14*e^4 + 320*A*B*b^4*c^9*d^13*e^5 - 240*A*
B*b^5*c^8*d^12*e^6 + 96*A*B*b^6*c^7*d^11*e^7 - 16*A*B*b^7*c^6*d^10*e^8) - (
(-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*(((-c^3*(b*e - c*d)^5)^(1/2)*(A*c -
B*b)*(d + e*x)^(1/2)*(16*b^2*c^13*d^21*e^2 - 168*b^3*c^12*d^20*e^3 + 800*b^
4*c^11*d^19*e^4 - 2280*b^5*c^10*d^18*e^5 + 4320*b^6*c^9*d^17*e^6 - 5712*b^7
*c^8*d^16*e^7 + 5376*b^8*c^7*d^15*e^8 - 3600*b^9*c^6*d^14*e^9 + 1680*b^10*c
^5*d^13*e^10 - 520*b^11*c^4*d^12*e^11 + 96*b^12*c^3*d^11*e^12 - 8*b^13*c^2*
d^10*e^13))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 1
0*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 24*A*b^2*c^12*d^18*e^3 - 216*A*b^3*c^1
1*d^17*e^4 + 872*A*b^4*c^10*d^16*e^5 - 2080*A*b^5*c^9*d^15*e^6 + 3248*A*b^6
*c^8*d^14*e^7 - 3472*A*b^7*c^7*d^13*e^8 + 2576*A*b^8*c^6*d^12*e^9 - 1312*A*
b^9*c^5*d^11*e^10 + 440*A*b^10*c^4*d^10*e^11 - 88*A*b^11*c^3*d^9*e^12 + 8*A
*b^12*c^2*d^8*e^13 - 8*B*b^2*c^12*d^19*e^2 + 64*B*b^3*c^11*d^18*e^3 - 224*B
*b^4*c^10*d^17*e^4 + 448*B*b^5*c^9*d^16*e^5 - 560*B*b^6*c^8*d^15*e^6 + 448*
B*b^7*c^7*d^14*e^7 - 224*B*b^8*c^6*d^13*e^8 + 64*B*b^9*c^5*d^12*e^9 - 8*B*b
^10*c^4*d^11*e^10))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3
*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4)))/(b^6*e^5 - b*c^5*d^5 + 5*b^2*c
^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^3 - 5*b^5*c*d*e^4) + 576*A
^3*b^2*c^10*d^11*e^5 - 880*A^3*b^3*c^9*d^10*e^6 + 800*A^3*b^4*c^8*d^9*e^7 -
 432*A^3*b^5*c^7*d^8*e^8 + 128*A^3*b^6*c^6*d^7*e^9 - 16*A^3*b^7*c^5*d^6*e^1
0 - 16*A^2*B*c^12*d^14*e^2 - 208*A^3*b*c^11*d^12*e^4 - 96*A*B^2*b^2*c^10*d^
13*e^3 + 240*A*B^2*b^3*c^9*d^12*e^4 - 320*A*B^2*b^4*c^8*d^11*e^5 + 240*A*B^
```

```
2*b^5*c^7*d^10*e^6 - 96*A*B^2*b^6*c^6*d^9*e^7 + 16*A*B^2*b^7*c^5*d^8*e^8 -
32*A^2*B*b^2*c^10*d^12*e^4 - 256*A^2*B*b^3*c^9*d^11*e^5 + 640*A^2*B*b^4*c^8
*d^10*e^6 - 704*A^2*B*b^5*c^7*d^9*e^7 + 416*A^2*B*b^6*c^6*d^8*e^8 - 128*A^2
*B*b^7*c^5*d^7*e^9 + 16*A^2*B*b^8*c^4*d^6*e^10 + 16*A*B^2*b*c^11*d^14*e^2 +
 64*A^2*B*b*c^11*d^13*e^3))*(-c^3*(b*e - c*d)^5)^(1/2)*(A*c - B*b)*2i)/(b^6
*e^5 - b*c^5*d^5 + 5*b^2*c^4*d^4*e - 10*b^3*c^3*d^3*e^2 + 10*b^4*c^2*d^2*e^
3 - 5*b^5*c*d*e^4) - (A*atan((B^2*b^2*c^9*d^21*(d + e*x)^(1/2)*1i + A^2*b^1
1*d^10*e^11*(d + e*x)^(1/2)*1i - A^2*b^10*c*d^11*e^10*(d + e*x)^(1/2)*11i -
 B^2*b^3*c^8*d^20*e*(d + e*x)^(1/2)*6i - A*B*b*c^10*d^21*(d + e*x)^(1/2)*2i
 - A^2*b^2*c^9*d^19*e^2*(d + e*x)^(1/2)*40i + A^2*b^3*c^8*d^18*e^3*(d + e*x
)^(1/2)*145i - A^2*b^4*c^7*d^17*e^4*(d + e*x)^(1/2)*315i + A^2*b^5*c^6*d^16
*e^5*(d + e*x)^(1/2)*456i - A^2*b^6*c^5*d^15*e^6*(d + e*x)^(1/2)*461i + A^2
*b^7*c^4*d^14*e^7*(d + e*x)^(1/2)*330i - A^2*b^8*c^3*d^13*e^8*(d + e*x)^(1/
2)*165i + A^2*b^9*c^2*d^12*e^9*(d + e*x)^(1/2)*55i + B^2*b^4*c^7*d^19*e^2*(
d + e*x)^(1/2)*15i - B^2*b^5*c^6*d^18*e^3*(d + e*x)^(1/2)*20i + B^2*b^6*c^5
*d^17*e^4*(d + e*x)^(1/2)*15i - B^2*b^7*c^4*d^16*e^5*(d + e*x)^(1/2)*6i + B
^2*b^8*c^3*d^15*e^6*(d + e*x)^(1/2)*1i + A^2*b*c^10*d^20*e*(d + e*x)^(1/2)*
5i - A*B*b^3*c^8*d^19*e^2*(d + e*x)^(1/2)*30i + A*B*b^4*c^7*d^18*e^3*(d + e
*x)^(1/2)*40i - A*B*b^5*c^6*d^17*e^4*(d + e*x)^(1/2)*30i + A*B*b^6*c^5*d^16
*e^5*(d + e*x)^(1/2)*12i - A*B*b^7*c^4*d^15*e^6*(d + e*x)^(1/2)*2i + A*B*b^
2*c^9*d^20*e*(d + e*x)^(1/2)*12i)/(d^5*(d^5)^(1/2)*(d^5*(d^5*(315*A^2*b^4*c
^7*e^4 - B^2*b^2*c^9*d^4 - 15*B^2*b^6*c^5*e^4 + 40*A^2*b^2*c^9*d^2*e^2 - 15
*B^2*b^4*c^7*d^2*e^2 + 30*A*B*b^5*c^6*e^4 - 5*A^2*b*c^10*d^3*e - 145*A^2*b^
3*c^8*d*e^3 + 6*B^2*b^3*c^8*d^3*e + 20*B^2*b^5*c^6*d*e^3 + 2*A*B*b*c^10*d^4
 - 12*A*B*b^2*c^9*d^3*e - 40*A*B*b^4*c^7*d*e^3 + 30*A*B*b^3*c^8*d^2*e^2) -
55*A^2*b^9*c^2*e^9 - 456*A^2*b^5*c^6*d^4*e^5 + 461*A^2*b^6*c^5*d^3*e^6 - 33
0*A^2*b^7*c^4*d^2*e^7 + 6*B^2*b^7*c^4*d^4*e^5 - B^2*b^8*c^3*d^3*e^6 + 165*A
^2*b^8*c^3*d*e^8 - 12*A*B*b^6*c^5*d^4*e^5 + 2*A*B*b^7*c^4*d^3*e^6) - A^2*b^
11*d^3*e^11 + 11*A^2*b^10*c*d^4*e^10)))*2i)/(b*(d^5)^(1/2)) - ((2*(A*e - B*
d))/(3*(c*d^2 - b*d*e)) - (2*(d + e*x)*(A*b*e^2 + B*c*d^2 - 2*A*c*d*e))/(c*
d^2 - b*d*e)^2)/(d + e*x)^(3/2)
```

sympy [A] time = 66.52, size = 160, normalized size = 0.98

$$\frac{2A\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^2\sqrt{-d}}-\frac{2\left(-Ae+Bd\right)}{3d\left(d+ex\right)^{\frac{3}{2}}\left(be-cd\right)}+\frac{2\left(Abe^2-2Acde+Bcd^2\right)}{d^2\sqrt{d+ex}\left(be-cd\right)^2}+\frac{2c\left(-Ac+Bb\right)\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{be-cd}{c}}}\right)}{b\sqrt{\frac{be-cd}{c}}\left(be-cd\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**2*sqrt(-d)) - 2*(-A*e + B*d)/(3*d*(d
 + e*x)**(3/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(d**2*sqr
t(d + e*x)*(b*e - c*d)**2) + 2*c*(-A*c + B*b)*atan(sqrt(d + e*x)/sqrt((b*e
- c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e - c*d)**2)
```

3.1236 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=225

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2c^{5/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(d+ex)^{3/2}(cd-be)^2}+\frac{2(Bd -}{5d(d+ex)^5}$$

```
[Out] 2/5*(-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)^(5/2)+2/3*(B*c*d^2-A*e*(-b*e+2*c*d))/d^
2/(-b*e+c*d)^2/(e*x+d)^(3/2)-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(7/2)-2
*c^(5/2)*(-A*c+B*b)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b/(-b*e
+c*d)^(7/2)+2*(B*c^2*d^3-A*e*(b^2*e^2-3*b*c*d*e+3*c^2*d^2))/d^3/(-b*e+c*d)^
3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2c^{5/2}(bB-Ac)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b(cd-be)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(d+ex)^{3/2}(cd-be)^2}+\frac{2(Bd -}{5d(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(5*d*(c*d - b*e)*(d + e*x)^(5/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(3*d^2*(c*d - b*e)^2*(d + e*x)^(3/2)) + (2*(B*c^2*d^3 - A*e*(3*c
^2*d^2 - 3*b*c*d*e + b^2*e^2)))/(d^3*(c*d - b*e)^3*Sqrt[d + e*x]) - (2*A*Ar
cTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*d^(7/2)) - (2*c^(5/2)*(b*B - A*c)*ArcTanh[
(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{5/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)}{(d+ex)^{3/2}\left(bx+cx^2\right)}}{d^2(cd-be)^2}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2(Bc^2d^3-Ae(3c^2d^2-3bc}{d^3(cd-be)^3\sqrt{d+e}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2(Bc^2d^3-Ae(3c^2d^2-3bc}{d^3(cd-be)^3\sqrt{d+e}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2(Bc^2d^3-Ae(3c^2d^2-3bc}{d^3(cd-be)^3\sqrt{d+e}}$$

$$= \frac{2(Bd-Ae)}{5d(cd-be)(d+ex)^{5/2}} + \frac{2\left(Bcd^2-Ae(2cd-be)\right)}{3d^2(cd-be)^2(d+ex)^{3/2}} + \frac{2(Bc^2d^3-Ae(3c^2d^2-3bc}{d^3(cd-be)^3\sqrt{d+e}}$$

Mathematica [C] time = 0.03, size = 91, normalized size = 0.40

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{ex}{d}+1\right)\right)}{5bd(d+ex)^{5/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-5/2, 1, -3/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-5/2, 1, -3/2, 1 + (e*x)/d]))/(5*b*d*(
c*d - b*e)*(d + e*x)^(5/2))
```

fricas [B] time = 14.79, size = 3081, normalized size = 13.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [1/15*(15*((B*b*c^2 - A*c^3)*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2
+ 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*c^2 - A*c^3)*d^7)*sqrt(c/(c*d - b*e))*
log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))
/(c*x + b)) + 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d
^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*
x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^
5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2
*e^4)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(23*B*b*c
^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22
*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2
*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3
*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 -
3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^
2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c
^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^
2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x), -1/15*(30*((B*b*c^2 - A*c^3)
*d^4*e^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*
x + (B*b*c^2 - A*c^3)*d^7)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*
x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*
e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4
+ 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 +
 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2
+ 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*
sqrt(d) + 2*d)/x) - 2*(23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58
*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*
A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e
 + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x
)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*
e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x
^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*
x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x
), 1/15*(30*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b^2*c*d^4*e^2 - A*b^3*d^3*e^
3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2*c*d*e^5 - A*b^3*e^6)*x^3 +
 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^
2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 - A*b^3*d^2*e^4)
*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + 15*((B*b*c^2 - A*c^3)*d^4*e
^3*x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B
*b*c^2 - A*c^3)*d^7)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d
- b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 2*(23*B*b*c^2*d^6 -
23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B*b^3 + 22*A*b^2*c)
*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*c*d^2*e^4 - A*
b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3 - 7*A*b^3*d^2*e^4
- (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^3*d^10 - 3*b^2*c^2
*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 - 3*b^2*c^2*d^6*e^4
 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2 - 3*b^2*c^2*d^7*e^
3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e - 3*b^2*c^2*d^8*e^2
 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x), -2/15*(15*((B*b*c^2 - A*c^3)*d^4*e^3*
x^3 + 3*(B*b*c^2 - A*c^3)*d^5*e^2*x^2 + 3*(B*b*c^2 - A*c^3)*d^6*e*x + (B*b*
c^2 - A*c^3)*d^7)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sq
rt(-c/(c*d - b*e))/(c*e*x + c*d)) - 15*(A*c^3*d^6 - 3*A*b*c^2*d^5*e + 3*A*b
^2*c*d^4*e^2 - A*b^3*d^3*e^3 + (A*c^3*d^3*e^3 - 3*A*b*c^2*d^2*e^4 + 3*A*b^2
*c*d*e^5 - A*b^3*e^6)*x^3 + 3*(A*c^3*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*b^2*
c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 3*(A*c^3*d^5*e - 3*A*b*c^2*d^4*e^2 + 3*A*b^2
*c*d^3*e^3 - A*b^3*d^2*e^4)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) -
(23*B*b*c^2*d^6 - 23*A*b^3*d^3*e^3 - (11*B*b^2*c + 58*A*b*c^2)*d^5*e + 3*(B
*b^3 + 22*A*b^2*c)*d^4*e^2 + 15*(B*b*c^2*d^4*e^2 - 3*A*b*c^2*d^3*e^3 + 3*A*
b^2*c*d^2*e^4 - A*b^3*d*e^5)*x^2 + 5*(7*B*b*c^2*d^5*e + 21*A*b^2*c*d^3*e^3
- 7*A*b^3*d^2*e^4 - (B*b^2*c + 20*A*b*c^2)*d^4*e^2)*x)*sqrt(e*x + d))/(b*c^
3*d^10 - 3*b^2*c^2*d^9*e + 3*b^3*c*d^8*e^2 - b^4*d^7*e^3 + (b*c^3*d^7*e^3 -
 3*b^2*c^2*d^6*e^4 + 3*b^3*c*d^5*e^5 - b^4*d^4*e^6)*x^3 + 3*(b*c^3*d^8*e^2
- 3*b^2*c^2*d^7*e^3 + 3*b^3*c*d^6*e^4 - b^4*d^5*e^5)*x^2 + 3*(b*c^3*d^9*e -
 3*b^2*c^2*d^8*e^2 + 3*b^3*c*d^7*e^3 - b^4*d^6*e^4)*x)]
```

giac [A] time = 0.23, size = 386, normalized size = 1.72

$$\frac{2\left(Bbc^{3}-Ac^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\left(bc^{3}d^{3}-3\,b^{2}c^{2}d^{2}e+3\,b^{3}cde^{2}-b^{4}e^{3}\right)\sqrt{-c^{2}d+bce}}+\frac{2\left(15\,(xe+d)^{2}Bc^{2}d^{3}+5\,(xe+d)Bc^{2}d^{4}+3\,Bc^{2}d^{5}-45\,(xe+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^3 - A*c^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^3*d^
3 - 3*b^2*c^2*d^2*e + 3*b^3*c*d*e^2 - b^4*e^3)*sqrt(-c^2*d + b*c*e)) + 2/15
*(15*(x*e + d)^2*B*c^2*d^3 + 5*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 - 45*(x*e
+ d)^2*A*c^2*d^2*e - 5*(x*e + d)*B*b*c*d^3*e - 10*(x*e + d)*A*c^2*d^3*e - 6
*B*b*c*d^4*e - 3*A*c^2*d^4*e + 45*(x*e + d)^2*A*b*c*d*e^2 + 15*(x*e + d)*A*
b*c*d^2*e^2 + 3*B*b^2*d^3*e^2 + 6*A*b*c*d^3*e^2 - 15*(x*e + d)^2*A*b^2*e^3
- 5*(x*e + d)*A*b^2*d*e^3 - 3*A*b^2*d^2*e^3)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*
b^2*c*d^4*e^2 - b^3*d^3*e^3)*(x*e + d)^(5/2)) + 2*A*arctan(sqrt(x*e + d)/sq
rt(-d))/(b*sqrt(-d)*d^3)
```

maple [**A**] time = 0.07, size = 350, normalized size = 1.56

$$\frac{2A\,c^{4}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{3}\sqrt{(be-cd)\,c}\;b}-\frac{2B\,c^{3}\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{3}\sqrt{(be-cd)\,c}}+\frac{2A\,b^{2}e^{3}}{(be-cd)^{3}\sqrt{ex+d}\;d^{3}}-\frac{6Abc\,e^{2}}{(be-cd)^{3}\sqrt{ex+d}\;d^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x)
```

```
[Out] 2/(b*e-c*d)^3*c^4/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A-2/(b*e-c*d)^3*c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e
-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(7/2)+2/5/(b*e-c
*d)/d/(e*x+d)^(5/2)*A*e-2/5/(b*e-c*d)/(e*x+d)^(5/2)*B+2/3/(b*e-c*d)^2/d^2/(
e*x+d)^(3/2)*A*b*e^2-4/3/(b*e-c*d)^2/d/(e*x+d)^(3/2)*A*c*e+2/3/(b*e-c*d)^2/
(e*x+d)^(3/2)*B*c+2/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A*b^2*e^3-6/(b*e-c*d)^3/d
^2/(e*x+d)^(1/2)*A*b*c*e^2+6/(b*e-c*d)^3/d/(e*x+d)^(1/2)*A*c^2*e-2/(b*e-c*d
)^3/(e*x+d)^(1/2)*B*c^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 4.72, size = 13404, normalized size = 59.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(7/2)),x)
```

```
[Out] - ((2*(A*e - B*d))/(5*(c*d^2 - b*d*e)) + (2*(d + e*x)^2*(A*b^2*e^3 - B*c^2*
d^3 + 3*A*c^2*d^2*e - 3*A*b*c*d*e^2))/(c*d^2 - b*d*e)^3 - (2*(d + e*x)*(A*b
*e^2 + B*c*d^2 - 2*A*c*d*e))/(3*(c*d^2 - b*d*e)^2))/(d + e*x)^(5/2) - (atan
((((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^2
4*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2
*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*
e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^
2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^1
3*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2
*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 7
```

```
2*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21
*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^
8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*
B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 +
 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*
d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A
*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^1
0 + 16*A*B*b^10*c^8*d^15*e^11) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((
(-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^
2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5
 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25
*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*
c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200
*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 1
36*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2
*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 +
 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - 32*A*b^2*c^17*d^27*e^3 + 432*A*b^3*c
^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*b^5*c^14*d^24*e^6 - 28608
*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 - 85184*A*b^8*c^11*d^21*e^
9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*d^19*e^11 + 63536*A*b^11*
c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552*A*b^13*c^6*d^16*e^14 - 4
480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^16 - 128*A*b^16*c^3*d^13*e
^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e^2 - 96*B*b^3*c^16*d^27*e
^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^25*e^5 + 3960*B*b^6*c^13*d
^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^11*d^22*e^8 - 6336*B*b^9*
c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B*b^11*c^8*d^19*e^11 + 528
*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 + 8*B*b^14*c^5*d^16*e^14))/
(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^
4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))*1i)/(b^8*
e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3
 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) + ((-c^5*(b*e -
 c*d)^7)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^
2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*
e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2
*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*
e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A
^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*
e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*
d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2
*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8
 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^
15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^
16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016
*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^1
8*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10
*c^8*d^15*e^11) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*
d)^7)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^1
7*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^
14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b
^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 +
 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*
e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^1
6*e^17 + 8*b^18*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21
*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2
*e^5 - 7*b^7*c*d*e^6) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 +
2720*A*b^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^2
3*e^7 - 56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9
*c^10*d^20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 +
 34848*A*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*
d^15*e^15 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*
c^2*d^12*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*
c^15*d^26*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*
B*b^7*c^12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 -
 3960*B*b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^1
8*e^12 + 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^
7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*
c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))*1i)/(b^8*e^7 - b*c^7*d^7
 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d
^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6))/(((-c^5*(b*e - c*d)^7)^(1/2)*
(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22
*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2
*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*
e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^
2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^1
2*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^
15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*
B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*
e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*
c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A
^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 5
76*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d
^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B
*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11)
 - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*d)^7)^(1/2)*(A*
c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 18
00*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 5
8968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^
9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8
*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^1
5*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18
*c^2*d^15*e^18))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^
2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*
d*e^6) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 + 2720*A*b^4*c^15
*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^23*e^7 - 56672*A
*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9*c^10*d^20*e^10
 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 + 34848*A*b^12*c
^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*d^15*e^15 - 960
*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*c^2*d^12*e^18 -
 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*c^15*d^26*e^4 +
 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*B*b^7*c^12*d^23
*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 - 3960*B*b^10*c^
9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^18*e^12 + 96*B*b
^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c
^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 2
1*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6)))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e
 - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^
2*d^2*e^5 - 7*b^7*c*d*e^6) - ((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*((d +
e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^
3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7
 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^
8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^
12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b
^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 +
8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*
e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7
*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*
B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3
 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^
```

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22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B
*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9
 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - ((-c^5*(b*e - c
*d)^7)^(1/2)*(A*c - B*b)*(((-c^5*(b*e - c*d)^7)^(1/2)*(A*c - B*b)*(d + e*x)
^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e
^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26
*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^
10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864
*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 +
1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(
b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4
*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*c*d*e^6) - 32*A*b^2*
c^17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*
A*b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8
 - 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^
9*d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 145
52*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e
^16 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28
*e^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d
^25*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*
c^11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760
*B*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13
+ 8*B*b^14*c^5*d^16*e^14))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*
c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5
- 7*b^7*c*d*e^6)))/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e - 21*b^3*c^5*d^5*
e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2*d^2*e^5 - 7*b^7*
c*d*e^6) - 48*A^3*c^17*d^20*e^3 - 2176*A^3*b^2*c^15*d^18*e^5 + 5904*A^3*b^3
*c^14*d^17*e^6 - 10656*A^3*b^4*c^13*d^16*e^7 + 13440*A^3*b^5*c^12*d^15*e^8
- 12096*A^3*b^6*c^11*d^14*e^9 + 7776*A^3*b^7*c^10*d^13*e^10 - 3504*A^3*b^8*
c^9*d^12*e^11 + 1056*A^3*b^9*c^8*d^11*e^12 - 192*A^3*b^10*c^7*d^10*e^13 + 1
6*A^3*b^11*c^6*d^9*e^14 + 16*A^2*B*c^17*d^21*e^2 + 480*A^3*b*c^16*d^19*e^4
+ 144*A*B^2*b^2*c^15*d^20*e^3 - 576*A*B^2*b^3*c^14*d^19*e^4 + 1344*A*B^2*b^
4*c^13*d^18*e^5 - 2016*A*B^2*b^5*c^12*d^17*e^6 + 2016*A*B^2*b^6*c^11*d^16*e
^7 - 1344*A*B^2*b^7*c^10*d^15*e^8 + 576*A*B^2*b^8*c^9*d^14*e^9 - 144*A*B^2*
b^9*c^8*d^13*e^10 + 16*A*B^2*b^10*c^7*d^12*e^11 + 96*A^2*B*b^2*c^15*d^19*e^
4 + 832*A^2*B*b^3*c^14*d^18*e^5 - 3888*A^2*B*b^4*c^13*d^17*e^6 + 8640*A^2*B
*b^5*c^12*d^16*e^7 - 12096*A^2*B*b^6*c^11*d^15*e^8 + 11520*A^2*B*b^7*c^10*d
^14*e^9 - 7632*A^2*B*b^8*c^9*d^13*e^10 + 3488*A^2*B*b^9*c^8*d^12*e^11 - 105
6*A^2*B*b^10*c^7*d^11*e^12 + 192*A^2*B*b^11*c^6*d^10*e^13 - 16*A^2*B*b^12*c
^5*d^9*e^14 - 16*A*B^2*b*c^16*d^21*e^2 - 96*A^2*B*b*c^16*d^20*e^3))*(-c^5*(
b*e - c*d)^7)^(1/2)*(A*c - B*b)*2i)/(b^8*e^7 - b*c^7*d^7 + 7*b^2*c^6*d^6*e
- 21*b^3*c^5*d^5*e^2 + 35*b^4*c^4*d^4*e^3 - 35*b^5*c^3*d^3*e^4 + 21*b^6*c^2
*d^2*e^5 - 7*b^7*c*d*e^6) - (A*atan(((A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*
e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b
^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^
8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*
b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*
e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b
^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*
B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e
^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*
c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^
2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 1
44*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^
21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B
*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10
+ 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2
 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5
+ 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*
e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c
^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*
b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 13
6*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) - 32*A*b^2*c^
17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600*A*
b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^8 -
 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c^9*
d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14552
*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*e^1
6 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^28*e
^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*d^2
5*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8*c^
11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 1760*B
*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13 +
8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2)))*1i)/(b*(d^7)^(1/2)) + (A*((d + e*
x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*
c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 +
 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*
c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12
 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^1
3*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*
B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^
4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c
^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^
2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 -
 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22
*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b
^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 -
 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^
(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^
4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*
e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^1
0*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*
b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1
080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b
*(d^7)^(1/2)) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b^3*c^16*d^26*e^4 + 2720*A*b
^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 28608*A*b^6*c^13*d^23*e^7 -
56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^21*e^9 - 99000*A*b^9*c^10*d^
20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b^11*c^8*d^18*e^12 + 34848*A
*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14 + 4480*A*b^14*c^5*d^15*e^1
5 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^13*e^17 - 8*A*b^17*c^2*d^12
*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^27*e^3 - 528*B*b^4*c^15*d^2
6*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^13*d^24*e^6 + 6336*B*b^7*c^
12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*b^9*c^10*d^21*e^9 - 3960*B*
b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 - 528*B*b^12*c^7*d^18*e^12 +
 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2)))*1i)/(b
*(d^7)^(1/2)))/((A*((d + e*x)^(1/2)*(16*A^2*c^18*d^24*e^2 + 1128*A^2*b^2*c^
16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^2*b^4*c^14*d^20*e^6 - 25
032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18*e^8 - 51768*A^2*b^7*c^1
1*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A^2*b^9*c^9*d^15*e^11 + 2
4024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^13*e^13 + 3640*A^2*b^12*
c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^2*b^14*c^4*d^10*e^16 - 8
*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 - 72*B^2*b^3*c^15*d^23*e^3
 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^21*e^5 + 1008*B^2*b^6*c^1
2*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b^8*c^10*d^18*e^8 - 288*B
^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8*B^2*b^11*c^7*d^15*e^11
- 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2 + 144*A*B*b^2*c^16*d^23*
e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14*d^21*e^5 - 2016*A*B*b^5
*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*A*B*b^7*c^11*d^18*e^8 +
576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^10 + 16*A*B*b^10*c^8*d^1
5*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*e^2 - 248*b^3*c^17*d^30*
e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e^5 + 25480*b^6*c^14*d^27
*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^25*e^8 - 143000*b^9*c^11
*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^11*c^9*d^22*e^11 + 88088*
b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 18200*b^14*c^6*d^19*e^14 -
5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 - 136*b^17*c^3*d^16*e^17
 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) + 32*A*b^2*c^17*d^27*e^3 - 432*A*b
^3*c^16*d^26*e^4 + 2720*A*b^4*c^15*d^25*e^5 - 10600*A*b^5*c^14*d^24*e^6 + 2
8608*A*b^6*c^13*d^23*e^7 - 56672*A*b^7*c^12*d^22*e^8 + 85184*A*b^8*c^11*d^2
1*e^9 - 99000*A*b^9*c^10*d^20*e^10 + 89760*A*b^10*c^9*d^19*e^11 - 63536*A*b
^11*c^8*d^18*e^12 + 34848*A*b^12*c^7*d^17*e^13 - 14552*A*b^13*c^6*d^16*e^14
 + 4480*A*b^14*c^5*d^15*e^15 - 960*A*b^15*c^4*d^14*e^16 + 128*A*b^16*c^3*d^
13*e^17 - 8*A*b^17*c^2*d^12*e^18 - 8*B*b^2*c^17*d^28*e^2 + 96*B*b^3*c^16*d^
27*e^3 - 528*B*b^4*c^15*d^26*e^4 + 1760*B*b^5*c^14*d^25*e^5 - 3960*B*b^6*c^
13*d^24*e^6 + 6336*B*b^7*c^12*d^23*e^7 - 7392*B*b^8*c^11*d^22*e^8 + 6336*B*
b^9*c^10*d^21*e^9 - 3960*B*b^10*c^9*d^20*e^10 + 1760*B*b^11*c^8*d^19*e^11 -
 528*B*b^12*c^7*d^18*e^12 + 96*B*b^13*c^6*d^17*e^13 - 8*B*b^14*c^5*d^16*e^1
4))/(b*(d^7)^(1/2))))/(b*(d^7)^(1/2)) - (A*((d + e*x)^(1/2)*(16*A^2*c^18*d^
24*e^2 + 1128*A^2*b^2*c^16*d^22*e^4 - 4312*A^2*b^3*c^15*d^21*e^5 + 11928*A^
2*b^4*c^14*d^20*e^6 - 25032*A^2*b^5*c^13*d^19*e^7 + 40712*A^2*b^6*c^12*d^18
*e^8 - 51768*A^2*b^7*c^11*d^17*e^9 + 51552*A^2*b^8*c^10*d^16*e^10 - 40048*A
^2*b^9*c^9*d^15*e^11 + 24024*A^2*b^10*c^8*d^14*e^12 - 10920*A^2*b^11*c^7*d^
13*e^13 + 3640*A^2*b^12*c^6*d^12*e^14 - 840*A^2*b^13*c^5*d^11*e^15 + 120*A^
2*b^14*c^4*d^10*e^16 - 8*A^2*b^15*c^3*d^9*e^17 + 8*B^2*b^2*c^16*d^24*e^2 -
72*B^2*b^3*c^15*d^23*e^3 + 288*B^2*b^4*c^14*d^22*e^4 - 672*B^2*b^5*c^13*d^2
1*e^5 + 1008*B^2*b^6*c^12*d^20*e^6 - 1008*B^2*b^7*c^11*d^19*e^7 + 672*B^2*b
^8*c^10*d^18*e^8 - 288*B^2*b^9*c^9*d^17*e^9 + 72*B^2*b^10*c^8*d^16*e^10 - 8
*B^2*b^11*c^7*d^15*e^11 - 192*A^2*b*c^17*d^23*e^3 - 16*A*B*b*c^17*d^24*e^2
 + 144*A*B*b^2*c^16*d^23*e^3 - 576*A*B*b^3*c^15*d^22*e^4 + 1344*A*B*b^4*c^14
*d^21*e^5 - 2016*A*B*b^5*c^13*d^20*e^6 + 2016*A*B*b^6*c^12*d^19*e^7 - 1344*
A*B*b^7*c^11*d^18*e^8 + 576*A*B*b^8*c^10*d^17*e^9 - 144*A*B*b^9*c^9*d^16*e^
10 + 16*A*B*b^10*c^8*d^15*e^11) - (A*((A*(d + e*x)^(1/2)*(16*b^2*c^18*d^31*
e^2 - 248*b^3*c^17*d^30*e^3 + 1800*b^4*c^16*d^29*e^4 - 8120*b^5*c^15*d^28*e
^5 + 25480*b^6*c^14*d^27*e^6 - 58968*b^7*c^13*d^26*e^7 + 104104*b^8*c^12*d^
25*e^8 - 143000*b^9*c^11*d^24*e^9 + 154440*b^10*c^10*d^23*e^10 - 131560*b^1
1*c^9*d^22*e^11 + 88088*b^12*c^8*d^21*e^12 - 45864*b^13*c^7*d^20*e^13 + 182
00*b^14*c^6*d^19*e^14 - 5320*b^15*c^5*d^18*e^15 + 1080*b^16*c^4*d^17*e^16 -
 136*b^17*c^3*d^16*e^17 + 8*b^18*c^2*d^15*e^18))/(b*(d^7)^(1/2)) - 32*A*b^2
*c^17*d^27*e^3 + 432*A*b^3*c^16*d^26*e^4 - 2720*A*b^4*c^15*d^25*e^5 + 10600
*A*b^5*c^14*d^24*e^6 - 28608*A*b^6*c^13*d^23*e^7 + 56672*A*b^7*c^12*d^22*e^
8 - 85184*A*b^8*c^11*d^21*e^9 + 99000*A*b^9*c^10*d^20*e^10 - 89760*A*b^10*c
^9*d^19*e^11 + 63536*A*b^11*c^8*d^18*e^12 - 34848*A*b^12*c^7*d^17*e^13 + 14
552*A*b^13*c^6*d^16*e^14 - 4480*A*b^14*c^5*d^15*e^15 + 960*A*b^15*c^4*d^14*
e^16 - 128*A*b^16*c^3*d^13*e^17 + 8*A*b^17*c^2*d^12*e^18 + 8*B*b^2*c^17*d^2
8*e^2 - 96*B*b^3*c^16*d^27*e^3 + 528*B*b^4*c^15*d^26*e^4 - 1760*B*b^5*c^14*
d^25*e^5 + 3960*B*b^6*c^13*d^24*e^6 - 6336*B*b^7*c^12*d^23*e^7 + 7392*B*b^8
*c^11*d^22*e^8 - 6336*B*b^9*c^10*d^21*e^9 + 3960*B*b^10*c^9*d^20*e^10 - 176
0*B*b^11*c^8*d^19*e^11 + 528*B*b^12*c^7*d^18*e^12 - 96*B*b^13*c^6*d^17*e^13
 + 8*B*b^14*c^5*d^16*e^14))/(b*(d^7)^(1/2))))/(b*(d^7)^(1/2)) - 48*A^3*c^17
*d^20*e^3 - 2176*A^3*b^2*c^15*d^18*e^5 + 5904*A^3*b^3*c^14*d^17*e^6 - 10656
*A^3*b^4*c^13*d^16*e^7 + 13440*A^3*b^5*c^12*d^15*e^8 - 12096*A^3*b^6*c^11*d
^14*e^9 + 7776*A^3*b^7*c^10*d^13*e^10 - 3504*A^3*b^8*c^9*d^12*e^11 + 1056*A
^3*b^9*c^8*d^11*e^12 - 192*A^3*b^10*c^7*d^10*e^13 + 16*A^3*b^11*c^6*d^9*e^1
4 + 16*A^2*B*c^17*d^21*e^2 + 480*A^3*b*c^16*d^19*e^4 + 144*A*B^2*b^2*c^15*d
^20*e^3 - 576*A*B^2*b^3*c^14*d^19*e^4 + 1344*A*B^2*b^4*c^13*d^18*e^5 - 2016
*A*B^2*b^5*c^12*d^17*e^6 + 2016*A*B^2*b^6*c^11*d^16*e^7 - 1344*A*B^2*b^7*c^
10*d^15*e^8 + 576*A*B^2*b^8*c^9*d^14*e^9 - 144*A*B^2*b^9*c^8*d^13*e^10 + 16
*A*B^2*b^10*c^7*d^12*e^11 + 96*A^2*B*b^2*c^15*d^19*e^4 + 832*A^2*B*b^3*c^14
```

```
*d^18*e^5 - 3888*A^2*B*b^4*c^13*d^17*e^6 + 8640*A^2*B*b^5*c^12*d^16*e^7 - 1
2096*A^2*B*b^6*c^11*d^15*e^8 + 11520*A^2*B*b^7*c^10*d^14*e^9 - 7632*A^2*B*b
^8*c^9*d^13*e^10 + 3488*A^2*B*b^9*c^8*d^12*e^11 - 1056*A^2*B*b^10*c^7*d^11*
e^12 + 192*A^2*B*b^11*c^6*d^10*e^13 - 16*A^2*B*b^12*c^5*d^9*e^14 - 16*A*B^2
*b*c^16*d^21*e^2 - 96*A^2*B*b*c^16*d^20*e^3))*2i)/(b*(d^7)^(1/2))
```

sympy [**A**] time = 78.32, size = 228, normalized size = 1.01

$$\frac{2A\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^3\sqrt{-d}}-\frac{2\left(-Ae+Bd\right)}{5d\left(d+ex\right)^{\frac{5}{2}}\left(be-cd\right)}+\frac{2\left(Abe^2-2Acde+Bcd^2\right)}{3d^2\left(d+ex\right)^{\frac{3}{2}}\left(be-cd\right)^2}+\frac{2\left(Ab^2e^3-3Abcde^2+3Ac^2d^2e-Bc^2d^3\right)}{d^3\sqrt{d+ex}\left(be-cd\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**3*sqrt(-d)) - 2*(-A*e + B*d)/(5*d*(d
 + e*x)**(5/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(3*d**2*(
d + e*x)**(3/2)*(b*e - c*d)**2) + 2*(A*b**2*e**3 - 3*A*b*c*d*e**2 + 3*A*c**
2*d**2*e - B*c**2*d**3)/(d**3*sqrt(d + e*x)*(b*e - c*d)**3) - 2*c**2*(-A*c
+ B*b)*atan(sqrt(d + e*x)/sqrt((b*e - c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e
- c*d)**3)
```

3.1237 $\int \frac{A+Bx}{(d+ex)^{9/2}\left(bx+cx^2\right)}\,dx$

Optimal. Leaf size=301

$$\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{3d^3(d+ex)^{3/2}(cd-be)^3}+\frac{2\left(Bc^3d^4-Ae\left(-b^3e^3+4b^2cde^2-6bc^2d^2e+4c^3d^3\right)\right)}{d^4\sqrt{d+ex}\,(cd-be)^4}-\frac{2c^{7/2}(bB-Ac)\tan}{b(cd-b}$$

```
[Out] 2/7*(-A*e+B*d)/d/(-b*e+c*d)/(e*x+d)^(7/2)+2/5*(B*c*d^2-A*e*(-b*e+2*c*d))/d^
2/(-b*e+c*d)^2/(e*x+d)^(5/2)+2/3*(B*c^2*d^3-A*e*(b^2*e^2-3*b*c*d*e+3*c^2*d^
2))/d^3/(-b*e+c*d)^3/(e*x+d)^(3/2)-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(
9/2)-2*c^(7/2)*(-A*c+B*b)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b
/(-b*e+c*d)^(9/2)+2*(B*c^3*d^4-A*e*(-b^3*e^3+4*b^2*c*d*e^2-6*b*c^2*d^2*e+4*
c^3*d^3))/d^4/(-b*e+c*d)^4/(e*x+d)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 301, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(Bc^3d^4-Ae\left(4b^2cde^2-b^3e^3-6bc^2d^2e+4c^3d^3\right)\right)}{d^4\sqrt{d+ex}\,(cd-be)^4}+\frac{2\left(Bc^2d^3-Ae\left(b^2e^2-3bcde+3c^2d^2\right)\right)}{3d^3(d+ex)^{3/2}(cd-be)^3}-\frac{2c^{7/2}(bB-Ac)\tanh}{b(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*(B*d - A*e))/(7*d*(c*d - b*e)*(d + e*x)^(7/2)) + (2*(B*c*d^2 - A*e*(2*c*
d - b*e)))/(5*d^2*(c*d - b*e)^2*(d + e*x)^(5/2)) + (2*(B*c^2*d^3 - A*e*(3*c
^2*d^2 - 3*b*c*d*e + b^2*e^2)))/(3*d^3*(c*d - b*e)^3*(d + e*x)^(3/2)) + (2*
(B*c^3*d^4 - A*e*(4*c^3*d^3 - 6*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)))/(d
^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (2*A*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b*d
^(9/2)) - (2*c^(7/2)*(b*B - A*c)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d -
 b*e]])/(b*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{9/2}\left(bx+cx^2\right)}\,dx = \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{\int \frac{A(cd-be)+c(Bd-Ae)x}{(d+ex)^{7/2}\left(bx+cx^2\right)}\,dx}{d(cd-be)}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{\int \frac{A(cd-be)^2+c\left(Bcd^2-Ae(2cd-be)\right)}{(d+ex)^{5/2}\left(bx+cx^2\right)}}{d^2(cd-be)^2}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bc\right.\right.}{3d^3(cd-be)^3(d+ex}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bc\right.\right.}{3d^3(cd-be)^3(d+ex}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bc\right.\right.}{3d^3(cd-be)^3(d+ex}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bc\right.\right.}{3d^3(cd-be)^3(d+ex}$$

$$= \frac{2(Bd-Ae)}{7d(cd-be)(d+ex)^{7/2}}+\frac{2\left(Bcd^2-Ae(2cd-be)\right)}{5d^2(cd-be)^2(d+ex)^{5/2}}+\frac{2\left(Bc^2d^3-Ae\left(3c^2d^2-3bc\right.\right.}{3d^3(cd-be)^3(d+ex}$$

Mathematica [C] time = 0.04, size = 91, normalized size = 0.30

$$\frac{2\left(d(bB-Ac)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};\frac{c(d+ex)}{cd-be}\right)+A(cd-be)\,{}_2F_1\left(-\frac{7}{2},1;-\frac{5}{2};\frac{ex}{d}+1\right)\right)}{7bd(d+ex)^{7/2}(cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(9/2)*(b*x + c*x^2)),x]
```

```
[Out] (2*((b*B - A*c)*d*Hypergeometric2F1[-7/2, 1, -5/2, (c*(d + e*x))/(c*d - b*e
)] + A*(c*d - b*e)*Hypergeometric2F1[-7/2, 1, -5/2, 1 + (e*x)/d]))/(7*b*d*(
c*d - b*e)*(d + e*x)^(7/2))
```

fricas [B] time = 48.78, size = 4757, normalized size = 15.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="fricas")
```

```
[Out] [-1/105*(105*((B*b*c^3 - A*c^4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x
^3 + 6*(B*b*c^3 - A*c^4)*d^7*e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c
^3 - A*c^4)*d^9)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*
e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 105*(A*c^4*d^8 - 4*A*b*c
^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4
*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^
4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4
*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3
+ 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d
^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*
d^3*e^5)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(176*B
*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*c^2 + 291*A*b*c^3)*d^7*e + 66*
(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4 + 689*A*b^3*c)*d^5*e^3 + 105*(
B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e
^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^2 + 60*A*b^2*c^2*d^4*e^4 - 40*
A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c^2 + 39*A*b*c^3)*d^5*e^3)*x^2
+ 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 + 58*A*b^4*d^3*e^5 - 8*(2*B*b^2
*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e
*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b^3*c^2*d^11*e^2 - 4*b^4*c*d^10
*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6
 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*c^4*d^10*e^3 - 4*b^2*c^3*d^9*e
^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^5*d^6*e^7)*x^3 + 6*(b*c^4*d^11
*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4 - 4*b^4*c*d^8*e^5 + b^5*d^7*e
^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^2 + 6*b^3*c^2*d^10*e^3 - 4*b^4
*c*d^9*e^4 + b^5*d^8*e^5)*x), -1/105*(210*((B*b*c^3 - A*c^4)*d^5*e^4*x^4 +
4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3 - A*c^4)*d^7*e^2*x^2 + 4*(B*b*
c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)*sqrt(-c/(c*d - b*e))*arctan(-
(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) - 105*(A*c^4*
d^8 - 4*A*b*c^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4
*e^4 + (A*c^4*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c
*d*e^7 + A*b^4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^
2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b
*c^3*d^5*e^3 + 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2
 + 4*(A*c^4*d^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4
*e^4 + A*b^4*d^3*e^5)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/
x) - 2*(176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*c^2 + 291*A*b*c^3
)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4 + 689*A*b^3*c)*d^
5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*
A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^2 + 60*A*b^2*c^2*
d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c^2 + 39*A*b*c^3)*
d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 + 58*A*b^4*d^3*e^5
 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115*A*b^2*c^2)*d^5*e
^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b^3*c^2*d^11*e^2 -
 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c^3*d^8*e^5 + 6*b^
3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*c^4*d^10*e^3 - 4*
b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^5*d^6*e^7)*x^3 +
6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4 - 4*b^4*c*d^8*e^
5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^2 + 6*b^3*c^2*d^1
0*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x), 1/105*(210*(A*c^4*d^8 - 4*A*b*c^
3*d^7*e + 6*A*b^2*c^2*d^6*e^2 - 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4*
d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^4
*e^8)*x^4 + 4*(A*c^4*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*
A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3 +
 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d^
7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*d
^3*e^5)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - 105*((B*b*c^3 - A*c^
4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3 - A*c^4)*d^7*
e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)*sqrt(c/(c*d
 - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d
 - b*e)))/(c*x + b)) + 2*(176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*
c^2 + 291*A*b*c^3)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4
 + 689*A*b^3*c)*d^5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2
```

```
*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^
2 + 60*A*b^2*c^2*d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c
^2 + 39*A*b*c^3)*d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 +
 58*A*b^4*d^3*e^5 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115
*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b
^3*c^2*d^11*e^2 - 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c
^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*
c^4*d^10*e^3 - 4*b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^
5*d^6*e^7)*x^3 + 6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4
 - 4*b^4*c*d^8*e^5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^
2 + 6*b^3*c^2*d^10*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x), -2/105*(105*((B
*b*c^3 - A*c^4)*d^5*e^4*x^4 + 4*(B*b*c^3 - A*c^4)*d^6*e^3*x^3 + 6*(B*b*c^3
- A*c^4)*d^7*e^2*x^2 + 4*(B*b*c^3 - A*c^4)*d^8*e*x + (B*b*c^3 - A*c^4)*d^9)
*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e)
)/(c*e*x + c*d)) - 105*(A*c^4*d^8 - 4*A*b*c^3*d^7*e + 6*A*b^2*c^2*d^6*e^2 -
 4*A*b^3*c*d^5*e^3 + A*b^4*d^4*e^4 + (A*c^4*d^4*e^4 - 4*A*b*c^3*d^3*e^5 + 6
*A*b^2*c^2*d^2*e^6 - 4*A*b^3*c*d*e^7 + A*b^4*e^8)*x^4 + 4*(A*c^4*d^5*e^3 -
4*A*b*c^3*d^4*e^4 + 6*A*b^2*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*
x^3 + 6*(A*c^4*d^6*e^2 - 4*A*b*c^3*d^5*e^3 + 6*A*b^2*c^2*d^4*e^4 - 4*A*b^3*
c*d^3*e^5 + A*b^4*d^2*e^6)*x^2 + 4*(A*c^4*d^7*e - 4*A*b*c^3*d^6*e^2 + 6*A*b
^2*c^2*d^5*e^3 - 4*A*b^3*c*d^4*e^4 + A*b^4*d^3*e^5)*x)*sqrt(-d)*arctan(sqrt
(e*x + d)*sqrt(-d)/d) - (176*B*b*c^3*d^8 + 176*A*b^4*d^4*e^4 - 2*(61*B*b^2*
c^2 + 291*A*b*c^3)*d^7*e + 66*(B*b^3*c + 15*A*b^2*c^2)*d^6*e^2 - (15*B*b^4
+ 689*A*b^3*c)*d^5*e^3 + 105*(B*b*c^3*d^5*e^3 - 4*A*b*c^3*d^4*e^4 + 6*A*b^2
*c^2*d^3*e^5 - 4*A*b^3*c*d^2*e^6 + A*b^4*d*e^7)*x^3 + 35*(10*B*b*c^3*d^6*e^
2 + 60*A*b^2*c^2*d^4*e^4 - 40*A*b^3*c*d^3*e^5 + 10*A*b^4*d^2*e^6 - (B*b^2*c
^2 + 39*A*b*c^3)*d^5*e^3)*x^2 + 7*(58*B*b*c^3*d^7*e - 232*A*b^3*c*d^4*e^4 +
 58*A*b^4*d^3*e^5 - 8*(2*B*b^2*c^2 + 27*A*b*c^3)*d^6*e^2 + 3*(B*b^3*c + 115
*A*b^2*c^2)*d^5*e^3)*x)*sqrt(e*x + d))/(b*c^4*d^13 - 4*b^2*c^3*d^12*e + 6*b
^3*c^2*d^11*e^2 - 4*b^4*c*d^10*e^3 + b^5*d^9*e^4 + (b*c^4*d^9*e^4 - 4*b^2*c
^3*d^8*e^5 + 6*b^3*c^2*d^7*e^6 - 4*b^4*c*d^6*e^7 + b^5*d^5*e^8)*x^4 + 4*(b*
c^4*d^10*e^3 - 4*b^2*c^3*d^9*e^4 + 6*b^3*c^2*d^8*e^5 - 4*b^4*c*d^7*e^6 + b^
5*d^6*e^7)*x^3 + 6*(b*c^4*d^11*e^2 - 4*b^2*c^3*d^10*e^3 + 6*b^3*c^2*d^9*e^4
 - 4*b^4*c*d^8*e^5 + b^5*d^7*e^6)*x^2 + 4*(b*c^4*d^12*e - 4*b^2*c^3*d^11*e^
2 + 6*b^3*c^2*d^10*e^3 - 4*b^4*c*d^9*e^4 + b^5*d^8*e^5)*x)]
```

giac [B] time = 0.28, size = 615, normalized size = 2.04

$$\frac{2\left(Bbc^4-Ac^5\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(bc^4d^4-4\,b^2c^3d^3e+6\,b^3c^2d^2e^2-4\,b^4cde^3+b^5e^4\right)\sqrt{-c^2d+bce}}+\frac{2\,(105\,(xe+d)^3Bc^3d^4+35\,(xe+d)^2Bc^3d^5+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="giac")
```

```
[Out] 2*(B*b*c^4 - A*c^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/((b*c^4*d^
4 - 4*b^2*c^3*d^3*e + 6*b^3*c^2*d^2*e^2 - 4*b^4*c*d*e^3 + b^5*e^4)*sqrt(-c^
2*d + b*c*e)) + 2/105*(105*(x*e + d)^3*B*c^3*d^4 + 35*(x*e + d)^2*B*c^3*d^5
 + 21*(x*e + d)*B*c^3*d^6 + 15*B*c^3*d^7 - 420*(x*e + d)^3*A*c^3*d^3*e - 35
*(x*e + d)^2*B*b*c^2*d^4*e - 105*(x*e + d)^2*A*c^3*d^4*e - 42*(x*e + d)*B*b
*c^2*d^5*e - 42*(x*e + d)*A*c^3*d^5*e - 45*B*b*c^2*d^6*e - 15*A*c^3*d^6*e +
 630*(x*e + d)^3*A*b*c^2*d^2*e^2 + 210*(x*e + d)^2*A*b*c^2*d^3*e^2 + 21*(x*
e + d)*B*b^2*c*d^4*e^2 + 105*(x*e + d)*A*b*c^2*d^4*e^2 + 45*B*b^2*c*d^5*e^2
 + 45*A*b*c^2*d^5*e^2 - 420*(x*e + d)^3*A*b^2*c*d*e^3 - 140*(x*e + d)^2*A*b
^2*c*d^2*e^3 - 84*(x*e + d)*A*b^2*c*d^3*e^3 - 15*B*b^3*d^4*e^3 - 45*A*b^2*c
*d^4*e^3 + 105*(x*e + d)^3*A*b^3*e^4 + 35*(x*e + d)^2*A*b^3*d*e^4 + 21*(x*e
 + d)*A*b^3*d^2*e^4 + 15*A*b^3*d^3*e^4)/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*c
^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(7/2)) + 2*A*arctan(s
qrt(x*e + d)/sqrt(-d))/(b*sqrt(-d)*d^4)
```

maple **[A]** time = 0.10, size = 489, normalized size = 1.62

$$-\frac{2A\,c^5\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)\,c}\;b}+\frac{2B\,c^4\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\sqrt{(be-cd)\,c}}+\frac{2A\,b^3e^4}{(be-cd)^4\sqrt{ex+d}\;d^4}-\frac{8A\,b^2c\,e^3}{(be-cd)^4\sqrt{ex+d}\;d^3}+\frac{12Ab\,c}{(be-cd)^4\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x)
```

```
[Out] -2/(b*e-c*d)^4*c^5/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*A+2/(b*e-c*d)^4*c^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B-2*A*arctanh((e*x+d)^(1/2)/d^(1/2))/b/d^(9/2)+2/7/(b*e-
c*d)/d/(e*x+d)^(7/2)*A*e-2/7/(b*e-c*d)/(e*x+d)^(7/2)*B+2/5/(b*e-c*d)^2/d^2/
(e*x+d)^(5/2)*A*b*e^2-4/5/(b*e-c*d)^2/d/(e*x+d)^(5/2)*A*c*e+2/5/(b*e-c*d)^2
/(e*x+d)^(5/2)*B*c+2/3/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A*b^2*e^3-2/(b*e-c*d)^
3/d^2/(e*x+d)^(3/2)*A*b*c*e^2+2/(b*e-c*d)^3/d/(e*x+d)^(3/2)*A*c^2*e-2/3/(b*
e-c*d)^3/(e*x+d)^(3/2)*B*c^2+2/(b*e-c*d)^4/d^4/(e*x+d)^(1/2)*A*b^3*e^4-8/(b
*e-c*d)^4/d^3/(e*x+d)^(1/2)*A*b^2*c*e^3+12/(b*e-c*d)^4/d^2/(e*x+d)^(1/2)*A*
b*c^2*e^2-8/(b*e-c*d)^4/d/(e*x+d)^(1/2)*A*c^3*e+2/(b*e-c*d)^4/(e*x+d)^(1/2)
*B*c^3
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(9/2)/(c*x^2+b*x),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad **[B]** time = 5.65, size = 11601, normalized size = 38.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)*(d + e*x)^(9/2)),x)
```

```
[Out] (A*atan((B^2*b^2*c^19*d^41*(d + e*x)^(1/2)*1i + A^2*b^21*d^20*e^21*(d + e*x
)^(1/2)*1i - A^2*b^20*c*d^21*e^20*(d + e*x)^(1/2)*21i - B^2*b^3*c^18*d^40*e
*(d + e*x)^(1/2)*12i - A*B*b*c^20*d^41*(d + e*x)^(1/2)*2i - A^2*b^2*c^19*d^
39*e^2*(d + e*x)^(1/2)*144i + A^2*b^3*c^18*d^38*e^3*(d + e*x)^(1/2)*1110i -
 A^2*b^4*c^17*d^37*e^4*(d + e*x)^(1/2)*5490i + A^2*b^5*c^16*d^36*e^5*(d + e
*x)^(1/2)*19557i - A^2*b^6*c^15*d^35*e^6*(d + e*x)^(1/2)*53340i + A^2*b^7*c
^14*d^34*e^7*(d + e*x)^(1/2)*115488i - A^2*b^8*c^13*d^33*e^8*(d + e*x)^(1/2
)*202995i + A^2*b^9*c^12*d^32*e^9*(d + e*x)^(1/2)*293710i - A^2*b^10*c^11*d
^31*e^10*(d + e*x)^(1/2)*352650i + A^2*b^11*c^10*d^30*e^11*(d + e*x)^(1/2)*
352704i - A^2*b^12*c^9*d^29*e^12*(d + e*x)^(1/2)*293929i + A^2*b^13*c^8*d^2
8*e^13*(d + e*x)^(1/2)*203490i - A^2*b^14*c^7*d^27*e^14*(d + e*x)^(1/2)*116
280i + A^2*b^15*c^6*d^26*e^15*(d + e*x)^(1/2)*54264i - A^2*b^16*c^5*d^25*e^
16*(d + e*x)^(1/2)*20349i + A^2*b^17*c^4*d^24*e^17*(d + e*x)^(1/2)*5985i -
A^2*b^18*c^3*d^23*e^18*(d + e*x)^(1/2)*1330i + A^2*b^19*c^2*d^22*e^19*(d +
e*x)^(1/2)*210i + B^2*b^4*c^17*d^39*e^2*(d + e*x)^(1/2)*66i - B^2*b^5*c^16*
d^38*e^3*(d + e*x)^(1/2)*220i + B^2*b^6*c^15*d^37*e^4*(d + e*x)^(1/2)*495i
- B^2*b^7*c^14*d^36*e^5*(d + e*x)^(1/2)*792i + B^2*b^8*c^13*d^35*e^6*(d + e
*x)^(1/2)*924i - B^2*b^9*c^12*d^34*e^7*(d + e*x)^(1/2)*792i + B^2*b^10*c^11
```

```
*d^33*e^8*(d + e*x)^(1/2)*495i - B^2*b^11*c^10*d^32*e^9*(d + e*x)^(1/2)*220
i + B^2*b^12*c^9*d^31*e^10*(d + e*x)^(1/2)*66i - B^2*b^13*c^8*d^30*e^11*(d
+ e*x)^(1/2)*12i + B^2*b^14*c^7*d^29*e^12*(d + e*x)^(1/2)*1i + A^2*b*c^20*d
^40*e*(d + e*x)^(1/2)*9i - A*B*b^3*c^18*d^39*e^2*(d + e*x)^(1/2)*132i + A*B
*b^4*c^17*d^38*e^3*(d + e*x)^(1/2)*440i - A*B*b^5*c^16*d^37*e^4*(d + e*x)^(
1/2)*990i + A*B*b^6*c^15*d^36*e^5*(d + e*x)^(1/2)*1584i - A*B*b^7*c^14*d^35
*e^6*(d + e*x)^(1/2)*1848i + A*B*b^8*c^13*d^34*e^7*(d + e*x)^(1/2)*1584i -
A*B*b^9*c^12*d^33*e^8*(d + e*x)^(1/2)*990i + A*B*b^10*c^11*d^32*e^9*(d + e*
x)^(1/2)*440i - A*B*b^11*c^10*d^31*e^10*(d + e*x)^(1/2)*132i + A*B*b^12*c^9
*d^30*e^11*(d + e*x)^(1/2)*24i - A*B*b^13*c^8*d^29*e^12*(d + e*x)^(1/2)*2i
+ A*B*b^2*c^19*d^40*e*(d + e*x)^(1/2)*24i)/(d^9*(d^9)^(1/2)*(d^9*(d^9*(d^9*
(9*A^2*b*c^20*e + B^2*b^2*c^19*d - 12*B^2*b^3*c^18*e - 2*A*B*b*c^20*d + 24*
A*B*b^2*c^19*e) - 352650*A^2*b^10*c^11*e^10 + 66*B^2*b^12*c^9*e^10 - 144*A^
2*b^2*c^19*d^8*e^2 + 1110*A^2*b^3*c^18*d^7*e^3 - 5490*A^2*b^4*c^17*d^6*e^4
+ 19557*A^2*b^5*c^16*d^5*e^5 - 53340*A^2*b^6*c^15*d^4*e^6 + 115488*A^2*b^7*
c^14*d^3*e^7 - 202995*A^2*b^8*c^13*d^2*e^8 + 66*B^2*b^4*c^17*d^8*e^2 - 220*
B^2*b^5*c^16*d^7*e^3 + 495*B^2*b^6*c^15*d^6*e^4 - 792*B^2*b^7*c^14*d^5*e^5
+ 924*B^2*b^8*c^13*d^4*e^6 - 792*B^2*b^9*c^12*d^3*e^7 + 495*B^2*b^10*c^11*d
^2*e^8 - 132*A*B*b^11*c^10*e^10 + 293710*A^2*b^9*c^12*d*e^9 - 220*B^2*b^11*
c^10*d*e^9 + 440*A*B*b^10*c^11*d*e^9 - 132*A*B*b^3*c^18*d^8*e^2 + 440*A*B*b
^4*c^17*d^7*e^3 - 990*A*B*b^5*c^16*d^6*e^4 + 1584*A*B*b^6*c^15*d^5*e^5 - 18
48*A*B*b^7*c^14*d^4*e^6 + 1584*A*B*b^8*c^13*d^3*e^7 - 990*A*B*b^9*c^12*d^2*
e^8) + 210*A^2*b^19*c^2*e^19 + 352704*A^2*b^11*c^10*d^8*e^11 - 293929*A^2*b
^12*c^9*d^7*e^12 + 203490*A^2*b^13*c^8*d^6*e^13 - 116280*A^2*b^14*c^7*d^5*e
^14 + 54264*A^2*b^15*c^6*d^4*e^15 - 20349*A^2*b^16*c^5*d^3*e^16 + 5985*A^2*
b^17*c^4*d^2*e^17 - 12*B^2*b^13*c^8*d^8*e^11 + B^2*b^14*c^7*d^7*e^12 - 1330
*A^2*b^18*c^3*d*e^18 + 24*A*B*b^12*c^9*d^8*e^11 - 2*A*B*b^13*c^8*d^7*e^12)
+ A^2*b^21*d^7*e^21 - 21*A^2*b^20*c*d^8*e^20)))*2i)/(b*(d^9)^(1/2)) - ((2*(
A*e - B*d))/(7*(c*d^2 - b*d*e)) - (2*(d + e*x)^3*(A*b^3*e^4 + B*c^3*d^4 - 4
*A*c^3*d^3*e + 6*A*b*c^2*d^2*e^2 - 4*A*b^2*c*d*e^3))/(c*d^2 - b*d*e)^4 + (2
*(d + e*x)^2*(A*b^2*e^3 - B*c^2*d^3 + 3*A*c^2*d^2*e - 3*A*b*c*d*e^2))/(3*(c
*d^2 - b*d*e)^3) - (2*(d + e*x)*(A*b*e^2 + B*c*d^2 - 2*A*c*d*e))/(5*(c*d^2
- b*d*e)^2))/(d + e*x)^(7/2) + (atan((((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*
b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^4 - 10
880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*b^5*c^
18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25*e^9 +
 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 1478576*
A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A^2*b^1
2*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c^9*d^1
8*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18 - 912
0*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19*c^4*d
^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^2*b^3*
c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^5 + 39
60*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*c^15*d
^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 - 1760*
B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c^10*d^
21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B*b*c^2
2*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 + 3520*
A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^17*d^2
7*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7920*A*
B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c^12*d^
22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) - ((-c^
7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)
*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200*b^4*c
^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 286824*b
^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e^9 + 2
635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^12*c^1
3*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^14 - 2
248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17*c^8*d
^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 12160*b^2
0*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 - 8*b^23
*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e
^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^
7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) - 40*A*b^2*c^22*d^36*e^
3 + 720*A*b^3*c^21*d^35*e^4 - 6160*A*b^4*c^20*d^34*e^5 + 33320*A*b^5*c^19*d
^33*e^6 - 127848*A*b^6*c^18*d^32*e^7 + 370048*A*b^7*c^17*d^31*e^8 - 838720*
A*b^8*c^16*d^30*e^9 + 1524960*A*b^9*c^15*d^29*e^10 - 2259920*A*b^10*c^14*d^
28*e^11 + 2757664*A*b^11*c^13*d^27*e^12 - 2786784*A*b^12*c^12*d^26*e^13 + 2
336880*A*b^13*c^11*d^25*e^14 - 1623440*A*b^14*c^10*d^24*e^15 + 929280*A*b^1
5*c^9*d^23*e^16 - 433984*A*b^16*c^8*d^22*e^17 + 162784*A*b^17*c^7*d^21*e^18
 - 47880*A*b^18*c^6*d^20*e^19 + 10640*A*b^19*c^5*d^19*e^20 - 1680*A*b^20*c^
4*d^18*e^21 + 168*A*b^21*c^3*d^17*e^22 - 8*A*b^22*c^2*d^16*e^23 + 8*B*b^2*c
^22*d^37*e^2 - 128*B*b^3*c^21*d^36*e^3 + 960*B*b^4*c^20*d^35*e^4 - 4480*B*b
^5*c^19*d^34*e^5 + 14560*B*b^6*c^18*d^33*e^6 - 34944*B*b^7*c^17*d^32*e^7 +
64064*B*b^8*c^16*d^31*e^8 - 91520*B*b^9*c^15*d^30*e^9 + 102960*B*b^10*c^14*
d^29*e^10 - 91520*B*b^11*c^13*d^28*e^11 + 64064*B*b^12*c^12*d^27*e^12 - 349
44*B*b^13*c^11*d^26*e^13 + 14560*B*b^14*c^10*d^25*e^14 - 4480*B*b^15*c^9*d^
24*e^15 + 960*B*b^16*c^8*d^23*e^16 - 128*B*b^17*c^7*d^22*e^17 + 8*B*b^18*c^
6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2
+ 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c
^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8))*1i)/(b^10*e^9 - b*c^9*d^9
 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*
d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9
*b^9*c*d*e^8) + ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(1
6*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^4 - 10880*A^2*b^3*c^20*d^29*
e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*b^5*c^18*d^27*e^7 + 317472*A
^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25*e^9 + 1011720*A^2*b^8*c^15*
d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 1478576*A^2*b^10*c^13*d^22*e^1
2 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A^2*b^12*c^11*d^20*e^14 - 620
160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c^9*d^18*e^16 - 124032*A^2*b^
15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18 - 9120*A^2*b^17*c^6*d^15*e^
19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19*c^4*d^13*e^21 + 8*A^2*b^20*
c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^2*b^3*c^20*d^31*e^3 + 528*B^
2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^5 + 3960*B^2*b^6*c^17*d^28*e
^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*c^15*d^26*e^8 - 6336*B^2*b^9
*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 - 1760*B^2*b^11*c^12*d^23*e^1
1 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c^10*d^21*e^13 + 8*B^2*b^14*c
^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B*b*c^22*d^32*e^2 + 192*A*B*b
^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 + 3520*A*B*b^4*c^19*d^29*e^5
- 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^17*d^27*e^7 - 14784*A*B*b^7*
c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7920*A*B*b^9*c^14*d^24*e^10 +
 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c^12*d^22*e^12 + 192*A*B*b^12
*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) - ((-c^7*(b*e - c*d)^9)^(1/2)
*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b
^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200*b^4*c^21*d^39*e^4 - 19760*b
^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 286824*b^7*c^18*d^36*e^7 + 744
192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e^9 + 2635680*b^10*c^15*d^33*
e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^12*c^13*d^31*e^12 - 4165408*
b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^14 - 2248080*b^15*c^10*d^28*
e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17*c^8*d^26*e^17 + 201552*b^18
*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 12160*b^20*c^5*d^23*e^20 - 1840
*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 - 8*b^23*c^2*d^20*e^23))/(b^10
*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^
3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8
*c^2*d^2*e^7 - 9*b^9*c*d*e^8) + 40*A*b^2*c^22*d^36*e^3 - 720*A*b^3*c^21*d^3
5*e^4 + 6160*A*b^4*c^20*d^34*e^5 - 33320*A*b^5*c^19*d^33*e^6 + 127848*A*b^6
*c^18*d^32*e^7 - 370048*A*b^7*c^17*d^31*e^8 + 838720*A*b^8*c^16*d^30*e^9 -
1524960*A*b^9*c^15*d^29*e^10 + 2259920*A*b^10*c^14*d^28*e^11 - 2757664*A*b^
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11*c^13*d^27*e^12 + 2786784*A*b^12*c^12*d^26*e^13 - 2336880*A*b^13*c^11*d^2
5*e^14 + 1623440*A*b^14*c^10*d^24*e^15 - 929280*A*b^15*c^9*d^23*e^16 + 4339
84*A*b^16*c^8*d^22*e^17 - 162784*A*b^17*c^7*d^21*e^18 + 47880*A*b^18*c^6*d^
20*e^19 - 10640*A*b^19*c^5*d^19*e^20 + 1680*A*b^20*c^4*d^18*e^21 - 168*A*b^
21*c^3*d^17*e^22 + 8*A*b^22*c^2*d^16*e^23 - 8*B*b^2*c^22*d^37*e^2 + 128*B*b
^3*c^21*d^36*e^3 - 960*B*b^4*c^20*d^35*e^4 + 4480*B*b^5*c^19*d^34*e^5 - 145
60*B*b^6*c^18*d^33*e^6 + 34944*B*b^7*c^17*d^32*e^7 - 64064*B*b^8*c^16*d^31*
e^8 + 91520*B*b^9*c^15*d^30*e^9 - 102960*B*b^10*c^14*d^29*e^10 + 91520*B*b^
11*c^13*d^28*e^11 - 64064*B*b^12*c^12*d^27*e^12 + 34944*B*b^13*c^11*d^26*e^
13 - 14560*B*b^14*c^10*d^25*e^14 + 4480*B*b^15*c^9*d^24*e^15 - 960*B*b^16*c
^8*d^23*e^16 + 128*B*b^17*c^7*d^22*e^17 - 8*B*b^18*c^6*d^21*e^18))/(b^10*e^
9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 -
 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^
2*d^2*e^7 - 9*b^9*c*d*e^8))*1i)/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 3
6*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*
d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8))/(((-c^7
*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 +
2048*A^2*b^2*c^21*d^30*e^4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^
19*d^28*e^6 - 130368*A^2*b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 -
 626496*A^2*b^7*c^16*d^25*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^
2*b^9*c^14*d^23*e^11 + 1478576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c
^12*d^21*e^13 + 1007768*A^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19
*e^15 + 310080*A^2*b^14*c^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 387
60*A^2*b^16*c^7*d^16*e^18 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5
*d^14*e^20 - 160*A^2*b^19*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*
b^2*c^21*d^32*e^2 - 96*B^2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 -
1760*B^2*b^5*c^18*d^29*e^5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16
*d^27*e^7 + 7392*B^2*b^8*c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*
B^2*b^10*c^13*d^24*e^10 - 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*
d^22*e^12 - 96*B^2*b^13*c^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2
*b*c^22*d^31*e^3 - 16*A*B*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 105
6*A*B*b^3*c^20*d^30*e^4 + 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^
28*e^6 + 12672*A*B*b^6*c^17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*
A*B*b^8*c^15*d^25*e^9 - 7920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^
23*e^11 - 1056*A*B*b^11*c^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A
*B*b^13*c^10*d^20*e^14) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(
b*e - c*d)^9)^(1/2)*(A*c - B*b)*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328
*b^3*c^22*d^40*e^3 + 3200*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 866
40*b^6*c^19*d^37*e^6 - 286824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8
- 1550400*b^9*c^16*d^34*e^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^
14*d^32*e^11 + 4299776*b^12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 +
3359200*b^14*c^11*d^29*e^14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^
9*d^27*e^16 - 558144*b^17*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000
*b^19*c^6*d^24*e^19 + 12160*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 +
176*b^22*c^3*d^21*e^22 - 8*b^23*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b
^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^
4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c
*d*e^8) - 40*A*b^2*c^22*d^36*e^3 + 720*A*b^3*c^21*d^35*e^4 - 6160*A*b^4*c^2
0*d^34*e^5 + 33320*A*b^5*c^19*d^33*e^6 - 127848*A*b^6*c^18*d^32*e^7 + 37004
8*A*b^7*c^17*d^31*e^8 - 838720*A*b^8*c^16*d^30*e^9 + 1524960*A*b^9*c^15*d^2
9*e^10 - 2259920*A*b^10*c^14*d^28*e^11 + 2757664*A*b^11*c^13*d^27*e^12 - 27
86784*A*b^12*c^12*d^26*e^13 + 2336880*A*b^13*c^11*d^25*e^14 - 1623440*A*b^1
4*c^10*d^24*e^15 + 929280*A*b^15*c^9*d^23*e^16 - 433984*A*b^16*c^8*d^22*e^1
7 + 162784*A*b^17*c^7*d^21*e^18 - 47880*A*b^18*c^6*d^20*e^19 + 10640*A*b^19
*c^5*d^19*e^20 - 1680*A*b^20*c^4*d^18*e^21 + 168*A*b^21*c^3*d^17*e^22 - 8*A
*b^22*c^2*d^16*e^23 + 8*B*b^2*c^22*d^37*e^2 - 128*B*b^3*c^21*d^36*e^3 + 960
*B*b^4*c^20*d^35*e^4 - 4480*B*b^5*c^19*d^34*e^5 + 14560*B*b^6*c^18*d^33*e^6
 - 34944*B*b^7*c^17*d^32*e^7 + 64064*B*b^8*c^16*d^31*e^8 - 91520*B*b^9*c^15
*d^30*e^9 + 102960*B*b^10*c^14*d^29*e^10 - 91520*B*b^11*c^13*d^28*e^11 + 64
```

```
064*B*b^12*c^12*d^27*e^12 - 34944*B*b^13*c^11*d^26*e^13 + 14560*B*b^14*c^10
*d^25*e^14 - 4480*B*b^15*c^9*d^24*e^15 + 960*B*b^16*c^8*d^23*e^16 - 128*B*b
^17*c^7*d^22*e^17 + 8*B*b^18*c^6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*
c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 +
 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*
e^8)))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^
4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*
e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) - ((-c^7*(b*e - c*d)^9)^(1/2)*(A*
c - B*b)*((d + e*x)^(1/2)*(16*A^2*c^23*d^32*e^2 + 2048*A^2*b^2*c^21*d^30*e^
4 - 10880*A^2*b^3*c^20*d^29*e^5 + 42720*A^2*b^4*c^19*d^28*e^6 - 130368*A^2*
b^5*c^18*d^27*e^7 + 317472*A^2*b^6*c^17*d^26*e^8 - 626496*A^2*b^7*c^16*d^25
*e^9 + 1011720*A^2*b^8*c^15*d^24*e^10 - 1345440*A^2*b^9*c^14*d^23*e^11 + 14
78576*A^2*b^10*c^13*d^22*e^12 - 1343776*A^2*b^11*c^12*d^21*e^13 + 1007768*A
^2*b^12*c^11*d^20*e^14 - 620160*A^2*b^13*c^10*d^19*e^15 + 310080*A^2*b^14*c
^9*d^18*e^16 - 124032*A^2*b^15*c^8*d^17*e^17 + 38760*A^2*b^16*c^7*d^16*e^18
 - 9120*A^2*b^17*c^6*d^15*e^19 + 1520*A^2*b^18*c^5*d^14*e^20 - 160*A^2*b^19
*c^4*d^13*e^21 + 8*A^2*b^20*c^3*d^12*e^22 + 8*B^2*b^2*c^21*d^32*e^2 - 96*B^
2*b^3*c^20*d^31*e^3 + 528*B^2*b^4*c^19*d^30*e^4 - 1760*B^2*b^5*c^18*d^29*e^
5 + 3960*B^2*b^6*c^17*d^28*e^6 - 6336*B^2*b^7*c^16*d^27*e^7 + 7392*B^2*b^8*
c^15*d^26*e^8 - 6336*B^2*b^9*c^14*d^25*e^9 + 3960*B^2*b^10*c^13*d^24*e^10 -
 1760*B^2*b^11*c^12*d^23*e^11 + 528*B^2*b^12*c^11*d^22*e^12 - 96*B^2*b^13*c
^10*d^21*e^13 + 8*B^2*b^14*c^9*d^20*e^14 - 256*A^2*b*c^22*d^31*e^3 - 16*A*B
*b*c^22*d^32*e^2 + 192*A*B*b^2*c^21*d^31*e^3 - 1056*A*B*b^3*c^20*d^30*e^4 +
 3520*A*B*b^4*c^19*d^29*e^5 - 7920*A*B*b^5*c^18*d^28*e^6 + 12672*A*B*b^6*c^
17*d^27*e^7 - 14784*A*B*b^7*c^16*d^26*e^8 + 12672*A*B*b^8*c^15*d^25*e^9 - 7
920*A*B*b^9*c^14*d^24*e^10 + 3520*A*B*b^10*c^13*d^23*e^11 - 1056*A*B*b^11*c
^12*d^22*e^12 + 192*A*B*b^12*c^11*d^21*e^13 - 16*A*B*b^13*c^10*d^20*e^14) -
 ((-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*(((-c^7*(b*e - c*d)^9)^(1/2)*(A*c
 - B*b)*(d + e*x)^(1/2)*(16*b^2*c^23*d^41*e^2 - 328*b^3*c^22*d^40*e^3 + 3200
*b^4*c^21*d^39*e^4 - 19760*b^5*c^20*d^38*e^5 + 86640*b^6*c^19*d^37*e^6 - 28
6824*b^7*c^18*d^36*e^7 + 744192*b^8*c^17*d^35*e^8 - 1550400*b^9*c^16*d^34*e
^9 + 2635680*b^10*c^15*d^33*e^10 - 3695120*b^11*c^14*d^32*e^11 + 4299776*b^
12*c^13*d^31*e^12 - 4165408*b^13*c^12*d^30*e^13 + 3359200*b^14*c^11*d^29*e^
14 - 2248080*b^15*c^10*d^28*e^15 + 1240320*b^16*c^9*d^27*e^16 - 558144*b^17
*c^8*d^26*e^17 + 201552*b^18*c^7*d^25*e^18 - 57000*b^19*c^6*d^24*e^19 + 121
60*b^20*c^5*d^23*e^20 - 1840*b^21*c^4*d^22*e^21 + 176*b^22*c^3*d^21*e^22 -
8*b^23*c^2*d^20*e^23))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7
*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 -
 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8) + 40*A*b^2*c^22*d
^36*e^3 - 720*A*b^3*c^21*d^35*e^4 + 6160*A*b^4*c^20*d^34*e^5 - 33320*A*b^5*
c^19*d^33*e^6 + 127848*A*b^6*c^18*d^32*e^7 - 370048*A*b^7*c^17*d^31*e^8 + 8
38720*A*b^8*c^16*d^30*e^9 - 1524960*A*b^9*c^15*d^29*e^10 + 2259920*A*b^10*c
^14*d^28*e^11 - 2757664*A*b^11*c^13*d^27*e^12 + 2786784*A*b^12*c^12*d^26*e^
13 - 2336880*A*b^13*c^11*d^25*e^14 + 1623440*A*b^14*c^10*d^24*e^15 - 929280
*A*b^15*c^9*d^23*e^16 + 433984*A*b^16*c^8*d^22*e^17 - 162784*A*b^17*c^7*d^2
1*e^18 + 47880*A*b^18*c^6*d^20*e^19 - 10640*A*b^19*c^5*d^19*e^20 + 1680*A*b
^20*c^4*d^18*e^21 - 168*A*b^21*c^3*d^17*e^22 + 8*A*b^22*c^2*d^16*e^23 - 8*B
*b^2*c^22*d^37*e^2 + 128*B*b^3*c^21*d^36*e^3 - 960*B*b^4*c^20*d^35*e^4 + 44
80*B*b^5*c^19*d^34*e^5 - 14560*B*b^6*c^18*d^33*e^6 + 34944*B*b^7*c^17*d^32*
e^7 - 64064*B*b^8*c^16*d^31*e^8 + 91520*B*b^9*c^15*d^30*e^9 - 102960*B*b^10
*c^14*d^29*e^10 + 91520*B*b^11*c^13*d^28*e^11 - 64064*B*b^12*c^12*d^27*e^12
 + 34944*B*b^13*c^11*d^26*e^13 - 14560*B*b^14*c^10*d^25*e^14 + 4480*B*b^15*
c^9*d^24*e^15 - 960*B*b^16*c^8*d^23*e^16 + 128*B*b^17*c^7*d^22*e^17 - 8*B*b
^18*c^6*d^21*e^18))/(b^10*e^9 - b*c^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^
7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84
*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7 - 9*b^9*c*d*e^8)))/(b^10*e^9 - b*c^9*
d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^5*c
^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e^7
 - 9*b^9*c*d*e^8) + 64*A^3*c^22*d^27*e^3 + 5440*A^3*b^2*c^20*d^25*e^5 - 2120
```

```
0*A^3*b^3*c^19*d^24*e^6 + 57216*A^3*b^4*c^18*d^23*e^7 - 113344*A^3*b^5*c^17
*d^22*e^8 + 170368*A^3*b^6*c^16*d^21*e^9 - 198000*A^3*b^7*c^15*d^20*e^10 +
179520*A^3*b^8*c^14*d^19*e^11 - 127072*A^3*b^9*c^13*d^18*e^12 + 69696*A^3*b
^10*c^12*d^17*e^13 - 29104*A^3*b^11*c^11*d^16*e^14 + 8960*A^3*b^12*c^10*d^1
5*e^15 - 1920*A^3*b^13*c^9*d^14*e^16 + 256*A^3*b^14*c^8*d^13*e^17 - 16*A^3*
b^15*c^7*d^12*e^18 - 16*A^2*B*c^22*d^28*e^2 - 864*A^3*b*c^21*d^26*e^4 - 192
*A*B^2*b^2*c^20*d^27*e^3 + 1056*A*B^2*b^3*c^19*d^26*e^4 - 3520*A*B^2*b^4*c^
18*d^25*e^5 + 7920*A*B^2*b^5*c^17*d^24*e^6 - 12672*A*B^2*b^6*c^16*d^23*e^7
+ 14784*A*B^2*b^7*c^15*d^22*e^8 - 12672*A*B^2*b^8*c^14*d^21*e^9 + 7920*A*B^
2*b^9*c^13*d^20*e^10 - 3520*A*B^2*b^10*c^12*d^19*e^11 + 1056*A*B^2*b^11*c^1
1*d^18*e^12 - 192*A*B^2*b^12*c^10*d^17*e^13 + 16*A*B^2*b^13*c^9*d^16*e^14 -
 192*A^2*B*b^2*c^20*d^26*e^4 - 1920*A^2*B*b^3*c^19*d^25*e^5 + 13280*A^2*B*b
^4*c^18*d^24*e^6 - 44544*A^2*B*b^5*c^17*d^23*e^7 + 98560*A^2*B*b^6*c^16*d^2
2*e^8 - 157696*A^2*B*b^7*c^15*d^21*e^9 + 190080*A^2*B*b^8*c^14*d^20*e^10 -
176000*A^2*B*b^9*c^13*d^19*e^11 + 126016*A^2*B*b^10*c^12*d^18*e^12 - 69504*
A^2*B*b^11*c^11*d^17*e^13 + 29088*A^2*B*b^12*c^10*d^16*e^14 - 8960*A^2*B*b^
13*c^9*d^15*e^15 + 1920*A^2*B*b^14*c^8*d^14*e^16 - 256*A^2*B*b^15*c^7*d^13*
e^17 + 16*A^2*B*b^16*c^6*d^12*e^18 + 16*A*B^2*b*c^21*d^28*e^2 + 128*A^2*B*b
*c^21*d^27*e^3))*(-c^7*(b*e - c*d)^9)^(1/2)*(A*c - B*b)*2i)/(b^10*e^9 - b*c
^9*d^9 + 9*b^2*c^8*d^8*e - 36*b^3*c^7*d^7*e^2 + 84*b^4*c^6*d^6*e^3 - 126*b^
5*c^5*d^5*e^4 + 126*b^6*c^4*d^4*e^5 - 84*b^7*c^3*d^3*e^6 + 36*b^8*c^2*d^2*e
^7 - 9*b^9*c*d*e^8)
```

sympy [**A**]   time = 92.51, size = 311, normalized size = 1.03

$$\frac{2A\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{-d}}\right)}{bd^4\sqrt{-d}}-\frac{2\left(-Ae+Bd\right)}{7d\left(d+ex\right)^{\frac{7}{2}}\left(be-cd\right)}+\frac{2\left(Abe^2-2Acde+Bcd^2\right)}{5d^2\left(d+ex\right)^{\frac{5}{2}}\left(be-cd\right)^2}+\frac{2\left(Ab^2e^3-3Abcde^2+3Ac^2d^2e-Bc^2d^3\right)}{3d^3\left(d+ex\right)^{\frac{3}{2}}\left(be-cd\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(9/2)/(c*x**2+b*x),x)
```

```
[Out] 2*A*atan(sqrt(d + e*x)/sqrt(-d))/(b*d**4*sqrt(-d)) - 2*(-A*e + B*d)/(7*d*(d
 + e*x)**(7/2)*(b*e - c*d)) + 2*(A*b*e**2 - 2*A*c*d*e + B*c*d**2)/(5*d**2*(
d + e*x)**(5/2)*(b*e - c*d)**2) + 2*(A*b**2*e**3 - 3*A*b*c*d*e**2 + 3*A*c**
2*d**2*e - B*c**2*d**3)/(3*d**3*(d + e*x)**(3/2)*(b*e - c*d)**3) + 2*(A*b**
3*e**4 - 4*A*b**2*c*d*e**3 + 6*A*b*c**2*d**2*e**2 - 4*A*c**3*d**3*e + B*c**
3*d**4)/(d**4*sqrt(d + e*x)*(b*e - c*d)**4) + 2*c**3*(-A*c + B*b)*atan(sqrt
(d + e*x)/sqrt((b*e - c*d)/c))/(b*sqrt((b*e - c*d)/c)*(b*e - c*d)**4)
```

3.1238 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=386

$$-\frac{d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(9Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+ex)}{}$$

```
[Out] 1/3*e*(6*A*c^3*d^2-7*b^3*B*e^2-3*b*c^2*d*(2*A*e+B*d)+b^2*c*e*(5*A*e+12*B*d)
)*(e*x+d)^(3/2)/b^2/c^3+1/5*e*(10*A*c^2*d+7*b^2*B*e-5*b*c*(A*e+B*d))*(e*x+d
)^(5/2)/b^2/c^2-(e*x+d)^(7/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)
/b^2/c/(c*x^2+b*x)-d^(7/2)*(9*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/
d^(1/2))/b^3-(-b*e+c*d)^(7/2)*(4*A*c^2*d-7*b^2*B*e-b*c*(-5*A*e+2*B*d))*arct
anh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b^3/c^(9/2)+e*(2*A*c^4*d^3+7*b^
4*B*e^3-b*c^3*d^2*(3*A*e+B*d)-b^3*c*e^2*(5*A*e+19*B*d)+b^2*c^2*d*e*(11*A*e+
15*B*d))*(e*x+d)^(1/2)/b^2/c^4
```

Rubi [A] time = 1.19, antiderivative size = 386, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 824, 826, 1166, 208}

$$\frac{e(d+ex)^{3/2}\left(b^2ce(5Ae+12Bd)-3bc^2d(2Ae+Bd)+6Ac^3d^2-7b^3Be^2\right)}{3b^2c^3}+\frac{e\sqrt{d+ex}\,\left(b^2c^2de(11Ae+15Bd)-b^3ce^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^4*d^3 + 7*b^4*B*e^3 - b*c^3*d^2*(B*d + 3*A*e) - b^3*c*e^2*(19*B*d
 + 5*A*e) + b^2*c^2*d*e*(15*B*d + 11*A*e))*Sqrt[d + e*x])/(b^2*c^4) + (e*(6
*A*c^3*d^2 - 7*b^3*B*e^2 - 3*b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(12*B*d + 5*A*
e))*(d + e*x)^(3/2))/(3*b^2*c^3) + (e*(10*A*c^2*d + 7*b^2*B*e - 5*b*c*(B*d
+ A*e))*(d + e*x)^(5/2))/(5*b^2*c^2) - ((d + e*x)^(7/2)*(A*b*c*d + (2*A*c^2
*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*(b*x + c*x^2)) - (d^(7/2)*(2*b*B
*d - 4*A*c*d + 9*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b^3 - ((c*d - b*e)^
(7/2)*(4*A*c^2*d - 7*b^2*B*e - b*c*(2*B*d - 5*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d
 + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \frac{\int \frac{(d+ex)^{5/2}\left(\frac{1}{2}cd(2bBd-4Acd-}{}}{}$$

$$= \frac{e\left(10Ac^2d+7b^2Be-5bc(Bd+Ae)\right)(d+ex)^{5/2}}{5b^2c^2} - \frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b\right.\right.}{b^2c\left(bx+cx\right.}$$

$$= \frac{e\left(6Ac^3d^2-7b^3Be^2-3bc^2d(Bd+2Ae)+b^2ce(12Bd+5Ae)\right)(d+ex)^{3/2}}{3b^2c^3} + \frac{e\left(10A\right.}{}$$

$$= \frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11\right.}{b^2c^4}$$

$$= \frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11\right.}{b^2c^4}$$

$$= \frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11\right.}{b^2c^4}$$

$$= \frac{e\left(2Ac^4d^3+7b^4Be^3-bc^3d^2(Bd+3Ae)-b^3ce^2(19Bd+5Ae)+b^2c^2de(15Bd+11\right.}{b^2c^4}$$

Mathematica [A] time = 2.36, size = 376, normalized size = 0.97

$$-\frac{-\frac{315\left(\frac{2}{315}\sqrt{d+ex}\left(563d^4+506d^3ex+408d^2e^2x^2+185de^3x^3+35e^4x^4\right)-2d^{9/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)(9Abe-4Acd+2bBd)-\frac{2d\left(bc(2Bd-5Ae)-4Ac^2d+7b^2Be\right)\Big(3(cd-be)}{}}{630b^2}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(11/2))/(b*(-(c*d) + b*e)*(b + c*
x)) + (A*(d + e*x)^(11/2))/(x*(b + c*x)) - (315*(2*b*B*d - 4*A*c*d + 9*A*b*
e)*((2*Sqrt[d + e*x]*(563*d^4 + 506*d^3*e*x + 408*d^2*e^2*x^2 + 185*d*e^3*x
^3 + 35*e^4*x^4))/315 - 2*d^(9/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - (2*d*(-
4*A*c^2*d + 7*b^2*B*e + b*c*(2*B*d - 5*A*e))*(35*c^(9/2)*(d + e*x)^(9/2) +
3*(c*d - b*e)*(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e
*x)^(5/2) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) -
3*(c*d - b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))/(
c^(9/2)*(c*d - b*e)))/(630*b^2))/(b*d))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.31, size = 846, normalized size = 2.19

$$\frac{\left(2\,Bbd^5-4\,Acd^5+9\,Abd^4e\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}}-\frac{\Big(2\,Bbc^5d^5-4\,Ac^6d^5-Bb^2c^4d^4e+11\,Abc^5d^4e-16\,Bb^3c^3d^3e^2-4\,}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^5 - 4*A*c*d^5 + 9*A*b*d^4*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*s
qrt(-d)) - (2*B*b*c^5*d^5 - 4*A*c^6*d^5 - B*b^2*c^4*d^4*e + 11*A*b*c^5*d^4*
e - 16*B*b^3*c^3*d^3*e^2 - 4*A*b^2*c^4*d^3*e^2 + 34*B*b^4*c^2*d^2*e^3 - 14*
A*b^3*c^3*d^2*e^3 - 26*B*b^5*c*d*e^4 + 16*A*b^4*c^2*d*e^4 + 7*B*b^6*e^5 - 5
*A*b^5*c*e^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b
*c*e)*b^3*c^4) + ((x*e + d)^(3/2)*B*b*c^4*d^4*e - 2*(x*e + d)^(3/2)*A*c^5*d
^4*e - sqrt(x*e + d)*B*b*c^4*d^5*e + 2*sqrt(x*e + d)*A*c^5*d^5*e - 4*(x*e +
 d)^(3/2)*B*b^2*c^3*d^3*e^2 + 4*(x*e + d)^(3/2)*A*b*c^4*d^3*e^2 + 4*sqrt(x*
e + d)*B*b^2*c^3*d^4*e^2 - 5*sqrt(x*e + d)*A*b*c^4*d^4*e^2 + 6*(x*e + d)^(3
/2)*B*b^3*c^2*d^2*e^3 - 6*(x*e + d)^(3/2)*A*b^2*c^3*d^2*e^3 - 6*sqrt(x*e +
d)*B*b^3*c^2*d^3*e^3 + 6*sqrt(x*e + d)*A*b^2*c^3*d^3*e^3 - 4*(x*e + d)^(3/2
)*B*b^4*c*d*e^4 + 4*(x*e + d)^(3/2)*A*b^3*c^2*d*e^4 + 4*sqrt(x*e + d)*B*b^4
*c*d^2*e^4 - 4*sqrt(x*e + d)*A*b^3*c^2*d^2*e^4 + (x*e + d)^(3/2)*B*b^5*e^5
- (x*e + d)^(3/2)*A*b^4*c*e^5 - sqrt(x*e + d)*B*b^5*d*e^5 + sqrt(x*e + d)*A
*b^4*c*d*e^5)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b
*d*e)*b^2*c^4) + 2/15*(3*(x*e + d)^(5/2)*B*c^8*e^2 + 15*(x*e + d)^(3/2)*B*c
^8*d*e^2 + 90*sqrt(x*e + d)*B*c^8*d^2*e^2 - 10*(x*e + d)^(3/2)*B*b*c^7*e^3
+ 5*(x*e + d)^(3/2)*A*c^8*e^3 - 120*sqrt(x*e + d)*B*b*c^7*d*e^3 + 60*sqrt(x
*e + d)*A*c^8*d*e^3 + 45*sqrt(x*e + d)*B*b^2*c^6*e^4 - 30*sqrt(x*e + d)*A*b
*c^7*e^4)/c^10
```

maple [B] time = 0.10, size = 1075, normalized size = 2.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e^5*b^3/c^4*(e*x+d)^(1/2)/(c*e*x+b*e)*B+5*e^5*b^2/c^3/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-7*e^5*b^3/c^4/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+16*e^2/c/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+e/b/((b*e-c*d)*c)^(1/
2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4+e/b*(e*x+d)^(1/2)/(c*e
*x+b*e)*B*d^4+14*e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*d^2+4*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*
d)*c)^(1/2)*c)*A*d^3-4*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^3-6*e^3/c*(e*x+d
)^(1/2)/(c*e*x+b*e)*A*d^2+4*e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^3-2/b^2*c/(
(b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^5+4/b^3*
c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^5+2
/3*e^3/c^2*A*(e*x+d)^(3/2)+2/5*e^2/c^2*B*(e*x+d)^(5/2)-2*d^(9/2)/b^2*arctan
h((e*x+d)^(1/2)/d^(1/2))*B-16*e^3/c^3*B*b*d*(e*x+d)^(1/2)-e^5*b^2/c^3*(e*x+
d)^(1/2)/(c*e*x+b*e)*A-d^4/b^2*A*(e*x+d)^(1/2)/x+6*e^4/c^4*B*b^2*(e*x+d)^(1
/2)+4*d^(9/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+2*e^2/c^2*B*(e*x+d)^(3
/2)*d+12*e^2/c^2*B*d^2*(e*x+d)^(1/2)-9*e*d^(7/2)/b^2*arctanh((e*x+d)^(1/2)/
d^(1/2))*A-4/3*e^3/c^3*B*(e*x+d)^(3/2)*b-4*e^4/c^3*A*b*(e*x+d)^(1/2)+8*e^3/
c^2*A*d*(e*x+d)^(1/2)-4*e^4*b^2/c^3*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+26*e^4*b^
2/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-3
4*e^3*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*B*d^2-16*e^4*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^
(1/2)*c)*A*d-11*e/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*A*d^4+6*e^3*b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^2+4*e^4*b/c^2*
(e*x+d)^(1/2)/(c*e*x+b*e)*A*d-e/b^2*c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.71, size = 12636, normalized size = 32.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^2,x)
```

```
[Out] atan(((((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 -
 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b
^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*
c^6*d^2*e^6)/(b^6*c^7) - (2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1
/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^
9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*
d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c
^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6
*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2
*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8
*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e -
 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3
+ 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e
^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*
d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2
*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*
b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^
2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819
*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 -
 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*
B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d
*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*
d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c
^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*
A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^
2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*
A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 +
8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 +
168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7
 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*
d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3
*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*
e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d
^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*
c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c
^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c
^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7
*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*
c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^
6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^
2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^
8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e
- 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3
 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*
e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2)*1i - (((20*A*b^10*c^6*d*e
^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 - 20*A*b^7*c^9*d^4*e^4 + 56
*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b^7*c^9*d^5*e^3 + 64*B*b^8*
c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*c^6*d^2*e^6)/(b^6*c^7) + (
2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1/2)*((16*A^2*c^11*d^9 - 49
*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7
*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*
d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^
7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7
*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*
b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10
*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 1
26*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4
+ 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e
^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25
*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3
*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*
b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^
2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 115
5*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315
*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10
*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7
*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*
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d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(
1/2) + (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2
*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^
2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*
A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 -
4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 +
84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^
8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*
d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^
12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9
*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*
d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8
*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 4
9*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^
7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6
*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c
^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^
7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2
*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^1
0*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 +
126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4
 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*
e^7)/(4*b^6*c^9))^(1/2)*1i)/((((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 +
 8*A*b^6*c^10*d^5*e^3 - 20*A*b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*
b^9*c^7*d^2*e^6 - 4*B*b^7*c^9*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^
7*d^3*e^5 + 104*B*b^10*c^6*d^2*e^6)/(b^6*c^7) - (2*(4*b^7*c^9*e^3 - 8*b^6*c
^10*d*e^2)*(d + e*x)^(1/2)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9
*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6
*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*
d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^
6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^
8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^1
0*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 +
 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 5
46*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5
 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b
^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b
^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4
*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*
b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^
2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 83
7*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^
2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^
8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6
*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*
d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(d + e*x)^(1/2)*
(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b
^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^
2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*
A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63
*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1
008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e
^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^
9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^
2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*
e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*
d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^
9*c^3*d^2*e^10))/(b^4*c^7))*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^
9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^
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6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5
*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c
^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b
^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^
10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9
+ 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 -
546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5
 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) +
(((20*A*b^10*c^6*d*e^7 - 28*B*b^11*c^5*d*e^7 + 8*A*b^6*c^10*d^5*e^3 - 20*A*
b^7*c^9*d^4*e^4 + 56*A*b^8*c^8*d^3*e^5 - 64*A*b^9*c^7*d^2*e^6 - 4*B*b^7*c^9
*d^5*e^3 + 64*B*b^8*c^8*d^4*e^4 - 136*B*b^9*c^7*d^3*e^5 + 104*B*b^10*c^6*d^
2*e^6)/(b^6*c^7) + (2*(4*b^7*c^9*e^3 - 8*b^6*c^10*d*e^2)*(d + e*x)^(1/2)*((
16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9
+ 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^
4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2
*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d
^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c
^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d
*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A
*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*
A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 9
54*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2))/(b^4*c^7))*((16*A^2*c^11*d^9 -
49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9 + 81*A^2*b^2*c^9*d
^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e^4 + 189*A^2*b^5*c^
6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^2*e^7 - 63*B^2*b^4*
c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*d^5*e^4 - 819*B^2*b
^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*c^2*d^2*e^7 - 72*A^
2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*d*e^8 - 16*A*B*b*c^
10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*A*B*b^9*c^2*d*e^8 +
 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630*A*B*b^5*c^6*d^5*e^
4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 + 954*A*B*b^8*c^3*d^2
*e^7)/(4*b^6*c^9))^(1/2) + (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^
10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*
c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^
6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*
b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^
2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 197
4*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^
10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^1
1 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 +
 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5
 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^
4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*(
(16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*d^9
 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^5*e
^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4*d^
2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c^5*
d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b^9*
c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c^3*
d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 414*
A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 + 630
*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6 +
954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2) - (2*(32*A^3*c^12*d^14*e^3 + 98
*B^3*b^12*d^5*e^12 + 326*A^3*b^2*c^10*d^12*e^5 + 956*A^3*b^3*c^9*d^11*e^6 -
 3430*A^3*b^4*c^8*d^10*e^7 + 3048*A^3*b^5*c^7*d^9*e^8 + 1659*A^3*b^6*c^6*d^
8*e^9 - 5256*A^3*b^7*c^5*d^7*e^10 + 4204*A^3*b^8*c^4*d^6*e^11 - 1540*A^3*b^
9*c^3*d^5*e^12 + 225*A^3*b^10*c^2*d^4*e^13 - 4*B^3*b^3*c^9*d^14*e^3 - 62*B^
3*b^4*c^8*d^13*e^4 + 200*B^3*b^5*c^7*d^12*e^5 + 272*B^3*b^6*c^6*d^11*e^6 -
2044*B^3*b^7*c^5*d^10*e^7 + 3948*B^3*b^8*c^4*d^9*e^8 - 3984*B^3*b^9*c^3*d^8
```

```
*e^9 + 2304*B^3*b^10*c^2*d^7*e^10 + 441*A*B^2*b^12*d^4*e^13 - 224*A^3*b*c^1
1*d^13*e^4 - 728*B^3*b^11*c*d^6*e^11 + 24*A*B^2*b^2*c^10*d^14*e^3 + 192*A*B
^2*b^3*c^9*d^13*e^4 - 1407*A*B^2*b^4*c^8*d^12*e^5 + 1824*A*B^2*b^5*c^7*d^11
*e^6 + 4848*A*B^2*b^6*c^6*d^10*e^7 - 19404*A*B^2*b^7*c^5*d^9*e^8 + 29574*A*
B^2*b^8*c^4*d^8*e^9 - 25272*A*B^2*b^9*c^3*d^7*e^10 + 12792*A*B^2*b^10*c^2*d
^6*e^11 - 24*A^2*B*b^2*c^10*d^13*e^4 + 1851*A^2*B*b^3*c^9*d^12*e^5 - 6672*A
^2*B*b^4*c^8*d^11*e^6 + 8214*A^2*B*b^5*c^7*d^10*e^7 + 2538*A^2*B*b^6*c^6*d^
9*e^8 - 18891*A^2*B*b^7*c^5*d^8*e^9 + 23544*A^2*B*b^8*c^4*d^7*e^10 - 14568*
A^2*B*b^9*c^3*d^6*e^11 + 4686*A^2*B*b^10*c^2*d^5*e^12 - 3612*A*B^2*b^11*c*d
^5*e^12 - 48*A^2*B*b*c^11*d^14*e^3 - 630*A^2*B*b^11*c*d^4*e^13))/(b^6*c^7))
)*((16*A^2*c^11*d^9 - 49*B^2*b^11*e^9 - 25*A^2*b^9*c^2*e^9 + 4*B^2*b^2*c^9*
d^9 + 81*A^2*b^2*c^9*d^7*e^2 + 105*A^2*b^3*c^8*d^6*e^3 - 315*A^2*b^4*c^7*d^
5*e^4 + 189*A^2*b^5*c^6*d^4*e^5 + 147*A^2*b^6*c^5*d^3*e^6 - 261*A^2*b^7*c^4
*d^2*e^7 - 63*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^5*c^6*d^6*e^3 + 189*B^2*b^6*c
^5*d^5*e^4 - 819*B^2*b^7*c^4*d^4*e^5 + 1155*B^2*b^8*c^3*d^3*e^6 - 837*B^2*b
^9*c^2*d^2*e^7 - 72*A^2*b*c^10*d^8*e + 315*B^2*b^10*c*d*e^8 + 135*A^2*b^8*c
^3*d*e^8 - 16*A*B*b*c^10*d^9 + 70*A*B*b^10*c*e^9 + 36*A*B*b^2*c^9*d^8*e - 4
14*A*B*b^9*c^2*d*e^8 + 126*A*B*b^3*c^8*d^7*e^2 - 546*A*B*b^4*c^7*d^6*e^3 +
630*A*B*b^5*c^6*d^5*e^4 + 126*A*B*b^6*c^5*d^4*e^5 - 966*A*B*b^7*c^4*d^3*e^6
 + 954*A*B*b^8*c^3*d^2*e^7)/(4*b^6*c^9))^(1/2)*2i - (((d + e*x)^(1/2)*(2*A*
c^5*d^5*e - B*b^5*d*e^5 - 5*A*b*c^4*d^4*e^2 + 4*B*b^4*c*d^2*e^4 + 6*A*b^2*c
^3*d^3*e^3 - 4*A*b^3*c^2*d^2*e^4 + 4*B*b^2*c^3*d^4*e^2 - 6*B*b^3*c^2*d^3*e^
3 + A*b^4*c*d*e^5 - B*b*c^4*d^5*e))/b^2 + ((d + e*x)^(3/2)*(B*b^5*e^5 - A*b
^4*c*e^5 - 2*A*c^5*d^4*e + 4*A*b*c^4*d^3*e^2 + 4*A*b^3*c^2*d*e^4 - 6*A*b^2*
c^3*d^2*e^3 - 4*B*b^2*c^3*d^3*e^2 + 6*B*b^3*c^2*d^2*e^3 + B*b*c^4*d^4*e - 4
*B*b^4*c*d*e^4))/b^2)/((2*c^5*d - b*c^4*e)*(d + e*x) - c^5*(d + e*x)^2 - c^
5*d^2 + b*c^4*d*e) - log((((((4*d*e^3*(b*e - c*d)*(2*A*c^4*d^3 + 7*B*b^4*e^
3 - 5*A*b^3*c*e^3 - B*b*c^3*d^3 + 11*A*b^2*c^2*d*e^2 + 15*B*b^2*c^2*d^2*e -
 3*A*b*c^3*d^2*e - 19*B*b^3*c*d*e^2))/c^2 + 4*b^2*c^2*e^2*(b*e - 2*c*d)*(d
+ e*x)^(1/2)*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))*((d^7*(9*A*
b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 + (2*(d + e*x)^(1/2)*(49*B^2*b^12
*e^12 + 25*A^2*b^10*c^2*e^12 + 32*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*
e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 420*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^
5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 - 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*
d^2*e^10 + 8*B^2*b^2*c^10*d^10*e^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8
*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*
c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^
2*b^10*c^2*d^2*e^10 - 364*B^2*b^11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*
A^2*b^9*c^3*d*e^11 - 70*A*B*b^11*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*
b^10*c^2*d*e^11 + 88*A*B*b^2*c^10*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*
B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 10
92*A*B*b^7*c^5*d^4*e^8 + 1920*A*B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^
10))/(b^4*c^7))*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 - (d^4
*e^3*(b*e - c*d)^4*(4*B^3*b^3*c^5*d^6 - 225*A^3*b^6*c^2*e^6 - 32*A^3*c^8*d^
6 - 441*A*B^2*b^8*e^6 - 98*B^3*b^8*d*e^5 + 250*A^3*b^2*c^6*d^4*e^2 - 660*A^
3*b^3*c^5*d^3*e^3 - 294*A^3*b^4*c^4*d^2*e^4 + 88*B^3*b^5*c^3*d^4*e^2 - 372*
B^3*b^6*c^2*d^3*e^3 + 48*A^2*B*b*c^7*d^6 + 630*A^2*B*b^7*c*e^6 + 96*A^3*b*c
^7*d^5*e - 24*A*B^2*b^2*c^6*d^6 + 640*A^3*b^5*c^3*d*e^5 + 78*B^3*b^4*c^4*d^
5*e + 336*B^3*b^7*c*d^2*e^4 + 399*A*B^2*b^4*c^4*d^4*e^2 + 1404*A*B^2*b^5*c^
3*d^3*e^3 - 2754*A*B^2*b^6*c^2*d^2*e^4 - 1275*A^2*B*b^3*c^5*d^4*e^2 + 468*A
^2*B*b^4*c^4*d^3*e^3 + 2124*A^2*B*b^5*c^3*d^2*e^4 + 1848*A*B^2*b^7*c*d*e^5
- 288*A*B^2*b^3*c^5*d^5*e + 216*A^2*B*b^2*c^6*d^5*e - 2166*A^2*B*b^6*c^2*d*
e^5))/(b^6*c^7))*((4*A^2*c^2*d^9 + B^2*b^2*d^9 + (81*A^2*b^2*d^7*e^2)/4 - 4
*A*B*b*c*d^9 + 9*A*B*b^2*d^8*e - 18*A^2*b*c*d^8*e)/b^6)^(1/2) + log((((((4*
d*e^3*(b*e - c*d)*(2*A*c^4*d^3 + 7*B*b^4*e^3 - 5*A*b^3*c*e^3 - B*b*c^3*d^3
+ 11*A*b^2*c^2*d*e^2 + 15*B*b^2*c^2*d^2*e - 3*A*b*c^3*d^2*e - 19*B*b^3*c*d*
e^2))/c^2 - 4*b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^7*(9*A*b*e - 4*
A*c*d + 2*B*b*d)^2)/b^6)^(1/2))*((d^7*(9*A*b*e - 4*A*c*d + 2*B*b*d)^2)/b^6)
^(1/2))/2 - (2*(d + e*x)^(1/2)*(49*B^2*b^12*e^12 + 25*A^2*b^10*c^2*e^12 + 3
2*A^2*c^12*d^10*e^2 + 234*A^2*b^2*c^10*d^8*e^4 + 24*A^2*b^3*c^9*d^7*e^5 - 4
20*A^2*b^4*c^8*d^6*e^6 + 504*A^2*b^5*c^7*d^5*e^7 - 42*A^2*b^6*c^6*d^4*e^8 -
 408*A^2*b^7*c^5*d^3*e^9 + 396*A^2*b^8*c^4*d^2*e^10 + 8*B^2*b^2*c^10*d^10*e
^2 - 4*B^2*b^3*c^9*d^9*e^3 - 63*B^2*b^4*c^8*d^8*e^4 + 168*B^2*b^5*c^7*d^7*e
^5 + 84*B^2*b^6*c^6*d^6*e^6 - 1008*B^2*b^7*c^5*d^5*e^7 + 1974*B^2*b^8*c^4*d
^4*e^8 - 1992*B^2*b^9*c^3*d^3*e^9 + 1152*B^2*b^10*c^2*d^2*e^10 - 364*B^2*b^
11*c*d*e^11 - 160*A^2*b*c^11*d^9*e^3 - 160*A^2*b^9*c^3*d*e^11 - 70*A*B*b^11
*c*e^12 - 32*A*B*b*c^11*d^10*e^2 + 484*A*B*b^10*c^2*d*e^11 + 88*A*B*b^2*c^1
0*d^9*e^3 + 90*A*B*b^3*c^9*d^8*e^4 - 672*A*B*b^4*c^8*d^7*e^5 + 1176*A*B*b^5
*c^7*d^6*e^6 - 504*A*B*b^6*c^6*d^5*e^7 - 1092*A*B*b^7*c^5*d^4*e^8 + 1920*A*
B*b^8*c^4*d^3*e^9 - 1368*A*B*b^9*c^3*d^2*e^10))/(b^4*c^7))*((d^7*(9*A*b*e -
 4*A*c*d + 2*B*b*d)^2)/b^6)^(1/2))/2 - (d^4*e^3*(b*e - c*d)^4*(4*B^3*b^3*c^
5*d^6 - 225*A^3*b^6*c^2*e^6 - 32*A^3*c^8*d^6 - 441*A*B^2*b^8*e^6 - 98*B^3*b
^8*d*e^5 + 250*A^3*b^2*c^6*d^4*e^2 - 660*A^3*b^3*c^5*d^3*e^3 - 294*A^3*b^4*
c^4*d^2*e^4 + 88*B^3*b^5*c^3*d^4*e^2 - 372*B^3*b^6*c^2*d^3*e^3 + 48*A^2*B*b
*c^7*d^6 + 630*A^2*B*b^7*c*e^6 + 96*A^3*b*c^7*d^5*e - 24*A*B^2*b^2*c^6*d^6
+ 640*A^3*b^5*c^3*d*e^5 + 78*B^3*b^4*c^4*d^5*e + 336*B^3*b^7*c*d^2*e^4 + 39
9*A*B^2*b^4*c^4*d^4*e^2 + 1404*A*B^2*b^5*c^3*d^3*e^3 - 2754*A*B^2*b^6*c^2*d
^2*e^4 - 1275*A^2*B*b^3*c^5*d^4*e^2 + 468*A^2*B*b^4*c^4*d^3*e^3 + 2124*A^2*
B*b^5*c^3*d^2*e^4 + 1848*A*B^2*b^7*c*d*e^5 - 288*A*B^2*b^3*c^5*d^5*e + 216*
A^2*B*b^2*c^6*d^5*e - 2166*A^2*B*b^6*c^2*d*e^5))/(b^6*c^7))*((16*A^2*c^2*d^
9 + 4*B^2*b^2*d^9 + 81*A^2*b^2*d^7*e^2 - 16*A*B*b*c*d^9 + 36*A*B*b^2*d^8*e
- 72*A^2*b*c*d^8*e)/(4*b^6))^(1/2) + ((2*A*e^3 - 2*B*d*e^2)/(3*c^2) + (2*B*
e^2*(4*c^2*d - 2*b*c*e))/(3*c^4))*(d + e*x)^(3/2) + (((4*c^2*d - 2*b*c*e)*(
(2*A*e^3 - 2*B*d*e^2)/c^2 + (2*B*e^2*(4*c^2*d - 2*b*c*e))/c^4))/c^2 - (2*B*
e^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c*d*e))/c^4)*(d + e*x)^(1/2) + (2*B*e^2*(d +
 e*x)^(5/2))/(5*c^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1239 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=292

$$-\frac{d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(7Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e(d+}{}$$

```
[Out] 1/3*e*(6*A*c^2*d+5*b^2*B*e-3*b*c*(A*e+B*d))*(e*x+d)^(3/2)/b^2/c^2-(e*x+d)^(
5/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b*x)-d^(5/2
)*(7*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3+(-b*e+c*d)^(
5/2)*(-3*A*b*c*e-4*A*c^2*d+5*B*b^2*e+2*B*b*c*d)*arctanh(c^(1/2)*(e*x+d)^(1/
2)/(-b*e+c*d)^(1/2))/b^3/c^(7/2)+e*(2*A*c^3*d^2-5*b^3*B*e^2-b*c^2*d*(2*A*e+
B*d)+b^2*c*e*(3*A*e+8*B*d))*(e*x+d)^(1/2)/b^2/c^3
```

Rubi [A] time = 0.88, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {818, 824, 826, 1166, 208}

$$\frac{e\sqrt{d+ex}\left(b^2ce(3Ae+8Bd)-bc^2d(2Ae+Bd)+2Ac^3d^2-5b^3Be^2\right)}{b^2c^3}-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b\right.\right.}{b^2c\left(bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^3*d^2 - 5*b^3*B*e^2 - b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(8*B*d + 3*
A*e))*Sqrt[d + e*x])/(b^2*c^3) + (e*(6*A*c^2*d + 5*b^2*B*e - 3*b*c*(B*d + A
*e))*(d + e*x)^(3/2))/(3*b^2*c^2) - ((d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d
+ b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c*(b*x + c*x^2)) - (d^(5/2)*(2*b*B*d
- 4*A*c*d + 7*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/b^3 + ((c*d - b*e)^(5/
2)*(2*b*B*c*d - 4*A*c^2*d + 5*b^2*B*e - 3*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[c*d - b*e]])/(b^3*c^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)} + \int \frac{(d+ex)^{3/2}\left(\frac{1}{2}cd(2bBd-4Acd+7A\right.}{}$$

$$= \frac{e\left(6Ac^2d+5b^2Be-3bc(Bd+Ae)\right)(d+ex)^{3/2}}{3b^2c^2} - \frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$= \frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3} + \frac{e\left(6Ac^2d+5b\right.}{}$$

$$= \frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3} + \frac{e\left(6Ac^2d+5b\right.}{}$$

$$= \frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3} + \frac{e\left(6Ac^2d+5b\right.}{}$$

$$= \frac{e\left(2Ac^3d^2-5b^3Be^2-bc^2d(Bd+2Ae)+b^2ce(8Bd+3Ae)\right)\sqrt{d+ex}}{b^2c^3} + \frac{e\left(6Ac^2d+5b\right.}{}$$

Mathematica [A] time = 1.55, size = 341, normalized size = 1.17

$$-\frac{-\frac{105\left(-2d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+\frac{2}{15}d\sqrt{d+ex}\left(23d^2+11dex+3e^2x^2\right)+\frac{2}{7}(d+ex)^{7/2}\right)(7Abe-4Acd+2bBd)-\frac{2d\left(bc(2Bd-3Ae)-4Ac^2d+5b^2Be\right)\left(7(cd-be)\left(5(cd-be)\left(\sqrt{c}\right.\right.\right.}{}}{210b^2}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -((((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(9/2))/(b*(-(c*d) + b*e)*(b + c*x
)) + (A*(d + e*x)^(9/2))/(x*(b + c*x)) - (105*(2*b*B*d - 4*A*c*d + 7*A*b*e)
*((2*(d + e*x)^(7/2))/7 + (2*d*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2
))/15 - 2*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - (2*d*(-4*A*c^2*d + 5*b^
2*B*e + b*c*(2*B*d - 3*A*e))*(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3
*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*
b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
 - b*e]]))))/(c^(7/2)*(c*d - b*e)))/(210*b^2))/(b*d))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.31, size = 639, normalized size = 2.19

$$\frac{\left(2\,Bbd^4-4\,Acd^4+7\,Abd^3e\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}}-\frac{\left(2\,Bbc^4d^4-4\,Ac^5d^4-Bb^2c^3d^3e+9\,Abc^4d^3e-9\,Bb^3c^2d^2e^2-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^4 - 4*A*c*d^4 + 7*A*b*d^3*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*s
qrt(-d)) - (2*B*b*c^4*d^4 - 4*A*c^5*d^4 - B*b^2*c^3*d^3*e + 9*A*b*c^4*d^3*e
 - 9*B*b^3*c^2*d^2*e^2 - 3*A*b^2*c^3*d^2*e^2 + 13*B*b^4*c*d*e^3 - 5*A*b^3*c
^2*d*e^3 - 5*B*b^5*e^4 + 3*A*b^4*c*e^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d
+ b*c*e))/(sqrt(-c^2*d + b*c*e)*b^3*c^3) + 2/3*((x*e + d)^(3/2)*B*c^4*e^2 +
 9*sqrt(x*e + d)*B*c^4*d*e^2 - 6*sqrt(x*e + d)*B*b*c^3*e^3 + 3*sqrt(x*e + d
)*A*c^4*e^3)/c^6 + ((x*e + d)^(3/2)*B*b*c^3*d^3*e - 2*(x*e + d)^(3/2)*A*c^4
*d^3*e - sqrt(x*e + d)*B*b*c^3*d^4*e + 2*sqrt(x*e + d)*A*c^4*d^4*e - 3*(x*e
 + d)^(3/2)*B*b^2*c^2*d^2*e^2 + 3*(x*e + d)^(3/2)*A*b*c^3*d^2*e^2 + 3*sqrt(
x*e + d)*B*b^2*c^2*d^3*e^2 - 4*sqrt(x*e + d)*A*b*c^3*d^3*e^2 + 3*(x*e + d)^
(3/2)*B*b^3*c*d*e^3 - 3*(x*e + d)^(3/2)*A*b^2*c^2*d*e^3 - 3*sqrt(x*e + d)*B
*b^3*c*d^2*e^3 + 3*sqrt(x*e + d)*A*b^2*c^2*d^2*e^3 - (x*e + d)^(3/2)*B*b^4*
e^4 + (x*e + d)^(3/2)*A*b^3*c*e^4 + sqrt(x*e + d)*B*b^4*d*e^4 - sqrt(x*e +
d)*A*b^3*c*d*e^4)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e
 - b*d*e)*b^2*c^3)
```

maple [B] time = 0.09, size = 823, normalized size = 2.82

$$-\frac{3Ab\,e^4\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c^2}+\frac{3A\,d^2e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}-\frac{9Ac\,d^3e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2}+\frac{4A\,c^2d^4\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right.}{\sqrt{(be-cd)\,c}\;b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*e^3/c^2*A*(e*x+d)^(1/2)+2/3*e^2/c^2*B*(e*x+d)^(3/2)-2*d^(7/2)/b^2*arctanh
((e*x+d)^(1/2)/d^(1/2))*B+e/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d^3-3*e^3/c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d+4/b^3*c^2/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^4-2/b^2*c
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4+e^4*
b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e^4*b^2/c^3*(e*x+d)^(1/2)/(c*e*x+b*e)*B-3
*e^4*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*
```

```
A+5*e^4*b^2/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2
)*c)*B-d^3/b^2*A*(e*x+d)^(1/2)/x+4*d^(7/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2
))*A*c-7*e*d^(5/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A-4*e^3/c^3*B*b*(e*x+
d)^(1/2)+6*e^2/c^2*B*d*(e*x+d)^(1/2)+3*e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^
2-3*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d^2+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d
^3+5*e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*
A*d+3*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*A*d^2+9*e^2/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d^2+3*e^3*b/c^2*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d-9*e/b^2*c/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3-13*e^3*b/c^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-e/b^2*c*(e*x
+d)^(1/2)/(c*e*x+b*e)*A*d^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 3.29, size = 7328, normalized size = 25.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (((d + e*x)^(3/2)*(B*b^4*e^4 - A*b^3*c*e^4 + 2*A*c^4*d^3*e - 3*A*b*c^3*d^2*
e^2 + 3*A*b^2*c^2*d*e^3 + 3*B*b^2*c^2*d^2*e^2 - B*b*c^3*d^3*e - 3*B*b^3*c*d
*e^3))/b^2 - ((d + e*x)^(1/2)*(2*A*c^4*d^4*e + B*b^4*d*e^4 - 4*A*b*c^3*d^3*
e^2 - 3*B*b^3*c*d^2*e^3 + 3*A*b^2*c^2*d^2*e^3 + 3*B*b^2*c^2*d^3*e^2 - A*b^3
*c*d*e^4 - B*b*c^3*d^4*e))/b^2)/((2*c^4*d - b*c^3*e)*(d + e*x) - c^4*(d + e
*x)^2 - c^4*d^2 + b*c^3*d*e) + ((2*A*e^3 - 2*B*d*e^2)/c^2 + (2*B*e^2*(4*c^2
*d - 2*b*c*e))/c^4)*(d + e*x)^(1/2) + (atan((((((((12*A*b^9*c^5*d*e^6 - 20*B
*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6
*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^
5)/(b^6*c^5) + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/
2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d
 + 2*B*b*d))/(2*b^3) + (2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2
*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*
e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*
e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^
4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e
^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3
- 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B
*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*
b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*
B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d)*1i
)/(2*b^3) - (((((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4
*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 -
36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^7*e^3 -
8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))
/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (2*(d + e*
x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154
*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 8
```

```
4*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B
^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B
^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 13
0*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b
^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d
^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5
*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d
^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^10*d^11*
e^3 + 50*B^3*b^10*d^4*e^10 + 262*A^3*b^2*c^8*d^9*e^5 + 141*A^3*b^3*c^7*d^8*
e^6 - 658*A^3*b^4*c^6*d^7*e^7 + 413*A^3*b^5*c^5*d^6*e^8 + 169*A^3*b^6*c^4*d
^5*e^9 - 246*A^3*b^7*c^3*d^4*e^10 + 63*A^3*b^8*c^2*d^3*e^11 - 4*B^3*b^3*c^7
*d^11*e^3 - 34*B^3*b^4*c^6*d^10*e^4 + 88*B^3*b^5*c^5*d^9*e^5 + 90*B^3*b^6*c
^4*d^8*e^6 - 448*B^3*b^7*c^3*d^7*e^7 + 518*B^3*b^8*c^2*d^6*e^8 + 175*A*B^2*
b^10*d^3*e^11 - 176*A^3*b*c^9*d^10*e^4 - 260*B^3*b^9*c*d^5*e^9 + 24*A*B^2*b
^2*c^8*d^11*e^3 + 92*A*B^2*b^3*c^7*d^10*e^4 - 605*A*B^2*b^4*c^6*d^9*e^5 + 5
94*A*B^2*b^5*c^5*d^8*e^6 + 1113*A*B^2*b^6*c^4*d^7*e^7 - 2912*A*B^2*b^7*c^3*
d^6*e^8 + 2589*A*B^2*b^8*c^2*d^5*e^9 + 40*A^2*B*b^2*c^8*d^10*e^4 + 727*A^2*
B*b^3*c^7*d^9*e^5 - 2133*A^2*B*b^4*c^6*d^8*e^6 + 1953*A^2*B*b^5*c^5*d^7*e^7
 + 287*A^2*B*b^6*c^4*d^6*e^8 - 1650*A^2*B*b^7*c^3*d^5*e^9 + 1034*A^2*B*b^8*
c^2*d^4*e^10 - 1070*A*B^2*b^9*c*d^4*e^10 - 48*A^2*B*b*c^9*d^11*e^3 - 210*A^
2*B*b^9*c*d^3*e^11))/(b^6*c^5) + (((((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*
e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4
*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5)
 + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e
- 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))
/(2*b^3) + (2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A
^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^
2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*
b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b
^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2
*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7
*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e
^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*
e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^
2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) + (((
((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7
*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^
3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2
)*(d^5)^(1/2)*(d + e*x)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^5))*(d^
5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (2*(d + e*x)^(1/2)*(25*B^
2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^
6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d
^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*
e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*
e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e
^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*
A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B
*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A
*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5))*(d^5)^(1/2)*(7*A*
b*e - 4*A*c*d + 2*B*b*d))/(2*b^3)))*(d^5)^(1/2)*(7*A*b*e - 4*A*c*d + 2*B*b*
d)*1i)/b^3 + (2*B*e^2*(d + e*x)^(3/2))/(3*c^2) + (atan((((-c^7*(b*e - c*d)^
5)^(1/2)*((2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^
2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2
*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b
^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^
5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*
b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*
c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^
9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e
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^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2
*e^8))/(b^4*c^5) + ((-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*
b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*
d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5
)/(b^6*c^5) + ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)
*(d + e*x)^(1/2)*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12
))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d
 - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*b^3*c^7) + ((-c^7*(b*e - c*d)^
5)^(1/2)*((2*(d + e*x)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^
2*c^10*d^8*e^2 + 154*A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2
*b^4*c^6*d^4*e^6 + 84*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b
^2*c^8*d^8*e^2 - 4*B^2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^
5*c^5*d^5*e^5 + 35*B^2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*
b^8*c^2*d^2*e^8 - 130*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*
c^3*d*e^9 - 30*A*B*b^9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^
9 + 72*A*B*b^2*c^8*d^7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e
^5 + 350*A*B*b^5*c^5*d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2
*e^8))/(b^4*c^5) - ((-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*
b^10*c^4*d*e^6 - 8*A*b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*
d^2*e^5 + 4*B*b^7*c^7*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5
)/(b^6*c^5) - ((4*b^7*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)
*(d + e*x)^(1/2)*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12
))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d
 - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*b^3*c^7))/((2*(32*A^3*c^10*d^1
1*e^3 + 50*B^3*b^10*d^4*e^10 + 262*A^3*b^2*c^8*d^9*e^5 + 141*A^3*b^3*c^7*d^
8*e^6 - 658*A^3*b^4*c^6*d^7*e^7 + 413*A^3*b^5*c^5*d^6*e^8 + 169*A^3*b^6*c^4
*d^5*e^9 - 246*A^3*b^7*c^3*d^4*e^10 + 63*A^3*b^8*c^2*d^3*e^11 - 4*B^3*b^3*c
^7*d^11*e^3 - 34*B^3*b^4*c^6*d^10*e^4 + 88*B^3*b^5*c^5*d^9*e^5 + 90*B^3*b^6
*c^4*d^8*e^6 - 448*B^3*b^7*c^3*d^7*e^7 + 518*B^3*b^8*c^2*d^6*e^8 + 175*A*B^
2*b^10*d^3*e^11 - 176*A^3*b*c^9*d^10*e^4 - 260*B^3*b^9*c*d^5*e^9 + 24*A*B^2
*b^2*c^8*d^11*e^3 + 92*A*B^2*b^3*c^7*d^10*e^4 - 605*A*B^2*b^4*c^6*d^9*e^5 +
 594*A*B^2*b^5*c^5*d^8*e^6 + 1113*A*B^2*b^6*c^4*d^7*e^7 - 2912*A*B^2*b^7*c^
3*d^6*e^8 + 2589*A*B^2*b^8*c^2*d^5*e^9 + 40*A^2*B*b^2*c^8*d^10*e^4 + 727*A^
2*B*b^3*c^7*d^9*e^5 - 2133*A^2*B*b^4*c^6*d^8*e^6 + 1953*A^2*B*b^5*c^5*d^7*e
^7 + 287*A^2*B*b^6*c^4*d^6*e^8 - 1650*A^2*B*b^7*c^3*d^5*e^9 + 1034*A^2*B*b^
8*c^2*d^4*e^10 - 1070*A*B^2*b^9*c*d^4*e^10 - 48*A^2*B*b*c^9*d^11*e^3 - 210*
A^2*B*b^9*c*d^3*e^11))/(b^6*c^5) + ((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x
)^(1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*
A^2*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84
*A^2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^
2*b^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^
2*b^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130
*B^2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^
9*c*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^
7*e^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*
d^4*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5) + ((
-c^7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*
b^6*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7
*d^4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) + ((4*b^7
*c^7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A
*c^2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12))*(4*A*c^2*d - 5*B*b
^2*e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*
c*e - 2*B*b*c*d))/(2*b^3*c^7) - ((-c^7*(b*e - c*d)^5)^(1/2)*((2*(d + e*x)^(
1/2)*(25*B^2*b^10*e^10 + 9*A^2*b^8*c^2*e^10 + 32*A^2*c^10*d^8*e^2 + 154*A^2
*b^2*c^8*d^6*e^4 - 14*A^2*b^3*c^7*d^5*e^5 - 105*A^2*b^4*c^6*d^4*e^6 + 84*A^
2*b^5*c^5*d^3*e^7 + 7*A^2*b^6*c^4*d^2*e^8 + 8*B^2*b^2*c^8*d^8*e^2 - 4*B^2*b
^3*c^7*d^7*e^3 - 35*B^2*b^4*c^6*d^6*e^4 + 70*B^2*b^5*c^5*d^5*e^5 + 35*B^2*b
^6*c^4*d^4*e^6 - 224*B^2*b^7*c^3*d^3*e^7 + 259*B^2*b^8*c^2*d^2*e^8 - 130*B^
2*b^9*c*d*e^9 - 128*A^2*b*c^9*d^7*e^3 - 30*A^2*b^7*c^3*d*e^9 - 30*A*B*b^9*c
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*e^10 - 32*A*B*b*c^9*d^8*e^2 + 128*A*B*b^8*c^2*d*e^9 + 72*A*B*b^2*c^8*d^7*e
^3 + 42*A*B*b^3*c^7*d^6*e^4 - 280*A*B*b^4*c^6*d^5*e^5 + 350*A*B*b^5*c^5*d^4
*e^6 - 84*A*B*b^6*c^4*d^3*e^7 - 154*A*B*b^7*c^3*d^2*e^8))/(b^4*c^5) - ((-c^
7*(b*e - c*d)^5)^(1/2)*((12*A*b^9*c^5*d*e^6 - 20*B*b^10*c^4*d*e^6 - 8*A*b^6
*c^8*d^4*e^3 + 16*A*b^7*c^7*d^3*e^4 - 20*A*b^8*c^6*d^2*e^5 + 4*B*b^7*c^7*d^
4*e^3 - 36*B*b^8*c^6*d^3*e^4 + 52*B*b^9*c^5*d^2*e^5)/(b^6*c^5) - ((4*b^7*c^
7*e^3 - 8*b^6*c^8*d*e^2)*(-c^7*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^
2*d - 5*B*b^2*e + 3*A*b*c*e - 2*B*b*c*d))/(b^7*c^12))*(4*A*c^2*d - 5*B*b^2*
e + 3*A*b*c*e - 2*B*b*c*d))/(2*b^3*c^7))*(4*A*c^2*d - 5*B*b^2*e + 3*A*b*c*e
 - 2*B*b*c*d))/(2*b^3*c^7)))*(-c^7*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d - 5*B*b^
2*e + 3*A*b*c*e - 2*B*b*c*d)*1i)/(b^3*c^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1240 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=225

$$-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(5Abe-4Acd+2bBd)}{b^3}-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e\sqrt{d+ex}}{}$$

```
[Out] -(e*x+d)^(3/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2+b
*x)-d^(3/2)*(5*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3-(-
b*e+c*d)^(3/2)*(4*A*c^2*d-3*b^2*B*e-b*c*(-A*e+2*B*d))*arctanh(c^(1/2)*(e*x+
d)^(1/2)/(-b*e+c*d)^(1/2))/b^3/c^(5/2)+e*(2*A*c^2*d+3*b^2*B*e-b*c*(A*e+B*d)
)*(e*x+d)^(1/2)/b^2/c^2
```

Rubi [A] time = 0.58, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {818, 824, 826, 1166, 208}

$$-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}+\frac{e\sqrt{d+ex}\left(-bc(Ae+Bd)+2Ac^2d+3b^2Be\right)}{b^2c^2}-\frac{(cd-be)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x]
```

```
[Out] (e*(2*A*c^2*d + 3*b^2*B*e - b*c*(B*d + A*e))*Sqrt[d + e*x])/(b^2*c^2) - ((d
 + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^2*c
*(b*x + c*x^2)) - (d^(3/2)*(2*b*B*d - 4*A*c*d + 5*A*b*e)*ArcTanh[Sqrt[d + e
*x]/Sqrt[d]])/b^3 - ((c*d - b*e)^(3/2)*(4*A*c^2*d - 3*b^2*B*e - b*c*(2*B*d
- A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\int \frac{\sqrt{d+ex}\left(\frac{1}{2}cd(2bBd-4Acd+5}{}$$

$$=\frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2}-\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$=\frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2}-\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$=\frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2}-\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

$$=\frac{e\left(2Ac^2d+3b^2Be-bc(Bd+Ae)\right)\sqrt{d+ex}}{b^2c^2}-\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be\right.\right.}{b^2c\left(bx+cx^2\right)}$$

Mathematica [A] time = 1.23, size = 302, normalized size = 1.34

$$-\frac{\frac{\frac{2d\left(bc(2Bd-Ae)-4Ac^2d+3b^2Be\right)\left(\sqrt{c}\sqrt{d+ex}\left(15b^2e^2-5bce(7d+ex)+c^2\left(23d^2+11dex+3e^2x^2\right)\right)-15(cd-be)^{5/2}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)}{c^{5/2}(cd-be)}+2\left(15d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)-\sqrt{d+ex}\right.}{30b^2}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -(((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(7/2))/(b*(-(c*d) + b*e)*(b + c*x
)) + (A*(d + e*x)^(7/2))/(x*(b + c*x)) + (2*(2*b*B*d - 4*A*c*d + 5*A*b*e)*(
-(Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3*e^2*x^2)) + 15*d^(5/2)*ArcTanh[Sqrt[
d + e*x]/Sqrt[d]]) + (2*d*(-4*A*c^2*d + 3*b^2*B*e + b*c*(2*B*d - A*e))*(Sqr
t[c]*Sqrt[d + e*x]*(15*b^2*e^2 - 5*b*c*e*(7*d + e*x) + c^2*(23*d^2 + 11*d*e
*x + 3*e^2*x^2)) - 15*(c*d - b*e)^(5/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqr
t[c*d - b*e]]))/(c^(5/2)*(c*d - b*e)))/(30*b^2))/(b*d))
```

fricas [A] time = 22.89, size = 1589, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*b*c^3)*d*e - (3*B*b^3*
c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (B*b^3*c + 3*A*b
^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt((c*d - b*e)/c)*log((c*e*x +
2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + ((5*A*b*c
^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^2 -
 2*A*b*c^3)*d^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) +
2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*
b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3*c^
3*x^2 + b^4*c^2*x), 1/2*(2*((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*b
*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d
^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(-(c*d -
 b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((5*A*
b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^
2 - 2*A*b*c^3)*d^2)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
 + 2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*
(B*b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3
*c^3*x^2 + b^4*c^2*x), 1/2*(2*((5*A*b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*
x^2 + (5*A*b^2*c^2*d*e + 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*sqrt(-d)*arctan(
sqrt(e*x + d)*sqrt(-d)/d) + ((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2 + 3*A*
b*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*
d^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt((c*d -
 b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/
(c*x + b)) + 2*(2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3
)*d^2 - 2*(B*b^3*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x
+ d))/(b^3*c^3*x^2 + b^4*c^2*x), (((2*(B*b*c^3 - 2*A*c^4)*d^2 + (B*b^2*c^2
+ 3*A*b*c^3)*d*e - (3*B*b^3*c - A*b^2*c^2)*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b
*c^3)*d^2 + (B*b^3*c + 3*A*b^2*c^2)*d*e - (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(
-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) +
 ((5*A*b*c^3*d*e + 2*(B*b*c^3 - 2*A*c^4)*d^2)*x^2 + (5*A*b^2*c^2*d*e + 2*(B
*b^2*c^2 - 2*A*b*c^3)*d^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (
2*B*b^3*c*e^2*x^2 - A*b^2*c^2*d^2 + ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - 2*(B*b^3
*c - A*b^2*c^2)*d*e + (3*B*b^4 - A*b^3*c)*e^2)*x)*sqrt(e*x + d))/(b^3*c^3*x
^2 + b^4*c^2*x)]
```

giac [B] time = 0.24, size = 468, normalized size = 2.08

$$\frac{2\,\sqrt{xe+d}\,Be^2}{c^2}+\frac{\left(2\,Bbd^3-4\,Acd^3+5\,Abd^2e\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}}-\frac{\left(2\,Bbc^3d^3-4\,Ac^4d^3-Bb^2c^2d^2e+7\,Abc^3d^2e-4\,B\right.}{\sqrt{-}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^2/c^2 + (2*B*b*d^3 - 4*A*c*d^3 + 5*A*b*d^2*e)*arctan(sq
rt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)) - (2*B*b*c^3*d^3 - 4*A*c^4*d^3 - B*b^2
*c^2*d^2*e + 7*A*b*c^3*d^2*e - 4*B*b^3*c*d*e^2 - 2*A*b^2*c^2*d*e^2 + 3*B*b^
4*e^3 - A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^
2*d + b*c*e)*b^3*c^2) + ((x*e + d)^(3/2)*B*b*c^2*d^2*e - 2*(x*e + d)^(3/2)*
A*c^3*d^2*e - sqrt(x*e + d)*B*b*c^2*d^3*e + 2*sqrt(x*e + d)*A*c^3*d^3*e - 2
*(x*e + d)^(3/2)*B*b^2*c*d*e^2 + 2*(x*e + d)^(3/2)*A*b*c^2*d*e^2 + 2*sqrt(x
*e + d)*B*b^2*c*d^2*e^2 - 3*sqrt(x*e + d)*A*b*c^2*d^2*e^2 + (x*e + d)^(3/2)
*B*b^3*e^3 - (x*e + d)^(3/2)*A*b^2*c*e^3 - sqrt(x*e + d)*B*b^3*d*e^3 + sqrt
(x*e + d)*A*b^2*c*d*e^3)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e +
 d)*b*e - b*d*e)*b^2*c^2)
```

maple [B] time = 0.07, size = 614, normalized size = 2.73

$$\frac{2Ad\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}-\frac{7Ac\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^2}+\frac{4A\,c^2d^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^3}+\frac{A\,e^3\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;c}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x)
```

```
[Out] 2*e^2*B/c^2*(e*x+d)^(1/2)-e^3/c*(e*x+d)^(1/2)/(c*e*x+b*e)*A+2*e^2/b*(e*x+d)
^(1/2)/(c*e*x+b*e)*A*d-e/b^2*c*(e*x+d)^(1/2)/(c*e*x+b*e)*A*d^2+e^3*b/c^2*(e
*x+d)^(1/2)/(c*e*x+b*e)*B-2*e^2/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+e/b*(e*x+d)
^(1/2)/(c*e*x+b*e)*B*d^2+e^3/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*A+2*e^2/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*A*d-7*e/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*A*d^2+4/b^3*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1
/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3-3*e^3*b/c^2/((b*e-c*d)*c)^(1/2)*arctan((e*
x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+4*e^2/c/((b*e-c*d)*c)^(1/2)*arctan((e*x
+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+e/b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)
^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-2/b^2*c/((b*e-c*d)*c)^(1/2)*arctan((e*x
+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3-d^2/b^2*A*(e*x+d)^(1/2)/x-5*e*d^(3/2
)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4*d^(5/2)/b^3*arctanh((e*x+d)^(1/2)/
d^(1/2))*A*c-2*d^(5/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.70, size = 5878, normalized size = 26.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan(((((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d
^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d
^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4
*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7
 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*
c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5
*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((
d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 -
 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^
3) + ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*
e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*
(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3) + (((2*(d + e*x)^(1/2
)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^
4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6
*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*
e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 +
4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^
2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*
d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) - ((d^3)^(1/2)*((4*A*b^8*c^4*d
*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*
B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b
^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b
^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A
*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^8*d^8*e^3 + 18*B^3*b^8*d^3*e^8 +
 166*A^3*b^2*c^6*d^6*e^5 - 50*A^3*b^3*c^5*d^5*e^6 - 41*A^3*b^4*c^4*d^4*e^7
+ 16*A^3*b^5*c^3*d^3*e^8 + 5*A^3*b^6*c^2*d^2*e^9 - 4*B^3*b^3*c^5*d^8*e^3 -
14*B^3*b^4*c^4*d^7*e^4 + 28*B^3*b^5*c^3*d^6*e^5 + 20*B^3*b^6*c^2*d^5*e^6 +
45*A*B^2*b^8*d^2*e^9 - 128*A^3*b*c^7*d^7*e^4 - 48*B^3*b^7*c*d^4*e^7 + 24*A*
B^2*b^2*c^6*d^8*e^3 + 24*A*B^2*b^3*c^5*d^7*e^4 - 183*A*B^2*b^4*c^4*d^6*e^5
+ 120*A*B^2*b^5*c^3*d^5*e^6 + 138*A*B^2*b^6*c^2*d^4*e^7 + 72*A^2*B*b^2*c^6*
d^7*e^4 + 171*A^2*B*b^3*c^5*d^6*e^5 - 420*A^2*B*b^4*c^4*d^5*e^6 + 249*A^2*B
*b^5*c^3*d^4*e^7 + 6*A^2*B*b^6*c^2*d^3*e^8 - 168*A*B^2*b^7*c*d^3*e^8 - 48*A
^2*B*b*c^7*d^8*e^3 - 30*A^2*B*b^7*c*d^2*e^9))/(b^6*c^3) - (((2*(d + e*x)^(1
/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*
d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d
^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^
3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3
+ 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*
c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^
4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((d^3)^(1/2)*((4*A*b^8*c^4
*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 -
4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) + ((4*b^7*c^5*e^3 - 8
*b^6*c^6*d*e^2)*(d^3)^(1/2)*(d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/
(b^7*c^3))*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4
*A*c*d + 2*B*b*d))/(2*b^3) + (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*
c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*
e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^
3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^
6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B
*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^
5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^
2*e^6))/(b^4*c^3) - ((d^3)^(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 +
 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^
8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(d^3)^(1/2)*(
d + e*x)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c^3))*(5*A*b*e - 4*A*c*d
 + 2*B*b*d))/(2*b^3))*(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3)))*
(d^3)^(1/2)*(5*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/b^3 - (((d + e*x)^(1/2)*(2*A*
c^3*d^3*e - B*b^3*d*e^3 - 3*A*b*c^2*d^2*e^2 + 2*B*b^2*c*d^2*e^2 + A*b^2*c*d
*e^3 - B*b*c^2*d^3*e))/b^2 + ((d + e*x)^(3/2)*(B*b^3*e^3 - A*b^2*c*e^3 - 2*
A*c^3*d^2*e + 2*A*b*c^2*d*e^2 + B*b*c^2*d^2*e - 2*B*b^2*c*d*e^2))/b^2)/((2*
c^3*d - b*c^2*e)*(d + e*x) - c^3*(d + e*x)^2 - c^3*d^2 + b*c^2*d*e) + (2*B*
e^2*(d + e*x)^(1/2))/c^2 + (atan(((((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2
*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5
*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d
^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d
^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 -
6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c
^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c
^3*d^2*e^6))/(b^4*c^3) + ((-c^5*(b*e - c*d)^3)^(1/2)*((4*A*b^8*c^4*d*e^5 -
12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c
^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) + ((4*b^7*c^5*e^3 - 8*b^6*c^6*
d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d - 3*B*b^2*e +
A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c
*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c
*e - 2*B*b*c*d)*1i)/(2*b^3*c^5) + (((2*(d + e*x)^(1/2)*(9*B^2*b^8*e^8 + A^2
*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6*d^4*e^4 - 20*A^2*b^3*c^5
*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*d^6*e^2 - 4*B^2*b^3*c^5*d
^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d^3*e^5 + 10*B^2*b^6*c^2*d
^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3 + 4*A^2*b^5*c^3*d*e^7 -
6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6*c^2*d*e^7 + 56*A*B*b^2*c
^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c^4*d^3*e^5 + 60*A*B*b^5*c
^3*d^2*e^6))/(b^4*c^3) - ((-c^5*(b*e - c*d)^3)^(1/2)*((4*A*b^8*c^4*d*e^5 -
12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^7*c^5*d^2*e^4 - 4*B*b^7*c
^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4*b^7*c^5*e^3 - 8*b^6*c^6*
d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d - 3*B*b^2*e +
A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c
*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c
*e - 2*B*b*c*d)*1i)/(2*b^3*c^5))/((2*(32*A^3*c^8*d^8*e^3 + 18*B^3*b^8*d^3*e
^8 + 166*A^3*b^2*c^6*d^6*e^5 - 50*A^3*b^3*c^5*d^5*e^6 - 41*A^3*b^4*c^4*d^4*
e^7 + 16*A^3*b^5*c^3*d^3*e^8 + 5*A^3*b^6*c^2*d^2*e^9 - 4*B^3*b^3*c^5*d^8*e^
3 - 14*B^3*b^4*c^4*d^7*e^4 + 28*B^3*b^5*c^3*d^6*e^5 + 20*B^3*b^6*c^2*d^5*e^
6 + 45*A*B^2*b^8*d^2*e^9 - 128*A^3*b*c^7*d^7*e^4 - 48*B^3*b^7*c*d^4*e^7 + 2
4*A*B^2*b^2*c^6*d^8*e^3 + 24*A*B^2*b^3*c^5*d^7*e^4 - 183*A*B^2*b^4*c^4*d^6*
e^5 + 120*A*B^2*b^5*c^3*d^5*e^6 + 138*A*B^2*b^6*c^2*d^4*e^7 + 72*A^2*B*b^2*
c^6*d^7*e^4 + 171*A^2*B*b^3*c^5*d^6*e^5 - 420*A^2*B*b^4*c^4*d^5*e^6 + 249*A
^2*B*b^5*c^3*d^4*e^7 + 6*A^2*B*b^6*c^2*d^3*e^8 - 168*A*B^2*b^7*c*d^3*e^8 -
48*A^2*B*b*c^7*d^8*e^3 - 30*A^2*B*b^7*c*d^2*e^9))/(b^6*c^3) - (((2*(d + e*x
)^(1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*
c^6*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c
^6*d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^
3*d^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*
e^3 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*
b^6*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^
4*c^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) + ((-c^5*(b*e - c*d)^3)^
(1/2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A
*b^7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) +
((4*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/
2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3
*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4
*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5) + (((2*(d + e*x)^(
1/2)*(9*B^2*b^8*e^8 + A^2*b^6*c^2*e^8 + 32*A^2*c^8*d^6*e^2 + 90*A^2*b^2*c^6
*d^4*e^4 - 20*A^2*b^3*c^5*d^3*e^5 - 10*A^2*b^4*c^4*d^2*e^6 + 8*B^2*b^2*c^6*
d^6*e^2 - 4*B^2*b^3*c^5*d^5*e^3 - 15*B^2*b^4*c^4*d^4*e^4 + 20*B^2*b^5*c^3*d
^3*e^5 + 10*B^2*b^6*c^2*d^2*e^6 - 24*B^2*b^7*c*d*e^7 - 96*A^2*b*c^7*d^5*e^3
 + 4*A^2*b^5*c^3*d*e^7 - 6*A*B*b^7*c*e^8 - 32*A*B*b*c^7*d^6*e^2 - 4*A*B*b^6
*c^2*d*e^7 + 56*A*B*b^2*c^6*d^5*e^3 + 10*A*B*b^3*c^5*d^4*e^4 - 80*A*B*b^4*c
^4*d^3*e^5 + 60*A*B*b^5*c^3*d^2*e^6))/(b^4*c^3) - ((-c^5*(b*e - c*d)^3)^(1/
2)*((4*A*b^8*c^4*d*e^5 - 12*B*b^9*c^3*d*e^5 + 8*A*b^6*c^6*d^3*e^3 - 12*A*b^
7*c^5*d^2*e^4 - 4*B*b^7*c^5*d^3*e^3 + 16*B*b^8*c^4*d^2*e^4)/(b^6*c^3) - ((4
*b^7*c^5*e^3 - 8*b^6*c^6*d*e^2)*(-c^5*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*
(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(b^7*c^8))*(4*A*c^2*d - 3*B*
b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5))*(-c^5*(b*e - c*d)^3)^(1/2)*(4*A*
c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d))/(2*b^3*c^5)))*(-c^5*(b*e - c*d)^3
)^(1/2)*(4*A*c^2*d - 3*B*b^2*e + A*b*c*e - 2*B*b*c*d)*1i)/(b^3*c^5)
```

sympy [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1241 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=181

$$-\frac{\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(3Abe-4Acd+2bBd)}{b^3}-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}-\sqrt{cd-b}$$

```
[Out] -(3*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))*d^(1/2)/b^3-(4*A*
c^2*d-b^2*B*e-b*c*(A*e+2*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/
2))*(-b*e+c*d)^(1/2)/b^3/c^(3/2)-(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))
*x)*(e*x+d)^(1/2)/b^2/c/(c*x^2+b*x)
```

Rubi [A] time = 0.34, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {818, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\left(bx+cx^2\right)}-\frac{\sqrt{cd-be}\left(-bc(Ae+2Bd)+4Ac^2d+b^2(-B)e\right)\tanh^{-}}{b^3c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x]
```

```
[Out] -((Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b^
2*c*(b*x + c*x^2))) - (Sqrt[d]*(2*b*B*d - 4*A*c*d + 3*A*b*e)*ArcTanh[Sqrt[d
 + e*x]/Sqrt[d]])/b^3 - (Sqrt[c*d - b*e]*(4*A*c^2*d - b^2*B*e - b*c*(2*B*d
+ A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\frac{\int \frac{\frac{1}{2}cd(2bBd-4Acd+3Abe)-\frac{1}{2}e\left(2Ac^2\right.}{\sqrt{d+ex}\left(bx+cx\right.}}{b^2c}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}cde(2bBd-4Acd+3A}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}+\frac{(cd(2bBd-4Acd+3Abe))\,\mathrm{S}}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\left(bx+cx^2\right)}-\frac{\sqrt{d}\,(2bBd-4Acd+3Abe)\,\mathrm{t}}{b^3}$$

Mathematica [A] time = 0.33, size = 171, normalized size = 0.94

$$\frac{-\frac{\sqrt{cd-be}\left(-bc(Ae+2Bd)+4Ac^2d+b^2(-B)e\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{c^{3/2}}+\frac{b\sqrt{d+ex}\,(Ac(-bd+bex-2cdx)+bBx(cd-be))}{cx(b+cx)}+\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-3Abe}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x]
```

```
[Out] ((b*Sqrt[d + e*x]*(b*B*(c*d - b*e)*x + A*c*(-(b*d) - 2*c*d*x + b*e*x)))/(c*
x*(b + c*x)) + Sqrt[d]*(-2*b*B*d + 4*A*c*d - 3*A*b*e)*ArcTanh[Sqrt[d + e*x]
/Sqrt[d]] - (Sqrt[c*d - b*e]*(4*A*c^2*d - b^2*B*e - b*c*(2*B*d + A*e))*ArcT
anh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/c^(3/2))/b^3
```

fricas [A] time = 2.30, size = 1146, normalized size = 6.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)*x^2 + (2*(B*b^2*c
- 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt((c*d - b*e)/c)*log((c*e*x + 2
*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) + ((3*A*b*c^
2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2)
*d)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c*d
- ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c^
2*x^2 + b^4*c*x), 1/2*(2*((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)
*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt(-(c*d - b*
e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((3*A*b*c
^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2
)*d)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c*d
 - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c
^2*x^2 + b^4*c*x), 1/2*(2*((3*A*b*c^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3
*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*c^2)*d)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sq
rt(-d)/d) + ((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)*e)*x^2 + (2*(B*
b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt((c*d - b*e)/c)*log((c*e
*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) - 2*(A
*b^2*c*d - ((B*b^2*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d)
)/(b^3*c^2*x^2 + b^4*c*x), (((2*(B*b*c^2 - 2*A*c^3)*d + (B*b^2*c + A*b*c^2)
*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d + (B*b^3 + A*b^2*c)*e)*x)*sqrt(-(c*d -
 b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) + ((3*A*
b*c^2*e + 2*(B*b*c^2 - 2*A*c^3)*d)*x^2 + (3*A*b^2*c*e + 2*(B*b^2*c - 2*A*b*
c^2)*d)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c*d - ((B*b^2
*c - 2*A*b*c^2)*d - (B*b^3 - A*b^2*c)*e)*x)*sqrt(e*x + d))/(b^3*c^2*x^2 + b
^4*c*x)]
```

giac [B] time = 0.21, size = 334, normalized size = 1.85

$$\frac{\left(2\,Bbd^2-4\,Acd^2+3\,Abde\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^3\sqrt{-d}}-\frac{\left(2\,Bbc^2d^2-4\,Ac^3d^2-Bb^2cde+5\,Abc^2de-Bb^3e^2-Ab^2ce^2\right)\mathrm{arc}}{\sqrt{-c^2d+bce}\,b^3c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] (2*B*b*d^2 - 4*A*c*d^2 + 3*A*b*d*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqr
t(-d)) - (2*B*b*c^2*d^2 - 4*A*c^3*d^2 - B*b^2*c*d*e + 5*A*b*c^2*d*e - B*b^3
*e^2 - A*b^2*c*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2
*d + b*c*e)*b^3*c) + ((x*e + d)^(3/2)*B*b*c*d*e - 2*(x*e + d)^(3/2)*A*c^2*d
*e - sqrt(x*e + d)*B*b*c*d^2*e + 2*sqrt(x*e + d)*A*c^2*d^2*e - (x*e + d)^(3
/2)*B*b^2*e^2 + (x*e + d)^(3/2)*A*b*c*e^2 + sqrt(x*e + d)*B*b^2*d*e^2 - 2*s
qrt(x*e + d)*A*b*c*d*e^2)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e
+ d)*b*e - b*d*e)*b^2*c)
```

maple [B] time = 0.07, size = 443, normalized size = 2.45

$$\frac{A\,e^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,b}-\frac{5Acde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,b^2}+\frac{4A\,c^2d^2\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,b^3}+\frac{Bde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\,\,b}-2Bc\,d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e^2/b*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A*c*d-e^2
/c*(e*x+d)^(1/2)/(c*e*x+b*e)*B+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B*d+e^2/b/((b*
e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-5*e/b^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c*d+4/b^3*c^2/
((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2+e^2/c
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+e/b/((b*
e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-2/b^2/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2*c-d/b^2*A*
(e*x+d)^(1/2)/x-3*e*d^(1/2)/b^2*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4*d^(3/2)/
b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2*d^(3/2)/b^2*arctanh((e*x+d)^(1/2)/
d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.61, size = 4391, normalized size = 24.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (d^(1/2)*atan(((d^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6
+ 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B
^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c
^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2
- 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b
^4*c) + (d^(1/2)*((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*
e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) + (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*
e^2)*(d + e*x)^(1/2)*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A
*c*d + 2*B*b*d))/(2*b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3) + (d^(1
/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2
 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 -
 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*
b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^
5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (d^(1/2)*((8
*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^
2*e^3)/(b^6*c) - (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/2)
*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*
b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/(2*b^3))/((2*(32*A^3*c^6*d^5*e^3 +
2*B^3*b^6*d^2*e^6 + 70*A^3*b^2*c^4*d^3*e^5 - 25*A^3*b^3*c^3*d^2*e^6 - 4*B^3
*b^3*c^3*d^5*e^3 - 2*B^3*b^4*c^2*d^4*e^4 + 3*A*B^2*b^6*d*e^7 - 80*A^3*b*c^5
*d^4*e^4 + 3*A^3*b^4*c^2*d*e^7 + 4*B^3*b^5*c*d^3*e^5 + 24*A*B^2*b^2*c^4*d^5
*e^3 - 12*A*B^2*b^3*c^3*d^4*e^4 - 21*A*B^2*b^4*c^2*d^3*e^5 + 72*A^2*B*b^2*c
^4*d^4*e^4 - 9*A^2*B*b^3*c^3*d^3*e^5 - 21*A^2*B*b^4*c^2*d^2*e^6 + 6*A^2*B*b
^5*c*d*e^7 + 6*A*B^2*b^5*c*d^2*e^6 - 48*A^2*B*b*c^5*d^5*e^3))/(b^6*c) + (d^
(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e
^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3
 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^
2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*
e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) + (d^(1/2)*(
(8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*
d^2*e^3)/(b^6*c) + (d^(1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/
2)*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(
2*b^3))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3) - (d^(1/2)*((2*(d + e*x)^(1/
2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2
*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^
4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B
*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^
3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (d^(1/2)*((8*A*b^7*c^3*d*e^4 - 4*
B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - (d^(
1/2)*(4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(d + e*x)^(1/2)*(3*A*b*e - 4*A*c*d +
 2*B*b*d))/(b^7*c))*(3*A*b*e - 4*A*c*d + 2*B*b*d))/(2*b^3))*(3*A*b*e - 4*A*
c*d + 2*B*b*d))/(2*b^3)))*(3*A*b*e - 4*A*c*d + 2*B*b*d)*1i)/b^3 - (((d + e*
x)^(3/2)*(B*b^2*e^2 - A*b*c*e^2 + 2*A*c^2*d*e - B*b*c*d*e))/(b^2*c) - ((d +
 e*x)^(1/2)*(2*A*c^2*d^2*e + B*b^2*d*e^2 - 2*A*b*c*d*e^2 - B*b*c*d^2*e))/(b
^2*c))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + c*d^2 - b*d*e) + (atan(((
(-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6
 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*
B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*
c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2
 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(
b^4*c) + (((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4
*B*b^7*c^3*d^2*e^3)/(b^6*c) + ((4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))
/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b
*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)/(2*b^3*
c^3) + ((-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4
*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*
e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 6
4*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5
*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2
*e^4))/(b^4*c) - (((8*A*b^7*c^3*d*e^4 - 4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2
*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - ((4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-
c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B
*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e
 + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)
/(2*b^3*c^3))/((2*(32*A^3*c^6*d^5*e^3 + 2*B^3*b^6*d^2*e^6 + 70*A^3*b^2*c^4*
d^3*e^5 - 25*A^3*b^3*c^3*d^2*e^6 - 4*B^3*b^3*c^3*d^5*e^3 - 2*B^3*b^4*c^2*d^
4*e^4 + 3*A*B^2*b^6*d*e^7 - 80*A^3*b*c^5*d^4*e^4 + 3*A^3*b^4*c^2*d*e^7 + 4*
B^3*b^5*c*d^3*e^5 + 24*A*B^2*b^2*c^4*d^5*e^3 - 12*A*B^2*b^3*c^3*d^4*e^4 - 2
1*A*B^2*b^4*c^2*d^3*e^5 + 72*A^2*B*b^2*c^4*d^4*e^4 - 9*A^2*B*b^3*c^3*d^3*e^
5 - 21*A^2*B*b^4*c^2*d^2*e^6 + 6*A^2*B*b^5*c*d*e^7 + 6*A*B^2*b^5*c*d^2*e^6
 - 48*A^2*B*b*c^5*d^5*e^3))/(b^6*c) + ((-c^3*(b*e - c*d))^(1/2)*((2*(d + e*x
)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b^2*c^
4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*c^2*d
^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e^5 +
2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*b^2*c
^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) + (((8*A*b^7*c^3*d*e^4 - 4*B*b
^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) + ((4*b^7
*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(B*b^2
*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(1/2)*
(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4*A*c^
2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3) - ((-c^3*(b*e - c*d))^(1/2)*((2*(d
+ e*x)^(1/2)*(B^2*b^6*e^6 + A^2*b^4*c^2*e^6 + 32*A^2*c^6*d^4*e^2 + 42*A^2*b
^2*c^4*d^2*e^4 + 8*B^2*b^2*c^4*d^4*e^2 - 4*B^2*b^3*c^3*d^3*e^3 - 3*B^2*b^4*
c^2*d^2*e^4 + 2*B^2*b^5*c*d*e^5 - 64*A^2*b*c^5*d^3*e^3 - 10*A^2*b^3*c^3*d*e
^5 + 2*A*B*b^5*c*e^6 - 32*A*B*b*c^5*d^4*e^2 - 8*A*B*b^4*c^2*d*e^5 + 40*A*B*
b^2*c^4*d^3*e^3 - 6*A*B*b^3*c^3*d^2*e^4))/(b^4*c) - (((8*A*b^7*c^3*d*e^4 -
4*B*b^8*c^2*d*e^4 - 8*A*b^6*c^4*d^2*e^3 + 4*B*b^7*c^3*d^2*e^3)/(b^6*c) - ((
4*b^7*c^3*e^3 - 8*b^6*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(
B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(b^7*c^4))*(-c^3*(b*e - c*d))^(
1/2)*(B*b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3))*(B*b^2*e - 4
*A*c^2*d + A*b*c*e + 2*B*b*c*d))/(2*b^3*c^3)))*(-c^3*(b*e - c*d))^(1/2)*(B*
b^2*e - 4*A*c^2*d + A*b*c*e + 2*B*b*c*d)*1i)/(b^3*c^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1242 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(Abe-4Acd+2bBd)}{b^3\sqrt{d}}-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\left(bx+cx^2\right)}+\frac{\left(3Abce-4Ac^2d+b^2(-B)e+2bBcd\right)\mathrm{tan}}{b^3\sqrt{c}\,\sqrt{cd-be}}$$

```
[Out] -(A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3/d^(1/2)+(3*A*b*
c*e-4*A*c^2*d-B*b^2*e+2*B*b*c*d)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(
1/2))/b^3/c^(1/2)/(-b*e+c*d)^(1/2)-(A*b-(-2*A*c+B*b)*x)*(e*x+d)^(1/2)/b^2/(
c*x^2+b*x)
```

Rubi [A] time = 0.31, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {820, 826, 1166, 208}

$$\frac{\left(3Abce-4Ac^2d+b^2(-B)e+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3\sqrt{c}\,\sqrt{cd-be}}-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\left(bx+cx^2\right)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(Abe-4}{b^3\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^2,x]
```

```
[Out] -(((A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(b^2*(b*x + c*x^2))) - ((2*b*B*d
 - 4*A*c*d + A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*Sqrt[d]) + ((2*b*B*
c*d - 4*A*c^2*d - b^2*B*e + 3*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt
[c*d - b*e]])/(b^3*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^2}\,dx = -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}(4Acd-b(2Bd+Ae))-\frac{1}{2}(bB-2Ac)ex}{\sqrt{d+ex}\left(bx+cx^2\right)}\,dx}{b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}(bB-2Ac)de+\frac{1}{2}e(4Acd-b(2Bd+Ae))-\frac{1}{2}(bB-2Ac)e}{cd^2-bde+(-2cd+be)x^2+cx^4}\right.}{b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} + \frac{(c(2bBd-4Acd+Abe))\,\mathrm{Subst}\left(\int \frac{1}{-\frac{be}{2}+\frac{1}{2}(-2cd+be)+c}\right.}{b^3}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\left(bx+cx^2\right)} - \frac{(2bBd-4Acd+Abe)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)}{b^3\sqrt{d}} + \frac{\left(2bBcd-\right.}{}$$

Mathematica [A] time = 0.55, size = 232, normalized size = 1.47

$$\frac{\frac{\frac{d\left(-bc(3Ae+2Bd)+4Ac^2d+b^2Be\right)\left(\sqrt{c}\sqrt{d+ex}-\sqrt{cd-be}\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)\right)}{\sqrt{c}(cd-be)}+\left(\sqrt{d+ex}-\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)(Abe-4Acd+2bBd)}{b^2} - \frac{c(d+ex)^{3/2}(Abe-2Acd+bB}{b(b+cx)(be-cd)}}{bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^2,x]
```

```
[Out] (-((c*(b*B*d - 2*A*c*d + A*b*e)*(d + e*x)^(3/2))/(b*(-(c*d) + b*e)*(b + c*x
))) - (A*(d + e*x)^(3/2))/(x*(b + c*x)) + ((2*b*B*d - 4*A*c*d + A*b*e)*(Sqr
t[d + e*x] - Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) + (d*(4*A*c^2*d + b^2*
B*e - b*c*(2*B*d + 3*A*e))*(Sqrt[c]*Sqrt[d + e*x] - Sqrt[c*d - b*e]*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]]))/(Sqrt[c]*(c*d - b*e)))/b^2)/(b*
d)
```

fricas [B] time = 1.38, size = 1574, normalized size = 9.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(c^2*d - b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^2 - (B*b^2*c - 3*A*b*c^
2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3 - 3*A*b^2*c)*d*e)*x)*lo
g((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) -
((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 - 5*A*b*c^3)*d*e
)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*b^3*c - 5*A*b^2
*c^2)*d*e)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b
^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2*A*b^
2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*c^2*d
^2 - b^5*c*d*e)*x), -1/2*(2*sqrt(-c^2*d + b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^
2 - (B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3
- 3*A*b^2*c)*d*e)*x)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e*x + c*d
)) + ((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 - 5*A*b*c^3
)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*b^3*c - 5*
A*b^2*c^2)*d*e)*x)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2
*(A*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2
*A*b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*
c^2*d^2 - b^5*c*d*e)*x), -1/2*(2*((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^
2 + (2*B*b^2*c^2 - 5*A*b*c^3)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*
b*c^3)*d^2 + (2*B*b^3*c - 5*A*b^2*c^2)*d*e)*x)*sqrt(-d)*arctan(sqrt(e*x + d
)*sqrt(-d)/d) - sqrt(c^2*d - b*c*e)*((2*(B*b*c^2 - 2*A*c^3)*d^2 - (B*b^2*c
- 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2 - (B*b^3 - 3*A*b^2*c)*
d*e)*x)*log((c*e*x + 2*c*d - b*e + 2*sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*
x + b)) + 2*(A*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (
B*b^3*c - 2*A*b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*
x^2 + (b^4*c^2*d^2 - b^5*c*d*e)*x), -(sqrt(-c^2*d + b*c*e)*((2*(B*b*c^2 - 2
*A*c^3)*d^2 - (B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^2
 - (B*b^3 - 3*A*b^2*c)*d*e)*x)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c
*e*x + c*d)) + ((A*b^2*c^2*e^2 - 2*(B*b*c^3 - 2*A*c^4)*d^2 + (2*B*b^2*c^2 -
 5*A*b*c^3)*d*e)*x^2 + (A*b^3*c*e^2 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^2 + (2*B*
b^3*c - 5*A*b^2*c^2)*d*e)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (A
*b^2*c^2*d^2 - A*b^3*c*d*e - ((B*b^2*c^2 - 2*A*b*c^3)*d^2 - (B*b^3*c - 2*A*
b^2*c^2)*d*e)*x)*sqrt(e*x + d))/((b^3*c^3*d^2 - b^4*c^2*d*e)*x^2 + (b^4*c^2
*d^2 - b^5*c*d*e)*x)]
```

giac [A] time = 0.22, size = 234, normalized size = 1.48

$$-\frac{\left(2\,Bbcd-4\,Ac^{2}d-Bb^{2}e+3\,Abce\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\sqrt{-c^{2}d+bce}\,b^{3}}+\frac{\left(2\,Bbd-4\,Acd+Abe\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{b^{3}\sqrt{-d}}+\frac{(xe+d)^{\frac{3}{2}}Bbe-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c*d - 4*A*c^2*d - B*b^2*e + 3*A*b*c*e)*arctan(sqrt(x*e + d)*c/sqrt(
-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b^3) + (2*B*b*d - 4*A*c*d + A*b*e)*a
rctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)) + ((x*e + d)^(3/2)*B*b*e - 2*(
x*e + d)^(3/2)*A*c*e - sqrt(x*e + d)*B*b*d*e + 2*sqrt(x*e + d)*A*c*d*e - sq
rt(x*e + d)*A*b*e^2)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*
b*e - b*d*e)*b^2)
```

maple [B] time = 0.07, size = 299, normalized size = 1.89

$$-\frac{3Ace\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^{2}}+\frac{4A\,c^{2}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^{3}}+\frac{Be\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b}-\frac{2Bcd\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{\sqrt{(be-cd)\,c}\;b^{2}}-\frac{\sqrt{ex+d}}{(cex+be)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A*c+e/b*(e*x+d)^(1/2)/(c*e*x+b*e)*B-3*e/b^
2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c+4/b^3
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c^2*d+e/
b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2/b^2/(
(b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*c*d-1/b^2*
A*(e*x+d)^(1/2)/x-e/b^2/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4/b^3*d^(1
/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2*d^(1/2)*arctanh((e*x+d)^(1/2)/
d^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 2.56, size = 2558, normalized size = 16.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^2,x)
```

```
[Out] (atan((((-c*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32
*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^
4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*
B*b^2*c^3*d*e^3))/b^4 + (((4*A*b^7*c^2*e^4 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^
2*d*e^3)/b^6 + ((4*b^7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d
 + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*
d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*
B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B
*b*c*d)*1i)/(2*(b^3*c^2*d - b^4*c*e)) + ((-c*(b*e - c*d))^(1/2)*((2*(d + e*
x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b
^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e
^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4 - (((4*A*b^7*c^2*e^4
 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 - ((4*b^7*c^2*e^3 - 8*b^6*c^3
*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b
*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A
*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*
c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^3*c^2*d - b^4*c*e)))/((2
*(6*A^3*b^2*c^3*e^5 + 32*A^3*c^5*d^2*e^3 - 4*B^3*b^3*c^2*d^2*e^3 + A*B^2*b^
4*c*e^5 - 32*A^3*b*c^4*d*e^4 + 2*B^3*b^4*c*d*e^4 - 5*A^2*B*b^3*c^2*e^5 + 24
*A*B^2*b^2*c^3*d^2*e^3 - 16*A*B^2*b^3*c^2*d*e^4 - 48*A^2*B*b*c^4*d^2*e^3 +
40*A^2*B*b^2*c^3*d*e^4))/b^6 + ((-c*(b*e - c*d))^(1/2)*((2*(d + e*x)^(1/2)*
(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^
2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^3 - 4*B^2*b^3*c^2*d*e^3 - 32*A
*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4 + (((4*A*b^7*c^2*e^4 - 8*A*b^
6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 + ((4*b^7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(
-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*
B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d +
B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)))*(4*A*c^2*d + B
*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*d - b^4*c*e)) - ((-c*(b*e - c*
d))^(1/2)*((2*(d + e*x)^(1/2)*(10*A^2*b^2*c^3*e^4 + 32*A^2*c^5*d^2*e^2 + B^
2*b^4*c*e^4 + 8*B^2*b^2*c^3*d^2*e^2 - 6*A*B*b^3*c^2*e^4 - 32*A^2*b*c^4*d*e^
3 - 4*B^2*b^3*c^2*d*e^3 - 32*A*B*b*c^4*d^2*e^2 + 24*A*B*b^2*c^3*d*e^3))/b^4
 - (((4*A*b^7*c^2*e^4 - 8*A*b^6*c^3*d*e^3 + 4*B*b^7*c^2*d*e^3)/b^6 - ((4*b^
7*c^2*e^3 - 8*b^6*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(4*A*c^
2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(b^4*(b^3*c^2*d - b^4*c*e)))*(-c*(b
*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2
*d - b^4*c*e)))*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2*B*b*c*d))/(2*(b^3*c^2*
d - b^4*c*e))))*(-c*(b*e - c*d))^(1/2)*(4*A*c^2*d + B*b^2*e - 3*A*b*c*e - 2
*B*b*c*d)*1i)/(b^3*c^2*d - b^4*c*e) - (((d + e*x)^(1/2)*(A*b*e^2 - 2*A*c*d*
e + B*b*d*e))/b^2 + ((2*A*c*e - B*b*e)*(d + e*x)^(3/2))/b^2)/((b*e - 2*c*d)
*(d + e*x) + c*(d + e*x)^2 + c*d^2 - b*d*e) - (atanh((4*B^3*c*d^(1/2)*e^4*(
d + e*x)^(1/2))/(2*A*B^2*c*e^5 - (8*A^3*c^3*e^5)/b^2 + 4*B^3*c*d*e^4 + (2*A
^3*c^2*e^6)/(b*d) - (16*A*B^2*c^2*d*e^4)/b + (16*A^2*B*c^3*d*e^4)/b^2) + (2
*A^3*c^2*e^6*(d + e*x)^(1/2))/(d^(3/2)*((2*A^3*c^2*e^6)/d - (8*A^3*c^3*e^5)
/b - 16*A*B^2*c^2*d*e^4 + 2*A*B^2*b*c*e^5 + 4*B^3*b*c*d*e^4 + (16*A^2*B*c^3
*d*e^4)/b)) - (8*A^3*c^3*e^5*(d + e*x)^(1/2))/(d^(1/2)*(2*A*B^2*b^2*c*e^5 -
 8*A^3*c^3*e^5 + 16*A^2*B*c^3*d*e^4 + 4*B^3*b^2*c*d*e^4 + (2*A^3*b*c^2*e^6)
/d - 16*A*B^2*b*c^2*d*e^4)) - (16*A*B^2*c^2*d^(1/2)*e^4*(d + e*x)^(1/2))/((
2*A^3*c^2*e^6)/d - (8*A^3*c^3*e^5)/b - 16*A*B^2*c^2*d*e^4 + 2*A*B^2*b*c*e^5
 + 4*B^3*b*c*d*e^4 + (16*A^2*B*c^3*d*e^4)/b) + (16*A^2*B*c^3*d^(1/2)*e^4*(d
 + e*x)^(1/2))/(2*A*B^2*b^2*c*e^5 - 8*A^3*c^3*e^5 + 16*A^2*B*c^3*d*e^4 + 4*
B^3*b^2*c*d*e^4 + (2*A^3*b*c^2*e^6)/d - 16*A*B^2*b*c^2*d*e^4) + (2*A*B^2*c*
e^5*(d + e*x)^(1/2))/(d^(1/2)*(2*A*B^2*c*e^5 - (8*A^3*c^3*e^5)/b^2 + 4*B^3*
c*d*e^4 + (2*A^3*c^2*e^6)/(b*d) - (16*A*B^2*c^2*d*e^4)/b + (16*A^2*B*c^3*d*
e^4)/b^2)))*(A*b*e - 4*A*c*d + 2*B*b*d))/(b^3*d^(1/2))
```

sympy [B] time = 147.85, size = 1431, normalized size = 9.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] 2*A*c**2*d*e*sqrt(d + e*x)/(2*b**4*e**2 - 2*b**3*c*d*e + 2*b**3*c*e**2*x -
2*b**2*c**2*d*e*x) - 2*A*c*e**2*sqrt(d + e*x)/(2*b**3*e**2 - 2*b**2*c*d*e +
 2*b**2*c*e**2*x - 2*b*c**2*d*e*x) + A*c*e**2*sqrt(-1/(c*(b*e - c*d)**3))*l
og(-b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d
)**3)) - c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b) - A*c
*e**2*sqrt(-1/(c*(b*e - c*d)**3))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3))
 - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)
**3)) + sqrt(d + e*x))/(2*b) - A*c**2*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(-
b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3
)) - c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b**2) + A*c*
*2*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)
) - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d
)**3)) + sqrt(d + e*x))/(2*b**2) - A*d*e*sqrt(d**(-3))*log(-d**2*sqrt(d**(-
3)) + sqrt(d + e*x))/(2*b**2) + A*d*e*sqrt(d**(-3))*log(d**2*sqrt(d**(-3))
+ sqrt(d + e*x))/(2*b**2) - 2*A*e*atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**2
*sqrt(b*e/c - d)) + 2*A*e*atan(sqrt(d + e*x)/sqrt(-d))/(b**2*sqrt(-d)) - A*
sqrt(d + e*x)/(b**2*x) + 4*A*c*d*atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**3*
sqrt(b*e/c - d)) - 4*A*c*d*atan(sqrt(d + e*x)/sqrt(-d))/(b**3*sqrt(-d)) - 2
*B*c*d*e*sqrt(d + e*x)/(2*b**3*e**2 - 2*b**2*c*d*e + 2*b**2*c*e**2*x - 2*b*
c**2*d*e*x) - B*e**2*sqrt(-1/(c*(b*e - c*d)**3))*log(-b**2*e**2*sqrt(-1/(c*
(b*e - c*d)**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) - c**2*d**2*sqrt(-
1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/2 + B*e**2*sqrt(-1/(c*(b*e - c*d)**3
))*log(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) - 2*b*c*d*e*sqrt(-1/(c*(b*e -
c*d)**3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/2 + 2*B*
e**2*sqrt(d + e*x)/(2*b**2*e**2 - 2*b*c*d*e + 2*b*c*e**2*x - 2*c**2*d*e*x)
+ B*c*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log(-b**2*e**2*sqrt(-1/(c*(b*e - c*d)
**3)) + 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**3)) - c**2*d**2*sqrt(-1/(c*(b*e -
 c*d)**3)) + sqrt(d + e*x))/(2*b) - B*c*d*e*sqrt(-1/(c*(b*e - c*d)**3))*log
(b**2*e**2*sqrt(-1/(c*(b*e - c*d)**3)) - 2*b*c*d*e*sqrt(-1/(c*(b*e - c*d)**
3)) + c**2*d**2*sqrt(-1/(c*(b*e - c*d)**3)) + sqrt(d + e*x))/(2*b) - 2*B*d*
atan(sqrt(d + e*x)/sqrt(b*e/c - d))/(b**2*sqrt(b*e/c - d)) + 2*B*d*atan(sqr
t(d + e*x)/sqrt(-d))/(b**2*sqrt(-d))
```

3.1243 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=188

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^3d^{3/2}}-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\left(bx+cx^2\right)(cd-be)}+\frac{\sqrt{c}\left(5Abce-4A\right.}{}$$

```
[Out] -(-A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3/d^(3/2)+(5*A*b
*c*e-4*A*c^2*d-3*B*b^2*e+2*B*b*c*d)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d
)^(1/2))*c^(1/2)/b^3/(-b*e+c*d)^(3/2)-(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d
))*x)*(e*x+d)^(1/2)/b^2/d/(-b*e+c*d)/(c*x^2+b*x)
```

Rubi [A] time = 0.34, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 826, 1166, 208}

$$\frac{\sqrt{c}\left(5Abce-4Ac^2d-3b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^3(cd-be)^{3/2}}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^3d^{3/2}}-\sqrt{d+ex}\,($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^2),x]
```

```
[Out] -((Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*
(c*d - b*e)*(b*x + c*x^2))) - ((2*b*B*d - 4*A*c*d - A*b*e)*ArcTanh[Sqrt[d +
 e*x]/Sqrt[d]])/(b^3*d^(3/2)) + (Sqrt[c]*(2*b*B*c*d - 4*A*c^2*d - 3*b^2*B*e
 + 5*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*(c*d -
 b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-Abe)-\frac{1}{2}ce(bB}{\sqrt{d+ex}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{-\frac{1}{2}e(cd-be)(2bBd-4Acd-}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} + \frac{(c(2bBd-4Acd-Abe))\,\mathrm{Subst}}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\left(bx+cx^2\right)} - \frac{(2bBd-4Acd-Abe)\tanh^{-1}\left(\right.}{b^3d^{3/2}}$$

Mathematica [A] time = 0.43, size = 231, normalized size = 1.23

$$\frac{-\frac{2\sqrt{c}\,d\left(-bc(5Ae+2Bd)+4Ac^2d+3b^2Be\right)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{b^2(cd-be)^{3/2}} - \frac{2\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-Abe-4Acd+2bBd)}{b^2\sqrt{d}} + \frac{c\sqrt{d+ex}\,(Abe+4Acd-2bBd)}{b(b+cx)(be-cd)} + \frac{3Ace\sqrt{d+e}}{(b+cx)(cd-b}}{2bd}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^2),x]
```

```
[Out] ((3*A*c*e*Sqrt[d + e*x])/((c*d - b*e)*(b + c*x)) + (c*(-2*b*B*d + 4*A*c*d +
 A*b*e)*Sqrt[d + e*x])/(b*(-(c*d) + b*e)*(b + c*x)) - (2*A*Sqrt[d + e*x])/(
x*(b + c*x)) - (2*(2*b*B*d - 4*A*c*d - A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]
])/(b^2*Sqrt[d]) - (2*Sqrt[c]*d*(4*A*c^2*d + 3*b^2*B*e - b*c*(2*B*d + 5*A*e
))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^2*(c*d - b*e)^(3/2)
))/(2*b*d)
```

fricas [B] time = 6.15, size = 1540, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(((2*(B*b*c^2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (
2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(c/(c*d -
 b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d -
 b*e)))/(c*x + b)) + ((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c
 - 3*A*b*c^2)*d*e)*x^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^
3 - 3*A*b^2*c)*d*e)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
 + 2*(A*b^2*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x
)*sqrt(e*x + d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)
*x), 1/2*(2*((2*(B*b*c^2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^
2 + (2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(-c/
(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x
+ c*d)) - ((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^
2)*d*e)*x^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2
*c)*d*e)*x)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2
*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x
+ d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)*x), 1/2*(2
*((A*b^2*c*e^2 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^2)*d*e)*x
^2 + (A*b^3*e^2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2*c)*d*e)*
x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((2*(B*b*c^2 - 2*A*c^3)*d^3
- (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (2*(B*b^2*c - 2*A*b*c^2)*d^3 - (3*B*
b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2
*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(A*b^2*c*d^2
 - A*b^3*d*e - (A*b^2*c*d*e + (B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x + d))/
((b^3*c^2*d^3 - b^4*c*d^2*e)*x^2 + (b^4*c*d^3 - b^5*d^2*e)*x), (((2*(B*b*c^
2 - 2*A*c^3)*d^3 - (3*B*b^2*c - 5*A*b*c^2)*d^2*e)*x^2 + (2*(B*b^2*c - 2*A*b
*c^2)*d^3 - (3*B*b^3 - 5*A*b^2*c)*d^2*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c
*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + ((A*b^2*c*e^2
 + 2*(B*b*c^2 - 2*A*c^3)*d^2 - (2*B*b^2*c - 3*A*b*c^2)*d*e)*x^2 + (A*b^3*e^
2 + 2*(B*b^2*c - 2*A*b*c^2)*d^2 - (2*B*b^3 - 3*A*b^2*c)*d*e)*x)*sqrt(-d)*ar
ctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c*d^2 - A*b^3*d*e - (A*b^2*c*d*e +
(B*b^2*c - 2*A*b*c^2)*d^2)*x)*sqrt(e*x + d))/((b^3*c^2*d^3 - b^4*c*d^2*e)*x
^2 + (b^4*c*d^3 - b^5*d^2*e)*x)]
```

giac [A] time = 0.24, size = 315, normalized size = 1.68

$$-\frac{\left(2\,Bbc^2d-4\,Ac^3d-3\,Bb^2ce+5\,Abc^2e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(b^3cd-b^4e\right)\sqrt{-c^2d+bce}}+\frac{(xe+d)^{\frac{3}{2}}Bbcde-2\,(xe+d)^{\frac{3}{2}}Ac^2de-\sqrt{xe+d}\,B}{\left(b^2cd^2-b^3de\right)\bigl(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^2*d - 4*A*c^3*d - 3*B*b^2*c*e + 5*A*b*c^2*e)*arctan(sqrt(x*e + d)
*c/sqrt(-c^2*d + b*c*e))/((b^3*c*d - b^4*e)*sqrt(-c^2*d + b*c*e)) + ((x*e +
 d)^(3/2)*B*b*c*d*e - 2*(x*e + d)^(3/2)*A*c^2*d*e - sqrt(x*e + d)*B*b*c*d^2
*e + 2*sqrt(x*e + d)*A*c^2*d^2*e + (x*e + d)^(3/2)*A*b*c*e^2 - 2*sqrt(x*e +
 d)*A*b*c*d*e^2 + sqrt(x*e + d)*A*b^2*e^3)/((b^2*c*d^2 - b^3*d*e)*((x*e + d
)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + (2*B*b*d - 4*A*
c*d - A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)*d)
```

maple [B] time = 0.07, size = 370, normalized size = 1.97

$$\frac{5A\,c^2e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^2}-\frac{4A\,c^3d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^3}-\frac{3Bce\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b}+\frac{2B\,c^2d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)\,\sqrt{(be-cd)\,c}\;b^2}+\frac{}{(be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e*c^2/b^2/(b*e-c*d)*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e*c/b/(b*e-c*d)*(e*x+d)^(1/
2)/(c*e*x+b*e)*B+5*e*c^2/b^2/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*A-4*c^3/b^3/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arcta
n((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-3*e*c/b/(b*e-c*d)/((b*e-c*d)*c)^
(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+2*c^2/b^2/(b*e-c*d)/((b
*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-1/b^2*A/d*
(e*x+d)^(1/2)/x+e/b^2/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+4/b^3/d^(1/2
)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(1/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 4.28, size = 5828, normalized size = 31.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(1/2)),x)
```

```
[Out] (((d + e*x)^(1/2)*(A*b^2*e^3 + 2*A*c^2*d^2*e - 2*A*b*c*d*e^2 - B*b*c*d^2*e)
)/(b^2*(c*d^2 - b*d*e)) + (c*(d + e*x)^(3/2)*(A*b*e^2 - 2*A*c*d*e + B*b*d*e
))/(b^2*(c*d^2 - b*d*e)))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + c*d^2
- b*d*e) + (atan(((((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^
2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3
 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32
*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*
b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*
c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^
5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*
c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x
)^(1/2)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^
9*c^2*d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d
^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e
- 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*
c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e
^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c
*d)*1i)/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)) + (((
2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^
2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2
*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 -
4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^
4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c
^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e
^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2
 - 2*b^7*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(8*b^6*c^5*d^
5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5)*(4*A*c
^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d^4 + b^6*d^2*e^2 - 2*
b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-
c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*
(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)
^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^6*e^3 -
 b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))/((2*(5*A^3*b^3*c^4*e^6 +
32*A^3*c^7*d^3*e^3 - 4*B^3*b^3*c^4*d^3*e^3 + 6*B^3*b^4*c^3*d^2*e^4 - 3*A^2*
B*b^4*c^3*e^6 - 48*A^3*b*c^6*d^2*e^4 + 6*A^3*b^2*c^5*d*e^5 + 24*A*B^2*b^2*c
^5*d^3*e^3 - 36*A*B^2*b^3*c^4*d^2*e^4 + 72*A^2*B*b^2*c^5*d^2*e^4 + 3*A*B^2*
b^4*c^3*d*e^5 - 48*A^2*B*b*c^6*d^3*e^3 - 9*A^2*B*b^3*c^4*d*e^5))/(b^6*c^2*d
^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 +
 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B
^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*
b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5
*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^
3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 +
4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*
c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) + ((-c*(b*e - c*d)
^3)^(1/2)*(d + e*x)^(1/2)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*
c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b
*c*d))/((b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3
+ 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d +
3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d
^2*e - 3*b^5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5
*A*b*c*e - 2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*
c*d*e^2)) - (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26
*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*
B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b
*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^
4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*
e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*
B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^
4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2
)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*
d^2*e^5)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/((b^4*c^2*d^4 + b
^6*d^2*e^2 - 2*b^5*c*d^3*e)*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^
5*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e -
2*B*b*c*d))/(2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2)))*
(-c*(b*e - c*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d))/(
2*(b^6*e^3 - b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2))))*(-c*(b*e - c
*d)^3)^(1/2)*(4*A*c^2*d + 3*B*b^2*e - 5*A*b*c*e - 2*B*b*c*d)*1i)/(b^6*e^3 -
 b^3*c^3*d^3 + 3*b^4*c^2*d^2*e - 3*b^5*c*d*e^2) + (atan(((((2*(d + e*x)^(1/
2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b
^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b
*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d
*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6
*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16
*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c
^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*
e) + ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b^6*c^5*d^5*e^2 - 20*b
^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5))/(b^3*(d^3)^(1/2)*
(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e + 4*A*c*d - 2*B*b*d))/
(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(2*b^3*(d^3)^(1/2)) +
(((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*c^5
*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c^3*
d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*e^2
 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4))/
(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*c^2*d*e^6 + 8*A*b^
6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4*d^
4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d^2*
e^2 - 2*b^7*c*d^3*e) - ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b^6*
c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^5))
/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e + 4*
A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(2*b
^3*(d^3)^(1/2)))/((2*(5*A^3*b^3*c^4*e^6 + 32*A^3*c^7*d^3*e^3 - 4*B^3*b^3*c^
4*d^3*e^3 + 6*B^3*b^4*c^3*d^2*e^4 - 3*A^2*B*b^4*c^3*e^6 - 48*A^3*b*c^6*d^2*
e^4 + 6*A^3*b^2*c^5*d*e^5 + 24*A*B^2*b^2*c^5*d^3*e^3 - 36*A*B^2*b^3*c^4*d^2
*e^4 + 72*A^2*B*b^2*c^5*d^2*e^4 + 3*A*B^2*b^4*c^3*d*e^5 - 48*A^2*B*b*c^6*d^
3*e^3 - 9*A^2*B*b^3*c^4*d*e^5))/(b^6*c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e)
 + (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^2 + 26*A^2*b^2*
c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3 + 13*B^2*b^4*c
^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32*A*B*b*c^6*d^4*
e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*b^3*c^4*d^2*e^4
))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) - (((4*A*b^9*c^2*d*e^6 + 8*A
*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^5 - 4*B*b^7*c^4
*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*c^2*d^4 + b^8*d
^2*e^2 - 2*b^7*c*d^3*e) + ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d - 2*B*b*d)*(8*b
^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4*b^9*c^2*d^2*e^
5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e)))*(A*b*e +
 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b
^3*(d^3)^(1/2)) - (((2*(d + e*x)^(1/2)*(A^2*b^4*c^3*e^6 + 32*A^2*c^7*d^4*e^
2 + 26*A^2*b^2*c^5*d^2*e^4 + 8*B^2*b^2*c^5*d^4*e^2 - 20*B^2*b^3*c^4*d^3*e^3
 + 13*B^2*b^4*c^3*d^2*e^4 - 64*A^2*b*c^6*d^3*e^3 + 6*A^2*b^3*c^4*d*e^5 - 32
*A*B*b*c^6*d^4*e^2 - 4*A*B*b^4*c^3*d*e^5 + 72*A*B*b^2*c^5*d^3*e^3 - 38*A*B*
b^3*c^4*d^2*e^4))/(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^3*e) + (((4*A*b^9*
c^2*d*e^6 + 8*A*b^6*c^5*d^4*e^3 - 16*A*b^7*c^4*d^3*e^4 + 4*A*b^8*c^3*d^2*e^
5 - 4*B*b^7*c^4*d^4*e^3 + 12*B*b^8*c^3*d^3*e^4 - 8*B*b^9*c^2*d^2*e^5)/(b^6*
c^2*d^4 + b^8*d^2*e^2 - 2*b^7*c*d^3*e) - ((d + e*x)^(1/2)*(A*b*e + 4*A*c*d
- 2*B*b*d)*(8*b^6*c^5*d^5*e^2 - 20*b^7*c^4*d^4*e^3 + 16*b^8*c^3*d^3*e^4 - 4
*b^9*c^2*d^2*e^5))/(b^3*(d^3)^(1/2)*(b^4*c^2*d^4 + b^6*d^2*e^2 - 2*b^5*c*d^
3*e)))*(A*b*e + 4*A*c*d - 2*B*b*d))/(2*b^3*(d^3)^(1/2)))*(A*b*e + 4*A*c*d -
 2*B*b*d))/(2*b^3*(d^3)^(1/2))))*(A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(b^3*(d^3)
^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1244 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=254

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-3Abe-4Acd+2bBd)}{b^3d^{5/2}}-\frac{e\left(b^2(-e)(2Bd-3Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}-\frac{cx(2Acd-b(}{b^2d\,(bx+c}$$

```
[Out] -(-3*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3/d^(5/2)+c^(3
/2)*(7*A*b*c*e-4*A*c^2*d-5*B*b^2*e+2*B*b*c*d)*arctanh(c^(1/2)*(e*x+d)^(1/2)
/(-b*e+c*d)^(1/2))/b^3/(-b*e+c*d)^(5/2)-e*(2*A*c^2*d^2-b^2*e*(-3*A*e+2*B*d)
-b*c*d*(2*A*e+B*d))/b^2/d^2/(-b*e+c*d)^2/(e*x+d)^(1/2)+(-A*b*(-b*e+c*d)-c*(
2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(c*x^2+b*x)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(b^2(-e)(2Bd-3Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{c^{3/2}\left(7Abce-4Ac^2d-5b^2Be+2bBcd\right)\tanh^{-1}\left(\frac{\sqrt{c}\,\sqrt{d+ex}}{\sqrt{cd-be}}\right.}{b^3(cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -((e*(2*A*c^2*d^2 - b^2*e*(2*B*d - 3*A*e) - b*c*d*(B*d + 2*A*e)))/(b^2*d^2*
(c*d - b*e)^2*Sqrt[d + e*x])) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*
e))*x)/(b^2*d*(c*d - b*e)*Sqrt[d + e*x]*(b*x + c*x^2)) - ((2*b*B*d - 4*A*c*
d - 3*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(5/2)) + (c^(3/2)*(2*b*
B*c*d - 4*A*c^2*d - 5*b^2*B*e + 7*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/
Sqrt[c*d - b*e]])/(b^3*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-3Abe)-\frac{3}{2}ce(bBd-2Acd+}{(d+ex)^{3/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\,(bx+}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\,(bx+}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\,(bx+}$$

$$= -\frac{e\left(2Ac^2d^2-b^2e(2Bd-3Ae)-bcd(Bd+2Ae)\right)}{b^2d^2(cd-be)^2\sqrt{d+ex}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)\sqrt{d+ex}\,(bx+}$$

Mathematica [C] time = 0.18, size = 191, normalized size = 0.75

$$\frac{-x(b+cx)\left(cd^2\left(bc(7Ae+2Bd)-4Ac^2d-5b^2Be\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{ex}{d}+1\right)(3Abe\right.}{b^3d^2x(b+cx)\sqrt{d+ex}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-(A*b^2*d*(c*d - b*e)^2) - b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e)*
x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 5*b^2*B*e + b*c*(2*B*d + 7*A*e))*Hyper
geometric2F1[-1/2, 1, 1/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(-2*b
*B*d + 4*A*c*d + 3*A*b*e)*Hypergeometric2F1[-1/2, 1, 1/2, 1 + (e*x)/d]))/(b
^3*d^2*(c*d - b*e)^2*x*(b + c*x)*Sqrt[d + e*x])
```

fricas [B] time = 36.32, size = 3240, normalized size = 12.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^2)*x^
3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*c^3)*d^4*e - (5*B*b^3*c
 - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b^3*c
- 7*A*b^2*c^2)*d^4*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(
c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + ((3*A*b^3*c*e^4
- 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 - 2*(B*b^
3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^4 + (2
*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2*B*b^4
- A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^4 + (4
*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(d)*log
((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c^2*d^4 - 2*A*b^3*c*d^
3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^3*e - 2*
(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e^3 + (B*
b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x + d))/(
(b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*d^6 - b^
4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b^5*c*d^5
*e + b^6*d^4*e^2)*x), 1/2*(2*((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 -
 7*A*b*c^3)*d^3*e^2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*
c^3)*d^4*e - (5*B*b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b
*c^3)*d^5 - (5*B*b^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(-c/(c*d - b*e))*arctan
(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) + ((3*A*b^3
*c*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 -
2*(B*b^3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d
^4 + (2*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2
*B*b^4 - A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d
^4 + (4*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt
(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(A*b^2*c^2*d^4 - 2*A*b
^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^3
*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e^
3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x
+ d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*d
^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b^
5*c*d^5*e + b^6*d^4*e^2)*x), -1/2*(2*((3*A*b^3*c*e^4 - 2*(B*b*c^3 - 2*A*c^4
)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c^3)*d^2*e^2 - 2*(B*b^3*c + A*b^2*c^2)*d*e^3
)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^4 + (2*B*b^2*c^2 - A*b*c^3)*
d^3*e + (2*B*b^3*c - 7*A*b^2*c^2)*d^2*e^2 - (2*B*b^4 - A*b^3*c)*d*e^3)*x^2
+ (3*A*b^4*d*e^3 - 2*(B*b^2*c^2 - 2*A*b*c^3)*d^4 + (4*B*b^3*c - 5*A*b^2*c^2
)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqr
t(-d)/d) - ((2*(B*b*c^3 - 2*A*c^4)*d^4*e - (5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^
2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*b^2*c^2 - A*b*c^3)*d^4*e - (5*B*
b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b
^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e
+ 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) + 2*(A*b^2*c^
2*d^4 - 2*A*b^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2
*A*b*c^3)*d^3*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e -
 3*A*b^4*d*e^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)
*x)*sqrt(e*x + d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3
 + (b^3*c^3*d^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c
^2*d^6 - 2*b^5*c*d^5*e + b^6*d^4*e^2)*x), (((2*(B*b*c^3 - 2*A*c^4)*d^4*e -
(5*B*b^2*c^2 - 7*A*b*c^3)*d^3*e^2)*x^3 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 3*(B*
b^2*c^2 - A*b*c^3)*d^4*e - (5*B*b^3*c - 7*A*b^2*c^2)*d^3*e^2)*x^2 + (2*(B*b
^2*c^2 - 2*A*b*c^3)*d^5 - (5*B*b^3*c - 7*A*b^2*c^2)*d^4*e)*x)*sqrt(-c/(c*d
- b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d
)) - ((3*A*b^3*c*e^4 - 2*(B*b*c^3 - 2*A*c^4)*d^3*e + (4*B*b^2*c^2 - 5*A*b*c
^3)*d^2*e^2 - 2*(B*b^3*c + A*b^2*c^2)*d*e^3)*x^3 + (3*A*b^4*e^4 - 2*(B*b*c^
3 - 2*A*c^4)*d^4 + (2*B*b^2*c^2 - A*b*c^3)*d^3*e + (2*B*b^3*c - 7*A*b^2*c^2
)*d^2*e^2 - (2*B*b^4 - A*b^3*c)*d*e^3)*x^2 + (3*A*b^4*d*e^3 - 2*(B*b^2*c^2
- 2*A*b*c^3)*d^4 + (4*B*b^3*c - 5*A*b^2*c^2)*d^3*e - 2*(B*b^4 + A*b^3*c)*d^
2*e^2)*x)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - (A*b^2*c^2*d^4 - 2*A*
b^3*c*d^3*e + A*b^4*d^2*e^2 + (3*A*b^3*c*d*e^3 - (B*b^2*c^2 - 2*A*b*c^3)*d^
3*e - 2*(B*b^3*c + A*b^2*c^2)*d^2*e^2)*x^2 - (A*b^2*c^2*d^3*e - 3*A*b^4*d*e
^3 + (B*b^2*c^2 - 2*A*b*c^3)*d^4 + (2*B*b^4 + A*b^3*c)*d^2*e^2)*x)*sqrt(e*x
 + d))/((b^3*c^3*d^5*e - 2*b^4*c^2*d^4*e^2 + b^5*c*d^3*e^3)*x^3 + (b^3*c^3*
d^6 - b^4*c^2*d^5*e - b^5*c*d^4*e^2 + b^6*d^3*e^3)*x^2 + (b^4*c^2*d^6 - 2*b
^5*c*d^5*e + b^6*d^4*e^2)*x)]
```

giac [B] time = 0.26, size = 500, normalized size = 1.97

$$-\frac{\left(2\,Bbc^{3}d - 4\,Ac^{4}d - 5\,Bb^{2}c^{2}e + 7\,Abc^{3}e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^{2}d+bce}}\right)}{\left(b^{3}c^{2}d^{2} - 2\,b^{4}cde + b^{5}e^{2}\right)\sqrt{-c^{2}d+bce}} + \frac{(xe+d)^{2}Bbc^{2}d^{2}e - 2\,(xe+d)^{2}Ac^{3}d^{2}e - (xe+d)B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^3*d - 4*A*c^4*d - 5*B*b^2*c^2*e + 7*A*b*c^3*e)*arctan(sqrt(x*e +
d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^2*d^2 - 2*b^4*c*d*e + b^5*e^2)*sqrt(-c^2
*d + b*c*e)) + ((x*e + d)^2*B*b*c^2*d^2*e - 2*(x*e + d)^2*A*c^3*d^2*e - (x*
e + d)*B*b*c^2*d^3*e + 2*(x*e + d)*A*c^3*d^3*e + 2*(x*e + d)^2*B*b^2*c*d*e^
2 + 2*(x*e + d)^2*A*b*c^2*d*e^2 - 4*(x*e + d)*B*b^2*c*d^2*e^2 - 3*(x*e + d)
*A*b*c^2*d^2*e^2 + 2*B*b^2*c*d^3*e^2 - 3*(x*e + d)^2*A*b^2*c*e^3 + 2*(x*e +
 d)*B*b^3*d*e^3 + 7*(x*e + d)*A*b^2*c*d*e^3 - 2*B*b^3*d^2*e^3 - 2*A*b^2*c*d
^2*e^3 - 3*(x*e + d)*A*b^3*e^4 + 2*A*b^3*d*e^4)/((b^2*c^2*d^4 - 2*b^3*c*d^3
*e + b^4*d^2*e^2)*((x*e + d)^(5/2)*c - 2*(x*e + d)^(3/2)*c*d + sqrt(x*e + d
)*c*d^2 + (x*e + d)^(3/2)*b*e - sqrt(x*e + d)*b*d*e)) + (2*B*b*d - 4*A*c*d
- 3*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d)*d^2)
```

maple [A] time = 0.08, size = 427, normalized size = 1.68

$$-\frac{7A\,c^{3}e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{2}} + \frac{4A\,c^{4}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{3}} + \frac{5B\,c^{2}e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b} - \frac{2B\,c^{3}d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^{2}\sqrt{(be-cd)\,c}\;b^{2}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e*c^3/(b*e-c*d)^2/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A+e*c^2/(b*e-c*d)^2/b*(e*x
+d)^(1/2)/(c*e*x+b*e)*B-7*e*c^3/(b*e-c*d)^2/b^2/((b*e-c*d)*c)^(1/2)*arctan(
(e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+4*c^4/(b*e-c*d)^2/b^3/((b*e-c*d)*c)^
(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d+5*e*c^2/(b*e-c*d)^2/b
/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*c^3/(b
*e-c*d)^2/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*
c)*B*d-1/b^2/d^2*A*(e*x+d)^(1/2)/x+3*e/b^2/d^(5/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*A+4/b^3/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(3/2)*arc
tanh((e*x+d)^(1/2)/d^(1/2))*B-2*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(1/2)*A+2*e^2/(
b*e-c*d)^2/d/(e*x+d)^(1/2)*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.08, size = 8946, normalized size = 35.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(3/2)),x)
```

```
[Out] (atan(((((d + e*x)^(1/2)*(64*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*
e^3 + 2228*A^2*b^8*c^13*d^16*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^
10*c^11*d^14*e^6 - 3976*A^2*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8
+ 1004*A^2*b^13*c^8*d^11*e^9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^
6*d^9*e^11 + 362*A^2*b^16*c^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2
*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 +
 770*B^2*b^10*c^11*d^16*e^4 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c
^9*d^14*e^6 - 3664*B^2*b^13*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 130
0*B^2*b^15*c^6*d^11*e^9 + 410*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*
e^11 + 8*B^2*b^18*c^3*d^8*e^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^1
3*d^17*e^3 - 2636*A*B*b^9*c^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 914
0*A*B*b^11*c^10*d^14*e^6 + 8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d
^12*e^8 - 224*A*B*b^14*c^7*d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B
*b^16*c^5*d^9*e^11 + 208*A*B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13)
- ((-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*
d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*
A*b*c*e - 2*B*b*c*d)*(16*b^12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*
b^14*c^11*d^19*e^4 - 2280*b^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 571
2*b^17*c^8*d^16*e^7 + 5376*b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 168
0*b^20*c^5*d^13*e^10 - 520*b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b
^23*c^2*d^10*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^
3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) - 8*A*b^10*c^13*d^19*e^3 +
 76*A*b^11*c^12*d^18*e^4 - 300*A*b^12*c^11*d^17*e^5 + 612*A*b^13*c^10*d^16*
e^6 - 576*A*b^14*c^9*d^15*e^7 - 168*A*b^15*c^8*d^14*e^8 + 1176*A*b^16*c^7*d
^13*e^9 - 1560*A*b^17*c^6*d^12*e^10 + 1128*A*b^18*c^5*d^11*e^11 - 484*A*b^1
9*c^4*d^10*e^12 + 116*A*b^20*c^3*d^9*e^13 - 12*A*b^21*c^2*d^8*e^14 + 4*B*b^
11*c^12*d^19*e^3 - 56*B*b^12*c^11*d^18*e^4 + 312*B*b^13*c^10*d^17*e^5 - 960
*B*b^14*c^9*d^16*e^6 + 1848*B*b^15*c^8*d^15*e^7 - 2352*B*b^16*c^7*d^14*e^8
+ 2016*B*b^17*c^6*d^13*e^9 - 1152*B*b^18*c^5*d^12*e^10 + 420*B*b^19*c^4*d^1
1*e^11 - 88*B*b^20*c^3*d^10*e^12 + 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^
3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b
^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e
 - 2*B*b*c*d)*1i)/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*
d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) + (((d + e*x)^(1/2)*(64*A^2*
b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^16*e^4
- 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^10*c^11*d^14*e^6 - 3976*A^2*b^11*
c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^9 - 44
2*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c^5*d^8
*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c
^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4 - 202
0*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13*c^8*d
^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 410*B^2
*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e^12 -
64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c^12*d^
16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 9140*A*B*b^11*c^10*d^14*e^6 + 8056*A
*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*d^11*e
```

```
^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B*b^16*c^5*d^9*e^11 + 208*A*B*b^17
*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/2)*(4*
A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(
d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^12*c^1
3*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*b^14*c^11*d^19*e^4 - 2280*b^15*c^
10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*b^18*c
^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 1680*b^20*c^5*d^13*e^10 - 520*b^21*c
^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8*e^5 -
 b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 -
5*b^7*c*d*e^4)) + 8*A*b^10*c^13*d^19*e^3 - 76*A*b^11*c^12*d^18*e^4 + 300*A*
b^12*c^11*d^17*e^5 - 612*A*b^13*c^10*d^16*e^6 + 576*A*b^14*c^9*d^15*e^7 + 1
68*A*b^15*c^8*d^14*e^8 - 1176*A*b^16*c^7*d^13*e^9 + 1560*A*b^17*c^6*d^12*e^
10 - 1128*A*b^18*c^5*d^11*e^11 + 484*A*b^19*c^4*d^10*e^12 - 116*A*b^20*c^3*
d^9*e^13 + 12*A*b^21*c^2*d^8*e^14 - 4*B*b^11*c^12*d^19*e^3 + 56*B*b^12*c^11
*d^18*e^4 - 312*B*b^13*c^10*d^17*e^5 + 960*B*b^14*c^9*d^16*e^6 - 1848*B*b^1
5*c^8*d^15*e^7 + 2352*B*b^16*c^7*d^14*e^8 - 2016*B*b^17*c^6*d^13*e^9 + 1152
*B*b^18*c^5*d^12*e^10 - 420*B*b^19*c^4*d^11*e^11 + 88*B*b^20*c^3*d^10*e^12
- 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*
b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5
)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*1i)/(2*(b^8*e^5 - b
^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*
b^7*c*d*e^4)))/((((d + e*x)^(1/2)*(64*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c
^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^16*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 59
60*A^2*b^10*c^11*d^14*e^6 - 3976*A^2*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*
d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^
2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13
 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d
^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B
^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*
e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 410*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17
*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*
B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*
e^5 - 9140*A*B*b^11*c^10*d^14*e^6 + 8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b
^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10
- 760*A*B*b^16*c^5*d^9*e^11 + 208*A*B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d
^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e -
 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b
^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e
^3 + 800*b^14*c^11*d^19*e^4 - 2280*b^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*
e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*
e^9 + 1680*b^20*c^5*d^13*e^10 - 520*b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e
^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e -
10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) + 8*A*b^10*c^13*d
^19*e^3 - 76*A*b^11*c^12*d^18*e^4 + 300*A*b^12*c^11*d^17*e^5 - 612*A*b^13*c
^10*d^16*e^6 + 576*A*b^14*c^9*d^15*e^7 + 168*A*b^15*c^8*d^14*e^8 - 1176*A*b
^16*c^7*d^13*e^9 + 1560*A*b^17*c^6*d^12*e^10 - 1128*A*b^18*c^5*d^11*e^11 +
484*A*b^19*c^4*d^10*e^12 - 116*A*b^20*c^3*d^9*e^13 + 12*A*b^21*c^2*d^8*e^14
 - 4*B*b^11*c^12*d^19*e^3 + 56*B*b^12*c^11*d^18*e^4 - 312*B*b^13*c^10*d^17*
e^5 + 960*B*b^14*c^9*d^16*e^6 - 1848*B*b^15*c^8*d^15*e^7 + 2352*B*b^16*c^7*
d^14*e^8 - 2016*B*b^17*c^6*d^13*e^9 + 1152*B*b^18*c^5*d^12*e^10 - 420*B*b^1
9*c^4*d^11*e^11 + 88*B*b^20*c^3*d^10*e^12 - 8*B*b^21*c^2*d^9*e^13))/(2*(b^8
*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*
e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e -
7*A*b*c*e - 2*B*b*c*d))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^
5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)) - (((d + e*x)^(1/2)*(6
4*A^2*b^6*c^15*d^18*e^2 - 576*A^2*b^7*c^14*d^17*e^3 + 2228*A^2*b^8*c^13*d^1
6*e^4 - 4768*A^2*b^9*c^12*d^15*e^5 + 5960*A^2*b^10*c^11*d^14*e^6 - 3976*A^2
*b^11*c^10*d^13*e^7 + 578*A^2*b^12*c^9*d^12*e^8 + 1004*A^2*b^13*c^8*d^11*e^
9 - 442*A^2*b^14*c^7*d^10*e^10 - 320*A^2*b^15*c^6*d^9*e^11 + 362*A^2*b^16*c
```

```
^5*d^8*e^12 - 132*A^2*b^17*c^4*d^7*e^13 + 18*A^2*b^18*c^3*d^6*e^14 + 16*B^2
*b^8*c^13*d^18*e^2 - 168*B^2*b^9*c^12*d^17*e^3 + 770*B^2*b^10*c^11*d^16*e^4
 - 2020*B^2*b^11*c^10*d^15*e^5 + 3350*B^2*b^12*c^9*d^14*e^6 - 3664*B^2*b^13
*c^8*d^13*e^7 + 2678*B^2*b^14*c^7*d^12*e^8 - 1300*B^2*b^15*c^6*d^11*e^9 + 4
10*B^2*b^16*c^5*d^10*e^10 - 80*B^2*b^17*c^4*d^9*e^11 + 8*B^2*b^18*c^3*d^8*e
^12 - 64*A*B*b^7*c^14*d^18*e^2 + 624*A*B*b^8*c^13*d^17*e^3 - 2636*A*B*b^9*c
^12*d^16*e^4 + 6280*A*B*b^10*c^11*d^15*e^5 - 9140*A*B*b^11*c^10*d^14*e^6 +
8056*A*B*b^12*c^9*d^13*e^7 - 3620*A*B*b^13*c^8*d^12*e^8 - 224*A*B*b^14*c^7*
d^11*e^9 + 1300*A*B*b^15*c^6*d^10*e^10 - 760*A*B*b^16*c^5*d^9*e^11 + 208*A*
B*b^17*c^4*d^8*e^12 - 24*A*B*b^18*c^3*d^7*e^13) - ((-c^3*(b*e - c*d)^5)^(1/
2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(((-c^3*(b*e - c*d)^5)^(
1/2)*(d + e*x)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d)*(16*b^
12*c^13*d^21*e^2 - 168*b^13*c^12*d^20*e^3 + 800*b^14*c^11*d^19*e^4 - 2280*b
^15*c^10*d^18*e^5 + 4320*b^16*c^9*d^17*e^6 - 5712*b^17*c^8*d^16*e^7 + 5376*
b^18*c^7*d^15*e^8 - 3600*b^19*c^6*d^14*e^9 + 1680*b^20*c^5*d^13*e^10 - 520*
b^21*c^4*d^12*e^11 + 96*b^22*c^3*d^11*e^12 - 8*b^23*c^2*d^10*e^13))/(2*(b^8
*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*
e^3 - 5*b^7*c*d*e^4)) - 8*A*b^10*c^13*d^19*e^3 + 76*A*b^11*c^12*d^18*e^4 -
300*A*b^12*c^11*d^17*e^5 + 612*A*b^13*c^10*d^16*e^6 - 576*A*b^14*c^9*d^15*e
^7 - 168*A*b^15*c^8*d^14*e^8 + 1176*A*b^16*c^7*d^13*e^9 - 1560*A*b^17*c^6*d
^12*e^10 + 1128*A*b^18*c^5*d^11*e^11 - 484*A*b^19*c^4*d^10*e^12 + 116*A*b^2
0*c^3*d^9*e^13 - 12*A*b^21*c^2*d^8*e^14 + 4*B*b^11*c^12*d^19*e^3 - 56*B*b^1
2*c^11*d^18*e^4 + 312*B*b^13*c^10*d^17*e^5 - 960*B*b^14*c^9*d^16*e^6 + 1848
*B*b^15*c^8*d^15*e^7 - 2352*B*b^16*c^7*d^14*e^8 + 2016*B*b^17*c^6*d^13*e^9
 - 1152*B*b^18*c^5*d^12*e^10 + 420*B*b^19*c^4*d^11*e^11 - 88*B*b^20*c^3*d^10
*e^12 + 8*B*b^21*c^2*d^9*e^13))/(2*(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e
 - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4)))*(-c^3*(b*e -
c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*c*e - 2*B*b*c*d))/(2*(b^8*e^5
- b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*d^3*e^2 + 10*b^6*c^2*d^2*e^3 -
 5*b^7*c*d*e^4)) + 64*A^3*b^4*c^15*d^16*e^3 - 512*A^3*b^5*c^14*d^15*e^4 + 1
804*A^3*b^6*c^13*d^14*e^5 - 3668*A^3*b^7*c^12*d^13*e^6 + 4606*A^3*b^8*c^11*
d^12*e^7 - 3248*A^3*b^9*c^10*d^11*e^8 + 322*A^3*b^10*c^9*d^10*e^9 + 1756*A^
3*b^11*c^8*d^9*e^10 - 1742*A^3*b^12*c^7*d^8*e^11 + 744*A^3*b^13*c^6*d^7*e^1
2 - 126*A^3*b^14*c^5*d^6*e^13 - 8*B^3*b^7*c^12*d^16*e^3 + 52*B^3*b^8*c^11*d
^15*e^4 - 104*B^3*b^9*c^10*d^14*e^5 - 20*B^3*b^10*c^9*d^13*e^6 + 400*B^3*b^
11*c^8*d^12*e^7 - 692*B^3*b^12*c^7*d^11*e^8 + 568*B^3*b^13*c^6*d^10*e^9 - 2
36*B^3*b^14*c^5*d^9*e^10 + 40*B^3*b^15*c^4*d^8*e^11 + 48*A*B^2*b^6*c^13*d^1
6*e^3 - 336*A*B^2*b^7*c^12*d^15*e^4 + 930*A*B^2*b^8*c^11*d^14*e^5 - 1332*A*
B^2*b^9*c^10*d^13*e^6 + 1230*A*B^2*b^10*c^9*d^12*e^7 - 1248*A*B^2*b^11*c^8*
d^11*e^8 + 1566*A*B^2*b^12*c^7*d^10*e^9 - 1380*A*B^2*b^13*c^6*d^9*e^10 + 64
2*A*B^2*b^14*c^5*d^8*e^11 - 120*A*B^2*b^15*c^4*d^7*e^12 - 96*A^2*B*b^5*c^14
*d^16*e^3 + 720*A^2*B*b^6*c^13*d^15*e^4 - 2346*A^2*B*b^7*c^12*d^14*e^5 + 45
24*A^2*B*b^8*c^11*d^13*e^6 - 6012*A^2*B*b^9*c^10*d^12*e^7 + 5916*A^2*B*b^10
*c^9*d^11*e^8 - 4080*A^2*B*b^11*c^8*d^10*e^9 + 1476*A^2*B*b^12*c^7*d^9*e^10
 + 156*A^2*B*b^13*c^6*d^8*e^11 - 348*A^2*B*b^14*c^5*d^7*e^12 + 90*A^2*B*b^1
5*c^4*d^6*e^13))*(-c^3*(b*e - c*d)^5)^(1/2)*(4*A*c^2*d + 5*B*b^2*e - 7*A*b*
c*e - 2*B*b*c*d)*1i)/(b^8*e^5 - b^3*c^5*d^5 + 5*b^4*c^4*d^4*e - 10*b^5*c^3*
d^3*e^2 + 10*b^6*c^2*d^2*e^3 - 5*b^7*c*d*e^4) - (atan((B^3*b^14*d^13*e^11*(
d + e*x)^(1/2)*8i - A^3*b^14*d^10*e^14*(d + e*x)^(1/2)*27i + A^3*b^13*c*d^1
1*e^13*(d + e*x)^(1/2)*189i - B^3*b^13*c*d^14*e^10*(d + e*x)^(1/2)*88i + A^
3*b^3*c^11*d^21*e^3*(d + e*x)^(1/2)*140i - A^3*b^4*c^10*d^20*e^4*(d + e*x)^
(1/2)*1015i + A^3*b^5*c^9*d^19*e^5*(d + e*x)^(1/2)*2996i - A^3*b^6*c^8*d^18
*e^6*(d + e*x)^(1/2)*4375i + A^3*b^7*c^7*d^17*e^7*(d + e*x)^(1/2)*2561i + A
^3*b^8*c^6*d^16*e^8*(d + e*x)^(1/2)*1316i - A^3*b^9*c^5*d^15*e^9*(d + e*x)^
(1/2)*3073i + A^3*b^10*c^4*d^14*e^10*(d + e*x)^(1/2)*1694i + A^3*b^11*c^3*d
^13*e^11*(d + e*x)^(1/2)*35i - A^3*b^12*c^2*d^12*e^12*(d + e*x)^(1/2)*441i
- B^3*b^5*c^9*d^22*e^2*(d + e*x)^(1/2)*30i + B^3*b^6*c^8*d^21*e^3*(d + e*x)
^(1/2)*260i - B^3*b^7*c^7*d^20*e^4*(d + e*x)^(1/2)*970i + B^3*b^8*c^6*d^19*
e^5*(d + e*x)^(1/2)*2048i - B^3*b^9*c^5*d^18*e^6*(d + e*x)^(1/2)*2698i + B^
```

```
3*b^10*c^4*d^17*e^7*(d + e*x)^(1/2)*2300i - B^3*b^11*c^3*d^16*e^8*(d + e*x)
^(1/2)*1270i + B^3*b^12*c^2*d^15*e^9*(d + e*x)^(1/2)*440i - A*B^2*b^14*d^12
*e^12*(d + e*x)^(1/2)*36i + A^2*B*b^14*d^11*e^13*(d + e*x)^(1/2)*54i + A*B^
2*b^13*c*d^13*e^11*(d + e*x)^(1/2)*348i - A^2*B*b^13*c*d^12*e^12*(d + e*x)^
(1/2)*450i + A*B^2*b^4*c^10*d^22*e^2*(d + e*x)^(1/2)*120i - A*B^2*b^5*c^9*d
^21*e^3*(d + e*x)^(1/2)*915i + A*B^2*b^6*c^8*d^20*e^4*(d + e*x)^(1/2)*2850i
 - A*B^2*b^7*c^7*d^19*e^5*(d + e*x)^(1/2)*4473i + A*B^2*b^8*c^6*d^18*e^6*(d
 + e*x)^(1/2)*3072i + A*B^2*b^9*c^5*d^17*e^7*(d + e*x)^(1/2)*951i - A*B^2*b
^10*c^4*d^16*e^8*(d + e*x)^(1/2)*3690i + A*B^2*b^11*c^3*d^15*e^9*(d + e*x)^
(1/2)*3225i - A*B^2*b^12*c^2*d^14*e^10*(d + e*x)^(1/2)*1452i - A^2*B*b^3*c^
11*d^22*e^2*(d + e*x)^(1/2)*120i + A^2*B*b^4*c^10*d^21*e^3*(d + e*x)^(1/2)*
720i - A^2*B*b^5*c^9*d^20*e^4*(d + e*x)^(1/2)*1380i - A^2*B*b^6*c^8*d^19*e^
5*(d + e*x)^(1/2)*204i + A^2*B*b^7*c^7*d^18*e^6*(d + e*x)^(1/2)*4878i - A^2
*B*b^8*c^6*d^17*e^7*(d + e*x)^(1/2)*8130i + A^2*B*b^9*c^5*d^16*e^8*(d + e*x
)^(1/2)*5646i - A^2*B*b^10*c^4*d^15*e^9*(d + e*x)^(1/2)*450i - A^2*B*b^11*c
^3*d^14*e^10*(d + e*x)^(1/2)*2046i + A^2*B*b^12*c^2*d^13*e^11*(d + e*x)^(1/
2)*1482i)/(d^5*(d^5)^(1/2)*(d^5*(d^5*(2561*A^3*b^7*c^7*e^7 - d^5*(30*B^3*b^
5*c^9*e^2 - 120*A*B^2*b^4*c^10*e^2 + 120*A^2*B*b^3*c^11*e^2) + 2300*B^3*b^1
0*c^4*e^7 + 140*A^3*b^3*c^11*d^4*e^3 - 1015*A^3*b^4*c^10*d^3*e^4 + 2996*A^3
*b^5*c^9*d^2*e^5 + 260*B^3*b^6*c^8*d^4*e^3 - 970*B^3*b^7*c^7*d^3*e^4 + 2048
*B^3*b^8*c^6*d^2*e^5 + 951*A*B^2*b^9*c^5*e^7 - 8130*A^2*B*b^8*c^6*e^7 - 437
5*A^3*b^6*c^8*d*e^6 - 2698*B^3*b^9*c^5*d*e^6 - 915*A*B^2*b^5*c^9*d^4*e^3 +
2850*A*B^2*b^6*c^8*d^3*e^4 - 4473*A*B^2*b^7*c^7*d^2*e^5 + 720*A^2*B*b^4*c^1
0*d^4*e^3 - 1380*A^2*B*b^5*c^9*d^3*e^4 - 204*A^2*B*b^6*c^8*d^2*e^5 + 3072*A
*B^2*b^8*c^6*d*e^6 + 4878*A^2*B*b^7*c^7*d*e^6) - 441*A^3*b^12*c^2*e^12 - 36
*A*B^2*b^14*e^12 + 8*B^3*b^14*d*e^11 + 1316*A^3*b^8*c^6*d^4*e^8 - 3073*A^3*
b^9*c^5*d^3*e^9 + 1694*A^3*b^10*c^4*d^2*e^10 - 1270*B^3*b^11*c^3*d^4*e^8 +
440*B^3*b^12*c^2*d^3*e^9 - 450*A^2*B*b^13*c*e^12 + 35*A^3*b^11*c^3*d*e^11 -
 88*B^3*b^13*c*d^2*e^10 - 3690*A*B^2*b^10*c^4*d^4*e^8 + 3225*A*B^2*b^11*c^3
*d^3*e^9 - 1452*A*B^2*b^12*c^2*d^2*e^10 + 5646*A^2*B*b^9*c^5*d^4*e^8 - 450*
A^2*B*b^10*c^4*d^3*e^9 - 2046*A^2*B*b^11*c^3*d^2*e^10 + 348*A*B^2*b^13*c*d*
e^11 + 1482*A^2*B*b^12*c^2*d*e^11) - 27*A^3*b^14*d^3*e^14 + 54*A^2*B*b^14*d
^4*e^13 + 189*A^3*b^13*c*d^4*e^13)))*(3*A*b*e + 4*A*c*d - 2*B*b*d)*1i)/(b^3
*(d^5)^(1/2)) - ((2*(A*e^3 - B*d*e^2))/(c*d^2 - b*d*e) + ((d + e*x)*(3*A*b^
3*e^4 - 2*A*c^3*d^3*e - 2*B*b^3*d*e^3 + 3*A*b*c^2*d^2*e^2 + 4*B*b^2*c*d^2*e
^2 - 7*A*b^2*c*d*e^3 + B*b*c^2*d^3*e))/(b^2*(c*d^2 - b*d*e)^2) - ((d + e*x)
^2*(2*A*b*c^2*d*e^2 - 2*A*c^3*d^2*e - 3*A*b^2*c*e^3 + B*b*c^2*d^2*e + 2*B*b
^2*c*d*e^2))/(b^2*(c*d^2 - b*d*e)^2))/(c*(d + e*x)^(5/2) + (c*d^2 - b*d*e)*
(d + e*x)^(1/2) + (b*e - 2*c*d)*(d + e*x)^(3/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1245 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=344

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-5Abe-4Acd+2bBd)}{b^3d^{7/2}}-\frac{e\left(b^2(-e)(2Bd-5Ae)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{3b^2d^2(d+ex)^{3/2}(cd-be)^2}-\frac{cx(2Acd-b(}{b^2d\,(bx+c}$$

```
[Out] -1/3*e*(6*A*c^2*d^2-b^2*e*(-5*A*e+2*B*d)-3*b*c*d*(2*A*e+B*d))/b^2/d^2/(-b*e
+c*d)^2/(e*x+d)^(3/2)+(-A*b*(-b*e+c*d)-c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b
*e+c*d)/(e*x+d)^(3/2)/(c*x^2+b*x)-(-5*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d
)^(1/2)/d^(1/2))/b^3/d^(7/2)+c^(5/2)*(9*A*b*c*e-4*A*c^2*d-7*B*b^2*e+2*B*b*c
*d)*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b^3/(-b*e+c*d)^(7/2)-e*
(2*A*c^3*d^3-b^2*c*d*e*(-11*A*e+6*B*d)+b^3*e^2*(-5*A*e+2*B*d)-b*c^2*d^2*(3*
A*e+B*d))/b^2/d^3/(-b*e+c*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.92, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(-b^2cde(6Bd-11Ae)+b^3e^2(2Bd-5Ae)-bc^2d^2(3Ae+Bd)+2Ac^3d^3\right)}{b^2d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{e\left(b^2(-e)(2Bd-5Ae)-3bcd(2Ae\right.}{3b^2d^2(d+ex)^{3/2}(cd-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -(e*(6*A*c^2*d^2 - b^2*e*(2*B*d - 5*A*e) - 3*b*c*d*(B*d + 2*A*e)))/(3*b^2*d
^2*(c*d - b*e)^2*(d + e*x)^(3/2)) - (e*(2*A*c^3*d^3 - b^2*c*d*e*(6*B*d - 11
*A*e) + b^3*e^2*(2*B*d - 5*A*e) - b*c^2*d^2*(B*d + 3*A*e)))/(b^2*d^3*(c*d -
 b*e)^3*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x)/
(b^2*d*(c*d - b*e)*(d + e*x)^(3/2)*(b*x + c*x^2)) - ((2*b*B*d - 4*A*c*d - 5
*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^3*d^(7/2)) + (c^(5/2)*(2*b*B*c*d
 - 4*A*c^2*d - 7*b^2*B*e + 9*A*b*c*e)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[
c*d - b*e]])/(b^3*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-5Abe)-\frac{5}{2}ce(bBd-2Acd+}{(d+ex)^{5/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{Ab(cd-be)+c(2Acd-b(Bd}{b^2d(cd-be)(d+ex)^{3/2}\left(bx\right.}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

$$= -\frac{e\left(6Ac^2d^2-b^2e(2Bd-5Ae)-3bcd(Bd+2Ae)\right)}{3b^2d^2(cd-be)^2(d+ex)^{3/2}} - \frac{e\left(2Ac^3d^3-b^2cde(6Bd-11A\right.}{b^2d^3}$$

Mathematica [C] time = 0.19, size = 194, normalized size = 0.56

$$\frac{-x(b+cx)\left(cd^2\left(bc(9Ae+2Bd)-4Ac^2d-7b^2Be\right)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{ex}{d}+1\right)(5A\right.}{3b^3d^2x(b+cx)(d+ex)^{3/2}(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-3*A*b^2*d*(c*d - b*e)^2 - 3*b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e
)*x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 7*b^2*B*e + b*c*(2*B*d + 9*A*e))*Hyp
ergeometric2F1[-3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(-
2*b*B*d + 4*A*c*d + 5*A*b*e)*Hypergeometric2F1[-3/2, 1, -1/2, 1 + (e*x)/d])
)/(3*b^3*d^2*(c*d - b*e)^2*x*(b + c*x)*(d + e*x)^(3/2))
```

fricas [B] time = 71.34, size = 5665, normalized size = 16.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b*c^4)*d^4*e^
3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*c^4)*d^5*e^2
 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A*c^5)*d^7 -
(3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d^5*e^2)*x^2
+ (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^6*e)*x)*sq
rt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sq
rt(c/(c*d - b*e)))/(c*x + b)) + 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d
^4*e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^
2*e^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 -
 2*A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^
2*c^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d
*e^5)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*
b*c^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*
c^2)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(
B*b^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4
*c + A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(d)*log((e
*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d
^5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^
3 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c +
 11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d
^5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*
d^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b
^5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4
*e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2
- 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d
^8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)
*x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 -
 2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^
7*d^6*e^3)*x), 1/6*(6*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*
b*c^4)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b
*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*
A*c^5)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*
d^5*e^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)
*d^6*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(
c*d - b*e))/(c*e*x + c*d)) - 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*
e^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e
^4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*
A*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c
^3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^
5)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c
^4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2
)*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b
^2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c
+ A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(d)*log((e*x
+ 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^5*
e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3 -
 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c + 11
```

```
*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^5*
e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d^3
*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^5*
d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*e^
2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 - 3
*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^8*
e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*x^
3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 - 2*
b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7*d
^6*e^3)*x), 1/6*(6*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*e^2 - (6*B*b
^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e^4 - (2*B*b^
4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*A*c^5)*d^5*e
 - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c^3)*d^3*e^3
+ (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^5)*x^3 + (10
*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c^4)*d^5*e -
(6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2)*d^3*e^3 -
(4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b^2*c^3 - 2*A
*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c + A*b^3*c^2)
*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(-d)*arctan(sqrt(e*x + d)
*sqrt(-d)/d) - 3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b*c^4
)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*c^4)
*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A*c^5
)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d^5*e
^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^6*
e)*x)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x
 + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^
5*e + 9*A*b^4*c*d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3
 - 2*A*b*c^4)*d^4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c +
11*A*b^3*c^2)*d^2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^
5*e + 5*(4*B*b^3*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d
^3*e^3 - (6*B*b^5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^
5*d^2*e^4 + 3*(B*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*
e^2 - (8*B*b^5 + 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 -
 3*b^4*c^3*d^6*e^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^
8*e - 5*b^4*c^3*d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*
x^3 + (b^3*c^4*d^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 -
2*b^7*d^5*e^4)*x^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7
*d^6*e^3)*x), 1/3*(3*((2*(B*b*c^4 - 2*A*c^5)*d^5*e^2 - (7*B*b^2*c^3 - 9*A*b
*c^4)*d^4*e^3)*x^4 + (4*(B*b*c^4 - 2*A*c^5)*d^6*e - 2*(6*B*b^2*c^3 - 7*A*b*
c^4)*d^5*e^2 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*d^4*e^3)*x^3 + (2*(B*b*c^4 - 2*A
*c^5)*d^7 - (3*B*b^2*c^3 - A*b*c^4)*d^6*e - 2*(7*B*b^3*c^2 - 9*A*b^2*c^3)*d
^5*e^2)*x^2 + (2*(B*b^2*c^3 - 2*A*b*c^4)*d^7 - (7*B*b^3*c^2 - 9*A*b^2*c^3)*
d^6*e)*x)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c
*d - b*e))/(c*e*x + c*d)) + 3*((5*A*b^4*c*e^6 + 2*(B*b*c^4 - 2*A*c^5)*d^4*e
^2 - (6*B*b^2*c^3 - 7*A*b*c^4)*d^3*e^3 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^2*e^
4 - (2*B*b^4*c + 11*A*b^3*c^2)*d*e^5)*x^4 + (5*A*b^5*e^6 + 4*(B*b*c^4 - 2*A
*c^5)*d^5*e - 10*(B*b^2*c^3 - A*b*c^4)*d^4*e^2 + (6*B*b^3*c^2 + 13*A*b^2*c^
3)*d^3*e^3 + (2*B*b^4*c - 19*A*b^3*c^2)*d^2*e^4 - (2*B*b^5 + A*b^4*c)*d*e^5
)*x^3 + (10*A*b^5*d*e^5 + 2*(B*b*c^4 - 2*A*c^5)*d^6 - (2*B*b^2*c^3 + A*b*c^
4)*d^5*e - (6*B*b^3*c^2 - 17*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - A*b^3*c^2)
*d^3*e^3 - (4*B*b^5 + 17*A*b^4*c)*d^2*e^4)*x^2 + (5*A*b^5*d^2*e^4 + 2*(B*b^
2*c^3 - 2*A*b*c^4)*d^6 - (6*B*b^3*c^2 - 7*A*b^2*c^3)*d^5*e + 3*(2*B*b^4*c +
 A*b^3*c^2)*d^4*e^2 - (2*B*b^5 + 11*A*b^4*c)*d^3*e^3)*x)*sqrt(-d)*arctan(sq
rt(e*x + d)*sqrt(-d)/d) - (3*A*b^2*c^3*d^6 - 9*A*b^3*c^2*d^5*e + 9*A*b^4*c*
d^4*e^2 - 3*A*b^5*d^3*e^3 - 3*(5*A*b^4*c*d*e^5 + (B*b^2*c^3 - 2*A*b*c^4)*d^
4*e^2 + 3*(2*B*b^3*c^2 + A*b^2*c^3)*d^3*e^3 - (2*B*b^4*c + 11*A*b^3*c^2)*d^
2*e^4)*x^3 - (15*A*b^5*d*e^5 + 6*(B*b^2*c^3 - 2*A*b*c^4)*d^5*e + 5*(4*B*b^3
*c^2 + 3*A*b^2*c^3)*d^4*e^2 + 5*(2*B*b^4*c - 7*A*b^3*c^2)*d^3*e^3 - (6*B*b^
5 + 13*A*b^4*c)*d^2*e^4)*x^2 - (3*A*b^2*c^3*d^5*e + 20*A*b^5*d^2*e^4 + 3*(B
```

```
*b^2*c^3 - 2*A*b*c^4)*d^6 + (20*B*b^4*c + 9*A*b^3*c^2)*d^4*e^2 - (8*B*b^5 +
 41*A*b^4*c)*d^3*e^3)*x)*sqrt(e*x + d))/((b^3*c^4*d^7*e^2 - 3*b^4*c^3*d^6*e
^3 + 3*b^5*c^2*d^5*e^4 - b^6*c*d^4*e^5)*x^4 + (2*b^3*c^4*d^8*e - 5*b^4*c^3*
d^7*e^2 + 3*b^5*c^2*d^6*e^3 + b^6*c*d^5*e^4 - b^7*d^4*e^5)*x^3 + (b^3*c^4*d
^9 - b^4*c^3*d^8*e - 3*b^5*c^2*d^7*e^2 + 5*b^6*c*d^6*e^3 - 2*b^7*d^5*e^4)*x
^2 + (b^4*c^3*d^9 - 3*b^5*c^2*d^8*e + 3*b^6*c*d^7*e^2 - b^7*d^6*e^3)*x)]
```

giac [A] time = 0.32, size = 603, normalized size = 1.75

$$-\frac{\left(2\,Bbc^4d - 4\,Ac^5d - 7\,Bb^2c^3e + 9\,Abc^4e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(b^3c^3d^3 - 3\,b^4c^2d^2e + 3\,b^5cde^2 - b^6e^3\right)\sqrt{-c^2d+bce}} + \frac{(xe+d)^{\frac{3}{2}}Bbc^3d^3e - 2\,(xe+d)^{\frac{3}{2}}Ac^4d^3e - \sqrt{xe+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^4*d - 4*A*c^5*d - 7*B*b^2*c^3*e + 9*A*b*c^4*e)*arctan(sqrt(x*e +
d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^3*d^3 - 3*b^4*c^2*d^2*e + 3*b^5*c*d*e^2
- b^6*e^3)*sqrt(-c^2*d + b*c*e)) + ((x*e + d)^(3/2)*B*b*c^3*d^3*e - 2*(x*e
+ d)^(3/2)*A*c^4*d^3*e - sqrt(x*e + d)*B*b*c^3*d^4*e + 2*sqrt(x*e + d)*A*c^
4*d^4*e + 3*(x*e + d)^(3/2)*A*b*c^3*d^2*e^2 - 4*sqrt(x*e + d)*A*b*c^3*d^3*e
^2 - 3*(x*e + d)^(3/2)*A*b^2*c^2*d*e^3 + 6*sqrt(x*e + d)*A*b^2*c^2*d^2*e^3
+ (x*e + d)^(3/2)*A*b^3*c*e^4 - 4*sqrt(x*e + d)*A*b^3*c*d*e^4 + sqrt(x*e +
d)*A*b^4*e^5)/((b^2*c^3*d^6 - 3*b^3*c^2*d^5*e + 3*b^4*c*d^4*e^2 - b^5*d^3*e
^3)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + 2/
3*(9*(x*e + d)*B*c*d^2*e^2 + B*c*d^3*e^2 - 3*(x*e + d)*B*b*d*e^3 - 12*(x*e
+ d)*A*c*d*e^3 - B*b*d^2*e^3 - A*c*d^2*e^3 + 6*(x*e + d)*A*b*e^4 + A*b*d*e^
4)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 - b^3*d^3*e^3)*(x*e + d)^(3/
2)) + (2*B*b*d - 4*A*c*d - 5*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqr
t(-d)*d^3)
```

maple [A] time = 0.08, size = 535, normalized size = 1.56

$$\frac{9A\,c^4e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\,\sqrt{(be-cd)\,c}\;b^2} - \frac{4A\,c^5d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\,\sqrt{(be-cd)\,c}\;b^3} - \frac{7B\,c^3e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\,\sqrt{(be-cd)\,c}\;b} + \frac{2B\,c^4d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^3\,\sqrt{(be-cd)\,c}\;b^2} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x)
```

```
[Out] e*c^4/(b*e-c*d)^3/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A-e*c^3/(b*e-c*d)^3/b*(e*x+
d)^(1/2)/(c*e*x+b*e)*B+9*e*c^4/(b*e-c*d)^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((
e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-4*c^5/(b*e-c*d)^3/b^3/((b*e-c*d)*c)^(
1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-7*e*c^3/(b*e-c*d)^3/b/
((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+2*c^4/(b*
e-c*d)^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c
)*B*d-1/b^2/d^3*A*(e*x+d)^(1/2)/x+5*e/b^2/d^(7/2)*arctanh((e*x+d)^(1/2)/d^(
1/2))*A+4/b^3/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(5/2)*arct
anh((e*x+d)^(1/2)/d^(1/2))*B-2/3*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(3/2)*A+2/3*e^
2/(b*e-c*d)^2/d/(e*x+d)^(3/2)*B-4*e^4/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A*b+8*e
^3/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*A*c+2*e^3/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*B*
b-6*e^2/(b*e-c*d)^3/d/(e*x+d)^(1/2)*B*c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 6.10, size = 18450, normalized size = 53.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(5/2)),x)
```

```
[Out] atan((A^2*c^13*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*
d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*
B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^
7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3
*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*32i
 - b^6*c^11*d^17*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2
 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b
*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 +
 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^
3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*2i + b
^17*d^6*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*1i + B^2*b
^2*c^11*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*8i - b^8*c
^9*d^15*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49
*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*
d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^
7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4
 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*100i + b^9*
c^8*d^14*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 4
9*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8
*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b
^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^
4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*285i - b^1
0*c^7*d^13*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 +
 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c
^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7
*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*
e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*540i + b
^11*c^6*d^12*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2
 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b
*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 +
 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^
3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*714i -
 b^12*c^5*d^11*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d
^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B
*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7
 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*
d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*672i
 + b^13*c^4*d^10*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7
*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A
*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d
^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^
3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*45
0i - b^14*c^3*d^9*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^
7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*
A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*
d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c
^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*2
10i + b^15*c^2*d^8*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c
^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16
*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7
*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*
c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*
65i + A^2*b^12*c*e^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^
7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*
A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*
d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c
^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2
5i + b^7*c^10*d^16*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7
*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A
*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d
^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^
3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*21
i - b^16*c*d^7*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*
d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*
B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^
7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3
*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(3/2)*(d + e*x)^(1/2)*12i
 - A^2*b*c^12*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7
*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A
*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d
^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^
3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*25
6i - A^2*b^11*c^2*d*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2
*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e -
16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c
^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^1
0*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2
)*210i - B^2*b^3*c^10*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2
*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*
e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b
^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35
*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^
(1/2)*84i + B^2*b^12*c*d^2*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*
B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6
*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7
- b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 -
 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*
x)^(1/2)*4i - A*B*b*c^12*d^12*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^
2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d
*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 -
b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 3
5*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)
^(1/2)*32i + A^2*b^2*c^11*d^10*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 +
 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*
c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e
^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^
3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d +
 e*x)^(1/2)*810i - A^2*b^3*c^10*d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*
e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2
*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b
^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d
^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)
*(d + e*x)^(1/2)*1190i + A^2*b^4*c^9*d^8*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2
*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 2
8*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*
e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*
c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^
(1/2)*(d + e*x)^(1/2)*475i + A^2*b^5*c^8*d^7*e^5*(-(16*A^2*c^9*d^2 + 81*A^2
*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2
 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^
7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*
b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^
6))^(1/2)*(d + e*x)^(1/2)*972i - A^2*b^6*c^7*d^6*e^6*(-(16*A^2*c^9*d^2 + 81
*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6
*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^
2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 +
 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*
d*e^6))^(1/2)*(d + e*x)^(1/2)*1389i + A^2*b^7*c^6*d^5*e^7*(-(16*A^2*c^9*d^2
 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^
3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A
*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*
e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^
12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*180i + A^2*b^8*c^5*d^4*e^8*(-(16*A^2*c^9
*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*
B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e +
92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*
d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 -
7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1170i - A^2*b^9*c^4*d^3*e^9*(-(16*A^
2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 1
26*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d
*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8
*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e
^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1360i + A^2*b^10*c^3*d^2*e^10*(
-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*
e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*
b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e -
 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^
2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*741i + B^2*b^4*c^9*d^10*
e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4
*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72
*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^
6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^
11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*365i - B^2*b^5*c^8*
d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2
*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2
- 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^
6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 2
1*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*860i + B^2*b^6*
c^7*d^8*e^4*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49
*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*
d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^
7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4
 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1250i - B^2
*b^7*c^6*d^7*e^5*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2
 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b
*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 +
 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^
3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1232i
+ B^2*b^8*c^5*d^6*e^6*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^
7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*
A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*
d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c
^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*8
89i - B^2*b^9*c^4*d^5*e^7*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^
2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e -
 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*
c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^
10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/
2)*480i + B^2*b^10*c^3*d^4*e^8*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B
^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*
d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 -
 b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 -
35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x
)^(1/2)*180i - B^2*b^11*c^2*d^3*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2
+ 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3
*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*
e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e
^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d
+ e*x)^(1/2)*40i - A*B*b^12*c*d*e^11*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2
 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^
3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13
*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*
e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d
 + e*x)^(1/2)*20i + A*B*b^2*c^11*d^11*e*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*
e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2
*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b
^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d
^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)
*(d + e*x)^(1/2)*296i - A*B*b^3*c^10*d^10*e^2*(-(16*A^2*c^9*d^2 + 81*A^2*b^
2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 -
28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d
*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9
*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))
^(1/2)*(d + e*x)^(1/2)*1110i + A*B*b^4*c^9*d^9*e^3*(-(16*A^2*c^9*d^2 + 81*A
^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e
^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*
c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 3
5*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*
e^6))^(1/2)*(d + e*x)^(1/2)*2140i - A*B*b^5*c^8*d^8*e^4*(-(16*A^2*c^9*d^2 +
 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*
c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B
*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^
2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12
*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2100i + A*B*b^6*c^7*d^7*e^5*(-(16*A^2*c^9*
d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B
*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 9
2*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d
^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7
*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*428i + A*B*b^7*c^6*d^6*e^6*(-(16*A^2*
c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126
*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e
 + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c
^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5
 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1554i - A*B*b^8*c^5*d^5*e^7*(-(16
*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2
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- 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^
8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*
b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^
2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*2280i + A*B*b^9*c^4*d^4*e^8*
(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b^4*c^5
*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 - 72*A^2
*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*d^6*e
- 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*b^11*c
^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*1680i - A*B*b^10*c^3*d^
3*e^9*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49*B^2*b
^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*d^2 -
72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^7*c^6*
d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4 + 21*
b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*740i + A*B*b^11*c
^2*d^2*e^10*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2*b^2*c^7*d^2 + 49
*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*e - 16*A*B*b*c^8*
d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(b^13*e^7 - b^6*c^7*d^7 + 7*b^
7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 - 35*b^10*c^3*d^3*e^4
 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6))^(1/2)*(d + e*x)^(1/2)*184i)/(225*
A^3*b^7*c^4*e^10 + 420*A^3*c^11*d^7*e^3 + 3591*A^3*b^2*c^9*d^5*e^5 - 1113*A
^3*b^3*c^8*d^4*e^6 - 2367*A^3*b^4*c^7*d^3*e^7 + 2889*A^3*b^5*c^6*d^2*e^8 -
70*B^3*b^2*c^9*d^8*e^2 + 525*B^3*b^3*c^8*d^7*e^3 - 1260*B^3*b^4*c^7*d^6*e^4
 + 1148*B^3*b^5*c^6*d^5*e^5 - 644*B^3*b^6*c^5*d^4*e^6 + 204*B^3*b^7*c^4*d^3
*e^7 - 28*B^3*b^8*c^3*d^2*e^8 - 175*A^2*B*b^8*c^3*e^10 - 280*A^2*B*c^11*d^8
*e^2 - 2205*A^3*b*c^10*d^6*e^4 - 1315*A^3*b^6*c^5*d*e^9 - 1645*A*B^2*b^2*c^
9*d^7*e^3 + 2520*A*B^2*b^3*c^8*d^6*e^4 + 112*A*B^2*b^4*c^7*d^5*e^5 - 2296*A
*B^2*b^5*c^6*d^4*e^6 + 2136*A*B^2*b^6*c^5*d^3*e^7 - 872*A*B^2*b^7*c^4*d^2*e
^8 + 665*A^2*B*b^2*c^9*d^6*e^4 - 5299*A^2*B*b^3*c^8*d^5*e^5 + 5537*A^2*B*b^
4*c^7*d^4*e^6 - 1717*A^2*B*b^5*c^6*d^3*e^7 - 901*A^2*B*b^6*c^5*d^2*e^8 + 28
0*A*B^2*b*c^10*d^8*e^2 + 140*A*B^2*b^8*c^3*d*e^9 + 980*A^2*B*b*c^10*d^7*e^3
 + 815*A^2*B*b^7*c^4*d*e^9))*(-(16*A^2*c^9*d^2 + 81*A^2*b^2*c^7*e^2 + 4*B^2
*b^2*c^7*d^2 + 49*B^2*b^4*c^5*e^2 - 126*A*B*b^3*c^6*e^2 - 28*B^2*b^3*c^6*d*
e - 16*A*B*b*c^8*d^2 - 72*A^2*b*c^8*d*e + 92*A*B*b^2*c^7*d*e)/(4*(b^13*e^7
- b^6*c^7*d^7 + 7*b^7*c^6*d^6*e - 21*b^8*c^5*d^5*e^2 + 35*b^9*c^4*d^4*e^3 -
 35*b^10*c^3*d^3*e^4 + 21*b^11*c^2*d^2*e^5 - 7*b^12*c*d*e^6)))^(1/2)*2i - l
og(32*A^3*b^4*c^20*d^23*e^3 - ((((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b
^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2)*(
(d + e*x)^(1/2)*(((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*
b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(1/2)*(16*b^12*c^18*d^
31*e^2 - 248*b^13*c^17*d^30*e^3 + 1800*b^14*c^16*d^29*e^4 - 8120*b^15*c^15*
d^28*e^5 + 25480*b^16*c^14*d^27*e^6 - 58968*b^17*c^13*d^26*e^7 + 104104*b^1
8*c^12*d^25*e^8 - 143000*b^19*c^11*d^24*e^9 + 154440*b^20*c^10*d^23*e^10 -
131560*b^21*c^9*d^22*e^11 + 88088*b^22*c^8*d^21*e^12 - 45864*b^23*c^7*d^20*
e^13 + 18200*b^24*c^6*d^19*e^14 - 5320*b^25*c^5*d^18*e^15 + 1080*b^26*c^4*d
^17*e^16 - 136*b^27*c^3*d^16*e^17 + 8*b^28*c^2*d^15*e^18) + 8*A*b^10*c^18*d
^28*e^3 - 112*A*b^11*c^17*d^27*e^4 + 664*A*b^12*c^16*d^26*e^5 - 2080*A*b^13
*c^15*d^25*e^6 + 2996*A*b^14*c^14*d^24*e^7 + 2528*A*b^15*c^13*d^23*e^8 - 23
056*A*b^16*c^12*d^22*e^9 + 59312*A*b^17*c^11*d^21*e^10 - 95700*A*b^18*c^10*
d^20*e^11 + 109648*A*b^19*c^9*d^19*e^12 - 92840*A*b^20*c^8*d^18*e^13 + 5868
8*A*b^21*c^7*d^17*e^14 - 27476*A*b^22*c^6*d^16*e^15 + 9280*A*b^23*c^5*d^15*
e^16 - 2144*A*b^24*c^4*d^14*e^17 + 304*A*b^25*c^3*d^13*e^18 - 20*A*b^26*c^2
*d^12*e^19 - 4*B*b^11*c^17*d^28*e^3 + 96*B*b^12*c^16*d^27*e^4 - 872*B*b^13*
c^15*d^26*e^5 + 4440*B*b^14*c^14*d^25*e^6 - 14748*B*b^15*c^13*d^24*e^7 + 34
496*B*b^16*c^12*d^23*e^8 - 59312*B*b^17*c^11*d^22*e^9 + 76824*B*b^18*c^10*d
^21*e^10 - 75900*B*b^19*c^9*d^20*e^11 + 57376*B*b^20*c^8*d^19*e^12 - 33000*
B*b^21*c^7*d^18*e^13 + 14216*B*b^22*c^6*d^17*e^14 - 4452*B*b^23*c^5*d^16*e^
15 + 960*B*b^24*c^4*d^15*e^16 - 128*B*b^25*c^3*d^14*e^17 + 8*B*b^26*c^2*d^1
3*e^18) - (d + e*x)^(1/2)*(64*A^2*b^6*c^20*d^26*e^2 - 832*A^2*b^7*c^19*d^25
*e^3 + 4820*A^2*b^8*c^18*d^24*e^4 - 16240*A^2*b^9*c^17*d^23*e^5 + 34490*A^2
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*b^10*c^16*d^22*e^6 - 45430*A^2*b^11*c^15*d^21*e^7 + 29414*A^2*b^12*c^14*d^
20*e^8 + 10670*A^2*b^13*c^13*d^19*e^9 - 39550*A^2*b^14*c^12*d^18*e^10 + 257
30*A^2*b^15*c^11*d^17*e^11 + 19048*A^2*b^16*c^10*d^16*e^12 - 53852*A^2*b^17
*c^9*d^15*e^13 + 55510*A^2*b^18*c^8*d^14*e^14 - 35210*A^2*b^19*c^7*d^13*e^1
5 + 14830*A^2*b^20*c^6*d^12*e^16 - 4082*A^2*b^21*c^5*d^11*e^17 + 670*A^2*b^
22*c^4*d^10*e^18 - 50*A^2*b^23*c^3*d^9*e^19 + 16*B^2*b^8*c^18*d^26*e^2 - 24
8*B^2*b^9*c^17*d^25*e^3 + 1730*B^2*b^10*c^16*d^24*e^4 - 7210*B^2*b^11*c^15*
d^23*e^5 + 20160*B^2*b^12*c^14*d^22*e^6 - 40320*B^2*b^13*c^13*d^21*e^7 + 60
116*B^2*b^14*c^12*d^20*e^8 - 68820*B^2*b^15*c^11*d^19*e^9 + 61800*B^2*b^16*
c^10*d^18*e^10 - 44080*B^2*b^17*c^9*d^17*e^11 + 24962*B^2*b^18*c^8*d^16*e^1
2 - 11018*B^2*b^19*c^7*d^15*e^13 + 3640*B^2*b^20*c^6*d^14*e^14 - 840*B^2*b^
21*c^5*d^13*e^15 + 120*B^2*b^22*c^4*d^12*e^16 - 8*B^2*b^23*c^3*d^11*e^17 -
64*A*B*b^7*c^19*d^26*e^2 + 912*A*B*b^8*c^18*d^25*e^3 - 5820*A*B*b^9*c^17*d^
24*e^4 + 21940*A*B*b^10*c^16*d^23*e^5 - 54040*A*B*b^11*c^15*d^22*e^6 + 8988
0*A*B*b^12*c^14*d^21*e^7 - 97664*A*B*b^13*c^13*d^20*e^8 + 54080*A*B*b^14*c^
12*d^19*e^9 + 23400*A*B*b^15*c^11*d^18*e^10 - 86480*A*B*b^16*c^10*d^17*e^11
 + 101652*A*B*b^17*c^9*d^16*e^12 - 76188*A*B*b^18*c^8*d^15*e^13 + 40040*A*B
*b^19*c^7*d^14*e^14 - 14840*A*B*b^20*c^6*d^13*e^15 + 3720*A*B*b^21*c^5*d^12
*e^16 - 568*A*B*b^22*c^4*d^11*e^17 + 40*A*B*b^23*c^3*d^10*e^18))*(((25*A^2*
b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e +
10*A^2*b*c*d*e)/(b^6*d^7))^(1/2) - 368*A^3*b^5*c^19*d^22*e^4 + 2006*A^3*b^6
*c^18*d^21*e^5 - 6895*A^3*b^7*c^17*d^20*e^6 + 16250*A^3*b^8*c^16*d^19*e^7 -
 25764*A^3*b^9*c^15*d^18*e^8 + 22851*A^3*b^10*c^14*d^17*e^9 + 2958*A^3*b^11
*c^13*d^16*e^10 - 41520*A^3*b^12*c^12*d^15*e^11 + 64900*A^3*b^13*c^11*d^14*
e^12 - 57568*A^3*b^14*c^10*d^13*e^13 + 32617*A^3*b^15*c^9*d^12*e^14 - 11714
*A^3*b^16*c^8*d^11*e^15 + 2440*A^3*b^17*c^7*d^10*e^16 - 225*A^3*b^18*c^6*d^
9*e^17 - 4*B^3*b^7*c^17*d^23*e^3 + 26*B^3*b^8*c^16*d^22*e^4 + 38*B^3*b^9*c^
15*d^21*e^5 - 880*B^3*b^10*c^14*d^20*e^6 + 3900*B^3*b^11*c^13*d^19*e^7 - 94
92*B^3*b^12*c^12*d^18*e^8 + 14868*B^3*b^13*c^11*d^17*e^9 - 15816*B^3*b^14*c
^10*d^16*e^10 + 11580*B^3*b^15*c^9*d^15*e^11 - 5750*B^3*b^16*c^8*d^14*e^12
+ 1846*B^3*b^17*c^7*d^13*e^13 - 344*B^3*b^18*c^6*d^12*e^14 + 28*B^3*b^19*c^
5*d^11*e^15 + 24*A*B^2*b^6*c^18*d^23*e^3 - 196*A*B^2*b^7*c^17*d^22*e^4 + 48
7*A*B^2*b^8*c^16*d^21*e^5 + 165*A*B^2*b^9*c^15*d^20*e^6 - 2800*A*B^2*b^10*c
^14*d^19*e^7 + 3552*A*B^2*b^11*c^13*d^18*e^8 + 5922*A*B^2*b^12*c^12*d^17*e^
9 - 25434*A*B^2*b^13*c^11*d^16*e^10 + 39900*A*B^2*b^14*c^10*d^15*e^11 - 366
00*A*B^2*b^15*c^9*d^14*e^12 + 21199*A*B^2*b^16*c^8*d^13*e^13 - 7651*A*B^2*b
^17*c^7*d^12*e^14 + 1572*A*B^2*b^18*c^6*d^11*e^15 - 140*A*B^2*b^19*c^5*d^10
*e^16 - 48*A^2*B*b^5*c^19*d^23*e^3 + 472*A^2*B*b^6*c^18*d^22*e^4 - 2129*A^2
*B*b^7*c^17*d^21*e^5 + 6450*A^2*B*b^8*c^16*d^20*e^6 - 16250*A^2*B*b^9*c^15*
d^19*e^7 + 35246*A^2*B*b^10*c^14*d^18*e^8 - 59679*A^2*B*b^11*c^13*d^17*e^9
+ 71028*A^2*B*b^12*c^12*d^16*e^10 - 52860*A^2*B*b^13*c^11*d^15*e^11 + 16500
*A^2*B*b^14*c^10*d^14*e^12 + 9377*A^2*B*b^15*c^9*d^13*e^13 - 13318*A^2*B*b^
16*c^8*d^12*e^14 + 6726*A^2*B*b^17*c^7*d^11*e^15 - 1690*A^2*B*b^18*c^6*d^10
*e^16 + 175*A^2*B*b^19*c^5*d^9*e^17)*(((25*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 +
 B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 5*A*B*b^2*d*e + 10*A^2*b*c*d*e)/(b^6*d^7))^(
1/2) + log((((25*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*
d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c*d*e)/(4*b^6*d^7))^(1/2)*((d + e*x)^(1/2)*
((25*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B
*b^2*d*e + 40*A^2*b*c*d*e)/(4*b^6*d^7))^(1/2)*(16*b^12*c^18*d^31*e^2 - 248*
b^13*c^17*d^30*e^3 + 1800*b^14*c^16*d^29*e^4 - 8120*b^15*c^15*d^28*e^5 + 25
480*b^16*c^14*d^27*e^6 - 58968*b^17*c^13*d^26*e^7 + 104104*b^18*c^12*d^25*e
^8 - 143000*b^19*c^11*d^24*e^9 + 154440*b^20*c^10*d^23*e^10 - 131560*b^21*c
^9*d^22*e^11 + 88088*b^22*c^8*d^21*e^12 - 45864*b^23*c^7*d^20*e^13 + 18200*
b^24*c^6*d^19*e^14 - 5320*b^25*c^5*d^18*e^15 + 1080*b^26*c^4*d^17*e^16 - 13
6*b^27*c^3*d^16*e^17 + 8*b^28*c^2*d^15*e^18) - 8*A*b^10*c^18*d^28*e^3 + 112
*A*b^11*c^17*d^27*e^4 - 664*A*b^12*c^16*d^26*e^5 + 2080*A*b^13*c^15*d^25*e^
6 - 2996*A*b^14*c^14*d^24*e^7 - 2528*A*b^15*c^13*d^23*e^8 + 23056*A*b^16*c^
12*d^22*e^9 - 59312*A*b^17*c^11*d^21*e^10 + 95700*A*b^18*c^10*d^20*e^11 - 1
09648*A*b^19*c^9*d^19*e^12 + 92840*A*b^20*c^8*d^18*e^13 - 58688*A*b^21*c^7*
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d^17*e^14 + 27476*A*b^22*c^6*d^16*e^15 - 9280*A*b^23*c^5*d^15*e^16 + 2144*A
*b^24*c^4*d^14*e^17 - 304*A*b^25*c^3*d^13*e^18 + 20*A*b^26*c^2*d^12*e^19 +
4*B*b^11*c^17*d^28*e^3 - 96*B*b^12*c^16*d^27*e^4 + 872*B*b^13*c^15*d^26*e^5
 - 4440*B*b^14*c^14*d^25*e^6 + 14748*B*b^15*c^13*d^24*e^7 - 34496*B*b^16*c^
12*d^23*e^8 + 59312*B*b^17*c^11*d^22*e^9 - 76824*B*b^18*c^10*d^21*e^10 + 75
900*B*b^19*c^9*d^20*e^11 - 57376*B*b^20*c^8*d^19*e^12 + 33000*B*b^21*c^7*d^
18*e^13 - 14216*B*b^22*c^6*d^17*e^14 + 4452*B*b^23*c^5*d^16*e^15 - 960*B*b^
24*c^4*d^15*e^16 + 128*B*b^25*c^3*d^14*e^17 - 8*B*b^26*c^2*d^13*e^18) - (d
+ e*x)^(1/2)*(64*A^2*b^6*c^20*d^26*e^2 - 832*A^2*b^7*c^19*d^25*e^3 + 4820*A
^2*b^8*c^18*d^24*e^4 - 16240*A^2*b^9*c^17*d^23*e^5 + 34490*A^2*b^10*c^16*d^
22*e^6 - 45430*A^2*b^11*c^15*d^21*e^7 + 29414*A^2*b^12*c^14*d^20*e^8 + 1067
0*A^2*b^13*c^13*d^19*e^9 - 39550*A^2*b^14*c^12*d^18*e^10 + 25730*A^2*b^15*c
^11*d^17*e^11 + 19048*A^2*b^16*c^10*d^16*e^12 - 53852*A^2*b^17*c^9*d^15*e^1
3 + 55510*A^2*b^18*c^8*d^14*e^14 - 35210*A^2*b^19*c^7*d^13*e^15 + 14830*A^2
*b^20*c^6*d^12*e^16 - 4082*A^2*b^21*c^5*d^11*e^17 + 670*A^2*b^22*c^4*d^10*e
^18 - 50*A^2*b^23*c^3*d^9*e^19 + 16*B^2*b^8*c^18*d^26*e^2 - 248*B^2*b^9*c^1
7*d^25*e^3 + 1730*B^2*b^10*c^16*d^24*e^4 - 7210*B^2*b^11*c^15*d^23*e^5 + 20
160*B^2*b^12*c^14*d^22*e^6 - 40320*B^2*b^13*c^13*d^21*e^7 + 60116*B^2*b^14*
c^12*d^20*e^8 - 68820*B^2*b^15*c^11*d^19*e^9 + 61800*B^2*b^16*c^10*d^18*e^1
0 - 44080*B^2*b^17*c^9*d^17*e^11 + 24962*B^2*b^18*c^8*d^16*e^12 - 11018*B^2
*b^19*c^7*d^15*e^13 + 3640*B^2*b^20*c^6*d^14*e^14 - 840*B^2*b^21*c^5*d^13*e
^15 + 120*B^2*b^22*c^4*d^12*e^16 - 8*B^2*b^23*c^3*d^11*e^17 - 64*A*B*b^7*c^
19*d^26*e^2 + 912*A*B*b^8*c^18*d^25*e^3 - 5820*A*B*b^9*c^17*d^24*e^4 + 2194
0*A*B*b^10*c^16*d^23*e^5 - 54040*A*B*b^11*c^15*d^22*e^6 + 89880*A*B*b^12*c^
14*d^21*e^7 - 97664*A*B*b^13*c^13*d^20*e^8 + 54080*A*B*b^14*c^12*d^19*e^9 +
 23400*A*B*b^15*c^11*d^18*e^10 - 86480*A*B*b^16*c^10*d^17*e^11 + 101652*A*B
*b^17*c^9*d^16*e^12 - 76188*A*B*b^18*c^8*d^15*e^13 + 40040*A*B*b^19*c^7*d^1
4*e^14 - 14840*A*B*b^20*c^6*d^13*e^15 + 3720*A*B*b^21*c^5*d^12*e^16 - 568*A
*B*b^22*c^4*d^11*e^17 + 40*A*B*b^23*c^3*d^10*e^18))*((25*A^2*b^2*e^2 + 16*A
^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c*d
*e)/(4*b^6*d^7))^(1/2) + 32*A^3*b^4*c^20*d^23*e^3 - 368*A^3*b^5*c^19*d^22*e
^4 + 2006*A^3*b^6*c^18*d^21*e^5 - 6895*A^3*b^7*c^17*d^20*e^6 + 16250*A^3*b^
8*c^16*d^19*e^7 - 25764*A^3*b^9*c^15*d^18*e^8 + 22851*A^3*b^10*c^14*d^17*e^
9 + 2958*A^3*b^11*c^13*d^16*e^10 - 41520*A^3*b^12*c^12*d^15*e^11 + 64900*A^
3*b^13*c^11*d^14*e^12 - 57568*A^3*b^14*c^10*d^13*e^13 + 32617*A^3*b^15*c^9*
d^12*e^14 - 11714*A^3*b^16*c^8*d^11*e^15 + 2440*A^3*b^17*c^7*d^10*e^16 - 22
5*A^3*b^18*c^6*d^9*e^17 - 4*B^3*b^7*c^17*d^23*e^3 + 26*B^3*b^8*c^16*d^22*e^
4 + 38*B^3*b^9*c^15*d^21*e^5 - 880*B^3*b^10*c^14*d^20*e^6 + 3900*B^3*b^11*c
^13*d^19*e^7 - 9492*B^3*b^12*c^12*d^18*e^8 + 14868*B^3*b^13*c^11*d^17*e^9 -
 15816*B^3*b^14*c^10*d^16*e^10 + 11580*B^3*b^15*c^9*d^15*e^11 - 5750*B^3*b^
16*c^8*d^14*e^12 + 1846*B^3*b^17*c^7*d^13*e^13 - 344*B^3*b^18*c^6*d^12*e^14
 + 28*B^3*b^19*c^5*d^11*e^15 + 24*A*B^2*b^6*c^18*d^23*e^3 - 196*A*B^2*b^7*c
^17*d^22*e^4 + 487*A*B^2*b^8*c^16*d^21*e^5 + 165*A*B^2*b^9*c^15*d^20*e^6 -
2800*A*B^2*b^10*c^14*d^19*e^7 + 3552*A*B^2*b^11*c^13*d^18*e^8 + 5922*A*B^2*
b^12*c^12*d^17*e^9 - 25434*A*B^2*b^13*c^11*d^16*e^10 + 39900*A*B^2*b^14*c^1
0*d^15*e^11 - 36600*A*B^2*b^15*c^9*d^14*e^12 + 21199*A*B^2*b^16*c^8*d^13*e^
13 - 7651*A*B^2*b^17*c^7*d^12*e^14 + 1572*A*B^2*b^18*c^6*d^11*e^15 - 140*A*
B^2*b^19*c^5*d^10*e^16 - 48*A^2*B*b^5*c^19*d^23*e^3 + 472*A^2*B*b^6*c^18*d^
22*e^4 - 2129*A^2*B*b^7*c^17*d^21*e^5 + 6450*A^2*B*b^8*c^16*d^20*e^6 - 1625
0*A^2*B*b^9*c^15*d^19*e^7 + 35246*A^2*B*b^10*c^14*d^18*e^8 - 59679*A^2*B*b^
11*c^13*d^17*e^9 + 71028*A^2*B*b^12*c^12*d^16*e^10 - 52860*A^2*B*b^13*c^11*
d^15*e^11 + 16500*A^2*B*b^14*c^10*d^14*e^12 + 9377*A^2*B*b^15*c^9*d^13*e^13
 - 13318*A^2*B*b^16*c^8*d^12*e^14 + 6726*A^2*B*b^17*c^7*d^11*e^15 - 1690*A^
2*B*b^18*c^6*d^10*e^16 + 175*A^2*B*b^19*c^5*d^9*e^17)*((25*A^2*b^2*e^2 + 16
*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 20*A*B*b^2*d*e + 40*A^2*b*c
*d*e)/(4*b^6*d^7))^(1/2) - ((2*(A*e^3 - B*d*e^2))/(3*(c*d^2 - b*d*e)) - (2*
(d + e*x)*(5*A*b*e^4 - 10*A*c*d*e^3 - 2*B*b*d*e^3 + 7*B*c*d^2*e^2))/(3*(c*d
^2 - b*d*e)^2) + ((d + e*x)^2*(6*B*b^4*d*e^4 - 6*A*c^4*d^4*e - 15*A*b^4*e^5
 + 12*A*b*c^3*d^3*e^2 - 28*B*b^3*c*d^2*e^3 - 64*A*b^2*c^2*d^2*e^3 + 34*B*b^
```

```
2*c^2*d^3*e^2 + 58*A*b^3*c*d*e^4 + 3*B*b*c^3*d^4*e))/(3*b^2*(c*d^2 - b*d*e)
^3) - ((d + e*x)^3*(5*A*b^3*c*e^4 - 2*A*c^4*d^3*e + 3*A*b*c^3*d^2*e^2 - 11*
A*b^2*c^2*d*e^3 + 6*B*b^2*c^2*d^2*e^2 + B*b*c^3*d^3*e - 2*B*b^3*c*d*e^3))/(
b^2*(c*d^2 - b*d*e)^3))/(c*(d + e*x)^(7/2) + (c*d^2 - b*d*e)*(d + e*x)^(3/2
) + (b*e - 2*c*d)*(d + e*x)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1246 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=457

$$-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)(-7Abe-4Acd+2bBd)}{b^3d^{9/2}}-\frac{e\left(b^2(-e)(2Bd-7Ae)-5bcd(2Ae+Bd)+10Ac^2d^2\right)}{5b^2d^2(d+ex)^{5/2}(cd-be)^2}-\frac{cx(2Acd-b(A}{b^2d\left(bx+cx\right.}$$

```
[Out] -1/5*e*(10*A*c^2*d^2-b^2*e*(-7*A*e+2*B*d)-5*b*c*d*(2*A*e+B*d))/b^2/d^2/(-b*
e+c*d)^2/(e*x+d)^(5/2)-1/3*e*(6*A*c^3*d^3-b^2*c*d*e*(-17*A*e+6*B*d)+b^3*e^2
*(-7*A*e+2*B*d)-3*b*c^2*d^2*(3*A*e+B*d))/b^2/d^3/(-b*e+c*d)^3/(e*x+d)^(3/2)
+(-A*b*(-b*e+c*d)-c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(e*x+d)^(5/2)
/(c*x^2+b*x)-(-7*A*b*e-4*A*c*d+2*B*b*d)*arctanh((e*x+d)^(1/2)/d^(1/2))/b^3/
d^(9/2)+c^(7/2)*(11*A*b*c*e-4*A*c^2*d-9*B*b^2*e+2*B*b*c*d)*arctanh(c^(1/2)*
(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b^3/(-b*e+c*d)^(9/2)-e*(2*A*c^4*d^4-2*b^2*c
^2*d^2*e*(-13*A*e+6*B*d)-b^4*e^3*(-7*A*e+2*B*d)+8*b^3*c*d*e^2*(-3*A*e+B*d)-
b*c^3*d^3*(4*A*e+B*d))/b^2/d^4/(-b*e+c*d)^4/(e*x+d)^(1/2)
```

Rubi [A] time = 1.28, antiderivative size = 457, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 828, 826, 1166, 208}

$$-\frac{e\left(-2b^2c^2d^2e(6Bd-13Ae)+8b^3cde^2(Bd-3Ae)+b^4\left(-e^3\right)(2Bd-7Ae)-bc^3d^3(4Ae+Bd)+2Ac^4d^4\right)}{b^2d^4\sqrt{d+ex}\,(cd-be)^4}-\frac{e\left(-b^2c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)^2),x]
```

```
[Out] -(e*(10*A*c^2*d^2 - b^2*e*(2*B*d - 7*A*e) - 5*b*c*d*(B*d + 2*A*e)))/(5*b^2*
d^2*(c*d - b*e)^2*(d + e*x)^(5/2)) - (e*(6*A*c^3*d^3 - b^2*c*d*e*(6*B*d - 1
7*A*e) + b^3*e^2*(2*B*d - 7*A*e) - 3*b*c^2*d^2*(B*d + 3*A*e)))/(3*b^2*d^3*(
c*d - b*e)^3*(d + e*x)^(3/2)) - (e*(2*A*c^4*d^4 - 2*b^2*c^2*d^2*e*(6*B*d -
13*A*e) - b^4*e^3*(2*B*d - 7*A*e) + 8*b^3*c*d*e^2*(B*d - 3*A*e) - b*c^3*d^3
*(B*d + 4*A*e)))/(b^2*d^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (A*b*(c*d - b*e) +
 c*(2*A*c*d - b*(B*d + A*e))*x)/(b^2*d*(c*d - b*e)*(d + e*x)^(5/2)*(b*x + c
*x^2)) - ((2*b*B*d - 4*A*c*d - 7*A*b*e)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(b^
3*d^(9/2)) + (c^(7/2)*(2*b*B*c*d - 4*A*c^2*d - 9*b^2*B*e + 11*A*b*c*e)*ArcT
anh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(b^3*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(bx+cx^2\right)^2}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{b^2d(cd-be)(d+ex)^{5/2}\left(bx+cx^2\right)} - \frac{\int \frac{-\frac{1}{2}(cd-be)(2bBd-4Acd-7Abe)-\frac{7}{2}ce(bBd-2A}{(d+ex)^{7/2}\left(bx+cx^2\right)}}{b^2d(cd-be)}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{Ab(cd-be)+c(2Acd-}{b^2d(cd-be)(d+ex)^{5/2}}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

$$= -\frac{e\left(10Ac^2d^2-b^2e(2Bd-7Ae)-5bcd(Bd+2Ae)\right)}{5b^2d^2(cd-be)^2(d+ex)^{5/2}} - \frac{e\left(6Ac^3d^3-b^2cde(6Bd-\right.}{3}$$

Mathematica [**C**] time = 0.20, size = 194, normalized size = 0.42

$$\frac{-x(b+cx)\left(cd^2\left(bc(11Ae+2Bd)-4Ac^2d-9b^2Be\right)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{c(d+ex)}{cd-be}\right)+(cd-be)^2\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{ex}{d}+1\right)(7A}{5b^3d^2x(b+cx)(d+ex)^{5/2}(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(b*x + c*x^2)^2),x]
```

```
[Out] (-5*A*b^2*d*(c*d - b*e)^2 - 5*b*c*d*(-(c*d) + b*e)*(b*B*d - 2*A*c*d + A*b*e
)*x - x*(b + c*x)*(c*d^2*(-4*A*c^2*d - 9*b^2*B*e + b*c*(2*B*d + 11*A*e))*Hy
pergeometric2F1[-5/2, 1, -3/2, (c*(d + e*x))/(c*d - b*e)] + (c*d - b*e)^2*(
-2*b*B*d + 4*A*c*d + 7*A*b*e)*Hypergeometric2F1[-5/2, 1, -3/2, 1 + (e*x)/d]
))/(5*b^3*d^2*(c*d - b*e)^2*x*(b + c*x)*(d + e*x)^(5/2))
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**] time = 0.49, size = 867, normalized size = 1.90

$$-\frac{\left(2\,Bbc^5d-4\,Ac^6d-9\,Bb^2c^4e+11\,Abc^5e\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{\left(b^3c^4d^4-4\,b^4c^3d^3e+6\,b^5c^2d^2e^2-4\,b^6cde^3+b^7e^4\right)\sqrt{-c^2d+bce}}+\frac{(xe+d)^{\frac{3}{2}}Bbc^4d^4e-2\,(xe+d)^{\frac{3}{2}}Ac^5d^4e-\sqrt{xe}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="giac")
```

```
[Out] -(2*B*b*c^5*d - 4*A*c^6*d - 9*B*b^2*c^4*e + 11*A*b*c^5*e)*arctan(sqrt(x*e +
 d)*c/sqrt(-c^2*d + b*c*e))/((b^3*c^4*d^4 - 4*b^4*c^3*d^3*e + 6*b^5*c^2*d^2
*e^2 - 4*b^6*c*d*e^3 + b^7*e^4)*sqrt(-c^2*d + b*c*e)) + ((x*e + d)^(3/2)*B*
b*c^4*d^4*e - 2*(x*e + d)^(3/2)*A*c^5*d^4*e - sqrt(x*e + d)*B*b*c^4*d^5*e +
 2*sqrt(x*e + d)*A*c^5*d^5*e + 4*(x*e + d)^(3/2)*A*b*c^4*d^3*e^2 - 5*sqrt(x
*e + d)*A*b*c^4*d^4*e^2 - 6*(x*e + d)^(3/2)*A*b^2*c^3*d^2*e^3 + 10*sqrt(x*e
 + d)*A*b^2*c^3*d^3*e^3 + 4*(x*e + d)^(3/2)*A*b^3*c^2*d*e^4 - 10*sqrt(x*e +
 d)*A*b^3*c^2*d^2*e^4 - (x*e + d)^(3/2)*A*b^4*c*e^5 + 5*sqrt(x*e + d)*A*b^4
*c*d*e^5 - sqrt(x*e + d)*A*b^5*e^6)/((b^2*c^4*d^8 - 4*b^3*c^3*d^7*e + 6*b^4
*c^2*d^6*e^2 - 4*b^5*c*d^5*e^3 + b^6*d^4*e^4)*((x*e + d)^2*c - 2*(x*e + d)*
c*d + c*d^2 + (x*e + d)*b*e - b*d*e)) + 2/15*(90*(x*e + d)^2*B*c^2*d^3*e^2
 + 15*(x*e + d)*B*c^2*d^4*e^2 + 3*B*c^2*d^5*e^2 - 60*(x*e + d)^2*B*b*c*d^2*e
^3 - 150*(x*e + d)^2*A*c^2*d^2*e^3 - 20*(x*e + d)*B*b*c*d^3*e^3 - 20*(x*e +
 d)*A*c^2*d^3*e^3 - 6*B*b*c*d^4*e^3 - 3*A*c^2*d^4*e^3 + 15*(x*e + d)^2*B*b^
2*d*e^4 + 150*(x*e + d)^2*A*b*c*d*e^4 + 5*(x*e + d)*B*b^2*d^2*e^4 + 30*(x*e
 + d)*A*b*c*d^2*e^4 + 3*B*b^2*d^3*e^4 + 6*A*b*c*d^3*e^4 - 45*(x*e + d)^2*A*
b^2*e^5 - 10*(x*e + d)*A*b^2*d*e^5 - 3*A*b^2*d^2*e^5)/((c^4*d^8 - 4*b*c^3*d
^7*e + 6*b^2*c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(5/2))
+ (2*B*b*d - 4*A*c*d - 7*A*b*e)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^3*sqrt(-d
)*d^4)
```

maple [**A**] time = 0.10, size = 707, normalized size = 1.55

$$-\frac{11A\,c^5e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\,\sqrt{(be-cd)\,c}\;b^2}+\frac{4A\,c^6d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\,\sqrt{(be-cd)\,c}\;b^3}+\frac{9B\,c^4e\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\,\sqrt{(be-cd)\,c}\;b}-\frac{2B\,c^5d\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{(be-cd)c}}\right)}{(be-cd)^4\,\sqrt{(be-cd)\,c}\;b^2}-\frac{}{(b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x)
```

```
[Out] -e*c^5/(b*e-c*d)^4/b^2*(e*x+d)^(1/2)/(c*e*x+b*e)*A+e*c^4/(b*e-c*d)^4/b*(e*x
+d)^(1/2)/(c*e*x+b*e)*B-11*e*c^5/(b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan
((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+4*c^6/(b*e-c*d)^4/b^3/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d+9*e*c^4/(b*e-c*d)^4/
b/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-2*c^5/(
b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)
*c)*B*d-1/b^2/d^4*A*(e*x+d)^(1/2)/x+7*e/b^2/d^(9/2)*arctanh((e*x+d)^(1/2)/d
^(1/2))*A+4/b^3/d^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-2/b^2/d^(7/2)*ar
ctanh((e*x+d)^(1/2)/d^(1/2))*B-2/5*e^3/(b*e-c*d)^2/d^2/(e*x+d)^(5/2)*A+2/5*
e^2/(b*e-c*d)^2/d/(e*x+d)^(5/2)*B-4/3*e^4/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A*b
+8/3*e^3/(b*e-c*d)^3/d^2/(e*x+d)^(3/2)*A*c+2/3*e^3/(b*e-c*d)^3/d^2/(e*x+d)^
(3/2)*B*b-2*e^2/(b*e-c*d)^3/d/(e*x+d)^(3/2)*B*c-6*e^5/(b*e-c*d)^4/d^4/(e*x+
d)^(1/2)*A*b^2+20*e^4/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*A*b*c-20*e^3/(b*e-c*d)^
4/d^2/(e*x+d)^(1/2)*A*c^2+2*e^4/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*B*b^2-8*e^3/(
b*e-c*d)^4/d^2/(e*x+d)^(1/2)*B*b*c+12*e^2/(b*e-c*d)^4/d/(e*x+d)^(1/2)*B*c^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 7.16, size = 20597, normalized size = 45.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^2*(d + e*x)^(7/2)),x)
```

```
[Out] log((((49*A^2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 2
8*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b^6*d^9))^(1/2)*((d + e*x)^(1/2)*((49*A^
2*b^2*e^2 + 16*A^2*c^2*d^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*
e + 56*A^2*b*c*d*e)/(4*b^6*d^9))^(1/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^
22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^
16*c^19*d^37*e^6 - 286824*b^17*c^18*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 -
1550400*b^19*c^16*d^34*e^9 + 2635680*b^20*c^15*d^33*e^10 - 3695120*b^21*c^1
4*d^32*e^11 + 4299776*b^22*c^13*d^31*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3
359200*b^24*c^11*d^29*e^14 - 2248080*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9
*d^27*e^16 - 558144*b^27*c^8*d^26*e^17 + 201552*b^28*c^7*d^25*e^18 - 57000*
b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 1
76*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 14
8*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*
e^6 - 8036*A*b^14*c^19*d^33*e^7 - 21868*A*b^15*c^18*d^32*e^8 + 194304*A*b^1
6*c^17*d^31*e^9 - 709280*A*b^17*c^16*d^30*e^10 + 1744160*A*b^18*c^15*d^29*e
^11 - 3218072*A*b^19*c^14*d^28*e^12 + 4654832*A*b^20*c^13*d^27*e^13 - 53944
80*A*b^21*c^12*d^26*e^14 + 5063240*A*b^22*c^11*d^25*e^15 - 3863800*A*b^23*c
^10*d^24*e^16 + 2393152*A*b^24*c^9*d^23*e^17 - 1194528*A*b^25*c^8*d^22*e^18
 + 474056*A*b^26*c^7*d^21*e^19 - 146300*A*b^27*c^6*d^20*e^20 + 33880*A*b^28
*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*
A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 +
1840*B*b^13*c^20*d^35*e^5 - 13160*B*b^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*
d^33*e^7 - 212800*B*b^16*c^17*d^32*e^8 + 550432*B*b^17*c^16*d^31*e^9 - 1113
120*B*b^18*c^15*d^30*e^10 + 1796600*B*b^19*c^14*d^29*e^11 - 2345824*B*b^20*
c^13*d^28*e^12 + 2498496*B*b^21*c^12*d^27*e^13 - 2179632*B*b^22*c^11*d^26*e
^14 + 1557920*B*b^23*c^10*d^25*e^15 - 909120*B*b^24*c^9*d^24*e^16 + 429664*
B*b^25*c^8*d^23*e^17 - 162208*B*b^26*c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*
e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*
c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^23) + (d + e*x)^(1/2)*(1088*A^2*b^7*c^2
4*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*
A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^2
0*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 +
 473880*A^2*b^14*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A
^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18
*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d
^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18
 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A
^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^
13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^
9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^
5 - 69252*B^2*b^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B
^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^
15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24
*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 +
 622176*B^2*b^21*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^
2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^1
7*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b
^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 +
 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^
11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^2
8*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 12
44088*A*B*b^16*c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A
*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20
*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^
19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 5
7760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*
c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^23))*((49*A^2*b^2*e^2 + 16*A^2*c^2*d
^2 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b
^6*d^9))^(1/2) + 32*A^3*b^4*c^25*d^30*e^3 - 480*A^3*b^5*c^24*d^29*e^4 + 359
0*A^3*b^6*c^23*d^28*e^5 - 17780*A^3*b^7*c^22*d^27*e^6 + 62874*A^3*b^8*c^21*
d^26*e^7 - 157248*A^3*b^9*c^20*d^25*e^8 + 254443*A^3*b^10*c^19*d^24*e^9 - 1
63416*A^3*b^11*c^18*d^23*e^10 - 380204*A^3*b^12*c^17*d^22*e^11 + 1403292*A^
3*b^13*c^16*d^21*e^12 - 2458995*A^3*b^14*c^15*d^20*e^13 + 2901724*A^3*b^15*
c^14*d^19*e^14 - 2487478*A^3*b^16*c^13*d^18*e^15 + 1581048*A^3*b^17*c^12*d^
17*e^16 - 741891*A^3*b^18*c^11*d^16*e^17 + 250736*A^3*b^19*c^10*d^15*e^18 -
 57912*A^3*b^20*c^9*d^14*e^19 + 8204*A^3*b^21*c^8*d^13*e^20 - 539*A^3*b^22*
c^7*d^12*e^21 - 4*B^3*b^7*c^22*d^30*e^3 + 18*B^3*b^8*c^21*d^29*e^4 + 344*B^
3*b^9*c^20*d^28*e^5 - 4228*B^3*b^10*c^19*d^27*e^6 + 22848*B^3*b^11*c^18*d^2
6*e^7 - 76706*B^3*b^12*c^17*d^25*e^8 + 178640*B^3*b^13*c^16*d^24*e^9 - 3041
28*B^3*b^14*c^15*d^23*e^10 + 389136*B^3*b^15*c^14*d^22*e^11 - 379346*B^3*b^
16*c^13*d^21*e^12 + 282744*B^3*b^17*c^12*d^20*e^13 - 160244*B^3*b^18*c^11*d
^19*e^14 + 67984*B^3*b^19*c^10*d^18*e^15 - 20958*B^3*b^20*c^9*d^17*e^16 + 4
448*B^3*b^21*c^8*d^16*e^17 - 584*B^3*b^22*c^7*d^15*e^18 + 36*B^3*b^23*c^6*d
^14*e^19 + 24*A*B^2*b^6*c^23*d^30*e^3 - 192*A*B^2*b^7*c^22*d^29*e^4 - 111*A
*B^2*b^8*c^21*d^28*e^5 + 6636*A*B^2*b^9*c^20*d^27*e^6 - 32970*A*B^2*b^10*c^
19*d^26*e^7 + 75432*A*B^2*b^11*c^18*d^25*e^8 - 55881*A*B^2*b^12*c^17*d^24*e
^9 - 172920*A*B^2*b^13*c^16*d^23*e^10 + 664488*A*B^2*b^14*c^15*d^22*e^11 -
1211100*A*B^2*b^15*c^14*d^21*e^12 + 1461999*A*B^2*b^16*c^13*d^20*e^13 - 126
4452*A*B^2*b^17*c^12*d^19*e^14 + 802158*A*B^2*b^18*c^11*d^18*e^15 - 372624*
A*B^2*b^19*c^10*d^17*e^16 + 123945*A*B^2*b^20*c^9*d^16*e^17 - 28080*A*B^2*b
```

```
^21*c^8*d^15*e^18 + 3900*A*B^2*b^22*c^7*d^14*e^19 - 252*A*B^2*b^23*c^6*d^13
*e^20 - 48*A^2*B*b^5*c^24*d^30*e^3 + 552*A^2*B*b^6*c^23*d^29*e^4 - 2949*A^2
*B*b^7*c^22*d^28*e^5 + 11844*A^2*B*b^8*c^21*d^27*e^6 - 47628*A^2*B*b^9*c^20
*d^26*e^7 + 176274*A^2*B*b^10*c^19*d^25*e^8 - 502782*A^2*B*b^11*c^18*d^24*e
^9 + 1030776*A^2*B*b^12*c^17*d^23*e^10 - 1480512*A^2*B*b^13*c^16*d^22*e^11
 + 1411806*A^2*B*b^14*c^15*d^21*e^12 - 703164*A^2*B*b^15*c^14*d^20*e^13 - 20
5212*A^2*B*b^16*c^13*d^19*e^14 + 729540*A^2*B*b^17*c^12*d^18*e^15 - 708498*
A^2*B*b^18*c^11*d^17*e^16 + 417222*A^2*B*b^19*c^10*d^16*e^17 - 162912*A^2*B
*b^20*c^9*d^15*e^18 + 41592*A^2*B*b^21*c^8*d^14*e^19 - 6342*A^2*B*b^22*c^7*
d^13*e^20 + 441*A^2*B*b^23*c^6*d^12*e^21)*((49*A^2*b^2*e^2 + 16*A^2*c^2*d^2
 + 4*B^2*b^2*d^2 - 16*A*B*b*c*d^2 - 28*A*B*b^2*d*e + 56*A^2*b*c*d*e)/(4*b^6
*d^9))^(1/2) - log(32*A^3*b^4*c^25*d^30*e^3 - ((((49*A^2*b^2*e^2)/4 + 4*A^2
*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b
^6*d^9))^(1/2)*((d + e*x)^(1/2)*(((49*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*
b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b^6*d^9))^(1/2)*
(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4 -
 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d^3
6*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*b^
20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*e^
12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*b^
25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^17
 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d^2
3*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^20
*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^12*c^
21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 21868
*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^16*d^
30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12 - 4
654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*A*b^
22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*d^23
*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 146300
*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^18*e
^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^22*d^
37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B*b^1
4*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*e^8
 - 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600*B*b
^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^12*d^
27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15 + 9
09120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^26*c^
7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 - 168
0*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e^23)
 + (d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A^2*b^6*c^25*d^34*e^2 -
 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31*e^5 - 116512*A^2*b^10
*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 267432*A^2*b^12*c^19*d^28*
e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*c^17*d^26*e^10 - 85113
6*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24*e^12 + 1207368*A^2*b^
17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 + 4835160*A^2*b^19*c^12
*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751968*A^2*b^21*c^10*d^19*e
^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^23*c^8*d^17*e^19 - 353
210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*e^21 - 16412*A^2*b^26*
c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*b^28*c^3*d^12*e^24 - 1
6*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 - 3074*B^2*b^10*c^21*d^
32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^12*c^19*d^30*e^6 + 2016
48*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28*e^8 + 821328*B^2*b^15
*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1509384*B^2*b^17*c^14*d^
25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B^2*b^19*c^12*d^23*e^13
 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*c^10*d^21*e^15 - 31024
2*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e^17 - 38760*B^2*b^24*c
^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2*b^26*c^5*d^16*e^20 +
160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22 + 64*A*B*b^7*c^24*d^3
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4*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^22*d^32*e^4 - 52944*A*
B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6 - 452112*A*B*b^12*c^19
*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*B*b^14*c^17*d^27*e^9 +
 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^15*d^25*e^11 - 3244396
*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23*e^13 - 5345768*A*B*b^
19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 - 3100404*A*B*b^21*c^10
*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*A*B*b^23*c^8*d^18*e^18
 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6*d^16*e^20 + 10000*A*B
*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 56*A*B*b^28*c^3*d^13*e^
23))*(((49*A^2*b^2*e^2)/4 + 4*A^2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7
*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(b^6*d^9))^(1/2) - 480*A^3*b^5*c^24*d^29*e^4
 + 3590*A^3*b^6*c^23*d^28*e^5 - 17780*A^3*b^7*c^22*d^27*e^6 + 62874*A^3*b^8
*c^21*d^26*e^7 - 157248*A^3*b^9*c^20*d^25*e^8 + 254443*A^3*b^10*c^19*d^24*e
^9 - 163416*A^3*b^11*c^18*d^23*e^10 - 380204*A^3*b^12*c^17*d^22*e^11 + 1403
292*A^3*b^13*c^16*d^21*e^12 - 2458995*A^3*b^14*c^15*d^20*e^13 + 2901724*A^3
*b^15*c^14*d^19*e^14 - 2487478*A^3*b^16*c^13*d^18*e^15 + 1581048*A^3*b^17*c
^12*d^17*e^16 - 741891*A^3*b^18*c^11*d^16*e^17 + 250736*A^3*b^19*c^10*d^15*
e^18 - 57912*A^3*b^20*c^9*d^14*e^19 + 8204*A^3*b^21*c^8*d^13*e^20 - 539*A^3
*b^22*c^7*d^12*e^21 - 4*B^3*b^7*c^22*d^30*e^3 + 18*B^3*b^8*c^21*d^29*e^4 +
344*B^3*b^9*c^20*d^28*e^5 - 4228*B^3*b^10*c^19*d^27*e^6 + 22848*B^3*b^11*c^
18*d^26*e^7 - 76706*B^3*b^12*c^17*d^25*e^8 + 178640*B^3*b^13*c^16*d^24*e^9
- 304128*B^3*b^14*c^15*d^23*e^10 + 389136*B^3*b^15*c^14*d^22*e^11 - 379346*
B^3*b^16*c^13*d^21*e^12 + 282744*B^3*b^17*c^12*d^20*e^13 - 160244*B^3*b^18*
c^11*d^19*e^14 + 67984*B^3*b^19*c^10*d^18*e^15 - 20958*B^3*b^20*c^9*d^17*e^
16 + 4448*B^3*b^21*c^8*d^16*e^17 - 584*B^3*b^22*c^7*d^15*e^18 + 36*B^3*b^23
*c^6*d^14*e^19 + 24*A*B^2*b^6*c^23*d^30*e^3 - 192*A*B^2*b^7*c^22*d^29*e^4 -
 111*A*B^2*b^8*c^21*d^28*e^5 + 6636*A*B^2*b^9*c^20*d^27*e^6 - 32970*A*B^2*b
^10*c^19*d^26*e^7 + 75432*A*B^2*b^11*c^18*d^25*e^8 - 55881*A*B^2*b^12*c^17*
d^24*e^9 - 172920*A*B^2*b^13*c^16*d^23*e^10 + 664488*A*B^2*b^14*c^15*d^22*e
^11 - 1211100*A*B^2*b^15*c^14*d^21*e^12 + 1461999*A*B^2*b^16*c^13*d^20*e^13
 - 1264452*A*B^2*b^17*c^12*d^19*e^14 + 802158*A*B^2*b^18*c^11*d^18*e^15 - 3
72624*A*B^2*b^19*c^10*d^17*e^16 + 123945*A*B^2*b^20*c^9*d^16*e^17 - 28080*A
*B^2*b^21*c^8*d^15*e^18 + 3900*A*B^2*b^22*c^7*d^14*e^19 - 252*A*B^2*b^23*c^
6*d^13*e^20 - 48*A^2*B*b^5*c^24*d^30*e^3 + 552*A^2*B*b^6*c^23*d^29*e^4 - 29
49*A^2*B*b^7*c^22*d^28*e^5 + 11844*A^2*B*b^8*c^21*d^27*e^6 - 47628*A^2*B*b^
9*c^20*d^26*e^7 + 176274*A^2*B*b^10*c^19*d^25*e^8 - 502782*A^2*B*b^11*c^18*
d^24*e^9 + 1030776*A^2*B*b^12*c^17*d^23*e^10 - 1480512*A^2*B*b^13*c^16*d^22
*e^11 + 1411806*A^2*B*b^14*c^15*d^21*e^12 - 703164*A^2*B*b^15*c^14*d^20*e^1
3 - 205212*A^2*B*b^16*c^13*d^19*e^14 + 729540*A^2*B*b^17*c^12*d^18*e^15 - 7
08498*A^2*B*b^18*c^11*d^17*e^16 + 417222*A^2*B*b^19*c^10*d^16*e^17 - 162912
*A^2*B*b^20*c^9*d^15*e^18 + 41592*A^2*B*b^21*c^8*d^14*e^19 - 6342*A^2*B*b^2
2*c^7*d^13*e^20 + 441*A^2*B*b^23*c^6*d^12*e^21)*(((49*A^2*b^2*e^2)/4 + 4*A^
2*c^2*d^2 + B^2*b^2*d^2 - 4*A*B*b*c*d^2 - 7*A*B*b^2*d*e + 14*A^2*b*c*d*e)/(
b^6*d^9))^(1/2) + atan((((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A
^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31
*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 2674
32*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*
c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24
*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 +
 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 375196
8*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^
23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*
e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*
b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 -
 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^1
2*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28
*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 15
09384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B
^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*
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c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e
^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2
*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22
 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^
22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6
 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*
B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^
15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23
*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 -
 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*
A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6
*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 5
6*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^
2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d
*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*
e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e
^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36
*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^11
*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A
*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e
 + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b
^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d
^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2
)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4
 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d
^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*
b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*
e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*
b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^1
7 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d
^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^
20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 148*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*
c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*e^6 - 8036*A*b^14*c^19*d^33*e^7 - 218
68*A*b^15*c^18*d^32*e^8 + 194304*A*b^16*c^17*d^31*e^9 - 709280*A*b^17*c^16*
d^30*e^10 + 1744160*A*b^18*c^15*d^29*e^11 - 3218072*A*b^19*c^14*d^28*e^12 +
 4654832*A*b^20*c^13*d^27*e^13 - 5394480*A*b^21*c^12*d^26*e^14 + 5063240*A*
b^22*c^11*d^25*e^15 - 3863800*A*b^23*c^10*d^24*e^16 + 2393152*A*b^24*c^9*d^
23*e^17 - 1194528*A*b^25*c^8*d^22*e^18 + 474056*A*b^26*c^7*d^21*e^19 - 1463
00*A*b^27*c^6*d^20*e^20 + 33880*A*b^28*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18
*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*
d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 + 1840*B*b^13*c^20*d^35*e^5 - 13160*B*b
^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*d^33*e^7 - 212800*B*b^16*c^17*d^32*e^
8 + 550432*B*b^17*c^16*d^31*e^9 - 1113120*B*b^18*c^15*d^30*e^10 + 1796600*B
*b^19*c^14*d^29*e^11 - 2345824*B*b^20*c^13*d^28*e^12 + 2498496*B*b^21*c^12*
d^27*e^13 - 2179632*B*b^22*c^11*d^26*e^14 + 1557920*B*b^23*c^10*d^25*e^15 -
 909120*B*b^24*c^9*d^24*e^16 + 429664*B*b^25*c^8*d^23*e^17 - 162208*B*b^26*
c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1
680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^2
3))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b
^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 -
 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^
7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^
4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^
14*c*d*e^8)))^(1/2)*1i + ((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*
A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^3
1*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 267
432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14
*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^2
4*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14
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+ 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 37519
68*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b
^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15
*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2
*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3
 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^
12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^2
8*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 1
509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*
B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21
*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*
e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^
2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^2
2 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c
^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6
 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A
*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c
^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^2
3*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15
 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184
*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^
6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 +
56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B
^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*
d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15
*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*
e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 3
6*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^1
1*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*
A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*
e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*
b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*
d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/
2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^
4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*
d^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680
*b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31
*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080
*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^
17 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*
d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d
^20*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^12
*c^21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 21
868*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^16
*d^30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12
 - 4654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*A
*b^22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*d
^23*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 146
300*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^1
8*e^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^22
*d^37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B*
b^14*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*e
^8 - 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600*
B*b^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^12
*d^27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15
+ 909120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^26
*c^7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 -
1680*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e^
23))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*
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b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2
- 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b
^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e
^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b
^14*c*d*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64
*A^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^
31*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 26
7432*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^1
4*c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^
24*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14
 + 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 3751
968*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*
b^23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^1
5*e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^
2*b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3
 - 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b
^12*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^
28*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 +
1509384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168
*B^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^2
1*c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19
*e^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B
^2*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^
22 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*
c^22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^
6 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*
A*B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*
c^15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^
23*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15
 - 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 71318
4*A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c
^6*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 +
 56*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*
B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8
*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^1
5*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6
*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 +
36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^
11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198
*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d
*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36
*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4
*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1
/2)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e
^4 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18
*d^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 263568
0*b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^3
1*e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 224808
0*b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e
^17 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5
*d^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*
d^20*e^23) + 8*A*b^10*c^23*d^37*e^3 - 148*A*b^11*c^22*d^36*e^4 + 1160*A*b^1
2*c^21*d^35*e^5 - 4760*A*b^13*c^20*d^34*e^6 + 8036*A*b^14*c^19*d^33*e^7 + 2
1868*A*b^15*c^18*d^32*e^8 - 194304*A*b^16*c^17*d^31*e^9 + 709280*A*b^17*c^1
6*d^30*e^10 - 1744160*A*b^18*c^15*d^29*e^11 + 3218072*A*b^19*c^14*d^28*e^12
 - 4654832*A*b^20*c^13*d^27*e^13 + 5394480*A*b^21*c^12*d^26*e^14 - 5063240*
A*b^22*c^11*d^25*e^15 + 3863800*A*b^23*c^10*d^24*e^16 - 2393152*A*b^24*c^9*
d^23*e^17 + 1194528*A*b^25*c^8*d^22*e^18 - 474056*A*b^26*c^7*d^21*e^19 + 14
6300*A*b^27*c^6*d^20*e^20 - 33880*A*b^28*c^5*d^19*e^21 + 5544*A*b^29*c^4*d^
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18*e^22 - 572*A*b^30*c^3*d^17*e^23 + 28*A*b^31*c^2*d^16*e^24 - 4*B*b^11*c^2
2*d^37*e^3 + 144*B*b^12*c^21*d^36*e^4 - 1840*B*b^13*c^20*d^35*e^5 + 13160*B
*b^14*c^19*d^34*e^6 - 62328*B*b^15*c^18*d^33*e^7 + 212800*B*b^16*c^17*d^32*
e^8 - 550432*B*b^17*c^16*d^31*e^9 + 1113120*B*b^18*c^15*d^30*e^10 - 1796600
*B*b^19*c^14*d^29*e^11 + 2345824*B*b^20*c^13*d^28*e^12 - 2498496*B*b^21*c^1
2*d^27*e^13 + 2179632*B*b^22*c^11*d^26*e^14 - 1557920*B*b^23*c^10*d^25*e^15
 + 909120*B*b^24*c^9*d^24*e^16 - 429664*B*b^25*c^8*d^23*e^17 + 162208*B*b^2
6*c^7*d^22*e^18 - 47844*B*b^27*c^6*d^21*e^19 + 10640*B*b^28*c^5*d^20*e^20 -
 1680*B*b^29*c^4*d^19*e^21 + 168*B*b^30*c^3*d^18*e^22 - 8*B*b^31*c^2*d^17*e
^23))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2
*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2
 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*
b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*
e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*
b^14*c*d*e^8)))^(1/2) - ((d + e*x)^(1/2)*(1088*A^2*b^7*c^24*d^33*e^3 - 64*A
^2*b^6*c^25*d^34*e^2 - 8404*A^2*b^8*c^23*d^32*e^4 + 38720*A^2*b^9*c^22*d^31
*e^5 - 116512*A^2*b^10*c^21*d^30*e^6 + 230912*A^2*b^11*c^20*d^29*e^7 - 2674
32*A^2*b^12*c^19*d^28*e^8 + 38544*A^2*b^13*c^18*d^27*e^9 + 473880*A^2*b^14*
c^17*d^26*e^10 - 851136*A^2*b^15*c^16*d^25*e^11 + 393646*A^2*b^16*c^15*d^24
*e^12 + 1207368*A^2*b^17*c^14*d^23*e^13 - 3343724*A^2*b^18*c^13*d^22*e^14 +
 4835160*A^2*b^19*c^12*d^21*e^15 - 4903382*A^2*b^20*c^11*d^20*e^16 + 375196
8*A^2*b^21*c^10*d^19*e^17 - 2217072*A^2*b^22*c^9*d^18*e^18 + 1013232*A^2*b^
23*c^8*d^17*e^19 - 353210*A^2*b^24*c^7*d^16*e^20 + 91080*A^2*b^25*c^6*d^15*
e^21 - 16412*A^2*b^26*c^5*d^14*e^22 + 1848*A^2*b^27*c^4*d^13*e^23 - 98*A^2*
b^28*c^3*d^12*e^24 - 16*B^2*b^8*c^23*d^34*e^2 + 328*B^2*b^9*c^22*d^33*e^3 -
 3074*B^2*b^10*c^21*d^32*e^4 + 17576*B^2*b^11*c^20*d^31*e^5 - 69252*B^2*b^1
2*c^19*d^30*e^6 + 201648*B^2*b^13*c^18*d^29*e^7 - 454686*B^2*b^14*c^17*d^28
*e^8 + 821328*B^2*b^15*c^16*d^27*e^9 - 1218432*B^2*b^16*c^15*d^26*e^10 + 15
09384*B^2*b^17*c^14*d^25*e^11 - 1574606*B^2*b^18*c^13*d^24*e^12 + 1384168*B
^2*b^19*c^12*d^23*e^13 - 1019324*B^2*b^20*c^11*d^22*e^14 + 622176*B^2*b^21*
c^10*d^21*e^15 - 310242*B^2*b^22*c^9*d^20*e^16 + 124032*B^2*b^23*c^8*d^19*e
^17 - 38760*B^2*b^24*c^7*d^18*e^18 + 9120*B^2*b^25*c^6*d^17*e^19 - 1520*B^2
*b^26*c^5*d^16*e^20 + 160*B^2*b^27*c^4*d^15*e^21 - 8*B^2*b^28*c^3*d^14*e^22
 + 64*A*B*b^7*c^24*d^34*e^2 - 1200*A*B*b^8*c^23*d^33*e^3 + 10252*A*B*b^9*c^
22*d^32*e^4 - 52944*A*B*b^10*c^21*d^31*e^5 + 184216*A*B*b^11*c^20*d^30*e^6
 - 452112*A*B*b^12*c^19*d^29*e^7 + 781428*A*B*b^13*c^18*d^28*e^8 - 863424*A*
B*b^14*c^17*d^27*e^9 + 255408*A*B*b^15*c^16*d^26*e^10 + 1244088*A*B*b^16*c^
15*d^25*e^11 - 3244396*A*B*b^17*c^14*d^24*e^12 + 4868800*A*B*b^18*c^13*d^23
*e^13 - 5345768*A*B*b^19*c^12*d^22*e^14 + 4568696*A*B*b^20*c^11*d^21*e^15 -
 3100404*A*B*b^21*c^10*d^20*e^16 + 1674432*A*B*b^22*c^9*d^19*e^17 - 713184*
A*B*b^23*c^8*d^18*e^18 + 234840*A*B*b^24*c^7*d^17*e^19 - 57760*A*B*b^25*c^6
*d^16*e^20 + 10000*A*B*b^26*c^5*d^15*e^21 - 1088*A*B*b^27*c^4*d^14*e^22 + 5
6*A*B*b^28*c^3*d^13*e^23) + (-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^
2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d
*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*
e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e
^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36
*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(16*A^2*c^11
*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 - 198*A
*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^10*d*e
 + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e - 36*b
^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11*c^4*d
^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8)))^(1/2
)*(16*b^12*c^23*d^41*e^2 - 328*b^13*c^22*d^40*e^3 + 3200*b^14*c^21*d^39*e^4
 - 19760*b^15*c^20*d^38*e^5 + 86640*b^16*c^19*d^37*e^6 - 286824*b^17*c^18*d
^36*e^7 + 744192*b^18*c^17*d^35*e^8 - 1550400*b^19*c^16*d^34*e^9 + 2635680*
b^20*c^15*d^33*e^10 - 3695120*b^21*c^14*d^32*e^11 + 4299776*b^22*c^13*d^31*
e^12 - 4165408*b^23*c^12*d^30*e^13 + 3359200*b^24*c^11*d^29*e^14 - 2248080*
b^25*c^10*d^28*e^15 + 1240320*b^26*c^9*d^27*e^16 - 558144*b^27*c^8*d^26*e^1
7 + 201552*b^28*c^7*d^25*e^18 - 57000*b^29*c^6*d^24*e^19 + 12160*b^30*c^5*d
^23*e^20 - 1840*b^31*c^4*d^22*e^21 + 176*b^32*c^3*d^21*e^22 - 8*b^33*c^2*d^
20*e^23) - 8*A*b^10*c^23*d^37*e^3 + 148*A*b^11*c^22*d^36*e^4 - 1160*A*b^12*
c^21*d^35*e^5 + 4760*A*b^13*c^20*d^34*e^6 - 8036*A*b^14*c^19*d^33*e^7 - 218
68*A*b^15*c^18*d^32*e^8 + 194304*A*b^16*c^17*d^31*e^9 - 709280*A*b^17*c^16*
d^30*e^10 + 1744160*A*b^18*c^15*d^29*e^11 - 3218072*A*b^19*c^14*d^28*e^12 +
 4654832*A*b^20*c^13*d^27*e^13 - 5394480*A*b^21*c^12*d^26*e^14 + 5063240*A*
b^22*c^11*d^25*e^15 - 3863800*A*b^23*c^10*d^24*e^16 + 2393152*A*b^24*c^9*d^
23*e^17 - 1194528*A*b^25*c^8*d^22*e^18 + 474056*A*b^26*c^7*d^21*e^19 - 1463
00*A*b^27*c^6*d^20*e^20 + 33880*A*b^28*c^5*d^19*e^21 - 5544*A*b^29*c^4*d^18
*e^22 + 572*A*b^30*c^3*d^17*e^23 - 28*A*b^31*c^2*d^16*e^24 + 4*B*b^11*c^22*
d^37*e^3 - 144*B*b^12*c^21*d^36*e^4 + 1840*B*b^13*c^20*d^35*e^5 - 13160*B*b
^14*c^19*d^34*e^6 + 62328*B*b^15*c^18*d^33*e^7 - 212800*B*b^16*c^17*d^32*e^
8 + 550432*B*b^17*c^16*d^31*e^9 - 1113120*B*b^18*c^15*d^30*e^10 + 1796600*B
*b^19*c^14*d^29*e^11 - 2345824*B*b^20*c^13*d^28*e^12 + 2498496*B*b^21*c^12*
d^27*e^13 - 2179632*B*b^22*c^11*d^26*e^14 + 1557920*B*b^23*c^10*d^25*e^15 -
 909120*B*b^24*c^9*d^24*e^16 + 429664*B*b^25*c^8*d^23*e^17 - 162208*B*b^26*
c^7*d^22*e^18 + 47844*B*b^27*c^6*d^21*e^19 - 10640*B*b^28*c^5*d^20*e^20 + 1
680*B*b^29*c^4*d^19*e^21 - 168*B*b^30*c^3*d^18*e^22 + 8*B*b^31*c^2*d^17*e^2
3))*(-(16*A^2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b
^4*c^7*e^2 - 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 -
 88*A^2*b*c^10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^
7*c^8*d^8*e - 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^
4 + 126*b^11*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^
14*c*d*e^8)))^(1/2) - 64*A^3*b^4*c^25*d^30*e^3 + 960*A^3*b^5*c^24*d^29*e^4
- 7180*A^3*b^6*c^23*d^28*e^5 + 35560*A^3*b^7*c^22*d^27*e^6 - 125748*A^3*b^8
*c^21*d^26*e^7 + 314496*A^3*b^9*c^20*d^25*e^8 - 508886*A^3*b^10*c^19*d^24*e
^9 + 326832*A^3*b^11*c^18*d^23*e^10 + 760408*A^3*b^12*c^17*d^22*e^11 - 2806
584*A^3*b^13*c^16*d^21*e^12 + 4917990*A^3*b^14*c^15*d^20*e^13 - 5803448*A^3
*b^15*c^14*d^19*e^14 + 4974956*A^3*b^16*c^13*d^18*e^15 - 3162096*A^3*b^17*c
^12*d^17*e^16 + 1483782*A^3*b^18*c^11*d^16*e^17 - 501472*A^3*b^19*c^10*d^15
*e^18 + 115824*A^3*b^20*c^9*d^14*e^19 - 16408*A^3*b^21*c^8*d^13*e^20 + 1078
*A^3*b^22*c^7*d^12*e^21 + 8*B^3*b^7*c^22*d^30*e^3 - 36*B^3*b^8*c^21*d^29*e^
4 - 688*B^3*b^9*c^20*d^28*e^5 + 8456*B^3*b^10*c^19*d^27*e^6 - 45696*B^3*b^1
1*c^18*d^26*e^7 + 153412*B^3*b^12*c^17*d^25*e^8 - 357280*B^3*b^13*c^16*d^24
*e^9 + 608256*B^3*b^14*c^15*d^23*e^10 - 778272*B^3*b^15*c^14*d^22*e^11 + 75
8692*B^3*b^16*c^13*d^21*e^12 - 565488*B^3*b^17*c^12*d^20*e^13 + 320488*B^3*
b^18*c^11*d^19*e^14 - 135968*B^3*b^19*c^10*d^18*e^15 + 41916*B^3*b^20*c^9*d
^17*e^16 - 8896*B^3*b^21*c^8*d^16*e^17 + 1168*B^3*b^22*c^7*d^15*e^18 - 72*B
^3*b^23*c^6*d^14*e^19 - 48*A*B^2*b^6*c^23*d^30*e^3 + 384*A*B^2*b^7*c^22*d^2
9*e^4 + 222*A*B^2*b^8*c^21*d^28*e^5 - 13272*A*B^2*b^9*c^20*d^27*e^6 + 65940
*A*B^2*b^10*c^19*d^26*e^7 - 150864*A*B^2*b^11*c^18*d^25*e^8 + 111762*A*B^2*
b^12*c^17*d^24*e^9 + 345840*A*B^2*b^13*c^16*d^23*e^10 - 1328976*A*B^2*b^14*
c^15*d^22*e^11 + 2422200*A*B^2*b^15*c^14*d^21*e^12 - 2923998*A*B^2*b^16*c^1
3*d^20*e^13 + 2528904*A*B^2*b^17*c^12*d^19*e^14 - 1604316*A*B^2*b^18*c^11*d
^18*e^15 + 745248*A*B^2*b^19*c^10*d^17*e^16 - 247890*A*B^2*b^20*c^9*d^16*e^
17 + 56160*A*B^2*b^21*c^8*d^15*e^18 - 7800*A*B^2*b^22*c^7*d^14*e^19 + 504*A
*B^2*b^23*c^6*d^13*e^20 + 96*A^2*B*b^5*c^24*d^30*e^3 - 1104*A^2*B*b^6*c^23*
d^29*e^4 + 5898*A^2*B*b^7*c^22*d^28*e^5 - 23688*A^2*B*b^8*c^21*d^27*e^6 + 9
5256*A^2*B*b^9*c^20*d^26*e^7 - 352548*A^2*B*b^10*c^19*d^25*e^8 + 1005564*A^
2*B*b^11*c^18*d^24*e^9 - 2061552*A^2*B*b^12*c^17*d^23*e^10 + 2961024*A^2*B*
b^13*c^16*d^22*e^11 - 2823612*A^2*B*b^14*c^15*d^21*e^12 + 1406328*A^2*B*b^1
5*c^14*d^20*e^13 + 410424*A^2*B*b^16*c^13*d^19*e^14 - 1459080*A^2*B*b^17*c^
12*d^18*e^15 + 1416996*A^2*B*b^18*c^11*d^17*e^16 - 834444*A^2*B*b^19*c^10*d
^16*e^17 + 325824*A^2*B*b^20*c^9*d^15*e^18 - 83184*A^2*B*b^21*c^8*d^14*e^19
 + 12684*A^2*B*b^22*c^7*d^13*e^20 - 882*A^2*B*b^23*c^6*d^12*e^21))*(-(16*A^
2*c^11*d^2 + 121*A^2*b^2*c^9*e^2 + 4*B^2*b^2*c^9*d^2 + 81*B^2*b^4*c^7*e^2 -
 198*A*B*b^3*c^8*e^2 - 36*B^2*b^3*c^8*d*e - 16*A*B*b*c^10*d^2 - 88*A^2*b*c^
10*d*e + 116*A*B*b^2*c^9*d*e)/(4*(b^15*e^9 - b^6*c^9*d^9 + 9*b^7*c^8*d^8*e
- 36*b^8*c^7*d^7*e^2 + 84*b^9*c^6*d^6*e^3 - 126*b^10*c^5*d^5*e^4 + 126*b^11
*c^4*d^4*e^5 - 84*b^12*c^3*d^3*e^6 + 36*b^13*c^2*d^2*e^7 - 9*b^14*c*d*e^8))
)^(1/2)*2i - ((2*(A*e^3 - B*d*e^2))/(5*(c*d^2 - b*d*e)) - (2*(d + e*x)*(7*A
*b*e^4 - 14*A*c*d*e^3 - 2*B*b*d*e^3 + 9*B*c*d^2*e^2))/(15*(c*d^2 - b*d*e)^2
) + (2*(d + e*x)^2*(35*A*b^2*e^5 - 10*B*b^2*d*e^4 + 113*A*c^2*d^2*e^3 - 63*
B*c^2*d^3*e^2 - 113*A*b*c*d*e^4 + 38*B*b*c*d^2*e^3))/(15*(c*d^2 - b*d*e)^3)
 + ((d + e*x)^3*(21*A*b^5*e^6 - 6*A*c^5*d^5*e - 6*B*b^5*d*e^5 + 15*A*b*c^4*
d^4*e^2 + 34*B*b^4*c*d^2*e^4 - 142*A*b^2*c^3*d^3*e^3 + 198*A*b^3*c^2*d^2*e^
4 + 66*B*b^2*c^3*d^4*e^2 - 76*B*b^3*c^2*d^3*e^3 - 107*A*b^4*c*d*e^5 + 3*B*b
*c^4*d^5*e))/(3*b^2*(c*d^2 - b*d*e)^4) - ((d + e*x)^4*(4*A*b*c^4*d^3*e^2 -
2*A*c^5*d^4*e - 7*A*b^4*c*e^5 + 24*A*b^3*c^2*d*e^4 - 26*A*b^2*c^3*d^2*e^3 +
 12*B*b^2*c^3*d^3*e^2 - 8*B*b^3*c^2*d^2*e^3 + B*b*c^4*d^4*e + 2*B*b^4*c*d*e
^4))/(b^2*(c*d^2 - b*d*e)^4))/(c*(d + e*x)^(9/2) + (c*d^2 - b*d*e)*(d + e*x
)^(5/2) + (b*e - 2*c*d)*(d + e*x)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(c*x**2+b*x)**2,x)
```

```
[Out] Timed out
```

3.1247 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=461

$$-\frac{(d+ex)^{7/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{3d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(3b^2e(7Ae+4Bd)-4bcd(9A\right.}{4b^5}$$

```
[Out] -1/2*(e*x+d)^(7/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/((c*x
^2+b*x)^2+1/4*(e*x+d)^(3/2)*(b*c*d^2*(12*A*c^2*d+2*b^2*B*e-b*c*(13*A*e+6*B*
d))+(24*A*c^4*d^3-5*b^4*B*e^3+b^3*c*e^2*(A*e+4*B*d)-12*b*c^3*d^2*(3*A*e+B*d
)+b^2*c^2*d*e*(10*A*e+9*B*d))*x)/b^4/c^2/(c*x^2+b*x)-3/4*d^(5/2)*(16*A*c^2*
d^2+3*b^2*e*(7*A*e+4*B*d)-4*b*c*d*(9*A*e+2*B*d))*arctanh((e*x+d)^(1/2)/d^(1
/2))/b^5+3/4*(-b*e+c*d)^(5/2)*(16*A*c^3*d^2-5*b^3*B*e^2-4*b*c^2*d*(-A*e+2*B
*d)-b^2*c*e*(-A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b
^5/c^(7/2)-3/4*e*(8*A*c^4*d^3-5*b^4*B*e^3+b^3*c*e^2*(A*e+2*B*d)+b^2*c^2*d*e
*(2*A*e+3*B*d)-4*b*c^3*d^2*(3*A*e+B*d))*(e*x+d)^(1/2)/b^4/c^3
```

Rubi [A] time = 1.22, antiderivative size = 461, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {818, 824, 826, 1166, 208}

$$\frac{(d+ex)^{3/2}\left(x\left(b^2c^2de(10Ae+9Bd)+b^3ce^2(Ae+4Bd)-12bc^3d^2(3Ae+Bd)+24Ac^4d^3-5b^4Be^3\right)+bcd^2\left(-bc\right.\right.}{4b^4c^2\left(bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x]
```

```
[Out] (-3*e*(8*A*c^4*d^3 - 5*b^4*B*e^3 + b^3*c*e^2*(2*B*d + A*e) + b^2*c^2*d*e*(3
*B*d + 2*A*e) - 4*b*c^3*d^2*(B*d + 3*A*e))*Sqrt[d + e*x])/(4*b^4*c^3) - ((d
 + e*x)^(7/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2*b^2
*c*(b*x + c*x^2)^2) + ((d + e*x)^(3/2)*(b*c*d^2*(12*A*c^2*d + 2*b^2*B*e - b
*c*(6*B*d + 13*A*e)) + (24*A*c^4*d^3 - 5*b^4*B*e^3 + b^3*c*e^2*(4*B*d + A*e
) - 12*b*c^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(9*B*d + 10*A*e))*x))/(4*b^4*c
^2*(b*x + c*x^2)) - (3*d^(5/2)*(16*A*c^2*d^2 + 3*b^2*e*(4*B*d + 7*A*e) - 4*
b*c*d*(2*B*d + 9*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5) + (3*(c*d -
b*e)^(5/2)*(16*A*c^3*d^2 - 5*b^3*B*e^2 - 4*b*c^2*d*(2*B*d - A*e) - b^2*c*e*
(8*B*d - A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(
7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{(d+ex)^{5/2}\left(-\frac{1}{2}d\left(12Ac^2d+2b^2Be-\right.\right.}{}}{}$$

$$=-\frac{(d+ex)^{7/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{(d+ex)^{3/2}\left(bcd^2\left(12Ac^2d\right.\right.}{}$$

$$=-\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3Ae)\right.}{4b^4c^3}$$

$$=-\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3Ae)\right.}{4b^4c^3}$$

$$=-\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3Ae)\right.}{4b^4c^3}$$

$$=-\frac{3e\left(8Ac^4d^3-5b^4Be^3+b^3ce^2(2Bd+Ae)+b^2c^2de(3Bd+2Ae)-4bc^3d^2(Bd+3Ae)\right.}{4b^4c^3}$$

Mathematica [A] time = 5.22, size = 589, normalized size = 1.28

$$\frac{\frac{630c(d+ex)^{11/2}\left(b^2(-e)(7Ae+4Bd)+bcd(17Ae+6Bd)-12Ac^2d^2\right)}{b^2d(be-cd)}+\frac{(b+cx)\left((b+cx)\left(945c^{11/2}(cd-be)^2\left(\frac{2}{315}\sqrt{d+ex}\left(563d^4+506d^3ex+408d^2e^2x^2+185de\right.\right.\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((630*c*(-12*A*c^2*d^2 - b^2*e*(4*B*d + 7*A*e) + b*c*d*(6*B*d + 17*A*e))*(d
 + e*x)^(11/2))/(b^2*d*(-(c*d) + b*e)) - (1260*A*(d + e*x)^(11/2))/x^2 - (6
30*(4*b*B*d - 8*A*c*d + 7*A*b*e)*(d + e*x)^(11/2))/(b*d*x) + ((b + c*x)*(-6
30*b*c^(13/2)*(-24*A*c^3*d^3 + 12*b*c^2*d^2*(B*d + 3*A*e) + b^3*e^2*(4*B*d
+ 7*A*e) - b^2*c*d*e*(9*B*d + 26*A*e))*(d + e*x)^(11/2) + (b + c*x)*(945*c^
(11/2)*(c*d - b*e)^2*(16*A*c^2*d^2 + 3*b^2*e*(4*B*d + 7*A*e) - 4*b*c*d*(2*B
*d + 9*A*e))*((2*Sqrt[d + e*x]*(563*d^4 + 506*d^3*e*x + 408*d^2*e^2*x^2 + 1
85*d*e^3*x^3 + 35*e^4*x^4))/315 - 2*d^(9/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])
 - 6*c^2*d^2*(16*A*c^3*d^2 - 5*b^3*B*e^2 + b^2*c*e*(-8*B*d + A*e) + 4*b*c^2
*d*(-2*B*d + A*e))*(35*c^(9/2)*(d + e*x)^(9/2) + 3*(c*d - b*e)*(15*c^(7/2)*
(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*(c*d - b*e)*
(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*ArcTan
h[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))))/(b^4*c^(11/2)*d*(c*d - b*
e)^2))/(2520*b*d*(b + c*x)^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.36, size = 1245, normalized size = 2.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^4/c^3 - 3/4*(8*B*b*c*d^5 - 16*A*c^2*d^5 - 12*B*b^2*d^4*
e + 36*A*b*c*d^4*e - 21*A*b^2*d^3*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*
sqrt(-d)) + 3/4*(8*B*b*c^5*d^5 - 16*A*c^6*d^5 - 16*B*b^2*c^4*d^4*e + 44*A*b
*c^5*d^4*e + 5*B*b^3*c^3*d^3*e^2 - 37*A*b^2*c^4*d^3*e^2 + B*b^4*c^2*d^2*e^3
 + 7*A*b^3*c^3*d^2*e^3 + 7*B*b^5*c*d*e^4 + A*b^4*c^2*d*e^4 - 5*B*b^6*e^5 +
A*b^5*c*e^5)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*
c*e)*b^5*c^3) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^5*d^4*e - 24*(x*e + d)^(7/2)*
A*c^6*d^4*e - 36*(x*e + d)^(5/2)*B*b*c^5*d^5*e + 72*(x*e + d)^(5/2)*A*c^6*d
^5*e + 36*(x*e + d)^(3/2)*B*b*c^5*d^6*e - 72*(x*e + d)^(3/2)*A*c^6*d^6*e -
12*sqrt(x*e + d)*B*b*c^5*d^7*e + 24*sqrt(x*e + d)*A*c^6*d^7*e - 15*(x*e + d
)^(7/2)*B*b^2*c^4*d^3*e^2 + 48*(x*e + d)^(7/2)*A*b*c^5*d^3*e^2 + 63*(x*e +
d)^(5/2)*B*b^2*c^4*d^4*e^2 - 180*(x*e + d)^(5/2)*A*b*c^5*d^4*e^2 - 81*(x*e
+ d)^(3/2)*B*b^2*c^4*d^5*e^2 + 216*(x*e + d)^(3/2)*A*b*c^5*d^5*e^2 + 33*sqr
t(x*e + d)*B*b^2*c^4*d^6*e^2 - 84*sqrt(x*e + d)*A*b*c^5*d^6*e^2 - 3*(x*e +
d)^(7/2)*B*b^3*c^3*d^2*e^3 - 21*(x*e + d)^(7/2)*A*b^2*c^4*d^2*e^3 - 14*(x*e
 + d)^(5/2)*B*b^3*c^3*d^3*e^3 + 136*(x*e + d)^(5/2)*A*b^2*c^4*d^3*e^3 + 41*
(x*e + d)^(3/2)*B*b^3*c^3*d^4*e^3 - 217*(x*e + d)^(3/2)*A*b^2*c^4*d^4*e^3 -
 24*sqrt(x*e + d)*B*b^3*c^3*d^5*e^3 + 102*sqrt(x*e + d)*A*b^2*c^4*d^5*e^3 +
 19*(x*e + d)^(7/2)*B*b^4*c^2*d*e^4 - 3*(x*e + d)^(7/2)*A*b^3*c^3*d*e^4 - 4
8*(x*e + d)^(5/2)*B*b^4*c^2*d^2*e^4 - 24*(x*e + d)^(5/2)*A*b^3*c^3*d^2*e^4
+ 39*(x*e + d)^(3/2)*B*b^4*c^2*d^3*e^4 + 74*(x*e + d)^(3/2)*A*b^3*c^3*d^3*e
^4 - 10*sqrt(x*e + d)*B*b^4*c^2*d^4*e^4 - 45*sqrt(x*e + d)*A*b^3*c^3*d^4*e^
4 - 9*(x*e + d)^(7/2)*B*b^5*c*e^5 + 5*(x*e + d)^(7/2)*A*b^4*c^2*e^5 + 38*(x
*e + d)^(5/2)*B*b^5*c*d*e^5 - 10*(x*e + d)^(5/2)*A*b^4*c^2*d*e^5 - 49*(x*e
+ d)^(3/2)*B*b^5*c*d^2*e^5 + 5*(x*e + d)^(3/2)*A*b^4*c^2*d^2*e^5 + 20*sqrt(
x*e + d)*B*b^5*c*d^3*e^5 - 7*(x*e + d)^(5/2)*B*b^6*e^6 + 3*(x*e + d)^(5/2)*
A*b^5*c*e^6 + 14*(x*e + d)^(3/2)*B*b^6*d*e^6 - 6*(x*e + d)^(3/2)*A*b^5*c*d*
e^6 - 7*sqrt(x*e + d)*B*b^6*d^2*e^6 + 3*sqrt(x*e + d)*A*b^5*c*d^2*e^6)/(((x
*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4*c^3)
```

maple [B] time = 0.09, size = 1421, normalized size = 3.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 2*e^4*B/c^3*(e*x+d)^(1/2)+5/2*e^4/c/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^2+15/2*
e^4/b/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2+3/4*e^4/b/(c*e*x+b*e)^2*(e*x+d)^(3/
2)*A*d-19/4*e^4/c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d+3/4*e^3/b/(c*e*x+b*e)^2*(
e*x+d)^(3/2)*B*d^2+21/4*e^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((
b*e-c*d)*c)^(1/2)*c)*A*d^2+5*e^3/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^3+6/b^4*
c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^5-1
2/b^5*c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A
*d^5+9/4*e^5*b/c^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B-3/4*e^6*b/c^2/(c*e*x+b*e)^
2*A*(e*x+d)^(1/2)-15/4*e^5*b/c^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(b*e-c*d)*c)^(1/2)*c)*B+7/4*e^6*b^2/c^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)-1/e*d
^4/b^3/x^2*(e*x+d)^(3/2)*B+1/e*d^5/b^3/x^2*(e*x+d)^(1/2)*B+27*e*d^(7/2)/b^4
*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+21/4*e^4/c^2/((b*e-c*d)*c)^(1/2)*arctan
((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+15/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*
arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+3/4*e^5/c^2/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-17/4*d^3/b^3/x^2*(e*x+
d)^(3/2)*A+15/4*d^4/b^3/x^2*(e*x+d)^(1/2)*A-12*d^(9/2)/b^5*arctanh((e*x+d)^
(1/2)/d^(1/2))*A*c^2+6*d^(9/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c-5/4*e
^5/c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-63/4*e^2*d^(5/2)/b^3*arctanh((e*x+d)^(1/
2)/d^(1/2))*A-9*e*d^(7/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B-111/4*e^2/b^
3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3+3
3*e/b^4*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)
*A*d^4+3/4*e^4/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(
1/2)*c)*A*d-25/4*e^2/b^2*c/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^4+2*e/b^3*c^2/(c
*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^5+45/4*e^2/b^3*c^2/(c*e*x+b*e)^2*A*(e*x+d)^(1
/2)*d^4-3*e/b^4*c^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^5-5*e^5*b/c^2/(c*e*x+b*
e)^2*B*(e*x+d)^(1/2)*d-15*e^3/b^2*c/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^3+21/4*
e^3/b^2*c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d^2-31/4*e^2/b^3*c^2/(c*e*x+b*e)^2*
(e*x+d)^(3/2)*A*d^3-12*e/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*B*d^4+3*e/b^4*c^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d^4+15/
4*e^2/b^2*c/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d^3-2*e/b^3*c^2/(c*e*x+b*e)^2*(e*
x+d)^(3/2)*B*d^4+3/e*d^4/b^4/x^2*(e*x+d)^(3/2)*A*c-3/e*d^5/b^4/x^2*(e*x+d)^
(1/2)*A*c+3/4*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*B*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 5.05, size = 16542, normalized size = 35.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(b*x + c*x^2)^3,x)
```

```
[Out] atan(((((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5
*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2
*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*
e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10
*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b
^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c
^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*
c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^
6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^
9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3
*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 9
60*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504
*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 -
420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8
*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B
^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*
A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*
A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 1
89*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1
152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*
b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^
8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*
e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d
^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2) - ((d + e*x)^(1/2)*(
225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^
2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6
- 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*
e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*
c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2
*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 32
4*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 -
 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 46
08*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^
3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^
7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*
b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11
*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^
2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2
*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^
2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*
B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^
2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^
10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 -
1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^
4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*
e^7))/(64*b^10*c^7))^(1/2)*1i - (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*
d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d
^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^
```

```
4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((
64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9
 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^
9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5
*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^
4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*
b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^
10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d
^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200
*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 +
546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7)
)/(64*b^10*c^7))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^
9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*
A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42
*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 1
05*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 +
 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^
2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*
c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*
e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d
^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^
(1/2) + ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^
2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 +
21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*
e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^1
0*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2
*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 207
9*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10
 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11
 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 +
 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8
*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b
^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b
^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2
*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^
2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^
2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189
*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 115
2*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^
3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*
e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^
3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3
*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2)*1i)/((((3*(64*A*b^14*c
^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*
d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d
^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^
2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(
1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2
*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^
4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^
7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2
*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^
2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^
8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e +
6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 -
210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6
 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8*b^8*c^5))*((9*(256*A^2
*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A
^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 2
```

```
1*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 1
44*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5
+ 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e +
45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B
*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e
^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d
^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3
*d^2*e^7))/(64*b^10*c^7))^(1/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A
^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44
928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*
e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d
^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*
b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646
*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 +
 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e
^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2
+ 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d
^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^
6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A
*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9
- A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^
2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A
^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105
*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6
*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*
b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*
e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^
2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4
*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1
/2) + (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5
*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2
*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*
e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10
*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b
^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c
^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*
c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^
6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^
9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3
*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 9
60*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504
*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 -
420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2))/(8
*b^8*c^5))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B
^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*
A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*
A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 1
89*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1
152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*
b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^
8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*
e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d
^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2) + ((d + e*x)^(1/2)*(
225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^
2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6
- 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*
e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*
c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2
*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 32
```

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4*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 -
 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 46
08*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^
3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^
7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*
b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^11
*d^9 - 25*B^2*b^11*e^9 - A^2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^
2*c^9*d^7*e^2 - 1512*A^2*b^3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2
*b^5*c^6*d^4*e^5 + 42*A^2*b^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^
2*b^4*c^7*d^7*e^2 + 105*B^2*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*
B^2*b^8*c^3*d^3*e^6 + 6*B^2*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^
2*b^10*c*d*e^8 - 3*A^2*b^8*c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^
10*d^9 + 10*A*B*b^10*c*e^9 + 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 -
1200*A*B*b^3*c^8*d^7*e^2 + 504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^
4 + 546*A*B*b^6*c^5*d^4*e^5 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*
e^7))/(64*b^10*c^7))^(1/2) - (3*(2700*B^3*b^13*d^4*e^13 - 18432*A^3*c^13*d^
14*e^3 - 381312*A^3*b^2*c^11*d^12*e^5 + 610560*A^3*b^3*c^10*d^11*e^6 - 5629
68*A^3*b^4*c^9*d^10*e^7 + 293112*A^3*b^5*c^8*d^9*e^8 - 84483*A^3*b^6*c^7*d^
8*e^9 + 23868*A^3*b^7*c^6*d^7*e^10 - 11943*A^3*b^8*c^5*d^6*e^11 + 2331*A^3*
b^9*c^4*d^5*e^12 + 54*A^3*b^10*c^3*d^4*e^13 + 189*A^3*b^11*c^2*d^3*e^14 + 2
304*B^3*b^3*c^10*d^14*e^3 - 10944*B^3*b^4*c^9*d^13*e^4 + 17856*B^3*b^5*c^8*
d^12*e^5 - 14328*B^3*b^6*c^7*d^11*e^6 + 18828*B^3*b^7*c^6*d^10*e^7 - 30672*
B^3*b^8*c^5*d^9*e^8 + 21060*B^3*b^9*c^4*d^8*e^9 - 6696*B^3*b^10*c^3*d^7*e^1
0 + 9252*B^3*b^11*c^2*d^6*e^11 + 4725*A*B^2*b^13*d^3*e^14 + 129024*A^3*b*c^
12*d^13*e^4 - 9360*B^3*b^12*c*d^5*e^12 - 13824*A*B^2*b^2*c^11*d^14*e^3 + 76
032*A*B^2*b^3*c^10*d^13*e^4 - 158976*A*B^2*b^4*c^9*d^12*e^5 + 167184*A*B^2*
b^5*c^8*d^11*e^6 - 143316*A*B^2*b^6*c^7*d^10*e^7 + 184869*A*B^2*b^7*c^6*d^9
*e^8 - 187434*A*B^2*b^8*c^5*d^8*e^9 + 93987*A*B^2*b^9*c^4*d^7*e^10 - 35640*
A*B^2*b^10*c^3*d^6*e^11 + 34803*A*B^2*b^11*c^2*d^5*e^12 - 172800*A^2*B*b^2*
c^11*d^13*e^4 + 437184*A^2*B*b^3*c^10*d^12*e^5 - 578448*A^2*B*b^4*c^9*d^11*
e^6 + 471420*A^2*B*b^5*c^8*d^10*e^7 - 361773*A^2*B*b^6*c^7*d^9*e^8 + 350001
*A^2*B*b^7*c^6*d^8*e^9 - 253071*A^2*B*b^8*c^5*d^7*e^10 + 90423*A^2*B*b^9*c^
4*d^6*e^11 - 12798*A^2*B*b^10*c^3*d^5*e^12 + 4104*A^2*B*b^11*c^2*d^4*e^13 -
 22410*A*B^2*b^12*c*d^4*e^13 + 27648*A^2*B*b*c^12*d^14*e^3 - 1890*A^2*B*b^1
2*c*d^3*e^14))/(32*b^12*c^5)))*((9*(256*A^2*c^11*d^9 - 25*B^2*b^11*e^9 - A^
2*b^9*c^2*e^9 + 64*B^2*b^2*c^9*d^9 + 1968*A^2*b^2*c^9*d^7*e^2 - 1512*A^2*b^
3*c^8*d^6*e^3 + 441*A^2*b^4*c^7*d^5*e^4 - 21*A^2*b^5*c^6*d^4*e^5 + 42*A^2*b
^6*c^5*d^3*e^6 - 18*A^2*b^7*c^4*d^2*e^7 + 144*B^2*b^4*c^7*d^7*e^2 + 105*B^2
*b^6*c^5*d^5*e^4 - 189*B^2*b^7*c^4*d^4*e^5 + 42*B^2*b^8*c^3*d^3*e^6 + 6*B^2
*b^9*c^2*d^2*e^7 - 1152*A^2*b*c^10*d^8*e + 45*B^2*b^10*c*d*e^8 - 3*A^2*b^8*
c^3*d*e^8 - 192*B^2*b^3*c^8*d^8*e - 256*A*B*b*c^10*d^9 + 10*A*B*b^10*c*e^9
+ 960*A*B*b^2*c^9*d^8*e + 6*A*B*b^9*c^2*d*e^8 - 1200*A*B*b^3*c^8*d^7*e^2 +
504*A*B*b^4*c^7*d^6*e^3 - 210*A*B*b^5*c^6*d^5*e^4 + 546*A*B*b^6*c^5*d^4*e^5
 - 420*A*B*b^7*c^4*d^3*e^6 + 60*A*B*b^8*c^3*d^2*e^7))/(64*b^10*c^7))^(1/2)*
2i + atan(((((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^
9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^
6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6
*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128
*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9
+ 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 50
4*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b
^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d
^7*e^2))/(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c
^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e
^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 151
2*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*
b^3*c*d^7*e^2))/(64*b^10))^(1/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*
A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 4
4928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5
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*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*
d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2
*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 264
6*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9
+ 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*
e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2
 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*
d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b
^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*
A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d
^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 +
 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^
2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*
c*d^7*e^2))/(64*b^10))^(1/2)*1i - (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^
4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7
*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*
d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) +
((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^
9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A
^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b
^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d
^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2
*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 +
 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 19
2*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^
2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2) + ((d + e*x)^(1/2)*
(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A
^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6
 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3
*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3
*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^
2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 3
24*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11
- 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4
608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e
^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c
^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B
*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4
*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 196
8*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^
2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^
2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2)*1i)/((((3*(64*A*b^14*c^
5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3 + 1280*A*b^11*c^8*d
^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6 + 256*B*b^11*c^8*d^
5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5 + 448*B*b^14*c^5*d^2
*e^6))/(64*b^12*c^5) - ((64*b^11*c^7*e^3 - 128*b^10*c^8*d*e^2)*(d + e*x)^(1
/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 144*B
^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A^2*
b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c^3*
d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2))/(8
*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4
+ 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 11
52*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B
*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1
/2) - ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*c^2*e^12 + 4608*A^2*
c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*b^3*c^9*d^7*e^5 + 21
546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 567*A^2*b^6*c^6*d^4*e^
8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10 + 1152*B^2*b^2*c^10*
d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*d^8*e^4 - 1296*B^2*b
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^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7*c^5*d^5*e^7 + 2079*
B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2*b^10*c^2*d^2*e^10 -
 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*A^2*b^9*c^3*d*e^11 -
 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B*b^10*c^2*d*e^11 + 1
9584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 + 19872*A*B*b^4*c^8*d
^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^5*e^7 - 8694*A*B*b^7
*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c^3*d^2*e^10))/(8*b^8
*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2*b^4*d^5*e^4 + 14
4*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4*d^6*e^3 - 1152*A
^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*e^3 - 256*A*B*b*c
^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/(64*b^10))^(1/2)
+ (((3*(64*A*b^14*c^5*d*e^7 - 320*B*b^15*c^4*d*e^7 - 512*A*b^10*c^9*d^5*e^3
 + 1280*A*b^11*c^8*d^4*e^4 - 896*A*b^12*c^7*d^3*e^5 + 64*A*b^13*c^6*d^2*e^6
 + 256*B*b^11*c^8*d^5*e^3 - 448*B*b^12*c^7*d^4*e^4 + 64*B*b^13*c^6*d^3*e^5
+ 448*B*b^14*c^5*d^2*e^6))/(64*b^12*c^5) + ((64*b^11*c^7*e^3 - 128*b^10*c^8
*d*e^2)*(d + e*x)^(1/2)*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2
*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4
*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*
e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/
(64*b^10))^(1/2))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 +
441*A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*
A*B*b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3
*c*d^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7
*e^2))/(64*b^10))^(1/2) + ((d + e*x)^(1/2)*(225*B^2*b^12*e^12 + 9*A^2*b^10*
c^2*e^12 + 4608*A^2*c^12*d^10*e^2 + 45792*A^2*b^2*c^10*d^8*e^4 - 44928*A^2*
b^3*c^9*d^7*e^5 + 21546*A^2*b^4*c^8*d^6*e^6 - 4158*A^2*b^5*c^7*d^5*e^7 + 56
7*A^2*b^6*c^6*d^4*e^8 - 540*A^2*b^7*c^5*d^3*e^9 + 135*A^2*b^8*c^4*d^2*e^10
+ 1152*B^2*b^2*c^10*d^10*e^2 - 4032*B^2*b^3*c^9*d^9*e^3 + 4320*B^2*b^4*c^8*
d^8*e^4 - 1296*B^2*b^5*c^7*d^7*e^5 + 945*B^2*b^6*c^6*d^6*e^6 - 2646*B^2*b^7
*c^5*d^5*e^7 + 2079*B^2*b^8*c^4*d^4*e^8 - 324*B^2*b^9*c^3*d^3*e^9 + 351*B^2
*b^10*c^2*d^2*e^10 - 630*B^2*b^11*c*d*e^11 - 23040*A^2*b*c^11*d^9*e^3 + 18*
A^2*b^9*c^3*d*e^11 - 90*A*B*b^11*c*e^12 - 4608*A*B*b*c^11*d^10*e^2 + 36*A*B
*b^10*c^2*d*e^11 + 19584*A*B*b^2*c^10*d^9*e^3 - 30240*A*B*b^3*c^9*d^8*e^4 +
 19872*A*B*b^4*c^8*d^7*e^5 - 6426*A*B*b^5*c^7*d^6*e^6 + 6804*A*B*b^6*c^6*d^
5*e^7 - 8694*A*B*b^7*c^5*d^4*e^8 + 4320*A*B*b^8*c^4*d^3*e^9 - 486*A*B*b^9*c
^3*d^2*e^10))/(8*b^8*c^5))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*
A^2*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*
b^4*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d
^6*e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2
))/(64*b^10))^(1/2) - (3*(2700*B^3*b^13*d^4*e^13 - 18432*A^3*c^13*d^14*e^3
- 381312*A^3*b^2*c^11*d^12*e^5 + 610560*A^3*b^3*c^10*d^11*e^6 - 562968*A^3*
b^4*c^9*d^10*e^7 + 293112*A^3*b^5*c^8*d^9*e^8 - 84483*A^3*b^6*c^7*d^8*e^9 +
 23868*A^3*b^7*c^6*d^7*e^10 - 11943*A^3*b^8*c^5*d^6*e^11 + 2331*A^3*b^9*c^4
*d^5*e^12 + 54*A^3*b^10*c^3*d^4*e^13 + 189*A^3*b^11*c^2*d^3*e^14 + 2304*B^3
*b^3*c^10*d^14*e^3 - 10944*B^3*b^4*c^9*d^13*e^4 + 17856*B^3*b^5*c^8*d^12*e^
5 - 14328*B^3*b^6*c^7*d^11*e^6 + 18828*B^3*b^7*c^6*d^10*e^7 - 30672*B^3*b^8
*c^5*d^9*e^8 + 21060*B^3*b^9*c^4*d^8*e^9 - 6696*B^3*b^10*c^3*d^7*e^10 + 925
2*B^3*b^11*c^2*d^6*e^11 + 4725*A*B^2*b^13*d^3*e^14 + 129024*A^3*b*c^12*d^13
*e^4 - 9360*B^3*b^12*c*d^5*e^12 - 13824*A*B^2*b^2*c^11*d^14*e^3 + 76032*A*B
^2*b^3*c^10*d^13*e^4 - 158976*A*B^2*b^4*c^9*d^12*e^5 + 167184*A*B^2*b^5*c^8
*d^11*e^6 - 143316*A*B^2*b^6*c^7*d^10*e^7 + 184869*A*B^2*b^7*c^6*d^9*e^8 -
187434*A*B^2*b^8*c^5*d^8*e^9 + 93987*A*B^2*b^9*c^4*d^7*e^10 - 35640*A*B^2*b
^10*c^3*d^6*e^11 + 34803*A*B^2*b^11*c^2*d^5*e^12 - 172800*A^2*B*b^2*c^11*d^
13*e^4 + 437184*A^2*B*b^3*c^10*d^12*e^5 - 578448*A^2*B*b^4*c^9*d^11*e^6 + 4
71420*A^2*B*b^5*c^8*d^10*e^7 - 361773*A^2*B*b^6*c^7*d^9*e^8 + 350001*A^2*B*
b^7*c^6*d^8*e^9 - 253071*A^2*B*b^8*c^5*d^7*e^10 + 90423*A^2*B*b^9*c^4*d^6*e
^11 - 12798*A^2*B*b^10*c^3*d^5*e^12 + 4104*A^2*B*b^11*c^2*d^4*e^13 - 22410*
A*B^2*b^12*c*d^4*e^13 + 27648*A^2*B*b*c^12*d^14*e^3 - 1890*A^2*B*b^12*c*d^3
*e^14))/(32*b^12*c^5)))*((9*(256*A^2*c^4*d^9 + 64*B^2*b^2*c^2*d^9 + 441*A^2
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*b^4*d^5*e^4 + 144*B^2*b^4*d^7*e^2 + 1968*A^2*b^2*c^2*d^7*e^2 + 504*A*B*b^4
*d^6*e^3 - 1152*A^2*b*c^3*d^8*e - 192*B^2*b^3*c*d^8*e - 1512*A^2*b^3*c*d^6*
e^3 - 256*A*B*b*c^3*d^9 + 960*A*B*b^2*c^2*d^8*e - 1200*A*B*b^3*c*d^7*e^2))/
(64*b^10))^(1/2)*2i + (((d + e*x)^(1/2)*(7*B*b^6*d^2*e^6 - 24*A*c^6*d^7*e +
 84*A*b*c^5*d^6*e^2 - 3*A*b^5*c*d^2*e^6 - 20*B*b^5*c*d^3*e^5 - 102*A*b^2*c^
4*d^5*e^3 + 45*A*b^3*c^3*d^4*e^4 - 33*B*b^2*c^4*d^6*e^2 + 24*B*b^3*c^3*d^5*
e^3 + 10*B*b^4*c^2*d^4*e^4 + 12*B*b*c^5*d^7*e))/(4*b^4) - ((d + e*x)^(3/2)*
(14*B*b^6*d*e^6 - 72*A*c^6*d^6*e + 216*A*b*c^5*d^5*e^2 - 49*B*b^5*c*d^2*e^5
 - 217*A*b^2*c^4*d^4*e^3 + 74*A*b^3*c^3*d^3*e^4 + 5*A*b^4*c^2*d^2*e^5 - 81*
B*b^2*c^4*d^5*e^2 + 41*B*b^3*c^3*d^4*e^3 + 39*B*b^4*c^2*d^3*e^4 - 6*A*b^5*c
*d*e^6 + 36*B*b*c^5*d^6*e))/(4*b^4) + ((d + e*x)^(7/2)*(9*B*b^5*c*e^5 + 24*
A*c^6*d^4*e - 5*A*b^4*c^2*e^5 - 48*A*b*c^5*d^3*e^2 + 3*A*b^3*c^3*d*e^4 - 19
*B*b^4*c^2*d*e^4 + 21*A*b^2*c^4*d^2*e^3 + 15*B*b^2*c^4*d^3*e^2 + 3*B*b^3*c^
3*d^2*e^3 - 12*B*b*c^5*d^4*e))/(4*b^4) + ((d + e*x)^(5/2)*(7*B*b^6*e^6 - 3*
A*b^5*c*e^6 - 72*A*c^6*d^5*e + 180*A*b*c^5*d^4*e^2 + 10*A*b^4*c^2*d*e^5 - 1
36*A*b^2*c^4*d^3*e^3 + 24*A*b^3*c^3*d^2*e^4 - 63*B*b^2*c^4*d^4*e^2 + 14*B*b
^3*c^3*d^3*e^3 + 48*B*b^4*c^2*d^2*e^4 + 36*B*b*c^5*d^5*e - 38*B*b^5*c*d*e^5
))/(4*b^4))/(c^5*(d + e*x)^4 - (d + e*x)*(4*c^5*d^3 + 2*b^2*c^3*d*e^2 - 6*b
*c^4*d^2*e) - (4*c^5*d - 2*b*c^4*e)*(d + e*x)^3 + c^5*d^4 + (d + e*x)^2*(6*
c^5*d^2 + b^2*c^3*e^2 - 6*b*c^4*d*e) + b^2*c^3*d^2*e^2 - 2*b*c^4*d^3*e) + (
2*B*e^4*(d + e*x)^(1/2))/c^3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1248 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=363

$$-\frac{(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(7b^2e(5Ae+4Bd)-12bcd(7Ae+\right.}{4b^5}$$

```
[Out] -1/2*(e*x+d)^(5/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x
^2+b*x)^2-1/4*d^(3/2)*(48*A*c^2*d^2+7*b^2*e*(5*A*e+4*B*d)-12*b*c*d*(7*A*e+2
*B*d))*arctanh((e*x+d)^(1/2)/d^(1/2))/b^5+1/4*(-b*e+c*d)^(3/2)*(48*A*c^3*d^
2-3*b^3*B*e^2-12*b*c^2*d*(A*e+2*B*d)-b^2*c*e*(A*e+8*B*d))*arctanh(c^(1/2)*(
e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b^5/c^(5/2)+1/4*(b*c*d^2*(12*A*c^2*d+2*b^2*B
*e-b*c*(11*A*e+6*B*d))+(24*A*c^4*d^3-3*b^4*B*e^3-A*b^3*c*e^3-12*b*c^3*d^2*(
3*A*e+B*d)+b^2*c^2*d*e*(14*A*e+11*B*d))*x)*(e*x+d)^(1/2)/b^4/c^2/(c*x^2+b*x
)
```

Rubi [A] time = 0.83, antiderivative size = 363, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {818, 826, 1166, 208}

$$\frac{\sqrt{d+ex}\left(x\left(b^2c^2de(14Ae+11Bd)-Ab^3ce^3-12bc^3d^2(3Ae+Bd)+24Ac^4d^3-3b^4Be^3\right)+bcd^2\left(-bc(11Ae+6Bd)\right.\right.}{4b^4c^2\left(bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2
*b^2*c*(b*x + c*x^2)^2) + (Sqrt[d + e*x]*(b*c*d^2*(12*A*c^2*d + 2*b^2*B*e -
 b*c*(6*B*d + 11*A*e)) + (24*A*c^4*d^3 - 3*b^4*B*e^3 - A*b^3*c*e^3 - 12*b*c
^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(11*B*d + 14*A*e))*x))/(4*b^4*c^2*(b*x +
 c*x^2)) - (d^(3/2)*(48*A*c^2*d^2 + 7*b^2*e*(4*B*d + 5*A*e) - 12*b*c*d*(2*B
*d + 7*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5) + ((c*d - b*e)^(3/2)*(
48*A*c^3*d^2 - 3*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + A*e) - b^2*c*e*(8*B*d + A*
e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{(d+ex)^{3/2}(-\frac{1}{2}d(12Ac^2d+2b}{}}{}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\sqrt{d+ex}\,(bcd^2\,(12Ac^2d}{}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\sqrt{d+ex}\,(bcd^2\,(12Ac^2d}{}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\sqrt{d+ex}\,(bcd^2\,(12Ac^2d}{}$$

$$= -\frac{(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\sqrt{d+ex}\,(bcd^2\,(12Ac^2d}{}$$

Mathematica [A] time = 4.05, size = 554, normalized size = 1.53

$$\frac{-\frac{210c(d+ex)^{9/2}\left(b^2e(5Ae+4Bd)-3bcd(5Ae+2Bd)+12Ac^2d^2\right)}{b^2d(be-cd)}+\frac{(b+cx)((b+cx)(105c^{9/2}(cd-be)^2(-2d^{7/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+\frac{2}{15}d\sqrt{d+ex}\,(23d^2+11dex}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-210*c*(12*A*c^2*d^2 - 3*b*c*d*(2*B*d + 5*A*e) + b^2*e*(4*B*d + 5*A*e))*(
d + e*x)^(9/2))/(b^2*d*(-(c*d) + b*e)) - (420*A*(d + e*x)^(9/2))/x^2 - (210
*(4*b*B*d - 8*A*c*d + 5*A*b*e)*(d + e*x)^(9/2))/(b*d*x) + ((b + c*x)*(-210*
b*c^(11/2)*(-24*A*c^3*d^3 - 11*b^2*c*d*e*(B*d + 2*A*e) + 12*b*c^2*d^2*(B*d
+ 3*A*e) + b^3*e^2*(4*B*d + 5*A*e))*(d + e*x)^(9/2) + (b + c*x)*(105*c^(9/2
)*(c*d - b*e)^2*(48*A*c^2*d^2 + 7*b^2*e*(4*B*d + 5*A*e) - 12*b*c*d*(2*B*d +
 7*A*e))*((2*(d + e*x)^(7/2))/7 + (2*d*Sqrt[d + e*x]*(23*d^2 + 11*d*e*x + 3
*e^2*x^2))/15 - 2*d^(7/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 2*c^2*d^2*(48*A
*c^3*d^2 - 3*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + A*e) - b^2*c*e*(8*B*d + A*e))*
(15*c^(7/2)*(d + e*x)^(7/2) + 7*(c*d - b*e)*(3*c^(5/2)*(d + e*x)^(5/2) + 5*
(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^
(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))/(b^4*c^(9/2)*d
*(c*d - b*e)^2))/(840*b*d*(b + c*x)^2)
```

fricas [B]   time = 67.44, size = 3378, normalized size = 9.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e -
(5*B*b^3*c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2
*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (
5*B*b^4*c^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*
(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B
*b^5*c + 11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt((c*d - b*
e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*
x + b)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 - 2*A*c^6)*d^3 + 28*(B*b^2*c^4
 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^2 - 24*(B*b^2*c^4 - 2*A*b*c^
5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (35*A*b^4*c^2*d*e^2 - 24
*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e)*x^2)*s
qrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^3 +
(12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c^4)*d^2*e - 2*(
B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3)*x^3 + (18*(B*
b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + 4*(B*b^5
*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13*A*b^4*c^2*d^2*
e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*c^4*x^4 + 2*b^6
*c^3*x^3 + b^7*c^2*x^2), -1/8*(2*((24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*
c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2
 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3
 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c +
A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 -
15*A*b^3*c^3)*d^2*e - (5*B*b^5*c + 11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c
)*e^3)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/
c)/(c*d - b*e)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 - 2*A*c^6)*d^3 + 28*(B
*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^2 - 24*(B*b^2*c^4 -
2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^3 + (35*A*b^4*c^2*d*
e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e
)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^
2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c^4)*d^2
*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3)*x^3 +
 (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e +
4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13*A*b^4*
c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*c^4*x^4
 + 2*b^6*c^3*x^3 + b^7*c^2*x^2), 1/8*(2*((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5
- 2*A*c^6)*d^3 + 28*(B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*
e^2 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*
x^3 + (35*A*b^4*c^2*d*e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^
2 - 3*A*b^3*c^3)*d^2*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((
24*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*
c^3 + 11*A*b^2*c^4)*d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b
^2*c^4 - 2*A*b*c^5)*d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c
^2 + 11*A*b^3*c^3)*d*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^
3 - 2*A*b^2*c^4)*d^3 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B*b^5*c +
11*A*b^4*c^2)*d*e^2 - (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt((c*d - b*e)/c)*log
((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) -
 2*(2*A*b^4*c^2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*
A*b^2*c^4)*d^2*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c
^2)*e^3)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3
*c^3)*d^2*e + 4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^
2 + (13*A*b^4*c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d)
)/(b^5*c^4*x^4 + 2*b^6*c^3*x^3 + b^7*c^2*x^2), -1/4*(((24*(B*b*c^5 - 2*A*c^
6)*d^3 - 4*(4*B*b^2*c^4 - 15*A*b*c^5)*d^2*e - (5*B*b^3*c^3 + 11*A*b^2*c^4)*
d*e^2 - (3*B*b^4*c^2 + A*b^3*c^3)*e^3)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*
d^3 - 4*(4*B*b^3*c^3 - 15*A*b^2*c^4)*d^2*e - (5*B*b^4*c^2 + 11*A*b^3*c^3)*d
*e^2 - (3*B*b^5*c + A*b^4*c^2)*e^3)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3
 - 4*(4*B*b^4*c^2 - 15*A*b^3*c^3)*d^2*e - (5*B*b^5*c + 11*A*b^4*c^2)*d*e^2
- (3*B*b^6 + A*b^5*c)*e^3)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqrt(e*x + d)*
c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((35*A*b^2*c^4*d*e^2 - 24*(B*b*c^5 -
2*A*c^6)*d^3 + 28*(B*b^2*c^4 - 3*A*b*c^5)*d^2*e)*x^4 + 2*(35*A*b^3*c^3*d*e^
2 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^3 + 28*(B*b^3*c^3 - 3*A*b^2*c^4)*d^2*e)*x^
3 + (35*A*b^4*c^2*d*e^2 - 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 + 28*(B*b^4*c^2
- 3*A*b^3*c^3)*d^2*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (2*A
*b^4*c^2*d^3 + (12*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (11*B*b^3*c^3 - 36*A*b^2*c
^4)*d^2*e - 2*(B*b^4*c^2 + 5*A*b^3*c^3)*d*e^2 + (5*B*b^5*c - A*b^4*c^2)*e^3
)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (17*B*b^4*c^2 - 55*A*b^3*c^3)*d
^2*e + 4*(B*b^5*c - 4*A*b^4*c^2)*d*e^2 + (3*B*b^6 + A*b^5*c)*e^3)*x^2 + (13
*A*b^4*c^2*d^2*e + 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3)*x)*sqrt(e*x + d))/(b^5*
c^4*x^4 + 2*b^6*c^3*x^3 + b^7*c^2*x^2)]
```

giac [B] time = 0.34, size = 1047, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/4*(24*B*b*c*d^4 - 48*A*c^2*d^4 - 28*B*b^2*d^3*e + 84*A*b*c*d^3*e - 35*A*
b^2*d^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) + 1/4*(24*B*b*c^
4*d^4 - 48*A*c^5*d^4 - 40*B*b^2*c^3*d^3*e + 108*A*b*c^4*d^3*e + 11*B*b^3*c^
2*d^2*e^2 - 71*A*b^2*c^3*d^2*e^2 + 2*B*b^4*c*d*e^3 + 10*A*b^3*c^2*d*e^3 + 3
*B*b^5*e^4 + A*b^4*c*e^4)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqr
t(-c^2*d + b*c*e)*b^5*c^2) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^4*d^3*e - 24*(x*
e + d)^(7/2)*A*c^5*d^3*e - 36*(x*e + d)^(5/2)*B*b*c^4*d^4*e + 72*(x*e + d)^
(5/2)*A*c^5*d^4*e + 36*(x*e + d)^(3/2)*B*b*c^4*d^5*e - 72*(x*e + d)^(3/2)*A
*c^5*d^5*e - 12*sqrt(x*e + d)*B*b*c^4*d^6*e + 24*sqrt(x*e + d)*A*c^5*d^6*e
- 11*(x*e + d)^(7/2)*B*b^2*c^3*d^2*e^2 + 36*(x*e + d)^(7/2)*A*b*c^4*d^2*e^2
 + 51*(x*e + d)^(5/2)*B*b^2*c^3*d^3*e^2 - 144*(x*e + d)^(5/2)*A*b*c^4*d^3*e
^2 - 69*(x*e + d)^(3/2)*B*b^2*c^3*d^4*e^2 + 180*(x*e + d)^(3/2)*A*b*c^4*d^4
*e^2 + 29*sqrt(x*e + d)*B*b^2*c^3*d^5*e^2 - 72*sqrt(x*e + d)*A*b*c^4*d^5*e^
2 - 2*(x*e + d)^(7/2)*B*b^3*c^2*d*e^3 - 10*(x*e + d)^(7/2)*A*b^2*c^3*d*e^3
- 11*(x*e + d)^(5/2)*B*b^3*c^2*d^2*e^3 + 85*(x*e + d)^(5/2)*A*b^2*c^3*d^2*e
^3 + 32*(x*e + d)^(3/2)*B*b^3*c^2*d^3*e^3 - 148*(x*e + d)^(3/2)*A*b^2*c^3*d
^3*e^3 - 19*sqrt(x*e + d)*B*b^3*c^2*d^4*e^3 + 73*sqrt(x*e + d)*A*b^2*c^3*d^
4*e^3 + 5*(x*e + d)^(7/2)*B*b^4*c*e^4 - (x*e + d)^(7/2)*A*b^3*c^2*e^4 - 11*
(x*e + d)^(5/2)*B*b^4*c*d*e^4 - 13*(x*e + d)^(5/2)*A*b^3*c^2*d*e^4 + 7*(x*e
 + d)^(3/2)*B*b^4*c*d^2*e^4 + 42*(x*e + d)^(3/2)*A*b^3*c^2*d^2*e^4 - sqrt(x
*e + d)*B*b^4*c*d^3*e^4 - 26*sqrt(x*e + d)*A*b^3*c^2*d^3*e^4 + 3*(x*e + d)^
(5/2)*B*b^5*e^5 + (x*e + d)^(5/2)*A*b^4*c*e^5 - 6*(x*e + d)^(3/2)*B*b^5*d*e
^5 - 2*(x*e + d)^(3/2)*A*b^4*c*d*e^5 + 3*sqrt(x*e + d)*B*b^5*d^2*e^5 + sqrt
(x*e + d)*A*b^4*c*d^2*e^5)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e
 + d)*b*e - b*d*e)^2*b^4*c^2)
```

maple [B] time = 0.12, size = 1218, normalized size = 3.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 21*e*d^(5/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+15/4*e^3/b/(c*e*x+b*e)^
2*(e*x+d)^(1/2)*B*d^2+5/2*e^3/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*A*d+11/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^
(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2+6/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)
^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^4*c^2-12/b^5*c^3/((b*e-c*d)*c)^(1/2)*arct
an((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^4+1/4*e^4/(c*e*x+b*e)^2/c*(e*x+
d)^(1/2)*B*d-3/4*e^5*b/(c*e*x+b*e)^2/c^2*(e*x+d)^(1/2)*B+1/2*e^3/b/(c*e*x+b
*e)^2*(e*x+d)^(3/2)*B*d+15/4*e^4/b/(c*e*x+b*e)^2*(e*x+d)^(1/2)*A*d+1/e*d^4/
b^3/x^2*(e*x+d)^(1/2)*B+1/4*e^4/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2
)/((b*e-c*d)*c)^(1/2)*c)*A-1/e*d^3/b^3/x^2*(e*x+d)^(3/2)*B+11/4*d^3/b^3/x^2
*(e*x+d)^(1/2)*A-7*e*d^(5/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B+1/4*e^4/b
/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-13/4*d^2/b^3/x^2*(e*x+d)^(3/2)*A+6*d^(7/2)/b
^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c+3/4*e^4/c^2/((b*e-c*d)*c)^(1/2)*arcta
n((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B-1/4*e^5/(c*e*x+b*e)^2/c*(e*x+d)^(1
/2)*A-5/4*e^4/(c*e*x+b*e)^2/c*(e*x+d)^(3/2)*B-35/4*e^2*d^(3/2)/b^3*arctanh(
(e*x+d)^(1/2)/d^(1/2))*A-12*d^(7/2)/b^5*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^
2+11/4*e^2/b^2/(c*e*x+b*e)^2*c*(e*x+d)^(3/2)*B*d^2-2*e/b^3/(c*e*x+b*e)^2*(e
*x+d)^(3/2)*B*d^3*c^2-3*e/b^4/(c*e*x+b*e)^2*c^3*(e*x+d)^(1/2)*A*d^4-39/4*e^
3/b^2/(c*e*x+b*e)^2*c*(e*x+d)^(1/2)*A*d^2+37/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d
)^(1/2)*A*d^3*c^2+3*e/b^4/(c*e*x+b*e)^2*c^3*(e*x+d)^(3/2)*A*d^3-21/4*e^2/b^
2/(c*e*x+b*e)^2*c*(e*x+d)^(1/2)*B*d^3+2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(1/2)*B
*d^4*c^2-71/4*e^2/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)
*c)^(1/2)*c)*A*d^2+27*e/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-
c*d)*c)^(1/2)*c)*A*d^3*c^2+1/2*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-10*e/b^3*c/((b*e-c*d)*c)^(1/2)*arctan((e*x+
d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3-3/e*d^4/b^4/x^2*c*(e*x+d)^(1/2)*A-23/
4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2*d^2+3/e*d^3/b^4/x^2*c*(e*x+d)^(
3/2)*A+5/2*e^3/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 6.40, size = 11072, normalized size = 30.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^3,x)
```

```
[Out] atan(((((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^10*c^7*d^4*e
^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*b^11*c^6*d^4
*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^12*c^3) - ((
64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*b^9*e^7 - 23
04*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*
d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*
c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^
7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*
d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 672
0*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 196
0*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/
(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^
2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*
b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B
^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 806
4*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^
3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e
 + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e
^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2
) - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^
8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^
4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^
2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 7
84*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7
+ 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 2
0*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^
8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304
*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 -
 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^7
 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5880
*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 -
784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5
+ 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*B
^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7*
d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5*
d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5))
^(1/2)*1i - (((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^10*c^7
*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*b^11*c
^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^12*c^3
) + ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*b^9*e^
7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^
2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^
2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*
B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^
6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7
 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2
 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2
*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*d^
7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 588
0*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5 -
 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e^5
 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 1344*
B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c^7
*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c^5
*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^5)
)^(1/2) + ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608*A^2*c
^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 + 8330*
A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1
152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e
^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^
3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e
^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*
A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 +
 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3
*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*c
^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2
+ 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*
e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^
2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 +
1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^
2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^
4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10
*c^5))^(1/2)*1i)/((((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A*b^
10*c^7*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768*B*
b^11*c^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64*b^
12*c^3) - ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B^2*
b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*
A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 -
 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4
 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*
A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8
*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d
^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c
^3*d^2*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A^2*
c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2
 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2
*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d
^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 +
 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b
^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b
^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^1
0*c^5))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4608
*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^5 +
 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^2*e
^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*c^6
*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b^7*
c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*c^9
*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*e^2
 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*d^6
*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^6*c
^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304
*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^
5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^
4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*
c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*
e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*
A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*
A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(6
4*b^10*c^5))^(1/2) + (((64*A*b^13*c^4*d*e^6 + 192*B*b^14*c^3*d*e^6 - 1536*A
*b^10*c^7*d^4*e^3 + 3072*A*b^11*c^6*d^3*e^4 - 1600*A*b^12*c^5*d^2*e^5 + 768
*B*b^11*c^6*d^4*e^3 - 1088*B*b^12*c^5*d^3*e^4 + 128*B*b^13*c^4*d^2*e^5)/(64
*b^12*c^3) + ((64*b^11*c^5*e^3 - 128*b^10*c^6*d*e^2)*(d + e*x)^(1/2)*(-(9*B
^2*b^9*e^7 - 2304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 104
16*A^2*b^2*c^7*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^
4 - 21*A^2*b^5*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*
e^4 + 91*B^2*b^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 +
21*A^2*b^6*c^3*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*
b^8*c*e^7 - 6720*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^
6*d^5*e^2 - 1960*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^
6*c^3*d^2*e^5)/(64*b^10*c^5))^(1/2))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2304*A
^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*
e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*
d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^
2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^
6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*
B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*
B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*
b^10*c^5))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*b^8*c^2*e^10 + 4
```

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608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^2*b^3*c^7*d^5*e^
5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 42*A^2*b^6*c^4*d^
2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3 + 2912*B^2*b^4*
c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4*e^6 - 196*B^2*b
^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^9 - 18432*A^2*b*
c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 4608*A*B*b*c^9*d^8*
e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19488*A*B*b^3*c^7*
d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*e^6 + 504*A*B*b^
6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*(-(9*B^2*b^9*e^7 - 2
304*A^2*c^9*d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7
*d^5*e^2 + 5880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5
*c^4*d^2*e^5 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b
^7*c^2*d^2*e^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3
*d*e^6 + 1344*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 67
20*A*B*b^2*c^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 19
60*A*B*b^4*c^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)
/(64*b^10*c^5))^(1/2) - (252*B^3*b^11*d^3*e^11 - 55296*A^3*c^11*d^11*e^3 -
694656*A^3*b^2*c^9*d^9*e^5 + 844992*A^3*b^3*c^8*d^8*e^6 - 579096*A^3*b^4*c^
7*d^7*e^7 + 212436*A^3*b^5*c^6*d^6*e^8 - 31282*A^3*b^6*c^5*d^5*e^9 - 1877*A
^3*b^7*c^4*d^4*e^10 + 616*A^3*b^8*c^3*d^3*e^11 + 35*A^3*b^9*c^2*d^2*e^12 +
6912*B^3*b^3*c^8*d^11*e^3 - 25920*B^3*b^4*c^7*d^10*e^4 + 33408*B^3*b^5*c^6*
d^9*e^5 - 16808*B^3*b^6*c^5*d^8*e^6 + 5180*B^3*b^7*c^4*d^7*e^7 - 4816*B^3*b
^8*c^3*d^6*e^8 + 1672*B^3*b^9*c^2*d^5*e^9 + 315*A*B^2*b^11*d^2*e^12 + 30412
8*A^3*b*c^10*d^10*e^4 + 120*B^3*b^10*c*d^4*e^10 - 41472*A*B^2*b^2*c^9*d^11*
e^3 + 179712*A*B^2*b^3*c^8*d^10*e^4 - 293184*A*B^2*b^4*c^7*d^9*e^5 + 220464
*A*B^2*b^5*c^6*d^8*e^6 - 83076*A*B^2*b^6*c^5*d^7*e^7 + 31899*A*B^2*b^7*c^4*
d^6*e^8 - 18012*A*B^2*b^8*c^3*d^5*e^9 + 3522*A*B^2*b^9*c^2*d^4*e^10 - 40780
8*A^2*B*b^2*c^9*d^10*e^4 + 800064*A^2*B*b^3*c^8*d^9*e^5 - 790704*A^2*B*b^4*
c^7*d^8*e^6 + 413028*A^2*B*b^5*c^6*d^7*e^7 - 122283*A^2*B*b^6*c^5*d^6*e^8 +
 36402*A^2*B*b^7*c^4*d^5*e^9 - 13617*A^2*B*b^8*c^3*d^4*e^10 + 1764*A^2*B*b^
9*c^2*d^3*e^11 - 168*A*B^2*b^10*c*d^3*e^11 + 82944*A^2*B*b*c^10*d^11*e^3 +
210*A^2*B*b^10*c*d^2*e^12)/(32*b^12*c^3)))*(-(9*B^2*b^9*e^7 - 2304*A^2*c^9*
d^7 + A^2*b^7*c^2*e^7 - 576*B^2*b^2*c^7*d^7 - 10416*A^2*b^2*c^7*d^5*e^2 + 5
880*A^2*b^3*c^6*d^4*e^3 - 1225*A^2*b^4*c^5*d^3*e^4 - 21*A^2*b^5*c^4*d^2*e^5
 - 784*B^2*b^4*c^5*d^5*e^2 - 105*B^2*b^6*c^3*d^3*e^4 + 91*B^2*b^7*c^2*d^2*e
^5 + 8064*A^2*b*c^8*d^6*e + 21*B^2*b^8*c*d*e^6 + 21*A^2*b^6*c^3*d*e^6 + 134
4*B^2*b^3*c^6*d^6*e + 2304*A*B*b*c^8*d^7 + 6*A*B*b^8*c*e^7 - 6720*A*B*b^2*c
^7*d^6*e + 70*A*B*b^7*c^2*d*e^6 + 6384*A*B*b^3*c^6*d^5*e^2 - 1960*A*B*b^4*c
^5*d^4*e^3 + 210*A*B*b^5*c^4*d^3*e^4 - 294*A*B*b^6*c^3*d^2*e^5)/(64*b^10*c^
5))^(1/2)*2i - log((d^2*e^3*(b*e - c*d)^2*(35*A^3*b^7*c^2*e^7 - 55296*A^3*c
^9*d^7 + 6912*B^3*b^3*c^6*d^7 + 315*A*B^2*b^9*e^7 + 252*B^3*b^9*d*e^6 - 252
288*A^3*b^2*c^7*d^5*e^2 + 146880*A^3*b^3*c^6*d^4*e^3 - 33048*A^3*b^4*c^5*d^
3*e^4 - 540*A^3*b^5*c^4*d^2*e^5 + 2304*B^3*b^5*c^4*d^5*e^2 - 104*B^3*b^6*c^
3*d^4*e^3 + 2668*B^3*b^7*c^2*d^3*e^4 + 82944*A^2*B*b*c^8*d^7 + 210*A^2*B*b^
8*c*e^7 + 193536*A^3*b*c^8*d^6*e - 41472*A*B^2*b^2*c^7*d^7 + 686*A^3*b^6*c^
3*d*e^6 - 12096*B^3*b^4*c^5*d^6*e + 624*B^3*b^8*c*d^2*e^5 - 58176*A*B^2*b^4
*c^5*d^5*e^2 + 7344*A*B^2*b^5*c^4*d^4*e^3 - 10212*A*B^2*b^6*c^3*d^3*e^4 + 4
131*A*B^2*b^7*c^2*d^2*e^5 + 233280*A^2*B*b^3*c^6*d^5*e^2 - 82224*A^2*B*b^4*
c^5*d^4*e^3 + 15300*A^2*B*b^5*c^4*d^3*e^4 - 9459*A^2*B*b^6*c^3*d^2*e^5 + 46
2*A*B^2*b^8*c*d*e^6 + 96768*A*B^2*b^3*c^6*d^6*e - 241920*A^2*B*b^2*c^7*d^6*
e + 2184*A^2*B*b^7*c^2*d*e^6))/(64*b^12*c^3) - (((((d*e^3*(b*e - c*d)*(24*A
*c^3*d^2 + 3*B*b^3*e^2 + A*b^2*c*e^2 - 12*B*b*c^2*d^2 - 24*A*b*c^2*d*e + 5*
B*b^2*c*d*e))/b^2 - b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^3*(35*A*b
^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e)^2)/b^10
)^(1/2))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e -
 84*A*b*c*d*e)^2)/b^10)^(1/2))/8 - ((d + e*x)^(1/2)*(9*B^2*b^10*e^10 + A^2*
b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 - 22176*A^
2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^3*e^7 - 4
2*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^7*d^7*e^3
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 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^6*c^4*d^4
*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b^9*c*d*e^
9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e^10 - 460
8*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7*e^3 - 19
488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5*c^5*d^4*
e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c^3))*((d^
3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e
)^2)/b^10)^(1/2))/8)*((36*A^2*c^4*d^7 + 9*B^2*b^2*c^2*d^7 + (1225*A^2*b^4*d
^3*e^4)/64 + (49*B^2*b^4*d^5*e^2)/4 + (651*A^2*b^2*c^2*d^5*e^2)/4 + (245*A*
B*b^4*d^4*e^3)/8 - 126*A^2*b*c^3*d^6*e - 21*B^2*b^3*c*d^6*e - (735*A^2*b^3*
c*d^4*e^3)/8 - 36*A*B*b*c^3*d^7 + 105*A*B*b^2*c^2*d^6*e - (399*A*B*b^3*c*d^
5*e^2)/4)/b^10)^(1/2) + log((d^2*e^3*(b*e - c*d)^2*(35*A^3*b^7*c^2*e^7 - 55
296*A^3*c^9*d^7 + 6912*B^3*b^3*c^6*d^7 + 315*A*B^2*b^9*e^7 + 252*B^3*b^9*d*
e^6 - 252288*A^3*b^2*c^7*d^5*e^2 + 146880*A^3*b^3*c^6*d^4*e^3 - 33048*A^3*b
^4*c^5*d^3*e^4 - 540*A^3*b^5*c^4*d^2*e^5 + 2304*B^3*b^5*c^4*d^5*e^2 - 104*B
^3*b^6*c^3*d^4*e^3 + 2668*B^3*b^7*c^2*d^3*e^4 + 82944*A^2*B*b*c^8*d^7 + 210
*A^2*B*b^8*c*e^7 + 193536*A^3*b*c^8*d^6*e - 41472*A*B^2*b^2*c^7*d^7 + 686*A
^3*b^6*c^3*d*e^6 - 12096*B^3*b^4*c^5*d^6*e + 624*B^3*b^8*c*d^2*e^5 - 58176*
A*B^2*b^4*c^5*d^5*e^2 + 7344*A*B^2*b^5*c^4*d^4*e^3 - 10212*A*B^2*b^6*c^3*d^
3*e^4 + 4131*A*B^2*b^7*c^2*d^2*e^5 + 233280*A^2*B*b^3*c^6*d^5*e^2 - 82224*A
^2*B*b^4*c^5*d^4*e^3 + 15300*A^2*B*b^5*c^4*d^3*e^4 - 9459*A^2*B*b^6*c^3*d^2
*e^5 + 462*A*B^2*b^8*c*d*e^6 + 96768*A*B^2*b^3*c^6*d^6*e - 241920*A^2*B*b^2
*c^7*d^6*e + 2184*A^2*B*b^7*c^2*d*e^6))/(64*b^12*c^3) - (((((d*e^3*(b*e - c
*d)*(24*A*c^3*d^2 + 3*B*b^3*e^2 + A*b^2*c*e^2 - 12*B*b*c^2*d^2 - 24*A*b*c^2
*d*e + 5*B*b^2*c*d*e))/b^2 + b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((d^
3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*A*b*c*d*e
)^2)/b^10)^(1/2))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*
b^2*d*e - 84*A*b*c*d*e)^2)/b^10)^(1/2))/8 + ((d + e*x)^(1/2)*(9*B^2*b^10*e^
10 + A^2*b^8*c^2*e^10 + 4608*A^2*c^10*d^8*e^2 + 28896*A^2*b^2*c^8*d^6*e^4 -
 22176*A^2*b^3*c^7*d^5*e^5 + 8330*A^2*b^4*c^6*d^4*e^6 - 1204*A^2*b^5*c^5*d^
3*e^7 - 42*A^2*b^6*c^4*d^2*e^8 + 1152*B^2*b^2*c^8*d^8*e^2 - 3264*B^2*b^3*c^
7*d^7*e^3 + 2912*B^2*b^4*c^6*d^6*e^4 - 784*B^2*b^5*c^5*d^5*e^5 + 105*B^2*b^
6*c^4*d^4*e^6 - 196*B^2*b^7*c^3*d^3*e^7 + 70*B^2*b^8*c^2*d^2*e^8 + 12*B^2*b
^9*c*d*e^9 - 18432*A^2*b*c^9*d^7*e^3 + 20*A^2*b^7*c^3*d*e^9 + 6*A*B*b^9*c*e
^10 - 4608*A*B*b*c^9*d^8*e^2 + 64*A*B*b^8*c^2*d*e^9 + 15744*A*B*b^2*c^8*d^7
*e^3 - 19488*A*B*b^3*c^7*d^6*e^4 + 10304*A*B*b^4*c^6*d^5*e^5 - 2170*A*B*b^5
*c^5*d^4*e^6 + 504*A*B*b^6*c^4*d^3*e^7 - 364*A*B*b^7*c^3*d^2*e^8))/(8*b^8*c
^3))*((d^3*(35*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 28*B*b^2*d*e - 84*
A*b*c*d*e)^2)/b^10)^(1/2))/8)*((2304*A^2*c^4*d^7 + 576*B^2*b^2*c^2*d^7 + 12
25*A^2*b^4*d^3*e^4 + 784*B^2*b^4*d^5*e^2 + 10416*A^2*b^2*c^2*d^5*e^2 + 1960
*A*B*b^4*d^4*e^3 - 8064*A^2*b*c^3*d^6*e - 1344*B^2*b^3*c*d^6*e - 5880*A^2*b
^3*c*d^4*e^3 - 2304*A*B*b*c^3*d^7 + 6720*A*B*b^2*c^2*d^6*e - 6384*A*B*b^3*c
*d^5*e^2)/(64*b^10))^(1/2) + (((d + e*x)^(7/2)*(A*b^3*c*e^4 - 5*B*b^4*e^4 +
 24*A*c^4*d^3*e - 36*A*b*c^3*d^2*e^2 + 10*A*b^2*c^2*d*e^3 + 11*B*b^2*c^2*d^
2*e^2 - 12*B*b*c^3*d^3*e + 2*B*b^3*c*d*e^3))/(4*b^4*c) - ((d + e*x)^(5/2)*(
3*B*b^5*e^5 + A*b^4*c*e^5 + 72*A*c^5*d^4*e - 144*A*b*c^4*d^3*e^2 - 13*A*b^3
*c^2*d*e^4 + 85*A*b^2*c^3*d^2*e^3 + 51*B*b^2*c^3*d^3*e^2 - 11*B*b^3*c^2*d^2
*e^3 - 36*B*b*c^4*d^4*e - 11*B*b^4*c*d*e^4))/(4*b^4*c^2) - ((d + e*x)^(1/2)
*(24*A*c^5*d^6*e + 3*B*b^5*d^2*e^5 - 72*A*b*c^4*d^5*e^2 + A*b^4*c*d^2*e^5 -
 B*b^4*c*d^3*e^4 + 73*A*b^2*c^3*d^4*e^3 - 26*A*b^3*c^2*d^3*e^4 + 29*B*b^2*c
^3*d^5*e^2 - 19*B*b^3*c^2*d^4*e^3 - 12*B*b*c^4*d^6*e))/(4*b^4*c^2) + ((d +
e*x)^(3/2)*(72*A*c^5*d^5*e + 6*B*b^5*d*e^5 - 180*A*b*c^4*d^4*e^2 - 7*B*b^4*
c*d^2*e^4 + 148*A*b^2*c^3*d^3*e^3 - 42*A*b^3*c^2*d^2*e^4 + 69*B*b^2*c^3*d^4
*e^2 - 32*B*b^3*c^2*d^3*e^3 + 2*A*b^4*c*d*e^5 - 36*B*b*c^4*d^5*e))/(4*b^4*c
^2))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) -
 (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c
*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1249 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=344

$$-\frac{(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d}\,\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(5b^2e(3Ae+4Bd)-12bcd(5Ae+\right.}{4b^5}$$

```
[Out] -1/2*(e*x+d)^(3/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x
^2+b*x)^2-1/4*(48*A*c^2*d^2+5*b^2*e*(3*A*e+4*B*d)-12*b*c*d*(5*A*e+2*B*d))*a
rctanh((e*x+d)^(1/2)/d^(1/2))*d^(1/2)/b^5+1/4*(48*A*c^3*d^2+b^3*B*e^2-12*b*
c^2*d*(3*A*e+2*B*d)+b^2*c*e*(3*A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-
b*e+c*d)^(1/2))*(-b*e+c*d)^(1/2)/b^5/c^(3/2)-1/4*(b*d*(9*A*b*c*e-12*A*c^2*d
-2*B*b^2*e+6*B*b*c*d)-(24*A*c^3*d^2+b^3*B*e^2-12*b*c^2*d*(2*A*e+B*d)+b^2*c*
e*(3*A*e+7*B*d))*x)*(e*x+d)^(1/2)/b^4/c/(c*x^2+b*x)
```

Rubi [A] time = 0.70, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {818, 820, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\,\left(bd\left(9Abce-12Ac^2d-2b^2Be+6bBcd\right)-x\left(b^2ce(3Ae+7Bd)-12bc^2d(2Ae+Bd)+24Ac^3d^2+b^3Be^2\right.\right.}{4b^4c\left(bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2
*b^2*c*(b*x + c*x^2)^2) - (Sqrt[d + e*x]*(b*d*(6*b*B*c*d - 12*A*c^2*d - 2*b
^2*B*e + 9*A*b*c*e) - (24*A*c^3*d^2 + b^3*B*e^2 - 12*b*c^2*d*(B*d + 2*A*e)
+ b^2*c*e*(7*B*d + 3*A*e))*x))/(4*b^4*c*(b*x + c*x^2)) - (Sqrt[d]*(48*A*c^2
*d^2 + 5*b^2*e*(4*B*d + 3*A*e) - 12*b*c*d*(2*B*d + 5*A*e))*ArcTanh[Sqrt[d +
 e*x]/Sqrt[d]])/(4*b^5) + (Sqrt[c*d - b*e]*(48*A*c^3*d^2 + b^3*B*e^2 - 12*b
*c^2*d*(2*B*d + 3*A*e) + b^2*c*e*(8*B*d + 3*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[c*d - b*e]])/(4*b^5*c^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{\sqrt{d+ex}\left(\frac{1}{2}d\left(6bBcd-12Ac^2d\right.\right.}{}}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-\right.\right.}{}$$

$$= -\frac{(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\left(bd\left(6bBcd-\right.\right.}{}$$

Mathematica [A] time = 3.04, size = 516, normalized size = 1.50

$$\frac{\frac{30c(d+ex)^{7/2}\left(b^2(-e)(3Ae+4Bd)+bcd(13Ae+6Bd)-12Ac^2d^2\right)}{b^2d(be-cd)}+\frac{(b+cx)\left((b+cx)\left(15c^{7/2}(cd-be)^2\left(-2d^{5/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)+\frac{2}{3}d\sqrt{d+ex}\,(4d+ex)+\frac{2}{5}(d+e\right.\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((30*c*(-12*A*c^2*d^2 - b^2*e*(4*B*d + 3*A*e) + b*c*d*(6*B*d + 13*A*e))*(d
+ e*x)^(7/2))/(b^2*d*(-(c*d) + b*e)) - (60*A*(d + e*x)^(7/2))/x^2 - (30*(4*
b*B*d - 8*A*c*d + 3*A*b*e)*(d + e*x)^(7/2))/(b*d*x) + ((b + c*x)*(-30*b*c^(
9/2)*(-24*A*c^3*d^3 + 12*b*c^2*d^2*(B*d + 3*A*e) + b^3*e^2*(4*B*d + 3*A*e)
- b^2*c*d*e*(13*B*d + 18*A*e))*(d + e*x)^(7/2) + (b + c*x)*(15*c^(7/2)*(c*d
 - b*e)^2*(48*A*c^2*d^2 + 5*b^2*e*(4*B*d + 3*A*e) - 12*b*c*d*(2*B*d + 5*A*e
))*((2*(d + e*x)^(5/2))/5 + (2*d*Sqrt[d + e*x]*(4*d + e*x))/3 - 2*d^(5/2)*A
rcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 2*c^2*d^2*(48*A*c^3*d^2 + b^3*B*e^2 - 12*b
*c^2*d*(2*B*d + 3*A*e) + b^2*c*e*(8*B*d + 3*A*e))*(3*c^(5/2)*(d + e*x)^(5/2
) + 5*(c*d - b*e)*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d -
 b*e)^(3/2)*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))))/(b^4*c^(7
/2)*d*(c*d - b*e)^2))/(120*b*d*(b + c*x)^2)
```

fricas [B] time = 7.34, size = 2754, normalized size = 8.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*
b^3*c^2 + 3*A*b^2*c^3)*e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*
B*b^3*c^2 - 9*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^
3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b
^4*c)*e^2)*x^2)*sqrt((c*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x +
 d)*c*sqrt((c*d - b*e)/c))/(c*x + b)) - ((15*A*b^2*c^3*e^2 - 24*(B*b*c^4 -
2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c^2*e^2 -
24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 + (1
5*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3*A*b^3*c^
2)*d*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*
b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^2 - 24*A*b^2*c^3)*
d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2
- (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e^2)*x^2 + (9*A*b^4
*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))/(b^5*c^3*x^4 + 2*
b^6*c^2*x^3 + b^7*c*x^2), -1/8*(2*((24*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(2*B*b^2
*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*e^2)*x^4 + 2*(24*(B*b^2*c
^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^
3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 - 4*(2*B*b^4*c - 9*A*b^
3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt(-(c*d - b*e)/c)*arctan(-sqr
t(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((15*A*b^2*c^3*e^2 - 24*(B
*b*c^4 - 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c
^2*e^2 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)
*x^3 + (15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3
*A*b^3*c^2)*d*e)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x)
+ 2*(2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^2 - 24*A*
b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 - 2*A*b^2*
c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e^2)*x^2 +
 (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))/(b^5*c^3
*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2), 1/8*(2*((15*A*b^2*c^3*e^2 - 24*(B*b*c^4
- 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*e)*x^4 + 2*(15*A*b^3*c^2*e^2
- 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c^2 - 3*A*b^2*c^3)*d*e)*x^3 +
(15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 + 20*(B*b^4*c - 3*A*b^3*
c^2)*d*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) - ((24*(B*b*c^4 -
2*A*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*
e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3
)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^
2 - 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt((c
*d - b*e)/c)*log((c*e*x + 2*c*d - b*e + 2*sqrt(e*x + d)*c*sqrt((c*d - b*e)/
c))/(c*x + b)) - 2*(2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*
b^3*c^2 - 24*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3
*c^2 - 2*A*b^2*c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^
4*c)*e^2)*x^2 + (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x
 + d))/(b^5*c^3*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2), -1/4*(((24*(B*b*c^4 - 2*A
*c^5)*d^2 - 4*(2*B*b^2*c^3 - 9*A*b*c^4)*d*e - (B*b^3*c^2 + 3*A*b^2*c^3)*e^2
)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(2*B*b^3*c^2 - 9*A*b^2*c^3)*d
*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^2 -
 4*(2*B*b^4*c - 9*A*b^3*c^2)*d*e - (B*b^5 + 3*A*b^4*c)*e^2)*x^2)*sqrt(-(c*d
 - b*e)/c)*arctan(-sqrt(e*x + d)*c*sqrt(-(c*d - b*e)/c)/(c*d - b*e)) - ((15
*A*b^2*c^3*e^2 - 24*(B*b*c^4 - 2*A*c^5)*d^2 + 20*(B*b^2*c^3 - 3*A*b*c^4)*d*
e)*x^4 + 2*(15*A*b^3*c^2*e^2 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^2 + 20*(B*b^3*c
^2 - 3*A*b^2*c^3)*d*e)*x^3 + (15*A*b^4*c*e^2 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)
*d^2 + 20*(B*b^4*c - 3*A*b^3*c^2)*d*e)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*s
qrt(-d)/d) + (2*A*b^4*c*d^2 + (12*(B*b^2*c^3 - 2*A*b*c^4)*d^2 - (7*B*b^3*c^
2 - 24*A*b^2*c^3)*d*e - (B*b^4*c + 3*A*b^3*c^2)*e^2)*x^3 + (18*(B*b^3*c^2 -
 2*A*b^2*c^3)*d^2 - (11*B*b^4*c - 37*A*b^3*c^2)*d*e + (B*b^5 - 5*A*b^4*c)*e
^2)*x^2 + (9*A*b^4*c*d*e + 4*(B*b^4*c - 2*A*b^3*c^2)*d^2)*x)*sqrt(e*x + d))
/(b^5*c^3*x^4 + 2*b^6*c^2*x^3 + b^7*c*x^2)]
```

giac [B] time = 0.34, size = 841, normalized size = 2.44

$$-\frac{\left(24\,Bbcd^3-48\,Ac^2d^3-20\,Bb^2d^2e+60\,Abcd^2e-15\,Ab^2de^2\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d}}\right)}{4\,b^5\sqrt{-d}}+\frac{\left(24\,Bbc^3d^3-48\,Ac^4d^3-32\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] -1/4*(24*B*b*c*d^3 - 48*A*c^2*d^3 - 20*B*b^2*d^2*e + 60*A*b*c*d^2*e - 15*A*
b^2*d*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) + 1/4*(24*B*b*c^3*
d^3 - 48*A*c^4*d^3 - 32*B*b^2*c^2*d^2*e + 84*A*b*c^3*d^2*e + 7*B*b^3*c*d*e^
2 - 39*A*b^2*c^2*d*e^2 + B*b^4*e^3 + 3*A*b^3*c*e^3)*arctan(sqrt(x*e + d)*c/
sqrt(-c^2*d + b*c*e))/(sqrt(-c^2*d + b*c*e)*b^5*c) - 1/4*(12*(x*e + d)^(7/2
)*B*b*c^3*d^2*e - 24*(x*e + d)^(7/2)*A*c^4*d^2*e - 36*(x*e + d)^(5/2)*B*b*c
^3*d^3*e + 72*(x*e + d)^(5/2)*A*c^4*d^3*e + 36*(x*e + d)^(3/2)*B*b*c^3*d^4*
e - 72*(x*e + d)^(3/2)*A*c^4*d^4*e - 12*sqrt(x*e + d)*B*b*c^3*d^5*e + 24*sq
rt(x*e + d)*A*c^4*d^5*e - 7*(x*e + d)^(7/2)*B*b^2*c^2*d*e^2 + 24*(x*e + d)^
(7/2)*A*b*c^3*d*e^2 + 39*(x*e + d)^(5/2)*B*b^2*c^2*d^2*e^2 - 108*(x*e + d)^
(5/2)*A*b*c^3*d^2*e^2 - 57*(x*e + d)^(3/2)*B*b^2*c^2*d^3*e^2 + 144*(x*e + d
)^(3/2)*A*b*c^3*d^3*e^2 + 25*sqrt(x*e + d)*B*b^2*c^2*d^4*e^2 - 60*sqrt(x*e
+ d)*A*b*c^3*d^4*e^2 - (x*e + d)^(7/2)*B*b^3*c*e^3 - 3*(x*e + d)^(7/2)*A*b^
2*c^2*e^3 - 8*(x*e + d)^(5/2)*B*b^3*c*d*e^3 + 46*(x*e + d)^(5/2)*A*b^2*c^2*
d*e^3 + 23*(x*e + d)^(3/2)*B*b^3*c*d^2*e^3 - 91*(x*e + d)^(3/2)*A*b^2*c^2*d
^2*e^3 - 14*sqrt(x*e + d)*B*b^3*c*d^3*e^3 + 48*sqrt(x*e + d)*A*b^2*c^2*d^3*
e^3 + (x*e + d)^(5/2)*B*b^4*e^4 - 5*(x*e + d)^(5/2)*A*b^3*c*e^4 - 2*(x*e +
d)^(3/2)*B*b^4*d*e^4 + 19*(x*e + d)^(3/2)*A*b^3*c*d*e^4 + sqrt(x*e + d)*B*b
^4*d^2*e^4 - 12*sqrt(x*e + d)*A*b^3*c*d^2*e^4)/(((x*e + d)^2*c - 2*(x*e + d
)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4*c)
```

maple [B] time = 0.08, size = 1004, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 15*e*d^(3/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c+6/b^4*c^2/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^3+7/4*e^2/b^2/((b*e-
c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d-12/b^5*c^3/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^3+3/4*e^3
/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c+1/4*e^3/b/(c*e*x+b*e)^2*(e*x+d)^(3/2)*
B-5*e*d^(3/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*B+3/4*e^3/b^2/((b*e-c*d)*c
)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+5/4*e^4/b/(c*e*x+b*e)
^2*(e*x+d)^(1/2)*A+7/4*d^2/b^3/x^2*(e*x+d)^(1/2)*A-12*d^(5/2)/b^5*arctanh((
e*x+d)^(1/2)/d^(1/2))*A*c^2+6*d^(5/2)/b^4*arctanh((e*x+d)^(1/2)/d^(1/2))*B*
c-9/4*d/b^3/x^2*(e*x+d)^(3/2)*A-1/4*e^4/(c*e*x+b*e)^2/c*(e*x+d)^(1/2)*B-15/
4*e^2*d^(1/2)/b^3*arctanh((e*x+d)^(1/2)/d^(1/2))*A-1/e*d^2/b^3/x^2*(e*x+d)^
(3/2)*B+1/e*d^3/b^3/x^2*(e*x+d)^(1/2)*B+5/2*e^3/b/(c*e*x+b*e)^2*(e*x+d)^(1/
2)*B*d+1/4*e^3/b/c/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(
1/2)*c)*B-39/4*e^2/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*c*d+21*e/b^4*c^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b
*e-c*d)*c)^(1/2)*c)*A*d^2-8*e/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/
((b*e-c*d)*c)^(1/2)*c)*B*d^2*c-2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c^2*d^
2+2*e/b^3/(c*e*x+b*e)^2*c^2*(e*x+d)^(1/2)*B*d^3+3/e*d^2/b^4/x^2*(e*x+d)^(3/
2)*A*c-3/e*d^3/b^4/x^2*(e*x+d)^(1/2)*A*c-17/4*e^2/b^2/(c*e*x+b*e)^2*(e*x+d)
^(1/2)*B*d^2*c+7/4*e^2/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c*d-11/2*e^3/b^2/(
c*e*x+b*e)^2*(e*x+d)^(1/2)*A*c*d+3*e/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^3*
d^2+29/4*e^2/b^3/(c*e*x+b*e)^2*c^2*(e*x+d)^(1/2)*A*d^2-3*e/b^4/(c*e*x+b*e)^
2*c^3*(e*x+d)^(1/2)*A*d^3-15/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 3.85, size = 7001, normalized size = 20.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(7/2)*(B*b^3*e^3 + 3*A*b^2*c*e^3 + 24*A*c^3*d^2*e - 24*A*b*c^2*
d*e^2 - 12*B*b*c^2*d^2*e + 7*B*b^2*c*d*e^2))/(4*b^4) - ((d + e*x)^(5/2)*(B*
b^4*e^4 - 5*A*b^3*c*e^4 + 72*A*c^4*d^3*e - 108*A*b*c^3*d^2*e^2 + 46*A*b^2*c
^2*d*e^3 + 39*B*b^2*c^2*d^2*e^2 - 36*B*b*c^3*d^3*e - 8*B*b^3*c*d*e^3))/(4*b
^4*c) - ((d + e*x)^(1/2)*(24*A*c^4*d^5*e + B*b^4*d^2*e^4 - 60*A*b*c^3*d^4*e
^2 - 12*A*b^3*c*d^2*e^4 - 14*B*b^3*c*d^3*e^3 + 48*A*b^2*c^2*d^3*e^3 + 25*B*
b^2*c^2*d^4*e^2 - 12*B*b*c^3*d^5*e))/(4*b^4*c) + ((d + e*x)^(3/2)*(72*A*c^4
*d^4*e + 2*B*b^4*d*e^4 - 144*A*b*c^3*d^3*e^2 - 23*B*b^3*c*d^2*e^3 + 91*A*b^
2*c^2*d^2*e^3 + 57*B*b^2*c^2*d^3*e^2 - 19*A*b^3*c*d*e^4 - 36*B*b*c^3*d^4*e)
)/(4*b^4*c))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*
d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2
 - 6*b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (d^(1/2)*atan(((d^(1
/2)*((d^(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*
e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4
)/(b^12*c) - (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2
)*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e
))/(64*b^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e
- 60*A*b*c*d*e))/(8*b^5) - ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^
8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3
```

```
*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c
^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^
6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*
c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7
 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4
*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^
2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(8*b^5) - (d^(1/2)*((d^
(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36
*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*
c) + (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2)*(15*A*
b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(64*b
^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b
*c*d*e))/(8*b^5) + ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608
*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2
250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e
^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^
2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^
7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904
*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5
 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B
*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(8*b^5))/(((5*B^3*b^9*d^2*e^9)/
8 - 1728*A^3*c^9*d^8*e^3 - 11124*A^3*b^2*c^7*d^6*e^5 + 9180*A^3*b^3*c^6*d^5
*e^6 - (16389*A^3*b^4*c^5*d^4*e^7)/4 + (1917*A^3*b^5*c^4*d^3*e^8)/2 - (3375
*A^3*b^6*c^3*d^2*e^9)/32 + 216*B^3*b^3*c^6*d^8*e^3 - 594*B^3*b^4*c^5*d^7*e^
4 + 558*B^3*b^5*c^4*d^6*e^5 - (725*B^3*b^6*c^3*d^5*e^6)/4 - (59*B^3*b^7*c^2
*d^4*e^7)/8 + (15*A*B^2*b^9*d*e^10)/32 + 6912*A^3*b*c^8*d^7*e^4 + (135*A^3*
b^7*c^2*d*e^10)/32 + 8*B^3*b^8*c*d^3*e^8 - 1296*A*B^2*b^2*c^7*d^8*e^3 + 410
4*A*B^2*b^3*c^6*d^7*e^4 - 4788*A*B^2*b^4*c^5*d^6*e^5 + (4815*A*B^2*b^5*c^4*
d^5*e^6)/2 - (3171*A*B^2*b^6*c^3*d^4*e^7)/8 - (1281*A*B^2*b^7*c^2*d^3*e^8)/
32 - 9288*A^2*B*b^2*c^7*d^7*e^4 + 12906*A^2*B*b^3*c^6*d^6*e^5 - (17235*A^2*
B*b^4*c^5*d^5*e^6)/2 + (21717*A^2*B*b^5*c^4*d^4*e^7)/8 - (9423*A^2*B*b^6*c^
3*d^3*e^8)/32 - (495*A^2*B*b^7*c^2*d^2*e^9)/32 + (45*A^2*B*b^8*c*d*e^10)/16
 + (135*A*B^2*b^8*c*d^2*e^9)/16 + 2592*A^2*B*b*c^8*d^8*e^3)/(b^12*c) + (d^(
1/2)*((d^(1/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3
*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^
4)/(b^12*c) - (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/
2)*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*
e))/(64*b^13*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e
 - 60*A*b*c*d*e))/(8*b^5) - ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e
^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^
3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*
c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b
^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5
*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^
7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^
4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d
^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(8*b^5) + (d^(1/2)*((d^(1
/2)*((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A
*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c)
 + (d^(1/2)*(64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(d + e*x)^(1/2)*(15*A*b^
2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(64*b^1
3*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c
*d*e))/(8*b^5) + ((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A
^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 225
0*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3
 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*
e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7
+ 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A
*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 -
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 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c))*(15*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b
*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e))/(8*b^5)))*(15*A*b^2*e^2 + 48*A*c^2*d
^2 - 24*B*b*c*d^2 + 20*B*b^2*d*e - 60*A*b*c*d*e)*1i)/(4*b^5) + (atan((((((d
 + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 158
40*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^
6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*
d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d
*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 -
4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 -
 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2
*e^6))/(8*b^8*c) - (((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^
5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d
^2*e^4)/(b^12*c) - ((64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(-c^3*(b*e - c*d
))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b
*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^13*c^4))*(-c^3*(b*e - c*d
))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*
b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3
*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^
2*c*d*e)*1i)/(8*b^5*c^3) + ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*
e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d
^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3
*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*
b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^
5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e
^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c
^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) + (((12*A*b^12*c^3*d*e^5 -
 B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^
11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c) + ((64*b^11*c^3*e^3 - 128*
b^10*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*
b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))
/(64*b^13*c^4))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^
2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-
c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c
^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e)*1i)/(8*b^5*c^3))/(((5*B^3*b^9*d^2*
e^9)/8 - 1728*A^3*c^9*d^8*e^3 - 11124*A^3*b^2*c^7*d^6*e^5 + 9180*A^3*b^3*c^
6*d^5*e^6 - (16389*A^3*b^4*c^5*d^4*e^7)/4 + (1917*A^3*b^5*c^4*d^3*e^8)/2 -
(3375*A^3*b^6*c^3*d^2*e^9)/32 + 216*B^3*b^3*c^6*d^8*e^3 - 594*B^3*b^4*c^5*d
^7*e^4 + 558*B^3*b^5*c^4*d^6*e^5 - (725*B^3*b^6*c^3*d^5*e^6)/4 - (59*B^3*b^
7*c^2*d^4*e^7)/8 + (15*A*B^2*b^9*d*e^10)/32 + 6912*A^3*b*c^8*d^7*e^4 + (135
*A^3*b^7*c^2*d*e^10)/32 + 8*B^3*b^8*c*d^3*e^8 - 1296*A*B^2*b^2*c^7*d^8*e^3
+ 4104*A*B^2*b^3*c^6*d^7*e^4 - 4788*A*B^2*b^4*c^5*d^6*e^5 + (4815*A*B^2*b^5
*c^4*d^5*e^6)/2 - (3171*A*B^2*b^6*c^3*d^4*e^7)/8 - (1281*A*B^2*b^7*c^2*d^3*
e^8)/32 - 9288*A^2*B*b^2*c^7*d^7*e^4 + 12906*A^2*B*b^3*c^6*d^6*e^5 - (17235
*A^2*B*b^4*c^5*d^5*e^6)/2 + (21717*A^2*B*b^5*c^4*d^4*e^7)/8 - (9423*A^2*B*b
^6*c^3*d^3*e^8)/32 - (495*A^2*B*b^7*c^2*d^2*e^9)/32 + (45*A^2*B*b^8*c*d*e^1
0)/16 + (135*A*B^2*b^8*c*d^2*e^9)/16 + 2592*A^2*B*b*c^8*d^8*e^3)/(b^12*c) -
 ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c^2*e^8 + 4608*A^2*c^8*d^6*e^2
 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^5*d^3*e^5 + 2250*A^2*b^4*c^4*
d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*b^3*c^5*d^5*e^3 + 1760*B^2*b^
4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B^2*b^6*c^2*d^2*e^6 + 14*B^2*b
^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2*b^5*c^3*d*e^7 + 6*A*B*b^7*c*
e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*d*e^7 + 11904*A*B*b^2*c^6*d^5
*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^4*c^4*d^3*e^5 - 570*A*B*b^5*c
^3*d^2*e^6))/(8*b^8*c) - (((12*A*b^12*c^3*d*e^5 - B*b^13*c^2*d*e^5 + 24*A*b
^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B*b^11*c^4*d^3*e^3 + 13*B*b^12
*c^3*d^2*e^4)/(b^12*c) - ((64*b^11*c^3*e^3 - 128*b^10*c^4*d*e^2)*(-c^3*(b*e
 - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 -
24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^13*c^4))*(-c^3*(b*e
 - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 -
 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))*(-c^3*(b*e - c*d))^(1/2)*(48
*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e +
8*B*b^2*c*d*e))/(8*b^5*c^3) + ((((d + e*x)^(1/2)*(B^2*b^8*e^8 + 9*A^2*b^6*c
^2*e^8 + 4608*A^2*c^8*d^6*e^2 + 15840*A^2*b^2*c^6*d^4*e^4 - 8640*A^2*b^3*c^
5*d^3*e^5 + 2250*A^2*b^4*c^4*d^2*e^6 + 1152*B^2*b^2*c^6*d^6*e^2 - 2496*B^2*
b^3*c^5*d^5*e^3 + 1760*B^2*b^4*c^4*d^4*e^4 - 400*B^2*b^5*c^3*d^3*e^5 - 15*B
^2*b^6*c^2*d^2*e^6 + 14*B^2*b^7*c*d*e^7 - 13824*A^2*b*c^7*d^5*e^3 - 234*A^2
*b^5*c^3*d*e^7 + 6*A*B*b^7*c*e^8 - 4608*A*B*b*c^7*d^6*e^2 - 36*A*B*b^6*c^2*
d*e^7 + 11904*A*B*b^2*c^6*d^5*e^3 - 11040*A*B*b^3*c^5*d^4*e^4 + 4320*A*B*b^
4*c^4*d^3*e^5 - 570*A*B*b^5*c^3*d^2*e^6))/(8*b^8*c) + (((12*A*b^12*c^3*d*e^
5 - B*b^13*c^2*d*e^5 + 24*A*b^10*c^5*d^3*e^3 - 36*A*b^11*c^4*d^2*e^4 - 12*B
*b^11*c^4*d^3*e^3 + 13*B*b^12*c^3*d^2*e^4)/(b^12*c) + ((64*b^11*c^3*e^3 - 1
28*b^10*c^4*d*e^2)*(-c^3*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(48*A*c^3*d^2 +
 B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*
e))/(64*b^13*c^4))*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A
*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3))
*(-c^3*(b*e - c*d))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*
b*c^2*d^2 - 36*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*b^5*c^3)))*(-c^3*(b*e - c*d
))^(1/2)*(48*A*c^3*d^2 + B*b^3*e^2 + 3*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 36*A*
b*c^2*d*e + 8*B*b^2*c*d*e)*1i)/(4*b^5*c^3)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1250 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=346

$$-\frac{\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(Ae+4Bd)-4bcd(3Ae+2Bd)+\right.}{4b^5\sqrt{d}}$$

```
[Out] -3/4*(16*A*c^2*d^2+b^2*e*(A*e+4*B*d)-4*b*c*d*(3*A*e+2*B*d))*arctanh((e*x+d)
^(1/2)/d^(1/2))/b^5/d^(1/2)+3/4*(16*A*c^3*d^2-b^3*B*e^2-4*b*c^2*d*(5*A*e+2*
B*d)+b^2*c*e*(5*A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))
/b^5/c^(1/2)/(-b*e+c*d)^(1/2)-1/2*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d)
)*x)*(e*x+d)^(1/2)/b^2/c/(c*x^2+b*x)^2-1/4*(b*(-b*e+c*d)*(7*A*b*c*e-12*A*c^
2*d-2*B*b^2*e+6*B*b*c*d)-3*c*(-b*e+c*d)*(8*A*c^2*d+b^2*B*e-4*b*c*(A*e+B*d))
*x)*(e*x+d)^(1/2)/b^4/c/(-b*e+c*d)/(c*x^2+b*x)
```

Rubi [A] time = 0.87, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {818, 822, 826, 1166, 208}

$$\frac{3\left(b^2ce(5Ae+8Bd)-4bc^2d(5Ae+2Bd)+16Ac^3d^2+b^3(-B)e^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5\sqrt{c}\sqrt{cd-be}}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(Ae+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x]
```

```
[Out] -(Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(2*b
^2*c*(b*x + c*x^2)^2) - (Sqrt[d + e*x]*(b*(c*d - b*e)*(6*b*B*c*d - 12*A*c^2
*d - 2*b^2*B*e + 7*A*b*c*e) - 3*c*(c*d - b*e)*(8*A*c^2*d + b^2*B*e - 4*b*c*
(B*d + A*e))*x))/(4*b^4*c*(c*d - b*e)*(b*x + c*x^2)) - (3*(16*A*c^2*d^2 + b
^2*e*(4*B*d + A*e) - 4*b*c*d*(2*B*d + 3*A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]
])/(4*b^5*Sqrt[d]) + (3*(16*A*c^3*d^2 - b^3*B*e^2 - 4*b*c^2*d*(2*B*d + 5*A*
e) + b^2*c*e*(8*B*d + 5*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*
e]])/(4*b^5*Sqrt[c]*Sqrt[c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}+\frac{\int \frac{-\frac{1}{2}d\left(12Ac^2d+2b^2Be-bc(6Bd+\right.}{\sqrt{d}}}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\,\left(b(cd-be)\left(6bB\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\,\left(b(cd-be)\left(6bB\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\,\left(b(cd-be)\left(6bB\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{2b^2c\left(bx+cx^2\right)^2}-\frac{\sqrt{d+ex}\,\left(b(cd-be)\left(6bB\right.\right.}{}$$

Mathematica [A] time = 2.85, size = 472, normalized size = 1.36

$$\frac{6b^2c^{7/2}(d+ex)^{5/2}(cd-be)\left(b^2e(Ae+4Bd)-bcd(11Ae+6Bd)+12Ac^2d^2\right)+(b+cx)\left((b+cx)\left(9c^{5/2}(cd-be)^2\left(\frac{2}{3}\sqrt{d+ex}\,(4d+ex)-2d^{3/2}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)\left(b^2e(Ae\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x]
```

```
[Out] ((-12*A*(d + e*x)^(5/2))/x^2 - (6*(4*b*B*d - 8*A*c*d + A*b*e)*(d + e*x)^(5/
2))/(b*d*x) + (6*b^2*c^(7/2)*(c*d - b*e)*(12*A*c^2*d^2 + b^2*e*(4*B*d + A*e
) - b*c*d*(6*B*d + 11*A*e))*(d + e*x)^(5/2) + (b + c*x)*(-6*b*c^(7/2)*(-24*
A*c^3*d^3 + b^3*e^2*(4*B*d + A*e) + 12*b*c^2*d^2*(B*d + 3*A*e) - b^2*c*d*e*
(15*B*d + 14*A*e))*(d + e*x)^(5/2) + (b + c*x)*(9*c^(5/2)*(c*d - b*e)^2*(16
*A*c^2*d^2 + b^2*e*(4*B*d + A*e) - 4*b*c*d*(2*B*d + 3*A*e))*((2*Sqrt[d + e*
x]*(4*d + e*x))/3 - 2*d^(3/2)*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) - 6*c^2*d^2*(
16*A*c^3*d^2 - b^3*B*e^2 - 4*b*c^2*d*(2*B*d + 5*A*e) + b^2*c*e*(8*B*d + 5*A
*e))*(Sqrt[c]*Sqrt[d + e*x]*(4*c*d - 3*b*e + c*e*x) - 3*(c*d - b*e)^(3/2)*A
rcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])))/(b^4*c^(5/2)*d*(c*d - b
*e)^2))/(24*b*d*(b + c*x)^2)
```

fricas [B] time = 2.58, size = 3471, normalized size = 10.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (
B*b^3*c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*
(2*B*b^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8
*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5
 - 5*A*b^4*c)*d*e^2)*x^2)*sqrt(c^2*d - b*c*e)*log((c*e*x + 2*c*d - b*e - 2*
sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*
c^5 - 2*A*c^6)*d^3 - 4*(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*
A*b^2*c^4)*d*e^2)*x^4 + 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 -
4*(3*B*b^3*c^3 - 7*A*b^2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x
^3 + (A*b^5*c*e^3 + 8*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*
b^3*c^3)*d^2*e + (4*B*b^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(d)*log((e*x -
2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e +
3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*
b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23
*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 -
(5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*
c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3
*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d^2 - b^8*c*d*e)*x^2), 1/8*(6*((8*(B*b*c
^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (B*b^3*c^2 - 5*A*b^
2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*(2*B*b^3*c^2 - 5*A
*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8*(B*b^3*c^2 - 2*A*
b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5 - 5*A*b^4*c)*d*e^
2)*x^2)*sqrt(-c^2*d + b*c*e)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e*x + d)/(c*e
*x + c*d)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3 - 4*(3*B*b^2*c^4
 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x^4 + 2*(A*b^4*c^
2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*A*b^2*c^4)*d^2*e
 + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 + 8*(B*b^3*c^3 -
2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4*B*b^5*c - 13*A*
b^4*c^2)*d*e^2)*x^2)*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) -
 2*(2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 -
(5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 +
 (18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e +
(5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2
*A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5
*c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*
d^2 - b^8*c*d*e)*x^2), -1/8*(6*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3
- 4*(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x
^4 + 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*
A*b^2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 +
 8*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4
*B*b^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)
/d) - 3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (
B*b^3*c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*
(2*B*b^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8
*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5
 - 5*A*b^4*c)*d*e^2)*x^2)*sqrt(c^2*d - b*c*e)*log((c*e*x + 2*c*d - b*e - 2*
sqrt(c^2*d - b*c*e)*sqrt(e*x + d))/(c*x + b)) + 2*(2*A*b^4*c^2*d^3 - 2*A*b^
5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (5*B*b^3*c^3 - 12*A*b^2*c^4)
*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 + (18*(B*b^3*c^3 - 2*A*b^2*c^
4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (5*B*b^5*c - 19*A*b^4*c^2)*d
*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^3 + (4*B*b^5*c
 - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^4*d^2 - b^6*c^3*d*e)*x^4
+ 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d^2 - b^8*c*d*e)*x^2), 1/4*(
3*((8*(B*b*c^4 - 2*A*c^5)*d^3 - 4*(2*B*b^2*c^3 - 5*A*b*c^4)*d^2*e + (B*b^3*
c^2 - 5*A*b^2*c^3)*d*e^2)*x^4 + 2*(8*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 4*(2*B*b
^3*c^2 - 5*A*b^2*c^3)*d^2*e + (B*b^4*c - 5*A*b^3*c^2)*d*e^2)*x^3 + (8*(B*b^
3*c^2 - 2*A*b^2*c^3)*d^3 - 4*(2*B*b^4*c - 5*A*b^3*c^2)*d^2*e + (B*b^5 - 5*A
*b^4*c)*d*e^2)*x^2)*sqrt(-c^2*d + b*c*e)*arctan(sqrt(-c^2*d + b*c*e)*sqrt(e
*x + d)/(c*e*x + c*d)) - 3*((A*b^3*c^3*e^3 + 8*(B*b*c^5 - 2*A*c^6)*d^3 - 4*
(3*B*b^2*c^4 - 7*A*b*c^5)*d^2*e + (4*B*b^3*c^3 - 13*A*b^2*c^4)*d*e^2)*x^4 +
 2*(A*b^4*c^2*e^3 + 8*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 4*(3*B*b^3*c^3 - 7*A*b^
2*c^4)*d^2*e + (4*B*b^4*c^2 - 13*A*b^3*c^3)*d*e^2)*x^3 + (A*b^5*c*e^3 + 8*(
B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - 4*(3*B*b^4*c^2 - 7*A*b^3*c^3)*d^2*e + (4*B*b
^5*c - 13*A*b^4*c^2)*d*e^2)*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d)
- (2*A*b^4*c^2*d^3 - 2*A*b^5*c*d^2*e + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - (
5*B*b^3*c^3 - 12*A*b^2*c^4)*d^2*e + (B*b^4*c^2 - 4*A*b^3*c^3)*d*e^2)*x^3 +
(18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^3 - (23*B*b^4*c^2 - 55*A*b^3*c^3)*d^2*e + (
5*B*b^5*c - 19*A*b^4*c^2)*d*e^2)*x^2 - (5*A*b^5*c*d*e^2 - 4*(B*b^4*c^2 - 2*
A*b^3*c^3)*d^3 + (4*B*b^5*c - 13*A*b^4*c^2)*d^2*e)*x)*sqrt(e*x + d))/((b^5*
c^4*d^2 - b^6*c^3*d*e)*x^4 + 2*(b^6*c^3*d^2 - b^7*c^2*d*e)*x^3 + (b^7*c^2*d
^2 - b^8*c*d*e)*x^2)]
```

giac [B] time = 0.28, size = 661, normalized size = 1.91

$$\frac{3\left(8\,Bbc^2d^2-16\,Ac^3d^2-8\,Bb^2cde+20\,Abc^2de+Bb^3e^2-5\,Ab^2ce^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{4\sqrt{-c^2d+bce}\,b^5}-\frac{3\left(8\,Bbcd^2-16\,Ac^2d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")

[Out] 3/4*(8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 8*B*b^2*c*d*e + 20*A*b*c^2*d*e + B*b^3*
e^2 - 5*A*b^2*c*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e))/(sqrt(-c^
2*d + b*c*e)*b^5) - 3/4*(8*B*b*c*d^2 - 16*A*c^2*d^2 - 4*B*b^2*d*e + 12*A*b*
c*d*e - A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sqrt(-d)) - 1/4*(12*
(x*e + d)^(7/2)*B*b*c^2*d*e - 24*(x*e + d)^(7/2)*A*c^3*d*e - 36*(x*e + d)^(
5/2)*B*b*c^2*d^2*e + 72*(x*e + d)^(5/2)*A*c^3*d^2*e + 36*(x*e + d)^(3/2)*B*
b*c^2*d^3*e - 72*(x*e + d)^(3/2)*A*c^3*d^3*e - 12*sqrt(x*e + d)*B*b*c^2*d^4
*e + 24*sqrt(x*e + d)*A*c^3*d^4*e - 3*(x*e + d)^(7/2)*B*b^2*c*e^2 + 12*(x*e
 + d)^(7/2)*A*b*c^2*e^2 + 27*(x*e + d)^(5/2)*B*b^2*c*d*e^2 - 72*(x*e + d)^(
5/2)*A*b*c^2*d*e^2 - 45*(x*e + d)^(3/2)*B*b^2*c*d^2*e^2 + 108*(x*e + d)^(3/
2)*A*b*c^2*d^2*e^2 + 21*sqrt(x*e + d)*B*b^2*c*d^3*e^2 - 48*sqrt(x*e + d)*A*
b*c^2*d^3*e^2 - 5*(x*e + d)^(5/2)*B*b^3*e^3 + 19*(x*e + d)^(5/2)*A*b^2*c*e^
3 + 14*(x*e + d)^(3/2)*B*b^3*d*e^3 - 46*(x*e + d)^(3/2)*A*b^2*c*d*e^3 - 9*s
qrt(x*e + d)*B*b^3*d^2*e^3 + 27*sqrt(x*e + d)*A*b^2*c*d^2*e^3 + 5*(x*e + d)
^(3/2)*A*b^3*e^4 - 3*sqrt(x*e + d)*A*b^3*d*e^4)/(((x*e + d)^2*c - 2*(x*e +
d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2*b^4)
```

maple [B] time = 0.08, size = 785, normalized size = 2.27

$$-\frac{9\sqrt{ex+d}\;Ac\,e^{3}}{4\left(cex+be\right)^{2}b^{2}}+\frac{21\sqrt{ex+d}\;A\,c^{2}d\,e^{2}}{4\left(cex+be\right)^{2}b^{3}}-\frac{3\sqrt{ex+d}\;A\,c^{3}d^{2}e}{\left(cex+be\right)^{2}b^{4}}+\frac{5\sqrt{ex+d}\;B\,e^{3}}{4\left(cex+be\right)^{2}b}-\frac{13\sqrt{ex+d}\;Bcd\,e^{2}}{4\left(cex+be\right)^{2}b^{2}}+\frac{2\sqrt{ex+d}\;B\,c^{2}d^{2}}{\left(cex+be\right)^{2}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -12/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*c
^3*d^2+6/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c
)*B*c^2*d^2-15/4*e^2/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*A*c-7/4*e^2/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^2+3/4*e^2/b^2
/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c-1/e/b^3/x^2*(e*x+d)^(3/2)*B*d-9/4*e^3/b^2/
(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c+9*e/b^4*d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/
2))*A*c+1/e/b^3/x^2*(e*x+d)^(1/2)*B*d^2-5/4/b^3/x^2*(e*x+d)^(3/2)*A-12/b^5*
d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+5/4*e^3/b/(c*e*x+b*e)^2*B*(e*x
+d)^(1/2)-3/4*e^2/b^3/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-3*e/b^3*d^(1
/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B+6/b^4*d^(3/2)*arctanh((e*x+d)^(1/2)/d^
(1/2))*B*c+3/4/b^3/x^2*(e*x+d)^(1/2)*A*d+3/4*e^2/b^2/((b*e-c*d)*c)^(1/2)*ar
ctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+3/e/b^4/x^2*(e*x+d)^(3/2)*A*c*d
-3/e/b^4/x^2*(e*x+d)^(1/2)*A*c*d^2+3*e/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*c^
3*d-3*e/b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c^3*d^2-13/4*e^2/b^2/(c*e*x+b*e)^
2*B*(e*x+d)^(1/2)*c*d-6*e/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*c*d-2*e/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*c^2*d+21/4*e
^2/b^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*c^2*d+2*e/b^3/(c*e*x+b*e)^2*B*(e*x+d)^
(1/2)*c^2*d^2+15*e/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*c^2*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 4.46, size = 5796, normalized size = 16.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^3,x)
```

```
[Out] ((3*(d + e*x)^(1/2)*(A*b^3*d*e^4 - 8*A*c^3*d^4*e + 3*B*b^3*d^2*e^3 + 16*A*b
*c^2*d^3*e^2 - 9*A*b^2*c*d^2*e^3 - 7*B*b^2*c*d^3*e^2 + 4*B*b*c^2*d^4*e))/(4
*b^4) - ((d + e*x)^(3/2)*(5*A*b^3*e^4 - 72*A*c^3*d^3*e + 14*B*b^3*d*e^3 + 1
08*A*b*c^2*d^2*e^2 - 45*B*b^2*c*d^2*e^2 - 46*A*b^2*c*d*e^3 + 36*B*b*c^2*d^3
*e))/(4*b^4) + ((d + e*x)^(5/2)*(5*B*b^3*e^3 - 19*A*b^2*c*e^3 - 72*A*c^3*d^
2*e + 72*A*b*c^2*d*e^2 + 36*B*b*c^2*d^2*e - 27*B*b^2*c*d*e^2))/(4*b^4) + (3
*c*(d + e*x)^(7/2)*(B*b^2*e^2 - 4*A*b*c*e^2 + 8*A*c^2*d*e - 4*B*b*c*d*e))/(
4*b^4))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e
) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*
b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) + (atan((((-c*(b*e - c*d))^
(1/2)*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2
*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2
*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*
b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b
*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B
*b^3*c^4*d^2*e^4))/(8*b^8) - (3*(-c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 -
 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^
11*c^3*d^2*e^3)/b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e -
 c*d))^(1/2)*(d + e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*
B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e
)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*
d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2
+ 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e)*3i)/(8*(b
^5*c^2*d - b^6*c*e)) + ((-c*(b*e - c*d))^(1/2)*(((d + e*x)^(1/2)*(234*A^2*b
^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*
e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3
*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d
*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*
e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*(-
c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^
2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^11
*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(16*A
*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B
*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*
A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*
d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 -
20*A*b*c^2*d*e + 8*B*b^2*c*d*e)*3i)/(8*(b^5*c^2*d - b^6*c*e)))/(((135*A^3*b
^5*c^3*e^8)/8 - 1728*A^3*c^8*d^5*e^3 - 3996*A^3*b^2*c^6*d^3*e^5 + 1674*A^3*
b^3*c^5*d^2*e^6 + 216*B^3*b^3*c^5*d^5*e^3 - 378*B^3*b^4*c^4*d^4*e^4 + 216*B
^3*b^5*c^3*d^3*e^5 - (189*B^3*b^6*c^2*d^2*e^6)/4 + (27*A*B^2*b^7*c*e^8)/32
+ (27*B^3*b^7*c*d*e^7)/8 - (243*A^2*B*b^6*c^2*e^8)/32 + 4320*A^3*b*c^7*d^4*
e^4 - (1215*A^3*b^4*c^4*d*e^7)/4 - 1296*A*B^2*b^2*c^6*d^5*e^3 + 2592*A*B^2*
b^3*c^5*d^4*e^4 - 1782*A*B^2*b^4*c^4*d^3*e^5 + (999*A*B^2*b^5*c^3*d^2*e^6)/
2 - 5832*A^2*B*b^2*c^6*d^4*e^4 + 4698*A^2*B*b^3*c^5*d^3*e^5 - (3267*A^2*B*b
^4*c^4*d^2*e^6)/2 - (405*A*B^2*b^6*c^2*d*e^7)/8 + 2592*A^2*B*b*c^7*d^5*e^3
+ (1809*A^2*B*b^5*c^3*d*e^7)/8)/b^12 - (3*(-c*(b*e - c*d))^(1/2)*(((d + e*x
)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 662
4*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3
 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 -
2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1
152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4
))/(8*b^8) - (3*(-c*(b*e - c*d))^(1/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d
*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/
b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d
+ e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20
*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^
2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*
d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2
- 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)
) + (3*(-c*(b*e - c*d))^(1/2)*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608
*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^
2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B
*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^
5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^
2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*(-c*(b*e - c*d))^(1
/2)*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^
10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^11*c^2*e^3 - 128*b^
10*c^3*d*e^2)*(-c*(b*e - c*d))^(1/2)*(d + e*x)^(1/2)*(16*A*c^3*d^2 - B*b^3*
e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(64*
b^8*(b^5*c^2*d - b^6*c*e)))*(16*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B
```

```
*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e)))*(1
6*A*c^3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e +
8*B*b^2*c*d*e))/(8*(b^5*c^2*d - b^6*c*e))))*(-c*(b*e - c*d))^(1/2)*(16*A*c^
3*d^2 - B*b^3*e^2 + 5*A*b^2*c*e^2 - 8*B*b*c^2*d^2 - 20*A*b*c^2*d*e + 8*B*b^
2*c*d*e)*3i)/(4*(b^5*c^2*d - b^6*c*e)) + (atan((((((d + e*x)^(1/2)*(234*A^2
*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^
2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c
^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4
*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*
d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) - (3*
((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c
^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 - (3*(64*b^11*c^2*e^3 - 128*b^10*c
^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2
*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*
c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2
*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)/(8*b^5*d^(1/2)) + ((((
d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^
6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*
d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3
*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*
e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*
d^2*e^4))/(8*b^8) + (3*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*
c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 + (3*(64*b^
11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2
- 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2
+ 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))
)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)
/(8*b^5*d^(1/2)))/(((135*A^3*b^5*c^3*e^8)/8 - 1728*A^3*c^8*d^5*e^3 - 3996*A
^3*b^2*c^6*d^3*e^5 + 1674*A^3*b^3*c^5*d^2*e^6 + 216*B^3*b^3*c^5*d^5*e^3 - 3
78*B^3*b^4*c^4*d^4*e^4 + 216*B^3*b^5*c^3*d^3*e^5 - (189*B^3*b^6*c^2*d^2*e^6
)/4 + (27*A*B^2*b^7*c*e^8)/32 + (27*B^3*b^7*c*d*e^7)/8 - (243*A^2*B*b^6*c^2
*e^8)/32 + 4320*A^3*b*c^7*d^4*e^4 - (1215*A^3*b^4*c^4*d*e^7)/4 - 1296*A*B^2
*b^2*c^6*d^5*e^3 + 2592*A*B^2*b^3*c^5*d^4*e^4 - 1782*A*B^2*b^4*c^4*d^3*e^5
+ (999*A*B^2*b^5*c^3*d^2*e^6)/2 - 5832*A^2*B*b^2*c^6*d^4*e^4 + 4698*A^2*B*b
^3*c^5*d^3*e^5 - (3267*A^2*B*b^4*c^4*d^2*e^6)/2 - (405*A*B^2*b^6*c^2*d*e^7)
/8 + 2592*A^2*B*b*c^7*d^5*e^3 + (1809*A^2*B*b^5*c^3*d*e^7)/8)/b^12 - (3*(((
d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^4*e^2 + 9*B^2*b^6*c*e^
6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e^2 - 1728*B^2*b^3*c^4*
d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^6 - 9216*A^2*b*c^6*d^3
*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5 - 4608*A*B*b*c^6*d^4*
e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e^3 - 4896*A*B*b^3*c^4*
d^2*e^4))/(8*b^8) - (3*((3*A*b^12*c^2*e^5 - 24*A*b^11*c^3*d*e^4 + 9*B*b^12*
c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2*e^3)/b^12 - (3*(64*b^
11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b^2*e^2 + 16*A*c^2*d^2
- 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13*d^(1/2)))*(A*b^2*e^2
+ 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))
)*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(8
*b^5*d^(1/2)) + (3*(((d + e*x)^(1/2)*(234*A^2*b^4*c^3*e^6 + 4608*A^2*c^7*d^
4*e^2 + 9*B^2*b^6*c*e^6 + 6624*A^2*b^2*c^5*d^2*e^4 + 1152*B^2*b^2*c^5*d^4*e
^2 - 1728*B^2*b^3*c^4*d^3*e^3 + 864*B^2*b^4*c^3*d^2*e^4 - 90*A*B*b^5*c^2*e^
6 - 9216*A^2*b*c^6*d^3*e^3 - 2016*A^2*b^3*c^4*d*e^5 - 144*B^2*b^5*c^2*d*e^5
 - 4608*A*B*b*c^6*d^4*e^2 + 1152*A*B*b^4*c^3*d*e^5 + 8064*A*B*b^2*c^5*d^3*e
^3 - 4896*A*B*b^3*c^4*d^2*e^4))/(8*b^8) + (3*((3*A*b^12*c^2*e^5 - 24*A*b^11
*c^3*d*e^4 + 9*B*b^12*c^2*d*e^4 + 24*A*b^10*c^4*d^2*e^3 - 12*B*b^11*c^3*d^2
*e^3)/b^12 + (3*(64*b^11*c^2*e^3 - 128*b^10*c^3*d*e^2)*(d + e*x)^(1/2)*(A*b
^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c*d*e))/(64*b^13
*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d*e - 12*A*b*c
*d*e))/(8*b^5*d^(1/2)))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d^2 + 4*B*b^2*d
*e - 12*A*b*c*d*e))/(8*b^5*d^(1/2))))*(A*b^2*e^2 + 16*A*c^2*d^2 - 8*B*b*c*d
```

```
^2 + 4*B*b^2*d*e - 12*A*b*c*d*e)*3i)/(4*b^5*d^(1/2))
```

sympy **[F(-1)]**   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1251 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=317

$$-\frac{\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{2b^2\left(bx+cx^2\right)^2}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(4Bd-Ae)-12bcd(Ae+2Bd)+48Ac^2d^2\right)}{4b^5d^{3/2}}-\sqrt{d+ex}\,\left(b(cd\right.$$

```
[Out] -1/4*(48*A*c^2*d^2+b^2*e*(-A*e+4*B*d)-12*b*c*d*(A*e+2*B*d))*arctanh((e*x+d)
^(1/2)/d^(1/2))/b^5/d^(3/2)+1/4*(48*A*c^3*d^2-15*b^3*B*e^2-12*b*c^2*d*(7*A*
e+2*B*d)+5*b^2*c*e*(7*A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^
(1/2))*c^(1/2)/b^5/(-b*e+c*d)^(3/2)-1/2*(A*b-(-2*A*c+B*b)*x)*(e*x+d)^(1/2)/
b^2/(c*x^2+b*x)^2-1/4*(b*(-b*e+c*d)*(A*b*e-12*A*c*d+6*B*b*d)-c*(24*A*c^2*d^
2+b^2*e*(A*e+11*B*d)-12*b*c*d*(2*A*e+B*d))*x)*(e*x+d)^(1/2)/b^4/d/(-b*e+c*d
)/(c*x^2+b*x)
```

Rubi [A] time = 0.70, antiderivative size = 317, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {820, 822, 826, 1166, 208}

$$\frac{\sqrt{c}\left(5b^2ce(7Ae+8Bd)-12bc^2d(7Ae+2Bd)+48Ac^3d^2-15b^3Be^2\right)\tanh^{-1}\left(\frac{\sqrt{c}\sqrt{d+ex}}{\sqrt{cd-be}}\right)}{4b^5(cd-be)^{3/2}}-\sqrt{d+ex}\,\left(b(cd-be)(Abe\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^3,x]
```

```
[Out] -((A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(2*b^2*(b*x + c*x^2)^2) - (Sqrt[d
+ e*x]*(b*(c*d - b*e)*(6*b*B*d - 12*A*c*d + A*b*e) - c*(24*A*c^2*d^2 + b^2*
e*(11*B*d + A*e) - 12*b*c*d*(B*d + 2*A*e))*x))/(4*b^4*d*(c*d - b*e)*(b*x +
c*x^2)) - ((48*A*c^2*d^2 + b^2*e*(4*B*d - A*e) - 12*b*c*d*(2*B*d + A*e))*Ar
cTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(3/2)) + (Sqrt[c]*(48*A*c^3*d^2 - 15
*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 7*A*e) + 5*b^2*c*e*(8*B*d + 7*A*e))*ArcTan
h[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
```

```
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^3}\,dx = -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(12Acd-b(6Bd+Ae))-\frac{5}{2}(bB-2Ac)ex}{\sqrt{d+ex}\left(bx+cx^2\right)^2}\,dx}{2b^2}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\,(24\right.}{4b^4d(cd-be}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\,(24\right.}{4b^4d(cd-be}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\,(24\right.}{4b^4d(cd-be}$$

$$= -\frac{(Ab-(bB-2Ac)x)\sqrt{d+ex}}{2b^2\left(bx+cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(b(cd-be)(6bBd-12Acd+Abe)-c\,(24\right.}{4b^4d(cd-be}$$

Mathematica [A] time = 2.22, size = 449, normalized size = 1.42

$$\frac{(b+cx)\left((b+cx)\left(2c^{3/2}(cd-be)^2\left(\sqrt{d+ex}-\sqrt{d}\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\right)\left(b^2e(4Bd-Ae)-12bcd(Ae+2Bd)+48Ac^2d^2\right)+2c^2d^2\left(-5b^2ce(7Ae+8Bd)+12bc^2d(7Ae+2B\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^3,x]
```

```
[Out] ((-4*A*(d + e*x)^(3/2))/x^2 - (2*(4*b*B*d - 8*A*c*d - A*b*e)*(d + e*x)^(3/2
))/(b*d*x) + (-2*b^2*c^(5/2)*(c*d - b*e)*(-12*A*c^2*d^2 + b^2*e*(-4*B*d + A
*e) + 3*b*c*d*(2*B*d + 3*A*e))*(d + e*x)^(3/2) + (b + c*x)*(2*b*c^(5/2)*(24
*A*c^3*d^3 + b^3*e^2*(-4*B*d + A*e) - 12*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*
e*(17*B*d + 10*A*e))*(d + e*x)^(3/2) + (b + c*x)*(2*c^(3/2)*(c*d - b*e)^2*(
48*A*c^2*d^2 + b^2*e*(4*B*d - A*e) - 12*b*c*d*(2*B*d + A*e))*(Sqrt[d + e*x]
 - Sqrt[d]*ArcTanh[Sqrt[d + e*x]/Sqrt[d]]) + 2*c^2*d^2*(-48*A*c^3*d^2 + 15*
b^3*B*e^2 + 12*b*c^2*d*(2*B*d + 7*A*e) - 5*b^2*c*e*(8*B*d + 7*A*e))*(Sqrt[c
]*Sqrt[d + e*x] - Sqrt[c*d - b*e]*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
 - b*e]]))))/(b^4*c^(3/2)*d*(c*d - b*e)^2))/(8*b*d*(b + c*x)^2)
```

fricas [B] time = 11.73, size = 3396, normalized size = 10.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [1/8*(((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*b^2*c^3 - 21*A*b*c^4)*d^3*e +
5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*
d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e + 5*(3*B*b^4*c - 7*A*b^3*c^2)*d
^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^4 - 4*(10*B*b^4*c - 21*A*b^3*
c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)*x^2)*sqrt(c/(c*d - b*e))*log(
(c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*
x + b)) - ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 1
5*A*b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3
 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e -
(4*B*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^
2*c^3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*
e^2)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) - 2*(2*A*b^4
*c*d^3 - 2*A*b^5*d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3
+ (11*B*b^3*c^2 - 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c
^2 - 2*A*b^2*c^3)*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e
^2 - 4*(B*b^4*c - 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e
*x + d))/((b^5*c^3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)
*x^3 + (b^7*c*d^3 - b^8*d^2*e)*x^2), -1/8*(2*((24*(B*b*c^4 - 2*A*c^5)*d^4 -
 4*(10*B*b^2*c^3 - 21*A*b*c^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^
2)*x^4 + 2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3
)*d^3*e + 5*(3*B*b^4*c - 7*A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b
^2*c^3)*d^4 - 4*(10*B*b^4*c - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)
*d^2*e^2)*x^2)*sqrt(-c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(
-c/(c*d - b*e))/(c*e*x + c*d)) + ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d
^3 + 4*(7*B*b^2*c^3 - 15*A*b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^
2)*x^4 + 2*(A*b^4*c*e^3 - 24*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 -
 15*A*b^2*c^3)*d^2*e - (4*B*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 -
 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4
*B*b^5 - 11*A*b^4*c)*d*e^2)*x^2)*sqrt(d)*log((e*x + 2*sqrt(e*x + d)*sqrt(d)
 + 2*d)/x) + 2*(2*A*b^4*c*d^3 - 2*A*b^5*d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^
2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 - 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^
4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*
d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c - 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*
b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6
*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3 - b^8*d^2*e)*x^2), 1/8*(2*((A*b^3*
c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 15*A*b*c^4)*d^2*e -
 (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3 - 24*(B*b^2*c^3 -
 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e - (4*B*b^4*c - 11*A*
b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + 4*(7*
B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*e^2)*x^2)*sqrt(-d)
*arctan(sqrt(e*x + d)*sqrt(-d)/d) + ((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*
b^2*c^3 - 21*A*b*c^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 +
2*(24*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e +
 5*(3*B*b^4*c - 7*A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d
^4 - 4*(10*B*b^4*c - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)
*x^2)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e - 2*(c*d - b*e)*sqrt(e*x
 + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(2*A*b^4*c*d^3 - 2*A*b^5*d^2*e -
(A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 - 24*A*b^
2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)*d^3 + (
17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c - 2*A*b^3
*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^3*d^3 -
b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3 - b^8*d
^2*e)*x^2), -1/4*(((24*(B*b*c^4 - 2*A*c^5)*d^4 - 4*(10*B*b^2*c^3 - 21*A*b*c
^4)*d^3*e + 5*(3*B*b^3*c^2 - 7*A*b^2*c^3)*d^2*e^2)*x^4 + 2*(24*(B*b^2*c^3 -
 2*A*b*c^4)*d^4 - 4*(10*B*b^3*c^2 - 21*A*b^2*c^3)*d^3*e + 5*(3*B*b^4*c - 7*
A*b^3*c^2)*d^2*e^2)*x^3 + (24*(B*b^3*c^2 - 2*A*b^2*c^3)*d^4 - 4*(10*B*b^4*c
 - 21*A*b^3*c^2)*d^3*e + 5*(3*B*b^5 - 7*A*b^4*c)*d^2*e^2)*x^2)*sqrt(-c/(c*d
 - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*
d)) - ((A*b^3*c^2*e^3 - 24*(B*b*c^4 - 2*A*c^5)*d^3 + 4*(7*B*b^2*c^3 - 15*A*
b*c^4)*d^2*e - (4*B*b^3*c^2 - 11*A*b^2*c^3)*d*e^2)*x^4 + 2*(A*b^4*c*e^3 - 2
4*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + 4*(7*B*b^3*c^2 - 15*A*b^2*c^3)*d^2*e - (4*B
*b^4*c - 11*A*b^3*c^2)*d*e^2)*x^3 + (A*b^5*e^3 - 24*(B*b^3*c^2 - 2*A*b^2*c^
3)*d^3 + 4*(7*B*b^4*c - 15*A*b^3*c^2)*d^2*e - (4*B*b^5 - 11*A*b^4*c)*d*e^2)
*x^2)*sqrt(-d)*arctan(sqrt(e*x + d)*sqrt(-d)/d) + (2*A*b^4*c*d^3 - 2*A*b^5*
d^2*e - (A*b^3*c^2*d*e^2 - 12*(B*b^2*c^3 - 2*A*b*c^4)*d^3 + (11*B*b^3*c^2 -
 24*A*b^2*c^3)*d^2*e)*x^3 - (2*A*b^4*c*d*e^2 - 18*(B*b^3*c^2 - 2*A*b^2*c^3)
*d^3 + (17*B*b^4*c - 37*A*b^3*c^2)*d^2*e)*x^2 - (A*b^5*d*e^2 - 4*(B*b^4*c -
 2*A*b^3*c^2)*d^3 + (4*B*b^5 - 9*A*b^4*c)*d^2*e)*x)*sqrt(e*x + d))/((b^5*c^
3*d^3 - b^6*c^2*d^2*e)*x^4 + 2*(b^6*c^2*d^3 - b^7*c*d^2*e)*x^3 + (b^7*c*d^3
 - b^8*d^2*e)*x^2)]
```

giac [B] time = 0.29, size = 841, normalized size = 2.65

$$\frac{\left(24\,Bbc^3d^2-48\,Ac^4d^2-40\,Bb^2c^2de+84\,Abc^3de+15\,Bb^3ce^2-35\,Ab^2c^2e^2\right)\arctan\left(\frac{\sqrt{xe+d}\,c}{\sqrt{-c^2d+bce}}\right)}{4\left(b^5cd-b^6e\right)\sqrt{-c^2d+bce}}-\frac{12\,(xe+d)^{\frac{7}{2}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^3*d^2 - 48*A*c^4*d^2 - 40*B*b^2*c^2*d*e + 84*A*b*c^3*d*e + 15
*B*b^3*c*e^2 - 35*A*b^2*c^2*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*e
))/((b^5*c*d - b^6*e)*sqrt(-c^2*d + b*c*e)) - 1/4*(12*(x*e + d)^(7/2)*B*b*c
^3*d^2*e - 24*(x*e + d)^(7/2)*A*c^4*d^2*e - 36*(x*e + d)^(5/2)*B*b*c^3*d^3*
e + 72*(x*e + d)^(5/2)*A*c^4*d^3*e + 36*(x*e + d)^(3/2)*B*b*c^3*d^4*e - 72*
(x*e + d)^(3/2)*A*c^4*d^4*e - 12*sqrt(x*e + d)*B*b*c^3*d^5*e + 24*sqrt(x*e
+ d)*A*c^4*d^5*e - 11*(x*e + d)^(7/2)*B*b^2*c^2*d*e^2 + 24*(x*e + d)^(7/2)*
A*b*c^3*d*e^2 + 51*(x*e + d)^(5/2)*B*b^2*c^2*d^2*e^2 - 108*(x*e + d)^(5/2)*
A*b*c^3*d^2*e^2 - 69*(x*e + d)^(3/2)*B*b^2*c^2*d^3*e^2 + 144*(x*e + d)^(3/2
)*A*b*c^3*d^3*e^2 + 29*sqrt(x*e + d)*B*b^2*c^2*d^4*e^2 - 60*sqrt(x*e + d)*A
*b*c^3*d^4*e^2 - (x*e + d)^(7/2)*A*b^2*c^2*e^3 - 17*(x*e + d)^(5/2)*B*b^3*c
*d*e^3 + 40*(x*e + d)^(5/2)*A*b^2*c^2*d*e^3 + 38*(x*e + d)^(3/2)*B*b^3*c*d^
2*e^3 - 85*(x*e + d)^(3/2)*A*b^2*c^2*d^2*e^3 - 21*sqrt(x*e + d)*B*b^3*c*d^3
*e^3 + 46*sqrt(x*e + d)*A*b^2*c^2*d^3*e^3 - 2*(x*e + d)^(5/2)*A*b^3*c*e^4 -
 4*(x*e + d)^(3/2)*B*b^4*d*e^4 + 13*(x*e + d)^(3/2)*A*b^3*c*d*e^4 + 4*sqrt(
x*e + d)*B*b^4*d^2*e^4 - 9*sqrt(x*e + d)*A*b^3*c*d^2*e^4 - (x*e + d)^(3/2)*
A*b^4*e^5 - sqrt(x*e + d)*A*b^4*d*e^5)/((b^4*c*d^2 - b^5*d*e)*((x*e + d)^2*
c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2
 - 48*A*c^2*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e + A*b^2*e^2)*arctan(sqrt(x*e +
 d)/sqrt(-d))/(b^5*sqrt(-d)*d)
```

maple [B] time = 0.08, size = 829, normalized size = 2.62

$$\frac{11 (ex+d)^{\frac{3}{2}} A c^3 e^2}{4 (cex+be)^2 (be-cd) b^3}+\frac{35 A c^2 e^2 \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{4 (be-cd) \sqrt{(be-cd) c}\, b^3}-\frac{3 (ex+d)^{\frac{3}{2}} A c^4 de}{(cex+be)^2 (be-cd) b^4}-\frac{21 A c^3 de \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{(be-cd)c}}\right)}{(be-cd) \sqrt{(be-cd) c}\, b^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -1/4/b^3/x^2*(e*x+d)^(1/2)*A-1/4/b^3/x^2/d*(e*x+d)^(3/2)*A-7/4*e^2*c^2/b^2/
(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*B-3*e*c^3/b^4/(c*e*x+b*e)^2*A*(e*x+d)
^(1/2)*d+2*e*c^2/b^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d+35/4*e^2*c^2/b^3/(b*e-
c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A-15/4
*e^2*c/b^2/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)
^(1/2)*c)*B+11/4*e^2*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*A-3/e/b^
4/x^2*(e*x+d)^(1/2)*A*c*d+12*c^4/b^5/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*arctan((
e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2-6*c^3/b^4/(b*e-c*d)/((b*e-c*d)*c)
^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2+2*e*c^3/b^3/(c*e*x
+b*e)^2/(b*e-c*d)*(e*x+d)^(3/2)*B*d-21*e*c^3/b^4/(b*e-c*d)/((b*e-c*d)*c)^(1
/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-3*e*c^4/b^4/(c*e*x+b*e)
^2/(b*e-c*d)*(e*x+d)^(3/2)*A*d+10*e*c^2/b^3/(b*e-c*d)/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d+3/e/b^4/x^2*(e*x+d)^(3/2)*A*
c+1/e/b^3/x^2*(e*x+d)^(1/2)*B*d+3*e/b^4/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/
2))*A*c+13/4*e^2*c^2/b^3/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)-9/4*e^2*c/b^2/(c*e*x
+b*e)^2*B*(e*x+d)^(1/2)-1/e/b^3/x^2*(e*x+d)^(3/2)*B+6/b^4*d^(1/2)*arctanh((
e*x+d)^(1/2)/d^(1/2))*B*c-e/b^3/d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12
/b^5*d^(1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+1/4*e^2/b^3/d^(3/2)*arcta
nh((e*x+d)^(1/2)/d^(1/2))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [B] time = 5.72, size = 8411, normalized size = 26.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(3/2)*(A*b^4*e^5 + 72*A*c^4*d^4*e + 4*B*b^4*d*e^4 - 144*A*b*c^3
*d^3*e^2 - 38*B*b^3*c*d^2*e^3 + 85*A*b^2*c^2*d^2*e^3 + 69*B*b^2*c^2*d^3*e^2
 - 13*A*b^3*c*d*e^4 - 36*B*b*c^3*d^4*e))/(4*b^4*(c*d^2 - b*d*e)) - ((d + e*
x)^(1/2)*(A*b^3*e^4 + 24*A*c^3*d^3*e - 4*B*b^3*d*e^3 - 36*A*b*c^2*d^2*e^2 +
 17*B*b^2*c*d^2*e^2 + 10*A*b^2*c*d*e^3 - 12*B*b*c^2*d^3*e))/(4*b^4) + ((d +
 e*x)^(5/2)*(2*A*b^3*c*e^4 - 72*A*c^4*d^3*e + 108*A*b*c^3*d^2*e^2 - 40*A*b^
2*c^2*d*e^3 - 51*B*b^2*c^2*d^2*e^2 + 36*B*b*c^3*d^3*e + 17*B*b^3*c*d*e^3))/
(4*b^4*(c*d^2 - b*d*e)) + (c*(d + e*x)^(7/2)*(A*b^2*c*e^3 + 24*A*c^3*d^2*e
- 24*A*b*c^2*d*e^2 - 12*B*b*c^2*d^2*e + 11*B*b^2*c*d*e^2))/(4*b^4*(c*d^2 -
b*d*e)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*
e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6
```

```
*b*c*d*e) + c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e) - (atan((((-c*(b*e - c*d)^
3)^(1/2)*(((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*
A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 +
 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4
*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8
*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*
e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*
c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2
*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^
5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^
5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^
6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/
2)*(d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*
c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*
c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4
 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e -
 3*b^7*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 3
5*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*
e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B
*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*
e)*1i)/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)) + ((-c
*(b*e - c*d)^3)^(1/2)*(((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6
*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*
c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^
2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13
824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A
*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 +
6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^1
0*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 +
 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*
B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^
14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e
- c*d)^3)^(1/2)*(d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^
3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^
2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64
*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^
6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*
B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d
*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c
^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e +
40*B*b^2*c*d*e)*1i)/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d
*e^2)))/((1728*A^3*c^10*d^6*e^3 - (35*A^3*b^6*c^4*e^9)/32 + 5508*A^3*b^2*c^
8*d^4*e^5 - 2376*A^3*b^3*c^7*d^3*e^6 + (1233*A^3*b^4*c^6*d^2*e^7)/4 - 216*B
^3*b^3*c^7*d^6*e^3 + 594*B^3*b^4*c^6*d^5*e^4 - 558*B^3*b^5*c^5*d^4*e^5 + (8
05*B^3*b^6*c^4*d^3*e^6)/4 - (165*B^3*b^7*c^3*d^2*e^7)/8 + (15*A^2*B*b^7*c^3
*e^9)/32 - 5184*A^3*b*c^9*d^5*e^4 + (63*A^3*b^5*c^5*d*e^8)/4 + 1296*A*B^2*b
^2*c^8*d^6*e^3 - 3672*A*B^2*b^3*c^7*d^5*e^4 + 3600*A*B^2*b^4*c^6*d^4*e^5 -
(2763*A*B^2*b^5*c^5*d^3*e^6)/2 + (1215*A*B^2*b^6*c^4*d^2*e^7)/8 + 7560*A^2*
B*b^2*c^8*d^5*e^4 - 7722*A^2*B*b^3*c^7*d^4*e^5 + (6291*A^2*B*b^4*c^6*d^3*e^
6)/2 - (2997*A^2*B*b^5*c^5*d^2*e^7)/8 + (105*A*B^2*b^7*c^3*d*e^8)/32 - 2592
*A^2*B*b*c^9*d^6*e^3 - (465*A^2*B*b^6*c^4*d*e^8)/32)/(b^12*c^2*d^4 + b^14*d
^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^(1/2)*(A^2
*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*
b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 326
4*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5
 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7
 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3
 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*
d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*
d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e
^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 +
 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2
 - 2*b^13*c*d^3*e) - ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(128*b^10*c^
5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e
^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b
*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e
)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c*(b*e - c*
d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2
 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d
^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*
B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 +
 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)) - ((-c*(b*e - c*d)^3)^(1/2)*(((d + e*x)^
(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 -
 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6
*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c
^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5
*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c
^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*
B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A
*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12
*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4
*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^
14*d^2*e^2 - 2*b^13*c*d^3*e) + ((-c*(b*e - c*d)^3)^(1/2)*(d + e*x)^(1/2)*(1
28*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13
*c^2*d^2*e^5)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^
2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(64*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b
^9*c*d^3*e)*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(-c
*(b*e - c*d)^3)^(1/2)*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*
b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5*c^3*d^3 + 3
*b^6*c^2*d^2*e - 3*b^7*c*d*e^2)))*(48*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c
*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*e + 40*B*b^2*c*d*e))/(8*(b^8*e^3 - b^5
*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7*c*d*e^2))))*(-c*(b*e - c*d)^3)^(1/2)*(48
*A*c^3*d^2 - 15*B*b^3*e^2 + 35*A*b^2*c*e^2 - 24*B*b*c^2*d^2 - 84*A*b*c^2*d*
e + 40*B*b^2*c*d*e)*1i)/(4*(b^8*e^3 - b^5*c^3*d^3 + 3*b^6*c^2*d^2*e - 3*b^7
*c*d*e^2)) - (atan(((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*
e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c
^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 3296*B^2
*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6 - 138
24*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*
B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6
368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10
*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e^3 +
60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B
*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*B*b^1
4*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((d + e*x)^
(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*e^4 -
 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*
e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*
c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*
c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B
*b^2*d*e + 12*A*b*c*d*e)*1i)/(8*b^5*(d^3)^(1/2)) + ((((d + e*x)^(1/2)*(A^2*
b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b
^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264
*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5
+ 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7
- 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3
- 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d
^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2*d
*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^
5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 +
21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2
- 2*b^13*c*d^3*e) + ((d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d
^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*
d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*
c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*
b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48
*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)*1i)/(8*b^5*(d^3)^(1
/2)))/((1728*A^3*c^10*d^6*e^3 - (35*A^3*b^6*c^4*e^9)/32 + 5508*A^3*b^2*c^8*
d^4*e^5 - 2376*A^3*b^3*c^7*d^3*e^6 + (1233*A^3*b^4*c^6*d^2*e^7)/4 - 216*B^3
*b^3*c^7*d^6*e^3 + 594*B^3*b^4*c^6*d^5*e^4 - 558*B^3*b^5*c^5*d^4*e^5 + (805
*B^3*b^6*c^4*d^3*e^6)/4 - (165*B^3*b^7*c^3*d^2*e^7)/8 + (15*A^2*B*b^7*c^3*e
^9)/32 - 5184*A^3*b*c^9*d^5*e^4 + (63*A^3*b^5*c^5*d*e^8)/4 + 1296*A*B^2*b^2
*c^8*d^6*e^3 - 3672*A*B^2*b^3*c^7*d^5*e^4 + 3600*A*B^2*b^4*c^6*d^4*e^5 - (2
763*A*B^2*b^5*c^5*d^3*e^6)/2 + (1215*A*B^2*b^6*c^4*d^2*e^7)/8 + 7560*A^2*B*
b^2*c^8*d^5*e^4 - 7722*A^2*B*b^3*c^7*d^4*e^5 + (6291*A^2*B*b^4*c^6*d^3*e^6)
/2 - (2997*A^2*B*b^5*c^5*d^2*e^7)/8 + (105*A*B^2*b^7*c^3*d*e^8)/32 - 2592*A
^2*B*b*c^9*d^6*e^3 - (465*A^2*B*b^6*c^4*d*e^8)/32)/(b^12*c^2*d^4 + b^14*d^2
*e^2 - 2*b^13*c*d^3*e) + ((((d + e*x)^(1/2)*(A^2*b^6*c^3*e^8 + 4608*A^2*c^9
*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2*b^3*c^6*d^3*e^5 + 1226*A^2*
b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 3264*B^2*b^3*c^6*d^5*e^3 + 329
6*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^5 + 241*B^2*b^6*c^3*d^2*e^6
- 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^7 - 4608*A*B*b*c^8*d^6*e^2 -
 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^3 - 14112*A*B*b^3*c^6*d^4*e^
4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4*d^2*e^6))/(8*(b^8*c^2*d^4 +
 b^10*d^2*e^2 - 2*b^9*c*d^3*e)) + (((A*b^14*c^2*d*e^7 - 24*A*b^10*c^6*d^5*e
^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*e^5 + 9*A*b^13*c^3*d^2*e^6 +
 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4 + 21*B*b^13*c^3*d^3*e^5 - 4*
B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^2 - 2*b^13*c*d^3*e) - ((d +
e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4*d^4*e^3 + 256*b^12*c^3*d^3*
e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b
^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2
*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12
*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2
- 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)) - ((((d + e*x)^(1/2)*(A^
2*b^6*c^3*e^8 + 4608*A^2*c^9*d^6*e^2 + 15072*A^2*b^2*c^7*d^4*e^4 - 7104*A^2
*b^3*c^6*d^3*e^5 + 1226*A^2*b^4*c^5*d^2*e^6 + 1152*B^2*b^2*c^7*d^6*e^2 - 32
64*B^2*b^3*c^6*d^5*e^3 + 3296*B^2*b^4*c^5*d^4*e^4 - 1424*B^2*b^5*c^4*d^3*e^
5 + 241*B^2*b^6*c^3*d^2*e^6 - 13824*A^2*b*c^8*d^5*e^3 + 22*A^2*b^5*c^4*d*e^
7 - 4608*A*B*b*c^8*d^6*e^2 - 8*A*B*b^6*c^3*d*e^7 + 13440*A*B*b^2*c^7*d^5*e^
3 - 14112*A*B*b^3*c^6*d^4*e^4 + 6368*A*B*b^4*c^5*d^3*e^5 - 1082*A*B*b^5*c^4
*d^2*e^6))/(8*(b^8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)) - (((A*b^14*c^2
*d*e^7 - 24*A*b^10*c^6*d^5*e^3 + 60*A*b^11*c^5*d^4*e^4 - 46*A*b^12*c^4*d^3*
e^5 + 9*A*b^13*c^3*d^2*e^6 + 12*B*b^11*c^5*d^5*e^3 - 29*B*b^12*c^4*d^4*e^4
+ 21*B*b^13*c^3*d^3*e^5 - 4*B*b^14*c^2*d^2*e^6)/(b^12*c^2*d^4 + b^14*d^2*e^
2 - 2*b^13*c*d^3*e) + ((d + e*x)^(1/2)*(128*b^10*c^5*d^5*e^2 - 320*b^11*c^4
*d^4*e^3 + 256*b^12*c^3*d^3*e^4 - 64*b^13*c^2*d^2*e^5)*(A*b^2*e^2 - 48*A*c^
2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(64*b^5*(d^3)^(1/2)*(b^
8*c^2*d^4 + b^10*d^2*e^2 - 2*b^9*c*d^3*e)))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*
B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/2)))*(A*b^2*e^2 -
48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e))/(8*b^5*(d^3)^(1/
2))))*(A*b^2*e^2 - 48*A*c^2*d^2 + 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e
)*1i)/(4*b^5*(d^3)^(1/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1252 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^3} dx$

Optimal. Leaf size=394

$$-\frac{\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{2b^2d\left(bx+cx^2\right)^2(cd-be)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-3Ae)-12bcd(2Bd-Ae)+\right.}{4b^5d^{5/2}}$$

```
[Out] -1/4*(48*A*c^2*d^2-b^2*e*(-3*A*e+4*B*d)-12*b*c*d*(-A*e+2*B*d))*arctanh((e*x
+d)^(1/2)/d^(1/2))/b^5/d^(5/2)+1/4*c^(3/2)*(48*A*c^3*d^2-35*b^3*B*e^2-12*b*
c^2*d*(9*A*e+2*B*d)+7*b^2*c*e*(9*A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2)/
(-b*e+c*d)^(1/2))/b^5/(-b*e+c*d)^(5/2)-1/2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*
e+B*d))*x)*(e*x+d)^(1/2)/b^2/d/(-b*e+c*d)/(c*x^2+b*x)^2+1/4*(b*(-b*e+c*d)*(
12*A*c^2*d^2+b^2*e*(-3*A*e+4*B*d)-b*c*d*(7*A*e+6*B*d))+c*(24*A*c^3*d^3-b^3*
e^2*(-3*A*e+4*B*d)-12*b*c^2*d^2*(3*A*e+B*d)+b^2*c*d*e*(6*A*e+19*B*d))*x)*(e
*x+d)^(1/2)/b^4/d^2/(-b*e+c*d)^2/(c*x^2+b*x)
```

Rubi [A] time = 0.90, antiderivative size = 394, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {822, 826, 1166, 208}

$$\frac{\sqrt{d+ex}\left(cx\left(b^2cde(6Ae+19Bd)+b^3\left(-e^2\right)(4Bd-3Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4\right.\right.}{4b^4d^2\left(bx+cx^2\right)(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^3),x]
```

```
[Out] -(Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(2*b^2*d
*(c*d - b*e)*(b*x + c*x^2)^2) + (Sqrt[d + e*x]*(b*(c*d - b*e)*(12*A*c^2*d^2
 + b^2*e*(4*B*d - 3*A*e) - b*c*d*(6*B*d + 7*A*e)) + c*(24*A*c^3*d^3 - b^3*e
^2*(4*B*d - 3*A*e) - 12*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e*(19*B*d + 6*A*e
))*x))/(4*b^4*d^2*(c*d - b*e)^2*(b*x + c*x^2)) - ((48*A*c^2*d^2 - b^2*e*(4*
B*d - 3*A*e) - 12*b*c*d*(2*B*d - A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b
^5*d^(5/2)) + (c^(3/2)*(48*A*c^3*d^2 - 35*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 9
*A*e) + 7*b^2*c*e*(8*B*d + 9*A*e))*ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d
 - b*e]])/(4*b^5*(c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\left(bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(12Ac^2d^2+b^2e(4Bd-3Ae)-bcd(6Bd-}{\sqrt{d+ex}\,(bx+}}{2b^2d(cd-}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,(b(cd-be)(12Ac^2d^2}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,(b(cd-be)(12Ac^2d^2}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,(b(cd-be)(12Ac^2d^2}{}$$

$$= -\frac{\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{2b^2d(cd-be)\left(bx+cx^2\right)^2} + \frac{\sqrt{d+ex}\,(b(cd-be)(12Ac^2d^2}{}$$

Mathematica [A] time = 1.48, size = 408, normalized size = 1.04

$$\frac{\frac{c\sqrt{d+ex}\left(b^2e(3Ae-4Bd)+bcd(7Ae+6Bd)-12Ac^2d^2\right)}{b^2d(b+cx)^2(be-cd)} + \frac{-\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2e(3Ae-4Bd)+12bcd(Ae-2Bd)+48Ac^2d^2\right)-\frac{bc\sqrt{d}\,\sqrt{d+ex}\,(b^3e^2(4Bd-3Ae)-b^2cde(}{(b+cx}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^3),x]
```

```
[Out] ((c*(-12*A*c^2*d^2 + b^2*e*(-4*B*d + 3*A*e) + b*c*d*(6*B*d + 7*A*e))*Sqrt[d
 + e*x])/(b^2*d*(-(c*d) + b*e)*(b + c*x)^2) - (2*A*Sqrt[d + e*x])/(x^2*(b +
 c*x)^2) + ((-4*b*B*d + 8*A*c*d + 3*A*b*e)*Sqrt[d + e*x])/(b*d*x*(b + c*x)^
2) + (-((b*c*Sqrt[d]*(-24*A*c^3*d^3 + b^3*e^2*(4*B*d - 3*A*e) + 12*b*c^2*d^
2*(B*d + 3*A*e) - b^2*c*d*e*(19*B*d + 6*A*e))*Sqrt[d + e*x])/((c*d - b*e)^2
*(b + c*x))) - (48*A*c^2*d^2 + 12*b*c*d*(-2*B*d + A*e) + b^2*e*(-4*B*d + 3*
A*e))*ArcTanh[Sqrt[d + e*x]/Sqrt[d]] + (c^(3/2)*d^(5/2)*(48*A*c^3*d^2 - 35*
b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 9*A*e) + 7*b^2*c*e*(8*B*d + 9*A*e))*ArcTanh
[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(c*d - b*e)^(5/2))/(b^4*d^(3/2))
)/(4*b*d)
```

fricas [B]   time = 53.29, size = 4310, normalized size = 10.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] [-1/8*(((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5)*d^4*e +
 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)
*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*A*b^3*c^3
)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c^2 - 27*A
*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(c/(c*d - b
*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sqrt(e*x + d)*sqrt(c/(c*d - b
*e)))/(c*x + b)) - ((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B
*b^2*c^4 - 21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2
*B*b^4*c^2 - 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2
*A*b*c^5)*d^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*
A*b^3*c^3)*d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4
- 24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e
- (16*B*b^5*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)
*sqrt(d)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^4
- 4*A*b^5*c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 -
2*A*b*c^5)*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A
*b^3*c^3)*d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^
4 + (29*B*b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e
^2)*x^2 - (3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 1
3*A*b^4*c^2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5
*c^4*d^5 - 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*
c^2*d^4*e + b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2
)*x^2), -1/8*(2*((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5
)*d^4*e + 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2
*A*b*c^5)*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*
A*b^3*c^3)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c
^2 - 27*A*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(-
c/(c*d - b*e))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*
x + c*d)) - ((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^
4 - 21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*
c^2 - 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^
5)*d^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c
^3)*d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B
*b^3*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B
*b^5*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(d
)*log((e*x - 2*sqrt(e*x + d)*sqrt(d) + 2*d)/x) + 2*(2*A*b^4*c^2*d^4 - 4*A*b
^5*c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c
^5)*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^
3)*d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29
*B*b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2
 - (3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4
*c^2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^
5 - 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4
*e + b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2),
 1/8*(2*((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^4 -
21*A*b*c^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*c^2
- 3*A*b^3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d
^4 + 4*(11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c^3)*
d^2*e^2 - 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B*b^3
*c^3 - 2*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B*b^5
*c - 27*A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(-d)*a
rctan(sqrt(e*x + d)*sqrt(-d)/d) - ((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^
2*c^4 - 27*A*b*c^5)*d^4*e + 7*(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*
(24*(B*b^2*c^4 - 2*A*b*c^5)*d^5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7
*(5*B*b^4*c^2 - 9*A*b^3*c^3)*d^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d
^5 - 4*(14*B*b^4*c^2 - 27*A*b^3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^
3*e^2)*x^2)*sqrt(c/(c*d - b*e))*log((c*e*x + 2*c*d - b*e + 2*(c*d - b*e)*sq
rt(e*x + d)*sqrt(c/(c*d - b*e)))/(c*x + b)) - 2*(2*A*b^4*c^2*d^4 - 4*A*b^5*
c*d^3*e + 2*A*b^6*d^2*e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c^5)
*d^4 + (19*B*b^3*c^3 - 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^3)*
d^2*e^2)*x^3 - (6*A*b^5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29*B*
b^4*c^2 - 55*A*b^3*c^3)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2 -
(3*A*b^6*d*e^3 - 4*(B*b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4*c^
2)*d^3*e - 2*(2*B*b^6 - A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^5 -
 2*b^6*c^3*d^4*e + b^7*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4*e
+ b^8*c*d^3*e^2)*x^3 + (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2), -1
/4*(((24*(B*b*c^5 - 2*A*c^6)*d^5 - 4*(14*B*b^2*c^4 - 27*A*b*c^5)*d^4*e + 7*
(5*B*b^3*c^3 - 9*A*b^2*c^4)*d^3*e^2)*x^4 + 2*(24*(B*b^2*c^4 - 2*A*b*c^5)*d^
5 - 4*(14*B*b^3*c^3 - 27*A*b^2*c^4)*d^4*e + 7*(5*B*b^4*c^2 - 9*A*b^3*c^3)*d
^3*e^2)*x^3 + (24*(B*b^3*c^3 - 2*A*b^2*c^4)*d^5 - 4*(14*B*b^4*c^2 - 27*A*b^
3*c^3)*d^4*e + 7*(5*B*b^5*c - 9*A*b^4*c^2)*d^3*e^2)*x^2)*sqrt(-c/(c*d - b*e
))*arctan(-(c*d - b*e)*sqrt(e*x + d)*sqrt(-c/(c*d - b*e))/(c*e*x + c*d)) -
((3*A*b^4*c^2*e^4 - 24*(B*b*c^5 - 2*A*c^6)*d^4 + 4*(11*B*b^2*c^4 - 21*A*b*c
^5)*d^3*e - (16*B*b^3*c^3 - 27*A*b^2*c^4)*d^2*e^2 - 2*(2*B*b^4*c^2 - 3*A*b^
3*c^3)*d*e^3)*x^4 + 2*(3*A*b^5*c*e^4 - 24*(B*b^2*c^4 - 2*A*b*c^5)*d^4 + 4*(
11*B*b^3*c^3 - 21*A*b^2*c^4)*d^3*e - (16*B*b^4*c^2 - 27*A*b^3*c^3)*d^2*e^2
- 2*(2*B*b^5*c - 3*A*b^4*c^2)*d*e^3)*x^3 + (3*A*b^6*e^4 - 24*(B*b^3*c^3 - 2
*A*b^2*c^4)*d^4 + 4*(11*B*b^4*c^2 - 21*A*b^3*c^3)*d^3*e - (16*B*b^5*c - 27*
A*b^4*c^2)*d^2*e^2 - 2*(2*B*b^6 - 3*A*b^5*c)*d*e^3)*x^2)*sqrt(-d)*arctan(sq
rt(e*x + d)*sqrt(-d)/d) + (2*A*b^4*c^2*d^4 - 4*A*b^5*c*d^3*e + 2*A*b^6*d^2*
e^2 - (3*A*b^4*c^2*d*e^3 - 12*(B*b^2*c^4 - 2*A*b*c^5)*d^4 + (19*B*b^3*c^3 -
 36*A*b^2*c^4)*d^3*e - 2*(2*B*b^4*c^2 - 3*A*b^3*c^3)*d^2*e^2)*x^3 - (6*A*b^
5*c*d*e^3 - 18*(B*b^3*c^3 - 2*A*b^2*c^4)*d^4 + (29*B*b^4*c^2 - 55*A*b^3*c^3
)*d^3*e - 2*(4*B*b^5*c - 5*A*b^4*c^2)*d^2*e^2)*x^2 - (3*A*b^6*d*e^3 - 4*(B*
b^4*c^2 - 2*A*b^3*c^3)*d^4 + (8*B*b^5*c - 13*A*b^4*c^2)*d^3*e - 2*(2*B*b^6
- A*b^5*c)*d^2*e^2)*x)*sqrt(e*x + d))/((b^5*c^4*d^5 - 2*b^6*c^3*d^4*e + b^7
*c^2*d^3*e^2)*x^4 + 2*(b^6*c^3*d^5 - 2*b^7*c^2*d^4*e + b^8*c*d^3*e^2)*x^3 +
 (b^7*c^2*d^5 - 2*b^8*c*d^4*e + b^9*d^3*e^2)*x^2)]
```

giac [B] time = 0.31, size = 1046, normalized size = 2.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^4*d^2 - 48*A*c^5*d^2 - 56*B*b^2*c^3*d*e + 108*A*b*c^4*d*e + 3
5*B*b^3*c^2*e^2 - 63*A*b^2*c^3*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*
c*e))/((b^5*c^2*d^2 - 2*b^6*c*d*e + b^7*e^2)*sqrt(-c^2*d + b*c*e)) - 1/4*(1
2*(x*e + d)^(7/2)*B*b*c^4*d^3*e - 24*(x*e + d)^(7/2)*A*c^5*d^3*e - 36*(x*e
+ d)^(5/2)*B*b*c^4*d^4*e + 72*(x*e + d)^(5/2)*A*c^5*d^4*e + 36*(x*e + d)^(3
/2)*B*b*c^4*d^5*e - 72*(x*e + d)^(3/2)*A*c^5*d^5*e - 12*sqrt(x*e + d)*B*b*c
^4*d^6*e + 24*sqrt(x*e + d)*A*c^5*d^6*e - 19*(x*e + d)^(7/2)*B*b^2*c^3*d^2*
e^2 + 36*(x*e + d)^(7/2)*A*b*c^4*d^2*e^2 + 75*(x*e + d)^(5/2)*B*b^2*c^3*d^3
*e^2 - 144*(x*e + d)^(5/2)*A*b*c^4*d^3*e^2 - 93*(x*e + d)^(3/2)*B*b^2*c^3*d
^4*e^2 + 180*(x*e + d)^(3/2)*A*b*c^4*d^4*e^2 + 37*sqrt(x*e + d)*B*b^2*c^3*d
^5*e^2 - 72*sqrt(x*e + d)*A*b*c^4*d^5*e^2 + 4*(x*e + d)^(7/2)*B*b^3*c^2*d*e
^3 - 6*(x*e + d)^(7/2)*A*b^2*c^3*d*e^3 - 41*(x*e + d)^(5/2)*B*b^3*c^2*d^2*e
^3 + 73*(x*e + d)^(5/2)*A*b^2*c^3*d^2*e^3 + 74*(x*e + d)^(3/2)*B*b^3*c^2*d^
3*e^3 - 136*(x*e + d)^(3/2)*A*b^2*c^3*d^3*e^3 - 37*sqrt(x*e + d)*B*b^3*c^2*
d^4*e^3 + 69*sqrt(x*e + d)*A*b^2*c^3*d^4*e^3 - 3*(x*e + d)^(7/2)*A*b^3*c^2*
e^4 + 8*(x*e + d)^(5/2)*B*b^4*c*d*e^4 - (x*e + d)^(5/2)*A*b^3*c^2*d*e^4 - 2
4*(x*e + d)^(3/2)*B*b^4*c*d^2*e^4 + 24*(x*e + d)^(3/2)*A*b^3*c^2*d^2*e^4 +
16*sqrt(x*e + d)*B*b^4*c*d^3*e^4 - 18*sqrt(x*e + d)*A*b^3*c^2*d^3*e^4 - 6*(
x*e + d)^(5/2)*A*b^4*c*e^5 + 4*(x*e + d)^(3/2)*B*b^5*d*e^5 + 10*(x*e + d)^(
3/2)*A*b^4*c*d*e^5 - 4*sqrt(x*e + d)*B*b^5*d^2*e^5 - 8*sqrt(x*e + d)*A*b^4*
c*d^2*e^5 - 3*(x*e + d)^(3/2)*A*b^5*e^6 + 5*sqrt(x*e + d)*A*b^5*d*e^6)/((b^
4*c^2*d^4 - 2*b^5*c*d^3*e + b^6*d^2*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d +
 c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2 - 48*A*c^2*d^2 + 4*B
*b^2*d*e - 12*A*b*c*d*e - 3*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*
sqrt(-d)*d^2)
```

maple [**B**] time = 0.08, size = 1009, normalized size = 2.56

$$-\frac{15 \left(e x+d\right)^{\frac{3}{2}} A \,c^{4} e^{2}}{4 \left(c e x+b e\right)^{2} \left(b^{2} e^{2}-2 b c d e+c^{2} d^{2}\right) b^{3}}-\frac{63 A \,c^{3} e^{2} \arctan \left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(b e-c d\right) c}}\right)}{4 \left(b^{2} e^{2}-2 b c d e+c^{2} d^{2}\right) \sqrt{\left(b e-c d\right) c}\, b^{3}}+\frac{3 \left(e x+d\right)^{\frac{3}{2}} A \,c^{5} d e}{\left(c e x+b e\right)^{2} \left(b^{2} e^{2}-2 b c d e+c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -3/e/b^4/x^2*(e*x+d)^(1/2)*A*c-3*e/b^4/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2
))*A*c-1/e/b^3/x^2/d*(e*x+d)^(3/2)*B-2*e*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e
*x+d)^(1/2)*B*d+3*e*c^4/b^4/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*A*d+3*e*c
^5/b^4/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*A*d-2*e*c^4/
b^3/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*B*d-14*e*c^3/b^
3/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*
e-c*d)*c)^(1/2)*c)*B*d+27*e*c^4/b^4/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*
c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-5/4/b^3/x^2/d*(e*x
+d)^(1/2)*A+3/4/b^3/x^2/d^2*(e*x+d)^(3/2)*A+6/b^4/d^(1/2)*arctanh((e*x+d)^(
1/2)/d^(1/2))*B*c+e/b^3/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12/b^5/d^(
1/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+1/e/b^3/x^2*(e*x+d)^(1/2)*B-3/4*e
^2/b^3/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-63/4*e^2*c^3/b^3/(b^2*e^2-2
*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*A+35/4*e^2*c^2/b^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+6*c^4/b^4/(b^2*e^2-2*b*c*d*e+c
^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d
^2-12*c^5/b^5/(b^2*e^2-2*b*c*d*e+c^2*d^2)/((b*e-c*d)*c)^(1/2)*arctan((e*x+d
)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d^2+3/e/b^4/x^2/d*(e*x+d)^(3/2)*A*c-15/4*e
^2*c^4/b^3/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*A+11/4*e
^2*c^3/b^2/(c*e*x+b*e)^2/(b^2*e^2-2*b*c*d*e+c^2*d^2)*(e*x+d)^(3/2)*B-17/4*e
^2*c^3/b^3/(c*e*x+b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*A+13/4*e^2*c^2/b^2/(c*e*x+
b*e)^2/(b*e-c*d)*(e*x+d)^(1/2)*B
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 7.11, size = 11338, normalized size = 28.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(1/2)),x)
```

```
[Out] log((((((c^2*e^3*(3*A*b^4*e^4 + 24*A*c^4*d^4 - 12*B*b*c^3*d^4 - 4*B*b^4*d*e
^3 + 25*B*b^2*c^2*d^3*e - 12*B*b^3*c*d^2*e^2 + 21*A*b^2*c^2*d^2*e^2 - 48*A*
b*c^3*d^3*e + 3*A*b^3*c*d*e^3))/(b^2*d^2*(b*e - c*d)^2) - b^2*c^2*e^2*(b*e
- 2*c*d)*(d + e*x)^(1/2)*((3*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*
b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))*((3*A*b^2*e^2 + 48*A*c^2*d^2 -
 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))/8 - ((d +
e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*
d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^
5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B
^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 +
1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8
 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^
2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^
6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*
c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*b^8*d^4*(b*e - c*d)^4))*((3*A*b^
2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d
^5))^(1/2))/8 - (567*A^3*b^7*c^5*e^10 + 55296*A^3*c^12*d^7*e^3 + 224640*A^3
*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 13608*A^3*b^4*c^8*d^3*e^7 +
 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3 + 25920*B^3*b^4*c^8*d^
6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^6*d^4*e^6 + 196*B^3*b^7
*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b^8*c^4*e^10 - 193536*A^
3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*B^2*b^2*c^10*d^7*e^3 -
152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*d^5*e^5 - 78768*A*B^2*b
^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A*B^2*b^7*c^5*d^2*e^8 +
297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9*d^5*e^5 + 136368*A^2*B
*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 3861*A^2*B*b^6*c^6*d^2*e^8
 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*e^3 - 2898*A^2*B*b^7*c^
5*d*e^9)/(64*b^12*d^4*(b*e - c*d)^4))*((9*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 +
576*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 432*A^2*b^2*c^2*d^2*e^2 + 1152*A
^2*b*c^3*d^3*e + 72*A^2*b^3*c*d*e^3 + 192*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*
d^4 - 24*A*B*b^4*d*e^3 - 960*A*B*b^2*c^2*d^3*e - 240*A*B*b^3*c*d^2*e^2)/(64
*b^10*d^5))^(1/2) - log((((((c^2*e^3*(3*A*b^4*e^4 + 24*A*c^4*d^4 - 12*B*b*c
^3*d^4 - 4*B*b^4*d*e^3 + 25*B*b^2*c^2*d^3*e - 12*B*b^3*c*d^2*e^2 + 21*A*b^2
*c^2*d^2*e^2 - 48*A*b*c^3*d^3*e + 3*A*b^3*c*d*e^3))/(b^2*d^2*(b*e - c*d)^2)
 + b^2*c^2*e^2*(b*e - 2*c*d)*(d + e*x)^(1/2)*((3*A*b^2*e^2 + 48*A*c^2*d^2 -
 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5))^(1/2))*((3*A*b^2*
e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*A*b*c*d*e)^2/(b^10*d^5
))^(1/2))/8 + ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2
+ 27360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*
d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*
c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^
2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16
*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 46
08*A*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 -
28704*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^
4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*b^8*d^4*(b*e
 - c*d)^4))*((3*A*b^2*e^2 + 48*A*c^2*d^2 - 24*B*b*c*d^2 - 4*B*b^2*d*e + 12*
A*b*c*d*e)^2/(b^10*d^5))^(1/2))/8 - (567*A^3*b^7*c^5*e^10 + 55296*A^3*c^12*
d^7*e^3 + 224640*A^3*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 13608*A
^3*b^4*c^8*d^3*e^7 + 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3 +
25920*B^3*b^4*c^8*d^6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^6*d
^4*e^6 + 196*B^3*b^7*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b^8*
c^4*e^10 - 193536*A^3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*B^2
*b^2*c^10*d^7*e^3 - 152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*d^5
*e^5 - 78768*A*B^2*b^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A*B^
2*b^7*c^5*d^2*e^8 + 297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9*d^
```

```
5*e^5 + 136368*A^2*B*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 3861*A
^2*B*b^6*c^6*d^2*e^8 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*e^3
 - 2898*A^2*B*b^7*c^5*d*e^9)/(64*b^12*d^4*(b*e - c*d)^4))*(((9*A^2*b^4*e^4)
/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (B^2*b^4*d^2*e^2)/4 + (27*A^2*b^
2*c^2*d^2*e^2)/4 + 18*A^2*b*c^3*d^3*e + (9*A^2*b^3*c*d*e^3)/8 + 3*B^2*b^3*c
*d^3*e - 36*A*B*b*c^3*d^4 - (3*A*B*b^4*d*e^3)/8 - 15*A*B*b^2*c^2*d^3*e - (1
5*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^5))^(1/2) - atan(((((6144*A*b^11*c^7*d^7*e^
4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c^6*d^6*e^5 + 5568*A*b^13*c^5*d^5
*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15*c^3*d^3*e^8 - 192*A*b^16*c^2*d^
2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^12*c^6*d^7*e^4 + 4736*B*b^13*c^5*
d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b^15*c^3*d^4*e^7 + 256*B*b^16*c^2
*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^
5*e^3 + 6*b^14*c^2*d^6*e^2)) - ((d + e*x)^(1/2)*(-(2304*A^2*c^9*d^4 + 3969*
A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^
2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2
*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*
b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^
4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b
^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)
))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c^6*d^8*e^3 + 1024*b^12*c^5*d^7*e
^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^5*e^6 - 64*b^15*c^2*d^4*e^7))/(8
*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*
c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7
*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*
d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*
d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^
4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d
^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e
^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^
2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*d^6*e^4 - 17568*
A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7 +
198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e
^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5
*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*b*c
^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c
^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^6*e^4 + 19008*A*
B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 - 14
4*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e -
4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4
*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d
^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*
d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4
*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d
*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4
*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2
)*1i - (((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c
^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15
*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^1
2*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b
^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4
- 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + ((d + e*x)^(
1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 122
5*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 -
4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 26
88*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*
A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(6
4*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^
13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c
^6*d^8*e^3 + 1024*b^12*c^5*d^7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^
5*e^6 - 64*b^15*c^2*d^4*e^7))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^
7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A
^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2
*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*
b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b
^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4
*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^
11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4))
)^(1/2) - ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27
360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*
e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*
d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^
5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2
*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A
*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 2870
4*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^
6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b
^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-
(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b
^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*
B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*
b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2
*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15
*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*
d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*1i)/((567*A^3*b^7*c^5*e^10 + 55296*A^3*c^
12*d^7*e^3 + 224640*A^3*b^2*c^10*d^5*e^5 - 77760*A^3*b^3*c^9*d^4*e^6 - 1360
8*A^3*b^4*c^8*d^3*e^7 + 1404*A^3*b^5*c^7*d^2*e^8 - 6912*B^3*b^3*c^9*d^7*e^3
 + 25920*B^3*b^4*c^8*d^6*e^4 - 33408*B^3*b^5*c^7*d^5*e^5 + 15016*B^3*b^6*c^
6*d^4*e^6 + 196*B^3*b^7*c^5*d^3*e^7 - 560*B^3*b^8*c^4*d^2*e^8 - 315*A^2*B*b
^8*c^4*e^10 - 193536*A^3*b*c^11*d^6*e^4 + 2430*A^3*b^6*c^6*d*e^9 + 41472*A*
B^2*b^2*c^10*d^7*e^3 - 152064*A*B^2*b^3*c^9*d^6*e^4 + 189504*A*B^2*b^4*c^8*
d^5*e^5 - 78768*A*B^2*b^5*c^7*d^4*e^6 - 4764*A*B^2*b^6*c^6*d^3*e^7 + 2709*A
*B^2*b^7*c^5*d^2*e^8 + 297216*A^2*B*b^2*c^10*d^6*e^4 - 357696*A^2*B*b^3*c^9
*d^5*e^5 + 136368*A^2*B*b^4*c^8*d^4*e^6 + 15516*A^2*B*b^5*c^7*d^3*e^7 - 386
1*A^2*B*b^6*c^6*d^2*e^8 + 840*A*B^2*b^8*c^4*d*e^9 - 82944*A^2*B*b*c^11*d^7*
e^3 - 2898*A^2*B*b^7*c^5*d*e^9)/(32*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c
^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + (((6144*A*b^11*c^7*d^7
*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c^6*d^6*e^5 + 5568*A*b^13*c^5*
d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15*c^3*d^3*e^8 - 192*A*b^16*c^2
*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^12*c^6*d^7*e^4 + 4736*B*b^13*c
^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b^15*c^3*d^4*e^7 + 256*B*b^16*
c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4 - 4*b^13*c^3*d^7*e - 4*b^15*c
*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) - ((d + e*x)^(1/2)*(-(2304*A^2*c^9*d^4 + 39
69*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2
*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*
A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B
^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B
*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 +
5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e
^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c^6*d^8*e^3 + 1024*b^12*c^5*d^
7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^5*e^6 - 64*b^15*c^2*d^4*e^7))
/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^
10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*
c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c
^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c
^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8
*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^
6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^
3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9
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*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27360*A^2*b^2*c^9*d^6*e^4 - 175
68*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*e^6 - 180*A^2*b^5*c^6*d^3*e^7
 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*d^8*e^2 - 4800*B^2*b^3*c^8*d^
7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^5*c^6*d^5*e^5 + 1129*B^2*b^6*
c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2*b^8*c^3*d^2*e^8 - 18432*A^2*
b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A*B*b*c^10*d^8*e^2 - 24*A*B*b^
8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 28704*A*B*b^3*c^8*d^6*e^4 + 19008
*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^6 - 144*A*B*b^6*c^5*d^3*e^7 -
 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^7*e
 - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*
b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^
7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c
^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*
c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^
5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*
c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(
1/2) + (((6144*A*b^11*c^7*d^7*e^4 - 1536*A*b^10*c^8*d^8*e^3 - 9024*A*b^12*c
^6*d^6*e^5 + 5568*A*b^13*c^5*d^5*e^6 - 1152*A*b^14*c^4*d^4*e^7 + 192*A*b^15
*c^3*d^3*e^8 - 192*A*b^16*c^2*d^2*e^9 + 768*B*b^11*c^7*d^8*e^3 - 3136*B*b^1
2*c^6*d^7*e^4 + 4736*B*b^13*c^5*d^6*e^5 - 2880*B*b^14*c^4*d^5*e^6 + 256*B*b
^15*c^3*d^4*e^7 + 256*B*b^16*c^2*d^3*e^8)/(64*(b^12*c^4*d^8 + b^16*d^4*e^4
 - 4*b^13*c^3*d^7*e - 4*b^15*c*d^5*e^3 + 6*b^14*c^2*d^6*e^2)) + ((d + e*x)^(
1/2)*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 122
5*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 -
4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 26
88*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*
A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(6
4*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^
13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*(128*b^10*c^7*d^9*e^2 - 576*b^11*c
^6*d^8*e^3 + 1024*b^12*c^5*d^7*e^4 - 896*b^13*c^4*d^6*e^5 + 384*b^14*c^3*d^
5*e^6 - 64*b^15*c^2*d^4*e^7))/(8*(b^8*c^4*d^8 + b^12*d^4*e^4 - 4*b^9*c^3*d^
7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-(2304*A^2*c^9*d^4 + 3969*A
^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2
*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*
b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b
^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4
*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^
11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4))
)^(1/2) - ((d + e*x)^(1/2)*(9*A^2*b^8*c^3*e^10 + 4608*A^2*c^11*d^8*e^2 + 27
360*A^2*b^2*c^9*d^6*e^4 - 17568*A^2*b^3*c^8*d^5*e^5 + 3978*A^2*b^4*c^7*d^4*
e^6 - 180*A^2*b^5*c^6*d^3*e^7 + 198*A^2*b^6*c^5*d^2*e^8 + 1152*B^2*b^2*c^9*
d^8*e^2 - 4800*B^2*b^3*c^8*d^7*e^3 + 7520*B^2*b^4*c^7*d^6*e^4 - 5136*B^2*b^
5*c^6*d^5*e^5 + 1129*B^2*b^6*c^5*d^4*e^6 + 128*B^2*b^7*c^4*d^3*e^7 + 16*B^2
*b^8*c^3*d^2*e^8 - 18432*A^2*b*c^10*d^7*e^3 + 36*A^2*b^7*c^4*d*e^9 - 4608*A
*B*b*c^10*d^8*e^2 - 24*A*B*b^8*c^3*d*e^9 + 18816*A*B*b^2*c^9*d^7*e^3 - 2870
4*A*B*b^3*c^8*d^6*e^4 + 19008*A*B*b^4*c^7*d^5*e^5 - 4218*A*B*b^5*c^6*d^4*e^
6 - 144*A*B*b^6*c^5*d^3*e^7 - 144*A*B*b^7*c^4*d^2*e^8))/(8*(b^8*c^4*d^8 + b
^12*d^4*e^4 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 6*b^10*c^2*d^6*e^2)))*(-
(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b
^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*
B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*
b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2
*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3 - 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15
*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*
d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)))*(-(2304*A^2*c^9*d^4 + 3969*A^2*b^4*c^5*
e^4 + 576*B^2*b^2*c^7*d^4 + 1225*B^2*b^6*c^3*e^4 + 17712*A^2*b^2*c^7*d^2*e^
2 + 4816*B^2*b^4*c^5*d^2*e^2 - 4410*A*B*b^5*c^4*e^4 - 10368*A^2*b*c^8*d^3*e
 - 13608*A^2*b^3*c^6*d*e^3 - 2688*B^2*b^3*c^6*d^3*e - 3920*B^2*b^5*c^4*d*e^
3 - 2304*A*B*b*c^8*d^4 + 10560*A*B*b^2*c^7*d^3*e + 14616*A*B*b^4*c^5*d*e^3
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- 18480*A*B*b^3*c^6*d^2*e^2)/(64*(b^15*e^5 - b^10*c^5*d^5 + 5*b^11*c^4*d^4*
e - 10*b^12*c^3*d^3*e^2 + 10*b^13*c^2*d^2*e^3 - 5*b^14*c*d*e^4)))^(1/2)*2i
- (((d + e*x)^(3/2)*(4*B*b^5*d*e^5 - 72*A*c^5*d^5*e - 3*A*b^5*e^6 + 180*A*b
*c^4*d^4*e^2 - 24*B*b^4*c*d^2*e^4 - 136*A*b^2*c^3*d^3*e^3 + 24*A*b^3*c^2*d^
2*e^4 - 93*B*b^2*c^3*d^4*e^2 + 74*B*b^3*c^2*d^3*e^3 + 10*A*b^4*c*d*e^5 + 36
*B*b*c^4*d^5*e))/(4*b^4*(c*d^2 - b*d*e)^2) - ((d + e*x)^(5/2)*(6*A*b^4*c*e^
5 - 72*A*c^5*d^4*e + 144*A*b*c^4*d^3*e^2 + A*b^3*c^2*d*e^4 - 73*A*b^2*c^3*d
^2*e^3 - 75*B*b^2*c^3*d^3*e^2 + 41*B*b^3*c^2*d^2*e^3 + 36*B*b*c^4*d^4*e - 8
*B*b^4*c*d*e^4))/(4*b^4*(c*d^2 - b*d*e)^2) + ((d + e*x)^(1/2)*(24*A*c^4*d^4
*e - 5*A*b^4*e^5 + 4*B*b^4*d*e^4 - 48*A*b*c^3*d^3*e^2 - 12*B*b^3*c*d^2*e^3
+ 21*A*b^2*c^2*d^2*e^3 + 25*B*b^2*c^2*d^3*e^2 + 3*A*b^3*c*d*e^4 - 12*B*b*c^
3*d^4*e))/(4*b^4*(c*d^2 - b*d*e)) - (c*(d + e*x)^(7/2)*(3*A*b^3*c*e^4 + 24*
A*c^4*d^3*e - 36*A*b*c^3*d^2*e^2 + 6*A*b^2*c^2*d*e^3 + 19*B*b^2*c^2*d^2*e^2
 - 12*B*b*c^3*d^3*e - 4*B*b^3*c*d*e^3))/(4*b^4*(c*d^2 - b*d*e)^2))/(c^2*(d
+ e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2
*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 - 6*b*c*d*e) + c^2*d
^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1253 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=506

$$-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2\sqrt{d+ex}\,(cd-be)}-\frac{3\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(b^2(-e)(4Bd-5Ae)-4bcd(2Bd-3Ae)+16Ac^2d^2\right.}{4b^5d^{7/2}}$$

```
[Out] -3/4*(16*A*c^2*d^2-b^2*e*(-5*A*e+4*B*d)-4*b*c*d*(-3*A*e+2*B*d))*arctanh((e*
x+d)^(1/2)/d^(1/2))/b^5/d^(7/2)+3/4*c^(5/2)*(16*A*c^3*d^2-21*b^3*B*e^2-4*b*
c^2*d*(11*A*e+2*B*d)+3*b^2*c*e*(11*A*e+8*B*d))*arctanh(c^(1/2)*(e*x+d)^(1/2
)/(-b*e+c*d)^(1/2))/b^5/(-b*e+c*d)^(7/2)+3/4*e*(8*A*c^4*d^4+b^4*e^3*(-5*A*e
+4*B*d)-b^3*c*d*e^2*(-3*A*e+4*B*d)-4*b*c^3*d^3*(4*A*e+B*d)+b^2*c^2*d^2*e*(5
*A*e+9*B*d))/b^4/d^3/(-b*e+c*d)^3/(e*x+d)^(1/2)+1/2*(-A*b*(-b*e+c*d)-c*(2*A
*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(c*x^2+b*x)^2/(e*x+d)^(1/2)+1/4*(b*(-
b*e+c*d)*(12*A*c^2*d^2+b^2*e*(-5*A*e+4*B*d)-b*c*d*(5*A*e+6*B*d))+c*(24*A*c^
3*d^3-b^3*e^2*(-5*A*e+4*B*d)+b^2*c*d*e*(2*A*e+21*B*d)-12*b*c^2*d^2*(3*A*e+B
*d))*x)/b^4/d^2/(-b*e+c*d)^2/(c*x^2+b*x)/(e*x+d)^(1/2)
```

Rubi **[A]** time = 1.45, antiderivative size = 506, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {822, 828, 826, 1166, 208}

$$\frac{cx\left(b^2cde(2Ae+21Bd)+b^3\left(-e^2\right)(4Bd-5Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4Bd-5Ae\right.}{4b^4d^2\left(bx+cx^2\right)\sqrt{d+ex}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (3*e*(8*A*c^4*d^4 + b^4*e^3*(4*B*d - 5*A*e) - b^3*c*d*e^2*(4*B*d - 3*A*e) -
 4*b*c^3*d^3*(B*d + 4*A*e) + b^2*c^2*d^2*e*(9*B*d + 5*A*e)))/(4*b^4*d^3*(c*
d - b*e)^3*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*
x)/(2*b^2*d*(c*d - b*e)*Sqrt[d + e*x]*(b*x + c*x^2)^2) + (b*(c*d - b*e)*(12
*A*c^2*d^2 + b^2*e*(4*B*d - 5*A*e) - b*c*d*(6*B*d + 5*A*e)) + c*(24*A*c^3*d
^3 - b^3*e^2*(4*B*d - 5*A*e) + b^2*c*d*e*(21*B*d + 2*A*e) - 12*b*c^2*d^2*(B
*d + 3*A*e))*x)/(4*b^4*d^2*(c*d - b*e)^2*Sqrt[d + e*x]*(b*x + c*x^2)) - (3*
(16*A*c^2*d^2 - b^2*e*(4*B*d - 5*A*e) - 4*b*c*d*(2*B*d - 3*A*e))*ArcTanh[Sq
rt[d + e*x]/Sqrt[d]])/(4*b^5*d^(7/2)) + (3*c^(5/2)*(16*A*c^3*d^2 - 21*b^3*B
*e^2 - 4*b*c^2*d*(2*B*d + 11*A*e) + 3*b^2*c*e*(8*B*d + 11*A*e))*ArcTanh[(Sq
rt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^3}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)\sqrt{d+ex}\,\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(12Ac^2d^2+b^2e(4Bd-5Ae)-bcd(6Bd+5Ae)\right)-\frac{7}{2}c}{(d+ex)^{3/2}\left(bx+cx^2\right)^2}}{2b^2d(cd-be)}$$

$$= -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)\sqrt{d+ex}\,\left(bx+cx^2\right)^2} + \frac{b(cd-be)\,(12Ac^2d^2+b^2e(4Bd-5Ae)}{}$$

$$= \frac{3e\,(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c^2d}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\,(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c^2d}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\,(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c^2d}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

$$= \frac{3e\,(8Ac^4d^4+b^4e^3(4Bd-5Ae)-b^3cde^2(4Bd-3Ae)-4bc^3d^3(Bd+4Ae)+b^2c^2d}{4b^4d^3(cd-be)^3\sqrt{d+ex}}$$

Mathematica [**C**] time = 0.55, size = 387, normalized size = 0.76

$$2Ab^4d^2(be-cd)^3+b^3dx(be-cd)^3(-5Abe-8Acd+4bBd)+x^2\Big(b^2cd(cd-be)^2\Big(b^2e(4Bd-5Ae)-bcd(5Ae+$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (2*A*b^4*d^2*(-(c*d) + b*e)^3 + b^3*d*(-(c*d) + b*e)^3*(4*b*B*d - 8*A*c*d -
 5*A*b*e)*x + x^2*(b^2*c*d*(c*d - b*e)^2*(12*A*c^2*d^2 + b^2*e*(4*B*d - 5*A
*e) - b*c*d*(6*B*d + 5*A*e)) + (b + c*x)*(b*c*d*(-(c*d) + b*e)*(-24*A*c^3*d
^3 + b^3*e^2*(4*B*d - 5*A*e) - b^2*c*d*e*(21*B*d + 2*A*e) + 12*b*c^2*d^2*(B
*d + 3*A*e)) - (b + c*x)*(3*c^2*d^3*(16*A*c^3*d^2 - 21*b^3*B*e^2 - 4*b*c^2*
d*(2*B*d + 11*A*e) + 3*b^2*c*e*(8*B*d + 11*A*e))*Hypergeometric2F1[-1/2, 1,
 1/2, (c*(d + e*x))/(c*d - b*e)] - 3*(c*d - b*e)^3*(16*A*c^2*d^2 + 4*b*c*d*
(-2*B*d + 3*A*e) + b^2*e*(-4*B*d + 5*A*e))*Hypergeometric2F1[-1/2, 1, 1/2,
1 + (e*x)/d]))))/(4*b^5*d^3*(c*d - b*e)^3*x^2*(b + c*x)^2*Sqrt[d + e*x])
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**] time = 0.41, size = 1313, normalized size = 2.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 3/4*(8*B*b*c^5*d^2 - 16*A*c^6*d^2 - 24*B*b^2*c^4*d*e + 44*A*b*c^5*d*e + 21*
B*b^3*c^3*e^2 - 33*A*b^2*c^4*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b*c*
e))/((b^5*c^3*d^3 - 3*b^6*c^2*d^2*e + 3*b^7*c*d*e^2 - b^8*e^3)*sqrt(-c^2*d
+ b*c*e)) + 2*(B*d*e^4 - A*e^5)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2
 - b^3*d^3*e^3)*sqrt(x*e + d)) - 1/4*(12*(x*e + d)^(7/2)*B*b*c^5*d^4*e - 24
*(x*e + d)^(7/2)*A*c^6*d^4*e - 36*(x*e + d)^(5/2)*B*b*c^5*d^5*e + 72*(x*e +
 d)^(5/2)*A*c^6*d^5*e + 36*(x*e + d)^(3/2)*B*b*c^5*d^6*e - 72*(x*e + d)^(3/
2)*A*c^6*d^6*e - 12*sqrt(x*e + d)*B*b*c^5*d^7*e + 24*sqrt(x*e + d)*A*c^6*d^
7*e - 27*(x*e + d)^(7/2)*B*b^2*c^4*d^3*e^2 + 48*(x*e + d)^(7/2)*A*b*c^5*d^3
*e^2 + 99*(x*e + d)^(5/2)*B*b^2*c^4*d^4*e^2 - 180*(x*e + d)^(5/2)*A*b*c^5*d
^4*e^2 - 117*(x*e + d)^(3/2)*B*b^2*c^4*d^5*e^2 + 216*(x*e + d)^(3/2)*A*b*c^
5*d^5*e^2 + 45*sqrt(x*e + d)*B*b^2*c^4*d^6*e^2 - 84*sqrt(x*e + d)*A*b*c^5*d
^6*e^2 + 12*(x*e + d)^(7/2)*B*b^3*c^3*d^2*e^3 - 15*(x*e + d)^(7/2)*A*b^2*c^
4*d^2*e^3 - 77*(x*e + d)^(5/2)*B*b^3*c^3*d^3*e^3 + 118*(x*e + d)^(5/2)*A*b^
2*c^4*d^3*e^3 + 122*(x*e + d)^(3/2)*B*b^3*c^3*d^4*e^3 - 199*(x*e + d)^(3/2)
*A*b^2*c^4*d^4*e^3 - 57*sqrt(x*e + d)*B*b^3*c^3*d^5*e^3 + 96*sqrt(x*e + d)*
A*b^2*c^4*d^5*e^3 - 4*(x*e + d)^(7/2)*B*b^4*c^2*d*e^4 - 9*(x*e + d)^(7/2)*A
*b^3*c^3*d*e^4 + 36*(x*e + d)^(5/2)*B*b^4*c^2*d^2*e^4 + 3*(x*e + d)^(5/2)*A
*b^3*c^3*d^2*e^4 - 72*(x*e + d)^(3/2)*B*b^4*c^2*d^3*e^4 + 38*(x*e + d)^(3/2
)*A*b^3*c^3*d^3*e^4 + 40*sqrt(x*e + d)*B*b^4*c^2*d^4*e^4 - 30*sqrt(x*e + d)
*A*b^3*c^3*d^4*e^4 + 7*(x*e + d)^(7/2)*A*b^4*c^2*e^5 - 8*(x*e + d)^(5/2)*B*
b^5*c*d*e^5 - 41*(x*e + d)^(5/2)*A*b^4*c^2*d*e^5 + 28*(x*e + d)^(3/2)*B*b^5
*c*d^2*e^5 + 58*(x*e + d)^(3/2)*A*b^4*c^2*d^2*e^5 - 20*sqrt(x*e + d)*B*b^5*
c*d^3*e^5 - 30*sqrt(x*e + d)*A*b^4*c^2*d^3*e^5 + 14*(x*e + d)^(5/2)*A*b^5*c
*e^6 - 4*(x*e + d)^(3/2)*B*b^6*d*e^6 - 41*(x*e + d)^(3/2)*A*b^5*c*d*e^6 + 4
*sqrt(x*e + d)*B*b^6*d^2*e^6 + 33*sqrt(x*e + d)*A*b^5*c*d^2*e^6 + 7*(x*e +
d)^(3/2)*A*b^6*e^7 - 9*sqrt(x*e + d)*A*b^6*d*e^7)/((b^4*c^3*d^6 - 3*b^5*c^2
*d^5*e + 3*b^6*c*d^4*e^2 - b^7*d^3*e^3)*((x*e + d)^2*c - 2*(x*e + d)*c*d +
c*d^2 + (x*e + d)*b*e - b*d*e)^2) - 3/4*(8*B*b*c*d^2 - 16*A*c^2*d^2 + 4*B*b
^2*d*e - 12*A*b*c*d*e - 5*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*sq
rt(-d)*d^3)
```

maple [**B**] time = 0.10, size = 1022, normalized size = 2.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x)
```

```
[Out] 18*e*c^4/(b*e-c*d)^3/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d
)*c)^(1/2)*c)*B*d+2*e*c^5/(b*e-c*d)^3/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d-3
*e*c^6/(b*e-c*d)^3/b^4/(c*e*x+b*e)^2*(e*x+d)^(3/2)*A*d+3*e*c^6/(b*e-c*d)^3/
b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2-33/4*e^2*c^5/(b*e-c*d)^3/b^3/(c*e*x+b
*e)^2*A*(e*x+d)^(1/2)*d+25/4*e^2*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*B*(e*x+d
)^(1/2)*d-33*e*c^5/(b*e-c*d)^3/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)
/((b*e-c*d)*c)^(1/2)*c)*A*d-2*e*c^5/(b*e-c*d)^3/b^3/(c*e*x+b*e)^2*B*(e*x+d)
^(1/2)*d^2+2*e^5/(b*e-c*d)^3/d^3/(e*x+d)^(1/2)*A+3*e/b^3/d^(5/2)*arctanh((e
*x+d)^(1/2)/d^(1/2))*B-2*e^4/(b*e-c*d)^3/d^2/(e*x+d)^(1/2)*B-15/4*e^2/b^3/d
^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A-9/4/b^3/d^2/x^2*(e*x+d)^(1/2)*A-12/
b^5/d^(3/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c^2+6/b^4/d^(3/2)*arctanh((e*x
+d)^(1/2)/d^(1/2))*B*c+7/4/b^3/d^3/x^2*A*(e*x+d)^(3/2)+3/e/b^4/d^2/x^2*A*(e
*x+d)^(3/2)*c-3/e/b^4/d/x^2*(e*x+d)^(1/2)*A*c+19/4*e^2*c^5/(b*e-c*d)^3/b^3/
(c*e*x+b*e)^2*(e*x+d)^(3/2)*A-15/4*e^2*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*(e
*x+d)^(3/2)*B+21/4*e^3*c^4/(b*e-c*d)^3/b^2/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)-17
/4*e^3*c^3/(b*e-c*d)^3/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)+99/4*e^2*c^4/(b*e-c*
d)^3/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+
12*c^6/(b*e-c*d)^3/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*
c)^(1/2)*c)*A*d^2-6*c^5/(b*e-c*d)^3/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^
(1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-63/4*e^2*c^3/(b*e-c*d)^3/b^2/((b*e-c*d)*
c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*B+1/e/b^3/d/x^2*(e*x+d
)^(1/2)*B-9*e/b^4/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-1/e/b^3/d^2/x^
2*B*(e*x+d)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

mupad [**B**] time = 9.53, size = 23541, normalized size = 46.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(3/2)),x)
```

```
[Out] - ((2*(A*e^5 - B*d*e^4))/(c*d^2 - b*d*e) + ((d + e*x)^2*(15*A*b^6*e^7 - 72*
A*c^6*d^6*e - 12*B*b^6*d*e^6 + 216*A*b*c^5*d^5*e^2 + 76*B*b^5*c*d^2*e^5 - 1
```

```
99*A*b^2*c^4*d^4*e^3 + 38*A*b^3*c^3*d^3*e^4 + 106*A*b^4*c^2*d^2*e^5 - 117*B
*b^2*c^4*d^5*e^2 + 122*B*b^3*c^3*d^4*e^3 - 120*B*b^4*c^2*d^3*e^4 - 89*A*b^5
*c*d*e^6 + 36*B*b*c^5*d^6*e))/(4*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)^3*(30*
A*b^5*c*e^6 + 72*A*c^6*d^5*e - 180*A*b*c^5*d^4*e^2 - 73*A*b^4*c^2*d*e^5 + 1
18*A*b^2*c^4*d^3*e^3 + 3*A*b^3*c^3*d^2*e^4 + 99*B*b^2*c^4*d^4*e^2 - 77*B*b^
3*c^3*d^3*e^3 + 68*B*b^4*c^2*d^2*e^4 - 36*B*b*c^5*d^5*e - 24*B*b^5*c*d*e^5)
)/(4*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)*(25*A*b^5*e^6 + 24*A*c^5*d^5*e - 2
0*B*b^5*d*e^5 - 60*A*b*c^4*d^4*e^2 + 48*B*b^4*c*d^2*e^4 + 36*A*b^2*c^3*d^3*
e^3 + 6*A*b^3*c^2*d^2*e^4 + 33*B*b^2*c^3*d^4*e^2 - 24*B*b^3*c^2*d^3*e^3 - 5
6*A*b^4*c*d*e^5 - 12*B*b*c^4*d^5*e))/(4*b^4*(c*d^2 - b*d*e)^2) - (3*(d + e*
x)^4*(8*A*c^6*d^4*e - 5*A*b^4*c^2*e^5 - 16*A*b*c^5*d^3*e^2 + 3*A*b^3*c^3*d*
e^4 + 4*B*b^4*c^2*d*e^4 + 5*A*b^2*c^4*d^2*e^3 + 9*B*b^2*c^4*d^3*e^2 - 4*B*b
^3*c^3*d^2*e^3 - 4*B*b*c^5*d^4*e))/(4*b^4*(c*d^2 - b*d*e)^3))/(c^2*(d + e*x
)^(9/2) - (4*c^2*d - 2*b*c*e)*(d + e*x)^(7/2) - (d + e*x)^(3/2)*(4*c^2*d^3
+ 2*b^2*d*e^2 - 6*b*c*d^2*e) + (d + e*x)^(5/2)*(b^2*e^2 + 6*c^2*d^2 - 6*b*c
*d*e) + (d + e*x)^(1/2)*(c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)) - atan(-(((d
 + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e
^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 5
64860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 15553
80864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 13582575
36*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*
A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*
b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c
^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e
^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 2880
0*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*
c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^
25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^
7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 4
07418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 6538
2912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2
*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*
d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 -
 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B
*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*
c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16
*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^
21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*
e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^1
3 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930
560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b
^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10
*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^
2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3
*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*
A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)
^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*
b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c
*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*
B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*
c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 83
14880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13
*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 1
58146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32
*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14
- 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3
*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352
*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*
d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 -
```

```
90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208
*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c
^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^1
5 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*
A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*
e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B
*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d
^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 4
5551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*
b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^
18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 108
1344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*
d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16
*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*
b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 3
20*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*1i + ((
d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*
e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 +
564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555
380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257
536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088
*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2
*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*
c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*
e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 288
00*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15
*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d
^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e
^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 +
407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 653
82912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^
2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6
*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18
- 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*
B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16
*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^1
6*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d
^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19
*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^
13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 493
0560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*
b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^1
0*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B
^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^
3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320
*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x
)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2
*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*
c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A
*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22
*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8
314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^1
3*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 +
158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^3
2*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14
 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^
3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 35635
2*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16
*d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 +
 90071040*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 10556620
8*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*
c^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^
15 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528
*A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12
*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*
B*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*
d^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 +
45551616*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B
*b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d
^18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 10
81344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2
*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 1
6*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2
*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 -
320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*1i)/((
(d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27
*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 +
 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 155
5380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 135825
7536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 43818508
8*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^
2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26
*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12
*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28
800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^1
5*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*
d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*
e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 +
 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65
382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B
^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^
6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18
 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A
*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^1
6*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^
16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*
d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^1
9*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e
^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 49
30560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B
*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^
10*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*
B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b
^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 32
0*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*
x)^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^
2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3
*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*
A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^2
2*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 -
8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^
13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 +
 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^
32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^1
4 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c
^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 3563
52*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^1
6*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8
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- 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 1055662
08*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28
*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e
^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 130252
8*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^1
2*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088
*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14
*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 -
 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*
B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*
d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1
081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^
2*d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 +
16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^
2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 -
 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2) - ((d
 + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e
^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 5
64860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 15553
80864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 13582575
36*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*
A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*
b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c
^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e
^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 2880
0*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*
c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^
25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^
7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 4
07418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 6538
2912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2
*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*
d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 -
 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B
*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*
c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16
*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^
21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*
e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^1
3 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930
560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b
^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10
*e^20) - ((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^
2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3
*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*
A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*((d + e*x)
^(1/2)*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*
b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c
*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*
B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2)*(16384*b^22*
c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 83
14880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13
*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 1
58146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32
*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14
- 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3
*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 356352
*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16*
d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 +
90071040*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 105566208
*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*c
^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^1
5 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*
A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*
e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B
*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d
^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 4
5551616*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*
b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^
18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 108
1344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*
d^13*e^19))*((9*(25*A^2*b^4*e^4 + 256*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16
*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*
b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e - 256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 3
20*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*c*d^2*e^2))/(64*b^10*d^7))^(1/2) - 17694
72*A^3*b^8*c^23*d^26*e^3 + 23003136*A^3*b^9*c^22*d^25*e^4 - 136138752*A^3*b
^10*c^21*d^24*e^5 + 483508224*A^3*b^11*c^20*d^23*e^6 - 1141579008*A^3*b^12*
c^19*d^22*e^7 + 1869094656*A^3*b^13*c^18*d^21*e^8 - 2133106272*A^3*b^14*c^1
7*d^20*e^9 + 1631703744*A^3*b^15*c^16*d^19*e^10 - 716335488*A^3*b^16*c^15*d
^18*e^11 + 36390816*A^3*b^17*c^14*d^17*e^12 + 153641664*A^3*b^18*c^13*d^16*
e^13 - 89697024*A^3*b^19*c^12*d^15*e^14 + 40065408*A^3*b^20*c^11*d^14*e^15
- 43695936*A^3*b^21*c^10*d^13*e^16 + 41388192*A^3*b^22*c^9*d^12*e^17 - 2184
3648*A^3*b^23*c^8*d^11*e^18 + 6082560*A^3*b^24*c^7*d^10*e^19 - 712800*A^3*b
^25*c^6*d^9*e^20 + 221184*B^3*b^11*c^20*d^26*e^3 - 3041280*B^3*b^12*c^19*d^
25*e^4 + 19132416*B^3*b^13*c^18*d^24*e^5 - 72873216*B^3*b^14*c^17*d^23*e^6
+ 187373952*B^3*b^15*c^16*d^22*e^7 - 343108224*B^3*b^16*c^15*d^21*e^8 + 459
302400*B^3*b^17*c^14*d^20*e^9 - 452086272*B^3*b^18*c^13*d^19*e^10 + 3201016
32*B^3*b^19*c^12*d^18*e^11 - 148172544*B^3*b^20*c^11*d^17*e^12 + 24731136*B
^3*b^21*c^10*d^16*e^13 + 23604480*B^3*b^22*c^9*d^15*e^14 - 23497344*B^3*b^2
3*c^8*d^14*e^15 + 10675584*B^3*b^24*c^7*d^13*e^16 - 2654208*B^3*b^25*c^6*d^
12*e^17 + 290304*B^3*b^26*c^5*d^11*e^18 - 1327104*A*B^2*b^10*c^21*d^26*e^3
+ 17915904*A*B^2*b^11*c^20*d^25*e^4 - 110481408*A*B^2*b^12*c^19*d^24*e^5 +
411360768*A*B^2*b^13*c^18*d^23*e^6 - 1029158784*A*B^2*b^14*c^17*d^22*e^7 +
1819508832*A*B^2*b^15*c^16*d^21*e^8 - 2321496288*A*B^2*b^16*c^15*d^20*e^9 +
 2131940736*A*B^2*b^17*c^14*d^19*e^10 - 1360146816*A*B^2*b^18*c^13*d^18*e^1
1 + 537046848*A*B^2*b^19*c^12*d^17*e^12 - 75442752*A*B^2*b^20*c^11*d^16*e^1
3 - 26096256*A*B^2*b^21*c^10*d^15*e^14 - 9808128*A*B^2*b^22*c^9*d^14*e^15 +
 30634848*A*B^2*b^23*c^8*d^13*e^16 - 19613664*A*B^2*b^24*c^7*d^12*e^17 + 58
89024*A*B^2*b^25*c^6*d^11*e^18 - 725760*A*B^2*b^26*c^5*d^10*e^19 + 2654208*
A^2*B*b^9*c^22*d^26*e^3 - 35168256*A^2*B*b^10*c^21*d^25*e^4 + 212502528*A^2
*B*b^11*c^20*d^24*e^5 - 772996608*A^2*B*b^12*c^19*d^23*e^6 + 1879770240*A^2
*B*b^13*c^18*d^22*e^7 - 3201998688*A^2*B*b^14*c^17*d^21*e^8 + 3875314752*A^
2*B*b^15*c^16*d^20*e^9 - 3278408256*A^2*B*b^16*c^15*d^19*e^10 + 1809184896*
A^2*B*b^17*c^14*d^18*e^11 - 509470560*A^2*B*b^18*c^13*d^17*e^12 - 26137728*
A^2*B*b^19*c^12*d^16*e^13 + 20559744*A^2*B*b^20*c^11*d^15*e^14 + 65536128*A
^2*B*b^21*c^10*d^14*e^15 - 57254688*A^2*B*b^22*c^9*d^13*e^16 + 15059520*A^2
*B*b^23*c^8*d^12*e^17 + 3043008*A^2*B*b^24*c^7*d^11*e^18 - 2643840*A^2*B*b^
25*c^6*d^10*e^19 + 453600*A^2*B*b^26*c^5*d^9*e^20))*((9*(25*A^2*b^4*e^4 + 2
56*A^2*c^4*d^4 + 64*B^2*b^2*c^2*d^4 + 16*B^2*b^4*d^2*e^2 + 304*A^2*b^2*c^2*
d^2*e^2 + 384*A^2*b*c^3*d^3*e + 120*A^2*b^3*c*d*e^3 + 64*B^2*b^3*c*d^3*e -
256*A*B*b*c^3*d^4 - 40*A*B*b^4*d*e^3 - 320*A*B*b^2*c^2*d^3*e - 176*A*B*b^3*
c*d^2*e^2))/(64*b^10*d^7))^(1/2)*2i - atan(-(((d + e*x)^(1/2)*(589824*A^2*b
^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20
*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24
*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^
8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10
- 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 2
01386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986
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048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*
b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*
d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 1
47456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^
2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18
*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14
*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20
*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^1
2 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 13708
8*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29
*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^
19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332
864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A
*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*
b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^2
1*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c
^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d
^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16
 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*
A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11
*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 29
92*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1
408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 100
8*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*
B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 +
 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3
*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(
-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2
*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*
B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^
3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^
9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7
 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*
e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(
16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^
29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 6038323
2*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d
^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90
202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6
*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 1392
64*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e
^3 + 356352*A*b^19*c^18*d^28*e^4 - 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A
*b^21*c^16*d^26*e^6 - 28065792*A*b^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*
d^24*e^8 - 90071040*A*b^24*c^13*d^23*e^9 + 108810240*A*b^25*c^12*d^22*e^10
 - 105566208*A*b^26*c^11*d^21*e^11 + 86406144*A*b^27*c^10*d^20*e^12 - 633937
92*A*b^28*c^9*d^19*e^13 + 43075584*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c
^7*d^17*e^15 + 13108224*A*b^31*c^6*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17
 + 1302528*A*b^33*c^4*d^14*e^18 - 208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^3
5*c^2*d^12*e^20 + 12288*B*b^19*c^18*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4
+ 1241088*B*b^21*c^16*d^27*e^5 - 5203968*B*b^22*c^15*d^26*e^6 + 14831616*B*
b^23*c^14*d^25*e^7 - 30096384*B*b^24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d
^23*e^9 - 45551616*B*b^26*c^11*d^22*e^10 + 30007296*B*b^27*c^10*d^21*e^11 -
 6454272*B*b^28*c^9*d^20*e^12 - 10407936*B*b^29*c^8*d^19*e^13 + 14112768*B*
b^30*c^7*d^18*e^14 - 9449472*B*b^31*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16
*e^16 - 1081344*B*b^33*c^4*d^15*e^17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*
B*b^35*c^2*d^13*e^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B
^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b
^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^
3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^
10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8
*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^
5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7
*b^16*c*d*e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2
 - 8257536*A^2*b^13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 21038
2848*A^2*b^15*c^19*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080
*A^2*b^17*c^17*d^23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^
2*b^19*c^15*d^21*e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b
^21*c^13*d^19*e^11 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23
*c^11*d^17*e^13 + 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*
d^15*e^15 + 15108480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^1
7 + 3399552*A^2*b^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 29376
0*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^
20*d^28*e^2 - 2138112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*
e^4 - 58816512*B^2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 -
328809600*B^2*b^19*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 52196
1984*B^2*b^21*c^13*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560
*B^2*b^23*c^11*d^19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b
^25*c^9*d^17*e^13 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^
15*e^15 + 1751040*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 +
202752*B^2*b^30*c^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b
^13*c^21*d^28*e^2 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19
*d^26*e^4 + 222584832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24
*e^6 + 1197861120*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^
8 + 1864765440*A*B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10
+ 864115200*A*B*b^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 1
10656512*A*B*b^24*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 320947
2*A*B*b^26*c^8*d^15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^2
8*c^6*d^13*e^17 + 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11
*e^19 + 46080*A*B*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b
^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^
2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^
3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e
^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 -
 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e
 - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^1
5*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11
*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 29
92*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1
408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 100
8*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*
B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 +
 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3
*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d
^31*e^2 - 253952*b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*
b^25*c^15*d^28*e^5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*
e^7 + 106602496*b^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 1581465
60*b^30*c^10*d^23*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d
^21*e^12 - 46964736*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447
680*b^35*c^5*d^18*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*
e^17 + 8192*b^38*c^2*d^15*e^18) + 24576*A*b^18*c^19*d^29*e^3 - 356352*A*b^1
9*c^18*d^28*e^4 + 2396160*A*b^20*c^17*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e
^6 + 28065792*A*b^22*c^15*d^25*e^7 - 57891840*A*b^23*c^14*d^24*e^8 + 900710
40*A*b^24*c^13*d^23*e^9 - 108810240*A*b^25*c^12*d^22*e^10 + 105566208*A*b^2
6*c^11*d^21*e^11 - 86406144*A*b^27*c^10*d^20*e^12 + 63393792*A*b^28*c^9*d^1
9*e^13 - 43075584*A*b^29*c^8*d^18*e^14 + 26173440*A*b^30*c^7*d^17*e^15 - 13
108224*A*b^31*c^6*d^16*e^16 + 4964352*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33
*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^13*e^19 - 15360*A*b^35*c^2*d^12*e^20 -
 12288*B*b^19*c^18*d^29*e^3 + 181248*B*b^20*c^17*d^28*e^4 - 1241088*B*b^21*
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c^16*d^27*e^5 + 5203968*B*b^22*c^15*d^26*e^6 - 14831616*B*b^23*c^14*d^25*e^
7 + 30096384*B*b^24*c^13*d^24*e^8 - 44064768*B*b^25*c^12*d^23*e^9 + 4555161
6*B*b^26*c^11*d^22*e^10 - 30007296*B*b^27*c^10*d^21*e^11 + 6454272*B*b^28*c
^9*d^20*e^12 + 10407936*B*b^29*c^8*d^19*e^13 - 14112768*B*b^30*c^7*d^18*e^1
4 + 9449472*B*b^31*c^6*d^17*e^15 - 3996672*B*b^32*c^5*d^16*e^16 + 1081344*B
*b^33*c^4*d^15*e^17 - 172032*B*b^34*c^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e
^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 +
441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 -
1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384
*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B
*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b
^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c
^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^
(1/2)*1i)/(((d + e*x)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^
13*c^21*d^27*e^3 + 53342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^1
9*d^25*e^5 + 564860160*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^
23*e^7 + 1555380864*A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*
e^9 + 1358257536*A^2*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^1
1 + 438185088*A^2*b^22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 +
 90100224*A^2*b^24*c^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108
480*A^2*b^26*c^8*d^14*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b
^28*c^6*d^12*e^18 - 1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^
10*e^20 - 28800*A^2*b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 213
8112*B^2*b^15*c^19*d^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^
2*b^17*c^17*d^25*e^5 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^1
9*c^15*d^23*e^7 + 482904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^1
3*d^21*e^9 + 407418624*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^
19*e^11 + 65382912*B^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13
 - 6007680*B^2*b^26*c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040
*B^2*b^28*c^6*d^14*e^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c
^4*d^12*e^18 - 18432*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2
 + 8404992*A*B*b^14*c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 22258
4832*A*B*b^16*c^18*d^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120
*A*B*b^18*c^16*d^23*e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*
B*b^20*c^14*d^21*e^9 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b
^22*c^12*d^19*e^11 - 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24
*c^10*d^17*e^13 - 27548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^
15*e^15 + 4930560*A*B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 +
 2165760*A*B*b^29*c^5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B
*b^31*c^3*d^10*e^20) - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B
^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b
^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^
3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^
10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8
*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^
5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7
*b^16*c*d*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b
^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^
2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^
3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e
^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 -
 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e
 - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^1
5*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*
b^23*c^17*d^30*e^3 + 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^
5 + 26091520*b^26*c^14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b
^28*c^12*d^25*e^8 - 146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23
*e^10 - 134717440*b^31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 469647
36*b^33*c^7*d^20*e^13 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18
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*e^15 + 1105920*b^36*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*
c^2*d^15*e^18) - 24576*A*b^18*c^19*d^29*e^3 + 356352*A*b^19*c^18*d^28*e^4 -
 2396160*A*b^20*c^17*d^27*e^5 + 9897984*A*b^21*c^16*d^26*e^6 - 28065792*A*b
^22*c^15*d^25*e^7 + 57891840*A*b^23*c^14*d^24*e^8 - 90071040*A*b^24*c^13*d^
23*e^9 + 108810240*A*b^25*c^12*d^22*e^10 - 105566208*A*b^26*c^11*d^21*e^11
+ 86406144*A*b^27*c^10*d^20*e^12 - 63393792*A*b^28*c^9*d^19*e^13 + 43075584
*A*b^29*c^8*d^18*e^14 - 26173440*A*b^30*c^7*d^17*e^15 + 13108224*A*b^31*c^6
*d^16*e^16 - 4964352*A*b^32*c^5*d^15*e^17 + 1302528*A*b^33*c^4*d^14*e^18 -
208896*A*b^34*c^3*d^13*e^19 + 15360*A*b^35*c^2*d^12*e^20 + 12288*B*b^19*c^1
8*d^29*e^3 - 181248*B*b^20*c^17*d^28*e^4 + 1241088*B*b^21*c^16*d^27*e^5 - 5
203968*B*b^22*c^15*d^26*e^6 + 14831616*B*b^23*c^14*d^25*e^7 - 30096384*B*b^
24*c^13*d^24*e^8 + 44064768*B*b^25*c^12*d^23*e^9 - 45551616*B*b^26*c^11*d^2
2*e^10 + 30007296*B*b^27*c^10*d^21*e^11 - 6454272*B*b^28*c^9*d^20*e^12 - 10
407936*B*b^29*c^8*d^19*e^13 + 14112768*B*b^30*c^7*d^18*e^14 - 9449472*B*b^3
1*c^6*d^17*e^15 + 3996672*B*b^32*c^5*d^16*e^16 - 1081344*B*b^33*c^4*d^15*e^
17 + 172032*B*b^34*c^3*d^14*e^18 - 12288*B*b^35*c^2*d^13*e^19))*(-(9*(256*A
^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e
^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*
e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*
e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e +
3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^
7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b
^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2) - ((d + e*x
)^(1/2)*(589824*A^2*b^12*c^22*d^28*e^2 - 8257536*A^2*b^13*c^21*d^27*e^3 + 5
3342208*A^2*b^14*c^20*d^26*e^4 - 210382848*A^2*b^15*c^19*d^25*e^5 + 5648601
60*A^2*b^16*c^18*d^24*e^6 - 1089838080*A^2*b^17*c^17*d^23*e^7 + 1555380864*
A^2*b^18*c^16*d^22*e^8 - 1667850624*A^2*b^19*c^15*d^21*e^9 + 1358257536*A^2
*b^20*c^14*d^20*e^10 - 855642240*A^2*b^21*c^13*d^19*e^11 + 438185088*A^2*b^
22*c^12*d^18*e^12 - 201386880*A^2*b^23*c^11*d^17*e^13 + 90100224*A^2*b^24*c
^10*d^16*e^14 - 37986048*A^2*b^25*c^9*d^15*e^15 + 15108480*A^2*b^26*c^8*d^1
4*e^16 - 6844032*A^2*b^27*c^7*d^13*e^17 + 3399552*A^2*b^28*c^6*d^12*e^18 -
1300608*A^2*b^29*c^5*d^11*e^19 + 293760*A^2*b^30*c^4*d^10*e^20 - 28800*A^2*
b^31*c^3*d^9*e^21 + 147456*B^2*b^14*c^20*d^28*e^2 - 2138112*B^2*b^15*c^19*d
^27*e^3 + 14340096*B^2*b^16*c^18*d^26*e^4 - 58816512*B^2*b^17*c^17*d^25*e^5
 + 164257920*B^2*b^18*c^16*d^24*e^6 - 328809600*B^2*b^19*c^15*d^23*e^7 + 48
2904576*B^2*b^20*c^14*d^22*e^8 - 521961984*B^2*b^21*c^13*d^21*e^9 + 4074186
24*B^2*b^22*c^12*d^20*e^10 - 216610560*B^2*b^23*c^11*d^19*e^11 + 65382912*B
^2*b^24*c^10*d^18*e^12 - 1276416*B^2*b^25*c^9*d^17*e^13 - 6007680*B^2*b^26*
c^8*d^16*e^14 + 137088*B^2*b^27*c^7*d^15*e^15 + 1751040*B^2*b^28*c^6*d^14*e
^16 - 903168*B^2*b^29*c^5*d^13*e^17 + 202752*B^2*b^30*c^4*d^12*e^18 - 18432
*B^2*b^31*c^3*d^11*e^19 - 589824*A*B*b^13*c^21*d^28*e^2 + 8404992*A*B*b^14*
c^20*d^27*e^3 - 55332864*A*B*b^15*c^19*d^26*e^4 + 222584832*A*B*b^16*c^18*d
^25*e^5 - 609557760*A*B*b^17*c^17*d^24*e^6 + 1197861120*A*B*b^18*c^16*d^23*
e^7 - 1733566464*A*B*b^19*c^15*d^22*e^8 + 1864765440*A*B*b^20*c^14*d^21*e^9
 - 1485494784*A*B*b^21*c^13*d^20*e^10 + 864115200*A*B*b^22*c^12*d^19*e^11 -
 361248768*A*B*b^23*c^11*d^18*e^12 + 110656512*A*B*b^24*c^10*d^17*e^13 - 27
548928*A*B*b^25*c^9*d^16*e^14 + 3209472*A*B*b^26*c^8*d^15*e^15 + 4930560*A*
B*b^27*c^7*d^14*e^16 - 4912128*A*B*b^28*c^6*d^13*e^17 + 2165760*A*B*b^29*c^
5*d^12*e^18 - 488448*A*B*b^30*c^4*d^11*e^19 + 46080*A*B*b^31*c^3*d^10*e^20)
 - (-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441
*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 138
6*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^
2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^
2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17
*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*
d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/
2)*((d + e*x)^(1/2)*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 + 64*B^2*
b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*B^2*b^4*
c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A^2*b^3*c
^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B*b*c^10*
d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^3*c^8*d^
2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c^5*d^5*e
^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^5 - 7*b^
16*c*d*e^6)))^(1/2)*(16384*b^22*c^18*d^31*e^2 - 253952*b^23*c^17*d^30*e^3 +
 1843200*b^24*c^16*d^29*e^4 - 8314880*b^25*c^15*d^28*e^5 + 26091520*b^26*c^
14*d^27*e^6 - 60383232*b^27*c^13*d^26*e^7 + 106602496*b^28*c^12*d^25*e^8 -
146432000*b^29*c^11*d^24*e^9 + 158146560*b^30*c^10*d^23*e^10 - 134717440*b^
31*c^9*d^22*e^11 + 90202112*b^32*c^8*d^21*e^12 - 46964736*b^33*c^7*d^20*e^1
3 + 18636800*b^34*c^6*d^19*e^14 - 5447680*b^35*c^5*d^18*e^15 + 1105920*b^36
*c^4*d^17*e^16 - 139264*b^37*c^3*d^16*e^17 + 8192*b^38*c^2*d^15*e^18) + 245
76*A*b^18*c^19*d^29*e^3 - 356352*A*b^19*c^18*d^28*e^4 + 2396160*A*b^20*c^17
*d^27*e^5 - 9897984*A*b^21*c^16*d^26*e^6 + 28065792*A*b^22*c^15*d^25*e^7 -
57891840*A*b^23*c^14*d^24*e^8 + 90071040*A*b^24*c^13*d^23*e^9 - 108810240*A
*b^25*c^12*d^22*e^10 + 105566208*A*b^26*c^11*d^21*e^11 - 86406144*A*b^27*c^
10*d^20*e^12 + 63393792*A*b^28*c^9*d^19*e^13 - 43075584*A*b^29*c^8*d^18*e^1
4 + 26173440*A*b^30*c^7*d^17*e^15 - 13108224*A*b^31*c^6*d^16*e^16 + 4964352
*A*b^32*c^5*d^15*e^17 - 1302528*A*b^33*c^4*d^14*e^18 + 208896*A*b^34*c^3*d^
13*e^19 - 15360*A*b^35*c^2*d^12*e^20 - 12288*B*b^19*c^18*d^29*e^3 + 181248*
B*b^20*c^17*d^28*e^4 - 1241088*B*b^21*c^16*d^27*e^5 + 5203968*B*b^22*c^15*d
^26*e^6 - 14831616*B*b^23*c^14*d^25*e^7 + 30096384*B*b^24*c^13*d^24*e^8 - 4
4064768*B*b^25*c^12*d^23*e^9 + 45551616*B*b^26*c^11*d^22*e^10 - 30007296*B*
b^27*c^10*d^21*e^11 + 6454272*B*b^28*c^9*d^20*e^12 + 10407936*B*b^29*c^8*d^
19*e^13 - 14112768*B*b^30*c^7*d^18*e^14 + 9449472*B*b^31*c^6*d^17*e^15 - 39
96672*B*b^32*c^5*d^16*e^16 + 1081344*B*b^33*c^4*d^15*e^17 - 172032*B*b^34*c
^3*d^14*e^18 + 12288*B*b^35*c^2*d^13*e^19))*(-(9*(256*A^2*c^11*d^4 + 1089*A
^2*b^4*c^7*e^4 + 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^
9*d^2*e^2 + 912*B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^1
0*d^3*e - 2904*A^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6
*d*e^3 - 256*A*B*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e
^3 - 3312*A*B*b^3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d
^6*e - 21*b^12*c^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21
*b^15*c^2*d^2*e^5 - 7*b^16*c*d*e^6)))^(1/2) - 1769472*A^3*b^8*c^23*d^26*e^3
 + 23003136*A^3*b^9*c^22*d^25*e^4 - 136138752*A^3*b^10*c^21*d^24*e^5 + 4835
08224*A^3*b^11*c^20*d^23*e^6 - 1141579008*A^3*b^12*c^19*d^22*e^7 + 18690946
56*A^3*b^13*c^18*d^21*e^8 - 2133106272*A^3*b^14*c^17*d^20*e^9 + 1631703744*
A^3*b^15*c^16*d^19*e^10 - 716335488*A^3*b^16*c^15*d^18*e^11 + 36390816*A^3*
b^17*c^14*d^17*e^12 + 153641664*A^3*b^18*c^13*d^16*e^13 - 89697024*A^3*b^19
*c^12*d^15*e^14 + 40065408*A^3*b^20*c^11*d^14*e^15 - 43695936*A^3*b^21*c^10
*d^13*e^16 + 41388192*A^3*b^22*c^9*d^12*e^17 - 21843648*A^3*b^23*c^8*d^11*e
^18 + 6082560*A^3*b^24*c^7*d^10*e^19 - 712800*A^3*b^25*c^6*d^9*e^20 + 22118
4*B^3*b^11*c^20*d^26*e^3 - 3041280*B^3*b^12*c^19*d^25*e^4 + 19132416*B^3*b^
13*c^18*d^24*e^5 - 72873216*B^3*b^14*c^17*d^23*e^6 + 187373952*B^3*b^15*c^1
6*d^22*e^7 - 343108224*B^3*b^16*c^15*d^21*e^8 + 459302400*B^3*b^17*c^14*d^2
0*e^9 - 452086272*B^3*b^18*c^13*d^19*e^10 + 320101632*B^3*b^19*c^12*d^18*e^
11 - 148172544*B^3*b^20*c^11*d^17*e^12 + 24731136*B^3*b^21*c^10*d^16*e^13 +
 23604480*B^3*b^22*c^9*d^15*e^14 - 23497344*B^3*b^23*c^8*d^14*e^15 + 106755
84*B^3*b^24*c^7*d^13*e^16 - 2654208*B^3*b^25*c^6*d^12*e^17 + 290304*B^3*b^2
6*c^5*d^11*e^18 - 1327104*A*B^2*b^10*c^21*d^26*e^3 + 17915904*A*B^2*b^11*c^
20*d^25*e^4 - 110481408*A*B^2*b^12*c^19*d^24*e^5 + 411360768*A*B^2*b^13*c^1
8*d^23*e^6 - 1029158784*A*B^2*b^14*c^17*d^22*e^7 + 1819508832*A*B^2*b^15*c^
16*d^21*e^8 - 2321496288*A*B^2*b^16*c^15*d^20*e^9 + 2131940736*A*B^2*b^17*c
^14*d^19*e^10 - 1360146816*A*B^2*b^18*c^13*d^18*e^11 + 537046848*A*B^2*b^19
*c^12*d^17*e^12 - 75442752*A*B^2*b^20*c^11*d^16*e^13 - 26096256*A*B^2*b^21*
c^10*d^15*e^14 - 9808128*A*B^2*b^22*c^9*d^14*e^15 + 30634848*A*B^2*b^23*c^8
*d^13*e^16 - 19613664*A*B^2*b^24*c^7*d^12*e^17 + 5889024*A*B^2*b^25*c^6*d^1
1*e^18 - 725760*A*B^2*b^26*c^5*d^10*e^19 + 2654208*A^2*B*b^9*c^22*d^26*e^3
- 35168256*A^2*B*b^10*c^21*d^25*e^4 + 212502528*A^2*B*b^11*c^20*d^24*e^5 -
772996608*A^2*B*b^12*c^19*d^23*e^6 + 1879770240*A^2*B*b^13*c^18*d^22*e^7 -
```

```
3201998688*A^2*B*b^14*c^17*d^21*e^8 + 3875314752*A^2*B*b^15*c^16*d^20*e^9 -
 3278408256*A^2*B*b^16*c^15*d^19*e^10 + 1809184896*A^2*B*b^17*c^14*d^18*e^1
1 - 509470560*A^2*B*b^18*c^13*d^17*e^12 - 26137728*A^2*B*b^19*c^12*d^16*e^1
3 + 20559744*A^2*B*b^20*c^11*d^15*e^14 + 65536128*A^2*B*b^21*c^10*d^14*e^15
 - 57254688*A^2*B*b^22*c^9*d^13*e^16 + 15059520*A^2*B*b^23*c^8*d^12*e^17 +
3043008*A^2*B*b^24*c^7*d^11*e^18 - 2643840*A^2*B*b^25*c^6*d^10*e^19 + 45360
0*A^2*B*b^26*c^5*d^9*e^20))*(-(9*(256*A^2*c^11*d^4 + 1089*A^2*b^4*c^7*e^4 +
 64*B^2*b^2*c^9*d^4 + 441*B^2*b^6*c^5*e^4 + 2992*A^2*b^2*c^9*d^2*e^2 + 912*
B^2*b^4*c^7*d^2*e^2 - 1386*A*B*b^5*c^6*e^4 - 1408*A^2*b*c^10*d^3*e - 2904*A
^2*b^3*c^8*d*e^3 - 384*B^2*b^3*c^8*d^3*e - 1008*B^2*b^5*c^6*d*e^3 - 256*A*B
*b*c^10*d^4 + 1472*A*B*b^2*c^9*d^3*e + 3432*A*B*b^4*c^7*d*e^3 - 3312*A*B*b^
3*c^8*d^2*e^2))/(64*(b^17*e^7 - b^10*c^7*d^7 + 7*b^11*c^6*d^6*e - 21*b^12*c
^5*d^5*e^2 + 35*b^13*c^4*d^4*e^3 - 35*b^14*c^3*d^3*e^4 + 21*b^15*c^2*d^2*e^
5 - 7*b^16*c*d*e^6)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1254 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=644

$$-\frac{cx(2Acd-b(Ae+Bd))+Ab(cd-be)}{2b^2d\left(bx+cx^2\right)^2(d+ex)^{3/2}(cd-be)}-\frac{\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d}}\right)\left(-5b^2e(4Bd-7Ae)-12bcd(2Bd-5Ae)+48Ac^2d^2\right)}{4b^5d^{9/2}}+$$

```
[Out] 1/12*e*(72*A*c^4*d^4+5*b^4*e^3*(-7*A*e+4*B*d)-9*b^3*c*d*e^2*(-5*A*e+4*B*d)-
36*b*c^3*d^3*(4*A*e+B*d)+3*b^2*c^2*d^2*e*(9*A*e+29*B*d))/b^4/d^3/(-b*e+c*d)
^3/(e*x+d)^(3/2)+1/2*(-A*b*(-b*e+c*d)-c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*
e+c*d)/(e*x+d)^(3/2)/(c*x^2+b*x)^2+1/4*(b*(-b*e+c*d)*(12*A*c^2*d^2+b^2*e*(-
7*A*e+4*B*d)-3*b*c*d*(A*e+2*B*d))+c*(24*A*c^3*d^3-b^3*e^2*(-7*A*e+4*B*d)+b^
2*c*d*e*(-2*A*e+23*B*d)-12*b*c^2*d^2*(3*A*e+B*d))*x)/b^4/d^2/(-b*e+c*d)^2/(
e*x+d)^(3/2)/(c*x^2+b*x)-1/4*(48*A*c^2*d^2-5*b^2*e*(-7*A*e+4*B*d)-12*b*c*d*
(-5*A*e+2*B*d))*arctanh((e*x+d)^(1/2)/d^(1/2))/b^5/d^(9/2)+1/4*c^(7/2)*(48*
A*c^3*d^2-99*b^3*B*e^2-12*b*c^2*d*(13*A*e+2*B*d)+11*b^2*c*e*(13*A*e+8*B*d))
*arctanh(c^(1/2)*(e*x+d)^(1/2)/(-b*e+c*d)^(1/2))/b^5/(-b*e+c*d)^(9/2)+1/4*e
*(24*A*c^5*d^5+8*b^4*c*d*e^3*(-10*A*e+7*B*d)-5*b^5*e^4*(-7*A*e+4*B*d)-6*b^3
*c^2*d^2*e^2*(-3*A*e+4*B*d)+7*b^2*c^3*d^3*e*(4*A*e+5*B*d)-12*b*c^4*d^4*(5*A
*e+B*d))/b^4/d^4/(-b*e+c*d)^4/(e*x+d)^(1/2)
```

Rubi [**A**] time = 1.79, antiderivative size = 644, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {822, 828, 826, 1166, 208}

$$\frac{cx\left(b^2cde(23Bd-2Ae)+b^3\left(-e^2\right)(4Bd-7Ae)-12bc^2d^2(3Ae+Bd)+24Ac^3d^3\right)+b(cd-be)\left(b^2e(4Bd-7Ae)-\right.}{4b^4d^2\left(bx+cx^2\right)(d+ex)^{3/2}(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (e*(72*A*c^4*d^4 + 5*b^4*e^3*(4*B*d - 7*A*e) - 9*b^3*c*d*e^2*(4*B*d - 5*A*e
) - 36*b*c^3*d^3*(B*d + 4*A*e) + 3*b^2*c^2*d^2*e*(29*B*d + 9*A*e)))/(12*b^4
*d^3*(c*d - b*e)^3*(d + e*x)^(3/2)) + (e*(24*A*c^5*d^5 + 8*b^4*c*d*e^3*(7*B
*d - 10*A*e) - 5*b^5*e^4*(4*B*d - 7*A*e) - 6*b^3*c^2*d^2*e^2*(4*B*d - 3*A*e
) + 7*b^2*c^3*d^3*e*(5*B*d + 4*A*e) - 12*b*c^4*d^4*(B*d + 5*A*e)))/(4*b^4*d
^4*(c*d - b*e)^4*Sqrt[d + e*x]) - (A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d +
A*e))*x)/(2*b^2*d*(c*d - b*e)*(d + e*x)^(3/2)*(b*x + c*x^2)^2) + (b*(c*d -
b*e)*(12*A*c^2*d^2 + b^2*e*(4*B*d - 7*A*e) - 3*b*c*d*(2*B*d + A*e)) + c*(24
*A*c^3*d^3 - b^3*e^2*(4*B*d - 7*A*e) + b^2*c*d*e*(23*B*d - 2*A*e) - 12*b*c^
2*d^2*(B*d + 3*A*e))*x)/(4*b^4*d^2*(c*d - b*e)^2*(d + e*x)^(3/2)*(b*x + c*x
^2)) - ((48*A*c^2*d^2 - 5*b^2*e*(4*B*d - 7*A*e) - 12*b*c*d*(2*B*d - 5*A*e))
*ArcTanh[Sqrt[d + e*x]/Sqrt[d]])/(4*b^5*d^(9/2)) + (c^(7/2)*(48*A*c^3*d^2 -
 99*b^3*B*e^2 - 12*b*c^2*d*(2*B*d + 13*A*e) + 11*b^2*c*e*(8*B*d + 13*A*e))*
ArcTanh[(Sqrt[c]*Sqrt[d + e*x])/Sqrt[c*d - b*e]])/(4*b^5*(c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^3}\,dx = -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(12Ac^2d^2+b^2e(4Bd-7Ae)-3bcd(2Bd+Ae)\right)-\frac{9}{2}c}{(d+ex)^{5/2}\left(bx+cx^2\right)^2}}{2b^2d(cd-be)}$$

$$= -\frac{Ab(cd-be)+c(2Acd-b(Bd+Ae))x}{2b^2d(cd-be)(d+ex)^{3/2}\left(bx+cx^2\right)^2} + \frac{b(cd-be)\left(12Ac^2d^2+b^2e(4Bd-7Ae)\right.}{}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+3b\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+3b\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+3b\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+3b\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

$$= \frac{e\left(72Ac^4d^4+5b^4e^3(4Bd-7Ae)-9b^3cde^2(4Bd-5Ae)-36bc^3d^3(Bd+4Ae)+3b\right.}{12b^4d^3(cd-be)^3(d+ex)^{3/2}}$$

Mathematica [**C**] time = 0.57, size = 388, normalized size = 0.60

$$\frac{6Ab^4d^2(be-cd)^3+3b^3dx(be-cd)^3(-7Abe-8Acd+4bBd)+x^2\left(3b^2cd(cd-be)^2\left(b^2e(4Bd-7Ae)-3bcd(Ae+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^3),x]
```

```
[Out] (6*A*b^4*d^2*(-(c*d) + b*e)^3 + 3*b^3*d*(-(c*d) + b*e)^3*(4*b*B*d - 8*A*c*d
 - 7*A*b*e)*x + x^2*(3*b^2*c*d*(c*d - b*e)^2*(12*A*c^2*d^2 + b^2*e*(4*B*d -
 7*A*e) - 3*b*c*d*(2*B*d + A*e)) + (b + c*x)*(3*b*c*d*(-(c*d) + b*e)*(-24*A
*c^3*d^3 + b^3*e^2*(4*B*d - 7*A*e) + b^2*c*d*e*(-23*B*d + 2*A*e) + 12*b*c^2
*d^2*(B*d + 3*A*e)) - (b + c*x)*(c^2*d^3*(48*A*c^3*d^2 - 99*b^3*B*e^2 - 12*
b*c^2*d*(2*B*d + 13*A*e) + 11*b^2*c*e*(8*B*d + 13*A*e))*Hypergeometric2F1[-
3/2, 1, -1/2, (c*(d + e*x))/(c*d - b*e)] - (c*d - b*e)^3*(48*A*c^2*d^2 + 12
*b*c*d*(-2*B*d + 5*A*e) + 5*b^2*e*(-4*B*d + 7*A*e))*Hypergeometric2F1[-3/2,
 1, -1/2, 1 + (e*x)/d]))))/(12*b^5*d^3*(c*d - b*e)^3*x^2*(b + c*x)^2*(d + e
*x)^(3/2))
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**]   time = 1.09, size = 1600, normalized size = 2.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="giac")
```

```
[Out] 1/4*(24*B*b*c^6*d^2 - 48*A*c^7*d^2 - 88*B*b^2*c^5*d*e + 156*A*b*c^6*d*e + 9
9*B*b^3*c^4*e^2 - 143*A*b^2*c^5*e^2)*arctan(sqrt(x*e + d)*c/sqrt(-c^2*d + b
*c*e))/((b^5*c^4*d^4 - 4*b^6*c^3*d^3*e + 6*b^7*c^2*d^2*e^2 - 4*b^8*c*d*e^3
+ b^9*e^4)*sqrt(-c^2*d + b*c*e)) + 2/3*(15*(x*e + d)*B*c*d^2*e^4 + B*c*d^3*
e^4 - 6*(x*e + d)*B*b*d*e^5 - 18*(x*e + d)*A*c*d*e^5 - B*b*d^2*e^5 - A*c*d^
2*e^5 + 9*(x*e + d)*A*b*e^6 + A*b*d*e^6)/((c^4*d^8 - 4*b*c^3*d^7*e + 6*b^2*
c^2*d^6*e^2 - 4*b^3*c*d^5*e^3 + b^4*d^4*e^4)*(x*e + d)^(3/2)) - 1/4*(12*(x*
e + d)^(7/2)*B*b*c^6*d^5*e - 24*(x*e + d)^(7/2)*A*c^7*d^5*e - 36*(x*e + d)^
(5/2)*B*b*c^6*d^6*e + 72*(x*e + d)^(5/2)*A*c^7*d^6*e + 36*(x*e + d)^(3/2)*B
*b*c^6*d^7*e - 72*(x*e + d)^(3/2)*A*c^7*d^7*e - 12*sqrt(x*e + d)*B*b*c^6*d^
8*e + 24*sqrt(x*e + d)*A*c^7*d^8*e - 35*(x*e + d)^(7/2)*B*b^2*c^5*d^4*e^2 +
 60*(x*e + d)^(7/2)*A*b*c^6*d^4*e^2 + 123*(x*e + d)^(5/2)*B*b^2*c^5*d^5*e^2
 - 216*(x*e + d)^(5/2)*A*b*c^6*d^5*e^2 - 141*(x*e + d)^(3/2)*B*b^2*c^5*d^6*
e^2 + 252*(x*e + d)^(3/2)*A*b*c^6*d^6*e^2 + 53*sqrt(x*e + d)*B*b^2*c^5*d^7*
e^2 - 96*sqrt(x*e + d)*A*b*c^6*d^7*e^2 + 24*(x*e + d)^(7/2)*B*b^3*c^4*d^3*e
^3 - 28*(x*e + d)^(7/2)*A*b^2*c^5*d^3*e^3 - 125*(x*e + d)^(5/2)*B*b^3*c^4*d
^4*e^3 + 175*(x*e + d)^(5/2)*A*b^2*c^5*d^4*e^3 + 182*(x*e + d)^(3/2)*B*b^3*
c^4*d^5*e^3 - 274*(x*e + d)^(3/2)*A*b^2*c^5*d^5*e^3 - 81*sqrt(x*e + d)*B*b^
3*c^4*d^6*e^3 + 127*sqrt(x*e + d)*A*b^2*c^5*d^6*e^3 - 16*(x*e + d)^(7/2)*B*
b^4*c^3*d^2*e^4 - 18*(x*e + d)^(7/2)*A*b^3*c^4*d^2*e^4 + 96*(x*e + d)^(5/2)
*B*b^4*c^3*d^3*e^4 + 10*(x*e + d)^(5/2)*A*b^3*c^4*d^3*e^4 - 160*(x*e + d)^(
3/2)*B*b^4*c^3*d^4*e^4 + 55*(x*e + d)^(3/2)*A*b^3*c^4*d^4*e^4 + 80*sqrt(x*e
 + d)*B*b^4*c^3*d^5*e^4 - 45*sqrt(x*e + d)*A*b^3*c^4*d^5*e^4 + 4*(x*e + d)^
(7/2)*B*b^5*c^2*d*e^5 + 32*(x*e + d)^(7/2)*A*b^4*c^3*d*e^5 - 44*(x*e + d)^(
5/2)*B*b^5*c^2*d^2*e^5 - 140*(x*e + d)^(5/2)*A*b^4*c^3*d^2*e^5 + 100*(x*e +
 d)^(3/2)*B*b^5*c^2*d^3*e^5 + 180*(x*e + d)^(3/2)*A*b^4*c^3*d^3*e^5 - 60*sq
rt(x*e + d)*B*b^5*c^2*d^4*e^5 - 80*sqrt(x*e + d)*A*b^4*c^3*d^4*e^5 - 11*(x*
e + d)^(7/2)*A*b^5*c^2*e^6 + 8*(x*e + d)^(5/2)*B*b^6*c*d*e^6 + 99*(x*e + d)
^(5/2)*A*b^5*c^2*d*e^6 - 32*(x*e + d)^(3/2)*B*b^6*c*d^2*e^6 - 199*(x*e + d)
^(3/2)*A*b^5*c^2*d^2*e^6 + 24*sqrt(x*e + d)*B*b^6*c*d^3*e^6 + 123*sqrt(x*e
+ d)*A*b^5*c^2*d^3*e^6 - 22*(x*e + d)^(5/2)*A*b^6*c*e^7 + 4*(x*e + d)^(3/2)
*B*b^7*d*e^7 + 80*(x*e + d)^(3/2)*A*b^6*c*d*e^7 - 4*sqrt(x*e + d)*B*b^7*d^2
*e^7 - 66*sqrt(x*e + d)*A*b^6*c*d^2*e^7 - 11*(x*e + d)^(3/2)*A*b^7*e^8 + 13
*sqrt(x*e + d)*A*b^7*d*e^8)/((b^4*c^4*d^8 - 4*b^5*c^3*d^7*e + 6*b^6*c^2*d^6
*e^2 - 4*b^7*c*d^5*e^3 + b^8*d^4*e^4)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*
d^2 + (x*e + d)*b*e - b*d*e)^2) - 1/4*(24*B*b*c*d^2 - 48*A*c^2*d^2 + 20*B*b
^2*d*e - 60*A*b*c*d*e - 35*A*b^2*e^2)*arctan(sqrt(x*e + d)/sqrt(-d))/(b^5*s
qrt(-d)*d^4)
```

maple [**A**]   time = 0.09, size = 1130, normalized size = 1.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x)
```

```
[Out] -29/4*e^2*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d+2*e*c^6/(b*e-
c*d)^4/b^3/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)*d^2+39*e*c^6/(b*e-c*d)^4/b^4/((b*e
-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A*d-22*e*c^5/(b*
e-c*d)^4/b^3/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c
)*B*d-3*e*c^7/(b*e-c*d)^4/b^4/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)*d^2-2*e*c^6/(b*
e-c*d)^4/b^3/(c*e*x+b*e)^2*(e*x+d)^(3/2)*B*d+3*e*c^7/(b*e-c*d)^4/b^4/(c*e*x
+b*e)^2*(e*x+d)^(3/2)*A*d+37/4*e^2*c^6/(b*e-c*d)^4/b^3/(c*e*x+b*e)^2*A*(e*x
+d)^(1/2)*d-35/4*e^2/b^3/d^(9/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A+5*e/b^3/d
^(7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B-12/b^5/d^(5/2)*arctanh((e*x+d)^(1/2
)/d^(1/2))*A*c^2+6/b^4/d^(5/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*B*c+11/4/b^3/
d^4/x^2*A*(e*x+d)^(3/2)-13/4/b^3/d^3/x^2*(e*x+d)^(1/2)*A-2/3*e^4/(b*e-c*d)^
3/d^2/(e*x+d)^(3/2)*B+2/3*e^5/(b*e-c*d)^3/d^3/(e*x+d)^(3/2)*A-1/e/b^3/d^3/x
^2*B*(e*x+d)^(3/2)+1/e/b^3/d^2/x^2*(e*x+d)^(1/2)*B+10*e^4/(b*e-c*d)^4/d^2/(
e*x+d)^(1/2)*B*c+6*e^6/(b*e-c*d)^4/d^4/(e*x+d)^(1/2)*A*b-12*e^5/(b*e-c*d)^4
/d^3/(e*x+d)^(1/2)*A*c-4*e^5/(b*e-c*d)^4/d^3/(e*x+d)^(1/2)*B*b-15*e/b^4/d^(
7/2)*arctanh((e*x+d)^(1/2)/d^(1/2))*A*c-3/e/b^4/d^2/x^2*(e*x+d)^(1/2)*A*c-1
2*c^7/(b*e-c*d)^4/b^5/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c
)^(1/2)*c)*A*d^2+6*c^6/(b*e-c*d)^4/b^4/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(
1/2)/((b*e-c*d)*c)^(1/2)*c)*B*d^2-23/4*e^2*c^6/(b*e-c*d)^4/b^3/(c*e*x+b*e)^
2*(e*x+d)^(3/2)*A+19/4*e^2*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*(e*x+d)^(3/2)*
B-25/4*e^3*c^5/(b*e-c*d)^4/b^2/(c*e*x+b*e)^2*A*(e*x+d)^(1/2)+21/4*e^3*c^4/(
b*e-c*d)^4/b/(c*e*x+b*e)^2*B*(e*x+d)^(1/2)-143/4*e^2*c^5/(b*e-c*d)^4/b^3/((
b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1/2)*c)*A+99/4*e^2*c^
4/(b*e-c*d)^4/b^2/((b*e-c*d)*c)^(1/2)*arctan((e*x+d)^(1/2)/((b*e-c*d)*c)^(1
/2)*c)*B+3/e/b^4/d^3/x^2*A*(e*x+d)^(3/2)*c
```

<u>**maxima**</u> **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-c*d>0)', see `assume?` for more
 details)Is b*e-c*d positive or negative?
```

<u>**mupad**</u> **[B]** time = 6.93, size = 24572, normalized size = 38.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^3*(d + e*x)^(5/2)),x)
```

```
[Out] log(14598144*A^3*b^9*c^27*d^32*e^4 - 884736*A^3*b^8*c^28*d^33*e^3 - ((d + e
*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3
+ 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707
439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822
016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 189361075
20*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641
408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 1026563
9040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597
440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 26085297
92*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 127446528
0*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2
*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c
^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^
26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555
520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B
^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*
b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^2
2*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24
*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^
13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*
d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20
*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20
 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 90112
0*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c
^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^3
4*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^
6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8
+ 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10
+ 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12
 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14
+ 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 -
1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1
489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 38370
8160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A
*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^
3*d^13*e^25) - ((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4
+ 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4
200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b
^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^
(1/2)*((d + e*x)^(1/2)*((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*
c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d
^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 14
00*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^1
0*d^9))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 32768
00*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^
37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587
609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 3783802880*b^3
1*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^
30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 +
 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b
^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^
20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2
*d^20*e^23) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A*b^19*c^23*d^37*e^4 + 41
85088*A*b^20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d^35*e^6 + 92710912*A*b^2
2*c^20*d^34*e^7 - 273566720*A*b^23*c^19*d^33*e^8 + 629578752*A*b^24*c^18*d^
32*e^9 - 1169833984*A*b^25*c^17*d^31*e^10 + 1818910720*A*b^26*c^16*d^30*e^1
1 - 2465058816*A*b^27*c^15*d^29*e^12 + 3031169024*A*b^28*c^14*d^28*e^13 - 3
457871872*A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30*c^12*d^26*e^15 - 338555
9040*A*b^31*c^11*d^25*e^16 + 2714064896*A*b^32*c^10*d^24*e^17 - 1813512192*
A*b^33*c^9*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^19 - 426815488*A*b^35*c^
7*d^21*e^20 + 143109120*A*b^36*c^6*d^20*e^21 - 35796992*A*b^37*c^5*d^19*e^2
2 + 6285312*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^3*d^17*e^24 + 35840*A*b^
40*c^2*d^16*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238592*B*b^20*c^22*d^37*e^4
 - 2187264*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c^20*d^35*e^6 - 49401856*
B*b^23*c^19*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e^8 - 300793856*B*b^25*c^
17*d^32*e^9 + 460562432*B*b^26*c^16*d^31*e^10 - 455516160*B*b^27*c^15*d^30*
e^11 + 116267008*B*b^28*c^14*d^29*e^12 + 543981568*B*b^29*c^13*d^28*e^13 -
1250156544*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^31*c^11*d^26*e^15 - 15476
94080*B*b^32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9*d^24*e^17 - 624861184*B
*b^34*c^8*d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^19 - 89988096*B*b^36*c^6*
d^21*e^20 + 22077440*B*b^37*c^5*d^20*e^21 - 3784704*B*b^38*c^4*d^19*e^22 +
405504*B*b^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17*e^24))*((1225*A^2*b^4*e
^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^
2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b
^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 1400*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3
*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^10*d^9))^(1/2) - 111310848*A^3*b^10*c^26
*d^31*e^5 + 518538240*A^3*b^11*c^25*d^30*e^6 - 1640557440*A^3*b^12*c^24*d^2
9*e^7 + 3692369088*A^3*b^13*c^23*d^28*e^8 - 5970365632*A^3*b^14*c^22*d^27*e
```

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^9 + 6695810784*A^3*b^15*c^21*d^26*e^10 - 4411189120*A^3*b^16*c^20*d^25*e^1
1 - 87084400*A^3*b^17*c^19*d^24*e^12 + 3954268032*A^3*b^18*c^18*d^23*e^13 -
 5135394368*A^3*b^19*c^17*d^22*e^14 + 4434262976*A^3*b^20*c^16*d^21*e^15 -
4011472080*A^3*b^21*c^15*d^20*e^16 + 4506553920*A^3*b^22*c^14*d^19*e^17 - 4
740529184*A^3*b^23*c^13*d^18*e^18 + 3806470656*A^3*b^24*c^12*d^17*e^19 - 21
98096912*A^3*b^25*c^11*d^16*e^20 + 886408960*A^3*b^26*c^10*d^15*e^21 - 2378
86080*A^3*b^27*c^9*d^14*e^22 + 38292800*A^3*b^28*c^8*d^13*e^23 - 2802800*A^
3*b^29*c^7*d^12*e^24 + 110592*B^3*b^11*c^25*d^33*e^3 - 1963008*B^3*b^12*c^2
4*d^32*e^4 + 16183296*B^3*b^13*c^23*d^31*e^5 - 82448000*B^3*b^14*c^22*d^30*
e^6 + 291430080*B^3*b^15*c^21*d^29*e^7 - 760810496*B^3*b^16*c^20*d^28*e^8 +
 1523208064*B^3*b^17*c^19*d^27*e^9 - 2387603328*B^3*b^18*c^18*d^26*e^10 + 2
934367040*B^3*b^19*c^17*d^25*e^11 - 2735068160*B^3*b^20*c^16*d^24*e^12 + 16
88898816*B^3*b^21*c^15*d^23*e^13 - 207986304*B^3*b^22*c^14*d^22*e^14 - 9929
19232*B^3*b^23*c^13*d^21*e^15 + 1419909120*B^3*b^24*c^12*d^20*e^16 - 114770
7520*B^3*b^25*c^11*d^19*e^17 + 629449088*B^3*b^26*c^10*d^18*e^18 - 23893075
2*B^3*b^27*c^9*d^17*e^19 + 60427264*B^3*b^28*c^8*d^16*e^20 - 9180160*B^3*b^
29*c^7*d^15*e^21 + 633600*B^3*b^30*c^6*d^14*e^22 - 663552*A*B^2*b^10*c^26*d
^33*e^3 + 11501568*A*B^2*b^11*c^25*d^32*e^4 - 92445696*A*B^2*b^12*c^24*d^31
*e^5 + 457608960*A*B^2*b^13*c^23*d^30*e^6 - 1561961280*A*B^2*b^14*c^22*d^29
*e^7 + 3897633456*A*B^2*b^15*c^21*d^28*e^8 - 7341910464*A*B^2*b^16*c^20*d^2
7*e^9 + 10584928608*A*B^2*b^17*c^19*d^26*e^10 - 11615091840*A*B^2*b^18*c^18
*d^25*e^11 + 9351305040*A*B^2*b^19*c^17*d^24*e^12 - 4949763456*A*B^2*b^20*c
^16*d^23*e^13 + 1152719424*A*B^2*b^21*c^15*d^22*e^14 + 35479872*A*B^2*b^22*
c^14*d^21*e^15 + 987243600*A*B^2*b^23*c^13*d^20*e^16 - 2238056640*A*B^2*b^2
4*c^12*d^19*e^17 + 2350093152*A*B^2*b^25*c^11*d^18*e^18 - 1531638528*A*B^2*
b^26*c^10*d^17*e^19 + 658359216*A*B^2*b^27*c^9*d^16*e^20 - 183198720*A*B^2*
b^28*c^8*d^15*e^21 + 30074880*A*B^2*b^29*c^7*d^14*e^22 - 2217600*A*B^2*b^30
*c^6*d^13*e^23 + 1327104*A^2*B*b^9*c^27*d^33*e^3 - 22450176*A^2*B*b^10*c^26
*d^32*e^4 + 175813632*A^2*B*b^11*c^25*d^31*e^5 - 844727040*A^2*B*b^12*c^24*
d^30*e^6 + 2778960960*A^2*B*b^13*c^23*d^29*e^7 - 6601799472*A^2*B*b^14*c^22
*d^28*e^8 + 11593951488*A^2*B*b^15*c^21*d^27*e^9 - 15030223296*A^2*B*b^16*c
^20*d^26*e^10 + 13855558080*A^2*B*b^17*c^19*d^25*e^11 - 7973238240*A^2*B*b^
18*c^18*d^24*e^12 + 1330213632*A^2*B*b^19*c^17*d^23*e^13 + 1474407552*A^2*B
*b^20*c^16*d^22*e^14 + 280293696*A^2*B*b^21*c^15*d^21*e^15 - 3189392640*A^2
*B*b^22*c^14*d^20*e^16 + 3911942400*A^2*B*b^23*c^13*d^19*e^17 - 2360240064*
A^2*B*b^24*c^12*d^18*e^18 + 534716736*A^2*B*b^25*c^11*d^17*e^19 + 282511968
*A^2*B*b^26*c^10*d^16*e^20 - 290822400*A^2*B*b^27*c^9*d^15*e^21 + 114170880
*A^2*B*b^28*c^8*d^14*e^22 - 22915200*A^2*B*b^29*c^7*d^13*e^23 + 1940400*A^2
*B*b^30*c^6*d^12*e^24)*((1225*A^2*b^4*e^4 + 2304*A^2*c^4*d^4 + 576*B^2*b^2*
c^2*d^4 + 400*B^2*b^4*d^2*e^2 + 6960*A^2*b^2*c^2*d^2*e^2 + 5760*A^2*b*c^3*d
^3*e + 4200*A^2*b^3*c*d*e^3 + 960*B^2*b^3*c*d^3*e - 2304*A*B*b*c^3*d^4 - 14
00*A*B*b^4*d*e^3 - 4800*A*B*b^2*c^2*d^3*e - 4080*A*B*b^3*c*d^2*e^2)/(64*b^1
0*d^9))^(1/2) - log(((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616
832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^
2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b
^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^1
9*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^2
1*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^
23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^
25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^2
7*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29
*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^
8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15
*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 +
156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2
*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*
c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20
*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^
29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27
*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e
^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15
 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 +
437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 12198
9120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2
*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^
14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 -
 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 18787
64800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545
216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 214068518
40*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523
328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 41114918
40*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920
*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*
A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B
*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33
*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^1
4*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (((1225*A^2*b^4*e^4)/64 + 36*A^2*
c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A^2*b^2*c^2*d^2
*e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B^2*b^3*c*d^3*e
 - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*d^3*e - (255*A
*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2)*((d + e*x)^(1/2)*(((1225*A^2*b^4*e^4
)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A
^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B
^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*
d^3*e - (255*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2)*(16384*b^22*c^23*d^41*
e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^2
5*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^
7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 26989363
20*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c
^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*
e^14 - 2302033920*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571
539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^
6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 18
0224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^24*d^38
*e^3 + 466944*A*b^19*c^23*d^37*e^4 - 4185088*A*b^20*c^22*d^36*e^5 + 2350080
0*A*b^21*c^21*d^35*e^6 - 92710912*A*b^22*c^20*d^34*e^7 + 273566720*A*b^23*c
^19*d^33*e^8 - 629578752*A*b^24*c^18*d^32*e^9 + 1169833984*A*b^25*c^17*d^31
*e^10 - 1818910720*A*b^26*c^16*d^30*e^11 + 2465058816*A*b^27*c^15*d^29*e^12
 - 3031169024*A*b^28*c^14*d^28*e^13 + 3457871872*A*b^29*c^13*d^27*e^14 - 36
26348544*A*b^30*c^12*d^26*e^15 + 3385559040*A*b^31*c^11*d^25*e^16 - 2714064
896*A*b^32*c^10*d^24*e^17 + 1813512192*A*b^33*c^9*d^23*e^18 - 986251264*A*b
^34*c^8*d^22*e^19 + 426815488*A*b^35*c^7*d^21*e^20 - 143109120*A*b^36*c^6*d
^20*e^21 + 35796992*A*b^37*c^5*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e^23 + 6
91200*A*b^39*c^3*d^17*e^24 - 35840*A*b^40*c^2*d^16*e^25 + 12288*B*b^19*c^23
*d^38*e^3 - 238592*B*b^20*c^22*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e^5 - 12
492800*B*b^22*c^20*d^35*e^6 + 49401856*B*b^23*c^19*d^34*e^7 - 141926400*B*b
^24*c^18*d^33*e^8 + 300793856*B*b^25*c^17*d^32*e^9 - 460562432*B*b^26*c^16*
d^31*e^10 + 455516160*B*b^27*c^15*d^30*e^11 - 116267008*B*b^28*c^14*d^29*e^
12 - 543981568*B*b^29*c^13*d^28*e^13 + 1250156544*B*b^30*c^12*d^27*e^14 - 1
639292928*B*b^31*c^11*d^26*e^15 + 1547694080*B*b^32*c^10*d^25*e^16 - 111579
9552*B*b^33*c^9*d^24*e^17 + 624861184*B*b^34*c^8*d^23*e^18 - 271372288*B*b^
35*c^7*d^22*e^19 + 89988096*B*b^36*c^6*d^21*e^20 - 22077440*B*b^37*c^5*d^20
*e^21 + 3784704*B*b^38*c^4*d^19*e^22 - 405504*B*b^39*c^3*d^18*e^23 + 20480*
B*b^40*c^2*d^17*e^24))*(((1225*A^2*b^4*e^4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2
*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*A^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b*
c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4
 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2*d^3*e - (255*A*B*b^3*c*d^2*e^2)/4
)/(b^10*d^9))^(1/2) - 884736*A^3*b^8*c^28*d^33*e^3 + 14598144*A^3*b^9*c^27*
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d^32*e^4 - 111310848*A^3*b^10*c^26*d^31*e^5 + 518538240*A^3*b^11*c^25*d^30*
e^6 - 1640557440*A^3*b^12*c^24*d^29*e^7 + 3692369088*A^3*b^13*c^23*d^28*e^8
 - 5970365632*A^3*b^14*c^22*d^27*e^9 + 6695810784*A^3*b^15*c^21*d^26*e^10 -
 4411189120*A^3*b^16*c^20*d^25*e^11 - 87084400*A^3*b^17*c^19*d^24*e^12 + 39
54268032*A^3*b^18*c^18*d^23*e^13 - 5135394368*A^3*b^19*c^17*d^22*e^14 + 443
4262976*A^3*b^20*c^16*d^21*e^15 - 4011472080*A^3*b^21*c^15*d^20*e^16 + 4506
553920*A^3*b^22*c^14*d^19*e^17 - 4740529184*A^3*b^23*c^13*d^18*e^18 + 38064
70656*A^3*b^24*c^12*d^17*e^19 - 2198096912*A^3*b^25*c^11*d^16*e^20 + 886408
960*A^3*b^26*c^10*d^15*e^21 - 237886080*A^3*b^27*c^9*d^14*e^22 + 38292800*A
^3*b^28*c^8*d^13*e^23 - 2802800*A^3*b^29*c^7*d^12*e^24 + 110592*B^3*b^11*c^
25*d^33*e^3 - 1963008*B^3*b^12*c^24*d^32*e^4 + 16183296*B^3*b^13*c^23*d^31*
e^5 - 82448000*B^3*b^14*c^22*d^30*e^6 + 291430080*B^3*b^15*c^21*d^29*e^7 -
760810496*B^3*b^16*c^20*d^28*e^8 + 1523208064*B^3*b^17*c^19*d^27*e^9 - 2387
603328*B^3*b^18*c^18*d^26*e^10 + 2934367040*B^3*b^19*c^17*d^25*e^11 - 27350
68160*B^3*b^20*c^16*d^24*e^12 + 1688898816*B^3*b^21*c^15*d^23*e^13 - 207986
304*B^3*b^22*c^14*d^22*e^14 - 992919232*B^3*b^23*c^13*d^21*e^15 + 141990912
0*B^3*b^24*c^12*d^20*e^16 - 1147707520*B^3*b^25*c^11*d^19*e^17 + 629449088*
B^3*b^26*c^10*d^18*e^18 - 238930752*B^3*b^27*c^9*d^17*e^19 + 60427264*B^3*b
^28*c^8*d^16*e^20 - 9180160*B^3*b^29*c^7*d^15*e^21 + 633600*B^3*b^30*c^6*d^
14*e^22 - 663552*A*B^2*b^10*c^26*d^33*e^3 + 11501568*A*B^2*b^11*c^25*d^32*e
^4 - 92445696*A*B^2*b^12*c^24*d^31*e^5 + 457608960*A*B^2*b^13*c^23*d^30*e^6
 - 1561961280*A*B^2*b^14*c^22*d^29*e^7 + 3897633456*A*B^2*b^15*c^21*d^28*e^
8 - 7341910464*A*B^2*b^16*c^20*d^27*e^9 + 10584928608*A*B^2*b^17*c^19*d^26*
e^10 - 11615091840*A*B^2*b^18*c^18*d^25*e^11 + 9351305040*A*B^2*b^19*c^17*d
^24*e^12 - 4949763456*A*B^2*b^20*c^16*d^23*e^13 + 1152719424*A*B^2*b^21*c^1
5*d^22*e^14 + 35479872*A*B^2*b^22*c^14*d^21*e^15 + 987243600*A*B^2*b^23*c^1
3*d^20*e^16 - 2238056640*A*B^2*b^24*c^12*d^19*e^17 + 2350093152*A*B^2*b^25*
c^11*d^18*e^18 - 1531638528*A*B^2*b^26*c^10*d^17*e^19 + 658359216*A*B^2*b^2
7*c^9*d^16*e^20 - 183198720*A*B^2*b^28*c^8*d^15*e^21 + 30074880*A*B^2*b^29*
c^7*d^14*e^22 - 2217600*A*B^2*b^30*c^6*d^13*e^23 + 1327104*A^2*B*b^9*c^27*d
^33*e^3 - 22450176*A^2*B*b^10*c^26*d^32*e^4 + 175813632*A^2*B*b^11*c^25*d^3
1*e^5 - 844727040*A^2*B*b^12*c^24*d^30*e^6 + 2778960960*A^2*B*b^13*c^23*d^2
9*e^7 - 6601799472*A^2*B*b^14*c^22*d^28*e^8 + 11593951488*A^2*B*b^15*c^21*d
^27*e^9 - 15030223296*A^2*B*b^16*c^20*d^26*e^10 + 13855558080*A^2*B*b^17*c^
19*d^25*e^11 - 7973238240*A^2*B*b^18*c^18*d^24*e^12 + 1330213632*A^2*B*b^19
*c^17*d^23*e^13 + 1474407552*A^2*B*b^20*c^16*d^22*e^14 + 280293696*A^2*B*b^
21*c^15*d^21*e^15 - 3189392640*A^2*B*b^22*c^14*d^20*e^16 + 3911942400*A^2*B
*b^23*c^13*d^19*e^17 - 2360240064*A^2*B*b^24*c^12*d^18*e^18 + 534716736*A^2
*B*b^25*c^11*d^17*e^19 + 282511968*A^2*B*b^26*c^10*d^16*e^20 - 290822400*A^
2*B*b^27*c^9*d^15*e^21 + 114170880*A^2*B*b^28*c^8*d^14*e^22 - 22915200*A^2*
B*b^29*c^7*d^13*e^23 + 1940400*A^2*B*b^30*c^6*d^12*e^24)*(((1225*A^2*b^4*e^
4)/64 + 36*A^2*c^4*d^4 + 9*B^2*b^2*c^2*d^4 + (25*B^2*b^4*d^2*e^2)/4 + (435*
A^2*b^2*c^2*d^2*e^2)/4 + 90*A^2*b*c^3*d^3*e + (525*A^2*b^3*c*d*e^3)/8 + 15*
B^2*b^3*c*d^3*e - 36*A*B*b*c^3*d^4 - (175*A*B*b^4*d*e^3)/8 - 75*A*B*b^2*c^2
*d^3*e - (255*A*B*b^3*c*d^2*e^2)/4)/(b^10*d^9))^(1/2) - ((2*(A*e^5 - B*d*e^
4))/(3*(c*d^2 - b*d*e)) - (2*(d + e*x)*(7*A*b*e^6 - 14*A*c*d*e^5 - 4*B*b*d*
e^5 + 11*B*c*d^2*e^4))/(3*(c*d^2 - b*d*e)^2) - ((d + e*x)^5*(24*A*c^7*d^5*e
 + 35*A*b^5*c^2*e^6 - 60*A*b*c^6*d^4*e^2 - 80*A*b^4*c^3*d*e^5 - 20*B*b^5*c^
2*d*e^5 + 28*A*b^2*c^5*d^3*e^3 + 18*A*b^3*c^4*d^2*e^4 + 35*B*b^2*c^5*d^4*e^
2 - 24*B*b^3*c^4*d^3*e^3 + 56*B*b^4*c^3*d^2*e^4 - 12*B*b*c^6*d^5*e))/(4*b^4
*(c*d^2 - b*d*e)^4) + ((d + e*x)^2*(72*A*c^6*d^6*e - 175*A*b^6*e^7 + 100*B*
b^6*d*e^6 - 216*A*b*c^5*d^5*e^2 - 444*B*b^5*c*d^2*e^5 + 165*A*b^2*c^4*d^4*e
^3 + 30*A*b^3*c^3*d^3*e^4 - 738*A*b^4*c^2*d^2*e^5 + 123*B*b^2*c^4*d^5*e^2 -
 120*B*b^3*c^3*d^4*e^3 + 552*B*b^4*c^2*d^3*e^4 + 687*A*b^5*c*d*e^6 - 36*B*b
*c^5*d^6*e))/(12*b^4*(c*d^2 - b*d*e)^3) + ((d + e*x)^3*(60*B*b^7*d*e^7 - 21
6*A*c^7*d^7*e - 105*A*b^7*e^8 + 756*A*b*c^6*d^6*e^2 - 488*B*b^6*c*d^2*e^6 -
 822*A*b^2*c^5*d^5*e^3 + 165*A*b^3*c^4*d^4*e^4 + 1372*A*b^4*c^3*d^3*e^5 - 1
845*A*b^5*c^2*d^2*e^6 - 423*B*b^2*c^5*d^6*e^2 + 546*B*b^3*c^4*d^5*e^3 - 116
8*B*b^4*c^3*d^4*e^4 + 1260*B*b^5*c^2*d^3*e^5 + 800*A*b^6*c*d*e^7 + 108*B*b*
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c^6*d^7*e))/(12*b^4*(c*d^2 - b*d*e)^4) + ((d + e*x)^4*(216*A*c^7*d^6*e - 21
0*A*b^6*c*e^7 - 648*A*b*c^6*d^5*e^2 + 865*A*b^5*c^2*d*e^6 + 525*A*b^2*c^5*d
^4*e^3 + 30*A*b^3*c^4*d^3*e^4 - 988*A*b^4*c^3*d^2*e^5 + 369*B*b^2*c^5*d^5*e
^2 - 375*B*b^3*c^4*d^4*e^3 + 760*B*b^4*c^3*d^3*e^4 - 556*B*b^5*c^2*d^2*e^5
- 108*B*b*c^6*d^6*e + 120*B*b^6*c*d*e^6))/(12*b^4*(c*d^2 - b*d*e)^4))/(c^2*
(d + e*x)^(11/2) - (4*c^2*d - 2*b*c*e)*(d + e*x)^(9/2) - (d + e*x)^(5/2)*(4
*c^2*d^3 + 2*b^2*d*e^2 - 6*b*c*d^2*e) + (d + e*x)^(7/2)*(b^2*e^2 + 6*c^2*d^
2 - 6*b*c*d*e) + (d + e*x)^(3/2)*(c^2*d^4 + b^2*d^2*e^2 - 2*b*c*d^3*e)) - a
tan(-(((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c
^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^
33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*
e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^
9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^
11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e
^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e
^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^
17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^1
9 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 +
301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 199308
80*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^3
6*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^3
5*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5
+ 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 30
62171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 60763
71840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 327354
9312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 66812224
0*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B
^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*
b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*
c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16
*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 5898
24*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*
b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17
*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c
^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^
18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c
^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^
14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12
*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*
d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18
*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22
 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 17920
0*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 +
576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 +
12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e
- 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*
e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*
e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8
*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 +
 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*
c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*
e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*
e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*
d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*
c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*
c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^
11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5
*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9
*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^
3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^2
6*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e
^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 37838
02880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^3
3*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^
28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 20
6389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^
5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192
*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^24*d^38*e^3 + 466944*A*b^19*c^23*d^37
*e^4 - 4185088*A*b^20*c^22*d^36*e^5 + 23500800*A*b^21*c^21*d^35*e^6 - 92710
912*A*b^22*c^20*d^34*e^7 + 273566720*A*b^23*c^19*d^33*e^8 - 629578752*A*b^2
4*c^18*d^32*e^9 + 1169833984*A*b^25*c^17*d^31*e^10 - 1818910720*A*b^26*c^16
*d^30*e^11 + 2465058816*A*b^27*c^15*d^29*e^12 - 3031169024*A*b^28*c^14*d^28
*e^13 + 3457871872*A*b^29*c^13*d^27*e^14 - 3626348544*A*b^30*c^12*d^26*e^15
 + 3385559040*A*b^31*c^11*d^25*e^16 - 2714064896*A*b^32*c^10*d^24*e^17 + 18
13512192*A*b^33*c^9*d^23*e^18 - 986251264*A*b^34*c^8*d^22*e^19 + 426815488*
A*b^35*c^7*d^21*e^20 - 143109120*A*b^36*c^6*d^20*e^21 + 35796992*A*b^37*c^5
*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e^23 + 691200*A*b^39*c^3*d^17*e^24 - 3
5840*A*b^40*c^2*d^16*e^25 + 12288*B*b^19*c^23*d^38*e^3 - 238592*B*b^20*c^22
*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e^5 - 12492800*B*b^22*c^20*d^35*e^6 +
49401856*B*b^23*c^19*d^34*e^7 - 141926400*B*b^24*c^18*d^33*e^8 + 300793856*
B*b^25*c^17*d^32*e^9 - 460562432*B*b^26*c^16*d^31*e^10 + 455516160*B*b^27*c
^15*d^30*e^11 - 116267008*B*b^28*c^14*d^29*e^12 - 543981568*B*b^29*c^13*d^2
8*e^13 + 1250156544*B*b^30*c^12*d^27*e^14 - 1639292928*B*b^31*c^11*d^26*e^1
5 + 1547694080*B*b^32*c^10*d^25*e^16 - 1115799552*B*b^33*c^9*d^24*e^17 + 62
4861184*B*b^34*c^8*d^23*e^18 - 271372288*B*b^35*c^7*d^22*e^19 + 89988096*B*
b^36*c^6*d^21*e^20 - 22077440*B*b^37*c^5*d^20*e^21 + 3784704*B*b^38*c^4*d^1
9*e^22 - 405504*B*b^39*c^3*d^18*e^23 + 20480*B*b^40*c^2*d^17*e^24))*(-(2304
*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6
*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A
*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B
^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A
*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(
64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b
^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3
*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*1i + ((d + e*x)^(1
/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3 + 8951
8080*A^2*b^14*c^25*d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707439360
*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822016*A^
2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 18936107520*A^2
*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641408*A^
2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 10265639040*A
^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597440*A^
2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 2608529792*A^2
*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 1274465280*A^2*
b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2*b^32*
c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c^5*d^1
4*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^26 + 1
47456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555520*B^
2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B^2*b^1
8*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*b^20*c
^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^22*c^17
*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24*c^15*
d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^13*d^2
4*e^14 + 721318400*B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*d^22*e
^16 - 366558720*B^2*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20*e^18
- 282501120*B^2*b^31*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20 - 364
95360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 901120*B^2*
b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c^26*d^
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36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4
+ 503726080*A*B*b^16*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^6 + 51
51263744*A*B*b^18*c^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8 + 1718
6104320*A*B*b^20*c^19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10 + 2069
3207040*A*B*b^22*c^17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12 + 895
5257856*A*B*b^24*c^15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14 + 1413
002240*A*B*b^26*c^13*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 - 128094
2080*A*B*b^28*c^11*d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1489551
360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 383708160*A
*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A*B*b^3
4*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^3*d^13
*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^
4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d
^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^1
0*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^
12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3
*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^
7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e
^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((
d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c
^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4
*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b
^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*
B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A
*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b
^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4
*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1
/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^
21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 2
93707776*b^27*c^18*d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^2
9*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^3
2*e^11 + 4402970624*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 +
3439820800*b^34*c^11*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 + 127008768
0*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^
25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 18841
60*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23
) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A*b^19*c^23*d^37*e^4 + 4185088*A*b^
20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d^35*e^6 + 92710912*A*b^22*c^20*d^3
4*e^7 - 273566720*A*b^23*c^19*d^33*e^8 + 629578752*A*b^24*c^18*d^32*e^9 - 1
169833984*A*b^25*c^17*d^31*e^10 + 1818910720*A*b^26*c^16*d^30*e^11 - 246505
8816*A*b^27*c^15*d^29*e^12 + 3031169024*A*b^28*c^14*d^28*e^13 - 3457871872*
A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30*c^12*d^26*e^15 - 3385559040*A*b^3
1*c^11*d^25*e^16 + 2714064896*A*b^32*c^10*d^24*e^17 - 1813512192*A*b^33*c^9
*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^19 - 426815488*A*b^35*c^7*d^21*e^2
0 + 143109120*A*b^36*c^6*d^20*e^21 - 35796992*A*b^37*c^5*d^19*e^22 + 628531
2*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^3*d^17*e^24 + 35840*A*b^40*c^2*d^1
6*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238592*B*b^20*c^22*d^37*e^4 - 2187264
*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c^20*d^35*e^6 - 49401856*B*b^23*c^1
9*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e^8 - 300793856*B*b^25*c^17*d^32*e^
9 + 460562432*B*b^26*c^16*d^31*e^10 - 455516160*B*b^27*c^15*d^30*e^11 + 116
267008*B*b^28*c^14*d^29*e^12 + 543981568*B*b^29*c^13*d^28*e^13 - 1250156544
*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^31*c^11*d^26*e^15 - 1547694080*B*b^
32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9*d^24*e^17 - 624861184*B*b^34*c^8*
d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^19 - 89988096*B*b^36*c^6*d^21*e^20
+ 22077440*B*b^37*c^5*d^20*e^21 - 3784704*B*b^38*c^4*d^19*e^22 + 405504*B*b
^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17*e^24))*(-(2304*A^2*c^13*d^4 + 204
49*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^
2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14
976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e -
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17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e +
56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10
*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 1
26*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*
c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(589824*A^2*b^1
2*c^27*d^36*e^2 - 10616832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*
d^34*e^4 - 468971520*A^2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32
*e^6 - 4579446784*A^2*b^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^
8 - 14937190400*A^2*b^19*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^1
0 - 19535324160*A^2*b^21*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^
12 - 13484230656*A^2*b^23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e
^14 - 7643066880*A^2*b^25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^
16 - 3708136960*A^2*b^27*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^1
8 - 1894041600*A^2*b^29*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20
- 707773440*A^2*b^31*c^8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 936
88320*A^2*b^33*c^6*d^15*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^
2*b^35*c^4*d^13*e^25 + 156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25
*d^36*e^2 - 2777088*B^2*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^
4 - 135055360*B^2*b^17*c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1
446258176*B^2*b^19*c^20*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951
119360*B^2*b^21*c^18*d^29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 547819
0080*B^2*b^23*c^16*d^27*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 7661168
64*B^2*b^25*c^14*d^25*e^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*
B^2*b^27*c^12*d^23*e^15 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2
*b^29*c^10*d^21*e^17 + 437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^3
1*c^8*d^19*e^19 + 121989120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*
d^17*e^21 + 7344128*B^2*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23
+ 51200*B^2*b^36*c^3*d^14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A
*B*b^14*c^25*d^35*e^3 - 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^1
6*c^23*d^33*e^5 - 1878764800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c
^21*d^31*e^7 - 10713545216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^
19*d^29*e^9 - 21406851840*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^
17*d^27*e^11 - 15463523328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^
15*d^25*e^13 - 4111491840*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^1
3*d^23*e^15 + 178449920*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*
d^21*e^17 + 1742746368*A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^
19*e^19 + 892446720*A*B*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^
21 + 117055488*A*B*b^33*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3
061760*A*B*b^35*c^4*d^14*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^
2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^
7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*
b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*
b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*
b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*
(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13
*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^
3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2
304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*
b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 2831
4*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 422
4*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 1593
6*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2
)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 8
4*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*
c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^2
3*d^41*e^2 - 335872*b^23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234
240*b^25*c^20*d^38*e^5 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*
d^36*e^7 + 762052608*b^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 2
698936320*b^30*c^15*d^33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624
*b^32*c^13*d^31*e^12 - 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^1
1*d^29*e^14 - 2302033920*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^1
6 - 571539456*b^37*c^8*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*
b^39*c^6*d^24*e^19 + 12451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^
21 + 180224*b^42*c^3*d^21*e^22 - 8192*b^43*c^2*d^20*e^23) - 24576*A*b^18*c^
24*d^38*e^3 + 466944*A*b^19*c^23*d^37*e^4 - 4185088*A*b^20*c^22*d^36*e^5 +
23500800*A*b^21*c^21*d^35*e^6 - 92710912*A*b^22*c^20*d^34*e^7 + 273566720*A
*b^23*c^19*d^33*e^8 - 629578752*A*b^24*c^18*d^32*e^9 + 1169833984*A*b^25*c^
17*d^31*e^10 - 1818910720*A*b^26*c^16*d^30*e^11 + 2465058816*A*b^27*c^15*d^
29*e^12 - 3031169024*A*b^28*c^14*d^28*e^13 + 3457871872*A*b^29*c^13*d^27*e^
14 - 3626348544*A*b^30*c^12*d^26*e^15 + 3385559040*A*b^31*c^11*d^25*e^16 -
2714064896*A*b^32*c^10*d^24*e^17 + 1813512192*A*b^33*c^9*d^23*e^18 - 986251
264*A*b^34*c^8*d^22*e^19 + 426815488*A*b^35*c^7*d^21*e^20 - 143109120*A*b^3
6*c^6*d^20*e^21 + 35796992*A*b^37*c^5*d^19*e^22 - 6285312*A*b^38*c^4*d^18*e
^23 + 691200*A*b^39*c^3*d^17*e^24 - 35840*A*b^40*c^2*d^16*e^25 + 12288*B*b^
19*c^23*d^38*e^3 - 238592*B*b^20*c^22*d^37*e^4 + 2187264*B*b^21*c^21*d^36*e
^5 - 12492800*B*b^22*c^20*d^35*e^6 + 49401856*B*b^23*c^19*d^34*e^7 - 141926
400*B*b^24*c^18*d^33*e^8 + 300793856*B*b^25*c^17*d^32*e^9 - 460562432*B*b^2
6*c^16*d^31*e^10 + 455516160*B*b^27*c^15*d^30*e^11 - 116267008*B*b^28*c^14*
d^29*e^12 - 543981568*B*b^29*c^13*d^28*e^13 + 1250156544*B*b^30*c^12*d^27*e
^14 - 1639292928*B*b^31*c^11*d^26*e^15 + 1547694080*B*b^32*c^10*d^25*e^16 -
 1115799552*B*b^33*c^9*d^24*e^17 + 624861184*B*b^34*c^8*d^23*e^18 - 2713722
88*B*b^35*c^7*d^22*e^19 + 89988096*B*b^36*c^6*d^21*e^20 - 22077440*B*b^37*c
^5*d^20*e^21 + 3784704*B*b^38*c^4*d^19*e^22 - 405504*B*b^39*c^3*d^18*e^23 +
 20480*B*b^40*c^2*d^17*e^24))*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4
+ 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2
+ 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*
e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*
d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*
d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c
^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4
 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^1
8*c*d*e^8)))^(1/2) - ((d + e*x)^(1/2)*(589824*A^2*b^12*c^27*d^36*e^2 - 1061
6832*A^2*b^13*c^26*d^35*e^3 + 89518080*A^2*b^14*c^25*d^34*e^4 - 468971520*A
^2*b^15*c^24*d^33*e^5 + 1707439360*A^2*b^16*c^23*d^32*e^6 - 4579446784*A^2*
b^17*c^22*d^31*e^7 + 9364822016*A^2*b^18*c^21*d^30*e^8 - 14937190400*A^2*b^
19*c^20*d^29*e^9 + 18936107520*A^2*b^20*c^19*d^28*e^10 - 19535324160*A^2*b^
21*c^18*d^27*e^11 + 17074641408*A^2*b^22*c^17*d^26*e^12 - 13484230656*A^2*b
^23*c^16*d^25*e^13 + 10265639040*A^2*b^24*c^15*d^24*e^14 - 7643066880*A^2*b
^25*c^14*d^23*e^15 + 5421597440*A^2*b^26*c^13*d^22*e^16 - 3708136960*A^2*b^
27*c^12*d^21*e^17 + 2608529792*A^2*b^28*c^11*d^20*e^18 - 1894041600*A^2*b^2
9*c^10*d^19*e^19 + 1274465280*A^2*b^30*c^9*d^18*e^20 - 707773440*A^2*b^31*c
^8*d^17*e^21 + 301648512*A^2*b^32*c^7*d^16*e^22 - 93688320*A^2*b^33*c^6*d^1
5*e^23 + 19930880*A^2*b^34*c^5*d^14*e^24 - 2598400*A^2*b^35*c^4*d^13*e^25 +
 156800*A^2*b^36*c^3*d^12*e^26 + 147456*B^2*b^14*c^25*d^36*e^2 - 2777088*B^
2*b^15*c^24*d^35*e^3 + 24555520*B^2*b^16*c^23*d^34*e^4 - 135055360*B^2*b^17
*c^22*d^33*e^5 + 515884160*B^2*b^18*c^21*d^32*e^6 - 1446258176*B^2*b^19*c^2
0*d^31*e^7 + 3062171904*B^2*b^20*c^19*d^30*e^8 - 4951119360*B^2*b^21*c^18*d
^29*e^9 + 6076371840*B^2*b^22*c^17*d^28*e^10 - 5478190080*B^2*b^23*c^16*d^2
7*e^11 + 3273549312*B^2*b^24*c^15*d^26*e^12 - 766116864*B^2*b^25*c^14*d^25*
e^13 - 668122240*B^2*b^26*c^13*d^24*e^14 + 721318400*B^2*b^27*c^12*d^23*e^1
5 - 107134720*B^2*b^28*c^11*d^22*e^16 - 366558720*B^2*b^29*c^10*d^21*e^17 +
 437847168*B^2*b^30*c^9*d^20*e^18 - 282501120*B^2*b^31*c^8*d^19*e^19 + 1219
89120*B^2*b^32*c^7*d^18*e^20 - 36495360*B^2*b^33*c^6*d^17*e^21 + 7344128*B^
2*b^34*c^5*d^16*e^22 - 901120*B^2*b^35*c^4*d^15*e^23 + 51200*B^2*b^36*c^3*d
^14*e^24 - 589824*A*B*b^13*c^26*d^36*e^2 + 10862592*A*B*b^14*c^25*d^35*e^3
- 93818880*A*B*b^15*c^24*d^34*e^4 + 503726080*A*B*b^16*c^23*d^33*e^5 - 1878
764800*A*B*b^17*c^22*d^32*e^6 + 5151263744*A*B*b^18*c^21*d^31*e^7 - 1071354
5216*A*B*b^19*c^20*d^30*e^8 + 17186104320*A*B*b^20*c^19*d^29*e^9 - 21406851
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840*A*B*b^21*c^18*d^28*e^10 + 20693207040*A*B*b^22*c^17*d^27*e^11 - 1546352
3328*A*B*b^23*c^16*d^26*e^12 + 8955257856*A*B*b^24*c^15*d^25*e^13 - 4111491
840*A*B*b^25*c^14*d^24*e^14 + 1413002240*A*B*b^26*c^13*d^23*e^15 + 17844992
0*A*B*b^27*c^12*d^22*e^16 - 1280942080*A*B*b^28*c^11*d^21*e^17 + 1742746368
*A*B*b^29*c^10*d^20*e^18 - 1489551360*A*B*b^30*c^9*d^19*e^19 + 892446720*A*
B*b^31*c^8*d^18*e^20 - 383708160*A*B*b^32*c^7*d^17*e^21 + 117055488*A*B*b^3
3*c^6*d^16*e^22 - 24217600*A*B*b^34*c^5*d^15*e^23 + 3061760*A*B*b^35*c^4*d^
14*e^24 - 179200*A*B*b^36*c^3*d^13*e^25) - (-(2304*A^2*c^13*d^4 + 20449*A^2
*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*
c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^
2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424
*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056
*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d
^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^1
4*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^
2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(2304*A^2*c^13*d^4 + 204
49*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4 + 38064*A^
2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14
976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^10*d^3*e -
 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^11*d^3*e +
 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*e^9 - b^10
*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 1
26*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*
c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*(16384*b^22*c^23*d^41*e^2 - 335872*b^
23*c^22*d^40*e^3 + 3276800*b^24*c^21*d^39*e^4 - 20234240*b^25*c^20*d^38*e^5
 + 88719360*b^26*c^19*d^37*e^6 - 293707776*b^27*c^18*d^36*e^7 + 762052608*b
^28*c^17*d^35*e^8 - 1587609600*b^29*c^16*d^34*e^9 + 2698936320*b^30*c^15*d^
33*e^10 - 3783802880*b^31*c^14*d^32*e^11 + 4402970624*b^32*c^13*d^31*e^12 -
 4265377792*b^33*c^12*d^30*e^13 + 3439820800*b^34*c^11*d^29*e^14 - 23020339
20*b^35*c^10*d^28*e^15 + 1270087680*b^36*c^9*d^27*e^16 - 571539456*b^37*c^8
*d^26*e^17 + 206389248*b^38*c^7*d^25*e^18 - 58368000*b^39*c^6*d^24*e^19 + 1
2451840*b^40*c^5*d^23*e^20 - 1884160*b^41*c^4*d^22*e^21 + 180224*b^42*c^3*d
^21*e^22 - 8192*b^43*c^2*d^20*e^23) + 24576*A*b^18*c^24*d^38*e^3 - 466944*A
*b^19*c^23*d^37*e^4 + 4185088*A*b^20*c^22*d^36*e^5 - 23500800*A*b^21*c^21*d
^35*e^6 + 92710912*A*b^22*c^20*d^34*e^7 - 273566720*A*b^23*c^19*d^33*e^8 +
629578752*A*b^24*c^18*d^32*e^9 - 1169833984*A*b^25*c^17*d^31*e^10 + 1818910
720*A*b^26*c^16*d^30*e^11 - 2465058816*A*b^27*c^15*d^29*e^12 + 3031169024*A
*b^28*c^14*d^28*e^13 - 3457871872*A*b^29*c^13*d^27*e^14 + 3626348544*A*b^30
*c^12*d^26*e^15 - 3385559040*A*b^31*c^11*d^25*e^16 + 2714064896*A*b^32*c^10
*d^24*e^17 - 1813512192*A*b^33*c^9*d^23*e^18 + 986251264*A*b^34*c^8*d^22*e^
19 - 426815488*A*b^35*c^7*d^21*e^20 + 143109120*A*b^36*c^6*d^20*e^21 - 3579
6992*A*b^37*c^5*d^19*e^22 + 6285312*A*b^38*c^4*d^18*e^23 - 691200*A*b^39*c^
3*d^17*e^24 + 35840*A*b^40*c^2*d^16*e^25 - 12288*B*b^19*c^23*d^38*e^3 + 238
592*B*b^20*c^22*d^37*e^4 - 2187264*B*b^21*c^21*d^36*e^5 + 12492800*B*b^22*c
^20*d^35*e^6 - 49401856*B*b^23*c^19*d^34*e^7 + 141926400*B*b^24*c^18*d^33*e
^8 - 300793856*B*b^25*c^17*d^32*e^9 + 460562432*B*b^26*c^16*d^31*e^10 - 455
516160*B*b^27*c^15*d^30*e^11 + 116267008*B*b^28*c^14*d^29*e^12 + 543981568*
B*b^29*c^13*d^28*e^13 - 1250156544*B*b^30*c^12*d^27*e^14 + 1639292928*B*b^3
1*c^11*d^26*e^15 - 1547694080*B*b^32*c^10*d^25*e^16 + 1115799552*B*b^33*c^9
*d^24*e^17 - 624861184*B*b^34*c^8*d^23*e^18 + 271372288*B*b^35*c^7*d^22*e^1
9 - 89988096*B*b^36*c^6*d^21*e^20 + 22077440*B*b^37*c^5*d^20*e^21 - 3784704
*B*b^38*c^4*d^19*e^22 + 405504*B*b^39*c^3*d^18*e^23 - 20480*B*b^40*c^2*d^17
*e^24))*(-(2304*A^2*c^13*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4
 + 9801*B^2*b^6*c^7*e^4 + 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^
2*e^2 - 28314*A*B*b^5*c^8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10
*d*e^3 - 4224*B^2*b^3*c^10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^1
2*d^4 + 15936*A*B*b^2*c^11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*
c^10*d^2*e^2)/(64*(b^19*e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7
*d^7*e^2 + 84*b^13*c^6*d^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^
5 - 84*b^16*c^3*d^3*e^6 + 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2) - 1
769472*A^3*b^8*c^28*d^33*e^3 + 29196288*A^3*b^9*c^27*d^32*e^4 - 222621696*A
^3*b^10*c^26*d^31*e^5 + 1037076480*A^3*b^11*c^25*d^30*e^6 - 3281114880*A^3*
b^12*c^24*d^29*e^7 + 7384738176*A^3*b^13*c^23*d^28*e^8 - 11940731264*A^3*b^
14*c^22*d^27*e^9 + 13391621568*A^3*b^15*c^21*d^26*e^10 - 8822378240*A^3*b^1
6*c^20*d^25*e^11 - 174168800*A^3*b^17*c^19*d^24*e^12 + 7908536064*A^3*b^18*
c^18*d^23*e^13 - 10270788736*A^3*b^19*c^17*d^22*e^14 + 8868525952*A^3*b^20*
c^16*d^21*e^15 - 8022944160*A^3*b^21*c^15*d^20*e^16 + 9013107840*A^3*b^22*c
^14*d^19*e^17 - 9481058368*A^3*b^23*c^13*d^18*e^18 + 7612941312*A^3*b^24*c^
12*d^17*e^19 - 4396193824*A^3*b^25*c^11*d^16*e^20 + 1772817920*A^3*b^26*c^1
0*d^15*e^21 - 475772160*A^3*b^27*c^9*d^14*e^22 + 76585600*A^3*b^28*c^8*d^13
*e^23 - 5605600*A^3*b^29*c^7*d^12*e^24 + 221184*B^3*b^11*c^25*d^33*e^3 - 39
26016*B^3*b^12*c^24*d^32*e^4 + 32366592*B^3*b^13*c^23*d^31*e^5 - 164896000*
B^3*b^14*c^22*d^30*e^6 + 582860160*B^3*b^15*c^21*d^29*e^7 - 1521620992*B^3*
b^16*c^20*d^28*e^8 + 3046416128*B^3*b^17*c^19*d^27*e^9 - 4775206656*B^3*b^1
8*c^18*d^26*e^10 + 5868734080*B^3*b^19*c^17*d^25*e^11 - 5470136320*B^3*b^20
*c^16*d^24*e^12 + 3377797632*B^3*b^21*c^15*d^23*e^13 - 415972608*B^3*b^22*c
^14*d^22*e^14 - 1985838464*B^3*b^23*c^13*d^21*e^15 + 2839818240*B^3*b^24*c^
12*d^20*e^16 - 2295415040*B^3*b^25*c^11*d^19*e^17 + 1258898176*B^3*b^26*c^1
0*d^18*e^18 - 477861504*B^3*b^27*c^9*d^17*e^19 + 120854528*B^3*b^28*c^8*d^1
6*e^20 - 18360320*B^3*b^29*c^7*d^15*e^21 + 1267200*B^3*b^30*c^6*d^14*e^22 -
 1327104*A*B^2*b^10*c^26*d^33*e^3 + 23003136*A*B^2*b^11*c^25*d^32*e^4 - 184
891392*A*B^2*b^12*c^24*d^31*e^5 + 915217920*A*B^2*b^13*c^23*d^30*e^6 - 3123
922560*A*B^2*b^14*c^22*d^29*e^7 + 7795266912*A*B^2*b^15*c^21*d^28*e^8 - 146
83820928*A*B^2*b^16*c^20*d^27*e^9 + 21169857216*A*B^2*b^17*c^19*d^26*e^10 -
 23230183680*A*B^2*b^18*c^18*d^25*e^11 + 18702610080*A*B^2*b^19*c^17*d^24*e
^12 - 9899526912*A*B^2*b^20*c^16*d^23*e^13 + 2305438848*A*B^2*b^21*c^15*d^2
2*e^14 + 70959744*A*B^2*b^22*c^14*d^21*e^15 + 1974487200*A*B^2*b^23*c^13*d^
20*e^16 - 4476113280*A*B^2*b^24*c^12*d^19*e^17 + 4700186304*A*B^2*b^25*c^11
*d^18*e^18 - 3063277056*A*B^2*b^26*c^10*d^17*e^19 + 1316718432*A*B^2*b^27*c
^9*d^16*e^20 - 366397440*A*B^2*b^28*c^8*d^15*e^21 + 60149760*A*B^2*b^29*c^7
*d^14*e^22 - 4435200*A*B^2*b^30*c^6*d^13*e^23 + 2654208*A^2*B*b^9*c^27*d^33
*e^3 - 44900352*A^2*B*b^10*c^26*d^32*e^4 + 351627264*A^2*B*b^11*c^25*d^31*e
^5 - 1689454080*A^2*B*b^12*c^24*d^30*e^6 + 5557921920*A^2*B*b^13*c^23*d^29*
e^7 - 13203598944*A^2*B*b^14*c^22*d^28*e^8 + 23187902976*A^2*B*b^15*c^21*d^
27*e^9 - 30060446592*A^2*B*b^16*c^20*d^26*e^10 + 27711116160*A^2*B*b^17*c^1
9*d^25*e^11 - 15946476480*A^2*B*b^18*c^18*d^24*e^12 + 2660427264*A^2*B*b^19
*c^17*d^23*e^13 + 2948815104*A^2*B*b^20*c^16*d^22*e^14 + 560587392*A^2*B*b^
21*c^15*d^21*e^15 - 6378785280*A^2*B*b^22*c^14*d^20*e^16 + 7823884800*A^2*B
*b^23*c^13*d^19*e^17 - 4720480128*A^2*B*b^24*c^12*d^18*e^18 + 1069433472*A^
2*B*b^25*c^11*d^17*e^19 + 565023936*A^2*B*b^26*c^10*d^16*e^20 - 581644800*A
^2*B*b^27*c^9*d^15*e^21 + 228341760*A^2*B*b^28*c^8*d^14*e^22 - 45830400*A^2
*B*b^29*c^7*d^13*e^23 + 3880800*A^2*B*b^30*c^6*d^12*e^24))*(-(2304*A^2*c^13
*d^4 + 20449*A^2*b^4*c^9*e^4 + 576*B^2*b^2*c^11*d^4 + 9801*B^2*b^6*c^7*e^4
+ 38064*A^2*b^2*c^11*d^2*e^2 + 12496*B^2*b^4*c^9*d^2*e^2 - 28314*A*B*b^5*c^
8*e^4 - 14976*A^2*b*c^12*d^3*e - 44616*A^2*b^3*c^10*d*e^3 - 4224*B^2*b^3*c^
10*d^3*e - 17424*B^2*b^5*c^8*d*e^3 - 2304*A*B*b*c^12*d^4 + 15936*A*B*b^2*c^
11*d^3*e + 56056*A*B*b^4*c^9*d*e^3 - 43824*A*B*b^3*c^10*d^2*e^2)/(64*(b^19*
e^9 - b^10*c^9*d^9 + 9*b^11*c^8*d^8*e - 36*b^12*c^7*d^7*e^2 + 84*b^13*c^6*d
^6*e^3 - 126*b^14*c^5*d^5*e^4 + 126*b^15*c^4*d^4*e^5 - 84*b^16*c^3*d^3*e^6
+ 36*b^17*c^2*d^2*e^7 - 9*b^18*c*d*e^8)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**3,x)
```

```
[Out] Timed out
```

3.1255 $\int (A+Bx)\sqrt{d+ex}\,\sqrt{bx+cx^2}\,dx$

Optimal. Leaf size=433

$$\frac{2\sqrt{bx+cx^2}\,\sqrt{d+ex}\,\left(3cex(7Ace-4bBe+Bcd)+7Ace(be+cd)-B\left(4b^2e^2-2bcde+4c^2d^2\right)\right)}{105c^2e^2}+\frac{2\sqrt{-b}\,d\sqrt{x}\,\sqrt{\frac{cx}{b}+}}{}$$

```
[Out] 2/7*B*(c*x^2+b*x)^(3/2)*(e*x+d)^(1/2)/c+2/105*(5*c*(-7*A*c+3*B*b)*d*e*(-b*e
+2*c*d)+(7*A*c*e-4*B*b*e+B*c*d)*(-2*b^2*e^2-3*b*c*d*e+8*c^2*d^2))*EllipticE
(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(
1/2)*(e*x+d)^(1/2)/c^(5/2)/e^3/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/105*d*(-
b*e+c*d)*(7*A*c*e*(-b*e+2*c*d)-B*(-4*b^2*e^2-b*c*d*e+8*c^2*d^2))*EllipticF(
c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1
/2)*(1+e*x/d)^(1/2)/c^(5/2)/e^3/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/105*(7*A*
c*e*(b*e+c*d)-B*(4*b^2*e^2-2*b*c*d*e+4*c^2*d^2)+3*c*e*(7*A*c*e-4*B*b*e+B*c*
d)*x)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.60, antiderivative size = 433, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {832, 814, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,\sqrt{d+ex}\,\left(3cex(7Ace-4bBe+Bcd)+7Ace(be+cd)-B\left(4b^2e^2-2bcde+4c^2d^2\right)\right)}{105c^2e^2}+\frac{2\sqrt{-b}\,d\sqrt{x}\,\sqrt{\frac{cx}{b}+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(7*A*c*e*(c*d + b*e) - B*(4*c^2*d^2 - 2*b*c*d*e + 4*b^2*e^
2) + 3*c*e*(B*c*d - 4*b*B*e + 7*A*c*e)*x)*Sqrt[b*x + c*x^2])/(105*c^2*e^2)
+ (2*B*Sqrt[d + e*x]*(b*x + c*x^2)^(3/2))/(7*c) + (2*Sqrt[-b]*(5*c*(3*b*B -
 7*A*c)*d*e*(2*c*d - b*e) + (B*c*d - 4*b*B*e + 7*A*c*e)*(8*c^2*d^2 - 3*b*c*
d*e - 2*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[
(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(105*c^(5/2)*e^3*Sqrt[1 + (e*x)/
d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[-b]*d*(c*d - b*e)*(7*A*c*e*(2*c*d - b*e) -
B*(8*c^2*d^2 - b*c*d*e - 4*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*
x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(105*c^(5
/2)*e^3*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\,\sqrt{bx+cx^2}\,dx=\frac{2B\sqrt{d+ex}\,\left(bx+cx^2\right)^{3/2}}{7c}+\frac{2\int\frac{\left(-\frac{1}{2}(3bB-7Ac)d+\frac{1}{2}(Bcd-4bBe+7Ace)x\right)\sqrt{bx+cx^2}}{\sqrt{d+ex}}\,dx}{7c}$$

$$=\frac{2\sqrt{d+ex}\,\Bigl(7Ace(cd+be)-B\left(4c^2d^2-2bcde+4b^2e^2\right)+3ce(Bcd-4bBe+7}{105c^2e^2}$$

$$=\frac{2\sqrt{d+ex}\,\Bigl(7Ace(cd+be)-B\left(4c^2d^2-2bcde+4b^2e^2\right)+3ce(Bcd-4bBe+7}{105c^2e^2}$$

$$=\frac{2\sqrt{d+ex}\,\Bigl(7Ace(cd+be)-B\left(4c^2d^2-2bcde+4b^2e^2\right)+3ce(Bcd-4bBe+7}{105c^2e^2}$$

$$=\frac{2\sqrt{d+ex}\,\Bigl(7Ace(cd+be)-B\left(4c^2d^2-2bcde+4b^2e^2\right)+3ce(Bcd-4bBe+7}{105c^2e^2}$$

$$=\frac{2\sqrt{d+ex}\,\Bigl(7Ace(cd+be)-B\left(4c^2d^2-2bcde+4b^2e^2\right)+3ce(Bcd-4bBe+7}{105c^2e^2}$$

Mathematica [C] time = 3.37, size = 461, normalized size = 1.06

$$-\frac{2\Biggl(bex(b+cx)(d+ex)\left(B\left(4b^2e^2-bce(2d+3ex)+c^2\left(4d^2-3dex-15e^2x^2\right)\right)-7Ace(be+c(d+3ex))\right)+\sqrt{\frac{b}{c}}\Bigl(-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2],x]
```

```
[Out] (-2*(b*e*x*(b + c*x)*(d + e*x)*(-7*A*c*e*(b*e + c*(d + 3*e*x)) + B*(4*b^2*e
^2 - b*c*e*(2*d + 3*e*x) + c^2*(4*d^2 - 3*d*e*x - 15*e^2*x^2))) + Sqrt[b/c]
*(Sqrt[b/c]*(14*A*c*e*(c^2*d^2 - b*c*d*e + b^2*e^2) + B*(-8*c^3*d^3 + 5*b*c
^2*d^2*e + 5*b^2*c*d*e^2 - 8*b^3*e^3))*(b + c*x)*(d + e*x) + I*b*e*(14*A*c*
e*(c^2*d^2 - b*c*d*e + b^2*e^2) + B*(-8*c^3*d^3 + 5*b*c^2*d^2*e + 5*b^2*c*d
*e^2 - 8*b^3*e^3))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*
ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(7*A*c*e*(c*d
- 2*b*e) - B*(4*c^2*d^2 + b*c*d*e - 8*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 +
d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(1
05*b*c^2*e^3*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 1.05, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d), x)
```

maple **[B]** time = 0.14, size = 1526, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(1/2)*((c*x+b)*x)^(1/2)*(14*A*EllipticE(((c*x+b)/b)^(1/2),(1/
(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*
c*x)^(1/2)*b^4*c*e^4-4*B*x*b*c^4*d^3*e+7*A*x^2*c^5*d^2*e^2-4*B*x^2*b^3*c^2*
e^4-4*B*x^2*c^5*d^3*e+18*B*x^4*b*c^4*e^4+18*B*x^4*c^5*d*e^3+28*A*x^3*b*c^4*
e^4+28*A*x^3*c^5*d*e^3-B*x^3*b^2*c^3*e^4-B*x^3*c^5*d^2*e^2+7*A*x^2*b^2*c^3*
e^4-13*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(
1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*b^2*c^3*d^3*e-4*B*((c*x+
b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d*e^3+3*B*((c*x+b)/b)^(1/2)*(-(e*
x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e^2+8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-
c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^
(1/2)*b*c^4*d^4-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*
x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*d^4+9*B
*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^3*e-28*A*EllipticE(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-
c*d))^(1/2)*(-1/b*c*x)^(1/2)*b^3*c^2*d*e^3+28*A*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-
1/b*c*x)^(1/2)*b^2*c^3*d^2*e^2-14*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/
2)*b*c^4*d^3*e+7*A*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d*e^3-
21*A*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^2*e^2+14*A*((c*x+b
)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*d^3*e+13*B*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2
)*(-1/b*c*x)^(1/2)*b^4*c*d*e^3-4*B*x*b^3*c^2*d*e^3+2*B*x*b^2*c^3*d^2*e^2+7*
A*x*b^2*c^3*d*e^3+7*A*x*b*c^4*d^2*e^2+B*x^2*b^2*c^3*d*e^3+B*x^2*b*c^4*d^2*e
^2+35*A*x^2*b*c^4*d*e^3+23*B*x^3*b*c^4*d*e^3+15*B*x^5*c^5*e^4+21*A*x^4*c^5*
e^4-8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1
/2)*(-(e*x+d)*c/(b*e-c*d))^(1/2)*(-1/b*c*x)^(1/2)*b^5*e^4)/x/(c*e*x^2+b*e*x
+c*d*x+b*d)/c^4/e^3
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)\,\sqrt{d+e\,x}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] int((b*x + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{x(b+cx)}\,(A+Bx)\sqrt{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)*sqrt(d + e*x), x)
```

3.1256 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=318

$$-\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(5Ace(2cd-be)-B\left(-2b^2e^2-3bcde+8c^2d^2\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{15c^{3/2}e^3\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+1}}-2\sqrt{-b}\,d\sqrt{x}$$

```
[Out] -2/15*(5*A*c*e*(-b*e+2*c*d)-B*(-2*b^2*e^2-3*b*c*d*e+8*c^2*d^2))*EllipticE(c
^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/
2)*(e*x+d)^(1/2)/c^(3/2)/e^3/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/15*d*(-b*e
+c*d)*(-10*A*c*e+B*b*e+8*B*c*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c
/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/c^(3/2)/e^3/(
e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2/15*(-3*B*c*e*x-5*A*c*e-B*b*e+4*B*c*d)*(e*x
+d)^(1/2)*(c*x^2+b*x)^(1/2)/c/e^2
```

Rubi [A] time = 0.33, antiderivative size = 318, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {814, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(5Ace(2cd-be)-B\left(-2b^2e^2-3bcde+8c^2d^2\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{15c^{3/2}e^3\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+1}}-2\sqrt{-b}\,d\sqrt{x}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(4*B*c*d - b*B*e - 5*A*c*e - 3*B*c*e*x)*Sqrt[b*x + c*x^2]
)/(15*c*e^2) - (2*Sqrt[-b]*(5*A*c*e*(2*c*d - b*e) - B*(8*c^2*d^2 - 3*b*c*d*
e - 2*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(S
qrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*c^(3/2)*e^3*Sqrt[1 + (e*x)/d]*
Sqrt[b*x + c*x^2]) - (2*Sqrt[-b]*d*(c*d - b*e)*(8*B*c*d + b*B*e - 10*A*c*e)
*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt
[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*c^(3/2)*e^3*Sqrt[d + e*x]*Sqrt[b*x + c*x^
2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(4Bcd-bBe-5Ace-3Bcex)\sqrt{bx+cx^2}}{15ce^2} - \frac{2\int \frac{-\frac{1}{2}bd(4Bcd-bBe-5Ace)+\frac{1}{2}(5Ace}{\sqrt{d+ex}}}{15}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bcd-bBe-5Ace-3Bcex)\sqrt{bx+cx^2}}{15ce^2} - \frac{(d(cd-be)(8Bcd+bBe-10}{15ce^3}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bcd-bBe-5Ace-3Bcex)\sqrt{bx+cx^2}}{15ce^2} - \frac{\Big(d(cd-be)(8Bcd+bBe-10}{15ce}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bcd-bBe-5Ace-3Bcex)\sqrt{bx+cx^2}}{15ce^2} - \frac{\Bigg(\Big(5Ace(2cd-be)-B\Big(8c^2d^2}{}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bcd-bBe-5Ace-3Bcex)\sqrt{bx+cx^2}}{15ce^2} - \frac{2\sqrt{-b}\,\Big(5Ace(2cd-be)-B\Big(}{}$$

Mathematica [C] time = 1.53, size = 344, normalized size = 1.08

$$-\frac{2\left(-bex(b+cx)(d+ex)(5Ace+B(be-4cd+3cex))-\sqrt{\frac{b}{c}}\left(-ibex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\left(5Ace(2cd-be)+B\left(2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*(-(b*e*x*(b + c*x)*(d + e*x)*(5*A*c*e + B*(-4*c*d + b*e + 3*c*e*x))) -
Sqrt[b/c]*(Sqrt[b/c]*(5*A*c*e*(-2*c*d + b*e) + B*(8*c^2*d^2 - 3*b*c*d*e - 2
*b^2*e^2))*(b + c*x)*(d + e*x) - I*b*e*(5*A*c*e*(2*c*d - b*e) + B*(-8*c^2*d
^2 + 3*b*c*d*e + 2*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*El
lipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] + I*b*e*(c*d - b*e)*(5*A
*c*e - 2*B*(2*c*d + b*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*Ellip
ticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(15*b*c*e^3*Sqrt[x*(b +
c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)}{\sqrt{ex+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)/sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/sqrt(e*x + d), x)
```

maple [B] time = 0.09, size = 1129, normalized size = 3.55

$$-\frac{2\sqrt{(cx+b)\,x}\,\sqrt{ex+d}\,\left(-3B\,c^4e^3x^4-5A\,c^4e^3x^3-4Bb\,c^3e^3x^3+B\,c^4d\,e^2x^3-5Ab\,c^3e^3x^2-5A\,c^4d\,e^2x^2-B\,b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/15*((c*x+b)*x)^(1/2)*(e*x+d)^(1/2)*(10*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*b^2*c^2*d*e^2-10*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2
)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c
^3*d^2*e+5*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*e^3-15*A*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d*e^2+10*A*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^2*e-B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*b^3*c*d*e^2-7*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2*e
+8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3-2*B*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*e^3-B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*b^3*c*d*e^2+11*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*
c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2
*e-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3-3*B*x^4*c^4*e^3-
5*A*x^3*c^4*e^3-4*B*x^3*b*c^3*e^3+B*x^3*c^4*d*e^2-5*A*x^2*b*c^3*e^3-5*A*x^2
*c^4*d*e^2-B*x^2*b^2*c^2*e^3+4*B*x^2*c^4*d^2*e-5*A*x*b*c^3*d*e^2-B*x*b^2*c^
2*d*e^2+4*B*x*b*c^3*d^2*e)/x/(c*e*x^2+b*e*x+c*d*x+b*d)/e^3/c^3
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)}{\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\left(b+cx\right)}\;\left(A+Bx\right)}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/sqrt(d + e*x), x)
```

3.1257 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=283

$$\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Bd(8cd-5be)-3Ae(2cd-be))F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3\sqrt{c}\,e^3\sqrt{bx+cx^2}\,\sqrt{d+ex}}-\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(}{3\sqrt{c}\,e}$$

```
[Out] -2/3*(-6*A*c*e-B*b*e+8*B*c*d)*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d
)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/e^3/c^(1/2)/(1+e*
x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(B*d*(-5*b*e+8*c*d)-3*A*e*(-b*e+2*c*d))*El
lipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x
/b+1)^(1/2)*(1+e*x/d)^(1/2)/e^3/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3
*(B*e*x-3*A*e+4*B*d)*(c*x^2+b*x)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {812, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,(-3Ae+4Bd+Bex)}{3e^2\sqrt{d+ex}}+\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Bd(8cd-5be)-3Ae(2cd-be))F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right.\right.}{3\sqrt{c}\,e^3\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*(4*B*d - 3*A*e + B*e*x)*Sqrt[b*x + c*x^2])/(3*e^2*Sqrt[d + e*x]) - (2*Sq
rt[-b]*(8*B*c*d - b*B*e - 6*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*
EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*Sqrt[c]*e^3*
Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[-b]*(B*d*(8*c*d - 5*b*e) - 3
*A*e*(2*c*d - b*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[A
rcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*Sqrt[c]*e^3*Sqrt[d + e*
x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] && !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] && !RationalQ[m])) && NeQ[m, -1] && !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{3/2}}\,dx = \frac{2(4Bd-3Ae+Bex)\sqrt{bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}b(4Bd-3Ae)+\frac{1}{2}(8Bcd-bBe-6Ace)x}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx}{3e^2}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{(8Bcd-bBe-6Ace)\int \frac{\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx}{3e^3} + \frac{(Bd(8cd-5}{}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{\left((8Bcd-bBe-6Ace)\sqrt{x}\,\sqrt{b+cx}\right)\int \frac{\sqrt{d+ex}}{\sqrt{x}\,\sqrt{b+cx}}\,dx}{3e^3\sqrt{bx+cx^2}}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{\left((8Bcd-bBe-6Ace)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\right)\int \frac{\sqrt{}}{\sqrt{x}}}{3e^3\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{2\sqrt{-b}\,(8Bcd-bBe-6Ace)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\,E}{3\sqrt{c}\,e^3\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}$$

Mathematica [**C**] time = 1.26, size = 269, normalized size = 0.95

$$\frac{2\Big(bex(b+cx)(-3Ae+4Bd+Bex)+\sqrt{\frac{b}{c}}\Big(ibex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\,(-3Ace-bBe+4Bcd)F\Big(i\sinh^{-1}\Big(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\Big)\Big|\frac{cd}{be}\Big)}{3be^3\sqrt{x(b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*e*x*(b + c*x)*(4*B*d - 3*A*e + B*e*x) + Sqrt[b/c]*(Sqrt[b/c]*(-8*B*c*
d + b*B*e + 6*A*c*e)*(b + c*x)*(d + e*x) - I*b*e*(8*B*c*d - b*B*e - 6*A*c*e
)*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]
/Sqrt[x]], (c*d)/(b*e)] + I*b*e*(4*B*c*d - b*B*e - 3*A*c*e)*Sqrt[1 + b/(c*x
)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/
(b*e)])))/(3*b*e^3*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [**F**] time = 1.22, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{e^2x^2+2\,dex+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(e^2*x^2 + 2*d*e*x + d^2
), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/(e*x + d)^(3/2), x)
```

maple [**B**] time = 0.10, size = 804, normalized size = 2.84

$$2\sqrt{(cx+b)\,x}\,\sqrt{ex+d}\,\Big(B\,c^3e^2x^3-3A\,c^3e^2x^2+Bb\,c^2e^2x^2+4B\,c^3de\,x^2-6\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,A\,b^2c\,e^2\,\mathrm{Ell}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/3*((c*x+b)*x)^(1/2)*(e*x+d)^(1/2)*(3*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*b^2*c*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)-6*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*
b*c^2*d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-6
*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*e^2*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+6*A*EllipticE(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-5*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*b^2*c*d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*
(-1/b*c*x)^(1/2)+8*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b
*c^2*d^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B*
EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*e^2*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+9*B*EllipticE(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-
c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*b*c^2*d^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+B*x^3*c^3*e^2-3*A*x^2*c^3*e^2+B*x^2*b*c^2*e^2+4*B*x^2*c^3*d*e-3
*A*x*b*c^2*e^2+4*B*x*b*c^2*d*e)/x/(c*e*x^2+b*e*x+c*d*x+b*d)/e^3/c^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/(e*x + d)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\;(A+Bx)}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**(3/2), x)
```

3.1258 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=346

$$-\frac{2\sqrt{bx+cx^2}\left(d^2(-Ace-3bBe+4Bcd)+ex(Bd(5cd-4be)-Ae(2cd-be))\right)}{3de^2(d+ex)^{3/2}(cd-be)}-\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}(-2}{3\sqrt{c}e^3}$$

```
[Out] 2/3*(B*d*(-7*b*e+8*c*d)-A*e*(-b*e+2*c*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1
/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/
2)/d/e^3/(-b*e+c*d)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/3*(-2*A*c*e-3*B*b*e
+8*B*c*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*
x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/e^3/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*
x)^(1/2)-2/3*(d^2*(-A*c*e-3*B*b*e+4*B*c*d)+e*(B*d*(-4*b*e+5*c*d)-A*e*(-b*e+
2*c*d))*x)*(c*x^2+b*x)^(1/2)/d/e^2/(-b*e+c*d)/(e*x+d)^(3/2)
```

Rubi [A] time = 0.38, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {810, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{bx+cx^2}\left(d^2(-Ace-3bBe+4Bcd)+ex(Bd(5cd-4be)-Ae(2cd-be))\right)}{3de^2(d+ex)^{3/2}(cd-be)}-\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}(-2}{3\sqrt{c}e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(d^2*(4*B*c*d - 3*b*B*e - A*c*e) + e*(B*d*(5*c*d - 4*b*e) - A*e*(2*c*d
- b*e))*x)*Sqrt[b*x + c*x^2])/(3*d*e^2*(c*d - b*e)*(d + e*x)^(3/2)) + (2*Sq
rt[-b]*Sqrt[c]*(B*d*(8*c*d - 7*b*e) - A*e*(2*c*d - b*e))*Sqrt[x]*Sqrt[1 + (
c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(
c*d)])/(3*d*e^3*(c*d - b*e)*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2*Sqrt[
-b]*(8*B*c*d - 3*b*B*e - 2*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/
d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*Sqrt[c]*e
^3*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{5/2}}\,dx = -\frac{2\left(d^2(4Bcd-3bBe-Ace)+e(Bd(5cd-4be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{3de^2(cd-be)(d+ex)^{3/2}} -$$

$$= -\frac{2\left(d^2(4Bcd-3bBe-Ace)+e(Bd(5cd-4be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{3de^2(cd-be)(d+ex)^{3/2}} -$$

$$= -\frac{2\left(d^2(4Bcd-3bBe-Ace)+e(Bd(5cd-4be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{3de^2(cd-be)(d+ex)^{3/2}} -$$

$$= -\frac{2\left(d^2(4Bcd-3bBe-Ace)+e(Bd(5cd-4be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{3de^2(cd-be)(d+ex)^{3/2}} +$$

$$= -\frac{2\left(d^2(4Bcd-3bBe-Ace)+e(Bd(5cd-4be)-Ae(2cd-be))x\right)\sqrt{bx+cx^2}}{3de^2(cd-be)(d+ex)^{3/2}} +$$

Mathematica [**C**] time = 1.71, size = 346, normalized size = 1.00

$$\frac{2\left(ex\sqrt{\frac{b}{c}}\,(b+cx)\left(Ae\left(cd(d+2ex)-be^2x\right)+Bd(be(3d+4ex)-cd(4d+5ex))\right)+(d+ex)\left(-ibex^{3/2}\sqrt{\frac{b}{cx}+1}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (2*(Sqrt[b/c]*e*x*(b + c*x)*(A*e*(-(b*e^2*x) + c*d*(d + 2*e*x)) + B*d*(b*e*
(3*d + 4*e*x) - c*d*(4*d + 5*e*x))) + (d + e*x)*(Sqrt[b/c]*(B*d*(8*c*d - 7*
b*e) + A*e*(-2*c*d + b*e))*(b + c*x)*(d + e*x) - I*b*e*(A*e*(2*c*d - b*e) +
 B*d*(-8*c*d + 7*b*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*Elliptic
E[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(4*B*d - A*e)*(c*d - b
*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/
c]/Sqrt[x]], (c*d)/(b*e)])))/(3*Sqrt[b/c]*d*e^3*(c*d - b*e)*Sqrt[x*(b + c*x
)]*(d + e*x)^(3/2))
```

fricas [**F**] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(e^3*x^3 + 3*d*e^2*x^2 +
 3*d^2*e*x + d^3), x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(d*exp(1)+x*exp(1
)^2)]Evaluation time: 1.83Unable to transpose Error: Bad Argument Value
```

maple [**B**] time = 0.16, size = 1959, normalized size = 5.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] 2/3*(-4*B*x^3*b*c^2*d*e^3+5*B*x^3*c^3*d^2*e^2+8*B*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)+A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x*b^3*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)+A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*d*e^3*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-7*B*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*d^2*e^2*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-8*B*EllipticE(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)+3*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*b^3*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)+A*x^2*b^2*c*e^4-A*x^2*c^3*d^2*e^2+A*x^3*b*c^2*e^4-2*A*x^3*c^3*d*e^3+
4*B*x^2*c^3*d^3*e-2*A*x^2*b*c^2*d*e^3-4*B*x^2*b^2*c*d*e^3+2*B*x^2*b*c^2*d^2
*e^2-A*x*b*c^2*d^2*e^2-3*B*x*b^2*c*d^2*e^2+4*B*x*b*c^2*d^3*e+15*B*EllipticE
(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d^3*e*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+3*B*EllipticF(((c*x+b)/b)^(1/2
),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)-3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*b^2*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)+2*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2
*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d^2*e^2*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-2*A*EllipticF(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+
d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-7*B*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b^3*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)-11*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*b^2*c*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)-3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c*d*e^
3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*Ellip
ticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^2*d^2*e^2*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticF(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-2*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x*b*c^2*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)+15*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*x*b^2*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)-8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c
^2*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-11
*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c*d^2*e^2*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*B*EllipticF(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^2*d^3*e*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2))*((c*x+b)*x)^(1/2)/c/(b*e-c*d
)/d/(c*x+b)/x/e^3/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\;\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\;(A+Bx)}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**(5/2), x)
```

3.1259 $\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=494

$$\frac{2\sqrt{bx+cx^2}\left(2Ae\left(b^2e^2-bcde+c^2d^2\right)+Bd\left(3b^2e^2-13bcde+8c^2d^2\right)\right)}{15d^2e^2\sqrt{d+ex}\,(cd-be)^2}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(2Ae\left(b^2e\right.\right.}{15d}$$

```
[Out] -2/15*(2*A*e*(b^2*e^2-b*c*d*e+c^2*d^2)+B*d*(3*b^2*e^2-13*b*c*d*e+8*c^2*d^2)
)*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*
x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/d^2/e^3/(-b*e+c*d)^2/(1+e*x/d)^(1/2)/
(c*x^2+b*x)^(1/2)+2/15*(B*d*(-9*b*e+8*c*d)+A*e*(-b*e+2*c*d))*EllipticF(c^(1
/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*(c*x/b+1
)^(1/2)*(1+e*x/d)^(1/2)/d/e^3/(-b*e+c*d)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2/
15*(d*(B*d*(-3*b*e+4*c*d)+A*e*(-2*b*e+c*d))+e*(B*d*(-6*b*e+7*c*d)-A*e*(-b*e
+2*c*d))*x)*(c*x^2+b*x)^(1/2)/d/e^2/(-b*e+c*d)/(e*x+d)^(5/2)+2/15*(2*A*e*(b
^2*e^2-b*c*d*e+c^2*d^2)+B*d*(3*b^2*e^2-13*b*c*d*e+8*c^2*d^2))*(c*x^2+b*x)^(
1/2)/d^2/e^2/(-b*e+c*d)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.64, antiderivative size = 494, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {810, 834, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\left(2Ae\left(b^2e^2-bcde+c^2d^2\right)+Bd\left(3b^2e^2-13bcde+8c^2d^2\right)\right)}{15d^2e^2\sqrt{d+ex}\,(cd-be)^2}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(2Ae\left(b^2e\right.\right.}{15d}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (2*(2*A*e*(c^2*d^2 - b*c*d*e + b^2*e^2) + B*d*(8*c^2*d^2 - 13*b*c*d*e + 3*b
^2*e^2))*Sqrt[b*x + c*x^2])/(15*d^2*e^2*(c*d - b*e)^2*Sqrt[d + e*x]) - (2*(
d*(B*d*(4*c*d - 3*b*e) + A*e*(c*d - 2*b*e)) + e*(B*d*(7*c*d - 6*b*e) - A*e*
(2*c*d - b*e))*x)*Sqrt[b*x + c*x^2])/(15*d*e^2*(c*d - b*e)*(d + e*x)^(5/2))
 - (2*Sqrt[-b]*Sqrt[c]*(2*A*e*(c^2*d^2 - b*c*d*e + b^2*e^2) + B*d*(8*c^2*d^
2 - 13*b*c*d*e + 3*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*Ellipt
icE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*d^2*e^3*(c*d - b*
e)^2*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[-b]*Sqrt[c]*(B*d*(8*c*d
 - 9*b*e) + A*e*(2*c*d - b*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*
EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*d*e^3*(c*d
- b*e)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{bx+cx^2}}{(d+ex)^{7/2}}\,dx = -\frac{2(d(Bd(4cd-3be)+Ae(cd-2be))+e(Bd(7cd-6be)-Ae(2cd-be))x)\sqrt{bx+cx^2}}{15de^2(cd-be)(d+ex)^{5/2}}$$

$$= \frac{2\left(2Ae\left(c^2d^2-bcde+b^2e^2\right)+Bd\left(8c^2d^2-13bcde+3b^2e^2\right)\right)\sqrt{bx+cx^2}}{15d^2e^2(cd-be)^2\sqrt{d+ex}} - 2(d(Bd(4c$$

$$= \frac{2\left(2Ae\left(c^2d^2-bcde+b^2e^2\right)+Bd\left(8c^2d^2-13bcde+3b^2e^2\right)\right)\sqrt{bx+cx^2}}{15d^2e^2(cd-be)^2\sqrt{d+ex}} - 2(d(Bd(4c$$

$$= \frac{2\left(2Ae\left(c^2d^2-bcde+b^2e^2\right)+Bd\left(8c^2d^2-13bcde+3b^2e^2\right)\right)\sqrt{bx+cx^2}}{15d^2e^2(cd-be)^2\sqrt{d+ex}} - 2(d(Bd(4c$$

$$= \frac{2\left(2Ae\left(c^2d^2-bcde+b^2e^2\right)+Bd\left(8c^2d^2-13bcde+3b^2e^2\right)\right)\sqrt{bx+cx^2}}{15d^2e^2(cd-be)^2\sqrt{d+ex}} - 2(d(Bd(4c$$

$$= \frac{2\left(2Ae\left(c^2d^2-bcde+b^2e^2\right)+Bd\left(8c^2d^2-13bcde+3b^2e^2\right)\right)\sqrt{bx+cx^2}}{15d^2e^2(cd-be)^2\sqrt{d+ex}} - 2(d(Bd(4c$$

Mathematica [C] time = 2.45, size = 491, normalized size = 0.99

$$2\left(bex(b+cx)\left((d+ex)^2\left(2Ae\left(b^2e^2-bcde+c^2d^2\right)+Bd\left(3b^2e^2-13bcde+8c^2d^2\right)\right)+3d^2(Bd-Ae)(cd-be)^2-d(\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[b*x + c*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*e*x*(b + c*x)*(3*d^2*(B*d - A*e)*(c*d - b*e)^2 - d*(c*d - b*e)*(B*d*(
7*c*d - 6*b*e) + A*e*(-2*c*d + b*e))*(d + e*x) + (2*A*e*(c^2*d^2 - b*c*d*e
+ b^2*e^2) + B*d*(8*c^2*d^2 - 13*b*c*d*e + 3*b^2*e^2))*(d + e*x)^2) - Sqrt[
b/c]*c*(d + e*x)^2*(Sqrt[b/c]*(2*A*e*(c^2*d^2 - b*c*d*e + b^2*e^2) + B*d*(8
*c^2*d^2 - 13*b*c*d*e + 3*b^2*e^2))*(b + c*x)*(d + e*x) + I*b*e*(2*A*e*(c^2
*d^2 - b*c*d*e + b^2*e^2) + B*d*(8*c^2*d^2 - 13*b*c*d*e + 3*b^2*e^2))*Sqrt[
1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x
]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(B*d*(4*c*d - 3*b*e) + A*e*(c*d - 2*b*
e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/
c]/Sqrt[x]], (c*d)/(b*e)])))/(15*b*d^2*e^3*(c*d - b*e)^2*Sqrt[x*(b + c*x)]*
(d + e*x)^(5/2))
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(e^4*x^4 + 4*d*e^3*x^3 +
 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx}\,(Bx+A)}{(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/(e*x + d)^(7/2), x)
```

maple [B] time = 0.13, size = 3831, normalized size = 7.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] 2/15*(-2*A*x^4*b*c^3*d*e^5+3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e
)^(1/2))*x^2*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+4*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*
d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-17*B*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^5*e*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+6*B*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-4*A*EllipticE(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)+4*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)-2*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3
*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+A*x^
2*c^4*d^4*e^2-8*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^
3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
+A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^3*e^3*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-3*A*EllipticF(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*
d)*c)^(1/2)*(-1/b*c*x)^(1/2)-16*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*
b*e)^(1/2))*b^3*c*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)+21*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^
2*c^2*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
+9*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^4*e^2*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*e^6*((c*x+b)/b)^(1/2)*(-
(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*x^4*b^2*c^2*e^6+4*B*x^2*c^4
*d^5*e+6*A*x^3*c^4*d^3*e^3+9*B*x^3*c^4*d^4*e^2+2*A*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*
b*e)^(1/2))*b^4*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)-8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3
*d^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*B*El
lipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^6*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*x^4*c^4*d^2*e^4+8*B*x
^4*c^4*d^3*e^3+2*A*x^3*b^3*c*e^6+8*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)-4*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*x*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)+2*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d
^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-6*A*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^3*e^3*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+A*x*b^2*c^2*d^3
*e^3+A*x*b*c^3*d^4*e^2-6*B*x*b^2*c^2*d^4*e^2+4*B*x*b*c^3*d^5*e+3*B*x^4*b^2*
c^2*d*e^5-13*B*x^4*b*c^3*d^2*e^4+3*A*x^3*b^2*c^2*d*e^5-5*A*x^3*b*c^3*d^2*e^
4+3*B*x^3*b^3*c*d*e^5-13*B*x^3*b^2*c^2*d^2*e^4-5*B*x^3*b*c^3*d^3*e^3+5*A*x^
2*b^3*c*d*e^5-7*A*x^2*b^2*c^2*d^2*e^4+7*A*x^2*b*c^3*d^3*e^3-13*B*x^2*b^2*c^
2*d^3*e^3+3*B*x^2*b*c^3*d^4*e^2+21*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x^2*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)-8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x^2*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)+9*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b
^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)-17*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^3
*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*B*El
lipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^4*e^2*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-2*A*EllipticE(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+A*EllipticF(((c*x+b)/b)^(1/2
),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+42*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)-16*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*x*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)+18*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d
^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-34*B
*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^4*e^2*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+16*B*EllipticF
(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^5*e*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-16*B*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)-32*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+4*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^
2*c^2*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)-4*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d*e^5
*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-3*A*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^2*e^4*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticF(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2))*((c*x+b)*x)^(1/2)/c/(b*e-c*d)
^2/d^2/(c*x+b)/x/e^3/(e*x+d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx}\,(Bx + A)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + b*x)*(B*x + A)/(e*x + d)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+b\,x}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{x\,(b+cx)}\,\,(A+Bx)}{(d+ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral(sqrt(x*(b + c*x))*(A + B*x)/(d + e*x)**(7/2), x)
```

3.1260 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=574

$$-\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(\left(-2b^2e^2-3bcde+8c^2d^2\right)\left(9Ace(2cd-be)-B\left(-4b^2e^2-7bcde+16c^2d^2\right)\right)+5bcde}{315c^{5/2}e^5\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}$$

```
[Out] -2/63*(-7*B*c*e*x-9*A*c*e-3*B*b*e+8*B*c*d)*(c*x^2+b*x)^(3/2)*(e*x+d)^(1/2)/
c/e^2-2/315*(5*b*c*d*e*(-b*e+2*c*d)*(-9*A*c*e-3*B*b*e+8*B*c*d)+(-2*b^2*e^2-
3*b*c*d*e+8*c^2*d^2)*(9*A*c*e*(-b*e+2*c*d)-B*(-4*b^2*e^2-7*b*c*d*e+16*c^2*d
^2)))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1
/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/c^(5/2)/e^5/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(
1/2)+2/315*d*(-b*e+c*d)*(9*A*c*e*(-b^2*e^2-16*b*c*d*e+16*c^2*d^2)-B*(-4*b^3
*e^3-9*b^2*c*d*e^2-120*b*c^2*d^2*e+128*c^3*d^3))*EllipticF(c^(1/2)*x^(1/2)/
(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1
/2)/c^(5/2)/e^5/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/315*(9*A*c*e*(b^2*e^2-11*
b*c*d*e+8*c^2*d^2)-2*B*(2*b^3*e^3+3*b^2*c*d*e^2-42*b*c^2*d^2*e+32*c^3*d^3)-
3*c*e*(9*A*c*e*(-b*e+2*c*d)-B*(-4*b^2*e^2-7*b*c*d*e+16*c^2*d^2))*x)*(e*x+d)
^(1/2)*(c*x^2+b*x)^(1/2)/c^2/e^4
```

Rubi [A] time = 0.78, antiderivative size = 574, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {814, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,\sqrt{d+ex}\,\left(-3cex\left(9Ace(2cd-be)-B\left(-4b^2e^2-7bcde+16c^2d^2\right)\right)+9Ace\left(b^2e^2-11bcde+8c^2d^2\right)-2}{315c^2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(9*A*c*e*(8*c^2*d^2 - 11*b*c*d*e + b^2*e^2) - 2*B*(32*c^3*
d^3 - 42*b*c^2*d^2*e + 3*b^2*c*d*e^2 + 2*b^3*e^3) - 3*c*e*(9*A*c*e*(2*c*d -
 b*e) - B*(16*c^2*d^2 - 7*b*c*d*e - 4*b^2*e^2))*x)*Sqrt[b*x + c*x^2])/(315*
c^2*e^4) - (2*Sqrt[d + e*x]*(8*B*c*d - 3*b*B*e - 9*A*c*e - 7*B*c*e*x)*(b*x
+ c*x^2)^(3/2))/(63*c*e^2) - (2*Sqrt[-b]*(5*b*c*d*e*(2*c*d - b*e)*(8*B*c*d
- 3*b*B*e - 9*A*c*e) + (8*c^2*d^2 - 3*b*c*d*e - 2*b^2*e^2)*(9*A*c*e*(2*c*d
- b*e) - B*(16*c^2*d^2 - 7*b*c*d*e - 4*b^2*e^2)))*Sqrt[x]*Sqrt[1 + (c*x)/b]
*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/
(315*c^(5/2)*e^5*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[-b]*d*(c*d
- b*e)*(9*A*c*e*(16*c^2*d^2 - 16*b*c*d*e - b^2*e^2) - B*(128*c^3*d^3 - 120*
b*c^2*d^2*e - 9*b^2*c*d*e^2 - 4*b^3*e^3))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1
+ (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(315
*c^(5/2)*e^5*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(8Bcd-3bBe-9Ace-7Bcex)\left(bx+cx^2\right)^{3/2}}{63ce^2} - 2\int \frac{\left(-\frac{1}{2}bd(8Bcd-3bBe-9Ace}{}$$

$$= \frac{2\sqrt{d+ex}\,\left(9Ace\left(8c^2d^2-11bcde+b^2e^2\right)-2B\left(32c^3d^3-42bc^2d^2e+3b^2cde^2+2b\right.\right.}{315c^2e^4}$$

$$= \frac{2\sqrt{d+ex}\,\left(9Ace\left(8c^2d^2-11bcde+b^2e^2\right)-2B\left(32c^3d^3-42bc^2d^2e+3b^2cde^2+2b\right.\right.}{315c^2e^4}$$

$$= \frac{2\sqrt{d+ex}\,\left(9Ace\left(8c^2d^2-11bcde+b^2e^2\right)-2B\left(32c^3d^3-42bc^2d^2e+3b^2cde^2+2b\right.\right.}{315c^2e^4}$$

$$= \frac{2\sqrt{d+ex}\,\left(9Ace\left(8c^2d^2-11bcde+b^2e^2\right)-2B\left(32c^3d^3-42bc^2d^2e+3b^2cde^2+2b\right.\right.}{315c^2e^4}$$

$$= \frac{2\sqrt{d+ex}\,\left(9Ace\left(8c^2d^2-11bcde+b^2e^2\right)-2B\left(32c^3d^3-42bc^2d^2e+3b^2cde^2+2b\right.\right.}{315c^2e^4}$$

Mathematica [C] time = 4.55, size = 630, normalized size = 1.10

$$-\frac{2(x(b+cx))^{3/2}\left(bex(b+cx)(d+ex)\left(B\left(4b^3e^3-3b^2ce^2(ex-2d)+bc^2e\left(-84d^2+61dex-50e^2x^2\right)+c^3\left(64d^3-4\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(x*(b + c*x))^(3/2)*(b*e*x*(b + c*x)*(d + e*x)*(-9*A*c*e*(b^2*e^2 + b*c
*e*(-11*d + 8*e*x) + c^2*(8*d^2 - 6*d*e*x + 5*e^2*x^2)) + B*(4*b^3*e^3 - 3*
b^2*c*e^2*(-2*d + e*x) + b*c^2*e*(-84*d^2 + 61*d*e*x - 50*e^2*x^2) + c^3*(6
4*d^3 - 48*d^2*e*x + 40*d*e^2*x^2 - 35*e^3*x^3))) + Sqrt[b/c]*(Sqrt[b/c]*(1
8*A*c*e*(8*c^3*d^3 - 12*b*c^2*d^2*e + 2*b^2*c*d*e^2 + b^3*e^3) - B*(128*c^4
*d^4 - 184*b*c^3*d^3*e + 27*b^2*c^2*d^2*e^2 + 11*b^3*c*d*e^3 + 8*b^4*e^4))*
(b + c*x)*(d + e*x) + I*b*e*(18*A*c*e*(8*c^3*d^3 - 12*b*c^2*d^2*e + 2*b^2*c
*d*e^2 + b^3*e^3) - B*(128*c^4*d^4 - 184*b*c^3*d^3*e + 27*b^2*c^2*d^2*e^2 +
 11*b^3*c*d*e^3 + 8*b^4*e^4))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*E
llipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(9*
A*c*e*(8*c^2*d^2 - 5*b*c*d*e - 2*b^2*e^2) + B*(-64*c^3*d^3 + 36*b*c^2*d^2*e
 + 15*b^2*c*d*e^2 + 8*b^3*e^3))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)
*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(315*b*c^2*e^5*x^2
*(b + c*x)^2*Sqrt[d + e*x])
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Abx+(Bb+Ac)x^2\right)\sqrt{cx^2+bx}}{\sqrt{ex+d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*b*x + (B*b + A*c)*x^2)*sqrt(c*x^2 + b*x)/sqrt(e*x + d
), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/sqrt(e*x + d), x)
```

maple [B] time = 0.08, size = 2112, normalized size = 3.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*((c*x+b)*x)^(1/2)*(e*x+d)^(1/2)*(-64*B*x*b*c^5*d^4*e+18*A*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^
(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c^2*d*e^4+9*A*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c
*d)*b*e)^(1/2))*b^4*c^2*d*e^4+135*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*b^3*c^3*d^2*e^3-288*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^4*
d^3*e^2+144*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^5*d^4*e+85*B*x^
5*b*c^5*e^5-252*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^3*d^2*e^3
+360*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^4*d^3*e^2-144*A*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^5*d^4*e-4*B*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*b^5*c*d*e^4-5*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*b^4*c^2*d^2*e^3-111*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^3
*d^3*e^2+248*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^4*d^4*e-3*B*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^5*c*d*e^4-16*B*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b^4*c^2*d^2*e^3+211*B*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*b^3*c^3*d^3*e^2-312*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*b^2*c^4*d^4*e+18*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^5*c*e^5+
35*B*x^6*c^6*e^5+45*A*x^5*c^6*e^5-128*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*
d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*b*c^5*d^5+128*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^5*d^5+
8*B*x^4*c^6*d^2*e^3+81*A*x^3*b^2*c^4*e^5+18*A*x^3*c^6*d^2*e^3-64*B*x^2*c^6*
d^4*e-9*A*x^4*c^6*d*e^4+53*B*x^4*b^2*c^4*e^5-5*B*x^5*c^6*d*e^4+117*A*x^4*b*
c^5*e^5-B*x^3*b^3*c^3*e^5-16*B*x^3*c^6*d^3*e^2+9*A*x^2*b^3*c^3*e^5+72*A*x^2
*c^6*d^3*e^2-4*B*x^2*b^4*c^2*e^5-4*B*x*b^4*c^2*d*e^4-6*B*x*b^3*c^3*d^2*e^3+
84*B*x*b^2*c^4*d^3*e^2+68*B*x^2*b*c^5*d^3*e^2+9*A*x*b^3*c^3*d*e^4-99*A*x*b^
2*c^4*d^2*e^3+17*B*x^2*b^2*c^4*d^2*e^3-18*A*x^2*b^2*c^4*d*e^4-81*A*x^2*b*c^
5*d^2*e^3-7*B*x^2*b^3*c^3*d*e^4-16*B*x^4*b*c^5*d*e^4-36*A*x^3*b*c^5*d*e^4-1
4*B*x^3*b^2*c^4*d*e^4+31*B*x^3*b*c^5*d^2*e^3+72*A*x*b*c^5*d^3*e^2-8*B*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^6*e^5)/c^4/e^5/x/(c*e*x^2+b*e*x+c*d*
x+b*d)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/sqrt(e*x + d), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1261 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=449

$$-\frac{2\sqrt{bx+cx^2}\sqrt{d+ex}\left(3cex(-14Ace-bBe+16Bcd)+7Ace(8cd-7be)-B\left(b^2e^2-60bcde+64c^2d^2\right)\right)}{35ce^4}-$$

```
[Out] 2/7*(B*e*x-7*A*e+8*B*d)*(c*x^2+b*x)^(3/2)/e^2/(e*x+d)^(1/2)+2/35*(5*b*c*e*(
-7*A*e+8*B*d)*(-b*e+2*c*d)-(-14*A*c*e-B*b*e+16*B*c*d)*(-2*b^2*e^2-3*b*c*d*e
+8*c^2*d^2))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/
2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/c^(3/2)/e^5/(1+e*x/d)^(1/2)/(c*x^2
+b*x)^(1/2)-2/35*d*(-b*e+c*d)*(56*A*c*e*(-b*e+2*c*d)-B*(-b^2*e^2-72*b*c*d*e
+128*c^2*d^2))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(
1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/c^(3/2)/e^5/(e*x+d)^(1/2)/(c*x
^2+b*x)^(1/2)-2/35*(7*A*c*e*(-7*b*e+8*c*d)-B*(b^2*e^2-60*b*c*d*e+64*c^2*d^2
)+3*c*e*(-14*A*c*e-B*b*e+16*B*c*d)*x)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2)/c/e^4
```

Rubi [**A**] time = 0.57, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {812, 814, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{bx+cx^2}\sqrt{d+ex}\left(3cex(-14Ace-bBe+16Bcd)+7Ace(8cd-7be)-B\left(b^2e^2-60bcde+64c^2d^2\right)\right)}{35ce^4}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(7*A*c*e*(8*c*d - 7*b*e) - B*(64*c^2*d^2 - 60*b*c*d*e + b
^2*e^2) + 3*c*e*(16*B*c*d - b*B*e - 14*A*c*e)*x)*Sqrt[b*x + c*x^2])/(35*c*e
^4) + (2*(8*B*d - 7*A*e + B*e*x)*(b*x + c*x^2)^(3/2))/(7*e^2*Sqrt[d + e*x])
 + (2*Sqrt[-b]*(5*b*c*e*(8*B*d - 7*A*e)*(2*c*d - b*e) - (16*B*c*d - b*B*e -
 14*A*c*e)*(8*c^2*d^2 - 3*b*c*d*e - 2*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*S
qrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3
5*c^(3/2)*e^5*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2*Sqrt[-b]*d*(c*d - b
*e)*(56*A*c*e*(2*c*d - b*e) - B*(128*c^2*d^2 - 72*b*c*d*e - b^2*e^2))*Sqrt[
x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/S
qrt[-b]], (b*e)/(c*d)])/(35*c^(3/2)*e^5*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{2(8Bd-7Ae+Bex)\left(bx+cx^2\right)^{3/2}}{7e^2\sqrt{d+ex}} - \frac{6\int \frac{\left(\frac{1}{2}b(8Bd-7Ae)+\frac{1}{2}(16Bcd-bBe-14Ace)x\right)\sqrt{bx+cx^2}}{\sqrt{d+ex}}}{7e^2}$$

$$= -\frac{2\sqrt{d+ex}\left(7Ace(8cd-7be)-B\left(64c^2d^2-60bcde+b^2e^2\right)+3ce(16Bcd-bBe}{35ce^4}$$

$$= -\frac{2\sqrt{d+ex}\left(7Ace(8cd-7be)-B\left(64c^2d^2-60bcde+b^2e^2\right)+3ce(16Bcd-bBe}{35ce^4}$$

$$= -\frac{2\sqrt{d+ex}\left(7Ace(8cd-7be)-B\left(64c^2d^2-60bcde+b^2e^2\right)+3ce(16Bcd-bBe}{35ce^4}$$

$$= -\frac{2\sqrt{d+ex}\left(7Ace(8cd-7be)-B\left(64c^2d^2-60bcde+b^2e^2\right)+3ce(16Bcd-bBe}{35ce^4}$$

$$= -\frac{2\sqrt{d+ex}\left(7Ace(8cd-7be)-B\left(64c^2d^2-60bcde+b^2e^2\right)+3ce(16Bcd-bBe}{35ce^4}$$

Mathematica [C] time = 3.52, size = 514, normalized size = 1.14

$$2(x(b+cx))^{3/2}\left(bex(b+cx)\left((d+ex)\left(7Ace(2be-3cd)+B\left(b^2e^2-25bcde+29c^2d^2\right)\right)+cex(d+ex)(7Ace+8b\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(b*e*x*(b + c*x)*(35*c*d*(B*d - A*e)*(c*d - b*e) + (
7*A*c*e*(-3*c*d + 2*b*e) + B*(29*c^2*d^2 - 25*b*c*d*e + b^2*e^2))*(d + e*x)
 + c*e*(-13*B*c*d + 8*b*B*e + 7*A*c*e)*x*(d + e*x) + 5*B*c^2*e^2*x^2*(d + e
*x)) + Sqrt[b/c]*(Sqrt[b/c]*(7*A*c*e*(16*c^2*d^2 - 16*b*c*d*e + b^2*e^2) -
B*(128*c^3*d^3 - 136*b*c^2*d^2*e + 11*b^2*c*d*e^2 + 2*b^3*e^3))*(b + c*x)*(
d + e*x) + I*b*e*(7*A*c*e*(16*c^2*d^2 - 16*b*c*d*e + b^2*e^2) - B*(128*c^3*
d^3 - 136*b*c^2*d^2*e + 11*b^2*c*d*e^2 + 2*b^3*e^3))*Sqrt[1 + b/(c*x)]*Sqrt
[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]
- I*b*e*(c*d - b*e)*(7*A*c*e*(8*c*d - b*e) + 2*B*(-32*c^2*d^2 + 6*b*c*d*e +
 b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[
Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(35*b*c*e^5*x^2*(b + c*x)^2*Sqrt[d + e*
x])
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Abx+(Bb+Ac)x^2\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{e^2x^2+2\,dex+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*b*x + (B*b + A*c)*x^2)*sqrt(c*x^2 + b*x)*sqrt(e*x + d
)/(e^2*x^2 + 2*d*e*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(3/2), x)
```

maple [B] time = 0.11, size = 1610, normalized size = 3.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35*((c*x+b)*x)^(1/2)*(e*x+d)^(1/2)*(7*A*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)*b^4*c*e^4-64*B*b*c^4*d^3*e*x+56*A*c^5*d^2*e^2*x^2-B*b^3*c^2*e^4*x
^2-64*B*c^5*d^3*e*x^2-13*B*b*c^4*e^4*x^4+8*B*c^5*d*e^3*x^4-21*A*b*c^4*e^4*x
^3+14*A*c^5*d*e^3*x^3-9*B*b^2*c^3*e^4*x^3-16*B*c^5*d^2*e^2*x^3-14*A*b^2*c^3
*e^4*x^2-264*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^2*c^3*d^3*e-B*((
c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d*e^3-71*B*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e^2+128*B*EllipticE(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)*b*c^4*d^4-128*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^
4*d^4+200*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^3*e-119*A*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^3*c^2*d*e^3+224*A*EllipticE(((c*
x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^2*c^3*d^2*e^2-112*A*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*
(-1/b*c*x)^(1/2)*b*c^4*d^3*e+56*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*b^3*c^2*d*e^3-168*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^2*
e^2+112*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*d^3*e-9*B*Ellipti
cE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^4*c*d*e^3-B*b^3*c^2*d*e^3*x+60*B*b^2*c
^3*d^2*e^2*x-49*A*b^2*c^3*d*e^3*x+56*A*b*c^4*d^2*e^2*x+16*B*b^2*c^3*d*e^3*x
^2+44*B*b*c^4*d^2*e^2*x^2-35*A*b*c^4*d*e^3*x^2+25*B*b*c^4*d*e^3*x^3-5*B*c^5
*e^4*x^5-7*A*c^5*e^4*x^4+147*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e
)^(1/2))*b^3*c^2*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)-2*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^5*e^4)/c^3/e^
5/x/(c*e*x^2+b*e*x+c*d*x+b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \left(A + Bx\right)}{\left(d + ex\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**(3/2), x)
```

3.1262 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=413

$$\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,\left(5Ae\left(3b^2e^2-16bcde+16c^2d^2\right)-Bd\left(39b^2e^2-152bcde+128c^2d^2\right)\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)\right.}{15\sqrt{c}\,e^5\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

```
[Out] 2/15*(3*B*e*x-5*A*e+8*B*d)*(c*x^2+b*x)^(3/2)/e^2/(e*x+d)^(3/2)-2/15*(40*A*c
*e*(-b*e+2*c*d)-B*(3*b^2*e^2-88*b*c*d*e+128*c^2*d^2))*EllipticE(c^(1/2)*x^(
1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)
^(1/2)/e^5/c^(1/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/15*(5*A*e*(3*b^2*e^2
-16*b*c*d*e+16*c^2*d^2)-B*d*(39*b^2*e^2-152*b*c*d*e+128*c^2*d^2))*EllipticF
(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(
1/2)*(1+e*x/d)^(1/2)/e^5/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2/15*(4*B*
d*(-9*b*e+16*c*d)-5*A*e*(-3*b*e+8*c*d)+e*(-10*A*c*e-3*B*b*e+16*B*c*d)*x)*(c
*x^2+b*x)^(1/2)/e^4/(e*x+d)^(1/2)
```

Rubi [A] time = 0.50, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {812, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,\left(5Ae\left(3b^2e^2-16bcde+16c^2d^2\right)-Bd\left(39b^2e^2-152bcde+128c^2d^2\right)\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)\right.}{15\sqrt{c}\,e^5\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(4*B*d*(16*c*d - 9*b*e) - 5*A*e*(8*c*d - 3*b*e) + e*(16*B*c*d - 3*b*B*e
 - 10*A*c*e)*x)*Sqrt[b*x + c*x^2])/(15*e^4*Sqrt[d + e*x]) + (2*(8*B*d - 5*A
*e + 3*B*e*x)*(b*x + c*x^2)^(3/2))/(15*e^2*(d + e*x)^(3/2)) - (2*Sqrt[-b]*(
40*A*c*e*(2*c*d - b*e) - B*(128*c^2*d^2 - 88*b*c*d*e + 3*b^2*e^2))*Sqrt[x]*
Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]
], (b*e)/(c*d)])/(15*Sqrt[c]*e^5*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*
Sqrt[-b]*(5*A*e*(16*c^2*d^2 - 16*b*c*d*e + 3*b^2*e^2) - B*d*(128*c^2*d^2 -
152*b*c*d*e + 39*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*Elli
pticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*Sqrt[c]*e^5*Sqr
t[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = \frac{2(8Bd-5Ae+3Bex)\left(bx+cx^2\right)^{3/2}}{15e^2(d+ex)^{3/2}} - \frac{2\int \frac{\left(\frac{1}{2}b(8Bd-5Ae)+\frac{1}{2}(16Bcd-3bBe-10Ace)x\right)\sqrt{bx+cx^2}}{(d+ex)^{3/2}}}{5e^2}$$

$$= -\frac{2(4Bd(16cd-9be)-5Ae(8cd-3be)+e(16Bcd-3bBe-10Ace)x)\sqrt{bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2(4Bd(16cd-9be)-5Ae(8cd-3be)+e(16Bcd-3bBe-10Ace)x)\sqrt{bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2(4Bd(16cd-9be)-5Ae(8cd-3be)+e(16Bcd-3bBe-10Ace)x)\sqrt{bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2(4Bd(16cd-9be)-5Ae(8cd-3be)+e(16Bcd-3bBe-10Ace)x)\sqrt{bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2(4Bd(16cd-9be)-5Ae(8cd-3be)+e(16Bcd-3bBe-10Ace)x)\sqrt{bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

Mathematica [C] time = 2.13, size = 436, normalized size = 1.06

$$2(x(b+cx))^{3/2}\left(iex^{3/2}\sqrt{\frac{b}{c}}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\left(5Ace(8cd-5be)+B\left(-3b^2e^2+52bcde-64c^2d^2\right)\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)\right|\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(((40*A*c*e*(-2*c*d + b*e) + B*(128*c^2*d^2 - 88*b*c
*d*e + 3*b^2*e^2))*(b + c*x)*(d + e*x))/c + (e*x*(b + c*x)*(5*A*e*(-(b*e*(3
*d + 4*e*x)) + c*(8*d^2 + 10*d*e*x + e^2*x^2)) + B*(b*e*(36*d^2 + 47*d*e*x
+ 6*e^2*x^2) - c*(64*d^3 + 80*d^2*e*x + 8*d*e^2*x^2 - 3*e^3*x^3))))/(d + e*
x) - I*Sqrt[b/c]*e*(40*A*c*e*(2*c*d - b*e) + B*(-128*c^2*d^2 + 88*b*c*d*e -
 3*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSin
h[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] + I*Sqrt[b/c]*e*(5*A*c*e*(8*c*d - 5*b*e)
 + B*(-64*c^2*d^2 + 52*b*c*d*e - 3*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(
e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]))/(15*e^
5*x^2*(b + c*x)^2*Sqrt[d + e*x])
```

fricas [F] time = 0.85, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Abx+(Bb+Ac)x^2\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*b*x + (B*b + A*c)*x^2)*sqrt(c*x^2 + b*x)*sqrt(e*x + d
)/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(5/2), x)
```

maple [B] time = 0.11, size = 2367, normalized size = 5.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15*((c*x+b)*x)^(1/2)*(3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x*b^4*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)-39*B*x^3*b*c^3*d*e^3-3*B*x^5*c^4*e^4-5*A*x^4*c^4*e^4-152*B*EllipticF(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^3*e*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+40*A*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-15*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x*b^3*c*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)+40*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3
*c*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-12
0*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2*e^2*((
c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+80*A*Elliptic
E(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3*e*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-15*A*EllipticF(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-9*B*x^4*b*c^3*e^4+3*B*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*
d)*c)^(1/2)*(-1/b*c*x)^(1/2)-128*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*b*c^3*d^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+128*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^
3*d^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+80*A*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2*e^2*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-80*A*EllipticF(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3*e*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-91*B*EllipticE(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)+216*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*
b*e)^(1/2))*b^2*c^2*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)+39*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^
3*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
-40*A*x^2*c^4*d^2*e^2+64*B*x^2*c^4*d^3*e+8*B*x^4*c^4*d*e^3+15*A*x^3*b*c^3*e
^4-50*A*x^3*c^4*d*e^3-6*B*x^3*b^2*c^2*e^4+80*B*x^3*c^4*d^2*e^2+20*A*x^2*b^2
*c^2*e^4-35*A*x^2*b*c^3*d*e^3-47*B*x^2*b^2*c^2*d*e^3+44*B*x^2*b*c^3*d^2*e^2
+15*A*x*b^2*c^2*d*e^3-40*A*x*b*c^3*d^2*e^2-36*B*x*b^2*c^2*d^2*e^2+64*B*x*b*
c^3*d^3*e-120*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*
c^2*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8
0*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^2*e^2*((
c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+80*A*Elliptic
F(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d*e^3*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-80*A*EllipticF(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-91*B*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b^3*c*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)+216*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*x*b^2*c^2*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)-128*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
*b*c^3*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)+39*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d*e^3*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-152*B*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^2*e^2*((c*x+b)/b
)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+128*B*EllipticF(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^3*e*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2))/(c*x+b)/x/(e*x+d)^(3/2)/c^2/e^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(5/2),x, algorithm="maxima")
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+b\,x\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(5/2),x)
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x\left(b+cx\right)\right)^{\frac{3}{2}}\left(A+Bx\right)}{\left(d+ex\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**(5/2),x)
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**(5/2), x)
```

3.1263 $\int \frac{(A+Bx)\left(bx+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=516

$$-\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,\left(24Ace(2cd-be)-B\left(15b^2e^2-104bcde+128c^2d^2\right)\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{15\sqrt{c}\,e^5\sqrt{bx+cx^2}\,\sqrt{d+ex}}+$$

```
[Out] -2/15*(d^2*(-3*A*c*e-5*B*b*e+8*B*c*d)+e*(B*d*(-8*b*e+11*c*d)-3*A*e*(-b*e+2*
c*d))*x)*(c*x^2+b*x)^(3/2)/d/e^2/(-b*e+c*d)/(e*x+d)^(5/2)+2/15*(3*A*e*(b^2*
e^2-16*b*c*d*e+16*c^2*d^2)-B*d*(43*b^2*e^2-168*b*c*d*e+128*c^2*d^2))*Ellipt
icE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*
(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/d/e^5/(-b*e+c*d)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^
(1/2)-2/15*(24*A*c*e*(-b*e+2*c*d)-B*(15*b^2*e^2-104*b*c*d*e+128*c^2*d^2))*E
llipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*
x/b+1)^(1/2)*(1+e*x/d)^(1/2)/e^5/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2/
15*(d*(3*A*c*e*(-7*b*e+8*c*d)-B*(15*b^2*e^2-76*b*c*d*e+64*c^2*d^2))-c*e*(B*
d*(-13*b*e+16*c*d)-3*A*e*(-b*e+2*c*d))*x)*(c*x^2+b*x)^(1/2)/d/e^4/(-b*e+c*d
)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.67, antiderivative size = 516, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {810, 812, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{bx+cx^2}\,\left(d\left(3Ace(8cd-7be)-B\left(15b^2e^2-76bcde+64c^2d^2\right)\right)-cex(Bd(16cd-13be)-3Ae(2cd-be))\right)}{15de^4\sqrt{d+ex}\,(cd-be)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(d*(3*A*c*e*(8*c*d - 7*b*e) - B*(64*c^2*d^2 - 76*b*c*d*e + 15*b^2*e^2))
 - c*e*(B*d*(16*c*d - 13*b*e) - 3*A*e*(2*c*d - b*e))*x)*Sqrt[b*x + c*x^2])/
(15*d*e^4*(c*d - b*e)*Sqrt[d + e*x]) - (2*(d^2*(8*B*c*d - 5*b*B*e - 3*A*c*e
) + e*(B*d*(11*c*d - 8*b*e) - 3*A*e*(2*c*d - b*e))*x)*(b*x + c*x^2)^(3/2))/
(15*d*e^2*(c*d - b*e)*(d + e*x)^(5/2)) + (2*Sqrt[-b]*Sqrt[c]*(3*A*e*(16*c^2
*d^2 - 16*b*c*d*e + b^2*e^2) - B*d*(128*c^2*d^2 - 168*b*c*d*e + 43*b^2*e^2)
)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x]
)/Sqrt[-b]], (b*e)/(c*d)])/(15*d*e^5*(c*d - b*e)*Sqrt[1 + (e*x)/d]*Sqrt[b*x
 + c*x^2]) - (2*Sqrt[-b]*(24*A*c*e*(2*c*d - b*e) - B*(128*c^2*d^2 - 104*b*c
*d*e + 15*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[A
rcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*Sqrt[c]*e^5*Sqrt[d + e
*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\big(bx+cx^2\big)^{3/2}}{(d+ex)^{7/2}}\,dx = -\frac{2\big(d^2(8Bcd-5bBe-3Ace)+e(Bd(11cd-8be)-3Ae(2cd-be))x\big)\big(bx+cx^2}{15de^2(cd-be)(d+ex)^{5/2}}$$

$$= -\frac{2\big(d\big(3Ace(8cd-7be)-B\big(64c^2d^2-76bcde+15b^2e^2\big)\big)-ce(Bd(16cd-13be)}{15de^4(cd-be)\sqrt{d+ex}}$$

$$= -\frac{2\big(d\big(3Ace(8cd-7be)-B\big(64c^2d^2-76bcde+15b^2e^2\big)\big)-ce(Bd(16cd-13be)}{15de^4(cd-be)\sqrt{d+ex}}$$

$$= -\frac{2\big(d\big(3Ace(8cd-7be)-B\big(64c^2d^2-76bcde+15b^2e^2\big)\big)-ce(Bd(16cd-13be)}{15de^4(cd-be)\sqrt{d+ex}}$$

$$= -\frac{2\big(d\big(3Ace(8cd-7be)-B\big(64c^2d^2-76bcde+15b^2e^2\big)\big)-ce(Bd(16cd-13be)}{15de^4(cd-be)\sqrt{d+ex}}$$

$$= -\frac{2\big(d\big(3Ace(8cd-7be)-B\big(64c^2d^2-76bcde+15b^2e^2\big)\big)-ce(Bd(16cd-13be)}{15de^4(cd-be)\sqrt{d+ex}}$$

Mathematica [C] time = 2.98, size = 530, normalized size = 1.03

$$\frac{2(x(b+cx))^{3/2}\Bigg(ex\sqrt{\frac{b}{c}}\,(b+cx)\big((d+ex)^2\big(Bd\big(23b^2e^2-93bcde+73c^2d^2\big)-3Ae\big(b^2e^2-11bcde+11c^2d^2\big)\big)+3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(b*x + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(x*(b + c*x))^(3/2)*(Sqrt[b/c]*e*x*(b + c*x)*(3*d^2*(B*d - A*e)*(c*d - b
*e)^2 - d*(c*d - b*e)*(B*d*(17*c*d - 11*b*e) + 6*A*e*(-2*c*d + b*e))*(d + e
*x) + (-3*A*e*(11*c^2*d^2 - 11*b*c*d*e + b^2*e^2) + B*d*(73*c^2*d^2 - 93*b*
c*d*e + 23*b^2*e^2))*(d + e*x)^2 + 5*B*c*d*(c*d - b*e)*(d + e*x)^3) + (d +
e*x)^2*(Sqrt[b/c]*(B*d*(-128*c^2*d^2 + 168*b*c*d*e - 43*b^2*e^2) + 3*A*e*(1
6*c^2*d^2 - 16*b*c*d*e + b^2*e^2))*(b + c*x)*(d + e*x) + I*b*e*(B*d*(-128*c
^2*d^2 + 168*b*c*d*e - 43*b^2*e^2) + 3*A*e*(16*c^2*d^2 - 16*b*c*d*e + b^2*e
^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b
/c]/Sqrt[x]], (c*d)/(b*e)] + I*b*e*(c*d - b*e)*(4*B*d*(16*c*d - 7*b*e) + 3*
A*e*(-8*c*d + b*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I
*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(15*Sqrt[b/c]*d*e^5*(c*d - b*e
)*x^2*(b + c*x)^2*(d + e*x)^(5/2))
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3+Abx+(Bb+Ac)x^2\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*b*x + (B*b + A*c)*x^2)*sqrt(c*x^2 + b*x)*sqrt(e*x + d
)/(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(7/2), x)
```

maple [B] time = 0.12, size = 4120, normalized size = 7.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] 2/15*((c*x+b)*x)^(1/2)*(-33*A*x^4*b*c^3*d*e^5-43*B*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+6*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)+232*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b
^2*c^2*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)-86*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*d^2*e^4*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-51*A*Ellipti
cE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^3*e^3*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+96*A*EllipticE(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-48*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)+24*A*x^2*c^4*d^4*e^2-5*B*x^5*c^4*d^2*e^4-102*A*Ellipti
cE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d^2*e^4*((c*x+b)/b)^(
1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+15*B*EllipticF(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+24*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)-72*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)+48*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^
5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+211*B*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^4*e^2*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-296*B*EllipticE(((c*
x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^5*e*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-119*B*EllipticF(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*
d)*c)^(1/2)*(-1/b*c*x)^(1/2)+3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*x^2*b^4*e^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+3*A*x^4*b^2*c^2*e^6-64*B*x^2*c^4*d^5*e+54*A*x^3*c^4*d^3*e^3-144
*B*x^3*c^4*d^4*e^2+3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*b^4*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)-43*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d^3*e^3*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+128*B*Elliptic
E(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^6*((c*x+b)/b)^(1/2)*(-
(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-128*B*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)+33*A*x^4*c^4*d^2*e^4-88*B*x^4*c^4*d^3*e^3+3*A*x^
3*b^3*c*e^6+30*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4
*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+19
2*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^3*e^3*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-96*A*Ellipt
icE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^4*e^2*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+48*A*EllipticF(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-144*A*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-
c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+5*B*x^5*b*c^3*d*e^5-35*B*x^2*b^3*c*d^2*e^4-1
5*B*x*b^3*c*d^3*e^3-21*A*x*b^2*c^2*d^3*e^3+24*A*x*b*c^3*d^4*e^2+76*B*x*b^2*
c^2*d^4*e^2-64*B*x*b*c^3*d^5*e-18*B*x^4*b^2*c^2*d*e^5+103*B*x^4*b*c^3*d^2*e
^4-33*A*x^3*b^2*c^2*d*e^5-15*A*x^3*b*c^3*d^2*e^4-23*B*x^3*b^3*c*d*e^5+73*B*
x^3*b^2*c^2*d^2*e^4+85*B*x^3*b*c^3*d^3*e^3-48*A*x^2*b^2*c^2*d^2*e^4+33*A*x^
2*b*c^3*d^3*e^3+158*B*x^2*b^2*c^2*d^3*e^3-68*B*x^2*b*c^3*d^4*e^2-296*B*Elli
pticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^3*e^3*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+128*B*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^4*e^2*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-119*B*EllipticF(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+232*B*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-128*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-
c*d)*b*e)^(1/2))*x^2*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)-48*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)+24*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2
*b^3*c*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)-592*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^4*
e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+256*B*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^5*e*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-238*B*EllipticF(((c*
x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-
(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+464*B*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-256*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)+211*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x^2*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)+96*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*
c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
+422*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d^3*e^3
*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+96*A*Ellip
ticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^2*e^4*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-51*A*EllipticE(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d*e^5*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-72*A*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+48*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)+15*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x^2*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2))/(c*x+b)/x/(b*e-c*d)/(e*x+d)^(5/2)/d/e^5/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x)^(3/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + b*x)^(3/2)*(B*x + A)/(e*x + d)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+b\,x\right)^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] int(((b*x + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(x \left(b + c x\right)\right)^{\frac{3}{2}} \left(A + B x\right)}{\left(d + e x\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral((x*(b + c*x))**(3/2)*(A + B*x)/(d + e*x)**(7/2), x)
```

3.1264 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=460

$$-\frac{2\sqrt{-b}\,d\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)\big(28Ace(2cd-be)+B\big(24b^2e^2-43bcde+15c^2d^2\big)\big)\,F\big(\sin^{-1}\big(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\big)|\frac{be}{cd}}{105c^{7/2}e\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

```
[Out] 2/105*(7*A*c*e*(8*b^2*e^2-23*b*c*d*e+23*c^2*d^2)+B*(-48*b^3*e^3+128*b^2*c*d
*e^2-103*b*c^2*d^2*e+15*c^3*d^3))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e
/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/c^(7/2)/e/(1+
e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/105*d*(-b*e+c*d)*(28*A*c*e*(-b*e+2*c*d)+B*
(24*b^2*e^2-43*b*c*d*e+15*c^2*d^2))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b
*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/c^(7/2)/e
/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/35*(7*A*c*e-6*B*b*e+5*B*c*d)*(e*x+d)^(3/
2)*(c*x^2+b*x)^(1/2)/c^2+2/7*B*(e*x+d)^(5/2)*(c*x^2+b*x)^(1/2)/c+2/105*(28*
A*c*e*(-b*e+2*c*d)+B*(24*b^2*e^2-43*b*c*d*e+15*c^2*d^2))*(e*x+d)^(1/2)*(c*x
^2+b*x)^(1/2)/c^3
```

Rubi [A] time = 0.77, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {832, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,\sqrt{d+ex}\,\big(28Ace(2cd-be)+B\big(24b^2e^2-43bcde+15c^2d^2\big)\big)}{105c^3}-\frac{2\sqrt{-b}\,d\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(cd-be}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(28*A*c*e*(2*c*d - b*e) + B*(15*c^2*d^2 - 43*b*c*d*e + 24*b^2*e^2))*Sqrt
[d + e*x]*Sqrt[b*x + c*x^2])/(105*c^3) + (2*(5*B*c*d - 6*b*B*e + 7*A*c*e)*(
d + e*x)^(3/2)*Sqrt[b*x + c*x^2])/(35*c^2) + (2*B*(d + e*x)^(5/2)*Sqrt[b*x
+ c*x^2])/(7*c) + (2*Sqrt[-b]*(7*A*c*e*(23*c^2*d^2 - 23*b*c*d*e + 8*b^2*e^2
) + B*(15*c^3*d^3 - 103*b*c^2*d^2*e + 128*b^2*c*d*e^2 - 48*b^3*e^3))*Sqrt[x
]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-
b]], (b*e)/(c*d)])/(105*c^(7/2)*e*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2
*Sqrt[-b]*d*(c*d - b*e)*(28*A*c*e*(2*c*d - b*e) + B*(15*c^2*d^2 - 43*b*c*d*
e + 24*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcS
in[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(105*c^(7/2)*e*Sqrt[d + e*x]*
Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{bx+cx^2}}\,dx = \frac{2B(d+ex)^{5/2}\sqrt{bx+cx^2}}{7c} + \frac{2\int \frac{(d+ex)^{3/2}\left(-\frac{1}{2}(bB-7Ac)d+\frac{1}{2}(5Bcd-6bBe+7Ace)x\right)}{\sqrt{bx+cx^2}}\,dx}{7c}$$

$$= \frac{2(5Bcd-6bBe+7Ace)(d+ex)^{3/2}\sqrt{bx+cx^2}}{35c^2} + \frac{2B(d+ex)^{5/2}\sqrt{bx+cx^2}}{7c} + 4\int$$

$$= \frac{2\left(28Ace(2cd-be)+B\left(15c^2d^2-43bcde+24b^2e^2\right)\right)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{105c^3} + 2(5Bc$$

$$= \frac{2\left(28Ace(2cd-be)+B\left(15c^2d^2-43bcde+24b^2e^2\right)\right)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{105c^3} + 2(5Bc$$

$$= \frac{2\left(28Ace(2cd-be)+B\left(15c^2d^2-43bcde+24b^2e^2\right)\right)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{105c^3} + 2(5Bc$$

$$= \frac{2\left(28Ace(2cd-be)+B\left(15c^2d^2-43bcde+24b^2e^2\right)\right)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{105c^3} + 2(5Bc$$

$$= \frac{2\left(28Ace(2cd-be)+B\left(15c^2d^2-43bcde+24b^2e^2\right)\right)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{105c^3} + 2(5Bc$$

Mathematica [C] time = 4.12, size = 479, normalized size = 1.04

$$2\sqrt{x}\left(\sqrt{x}\,(b+cx)(d+ex)\left(7Ace(-4be+11cd+3cex)+B\left(24b^2e^2-bce(61d+18ex)+15c^2\left(3d^2+3dex+e^2x\right.\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x]*(((7*A*c*e*(23*c^2*d^2 - 23*b*c*d*e + 8*b^2*e^2) + B*(15*c^3*d^3
 - 103*b*c^2*d^2*e + 128*b^2*c*d*e^2 - 48*b^3*e^3))*(b + c*x)*(d + e*x))/(c
*e*Sqrt[x]) + Sqrt[x]*(b + c*x)*(d + e*x)*(7*A*c*e*(11*c*d - 4*b*e + 3*c*e*
x) + B*(24*b^2*e^2 - b*c*e*(61*d + 18*e*x) + 15*c^2*(3*d^2 + 3*d*e*x + e^2*
x^2))) + I*Sqrt[b/c]*(7*A*c*e*(23*c^2*d^2 - 23*b*c*d*e + 8*b^2*e^2) + B*(15
*c^3*d^3 - 103*b*c^2*d^2*e + 128*b^2*c*d*e^2 - 48*b^3*e^3))*Sqrt[1 + b/(c*x
)]*Sqrt[1 + d/(e*x)]*x*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]
 + (I*Sqrt[b/c]*(-(c*d) + b*e)*(-105*A*c^3*d^2 + 48*b^3*B*e^2 - 8*b^2*c*e*(
13*B*d + 7*A*e) + b*c^2*d*(60*B*d + 133*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/
(e*x)]*x*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/b))/(105*c^3
*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^2x^3+Ad^2+\left(2\,Bde+Ae^2\right)x^2+\left(Bd^2+2\,Ade\right)x\right)\sqrt{ex+d}}{\sqrt{cx^2+bx}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*d^2 + (2*B*d*e + A*e^2)*x^2 + (B*d^2 + 2*A*d*e)*x)*
sqrt(e*x + d)/sqrt(c*x^2 + b*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\sqrt{cx^2+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/sqrt(c*x^2 + b*x), x)
```

maple [B] time = 0.10, size = 1610, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/105*(e*x+d)^(1/2)*((c*x+b)*x)^(1/2)*(56*A*EllipticE(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*b^4*c*e^4-45*B*b*c^4*d^3*e*x-77*A*c^5*d^2*e^2*x^2-24*B*b^3*c^2*
e^4*x^2-45*B*c^5*d^3*e*x^2+3*B*b*c^4*e^4*x^4-60*B*c^5*d*e^3*x^4+7*A*b*c^4*e
^4*x^3-98*A*c^5*d*e^3*x^3-6*B*b^2*c^3*e^4*x^3-90*B*c^5*d^2*e^2*x^3+28*A*b^2
*c^3*e^4*x^2+118*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^2*c^3*d^3*e-
24*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d*e^3+67*B*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^
(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e^2-15*B*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2
)*(-1/b*c*x)^(1/2)*b*c^4*d^4+15*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*b*c^4*d^4-58*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(
1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^3*e-217
*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^3*c^2*d*e^3+322*A*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^2*c^3*d^2*e^2-161*A*EllipticE(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*b*c^4*d^3*e+28*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*b^3*c^2*d*e^3-84*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d
^2*e^2+56*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*d^3*e+176*B*Ell
ipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*((c*x+b)/b)^(1/2)*(-(e*x+
d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^4*c*d*e^3-24*B*b^3*c^2*d*e^3*x+61*
B*b^2*c^3*d^2*e^2*x+28*A*b^2*c^3*d*e^3*x-77*A*b*c^4*d^2*e^2*x+55*B*b^2*c^3*
d*e^3*x^2-29*B*b*c^4*d^2*e^2*x^2-70*A*b*c^4*d*e^3*x^2+19*B*b*c^4*d*e^3*x^3-
15*B*c^5*e^4*x^5-21*A*c^5*e^4*x^4-231*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)-48*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*b^5*e
^4)/e/c^5/x/(c*e*x^2+b*e*x+c*d*x+b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\sqrt{cx^2+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/sqrt(c*x^2 + b*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{5/2}}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{\frac{5}{2}}}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**(5/2)/sqrt(x*(b + c*x)), x)
```

3.1265 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=339

$$\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(10Ace(2cd-be)+B\left(8b^2e^2-13bcde+3c^2d^2\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{15c^{5/2}e\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+1}}-\frac{2\sqrt{-b}\,d\sqrt{x}}{}$$

```
[Out] 2/15*(10*A*c*e*(-b*e+2*c*d)+B*(8*b^2*e^2-13*b*c*d*e+3*c^2*d^2))*EllipticE(c
^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/
2)*(e*x+d)^(1/2)/c^(5/2)/e/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/15*d*(-b*e+c
*d)*(5*A*c*e-4*B*b*e+3*B*c*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d
)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/c^(5/2)/e/(e*x+
d)^(1/2)/(c*x^2+b*x)^(1/2)+2/5*B*(e*x+d)^(3/2)*(c*x^2+b*x)^(1/2)/c+2/15*(5*
A*c*e-4*B*b*e+3*B*c*d)*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2)/c^2
```

Rubi [A] time = 0.48, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {832, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{-b}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(10Ace(2cd-be)+B\left(8b^2e^2-13bcde+3c^2d^2\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{15c^{5/2}e\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+1}}+\frac{2\sqrt{bx+cx^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*(3*B*c*d - 4*b*B*e + 5*A*c*e)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])/(15*c^2)
+ (2*B*(d + e*x)^(3/2)*Sqrt[b*x + c*x^2])/(5*c) + (2*Sqrt[-b]*(10*A*c*e*(2*
c*d - b*e) + B*(3*c^2*d^2 - 13*b*c*d*e + 8*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)
/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)
])/(15*c^(5/2)*e*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2*Sqrt[-b]*d*(c*d
- b*e)*(3*B*c*d - 4*b*B*e + 5*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*
x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*c^(5/
2)*e*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{bx+cx^2}}\,dx &= \frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}+\frac{2\int \frac{\sqrt{d+ex}\left(-\frac{1}{2}(bB-5Ac)d+\frac{1}{2}(3Bcd-4bBe+5Ace)x\right)}{\sqrt{bx+cx^2}}\,dx}{5c}\\
&= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}+ 4\int -\frac{1}{4}d(\\
&= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}- (d(cd-\\
&= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}- \Big(d(cd-\\
&= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}+ \Big(\Big(10Ac\\
&= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{bx+cx^2}}{15c^2}+\frac{2B(d+ex)^{3/2}\sqrt{bx+cx^2}}{5c}+ 2\sqrt{-b}\,\Big(
\end{aligned}
$$

Mathematica [**C**] time = 1.84, size = 356, normalized size = 1.05

$$2\sqrt{x}\left(\frac{(b+cx)(d+ex)\left(10Ace(2cd-be)+B\left(8b^2e^2-13bcde+3c^2d^2\right)\right)}{ce\sqrt{x}}+ix\sqrt{\frac{b}{c}}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\left(10Ace(2cd-be)+B\left(8b^2e^2-13bcde\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[x]*(((10*A*c*e*(2*c*d - b*e) + B*(3*c^2*d^2 - 13*b*c*d*e + 8*b^2*e^
2))*(b + c*x)*(d + e*x))/(c*e*Sqrt[x]) + Sqrt[x]*(b + c*x)*(d + e*x)*(5*A*c
*e + B*(6*c*d - 4*b*e + 3*c*e*x)) + I*Sqrt[b/c]*(10*A*c*e*(2*c*d - b*e) + B
*(3*c^2*d^2 - 13*b*c*d*e + 8*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*
x*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - (I*Sqrt[b/c]*(-(c*
d) + b*e)*(15*A*c^2*d + 8*b^2*B*e - b*c*(9*B*d + 10*A*e))*Sqrt[1 + b/(c*x)]
*Sqrt[1 + d/(e*x)]*x*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/
b))/(15*c^2*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [**F**] time = 0.77, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bex^2+Ad+(Bd+Ae)x\right)\sqrt{ex+d}}{\sqrt{cx^2+bx}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(e*x + d)/sqrt(c*x^2 + b*x), x
)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\sqrt{cx^2+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x), x)
```

maple [**B**] time = 0.10, size = 1144, normalized size = 3.37

$$2\sqrt{ex+d}\,\sqrt{(cx+b)\,x}\,\left(3B\,c^4e^3x^4+5A\,c^4e^3x^3-Bb\,c^3e^3x^3+9B\,c^4d\,e^2x^3+5Ab\,c^3e^3x^2+5A\,c^4d\,e^2x^2-4B\,b^2c^2e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/15*(e*x+d)^(1/2)*((c*x+b)*x)^(1/2)*(5*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-
c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e
)^(1/2))*b^2*c^2*d*e^2-5*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(
-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*
d^2*e+10*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*e^3-30*A*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d*e^2+20*A*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*b*c^3*d^2*e-4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*b^3*c*d*e^2+7*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2*e
-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3-8*B*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*e^3+21*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*b^3*c*d*e^2-16*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*
d^2*e+3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3+3*B*x^4*c^4*e
^3+5*A*c^4*e^3*x^3-B*x^3*b*c^3*e^3+9*B*c^4*d*e^2*x^3+5*A*b*c^3*e^3*x^2+5*A*
c^4*d*e^2*x^2-4*B*b^2*c^2*e^3*x^2+5*B*x^2*b*c^3*d*e^2+6*B*x^2*c^4*d^2*e+5*A
*b*c^3*d*e^2*x-4*B*x*b^2*c^2*d*e^2+6*B*x*b*c^3*d^2*e)/e/x/(c*e*x^2+b*e*x+c*
d*x+b*d)/c^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\sqrt{cx^2 + bx}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,{(d + e\,x)}^{3/2}}{\sqrt{c\,x^2 + b\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,(d + ex)^{\frac{3}{2}}}{\sqrt{x\,(b + cx)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**(3/2)/sqrt(x*(b + c*x)), x)
```

3.1266 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=254

$$\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(3Ace-2bBe+Bcd)E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3c^{3/2}e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}-\frac{2\sqrt{-b}\,Bd\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)F\bigl(\mathrm{s}}{3c^{3/2}e\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

```
[Out] 2/3*(3*A*c*e-2*B*b*e+B*c*d)*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^
(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/c^(3/2)/e/(1+e*x/d)
^(1/2)/(c*x^2+b*x)^(1/2)-2/3*B*d*(-b*e+c*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^
(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/c
^(3/2)/e/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*B*(e*x+d)^(1/2)*(c*x^2+b*x)^(1
/2)/c
```

Rubi [A] time = 0.28, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {832, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(3Ace-2bBe+Bcd)E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3c^{3/2}e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}-\frac{2\sqrt{-b}\,Bd\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)F\bigl(\mathrm{s}}{3c^{3/2}e\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*B*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])/(3*c) + (2*Sqrt[-b]*(B*c*d - 2*b*B*e
+ 3*A*c*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c
]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*c^(3/2)*e*Sqrt[1 + (e*x)/d]*Sqrt[b*x
 + c*x^2]) - (2*Sqrt[-b]*B*d*(c*d - b*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 +
 (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*c^
(3/2)*e*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx &= \frac{2B\sqrt{d+ex}\,\sqrt{bx+cx^2}}{3c}+\frac{2\int \frac{-\frac{1}{2}(bB-3Ac)d+\frac{1}{2}(Bcd-2bBe+3Ace)x}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx}{3c}\\
&= \frac{2B\sqrt{d+ex}\,\sqrt{bx+cx^2}}{3c}-\frac{(Bd(cd-be))\int \frac{1}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx}{3ce}+\frac{(Bcd-2bBe+3Ace)\int}{3ce}\\
&= \frac{2B\sqrt{d+ex}\,\sqrt{bx+cx^2}}{3c}-\frac{\left(Bd(cd-be)\sqrt{x}\,\sqrt{b+cx}\right)\int \frac{1}{\sqrt{x}\,\sqrt{b+cx}\,\sqrt{d+ex}}\,dx}{3ce\sqrt{bx+cx^2}}+\left((Bcd-2\right.\\
&= \frac{2B\sqrt{d+ex}\,\sqrt{bx+cx^2}}{3c}+\frac{\left((Bcd-2bBe+3Ace)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\right)\int \frac{\sqrt{1+\frac{ex}{d}}}{\sqrt{x}\,\sqrt{1+\frac{cx}{b}}}\,d}{3ce\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}\\
&= \frac{2B\sqrt{d+ex}\,\sqrt{bx+cx^2}}{3c}+\frac{2\sqrt{-b}\,(Bcd-2bBe+3Ace)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\right.\right.}{3c^{3/2}e\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}
\end{aligned}$$

Mathematica [C]   time = 1.12, size = 263, normalized size = 1.04

$$\frac{2x\left(\frac{(b+cx)(d+ex)(3Ace-2bBe+Bcd)}{cex}+\frac{i\sqrt{x}\sqrt{\frac{b}{c}}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}(2bB-3Ac)(be-cd)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)}{b}+i\sqrt{x}\sqrt{\frac{b}{c}}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}(3Ac\right.}{3c\sqrt{x(b+cx)}\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/Sqrt[b*x + c*x^2],x]
```

```
[Out] (2*x*(B*(b + c*x)*(d + e*x) + ((B*c*d - 2*b*B*e + 3*A*c*e)*(b + c*x)*(d + e
*x))/(c*e*x) + I*Sqrt[b/c]*(B*c*d - 2*b*B*e + 3*A*c*e)*Sqrt[1 + b/(c*x)]*Sq
rt[1 + d/(e*x)]*Sqrt[x]*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)
] + (I*Sqrt[b/c]*(2*b*B - 3*A*c)*(-(c*d) + b*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 +
d/(e*x)]*Sqrt[x]*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/b))/
(3*c*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F]   time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x), x)
```

maple [B]   time = 0.09, size = 629, normalized size = 2.48

$$-\frac{2\sqrt{ex+d}\,\sqrt{(cx+b)\,x}\,\left(-B\,c^3e^2x^3-Bb\,c^2e^2x^2-B\,c^3de\,x^2+3\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,A\,b^2c\,e^2\,\text{EllipticE}\left(\sqrt{\frac{cx+b}{b}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] -2/3*(e*x+d)^(1/2)*((c*x+b)*x)^(1/2)*(3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*b^2*c*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2
)*(-1/b*c*x)^(1/2)-3*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*b*c^2*d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-
B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d*e*((c*x+b)/b
)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+B*EllipticF(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-2*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*b^3*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)+3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*
d*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B*Ellip
ticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^2*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B*c^3*e^2*x^3-B*b*c^2*e^2*x^
2-B*c^3*d*e*x^2-B*b*c^2*d*e*x)/x/(c*e*x^2+b*e*x+c*d*x+b*d)/c^3/e
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\sqrt{c\,x^2+b\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,\sqrt{d+ex}}{\sqrt{x\,(b+cx)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/sqrt(x*(b + c*x)), x)
```

3.1267 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=204

$$\frac{2\sqrt{-b}\,B\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{\sqrt{c}\,e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}-\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Bd-Ae)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{\sqrt{c}\,e\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

```
[Out] 2*B*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*x^(1/2
)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/e/c^(1/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)
-2*(-A*e+B*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1
/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/e/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+
b*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{-b}\,B\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{\sqrt{c}\,e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}-\frac{2\sqrt{-b}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Bd-Ae)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{\sqrt{c}\,e\sqrt{bx+cx^2}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[-b]*B*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqr
t[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(Sqrt[c]*e*Sqrt[1 + (e*x)/d]*Sqrt[b*
x + c*x^2]) - (2*Sqrt[-b]*(B*d - A*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e
*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(Sqrt[c]
*e*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
```

```
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx &= \frac{B\int \frac{\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx}{e}+\frac{(-Bd+Ae)\int \frac{1}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx}{e}\\
&= \frac{\left(B\sqrt{x}\,\sqrt{b+cx}\right)\int \frac{\sqrt{d+ex}}{\sqrt{x}\,\sqrt{b+cx}}\,dx}{e\sqrt{bx+cx^2}}+\frac{\left((-Bd+Ae)\sqrt{x}\,\sqrt{b+cx}\right)\int \frac{1}{\sqrt{x}\,\sqrt{b+cx}\,\sqrt{d+ex}}\,dx}{e\sqrt{bx+cx^2}}\\
&= \frac{\left(B\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\right)\int \frac{\sqrt{1+\frac{ex}{d}}}{\sqrt{x}\,\sqrt{1+\frac{cx}{b}}}\,dx}{e\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}+\frac{\left((-Bd+Ae)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{1+\frac{ex}{d}}\right)\int}{e\sqrt{d+ex}\,\sqrt{bx+cx^2}}\\
&= \frac{2\sqrt{-b}\,B\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{\sqrt{c}\,e\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}-\frac{2\sqrt{-b}\,(Bd-Ae)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}}{\sqrt{c}\,e\sqrt{d+e}}
\end{aligned}$$

Mathematica [C] time = 1.06, size = 209, normalized size = 1.02

$$\frac{-2iex^{3/2}\sqrt{\frac{b}{c}}\,\sqrt{\frac{b}{cx}+1}\,\sqrt{\frac{d}{ex}+1}\,(bB-Ac)F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)+2ibBex^{3/2}\sqrt{\frac{b}{c}}\,\sqrt{\frac{b}{cx}+1}\,\sqrt{\frac{d}{ex}+1}\,E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right.\right.}{be\sqrt{x(b+cx)}\,\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*Sqrt[b*x + c*x^2]),x]
```

```
[Out] ((2*b*B*(b + c*x)*(d + e*x))/c + (2*I)*b*B*Sqrt[b/c]*e*Sqrt[1 + b/(c*x)]*Sq
rt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)
] - (2*I)*Sqrt[b/c]*(b*B - A*c)*e*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/
2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/(b*e*Sqrt[x*(b + c
*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{cex^3+bdx+(cd+be)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c*e*x^3 + b*d*x + (c*d
+ b*e)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*sqrt(e*x + d)), x)
```

maple [A] time = 0.12, size = 216, normalized size = 1.06

$$\frac{2\left(Ace\,\mathrm{EllipticF}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)-Bbe\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)+Bcd\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)-Bcd\,\mathrm{Elli}}{\left(ce\,x^2+bex+cdx+bd\right)c^2ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2*(A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c*e-B*EllipticF((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c*d-B*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b*e+B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*c*d)*b*(-1/b*c*x)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*((c*x+b)/b)^
(1/2)*(e*x+d)^(1/2)*((c*x+b)*x)^(1/2)/e/c^2/x/(c*e*x^2+b*e*x+c*d*x+b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x\,(b+cx)}\,\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*sqrt(d + e*x)), x)
```

3.1268 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=262

$$\frac{2\sqrt{bx+cx^2}\,(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{de\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)}+\frac{2\sqrt{-b}\,B\sqrt{x}\,\sqrt{\frac{cx}{b}+1}}{\sqrt{c}\,e\sqrt{bx}}$$

```
[Out] -2*(-A*e+B*d)*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1
/2)*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/d/e/(-b*e+c*d)/(1+e*x/d)^
(1/2)/(c*x^2+b*x)^(1/2)+2*B*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^
(1/2))*(-b)^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/e/c^(1/2)/(e*x+d)
^(1/2)/(c*x^2+b*x)^(1/2)+2*(-A*e+B*d)*(c*x^2+b*x)^(1/2)/d/(-b*e+c*d)/(e*x+d
)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {834, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,(Bd-Ae)}{d\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{de\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)}+\frac{2\sqrt{-b}\,B\sqrt{x}\,\sqrt{\frac{cx}{b}+1}}{\sqrt{c}\,e\sqrt{bx}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[b*x + c*x^2])/(d*(c*d - b*e)*Sqrt[d + e*x]) - (2*Sqrt[-
b]*Sqrt[c]*(B*d - A*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[Ar
cSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(d*e*(c*d - b*e)*Sqrt[1 + (
e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[-b]*B*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1
 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(Sq
rt[c]*e*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] && !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{bx+cx^2}}\,dx &= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}(bB-Ac)d+\frac{1}{2}c(Bd-Ae)x}{\sqrt{d+ex}\sqrt{bx+cx^2}}\,dx}{d(cd-be)} \\
&= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)\sqrt{d+ex}} + \frac{B\int \frac{1}{\sqrt{d+ex}\sqrt{bx+cx^2}}\,dx}{e} - \frac{(c(Bd-Ae))\int \frac{\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx}{de(cd-be)} \\
&= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)\sqrt{d+ex}} + \frac{\left(B\sqrt{x}\sqrt{b+cx}\right)\int \frac{1}{\sqrt{x}\sqrt{b+cx}\sqrt{d+ex}}\,dx}{e\sqrt{bx+cx^2}} - \frac{\left(c(Bd-Ae)\sqrt{x}\sqrt{b}}{de(cd-b} \\
&= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)\sqrt{d+ex}} - \frac{\left(c(Bd-Ae)\sqrt{x}\sqrt{1+\frac{cx}{b}}\sqrt{d+ex}\right)\int \frac{\sqrt{1+\frac{ex}{d}}}{\sqrt{x}\sqrt{1+\frac{cx}{b}}}\,dx}{de(cd-be)\sqrt{1+\frac{ex}{d}}\sqrt{bx+cx^2}} + \frac{\left(B\sqrt{x}}{} \\
&= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{d(cd-be)\sqrt{d+ex}} - \frac{2\sqrt{-b}\sqrt{c}\,(Bd-Ae)\sqrt{x}\sqrt{1+\frac{cx}{b}}\sqrt{d+ex}\,E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)\right.}{de(cd-be)\sqrt{1+\frac{ex}{d}}\sqrt{bx+cx^2}}
\end{aligned}
$$

Mathematica [C] time = 1.00, size = 226, normalized size = 0.86

$$
\frac{2ibex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\,(Ae-Bd)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)-2d\sqrt{\frac{b}{c}}\,(b+cx)(Bd-Ae)+2iAex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\,(}{de\sqrt{\frac{b}{c}}\sqrt{x(b+cx)}\sqrt{d+ex}\,(cd-be)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (-2*Sqrt[b/c]*d*(B*d - A*e)*(b + c*x) + (2*I)*b*e*(-(B*d) + A*e)*Sqrt[1 + b
/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (
c*d)/(b*e)] + (2*I)*A*e*(c*d - b*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(
3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/(Sqrt[b/c]*d*e*(
c*d - b*e)*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{ce^2x^4+bd^2x+\left(2\,cde+be^2\right)x^3+\left(cd^2+2\,bde\right)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c*e^2*x^4 + b*d^2*x + (
2*c*d*e + b*e^2)*x^3 + (c*d^2 + 2*b*d*e)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(3/2)), x)
```

maple [B] time = 0.11, size = 547, normalized size = 2.09

$$2\left(A\,c^2e^2x^2-B\,c^2de\,x^2+\sqrt{-\frac{cx}{b}}\,\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,A\,b^2e^2\,\text{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)-\sqrt{-\frac{cx}{b}}\,\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)}{be-cd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2*(A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*e^2*(-1/b*c*x
)^(1/2)*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)-A*EllipticE(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c*d*e*(-1/b*c*x)^(1/2)*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)-B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*
b*e)^(1/2))*b^2*d*e*(-1/b*c*x)^(1/2)*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)+B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c*d^2*(-1
/b*c*x)^(1/2)*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)+B*EllipticF(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*d*e*(-1/b*c*x)^(1/2)*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)-B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*b*c*d^2*(-1/b*c*x)^(1/2)*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)+A*x^2*c^2*e^2-B*x^2*c^2*d*e+A*x*b*c*e^2-B*x*b*c*d*e)*((c*x+b
)*x)^(1/2)*(e*x+d)^(1/2)/d/e/c/(b*e-c*d)/x/(c*e*x^2+b*e*x+c*d*x+b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+Bx}{\sqrt{cx^2+bx}\,(d+ex)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x\,(b+cx)}\,(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**(3/2)), x)
```

3.1269 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=369

$$-\frac{2\sqrt{bx+cx^2}\,(2Ae(2cd-be)-Bd(be+cd))}{3d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(2Ae(2cd-be)-Bd(be+cd))E\left(\mathrm{s}\right.}{3d^2e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)^2}$$

```
[Out] 2/3*(2*A*e*(-b*e+2*c*d)-B*d*(b*e+c*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2)
,(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/
d^2/e/(-b*e+c*d)^2/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(-A*e+B*d)*Ellipti
cF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*(
c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/d/e/(-b*e+c*d)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/
2)+2/3*(-A*e+B*d)*(c*x^2+b*x)^(1/2)/d/(-b*e+c*d)/(e*x+d)^(3/2)-2/3*(2*A*e*(
-b*e+2*c*d)-B*d*(b*e+c*d))*(c*x^2+b*x)^(1/2)/d^2/(-b*e+c*d)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.48, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {834, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{bx+cx^2}\,(2Ae(2cd-be)-Bd(be+cd))}{3d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(2Ae(2cd-be)-Bd(be+cd))E\left(\mathrm{s}\right.}{3d^2e\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[b*x + c*x^2])/(3*d*(c*d - b*e)*(d + e*x)^(3/2)) - (2*(2
*A*e*(2*c*d - b*e) - B*d*(c*d + b*e))*Sqrt[b*x + c*x^2])/(3*d^2*(c*d - b*e)
^2*Sqrt[d + e*x]) + (2*Sqrt[-b]*Sqrt[c]*(2*A*e*(2*c*d - b*e) - B*d*(c*d + b
*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt
[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*d^2*e*(c*d - b*e)^2*Sqrt[1 + (e*x)/d]*Sqrt
[b*x + c*x^2]) + (2*Sqrt[-b]*Sqrt[c]*(B*d - A*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*
Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)
])/(3*d*e*(c*d - b*e)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] && !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{bx+cx^2}}\,dx = \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2\int \frac{\frac{1}{2}(bBd-3Acd+2Abe)-\frac{1}{2}c(Bd-Ae)x}{(d+ex)^{3/2}\sqrt{bx+cx^2}}\,dx}{3d(cd-be)}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2(2Ae(2cd-be)-Bd(cd+be))\sqrt{bx+cx^2}}{3d^2(cd-be)^2\sqrt{d+ex}} + \frac{4\int \frac{-\frac{1}{4}cd(2bB}{}}{}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2(2Ae(2cd-be)-Bd(cd+be))\sqrt{bx+cx^2}}{3d^2(cd-be)^2\sqrt{d+ex}} + \frac{(c(Bd-Ae)}{3d}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2(2Ae(2cd-be)-Bd(cd+be))\sqrt{bx+cx^2}}{3d^2(cd-be)^2\sqrt{d+ex}} + \frac{\Big(c(Bd-Ae)}{3}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2(2Ae(2cd-be)-Bd(cd+be))\sqrt{bx+cx^2}}{3d^2(cd-be)^2\sqrt{d+ex}} + \frac{\Big(c(2Ae(2cd}{}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{3d(cd-be)(d+ex)^{3/2}} - \frac{2(2Ae(2cd-be)-Bd(cd+be))\sqrt{bx+cx^2}}{3d^2(cd-be)^2\sqrt{d+ex}} + \frac{2\sqrt{-b}\sqrt{c}\,(2}{}$$

Mathematica [C] time = 2.04, size = 347, normalized size = 0.94

$$2\Bigg(bex(b+cx)\left(Ae(be(3d+2ex)-cd(5d+4ex))+Bd\left(be^2x+cd(2d+ex)\right)\right)-c\sqrt{\frac{b}{c}}(d+ex)\Bigg(-iex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*(b*e*x*(b + c*x)*(B*d*(b*e^2*x + c*d*(2*d + e*x)) + A*e*(b*e*(3*d + 2*e*
x) - c*d*(5*d + 4*e*x))) - Sqrt[b/c]*c*(d + e*x)*(Sqrt[b/c]*(2*A*e*(-2*c*d
+ b*e) + B*d*(c*d + b*e))*(b + c*x)*(d + e*x) + I*b*e*(2*A*e*(-2*c*d + b*e)
 + B*d*(c*d + b*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I
*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*e*(c*d - b*e)*(3*A*c*d - b*(B
*d + 2*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSin
h[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b*d^2*e*(c*d - b*e)^2*Sqrt[x*(b +
c*x)]*(d + e*x)^(3/2))
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{ce^3x^5+bd^3x+\left(3\,cde^2+be^3\right)x^4+3\left(cd^2e+bde^2\right)x^3+\left(cd^3+3\,bd^2e\right)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c*e^3*x^5 + b*d^3*x + (
3*c*d*e^2 + b*e^3)*x^4 + 3*(c*d^2*e + b*d*e^2)*x^3 + (c*d^3 + 3*b*d^2*e)*x^
2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(5/2)), x)
```

maple [B] time = 0.12, size = 1635, normalized size = 4.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/3*((c*x+b)*x)^(1/2)*(B*b*c^2*d*e^3*x^3+3*A*x*b^2*c*d*e^3+B*c^3*d^2*e^2*x^
3+B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^4*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*b^3*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)+B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^
3*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B
*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^4*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*A*b^2*c*e^4*x^2-5*A*
c^3*d^2*e^2*x^2+2*A*b*c^2*e^4*x^3-4*A*c^3*d*e^3*x^3+2*B*c^3*d^3*e*x^2-A*b*c
^2*d*e^3*x^2+B*b^2*c*d*e^3*x^2+B*b*c^2*d^2*e^2*x^2-5*A*b*c^2*d^2*e^2*x+2*B*
b*c^2*d^3*e*x-6*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*
c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4
*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^3*e*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+A*EllipticF(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-A*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*b*c^2*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)+B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*x*b^3*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)-B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d^3*e*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-6*A*EllipticE(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c*d*e^3*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4*A*EllipticE(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^2*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x*b^2*c*d*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)-A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^2
*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B*
EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^2*d^3*e*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-B*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c*d^2*e^2*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+B*EllipticF(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b*c^2*d^3*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2))/(c*x+b)/x/(b*e-c*d)^2/(e*x+d)^(3/2)/c/d^2/e
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\,(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{c\,x^2 + b\,x}\,{\left(d + e\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{x\,(b + cx)}\,\left(d + ex\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**(5/2)), x)
```

3.1270 $\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{bx+cx^2}}\,dx$

Optimal. Leaf size=510

$$\frac{2\sqrt{bx+cx^2}\,\left(Bd\left(-2b^2e^2+7bcde+3c^2d^2\right)-Ae\left(8b^2e^2-23bcde+23c^2d^2\right)\right)}{15d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(}{}$$

```
[Out] -2/15*(B*d*(-2*b^2*e^2+7*b*c*d*e+3*c^2*d^2)-A*e*(8*b^2*e^2-23*b*c*d*e+23*c^
2*d^2))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^
(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/d^3/e/(-b*e+c*d)^3/(1+e*x/d)^(1
/2)/(c*x^2+b*x)^(1/2)-2/15*(4*A*e*(-b*e+2*c*d)-B*d*(b*e+3*c*d))*EllipticF(c
^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*(-b)^(1/2)*c^(1/2)*x^(1/2)*(c*x/
b+1)^(1/2)*(1+e*x/d)^(1/2)/d^2/e/(-b*e+c*d)^2/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/
2)+2/5*(-A*e+B*d)*(c*x^2+b*x)^(1/2)/d/(-b*e+c*d)/(e*x+d)^(5/2)-2/15*(4*A*e*
(-b*e+2*c*d)-B*d*(b*e+3*c*d))*(c*x^2+b*x)^(1/2)/d^2/(-b*e+c*d)^2/(e*x+d)^(3
/2)+2/15*(B*d*(-2*b^2*e^2+7*b*c*d*e+3*c^2*d^2)-A*e*(8*b^2*e^2-23*b*c*d*e+23
*c^2*d^2))*(c*x^2+b*x)^(1/2)/d^3/(-b*e+c*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 510, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {834, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{bx+cx^2}\,\left(Bd\left(-2b^2e^2+7bcde+3c^2d^2\right)-Ae\left(8b^2e^2-23bcde+23c^2d^2\right)\right)}{15d^3\sqrt{d+ex}\,(cd-be)^3}-\frac{2\sqrt{-b}\,\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[b*x + c*x^2])/(5*d*(c*d - b*e)*(d + e*x)^(5/2)) - (2*(4
*A*e*(2*c*d - b*e) - B*d*(3*c*d + b*e))*Sqrt[b*x + c*x^2])/(15*d^2*(c*d - b
*e)^2*(d + e*x)^(3/2)) + (2*(B*d*(3*c^2*d^2 + 7*b*c*d*e - 2*b^2*e^2) - A*e*
(23*c^2*d^2 - 23*b*c*d*e + 8*b^2*e^2))*Sqrt[b*x + c*x^2])/(15*d^3*(c*d - b*
e)^3*Sqrt[d + e*x]) - (2*Sqrt[-b]*Sqrt[c]*(B*d*(3*c^2*d^2 + 7*b*c*d*e - 2*b
^2*e^2) - A*e*(23*c^2*d^2 - 23*b*c*d*e + 8*b^2*e^2))*Sqrt[x]*Sqrt[1 + (c*x)
/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)
])/(15*d^3*e*(c*d - b*e)^3*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2*Sqrt[-
b]*Sqrt[c]*(4*A*e*(2*c*d - b*e) - B*d*(3*c*d + b*e))*Sqrt[x]*Sqrt[1 + (c*x)
/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(
c*d)])/(15*d^2*e*(c*d - b*e)^2*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{bx+cx^2}}\,dx = \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2\int \frac{\frac{1}{2}(bBd-5Acd+4Abe)-\frac{3}{2}c(Bd-Ae)x}{(d+ex)^{5/2}\sqrt{bx+cx^2}}\,dx}{5d(cd-be)}$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

$$= \frac{2(Bd-Ae)\sqrt{bx+cx^2}}{5d(cd-be)(d+ex)^{5/2}} - \frac{2(4Ae(2cd-be)-Bd(3cd+be))\sqrt{bx+cx^2}}{15d^2(cd-be)^2(d+ex)^{3/2}} +$$

Mathematica [**C**] time = 3.03, size = 506, normalized size = 0.99

$$2\left(bex(b+cx)\left((d+ex)^2\left(Ae\left(-8b^2e^2+23bcde-23c^2d^2\right)+Bd\left(-2b^2e^2+7bcde+3c^2d^2\right)\right)+3d^2(Bd-Ae)(cd\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*Sqrt[b*x + c*x^2]),x]
```

```
[Out] (2*(b*e*x*(b + c*x)*(3*d^2*(B*d - A*e)*(c*d - b*e)^2 + d*(c*d - b*e)*(4*A*e
*(-2*c*d + b*e) + B*d*(3*c*d + b*e))*(d + e*x) + (A*e*(-23*c^2*d^2 + 23*b*c
*d*e - 8*b^2*e^2) + B*d*(3*c^2*d^2 + 7*b*c*d*e - 2*b^2*e^2))*(d + e*x)^2) -
 Sqrt[b/c]*c*(d + e*x)^2*(Sqrt[b/c]*(A*e*(-23*c^2*d^2 + 23*b*c*d*e - 8*b^2*
e^2) + B*d*(3*c^2*d^2 + 7*b*c*d*e - 2*b^2*e^2))*(b + c*x)*(d + e*x) - I*b*e
*(B*d*(-3*c^2*d^2 - 7*b*c*d*e + 2*b^2*e^2) + A*e*(23*c^2*d^2 - 23*b*c*d*e +
 8*b^2*e^2))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSin
h[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*e*(c*d - b*e)*(15*A*c^2*d^2 + 2*b^2*
e*(B*d + 4*A*e) - b*c*d*(6*B*d + 19*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x
)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(15*b*d^
3*e*(c*d - b*e)^3*Sqrt[x*(b + c*x)]*(d + e*x)^(5/2))
```

fricas [**F**] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{ce^4x^6+bd^4x+\left(4\,cde^3+be^4\right)x^5+2\left(3\,cd^2e^2+2\,bde^3\right)x^4+2\left(2\,cd^3e+3\,bd^2e^2\right)x^3+\left(cd^4+4\,bd^3e\right)x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c*e^4*x^6 + b*d^4*x + (
4*c*d*e^3 + b*e^4)*x^5 + 2*(3*c*d^2*e^2 + 2*b*d*e^3)*x^4 + 2*(2*c*d^3*e + 3
*b*d^2*e^2)*x^3 + (c*d^4 + 4*b*d^3*e)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\,(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(7/2)), x)
```

maple [B] time = 0.14, size = 3863, normalized size = 7.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^(1/2),x)
```

```
[Out] 2/15*((c*x+b)*x)^(1/2)*(-23*A*x^4*b*c^3*d*e^5+2*B*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-
c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+16*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x*b^4*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)+2*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2
*c^2*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+
4*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*d^2*e^4*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-31*A*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+46*A*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b
*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-23*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-
c*d)*b*e)^(1/2))*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)+34*A*x^2*c^4*d^4*e^2-62*A*EllipticE(((c*x+b)/b)^(1/2),(1/
(b*e-c*d)*b*e)^(1/2))*x*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)+4*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e
)^(1/2))*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)-12*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c
^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+
8*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^5*e*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-9*B*EllipticE(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^4*e^2*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4*B*EllipticE(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)+B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*b^3*c*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*
c*x)^(1/2)+8*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4
*e^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*A*x^
4*b^2*c^2*e^6-9*B*x^2*c^4*d^5*e+54*A*x^3*c^4*d^3*e^3-9*B*x^3*c^4*d^4*e^2+8*
A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d^2*e^4*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+2*B*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+
d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*b*c^3*d^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/
2)*(-1/b*c*x)^(1/2)-3*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*b*c^3*d^6*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
+23*A*x^4*c^4*d^2*e^4-3*B*x^4*c^4*d^3*e^3+8*A*x^3*b^3*c*e^6+92*A*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-46*A*EllipticE(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)-24*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*x*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)+5*B*x^2*b^3*c*d^2*e^4-41*A*x*b^2*c^2*d^3*e^3+34*A*x*b*c^3*d^
4*e^2+B*x*b^2*c^2*d^4*e^2-9*B*x*b*c^3*d^5*e+2*B*x^4*b^2*c^2*d*e^5-7*B*x^4*b
*c^3*d^2*e^4-3*A*x^3*b^2*c^2*d*e^5-35*A*x^3*b*c^3*d^2*e^4+2*B*x^3*b^3*c*d*e
^5-2*B*x^3*b^2*c^2*d^2*e^4-15*B*x^3*b*c^3*d^3*e^3+20*A*x^2*b^3*c*d*e^5-43*A
*x^2*b^2*c^2*d^2*e^4+13*A*x^2*b*c^3*d^3*e^3-12*B*x^2*b^2*c^2*d^3*e^3-8*B*x^
2*b*c^3*d^4*e^2+15*A*x*b^3*c*d^2*e^4+4*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)+3*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x^2*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*
(-1/b*c*x)^(1/2)+B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2
*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)+2*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^
3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-3*B*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^4*e^2*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-23*A*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4*A*EllipticF(((c*x+b)/b)^
(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d*e^5*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x*b^2*c^2*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)+6*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)+2*B*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c*
d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+4*B
*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^2*d^4*e^2*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-6*B*EllipticF(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^3*d^5*e*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-9*B*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+16*A*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x*b*c^3*d^4*e^2*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)-18*B*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x*b^3*c*d^3*e^3*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*
c*x)^(1/2)+46*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^
2*c^2*d^2*e^4*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)-31*A*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c*d*e^
5*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)-12*A*Elli
pticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^2*d^2*e^4*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)+8*A*EllipticF(((c
*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^3*d^3*e^3*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2))/(c*x+b)/x/(b*e-c*d)^3/(e*x+
d)^(5/2)/c/d^3/e
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx}\,(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(c*x^2+b*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+b\,x}\,{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(7/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(1/2)*(d + e*x)^(7/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{x\left(b+cx\right)}\left(d+ex\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(c*x**2+b*x)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(x*(b + c*x))*(d + e*x)**(7/2)), x)
```

3.1271 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=527

$$-\frac{2(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2e\sqrt{bx+cx^2}\,(d+ex)^{3/2}\left(-5bc(Ae+Bd)+10Ac^2d\right.}{5b^2c^2}$$

```
[Out] -2*(e*x+d)^(5/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2
+b*x)^(1/2)+2/15*(30*A*c^4*d^3+48*b^4*B*e^3-15*b*c^3*d^2*(3*A*e+B*d)-8*b^3*
c*e^2*(5*A*e+16*B*d)+b^2*c^2*d*e*(95*A*e+103*B*d))*EllipticE(c^(1/2)*x^(1/2
)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(3
/2)/c^(7/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/15*d*(-b*e+c*d)*(30*A*c^3*d
^2-24*b^3*B*e^2-15*b*c^2*d*(2*A*e+B*d)+b^2*c*e*(20*A*e+43*B*d))*EllipticF(c
^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d
)^(1/2)/(-b)^(3/2)/c^(7/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/5*e*(10*A*c^2*
d+6*b^2*B*e-5*b*c*(A*e+B*d))*(e*x+d)^(3/2)*(c*x^2+b*x)^(1/2)/b^2/c^2+2/15*e
*(30*A*c^3*d^2-24*b^3*B*e^2-15*b*c^2*d*(2*A*e+B*d)+b^2*c*e*(20*A*e+43*B*d))
*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2)/b^2/c^3
```

Rubi [A] time = 0.91, antiderivative size = 527, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 832, 843, 715, 112, 110, 117, 116}

$$\frac{2e\sqrt{bx+cx^2}\,\sqrt{d+ex}\,\left(b^2ce(20Ae+43Bd)-15bc^2d(2Ae+Bd)+30Ac^3d^2-24b^3Be^2\right)}{15b^2c^3}-\frac{2d\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/
(b^2*c*Sqrt[b*x + c*x^2]) + (2*e*(30*A*c^3*d^2 - 24*b^3*B*e^2 - 15*b*c^2*d*
(B*d + 2*A*e) + b^2*c*e*(43*B*d + 20*A*e))*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
/(15*b^2*c^3) + (2*e*(10*A*c^2*d + 6*b^2*B*e - 5*b*c*(B*d + A*e))*(d + e*x)
^(3/2)*Sqrt[b*x + c*x^2])/(5*b^2*c^2) + (2*(30*A*c^4*d^3 + 48*b^4*B*e^3 - 1
5*b*c^3*d^2*(B*d + 3*A*e) - 8*b^3*c*e^2*(16*B*d + 5*A*e) + b^2*c^2*d*e*(103
*B*d + 95*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(S
qrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(15*(-b)^(3/2)*c^(7/2)*Sqrt[1 + (e
*x)/d]*Sqrt[b*x + c*x^2]) - (2*d*(c*d - b*e)*(30*A*c^3*d^2 - 24*b^3*B*e^2 -
 15*b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(43*B*d + 20*A*e))*Sqrt[x]*Sqrt[1 + (c*
x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)
/(c*d)])/(15*(-b)^(3/2)*c^(7/2)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2\int \frac{(d+ex)^{3/2}\left(\frac{1}{2}b(bB+5Ac)}{}}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(10Ac^2d+6b^2Be-\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(30Ac^3d^2-24b^3B\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(30Ac^3d^2-24b^3B\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(30Ac^3d^2-24b^3B\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(30Ac^3d^2-24b^3B\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(30Ac^3d^2-24b^3B\right.}{}$$

Mathematica [C] time = 4.06, size = 493, normalized size = 0.94

$$\frac{2\left(b(d+ex)\left(b^2e^2x(b+cx)(5Ace-9bBe+16Bcd)+15x(bB-Ac)(cd-be)^3-15Ac^3d^3(b+cx)+3b^2Bce^3x^2(b\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*(d + e*x)*(15*(b*B - A*c)*(c*d - b*e)^3*x - 15*A*c^3*d^3*(b + c*x) +
b^2*e^2*(16*B*c*d - 9*b*B*e + 5*A*c*e)*x*(b + c*x) + 3*b^2*B*c*e^3*x^2*(b +
 c*x)) + Sqrt[b/c]*(Sqrt[b/c]*(30*A*c^4*d^3 + 48*b^4*B*e^3 - 15*b*c^3*d^2*(
B*d + 3*A*e) - 8*b^3*c*e^2*(16*B*d + 5*A*e) + b^2*c^2*d*e*(103*B*d + 95*A*e
))*(b + c*x)*(d + e*x) + I*b*e*(30*A*c^4*d^3 + 48*b^4*B*e^3 - 15*b*c^3*d^2*
(B*d + 3*A*e) - 8*b^3*c*e^2*(16*B*d + 5*A*e) + b^2*c^2*d*e*(103*B*d + 95*A*
e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/
c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(15*A*c^3*d^2 - 48*b^3*B*e^2
- 15*b*c^2*d*(4*B*d + 5*A*e) + 8*b^2*c*e*(13*B*d + 5*A*e))*Sqrt[1 + b/(c*x)
]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(
b*e)])))/(15*b^3*c^3*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^3x^4+Ad^3+\left(3\,Bde^2+Ae^3\right)x^3+3\left(Bd^2e+Ade^2\right)x^2+\left(Bd^3+3\,Ad^2e\right)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^2x^4+2\,bcx^3+b^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*d^3 + (3*B*d*e^2 + A*e^3)*x^3 + 3*(B*d^2*e + A*d*e^
2)*x^2 + (B*d^3 + 3*A*d^2*e)*x)*sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c^2*x^4 +
2*b*c*x^3 + b^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 + b*x)^(3/2), x)
```

maple [B] time = 0.11, size = 1766, normalized size = 3.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2/15*(45*A*x^2*b*c^5*d^2*e^2+15*B*x*b*c^5*d^4+15*B*x^2*b*c^5*d^3*e+19*B*x^3
*b^2*c^4*d*e^3+55*B*x^2*b^3*c^3*d*e^3-29*B*x^2*b^2*c^4*d^2*e^2+61*B*x*b^3*c
^3*d^2*e^2+30*A*x*b*c^5*d^3*e-24*B*x*b^4*c^2*d*e^3-40*A*x^2*b^2*c^4*d*e^3+2
0*A*x*b^3*c^3*d*e^3-45*A*x*b^2*c^4*d^2*e^2-45*B*x*b^2*c^4*d^3*e-15*A*b*c^5*
d^4-30*A*x*c^6*d^4+30*b*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^5*d^4
-30*b*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ell
ipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^5*d^4-15*b^2*B*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^4*d^4+15*b^2*B*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*c^4*d^4+40*e^4*b^5*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*c+3*B*x^4*b^2*c^4*e^4-6*B*x^3*b^3*c^3*e^4-24*B*x^2*b^4*c^2*e^4+5*A*x^
3*b^2*c^4*e^4+20*A*x^2*b^3*c^3*e^4-30*A*x^2*c^6*d^3*e+118*e*b^3*B*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^3*d^3-24*e^3*b^5*B*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*c*d-135*e^3*b^4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*c^2*d+140*e^2*b^3*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-
1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^3*d^2
-75*e*b^2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^4*d^3+20*e^3*b^4*A*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^2*d-50*e^2*b^3*A*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*c^3*d^2+60*e*b^2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*c^4*d^3+176*e^3*b^5*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*c*d-231*e^2*b^4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^2*d^2+67*e
^2*b^4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*El
lipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^2*d^2-58*e*b^3*B*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*c^3*d^3-48*e^4*b^6*B*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2)))/x*((c*x+b)*x)^(1/2)/(c*x+b)/c^5/b^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^{7/2}}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.1272 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=399

$$-\frac{2(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2e\sqrt{bx+cx^2}\,\sqrt{d+ex}\,(-3bc(Ae+Bd)+6Ac^2d+4b^2}{3b^2c^2}$$

```
[Out] -2*(e*x+d)^(3/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x^2
+b*x)^(1/2)+2/3*(6*A*c^3*d^2-8*b^3*B*e^2-3*b*c^2*d*(2*A*e+B*d)+b^2*c*e*(6*A
*e+13*B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(
c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(3/2)/c^(5/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)
^(1/2)-2/3*d*(-b*e+c*d)*(6*A*c^2*d+4*b^2*B*e-3*b*c*(A*e+B*d))*EllipticF(c^(
1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^
(1/2)/(-b)^(3/2)/c^(5/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*e*(6*A*c^2*d+4
*b^2*B*e-3*b*c*(A*e+B*d))*(e*x+d)^(1/2)*(c*x^2+b*x)^(1/2)/b^2/c^2
```

Rubi [A] time = 0.55, antiderivative size = 399, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 832, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(b^2ce(6Ae+13Bd)-3bc^2d(2Ae+Bd)+6Ac^3d^2-8b^3Be^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3(-b)^{3/2}c^{5/2}\sqrt{bx+cx^2}\,\sqrt{\frac{ex}{d}+1}}-2(d+e$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/
(b^2*c*Sqrt[b*x + c*x^2]) + (2*e*(6*A*c^2*d + 4*b^2*B*e - 3*b*c*(B*d + A*e)
)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])/(3*b^2*c^2) + (2*(6*A*c^3*d^2 - 8*b^3*B*
e^2 - 3*b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(13*B*d + 6*A*e))*Sqrt[x]*Sqrt[1 +
(c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/
(c*d)])/(3*(-b)^(3/2)*c^(5/2)*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) - (2*d*(
c*d - b*e)*(6*A*c^2*d + 4*b^2*B*e - 3*b*c*(B*d + A*e))*Sqrt[x]*Sqrt[1 + (c*
x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)
/(c*d)])/(3*(-b)^(3/2)*c^(5/2)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
```

```
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2\int \frac{\sqrt{d+ex}\left(\frac{1}{2}b(bB+3Ac)de+\frac{1}{2}e\right.}{\sqrt{b}}}{b}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(6Ac^2d+4b^2Be-3bc\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(6Ac^2d+4b^2Be-3bc\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(6Ac^2d+4b^2Be-3bc\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(6Ac^2d+4b^2Be-3bc\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}} + \frac{2e\left(6Ac^2d+4b^2Be-3bc\right.}{}$$

Mathematica [C] time = 3.17, size = 391, normalized size = 0.98

$$\frac{2\left(b(d+ex)\left(3x(bB-Ac)(cd-be)^2-3Ac^2d^2(b+cx)+b^2Be^2x(b+cx)\right)+\sqrt{\frac{b}{c}}\left(-ibex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\,(cd-be\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*(d + e*x)*(3*(b*B - A*c)*(c*d - b*e)^2*x - 3*A*c^2*d^2*(b + c*x) + b^
2*B*e^2*x*(b + c*x)) + Sqrt[b/c]*(Sqrt[b/c]*(6*A*c^3*d^2 - 8*b^3*B*e^2 - 3*
b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(13*B*d + 6*A*e))*(b + c*x)*(d + e*x) + I*b
*e*(6*A*c^3*d^2 - 8*b^3*B*e^2 - 3*b*c^2*d*(B*d + 2*A*e) + b^2*c*e*(13*B*d +
 6*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sq
rt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(3*A*c^2*d + 8*b^2*B*e -
 3*b*c*(3*B*d + 2*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*Ellipti
cF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b^3*c^2*Sqrt[x*(b + c*x
)]*Sqrt[d + e*x])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Be^2x^3+Ad^2+\left(2\,Bde+Ae^2\right)x^2+\left(Bd^2+2\,Ade\right)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^2x^4+2\,bcx^3+b^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*d^2 + (2*B*d*e + A*e^2)*x^2 + (B*d^2 + 2*A*d*e)*x)*
sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x^3 + b^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x)^(3/2), x)
```

maple [B] time = 0.11, size = 1324, normalized size = 3.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/3*(-4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d*e^2+7*B*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e-6*A*x^2*b*c^4*d*e^2+3*A*b
*c^4*d^3-3*B*x*b*c^4*d^3-6*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^
4*d^3+3*A*x^2*b^2*c^3*e^3+6*A*x*c^5*d^3+5*B*x^2*b^2*c^3*d*e^2-3*A*x*b*c^4*d
^2*e-12*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d*e^2+12*A*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^2*e+3*A*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d*e^2-9*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*b^2*c^3*d^2*e+21*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(
-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*
d*e^2-16*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^2*e+6*A*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*d^3+3*B*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*b^2*c^3*d^3-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*b^2*c^3*d^3+6*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*e^3+6*A*x
^2*c^5*d^2*e-B*x^3*b^2*c^3*e^3-4*B*x^2*b^3*c^2*e^3+3*A*x*b^2*c^3*d*e^2+6*B*
x*b^2*c^3*d^2*e-4*B*x*b^3*c^2*d*e^2-3*B*x^2*b*c^4*d^2*e-8*B*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2
),(1/(b*e-c*d)*b*e)^(1/2))*b^5*e^3)/x*((c*x+b)*x)^(1/2)/(c*x+b)/c^4/b^2/(e*
x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{5/2}}{\left(c\,x^2+b\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.1273 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=295

$$-\frac{2\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(-bc(Ae+Bd)+2Ac^2d+2b\right.}{(-b)^{3/2}c^{3/2}\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+}}$$

```
[Out] -2*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)*(e*x+d)^(1/2)/b^2/c/(c*x^2
+b*x)^(1/2)+2*(2*A*c^2*d+2*b^2*B*e-b*c*(A*e+B*d))*EllipticE(c^(1/2)*x^(1/2)
/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(3/
2)/c^(3/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2*(-2*A*c+B*b)*d*(-b*e+c*d)*El
lipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)
*(1+e*x/d)^(1/2)/(-b)^(3/2)/c^(3/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 295, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {818, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{d+ex}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(-bc(Ae+Bd)+2Ac^2d+2b\right.}{(-b)^{3/2}c^{3/2}\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(b
^2*c*Sqrt[b*x + c*x^2]) + (2*(2*A*c^2*d + 2*b^2*B*e - b*c*(B*d + A*e))*Sqrt
[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt
[-b]], (b*e)/(c*d)])/((-b)^(3/2)*c^(3/2)*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2
]) + (2*(b*B - 2*A*c)*d*(c*d - b*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x
)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/((-b)^(3/2
)*c^(3/2)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2\int \frac{\frac{1}{2}b(bB+Ac)de+\frac{1}{2}e(2Ac^2d+2b^2}{\sqrt{d+ex}\,\sqrt{bx+c}}}{b^2c}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{((bB-2Ac)d(cd-be))\int}{b^2c}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{((bB-2Ac)d(cd-be)\sqrt{x}}{b^2c\sqrt{b}}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{((2Ac^2d+2b^2Be-bc(Bd}{b^2c}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{b^2c\sqrt{bx+cx^2}}+\frac{2(2Ac^2d+2b^2Be-bc(Bd}{(-b}$$

Mathematica [**C**] time = 1.67, size = 302, normalized size = 1.02

$$2\left(b(d+ex)(x(bB-Ac)(cd-be)-Acd(b+cx))+\sqrt{\frac{b}{c}}\left(ibex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\left(-bc(Ae+Bd)+2Ac^2d+2b\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(b*(d + e*x)*((b*B - A*c)*(c*d - b*e)*x - A*c*d*(b + c*x)) + Sqrt[b/c]*(
Sqrt[b/c]*(2*A*c^2*d + 2*b^2*B*e - b*c*(B*d + A*e))*(b + c*x)*(d + e*x) + I
*b*e*(2*A*c^2*d + 2*b^2*B*e - b*c*(B*d + A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d
/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*
(-2*b*B + A*c)*e*(c*d - b*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*El
lipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(b^3*c*Sqrt[x*(b + c*
x)]*Sqrt[d + e*x])
```

fricas [**F**] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^2+Ad+(Bd+Ae)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^2x^4+2\,bcx^3+b^2x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c
^2*x^4 + 2*b*c*x^3 + b^2*x^2), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x)^(3/2), x)
```

maple [**B**] time = 0.10, size = 898, normalized size = 3.04

$$2\left(Abc^3e^2x^2-2Ac^4dex^2-Bb^2c^2e^2x^2+Bbc^3dex^2+\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,Ab^3ce^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2*(2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d*e-2*A*((c*x+b)/b
)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^2+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*b^3*c*e^2-3*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*
d*e+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ell
ipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^2-B*((c*x+b)/b)^(
1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d*e+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*b^2*c^2*d^2-2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*e^2+3
*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elliptic
E(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d*e-B*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2+A*x^2*b*c^3*e^2-2*A*x^2*c^4*d*e-B*x^2*b
^2*c^2*e^2+B*x^2*b*c^3*d*e-2*A*x*c^4*d^2-B*x*b^2*c^2*d*e+B*x*b*c^3*d^2-A*b*
c^3*d^2)/x*((c*x+b)*x)^(1/2)/(c*x+b)/c^3/b^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^2 + bx\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{3/2}}{\left(c\,x^2 + b\,x\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.1274 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=253

$$-\frac{2\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}+\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Abe-2Acd+bBd)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{(-b)^{3/2}\sqrt{c}\,\sqrt{bx+cx^2}\,\sqrt{d+ex}}-\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+}{}$$

```
[Out] -2*(A*b-(-2*A*c+B*b)*x)*(e*x+d)^(1/2)/b^2/(c*x^2+b*x)^(1/2)-2*(-2*A*c+B*b)*
EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/
2)*(e*x+d)^(1/2)/(-b)^(3/2)/c^(1/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2*(A*
b*e-2*A*c*d+B*b*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^
(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(3/2)/c^(1/2)/(e*x+d)^(1/2)/(c*x
^2+b*x)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 253, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {820, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{d+ex}\,(Ab-x(bB-2Ac))}{b^2\sqrt{bx+cx^2}}+\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(Abe-2Acd+bBd)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{(-b)^{3/2}\sqrt{c}\,\sqrt{bx+cx^2}\,\sqrt{d+ex}}-\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(b^2*Sqrt[b*x + c*x^2]) - (2*(b*
B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c
]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/((-b)^(3/2)*Sqrt[c]*Sqrt[1 + (e*x)/d]*S
qrt[b*x + c*x^2]) + (2*(b*B*d - 2*A*c*d + A*b*e)*Sqrt[x]*Sqrt[1 + (c*x)/b]*
Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)
])/((-b)^(3/2)*Sqrt[c]*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\sqrt{bx+cx^2}} - \frac{2\int \frac{-\frac{1}{2}Abe+\frac{1}{2}(bB-2Ac)ex}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}\,dx}{b^2} \\
&= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\sqrt{bx+cx^2}} - \frac{(bB-2Ac)\int \frac{\sqrt{d+ex}}{\sqrt{bx+cx^2}}\,dx}{b^2} + \frac{(bBd-2Acd+Abe)\int}{b^2} \\
&= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\sqrt{bx+cx^2}} - \frac{\left((bB-2Ac)\sqrt{x}\,\sqrt{b+cx}\right)\int \frac{\sqrt{d+ex}}{\sqrt{x}\,\sqrt{b+cx}}\,dx}{b^2\sqrt{bx+cx^2}} + \\
&= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\sqrt{bx+cx^2}} - \frac{\left((bB-2Ac)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\right)\int \frac{\sqrt{1+\frac{ex}{d}}}{\sqrt{x}\,\sqrt{1+\frac{cx}{b}}}\,dx}{b^2\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}} + \\
&= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{b^2\sqrt{bx+cx^2}} - \frac{2(bB-2Ac)\sqrt{x}\,\sqrt{1+\frac{cx}{b}}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\right.}{(-b)^{3/2}\sqrt{c}\,\sqrt{1+\frac{ex}{d}}\,\sqrt{bx+cx^2}}
\end{aligned}
$$

Mathematica [C] time = 0.84, size = 210, normalized size = 0.83

$$
\frac{-2(bB-Ac)\left(b(d+ex)-icex^{3/2}\sqrt{\frac{b}{c}}\,\sqrt{\frac{b}{cx}+1}\,\sqrt{\frac{d}{ex}+1}\,F\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)\right)-2icex^{3/2}\sqrt{\frac{b}{c}}\,\sqrt{\frac{b}{cx}+1}\,\sqrt{\frac{d}{ex}+1}\,(bB-}{b^2c\sqrt{x(b+cx)}\,\sqrt{d+ex}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^(3/2),x]
```

```
[Out] ((-2*I)*Sqrt[b/c]*c*(b*B - 2*A*c)*e*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(
3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - 2*(b*B - A*c)*(
b*(d + e*x) - I*Sqrt[b/c]*c*e*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*E
llipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]))/(b^2*c*Sqrt[x*(b + c*
x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^2x^4+2\,bcx^3+b^2x^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x^3 + b
^2*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x)^(3/2), x)
```

maple [B] time = 0.10, size = 610, normalized size = 2.41

$$2\left(-2A\,c^3e\,x^2+Bb\,c^2e\,x^2-2\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,A\,b^2ce\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)+\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{\vphantom{b}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] 2*(A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*e-2*A*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d-2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*b^2*c*e+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d+B*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*b^3*e-B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d-2*A*
x^2*c^3*e+B*x^2*b*c^2*e-A*x*b*c^2*e-2*A*x*c^3*d+B*x*b*c^2*d-A*b*c^2*d)/x*((
c*x+b)*x)^(1/2)/(c*x+b)/b^2/c^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+bx\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{{\left(c\,x^2+b\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx) \sqrt{d + ex}}{(x (b + cx))^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/(x*(b + c*x))**(3/2), x)
```

3.1275 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=295

$$-\frac{2\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}+\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(bB-2Ac)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{(-b)^{3/2}\sqrt{c}\,\sqrt{bx+cx^2}\,\sqrt{d+ex}}-2$$

```
[Out] -2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)*(e*x+d)^(1/2)/b^2/d/(-b*e+c*d
)/(c*x^2+b*x)^(1/2)-2*(A*b*e-2*A*c*d+B*b*d)*EllipticE(c^(1/2)*x^(1/2)/(-b)^
(1/2),(b*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(
3/2)/d/(-b*e+c*d)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2*(-2*A*c+B*b)*Elliptic
F(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*
x/d)^(1/2)/(-b)^(3/2)/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 295, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {822, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{d+ex}\,(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{b^2d\sqrt{bx+cx^2}\,(cd-be)}+\frac{2\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,(bB-2Ac)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{(-b)^{3/2}\sqrt{c}\,\sqrt{bx+cx^2}\,\sqrt{d+ex}}-2$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d
*(c*d - b*e)*Sqrt[b*x + c*x^2]) - (2*Sqrt[c]*(b*B*d - 2*A*c*d + A*b*e)*Sqrt
[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt
[-b]], (b*e)/(c*d)])/((-b)^(3/2)*d*(c*d - b*e)*Sqrt[1 + (e*x)/d]*Sqrt[b*x +
 c*x^2]) + (2*(b*B - 2*A*c)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*Ell
ipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/((-b)^(3/2)*Sqrt[c
]*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}}\,dx &= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}b(bB-Ac)de+\frac{1}{2}ce(bBd-2Acd+}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}}{b^2d(cd-be)} \\
&= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} + \frac{(bB-2Ac)\int \frac{1}{\sqrt{d+ex}\,\sqrt{bx+cx^2}}}{b^2} \\
&= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} + \frac{\left((bB-2Ac)\sqrt{x}\,\sqrt{b+cx}\right)\int}{b^2\sqrt{bx+cx} } \\
&= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{\left(c(bBd-2Acd+Abe)\sqrt{x}\right.}{b^2d(cd-be)} \\
&= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{bx+cx^2}} - \frac{2\sqrt{c}\,(bBd-2Acd+Abe)\sqrt{x}}{(-b)^{3/2}d(cd-}
\end{aligned}
$$

Mathematica [C] time = 1.08, size = 233, normalized size = 0.79

$$\frac{-2iex^{3/2}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\,(2Acd-b(Ae+Bd))E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)+2d\sqrt{\frac{b}{c}}\,(d+ex)(bB-Ac)+2iAex^{3/2}\sqrt{\frac{b}{cx}}}{bd\sqrt{\frac{b}{c}}\,\sqrt{x(b+cx)}\,\sqrt{d+ex}\,(be-cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*Sqrt[b/c]*(b*B - A*c)*d*(d + e*x) - (2*I)*e*(2*A*c*d - b*(B*d + A*e))*Sq
rt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqr
t[x]], (c*d)/(b*e)] + (2*I)*A*e*(c*d - b*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e
*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])/(b*Sqrt[
b/c]*d*(-(c*d) + b*e)*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^2ex^5+b^2dx^2+\left(c^2d+2\,bce\right)x^4+\left(2\,bcd+b^2e\right)x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^2*e*x^5 + b^2*d*x^2 +
 (c^2*d + 2*b*c*e)*x^4 + (2*b*c*d + b^2*e)*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.24, size = 814, normalized size = 2.76

$$-\frac{2\left(Ab\,c^2e^2x^2-2A\,c^3de\,x^2+Bb\,c^2de\,x^2+\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,A\,b^3e^2\,\mathrm{EllipticE}\left(\sqrt{\frac{cx+b}{b}},\sqrt{\frac{be}{be-cd}}\right)-3\sqrt{\frac{cx}{b}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/x*(2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d*e-2*A*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^2+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b
*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*
b*e)^(1/2))*b^3*e^2-3*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d*e
+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^2*d^2-B*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b^3*d*e+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*b^2*c*d^2+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*d*e-B*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c*d^2+A*x^2*b*c^2*e^2-2*A*x^2*c^3*d*e
+B*x^2*b*c^2*d*e+A*x*b^2*c*e^2-2*A*x*c^3*d^2+B*x*b*c^2*d^2+A*b^2*c*d*e-A*b*
c^2*d^2)*((c*x+b)*x)^(1/2)/(c*x+b)/(b*e-c*d)/c/b^2/d/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{3}{2}} \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(c\,x^2 + b\,x\right)}^{3/2}\,\sqrt{d + e\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x \left(b + cx\right)\right)^{\frac{3}{2}} \sqrt{d + ex}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*sqrt(d + e*x)), x)
```

3.1276 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=415

$$-\frac{2e\sqrt{bx+cx^2}\,\left(b^2(-e)(Bd-2Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(b^2(-e)(Bd-2Ae)-\right.}{(-b)^{3/2}d^2\sqrt{bx+c}}$$

```
[Out] -2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(e*x+d)^(1/2
)/(c*x^2+b*x)^(1/2)+2*(2*A*c^2*d^2-b^2*e*(-2*A*e+B*d)-b*c*d*(2*A*e+B*d))*El
lipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+
1)^(1/2)*(e*x+d)^(1/2)/(-b)^(3/2)/d^2/(-b*e+c*d)^2/(1+e*x/d)^(1/2)/(c*x^2+b
*x)^(1/2)+2*(A*b*e-2*A*c*d+B*b*d)*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e
/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(3/2)/d/(
-b*e+c*d)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2*e*(2*A*c^2*d^2-b^2*e*(-2*A*e+B*
d)-b*c*d*(2*A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/d^2/(-b*e+c*d)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 415, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 834, 843, 715, 112, 110, 117, 116}

$$-\frac{2e\sqrt{bx+cx^2}\,\left(b^2(-e)(Bd-2Ae)-bcd(2Ae+Bd)+2Ac^2d^2\right)}{b^2d^2\sqrt{d+ex}\,(cd-be)^2}+\frac{2\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{d+ex}\,\left(b^2(-e)(Bd-2Ae)-\right.}{(-b)^{3/2}d^2\sqrt{bx+c}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*S
qrt[d + e*x]*Sqrt[b*x + c*x^2]) - (2*e*(2*A*c^2*d^2 - b^2*e*(B*d - 2*A*e) -
 b*c*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(b^2*d^2*(c*d - b*e)^2*Sqrt[d + e*
x]) + (2*Sqrt[c]*(2*A*c^2*d^2 - b^2*e*(B*d - 2*A*e) - b*c*d*(B*d + 2*A*e))*
Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/
Sqrt[-b]], (b*e)/(c*d)])/((-b)^(3/2)*d^2*(c*d - b*e)^2*Sqrt[1 + (e*x)/d]*Sq
rt[b*x + c*x^2]) + (2*Sqrt[c]*(b*B*d - 2*A*c*d + A*b*e)*Sqrt[x]*Sqrt[1 + (c
*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e
)/(c*d)])/((-b)^(3/2)*d*(c*d - b*e)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
```

```
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+Acd-2Abe)-\frac{1}{2}ce(bBd-2Ac}{(d+ex)^{3/2}\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2e\left(2Ac^2d^2-b^2e(Bd-2Ae)-b\right.}{b^2d^2(cd-be)^2}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2e\left(2Ac^2d^2-b^2e(Bd-2Ae)-b\right.}{b^2d^2(cd-be)^2}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2e\left(2Ac^2d^2-b^2e(Bd-2Ae)-b\right.}{b^2d^2(cd-be)^2}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2e\left(2Ac^2d^2-b^2e(Bd-2Ae)-b\right.}{b^2d^2(cd-be)^2}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)\sqrt{d+ex}\,\sqrt{bx+cx^2}} - \frac{2e\left(2Ac^2d^2-b^2e(Bd-2Ae)-b\right.}{b^2d^2(cd-be)^2}$$

Mathematica [C] time = 1.81, size = 367, normalized size = 0.88

$$\frac{2\left(icex^{3/2}\sqrt{\frac{b}{c}}\sqrt{\frac{b}{cx}+1}\sqrt{\frac{d}{ex}+1}\left(b^2e(2Ae-Bd)-bcd(2Ae+Bd)+2Ac^2d^2\right)E\left(i\sinh^{-1}\left(\frac{\sqrt{\frac{b}{c}}}{\sqrt{x}}\right)|\frac{cd}{be}\right)+(b+cx)(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(b^2*e^2*(B*d - A*e)*x*(b + c*x) + c^2*(b*B - A*c)*d^2*x*(d + e*x) - A*(
c*d - b*e)^2*(b + c*x)*(d + e*x) + (2*A*c^2*d^2 + b^2*e*(-(B*d) + 2*A*e) -
b*c*d*(B*d + 2*A*e))*(b + c*x)*(d + e*x) + I*Sqrt[b/c]*c*e*(2*A*c^2*d^2 + b
^2*e*(-(B*d) + 2*A*e) - b*c*d*(B*d + 2*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(
e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*Sqrt
[b/c]*c*e*(c*d - b*e)*(b*B*d + A*c*d - 2*A*b*e)*Sqrt[1 + b/(c*x)]*Sqrt[1 +
d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]))/(b^
2*d^2*(c*d - b*e)^2*Sqrt[x*(b + c*x)]*Sqrt[d + e*x])
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^2e^2x^6+b^2d^2x^2+2\left(c^2de+bce^2\right)x^5+\left(c^2d^2+4\,bcde+b^2e^2\right)x^4+2\left(bcd^2+b^2de\right)x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^2*e^2*x^6 + b^2*d^2*x
^2 + 2*(c^2*d*e + b*c*e^2)*x^5 + (c^2*d^2 + 4*b*c*d*e + b^2*e^2)*x^4 + 2*(b
*c*d^2 + b^2*d*e)*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 1.38Unable to transpose Error: Bad Argum
ent Value
```

maple **[B]** time = 0.12, size = 1079, normalized size = 2.60

$$-\frac{2\left(2A\,b^2c^2e^3x^2-2Ab\,c^3d\,e^2x^2+2A\,c^4d^2e\,x^2-B\,b^2c^2d\,e^2x^2-Bb\,c^3d^2e\,x^2+2\sqrt{\frac{cx+b}{b}}\,\sqrt{-\frac{(ex+d)c}{be-cd}}\,\sqrt{-\frac{cx}{b}}\,A\,b^4e^3\,\mathrm{Ell}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/x*(-A*x*b^2*c^2*d*e^2-B*x*b*c^3*d^3+A*b*c^3*d^3+2*A*x*c^4*d^3+B*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d^2*e+4*A*((c*x+b)/b)^(1/2)*(-(e*x+
d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-
c*d)*b*e)^(1/2))*b^2*c^2*d^2*e+2*A*x^2*b^2*c^2*e^3+2*A*x^2*c^4*d^2*e+2*A*x*
b^3*c*e^3-2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3+2*A*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^3*d^3-B*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c
*d)*b*e)^(1/2))*b^4*d*e^2+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*
(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c
^2*d^3-B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*El
lipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^3-A*x*b*c^3*d^
2*e-2*A*x^2*b*c^3*d*e^2-B*x^2*b^2*c^2*d*e^2-B*x^2*b*c^3*d^2*e-B*x*b^3*c*d*e
^2+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c*d*e^2-3*A*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^2*d^2*e-4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*b^3*c*d*e^2-2*A*b^2*c^2*d^2*e+A*b^3*c*d*e^2+2*A*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*e^3)*((c*x+b)*x)^(1/2)/(c*x+b)/(b*e-c*d)^
2/c/b^2/d^2/(e*x+d)^(1/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{3}{2}}(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(c\,x^2 + b\,x\right)}^{3/2}\,{\left(d + e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(x\left(b + cx\right)\right)^{\frac{3}{2}}\left(d + ex\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((x*(b + c*x))**(3/2)*(d + e*x)**(3/2)), x)
```

3.1277 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=570

$$-\frac{2e\sqrt{bx+cx^2}\left(b^2(-e)(Bd-4Ae)-3bcd(2Ae+Bd)+6Ac^2d^2\right)}{3b^2d^2(d+ex)^{3/2}(cd-be)^2}-\frac{2\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\left(b^2(-e)(Bd-4Ae)-3\right.}{3(-b)^{3/2}d^2\sqrt{bx+cx}}$$

```
[Out] -2*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(e*x+d)^(3/2
)/(c*x^2+b*x)^(1/2)+2/3*(6*A*c^3*d^3-b^2*c*d*e*(-19*A*e+7*B*d)+2*b^3*e^2*(-
4*A*e+B*d)-3*b*c^2*d^2*(3*A*e+B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b
*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(3/2)/d^3
/(-b*e+c*d)^3/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)-2/3*(6*A*c^2*d^2-b^2*e*(-4*
A*e+B*d)-3*b*c*d*(2*A*e+B*d))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d
)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(3/2)/d^2/(-b
*e+c*d)^2/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)-2/3*e*(6*A*c^2*d^2-b^2*e*(-4*A*e+
B*d)-3*b*c*d*(2*A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/d^2/(-b*e+c*d)^2/(e*x+d)^(3
/2)-2/3*e*(6*A*c^3*d^3-b^2*c*d*e*(-19*A*e+7*B*d)+2*b^3*e^2*(-4*A*e+B*d)-3*b
*c^2*d^2*(3*A*e+B*d))*(c*x^2+b*x)^(1/2)/b^2/d^3/(-b*e+c*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.99, antiderivative size = 570, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {822, 834, 843, 715, 112, 110, 117, 116}

$$-\frac{2e\sqrt{bx+cx^2}\left(-b^2cde(7Bd-19Ae)+2b^3e^2(Bd-4Ae)-3bc^2d^2(3Ae+Bd)+6Ac^3d^3\right)}{3b^2d^3\sqrt{d+ex}\,(cd-be)^3}+\frac{2\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+e}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(b^2*d*(c*d - b*e)*(
d + e*x)^(3/2)*Sqrt[b*x + c*x^2]) - (2*e*(6*A*c^2*d^2 - b^2*e*(B*d - 4*A*e)
 - 3*b*c*d*(B*d + 2*A*e))*Sqrt[b*x + c*x^2])/(3*b^2*d^2*(c*d - b*e)^2*(d +
e*x)^(3/2)) - (2*e*(6*A*c^3*d^3 - b^2*c*d*e*(7*B*d - 19*A*e) + 2*b^3*e^2*(B
*d - 4*A*e) - 3*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[b*x + c*x^2])/(3*b^2*d^3*(c*d
 - b*e)^3*Sqrt[d + e*x]) + (2*Sqrt[c]*(6*A*c^3*d^3 - b^2*c*d*e*(7*B*d - 19*
A*e) + 2*b^3*e^2*(B*d - 4*A*e) - 3*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[x]*Sqrt[1
+ (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e
)/(c*d)])/(3*(-b)^(3/2)*d^3*(c*d - b*e)^3*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^
2]) - (2*Sqrt[c]*(6*A*c^2*d^2 - b^2*e*(B*d - 4*A*e) - 3*b*c*d*(B*d + 2*A*e)
)*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqr
t[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(3/2)*d^2*(c*d - b*e)^2*Sqrt[d + e*x
]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
```

```
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}be(bBd+3Acd-4Abe)-\frac{3}{2}ce(bBd-2Acd+}{(d+ex)^{5/2}\sqrt{bx+cx^2}}}{b^2d(cd-be)}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{b^2d(cd-be)(d+ex)^{3/2}\sqrt{bx+cx^2}} - \frac{2e\left(6Ac^2d^2-b^2e(Bd-4Ae)-3bc}{3b^2d^2(cd-be)^2(d}$$

Mathematica [**C**] time = 4.80, size = 506, normalized size = 0.89

$$\frac{2\left(b\left(b^2de^2x(b+cx)(Bd-Ae)(cd-be)+b^2e^2x(b+cx)(d+ex)(5Ae(be-2cd)+Bd(7cd-2be))+3c^3d^3x(d+ex)^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(b*(b^2*d*e^2*(B*d - A*e)*(c*d - b*e)*x*(b + c*x) + b^2*e^2*(B*d*(7*c*d
 - 2*b*e) + 5*A*e*(-2*c*d + b*e))*x*(b + c*x)*(d + e*x) + 3*c^3*(b*B - A*c)*
d^3*x*(d + e*x)^2 - 3*A*(c*d - b*e)^3*(b + c*x)*(d + e*x)^2) + Sqrt[b/c]*c*
(d + e*x)*(Sqrt[b/c]*(6*A*c^3*d^3 + 2*b^3*e^2*(B*d - 4*A*e) - 3*b*c^2*d^2*(
B*d + 3*A*e) + b^2*c*d*e*(-7*B*d + 19*A*e))*(b + c*x)*(d + e*x) + I*b*e*(6*
A*c^3*d^3 + 2*b^3*e^2*(B*d - 4*A*e) - 3*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e
*(-7*B*d + 19*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I
*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(3*A*c^2*d^2
+ 3*b*c*d*(2*B*d - 5*A*e) + 2*b^2*e*(-(B*d) + 4*A*e))*Sqrt[1 + b/(c*x)]*Sqr
t[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)]
)))/(3*b^3*d^3*(c*d - b*e)^3*Sqrt[x*(b + c*x)]*(d + e*x)^(3/2))
```

fricas [**F**] time = 0.66, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^2e^3x^7+b^2d^3x^2+\left(3\,c^2de^2+2\,bce^3\right)x^6+\left(3\,c^2d^2e+6\,bcde^2+b^2e^3\right)x^5+\left(c^2d^3+6\,bcd^2e+3\,b^2de^2\right)x^4+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^2*e^3*x^7 + b^2*d^3*x
^2 + (3*c^2*d*e^2 + 2*b*c*e^3)*x^6 + (3*c^2*d^2*e + 6*b*c*d*e^2 + b^2*e^3)*
x^5 + (c^2*d^3 + 6*b*c*d^2*e + 3*b^2*d*e^2)*x^4 + (2*b*c*d^3 + 3*b^2*d^2*e)
*x^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 4.34Unable to transpose Error: Bad Argum
ent Value
```

maple [B] time = 0.14, size = 3024, normalized size = 5.31

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x)
```

```
[Out] -2/3*((c*x+b)*x)^(1/2)/x*(7*B*x^3*b^2*c^3*d^2*e^3+3*B*x*b*c^4*d^5+28*A*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^3*e^2-15*A*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^4*e+4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*b^4*c*d^2*e^3-10*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2
)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3
*c^2*d^3*e^2+12*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^4*e+9
*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elliptic
E(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d^3*e^2-4*B*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^3*c^2*d^4*e-B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*b^4*c*d^3*e^2-2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/
2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^
3*c^2*d^4*e-2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(
1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*d*e^4-27*A*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^4*c*d^2*e^3-6*A*x*c^5*d^5-6*A*x
^3*c^5*d^3*e^2+8*A*x^2*b^4*c*e^5-12*A*x^2*c^5*d^4*e+8*A*x^3*b^3*c^2*e^5-B*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*d^2*e^3-2*B*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d^3*e^2+4*A*((c*x+b)/b)^(1/2)*(-(e*x+
d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-
c*d)*b*e)^(1/2))*x*b^4*c*d*e^4+3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*b^2*c^3*d^5+3*A*b^4*c*d^2*e^3-9*A*b^3*c^2*d^3*e^2+9*A*b^2*c^3*d^4*e+3*B*x
^3*b*c^4*d^3*e^2-2*B*x^2*b^4*c*d*e^4+6*B*x^2*b*c^4*d^4*e-2*B*x^3*b^3*c^2*d*
e^4-7*A*x^2*b^3*c^2*d*e^4-20*A*x^2*b^2*c^3*d^2*e^3-19*A*x^3*b^2*c^3*d*e^4+9
*A*x^3*b*c^4*d^2*e^3+9*A*x*b^2*c^3*d^3*e^2+8*B*x*b^3*c^2*d^3*e^2+8*B*x^2*b^
2*c^3*d^3*e^2+4*B*x^2*b^3*c^2*d^2*e^3+12*A*x*b^4*c*d*e^4-26*A*x*b^3*c^2*d^2
*e^3-3*B*x*b^4*c*d^2*e^3+3*A*x*b*c^4*d^4*e+15*A*x^2*b*c^4*d^3*e^2-3*A*b*c^4
*d^5+8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*El
lipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*e^5+8*A*((c*x+b)/b
)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^5*d*e^4+6*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*b*c^4*d^5-6*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(
-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b*c^4*
d^5-2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ell
ipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^5*d^2*e^3-3*B*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*b^2*c^3*d^5-6*A*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c
*d)*b*e)^(1/2))*x*b*c^4*d^4*e+9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*x*b^4*c*d^2*e^3-4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c
*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d^
3*e^2+3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^4*e-3*B*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*
x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^4*e-27*A*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2
),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*d*e^4+28*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x*b^3*c^2*d^2*e^3-15*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*x*b^2*c^3*d^3*e^2+6*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b*c^4*
d^4*e-10*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d^2*e^3+12*A
*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^3*e^2)/d^3/b^2/c/(e*
x+d)^(3/2)/(b*e-c*d)^3/(c*x+b)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx\right)^{\frac{3}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(3/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(c\,x^2+b\,x\right)}^{3/2}\,{\left(d+e\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(3/2)*(d + e*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x)**(3/2),x)
```

```
[Out] Timed out
```

3.1278 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=524

$$-\frac{2(d+ex)^{5/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2d\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\,(cd-be)\left(b^2ce(Bd-Ae)-8b\right.}{3(-b)^{7/2}c^{5/2}\sqrt{}}$$

```
[Out] -2/3*(e*x+d)^(5/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x
^2+b*x)^(3/2)+2/3*(b*c*d^2*(8*A*c^2*d+b^2*B*e-b*c*(9*A*e+4*B*d))+(16*A*c^4*
d^3-4*b^4*B*e^3+b^3*c*e^2*(A*e+4*B*d)-8*b*c^3*d^2*(3*A*e+B*d)+b^2*c^2*d*e*(
6*A*e+5*B*d))*x)*(e*x+d)^(1/2)/b^4/c^2/(c*x^2+b*x)^(1/2)-2/3*(16*A*c^4*d^3-
8*b^4*B*e^3+b^3*c*e^2*(2*A*e+5*B*d)-8*b*c^3*d^2*(3*A*e+B*d)+b^2*c^2*d*e*(4*
A*e+5*B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(
c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(7/2)/c^(5/2)/(1+e*x/d)^(1/2)/(c*x^2+b*x)
^(1/2)+2/3*d*(-b*e+c*d)*(16*A*c^3*d^2+4*b^3*B*e^2+b^2*c*e*(-A*e+B*d)-8*b*c^
2*d*(2*A*e+B*d))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1
/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(7/2)/c^(5/2)/(e*x+d)^(1/2)/(c*x^2
+b*x)^(1/2)
```

Rubi [**A**] time = 0.73, antiderivative size = 524, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {818, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{d+ex}\left(x\left(b^2c^2de(6Ae+5Bd)+b^3ce^2(Ae+4Bd)-8bc^3d^2(3Ae+Bd)+16Ac^4d^3-4b^4Be^3\right)+bcd^2\left(-bc(9Ae\right.\right.}{3b^4c^2\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(5/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/
(3*b^2*c*(b*x + c*x^2)^(3/2)) + (2*Sqrt[d + e*x]*(b*c*d^2*(8*A*c^2*d + b^2*
B*e - b*c*(4*B*d + 9*A*e)) + (16*A*c^4*d^3 - 4*b^4*B*e^3 + b^3*c*e^2*(4*B*d
 + A*e) - 8*b*c^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(5*B*d + 6*A*e))*x))/(3*b
^4*c^2*Sqrt[b*x + c*x^2]) - (2*(16*A*c^4*d^3 - 8*b^4*B*e^3 + b^3*c*e^2*(5*B
*d + 2*A*e) - 8*b*c^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(5*B*d + 4*A*e))*Sqrt
[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt
[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*c^(5/2)*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x
^2]) + (2*d*(c*d - b*e)*(16*A*c^3*d^2 + 4*b^3*B*e^2 + b^2*c*e*(B*d - A*e) -
 8*b*c^2*d*(B*d + 2*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*Ellip
ticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*c^(5/2
)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\int \frac{(d+ex)^{3/2}(\frac{1}{2}d(4bBcd-8Ac^2d}{}}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,(bcd^2\,(8Ac^2d\,-}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,(bcd^2\,(8Ac^2d\,-}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,(bcd^2\,(8Ac^2d\,-}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,(bcd^2\,(8Ac^2d\,-}{}$$

$$= -\frac{2(d+ex)^{5/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,(bcd^2\,(8Ac^2d\,-}{}$$

Mathematica [C] time = 4.77, size = 530, normalized size = 1.01

$$-\frac{2\Big(b(d+ex)\left(x^2(b+cx)(cd-be)^2\left(bc(5Bd-2Ae)-8Ac^2d+5b^2Be\right)+c^2d^2x(b+cx)^2(10Abe-8Acd+3bBd)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*(d + e*x)*(b*(b*B - A*c)*(c*d - b*e)^3*x^2 + (c*d - b*e)^2*(-8*A*c^2
*d + 5*b^2*B*e + b*c*(5*B*d - 2*A*e))*x^2*(b + c*x) + A*b*c^2*d^3*(b + c*x)
^2 + c^2*d^2*(3*b*B*d - 8*A*c*d + 10*A*b*e)*x*(b + c*x)^2) + Sqrt[b/c]*x*(b
 + c*x)*(Sqrt[b/c]*(16*A*c^4*d^3 - 8*b^4*B*e^3 + b^3*c*e^2*(5*B*d + 2*A*e)
- 8*b*c^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(5*B*d + 4*A*e))*(b + c*x)*(d + e
*x) + I*b*e*(16*A*c^4*d^3 - 8*b^4*B*e^3 + b^3*c*e^2*(5*B*d + 2*A*e) - 8*b*c
^3*d^2*(B*d + 3*A*e) + b^2*c^2*d*e*(5*B*d + 4*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[
1 + d/(e*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] -
 I*b*e*(c*d - b*e)*(8*A*c^3*d^2 + 8*b^3*B*e^2 - b^2*c*e*(B*d + 2*A*e) - b*c
^2*d*(4*B*d + 5*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF
[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b^5*c^2*(x*(b + c*x))^(3/
2)*Sqrt[d + e*x])
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^3x^4+Ad^3+\left(3\,Bde^2+Ae^3\right)x^3+3\left(Bd^2e+Ade^2\right)x^2+\left(Bd^3+3\,Ad^2e\right)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^3x^6+3\,bc^2x^5+3\,b^2cx^4+b^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^3*x^4 + A*d^3 + (3*B*d*e^2 + A*e^3)*x^3 + 3*(B*d^2*e + A*d*e^
2)*x^2 + (B*d^3 + 3*A*d^2*e)*x)*sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c^3*x^6 +
3*b*c^2*x^5 + 3*b^2*c*x^4 + b^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 + b*x)^(5/2), x)
```

maple [B] time = 0.15, size = 3247, normalized size = 6.20

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(4*A*x^4*b^2*c^5*d*e^3+16*A*x^3*c^7*d^4-4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^6*c*d*e^3+3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*
x*b^5*c^2*d^2*e^2+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*
c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^3
*d*e^3-28*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^4*d^2*e^2+4
0*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipti
cE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^3*e+15*A*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^4*d^2*e^2-32*A*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^3*e+13*B*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x^2*b^5*c^2*d*e^3-13*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c
*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)
^(1/2))*x^2*b^3*c^4*d^3*e-4*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2
)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2
*b^5*c^2*d*e^3+3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^3*d^
2*e^2+9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^4*d^3*e+2*A*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c^2*d*e^3+A*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^3*d*e^3+9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^4*c^3*d^3*e+A*x^3*b^4*c^3*e^4-8*B*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^4-4*B*x^3*b^5*c^2*e^4+16*A*x^4*c^7*d^3*e+24
*A*x^2*b*c^6*d^4-8*B*x^3*b*c^6*d^4-12*B*x^2*b^2*c^5*d^4+6*A*x*b^2*c^5*d^4-3
*B*x*b^3*c^4*d^4-5*B*x^4*b^4*c^3*e^4+2*A*x^4*b^3*c^4*e^4-28*A*((c*x+b)/b)^(
1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^3*d^2*e^2+40*A*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^3*e+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*x*b^5*c^2*d*e^3+15*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^
3*d^2*e^2-32*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^3*e+13
*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elliptic
E(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*c*d*e^3-13*B*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^
(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^3*d^3*e+13*B*x^3*b^3*c^4*d^2*e^2-4*B
*x^2*b^5*c^2*d*e^3-7*B*x^3*b^2*c^5*d^3*e+A*x^2*b^4*c^3*d*e^3-3*A*x^2*b^3*c^
4*d^2*e^2-31*A*x^2*b^2*c^5*d^3*e-8*B*x^4*b*c^6*d^3*e-24*A*x^4*b*c^6*d^2*e^2
+2*B*x^2*b^4*c^3*d^2*e^2-11*A*x*b^3*c^4*d^3*e+5*B*x^4*b^3*c^4*d*e^3+5*B*x^4
*b^2*c^5*d^2*e^2+5*B*x^2*b^3*c^4*d^3*e+9*A*x^3*b^3*c^4*d*e^3-33*A*x^3*b^2*c
^5*d^2*e^2-3*B*x^3*b^4*c^3*d*e^3-A*b^3*c^4*d^4+2*A*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x^2*b^5*c^2*e^4-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x^2*b*c^6*d^4+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^
6*d^4-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^6*c*e^4+8*B*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^4-8*B*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^4+8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*x*b^3*c^4*d^4+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^
6*c*e^4-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^5*d^4+16*A*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^5*d^4-8*B*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*x*b^7*e^4)/x^2*((c*x+b)*x)^(1/2)/b^4/(c*x+b)^2/c^
4/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{7/2}}{\left(c\,x^2+b\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1279 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=454

$$-\frac{2(d+ex)^{3/2}\left(x\left(-bc(Ae+Bd)+2Ac^2d+b^2Be\right)+Abcd\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2d\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\,(cd-be)\left(-8bc(Ae+Bd)+16\right.}{3(-b)^{7/2}c^{3/2}\sqrt{bx+cx^2}}$$

```
[Out] -2/3*(e*x+d)^(3/2)*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)/b^2/c/(c*x
^2+b*x)^(3/2)+2/3*(b*d*(8*A*c^2*d+b^2*B*e-b*c*(7*A*e+4*B*d))+(16*A*c^3*d^2+
2*b^3*B*e^2+b^2*c*e*(A*e+3*B*d)-8*b*c^2*d*(2*A*e+B*d))*x)*(e*x+d)^(1/2)/b^4
/c/(c*x^2+b*x)^(1/2)-2/3*(16*A*c^3*d^2+2*b^3*B*e^2+b^2*c*e*(A*e+3*B*d)-8*b*
c^2*d*(2*A*e+B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^
(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(7/2)/c^(3/2)/(1+e*x/d)^(1/2)/(c*x
^2+b*x)^(1/2)+2/3*d*(-b*e+c*d)*(16*A*c^2*d-b^2*B*e-8*b*c*(A*e+B*d))*Ellipti
cF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(1+e
*x/d)^(1/2)/(-b)^(7/2)/c^(3/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 454, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 820, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{d+ex}\left(x\left(b^2ce(Ae+3Bd)-8bc^2d(2Ae+Bd)+16Ac^3d^2+2b^3Be^2\right)+bd\left(-bc(7Ae+4Bd)+8Ac^2d+b^2Be\right)\right)}{3b^4c\sqrt{bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2)*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/
(3*b^2*c*(b*x + c*x^2)^(3/2)) + (2*Sqrt[d + e*x]*(b*d*(8*A*c^2*d + b^2*B*e
- b*c*(4*B*d + 7*A*e)) + (16*A*c^3*d^2 + 2*b^3*B*e^2 + b^2*c*e*(3*B*d + A*e
) - 8*b*c^2*d*(B*d + 2*A*e))*x))/(3*b^4*c*Sqrt[b*x + c*x^2]) - (2*(16*A*c^3
*d^2 + 2*b^3*B*e^2 + b^2*c*e*(3*B*d + A*e) - 8*b*c^2*d*(B*d + 2*A*e))*Sqrt[
x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[
-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*c^(3/2)*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^
2]) + (2*d*(c*d - b*e)*(16*A*c^2*d - b^2*B*e - 8*b*c*(B*d + A*e))*Sqrt[x]*S
qrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[
-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*c^(3/2)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\int \frac{\sqrt{d+ex}\left(\frac{1}{2}d\left(4bBcd-8Ac^2d-\right.\right.}{}}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\left(bd\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\left(bd\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\left(bd\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\left(bd\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2(d+ex)^{3/2}\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\left(bd\left(8Ac^2d+\right.\right.}{}$$

Mathematica **[C]** time = 3.63, size = 452, normalized size = 1.00

$$-\frac{2\left(b(d+ex)\left(x^2(b+cx)(cd-be)\left(bc(Ae+5Bd)-8Ac^2d+2b^2Be\right)+bx^2(bB-Ac)(cd-be)^2+cdx(b+cx)^2(7Ab\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*(d + e*x)*(b*(b*B - A*c)*(c*d - b*e)^2*x^2 + (c*d - b*e)*(-8*A*c^2*d
 + 2*b^2*B*e + b*c*(5*B*d + A*e))*x^2*(b + c*x) + A*b*c*d^2*(b + c*x)^2 + c
*d*(3*b*B*d - 8*A*c*d + 7*A*b*e)*x*(b + c*x)^2) + Sqrt[b/c]*x*(b + c*x)*(Sq
rt[b/c]*(16*A*c^3*d^2 + 2*b^3*B*e^2 + b^2*c*e*(3*B*d + A*e) - 8*b*c^2*d*(B*
d + 2*A*e))*(b + c*x)*(d + e*x) + I*b*e*(16*A*c^3*d^2 + 2*b^3*B*e^2 + b^2*c
*e*(3*B*d + A*e) - 8*b*c^2*d*(B*d + 2*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e
*x)]*x^(3/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(
c*d - b*e)*(8*A*c^2*d - 2*b^2*B*e - b*c*(4*B*d + A*e))*Sqrt[1 + b/(c*x)]*Sq
rt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)
])))/(3*b^5*c*(x*(b + c*x))^(3/2)*Sqrt[d + e*x])
```

fricas **[F]** time = 0.59, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(Be^2x^3+Ad^2+\left(2\,Bde+Ae^2\right)x^2+\left(Bd^2+2\,Ade\right)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^3x^6+3\,bc^2x^5+3\,b^2cx^4+b^3x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*d^2 + (2*B*d*e + A*e^2)*x^2 + (B*d^2 + 2*A*d*e)*x)*
sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c^3*x^6 + 3*b*c^2*x^5 + 3*b^2*c*x^4 + b^3*
x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x)^(5/2), x)
```

maple [B] time = 0.12, size = 2644, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(3*B*x^4*b^2*c^4*d*e^2+16*A*x^3*c^6*d^3+16*A*x^4*c^6*d^2*e-8*B*x^3*b*c^
5*d^3+24*A*x^2*b*c^5*d^3-3*B*x*b^3*c^3*d^3+B*x^3*b^4*c^2*e^3-12*B*x^2*b^2*c
^4*d^3+6*A*x*b^2*c^4*d^3+2*A*x^3*b^3*c^3*e^3+A*x^4*b^2*c^4*e^3+2*B*x^4*b^3*
c^3*e^3+2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c*e^3+8*B*((c
*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*
x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^3+16*A*((c*x+b)/b)^(1/
2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2
),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^4*d^3+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x*b^5*c*e^3-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(
-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*
c^4*d^3+2*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*e^3+16*A*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^5*d^3-8*A*x*b^3*c^3*d^2*e+7*B*x
^3*b^3*c^3*d*e^2-9*B*x^3*b^2*c^4*d^2*e-5*A*x^2*b^3*c^3*d*e^2-19*A*x^2*b^2*c
^4*d^2*e-24*A*x^3*b^2*c^4*d*e^2-8*B*x^4*b*c^5*d^2*e+8*A*x^3*b*c^5*d^2*e-16*
A*x^4*b*c^5*d*e^2+B*x^2*b^4*c^2*d*e^2+2*B*x^2*b^3*c^3*d^2*e-A*b^3*c^3*d^3-8
*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elliptic
F(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^3*d^3+8*B*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^3*d^3+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x^2*b^4*c^2*e^3-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*x^2*b*c^5*d^3-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^
3+8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellip
ticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d*e^2-24*A*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^2*e-17*A*((c*x+b)/b)^(1
/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/
2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d*e^2+32*A*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^2*e+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*x^2*b^4*c^2*d*e^2+7*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(
-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^
3*c^3*d^2*e+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^2*d*e^2-1
1*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipti
cE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d^2*e+8*A*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^2*d*e^2-24*A*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^3*d^2*e-17*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*x*b^4*c^2*d*e^2+32*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
*b^3*c^3*d^2*e+B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c*d*e^2+7*
B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF
(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^2*d^2*e+B*((c*x+b)/b)^(
1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c*d*e^2-11*B*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^4*c^2*d^2*e)/x^2*((c*x+b)*x)^(1/2)/b^4/(c*x+b)^2/c^3/(e*
x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(cx^2 + bx\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,{(d + e\,x)}^{5/2}}{{\left(c\,x^2 + b\,x\right)}^{5/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1280 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=410

$$\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\left(b^2e(3Ae+5Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3(-b)^{7/2}\sqrt{c}\sqrt{bx+cx^2}\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\left(x\left(-b\right.\right.}{}$$

```
[Out] -2/3*(A*b*c*d+(2*A*c^2*d+b^2*B*e-b*c*(A*e+B*d))*x)*(e*x+d)^(1/2)/b^2/c/(c*x
^2+b*x)^(3/2)+2/3*(b*(8*A*c^2*d+b^2*B*e-b*c*(5*A*e+4*B*d))+c*(16*A*c^2*d+b^
2*B*e-8*b*c*(A*e+B*d))*x)*(e*x+d)^(1/2)/b^4/c/(c*x^2+b*x)^(1/2)-2/3*(16*A*c
^2*d+b^2*B*e-8*b*c*(A*e+B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d
)^(1/2))*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(7/2)/c^(1/2)/(1+e*x/d)
^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(16*A*c^2*d^2-8*b*c*d*(2*A*e+B*d)+b^2*e*(3*A*e
+5*B*d))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^(1/2)*(c*x
/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(7/2)/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1
/2)
```

Rubi [A] time = 0.59, antiderivative size = 410, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.286, Rules used = {818, 822, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\left(b^2e(3Ae+5Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3(-b)^{7/2}\sqrt{c}\sqrt{bx+cx^2}\sqrt{d+ex}}+\frac{2\sqrt{d+ex}\left(cx\left(-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(A*b*c*d + (2*A*c^2*d + b^2*B*e - b*c*(B*d + A*e))*x))/(3
*b^2*c*(b*x + c*x^2)^(3/2)) + (2*Sqrt[d + e*x]*(b*(8*A*c^2*d + b^2*B*e - b*
c*(4*B*d + 5*A*e)) + c*(16*A*c^2*d + b^2*B*e - 8*b*c*(B*d + A*e))*x))/(3*b^
4*c*Sqrt[b*x + c*x^2]) - (2*(16*A*c^2*d + b^2*B*e - 8*b*c*(B*d + A*e))*Sqrt
[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt
[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*Sqrt[c]*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x
^2]) + (2*(16*A*c^2*d^2 - 8*b*c*d*(B*d + 2*A*e) + b^2*e*(5*B*d + 3*A*e))*Sq
rt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x]
)/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*Sqrt[c]*Sqrt[d + e*x]*Sqrt[b*x + c
*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\int \frac{\frac{1}{2}d\left(4bBcd-8Ac^2d-b^2Be+\right.}{\sqrt{d+ex}}}{3}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,\left(b\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,\left(b\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,\left(b\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,\left(b\left(8Ac^2d+\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(Abcd+\left(2Ac^2d+b^2Be-bc(Bd+Ae)\right)x\right)}{3b^2c\left(bx+cx^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,\left(b\left(8Ac^2d+\right.\right.}{}$$

Mathematica [**C**] time = 2.19, size = 378, normalized size = 0.92

$$-\frac{2\left(b(d+ex)\left(A\left(b^3(d+4ex)+b^2cx(13ex-6d)+8bc^2x^2(ex-3d)-16c^3dx^3\right)+bBx\left(b^2(3d-2ex)+bcx(12d\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b*(d + e*x)*(b*B*x*(8*c^2*d*x^2 + b^2*(3*d - 2*e*x) + b*c*x*(12*d - e*
x)) + A*(-16*c^3*d*x^3 + 8*b*c^2*x^2*(-3*d + e*x) + b^3*(d + 4*e*x) + b^2*c
*x*(-6*d + 13*e*x))) + Sqrt[b/c]*x*(b + c*x)*(Sqrt[b/c]*(16*A*c^2*d + b^2*B
*e - 8*b*c*(B*d + A*e))*(b + c*x)*(d + e*x) + I*b*e*(16*A*c^2*d + b^2*B*e -
 8*b*c*(B*d + A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I
*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(8*A*c^2*d + b^2*B*e - b*
c*(4*B*d + 5*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*
ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b^5*(x*(b + c*x))^(3/2)*Sqrt
[d + e*x])
```

fricas [**F**] time = 0.56, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bex^2+Ad+(Bd+Ae)x\right)\sqrt{cx^2+bx}\,\sqrt{ex+d}}{c^3x^6+3\,bc^2x^5+3\,b^2cx^4+b^3x^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(c*x^2 + b*x)*sqrt(e*x + d)/(c
^3*x^6 + 3*b*c^2*x^5 + 3*b^2*c*x^4 + b^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x)^(5/2), x)
```

maple [B] time = 0.13, size = 2043, normalized size = 4.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(-8*B*x^4*b*c^4*d*e+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^
2*c^3*d^2-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/
2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d^2+B*(
(c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((
c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c*e^2+8*B*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d^2+3*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x*b^4*c*e^2+8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^
3*c^2*d^2+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^4*d^2-8*A*
x^4*b*c^4*e^2-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d*
e+24*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d*e+5*B*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*d*e+B*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b^5*e^2-8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*x^2*b^3*c^2*e^2-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^4*
d^2+3*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ell
ipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*e^2-8*A*((c*x
+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+
b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*e^2-16*A*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^2-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x*b^3*c^2*d^2+16*A*x^3*c^5*d^2+6*A*x*b^2*c^3*d^2-13*A*x^3*b^2*c^3*e^2
-12*B*x^2*b^2*c^3*d^2+2*B*x^3*b^3*c^2*e^2+B*x^4*b^2*c^3*e^2+16*A*x^4*c^5*d*
e-3*B*x*b^3*c^2*d^2-8*B*x^3*b*c^4*d^2-4*A*x^2*b^3*c^2*e^2+24*A*x^2*b*c^4*d^
2-9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellip
ticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*d*e-16*A*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d*e+24*A*((c*x+b)/b)^(1/2)*(-
(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/
(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d*e+5*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*
d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^
(1/2))*x*b^4*c*d*e-9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*d*
e+16*A*x^3*b*c^4*d*e-B*x^2*b^3*c^2*d*e-11*B*x^3*b^2*c^3*d*e-7*A*x^2*b^2*c^3
*d*e-5*A*x*b^3*c^2*d*e-A*b^3*c^2*d^2)/x^2*((c*x+b)*x)^(1/2)/b^4/c^2/(c*x+b)
^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{3/2}}{\left(c\,x^2+b\,x\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1281 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=420

$$-\frac{2\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{d+ex}\left(b^2e(Ae+7Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{c}\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3(-b)^{7/2}d\sqrt{bx+cx^2}\sqrt{\frac{ex}{d}+1}(cd-be)}+\frac{2\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\ }}{}$$

```
[Out] -2/3*(A*b-(-2*A*c+B*b)*x)*(e*x+d)^(1/2)/b^2/(c*x^2+b*x)^(3/2)-2/3*(b*(-b*e+
c*d)*(A*b*e-8*A*c*d+4*B*b*d)-c*(16*A*c^2*d^2+b^2*e*(A*e+7*B*d)-8*b*c*d*(2*A
*e+B*d))*x)*(e*x+d)^(1/2)/b^4/d/(-b*e+c*d)/(c*x^2+b*x)^(1/2)-2/3*(16*A*c^2*
d^2+b^2*e*(A*e+7*B*d)-8*b*c*d*(2*A*e+B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(
1/2),(b*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(7
/2)/d/(-b*e+c*d)/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(16*A*c^2*d+3*b^2*B*
e-8*b*c*(A*e+B*d))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*x^
(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(7/2)/c^(1/2)/(e*x+d)^(1/2)/(c*x
^2+b*x)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 420, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {820, 822, 843, 715, 112, 110, 117, 116}

$$-\frac{2\sqrt{d+ex}\left(b(cd-be)(Abe-8Acd+4bBd)-cx\left(b^2e(Ae+7Bd)-8bcd(2Ae+Bd)+16Ac^2d^2\right)\right)}{3b^4d\sqrt{bx+cx^2}(cd-be)}-\frac{2\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+\ }}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/(3*b^2*(b*x + c*x^2)^(3/2)) - (2
*Sqrt[d + e*x]*(b*(c*d - b*e)*(4*b*B*d - 8*A*c*d + A*b*e) - c*(16*A*c^2*d^2
 + b^2*e*(7*B*d + A*e) - 8*b*c*d*(B*d + 2*A*e))*x))/(3*b^4*d*(c*d - b*e)*Sq
rt[b*x + c*x^2]) - (2*Sqrt[c]*(16*A*c^2*d^2 + b^2*e*(7*B*d + A*e) - 8*b*c*d
*(B*d + 2*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[(S
qrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*d*(c*d - b*e)*Sqrt[1
 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*(16*A*c^2*d + 3*b^2*B*e - 8*b*c*(B*d +
A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]
*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*Sqrt[c]*Sqrt[d + e*x]*Sqrt
[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}(8Acd-b(4Bd+Ae))-\frac{3}{2}(bB-2Ac)ex}{\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}}dx}{3b^2}$$

$$= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\sqrt{d+ex}\left(b(cd-be)(4bBd-8Acd+Abe)-c\left(16A\right.\right.}{3b^4d(cd-be)\sqrt{}}$$

$$= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\sqrt{d+ex}\left(b(cd-be)(4bBd-8Acd+Abe)-c\left(16A\right.\right.}{3b^4d(cd-be)\sqrt{}}$$

$$= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\sqrt{d+ex}\left(b(cd-be)(4bBd-8Acd+Abe)-c\left(16A\right.\right.}{3b^4d(cd-be)\sqrt{}}$$

$$= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\sqrt{d+ex}\left(b(cd-be)(4bBd-8Acd+Abe)-c\left(16A\right.\right.}{3b^4d(cd-be)\sqrt{}}$$

$$= -\frac{2(Ab-(bB-2Ac)x)\sqrt{d+ex}}{3b^2\left(bx+cx^2\right)^{3/2}} - \frac{2\sqrt{d+ex}\left(b(cd-be)(4bBd-8Acd+Abe)-c\left(16A\right.\right.}{3b^4d(cd-be)\sqrt{}}$$

Mathematica [C] time = 2.27, size = 441, normalized size = 1.05

$$-\frac{2\left(\sqrt{\frac{b}{c}}(d+ex)\left(cdx^2(b+cx)\left(bc(7Ae+5Bd)-8Ac^2d-4b^2Be\right)+bcdx^2(bB-Ac)(cd-be)+x(b+cx)^2(cd-be\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(Sqrt[b/c]*(d + e*x)*(b*c*(b*B - A*c)*d*(c*d - b*e)*x^2 + c*d*(-8*A*c^2
*d - 4*b^2*B*e + b*c*(5*B*d + 7*A*e))*x^2*(b + c*x) + A*b*d*(c*d - b*e)*(b
+ c*x)^2 + (c*d - b*e)*(3*b*B*d - 8*A*c*d + A*b*e)*x*(b + c*x)^2) + x*(b +
c*x)*(Sqrt[b/c]*(16*A*c^2*d^2 + b^2*e*(7*B*d + A*e) - 8*b*c*d*(B*d + 2*A*e)
)*(b + c*x)*(d + e*x) + I*b*e*(16*A*c^2*d^2 + b^2*e*(7*B*d + A*e) - 8*b*c*d
*(B*d + 2*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticE[I*Arc
Sinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)*(8*A*c*d - b*(4*B
*d + A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[
Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b^4*Sqrt[b/c]*d*(c*d - b*e)*(x*(b +
c*x))^(3/2)*Sqrt[d + e*x])
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^3x^6+3\,bc^2x^5+3\,b^2cx^4+b^3x^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^3*x^6 + 3*b*c^2*x^5 +
 3*b^2*c*x^4 + b^3*x^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex + d}}{\left(cx^2 + bx\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x)^(5/2), x)
```

maple [B] time = 0.13, size = 2503, normalized size = 5.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] -2/3/x^2*(A*b^4*c*d^2*e+8*B*x^2*b^3*c^2*d^2*e-3*B*x*b^3*c^2*d^3+A*x^2*b^4*c
*e^3+16*A*x^4*c^5*d^2*e-8*B*x^3*b*c^4*d^3-24*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x*b^3*c^2*d^2*e+11*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*x^2*b^3*c^2*d^2*e+24*A*x^2*b*c^4*d^3-12*B*x^2*b^2*c^3*d^3+A*x^4*b^2*c^3*e
^3+6*A*x*b^2*c^3*d^3+2*A*x^3*b^3*c^2*e^3+16*A*x^3*c^5*d^3-17*A*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*d*e^2+32*A*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d^2*e-17*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x*b^4*c*d*e^2-15*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^
4*c*d^2*e+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1
/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^4*d^3+8*B*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d^3-8*B*((c*x+b)/b)^(
1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1
/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^3*d^3+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x^2*b^4*c*e^3-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*
x^2*b*c^4*d^3+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^3-
16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^3*d^3+7*B*((c*x+b)/b
)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)
^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*d*e^2+8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)
/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*
d)*b*e)^(1/2))*x*b^3*c^2*d^3-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(
1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*
x*b^5*d*e^2-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(
1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d^3+7*B
*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c*d*e^2-15*B*((c*x+b)/b)
^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^
(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*d^2*e+8*A*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x^2*b^3*c^2*d*e^2-24*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e
-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*
e)^(1/2))*x^2*b^2*c^3*d^2*e-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
^2*b^4*c*d*e^2+32*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^2*d^2
*e+8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*d*e^2+11*B*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c*d^2*e+A*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x*b^5*e^3-16*A*x^4*b*c^4*d*e^2+2*A*x*b^4*c*d*e^2-8*A*x*b^
3*c^2*d^2*e-5*A*x^2*b^3*c^2*d*e^2+3*B*x*b^4*c*d^2*e+3*B*x^2*b^4*c*d*e^2-5*B
*x^3*b^2*c^3*d^2*e-19*A*x^2*b^2*c^3*d^2*e+11*B*x^3*b^3*c^2*d*e^2-24*A*x^3*b
^2*c^3*d*e^2+8*A*x^3*b*c^4*d^2*e+7*B*x^4*b^2*c^3*d*e^2-8*B*x^4*b*c^4*d^2*e-
A*b^3*c^2*d^3)*((c*x+b)*x)^(1/2)/b^4/c/d/(c*x+b)^2/(b*e-c*d)/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex + d}}{\left(cx^2 + bx\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{d + e\,x}}{{\left(c\,x^2 + b\,x\right)}^{5/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1282 $\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=543

$$\frac{2\sqrt{c}\,\sqrt{x}\,\sqrt{\frac{cx}{b}+1}\,\sqrt{\frac{ex}{d}+1}\,\left(b^2e(9Bd-Ae)-8bcd(2Ae+Bd)+16Ac^2d^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{x}}{\sqrt{-b}}\right)|\frac{be}{cd}\right)}{3(-b)^{7/2}d\sqrt{bx+cx^2}\,\sqrt{d+ex}\,(cd-be)}-\frac{2\sqrt{d+ex}\,(cx(2}{3b^2}$$

```
[Out] -2/3*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)*(e*x+d)^(1/2)/b^2/d/(-b*e+c
*d)/(c*x^2+b*x)^(3/2)+2/3*(b*(-b*e+c*d)*(8*A*c^2*d^2+b^2*e*(-2*A*e+3*B*d)-b
*c*d*(5*A*e+4*B*d))+c*(16*A*c^3*d^3-b^3*e^2*(-2*A*e+3*B*d)-8*b*c^2*d^2*(3*A
*e+B*d)+b^2*c*d*e*(4*A*e+13*B*d))*x)*(e*x+d)^(1/2)/b^4/d^2/(-b*e+c*d)^2/(c*
x^2+b*x)^(1/2)-2/3*(16*A*c^3*d^3-b^3*e^2*(-2*A*e+3*B*d)-8*b*c^2*d^2*(3*A*e+
B*d)+b^2*c*d*e*(4*A*e+13*B*d))*EllipticE(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/
d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^(1/2)/(-b)^(7/2)/d^2/(-b*
e+c*d)^2/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(16*A*c^2*d^2+b^2*e*(-A*e+9*
B*d)-8*b*c*d*(2*A*e+B*d))*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1
/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(7/2)/d/(-b*e+c*d
)/(e*x+d)^(1/2)/(c*x^2+b*x)^(1/2)
```

Rubi [A] time = 0.76, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {822, 843, 715, 112, 110, 117, 116}

$$\frac{2\sqrt{d+ex}\,\left(cx\left(b^2cde(4Ae+13Bd)+b^3\left(-e^2\right)(3Bd-2Ae)-8bc^2d^2(3Ae+Bd)+16Ac^3d^3\right)+b(cd-be)\left(b^2e(3\right.\right.}{3b^4d^2\sqrt{bx+cx^2}\,(cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2
*d*(c*d - b*e)*(b*x + c*x^2)^(3/2)) + (2*Sqrt[d + e*x]*(b*(c*d - b*e)*(8*A*
c^2*d^2 + b^2*e*(3*B*d - 2*A*e) - b*c*d*(4*B*d + 5*A*e)) + c*(16*A*c^3*d^3
- b^3*e^2*(3*B*d - 2*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e*(13*B*d +
 4*A*e))*x))/(3*b^4*d^2*(c*d - b*e)^2*Sqrt[b*x + c*x^2]) - (2*Sqrt[c]*(16*A
*c^3*d^3 - b^3*e^2*(3*B*d - 2*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e*
(13*B*d + 4*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin[
(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*d^2*(c*d - b*e)^2*
Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[c]*(16*A*c^2*d^2 + b^2*e*(9*
B*d - A*e) - 8*b*c*d*(B*d + 2*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[1 + (e*x
)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7
/2)*d*(c*d - b*e)*Sqrt[d + e*x]*Sqrt[b*x + c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(8Ac^2d^2+b^2e(3Bd-2Ae)-\right.}{\sqrt{d}}}{3b}$$

$$= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,\left(b(cd-be)\left(8\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,\left(b(cd-be)\left(8\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,\left(b(cd-be)\left(8\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,\left(b(cd-be)\left(8\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\left(bx+cx^2\right)^{3/2}} + \frac{2\sqrt{d+ex}\,\left(b(cd-be)\left(8\right.\right.}{}$$

Mathematica [**C**] time = 4.14, size = 514, normalized size = 0.95

$$-\frac{2\left(b(d+ex)\left(c^2d^2x^2(b+cx)\left(5bc(2Ae+Bd)-8Ac^2d-7b^2Be\right)+bc^2d^2x^2(bB-Ac)(cd-be)+x(b+cx)^2(cd\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(b*(d + e*x)*(b*c^2*(b*B - A*c)*d^2*(c*d - b*e)*x^2 + c^2*d^2*(-8*A*c^2
*d - 7*b^2*B*e + 5*b*c*(B*d + 2*A*e))*x^2*(b + c*x) + A*b*d*(c*d - b*e)^2*(
b + c*x)^2 + (c*d - b*e)^2*(3*b*B*d - 8*A*c*d - 2*A*b*e)*x*(b + c*x)^2) + S
qrt[b/c]*c*x*(b + c*x)*(Sqrt[b/c]*(16*A*c^3*d^3 + b^3*e^2*(-3*B*d + 2*A*e)
- 8*b*c^2*d^2*(B*d + 3*A*e) + b^2*c*d*e*(13*B*d + 4*A*e))*(b + c*x)*(d + e*
x) + I*b*e*(16*A*c^3*d^3 + b^3*e^2*(-3*B*d + 2*A*e) - 8*b*c^2*d^2*(B*d + 3*
A*e) + b^2*c*d*e*(13*B*d + 4*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3
/2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e
)*(8*A*c^2*d^2 + b^2*e*(3*B*d - 2*A*e) - b*c*d*(4*B*d + 5*A*e))*Sqrt[1 + b/
(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*EllipticF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c
*d)/(b*e)])))/(3*b^5*d^2*(c*d - b*e)^2*(x*(b + c*x))^(3/2)*Sqrt[d + e*x])
```

fricas [**F**] time = 0.84, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^3ex^7+b^3dx^3+\left(c^3d+3\,bc^2e\right)x^6+3\left(bc^2d+b^2ce\right)x^5+\left(3\,b^2cd+b^3e\right)x^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^3*e*x^7 + b^3*d*x^3 +
 (c^3*d + 3*b*c^2*e)*x^6 + 3*(b*c^2*d + b^2*c*e)*x^5 + (3*b^2*c*d + b^3*e)*
x^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{5}{2}} \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.14, size = 3140, normalized size = 5.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/3*(9*A*x^3*b^3*c^3*d*e^3-8*B*x^3*b*c^5*d^4+8*B*((c*x+b)/b)^(1/2)*(-(e*x+d
)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c
*d)*b*e)^(1/2))*x*b^3*c^3*d^4-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*x*b^3*c^3*d^4+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c*e^4-
16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^5*d^4+16*A*((c*x+b)/
b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b
)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^5*d^4+8*B*((c*x+b)/b)^(1/2)*(-(e*x
+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e
-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^4+16*A*x^3*c^6*d^4-32*A*((c*x+b)/b)^(1/2)*(
-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1
/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^3*d^3*e+16*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*x*b^5*c*d^2*e^2-21*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
*b^4*c^2*d^3*e+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*
x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^4*d^4
-8*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipt
icF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^4-16*A*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^2*c^4*d^4-3*B*((c*x+b)/b)^(1/2)*(-(e
*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b
*e-c*d)*b*e)^(1/2))*x*b^6*d*e^3+24*A*x^2*b*c^5*d^4-12*B*x^2*b^2*c^4*d^4+2*A
*x^4*b^3*c^3*e^4+16*A*x^4*c^6*d^3*e+4*A*x^3*b^4*c^2*e^4+2*A*x^2*b^5*c*e^4-3
*B*x*b^3*c^3*d^4+6*A*x*b^2*c^4*d^4-3*B*x^2*b^5*c*d*e^3-33*A*x^3*b^2*c^4*d^2
*e^2-6*B*x^3*b^4*c^2*d*e^3+17*B*x^3*b^3*c^3*d^2*e^2-3*A*x^2*b^3*c^3*d^2*e^2
-31*A*x^2*b^2*c^4*d^3*e+17*B*x^2*b^3*c^3*d^3*e-24*A*x^4*b*c^5*d^2*e^2+13*B*
x^4*b^2*c^4*d^2*e^2-8*B*x^4*b*c^5*d^3*e+6*A*x^2*b^4*c^2*d*e^3-11*A*x*b^3*c^
3*d^3*e+B*x^3*b^2*c^4*d^3*e+A*x*b^5*c*d*e^3+4*A*x*b^4*c^2*d^2*e^2-3*B*x*b^5
*c*d^2*e^2+6*B*x*b^4*c^2*d^3*e+4*A*x^4*b^2*c^4*d*e^3-3*B*x^4*b^3*c^3*d*e^3-
A*b^3*c^3*d^4+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*e^4-A*b^5
*c*d^2*e^2+2*A*b^4*c^2*d^3*e-28*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^
(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))
*x*b^4*c^2*d^2*e^2+40*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/
b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^3
*d^3*e+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*El
lipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c*d*e^3-3*B*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c*d*e^3+40*A*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^4*d^3*e+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x^2*b^4*c^2*d*e^3-9*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*x*b^5*c*d^2*e^2+15*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b
*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^2*
d^2*e^2+17*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2
)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^2*d^3*e+16*B
*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(
((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^2*d^2*e^2-21*B*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d^3*e-9*B*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^2*d^2*e^2+A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x^2*b^4*c^2*d*e^3+15*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*x^2*b^3*c^3*d^2*e^2-32*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*
(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b
^2*c^4*d^3*e+17*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d^3
*e+2*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elli
pticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c*d*e^3-28*A*((c*x+b
)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)
/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^3*d^2*e^2)/x^2*((c*x+b)*x)^(1/
2)/d^2/b^4/c/(c*x+b)^2/(b*e-c*d)^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{5}{2}} \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x)^(5/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\left(c\,x^2 + b\,x\right)^{5/2}\,\sqrt{d + e\,x}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^(1/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1283 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=706

$$-\frac{2(cx(2Acd-b(Ae+Bd))+Ab(cd-be))}{3b^2d\left(bx+cx^2\right)^{3/2}\sqrt{d+ex}\,(cd-be)}+\frac{2\sqrt{c}\sqrt{x}\sqrt{\frac{cx}{b}+1}\sqrt{\frac{ex}{d}+1}\left(b^3\left(-e^2\right)(3Bd-4Ae)-8bc^2d^2(3Ae+Bd)}{3(-b)^{7/2}d^2\sqrt{bx+cx^2}\sqrt{d+ex}\,(}$$

```
[Out] -2/3*(A*b*(-b*e+c*d)+c*(2*A*c*d-b*(A*e+B*d))*x)/b^2/d/(-b*e+c*d)/(c*x^2+b*x
)^(3/2)/(e*x+d)^(1/2)+2/3*(b*(-b*e+c*d)*(8*A*c^2*d^2+b^2*e*(-4*A*e+3*B*d)-b
*c*d*(3*A*e+4*B*d))+c*(16*A*c^3*d^3+15*b^2*B*c*d^2*e-b^3*e^2*(-4*A*e+3*B*d)
-8*b*c^2*d^2*(3*A*e+B*d))*x)/b^4/d^2/(-b*e+c*d)^2/(e*x+d)^(1/2)/(c*x^2+b*x)
^(1/2)-2/3*(16*A*c^4*d^4-b^3*c*d*e^2*(-7*A*e+9*B*d)+2*b^4*e^3*(-4*A*e+3*B*d
)-8*b*c^3*d^3*(4*A*e+B*d)+b^2*c^2*d^2*e*(9*A*e+19*B*d))*EllipticE(c^(1/2)*x
^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x/b+1)^(1/2)*(e*x+d)^
(1/2)/(-b)^(7/2)/d^3/(-b*e+c*d)^3/(1+e*x/d)^(1/2)/(c*x^2+b*x)^(1/2)+2/3*(16
*A*c^3*d^3+15*b^2*B*c*d^2*e-b^3*e^2*(-4*A*e+3*B*d)-8*b*c^2*d^2*(3*A*e+B*d))
*EllipticF(c^(1/2)*x^(1/2)/(-b)^(1/2),(b*e/c/d)^(1/2))*c^(1/2)*x^(1/2)*(c*x
/b+1)^(1/2)*(1+e*x/d)^(1/2)/(-b)^(7/2)/d^2/(-b*e+c*d)^2/(e*x+d)^(1/2)/(c*x^
2+b*x)^(1/2)+2/3*e*(16*A*c^4*d^4-b^3*c*d*e^2*(-7*A*e+9*B*d)-8*b*c^3*d^3*(4*
A*e+B*d)+b^2*c^2*d^2*e*(9*A*e+19*B*d)+b^4*(-8*A*e^4+6*B*d*e^3))*(c*x^2+b*x)
^(1/2)/b^4/d^3/(-b*e+c*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 1.19, antiderivative size = 706, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 8, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.286$, Rules used = {822, 834, 843, 715, 112, 110, 117, 116}

$$\frac{2e\sqrt{bx+cx^2}\left(b^2c^2d^2e(9Ae+19Bd)-b^3cde^2(9Bd-7Ae)+b^4\left(6Bde^3-8Ae^4\right)-8bc^3d^3(4Ae+Bd)+16Ac^4d^4\right)}{3b^4d^3\sqrt{d+ex}\,(cd-be)^3}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*(A*b*(c*d - b*e) + c*(2*A*c*d - b*(B*d + A*e))*x))/(3*b^2*d*(c*d - b*e)
*Sqrt[d + e*x]*(b*x + c*x^2)^(3/2)) + (2*(b*(c*d - b*e)*(8*A*c^2*d^2 + b^2*
e*(3*B*d - 4*A*e) - b*c*d*(4*B*d + 3*A*e)) + c*(16*A*c^3*d^3 + 15*b^2*B*c*d
^2*e - b^3*e^2*(3*B*d - 4*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*x))/(3*b^4*d^2*
(c*d - b*e)^2*Sqrt[d + e*x]*Sqrt[b*x + c*x^2]) + (2*e*(16*A*c^4*d^4 - b^3*c
*d*e^2*(9*B*d - 7*A*e) - 8*b*c^3*d^3*(B*d + 4*A*e) + b^2*c^2*d^2*e*(19*B*d
+ 9*A*e) + b^4*(6*B*d*e^3 - 8*A*e^4))*Sqrt[b*x + c*x^2])/(3*b^4*d^3*(c*d -
b*e)^3*Sqrt[d + e*x]) - (2*Sqrt[c]*(16*A*c^4*d^4 - b^3*c*d*e^2*(9*B*d - 7*A
*e) + 2*b^4*e^3*(3*B*d - 4*A*e) - 8*b*c^3*d^3*(B*d + 4*A*e) + b^2*c^2*d^2*e
*(19*B*d + 9*A*e))*Sqrt[x]*Sqrt[1 + (c*x)/b]*Sqrt[d + e*x]*EllipticE[ArcSin
[(Sqrt[c]*Sqrt[x])/Sqrt[-b]], (b*e)/(c*d)])/(3*(-b)^(7/2)*d^3*(c*d - b*e)^3
*Sqrt[1 + (e*x)/d]*Sqrt[b*x + c*x^2]) + (2*Sqrt[c]*(16*A*c^3*d^3 + 15*b^2*B
*c*d^2*e - b^3*e^2*(3*B*d - 4*A*e) - 8*b*c^2*d^2*(B*d + 3*A*e))*Sqrt[x]*Sqr
t[1 + (c*x)/b]*Sqrt[1 + (e*x)/d]*EllipticF[ArcSin[(Sqrt[c]*Sqrt[x])/Sqrt[-b
]], (b*e)/(c*d)])/(3*(-b)^(7/2)*d^2*(c*d - b*e)^2*Sqrt[d + e*x]*Sqrt[b*x +
c*x^2])
```

Rule 110

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Simp[(2*Sqrt[e]*Rt[-(b/d), 2]*EllipticE[ArcSin[Sqrt[b*x]/(Sqrt[c]
*Rt[-(b/d), 2])], (c*f)/(d*e)])/b, x] /; FreeQ[{b, c, d, e, f}, x] && NeQ[d
*e - c*f, 0] && GtQ[c, 0] && GtQ[e, 0] &&  !LtQ[-(b/d), 0]
```

Rule 112

```
Int[Sqrt[(e_) + (f_.)*(x_)]/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]), x_S
ymbol] :> Dist[(Sqrt[e + f*x]*Sqrt[1 + (d*x)/c])/(Sqrt[c + d*x]*Sqrt[1 + (f
*x)/e]), Int[Sqrt[1 + (f*x)/e]/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]), x], x] /; Fre
eQ[{b, c, d, e, f}, x] && NeQ[d*e - c*f, 0] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 116

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Simp[(2*Rt[-(b/d), 2]*EllipticF[ArcSin[Sqrt[b*x]/(Sqrt[c]*Rt[-(
b/d), 2])], (c*f)/(d*e)])/(b*Sqrt[e]), x] /; FreeQ[{b, c, d, e, f}, x] && G
tQ[c, 0] && GtQ[e, 0] && (PosQ[-(b/d)] || NegQ[-(b/f)])
```

Rule 117

```
Int[1/(Sqrt[(b_.)*(x_)]*Sqrt[(c_) + (d_.)*(x_)]*Sqrt[(e_) + (f_.)*(x_)]), x
_Symbol] :> Dist[(Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e])/(Sqrt[c + d*x]*Sqrt[
e + f*x]), Int[1/(Sqrt[b*x]*Sqrt[1 + (d*x)/c]*Sqrt[1 + (f*x)/e]), x], x] /;
 FreeQ[{b, c, d, e, f}, x] &&  !(GtQ[c, 0] && GtQ[e, 0])
```

Rule 715

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :>
 Dist[(Sqrt[x]*Sqrt[b + c*x])/Sqrt[b*x + c*x^2], Int[(d + e*x)^m/(Sqrt[x]*S
qrt[b + c*x]), x], x] /; FreeQ[{b, c, d, e}, x] && NeQ[c*d - b*e, 0] && NeQ
[2*c*d - b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(bx+cx^2\right)^{5/2}}\,dx = -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}(8Ac^2d^2+b^2e(3Bd-4Ae)-bcd(4Bd+3A}{(d+ex)^{3/2}(bx+cx^2}}{3b^2d(cd-be}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

$$= -\frac{2(Ab(cd-be)+c(2Acd-b(Bd+Ae))x)}{3b^2d(cd-be)\sqrt{d+ex}\left(bx+cx^2\right)^{3/2}} + \frac{2(b(cd-be)(8Ac^2d^2+b^2e(3Bd-}{}$$

Mathematica [C] time = 5.47, size = 628, normalized size = 0.89

$$\frac{2(b(3b^4e^4x^2(b+cx)^2(Bd-Ae)+c^3d^3x^2(b+cx)(d+ex)\left(-bc(13Ae+5Bd)+8Ac^2d+10b^2Be\right)+bc^3d^3x^2(d+ex}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(b*(3*b^4*e^4*(B*d - A*e)*x^2*(b + c*x)^2 + b*c^3*(b*B - A*c)*d^3*(-(c*d
) + b*e)*x^2*(d + e*x) + c^3*d^3*(8*A*c^2*d + 10*b^2*B*e - b*c*(5*B*d + 13*
A*e))*x^2*(b + c*x)*(d + e*x) + A*b*d*(-(c*d) + b*e)^3*(b + c*x)^2*(d + e*x
) + (c*d - b*e)^3*(-3*b*B*d + 8*A*c*d + 5*A*b*e)*x*(b + c*x)^2*(d + e*x)) -
 Sqrt[b/c]*c*x*(b + c*x)*(Sqrt[b/c]*(16*A*c^4*d^4 + 2*b^4*e^3*(3*B*d - 4*A*
e) - 8*b*c^3*d^3*(B*d + 4*A*e) + b^3*c*d*e^2*(-9*B*d + 7*A*e) + b^2*c^2*d^2
*e*(19*B*d + 9*A*e))*(b + c*x)*(d + e*x) + I*b*e*(16*A*c^4*d^4 + 2*b^4*e^3*
(3*B*d - 4*A*e) - 8*b*c^3*d^3*(B*d + 4*A*e) + b^3*c*d*e^2*(-9*B*d + 7*A*e)
+ b^2*c^2*d^2*e*(19*B*d + 9*A*e))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/
2)*EllipticE[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)] - I*b*e*(c*d - b*e)
*(8*A*c^3*d^3 + 3*b^2*c*d*e*(2*B*d - A*e) - b*c^2*d^2*(4*B*d + 9*A*e) + b^3
*(-6*B*d*e^2 + 8*A*e^3))*Sqrt[1 + b/(c*x)]*Sqrt[1 + d/(e*x)]*x^(3/2)*Ellipt
icF[I*ArcSinh[Sqrt[b/c]/Sqrt[x]], (c*d)/(b*e)])))/(3*b^5*d^3*(c*d - b*e)^3*
(x*(b + c*x))^(3/2)*Sqrt[d + e*x])
```

fricas [**F**]   time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx}\,(Bx+A)\sqrt{ex+d}}{c^3e^2x^8+b^3d^2x^3+\left(2\,c^3de+3\,bc^2e^2\right)x^7+\left(c^3d^2+6\,bc^2de+3\,b^2ce^2\right)x^6+\left(3\,bc^2d^2+6\,b^2cde+b^3e^2\right)x^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x)*(B*x + A)*sqrt(e*x + d)/(c^3*e^2*x^8 + b^3*d^2*x
^3 + (2*c^3*d*e + 3*b*c^2*e^2)*x^7 + (c^3*d^2 + 6*b*c^2*d*e + 3*b^2*c*e^2)*
x^6 + (3*b*c^2*d^2 + 6*b^2*c*d*e + b^3*e^2)*x^5 + (3*b^2*c*d^2 + 2*b^3*d*e)
*x^4), x)
```

giac [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 3.62Unable to transpose Error: Bad Argum
ent Value
```

maple [**B**]   time = 0.15, size = 4001, normalized size = 5.67

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x)
```

```
[Out] 2/3*(-7*A*x^4*b^3*c^4*d*e^4+8*A*x^4*b^4*c^3*e^5-16*A*x^3*c^7*d^5+8*B*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^5-8*B*((c*x+b)/b)^(1/2)*(-(
e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(
b*e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^5+8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d
)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(
1/2))*x^2*b^6*c*e^5+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^
6*d^5-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b*c^6*d^5-8*B*((c*
x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x
+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^5+8*B*((c*x+b)/b)^(1/2)
*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),
(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^5+16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(
b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)
*b*e)^(1/2))*x*b^2*c^5*d^5-16*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
*b^2*c^5*d^5-6*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^
(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^7*d*e^4-6*A*
x*b^2*c^5*d^5+16*A*x^3*b^5*c^2*e^5+8*A*x^2*b^6*c*e^5-16*A*x^4*c^7*d^4*e+8*B
*x^3*b*c^6*d^5-24*A*x^2*b*c^6*d^5+12*B*x^2*b^2*c^5*d^5+3*B*x*b^3*c^4*d^5-7*
B*x^3*b^2*c^5*d^4*e-18*A*x^2*b^4*c^3*d^2*e^3-2*A*x^2*b^3*c^4*d^3*e^2+43*A*x
^2*b^2*c^5*d^4*e+3*B*x^2*b^5*c^2*d^2*e^3+9*B*x^2*b^4*c^3*d^3*e^2-26*B*x^2*b
^3*c^4*d^4*e+A*x^2*b^5*c^2*d*e^4-9*B*x*b^4*c^3*d^4*e+14*A*x*b^3*c^4*d^4*e-6
*A*x*b^4*c^3*d^3*e^2-6*B*x^2*b^6*c*d*e^4-3*B*x*b^6*c*d^2*e^3+9*B*x*b^5*c^2*
d^3*e^2+4*A*x*b^6*c*d*e^4-6*A*x*b^5*c^2*d^2*e^3-9*A*x^4*b^2*c^5*d^2*e^3+32*
A*x^4*b*c^6*d^3*e^2+A*b^3*c^4*d^5+8*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)
*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1
/2))*x*b^7*e^5-4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^3*d^
2*e^3-24*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*
EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^4*d^3*e^2+40
*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Elliptic
F(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^2*c^5*d^4*e-6*B*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^6*c*d*e^4+15*B*((c*x+b)/b)^(1/2)*(-
(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/
(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c^2*d^2*e^3+9*B*x^4*b^3*c^4*d^2*e^3-19*B*x^4*
b^2*c^5*d^3*e^2+8*B*x^4*b*c^6*d^4*e-10*A*x^3*b^4*c^3*d*e^4-22*A*x^3*b^3*c^4
*d^2*e^3+40*A*x^3*b^2*c^5*d^3*e^2+8*A*x^3*b*c^6*d^4*e-12*B*x^3*b^5*c^2*d*e^
4+15*B*x^3*b^4*c^3*d^2*e^3-20*B*x^3*b^3*c^4*d^3*e^2-6*B*x^4*b^4*c^3*d*e^4-A
*b^6*c*d^2*e^3+3*A*b^5*c^2*d^3*e^2-3*A*b^4*c^3*d^4*e+4*A*((c*x+b)/b)^(1/2)*
(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(
1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c^2*d*e^4+18*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x*b^5*c^2*d^3*e^2-28*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*
c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/
2))*x^2*b^4*c^3*d^3*e^2+27*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)
*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*
b^3*c^4*d^4*e-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)
^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c^2*d^2
*e^3+18*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*E
llipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^4*c^3*d^3*e^2-23*
B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF
(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^3*c^4*d^4*e-15*A*((c*x+b)
/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/
b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*c*d*e^4-2*A*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x*b^5*c^2*d^2*e^3+41*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-
c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e
)^(1/2))*x*b^4*c^3*d^3*e^2-48*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1
/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x
*b^3*c^4*d^4*e+4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x
)^(1/2)*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*c*d*e^4-
4*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*Ellipti
cF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^5*c^2*d^2*e^3-24*A*((c*x+
b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b
)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^3*d^3*e^2+40*A*((c*x+b)/b)^(1/2
)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF(((c*x+b)/b)^(1/2)
,(1/(b*e-c*d)*b*e)^(1/2))*x*b^3*c^4*d^4*e+15*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/
(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d
)*b*e)^(1/2))*x*b^6*c*d^2*e^3-28*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)
^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2)
)*x*b^5*c^2*d^3*e^2+27*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1
/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^
3*d^4*e-3*B*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)
*EllipticF(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^6*c*d^2*e^3-23*B*
((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticF((
(c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2))*x*b^4*c^3*d^4*e-15*A*((c*x+b)/b)^
(1/2)*(-(e*x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(
1/2),(1/(b*e-c*d)*b*e)^(1/2))*x^2*b^5*c^2*d*e^4-2*A*((c*x+b)/b)^(1/2)*(-(e*
x+d)/(b*e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*
e-c*d)*b*e)^(1/2))*x^2*b^4*c^3*d^2*e^3+41*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*
e-c*d)*c)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b
*e)^(1/2))*x^2*b^3*c^4*d^3*e^2-48*A*((c*x+b)/b)^(1/2)*(-(e*x+d)/(b*e-c*d)*c
)^(1/2)*(-1/b*c*x)^(1/2)*EllipticE(((c*x+b)/b)^(1/2),(1/(b*e-c*d)*b*e)^(1/2
))*x^2*b^2*c^5*d^4*e)/x^2*((c*x+b)*x)^(1/2)/d^3/b^4/c/(c*x+b)^2/(b*e-c*d)^3
/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + bx\right)^{\frac{5}{2}}(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x)^(5/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\left(c\,x^2 + b\,x\right)^{5/2}\,\left(d + e\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((b*x + c*x^2)^(5/2)*(d + e*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x)**(5/2),x)
```

```
[Out] Timed out
```

3.1284 $\int (A+Bx)(d+ex)^5\left(a+cx^2\right)\,dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^7\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{(d+ex)^6\left(ae^2+cd^2\right)(Bd-Ae)}{6e^4}-\frac{c(d+ex)^8(3Bd-Ae)}{8e^4}+\frac{Bc(d+ex)^9}{9e^4}$$

```
[Out] -1/6*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^6/e^4+1/7*(-2*A*c*d*e+B*a*e^2+3*B*c*d
^2)*(e*x+d)^7/e^4-1/8*c*(-A*e+3*B*d)*(e*x+d)^8/e^4+1/9*B*c*(e*x+d)^9/e^4
```

Rubi [**A**] time = 0.18, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^7\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{(d+ex)^6\left(ae^2+cd^2\right)(Bd-Ae)}{6e^4}-\frac{c(d+ex)^8(3Bd-Ae)}{8e^4}+\frac{Bc(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^6)/(6*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^7)/(7*e^4) - (c*(3*B*d - A*e)*(d + e*x)^8)/(8*e^4) +
 (B*c*(d + e*x)^9)/(9*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a+cx^2\right)\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^5}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^6}{e^3}+\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^6}{6e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^7}{7e^4}-\end{aligned}$$

Mathematica [**B**] time = 0.06, size = 233, normalized size = 2.16

$$\frac{1}{7}e^3x^7\left(aBe^2+5Acde+10Bcd^2\right)+\frac{1}{3}d^3x^3\left(10aAe^2+5aBde+Acd^2\right)+\frac{1}{6}e^2x^6\left(aAe^3+5aBde^2+10Acd^2e+10Bcd^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2),x]
```

```
[Out] a*A*d^5*x + (a*d^4*(B*d + 5*A*e)*x^2)/2 + (d^3*(A*c*d^2 + 5*a*B*d*e + 10*a*
A*e^2)*x^3)/3 + (d^2*(B*c*d^3 + 5*A*c*d^2*e + 10*a*B*d*e^2 + 10*a*A*e^3)*x^
4)/4 + d*e*(B*c*d^3 + 2*A*c*d^2*e + 2*a*B*d*e^2 + a*A*e^3)*x^5 + (e^2*(10*B
*c*d^3 + 10*A*c*d^2*e + 5*a*B*d*e^2 + a*A*e^3)*x^6)/6 + (e^3*(10*B*c*d^2 +
5*A*c*d*e + a*B*e^2)*x^7)/7 + (c*e^4*(5*B*d + A*e)*x^8)/8 + (B*c*e^5*x^9)/9
```

fricas [**B**] time = 0.50, size = 268, normalized size = 2.48

$$\frac{1}{9}x^9e^5cB+\frac{5}{8}x^8e^4dcB+\frac{1}{8}x^8e^5cA+\frac{10}{7}x^7e^3d^2cB+\frac{1}{7}x^7e^5aB+\frac{5}{7}x^7e^4dcA+\frac{5}{3}x^6e^2d^3cB+\frac{5}{6}x^6e^4daB+\frac{5}{3}x^6e^3d^2cA+\frac{1}{6}x^6e^5a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*c*B + 5/8*x^8*e^4*d*c*B + 1/8*x^8*e^5*c*A + 10/7*x^7*e^3*d^2*c*
B + 1/7*x^7*e^5*a*B + 5/7*x^7*e^4*d*c*A + 5/3*x^6*e^2*d^3*c*B + 5/6*x^6*e^4
*d*a*B + 5/3*x^6*e^3*d^2*c*A + 1/6*x^6*e^5*a*A + x^5*e*d^4*c*B + 2*x^5*e^3*
d^2*a*B + 2*x^5*e^2*d^3*c*A + x^5*e^4*d*a*A + 1/4*x^4*d^5*c*B + 5/2*x^4*e^2
*d^3*a*B + 5/4*x^4*e*d^4*c*A + 5/2*x^4*e^3*d^2*a*A + 5/3*x^3*e*d^4*a*B + 1/
3*x^3*d^5*c*A + 10/3*x^3*e^2*d^3*a*A + 1/2*x^2*d^5*a*B + 5/2*x^2*e*d^4*a*A
+ x*d^5*a*A
```

giac [B] time = 0.16, size = 256, normalized size = 2.37

$$\frac{1}{9}\,Bcx^9e^5+\frac{5}{8}\,Bcdx^8e^4+\frac{10}{7}\,Bcd^2x^7e^3+\frac{5}{3}\,Bcd^3x^6e^2+Bcd^4x^5e+\frac{1}{4}\,Bcd^5x^4+\frac{1}{8}\,Acx^8e^5+\frac{5}{7}\,Acdx^7e^4+\frac{5}{3}\,Acd^2x^6e^3+2\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/9*B*c*x^9*e^5 + 5/8*B*c*d*x^8*e^4 + 10/7*B*c*d^2*x^7*e^3 + 5/3*B*c*d^3*x^
6*e^2 + B*c*d^4*x^5*e + 1/4*B*c*d^5*x^4 + 1/8*A*c*x^8*e^5 + 5/7*A*c*d*x^7*e
^4 + 5/3*A*c*d^2*x^6*e^3 + 2*A*c*d^3*x^5*e^2 + 5/4*A*c*d^4*x^4*e + 1/3*A*c*
d^5*x^3 + 1/7*B*a*x^7*e^5 + 5/6*B*a*d*x^6*e^4 + 2*B*a*d^2*x^5*e^3 + 5/2*B*a
*d^3*x^4*e^2 + 5/3*B*a*d^4*x^3*e + 1/2*B*a*d^5*x^2 + 1/6*A*a*x^6*e^5 + A*a*
d*x^5*e^4 + 5/2*A*a*d^2*x^4*e^3 + 10/3*A*a*d^3*x^3*e^2 + 5/2*A*a*d^4*x^2*e
+ A*a*d^5*x
```

maple [B] time = 0.05, size = 247, normalized size = 2.29

$$\frac{Bc\,e^5x^9}{9}+\frac{\left(A\,e^5+5Bd\,e^4\right)c\,x^8}{8}+Aa\,d^5x+\frac{\left(Ba\,e^5+\left(5Ad\,e^4+10B\,d^2e^3\right)c\right)x^7}{7}+\frac{\left(\left(A\,e^5+5Bd\,e^4\right)a+\left(10A\,d^2e^3+\right.\right.}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a),x)
```

```
[Out] 1/9*B*e^5*c*x^9+1/8*(A*e^5+5*B*d*e^4)*c*x^8+1/7*((5*A*d*e^4+10*B*d^2*e^3)*c
+B*e^5*a)*x^7+1/6*((10*A*d^2*e^3+10*B*d^3*e^2)*c+(A*e^5+5*B*d*e^4)*a)*x^6+1
/5*((10*A*d^3*e^2+5*B*d^4*e)*c+(5*A*d*e^4+10*B*d^2*e^3)*a)*x^5+1/4*((5*A*d^
4*e+B*d^5)*c+(10*A*d^2*e^3+10*B*d^3*e^2)*a)*x^4+1/3*(A*d^5*c+(10*A*d^3*e^2+
5*B*d^4*e)*a)*x^3+1/2*(5*A*d^4*e+B*d^5)*a*x^2+A*d^5*a*x
```

maxima [B] time = 0.55, size = 237, normalized size = 2.19

$$\frac{1}{9}\,Bce^5x^9+\frac{1}{8}\,\left(5\,Bcde^4+Ace^5\right)x^8+Aad^5x+\frac{1}{7}\,\left(10\,Bcd^2e^3+5\,Acde^4+Bae^5\right)x^7+\frac{1}{6}\,\left(10\,Bcd^3e^2+10\,Acd^2e^3+5\,Ba\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/9*B*c*e^5*x^9 + 1/8*(5*B*c*d*e^4 + A*c*e^5)*x^8 + A*a*d^5*x + 1/7*(10*B*c
*d^2*e^3 + 5*A*c*d*e^4 + B*a*e^5)*x^7 + 1/6*(10*B*c*d^3*e^2 + 10*A*c*d^2*e^
3 + 5*B*a*d*e^4 + A*a*e^5)*x^6 + (B*c*d^4*e + 2*A*c*d^3*e^2 + 2*B*a*d^2*e^3
 + A*a*d*e^4)*x^5 + 1/4*(B*c*d^5 + 5*A*c*d^4*e + 10*B*a*d^3*e^2 + 10*A*a*d^
2*e^3)*x^4 + 1/3*(A*c*d^5 + 5*B*a*d^4*e + 10*A*a*d^3*e^2)*x^3 + 1/2*(B*a*d^
5 + 5*A*a*d^4*e)*x^2
```

mupad [B] time = 0.12, size = 231, normalized size = 2.14

$$x^5\,\left(B\,c\,d^4\,e+2\,A\,c\,d^3\,e^2+2\,B\,a\,d^2\,e^3+A\,a\,d\,e^4\right)+x^3\,\left(\frac{A\,c\,d^5}{3}+\frac{5\,B\,a\,d^4\,e}{3}+\frac{10\,A\,a\,d^3\,e^2}{3}\right)+x^7\,\left(\frac{10\,B\,c\,d^2\,e^3}{7}+5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^5*(A*a*d*e^4 + B*c*d^4*e + 2*B*a*d^2*e^3 + 2*A*c*d^3*e^2) + x^3*((A*c*d^5
)/3 + (5*B*a*d^4*e)/3 + (10*A*a*d^3*e^2)/3) + x^7*((B*a*e^5)/7 + (5*A*c*d*e
^4)/7 + (10*B*c*d^2*e^3)/7) + x^4*((B*c*d^5)/4 + (5*A*c*d^4*e)/4 + (5*A*a*d
^2*e^3)/2 + (5*B*a*d^3*e^2)/2) + x^6*((A*a*e^5)/6 + (5*B*a*d*e^4)/6 + (5*A*
c*d^2*e^3)/3 + (5*B*c*d^3*e^2)/3) + A*a*d^5*x + (B*c*e^5*x^9)/9 + (a*d^4*x^
2*(5*A*e + B*d))/2 + (c*e^4*x^8*(A*e + 5*B*d))/8
```

sympy [B] time = 0.11, size = 287, normalized size = 2.66

$$Aad^5x+\frac{Bce^5x^9}{9}+x^8\left(\frac{Ace^5}{8}+\frac{5Bcde^4}{8}\right)+x^7\left(\frac{5Acde^4}{7}+\frac{Bae^5}{7}+\frac{10Bcd^2e^3}{7}\right)+x^6\left(\frac{Aae^5}{6}+\frac{5Acd^2e^3}{3}+\frac{5Bade^4}{6}+\frac{5Bc}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a),x)
```

```
[Out] A*a*d**5*x + B*c*e**5*x**9/9 + x**8*(A*c*e**5/8 + 5*B*c*d*e**4/8) + x**7*(5
*A*c*d*e**4/7 + B*a*e**5/7 + 10*B*c*d**2*e**3/7) + x**6*(A*a*e**5/6 + 5*A*c
*d**2*e**3/3 + 5*B*a*d*e**4/6 + 5*B*c*d**3*e**2/3) + x**5*(A*a*d*e**4 + 2*A
*c*d**3*e**2 + 2*B*a*d**2*e**3 + B*c*d**4*e) + x**4*(5*A*a*d**2*e**3/2 + 5*
A*c*d**4*e/4 + 5*B*a*d**3*e**2/2 + B*c*d**5/4) + x**3*(10*A*a*d**3*e**2/3 +
 A*c*d**5/3 + 5*B*a*d**4*e/3) + x**2*(5*A*a*d**4*e/2 + B*a*d**5/2)
```

3.1285 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right) \, dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^6 \left(aBe^2-2Acde+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5 \left(ae^2+cd^2\right) (Bd-Ae)}{5e^4}-\frac{c(d+ex)^7(3Bd-Ae)}{7e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^5/e^4+1/6*(-2*A*c*d*e+B*a*e^2+3*B*c*d
^2)*(e*x+d)^6/e^4-1/7*c*(-A*e+3*B*d)*(e*x+d)^7/e^4+1/8*B*c*(e*x+d)^8/e^4
```

Rubi [A] time = 0.14, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^6 \left(aBe^2-2Acde+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5 \left(ae^2+cd^2\right) (Bd-Ae)}{5e^4}-\frac{c(d+ex)^7(3Bd-Ae)}{7e^4}+\frac{Bc(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^6)/(6*e^4) - (c*(3*B*d - A*e)*(d + e*x)^7)/(7*e^4) +
 (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4 \left(a+cx^2\right) \, dx &= \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right) (d+ex)^4}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right) (d+ex)^5}{e^3}\right.\\ &= -\frac{(Bd-Ae) \left(cd^2+ae^2\right) (d+ex)^5}{5e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right) (d+ex)^6}{6e^4}-\end{aligned}$$

Mathematica [A] time = 0.05, size = 194, normalized size = 1.80

$$\frac{1}{6}e^2x^6 \left(aBe^2+4Acde+6Bcd^2\right)+\frac{1}{3}d^2x^3 \left(6aAe^2+4aBde+Acd^2\right)+\frac{1}{5}ex^5 \left(aAe^3+4aBde^2+6Acd^2e+4Bcd^3\right)+$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2),x]
```

```
[Out] a*A*d^4*x + (a*d^3*(B*d + 4*A*e)*x^2)/2 + (d^2*(A*c*d^2 + 4*a*B*d*e + 6*a*A
*e^2)*x^3)/3 + (d*(B*c*d^3 + 4*A*c*d^2*e + 6*a*B*d*e^2 + 4*a*A*e^3)*x^4)/4
+ (e*(4*B*c*d^3 + 6*A*c*d^2*e + 4*a*B*d*e^2 + a*A*e^3)*x^5)/5 + (e^2*(6*B*c
*d^2 + 4*A*c*d*e + a*B*e^2)*x^6)/6 + (c*e^3*(4*B*d + A*e)*x^7)/7 + (B*c*e^4
*x^8)/8
```

fricas [B] time = 0.49, size = 215, normalized size = 1.99

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{1}{6}x^6e^4aB+\frac{2}{3}x^6e^3dcA+\frac{4}{5}x^5ed^3cB+\frac{4}{5}x^5e^3daB+\frac{6}{5}x^5e^2d^2cA+\frac{1}{5}x^5e^4aA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*c*A + x^6*e^2*d^2*c*B + 1
/6*x^6*e^4*a*B + 2/3*x^6*e^3*d*c*A + 4/5*x^5*e*d^3*c*B + 4/5*x^5*e^3*d*a*B
+ 6/5*x^5*e^2*d^2*c*A + 1/5*x^5*e^4*a*A + 1/4*x^4*d^4*c*B + 3/2*x^4*e^2*d^2
*a*B + x^4*e*d^3*c*A + x^4*e^3*d*a*A + 4/3*x^3*e*d^3*a*B + 1/3*x^3*d^4*c*A
+ 2*x^3*e^2*d^2*a*A + 1/2*x^2*d^4*a*B + 2*x^2*e*d^3*a*A + x*d^4*a*A
```

giac [B] time = 0.15, size = 207, normalized size = 1.92

$$\frac{1}{8}Bcx^8e^4+\frac{4}{7}Bcdx^7e^3+Bcd^2x^6e^2+\frac{4}{5}Bcd^3x^5e+\frac{1}{4}Bcd^4x^4+\frac{1}{7}Acx^7e^4+\frac{2}{3}Acdx^6e^3+\frac{6}{5}Acd^2x^5e^2+Acd^3x^4e+\frac{1}{3}Acd^4x^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*A*c*x^7*e^4 + 2/3*A*c*d*x^6*e^3 + 6/5*A*c*d^2*x^5*e^
2 + A*c*d^3*x^4*e + 1/3*A*c*d^4*x^3 + 1/6*B*a*x^6*e^4 + 4/5*B*a*d*x^5*e^3 +
 3/2*B*a*d^2*x^4*e^2 + 4/3*B*a*d^3*x^3*e + 1/2*B*a*d^4*x^2 + 1/5*A*a*x^5*e^
4 + A*a*d*x^4*e^3 + 2*A*a*d^2*x^3*e^2 + 2*A*a*d^3*x^2*e + A*a*d^4*x
```

maple [A] time = 0.04, size = 199, normalized size = 1.84

$$\frac{Bc\,e^4x^8}{8}+\frac{\left(A\,e^4+4Bd\,e^3\right)c\,x^7}{7}+Aa\,d^4x+\frac{\left(Ba\,e^4+\left(4Ad\,e^3+6B\,d^2e^2\right)c\right)x^6}{6}+\frac{\left(\left(A\,e^4+4Bd\,e^3\right)a+\left(6A\,d^2e^2+4B\,d^3\right.\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*(A*e^4+4*B*d*e^3)*c*x^7+1/6*((4*A*d*e^3+6*B*d^2*e^2)*c+
B*e^4*a)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(A*e^4+4*B*d*e^3)*a)*x^5+1/4*((
4*A*d^3*e+B*d^4)*c+(4*A*d*e^3+6*B*d^2*e^2)*a)*x^4+1/3*(A*d^4*c+(6*A*d^2*e^2
+4*B*d^3*e)*a)*x^3+1/2*(4*A*d^3*e+B*d^4)*a*x^2+A*d^4*a*x
```

maxima [A] time = 0.47, size = 194, normalized size = 1.80

$$\frac{1}{8}Bce^4x^8+\frac{1}{7}\left(4\,Bcde^3+Ace^4\right)x^7+Aad^4x+\frac{1}{6}\left(6\,Bcd^2e^2+4\,Acde^3+Bae^4\right)x^6+\frac{1}{5}\left(4\,Bcd^3e+6\,Acd^2e^2+4\,Bade^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/7*(4*B*c*d*e^3 + A*c*e^4)*x^7 + A*a*d^4*x + 1/6*(6*B*c*
d^2*e^2 + 4*A*c*d*e^3 + B*a*e^4)*x^6 + 1/5*(4*B*c*d^3*e + 6*A*c*d^2*e^2 + 4
*B*a*d*e^3 + A*a*e^4)*x^5 + 1/4*(B*c*d^4 + 4*A*c*d^3*e + 6*B*a*d^2*e^2 + 4*
A*a*d*e^3)*x^4 + 1/3*(A*c*d^4 + 4*B*a*d^3*e + 6*A*a*d^2*e^2)*x^3 + 1/2*(B*a
*d^4 + 4*A*a*d^3*e)*x^2
```

mupad [B] time = 0.09, size = 185, normalized size = 1.71

$$x^3\,\left(\frac{A\,c\,d^4}{3}+\frac{4\,B\,a\,d^3\,e}{3}+2\,A\,a\,d^2\,e^2\right)+x^6\,\left(B\,c\,d^2\,e^2+\frac{2\,A\,c\,d\,e^3}{3}+\frac{B\,a\,e^4}{6}\right)+x^4\,\left(\frac{B\,c\,d^4}{4}+A\,c\,d^3\,e+\frac{3\,B\,a\,d^2\,e^2}{2}+A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^3*((A*c*d^4)/3 + (4*B*a*d^3*e)/3 + 2*A*a*d^2*e^2) + x^6*((B*a*e^4)/6 + (2
*A*c*d*e^3)/3 + B*c*d^2*e^2) + x^4*((B*c*d^4)/4 + A*a*d*e^3 + A*c*d^3*e + (
3*B*a*d^2*e^2)/2) + x^5*((A*a*e^4)/5 + (4*B*a*d*e^3)/5 + (4*B*c*d^3*e)/5 +
(6*A*c*d^2*e^2)/5) + A*a*d^4*x + (B*c*e^4*x^8)/8 + (a*d^3*x^2*(4*A*e + B*d)
)/2 + (c*e^3*x^7*(A*e + 4*B*d))/7
```

sympy [B] time = 0.10, size = 226, normalized size = 2.09

$$Aad^4x+\frac{Bce^4x^8}{8}+x^7\left(\frac{Ace^4}{7}+\frac{4Bcde^3}{7}\right)+x^6\left(\frac{2Acde^3}{3}+\frac{Bae^4}{6}+Bcd^2e^2\right)+x^5\Bigg(\frac{Aae^4}{5}+\frac{6Acd^2e^2}{5}+\frac{4Bade^3}{5}+\frac{4Bc}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a),x)
```

```
[Out] A*a*d**4*x + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + 4*B*c*d*e**3/7) + x**6*(2
*A*c*d*e**3/3 + B*a*e**4/6 + B*c*d**2*e**2) + x**5*(A*a*e**4/5 + 6*A*c*d**2
*e**2/5 + 4*B*a*d*e**3/5 + 4*B*c*d**3*e/5) + x**4*(A*a*d*e**3 + A*c*d**3*e
+ 3*B*a*d**2*e**2/2 + B*c*d**4/4) + x**3*(2*A*a*d**2*e**2 + A*c*d**4/3 + 4*
B*a*d**3*e/3) + x**2*(2*A*a*d**3*e + B*a*d**4/2)
```

3.1286 $\int (A+Bx)(d+ex)^3\left(a+cx^2\right)\,dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^5\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4\left(ae^2+cd^2\right)(Bd-Ae)}{4e^4}-\frac{c(d+ex)^6(3Bd-Ae)}{6e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^4/e^4+1/5*(-2*A*c*d*e+B*a*e^2+3*B*c*d
^2)*(e*x+d)^5/e^4-1/6*c*(-A*e+3*B*d)*(e*x+d)^6/e^4+1/7*B*c*(e*x+d)^7/e^4
```

Rubi [A] time = 0.11, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^5\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4\left(ae^2+cd^2\right)(Bd-Ae)}{4e^4}-\frac{c(d+ex)^6(3Bd-Ae)}{6e^4}+\frac{Bc(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^5)/(5*e^4) - (c*(3*B*d - A*e)*(d + e*x)^6)/(6*e^4) +
 (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a+cx^2\right)\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^4}{e^3}+\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^5}{5e^4}-\frac{c(3}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 150, normalized size = 1.39

$$\frac{1}{5}ex^5\left(aBe^2+3Acde+3Bcd^2\right)+\frac{1}{3}dx^3\left(3aAe^2+3aBde+Acd^2\right)+\frac{1}{4}x^4\left(aAe^3+3aBde^2+3Acd^2e+Bcd^3\right)+\frac{1}{2}ad^2x^2($$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2),x]
```

```
[Out] a*A*d^3*x + (a*d^2*(B*d + 3*A*e)*x^2)/2 + (d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e
^2)*x^3)/3 + ((B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^4)/4 + (e*(
3*B*c*d^2 + 3*A*c*d*e + a*B*e^2)*x^5)/5 + (c*e^2*(3*B*d + A*e)*x^6)/6 + (B*
c*e^3*x^7)/7
```

fricas [A] time = 0.58, size = 164, normalized size = 1.52

$$\frac{1}{7}x^7e^3cB+\frac{1}{2}x^6e^2dcB+\frac{1}{6}x^6e^3cA+\frac{3}{5}x^5ed^2cB+\frac{1}{5}x^5e^3aB+\frac{3}{5}x^5e^2dcA+\frac{1}{4}x^4d^3cB+\frac{3}{4}x^4e^2daB+\frac{3}{4}x^4ed^2cA+\frac{1}{4}x^4e^3aA+x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*c*A + 3/5*x^5*e*d^2*c*B +
 1/5*x^5*e^3*a*B + 3/5*x^5*e^2*d*c*A + 1/4*x^4*d^3*c*B + 3/4*x^4*e^2*d*a*B
+ 3/4*x^4*e*d^2*c*A + 1/4*x^4*e^3*a*A + x^3*e*d^2*a*B + 1/3*x^3*d^3*c*A + x
^3*e^2*d*a*A + 1/2*x^2*d^3*a*B + 3/2*x^2*e*d^2*a*A + x*d^3*a*A
```

giac [A] time = 0.15, size = 160, normalized size = 1.48

$$\frac{1}{7}\,Bcx^7e^3+\frac{1}{2}\,Bcdx^6e^2+\frac{3}{5}\,Bcd^2x^5e+\frac{1}{4}\,Bcd^3x^4+\frac{1}{6}\,Acx^6e^3+\frac{3}{5}\,Acdx^5e^2+\frac{3}{4}\,Acd^2x^4e+\frac{1}{3}\,Acd^3x^3+\frac{1}{5}\,Bax^5e^3+\frac{3}{4}\,Badx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*A*c*x^6*e^3 + 3/5*A*c*d*x^5*e^2 + 3/4*A*c*d^2*x^4*e + 1/3*A*c*d^3*x^3
+ 1/5*B*a*x^5*e^3 + 3/4*B*a*d*x^4*e^2 + B*a*d^2*x^3*e + 1/2*B*a*d^3*x^2 + 1
/4*A*a*x^4*e^3 + A*a*d*x^3*e^2 + 3/2*A*a*d^2*x^2*e + A*a*d^3*x
```

maple [A] time = 0.04, size = 151, normalized size = 1.40

$$\frac{Bc\,e^3x^7}{7}+\frac{\left(A\,e^3+3Bd\,e^2\right)c\,x^6}{6}+Aa\,d^3x+\frac{\left(Ba\,e^3+\left(3Ad\,e^2+3B\,d^2e\right)c\right)x^5}{5}+\frac{\big(\left(A\,e^3+3Bd\,e^2\right)a+\big(3A\,d^2e+B\,d^3}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*(A*e^3+3*B*d*e^2)*c*x^6+1/5*((3*A*d*e^2+3*B*d^2*e)*c+B*
e^3*a)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(A*e^3+3*B*d*e^2)*a)*x^4+1/3*(A*d^3*c+(
3*A*d*e^2+3*B*d^2*e)*a)*x^3+1/2*(3*A*d^2*e+B*d^3)*a*x^2+A*d^3*a*x
```

maxima [A] time = 0.64, size = 148, normalized size = 1.37

$$\frac{1}{7}\,Bce^3x^7+\frac{1}{6}\,\left(3\,Bcde^2+Ace^3\right)x^6+Aad^3x+\frac{1}{5}\,\left(3\,Bcd^2e+3\,Acde^2+Bae^3\right)x^5+\frac{1}{4}\,\big(Bcd^3+3\,Acd^2e+3\,Bade^2+Ad$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/6*(3*B*c*d*e^2 + A*c*e^3)*x^6 + A*a*d^3*x + 1/5*(3*B*c*
d^2*e + 3*A*c*d*e^2 + B*a*e^3)*x^5 + 1/4*(B*c*d^3 + 3*A*c*d^2*e + 3*B*a*d*e
^2 + A*a*e^3)*x^4 + 1/3*(A*c*d^3 + 3*B*a*d^2*e + 3*A*a*d*e^2)*x^3 + 1/2*(B*
a*d^3 + 3*A*a*d^2*e)*x^2
```

mupad [B] time = 0.06, size = 141, normalized size = 1.31

$$x^4\,\left(\frac{B\,c\,d^3}{4}+\frac{3\,A\,c\,d^2\,e}{4}+\frac{3\,B\,a\,d\,e^2}{4}+\frac{A\,a\,e^3}{4}\right)+x^3\,\left(\frac{A\,c\,d^3}{3}+B\,a\,d^2\,e+A\,a\,d\,e^2\right)+x^5\,\big(\frac{3\,B\,c\,d^2\,e}{5}+\frac{3\,A\,c\,d\,e^2}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^4*((A*a*e^3)/4 + (B*c*d^3)/4 + (3*B*a*d*e^2)/4 + (3*A*c*d^2*e)/4) + x^3*(
(A*c*d^3)/3 + A*a*d*e^2 + B*a*d^2*e) + x^5*((B*a*e^3)/5 + (3*A*c*d*e^2)/5 +
 (3*B*c*d^2*e)/5) + A*a*d^3*x + (B*c*e^3*x^7)/7 + (a*d^2*x^2*(3*A*e + B*d))
/2 + (c*e^2*x^6*(A*e + 3*B*d))/6
```

sympy [A] time = 0.09, size = 173, normalized size = 1.60

$$Aad^3x+\frac{Bce^3x^7}{7}+x^6\left(\frac{Ace^3}{6}+\frac{Bcde^2}{2}\right)+x^5\left(\frac{3Acde^2}{5}+\frac{Bae^3}{5}+\frac{3Bcd^2e}{5}\right)+x^4\left(\frac{Aae^3}{4}+\frac{3Acd^2e}{4}+\frac{3Bade^2}{4}+\frac{Bcd^3}{4}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a),x)
```

```
[Out] A*a*d**3*x + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*c*d*e**2/2) + x**5*(3*A
*c*d*e**2/5 + B*a*e**3/5 + 3*B*c*d**2*e/5) + x**4*(A*a*e**3/4 + 3*A*c*d**2*
e/4 + 3*B*a*d*e**2/4 + B*c*d**3/4) + x**3*(A*a*d*e**2 + A*c*d**3/3 + B*a*d*
*2*e) + x**2*(3*A*a*d**2*e/2 + B*a*d**3/2)
```

3.1287 $\int (A+Bx)(d+ex)^2\left(a+cx^2\right)dx$

Optimal. Leaf size=108

$$\frac{(d+ex)^4\left(aBe^2-2Acde+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{c(d+ex)^5(3Bd-Ae)}{5e^4}+\frac{Bc(d+ex)^6}{6e^4}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^3/e^4+1/4*(-2*A*c*d*e+B*a*e^2+3*B*c*d
^2)*(e*x+d)^4/e^4-1/5*c*(-A*e+3*B*d)*(e*x+d)^5/e^4+1/6*B*c*(e*x+d)^6/e^4
```

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{(d+ex)^4\left(aBe^2-2Acde+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{c(d+ex)^5(3Bd-Ae)}{5e^4}+\frac{Bc(d+ex)^6}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^3)/(3*e^4) + ((3*B*c*d^2 - 2*A*c*d*
e + a*B*e^2)*(d + e*x)^4)/(4*e^4) - (c*(3*B*d - A*e)*(d + e*x)^5)/(5*e^4) +
 (B*c*(d + e*x)^6)/(6*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a+cx^2\right)dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)}{e^3}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^4}{4e^4}-$$

Mathematica [A] time = 0.03, size = 106, normalized size = 0.98

$$\frac{1}{4}x^4\left(aBe^2+2Acde+Bcd^2\right)+\frac{1}{3}x^3\left(aAe^2+2aBde+Acd^2\right)+\frac{1}{2}adx^2(2Ae+Bd)+aAd^2x+\frac{1}{5}cex^5(Ae+2Bd)+\frac{1}{6}Bce^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2),x]
```

```
[Out] a*A*d^2*x + (a*d*(B*d + 2*A*e)*x^2)/2 + ((A*c*d^2 + 2*a*B*d*e + a*A*e^2)*x^
3)/3 + ((B*c*d^2 + 2*A*c*d*e + a*B*e^2)*x^4)/4 + (c*e*(2*B*d + A*e)*x^5)/5
+ (B*c*e^2*x^6)/6
```

fricas [A] time = 0.43, size = 113, normalized size = 1.05

$$\frac{1}{6}x^6e^2cB+\frac{2}{5}x^5edcB+\frac{1}{5}x^5e^2cA+\frac{1}{4}x^4d^2cB+\frac{1}{4}x^4e^2aB+\frac{1}{2}x^4edcA+\frac{2}{3}x^3edaB+\frac{1}{3}x^3d^2cA+\frac{1}{3}x^3e^2aA+\frac{1}{2}x^2d^2aB+x^2ed$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*c*A + 1/4*x^4*d^2*c*B + 1/4
*x^4*e^2*a*B + 1/2*x^4*e*d*c*A + 2/3*x^3*e*d*a*B + 1/3*x^3*d^2*c*A + 1/3*x^
3*e^2*a*A + 1/2*x^2*d^2*a*B + x^2*e*d*a*A + x*d^2*a*A
```

giac [A] time = 0.16, size = 113, normalized size = 1.05

$$\frac{1}{6}Bcx^6e^2+\frac{2}{5}Bcdx^5e+\frac{1}{4}Bcd^2x^4+\frac{1}{5}Acx^5e^2+\frac{1}{2}Acdx^4e+\frac{1}{3}Acd^2x^3+\frac{1}{4}Bax^4e^2+\frac{2}{3}Badx^3e+\frac{1}{2}Bad^2x^2+\frac{1}{3}Aax^3e^2+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*A*c*x^5*e^2 + 1/2
*A*c*d*x^4*e + 1/3*A*c*d^2*x^3 + 1/4*B*a*x^4*e^2 + 2/3*B*a*d*x^3*e + 1/2*B*
a*d^2*x^2 + 1/3*A*a*x^3*e^2 + A*a*d*x^2*e + A*a*d^2*x
```

maple [A] time = 0.04, size = 103, normalized size = 0.95

$$\frac{Bc\,e^2x^6}{6}+\frac{\left(A\,e^2+2Bde\right)c\,x^5}{5}+Aa\,d^2x+\frac{\left(Ba\,e^2+\left(2Ade+B\,d^2\right)c\right)x^4}{4}+\frac{\left(2Ade+B\,d^2\right)a\,x^2}{2}+\frac{\left(Ac\,d^2+\left(A\,e^2+2Bde\right)\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*(A*e^2+2*B*d*e)*c*x^5+1/4*((2*A*d*e+B*d^2)*c+a*B*e^2)*x
^4+1/3*(A*c*d^2+(A*e^2+2*B*d*e)*a)*x^3+1/2*(2*A*d*e+B*d^2)*a*x^2+A*d^2*a*x
```

maxima [A] time = 0.58, size = 102, normalized size = 0.94

$$\frac{1}{6}Bce^2x^6+\frac{1}{5}\left(2\,Bcde+Ace^2\right)x^5+Aad^2x+\frac{1}{4}\left(Bcd^2+2\,Acde+Bae^2\right)x^4+\frac{1}{3}\left(Acd^2+2\,Bade+Aae^2\right)x^3+\frac{1}{2}\left(Bad^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/5*(2*B*c*d*e + A*c*e^2)*x^5 + A*a*d^2*x + 1/4*(B*c*d^2
+ 2*A*c*d*e + B*a*e^2)*x^4 + 1/3*(A*c*d^2 + 2*B*a*d*e + A*a*e^2)*x^3 + 1/2*
(B*a*d^2 + 2*A*a*d*e)*x^2
```

mupad [B] time = 0.04, size = 98, normalized size = 0.91

$$x^3\left(\frac{A\,c\,d^2}{3}+\frac{2\,B\,a\,d\,e}{3}+\frac{A\,a\,e^2}{3}\right)+x^4\left(\frac{B\,c\,d^2}{4}+\frac{A\,c\,d\,e}{2}+\frac{B\,a\,e^2}{4}\right)+A\,a\,d^2\,x+\frac{a\,d\,x^2\,\left(2\,A\,e+B\,d\right)}{2}+\frac{c\,e\,x^5\,\left(A\,e+2\,B\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a*e^2)/3 + (A*c*d^2)/3 + (2*B*a*d*e)/3) + x^4*((B*a*e^2)/4 + (B*c*d
^2)/4 + (A*c*d*e)/2) + A*a*d^2*x + (a*d*x^2*(2*A*e + B*d))/2 + (c*e*x^5*(A*
e + 2*B*d))/5 + (B*c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 119, normalized size = 1.10

$$Aad^2x+\frac{Bce^2x^6}{6}+x^5\left(\frac{Ace^2}{5}+\frac{2Bcde}{5}\right)+x^4\left(\frac{Acde}{2}+\frac{Bae^2}{4}+\frac{Bcd^2}{4}\right)+x^3\left(\frac{Aae^2}{3}+\frac{Acd^2}{3}+\frac{2Bade}{3}\right)+x^2\left(Aade+\frac{Bad}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a),x)
```

```
[Out] A*a*d**2*x + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + 2*B*c*d*e/5) + x**4*(A*c*
d*e/2 + B*a*e**2/4 + B*c*d**2/4) + x**3*(A*a*e**2/3 + A*c*d**2/3 + 2*B*a*d*
e/3) + x**2*(A*a*d*e + B*a*d**2/2)
```

3.1288 $\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=62

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

```
[Out] a*A*d*x+1/2*a*(A*e+B*d)*x^2+1/3*(A*c*d+B*a*e)*x^3+1/4*c*(A*e+B*d)*x^4+1/5*B
*c*e*x^5
```

Rubi [A] time = 0.06, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}} = 0.056$, Rules used = {772}

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2),x]
```

```
[Out] a*A*d*x + (a*(B*d + A*e)*x^2)/2 + ((A*c*d + a*B*e)*x^3)/3 + (c*(B*d + A*e)*
x^4)/4 + (B*c*e*x^5)/5
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+cx^2\right)\,dx &= \int \left(aAd+a(Bd+Ae)x+(Acd+aBe)x^2+c(Bd+Ae)x^3+Bcex^4\right)\,dx\\ &= aAdx+\frac{1}{2}a(Bd+Ae)x^2+\frac{1}{3}(Acd+aBe)x^3+\frac{1}{4}c(Bd+Ae)x^4+\frac{1}{5}Bcex^5\end{aligned}$$

Mathematica [A] time = 0.02, size = 62, normalized size = 1.00

$$\frac{1}{3}x^3(aBe+Acd)+\frac{1}{2}ax^2(Ae+Bd)+aAdx+\frac{1}{4}cx^4(Ae+Bd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2),x]
```

```
[Out] a*A*d*x + (a*(B*d + A*e)*x^2)/2 + ((A*c*d + a*B*e)*x^3)/3 + (c*(B*d + A*e)*
x^4)/4 + (B*c*e*x^5)/5
```

fricas [A] time = 0.47, size = 62, normalized size = 1.00

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3eaB+\frac{1}{3}x^3dcA+\frac{1}{2}x^2daB+\frac{1}{2}x^2eaA+xdaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*c*A + 1/3*x^3*e*a*B + 1/3*x^3*d*c
*A + 1/2*x^2*d*a*B + 1/2*x^2*e*a*A + x*d*a*A
```

giac [A] time = 0.16, size = 66, normalized size = 1.06

$$\frac{1}{5}Bcx^5e + \frac{1}{4}Bcdx^4 + \frac{1}{4}Acx^4e + \frac{1}{3}Acdx^3 + \frac{1}{3}Bax^3e + \frac{1}{2}Badx^2 + \frac{1}{2}Aax^2e + Aadx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*A*c*x^4*e + 1/3*A*c*d*x^3 + 1/3*B*a*x^3
*e + 1/2*B*a*d*x^2 + 1/2*A*a*x^2*e + A*a*d*x
```

maple [A] time = 0.04, size = 55, normalized size = 0.89

$$\frac{Bce\,x^5}{5} + \frac{(Ae+Bd)\,c\,x^4}{4} + Aadx + \frac{(Ae+Bd)\,a\,x^2}{2} + \frac{(Acd+aBe)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a),x)
```

```
[Out] a*A*d*x+1/2*a*(A*e+B*d)*x^2+1/3*(A*c*d+B*a*e)*x^3+1/4*c*(A*e+B*d)*x^4+1/5*B
*c*e*x^5
```

maxima [A] time = 0.49, size = 56, normalized size = 0.90

$$\frac{1}{5}Bcex^5 + \frac{1}{4}(Bcd+Ace)x^4 + Aadx + \frac{1}{3}(Acd+Bae)x^3 + \frac{1}{2}(Bad+Aae)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/4*(B*c*d + A*c*e)*x^4 + A*a*d*x + 1/3*(A*c*d + B*a*e)*x^3
 + 1/2*(B*a*d + A*a*e)*x^2
```

mupad [B] time = 1.67, size = 55, normalized size = 0.89

$$\frac{B\,c\,e\,x^5}{5} + \frac{c\,\left(A\,e+B\,d\right)\,x^4}{4} + \left(\frac{A\,c\,d}{3} + \frac{B\,a\,e}{3}\right)\,x^3 + \frac{a\,\left(A\,e+B\,d\right)\,x^2}{2} + A\,a\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((A*c*d)/3 + (B*a*e)/3) + (a*x^2*(A*e + B*d))/2 + (c*x^4*(A*e + B*d))/4
 + (B*c*e*x^5)/5 + A*a*d*x
```

sympy [A] time = 0.07, size = 66, normalized size = 1.06

$$Aadx + \frac{Bcex^5}{5} + x^4\left(\frac{Ace}{4} + \frac{Bcd}{4}\right) + x^3\left(\frac{Acd}{3} + \frac{Bae}{3}\right) + x^2\left(\frac{Aae}{2} + \frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a),x)
```

```
[Out] A*a*d*x + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*c*d/4) + x**3*(A*c*d/3 + B*a*e/3
) + x**2*(A*a*e/2 + B*a*d/2)
```

3.1289 $\int (A+Bx)\left(a+cx^2\right)\,dx$

Optimal. Leaf size=31

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

```
[Out] a*A*x+1/3*A*c*x^3+1/4*B*(c*x^2+a)^2/c
```

Rubi **[A]** time = 0.01, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 13, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {641}

$$aAx+\frac{B\left(a+cx^2\right)^2}{4c}+\frac{1}{3}Acx^3$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2),x]
```

```
[Out] a*A*x + (A*c*x^3)/3 + (B*(a + c*x^2)^2)/(4*c)
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)\,dx&=\frac{B\left(a+cx^2\right)^2}{4c}+A\int \left(a+cx^2\right)\,dx\\&=aAx+\frac{1}{3}Acx^3+\frac{B\left(a+cx^2\right)^2}{4c}\end{aligned}$$

Mathematica **[A]** time = 0.00, size = 32, normalized size = 1.03

$$aAx+\frac{1}{2}aBx^2+\frac{1}{3}Acx^3+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2),x]
```

```
[Out] a*A*x + (a*B*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

fricas **[A]** time = 0.53, size = 26, normalized size = 0.84

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*c*A + 1/2*x^2*a*B + x*a*A
```

giac **[A]** time = 0.15, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^4+\frac{1}{3}\,Acx^3+\frac{1}{2}\,Bax^2+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

maple [A] time = 0.04, size = 27, normalized size = 0.87

$$\frac{1}{4}B c x^{4}+\frac{1}{3}A c x^{3}+\frac{1}{2}B a x^{2}+A a x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a),x)
```

```
[Out] 1/4*B*c*x^4+1/3*A*c*x^3+1/2*B*a*x^2+A*a*x
```

maxima [A] time = 0.49, size = 26, normalized size = 0.84

$$\frac{1}{4}\,Bcx^{4}+\frac{1}{3}\,Acx^{3}+\frac{1}{2}\,Bax^{2}+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + A*a*x
```

mupad [B] time = 0.04, size = 26, normalized size = 0.84

$$\frac{B\,c\,x^4}{4}+\frac{A\,c\,x^3}{3}+\frac{B\,a\,x^2}{2}+A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x),x)
```

```
[Out] A*a*x + (B*a*x^2)/2 + (A*c*x^3)/3 + (B*c*x^4)/4
```

sympy [A] time = 0.06, size = 29, normalized size = 0.94

$$Aax+\frac{Acx^{3}}{3}+\frac{Bax^{2}}{2}+\frac{Bcx^{4}}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a),x)
```

```
[Out] A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4
```

3.1290 $\int \frac{(A+Bx)\left(a+cx^2\right)}{d+ex}\,dx$

Optimal. Leaf size=86

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{e^4}+\frac{x\left(aBe^2-Acde+Bcd^2\right)}{e^3}-\frac{cx^2(Bd-Ae)}{2e^2}+\frac{Bcx^3}{3e}$$

```
[Out] (-A*c*d*e+B*a*e^2+B*c*d^2)*x/e^3-1/2*c*(-A*e+B*d)*x^2/e^2+1/3*B*c*x^3/e-(-A
*e+B*d)*(a*e^2+c*d^2)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {772}

$$\frac{x\left(aBe^2-Acde+Bcd^2\right)}{e^3}-\frac{\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{e^4}-\frac{cx^2(Bd-Ae)}{2e^2}+\frac{Bcx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*c*d^2 - A*c*d*e + a*B*e^2)*x)/e^3 - (c*(B*d - A*e)*x^2)/(2*e^2) + (B*c*
x^3)/(3*e) - ((B*d - A*e)*(c*d^2 + a*e^2)*Log[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{Bcd^2-Acde+aBe^2}{e^3}+\frac{c(-Bd+Ae)x}{e^2}+\frac{Bcx^2}{e}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)}\right)dx\\ &= \frac{\left(Bcd^2-Acde+aBe^2\right)x}{e^3}-\frac{c(Bd-Ae)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{(Bd-Ae)\left(cd^2+ae^2\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.93

$$\frac{ex\left(6aBe^2+3Ace(ex-2d)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6\left(ae^2+cd^2\right)(Bd-Ae)\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*a*B*e^2 + 3*A*c*e*(-2*d + e*x) + B*c*(6*d^2 - 3*d*e*x + 2*e^2*x^2))
 - 6*(B*d - A*e)*(c*d^2 + a*e^2)*Log[d + e*x])/(6*e^4)
```

fricas [A] time = 0.75, size = 98, normalized size = 1.14

$$\frac{2\,Bce^3x^3-3\left(Bcde^2-Ace^3\right)x^2+6\left(Bcd^2e-Acde^2+Bae^3\right)x-6\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - A*c*e^3)*x^2 + 6*(B*c*d^2*e - A*c*d*e^2
 + B*a*e^3)*x - 6*(B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*log(e*x + d))
/e^4
```

giac [A] time = 0.15, size = 97, normalized size = 1.13

$$-\left(Bcd^3 - Acd^2e + Bade^2 - Aae^3\right)e^{(-4)}\log\left(|xe + d|\right)+\frac{1}{6}\left(2\,Bcx^3e^2 - 3\,Bcdx^2e + 6\,Bcd^2x + 3\,Acx^2e^2 - 6\,Acdxe +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*e^(-4)*log(abs(x*e + d)) + 1/6
*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*A*c*x^2*e^2 - 6*A*c*d*x*e
 + 6*B*a*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 116, normalized size = 1.35

$$\frac{Bc\,x^3}{3e}+\frac{Ac\,x^2}{2e}-\frac{Bcd\,x^2}{2e^2}+\frac{Aa\ln\left(ex+d\right)}{e}+\frac{Ac\,d^2\ln\left(ex+d\right)}{e^3}-\frac{Acdx}{e^2}-\frac{Bad\ln\left(ex+d\right)}{e^2}+\frac{Bax}{e}-\frac{Bc\,d^3\ln\left(ex+d\right)}{e^4}+Bc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d),x)
```

```
[Out] 1/3*B*c/e*x^3+1/2/e*A*x^2*c-1/2/e^2*B*x^2*c*d-1/e^2*A*x*c*d+1/e*B*x*a+1/e^3
*B*x*c*d^2+1/e*ln(e*x+d)*a*A+1/e^3*ln(e*x+d)*A*c*d^2-1/e^2*ln(e*x+d)*a*B*d-
1/e^4*ln(e*x+d)*B*c*d^3
```

maxima [A] time = 0.62, size = 97, normalized size = 1.13

$$\frac{2\,Bce^2x^3 - 3\left(Bcde - Ace^2\right)x^2 + 6\left(Bcd^2 - Acde + Bae^2\right)x}{6\,e^3}-\frac{\left(Bcd^3 - Acd^2e + Bade^2 - Aae^3\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - A*c*e^2)*x^2 + 6*(B*c*d^2 - A*c*d*e + B*a
*e^2)*x)/e^3 - (B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)*log(e*x + d)/e^4
```

mupad [B] time = 1.68, size = 100, normalized size = 1.16

$$x^2\left(\frac{A\,c}{2\,e}-\frac{B\,c\,d}{2\,e^2}\right)+x\left(\frac{B\,a}{e}-\frac{d\,\left(\frac{A\,c}{e}-\frac{B\,c\,d}{e^2}\right)}{e}\right)+\frac{\ln\left(d+e\,x\right)\,\left(-B\,c\,d^3+A\,c\,d^2\,e-B\,a\,d\,e^2+A\,a\,e^3\right)}{e^4}+\frac{B\,c\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((A*c)/(2*e) - (B*c*d)/(2*e^2)) + x*((B*a)/e - (d*((A*c)/e - (B*c*d)/e^
2))/e) + (log(d + e*x)*(A*a*e^3 - B*c*d^3 - B*a*d*e^2 + A*c*d^2*e))/e^4 + (
B*c*x^3)/(3*e)
```

sympy [A] time = 0.33, size = 82, normalized size = 0.95

$$\frac{Bcx^3}{3e} + x^2\left(\frac{Ac}{2e} - \frac{Bcd}{2e^2}\right) + x\left(-\frac{Acd}{e^2} + \frac{Ba}{e} + \frac{Bcd^2}{e^3}\right) - \frac{\left(-Ae + Bd\right)\left(ae^2 + cd^2\right)\log\left(d + ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + x**2*(A*c/(2*e) - B*c*d/(2*e**2)) + x*(-A*c*d/e**2 + B*a/e
 + B*c*d**2/e**3) - (-A*e + B*d)*(a*e**2 + c*d**2)*log(d + e*x)/e**4
```

3.1291 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=89

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{e^4(d+ex)}+\frac{\log(d+ex)\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}-\frac{cx(2Bd-Ae)}{e^3}+\frac{Bcx^2}{2e^2}$$

```
[Out] -c*(-A*e+2*B*d)*x/e^3+1/2*B*c*x^2/e^2+(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)+
(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{e^4(d+ex)}+\frac{\log(d+ex)\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}-\frac{cx(2Bd-Ae)}{e^3}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -((c*(2*B*d - A*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + ((B*d - A*e)*(c*d^2 + a*e^
2))/(e^4*(d + e*x)) + ((3*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^2}\,dx &= \int \left(\frac{c(-2Bd+Ae)}{e^3}+\frac{Bcx}{e^2}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^2}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)}\right)dx\\ &= -\frac{c(2Bd-Ae)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)}{e^4(d+ex)}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)\log(d}{e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.97

$$\frac{\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{d+ex}+2\log(d+ex)\left(aBe^2-2Acde+3Bcd^2\right)+2cex(Ae-2Bd)+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*c*e*(-2*B*d + A*e)*x + B*c*e^2*x^2 + (2*(B*d - A*e)*(c*d^2 + a*e^2))/(d
+ e*x) + 2*(3*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/(2*e^4)
```

fricas [A] time = 0.74, size = 152, normalized size = 1.71

$$\frac{Bce^3x^3+2\,Bcd^3-2\,Acd^2e+2\,Bade^2-2\,Aae^3-\left(3\,Bcde^2-2\,Ace^3\right)x^2-2\left(2\,Bcd^2e-Acde^2\right)x+2\,(3\,Bcd^3-2}{2\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 - (3*B
*c*d*e^2 - 2*A*c*e^3)*x^2 - 2*(2*B*c*d^2*e - A*c*d*e^2)*x + 2*(3*B*c*d^3 -
2*A*c*d^2*e + B*a*d*e^2 + (3*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^3)*x)*log(e*x
+ d))/(e^5*x + d*e^4)
```

giac [A] time = 0.16, size = 151, normalized size = 1.70

$$\frac{1}{2}\left(Bc - \frac{2\left(3\,Bcde - Ace^2\right)e^{(-1)}}{xe+d}\right)(xe+d)^2e^{(-4)} - \left(3\,Bcd^2 - 2\,Acde + Bae^2\right)e^{(-4)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) + \left(\frac{Bcd^3e^2}{xe+d} - \frac{Acd^2}{xe+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - (
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2
) + (B*c*d^3*e^2/(x*e + d) - A*c*d^2*e^3/(x*e + d) + B*a*d*e^4/(x*e + d) -
A*a*e^5/(x*e + d))*e^(-6)
```

maple [A] time = 0.06, size = 131, normalized size = 1.47

$$\frac{Bc\,x^2}{2e^2} - \frac{Aa}{(ex+d)\,e} - \frac{Ac\,d^2}{(ex+d)\,e^3} - \frac{2Acd\ln(ex+d)}{e^3} + \frac{Acx}{e^2} + \frac{Bad}{(ex+d)\,e^2} + \frac{Ba\ln(ex+d)}{e^2} + \frac{Bc\,d^3}{(ex+d)\,e^4} + \frac{3Bc\,d^2\ln(ex+}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c/e^2*x^2+c/e^2*A*x-2*c/e^3*B*d*x-1/e/(e*x+d)*a*A-1/e^3/(e*x+d)*A*c*d
^2+1/e^2/(e*x+d)*a*B*d+1/e^4/(e*x+d)*B*c*d^3-2/e^3*ln(e*x+d)*A*c*d+1/e^2*ln
(e*x+d)*B*a+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 0.54, size = 101, normalized size = 1.13

$$\frac{Bcd^3 - Acd^2e + Bade^2 - Aae^3}{e^5x + de^4} + \frac{Bcex^2 - 2\,(2\,Bcd - Ace)x}{2\,e^3} + \frac{\left(3\,Bcd^2 - 2\,Acde + Bae^2\right)\log(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3)/(e^5*x + d*e^4) + 1/2*(B*c*e*x^
2 - 2*(2*B*c*d - A*c*e)*x)/e^3 + (3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*log(e*x
+ d)/e^4
```

mupad [B] time = 0.08, size = 105, normalized size = 1.18

$$x\left(\frac{A\,c}{e^2} - \frac{2\,B\,c\,d}{e^3}\right) - \frac{-B\,c\,d^3 + A\,c\,d^2\,e - B\,a\,d\,e^2 + A\,a\,e^3}{e\,\left(x\,e^4 + d\,e^3\right)} + \frac{\ln(d+e\,x)\,\left(3\,B\,c\,d^2 - 2\,A\,c\,d\,e + B\,a\,e^2\right)}{e^4} + \frac{B\,c\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*c)/e^2 - (2*B*c*d)/e^3) - (A*a*e^3 - B*c*d^3 - B*a*d*e^2 + A*c*d^2*e)
/(e*(d*e^3 + e^4*x)) + (log(d + e*x)*(B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e))/e^4
 + (B*c*x^2)/(2*e^2)
```

sympy [A] time = 0.59, size = 104, normalized size = 1.17

$$\frac{Bcx^2}{2e^2} + x\left(\frac{Ac}{e^2} - \frac{2Bcd}{e^3}\right) + \frac{-Aae^3 - Acd^2e + Bade^2 + Bcd^3}{de^4 + e^5x} + \frac{\left(-2Acde + Bae^2 + 3Bcd^2\right)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 - 2*B*c*d/e**3) + (-A*a*e**3 - A*c*d**2*e +
 B*a*d*e**2 + B*c*d**3)/(d*e**4 + e**5*x) + (-2*A*c*d*e + B*a*e**2 + 3*B*c*
d**2)*log(d + e*x)/e**4
```

3.1292 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=94

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{2e^4(d+ex)^2}-\frac{aBe^2-2Acde+3Bcd^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}+\frac{Bcx}{e^3}$$

```
[Out] B*c*x/e^3+1/2*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^2+(2*A*c*d*e-B*a*e^2-3*B
*c*d^2)/e^4/(e*x+d)-c*(-A*e+3*B*d)*ln(e*x+d)/e^4
```

Rubi [**A**] time = 0.07, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{2e^4(d+ex)^2}-\frac{aBe^2-2Acde+3Bcd^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + ((B*d - A*e)*(c*d^2 + a*e^2))/(2*e^4*(d + e*x)^2) - (3*B*c*d^
2 - 2*A*c*d*e + a*B*e^2)/(e^4*(d + e*x)) - (c*(3*B*d - A*e)*Log[d + e*x])/e
^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{Bc}{e^3}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^3}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^2}+\frac{c(-3Bd+Ae)}{e^3(d+ex)}\right)dx\\ &= \frac{Bcx}{e^3}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)}{2e^4(d+ex)^2}-\frac{3Bcd^2-2Acde+aBe^2}{e^4(d+ex)}-\frac{c(3Bd-Ae)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 88, normalized size = 0.94

$$\frac{\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{(d+ex)^2}-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{d+ex}+2\log(d+ex)(Ace-3Bcd)+2Bcex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*B*c*e*x + ((B*d - A*e)*(c*d^2 + a*e^2))/(d + e*x)^2 - (2*(3*B*c*d^2 - 2*
A*c*d*e + a*B*e^2))/(d + e*x) + 2*(-3*B*c*d + A*c*e)*Log[d + e*x])/(2*e^4)
```

fricas [**A**] time = 0.74, size = 168, normalized size = 1.79

$$\frac{2\,Bce^3x^3+4\,Bcde^2x^2-5\,Bcd^3+3\,Acd^2e-Bade^2-Aae^3-2\left(2\,Bcd^2e-2\,Acde^2+Bae^3\right)x-2\,(3\,Bcd^3-Acd^2e+}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 + 3*A*c*d^2*e - B*a*d*e^2
- A*a*e^3 - 2*(2*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^3)*x - 2*(3*B*c*d^3 - A*c*
d^2*e + (3*B*c*d*e^2 - A*c*e^3)*x^2 + 2*(3*B*c*d^2*e - A*c*d*e^2)*x)*log(e*
x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.15, size = 96, normalized size = 1.02

$$Bcxe^{(-3)} - (3\,Bcd - Ace)e^{(-4)}\log\left(|xe+d|\right) - \frac{\left(5\,Bcd^3 - 3\,Acd^2e + Bade^2 + Aae^3 + 2\left(3\,Bcd^2e - 2\,Acde^2 + Bae^3\right)x}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*B*c*d^3
- 3*A*c*d^2*e + B*a*d*e^2 + A*a*e^3 + 2*(3*B*c*d^2*e - 2*A*c*d*e^2 + B*a*e^
3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.05, size = 144, normalized size = 1.53

$$-\frac{Aa}{2\,(ex+d)^2\,e} - \frac{Ac\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bad}{2\,(ex+d)^2\,e^2} + \frac{Bc\,d^3}{2\,(ex+d)^2\,e^4} + \frac{2Acd}{(ex+d)\,e^3} + \frac{Ac\ln(ex+d)}{e^3} - \frac{Ba}{(ex+d)\,e^2} - \frac{3Bc\,d^2}{(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^3,x)
```

```
[Out] B*c/e^3*x+2/e^3/(e*x+d)*A*c*d-1/e^2/(e*x+d)*B*a-3/e^4/(e*x+d)*B*c*d^2-1/2/e
/(e*x+d)^2*a*A-1/2/e^3/(e*x+d)^2*A*c*d^2+1/2/e^2/(e*x+d)^2*a*B*d+1/2/e^4/(e
*x+d)^2*B*c*d^3+c/e^3*ln(e*x+d)*A-3*c/e^4*ln(e*x+d)*B*d
```

maxima [A] time = 0.63, size = 111, normalized size = 1.18

$$-\frac{5\,Bcd^3 - 3\,Acd^2e + Bade^2 + Aae^3 + 2\left(3\,Bcd^2e - 2\,Acde^2 + Bae^3\right)x}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)} + \frac{Bcx}{e^3} - \frac{(3\,Bcd - Ace)\log(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 - 3*A*c*d^2*e + B*a*d*e^2 + A*a*e^3 + 2*(3*B*c*d^2*e - 2*A*
c*d*e^2 + B*a*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + B*c*x/e^3 - (3*B*c*
d - A*c*e)*log(e*x + d)/e^4
```

mupad [B] time = 1.76, size = 111, normalized size = 1.18

$$\frac{\ln(d+e\,x)\,\left(A\,c\,e - 3\,B\,c\,d\right)}{e^4} - \frac{\frac{5\,B\,c\,d^3 - 3\,A\,c\,d^2\,e + B\,a\,d\,e^2 + A\,a\,e^3}{2\,e} + x\,\left(3\,B\,c\,d^2 - 2\,A\,c\,d\,e + B\,a\,e^2\right)}{d^2\,e^3 + 2\,d\,e^4\,x + e^5\,x^2} + \frac{B\,c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*c*e - 3*B*c*d))/e^4 - ((A*a*e^3 + 5*B*c*d^3 + B*a*d*e^2 -
3*A*c*d^2*e)/(2*e) + x*(B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e))/(d^2*e^3 + e^5*x^
2 + 2*d*e^4*x) + (B*c*x)/e^3
```

sympy [**A**] time = 1.27, size = 117, normalized size = 1.24

$$\frac{Bcx}{e^3}-\frac{c\left(-Ae+3Bd\right)\log\left(d+ex\right)}{e^4}+\frac{-Aae^3+3Acd^2e-Bade^2-5Bcd^3+x\left(4Acde^2-2Bae^3-6Bcd^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**3,x)
```

```
[Out] B*c*x/e**3 - c*(-A*e + 3*B*d)*log(d + e*x)/e**4 + (-A*a*e**3 + 3*A*c*d**2*e
 - B*a*d*e**2 - 5*B*c*d**3 + x*(4*A*c*d*e**2 - 2*B*a*e**3 - 6*B*c*d**2*e))/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1293 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=101

$$-\frac{aBe^2-2Acde+3Bcd^2}{2e^4(d+ex)^2}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

```
[Out] 1/3*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^3+1/2*(2*A*c*d*e-B*a*e^2-3*B*c*d^2
)/e^4/(e*x+d)^2+c*(-A*e+3*B*d)/e^4/(e*x+d)+B*c*ln(e*x+d)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{2e^4(d+ex)^2}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(3*e^4*(d + e*x)^3) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(2*e^4*(d + e*x)^2) + (c*(3*B*d - A*e))/(e^4*(d + e*x)) + (B*c*L
og[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^4}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^4}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^3}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^2}+\frac{Bc}{e^3(d+e}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)}{3e^4(d+ex)^3}-\frac{3Bcd^2-2Acde+aBe^2}{2e^4(d+ex)^2}+\frac{c(3Bd-Ae)}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 98, normalized size = 0.97

$$\frac{-2Ae\left(ae^2+c\left(d^2+3dex+3e^2x^2\right)\right)+B\left(cd\left(11d^2+27dex+18e^2x^2\right)-ae^2(d+3ex)\right)+6Bc(d+ex)^3\log(d+e}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-2*A*e*(a*e^2 + c*(d^2 + 3*d*e*x + 3*e^2*x^2)) + B*(-(a*e^2*(d + 3*e*x)) +
 c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*B*c*(d + e*x)^3*Log[d + e*x])/(6
*e^4*(d + e*x)^3)
```

fricas [A] time = 0.55, size = 160, normalized size = 1.58

$$\frac{11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3+6\left(3\,Bcde^2-Ace^3\right)x^2+3\left(9\,Bcd^2e-2\,Acde^2-Bae^3\right)x+6\left(Bce^3x^3+3\right.}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*a*e^3 + 6*(3*B*c*d*e^2 - A*
c*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x + 6*(B*c*e^3*x^3 + 3
*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*c*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*
x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.16, size = 103, normalized size = 1.02

$$Bce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,Bcde-Ace^2\right)x^2+3\left(9\,Bcd^2-2\,Acde-Bae^2\right)x+\left(11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3\right.}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - A*c*e^2)*x^2 + 3*(9*B*c*
d^2 - 2*A*c*d*e - B*a*e^2)*x + (11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*
a*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [A] time = 0.06, size = 151, normalized size = 1.50

$$-\frac{Aa}{3\,(ex+d)^3\,e}-\frac{Ac\,d^2}{3\,(ex+d)^3\,e^3}+\frac{Bad}{3\,(ex+d)^3\,e^2}+\frac{Bc\,d^3}{3\,(ex+d)^3\,e^4}+\frac{Acd}{(ex+d)^2\,e^3}-\frac{Ba}{2\,(ex+d)^2\,e^2}-\frac{3Bc\,d^2}{2\,(ex+d)^2\,e^4}-\frac{Ac}{(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^4,x)
```

```
[Out] -c/e^3/(e*x+d)*A+3*c/e^4/(e*x+d)*B*d+1/e^3/(e*x+d)^2*A*c*d-1/2/e^2/(e*x+d)^
2*B*a-3/2/e^4/(e*x+d)^2*B*c*d^2-1/3/e/(e*x+d)^3*a*A-1/3/e^3/(e*x+d)^3*A*c*d
^2+1/3/e^2/(e*x+d)^3*a*B*d+1/3/e^4/(e*x+d)^3*B*c*d^3+B*c/e^4*ln(e*x+d)
```

maxima [A] time = 0.46, size = 129, normalized size = 1.28

$$\frac{11\,Bcd^3-2\,Acd^2e-Bade^2-2\,Aae^3+6\left(3\,Bcde^2-Ace^3\right)x^2+3\left(9\,Bcd^2e-2\,Acde^2-Bae^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{Bc\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 - 2*A*a*e^3 + 6*(3*B*c*d*e^2 - A*
c*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)/(e^7*x^3 + 3*d*e^6*
x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*log(e*x + d)/e^4
```

mupad [B] time = 0.10, size = 122, normalized size = 1.21

$$\frac{B\,c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{-11\,B\,c\,d^3+2\,A\,c\,d^2\,e+B\,a\,d\,e^2+2\,A\,a\,e^3}{6\,e^4}+\frac{x\,\left(-9\,B\,c\,d^2+2\,A\,c\,d\,e+B\,a\,e^2\right)}{2\,e^3}+\frac{c\,x^2\,\left(A\,e-3\,B\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((2*A*a*e^3 - 11*B*c*d^3 + B*a*d*e^2 + 2*A*c*d^2*e
)/(6*e^4) + (x*(B*a*e^2 - 9*B*c*d^2 + 2*A*c*d*e))/(2*e^3) + (c*x^2*(A*e - 3
*B*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [**A**] time = 2.60, size = 138, normalized size = 1.37

$$\frac{Bc\log(d+ex)}{e^4}+\frac{-2Aae^3-2Acd^2e-Bade^2+11Bcd^3+x^2\big(-6Ace^3+18Bcde^2\big)+x\big(-6Acde^2-3Bae^3+27Bc}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-2*A*a*e**3 - 2*A*c*d**2*e - B*a*d*e**2 + 11*B*c*d
**3 + x**2*(-6*A*c*e**3 + 18*B*c*d*e**2) + x*(-6*A*c*d*e**2 - 3*B*a*e**3 +
27*B*c*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**
3)
```

3.1294 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=106

$$-\frac{aBe^2-2Acde+3Bcd^2}{3e^4(d+ex)^3}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{4e^4(d+ex)^4}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

```
[Out] 1/4*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^4+1/3*(2*A*c*d*e-B*a*e^2-3*B*c*d^2
)/e^4/(e*x+d)^3+1/2*c*(-A*e+3*B*d)/e^4/(e*x+d)^2-B*c/e^4/(e*x+d)
```

Rubi [A] time = 0.07, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{3e^4(d+ex)^3}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{4e^4(d+ex)^4}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(4*e^4*(d + e*x)^4) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(3*e^4*(d + e*x)^3) + (c*(3*B*d - A*e))/(2*e^4*(d + e*x)^2) - (B
*c)/(e^4*(d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^5}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^5}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^4}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^3}+\frac{Bc}{e^3(d+ex)^2}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)}{4e^4(d+ex)^4}-\frac{3Bcd^2-2Acde+aBe^2}{3e^4(d+ex)^3}+\frac{c(3Bd-Ae)}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 0.82

$$-\frac{3aAe^3+aBe^2(d+4ex)+Ace\left(d^2+4dex+6e^2x^2\right)+3Bc\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(3*a*A*e^3 + a*B*e^2*(d + 4*e*x) + A*c*e*(d^2 + 4*d*e*x + 6*e^2*x^2)
+ 3*B*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3))/(e^4*(d + e*x)^4)
```

fricas [A] time = 0.91, size = 132, normalized size = 1.25

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+Acd^2e+Bade^2+3\,Aae^3+6\left(3\,Bcde^2+Ace^3\right)x^2+4\left(3\,Bcd^2e+Acde^2+Bae^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*c*d^2*e + B*a*d*e^2 + 3*A*a*e^3 + 6*(
3*B*c*d*e^2 + A*c*e^3)*x^2 + 4*(3*B*c*d^2*e + A*c*d*e^2 + B*a*e^3)*x)/(e^8*
x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.16, size = 151, normalized size = 1.42

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d}-\frac{18\,Bcde^{(-1)}}{(xe+d)^2}+\frac{12\,Bcd^2e^{(-1)}}{(xe+d)^3}-\frac{3\,Bcd^3e^{(-1)}}{(xe+d)^4}+\frac{6\,Ac}{(xe+d)^2}-\frac{8\,Acd}{(xe+d)^3}+\frac{3\,Acd^2}{(xe+d)^4}+\frac{4\,Bae}{(xe+d)^3}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*A*c/(x*e + d)^2 - 8*A*
c*d/(x*e + d)^3 + 3*A*c*d^2/(x*e + d)^4 + 4*B*a*e/(x*e + d)^3 - 3*B*a*d*e/(
x*e + d)^4 + 3*A*a*e^2/(x*e + d)^4)*e^(-3)
```

maple [A] time = 0.05, size = 110, normalized size = 1.04

$$-\frac{Bc}{(ex+d)\,e^4}-\frac{(Ae-3Bd)\,c}{2\,(ex+d)^2\,e^4}-\frac{aA\,e^3+Ac\,d^2e-aBd\,e^2-Bc\,d^3}{4\,(ex+d)^4\,e^4}-\frac{-2Acde+Ba\,e^2+3Bc\,d^2}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^5,x)
```

```
[Out] -1/(e*x+d)*B*c/e^4-1/4*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/(e*x+d)^4-
1/2*c*(A*e-3*B*d)/e^4/(e*x+d)^2-1/3*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/(e*x
+d)^3
```

maxima [A] time = 0.57, size = 132, normalized size = 1.25

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+Acd^2e+Bade^2+3\,Aae^3+6\left(3\,Bcde^2+Ace^3\right)x^2+4\left(3\,Bcd^2e+Acde^2+Bae^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + A*c*d^2*e + B*a*d*e^2 + 3*A*a*e^3 + 6*(
3*B*c*d*e^2 + A*c*e^3)*x^2 + 4*(3*B*c*d^2*e + A*c*d*e^2 + B*a*e^3)*x)/(e^8*
x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 1.71, size = 128, normalized size = 1.21

$$-\frac{\frac{3\,B\,c\,d^3+A\,c\,d^2\,e+B\,a\,d\,e^2+3\,A\,a\,e^3}{12\,e^4}+\frac{x\left(3\,B\,c\,d^2+A\,c\,d\,e+B\,a\,e^2\right)}{3\,e^3}+\frac{B\,c\,x^3}{e}+\frac{c\,x^2\,(A\,e+3\,B\,d)}{2\,e^2}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a*e^3 + 3*B*c*d^3 + B*a*d*e^2 + A*c*d^2*e)/(12*e^4) + (x*(B*a*e^2 +
3*B*c*d^2 + A*c*d*e))/(3*e^3) + (B*c*x^3)/e + (c*x^2*(A*e + 3*B*d))/(2*e^2)
)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 4.89, size = 150, normalized size = 1.42

$$\frac{-3Aae^3 - Acd^2e - Bade^2 - 3Bcd^3 - 12Bce^3x^3 + x^2\left(-6Ace^3 - 18Bcde^2\right) + x\left(-4Acde^2 - 4Bae^3 - 12Bcd^2e\right)}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**3 - A*c*d**2*e - B*a*d*e**2 - 3*B*c*d**3 - 12*B*c*e**3*x**3 + x*
*2*(-6*A*c*e**3 - 18*B*c*d*e**2) + x*(-4*A*c*d*e**2 - 4*B*a*e**3 - 12*B*c*d
**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3
 + 12*e**8*x**4)
```

3.1295 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=108

$$-\frac{aBe^2 - 2Acde + 3Bcd^2}{4e^4(d+ex)^4} + \frac{\left(ae^2 + cd^2\right)(Bd - Ae)}{5e^4(d+ex)^5} + \frac{c(3Bd - Ae)}{3e^4(d+ex)^3} - \frac{Bc}{2e^4(d+ex)^2}$$

```
[Out] 1/5*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^5+1/4*(2*A*c*d*e-B*a*e^2-3*B*c*d^2
)/e^4/(e*x+d)^4+1/3*c*(-A*e+3*B*d)/e^4/(e*x+d)^3-1/2*B*c/e^4/(e*x+d)^2
```

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2 - 2Acde + 3Bcd^2}{4e^4(d+ex)^4} + \frac{\left(ae^2 + cd^2\right)(Bd - Ae)}{5e^4(d+ex)^5} + \frac{c(3Bd - Ae)}{3e^4(d+ex)^3} - \frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(5*e^4*(d + e*x)^5) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(4*e^4*(d + e*x)^4) + (c*(3*B*d - A*e))/(3*e^4*(d + e*x)^3) - (B
*c)/(2*e^4*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^6}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^6} + \frac{3Bcd^2 - 2Acde + aBe^2}{e^3(d+ex)^5} + \frac{c(-3Bd+Ae)}{e^3(d+ex)^4} + \frac{Bc}{e^3(d+e} \right. \\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)}{5e^4(d+ex)^5} - \frac{3Bcd^2 - 2Acde + aBe^2}{4e^4(d+ex)^4} + \frac{c(3Bd-Ae)}{3e^4(d+ex)^3} - \frac{Bc}{2e^4(d+ex)^2} \end{aligned}$$

Mathematica [A] time = 0.04, size = 90, normalized size = 0.83

$$-\frac{2Ae\left(6ae^2 + c\left(d^2 + 5dex + 10e^2x^2\right)\right) + 3B\left(ae^2(d+5ex) + c\left(d^3 + 5d^2ex + 10de^2x^2 + 10e^3x^3\right)\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(2*A*e*(6*a*e^2 + c*(d^2 + 5*d*e*x + 10*e^2*x^2)) + 3*B*(a*e^2*(d + 5
*e*x) + c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)))/(e^4*(d + e*x)^5)
```

fricas [A] time = 0.48, size = 148, normalized size = 1.37

$$-\frac{30\,Bce^3x^3 + 3\,Bcd^3 + 2\,Acd^2e + 3\,Bade^2 + 12\,Aae^3 + 10\left(3\,Bcde^2 + 2\,Ace^3\right)x^2 + 5\left(3\,Bcd^2e + 2\,Acde^2 + 3\,Bae\right.}{60\left(e^9x^5 + 5\,de^8x^4 + 10\,d^2e^7x^3 + 10\,d^3e^6x^2 + 5\,d^4e^5x + d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 2*A*c*d^2*e + 3*B*a*d*e^2 + 12*A*a*e^3
+ 10*(3*B*c*d*e^2 + 2*A*c*e^3)*x^2 + 5*(3*B*c*d^2*e + 2*A*c*d*e^2 + 3*B*a*e
^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5
*x + d^5*e^4)
```

giac [A] time = 0.18, size = 95, normalized size = 0.88

$$-\frac{\left(30\,Bcx^3e^3 + 30\,Bcdx^2e^2 + 15\,Bcd^2xe + 3\,Bcd^3 + 20\,Acx^2e^3 + 10\,Acdxe^2 + 2\,Acd^2e + 15\,Baxe^3 + 3\,Bade^2 + 12\,A}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
A*c*x^2*e^3 + 10*A*c*d*x*e^2 + 2*A*c*d^2*e + 15*B*a*x*e^3 + 3*B*a*d*e^2 + 1
2*A*a*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.06, size = 110, normalized size = 1.02

$$-\frac{Bc}{2\,(ex+d)^2\,e^4}-\frac{(Ae-3Bd)\,c}{3\,(ex+d)^3\,e^4}-\frac{-2Acde+Ba\,e^2+3Bc\,d^2}{4\,(ex+d)^4\,e^4}-\frac{aA\,e^3+Ac\,d^2e-aBd\,e^2-Bc\,d^3}{5\,(ex+d)^5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^6,x)
```

```
[Out] -1/4*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/(e*x+d)^4-1/2/(e*x+d)^2*B*c/e^4-1/3
*c*(A*e-3*B*d)/e^4/(e*x+d)^3-1/5*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/
(e*x+d)^5
```

maxima [A] time = 0.62, size = 148, normalized size = 1.37

$$-\frac{30\,Bce^3x^3 + 3\,Bcd^3 + 2\,Acd^2e + 3\,Bade^2 + 12\,Aae^3 + 10\,\left(3\,Bcde^2 + 2\,Ace^3\right)x^2 + 5\,\left(3\,Bcd^2e + 2\,Acde^2 + 3\,Bae^3\right)}{60\,\left(e^9x^5 + 5\,de^8x^4 + 10\,d^2e^7x^3 + 10\,d^3e^6x^2 + 5\,d^4e^5x + d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 2*A*c*d^2*e + 3*B*a*d*e^2 + 12*A*a*e^3
+ 10*(3*B*c*d*e^2 + 2*A*c*e^3)*x^2 + 5*(3*B*c*d^2*e + 2*A*c*d*e^2 + 3*B*a*e
^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5
*x + d^5*e^4)
```

mupad [B] time = 0.07, size = 145, normalized size = 1.34

$$-\frac{\frac{3\,B\,c\,d^3+2\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+12\,A\,a\,e^3}{60\,e^4}+\frac{x\,\left(3\,B\,c\,d^2+2\,A\,c\,d\,e+3\,B\,a\,e^2\right)}{12\,e^3}+\frac{B\,c\,x^3}{2\,e}+\frac{c\,x^2\,\left(2\,A\,e+3\,B\,d\right)}{6\,e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a*e^3 + 3*B*c*d^3 + 3*B*a*d*e^2 + 2*A*c*d^2*e)/(60*e^4) + (x*(3*B*a
*e^2 + 3*B*c*d^2 + 2*A*c*d*e))/(12*e^3) + (B*c*x^3)/(2*e) + (c*x^2*(2*A*e +
 3*B*d))/(6*e^2))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^
3*x^3 + 5*d^4*e*x)
```

sympy [**A**] time = 8.41, size = 165, normalized size = 1.53

$$\frac{-12Aae^3-2Acd^2e-3Bade^2-3Bcd^3-30Bce^3x^3+x^2\left(-20Ace^3-30Bcde^2\right)+x\left(-10Acde^2-15Bae^3-15Bc\right.}{60d^5e^4+300d^4e^5x+600d^3e^6x^2+600d^2e^7x^3+300de^8x^4+60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**3 - 2*A*c*d**2*e - 3*B*a*d*e**2 - 3*B*c*d**3 - 30*B*c*e**3*x**3
 + x**2*(-20*A*c*e**3 - 30*B*c*d*e**2) + x*(-10*A*c*d*e**2 - 15*B*a*e**3 -
15*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*
d**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x**5)
```

3.1296 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^7}\,dx$

Optimal. Leaf size=108

$$-\frac{aBe^2-2Acde+3Bcd^2}{5e^4(d+ex)^5}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{6e^4(d+ex)^6}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

```
[Out] 1/6*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^6+1/5*(2*A*c*d*e-B*a*e^2-3*B*c*d^2
)/e^4/(e*x+d)^5+1/4*c*(-A*e+3*B*d)/e^4/(e*x+d)^4-1/3*B*c/e^4/(e*x+d)^3
```

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{aBe^2-2Acde+3Bcd^2}{5e^4(d+ex)^5}+\frac{\left(ae^2+cd^2\right)(Bd-Ae)}{6e^4(d+ex)^6}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2))/(6*e^4*(d + e*x)^6) - (3*B*c*d^2 - 2*A*c*d*e
+ a*B*e^2)/(5*e^4*(d + e*x)^5) + (c*(3*B*d - A*e))/(4*e^4*(d + e*x)^4) - (B
*c)/(3*e^4*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^7}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^7}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^6}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^5}+\frac{Bc}{e^3(d+ex)^4}\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)}{6e^4(d+ex)^6}-\frac{3Bcd^2-2Acde+aBe^2}{5e^4(d+ex)^5}+\frac{c(3Bd-Ae)}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.04, size = 87, normalized size = 0.81

$$-\frac{10aAe^3+2aBe^2(d+6ex)+Ace\left(d^2+6dex+15e^2x^2\right)+Bc\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(10*a*A*e^3 + 2*a*B*e^2*(d + 6*e*x) + A*c*e*(d^2 + 6*d*e*x + 15*e^2*x
^2) + B*c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3))/(e^4*(d + e*x)^6)
```

fricas [A] time = 0.61, size = 153, normalized size = 1.42

$$-\frac{20\,Bce^3x^3+Bcd^3+Acd^2e+2\,Bade^2+10\,Aae^3+15\left(Bcde^2+Ace^3\right)x^2+6\left(Bcd^2e+Acde^2+2\,Bae^3\right)x}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + A*c*d^2*e + 2*B*a*d*e^2 + 10*A*a*e^3 + 15
*(B*c*d*e^2 + A*c*e^3)*x^2 + 6*(B*c*d^2*e + A*c*d*e^2 + 2*B*a*e^3)*x)/(e^10
*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d
^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.17, size = 93, normalized size = 0.86

$$-\frac{\left(20\,Bcx^3e^3 + 15\,Bcdx^2e^2 + 6\,Bcd^2xe + Bcd^3 + 15\,Acx^2e^3 + 6\,Acdxe^2 + Acd^2e + 12\,Baxe^3 + 2\,Bade^2 + 10\,Aae\right.}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3*e^3 + 15*B*c*d*x^2*e^2 + 6*B*c*d^2*x*e + B*c*d^3 + 15*A*c
*x^2*e^3 + 6*A*c*d*x*e^2 + A*c*d^2*e + 12*B*a*x*e^3 + 2*B*a*d*e^2 + 10*A*a*
e^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 110, normalized size = 1.02

$$-\frac{Bc}{3\,(ex+d)^3\,e^4} - \frac{(Ae-3Bd)\,c}{4\,(ex+d)^4\,e^4} - \frac{aA\,e^3 + Ac\,d^2e - aBd\,e^2 - Bc\,d^3}{6\,(ex+d)^6\,e^4} - \frac{-2Acde + Ba\,e^2 + 3Bc\,d^2}{5\,(ex+d)^5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^7,x)
```

```
[Out] -1/6*(A*a*e^3+A*c*d^2*e-B*a*d*e^2-B*c*d^3)/e^4/(e*x+d)^6-1/4*c*(A*e-3*B*d)/
e^4/(e*x+d)^4-1/3*B*c/e^4/(e*x+d)^3-1/5*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/
(e*x+d)^5
```

maxima [A] time = 0.59, size = 153, normalized size = 1.42

$$-\frac{20\,Bce^3x^3 + Bcd^3 + Acd^2e + 2\,Bade^2 + 10\,Aae^3 + 15\,\left(Bcde^2 + Ace^3\right)x^2 + 6\,\left(Bcd^2e + Acde^2 + 2\,Bae^3\right)x}{60\,\left(e^{10}x^6 + 6\,de^9x^5 + 15\,d^2e^8x^4 + 20\,d^3e^7x^3 + 15\,d^4e^6x^2 + 6\,d^5e^5x + d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + A*c*d^2*e + 2*B*a*d*e^2 + 10*A*a*e^3 + 15
*(B*c*d*e^2 + A*c*e^3)*x^2 + 6*(B*c*d^2*e + A*c*d*e^2 + 2*B*a*e^3)*x)/(e^10
*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d
^5*e^5*x + d^6*e^4)
```

mupad [B] time = 1.78, size = 150, normalized size = 1.39

$$-\frac{\frac{B\,c\,d^3+A\,c\,d^2\,e+2\,B\,a\,d\,e^2+10\,A\,a\,e^3}{60\,e^4}+\frac{x\,\left(B\,c\,d^2+A\,c\,d\,e+2\,B\,a\,e^2\right)}{10\,e^3}+\frac{B\,c\,x^3}{3\,e}+\frac{c\,x^2\,\left(A\,e+B\,d\right)}{4\,e^2}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a*e^3 + B*c*d^3 + 2*B*a*d*e^2 + A*c*d^2*e)/(60*e^4) + (x*(2*B*a*e^2
 + B*c*d^2 + A*c*d*e))/(10*e^3) + (B*c*x^3)/(3*e) + (c*x^2*(A*e + B*d))/(4*
e^2))/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d
^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [**A**] time = 13.57, size = 173, normalized size = 1.60

$$\frac{-10Aae^3 - Acd^2e - 2Bade^2 - Bcd^3 - 20Bce^3x^3 + x^2\left(-15Ace^3 - 15Bcde^2\right) + x\left(-6Acde^2 - 12Bae^3 - 6Bcd^2e\right)}{60d^6e^4 + 360d^5e^5x + 900d^4e^6x^2 + 1200d^3e^7x^3 + 900d^2e^8x^4 + 360de^9x^5 + 60e^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a*e**3 - A*c*d**2*e - 2*B*a*d*e**2 - B*c*d**3 - 20*B*c*e**3*x**3 + x
**2*(-15*A*c*e**3 - 15*B*c*d*e**2) + x*(-6*A*c*d*e**2 - 12*B*a*e**3 - 6*B*c
*d**2*e))/(60*d**6*e**4 + 360*d**5*e**5*x + 900*d**4*e**6*x**2 + 1200*d**3*
e**7*x**3 + 900*d**2*e**8*x**4 + 360*d*e**9*x**5 + 60*e**10*x**6)
```

3.1297 $\int (A+Bx)(d+ex)^5\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=206

$$\frac{2c(d+ex)^9\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}+\frac{(d+ex)^7\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{7e^6}-\frac{(d+ex)^6\left(ae^2+cd^2\right)^2(B}{6e^6}$$

```
[Out] -1/6*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^6/e^6+1/7*(a*e^2+c*d^2)*(-4*A*c*d*e
+B*a*e^2+5*B*c*d^2)*(e*x+d)^7/e^6-1/4*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5
*B*c*d^3)*(e*x+d)^8/e^6+2/9*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^9/e^6-
1/10*c^2*(-A*e+5*B*d)*(e*x+d)^10/e^6+1/11*B*c^2*(e*x+d)^11/e^6
```

Rubi [A] time = 0.39, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2c(d+ex)^9\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}-\frac{c(d+ex)^8\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{4e^6}+\frac{(d+ex)^7\left(ae^2+cd^2\right)(}{7}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^6)/(6*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^6) - (c*(5*B*c*d^3 - 3*A*c
*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^8)/(4*e^6) + (2*c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^9)/(9*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^10)/
(10*e^6) + (B*c^2*(d + e*x)^11)/(11*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a+cx^2\right)^2\,dx&=\int \Bigg(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2(d+ex)^5}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{e^5}\\&=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^6}{6e^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.10, size = 390, normalized size = 1.89

$$\frac{1}{7}ex^7\left(a^2Be^4+10aAcde^3+20aBcd^2e^2+10Ac^2d^3e+5Bc^2d^4\right)+\frac{1}{5}dx^5\left(5a^2Ae^4+10a^2Bde^3+20aAcd^2e^2+10aB\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^5*x + (a^2*d^4*(B*d + 5*A*e)*x^2)/2 + (a*d^3*(2*A*c*d^2 + 5*a*B*d*e
 + 10*a*A*e^2)*x^3)/3 + (a*d^2*(B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A
*e^3)*x^4)/2 + (d*(A*c^2*d^4 + 10*a*B*c*d^3*e + 20*a*A*c*d^2*e^2 + 10*a^2*B
*d*e^3 + 5*a^2*A*e^4)*x^5)/5 + ((B*c^2*d^5 + 5*A*c^2*d^4*e + 20*a*B*c*d^3*e
^2 + 20*a*A*c*d^2*e^3 + 5*a^2*B*d*e^4 + a^2*A*e^5)*x^6)/6 + (e*(5*B*c^2*d^4
 + 10*A*c^2*d^3*e + 20*a*B*c*d^2*e^2 + 10*a*A*c*d*e^3 + a^2*B*e^4)*x^7)/7 +
 (c*e^2*(5*B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + a*A*e^3)*x^8)/4 + (c*e^3*(
10*B*c*d^2 + 5*A*c*d*e + 2*a*B*e^2)*x^9)/9 + (c^2*e^4*(5*B*d + A*e)*x^10)/1
0 + (B*c^2*e^5*x^11)/11
```

fricas [B] time = 0.64, size = 465, normalized size = 2.26

$$\frac{1}{11}x^{11}e^5c^2B+\frac{1}{2}x^{10}e^4dc^2B+\frac{1}{10}x^{10}e^5c^2A+\frac{10}{9}x^9e^3d^2c^2B+\frac{2}{9}x^9e^5caB+\frac{5}{9}x^9e^4dc^2A+\frac{5}{4}x^8e^2d^3c^2B+\frac{5}{4}x^8e^4dcaB+\frac{5}{4}x^8e^3d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*c^2*B + 1/2*x^10*e^4*d*c^2*B + 1/10*x^10*e^5*c^2*A + 10/9*x^9
*e^3*d^2*c^2*B + 2/9*x^9*e^5*c*a*B + 5/9*x^9*e^4*d*c^2*A + 5/4*x^8*e^2*d^3*
c^2*B + 5/4*x^8*e^4*d*c*a*B + 5/4*x^8*e^3*d^2*c^2*A + 1/4*x^8*e^5*c*a*A + 5
/7*x^7*e*d^4*c^2*B + 20/7*x^7*e^3*d^2*c*a*B + 1/7*x^7*e^5*a^2*B + 10/7*x^7*
e^2*d^3*c^2*A + 10/7*x^7*e^4*d*c*a*A + 1/6*x^6*d^5*c^2*B + 10/3*x^6*e^2*d^3
*c*a*B + 5/6*x^6*e^4*d*a^2*B + 5/6*x^6*e*d^4*c^2*A + 10/3*x^6*e^3*d^2*c*a*A
 + 1/6*x^6*e^5*a^2*A + 2*x^5*e*d^4*c*a*B + 2*x^5*e^3*d^2*a^2*B + 1/5*x^5*d^
5*c^2*A + 4*x^5*e^2*d^3*c*a*A + x^5*e^4*d*a^2*A + 1/2*x^4*d^5*c*a*B + 5/2*x
^4*e^2*d^3*a^2*B + 5/2*x^4*e*d^4*c*a*A + 5/2*x^4*e^3*d^2*a^2*A + 5/3*x^3*e*
d^4*a^2*B + 2/3*x^3*d^5*c*a*A + 10/3*x^3*e^2*d^3*a^2*A + 1/2*x^2*d^5*a^2*B
+ 5/2*x^2*e*d^4*a^2*A + x*d^5*a^2*A
```

giac [B] time = 0.19, size = 447, normalized size = 2.17

$$\frac{1}{11}\,Bc^2x^{11}e^5+\frac{1}{2}\,Bc^2dx^{10}e^4+\frac{10}{9}\,Bc^2d^2x^9e^3+\frac{5}{4}\,Bc^2d^3x^8e^2+\frac{5}{7}\,Bc^2d^4x^7e+\frac{1}{6}\,Bc^2d^5x^6+\frac{1}{10}\,Ac^2x^{10}e^5+\frac{5}{9}\,Ac^2dx^9e^4+\frac{5}{4}\,Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/11*B*c^2*x^11*e^5 + 1/2*B*c^2*d*x^10*e^4 + 10/9*B*c^2*d^2*x^9*e^3 + 5/4*B
*c^2*d^3*x^8*e^2 + 5/7*B*c^2*d^4*x^7*e + 1/6*B*c^2*d^5*x^6 + 1/10*A*c^2*x^1
0*e^5 + 5/9*A*c^2*d*x^9*e^4 + 5/4*A*c^2*d^2*x^8*e^3 + 10/7*A*c^2*d^3*x^7*e^
2 + 5/6*A*c^2*d^4*x^6*e + 1/5*A*c^2*d^5*x^5 + 2/9*B*a*c*x^9*e^5 + 5/4*B*a*c
*d*x^8*e^4 + 20/7*B*a*c*d^2*x^7*e^3 + 10/3*B*a*c*d^3*x^6*e^2 + 2*B*a*c*d^4*
x^5*e + 1/2*B*a*c*d^5*x^4 + 1/4*A*a*c*x^8*e^5 + 10/7*A*a*c*d*x^7*e^4 + 10/3
*A*a*c*d^2*x^6*e^3 + 4*A*a*c*d^3*x^5*e^2 + 5/2*A*a*c*d^4*x^4*e + 2/3*A*a*c*
d^5*x^3 + 1/7*B*a^2*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4 + 2*B*a^2*d^2*x^5*e^3 + 5
/2*B*a^2*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 1/2*B*a^2*d^5*x^2 + 1/6*A*a^2*
x^6*e^5 + A*a^2*d*x^5*e^4 + 5/2*A*a^2*d^2*x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2
+ 5/2*A*a^2*d^4*x^2*e + A*a^2*d^5*x
```

maple [B] time = 0.04, size = 402, normalized size = 1.95

$$\frac{B\,c^2e^5x^{11}}{11}+\frac{\left(A\,e^5+5Bd\,e^4\right)c^2x^{10}}{10}+A\,a^2d^5x+\frac{\left(2Bac\,e^5+\left(5Ad\,e^4+10B\,d^2e^3\right)c^2\right)x^9}{9}+\frac{(2\left(A\,e^5+5Bd\,e^4\right)ac+(10A}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x)
```

```
[Out] 1/11*B*e^5*c^2*x^11+1/10*(A*e^5+5*B*d*e^4)*c^2*x^10+1/9*((5*A*d*e^4+10*B*d^
2*e^3)*c^2+2*B*e^5*a*c)*x^9+1/8*((10*A*d^2*e^3+10*B*d^3*e^2)*c^2+2*(A*e^5+5
*B*d*e^4)*a*c)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*c^2+2*(5*A*d*e^4+10*B*d^2*
e^3)*a*c+B*e^5*a^2)*x^7+1/6*((5*A*d^4*e+B*d^5)*c^2+2*(10*A*d^2*e^3+10*B*d^3
*e^2)*a*c+(A*e^5+5*B*d*e^4)*a^2)*x^6+1/5*(A*d^5*c^2+2*(10*A*d^3*e^2+5*B*d^4
*e)*a*c+(5*A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*(2*(5*A*d^4*e+B*d^5)*a*c+(10*
A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*(2*A*d^5*a*c+(10*A*d^3*e^2+5*B*d^4*e)*
a^2)*x^3+1/2*(5*A*d^4*e+B*d^5)*a^2*x^2+A*d^5*a^2*x
```

maxima [B] time = 0.53, size = 410, normalized size = 1.99

$$\frac{1}{11}Bc^2e^5x^{11}+\frac{1}{10}\left(5Bc^2de^4+Ac^2e^5\right)x^{10}+\frac{1}{9}\left(10Bc^2d^2e^3+5Ac^2de^4+2Bace^5\right)x^9+Aa^2d^5x+\frac{1}{4}\left(5Bc^2d^3e^2+5A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^2*e^5*x^11 + 1/10*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^10 + 1/9*(10*B*c^2
*d^2*e^3 + 5*A*c^2*d*e^4 + 2*B*a*c*e^5)*x^9 + A*a^2*d^5*x + 1/4*(5*B*c^2*d^
3*e^2 + 5*A*c^2*d^2*e^3 + 5*B*a*c*d*e^4 + A*a*c*e^5)*x^8 + 1/7*(5*B*c^2*d^4
*e + 10*A*c^2*d^3*e^2 + 20*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + B*a^2*e^5)*x^7
+ 1/6*(B*c^2*d^5 + 5*A*c^2*d^4*e + 20*B*a*c*d^3*e^2 + 20*A*a*c*d^2*e^3 + 5*
B*a^2*d*e^4 + A*a^2*e^5)*x^6 + 1/5*(A*c^2*d^5 + 10*B*a*c*d^4*e + 20*A*a*c*d
^3*e^2 + 10*B*a^2*d^2*e^3 + 5*A*a^2*d*e^4)*x^5 + 1/2*(B*a*c*d^5 + 5*A*a*c*d
^4*e + 5*B*a^2*d^3*e^2 + 5*A*a^2*d^2*e^3)*x^4 + 1/3*(2*A*a*c*d^5 + 5*B*a^2*
d^4*e + 10*A*a^2*d^3*e^2)*x^3 + 1/2*(B*a^2*d^5 + 5*A*a^2*d^4*e)*x^2
```

mupad [B] time = 1.86, size = 374, normalized size = 1.82

$$x^5\left(2Ba^2d^2e^3+Aa^2de^4+2Bacd^4e+4Aacd^3e^2+\frac{Ac^2d^5}{5}\right)+x^7\left(\frac{Ba^2e^5}{7}+\frac{20Bacd^2e^3}{7}+\frac{10Aacde^4}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^5*((A*c^2*d^5)/5 + A*a^2*d*e^4 + 2*B*a^2*d^2*e^3 + 2*B*a*c*d^4*e + 4*A*a*
c*d^3*e^2) + x^7*((B*a^2*e^5)/7 + (5*B*c^2*d^4*e)/7 + (10*A*c^2*d^3*e^2)/7
+ (10*A*a*c*d*e^4)/7 + (20*B*a*c*d^2*e^3)/7) + x^6*((A*a^2*e^5)/6 + (B*c^2*
d^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*c^2*d^4*e)/6 + (10*A*a*c*d^2*e^3)/3 + (10
*B*a*c*d^3*e^2)/3) + (a*d^3*x^3*(10*A*a*e^2 + 2*A*c*d^2 + 5*B*a*d*e))/3 + (
c*e^3*x^9*(2*B*a*e^2 + 10*B*c*d^2 + 5*A*c*d*e))/9 + (a^2*d^4*x^2*(5*A*e + B
*d))/2 + (c^2*e^4*x^10*(A*e + 5*B*d))/10 + A*a^2*d^5*x + (a*d^2*x^4*(5*A*a*
e^3 + B*c*d^3 + 5*B*a*d*e^2 + 5*A*c*d^2*e))/2 + (c*e^2*x^8*(A*a*e^3 + 5*B*c
*d^3 + 5*B*a*d*e^2 + 5*A*c*d^2*e))/4 + (B*c^2*e^5*x^11)/11
```

sympy [B] time = 0.14, size = 495, normalized size = 2.40

$$Aa^2d^5x+\frac{Bc^2e^5x^{11}}{11}+x^{10}\left(\frac{Ac^2e^5}{10}+\frac{Bc^2de^4}{2}\right)+x^9\left(\frac{5Ac^2de^4}{9}+\frac{2Bace^5}{9}+\frac{10Bc^2d^2e^3}{9}\right)+x^8\left(\frac{Aace^5}{4}+\frac{5Ac^2d^2e^3}{4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**5*x + B*c**2*e**5*x**11/11 + x**10*(A*c**2*e**5/10 + B*c**2*d*e**
4/2) + x**9*(5*A*c**2*d*e**4/9 + 2*B*a*c*e**5/9 + 10*B*c**2*d**2*e**3/9) +
x**8*(A*a*c*e**5/4 + 5*A*c**2*d**2*e**3/4 + 5*B*a*c*d*e**4/4 + 5*B*c**2*d**
3*e**2/4) + x**7*(10*A*a*c*d*e**4/7 + 10*A*c**2*d**3*e**2/7 + B*a**2*e**5/7
 + 20*B*a*c*d**2*e**3/7 + 5*B*c**2*d**4*e/7) + x**6*(A*a**2*e**5/6 + 10*A*a
*c*d**2*e**3/3 + 5*A*c**2*d**4*e/6 + 5*B*a**2*d*e**4/6 + 10*B*a*c*d**3*e**2
/3 + B*c**2*d**5/6) + x**5*(A*a**2*d*e**4 + 4*A*a*c*d**3*e**2 + A*c**2*d**5
/5 + 2*B*a**2*d**2*e**3 + 2*B*a*c*d**4*e) + x**4*(5*A*a**2*d**2*e**3/2 + 5*
A*a*c*d**4*e/2 + 5*B*a**2*d**3*e**2/2 + B*a*c*d**5/2) + x**3*(10*A*a**2*d**
3*e**2/3 + 2*A*a*c*d**5/3 + 5*B*a**2*d**4*e/3) + x**2*(5*A*a**2*d**4*e/2 +
B*a**2*d**5/2)
```

3.1298 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx$

Optimal. Leaf size=206

$$\frac{c(d+ex)^8 \left(aBe^2-2Acde+5Bcd^2\right)}{4e^6}+\frac{(d+ex)^6 \left(ae^2+cd^2\right) \left(aBe^2-4Acde+5Bcd^2\right)}{6e^6}-\frac{(d+ex)^5 \left(ae^2+cd^2\right)^2 (Bd-}{5e^6}$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^5/e^6+1/6*(a*e^2+c*d^2)*(-4*A*c*d*e
+B*a*e^2+5*B*c*d^2)*(e*x+d)^6/e^6-2/7*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5
*B*c*d^3)*(e*x+d)^7/e^6+1/4*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^8/e^6-
1/9*c^2*(-A*e+5*B*d)*(e*x+d)^9/e^6+1/10*B*c^2*(e*x+d)^10/e^6
```

Rubi [**A**] time = 0.27, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c(d+ex)^8 \left(aBe^2-2Acde+5Bcd^2\right)}{4e^6}-\frac{2c(d+ex)^7 \left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6}+\frac{(d+ex)^6 \left(ae^2+cd^2\right) (aB}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^6)/(6*e^6) - (2*c*(5*B*c*d^3 - 3*A
*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^7)/(7*e^6) + (c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^8)/(4*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^9)/(
9*e^6) + (B*c^2*(d + e*x)^10)/(10*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned} \int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^2 \, dx &= \int \left(\frac{(-Bd+Ae) \left(cd^2+ae^2\right)^2 (d+ex)^4}{e^5}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe\right.}{e^5}\right. \\ &= -\frac{(Bd-Ae) \left(cd^2+ae^2\right)^2 (d+ex)^5}{5e^6}+\frac{\left(cd^2+ae^2\right) \left(5Bcd^2-4Acde+aBe^2\right) (d}{6e^6} \end{aligned}$$

Mathematica [**A**] time = 0.08, size = 314, normalized size = 1.52

$$\frac{1}{6}x^6 \left(a^2Be^4+8aAcde^3+12aBcd^2e^2+4Ac^2d^3e+Bc^2d^4\right)+\frac{1}{5}x^5 \left(a^2Ae^4+4a^2Bde^3+12aAcd^2e^2+8aBcd^3e+Ac^2d\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^4*x + (a^2*d^3*(B*d + 4*A*e)*x^2)/2 + (2*a*d^2*(A*c*d^2 + 2*a*B*d*e
 + 3*a*A*e^2)*x^3)/3 + (a*d*(B*c*d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^
3)*x^4)/2 + ((A*c^2*d^4 + 8*a*B*c*d^3*e + 12*a*A*c*d^2*e^2 + 4*a^2*B*d*e^3
+ a^2*A*e^4)*x^5)/5 + ((B*c^2*d^4 + 4*A*c^2*d^3*e + 12*a*B*c*d^2*e^2 + 8*a*
A*c*d*e^3 + a^2*B*e^4)*x^6)/6 + (2*c*e*(2*B*c*d^3 + 3*A*c*d^2*e + 4*a*B*d*e
^2 + a*A*e^3)*x^7)/7 + (c*e^2*(3*B*c*d^2 + 2*A*c*d*e + a*B*e^2)*x^8)/4 + (c
^2*e^3*(4*B*d + A*e)*x^9)/9 + (B*c^2*e^4*x^10)/10
```

fricas [**A**] time = 0.40, size = 377, normalized size = 1.83

$$\frac{1}{10}x^{10}e^4c^2B+\frac{4}{9}x^9e^3dc^2B+\frac{1}{9}x^9e^4c^2A+\frac{3}{4}x^8e^2d^2c^2B+\frac{1}{4}x^8e^4caB+\frac{1}{2}x^8e^3dc^2A+\frac{4}{7}x^7ed^3c^2B+\frac{8}{7}x^7e^3dcaB+\frac{6}{7}x^7e^2d^2c^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*c^2*B + 4/9*x^9*e^3*d*c^2*B + 1/9*x^9*e^4*c^2*A + 3/4*x^8*e^2
*d^2*c^2*B + 1/4*x^8*e^4*c*a*B + 1/2*x^8*e^3*d*c^2*A + 4/7*x^7*e*d^3*c^2*B
+ 8/7*x^7*e^3*d*c*a*B + 6/7*x^7*e^2*d^2*c^2*A + 2/7*x^7*e^4*c*a*A + 1/6*x^6
*d^4*c^2*B + 2*x^6*e^2*d^2*c*a*B + 1/6*x^6*e^4*a^2*B + 2/3*x^6*e*d^3*c^2*A
+ 4/3*x^6*e^3*d*c*a*A + 8/5*x^5*e*d^3*c*a*B + 4/5*x^5*e^3*d*a^2*B + 1/5*x^5
*d^4*c^2*A + 12/5*x^5*e^2*d^2*c*a*A + 1/5*x^5*e^4*a^2*A + 1/2*x^4*d^4*c*a*B
 + 3/2*x^4*e^2*d^2*a^2*B + 2*x^4*e*d^3*c*a*A + x^4*e^3*d*a^2*A + 4/3*x^3*e*
d^3*a^2*B + 2/3*x^3*d^4*c*a*A + 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d^4*a^2*B + 2
*x^2*e*d^3*a^2*A + x*d^4*a^2*A
```

giac [**A**] time = 0.19, size = 365, normalized size = 1.77

$$\frac{1}{10}\,Bc^2x^{10}e^4+\frac{4}{9}\,Bc^2dx^9e^3+\frac{3}{4}\,Bc^2d^2x^8e^2+\frac{4}{7}\,Bc^2d^3x^7e+\frac{1}{6}\,Bc^2d^4x^6+\frac{1}{9}\,Ac^2x^9e^4+\frac{1}{2}\,Ac^2dx^8e^3+\frac{6}{7}\,Ac^2d^2x^7e^2+\frac{2}{3}\,Ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*c^2*x^10*e^4 + 4/9*B*c^2*d*x^9*e^3 + 3/4*B*c^2*d^2*x^8*e^2 + 4/7*B*c
^2*d^3*x^7*e + 1/6*B*c^2*d^4*x^6 + 1/9*A*c^2*x^9*e^4 + 1/2*A*c^2*d*x^8*e^3
+ 6/7*A*c^2*d^2*x^7*e^2 + 2/3*A*c^2*d^3*x^6*e + 1/5*A*c^2*d^4*x^5 + 1/4*B*a
*c*x^8*e^4 + 8/7*B*a*c*d*x^7*e^3 + 2*B*a*c*d^2*x^6*e^2 + 8/5*B*a*c*d^3*x^5*
e + 1/2*B*a*c*d^4*x^4 + 2/7*A*a*c*x^7*e^4 + 4/3*A*a*c*d*x^6*e^3 + 12/5*A*a*
c*d^2*x^5*e^2 + 2*A*a*c*d^3*x^4*e + 2/3*A*a*c*d^4*x^3 + 1/6*B*a^2*x^6*e^4 +
 4/5*B*a^2*d*x^5*e^3 + 3/2*B*a^2*d^2*x^4*e^2 + 4/3*B*a^2*d^3*x^3*e + 1/2*B*
a^2*d^4*x^2 + 1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e^3 + 2*A*a^2*d^2*x^3*e^2 + 2
*A*a^2*d^3*x^2*e + A*a^2*d^4*x
```

maple [**A**] time = 0.04, size = 327, normalized size = 1.59

$$\frac{B\,c^2e^4x^{10}}{10}+\frac{\left(A\,e^4+4Bd\,e^3\right)c^2x^9}{9}+A\,a^2d^4x+\frac{\left(2Bac\,e^4+\left(4Ad\,e^3+6B\,d^2e^2\right)c^2\right)x^8}{8}+\frac{\left(2\left(A\,e^4+4Bd\,e^3\right)ac+\left(6A\right.\right.}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x)
```

```
[Out] 1/10*B*e^4*c^2*x^10+1/9*(A*e^4+4*B*d*e^3)*c^2*x^9+1/8*((4*A*d*e^3+6*B*d^2*e
^2)*c^2+2*B*e^4*a*c)*x^8+1/7*((6*A*d^2*e^2+4*B*d^3*e)*c^2+2*(A*e^4+4*B*d*e^
3)*a*c)*x^7+1/6*((4*A*d^3*e+B*d^4)*c^2+2*(4*A*d*e^3+6*B*d^2*e^2)*a*c+B*e^4*
a^2)*x^6+1/5*(A*d^4*c^2+2*(6*A*d^2*e^2+4*B*d^3*e)*a*c+(A*e^4+4*B*d*e^3)*a^2
)*x^5+1/4*(2*(4*A*d^3*e+B*d^4)*a*c+(4*A*d*e^3+6*B*d^2*e^2)*a^2)*x^4+1/3*(2*
A*d^4*a*c+(6*A*d^2*e^2+4*B*d^3*e)*a^2)*x^3+1/2*(4*A*d^3*e+B*d^4)*a^2*x^2+A*
d^4*a^2*x
```

maxima [**A**] time = 0.51, size = 332, normalized size = 1.61

$$\frac{1}{10}\,Bc^2e^4x^{10}+\frac{1}{9}\left(4\,Bc^2de^3+Ac^2e^4\right)x^9+\frac{1}{4}\left(3\,Bc^2d^2e^2+2\,Ac^2de^3+Bace^4\right)x^8+Aa^2d^4x+\frac{2}{7}\left(2\,Bc^2d^3e+3\,Ac^2d^2e^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^2*e^4*x^10 + 1/9*(4*B*c^2*d*e^3 + A*c^2*e^4)*x^9 + 1/4*(3*B*c^2*d^
2*e^2 + 2*A*c^2*d*e^3 + B*a*c*e^4)*x^8 + A*a^2*d^4*x + 2/7*(2*B*c^2*d^3*e +
 3*A*c^2*d^2*e^2 + 4*B*a*c*d*e^3 + A*a*c*e^4)*x^7 + 1/6*(B*c^2*d^4 + 4*A*c^
2*d^3*e + 12*B*a*c*d^2*e^2 + 8*A*a*c*d*e^3 + B*a^2*e^4)*x^6 + 1/5*(A*c^2*d^
4 + 8*B*a*c*d^3*e + 12*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*x^5 + 1/2
*(B*a*c*d^4 + 4*A*a*c*d^3*e + 3*B*a^2*d^2*e^2 + 2*A*a^2*d*e^3)*x^4 + 2/3*(A
*a*c*d^4 + 2*B*a^2*d^3*e + 3*A*a^2*d^2*e^2)*x^3 + 1/2*(B*a^2*d^4 + 4*A*a^2*
d^3*e)*x^2
```

mupad [**B**] time = 0.13, size = 298, normalized size = 1.45

$$x^5\left(\frac{4\,B\,a^2\,d\,e^3}{5}+\frac{A\,a^2\,e^4}{5}+\frac{8\,B\,a\,c\,d^3\,e}{5}+\frac{12\,A\,a\,c\,d^2\,e^2}{5}+\frac{A\,c^2\,d^4}{5}\right)+x^6\left(\frac{B\,a^2\,e^4}{6}+2\,B\,a\,c\,d^2\,e^2+\frac{4\,A\,a\,c\,d\,e^3}{3}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^5*((A*a^2*e^4)/5 + (A*c^2*d^4)/5 + (4*B*a^2*d*e^3)/5 + (8*B*a*c*d^3*e)/5
+ (12*A*a*c*d^2*e^2)/5) + x^6*((B*a^2*e^4)/6 + (B*c^2*d^4)/6 + (2*A*c^2*d^3
*e)/3 + (4*A*a*c*d*e^3)/3 + 2*B*a*c*d^2*e^2) + (2*a*d^2*x^3*(3*A*a*e^2 + A*
c*d^2 + 2*B*a*d*e))/3 + (c*e^2*x^8*(B*a*e^2 + 3*B*c*d^2 + 2*A*c*d*e))/4 + (
a^2*d^3*x^2*(4*A*e + B*d))/2 + (c^2*e^3*x^9*(A*e + 4*B*d))/9 + (a*d*x^4*(2*
A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 4*A*c*d^2*e))/2 + (2*c*e*x^7*(A*a*e^3 + 2
*B*c*d^3 + 4*B*a*d*e^2 + 3*A*c*d^2*e))/7 + A*a^2*d^4*x + (B*c^2*e^4*x^10)/1
0
```

sympy [**A**] time = 0.12, size = 398, normalized size = 1.93

$$Aa^2d^4x+\frac{Bc^2e^4x^{10}}{10}+x^9\left(\frac{Ac^2e^4}{9}+\frac{4Bc^2de^3}{9}\right)+x^8\left(\frac{Ac^2de^3}{2}+\frac{Bace^4}{4}+\frac{3Bc^2d^2e^2}{4}\right)+x^7\left(\frac{2Aace^4}{7}+\frac{6Ac^2d^2e^2}{7}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**4*x + B*c**2*e**4*x**10/10 + x**9*(A*c**2*e**4/9 + 4*B*c**2*d*e**
3/9) + x**8*(A*c**2*d*e**3/2 + B*a*c*e**4/4 + 3*B*c**2*d**2*e**2/4) + x**7*
(2*A*a*c*e**4/7 + 6*A*c**2*d**2*e**2/7 + 8*B*a*c*d*e**3/7 + 4*B*c**2*d**3*e
/7) + x**6*(4*A*a*c*d*e**3/3 + 2*A*c**2*d**3*e/3 + B*a**2*e**4/6 + 2*B*a*c*
d**2*e**2 + B*c**2*d**4/6) + x**5*(A*a**2*e**4/5 + 12*A*a*c*d**2*e**2/5 + A
*c**2*d**4/5 + 4*B*a**2*d*e**3/5 + 8*B*a*c*d**3*e/5) + x**4*(A*a**2*d*e**3
+ 2*A*a*c*d**3*e + 3*B*a**2*d**2*e**2/2 + B*a*c*d**4/2) + x**3*(2*A*a**2*d*
*2*e**2 + 2*A*a*c*d**4/3 + 4*B*a**2*d**3*e/3) + x**2*(2*A*a**2*d**3*e + B*a
**2*d**4/2)
```

3.1299 $\int (A+Bx)(d+ex)^3\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=206

$$\frac{2c(d+ex)^7\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}+\frac{(d+ex)^5\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{(d+ex)^4\left(ae^2+cd^2\right)^2(}{4e^6}$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^4/e^6+1/5*(a*e^2+c*d^2)*(-4*A*c*d*e
+B*a*e^2+5*B*c*d^2)*(e*x+d)^5/e^6-1/3*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5
*B*c*d^3)*(e*x+d)^6/e^6+2/7*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^7/e^6-
1/8*c^2*(-A*e+5*B*d)*(e*x+d)^8/e^6+1/9*B*c^2*(e*x+d)^9/e^6
```

Rubi [A] time = 0.22, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2c(d+ex)^7\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}-\frac{c(d+ex)^6\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6}+\frac{(d+ex)^5\left(ae^2+cd^2\right)(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^4)/(4*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^5)/(5*e^6) - (c*(5*B*c*d^3 - 3*A*c
*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^6)/(3*e^6) + (2*c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^8)/(
8*e^6) + (B*c^2*(d + e*x)^9)/(9*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a+cx^2\right)^2\,dx&=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2(d+ex)^3}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{e^5}\right.\\&=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^4}{4e^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{5e^6}\end{aligned}$$

Mathematica [A] time = 0.07, size = 244, normalized size = 1.18

$$\frac{1}{5}x^5\left(a^2Be^3+6aAcde^2+6aBcd^2e+Ac^2d^3\right)+\frac{1}{2}a^2d^2x^2(3Ae+Bd)+a^2Ad^3x+\frac{1}{7}cex^7\left(2aBe^2+3Acde+3Bcd^2\right)+$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^3*x + (a^2*d^2*(B*d + 3*A*e)*x^2)/2 + (a*d*(2*A*c*d^2 + 3*a*B*d*e +
 3*a*A*e^2)*x^3)/3 + (a*(2*B*c*d^3 + 6*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x
^4)/4 + ((A*c^2*d^3 + 6*a*B*c*d^2*e + 6*a*A*c*d*e^2 + a^2*B*e^3)*x^5)/5 + (
c*(B*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3)*x^6)/6 + (c*e*(3*B*c*d^
2 + 3*A*c*d*e + 2*a*B*e^2)*x^7)/7 + (c^2*e^2*(3*B*d + A*e)*x^8)/8 + (B*c^2*
e^3*x^9)/9
```

fricas [A] time = 0.39, size = 287, normalized size = 1.39

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{2}{7}x^7e^3caB+\frac{3}{7}x^7e^2dc^2A+\frac{1}{6}x^6d^3c^2B+x^6e^2dcaB+\frac{1}{2}x^6ed^2c^2A+\frac{1}{3}x^6e^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/8*x^8*e^3*c^2*A + 3/7*x^7*e*d^2
*c^2*B + 2/7*x^7*e^3*c*a*B + 3/7*x^7*e^2*d*c^2*A + 1/6*x^6*d^3*c^2*B + x^6*
e^2*d*c*a*B + 1/2*x^6*e*d^2*c^2*A + 1/3*x^6*e^3*c*a*A + 6/5*x^5*e*d^2*c*a*B
 + 1/5*x^5*e^3*a^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x^5*e^2*d*c*a*A + 1/2*x^4*d^
3*c*a*B + 3/4*x^4*e^2*d*a^2*B + 3/2*x^4*e*d^2*c*a*A + 1/4*x^4*e^3*a^2*A + x
^3*e*d^2*a^2*B + 2/3*x^3*d^3*c*a*A + x^3*e^2*d*a^2*A + 1/2*x^2*d^3*a^2*B +
3/2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [A] time = 0.19, size = 281, normalized size = 1.36

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{8}Ac^2x^8e^3+\frac{3}{7}Ac^2dx^7e^2+\frac{1}{2}Ac^2d^2x^6e+\frac{1}{5}Ac^2d^3x^5+\frac{2}{7}Bacx^7e^3+B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/8*A*c^2*x^8*e^3 + 3/7*A*c^2*d*x^7*e^2 + 1/2*A*c^2*d^2*x^6*e + 1/
5*A*c^2*d^3*x^5 + 2/7*B*a*c*x^7*e^3 + B*a*c*d*x^6*e^2 + 6/5*B*a*c*d^2*x^5*e
 + 1/2*B*a*c*d^3*x^4 + 1/3*A*a*c*x^6*e^3 + 6/5*A*a*c*d*x^5*e^2 + 3/2*A*a*c*
d^2*x^4*e + 2/3*A*a*c*d^3*x^3 + 1/5*B*a^2*x^5*e^3 + 3/4*B*a^2*d*x^4*e^2 + B
*a^2*d^2*x^3*e + 1/2*B*a^2*d^3*x^2 + 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 +
3/2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [A] time = 0.04, size = 252, normalized size = 1.22

$$\frac{Bc^2e^3x^9}{9}+\frac{\left(Ae^3+3Bde^2\right)c^2x^8}{8}+Aa^2d^3x+\frac{\left(2Bace^3+\left(3Ade^2+3Bd^2e\right)c^2\right)x^7}{7}+\frac{\left(2\left(Ae^3+3Bde^2\right)ac+\left(3Ad^2e+\right.\right.}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*(A*e^3+3*B*d*e^2)*c^2*x^8+1/7*((3*A*d*e^2+3*B*d^2*e)*
c^2+2*B*e^3*a*c)*x^7+1/6*((3*A*d^2*e+B*d^3)*c^2+2*(A*e^3+3*B*d*e^2)*a*c)*x^
6+1/5*(A*d^3*c^2+2*(3*A*d*e^2+3*B*d^2*e)*a*c+a^2*B*e^3)*x^5+1/4*(2*(3*A*d^2
*e+B*d^3)*a*c+(A*e^3+3*B*d*e^2)*a^2)*x^4+1/3*(2*A*d^3*a*c+(3*A*d*e^2+3*B*d^
2*e)*a^2)*x^3+1/2*(3*A*d^2*e+B*d^3)*a^2*x^2+A*d^3*a^2*x
```

maxima [A] time = 0.63, size = 260, normalized size = 1.26

$$\frac{1}{9}Bc^2e^3x^9+\frac{1}{8}\left(3Bc^2de^2+Ac^2e^3\right)x^8+\frac{1}{7}\left(3Bc^2d^2e+3Ac^2de^2+2Bace^3\right)x^7+Aa^2d^3x+\frac{1}{6}\left(Bc^2d^3+3Ac^2d^2e+6Bac\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/8*(3*B*c^2*d*e^2 + A*c^2*e^3)*x^8 + 1/7*(3*B*c^2*d^2*
e + 3*A*c^2*d*e^2 + 2*B*a*c*e^3)*x^7 + A*a^2*d^3*x + 1/6*(B*c^2*d^3 + 3*A*c
^2*d^2*e + 6*B*a*c*d*e^2 + 2*A*a*c*e^3)*x^6 + 1/5*(A*c^2*d^3 + 6*B*a*c*d^2*
e + 6*A*a*c*d*e^2 + B*a^2*e^3)*x^5 + 1/4*(2*B*a*c*d^3 + 6*A*a*c*d^2*e + 3*B
*a^2*d*e^2 + A*a^2*e^3)*x^4 + 1/3*(2*A*a*c*d^3 + 3*B*a^2*d^2*e + 3*A*a^2*d*
e^2)*x^3 + 1/2*(B*a^2*d^3 + 3*A*a^2*d^2*e)*x^2
```

mupad [B] time = 1.75, size = 229, normalized size = 1.11

$$x^5\left(\frac{B\,a^2\,e^3}{5}+\frac{6\,B\,a\,c\,d^2\,e}{5}+\frac{6\,A\,a\,c\,d\,e^2}{5}+\frac{A\,c^2\,d^3}{5}\right)+\frac{a\,x^4\,\left(2\,B\,c\,d^3+6\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{4}+c\,x^6\,\left(B\,c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^5*((A*c^2*d^3)/5 + (B*a^2*e^3)/5 + (6*A*a*c*d*e^2)/5 + (6*B*a*c*d^2*e)/5)
 + (a*x^4*(A*a*e^3 + 2*B*c*d^3 + 3*B*a*d*e^2 + 6*A*c*d^2*e))/4 + (c*x^6*(2*
A*a*e^3 + B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/6 + (a^2*d^2*x^2*(3*A*e + B
*d))/2 + (c^2*e^2*x^8*(A*e + 3*B*d))/8 + A*a^2*d^3*x + (a*d*x^3*(3*A*a*e^2
+ 2*A*c*d^2 + 3*B*a*d*e))/3 + (c*e*x^7*(2*B*a*e^2 + 3*B*c*d^2 + 3*A*c*d*e))
/7 + (B*c^2*e^3*x^9)/9
```

sympy [A] time = 0.11, size = 303, normalized size = 1.47

$$Aa^2d^3x+\frac{Bc^2e^3x^9}{9}+x^8\left(\frac{Ac^2e^3}{8}+\frac{3Bc^2de^2}{8}\right)+x^7\left(\frac{3Ac^2de^2}{7}+\frac{2Bace^3}{7}+\frac{3Bc^2d^2e}{7}\right)+x^6\left(\frac{Aace^3}{3}+\frac{Ac^2d^2e}{2}+Bacde\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**3*x + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + 3*B*c**2*d*e**2/
8) + x**7*(3*A*c**2*d*e**2/7 + 2*B*a*c*e**3/7 + 3*B*c**2*d**2*e/7) + x**6*(
A*a*c*e**3/3 + A*c**2*d**2*e/2 + B*a*c*d*e**2 + B*c**2*d**3/6) + x**5*(6*A*
a*c*d*e**2/5 + A*c**2*d**3/5 + B*a**2*e**3/5 + 6*B*a*c*d**2*e/5) + x**4*(A*
a**2*e**3/4 + 3*A*a*c*d**2*e/2 + 3*B*a**2*d*e**2/4 + B*a*c*d**3/2) + x**3*(
A*a**2*d*e**2 + 2*A*a*c*d**3/3 + B*a**2*d**2*e) + x**2*(3*A*a**2*d**2*e/2 +
 B*a**2*d**3/2)
```

3.1300 $\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=206

$$\frac{c(d+ex)^6\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}+\frac{(d+ex)^4\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{4e^6}-\frac{(d+ex)^3\left(ae^2+cd^2\right)^2(Bd-}{3e^6}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^3/e^6+1/4*(a*e^2+c*d^2)*(-4*A*c*d*e
+B*a*e^2+5*B*c*d^2)*(e*x+d)^4/e^6-2/5*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5
*B*c*d^3)*(e*x+d)^5/e^6+1/3*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^6/e^6-
1/7*c^2*(-A*e+5*B*d)*(e*x+d)^7/e^6+1/8*B*c^2*(e*x+d)^8/e^6
```

Rubi [**A**] time = 0.17, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c(d+ex)^6\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{2c(d+ex)^5\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6}+\frac{(d+ex)^4\left(ae^2+cd^2\right)(aB}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 + a*e^2)*(5*
B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^4)/(4*e^6) - (2*c*(5*B*c*d^3 - 3*A
*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^5)/(5*e^6) + (c*(5*B*c*d^2 - 2*
A*c*d*e + a*B*e^2)*(d + e*x)^6)/(3*e^6) - (c^2*(5*B*d - A*e)*(d + e*x)^7)/(
7*e^6) + (B*c^2*(d + e*x)^8)/(8*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^2\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2(d+ex)^2}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe\right.}{e^5}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^3}{3e^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)(d}{4e^6}$$

Mathematica [**A**] time = 0.04, size = 174, normalized size = 0.84

$$\frac{1}{2}a^2dx^2(2Ae+Bd)+a^2Ad^2x+\frac{1}{6}cx^6\left(2aBe^2+2Acde+Bcd^2\right)+\frac{1}{5}cx^5\left(2aAe^2+4aBde+Acd^2\right)+\frac{1}{4}ax^4\left(aBe^2+4Acde\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d^2*x + (a^2*d*(B*d + 2*A*e)*x^2)/2 + (a*(2*A*c*d^2 + 2*a*B*d*e + a*A
*e^2)*x^3)/3 + (a*(2*B*c*d^2 + 4*A*c*d*e + a*B*e^2)*x^4)/4 + (c*(A*c*d^2 +
4*a*B*d*e + 2*a*A*e^2)*x^5)/5 + (c*(B*c*d^2 + 2*A*c*d*e + 2*a*B*e^2)*x^6)/6
 + (c^2*e*(2*B*d + A*e)*x^7)/7 + (B*c^2*e^2*x^8)/8
```

fricas [A] time = 0.44, size = 200, normalized size = 0.97

$$\frac{1}{8}x^8e^2c^2B+\frac{2}{7}x^7edc^2B+\frac{1}{7}x^7e^2c^2A+\frac{1}{6}x^6d^2c^2B+\frac{1}{3}x^6e^2caB+\frac{1}{3}x^6edc^2A+\frac{4}{5}x^5edcaB+\frac{1}{5}x^5d^2c^2A+\frac{2}{5}x^5e^2caA+\frac{1}{2}x^4d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 1/7*x^7*e^2*c^2*A + 1/6*x^6*d^2*c^2
*B + 1/3*x^6*e^2*c*a*B + 1/3*x^6*e*d*c^2*A + 4/5*x^5*e*d*c*a*B + 1/5*x^5*d^
2*c^2*A + 2/5*x^5*e^2*c*a*A + 1/2*x^4*d^2*c*a*B + 1/4*x^4*e^2*a^2*B + x^4*e
*d*c*a*A + 2/3*x^3*e*d*a^2*B + 2/3*x^3*d^2*c*a*A + 1/3*x^3*e^2*a^2*A + 1/2*
x^2*d^2*a^2*B + x^2*e*d*a^2*A + x*d^2*a^2*A
```

giac [A] time = 0.16, size = 200, normalized size = 0.97

$$\frac{1}{8}\,Bc^2x^8e^2+\frac{2}{7}\,Bc^2dx^7e+\frac{1}{6}\,Bc^2d^2x^6+\frac{1}{7}\,Ac^2x^7e^2+\frac{1}{3}\,Ac^2dx^6e+\frac{1}{5}\,Ac^2d^2x^5+\frac{1}{3}\,Bacx^6e^2+\frac{4}{5}\,Bacdx^5e+\frac{1}{2}\,Bacd^2x^4+\frac{2}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 1/7*A*c^2*x^7*e
^2 + 1/3*A*c^2*d*x^6*e + 1/5*A*c^2*d^2*x^5 + 1/3*B*a*c*x^6*e^2 + 4/5*B*a*c*
d*x^5*e + 1/2*B*a*c*d^2*x^4 + 2/5*A*a*c*x^5*e^2 + A*a*c*d*x^4*e + 2/3*A*a*c
*d^2*x^3 + 1/4*B*a^2*x^4*e^2 + 2/3*B*a^2*d*x^3*e + 1/2*B*a^2*d^2*x^2 + 1/3*
A*a^2*x^3*e^2 + A*a^2*d*x^2*e + A*a^2*d^2*x
```

maple [A] time = 0.04, size = 177, normalized size = 0.86

$$\frac{B\,c^2e^2x^8}{8}+\frac{\left(A\,e^2+2Bde\right)c^2x^7}{7}+A\,a^2d^2x+\frac{\left(2Bac\,e^2+\left(2Ade+B\,d^2\right)c^2\right)x^6}{6}+\frac{\left(A\,c^2d^2+2\left(A\,e^2+2Bde\right)ac\right)x^5}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*(A*e^2+2*B*d*e)*c^2*x^7+1/6*((2*A*d*e+B*d^2)*c^2+2*B*
e^2*a*c)*x^6+1/5*(A*c^2*d^2+2*(A*e^2+2*B*d*e)*a*c)*x^5+1/4*(2*(2*A*d*e+B*d^
2)*a*c+a^2*B*e^2)*x^4+1/3*(2*A*d^2*a*c+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d*
e+B*d^2)*a^2*x^2+A*d^2*a^2*x
```

maxima [A] time = 0.57, size = 184, normalized size = 0.89

$$\frac{1}{8}\,Bc^2e^2x^8+\frac{1}{7}\left(2\,Bc^2de+Ac^2e^2\right)x^7+\frac{1}{6}\left(Bc^2d^2+2\,Ac^2de+2\,Bace^2\right)x^6+Aa^2d^2x+\frac{1}{5}\left(Ac^2d^2+4\,Bacde+2\,Aace^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/7*(2*B*c^2*d*e + A*c^2*e^2)*x^7 + 1/6*(B*c^2*d^2 + 2*
A*c^2*d*e + 2*B*a*c*e^2)*x^6 + A*a^2*d^2*x + 1/5*(A*c^2*d^2 + 4*B*a*c*d*e +
 2*A*a*c*e^2)*x^5 + 1/4*(2*B*a*c*d^2 + 4*A*a*c*d*e + B*a^2*e^2)*x^4 + 1/3*(
2*A*a*c*d^2 + 2*B*a^2*d*e + A*a^2*e^2)*x^3 + 1/2*(B*a^2*d^2 + 2*A*a^2*d*e)*
x^2
```

mupad [B] time = 1.73, size = 168, normalized size = 0.82

$$x^3\left(\frac{2\,B\,a^2\,d\,e}{3}+\frac{A\,a^2\,e^2}{3}+\frac{2\,A\,c\,a\,d^2}{3}\right)+x^6\left(\frac{B\,c^2\,d^2}{6}+\frac{A\,c^2\,d\,e}{3}+\frac{B\,a\,c\,e^2}{3}\right)+\frac{c\,x^5\left(A\,c\,d^2+4\,B\,a\,d\,e+2\,A\,a\,e^2\right)}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (2*A*a*c*d^2)/3 + (2*B*a^2*d*e)/3) + x^6*((B*c^2*d^2)/
6 + (B*a*c*e^2)/3 + (A*c^2*d*e)/3) + (c*x^5*(2*A*a*e^2 + A*c*d^2 + 4*B*a*d*
e))/5 + (a*x^4*(B*a*e^2 + 2*B*c*d^2 + 4*A*c*d*e))/4 + A*a^2*d^2*x + (a^2*d*
x^2*(2*A*e + B*d))/2 + (c^2*e*x^7*(A*e + 2*B*d))/7 + (B*c^2*e^2*x^8)/8
```

sympy [A] time = 0.10, size = 211, normalized size = 1.02

$$Aa^2d^2x+\frac{Bc^2e^2x^8}{8}+x^7\left(\frac{Ac^2e^2}{7}+\frac{2Bc^2de}{7}\right)+x^6\left(\frac{Ac^2de}{3}+\frac{Bace^2}{3}+\frac{Bc^2d^2}{6}\right)+x^5\left(\frac{2Aace^2}{5}+\frac{Ac^2d^2}{5}+\frac{4Bacde}{5}\right)+x^4\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d**2*x + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*c**2*d*e/7)
+ x**6*(A*c**2*d*e/3 + B*a*c*e**2/3 + B*c**2*d**2/6) + x**5*(2*A*a*c*e**2/5
 + A*c**2*d**2/5 + 4*B*a*c*d*e/5) + x**4*(A*a*c*d*e + B*a**2*e**2/4 + B*a*c
*d**2/2) + x**3*(A*a**2*e**2/3 + 2*A*a*c*d**2/3 + 2*B*a**2*d*e/3) + x**2*(A
*a**2*d*e + B*a**2*d**2/2)
```

3.1301 $\int (A+Bx)(d+ex)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=106

$$\frac{1}{2}a^2x^2(Ae+Bd)+a^2Adx+\frac{1}{5}cx^5(2aBe+Acd)+\frac{1}{2}acx^4(Ae+Bd)+\frac{1}{3}ax^3(aBe+2Acd)+\frac{1}{6}c^2x^6(Ae+Bd)+\frac{1}{7}Bc^2ex^7$$

```
[Out] a^2*A*d*x+1/2*a^2*(A*e+B*d)*x^2+1/3*a*(2*A*c*d+B*a*e)*x^3+1/2*a*c*(A*e+B*d)
*x^4+1/5*c*(A*c*d+2*B*a*e)*x^5+1/6*c^2*(A*e+B*d)*x^6+1/7*B*c^2*e*x^7
```

Rubi [A] time = 0.13, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {772}

$$\frac{1}{2}a^2x^2(Ae+Bd)+a^2Adx+\frac{1}{5}cx^5(2aBe+Acd)+\frac{1}{2}acx^4(Ae+Bd)+\frac{1}{3}ax^3(aBe+2Acd)+\frac{1}{6}c^2x^6(Ae+Bd)+\frac{1}{7}Bc^2ex^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a^2*(B*d + A*e)*x^2)/2 + (a*(2*A*c*d + a*B*e)*x^3)/3 + (a*c*(B
*d + A*e)*x^4)/2 + (c*(A*c*d + 2*a*B*e)*x^5)/5 + (c^2*(B*d + A*e)*x^6)/6 +
(B*c^2*e*x^7)/7
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+cx^2\right)^2\,dx &= \int \left(a^2Ad+a^2(Bd+Ae)x+a(2Acd+aBe)x^2+2ac(Bd+Ae)x^3+c(Acd\right.\\ &= a^2Adx+\frac{1}{2}a^2(Bd+Ae)x^2+\frac{1}{3}a(2Acd+aBe)x^3+\frac{1}{2}ac(Bd+Ae)x^4+\frac{1}{5}c(\end{aligned}$$

Mathematica [A] time = 0.04, size = 95, normalized size = 0.90

$$\frac{1}{210}x\left(35a^2(3A(2d+ex)+Bx(3d+2ex))+7acx^2(5A(4d+3ex)+3Bx(5d+4ex))+c^2x^4(7A(6d+5ex)+5B\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2)^2,x]
```

```
[Out] (x*(35*a^2*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 7*a*c*x^2*(5*A*(4*d + 3*
e*x) + 3*B*x*(5*d + 4*e*x)) + c^2*x^4*(7*A*(6*d + 5*e*x) + 5*B*x*(7*d + 6*e
*x))))/210
```

fricas [A] time = 0.43, size = 114, normalized size = 1.08

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5ecaB+\frac{1}{5}x^5dc^2A+\frac{1}{2}x^4dcaB+\frac{1}{2}x^4ecaA+\frac{1}{3}x^3ea^2B+\frac{2}{3}x^3dcaA+\frac{1}{2}x^2da^2B+\frac{1}{2}x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/6*x^6*e*c^2*A + 2/5*x^5*e*c*a*B + 1/5
*x^5*d*c^2*A + 1/2*x^4*d*c*a*B + 1/2*x^4*e*c*a*A + 1/3*x^3*e*a^2*B + 2/3*x^
3*d*c*a*A + 1/2*x^2*d*a^2*B + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [A] time = 0.16, size = 120, normalized size = 1.13

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{6}Ac^2x^6e+\frac{1}{5}Ac^2dx^5+\frac{2}{5}Bacx^5e+\frac{1}{2}Bacdx^4+\frac{1}{2}Aacx^4e+\frac{2}{3}Aacdx^3+\frac{1}{3}Ba^2x^3e+\frac{1}{2}Ba^2dx^2+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/6*A*c^2*x^6*e + 1/5*A*c^2*d*x^5 + 2/5
*B*a*c*x^5*e + 1/2*B*a*c*d*x^4 + 1/2*A*a*c*x^4*e + 2/3*A*a*c*d*x^3 + 1/3*B*
a^2*x^3*e + 1/2*B*a^2*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [A] time = 0.04, size = 99, normalized size = 0.93

$$\frac{Bc^2ex^7}{7}+\frac{(Ae+Bd)c^2x^6}{6}+\frac{(Ae+Bd)acx^4}{2}+Aa^2dx+\frac{\left(Ac^2d+2Beac\right)x^5}{5}+\frac{(Ae+Bd)a^2x^2}{2}+\frac{\left(2Adac+Bea^2\right)x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*c^2*(A*e+B*d)*x^6+1/5*(A*c^2*d+2*B*a*c*e)*x^5+1/2*a*c*(
A*e+B*d)*x^4+1/3*(2*A*a*c*d+B*a^2*e)*x^3+1/2*a^2*(A*e+B*d)*x^2+a^2*A*d*x
```

maxima [A] time = 0.57, size = 106, normalized size = 1.00

$$\frac{1}{7}Bc^2ex^7+\frac{1}{6}\left(Bc^2d+Ac^2e\right)x^6+\frac{1}{5}\left(Ac^2d+2Bace\right)x^5+Aa^2dx+\frac{1}{2}(Bacd+Aace)x^4+\frac{1}{3}\left(2Aacd+Ba^2e\right)x^3+\frac{1}{2}\left(Ba^2d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/6*(B*c^2*d + A*c^2*e)*x^6 + 1/5*(A*c^2*d + 2*B*a*c*e)*x
^5 + A*a^2*d*x + 1/2*(B*a*c*d + A*a*c*e)*x^4 + 1/3*(2*A*a*c*d + B*a^2*e)*x^
3 + 1/2*(B*a^2*d + A*a^2*e)*x^2
```

mupad [B] time = 1.68, size = 98, normalized size = 0.92

$$x^3\left(\frac{Bea^2}{3}+\frac{2Acda}{3}\right)+x^5\left(\frac{Adc^2}{5}+\frac{2Baec}{5}\right)+\frac{a^2x^2(Ae+Bd)}{2}+\frac{c^2x^6(Ae+Bd)}{6}+Aa^2dx+\frac{acx^4(Ae+Bd)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((B*a^2*e)/3 + (2*A*a*c*d)/3) + x^5*((A*c^2*d)/5 + (2*B*a*c*e)/5) + (a^
2*x^2*(A*e + B*d))/2 + (c^2*x^6*(A*e + B*d))/6 + A*a^2*d*x + (a*c*x^4*(A*e
+ B*d))/2 + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.08, size = 124, normalized size = 1.17

$$Aa^2dx+\frac{Bc^2ex^7}{7}+x^6\left(\frac{Ac^2e}{6}+\frac{Bc^2d}{6}\right)+x^5\left(\frac{Ac^2d}{5}+\frac{2Bace}{5}\right)+x^4\left(\frac{Aace}{2}+\frac{Bacd}{2}\right)+x^3\left(\frac{2Aacd}{3}+\frac{Ba^2e}{3}\right)+x^2\left(\frac{Aa^2e}{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*d*x + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*c**2*d/6) + x**5*(A*c**
2*d/5 + 2*B*a*c*e/5) + x**4*(A*a*c*e/2 + B*a*c*d/2) + x**3*(2*A*a*c*d/3 + B
*a**2*e/3) + x**2*(A*a**2*e/2 + B*a**2*d/2)
```

3.1302 $\int (A+Bx)\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=45

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

```
[Out] a^2*A*x+2/3*a*A*c*x^3+1/5*A*c^2*x^5+1/6*B*(c*x^2+a)^3/c
```

Rubi [A] time = 0.02, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Ax+\frac{2}{3}aAcx^3+\frac{B\left(a+cx^2\right)^3}{6c}+\frac{1}{5}Ac^2x^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (2*a*A*c*x^3)/3 + (A*c^2*x^5)/5 + (B*(a + c*x^2)^3)/(6*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+cx^2\right)^2\,dx&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a+cx^2\right)^2\,dx\\&=\frac{B\left(a+cx^2\right)^3}{6c}+A\int \left(a^2+2acx^2+c^2x^4\right)\,dx\\&=a^2Ax+\frac{2}{3}aAcx^3+\frac{1}{5}Ac^2x^5+\frac{B\left(a+cx^2\right)^3}{6c}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.33

$$a^2Ax+\frac{1}{2}a^2Bx^2+\frac{2}{3}aAcx^3+\frac{1}{2}aBcx^4+\frac{1}{5}Ac^2x^5+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a^2*B*x^2)/2 + (2*a*A*c*x^3)/3 + (a*B*c*x^4)/2 + (A*c^2*x^5)/5 +
 (B*c^2*x^6)/6
```

fricas [A] time = 0.53, size = 50, normalized size = 1.11

$$\frac{1}{6}x^6c^2B+\frac{1}{5}x^5c^2A+\frac{1}{2}x^4caB+\frac{2}{3}x^3caA+\frac{1}{2}x^2a^2B+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 1/5*x^5*c^2*A + 1/2*x^4*c*a*B + 2/3*x^3*c*a*A + 1/2*x^2*a^2
*B + x*a^2*A
```

giac [A] time = 0.15, size = 50, normalized size = 1.11

$$\frac{1}{6}\,Bc^2x^6 + \frac{1}{5}\,Ac^2x^5 + \frac{1}{2}\,Bacx^4 + \frac{2}{3}\,Aacx^3 + \frac{1}{2}\,Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

maple [A] time = 0.04, size = 51, normalized size = 1.13

$$\frac{1}{6}B\,c^2x^6 + \frac{1}{5}A\,c^2x^5 + \frac{1}{2}Bac\,x^4 + \frac{2}{3}Aac\,x^3 + \frac{1}{2}B\,a^2x^2 + A\,a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*A*c^2*x^5+1/2*B*a*c*x^4+2/3*A*a*c*x^3+1/2*B*a^2*x^2+A*a^2
*x
```

maxima [A] time = 0.65, size = 50, normalized size = 1.11

$$\frac{1}{6}\,Bc^2x^6 + \frac{1}{5}\,Ac^2x^5 + \frac{1}{2}\,Bacx^4 + \frac{2}{3}\,Aacx^3 + \frac{1}{2}\,Ba^2x^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*A*c^2*x^5 + 1/2*B*a*c*x^4 + 2/3*A*a*c*x^3 + 1/2*B*a^2*x
^2 + A*a^2*x
```

mupad [B] time = 0.02, size = 50, normalized size = 1.11

$$\frac{B\,a^2\,x^2}{2} + A\,a^2\,x + \frac{B\,a\,c\,x^4}{2} + \frac{2\,A\,a\,c\,x^3}{3} + \frac{B\,c^2\,x^6}{6} + \frac{A\,c^2\,x^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x),x)
```

```
[Out] (B*a^2*x^2)/2 + (A*c^2*x^5)/5 + (B*c^2*x^6)/6 + A*a^2*x + (2*A*a*c*x^3)/3 +
 (B*a*c*x^4)/2
```

sympy [A] time = 0.07, size = 58, normalized size = 1.29

$$Aa^2x + \frac{2Aacx^3}{3} + \frac{Ac^2x^5}{5} + \frac{Ba^2x^2}{2} + \frac{Bacx^4}{2} + \frac{Bc^2x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2,x)
```

```
[Out] A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 +
B*c**2*x**6/6
```

3.1303 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=169

$$-\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)\log(d+ex)}{e^6}+\frac{x\left(B\left(ae^2+cd^2\right)^2-Acde\left(2ae^2+cd^2\right)\right)}{e^5}-\frac{cx^2\left(2ae^2+cd^2\right)(Bd-Ae)}{2e^4}+cx$$

```
[Out] (B*(a*e^2+c*d^2)^2-A*c*d*e*(2*a*e^2+c*d^2))*x/e^5-1/2*c*(-A*e+B*d)*(2*a*e^2
+c*d^2)*x^2/e^4+1/3*c*(-A*c*d*e+2*B*a*e^2+B*c*d^2)*x^3/e^3-1/4*c^2*(-A*e+B*
d)*x^4/e^2+1/5*B*c^2*x^5/e-(-A*e+B*d)*(a*e^2+c*d^2)^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.19, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{cx^3\left(2aBe^2-Acde+Bcd^2\right)}{3e^3}-\frac{cx^2\left(2ae^2+cd^2\right)(Bd-Ae)}{2e^4}+\frac{x\left(B\left(ae^2+cd^2\right)^2-Acde\left(2ae^2+cd^2\right)\right)}{e^5}-\left(ae^2+cd^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x),x]
```

```
[Out] ((B*(c*d^2 + a*e^2)^2 - A*c*d*e*(c*d^2 + 2*a*e^2))*x)/e^5 - (c*(B*d - A*e)*
(c*d^2 + 2*a*e^2)*x^2)/(2*e^4) + (c*(B*c*d^2 - A*c*d*e + 2*a*B*e^2)*x^3)/(3
*e^3) - (c^2*(B*d - A*e)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - ((B*d - A*e)*(c
*d^2 + a*e^2)^2*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{d+ex}\,dx=\int \left(\frac{B\left(cd^2+ae^2\right)^2-Acde\left(cd^2+2ae^2\right)}{e^5}+\frac{c(-Bd+Ae)\left(cd^2+2ae^2\right)x}{e^4}-c\left(-Bcd\right.\right.$$

$$=\frac{\left(B\left(cd^2+ae^2\right)^2-Acde\left(cd^2+2ae^2\right)\right)x}{e^5}-\frac{c(Bd-Ae)\left(cd^2+2ae^2\right)x^2}{2e^4}+c\left(Bcd^2-\right.$$

Mathematica [A] time = 0.10, size = 174, normalized size = 1.03

$$\frac{ex\left(B\left(60a^2e^4+20ace^2\left(6d^2-3dex+2e^2x^2\right)+c^2\left(60d^4-30d^3ex+20d^2e^2x^2-15de^3x^3+12e^4x^4\right)\right)+5Ace\left(12\right.\right.}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(5*A*c*e*(12*a*e^2*(-2*d + e*x) + c*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
 + 3*e^3*x^3)) + B*(60*a^2*e^4 + 20*a*c*e^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2) +
 c^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4))) -
 60*(B*d - A*e)*(c*d^2 + a*e^2)^2*Log[d + e*x])/(60*e^6)
```

fricas [A] time = 0.56, size = 243, normalized size = 1.44

$$\frac{12\,Bc^2e^5x^5 - 15\left(Bc^2de^4 - Ac^2e^5\right)x^4 + 20\left(Bc^2d^2e^3 - Ac^2de^4 + 2\,Bace^5\right)x^3 - 30\left(Bc^2d^3e^2 - Ac^2d^2e^3 + 2\,Bacde^4 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 20*(B*c^2*d^2*e
^3 - A*c^2*d*e^4 + 2*B*a*c*e^5)*x^3 - 30*(B*c^2*d^3*e^2 - A*c^2*d^2*e^3 + 2
*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 60*(B*c^2*d^4*e - A*c^2*d^3*e^2 + 2*B*a*c
*d^2*e^3 - 2*A*a*c*d*e^4 + B*a^2*e^5)*x - 60*(B*c^2*d^5 - A*c^2*d^4*e + 2*B
*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*log(e*x + d))/e^6
```

giac [A] time = 0.16, size = 244, normalized size = 1.44

$$-\left(Bc^2d^5 - Ac^2d^4e + 2\,Bacd^3e^2 - 2\,Aacd^2e^3 + Ba^2de^4 - Aa^2e^5\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{60}\left(12\,Bc^2x^5e^4 - 15\,Bc^2dx^4e^3 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
 - A*a^2*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*c^2*x^5*e^4 - 15*B*c^2*
d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^2*e + 60*B*c^2*d^4*x + 15
*A*c^2*x^4*e^4 - 20*A*c^2*d*x^3*e^3 + 30*A*c^2*d^2*x^2*e^2 - 60*A*c^2*d^3*x
*e + 40*B*a*c*x^3*e^4 - 60*B*a*c*d*x^2*e^3 + 120*B*a*c*d^2*x*e^2 + 60*A*a*c
*x^2*e^4 - 120*A*a*c*d*x*e^3 + 60*B*a^2*x*e^4)*e^(-5)
```

maple [A] time = 0.05, size = 285, normalized size = 1.69

$$\frac{B\,c^2x^5}{5e} + \frac{A\,c^2x^4}{4e} - \frac{B\,c^2d\,x^4}{4e^2} - \frac{A\,c^2d\,x^3}{3e^2} + \frac{2Bac\,x^3}{3e} + \frac{B\,c^2d^2x^3}{3e^3} + \frac{Aac\,x^2}{e} + \frac{A\,c^2d^2x^2}{2e^3} - \frac{Bacd\,x^2}{e^2} - \frac{B\,c^2d^3x^2}{2e^4} + \frac{A\,a^2\ln\left(ex + d\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d),x)
```

```
[Out] 1/5*B*c^2/e*x^5+1/4/e*A*x^4*c^2-1/4/e^2*B*x^4*c^2*d-1/3/e^2*A*x^3*c^2*d+2/3
/e*B*x^3*a*c+1/3/e^3*B*x^3*c^2*d^2+1/e*A*x^2*a*c+1/2/e^3*A*x^2*c^2*d^2-1/e^
2*B*x^2*a*c*d-1/2/e^4*B*x^2*c^2*d^3-2/e^2*A*x*a*c*d-1/e^4*A*x*c^2*d^3+1/e*B
*x*a^2+2/e^3*B*x*a*c*d^2+1/e^5*B*x*c^2*d^4+1/e*ln(e*x+d)*A*a^2+2/e^3*ln(e*x
+d)*A*a*c*d^2+1/e^5*ln(e*x+d)*A*c^2*d^4-1/e^2*ln(e*x+d)*B*a^2*d-2/e^4*ln(e*
x+d)*B*a*c*d^3-1/e^6*ln(e*x+d)*B*c^2*d^5
```

maxima [A] time = 0.56, size = 242, normalized size = 1.43

$$\frac{12\,Bc^2e^4x^5 - 15\left(Bc^2de^3 - Ac^2e^4\right)x^4 + 20\left(Bc^2d^2e^2 - Ac^2de^3 + 2\,Bace^4\right)x^3 - 30\left(Bc^2d^3e - Ac^2d^2e^2 + 2\,Bacde^3 - 2\right.}{60\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - A*c^2*e^4)*x^4 + 20*(B*c^2*d^2*e
^2 - A*c^2*d*e^3 + 2*B*a*c*e^4)*x^3 - 30*(B*c^2*d^3*e - A*c^2*d^2*e^2 + 2*B
*a*c*d*e^3 - 2*A*a*c*e^4)*x^2 + 60*(B*c^2*d^4 - A*c^2*d^3*e + 2*B*a*c*d^2*e
^2 - 2*A*a*c*d*e^3 + B*a^2*e^4)*x)/e^5 - (B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c
*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*log(e*x + d)/e^6
```

mupad [B] time = 0.07, size = 260, normalized size = 1.54

$$x\left(\frac{B\,a^2}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{A\,c^2}{e}-\frac{B\,c^2\,d}{e^2}\right)}{e}-\frac{2\,B\,a\,c}{e}\right)}{e}+\frac{2\,A\,a\,c}{e}\right)}{e}\right)+x^4\left(\frac{A\,c^2}{4\,e}-\frac{B\,c^2\,d}{4\,e^2}\right)-x^3\left(\frac{d\left(\frac{A\,c^2}{e}-\frac{B\,c^2\,d}{e^2}\right)}{3\,e}-\frac{2\,B\,a\,c}{3\,e}\right)+x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x),x)
```

```
[Out] x*((B*a^2)/e - (d*((d*((d*((A*c^2)/e - (B*c^2*d)/e^2))/e - (2*B*a*c)/e))/e
+ (2*A*a*c)/e))/e) + x^4*((A*c^2)/(4*e) - (B*c^2*d)/(4*e^2)) - x^3*((d*((A*
c^2)/e - (B*c^2*d)/e^2))/(3*e) - (2*B*a*c)/(3*e)) + x^2*((d*((d*((A*c^2)/e
- (B*c^2*d)/e^2))/e - (2*B*a*c)/e))/(2*e) + (A*a*c)/e) + (log(d + e*x)*(A*a
^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + 2*A*a*c*d^2*e^3 - 2*B*a*c*
d^3*e^2))/e^6 + (B*c^2*x^5)/(5*e)
```

sympy [A] time = 0.58, size = 207, normalized size = 1.22

$$\frac{Bc^2x^5}{5e}+x^4\left(\frac{Ac^2}{4e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(-\frac{Ac^2d}{3e^2}+\frac{2Bac}{3e}+\frac{Bc^2d^2}{3e^3}\right)+x^2\left(\frac{Aac}{e}+\frac{Ac^2d^2}{2e^3}-\frac{Bacd}{e^2}-\frac{Bc^2d^3}{2e^4}\right)+x\left(-\frac{2Aacd}{e^2}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) + x**4*(A*c**2/(4*e) - B*c**2*d/(4*e**2)) + x**3*(-A*c**2
*d/(3*e**2) + 2*B*a*c/(3*e) + B*c**2*d**2/(3*e**3)) + x**2*(A*a*c/e + A*c**
2*d**2/(2*e**3) - B*a*c*d/e**2 - B*c**2*d**3/(2*e**4)) + x*(-2*A*a*c*d/e**2
 - A*c**2*d**3/e**4 + B*a**2/e + 2*B*a*c*d**2/e**3 + B*c**2*d**4/e**5) - (-
A*e + B*d)*(a*e**2 + c*d**2)**2*log(d + e*x)/e**6
```

3.1304 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=180

$$\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)\log(d+ex)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}+\frac{cx^2\left(2aBe^2-2Acde+3Bcd^2\right)}{2e^4}-cx\left(-2\right.$$

```
[Out] -c*(-2*A*a*e^3-3*A*c*d^2*e+4*B*a*d*e^2+4*B*c*d^3)*x/e^5+1/2*c*(-2*A*c*d*e+2
*B*a*e^2+3*B*c*d^2)*x^2/e^4-1/3*c^2*(-A*e+2*B*d)*x^3/e^3+1/4*B*c^2*x^4/e^2+
(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)+(a*e^2+c*d^2)*(-4*A*c*d*e+B*a*e^2+5*
B*c*d^2)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.22, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{cx^2\left(2aBe^2-2Acde+3Bcd^2\right)}{2e^4}-\frac{cx\left(-2aAe^3+4aBde^2-3Acd^2e+4Bcd^3\right)}{e^5}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6(d+ex)}+\left(ae^2+cd^2\right)\mathrm{lc}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -((c*(4*B*c*d^3 - 3*A*c*d^2*e + 4*a*B*d*e^2 - 2*a*A*e^3)*x)/e^5) + (c*(3*B*
c*d^2 - 2*A*c*d*e + 2*a*B*e^2)*x^2)/(2*e^4) - (c^2*(2*B*d - A*e)*x^3)/(3*e^
3) + (B*c^2*x^4)/(4*e^2) + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(e^6*(d + e*x))
+ ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^2}\,dx &= \int \left(\frac{c\left(-4Bcd^3+3Acd^2e-4aBde^2+2aAe^3\right)}{e^5}-\frac{c\left(-3Bcd^2+2Acde-2aBe^2\right)x}{e^4}+c^2(\right.\\ &= -\frac{c\left(4Bcd^3-3Acd^2e+4aBde^2-2aAe^3\right)x}{e^5}+\frac{c\left(3Bcd^2-2Acde+2aBe^2\right)x^2}{2e^4}-c^2(2B\end{aligned}$$

Mathematica [A] time = 0.14, size = 175, normalized size = 0.97

$$\frac{6ce^2x^2\left(2aBe^2-2Acde+3Bcd^2\right)+\frac{12\left(ae^2+cd^2\right)^2(Bd-Ae)}{d+ex}+12\left(ae^2+cd^2\right)\log(d+ex)\left(aBe^2-4Acde+5Bcd^2\right)+12ce}{12e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*c*e*(A*e*(3*c*d^2 + 2*a*e^2) - 4*B*(c*d^3 + a*d*e^2))*x + 6*c*e^2*(3*B*
c*d^2 - 2*A*c*d*e + 2*a*B*e^2)*x^2 + 4*c^2*e^3*(-2*B*d + A*e)*x^3 + 3*B*c^2
*e^4*x^4 + (12*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(d + e*x) + 12*(c*d^2 + a*e^2
)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Log[d + e*x])/(12*e^6)
```

fricas [B] time = 0.68, size = 354, normalized size = 1.97

$$\frac{3 Bc^2e^5x^5 + 12 Bc^2d^5 - 12 Ac^2d^4e + 24 Bacd^3e^2 - 24 Aacd^2e^3 + 12 Ba^2de^4 - 12 Aa^2e^5 - \left(5 Bc^2de^4 - 4 Ac^2e^5\right)x^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*c^2*d^4*e + 24*B*a*c*d^3*e^2 -
24*A*a*c*d^2*e^3 + 12*B*a^2*d*e^4 - 12*A*a^2*e^5 - (5*B*c^2*d*e^4 - 4*A*c^2
*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 - 6*(5*B*
c^2*d^3*e^2 - 4*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 - 4*A*a*c*e^5)*x^2 - 12*(4*B*
c^2*d^4*e - 3*A*c^2*d^3*e^2 + 4*B*a*c*d^2*e^3 - 2*A*a*c*d*e^4)*x + 12*(5*B*
c^2*d^5 - 4*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 + B*a^2*d*e^4 +
 (5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 + B*a^2
*e^5)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [A] time = 0.23, size = 317, normalized size = 1.76

$$\frac{1}{12}\left(3 Bc^2 - \frac{4\left(5 Bc^2de - Ac^2e^2\right)e^{(-1)}}{xe + d} + \frac{12\left(5 Bc^2d^2e^2 - 2 Ac^2de^3 + Bace^4\right)e^{(-2)}}{(xe + d)^2} - \frac{24\left(5 Bc^2d^3e^3 - 3 Ac^2d^2e^4 +\right.}{(xe + d)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - A*c^2*e^2)*e^(-1)/(x*e + d) + 12*(5*B*c^2*
d^2*e^2 - 2*A*c^2*d*e^3 + B*a*c*e^4)*e^(-2)/(x*e + d)^2 - 24*(5*B*c^2*d^3*e
^3 - 3*A*c^2*d^2*e^4 + 3*B*a*c*d*e^5 - A*a*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e
+ d)^4*e^(-6) - (5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*
e^3 + B*a^2*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c^2*d^5*e
^4/(x*e + d) - A*c^2*d^4*e^5/(x*e + d) + 2*B*a*c*d^3*e^6/(x*e + d) - 2*A*a*
c*d^2*e^7/(x*e + d) + B*a^2*d*e^8/(x*e + d) - A*a^2*e^9/(x*e + d))*e^(-10)
```

maple [A] time = 0.05, size = 309, normalized size = 1.72

$$\frac{B c^2x^4}{4e^2}+\frac{A c^2x^3}{3e^2}-\frac{2B c^2d x^3}{3e^3}-\frac{A c^2d x^2}{e^3}+\frac{Bac x^2}{e^2}+\frac{3B c^2d^2x^2}{2e^4}-\frac{A a^2}{(ex + d) e}-\frac{2Aac d^2}{(ex + d) e^3}-\frac{4Aacd \ln (ex + d)}{e^3}+\frac{2Aacx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x)
```

```
[Out] 1/4*B*c^2/e^2*x^4+1/3*c^2/e^2*A*x^3-2/3*c^2/e^3*B*x^3*d-c^2/e^3*A*x^2*d+c/e
^2*B*x^2*a+3/2*c^2/e^4*B*x^2*d^2+2*c/e^2*a*A*x+3*c^2/e^4*A*d^2*x-4*c/e^3*a*
B*d*x-4*c^2/e^5*B*d^3*x-1/e/(e*x+d)*A*a^2-2/e^3/(e*x+d)*A*a*c*d^2-1/e^5/(e*
x+d)*A*c^2*d^4+1/e^2/(e*x+d)*B*d*a^2+2/e^4/(e*x+d)*B*a*c*d^3+1/e^6/(e*x+d)*
B*c^2*d^5-4/e^3*ln(e*x+d)*A*a*c*d-4/e^5*ln(e*x+d)*A*c^2*d^3+1/e^2*ln(e*x+d)
*B*a^2+6/e^4*ln(e*x+d)*B*a*c*d^2+5/e^6*ln(e*x+d)*B*c^2*d^4
```

maxima [A] time = 0.58, size = 249, normalized size = 1.38

$$\frac{Bc^2d^5 - Ac^2d^4e + 2 Bacd^3e^2 - 2 Aacd^2e^3 + Ba^2de^4 - Aa^2e^5}{e^7x + de^6} + \frac{3 Bc^2e^3x^4 - 4\left(2 Bc^2de^2 - Ac^2e^3\right)x^3 + 6\left(3 Bc^2d^2e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
- A*a^2*e^5)/(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - A
*c^2*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*A*c^2*d*e^2 + 2*B*a*c*e^3)*x^2 - 12*(4
*B*c^2*d^3 - 3*A*c^2*d^2*e + 4*B*a*c*d*e^2 - 2*A*a*c*e^3)*x)/e^5 + (5*B*c^2
*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(e*x
 + d)/e^6
```

mupad [B] time = 0.09, size = 311, normalized size = 1.73

$$x^3\left(\frac{A\,c^2}{3\,e^2}-\frac{2\,B\,c^2\,d}{3\,e^3}\right)-x^2\left(\frac{d\left(\frac{A\,c^2}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{B\,a\,c}{e^2}+\frac{B\,c^2\,d^2}{2\,e^4}\right)+x\left(\frac{2\,d\left(\frac{2\,d\left(\frac{A\,c^2}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{2\,B\,a\,c}{e^2}+\frac{B\,c^2\,d^2}{e^4}\right)}{e}-d^2\,(\frac{A\,c}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((A*c^2)/(3*e^2) - (2*B*c^2*d)/(3*e^3)) - x^2*((d*((A*c^2)/e^2 - (2*B*c
^2*d)/e^3))/e - (B*a*c)/e^2 + (B*c^2*d^2)/(2*e^4)) + x*((2*d*((2*d*((A*c^2)
/e^2 - (2*B*c^2*d)/e^3))/e - (2*B*a*c)/e^2 + (B*c^2*d^2)/e^4))/e - (d^2*((A
*c^2)/e^2 - (2*B*c^2*d)/e^3))/e^2 + (2*A*a*c)/e^2) + (log(d + e*x)*(B*a^2*e
^4 + 5*B*c^2*d^4 - 4*A*c^2*d^3*e - 4*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2))/e^6 -
(A*a^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + 2*A*a*c*d^2*e^3 - 2*B*
a*c*d^3*e^2)/(e*(d*e^5 + e^6*x)) + (B*c^2*x^4)/(4*e^2)
```

sympy [A] time = 1.19, size = 246, normalized size = 1.37

$$\frac{Bc^2x^4}{4e^2}+x^3\left(\frac{Ac^2}{3e^2}-\frac{2Bc^2d}{3e^3}\right)+x^2\left(-\frac{Ac^2d}{e^3}+\frac{Bac}{e^2}+\frac{3Bc^2d^2}{2e^4}\right)+x\left(\frac{2Aac}{e^2}+\frac{3Ac^2d^2}{e^4}-\frac{4Bacd}{e^3}-\frac{4Bc^2d^3}{e^5}\right)+\frac{-Aa^2e^5-2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + x**3*(A*c**2/(3*e**2) - 2*B*c**2*d/(3*e**3)) + x**2*
(-A*c**2*d/e**3 + B*a*c/e**2 + 3*B*c**2*d**2/(2*e**4)) + x*(2*A*a*c/e**2 +
3*A*c**2*d**2/e**4 - 4*B*a*c*d/e**3 - 4*B*c**2*d**3/e**5) + (-A*a**2*e**5 -
 2*A*a*c*d**2*e**3 - A*c**2*d**4*e + B*a**2*d*e**4 + 2*B*a*c*d**3*e**2 + B*
c**2*d**5)/(d*e**6 + e**7*x) + (a*e**2 + c*d**2)*(-4*A*c*d*e + B*a*e**2 + 5
*B*c*d**2)*log(d + e*x)/e**6
```

3.1305 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{2e^6(d+ex)^2}+\frac{cx\left(2aBe^2-3Acde+6Bcd^2\right)}{e^5}-\frac{2c\log(d+ex)}{}$$

```
[Out] c*(-3*A*c*d*e+2*B*a*e^2+6*B*c*d^2)*x/e^5-1/2*c^2*(-A*e+3*B*d)*x^2/e^4+1/3*B
*c^2*x^3/e^3+1/2*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^2-(a*e^2+c*d^2)*(-4
*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)-2*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e
^2+5*B*c*d^3)*ln(e*x+d)/e^6
```

Rubi **[A]** time = 0.20, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{cx\left(2aBe^2-3Acde+6Bcd^2\right)}{e^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{2e^6(d+ex)^2}-\frac{2c\log(d+ex)(-}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (c*(6*B*c*d^2 - 3*A*c*d*e + 2*a*B*e^2)*x)/e^5 - (c^2*(3*B*d - A*e)*x^2)/(2*
e^4) + (B*c^2*x^3)/(3*e^3) + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(2*e^6*(d + e*
x)^2) - ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(e^6*(d + e*x))
 - (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^3}\,dx &= \int\left(-\frac{c\left(-6Bcd^2+3Acde-2aBe^2\right)}{e^5}+\frac{c^2(-3Bd+Ae)x}{e^4}+\frac{Bc^2x^2}{e^3}+\frac{(-Bd+Ae)\left(c\right.}{e^5(d+e}\right.\\ &= \frac{c\left(6Bcd^2-3Acde+2aBe^2\right)x}{e^5}-\frac{c^2(3Bd-Ae)x^2}{2e^4}+\frac{Bc^2x^3}{3e^3}+\frac{(Bd-Ae)\left(cd^2+ae^2\right.}{2e^6(d+ex)^2}\end{aligned}$$

Mathematica **[A]** time = 0.16, size = 174, normalized size = 0.94

$$\frac{6cex\left(2aBe^2-3Acde+6Bcd^2\right)-\frac{6\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{d+ex}+\frac{3\left(ae^2+cd^2\right)^2(Bd-Ae)}{(d+ex)^2}+12c\log(d+ex)\left(aAe^3-3aBd\right.}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*c*e*(6*B*c*d^2 - 3*A*c*d*e + 2*a*B*e^2)*x + 3*c^2*e^2*(-3*B*d + A*e)*x^2
 + 2*B*c^2*e^3*x^3 + (3*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(d + e*x)^2 - (6*(c*
d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(d + e*x) + 12*c*(-5*B*c*d^
3 + 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x])/(6*e^6)
```

fricas [B] time = 0.69, size = 394, normalized size = 2.13

$$\frac{2\,Bc^2e^5x^5 - 27\,Bc^2d^5 + 21\,Ac^2d^4e - 30\,Bacd^3e^2 + 18\,Aacd^2e^3 - 3\,Ba^2de^4 - 3\,Aa^2e^5 - \left(5\,Bc^2de^4 - 3\,Ac^2e^5\right)x^4 + 4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 + 21*A*c^2*d^4*e - 30*B*a*c*d^3*e^2 + 1
8*A*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 3*A*a^2*e^5 - (5*B*c^2*d*e^4 - 3*A*c^2*e^
5)*x^4 + 4*(5*B*c^2*d^2*e^3 - 3*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 3*(21*B*c^
2*d^3*e^2 - 11*A*c^2*d^2*e^3 + 8*B*a*c*d*e^4)*x^2 + 6*(B*c^2*d^4*e + A*c^2*
d^3*e^2 - 4*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 - B*a^2*e^5)*x - 12*(5*B*c^2*d^5
- 3*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - A*a*c*d^2*e^3 + (5*B*c^2*d^3*e^2 - 3*A*
c^2*d^2*e^3 + 3*B*a*c*d*e^4 - A*a*c*e^5)*x^2 + 2*(5*B*c^2*d^4*e - 3*A*c^2*d
^3*e^2 + 3*B*a*c*d^2*e^3 - A*a*c*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7
*x + d^2*e^6)
```

giac [A] time = 0.19, size = 237, normalized size = 1.28

$$-2\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bc^2x^3e^6 - 9\,Bc^2dx^2e^5 + 36\,Bc^2d^2xe^4 + 3\,Ac^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -2*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*e^(-6)*log(abs
(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4
+ 3*A*c^2*x^2*e^6 - 18*A*c^2*d*x*e^5 + 12*B*a*c*x*e^6)*e^(-9) - 1/2*(9*B*c^
2*d^5 - 7*A*c^2*d^4*e + 10*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + B*a^2*d*e^4 +
A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 - 4*A*a*c*
d*e^4 + B*a^2*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [A] time = 0.06, size = 331, normalized size = 1.79

$$\frac{Bc^2x^3}{3e^3} - \frac{Aa^2}{2\left(ex+d\right)^2e} - \frac{Aacd^2}{\left(ex+d\right)^2e^3} - \frac{Ac^2d^4}{2\left(ex+d\right)^2e^5} + \frac{Ac^2x^2}{2e^3} + \frac{Ba^2d}{2\left(ex+d\right)^2e^2} + \frac{Bacd^3}{\left(ex+d\right)^2e^4} + \frac{Bc^2d^5}{2\left(ex+d\right)^2e^6} - \frac{3Bc^2dx^2}{2e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*B*c^2/e^3*x^3+1/2*c^2/e^3*A*x^2-3/2*c^2/e^4*B*x^2*d-3*c^2/e^4*A*x*d+2*c
/e^3*B*x*a+6*c^2/e^5*B*x*d^2+4/e^3/(e*x+d)*A*a*c*d+4/e^5/(e*x+d)*A*c^2*d^3-
1/e^2/(e*x+d)*B*a^2-6/e^4/(e*x+d)*B*a*c*d^2-5/e^6/(e*x+d)*B*c^2*d^4-1/2/e/(
e*x+d)^2*A*a^2-1/e^3/(e*x+d)^2*A*d^2*a*c-1/2/e^5/(e*x+d)^2*A*c^2*d^4+1/2/e^
2/(e*x+d)^2*B*d*a^2+1/e^4/(e*x+d)^2*B*a*c*d^3+1/2/e^6/(e*x+d)^2*B*c^2*d^5+2
*c/e^3*ln(e*x+d)*a*A+6*c^2/e^5*ln(e*x+d)*A*d^2-6*c/e^4*ln(e*x+d)*a*B*d-10*c
^2/e^6*ln(e*x+d)*B*d^3
```

maxima [A] time = 0.56, size = 258, normalized size = 1.39

$$-\frac{9\,Bc^2d^5 - 7\,Ac^2d^4e + 10\,Bacd^3e^2 - 6\,Aacd^2e^3 + Ba^2de^4 + Aa^2e^5 + 2\left(5\,Bc^2d^4e - 4\,Ac^2d^3e^2 + 6\,Bacd^2e^3 - 4\,Aac\right.}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*c^2*d^5 - 7*A*c^2*d^4*e + 10*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + B*
a^2*d*e^4 + A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 4*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^
3 - 4*A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*
B*c^2*e^2*x^3 - 3*(3*B*c^2*d*e - A*c^2*e^2)*x^2 + 6*(6*B*c^2*d^2 - 3*A*c^2*
d*e + 2*B*a*c*e^2)*x)/e^5 - 2*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2
- A*a*c*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 1.75, size = 275, normalized size = 1.49

$$x^2\,\left(\frac{A\,c^2}{2\,e^3}-\frac{3\,B\,c^2\,d}{2\,e^4}\right)-\frac{x\,\left(B\,a^2\,e^4+6\,B\,a\,c\,d^2\,e^2-4\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4-4\,A\,c^2\,d^3\,e\right)+\frac{B\,a^2\,d\,e^4+A\,a^2\,e^5+10\,B\,a\,c\,d^3\,e^2}{}}{d^2\,e^5+2\,d\,e^6\,x+e^7\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^2*((A*c^2)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - (x*(B*a^2*e^4 + 5*B*c^2*d^4 -
 4*A*c^2*d^3*e - 4*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2) + (A*a^2*e^5 + 9*B*c^2*d^
5 + B*a^2*d*e^4 - 7*A*c^2*d^4*e - 6*A*a*c*d^2*e^3 + 10*B*a*c*d^3*e^2)/(2*e)
)/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3*d*((A*c^2)/e^3 - (3*B*c^2*d)/e^4)
)/e - (2*B*a*c)/e^3 + (3*B*c^2*d^2)/e^5) - (log(d + e*x)*(10*B*c^2*d^3 - 2*
A*a*c*e^3 - 6*A*c^2*d^2*e + 6*B*a*c*d*e^2))/e^6 + (B*c^2*x^3)/(3*e^3)
```

sympy [A] time = 3.33, size = 282, normalized size = 1.52

$$\frac{Bc^2x^3}{3e^3}-\frac{2c\left(-Aae^3-3Acd^2e+3Bade^2+5Bcd^3\right)\log\left(d+ex\right)}{e^6}+x^2\left(\frac{Ac^2}{2e^3}-\frac{3Bc^2d}{2e^4}\right)+x\Bigg(-\frac{3Ac^2d}{e^4}+\frac{2Bac}{e^3}+\frac{6Bc^2}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**3,x)
```

```
[Out] B*c**2*x**3/(3*e**3) - 2*c*(-A*a*e**3 - 3*A*c*d**2*e + 3*B*a*d*e**2 + 5*B*c
*d**3)*log(d + e*x)/e**6 + x**2*(A*c**2/(2*e**3) - 3*B*c**2*d/(2*e**4)) + x
*(-3*A*c**2*d/e**4 + 2*B*a*c/e**3 + 6*B*c**2*d**2/e**5) + (-A*a**2*e**5 + 6
*A*a*c*d**2*e**3 + 7*A*c**2*d**4*e - B*a**2*d*e**4 - 10*B*a*c*d**3*e**2 - 9
*B*c**2*d**5 + x*(8*A*a*c*d*e**4 + 8*A*c**2*d**3*e**2 - 2*B*a**2*e**5 - 12*
B*a*c*d**2*e**3 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**
2)
```

3.1306 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=189

$$-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{2e^6(d+ex)^2}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^3}+\frac{2c\log(d+ex)\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}+\frac{2c\left(-a\right.}{}$$

```
[Out] -c^2*(-A*e+4*B*d)*x/e^5+1/2*B*c^2*x^2/e^4+1/3*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^
6/(e*x+d)^3-1/2*(a*e^2+c*d^2)*(-4*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^2+
2*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*B*c*d^3)/e^6/(e*x+d)+2*c*(-2*A*c*d*
e+B*a*e^2+5*B*c*d^2)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.19, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6(d+ex)}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{2e^6(d+ex)^2}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^3}+\frac{2c\log(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(4*B*d - A*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + ((B*d - A*e)*(c*d^2 +
a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a
*B*e^2))/(2*e^6*(d + e*x)^2) + (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2
- a*A*e^3))/(e^6*(d + e*x)) + (2*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d
+ e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^4}\,dx &= \int \left(\frac{c^2(-4Bd+Ae)}{e^5}+\frac{Bc^2x}{e^4}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^4}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Ac\right.}{e^5(d+ex)^3}\right.\\ &= -\frac{c^2(4Bd-Ae)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+\right.}{2e^6(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 1.23

$$\frac{-2Ae\left(a^2e^4+2ace^2\left(d^2+3dex+3e^2x^2\right)+c^2\left(13d^4+27d^3ex+9d^2e^2x^2-9de^3x^3-3e^4x^4\right)\right)+B\left(-a^2e^4(d+3ex)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (-2*A*e*(a^2*e^4 + 2*a*c*e^2*(d^2 + 3*d*e*x + 3*e^2*x^2) + c^2*(13*d^4 + 27
*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4)) + B*(-(a^2*e^4*(d + 3*
e*x)) + 2*a*c*d*e^2*(11*d^2 + 27*d*e*x + 18*e^2*x^2) + c^2*(47*d^5 + 81*d^4
*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + 12*c*(
5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)
^3)
```

fricas [B] time = 0.63, size = 411, normalized size = 2.17

$$3\,Bc^2e^5x^5 + 47\,Bc^2d^5 - 26\,Ac^2d^4e + 22\,Bacd^3e^2 - 4\,Aacd^2e^3 - Ba^2de^4 - 2\,Aa^2e^5 - 3\left(5\,Bc^2de^4 - 2\,Ac^2e^5\right)x^4 -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4
*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a^2*e^5 - 3*(5*B*c^2*d*e^4 - 2*A*c^2*e^5
)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4)*x^3 - 3*(3*B*c^2*d^3*e^2 + 6*A*
c^2*d^2*e^3 - 12*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 3*(27*B*c^2*d^4*e - 18*A*
c^2*d^3*e^2 + 18*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - B*a^2*e^5)*x + 12*(5*B*c^2
*d^5 - 2*A*c^2*d^4*e + B*a*c*d^3*e^2 + (5*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B
*a*c*e^5)*x^3 + 3*(5*B*c^2*d^3*e^2 - 2*A*c^2*d^2*e^3 + B*a*c*d*e^4)*x^2 + 3
*(5*B*c^2*d^4*e - 2*A*c^2*d^3*e^2 + B*a*c*d^2*e^3)*x)*log(e*x + d))/(e^9*x^
3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.15, size = 237, normalized size = 1.25

$$2\left(5\,Bc^2d^2 - 2\,Ac^2de + Bace^2\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{2}\left(Bc^2x^2e^4 - 8\,Bc^2dxe^3 + 2\,Ac^2xe^4\right)e^{(-8)} + \frac{\left(47\,Bc^2d^5 - 26\,Ac\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 2*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B
*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5
- 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a
^2*e^5 + 12*(5*B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 - A*a*c*e^5)
*x^2 + 3*(35*B*c^2*d^4*e - 20*A*c^2*d^3*e^2 + 18*B*a*c*d^2*e^3 - 4*A*a*c*d*
e^4 - B*a^2*e^5)*x)*e^(-6)/(x*e + d)^3
```

maple [A] time = 0.06, size = 346, normalized size = 1.83

$$-\frac{A\,a^2}{3\left(ex+d\right)^3 e} - \frac{2Aac\,d^2}{3\left(ex+d\right)^3 e^3} - \frac{A\,c^2d^4}{3\left(ex+d\right)^3 e^5} + \frac{B\,a^2d}{3\left(ex+d\right)^3 e^2} + \frac{2Bac\,d^3}{3\left(ex+d\right)^3 e^4} + \frac{B\,c^2d^5}{3\left(ex+d\right)^3 e^6} + \frac{2Aacd}{\left(ex+d\right)^2 e^3} + \frac{2A}{(ex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x)
```

```
[Out] 1/2*B*c^2/e^4*x^2+c^2/e^4*A*x-4*c^2/e^5*B*d*x-2*c/e^3/(e*x+d)*a*A-6*c^2/e^5
/(e*x+d)*A*d^2+6*c/e^4/(e*x+d)*a*B*d+10*c^2/e^6/(e*x+d)*B*d^3+2/e^3/(e*x+d)
^2*A*a*c*d+2/e^5/(e*x+d)^2*A*c^2*d^3-1/2/e^2/(e*x+d)^2*B*a^2-3/e^4/(e*x+d)^
2*B*a*c*d^2-5/2/e^6/(e*x+d)^2*B*c^2*d^4-1/3/e/(e*x+d)^3*A*a^2-2/3/e^3/(e*x+
d)^3*A*d^2*a*c-1/3/e^5/(e*x+d)^3*A*c^2*d^4+1/3/e^2/(e*x+d)^3*B*d*a^2+2/3/e^
4/(e*x+d)^3*B*d^3*a*c+1/3/e^6/(e*x+d)^3*B*c^2*d^5-4*c^2/e^5*ln(e*x+d)*A*d+2
*c/e^4*ln(e*x+d)*B*a+10*c^2/e^6*ln(e*x+d)*B*d^2
```

maxima [A] time = 0.61, size = 270, normalized size = 1.43

$$\frac{47\,Bc^2d^5 - 26\,Ac^2d^4e + 22\,Bacd^3e^2 - 4\,Aacd^2e^3 - Ba^2de^4 - 2\,Aa^2e^5 + 12\left(5\,Bc^2d^3e^2 - 3\,Ac^2d^2e^3 + 3\,Bacde^4 -\right.}{6\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*c^2*d^5 - 26*A*c^2*d^4*e + 22*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - B
*a^2*d*e^4 - 2*A*a^2*e^5 + 12*(5*B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 + 3*B*a*c*
d*e^4 - A*a*c*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 20*A*c^2*d^3*e^2 + 18*B*a*c*d^
2*e^3 - 4*A*a*c*d*e^4 - B*a^2*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x
+ d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c^2*d - A*c^2*e)*x)/e^5 + 2*(5*B*c^2
*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.77, size = 268, normalized size = 1.42

$$x\left(\frac{A\,c^2}{e^4}-\frac{4\,B\,c^2\,d}{e^5}\right)-\frac{x\left(\frac{B\,a^2\,e^4}{2}-9\,B\,a\,c\,d^2\,e^2+2\,A\,a\,c\,d\,e^3-\frac{35\,B\,c^2\,d^4}{2}+10\,A\,c^2\,d^3\,e\right)+\frac{B\,a^2\,d\,e^4+2\,A\,a^2\,e^5-22\,B\,a\,c\,d^3\,e^2+4}{6\,e}}{d^3\,e^5+3\,d^2\,e^6\,x+3\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x*((A*c^2)/e^4 - (4*B*c^2*d)/e^5) - (x*((B*a^2*e^4)/2 - (35*B*c^2*d^4)/2 +
10*A*c^2*d^3*e + 2*A*a*c*d*e^3 - 9*B*a*c*d^2*e^2) + (2*A*a^2*e^5 - 47*B*c^2
*d^5 + B*a^2*d*e^4 + 26*A*c^2*d^4*e + 4*A*a*c*d^2*e^3 - 22*B*a*c*d^3*e^2)/(
6*e) + x^2*(2*A*a*c*e^4 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2 - 6*B*a*c*d*e^3)
)/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(10*B*c^2
*d^2 + 2*B*a*c*e^2 - 4*A*c^2*d*e))/e^6 + (B*c^2*x^2)/(2*e^4)
```

sympy [A] time = 9.16, size = 294, normalized size = 1.56

$$\frac{Bc^2x^2}{2e^4}+\frac{2c\left(-2Acde+Bae^2+5Bcd^2\right)\log\left(d+ex\right)}{e^6}+x\left(\frac{Ac^2}{e^4}-\frac{4Bc^2d}{e^5}\right)+\frac{-2Aa^2e^5-4Aacd^2e^3-26Ac^2d^4e-Ba^2de}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**4,x)
```

```
[Out] B*c**2*x**2/(2*e**4) + 2*c*(-2*A*c*d*e + B*a*e**2 + 5*B*c*d**2)*log(d + e*x
)/e**6 + x*(A*c**2/e**4 - 4*B*c**2*d/e**5) + (-2*A*a**2*e**5 - 4*A*a*c*d**2
*e**3 - 26*A*c**2*d**4*e - B*a**2*d*e**4 + 22*B*a*c*d**3*e**2 + 47*B*c**2*d
**5 + x**2*(-12*A*a*c*e**5 - 36*A*c**2*d**2*e**3 + 36*B*a*c*d*e**4 + 60*B*c
**2*d**3*e**2) + x*(-12*A*a*c*d*e**4 - 60*A*c**2*d**3*e**2 - 3*B*a**2*e**5
+ 54*B*a*c*d**2*e**3 + 105*B*c**2*d**4*e))/(6*d**3*e**6 + 18*d**2*e**7*x +
18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1307 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=189

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{4e^6(d+ex)^4}+\frac{c\left(-aAe^3+3aB\right.}{e^6}$$

```
[Out] B*c^2*x/e^5+1/4*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^4-1/3*(a*e^2+c*d^2)*
(-4*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^3+c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*
d*e^2+5*B*c*d^3)/e^6/(e*x+d)^2-2*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+
d)-c^2*(-A*e+5*B*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.17, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6(d+ex)^2}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(4*e^6*(d + e*x)^4) - ((c*d
^2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^3) + (c*(5*
B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^6*(d + e*x)^2) - (2*c*(5
*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(e^6*(d + e*x)) - (c^2*(5*B*d - A*e)*Log[d
 + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^5}\,dx &= \int \left(\frac{Bc^2}{e^5}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^4}+\frac{2c}{}\right.\\ &= \frac{Bc^2x}{e^5}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{3e^6(d+ex)^3}+\frac{c\left(5Bcd\right.}{}\end{aligned}$$

Mathematica [A] time = 0.11, size = 221, normalized size = 1.17

$$\frac{Ae\left(-3a^2e^4-2ace^2\left(d^2+4dex+6e^2x^2\right)+c^2d\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)\right)-B\left(a^2e^4(d+4ex)+6ac\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (A*e*(-3*a^2*e^4 - 2*a*c*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + c^2*d*(25*d^3 +
88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) - B*(a^2*e^4*(d + 4*e*x) + 6*a*c*
e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + c^2*(77*d^5 + 248*d^4*e*x
 + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)) - 12*c^2*
(5*B*d - A*e)*(d + e*x)^4*Log[d + e*x])/(12*e^6*(d + e*x)^4)
```

fricas [B] time = 0.57, size = 405, normalized size = 2.14

$$\frac{12\,Bc^2e^5x^5 + 48\,Bc^2de^4x^4 - 77\,Bc^2d^5 + 25\,Ac^2d^4e - 6\,Bacd^3e^2 - 2\,Aacd^2e^3 - Ba^2de^4 - 3\,Aa^2e^5 - 24\left(2\,Bc^2d^2e^3 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 + 25*A*c^2*d^4*e
 - 6*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 3*A*a^2*e^5 - 24*(2*B*
c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B*a*c*e^5)*x^3 - 12*(21*B*c^2*d^3*e^2 - 9*A*c
^2*d^2*e^3 + 3*B*a*c*d*e^4 + A*a*c*e^5)*x^2 - 4*(62*B*c^2*d^4*e - 22*A*c^2*
d^3*e^2 + 6*B*a*c*d^2*e^3 + 2*A*a*c*d*e^4 + B*a^2*e^5)*x - 12*(5*B*c^2*d^5
- A*c^2*d^4*e + (5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 4*(5*B*c^2*d^2*e^3 - A*c^
2*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - A*c^2*d^2*e^3)*x^2 + 4*(5*B*c^2*d^4*e -
 A*c^2*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.17, size = 372, normalized size = 1.97

$$(xe+d)Bc^2e^{(-6)} + \left(5\,Bc^2d - Ac^2e\right)e^{(-6)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bc^2d^2e^{22}}{xe+d} - \frac{60\,Bc^2d^3e^{22}}{(xe+d)^2} + \frac{20\,Bc^2d^4e^{22}}{(xe+d)^3} - \frac{3\,Bc^2}{(xe}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - A*c^2*e)*e^(-6)*log(abs(x*e + d)*e^(-
1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2*d^3*e^22/(x
*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x*e + d)^4 -
48*A*c^2*d*e^23/(x*e + d) + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 16*A*c^2*d^3*e^
23/(x*e + d)^3 + 3*A*c^2*d^4*e^23/(x*e + d)^4 + 24*B*a*c*e^24/(x*e + d) - 3
6*B*a*c*d*e^24/(x*e + d)^2 + 24*B*a*c*d^2*e^24/(x*e + d)^3 - 6*B*a*c*d^3*e^
24/(x*e + d)^4 + 12*A*a*c*e^25/(x*e + d)^2 - 16*A*a*c*d*e^25/(x*e + d)^3 +
6*A*a*c*d^2*e^25/(x*e + d)^4 + 4*B*a^2*e^26/(x*e + d)^3 - 3*B*a^2*d*e^26/(x
*e + d)^4 + 3*A*a^2*e^27/(x*e + d)^4)*e^(-28)
```

maple [A] time = 0.06, size = 356, normalized size = 1.88

$$-\frac{A\,a^2}{4\,(ex+d)^4\,e} - \frac{Aac\,d^2}{2\,(ex+d)^4\,e^3} - \frac{A\,c^2d^4}{4\,(ex+d)^4\,e^5} + \frac{B\,a^2d}{4\,(ex+d)^4\,e^2} + \frac{Bac\,d^3}{2\,(ex+d)^4\,e^4} + \frac{B\,c^2d^5}{4\,(ex+d)^4\,e^6} + \frac{4Aacd}{3\,(ex+d)^3\,e^3} + \frac{4A}{3\,(ex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x)
```

```
[Out] B*c^2/e^5*x+4/(e*x+d)*A*c^2*d/e^5-2*c/e^4/(e*x+d)*B*a-10/(e*x+d)*B*c^2*d^2/
e^6-1/4/e/(e*x+d)^4*A*a^2-1/2/e^3/(e*x+d)^4*A*d^2*a*c-1/4/(e*x+d)^4*A*c^2*d
^4/e^5+1/4/e^2/(e*x+d)^4*B*d*a^2+1/2/e^4/(e*x+d)^4*B*d^3*a*c+1/4/(e*x+d)^4*
B*c^2*d^5/e^6-c/e^3/(e*x+d)^2*a*A-3/(e*x+d)^2*A*c^2*d^2/e^5+3*c/e^4/(e*x+d)
^2*a*B*d+5/(e*x+d)^2*B*c^2*d^3/e^6+4/3/e^3/(e*x+d)^3*A*a*c*d+4/3/(e*x+d)^3*
A*c^2*d^3/e^5-1/3/e^2/(e*x+d)^3*B*a^2-2/e^4/(e*x+d)^3*B*a*c*d^2-5/3/(e*x+d)
^3*B*c^2*d^4/e^6+A*c^2/e^5*ln(e*x+d)-5*B*c^2*d/e^6*ln(e*x+d)
```

maxima [A] time = 0.58, size = 279, normalized size = 1.48

$$-\frac{77\,Bc^2d^5 - 25\,Ac^2d^4e + 6\,Bacd^3e^2 + 2\,Aacd^2e^3 + Ba^2de^4 + 3\,Aa^2e^5 + 24\left(5\,Bc^2d^2e^3 - 2\,Ac^2de^4 + Bace^5\right)x^3 + 12}{12\left(e^{10}x^4 + 4\,de^9x^3 + 6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 - 25*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 + 2*A*a*c*d^2*e^3 +
B*a^2*d*e^4 + 3*A*a^2*e^5 + 24*(5*B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 + B*a*c*e^5
)*x^3 + 12*(25*B*c^2*d^3*e^2 - 9*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + A*a*c*e^5)
*x^2 + 4*(65*B*c^2*d^4*e - 22*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 2*A*a*c*d*e
^4 + B*a^2*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x +
d^4*e^6) + B*c^2*x/e^5 - (5*B*c^2*d - A*c^2*e)*log(e*x + d)/e^6
```

mupad [B] time = 1.84, size = 277, normalized size = 1.47

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^2\,e-5\,B\,c^2\,d\right)}{e^6}-\frac{x^3\,\left(10\,B\,c^2\,d^2\,e^2-4\,A\,c^2\,d\,e^3+2\,B\,a\,c\,e^4\right)+x\,\Big(\frac{B\,a^2\,e^4}{3}+2\,B\,a\,c\,d^2\,e^2+\frac{2\,A\,a\,c\,d\,e^3}{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d))/e^6 - (x^3*(2*B*a*c*e^4 - 4*A*c^2*d*e^
3 + 10*B*c^2*d^2*e^2) + x*((B*a^2*e^4)/3 + (65*B*c^2*d^4)/3 - (22*A*c^2*d^3
*e)/3 + (2*A*a*c*d*e^3)/3 + 2*B*a*c*d^2*e^2) + (3*A*a^2*e^5 + 77*B*c^2*d^5
+ B*a^2*d*e^4 - 25*A*c^2*d^4*e + 2*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2)/(12*e)
+ x^2*(A*a*c*e^4 + 25*B*c^2*d^3*e - 9*A*c^2*d^2*e^2 + 3*B*a*c*d*e^3))/(d^4*
e^5 + e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [A] time = 21.57, size = 304, normalized size = 1.61

$$\frac{Bc^2x}{e^5}-\frac{c^2\left(-Ae+5Bd\right)\log\left(d+ex\right)}{e^6}+\frac{-3Aa^2e^5-2Aacd^2e^3+25Ac^2d^4e-Ba^2de^4-6Bacd^3e^2-77Bc^2d^5+x^3\Big(4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**5,x)
```

```
[Out] B*c**2*x/e**5 - c**2*(-A*e + 5*B*d)*log(d + e*x)/e**6 + (-3*A*a**2*e**5 - 2
*A*a*c*d**2*e**3 + 25*A*c**2*d**4*e - B*a**2*d*e**4 - 6*B*a*c*d**3*e**2 - 7
7*B*c**2*d**5 + x**3*(48*A*c**2*d*e**4 - 24*B*a*c*e**5 - 120*B*c**2*d**2*e*
*3) + x**2*(-12*A*a*c*e**5 + 108*A*c**2*d**2*e**3 - 36*B*a*c*d*e**4 - 300*B
*c**2*d**3*e**2) + x*(-8*A*a*c*d*e**4 + 88*A*c**2*d**3*e**2 - 4*B*a**2*e**5
 - 24*B*a*c*d**2*e**3 - 260*B*c**2*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x
+ 72*d**2*e**8*x**2 + 48*d*e**9*x**3 + 12*e**10*x**4)
```

3.1308 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=197

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)^2}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{4e^6(d+ex)^4}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^5}+\frac{2c\left(-aAe^3+3aBde^2\right.}{3e^6(d}$$

```
[Out] 1/5*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^5-1/4*(a*e^2+c*d^2)*(-4*A*c*d*e+
B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^4+2/3*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*
B*c*d^3)/e^6/(e*x+d)^3-c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^2+c^2*(
-A*e+5*B*d)/e^6/(e*x+d)+B*c^2*ln(e*x+d)/e^6
```

Rubi **[A]** time = 0.15, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6(d+ex)^2}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^3}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{4e^6(d+ex)^4}+\frac{(ae}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(5*e^6*(d + e*x)^5) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(4*e^6*(d + e*x)^4) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^3) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(e^6*(d + e*x)^2) + (c^2*(5*B*d - A*e))/(e^6*(d + e*x))
+ (B*c^2*Log[d + e*x])/e^6
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^6}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^6}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^5}+\frac{2c\left(-5Bcd^3\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{5e^6(d+ex)^5}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{4e^6(d+ex)^4}+\frac{2c\left(5Bcd^3-3Acd^2\right.}{3e^6(d}\end{aligned}$$

Mathematica **[A]** time = 0.11, size = 212, normalized size = 1.08

$$\frac{-4Ae\left(3a^2e^4+ace^2\left(d^2+5dex+10e^2x^2\right)+3c^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)\right)+B\left(-3a^2e^4(d+5ex\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-4*A*e*(3*a^2*e^4 + a*c*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*c^2*(d^4 + 5*
d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + B*(-3*a^2*e^4*(d +
5*e*x) - 6*a*c*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + c^2*d*(1
37*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4)) + 6
0*B*c^2*(d + e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

fricas [A] time = 0.57, size = 365, normalized size = 1.85

$$137\,Bc^2d^5 - 12\,Ac^2d^4e - 6\,Bacd^3e^2 - 4\,Aacd^2e^3 - 3\,Ba^2de^4 - 12\,Aa^2e^5 + 60\left(5\,Bc^2de^4 - Ac^2e^5\right)x^4 + 60\left(15\,Bc^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 -
3*B*a^2*d*e^4 - 12*A*a^2*e^5 + 60*(5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 60*(15*
B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 - B*a*c*e^5)*x^3 + 20*(55*B*c^2*d^3*e^2 - 6*A
*c^2*d^2*e^3 - 3*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 5*(125*B*c^2*d^4*e - 12*A
*c^2*d^3*e^2 - 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - 3*B*a^2*e^5)*x + 60*(B*c^2
*e^5*x^5 + 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e^2*x^2
+ 5*B*c^2*d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^4 + 10*
d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [A] time = 0.20, size = 239, normalized size = 1.21

$$Bc^2e^{(-6)}\log\left(|xe+d|\right)+\left(60\left(5\,Bc^2de^3 - Ac^2e^4\right)x^4 + 60\left(15\,Bc^2d^2e^2 - 2\,Ac^2de^3 - Bace^4\right)x^3 + 20\left(55\,Bc^2d^3e - 6\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - A*c^2*e^4)*x^4 +
 60*(15*B*c^2*d^2*e^2 - 2*A*c^2*d*e^3 - B*a*c*e^4)*x^3 + 20*(55*B*c^2*d^3*e
 - 6*A*c^2*d^2*e^2 - 3*B*a*c*d*e^3 - 2*A*a*c*e^4)*x^2 + 5*(125*B*c^2*d^4 -
12*A*c^2*d^3*e - 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 - 3*B*a^2*e^4)*x + (137*B*
c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 - 3*B*a^2*d*e^
4 - 12*A*a^2*e^5)*e^(-1))*e^(-5)/(x*e + d)^5
```

maple [A] time = 0.05, size = 362, normalized size = 1.84

$$-\frac{A\,a^2}{5\left(ex+d\right)^5e}-\frac{2Aac\,d^2}{5\left(ex+d\right)^5e^3}-\frac{A\,c^2d^4}{5\left(ex+d\right)^5e^5}+\frac{B\,a^2d}{5\left(ex+d\right)^5e^2}+\frac{2Bac\,d^3}{5\left(ex+d\right)^5e^4}+\frac{B\,c^2d^5}{5\left(ex+d\right)^5e^6}+\frac{Aacd}{\left(ex+d\right)^4e^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x)
```

```
[Out] -c^2/e^5/(e*x+d)*A+5*c^2/e^6/(e*x+d)*B*d+1/e^3/(e*x+d)^4*A*d*a*c+1/e^5/(e*x
+d)^4*A*c^2*d^3-1/4/e^2/(e*x+d)^4*B*a^2-3/2/e^4/(e*x+d)^4*B*d^2*a*c-5/4/e^6
/(e*x+d)^4*B*d^4*c^2+2*c^2/e^5/(e*x+d)^2*A*d-c/e^4/(e*x+d)^2*B*a-5*c^2/e^6/
(e*x+d)^2*B*d^2-2/3*c/e^3/(e*x+d)^3*a*A-2*c^2/e^5/(e*x+d)^3*A*d^2+2*c/e^4/(
e*x+d)^3*a*B*d+10/3*c^2/e^6/(e*x+d)^3*B*d^3+B*c^2/e^6*ln(e*x+d)-1/5/e/(e*x+
d)^5*A*a^2-2/5/e^3/(e*x+d)^5*A*d^2*a*c-1/5/e^5/(e*x+d)^5*A*c^2*d^4+1/5/e^2/
(e*x+d)^5*B*d*a^2+2/5/e^4/(e*x+d)^5*B*d^3*a*c+1/5/e^6/(e*x+d)^5*B*c^2*d^5
```

maxima [A] time = 0.64, size = 298, normalized size = 1.51

$$\frac{137\,Bc^2d^5 - 12\,Ac^2d^4e - 6\,Bacd^3e^2 - 4\,Aacd^2e^3 - 3\,Ba^2de^4 - 12\,Aa^2e^5 + 60\left(5\,Bc^2de^4 - Ac^2e^5\right)x^4 + 60\left(15\,Bc^2\right.}{60\left(e^{11}x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*c^2*d^4*e - 6*B*a*c*d^3*e^2 - 4*A*a*c*d^2*e^3 -
3*B*a^2*d*e^4 - 12*A*a^2*e^5 + 60*(5*B*c^2*d*e^4 - A*c^2*e^5)*x^4 + 60*(15*
B*c^2*d^2*e^3 - 2*A*c^2*d*e^4 - B*a*c*e^5)*x^3 + 20*(55*B*c^2*d^3*e^2 - 6*A
*c^2*d^2*e^3 - 3*B*a*c*d*e^4 - 2*A*a*c*e^5)*x^2 + 5*(125*B*c^2*d^4*e - 12*A
*c^2*d^3*e^2 - 6*B*a*c*d^2*e^3 - 4*A*a*c*d*e^4 - 3*B*a^2*e^5)*x)/(e^11*x^5
+ 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6) +
 B*c^2*log(e*x + d)/e^6
```

mupad [**B**] time = 1.78, size = 243, normalized size = 1.23

$$\frac{B\,c^2\,\ln\left(d+e\,x\right)}{e^6}-\frac{x^2\,\left(-\frac{55\,B\,c^2\,d^3\,e^2}{3}+2\,A\,c^2\,d^2\,e^3+B\,a\,c\,d\,e^4+\frac{2\,A\,a\,c\,e^5}{3}\right)+x^3\,\left(-15\,B\,c^2\,d^2\,e^3+2\,A\,c^2\,d\,e^4+B\,a\,c\,e^5\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - (x^2*((2*A*a*c*e^5)/3 + 2*A*c^2*d^2*e^3 - (55*B*
c^2*d^3*e^2)/3 + B*a*c*d*e^4) + x^3*(B*a*c*e^5 + 2*A*c^2*d*e^4 - 15*B*c^2*d
^2*e^3) + x^4*(A*c^2*e^5 - 5*B*c^2*d*e^4) + x*((B*a^2*e^5)/4 - (125*B*c^2*d
^4*e)/12 + A*c^2*d^3*e^2 + (A*a*c*d*e^4)/3 + (B*a*c*d^2*e^3)/2) + (A*a^2*e^
5)/5 - (137*B*c^2*d^5)/60 + (B*a^2*d*e^4)/20 + (A*c^2*d^4*e)/5 + (A*a*c*d^2
*e^3)/15 + (B*a*c*d^3*e^2)/10)/(e^6*(d + e*x)^5)
```

sympy [**A**] time = 54.06, size = 326, normalized size = 1.65

$$\frac{Bc^2\log\left(d+ex\right)}{e^6}+\frac{-12Aa^2e^5-4Aacd^2e^3-12Ac^2d^4e-3Ba^2de^4-6Bacd^3e^2+137Bc^2d^5+x^4\left(-60Ac^2e^5+300Bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**6,x)
```

```
[Out] B*c**2*log(d + e*x)/e**6 + (-12*A*a**2*e**5 - 4*A*a*c*d**2*e**3 - 12*A*c**2
*d**4*e - 3*B*a**2*d*e**4 - 6*B*a*c*d**3*e**2 + 137*B*c**2*d**5 + x**4*(-60
*A*c**2*e**5 + 300*B*c**2*d*e**4) + x**3*(-120*A*c**2*d*e**4 - 60*B*a*c*e**
5 + 900*B*c**2*d**2*e**3) + x**2*(-40*A*a*c*e**5 - 120*A*c**2*d**2*e**3 - 6
0*B*a*c*d*e**4 + 1100*B*c**2*d**3*e**2) + x*(-20*A*a*c*d*e**4 - 60*A*c**2*d
**3*e**2 - 15*B*a**2*e**5 - 30*B*a*c*d**2*e**3 + 625*B*c**2*d**4*e))/(60*d*
*5*e**6 + 300*d**4*e**7*x + 600*d**3*e**8*x**2 + 600*d**2*e**9*x**3 + 300*d
*e**10*x**4 + 60*e**11*x**5)
```

3.1309 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7} \, dx$

Optimal. Leaf size=204

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^3}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{6e^6(d+ex)^6}+\frac{c\left(-aAe^3+3aB\right.}{2e}$$

```
[Out] 1/6*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^6-1/5*(a*e^2+c*d^2)*(-4*A*c*d*e+
B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^5+1/2*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*
B*c*d^3)/e^6/(e*x+d)^4-2/3*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^3+1
/2*c^2*(-A*e+5*B*d)/e^6/(e*x+d)^2-B*c^2/e^6/(e*x+d)
```

Rubi [A] time = 0.14, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^3}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{2e^6(d+ex)^4}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(6*e^6*(d + e*x)^6) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^5) + (c*(5*B*c*d^3 - 3*A*c*
d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(2*e^6*(d + e*x)^4) - (2*c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^3) + (c^2*(5*B*d - A*e))/(2*e^6*(d + e*
x)^2) - (B*c^2)/(e^6*(d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^7}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^7}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^6}+\frac{2c\left(-5Bc\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{6e^6(d+ex)^6}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{5e^6(d+ex)^5}+\frac{c\left(5Bcd^3-3Ac\right.}{2e}\end{aligned}$$

Mathematica [A] time = 0.10, size = 198, normalized size = 0.97

$$-\frac{Ae\left(5a^2e^4+ace^2\left(d^2+6dex+15e^2x^2\right)+c^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)\right)+B\left(a^2e^4(d+6ex)\right.}{30e^6(d+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/30*(A*e*(5*a^2*e^4 + a*c*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + c^2*(d^4 + 6
*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + B*(a^2*e^4*(d + 6
*e*x) + a*c*e^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 5*c^2*(d^5
+ 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)))
/(e^6*(d + e*x)^6)
```

fricas [A] time = 0.58, size = 292, normalized size = 1.43

$$-\frac{30\,Bc^2e^5x^5 + 5\,Bc^2d^5 + Ac^2d^4e + Bacd^3e^2 + Aacd^2e^3 + Ba^2de^4 + 5\,Aa^2e^5 + 15\,(5\,Bc^2de^4 + Ac^2e^5)x^4 + 20\,(5\,Bc}{30\,(e^{12}x^6 + 6\,de^{11}x^5 + 15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/30*(30*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + A*c^2*d^4*e + B*a*c*d^3*e^2 + A*a*c
*d^2*e^3 + B*a^2*d*e^4 + 5*A*a^2*e^5 + 15*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^4 +
 20*(5*B*c^2*d^2*e^3 + A*c^2*d*e^4 + B*a*c*e^5)*x^3 + 15*(5*B*c^2*d^3*e^2 +
 A*c^2*d^2*e^3 + B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 6*(5*B*c^2*d^4*e + A*c^2*d^
3*e^2 + B*a*c*d^2*e^3 + A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^12*x^6 + 6*d*e^11*x^
5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e
^6)
```

giac [A] time = 0.17, size = 238, normalized size = 1.17

$$-\frac{(30\,Bc^2x^5e^5 + 75\,Bc^2dx^4e^4 + 100\,Bc^2d^2x^3e^3 + 75\,Bc^2d^3x^2e^2 + 30\,Bc^2d^4xe + 5\,Bc^2d^5 + 15\,Ac^2x^4e^5 + 20\,Ac^2dx^3e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/30*(30*B*c^2*x^5*e^5 + 75*B*c^2*d*x^4*e^4 + 100*B*c^2*d^2*x^3*e^3 + 75*B
*c^2*d^3*x^2*e^2 + 30*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 15*A*c^2*x^4*e^5 + 20*A
*c^2*d*x^3*e^4 + 15*A*c^2*d^2*x^2*e^3 + 6*A*c^2*d^3*x*e^2 + A*c^2*d^4*e + 2
0*B*a*c*x^3*e^5 + 15*B*a*c*d*x^2*e^4 + 6*B*a*c*d^2*x*e^3 + B*a*c*d^3*e^2 +
15*A*a*c*x^2*e^5 + 6*A*a*c*d*x*e^4 + A*a*c*d^2*e^3 + 6*B*a^2*x*e^5 + B*a^2*
d*e^4 + 5*A*a^2*e^5)*e^(-6)/(x*e + d)^6
```

maple [A] time = 0.05, size = 249, normalized size = 1.22

$$-\frac{B\,c^2}{(ex+d)\,e^6}-\frac{(Ae-5Bd)\,c^2}{2\,(ex+d)^2\,e^6}-\frac{\left(aA\,e^3+3Ac\,d^2e-3aBd\,e^2-5Bc\,d^3\right)c}{2\,(ex+d)^4\,e^6}+\frac{2\left(2Acde-Ba\,e^2-5Bc\,d^2\right)c}{3\,(ex+d)^3\,e^6}-\frac{A\,a^2e^5+2A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x)
```

```
[Out] -1/(e*x+d)*B*c^2/e^6-1/2*c*(A*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/
(e*x+d)^4-1/2*c^2*(A*e-5*B*d)/e^6/(e*x+d)^2+2/3*c*(2*A*c*d*e-B*a*e^2-5*B*c*
d^2)/e^6/(e*x+d)^3-1/6*(A*a^2*e^5+2*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2
*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+d)^6-1/5*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B
*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^5
```

maxima [A] time = 0.66, size = 292, normalized size = 1.43

$$-\frac{30\,Bc^2e^5x^5 + 5\,Bc^2d^5 + Ac^2d^4e + Bacd^3e^2 + Aacd^2e^3 + Ba^2de^4 + 5\,Aa^2e^5 + 15\,(5\,Bc^2de^4 + Ac^2e^5)x^4 + 20\,(5\,Bc}{30\,(e^{12}x^6 + 6\,de^{11}x^5 + 15\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + A*c^2*d^4*e + B*a*c*d^3*e^2 + A*a*c
*d^2*e^3 + B*a^2*d*e^4 + 5*A*a^2*e^5 + 15*(5*B*c^2*d*e^4 + A*c^2*e^5)*x^4 +
 20*(5*B*c^2*d^2*e^3 + A*c^2*d*e^4 + B*a*c*e^5)*x^3 + 15*(5*B*c^2*d^3*e^2 +
 A*c^2*d^2*e^3 + B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 6*(5*B*c^2*d^4*e + A*c^2*d^
3*e^2 + B*a*c*d^2*e^3 + A*a*c*d*e^4 + B*a^2*e^5)*x)/(e^12*x^6 + 6*d*e^11*x^
5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e
^6)
```

mupad [B] time = 0.11, size = 273, normalized size = 1.34

$$-\frac{\frac{B\,a^2\,d\,e^4+5\,A\,a^2\,e^5+B\,a\,c\,d^3\,e^2+A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+A\,c^2\,d^4\,e}{30\,e^6}+\frac{x\,\left(B\,a^2\,e^4+B\,a\,c\,d^2\,e^2+A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+A\,c^2\,d^3\,e\right)}{5\,e^5}+\frac{2\,c\,x^3\,\left(5\,B\,c\,d^2+A\,c\,d\,e}{3\,e^3}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -((5*A*a^2*e^5 + 5*B*c^2*d^5 + B*a^2*d*e^4 + A*c^2*d^4*e + A*a*c*d^2*e^3 +
B*a*c*d^3*e^2)/(30*e^6) + (x*(B*a^2*e^4 + 5*B*c^2*d^4 + A*c^2*d^3*e + A*a*c
*d*e^3 + B*a*c*d^2*e^2))/(5*e^5) + (2*c*x^3*(B*a*e^2 + 5*B*c*d^2 + A*c*d*e)
)/(3*e^3) + (c^2*x^4*(A*e + 5*B*d))/(2*e^2) + (c*x^2*(A*a*e^3 + 5*B*c*d^3 +
 B*a*d*e^2 + A*c*d^2*e))/(2*e^4) + (B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*
x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [A] time = 125.89, size = 337, normalized size = 1.65

$$\frac{-5Aa^2e^5 - Aacd^2e^3 - Ac^2d^4e - Ba^2de^4 - Bacd^3e^2 - 5Bc^2d^5 - 30Bc^2e^5x^5 + x^4\left(-15Ac^2e^5 - 75Bc^2de^4\right) + x^3\left(-}{30d^6e^6 + 180d^5e^7x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**7,x)
```

```
[Out] (-5*A*a**2*e**5 - A*a*c*d**2*e**3 - A*c**2*d**4*e - B*a**2*d*e**4 - B*a*c*d
**3*e**2 - 5*B*c**2*d**5 - 30*B*c**2*e**5*x**5 + x**4*(-15*A*c**2*e**5 - 75
*B*c**2*d*e**4) + x**3*(-20*A*c**2*d*e**4 - 20*B*a*c*e**5 - 100*B*c**2*d**2
*e**3) + x**2*(-15*A*a*c*e**5 - 15*A*c**2*d**2*e**3 - 15*B*a*c*d*e**4 - 75*
B*c**2*d**3*e**2) + x*(-6*A*a*c*d*e**4 - 6*A*c**2*d**3*e**2 - 6*B*a**2*e**5
 - 6*B*a*c*d**2*e**3 - 30*B*c**2*d**4*e))/(30*d**6*e**6 + 180*d**5*e**7*x +
 450*d**4*e**8*x**2 + 600*d**3*e**9*x**3 + 450*d**2*e**10*x**4 + 180*d*e**1
1*x**5 + 30*e**12*x**6)
```

3.1310 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=206

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{2e^6(d+ex)^4}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{6e^6(d+ex)^6}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^7}+\frac{2c\left(-aAe^3+3aBde^2\right.}{5e^6(d}$$

```
[Out] 1/7*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^7-1/6*(a*e^2+c*d^2)*(-4*A*c*d*e+
B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^6+2/5*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*
B*c*d^3)/e^6/(e*x+d)^5-1/2*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^4+1
/3*c^2*(-A*e+5*B*d)/e^6/(e*x+d)^3-1/2*B*c^2/e^6/(e*x+d)^2
```

Rubi **[A]** time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{2e^6(d+ex)^4}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6(d+ex)^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{6e^6(d+ex)^6}+\frac{(ae}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(7*e^6*(d + e*x)^7) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(6*e^6*(d + e*x)^6) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^6*(d + e*x)^5) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(2*e^6*(d + e*x)^4) + (c^2*(5*B*d - A*e))/(3*e^6*(d + e*
x)^3) - (B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^8}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^8}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^7}+\frac{2c\left(-5Bcd^3\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{7e^6(d+ex)^7}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{6e^6(d+ex)^6}+\frac{2c\left(5Bcd^3-3Acd^2\right.}{5e^6(d}\end{aligned}$$

Mathematica **[A]** time = 0.09, size = 202, normalized size = 0.98

$$-\frac{2Ae\left(15a^2e^4+2ace^2\left(d^2+7dex+21e^2x^2\right)+c^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)\right)+B\left(5a^2e^4(d+7e\right.}{210e^6(d+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/210*(2*A*e*(15*a^2*e^4 + 2*a*c*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + c^2*(d
^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + B*(5*a^2*e^
4*(d + 7*e*x) + 3*a*c*e^2*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 5
*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21
*e^5*x^5)))/(e^6*(d + e*x)^7)
```

fricas [A] time = 0.61, size = 317, normalized size = 1.54

$$-\frac{105\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 2\,Ac^2d^4e + 3\,Bacd^3e^2 + 4\,Aacd^2e^3 + 5\,Ba^2de^4 + 30\,Aa^2e^5 + 35\left(5\,Bc^2de^4 + 2\,Ac^2e^5\right)}{210\left(e^{13}x^7 + 7\,de^{12}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 2*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 +
 4*A*a*c*d^2*e^3 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5 + 35*(5*B*c^2*d*e^4 + 2*A*c
^2*e^5)*x^4 + 35*(5*B*c^2*d^2*e^3 + 2*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 21*(
5*B*c^2*d^3*e^2 + 2*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 7*(5
*B*c^2*d^4*e + 2*A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 + 5*B*a^2*
e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d
^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [A] time = 0.18, size = 242, normalized size = 1.17

$$-\frac{\left(105\,Bc^2x^5e^5 + 175\,Bc^2dx^4e^4 + 175\,Bc^2d^2x^3e^3 + 105\,Bc^2d^3x^2e^2 + 35\,Bc^2d^4xe + 5\,Bc^2d^5 + 70\,Ac^2x^4e^5 + 70\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*c^2*x^5*e^5 + 175*B*c^2*d*x^4*e^4 + 175*B*c^2*d^2*x^3*e^3 + 1
05*B*c^2*d^3*x^2*e^2 + 35*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 70*A*c^2*x^4*e^5 +
70*A*c^2*d*x^3*e^4 + 42*A*c^2*d^2*x^2*e^3 + 14*A*c^2*d^3*x*e^2 + 2*A*c^2*d^
4*e + 105*B*a*c*x^3*e^5 + 63*B*a*c*d*x^2*e^4 + 21*B*a*c*d^2*x*e^3 + 3*B*a*c
*d^3*e^2 + 84*A*a*c*x^2*e^5 + 28*A*a*c*d*x*e^4 + 4*A*a*c*d^2*e^3 + 35*B*a^2
*x*e^5 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5)*e^(-6)/(x*e + d)^7
```

maple [A] time = 0.05, size = 249, normalized size = 1.21

$$-\frac{B\,c^2}{2\,(ex+d)^2\,e^6} - \frac{(Ae-5Bd)\,c^2}{3\,(ex+d)^3\,e^6} + \frac{\left(2Acde - Ba\,e^2 - 5Bc\,d^2\right)c}{2\,(ex+d)^4\,e^6} - \frac{2\left(aA\,e^3 + 3Ac\,d^2e - 3aBd\,e^2 - 5Bc\,d^3\right)c}{5\,(ex+d)^5\,e^6} - \frac{-4Ad}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x)
```

```
[Out] 1/2*c*(2*A*c*d*e-B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^4-1/2/(e*x+d)^2*B*c^2/e^6-1
/3*c^2*(A*e-5*B*d)/e^6/(e*x+d)^3-1/6*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B*a^2*e^
4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^6-1/7*(A*a^2*e^5+2*A*a*c*d^2*e^3
+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+d)^7-2/5*c*(A*
a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/(e*x+d)^5
```

maxima [A] time = 0.58, size = 317, normalized size = 1.54

$$-\frac{105\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 2\,Ac^2d^4e + 3\,Bacd^3e^2 + 4\,Aacd^2e^3 + 5\,Ba^2de^4 + 30\,Aa^2e^5 + 35\left(5\,Bc^2de^4 + 2\,Ac^2e^5\right)}{210\left(e^{13}x^7 + 7\,de^{12}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 2*A*c^2*d^4*e + 3*B*a*c*d^3*e^2 +
 4*A*a*c*d^2*e^3 + 5*B*a^2*d*e^4 + 30*A*a^2*e^5 + 35*(5*B*c^2*d*e^4 + 2*A*c
^2*e^5)*x^4 + 35*(5*B*c^2*d^2*e^3 + 2*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 21*(
5*B*c^2*d^3*e^2 + 2*A*c^2*d^2*e^3 + 3*B*a*c*d*e^4 + 4*A*a*c*e^5)*x^2 + 7*(5
*B*c^2*d^4*e + 2*A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 + 4*A*a*c*d*e^4 + 5*B*a^2*
e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d
^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 1.73, size = 299, normalized size = 1.45

$$-\frac{\frac{5\,B\,a^2\,d\,e^4+30\,A\,a^2\,e^5+3\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+2\,A\,c^2\,d^4\,e}{210\,e^6}+\frac{x\,\left(5\,B\,a^2\,e^4+3\,B\,a\,c\,d^2\,e^2+4\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+2\,A\,c^2\,d^3\,e\right)}{30\,e^5}+\frac{c\,x^3\,\left(5\,B\,c\,d^2\right.}{}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35\,d^4\,e^3\,x^3+35\,d^3\,e^4\,x^4+21\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] -((30*A*a^2*e^5 + 5*B*c^2*d^5 + 5*B*a^2*d*e^4 + 2*A*c^2*d^4*e + 4*A*a*c*d^2
*e^3 + 3*B*a*c*d^3*e^2)/(210*e^6) + (x*(5*B*a^2*e^4 + 5*B*c^2*d^4 + 2*A*c^2
*d^3*e + 4*A*a*c*d*e^3 + 3*B*a*c*d^2*e^2))/(30*e^5) + (c*x^3*(3*B*a*e^2 + 5
*B*c*d^2 + 2*A*c*d*e))/(6*e^3) + (c^2*x^4*(2*A*e + 5*B*d))/(6*e^2) + (c*x^2
*(4*A*a*e^3 + 5*B*c*d^3 + 3*B*a*d*e^2 + 2*A*c*d^2*e))/(10*e^4) + (B*c^2*x^5
)/(2*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 3
5*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1311 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=206

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6(d+ex)^5}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{7e^6(d+ex)^7}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{8e^6(d+ex)^8}+\frac{c\left(-aAe^3+3aB\right.}{3e}$$

```
[Out] 1/8*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^8-1/7*(a*e^2+c*d^2)*(-4*A*c*d*e+
B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^7+1/3*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*
B*c*d^3)/e^6/(e*x+d)^6-2/5*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^5+1
/4*c^2*(-A*e+5*B*d)/e^6/(e*x+d)^4-1/3*B*c^2/e^6/(e*x+d)^3
```

Rubi [A] time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2c\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6(d+ex)^5}+\frac{c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^6}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{7e^6(d+ex)^7}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(8*e^6*(d + e*x)^8) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(7*e^6*(d + e*x)^7) + (c*(5*B*c*d^3 - 3*A*c*
d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^6) - (2*c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^5) + (c^2*(5*B*d - A*e))/(4*e^6*(d + e*
x)^4) - (B*c^2)/(3*e^6*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^9}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^9}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^8}+\frac{2c\left(-5Bc\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{8e^6(d+ex)^8}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{7e^6(d+ex)^7}+\frac{c\left(5Bcd^3-3Ac\right.}{3e}\end{aligned}$$

Mathematica [A] time = 0.09, size = 202, normalized size = 0.98

$$-\frac{Ae\left(105a^2e^4+10ace^2\left(d^2+8dex+28e^2x^2\right)+3c^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)\right)+B\left(15a^2e^4\right.}{840}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(A*e*(105*a^2*e^4 + 10*a*c*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*c^2*
(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + B*(15*a^2
*e^4*(d + 8*e*x) + 6*a*c*e^2*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
+ 5*c^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 +
 56*e^5*x^5)))/(e^6*(d + e*x)^8)
```

fricas [A] time = 0.64, size = 328, normalized size = 1.59

$$-\frac{280\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 3\,Ac^2d^4e + 6\,Bacd^3e^2 + 10\,Aacd^2e^3 + 15\,Ba^2de^4 + 105\,Aa^2e^5 + 70\,(5\,Bc^2de^4 + 3\,Ac^2e^5}{840\,(e^{14}x^8 + 8\,de^{13}x^7 + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 +
 10*A*a*c*d^2*e^3 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5 + 70*(5*B*c^2*d*e^4 + 3*
A*c^2*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 + 2
8*(5*B*c^2*d^3*e^2 + 3*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + 10*A*a*c*e^5)*x^2 +
8*(5*B*c^2*d^4*e + 3*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + 15*
B*a^2*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^5
+ 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e^6
)
```

giac [A] time = 0.19, size = 242, normalized size = 1.17

$$-\frac{(280\,Bc^2x^5e^5 + 350\,Bc^2dx^4e^4 + 280\,Bc^2d^2x^3e^3 + 140\,Bc^2d^3x^2e^2 + 40\,Bc^2d^4xe + 5\,Bc^2d^5 + 210\,Ac^2x^4e^5 + 168\,Ac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 280*B*c^2*d^2*x^3*e^3 + 1
40*B*c^2*d^3*x^2*e^2 + 40*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 210*A*c^2*x^4*e^5 +
 168*A*c^2*d*x^3*e^4 + 84*A*c^2*d^2*x^2*e^3 + 24*A*c^2*d^3*x*e^2 + 3*A*c^2*
d^4*e + 336*B*a*c*x^3*e^5 + 168*B*a*c*d*x^2*e^4 + 48*B*a*c*d^2*x*e^3 + 6*B*
a*c*d^3*e^2 + 280*A*a*c*x^2*e^5 + 80*A*a*c*d*x*e^4 + 10*A*a*c*d^2*e^3 + 120
*B*a^2*x*e^5 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5)*e^(-6)/(x*e + d)^8
```

maple [A] time = 0.06, size = 249, normalized size = 1.21

$$-\frac{B\,c^2}{3\,(ex+d)^3\,e^6}-\frac{(Ae-5Bd)\,c^2}{4\,(ex+d)^4\,e^6}+\frac{2\,(2Acde-Ba\,e^2-5Bc\,d^2)\,c}{5\,(ex+d)^5\,e^6}-\frac{(aA\,e^3+3Ac\,d^2e-3aBd\,e^2-5Bc\,d^3)\,c}{3\,(ex+d)^6\,e^6}-\frac{A\,a^2e^5+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x)
```

```
[Out] -1/4*c^2*(A*e-5*B*d)/e^6/(e*x+d)^4-1/3*B*c^2/e^6/(e*x+d)^3-1/8*(A*a^2*e^5+2
*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c^2*d^5)/e^6/(e*x+
d)^8-1/7*(-4*A*a*c*d*e^3-4*A*c^2*d^3*e+B*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^
4)/e^6/(e*x+d)^7+2/5*c*(2*A*c*d*e-B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^5-1/3*c*(A
*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B*c*d^3)/e^6/(e*x+d)^6
```

maxima [A] time = 0.55, size = 328, normalized size = 1.59

$$-\frac{280\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 3\,Ac^2d^4e + 6\,Bacd^3e^2 + 10\,Aacd^2e^3 + 15\,Ba^2de^4 + 105\,Aa^2e^5 + 70\,(5\,Bc^2de^4 + 3\,Ac^2e^5}{840\,(e^{14}x^8 + 8\,de^{13}x^7 + 2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 +
 10*A*a*c*d^2*e^3 + 15*B*a^2*d*e^4 + 105*A*a^2*e^5 + 70*(5*B*c^2*d*e^4 + 3*
A*c^2*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*A*c^2*d*e^4 + 6*B*a*c*e^5)*x^3 + 2
8*(5*B*c^2*d^3*e^2 + 3*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + 10*A*a*c*e^5)*x^2 +
8*(5*B*c^2*d^4*e + 3*A*c^2*d^3*e^2 + 6*B*a*c*d^2*e^3 + 10*A*a*c*d*e^4 + 15*
B*a^2*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^5
+ 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e^6
)
```

mupad [B] time = 0.12, size = 310, normalized size = 1.50

$$-\frac{\frac{15\,B\,a^2\,d\,e^4+105\,A\,a^2\,e^5+6\,B\,a\,c\,d^3\,e^2+10\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+3\,A\,c^2\,d^4\,e}{840\,e^6}+\frac{x\left(15\,B\,a^2\,e^4+6\,B\,a\,c\,d^2\,e^2+10\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+3\,A\,c^2\,d^3\,e\right)}{105\,e^5}+\frac{c}{}}{d^8+8\,d^7\,e\,x+28\,d^6\,e^2\,x^2+56\,d^5\,e^3\,x^3+70\,d^4\,e^4\,x^4+56\,d^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^9,x)
```

```
[Out] -((105*A*a^2*e^5 + 5*B*c^2*d^5 + 15*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 10*A*a*c*
d^2*e^3 + 6*B*a*c*d^3*e^2)/(840*e^6) + (x*(15*B*a^2*e^4 + 5*B*c^2*d^4 + 3*A
*c^2*d^3*e + 10*A*a*c*d*e^3 + 6*B*a*c*d^2*e^2))/(105*e^5) + (c*x^3*(6*B*a*e
^2 + 5*B*c*d^2 + 3*A*c*d*e))/(15*e^3) + (c^2*x^4*(3*A*e + 5*B*d))/(12*e^2)
+ (c*x^2*(10*A*a*e^3 + 5*B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/(30*e^4) + (
B*c^2*x^5)/(3*e))/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^
3*x^3 + 70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1312 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=206

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^6}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{8e^6(d+ex)^8}+\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)}{9e^6(d+ex)^9}+\frac{2c\left(-aAe^3+3aBde^2\right.}{7e^6(d}$$

```
[Out] 1/9*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^9-1/8*(a*e^2+c*d^2)*(-4*A*c*d*e+
B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^8+2/7*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*
B*c*d^3)/e^6/(e*x+d)^7-1/3*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^6+1
/5*c^2*(-A*e+5*B*d)/e^6/(e*x+d)^5-1/4*B*c^2/e^6/(e*x+d)^4
```

Rubi [A] time = 0.14, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6(d+ex)^6}+\frac{2c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6(d+ex)^7}-\frac{\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{8e^6(d+ex)^8}+\left(a\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^2)/(9*e^6*(d + e*x)^9) - ((c*d^2 + a*e^2)*(5*B
*c*d^2 - 4*A*c*d*e + a*B*e^2))/(8*e^6*(d + e*x)^8) + (2*c*(5*B*c*d^3 - 3*A*
c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(7*e^6*(d + e*x)^7) - (c*(5*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^6) + (c^2*(5*B*d - A*e))/(5*e^6*(d + e*
x)^5) - (B*c^2)/(4*e^6*(d + e*x)^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{10}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{10}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^9}+\frac{2c\left(-5Bcd^3+\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^2}{9e^6(d+ex)^9}-\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{8e^6(d+ex)^8}+\frac{2c\left(5Bcd^3-3Acd^2\right.}{7e^6(d}\end{aligned}$$

Mathematica [A] time = 0.09, size = 202, normalized size = 0.98

$$-\frac{4Ae\left(70a^2e^4+5ace^2\left(d^2+9dex+36e^2x^2\right)+c^2\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)\right)+5B\left(7a^2e^4(d+\right.}{2520e^6(}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(4*A*e*(70*a^2*e^4 + 5*a*c*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + c^2*(
d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 5*B*(7*a^
2*e^4*(d + 9*e*x) + 2*a*c*e^2*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)
 + c^2*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 +
 126*e^5*x^5)))/(e^6*(d + e*x)^9)
```

fricas [A] time = 0.62, size = 339, normalized size = 1.65

$$-\frac{630\,Bc^2e^5x^5+5\,Bc^2d^5+4\,Ac^2d^4e+10\,Bacd^3e^2+20\,Aacd^2e^3+35\,Ba^2de^4+280\,Aa^2e^5+126\,\left(5\,Bc^2de^4+4\right.}{2520\,\left(e^{15}x^9+9\,de^{14}x^8+3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 4*A*c^2*d^4*e + 10*B*a*c*d^3*e^2
 + 20*A*a*c*d^2*e^3 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5 + 126*(5*B*c^2*d*e^4 +
 4*A*c^2*e^5)*x^4 + 84*(5*B*c^2*d^2*e^3 + 4*A*c^2*d*e^4 + 10*B*a*c*e^5)*x^3
 + 36*(5*B*c^2*d^3*e^2 + 4*A*c^2*d^2*e^3 + 10*B*a*c*d*e^4 + 20*A*a*c*e^5)*x
^2 + 9*(5*B*c^2*d^4*e + 4*A*c^2*d^3*e^2 + 10*B*a*c*d^2*e^3 + 20*A*a*c*d*e^4
 + 35*B*a^2*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7 + 84*d^3*e^1
2*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 + 36*d^7*e^8*x
^2 + 9*d^8*e^7*x + d^9*e^6)
```

giac [A] time = 0.19, size = 242, normalized size = 1.17

$$-\frac{\left(630\,Bc^2x^5e^5+630\,Bc^2dx^4e^4+420\,Bc^2d^2x^3e^3+180\,Bc^2d^3x^2e^2+45\,Bc^2d^4xe+5\,Bc^2d^5+504\,Ac^2x^4e^5+336\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(630*B*c^2*x^5*e^5 + 630*B*c^2*d*x^4*e^4 + 420*B*c^2*d^2*x^3*e^3 +
180*B*c^2*d^3*x^2*e^2 + 45*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 504*A*c^2*x^4*e^5
+ 336*A*c^2*d*x^3*e^4 + 144*A*c^2*d^2*x^2*e^3 + 36*A*c^2*d^3*x*e^2 + 4*A*c^
2*d^4*e + 840*B*a*c*x^3*e^5 + 360*B*a*c*d*x^2*e^4 + 90*B*a*c*d^2*x*e^3 + 10
*B*a*c*d^3*e^2 + 720*A*a*c*x^2*e^5 + 180*A*a*c*d*x*e^4 + 20*A*a*c*d^2*e^3 +
 315*B*a^2*x*e^5 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5)*e^(-6)/(x*e + d)^9
```

maple [A] time = 0.05, size = 249, normalized size = 1.21

$$-\frac{B\,c^2}{4\,(ex+d)^4\,e^6}-\frac{(Ae-5Bd)\,c^2}{5\,(ex+d)^5\,e^6}+\frac{\left(2Acde-Ba\,e^2-5Bc\,d^2\right)c}{3\,(ex+d)^6\,e^6}-\frac{2\left(aA\,e^3+3Ac\,d^2e-3aBd\,e^2-5Bc\,d^3\right)c}{7\,(ex+d)^7\,e^6}-\frac{A\,a^2e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x)
```

```
[Out] -1/9*(A*a^2*e^5+2*A*a*c*d^2*e^3+A*c^2*d^4*e-B*a^2*d*e^4-2*B*a*c*d^3*e^2-B*c
^2*d^5)/e^6/(e*x+d)^9-1/4*B*c^2/e^6/(e*x+d)^4-1/8*(-4*A*a*c*d*e^3-4*A*c^2*d
^3*e+B*a^2*e^4+6*B*a*c*d^2*e^2+5*B*c^2*d^4)/e^6/(e*x+d)^8+1/3*c*(2*A*c*d*e-
B*a*e^2-5*B*c*d^2)/e^6/(e*x+d)^6-2/7*c*(A*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2-5*B
*c*d^3)/e^6/(e*x+d)^7-1/5*c^2*(A*e-5*B*d)/e^6/(e*x+d)^5
```

maxima [A] time = 0.78, size = 339, normalized size = 1.65

$$-\frac{630\,Bc^2e^5x^5+5\,Bc^2d^5+4\,Ac^2d^4e+10\,Bacd^3e^2+20\,Aacd^2e^3+35\,Ba^2de^4+280\,Aa^2e^5+126\,\left(5\,Bc^2de^4+4\right.}{2520\,\left(e^{15}x^9+9\,de^{14}x^8+3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(630*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 4*A*c^2*d^4*e + 10*B*a*c*d^3*e^2
 + 20*A*a*c*d^2*e^3 + 35*B*a^2*d*e^4 + 280*A*a^2*e^5 + 126*(5*B*c^2*d*e^4 +
 4*A*c^2*e^5)*x^4 + 84*(5*B*c^2*d^2*e^3 + 4*A*c^2*d*e^4 + 10*B*a*c*e^5)*x^3
 + 36*(5*B*c^2*d^3*e^2 + 4*A*c^2*d^2*e^3 + 10*B*a*c*d*e^4 + 20*A*a*c*e^5)*x
^2 + 9*(5*B*c^2*d^4*e + 4*A*c^2*d^3*e^2 + 10*B*a*c*d^2*e^3 + 20*A*a*c*d*e^4
 + 35*B*a^2*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7 + 84*d^3*e^1
2*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 + 36*d^7*e^8*x
^2 + 9*d^8*e^7*x + d^9*e^6)
```

mupad [B]   time = 1.76, size = 321, normalized size = 1.56

$$-\frac{\frac{35\,B\,a^2\,d\,e^4+280\,A\,a^2\,e^5+10\,B\,a\,c\,d^3\,e^2+20\,A\,a\,c\,d^2\,e^3+5\,B\,c^2\,d^5+4\,A\,c^2\,d^4\,e}{2520\,e^6}+\frac{x\,\left(35\,B\,a^2\,e^4+10\,B\,a\,c\,d^2\,e^2+20\,A\,a\,c\,d\,e^3+5\,B\,c^2\,d^4+4\,A\,c^2\,d^3\,e\right)}{280\,e^5}+\frac{c\,x^3}{}}{d^9+9\,d^8\,e\,x+36\,d^7\,e^2\,x^2+84\,d^6\,e^3\,x^3+126\,d^5\,e^4\,x^4+126\,d^4\,e^5\,x^5+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^2*e^5 + 5*B*c^2*d^5 + 35*B*a^2*d*e^4 + 4*A*c^2*d^4*e + 20*A*a*c*
d^2*e^3 + 10*B*a*c*d^3*e^2)/(2520*e^6) + (x*(35*B*a^2*e^4 + 5*B*c^2*d^4 + 4
*A*c^2*d^3*e + 20*A*a*c*d*e^3 + 10*B*a*c*d^2*e^2))/(280*e^5) + (c*x^3*(10*B
*a*e^2 + 5*B*c*d^2 + 4*A*c*d*e))/(30*e^3) + (c^2*x^4*(4*A*e + 5*B*d))/(20*e
^2) + (c*x^2*(20*A*a*e^3 + 5*B*c*d^3 + 10*B*a*d*e^2 + 4*A*c*d^2*e))/(70*e^4
) + (B*c^2*x^5)/(4*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e^2*x^2 + 84*d
^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^6 + 36*d^2*e^
7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1313 $\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^9 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{9e^8}+\frac{3c^2(d+ex)^{11}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}-$$

```
[Out] -1/6*(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^6/e^8+1/7*(a*e^2+c*d^2)^2*(-6*A*c*d
*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^7/e^8-3/8*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2
*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^8/e^8-1/9*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-
B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^9/e^8-1/10*c^2*(-3*A*a*e^3
-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^10/e^8+3/11*c^2*(-2*A*c*d*e+
B*a*e^2+7*B*c*d^2)*(e*x+d)^11/e^8-1/12*c^3*(-A*e+7*B*d)*(e*x+d)^12/e^8+1/13
*B*c^3*(e*x+d)^13/e^8
```

Rubi [A] time = 0.60, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^9 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{9e^8}+\frac{3c^2(d+ex)^{11}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^6)/(6*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^7)/(7*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^8)/(8*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^9)/(9*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^10)/(10*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*
e^2)*(d + e*x)^11)/(11*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^12)/(12*e^8) + (
B*c^3*(d + e*x)^13)/(13*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5 \left(a+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3 (d+ex)^5}{e^7}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3 (d+ex)^6}{6e^8}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+aBe\right.}{7e^8}$$

Mathematica [A] time = 0.15, size = 542, normalized size = 1.62

$$\frac{1}{2}a^3d^4x^2(5Ae+Bd)+a^3Ad^5x+\frac{1}{9}cex^9\left(B\left(3a^2e^4+30acd^2e^2+5c^2d^4\right)+5Acde\left(3ae^2+2cd^2\right)\right)+\frac{1}{7}x^7\left(Acd\left(15a^2e^4\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^5*x + (a^3*d^4*(B*d + 5*A*e)*x^2)/2 + (a^2*d^3*(3*A*c*d^2 + 5*a*B*d
*e + 10*a*A*e^2)*x^3)/3 + (a^2*d^2*(3*B*c*d^3 + 15*A*c*d^2*e + 10*a*B*d*e^2
 + 10*a*A*e^3)*x^4)/4 + (a*d*(5*a*B*d*e*(3*c*d^2 + 2*a*e^2) + A*(3*c^2*d^4
+ 30*a*c*d^2*e^2 + 5*a^2*e^4))*x^5)/5 + (a*(A*e*(15*c^2*d^4 + 30*a*c*d^2*e^
2 + a^2*e^4) + B*(3*c^2*d^5 + 30*a*c*d^3*e^2 + 5*a^2*d*e^4))*x^6)/6 + ((a*B
*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 + a^2*e^4) + A*c*d*(c^2*d^4 + 30*a*c*d^2*e^
2 + 15*a^2*e^4))*x^7)/7 + (c*(A*e*(5*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)
+ B*(c^2*d^5 + 30*a*c*d^3*e^2 + 15*a^2*d*e^4))*x^8)/8 + (c*e*(5*A*c*d*e*(2*
c*d^2 + 3*a*e^2) + B*(5*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*x^9)/9 + (c^
2*e^2*(10*B*c*d^3 + 10*A*c*d^2*e + 15*a*B*d*e^2 + 3*a*A*e^3)*x^10)/10 + (c^
2*e^3*(10*B*c*d^2 + 5*A*c*d*e + 3*a*B*e^2)*x^11)/11 + (c^3*e^4*(5*B*d + A*e
)*x^12)/12 + (B*c^3*e^5*x^13)/13
```

fricas [B] time = 0.58, size = 658, normalized size = 1.97

$$\frac{1}{13}x^{13}e^5c^3B+\frac{5}{12}x^{12}e^4dc^3B+\frac{1}{12}x^{12}e^5c^3A+\frac{10}{11}x^{11}e^3d^2c^3B+\frac{3}{11}x^{11}e^5c^2aB+\frac{5}{11}x^{11}e^4dc^3A+x^{10}e^2d^3c^3B+\frac{3}{2}x^{10}e^4dc^2aB+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*c^3*B + 5/12*x^12*e^4*d*c^3*B + 1/12*x^12*e^5*c^3*A + 10/11*x
^11*e^3*d^2*c^3*B + 3/11*x^11*e^5*c^2*a*B + 5/11*x^11*e^4*d*c^3*A + x^10*e^
2*d^3*c^3*B + 3/2*x^10*e^4*d*c^2*a*B + x^10*e^3*d^2*c^3*A + 3/10*x^10*e^5*c
^2*a*A + 5/9*x^9*e*d^4*c^3*B + 10/3*x^9*e^3*d^2*c^2*a*B + 1/3*x^9*e^5*c*a^2
*B + 10/9*x^9*e^2*d^3*c^3*A + 5/3*x^9*e^4*d*c^2*a*A + 1/8*x^8*d^5*c^3*B + 1
5/4*x^8*e^2*d^3*c^2*a*B + 15/8*x^8*e^4*d*c*a^2*B + 5/8*x^8*e*d^4*c^3*A + 15
/4*x^8*e^3*d^2*c^2*a*A + 3/8*x^8*e^5*c*a^2*A + 15/7*x^7*e*d^4*c^2*a*B + 30/
7*x^7*e^3*d^2*c*a^2*B + 1/7*x^7*e^5*a^3*B + 1/7*x^7*d^5*c^3*A + 30/7*x^7*e^
2*d^3*c^2*a*A + 15/7*x^7*e^4*d*c*a^2*A + 1/2*x^6*d^5*c^2*a*B + 5*x^6*e^2*d^
3*c*a^2*B + 5/6*x^6*e^4*d*a^3*B + 5/2*x^6*e*d^4*c^2*a*A + 5*x^6*e^3*d^2*c*a
^2*A + 1/6*x^6*e^5*a^3*A + 3*x^5*e*d^4*c*a^2*B + 2*x^5*e^3*d^2*a^3*B + 3/5*
x^5*d^5*c^2*a*A + 6*x^5*e^2*d^3*c*a^2*A + x^5*e^4*d*a^3*A + 3/4*x^4*d^5*c*a
^2*B + 5/2*x^4*e^2*d^3*a^3*B + 15/4*x^4*e*d^4*c*a^2*A + 5/2*x^4*e^3*d^2*a^3
*A + 5/3*x^3*e*d^4*a^3*B + x^3*d^5*c*a^2*A + 10/3*x^3*e^2*d^3*a^3*A + 1/2*x
^2*d^5*a^3*B + 5/2*x^2*e*d^4*a^3*A + x*d^5*a^3*A
```

giac [A] time = 0.19, size = 634, normalized size = 1.90

$$\frac{1}{13}Bc^3x^{13}e^5+\frac{5}{12}Bc^3dx^{12}e^4+\frac{10}{11}Bc^3d^2x^{11}e^3+Bc^3d^3x^{10}e^2+\frac{5}{9}Bc^3d^4x^9e+\frac{1}{8}Bc^3d^5x^8+\frac{1}{12}Ac^3x^{12}e^5+\frac{5}{11}Ac^3dx^{11}e^4+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/13*B*c^3*x^13*e^5 + 5/12*B*c^3*d*x^12*e^4 + 10/11*B*c^3*d^2*x^11*e^3 + B*
c^3*d^3*x^10*e^2 + 5/9*B*c^3*d^4*x^9*e + 1/8*B*c^3*d^5*x^8 + 1/12*A*c^3*x^1
2*e^5 + 5/11*A*c^3*d*x^11*e^4 + A*c^3*d^2*x^10*e^3 + 10/9*A*c^3*d^3*x^9*e^2
 + 5/8*A*c^3*d^4*x^8*e + 1/7*A*c^3*d^5*x^7 + 3/11*B*a*c^2*x^11*e^5 + 3/2*B*
a*c^2*d*x^10*e^4 + 10/3*B*a*c^2*d^2*x^9*e^3 + 15/4*B*a*c^2*d^3*x^8*e^2 + 15
/7*B*a*c^2*d^4*x^7*e + 1/2*B*a*c^2*d^5*x^6 + 3/10*A*a*c^2*x^10*e^5 + 5/3*A*
a*c^2*d*x^9*e^4 + 15/4*A*a*c^2*d^2*x^8*e^3 + 30/7*A*a*c^2*d^3*x^7*e^2 + 5/2
*A*a*c^2*d^4*x^6*e + 3/5*A*a*c^2*d^5*x^5 + 1/3*B*a^2*c*x^9*e^5 + 15/8*B*a^2
*c*d*x^8*e^4 + 30/7*B*a^2*c*d^2*x^7*e^3 + 5*B*a^2*c*d^3*x^6*e^2 + 3*B*a^2*c
*d^4*x^5*e + 3/4*B*a^2*c*d^5*x^4 + 3/8*A*a^2*c*x^8*e^5 + 15/7*A*a^2*c*d*x^7
*e^4 + 5*A*a^2*c*d^2*x^6*e^3 + 6*A*a^2*c*d^3*x^5*e^2 + 15/4*A*a^2*c*d^4*x^4
*e + A*a^2*c*d^5*x^3 + 1/7*B*a^3*x^7*e^5 + 5/6*B*a^3*d*x^6*e^4 + 2*B*a^3*d^
2*x^5*e^3 + 5/2*B*a^3*d^3*x^4*e^2 + 5/3*B*a^3*d^4*x^3*e + 1/2*B*a^3*d^5*x^2
```

```
 + 1/6*A*a^3*x^6*e^5 + A*a^3*d*x^5*e^4 + 5/2*A*a^3*d^2*x^4*e^3 + 10/3*A*a^3
*d^3*x^3*e^2 + 5/2*A*a^3*d^4*x^2*e + A*a^3*d^5*x
```

maple [A]   time = 0.05, size = 557, normalized size = 1.67

$$\frac{B\,c^3e^5x^{13}}{13}+\frac{\left(A\,e^5+5Bd\,e^4\right)c^3x^{12}}{12}+\frac{\left(3Ba\,c^2e^5+\left(5Ad\,e^4+10B\,d^2e^3\right)c^3\right)x^{11}}{11}+A\,a^3d^5x+\frac{3\left(A\,e^5+5Bd\,e^4\right)a\,c^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x)
```

```
[Out] 1/13*B*e^5*c^3*x^13+1/12*(A*e^5+5*B*d*e^4)*c^3*x^12+1/11*((5*A*d*e^4+10*B*d
^2*e^3)*c^3+3*B*e^5*a*c^2)*x^11+1/10*((10*A*d^2*e^3+10*B*d^3*e^2)*c^3+3*(A*
e^5+5*B*d*e^4)*a*c^2)*x^10+1/9*((10*A*d^3*e^2+5*B*d^4*e)*c^3+3*(5*A*d*e^4+1
0*B*d^2*e^3)*a*c^2+3*B*e^5*a^2*c)*x^9+1/8*((5*A*d^4*e+B*d^5)*c^3+3*(10*A*d^
2*e^3+10*B*d^3*e^2)*a*c^2+3*(A*e^5+5*B*d*e^4)*a^2*c)*x^8+1/7*(A*d^5*c^3+3*(
10*A*d^3*e^2+5*B*d^4*e)*a*c^2+3*(5*A*d*e^4+10*B*d^2*e^3)*a^2*c+B*e^5*a^3)*x
^7+1/6*(3*(5*A*d^4*e+B*d^5)*a*c^2+3*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*c+(A*e^
5+5*B*d*e^4)*a^3)*x^6+1/5*(3*A*d^5*a*c^2+3*(10*A*d^3*e^2+5*B*d^4*e)*a^2*c+(
5*A*d*e^4+10*B*d^2*e^3)*a^3)*x^5+1/4*(3*(5*A*d^4*e+B*d^5)*a^2*c+(10*A*d^2*e
^3+10*B*d^3*e^2)*a^3)*x^4+1/3*(3*A*d^5*a^2*c+(10*A*d^3*e^2+5*B*d^4*e)*a^3)*
x^3+1/2*(5*A*d^4*e+B*d^5)*a^3*x^2+A*d^5*a^3*x
```

maxima [A]   time = 0.66, size = 584, normalized size = 1.75

$$\frac{1}{13}\,Bc^3e^5x^{13}+\frac{1}{12}\left(5\,Bc^3de^4+Ac^3e^5\right)x^{12}+\frac{1}{11}\left(10\,Bc^3d^2e^3+5\,Ac^3de^4+3\,Bac^2e^5\right)x^{11}+\frac{1}{10}\left(10\,Bc^3d^3e^2+10\,Ac^3d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^3*e^5*x^13 + 1/12*(5*B*c^3*d*e^4 + A*c^3*e^5)*x^12 + 1/11*(10*B*c^
3*d^2*e^3 + 5*A*c^3*d*e^4 + 3*B*a*c^2*e^5)*x^11 + 1/10*(10*B*c^3*d^3*e^2 +
10*A*c^3*d^2*e^3 + 15*B*a*c^2*d*e^4 + 3*A*a*c^2*e^5)*x^10 + A*a^3*d^5*x + 1
/9*(5*B*c^3*d^4*e + 10*A*c^3*d^3*e^2 + 30*B*a*c^2*d^2*e^3 + 15*A*a*c^2*d*e^
4 + 3*B*a^2*c*e^5)*x^9 + 1/8*(B*c^3*d^5 + 5*A*c^3*d^4*e + 30*B*a*c^2*d^3*e^
2 + 30*A*a*c^2*d^2*e^3 + 15*B*a^2*c*d*e^4 + 3*A*a^2*c*e^5)*x^8 + 1/7*(A*c^3
*d^5 + 15*B*a*c^2*d^4*e + 30*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^
2*c*d*e^4 + B*a^3*e^5)*x^7 + 1/6*(3*B*a*c^2*d^5 + 15*A*a*c^2*d^4*e + 30*B*a
^2*c*d^3*e^2 + 30*A*a^2*c*d^2*e^3 + 5*B*a^3*d*e^4 + A*a^3*e^5)*x^6 + 1/5*(3
*A*a*c^2*d^5 + 15*B*a^2*c*d^4*e + 30*A*a^2*c*d^3*e^2 + 10*B*a^3*d^2*e^3 + 5
*A*a^3*d*e^4)*x^5 + 1/4*(3*B*a^2*c*d^5 + 15*A*a^2*c*d^4*e + 10*B*a^3*d^3*e^
2 + 10*A*a^3*d^2*e^3)*x^4 + 1/3*(3*A*a^2*c*d^5 + 5*B*a^3*d^4*e + 10*A*a^3*d
^3*e^2)*x^3 + 1/2*(B*a^3*d^5 + 5*A*a^3*d^4*e)*x^2
```

mupad [B]   time = 1.86, size = 542, normalized size = 1.62

$$x^6\left(\frac{5\,B\,a^3\,d\,e^4}{6}+\frac{A\,a^3\,e^5}{6}+5\,B\,a^2\,c\,d^3\,e^2+5\,A\,a^2\,c\,d^2\,e^3+\frac{B\,a\,c^2\,d^5}{2}+\frac{5\,A\,a\,c^2\,d^4\,e}{2}\right)+x^7\left(\frac{B\,a^3\,e^5}{7}+\frac{30\,B\,a^2\,c\,d^2}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^5,x)
```

```
[Out] x^6*((A*a^3*e^5)/6 + (B*a*c^2*d^5)/2 + (5*B*a^3*d*e^4)/6 + 5*A*a^2*c*d^2*e^
3 + 5*B*a^2*c*d^3*e^2 + (5*A*a*c^2*d^4*e)/2) + x^7*((A*c^3*d^5)/7 + (B*a^3*
e^5)/7 + (30*A*a*c^2*d^3*e^2)/7 + (30*B*a^2*c*d^2*e^3)/7 + (15*A*a^2*c*d*e^
4)/7 + (15*B*a*c^2*d^4*e)/7) + x^8*((B*c^3*d^5)/8 + (3*A*a^2*c*e^5)/8 + (5*
A*c^3*d^4*e)/8 + (15*A*a*c^2*d^2*e^3)/4 + (15*B*a*c^2*d^3*e^2)/4 + (15*B*a^
2*c*d*e^4)/8) + x^5*((3*A*a*c^2*d^5)/5 + A*a^3*d*e^4 + 2*B*a^3*d^2*e^3 + 6*
A*a^2*c*d^3*e^2 + 3*B*a^2*c*d^4*e) + x^9*((B*a^2*c*e^5)/3 + (5*B*c^3*d^4*e)
/9 + (10*A*c^3*d^3*e^2)/9 + (10*B*a*c^2*d^2*e^3)/3 + (5*A*a*c^2*d*e^4)/3) +
 (c^2*e^2*x^10*(3*A*a*e^3 + 10*B*c*d^3 + 15*B*a*d*e^2 + 10*A*c*d^2*e))/10 +
 (a^3*d^4*x^2*(5*A*e + B*d))/2 + (c^3*e^4*x^12*(A*e + 5*B*d))/12 + (a^2*d^3
*x^3*(10*A*a*e^2 + 3*A*c*d^2 + 5*B*a*d*e))/3 + (c^2*e^3*x^11*(3*B*a*e^2 + 1
0*B*c*d^2 + 5*A*c*d*e))/11 + A*a^3*d^5*x + (a^2*d^2*x^4*(10*A*a*e^3 + 3*B*c
*d^3 + 10*B*a*d*e^2 + 15*A*c*d^2*e))/4 + (B*c^3*e^5*x^13)/13
```

sympy [B] time = 0.16, size = 694, normalized size = 2.08

$$Aa^3d^5x+\frac{Bc^3e^5x^{13}}{13}+x^{12}\left(\frac{Ac^3e^5}{12}+\frac{5Bc^3de^4}{12}\right)+x^{11}\left(\frac{5Ac^3de^4}{11}+\frac{3Bac^2e^5}{11}+\frac{10Bc^3d^2e^3}{11}\right)+x^{10}\left(\frac{3Aac^2e^5}{10}+Ac^3d^2e^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**5*x + B*c**3*e**5*x**13/13 + x**12*(A*c**3*e**5/12 + 5*B*c**3*d*e
**4/12) + x**11*(5*A*c**3*d*e**4/11 + 3*B*a*c**2*e**5/11 + 10*B*c**3*d**2*e
**3/11) + x**10*(3*A*a*c**2*e**5/10 + A*c**3*d**2*e**3 + 3*B*a*c**2*d*e**4/
2 + B*c**3*d**3*e**2) + x**9*(5*A*a*c**2*d*e**4/3 + 10*A*c**3*d**3*e**2/9 +
 B*a**2*c*e**5/3 + 10*B*a*c**2*d**2*e**3/3 + 5*B*c**3*d**4*e/9) + x**8*(3*A
*a**2*c*e**5/8 + 15*A*a*c**2*d**2*e**3/4 + 5*A*c**3*d**4*e/8 + 15*B*a**2*c*
d*e**4/8 + 15*B*a*c**2*d**3*e**2/4 + B*c**3*d**5/8) + x**7*(15*A*a**2*c*d*e
**4/7 + 30*A*a*c**2*d**3*e**2/7 + A*c**3*d**5/7 + B*a**3*e**5/7 + 30*B*a**2
*c*d**2*e**3/7 + 15*B*a*c**2*d**4*e/7) + x**6*(A*a**3*e**5/6 + 5*A*a**2*c*d
**2*e**3 + 5*A*a*c**2*d**4*e/2 + 5*B*a**3*d*e**4/6 + 5*B*a**2*c*d**3*e**2 +
 B*a*c**2*d**5/2) + x**5*(A*a**3*d*e**4 + 6*A*a**2*c*d**3*e**2 + 3*A*a*c**2
*d**5/5 + 2*B*a**3*d**2*e**3 + 3*B*a**2*c*d**4*e) + x**4*(5*A*a**3*d**2*e**
3/2 + 15*A*a**2*c*d**4*e/4 + 5*B*a**3*d**3*e**2/2 + 3*B*a**2*c*d**5/4) + x*
*3*(10*A*a**3*d**3*e**2/3 + A*a**2*c*d**5 + 5*B*a**3*d**4*e/3) + x**2*(5*A*
a**3*d**4*e/2 + B*a**3*d**5/2)
```

3.1314 $\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^8 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{8e^8}+\frac{3c^2(d+ex)^{10}\left(aBe^2-2Acde+7Bcd^2\right)}{10e^8}-$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^5/e^8+1/6*(a*e^2+c*d^2)^2*(-6*A*c*d
*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^6/e^8-3/7*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2
*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^7/e^8-1/8*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-
B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^8/e^8-1/9*c^2*(-3*A*a*e^3-
15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^9/e^8+3/10*c^2*(-2*A*c*d*e+B*
a*e^2+7*B*c*d^2)*(e*x+d)^10/e^8-1/11*c^3*(-A*e+7*B*d)*(e*x+d)^11/e^8+1/12*B
*c^3*(e*x+d)^12/e^8
```

Rubi [A] time = 0.45, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^8 \left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{8e^8}+\frac{3c^2(d+ex)^{10}\left(aBe^2-2Acde+7Bcd^2\right)}{10e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^6)/(6*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^7)/(7*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^8)/(8*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^9)/(9*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^
2)*(d + e*x)^10)/(10*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^11)/(11*e^8) + (B*
c^3*(d + e*x)^12)/(12*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3 (d+ex)^4}{e^7}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+\right.}{e^7}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3 (d+ex)^5}{5e^8}+\frac{\left(cd^2+ae^2\right)^2 \left(7Bcd^2-6Acde+aBe\right.}{6e^8}$$

Mathematica [A] time = 0.12, size = 436, normalized size = 1.31

$$\frac{1}{2}a^3d^3x^2(4Ae+Bd)+a^3Ad^4x+\frac{1}{8}cx^8\left(B\left(3a^2e^4+18acd^2e^2+c^2d^4\right)+4Acde\left(3ae^2+cd^2\right)\right)+\frac{1}{7}cx^7\left(A\left(3a^2e^4+18a\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^4*x + (a^3*d^3*(B*d + 4*A*e)*x^2)/2 + (a^2*d^2*(3*A*c*d^2 + 4*a*B*d
*e + 6*a*A*e^2)*x^3)/3 + (a^2*d*(3*B*c*d^3 + 12*A*c*d^2*e + 6*a*B*d*e^2 + 4
*a*A*e^3)*x^4)/4 + (a*(4*a*B*d*e*(3*c*d^2 + a*e^2) + A*(3*c^2*d^4 + 18*a*c*
d^2*e^2 + a^2*e^4))*x^5)/5 + (a*(12*A*c*d*e*(c*d^2 + a*e^2) + B*(3*c^2*d^4
+ 18*a*c*d^2*e^2 + a^2*e^4))*x^6)/6 + (c*(12*a*B*d*e*(c*d^2 + a*e^2) + A*(c
^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^7)/7 + (c*(4*A*c*d*e*(c*d^2 + 3*a*e
^2) + B*(c^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^8)/8 + (c^2*e*(4*B*c*d^3
+ 6*A*c*d^2*e + 12*a*B*d*e^2 + 3*a*A*e^3)*x^9)/9 + (c^2*e^2*(6*B*c*d^2 + 4*
A*c*d*e + 3*a*B*e^2)*x^10)/10 + (c^3*e^3*(4*B*d + A*e)*x^11)/11 + (B*c^3*e^
4*x^12)/12
```

fricas [A] time = 0.80, size = 536, normalized size = 1.60

$$\frac{1}{12}x^{12}e^4c^3B+\frac{4}{11}x^{11}e^3dc^3B+\frac{1}{11}x^{11}e^4c^3A+\frac{3}{5}x^{10}e^2d^2c^3B+\frac{3}{10}x^{10}e^4c^2aB+\frac{2}{5}x^{10}e^3dc^3A+\frac{4}{9}x^9ed^3c^3B+\frac{4}{3}x^9e^3dc^2aB+\frac{2}{3}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 1/11*x^11*e^4*c^3*A + 3/5*x^1
0*e^2*d^2*c^3*B + 3/10*x^10*e^4*c^2*a*B + 2/5*x^10*e^3*d*c^3*A + 4/9*x^9*e*
d^3*c^3*B + 4/3*x^9*e^3*d*c^2*a*B + 2/3*x^9*e^2*d^2*c^3*A + 1/3*x^9*e^4*c^2
*a*A + 1/8*x^8*d^4*c^3*B + 9/4*x^8*e^2*d^2*c^2*a*B + 3/8*x^8*e^4*c*a^2*B +
1/2*x^8*e*d^3*c^3*A + 3/2*x^8*e^3*d*c^2*a*A + 12/7*x^7*e*d^3*c^2*a*B + 12/7
*x^7*e^3*d*c*a^2*B + 1/7*x^7*d^4*c^3*A + 18/7*x^7*e^2*d^2*c^2*a*A + 3/7*x^7
*e^4*c*a^2*A + 1/2*x^6*d^4*c^2*a*B + 3*x^6*e^2*d^2*c*a^2*B + 1/6*x^6*e^4*a^
3*B + 2*x^6*e*d^3*c^2*a*A + 2*x^6*e^3*d*c*a^2*A + 12/5*x^5*e*d^3*c*a^2*B +
4/5*x^5*e^3*d*a^3*B + 3/5*x^5*d^4*c^2*a*A + 18/5*x^5*e^2*d^2*c*a^2*A + 1/5*
x^5*e^4*a^3*A + 3/4*x^4*d^4*c*a^2*B + 3/2*x^4*e^2*d^2*a^3*B + 3*x^4*e*d^3*c
*a^2*A + x^4*e^3*d*a^3*A + 4/3*x^3*e*d^3*a^3*B + x^3*d^4*c*a^2*A + 2*x^3*e^
2*d^2*a^3*A + 1/2*x^2*d^4*a^3*B + 2*x^2*e*d^3*a^3*A + x*d^4*a^3*A
```

giac [A] time = 0.21, size = 520, normalized size = 1.56

$$\frac{1}{12}Bc^3x^{12}e^4+\frac{4}{11}Bc^3dx^{11}e^3+\frac{3}{5}Bc^3d^2x^{10}e^2+\frac{4}{9}Bc^3d^3x^9e+\frac{1}{8}Bc^3d^4x^8+\frac{1}{11}Ac^3x^{11}e^4+\frac{2}{5}Ac^3dx^{10}e^3+\frac{2}{3}Ac^3d^2x^9e^2+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 1/11*A*c^3*x^11*e^4 + 2/5*A*c^3*d*x^1
0*e^3 + 2/3*A*c^3*d^2*x^9*e^2 + 1/2*A*c^3*d^3*x^8*e + 1/7*A*c^3*d^4*x^7 + 3
/10*B*a*c^2*x^10*e^4 + 4/3*B*a*c^2*d*x^9*e^3 + 9/4*B*a*c^2*d^2*x^8*e^2 + 12
/7*B*a*c^2*d^3*x^7*e + 1/2*B*a*c^2*d^4*x^6 + 1/3*A*a*c^2*x^9*e^4 + 3/2*A*a*
c^2*d*x^8*e^3 + 18/7*A*a*c^2*d^2*x^7*e^2 + 2*A*a*c^2*d^3*x^6*e + 3/5*A*a*c^
2*d^4*x^5 + 3/8*B*a^2*c*x^8*e^4 + 12/7*B*a^2*c*d*x^7*e^3 + 3*B*a^2*c*d^2*x^
6*e^2 + 12/5*B*a^2*c*d^3*x^5*e + 3/4*B*a^2*c*d^4*x^4 + 3/7*A*a^2*c*x^7*e^4
+ 2*A*a^2*c*d*x^6*e^3 + 18/5*A*a^2*c*d^2*x^5*e^2 + 3*A*a^2*c*d^3*x^4*e + A*
a^2*c*d^4*x^3 + 1/6*B*a^3*x^6*e^4 + 4/5*B*a^3*d*x^5*e^3 + 3/2*B*a^3*d^2*x^4
*e^2 + 4/3*B*a^3*d^3*x^3*e + 1/2*B*a^3*d^4*x^2 + 1/5*A*a^3*x^5*e^4 + A*a^3*
d*x^4*e^3 + 2*A*a^3*d^2*x^3*e^2 + 2*A*a^3*d^3*x^2*e + A*a^3*d^4*x
```

maple [A] time = 0.05, size = 455, normalized size = 1.36

$$\frac{Bc^3e^4x^{12}}{12}+\frac{\left(Ae^4+4Bde^3\right)c^3x^{11}}{11}+\frac{\left(3Bac^2e^4+\left(4Ade^3+6Bd^2e^2\right)c^3\right)x^{10}}{10}+Aa^3d^4x+\frac{(3\left(Ae^4+4Bde^3\right)ac^2+(6}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*(A*e^4+4*B*d*e^3)*c^3*x^11+1/10*((4*A*d*e^3+6*B*d^
2*e^2)*c^3+3*B*e^4*a*c^2)*x^10+1/9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(A*e^4+4*
B*d*e^3)*a*c^2)*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(4*A*d*e^3+6*B*d^2*e^2)*a*
c^2+3*B*e^4*a^2*c)*x^8+1/7*(A*d^4*c^3+3*(6*A*d^2*e^2+4*B*d^3*e)*a*c^2+3*(A*
e^4+4*B*d*e^3)*a^2*c)*x^7+1/6*(3*(4*A*d^3*e+B*d^4)*a*c^2+3*(4*A*d*e^3+6*B*d
^2*e^2)*a^2*c+B*e^4*a^3)*x^6+1/5*(3*A*d^4*a*c^2+3*(6*A*d^2*e^2+4*B*d^3*e)*a
^2*c+(A*e^4+4*B*d*e^3)*a^3)*x^5+1/4*(3*(4*A*d^3*e+B*d^4)*a^2*c+(4*A*d*e^3+6
*B*d^2*e^2)*a^3)*x^4+1/3*(3*A*d^4*a^2*c+(6*A*d^2*e^2+4*B*d^3*e)*a^3)*x^3+1/
2*(4*A*d^3*e+B*d^4)*a^3*x^2+A*d^4*a^3*x
```

maxima [A]   time = 0.63, size = 478, normalized size = 1.43

$$\frac{1}{12} Bc^3e^4x^{12}+\frac{1}{11}\left(4 Bc^3de^3 + Ac^3e^4\right)x^{11}+\frac{1}{10}\left(6 Bc^3d^2e^2 + 4 Ac^3de^3 + 3 Bac^2e^4\right)x^{10}+\frac{1}{9}\left(4 Bc^3d^3e + 6 Ac^3d^2e^2 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/11*(4*B*c^3*d*e^3 + A*c^3*e^4)*x^11 + 1/10*(6*B*c^3
*d^2*e^2 + 4*A*c^3*d*e^3 + 3*B*a*c^2*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*A*c
^3*d^2*e^2 + 12*B*a*c^2*d*e^3 + 3*A*a*c^2*e^4)*x^9 + A*a^3*d^4*x + 1/8*(B*c
^3*d^4 + 4*A*c^3*d^3*e + 18*B*a*c^2*d^2*e^2 + 12*A*a*c^2*d*e^3 + 3*B*a^2*c*
e^4)*x^8 + 1/7*(A*c^3*d^4 + 12*B*a*c^2*d^3*e + 18*A*a*c^2*d^2*e^2 + 12*B*a^
2*c*d*e^3 + 3*A*a^2*c*e^4)*x^7 + 1/6*(3*B*a*c^2*d^4 + 12*A*a*c^2*d^3*e + 18
*B*a^2*c*d^2*e^2 + 12*A*a^2*c*d*e^3 + B*a^3*e^4)*x^6 + 1/5*(3*A*a*c^2*d^4 +
 12*B*a^2*c*d^3*e + 18*A*a^2*c*d^2*e^2 + 4*B*a^3*d*e^3 + A*a^3*e^4)*x^5 + 1
/4*(3*B*a^2*c*d^4 + 12*A*a^2*c*d^3*e + 6*B*a^3*d^2*e^2 + 4*A*a^3*d*e^3)*x^4
 + 1/3*(3*A*a^2*c*d^4 + 4*B*a^3*d^3*e + 6*A*a^3*d^2*e^2)*x^3 + 1/2*(B*a^3*d
^4 + 4*A*a^3*d^3*e)*x^2
```

mupad [B]   time = 0.19, size = 438, normalized size = 1.31

$$x^5\left(\frac{4\,B\,a^3\,d\,e^3}{5}+\frac{A\,a^3\,e^4}{5}+\frac{12\,B\,a^2\,c\,d^3\,e}{5}+\frac{18\,A\,a^2\,c\,d^2\,e^2}{5}+\frac{3\,A\,a\,c^2\,d^4}{5}\right)+x^8\left(\frac{3\,B\,a^2\,c\,e^4}{8}+\frac{9\,B\,a\,c^2\,d^2\,e^2}{4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] x^5*((A*a^3*e^4)/5 + (3*A*a*c^2*d^4)/5 + (4*B*a^3*d*e^3)/5 + (18*A*a^2*c*d^
2*e^2)/5 + (12*B*a^2*c*d^3*e)/5) + x^8*((B*c^3*d^4)/8 + (3*B*a^2*c*e^4)/8 +
 (A*c^3*d^3*e)/2 + (9*B*a*c^2*d^2*e^2)/4 + (3*A*a*c^2*d*e^3)/2) + x^6*((B*a
^3*e^4)/6 + (B*a*c^2*d^4)/2 + 3*B*a^2*c*d^2*e^2 + 2*A*a*c^2*d^3*e + 2*A*a^2
*c*d*e^3) + x^7*((A*c^3*d^4)/7 + (3*A*a^2*c*e^4)/7 + (18*A*a*c^2*d^2*e^2)/7
 + (12*B*a*c^2*d^3*e)/7 + (12*B*a^2*c*d*e^3)/7) + (a^3*d^3*x^2*(4*A*e + B*d
))/2 + (c^3*e^3*x^11*(A*e + 4*B*d))/11 + (a^2*d^2*x^3*(6*A*a*e^2 + 3*A*c*d^
2 + 4*B*a*d*e))/3 + (c^2*e^2*x^10*(3*B*a*e^2 + 6*B*c*d^2 + 4*A*c*d*e))/10 +
 A*a^3*d^4*x + (a^2*d*x^4*(4*A*a*e^3 + 3*B*c*d^3 + 6*B*a*d*e^2 + 12*A*c*d^2
*e))/4 + (c^2*e*x^9*(3*A*a*e^3 + 4*B*c*d^3 + 12*B*a*d*e^2 + 6*A*c*d^2*e))/9
 + (B*c^3*e^4*x^12)/12
```

sympy [A]   time = 0.15, size = 564, normalized size = 1.69

$$Aa^3d^4x+\frac{Bc^3e^4x^{12}}{12}+x^{11}\left(\frac{Ac^3e^4}{11}+\frac{4Bc^3de^3}{11}\right)+x^{10}\left(\frac{2Ac^3de^3}{5}+\frac{3Bac^2e^4}{10}+\frac{3Bc^3d^2e^2}{5}\right)+x^9\left(\frac{Aac^2e^4}{3}+\frac{2Ac^3d^2e^2}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**4*x + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 4*B*c**3*d*e
**3/11) + x**10*(2*A*c**3*d*e**3/5 + 3*B*a*c**2*e**4/10 + 3*B*c**3*d**2*e**
2/5) + x**9*(A*a*c**2*e**4/3 + 2*A*c**3*d**2*e**2/3 + 4*B*a*c**2*d*e**3/3 +
 4*B*c**3*d**3*e/9) + x**8*(3*A*a*c**2*d*e**3/2 + A*c**3*d**3*e/2 + 3*B*a**
2*c*e**4/8 + 9*B*a*c**2*d**2*e**2/4 + B*c**3*d**4/8) + x**7*(3*A*a**2*c*e**
4/7 + 18*A*a*c**2*d**2*e**2/7 + A*c**3*d**4/7 + 12*B*a**2*c*d*e**3/7 + 12*B
*a*c**2*d**3*e/7) + x**6*(2*A*a**2*c*d*e**3 + 2*A*a*c**2*d**3*e + B*a**3*e*
*4/6 + 3*B*a**2*c*d**2*e**2 + B*a*c**2*d**4/2) + x**5*(A*a**3*e**4/5 + 18*A
*a**2*c*d**2*e**2/5 + 3*A*a*c**2*d**4/5 + 4*B*a**3*d*e**3/5 + 12*B*a**2*c*d
**3*e/5) + x**4*(A*a**3*d*e**3 + 3*A*a**2*c*d**3*e + 3*B*a**3*d**2*e**2/2 +
 3*B*a**2*c*d**4/4) + x**3*(2*A*a**3*d**2*e**2 + A*a**2*c*d**4 + 4*B*a**3*d
**3*e/3) + x**2*(2*A*a**3*d**3*e + B*a**3*d**4/2)
```

3.1315 $\int (A+Bx)(d+ex)^3\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^7\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{c^2(d+ex)^9\left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-\frac{c^2}{}$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^4/e^8+1/5*(a*e^2+c*d^2)^2*(-6*A*c*d
*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^5/e^8-1/2*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2
*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^6/e^8-1/7*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-
B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^7/e^8-1/8*c^2*(-3*A*a*e^3-
15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^8/e^8+1/3*c^2*(-2*A*c*d*e+B*a
*e^2+7*B*c*d^2)*(e*x+d)^9/e^8-1/10*c^3*(-A*e+7*B*d)*(e*x+d)^10/e^8+1/11*B*c
^3*(e*x+d)^11/e^8
```

Rubi [A] time = 0.37, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^7\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{c^2(d+ex)^9\left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-\frac{c^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^5)/(5*e^8) - (c*(c*d^2 + a*e^2)*
(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^6)/(2*e^8) - (c
*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^
4))*(d + e*x)^7)/(7*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 -
 3*a*A*e^3)*(d + e*x)^8)/(8*e^8) + (c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(
d + e*x)^9)/(3*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^10)/(10*e^8) + (B*c^3*(d
 + e*x)^11)/(11*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a+cx^2\right)^3\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^3}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+\right.}{e^7}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^4}{4e^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe\right.}{5e^8}\end{aligned}$$

Mathematica [A] time = 0.09, size = 323, normalized size = 0.97

$$\frac{1}{2}a^3d^2x^2(3Ae+Bd)+a^3Ad^3x+a^2dx^3\left(aAe^2+aBde+Acd^2\right)+\frac{1}{4}a^2x^4\left(aAe^3+3aBde^2+9Acd^2e+3Bcd^3\right)+\frac{1}{3}c^2ex$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^3*x + (a^3*d^2*(B*d + 3*A*e)*x^2)/2 + a^2*d*(A*c*d^2 + a*B*d*e + a*
A*e^2)*x^3 + (a^2*(3*B*c*d^3 + 9*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^4)/4
+ (a*(a*B*e*(9*c*d^2 + a*e^2) + 3*A*c*d*(c*d^2 + 3*a*e^2))*x^5)/5 + (a*c*(B
*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3)*x^6)/2 + (c*(3*a*B*e*(3*c*d^2
 + a*e^2) + A*c*d*(c*d^2 + 9*a*e^2))*x^7)/7 + (c^2*(B*c*d^3 + 3*A*c*d^2*e +
 9*a*B*d*e^2 + 3*a*A*e^3)*x^8)/8 + (c^2*e*(B*c*d^2 + A*c*d*e + a*B*e^2)*x^9
)/3 + (c^3*e^2*(3*B*d + A*e)*x^10)/10 + (B*c^3*e^3*x^11)/11
```

fricas [A] time = 0.73, size = 411, normalized size = 1.23

$$\frac{1}{11}x^{11}e^3c^3B+\frac{3}{10}x^{10}e^2dc^3B+\frac{1}{10}x^{10}e^3c^3A+\frac{1}{3}x^9ed^2c^3B+\frac{1}{3}x^9e^3c^2aB+\frac{1}{3}x^9e^2dc^3A+\frac{1}{8}x^8d^3c^3B+\frac{9}{8}x^8e^2dc^2aB+\frac{3}{8}x^8ed^2c^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 1/10*x^10*e^3*c^3*A + 1/3*x^9
*e*d^2*c^3*B + 1/3*x^9*e^3*c^2*a*B + 1/3*x^9*e^2*d*c^3*A + 1/8*x^8*d^3*c^3*
B + 9/8*x^8*e^2*d*c^2*a*B + 3/8*x^8*e*d^2*c^3*A + 3/8*x^8*e^3*c^2*a*A + 9/7
*x^7*e*d^2*c^2*a*B + 3/7*x^7*e^3*c*a^2*B + 1/7*x^7*d^3*c^3*A + 9/7*x^7*e^2*
d*c^2*a*A + 1/2*x^6*d^3*c^2*a*B + 3/2*x^6*e^2*d*c*a^2*B + 3/2*x^6*e*d^2*c^2
*a*A + 1/2*x^6*e^3*c*a^2*A + 9/5*x^5*e*d^2*c*a^2*B + 1/5*x^5*e^3*a^3*B + 3/
5*x^5*d^3*c^2*a*A + 9/5*x^5*e^2*d*c*a^2*A + 3/4*x^4*d^3*c*a^2*B + 3/4*x^4*e
^2*d*a^3*B + 9/4*x^4*e*d^2*c*a^2*A + 1/4*x^4*e^3*a^3*A + x^3*e*d^2*a^3*B +
x^3*d^3*c*a^2*A + x^3*e^2*d*a^3*A + 1/2*x^2*d^3*a^3*B + 3/2*x^2*e*d^2*a^3*A
 + x*d^3*a^3*A
```

giac [A] time = 0.18, size = 403, normalized size = 1.21

$$\frac{1}{11}Bc^3x^{11}e^3+\frac{3}{10}Bc^3dx^{10}e^2+\frac{1}{3}Bc^3d^2x^9e+\frac{1}{8}Bc^3d^3x^8+\frac{1}{10}Ac^3x^{10}e^3+\frac{1}{3}Ac^3dx^9e^2+\frac{3}{8}Ac^3d^2x^8e+\frac{1}{7}Ac^3d^3x^7+\frac{1}{3}Bac^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 1/10*A*c^3*x^10*e^3 + 1/3*A*c^3*d*x^9*e^2 + 3/8*A*c^3*d^2*x^8*
e + 1/7*A*c^3*d^3*x^7 + 1/3*B*a*c^2*x^9*e^3 + 9/8*B*a*c^2*d*x^8*e^2 + 9/7*B
*a*c^2*d^2*x^7*e + 1/2*B*a*c^2*d^3*x^6 + 3/8*A*a*c^2*x^8*e^3 + 9/7*A*a*c^2*
d*x^7*e^2 + 3/2*A*a*c^2*d^2*x^6*e + 3/5*A*a*c^2*d^3*x^5 + 3/7*B*a^2*c*x^7*e
^3 + 3/2*B*a^2*c*d*x^6*e^2 + 9/5*B*a^2*c*d^2*x^5*e + 3/4*B*a^2*c*d^3*x^4 +
1/2*A*a^2*c*x^6*e^3 + 9/5*A*a^2*c*d*x^5*e^2 + 9/4*A*a^2*c*d^2*x^4*e + A*a^2
*c*d^3*x^3 + 1/5*B*a^3*x^5*e^3 + 3/4*B*a^3*d*x^4*e^2 + B*a^3*d^2*x^3*e + 1/
2*B*a^3*d^3*x^2 + 1/4*A*a^3*x^4*e^3 + A*a^3*d*x^3*e^2 + 3/2*A*a^3*d^2*x^2*e
 + A*a^3*d^3*x
```

maple [A] time = 0.04, size = 353, normalized size = 1.06

$$\frac{Bc^3e^3x^{11}}{11}+\frac{\left(Ae^3+3Bde^2\right)c^3x^{10}}{10}+\frac{\left(3Bac^2e^3+\left(3Ade^2+3Bd^2e\right)c^3\right)x^9}{9}+Aa^3d^3x+\frac{(3\left(Ae^3+3Bde^2\right)ac^2+(3A}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*(A*e^3+3*B*d*e^2)*c^3*x^10+1/9*((3*A*d*e^2+3*B*d^2
*e)*c^3+3*B*e^3*a*c^2)*x^9+1/8*((3*A*d^2*e+B*d^3)*c^3+3*(A*e^3+3*B*d*e^2)*a
*c^2)*x^8+1/7*(A*c^3*d^3+3*(3*A*d*e^2+3*B*d^2*e)*a*c^2+3*B*e^3*a^2*c)*x^7+1
/6*(3*(3*A*d^2*e+B*d^3)*a*c^2+3*(A*e^3+3*B*d*e^2)*a^2*c)*x^6+1/5*(3*A*d^3*a
*c^2+3*(3*A*d*e^2+3*B*d^2*e)*a^2*c+B*e^3*a^3)*x^5+1/4*(3*(3*A*d^2*e+B*d^3)*
a^2*c+(A*e^3+3*B*d*e^2)*a^3)*x^4+1/3*(3*A*d^3*a^2*c+(3*A*d*e^2+3*B*d^2*e)*a
^3)*x^3+1/2*(3*A*d^2*e+B*d^3)*a^3*x^2+A*d^3*a^3*x
```

maxima [A]   time = 0.49, size = 363, normalized size = 1.09

$$\frac{1}{11}\,Bc^3e^3x^{11}+\frac{1}{10}\left(3\,Bc^3de^2+Ac^3e^3\right)x^{10}+\frac{1}{3}\left(Bc^3d^2e+Ac^3de^2+Bac^2e^3\right)x^9+\frac{1}{8}\left(Bc^3d^3+3\,Ac^3d^2e+9\,Bac^2de^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/10*(3*B*c^3*d*e^2 + A*c^3*e^3)*x^10 + 1/3*(B*c^3*d^
2*e + A*c^3*d*e^2 + B*a*c^2*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*A*c^3*d^2*e + 9*B
*a*c^2*d*e^2 + 3*A*a*c^2*e^3)*x^8 + A*a^3*d^3*x + 1/7*(A*c^3*d^3 + 9*B*a*c^
2*d^2*e + 9*A*a*c^2*d*e^2 + 3*B*a^2*c*e^3)*x^7 + 1/2*(B*a*c^2*d^3 + 3*A*a*c
^2*d^2*e + 3*B*a^2*c*d*e^2 + A*a^2*c*e^3)*x^6 + 1/5*(3*A*a*c^2*d^3 + 9*B*a^
2*c*d^2*e + 9*A*a^2*c*d*e^2 + B*a^3*e^3)*x^5 + 1/4*(3*B*a^2*c*d^3 + 9*A*a^2
*c*d^2*e + 3*B*a^3*d*e^2 + A*a^3*e^3)*x^4 + (A*a^2*c*d^3 + B*a^3*d^2*e + A*
a^3*d*e^2)*x^3 + 1/2*(B*a^3*d^3 + 3*A*a^3*d^2*e)*x^2
```

mupad [B]   time = 0.15, size = 317, normalized size = 0.95

$$x^5\left(\frac{B\,a^3\,e^3}{5}+\frac{9\,B\,a^2\,c\,d^2\,e}{5}+\frac{9\,A\,a^2\,c\,d\,e^2}{5}+\frac{3\,A\,a\,c^2\,d^3}{5}\right)+x^7\left(\frac{3\,B\,a^2\,c\,e^3}{7}+\frac{9\,B\,a\,c^2\,d^2\,e}{7}+\frac{9\,A\,a\,c^2\,d\,e^2}{7}+\frac{A\,c^3\,d}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] x^5*((B*a^3*e^3)/5 + (3*A*a*c^2*d^3)/5 + (9*A*a^2*c*d*e^2)/5 + (9*B*a^2*c*d
^2*e)/5) + x^7*((A*c^3*d^3)/7 + (3*B*a^2*c*e^3)/7 + (9*A*a*c^2*d*e^2)/7 + (
9*B*a*c^2*d^2*e)/7) + (a^2*x^4*(A*a*e^3 + 3*B*c*d^3 + 3*B*a*d*e^2 + 9*A*c*d
^2*e))/4 + (c^2*x^8*(3*A*a*e^3 + B*c*d^3 + 9*B*a*d*e^2 + 3*A*c*d^2*e))/8 +
a^2*d*x^3*(A*a*e^2 + A*c*d^2 + B*a*d*e) + (c^2*e*x^9*(B*a*e^2 + B*c*d^2 + A
*c*d*e))/3 + (a^3*d^2*x^2*(3*A*e + B*d))/2 + (c^3*e^2*x^10*(A*e + 3*B*d))/1
0 + (a*c*x^6*(A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 3*A*c*d^2*e))/2 + A*a^3*d^3
*x + (B*c^3*e^3*x^11)/11
```

sympy [A]   time = 0.14, size = 435, normalized size = 1.30

$$Aa^3d^3x+\frac{Bc^3e^3x^{11}}{11}+x^{10}\left(\frac{Ac^3e^3}{10}+\frac{3Bc^3de^2}{10}\right)+x^9\left(\frac{Ac^3de^2}{3}+\frac{Bac^2e^3}{3}+\frac{Bc^3d^2e}{3}\right)+x^8\left(\frac{3Aac^2e^3}{8}+\frac{3Ac^3d^2e}{8}+9B\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**3*x + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*c**3*d*e
**2/10) + x**9*(A*c**3*d*e**2/3 + B*a*c**2*e**3/3 + B*c**3*d**2*e/3) + x**8
*(3*A*a*c**2*e**3/8 + 3*A*c**3*d**2*e/8 + 9*B*a*c**2*d*e**2/8 + B*c**3*d**3
/8) + x**7*(9*A*a*c**2*d*e**2/7 + A*c**3*d**3/7 + 3*B*a**2*c*e**3/7 + 9*B*a
*c**2*d**2*e/7) + x**6*(A*a**2*c*e**3/2 + 3*A*a*c**2*d**2*e/2 + 3*B*a**2*c*
d*e**2/2 + B*a*c**2*d**3/2) + x**5*(9*A*a**2*c*d*e**2/5 + 3*A*a*c**2*d**3/5
 + B*a**3*e**3/5 + 9*B*a**2*c*d**2*e/5) + x**4*(A*a**3*e**3/4 + 9*A*a**2*c*
d**2*e/4 + 3*B*a**3*d*e**2/4 + 3*B*a**2*c*d**3/4) + x**3*(A*a**3*d*e**2 + A
*a**2*c*d**3 + B*a**3*d**2*e) + x**2*(3*A*a**3*d**2*e/2 + B*a**3*d**3/2)
```

3.1316 $\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=334

$$-\frac{c(d+ex)^6\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8}+\frac{3c^2(d+ex)^8\left(aBe^2-2Acde+7Bcd^2\right)}{8e^8}-\frac{c^2(}{}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^3/e^8+1/4*(a*e^2+c*d^2)^2*(-6*A*c*d
*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^4/e^8-3/5*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2
*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^5/e^8-1/6*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-
B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^6/e^8-1/7*c^2*(-3*A*a*e^3-
15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^7/e^8+3/8*c^2*(-2*A*c*d*e+B*a
*e^2+7*B*c*d^2)*(e*x+d)^8/e^8-1/9*c^3*(-A*e+7*B*d)*(e*x+d)^9/e^8+1/10*B*c^3
*(e*x+d)^10/e^8
```

Rubi [A] time = 0.31, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c(d+ex)^6\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8}+\frac{3c^2(d+ex)^8\left(aBe^2-2Acde+7Bcd^2\right)}{8e^8}-\frac{c^2(}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 + a*e^2)^2*(
7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^4)/(4*e^8) - (3*c*(c*d^2 + a*e^2
)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^5)/(5*e^8) -
(c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*
e^4))*(d + e*x)^6)/(6*e^8) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
 - 3*a*A*e^3)*(d + e*x)^7)/(7*e^8) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^
2)*(d + e*x)^8)/(8*e^8) - (c^3*(7*B*d - A*e)*(d + e*x)^9)/(9*e^8) + (B*c^3*
(d + e*x)^10)/(10*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a+cx^2\right)^3\,dx &= \int \Bigg(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^2}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aB\right.}{e^7}\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^3}{3e^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)(}{4e^8}\end{aligned}$$

Mathematica [A] time = 0.06, size = 238, normalized size = 0.71

$$\frac{1}{2}a^3dx^2(2Ae+Bd)+a^3Ad^2x+\frac{1}{4}a^2x^4\left(aBe^2+6Acde+3Bcd^2\right)+\frac{1}{3}a^2x^3\left(aAe^2+2aBde+3Acd^2\right)+\frac{1}{8}c^2x^8\left(3aBe^2+2\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d^2*x + (a^3*d*(B*d + 2*A*e)*x^2)/2 + (a^2*(3*A*c*d^2 + 2*a*B*d*e + a
*A*e^2)*x^3)/3 + (a^2*(3*B*c*d^2 + 6*A*c*d*e + a*B*e^2)*x^4)/4 + (3*a*c*(A*
c*d^2 + 2*a*B*d*e + a*A*e^2)*x^5)/5 + (a*c*(B*c*d^2 + 2*A*c*d*e + a*B*e^2)*
x^6)/2 + (c^2*(A*c*d^2 + 6*a*B*d*e + 3*a*A*e^2)*x^7)/7 + (c^2*(B*c*d^2 + 2*
A*c*d*e + 3*a*B*e^2)*x^8)/8 + (c^3*e*(2*B*d + A*e)*x^9)/9 + (B*c^3*e^2*x^10
)/10
```

fricas [A] time = 0.67, size = 287, normalized size = 0.86

$$\frac{1}{10}x^{10}e^2c^3B+\frac{2}{9}x^9edc^3B+\frac{1}{9}x^9e^2c^3A+\frac{1}{8}x^8d^2c^3B+\frac{3}{8}x^8e^2c^2aB+\frac{1}{4}x^8edc^3A+\frac{6}{7}x^7edc^2aB+\frac{1}{7}x^7d^2c^3A+\frac{3}{7}x^7e^2c^2aA+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/9*x^9*e^2*c^3*A + 1/8*x^8*d^2*c
^3*B + 3/8*x^8*e^2*c^2*a*B + 1/4*x^8*e*d*c^3*A + 6/7*x^7*e*d*c^2*a*B + 1/7*
x^7*d^2*c^3*A + 3/7*x^7*e^2*c^2*a*A + 1/2*x^6*d^2*c^2*a*B + 1/2*x^6*e^2*c*a
^2*B + x^6*e*d*c^2*a*A + 6/5*x^5*e*d*c*a^2*B + 3/5*x^5*d^2*c^2*a*A + 3/5*x^
5*e^2*c*a^2*A + 3/4*x^4*d^2*c*a^2*B + 1/4*x^4*e^2*a^3*B + 3/2*x^4*e*d*c*a^2
*A + 2/3*x^3*e*d*a^3*B + x^3*d^2*c*a^2*A + 1/3*x^3*e^2*a^3*A + 1/2*x^2*d^2*
a^3*B + x^2*e*d*a^3*A + x*d^2*a^3*A
```

giac [A] time = 0.15, size = 287, normalized size = 0.86

$$\frac{1}{10}Bc^3x^{10}e^2+\frac{2}{9}Bc^3dx^9e+\frac{1}{8}Bc^3d^2x^8+\frac{1}{9}Ac^3x^9e^2+\frac{1}{4}Ac^3dx^8e+\frac{1}{7}Ac^3d^2x^7+\frac{3}{8}Bac^2x^8e^2+\frac{6}{7}Bac^2dx^7e+\frac{1}{2}Bac^2d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/9*A*c^3*x^9
*e^2 + 1/4*A*c^3*d*x^8*e + 1/7*A*c^3*d^2*x^7 + 3/8*B*a*c^2*x^8*e^2 + 6/7*B*
a*c^2*d*x^7*e + 1/2*B*a*c^2*d^2*x^6 + 3/7*A*a*c^2*x^7*e^2 + A*a*c^2*d*x^6*e
 + 3/5*A*a*c^2*d^2*x^5 + 1/2*B*a^2*c*x^6*e^2 + 6/5*B*a^2*c*d*x^5*e + 3/4*B*
a^2*c*d^2*x^4 + 3/5*A*a^2*c*x^5*e^2 + 3/2*A*a^2*c*d*x^4*e + A*a^2*c*d^2*x^3
 + 1/4*B*a^3*x^4*e^2 + 2/3*B*a^3*d*x^3*e + 1/2*B*a^3*d^2*x^2 + 1/3*A*a^3*x^
3*e^2 + A*a^3*d*x^2*e + A*a^3*d^2*x
```

maple [A] time = 0.04, size = 251, normalized size = 0.75

$$\frac{Bc^3e^2x^{10}}{10}+\frac{\left(Ae^2+2Bde\right)c^3x^9}{9}+\frac{\left(3Bac^2e^2+\left(2Ade+Bd^2\right)c^3\right)x^8}{8}+Aa^3d^2x+\frac{\left(Ac^3d^2+3\left(Ae^2+2Bde\right)ac^2\right)x}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*(A*e^2+2*B*d*e)*c^3*x^9+1/8*((2*A*d*e+B*d^2)*c^3+3*
B*e^2*a*c^2)*x^8+1/7*(A*c^3*d^2+3*(A*e^2+2*B*d*e)*a*c^2)*x^7+1/6*(3*(2*A*d*
e+B*d^2)*a*c^2+3*B*e^2*a^2*c)*x^6+1/5*(3*A*d^2*a*c^2+3*(A*e^2+2*B*d*e)*a^2*
c)*x^5+1/4*(3*(2*A*d*e+B*d^2)*a^2*c+B*e^2*a^3)*x^4+1/3*(3*A*d^2*a^2*c+(A*e^
2+2*B*d*e)*a^3)*x^3+1/2*(2*A*d*e+B*d^2)*a^3*x^2+A*d^2*a^3*x
```

maxima [A] time = 0.49, size = 262, normalized size = 0.78

$$\frac{1}{10}Bc^3e^2x^{10}+\frac{1}{9}\left(2Bc^3de+Ac^3e^2\right)x^9+\frac{1}{8}\left(Bc^3d^2+2Ac^3de+3Bac^2e^2\right)x^8+\frac{1}{7}\left(Ac^3d^2+6Bac^2de+3Aac^2e^2\right)x^7+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/9*(2*B*c^3*d*e + A*c^3*e^2)*x^9 + 1/8*(B*c^3*d^2 +
2*A*c^3*d*e + 3*B*a*c^2*e^2)*x^8 + 1/7*(A*c^3*d^2 + 6*B*a*c^2*d*e + 3*A*a*c
^2*e^2)*x^7 + A*a^3*d^2*x + 1/2*(B*a*c^2*d^2 + 2*A*a*c^2*d*e + B*a^2*c*e^2)
*x^6 + 3/5*(A*a*c^2*d^2 + 2*B*a^2*c*d*e + A*a^2*c*e^2)*x^5 + 1/4*(3*B*a^2*c
*d^2 + 6*A*a^2*c*d*e + B*a^3*e^2)*x^4 + 1/3*(3*A*a^2*c*d^2 + 2*B*a^3*d*e +
A*a^3*e^2)*x^3 + 1/2*(B*a^3*d^2 + 2*A*a^3*d*e)*x^2
```

mupad [B] time = 1.73, size = 227, normalized size = 0.68

$$x^3\left(\frac{2\,B\,a^3\,d\,e}{3}+\frac{A\,a^3\,e^2}{3}+A\,c\,a^2\,d^2\right)+x^8\left(\frac{B\,c^3\,d^2}{8}+\frac{A\,c^3\,d\,e}{4}+\frac{3\,B\,a\,c^2\,e^2}{8}\right)+\frac{c^2\,x^7\,\left(A\,c\,d^2+6\,B\,a\,d\,e+3\,A\,a\,e^2\right)}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] x^3*((A*a^3*e^2)/3 + (2*B*a^3*d*e)/3 + A*a^2*c*d^2) + x^8*((B*c^3*d^2)/8 +
(A*c^3*d*e)/4 + (3*B*a*c^2*e^2)/8) + (c^2*x^7*(3*A*a*e^2 + A*c*d^2 + 6*B*a*
d*e))/7 + (a^2*x^4*(B*a*e^2 + 3*B*c*d^2 + 6*A*c*d*e))/4 + A*a^3*d^2*x + (3*
a*c*x^5*(A*a*e^2 + A*c*d^2 + 2*B*a*d*e))/5 + (a*c*x^6*(B*a*e^2 + B*c*d^2 +
2*A*c*d*e))/2 + (a^3*d*x^2*(2*A*e + B*d))/2 + (c^3*e*x^9*(A*e + 2*B*d))/9 +
 (B*c^3*e^2*x^10)/10
```

sympy [A] time = 0.11, size = 306, normalized size = 0.92

$$Aa^3d^2x+\frac{Bc^3e^2x^{10}}{10}+x^9\left(\frac{Ac^3e^2}{9}+\frac{2Bc^3de}{9}\right)+x^8\left(\frac{Ac^3de}{4}+\frac{3Bac^2e^2}{8}+\frac{Bc^3d^2}{8}\right)+x^7\left(\frac{3Aac^2e^2}{7}+\frac{Ac^3d^2}{7}+\frac{6Bac^2de}{7}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d**2*x + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + 2*B*c**3*d*e/9
) + x**8*(A*c**3*d*e/4 + 3*B*a*c**2*e**2/8 + B*c**3*d**2/8) + x**7*(3*A*a*c
**2*e**2/7 + A*c**3*d**2/7 + 6*B*a*c**2*d*e/7) + x**6*(A*a*c**2*d*e + B*a**
2*c*e**2/2 + B*a*c**2*d**2/2) + x**5*(3*A*a**2*c*e**2/5 + 3*A*a*c**2*d**2/5
 + 6*B*a**2*c*d*e/5) + x**4*(3*A*a**2*c*d*e/2 + B*a**3*e**2/4 + 3*B*a**2*c*
d**2/4) + x**3*(A*a**3*e**2/3 + A*a**2*c*d**2 + 2*B*a**3*d*e/3) + x**2*(A*a
**3*d*e + B*a**3*d**2/2)
```

3.1317 $\int (A+Bx)(d+ex)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=148

$$\frac{1}{2}a^3x^2(Ae+Bd)+a^3Adx+\frac{3}{4}a^2cx^4(Ae+Bd)+\frac{1}{3}a^2x^3(aBe+3Acd)+\frac{1}{7}c^2x^7(3aBe+Acd)+\frac{1}{2}ac^2x^6(Ae+Bd)+\frac{3}{5}acx^5(a$$

```
[Out] a^3*A*d*x+1/2*a^3*(A*e+B*d)*x^2+1/3*a^2*(3*A*c*d+B*a*e)*x^3+3/4*a^2*c*(A*e+
B*d)*x^4+3/5*a*c*(A*c*d+B*a*e)*x^5+1/2*a*c^2*(A*e+B*d)*x^6+1/7*c^2*(A*c*d+3
*B*a*e)*x^7+1/8*c^3*(A*e+B*d)*x^8+1/9*B*c^3*e*x^9
```

Rubi [A] time = 0.21, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {772}

$$\frac{3}{4}a^2cx^4(Ae+Bd)+\frac{1}{3}a^2x^3(aBe+3Acd)+\frac{1}{2}a^3x^2(Ae+Bd)+a^3Adx+\frac{1}{7}c^2x^7(3aBe+Acd)+\frac{1}{2}ac^2x^6(Ae+Bd)+\frac{3}{5}acx^5(a$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^3*(B*d + A*e)*x^2)/2 + (a^2*(3*A*c*d + a*B*e)*x^3)/3 + (3*a^
2*c*(B*d + A*e)*x^4)/4 + (3*a*c*(A*c*d + a*B*e)*x^5)/5 + (a*c^2*(B*d + A*e)
*x^6)/2 + (c^2*(A*c*d + 3*a*B*e)*x^7)/7 + (c^3*(B*d + A*e)*x^8)/8 + (B*c^3*
e*x^9)/9
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+cx^2\right)^3\,dx &= \int \left(a^3Ad+a^3(Bd+Ae)x+a^2(3Acd+aBe)x^2+3a^2c(Bd+Ae)x^3+3ac(\right.\\ &= a^3Adx+\frac{1}{2}a^3(Bd+Ae)x^2+\frac{1}{3}a^2(3Acd+aBe)x^3+\frac{3}{4}a^2c(Bd+Ae)x^4+\frac{3}{5}\end{aligned}$$

Mathematica [A] time = 0.05, size = 135, normalized size = 0.91

$$\frac{1}{6}a^3x(3A(2d+ex)+Bx(3d+2ex))+\frac{1}{20}a^2cx^3(5A(4d+3ex)+3Bx(5d+4ex))+\frac{1}{70}ac^2x^5(7A(6d+5ex)+5Bx(7d+6ex))$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + c*x^2)^3,x]
```

```
[Out] (a^3*x*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)))/6 + (a^2*c*x^3*(5*A*(4*d + 3*
e*x) + 3*B*x*(5*d + 4*e*x)))/20 + (a*c^2*x^5*(7*A*(6*d + 5*e*x) + 5*B*x*(7*
d + 6*e*x)))/70 + (c^3*x^7*(9*A*(8*d + 7*e*x) + 7*B*x*(9*d + 8*e*x)))/504
```

fricas [A] time = 0.65, size = 165, normalized size = 1.11

$$\frac{1}{9}x^9ec^3B+\frac{1}{8}x^8dc^3B+\frac{1}{8}x^8ec^3A+\frac{3}{7}x^7ec^2aB+\frac{1}{7}x^7dc^3A+\frac{1}{2}x^6dc^2aB+\frac{1}{2}x^6ec^2aA+\frac{3}{5}x^5eca^2B+\frac{3}{5}x^5dc^2aA+\frac{3}{4}x^4dca^2B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 1/8*x^8*e*c^3*A + 3/7*x^7*e*c^2*a*B + 1
/7*x^7*d*c^3*A + 1/2*x^6*d*c^2*a*B + 1/2*x^6*e*c^2*a*A + 3/5*x^5*e*c*a^2*B
+ 3/5*x^5*d*c^2*a*A + 3/4*x^4*d*c*a^2*B + 3/4*x^4*e*c*a^2*A + 1/3*x^3*e*a^3
*B + x^3*d*c*a^2*A + 1/2*x^2*d*a^3*B + 1/2*x^2*e*a^3*A + x*d*a^3*A
```

giac [A] time = 0.17, size = 173, normalized size = 1.17

$$\frac{1}{9}Bc^3x^9e+\frac{1}{8}Bc^3dx^8+\frac{1}{8}Ac^3x^8e+\frac{1}{7}Ac^3dx^7+\frac{3}{7}Bac^2x^7e+\frac{1}{2}Bac^2dx^6+\frac{1}{2}Aac^2x^6e+\frac{3}{5}Aac^2dx^5+\frac{3}{5}Ba^2cx^5e+\frac{3}{4}Ba^2cdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 1/8*A*c^3*x^8*e + 1/7*A*c^3*d*x^7 + 3/7
*B*a*c^2*x^7*e + 1/2*B*a*c^2*d*x^6 + 1/2*A*a*c^2*x^6*e + 3/5*A*a*c^2*d*x^5
+ 3/5*B*a^2*c*x^5*e + 3/4*B*a^2*c*d*x^4 + 3/4*A*a^2*c*x^4*e + A*a^2*c*d*x^3
 + 1/3*B*a^3*x^3*e + 1/2*B*a^3*d*x^2 + 1/2*A*a^3*x^2*e + A*a^3*d*x
```

maple [A] time = 0.04, size = 143, normalized size = 0.97

$$\frac{Bc^3ex^9}{9}+\frac{(Ae+Bd)\,c^3x^8}{8}+\frac{(Ae+Bd)\,a\,c^2x^6}{2}+\frac{3\,(Ae+Bd)\,a^2c\,x^4}{4}+\frac{\left(Ad\,c^3+3Bea\,c^2\right)x^7}{7}+A\,a^3dx+\frac{(Ae+Bd)\,a^3x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+a)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*c^3*(A*e+B*d)*x^8+1/7*(A*c^3*d+3*B*a*c^2*e)*x^7+1/2*a*c
^2*(A*e+B*d)*x^6+1/5*(3*A*a*c^2*d+3*B*a^2*c*e)*x^5+3/4*a^2*c*(A*e+B*d)*x^4+
1/3*(3*A*a^2*c*d+B*a^3*e)*x^3+1/2*a^3*(A*e+B*d)*x^2+a^3*A*d*x
```

maxima [A] time = 0.53, size = 154, normalized size = 1.04

$$\frac{1}{9}Bc^3ex^9+\frac{1}{8}\left(Bc^3d+Ac^3e\right)x^8+\frac{1}{7}\left(Ac^3d+3\,Bac^2e\right)x^7+\frac{1}{2}\left(Bac^2d+Aac^2e\right)x^6+Aa^3dx+\frac{3}{5}\left(Aac^2d+Ba^2ce\right)x^5+\frac{3}{4}\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/8*(B*c^3*d + A*c^3*e)*x^8 + 1/7*(A*c^3*d + 3*B*a*c^2*e)
*x^7 + 1/2*(B*a*c^2*d + A*a*c^2*e)*x^6 + A*a^3*d*x + 3/5*(A*a*c^2*d + B*a^2
*c*e)*x^5 + 3/4*(B*a^2*c*d + A*a^2*c*e)*x^4 + 1/3*(3*A*a^2*c*d + B*a^3*e)*x
^3 + 1/2*(B*a^3*d + A*a^3*e)*x^2
```

mupad [B] time = 0.07, size = 140, normalized size = 0.95

$$x^3\left(\frac{B\,e\,a^3}{3}+A\,c\,d\,a^2\right)+x^7\left(\frac{A\,d\,c^3}{7}+\frac{3\,B\,a\,e\,c^2}{7}\right)+x^5\left(\frac{3\,B\,e\,a^2\,c}{5}+\frac{3\,A\,d\,a\,c^2}{5}\right)+\frac{a^3\,x^2\,\left(A\,e+B\,d\right)}{2}+\frac{c^3\,x^8\,\left(A\,e+B\,d\right)}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x),x)
```

```
[Out] x^3*((B*a^3*e)/3 + A*a^2*c*d) + x^7*((A*c^3*d)/7 + (3*B*a*c^2*e)/7) + x^5*(
(3*A*a*c^2*d)/5 + (3*B*a^2*c*e)/5) + (a^3*x^2*(A*e + B*d))/2 + (c^3*x^8*(A*
e + B*d))/8 + A*a^3*d*x + (B*c^3*e*x^9)/9 + (3*a^2*c*x^4*(A*e + B*d))/4 + (
a*c^2*x^6*(A*e + B*d))/2
```

sympy [A] time = 0.09, size = 182, normalized size = 1.23

$$Aa^3dx+\frac{Bc^3ex^9}{9}+x^8\left(\frac{Ac^3e}{8}+\frac{Bc^3d}{8}\right)+x^7\left(\frac{Ac^3d}{7}+\frac{3Bac^2e}{7}\right)+x^6\left(\frac{Aac^2e}{2}+\frac{Bac^2d}{2}\right)+x^5\left(\frac{3Aac^2d}{5}+\frac{3Ba^2ce}{5}\right)+x^4\Bigg(3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*d*x + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + B*c**3*d/8) + x**7*(A*c**
3*d/7 + 3*B*a*c**2*e/7) + x**6*(A*a*c**2*e/2 + B*a*c**2*d/2) + x**5*(3*A*a*
c**2*d/5 + 3*B*a**2*c*e/5) + x**4*(3*A*a**2*c*e/4 + 3*B*a**2*c*d/4) + x**3*
(A*a**2*c*d + B*a**3*e/3) + x**2*(A*a**3*e/2 + B*a**3*d/2)
```

3.1318 $\int (A+Bx)\left(a+cx^2\right)^3\,dx$

Optimal. Leaf size=56

$$a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

```
[Out] a^3*A*x+a^2*A*c*x^3+3/5*a*A*c^2*x^5+1/7*A*c^3*x^7+1/8*B*(c*x^2+a)^4/c
```

Rubi [A] time = 0.02, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {641, 194}

$$a^2Acx^3+a^3Ax+\frac{3}{5}aAc^2x^5+\frac{B\left(a+cx^2\right)^4}{8c}+\frac{1}{7}Ac^3x^7$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + a^2*A*c*x^3 + (3*a*A*c^2*x^5)/5 + (A*c^3*x^7)/7 + (B*(a + c*x^2)^
4)/(8*c)
```

Rule 194

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Int[ExpandIntegrand[(a + b*
x^n)^p, x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && IGtQ[p, 0]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)\left(a+cx^2\right)^3\,dx &= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a+cx^2\right)^3\,dx\\
&= \frac{B\left(a+cx^2\right)^4}{8c}+A\int \left(a^3+3a^2cx^2+3ac^2x^4+c^3x^6\right)dx\\
&= a^3Ax+a^2Acx^3+\frac{3}{5}aAc^2x^5+\frac{1}{7}Ac^3x^7+\frac{B\left(a+cx^2\right)^4}{8c}
\end{aligned}$$

Mathematica [A] time = 0.00, size = 85, normalized size = 1.52

$$a^3Ax+\frac{1}{2}a^3Bx^2+a^2Acx^3+\frac{3}{4}a^2Bcx^4+\frac{3}{5}aAc^2x^5+\frac{1}{2}aBc^2x^6+\frac{1}{7}Ac^3x^7+\frac{1}{8}Bc^3x^8$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^3*B*x^2)/2 + a^2*A*c*x^3 + (3*a^2*B*c*x^4)/4 + (3*a*A*c^2*x^5)
/5 + (a*B*c^2*x^6)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8
```

fricas [A] time = 0.51, size = 73, normalized size = 1.30

$$\frac{1}{8}x^8c^3B+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6c^2aB+\frac{3}{5}x^5c^2aA+\frac{3}{4}x^4ca^2B+x^3ca^2A+\frac{1}{2}x^2a^3B+xa^3A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 1/7*x^7*c^3*A + 1/2*x^6*c^2*a*B + 3/5*x^5*c^2*a*A + 3/4*x^4
*c*a^2*B + x^3*c*a^2*A + 1/2*x^2*a^3*B + x*a^3*A
```

giac [A] time = 0.17, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bac^2x^6+\frac{3}{5}Aac^2x^5+\frac{3}{4}Ba^2cx^4+Aa^2cx^3+\frac{1}{2}Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

maple [A] time = 0.04, size = 74, normalized size = 1.32

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bac^2x^6+\frac{3}{5}Aac^2x^5+\frac{3}{4}Ba^2cx^4+Aa^2cx^3+\frac{1}{2}Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*A*c^3*x^7+1/2*B*a*c^2*x^6+3/5*A*a*c^2*x^5+3/4*B*a^2*c*x^4
+A*a^2*c*x^3+1/2*B*a^3*x^2+A*a^3*x
```

maxima [A] time = 0.64, size = 73, normalized size = 1.30

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bac^2x^6+\frac{3}{5}Aac^2x^5+\frac{3}{4}Ba^2cx^4+Aa^2cx^3+\frac{1}{2}Ba^3x^2+Aa^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*A*c^3*x^7 + 1/2*B*a*c^2*x^6 + 3/5*A*a*c^2*x^5 + 3/4*B*a
^2*c*x^4 + A*a^2*c*x^3 + 1/2*B*a^3*x^2 + A*a^3*x
```

mupad [B] time = 0.03, size = 73, normalized size = 1.30

$$\frac{B\,a^3\,x^2}{2}+A\,a^3\,x+\frac{3\,B\,a^2\,c\,x^4}{4}+A\,a^2\,c\,x^3+\frac{B\,a\,c^2\,x^6}{2}+\frac{3\,A\,a\,c^2\,x^5}{5}+\frac{B\,c^3\,x^8}{8}+\frac{A\,c^3\,x^7}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x),x)
```

```
[Out] (B*a^3*x^2)/2 + (A*c^3*x^7)/7 + (B*c^3*x^8)/8 + A*a^3*x + A*a^2*c*x^3 + (3*
A*a*c^2*x^5)/5 + (3*B*a^2*c*x^4)/4 + (B*a*c^2*x^6)/2
```

sympy [A] time = 0.08, size = 85, normalized size = 1.52

$$Aa^3x+Aa^2cx^3+\frac{3Aac^2x^5}{5}+\frac{Ac^3x^7}{7}+\frac{Ba^3x^2}{2}+\frac{3Ba^2cx^4}{4}+\frac{Bac^2x^6}{2}+\frac{Bc^3x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3,x)
```

```
[Out] A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*x**2/
2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8
```

3.1319 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=290

$$\frac{x\left(B\left(ae^2+cd^2\right)^3-Acde\left(3a^2e^4+3acd^2e^2+c^2d^4\right)\right)}{e^7}-\frac{cx^2\left(3a^2e^4+3acd^2e^2+c^2d^4\right)(Bd-Ae)}{2e^6}-cx^3\left(Acde\left(3ae^2\right.\right.$$

```
[Out] (B*(a*e^2+c*d^2)^3-A*c*d*e*(3*a^2*e^4+3*a*c*d^2*e^2+c^2*d^4))*x/e^7-1/2*c*(
-A*e+B*d)*(3*a^2*e^4+3*a*c*d^2*e^2+c^2*d^4)*x^2/e^6-1/3*c*(A*c*d*e*(3*a*e^2
+c*d^2)-B*(3*a^2*e^4+3*a*c*d^2*e^2+c^2*d^4))*x^3/e^5-1/4*c^2*(-A*e+B*d)*(3*
a*e^2+c*d^2)*x^4/e^4+1/5*c^2*(-A*c*d*e+3*B*a*e^2+B*c*d^2)*x^5/e^3-1/6*c^3*(
-A*e+B*d)*x^6/e^2+1/7*B*c^3*x^7/e-(-A*e+B*d)*(a*e^2+c*d^2)^3*ln(e*x+d)/e^8
```

Rubi [A] time = 0.40, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{cx^3\left(Acde\left(3ae^2+cd^2\right)-B\left(3a^2e^4+3acd^2e^2+c^2d^4\right)\right)}{3e^5}-\frac{cx^2\left(3a^2e^4+3acd^2e^2+c^2d^4\right)(Bd-Ae)}{2e^6}+x\left(B\left(ae^2+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((B*(c*d^2 + a*e^2)^3 - A*c*d*e*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4))*x)/e
^7 - (c*(B*d - A*e)*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4)*x^2)/(2*e^6) - (c
*(A*c*d*e*(c*d^2 + 3*a*e^2) - B*(c^2*d^4 + 3*a*c*d^2*e^2 + 3*a^2*e^4))*x^3)
/(3*e^5) - (c^2*(B*d - A*e)*(c*d^2 + 3*a*e^2)*x^4)/(4*e^4) + (c^2*(B*c*d^2
- A*c*d*e + 3*a*B*e^2)*x^5)/(5*e^3) - (c^3*(B*d - A*e)*x^6)/(6*e^2) + (B*c^
3*x^7)/(7*e) - ((B*d - A*e)*(c*d^2 + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{d+ex}\,dx &= \int \left(\frac{B\left(cd^2+ae^2\right)^3-Acde\left(c^2d^4+3acd^2e^2+3a^2e^4\right)}{e^7}+\frac{c(-Bd+Ae)\left(c^2d^4+3acd\right.}{e^6}\right.\\ &= \frac{\left(B\left(cd^2+ae^2\right)^3-Acde\left(c^2d^4+3acd^2e^2+3a^2e^4\right)\right)x}{e^7}-\frac{c(Bd-Ae)\left(c^2d^4+3acd^2e\right.}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.18, size = 311, normalized size = 1.07

$$ex\left(7Ace\left(90a^2e^4(ex-2d)+15ace^2\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+c^2\left(-60d^5+30d^4ex-20d^3e^2x^2+15\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(7*A*c*e*(90*a^2*e^4*(-2*d + e*x) + 15*a*c*e^2*(-12*d^3 + 6*d^2*e*x -
4*d*e^2*x^2 + 3*e^3*x^3) + c^2*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*
d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5)) + B*(420*a^3*e^6 + 210*a^2*c*e^4*
(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 21*a*c^2*e^2*(60*d^4 - 30*d^3*e*x + 20*d^2*
e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + c^3*(420*d^6 - 210*d^5*e*x + 140*d^4
*e^2*x^2 - 105*d^3*e^3*x^3 + 84*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6)))
- 420*(B*d - A*e)*(c*d^2 + a*e^2)^3*Log[d + e*x])/(420*e^8)
```

fricas [A] time = 0.58, size = 448, normalized size = 1.54

$$60\,Bc^3e^7x^7 - 70\left(Bc^3de^6 - Ac^3e^7\right)x^6 + 84\left(Bc^3d^2e^5 - Ac^3de^6 + 3\,Bac^2e^7\right)x^5 - 105\left(Bc^3d^3e^4 - Ac^3d^2e^5 + 3\,Bac^2de^{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 84*(B*c^3*d^2*
e^5 - A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 - 105*(B*c^3*d^3*e^4 - A*c^3*d^2*e^5
 + 3*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 + 140*(B*c^3*d^4*e^3 - A*c^3*d^3*e^
4 + 3*B*a*c^2*d^2*e^5 - 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 - 210*(B*c^3*d
^5*e^2 - A*c^3*d^4*e^3 + 3*B*a*c^2*d^3*e^4 - 3*A*a*c^2*d^2*e^5 + 3*B*a^2*c*
d*e^6 - 3*A*a^2*c*e^7)*x^2 + 420*(B*c^3*d^6*e - A*c^3*d^5*e^2 + 3*B*a*c^2*d
^4*e^3 - 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 - 3*A*a^2*c*d*e^6 + B*a^3*e^
7)*x - 420*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3
 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*log(e*x
 + d))/e^8
```

giac [A] time = 0.18, size = 459, normalized size = 1.58

$$-\left(Bc^3d^7 - Ac^3d^6e + 3\,Bac^2d^5e^2 - 3\,Aac^2d^4e^3 + 3\,Ba^2cd^3e^4 - 3\,Aa^2cd^2e^5 + Ba^3de^6 - Aa^3e^7\right)e^{(-8)}\log\left(|xe+d|\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2
*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*e^(-8)*log(abs(x*
e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x^5*e
^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*e +
420*B*c^3*d^6*x + 70*A*c^3*x^6*e^6 - 84*A*c^3*d*x^5*e^5 + 105*A*c^3*d^2*x^4
*e^4 - 140*A*c^3*d^3*x^3*e^3 + 210*A*c^3*d^4*x^2*e^2 - 420*A*c^3*d^5*x*e +
252*B*a*c^2*x^5*e^6 - 315*B*a*c^2*d*x^4*e^5 + 420*B*a*c^2*d^2*x^3*e^4 - 630
*B*a*c^2*d^3*x^2*e^3 + 1260*B*a*c^2*d^4*x*e^2 + 315*A*a*c^2*x^4*e^6 - 420*A
*a*c^2*d*x^3*e^5 + 630*A*a*c^2*d^2*x^2*e^4 - 1260*A*a*c^2*d^3*x*e^3 + 420*B
*a^2*c*x^3*e^6 - 630*B*a^2*c*d*x^2*e^5 + 1260*B*a^2*c*d^2*x*e^4 + 630*A*a^2
*c*x^2*e^6 - 1260*A*a^2*c*d*x*e^5 + 420*B*a^3*x*e^6)*e^(-7)
```

maple [A] time = 0.05, size = 526, normalized size = 1.81

$$\frac{B\,c^3x^7}{7e}+\frac{A\,c^3x^6}{6e}-\frac{B\,c^3d\,x^6}{6e^2}-\frac{A\,c^3d\,x^5}{5e^2}+\frac{3Ba\,c^2x^5}{5e}+\frac{B\,c^3d^2x^5}{5e^3}+\frac{3Aa\,c^2x^4}{4e}+\frac{A\,c^3d^2x^4}{4e^3}-\frac{3Ba\,c^2d\,x^4}{4e^2}-\frac{B\,c^3d^3x^4}{4e^4}-\frac{Aa\,c^2d\,x^3}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d),x)
```

```
[Out] 1/6/e*A*x^6*c^3+1/e*B*x*a^3+1/e*ln(e*x+d)*A*a^3-1/6/e^2*B*x^6*c^3*d+1/2/e^5
*A*x^2*c^3*d^4-1/e^2*ln(e*x+d)*B*a^3*d-1/e^8*ln(e*x+d)*B*c^3*d^7-1/3/e^4*A*
x^3*c^3*d^3+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*a*c^2-1/5/e^2*A*x^5*c^3*d+1/e
^7*ln(e*x+d)*A*c^3*d^6-1/e^6*A*x*c^3*d^5-1/2/e^6*B*x^2*c^3*d^5+1/e^7*B*x*c^
```

```
3*d^6+1/e*B*x^3*a^2*c+3/5/e*B*x^5*a*c^2+3/2/e*A*x^2*a^2*c+1/4/e^3*A*x^4*c^3
*d^2-1/4/e^4*B*x^4*c^3*d^3+1/3/e^5*B*x^3*c^3*d^4+3/e^5*B*x*a*c^2*d^4-3/e^2*
A*x*a^2*c*d-3/e^4*A*x*a*c^2*d^3+3/e^3*B*x*a^2*c*d^2+1/e^3*B*x^3*a*c^2*d^2+3
/e^3*ln(e*x+d)*A*a^2*c*d^2+3/e^5*ln(e*x+d)*A*a*c^2*d^4-3/e^4*ln(e*x+d)*B*a^
2*c*d^3-3/e^6*ln(e*x+d)*B*a*c^2*d^5-3/2/e^4*B*x^2*a*c^2*d^3-3/2/e^2*B*x^2*a
^2*c*d+3/2/e^3*A*x^2*a*c^2*d^2-1/e^2*A*x^3*a*c^2*d-3/4/e^2*B*x^4*a*c^2*d+1/
7*B*c^3/e*x^7
```

maxima [A] time = 0.56, size = 447, normalized size = 1.54

$$60\,Bc^{3}e^{6}x^{7} - 70\left(Bc^{3}de^{5} - Ac^{3}e^{6}\right)x^{6} + 84\left(Bc^{3}d^{2}e^{4} - Ac^{3}de^{5} + 3\,Bac^{2}e^{6}\right)x^{5} - 105\left(Bc^{3}d^{3}e^{3} - Ac^{3}d^{2}e^{4} + 3\,Bac^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - A*c^3*e^6)*x^6 + 84*(B*c^3*d^2*
e^4 - A*c^3*d*e^5 + 3*B*a*c^2*e^6)*x^5 - 105*(B*c^3*d^3*e^3 - A*c^3*d^2*e^4
 + 3*B*a*c^2*d*e^5 - 3*A*a*c^2*e^6)*x^4 + 140*(B*c^3*d^4*e^2 - A*c^3*d^3*e^
3 + 3*B*a*c^2*d^2*e^4 - 3*A*a*c^2*d*e^5 + 3*B*a^2*c*e^6)*x^3 - 210*(B*c^3*d
^5*e - A*c^3*d^4*e^2 + 3*B*a*c^2*d^3*e^3 - 3*A*a*c^2*d^2*e^4 + 3*B*a^2*c*d*
e^5 - 3*A*a^2*c*e^6)*x^2 + 420*(B*c^3*d^6 - A*c^3*d^5*e + 3*B*a*c^2*d^4*e^2
 - 3*A*a*c^2*d^3*e^3 + 3*B*a^2*c*d^2*e^4 - 3*A*a^2*c*d*e^5 + B*a^3*e^6)*x)/
e^7 - (B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*
B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)*log(e*x + d)
/e^8
```

mupad [B] time = 0.08, size = 494, normalized size = 1.70

$$x^2 \left(\frac{d \left(\frac{d \left(\frac{d \left(\frac{d \left(\frac{A c^3}{e}-\frac{B c^3 d}{e^2}\right)}{e}-\frac{3 B a c^2}{e}\right)}{e}+\frac{3 A a c^2}{e}\right)}{e}-\frac{3 B a^2 c}{e}\right)}{2 e}+\frac{3 A a^2 c}{2 e}\right)+x^4 \left(\frac{d \left(\frac{d \left(\frac{A c^3}{e}-\frac{B c^3 d}{e^2}\right)}{e}-\frac{3 B a c^2}{e}\right)}{4 e}+\frac{3 A a c^2}{4 e}\right)+x^6 \Bigg(\frac{A c^3}{6 e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x),x)
```

```
[Out] x^2*((d*((d*((d*((d*((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/e + (3
*A*a*c^2)/e))/e - (3*B*a^2*c)/e))/(2*e) + (3*A*a^2*c)/(2*e)) + x^4*((d*((d*
((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/(4*e) + (3*A*a*c^2)/(4*e))
 + x^6*((A*c^3)/(6*e) - (B*c^3*d)/(6*e^2)) - x^3*((d*((d*((d*((A*c^3)/e - (
B*c^3*d)/e^2))/e - (3*B*a*c^2)/e))/e + (3*A*a*c^2)/e))/(3*e) - (B*a^2*c)/e)
 + x*((B*a^3)/e - (d*((d*((d*((d*((d*((A*c^3)/e - (B*c^3*d)/e^2))/e - (3*B*
a*c^2)/e))/e + (3*A*a*c^2)/e))/e - (3*B*a^2*c)/e))/e + (3*A*a^2*c)/e))/e) -
 x^5*((d*((A*c^3)/e - (B*c^3*d)/e^2))/(5*e) - (3*B*a*c^2)/(5*e)) + (log(d +
 e*x)*(A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e + 3*A*a*c^2*d^4*e^
3 + 3*A*a^2*c*d^2*e^5 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4))/e^8 + (B*c^
3*x^7)/(7*e)
```

sympy [A] time = 0.92, size = 410, normalized size = 1.41

$$\frac{Bc^3x^7}{7e}+x^6\left(\frac{Ac^3}{6e}-\frac{Bc^3d}{6e^2}\right)+x^5\left(-\frac{Ac^3d}{5e^2}+\frac{3Bac^2}{5e}+\frac{Bc^3d^2}{5e^3}\right)+x^4\left(\frac{3Aac^2}{4e}+\frac{Ac^3d^2}{4e^3}-\frac{3Bac^2d}{4e^2}-\frac{Bc^3d^3}{4e^4}\right)+x^3\Bigg(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + x**6*(A*c**3/(6*e) - B*c**3*d/(6*e**2)) + x**5*(-A*c**3
*d/(5*e**2) + 3*B*a*c**2/(5*e) + B*c**3*d**2/(5*e**3)) + x**4*(3*A*a*c**2/(
4*e) + A*c**3*d**2/(4*e**3) - 3*B*a*c**2*d/(4*e**2) - B*c**3*d**3/(4*e**4))
 + x**3*(-A*a*c**2*d/e**2 - A*c**3*d**3/(3*e**4) + B*a**2*c/e + B*a*c**2*d*
*2/e**3 + B*c**3*d**4/(3*e**5)) + x**2*(3*A*a**2*c/(2*e) + 3*A*a*c**2*d**2/
(2*e**3) + A*c**3*d**4/(2*e**5) - 3*B*a**2*c*d/(2*e**2) - 3*B*a*c**2*d**3/(
2*e**4) - B*c**3*d**5/(2*e**6)) + x*(-3*A*a**2*c*d/e**2 - 3*A*a*c**2*d**3/e
**4 - A*c**3*d**5/e**6 + B*a**3/e + 3*B*a**2*c*d**2/e**3 + 3*B*a*c**2*d**4/
e**5 + B*c**3*d**6/e**7) - (-A*e + B*d)*(a*e**2 + c*d**2)**3*log(d + e*x)/e
**8
```

3.1320 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2} \, dx$

Optimal. Leaf size=309

$$-\frac{cx\left(6Bd\left(ae^2+cd^2\right)^2-Ae\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right)}{e^7}-\frac{cx^2\left(2Acde\left(3ae^2+2cd^2\right)-B\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)}{2e^6}$$

```
[Out] -c*(6*B*d*(a*e^2+c*d^2)^2-A*e*(3*a^2*e^4+9*a*c*d^2*e^2+5*c^2*d^4))*x/e^7-1/
2*c*(2*A*c*d*e*(3*a*e^2+2*c*d^2)-B*(3*a^2*e^4+9*a*c*d^2*e^2+5*c^2*d^4))*x^2
/e^6+1/3*c^2*(3*A*e*(a*e^2+c*d^2)-B*(6*a*d*e^2+4*c*d^3))*x^3/e^5-1/4*c^2*(2
*A*c*d*e-3*B*(a*e^2+c*d^2))*x^4/e^4-1/5*c^3*(-A*e+2*B*d)*x^5/e^3+1/6*B*c^3*
x^6/e^2+(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)+(a*e^2+c*d^2)^2*(-6*A*c*d*e+
B*a*e^2+7*B*c*d^2)*ln(e*x+d)/e^8
```

Rubi [A] time = 0.44, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{cx^2\left(2Acde\left(3ae^2+2cd^2\right)-B\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)\right)}{2e^6}-\frac{cx\left(6Bd\left(ae^2+cd^2\right)^2-Ae\left(3a^2e^4+9acd^2e^2+5c^2d^4\right)}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] -((c*(6*B*d*(c*d^2 + a*e^2)^2 - A*e*(5*c^2*d^4 + 9*a*c*d^2*e^2 + 3*a^2*e^4)
)*x)/e^7) - (c*(2*A*c*d*e*(2*c*d^2 + 3*a*e^2) - B*(5*c^2*d^4 + 9*a*c*d^2*e^
2 + 3*a^2*e^4))*x^2)/(2*e^6) + (c^2*(3*A*e*(c*d^2 + a*e^2) - B*(4*c*d^3 + 6
*a*d*e^2))*x^3)/(3*e^5) - (c^2*(2*A*c*d*e - 3*B*(c*d^2 + a*e^2))*x^4)/(4*e^
4) - (c^3*(2*B*d - A*e)*x^5)/(5*e^3) + (B*c^3*x^6)/(6*e^2) + ((B*d - A*e)*(
c*d^2 + a*e^2)^3)/(e^8*(d + e*x)) + ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d
*e + a*B*e^2)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^2} \, dx = \int \left(\frac{c\left(-6Bd\left(cd^2+ae^2\right)^2+Ae\left(5c^2d^4+9acd^2e^2+3a^2e^4\right)\right)}{e^7}-\frac{c\left(-5Bc^2d^4+4Ac^2d^3e\right.}{}\right.$$

$$=-\frac{c\left(6Bd\left(cd^2+ae^2\right)^2-Ae\left(5c^2d^4+9acd^2e^2+3a^2e^4\right)\right)x}{e^7}-\frac{c\left(2Acde\left(2cd^2+3ae^2\right)-\right.}{}$$

Mathematica [A] time = 0.18, size = 405, normalized size = 1.31

$$\frac{6Ae\left(-10a^3e^6+30a^2ce^4\left(-d^2+dex+e^2x^2\right)+10ac^2e^2\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+c^3\left(-10d^6+5\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (6*A*e*(-10*a^3*e^6 + 30*a^2*c*e^4*(-d^2 + d*e*x + e^2*x^2) + 10*a*c^2*e^2*
(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + c^3*(-10*d^6
 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x
^5 + 2*e^6*x^6)) + B*(60*a^3*d*e^6 + 90*a^2*c*e^4*(2*d^3 - 4*d^2*e*x - 3*d*
e^2*x^2 + e^3*x^3) + 15*a*c^2*e^2*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 1
0*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) + c^3*(60*d^7 - 360*d^6*e*x - 210*
d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 - 14*d*e^6*x
^6 + 10*e^7*x^7)) + 60*(c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*
(d + e*x)*Log[d + e*x])/(60*e^8*(d + e*x))
```

fricas [**B**] time = 0.78, size = 621, normalized size = 2.01

$$10 \, B c^{3} e^{7} x^{7} + 60 \, B c^{3} d^{7} - 60 \, A c^{3} d^{6} e + 180 \, B a c^{2} d^{5} e^{2} - 180 \, A a c^{2} d^{4} e^{3} + 180 \, B a^{2} c d^{3} e^{4} - 180 \, A a^{2} c d^{2} e^{5} + 60 \, B a^{3} d e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 - 60*A*c^3*d^6*e + 180*B*a*c^2*d^5*e^
2 - 180*A*a*c^2*d^4*e^3 + 180*B*a^2*c*d^3*e^4 - 180*A*a^2*c*d^2*e^5 + 60*B*
a^3*d*e^6 - 60*A*a^3*e^7 - 2*(7*B*c^3*d*e^6 - 6*A*c^3*e^7)*x^6 + 3*(7*B*c^3
*d^2*e^5 - 6*A*c^3*d*e^6 + 15*B*a*c^2*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 6*A*c
^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 12*A*a*c^2*e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 -
 6*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x
^3 - 30*(7*B*c^3*d^5*e^2 - 6*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e^4 - 12*A*a*c^
2*d^2*e^5 + 9*B*a^2*c*d*e^6 - 6*A*a^2*c*e^7)*x^2 - 60*(6*B*c^3*d^6*e - 5*A*
c^3*d^5*e^2 + 12*B*a*c^2*d^4*e^3 - 9*A*a*c^2*d^3*e^4 + 6*B*a^2*c*d^2*e^5 -
3*A*a^2*c*d*e^6)*x + 60*(7*B*c^3*d^7 - 6*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2 -
 12*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 - 6*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 +
 (7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4
 + 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3*e^7)*x)*log(e*x + d))/(e^9*x
 + d*e^8)
```

giac [**A**] time = 0.20, size = 539, normalized size = 1.74

$$\frac{1}{60} \left(10 \, B c^{3} - \frac{12 \, {\left(7 \, B c^{3} d e - A c^{3} e^{2}\right)} e^{\left(-1\right)}}{x e + d} + \frac{45 \, {\left(7 \, B c^{3} d^{2} e^{2} - 2 \, A c^{3} d e^{3} + B a c^{2} e^{4}\right)} e^{\left(-2\right)}}{{\left(x e + d\right)}^{2}} - \frac{20 \, \left(35 \, B c^{3} d^{3} e^{3} - 15 \, A c^{3} d\right.}{(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - A*c^3*e^2)*e^(-1)/(x*e + d) + 45*(7*B*c^
3*d^2*e^2 - 2*A*c^3*d*e^3 + B*a*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*
d^3*e^3 - 15*A*c^3*d^2*e^4 + 15*B*a*c^2*d*e^5 - 3*A*a*c^2*e^6)*e^(-3)/(x*e
+ d)^3 + 30*(35*B*c^3*d^4*e^4 - 20*A*c^3*d^3*e^5 + 30*B*a*c^2*d^2*e^6 - 12*
A*a*c^2*d*e^7 + 3*B*a^2*c*e^8)*e^(-4)/(x*e + d)^4 - 180*(7*B*c^3*d^5*e^5 -
5*A*c^3*d^4*e^6 + 10*B*a*c^2*d^3*e^7 - 6*A*a*c^2*d^2*e^8 + 3*B*a^2*c*d*e^9
- A*a^2*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 - 6*A
*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 -
6*A*a^2*c*d*e^5 + B*a^3*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) +
(B*c^3*d^7*e^6/(x*e + d) - A*c^3*d^6*e^7/(x*e + d) + 3*B*a*c^2*d^5*e^8/(x*e
 + d) - 3*A*a*c^2*d^4*e^9/(x*e + d) + 3*B*a^2*c*d^3*e^10/(x*e + d) - 3*A*a^
2*c*d^2*e^11/(x*e + d) + B*a^3*d*e^12/(x*e + d) - A*a^3*e^13/(x*e + d))*e^(
-14)
```

maple [**A**] time = 0.06, size = 558, normalized size = 1.81

$$\frac{B\,c^{3}x^{6}}{6e^{2}}+\frac{A\,c^{3}x^{5}}{5e^{2}}-\frac{2B\,c^{3}d\,x^{5}}{5e^{3}}-\frac{A\,c^{3}d\,x^{4}}{2e^{3}}+\frac{3Ba\,c^{2}x^{4}}{4e^{2}}+\frac{3B\,c^{3}d^{2}x^{4}}{4e^{4}}+\frac{Aa\,c^{2}x^{3}}{e^{2}}+\frac{A\,c^{3}d^{2}x^{3}}{e^{4}}-\frac{2Ba\,c^{2}d\,x^{3}}{e^{3}}-\frac{4B\,c^{3}d^{3}x^{3}}{3e^{5}}-\frac{3A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x)
```

```
[Out] -3/e^5/(e*x+d)*A*a*c^2*d^4+1/e^2*ln(e*x+d)*B*a^3+1/5*c^3/e^2*A*x^5-1/e/(e*x
+d)*A*a^3-6*c^3/e^7*B*d^5*x-1/e^7/(e*x+d)*A*c^3*d^6-12/e^5*ln(e*x+d)*A*a*c^
2*d^3+9/e^4*ln(e*x+d)*B*a^2*c*d^2+15/e^6*ln(e*x+d)*B*a*c^2*d^4+3/e^4/(e*x+d
)*B*a^2*c*d^3+3/e^6/(e*x+d)*B*a*c^2*d^5-6/e^3*ln(e*x+d)*A*a^2*c*d+9*c^2/e^4
*A*d^2*a*x-6*c/e^3*B*d*a^2*x-12*c^2/e^5*B*d^3*a*x+9/2*c^2/e^4*B*x^2*a*d^2-2
*c^2/e^3*B*x^3*a*d-3*c^2/e^3*A*x^2*a*d-3/e^3/(e*x+d)*A*a^2*c*d^2+1/e^2/(e*x
+d)*B*d*a^3+1/e^8/(e*x+d)*B*c^3*d^7-6/e^7*ln(e*x+d)*A*c^3*d^5-2/5*c^3/e^3*B
*x^5*d-1/2*c^3/e^3*A*x^4*d+7/e^8*ln(e*x+d)*B*c^3*d^6+3/4*c^2/e^2*B*x^4*a+3/
4*c^3/e^4*B*x^4*d^2+c^2/e^2*A*x^3*a+c^3/e^4*A*x^3*d^2-4/3*c^3/e^5*B*x^3*d^3
-2*c^3/e^5*A*x^2*d^3+3/2*c/e^2*B*x^2*a^2+5/2*c^3/e^6*B*x^2*d^4+3*c/e^2*A*a^
2*x+5*c^3/e^6*A*d^4*x+1/6*B*c^3/e^2*x^6
```

maxima [A] time = 0.56, size = 456, normalized size = 1.48

$$\frac{Bc^3d^7 - Ac^3d^6e + 3\,Bac^2d^5e^2 - 3\,Aac^2d^4e^3 + 3\,Ba^2cd^3e^4 - 3\,Aa^2cd^2e^5 + Ba^3de^6 - Aa^3e^7}{e^9x + de^8} + \frac{10\,Bc^3e^5x^6 - 12\,(2\,Bc^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*
c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 - A*a^3*e^7)/(e^9*x + d*e^8) +
1/60*(10*B*c^3*e^5*x^6 - 12*(2*B*c^3*d*e^4 - A*c^3*e^5)*x^5 + 15*(3*B*c^3*d
^2*e^3 - 2*A*c^3*d*e^4 + 3*B*a*c^2*e^5)*x^4 - 20*(4*B*c^3*d^3*e^2 - 3*A*c^3
*d^2*e^3 + 6*B*a*c^2*d*e^4 - 3*A*a*c^2*e^5)*x^3 + 30*(5*B*c^3*d^4*e - 4*A*c
^3*d^3*e^2 + 9*B*a*c^2*d^2*e^3 - 6*A*a*c^2*d*e^4 + 3*B*a^2*c*e^5)*x^2 - 60*
(6*B*c^3*d^5 - 5*A*c^3*d^4*e + 12*B*a*c^2*d^3*e^2 - 9*A*a*c^2*d^2*e^3 + 6*B
*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x)/e^7 + (7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*
a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 +
B*a^3*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 1.74, size = 826, normalized size = 2.67

$$x^3\left(\frac{2\,d\left(\frac{2\,d\left(\frac{A\,c^3}{e^2}-\frac{2\,B\,c^3\,d}{e^3}\right)}{e}-\frac{3\,B\,a\,c^2}{e^2}+\frac{B\,c^3\,d^2}{e^4}\right)}{3\,e}-\frac{d^2\left(\frac{A\,c^3}{e^2}-\frac{2\,B\,c^3\,d}{e^3}\right)}{3\,e^2}+\frac{A\,a\,c^2}{e^2}\right)+x^5\left(\frac{A\,c^3}{5\,e^2}-\frac{2\,B\,c^3\,d}{5\,e^3}\right)-x^4\left(\frac{d\left(\frac{A\,c^3}{e^2}-\frac{2\,B}{}\right.}{2\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] x^3*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c
^3*d^2)/e^4))/(3*e) - (d^2*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2) + (A*a*
c^2)/e^2) + x^5*((A*c^3)/(5*e^2) - (2*B*c^3*d)/(5*e^3)) - x^4*((d*((A*c^3)/
e^2 - (2*B*c^3*d)/e^3))/(2*e) - (3*B*a*c^2)/(4*e^2) + (B*c^3*d^2)/(4*e^4))
- x*((2*d*((d^2*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2
+ (B*c^3*d^2)/e^4))/e^2 - (2*d*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))
/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3)/e^2 - (2*B*c^3*d
)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e + (3*B*a^2*c)/e^2))/e + (d^2*((2*d*((2*d*
((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e
- (d^2*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e^2 - (3*A*
a^2*c)/e^2) + x^2*((d^2*((2*d*((A*c^3)/e^2 - (2*B*c^3*d)/e^3))/e - (3*B*a*c
^2)/e^2 + (B*c^3*d^2)/e^4))/(2*e^2) - (d*((2*d*((2*d*((A*c^3)/e^2 - (2*B*c^
3*d)/e^3))/e - (3*B*a*c^2)/e^2 + (B*c^3*d^2)/e^4))/e - (d^2*((A*c^3)/e^2 -
(2*B*c^3*d)/e^3))/e^2 + (3*A*a*c^2)/e^2))/e + (3*B*a^2*c)/(2*e^2)) + (log(d
 + e*x)*(B*a^3*e^6 + 7*B*c^3*d^6 - 6*A*c^3*d^5*e - 12*A*a*c^2*d^3*e^3 + 15*
B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5))/e^8 - (A*a^3*e^7 -
B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e + 3*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e
^5 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4)/(e*(d*e^7 + e^8*x)) + (B*c^3*x^
6)/(6*e^2)
```

sympy [A] time = 1.96, size = 454, normalized size = 1.47

$$\frac{Bc^3x^6}{6e^2}+x^5\left(\frac{Ac^3}{5e^2}-\frac{2Bc^3d}{5e^3}\right)+x^4\left(-\frac{Ac^3d}{2e^3}+\frac{3Bac^2}{4e^2}+\frac{3Bc^3d^2}{4e^4}\right)+x^3\left(\frac{Aac^2}{e^2}+\frac{Ac^3d^2}{e^4}-\frac{2Bac^2d}{e^3}-\frac{4Bc^3d^3}{3e^5}\right)+x^2\Bigg(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) + x**5*(A*c**3/(5*e**2) - 2*B*c**3*d/(5*e**3)) + x**4*
(-A*c**3*d/(2*e**3) + 3*B*a*c**2/(4*e**2) + 3*B*c**3*d**2/(4*e**4)) + x**3*
(A*a*c**2/e**2 + A*c**3*d**2/e**4 - 2*B*a*c**2*d/e**3 - 4*B*c**3*d**3/(3*e*
*5)) + x**2*(-3*A*a*c**2*d/e**3 - 2*A*c**3*d**3/e**5 + 3*B*a**2*c/(2*e**2)
+ 9*B*a*c**2*d**2/(2*e**4) + 5*B*c**3*d**4/(2*e**6)) + x*(3*A*a**2*c/e**2 +
 9*A*a*c**2*d**2/e**4 + 5*A*c**3*d**4/e**6 - 6*B*a**2*c*d/e**3 - 12*B*a*c**
2*d**3/e**5 - 6*B*c**3*d**5/e**7) + (-A*a**3*e**7 - 3*A*a**2*c*d**2*e**5 -
3*A*a*c**2*d**4*e**3 - A*c**3*d**6*e + B*a**3*d*e**6 + 3*B*a**2*c*d**3*e**4
 + 3*B*a*c**2*d**5*e**2 + B*c**3*d**7)/(d*e**8 + e**9*x) + (a*e**2 + c*d**2
)**2*(-6*A*c*d*e + B*a*e**2 + 7*B*c*d**2)*log(d + e*x)/e**8
```

3.1321 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=300

$$-\frac{cx\left(Acde\left(9ae^2+10cd^2\right)-3B\left(a^2e^4+6acd^2e^2+5c^2d^4\right)\right)}{e^7}+\frac{c^2x^3\left(aBe^2-Acde+2Bcd^2\right)}{e^5}-\frac{c^2x^2\left(-3aAe^3+9aBde^2\right.}{2e^6}$$

```
[Out] -c*(A*c*d*e*(9*a*e^2+10*c*d^2)-3*B*(a^2*e^4+6*a*c*d^2*e^2+5*c^2*d^4))*x/e^7
-1/2*c^2*(-3*A*a*e^3-6*A*c*d^2*e+9*B*a*d*e^2+10*B*c*d^3)*x^2/e^6+c^2*(-A*c*
d*e+B*a*e^2+2*B*c*d^2)*x^3/e^5-1/4*c^3*(-A*e+3*B*d)*x^4/e^4+1/5*B*c^3*x^5/e
^3+1/2*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^2-(a*e^2+c*d^2)^2*(-6*A*c*d*e
+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)-3*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*e+3*B
*a*d*e^2+7*B*c*d^3)*ln(e*x+d)/e^8
```

Rubi [A] time = 0.42, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{cx\left(Acde\left(9ae^2+10cd^2\right)-3B\left(a^2e^4+6acd^2e^2+5c^2d^4\right)\right)}{e^7}+\frac{c^2x^3\left(aBe^2-Acde+2Bcd^2\right)}{e^5}-\frac{c^2x^2\left(-3aAe^3+9aBde^2\right.}{2e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -((c*(A*c*d*e*(10*c*d^2 + 9*a*e^2) - 3*B*(5*c^2*d^4 + 6*a*c*d^2*e^2 + a^2*e
^4))*x)/e^7) - (c^2*(10*B*c*d^3 - 6*A*c*d^2*e + 9*a*B*d*e^2 - 3*a*A*e^3)*x^
2)/(2*e^6) + (c^2*(2*B*c*d^2 - A*c*d*e + a*B*e^2)*x^3)/e^5 - (c^3*(3*B*d -
A*e)*x^4)/(4*e^4) + (B*c^3*x^5)/(5*e^3) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(
2*e^8*(d + e*x)^2) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/
(e^8*(d + e*x)) - (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e
^2 - a*A*e^3)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^3}\,dx &= \int \left(\frac{c\left(-Acde\left(10cd^2+9ae^2\right)+3B\left(5c^2d^4+6acd^2e^2+a^2e^4\right)\right)}{e^7}+\frac{c^2\left(-10Bcd^3+6Acd\right.}{}\right.\\ &= -\frac{c\left(Acde\left(10cd^2+9ae^2\right)-3B\left(5c^2d^4+6acd^2e^2+a^2e^4\right)\right)x}{e^7}-\frac{c^2\left(10Bcd^3-6Acd^2e+\right.}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.19, size = 414, normalized size = 1.38

$$\frac{5Ae\left(-2a^3e^6+6a^2cde^4(3d+4ex)+6ac^2e^2\left(7d^4+2d^3ex-11d^2e^2x^2-4de^3x^3+e^4x^4\right)+c^3\left(22d^6-16d^5ex-68d^4\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (5*A*e*(-2*a^3*e^6 + 6*a^2*c*d*e^4*(3*d + 4*e*x) + 6*a*c^2*e^2*(7*d^4 + 2*d
^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + c^3*(22*d^6 - 16*d^5*e*x
 - 68*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6)
) + B*(-10*a^3*e^6*(d + 2*e*x) + 30*a^2*c*e^4*(-5*d^3 - 4*d^2*e*x + 4*d*e^2
*x^2 + 2*e^3*x^3) + 10*a*c^2*e^2*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20
*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) + c^3*(-130*d^7 + 160*d^6*e*x + 500
*d^5*e^2*x^2 + 140*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 14*d^2*e^5*x^5 - 7*d*e^6*
x^6 + 4*e^7*x^7)) - 60*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d
*e^2 - a*A*e^3)*(d + e*x)^2*Log[d + e*x])/(20*e^8*(d + e*x)^2)
```

fricas [B] time = 0.64, size = 691, normalized size = 2.30

$$4\,Bc^3e^7x^7 - 130\,Bc^3d^7 + 110\,Ac^3d^6e - 270\,Bac^2d^5e^2 + 210\,Aac^2d^4e^3 - 150\,Ba^2cd^3e^4 + 90\,Aa^2cd^2e^5 - 10\,Ba^3de$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 + 110*A*c^3*d^6*e - 270*B*a*c^2*d^5*e
^2 + 210*A*a*c^2*d^4*e^3 - 150*B*a^2*c*d^3*e^4 + 90*A*a^2*c*d^2*e^5 - 10*B*
a^3*d*e^6 - 10*A*a^3*e^7 - (7*B*c^3*d*e^6 - 5*A*c^3*e^7)*x^6 + 2*(7*B*c^3*d
^2*e^5 - 5*A*c^3*d*e^6 + 10*B*a*c^2*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 5*A*c^3
*d^2*e^5 + 10*B*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 20*(7*B*c^3*d^4*e^3 - 5*
A*c^3*d^3*e^4 + 10*B*a*c^2*d^2*e^5 - 6*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 +
 10*(50*B*c^3*d^5*e^2 - 34*A*c^3*d^4*e^3 + 63*B*a*c^2*d^3*e^4 - 33*A*a*c^2*
d^2*e^5 + 12*B*a^2*c*d*e^6)*x^2 + 20*(8*B*c^3*d^6*e - 4*A*c^3*d^5*e^2 + 3*B
*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 - 6*B*a^2*c*d^2*e^5 + 6*A*a^2*c*d*e^6 -
B*a^3*e^7)*x - 60*(7*B*c^3*d^7 - 5*A*c^3*d^6*e + 10*B*a*c^2*d^5*e^2 - 6*A*a
*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - A*a^2*c*d^2*e^5 + (7*B*c^3*d^5*e^2 - 5*A
*c^3*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 - A
*a^2*c*e^7)*x^2 + 2*(7*B*c^3*d^6*e - 5*A*c^3*d^5*e^2 + 10*B*a*c^2*d^4*e^3 -
 6*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 - A*a^2*c*d*e^6)*x)*log(e*x + d))/(e
^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.16, size = 440, normalized size = 1.47

$$-3\left(7\,Bc^3d^5 - 5\,Ac^3d^4e + 10\,Bac^2d^3e^2 - 6\,Aac^2d^2e^3 + 3\,Ba^2cde^4 - Aa^2ce^5\right)e^{(-8)}\log\left(|xe+d|\right) + \frac{1}{20}\left(4\,Bc^3x^5e^{12} -\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 +
3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5
*e^12 - 15*B*c^3*d*x^4*e^11 + 40*B*c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9
 + 300*B*c^3*d^4*x*e^8 + 5*A*c^3*x^4*e^12 - 20*A*c^3*d*x^3*e^11 + 60*A*c^3*
d^2*x^2*e^10 - 200*A*c^3*d^3*x*e^9 + 20*B*a*c^2*x^3*e^12 - 90*B*a*c^2*d*x^2
*e^11 + 360*B*a*c^2*d^2*x*e^10 + 30*A*a*c^2*x^2*e^12 - 180*A*a*c^2*d*x*e^11
 + 60*B*a^2*c*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7 - 11*A*c^3*d^6*e + 27*B*a
*c^2*d^5*e^2 - 21*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^2*e^5
+ B*a^3*d*e^6 + A*a^3*e^7 + 2*(7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2
*d^4*e^3 - 12*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3
*e^7)*x)*e^(-8)/(x*e + d)^2
```

maple [B] time = 0.06, size = 589, normalized size = 1.96

$$\frac{B\,c^3x^5}{5e^3} + \frac{A\,c^3x^4}{4e^3} - \frac{3B\,c^3d\,x^4}{4e^4} - \frac{A\,c^3d\,x^3}{e^4} + \frac{Ba\,c^2x^3}{e^3} + \frac{2B\,c^3d^2x^3}{e^5} - \frac{A\,a^3}{2\,(ex+d)^2\,e} - \frac{3A\,a^2c\,d^2}{2\,(ex+d)^2\,e^3} - \frac{3Aa\,c^2d^4}{2\,(ex+d)^2\,e^5} + \frac{3Aa\,c}{2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x)
```

```
[Out] -c^3/e^4*A*x^3*d-7/e^8/(e*x+d)*B*c^3*d^6-1/2/e^7/(e*x+d)^2*A*c^3*d^6+1/2/e^
2/(e*x+d)^2*B*d*a^3+6/e^7/(e*x+d)*A*c^3*d^5+1/4*c^3/e^3*A*x^4-1/e^2/(e*x+d)
*B*a^3-1/2/e/(e*x+d)^2*A*a^3-15/e^6/(e*x+d)*B*a*c^2*d^4-3/2/e^3/(e*x+d)^2*A
*d^2*a^2*c-3/2/e^5/(e*x+d)^2*A*a*c^2*d^4+3/2/e^4/(e*x+d)^2*B*a^2*c*d^3+3/2/
e^6/(e*x+d)^2*B*a*c^2*d^5+3*c^3/e^5*A*x^2*d^2+1/2/e^8/(e*x+d)^2*B*c^3*d^7+3
*c/e^3*ln(e*x+d)*A*a^2+15*c^3/e^7*ln(e*x+d)*A*d^4-21*c^3/e^8*ln(e*x+d)*B*d^
5+15*c^3/e^7*B*x*d^4-3/4*c^3/e^4*B*x^4*d+18*c^2/e^5*ln(e*x+d)*A*d^2*a-9*c/e
^4*ln(e*x+d)*B*d*a^2-30*c^2/e^6*ln(e*x+d)*B*d^3*a-9/2*c^2/e^4*B*x^2*a*d-9*c
^2/e^4*A*x*a*d+18*c^2/e^5*B*x*a*d^2+6/e^3/(e*x+d)*A*a^2*c*d+12/e^5/(e*x+d)*
A*a*c^2*d^3-9/e^4/(e*x+d)*B*a^2*c*d^2+3/2*c^2/e^3*A*x^2*a-5*c^3/e^6*B*x^2*d
^3-10*c^3/e^6*A*x*d^3+3*c/e^3*B*x*a^2+c^2/e^3*B*x^3*a+2*c^3/e^5*B*x^3*d^2+1
/5*B*c^3/e^3*x^5
```

maxima [A] time = 0.69, size = 464, normalized size = 1.55

$$-\frac{13\,Bc^3d^7 - 11\,Ac^3d^6e + 27\,Bac^2d^5e^2 - 21\,Aac^2d^4e^3 + 15\,Ba^2cd^3e^4 - 9\,Aa^2cd^2e^5 + Ba^3de^6 + Aa^3e^7 + 2\,\bigl(7\,Bc^3d^6e}{2\,\left(e^{10}x^2 + 2\,de^9x + d^2e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 - 11*A*c^3*d^6*e + 27*B*a*c^2*d^5*e^2 - 21*A*a*c^2*d^4*e
^3 + 15*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + A*a^3*e^7 + 2*(
7*B*c^3*d^6*e - 6*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 +
 9*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 + B*a^3*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
+ d^2*e^8) + 1/20*(4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - A*c^3*e^4)*x^4 + 20
*(2*B*c^3*d^2*e^2 - A*c^3*d*e^3 + B*a*c^2*e^4)*x^3 - 10*(10*B*c^3*d^3*e - 6
*A*c^3*d^2*e^2 + 9*B*a*c^2*d*e^3 - 3*A*a*c^2*e^4)*x^2 + 20*(15*B*c^3*d^4 -
10*A*c^3*d^3*e + 18*B*a*c^2*d^2*e^2 - 9*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*x)/e
^7 - 3*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^
3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 0.14, size = 681, normalized size = 2.27

$$x^4\,\left(\frac{A\,c^3}{4\,e^3}-\frac{3\,B\,c^3\,d}{4\,e^4}\right)-\frac{\frac{B\,a^3\,d\,e^6+A\,a^3\,e^7+15\,B\,a^2\,c\,d^3\,e^4-9\,A\,a^2\,c\,d^2\,e^5+27\,B\,a\,c^2\,d^5\,e^2-21\,A\,a\,c^2\,d^4\,e^3+13\,B\,c^3\,d^7-11\,A\,c^3\,d^6\,e}{2\,e}+x\,\bigl(B\,a^3\,e^6+}{d^2\,e^7+2\,d\,e^8\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] x^4*((A*c^3)/(4*e^3) - (3*B*c^3*d)/(4*e^4)) - ((A*a^3*e^7 + 13*B*c^3*d^7 +
B*a^3*d*e^6 - 11*A*c^3*d^6*e - 21*A*a*c^2*d^4*e^3 - 9*A*a^2*c*d^2*e^5 + 27*
B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4)/(2*e) + x*(B*a^3*e^6 + 7*B*c^3*d^6 -
6*A*c^3*d^5*e - 12*A*a*c^2*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4
 - 6*A*a^2*c*d*e^5))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) - x*((3*d*((3*d*((3*d*
((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (3*B*a*c^2)/e^3 + (3*B*c^3*d^2)/e^5))/
e - (3*d^2*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e^2 + (3*A*a*c^2)/e^3 - (B*c^3*
d^3)/e^6))/e - (3*d^2*((3*d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (3*B*a*c^2
)/e^3 + (3*B*c^3*d^2)/e^5))/e^2 + (d^3*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e^3
 - (3*B*a^2*c)/e^3) - x^3*((d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))/e - (B*a*c^2
)/e^3 + (B*c^3*d^2)/e^5) + x^2*((3*d*((3*d*((A*c^3)/e^3 - (3*B*c^3*d)/e^4))
/e - (3*B*a*c^2)/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (3*d^2*((A*c^3)/e^3 - (3
*B*c^3*d)/e^4))/(2*e^2) + (3*A*a*c^2)/(2*e^3) - (B*c^3*d^3)/(2*e^6)) - (log
(d + e*x)*(21*B*c^3*d^5 - 3*A*a^2*c*e^5 - 15*A*c^3*d^4*e - 18*A*a*c^2*d^2*e
^3 + 30*B*a*c^2*d^3*e^2 + 9*B*a^2*c*d*e^4))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [**A**] time = 6.10, size = 490, normalized size = 1.63

$$\frac{Bc^3x^5}{5e^3} - \frac{3c\left(ae^2+cd^2\right)\left(-Aae^3-5Acd^2e+3Bade^2+7Bcd^3\right)\log\left(d+ex\right)}{e^8} + x^4\left(\frac{Ac^3}{4e^3}-\frac{3Bc^3d}{4e^4}\right) + x^3\left(-\frac{Ac^3d}{e^4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) - 3*c*(a*e**2 + c*d**2)*(-A*a*e**3 - 5*A*c*d**2*e + 3*
B*a*d*e**2 + 7*B*c*d**3)*log(d + e*x)/e**8 + x**4*(A*c**3/(4*e**3) - 3*B*c*
*3*d/(4*e**4)) + x**3*(-A*c**3*d/e**4 + B*a*c**2/e**3 + 2*B*c**3*d**2/e**5)
 + x**2*(3*A*a*c**2/(2*e**3) + 3*A*c**3*d**2/e**5 - 9*B*a*c**2*d/(2*e**4) -
 5*B*c**3*d**3/e**6) + x*(-9*A*a*c**2*d/e**4 - 10*A*c**3*d**3/e**6 + 3*B*a*
*2*c/e**3 + 18*B*a*c**2*d**2/e**5 + 15*B*c**3*d**4/e**7) + (-A*a**3*e**7 +
9*A*a**2*c*d**2*e**5 + 21*A*a*c**2*d**4*e**3 + 11*A*c**3*d**6*e - B*a**3*d*
e**6 - 15*B*a**2*c*d**3*e**4 - 27*B*a*c**2*d**5*e**2 - 13*B*c**3*d**7 + x*(
12*A*a**2*c*d*e**6 + 24*A*a*c**2*d**3*e**4 + 12*A*c**3*d**5*e**2 - 2*B*a**3
*e**7 - 18*B*a**2*c*d**2*e**5 - 30*B*a*c**2*d**4*e**3 - 14*B*c**3*d**6*e))/
(2*d**2*e**8 + 4*d*e**9*x + 2*e**10*x**2)
```

3.1322 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=310

$$-\frac{c\log(d+ex)\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{c^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)}{2e^6}-\frac{c^2x\left(-\right.}{}$$

```
[Out] -c^2*(-3*A*a*e^3-10*A*c*d^2*e+12*B*a*d*e^2+20*B*c*d^3)*x/e^7+1/2*c^2*(-4*A*
c*d*e+3*B*a*e^2+10*B*c*d^2)*x^2/e^6-1/3*c^3*(-A*e+4*B*d)*x^3/e^5+1/4*B*c^3*
x^4/e^4+1/3*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^3-1/2*(a*e^2+c*d^2)^2*(-
6*A*c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^2+3*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*
c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)-c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B
*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.40, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{c\log(d+ex)\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{c^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)}{2e^6}-\frac{c^2x\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(20*B*c*d^3 - 10*A*c*d^2*e + 12*a*B*d*e^2 - 3*a*A*e^3)*x)/e^7) + (c^
2*(10*B*c*d^2 - 4*A*c*d*e + 3*a*B*e^2)*x^2)/(2*e^6) - (c^3*(4*B*d - A*e)*x^
3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(3*e^8*(
d + e*x)^3) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(2*e^8*
(d + e*x)^2) + (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2
- a*A*e^3))/(e^8*(d + e*x)) - (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2
*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^4}\,dx&=\int\left(\frac{c^2\left(-20Bcd^3+10Acd^2e-12aBde^2+3aAe^3\right)}{e^7}-\frac{c^2\left(-10Bcd^2+4Acde-3aBe^2\right)x}{e^6}\right.\\&=-\frac{c^2\left(20Bcd^3-10Acd^2e+12aBde^2-3aAe^3\right)x}{e^7}+\frac{c^2\left(10Bcd^2-4Acde+3aBe^2\right)x^2}{2e^6}-\end{aligned}$$

Mathematica [A] time = 0.13, size = 294, normalized size = 0.95

$$\frac{12c\log(d+ex)\left(B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)-4Acde\left(3ae^2+5cd^2\right)\right)+6c^2e^2x^2\left(3aBe^2-4Acde+10Bcd^2\right)+1}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (12*c^2*e*(A*e*(10*c*d^2 + 3*a*e^2) - 4*B*(5*c*d^3 + 3*a*d*e^2))*x + 6*c^2*
e^2*(10*B*c*d^2 - 4*A*c*d*e + 3*a*B*e^2)*x^2 + 4*c^3*e^3*(-4*B*d + A*e)*x^3
 + 3*B*c^3*e^4*x^4 + (4*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(d + e*x)^3 - (6*(c*
d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(d + e*x)^2 + (36*c*(c*d^
2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(d + e*x) + 1
2*c*(-4*A*c*d*e*(5*c*d^2 + 3*a*e^2) + B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^
2*e^4))*Log[d + e*x])/(12*e^8)
```

fricas [B] time = 0.72, size = 732, normalized size = 2.36

$$\frac{3\,Bc^{3}e^{7}x^{7} + 214\,Bc^{3}d^{7} - 148\,Ac^{3}d^{6}e + 282\,Bac^{2}d^{5}e^{2} - 156\,Aac^{2}d^{4}e^{3} + 66\,Ba^{2}cd^{3}e^{4} - 12\,Aa^{2}cd^{2}e^{5} - 2\,Ba^{3}de^{6} -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 - 148*A*c^3*d^6*e + 282*B*a*c^2*d^5*e
^2 - 156*A*a*c^2*d^4*e^3 + 66*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 2*B*a^
3*d*e^6 - 4*A*a^3*e^7 - (7*B*c^3*d*e^6 - 4*A*c^3*e^7)*x^6 + 3*(7*B*c^3*d^2*
e^5 - 4*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 - 3*(35*B*c^3*d^3*e^4 - 20*A*c^3*d
^2*e^5 + 30*B*a*c^2*d*e^6 - 12*A*a*c^2*e^7)*x^4 - 2*(278*B*c^3*d^4*e^3 - 14
6*A*c^3*d^3*e^4 + 189*B*a*c^2*d^2*e^5 - 54*A*a*c^2*d*e^6)*x^3 - 6*(68*B*c^3
*d^5*e^2 - 26*A*c^3*d^4*e^3 + 9*B*a*c^2*d^3*e^4 + 18*A*a*c^2*d^2*e^5 - 18*B
*a^2*c*d*e^6 + 6*A*a^2*c*e^7)*x^2 + 6*(37*B*c^3*d^6*e - 34*A*c^3*d^5*e^2 +
81*B*a*c^2*d^4*e^3 - 54*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*
e^6 - B*a^3*e^7)*x + 12*(35*B*c^3*d^7 - 20*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2
 - 12*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + (35*B*c^3*d^4*e^3 - 20*A*c^3*d^
3*e^4 + 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 3*(35*
B*c^3*d^5*e^2 - 20*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5
+ 3*B*a^2*c*d*e^6)*x^2 + 3*(35*B*c^3*d^6*e - 20*A*c^3*d^5*e^2 + 30*B*a*c^2*
d^4*e^3 - 12*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5)*x)*log(e*x + d))/(e^11*x^
3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A] time = 0.16, size = 435, normalized size = 1.40

$$\left(35\,Bc^{3}d^{4} - 20\,Ac^{3}d^{3}e + 30\,Bac^{2}d^{2}e^{2} - 12\,Aac^{2}de^{3} + 3\,Ba^{2}ce^{4}\right)e^{(-8)}\log\left(|xe+d|\right) + \frac{1}{12}\left(3\,Bc^{3}x^{4}e^{12} - 16\,Bc^{3}dx^{3}e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 + 3*
B*a^2*c*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 16*B*c^3*d
*x^3*e^11 + 60*B*c^3*d^2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 4*A*c^3*x^3*e^12
- 24*A*c^3*d*x^2*e^11 + 120*A*c^3*d^2*x*e^10 + 18*B*a*c^2*x^2*e^12 - 144*B*
a*c^2*d*x*e^11 + 36*A*a*c^2*x*e^12)*e^(-16) + 1/6*(107*B*c^3*d^7 - 74*A*c^3
*d^6*e + 141*B*a*c^2*d^5*e^2 - 78*A*a*c^2*d^4*e^3 + 33*B*a^2*c*d^3*e^4 - 6*
A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 2*A*a^3*e^7 + 18*(7*B*c^3*d^5*e^2 - 5*A*c^3
*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 - A*a^2
*c*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*A*c^3*d^5*e^2 + 105*B*a*c^2*d^4*e^3 -
60*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*a^2*c*d*e^6 - B*a^3*e^7)*x)*e
^(-8)/(x*e + d)^3
```

maple [B] time = 0.07, size = 611, normalized size = 1.97

$$\frac{B\,c^{3}x^{4}}{4e^{4}} - \frac{A\,a^{3}}{3\left(ex+d\right)^{3}e} - \frac{A\,a^{2}c\,d^{2}}{\left(ex+d\right)^{3}e^{3}} - \frac{Aa\,c^{2}d^{4}}{\left(ex+d\right)^{3}e^{5}} - \frac{A\,c^{3}d^{6}}{3\left(ex+d\right)^{3}e^{7}} + \frac{A\,c^{3}x^{3}}{3e^{4}} + \frac{B\,a^{3}d}{3\left(ex+d\right)^{3}e^{2}} + \frac{B\,a^{2}c\,d^{3}}{\left(ex+d\right)^{3}e^{4}} + \frac{Ba\,c^{2}d}{\left(ex+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x)
```

```
[Out] -12*c^2/e^5*a*B*d*x+3/e^3/(e*x+d)^2*A*a^2*c*d+6/e^5/(e*x+d)^2*A*a*c^2*d^3-9
/2/e^4/(e*x+d)^2*B*a^2*c*d^2-15/2/e^6/(e*x+d)^2*B*a*c^2*d^4-1/e^3/(e*x+d)^3
*A*d^2*a^2*c+3/e^7/(e*x+d)^2*A*c^3*d^5-7/2/e^8/(e*x+d)^2*B*c^3*d^6-1/2/e^2/
(e*x+d)^2*B*a^3-1/3/e/(e*x+d)^3*A*a^3+1/3*c^3/e^4*A*x^3-18*c^2/e^5/(e*x+d)*
A*d^2*a+9*c/e^4/(e*x+d)*B*a^2*d+30*c^2/e^6/(e*x+d)*B*d^3*a-12*c^2/e^5*ln(e*
x+d)*A*d*a+30*c^2/e^6*ln(e*x+d)*B*d^2*a+1/e^4/(e*x+d)^3*B*d^3*a^2*c+1/e^6/(
e*x+d)^3*B*a*c^2*d^5-1/3/e^7/(e*x+d)^3*A*c^3*d^6-4/3*c^3/e^5*B*x^3*d-2*c^3/
e^5*A*x^2*d-20*c^3/e^7*ln(e*x+d)*A*d^3+3*c/e^4*ln(e*x+d)*B*a^2+35*c^3/e^8*l
n(e*x+d)*B*d^4-1/e^5/(e*x+d)^3*A*a*c^2*d^4+3/2*c^2/e^4*B*x^2*a+5*c^3/e^6*B*
x^2*d^2+3*c^2/e^4*a*A*x+10*c^3/e^6*A*d^2*x-20*c^3/e^7*B*d^3*x-3*c/e^3/(e*x+
d)*A*a^2-15*c^3/e^7/(e*x+d)*A*d^4+21*c^3/e^8/(e*x+d)*B*d^5+1/3/e^8/(e*x+d)^
3*B*c^3*d^7+1/3/e^2/(e*x+d)^3*B*d*a^3+1/4*B*c^3/e^4*x^4
```

maxima [A] time = 0.66, size = 478, normalized size = 1.54

$$\frac{107 \, B c^{3} d^{7} - 74 \, A c^{3} d^{6} e + 141 \, B a c^{2} d^{5} e^{2} - 78 \, A a c^{2} d^{4} e^{3} + 33 \, B a^{2} c d^{3} e^{4} - 6 \, A a^{2} c d^{2} e^{5} - B a^{3} d e^{6} - 2 \, A a^{3} e^{7} + 18 \, \big(7 \, B c^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 - 74*A*c^3*d^6*e + 141*B*a*c^2*d^5*e^2 - 78*A*a*c^2*d^4*
e^3 + 33*B*a^2*c*d^3*e^4 - 6*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 2*A*a^3*e^7 +
18*(7*B*c^3*d^5*e^2 - 5*A*c^3*d^4*e^3 + 10*B*a*c^2*d^3*e^4 - 6*A*a*c^2*d^2*
e^5 + 3*B*a^2*c*d*e^6 - A*a^2*c*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*A*c^3*d^5
*e^2 + 105*B*a*c^2*d^4*e^3 - 60*A*a*c^2*d^3*e^4 + 27*B*a^2*c*d^2*e^5 - 6*A*
a^2*c*d*e^6 - B*a^3*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^
8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d*e^2 - A*c^3*e^3)*x^3 + 6*(10*B*c^
3*d^2*e - 4*A*c^3*d*e^2 + 3*B*a*c^2*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10*A*c^3*
d^2*e + 12*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*x)/e^7 + (35*B*c^3*d^4 - 20*A*c^3
*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*log(e*x + d
)/e^8
```

mupad [B] time = 1.78, size = 548, normalized size = 1.77

$$x^3\,\left(\frac{A\,c^3}{3\,e^4}-\frac{4\,B\,c^3\,d}{3\,e^5}\right)-\frac{\frac{B\,a^3\,d\,e^6+2\,A\,a^3\,e^7-33\,B\,a^2\,c\,d^3\,e^4+6\,A\,a^2\,c\,d^2\,e^5-141\,B\,a\,c^2\,d^5\,e^2+78\,A\,a\,c^2\,d^4\,e^3-107\,B\,c^3\,d^7+74\,A\,c^3\,d^6\,e}{6\,e}+x^2\,\big(-9\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] x^3*((A*c^3)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) - ((2*A*a^3*e^7 - 107*B*c^3*d^7
 + B*a^3*d*e^6 + 74*A*c^3*d^6*e + 78*A*a*c^2*d^4*e^3 + 6*A*a^2*c*d^2*e^5 -
141*B*a*c^2*d^5*e^2 - 33*B*a^2*c*d^3*e^4)/(6*e) + x^2*(3*A*a^2*c*e^6 - 21*B
*c^3*d^5*e + 15*A*c^3*d^4*e^2 + 18*A*a*c^2*d^2*e^4 - 30*B*a*c^2*d^3*e^3 - 9
*B*a^2*c*d*e^5) + x*((B*a^3*e^6)/2 - (77*B*c^3*d^6)/2 + 27*A*c^3*d^5*e + 30
*A*a*c^2*d^3*e^3 - (105*B*a*c^2*d^4*e^2)/2 - (27*B*a^2*c*d^2*e^4)/2 + 3*A*a
^2*c*d*e^5))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x*((4*d*((4
*d*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e - (3*B*a*c^2)/e^4 + (6*B*c^3*d^2)/e^6
))/e - (6*d^2*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e^2 + (3*A*a*c^2)/e^4 - (4*B
*c^3*d^3)/e^7) - x^2*((2*d*((A*c^3)/e^4 - (4*B*c^3*d)/e^5))/e - (3*B*a*c^2)
/(2*e^4) + (3*B*c^3*d^2)/e^6) + (log(d + e*x)*(35*B*c^3*d^4 + 3*B*a^2*c*e^4
 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3))/e^8 + (B*c^3*x^
4)/(4*e^4)
```

sympy [A] time = 18.98, size = 530, normalized size = 1.71

$$\frac{Bc^3x^4}{4e^4}+\frac{c\left(-12Aacde^3-20Ac^2d^3e+3Ba^2e^4+30Bacd^2e^2+35Bc^2d^4\right)\log\left(d+ex\right)}{e^8}+x^3\left(\frac{Ac^3}{3e^4}-\frac{4Bc^3d}{3e^5}\right)+x^2\left(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**4,x)
```

```
[Out] B*c**3*x**4/(4*e**4) + c*(-12*A*a*c*d*e**3 - 20*A*c**2*d**3*e + 3*B*a**2*e*
*4 + 30*B*a*c*d**2*e**2 + 35*B*c**2*d**4)*log(d + e*x)/e**8 + x**3*(A*c**3/
(3*e**4) - 4*B*c**3*d/(3*e**5)) + x**2*(-2*A*c**3*d/e**5 + 3*B*a*c**2/(2*e*
*4) + 5*B*c**3*d**2/e**6) + x*(3*A*a*c**2/e**4 + 10*A*c**3*d**2/e**6 - 12*B
*a*c**2*d/e**5 - 20*B*c**3*d**3/e**7) + (-2*A*a**3*e**7 - 6*A*a**2*c*d**2*e
**5 - 78*A*a*c**2*d**4*e**3 - 74*A*c**3*d**6*e - B*a**3*d*e**6 + 33*B*a**2*
c*d**3*e**4 + 141*B*a*c**2*d**5*e**2 + 107*B*c**3*d**7 + x**2*(-18*A*a**2*c
*e**7 - 108*A*a*c**2*d**2*e**5 - 90*A*c**3*d**4*e**3 + 54*B*a**2*c*d*e**6 +
 180*B*a*c**2*d**3*e**4 + 126*B*c**3*d**5*e**2) + x*(-18*A*a**2*c*d*e**6 -
180*A*a*c**2*d**3*e**4 - 162*A*c**3*d**5*e**2 - 3*B*a**3*e**7 + 81*B*a**2*c
*d**2*e**5 + 315*B*a*c**2*d**4*e**3 + 231*B*c**3*d**6*e))/(6*d**3*e**8 + 18
*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3)
```

3.1323 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5}\,dx$

Optimal. Leaf size=314

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(d+ex)}-\frac{c^2x\left(5Acde-3B\left(ae^2+5cd^2\right)\right)}{e^7}-\frac{c^2\log(d+ex)\left(-3aA\right.}{}$$

```
[Out] -c^2*(5*A*c*d*e-3*B*(a*e^2+5*c*d^2))*x/e^7-1/2*c^3*(-A*e+5*B*d)*x^2/e^6+1/3
*B*c^3*x^3/e^5+1/4*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^4-1/3*(a*e^2+c*d^
2)^2*(-6*A*c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^3+3/2*c*(a*e^2+c*d^2)*(-A*a
*e^3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^2+c*(4*A*c*d*e*(3*a*e^2
+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)-c^2*(-3*A*a*
e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*ln(e*x+d)/e^8
```

Rubi [**A**] time = 0.38, antiderivative size = 314, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(d+ex)}-\frac{c^2x\left(5Acde-3B\left(ae^2+5cd^2\right)\right)}{e^7}-\frac{c^2\log(d+ex)\left(-3aA\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -((c^2*(5*A*c*d*e - 3*B*(5*c*d^2 + a*e^2))*x)/e^7) - (c^3*(5*B*d - A*e)*x^2
)/(2*e^6) + (B*c^3*x^3)/(3*e^5) + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(4*e^8*(d
 + e*x)^4) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(3*e^8*(
d + e*x)^3) + (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 -
 a*A*e^3))/(2*e^8*(d + e*x)^2) + (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*
c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)))/(e^8*(d + e*x)) - (c^2*(35*B*c*d^3
- 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^5}\,dx &= \int \left(-\frac{c^2\left(-15Bcd^2+5Acde-3aBe^2\right)}{e^7}+\frac{c^3(-5Bd+Ae)x}{e^6}+\frac{Bc^3x^2}{e^5}+\frac{(-Bd+Ae)\left(cd\right.}{e^7(d+ex}\right.\\ &= -\frac{c^2\left(5Acde-3B\left(5cd^2+ae^2\right)\right)x}{e^7}-\frac{c^3(5Bd-Ae)x^2}{2e^6}+\frac{Bc^3x^3}{3e^5}+\frac{(Bd-Ae)\left(cd^2+ae^2\right.}{4e^8(d+ex)^4}\end{aligned}$$

Mathematica [**A**] time = 0.21, size = 405, normalized size = 1.29

$$\frac{3Ae\left(-a^3e^6-a^2ce^4\left(d^2+4dex+6e^2x^2\right)+ac^2de^2\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)+c^3\left(57d^6+168d^5ex+1\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (3*A*e*(-(a^3*e^6) - a^2*c*e^4*(d^2 + 4*d*e*x + 6*e^2*x^2) + a*c^2*d*e^2*(2
5*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + c^3*(57*d^6 + 168*d^5*e*
x + 132*d^4*e^2*x^2 - 32*d^3*e^3*x^3 - 68*d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^
6*x^6)) - B*(a^3*e^6*(d + 4*e*x) + 9*a^2*c*e^4*(d^3 + 4*d^2*e*x + 6*d*e^2*x
^2 + 4*e^3*x^3) + 3*a*c^2*e^2*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*
d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5) + c^3*(319*d^7 + 856*d^6*e*x + 444
*d^5*e^2*x^2 - 544*d^4*e^3*x^3 - 556*d^3*e^4*x^4 - 84*d^2*e^5*x^5 + 14*d*e^
6*x^6 - 4*e^7*x^7)) + 12*c^2*(3*A*e*(5*c*d^2 + a*e^2) - 5*B*(7*c*d^3 + 3*a*
d*e^2))*(d + e*x)^4*Log[d + e*x])/(12*e^8*(d + e*x)^4)
```

fricas [**B**] time = 0.60, size = 746, normalized size = 2.38

$$4 \, B c^{3} e^{7} x^{7} - 319 \, B c^{3} d^{7} + 171 \, A c^{3} d^{6} e - 231 \, B a c^{2} d^{5} e^{2} + 75 \, A a c^{2} d^{4} e^{3} - 9 \, B a^{2} c d^{3} e^{4} - 3 \, A a^{2} c d^{2} e^{5} - B a^{3} d e^{6} - 3 \, A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*e^7*x^7 - 319*B*c^3*d^7 + 171*A*c^3*d^6*e - 231*B*a*c^2*d^5*e
^2 + 75*A*a*c^2*d^4*e^3 - 9*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 - B*a^3*d*e
^6 - 3*A*a^3*e^7 - 2*(7*B*c^3*d*e^6 - 3*A*c^3*e^7)*x^6 + 12*(7*B*c^3*d^2*e^
5 - 3*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 4*(139*B*c^3*d^3*e^4 - 51*A*c^3*d^
2*e^5 + 36*B*a*c^2*d*e^6)*x^4 + 4*(136*B*c^3*d^4*e^3 - 24*A*c^3*d^3*e^4 - 3
6*B*a*c^2*d^2*e^5 + 36*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 - 6*(74*B*c^3*d^5
*e^2 - 66*A*c^3*d^4*e^3 + 126*B*a*c^2*d^3*e^4 - 54*A*a*c^2*d^2*e^5 + 9*B*a^
2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 - 4*(214*B*c^3*d^6*e - 126*A*c^3*d^5*e^2 + 1
86*B*a*c^2*d^4*e^3 - 66*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e
^6 + B*a^3*e^7)*x - 12*(35*B*c^3*d^7 - 15*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2
- 3*A*a*c^2*d^4*e^3 + (35*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e
^6 - 3*A*a*c^2*e^7)*x^4 + 4*(35*B*c^3*d^4*e^3 - 15*A*c^3*d^3*e^4 + 15*B*a*c
^2*d^2*e^5 - 3*A*a*c^2*d*e^6)*x^3 + 6*(35*B*c^3*d^5*e^2 - 15*A*c^3*d^4*e^3
+ 15*B*a*c^2*d^3*e^4 - 3*A*a*c^2*d^2*e^5)*x^2 + 4*(35*B*c^3*d^6*e - 15*A*c^
3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 - 3*A*a*c^2*d^3*e^4)*x)*log(e*x + d))/(e^12*
x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8)
```

giac [**B**] time = 0.18, size = 647, normalized size = 2.06

$$\frac{1}{6} \left(2 \, B c^{3} - \frac{3 \, {\left(7 \, B c^{3} d e - A c^{3} e^{2}\right)} e^{\left(-1\right)}}{x e + d} + \frac{18 \, {\left(7 \, B c^{3} d^{2} e^{2} - 2 \, A c^{3} d e^{3} + B a c^{2} e^{4}\right)} e^{\left(-2\right)}}{{\left(x e + d\right)}^{2}}\right) {\left(x e + d\right)}^{3} e^{\left(-8\right)} + {\left(35 \, B c^{3} d^{3} - 15$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 1/6*(2*B*c^3 - 3*(7*B*c^3*d*e - A*c^3*e^2)*e^(-1)/(x*e + d) + 18*(7*B*c^3*d
^2*e^2 - 2*A*c^3*d*e^3 + B*a*c^2*e^4)*e^(-2)/(x*e + d)^2)*(x*e + d)^3*e^(-8
) + (35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*e^(-
8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(420*B*c^3*d^4*e^36/(x*e + d
) - 126*B*c^3*d^5*e^36/(x*e + d)^2 + 28*B*c^3*d^6*e^36/(x*e + d)^3 - 3*B*c^
3*d^7*e^36/(x*e + d)^4 - 240*A*c^3*d^3*e^37/(x*e + d) + 90*A*c^3*d^4*e^37/(
x*e + d)^2 - 24*A*c^3*d^5*e^37/(x*e + d)^3 + 3*A*c^3*d^6*e^37/(x*e + d)^4 +
 360*B*a*c^2*d^2*e^38/(x*e + d) - 180*B*a*c^2*d^3*e^38/(x*e + d)^2 + 60*B*a
*c^2*d^4*e^38/(x*e + d)^3 - 9*B*a*c^2*d^5*e^38/(x*e + d)^4 - 144*A*a*c^2*d*
e^39/(x*e + d) + 108*A*a*c^2*d^2*e^39/(x*e + d)^2 - 48*A*a*c^2*d^3*e^39/(x*
e + d)^3 + 9*A*a*c^2*d^4*e^39/(x*e + d)^4 + 36*B*a^2*c*e^40/(x*e + d) - 54*
B*a^2*c*d*e^40/(x*e + d)^2 + 36*B*a^2*c*d^2*e^40/(x*e + d)^3 - 9*B*a^2*c*d^
3*e^40/(x*e + d)^4 + 18*A*a^2*c*e^41/(x*e + d)^2 - 24*A*a^2*c*d*e^41/(x*e +
 d)^3 + 9*A*a^2*c*d^2*e^41/(x*e + d)^4 + 4*B*a^3*e^42/(x*e + d)^3 - 3*B*a^3
*d*e^42/(x*e + d)^4 + 3*A*a^3*e^43/(x*e + d)^4)*e^(-44)
```

maple [B] time = 0.07, size = 632, normalized size = 2.01

$$-\frac{A\,a^3}{4\,(ex+d)^4\,e}-\frac{3A\,a^2c\,d^2}{4\,(ex+d)^4\,e^3}-\frac{3Aa\,c^2d^4}{4\,(ex+d)^4\,e^5}-\frac{A\,c^3d^6}{4\,(ex+d)^4\,e^7}+\frac{B\,a^3d}{4\,(ex+d)^4\,e^2}+\frac{3B\,a^2c\,d^3}{4\,(ex+d)^4\,e^4}+\frac{3Ba\,c^2d^5}{4\,(ex+d)^4\,e^6}+\frac{B\,c}{4\,(ex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x)
```

```
[Out] 1/2*c^3/e^5*A*x^2-1/3/e^2/(e*x+d)^3*B*a^3-1/4/e/(e*x+d)^4*A*a^3-7/3/e^8/(e*
x+d)^3*B*c^3*d^6+20*c^3/e^7/(e*x+d)*A*d^3-3*c/e^4/(e*x+d)*B*a^2-35*c^3/e^8/
(e*x+d)*B*d^4-1/4/e^7/(e*x+d)^4*A*c^3*d^6+1/4/e^2/(e*x+d)^4*B*d*a^3+1/4/e^8
/(e*x+d)^4*B*c^3*d^7-5/2*c^3/e^6*B*x^2*d+3*c^2/e^5*ln(e*x+d)*a*A+15*c^3/e^7
*ln(e*x+d)*A*d^2-35*c^3/e^8*ln(e*x+d)*B*d^3-3/2*c/e^3/(e*x+d)^2*A*a^2-15/2*
c^3/e^7/(e*x+d)^2*A*d^4+21/2*c^3/e^8/(e*x+d)^2*B*d^5+2/e^7/(e*x+d)^3*A*c^3*
d^5+12*c^2/e^5/(e*x+d)*A*d*a-30*c^2/e^6/(e*x+d)*B*d^2*a-3/4/e^3/(e*x+d)^4*A
*d^2*a^2*c-3/4/e^5/(e*x+d)^4*A*d^4*a*c^2+3/4/e^4/(e*x+d)^4*B*d^3*a^2*c+2/e^
3/(e*x+d)^3*A*a^2*c*d+4/e^5/(e*x+d)^3*A*a*c^2*d^3-3/e^4/(e*x+d)^3*B*a^2*c*d
^2+3*c^2/e^5*B*x*a+15*c^3/e^7*B*x*d^2+1/3*B*c^3*x^3/e^5-5/e^6/(e*x+d)^3*B*a
*c^2*d^4-15*c^2/e^6*ln(e*x+d)*a*B*d+3/4/e^6/(e*x+d)^4*B*a*c^2*d^5-9*c^2/e^5
/(e*x+d)^2*A*d^2*a+9/2*c/e^4/(e*x+d)^2*B*a^2*d+15*c^2/e^6/(e*x+d)^2*B*d^3*a
-5*c^3/e^6*A*x*d
```

maxima [A] time = 0.61, size = 487, normalized size = 1.55

$$-\frac{319\,Bc^3d^7-171\,Ac^3d^6e+231\,Bac^2d^5e^2-75\,Aac^2d^4e^3+9\,Ba^2cd^3e^4+3\,Aa^2cd^2e^5+Ba^3de^6+3\,Aa^3e^7+12\,\big(35}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(319*B*c^3*d^7 - 171*A*c^3*d^6*e + 231*B*a*c^2*d^5*e^2 - 75*A*a*c^2*d
^4*e^3 + 9*B*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^3*e^7
+ 12*(35*B*c^3*d^4*e^3 - 20*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2
*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 18*(63*B*c^3*d^5*e^2 - 35*A*c^3*d^4*e^3 + 50*
B*a*c^2*d^3*e^4 - 18*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + A*a^2*c*e^7)*x^2 +
 4*(259*B*c^3*d^6*e - 141*A*c^3*d^5*e^2 + 195*B*a*c^2*d^4*e^3 - 66*A*a*c^2*
d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + B*a^3*e^7)*x)/(e^12*x^4 + 4
*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8) + 1/6*(2*B*c^3*e^2*x^
3 - 3*(5*B*c^3*d*e - A*c^3*e^2)*x^2 + 6*(15*B*c^3*d^2 - 5*A*c^3*d*e + 3*B*a
*c^2*e^2)*x)/e^7 - (35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*
a*c^2*e^3)*log(e*x + d)/e^8
```

mupad [B] time = 1.80, size = 501, normalized size = 1.60

$$x^2\,\left(\frac{A\,c^3}{2\,e^5}-\frac{5\,B\,c^3\,d}{2\,e^6}\right)-x\,\left(\frac{5\,d\,\left(\frac{A\,c^3}{e^5}-\frac{5\,B\,c^3\,d}{e^6}\right)}{e}-\frac{3\,B\,a\,c^2}{e^5}+\frac{10\,B\,c^3\,d^2}{e^7}\right)-\frac{\frac{B\,a^3\,d\,e^6+3\,A\,a^3\,e^7+9\,B\,a^2\,c\,d^3\,e^4+3\,A\,a^2\,c\,d^2\,e^5+231\,B\,a\,c}{12\,e}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] x^2*((A*c^3)/(2*e^5) - (5*B*c^3*d)/(2*e^6)) - x*((5*d*((A*c^3)/e^5 - (5*B*c
^3*d)/e^6))/e - (3*B*a*c^2)/e^5 + (10*B*c^3*d^2)/e^7) - ((3*A*a^3*e^7 + 319
*B*c^3*d^7 + B*a^3*d*e^6 - 171*A*c^3*d^6*e - 75*A*a*c^2*d^4*e^3 + 3*A*a^2*c
*d^2*e^5 + 231*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4)/(12*e) + x^2*((3*A*a^2*
c*e^6)/2 + (189*B*c^3*d^5*e)/2 - (105*A*c^3*d^4*e^2)/2 - 27*A*a*c^2*d^2*e^4
 + 75*B*a*c^2*d^3*e^3 + (9*B*a^2*c*d*e^5)/2) + x^3*(3*B*a^2*c*e^6 - 20*A*c^
3*d^3*e^3 + 35*B*c^3*d^4*e^2 + 30*B*a*c^2*d^2*e^4 - 12*A*a*c^2*d*e^5) + x*(
(B*a^3*e^6)/3 + (259*B*c^3*d^6)/3 - 47*A*c^3*d^5*e - 22*A*a*c^2*d^3*e^3 + 6
5*B*a*c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + A*a^2*c*d*e^5))/(d^4*e^7 + e^11*x^4
 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2*e^9*x^2) - (log(d + e*x)*(35*B*c^3*d^
3 - 3*A*a*c^2*e^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2))/e^8 + (B*c^3*x^3)/(
3*e^5)
```

sympy [A] time = 63.11, size = 537, normalized size = 1.71

$$\frac{Bc^3x^3}{3e^5} - \frac{c^2\left(-3Aae^3 - 15Acd^2e + 15Bade^2 + 35Bcd^3\right)\log\left(d+ex\right)}{e^8} + x^2\left(\frac{Ac^3}{2e^5} - \frac{5Bc^3d}{2e^6}\right) + x\left(-\frac{5Ac^3d}{e^6} + \frac{3Bac^2}{e^5} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**5,x)
```

```
[Out] B*c**3*x**3/(3*e**5) - c**2*(-3*A*a*e**3 - 15*A*c*d**2*e + 15*B*a*d*e**2 +
35*B*c*d**3)*log(d + e*x)/e**8 + x**2*(A*c**3/(2*e**5) - 5*B*c**3*d/(2*e**6
)) + x*(-5*A*c**3*d/e**6 + 3*B*a*c**2/e**5 + 15*B*c**3*d**2/e**7) + (-3*A*a
**3*e**7 - 3*A*a**2*c*d**2*e**5 + 75*A*a*c**2*d**4*e**3 + 171*A*c**3*d**6*e
 - B*a**3*d*e**6 - 9*B*a**2*c*d**3*e**4 - 231*B*a*c**2*d**5*e**2 - 319*B*c*
*3*d**7 + x**3*(144*A*a*c**2*d*e**6 + 240*A*c**3*d**3*e**4 - 36*B*a**2*c*e*
*7 - 360*B*a*c**2*d**2*e**5 - 420*B*c**3*d**4*e**3) + x**2*(-18*A*a**2*c*e*
*7 + 324*A*a*c**2*d**2*e**5 + 630*A*c**3*d**4*e**3 - 54*B*a**2*c*d*e**6 - 9
00*B*a*c**2*d**3*e**4 - 1134*B*c**3*d**5*e**2) + x*(-12*A*a**2*c*d*e**6 + 2
64*A*a*c**2*d**3*e**4 + 564*A*c**3*d**5*e**2 - 4*B*a**3*e**7 - 36*B*a**2*c*
d**2*e**5 - 780*B*a*c**2*d**4*e**3 - 1036*B*c**3*d**6*e))/(12*d**4*e**8 + 4
8*d**3*e**9*x + 72*d**2*e**10*x**2 + 48*d*e**11*x**3 + 12*e**12*x**4)
```

3.1324 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6}\,dx$

Optimal. Leaf size=313

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{2e^8(d+ex)^2}+\frac{3c^2\log(d+ex)\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+c^2\left(-3aAe^3\right.$$

```
[Out] -c^3*(-A*e+6*B*d)*x/e^7+1/2*B*c^3*x^2/e^6+1/5*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^
8/(e*x+d)^5-1/4*(a*e^2+c*d^2)^2*(-6*A*c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^
4+c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^
3+1/2*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4
))/e^8/(e*x+d)^2+c^2*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/
(e*x+d)+3*c^2*(-2*A*c*d*e+B*a*e^2+7*B*c*d^2)*ln(e*x+d)/e^8
```

Rubi [A] time = 0.34, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{2e^8(d+ex)^2}+\frac{c^2\left(-3aAe^3+15aBde^2-15Acd^2e+35Bcd^3\right)}{e^8(d+ex)}+3c^2\log$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] -((c^3*(6*B*d - A*e)*x)/e^7) + (B*c^3*x^2)/(2*e^6) + ((B*d - A*e)*(c*d^2 +
a*e^2)^3)/(5*e^8*(d + e*x)^5) - ((c*d^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e +
 a*B*e^2))/(4*e^8*(d + e*x)^4) + (c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*
e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*(d + e*x)^3) + (c*(4*A*c*d*e*(5*c*d^2 + 3*
a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4)))/(2*e^8*(d + e*x)^2)
+ (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3))/(e^8*(d + e*
x)) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^6}\,dx &= \int \left(\frac{c^3(-6Bd+Ae)}{e^7}+\frac{Bc^3x}{e^6}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^6}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6A\right.}{e^7(d+ex)^5}\right.\\ &= -\frac{c^3(6Bd-Ae)x}{e^7}+\frac{Bc^3x^2}{2e^6}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{5e^8(d+ex)^5}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde\right.}{4e^8(d+ex)^4}\end{aligned}$$

Mathematica [A] time = 0.20, size = 388, normalized size = 1.24

$$-2Ae\left(2a^3e^6+a^2ce^4\left(d^2+5dex+10e^2x^2\right)+6ac^2e^2\left(d^4+5d^3ex+10d^2e^2x^2+10de^3x^3+5e^4x^4\right)+c^3\left(87d^6+375\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(2*a^3*e^6 + a^2*c*e^4*(d^2 + 5*d*e*x + 10*e^2*x^2) + 6*a*c^2*e^2*(
d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + c^3*(87*d^6
+ 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e
^5*x^5 - 10*e^6*x^6)) + B*(-(a^3*e^6*(d + 5*e*x)) - 3*a^2*c*e^4*(d^3 + 5*d^
2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + a*c^2*d*e^2*(137*d^4 + 625*d^3*e*x + 1
100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4) + c^3*(459*d^7 + 1875*d^6*e*
x + 2700*d^5*e^2*x^2 + 1300*d^4*e^3*x^3 - 400*d^3*e^4*x^4 - 500*d^2*e^5*x^5
 - 70*d*e^6*x^6 + 10*e^7*x^7)) + 60*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(
d + e*x)^5*Log[d + e*x])/(20*e^8*(d + e*x)^5)
```

fricas [B] time = 0.60, size = 730, normalized size = 2.33

$$10\,Bc^3e^7x^7 + 459\,Bc^3d^7 - 174\,Ac^3d^6e + 137\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 3\,Ba^2cd^3e^4 - 2\,Aa^2cd^2e^5 - Ba^3de^6 - 4\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*e^7*x^7 + 459*B*c^3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*
e^2 - 12*A*a*c^2*d^4*e^3 - 3*B*a^2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*
e^6 - 4*A*a^3*e^7 - 10*(7*B*c^3*d*e^6 - 2*A*c^3*e^7)*x^6 - 100*(5*B*c^3*d^2
*e^5 - A*c^3*d*e^6)*x^5 - 20*(20*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e^5 - 15*B*a*c
^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 10*(130*B*c^3*d^4*e^3 - 80*A*c^3*d^3*e^4 +
90*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 3*B*a^2*c*e^7)*x^3 + 10*(270*B*c^3*
d^5*e^2 - 120*A*c^3*d^4*e^3 + 110*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*
B*a^2*c*d*e^6 - 2*A*a^2*c*e^7)*x^2 + 5*(375*B*c^3*d^6*e - 150*A*c^3*d^5*e^2
 + 125*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c
*d*e^6 - B*a^3*e^7)*x + 60*(7*B*c^3*d^7 - 2*A*c^3*d^6*e + B*a*c^2*d^5*e^2 +
 (7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 5*(7*B*c^3*d^3*e^4 -
 2*A*c^3*d^2*e^5 + B*a*c^2*d*e^6)*x^4 + 10*(7*B*c^3*d^4*e^3 - 2*A*c^3*d^3*e
^4 + B*a*c^2*d^2*e^5)*x^3 + 10*(7*B*c^3*d^5*e^2 - 2*A*c^3*d^4*e^3 + B*a*c^2
*d^3*e^4)*x^2 + 5*(7*B*c^3*d^6*e - 2*A*c^3*d^5*e^2 + B*a*c^2*d^4*e^3)*x)*lo
g(e*x + d))/(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 +
5*d^4*e^9*x + d^5*e^8)
```

giac [A] time = 0.16, size = 429, normalized size = 1.37

$$3\left(7\,Bc^3d^2 - 2\,Ac^3de + Bac^2e^2\right)e^{(-8)}\log\left(|xe+d|\right) + \frac{1}{2}\left(Bc^3x^2e^6 - 12\,Bc^3dxe^5 + 2\,Ac^3xe^6\right)e^{(-12)} + \frac{(459\,Bc^3d^7 - 17}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 3*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*e^(-8)*log(abs(x*e + d)) + 1/2*
(B*c^3*x^2*e^6 - 12*B*c^3*d*x*e^5 + 2*A*c^3*x*e^6)*e^(-12) + 1/20*(459*B*c^
3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^4*e^3 - 3*B*a^
2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 + 20*(35*B*c^3*d^3*e^4 - 15*A
*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 - 4*A*a^3*e^7 + 10*(24
5*B*c^3*d^4*e^3 - 100*A*c^3*d^3*e^4 + 90*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6
 - 3*B*a^2*c*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130*A*c^3*d^4*e^3 + 110*B*a
*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*B*a^2*c*d*e^6 - 2*A*a^2*c*e^7)*x^2 +
5*(399*B*c^3*d^6*e - 154*A*c^3*d^5*e^2 + 125*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d
^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c*d*e^6 - B*a^3*e^7)*x)*e^(-8)/(x*e +
d)^5
```

maple [B] time = 0.06, size = 646, normalized size = 2.06

$$-\frac{A\,a^3}{5\,(ex+d)^5\,e} - \frac{3A\,a^2c\,d^2}{5\,(ex+d)^5\,e^3} - \frac{3Aa\,c^2d^4}{5\,(ex+d)^5\,e^5} - \frac{A\,c^3d^6}{5\,(ex+d)^5\,e^7} + \frac{B\,a^3d}{5\,(ex+d)^5\,e^2} + \frac{3B\,a^2c\,d^3}{5\,(ex+d)^5\,e^4} + \frac{3Ba\,c^2d^5}{5\,(ex+d)^5\,e^6} + \frac{}{5\,(e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x)
```

```
[Out] -1/5/e/(e*x+d)^5*A*a^3+c^3/e^6*A*x-1/4/e^2/(e*x+d)^4*B*a^3+15*c^2/e^6/(e*x+
d)*a*B*d+3/2/e^3/(e*x+d)^4*A*a^2*c*d-1/5/e^7/(e*x+d)^5*A*c^3*d^6+1/5/e^2/(e
*x+d)^5*B*d*a^3-6*c^3/e^7*B*d*x+21*c^3/e^8*ln(e*x+d)*B*d^2-6*c^2/e^5/(e*x+d
)^3*A*d^2*a+3*c/e^4/(e*x+d)^3*B*a^2*d+10*c^2/e^6/(e*x+d)^3*B*d^3*a-3/5/e^3/
(e*x+d)^5*A*d^2*a^2*c-3/5/e^5/(e*x+d)^5*A*d^4*a*c^2+3/5/e^4/(e*x+d)^5*B*d^3
*a^2*c+3/5/e^6/(e*x+d)^5*B*d^5*a*c^2-15*c^2/e^6/(e*x+d)^2*B*d^2*a-15*c^3/e^
7/(e*x+d)*A*d^2+10*c^3/e^7/(e*x+d)^2*A*d^3-3/2*c/e^4/(e*x+d)^2*B*a^2-35/2*c
^3/e^8/(e*x+d)^2*B*d^4+1/2*B*c^3*x^2/e^6+1/5/e^8/(e*x+d)^5*B*c^3*d^7-6*c^3/
e^7*ln(e*x+d)*A*d+3*c^2/e^6*ln(e*x+d)*B*a-c/e^3/(e*x+d)^3*A*a^2-5*c^3/e^7/(
e*x+d)^3*A*d^4+7*c^3/e^8/(e*x+d)^3*B*d^5+35*c^3/e^8/(e*x+d)*B*d^3+3/2/e^7/(
e*x+d)^4*A*c^3*d^5-7/4/e^8/(e*x+d)^4*B*c^3*d^6-3*c^2/e^5/(e*x+d)*a*A+3/e^5/
(e*x+d)^4*A*a*c^2*d^3-9/4/e^4/(e*x+d)^4*B*a^2*c*d^2-15/4/e^6/(e*x+d)^4*B*a*
c^2*d^4+6*c^2/e^5/(e*x+d)^2*A*d*a
```

maxima [A] time = 0.79, size = 499, normalized size = 1.59

$$\frac{459\,Bc^3d^7 - 174\,Ac^3d^6e + 137\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 3\,Ba^2cd^3e^4 - 2\,Aa^2cd^2e^5 - Ba^3de^6 - 4\,Aa^3e^7 + 20\left(35\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*c^3*d^7 - 174*A*c^3*d^6*e + 137*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 3*B*a^2*c*d^3*e^4 - 2*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 4*A*a^3*e^7 +
 20*(35*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7
)*x^4 + 10*(245*B*c^3*d^4*e^3 - 100*A*c^3*d^3*e^4 + 90*B*a*c^2*d^2*e^5 - 12
*A*a*c^2*d*e^6 - 3*B*a^2*c*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130*A*c^3*d^4
*e^3 + 110*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 - 3*B*a^2*c*d*e^6 - 2*A*a^2
*c*e^7)*x^2 + 5*(399*B*c^3*d^6*e - 154*A*c^3*d^5*e^2 + 125*B*a*c^2*d^4*e^3
- 12*A*a*c^2*d^3*e^4 - 3*B*a^2*c*d^2*e^5 - 2*A*a^2*c*d*e^6 - B*a^3*e^7)*x)/
(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x
+ d^5*e^8) + 1/2*(B*c^3*e*x^2 - 2*(6*B*c^3*d - A*c^3*e)*x)/e^7 + 3*(7*B*c^3
*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*log(e*x + d)/e^8
```

mupad [B] time = 0.16, size = 494, normalized size = 1.58

$$x\left(\frac{A\,c^3}{e^6}-\frac{6\,B\,c^3\,d}{e^7}\right)-\frac{\frac{B\,a^3\,d\,e^6+4\,A\,a^3\,e^7+3\,B\,a^2\,c\,d^3\,e^4+2\,A\,a^2\,c\,d^2\,e^5-137\,B\,a\,c^2\,d^5\,e^2+12\,A\,a\,c^2\,d^4\,e^3-459\,B\,c^3\,d^7+174\,A\,c^3\,d^6\,e}{20\,e}+x^2\left(\frac{3\,B\,a^2\,c}{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] x*((A*c^3)/e^6 - (6*B*c^3*d)/e^7) - ((4*A*a^3*e^7 - 459*B*c^3*d^7 + B*a^3*d
*e^6 + 174*A*c^3*d^6*e + 12*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 - 137*B*a*c
^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4)/(20*e) + x^2*(A*a^2*c*e^6 - (329*B*c^3*d^5*
e)/2 + 65*A*c^3*d^4*e^2 + 6*A*a*c^2*d^2*e^4 - 55*B*a*c^2*d^3*e^3 + (3*B*a^2
*c*d*e^5)/2) + x^3*((3*B*a^2*c*e^6)/2 + 50*A*c^3*d^3*e^3 - (245*B*c^3*d^4*e
^2)/2 - 45*B*a*c^2*d^2*e^4 + 6*A*a*c^2*d*e^5) + x*((B*a^3*e^6)/4 - (399*B*c
^3*d^6)/4 + (77*A*c^3*d^5*e)/2 + 3*A*a*c^2*d^3*e^3 - (125*B*a*c^2*d^4*e^2)/
4 + (3*B*a^2*c*d^2*e^4)/4 + (A*a^2*c*d*e^5)/2) + x^4*(3*A*a*c^2*e^6 + 15*A*
c^3*d^2*e^4 - 35*B*c^3*d^3*e^3 - 15*B*a*c^2*d*e^5))/(d^5*e^7 + e^12*x^5 + 5
*d^4*e^8*x + 5*d*e^11*x^4 + 10*d^3*e^9*x^2 + 10*d^2*e^10*x^3) + (log(d + e*
x)*(21*B*c^3*d^2 - 6*A*c^3*d*e + 3*B*a*c^2*e^2))/e^8 + (B*c^3*x^2)/(2*e^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.1325 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7} \, dx$

Optimal. Leaf size=320

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^3}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{2e^8(d+}$$

```
[Out] B*c^3*x/e^7+1/6*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^6-1/5*(a*e^2+c*d^2)^
2*(-6*A*c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^5+3/4*c*(a*e^2+c*d^2)*(-A*a*e^
3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^4+1/3*c*(4*A*c*d*e*(3*a*e^
2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^3+1/2*c^2*(
-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^2-3*c^2*(-2*A*
c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)-c^3*(-A*e+7*B*d)*ln(e*x+d)/e^8
```

Rubi [A] time = 0.32, antiderivative size = 320, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^3}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{2e^8(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] (B*c^3*x)/e^7 + ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(6*e^8*(d + e*x)^6) - ((c*d
^2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(5*e^8*(d + e*x)^5) + (3*c
*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(4*e^8*
(d + e*x)^4) + (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d
^2*e^2 + 3*a^2*e^4)))/(3*e^8*(d + e*x)^3) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e
 + 15*a*B*d*e^2 - 3*a*A*e^3))/(2*e^8*(d + e*x)^2) - (3*c^2*(7*B*c*d^2 - 2*A
*c*d*e + a*B*e^2))/(e^8*(d + e*x)) - (c^3*(7*B*d - A*e)*Log[d + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^7} \, dx &= \int \left(\frac{Bc^3}{e^7}+\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^6}+\frac{3c\left(c\right.}{}\right.\\ &= \frac{Bc^3x}{e^7}+\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{6e^8(d+ex)^6}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{5e^8(d+ex)^5}+\frac{3c\left(cd^2+\right.}{}\end{aligned}$$

Mathematica [A] time = 0.21, size = 377, normalized size = 1.18

$$-\frac{Ae\left(10a^3e^6+3a^2ce^4\left(d^2+6dex+15e^2x^2\right)+6ac^2e^2\left(d^4+6d^3ex+15d^2e^2x^2+20de^3x^3+15e^4x^4\right)-c^3d\left(147d^5+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(10*a^3*e^6 + 3*a^2*c*e^4*(d^2 + 6*d*e*x + 15*e^2*x^2) + 6*a*c^2
*e^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) - c^3*d
*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*
x^4 + 360*e^5*x^5)) + B*(2*a^3*e^6*(d + 6*e*x) + 3*a^2*c*e^4*(d^3 + 6*d^2*e
*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 30*a*c^2*e^2*(d^5 + 6*d^4*e*x + 15*d^3*e^
2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) + c^3*(669*d^7 + 3594*d^
6*e*x + 7725*d^5*e^2*x^2 + 8200*d^4*e^3*x^3 + 4050*d^3*e^4*x^4 + 360*d^2*e^
5*x^5 - 360*d*e^6*x^6 - 60*e^7*x^7)) + 60*c^3*(7*B*d - A*e)*(d + e*x)^6*Log
[d + e*x])/(e^8*(d + e*x)^6)
```

fricas [B] time = 0.76, size = 695, normalized size = 2.17

$$60\,Bc^3e^7x^7 + 360\,Bc^3de^6x^6 - 669\,Bc^3d^7 + 147\,Ac^3d^6e - 30\,Bac^2d^5e^2 - 6\,Aac^2d^4e^3 - 3\,Ba^2cd^3e^4 - 3\,Aa^2cd^2e^5 -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*e^7*x^7 + 360*B*c^3*d*e^6*x^6 - 669*B*c^3*d^7 + 147*A*c^3*d^
6*e - 30*B*a*c^2*d^5*e^2 - 6*A*a*c^2*d^4*e^3 - 3*B*a^2*c*d^3*e^4 - 3*A*a^2*
c*d^2*e^5 - 2*B*a^3*d*e^6 - 10*A*a^3*e^7 - 180*(2*B*c^3*d^2*e^5 - 2*A*c^3*d
*e^6 + B*a*c^2*e^7)*x^5 - 90*(45*B*c^3*d^3*e^4 - 15*A*c^3*d^2*e^5 + 5*B*a*c
^2*d*e^6 + A*a*c^2*e^7)*x^4 - 20*(410*B*c^3*d^4*e^3 - 110*A*c^3*d^3*e^4 + 3
0*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 - 15*(515*B*c^3*d^
5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^2*e^5 + 3*B*a^
2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 - 6*(599*B*c^3*d^6*e - 137*A*c^3*d^5*e^2 + 3
0*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6
 + 2*B*a^3*e^7)*x - 60*(7*B*c^3*d^7 - A*c^3*d^6*e + (7*B*c^3*d*e^6 - A*c^3*
e^7)*x^6 + 6*(7*B*c^3*d^2*e^5 - A*c^3*d*e^6)*x^5 + 15*(7*B*c^3*d^3*e^4 - A*
c^3*d^2*e^5)*x^4 + 20*(7*B*c^3*d^4*e^3 - A*c^3*d^3*e^4)*x^3 + 15*(7*B*c^3*d
^5*e^2 - A*c^3*d^4*e^3)*x^2 + 6*(7*B*c^3*d^6*e - A*c^3*d^5*e^2)*x)*log(e*x
+ d))/(e^14*x^6 + 6*d*e^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4
*e^10*x^2 + 6*d^5*e^9*x + d^6*e^8)
```

giac [A] time = 0.16, size = 426, normalized size = 1.33

$$Bc^3xe^{(-7)} - \left(7\,Bc^3d - Ac^3e\right)e^{(-8)}\log\left(|xe + d|\right) - \frac{\left(669\,Bc^3d^7 - 147\,Ac^3d^6e + 30\,Bac^2d^5e^2 + 6\,Aac^2d^4e^3 + 3\,Ba^2cd^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] B*c^3*x*e^(-7) - (7*B*c^3*d - A*c^3*e)*e^(-8)*log(abs(x*e + d)) - 1/60*(669
*B*c^3*d^7 - 147*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2 + 6*A*a*c^2*d^4*e^3 + 3*B
*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + 180*(7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 +
 B*a*c^2*e^7)*x^5 + 2*B*a^3*d*e^6 + 30*(175*B*c^3*d^3*e^4 - 45*A*c^3*d^2*e^
5 + 15*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 10*A*a^3*e^7 + 20*(455*B*c^3*d^
4*e^3 - 110*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 3*B*a^2*
c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c^2*d^3*e^4
 + 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 + 6*(609*B*c^3*
d^6*e - 137*A*c^3*d^5*e^2 + 30*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 3*B*a^
2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7)*x)*e^(-8)/(x*e + d)^6
```

maple [B] time = 0.06, size = 656, normalized size = 2.05

$$-\frac{A\,a^3}{6\,(ex+d)^6\,e} - \frac{A\,a^2c\,d^2}{2\,(ex+d)^6\,e^3} - \frac{Aa\,c^2d^4}{2\,(ex+d)^6\,e^5} - \frac{A\,c^3d^6}{6\,(ex+d)^6\,e^7} + \frac{B\,a^3d}{6\,(ex+d)^6\,e^2} + \frac{B\,a^2c\,d^3}{2\,(ex+d)^6\,e^4} + \frac{Ba\,c^2d^5}{2\,(ex+d)^6\,e^6} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x)
```

```
[Out] -9/2*c^2/e^5/(e*x+d)^4*A*d^2*a+9/4*c/e^4/(e*x+d)^4*B*a^2*d+6/5/e^3/(e*x+d)^
5*A*a^2*c*d+12/5/e^5/(e*x+d)^5*A*a*c^2*d^3-9/5/e^4/(e*x+d)^5*B*a^2*c*d^2-3/
e^6/(e*x+d)^5*B*a*c^2*d^4+1/2/e^6/(e*x+d)^6*B*d^5*a*c^2-10*c^2/e^6/(e*x+d)^
3*B*d^2*a+4*c^2/e^5/(e*x+d)^3*A*d*a-1/6/e/(e*x+d)^6*A*a^3-1/5/e^2/(e*x+d)^5
*B*a^3+c^3/e^7*ln(e*x+d)*A+15/2*c^2/e^6/(e*x+d)^4*B*d^3*a+15/2*c^2/e^6/(e*x
+d)^2*a*B*d-1/2/e^3/(e*x+d)^6*A*d^2*a^2*c-1/2/e^5/(e*x+d)^6*A*d^4*a*c^2+1/2
/e^4/(e*x+d)^6*B*d^3*a^2*c+35/2*c^3/e^8/(e*x+d)^2*B*d^3-7*c^3/e^8*ln(e*x+d)
*B*d+20/3*c^3/e^7/(e*x+d)^3*A*d^3+6*c^3/e^7/(e*x+d)*A*d-3*c^2/e^6/(e*x+d)*B
*a-c/e^4/(e*x+d)^3*B*a^2-35/3*c^3/e^8/(e*x+d)^3*B*d^4-3/4*c/e^3/(e*x+d)^4*A
*a^2-15/4*c^3/e^7/(e*x+d)^4*A*d^4+21/4*c^3/e^8/(e*x+d)^4*B*d^5-1/6/e^7/(e*x
+d)^6*A*d^6*c^3+1/6/e^2/(e*x+d)^6*B*d*a^3+1/6/e^8/(e*x+d)^6*B*c^3*d^7-21*c^
3/e^8/(e*x+d)*B*d^2-3/2*c^2/e^5/(e*x+d)^2*a*A-15/2*c^3/e^7/(e*x+d)^2*A*d^2+
6/5/e^7/(e*x+d)^5*A*c^3*d^5-7/5/e^8/(e*x+d)^5*B*c^3*d^6+B*c^3*x/e^7
```

maxima [A] time = 0.77, size = 511, normalized size = 1.60

$$-\frac{669\,Bc^3d^7-147\,Ac^3d^6e+30\,Bac^2d^5e^2+6\,Aac^2d^4e^3+3\,Ba^2cd^3e^4+3\,Aa^2cd^2e^5+2\,Ba^3de^6+10\,Aa^3e^7+180\,\Big(7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(669*B*c^3*d^7 - 147*A*c^3*d^6*e + 30*B*a*c^2*d^5*e^2 + 6*A*a*c^2*d^4
*e^3 + 3*B*a^2*c*d^3*e^4 + 3*A*a^2*c*d^2*e^5 + 2*B*a^3*d*e^6 + 10*A*a^3*e^7
 + 180*(7*B*c^3*d^2*e^5 - 2*A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 30*(175*B*c^3*
d^3*e^4 - 45*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 20*(45
5*B*c^3*d^4*e^3 - 110*A*c^3*d^3*e^4 + 30*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6
+ 3*B*a^2*c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 125*A*c^3*d^4*e^3 + 30*B*a*c
^2*d^3*e^4 + 6*A*a*c^2*d^2*e^5 + 3*B*a^2*c*d*e^6 + 3*A*a^2*c*e^7)*x^2 + 6*(
609*B*c^3*d^6*e - 137*A*c^3*d^5*e^2 + 30*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^
4 + 3*B*a^2*c*d^2*e^5 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7)*x)/(e^14*x^6 + 6*d*e
^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 + 6*d^5*e^9*x
 + d^6*e^8) + B*c^3*x/e^7 - (7*B*c^3*d - A*c^3*e)*log(e*x + d)/e^8
```

mupad [B] time = 1.86, size = 505, normalized size = 1.58

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^3\,e-7\,B\,c^3\,d\right)}{e^8}-\frac{\frac{2\,B\,a^3\,d\,e^6+10\,A\,a^3\,e^7+3\,B\,a^2\,c\,d^3\,e^4+3\,A\,a^2\,c\,d^2\,e^5+30\,B\,a\,c^2\,d^5\,e^2+6\,A\,a\,c^2\,d^4\,e^3+669\,B\,c^3\,d^7-147\,A\,c^3\,d^6\,e}{60\,e}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] (log(d + e*x)*(A*c^3*e - 7*B*c^3*d))/e^8 - ((10*A*a^3*e^7 + 669*B*c^3*d^7 +
 2*B*a^3*d*e^6 - 147*A*c^3*d^6*e + 6*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 +
30*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4)/(60*e) + x^2*((3*A*a^2*c*e^6)/4 + (
539*B*c^3*d^5*e)/4 - (125*A*c^3*d^4*e^2)/4 + (3*A*a*c^2*d^2*e^4)/2 + (15*B*
a*c^2*d^3*e^3)/2 + (3*B*a^2*c*d*e^5)/4) + x^3*(B*a^2*c*e^6 - (110*A*c^3*d^3
*e^3)/3 + (455*B*c^3*d^4*e^2)/3 + 10*B*a*c^2*d^2*e^4 + 2*A*a*c^2*d*e^5) + x
^5*(3*B*a*c^2*e^6 - 6*A*c^3*d*e^5 + 21*B*c^3*d^2*e^4) + x*((B*a^3*e^6)/5 +
(609*B*c^3*d^6)/10 - (137*A*c^3*d^5*e)/10 + (3*A*a*c^2*d^3*e^3)/5 + 3*B*a*c
^2*d^4*e^2 + (3*B*a^2*c*d^2*e^4)/10 + (3*A*a^2*c*d*e^5)/10) + x^4*((3*A*a*c
^2*e^6)/2 - (45*A*c^3*d^2*e^4)/2 + (175*B*c^3*d^3*e^3)/2 + (15*B*a*c^2*d*e^
5)/2))/(d^6*e^7 + e^13*x^6 + 6*d^5*e^8*x + 6*d*e^12*x^5 + 15*d^4*e^9*x^2 +
20*d^3*e^10*x^3 + 15*d^2*e^11*x^4) + (B*c^3*x)/e^7
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1326 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^8}\,dx$

Optimal. Leaf size=327

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{4e^8(d+ex)^4}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{2e^8(d+ex)^2}+\frac{c^2(-3aAe^3+15aBde^2}{3e^8(d+}$$

```
[Out] 1/7*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^7-1/6*(a*e^2+c*d^2)^2*(-6*A*c*d*
e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^6+3/5*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*
e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^5+1/4*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B
*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^4+1/3*c^2*(-3*A*a*e^3-1
5*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^3-3/2*c^2*(-2*A*c*d*e+B*a*
e^2+7*B*c*d^2)/e^8/(e*x+d)^2+c^3*(-A*e+7*B*d)/e^8/(e*x+d)+B*c^3*ln(e*x+d)/e
^8
```

Rubi [A] time = 0.30, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{4e^8(d+ex)^4}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{2e^8(d+ex)^2}+\frac{c^2(-3aAe^3+15aBde^2}{3e^8(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(7*e^8*(d + e*x)^7) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(6*e^8*(d + e*x)^6) + (3*c*(c*d^2 + a*e^2)
*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^8*(d + e*x)^5) + (
c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e
^4)))/(4*e^8*(d + e*x)^4) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
- 3*a*A*e^3))/(3*e^8*(d + e*x)^3) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2
))/(2*e^8*(d + e*x)^2) + (c^3*(7*B*d - A*e))/(e^8*(d + e*x)) + (B*c^3*Log[d
 + e*x])/e^8
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^8}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^8}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^7}+\frac{3c(cd^2+ae}{}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{7e^8(d+ex)^7}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{6e^8(d+ex)^6}+\frac{3c\left(cd^2+ae^2\right)(7B}{}$$

Mathematica [A] time = 0.20, size = 366, normalized size = 1.12

$$\frac{-12Ae\left(5a^3e^6+a^2ce^4\left(d^2+7dex+21e^2x^2\right)+ac^2e^2\left(d^4+7d^3ex+21d^2e^2x^2+35de^3x^3+35e^4x^4\right)+5c^3(d^6+7d^5}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] (-12*A*e*(5*a^3*e^6 + a^2*c*e^4*(d^2 + 7*d*e*x + 21*e^2*x^2) + a*c^2*e^2*(d
^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*c^3*(d^6 +
 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^
5 + 7*e^6*x^6)) + B*(-10*a^3*e^6*(d + 7*e*x) - 9*a^2*c*e^4*(d^3 + 7*d^2*e*x
 + 21*d*e^2*x^2 + 35*e^3*x^3) - 30*a*c^2*e^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*
x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + c^3*d*(1089*d^6 + 7203*
d^5*e*x + 20139*d^4*e^2*x^2 + 30625*d^3*e^3*x^3 + 26950*d^2*e^4*x^4 + 13230
*d*e^5*x^5 + 2940*e^6*x^6)) + 420*B*c^3*(d + e*x)^7*Log[d + e*x])/(420*e^8*
(d + e*x)^7)
```

fricas [A] time = 0.55, size = 624, normalized size = 1.91

$$\frac{1089\,Bc^3d^7 - 60\,Ac^3d^6e - 30\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 9\,Ba^2cd^3e^4 - 12\,Aa^2cd^2e^5 - 10\,Ba^3de^6 - 60\,Aa^3e^7 + 42}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 9*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*
e^7 + 420*(7*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*A*c^3
*d*e^6 - B*a*c^2*e^7)*x^5 + 70*(385*B*c^3*d^3*e^4 - 30*A*c^3*d^2*e^5 - 15*B
*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 35*(875*B*c^3*d^4*e^3 - 60*A*c^3*d^3*e^
4 - 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 + 21*(959*B*
c^3*d^5*e^2 - 60*A*c^3*d^4*e^3 - 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 -
9*B*a^2*c*d*e^6 - 12*A*a^2*c*e^7)*x^2 + 7*(1029*B*c^3*d^6*e - 60*A*c^3*d^5*
e^2 - 30*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 9*B*a^2*c*d^2*e^5 - 12*A*a^
2*c*d*e^6 - 10*B*a^3*e^7)*x + 420*(B*c^3*e^7*x^7 + 7*B*c^3*d*e^6*x^6 + 21*B
*c^3*d^2*e^5*x^5 + 35*B*c^3*d^3*e^4*x^4 + 35*B*c^3*d^4*e^3*x^3 + 21*B*c^3*d
^5*e^2*x^2 + 7*B*c^3*d^6*e*x + B*c^3*d^7)*log(e*x + d))/(e^15*x^7 + 7*d*e^1
4*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e^10*x
^2 + 7*d^6*e^9*x + d^7*e^8)
```

giac [A] time = 0.19, size = 431, normalized size = 1.32

$$Bc^3e^{(-8)}\log\left(|xe+d|\right)+\frac{\left(420\left(7\,Bc^3de^5 - Ac^3e^6\right)x^6 + 630\left(21\,Bc^3d^2e^4 - 2\,Ac^3de^5 - Bac^2e^6\right)x^5 + 70\left(385\,Bc^3d^3e^{}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] B*c^3*e^(-8)*log(abs(x*e + d)) + 1/420*(420*(7*B*c^3*d*e^5 - A*c^3*e^6)*x^6
 + 630*(21*B*c^3*d^2*e^4 - 2*A*c^3*d*e^5 - B*a*c^2*e^6)*x^5 + 70*(385*B*c^3
*d^3*e^3 - 30*A*c^3*d^2*e^4 - 15*B*a*c^2*d*e^5 - 6*A*a*c^2*e^6)*x^4 + 35*(8
75*B*c^3*d^4*e^2 - 60*A*c^3*d^3*e^3 - 30*B*a*c^2*d^2*e^4 - 12*A*a*c^2*d*e^5
 - 9*B*a^2*c*e^6)*x^3 + 21*(959*B*c^3*d^5*e - 60*A*c^3*d^4*e^2 - 30*B*a*c^2
*d^3*e^3 - 12*A*a*c^2*d^2*e^4 - 9*B*a^2*c*d*e^5 - 12*A*a^2*c*e^6)*x^2 + 7*(
1029*B*c^3*d^6 - 60*A*c^3*d^5*e - 30*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 -
 9*B*a^2*c*d^2*e^4 - 12*A*a^2*c*d*e^5 - 10*B*a^3*e^6)*x + (1089*B*c^3*d^7 -
 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^4*e^3 - 9*B*a^2*c*d^3*e
^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*e^7)*e^(-1))*e^(-7)/(x*
e + d)^7
```

maple [B] time = 0.06, size = 662, normalized size = 2.02

$$-\frac{A\,a^3}{7\left(ex+d\right)^7e}-\frac{3A\,a^2c\,d^2}{7\left(ex+d\right)^7e^3}-\frac{3Aa\,c^2d^4}{7\left(ex+d\right)^7e^5}-\frac{A\,c^3d^6}{7\left(ex+d\right)^7e^7}+\frac{B\,a^3d}{7\left(ex+d\right)^7e^2}+\frac{3B\,a^2c\,d^3}{7\left(ex+d\right)^7e^4}+\frac{3Ba\,c^2d^5}{7\left(ex+d\right)^7e^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x)
```

```
[Out] 9/5*c/e^4/(e*x+d)^5*B*a^2*d-18/5*c^2/e^5/(e*x+d)^5*A*d^2*a+3*c^2/e^5/(e*x+d
)^4*A*d*a+6*c^2/e^6/(e*x+d)^5*B*d^3*a+5*c^2/e^6/(e*x+d)^3*a*B*d-15/2*c^2/e^
6/(e*x+d)^4*B*d^2*a-3/2/e^4/(e*x+d)^6*B*d^2*a^2*c-5/2/e^6/(e*x+d)^6*B*d^4*a
*c^2-3/7/e^3/(e*x+d)^7*A*d^2*a^2*c-3/7/e^5/(e*x+d)^7*A*a*c^2*d^4+1/e^3/(e*x
+d)^6*A*d*a^2*c+2/e^5/(e*x+d)^6*A*d^3*a*c^2+3/7/e^6/(e*x+d)^7*B*d^5*a*c^2+5
*c^3/e^7/(e*x+d)^4*A*d^3-1/6/e^2/(e*x+d)^6*B*a^3-1/7/e/(e*x+d)^7*A*a^3-c^3/
e^7/(e*x+d)*A-1/7/e^7/(e*x+d)^7*A*d^6*c^3+1/7/e^2/(e*x+d)^7*B*d*a^3+1/7/e^8
/(e*x+d)^7*B*c^3*d^7+1/e^7/(e*x+d)^6*A*c^3*d^5+3*c^3/e^7/(e*x+d)^2*A*d-7/6/
e^8/(e*x+d)^6*B*d^6*c^3-3/5*c/e^3/(e*x+d)^5*A*a^2-3*c^3/e^7/(e*x+d)^5*A*d^4
+21/5*c^3/e^8/(e*x+d)^5*B*d^5+3/7/e^4/(e*x+d)^7*B*d^3*a^2*c-c^2/e^5/(e*x+d)
^3*a*A-5*c^3/e^7/(e*x+d)^3*A*d^2+35/3*c^3/e^8/(e*x+d)^3*B*d^3+7*c^3/e^8/(e*
x+d)*B*d-3/4*c/e^4/(e*x+d)^4*B*a^2-35/4*c^3/e^8/(e*x+d)^4*B*d^4-21/2*c^3/e^
8/(e*x+d)^2*B*d^2-3/2*c^2/e^6/(e*x+d)^2*B*a+B*c^3*ln(e*x+d)/e^8
```

maxima [A] time = 0.68, size = 527, normalized size = 1.61

$$\frac{1089\,Bc^3d^7 - 60\,Ac^3d^6e - 30\,Bac^2d^5e^2 - 12\,Aac^2d^4e^3 - 9\,Ba^2cd^3e^4 - 12\,Aa^2cd^2e^5 - 10\,Ba^3de^6 - 60\,Aa^3e^7 + 420\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*c^3*d^6*e - 30*B*a*c^2*d^5*e^2 - 12*A*a*c^2*d^
4*e^3 - 9*B*a^2*c*d^3*e^4 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 60*A*a^3*
e^7 + 420*(7*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*A*c^3
*d*e^6 - B*a*c^2*e^7)*x^5 + 70*(385*B*c^3*d^3*e^4 - 30*A*c^3*d^2*e^5 - 15*B
*a*c^2*d*e^6 - 6*A*a*c^2*e^7)*x^4 + 35*(875*B*c^3*d^4*e^3 - 60*A*c^3*d^3*e^
4 - 30*B*a*c^2*d^2*e^5 - 12*A*a*c^2*d*e^6 - 9*B*a^2*c*e^7)*x^3 + 21*(959*B*
c^3*d^5*e^2 - 60*A*c^3*d^4*e^3 - 30*B*a*c^2*d^3*e^4 - 12*A*a*c^2*d^2*e^5 -
9*B*a^2*c*d*e^6 - 12*A*a^2*c*e^7)*x^2 + 7*(1029*B*c^3*d^6*e - 60*A*c^3*d^5*
e^2 - 30*B*a*c^2*d^4*e^3 - 12*A*a*c^2*d^3*e^4 - 9*B*a^2*c*d^2*e^5 - 12*A*a^
2*c*d*e^6 - 10*B*a^3*e^7)*x)/(e^15*x^7 + 7*d*e^14*x^6 + 21*d^2*e^13*x^5 + 3
5*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e^10*x^2 + 7*d^6*e^9*x + d^7*e^8)
 + B*c^3*log(e*x + d)/e^8
```

mupad [B] time = 1.81, size = 448, normalized size = 1.37

$$\frac{B\,c^3\,\ln\left(d+e\,x\right)}{e^8}-\frac{x^3\,\left(\frac{3\,B\,a^2\,c\,e^7}{4}+\frac{5\,B\,a\,c^2\,d^2\,e^5}{2}+A\,a\,c^2\,d\,e^6-\frac{875\,B\,c^3\,d^4\,e^3}{12}+5\,A\,c^3\,d^3\,e^4\right)+x^6\,\left(A\,c^3\,e^7-7\,B\,c^3\,d\,e^6\right)+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^8,x)
```

```
[Out] (B*c^3*log(d + e*x))/e^8 - (x^3*((3*B*a^2*c*e^7)/4 + 5*A*c^3*d^3*e^4 - (875
*B*c^3*d^4*e^3)/12 + (5*B*a*c^2*d^2*e^5)/2 + A*a*c^2*d*e^6) + x^6*(A*c^3*e^
7 - 7*B*c^3*d*e^6) + x^2*((3*A*a^2*c*e^7)/5 + 3*A*c^3*d^4*e^3 - (959*B*c^3*
d^5*e^2)/20 + (3*A*a*c^2*d^2*e^5)/5 + (3*B*a*c^2*d^3*e^4)/2 + (9*B*a^2*c*d*
e^6)/20) + x^5*((3*B*a*c^2*e^7)/2 + 3*A*c^3*d*e^6 - (63*B*c^3*d^2*e^5)/2) +
 x*((B*a^3*e^7)/6 - (343*B*c^3*d^6*e)/20 + A*c^3*d^5*e^2 + (A*a*c^2*d^3*e^4
)/5 + (B*a*c^2*d^4*e^3)/2 + (3*B*a^2*c*d^2*e^5)/20 + (A*a^2*c*d*e^6)/5) + x
^4*(A*a*c^2*e^7 + 5*A*c^3*d^2*e^5 - (385*B*c^3*d^3*e^4)/6 + (5*B*a*c^2*d*e^
6)/2) + (A*a^3*e^7)/7 - (363*B*c^3*d^7)/140 + (B*a^3*d*e^6)/42 + (A*c^3*d^6
*e)/7 + (A*a*c^2*d^4*e^3)/35 + (A*a^2*c*d^2*e^5)/35 + (B*a*c^2*d^5*e^2)/14
+ (3*B*a^2*c*d^3*e^4)/140)/(e^8*(d + e*x)^7)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1327 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9} \, dx$

Optimal. Leaf size=330

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8(d+ex)^5}-\frac{c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)^3}+\frac{c^2\left(-3aAe^3+15aBde^2-\right.}{4e^8(d+}$$

```
[Out] 1/8*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^8-1/7*(a*e^2+c*d^2)^2*(-6*A*c*d*
e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^7+1/2*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*
e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^6+1/5*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B
*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^5+1/4*c^2*(-3*A*a*e^3-1
5*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^4-c^2*(-2*A*c*d*e+B*a*e^2+
7*B*c*d^2)/e^8/(e*x+d)^3+1/2*c^3*(-A*e+7*B*d)/e^8/(e*x+d)^2-B*c^3/e^8/(e*x+
d)
```

Rubi [**A**] time = 0.27, antiderivative size = 330, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8(d+ex)^5}-\frac{c^2\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(d+ex)^3}+\frac{c^2\left(-3aAe^3+15aBde^2-\right.}{4e^8(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(8*e^8*(d + e*x)^8) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(7*e^8*(d + e*x)^7) + (c*(c*d^2 + a*e^2)*(
7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(2*e^8*(d + e*x)^6) + (c*
(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4
)))/(5*e^8*(d + e*x)^5) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 -
3*a*A*e^3))/(4*e^8*(d + e*x)^4) - (c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(
e^8*(d + e*x)^3) + (c^3*(7*B*d - A*e))/(2*e^8*(d + e*x)^2) - (B*c^3)/(e^8*(
d + e*x))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^9} \, dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^9}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^8}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{8e^8(d+ex)^8}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{7e^8(d+ex)^7}+\frac{c\left(cd^2+ae^2\right)\left(7Bc\right.}{}\end{aligned}$$

Mathematica [**A**] time = 0.17, size = 357, normalized size = 1.08

$$-\frac{Ae\left(35a^3e^6+5a^2ce^4\left(d^2+8dex+28e^2x^2\right)+3ac^2e^2\left(d^4+8d^3ex+28d^2e^2x^2+56de^3x^3+70e^4x^4\right)+5c^3\left(d^6+8d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] -1/280*(A*e*(35*a^3*e^6 + 5*a^2*c*e^4*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*a*c^
2*e^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*c^
3*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*
d*e^5*x^5 + 28*e^6*x^6)) + B*(5*a^3*e^6*(d + 8*e*x) + 3*a^2*c*e^4*(d^3 + 8*
d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + 5*a*c^2*e^2*(d^5 + 8*d^4*e*x + 28*d^
3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + 35*c^3*(d^7 + 8*d
^6*e*x + 28*d^5*e^2*x^2 + 56*d^4*e^3*x^3 + 70*d^3*e^4*x^4 + 56*d^2*e^5*x^5
+ 28*d*e^6*x^6 + 8*e^7*x^7)))/(e^8*(d + e*x)^8)
```

fricas **[A]** time = 0.76, size = 532, normalized size = 1.61

$$-\frac{280\,Bc^3e^7x^7 + 35\,Bc^3d^7 + 5\,Ac^3d^6e + 5\,Bac^2d^5e^2 + 3\,Aac^2d^4e^3 + 3\,Ba^2cd^3e^4 + 5\,Aa^2cd^2e^5 + 5\,Ba^3de^6 + 35\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 5*A*c^3*d^6*e + 5*B*a*c^2*d^5*e^
2 + 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + 5*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e
^6 + 35*A*a^3*e^7 + 140*(7*B*c^3*d*e^6 + A*c^3*e^7)*x^6 + 280*(7*B*c^3*d^2*
e^5 + A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 70*(35*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e
^5 + 5*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 56*(35*B*c^3*d^4*e^3 + 5*A*c^3*
d^3*e^4 + 5*B*a*c^2*d^2*e^5 + 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 28*(35
*B*c^3*d^5*e^2 + 5*A*c^3*d^4*e^3 + 5*B*a*c^2*d^3*e^4 + 3*A*a*c^2*d^2*e^5 +
3*B*a^2*c*d*e^6 + 5*A*a^2*c*e^7)*x^2 + 8*(35*B*c^3*d^6*e + 5*A*c^3*d^5*e^2
+ 5*B*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 5*A*a^2*c*d*e
^6 + 5*B*a^3*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^14*x^6 + 56*d^3*e^
13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*x^2 + 8*d^7*e^9*x
+ d^8*e^8)
```

giac **[A]** time = 0.19, size = 457, normalized size = 1.38

$$-\frac{\left(280\,Bc^3x^7e^7 + 980\,Bc^3dx^6e^6 + 1960\,Bc^3d^2x^5e^5 + 2450\,Bc^3d^3x^4e^4 + 1960\,Bc^3d^4x^3e^3 + 980\,Bc^3d^5x^2e^2 + 280\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7*e^7 + 980*B*c^3*d*x^6*e^6 + 1960*B*c^3*d^2*x^5*e^5 +
2450*B*c^3*d^3*x^4*e^4 + 1960*B*c^3*d^4*x^3*e^3 + 980*B*c^3*d^5*x^2*e^2 + 2
80*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 140*A*c^3*x^6*e^7 + 280*A*c^3*d*x^5*e^6 +
 350*A*c^3*d^2*x^4*e^5 + 280*A*c^3*d^3*x^3*e^4 + 140*A*c^3*d^4*x^2*e^3 + 40
*A*c^3*d^5*x*e^2 + 5*A*c^3*d^6*e + 280*B*a*c^2*x^5*e^7 + 350*B*a*c^2*d*x^4*
e^6 + 280*B*a*c^2*d^2*x^3*e^5 + 140*B*a*c^2*d^3*x^2*e^4 + 40*B*a*c^2*d^4*x*
e^3 + 5*B*a*c^2*d^5*e^2 + 210*A*a*c^2*x^4*e^7 + 168*A*a*c^2*d*x^3*e^6 + 84*
A*a*c^2*d^2*x^2*e^5 + 24*A*a*c^2*d^3*x*e^4 + 3*A*a*c^2*d^4*e^3 + 168*B*a^2*
c*x^3*e^7 + 84*B*a^2*c*d*x^2*e^6 + 24*B*a^2*c*d^2*x*e^5 + 3*B*a^2*c*d^3*e^4
 + 140*A*a^2*c*x^2*e^7 + 40*A*a^2*c*d*x*e^6 + 5*A*a^2*c*d^2*e^5 + 40*B*a^3*
x*e^7 + 5*B*a^3*d*e^6 + 35*A*a^3*e^7)*e^(-8)/(x*e + d)^8
```

maple **[A]** time = 0.05, size = 448, normalized size = 1.36

$$-\frac{B\,c^3}{(ex+d)\,e^8}-\frac{(Ae-7Bd)\,c^3}{2\,(ex+d)^2\,e^8}-\frac{\left(3aA\,e^3+15Ac\,d^2e-15aBd\,e^2-35Bc\,d^3\right)c^2}{4\,(ex+d)^4\,e^8}+\frac{\left(2Acde-Ba\,e^2-7Bc\,d^2\right)c^2}{(ex+d)^3\,e^8}-\frac{\left(A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x)
```

```
[Out] -B*c^3/e^8/(e*x+d)-1/4*c^2*(3*A*a*e^3+15*A*c*d^2*e-15*B*a*d*e^2-35*B*c*d^3)
/e^8/(e*x+d)^4-1/2*c^3*(A*e-7*B*d)/e^8/(e*x+d)^2+c^2*(2*A*c*d*e-B*a*e^2-7*B
*c*d^2)/e^8/(e*x+d)^3-1/8*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*
c^3*d^6*e-B*a^3*d*e^6-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e
*x+d)^8-1/7*(-6*A*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*e+B*a^3*e^6+9*
B*a^2*c*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^7-1/2*c*(A*a^2*
e^5+6*A*a*c*d^2*e^3+5*A*c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*e^2-7*B*c^2*d^
5)/e^8/(e*x+d)^6+1/5*c*(12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2*e^4-30*B*a*c*
d^2*e^2-35*B*c^2*d^4)/e^8/(e*x+d)^5
```

maxima [A] time = 0.66, size = 532, normalized size = 1.61

$$-\frac{280\,Bc^{3}e^{7}x^{7} + 35\,Bc^{3}d^{7} + 5\,Ac^{3}d^{6}e + 5\,Bac^{2}d^{5}e^{2} + 3\,Aac^{2}d^{4}e^{3} + 3\,Ba^{2}cd^{3}e^{4} + 5\,Aa^{2}cd^{2}e^{5} + 5\,Ba^{3}de^{6} + 35\,Aa^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 5*A*c^3*d^6*e + 5*B*a*c^2*d^5*e^
2 + 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 + 5*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e
^6 + 35*A*a^3*e^7 + 140*(7*B*c^3*d*e^6 + A*c^3*e^7)*x^6 + 280*(7*B*c^3*d^2*
e^5 + A*c^3*d*e^6 + B*a*c^2*e^7)*x^5 + 70*(35*B*c^3*d^3*e^4 + 5*A*c^3*d^2*e
^5 + 5*B*a*c^2*d*e^6 + 3*A*a*c^2*e^7)*x^4 + 56*(35*B*c^3*d^4*e^3 + 5*A*c^3*
d^3*e^4 + 5*B*a*c^2*d^2*e^5 + 3*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x^3 + 28*(35
*B*c^3*d^5*e^2 + 5*A*c^3*d^4*e^3 + 5*B*a*c^2*d^3*e^4 + 3*A*a*c^2*d^2*e^5 +
3*B*a^2*c*d*e^6 + 5*A*a^2*c*e^7)*x^2 + 8*(35*B*c^3*d^6*e + 5*A*c^3*d^5*e^2
+ 5*B*a*c^2*d^4*e^3 + 3*A*a*c^2*d^3*e^4 + 3*B*a^2*c*d^2*e^5 + 5*A*a^2*c*d*e
^6 + 5*B*a^3*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^14*x^6 + 56*d^3*e^
13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*x^2 + 8*d^7*e^9*x
+ d^8*e^8)
```

mupad [B] time = 0.16, size = 570, normalized size = 1.73

$$-\frac{5\,B\,a^{3}\,d\,e^{6} + 40\,B\,a^{3}\,e^{7}\,x + 35\,A\,a^{3}\,e^{7} + 3\,B\,a^{2}\,c\,d^{3}\,e^{4} + 24\,B\,a^{2}\,c\,d^{2}\,e^{5}\,x + 5\,A\,a^{2}\,c\,d^{2}\,e^{5} + 84\,B\,a^{2}\,c\,d\,e^{6}\,x^{2} + 40\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^9,x)
```

```
[Out] -(35*A*a^3*e^7 + 35*B*c^3*d^7 + 5*B*a^3*d*e^6 + 5*A*c^3*d^6*e + 40*B*a^3*e^
7*x + 140*A*c^3*e^7*x^6 + 280*B*c^3*e^7*x^7 + 280*B*c^3*d^6*e*x + 3*A*a*c^2
*d^4*e^3 + 5*A*a^2*c*d^2*e^5 + 5*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 140*
A*a^2*c*e^7*x^2 + 210*A*a*c^2*e^7*x^4 + 168*B*a^2*c*e^7*x^3 + 280*B*a*c^2*e
^7*x^5 + 40*A*c^3*d^5*e^2*x + 280*A*c^3*d*e^6*x^5 + 980*B*c^3*d*e^6*x^6 + 1
40*A*c^3*d^4*e^3*x^2 + 280*A*c^3*d^3*e^4*x^3 + 350*A*c^3*d^2*e^5*x^4 + 980*
B*c^3*d^5*e^2*x^2 + 1960*B*c^3*d^4*e^3*x^3 + 2450*B*c^3*d^3*e^4*x^4 + 1960*
B*c^3*d^2*e^5*x^5 + 84*A*a*c^2*d^2*e^5*x^2 + 140*B*a*c^2*d^3*e^4*x^2 + 280*
B*a*c^2*d^2*e^5*x^3 + 40*A*a^2*c*d*e^6*x + 24*A*a*c^2*d^3*e^4*x + 168*A*a*c
^2*d*e^6*x^3 + 40*B*a*c^2*d^4*e^3*x + 24*B*a^2*c*d^2*e^5*x + 84*B*a^2*c*d*e
^6*x^2 + 350*B*a*c^2*d*e^6*x^4)/(280*d^8*e^8 + 280*e^16*x^8 + 2240*d^7*e^9*
x + 2240*d*e^15*x^7 + 7840*d^6*e^10*x^2 + 15680*d^5*e^11*x^3 + 19600*d^4*e^
12*x^4 + 15680*d^3*e^13*x^5 + 7840*d^2*e^14*x^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1328 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=334

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8(d+ex)^6}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{4e^8(d+ex)^4}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{5e^8(d+}$$

```
[Out] 1/9*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^9-1/8*(a*e^2+c*d^2)^2*(-6*A*c*d*
e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^8+3/7*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*
e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^7+1/6*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B
*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^6+1/5*c^2*(-3*A*a*e^3-1
5*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^5-3/4*c^2*(-2*A*c*d*e+B*a*
e^2+7*B*c*d^2)/e^8/(e*x+d)^4+1/3*c^3*(-A*e+7*B*d)/e^8/(e*x+d)^3-1/2*B*c^3/e
^8/(e*x+d)^2
```

Rubi [A] time = 0.26, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{6e^8(d+ex)^6}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{4e^8(d+ex)^4}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{5e^8(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(9*e^8*(d + e*x)^9) - ((c*d^2 + a*e^2)^2*(7
*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(8*e^8*(d + e*x)^8) + (3*c*(c*d^2 + a*e^2)
*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(7*e^8*(d + e*x)^7) + (
c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e
^4)))/(6*e^8*(d + e*x)^6) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2
- 3*a*A*e^3))/(5*e^8*(d + e*x)^5) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2
))/(4*e^8*(d + e*x)^4) + (c^3*(7*B*d - A*e))/(3*e^8*(d + e*x)^3) - (B*c^3)/
(2*e^8*(d + e*x)^2)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{10}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{10}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^9}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{9e^8(d+ex)^9}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{8e^8(d+ex)^8}+\frac{3c\left(cd^2+ae^2\right)(7B}{}\end{aligned}$$

Mathematica [A] time = 0.18, size = 359, normalized size = 1.07

$$-\frac{2Ae\left(140a^3e^6+15a^2ce^4\left(d^2+9dex+36e^2x^2\right)+6ac^2e^2\left(d^4+9d^3ex+36d^2e^2x^2+84de^3x^3+126e^4x^4\right)+5c^3\left(d^6\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(2*A*e*(140*a^3*e^6 + 15*a^2*c*e^4*(d^2 + 9*d*e*x + 36*e^2*x^2) + 6
*a*c^2*e^2*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)
+ 5*c^3*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^
4 + 126*d*e^5*x^5 + 84*e^6*x^6)) + 5*B*(7*a^3*e^6*(d + 9*e*x) + 3*a^2*c*e^4
*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 3*a*c^2*e^2*(d^5 + 9*d^4*e
*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + 7*c^3
*(d^7 + 9*d^6*e*x + 36*d^5*e^2*x^2 + 84*d^4*e^3*x^3 + 126*d^3*e^4*x^4 + 126
*d^2*e^5*x^5 + 84*d*e^6*x^6 + 36*e^7*x^7)))/(e^8*(d + e*x)^9)
```

fricas [**A**]   time = 0.65, size = 546, normalized size = 1.63

$$-\frac{1260\,Bc^3e^7x^7 + 35\,Bc^3d^7 + 10\,Ac^3d^6e + 15\,Bac^2d^5e^2 + 12\,Aac^2d^4e^3 + 15\,Ba^2cd^3e^4 + 30\,Aa^2cd^2e^5 + 35\,Ba^3de}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 10*A*c^3*d^6*e + 15*B*a*c^2*d^
5*e^2 + 12*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 + 30*A*a^2*c*d^2*e^5 + 35*B
*a^3*d*e^6 + 280*A*a^3*e^7 + 420*(7*B*c^3*d*e^6 + 2*A*c^3*e^7)*x^6 + 630*(7
*B*c^3*d^2*e^5 + 2*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4
 + 10*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 12*A*a*c^2*e^7)*x^4 + 84*(35*B*c^3
*d^4*e^3 + 10*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 + 12*A*a*c^2*d*e^6 + 15*B*
a^2*c*e^7)*x^3 + 36*(35*B*c^3*d^5*e^2 + 10*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e
^4 + 12*A*a*c^2*d^2*e^5 + 15*B*a^2*c*d*e^6 + 30*A*a^2*c*e^7)*x^2 + 9*(35*B*
c^3*d^6*e + 10*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 + 12*A*a*c^2*d^3*e^4 + 15
*B*a^2*c*d^2*e^5 + 30*A*a^2*c*d*e^6 + 35*B*a^3*e^7)*x)/(e^17*x^9 + 9*d*e^16
*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d^4*e^13*x^5 + 126*d^5*e^12*
x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*e^9*x + d^9*e^8)
```

giac [**A**]   time = 0.20, size = 457, normalized size = 1.37

$$-\frac{\left(1260\,Bc^3x^7e^7 + 2940\,Bc^3dx^6e^6 + 4410\,Bc^3d^2x^5e^5 + 4410\,Bc^3d^3x^4e^4 + 2940\,Bc^3d^4x^3e^3 + 1260\,Bc^3d^5x^2e^2 + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7*e^7 + 2940*B*c^3*d*x^6*e^6 + 4410*B*c^3*d^2*x^5*e^5
 + 4410*B*c^3*d^3*x^4*e^4 + 2940*B*c^3*d^4*x^3*e^3 + 1260*B*c^3*d^5*x^2*e^2
 + 315*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 840*A*c^3*x^6*e^7 + 1260*A*c^3*d*x^5*
e^6 + 1260*A*c^3*d^2*x^4*e^5 + 840*A*c^3*d^3*x^3*e^4 + 360*A*c^3*d^4*x^2*e^
3 + 90*A*c^3*d^5*x*e^2 + 10*A*c^3*d^6*e + 1890*B*a*c^2*x^5*e^7 + 1890*B*a*c
^2*d*x^4*e^6 + 1260*B*a*c^2*d^2*x^3*e^5 + 540*B*a*c^2*d^3*x^2*e^4 + 135*B*a
*c^2*d^4*x*e^3 + 15*B*a*c^2*d^5*e^2 + 1512*A*a*c^2*x^4*e^7 + 1008*A*a*c^2*d
*x^3*e^6 + 432*A*a*c^2*d^2*x^2*e^5 + 108*A*a*c^2*d^3*x*e^4 + 12*A*a*c^2*d^4
*e^3 + 1260*B*a^2*c*x^3*e^7 + 540*B*a^2*c*d*x^2*e^6 + 135*B*a^2*c*d^2*x*e^5
 + 15*B*a^2*c*d^3*e^4 + 1080*A*a^2*c*x^2*e^7 + 270*A*a^2*c*d*x*e^6 + 30*A*a
^2*c*d^2*e^5 + 315*B*a^3*x*e^7 + 35*B*a^3*d*e^6 + 280*A*a^3*e^7)*e^(-8)/(x*
e + d)^9
```

maple [**A**]   time = 0.05, size = 449, normalized size = 1.34

$$-\frac{B\,c^3}{2\,(ex+d)^2\,e^8}-\frac{(Ae-7Bd)\,c^3}{3\,(ex+d)^3\,e^8}+\frac{3\left(2Acde-Ba\,e^2-7Bc\,d^2\right)c^2}{4\,(ex+d)^4\,e^8}-\frac{\left(3aA\,e^3+15Ac\,d^2e-15aBd\,e^2-35Bc\,d^3\right)c^2}{5\,(ex+d)^5\,e^8}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x)
```

```
[Out] -1/9*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*c^3*d^6*e-B*a^3*d*e^6
-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e*x+d)^9+3/4*c^2*(2*A*
c*d*e-B*a*e^2-7*B*c*d^2)/e^8/(e*x+d)^4-1/2*B*c^3/e^8/(e*x+d)^2-1/3*c^3*(A*e
-7*B*d)/e^8/(e*x+d)^3-1/8*(-6*A*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*
e+B*a^3*e^6+9*B*a^2*c*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^8
-3/7*c*(A*a^2*e^5+6*A*a*c*d^2*e^3+5*A*c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*
e^2-7*B*c^2*d^5)/e^8/(e*x+d)^7+1/6*c*(12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2
*e^4-30*B*a*c*d^2*e^2-35*B*c^2*d^4)/e^8/(e*x+d)^6-1/5*c^2*(3*A*a*e^3+15*A*c
*d^2*e-15*B*a*d*e^2-35*B*c*d^3)/e^8/(e*x+d)^5
```

maxima [A] time = 0.60, size = 546, normalized size = 1.63

$$-\frac{1260\,Bc^3e^7x^7 + 35\,Bc^3d^7 + 10\,Ac^3d^6e + 15\,Bac^2d^5e^2 + 12\,Aac^2d^4e^3 + 15\,Ba^2cd^3e^4 + 30\,Aa^2cd^2e^5 + 35\,Ba^3de^6 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 10*A*c^3*d^6*e + 15*B*a*c^2*d^
5*e^2 + 12*A*a*c^2*d^4*e^3 + 15*B*a^2*c*d^3*e^4 + 30*A*a^2*c*d^2*e^5 + 35*B
*a^3*d*e^6 + 280*A*a^3*e^7 + 420*(7*B*c^3*d*e^6 + 2*A*c^3*e^7)*x^6 + 630*(7
*B*c^3*d^2*e^5 + 2*A*c^3*d*e^6 + 3*B*a*c^2*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4
 + 10*A*c^3*d^2*e^5 + 15*B*a*c^2*d*e^6 + 12*A*a*c^2*e^7)*x^4 + 84*(35*B*c^3
*d^4*e^3 + 10*A*c^3*d^3*e^4 + 15*B*a*c^2*d^2*e^5 + 12*A*a*c^2*d*e^6 + 15*B*
a^2*c*e^7)*x^3 + 36*(35*B*c^3*d^5*e^2 + 10*A*c^3*d^4*e^3 + 15*B*a*c^2*d^3*e
^4 + 12*A*a*c^2*d^2*e^5 + 15*B*a^2*c*d*e^6 + 30*A*a^2*c*e^7)*x^2 + 9*(35*B*
c^3*d^6*e + 10*A*c^3*d^5*e^2 + 15*B*a*c^2*d^4*e^3 + 12*A*a*c^2*d^3*e^4 + 15
*B*a^2*c*d^2*e^5 + 30*A*a^2*c*d*e^6 + 35*B*a^3*e^7)*x)/(e^17*x^9 + 9*d*e^16
*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d^4*e^13*x^5 + 126*d^5*e^12*
x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*e^9*x + d^9*e^8)
```

mupad [B] time = 1.80, size = 513, normalized size = 1.54

$$-\frac{\frac{35\,B\,a^3\,d\,e^6+280\,A\,a^3\,e^7+15\,B\,a^2\,c\,d^3\,e^4+30\,A\,a^2\,c\,d^2\,e^5+15\,B\,a\,c^2\,d^5\,e^2+12\,A\,a\,c^2\,d^4\,e^3+35\,B\,c^3\,d^7+10\,A\,c^3\,d^6\,e}{2520\,e^8}+\frac{x\left(35\,B\,a^3\,e^6+15\,B\,a^2\,c\,d^2\,e^4+30\,A}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^3*e^7 + 35*B*c^3*d^7 + 35*B*a^3*d*e^6 + 10*A*c^3*d^6*e + 12*A*a*
c^2*d^4*e^3 + 30*A*a^2*c*d^2*e^5 + 15*B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4)
/(2520*e^8) + (x*(35*B*a^3*e^6 + 35*B*c^3*d^6 + 10*A*c^3*d^5*e + 12*A*a*c^2
*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 15*B*a^2*c*d^2*e^4 + 30*A*a^2*c*d*e^5))/(28
0*e^7) + (c^2*x^4*(12*A*a*e^3 + 35*B*c*d^3 + 15*B*a*d*e^2 + 10*A*c*d^2*e))/
(20*e^4) + (c*x^3*(15*B*a^2*e^4 + 35*B*c^2*d^4 + 10*A*c^2*d^3*e + 12*A*a*c*
d*e^3 + 15*B*a*c*d^2*e^2))/(30*e^5) + (c^3*x^6*(2*A*e + 7*B*d))/(6*e^2) + (
c^2*x^5*(3*B*a*e^2 + 7*B*c*d^2 + 2*A*c*d*e))/(4*e^3) + (c*x^2*(30*A*a^2*e^5
 + 35*B*c^2*d^5 + 15*B*a^2*d*e^4 + 10*A*c^2*d^4*e + 12*A*a*c*d^2*e^3 + 15*B
*a*c*d^3*e^2))/(70*e^6) + (B*c^3*x^7)/(2*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 +
 36*d^7*e^2*x^2 + 84*d^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d
^3*e^6*x^6 + 36*d^2*e^7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1329 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=334

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8(d+ex)^7}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8(d+ex)^5}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{6e^8(d+}$$

```
[Out] 1/10*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^10-1/9*(a*e^2+c*d^2)^2*(-6*A*c*
d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^9+3/8*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^
2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^8+1/7*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)
-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^7+1/6*c^2*(-3*A*a*e^3
-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^6-3/5*c^2*(-2*A*c*d*e+B*
a*e^2+7*B*c*d^2)/e^8/(e*x+d)^5+1/4*c^3*(-A*e+7*B*d)/e^8/(e*x+d)^4-1/3*B*c^3
/e^8/(e*x+d)^3
```

Rubi [A] time = 0.26, antiderivative size = 334, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8(d+ex)^7}-\frac{3c^2\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8(d+ex)^5}+\frac{c^2\left(-3aAe^3+15aBde^2\right.}{6e^8(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 + a*e^2)^3)/(10*e^8*(d + e*x)^10) - ((c*d^2 + a*e^2)^2*
(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(9*e^8*(d + e*x)^9) + (3*c*(c*d^2 + a*e^
2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(8*e^8*(d + e*x)^8) +
 (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2
*e^4)))/(7*e^8*(d + e*x)^7) + (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^
2 - 3*a*A*e^3))/(6*e^8*(d + e*x)^6) - (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e
^2))/(5*e^8*(d + e*x)^5) + (c^3*(7*B*d - A*e))/(4*e^8*(d + e*x)^4) - (B*c^3
)/(3*e^8*(d + e*x)^3)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{11}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{10}}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{(Bd-Ae)\left(cd^2+ae^2\right)^3}{10e^8(d+ex)^{10}}-\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{9e^8(d+ex)^9}+\frac{3c\left(cd^2+ae^2\right)(7B}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 357, normalized size = 1.07

$$-\frac{3Ae\left(84a^3e^6+7a^2ce^4\left(d^2+10dex+45e^2x^2\right)+2ac^2e^2\left(d^4+10d^3ex+45d^2e^2x^2+120de^3x^3+210e^4x^4\right)+c^3\left(d^6\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] -1/2520*(3*A*e*(84*a^3*e^6 + 7*a^2*c*e^4*(d^2 + 10*d*e*x + 45*e^2*x^2) + 2*
a*c^2*e^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)
 + c^3*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x
^4 + 252*d*e^5*x^5 + 210*e^6*x^6)) + B*(28*a^3*e^6*(d + 10*e*x) + 9*a^2*c*e
^4*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 6*a*c^2*e^2*(d^5 + 10*
d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) +
 7*c^3*(d^7 + 10*d^6*e*x + 45*d^5*e^2*x^2 + 120*d^4*e^3*x^3 + 210*d^3*e^4*x
^4 + 252*d^2*e^5*x^5 + 210*d*e^6*x^6 + 120*e^7*x^7)))/(e^8*(d + e*x)^10)
```

fricas [A] time = 0.52, size = 557, normalized size = 1.67

$$-\frac{840\,Bc^3e^7x^7 + 7\,Bc^3d^7 + 3\,Ac^3d^6e + 6\,Bac^2d^5e^2 + 6\,Aac^2d^4e^3 + 9\,Ba^2cd^3e^4 + 21\,Aa^2cd^2e^5 + 28\,Ba^3de^6 + 252}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 3*A*c^3*d^6*e + 6*B*a*c^2*d^5*e^
2 + 6*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 + 21*A*a^2*c*d^2*e^5 + 28*B*a^3*d
*e^6 + 252*A*a^3*e^7 + 210*(7*B*c^3*d*e^6 + 3*A*c^3*e^7)*x^6 + 252*(7*B*c^3
*d^2*e^5 + 3*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*A*
c^3*d^2*e^5 + 6*B*a*c^2*d*e^6 + 6*A*a*c^2*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 +
 3*A*c^3*d^3*e^4 + 6*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x^3
 + 45*(7*B*c^3*d^5*e^2 + 3*A*c^3*d^4*e^3 + 6*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^
2*e^5 + 9*B*a^2*c*d*e^6 + 21*A*a^2*c*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*A*c^3
*d^5*e^2 + 6*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 21*A
*a^2*c*d*e^6 + 28*B*a^3*e^7)*x)/(e^18*x^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^
8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x
^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2 + 10*d^9*e^9*x + d^10*e^8)
```

giac [A] time = 0.17, size = 457, normalized size = 1.37

$$-\frac{\left(840\,Bc^3x^7e^7 + 1470\,Bc^3dx^6e^6 + 1764\,Bc^3d^2x^5e^5 + 1470\,Bc^3d^3x^4e^4 + 840\,Bc^3d^4x^3e^3 + 315\,Bc^3d^5x^2e^2 + 70\,Bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7*e^7 + 1470*B*c^3*d*x^6*e^6 + 1764*B*c^3*d^2*x^5*e^5
+ 1470*B*c^3*d^3*x^4*e^4 + 840*B*c^3*d^4*x^3*e^3 + 315*B*c^3*d^5*x^2*e^2 +
70*B*c^3*d^6*x*e + 7*B*c^3*d^7 + 630*A*c^3*x^6*e^7 + 756*A*c^3*d*x^5*e^6 +
630*A*c^3*d^2*x^4*e^5 + 360*A*c^3*d^3*x^3*e^4 + 135*A*c^3*d^4*x^2*e^3 + 30*
A*c^3*d^5*x*e^2 + 3*A*c^3*d^6*e + 1512*B*a*c^2*x^5*e^7 + 1260*B*a*c^2*d*x^4
*e^6 + 720*B*a*c^2*d^2*x^3*e^5 + 270*B*a*c^2*d^3*x^2*e^4 + 60*B*a*c^2*d^4*x
*e^3 + 6*B*a*c^2*d^5*e^2 + 1260*A*a*c^2*x^4*e^7 + 720*A*a*c^2*d*x^3*e^6 + 2
70*A*a*c^2*d^2*x^2*e^5 + 60*A*a*c^2*d^3*x*e^4 + 6*A*a*c^2*d^4*e^3 + 1080*B*
a^2*c*x^3*e^7 + 405*B*a^2*c*d*x^2*e^6 + 90*B*a^2*c*d^2*x*e^5 + 9*B*a^2*c*d^
3*e^4 + 945*A*a^2*c*x^2*e^7 + 210*A*a^2*c*d*x*e^6 + 21*A*a^2*c*d^2*e^5 + 28
0*B*a^3*x*e^7 + 28*B*a^3*d*e^6 + 252*A*a^3*e^7)*e^(-8)/(x*e + d)^10
```

maple [A] time = 0.05, size = 449, normalized size = 1.34

$$-\frac{B\,c^3}{3\,(ex+d)^3\,e^8}-\frac{(Ae-7Bd)\,c^3}{4\,(ex+d)^4\,e^8}-\frac{\left(3aA\,e^3+15Ac\,d^2e-15aBd\,e^2-35Bc\,d^3\right)c^2}{6\,(ex+d)^6\,e^8}+\frac{3\left(2Acde-Ba\,e^2-7Bc\,d^2\right)c^2}{5\,(ex+d)^5\,e^8}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x)
```

```
[Out] -1/9*(-6*A*a^2*c*d*e^5-12*A*a*c^2*d^3*e^3-6*A*c^3*d^5*e+B*a^3*e^6+9*B*a^2*c
*d^2*e^4+15*B*a*c^2*d^4*e^2+7*B*c^3*d^6)/e^8/(e*x+d)^9-1/4*c^3*(A*e-7*B*d)/
e^8/(e*x+d)^4-1/3*B*c^3/e^8/(e*x+d)^3-3/8*c*(A*a^2*e^5+6*A*a*c*d^2*e^3+5*A*
c^2*d^4*e-3*B*a^2*d*e^4-10*B*a*c*d^3*e^2-7*B*c^2*d^5)/e^8/(e*x+d)^8+1/7*c*(
12*A*a*c*d*e^3+20*A*c^2*d^3*e-3*B*a^2*e^4-30*B*a*c*d^2*e^2-35*B*c^2*d^4)/e^
8/(e*x+d)^7-1/10*(A*a^3*e^7+3*A*a^2*c*d^2*e^5+3*A*a*c^2*d^4*e^3+A*c^3*d^6*e
-B*a^3*d*e^6-3*B*a^2*c*d^3*e^4-3*B*a*c^2*d^5*e^2-B*c^3*d^7)/e^8/(e*x+d)^10-
1/6*c^2*(3*A*a*e^3+15*A*c*d^2*e-15*B*a*d*e^2-35*B*c*d^3)/e^8/(e*x+d)^6+3/5*
c^2*(2*A*c*d*e-B*a*e^2-7*B*c*d^2)/e^8/(e*x+d)^5
```

maxima [A] time = 0.70, size = 557, normalized size = 1.67

$$-\frac{840\,Bc^3e^7x^7 + 7\,Bc^3d^7 + 3\,Ac^3d^6e + 6\,Bac^2d^5e^2 + 6\,Aac^2d^4e^3 + 9\,Ba^2cd^3e^4 + 21\,Aa^2cd^2e^5 + 28\,Ba^3de^6 + 252\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 3*A*c^3*d^6*e + 6*B*a*c^2*d^5*e^
2 + 6*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 + 21*A*a^2*c*d^2*e^5 + 28*B*a^3*d
*e^6 + 252*A*a^3*e^7 + 210*(7*B*c^3*d*e^6 + 3*A*c^3*e^7)*x^6 + 252*(7*B*c^3
*d^2*e^5 + 3*A*c^3*d*e^6 + 6*B*a*c^2*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*A*
c^3*d^2*e^5 + 6*B*a*c^2*d*e^6 + 6*A*a*c^2*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 +
 3*A*c^3*d^3*e^4 + 6*B*a*c^2*d^2*e^5 + 6*A*a*c^2*d*e^6 + 9*B*a^2*c*e^7)*x^3
 + 45*(7*B*c^3*d^5*e^2 + 3*A*c^3*d^4*e^3 + 6*B*a*c^2*d^3*e^4 + 6*A*a*c^2*d^
2*e^5 + 9*B*a^2*c*d*e^6 + 21*A*a^2*c*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*A*c^3
*d^5*e^2 + 6*B*a*c^2*d^4*e^3 + 6*A*a*c^2*d^3*e^4 + 9*B*a^2*c*d^2*e^5 + 21*A
*a^2*c*d*e^6 + 28*B*a^3*e^7)*x)/(e^18*x^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^
8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x
^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2 + 10*d^9*e^9*x + d^10*e^8)
```

mupad [B] time = 1.91, size = 524, normalized size = 1.57

$$-\frac{\frac{28\,B\,a^3\,d\,e^6+252\,A\,a^3\,e^7+9\,B\,a^2\,c\,d^3\,e^4+21\,A\,a^2\,c\,d^2\,e^5+6\,B\,a\,c^2\,d^5\,e^2+6\,A\,a\,c^2\,d^4\,e^3+7\,B\,c^3\,d^7+3\,A\,c^3\,d^6\,e}{2520\,e^8}+\frac{x\left(28\,B\,a^3\,e^6+9\,B\,a^2\,c\,d^2\,e^4+21\,A\,a^2\,c\,d\,e^5\right.}{}}{d^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^11,x)
```

```
[Out] -((252*A*a^3*e^7 + 7*B*c^3*d^7 + 28*B*a^3*d*e^6 + 3*A*c^3*d^6*e + 6*A*a*c^2
*d^4*e^3 + 21*A*a^2*c*d^2*e^5 + 6*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4)/(252
0*e^8) + (x*(28*B*a^3*e^6 + 7*B*c^3*d^6 + 3*A*c^3*d^5*e + 6*A*a*c^2*d^3*e^3
 + 6*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 21*A*a^2*c*d*e^5))/(252*e^7) + (
c^2*x^4*(6*A*a*e^3 + 7*B*c*d^3 + 6*B*a*d*e^2 + 3*A*c*d^2*e))/(12*e^4) + (c*
x^3*(9*B*a^2*e^4 + 7*B*c^2*d^4 + 3*A*c^2*d^3*e + 6*A*a*c*d*e^3 + 6*B*a*c*d^
2*e^2))/(21*e^5) + (c^3*x^6*(3*A*e + 7*B*d))/(12*e^2) + (c^2*x^5*(6*B*a*e^2
 + 7*B*c*d^2 + 3*A*c*d*e))/(10*e^3) + (c*x^2*(21*A*a^2*e^5 + 7*B*c^2*d^5 +
9*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 6*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2))/(56*e^6
) + (B*c^3*x^7)/(3*e))/(d^10 + e^10*x^10 + 10*d*e^9*x^9 + 45*d^8*e^2*x^2 +
120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 + 252*d^5*e^5*x^5 + 210*d^4*e^6*x^6 + 120
*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*d^9*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1330 $\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx$

Optimal. Leaf size=240

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(4aBde\left(cd^2-ae^2\right)-A\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4Acd\right.}{2c^3}$$

```
[Out] e*(-A*a*e^3+6*A*c*d^2*e-4*B*a*d*e^2+4*B*c*d^3)*x/c^2+1/2*e^2*(4*A*c*d*e-B*a
*e^2+6*B*c*d^2)*x^2/c^2+1/3*e^3*(A*e+4*B*d)*x^3/c+1/4*B*e^4*x^4/c+1/2*(4*A*
c*d*e*(-a*e^2+c*d^2)+B*(a^2*e^4-6*a*c*d^2*e^2+c^2*d^4))*ln(c*x^2+a)/c^3-(4*
a*B*d*e*(-a*e^2+c*d^2)-A*(a^2*e^4-6*a*c*d^2*e^2+c^2*d^4))*arctan(x*c^(1/2)/
a^(1/2))/c^(5/2)/a^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4Acde\left(cd^2-ae^2\right)\right)}{2c^3}-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(4aBde\left(cd^2-ae^2\right)-A\left(a^2e^4-6acd\right.\right.}{\sqrt{a}\,c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2),x]
```

```
[Out] (e*(4*B*c*d^3 + 6*A*c*d^2*e - 4*a*B*d*e^2 - a*A*e^3)*x)/c^2 + (e^2*(6*B*c*d
^2 + 4*A*c*d*e - a*B*e^2)*x^2)/(2*c^2) + (e^3*(4*B*d + A*e)*x^3)/(3*c) + (B
*e^4*x^4)/(4*c) - ((4*a*B*d*e*(c*d^2 - a*e^2) - A*(c^2*d^4 - 6*a*c*d^2*e^2
+ a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + ((4*A*c*d*e*(c
*d^2 - a*e^2) + B*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Log[a + c*x^2])/(2*c
^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{a+cx^2}\,dx = \int \left(\frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x}{c^2} + \frac{e^3(4B\right.$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd}{3}$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd}{3}$$

$$= \frac{e\left(4Bcd^3+6Acd^2e-4aBde^2-aAe^3\right)x}{c^2} + \frac{e^2\left(6Bcd^2+4Acde-aBe^2\right)x^2}{2c^2} + \frac{e^3(4Bd}{3}$$

Mathematica [A] time = 0.18, size = 217, normalized size = 0.90

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(A\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4aBde\left(ae^2-cd^2\right)\right)}{\sqrt{a}\,c^{5/2}} + \frac{6\log\left(a+cx^2\right)\left(B\left(a^2e^4-6acd^2e^2+c^2d^4\right)+4A\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2),x]
```

```
[Out] ((4*a*B*d*e*(-(c*d^2) + a*e^2) + A*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Arc
Tan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + (c*e*x*(-12*a*A*e^3 - 6*a*B*e
^2*(8*d + e*x) + 4*A*c*e*(18*d^2 + 6*d*e*x + e^2*x^2) + B*c*(48*d^3 + 36*d^
2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)) + 6*(4*A*c*d*e*(c*d^2 - a*e^2) + B*(c^2*
d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*Log[a + c*x^2])/(12*c^3)
```

fricas [A] time = 0.66, size = 550, normalized size = 2.29

$$\left[\frac{3\,Bac^2e^4x^4+4\left(4\,Bac^2de^3+Aac^2e^4\right)x^3+6\left(6\,Bac^2d^2e^2+4\,Aac^2de^3-Ba^2ce^4\right)x^2-6\left(Ac^2d^4-4\,Bacd^3e-6\,A\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/12*(3*B*a*c^2*e^4*x^4 + 4*(4*B*a*c^2*d*e^3 + A*a*c^2*e^4)*x^3 + 6*(6*B*a
*c^2*d^2*e^2 + 4*A*a*c^2*d*e^3 - B*a^2*c*e^4)*x^2 - 6*(A*c^2*d^4 - 4*B*a*c*
d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*sqrt(-a*c)*log((c*x^2
 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 12*(4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^
2 - 4*B*a^2*c*d*e^3 - A*a^2*c*e^4)*x + 6*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6
*B*a^2*c*d^2*e^2 - 4*A*a^2*c*d*e^3 + B*a^3*e^4)*log(c*x^2 + a))/(a*c^3), 1/
12*(3*B*a*c^2*e^4*x^4 + 4*(4*B*a*c^2*d*e^3 + A*a*c^2*e^4)*x^3 + 6*(6*B*a*c^
2*d^2*e^2 + 4*A*a*c^2*d*e^3 - B*a^2*c*e^4)*x^2 + 12*(A*c^2*d^4 - 4*B*a*c*d^
3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*sqrt(a*c)*arctan(sqrt(a*
c)*x/a) + 12*(4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 - 4*B*a^2*c*d*e^3 - A*a^2
*c*e^4)*x + 6*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 - 4*A*a^2*
c*d*e^3 + B*a^3*e^4)*log(c*x^2 + a))/(a*c^3)]
```

giac [A] time = 0.16, size = 245, normalized size = 1.02

$$\frac{\left(Ac^2d^4-4\,Bacd^3e-6\,Aacd^2e^2+4\,Ba^2de^3+Aa^2e^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2} + \frac{\left(Bc^2d^4+4\,Ac^2d^3e-6\,Bacd^2e^2-4\,Aacde\right.}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c^2*d^4 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*a
rctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/2*(B*c^2*d^4 + 4*A*c^2*d^3*e - 6*B
*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(c*x^2 + a)/c^3 + 1/12*(3*B*c^
3*x^4*e^4 + 16*B*c^3*d*x^3*e^3 + 36*B*c^3*d^2*x^2*e^2 + 48*B*c^3*d^3*x*e +
4*A*c^3*x^3*e^4 + 24*A*c^3*d*x^2*e^3 + 72*A*c^3*d^2*x*e^2 - 6*B*a*c^2*x^2*e
^4 - 48*B*a*c^2*d*x*e^3 - 12*A*a*c^2*x*e^4)/c^4
```

maple [A] time = 0.05, size = 345, normalized size = 1.44

$$\frac{B\,e^4x^4}{4c}+\frac{A\,e^4x^3}{3c}+\frac{4Bd\,e^3x^3}{3c}+\frac{A\,a^2e^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c^2}-\frac{6Aa\,d^2e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{2Ad\,e^3x^2}{c}+\frac{A\,d^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{4B\,a^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a),x)
```

```
[Out] 1/4*B/c*e^4*x^4+1/3/c*e^4*A*x^3+4/3/c*e^3*B*x^3*d+2/c*e^3*A*x^2*d-1/2/c^2*e
^4*B*x^2*a+3/c*e^2*B*x^2*d^2-1/c^2*e^4*a*A*x+6/c*e^2*A*d^2*x-4/c^2*e^3*a*B*
d*x+4/c*e*B*d^3*x-2/c^2*ln(c*x^2+a)*A*d*a*e^3+2/c*ln(c*x^2+a)*A*d^3*e+1/2/c
^3*ln(c*x^2+a)*B*a^2*e^4-3/c^2*ln(c*x^2+a)*B*d^2*a*e^2+1/2/c*ln(c*x^2+a)*B*
d^4+1/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*a^2*e^4-6/c/(a*c)^(1/2)*a
rctan(1/(a*c)^(1/2)*c*x)*A*a*d^2*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x
)*A*d^4+4/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*d*e^3-4/c/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a*d^3*e
```

maxima [A] time = 1.17, size = 230, normalized size = 0.96

$$\frac{\left(Ac^2d^4-4\,Bacd^3e-6\,Aacd^2e^2+4\,Ba^2de^3+Aa^2e^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2}+\frac{3\,Bce^4x^4+4\left(4\,Bcde^3+Ace^4\right)x^3+6\left(6\,Bcd^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (A*c^2*d^4 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2 + 4*B*a^2*d*e^3 + A*a^2*e^4)*a
rctan(c*x/sqrt(a*c))/(sqrt(a*c)*c^2) + 1/12*(3*B*c*e^4*x^4 + 4*(4*B*c*d*e^3
 + A*c*e^4)*x^3 + 6*(6*B*c*d^2*e^2 + 4*A*c*d*e^3 - B*a*e^4)*x^2 + 12*(4*B*c
*d^3*e + 6*A*c*d^2*e^2 - 4*B*a*d*e^3 - A*a*e^4)*x)/c^2 + 1/2*(B*c^2*d^4 + 4
*A*c^2*d^3*e - 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*log(c*x^2 + a)/
c^3
```

mupad [B] time = 0.24, size = 249, normalized size = 1.04

$$\frac{x^3\,\left(A\,e^4+4\,B\,d\,e^3\right)}{3\,c}-x\,\left(\frac{a\,\left(A\,e^4+4\,B\,d\,e^3\right)}{c^2}-\frac{2\,d^2\,e\,\left(3\,A\,e+2\,B\,d\right)}{c}\right)-x^2\,\left(\frac{B\,a\,e^4}{2\,c^2}-\frac{d\,e^2\,\left(2\,A\,e+3\,B\,d\right)}{c}\right)+\frac{\mathrm{atan}\left(\sqrt{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2),x)
```

```
[Out] (x^3*(A*e^4 + 4*B*d*e^3))/(3*c) - x*((a*(A*e^4 + 4*B*d*e^3))/c^2 - (2*d^2*e
*(3*A*e + 2*B*d))/c) - x^2*((B*a*e^4)/(2*c^2) - (d*e^2*(2*A*e + 3*B*d))/c)
+ (atan((c^(1/2)*x)/a^(1/2))*(A*a^2*e^4 + A*c^2*d^4 + 4*B*a^2*d*e^3 - 4*B*a
*c*d^3*e - 6*A*a*c*d^2*e^2))/(a^(1/2)*c^(5/2)) + (log(a + c*x^2)*(4*B*a*c^5
*d^4 + 4*B*a^3*c^3*e^4 - 16*A*a^2*c^4*d*e^3 - 24*B*a^2*c^4*d^2*e^2 + 16*A*a
*c^5*d^3*e))/(8*a*c^6) + (B*e^4*x^4)/(4*c)
```

sympy [**B**] time = 3.50, size = 908, normalized size = 3.78

$$\frac{Be^4x^4}{4c}+x^3\left(\frac{Ae^4}{3c}+\frac{4Bde^3}{3c}\right)+x^2\left(\frac{2Ade^3}{c}-\frac{Bae^4}{2c^2}+\frac{3Bd^2e^2}{c}\right)+x\left(-\frac{Aae^4}{c^2}+\frac{6Ad^2e^2}{c}-\frac{4Bade^3}{c^2}+\frac{4Bd^3e}{c}\right)+\left(\frac{-4Aa}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a),x)
```

```
[Out] B*e**4*x**4/(4*c) + x**3*(A*e**4/(3*c) + 4*B*d*e**3/(3*c)) + x**2*(2*A*d*e*
*3/c - B*a*e**4/(2*c**2) + 3*B*d**2*e**2/c) + x*(-A*a*e**4/c**2 + 6*A*d**2*
e**2/c - 4*B*a*d*e**3/c**2 + 4*B*d**3*e/c) + ((-4*A*a*c*d*e**3 + 4*A*c**2*d
**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2*c**3) - sqrt(-a*c
**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B*a**2*d*e**3 - 4*B
*a*c*d**3*e)/(2*a*c**6))*log(x + (4*A*a**2*c*d*e**3 - 4*A*a*c**2*d**3*e - B
*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + 2*a*c**3*((-4*A*a*c*d*e
**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2*c
**3) - sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B*a
**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6)))/(A*a**2*c*e**4 - 6*A*a*c**2*d**2*
e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + ((-4*A*a*c*d
*e**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 + B*c**2*d**4)/(2
*c**3) + sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A*c**2*d**4 + 4*B
*a**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6))*log(x + (4*A*a**2*c*d*e**3 - 4*A
*a*c**2*d**3*e - B*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + 2*a*c
**3*((-4*A*a*c*d*e**3 + 4*A*c**2*d**3*e + B*a**2*e**4 - 6*B*a*c*d**2*e**2 +
 B*c**2*d**4)/(2*c**3) + sqrt(-a*c**7)*(A*a**2*e**4 - 6*A*a*c*d**2*e**2 + A
*c**2*d**4 + 4*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(2*a*c**6)))/(A*a**2*c*e**4
- 6*A*a*c**2*d**2*e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*
e))
```

3.1331 $\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx$

Optimal. Leaf size=167

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\,c^{5/2}}+\frac{ex\left(-aBe^2+3Acde+3Bcd^2\right)}{c^2}+\frac{\log\left(a+cx^2\right)\left(-aAe^3-3aBd\right.}{2c^2}$$

```
[Out] e*(3*A*c*d*e-B*a*e^2+3*B*c*d^2)*x/c^2+1/2*e^2*(A*e+3*B*d)*x^2/c+1/3*B*e^3*x
^3/c+1/2*(-A*a*e^3+3*A*c*d^2*e-3*B*a*d*e^2+B*c*d^3)*ln(c*x^2+a)/c^2+(A*c*d*
(-3*a*e^2+c*d^2)-a*B*e*(-a*e^2+3*c*d^2))*arctan(x*c^(1/2)/a^(1/2))/c^(5/2)/
a^(1/2)
```

Rubi **[A]** time = 0.18, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aAe^3-3aBde^2+3Acd^2e+Bcd^3\right)}{2c^2}+\frac{ex\left(-aBe^2+3Acde+3Bcd^2\right)}{c^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right.\right.}{\sqrt{a}\,c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2),x]
```

```
[Out] (e*(3*B*c*d^2 + 3*A*c*d*e - a*B*e^2)*x)/c^2 + (e^2*(3*B*d + A*e)*x^2)/(2*c)
 + (B*e^3*x^3)/(3*c) + ((A*c*d*(c*d^2 - 3*a*e^2) - a*B*e*(3*c*d^2 - a*e^2))
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(5/2)) + ((B*c*d^3 + 3*A*c*d^2*e -
 3*a*B*d*e^2 - a*A*e^3)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{a+cx^2}\,dx = \int \Bigg(\frac{e\left(3Bcd^2+3Acde-aBe^2\right)}{c^2} + \frac{e^2(3Bd+Ae)x}{c} + \frac{Be^3x^2}{c} + \frac{Acd\left(cd^2-3ae^2\right)-aB}{}$$

$$= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2} + \frac{e^2(3Bd+Ae)x^2}{2c} + \frac{Be^3x^3}{3c} + \frac{\int \frac{Acd\left(cd^2-3ae^2\right)-aBe\left(3cd^2-a\right.}{}}{}$$

$$= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2} + \frac{e^2(3Bd+Ae)x^2}{2c} + \frac{Be^3x^3}{3c} + \frac{\left(Bcd^3+3Acd^2e-3aBd\right.}{c}$$

$$= \frac{e\left(3Bcd^2+3Acde-aBe^2\right)x}{c^2} + \frac{e^2(3Bd+Ae)x^2}{2c} + \frac{Be^3x^3}{3c} + \frac{\left(Acd\left(cd^2-3ae^2\right)-aB\right.}{\sqrt{}}$$

Mathematica [A] time = 0.15, size = 151, normalized size = 0.90

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(ae^2-3cd^2\right)\right)}{\sqrt{a}\,c^{5/2}} + \frac{ex\left(-6aBe^2+3Ace(6d+ex)+Bc\left(18d^2+9dex+2e^2x^2\right)\right)}{6c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2),x]
```

```
[Out] ((A*c*d*(c*d^2 - 3*a*e^2) + a*B*e*(-3*c*d^2 + a*e^2))*ArcTan[(Sqrt[c]*x)/Sq
rt[a]])/(Sqrt[a]*c^(5/2)) + (e*x*(-6*a*B*e^2 + 3*A*c*e*(6*d + e*x) + B*c*(1
8*d^2 + 9*d*e*x + 2*e^2*x^2)) + 3*(B*c*d^3 + 3*A*c*d^2*e - 3*a*B*d*e^2 - a*
A*e^3)*Log[a + c*x^2])/(6*c^2)
```

fricas [A] time = 0.58, size = 398, normalized size = 2.38

$$\left[\frac{2\,Bac^2e^3x^3+3\left(3\,Bac^2de^2+Aac^2e^3\right)x^2-3\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)}{6\,ac^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*B*a*c^2*e^3*x^3 + 3*(3*B*a*c^2*d*e^2 + A*a*c^2*e^3)*x^2 - 3*(A*c^2*
d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*sqrt(-a*c)*log((c*x^2 - 2*
sqrt(-a*c)*x - a)/(c*x^2 + a)) + 6*(3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - B*a
^2*c*e^3)*x + 3*(B*a*c^2*d^3 + 3*A*a*c^2*d^2*e - 3*B*a^2*c*d*e^2 - A*a^2*c*
e^3)*log(c*x^2 + a))/(a*c^3), 1/6*(2*B*a*c^2*e^3*x^3 + 3*(3*B*a*c^2*d*e^2 +
 A*a*c^2*e^3)*x^2 + 6*(A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^
3)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 6*(3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 -
 B*a^2*c*e^3)*x + 3*(B*a*c^2*d^3 + 3*A*a*c^2*d^2*e - 3*B*a^2*c*d*e^2 - A*a^
2*c*e^3)*log(c*x^2 + a))/(a*c^3)]
```

giac [A] time = 0.15, size = 165, normalized size = 0.99

$$\frac{\left(Bcd^3+3\,Acd^2e-3\,Bade^2-Aae^3\right)\log\left(cx^2+a\right)}{2\,c^2} + \frac{\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c^2} + \frac{2\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c*d^3 + 3*A*c*d^2*e - 3*B*a*d*e^2 - A*a*e^3)*log(c*x^2 + a)/c^2 + (A
*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))
```

```
/(sqrt(a*c)*c^2) + 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d^2*
x*e + 3*A*c^2*x^2*e^3 + 18*A*c^2*d*x*e^2 - 6*B*a*c*x*e^3)/c^3
```

maple [**A**] time = 0.05, size = 238, normalized size = 1.43

$$\frac{B e^{3} x^{3}}{3 c}-\frac{3 A a d e^{2} \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{\sqrt{a c}\, c}+\frac{A e^{3} x^{2}}{2 c}+\frac{A d^{3} \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{\sqrt{a c}}+\frac{B a^{2} e^{3} \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{\sqrt{a c}\, c^{2}}-\frac{3 B a d^{2} e \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{\sqrt{a c}\, c}+\frac{3 B d e^{2}}{2 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a),x)
```

```
[Out] 1/3*B/c*e^3*x^3+1/2/c*e^3*A*x^2+3/2/c*e^2*B*x^2*d+3/c*e^2*A*x*d-1/c^2*e^3*B
*x*a+3/c*e*B*x*d^2-1/2/c^2*ln(c*x^2+a)*A*a*e^3+3/2/c*ln(c*x^2+a)*A*d^2*e-3/
2/c^2*ln(c*x^2+a)*B*a*d*e^2+1/2/c*ln(c*x^2+a)*B*d^3-3/c/(a*c)^(1/2)*arctan(
1/(a*c)^(1/2)*c*x)*A*a*d*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3+
1/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*e^3-3/c/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*B*a*d^2*e
```

maxima [**A**] time = 1.16, size = 160, normalized size = 0.96

$$\frac{\left(B c d^{3}+3\, A c d^{2} e-3\, B a d e^{2}-A a e^{3}\right) \log\left(c x^{2}+a\right)}{2\, c^{2}}+\frac{\left(A c^{2} d^{3}-3\, B a c d^{2} e-3\, A a c d e^{2}+B a^{2} e^{3}\right) \arctan\left(\frac{c x}{\sqrt{a c}}\right)}{\sqrt{a c}\, c^{2}}+\frac{2\, B c e^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c*d^3 + 3*A*c*d^2*e - 3*B*a*d*e^2 - A*a*e^3)*log(c*x^2 + a)/c^2 + (A
*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))
/(sqrt(a*c)*c^2) + 1/6*(2*B*c*e^3*x^3 + 3*(3*B*c*d*e^2 + A*c*e^3)*x^2 + 6*(
3*B*c*d^2*e + 3*A*c*d*e^2 - B*a*e^3)*x)/c^2
```

mupad [**B**] time = 1.82, size = 175, normalized size = 1.05

$$x \left(\frac{3\, d\, e\, (A\, e+B\, d)}{c}-\frac{B\, a\, e^{3}}{c^{2}}\right)+\frac{x^{2} \left(A\, e^{3}+3\, B\, d\, e^{2}\right)}{2\, c}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\, x}{\sqrt{a}}\right) \left(B\, a^{2}\, e^{3}-3\, B\, a\, c\, d^{2}\, e-3\, A\, a\, c\, d\, e^{2}+A\, c^{2}\, d^{3}\right)}{\sqrt{a}\, c^{5/2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2),x)
```

```
[Out] x*((3*d*e*(A*e + B*d))/c - (B*a*e^3)/c^2) + (x^2*(A*e^3 + 3*B*d*e^2))/(2*c)
 + (atan((c^(1/2)*x)/a^(1/2))*(A*c^2*d^3 + B*a^2*e^3 - 3*A*a*c*d*e^2 - 3*B*
a*c*d^2*e))/(a^(1/2)*c^(5/2)) + (log(a + c*x^2)*(4*B*a*c^4*d^3 - 4*A*a^2*c^
3*e^3 - 12*B*a^2*c^3*d*e^2 + 12*A*a*c^4*d^2*e))/(8*a*c^5) + (B*e^3*x^3)/(3*
c)
```

sympy [**B**] time = 2.15, size = 641, normalized size = 3.84

$$\frac{B e^{3} x^{3}}{3 c}+x^{2} \left(\frac{A e^{3}}{2 c}+\frac{3 B d e^{2}}{2 c}\right)+x \left(\frac{3 A d e^{2}}{c}-\frac{B a e^{3}}{c^{2}}+\frac{3 B d^{2} e}{c}\right)+\left(-\frac{A a e^{3}-3 A c d^{2} e+3 B a d e^{2}-B c d^{3}}{2 c^{2}}-\frac{\sqrt{-a c^{5}}\, \left(-3 A a c d\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a),x)
```

```
[Out] B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) + 3*B*d*e**2/(2*c)) + x*(3*A*d*e**2/
c - B*a*e**3/c**2 + 3*B*d**2*e/c) + (-(A*a*e**3 - 3*A*c*d**2*e + 3*B*a*d*e*
*2 - B*c*d**3)/(2*c**2) - sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*d**3 + B*
a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5))*log(x + (A*a**2*e**3 - 3*A*a*c*d**2
*e + 3*B*a**2*d*e**2 - B*a*c*d**3 + 2*a*c**2*(-(A*a*e**3 - 3*A*c*d**2*e + 3
*B*a*d*e**2 - B*c*d**3)/(2*c**2) - sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*
d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5)))/(-3*A*a*c*d*e**2 + A*c**2
*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)) + (-(A*a*e**3 - 3*A*c*d**2*e + 3*B*a
*d*e**2 - B*c*d**3)/(2*c**2) + sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*c**2*d**3
 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5))*log(x + (A*a**2*e**3 - 3*A*a*c
*d**2*e + 3*B*a**2*d*e**2 - B*a*c*d**3 + 2*a*c**2*(-(A*a*e**3 - 3*A*c*d**2*
e + 3*B*a*d*e**2 - B*c*d**3)/(2*c**2) + sqrt(-a*c**5)*(-3*A*a*c*d*e**2 + A*
c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e)/(2*a*c**5)))/(-3*A*a*c*d*e**2 + A
*c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2*e))
```

3.1332 $\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx$

Optimal. Leaf size=108

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(-aAe^2-2aBde+Acd^2\right)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)}{2c^2}+\frac{ex(Ae+2Bd)}{c}+\frac{Be^2x^2}{2c}$$

```
[Out] e*(A*e+2*B*d)*x/c+1/2*B*e^2*x^2/c+1/2*(2*A*c*d*e-B*a*e^2+B*c*d^2)*ln(c*x^2+
a)/c^2+(-A*a*e^2+A*c*d^2-2*B*a*d*e)*arctan(x*c^(1/2)/a^(1/2))/c^(3/2)/a^(1/
2)
```

Rubi [A] time = 0.09, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)}{2c^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(-aAe^2-2aBde+Acd^2\right)}{\sqrt{a}\,c^{3/2}}+\frac{ex(Ae+2Bd)}{c}+\frac{Be^2x^2}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2),x]
```

```
[Out] (e*(2*B*d + A*e)*x)/c + (B*e^2*x^2)/(2*c) + ((A*c*d^2 - 2*a*B*d*e - a*A*e^2
)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/2)) + ((B*c*d^2 + 2*A*c*d*e -
a*B*e^2)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{a+cx^2}\,dx = \int \left(\frac{e(2Bd+Ae)}{c} + \frac{Be^2x}{c} + \frac{Acd^2-2aBde-aAe^2+\left(Bcd^2+2Acde-aBe^2\right)x}{c\left(a+cx^2\right)}\right)dx$$

$$= \frac{e(2Bd+Ae)x}{c} + \frac{Be^2x^2}{2c} + \frac{\int \frac{Acd^2-2aBde-aAe^2+\left(Bcd^2+2Acde-aBe^2\right)x}{a+cx^2}\,dx}{c}$$

$$= \frac{e(2Bd+Ae)x}{c} + \frac{Be^2x^2}{2c} + \frac{\left(Acd^2-2aBde-aAe^2\right)\int \frac{1}{a+cx^2}\,dx}{c} + \frac{\left(Bcd^2+2Acde-a\right.}{c}$$

$$= \frac{e(2Bd+Ae)x}{c} + \frac{Be^2x^2}{2c} + \frac{\left(Acd^2-2aBde-aAe^2\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,c^{3/2}} + \left(Bcd^2+2Acde-\right.$$

Mathematica [A]   time = 0.09, size = 99, normalized size = 0.92

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2+2Acde+Bcd^2\right)-\frac{2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(aAe^2+2aBde-Acd^2\right)}{\sqrt{a}}+cex(2Ae+4Bd+Bex)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2),x]
```

```
[Out] (c*e*x*(4*B*d + 2*A*e + B*e*x) - (2*Sqrt[c]*(-(A*c*d^2) + 2*a*B*d*e + a*A*e
^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] + (B*c*d^2 + 2*A*c*d*e - a*B*e^2)*
Log[a + c*x^2])/(2*c^2)
```

fricas [A]   time = 0.75, size = 235, normalized size = 2.18

$$\left[\frac{Bace^2x^2+\left(Acd^2-2\,Bade-Aae^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2+2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)+2\left(2\,Bacde+Aace^2\right)x+\left(Bacd^2+2\,Aacde-B\right.}{2\,ac^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*c*e^2*x^2 + (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*sqrt(-a*c)*log((c*x^2
 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(2*B*a*c*d*e + A*a*c*e^2)*x + (B*a*
c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)*log(c*x^2 + a))/(a*c^2), 1/2*(B*a*c*e^2*x^
2 + 2*(A*c*d^2 - 2*B*a*d*e - A*a*e^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 2*(
2*B*a*c*d*e + A*a*c*e^2)*x + (B*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)*log(c*x^
2 + a))/(a*c^2)]
```

giac [A]   time = 0.16, size = 101, normalized size = 0.94

$$\frac{\left(Acd^2-2\,Bade-Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{\left(Bcd^2+2\,Acde-Bae^2\right)\log\left(cx^2+a\right)}{2\,c^2}+\frac{Bcx^2e^2+4\,Bcdxe+2\,Acxe^2}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*(
B*c*d^2 + 2*A*c*d*e - B*a*e^2)*log(c*x^2 + a)/c^2 + 1/2*(B*c*x^2*e^2 + 4*B*
c*d*x*e + 2*A*c*x*e^2)/c^2
```

maple [A] time = 0.05, size = 148, normalized size = 1.37

$$-\frac{A a e^2 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{A d^2 \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{2Bade\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{Be^2x^2}{2c}+\frac{Ade\ln\left(cx^2+a\right)}{c}+\frac{Ae^2x}{c}-\frac{Bae^2\ln\big(cx^2}{2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a),x)
```

```
[Out] 1/2*B/c*e^2*x^2+1/c*e^2*A*x+2/c*e*B*d*x+1/c*ln(c*x^2+a)*A*d*e-1/2/c^2*ln(c*
x^2+a)*B*a*e^2+1/2/c*ln(c*x^2+a)*B*d^2-1/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)
*c*x)*A*a*e^2+1/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2-2/c/(a*c)^(1/2)
*arctan(1/(a*c)^(1/2)*c*x)*a*B*d*e
```

maxima [A] time = 1.27, size = 100, normalized size = 0.93

$$\frac{\left(Acd^2-2\,Bade-Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}+\frac{Be^2x^2+2\left(2\,Bde+Ae^2\right)x}{2\,c}+\frac{\left(Bcd^2+2\,Acde-Bae^2\right)\log\left(cx^2+a\right)}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (A*c*d^2 - 2*B*a*d*e - A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*c) + 1/2*(
B*e^2*x^2 + 2*(2*B*d*e + A*e^2)*x)/c + 1/2*(B*c*d^2 + 2*A*c*d*e - B*a*e^2)*
log(c*x^2 + a)/c^2
```

mupad [B] time = 0.14, size = 114, normalized size = 1.06

$$\frac{x\left(A\,e^2+2\,B\,d\,e\right)}{c}+\frac{\ln\left(c\,x^2+a\right)\left(-4\,B\,a^2\,c^2\,e^2+4\,B\,a\,c^3\,d^2+8\,A\,a\,c^3\,d\,e\right)}{8\,a\,c^4}-\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\big(-A\,c\,d^2+2\,B\,a\,d\,e+A\,a}{\sqrt{a}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2),x)
```

```
[Out] (x*(A*e^2 + 2*B*d*e))/c + (log(a + c*x^2)*(4*B*a*c^3*d^2 - 4*B*a^2*c^2*e^2
+ 8*A*a*c^3*d*e))/(8*a*c^4) - (atan((c^(1/2)*x)/a^(1/2))*(A*a*e^2 - A*c*d^2
 + 2*B*a*d*e))/(a^(1/2)*c^(3/2)) + (B*e^2*x^2)/(2*c)
```

sympy [B] time = 1.41, size = 425, normalized size = 3.94

$$\frac{Be^2x^2}{2c}+x\left(\frac{Ae^2}{c}+\frac{2Bde}{c}\right)+\left(-\frac{-2Acde+Bae^2-Bcd^2}{2c^2}-\frac{\sqrt{-ac^5}\left(Aae^2-Acd^2+2Bade\right)}{2ac^4}\right)\log\Bigg(x+\frac{2Aacde-Ba^2e^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a),x)
```

```
[Out] B*e**2*x**2/(2*c) + x*(A*e**2/c + 2*B*d*e/c) + (-(-2*A*c*d*e + B*a*e**2 - B
*c*d**2)/(2*c**2) - sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2 + 2*B*a*d*e)/(2*a*c*
*4))*log(x + (2*A*a*c*d*e - B*a**2*e**2 + B*a*c*d**2 - 2*a*c**2*(-(-2*A*c*d
*e + B*a*e**2 - B*c*d**2)/(2*c**2) - sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2 + 2
*B*a*d*e)/(2*a*c**4)))/(A*a*c*e**2 - A*c**2*d**2 + 2*B*a*c*d*e)) + (-(-2*A*
c*d*e + B*a*e**2 - B*c*d**2)/(2*c**2) + sqrt(-a*c**5)*(A*a*e**2 - A*c*d**2
+ 2*B*a*d*e)/(2*a*c**4))*log(x + (2*A*a*c*d*e - B*a**2*e**2 + B*a*c*d**2 -
2*a*c**2*(-(-2*A*c*d*e + B*a*e**2 - B*c*d**2)/(2*c**2) + sqrt(-a*c**5)*(A*a
*e**2 - A*c*d**2 + 2*B*a*d*e)/(2*a*c**4)))/(A*a*c*e**2 - A*c**2*d**2 + 2*B*
a*c*d*e))
```

3.1333 $\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx$

Optimal. Leaf size=64

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(Acd-aBe)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

```
[Out] B*e*x/c+1/2*(A*e+B*d)*ln(c*x^2+a)/c+(A*c*d-B*a*e)*arctan(x*c^(1/2)/a^(1/2))
/c^(3/2)/a^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {774, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(Acd-aBe)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (B*e*x)/c + ((A*c*d - a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/2))
 + ((B*d + A*e)*Log[a + c*x^2])/(2*c)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{a+cx^2}\,dx &= \frac{Bex}{c}+\frac{\int \frac{Acd-aBe+c(Bd+Ae)x}{a+cx^2}\,dx}{c}\\ &= \frac{Bex}{c}+(Bd+Ae)\int \frac{x}{a+cx^2}\,dx+\frac{(Acd-aBe)\int \frac{1}{a+cx^2}\,dx}{c}\\ &= \frac{Bex}{c}+\frac{(Acd-aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,c^{3/2}}+\frac{(Bd+Ae)\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.05, size = 65, normalized size = 1.02

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe-Acd)}{\sqrt{a}\,c^{3/2}}+\frac{\log\left(a+cx^2\right)(Ae+Bd)}{2c}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2),x]
```

```
[Out] (B*e*x)/c - ((-(A*c*d) + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*c^(3/
2)) + ((B*d + A*e)*Log[a + c*x^2])/(2*c)
```

fricas [A] time = 0.73, size = 147, normalized size = 2.30

$$\left[\frac{2\,Bacex+(Acd-Bae)\sqrt{-ac}\,\log\left(\frac{cx^2+2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)+(Bacd+Aace)\log\left(cx^2+a\right)}{2\,ac^2},\ \frac{2\,Bacex+2\,(Acd-Bae)\sqrt{ac}\ \mathrm{ar}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*B*a*c*e*x + (A*c*d - B*a*e)*sqrt(-a*c)*log((c*x^2 + 2*sqrt(-a*c)*x
- a)/(c*x^2 + a)) + (B*a*c*d + A*a*c*e)*log(c*x^2 + a))/(a*c^2), 1/2*(2*B*a
*c*e*x + 2*(A*c*d - B*a*e)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (B*a*c*d + A*a
*c*e)*log(c*x^2 + a))/(a*c^2)]
```

giac [A] time = 0.15, size = 59, normalized size = 0.92

$$\frac{Bxe}{c}+\frac{(Bd+Ae)\log\left(cx^2+a\right)}{2\,c}+\frac{(Acd-Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] B*x*e/c + 1/2*(B*d + A*e)*log(c*x^2 + a)/c + (A*c*d - B*a*e)*arctan(c*x/sqr
t(a*c))/(sqrt(a*c)*c)
```

maple [A] time = 0.05, size = 78, normalized size = 1.22

$$\frac{Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}-\frac{Bae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{Ae\ln\left(c\,x^2+a\right)}{2c}+\frac{Bd\ln\left(c\,x^2+a\right)}{2c}+\frac{Bex}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a),x)
```

```
[Out] B/c*e*x+1/2/c*ln(c*x^2+a)*A*e+1/2/c*ln(c*x^2+a)*B*d+1/(a*c)^(1/2)*arctan(1/
(a*c)^(1/2)*c*x)*A*d-1/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*a*B*e
```

maxima [A] time = 1.15, size = 56, normalized size = 0.88

$$\frac{Bex}{c}+\frac{(Bd+Ae)\log\left(cx^2+a\right)}{2\,c}+\frac{(Acd-Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] B*e*x/c + 1/2*(B*d + A*e)*log(c*x^2 + a)/c + (A*c*d - B*a*e)*arctan(c*x/sqr
t(a*c))/(sqrt(a*c)*c)
```

mupad [B] time = 1.73, size = 75, normalized size = 1.17

$$\frac{B\,e\,x}{c}+\frac{A\,e\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{B\,d\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{A\,d\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}-\frac{B\,\sqrt{a}\,e\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2),x)
```

```
[Out] (B*e*x)/c + (A*e*log(a + c*x^2))/(2*c) + (B*d*log(a + c*x^2))/(2*c) + (A*d*
atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2)) - (B*a^(1/2)*e*atan((c^(1/2)*x
)/a^(1/2)))/c^(3/2)
```

sympy [B] time = 0.73, size = 212, normalized size = 3.31

$$\frac{Bex}{c}+\left(\frac{Ae+Bd}{2c}-\frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)\log\left(x+\frac{Aae+Bad-2ac\left(\frac{Ae+Bd}{2c}-\frac{\sqrt{-ac^3}\,(-Acd+Bae)}{2ac^3}\right)}{-Acd+Bae}\right)+\left(\frac{Ae+Bd}{2c}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a),x)
```

```
[Out] B*e*x/c + ((A*e + B*d)/(2*c) - sqrt(-a*c**3)*(-A*c*d + B*a*e)/(2*a*c**3))*l
og(x + (A*a*e + B*a*d - 2*a*c*((A*e + B*d)/(2*c) - sqrt(-a*c**3)*(-A*c*d +
B*a*e)/(2*a*c**3)))/(-A*c*d + B*a*e)) + ((A*e + B*d)/(2*c) + sqrt(-a*c**3)*
(-A*c*d + B*a*e)/(2*a*c**3))*log(x + (A*a*e + B*a*d - 2*a*c*((A*e + B*d)/(2
*c) + sqrt(-a*c**3)*(-A*c*d + B*a*e)/(2*a*c**3)))/(-A*c*d + B*a*e))
```

3.1334 $\int \frac{A+Bx}{a+cx^2}\,dx$

Optimal. Leaf size=42

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

```
[Out] 1/2*B*ln(c*x^2+a)/c+A*arctan(x*c^(1/2)/a^(1/2))/a^(1/2)/c^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {635, 205, 260}

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2),x]
```

```
[Out] (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (B*Log[a + c*x^2])/(2*c
)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rubi steps

$$\begin{aligned}\int\frac{A+Bx}{a+cx^2}\,dx&=A\int\frac{1}{a+cx^2}\,dx+B\int\frac{x}{a+cx^2}\,dx\\&=\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}+\frac{B\log\left(a+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2),x]
```

```
[Out] (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]) + (B*Log[a + c*x^2])/(2*c
)
```

fricas [A] time = 0.69, size = 98, normalized size = 2.33

$$\left[\frac{Ba\log\left(cx^2+a\right)-\sqrt{-ac}\,A\log\left(\frac{cx^2-2\sqrt{-ac}\,x-a}{cx^2+a}\right)}{2\,ac},\ \frac{Ba\log\left(cx^2+a\right)+2\sqrt{ac}\,A\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,ac}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(B*a*log(c*x^2 + a) - sqrt(-a*c)*A*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c
*x^2 + a)))/(a*c), 1/2*(B*a*log(c*x^2 + a) + 2*sqrt(a*c)*A*arctan(sqrt(a*c)
*x/a))/(a*c)]
```

giac [A] time = 0.15, size = 31, normalized size = 0.74

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] A*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*B*log(c*x^2 + a)/c
```

maple [A] time = 0.06, size = 32, normalized size = 0.76

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\ln\left(c\,x^2+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a),x)
```

```
[Out] 1/2*B*ln(c*x^2+a)/c+A/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.16, size = 31, normalized size = 0.74

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}}+\frac{B\log\left(cx^2+a\right)}{2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] A*arctan(c*x/sqrt(a*c))/sqrt(a*c) + 1/2*B*log(c*x^2 + a)/c
```

mupad [B] time = 0.05, size = 32, normalized size = 0.76

$$\frac{B\,\ln\left(c\,x^2+a\right)}{2\,c}+\frac{A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2),x)
```

```
[Out] (B*log(a + c*x^2))/(2*c) + (A*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(1/2))
```

sympy [B] time = 0.26, size = 124, normalized size = 2.95

$$\left(-\frac{A\sqrt{-ac^{3}}}{2ac^{2}}+\frac{B}{2c}\right)\log\left(x+\frac{-Ba+2ac\left(-\frac{A\sqrt{-ac^{3}}}{2ac^{2}}+\frac{B}{2c}\right)}{Ac}\right)+\left(\frac{A\sqrt{-ac^{3}}}{2ac^{2}}+\frac{B}{2c}\right)\log\left(x+\frac{-Ba+2ac\left(\frac{A\sqrt{-ac^{3}}}{2ac^{2}}+\frac{B}{2c}\right)}{Ac}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a),x)
```

```
[Out] (-A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c))*log(x + (-B*a + 2*a*c*(-A*sqrt(-a*c
**3)/(2*a*c**2) + B/(2*c)))/(A*c)) + (A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c))
*log(x + (-B*a + 2*a*c*(A*sqrt(-a*c**3)/(2*a*c**2) + B/(2*c)))/(A*c))
```

3.1335 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=109

$$\frac{\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2+cd^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{\sqrt{a}\,\sqrt{c}\,\left(ae^2+cd^2\right)}$$

```
[Out] -(-A*e+B*d)*ln(e*x+d)/(a*e^2+c*d^2)+1/2*(-A*e+B*d)*ln(c*x^2+a)/(a*e^2+c*d^2
)+(A*c*d+B*a*e)*arctan(x*c^(1/2)/a^(1/2))/(a*e^2+c*d^2)/a^(1/2)/c^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2+cd^2}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{\sqrt{a}\,\sqrt{c}\,\left(ae^2+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)),x]
```

```
[Out] ((A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*Sqrt[c]*(c*d^2 + a*e
^2)) - ((B*d - A*e)*Log[d + e*x])/(c*d^2 + a*e^2) + ((B*d - A*e)*Log[a + c*
x^2])/(2*(c*d^2 + a*e^2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)}\,dx &= \int \left(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)}+\frac{Acd+aBe+c(Bd-Ae)x}{\left(cd^2+ae^2\right)\left(a+cx^2\right)}\right)dx\\
&= -\frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2}+\frac{\int \frac{Acd+aBe+c(Bd-Ae)x}{a+cx^2}\,dx}{cd^2+ae^2}\\
&= -\frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2}+\frac{(c(Bd-Ae))\int \frac{x}{a+cx^2}\,dx}{cd^2+ae^2}+\frac{(Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{cd^2+ae^2}\\
&= \frac{(Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{\sqrt{a}\,\sqrt{c}\,\left(cd^2+ae^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{cd^2+ae^2}+\frac{(Bd-Ae)\log\left(a+cx^2\right)}{2\left(cd^2+ae^2\right)}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 91, normalized size = 0.83

$$\frac{2\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)-\sqrt{a}\,\sqrt{c}\,(Bd-Ae)\left(2\log(d+ex)-\log\left(a+cx^2\right)\right)}{2\sqrt{a}\,\sqrt{c}\,\left(ae^2+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)),x]
```

```
[Out] (2*(A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]] - Sqrt[a]*Sqrt[c]*(B*d - A*e
)*(2*Log[d + e*x] - Log[a + c*x^2]))/(2*Sqrt[a]*Sqrt[c]*(c*d^2 + a*e^2))
```

fricas [A] time = 2.12, size = 200, normalized size = 1.83

$$\Bigg[-\frac{(Acd+Bae)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right)-(Bacd-Aace)\log\left(cx^2+a\right)+2\,(Bacd-Aace)\log\left(ex+d\right)}{2\left(ac^2d^2+a^2ce^2\right)},\ 2\,(Acd+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((A*c*d + B*a*e)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 +
 a)) - (B*a*c*d - A*a*c*e)*log(c*x^2 + a) + 2*(B*a*c*d - A*a*c*e)*log(e*x +
 d))/(a*c^2*d^2 + a^2*c*e^2), 1/2*(2*(A*c*d + B*a*e)*sqrt(a*c)*arctan(sqrt(
a*c)*x/a) + (B*a*c*d - A*a*c*e)*log(c*x^2 + a) - 2*(B*a*c*d - A*a*c*e)*log(
e*x + d))/(a*c^2*d^2 + a^2*c*e^2)]
```

giac [A] time = 0.16, size = 104, normalized size = 0.95

$$\frac{(Bd-Ae)\log\left(cx^2+a\right)}{2\left(cd^2+ae^2\right)}-\frac{\left(Bde-Ae^2\right)\log\left(|xe+d|\right)}{cd^2e+ae^3}+\frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(cd^2+ae^2\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + a)/(c*d^2 + a*e^2) - (B*d*e - A*e^2)*log(abs(x*
e + d))/(c*d^2*e + a*e^3) + (A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/((c*d^2 +
 a*e^2)*sqrt(a*c))
```

maple [A] time = 0.06, size = 159, normalized size = 1.46

$$\frac{Acd\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)\sqrt{ac}}+\frac{Bae\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)\sqrt{ac}}-\frac{Ae\ln\left(c\,x^2+a\right)}{2\left(a\,e^2+c\,d^2\right)}+\frac{Ae\ln\left(ex+d\right)}{a\,e^2+c\,d^2}+\frac{Bd\ln\left(c\,x^2+a\right)}{2a\,e^2+2c\,d^2}-\frac{Bd\ln\left(ex+d\right)}{a\,e^2+c\,d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a),x)
```

```
[Out] -1/2/(a*e^2+c*d^2)*ln(c*x^2+a)*A*e+1/2/(a*e^2+c*d^2)*ln(c*x^2+a)*B*d+1/(a*e
^2+c*d^2)/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c*d+1/(a*e^2+c*d^2)/(a*c)
^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*a*B*e+1/(a*e^2+c*d^2)*ln(e*x+d)*A*e-1/(a*e
^2+c*d^2)*ln(e*x+d)*B*d
```

maxima [A] time = 1.31, size = 98, normalized size = 0.90

$$\frac{(Bd-Ae)\log\left(cx^2+a\right)}{2\left(cd^2+ae^2\right)}-\frac{(Bd-Ae)\log(ex+d)}{cd^2+ae^2}+\frac{(Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(cd^2+ae^2\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + a)/(c*d^2 + a*e^2) - (B*d - A*e)*log(e*x + d)/(
c*d^2 + a*e^2) + (A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/((c*d^2 + a*e^2)*sqr
t(a*c))
```

mupad [B] time = 3.13, size = 535, normalized size = 4.91

$$\frac{\ln(d+e\,x)\,(A\,e-B\,d)}{c\,d^2+a\,e^2}-\frac{\ln\left(B^2\,c\,e\,x-\frac{\left(c\left(a\left(\frac{A\,e}{2}-\frac{B\,d}{2}\right)+\frac{A\,d\,\sqrt{-a\,c}}{2}\right)+\frac{B\,a\,e\,\sqrt{-a\,c}}{2}\right)\left(x\left(3\,A\,c^2\,e^2-B\,c^2\,d\,e\right)-\frac{\left(c\left(a\left(\frac{A\,e}{2}-\frac{B\,d}{2}\right)+\frac{A\,d\,\sqrt{-a\,c}}{2}\right)+\frac{B\,a\,e\,\sqrt{}}{2}\right.}{a^2\,c\,e^2}\right.}{a^2\,c\,e^2+a\,c^2\,d^2}\right.}{a^2\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(a*e^2 + c*d^2) - (log(B^2*c*e*x - ((c*(a*((A*e)
/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B*a*e*(-a*c)^(1/2))/2)*(x*(3*A*c^2
*e^2 - B*c^2*d*e) - ((c*(a*((A*e)/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B
*a*e*(-a*c)^(1/2))/2)*(x*(6*a*c^2*e^3 - 2*c^3*d^2*e) + 8*a*c^2*d*e^2))/(a*c
^2*d^2 + a^2*c*e^2) - B*a*c*e^2 + A*c^2*d*e))/(a*c^2*d^2 + a^2*c*e^2) + A*B
*c*e)*(c*(a*((A*e)/2 - (B*d)/2) + (A*d*(-a*c)^(1/2))/2) + (B*a*e*(-a*c)^(1/
2))/2))/(a*c^2*d^2 + a^2*c*e^2) - (log(B^2*c*e*x - ((c*(a*((A*e)/2 - (B*d)/
2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)^(1/2))/2)*(x*(3*A*c^2*e^2 - B*c^
2*d*e) - ((c*(a*((A*e)/2 - (B*d)/2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)
^(1/2))/2)*(x*(6*a*c^2*e^3 - 2*c^3*d^2*e) + 8*a*c^2*d*e^2))/(a*c^2*d^2 + a^
2*c*e^2) - B*a*c*e^2 + A*c^2*d*e))/(a*c^2*d^2 + a^2*c*e^2) + A*B*c*e)*(c*(a
*((A*e)/2 - (B*d)/2) - (A*d*(-a*c)^(1/2))/2) - (B*a*e*(-a*c)^(1/2))/2))/(a*
c^2*d^2 + a^2*c*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1336 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=173

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)}{2\left(ae^2+cd^2\right)^2}+\frac{Bd-Ae}{(d+ex)\left(ae^2+cd^2\right)}-\frac{\log(d+ex)\left(-aBe^2-2Acde+Bcd^2\right)}{\left(ae^2+cd^2\right)^2}+\sqrt{c}\tan^{-1}($$

```
[Out] (-A*e+B*d)/(a*e^2+c*d^2)/(e*x+d)-(-2*A*c*d*e-B*a*e^2+B*c*d^2)*ln(e*x+d)/(a*
e^2+c*d^2)^2+1/2*(-2*A*c*d*e-B*a*e^2+B*c*d^2)*ln(c*x^2+a)/(a*e^2+c*d^2)^2+(
-A*a*e^2+A*c*d^2+2*B*a*d*e)*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/(a*e^2+c*d^2)
^2/a^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)}{2\left(ae^2+cd^2\right)^2}+\frac{Bd-Ae}{(d+ex)\left(ae^2+cd^2\right)}-\frac{\log(d+ex)\left(-aBe^2-2Acde+Bcd^2\right)}{\left(ae^2+cd^2\right)^2}+\sqrt{c}\tan^{-1}($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)),x]
```

```
[Out] (B*d - A*e)/((c*d^2 + a*e^2)*(d + e*x)) + (Sqrt[c]*(A*c*d^2 + 2*a*B*d*e - a
*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*(c*d^2 + a*e^2)^2) - ((B*c*d^
2 - 2*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 + a*e^2)^2 + ((B*c*d^2 - 2*A*
c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)}\,dx = \int \left(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)^2} + \frac{e\left(-Bcd^2+2Acde+aBe^2\right)}{\left(cd^2+ae^2\right)^2(d+ex)} + \frac{c\left(Acd^2+2aBde-aAe^2\right.}{\left(cd^2+ae\right.}\right.$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} - \frac{\left(Bcd^2-2Acde-aBe^2\right)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{c\int \frac{Acd^2+2aBde-aAe^2+(}{a+c}}{\left(cd^2+\right.}$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} - \frac{\left(Bcd^2-2Acde-aBe^2\right)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{\left(c\left(Acd^2+2aBde-\right.\right.}{\left(cd^2+a\right.}$$

$$= \frac{Bd-Ae}{\left(cd^2+ae^2\right)(d+ex)} + \frac{\sqrt{c}\left(Acd^2+2aBde-aAe^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{\sqrt{a}\left(cd^2+ae^2\right)^2} - \frac{\left(Bcd^2-2Acde\right.}{\left(cd^2\right.}$$

Mathematica [A] time = 0.18, size = 148, normalized size = 0.86

$$\frac{\log\left(a+cx^2\right)\left(-aBe^2-2Acde+Bcd^2\right)+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{d+ex}+\log(d+ex)\left(2aBe^2+4Acde-2Bcd^2\right)+\frac{2\sqrt{c}\tan^{-1}\left(\right.}{}}{2\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + a*e^2))/(d + e*x) + (2*Sqrt[c]*(A*c*d^2 + 2*a*B*d*
e - a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] + (-2*B*c*d^2 + 4*A*c*d*e
 + 2*a*B*e^2)*Log[d + e*x] + (B*c*d^2 - 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2]
)/(2*(c*d^2 + a*e^2)^2)
```

fricas [A] time = 9.62, size = 562, normalized size = 3.25

$$\left[\frac{2\,Bcd^3-2\,Acd^2e+2\,Bade^2-2\,Aae^3-\left(Acd^3+2\,Bad^2e-Aade^2+\left(Acd^2e+2\,Bade^2-Aae^3\right)x\right)\sqrt{-\frac{c}{a}}\log\left(\frac{cx}{}\right.}{2\left(c^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 - (A*c*d^3 + 2*B*a*
d^2*e - A*a*d*e^2 + (A*c*d^2*e + 2*B*a*d*e^2 - A*a*e^3)*x)*sqrt(-c/a)*log((
c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + (B*c*d^3 - 2*A*c*d^2*e - B*a*d
*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(c*x^2 + a) - 2*(B*c*d^3 -
 2*A*c*d^2*e - B*a*d*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(e*x +
 d))/(c^2*d^5 + 2*a*c*d^3*e^2 + a^2*d*e^4 + (c^2*d^4*e + 2*a*c*d^2*e^3 + a^
2*e^5)*x), 1/2*(2*B*c*d^3 - 2*A*c*d^2*e + 2*B*a*d*e^2 - 2*A*a*e^3 + 2*(A*c*
d^3 + 2*B*a*d^2*e - A*a*d*e^2 + (A*c*d^2*e + 2*B*a*d*e^2 - A*a*e^3)*x)*sqrt
(c/a)*arctan(x*sqrt(c/a)) + (B*c*d^3 - 2*A*c*d^2*e - B*a*d*e^2 + (B*c*d^2*e
 - 2*A*c*d*e^2 - B*a*e^3)*x)*log(c*x^2 + a) - 2*(B*c*d^3 - 2*A*c*d^2*e - B*
a*d*e^2 + (B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)*log(e*x + d))/(c^2*d^5 + 2
*a*c*d^3*e^2 + a^2*d*e^4 + (c^2*d^4*e + 2*a*c*d^2*e^3 + a^2*e^5)*x)]
```

giac [A] time = 0.16, size = 229, normalized size = 1.32

$$\frac{\left(Ac^2d^2e^2 + 2\,Bacde^3 - Aace^4\right)\arctan\left(\frac{\left(cd - \frac{cd^2}{xe+d} - \frac{ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{ac}}\right)e^{(-2)}}{\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)\sqrt{ac}} + \frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(c - \frac{2\,cd}{xe+d} + \frac{cd^2}{(xe+d)^2} +\right.}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="giac")
```

```
[Out] (A*c^2*d^2*e^2 + 2*B*a*c*d*e^3 - A*a*c*e^4)*arctan((c*d - c*d^2/(x*e + d) -
 a*e^2/(x*e + d))*e^(-1)/sqrt(a*c))*e^(-2)/((c^2*d^4 + 2*a*c*d^2*e^2 + a^2*
e^4)*sqrt(a*c)) + 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(c - 2*c*d/(x*e +
d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*
e^4) + (B*d*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 + a*e^4)
```

maple [A] time = 0.05, size = 312, normalized size = 1.80

$$-\frac{Aac\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} + \frac{A\,c^2d^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} + \frac{2Bacde\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} - \frac{Acde\ln\left(c\,x^2 + a\right)}{\left(a\,e^2 + c\,d^2\right)^2} + \frac{2Acde\ln\left(ex + d\right)}{\left(a\,e^2 + c\,d^2\right)^2} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a),x)
```

```
[Out] -c/(a*e^2+c*d^2)^2*ln(c*x^2+a)*A*d*e-1/2/(a*e^2+c*d^2)^2*ln(c*x^2+a)*B*a*e^
2+1/2*c/(a*e^2+c*d^2)^2*ln(c*x^2+a)*B*d^2-c/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arc
tan(1/(a*c)^(1/2)*c*x)*A*a*e^2+c^2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*A*d^2+2*c/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
x)*a*B*d*e-1/(a*e^2+c*d^2)/(e*x+d)*A*e+1/(a*e^2+c*d^2)/(e*x+d)*B*d+2/(a*e^2
+c*d^2)^2*ln(e*x+d)*A*c*d*e+1/(a*e^2+c*d^2)^2*ln(e*x+d)*B*a*e^2-1/(a*e^2+c*
d^2)^2*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 1.31, size = 216, normalized size = 1.25

$$\frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bcd^2 - 2\,Acde - Bae^2\right)\log\left(ex + d\right)}{c^2d^4 + 2\,acd^2e^2 + a^2e^4} + \frac{\left(Ac^2d^2 + 2\,Bacde - Aace^2\right)\arctan}{\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2
 + a^2*e^4) - (B*c*d^2 - 2*A*c*d*e - B*a*e^2)*log(e*x + d)/(c^2*d^4 + 2*a*c
*d^2*e^2 + a^2*e^4) + (A*c^2*d^2 + 2*B*a*c*d*e - A*a*c*e^2)*arctan(c*x/sqrt
(a*c))/((c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4)*sqrt(a*c)) + (B*d - A*e)/(c*d^3
 + a*d*e^2 + (c*d^2*e + a*e^3)*x)
```

mupad [B] time = 3.32, size = 810, normalized size = 4.68

$$\ln\left(3\,B\,a^3\,e^4 + 3\,B\,a\,c^2\,d^4 + A\,c^3\,d^4\,x + A\,a^2\,e^4\,\sqrt{-a\,c} + A\,c^2\,d^4\,\sqrt{-a\,c} + 14\,A\,d^2\,e^2\,(-a\,c)^{3/2} + A\,a^2\,c\,e^4\,x - 8\,B\,a^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)^2),x)
```

```
[Out] (log(3*B*a^3*e^4 + 3*B*a*c^2*d^4 + A*c^3*d^4*x + A*a^2*e^4*(-a*c)^(1/2) + A
*c^2*d^4*(-a*c)^(1/2) + 14*A*d^2*e^2*(-a*c)^(3/2) + A*a^2*c*e^4*x - 8*B*a^2
*d*e^3*(-a*c)^(1/2) - 3*B*a^2*e^4*x*(-a*c)^(1/2) - 3*B*c^2*d^4*x*(-a*c)^(1/
2) - 10*B*a^2*c*d^2*e^2 + 8*A*d*e^3*x*(-a*c)^(3/2) - 8*A*a*c^2*d^3*e + 8*A*
a^2*c*d*e^3 + 8*B*a*c*d^3*e*(-a*c)^(1/2) + 8*B*a*c^2*d^3*e*x - 8*B*a^2*c*d*
e^3*x + 8*A*c^2*d^3*e*x*(-a*c)^(1/2) - 14*A*a*c^2*d^2*e^2*x + 10*B*a*c*d^2*
e^2*x*(-a*c)^(1/2))*(c*((B*a*d^2)/2 + (A*d^2*(-a*c)^(1/2))/2 - A*a*d*e) - e
^2*((B*a^2)/2 + (A*a*(-a*c)^(1/2))/2) + B*a*d*e*(-a*c)^(1/2)))/(a^3*e^4 + a
*c^2*d^4 + 2*a^2*c*d^2*e^2) - (log(d + e*x)*(c*(B*d^2 - 2*A*d*e) - B*a*e^2)
)/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2) - (log(3*B*a^3*e^4 + 8*B*d^3*e*(-a*c)
^(3/2) + 3*B*a*c^2*d^4 + A*c^3*d^4*x - A*a^2*e^4*(-a*c)^(1/2) - A*c^2*d^4*(
-a*c)^(1/2) + A*a^2*c*e^4*x + 8*B*a^2*d*e^3*(-a*c)^(1/2) + 3*B*a^2*e^4*x*(-
a*c)^(1/2) + 3*B*c^2*d^4*x*(-a*c)^(1/2) + 10*B*d^2*e^2*x*(-a*c)^(3/2) - 10*
B*a^2*c*d^2*e^2 - 8*A*a*c^2*d^3*e + 8*A*a^2*c*d*e^3 + 8*B*a*c^2*d^3*e*x - 8
*B*a^2*c*d*e^3*x + 14*A*a*c*d^2*e^2*(-a*c)^(1/2) - 8*A*c^2*d^3*e*x*(-a*c)^(
1/2) - 14*A*a*c^2*d^2*e^2*x + 8*A*a*c*d*e^3*x*(-a*c)^(1/2))*(e^2*((B*a^2)/2
 - (A*a*(-a*c)^(1/2))/2) + c*((A*d^2*(-a*c)^(1/2))/2 - (B*a*d^2)/2 + A*a*d*
e) + B*a*d*e*(-a*c)^(1/2)))/(a^3*e^4 + a*c^2*d^4 + 2*a^2*c*d^2*e^2) - (A*e
- B*d)/((a*e^2 + c*d^2)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1337 $\int \frac{A+Bx}{(d+ex)^3\left(a+cx^2\right)}\,dx$

Optimal. Leaf size=251

$$\frac{Bd-Ae}{2(d+ex)^2\left(ae^2+cd^2\right)}+\frac{-aBe^2-2Acde+Bcd^2}{(d+ex)\left(ae^2+cd^2\right)^2}+\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}\left(ae^2+cd^2\right)^3}+c\log\left(a\right.$$

```
[Out] 1/2*(-A*e+B*d)/(a*e^2+c*d^2)/(e*x+d)^2+(-2*A*c*d*e-B*a*e^2+B*c*d^2)/(a*e^2+
c*d^2)^2/(e*x+d)-c*(A*a*e^3-3*A*c*d^2*e-3*B*a*d*e^2+B*c*d^3)*ln(e*x+d)/(a*e
^2+c*d^2)^3+1/2*c*(A*a*e^3-3*A*c*d^2*e-3*B*a*d*e^2+B*c*d^3)*ln(c*x^2+a)/(a*
e^2+c*d^2)^3+(A*c*d*(-3*a*e^2+c*d^2)+a*B*e*(-a*e^2+3*c*d^2))*arctan(x*c^(1/
2)/a^(1/2))*c^(1/2)/(a*e^2+c*d^2)^3/a^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {801, 635, 205, 260}

$$\frac{c\log\left(a+cx^2\right)\left(aAe^3-3aBde^2-3Acd^2e+Bcd^3\right)}{2\left(ae^2+cd^2\right)^3}+\frac{Bd-Ae}{2(d+ex)^2\left(ae^2+cd^2\right)}+\frac{-aBe^2-2Acde+Bcd^2}{(d+ex)\left(ae^2+cd^2\right)^2}-c\log(d+ex$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 + a*e^2)*(d + e*x)^2) + (B*c*d^2 - 2*A*c*d*e - a*B*e^
2)/((c*d^2 + a*e^2)^2*(d + e*x)) + (Sqrt[c]*(A*c*d*(c*d^2 - 3*a*e^2) + a*B*
e*(3*c*d^2 - a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(Sqrt[a]*(c*d^2 + a*e^2)^
3) - (c*(B*c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x])/(c*d^
2 + a*e^2)^3 + (c*(B*c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[a + c
*x^2])/(2*(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+cx^2\right)}\,dx=\int \Bigg(\frac{e(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)^3}+\frac{e\left(-Bcd^2+2Acde+aBe^2\right)}{\left(cd^2+ae^2\right)^2(d+ex)^2}+\frac{ce(-Bcd^3+3Acd^2e+3}{\left(cd^2+ae^2\right)^3(d}$$

$$=\frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2}+\frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)}-\frac{c(Bcd^3-3Acd^2e-3aBde^2+a}{\left(cd^2+ae^2\right)^3}$$

$$=\frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2}+\frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)}-\frac{c(Bcd^3-3Acd^2e-3aBde^2+a}{\left(cd^2+ae^2\right)^3}$$

$$=\frac{Bd-Ae}{2\left(cd^2+ae^2\right)(d+ex)^2}+\frac{Bcd^2-2Acde-aBe^2}{\left(cd^2+ae^2\right)^2(d+ex)}+\frac{\sqrt{c}\,(Acd\left(cd^2-3ae^2\right)+aBe(3c}{\sqrt{a}\,(cd^2+a}$$

Mathematica [**A**]   time = 0.36, size = 223, normalized size = 0.89

$$\frac{\frac{\left(ae^2+cd^2\right)\left(B\left(cd^2(3d+2ex)-ae^2(d+2ex)\right)-Ae\left(ae^2+cd(5d+4ex)\right)\right)}{(d+ex)^2}+\frac{2\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(cd^2-3ae^2\right)+aBe\left(3cd^2-ae^2\right)\right)}{\sqrt{a}}+c\log\left(a+cx^2\right)(a}{2\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + c*x^2)),x]
```

```
[Out] (((c*d^2 + a*e^2)*(B*(-(a*e^2*(d + 2*e*x)) + c*d^2*(3*d + 2*e*x)) - A*e*(a*
e^2 + c*d*(5*d + 4*e*x))))/(d + e*x)^2 + (2*Sqrt[c]*(A*c*d*(c*d^2 - 3*a*e^2
) + a*B*e*(3*c*d^2 - a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/Sqrt[a] - 2*c*(B*
c*d^3 - 3*A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[d + e*x] + c*(B*c*d^3 - 3*
A*c*d^2*e - 3*a*B*d*e^2 + a*A*e^3)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

fricas [**B**]   time = 49.68, size = 1350, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] [1/2*(3*B*c^2*d^5 - 5*A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a
^2*d*e^4 - A*a^2*e^5 - (A*c^2*d^5 + 3*B*a*c*d^4*e - 3*A*a*c*d^3*e^2 - B*a^2
*d^2*e^3 + (A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 - 3*A*a*c*d*e^4 - B*a^2*e^5)*x^
2 + 2*(A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - 3*A*a*c*d^2*e^3 - B*a^2*d*e^4)*x)*sq
rt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*x^2 + a)) + 2*(B*c^2*d^4*e -
 2*A*c^2*d^3*e^2 - 2*A*a*c*d*e^4 - B*a^2*e^5)*x + (B*c^2*d^5 - 3*A*c^2*d^4*
e - 3*B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*
B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d
^2*e^3 + A*a*c*d*e^4)*x)*log(c*x^2 + a) - 2*(B*c^2*d^5 - 3*A*c^2*d^4*e - 3*
B*a*c*d^3*e^2 + A*a*c*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*
d*e^4 + A*a*c*e^5)*x^2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3
 + A*a*c*d*e^4)*x)*log(e*x + d))/(c^3*d^8 + 3*a*c^2*d^6*e^2 + 3*a^2*c*d^4*e
^4 + a^3*d^2*e^6 + (c^3*d^6*e^2 + 3*a*c^2*d^4*e^4 + 3*a^2*c*d^2*e^6 + a^3*e
^8)*x^2 + 2*(c^3*d^7*e + 3*a*c^2*d^5*e^3 + 3*a^2*c*d^3*e^5 + a^3*d*e^7)*x),
 1/2*(3*B*c^2*d^5 - 5*A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a
^2*d*e^4 - A*a^2*e^5 + 2*(A*c^2*d^5 + 3*B*a*c*d^4*e - 3*A*a*c*d^3*e^2 - B*a
^2*d^2*e^3 + (A*c^2*d^3*e^2 + 3*B*a*c*d^2*e^3 - 3*A*a*c*d*e^4 - B*a^2*e^5)*
x^2 + 2*(A*c^2*d^4*e + 3*B*a*c*d^3*e^2 - 3*A*a*c*d^2*e^3 - B*a^2*d*e^4)*x)*
sqrt(c/a)*arctan(x*sqrt(c/a)) + 2*(B*c^2*d^4*e - 2*A*c^2*d^3*e^2 - 2*A*a*c*
d*e^4 - B*a^2*e^5)*x + (B*c^2*d^5 - 3*A*c^2*d^4*e - 3*B*a*c*d^3*e^2 + A*a*c
*d^2*e^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*d*e^4 + A*a*c*e^5)*x^
2 + 2*(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3 + A*a*c*d*e^4)*x)*lo
g(c*x^2 + a) - 2*(B*c^2*d^5 - 3*A*c^2*d^4*e - 3*B*a*c*d^3*e^2 + A*a*c*d^2*e
^3 + (B*c^2*d^3*e^2 - 3*A*c^2*d^2*e^3 - 3*B*a*c*d*e^4 + A*a*c*e^5)*x^2 + 2*
(B*c^2*d^4*e - 3*A*c^2*d^3*e^2 - 3*B*a*c*d^2*e^3 + A*a*c*d*e^4)*x)*log(e*x
+ d))/(c^3*d^8 + 3*a*c^2*d^6*e^2 + 3*a^2*c*d^4*e^4 + a^3*d^2*e^6 + (c^3*d^6
*e^2 + 3*a*c^2*d^4*e^4 + 3*a^2*c*d^2*e^6 + a^3*e^8)*x^2 + 2*(c^3*d^7*e + 3*
a*c^2*d^5*e^3 + 3*a^2*c*d^3*e^5 + a^3*d*e^7)*x)]
```

giac [A] time = 0.17, size = 383, normalized size = 1.53

$$\frac{\left(Bc^2d^3-3\,Ac^2d^2e-3\,Bacde^2+Aace^3\right)\log\left(cx^2+a\right)}{2\left(c^3d^6+3\,ac^2d^4e^2+3\,a^2cd^2e^4+a^3e^6\right)}-\frac{\left(Bc^2d^3e-3\,Ac^2d^2e^2-3\,Bacde^3+Aace^4\right)\log\left(|xe+d|\right)}{c^3d^6e+3\,ac^2d^4e^3+3\,a^2cd^2e^5+a^3e^7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(c*x^2 + a)/
(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (B*c^2*d^3*e - 3*
A*c^2*d^2*e^2 - 3*B*a*c*d*e^3 + A*a*c*e^4)*log(abs(x*e + d))/(c^3*d^6*e + 3
*a*c^2*d^4*e^3 + 3*a^2*c*d^2*e^5 + a^3*e^7) + (A*c^3*d^3 + 3*B*a*c^2*d^2*e
- 3*A*a*c^2*d*e^2 - B*a^2*c*e^3)*arctan(c*x/sqrt(a*c))/((c^3*d^6 + 3*a*c^2*
d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6)*sqrt(a*c)) + 1/2*(3*B*c^2*d^5 - 5*A*c^
2*d^4*e + 2*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 - B*a^2*d*e^4 - A*a^2*e^5 + 2*(
B*c^2*d^4*e - 2*A*c^2*d^3*e^2 - 2*A*a*c*d*e^4 - B*a^2*e^5)*x)/((c*d^2 + a*e
^2)^3*(x*e + d)^2)
```

maple [B] time = 0.06, size = 509, normalized size = 2.03

$$-\frac{3Aa\,c^2d\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}}+\frac{A\,c^3d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}}-\frac{B\,a^2c\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}}+\frac{3Ba\,c^2d^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+a),x)
```

```
[Out] 1/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*a*A*e^3-3/2*c^2/(a*e^2+c*d^2)^3*ln(c*x^2+
a)*A*d^2*e-3/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*a*B*d*e^2+1/2*c^2/(a*e^2+c*d^2
)^3*ln(c*x^2+a)*B*d^3-3*c^2/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*a*d*e^2+c^3/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
A*d^3-c/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a^2*e^3+3*c
^2/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*a*d^2*e-1/2/(a*e
^2+c*d^2)/(e*x+d)^2*A*e+1/2/(a*e^2+c*d^2)/(e*x+d)^2*B*d-2/(a*e^2+c*d^2)^2/(
e*x+d)*A*c*d*e-1/(a*e^2+c*d^2)^2/(e*x+d)*B*a*e^2+1/(a*e^2+c*d^2)^2/(e*x+d)*
B*c*d^2-c/(a*e^2+c*d^2)^3*ln(e*x+d)*a*A*e^3+3*c^2/(a*e^2+c*d^2)^3*ln(e*x+d)
*A*d^2*e+3*c/(a*e^2+c*d^2)^3*ln(e*x+d)*a*B*d*e^2-c^2/(a*e^2+c*d^2)^3*ln(e*x
+d)*B*d^3
```

maxima [A] time = 1.35, size = 419, normalized size = 1.67

$$\frac{\left(Bc^2d^3-3\,Ac^2d^2e-3\,Bacde^2+Aace^3\right)\log\left(cx^2+a\right)}{2\left(c^3d^6+3\,ac^2d^4e^2+3\,a^2cd^2e^4+a^3e^6\right)}-\frac{\left(Bc^2d^3-3\,Ac^2d^2e-3\,Bacde^2+Aace^3\right)\log\left(ex+d\right)}{c^3d^6+3\,ac^2d^4e^2+3\,a^2cd^2e^4+a^3e^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(c*x^2 + a)/
(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (B*c^2*d^3 - 3*A*
c^2*d^2*e - 3*B*a*c*d*e^2 + A*a*c*e^3)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*
e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + (A*c^3*d^3 + 3*B*a*c^2*d^2*e - 3*A*a*c^2
*d*e^2 - B*a^2*c*e^3)*arctan(c*x/sqrt(a*c))/((c^3*d^6 + 3*a*c^2*d^4*e^2 + 3
*a^2*c*d^2*e^4 + a^3*e^6)*sqrt(a*c)) + 1/2*(3*B*c*d^3 - 5*A*c*d^2*e - B*a*d
*e^2 - A*a*e^3 + 2*(B*c*d^2*e - 2*A*c*d*e^2 - B*a*e^3)*x)/(c^2*d^6 + 2*a*c*
d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 + 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^
2*d^5*e + 2*a*c*d^3*e^3 + a^2*d*e^5)*x)
```

mupad [**B**] time = 3.64, size = 1680, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)*(d + e*x)^3),x)
```

```
[Out] (log(B^2*a^7*e^10*(-a*c)^(1/2) - A^2*c^5*d^10*(-a*c)^(3/2) - 9*A^2*a^5*e^10
*(-a*c)^(3/2) + 9*B^2*c^3*d^10*(-a*c)^(5/2) + A^2*a*c^7*d^10*x + B^2*a^7*c*
e^10*x + 6*A^2*a*d^4*e^6*(-a*c)^(7/2) + 6*B^2*a*d^6*e^4*(-a*c)^(7/2) - 106*
A^2*c*d^6*e^4*(-a*c)^(7/2) + 27*B^2*c*d^8*e^2*(-a*c)^(7/2) + 9*A^2*a^6*c^2*
e^10*x + 9*B^2*a^2*c^6*d^10*x - 27*A^2*a^3*d^2*e^8*(-a*c)^(5/2) + 106*B^2*a
^3*d^4*e^6*(-a*c)^(5/2) - 77*B^2*a^5*d^2*e^8*(-a*c)^(3/2) + 77*A^2*c^3*d^8*
e^2*(-a*c)^(5/2) - 224*A*B*a*d^5*e^5*(-a*c)^(7/2) + 48*A*B*a^5*d*e^9*(-a*c)
^(3/2) - 64*A*B*c*d^7*e^3*(-a*c)^(7/2) - 48*A*B*c^3*d^9*e*(-a*c)^(5/2) + 77
*A^2*a^2*c^6*d^8*e^2*x + 106*A^2*a^3*c^5*d^6*e^4*x - 6*A^2*a^4*c^4*d^4*e^6*
x - 27*A^2*a^5*c^3*d^2*e^8*x - 27*B^2*a^3*c^5*d^8*e^2*x - 6*B^2*a^4*c^4*d^6
*e^4*x + 106*B^2*a^5*c^3*d^4*e^6*x + 77*B^2*a^6*c^2*d^2*e^8*x + 64*A*B*a^3*
d^3*e^7*(-a*c)^(5/2) - 48*A*B*a^2*c^6*d^9*e*x - 48*A*B*a^6*c^2*d*e^9*x + 64
*A*B*a^3*c^5*d^7*e^3*x + 224*A*B*a^4*c^4*d^5*e^5*x + 64*A*B*a^5*c^3*d^3*e^7
*x)*(a^2*e^3*((A*c)/2 - (B*(-a*c)^(1/2))/2) - e^2*((3*B*a^2*c*d)/2 + (3*A*a
*c*d*(-a*c)^(1/2))/2) - a*e*((3*A*c^2*d^2)/2 - (3*B*c*d^2*(-a*c)^(1/2))/2)
+ (B*a*c^2*d^3)/2 + (A*c^2*d^3*(-a*c)^(1/2))/2))/(a^4*e^6 + a*c^3*d^6 + 3*a
^3*c*d^2*e^4 + 3*a^2*c^2*d^4*e^2) - (log(d + e*x)*(c^2*(B*d^3 - 3*A*d^2*e)
+ a*c*(A*e^3 - 3*B*d*e^2)))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*
d^2*e^4) - (log(9*A^2*a^5*e^10*(-a*c)^(3/2) + A^2*c^5*d^10*(-a*c)^(3/2) - B
^2*a^7*e^10*(-a*c)^(1/2) - 9*B^2*c^3*d^10*(-a*c)^(5/2) + A^2*a*c^7*d^10*x +
 B^2*a^7*c*e^10*x - 6*A^2*a*d^4*e^6*(-a*c)^(7/2) - 6*B^2*a*d^6*e^4*(-a*c)^(
7/2) + 106*A^2*c*d^6*e^4*(-a*c)^(7/2) - 27*B^2*c*d^8*e^2*(-a*c)^(7/2) + 9*A
^2*a^6*c^2*e^10*x + 9*B^2*a^2*c^6*d^10*x + 27*A^2*a^3*d^2*e^8*(-a*c)^(5/2)
- 106*B^2*a^3*d^4*e^6*(-a*c)^(5/2) + 77*B^2*a^5*d^2*e^8*(-a*c)^(3/2) - 77*A
^2*c^3*d^8*e^2*(-a*c)^(5/2) + 224*A*B*a*d^5*e^5*(-a*c)^(7/2) - 48*A*B*a^5*d
*e^9*(-a*c)^(3/2) + 64*A*B*c*d^7*e^3*(-a*c)^(7/2) + 48*A*B*c^3*d^9*e*(-a*c)
^(5/2) + 77*A^2*a^2*c^6*d^8*e^2*x + 106*A^2*a^3*c^5*d^6*e^4*x - 6*A^2*a^4*c
^4*d^4*e^6*x - 27*A^2*a^5*c^3*d^2*e^8*x - 27*B^2*a^3*c^5*d^8*e^2*x - 6*B^2*
a^4*c^4*d^6*e^4*x + 106*B^2*a^5*c^3*d^4*e^6*x + 77*B^2*a^6*c^2*d^2*e^8*x -
64*A*B*a^3*d^3*e^7*(-a*c)^(5/2) - 48*A*B*a^2*c^6*d^9*e*x - 48*A*B*a^6*c^2*d
*e^9*x + 64*A*B*a^3*c^5*d^7*e^3*x + 224*A*B*a^4*c^4*d^5*e^5*x + 64*A*B*a^5*
c^3*d^3*e^7*x)*(e^2*((3*B*a^2*c*d)/2 - (3*A*a*c*d*(-a*c)^(1/2))/2) - a^2*e^
3*((A*c)/2 + (B*(-a*c)^(1/2))/2) + a*e*((3*A*c^2*d^2)/2 + (3*B*c*d^2*(-a*c)
^(1/2))/2) - (B*a*c^2*d^3)/2 + (A*c^2*d^3*(-a*c)^(1/2))/2))/(a^4*e^6 + a*c^
3*d^6 + 3*a^3*c*d^2*e^4 + 3*a^2*c^2*d^4*e^2) - ((A*a*e^3 - 3*B*c*d^3 + B*a*
d*e^2 + 5*A*c*d^2*e)/(2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x*(B*a*e^3
+ 2*A*c*d*e^2 - B*c*d^2*e))/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2))/(d^2 + e^2
*x^2 + 2*d*e*x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+a),x)
```

```
[Out] Timed out
```

3.1338 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=297

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}-\frac{e^2x\,(3Acd\,(2cd^2-5ae^2)-5}{2ac^3}$$

```
[Out] -1/2*e^2*(3*A*c*d*(-5*a*e^2+2*c*d^2)-5*a*B*e*(-a*e^2+6*c*d^2))*x/a/c^3-e^3*
(-A*a*e^2+2*A*c*d^2-5*B*a*d*e)*x^2/a/c^2-1/6*e^4*(3*A*c*d-5*B*a*e)*x^3/a/c^
2-1/2*(e*x+d)^4*(a*(A*e+B*d)-(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)+1/2*(A*c*d*(-15
*a^2*e^4+10*a*c*d^2*e^2+c^2*d^4)+5*a*B*e*(a^2*e^4-6*a*c*d^2*e^2+c^2*d^4))*a
rctan(x*c^(1/2)/a^(1/2))/a^(3/2)/c^(7/2)+e^2*(-A*a*e^3+5*A*c*d^2*e-5*B*a*d*
e^2+5*B*c*d^3)*ln(c*x^2+a)/c^3
```

Rubi [A] time = 0.34, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.227, Rules used = {819, 801, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}-\frac{e^3x^2\,(-aAe^2-5aBde+2Ac}{ac^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x]
```

```
[Out] -(e^2*(3*A*c*d*(2*c*d^2 - 5*a*e^2) - 5*a*B*e*(6*c*d^2 - a*e^2))*x)/(2*a*c^3
) - (e^3*(2*A*c*d^2 - 5*a*B*d*e - a*A*e^2)*x^2)/(a*c^2) - (e^4*(3*A*c*d - 5
*a*B*e)*x^3)/(6*a*c^2) - ((d + e*x)^4*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/
(2*a*c*(a + c*x^2)) + ((A*c*d*(c^2*d^4 + 10*a*c*d^2*e^2 - 15*a^2*e^4) + 5*a
*B*e*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*c^(7/2)) + (e^2*(5*B*c*d^3 + 5*A*c*d^2*e - 5*a*B*d*e^2 - a*A*e^3)*Lo
g[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)}+\frac{\int \frac{(d+ex)^3\left(Acd^2+ae(5Bd+4Ae)-e(3Acd-5aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)}+\frac{\int\left(-\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)}{c^2}-\frac{4e^3(2A}{}\right.}{}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4}{}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4}{}$$

$$= -\frac{e^2\left(3Acd\left(2cd^2-5ae^2\right)-5aBe\left(6cd^2-ae^2\right)\right)x}{2ac^3}-\frac{e^3\left(2Acd^2-5aBde-aAe^2\right)x^2}{ac^2}-\frac{e^4}{}$$

Mathematica [A] time = 0.18, size = 307, normalized size = 1.03

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)+5aBe\left(a^2e^4-6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}c^{7/2}}+\frac{-a^3e^4(Ae+5Bd+Bex)+5a^2c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x]
```

```
[Out] (e^3*(10*B*c*d^2 + 5*A*c*d*e - 2*a*B*e^2)*x)/c^3 + (e^4*(5*B*d + A*e)*x^2)/
(2*c^2) + (B*e^5*x^3)/(3*c^2) + (A*c^3*d^5*x - a^3*e^4*(5*B*d + A*e + B*e*x
) + 5*a^2*c*d*e^2*(2*B*d*(d + e*x) + A*e*(2*d + e*x)) - a*c^2*d^3*(5*A*e*(d
 + 2*e*x) + B*d*(d + 5*e*x)))/(2*a*c^3*(a + c*x^2)) + ((A*c*d*(c^2*d^4 + 10
*a*c*d^2*e^2 - 15*a^2*e^4) + 5*a*B*e*(c^2*d^4 - 6*a*c*d^2*e^2 + a^2*e^4))*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(7/2)) + (e^2*(5*B*c*d^3 + 5*A*c*d
^2*e - 5*a*B*d*e^2 - a*A*e^3)*Log[a + c*x^2])/c^3
```

fricas [B] time = 0.72, size = 1190, normalized size = 4.01

$$\left[\frac{4\,Ba^2c^3e^5x^5-6\,Ba^2c^3d^5-30\,Aa^2c^3d^4e+60\,Ba^3c^2d^3e^2+60\,Aa^3c^2d^2e^3-30\,Ba^4cde^4-6\,Aa^4ce^5+6\left(5\,Ba^2c^3de^4\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/12*(4*B*a^2*c^3*e^5*x^5 - 6*B*a^2*c^3*d^5 - 30*A*a^2*c^3*d^4*e + 60*B*a^
3*c^2*d^3*e^2 + 60*A*a^3*c^2*d^2*e^3 - 30*B*a^4*c*d*e^4 - 6*A*a^4*c*e^5 + 6
*(5*B*a^2*c^3*d*e^4 + A*a^2*c^3*e^5)*x^4 + 20*(6*B*a^2*c^3*d^2*e^3 + 3*A*a^
2*c^3*d*e^4 - B*a^3*c^2*e^5)*x^3 + 6*(5*B*a^3*c^2*d*e^4 + A*a^3*c^2*e^5)*x^
2 - 3*(A*a*c^3*d^5 + 5*B*a^2*c^2*d^4*e + 10*A*a^2*c^2*d^3*e^2 - 30*B*a^3*c*
d^2*e^3 - 15*A*a^3*c*d*e^4 + 5*B*a^4*e^5 + (A*c^4*d^5 + 5*B*a*c^3*d^4*e + 1
0*A*a*c^3*d^3*e^2 - 30*B*a^2*c^2*d^2*e^3 - 15*A*a^2*c^2*d*e^4 + 5*B*a^3*c*e
^5)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 6*(A*a*
c^4*d^5 - 5*B*a^2*c^3*d^4*e - 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 +
 15*A*a^3*c^2*d*e^4 - 5*B*a^4*c*e^5)*x + 12*(5*B*a^3*c^2*d^3*e^2 + 5*A*a^3*
c^2*d^2*e^3 - 5*B*a^4*c*d*e^4 - A*a^4*c*e^5 + (5*B*a^2*c^3*d^3*e^2 + 5*A*a^
2*c^3*d^2*e^3 - 5*B*a^3*c^2*d*e^4 - A*a^3*c^2*e^5)*x^2)*log(c*x^2 + a))/(a^
2*c^5*x^2 + a^3*c^4), 1/6*(2*B*a^2*c^3*e^5*x^5 - 3*B*a^2*c^3*d^5 - 15*A*a^2
*c^3*d^4*e + 30*B*a^3*c^2*d^3*e^2 + 30*A*a^3*c^2*d^2*e^3 - 15*B*a^4*c*d*e^4
 - 3*A*a^4*c*e^5 + 3*(5*B*a^2*c^3*d*e^4 + A*a^2*c^3*e^5)*x^4 + 10*(6*B*a^2*
c^3*d^2*e^3 + 3*A*a^2*c^3*d*e^4 - B*a^3*c^2*e^5)*x^3 + 3*(5*B*a^3*c^2*d*e^4
 + A*a^3*c^2*e^5)*x^2 + 3*(A*a*c^3*d^5 + 5*B*a^2*c^2*d^4*e + 10*A*a^2*c^2*d
^3*e^2 - 30*B*a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 5*B*a^4*e^5 + (A*c^4*d^5 +
 5*B*a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 - 30*B*a^2*c^2*d^2*e^3 - 15*A*a^2*c^2
*d*e^4 + 5*B*a^3*c*e^5)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 3*(A*a*c^4*d
^5 - 5*B*a^2*c^3*d^4*e - 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 + 15*A
*a^3*c^2*d*e^4 - 5*B*a^4*c*e^5)*x + 6*(5*B*a^3*c^2*d^3*e^2 + 5*A*a^3*c^2*d^
2*e^3 - 5*B*a^4*c*d*e^4 - A*a^4*c*e^5 + (5*B*a^2*c^3*d^3*e^2 + 5*A*a^2*c^3*
d^2*e^3 - 5*B*a^3*c^2*d*e^4 - A*a^3*c^2*e^5)*x^2)*log(c*x^2 + a))/(a^2*c^5*
x^2 + a^3*c^4)]
```

giac [**A**] time = 0.16, size = 347, normalized size = 1.17

$$\frac{\left(5\,Bcd^3e^2 + 5\,Acd^2e^3 - 5\,Bade^4 - Aae^5\right)\log\left(cx^2 + a\right)}{c^3} + \frac{(Ac^3d^5 + 5\,Bac^2d^4e + 10\,Aac^2d^3e^2 - 30\,Ba^2cd^2e^3 - 15}{2\,\sqrt{ac}\,ac^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (5*B*c*d^3*e^2 + 5*A*c*d^2*e^3 - 5*B*a*d*e^4 - A*a*e^5)*log(c*x^2 + a)/c^3
+ 1/2*(A*c^3*d^5 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 - 30*B*a^2*c*d^2*e^
3 - 15*A*a^2*c*d*e^4 + 5*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^3)
 - 1/2*(B*a*c^2*d^5 + 5*A*a*c^2*d^4*e - 10*B*a^2*c*d^3*e^2 - 10*A*a^2*c*d^2
*e^3 + 5*B*a^3*d*e^4 + A*a^3*e^5 - (A*c^3*d^5 - 5*B*a*c^2*d^4*e - 10*A*a*c^
2*d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d*e^4 - B*a^3*e^5)*x)/((c*x^2 +
a)*a*c^3) + 1/6*(2*B*c^4*x^3*e^5 + 15*B*c^4*d*x^2*e^4 + 60*B*c^4*d^2*x*e^3
+ 3*A*c^4*x^2*e^5 + 30*A*c^4*d*x*e^4 - 12*B*a*c^3*x*e^5)/c^6
```

maple [**A**] time = 0.06, size = 553, normalized size = 1.86

$$\frac{B\,e^5x^3}{3c^2} + \frac{5Aad\,e^4x}{2\left(c\,x^2 + a\right)c^2} - \frac{15Aad\,e^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^2} + \frac{A\,d^5x}{2\left(c\,x^2 + a\right)a} + \frac{A\,d^5\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a} - \frac{5A\,d^3e^2x}{\left(c\,x^2 + a\right)c} + \frac{5A\,d^3e^2\,\mathrm{arc}}{\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x)
```

```
[Out] 1/2*e^5/c^2*A*x^2-1/2/c^3/(c*x^2+a)*A*a^2*e^5-5/2/c/(c*x^2+a)*A*d^4*e-1/2/c
/(c*x^2+a)*B*d^5+1/3*e^5/c^2*B*x^3+5/c^2/(c*x^2+a)*a*x*B*d^2*e^3-1/c^3*a*ln
(c*x^2+a)*A*e^5+5/c^2*ln(c*x^2+a)*A*d^2*e^3-15/c^2*a/(a*c)^(1/2)*arctan(1/(
a*c)^(1/2)*c*x)*B*d^2*e^3+5/2/c^2/(c*x^2+a)*a*x*A*d*e^4-15/2/c^2*a/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d*e^4+5/c^2/(c*x^2+a)*A*d^2*a*e^3-5/c/(c*x^
2+a)*x*A*d^3*e^2+10*e^3/c^2*B*x*d^2-2*e^5/c^3*B*x*a+5/2*e^4/c^2*B*x^2*d+5*e
```

```
^4/c^2*A*x*d+1/2/(c*x^2+a)/a*x*A*d^5+5/c^2*ln(c*x^2+a)*B*d^3*e^2+1/2/a/(a*c
)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^5+5/2/c^3*a^2/(a*c)^(1/2)*arctan(1/(a
*c)^(1/2)*c*x)*B*e^5+5/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^4*e-1/
2/c^3/(c*x^2+a)*a^2*x*B*e^5-5/2/c/(c*x^2+a)*x*B*d^4*e-5/2/c^3/(c*x^2+a)*B*a
^2*d*e^4+5/c^2/(c*x^2+a)*B*d^3*a*e^2-5/c^3*a*ln(c*x^2+a)*B*d*e^4+5/c/(a*c)^
(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3*e^2
```

maxima [A] time = 1.34, size = 356, normalized size = 1.20

$$-\frac{Bac^2d^5+5\,Aac^2d^4e-10\,Ba^2cd^3e^2-10\,Aa^2cd^2e^3+5\,Ba^3de^4+Aa^3e^5-\left(Ac^3d^5-5\,Bac^2d^4e-10\,Aac^2d^3e^2+10\right.}{2\left(ac^4x^2+a^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*c^2*d^5 + 5*A*a*c^2*d^4*e - 10*B*a^2*c*d^3*e^2 - 10*A*a^2*c*d^2*e
^3 + 5*B*a^3*d*e^4 + A*a^3*e^5 - (A*c^3*d^5 - 5*B*a*c^2*d^4*e - 10*A*a*c^2*
d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d*e^4 - B*a^3*e^5)*x)/(a*c^4*x^2 +
 a^2*c^3) + (5*B*c*d^3*e^2 + 5*A*c*d^2*e^3 - 5*B*a*d*e^4 - A*a*e^5)*log(c*x
^2 + a)/c^3 + 1/6*(2*B*c*e^5*x^3 + 3*(5*B*c*d*e^4 + A*c*e^5)*x^2 + 6*(10*B*
c*d^2*e^3 + 5*A*c*d*e^4 - 2*B*a*e^5)*x)/c^3 + 1/2*(A*c^3*d^5 + 5*B*a*c^2*d^
4*e + 10*A*a*c^2*d^3*e^2 - 30*B*a^2*c*d^2*e^3 - 15*A*a^2*c*d*e^4 + 5*B*a^3*
e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^3)
```

mupad [B] time = 0.32, size = 370, normalized size = 1.25

$$\frac{x^2\,\left(A\,e^5+5\,B\,d\,e^4\right)}{2\,c^2}-\frac{\frac{A\,a^2\,e^5}{2}+\frac{B\,c^2\,d^5}{2}-\frac{x\,\left(-B\,a^3\,e^5+10\,B\,a^2\,c\,d^2\,e^3+5\,A\,a^2\,c\,d\,e^4-5\,B\,a\,c^2\,d^4\,e-10\,A\,a\,c^2\,d^3\,e^2+A\,c^3\,d^5\right)}{2\,a}+\frac{5\,B\,a^2\,d\,e^4}{2}+\frac{5\,A}{}}{c^4\,x^2+a\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + c*x^2)^2,x)
```

```
[Out] (x^2*(A*e^5 + 5*B*d*e^4))/(2*c^2) - ((A*a^2*e^5)/2 + (B*c^2*d^5)/2 - (x*(A*
c^3*d^5 - B*a^3*e^5 - 10*A*a*c^2*d^3*e^2 + 10*B*a^2*c*d^2*e^3 + 5*A*a^2*c*d
*e^4 - 5*B*a*c^2*d^4*e))/(2*a) + (5*B*a^2*d*e^4)/2 + (5*A*c^2*d^4*e)/2 - 5*
A*a*c*d^2*e^3 - 5*B*a*c*d^3*e^2)/(a*c^3 + c^4*x^2) - x*((2*B*a*e^5)/c^3 - (
5*d*e^3*(A*e + 2*B*d))/c^2) - (log(a + c*x^2)*(32*A*a^4*c^4*e^5 + 160*B*a^4
*c^4*d*e^4 - 160*A*a^3*c^5*d^2*e^3 - 160*B*a^3*c^5*d^3*e^2))/(32*a^3*c^7) +
 (atan((c^(1/2)*x)/a^(1/2))*(A*c^3*d^5 + 5*B*a^3*e^5 + 10*A*a*c^2*d^3*e^2 -
 30*B*a^2*c*d^2*e^3 - 15*A*a^2*c*d*e^4 + 5*B*a*c^2*d^4*e))/(2*a^(3/2)*c^(7/
2)) + (B*e^5*x^3)/(3*c^2)
```

sympy [B] time = 14.77, size = 1091, normalized size = 3.67

$$\frac{Be^5x^3}{3c^2}+x^2\left(\frac{Ae^5}{2c^2}+\frac{5Bde^4}{2c^2}\right)+x\left(\frac{5Ade^4}{c^2}-\frac{2Bae^5}{c^3}+\frac{10Bd^2e^3}{c^2}\right)+\left(-\frac{e^2\left(Aae^3-5Acd^2e+5Bade^2-5Bcd^3\right)}{c^3}-\frac{\sqrt{-a^3c^7}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+a)**2,x)
```

```
[Out] B*e**5*x**3/(3*c**2) + x**2*(A*e**5/(2*c**2) + 5*B*d*e**4/(2*c**2)) + x*(5*
A*d*e**4/c**2 - 2*B*a*e**5/c**3 + 10*B*d**2*e**3/c**2) + (-e**2*(A*a*e**3 -
 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 - sqrt(-a**3*c**7)*(-15*A*a
**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*B*a
**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))*log(x + (4*A*a**3*e**5
- 20*A*a**2*c*d**2*e**3 + 20*B*a**3*d*e**4 - 20*B*a**2*c*d**3*e**2 + 4*a**2
*c**3*(-e**2*(A*a*e**3 - 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 - s
qrt(-a**3*c**7)*(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5
+ 5*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))
)/(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**
5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)) + (-e**2*(A*a*e**3 - 5*A*c*
d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 + sqrt(-a**3*c**7)*(-15*A*a**2*c*d
*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*B*a**2*c*d
**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7))*log(x + (4*A*a**3*e**5 - 20*A*
a**2*c*d**2*e**3 + 20*B*a**3*d*e**4 - 20*B*a**2*c*d**3*e**2 + 4*a**2*c**3*(
-e**2*(A*a*e**3 - 5*A*c*d**2*e + 5*B*a*d*e**2 - 5*B*c*d**3)/c**3 + sqrt(-a*
*3*c**7)*(-15*A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a
**3*e**5 - 30*B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)/(4*a**3*c**7)))/(-15*
A*a**2*c*d*e**4 + 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 + 5*B*a**3*e**5 - 30*
B*a**2*c*d**2*e**3 + 5*B*a*c**2*d**4*e)) + (-A*a**3*e**5 + 10*A*a**2*c*d**2
*e**3 - 5*A*a*c**2*d**4*e - 5*B*a**3*d*e**4 + 10*B*a**2*c*d**3*e**2 - B*a*c
**2*d**5 + x*(5*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 + A*c**3*d**5 - B*a
**3*e**5 + 10*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e))/(2*a**2*c**3 + 2*a*c
**4*x**2)
```

3.1339 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=220

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)\left(-aBe^2+2Acde+3Bcd^2\right)}{c^3}\ 3$$

```
[Out] -3/2*e^2*(-A*a*e^2+A*c*d^2-4*B*a*d*e)*x/a/c^2-1/2*e^3*(A*c*d-2*B*a*e)*x^2/a
/c^2-1/2*(e*x+d)^3*(a*(A*e+B*d)-(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)+1/2*(4*a*B*d
*e*(-3*a*e^2+c*d^2)+A*(-3*a^2*e^4+6*a*c*d^2*e^2+c^2*d^4))*arctan(x*c^(1/2)/
a^(1/2))/a^(3/2)/c^(5/2)+e^2*(2*A*c*d*e-B*a*e^2+3*B*c*d^2)*ln(c*x^2+a)/c^3
```

Rubi [A] time = 0.28, antiderivative size = 220, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {819, 801, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)\left(-aBe^2+2Acde+3Bcd^2\right)}{c^3}\ 3$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x]
```

```
[Out] (-3*e^2*(A*c*d^2 - 4*a*B*d*e - a*A*e^2)*x)/(2*a*c^2) - (e^3*(A*c*d - 2*a*B*
e)*x^2)/(2*a*c^2) - ((d + e*x)^3*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(2*a*
c*(a + c*x^2)) + ((4*a*B*d*e*(c*d^2 - 3*a*e^2) + A*(c^2*d^4 + 6*a*c*d^2*e^2
 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(5/2)) + (e^2*(3*B
*c*d^2 + 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/c^3
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{(d+ex)^2\left(Acd^2+ae(4Bd+3Ae)-2e(Acd-2aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \left(-\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)}{c} - \frac{2e^3(Acd-2aBe)x}{c}\right.}{}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

$$= -\frac{3e^2\left(Acd^2-4aBde-aAe^2\right)x}{2ac^2} - \frac{e^3(Acd-2aBe)x^2}{2ac^2} - \frac{(d+ex)^3(a(Bd+Ae)-(Acd}{2ac\left(a+cx^2\right)}$$

Mathematica [**A**] time = 0.20, size = 231, normalized size = 1.05

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+4aBde\left(cd^2-3ae^2\right)\right)}{a^{3/2}} + \frac{-a^3Be^4+a^2ce^2(Ae(4d+ex)+2Bd(3d+2ex))-ac^2d^2(2Ae(2d+3ex)+Bd(d+4ex))+A}{a\left(a+cx^2\right)}}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x]
```

```
[Out] (2*c*e^3*(4*B*d + A*e)*x + B*c*e^4*x^2 + (-(a^3*B*e^4) + A*c^3*d^4*x + a^2*
c*e^2*(A*e*(4*d + e*x) + 2*B*d*(3*d + 2*e*x)) - a*c^2*d^2*(2*A*e*(2*d + 3*e
*x) + B*d*(d + 4*e*x))))/(a*(a + c*x^2)) + (Sqrt[c]*(4*a*B*d*e*(c*d^2 - 3*a*
e^2) + A*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]]
)/a^(3/2) + 2*e^2*(3*B*c*d^2 + 2*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*c^3)
```

fricas [**B**] time = 0.59, size = 849, normalized size = 3.86

$$\left[\frac{2\,Ba^2c^2e^4x^4 + 2\,Ba^3ce^4x^2 - 2\,Ba^2c^2d^4 - 8\,Aa^2c^2d^3e + 12\,Ba^3cd^2e^2 + 8\,Aa^3cde^3 - 2\,Ba^4e^4 + 4\left(4\,Ba^2c^2de^3 + A\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*B*a^2*c^2*e^4*x^4 + 2*B*a^3*c*e^4*x^2 - 2*B*a^2*c^2*d^4 - 8*A*a^2*c
^2*d^3*e + 12*B*a^3*c*d^2*e^2 + 8*A*a^3*c*d*e^3 - 2*B*a^4*e^4 + 4*(4*B*a^2*
c^2*d*e^3 + A*a^2*c^2*e^4)*x^3 + (A*a*c^2*d^4 + 4*B*a^2*c*d^3*e + 6*A*a^2*c
*d^2*e^2 - 12*B*a^3*d*e^3 - 3*A*a^3*e^4 + (A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*
A*a*c^2*d^2*e^2 - 12*B*a^2*c*d*e^3 - 3*A*a^2*c*e^4)*x^2)*sqrt(-a*c)*log((c*
x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(A*a*c^3*d^4 - 4*B*a^2*c^2*d^3*e
```

```
 - 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d*e^3 + 3*A*a^3*c*e^4)*x + 4*(3*B*a^3*c
*d^2*e^2 + 2*A*a^3*c*d*e^3 - B*a^4*e^4 + (3*B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2
*d*e^3 - B*a^3*c*e^4)*x^2)*log(c*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3), 1/2*(B*
a^2*c^2*e^4*x^4 + B*a^3*c*e^4*x^2 - B*a^2*c^2*d^4 - 4*A*a^2*c^2*d^3*e + 6*B
*a^3*c*d^2*e^2 + 4*A*a^3*c*d*e^3 - B*a^4*e^4 + 2*(4*B*a^2*c^2*d*e^3 + A*a^2
*c^2*e^4)*x^3 + (A*a*c^2*d^4 + 4*B*a^2*c*d^3*e + 6*A*a^2*c*d^2*e^2 - 12*B*a
^3*d*e^3 - 3*A*a^3*e^4 + (A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 -
 12*B*a^2*c*d*e^3 - 3*A*a^2*c*e^4)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (
A*a*c^3*d^4 - 4*B*a^2*c^2*d^3*e - 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d*e^3 +
3*A*a^3*c*e^4)*x + 2*(3*B*a^3*c*d^2*e^2 + 2*A*a^3*c*d*e^3 - B*a^4*e^4 + (3*
B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2*d*e^3 - B*a^3*c*e^4)*x^2)*log(c*x^2 + a))/(
a^2*c^4*x^2 + a^3*c^3)]
```

giac [A] time = 0.20, size = 261, normalized size = 1.19

$$\frac{\left(3\,Bcd^2e^2+2\,Acde^3-Bae^4\right)\log\left(cx^2+a\right)}{c^3}+\frac{\left(Ac^2d^4+4\,Bacd^3e+6\,Aacd^2e^2-12\,Ba^2de^3-3\,Aa^2e^4\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] (3*B*c*d^2*e^2 + 2*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/c^3 + 1/2*(A*c^2*d^4
 + 4*B*a*c*d^3*e + 6*A*a*c*d^2*e^2 - 12*B*a^2*d*e^3 - 3*A*a^2*e^4)*arctan(c
*x/sqrt(a*c))/(sqrt(a*c)*a*c^2) + 1/2*(B*c^2*x^2*e^4 + 8*B*c^2*d*x*e^3 + 2*
A*c^2*x*e^4)/c^4 - 1/2*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 -
 4*A*a^2*c*d*e^3 + B*a^3*e^4 - (A*c^3*d^4 - 4*B*a*c^2*d^3*e - 6*A*a*c^2*d^2
*e^2 + 4*B*a^2*c*d*e^3 + A*a^2*c*e^4)*x)/((c*x^2 + a)*a*c^3)
```

maple [B] time = 0.05, size = 414, normalized size = 1.88

$$\frac{Aa\,e^4x}{2\left(c\,x^2+a\right)c^2}-\frac{3Aa\,e^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^2}+\frac{A\,d^4x}{2\left(c\,x^2+a\right)a}+\frac{A\,d^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}-\frac{3A\,d^2e^2x}{\left(c\,x^2+a\right)c}+\frac{3A\,d^2e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x)
```

```
[Out] 1/2*B/c^2*e^4*x^2+A/c^2*e^4*x+4*B/c^2*d*e^3*x+1/2/c^2/(c*x^2+a)*a*x*A*e^4-3
/c/(c*x^2+a)*x*A*d^2*e^2+1/2/(c*x^2+a)/a*x*A*d^4+2/c^2/(c*x^2+a)*a*x*B*d*e^
3-2/c/(c*x^2+a)*x*B*d^3*e+2/c^2/(c*x^2+a)*A*a*d*e^3-2/c/(c*x^2+a)*A*d^3*e-1
/2/c^3/(c*x^2+a)*B*a^2*e^4+3/c^2/(c*x^2+a)*a*d^2*B*e^2-1/2/c/(c*x^2+a)*B*d^
4+2/c^2*ln(c*x^2+a)*A*d*e^3-1/c^3*a*ln(c*x^2+a)*B*e^4+3/c^2*ln(c*x^2+a)*B*d
^2*e^2-3/2/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^4+3/c/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*d^4-6/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e^3+2/c/(a*c
)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e
```

maxima [A] time = 1.51, size = 268, normalized size = 1.22

$$-\frac{Bac^2d^4+4\,Aac^2d^3e-6\,Ba^2cd^2e^2-4\,Aa^2cde^3+Ba^3e^4-\left(Ac^3d^4-4\,Bac^2d^3e-6\,Aac^2d^2e^2+4\,Ba^2cde^3+Aa^2ce\right.}{2\left(ac^4x^2+a^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*c^2*d^4 + 4*A*a*c^2*d^3*e - 6*B*a^2*c*d^2*e^2 - 4*A*a^2*c*d*e^3 +
 B*a^3*e^4 - (A*c^3*d^4 - 4*B*a*c^2*d^3*e - 6*A*a*c^2*d^2*e^2 + 4*B*a^2*c*d
*e^3 + A*a^2*c*e^4)*x)/(a*c^4*x^2 + a^2*c^3) + 1/2*(B*e^4*x^2 + 2*(4*B*d*e^
3 + A*e^4)*x)/c^2 + (3*B*c*d^2*e^2 + 2*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/
c^3 + 1/2*(A*c^2*d^4 + 4*B*a*c*d^3*e + 6*A*a*c*d^2*e^2 - 12*B*a^2*d*e^3 - 3
*A*a^2*e^4)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c^2)
```

mupad [B] time = 1.91, size = 276, normalized size = 1.25

$$\frac{x\,\left(A\,e^4+4\,B\,d\,e^3\right)}{c^2}-\frac{\frac{B\,a^2\,e^4-6\,B\,a\,c\,d^2\,e^2-4\,A\,a\,c\,d\,e^3+B\,c^2\,d^4+4\,A\,c^2\,d^3\,e}{2\,c}-\frac{x\,\left(4\,B\,a^2\,d\,e^3+A\,a^2\,e^4-4\,B\,a\,c\,d^3\,e-6\,A\,a\,c\,d^2\,e^2+A\,c^2\,d^4\right)}{2\,a}}{c^3\,x^2+a\,c^2}+\mathrm{ata}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2)^2,x)
```

```
[Out] (x*(A*e^4 + 4*B*d*e^3))/c^2 - ((B*a^2*e^4 + B*c^2*d^4 + 4*A*c^2*d^3*e - 4*A
*a*c*d*e^3 - 6*B*a*c*d^2*e^2)/(2*c) - (x*(A*a^2*e^4 + A*c^2*d^4 + 4*B*a^2*d
*e^3 - 4*B*a*c*d^3*e - 6*A*a*c*d^2*e^2))/(2*a))/(a*c^2 + c^3*x^2) + (atan((
c^(1/2)*x)/a^(1/2))*(A*c^2*d^4 - 3*A*a^2*e^4 - 12*B*a^2*d*e^3 + 4*B*a*c*d^3
*e + 6*A*a*c*d^2*e^2))/(2*a^(3/2)*c^(5/2)) + (log(a + c*x^2)*(64*A*a^3*c^4*
d*e^3 - 32*B*a^4*c^3*e^4 + 96*B*a^3*c^4*d^2*e^2))/(32*a^3*c^6) + (B*e^4*x^2
)/(2*c^2)
```

sympy [B] time = 10.54, size = 836, normalized size = 3.80

$$\frac{Be^4x^2}{2c^2}+x\left(\frac{Ae^4}{c^2}+\frac{4Bde^3}{c^2}\right)+\left(-\frac{e^2\left(-2Acde+Bae^2-3Bcd^2\right)}{c^3}-\frac{\sqrt{-a^3c^7}\,\left(3Aa^2e^4-6Aacd^2e^2-Ac^2d^4+12Ba^2de\right.}{4a^3c^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a)**2,x)
```

```
[Out] B*e**4*x**2/(2*c**2) + x*(A*e**4/c**2 + 4*B*d*e**3/c**2) + (-e**2*(-2*A*c*d
*e + B*a*e**2 - 3*B*c*d**2)/c**3 - sqrt(-a**3*c**7)*(3*A*a**2*e**4 - 6*A*a*
c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(4*a**3*c**6
))*log(x + (8*A*a**2*c*d*e**3 - 4*B*a**3*e**4 + 12*B*a**2*c*d**2*e**2 - 4*a
**2*c**3*(-e**2*(-2*A*c*d*e + B*a*e**2 - 3*B*c*d**2)/c**3 - sqrt(-a**3*c**7
)*(3*A*a**2*e**4 - 6*A*a*c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B
*a*c*d**3*e)/(4*a**3*c**6)))/(3*A*a**2*c*e**4 - 6*A*a*c**2*d**2*e**2 - A*c*
*3*d**4 + 12*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + (-e**2*(-2*A*c*d*e + B
*a*e**2 - 3*B*c*d**2)/c**3 + sqrt(-a**3*c**7)*(3*A*a**2*e**4 - 6*A*a*c*d**2
*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d**3*e)/(4*a**3*c**6))*log
(x + (8*A*a**2*c*d*e**3 - 4*B*a**3*e**4 + 12*B*a**2*c*d**2*e**2 - 4*a**2*c*
*3*(-e**2*(-2*A*c*d*e + B*a*e**2 - 3*B*c*d**2)/c**3 + sqrt(-a**3*c**7)*(3*A
*a**2*e**4 - 6*A*a*c*d**2*e**2 - A*c**2*d**4 + 12*B*a**2*d*e**3 - 4*B*a*c*d
**3*e)/(4*a**3*c**6)))/(3*A*a**2*c*e**4 - 6*A*a*c**2*d**2*e**2 - A*c**3*d**
4 + 12*B*a**2*c*d*e**3 - 4*B*a*c**2*d**3*e)) + (4*A*a**2*c*d*e**3 - 4*A*a*c
**2*d**3*e - B*a**3*e**4 + 6*B*a**2*c*d**2*e**2 - B*a*c**2*d**4 + x*(A*a**2
*c*e**4 - 6*A*a*c**2*d**2*e**2 + A*c**3*d**4 + 4*B*a**2*c*d*e**3 - 4*B*a*c*
*2*d**3*e))/(2*a**2*c**3 + 2*a*c**4*x**2)
```

3.1340 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=161

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)(Ae+3Bd)}{2c^2}-\frac{e^2x(Acd-3aBe)}{2ac^2}-(d+ex)^2(a($$

```
[Out] -1/2*e^2*(A*c*d-3*B*a*e)*x/a/c^2-1/2*(e*x+d)^2*(a*(A*e+B*d)-(A*c*d-B*a*e)*x
)/a/c/(c*x^2+a)+1/2*(3*a*B*e*(-a*e^2+c*d^2)+A*c*d*(3*a*e^2+c*d^2))*arctan(x
*c^(1/2)/a^(1/2))/a^(3/2)/c^(5/2)+1/2*e^2*(A*e+3*B*d)*ln(c*x^2+a)/c^2
```

Rubi [A] time = 0.21, antiderivative size = 161, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {819, 774, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{2a^{3/2}c^{5/2}}+\frac{e^2\log\left(a+cx^2\right)(Ae+3Bd)}{2c^2}-\frac{e^2x(Acd-3aBe)}{2ac^2}-(d+ex)^2(a($$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x]
```

```
[Out] -(e^2*(A*c*d - 3*a*B*e)*x)/(2*a*c^2) - ((d + e*x)^2*(a*(B*d + A*e) - (A*c*d
 - a*B*e)*x))/(2*a*c*(a + c*x^2)) + ((3*a*B*e*(c*d^2 - a*e^2) + A*c*d*(c*d^
2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(5/2)) + (e^2*(3*B*
d + A*e)*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{(d+ex)\left(Acd^2+ae(3Bd+2Ae)-e(Acd-3aBe)x\right)}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{ae^2(Acd-3aBe)+cd(Acd}{}}{}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(e^2(3Bd+Ae)\right)\int \frac{}{a+}}{c}$$

$$= -\frac{e^2(Acd-3aBe)x}{2ac^2} - \frac{(d+ex)^2(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(3aBe\left(cd^2-ae^2\right)+\right.}{}$$

Mathematica [A] time = 0.12, size = 171, normalized size = 1.06

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+3aBe\left(cd^2-ae^2\right)\right)}{a^{3/2}} + \frac{\sqrt{c}\left(a^2e^2(Ae+3Bd+Bex)-acd(3Ae(d+ex)+Bd(d+3ex))+Ac^2d^3x\right)}{a\left(a+cx^2\right)} + \sqrt{c}\,e^2\log\left(a+cx^2\right)(A}{2c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x]
```

```
[Out] (2*B*Sqrt[c]*e^3*x + (Sqrt[c]*(A*c^2*d^3*x + a^2*e^2*(3*B*d + A*e + B*e*x)
- a*c*d*(3*A*e*(d + e*x) + B*d*(d + 3*e*x))))/(a*(a + c*x^2)) + ((3*a*B*e*(
c*d^2 - a*e^2) + A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3
/2) + Sqrt[c]*e^2*(3*B*d + A*e)*Log[a + c*x^2])/(2*c^(5/2))
```

fricas [B] time = 0.52, size = 609, normalized size = 3.78

$$\left[\frac{4\,Ba^2c^2e^3x^3 - 2\,Ba^2c^2d^3 - 6\,Aa^2c^2d^2e + 6\,Ba^3cde^2 + 2\,Aa^3ce^3 + \left(Aac^2d^3 + 3\,Ba^2cd^2e + 3\,Aa^2cde^2 - 3\,Ba^3e^3\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(4*B*a^2*c^2*e^3*x^3 - 2*B*a^2*c^2*d^3 - 6*A*a^2*c^2*d^2*e + 6*B*a^3*c
*d*e^2 + 2*A*a^3*c*e^3 + (A*a*c^2*d^3 + 3*B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 -
 3*B*a^3*e^3 + (A*c^3*d^3 + 3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - 3*B*a^2*c*e
^3)*x^2)*sqrt(-a*c)*log((c*x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 2*(A*a*
c^3*d^3 - 3*B*a^2*c^2*d^2*e - 3*A*a^2*c^2*d*e^2 + 3*B*a^3*c*e^3)*x + 2*(3*B
*a^3*c*d*e^2 + A*a^3*c*e^3 + (3*B*a^2*c^2*d*e^2 + A*a^2*c^2*e^3)*x^2)*log(c
*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3), 1/2*(2*B*a^2*c^2*e^3*x^3 - B*a^2*c^2*d^
3 - 3*A*a^2*c^2*d^2*e + 3*B*a^3*c*d*e^2 + A*a^3*c*e^3 + (A*a*c^2*d^3 + 3*B*
a^2*c*d^2*e + 3*A*a^2*c*d*e^2 - 3*B*a^3*e^3 + (A*c^3*d^3 + 3*B*a*c^2*d^2*e
+ 3*A*a*c^2*d*e^2 - 3*B*a^2*c*e^3)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + (
A*a*c^3*d^3 - 3*B*a^2*c^2*d^2*e - 3*A*a^2*c^2*d*e^2 + 3*B*a^3*c*e^3)*x + (3
*B*a^3*c*d*e^2 + A*a^3*c*e^3 + (3*B*a^2*c^2*d*e^2 + A*a^2*c^2*e^3)*x^2)*log
(c*x^2 + a))/(a^2*c^4*x^2 + a^3*c^3)]
```

giac [A] time = 0.19, size = 179, normalized size = 1.11

$$\frac{Bxe^3}{c^2}+\frac{\left(3\,Bde^2+Ae^3\right)\log\left(cx^2+a\right)}{2\,c^2}+\frac{\left(Ac^2d^3+3\,Bacd^2e+3\,Aacde^2-3\,Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac^2}-\frac{Bacd^3+3\,Aacd^2e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] B*x*e^3/c^2 + 1/2*(3*B*d*e^2 + A*e^3)*log(c*x^2 + a)/c^2 + 1/2*(A*c^2*d^3 +
 3*B*a*c*d^2*e + 3*A*a*c*d*e^2 - 3*B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqrt(a
*c)*a*c^2) - 1/2*(B*a*c*d^3 + 3*A*a*c*d^2*e - 3*B*a^2*d*e^2 - A*a^2*e^3 - (
A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*x)/((c*x^2 + a)*a*c^
2)
```

maple [B] time = 0.05, size = 296, normalized size = 1.84

$$\frac{A\,d^3x}{2\left(c\,x^2+a\right)a}+\frac{A\,d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}-\frac{3Ad\,e^2x}{2\left(c\,x^2+a\right)c}+\frac{3Ad\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c}+\frac{Ba\,e^3x}{2\left(c\,x^2+a\right)c^2}-\frac{3Ba\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^2}-\frac{}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x)
```

```
[Out] B/c^2*e^3*x-3/2/c/(c*x^2+a)*x*A*d*e^2+1/2/(c*x^2+a)/a*x*A*d^3+1/2/c^2/(c*x^
2+a)*a*x*B*e^3-3/2/c/(c*x^2+a)*x*B*d^2*e+1/2/c^2/(c*x^2+a)*a*A*e^3-3/2/c/(c
*x^2+a)*A*d^2*e+3/2/c^2/(c*x^2+a)*a*B*d*e^2-1/2/c/(c*x^2+a)*B*d^3+1/2/c^2*l
n(c*x^2+a)*A*e^3+3/2/c^2*ln(c*x^2+a)*B*d*e^2+3/2/c/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*A*d*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^3-3/2
/c^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e^3+3/2/c/(a*c)^(1/2)*arctan
(1/(a*c)^(1/2)*c*x)*B*d^2*e
```

maxima [A] time = 1.15, size = 188, normalized size = 1.17

$$\frac{Be^3x}{c^2}-\frac{Bacd^3+3\,Aacd^2e-3\,Ba^2de^2-Aa^2e^3-\left(Ac^2d^3-3\,Bacd^2e-3\,Aacde^2+Ba^2e^3\right)x}{2\left(ac^3x^2+a^2c^2\right)}+\frac{\left(3\,Bde^2+Ae^3\right)\log\left(cx\right.}{2\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/c^2 - 1/2*(B*a*c*d^3 + 3*A*a*c*d^2*e - 3*B*a^2*d*e^2 - A*a^2*e^3 -
(A*c^2*d^3 - 3*B*a*c*d^2*e - 3*A*a*c*d*e^2 + B*a^2*e^3)*x)/(a*c^3*x^2 + a^2
*c^2) + 1/2*(3*B*d*e^2 + A*e^3)*log(c*x^2 + a)/c^2 + 1/2*(A*c^2*d^3 + 3*B*a
*c*d^2*e + 3*A*a*c*d*e^2 - 3*B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*
c^2)
```

mupad [B] time = 0.19, size = 193, normalized size = 1.20

$$\frac{\frac{x\left(B\,a^2\,e^3-3\,B\,a\,c\,d^2\,e-3\,A\,a\,c\,d\,e^2+A\,c^2\,d^3\right)}{2\,a}+\frac{A\,a\,e^3}{2}-\frac{B\,c\,d^3}{2}+\frac{3\,B\,a\,d\,e^2}{2}-\frac{3\,A\,c\,d^2\,e}{2}}{c^3\,x^2+a\,c^2}+\frac{\ln\left(c\,x^2+a\right)\,\left(16\,A\,a^3\,c^3\,e^3+48\,B\,d\,a^3\,c^3\,e^2\right)}{32\,a^3\,c^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2)^2,x)
```

```
[Out] ((x*(A*c^2*d^3 + B*a^2*e^3 - 3*A*a*c*d*e^2 - 3*B*a*c*d^2*e))/(2*a) + (A*a*e
^3)/2 - (B*c*d^3)/2 + (3*B*a*d*e^2)/2 - (3*A*c*d^2*e)/2)/(a*c^2 + c^3*x^2)
```

```
+ (log(a + c*x^2)*(16*A*a^3*c^3*e^3 + 48*B*a^3*c^3*d*e^2))/(32*a^3*c^5) + (
atan((c^(1/2)*x)/a^(1/2))*(A*c^2*d^3 - 3*B*a^2*e^3 + 3*A*a*c*d*e^2 + 3*B*a*
c*d^2*e))/(2*a^(3/2)*c^(5/2)) + (B*e^3*x)/c^2
```

sympy [B] time = 6.04, size = 583, normalized size = 3.62

$$\frac{Be^3x}{c^2}+\left(\frac{e^2\left(Ae+3Bd\right)}{2c^2}-\frac{\sqrt{-a^3c^5}\left(-3Aacde^2-Ac^2d^3+3Ba^2e^3-3Bacd^2e\right)}{4a^3c^5}\right)\log\left(x+\frac{2Aa^2e^3+6Ba^2de^2-4a^2}{-3Aa}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a)**2,x)
```

```
[Out] B*e**3*x/c**2 + (e**2*(A*e + 3*B*d)/(2*c**2) - sqrt(-a**3*c**5)*(-3*A*a*c*d
*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*a*c*d**2*e)/(4*a**3*c**5))*log(x
+ (2*A*a**2*e**3 + 6*B*a**2*d*e**2 - 4*a**2*c**2*(e**2*(A*e + 3*B*d)/(2*c**
2) - sqrt(-a**3*c**5)*(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*
a*c*d**2*e)/(4*a**3*c**5)))/(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3
- 3*B*a*c*d**2*e)) + (e**2*(A*e + 3*B*d)/(2*c**2) + sqrt(-a**3*c**5)*(-3*A*
a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 - 3*B*a*c*d**2*e)/(4*a**3*c**5))*l
og(x + (2*A*a**2*e**3 + 6*B*a**2*d*e**2 - 4*a**2*c**2*(e**2*(A*e + 3*B*d)/(
2*c**2) + sqrt(-a**3*c**5)*(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*e**3 -
 3*B*a*c*d**2*e)/(4*a**3*c**5)))/(-3*A*a*c*d*e**2 - A*c**2*d**3 + 3*B*a**2*
e**3 - 3*B*a*c*d**2*e)) + (A*a**2*e**3 - 3*A*a*c*d**2*e + 3*B*a**2*d*e**2 -
 B*a*c*d**3 + x*(-3*A*a*c*d*e**2 + A*c**2*d**3 + B*a**2*e**3 - 3*B*a*c*d**2
*e))/(2*a**2*c**2 + 2*a*c**3*x**2)
```

3.1341 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=112

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(ae(Ae+2Bd)+Acd^2\right)}{2a^{3/2}c^{3/2}}-\frac{(d+ex)(a(Ae+Bd)-x(Acd-aBe))}{2ac\left(a+cx^2\right)}+\frac{Be^2\log\left(a+cx^2\right)}{2c^2}$$

```
[Out] -1/2*(e*x+d)*(a*(A*e+B*d)-(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)+1/2*(A*c*d^2+a*e*(
A*e+2*B*d))*arctan(x*c^(1/2)/a^(1/2))/a^(3/2)/c^(3/2)+1/2*B*e^2*ln(c*x^2+a)
/c^2
```

Rubi [A] time = 0.07, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {819, 635, 205, 260}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(ae(Ae+2Bd)+Acd^2\right)}{2a^{3/2}c^{3/2}}-\frac{(d+ex)(a(Ae+Bd)-x(Acd-aBe))}{2ac\left(a+cx^2\right)}+\frac{Be^2\log\left(a+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x]
```

```
[Out] -((d + e*x)*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(2*a*c*(a + c*x^2)) + ((A*
c*d^2 + a*e*(2*B*d + A*e))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
 + (B*e^2*Log[a + c*x^2])/(2*c^2)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\int \frac{Acd^2+ae(2Bd+Ae)+2aBe^2x}{a+cx^2}\,dx}{2ac}$$

$$= -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(Be^2\right)\int \frac{x}{a+cx^2}\,dx}{c} + \frac{(Acd^2+ae(2Bd+Ae}{2ac}$$

$$= -\frac{(d+ex)(a(Bd+Ae)-(Acd-aBe)x)}{2ac\left(a+cx^2\right)} + \frac{\left(Acd^2+ae(2Bd+Ae)\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}c^{3/2}} + B$$

Mathematica [A] time = 0.10, size = 119, normalized size = 1.06

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aAe^2+2aBde+Acd^2\right)}{a^{3/2}} + \frac{a^2Be^2-ac(Ae(2d+ex)+Bd(d+2ex))+Ac^2d^2x}{a\left(a+cx^2\right)} + Be^2\log\left(a+cx^2\right)}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x]
```

```
[Out] ((a^2*B*e^2 + A*c^2*d^2*x - a*c*(A*e*(2*d + e*x) + B*d*(d + 2*e*x)))/(a*(a
+ c*x^2)) + (Sqrt[c]*(A*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqr
t[a]])/a^(3/2) + B*e^2*Log[a + c*x^2])/(2*c^2)
```

fricas [A] time = 0.66, size = 384, normalized size = 3.43

$$\Bigg[-\frac{2\,Ba^2cd^2+4\,Aa^2cde-2\,Ba^3e^2+\left(Aacd^2+2\,Ba^2de+Aa^2e^2+\left(Ac^2d^2+2\,Bacde+Aace^2\right)x^2\right)\sqrt{-ac}\,\log(\frac{cx^2}{}}{4\left(a^2c^3x^2+a^3c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c*d^2 + 4*A*a^2*c*d*e - 2*B*a^3*e^2 + (A*a*c*d^2 + 2*B*a^2*d
*e + A*a^2*e^2 + (A*c^2*d^2 + 2*B*a*c*d*e + A*a*c*e^2)*x^2)*sqrt(-a*c)*log(
(c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^2*d^2 - 2*B*a^2*c*d*e
- A*a^2*c*e^2)*x - 2*(B*a^2*c*e^2*x^2 + B*a^3*e^2)*log(c*x^2 + a))/(a^2*c^3
*x^2 + a^3*c^2), -1/2*(B*a^2*c*d^2 + 2*A*a^2*c*d*e - B*a^3*e^2 - (A*a*c*d^2
 + 2*B*a^2*d*e + A*a^2*e^2 + (A*c^2*d^2 + 2*B*a*c*d*e + A*a*c*e^2)*x^2)*sqr
t(a*c)*arctan(sqrt(a*c)*x/a) - (A*a*c^2*d^2 - 2*B*a^2*c*d*e - A*a^2*c*e^2)*
x - (B*a^2*c*e^2*x^2 + B*a^3*e^2)*log(c*x^2 + a))/(a^2*c^3*x^2 + a^3*c^2)]
```

giac [A] time = 0.16, size = 127, normalized size = 1.13

$$\frac{Be^2\log\left(cx^2+a\right)}{2\,c^2} + \frac{\left(Acd^2+2\,Bade+Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac} + \frac{\left(Acd^2-2\,Bade-Aae^2\right)x - \frac{Bacd^2+2\,Aacde-Ba^2e^2}{c}}{2\left(cx^2+a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*B*e^2*log(c*x^2 + a)/c^2 + 1/2*(A*c*d^2 + 2*B*a*d*e + A*a*e^2)*arctan(c
*x/sqrt(a*c))/(sqrt(a*c)*a*c) + 1/2*((A*c*d^2 - 2*B*a*d*e - A*a*e^2)*x - (B
*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2)/c)/((c*x^2 + a)*a*c)
```

maple [A] time = 0.06, size = 151, normalized size = 1.35

$$\frac{A\,d^{2}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a}+\frac{A\,e^{2}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c}+\frac{Bde\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{\sqrt{ac}\;c}+\frac{B\,e^{2}\ln\left(c\,x^{2}+a\right)}{2c^{2}}+\frac{-\frac{\left(Aa\,e^{2}-Ac\,d^{2}+2aBde\right)x}{2ac}-\frac{2Acde-Ba\,e^{2}+}{2c^{2}}}{c\,x^{2}+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x)
```

```
[Out] (-1/2*(A*a*e^2-A*c*d^2+2*B*a*d*e)/a/c*x-1/2*(2*A*c*d*e-B*a*e^2+B*c*d^2)/c^2
)/(c*x^2+a)+1/2*B*e^2*ln(c*x^2+a)/c^2+1/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*e^2+1/2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2+1/c/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e
```

maxima [A] time = 1.28, size = 130, normalized size = 1.16

$$\frac{Be^{2}\log\left(cx^{2}+a\right)}{2\,c^{2}}-\frac{Bacd^{2}+2\,Aacde-Ba^{2}e^{2}-\left(Ac^{2}d^{2}-2\,Bacde-Aace^{2}\right)x}{2\left(ac^{3}x^{2}+a^{2}c^{2}\right)}+\frac{\left(Acd^{2}+2\,Bade+Aae^{2}\right)\arctan\left(\frac{c}{\sqrt{}}\right.}{2\,\sqrt{ac}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*B*e^2*log(c*x^2 + a)/c^2 - 1/2*(B*a*c*d^2 + 2*A*a*c*d*e - B*a^2*e^2 - (
A*c^2*d^2 - 2*B*a*c*d*e - A*a*c*e^2)*x)/(a*c^3*x^2 + a^2*c^2) + 1/2*(A*c*d^
2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c)
```

mupad [B] time = 1.80, size = 203, normalized size = 1.81

$$\frac{B\,a\,e^{2}}{2\,\left(c^{3}\,x^{2}+a\,c^{2}\right)}-\frac{B\,d^{2}}{2\,\left(c^{2}\,x^{2}+a\,c\right)}-\frac{A\,d\,e}{c^{2}\,x^{2}+a\,c}+\frac{A\,d^{2}\,x}{2\,\left(a^{2}+c\,a\,x^{2}\right)}-\frac{A\,e^{2}\,x}{2\,\left(c^{2}\,x^{2}+a\,c\right)}+\frac{B\,e^{2}\,\ln\left(c\,x^{2}+a\right)}{2\,c^{2}}+\frac{A\,d^{2}\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right.}{2\,a^{3/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2)^2,x)
```

```
[Out] (B*a*e^2)/(2*(a*c^2 + c^3*x^2)) - (B*d^2)/(2*(a*c + c^2*x^2)) - (A*d*e)/(a*
c + c^2*x^2) + (A*d^2*x)/(2*(a^2 + a*c*x^2)) - (A*e^2*x)/(2*(a*c + c^2*x^2)
) + (B*e^2*log(a + c*x^2))/(2*c^2) + (A*d^2*atan((c^(1/2)*x)/a^(1/2)))/(2*a
^(3/2)*c^(1/2)) + (A*e^2*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(1/2)*c^(3/2)) - (
B*d*e*x)/(a*c + c^2*x^2) + (B*d*e*atan((c^(1/2)*x)/a^(1/2)))/(a^(1/2)*c^(3/
2))
```

sympy [B] time = 2.96, size = 382, normalized size = 3.41

$$\left(\frac{Be^{2}}{2c^{2}}-\frac{\sqrt{-a^{3}c^{5}}\,\left(Aae^{2}+Acd^{2}+2Bade\right)}{4a^{3}c^{4}}\right)\log\left(x+\frac{-2Ba^{2}e^{2}+4a^{2}c^{2}\left(\frac{Be^{2}}{2c^{2}}-\frac{\sqrt{-a^{3}c^{5}}\,\left(Aae^{2}+Acd^{2}+2Bade\right)}{4a^{3}c^{4}}\right)}{Aace^{2}+Ac^{2}d^{2}+2Bacde}\right)+\left(\frac{Be^{2}}{2c^{2}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a)**2,x)
```

```
[Out] (B*e**2/(2*c**2) - sqrt(-a**3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a*
*3*c**4))*log(x + (-2*B*a**2*e**2 + 4*a**2*c**2*(B*e**2/(2*c**2) - sqrt(-a*
*3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a**3*c**4)))/(A*a*c*e**2 + A*
c**2*d**2 + 2*B*a*c*d*e)) + (B*e**2/(2*c**2) + sqrt(-a**3*c**5)*(A*a*e**2 +
 A*c*d**2 + 2*B*a*d*e)/(4*a**3*c**4))*log(x + (-2*B*a**2*e**2 + 4*a**2*c**2
*(B*e**2/(2*c**2) + sqrt(-a**3*c**5)*(A*a*e**2 + A*c*d**2 + 2*B*a*d*e)/(4*a
**3*c**4)))/(A*a*c*e**2 + A*c**2*d**2 + 2*B*a*c*d*e)) + (-2*A*a*c*d*e + B*a
**2*e**2 - B*a*c*d**2 + x*(-A*a*c*e**2 + A*c**2*d**2 - 2*B*a*c*d*e))/(2*a**
2*c**2 + 2*a*c**3*x**2)
```

3.1342 $\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=79

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}-\frac{a(Ae+Bd)-x(Acd-aBe)}{2ac\left(a+cx^2\right)}$$

```
[Out] 1/2*(-a*(A*e+B*d)+(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)+1/2*(A*c*d+B*a*e)*arctan(x
*c^(1/2)/a^(1/2))/a^(3/2)/c^(3/2)
```

Rubi **[A]** time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {778, 205}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}-\frac{a(Ae+Bd)-x(Acd-aBe)}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] -(a*(B*d + A*e) - (A*c*d - a*B*e)*x)/(2*a*c*(a + c*x^2)) + ((A*c*d + a*B*e)
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^2}\,dx&=-\frac{a(Bd+Ae)-(Acd-aBe)x}{2ac\left(a+cx^2\right)}+\frac{(Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{2ac}\\&=-\frac{a(Bd+Ae)-(Acd-aBe)x}{2ac\left(a+cx^2\right)}+\frac{(Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}c^{3/2}}\end{aligned}$$

Mathematica **[A]** time = 0.07, size = 78, normalized size = 0.99

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+Acd)}{2a^{3/2}c^{3/2}}+\frac{-aAe-aBd-aBex+Acdx}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2)^2,x]
```

```
[Out] (-(a*B*d) - a*A*e + A*c*d*x - a*B*e*x)/(2*a*c*(a + c*x^2)) + ((A*c*d + a*B*
e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*c^(3/2))
```

fricas [A] time = 0.55, size = 225, normalized size = 2.85

$$\left[-\frac{2\,Ba^2cd + 2\,Aa^2ce + \left(Aacd + Ba^2e + \left(Ac^2d + Bace\right)x^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2-2\,\sqrt{-ac}\,x-a}{cx^2+a}\right) - 2\left(Aac^2d - Ba^2ce\right)x}{4\left(a^2c^3x^2 + a^3c^2\right)}, -\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c*d + 2*A*a^2*c*e + (A*a*c*d + B*a^2*e + (A*c^2*d + B*a*c*e)
*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^2
*d - B*a^2*c*e)*x)/(a^2*c^3*x^2 + a^3*c^2), -1/2*(B*a^2*c*d + A*a^2*c*e - (
A*a*c*d + B*a^2*e + (A*c^2*d + B*a*c*e)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a
) - (A*a*c^2*d - B*a^2*c*e)*x)/(a^2*c^3*x^2 + a^3*c^2)]
```

giac [A] time = 0.15, size = 74, normalized size = 0.94

$$\frac{(Acd + Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac} + \frac{Acdx - Baxe - Bad - Aae}{2\left(cx^2 + a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c) + 1/2*(A*c*d*x -
B*a*x*e - B*a*d - A*a*e)/((c*x^2 + a)*a*c)
```

maple [A] time = 0.06, size = 86, normalized size = 1.09

$$\frac{Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a} + \frac{Be\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c} + \frac{\frac{(Acd-aBe)x}{2ac} - \frac{Ae+Bd}{2c}}{c\,x^2 + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] (1/2*(A*c*d-B*a*e)/a/c*x-1/2*(A*e+B*d)/c)/(c*x^2+a)+1/2/a/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*A*d+1/2/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e
```

maxima [A] time = 1.20, size = 72, normalized size = 0.91

$$-\frac{Bad + Aae - (Acd - Bae)x}{2\left(ac^2x^2 + a^2c\right)} + \frac{(Acd + Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(B*a*d + A*a*e - (A*c*d - B*a*e)*x)/(a*c^2*x^2 + a^2*c) + 1/2*(A*c*d +
 B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a*c)
```

mupad [B] time = 1.77, size = 70, normalized size = 0.89

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,(A\,c\,d + B\,a\,e)}{2\,a^{3/2}\,c^{3/2}} - \frac{\frac{A\,e+B\,d}{2\,c} - \frac{x\,(A\,c\,d-B\,a\,e)}{2\,a\,c}}{c\,x^2 + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2)^2,x)
```

```
[Out] (atan((c^(1/2)*x)/a^(1/2))*(A*c*d + B*a*e))/(2*a^(3/2)*c^(3/2)) - ((A*e + B
*d)/(2*c) - (x*(A*c*d - B*a*e))/(2*a*c))/(a + c*x^2)
```

sympy [A]   time = 0.92, size = 133, normalized size = 1.68

$$-\frac{\sqrt{-\frac{1}{a^3c^3}}\,(Acd+Bae)\log\left(-a^2c\sqrt{-\frac{1}{a^3c^3}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^3c^3}}\,(Acd+Bae)\log\left(a^2c\sqrt{-\frac{1}{a^3c^3}}+x\right)}{4}+\frac{-Aae-Bad+x\,(Ac}{2a^2c+2ac^2x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] -sqrt(-1/(a**3*c**3))*(A*c*d + B*a*e)*log(-a**2*c*sqrt(-1/(a**3*c**3)) + x)
/4 + sqrt(-1/(a**3*c**3))*(A*c*d + B*a*e)*log(a**2*c*sqrt(-1/(a**3*c**3)) +
 x)/4 + (-A*a*e - B*a*d + x*(A*c*d - B*a*e))/(2*a**2*c + 2*a*c**2*x**2)
```

3.1343 $\int \frac{A+Bx}{\left(a+cx^2\right)^2} \, dx$

Optimal. Leaf size=57

$$\frac{A \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{Acx-aB}{2ac\left(a+cx^2\right)}$$

```
[Out] 1/2*(A*c*x-B*a)/a/c/(c*x^2+a)+1/2*A*arctan(x*c^(1/2)/a^(1/2))/a^(3/2)/c^(1/
2)
```

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {639, 205}

$$\frac{A \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}-\frac{aB-Acx}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^2,x]
```

```
[Out] -(a*B - A*c*x)/(2*a*c*(a + c*x^2)) + (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(
3/2)*Sqrt[c])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+cx^2\right)^2} \, dx &= -\frac{aB-Acx}{2ac\left(a+cx^2\right)}+\frac{A\int \frac{1}{a+cx^2} \, dx}{2a}\\ &= -\frac{aB-Acx}{2ac\left(a+cx^2\right)}+\frac{A \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 1.00

$$\frac{A \tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}}+\frac{Acx-aB}{2ac\left(a+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^2,x]
```

```
[Out] (-(a*B) + A*c*x)/(2*a*c*(a + c*x^2)) + (A*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a
^(3/2)*Sqrt[c])
```

fricas [A] time = 0.56, size = 140, normalized size = 2.46

$$\left[\frac{2\,Aacx - 2\,Ba^2 - \left(Acx^2 + Aa\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\,\sqrt{-ac}\,x - a}{cx^2 + a}\right)}{4\,\left(a^2c^2x^2 + a^3c\right)}, \frac{Aacx - Ba^2 + \left(Acx^2 + Aa\right)\sqrt{ac}\,\arctan\left(\frac{\sqrt{ac}\,x}{a}\right)}{2\,\left(a^2c^2x^2 + a^3c\right)}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [1/4*(2*A*a*c*x - 2*B*a^2 - (A*c*x^2 + A*a)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(
-a*c)*x - a)/(c*x^2 + a)))/(a^2*c^2*x^2 + a^3*c), 1/2*(A*a*c*x - B*a^2 + (A
*c*x^2 + A*a)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^2*c^2*x^2 + a^3*c)]
```

giac [A] time = 0.17, size = 47, normalized size = 0.82

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a} + \frac{Acx - Ba}{2\,\left(cx^2 + a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(A*c*x - B*a)/((c*x^2 + a)*
a*c)
```

maple [A] time = 0.05, size = 49, normalized size = 0.86

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;a} + \frac{2Acx - 2Ba}{4\left(c\,x^2 + a\right)ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^2,x)
```

```
[Out] 1/4*(2*A*c*x-2*B*a)/a/c/(c*x^2+a)+1/2*A/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)
```

maxima [A] time = 1.16, size = 48, normalized size = 0.84

$$\frac{A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\,\sqrt{ac}\,a} + \frac{Acx - Ba}{2\,\left(ac^2x^2 + a^2c\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a) + 1/2*(A*c*x - B*a)/(a*c^2*x^2 +
a^2*c)
```

mupad [B] time = 0.05, size = 44, normalized size = 0.77

$$\frac{A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2\,a^{3/2}\,\sqrt{c}} - \frac{\frac{B}{2\,c} - \frac{A\,x}{2\,a}}{c\,x^2 + a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^2,x)
```

```
[Out] (A*atan((c^(1/2)*x)/a^(1/2)))/(2*a^(3/2)*c^(1/2)) - (B/(2*c) - (A*x)/(2*a))
/(a + c*x^2)
```

sympy **[A]** time = 0.30, size = 90, normalized size = 1.58

$$A\left(-\frac{\sqrt{-\frac{1}{a^{3}c}}\log\left(-a^{2}\sqrt{-\frac{1}{a^{3}c}}+x\right)}{4}+\frac{\sqrt{-\frac{1}{a^{3}c}}\log\left(a^{2}\sqrt{-\frac{1}{a^{3}c}}+x\right)}{4}\right)+\frac{Acx-Ba}{2a^{2}c+2ac^{2}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**2,x)
```

```
[Out] A*(-sqrt(-1/(a**3*c))*log(-a**2*sqrt(-1/(a**3*c)) + x)/4 + sqrt(-1/(a**3*c)
)*log(a**2*sqrt(-1/(a**3*c)) + x)/4) + (A*c*x - B*a)/(2*a**2*c + 2*a*c**2*x
**2)
```

3.1344 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^2}\,dx$

<u>**Optimal**</u>. Leaf size=195

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(cd^2-ae^2\right)-Acd\left(3ae^2+cd^2\right)\right)}{2a^{3/2}\sqrt{c}\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)\left(ae^2+cd^2\right)}+\frac{e^2\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)^2}-e^2($$

```
[Out] 1/2*(-a*(-A*e+B*d)+(A*c*d+B*a*e)*x)/a/(a*e^2+c*d^2)/(c*x^2+a)-e^2*(-A*e+B*d
)*ln(e*x+d)/(a*e^2+c*d^2)^2+1/2*e^2*(-A*e+B*d)*ln(c*x^2+a)/(a*e^2+c*d^2)^2-
1/2*(a*B*e*(-a*e^2+c*d^2)-A*c*d*(3*a*e^2+c*d^2))*arctan(x*c^(1/2)/a^(1/2))/
a^(3/2)/(a*e^2+c*d^2)^2/c^(1/2)
```

<u>**Rubi**</u> **[A]** time = 0.28, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(cd^2-ae^2\right)-Acd\left(3ae^2+cd^2\right)\right)}{2a^{3/2}\sqrt{c}\left(ae^2+cd^2\right)^2}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)\left(ae^2+cd^2\right)}+\frac{e^2\log\left(a+cx^2\right)(Bd-Ae)}{2\left(ae^2+cd^2\right)^2}-e^2($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)^2),x]
```

```
[Out] -(a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(2*a*(c*d^2 + a*e^2)*(a + c*x^2)) - ((
a*B*e*(c*d^2 - a*e^2) - A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]
])/(2*a^(3/2)*Sqrt[c]*(c*d^2 + a*e^2)^2) - (e^2*(B*d - A*e)*Log[d + e*x])/(
c*d^2 + a*e^2)^2 + (e^2*(B*d - A*e)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

<u>Rule 205</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

<u>Rule 260</u>

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

<u>Rule 635</u>

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

<u>Rule 801</u>

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

<u>Rule 823</u>

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^2}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \frac{c\left(aBde-A\left(cd^2+2ae^2\right)\right)-ce(Acd+aBe)x}{(d+ex)\left(a+cx^2\right)}\,dx}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \left(-\frac{2ace^3(-Bd+Ae)}{\left(cd^2+ae^2\right)(d+ex)} + \frac{c\left(aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3ae^2\right)-2ace^2}{\left(cd^2+ae^2\right)\left(a+cx^2\right)}\right.}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{e^2(Bd-Ae)\log(d+ex)}{\left(cd^2+ae^2\right)^2} - \frac{\int \frac{aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3a\right.}{a+cx^2}}{2a\left(cd^2+\right.}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{e^2(Bd-Ae)\log(d+ex)}{\left(cd^2+ae^2\right)^2} + \frac{\left(ce^2(Bd-Ae)\right)\int \frac{x}{a+cx^2}}{\left(cd^2+ae^2\right)^2}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\left(aBe\left(cd^2-ae^2\right)-Acd\left(cd^2+3ae^2\right)\right)\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{2a^{3/2}\sqrt{c}\left(cd^2+ae^2\right)^2}$$

Mathematica [A] time = 0.16, size = 158, normalized size = 0.81

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(3ae^2+cd^2\right)+aBe\left(ae^2-cd^2\right)\right)}{a^{3/2}\sqrt{c}} + \frac{\left(ae^2+cd^2\right)(a(Ae-Bd+Bex)+Acdx)}{a\left(a+cx^2\right)} + e^2\log\left(a+cx^2\right)(Bd-Ae) + 2e^2(Ae-Bd)\,\mathrm{lo}}{2\left(ae^2+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)^2),x]
```

```
[Out] (((c*d^2 + a*e^2)*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)))/(a*(a + c*x^2)) + (
(a*B*e*(-(c*d^2) + a*e^2) + A*c*d*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqr
t[a]])/(a^(3/2)*Sqrt[c]) + 2*e^2*(-(B*d) + A*e)*Log[d + e*x] + e^2*(B*d - A
*e)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^2)
```

fricas [B] time = 23.94, size = 795, normalized size = 4.08

$$\left[-\frac{2\,Ba^2c^2d^3 - 2\,Aa^2c^2d^2e + 2\,Ba^3cde^2 - 2\,Aa^3ce^3 + \left(Aac^2d^3 - Ba^2cd^2e + 3\,Aa^2cde^2 + Ba^3e^3 + \left(Ac^3d^3 - Bac^2\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a^2*c^2*d^3 - 2*A*a^2*c^2*d^2*e + 2*B*a^3*c*d*e^2 - 2*A*a^3*c*e^
3 + (A*a*c^2*d^3 - B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 + B*a^3*e^3 + (A*c^3*d^3
 - B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 + B*a^2*c*e^3)*x^2)*sqrt(-a*c)*log((c*x^
2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A
*a^2*c^2*d*e^2 + B*a^3*c*e^3)*x - 2*(B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c
^2*d*e^2 - A*a^2*c^2*e^3)*x^2)*log(c*x^2 + a) + 4*(B*a^3*c*d*e^2 - A*a^3*c*
e^3 + (B*a^2*c^2*d*e^2 - A*a^2*c^2*e^3)*x^2)*log(e*x + d))/(a^3*c^3*d^4 + 2
*a^4*c^2*d^2*e^2 + a^5*c*e^4 + (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e
^4)*x^2), -1/2*(B*a^2*c^2*d^3 - A*a^2*c^2*d^2*e + B*a^3*c*d*e^2 - A*a^3*c*e
^3 - (A*a*c^2*d^3 - B*a^2*c*d^2*e + 3*A*a^2*c*d*e^2 + B*a^3*e^3 + (A*c^3*d^
3 - B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 + B*a^2*c*e^3)*x^2)*sqrt(a*c)*arctan(sq
rt(a*c)*x/a) - (A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a^2*c^2*d*e^2 + B*a^3*c*e
^3)*x - (B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c^2*d*e^2 - A*a^2*c^2*e^3)*x^
2)*log(c*x^2 + a) + 2*(B*a^3*c*d*e^2 - A*a^3*c*e^3 + (B*a^2*c^2*d*e^2 - A*a
^2*c^2*e^3)*x^2)*log(e*x + d))/(a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2 + a^5*c*e^4
 + (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e^4)*x^2)]
```

giac [A] time = 0.18, size = 268, normalized size = 1.37

$$\frac{\left(Bde^2 - Ae^3\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bde^3 - Ae^4\right)\log\left(|xe + d|\right)}{c^2d^4e + 2\,acd^2e^3 + a^2e^5} + \frac{\left(Ac^2d^3 - Bacd^2e + 3\,Aacde^2 + Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ac^2d^4 + 2\,a^2cd^2e^2 + a^3e^4\right)\sqrt{ac}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*d*e^2 - A*e^3)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) -
(B*d*e^3 - A*e^4)*log(abs(x*e + d))/(c^2*d^4*e + 2*a*c*d^2*e^3 + a^2*e^5) +
 1/2*(A*c^2*d^3 - B*a*c*d^2*e + 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(
a*c))/((a*c^2*d^4 + 2*a^2*c*d^2*e^2 + a^3*e^4)*sqrt(a*c)) - 1/2*(B*a*c*d^3
- A*a*c*d^2*e + B*a^2*d*e^2 - A*a^2*e^3 - (A*c^2*d^3 + B*a*c*d^2*e + A*a*c*
d*e^2 + B*a^2*e^3)*x)/((c*d^2 + a*e^2)^2*(c*x^2 + a)*a)
```

maple [B] time = 0.06, size = 495, normalized size = 2.54

$$\frac{A\,c^2d^3x}{2\left(a\,e^2 + c\,d^2\right)^2\left(c\,x^2 + a\right)a} + \frac{A\,c^2d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}\;a} + \frac{Acd\,e^2x}{2\left(a\,e^2 + c\,d^2\right)^2\left(c\,x^2 + a\right)} + \frac{3Acd\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a\,e^2 + c\,d^2\right)^2\sqrt{ac}} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a)^2,x)
```

```
[Out] 1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*x*A*c*d*e^2+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)/a*x
*A*c^2*d^3+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*x*B*e^3+1/2/(a*e^2+c*d^2)^2/(c*x
^2+a)*x*B*c*d^2*e+1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*A*e^3+1/2/(a*e^2+c*d^2)^2
/(c*x^2+a)*A*c*d^2*e-1/2/(a*e^2+c*d^2)^2/(c*x^2+a)*a*B*d*e^2-1/2/(a*e^2+c*d
^2)^2/(c*x^2+a)*B*c*d^3-1/2/(a*e^2+c*d^2)^2*ln(c*x^2+a)*A*e^3+1/2/(a*e^2+c*
d^2)^2*ln(c*x^2+a)*B*d*e^2+3/2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(
1/2)*c*x)*A*c*d*e^2+1/2/(a*e^2+c*d^2)^2/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*
c*x)*A*c^2*d^3+1/2/(a*e^2+c*d^2)^2*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
B*e^3-1/2/(a*e^2+c*d^2)^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*c*d^2*e+e
^3/(a*e^2+c*d^2)^2*ln(e*x+d)*A-e^2/(a*e^2+c*d^2)^2*ln(e*x+d)*B*d
```

maxima [A] time = 1.34, size = 243, normalized size = 1.25

$$\frac{\left(Bde^2 - Ae^3\right)\log\left(cx^2 + a\right)}{2\left(c^2d^4 + 2\,acd^2e^2 + a^2e^4\right)} - \frac{\left(Bde^2 - Ae^3\right)\log\left(ex + d\right)}{c^2d^4 + 2\,acd^2e^2 + a^2e^4} + \frac{\left(Ac^2d^3 - Bacd^2e + 3\,Aacde^2 + Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(ac^2d^4 + 2\,a^2cd^2e^2 + a^3e^4\right)\sqrt{ac}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(B*d*e^2 - A*e^3)*log(c*x^2 + a)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) -
(B*d*e^2 - A*e^3)*log(e*x + d)/(c^2*d^4 + 2*a*c*d^2*e^2 + a^2*e^4) + 1/2*(A
*c^2*d^3 - B*a*c*d^2*e + 3*A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(
(a*c^2*d^4 + 2*a^2*c*d^2*e^2 + a^3*e^4)*sqrt(a*c)) - 1/2*(B*a*d - A*a*e - (
A*c*d + B*a*e)*x)/(a^2*c*d^2 + a^3*e^2 + (a*c^2*d^2 + a^2*c*e^2)*x^2)
```

mupad [B] time = 3.76, size = 1086, normalized size = 5.57

$$\frac{\frac{Ae-Bd}{2\left(cd^2+ae^2\right)}+\frac{x\,(Acd+Bae)}{2a\left(cd^2+ae^2\right)}}{cx^2+a}-\frac{\ln\left(Ac^3d^5\sqrt{-a^3c}-Ba^3e^5\sqrt{-a^3c}-6Aa^4ce^5+Ba^4ce^5x+2Aa^2c^3d^4e+12A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^2*(d + e*x)),x)
```

```
[Out] ((A*e - B*d)/(2*(a*e^2 + c*d^2)) + (x*(A*c*d + B*a*e))/(2*a*(a*e^2 + c*d^2)
))/(a + c*x^2) - (log(A*c^3*d^5*(-a^3*c)^(1/2) - B*a^3*e^5*(-a^3*c)^(1/2) -
 6*A*a^4*c*e^5 + B*a^4*c*e^5*x + 2*A*a^2*c^3*d^4*e + 12*A*a^3*c^2*d^2*e^3 -
 8*B*a^3*c^2*d^3*e^2 + 8*B*a^4*c*d*e^4 - A*a*c^4*d^5*x - 2*A*a^2*c^3*d^3*e^
2*x - 14*B*a^3*c^2*d^2*e^3*x + 2*A*a*c^2*d^3*e^2*(-a^3*c)^(1/2) + 14*B*a^2*
c*d^2*e^3*(-a^3*c)^(1/2) + 15*A*a^3*c^2*d*e^4*x + B*a^2*c^3*d^4*e*x - 15*A*
a^2*c*d*e^4*(-a^3*c)^(1/2) - B*a*c^2*d^4*e*(-a^3*c)^(1/2) - 6*A*a^2*c*e^5*x
*(-a^3*c)^(1/2) + 2*A*c^3*d^4*e*x*(-a^3*c)^(1/2) + 8*B*a^2*c*d*e^4*x*(-a^3*
c)^(1/2) + 12*A*a*c^2*d^2*e^3*x*(-a^3*c)^(1/2) - 8*B*a*c^2*d^3*e^2*x*(-a^3*
c)^(1/2))*(c*(a*((3*A*d*e^2*(-a^3*c)^(1/2))/4 - (B*d^2*e*(-a^3*c)^(1/2))/4)
 + a^3*((A*e^3)/2 - (B*d*e^2)/2)) + (A*c^2*d^3*(-a^3*c)^(1/2))/4 + (B*a^2*e
^3*(-a^3*c)^(1/2))/4))/(a^5*c*e^4 + a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2) + (log
(A*c^3*d^5*(-a^3*c)^(1/2) - B*a^3*e^5*(-a^3*c)^(1/2) + 6*A*a^4*c*e^5 - B*a^
4*c*e^5*x - 2*A*a^2*c^3*d^4*e - 12*A*a^3*c^2*d^2*e^3 + 8*B*a^3*c^2*d^3*e^2
- 8*B*a^4*c*d*e^4 + A*a*c^4*d^5*x + 2*A*a^2*c^3*d^3*e^2*x + 14*B*a^3*c^2*d^
2*e^3*x + 2*A*a*c^2*d^3*e^2*(-a^3*c)^(1/2) + 14*B*a^2*c*d^2*e^3*(-a^3*c)^(1
/2) - 15*A*a^3*c^2*d*e^4*x - B*a^2*c^3*d^4*e*x - 15*A*a^2*c*d*e^4*(-a^3*c)^
(1/2) - B*a*c^2*d^4*e*(-a^3*c)^(1/2) - 6*A*a^2*c*e^5*x*(-a^3*c)^(1/2) + 2*A
*c^3*d^4*e*x*(-a^3*c)^(1/2) + 8*B*a^2*c*d*e^4*x*(-a^3*c)^(1/2) + 12*A*a*c^2
*d^2*e^3*x*(-a^3*c)^(1/2) - 8*B*a*c^2*d^3*e^2*x*(-a^3*c)^(1/2))*(c*(a*((3*A
*d*e^2*(-a^3*c)^(1/2))/4 - (B*d^2*e*(-a^3*c)^(1/2))/4) - a^3*((A*e^3)/2 - (
B*d*e^2)/2)) + (A*c^2*d^3*(-a^3*c)^(1/2))/4 + (B*a^2*e^3*(-a^3*c)^(1/2))/4)
)/(a^5*c*e^4 + a^3*c^3*d^4 + 2*a^4*c^2*d^2*e^2) + (log(d + e*x)*(A*e^3 - B*
d*e^2))/(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1345 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=290

$$-\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(cd^2-3ae^2\right)-A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}\left(ae^2+cd^2\right)^3}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}+\frac{e^2\log}{}$$

```
[Out] 1/2*e*(-3*A*a*e^2+A*c*d^2+4*B*a*d*e)/a/(a*e^2+c*d^2)^2/(e*x+d)+1/2*(-a*(-A*
e+B*d)+(A*c*d+B*a*e)*x)/a/(a*e^2+c*d^2)/(e*x+d)/(c*x^2+a)-e^2*(-4*A*c*d*e-B
*a*e^2+3*B*c*d^2)*ln(e*x+d)/(a*e^2+c*d^2)^3+1/2*e^2*(-4*A*c*d*e-B*a*e^2+3*B
*c*d^2)*ln(c*x^2+a)/(a*e^2+c*d^2)^3-1/2*(2*a*B*d*e*(-3*a*e^2+c*d^2)-A*(-3*a
^2*e^4+6*a*c*d^2*e^2+c^2*d^4))*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/a^(3/2)/(a
*e^2+c*d^2)^3
```

Rubi [A] time = 0.41, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(2aBde\left(cd^2-3ae^2\right)-A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{2a^{3/2}\left(ae^2+cd^2\right)^3}-\frac{a(Bd-Ae)-x(aBe+Acd)}{2a\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}+\frac{e^2\log}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2),x]
```

```
[Out] (e*(A*c*d^2 + 4*a*B*d*e - 3*a*A*e^2))/(2*a*(c*d^2 + a*e^2)^2*(d + e*x)) - (
a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(2*a*(c*d^2 + a*e^2)*(d + e*x)*(a + c*x^
2)) - (Sqrt[c]*(2*a*B*d*e*(c*d^2 - 3*a*e^2) - A*(c^2*d^4 + 6*a*c*d^2*e^2 -
3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(2*a^(3/2)*(c*d^2 + a*e^2)^3) - (e
^2*(3*B*c*d^2 - 4*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 + a*e^2)^3 + (e^2
*(3*B*c*d^2 - 4*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^2}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\int \frac{-c\left(Acd^2-2aBde+3aAe^2\right)-2ce(Acd+aBe)x}{(d+ex)^2\left(a+cx^2\right)}\,dx}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\int\left(\frac{ce^2\left(Acd^2+4aBde-3aAe^2\right)}{\left(cd^2+ae^2\right)(d+ex)^2} - \frac{2ace^3\left(-3Bcd^2+4Acde+a\right.}{\left(cd^2+ae^2\right)^2(d+ex)}\right.}{}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{e^2\left(3Bcd^2-4Ac\right.}{\left(cd\right.}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{e^2\left(3Bcd^2-4Ac\right.}{\left(cd\right.}$$

$$= \frac{e\left(Acd^2+4aBde-3aAe^2\right)}{2a\left(cd^2+ae^2\right)^2(d+ex)} - \frac{a(Bd-Ae)-(Acd+aBe)x}{2a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)} - \frac{\sqrt{c}\left(2aBde\left(cd^2\right.\right.}{}$$

Mathematica [A] time = 0.36, size = 251, normalized size = 0.87

$$\frac{\frac{\left(ae^2+cd^2\right)\left(a^2Be^2-ac(Ae(ex-2d)+Bd(d-2ex))+Ac^2d^2x\right)}{a\left(a+cx^2\right)} + \frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(A\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)+2aBde\left(3ae^2-cd^2\right)\right)}{a^{3/2}} - e^2\log\left(a+cx^2\right.}{2\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)^2),x]
```

```
[Out] ((-2*e^2*(-(B*d) + A*e)*(c*d^2 + a*e^2))/(d + e*x) + ((c*d^2 + a*e^2)*(a^2*
B*e^2 + A*c^2*d^2*x - a*c*(B*d*(d - 2*e*x) + A*e*(-2*d + e*x))))/(a*(a + c*
x^2)) + (Sqrt[c]*(2*a*B*d*e*(-(c*d^2) + 3*a*e^2) + A*(c^2*d^4 + 6*a*c*d^2*e
^2 - 3*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(3/2) + 2*e^2*(-3*B*c*d^2 +
 4*A*c*d*e + a*B*e^2)*Log[d + e*x] - e^2*(-3*B*c*d^2 + 4*A*c*d*e + a*B*e^2)
*Log[a + c*x^2])/(2*(c*d^2 + a*e^2)^3)
```

fricas [B] time = 82.96, size = 1940, normalized size = 6.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(2*B*a*c^2*d^5 - 4*A*a*c^2*d^4*e - 4*B*a^2*c*d^3*e^2 - 6*B*a^3*d*e^4
+ 4*A*a^3*e^5 - 2*(A*c^3*d^4*e + 4*B*a*c^2*d^3*e^2 - 2*A*a*c^2*d^2*e^3 + 4*
B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^2 + (A*a*c^2*d^5 - 2*B*a^2*c*d^4*e + 6*A*a
^2*c*d^3*e^2 + 6*B*a^3*d^2*e^3 - 3*A*a^3*d*e^4 + (A*c^3*d^4*e - 2*B*a*c^2*d
^3*e^2 + 6*A*a*c^2*d^2*e^3 + 6*B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^3 + (A*c^3*
d^5 - 2*B*a*c^2*d^4*e + 6*A*a*c^2*d^3*e^2 + 6*B*a^2*c*d^2*e^3 - 3*A*a^2*c*d
*e^4)*x^2 + (A*a*c^2*d^4*e - 2*B*a^2*c*d^3*e^2 + 6*A*a^2*c*d^2*e^3 + 6*B*a^
3*d*e^4 - 3*A*a^3*e^5)*x)*sqrt(-c/a)*log((c*x^2 - 2*a*x*sqrt(-c/a) - a)/(c*
x^2 + a)) - 2*(A*c^3*d^5 + B*a*c^2*d^4*e + 2*A*a*c^2*d^3*e^2 + 2*B*a^2*c*d^
2*e^3 + A*a^2*c*d*e^4 + B*a^3*e^5)*x - 2*(3*B*a^2*c*d^3*e^2 - 4*A*a^2*c*d^2
*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d*e^4 - B*a^2*c*e^5)*x^
3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*d*e^4)*x^2 + (3*B*a^2*
c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(c*x^2 + a) + 4*(3*B*a^2*c*d
^3*e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d
*e^4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*
d*e^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(e*x +
 d))/(a^2*c^3*d^7 + 3*a^3*c^2*d^5*e^2 + 3*a^4*c*d^3*e^4 + a^5*d*e^6 + (a*c^
4*d^6*e + 3*a^2*c^3*d^4*e^3 + 3*a^3*c^2*d^2*e^5 + a^4*c*e^7)*x^3 + (a*c^4*d
^7 + 3*a^2*c^3*d^5*e^2 + 3*a^3*c^2*d^3*e^4 + a^4*c*d*e^6)*x^2 + (a^2*c^3*d^
6*e + 3*a^3*c^2*d^4*e^3 + 3*a^4*c*d^2*e^5 + a^5*e^7)*x), -1/2*(B*a*c^2*d^5
- 2*A*a*c^2*d^4*e - 2*B*a^2*c*d^3*e^2 - 3*B*a^3*d*e^4 + 2*A*a^3*e^5 - (A*c^
3*d^4*e + 4*B*a*c^2*d^3*e^2 - 2*A*a*c^2*d^2*e^3 + 4*B*a^2*c*d*e^4 - 3*A*a^2
*c*e^5)*x^2 - (A*a*c^2*d^5 - 2*B*a^2*c*d^4*e + 6*A*a^2*c*d^3*e^2 + 6*B*a^3*
d^2*e^3 - 3*A*a^3*d*e^4 + (A*c^3*d^4*e - 2*B*a*c^2*d^3*e^2 + 6*A*a*c^2*d^2*
e^3 + 6*B*a^2*c*d*e^4 - 3*A*a^2*c*e^5)*x^3 + (A*c^3*d^5 - 2*B*a*c^2*d^4*e +
 6*A*a*c^2*d^3*e^2 + 6*B*a^2*c*d^2*e^3 - 3*A*a^2*c*d*e^4)*x^2 + (A*a*c^2*d^
4*e - 2*B*a^2*c*d^3*e^2 + 6*A*a^2*c*d^2*e^3 + 6*B*a^3*d*e^4 - 3*A*a^3*e^5)*
x)*sqrt(c/a)*arctan(x*sqrt(c/a)) - (A*c^3*d^5 + B*a*c^2*d^4*e + 2*A*a*c^2*d
^3*e^2 + 2*B*a^2*c*d^2*e^3 + A*a^2*c*d*e^4 + B*a^3*e^5)*x - (3*B*a^2*c*d^3*
e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^2*e^3 - 4*A*a*c^2*d*e^
4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2*d^2*e^3 - B*a^2*c*d*e
^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^3*e^5)*x)*log(c*x^2 +
a) + 2*(3*B*a^2*c*d^3*e^2 - 4*A*a^2*c*d^2*e^3 - B*a^3*d*e^4 + (3*B*a*c^2*d^
2*e^3 - 4*A*a*c^2*d*e^4 - B*a^2*c*e^5)*x^3 + (3*B*a*c^2*d^3*e^2 - 4*A*a*c^2
*d^2*e^3 - B*a^2*c*d*e^4)*x^2 + (3*B*a^2*c*d^2*e^3 - 4*A*a^2*c*d*e^4 - B*a^
3*e^5)*x)*log(e*x + d))/(a^2*c^3*d^7 + 3*a^3*c^2*d^5*e^2 + 3*a^4*c*d^3*e^4
+ a^5*d*e^6 + (a*c^4*d^6*e + 3*a^2*c^3*d^4*e^3 + 3*a^3*c^2*d^2*e^5 + a^4*c*
e^7)*x^3 + (a*c^4*d^7 + 3*a^2*c^3*d^5*e^2 + 3*a^3*c^2*d^3*e^4 + a^4*c*d*e^6
)*x^2 + (a^2*c^3*d^6*e + 3*a^3*c^2*d^4*e^3 + 3*a^4*c*d^2*e^5 + a^5*e^7)*x)]
```

giac [A] time = 0.18, size = 494, normalized size = 1.70

$$\frac{\left(Ac^3d^4e^2 - 2\,Bac^2d^3e^3 + 6\,Aac^2d^2e^4 + 6\,Ba^2cde^5 - 3\,Aa^2ce^6\right)\arctan\left(\frac{\left(cd - \frac{cd^2}{xe+d} - \frac{ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{ac}}\right)e^{(-2)}}{2\left(ac^3d^6 + 3\,a^2c^2d^4e^2 + 3\,a^3cd^2e^4 + a^4e^6\right)\sqrt{ac}} + \frac{(3\,Bcd^2e^2 - 4\,Acd}{2\,(c^3d^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(A*c^3*d^4*e^2 - 2*B*a*c^2*d^3*e^3 + 6*A*a*c^2*d^2*e^4 + 6*B*a^2*c*d*e^
5 - 3*A*a^2*c*e^6)*arctan((c*d - c*d^2/(x*e + d) - a*e^2/(x*e + d))*e^(-1)/
sqrt(a*c))*e^(-2)/((a*c^3*d^6 + 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 + a^4*e
^6)*sqrt(a*c)) + 1/2*(3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*a*e^4)*log(c - 2*c*d/
(x*e + d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^3*d^6 + 3*a*c^2*d^4*e
^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + (B*d*e^6/(x*e + d) - A*e^7/(x*e + d))/(c^
2*d^4*e^4 + 2*a*c*d^2*e^6 + a^2*e^8) + 1/2*((A*c^3*d^3*e + 3*B*a*c^2*d^2*e^
2 - 3*A*a*c^2*d*e^3 - B*a^2*c*e^4)/(c*d^2 + a*e^2) - (A*c^3*d^4*e^2 + 4*B*a
*c^2*d^3*e^3 - 6*A*a*c^2*d^2*e^4 - 4*B*a^2*c*d*e^5 + A*a^2*c*e^6)*e^(-1)/((
c*d^2 + a*e^2)*(x*e + d)))/((c*d^2 + a*e^2)^2*a*(c - 2*c*d/(x*e + d) + c*d^
2/(x*e + d)^2 + a*e^2/(x*e + d)^2))
```

maple [**B**] time = 0.07, size = 661, normalized size = 2.28

$$-\frac{Aac\,e^4x}{2\left(a\,e^2+c\,d^2\right)^3\left(c\,x^2+a\right)}-\frac{3Aac\,e^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}}+\frac{A\,c^3d^4x}{2\left(a\,e^2+c\,d^2\right)^3\left(c\,x^2+a\right)a}+\frac{A\,c^3d^4\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\left(a\,e^2+c\,d^2\right)^3\sqrt{ac}\;a}+\frac{3A\,c^2}{\left(a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x)
```

```
[Out] -1/2*c/(a*e^2+c*d^2)^3/(c*x^2+a)*a*x*A*e^4+1/2*c^3/(a*e^2+c*d^2)^3/(c*x^2+a
)/a*x*A*d^4+c/(a*e^2+c*d^2)^3/(c*x^2+a)*a*x*B*d*e^3+c^2/(a*e^2+c*d^2)^3/(c*
x^2+a)*x*B*d^3*e+c/(a*e^2+c*d^2)^3/(c*x^2+a)*A*a*d*e^3+c^2/(a*e^2+c*d^2)^3/
(c*x^2+a)*A*d^3*e+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)*B*a^2*e^4-1/2*c^2/(a*e^2+c*
d^2)^3/(c*x^2+a)*B*d^4-2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*A*d*e^3-1/2/(a*e^2+c
*d^2)^3*a*ln(c*x^2+a)*B*e^4+3/2*c/(a*e^2+c*d^2)^3*ln(c*x^2+a)*d^2*B*e^2-3/2
*c/(a*e^2+c*d^2)^3*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^4+3*c^2/(a*e
^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+1/2*c^3/(a*e^2+
c*d^2)^3/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4+3*c/(a*e^2+c*d^2)^3*
a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d*e^3-c^2/(a*e^2+c*d^2)^3/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e+4*e^3/(a*e^2+c*d^2)^3*ln(e*x+d)*A*c*
d+e^4/(a*e^2+c*d^2)^3*ln(e*x+d)*B*a-3*e^2/(a*e^2+c*d^2)^3*ln(e*x+d)*B*c*d^2
-e^3/(a*e^2+c*d^2)^2/(e*x+d)*A+e^2/(a*e^2+c*d^2)^2/(e*x+d)*B*d
```

maxima [**A**] time = 1.35, size = 511, normalized size = 1.76

$$\frac{\left(3\,Bcd^2e^2-4\,Acde^3-Bae^4\right)\log\left(cx^2+a\right)}{2\left(c^3d^6+3\,ac^2d^4e^2+3\,a^2cd^2e^4+a^3e^6\right)}-\frac{\left(3\,Bcd^2e^2-4\,Acde^3-Bae^4\right)\log\left(ex+d\right)}{c^3d^6+3\,ac^2d^4e^2+3\,a^2cd^2e^4+a^3e^6}+\frac{\left(Ac^3d^4-2\,Bac^2d^3e+6\right.}{2\left(ac^3d^6+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] 1/2*(3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*a*e^4)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c
^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) - (3*B*c*d^2*e^2 - 4*A*c*d*e^3 - B*
a*e^4)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + a^3*e^6)
 + 1/2*(A*c^3*d^4 - 2*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 + 6*B*a^2*c*d*e^3 -
 3*A*a^2*c*e^4)*arctan(c*x/sqrt(a*c))/((a*c^3*d^6 + 3*a^2*c^2*d^4*e^2 + 3*a
^3*c*d^2*e^4 + a^4*e^6)*sqrt(a*c)) - 1/2*(B*a*c*d^3 - 2*A*a*c*d^2*e - 3*B*a
^2*d*e^2 + 2*A*a^2*e^3 - (A*c^2*d^2*e + 4*B*a*c*d*e^2 - 3*A*a*c*e^3)*x^2 -
(A*c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*x)/(a^2*c^2*d^5 + 2*a^3
*c*d^3*e^2 + a^4*d*e^4 + (a*c^3*d^4*e + 2*a^2*c^2*d^2*e^3 + a^3*c*e^5)*x^3
+ (a*c^3*d^5 + 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)*x^2 + (a^2*c^2*d^4*e + 2*a^
3*c*d^2*e^3 + a^4*e^5)*x)
```

mupad [**B**] time = 4.05, size = 2029, normalized size = 7.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^2*(d + e*x)^2),x)
```

```
[Out] ((x*(A*c*d + B*a*e))/(2*a*(a*e^2 + c*d^2)) - (2*A*a*e^3 + B*c*d^3 - 3*B*a*d
*e^2 - 2*A*c*d^2*e)/(2*(a*e^2 + c*d^2)^2) + (x^2*(A*c^2*d^2*e - 3*A*a*c*e^3
 + 4*B*a*c*d*e^2))/(2*a*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)))/(a*d + a*e*x
+ c*d*x^2 + c*e*x^3) + (log(9*A^2*a^6*e^12*(-a^3*c)^(3/2) + A^2*c^6*d^12*(-
a^3*c)^(3/2) - 36*B^2*a^10*e^12*(-a^3*c)^(1/2) - 558*A^2*a^2*d^2*e^10*(-a^3
*c)^(5/2) + 24*B^2*a^2*d^4*e^8*(-a^3*c)^(5/2) - 108*B^2*a^6*d^2*e^10*(-a^3*
c)^(3/2) - 612*A^2*c^2*d^6*e^6*(-a^3*c)^(5/2) - 308*B^2*c^2*d^8*e^4*(-a^3*c
)^(5/2) + 36*B^2*a^11*c*e^12*x + A^2*a^4*c^8*d^12*x + 9*A^2*a^10*c^2*e^12*x
 + 276*A*B*a^2*d^3*e^9*(-a^3*c)^(5/2) + 808*A*B*c^2*d^7*e^5*(-a^3*c)^(5/2)
- 1119*A^2*a*c*d^4*e^8*(-a^3*c)^(5/2) - 424*B^2*a*c*d^6*e^6*(-a^3*c)^(5/2)
+ 14*A^2*a^5*c^7*d^10*e^2*x + 55*A^2*a^6*c^6*d^8*e^4*x + 612*A^2*a^7*c^5*d^
6*e^6*x + 1119*A^2*a^8*c^4*d^4*e^8*x + 558*A^2*a^9*c^3*d^2*e^10*x + 4*B^2*a
^6*c^6*d^10*e^2*x + 308*B^2*a^7*c^5*d^8*e^4*x + 424*B^2*a^8*c^4*d^6*e^6*x -
 24*B^2*a^9*c^3*d^4*e^8*x - 108*B^2*a^10*c^2*d^2*e^10*x + 14*A^2*a*c^5*d^10
*e^2*(-a^3*c)^(3/2) + 252*A*B*a^6*d*e^11*(-a^3*c)^(3/2) + 55*A^2*a^2*c^4*d^
8*e^4*(-a^3*c)^(3/2) + 4*B^2*a^2*c^4*d^10*e^2*(-a^3*c)^(3/2) - 4*A*B*a^5*c^
7*d^11*e*x + 252*A*B*a^10*c^2*d*e^11*x + 1320*A*B*a*c*d^5*e^7*(-a^3*c)^(5/2
) - 4*A*B*a*c^5*d^11*e*(-a^3*c)^(3/2) - 20*A*B*a^6*c^6*d^9*e^3*x - 808*A*B*
a^7*c^5*d^7*e^5*x - 1320*A*B*a^8*c^4*d^5*e^7*x - 276*A*B*a^9*c^3*d^3*e^9*x
- 20*A*B*a^2*c^4*d^9*e^3*(-a^3*c)^(3/2))*(c*(a^3*((3*B*d^2*e^2)/2 - 2*A*d*e
^3) - a*((3*A*d^2*e^2*(-a^3*c)^(1/2))/2 - (B*d^3*e*(-a^3*c)^(1/2))/2)) + a^
2*((3*A*e^4*(-a^3*c)^(1/2))/4 - (3*B*d*e^3*(-a^3*c)^(1/2))/2) - (B*a^4*e^4)
/2 - (A*c^2*d^4*(-a^3*c)^(1/2))/4))/(a^6*e^6 + a^3*c^3*d^6 + 3*a^5*c*d^2*e^
4 + 3*a^4*c^2*d^4*e^2) + (log(36*B^2*a^10*e^12*(-a^3*c)^(1/2) - A^2*c^6*d^1
2*(-a^3*c)^(3/2) - 9*A^2*a^6*e^12*(-a^3*c)^(3/2) + 558*A^2*a^2*d^2*e^10*(-a
^3*c)^(5/2) - 24*B^2*a^2*d^4*e^8*(-a^3*c)^(5/2) + 108*B^2*a^6*d^2*e^10*(-a^
3*c)^(3/2) + 612*A^2*c^2*d^6*e^6*(-a^3*c)^(5/2) + 308*B^2*c^2*d^8*e^4*(-a^3
*c)^(5/2) + 36*B^2*a^11*c*e^12*x + A^2*a^4*c^8*d^12*x + 9*A^2*a^10*c^2*e^12
*x - 276*A*B*a^2*d^3*e^9*(-a^3*c)^(5/2) - 808*A*B*c^2*d^7*e^5*(-a^3*c)^(5/2
) + 1119*A^2*a*c*d^4*e^8*(-a^3*c)^(5/2) + 424*B^2*a*c*d^6*e^6*(-a^3*c)^(5/2
) + 14*A^2*a^5*c^7*d^10*e^2*x + 55*A^2*a^6*c^6*d^8*e^4*x + 612*A^2*a^7*c^5*
d^6*e^6*x + 1119*A^2*a^8*c^4*d^4*e^8*x + 558*A^2*a^9*c^3*d^2*e^10*x + 4*B^2
*a^6*c^6*d^10*e^2*x + 308*B^2*a^7*c^5*d^8*e^4*x + 424*B^2*a^8*c^4*d^6*e^6*x
 - 24*B^2*a^9*c^3*d^4*e^8*x - 108*B^2*a^10*c^2*d^2*e^10*x - 14*A^2*a*c^5*d^
10*e^2*(-a^3*c)^(3/2) - 252*A*B*a^6*d*e^11*(-a^3*c)^(3/2) - 55*A^2*a^2*c^4*
d^8*e^4*(-a^3*c)^(3/2) - 4*B^2*a^2*c^4*d^10*e^2*(-a^3*c)^(3/2) - 4*A*B*a^5*
c^7*d^11*e*x + 252*A*B*a^10*c^2*d*e^11*x - 1320*A*B*a*c*d^5*e^7*(-a^3*c)^(5
/2) + 4*A*B*a*c^5*d^11*e*(-a^3*c)^(3/2) - 20*A*B*a^6*c^6*d^9*e^3*x - 808*A*
B*a^7*c^5*d^7*e^5*x - 1320*A*B*a^8*c^4*d^5*e^7*x - 276*A*B*a^9*c^3*d^3*e^9*
x + 20*A*B*a^2*c^4*d^9*e^3*(-a^3*c)^(3/2))*(c*(a^3*((3*B*d^2*e^2)/2 - 2*A*d
*e^3) + a*((3*A*d^2*e^2*(-a^3*c)^(1/2))/2 - (B*d^3*e*(-a^3*c)^(1/2))/2)) -
a^2*((3*A*e^4*(-a^3*c)^(1/2))/4 - (3*B*d*e^3*(-a^3*c)^(1/2))/2) - (B*a^4*e^
4)/2 + (A*c^2*d^4*(-a^3*c)^(1/2))/4))/(a^6*e^6 + a^3*c^3*d^6 + 3*a^5*c*d^2*
e^4 + 3*a^4*c^2*d^4*e^2) - (log(d + e*x)*(c*(3*B*d^2*e^2 - 4*A*d*e^3) - B*a
*e^4))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1346 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3} \, dx$

Optimal. Leaf size=304

$$-\frac{e^2x\left(Acd\left(7ae^2+3cd^2\right)+5aBe\left(cd^2-3ae^2\right)\right)}{8a^2c^3}-\frac{(d+ex)^2\left(2ae\left(2aAe^2+5aBde+Acd^2\right)-x\left(Acd\left(5ae^2+3cd^2\right.\right.\right.}{8a^2c^2\left(a+cx^2\right)}$$

```
[Out] -1/8*e^2*(5*a*B*e*(-3*a*e^2+c*d^2)+A*c*d*(7*a*e^2+3*c*d^2))*x/a^2/c^3-1/4*(
e*x+d)^4*(a*(A*e+B*d)-(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)^2-1/8*(e*x+d)^2*(2*a*e
*(2*A*a*e^2+A*c*d^2+5*B*a*d*e)-(5*a*B*e*(-a*e^2+c*d^2)+A*c*d*(5*a*e^2+3*c*d
^2))*x)/a^2/c^2/(c*x^2+a)+1/8*(5*a*B*e*(-3*a^2*e^4+6*a*c*d^2*e^2+c^2*d^4)+A
*c*d*(15*a^2*e^4+10*a*c*d^2*e^2+3*c^2*d^4))*arctan(x*c^(1/2)/a^(1/2))/a^(5/
2)/c^(7/2)+1/2*e^4*(A*e+5*B*d)*ln(c*x^2+a)/c^3
```

Rubi [A] time = 0.42, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {819, 774, 635, 205, 260}

$$-\frac{(d+ex)^2\left(2ae\left(2aAe^2+5aBde+Acd^2\right)-x\left(Acd\left(5ae^2+3cd^2\right)+5aBe\left(cd^2-ae^2\right)\right)\right)}{8a^2c^2\left(a+cx^2\right)}-\frac{e^2x\left(Acd\left(7ae^2+3cd^2\right.\right.}{8a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x]
```

```
[Out] -(e^2*(5*a*B*e*(c*d^2 - 3*a*e^2) + A*c*d*(3*c*d^2 + 7*a*e^2))*x)/(8*a^2*c^3
) - ((d + e*x)^4*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(4*a*c*(a + c*x^2)^2)
 - ((d + e*x)^2*(2*a*e*(A*c*d^2 + 5*a*B*d*e + 2*a*A*e^2) - (5*a*B*e*(c*d^2
- a*e^2) + A*c*d*(3*c*d^2 + 5*a*e^2))*x))/(8*a^2*c^2*(a + c*x^2)) + ((5*a*B
*e*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^
2 + 15*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(7/2)) + (e^4*(5
*B*d + A*e)*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 774

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2), x_Sym
bol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + c*(e*f + d*g)*x
)/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g}, x]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+cx^2\right)^3}\,dx = -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} + \frac{\int \frac{(d+ex)^3\left(3Acd^2+ae(5Bd+4Ae)-e(Acd-5aBe)x\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)^2\left(2ae\left(Acd^2+5aBde+2aAe^2\right)-\bigl(}{8a^2c^2\bigl(a}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

$$= -\frac{e^2\left(5aBe\left(cd^2-3ae^2\right)+Acd\left(3cd^2+7ae^2\right)\right)x}{8a^2c^3} - \frac{(d+ex)^4(a(Bd+Ae)-(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

Mathematica [A] time = 0.25, size = 341, normalized size = 1.12

$$\frac{\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)+5aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)\right)}{a^{5/2}} + \frac{2\sqrt{c}\bigl(-a^3e^4(Ae+5Bd+Bex)+5a^2cde^2(Ae(2d+ex)+2Bd(d+ex))-ac^2d^3(5}{a\left(a+cx^2\right)^2}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x]
```

```
[Out] (8*B*Sqrt[c]*e^5*x + (2*Sqrt[c]*(A*c^3*d^5*x - a^3*e^4*(5*B*d + A*e + B*e*x
) + 5*a^2*c*d*e^2*(2*B*d*(d + e*x) + A*e*(2*d + e*x)) - a*c^2*d^3*(5*A*e*(d
 + 2*e*x) + B*d*(d + 5*e*x))))/(a*(a + c*x^2)^2) + (Sqrt[c]*(3*A*c^3*d^5*x
+ 5*a*c^2*d^3*e*(B*d + 2*A*e)*x + a^3*e^4*(40*B*d + 8*A*e + 9*B*e*x) - 5*a^
2*c*d*e^2*(2*B*d*(4*d + 5*e*x) + A*e*(8*d + 5*e*x))))/(a^2*(a + c*x^2)) + (
(5*a*B*e*(c^2*d^4 + 6*a*c*d^2*e^2 - 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*
d^2*e^2 + 15*a^2*e^4))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) + 4*Sqrt[c]*e^4
*(5*B*d + A*e)*Log[a + c*x^2])/(8*c^(7/2))
```

fricas [B] time = 0.73, size = 1403, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(16*B*a^3*c^3*e^5*x^5 - 4*B*a^3*c^3*d^5 - 20*A*a^3*c^3*d^4*e - 40*B*a
^4*c^2*d^3*e^2 - 40*A*a^4*c^2*d^2*e^3 + 60*B*a^5*c*d*e^4 + 12*A*a^5*c*e^5 +
 2*(3*A*a*c^5*d^5 + 5*B*a^2*c^4*d^4*e + 10*A*a^2*c^4*d^3*e^2 - 50*B*a^3*c^3
*d^2*e^3 - 25*A*a^3*c^3*d*e^4 + 25*B*a^4*c^2*e^5)*x^3 - 16*(5*B*a^3*c^3*d^3
*e^2 + 5*A*a^3*c^3*d^2*e^3 - 5*B*a^4*c^2*d*e^4 - A*a^4*c^2*e^5)*x^2 + (3*A*
a^2*c^3*d^5 + 5*B*a^3*c^2*d^4*e + 10*A*a^3*c^2*d^3*e^2 + 30*B*a^4*c*d^2*e^3
 + 15*A*a^4*c*d*e^4 - 15*B*a^5*e^5 + (3*A*c^5*d^5 + 5*B*a*c^4*d^4*e + 10*A*
a*c^4*d^3*e^2 + 30*B*a^2*c^3*d^2*e^3 + 15*A*a^2*c^3*d*e^4 - 15*B*a^3*c^2*e^
5)*x^4 + 2*(3*A*a*c^4*d^5 + 5*B*a^2*c^3*d^4*e + 10*A*a^2*c^3*d^3*e^2 + 30*B
*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 - 15*B*a^4*c*e^5)*x^2)*sqrt(-a*c)*log
((c*x^2 + 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) + 10*(A*a^2*c^4*d^5 - B*a^3*c^3*
d^4*e - 2*A*a^3*c^3*d^3*e^2 - 6*B*a^4*c^2*d^2*e^3 - 3*A*a^4*c^2*d*e^4 + 3*B
*a^5*c*e^5)*x + 8*(5*B*a^5*c*d*e^4 + A*a^5*c*e^5 + (5*B*a^3*c^3*d*e^4 + A*a
^3*c^3*e^5)*x^4 + 2*(5*B*a^4*c^2*d*e^4 + A*a^4*c^2*e^5)*x^2)*log(c*x^2 + a)
)/(a^3*c^6*x^4 + 2*a^4*c^5*x^2 + a^5*c^4), 1/8*(8*B*a^3*c^3*e^5*x^5 - 2*B*a
^3*c^3*d^5 - 10*A*a^3*c^3*d^4*e - 20*B*a^4*c^2*d^3*e^2 - 20*A*a^4*c^2*d^2*e
^3 + 30*B*a^5*c*d*e^4 + 6*A*a^5*c*e^5 + (3*A*a*c^5*d^5 + 5*B*a^2*c^4*d^4*e
+ 10*A*a^2*c^4*d^3*e^2 - 50*B*a^3*c^3*d^2*e^3 - 25*A*a^3*c^3*d*e^4 + 25*B*a
^4*c^2*e^5)*x^3 - 8*(5*B*a^3*c^3*d^3*e^2 + 5*A*a^3*c^3*d^2*e^3 - 5*B*a^4*c^
2*d*e^4 - A*a^4*c^2*e^5)*x^2 + (3*A*a^2*c^3*d^5 + 5*B*a^3*c^2*d^4*e + 10*A*
a^3*c^2*d^3*e^2 + 30*B*a^4*c*d^2*e^3 + 15*A*a^4*c*d*e^4 - 15*B*a^5*e^5 + (3
*A*c^5*d^5 + 5*B*a*c^4*d^4*e + 10*A*a*c^4*d^3*e^2 + 30*B*a^2*c^3*d^2*e^3 +
15*A*a^2*c^3*d*e^4 - 15*B*a^3*c^2*e^5)*x^4 + 2*(3*A*a*c^4*d^5 + 5*B*a^2*c^3
*d^4*e + 10*A*a^2*c^3*d^3*e^2 + 30*B*a^3*c^2*d^2*e^3 + 15*A*a^3*c^2*d*e^4 -
 15*B*a^4*c*e^5)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) + 5*(A*a^2*c^4*d^5 -
B*a^3*c^3*d^4*e - 2*A*a^3*c^3*d^3*e^2 - 6*B*a^4*c^2*d^2*e^3 - 3*A*a^4*c^2*d
*e^4 + 3*B*a^5*c*e^5)*x + 4*(5*B*a^5*c*d*e^4 + A*a^5*c*e^5 + (5*B*a^3*c^3*d
*e^4 + A*a^3*c^3*e^5)*x^4 + 2*(5*B*a^4*c^2*d*e^4 + A*a^4*c^2*e^5)*x^2)*log(
c*x^2 + a))/(a^3*c^6*x^4 + 2*a^4*c^5*x^2 + a^5*c^4)]
```

giac [A] time = 0.16, size = 403, normalized size = 1.33

$$\frac{Bxe^5}{c^3}+\frac{\left(5\,Bde^4+Ae^5\right)\log\left(cx^2+a\right)}{2\,c^3}+\frac{\left(3\,Ac^3d^5+5\,Bac^2d^4e+10\,Aac^2d^3e^2+30\,Ba^2cd^2e^3+15\,Aa^2cde^4-15\,B}{8\,\sqrt{ac}\,a^2c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] B*x*e^5/c^3 + 1/2*(5*B*d*e^4 + A*e^5)*log(c*x^2 + a)/c^3 + 1/8*(3*A*c^3*d^5
 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d
*e^4 - 15*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c^3) - 1/8*(2*B*a
^2*c^2*d^5 + 10*A*a^2*c^2*d^4*e + 20*B*a^3*c*d^3*e^2 + 20*A*a^3*c*d^2*e^3 -
 30*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 + 5*B*a*c^3*d^4*e + 10*A*a*c^3
*d^3*e^2 - 50*B*a^2*c^2*d^2*e^3 - 25*A*a^2*c^2*d*e^4 + 9*B*a^3*c*e^5)*x^3 +
 8*(5*B*a^2*c^2*d^3*e^2 + 5*A*a^2*c^2*d^2*e^3 - 5*B*a^3*c*d*e^4 - A*a^3*c*e
^5)*x^2 - (5*A*a*c^3*d^5 - 5*B*a^2*c^2*d^4*e - 10*A*a^2*c^2*d^3*e^2 - 30*B*
a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 7*B*a^4*e^5)*x)/((c*x^2 + a)^2*a^2*c^3)
```

maple [B] time = 0.06, size = 678, normalized size = 2.23

$$\frac{5A\,d^3e^2x^3}{4\left(c\,x^2+a\right)^2a}+\frac{3Ac\,d^5x^3}{8\left(c\,x^2+a\right)^2a^2}-\frac{25Ad\,e^4x^3}{8\left(c\,x^2+a\right)^2c}+\frac{9Ba\,e^5x^3}{8\left(c\,x^2+a\right)^2c^2}+\frac{5B\,d^4e\,x^3}{8\left(c\,x^2+a\right)^2a}-\frac{25B\,d^2e^3x^3}{4\left(c\,x^2+a\right)^2c}+\frac{Aa\,e^5x^2}{\left(c\,x^2+a\right)^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x)
```

```
[Out] -1/4/c/(c*x^2+a)^2*B*d^5+1/2/c^3*ln(c*x^2+a)*A*e^5+5/4/c/a/(a*c)^(1/2)*arct
an(1/(a*c)^(1/2)*c*x)*A*d^3*e^2+5/8/c/a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
x)*B*d^4*e-15/4/c^2/(c*x^2+a)^2*a*x*B*d^2*e^3-15/8/c^2/(c*x^2+a)^2*a*x*A*d*
e^4+5/c^2/(c*x^2+a)^2*B*x^2*a*d*e^4+3/8/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*d^5+5/2/c^3*ln(c*x^2+a)*B*d*e^4+3/4/c^3/(c*x^2+a)^2*A*a^2*e^5-5/4/
c/(c*x^2+a)^2*A*d^4*e+5/8/(c*x^2+a)^2/a*x*A*d^5+5/8/(c*x^2+a)^2/a*x^3*B*d^4
*e+5/4/(c*x^2+a)^2/a*x^3*A*d^3*e^2+15/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2
)*c*x)*A*d*e^4+15/4/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^2*e^3+1/c
^2/(c*x^2+a)^2*A*x^2*a*e^5+9/8/c^2/(c*x^2+a)^2*a*x^3*B*e^5-25/8/c/(c*x^2+a)
^2*x^3*A*d*e^4+3/8*c/(c*x^2+a)^2/a^2*x^3*A*d^5-15/8/c^3*a/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*B*e^5+B/c^3*e^5*x-5/c/(c*x^2+a)^2*A*x^2*d^2*e^3-5/c/(c
*x^2+a)^2*B*x^2*d^3*e^2-5/4/c/(c*x^2+a)^2*x*A*d^3*e^2-5/8/c/(c*x^2+a)^2*x*B
*d^4*e-5/2/c^2/(c*x^2+a)^2*A*d^2*a*e^3-5/2/c^2/(c*x^2+a)^2*B*d^3*a*e^2+15/4
/c^3/(c*x^2+a)^2*B*a^2*d*e^4+7/8/c^3/(c*x^2+a)^2*a^2*x*B*e^5-25/4/c/(c*x^2+
a)^2*x^3*B*d^2*e^3
```

maxima [A] time = 1.15, size = 438, normalized size = 1.44

$$\frac{Be^5x}{c^3} - \frac{2\,Ba^2c^2d^5 + 10\,Aa^2c^2d^4e + 20\,Ba^3cd^3e^2 + 20\,Aa^3cd^2e^3 - 30\,Ba^4de^4 - 6\,Aa^4e^5 - \left(3\,Ac^4d^5 + 5\,Bac^3d^4e + 10}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] B*e^5*x/c^3 - 1/8*(2*B*a^2*c^2*d^5 + 10*A*a^2*c^2*d^4*e + 20*B*a^3*c*d^3*e^
2 + 20*A*a^3*c*d^2*e^3 - 30*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 + 5*B*
a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 - 50*B*a^2*c^2*d^2*e^3 - 25*A*a^2*c^2*d*e^
4 + 9*B*a^3*c*e^5)*x^3 + 8*(5*B*a^2*c^2*d^3*e^2 + 5*A*a^2*c^2*d^2*e^3 - 5*B
*a^3*c*d*e^4 - A*a^3*c*e^5)*x^2 - (5*A*a*c^3*d^5 - 5*B*a^2*c^2*d^4*e - 10*A
*a^2*c^2*d^3*e^2 - 30*B*a^3*c*d^2*e^3 - 15*A*a^3*c*d*e^4 + 7*B*a^4*e^5)*x)/
(a^2*c^5*x^4 + 2*a^3*c^4*x^2 + a^4*c^3) + 1/2*(5*B*d*e^4 + A*e^5)*log(c*x^2
 + a)/c^3 + 1/8*(3*A*c^3*d^5 + 5*B*a*c^2*d^4*e + 10*A*a*c^2*d^3*e^2 + 30*B*
a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 - 15*B*a^3*e^5)*arctan(c*x/sqrt(a*c))/(sqr
t(a*c)*a^2*c^3)
```

mupad [B] time = 0.29, size = 424, normalized size = 1.39

$$\frac{\ln\left(c\,x^2+a\right)\,\left(256\,A\,a^5\,c^4\,e^5+1280\,B\,d\,a^5\,c^4\,e^4\right)}{512\,a^5\,c^7} - \frac{\frac{B\,c^2\,d^5}{4} - \frac{3\,A\,a^2\,e^5}{4} - x^2\,\left(-5\,B\,c^2\,d^3\,e^2 - 5\,A\,c^2\,d^2\,e^3 + 5\,B\,a\,c\,d\,e^4 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + c*x^2)^3,x)
```

```
[Out] (log(a + c*x^2)*(256*A*a^5*c^4*e^5 + 1280*B*a^5*c^4*d*e^4))/(512*a^5*c^7) -
 ((B*c^2*d^5)/4 - (3*A*a^2*e^5)/4 - x^2*(A*a*c*e^5 - 5*A*c^2*d^2*e^3 - 5*B*
c^2*d^3*e^2 + 5*B*a*c*d*e^4) - (x^3*(3*A*c^4*d^5 + 9*B*a^3*c*e^5 + 10*A*a*c
^3*d^3*e^2 - 25*A*a^2*c^2*d*e^4 - 50*B*a^2*c^2*d^2*e^3 + 5*B*a*c^3*d^4*e))/
(8*a^2) + (x*(10*A*a*c^2*d^3*e^2 - 7*B*a^3*e^5 - 5*A*c^3*d^5 + 30*B*a^2*c*d
^2*e^3 + 15*A*a^2*c*d*e^4 + 5*B*a*c^2*d^4*e))/(8*a) - (15*B*a^2*d*e^4)/4 +
(5*A*c^2*d^4*e)/4 + (5*A*a*c*d^2*e^3)/2 + (5*B*a*c*d^3*e^2)/2)/(a^2*c^3 + c
^5*x^4 + 2*a*c^4*x^2) + (B*e^5*x)/c^3 + (atan((c^(1/2)*x)/a^(1/2))*(3*A*c^3
*d^5 - 15*B*a^3*e^5 + 10*A*a*c^2*d^3*e^2 + 30*B*a^2*c*d^2*e^3 + 15*A*a^2*c*
d*e^4 + 5*B*a*c^2*d^4*e))/(8*a^(5/2)*c^(7/2))
```

sympy [B] time = 97.93, size = 1044, normalized size = 3.43

$$\frac{Be^5x}{c^3} + \left(\frac{e^4\left(Ae+5Bd\right)}{2c^3} - \frac{\sqrt{-a^5c^7}\,\left(-15Aa^2cde^4 - 10Aac^2d^3e^2 - 3Ac^3d^5 + 15Ba^3e^5 - 30Ba^2cd^2e^3 - 5Bac^2d^4e\right)}{16a^5c^7}\right)\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+a)**3,x)
```

```
[Out] B*e**5*x/c**3 + (e**4*(A*e + 5*B*d)/(2*c**3) - sqrt(-a**5*c**7)*(-15*A*a**2
*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a
**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a**5*c**7))*log(x + (8*A*a**3*e**5
 + 40*B*a**3*d*e**4 - 16*a**3*c**3*(e**4*(A*e + 5*B*d)/(2*c**3) - sqrt(-a**
5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B
*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a**5*c**7)))/(-
15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5
 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)) + (e**4*(A*e + 5*B*d)/(2*c**
3) + sqrt(-a**5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2 - 3*A*c*
*3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4*e)/(16*a
**5*c**7))*log(x + (8*A*a**3*e**5 + 40*B*a**3*d*e**4 - 16*a**3*c**3*(e**4*(
A*e + 5*B*d)/(2*c**3) + sqrt(-a**5*c**7)*(-15*A*a**2*c*d*e**4 - 10*A*a*c**2
*d**3*e**2 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a
*c**2*d**4*e)/(16*a**5*c**7)))/(-15*A*a**2*c*d*e**4 - 10*A*a*c**2*d**3*e**2
 - 3*A*c**3*d**5 + 15*B*a**3*e**5 - 30*B*a**2*c*d**2*e**3 - 5*B*a*c**2*d**4
*e)) + (6*A*a**4*e**5 - 20*A*a**3*c*d**2*e**3 - 10*A*a**2*c**2*d**4*e + 30*
B*a**4*d*e**4 - 20*B*a**3*c*d**3*e**2 - 2*B*a**2*c**2*d**5 + x**3*(-25*A*a*
*2*c**2*d*e**4 + 10*A*a*c**3*d**3*e**2 + 3*A*c**4*d**5 + 9*B*a**3*c*e**5 -
50*B*a**2*c**2*d**2*e**3 + 5*B*a*c**3*d**4*e) + x**2*(8*A*a**3*c*e**5 - 40*
A*a**2*c**2*d**2*e**3 + 40*B*a**3*c*d*e**4 - 40*B*a**2*c**2*d**3*e**2) + x*
(-15*A*a**3*c*d*e**4 - 10*A*a**2*c**2*d**3*e**2 + 5*A*a*c**3*d**5 + 7*B*a**
4*e**5 - 30*B*a**3*c*d**2*e**3 - 5*B*a**2*c**2*d**4*e))/(8*a**4*c**3 + 16*a
**3*c**4*x**2 + 8*a**2*c**5*x**4)
```

3.1347 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=216

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(3A\left(ae^2+cd^2\right)^2+4aBde\left(3ae^2+cd^2\right)\right)}{8a^{5/2}c^{5/2}}-\frac{(d+ex)\left(x\left(4a^2Be^3-cd\left(ae(3Ae+4Bd)+3Acd^2\right)\right)+ae\left(3\right.\right.}{8a^2c^2\left(a+cx^2\right)}$$

```
[Out] -1/4*(e*x+d)^3*(a*(A*e+B*d)-(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)^2-1/8*(e*x+d)*(a
*e*(8*a*B*d*e+3*A*(a*e^2+c*d^2))+(4*a^2*B*e^3-c*d*(3*A*c*d^2+a*e*(3*A*e+4*B
*d)))*x)/a^2/c^2/(c*x^2+a)+1/8*(3*A*(a*e^2+c*d^2)^2+4*a*B*d*e*(3*a*e^2+c*d^
2))*arctan(x*c^(1/2)/a^(1/2))/a^(5/2)/c^(5/2)+1/2*B*e^4*ln(c*x^2+a)/c^3
```

Rubi [A] time = 0.21, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {819, 635, 205, 260}

$$-\frac{(d+ex)\left(x\left(4a^2Be^3-cd\left(ae(3Ae+4Bd)+3Acd^2\right)\right)+ae\left(3A\left(ae^2+cd^2\right)+8aBde\right)\right)}{8a^2c^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(3A\left(ae^2+c\right.\right.}{8a^{5/}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^3*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(4*a*c*(a + c*x^2)^2) -
((d + e*x)*(a*e*(8*a*B*d*e + 3*A*(c*d^2 + a*e^2)) + (4*a^2*B*e^3 - c*d*(3*A
*c*d^2 + a*e*(4*B*d + 3*A*e)))*x))/(8*a^2*c^2*(a + c*x^2)) + ((3*A*(c*d^2 +
 a*e^2)^2 + 4*a*B*d*e*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^
(5/2)*c^(5/2)) + (B*e^4*Log[a + c*x^2])/(2*c^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+cx^2\right)^3}\,dx = -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} + \frac{\int \frac{(d+ex)^2\left(3Acd^2+ae(4Bd+3Ae)+4aBe^2x\right)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\Big(ae\Big(8aBde+3A\Big(cd^2+ae^2\Big)\Big)+}{8a^2c^2}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\Big(ae\Big(8aBde+3A\Big(cd^2+ae^2\Big)\Big)+}{8a^2c^2}$$

$$= -\frac{(d+ex)^3(a(Bd+Ae)-(Acd-aBe)x)}{4ac\left(a+cx^2\right)^2} - \frac{(d+ex)\Big(ae\Big(8aBde+3A\Big(cd^2+ae^2\Big)\Big)+}{8a^2c^2}$$

Mathematica [**A**] time = 0.21, size = 263, normalized size = 1.22

$$\frac{\frac{\sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)\left(3A\left(ae^2+cd^2\right)^2+4aBde\left(3ae^2+cd^2\right)\right)}{a^{5/2}} + \frac{-2a^3Be^4+2a^2ce^2(Ae(4d+ex)+2Bd(3d+2ex))-2ac^2d^2(2Ae(2d+3ex)+Bd(d+4ex))+2Ac^3d^4x}{a\left(a+cx^2\right)^2}}{8c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x]
```

```
[Out] ((-2*a^3*B*e^4 + 2*A*c^3*d^4*x + 2*a^2*c*e^2*(A*e*(4*d + e*x) + 2*B*d*(3*d
+ 2*e*x)) - 2*a*c^2*d^2*(2*A*e*(2*d + 3*e*x) + B*d*(d + 4*e*x)))/(a*(a + c*
x^2)^2) + (8*a^3*B*e^4 + 3*A*c^3*d^4*x + 2*a*c^2*d^2*e*(2*B*d + 3*A*e)*x -
a^2*c*e^2*(4*B*d*(6*d + 5*e*x) + A*e*(16*d + 5*e*x)))/(a^2*(a + c*x^2)) + (
Sqrt[c]*(3*A*(c*d^2 + a*e^2)^2 + 4*a*B*d*e*(c*d^2 + 3*a*e^2))*ArcTan[(Sqrt[
c]*x)/Sqrt[a]])/a^(5/2) + 4*B*e^4*Log[a + c*x^2])/(8*c^3)
```

fricas [**B**] time = 0.67, size = 1055, normalized size = 4.88

$$\left[-\frac{4Ba^3c^2d^4+16Aa^3c^2d^3e+24Ba^4cd^2e^2+16Aa^4cde^3-12Ba^5e^4-2\Big(3Aac^4d^4+4Ba^2c^3d^3e+6Aa^2c^3d^2e^2}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c^2*d^4 + 16*A*a^3*c^2*d^3*e + 24*B*a^4*c*d^2*e^2 + 16*A*a^
4*c*d*e^3 - 12*B*a^5*e^4 - 2*(3*A*a*c^4*d^4 + 4*B*a^2*c^3*d^3*e + 6*A*a^2*c
^3*d^2*e^2 - 20*B*a^3*c^2*d*e^3 - 5*A*a^3*c^2*e^4)*x^3 + 16*(3*B*a^3*c^2*d^
2*e^2 + 2*A*a^3*c^2*d*e^3 - B*a^4*c*e^4)*x^2 + (3*A*a^2*c^2*d^4 + 4*B*a^3*c
*d^3*e + 6*A*a^3*c*d^2*e^2 + 12*B*a^4*d*e^3 + 3*A*a^4*e^4 + (3*A*c^4*d^4 +
4*B*a*c^3*d^3*e + 6*A*a*c^3*d^2*e^2 + 12*B*a^2*c^2*d*e^3 + 3*A*a^2*c^2*e^4)
*x^4 + 2*(3*A*a*c^3*d^4 + 4*B*a^2*c^2*d^3*e + 6*A*a^2*c^2*d^2*e^2 + 12*B*a^
3*c*d*e^3 + 3*A*a^3*c*e^4)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)
/(c*x^2 + a)) - 2*(5*A*a^2*c^3*d^4 - 4*B*a^3*c^2*d^3*e - 6*A*a^3*c^2*d^2*e^
2 - 12*B*a^4*c*d*e^3 - 3*A*a^4*c*e^4)*x - 8*(B*a^3*c^2*e^4*x^4 + 2*B*a^4*c*
e^4*x^2 + B*a^5*e^4)*log(c*x^2 + a))/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3
), -1/8*(2*B*a^3*c^2*d^4 + 8*A*a^3*c^2*d^3*e + 12*B*a^4*c*d^2*e^2 + 8*A*a^4
*c*d*e^3 - 6*B*a^5*e^4 - (3*A*a*c^4*d^4 + 4*B*a^2*c^3*d^3*e + 6*A*a^2*c^3*d
^2*e^2 - 20*B*a^3*c^2*d*e^3 - 5*A*a^3*c^2*e^4)*x^3 + 8*(3*B*a^3*c^2*d^2*e^2
 + 2*A*a^3*c^2*d*e^3 - B*a^4*c*e^4)*x^2 - (3*A*a^2*c^2*d^4 + 4*B*a^3*c*d^3*
e + 6*A*a^3*c*d^2*e^2 + 12*B*a^4*d*e^3 + 3*A*a^4*e^4 + (3*A*c^4*d^4 + 4*B*a
*c^3*d^3*e + 6*A*a*c^3*d^2*e^2 + 12*B*a^2*c^2*d*e^3 + 3*A*a^2*c^2*e^4)*x^4
+ 2*(3*A*a*c^3*d^4 + 4*B*a^2*c^2*d^3*e + 6*A*a^2*c^2*d^2*e^2 + 12*B*a^3*c*d
*e^3 + 3*A*a^3*c*e^4)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^3*d
^4 - 4*B*a^3*c^2*d^3*e - 6*A*a^3*c^2*d^2*e^2 - 12*B*a^4*c*d*e^3 - 3*A*a^4*c
*e^4)*x - 4*(B*a^3*c^2*e^4*x^4 + 2*B*a^4*c*e^4*x^2 + B*a^5*e^4)*log(c*x^2 +
 a))/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3)]
```

giac [A] time = 0.16, size = 312, normalized size = 1.44

$$\frac{Be^{4}\log\left(cx^{2}+a\right)}{2\,c^{3}}+\frac{\left(3\,Ac^{2}d^{4}+4\,Bacd^{3}e+6\,Aacd^{2}e^{2}+12\,Ba^{2}de^{3}+3\,Aa^{2}e^{4}\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^{2}c^{2}}+\left(3\,Ac^{3}d^{4}+4\,Bac^{2}d^{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*B*e^4*log(c*x^2 + a)/c^3 + 1/8*(3*A*c^2*d^4 + 4*B*a*c*d^3*e + 6*A*a*c*d
^2*e^2 + 12*B*a^2*d*e^3 + 3*A*a^2*e^4)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2
*c^2) + 1/8*((3*A*c^3*d^4 + 4*B*a*c^2*d^3*e + 6*A*a*c^2*d^2*e^2 - 20*B*a^2*
c*d*e^3 - 5*A*a^2*c*e^4)*x^3 - 8*(3*B*a^2*c*d^2*e^2 + 2*A*a^2*c*d*e^3 - B*a
^3*e^4)*x^2 + (5*A*a*c^2*d^4 - 4*B*a^2*c*d^3*e - 6*A*a^2*c*d^2*e^2 - 12*B*a
^3*d*e^3 - 3*A*a^3*e^4)*x - 2*(B*a^2*c^2*d^4 + 4*A*a^2*c^2*d^3*e + 6*B*a^3*
c*d^2*e^2 + 4*A*a^3*c*d*e^3 - 3*B*a^4*e^4)/c)/((c*x^2 + a)^2*a^2*c^2)
```

maple [A] time = 0.05, size = 359, normalized size = 1.66

$$\frac{3A\,d^{2}e^{2}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{4\sqrt{ac}\;ac}+\frac{3A\,d^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^{2}}+\frac{3A\,e^{4}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;c^{2}}+\frac{B\,d^{3}e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;ac}+\frac{3Bd\,e^{3}\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{2\sqrt{ac}\;c^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x)
```

```
[Out] (-1/8*(5*A*a^2*e^4-6*A*a*c*d^2*e^2-3*A*c^2*d^4+20*B*a^2*d*e^3-4*B*a*c*d^3*e
)/a^2/c*x^3-e^2*(2*A*c*d*e-B*a*e^2+3*B*c*d^2)/c^2*x^2-1/8*(3*A*a^2*e^4+6*A*
a*c*d^2*e^2-5*A*c^2*d^4+12*B*a^2*d*e^3+4*B*a*c*d^3*e)/a/c^2*x-1/4*(4*A*a*c*
d*e^3+4*A*c^2*d^3*e-3*B*a^2*e^4+6*B*a*c*d^2*e^2+B*c^2*d^4)/c^3)/(c*x^2+a)^2
+1/2*B*e^4*ln(c*x^2+a)/c^3+3/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*
e^4+3/4/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^2*e^2+3/8/a^2/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4+3/2/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/
2)*c*x)*B*d*e^3+1/2/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^3*e
```

maxima [A] time = 1.34, size = 352, normalized size = 1.63

$$\frac{Be^{4}\log\left(cx^{2}+a\right)}{2\,c^{3}}-2\,Ba^{2}c^{2}d^{4}+8\,Aa^{2}c^{2}d^{3}e+12\,Ba^{3}cd^{2}e^{2}+8\,Aa^{3}cde^{3}-6\,Ba^{4}e^{4}-\left(3\,Ac^{4}d^{4}+4\,Bac^{3}d^{3}e+6\,Aac^{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*B*e^4*log(c*x^2 + a)/c^3 - 1/8*(2*B*a^2*c^2*d^4 + 8*A*a^2*c^2*d^3*e + 1
2*B*a^3*c*d^2*e^2 + 8*A*a^3*c*d*e^3 - 6*B*a^4*e^4 - (3*A*c^4*d^4 + 4*B*a*c^
3*d^3*e + 6*A*a*c^3*d^2*e^2 - 20*B*a^2*c^2*d*e^3 - 5*A*a^2*c^2*e^4)*x^3 + 8
*(3*B*a^2*c^2*d^2*e^2 + 2*A*a^2*c^2*d*e^3 - B*a^3*c*e^4)*x^2 - (5*A*a*c^3*d
^4 - 4*B*a^2*c^2*d^3*e - 6*A*a^2*c^2*d^2*e^2 - 12*B*a^3*c*d*e^3 - 3*A*a^3*c
*e^4)*x)/(a^2*c^5*x^4 + 2*a^3*c^4*x^2 + a^4*c^3) + 1/8*(3*A*c^2*d^4 + 4*B*a
*c*d^3*e + 6*A*a*c*d^2*e^2 + 12*B*a^2*d*e^3 + 3*A*a^2*e^4)*arctan(c*x/sqrt(
a*c))/(sqrt(a*c)*a^2*c^2)
```

mupad [**B**] time = 2.56, size = 763, normalized size = 3.53

$$\frac{5\,A\,d^4\,x}{8\,\left(a^3+2\,a^2\,c\,x^2+a\,c^2\,x^4\right)}-\frac{B\,d^4}{4\,\left(a^2\,c+2\,a\,c^2\,x^2+c^3\,x^4\right)}+\frac{3\,B\,a^2\,e^4}{4\,\left(a^2\,c^3+2\,a\,c^4\,x^2+c^5\,x^4\right)}-\frac{A\,d^3\,e}{a^2\,c+2\,a\,c^2\,x^2+c^3\,x^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + c*x^2)^3,x)
```

```
[Out] (5*A*d^4*x)/(8*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4)) - (B*d^4)/(4*(a^2*c + c^3*x
^4 + 2*a*c^2*x^2)) + (3*B*a^2*e^4)/(4*(a^2*c^3 + c^5*x^4 + 2*a*c^4*x^2)) -
(A*d^3*e)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) - (5*A*e^4*x^3)/(8*(a^2*c + c^3*x
^4 + 2*a*c^2*x^2)) + (B*e^4*log(a + c*x^2))/(2*c^3) - (A*a*d*e^3)/(a^2*c^2
+ c^4*x^4 + 2*a*c^3*x^2) + (3*A*c*d^4*x^3)/(8*(a^4 + 2*a^3*c*x^2 + a^2*c^2*
x^4)) - (3*A*a*e^4*x)/(8*(a^2*c^2 + c^4*x^4 + 2*a*c^3*x^2)) + (3*A*d^2*e^2*
x^3)/(4*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4)) - (3*A*d^2*e^2*x)/(4*(a^2*c + c^3*
x^4 + 2*a*c^2*x^2)) - (2*A*d*e^3*x^2)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) - (5*
B*d*e^3*x^3)/(2*(a^2*c + c^3*x^4 + 2*a*c^2*x^2)) - (3*B*a*d^2*e^2)/(2*(a^2*
c^2 + c^4*x^4 + 2*a*c^3*x^2)) + (B*a*e^4*x^2)/(a^2*c^2 + c^4*x^4 + 2*a*c^3*
x^2) - (3*B*d^2*e^2*x^2)/(a^2*c + c^3*x^4 + 2*a*c^2*x^2) + (3*A*d^4*atan((c
^(1/2)*x)/a^(1/2)))/(8*a^(5/2)*c^(1/2)) + (3*A*e^4*atan((c^(1/2)*x)/a^(1/2)
))/(8*a^(1/2)*c^(5/2)) + (B*d^3*e*x^3)/(2*(a^3 + 2*a^2*c*x^2 + a*c^2*x^4))
- (B*d^3*e*x)/(2*(a^2*c + c^3*x^4 + 2*a*c^2*x^2)) + (3*B*d*e^3*atan((c^(1/2
)*x)/a^(1/2)))/(2*a^(1/2)*c^(5/2)) + (B*d^3*e*atan((c^(1/2)*x)/a^(1/2)))/(2
*a^(3/2)*c^(3/2)) + (3*A*d^2*e^2*atan((c^(1/2)*x)/a^(1/2)))/(4*a^(3/2)*c^(3
/2)) - (3*B*a*d*e^3*x)/(2*(a^2*c^2 + c^4*x^4 + 2*a*c^3*x^2))
```

sympy [**B**] time = 46.14, size = 816, normalized size = 3.78

$$\left(\frac{Be^4}{2c^3}-\frac{\sqrt{-a^5c^7}\left(3Aa^2e^4+6Aacd^2e^2+3Ac^2d^4+12Ba^2de^3+4Bacd^3e\right)}{16a^5c^6}\right)\log\left(x+\frac{-8Ba^3e^4+16a^3c^3\left(\frac{Be^4}{2c^3}-\right.}{3Aa^2ce^4+6Aac^2d^2e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+a)**3,x)
```

```
[Out] (B*e**4/(2*c**3) - sqrt(-a**5*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*
A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*e)/(16*a**5*c**6))*log(x + (-
8*B*a**3*e**4 + 16*a**3*c**3*(B*e**4/(2*c**3) - sqrt(-a**5*c**7)*(3*A*a**2*
e**4 + 6*A*a*c*d**2*e**2 + 3*A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*
e)/(16*a**5*c**6)))/(3*A*a**2*c*e**4 + 6*A*a*c**2*d**2*e**2 + 3*A*c**3*d**4
 + 12*B*a**2*c*d*e**3 + 4*B*a*c**2*d**3*e)) + (B*e**4/(2*c**3) + sqrt(-a**5
*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*A*c**2*d**4 + 12*B*a**2*d*e**
3 + 4*B*a*c*d**3*e)/(16*a**5*c**6))*log(x + (-8*B*a**3*e**4 + 16*a**3*c**3*
(B*e**4/(2*c**3) + sqrt(-a**5*c**7)*(3*A*a**2*e**4 + 6*A*a*c*d**2*e**2 + 3*
A*c**2*d**4 + 12*B*a**2*d*e**3 + 4*B*a*c*d**3*e)/(16*a**5*c**6)))/(3*A*a**2
*c*e**4 + 6*A*a*c**2*d**2*e**2 + 3*A*c**3*d**4 + 12*B*a**2*c*d*e**3 + 4*B*a
*c**2*d**3*e)) + (-8*A*a**3*c*d*e**3 - 8*A*a**2*c**2*d**3*e + 6*B*a**4*e**4
 - 12*B*a**3*c*d**2*e**2 - 2*B*a**2*c**2*d**4 + x**3*(-5*A*a**2*c**2*e**4 +
 6*A*a*c**3*d**2*e**2 + 3*A*c**4*d**4 - 20*B*a**2*c**2*d*e**3 + 4*B*a*c**3*
d**3*e) + x**2*(-16*A*a**2*c**2*d*e**3 + 8*B*a**3*c*e**4 - 24*B*a**2*c**2*d
**2*e**2) + x*(-3*A*a**3*c*e**4 - 6*A*a**2*c**2*d**2*e**2 + 5*A*a*c**3*d**4
```

```
 - 12*B*a**3*c*d*e**3 - 4*B*a**2*c**2*d**3*e))/(8*a**4*c**3 + 16*a**3*c**4*
x**2 + 8*a**2*c**5*x**4)
```

3.1348 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=125

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}}-\frac{3(d+ex)(ae-cdx)(aBe+Acd)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^3(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

```
[Out] -1/4*(-A*c*x+B*a)*(e*x+d)^3/a/c/(c*x^2+a)^2-3/8*(A*c*d+B*a*e)*(-c*d*x+a*e)*
(e*x+d)/a^2/c^2/(c*x^2+a)+3/8*(A*c*d+B*a*e)*(a*e^2+c*d^2)*arctan(x*c^(1/2)/
a^(1/2))/a^(5/2)/c^(5/2)
```

Rubi [A] time = 0.06, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {805, 723, 205}

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}}-\frac{3(d+ex)(ae-cdx)(aBe+Acd)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^3(aB-Acx)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x]
```

```
[Out] -((a*B - A*c*x)*(d + e*x)^3)/(4*a*c*(a + c*x^2)^2) - (3*(A*c*d + a*B*e)*(a*
e - c*d*x)*(d + e*x))/(8*a^2*c^2*(a + c*x^2)) + (3*(A*c*d + a*B*e)*(c*d^2 +
 a*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(5/2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 723

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[
((d + e*x)^(m - 1)*(a*e - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] +
 Dist[((2*p + 3)*(c*d^2 + a*e^2))/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 2)*(a
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0
] && EqQ[m + 2*p + 2, 0] && LtQ[p, -1]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+cx^2\right)^3}\,dx = -\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2} + \frac{(3(Acd+aBe))\int \frac{(d+ex)^2}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2} - \frac{3(Acd+aBe)(ae-cdx)(d+ex)}{8a^2c^2\left(a+cx^2\right)} + \frac{\left(3(Acd+aBe)\left(cd^2+ae^2\right)\right.}{8a^2c^2}$$

$$= -\frac{(aB-Acx)(d+ex)^3}{4ac\left(a+cx^2\right)^2} - \frac{3(Acd+aBe)(ae-cdx)(d+ex)}{8a^2c^2\left(a+cx^2\right)} + \frac{3(Acd+aBe)\left(cd^2+ae^2\right)}{8a^{5/2}c^{5/2}}$$

Mathematica **[A]** time = 0.10, size = 186, normalized size = 1.49

$$\frac{3\left(ae^2+cd^2\right)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+Acd)}{8a^{5/2}c^{5/2}} + \frac{-a^2e^2(4Ae+12Bd+5Bex)+3acdex(Ae+Bd)+3Ac^2d^3x}{8a^2c^2\left(a+cx^2\right)} + a^2e^2(Ae+3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x]
```

```
[Out] (3*A*c^2*d^3*x + 3*a*c*d*e*(B*d + A*e)*x - a^2*e^2*(12*B*d + 4*A*e + 5*B*e*
x))/(8*a^2*c^2*(a + c*x^2)) + (A*c^2*d^3*x + a^2*e^2*(3*B*d + A*e + B*e*x)
- a*c*d*(3*A*e*(d + e*x) + B*d*(d + 3*e*x)))/(4*a*c^2*(a + c*x^2)^2) + (3*(
A*c*d + a*B*e)*(c*d^2 + a*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(5
/2))
```

fricas **[B]** time = 0.71, size = 752, normalized size = 6.02

$$\left[-\frac{4\,Ba^3c^2d^3+12\,Aa^3c^2d^2e+12\,Ba^4cde^2+4\,Aa^4ce^3-2\left(3\,Aac^4d^3+3\,Ba^2c^3d^2e+3\,Aa^2c^3de^2-5\,Ba^3c^2e^3\right)x^3+8}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c^2*d^3 + 12*A*a^3*c^2*d^2*e + 12*B*a^4*c*d*e^2 + 4*A*a^4*c
*e^3 - 2*(3*A*a*c^4*d^3 + 3*B*a^2*c^3*d^2*e + 3*A*a^2*c^3*d*e^2 - 5*B*a^3*c
^2*e^3)*x^3 + 8*(3*B*a^3*c^2*d*e^2 + A*a^3*c^2*e^3)*x^2 + 3*(A*a^2*c^2*d^3
+ B*a^3*c*d^2*e + A*a^3*c*d*e^2 + B*a^4*e^3 + (A*c^4*d^3 + B*a*c^3*d^2*e +
A*a*c^3*d*e^2 + B*a^2*c^2*e^3)*x^4 + 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a
^2*c^2*d*e^2 + B*a^3*c*e^3)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a
)/(c*x^2 + a)) - 2*(5*A*a^2*c^3*d^3 - 3*B*a^3*c^2*d^2*e - 3*A*a^3*c^2*d*e^2
 - 3*B*a^4*c*e^3)*x)/(a^3*c^5*x^4 + 2*a^4*c^4*x^2 + a^5*c^3), -1/8*(2*B*a^3
*c^2*d^3 + 6*A*a^3*c^2*d^2*e + 6*B*a^4*c*d*e^2 + 2*A*a^4*c*e^3 - (3*A*a*c^4
*d^3 + 3*B*a^2*c^3*d^2*e + 3*A*a^2*c^3*d*e^2 - 5*B*a^3*c^2*e^3)*x^3 + 4*(3*
B*a^3*c^2*d*e^2 + A*a^3*c^2*e^3)*x^2 - 3*(A*a^2*c^2*d^3 + B*a^3*c*d^2*e + A
*a^3*c*d*e^2 + B*a^4*e^3 + (A*c^4*d^3 + B*a*c^3*d^2*e + A*a*c^3*d*e^2 + B*a
^2*c^2*e^3)*x^4 + 2*(A*a*c^3*d^3 + B*a^2*c^2*d^2*e + A*a^2*c^2*d*e^2 + B*a^
3*c*e^3)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^3*d^3 - 3*B*a^3*
c^2*d^2*e - 3*A*a^3*c^2*d*e^2 - 3*B*a^4*c*e^3)*x)/(a^3*c^5*x^4 + 2*a^4*c^4*
x^2 + a^5*c^3)]
```

giac **[B]** time = 0.19, size = 233, normalized size = 1.86

$$\frac{3\left(Ac^2d^3+Bacd^2e+Aacde^2+Ba^2e^3\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^2c^2} + \frac{3\,Ac^3d^3x^3+3\,Bac^2d^2x^3e+3\,Aac^2dx^3e^2+5\,Aac^2d^3x-5\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/8*(A*c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c
))/(sqrt(a*c)*a^2*c^2) + 1/8*(3*A*c^3*d^3*x^3 + 3*B*a*c^2*d^2*x^3*e + 3*A*a
*c^2*d*x^3*e^2 + 5*A*a*c^2*d^3*x - 5*B*a^2*c*x^3*e^3 - 12*B*a^2*c*d*x^2*e^2
 - 3*B*a^2*c*d^2*x*e - 2*B*a^2*c*d^3 - 4*A*a^2*c*x^2*e^3 - 3*A*a^2*c*d*x*e^
2 - 6*A*a^2*c*d^2*e - 3*B*a^3*x*e^3 - 6*B*a^3*d*e^2 - 2*A*a^3*e^3)/((c*x^2
+ a)^2*a^2*c^2)
```

maple [B] time = 0.06, size = 260, normalized size = 2.08

$$\frac{3Ad\,e^2\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;ac}+\frac{3A\,d^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^2}+\frac{3B\,d^2e\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;ac}+\frac{3B\,e^3\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;c^2}+\frac{-\frac{(Ae+3Bd)e^2x^2}{2c}+\frac{(3Aacd}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(3*A*a*c*d*e^2+3*A*c^2*d^3-5*B*a^2*e^3+3*B*a*c*d^2*e)/a^2/c*x^3-1/2*e^
2*(A*e+3*B*d)*x^2/c-1/8*(3*A*a*c*d*e^2-5*A*c^2*d^3+3*B*a^2*e^3+3*B*a*c*d^2*
e)/a/c^2*x-1/4*(A*a*e^3+3*A*c*d^2*e+3*B*a*d*e^2+B*c*d^3)/c^2)/(c*x^2+a)^2+3
/8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d*e^2+3/8/a^2/(a*c)^(1/2)*ar
ctan(1/(a*c)^(1/2)*c*x)*A*d^3+3/8/c^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)
*B*e^3+3/8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*d^2*e
```

maxima [B] time = 1.51, size = 248, normalized size = 1.98

$$-\frac{2\,Ba^2cd^3+6\,Aa^2cd^2e+6\,Ba^3de^2+2\,Aa^3e^3-\left(3\,Ac^3d^3+3\,Bac^2d^2e+3\,Aac^2de^2-5\,Ba^2ce^3\right)x^3+4\left(3\,Ba^2cde\right.}{8\left(a^2c^4x^4+2\,a^3c^3x^2+a^4c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(2*B*a^2*c*d^3 + 6*A*a^2*c*d^2*e + 6*B*a^3*d*e^2 + 2*A*a^3*e^3 - (3*A*
c^3*d^3 + 3*B*a*c^2*d^2*e + 3*A*a*c^2*d*e^2 - 5*B*a^2*c*e^3)*x^3 + 4*(3*B*a
^2*c*d*e^2 + A*a^2*c*e^3)*x^2 - (5*A*a*c^2*d^3 - 3*B*a^2*c*d^2*e - 3*A*a^2*
c*d*e^2 - 3*B*a^3*e^3)*x)/(a^2*c^4*x^4 + 2*a^3*c^3*x^2 + a^4*c^2) + 3/8*(A*
c^2*d^3 + B*a*c*d^2*e + A*a*c*d*e^2 + B*a^2*e^3)*arctan(c*x/sqrt(a*c))/(sqr
t(a*c)*a^2*c^2)
```

mupad [B] time = 0.22, size = 265, normalized size = 2.12

$$\frac{3\,\mathrm{atan}\left(\frac{\sqrt{c}\,x\,(A\,c\,d+B\,a\,e)\left(c\,d^2+a\,e^2\right)}{\sqrt{a}\,\left(B\,a^2\,e^3+B\,a\,c\,d^2\,e+A\,a\,c\,d\,e^2+A\,c^2\,d^3\right)}\right)(A\,c\,d+B\,a\,e)\,\left(c\,d^2+a\,e^2\right)}{8\,a^{5/2}\,c^{5/2}}-\frac{\frac{B\,c\,d^3+3\,A\,c\,d^2\,e+3\,B\,a\,d\,e^2+A\,a\,e^3}{4\,c^2}+\frac{x^2\left(A\,e^3+3\,B\right.}{2\,c}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + c*x^2)^3,x)
```

```
[Out] (3*atan((c^(1/2)*x*(A*c*d + B*a*e)*(a*e^2 + c*d^2))/(a^(1/2)*(A*c^2*d^3 + B
*a^2*e^3 + A*a*c*d*e^2 + B*a*c*d^2*e)))*(A*c*d + B*a*e)*(a*e^2 + c*d^2))/(8
*a^(5/2)*c^(5/2)) - ((A*a*e^3 + B*c*d^3 + 3*B*a*d*e^2 + 3*A*c*d^2*e)/(4*c^2
) + (x^2*(A*e^3 + 3*B*d*e^2))/(2*c) + (x*(3*B*a^2*e^3 - 5*A*c^2*d^3 + 3*A*a
*c*d*e^2 + 3*B*a*c*d^2*e))/(8*a*c^2) - (x^3*(3*A*c^2*d^3 - 5*B*a^2*e^3 + 3*
A*a*c*d*e^2 + 3*B*a*c*d^2*e))/(8*a^2*c))/(a^2 + c^2*x^4 + 2*a*c*x^2)
```

sympy [B] time = 20.05, size = 468, normalized size = 3.74

$$-\frac{3\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)\log\left(-\frac{3a^3c^2\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)}{3Aacde^2+3Ac^2d^3+3Ba^2e^3+3Bacd^2e}+x\right)}{16}+\frac{3\sqrt{-\frac{1}{a^5c^5}}\left(ae^2+cd^2\right)(Acd+Bae)\,\mathrm{lo}}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+a)**3,x)
```

```
[Out] -3*sqrt(-1/(a**5*c**5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)*log(-3*a**3*c**2*
sqrt(-1/(a**5*c**5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)/(3*A*a*c*d*e**2 + 3*
A*c**2*d**3 + 3*B*a**2*e**3 + 3*B*a*c*d**2*e) + x)/16 + 3*sqrt(-1/(a**5*c**
5))*(a*e**2 + c*d**2)*(A*c*d + B*a*e)*log(3*a**3*c**2*sqrt(-1/(a**5*c**5))*
(a*e**2 + c*d**2)*(A*c*d + B*a*e)/(3*A*a*c*d*e**2 + 3*A*c**2*d**3 + 3*B*a**
2*e**3 + 3*B*a*c*d**2*e) + x)/16 + (-2*A*a**3*e**3 - 6*A*a**2*c*d**2*e - 6*
B*a**3*d*e**2 - 2*B*a**2*c*d**3 + x**3*(3*A*a*c**2*d*e**2 + 3*A*c**3*d**3 -
 5*B*a**2*c*e**3 + 3*B*a*c**2*d**2*e) + x**2*(-4*A*a**2*c*e**3 - 12*B*a**2*
c*d*e**2) + x*(-3*A*a**2*c*d*e**2 + 5*A*a*c**2*d**3 - 3*B*a**3*e**3 - 3*B*a
**2*c*d**2*e))/(8*a**4*c**2 + 16*a**3*c**3*x**2 + 8*a**2*c**4*x**4)
```

3.1349 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=142

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Acd^2\right)}{8a^{5/2}c^{3/2}}-\frac{2ae(aBe+2Acd)-cx\left(-aAe^2+2aBde+3Acd^2\right)}{8a^2c^2\left(a+cx^2\right)}-\frac{(d+ex)^2(aB-Acx}{4ac\left(a+cx^2\right)^2}$$

```
[Out] -1/4*(-A*c*x+B*a)*(e*x+d)^2/a/c/(c*x^2+a)^2+1/8*(-2*a*e*(2*A*c*d+B*a*e)+c*(
-A*a*e^2+3*A*c*d^2+2*B*a*d*e)*x)/a^2/c^2/(c*x^2+a)+1/8*(A*a*e^2+3*A*c*d^2+2
*B*a*d*e)*arctan(x*c^(1/2)/a^(1/2))/a^(5/2)/c^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 142, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {821, 778, 205}

$$-\frac{2ae(aBe+2Acd)-cx\left(-aAe^2+2aBde+3Acd^2\right)}{8a^2c^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Acd^2\right)}{8a^{5/2}c^{3/2}}-\frac{(d+ex)^2(aB-A}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x]
```

```
[Out] -((a*B - A*c*x)*(d + e*x)^2)/(4*a*c*(a + c*x^2)^2) - (2*a*e*(2*A*c*d + a*B*
e) - c*(3*A*c*d^2 + 2*a*B*d*e - a*A*e^2)*x)/(8*a^2*c^2*(a + c*x^2)) + ((3*A
*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^(3/
2))
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+cx^2\right)^3}\,dx = -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2} + \frac{\int \frac{(d+ex)(3Acd+2aBe+Acex)}{\left(a+cx^2\right)^2}\,dx}{4ac}$$

$$= -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2} - \frac{2ae(2Acd+aBe)-c\left(3Acd^2+2aBde-aAe^2\right)x}{8a^2c^2\left(a+cx^2\right)} + \frac{\left(3Acd^2+\right.}{}$$

$$= -\frac{(aB-Acx)(d+ex)^2}{4ac\left(a+cx^2\right)^2} - \frac{2ae(2Acd+aBe)-c\left(3Acd^2+2aBde-aAe^2\right)x}{8a^2c^2\left(a+cx^2\right)} + \frac{\left(3Acd^2+\right.}{}$$

Mathematica [A] time = 0.11, size = 158, normalized size = 1.11

$$\frac{\frac{\sqrt{a}\left(-4a^2Be^2+acex(Ae+2Bd)+3Ac^2d^2x\right)}{a+cx^2} + \frac{2a^{3/2}\left(a^2Be^2-ac(Ae(2d+ex)+Bd(d+2ex))+Ac^2d^2x\right)}{\left(a+cx^2\right)^2} + \sqrt{c}\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aAe^2+2aBde+3Ac\right.}{8a^{5/2}c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x]
```

```
[Out] ((Sqrt[a]*(-4*a^2*B*e^2 + 3*A*c^2*d^2*x + a*c*e*(2*B*d + A*e)*x))/(a + c*x^
2) + (2*a^(3/2)*(a^2*B*e^2 + A*c^2*d^2*x - a*c*(A*e*(2*d + e*x) + B*d*(d +
2*e*x))))/(a + c*x^2)^2 + Sqrt[c]*(3*A*c*d^2 + 2*a*B*d*e + a*A*e^2)*ArcTan[
(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c^2)
```

fricas [B] time = 0.75, size = 537, normalized size = 3.78

$$\left[-\frac{8\,Ba^3ce^2x^2+4\,Ba^3cd^2+8\,Aa^3cde+4\,Ba^4e^2-2\left(3\,Aac^3d^2+2\,Ba^2c^2de+Aa^2c^2e^2\right)x^3+\left(3\,Aa^2cd^2+2\,Ba^3de+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(8*B*a^3*c*e^2*x^2 + 4*B*a^3*c*d^2 + 8*A*a^3*c*d*e + 4*B*a^4*e^2 - 2
*(3*A*a*c^3*d^2 + 2*B*a^2*c^2*d*e + A*a^2*c^2*e^2)*x^3 + (3*A*a^2*c*d^2 + 2
*B*a^3*d*e + A*a^3*e^2 + (3*A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^4 +
2*(3*A*a*c^2*d^2 + 2*B*a^2*c*d*e + A*a^2*c*e^2)*x^2)*sqrt(-a*c)*log((c*x^2
- 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(5*A*a^2*c^2*d^2 - 2*B*a^3*c*d*e - A
*a^3*c*e^2)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*c^2), -1/8*(4*B*a^3*c*e^2
*x^2 + 2*B*a^3*c*d^2 + 4*A*a^3*c*d*e + 2*B*a^4*e^2 - (3*A*a*c^3*d^2 + 2*B*a
^2*c^2*d*e + A*a^2*c^2*e^2)*x^3 - (3*A*a^2*c*d^2 + 2*B*a^3*d*e + A*a^3*e^2
+ (3*A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^4 + 2*(3*A*a*c^2*d^2 + 2*B*
a^2*c*d*e + A*a^2*c*e^2)*x^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^
2*d^2 - 2*B*a^3*c*d*e - A*a^3*c*e^2)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*
c^2)]
```

giac [A] time = 0.16, size = 169, normalized size = 1.19

$$\frac{\left(3\,Acd^2+2\,Bade+Aae^2\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c} + \frac{3\,Ac^3d^2x^3+2\,Bac^2dx^3e+Aac^2x^3e^2+5\,Aac^2d^2x-4\,Ba^2cx^2e^2-2\,Ba^2}{8\left(cx^2+a\right)^2a^2c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c*d^2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*
c) + 1/8*(3*A*c^3*d^2*x^3 + 2*B*a*c^2*d*x^3*e + A*a*c^2*x^3*e^2 + 5*A*a*c^2
*d^2*x - 4*B*a^2*c*x^2*e^2 - 2*B*a^2*c*d*x*e - 2*B*a^2*c*d^2 - A*a^2*c*x*e^
2 - 4*A*a^2*c*d*e - 2*B*a^3*e^2)/((c*x^2 + a)^2*a^2*c^2)
```

maple [A] time = 0.05, size = 180, normalized size = 1.27

$$\frac{A e^{2} \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;ac}+\frac{3A d^{2} \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^{2}}+\frac{Bde \arctan\left(\frac{cx}{\sqrt{ac}}\right)}{4\sqrt{ac}\;ac}+\frac{-\frac{B e^{2}x^{2}}{2c}+\frac{\left(Aa e^{2}+3Ac d^{2}+2aBde\right)x^{3}}{8a^{2}}-\frac{(Aa e^{2}-5Ac d^{2}+2aBd}{8ac}}{\left(c x^{2}+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(A*a*e^2+3*A*c*d^2+2*B*a*d*e)/a^2*x^3-1/2*B/c*e^2*x^2-1/8*(A*a*e^2-5*A
*c*d^2+2*B*a*d*e)/a/c*x-1/4*(2*A*c*d*e+B*a*e^2+B*c*d^2)/c^2)/(c*x^2+a)^2+1/
8/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*e^2+3/8/a^2/(a*c)^(1/2)*arcta
n(1/(a*c)^(1/2)*c*x)*A*d^2+1/4/a/c/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*
d*e
```

maxima [A] time = 1.18, size = 184, normalized size = 1.30

$$-\frac{4\,Ba^{2}ce^{2}x^{2}+2\,Ba^{2}cd^{2}+4\,Aa^{2}cde+2\,Ba^{3}e^{2}-\left(3\,Ac^{3}d^{2}+2\,Bac^{2}de+Aac^{2}e^{2}\right)x^{3}-(5\,Aac^{2}d^{2}-2\,Ba^{2}cde-A}{8\left(a^{2}c^{4}x^{4}+2\,a^{3}c^{3}x^{2}+a^{4}c^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(4*B*a^2*c*e^2*x^2 + 2*B*a^2*c*d^2 + 4*A*a^2*c*d*e + 2*B*a^3*e^2 - (3*
A*c^3*d^2 + 2*B*a*c^2*d*e + A*a*c^2*e^2)*x^3 - (5*A*a*c^2*d^2 - 2*B*a^2*c*d
*e - A*a^2*c*e^2)*x)/(a^2*c^4*x^4 + 2*a^3*c^3*x^2 + a^4*c^2) + 1/8*(3*A*c*d
^2 + 2*B*a*d*e + A*a*e^2)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c)
```

mupad [B] time = 1.81, size = 154, normalized size = 1.08

$$\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(3\,A\,c\,d^{2}+2\,B\,a\,d\,e+A\,a\,e^{2}\right)}{8\,a^{5/2}\,c^{3/2}}-\frac{\frac{B\,c\,d^{2}+2\,A\,c\,d\,e+B\,a\,e^{2}}{4\,c^{2}}-\frac{x^{3}\left(3\,A\,c\,d^{2}+2\,B\,a\,d\,e+A\,a\,e^{2}\right)}{8\,a^{2}}+\frac{x\,(-5\,A\,c\,d^{2}+2\,B\,a\,d\,e+A\,a\,e^{2}}{8\,a\,c}}{a^{2}+2\,a\,c\,x^{2}+c^{2}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + c*x^2)^3,x)
```

```
[Out] (atan((c^(1/2)*x)/a^(1/2))*(A*a*e^2 + 3*A*c*d^2 + 2*B*a*d*e))/(8*a^(5/2)*c^
(3/2)) - ((B*a*e^2 + B*c*d^2 + 2*A*c*d*e)/(4*c^2) - (x^3*(A*a*e^2 + 3*A*c*d
^2 + 2*B*a*d*e))/(8*a^2) + (x*(A*a*e^2 - 5*A*c*d^2 + 2*B*a*d*e))/(8*a*c) +
(B*e^2*x^2)/(2*c))/(a^2 + c^2*x^4 + 2*a*c*x^2)
```

sympy [A] time = 7.84, size = 274, normalized size = 1.93

$$-\frac{\sqrt{-\frac{1}{a^{5}c^{3}}}\left(Aae^{2}+3Acd^{2}+2Bade\right)\log\left(-a^{3}c\sqrt{-\frac{1}{a^{5}c^{3}}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{a^{5}c^{3}}}\left(Aae^{2}+3Acd^{2}+2Bade\right)\log(a^{3}c\sqrt{-\frac{1}{a^{5}c^{3}}}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+a)**3,x)
```

```
[Out] -sqrt(-1/(a**5*c**3))*(A*a*e**2 + 3*A*c*d**2 + 2*B*a*d*e)*log(-a**3*c*sqrt(
-1/(a**5*c**3)) + x)/16 + sqrt(-1/(a**5*c**3))*(A*a*e**2 + 3*A*c*d**2 + 2*B
*a*d*e)*log(a**3*c*sqrt(-1/(a**5*c**3)) + x)/16 + (-4*A*a**2*c*d*e - 2*B*a*
*3*e**2 - 2*B*a**2*c*d**2 - 4*B*a**2*c*e**2*x**2 + x**3*(A*a*c**2*e**2 + 3*
A*c**3*d**2 + 2*B*a*c**2*d*e) + x*(-A*a**2*c*e**2 + 5*A*a*c**2*d**2 - 2*B*a
**2*c*d*e))/(8*a**4*c**2 + 16*a**3*c**3*x**2 + 8*a**2*c**4*x**4)
```

3.1350 $\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3} dx$

Optimal. Leaf size=110

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{x(aBe+3Acd)}{8a^2c\left(a+cx^2\right)}-\frac{a(Ae+Bd)-x(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

```
[Out] 1/4*(-a*(A*e+B*d)+(A*c*d-B*a*e)*x)/a/c/(c*x^2+a)^2+1/8*(3*A*c*d+B*a*e)*x/a^
2/c/(c*x^2+a)+1/8*(3*A*c*d+B*a*e)*arctan(x*c^(1/2)/a^(1/2))/a^(5/2)/c^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {778, 199, 205}

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{x(aBe+3Acd)}{8a^2c\left(a+cx^2\right)}-\frac{a(Ae+Bd)-x(Acd-aBe)}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + c*x^2)^3,x]
```

```
[Out] -(a*(B*d + A*e) - (A*c*d - a*B*e)*x)/(4*a*c*(a + c*x^2)^2) + ((3*A*c*d + a*
B*e)*x)/(8*a^2*c*(a + c*x^2)) + ((3*A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[
a]])/(8*a^(5/2)*c^(3/2))
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+cx^2\right)^3}\,dx &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)\int \frac{1}{\left(a+cx^2\right)^2}\,dx}{4ac}\\ &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)x}{8a^2c\left(a+cx^2\right)}+\frac{(3Acd+aBe)\int \frac{1}{a+cx^2}\,dx}{8a^2c}\\ &= -\frac{a(Bd+Ae)-(Acd-aBe)x}{4ac\left(a+cx^2\right)^2}+\frac{(3Acd+aBe)x}{8a^2c\left(a+cx^2\right)}+\frac{(3Acd+aBe)\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)}{8a^{5/2}c^{3/2}}\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 101, normalized size = 0.92

$$\frac{\tan^{-1}\left(\frac{\sqrt{c}x}{\sqrt{a}}\right)(aBe+3Acd)}{8a^{5/2}c^{3/2}}+\frac{-a^2(2Ae+2Bd+Bex)+acx\left(5Ad+Bex^2\right)+3Ac^2dx^3}{8a^2c\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + c*x^2)^3,x]
```

```
[Out] (3*A*c^2*d*x^3 - a^2*(2*B*d + 2*A*e + B*e*x) + a*c*x*(5*A*d + B*e*x^2))/(8*
a^2*c*(a + c*x^2)^2) + ((3*A*c*d + a*B*e)*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a
^(5/2)*c^(3/2))
```

fricas [**A**] time = 0.46, size = 355, normalized size = 3.23

$$\left[-\frac{4\,Ba^3cd+4\,Aa^3ce-2\left(3\,Aac^3d+Ba^2c^2e\right)x^3+\left(3\,Aa^2cd+Ba^3e+\left(3\,Ac^3d+Bac^2e\right)x^4+2\left(3\,Aac^2d+Ba^2ce\right)x}{16\left(a^3c^4x^4+2\,a^4c^3x^2+a^5c^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/16*(4*B*a^3*c*d + 4*A*a^3*c*e - 2*(3*A*a*c^3*d + B*a^2*c^2*e)*x^3 + (3*
A*a^2*c*d + B*a^3*e + (3*A*c^3*d + B*a*c^2*e)*x^4 + 2*(3*A*a*c^2*d + B*a^2*
c*e)*x^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)) - 2*(5*A
*a^2*c^2*d - B*a^3*c*e)*x)/(a^3*c^4*x^4 + 2*a^4*c^3*x^2 + a^5*c^2), -1/8*(2
*B*a^3*c*d + 2*A*a^3*c*e - (3*A*a*c^3*d + B*a^2*c^2*e)*x^3 - (3*A*a^2*c*d +
 B*a^3*e + (3*A*c^3*d + B*a*c^2*e)*x^4 + 2*(3*A*a*c^2*d + B*a^2*c*e)*x^2)*s
qrt(a*c)*arctan(sqrt(a*c)*x/a) - (5*A*a^2*c^2*d - B*a^3*c*e)*x)/(a^3*c^4*x^
4 + 2*a^4*c^3*x^2 + a^5*c^2)]
```

giac [**A**] time = 0.16, size = 102, normalized size = 0.93

$$\frac{(3\,Acd+Bae)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c}+\frac{3\,Ac^2dx^3+Bacx^3e+5\,Aacdx-Ba^2xe-2\,Ba^2d-2\,Aa^2e}{8\left(cx^2+a\right)^2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c*d + B*a*e)*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c) + 1/8*(3*A*c^
2*d*x^3 + B*a*c*x^3*e + 5*A*a*c*d*x - B*a^2*x*e - 2*B*a^2*d - 2*A*a^2*e)/((
c*x^2 + a)^2*a^2*c)
```

maple [A] time = 0.06, size = 108, normalized size = 0.98

$$\frac{3Ad\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,a^2}+\frac{Be\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\,ac}+\frac{\frac{(3Acd+aBe)x^3}{8a^2}+\frac{(5Acd-aBe)x}{8ac}-\frac{Ae+Bd}{4c}}{\left(cx^2+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+a)^3,x)
```

```
[Out] (1/8*(3*A*c*d+B*a*e)/a^2*x^3+1/8*(5*A*c*d-B*a*e)/a/c*x-1/4*(A*e+B*d)/c)/(c*
x^2+a)^2+3/8/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d+1/8/a/c/(a*c)^(1
/2)*arctan(1/(a*c)^(1/2)*c*x)*B*e
```

maxima [A] time = 1.12, size = 114, normalized size = 1.04

$$-\frac{2\,Ba^2d+2\,Aa^2e-\left(3\,Ac^2d+Bace\right)x^3-\left(5\,Aacd-Ba^2e\right)x}{8\,\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)}+\frac{\left(3\,Acd+Bae\right)\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -1/8*(2*B*a^2*d + 2*A*a^2*e - (3*A*c^2*d + B*a*c*e)*x^3 - (5*A*a*c*d - B*a^
2*e)*x)/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*c) + 1/8*(3*A*c*d + B*a*e)*arcta
n(c*x/sqrt(a*c))/(sqrt(a*c)*a^2*c)
```

mupad [B] time = 1.77, size = 100, normalized size = 0.91

$$\frac{\frac{x^3\,\left(3\,A\,c\,d+B\,a\,e\right)}{8\,a^2}-\frac{A\,e+B\,d}{4\,c}+\frac{x\,\left(5\,A\,c\,d-B\,a\,e\right)}{8\,a\,c}}{a^2+2\,a\,c\,x^2+c^2\,x^4}+\frac{\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\,\left(3\,A\,c\,d+B\,a\,e\right)}{8\,a^{5/2}\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + c*x^2)^3,x)
```

```
[Out] ((x^3*(3*A*c*d + B*a*e))/(8*a^2) - (A*e + B*d)/(4*c) + (x*(5*A*c*d - B*a*e)
)/(8*a*c))/(a^2 + c^2*x^4 + 2*a*c*x^2) + (atan((c^(1/2)*x)/a^(1/2))*(3*A*c*
d + B*a*e))/(8*a^(5/2)*c^(3/2))
```

sympy [A] time = 1.93, size = 180, normalized size = 1.64

$$-\frac{\sqrt{-\frac{1}{a^5c^3}}\,(3Acd+Bae)\log\left(-a^3c\sqrt{-\frac{1}{a^5c^3}}+x\right)}{16}+\frac{\sqrt{-\frac{1}{a^5c^3}}\,(3Acd+Bae)\log\left(a^3c\sqrt{-\frac{1}{a^5c^3}}+x\right)}{16}+\frac{-2Aa^2e-2Ba^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+a)**3,x)
```

```
[Out] -sqrt(-1/(a**5*c**3))*(3*A*c*d + B*a*e)*log(-a**3*c*sqrt(-1/(a**5*c**3)) +
x)/16 + sqrt(-1/(a**5*c**3))*(3*A*c*d + B*a*e)*log(a**3*c*sqrt(-1/(a**5*c**
3)) + x)/16 + (-2*A*a**2*e - 2*B*a**2*d + x**3*(3*A*c**2*d + B*a*c*e) + x*(
5*A*a*c*d - B*a**2*e))/(8*a**4*c + 16*a**3*c**2*x**2 + 8*a**2*c**3*x**4)
```

3.1351 $\int \frac{A+Bx}{\left(a+cx^2\right)^3} \, dx$

Optimal. Leaf size=75

$$\frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}+\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{Acx-aB}{4ac\left(a+cx^2\right)^2}$$

```
[Out] 1/4*(A*c*x-B*a)/a/c/(c*x^2+a)^2+3/8*A*x/a^2/(c*x^2+a)+3/8*A*arctan(x*c^(1/2
)/a^(1/2))/a^(5/2)/c^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {639, 199, 205}

$$\frac{3Ax}{8a^2\left(a+cx^2\right)}+\frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}-\frac{aB-Acx}{4ac\left(a+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + c*x^2)^3,x]
```

```
[Out] -(a*B - A*c*x)/(4*a*c*(a + c*x^2)^2) + (3*A*x)/(8*a^2*(a + c*x^2)) + (3*A*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[c])
```

Rule 199

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> -Simp[(x*(a + b*x^n)^(p + 1
))/(a*n*(p + 1)), x] + Dist[(n*(p + 1) + 1)/(a*n*(p + 1)), Int[(a + b*x^n)^
(p + 1), x], x] /; FreeQ[{a, b}, x] && IGtQ[n, 0] && LtQ[p, -1] && (Integer
Q[2*p] || (n == 2 && IntegerQ[4*p]) || (n == 2 && IntegerQ[3*p]) || Denomin
ator[p + 1/n] < Denominator[p])
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+cx^2\right)^3}\,dx = -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2} + \frac{(3A)\int \frac{1}{\left(a+cx^2\right)^2}\,dx}{4a}$$

$$= -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2} + \frac{3Ax}{8a^2\left(a+cx^2\right)} + \frac{(3A)\int \frac{1}{a+cx^2}\,dx}{8a^2}$$

$$= -\frac{aB-Acx}{4ac\left(a+cx^2\right)^2} + \frac{3Ax}{8a^2\left(a+cx^2\right)} + \frac{3A\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}\sqrt{c}}$$

Mathematica [**A**] time = 0.05, size = 71, normalized size = 0.95

$$\frac{\frac{\sqrt{a}\left(-2a^2B+5aAcx+3Ac^2x^3\right)}{\left(a+cx^2\right)^2} + 3A\sqrt{c}\,\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8a^{5/2}c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + c*x^2)^3,x]
```

```
[Out] ((Sqrt[a]*(-2*a^2*B + 5*a*A*c*x + 3*A*c^2*x^3))/(a + c*x^2)^2 + 3*A*Sqrt[c]
*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*c)
```

fricas [**A**] time = 0.61, size = 212, normalized size = 2.83

$$\left[\frac{6\,Aac^2x^3 + 10\,Aa^2cx - 4\,Ba^3 - 3\left(Ac^2x^4 + 2\,Aacx^2 + Aa^2\right)\sqrt{-ac}\,\log\left(\frac{cx^2 - 2\sqrt{-ac}\,x - a}{cx^2+a}\right)}{16\left(a^3c^3x^4 + 2\,a^4c^2x^2 + a^5c\right)},\; 3\,Aac^2x^3 + 5\,Aa^2cx - \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] [1/16*(6*A*a*c^2*x^3 + 10*A*a^2*c*x - 4*B*a^3 - 3*(A*c^2*x^4 + 2*A*a*c*x^2
+ A*a^2)*sqrt(-a*c)*log((c*x^2 - 2*sqrt(-a*c)*x - a)/(c*x^2 + a)))/(a^3*c^3
*x^4 + 2*a^4*c^2*x^2 + a^5*c), 1/8*(3*A*a*c^2*x^3 + 5*A*a^2*c*x - 2*B*a^3 +
 3*(A*c^2*x^4 + 2*A*a*c*x^2 + A*a^2)*sqrt(a*c)*arctan(sqrt(a*c)*x/a))/(a^3*
c^3*x^4 + 2*a^4*c^2*x^2 + a^5*c)]
```

giac [**A**] time = 0.19, size = 60, normalized size = 0.80

$$\frac{3\,A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2} + \frac{3\,Ac^2x^3 + 5\,Aacx - 2\,Ba^2}{8\left(cx^2+a\right)^2a^2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/8*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2) + 1/8*(3*A*c^2*x^3 + 5*A*a*c*x
- 2*B*a^2)/((c*x^2 + a)^2*a^2*c)
```

maple [**A**] time = 0.05, size = 65, normalized size = 0.87

$$\frac{3Ax}{8\left(c\,x^2+a\right)a^2} + \frac{3A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\sqrt{ac}\;a^2} + \frac{2Acx-2Ba}{8\left(c\,x^2+a\right)^2 ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^3,x)
```

```
[Out] 1/8*(2*A*c*x-2*B*a)/a/c/(c*x^2+a)^2+3/8*A*x/a^2/(c*x^2+a)+3/8*A/a^2/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)
```

maxima [A] time = 1.30, size = 74, normalized size = 0.99

$$\frac{3\,Ac^2x^3+5\,Aacx-2\,Ba^2}{8\left(a^2c^3x^4+2\,a^3c^2x^2+a^4c\right)}+\frac{3\,A\arctan\left(\frac{cx}{\sqrt{ac}}\right)}{8\,\sqrt{ac}\,a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(3*A*c^2*x^3 + 5*A*a*c*x - 2*B*a^2)/(a^2*c^3*x^4 + 2*a^3*c^2*x^2 + a^4*
c) + 3/8*A*arctan(c*x/sqrt(a*c))/(sqrt(a*c)*a^2)
```

mupad [B] time = 0.08, size = 64, normalized size = 0.85

$$\frac{\frac{5\,A\,x}{8\,a}-\frac{B}{4\,c}+\frac{3\,A\,c\,x^3}{8\,a^2}}{a^2+2\,a\,c\,x^2+c^2\,x^4}+\frac{3\,A\,\mathrm{atan}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)}{8\,a^{5/2}\,\sqrt{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + c*x^2)^3,x)
```

```
[Out] ((5*A*x)/(8*a) - B/(4*c) + (3*A*c*x^3)/(8*a^2))/(a^2 + c^2*x^4 + 2*a*c*x^2)
 + (3*A*atan((c^(1/2)*x)/a^(1/2)))/(8*a^(5/2)*c^(1/2))
```

sympy [A] time = 0.45, size = 124, normalized size = 1.65

$$A\left(-\frac{3\sqrt{-\frac{1}{a^5c}}\,\log\left(-a^3\sqrt{-\frac{1}{a^5c}}+x\right)}{16}+\frac{3\sqrt{-\frac{1}{a^5c}}\,\log\left(a^3\sqrt{-\frac{1}{a^5c}}+x\right)}{16}\right)+\frac{5Aacx+3Ac^2x^3-2Ba^2}{8a^4c+16a^3c^2x^2+8a^2c^3x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**3,x)
```

```
[Out] A*(-3*sqrt(-1/(a**5*c))*log(-a**3*sqrt(-1/(a**5*c)) + x)/16 + 3*sqrt(-1/(a*
*5*c))*log(a**3*sqrt(-1/(a**5*c)) + x)/16) + (5*A*a*c*x + 3*A*c**2*x**3 - 2
*B*a**2)/(8*a**4*c + 16*a**3*c**2*x**2 + 8*a**2*c**3*x**4)
```

3.1352 $\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=307

$$-\frac{4a^2e^2(Bd-Ae)+x\left(aBe\left(cd^2-3ae^2\right)-Acd\left(7ae^2+3cd^2\right)\right)}{8a^2\left(a+cx^2\right)\left(ae^2+cd^2\right)^2}-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)-\right.}{8a^{5/2}\sqrt{c}\,\left(ae^2+c\right.}$$

```
[Out] 1/4*(-a*(-A*e+B*d)+(A*c*d+B*a*e)*x)/a/(a*e^2+c*d^2)/(c*x^2+a)^2+1/8*(-4*a^2
*e^2*(-A*e+B*d)-(a*B*e*(-3*a*e^2+c*d^2)-A*c*d*(7*a*e^2+3*c*d^2))*x)/a^2/(a*
e^2+c*d^2)^2/(c*x^2+a)-e^4*(-A*e+B*d)*ln(e*x+d)/(a*e^2+c*d^2)^3+1/2*e^4*(-A
*e+B*d)*ln(c*x^2+a)/(a*e^2+c*d^2)^3-1/8*(a*B*e*(-3*a^2*e^4+6*a*c*d^2*e^2+c^
2*d^4)-A*c*d*(15*a^2*e^4+10*a*c*d^2*e^2+3*c^2*d^4))*arctan(x*c^(1/2)/a^(1/2
))/a^(5/2)/(a*e^2+c*d^2)^3/c^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {823, 801, 635, 205, 260}

$$-\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(aBe\left(-3a^2e^4+6acd^2e^2+c^2d^4\right)-Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)\right)}{8a^{5/2}\sqrt{c}\,\left(ae^2+cd^2\right)^3}-\frac{4a^2e^2(Bd-Ae)+x\left(aBe\right.}{8a^2\left(a+\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + c*x^2)^3),x]
```

```
[Out] -(a*(B*d - A*e) - (A*c*d + a*B*e)*x)/(4*a*(c*d^2 + a*e^2)*(a + c*x^2)^2) -
(4*a^2*e^2*(B*d - A*e) + (a*B*e*(c*d^2 - 3*a*e^2) - A*c*d*(3*c*d^2 + 7*a*e^
2))*x)/(8*a^2*(c*d^2 + a*e^2)^2*(a + c*x^2)) - ((a*B*e*(c^2*d^4 + 6*a*c*d^2
*e^2 - 3*a^2*e^4) - A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^2 + 15*a^2*e^4))*ArcTan
[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*Sqrt[c]*(c*d^2 + a*e^2)^3) - (e^4*(B*d -
A*e)*Log[d + e*x])/(c*d^2 + a*e^2)^3 + (e^4*(B*d - A*e)*Log[a + c*x^2])/(2*
(c*d^2 + a*e^2)^3)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] && !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+cx^2\right)^3}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{\int \frac{-c\left(3Acd^2-aBde+4aAe^2\right)-3ce(Acd+aBe)x}{(d+ex)\left(a+cx^2\right)^2}\,dx}{4ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\big(aBe\left(cd^2-3ae^2\right)-Acd\big(3cd^2+7}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\big(aBe\left(cd^2-3ae^2\right)-Acd\big(3cd^2+7}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\big(aBe\left(cd^2-3ae^2\right)-Acd\big(3cd^2+7}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\big(aBe\left(cd^2-3ae^2\right)-Acd\big(3cd^2+7}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)\left(a+cx^2\right)^2} - \frac{4a^2e^2(Bd-Ae)+\big(aBe\left(cd^2-3ae^2\right)-Acd\big(3cd^2+7}{8a^2\left(cd^2+ae^2\right)^2\left(a+cx^2\right)}$$

Mathematica [A] time = 0.28, size = 263, normalized size = 0.86

$$\frac{\frac{\left(ae^2+cd^2\right)\left(a^2e^2(4Ae-4Bd+3Bex)+acdex(7Ae-Bd)+3Ac^2d^3x\right)}{a^2\left(a+cx^2\right)}+\frac{\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(Acd\left(15a^2e^4+10acd^2e^2+3c^2d^4\right)+aBe\left(3a^2e^4-6acd^2e^2-c^2d^4\right)\right)}{a^{5/2}\sqrt{c}}+2\big(ae^2+c}{8\left(ae^2+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + c*x^2)^3),x]
```

```
[Out] ((2*(c*d^2 + a*e^2)^2*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)))/(a*(a + c*x^2)^
2) + ((c*d^2 + a*e^2)*(3*A*c^2*d^3*x + a*c*d*e*(-(B*d) + 7*A*e)*x + a^2*e^2
*(-4*B*d + 4*A*e + 3*B*e*x)))/(a^2*(a + c*x^2)) + ((a*B*e*(-(c^2*d^4) - 6*a
*c*d^2*e^2 + 3*a^2*e^4) + A*c*d*(3*c^2*d^4 + 10*a*c*d^2*e^2 + 15*a^2*e^4))*
ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(a^(5/2)*Sqrt[c]) + 8*e^4*(-(B*d) + A*e)*Log[d
 + e*x] + 4*e^4*(B*d - A*e)*Log[a + c*x^2])/(8*(c*d^2 + a*e^2)^3)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**A**] time = 0.19, size = 534, normalized size = 1.74

$$\frac{\left(Bde^4 - Ae^5\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bde^5 - Ae^6\right)\log\left(|xe + d|\right)}{c^3d^6e + 3\,ac^2d^4e^3 + 3\,a^2cd^2e^5 + a^3e^7} + \frac{(3\,Ac^3d^5 - Bac^2d^4e + 10\,Aac^2}{8\,(a^2c^3d^6 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(B*d*e^4 - A*e^5)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d
^2*e^4 + a^3*e^6) - (B*d*e^5 - A*e^6)*log(abs(x*e + d))/(c^3*d^6*e + 3*a*c^
2*d^4*e^3 + 3*a^2*c*d^2*e^5 + a^3*e^7) + 1/8*(3*A*c^3*d^5 - B*a*c^2*d^4*e +
 10*A*a*c^2*d^3*e^2 - 6*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 + 3*B*a^3*e^5)*a
rctan(c*x/sqrt(a*c))/((a^2*c^3*d^6 + 3*a^3*c^2*d^4*e^2 + 3*a^4*c*d^2*e^4 +
a^5*e^6)*sqrt(a*c)) - 1/8*(2*B*a^2*c^2*d^5 - 2*A*a^2*c^2*d^4*e + 8*B*a^3*c*
d^3*e^2 - 8*A*a^3*c*d^2*e^3 + 6*B*a^4*d*e^4 - 6*A*a^4*e^5 - (3*A*c^4*d^5 -
B*a*c^3*d^4*e + 10*A*a*c^3*d^3*e^2 + 2*B*a^2*c^2*d^2*e^3 + 7*A*a^2*c^2*d*e^
4 + 3*B*a^3*c*e^5)*x^3 + 4*(B*a^2*c^2*d^3*e^2 - A*a^2*c^2*d^2*e^3 + B*a^3*c
*d*e^4 - A*a^3*c*e^5)*x^2 - (5*A*a*c^3*d^5 + B*a^2*c^2*d^4*e + 14*A*a^2*c^2
*d^3*e^2 + 6*B*a^3*c*d^2*e^3 + 9*A*a^3*c*d*e^4 + 5*B*a^4*e^5)*x)/((c*d^2 +
a*e^2)^3*(c*x^2 + a)^2*a^2)
```

maple [**B**] time = 0.10, size = 1087, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+a)^3,x)
```

```
[Out] 9/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a*x*A*c*d*e^4+5/4/(a*e^2+c*d^2)^3/a/(a*c)^(
1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c^2*d^3*e^2+e^5/(a*e^2+c*d^2)^3*ln(e*x+d)*
A-1/2/(a*e^2+c*d^2)^3*ln(c*x^2+a)*A*e^5+3/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a*x
*B*c*d^2*e^3-1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x^2*B*a*c*d*e^4+5/4/(a*e^2+c*d
^2)^3/(c*x^2+a)^2*c^3/a*x^3*A*d^3*e^2-1/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c^3/a
*x^3*B*d^4*e+3/8/(a*e^2+c*d^2)^3/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
A*c^3*d^5+15/8/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*c*d*
e^4-3/4/(a*e^2+c*d^2)^3/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*B*c*d^2*e^3-1
/(a*e^2+c*d^2)^3/(c*x^2+a)^2*B*d^3*a*c*e^2-1/8/(a*e^2+c*d^2)^3/a/(a*c)^(1/2
)*arctan(1/(a*c)^(1/2)*c*x)*B*c^2*d^4*e+5/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*a^2
*x*B*e^5+1/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*A*c^2*d^4*e+7/8/(a*e^2+c*d^2)^3/(c
*x^2+a)^2*c^2*x^3*A*d*e^4+1/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x*B*c^2*d^4*e+1/(
a*e^2+c*d^2)^3/(c*x^2+a)^2*A*d^2*a*c*e^3+3/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c^
4/a^2*x^3*A*d^5-1/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*B*c^2*d^5+1/2/(a*e^2+c*d^2)
^3*ln(c*x^2+a)*B*d*e^4-e^4/(a*e^2+c*d^2)^3*ln(e*x+d)*B*d+3/4/(a*e^2+c*d^2)^
3/(c*x^2+a)^2*A*a^2*e^5+3/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2*c*a*x^3*B*e^5+1/4/(
a*e^2+c*d^2)^3/(c*x^2+a)^2*c^2*x^3*B*d^2*e^3+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^
2*x^2*A*a*c*e^5+1/2/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x^2*A*c^2*d^2*e^3-1/2/(a*e^
2+c*d^2)^3/(c*x^2+a)^2*x^2*B*c^2*d^3*e^2+7/4/(a*e^2+c*d^2)^3/(c*x^2+a)^2*x*
A*c^2*d^3*e^2+5/8/(a*e^2+c*d^2)^3/(c*x^2+a)^2/a*x*A*c^3*d^5-3/4/(a*e^2+c*d^
2)^3/(c*x^2+a)^2*B*a^2*d*e^4+3/8/(a*e^2+c*d^2)^3*a/(a*c)^(1/2)*arctan(1/(a*
c)^(1/2)*c*x)*B*e^5
```

maxima [**A**] time = 1.27, size = 525, normalized size = 1.71

$$\frac{\left(Bde^4 - Ae^5\right)\log\left(cx^2 + a\right)}{2\left(c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6\right)} - \frac{\left(Bde^4 - Ae^5\right)\log\left(ex + d\right)}{c^3d^6 + 3\,ac^2d^4e^2 + 3\,a^2cd^2e^4 + a^3e^6} + \frac{(3\,Ac^3d^5 - Bac^2d^4e + 10\,Aac^2d}{8\,(a^2c^3d^6 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(B*d*e^4 - A*e^5)*log(c*x^2 + a)/(c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d
^2*e^4 + a^3*e^6) - (B*d*e^4 - A*e^5)*log(e*x + d)/(c^3*d^6 + 3*a*c^2*d^4*e
^2 + 3*a^2*c*d^2*e^4 + a^3*e^6) + 1/8*(3*A*c^3*d^5 - B*a*c^2*d^4*e + 10*A*a
*c^2*d^3*e^2 - 6*B*a^2*c*d^2*e^3 + 15*A*a^2*c*d*e^4 + 3*B*a^3*e^5)*arctan(c
*x/sqrt(a*c))/((a^2*c^3*d^6 + 3*a^3*c^2*d^4*e^2 + 3*a^4*c*d^2*e^4 + a^5*e^6
)*sqrt(a*c)) - 1/8*(2*B*a^2*c*d^3 - 2*A*a^2*c*d^2*e + 6*B*a^3*d*e^2 - 6*A*a
^3*e^3 - (3*A*c^3*d^3 - B*a*c^2*d^2*e + 7*A*a*c^2*d*e^2 + 3*B*a^2*c*e^3)*x^
3 + 4*(B*a^2*c*d*e^2 - A*a^2*c*e^3)*x^2 - (5*A*a*c^2*d^3 + B*a^2*c*d^2*e +
9*A*a^2*c*d*e^2 + 5*B*a^3*e^3)*x)/(a^4*c^2*d^4 + 2*a^5*c*d^2*e^2 + a^6*e^4
+ (a^2*c^4*d^4 + 2*a^3*c^3*d^2*e^2 + a^4*c^2*e^4)*x^4 + 2*(a^3*c^3*d^4 + 2*
a^4*c^2*d^2*e^2 + a^5*c*e^4)*x^2)
```

mupad [B] time = 4.44, size = 2415, normalized size = 7.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^3*(d + e*x)),x)
```

```
[Out] ((3*A*a*e^3 - B*c*d^3 - 3*B*a*d*e^2 + A*c*d^2*e)/(4*(a^2*e^4 + c^2*d^4 + 2*
a*c*d^2*e^2)) + (x^2*(A*c*e^3 - B*c*d*e^2))/(2*(a^2*e^4 + c^2*d^4 + 2*a*c*d
^2*e^2)) + (x^3*(3*A*c^3*d^3 + 3*B*a^2*c*e^3 + 7*A*a*c^2*d*e^2 - B*a*c^2*d^
2*e))/(8*a^2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x*(5*A*c^2*d^3 + 5*B*a
^2*e^3 + 9*A*a*c*d*e^2 + B*a*c*d^2*e))/(8*a*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*
e^2)))/(a^2 + c^2*x^4 + 2*a*c*x^2) - (log(576*A^2*a^7*e^14*(-a^5*c)^(3/2) +
 9*A^2*c^7*d^14*(-a^5*c)^(3/2) - 9*B^2*a^13*e^14*(-a^5*c)^(1/2) + 558*B^2*a
^7*d^2*e^12*(-a^5*c)^(3/2) + 9*B^2*a^15*c*e^14*x + 9*A^2*a^7*c^9*d^14*x + 5
76*A^2*a^14*c^2*e^14*x - 1377*A^2*a*d^2*e^12*(-a^5*c)^(5/2) - 1119*B^2*a*d^
4*e^10*(-a^5*c)^(5/2) - 1326*A^2*c*d^4*e^10*(-a^5*c)^(5/2) - 612*B^2*c*d^6*
e^8*(-a^5*c)^(5/2) + 78*A^2*a^8*c^8*d^12*e^2*x + 319*A^2*a^9*c^7*d^10*e^4*x
 + 740*A^2*a^10*c^6*d^8*e^6*x + 1015*A^2*a^11*c^5*d^6*e^8*x + 1326*A^2*a^12
*c^4*d^4*e^10*x + 1377*A^2*a^13*c^3*d^2*e^12*x + B^2*a^9*c^7*d^12*e^2*x + 1
4*B^2*a^10*c^6*d^10*e^4*x + 55*B^2*a^11*c^5*d^8*e^6*x + 612*B^2*a^12*c^4*d^
6*e^8*x + 1119*B^2*a^13*c^3*d^4*e^10*x + 558*B^2*a^14*c^2*d^2*e^12*x + 78*A
^2*a*c^6*d^12*e^2*(-a^5*c)^(3/2) + 2244*A*B*a*d^3*e^11*(-a^5*c)^(5/2) - 106
2*A*B*a^7*d*e^13*(-a^5*c)^(3/2) + 1434*A*B*c*d^5*e^9*(-a^5*c)^(5/2) + 319*A
^2*a^2*c^5*d^10*e^4*(-a^5*c)^(3/2) + 740*A^2*a^3*c^4*d^8*e^6*(-a^5*c)^(3/2)
 + 1015*A^2*a^4*c^3*d^6*e^8*(-a^5*c)^(3/2) + B^2*a^2*c^5*d^12*e^2*(-a^5*c)^
(3/2) + 14*B^2*a^3*c^4*d^10*e^4*(-a^5*c)^(3/2) + 55*B^2*a^4*c^3*d^8*e^6*(-a
^5*c)^(3/2) - 6*A*B*a^8*c^8*d^13*e*x - 1062*A*B*a^14*c^2*d*e^13*x - 6*A*B*a
*c^6*d^13*e*(-a^5*c)^(3/2) - 68*A*B*a^9*c^7*d^11*e^3*x - 250*A*B*a^10*c^6*d
^9*e^5*x - 440*A*B*a^11*c^5*d^7*e^7*x - 1434*A*B*a^12*c^4*d^5*e^9*x - 2244*
A*B*a^13*c^3*d^3*e^11*x - 68*A*B*a^2*c^5*d^11*e^3*(-a^5*c)^(3/2) - 250*A*B*
a^3*c^4*d^9*e^5*(-a^5*c)^(3/2) - 440*A*B*a^4*c^3*d^7*e^7*(-a^5*c)^(3/2))*(a
*c^2*((5*A*d^3*e^2*(-a^5*c)^(1/2))/8 - (B*d^4*e*(-a^5*c)^(1/2))/16) - c*(a^
2*((3*B*d^2*e^3*(-a^5*c)^(1/2))/8 - (15*A*d*e^4*(-a^5*c)^(1/2))/16) - a^5*(
(A*e^5)/2 - (B*d*e^4)/2)) + (3*A*c^3*d^5*(-a^5*c)^(1/2))/16 + (3*B*a^3*e^5*
(-a^5*c)^(1/2))/16))/(a^8*c*e^6 + a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2 + 3*a^7*c
^2*d^2*e^4) + (log(9*B^2*a^13*e^14*(-a^5*c)^(1/2) - 9*A^2*c^7*d^14*(-a^5*c)
^(3/2) - 576*A^2*a^7*e^14*(-a^5*c)^(3/2) - 558*B^2*a^7*d^2*e^12*(-a^5*c)^(3
/2) + 9*B^2*a^15*c*e^14*x + 9*A^2*a^7*c^9*d^14*x + 576*A^2*a^14*c^2*e^14*x
+ 1377*A^2*a*d^2*e^12*(-a^5*c)^(5/2) + 1119*B^2*a*d^4*e^10*(-a^5*c)^(5/2) +
 1326*A^2*c*d^4*e^10*(-a^5*c)^(5/2) + 612*B^2*c*d^6*e^8*(-a^5*c)^(5/2) + 78
*A^2*a^8*c^8*d^12*e^2*x + 319*A^2*a^9*c^7*d^10*e^4*x + 740*A^2*a^10*c^6*d^8
*e^6*x + 1015*A^2*a^11*c^5*d^6*e^8*x + 1326*A^2*a^12*c^4*d^4*e^10*x + 1377*
A^2*a^13*c^3*d^2*e^12*x + B^2*a^9*c^7*d^12*e^2*x + 14*B^2*a^10*c^6*d^10*e^4
*x + 55*B^2*a^11*c^5*d^8*e^6*x + 612*B^2*a^12*c^4*d^6*e^8*x + 1119*B^2*a^13
*c^3*d^4*e^10*x + 558*B^2*a^14*c^2*d^2*e^12*x - 78*A^2*a*c^6*d^12*e^2*(-a^5
*c)^(3/2) - 2244*A*B*a*d^3*e^11*(-a^5*c)^(5/2) + 1062*A*B*a^7*d*e^13*(-a^5*
c)^(3/2) - 1434*A*B*c*d^5*e^9*(-a^5*c)^(5/2) - 319*A^2*a^2*c^5*d^10*e^4*(-a
^5*c)^(3/2) - 740*A^2*a^3*c^4*d^8*e^6*(-a^5*c)^(3/2) - 1015*A^2*a^4*c^3*d^6
*e^8*(-a^5*c)^(3/2) - B^2*a^2*c^5*d^12*e^2*(-a^5*c)^(3/2) - 14*B^2*a^3*c^4*
d^10*e^4*(-a^5*c)^(3/2) - 55*B^2*a^4*c^3*d^8*e^6*(-a^5*c)^(3/2) - 6*A*B*a^8
*c^8*d^13*e*x - 1062*A*B*a^14*c^2*d*e^13*x + 6*A*B*a*c^6*d^13*e*(-a^5*c)^(3
/2) - 68*A*B*a^9*c^7*d^11*e^3*x - 250*A*B*a^10*c^6*d^9*e^5*x - 440*A*B*a^11
*c^5*d^7*e^7*x - 1434*A*B*a^12*c^4*d^5*e^9*x - 2244*A*B*a^13*c^3*d^3*e^11*x
 + 68*A*B*a^2*c^5*d^11*e^3*(-a^5*c)^(3/2) + 250*A*B*a^3*c^4*d^9*e^5*(-a^5*c
)^(3/2) + 440*A*B*a^4*c^3*d^7*e^7*(-a^5*c)^(3/2))*(a*c^2*((5*A*d^3*e^2*(-a^
5*c)^(1/2))/8 - (B*d^4*e*(-a^5*c)^(1/2))/16) - c*(a^2*((3*B*d^2*e^3*(-a^5*c
)^(1/2))/8 - (15*A*d*e^4*(-a^5*c)^(1/2))/16) + a^5*((A*e^5)/2 - (B*d*e^4)/2
)) + (3*A*c^3*d^5*(-a^5*c)^(1/2))/16 + (3*B*a^3*e^5*(-a^5*c)^(1/2))/16))/(a
^8*c*e^6 + a^5*c^4*d^6 + 3*a^6*c^3*d^4*e^2 + 3*a^7*c^2*d^2*e^4) + (log(d +
e*x)*(A*e^5 - B*d*e^4))/(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*
e^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1353 $\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx$

Optimal. Leaf size=443

$$-\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(-5a^2e^4+4acd^2e^2+c^2d^4\right)\right)}{8a^2(d+ex)\left(ae^2+cd^2\right)^3}-\frac{x\left(2aBe\left(cd^2-2ae^2\right)-3Acd\left(3ae^2+cd^2\right)\right)+ae\,(-5a}{8a^2\left(a+cx^2\right)(d+ex)\left(ae^2+cd^2\right)}$$

```
[Out] -1/8*e*(2*a*B*d*e*(-11*a*e^2+c*d^2)-3*A*(-5*a^2*e^4+4*a*c*d^2*e^2+c^2*d^4))
/a^2/(a*e^2+c*d^2)^3/(e*x+d)+1/4*(-a*(-A*e+B*d)+(A*c*d+B*a*e)*x)/a/(a*e^2+c
*d^2)/(e*x+d)/(c*x^2+a)^2+1/8*(-a*e*(-5*A*a*e^2+A*c*d^2+6*B*a*d*e)-(2*a*B*e
*(-2*a*e^2+c*d^2)-3*A*c*d*(3*a*e^2+c*d^2))*x)/a^2/(a*e^2+c*d^2)^2/(e*x+d)/(
c*x^2+a)-e^4*(-6*A*c*d*e-B*a*e^2+5*B*c*d^2)*ln(e*x+d)/(a*e^2+c*d^2)^4+1/2*e
^4*(-6*A*c*d*e-B*a*e^2+5*B*c*d^2)*ln(c*x^2+a)/(a*e^2+c*d^2)^4-1/8*(2*a*B*d*
e*(-15*a^2*e^4+10*a*c*d^2*e^2+c^2*d^4)-3*A*(-5*a^3*e^6+15*a^2*c*d^2*e^4+5*a
*c^2*d^4*e^2+c^3*d^6))*arctan(x*c^(1/2)/a^(1/2))*c^(1/2)/a^(5/2)/(a*e^2+c*d
^2)^4
```

Rubi [A] time = 0.72, antiderivative size = 443, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.227$, Rules used = {823, 801, 635, 205, 260}

$$-\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(-5a^2e^4+4acd^2e^2+c^2d^4\right)\right)}{8a^2(d+ex)\left(ae^2+cd^2\right)^3}-\frac{\sqrt{c}\,\tan^{-1}\left(\frac{\sqrt{c}\,x}{\sqrt{a}}\right)\left(2aBde\left(-15a^2e^4+10acd^2e^2+c^2d^4\right)\right.}{8a^{5/2}\,(ae^2+c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3),x]
```

```
[Out] -(e*(2*a*B*d*e*(c*d^2 - 11*a*e^2) - 3*A*(c^2*d^4 + 4*a*c*d^2*e^2 - 5*a^2*e^
4)))/(8*a^2*(c*d^2 + a*e^2)^3*(d + e*x)) - (a*(B*d - A*e) - (A*c*d + a*B*e)
*x)/(4*a*(c*d^2 + a*e^2)*(d + e*x)*(a + c*x^2)^2) - (a*e*(A*c*d^2 + 6*a*B*d
*e - 5*a*A*e^2) + (2*a*B*e*(c*d^2 - 2*a*e^2) - 3*A*c*d*(c*d^2 + 3*a*e^2))*x
)/(8*a^2*(c*d^2 + a*e^2)^2*(d + e*x)*(a + c*x^2)) - (Sqrt[c]*(2*a*B*d*e*(c^
2*d^4 + 10*a*c*d^2*e^2 - 15*a^2*e^4) - 3*A*(c^3*d^6 + 5*a*c^2*d^4*e^2 + 15*
a^2*c*d^2*e^4 - 5*a^3*e^6))*ArcTan[(Sqrt[c]*x)/Sqrt[a]])/(8*a^(5/2)*(c*d^2
+ a*e^2)^4) - (e^4*(5*B*c*d^2 - 6*A*c*d*e - a*B*e^2)*Log[d + e*x])/(c*d^2 +
 a*e^2)^4 + (e^4*(5*B*c*d^2 - 6*A*c*d*e - a*B*e^2)*Log[a + c*x^2])/(2*(c*d^
2 + a*e^2)^4)
```

Rule 205

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[a/b, 2]*ArcTan[x/Rt[a
/b, 2]])/a, x] /; FreeQ[{a, b}, x] && PosQ[a/b]
```

Rule 260

```
Int[(x_)^(m_.)/((a_) + (b_.)*(x_)^(n_)), x_Symbol] :> Simp[Log[RemoveConten
t[a + b*x^n, x]]/(b*n), x] /; FreeQ[{a, b, m, n}, x] && EqQ[m, n - 1]
```

Rule 635

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2), x_Symbol] :> Dist[d, Int[1/(
a + c*x^2), x], x] + Dist[e, Int[x/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e
}, x] &&  !NiceSqrtQ[-(a*c)]
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+cx^2\right)^3}\,dx = -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2} - \frac{\int \frac{-c\left(3Acd^2-2aBde+5aAe^2\right)-4ce(Acd+aBe)x}{(d+ex)^2\left(a+cx^2\right)^2}\,dx}{4ac\left(cd^2+ae^2\right)}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2} - \frac{ae\left(Acd^2+6aBde-5aAe^2\right)+\left(2aBe\left(cd^2-\right.\right.}{8a^2\left(cd^2+ae^2\right)^2(d+ex}$$

$$= -\frac{a(Bd-Ae)-(Acd+aBe)x}{4a\left(cd^2+ae^2\right)(d+ex)\left(a+cx^2\right)^2} - \frac{ae\left(Acd^2+6aBde-5aAe^2\right)+\left(2aBe\left(cd^2-\right.\right.}{8a^2\left(cd^2+ae^2\right)^2(d+ex}$$

$$= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)} - \frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex}$$

$$= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)} - \frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex}$$

$$= -\frac{e\left(2aBde\left(cd^2-11ae^2\right)-3A\left(c^2d^4+4acd^2e^2-5a^2e^4\right)\right)}{8a^2\left(cd^2+ae^2\right)^3(d+ex)} - \frac{a(Bd-Ae)-(Acd}{4a\left(cd^2+ae^2\right)(d+ex}$$

Mathematica [A] time = 0.49, size = 378, normalized size = 0.85

$$\frac{\frac{2\left(ae^2+cd^2\right)^2\left(a^2Be^2-ac(Ae(ex-2d)+Bd(d-2ex))+Ac^2d^2x\right)}{a\left(a+cx^2\right)^2} + \frac{\left(ae^2+cd^2\right)\left(4a^3Be^4+a^2ce^2(Ae(16d-7ex)-2Bd(6d-7ex))-2ac^2d^2ex(Bd-6Ae)+3Ac^3d^4x\right.}{a^2\left(a+cx^2\right)}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + c*x^2)^3),x]
```

```
[Out] ((-8*e^4*(-(B*d) + A*e)*(c*d^2 + a*e^2))/(d + e*x) + ((c*d^2 + a*e^2)*(4*a^
3*B*e^4 + 3*A*c^3*d^4*x - 2*a*c^2*d^2*e*(B*d - 6*A*e)*x + a^2*c*e^2*(-2*B*d
*(6*d - 7*e*x) + A*e*(16*d - 7*e*x))))/(a^2*(a + c*x^2)) + (2*(c*d^2 + a*e^
2)^2*(a^2*B*e^2 + A*c^2*d^2*x - a*c*(B*d*(d - 2*e*x) + A*e*(-2*d + e*x))))/
(a*(a + c*x^2)^2) + (Sqrt[c]*(2*a*B*d*e*(-(c^2*d^4) - 10*a*c*d^2*e^2 + 15*a
^2*e^4) + 3*A*(c^3*d^6 + 5*a*c^2*d^4*e^2 + 15*a^2*c*d^2*e^4 - 5*a^3*e^6))*A
rcTan[(Sqrt[c]*x)/Sqrt[a]])/a^(5/2) + 8*e^4*(-5*B*c*d^2 + 6*A*c*d*e + a*B*e
^2)*Log[d + e*x] - 4*e^4*(-5*B*c*d^2 + 6*A*c*d*e + a*B*e^2)*Log[a + c*x^2])
/(8*(c*d^2 + a*e^2)^4)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.22, size = 836, normalized size = 1.89

$$\frac{\left(3\,Ac^4d^6e^2 - 2\,Bac^3d^5e^3 + 15\,Aac^3d^4e^4 - 20\,Ba^2c^2d^3e^5 + 45\,Aa^2c^2d^2e^6 + 30\,Ba^3cde^7 - 15\,Aa^3ce^8\right)\arctan\left(\frac{\left(cd - \frac{cd}{xe+}\right.}{}\right.}{8\left(a^2c^4d^8 + 4\,a^3c^3d^6e^2 + 6\,a^4c^2d^4e^4 + 4\,a^5cd^2e^6 + a^6e^8\right)\sqrt{ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*(3*A*c^4*d^6*e^2 - 2*B*a*c^3*d^5*e^3 + 15*A*a*c^3*d^4*e^4 - 20*B*a^2*c^
2*d^3*e^5 + 45*A*a^2*c^2*d^2*e^6 + 30*B*a^3*c*d*e^7 - 15*A*a^3*c*e^8)*arcta
n((c*d - c*d^2/(x*e + d) - a*e^2/(x*e + d))*e^(-1)/sqrt(a*c))*e^(-2)/((a^2*
c^4*d^8 + 4*a^3*c^3*d^6*e^2 + 6*a^4*c^2*d^4*e^4 + 4*a^5*c*d^2*e^6 + a^6*e^8
)*sqrt(a*c)) + 1/2*(5*B*c*d^2*e^4 - 6*A*c*d*e^5 - B*a*e^6)*log(c - 2*c*d/(x
*e + d) + c*d^2/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^4*d^8 + 4*a*c^3*d^6*e^2
 + 6*a^2*c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) + (B*d*e^10/(x*e + d) - A
*e^11/(x*e + d))/(c^3*d^6*e^6 + 3*a*c^2*d^4*e^8 + 3*a^2*c*d^2*e^10 + a^3*e^
12) + 1/8*(3*A*c^5*d^5*e - 2*B*a*c^4*d^4*e^2 + 14*A*a*c^4*d^3*e^3 + 32*B*a^
2*c^3*d^2*e^4 - 29*A*a^2*c^3*d*e^5 - 6*B*a^3*c^2*e^6 - (9*A*c^5*d^6*e^2 - 6
*B*a*c^4*d^5*e^3 + 41*A*a*c^4*d^4*e^4 + 116*B*a^2*c^3*d^3*e^5 - 121*A*a^2*c
^3*d^2*e^6 - 38*B*a^3*c^2*d*e^7 + 7*A*a^3*c^2*e^8)*e^(-1)/(x*e + d) + (9*A*
c^5*d^7*e^3 - 6*B*a*c^4*d^6*e^4 + 45*A*a*c^4*d^5*e^5 + 140*B*a^2*c^3*d^4*e^
6 - 145*A*a^2*c^3*d^3*e^7 - 22*B*a^3*c^2*d^2*e^8 - 21*A*a^3*c^2*d*e^9 - 8*B
*a^4*c*e^10)*e^(-2)/(x*e + d)^2 - (3*A*c^5*d^8*e^4 - 2*B*a*c^4*d^7*e^5 + 18
*A*a*c^4*d^6*e^6 + 58*B*a^2*c^3*d^5*e^7 - 60*A*a^2*c^3*d^4*e^8 + 26*B*a^3*c
^2*d^3*e^9 - 66*A*a^3*c^2*d^2*e^10 - 34*B*a^4*c*d*e^11 + 9*A*a^4*c*e^12)*e^
(-3)/(x*e + d)^3)/((c*d^2 + a*e^2)^4*a^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e
+ d)^2 + a*e^2/(x*e + d)^2)^2)
```

maple [B] time = 0.12, size = 1410, normalized size = 3.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x)
```

```
[Out] -e^5/(a*e^2+c*d^2)^3/(e*x+d)*A-c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*B*a*d^2*
e^4-1/4*c^4/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a*x^3*B*d^5*e+2*c^2/(a*e^2+c*d^2)^4
/(c*x^2+a)^2*x^2*A*a*d*e^5-1/4*c^3/(a*e^2+c*d^2)^4/a/(a*c)^(1/2)*arctan(1/(
a*c)^(1/2)*c*x)*B*d^5*e+15/4*c/(a*e^2+c*d^2)^4*a/(a*c)^(1/2)*arctan(1/(a*c)
^(1/2)*c*x)*B*d*e^5+7/4*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x^3*B*d*e^5+9/4*c
/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*x*B*d*e^5+15/8*c^3/(a*e^2+c*d^2)^4/a/(a*c)
^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^4*e^2+3/8*c^2/(a*e^2+c*d^2)^4/(c*x^2+a
)^2*a*x*A*d^2*e^4+5/2*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x*B*d^3*e^3+15/8*c^
4/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a*x^3*A*d^4*e^2+1/2*c/(a*e^2+c*d^2)^4/(c*x^2+
a)^2*x^2*a^2*B*e^6-9/8*c/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*x*A*e^6-3/2*c^3/(a
*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*B*d^4*e^2+5/8*c^4/(a*e^2+c*d^2)^4/(c*x^2+a)^2
/a*x*A*d^6+2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^2*A*d^3*e^3+5/8*c^3/(a*e^2+c
*d^2)^4/(c*x^2+a)^2*x^3*A*d^2*e^4-1/4*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*B*d^6
+3*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*A*d^3*a*e^3-7/4*c^2/(a*e^2+c*d^2)^4/(c*x
^2+a)^2*B*d^4*a*e^2+3/2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x^3*B*d^3*e^3+17/8*
c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*x*A*d^4*e^2+1/4*c^3/(a*e^2+c*d^2)^4/(c*x^2+
a)^2*x*B*d^5*e+45/8*c^2/(a*e^2+c*d^2)^4/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*
x)*A*d^2*e^4-5/2*c^2/(a*e^2+c*d^2)^4/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*
B*d^3*e^3-15/8*c/(a*e^2+c*d^2)^4*a/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*
e^6+3/8*c^4/(a*e^2+c*d^2)^4/a^2/(a*c)^(1/2)*arctan(1/(a*c)^(1/2)*c*x)*A*d^6
-3/4*c/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a^2*B*d^2*e^4+5/2*c/(a*e^2+c*d^2)^4/(c*x
^2+a)^2*A*a^2*d*e^5-7/8*c^2/(a*e^2+c*d^2)^4/(c*x^2+a)^2*a*x^3*A*e^6+3/8*c^5
/(a*e^2+c*d^2)^4/(c*x^2+a)^2/a^2*x^3*A*d^6-1/2/(a*e^2+c*d^2)^4*a*ln(c*x^2+a
)*B*e^6+e^6/(a*e^2+c*d^2)^4*ln(e*x+d)*B*a+e^4/(a*e^2+c*d^2)^3/(e*x+d)*B*d+3
/4/(a*e^2+c*d^2)^4/(c*x^2+a)^2*B*a^3*e^6+5/2*c/(a*e^2+c*d^2)^4*ln(c*x^2+a)*
B*d^2*e^4+6*e^5/(a*e^2+c*d^2)^4*ln(e*x+d)*A*c*d-5*e^4/(a*e^2+c*d^2)^4*ln(e*
x+d)*B*c*d^2+1/2*c^3/(a*e^2+c*d^2)^4/(c*x^2+a)^2*A*d^5*e-3*c/(a*e^2+c*d^2)^
4*ln(c*x^2+a)*A*d*e^5
```

maxima [B] time = 1.39, size = 997, normalized size = 2.25

$$\frac{\left(5\,Bcd^2e^4 - 6\,Acde^5 - Bae^6\right)\log\left(cx^2 + a\right)}{2\left(c^4d^8 + 4\,ac^3d^6e^2 + 6\,a^2c^2d^4e^4 + 4\,a^3cd^2e^6 + a^4e^8\right)} - \frac{\left(5\,Bcd^2e^4 - 6\,Acde^5 - Bae^6\right)\log\left(ex + d\right)}{c^4d^8 + 4\,ac^3d^6e^2 + 6\,a^2c^2d^4e^4 + 4\,a^3cd^2e^6 + a^4e^8} + \frac{\left(3\,Ac\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(5*B*c*d^2*e^4 - 6*A*c*d*e^5 - B*a*e^6)*log(c*x^2 + a)/(c^4*d^8 + 4*a*c
^3*d^6*e^2 + 6*a^2*c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) - (5*B*c*d^2*e^
4 - 6*A*c*d*e^5 - B*a*e^6)*log(e*x + d)/(c^4*d^8 + 4*a*c^3*d^6*e^2 + 6*a^2*
c^2*d^4*e^4 + 4*a^3*c*d^2*e^6 + a^4*e^8) + 1/8*(3*A*c^4*d^6 - 2*B*a*c^3*d^5
*e + 15*A*a*c^3*d^4*e^2 - 20*B*a^2*c^2*d^3*e^3 + 45*A*a^2*c^2*d^2*e^4 + 30*
B*a^3*c*d*e^5 - 15*A*a^3*c*e^6)*arctan(c*x/sqrt(a*c))/((a^2*c^4*d^8 + 4*a^3
*c^3*d^6*e^2 + 6*a^4*c^2*d^4*e^4 + 4*a^5*c*d^2*e^6 + a^6*e^8)*sqrt(a*c)) -
1/8*(2*B*a^2*c^2*d^5 - 4*A*a^2*c^2*d^4*e + 12*B*a^3*c*d^3*e^2 - 20*A*a^3*c*
d^2*e^3 - 14*B*a^4*d*e^4 + 8*A*a^4*e^5 - (3*A*c^4*d^4*e - 2*B*a*c^3*d^3*e^2
 + 12*A*a*c^3*d^2*e^3 + 22*B*a^2*c^2*d*e^4 - 15*A*a^2*c^2*e^5)*x^4 - (3*A*c
^4*d^5 - 2*B*a*c^3*d^4*e + 12*A*a*c^3*d^3*e^2 + 2*B*a^2*c^2*d^2*e^3 + 9*A*a
^2*c^2*d*e^4 + 4*B*a^3*c*e^5)*x^3 - (5*A*a*c^3*d^4*e - 10*B*a^2*c^2*d^3*e^2
 + 28*A*a^2*c^2*d^2*e^3 + 38*B*a^3*c*d*e^4 - 25*A*a^3*c*e^5)*x^2 - (5*A*a*c
^3*d^5 + 16*A*a^2*c^2*d^3*e^2 + 6*B*a^3*c*d^2*e^3 + 11*A*a^3*c*d*e^4 + 6*B*
a^4*e^5)*x)/(a^4*c^3*d^7 + 3*a^5*c^2*d^5*e^2 + 3*a^6*c*d^3*e^4 + a^7*d*e^6
+ (a^2*c^5*d^6*e + 3*a^3*c^4*d^4*e^3 + 3*a^4*c^3*d^2*e^5 + a^5*c^2*e^7)*x^5
 + (a^2*c^5*d^7 + 3*a^3*c^4*d^5*e^2 + 3*a^4*c^3*d^3*e^4 + a^5*c^2*d*e^6)*x^
4 + 2*(a^3*c^4*d^6*e + 3*a^4*c^3*d^4*e^3 + 3*a^5*c^2*d^2*e^5 + a^6*c*e^7)*x
^3 + 2*(a^3*c^4*d^7 + 3*a^4*c^3*d^5*e^2 + 3*a^5*c^2*d^3*e^4 + a^6*c*d*e^6)*
x^2 + (a^4*c^3*d^6*e + 3*a^5*c^2*d^4*e^3 + 3*a^6*c*d^2*e^5 + a^7*e^7)*x)
```

mupad [B] time = 5.51, size = 3015, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^3*(d + e*x)^2),x)
```

```
[Out] ((x*(5*A*c^2*d^3 + 6*B*a^2*e^3 + 11*A*a*c*d*e^2))/(8*a*(a^2*e^4 + c^2*d^4 +
 2*a*c*d^2*e^2)) - (4*A*a^2*e^5 + B*c^2*d^5 - 7*B*a^2*d*e^4 - 2*A*c^2*d^4*e
 - 10*A*a*c*d^2*e^3 + 6*B*a*c*d^3*e^2)/(4*(a*e^2 + c*d^2)*(a^2*e^4 + c^2*d^
4 + 2*a*c*d^2*e^2)) + (x^3*(3*A*c^3*d^3 + 4*B*a^2*c*e^3 + 9*A*a*c^2*d*e^2 -
 2*B*a*c^2*d^2*e))/(8*a^2*(a^2*e^4 + c^2*d^4 + 2*a*c*d^2*e^2)) + (x^4*(3*A*
c^4*d^4*e - 15*A*a^2*c^2*e^5 + 12*A*a*c^3*d^2*e^3 - 2*B*a*c^3*d^3*e^2 + 22*
B*a^2*c^2*d*e^4))/(8*a^2*(a^3*e^6 + c^3*d^6 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2
*e^4)) + (x^2*(5*A*c^3*d^4*e - 25*A*a^2*c*e^5 + 28*A*a*c^2*d^2*e^3 - 10*B*a
*c^2*d^3*e^2 + 38*B*a^2*c*d*e^4))/(8*a*(a*e^2 + c*d^2)*(a^2*e^4 + c^2*d^4 +
 2*a*c*d^2*e^2)))/(a^2*d + c^2*d*x^4 + c^2*e*x^5 + a^2*e*x + 2*a*c*d*x^2 +
2*a*c*e*x^3) - (log(d + e*x)*(c*(5*B*d^2*e^4 - 6*A*d*e^5) - B*a*e^6))/(a^4*
e^8 + c^4*d^8 + 4*a*c^3*d^6*e^2 + 4*a^3*c*d^2*e^6 + 6*a^2*c^2*d^4*e^4) + (l
og(576*B^2*a^14*e^16*(-a^5*c)^(1/2) - 9*A^2*c^8*d^16*(-a^5*c)^(3/2) - 225*A
^2*a^8*e^16*(-a^5*c)^(3/2) + 19836*A^2*a^2*d^2*e^14*(-a^5*c)^(5/2) + 4056*B
^2*a^2*d^4*e^12*(-a^5*c)^(5/2) + 3708*B^2*a^8*d^2*e^14*(-a^5*c)^(3/2) + 237
96*A^2*c^2*d^6*e^10*(-a^5*c)^(5/2) + 13840*B^2*c^2*d^8*e^8*(-a^5*c)^(5/2) +
 576*B^2*a^16*c*e^16*x + 9*A^2*a^7*c^10*d^16*x + 225*A^2*a^15*c^2*e^16*x -
19236*A*B*a^2*d^3*e^13*(-a^5*c)^(5/2) - 33540*A*B*c^2*d^7*e^9*(-a^5*c)^(5/2
) + 40572*A^2*a*c*d^4*e^12*(-a^5*c)^(5/2) + 21820*B^2*a*c*d^6*e^10*(-a^5*c)
^(5/2) + 108*A^2*a^8*c^9*d^14*e^2*x + 684*A^2*a^9*c^8*d^12*e^4*x + 2340*A^2
*a^10*c^7*d^10*e^6*x + 4590*A^2*a^11*c^6*d^8*e^8*x + 23796*A^2*a^12*c^5*d^6
*e^10*x + 40572*A^2*a^13*c^4*d^4*e^12*x + 19836*A^2*a^14*c^3*d^2*e^14*x + 4
*B^2*a^9*c^8*d^14*e^2*x + 88*B^2*a^10*c^7*d^12*e^4*x + 444*B^2*a^11*c^6*d^1
0*e^6*x + 13840*B^2*a^12*c^5*d^8*e^8*x + 21820*B^2*a^13*c^4*d^6*e^10*x + 40
56*B^2*a^14*c^3*d^4*e^12*x - 3708*B^2*a^15*c^2*d^2*e^14*x - 108*A^2*a*c^7*d
^14*e^2*(-a^5*c)^(3/2) - 6012*A*B*a^8*d*e^15*(-a^5*c)^(3/2) - 684*A^2*a^2*c
^6*d^12*e^4*(-a^5*c)^(3/2) - 2340*A^2*a^3*c^5*d^10*e^6*(-a^5*c)^(3/2) - 459
0*A^2*a^4*c^4*d^8*e^8*(-a^5*c)^(3/2) - 4*B^2*a^2*c^6*d^14*e^2*(-a^5*c)^(3/2
) - 88*B^2*a^3*c^5*d^12*e^4*(-a^5*c)^(3/2) - 444*B^2*a^4*c^4*d^10*e^6*(-a^5
*c)^(3/2) - 12*A*B*a^8*c^9*d^15*e*x + 6012*A*B*a^15*c^2*d*e^15*x - 57348*A*
B*a*c*d^5*e^11*(-a^5*c)^(5/2) + 12*A*B*a*c^7*d^15*e*(-a^5*c)^(3/2) - 204*A*
B*a^9*c^8*d^13*e^3*x - 972*A*B*a^10*c^7*d^11*e^5*x - 2220*A*B*a^11*c^6*d^9*
e^7*x - 33540*A*B*a^12*c^5*d^7*e^9*x - 57348*A*B*a^13*c^4*d^5*e^11*x - 1923
6*A*B*a^14*c^3*d^3*e^13*x + 204*A*B*a^2*c^6*d^13*e^3*(-a^5*c)^(3/2) + 972*A
*B*a^3*c^5*d^11*e^5*(-a^5*c)^(3/2) + 2220*A*B*a^4*c^4*d^9*e^7*(-a^5*c)^(3/2
))*(c*(a^5*((5*B*d^2*e^4)/2 - 3*A*d*e^5) + a^2*((45*A*d^2*e^4*(-a^5*c)^(1/2
))/16 - (5*B*d^3*e^3*(-a^5*c)^(1/2))/4)) - a^3*((15*A*e^6*(-a^5*c)^(1/2))/1
6 - (15*B*d*e^5*(-a^5*c)^(1/2))/8) - (B*a^6*e^6)/2 + a*c^2*((15*A*d^4*e^2*(
-a^5*c)^(1/2))/16 - (B*d^5*e*(-a^5*c)^(1/2))/8) + (3*A*c^3*d^6*(-a^5*c)^(1/
2))/16))/(a^9*e^8 + a^5*c^4*d^8 + 4*a^8*c*d^2*e^6 + 4*a^6*c^3*d^6*e^2 + 6*a
^7*c^2*d^4*e^4) - (log(225*A^2*a^8*e^16*(-a^5*c)^(3/2) + 9*A^2*c^8*d^16*(-a
^5*c)^(3/2) - 576*B^2*a^14*e^16*(-a^5*c)^(1/2) - 19836*A^2*a^2*d^2*e^14*(-a
^5*c)^(5/2) - 4056*B^2*a^2*d^4*e^12*(-a^5*c)^(5/2) - 3708*B^2*a^8*d^2*e^14*
(-a^5*c)^(3/2) - 23796*A^2*c^2*d^6*e^10*(-a^5*c)^(5/2) - 13840*B^2*c^2*d^8*
e^8*(-a^5*c)^(5/2) + 576*B^2*a^16*c*e^16*x + 9*A^2*a^7*c^10*d^16*x + 225*A^
2*a^15*c^2*e^16*x + 19236*A*B*a^2*d^3*e^13*(-a^5*c)^(5/2) + 33540*A*B*c^2*d
^7*e^9*(-a^5*c)^(5/2) - 40572*A^2*a*c*d^4*e^12*(-a^5*c)^(5/2) - 21820*B^2*a
*c*d^6*e^10*(-a^5*c)^(5/2) + 108*A^2*a^8*c^9*d^14*e^2*x + 684*A^2*a^9*c^8*d
^12*e^4*x + 2340*A^2*a^10*c^7*d^10*e^6*x + 4590*A^2*a^11*c^6*d^8*e^8*x + 23
796*A^2*a^12*c^5*d^6*e^10*x + 40572*A^2*a^13*c^4*d^4*e^12*x + 19836*A^2*a^1
4*c^3*d^2*e^14*x + 4*B^2*a^9*c^8*d^14*e^2*x + 88*B^2*a^10*c^7*d^12*e^4*x +
444*B^2*a^11*c^6*d^10*e^6*x + 13840*B^2*a^12*c^5*d^8*e^8*x + 21820*B^2*a^13
*c^4*d^6*e^10*x + 4056*B^2*a^14*c^3*d^4*e^12*x - 3708*B^2*a^15*c^2*d^2*e^14
*x + 108*A^2*a*c^7*d^14*e^2*(-a^5*c)^(3/2) + 6012*A*B*a^8*d*e^15*(-a^5*c)^(
3/2) + 684*A^2*a^2*c^6*d^12*e^4*(-a^5*c)^(3/2) + 2340*A^2*a^3*c^5*d^10*e^6*
(-a^5*c)^(3/2) + 4590*A^2*a^4*c^4*d^8*e^8*(-a^5*c)^(3/2) + 4*B^2*a^2*c^6*d^
14*e^2*(-a^5*c)^(3/2) + 88*B^2*a^3*c^5*d^12*e^4*(-a^5*c)^(3/2) + 444*B^2*a^
4*c^4*d^10*e^6*(-a^5*c)^(3/2) - 12*A*B*a^8*c^9*d^15*e*x + 6012*A*B*a^15*c^2
*d*e^15*x + 57348*A*B*a*c*d^5*e^11*(-a^5*c)^(5/2) - 12*A*B*a*c^7*d^15*e*(-a
^5*c)^(3/2) - 204*A*B*a^9*c^8*d^13*e^3*x - 972*A*B*a^10*c^7*d^11*e^5*x - 22
20*A*B*a^11*c^6*d^9*e^7*x - 33540*A*B*a^12*c^5*d^7*e^9*x - 57348*A*B*a^13*c
^4*d^5*e^11*x - 19236*A*B*a^14*c^3*d^3*e^13*x - 204*A*B*a^2*c^6*d^13*e^3*(-
a^5*c)^(3/2) - 972*A*B*a^3*c^5*d^11*e^5*(-a^5*c)^(3/2) - 2220*A*B*a^4*c^4*d
^9*e^7*(-a^5*c)^(3/2))*((B*a^6*e^6)/2 - a^3*((15*A*e^6*(-a^5*c)^(1/2))/16 -
 (15*B*d*e^5*(-a^5*c)^(1/2))/8) - c*(a^5*((5*B*d^2*e^4)/2 - 3*A*d*e^5) - a^
2*((45*A*d^2*e^4*(-a^5*c)^(1/2))/16 - (5*B*d^3*e^3*(-a^5*c)^(1/2))/4)) + a*
c^2*((15*A*d^4*e^2*(-a^5*c)^(1/2))/16 - (B*d^5*e*(-a^5*c)^(1/2))/8) + (3*A*
c^3*d^6*(-a^5*c)^(1/2))/16))/(a^9*e^8 + a^5*c^4*d^8 + 4*a^8*c*d^2*e^6 + 4*a
^6*c^3*d^6*e^2 + 6*a^7*c^2*d^4*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1354 $\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)} \, dx$

Optimal. Leaf size=29

$$\frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(x+1)$$

```
[Out] 16/3*ln(1-2*x)-5/2*ln(1-x)-17/6*ln(1+x)
```

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {801}

$$\frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)),x]
```

```
[Out] (16*Log[1 - 2*x])/3 - (5*Log[1 - x])/2 - (17*Log[1 + x])/6
```

Rule 801

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a + c*x^2), x],
x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{-11+6x}{(-1+2x)\left(-1+x^2\right)} \, dx &= \int \left(-\frac{5}{2(-1+x)}-\frac{17}{6(1+x)}+\frac{32}{3(-1+2x)}\right) dx\\ &= \frac{16}{3}\log(1-2x)-\frac{5}{2}\log(1-x)-\frac{17}{6}\log(1+x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 1.07

$$-\frac{5}{2}\log(2-2x)+\frac{16}{3}\log(2x-1)-\frac{17}{6}\log(2x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-11 + 6*x)/((-1 + 2*x)*(-1 + x^2)),x]
```

```
[Out] (-5*Log[2 - 2*x])/2 + (16*Log[-1 + 2*x])/3 - (17*Log[2 + 2*x])/6
```

fricas [A] time = 0.81, size = 21, normalized size = 0.72

$$\frac{16}{3}\log\left(2x-1\right)-\frac{17}{6}\log\left(x+1\right)-\frac{5}{2}\log\left(x-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="fricas")
```

```
[Out] 16/3*log(2*x - 1) - 17/6*log(x + 1) - 5/2*log(x - 1)
```

giac [A] time = 0.17, size = 24, normalized size = 0.83

$$\frac{16}{3}\log\left(|2x-1|\right)-\frac{17}{6}\log\left(|x+1|\right)-\frac{5}{2}\log\left(|x-1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="giac")
[Out] 16/3*log(abs(2*x - 1)) - 17/6*log(abs(x + 1)) - 5/2*log(abs(x - 1))
```

maple [A]   time = 0.05, size = 22, normalized size = 0.76

$$-\frac{5\ln\left(x-1\right)}{2}-\frac{17\ln\left(x+1\right)}{6}+\frac{16\ln\left(2x-1\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-11+6*x)/(2*x-1)/(x^2-1),x)
[Out] -5/2*ln(x-1)+16/3*ln(2*x-1)-17/6*ln(x+1)
```

maxima [A]   time = 0.57, size = 21, normalized size = 0.72

$$\frac{16}{3}\log\left(2\,x-1\right)-\frac{17}{6}\log\left(x+1\right)-\frac{5}{2}\log\left(x-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x^2-1),x, algorithm="maxima")
[Out] 16/3*log(2*x - 1) - 17/6*log(x + 1) - 5/2*log(x - 1)
```

mupad [B]   time = 0.07, size = 19, normalized size = 0.66

$$\frac{16\,\ln\left(x-\frac{1}{2}\right)}{3}-\frac{17\,\ln\left(x+1\right)}{6}-\frac{5\,\ln\left(x-1\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((6*x - 11)/((2*x - 1)*(x^2 - 1)),x)
[Out] (16*log(x - 1/2))/3 - (17*log(x + 1))/6 - (5*log(x - 1))/2
```

sympy [A]   time = 0.14, size = 26, normalized size = 0.90

$$-\frac{5\log\left(x-1\right)}{2}+\frac{16\log\left(x-\frac{1}{2}\right)}{3}-\frac{17\log\left(x+1\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-11+6*x)/(-1+2*x)/(x**2-1),x)
[Out] -5*log(x - 1)/2 + 16*log(x - 1/2)/3 - 17*log(x + 1)/6
```

3.1355 $\int \frac{x(1+x)^2}{\left(1+x^2\right)^3} \, dx$

Optimal. Leaf size=39

$$-\frac{(x+1)^2}{4\left(x^2+1\right)^2}-\frac{1-x}{4\left(x^2+1\right)}+\frac{1}{4}\tan^{-1}(x)$$

```
[Out] -1/4*(1+x)^2/(x^2+1)^2+1/4*(-1+x)/(x^2+1)+1/4*arctan(x)
```

Rubi [A] time = 0.02, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 14, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {819, 639, 203}

$$-\frac{(x+1)^2}{4\left(x^2+1\right)^2}-\frac{1-x}{4\left(x^2+1\right)}+\frac{1}{4}\tan^{-1}(x)$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 + x)^2)/(1 + x^2)^3,x]
```

```
[Out] -(1 + x)^2/(4*(1 + x^2)^2) - (1 - x)/(4*(1 + x^2)) + ArcTan[x]/4
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{x(1+x)^2}{\left(1+x^2\right)^3} \, dx &= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}+\frac{1}{4}\int \frac{2+2x}{\left(1+x^2\right)^2} \, dx\\
&= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}-\frac{1-x}{4\left(1+x^2\right)}+\frac{1}{4}\int \frac{1}{1+x^2} \, dx\\
&= -\frac{(1+x)^2}{4\left(1+x^2\right)^2}-\frac{1-x}{4\left(1+x^2\right)}+\frac{1}{4}\tan^{-1}(x)
\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 28, normalized size = 0.72

$$\frac{1}{4}\left(\frac{x^3-2x^2-x-2}{\left(x^2+1\right)^2}+\tan^{-1}(x)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 + x)^2)/(1 + x^2)^3,x]
```

```
[Out] ((-2 - x - 2*x^2 + x^3)/(1 + x^2)^2 + ArcTan[x])/4
```

fricas [**A**] time = 0.94, size = 40, normalized size = 1.03

$$\frac{x^3-2\,x^2+\left(x^4+2\,x^2+1\right)\arctan(x)-x-2}{4\left(x^4+2\,x^2+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="fricas")
```

```
[Out] 1/4*(x^3 - 2*x^2 + (x^4 + 2*x^2 + 1)*arctan(x) - x - 2)/(x^4 + 2*x^2 + 1)
```

giac [**A**] time = 0.15, size = 27, normalized size = 0.69

$$\frac{x^3-2\,x^2-x-2}{4\left(x^2+1\right)^2}+\frac{1}{4}\,\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="giac")
```

```
[Out] 1/4*(x^3 - 2*x^2 - x - 2)/(x^2 + 1)^2 + 1/4*arctan(x)
```

maple [**A**] time = 0.04, size = 29, normalized size = 0.74

$$\frac{\arctan(x)}{4}+\frac{\frac{1}{4}x^3-\frac{1}{2}x^2-\frac{1}{4}x-\frac{1}{2}}{\left(x^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)^2/(x^2+1)^3,x)
```

```
[Out] (1/4*x^3-1/2*x^2-1/4*x-1/2)/(x^2+1)^2+1/4*arctan(x)
```

maxima [**A**] time = 1.18, size = 32, normalized size = 0.82

$$\frac{x^3-2\,x^2-x-2}{4\left(x^4+2\,x^2+1\right)}+\frac{1}{4}\,\arctan(x)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+1)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(x^3 - 2*x^2 - x - 2)/(x^4 + 2*x^2 + 1) + 1/4*arctan(x)
```

mupad [**B**] time = 0.04, size = 29, normalized size = 0.74

$$\frac{\mathrm{atan}(x)}{4}-\frac{-\frac{x^3}{4}+\frac{x^2}{2}+\frac{x}{4}+\frac{1}{2}}{\left(x^2+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(x + 1)^2)/(x^2 + 1)^3,x)
```

```
[Out] atan(x)/4 - (x/4 + x^2/2 - x^3/4 + 1/2)/(x^2 + 1)^2
```

sympy [**A**] time = 0.13, size = 27, normalized size = 0.69

$$\frac{\operatorname{atan}(x)}{4} + \frac{x^3 - 2x^2 - x - 2}{4x^4 + 8x^2 + 4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)**2/(x**2+1)**3,x)
```

```
[Out] atan(x)/4 + (x**3 - 2*x**2 - x - 2)/(4*x**4 + 8*x**2 + 4)
```

3.1356 $\int (5-x)(3+2x)^4\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=122

$$-\frac{1}{21}\left(3x^2+2\right)^{3/2}(2x+3)^4+\frac{29}{63}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{923}{315}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{405}(4599x+13781)\left(3x^2+2\right)^3$$

```
[Out] 923/315*(3+2*x)^2*(3*x^2+2)^(3/2)+29/63*(3+2*x)^3*(3*x^2+2)^(3/2)-1/21*(3+2
*x)^4*(3*x^2+2)^(3/2)+2/405*(13781+4599*x)*(3*x^2+2)^(3/2)+2341/27*arcsinh(
1/2*x*6^(1/2))*3^(1/2)+2341/18*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{21}\left(3x^2+2\right)^{3/2}(2x+3)^4+\frac{29}{63}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{923}{315}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{405}(4599x+13781)\left(3x^2+2\right)^3$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 3*x^2],x]
```

```
[Out] (2341*x*Sqrt[2 + 3*x^2])/18 + (923*(3 + 2*x)^2*(2 + 3*x^2)^(3/2))/315 + (29
*(3 + 2*x)^3*(2 + 3*x^2)^(3/2))/63 - ((3 + 2*x)^4*(2 + 3*x^2)^(3/2))/21 + (
2*(13781 + 4599*x)*(2 + 3*x^2)^(3/2))/405 + (2341*ArcSinh[Sqrt[3/2]*x])/(9*
Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^4\sqrt{2+3x^2}\,dx &= -\frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3/2}+\frac{1}{21}\int (3+2x)^3(331+174x)\sqrt{2+3x^2}\,dx\\ &= \frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^4\left(2+3x^2\right)^{3/2}+\frac{1}{378}\int (3+2x)^2(15786\\ &= \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^4\left(2+3x^2\right)\\ &= \frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^4\left(2+3x^2\right)\\ &= \frac{2341}{18}x\sqrt{2+3x^2}+\frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2}-\frac{1}{21}(\\ &= \frac{2341}{18}x\sqrt{2+3x^2}+\frac{923}{315}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{29}{63}(3+2x)^3\left(2+3x^2\right)^{3/2}-\frac{1}{21}(\end{aligned}$$

Mathematica [A] time = 0.08, size = 65, normalized size = 0.53

$$\frac{\sqrt{3x^2+2}\left(-12960x^6-15120x^5+297648x^4+1222200x^3+1956174x^2+1558935x+1167988\right)}{5670}+\frac{2341\sinh^{-1}(}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 3*x^2],x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(1167988 + 1558935*x + 1956174*x^2 + 1222200*x^3 + 297648*
x^4 - 15120*x^5 - 12960*x^6))/5670 + (2341*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3]
)
```

fricas [A] time = 1.10, size = 70, normalized size = 0.57

$$-\frac{1}{5670}\left(12960\,x^6+15120\,x^5-297648\,x^4-1222200\,x^3-1956174\,x^2-1558935\,x-1167988\right)\sqrt{3\,x^2+2}+\frac{2341}{54}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/5670*(12960*x^6 + 15120*x^5 - 297648*x^4 - 1222200*x^3 - 1956174*x^2 - 1
558935*x - 1167988)*sqrt(3*x^2 + 2) + 2341/54*sqrt(3)*log(-sqrt(3)*sqrt(3*x
^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 64, normalized size = 0.52

$$-\frac{1}{5670}\,(3\,(2\,(12\,(6\,(5\,(6\,x+7)x-689)x-16975)x-326029)x-519645)x-1167988)\sqrt{3\,x^2+2}-\frac{2341}{27}\,\sqrt{3}\,\log($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/5670*(3*(2*(12*(6*(5*(6*x + 7)*x - 689)*x - 16975)*x - 326029)*x - 51964
5)*x - 1167988)*sqrt(3*x^2 + 2) - 2341/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x
^2 + 2))
```

maple [A] time = 0.05, size = 91, normalized size = 0.75

$$-\frac{16\left(3x^2+2\right)^{\frac{3}{2}}x^4}{21}-\frac{8\left(3x^2+2\right)^{\frac{3}{2}}x^3}{9}+\frac{5672\left(3x^2+2\right)^{\frac{3}{2}}x^2}{315}+\frac{652\left(3x^2+2\right)^{\frac{3}{2}}x}{9}+\frac{2341\sqrt{3x^2+2}\,x}{18}+\frac{2341\sqrt{3}\ \mathrm{arcsinh}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(1/2),x)
```

```
[Out] -16/21*x^4*(3*x^2+2)^(3/2)+5672/315*x^2*(3*x^2+2)^(3/2)+291997/2835*(3*x^2+
2)^(3/2)-8/9*x^3*(3*x^2+2)^(3/2)+652/9*x*(3*x^2+2)^(3/2)+2341/18*(3*x^2+2)^
(1/2)*x+2341/27*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.39, size = 90, normalized size = 0.74

$$-\frac{16}{21}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{4}-\frac{8}{9}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{3}+\frac{5672}{315}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x^{2}+\frac{652}{9}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x+\frac{291997}{2835}\left(3\,x^{2}+2\right)^{\frac{3}{2}}+\frac{2341}{18}\sqrt{3\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/21*(3*x^2 + 2)^(3/2)*x^4 - 8/9*(3*x^2 + 2)^(3/2)*x^3 + 5672/315*(3*x^2
+ 2)^(3/2)*x^2 + 652/9*(3*x^2 + 2)^(3/2)*x + 291997/2835*(3*x^2 + 2)^(3/2)
+ 2341/18*sqrt(3*x^2 + 2)*x + 2341/27*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.71, size = 55, normalized size = 0.45

$$\frac{2341\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{48\,x^6}{7}-8\,x^5+\frac{5512\,x^4}{35}+\frac{1940\,x^3}{3}+\frac{326029\,x^2}{315}+\frac{4949\,x}{6}+\frac{583994}{945}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (2341*3^(1/2)*asinh((6^(1/2)*x)/2))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((4949*
x)/6 + (326029*x^2)/315 + (1940*x^3)/3 + (5512*x^4)/35 - 8*x^5 - (48*x^6)/7
 + 583994/945))/3
```

sympy [A] time = 3.13, size = 131, normalized size = 1.07

$$-\frac{16x^{6}\sqrt{3x^{2}+2}}{7}-\frac{8x^{5}\sqrt{3x^{2}+2}}{3}+\frac{5512x^{4}\sqrt{3x^{2}+2}}{105}+\frac{1940x^{3}\sqrt{3x^{2}+2}}{9}+\frac{326029x^{2}\sqrt{3x^{2}+2}}{945}+\frac{4949x\sqrt{3x^{2}+2}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(1/2),x)
```

```
[Out] -16*x**6*sqrt(3*x**2 + 2)/7 - 8*x**5*sqrt(3*x**2 + 2)/3 + 5512*x**4*sqrt(3*
x**2 + 2)/105 + 1940*x**3*sqrt(3*x**2 + 2)/9 + 326029*x**2*sqrt(3*x**2 + 2)
/945 + 4949*x*sqrt(3*x**2 + 2)/18 + 583994*sqrt(3*x**2 + 2)/2835 + 2341*sqr
t(3)*asinh(sqrt(6)*x/2)/27
```

3.1357 $\int (5-x)(3+2x)^3\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=100

$$-\frac{1}{18}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{17}{30}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{7}{270}(267x+898)\left(3x^2+2\right)^{3/2}+\frac{511}{9}x\sqrt{3x^2+2}+\frac{1022\sinh^{-1}\big(}{9\sqrt{3}}$$

```
[Out] 17/30*(3+2*x)^2*(3*x^2+2)^(3/2)-1/18*(3+2*x)^3*(3*x^2+2)^(3/2)+7/270*(898+2
67*x)*(3*x^2+2)^(3/2)+1022/27*arcsinh(1/2*x*6^(1/2))*3^(1/2)+511/9*x*(3*x^2
+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {833, 780, 195, 215}

$$-\frac{1}{18}\left(3x^2+2\right)^{3/2}(2x+3)^3+\frac{17}{30}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{7}{270}(267x+898)\left(3x^2+2\right)^{3/2}+\frac{511}{9}x\sqrt{3x^2+2}+\frac{1022\sinh^{-1}\big(}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 3*x^2],x]
```

```
[Out] (511*x*Sqrt[2 + 3*x^2])/9 + (17*(3 + 2*x)^2*(2 + 3*x^2)^(3/2))/30 - ((3 + 2
*x)^3*(2 + 3*x^2)^(3/2))/18 + (7*(898 + 267*x)*(2 + 3*x^2)^(3/2))/270 + (10
22*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^3\sqrt{2+3x^2}\,dx &= -\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{1}{18}\int (3+2x)^2(282+153x)\sqrt{2+3x^2}\,dx\\ &= \frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{1}{270}\int (3+2x)(1146\\ &= \frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{270}(898+267x)\left(2\right.\\ &= \frac{511}{9}x\sqrt{2+3x^2}+\frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{27}\\ &= \frac{511}{9}x\sqrt{2+3x^2}+\frac{17}{30}(3+2x)^2\left(2+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+3x^2\right)^{3/2}+\frac{7}{27}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 60, normalized size = 0.60

$$\frac{1}{270}\left(10220\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-\sqrt{3x^2+2}\left(360x^5-216x^4-8445x^3-21918x^2-21120x-14516\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-14516 - 21120*x - 21918*x^2 - 8445*x^3 - 216*x^4 + 360
*x^5)) + 10220*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/270
```

fricas [**A**] time = 0.92, size = 65, normalized size = 0.65

$$-\frac{1}{270}\left(360\,x^5-216\,x^4-8445\,x^3-21918\,x^2-21120\,x-14516\right)\sqrt{3\,x^2+2}+\frac{511}{27}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/270*(360*x^5 - 216*x^4 - 8445*x^3 - 21918*x^2 - 21120*x - 14516)*sqrt(3*
x^2 + 2) + 511/27*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [**A**] time = 0.17, size = 57, normalized size = 0.57

$$-\frac{1}{270}\,(3\,(((24\,(5\,x-3)x-2815)x-7306)x-7040)x-14516)\sqrt{3\,x^2+2}-\frac{1022}{27}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/270*(3*(((24*(5*x - 3)*x - 2815)*x - 7306)*x - 7040)*x - 14516)*sqrt(3*x
^2 + 2) - 1022/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [**A**] time = 0.06, size = 77, normalized size = 0.77

$$-\frac{4\left(3x^2+2\right)^{\frac{3}{2}}x^3}{9}+\frac{4\left(3x^2+2\right)^{\frac{3}{2}}x^2}{15}+\frac{193\left(3x^2+2\right)^{\frac{3}{2}}x}{18}+\frac{511\sqrt{3x^2+2}\;x}{9}+\frac{1022\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{3629\left(3x^2\right.}{135}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+2)^(3/2)*x^3+193/18*(3*x^2+2)^(3/2)*x+511/9*(3*x^2+2)^(1/2)*x+1
022/27*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+4/15*(3*x^2+2)^(3/2)*x^2+3629/135*(3*
x^2+2)^(3/2)
```

maxima [A]   time = 1.10, size = 76, normalized size = 0.76

$$-\frac{4}{9}\left(3x^2+2\right)^{\frac{3}{2}}x^3+\frac{4}{15}\left(3x^2+2\right)^{\frac{3}{2}}x^2+\frac{193}{18}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{3629}{135}\left(3x^2+2\right)^{\frac{3}{2}}+\frac{511}{9}\sqrt{3x^2+2}\,x+\frac{1022}{27}\sqrt{3}\ \mathrm{arsinh}\left(\frac{1}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*(3*x^2 + 2)^(3/2)*x^3 + 4/15*(3*x^2 + 2)^(3/2)*x^2 + 193/18*(3*x^2 + 2
)^(3/2)*x + 3629/135*(3*x^2 + 2)^(3/2) + 511/9*sqrt(3*x^2 + 2)*x + 1022/27*
sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B]   time = 1.69, size = 50, normalized size = 0.50

$$\frac{1022\sqrt{3}\ \mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}+\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\ \left(-4x^5+\frac{12x^4}{5}+\frac{563x^3}{6}+\frac{3653x^2}{15}+\frac{704x}{3}+\frac{7258}{45}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (1022*3^(1/2)*asinh((6^(1/2)*x)/2))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((704*x
)/3 + (3653*x^2)/15 + (563*x^3)/6 + (12*x^4)/5 - 4*x^5 + 7258/45))/3
```

sympy [A]   time = 20.72, size = 150, normalized size = 1.50

$$-\frac{4x^7}{\sqrt{3x^2+2}}+\frac{547x^5}{6\sqrt{3x^2+2}}+\frac{1705x^3}{18\sqrt{3x^2+2}}+\frac{135x\sqrt{3x^2+2}}{2}+\frac{193x}{9\sqrt{3x^2+2}}+\frac{16\sqrt{2}\left(\frac{3x^2}{2}+1\right)^{\frac{5}{2}}}{45}-\frac{16\sqrt{2}\left(\frac{3x^2}{2}+1\right)^{\frac{3}{2}}}{27}+27\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**7/sqrt(3*x**2 + 2) + 547*x**5/(6*sqrt(3*x**2 + 2)) + 1705*x**3/(18*sq
rt(3*x**2 + 2)) + 135*x*sqrt(3*x**2 + 2)/2 + 193*x/(9*sqrt(3*x**2 + 2)) + 1
6*sqrt(2)*(3*x**2/2 + 1)**(5/2)/45 - 16*sqrt(2)*(3*x**2/2 + 1)**(3/2)/27 +
27*(3*x**2 + 2)**(3/2) + 1022*sqrt(3)*asinh(sqrt(6)*x/2)/27
```

3.1358 $\int (5-x)(3+2x)^2\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=78

$$-\frac{1}{15}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{135}(99x+431)\left(3x^2+2\right)^{3/2}+\frac{131}{6}x\sqrt{3x^2+2}+\frac{131\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] -1/15*(3+2*x)^2*(3*x^2+2)^(3/2)+2/135*(431+99*x)*(3*x^2+2)^(3/2)+131/9*arcs
inh(1/2*x*6^(1/2))*3^(1/2)+131/6*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {833, 780, 195, 215}

$$-\frac{1}{15}\left(3x^2+2\right)^{3/2}(2x+3)^2+\frac{2}{135}(99x+431)\left(3x^2+2\right)^{3/2}+\frac{131}{6}x\sqrt{3x^2+2}+\frac{131\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 3*x^2],x]
```

```
[Out] (131*x*Sqrt[2 + 3*x^2])/6 - ((3 + 2*x)^2*(2 + 3*x^2)^(3/2))/15 + (2*(431 +
99*x)*(2 + 3*x^2)^(3/2))/135 + (131*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^2\sqrt{2+3x^2}\,dx &= -\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{1}{15}\int (3+2x)(233+132x)\sqrt{2+3x^2}\,dx\\ &= -\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2}+\frac{131}{3}\int \sqrt{2+3x^2}\,d\\ &= \frac{131}{6}x\sqrt{2+3x^2}-\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2}+\frac{13}{3}\\ &= \frac{131}{6}x\sqrt{2+3x^2}-\frac{1}{15}(3+2x)^2\left(2+3x^2\right)^{3/2}+\frac{2}{135}(431+99x)\left(2+3x^2\right)^{3/2}+\frac{13}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 0.71

$$\frac{1}{270}\left(3930\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(216x^4-540x^3-4542x^2-6255x-3124\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-3124 - 6255*x - 4542*x^2 - 540*x^3 + 216*x^4)) + 3930*
Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/270
```

fricas [A] time = 0.92, size = 60, normalized size = 0.77

$$-\frac{1}{270}\left(216\,x^4-540\,x^3-4542\,x^2-6255\,x-3124\right)\sqrt{3\,x^2+2}+\frac{131}{18}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/270*(216*x^4 - 540*x^3 - 4542*x^2 - 6255*x - 3124)*sqrt(3*x^2 + 2) + 131
/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.16, size = 54, normalized size = 0.69

$$-\frac{1}{270}\,(3\,(2\,(18\,(2\,x-5)x-757)x-2085)x-3124)\sqrt{3\,x^2+2}-\frac{131}{9}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/270*(3*(2*(18*(2*x - 5)*x - 757)*x - 2085)*x - 3124)*sqrt(3*x^2 + 2) - 1
31/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 63, normalized size = 0.81

$$-\frac{4\left(3x^2+2\right)^{\frac{3}{2}}x^2}{15}+\frac{2\left(3x^2+2\right)^{\frac{3}{2}}x}{3}+\frac{131\sqrt{3x^2+2}\,x}{6}+\frac{131\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{781\left(3x^2+2\right)^{\frac{3}{2}}}{135}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(1/2),x)
```

```
[Out] -4/15*(3*x^2+2)^(3/2)*x^2+781/135*(3*x^2+2)^(3/2)+2/3*(3*x^2+2)^(3/2)*x+131
/6*(3*x^2+2)^(1/2)*x+131/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.28, size = 62, normalized size = 0.79

$$-\frac{4}{15}\left(3x^2+2\right)^{\frac{3}{2}}x^2+\frac{2}{3}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{781}{135}\left(3x^2+2\right)^{\frac{3}{2}}+\frac{131}{6}\sqrt{3x^2+2}\,x+\frac{131}{9}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 2)^(3/2)*x^2 + 2/3*(3*x^2 + 2)^(3/2)*x + 781/135*(3*x^2 + 2)
^(3/2) + 131/6*sqrt(3*x^2 + 2)*x + 131/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.71, size = 45, normalized size = 0.58

$$\frac{131\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{12\,x^4}{5}+6\,x^3+\frac{757\,x^2}{15}+\frac{139\,x}{2}+\frac{1562}{45}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (131*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((139*x)/
2 + (757*x^2)/15 + 6*x^3 - (12*x^4)/5 + 1562/45))/3
```

sympy [A] time = 0.93, size = 95, normalized size = 1.22

$$-\frac{4x^4\sqrt{3x^2+2}}{5}+2x^3\sqrt{3x^2+2}+\frac{757x^2\sqrt{3x^2+2}}{45}+\frac{139x\sqrt{3x^2+2}}{6}+\frac{1562\sqrt{3x^2+2}}{135}+\frac{131\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**4*sqrt(3*x**2 + 2)/5 + 2*x**3*sqrt(3*x**2 + 2) + 757*x**2*sqrt(3*x**2
 + 2)/45 + 139*x*sqrt(3*x**2 + 2)/6 + 1562*sqrt(3*x**2 + 2)/135 + 131*sqrt(
3)*asinh(sqrt(6)*x/2)/9
```

3.1359 $\int (5-x)(3+2x)\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=56

$$\frac{1}{18}(14-3x)\left(3x^2+2\right)^{3/2}+\frac{23}{3}x\sqrt{3x^2+2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] 1/18*(14-3*x)*(3*x^2+2)^(3/2)+46/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)+23/3*x*(3
*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {780, 195, 215}

$$\frac{1}{18}(14-3x)\left(3x^2+2\right)^{3/2}+\frac{23}{3}x\sqrt{3x^2+2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (23*x*Sqrt[2 + 3*x^2])/3 + ((14 - 3*x)*(2 + 3*x^2)^(3/2))/18 + (46*ArcSinh[
Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)\sqrt{2+3x^2}\,dx &= \frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46}{3}\int \sqrt{2+3x^2}\,dx\\ &= \frac{23}{3}x\sqrt{2+3x^2}+\frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{23}{3}x\sqrt{2+3x^2}+\frac{1}{18}(14-3x)\left(2+3x^2\right)^{3/2}+\frac{46\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 50, normalized size = 0.89

$$\frac{1}{18}\left(92\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(9x^3-42x^2-132x-28\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-28 - 132*x - 42*x^2 + 9*x^3)) + 92*Sqrt[3]*ArcSinh[Sqr
t[3/2]*x])/18
```

fricas [A] time = 0.54, size = 55, normalized size = 0.98

$$-\frac{1}{18}\left(9x^3-42x^2-132x-28\right)\sqrt{3x^2+2}+\frac{23}{9}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/18*(9*x^3 - 42*x^2 - 132*x - 28)*sqrt(3*x^2 + 2) + 23/9*sqrt(3)*log(-sqr
t(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.22, size = 48, normalized size = 0.86

$$-\frac{1}{18}\left(3\left((3x-14)x-44\right)x-28\right)\sqrt{3x^2+2}-\frac{46}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/18*(3*((3*x - 14)*x - 44)*x - 28)*sqrt(3*x^2 + 2) - 46/9*sqrt(3)*log(-sq
rt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 49, normalized size = 0.88

$$-\frac{\left(3x^2+2\right)^{\frac{3}{2}}x}{6}+\frac{23\sqrt{3x^2+2}\,x}{3}+\frac{46\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{7\left(3x^2+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(1/2),x)
```

```
[Out] -1/6*(3*x^2+2)^(3/2)*x+23/3*(3*x^2+2)^(1/2)*x+46/9*arcsinh(1/2*6^(1/2)*x)*3
^(1/2)+7/9*(3*x^2+2)^(3/2)
```

maxima [A] time = 1.46, size = 48, normalized size = 0.86

$$-\frac{1}{6}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{7}{9}\left(3x^2+2\right)^{\frac{3}{2}}+\frac{23}{3}\sqrt{3x^2+2}\,x+\frac{46}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*(3*x^2 + 2)^(3/2)*x + 7/9*(3*x^2 + 2)^(3/2) + 23/3*sqrt(3*x^2 + 2)*x +
 46/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.03, size = 40, normalized size = 0.71

$$\frac{46\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(-\frac{3x^3}{2}+7x^2+22x+\frac{14}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (46*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(22*x + 7*
x^2 - (3*x^3)/2 + 14/3))/3
```

sympy [A] time = 8.08, size = 94, normalized size = 1.68

$$-\frac{3x^5}{2\sqrt{3x^2+2}}-\frac{3x^3}{2\sqrt{3x^2+2}}+\frac{15x\sqrt{3x^2+2}}{2}-\frac{x}{3\sqrt{3x^2+2}}+\frac{7\left(3x^2+2\right)^{\frac{3}{2}}}{9}+\frac{46\sqrt{3}\ \mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(1/2),x)
```

```
[Out] -3*x**5/(2*sqrt(3*x**2 + 2)) - 3*x**3/(2*sqrt(3*x**2 + 2)) + 15*x*sqrt(3*x*
*2 + 2)/2 - x/(3*sqrt(3*x**2 + 2)) + 7*(3*x**2 + 2)**(3/2)/9 + 46*sqrt(3)*a
sinh(sqrt(6)*x/2)/9
```

3.1360 $\int (5-x)\sqrt{2+3x^2}\,dx$

Optimal. Leaf size=49

$$-\frac{1}{9}\left(3x^2+2\right)^{3/2}+\frac{5}{2}x\sqrt{3x^2+2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}$$

```
[Out] -1/9*(3*x^2+2)^(3/2)+5/3*arcsinh(1/2*x*6^(1/2))*3^(1/2)+5/2*x*(3*x^2+2)^(1/
2)
```

Rubi [A] time = 0.01, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{9}\left(3x^2+2\right)^{3/2}+\frac{5}{2}x\sqrt{3x^2+2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] (5*x*Sqrt[2 + 3*x^2])/2 - (2 + 3*x^2)^(3/2)/9 + (5*ArcSinh[Sqrt[3/2]*x])/Sq
rt[3]
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{2+3x^2}\,dx &= -\frac{1}{9}\left(2+3x^2\right)^{3/2}+5\int \sqrt{2+3x^2}\,dx\\ &= \frac{5}{2}x\sqrt{2+3x^2}-\frac{1}{9}\left(2+3x^2\right)^{3/2}+5\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{5}{2}x\sqrt{2+3x^2}-\frac{1}{9}\left(2+3x^2\right)^{3/2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.88

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{\sqrt{3}}-\frac{1}{18}\sqrt{3x^2+2}\left(6x^2-45x+4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[2 + 3*x^2],x]
```

```
[Out] -1/18*(Sqrt[2 + 3*x^2]*(4 - 45*x + 6*x^2)) + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[
3]
```

fricas [A] time = 0.71, size = 50, normalized size = 1.02

$$-\frac{1}{18}\left(6x^{2}-45x+4\right)\sqrt{3x^{2}+2}+\frac{5}{6}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^{2}+2}x-3x^{2}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/18*(6*x^2 - 45*x + 4)*sqrt(3*x^2 + 2) + 5/6*sqrt(3)*log(-sqrt(3)*sqrt(3*
x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.16, size = 44, normalized size = 0.90

$$-\frac{1}{18}(3(2x-15)x+4)\sqrt{3x^{2}+2}-\frac{5}{3}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^{2}+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/18*(3*(2*x - 15)*x + 4)*sqrt(3*x^2 + 2) - 5/3*sqrt(3)*log(-sqrt(3)*x + s
qrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 37, normalized size = 0.76

$$\frac{5\sqrt{3x^{2}+2}\,x}{2}+\frac{5\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\left(3x^{2}+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2),x)
```

```
[Out] -1/9*(3*x^2+2)^(3/2)+5/3*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+5/2*(3*x^2+2)^(1/2)
*x
```

maxima [A] time = 1.38, size = 36, normalized size = 0.73

$$-\frac{1}{9}\left(3x^{2}+2\right)^{\frac{3}{2}}+\frac{5}{2}\sqrt{3x^{2}+2}x+\frac{5}{3}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 2)^(3/2) + 5/2*sqrt(3*x^2 + 2)*x + 5/3*sqrt(3)*arcsinh(1/2*sq
rt(6)*x)
```

mupad [B] time = 0.03, size = 33, normalized size = 0.67

$$\frac{5\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(x^{2}-\frac{15x}{2}+\frac{2}{3}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(1/2)*(x - 5),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/3 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(x^2 - (15*
x)/2 + 2/3))/3
```

sympy [A] time = 0.26, size = 61, normalized size = 1.24

$$-\frac{x^2\sqrt{3x^2+2}}{3}+\frac{5x\sqrt{3x^2+2}}{2}-\frac{2\sqrt{3x^2+2}}{9}+\frac{5\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2),x)
```

```
[Out] -x**2*sqrt(3*x**2 + 2)/3 + 5*x*sqrt(3*x**2 + 2)/2 - 2*sqrt(3*x**2 + 2)/9 +
5*sqrt(3)*asinh(sqrt(6)*x/2)/3
```

3.1361 $\int \frac{(5-x)\sqrt{2+3x^2}}{3+2x}\,dx$

Optimal. Leaf size=72

$$\frac{1}{4}\sqrt{3x^2+2}\,(13-x)-\frac{13}{8}\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}$$

```
[Out] -121/24*arcsinh(1/2*x*6^(1/2))*3^(1/2)-13/8*arctanh(1/35*(4-9*x)*35^(1/2)/(
3*x^2+2)^(1/2))*35^(1/2)+1/4*(13-x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {815, 844, 215, 725, 206}

$$\frac{1}{4}\sqrt{3x^2+2}\,(13-x)-\frac{13}{8}\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((13 - x)*Sqrt[2 + 3*x^2])/4 - (121*ArcSinh[Sqrt[3/2]*x])/(8*Sqrt[3]) - (13
*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+3x^2}}{3+2x}\,dx &= \frac{1}{4}(13-x)\sqrt{2+3x^2}+\frac{1}{24}\int \frac{276-726x}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= \frac{1}{4}(13-x)\sqrt{2+3x^2}-\frac{121}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx+\frac{455}{8}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= \frac{1}{4}(13-x)\sqrt{2+3x^2}-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}-\frac{455}{8}\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right.\\ &= \frac{1}{4}(13-x)\sqrt{2+3x^2}-\frac{121\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{8\sqrt{3}}-\frac{13}{8}\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{2+3x^2}}\right)\end{aligned}$$

Mathematica [A] time = 0.04, size = 68, normalized size = 0.94

$$\frac{1}{24}\left(-6\sqrt{3x^2+2}\,(x-13)-39\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-121\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x),x]
```

```
[Out] (-6*(-13 + x)*Sqrt[2 + 3*x^2] - 121*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 39*Sqrt[
35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/24
```

fricas [A] time = 0.63, size = 90, normalized size = 1.25

$$-\frac{1}{4}\,\sqrt{3\,x^2+2}\,(x-13)+\frac{121}{48}\,\sqrt{3}\,\log\left(\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+\frac{13}{16}\,\sqrt{35}\,\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93}{4\,x^2+12\,x+9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*(x - 13) + 121/48*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*
x - 3*x^2 - 1) + 13/16*sqrt(35)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) +
93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.25, size = 104, normalized size = 1.44

$$-\frac{1}{4}\,\sqrt{3\,x^2+2}\,(x-13)+\frac{121}{24}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)+\frac{13}{8}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}\,-3\,\sqrt{3}\,+2\,\sqrt{3\,x^2+}\right.}{2\,\sqrt{3}\,x-\sqrt{35}\,+3\,\sqrt{3}\,-2\,\sqrt{3\,x^2+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*(x - 13) + 121/24*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2
+ 2)) + 13/8*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.06, size = 72, normalized size = 1.00

$$-\frac{\sqrt{3x^2+2}\;x}{4}-\frac{121\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{24}-\frac{13\sqrt{35}\;\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8}+\frac{13\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-1}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3),x)
```

```
[Out] -1/4*(3*x^2+2)^(1/2)*x-121/24*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+13/8*(12*(x+3/
2)^2-36*x-19)^(1/2)-13/8*35^(1/2)*arctanh(2/35*(4-9*x)*35^(1/2)/(12*(x+3/2)
^2-36*x-19)^(1/2))
```

maxima [**A**] time = 1.08, size = 70, normalized size = 0.97

$$-\frac{1}{4}\sqrt{3x^{2}+2}\,x-\frac{121}{24}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{13}{8}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)+\frac{13}{4}\sqrt{3x^{2}+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(3*x^2 + 2)*x - 121/24*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 13/8*sqrt(
35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 13/4*s
qrt(3*x^2 + 2)
```

mupad [**B**] time = 0.17, size = 66, normalized size = 0.92

$$\frac{\sqrt{35}\left(910\ln\left(x+\frac{3}{2}\right)-910\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{560}-\frac{121\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{24}-\frac{\sqrt{3}\,\left(\frac{3x}{4}-\frac{39}{4}\right)\sqrt{x^{2}+\frac{2}{3}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(910*log(x + 3/2) - 910*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/
2))/9 - 4/9)))/560 - (121*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/24 - (3^(1/
2)*((3*x)/4 - 39/4)*(x^2 + 2/3)^(1/2))/3
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{2x+3}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integral(x*sqrt(3*x**2 + 2)/(
2*x + 3), x)
```

3.1362 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{\sqrt{3x^2+2}\,(x+8)}{2(2x+3)}+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{\sqrt{35}}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

```
[Out] 2*arcsinh(1/2*x*6^(1/2))*3^(1/2)+19/35*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2
+2)^(1/2))*35^(1/2)-1/2*(8+x)*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.04, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {813, 844, 215, 725, 206}

$$-\frac{\sqrt{3x^2+2}\,(x+8)}{2(2x+3)}+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{\sqrt{35}}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -((8 + x)*Sqrt[2 + 3*x^2])/(2*(3 + 2*x)) + 2*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] +
 (19*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/Sqrt[35]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx &= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)}-\frac{1}{8}\int \frac{8-96x}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)}+6\int \frac{1}{\sqrt{2+3x^2}}\,dx-19\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)+19\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\ &= -\frac{(8+x)\sqrt{2+3x^2}}{2(3+2x)}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{2+3x^2}}\right)}{\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 71, normalized size = 0.97

$$-\frac{\sqrt{3x^2+2}\,(x+8)}{4x+6}+\frac{19\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)}{\sqrt{35}}+2\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -(((8 + x)*Sqrt[2 + 3*x^2])/(6 + 4*x)) + 2*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + (
19*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/Sqrt[35]
```

fricas [A] time = 0.78, size = 109, normalized size = 1.49

$$\frac{70\,\sqrt{3}\,(2\,x+3)\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+19\,\sqrt{35}\,(2\,x+3)\log\left(\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)-93\,x^2+36\,x-43}{4\,x^2+12\,x+9}\right)-35\,\sqrt{3\,x}}{70\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/70*(70*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 19
*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x
 - 43)/(4*x^2 + 12*x + 9)) - 35*sqrt(3*x^2 + 2)*(x + 8))/(2*x + 3)
```

giac [B] time = 0.57, size = 285, normalized size = 3.90

$$\frac{19}{35}\,\sqrt{35}\,\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2\,x+3}+\frac{35}{(2\,x+3)^2}+3}+\frac{\sqrt{35}}{2\,x+3}\right)-9\right)\mathrm{sgn}\left(\frac{1}{2\,x+3}\right)-2\,\sqrt{3}\,\log\left(\frac{\left|-2\,\sqrt{3}+2\,\sqrt{-\frac{18}{2\,x+3}}\right.}{2\left(\sqrt{3}+\sqrt{-\frac{18}{2\,x+3}+}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 19/35*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqr
t(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 2*sqrt(3)*log(1/2*abs(-2*sqrt(3) +
 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3))/(sqrt(3
) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)))*sgn(1/(
2*x + 3)) - 13/8*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn(1/(2*x + 3))
+ 3/4*(3*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))*sg
n(1/(2*x + 3)) - sqrt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*x + 3) + 35/(2*x
+ 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)
```

maple [A] time = 0.05, size = 98, normalized size = 1.34

$$\frac{39\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\;x}{70}+2\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\;x}{2}\right)+\frac{19\sqrt{35}\;\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{35}-\frac{13\left(-9x+3\left(\right.\right.}{70\left(x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(3*(x+3/2)^2-9*x-19/4)^(3/2)-19/35*(-36*x+12*(x+3/2)^2-19)^(
1/2)+2*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+19/35*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(3*(x+3/2)^2-9*x-19/4)^(1/2
)
```

maxima [A] time = 1.25, size = 76, normalized size = 1.04

$$2\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)-\frac{19}{35}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{1}{4}\sqrt{3x^{2}+2}-\frac{13\sqrt{3x^{2}+2}}{4(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] 2*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 19/35*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs
(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 1/4*sqrt(3*x^2 + 2) - 13/4*sqrt(3*x
^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.11, size = 80, normalized size = 1.10

$$2\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)-\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{4}-\frac{19\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{35}+\frac{19\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{35}-\frac{13\sqrt{3}\,\sqrt{x^{2}}}{8\left(x+\frac{3}{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] 2*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2) - (3^(1/2)*(x^2 + 2/3)^(1/2))/4 - (1
9*35^(1/2)*log(x + 3/2))/35 + (19*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 +
 2/3)^(1/2))/9 - 4/9))/35 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(8*(x + 3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{4x^{2}+12x+9}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{4x^{2}+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(x*sqrt(3*x
**2 + 2)/(4*x**2 + 12*x + 9), x)
```

3.1363 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=79

$$\frac{\sqrt{3x^2+2}\,(187x+53)}{140(2x+3)^2}-\frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{280\sqrt{35}}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

```
[Out] -1/8*arcsinh(1/2*x*6^(1/2))*3^(1/2)-471/9800*arctanh(1/35*(4-9*x)*35^(1/2)/
(3*x^2+2)^(1/2))*35^(1/2)+1/140*(53+187*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.04, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {811, 844, 215, 725, 206}

$$\frac{\sqrt{3x^2+2}\,(187x+53)}{140(2x+3)^2}-\frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{280\sqrt{35}}-\frac{1}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((53 + 187*x)*Sqrt[2 + 3*x^2])/(140*(3 + 2*x)^2) - (Sqrt[3]*ArcSinh[Sqrt[3/
2]*x])/8 - (471*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(280*Sqrt[35
])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
```

```
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx &= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2} - \frac{1}{560}\int \frac{-312+420x}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2} - \frac{3}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx + \frac{471}{280}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2} - \frac{1}{8}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right) - \frac{471}{280}\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-}{\sqrt{2+}}\right. \\
&= \frac{(53+187x)\sqrt{2+3x^2}}{140(3+2x)^2} - \frac{1}{8}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right) - \frac{471\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{280\sqrt{35}}
\end{aligned}$$

Mathematica [**A**] time = 0.10, size = 80, normalized size = 1.01

$$\frac{\frac{70(187x+53)\sqrt{3x^2+2}}{(2x+3)^2} - 471\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{9800} - \frac{1}{8}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] -1/8*(Sqrt[3]*ArcSinh[Sqrt[3/2]*x]) + ((70*(53 + 187*x)*Sqrt[2 + 3*x^2])/(3
 + 2*x)^2 - 471*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/980
0
```

fricas [**B**] time = 0.65, size = 126, normalized size = 1.59

$$\frac{1225\sqrt{3}\left(4x^2+12x+9\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+471\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+}{4x^2+12x}\right.}{19600\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/19600*(1225*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*
x^2 - 1) + 471*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(
9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 140*sqrt(3*x^2 + 2)*(1
87*x + 53))/(4*x^2 + 12*x + 9)
```

giac [**B**] time = 0.27, size = 205, normalized size = 2.59

$$\frac{1}{8}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)+\frac{471}{9800}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}\,x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}\,x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3048\left(\sqrt{3}\,x-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] 1/8*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 471/9800*sqrt(35)*log(-abs(
-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqr
t(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/560*(3048*(sqrt(3)*x - sqrt(3*x
^2 + 2))^3 + 4301*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 7368*sqrt(3)*x
+ 1496*sqrt(3) + 7368*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3
*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [**A**] time = 0.06, size = 119, normalized size = 1.51

$$\frac{141\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\;x}{4900}-\frac{\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{8}-\frac{471\sqrt{35}\;\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{9800}-\frac{13\Big(-9x+3\Big(x+}{280\Big(x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-47/4900/(x+3/2)*(-9*x+3*(x+
3/2)^2-19/4)^(3/2)+471/9800*(-36*x+12*(x+3/2)^2-19)^(1/2)-471/9800*35^(1/2)
*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+141/4900*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-1/8*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [**A**] time = 1.25, size = 99, normalized size = 1.25

$$-\frac{1}{8}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{471}{9800}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{39}{280}\,\sqrt{3\,x^{2}+2}-\frac{13\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}{70\,\left(4\,x^{2}+12\,x+9\right)}-\frac{47}{280}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 471/9800*sqrt(35)*arcsinh(3/2*sqrt(6)
*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 39/280*sqrt(3*x^2 + 2) - 13/7
0*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 47/280*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [**B**] time = 1.90, size = 92, normalized size = 1.16

$$\frac{471\,\sqrt{35}\;\ln\left(x+\frac{3}{2}\right)}{9800}-\frac{\sqrt{3}\;\operatorname{asinh}\left(\frac{\sqrt{2}\;\sqrt{3}\;x}{2}\right)}{8}-\frac{471\,\sqrt{35}\;\ln\left(x-\frac{\sqrt{3}\;\sqrt{35}\;\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{9800}+\frac{187\,\sqrt{3}\;\sqrt{x^{2}+\frac{2}{3}}}{560\,\left(x+\frac{3}{2}\right)}-\frac{13\,\sqrt{3}\;\sqrt{x^{2}}}{32\,\Big(x^{2}+3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (471*35^(1/2)*log(x + 3/2))/9800 - (3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/8
 - (471*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/980
0 + (187*3^(1/2)*(x^2 + 2/3)^(1/2))/(560*(x + 3/2)) - (13*3^(1/2)*(x^2 + 2/
3)^(1/2))/(32*(3*x + x^2 + 9/4))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{8x^{3}+36x^{2}+54x+27}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{8x^{3}+36x^{2}+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - Integral
(x*sqrt(3*x**2 + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.1364 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=82

$$-\frac{13\left(3x^2+2\right)^{3/2}}{105(2x+3)^3}-\frac{41(4-9x)\sqrt{3x^2+2}}{2450(2x+3)^2}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

```
[Out] -13/105*(3*x^2+2)^(3/2)/(3+2*x)^3-123/42875*arctanh(1/35*(4-9*x)*35^(1/2)/(
3*x^2+2)^(1/2))*35^(1/2)-41/2450*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.03, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{807, 721, 725, 206\}$

$$-\frac{13\left(3x^2+2\right)^{3/2}}{105(2x+3)^3}-\frac{41(4-9x)\sqrt{3x^2+2}}{2450(2x+3)^2}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (-41*(4 - 9*x)*Sqrt[2 + 3*x^2])/(2450*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/2))
/(105*(3 + 2*x)^3) - (123*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1
225*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx = -\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}+\frac{41}{35}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx$$

$$= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}+\frac{123\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}$$

$$= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}-\frac{123\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}$$

$$= -\frac{41(4-9x)\sqrt{2+3x^2}}{2450(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{105(3+2x)^3}-\frac{123\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}$$

Mathematica [A] time = 0.05, size = 65, normalized size = 0.79

$$\frac{-\frac{35\sqrt{3x^2+2}\left(516x^2-2337x+3296\right)}{(2x+3)^3}-738\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{257250}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(3296 - 2337*x + 516*x^2))/(3 + 2*x)^3 - 738*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/257250
```

fricas [A] time = 0.70, size = 104, normalized size = 1.27

$$\frac{369\sqrt{35}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(516x^2-2337x+3296\right)\sqrt{3x^2+2}}{257250\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/257250*(369*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(35)*sqrt(3*x
^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(516*x^2 -
 2337*x + 3296)*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.31, size = 232, normalized size = 2.83

$$\frac{123}{42875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{\sqrt{3}\left(1553\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+30\left(\sqrt{3}x-\sqrt{3}\right.\right.}{98}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] 123/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/980
0*sqrt(3)*(1553*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 30*(sqrt(3)*x - s
qrt(3*x^2 + 2))^4 + 3870*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 25740*(s
qrt(3)*x - sqrt(3*x^2 + 2))^2 - 20*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
1376)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2)) - 2)^3
```

maple [A] time = 0.06, size = 128, normalized size = 1.56

$$\frac{1107\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\;x}{85750}-\frac{123\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{42875}-\frac{41\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{4900\left(x+\frac{3}{2}\right)^{2}}-369$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^4,x)
```

```
[Out] -41/4900/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-369/85750/(x+3/2)*(-9*x+3*
(x+3/2)^2-19/4)^(3/2)+123/42875*(-36*x+12*(x+3/2)^2-19)^(1/2)-123/42875*35^
(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+1107/85
750*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)
```

maxima [A] time = 1.35, size = 115, normalized size = 1.40

$$\frac{123}{42875}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{123}{4900}\sqrt{3x^{2}+2}-\frac{13\left(3x^{2}+2\right)^{\frac{3}{2}}}{105\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{41(3x^{2}+}{1225(4x^{2}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 123/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 123/4900*sqrt(3*x^2 + 2) - 13/105*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^
2 + 54*x + 27) - 41/1225*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 369/4900*sq
rt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.81, size = 106, normalized size = 1.29

$$\frac{123\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{123\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}-\frac{43\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{4900\left(x+\frac{3}{2}\right)}+\frac{37\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{560\left(x^{2}+3x+\frac{9}{4}\right)}-\frac{13\sqrt{3}}{96(x^{3}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (123*35^(1/2)*log(x + 3/2))/42875 - (123*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 - (43*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*
(x + 3/2)) + (37*3^(1/2)*(x^2 + 2/3)^(1/2))/(560*(3*x + x^2 + 9/4)) - (13*3
^(1/2)*(x^2 + 2/3)^(1/2))/(96*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\right)dx-\int\frac{x\sqrt{3x^{2}+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81),
x) - Integral(x*sqrt(3*x**2 + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81
), x)
```

3.1365 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=104

$$-\frac{89\left(3x^2+2\right)^{3/2}}{2940(2x+3)^3}-\frac{13\left(3x^2+2\right)^{3/2}}{140(2x+3)^4}-\frac{33(4-9x)\sqrt{3x^2+2}}{8575(2x+3)^2}-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

```
[Out] -13/140*(3*x^2+2)^(3/2)/(3+2*x)^4-89/2940*(3*x^2+2)^(3/2)/(3+2*x)^3-198/300
125*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-33/8575*(4-9*x)
*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.05, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {835, 807, 721, 725, 206}

$$-\frac{89\left(3x^2+2\right)^{3/2}}{2940(2x+3)^3}-\frac{13\left(3x^2+2\right)^{3/2}}{140(2x+3)^4}-\frac{33(4-9x)\sqrt{3x^2+2}}{8575(2x+3)^2}-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (-33*(4 - 9*x)*Sqrt[2 + 3*x^2])/(8575*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/2))
/(140*(3 + 2*x)^4) - (89*(2 + 3*x^2)^(3/2))/(2940*(3 + 2*x)^3) - (198*ArcTa
nh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx &= -\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4}-\frac{1}{140}\int \frac{(-164+39x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4}-\frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3}+\frac{66}{245}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx\\
&= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4}-\frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3}+\frac{198\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{8575}\\
&= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4}-\frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3}-\frac{198\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,\right.}{8575}\\
&= -\frac{33(4-9x)\sqrt{2+3x^2}}{8575(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{140(3+2x)^4}-\frac{89\left(2+3x^2\right)^{3/2}}{2940(3+2x)^3}-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right.}{8575\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 70, normalized size = 0.67

$$
-\frac{198\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}-\frac{\sqrt{3x^2+2}\left(2217x^3+10134x^2-304x+26028\right)}{51450(2x+3)^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] -1/51450*(Sqrt[2 + 3*x^2]*(26028 - 304*x + 10134*x^2 + 2217*x^3))/(3 + 2*x)
^4 - (198*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

fricas [A] time = 0.48, size = 119, normalized size = 1.14

$$
\frac{594\sqrt{35}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(2217x^3+10134x^2\right.}{1800750\left(16x^4+96x^3+216x^2+216x+81\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/1800750*(594*sqrt(35)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-(sqrt
(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) -
35*(2217*x^3 + 10134*x^2 - 304*x + 26028)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3
 + 216*x^2 + 216*x + 81)
```

giac [B] time = 0.22, size = 181, normalized size = 1.74

$$\frac{1}{9604000}\sqrt{35}\left(739\sqrt{35}\sqrt{3}+6336\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{198}{300125}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{}{(2}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 1/9604000*sqrt(35)*(739*sqrt(35)*sqrt(3) + 6336*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 198/300125*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 3
5/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 1/823200*(
35*(7*(1365*sgn(1/(2*x + 3))/(2*x + 3) - 257*sgn(1/(2*x + 3)))/(2*x + 3) +
9*sgn(1/(2*x + 3)))/(2*x + 3) + 2217*sgn(1/(2*x + 3)))*sqrt(-18/(2*x + 3) +
 35/(2*x + 3)^2 + 3)
```

maple [A] time = 0.06, size = 149, normalized size = 1.43

$$\frac{891\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{300125}-\frac{198\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{300125}-\frac{89\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{23520\left(x+\frac{3}{2}\right)^{3}}-\frac{33\left(-9x\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^5,x)
```

```
[Out] -89/23520/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-33/17150/(x+3/2)^2*(-9*x+
3*(x+3/2)^2-19/4)^(3/2)-297/300125/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+19
8/300125*(-36*x+12*(x+3/2)^2-19)^(1/2)-198/300125*35^(1/2)*arctanh(2/35*(-9
*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+891/300125*(-9*x+3*(x+3/2)^2-
19/4)^(1/2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.17, size = 148, normalized size = 1.42

$$\frac{198}{300125}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{99}{17150}\sqrt{3x^{2}+2}-\frac{13\left(3x^{2}+2\right)^{\frac{3}{2}}}{140\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}-\frac{}{294}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 198/300125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*
x + 3)) + 99/17150*sqrt(3*x^2 + 2) - 13/140*(3*x^2 + 2)^(3/2)/(16*x^4 + 96*
x^3 + 216*x^2 + 216*x + 81) - 89/2940*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^2 + 5
4*x + 27) - 66/8575*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 297/17150*sqrt(3
*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.86, size = 140, normalized size = 1.35

$$\frac{198\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{300125}-\frac{198\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{300125}-\frac{13\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{256\left(x^{4}+6x^{3}+\frac{27x^{2}}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{739\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{274400\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (198*35^(1/2)*log(x + 3/2))/300125 - (198*35^(1/2)*log(x - (3^(1/2)*35^(1/2
)*(x^2 + 2/3)^(1/2))/9 - 4/9))/300125 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(256
*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (739*3^(1/2)*(x^2 + 2/3)^
(1/2))/(274400*(x + 3/2)) - (3*3^(1/2)*(x^2 + 2/3)^(1/2))/(15680*(3*x + x^2
 + 9/4)) + (257*3^(1/2)*(x^2 + 2/3)^(1/2))/(13440*((27*x)/4 + (9*x^2)/2 + x
^3 + 27/8))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1366 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=126

$$-\frac{43\left(3x^2+2\right)^{3/2}}{6125(2x+3)^3}-\frac{23\left(3x^2+2\right)^{3/2}}{875(2x+3)^4}-\frac{13\left(3x^2+2\right)^{3/2}}{175(2x+3)^5}-\frac{339(4-9x)\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{1017\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{214375\sqrt{35}}$$

```
[Out] -13/175*(3*x^2+2)^(3/2)/(3+2*x)^5-23/875*(3*x^2+2)^(3/2)/(3+2*x)^4-43/6125*
(3*x^2+2)^(3/2)/(3+2*x)^3-1017/7503125*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2
+2)^(1/2))*35^(1/2)-339/428750*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{43\left(3x^2+2\right)^{3/2}}{6125(2x+3)^3}-\frac{23\left(3x^2+2\right)^{3/2}}{875(2x+3)^4}-\frac{13\left(3x^2+2\right)^{3/2}}{175(2x+3)^5}-\frac{339(4-9x)\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{1017\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{214375\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (-339*(4 - 9*x)*Sqrt[2 + 3*x^2])/(428750*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(3/
2))/(175*(3 + 2*x)^5) - (23*(2 + 3*x^2)^(3/2))/(875*(3 + 2*x)^4) - (43*(2 +
 3*x^2)^(3/2))/(6125*(3 + 2*x)^3) - (1017*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[
2 + 3*x^2])])/(214375*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx &= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{1}{175}\int \frac{(-205+78x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}+\frac{\int \frac{(6132-1932x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx}{24500}\\
&= -\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}+\frac{339\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{6125}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}+\frac{101}{}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}-\frac{101}{}\\
&= -\frac{339(4-9x)\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{13\left(2+3x^2\right)^{3/2}}{175(3+2x)^5}-\frac{23\left(2+3x^2\right)^{3/2}}{875(3+2x)^4}-\frac{43\left(2+3x^2\right)^{3/2}}{6125(3+2x)^3}-\frac{101}{}
\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 75, normalized size = 0.60

$$\frac{-2034\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{35\sqrt{3x^2+2}\left(11712x^4+76992x^3+186392x^2+108167x+222112\right)}{(2x+3)^5}}{15006250}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(222112 + 108167*x + 186392*x^2 + 76992*x^3 + 11712*x
^4))/(3 + 2*x)^5 - 2034*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2
])])/15006250
```

fricas [**A**] time = 0.70, size = 134, normalized size = 1.06

$$\frac{1017\sqrt{35}\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right)-35\,\left(11712\right.}{15006250\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/15006250*(1017*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2
+ 12*x + 9)) - 35*(11712*x^4 + 76992*x^3 + 186392*x^2 + 108167*x + 222112)*
sqrt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.26, size = 322, normalized size = 2.56

$$\frac{1017}{7503125}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(904\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+36612\left(\sqrt{3}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 1017/7503125*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/
1715000*sqrt(3)*(904*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 36612*(sqrt(
3)*x - sqrt(3*x^2 + 2))^8 + 254217*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7
- 142464*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 338184*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 2))^5 - 4315808*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 1676892*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 1737184*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 +
 219776*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 31232)/((sqrt(3)*x - sqrt(3
*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^5
```

maple [A] time = 0.07, size = 170, normalized size = 1.35

$$\frac{9153\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{15006250}-\frac{1017\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{7503125}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{5600\left(x+\frac{3}{2}\right)^5}-\frac{23\left(-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^6,x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-23/14000/(x+3/2)^4*(-9*x+3
*(x+3/2)^2-19/4)^(3/2)-43/49000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-339
/857500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-3051/15006250/(x+3/2)*(-9*x
+3*(x+3/2)^2-19/4)^(3/2)+1017/7503125*(-36*x+12*(x+3/2)^2-19)^(1/2)-1017/75
03125*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2)
)+9153/15006250*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
```

maxima [A] time = 1.23, size = 186, normalized size = 1.48

$$\frac{1017}{7503125}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{1017}{857500}\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right)^{\frac{3}{2}}}{175\left(32x^5+240x^4+720x^3+1080x^2+81\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 1017/7503125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) + 1017/857500*sqrt(3*x^2 + 2) - 13/175*(3*x^2 + 2)^(3/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 23/875*(3*x^2 + 2)^(3/2)/(1
6*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 43/6125*(3*x^2 + 2)^(3/2)/(8*x^3 +
 36*x^2 + 54*x + 27) - 339/214375*(3*x^2 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 30
51/857500*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.80, size = 178, normalized size = 1.41

$$\frac{1017\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{7503125}-\frac{1017\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{7503125}+\frac{73\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{11200\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{}{640\left(x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (1017*35^(1/2)*log(x + 3/2))/7503125 - (1017*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/7503125 + (73*3^(1/2)*(x^2 + 2/3)^(1/2))/
(11200*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (13*3^(1/2)*(x^2 +
2/3)^(1/2))/(640*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (183*3^(1/2)*(x^2 + 2/3)^(1/2))/(214375*(x + 3/2)) - (3*3^(1/2
)*(x^2 + 2/3)^(1/2))/(6125*(3*x + x^2 + 9/4)) + (3^(1/2)*(x^2 + 2/3)^(1/2))
/(7000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1367 $\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=148

$$-\frac{1207\left(3x^2+2\right)^{3/2}}{857500(2x+3)^3}-\frac{111\left(3x^2+2\right)^{3/2}}{17500(2x+3)^4}-\frac{281\left(3x^2+2\right)^{3/2}}{12250(2x+3)^5}-\frac{13\left(3x^2+2\right)^{3/2}}{210(2x+3)^6}-\frac{1017(4-9x)\sqrt{3x^2+2}}{7503125(2x+3)^2}-\frac{6102\tanh^{-1}\left(\right.}{7503125}$$

```
[Out] -13/210*(3*x^2+2)^(3/2)/(3+2*x)^6-281/12250*(3*x^2+2)^(3/2)/(3+2*x)^5-111/1
7500*(3*x^2+2)^(3/2)/(3+2*x)^4-1207/857500*(3*x^2+2)^(3/2)/(3+2*x)^3-6102/2
62609375*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-1017/75031
25*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = $\{835, 807, 721, 725, 206\}$

$$-\frac{1207\left(3x^2+2\right)^{3/2}}{857500(2x+3)^3}-\frac{111\left(3x^2+2\right)^{3/2}}{17500(2x+3)^4}-\frac{281\left(3x^2+2\right)^{3/2}}{12250(2x+3)^5}-\frac{13\left(3x^2+2\right)^{3/2}}{210(2x+3)^6}-\frac{1017(4-9x)\sqrt{3x^2+2}}{7503125(2x+3)^2}-\frac{6102\tanh^{-1}\left(\right.}{7503125}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (-1017*(4 - 9*x)*Sqrt[2 + 3*x^2])/(7503125*(3 + 2*x)^2) - (13*(2 + 3*x^2)^(
3/2))/(210*(3 + 2*x)^6) - (281*(2 + 3*x^2)^(3/2))/(12250*(3 + 2*x)^5) - (11
1*(2 + 3*x^2)^(3/2))/(17500*(3 + 2*x)^4) - (1207*(2 + 3*x^2)^(3/2))/(857500
*(3 + 2*x)^3) - (6102*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(75031
25*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+3x^2}}{(3+2x)^7}\,dx = -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{1}{210}\int \frac{(-246+117x)\sqrt{2+3x^2}}{(3+2x)^6}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} + \frac{\int \frac{(8730-5058x)\sqrt{2+3x^2}}{(3+2x)^5}\,dx}{36750}$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} - \frac{\int \frac{(-233352+97902x)\sqrt{2+3x^2}}{(3+2x)^4}\,dx}{5145000}$$

$$= -\frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} - \frac{1207\left(2+3x^2\right)^{3/2}}{857500(3+2x)^3} + 2034$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

$$= -\frac{1017(4-9x)\sqrt{2+3x^2}}{7503125(3+2x)^2} - \frac{13\left(2+3x^2\right)^{3/2}}{210(3+2x)^6} - \frac{281\left(2+3x^2\right)^{3/2}}{12250(3+2x)^5} - \frac{111\left(2+3x^2\right)^{3/2}}{17500(3+2x)^4} -$$

Mathematica [A] time = 0.09, size = 80, normalized size = 0.54

$$\frac{-36612\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right) - \frac{35\sqrt{3x^2+2}\left(642132x^5+5388660x^4+18236055x^3+30753930x^2+18651300x+22308548\right)}{(2x+3)^6}}{1575656250}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(22308548 + 18651300*x + 30753930*x^2 + 18236055*x^3
+ 5388660*x^4 + 642132*x^5))/(3 + 2*x)^6 - 36612*Sqrt[35]*ArcTanh[(4 - 9*x)
/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1575656250
```

fricas [A] time = 0.66, size = 149, normalized size = 1.01

$$\frac{18306\,\sqrt{35}\left(64\,x^6+576\,x^5+2160\,x^4+4320\,x^3+4860\,x^2+2916\,x+729\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right.}{1575656250\left(64\,x^6+576\,x^5+2160\,x^4+4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1575656250*(18306*sqrt(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860
*x^2 + 2916*x + 729)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36
*x + 43)/(4*x^2 + 12*x + 9)) - 35*(642132*x^5 + 5388660*x^4 + 18236055*x^3
+ 30753930*x^2 + 18651300*x + 22308548)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5
+ 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.27, size = 367, normalized size = 2.48

$$\frac{6102}{262609375}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(21696\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+10739\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 6102/262609375*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sq
rt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) -
3/240100000*sqrt(3)*(21696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 10739
52*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 6978880*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 2))^9 + 87678735*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 66333990*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 2))^7 - 258582989*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 -
 426764436*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 755892540*(sqrt(3)*x -
 sqrt(3*x^2 + 2))^4 - 355133440*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 2
07134880*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 19853952*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 2)) + 2283136)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 2)) - 2)^6
```

maple [A] time = 0.07, size = 191, normalized size = 1.29

$$\frac{27459\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\;x}{262609375}-\frac{6102\sqrt{35}\;\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{262609375}-\frac{13\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{13440\left(x+\frac{3}{2}\right)^6}-\frac{281}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(1/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-281/392000/(x+3/2)^5*(-9*
x+3*(x+3/2)^2-19/4)^(3/2)-111/280000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(3/2
)-1207/6860000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-1017/15006250/(x+3/2
)^2*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-9153/262609375/(x+3/2)*(-9*x+3*(x+3/2)^2-
19/4)^(3/2)+6102/262609375*(-36*x+12*(x+3/2)^2-19)^(1/2)-6102/262609375*35^
(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+27459/2
62609375*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
```

maxima [A] time = 1.23, size = 229, normalized size = 1.55

$$\frac{6102}{262609375}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)+\frac{3051}{15006250}\sqrt{3x^2+2}-\frac{13\left(3x^2+2\right.}{210\left(64x^6+576x^5+2160x^4+4320x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(1/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 6102/262609375*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/ab
s(2*x + 3)) + 3051/15006250*sqrt(3*x^2 + 2) - 13/210*(3*x^2 + 2)^(3/2)/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 281/12250*
(3*x^2 + 2)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 1
```

```
11/17500*(3*x^2 + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 1207/
857500*(3*x^2 + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2034/7503125*(3*x^2
 + 2)^(3/2)/(4*x^2 + 12*x + 9) - 9153/15006250*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [**B**] time = 0.13, size = 223, normalized size = 1.51

$$\frac{6102\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{262609375}-\frac{6102\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{262609375}+\frac{127\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{1568000\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{}{44800}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(1/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (6102*35^(1/2)*log(x + 3/2))/262609375 - (6102*35^(1/2)*log(x - (3^(1/2)*35
^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/262609375 + (127*3^(1/2)*(x^2 + 2/3)^(1
/2))/(1568000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (109*3^(1/2)
*(x^2 + 2/3)^(1/2))/(44800*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4
)/2 + x^5 + 243/32)) - (53511*3^(1/2)*(x^2 + 2/3)^(1/2))/(240100000*(x + 3/
2)) - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((729*x)/16 + (1215*x^2)/16 + (1
35*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) - (2727*3^(1/2)*(x^2 + 2/3
)^(1/2))/(13720000*(3*x + x^2 + 9/4)) - (479*3^(1/2)*(x^2 + 2/3)^(1/2))/(39
20000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(1/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1368 $\int (5-x)(3+2x)^4 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=138

$$-\frac{1}{27}\left(3x^2+2\right)^{5/2}(2x+3)^4+\frac{13}{36}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{4421\left(3x^2+2\right)^{5/2}(2x+3)^2}{2268}+\frac{(226755x+661583)\left(3x^2+2\right)^{5}}{17010}$$

```
[Out] 2777/36*x*(3*x^2+2)^(3/2)+4421/2268*(3+2*x)^2*(3*x^2+2)^(5/2)+13/36*(3+2*x)
^3*(3*x^2+2)^(5/2)-1/27*(3+2*x)^4*(3*x^2+2)^(5/2)+1/17010*(661583+226755*x)
*(3*x^2+2)^(5/2)+2777/18*arcsinh(1/2*x*6^(1/2))*3^(1/2)+2777/12*x*(3*x^2+2)
^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {833, 780, 195, 215}

$$-\frac{1}{27}\left(3x^2+2\right)^{5/2}(2x+3)^4+\frac{13}{36}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{4421\left(3x^2+2\right)^{5/2}(2x+3)^2}{2268}+\frac{(226755x+661583)\left(3x^2+2\right)^{5}}{17010}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2777*x*Sqrt[2 + 3*x^2])/12 + (2777*x*(2 + 3*x^2)^(3/2))/36 + (4421*(3 + 2*
x)^2*(2 + 3*x^2)^(5/2))/2268 + (13*(3 + 2*x)^3*(2 + 3*x^2)^(5/2))/36 - ((3
+ 2*x)^4*(2 + 3*x^2)^(5/2))/27 + ((661583 + 226755*x)*(2 + 3*x^2)^(5/2))/17
010 + (2777*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^4\left(2+3x^2\right)^{3/2}\,dx &= -\frac{1}{27}(3+2x)^4\left(2+3x^2\right)^{5/2}+\frac{1}{27}\int (3+2x)^3(421+234x)\left(2+3x^2\right)^{3/2}\,dx\\
&= \frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^4\left(2+3x^2\right)^{5/2}+\frac{1}{648}\int (3+2x)^2(\\
&= \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268}+\frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^4\left(2\right.\\
&= \frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268}+\frac{13}{36}(3+2x)^3\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^4\left(2\right.\\
&= \frac{2777}{36}x\left(2+3x^2\right)^{3/2}+\frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268}+\frac{13}{36}(3+2x)^3\left(2+3x^2\right.\\
&= \frac{2777}{12}x\sqrt{2+3x^2}+\frac{2777}{36}x\left(2+3x^2\right)^{3/2}+\frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268}+\\
&= \frac{2777}{12}x\sqrt{2+3x^2}+\frac{2777}{36}x\left(2+3x^2\right)^{3/2}+\frac{4421(3+2x)^2\left(2+3x^2\right)^{5/2}}{2268}+\end{aligned}$$

Mathematica [A] time = 0.08, size = 75, normalized size = 0.54

$$\frac{\sqrt{3x^2+2}\left(-181440x^8-204120x^7+3676320x^6+14492520x^5+24490404x^4+27468315x^3+27537072x^2+\right.}{34020}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(8598544 + 19683405*x + 27537072*x^2 + 27468315*x^3 + 2449
0404*x^4 + 14492520*x^5 + 3676320*x^6 - 204120*x^7 - 181440*x^8))/34020 + (
2777*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

fricas [A] time = 0.65, size = 80, normalized size = 0.58

$$-\frac{1}{34020}\left(181440\,x^8+204120\,x^7-3676320\,x^6-14492520\,x^5-24490404\,x^4-27468315\,x^3-27537072\,x^2-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/34020*(181440*x^8 + 204120*x^7 - 3676320*x^6 - 14492520*x^5 - 24490404*x
^4 - 27468315*x^3 - 27537072*x^2 - 19683405*x - 8598544)*sqrt(3*x^2 + 2) +
2777/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 72, normalized size = 0.52

$$-\frac{1}{34020}\left(3\left(\left(9\left(4\left(10\left(\left(21\left(8\,x+9\right)x-3404\right)x-13419\right)x-226763\right)x-1017345\right)x-9179024\right)x-6561135\right)x-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/34020*(3*((9*(4*(10*((21*(8*x + 9)*x - 3404)*x - 13419)*x - 226763)*x -
1017345)*x - 9179024)*x - 6561135)*x - 8598544)*sqrt(3*x^2 + 2) - 2777/18*s
qrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 103, normalized size = 0.75

$$-\frac{16\left(3x^2+2\right)^{\frac{5}{2}}x^4}{27}-\frac{2\left(3x^2+2\right)^{\frac{5}{2}}x^3}{3}+\frac{7256\left(3x^2+2\right)^{\frac{5}{2}}x^2}{567}+\frac{434\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{2777\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{2777\sqrt{3x^2+2}}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(3/2),x)
```

```
[Out] -16/27*x^4*(3*x^2+2)^(5/2)+7256/567*x^2*(3*x^2+2)^(5/2)+537409/8505*(3*x^2+
2)^(5/2)-2/3*x^3*(3*x^2+2)^(5/2)+434/9*x*(3*x^2+2)^(5/2)+2777/36*(3*x^2+2)^
(3/2)*x+2777/12*(3*x^2+2)^(1/2)*x+2777/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.28, size = 102, normalized size = 0.74

$$-\frac{16}{27}\left(3x^2+2\right)^{\frac{5}{2}}x^4-\frac{2}{3}\left(3x^2+2\right)^{\frac{5}{2}}x^3+\frac{7256}{567}\left(3x^2+2\right)^{\frac{5}{2}}x^2+\frac{434}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{537409}{8505}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{2777}{36}\left(3x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/27*(3*x^2 + 2)^(5/2)*x^4 - 2/3*(3*x^2 + 2)^(5/2)*x^3 + 7256/567*(3*x^2
+ 2)^(5/2)*x^2 + 434/9*(3*x^2 + 2)^(5/2)*x + 537409/8505*(3*x^2 + 2)^(5/2)
+ 2777/36*(3*x^2 + 2)^(3/2)*x + 2777/12*sqrt(3*x^2 + 2)*x + 2777/18*sqrt(3)
*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 2.10, size = 65, normalized size = 0.47

$$\frac{2777\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(-16x^8-18x^7+\frac{6808x^6}{21}+1278x^5+\frac{226763x^4}{105}+\frac{9689x^3}{4}+\frac{2294756x^2}{945}+\frac{6943x}{4}\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (2777*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((6943*
x)/4 + (2294756*x^2)/945 + (9689*x^3)/4 + (226763*x^4)/105 + 1278*x^5 + (68
08*x^6)/21 - 18*x^7 - 16*x^8 + 2149636/2835))/3
```

sympy [A] time = 22.52, size = 162, normalized size = 1.17

$$-\frac{16x^8\sqrt{3x^2+2}}{3}-6x^7\sqrt{3x^2+2}+\frac{6808x^6\sqrt{3x^2+2}}{63}+426x^5\sqrt{3x^2+2}+\frac{226763x^4\sqrt{3x^2+2}}{315}+\frac{9689x^3\sqrt{3x^2+2}}{12}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(3/2),x)
```

```
[Out] -16*x**8*sqrt(3*x**2 + 2)/3 - 6*x**7*sqrt(3*x**2 + 2) + 6808*x**6*sqrt(3*x*
*2 + 2)/63 + 426*x**5*sqrt(3*x**2 + 2) + 226763*x**4*sqrt(3*x**2 + 2)/315 +
 9689*x**3*sqrt(3*x**2 + 2)/12 + 2294756*x**2*sqrt(3*x**2 + 2)/2835 + 6943*
x*sqrt(3*x**2 + 2)/12 + 2149636*sqrt(3*x**2 + 2)/8505 + 2777*sqrt(3)*asinh(
sqrt(6)*x/2)/18
```

3.1369 $\int (5-x)(3+2x)^3 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=116

$$-\frac{1}{24}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{71}{168}\left(3x^2+2\right)^{5/2}(2x+3)^2+\frac{(5405x+16973)\left(3x^2+2\right)^{5/2}}{1260}+\frac{1087}{36}x\left(3x^2+2\right)^{3/2}+\frac{108}{12}$$

```
[Out] 1087/36*x*(3*x^2+2)^(3/2)+71/168*(3+2*x)^2*(3*x^2+2)^(5/2)-1/24*(3+2*x)^3*(
3*x^2+2)^(5/2)+1/1260*(16973+5405*x)*(3*x^2+2)^(5/2)+1087/18*arcsinh(1/2*x*
6^(1/2))*3^(1/2)+1087/12*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{833, 780, 195, 215\}$

$$-\frac{1}{24}\left(3x^2+2\right)^{5/2}(2x+3)^3+\frac{71}{168}\left(3x^2+2\right)^{5/2}(2x+3)^2+\frac{(5405x+16973)\left(3x^2+2\right)^{5/2}}{1260}+\frac{1087}{36}x\left(3x^2+2\right)^{3/2}+\frac{108}{12}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (1087*x*Sqrt[2 + 3*x^2])/12 + (1087*x*(2 + 3*x^2)^(3/2))/36 + (71*(3 + 2*x)
^2*(2 + 3*x^2)^(5/2))/168 - ((3 + 2*x)^3*(2 + 3*x^2)^(5/2))/24 + ((16973 +
5405*x)*(2 + 3*x^2)^(5/2))/1260 + (1087*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^3\left(2+3x^2\right)^{3/2}dx &= -\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{1}{24}\int (3+2x)^2(372+213x)\left(2+3x^2\right)^{3/2}dx\\ &= \frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{1}{504}\int (3+2x)(217\\ &= \frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}+\frac{(16973+5405x)\left(2\right.}{1260}\\ &= \frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+3x^2\right)^{5/2}\\ &= \frac{1087}{12}x\sqrt{2+3x^2}+\frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3\\ &= \frac{1087}{12}x\sqrt{2+3x^2}+\frac{1087}{36}x\left(2+3x^2\right)^{3/2}+\frac{71}{168}(3+2x)^2\left(2+3x^2\right)^{5/2}-\frac{1}{24}(3\end{aligned}$$

Mathematica [A] time = 0.06, size = 70, normalized size = 0.60

$$\frac{76090\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(3780x^7-2160x^6-75600x^5-186012x^4-219975x^3-245136x^2-22606\right.}{1260}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-81392 - 226065*x - 245136*x^2 - 219975*x^3 - 186012*x^
4 - 75600*x^5 - 2160*x^6 + 3780*x^7)) + 76090*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])
/1260
```

fricas [A] time = 0.68, size = 75, normalized size = 0.65

$$-\frac{1}{1260}\left(3780\,x^7-2160\,x^6-75600\,x^5-186012\,x^4-219975\,x^3-245136\,x^2-226065\,x-81392\right)\sqrt{3\,x^2+2}+\frac{108}{36}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/1260*(3780*x^7 - 2160*x^6 - 75600*x^5 - 186012*x^4 - 219975*x^3 - 245136
*x^2 - 226065*x - 81392)*sqrt(3*x^2 + 2) + 1087/36*sqrt(3)*log(-sqrt(3)*sqr
t(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 66, normalized size = 0.57

$$-\frac{1}{1260}\left(3\left(\left(\left(12\left(15\left(\left(7\,x-4\right)x-140\right)x-5167\right)x-73325\right)x-81712\right)x-75355\right)x-81392\right)\sqrt{3\,x^2+2}-\frac{1087}{18}\sqrt{3}\,\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/1260*(3*(((12*(15*((7*x - 4)*x - 140)*x - 5167)*x - 73325)*x - 81712)*x
 - 75355)*x - 81392)*sqrt(3*x^2 + 2) - 1087/18*sqrt(3)*log(-sqrt(3)*x + sqrt
(3*x^2 + 2))
```

maple [A] time = 0.06, size = 89, normalized size = 0.77

$$-\frac{\left(3x^2+2\right)^{\frac{5}{2}}x^3}{3}+\frac{4\left(3x^2+2\right)^{\frac{5}{2}}x^2}{21}+\frac{64\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{1087\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{1087\sqrt{3x^2+2}\,x}{12}+\frac{1087\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}}{2}\right.}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(3/2),x)
```

```
[Out] -1/3*(3*x^2+2)^(5/2)*x^3+64/9*(3*x^2+2)^(5/2)*x+1087/36*(3*x^2+2)^(3/2)*x+1
087/12*(3*x^2+2)^(1/2)*x+1087/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+4/21*(3*x^2
+2)^(5/2)*x^2+5087/315*(3*x^2+2)^(5/2)
```

maxima [A] time = 1.36, size = 88, normalized size = 0.76

$$-\frac{1}{3}\left(3x^2+2\right)^{\frac{5}{2}}x^3+\frac{4}{21}\left(3x^2+2\right)^{\frac{5}{2}}x^2+\frac{64}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{5087}{315}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{1087}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{1087}{12}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/3*(3*x^2 + 2)^(5/2)*x^3 + 4/21*(3*x^2 + 2)^(5/2)*x^2 + 64/9*(3*x^2 + 2)^
(5/2)*x + 5087/315*(3*x^2 + 2)^(5/2) + 1087/36*(3*x^2 + 2)^(3/2)*x + 1087/1
2*sqrt(3*x^2 + 2)*x + 1087/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.05, size = 60, normalized size = 0.52

$$\frac{1087\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-9\,x^7+\frac{36\,x^6}{7}+180\,x^5+\frac{15501\,x^4}{35}+\frac{2095\,x^3}{4}+\frac{20428\,x^2}{35}+\frac{2153\,x}{4}+\frac{20348}{105}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (1087*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((2153*
x)/4 + (20428*x^2)/35 + (2095*x^3)/4 + (15501*x^4)/35 + 180*x^5 + (36*x^6)/
7 - 9*x^7 + 20348/105))/3
```

sympy [A] time = 14.07, size = 144, normalized size = 1.24

$$-3x^7\sqrt{3x^2+2}+\frac{12x^6\sqrt{3x^2+2}}{7}+60x^5\sqrt{3x^2+2}+\frac{5167x^4\sqrt{3x^2+2}}{35}+\frac{2095x^3\sqrt{3x^2+2}}{12}+\frac{20428x^2\sqrt{3x^2+2}}{105}+\frac{2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(3/2),x)
```

```
[Out] -3*x**7*sqrt(3*x**2 + 2) + 12*x**6*sqrt(3*x**2 + 2)/7 + 60*x**5*sqrt(3*x**2
 + 2) + 5167*x**4*sqrt(3*x**2 + 2)/35 + 2095*x**3*sqrt(3*x**2 + 2)/12 + 204
28*x**2*sqrt(3*x**2 + 2)/105 + 2153*x*sqrt(3*x**2 + 2)/12 + 20348*sqrt(3*x*
*2 + 2)/315 + 1087*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1370 $\int (5-x)(3+2x)^2 \left(2+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=94

$$-\frac{1}{21}(2x+3)^2 \left(3x^2+2\right)^{5/2}+\frac{2}{315}(160x+611) \left(3x^2+2\right)^{5/2}+\frac{397}{36}x \left(3x^2+2\right)^{3/2}+\frac{397}{12}x\sqrt{3x^2+2}+\frac{397 \sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

```
[Out] 397/36*x*(3*x^2+2)^(3/2)-1/21*(3+2*x)^2*(3*x^2+2)^(5/2)+2/315*(611+160*x)*(
3*x^2+2)^(5/2)+397/18*arcsinh(1/2*x*6^(1/2))*3^(1/2)+397/12*x*(3*x^2+2)^(1/
2)
```

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{833, 780, 195, 215\}$

$$-\frac{1}{21}(2x+3)^2 \left(3x^2+2\right)^{5/2}+\frac{2}{315}(160x+611) \left(3x^2+2\right)^{5/2}+\frac{397}{36}x \left(3x^2+2\right)^{3/2}+\frac{397}{12}x\sqrt{3x^2+2}+\frac{397 \sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (397*x*Sqrt[2 + 3*x^2])/12 + (397*x*(2 + 3*x^2)^(3/2))/36 - ((3 + 2*x)^2*(2
 + 3*x^2)^(5/2))/21 + (2*(611 + 160*x)*(2 + 3*x^2)^(5/2))/315 + (397*ArcSin
h[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^2\left(2+3x^2\right)^{3/2}\,dx &= -\frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2}+\frac{1}{21}\int (3+2x)(323+192x)\left(2+3x^2\right)^{3/2}\,dx\\ &= -\frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2}+\frac{2}{315}(611+160x)\left(2+3x^2\right)^{5/2}+\frac{397}{9}\int \left(2+\right.\\ &= \frac{397}{36}x\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2}+\frac{2}{315}(611+160x)\left(2+3x\right.\\ &= \frac{397}{12}x\sqrt{2+3x^2}+\frac{397}{36}x\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2}+\frac{2}{315}(61\\ \\ &= \frac{397}{12}x\sqrt{2+3x^2}+\frac{397}{36}x\left(2+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^2\left(2+3x^2\right)^{5/2}+\frac{2}{315}(61\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 65, normalized size = 0.69

$$\frac{27790\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-\sqrt{3x^2+2}\left(2160x^6-5040x^5-36252x^4-48405x^3-51216x^2-71715x-17392\right)}{1260}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-17392 - 71715*x - 51216*x^2 - 48405*x^3 - 36252*x^4 -
5040*x^5 + 2160*x^6)) + 27790*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/1260
```

fricas [**A**] time = 0.96, size = 70, normalized size = 0.74

$$-\frac{1}{1260}\left(2160\,x^6-5040\,x^5-36252\,x^4-48405\,x^3-51216\,x^2-71715\,x-17392\right)\sqrt{3\,x^2+2}+\frac{397}{36}\,\sqrt{3}\,\log\left(-\sqrt{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/1260*(2160*x^6 - 5040*x^5 - 36252*x^4 - 48405*x^3 - 51216*x^2 - 71715*x
- 17392)*sqrt(3*x^2 + 2) + 397/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
3*x^2 - 1)
```

giac [**A**] time = 0.17, size = 62, normalized size = 0.66

$$-\frac{1}{1260}\,(3\,(((12\,(20\,(3\,x-7)x-1007)x-16135)x-17072)x-23905)x-17392)\sqrt{3\,x^2+2}-\frac{397}{18}\,\sqrt{3}\,\log\left(-\sqrt{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/1260*(3*(((12*(20*(3*x - 7)*x - 1007)*x - 16135)*x - 17072)*x - 23905)*x
 - 17392)*sqrt(3*x^2 + 2) - 397/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)
)
```

maple [**A**] time = 0.06, size = 75, normalized size = 0.80

$$-\frac{4\left(3x^2+2\right)^{\frac{5}{2}}x^2}{21}+\frac{4\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{397\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{397\sqrt{3x^2+2}\;x}{12}+\frac{397\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{1087\left(3x^2+\right.}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(3/2),x)
```

```
[Out] -4/21*(3*x^2+2)^(5/2)*x^2+1087/315*(3*x^2+2)^(5/2)+4/9*(3*x^2+2)^(5/2)*x+39
7/36*(3*x^2+2)^(3/2)*x+397/12*(3*x^2+2)^(1/2)*x+397/18*arcsinh(1/2*6^(1/2)*
x)*3^(1/2)
```

maxima [A] time = 1.33, size = 74, normalized size = 0.79

$$-\frac{4}{21}\left(3\,x^2+2\right)^{\frac{5}{2}}x^2+\frac{4}{9}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{1087}{315}\left(3\,x^2+2\right)^{\frac{5}{2}}+\frac{397}{36}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{397}{12}\sqrt{3\,x^2+2}\,x+\frac{397}{18}\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/21*(3*x^2 + 2)^(5/2)*x^2 + 4/9*(3*x^2 + 2)^(5/2)*x + 1087/315*(3*x^2 + 2
)^(5/2) + 397/36*(3*x^2 + 2)^(3/2)*x + 397/12*sqrt(3*x^2 + 2)*x + 397/18*sq
rt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.04, size = 55, normalized size = 0.59

$$\frac{397\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{36\,x^6}{7}+12\,x^5+\frac{3021\,x^4}{35}+\frac{461\,x^3}{4}+\frac{4268\,x^2}{35}+\frac{683\,x}{4}+\frac{4348}{105}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (397*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((683*x)
/4 + (4268*x^2)/35 + (461*x^3)/4 + (3021*x^4)/35 + 12*x^5 - (36*x^6)/7 + 43
48/105))/3
```

sympy [A] time = 8.16, size = 129, normalized size = 1.37

$$-\frac{12x^6\sqrt{3x^2+2}}{7}+4x^5\sqrt{3x^2+2}+\frac{1007x^4\sqrt{3x^2+2}}{35}+\frac{461x^3\sqrt{3x^2+2}}{12}+\frac{4268x^2\sqrt{3x^2+2}}{105}+\frac{683x\sqrt{3x^2+2}}{12}+4348$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(3/2),x)
```

```
[Out] -12*x**6*sqrt(3*x**2 + 2)/7 + 4*x**5*sqrt(3*x**2 + 2) + 1007*x**4*sqrt(3*x*
*2 + 2)/35 + 461*x**3*sqrt(3*x**2 + 2)/12 + 4268*x**2*sqrt(3*x**2 + 2)/105
+ 683*x*sqrt(3*x**2 + 2)/12 + 4348*sqrt(3*x**2 + 2)/315 + 397*sqrt(3)*asinh
(sqrt(6)*x/2)/18
```

3.1371 $\int (5-x)(3+2x)\left(2+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=72

$$\frac{1}{45}(21-5x)\left(3x^2+2\right)^{5/2}+\frac{137}{36}x\left(3x^2+2\right)^{3/2}+\frac{137}{12}x\sqrt{3x^2+2}+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

```
[Out] 137/36*x*(3*x^2+2)^(3/2)+1/45*(21-5*x)*(3*x^2+2)^(5/2)+137/18*arcsinh(1/2*x
*6^(1/2))*3^(1/2)+137/12*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = $\{780, 195, 215\}$

$$\frac{1}{45}(21-5x)\left(3x^2+2\right)^{5/2}+\frac{137}{36}x\left(3x^2+2\right)^{3/2}+\frac{137}{12}x\sqrt{3x^2+2}+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (137*x*Sqrt[2 + 3*x^2])/12 + (137*x*(2 + 3*x^2)^(3/2))/36 + ((21 - 5*x)*(2
+ 3*x^2)^(5/2))/45 + (137*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)\left(2+3x^2\right)^{3/2}\,dx &= \frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{9}\int\left(2+3x^2\right)^{3/2}\,dx\\ &= \frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{6}\int\sqrt{2+3x^2}\,dx\\ &= \frac{137}{12}x\sqrt{2+3x^2}+\frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137}{6}\int\\ &= \frac{137}{12}x\sqrt{2+3x^2}+\frac{137}{36}x\left(2+3x^2\right)^{3/2}+\frac{1}{45}(21-5x)\left(2+3x^2\right)^{5/2}+\frac{137\,\mathrm{sin}}{6}\end{aligned}$$

Mathematica [A] time = 0.06, size = 60, normalized size = 0.83

$$\frac{1}{60}\sqrt{3x^2+2}\left(-60x^5+252x^4+605x^3+336x^2+1115x+112\right)+\frac{137\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{6\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(112 + 1115*x + 336*x^2 + 605*x^3 + 252*x^4 - 60*x^5))/60
+ (137*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

fricas [A] time = 0.55, size = 65, normalized size = 0.90

$$-\frac{1}{60}\left(60x^5-252x^4-605x^3-336x^2-1115x-112\right)\sqrt{3x^2+2}+\frac{137}{36}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/60*(60*x^5 - 252*x^4 - 605*x^3 - 336*x^2 - 1115*x - 112)*sqrt(3*x^2 + 2)
 + 137/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 56, normalized size = 0.78

$$-\frac{1}{60}((((12(5x-21)x-605)x-336)x-1115)x-112)\sqrt{3x^2+2}-\frac{137}{18}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/60*((((12*(5*x - 21)*x - 605)*x - 336)*x - 1115)*x - 112)*sqrt(3*x^2 + 2
) - 137/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 61, normalized size = 0.85

$$-\frac{\left(3x^2+2\right)^{\frac{5}{2}}x}{9}+\frac{137\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{137\sqrt{3x^2+2}\,x}{12}+\frac{137\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{7\left(3x^2+2\right)^{\frac{5}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(3/2),x)
```

```
[Out] -1/9*(3*x^2+2)^(5/2)*x+137/36*(3*x^2+2)^(3/2)*x+137/12*(3*x^2+2)^(1/2)*x+13
7/18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+7/15*(3*x^2+2)^(5/2)
```

maxima [A] time = 1.37, size = 60, normalized size = 0.83

$$-\frac{1}{9}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{7}{15}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{137}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{137}{12}\sqrt{3x^2+2}\,x+\frac{137}{18}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 2)^(5/2)*x + 7/15*(3*x^2 + 2)^(5/2) + 137/36*(3*x^2 + 2)^(3/2
)*x + 137/12*sqrt(3*x^2 + 2)*x + 137/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.74, size = 50, normalized size = 0.69

$$\frac{137\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\ \left(-3x^5+\frac{63x^4}{5}+\frac{121x^3}{4}+\frac{84x^2}{5}+\frac{223x}{4}+\frac{28}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (137*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((223*x)
/4 + (84*x^2)/5 + (121*x^3)/4 + (63*x^4)/5 - 3*x^5 + 28/5))/3
```

sympy [A] time = 5.00, size = 110, normalized size = 1.53

$$-x^5\sqrt{3x^2+2}+\frac{21x^4\sqrt{3x^2+2}}{5}+\frac{121x^3\sqrt{3x^2+2}}{12}+\frac{28x^2\sqrt{3x^2+2}}{5}+\frac{223x\sqrt{3x^2+2}}{12}+\frac{28\sqrt{3x^2+2}}{15}+\frac{137\sqrt{3}\ \text{asin}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(3/2),x)
```

```
[Out] -x**5*sqrt(3*x**2 + 2) + 21*x**4*sqrt(3*x**2 + 2)/5 + 121*x**3*sqrt(3*x**2
+ 2)/12 + 28*x**2*sqrt(3*x**2 + 2)/5 + 223*x*sqrt(3*x**2 + 2)/12 + 28*sqrt(
3*x**2 + 2)/15 + 137*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1372 $\int (5-x)\left(2+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=67

$$-\frac{1}{15}\left(3x^2+2\right)^{5/2}+\frac{5}{4}x\left(3x^2+2\right)^{3/2}+\frac{15}{4}x\sqrt{3x^2+2}+\frac{5}{2}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

```
[Out] 5/4*x*(3*x^2+2)^(3/2)-1/15*(3*x^2+2)^(5/2)+5/2*arcsinh(1/2*x*6^(1/2))*3^(1/
2)+15/4*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{15}\left(3x^2+2\right)^{5/2}+\frac{5}{4}x\left(3x^2+2\right)^{3/2}+\frac{15}{4}x\sqrt{3x^2+2}+\frac{5}{2}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] (15*x*Sqrt[2 + 3*x^2])/4 + (5*x*(2 + 3*x^2)^(3/2))/4 - (2 + 3*x^2)^(5/2)/15
 + (5*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/2
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int (5-x)\left(2+3x^2\right)^{3/2}\,dx &= -\frac{1}{15}\left(2+3x^2\right)^{5/2}+5\int \left(2+3x^2\right)^{3/2}\,dx\\
&= \frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{15}{2}\int \sqrt{2+3x^2}\,dx\\
&= \frac{15}{4}x\sqrt{2+3x^2}+\frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{15}{2}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\
&= \frac{15}{4}x\sqrt{2+3x^2}+\frac{5}{4}x\left(2+3x^2\right)^{3/2}-\frac{1}{15}\left(2+3x^2\right)^{5/2}+\frac{5}{2}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 0.82

$$\frac{5}{2}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\frac{1}{60}\sqrt{3x^2+2}\left(36x^4-225x^3+48x^2-375x+16\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/60*(Sqrt[2 + 3*x^2]*(16 - 375*x + 48*x^2 - 225*x^3 + 36*x^4)) + (5*Sqrt[
3]*ArcSinh[Sqrt[3/2]*x])/2
```

fricas [A] time = 0.54, size = 60, normalized size = 0.90

$$-\frac{1}{60}\left(36\,x^4-225\,x^3+48\,x^2-375\,x+16\right)\sqrt{3\,x^2+2}+\frac{5}{4}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/60*(36*x^4 - 225*x^3 + 48*x^2 - 375*x + 16)*sqrt(3*x^2 + 2) + 5/4*sqrt(3
)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 53, normalized size = 0.79

$$-\frac{1}{60}\,(3\,((3\,(4\,x-25)x+16)x-125)x+16)\sqrt{3\,x^2+2}-\frac{5}{2}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/60*(3*((3*(4*x - 25)*x + 16)*x - 125)*x + 16)*sqrt(3*x^2 + 2) - 5/2*sqrt
(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.04, size = 49, normalized size = 0.73

$$\frac{5\left(3x^2+2\right)^{\frac{3}{2}}x}{4}+\frac{15\sqrt{3x^2+2}\,x}{4}+\frac{5\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{2}-\frac{\left(3x^2+2\right)^{\frac{5}{2}}}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2),x)
```

```
[Out] 5/4*(3*x^2+2)^(3/2)*x-1/15*(3*x^2+2)^(5/2)+5/2*arcsinh(1/2*6^(1/2)*x)*3^(1/
2)+15/4*(3*x^2+2)^(1/2)*x
```

maxima [A] time = 1.33, size = 48, normalized size = 0.72

$$-\frac{1}{15}\left(3\,x^2+2\right)^{\frac{5}{2}}+\frac{5}{4}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{15}{4}\,\sqrt{3\,x^2+2}\,x+\frac{5}{2}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 2)^(5/2) + 5/4*(3*x^2 + 2)^(3/2)*x + 15/4*sqrt(3*x^2 + 2)*x
+ 5/2*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.04, size = 45, normalized size = 0.67

$$\frac{5\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{2}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{9\,x^4}{5}-\frac{45\,x^3}{4}+\frac{12\,x^2}{5}-\frac{75\,x}{4}+\frac{4}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(3/2)*(x - 5),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/2 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((12*x^2)/5
 - (75*x)/4 - (45*x^3)/4 + (9*x^4)/5 + 4/5))/3
```

sympy [A] time = 2.76, size = 97, normalized size = 1.45

$$-\frac{3x^4\sqrt{3x^2+2}}{5}+\frac{15x^3\sqrt{3x^2+2}}{4}-\frac{4x^2\sqrt{3x^2+2}}{5}+\frac{25x\sqrt{3x^2+2}}{4}-\frac{4\sqrt{3x^2+2}}{15}+\frac{5\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2),x)
```

```
[Out] -3*x**4*sqrt(3*x**2 + 2)/5 + 15*x**3*sqrt(3*x**2 + 2)/4 - 4*x**2*sqrt(3*x**
2 + 2)/5 + 25*x*sqrt(3*x**2 + 2)/4 - 4*sqrt(3*x**2 + 2)/15 + 5*sqrt(3)*asin
h(sqrt(6)*x/2)/2
```

3.1373 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{3+2x} \, dx$

Optimal. Leaf size=92

$$\frac{1}{24}(26-3x)\left(3x^2+2\right)^{3/2}+\frac{1}{16}(455-123x)\sqrt{3x^2+2}-\frac{455}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\right.$$

```
[Out] 1/24*(26-3*x)*(3*x^2+2)^(3/2)-1529/32*arcsinh(1/2*x*6^(1/2))*3^(1/2)-455/32
*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/16*(455-123*x)*(
3*x^2+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = $\{815, 844, 215, 725, 206\}$

$$\frac{1}{24}(26-3x)\left(3x^2+2\right)^{3/2}+\frac{1}{16}(455-123x)\sqrt{3x^2+2}-\frac{455}{32}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] ((455 - 123*x)*Sqrt[2 + 3*x^2])/16 + ((26 - 3*x)*(2 + 3*x^2)^(3/2))/24 - (1
529*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 - (455*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqr
t[35]*Sqrt[2 + 3*x^2])])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
```

```
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx &= \frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2}+\frac{1}{48}\int \frac{(516-1476x)\sqrt{2+3x^2}}{3+2x}\,dx\\
&= \frac{1}{16}(455-123x)\sqrt{2+3x^2}+\frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2}+\frac{\int \frac{77904-330264x}{(3+2x)\sqrt{2+3x^2}}\,dx}{1152}\\
&= \frac{1}{16}(455-123x)\sqrt{2+3x^2}+\frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2}-\frac{4587}{32}\int \frac{1}{\sqrt{2+3x^2}}\,dx+\\
&= \frac{1}{16}(455-123x)\sqrt{2+3x^2}+\frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2}-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\\
&= \frac{1}{16}(455-123x)\sqrt{2+3x^2}+\frac{1}{24}(26-3x)\left(2+3x^2\right)^{3/2}-\frac{1529}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.87

$$\frac{1}{96}\left(-1365\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-2\sqrt{3x^2+2}\left(18x^3-156x^2+381x-1469\right)-4587\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 3*x^2]*(-1469 + 381*x - 156*x^2 + 18*x^3) - 4587*Sqrt[3]*ArcSi
nh[Sqrt[3/2]*x] - 1365*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2]
)])/96
```

fricas [A] time = 0.57, size = 102, normalized size = 1.11

$$-\frac{1}{48}\left(18x^3-156x^2+381x-1469\right)\sqrt{3x^2+2}+\frac{1529}{64}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)+\frac{455}{64}\sqrt{35}\log\left(-\frac{\sqrt{35}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/48*(18*x^3 - 156*x^2 + 381*x - 1469)*sqrt(3*x^2 + 2) + 1529/64*sqrt(3)*l
og(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 455/64*sqrt(35)*log(-(sqrt(35)*
sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.27, size = 116, normalized size = 1.26

$$-\frac{1}{48}(3(2(3x-26)x+127)x-1469)\sqrt{3x^2+2}+\frac{1529}{32}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{455}{32}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\right.}{2\sqrt{3}x-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/48*(3*(2*(3*x - 26)*x + 127)*x - 1469)*sqrt(3*x^2 + 2) + 1529/32*sqrt(3)
*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 455/32*sqrt(35)*log(-abs(-2*sqrt(3)*x
- sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqr
t(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 117, normalized size = 1.27

$$-\frac{\left(3x^2+2\right)^{\frac{3}{2}} x}{8}-\frac{3\sqrt{3x^2+2}\ x}{8}-\frac{117\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\ x}{16}-\frac{1529\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{32}-455\sqrt{35}\ \operatorname{arctanh}\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3),x)
```

```
[Out] -1/8*(3*x^2+2)^(3/2)*x-3/8*(3*x^2+2)^(1/2)*x-1529/32*arcsinh(1/2*6^(1/2)*x)
*3^(1/2)+13/12*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-117/16*(-9*x+3*(x+3/2)^2-19/4)
^(1/2)*x+455/32*(-36*x+12*(x+3/2)^2-19)^(1/2)-455/32*35^(1/2)*arctanh(2/35*
(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.40, size = 93, normalized size = 1.01

$$-\frac{1}{8}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{13}{12}\left(3\,x^2+2\right)^{\frac{3}{2}}-\frac{123}{16}\sqrt{3\,x^2+2}\,x-\frac{1529}{32}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{455}{32}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/8*(3*x^2 + 2)^(3/2)*x + 13/12*(3*x^2 + 2)^(3/2) - 123/16*sqrt(3*x^2 + 2)
*x - 1529/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 455/32*sqrt(35)*arcsinh(3/2*s
qrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 455/16*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 76, normalized size = 0.83

$$\frac{\sqrt{35}\left(31850\ \ln\left(x+\frac{3}{2}\right)-31850\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{2240}-\frac{1529\,\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{2}\ \sqrt{3}\,x}{2}\right)}{32}-\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\ \left(\frac{9\,x^3}{8}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(31850*log(x + 3/2) - 31850*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)
^(1/2))/9 - 4/9)))/2240 - (1529*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 -
(3^(1/2)*(x^2 + 2/3)^(1/2)*((381*x)/16 - (39*x^2)/4 + (9*x^3)/8 - 1469/16))
/3
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+2}}{2x+3}\right)dx-\int\frac{2x\sqrt{3x^2+2}}{2x+3}\,dx-\int\left(-\frac{15x^2\sqrt{3x^2+2}}{2x+3}\right)dx-\int\frac{3x^3\sqrt{3x^2+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integral(2*x*sqrt(3*x**2 + 2
)/(2*x + 3), x) - Integral(-15*x**2*sqrt(3*x**2 + 2)/(2*x + 3), x) - Integr
al(3*x**3*sqrt(3*x**2 + 2)/(2*x + 3), x)
```

3.1374 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=97

$$-\frac{(x+21)\left(3x^2+2\right)^{3/2}}{6(2x+3)}-\frac{1}{8}(193-63x)\sqrt{3x^2+2}+\frac{193}{16}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

```
[Out] -1/6*(21+x)*(3*x^2+2)^(3/2)/(3+2*x)+663/16*arcsinh(1/2*x*6^(1/2))*3^(1/2)+1
93/16*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-1/8*(193-63*x
)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {813, 815, 844, 215, 725, 206}

$$-\frac{(x+21)\left(3x^2+2\right)^{3/2}}{6(2x+3)}-\frac{1}{8}(193-63x)\sqrt{3x^2+2}+\frac{193}{16}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)+\frac{663}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] -((193 - 63*x)*Sqrt[2 + 3*x^2])/8 - ((21 + x)*(2 + 3*x^2)^(3/2))/(6*(3 + 2*
x)) + (663*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (193*Sqrt[35]*ArcTanh[(4 - 9*
x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/16
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx &= -\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)}-\frac{1}{8}\int \frac{(8-252x)\sqrt{2+3x^2}}{3+2x}\,dx \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2}-\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)}-\frac{1}{192}\int \frac{9456-47736x}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2}-\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)}+\frac{1989}{16}\int \frac{1}{\sqrt{2+3x^2}}\,dx-\frac{6755}{16} \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2}-\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)}+\frac{663}{16}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)+\frac{675}{16} \\
&= -\frac{1}{8}(193-63x)\sqrt{2+3x^2}-\frac{(21+x)\left(2+3x^2\right)^{3/2}}{6(3+2x)}+\frac{663}{16}\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)+\frac{193}{16}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 87, normalized size = 0.90

$$\frac{1}{48}\left(579\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{2\sqrt{3x^2+2}\,\left(12x^3-126x^2+599x+1905\right)}{2x+3}+1989\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(1905 + 599*x - 126*x^2 + 12*x^3))/(3 + 2*x) + 1989*Sq
rt[3]*ArcSinh[Sqrt[3/2]*x] + 579*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[
2 + 3*x^2])])/48
```

fricas [A] time = 0.62, size = 121, normalized size = 1.25

$$\frac{1989\,\sqrt{3}\,(2\,x+3)\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+579\,\sqrt{35}\,(2\,x+3)\log\left(\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)-93\,x^2+36\,x-43}{4\,x^2+12\,x+9}\right)-4}{96\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/96*(1989*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) +
579*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 3
6*x - 43)/(4*x^2 + 12*x + 9)) - 4*(12*x^3 - 126*x^2 + 599*x + 1905)*sqrt(3*
x^2 + 2))/(2*x + 3)
```

giac [B] time = 0.73, size = 475, normalized size = 4.90

$$\frac{193}{16}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{663}{16}\sqrt{3}\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 193/16*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sq
rt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 663/16*sqrt(3)*log(1/2*abs(-2*sqr
t(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3))/(
sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)))*s
gn(1/(2*x + 3)) - 455/32*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn(1/(2*
x + 3)) + 3/8*(704*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*
x + 3))^5*sgn(1/(2*x + 3)) - 323*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) + sqrt(35)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 1944*(sqrt(-18/(2*x + 3
) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 1158*sqr
t(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2*sgn
(1/(2*x + 3)) + 1872*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(
2*x + 3))*sgn(1/(2*x + 3)) - 1263*sqrt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*
x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)^3
```

maple [A] time = 0.05, size = 131, normalized size = 1.35

$$\frac{63\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{8}+\frac{39\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{70}+\frac{663\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{16}+\frac{193\sqrt{35}\,\operatorname{arctanh}}{16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-193/210*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)+63/8*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+663/16*arcsinh(1/2*6^(1/2)*x)*
3^(1/2)-193/16*(-36*x+12*(x+3/2)^2-19)^(1/2)+193/16*35^(1/2)*arctanh(2/35*(
-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(-9*x+3*(x+3/2)^2-1
9/4)^(3/2)
```

maxima [A] time = 1.34, size = 99, normalized size = 1.02

$$-\frac{1}{12}\left(3x^{2}+2\right)^{\frac{3}{2}}+\frac{63}{8}\sqrt{3x^{2}+2}\,x+\frac{663}{16}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)-\frac{193}{16}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)-\frac{193}{8}\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(3/2) + 63/8*sqrt(3*x^2 + 2)*x + 663/16*sqrt(3)*arcsinh(1
/2*sqrt(6)*x) - 193/16*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sq
rt(6)/abs(2*x + 3)) - 193/8*sqrt(3*x^2 + 2) - 13/4*(3*x^2 + 2)^(3/2)/(2*x +
 3)
```

mupad [B] time = 0.12, size = 108, normalized size = 1.11

$$\frac{663\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{815\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{48}-\frac{193\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{16}+\frac{193\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{16}-\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] (663*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (815*3^(1/2)*(x^2 + 2/3)^(1
/2))/48 - (193*35^(1/2)*log(x + 3/2))/16 + (193*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/16 - (3^(1/2)*x^2*(x^2 + 2/3)^(1/2))/4
 - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(32*(x + 3/2)) + 3*3^(1/2)*x*(x^2 + 2/3)
^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+2}}{4x^2+12x+9}\right)dx-\int\frac{2x\sqrt{3x^2+2}}{4x^2+12x+9}\,dx-\int\left(-\frac{15x^2\sqrt{3x^2+2}}{4x^2+12x+9}\right)dx-\int\frac{3x^3\sqrt{3x^2+2}}{4x^2+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(2*x*sqrt(
3*x**2 + 2)/(4*x**2 + 12*x + 9), x) - Integral(-15*x**2*sqrt(3*x**2 + 2)/(4
*x**2 + 12*x + 9), x) - Integral(3*x**3*sqrt(3*x**2 + 2)/(4*x**2 + 12*x + 9
), x)
```

3.1375 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=104

$$-\frac{(x+8)\left(3x^2+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(12x+37)\sqrt{3x^2+2}}{4(2x+3)}-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

```
[Out] -1/4*(8+x)*(3*x^2+2)^(3/2)/(3+2*x)^2-111/8*arcsinh(1/2*x*6^(1/2))*3^(1/2)-1
143/280*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+3/4*(37+12*
x)*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {813, 844, 215, 725, 206}

$$-\frac{(x+8)\left(3x^2+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(12x+37)\sqrt{3x^2+2}}{4(2x+3)}-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (3*(37 + 12*x)*Sqrt[2 + 3*x^2])/(4*(3 + 2*x)) - ((8 + x)*(2 + 3*x^2)^(3/2))
/(4*(3 + 2*x)^2) - (111*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/8 - (1143*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx &= -\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{3}{32}\int \frac{(16-192x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx \\
&= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)}-\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2}+\frac{3}{256}\int \frac{1536-7104x}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)}-\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{333}{8}\int \frac{1}{\sqrt{2+3x^2}}\,dx+\frac{1143}{8}\int \frac{}{(3} \\
&= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)}-\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\frac{1143}{8}\text{Su} \\
&= \frac{3(37+12x)\sqrt{2+3x^2}}{4(3+2x)}-\frac{(8+x)\left(2+3x^2\right)^{3/2}}{4(3+2x)^2}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\frac{1143\tan}{}
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 89, normalized size = 0.86

$$
-\frac{1143\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8\sqrt{35}}-\frac{\sqrt{3x^2+2}\left(3x^3-48x^2-328x-317\right)}{4(2x+3)^2}-\frac{111}{8}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] -1/4*(Sqrt[2 + 3*x^2]*(-317 - 328*x - 48*x^2 + 3*x^3))/(3 + 2*x)^2 - (111*S
qrt[3]*ArcSinh[Sqrt[3/2]*x])/8 - (1143*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
 3*x^2])])/(8*Sqrt[35])
```

fricas [A] time = 0.56, size = 136, normalized size = 1.31

$$
\frac{3885\sqrt{3}\left(4x^2+12x+9\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+1143\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)}{4x^2+12}\right.}{560\left(4x^2+12x+9\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/560*(3885*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^
2 - 1) + 1143*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9
*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 140*(3*x^3 - 48*x^2 - 3
28*x - 317)*sqrt(3*x^2 + 2))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.28, size = 219, normalized size = 2.11

$$
-\frac{3}{16}\sqrt{3x^2+2}\,(x-19)+\frac{111}{8}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{1143}{280}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3}\right.}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3}x}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -3/16*sqrt(3*x^2 + 2)*(x - 19) + 111/8*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2
+ 2)) + 1143/280*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
+ 5/64*(1452*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 3013*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 2))^2 - 6528*sqrt(3)*x + 1048*sqrt(3) + 6528*sqrt(3*x^2 + 2))/((
sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
2)^2
```

maple [A] time = 0.05, size = 152, normalized size = 1.46

$$-\frac{171\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{70}-\frac{561\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{4900}-\frac{111\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{8}-\frac{1143\sqrt{35}\ \operatorname{arctanh}}{28}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+187/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(5/2)+381/1225*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-171/70*(-9*x+3*(
x+3/2)^2-19/4)^(1/2)*x-111/8*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+1143/280*(-36*x
+12*(x+3/2)^2-19)^(1/2)-1143/280*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-
36*x+12*(x+3/2)^2-19)^(1/2))-561/4900*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x
```

maxima [A] time = 1.30, size = 122, normalized size = 1.17

$$\frac{39}{280}\left(3x^{2}+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{5}{2}}}{70\left(4x^{2}+12x+9\right)}-\frac{171}{70}\sqrt{3x^{2}+2}\,x-\frac{111}{8}\sqrt{3}\ \operatorname{arcsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{1143}{280}\sqrt{35}\ \operatorname{arcsinh}\left(\frac{3\sqrt{6}\,x}{2\left|2x+3\right|}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/280*(3*x^2 + 2)^(3/2) - 13/70*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) - 171
/70*sqrt(3*x^2 + 2)*x - 111/8*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 1143/280*sqr
t(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 1143
/140*sqrt(3*x^2 + 2) + 187/280*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.82, size = 117, normalized size = 1.12

$$\frac{1143\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{280}+\frac{57\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{16}-\frac{111\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{2}\ \sqrt{3}\,x}{2}\right)}{8}-\frac{1143\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{280}+\frac{655\sqrt{3}}{64}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (1143*35^(1/2)*log(x + 3/2))/280 + (57*3^(1/2)*(x^2 + 2/3)^(1/2))/16 - (111
*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/8 - (1143*35^(1/2)*log(x - (3^(1/2)*
35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/280 + (655*3^(1/2)*(x^2 + 2/3)^(1/2))
/(64*(x + 3/2)) - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(128*(3*x + x^2 + 9/4)) -
 (3*3^(1/2)*x*(x^2 + 2/3)^(1/2))/16
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**3,x)
```

```
[Out] Timed out
```

3.1376 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=106

$$\frac{(456x+229)\left(3x^2+2\right)^{3/2}}{420(2x+3)^3}-\frac{3(111x+385)\sqrt{3x^2+2}}{280(2x+3)}+\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}}+\frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

```
[Out] 1/420*(229+456*x)*(3*x^2+2)^(3/2)/(3+2*x)^3+33/16*arcsinh(1/2*x*6^(1/2))*3^
(1/2)+11727/19600*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-3
/280*(385+111*x)*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {811, 813, 844, 215, 725, 206}

$$\frac{(456x+229)\left(3x^2+2\right)^{3/2}}{420(2x+3)^3}-\frac{3(111x+385)\sqrt{3x^2+2}}{280(2x+3)}+\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}}+\frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] (-3*(385 + 111*x)*Sqrt[2 + 3*x^2])/(280*(3 + 2*x)) + ((229 + 456*x)*(2 + 3*
x^2)^(3/2))/(420*(3 + 2*x)^3) + (33*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (117
27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(560*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx = \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} - \frac{1}{560}\int \frac{(-624+1332x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{\int \frac{-10656+55440x}{(3+2x)\sqrt{2+3x^2}}\,dx}{4480}$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{99}{16}\int \frac{1}{\sqrt{2+3x^2}}\,dx -$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) +$$

$$= -\frac{3(385+111x)\sqrt{2+3x^2}}{280(3+2x)} + \frac{(229+456x)\left(2+3x^2\right)^{3/2}}{420(3+2x)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) +$$

Mathematica [A] time = 0.12, size = 89, normalized size = 0.84

$$\frac{11727\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{560\sqrt{35}} - \frac{\sqrt{3x^2+2}\left(1260x^3+24474x^2+48747x+30269\right)}{840(2x+3)^3} + \frac{33}{16}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] -1/840*(Sqrt[2 + 3*x^2]*(30269 + 48747*x + 24474*x^2 + 1260*x^3))/(3 + 2*x)
^3 + (33*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (11727*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/(560*Sqrt[35])
```

fricas [A] time = 0.65, size = 151, normalized size = 1.42

$$\frac{121275\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+35181\sqrt{35}\,(8x^3+36x^2+54x+27}{117600\,(8x^3+36x^2+5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/117600*(121275*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-sqrt(3)*sqrt(3*x
^2 + 2)*x - 3*x^2 - 1) + 35181*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log((s
qrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9))
 - 140*(1260*x^3 + 24474*x^2 + 48747*x + 30269)*sqrt(3*x^2 + 2))/(8*x^3 + 3
6*x^2 + 54*x + 27)
```

giac [B] time = 0.28, size = 265, normalized size = 2.50

$$-\frac{33}{16}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{11727}{19600}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3}{16}\sqrt{3x^2+2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -33/16*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 11727/19600*sqrt(35)*log
(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x
 - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/16*sqrt(3*x^2 + 2) - 1/11
20*sqrt(3)*(14792*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 189285*(sqrt(3)
*x - sqrt(3*x^2 + 2))^4 + 141030*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 -
561630*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 166480*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 2)) - 50144)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 2)) - 2)^3
```

maple [B] time = 0.06, size = 173, normalized size = 1.63

$$\frac{3933\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{9800}+\frac{1338\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{42875}+\frac{33\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{16}+\frac{11727\sqrt{35}\,\operatorname{arctanh}}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^4,x)
```

```
[Out] -1/2450/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-446/42875/(x+3/2)*(-9*x+3*(
x+3/2)^2-19/4)^(5/2)-3909/85750*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+3933/9800*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x+33/16*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-11727/196
00*(-36*x+12*(x+3/2)^2-19)^(1/2)+11727/19600*35^(1/2)*arctanh(2/35*(-9*x+4)
*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+1338/42875*(-9*x+3*(x+3/2)^2-19/4)
^(3/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.43, size = 150, normalized size = 1.42

$$\frac{3}{2450}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{105\left(8x^3+36x^2+54x+27\right)}-\frac{2\left(3x^2+2\right)^{\frac{5}{2}}}{1225\left(4x^2+12x+9\right)}+\frac{3933}{9800}\sqrt{3x^2+2}\,x+\frac{33}{16}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 3/2450*(3*x^2 + 2)^(3/2) - 13/105*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x
+ 27) - 2/1225*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) + 3933/9800*sqrt(3*x^2
+ 2)*x + 33/16*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 11727/19600*sqrt(35)*arcsin
h(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 11727/9800*sqrt(
3*x^2 + 2) - 223/1225*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [**B**] time = 0.12, size = 133, normalized size = 1.25

$$\frac{33\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{3\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{16}-\frac{11727\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{19600}+\frac{11727\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{19600}-156$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (33*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (3*3^(1/2)*(x^2 + 2/3)^(1/2)
)/16 - (11727*35^(1/2)*log(x + 3/2))/19600 + (11727*35^(1/2)*log(x - (3^(1/
2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/19600 - (1567*3^(1/2)*(x^2 + 2/3)^
(1/2))/(560*(x + 3/2)) + (77*3^(1/2)*(x^2 + 2/3)^(1/2))/(32*(3*x + x^2 + 9/
4)) - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(384*((27*x)/4 + (9*x^2)/2 + x^3 + 27
/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**4,x)
```

```
[Out] Timed out
```

3.1377 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=106

$$\frac{(491x+54)\left(3x^2+2\right)^{3/2}}{840(2x+3)^4}+\frac{3(4097x+2943)\sqrt{3x^2+2}}{19600(2x+3)^2}-\frac{39663\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

```
[Out] 1/840*(54+491*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-3/32*arcsinh(1/2*x*6^(1/2))*3^(1
/2)-39663/1372000*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+3
/19600*(2943+4097*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = $\{811, 844, 215, 725, 206\}$

$$\frac{(491x+54)\left(3x^2+2\right)^{3/2}}{840(2x+3)^4}+\frac{3(4097x+2943)\sqrt{3x^2+2}}{19600(2x+3)^2}-\frac{39663\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{39200\sqrt{35}}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (3*(2943 + 4097*x)*Sqrt[2 + 3*x^2])/(19600*(3 + 2*x)^2) + ((54 + 491*x)*(2
+ 3*x^2)^(3/2))/(840*(3 + 2*x)^4) - (3*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 - (
39663*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(39200*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 && !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx &= \frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4}-\frac{\int \frac{(-936+840x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{1120}\\ &= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2}+\frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4}+\frac{\int \frac{105408-352800x}{(3+2x)\sqrt{2+3x^2}}\,dx}{627200}\\ &= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2}+\frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4}-\frac{9}{32}\int \frac{1}{\sqrt{2+3x^2}}\,dx+-\\ &= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2}+\frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\\ &= \frac{3(2943+4097x)\sqrt{2+3x^2}}{19600(3+2x)^2}+\frac{(54+491x)\left(2+3x^2\right)^{3/2}}{840(3+2x)^4}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\end{aligned}$$

Mathematica [A] time = 0.15, size = 90, normalized size = 0.85

$$\frac{\frac{70\sqrt{3x^2+2}\left(250602x^3+559764x^2+718441x+245943\right)}{(2x+3)^4}-118989\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{4116000}-\frac{3}{32}\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] (-3*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + ((70*Sqrt[2 + 3*x^2]*(245943 + 71844
1*x + 559764*x^2 + 250602*x^3))/(3 + 2*x)^4 - 118989*Sqrt[35]*ArcTanh[(4 -
9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/4116000
```

fricas [A] time = 0.60, size = 166, normalized size = 1.57

$$\frac{385875\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+118989\sqrt{35}\left(16x^4+96x^3\right.}{8232000\left(16x^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/8232000*(385875*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(sqrt
(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 118989*sqrt(35)*(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x
 + 43)/(4*x^2 + 12*x + 9)) + 140*(250602*x^3 + 559764*x^2 + 718441*x + 2459
43)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.24, size = 106, normalized size = 1.00

$$-\frac{1}{470400}\left(\frac{35\left(\frac{35\left(\frac{1365\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-1193\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+16227\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-125301\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -1/470400*(35*(35*(1365*sgn(1/(2*x + 3))/(2*x + 3) - 1193*sgn(1/(2*x + 3)))
/(2*x + 3) + 16227*sgn(1/(2*x + 3)))/(2*x + 3) - 125301*sgn(1/(2*x + 3)))*s
qrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 41767/156800*sqrt(3)*sgn(1/(2*x +
 3))
```

maple [B] time = 0.07, size = 194, normalized size = 1.83

$$-\frac{7227\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{686000}+\frac{17337\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{12005000}-\frac{3\sqrt{3}\,\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{32}-\frac{39663\sqrt{35}\,\mathrm{arctan}}{13}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^5,x)
```

```
[Out] -211/117600/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-999/686000/(x+3/2)^2*(-
9*x+3*(x+3/2)^2-19/4)^(5/2)-5779/12005000/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(
5/2)+13221/6002500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-7227/686000*(-9*x+3*(x+3/2
)^2-19/4)^(1/2)*x-3/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+39663/1372000*(-36*x+
12*(x+3/2)^2-19)^(1/2)-39663/1372000*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2
)/(-36*x+12*(x+3/2)^2-19)^(1/2))+17337/12005000*(-9*x+3*(x+3/2)^2-19/4)^(3/
2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.45, size = 183, normalized size = 1.73

$$\frac{2997}{686000}\left(3x^{2}+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{5}{2}}}{140\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}-\frac{211\left(3x^{2}+2\right)^{\frac{5}{2}}}{14700\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{999\left(3x^{2}\right.}{171500\left(4x^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 2997/686000*(3*x^2 + 2)^(3/2) - 13/140*(3*x^2 + 2)^(5/2)/(16*x^4 + 96*x^3 +
 216*x^2 + 216*x + 81) - 211/14700*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x
 + 27) - 999/171500*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) - 7227/686000*sqrt
(3*x^2 + 2)*x - 3/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 39663/1372000*sqrt(35
)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 39663/68
6000*sqrt(3*x^2 + 2) - 5779/686000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 0.12, size = 155, normalized size = 1.46

$$\frac{39663\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1372000}-\frac{3\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{32}-\frac{39663\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1372000}-\frac{455\sqrt{3}\,\sqrt{x^{2}+}}{1024\left(x^{4}+6x^{3}+\frac{27x^{2}}{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (39663*35^(1/2)*log(x + 3/2))/1372000 - (3*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x
)/2))/32 - (39663*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 -
 4/9))/1372000 - (455*3^(1/2)*(x^2 + 2/3)^(1/2))/(1024*((27*x)/2 + (27*x^2)
/2 + 6*x^3 + x^4 + 81/16)) + (41767*3^(1/2)*(x^2 + 2/3)^(1/2))/(156800*(x +
 3/2)) - (5409*3^(1/2)*(x^2 + 2/3)^(1/2))/(8960*(3*x + x^2 + 9/4)) + (1193*
3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1378 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=109

$$-\frac{13\left(3x^2+2\right)^{5/2}}{175(2x+3)^5}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{4900(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{171500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750\sqrt{35}}$$

```
[Out] -41/4900*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-13/175*(3*x^2+2)^(5/2)/(3+2*x)^5
-1107/3001250*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-369/1
71500*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.05, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{807, 721, 725, 206\}$

$$-\frac{13\left(3x^2+2\right)^{5/2}}{175(2x+3)^5}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{4900(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{171500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (-369*(4 - 9*x)*Sqrt[2 + 3*x^2])/(171500*(3 + 2*x)^2) - (41*(4 - 9*x)*(2 +
3*x^2)^(3/2))/(4900*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(175*(3 + 2*x)^5)
 - (1107*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(85750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int\frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx=-\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5}+\frac{41}{35}\int\frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$

$$=-\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5}+\frac{369\int\frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{2450}$$

$$=-\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2}-\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5}+\frac{1107\int\frac{}{(3+2}}{85}$$

$$=-\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2}-\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5}-\frac{1107\,\mathrm{Subst}}{}$$

$$=-\frac{369(4-9x)\sqrt{2+3x^2}}{171500(3+2x)^2}-\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{4900(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{175(3+2x)^5}-\frac{1107\tanh^{-}}{857}$$

Mathematica [A] time = 0.10, size = 112, normalized size = 1.03

$$\frac{1}{350}\left(-\frac{26\left(3x^2+2\right)^{5/2}}{(2x+3)^5}+\frac{41(9x-4)\left(3x^2+2\right)^{3/2}}{14(2x+3)^4}-\frac{369\left(6\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35(9x-4)\sqrt{3x^2+2}}{(2x+3)^2}\right)}{17150}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] ((41*(-4 + 9*x)*(2 + 3*x^2)^(3/2))/(14*(3 + 2*x)^4) - (26*(2 + 3*x^2)^(5/2)
)/(3 + 2*x)^5 - (369*((-35*(-4 + 9*x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2 + 6*Sqrt
[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/17150)/350
```

fricas [A] time = 0.48, size = 134, normalized size = 1.23

$$\frac{1107\sqrt{35}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-35\left(10602\right.}{6002500\left(32x^5+240x^4+720x^3+1080x^2+810x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/6002500*(1107*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 2
43)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 +
 12*x + 9)) - 35*(10602*x^4 - 189543*x^3 + 26682*x^2 - 64493*x + 125252)*sq
rt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.27, size = 318, normalized size = 2.92

$$\frac{1107}{3001250}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{9\left(89686\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^9+138886\sqrt{3}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 1107/3001250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9/
2744000*(89686*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 138886*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^8 + 1224478*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 + 245133*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 1224531*(sqrt(3)*x - sqrt(3*x^2 + 2)
)^5 - 4374874*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 4855928*(sqrt(3)*x
- sqrt(3*x^2 + 2))^3 - 1339152*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 58
6816*sqrt(3)*x - 37696*sqrt(3) + 586816*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt
(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^5
```

maple [B] time = 0.07, size = 203, normalized size = 1.86

$$\frac{9963\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{6002500}+\frac{129519\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{210087500}-\frac{1107\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{3001250}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^6,x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-41/39200/(x+3/2)^4*(-9*x+3
*(x+3/2)^2-19/4)^(5/2)-369/686000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-3
813/12005000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-43173/210087500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+1476/52521875*(-9*x+3*(x+3/2)^2-19/4)^(3/2)
+9963/6002500*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+1107/3001250*(-36*x+12*(x+3/2
)^2-19)^(1/2)-1107/3001250*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+1
2*(x+3/2)^2-19)^(1/2))+129519/210087500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x
```

maxima [B] time = 1.32, size = 209, normalized size = 1.92

$$\frac{11439}{12005000}\left(3x^{2}+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{5}{2}}}{175\left(32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243\right)}-\frac{41\left(3x^{2}+2\right)^{\frac{5}{2}}}{2450\left(16x^{4}+96x^{3}+216x^{2}+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 11439/12005000*(3*x^2 + 2)^(3/2) - 13/175*(3*x^2 + 2)^(5/2)/(32*x^5 + 240*x
^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 41/2450*(3*x^2 + 2)^(5/2)/(16*x^4
+ 96*x^3 + 216*x^2 + 216*x + 81) - 369/85750*(3*x^2 + 2)^(5/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 3813/3001250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9) + 9963
/6002500*sqrt(3*x^2 + 2)*x + 1107/3001250*sqrt(35)*arcsinh(3/2*sqrt(6)*x/ab
s(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 1107/1500625*sqrt(3*x^2 + 2) - 431
73/12005000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.98, size = 179, normalized size = 1.64

$$\frac{1107\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{3001250}-\frac{1107\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{3001250}+\frac{731\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{2560\left(x^{4}+6x^{3}+\frac{27x^{2}}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{}{512\left(x^{5}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (1107*35^(1/2)*log(x + 3/2))/3001250 - (1107*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/3001250 + (731*3^(1/2)*(x^2 + 2/3)^(1/2))
```

```
/(2560*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (91*3^(1/2)*(x^2 +
2/3)^(1/2))/(512*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (5301*3^(1/2)*(x^2 + 2/3)^(1/2))/(2744000*(x + 3/2)) + (7233*3
^(1/2)*(x^2 + 2/3)^(1/2))/(156800*(3*x + x^2 + 9/4)) - (8349*3^(1/2)*(x^2 +
 2/3)^(1/2))/(44800*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1379 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=131

$$-\frac{29\left(3x^2+2\right)^{5/2}}{1750(2x+3)^5}-\frac{13\left(3x^2+2\right)^{5/2}}{210(2x+3)^6}-\frac{(4-9x)\left(3x^2+2\right)^{3/2}}{500(2x+3)^4}-\frac{9(4-9x)\sqrt{3x^2+2}}{17500(2x+3)^2}-\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8750\sqrt{35}}$$

```
[Out] -1/500*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-13/210*(3*x^2+2)^(5/2)/(3+2*x)^6-2
9/1750*(3*x^2+2)^(5/2)/(3+2*x)^5-27/306250*arctanh(1/35*(4-9*x)*35^(1/2)/(3
*x^2+2)^(1/2))*35^(1/2)-9/17500*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.07, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {835, 807, 721, 725, 206}

$$-\frac{29\left(3x^2+2\right)^{5/2}}{1750(2x+3)^5}-\frac{13\left(3x^2+2\right)^{5/2}}{210(2x+3)^6}-\frac{(4-9x)\left(3x^2+2\right)^{3/2}}{500(2x+3)^4}-\frac{9(4-9x)\sqrt{3x^2+2}}{17500(2x+3)^2}-\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8750\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (-9*(4 - 9*x)*Sqrt[2 + 3*x^2])/(17500*(3 + 2*x)^2) - ((4 - 9*x)*(2 + 3*x^2)
^(3/2))/(500*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(210*(3 + 2*x)^6) - (29*
(2 + 3*x^2)^(5/2))/(1750*(3 + 2*x)^5) - (27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqr
t[2 + 3*x^2])])/(8750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx &= -\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{1}{210}\int \frac{(-246+39x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}+\frac{7}{25}\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx\\
&= -\frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}+\frac{9}{250}\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}\,dx\\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2}-\frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}\\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2}-\frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}\\
&= -\frac{9(4-9x)\sqrt{2+3x^2}}{17500(3+2x)^2}-\frac{(4-9x)\left(2+3x^2\right)^{3/2}}{500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{210(3+2x)^6}-\frac{29\left(2+3x^2\right)^{5/2}}{1750(3+2x)^5}
\end{aligned}$$

Mathematica [A] time = 0.20, size = 137, normalized size = 1.05

$$\frac{1}{210}\left(-\frac{13\left(3x^2+2\right)^{5/2}}{(2x+3)^6}-\frac{3\left(10150\left(3x^2+2\right)^{5/2}+(2x+3)\left(-315(9x-4)\sqrt{3x^2+2}\,(2x+3)^2-1225(9x-4)\left(3x\right.\right.\right.}{8750(2x+3)^5}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6 - (3*(10150*(2 + 3*x^2)^(5/2) + (3 + 2
*x)*(-315*(3 + 2*x)^2*(-4 + 9*x)*Sqrt[2 + 3*x^2] - 1225*(-4 + 9*x)*(2 + 3*x
^2)^(3/2) + 54*Sqrt[35]*(3 + 2*x)^4*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*
x^2])])))/(8750*(3 + 2*x)^5))/210
```

fricas [A] time = 0.75, size = 149, normalized size = 1.14

$$\frac{81\sqrt{35}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-}{1837500\left(64x^6+576x^5+2160x^4+4320x^3+4860x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1837500*(81*sqrt(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 +
 2916*x + 729)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 4
3)/(4*x^2 + 12*x + 9)) - 35*(432*x^5 + 2160*x^4 - 39195*x^3 + 33180*x^2 + 3
675*x + 39748)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4
860*x^2 + 2916*x + 729)
```

giac [B] time = 0.31, size = 367, normalized size = 2.80

$$\frac{27}{306250}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3\sqrt{3}\left(96\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{11}+17877\left(\sqrt{3}x\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 27/306250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/280
000*sqrt(3)*(96*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 17877*(sqrt(3)*x
 - sqrt(3*x^2 + 2))^10 - 4120*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 258
60*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 225240*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 2))^7 - 173964*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 648336*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2))^5 + 641040*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 309440*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 135120*(sqrt(3)*x - sqrt(3*x^2 + 2
))^2 - 10752*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 1536)/((sqrt(3)*x - sq
rt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^6
```

maple [B] time = 0.06, size = 224, normalized size = 1.71

$$\frac{243\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{612500}+\frac{3159\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{21437500}-\frac{27\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{306250}-\frac{13\left(-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-29/56000/(x+3/2)^5*(-9*x+
3*(x+3/2)^2-19/4)^(5/2)-1/4000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-9/70
000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-93/1225000/(x+3/2)^2*(-9*x+3*(x
+3/2)^2-19/4)^(5/2)-1053/21437500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+36/
5359375*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+243/612500*(-9*x+3*(x+3/2)^2-19/4)^(1
/2)*x+27/306250*(-36*x+12*(x+3/2)^2-19)^(1/2)-27/306250*35^(1/2)*arctanh(2/
35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+3159/21437500*(-9*x+3*(
x+3/2)^2-19/4)^(3/2)*x
```

maxima [B] time = 1.32, size = 252, normalized size = 1.92

$$\frac{279}{1225000}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{210\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{}{1750\left(32x^5+240x^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 279/1225000*(3*x^2 + 2)^(3/2) - 13/210*(3*x^2 + 2)^(5/2)/(64*x^6 + 576*x^5
+ 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 29/1750*(3*x^2 + 2)^(5/2
)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 1/250*(3*x^2 + 2)
^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 9/8750*(3*x^2 + 2)^(5/2)/
(8*x^3 + 36*x^2 + 54*x + 27) - 93/306250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x +
9) + 243/612500*sqrt(3*x^2 + 2)*x + 27/306250*sqrt(35)*arcsinh(3/2*sqrt(6)*
x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 27/153125*sqrt(3*x^2 + 2) - 10
53/1225000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 1.86, size = 223, normalized size = 1.70

$$\frac{27\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{306250}-\frac{27\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{306250}-\frac{5977\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{89600\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}+\frac{}{5120\left(x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (27*35^(1/2)*log(x + 3/2))/306250 - (27*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*
(x^2 + 2/3)^(1/2))/9 - 4/9))/306250 - (5977*3^(1/2)*(x^2 + 2/3)^(1/2))/(896
00*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (577*3^(1/2)*(x^2 + 2/3
)^(1/2))/(5120*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 +
243/32)) - (9*3^(1/2)*(x^2 + 2/3)^(1/2))/(70000*(x + 3/2)) - (455*3^(1/2)*(
x^2 + 2/3)^(1/2))/(6144*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^
4)/4 + 9*x^5 + x^6 + 729/64)) + (9*3^(1/2)*(x^2 + 2/3)^(1/2))/(28000*(3*x +
 x^2 + 9/4)) + (2829*3^(1/2)*(x^2 + 2/3)^(1/2))/(224000*((27*x)/4 + (9*x^2)
/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1380 $\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=153

$$-\frac{822\left(3x^2+2\right)^{5/2}}{214375(2x+3)^5}-\frac{404\left(3x^2+2\right)^{5/2}}{25725(2x+3)^6}-\frac{13\left(3x^2+2\right)^{5/2}}{245(2x+3)^7}-\frac{2689(4-9x)\left(3x^2+2\right)^{3/2}}{6002500(2x+3)^4}-\frac{24201(4-9x)\sqrt{3x^2+2}}{210087500(2x+3)^2}-\frac{726}{}$$

```
[Out] -2689/6002500*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-13/245*(3*x^2+2)^(5/2)/(3+2
*x)^7-404/25725*(3*x^2+2)^(5/2)/(3+2*x)^6-822/214375*(3*x^2+2)^(5/2)/(3+2*x
)^5-72603/3676531250*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2
)-24201/210087500*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.10, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{822\left(3x^2+2\right)^{5/2}}{214375(2x+3)^5}-\frac{404\left(3x^2+2\right)^{5/2}}{25725(2x+3)^6}-\frac{13\left(3x^2+2\right)^{5/2}}{245(2x+3)^7}-\frac{2689(4-9x)\left(3x^2+2\right)^{3/2}}{6002500(2x+3)^4}-\frac{24201(4-9x)\sqrt{3x^2+2}}{210087500(2x+3)^2}-\frac{726}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (-24201*(4 - 9*x)*Sqrt[2 + 3*x^2])/(210087500*(3 + 2*x)^2) - (2689*(4 - 9*x
)*(2 + 3*x^2)^(3/2))/(6002500*(3 + 2*x)^4) - (13*(2 + 3*x^2)^(5/2))/(245*(3
 + 2*x)^7) - (404*(2 + 3*x^2)^(5/2))/(25725*(3 + 2*x)^6) - (822*(2 + 3*x^2)
^(5/2))/(214375*(3 + 2*x)^5) - (72603*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])])/(105043750*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{3/2}}{(3+2x)^8}\,dx &= -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{1}{245}\int \frac{(-287+78x)\left(2+3x^2\right)^{3/2}}{(3+2x)^7}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6}+\frac{\int \frac{(13626-2424x)\left(2+3x^2\right)^{3/2}}{(3+2x)^6}\,dx}{51450}\\
&= -\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6}-\frac{822\left(2+3x^2\right)^{5/2}}{214375(3+2x)^5}+\frac{2689\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx}{42875}\\
&= -\frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2+3x^2\right)^{5/2}}{25725(3+2x)^6}-\frac{822\left(2+3x^2\right)}{214375(3+2}\\
&= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2}-\frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2\right.}{25725}\\
&= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2}-\frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2\right.}{25725}\\
&= -\frac{24201(4-9x)\sqrt{2+3x^2}}{210087500(3+2x)^2}-\frac{2689(4-9x)\left(2+3x^2\right)^{3/2}}{6002500(3+2x)^4}-\frac{13\left(2+3x^2\right)^{5/2}}{245(3+2x)^7}-\frac{404\left(2\right.}{25725}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 161, normalized size = 1.05

$$\frac{1}{245}\left(-\frac{822\left(3x^2+2\right)^{5/2}}{875(2x+3)^5}-\frac{404\left(3x^2+2\right)^{5/2}}{105(2x+3)^6}-\frac{13\left(3x^2+2\right)^{5/2}}{(2x+3)^7}-\frac{2689\left(-315(9x-4)\sqrt{3x^2+2}\,(2x+3)^2-1225\right.}{3(}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7 - (404*(2 + 3*x^2)^(5/2))/(105*(3 + 2*
x)^6) - (822*(2 + 3*x^2)^(5/2))/(875*(3 + 2*x)^5) - (2689*(-315*(3 + 2*x)^2
*(-4 + 9*x)*Sqrt[2 + 3*x^2] - 1225*(-4 + 9*x)*(2 + 3*x^2)^(3/2) + 54*Sqrt[3
5]*(3 + 2*x)^4*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/(30012500*(3
 + 2*x)^4))/245
```

fricas [A] time = 0.81, size = 164, normalized size = 1.07

$$\frac{217809\sqrt{35}\left(128\,x^7+1344\,x^6+6048\,x^5+15120\,x^4+22680\,x^3+20412\,x^2+10206\,x+2187\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2}}{}\right.}{22059187500\left(128\,x^7+1344\,x^6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/22059187500*(217809*sqrt(35)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 +
 22680*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*
x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(5104296*x^6 + 443019
24*x^5 + 148868010*x^4 - 98810025*x^3 + 740031210*x^2 + 256388969*x + 47110
3116)*sqrt(3*x^2 + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x
^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.28, size = 408, normalized size = 2.67

$$\frac{72603}{3676531250}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-9\left(258144\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{13}+5033808\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 72603/3676531250*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
- 9/3361400000*(258144*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 + 5033808*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 2))^12 + 225898166*(sqrt(3)*x - sqrt(3*x^2 + 2))^1
1 + 26360013*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 555459995*(sqrt(3)*
x - sqrt(3*x^2 + 2))^9 - 2679767547*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^8
 - 4252091247*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 6029804778*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2))^6 + 11677158028*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 732
4195080*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 2245361152*(sqrt(3)*x - s
qrt(3*x^2 + 2))^3 - 675266496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 174
039168*sqrt(3)*x - 6049536*sqrt(3) - 174039168*sqrt(3*x^2 + 2))/((sqrt(3)*x
 - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^7
```

maple [A] time = 0.08, size = 245, normalized size = 1.60

$$\frac{653427\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\;x}{7353062500}+\frac{8494551\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{257357187500}-\frac{72603\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}}}\right.}{3676531250}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(3/2)/(2*x+3)^8,x)
```

```
[Out] -101/411600/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-411/3430000/(x+3/2)^5*(
-9*x+3*(x+3/2)^2-19/4)^(5/2)-2689/48020000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4
)^(5/2)-24201/840350000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-250077/1470
6125000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-2831517/257357187500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+96804/64339296875*(-9*x+3*(x+3/2)^2-19/4)^(
3/2)+653427/7353062500*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+72603/3676531250*(-3
6*x+12*(x+3/2)^2-19)^(1/2)-72603/3676531250*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+8494551/257357187500*(-9*x+3*(x+3/2
)^2-19/4)^(3/2)*x-13/31360/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.43, size = 300, normalized size = 1.96

$$\frac{750231}{14706125000}\left(3x^{2}+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{5}{2}}}{245\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(3/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 750231/14706125000*(3*x^2 + 2)^(3/2) - 13/245*(3*x^2 + 2)^(5/2)/(128*x^7 +
1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
 404/25725*(3*x^2 + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860
*x^2 + 2916*x + 729) - 822/214375*(3*x^2 + 2)^(5/2)/(32*x^5 + 240*x^4 + 720
*x^3 + 1080*x^2 + 810*x + 243) - 2689/3001250*(3*x^2 + 2)^(5/2)/(16*x^4 + 9
6*x^3 + 216*x^2 + 216*x + 81) - 24201/105043750*(3*x^2 + 2)^(5/2)/(8*x^3 +
36*x^2 + 54*x + 27) - 250077/3676531250*(3*x^2 + 2)^(5/2)/(4*x^2 + 12*x + 9
) + 653427/7353062500*sqrt(3*x^2 + 2)*x + 72603/3676531250*sqrt(35)*arcsinh
(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 72603/1838265625*
sqrt(3*x^2 + 2) - 2831517/14706125000*(3*x^2 + 2)^(3/2)/(2*x + 3)
```

mupad [B] time = 0.14, size = 272, normalized size = 1.78

$$\frac{72603\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{3676531250}-\frac{72603\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{3676531250}+\frac{92453\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{21952000\left(x^4+6\,x^3+\frac{27\,x^2}{2}+\frac{27\,x}{2}+\frac{81}{16}\right)}-\frac{}{19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(3/2)*(x - 5))/(2*x + 3)^8,x)
```

```
[Out] (72603*35^(1/2)*log(x + 3/2))/3676531250 - (72603*35^(1/2)*log(x - (3^(1/2)
*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/3676531250 + (92453*3^(1/2)*(x^2 + 2
/3)^(1/2))/(21952000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (507*
3^(1/2)*(x^2 + 2/3)^(1/2))/(19600*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 +
(15*x^4)/2 + x^5 + 243/32)) - (212679*3^(1/2)*(x^2 + 2/3)^(1/2))/(336140000
0*(x + 3/2)) + (125*3^(1/2)*(x^2 + 2/3)^(1/2))/(2688*((729*x)/16 + (1215*x^
2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (3897*3^(1/2)*
(x^2 + 2/3)^(1/2))/(192080000*(3*x + x^2 + 9/4)) - (65*3^(1/2)*(x^2 + 2/3)^
(1/2))/(2048*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (
189*x^5)/4 + (21*x^6)/2 + x^7 + 2187/128)) + (7569*3^(1/2)*(x^2 + 2/3)^(1/2
))/(54880000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(3/2)/(3+2*x)**8,x)
```

```
[Out] Timed out
```

3.1381 $\int (5-x)(3+2x)^4\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=154

$$-\frac{1}{33}\left(3x^2+2\right)^{7/2}(2x+3)^4+\frac{49}{165}\left(3x^2+2\right)^{7/2}(2x+3)^3+\frac{6433\left(3x^2+2\right)^{7/2}(2x+3)^2}{4455}+\frac{2(62244x+181243)\left(3x^2+2\right.}{13365}$$

```
[Out] 4991/36*x*(3*x^2+2)^(3/2)+4991/90*x*(3*x^2+2)^(5/2)+6433/4455*(3+2*x)^2*(3*
x^2+2)^(7/2)+49/165*(3+2*x)^3*(3*x^2+2)^(7/2)-1/33*(3+2*x)^4*(3*x^2+2)^(7/2
)+2/13365*(181243+62244*x)*(3*x^2+2)^(7/2)+4991/18*arcsinh(1/2*x*6^(1/2))*3
^(1/2)+4991/12*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{33}\left(3x^2+2\right)^{7/2}(2x+3)^4+\frac{49}{165}\left(3x^2+2\right)^{7/2}(2x+3)^3+\frac{6433\left(3x^2+2\right)^{7/2}(2x+3)^2}{4455}+\frac{2(62244x+181243)\left(3x^2+2\right.}{13365}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (4991*x*Sqrt[2 + 3*x^2])/12 + (4991*x*(2 + 3*x^2)^(3/2))/36 + (4991*x*(2 +
3*x^2)^(5/2))/90 + (6433*(3 + 2*x)^2*(2 + 3*x^2)^(7/2))/4455 + (49*(3 + 2*x
)^3*(2 + 3*x^2)^(7/2))/165 - ((3 + 2*x)^4*(2 + 3*x^2)^(7/2))/33 + (2*(18124
3 + 62244*x)*(2 + 3*x^2)^(7/2))/13365 + (4991*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt
[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4\left(2+3x^2\right)^{5/2}\,dx = -\frac{1}{33}(3+2x)^4\left(2+3x^2\right)^{7/2}+\frac{1}{33}\int (3+2x)^3(511+294x)\left(2+3x^2\right)^{5/2}\,dx$$

$$= \frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4\left(2+3x^2\right)^{7/2}+\frac{1}{990}\int (3+2x)^2($$

$$= \frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4(2$$

$$= \frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3\left(2+3x^2\right)^{7/2}-\frac{1}{33}(3+2x)^4(2$$

$$= \frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+\frac{49}{165}(3+2x)^3(2+3x$$

$$= \frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+2x)^2\left(2+3x^2\right)^{7/2}}{4455}+$$

$$= \frac{4991}{12}x\sqrt{2+3x^2}+\frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+}{}$$

$$= \frac{4991}{12}x\sqrt{2+3x^2}+\frac{4991}{36}x\left(2+3x^2\right)^{3/2}+\frac{4991}{90}x\left(2+3x^2\right)^{5/2}+\frac{6433(3+}{}$$

Mathematica [A] time = 0.09, size = 85, normalized size = 0.55

$$\frac{\sqrt{3x^2+2}\,(-699840x^{10}-769824x^9+12921120x^8+50615928x^7+93646260x^6+129966606x^5+150762600}{53460}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(19537120 + 64370295*x + 92160240*x^2 + 127123425*x^3 + 15
0762600*x^4 + 129966606*x^5 + 93646260*x^6 + 50615928*x^7 + 12921120*x^8 -
769824*x^9 - 699840*x^10))/53460 + (4991*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

fricas [A] time = 0.61, size = 90, normalized size = 0.58

$$-\frac{1}{53460}\,(699840\,x^{10}+769824\,x^9-12921120\,x^8-50615928\,x^7-93646260\,x^6-129966606\,x^5-150762600$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/53460*(699840*x^10 + 769824*x^9 - 12921120*x^8 - 50615928*x^7 - 93646260
*x^6 - 129966606*x^5 - 150762600*x^4 - 127123425*x^3 - 92160240*x^2 - 64370
295*x - 19537120)*sqrt(3*x^2 + 2) + 4991/36*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2
 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 82, normalized size = 0.53

$$-\frac{1}{53460}\,(3\,((9\,(2\,((2\,(6\,(4\,(27\,(10\,x+11)x-4985)x-78111)x-867095)x-2406789)x-2791900)x-470827$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/53460*(3*((9*(2*((2*(6*(4*(27*(10*x + 11)*x - 4985)*x - 78111)*x - 86709
5)*x - 2406789)*x - 2791900)*x - 4708275)*x - 30720080)*x - 21456765)*x - 1
9537120)*sqrt(3*x^2 + 2) - 4991/18*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)
)
```

maple [A] time = 0.07, size = 115, normalized size = 0.75

$$-\frac{16\left(3x^{2}+2\right)^{\frac{7}{2}}x^{4}}{33}-\frac{8\left(3x^{2}+2\right)^{\frac{7}{2}}x^{3}}{15}+\frac{8840\left(3x^{2}+2\right)^{\frac{7}{2}}x^{2}}{891}+\frac{542\left(3x^{2}+2\right)^{\frac{7}{2}}x}{15}+\frac{4991\left(3x^{2}+2\right)^{\frac{5}{2}}x}{90}+\frac{4991\left(3x^{2}+2\right)}{36}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+2)^(5/2),x)
```

```
[Out] -16/33*x^4*(3*x^2+2)^(7/2)+8840/891*x^2*(3*x^2+2)^(7/2)+122107/2673*(3*x^2+
2)^(7/2)-8/15*x^3*(3*x^2+2)^(7/2)+542/15*x*(3*x^2+2)^(7/2)+4991/90*(3*x^2+2
)^(5/2)*x+4991/36*(3*x^2+2)^(3/2)*x+4991/12*(3*x^2+2)^(1/2)*x+4991/18*arcsi
nh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.10, size = 114, normalized size = 0.74

$$-\frac{16}{33}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x^{4}-\frac{8}{15}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x^{3}+\frac{8840}{891}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x^{2}+\frac{542}{15}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x+\frac{122107}{2673}\left(3\,x^{2}+2\right)^{\frac{7}{2}}+\frac{4991}{90}\left(3\,x^{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/33*(3*x^2 + 2)^(7/2)*x^4 - 8/15*(3*x^2 + 2)^(7/2)*x^3 + 8840/891*(3*x^2
 + 2)^(7/2)*x^2 + 542/15*(3*x^2 + 2)^(7/2)*x + 122107/2673*(3*x^2 + 2)^(7/2
) + 4991/90*(3*x^2 + 2)^(5/2)*x + 4991/36*(3*x^2 + 2)^(3/2)*x + 4991/12*sqr
t(3*x^2 + 2)*x + 4991/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.75, size = 75, normalized size = 0.49

$$\frac{4991\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\left(-\frac{432\,x^{10}}{11}-\frac{216\,x^{9}}{5}+\frac{7976\,x^{8}}{11}+\frac{14202\,x^{7}}{5}+\frac{173419\,x^{6}}{33}+\frac{72933\,x^{5}}{10}+\frac{279190\,x^{4}}{33}+\frac{28535}{4}\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (4991*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((14449
*x)/4 + (1536004*x^2)/297 + (28535*x^3)/4 + (279190*x^4)/33 + (72933*x^5)/1
0 + (173419*x^6)/33 + (14202*x^7)/5 + (7976*x^8)/11 - (216*x^9)/5 - (432*x^
10)/11 + 976856/891))/3
```

sympy [A] time = 113.01, size = 199, normalized size = 1.29

$$-\frac{144x^{10}\sqrt{3x^{2}+2}}{11}-\frac{72x^{9}\sqrt{3x^{2}+2}}{5}+\frac{7976x^{8}\sqrt{3x^{2}+2}}{33}+\frac{4734x^{7}\sqrt{3x^{2}+2}}{5}+\frac{173419x^{6}\sqrt{3x^{2}+2}}{99}+\frac{24311x^{5}\sqrt{3x^{2}+}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+2)**(5/2),x)
```

```
[Out] -144*x**10*sqrt(3*x**2 + 2)/11 - 72*x**9*sqrt(3*x**2 + 2)/5 + 7976*x**8*sqr
t(3*x**2 + 2)/33 + 4734*x**7*sqrt(3*x**2 + 2)/5 + 173419*x**6*sqrt(3*x**2 +
 2)/99 + 24311*x**5*sqrt(3*x**2 + 2)/10 + 279190*x**4*sqrt(3*x**2 + 2)/99 +
 28535*x**3*sqrt(3*x**2 + 2)/12 + 1536004*x**2*sqrt(3*x**2 + 2)/891 + 14449
*x*sqrt(3*x**2 + 2)/12 + 976856*sqrt(3*x**2 + 2)/2673 + 4991*sqrt(3)*asinh(
sqrt(6)*x/2)/18
```

3.1382 $\int (5-x)(3+2x)^3\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=132

$$-\frac{1}{30}(2x+3)^3\left(3x^2+2\right)^{7/2}+\frac{91}{270}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{(4977x+15244)\left(3x^2+2\right)^{7/2}}{1620}+\frac{3731}{180}x\left(3x^2+2\right)^{5/2}+\frac{3731}{72}x\big($$

```
[Out] 3731/72*x*(3*x^2+2)^(3/2)+3731/180*x*(3*x^2+2)^(5/2)+91/270*(3+2*x)^2*(3*x^
2+2)^(7/2)-1/30*(3+2*x)^3*(3*x^2+2)^(7/2)+1/1620*(15244+4977*x)*(3*x^2+2)^(
7/2)+3731/36*arcsinh(1/2*x*6^(1/2))*3^(1/2)+3731/24*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {833, 780, 195, 215}

$$-\frac{1}{30}(2x+3)^3\left(3x^2+2\right)^{7/2}+\frac{91}{270}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{(4977x+15244)\left(3x^2+2\right)^{7/2}}{1620}+\frac{3731}{180}x\left(3x^2+2\right)^{5/2}+\frac{3731}{72}x\big($$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (3731*x*Sqrt[2 + 3*x^2])/24 + (3731*x*(2 + 3*x^2)^(3/2))/72 + (3731*x*(2 +
3*x^2)^(5/2))/180 + (91*(3 + 2*x)^2*(2 + 3*x^2)^(7/2))/270 - ((3 + 2*x)^3*(
2 + 3*x^2)^(7/2))/30 + ((15244 + 4977*x)*(2 + 3*x^2)^(7/2))/1620 + (3731*Ar
cSinh[Sqrt[3/2]*x])/(12*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int (5-x)(3+2x)^3\left(2+3x^2\right)^{5/2}\,dx &= -\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{1}{30}\int (3+2x)^2(462+273x)\left(2+3x^2\right)^{5/2}\,dx\\
&= \frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{1}{810}\int (3+2x)(\\
&= \frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)^{7/2}+\frac{(15244+4977x)}{1620}\\
&= \frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+3x^2\right)\\
&= \frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+2x)^2\left(2+3x^2\right)^{7/2}-\\
&= \frac{3731}{24}x\sqrt{2+3x^2}+\frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+\\
&= \frac{3731}{24}x\sqrt{2+3x^2}+\frac{3731}{72}x\left(2+3x^2\right)^{3/2}+\frac{3731}{180}x\left(2+3x^2\right)^{5/2}+\frac{91}{270}(3+
\end{aligned}
$$

Mathematica [**A**] time = 0.08, size = 80, normalized size = 0.61

$$\frac{335790\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-\sqrt{3x^2+2}\,\left(23328x^9-12960x^8-418446x^7-1035720x^6-1503522x^5-203688}{3240}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-299200 - 1245915*x - 1350240*x^2 - 1922805*x^3 - 20368
80*x^4 - 1503522*x^5 - 1035720*x^6 - 418446*x^7 - 12960*x^8 + 23328*x^9)) +
 335790*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/3240
```

fricas [**A**] time = 0.88, size = 85, normalized size = 0.64

$$-\frac{1}{3240}\left(23328\,x^9-12960\,x^8-418446\,x^7-1035720\,x^6-1503522\,x^5-2036880\,x^4-1922805\,x^3-1350240\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3240*(23328*x^9 - 12960*x^8 - 418446*x^7 - 1035720*x^6 - 1503522*x^5 - 2
036880*x^4 - 1922805*x^3 - 1350240*x^2 - 1245915*x - 299200)*sqrt(3*x^2 + 2
) + 3731/72*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [**A**] time = 0.23, size = 76, normalized size = 0.58

$$-\frac{1}{3240}\left(3\left(\left(9\left(2\left(\left(\left(3\left(16\left(9\,x-5\right)x-2583\right)x-19180\right)x-27843\right)x-37720\right)x-71215\right)x-450080\right)x-415305\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3240*(3*((9*(2*(((3*(16*(9*x - 5)*x - 2583)*x - 19180)*x - 27843)*x - 37
720)*x - 71215)*x - 450080)*x - 415305)*x - 299200)*sqrt(3*x^2 + 2) - 3731/
36*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 101, normalized size = 0.77

$$-\frac{4\left(3x^{2}+2\right)^{\frac{7}{2}}x^{3}}{15}+\frac{4\left(3x^{2}+2\right)^{\frac{7}{2}}x^{2}}{27}+\frac{319\left(3x^{2}+2\right)^{\frac{7}{2}}x}{60}+\frac{3731\left(3x^{2}+2\right)^{\frac{5}{2}}x}{180}+\frac{3731\left(3x^{2}+2\right)^{\frac{3}{2}}x}{72}+\frac{3731\sqrt{3x^{2}+2}\,x}{24}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+2)^(5/2),x)
```

```
[Out] -4/15*(3*x^2+2)^(7/2)*x^3+319/60*(3*x^2+2)^(7/2)*x+3731/180*(3*x^2+2)^(5/2)
*x+3731/72*(3*x^2+2)^(3/2)*x+3731/24*(3*x^2+2)^(1/2)*x+3731/36*arcsinh(1/2*
6^(1/2)*x)*3^(1/2)+4/27*(3*x^2+2)^(7/2)*x^2+935/81*(3*x^2+2)^(7/2)
```

maxima [A] time = 1.16, size = 100, normalized size = 0.76

$$-\frac{4}{15}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x^{3}+\frac{4}{27}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x^{2}+\frac{319}{60}\left(3\,x^{2}+2\right)^{\frac{7}{2}}x+\frac{935}{81}\left(3\,x^{2}+2\right)^{\frac{7}{2}}+\frac{3731}{180}\left(3\,x^{2}+2\right)^{\frac{5}{2}}x+\frac{3731}{72}\left(3\,x^{2}+2\right)^{\frac{3}{2}}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 2)^(7/2)*x^3 + 4/27*(3*x^2 + 2)^(7/2)*x^2 + 319/60*(3*x^2 +
2)^(7/2)*x + 935/81*(3*x^2 + 2)^(7/2) + 3731/180*(3*x^2 + 2)^(5/2)*x + 3731
/72*(3*x^2 + 2)^(3/2)*x + 3731/24*sqrt(3*x^2 + 2)*x + 3731/36*sqrt(3)*arcsi
nh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.75, size = 70, normalized size = 0.53

$$\frac{3731\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}\,\Bigg(-\frac{108\,x^{9}}{5}+12\,x^{8}+\frac{7749\,x^{7}}{20}+959\,x^{6}+\frac{27843\,x^{5}}{20}+1886\,x^{4}+\frac{14243\,x^{3}}{8}+\frac{11252\,x^{2}}{9}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (3731*3^(1/2)*asinh((6^(1/2)*x)/2))/36 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((9229*
x)/8 + (11252*x^2)/9 + (14243*x^3)/8 + 1886*x^4 + (27843*x^5)/20 + 959*x^6
+ (7749*x^7)/20 + 12*x^8 - (108*x^9)/5 + 7480/27))/3
```

sympy [A] time = 77.88, size = 180, normalized size = 1.36

$$-\frac{36x^{9}\sqrt{3x^{2}+2}}{5}+4x^{8}\sqrt{3x^{2}+2}+\frac{2583x^{7}\sqrt{3x^{2}+2}}{20}+\frac{959x^{6}\sqrt{3x^{2}+2}}{3}+\frac{9281x^{5}\sqrt{3x^{2}+2}}{20}+\frac{1886x^{4}\sqrt{3x^{2}+2}}{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+2)**(5/2),x)
```

```
[Out] -36*x**9*sqrt(3*x**2 + 2)/5 + 4*x**8*sqrt(3*x**2 + 2) + 2583*x**7*sqrt(3*x*
*2 + 2)/20 + 959*x**6*sqrt(3*x**2 + 2)/3 + 9281*x**5*sqrt(3*x**2 + 2)/20 +
1886*x**4*sqrt(3*x**2 + 2)/3 + 14243*x**3*sqrt(3*x**2 + 2)/24 + 11252*x**2*
sqrt(3*x**2 + 2)/27 + 9229*x*sqrt(3*x**2 + 2)/24 + 7480*sqrt(3*x**2 + 2)/81
 + 3731*sqrt(3)*asinh(sqrt(6)*x/2)/36
```

3.1383 $\int (5-x)(3+2x)^2\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=110

$$-\frac{1}{27}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{1}{81}(63x+226)\left(3x^2+2\right)^{7/2}+\frac{133}{18}x\left(3x^2+2\right)^{5/2}+\frac{665}{36}x\left(3x^2+2\right)^{3/2}+\frac{665}{12}x\sqrt{3x^2+2}+$$

```
[Out] 665/36*x*(3*x^2+2)^(3/2)+133/18*x*(3*x^2+2)^(5/2)-1/27*(3+2*x)^2*(3*x^2+2)^
(7/2)+1/81*(226+63*x)*(3*x^2+2)^(7/2)+665/18*arcsinh(1/2*x*6^(1/2))*3^(1/2)
+665/12*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {833, 780, 195, 215}

$$-\frac{1}{27}(2x+3)^2\left(3x^2+2\right)^{7/2}+\frac{1}{81}(63x+226)\left(3x^2+2\right)^{7/2}+\frac{133}{18}x\left(3x^2+2\right)^{5/2}+\frac{665}{36}x\left(3x^2+2\right)^{3/2}+\frac{665}{12}x\sqrt{3x^2+2}+$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (665*x*Sqrt[2 + 3*x^2])/12 + (665*x*(2 + 3*x^2)^(3/2))/36 + (133*x*(2 + 3*x
^2)^(5/2))/18 - ((3 + 2*x)^2*(2 + 3*x^2)^(7/2))/27 + ((226 + 63*x)*(2 + 3*x
^2)^(7/2))/81 + (665*ArcSinh[Sqrt[3/2]*x])/(6*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^2\left(2+3x^2\right)^{5/2}\,dx &= -\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{27}\int (3+2x)(413+252x)\left(2+3x^2\right)^{5/2}\,dx\\ &= -\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}(226+63x)\left(2+3x^2\right)^{7/2}+\frac{133}{3}\int \left(2+3x^2\right)\\ &= \frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}(226+63x)\left(2+3x^2\right)^{7/2}\\ &= \frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+3x^2\right)^{7/2}+\frac{1}{81}(226\\ &= \frac{665}{12}x\sqrt{2+3x^2}+\frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+\right.\\ &= \frac{665}{12}x\sqrt{2+3x^2}+\frac{665}{36}x\left(2+3x^2\right)^{3/2}+\frac{133}{18}x\left(2+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^2\left(2+\right.\end{aligned}$$

Mathematica [A] time = 0.07, size = 75, normalized size = 0.68

$$\frac{1}{324}\sqrt{3x^2+2}\left(-1296x^8+2916x^7+18900x^6+27378x^5+41256x^4+50571x^3+28272x^2+40365x+6368\right)+$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (Sqrt[2 + 3*x^2]*(6368 + 40365*x + 28272*x^2 + 50571*x^3 + 41256*x^4 + 2737
8*x^5 + 18900*x^6 + 2916*x^7 - 1296*x^8))/324 + (665*ArcSinh[Sqrt[3/2]*x])/
(6*Sqrt[3])
```

fricas [A] time = 0.66, size = 80, normalized size = 0.73

$$-\frac{1}{324}\left(1296\,x^8-2916\,x^7-18900\,x^6-27378\,x^5-41256\,x^4-50571\,x^3-28272\,x^2-40365\,x-6368\right)\sqrt{3\,x^2+2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/324*(1296*x^8 - 2916*x^7 - 18900*x^6 - 27378*x^5 - 41256*x^4 - 50571*x^3
 - 28272*x^2 - 40365*x - 6368)*sqrt(3*x^2 + 2) + 665/36*sqrt(3)*log(-sqrt(3
)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 72, normalized size = 0.65

$$-\frac{1}{324}\left(3\left(\left(9\left(2\left(\left(2\left(3\left(4\,x-9\right)x-175\right)x-507\right)x-764\right)x-1873\right)x-9424\right)x-13455\right)x-6368\right)\sqrt{3\,x^2+2}-\frac{665}{18}\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/324*(3*((9*(2*((2*(3*(4*x - 9)*x - 175)*x - 507)*x - 764)*x - 1873)*x -
9424)*x - 13455)*x - 6368)*sqrt(3*x^2 + 2) - 665/18*sqrt(3)*log(-sqrt(3)*x
+ sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 87, normalized size = 0.79

$$-\frac{4\left(3x^2+2\right)^{\frac{7}{2}}x^2}{27}+\frac{\left(3x^2+2\right)^{\frac{7}{2}}x}{3}+\frac{133\left(3x^2+2\right)^{\frac{5}{2}}x}{18}+\frac{665\left(3x^2+2\right)^{\frac{3}{2}}x}{36}+\frac{665\sqrt{3x^2+2}\,x}{12}+\frac{665\sqrt{3}\;\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+2)^(5/2),x)
```

```
[Out] -4/27*(3*x^2+2)^(7/2)*x^2+199/81*(3*x^2+2)^(7/2)+1/3*(3*x^2+2)^(7/2)*x+133/
18*(3*x^2+2)^(5/2)*x+665/36*(3*x^2+2)^(3/2)*x+665/12*(3*x^2+2)^(1/2)*x+665/
18*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.32, size = 86, normalized size = 0.78

$$-\frac{4}{27}\left(3x^2+2\right)^{\frac{7}{2}}x^2+\frac{1}{3}\left(3x^2+2\right)^{\frac{7}{2}}x+\frac{199}{81}\left(3x^2+2\right)^{\frac{7}{2}}+\frac{133}{18}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{665}{36}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{665}{12}\sqrt{3x^2+2}\,x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/27*(3*x^2 + 2)^(7/2)*x^2 + 1/3*(3*x^2 + 2)^(7/2)*x + 199/81*(3*x^2 + 2)^
(7/2) + 133/18*(3*x^2 + 2)^(5/2)*x + 665/36*(3*x^2 + 2)^(3/2)*x + 665/12*sq
rt(3*x^2 + 2)*x + 665/18*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 0.06, size = 65, normalized size = 0.59

$$\frac{665\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{18}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-12x^8+27x^7+175x^6+\frac{507x^5}{2}+382x^4+\frac{1873x^3}{4}+\frac{2356x^2}{9}+\frac{1495x}{4}+\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (665*3^(1/2)*asinh((6^(1/2)*x)/2))/18 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((1495*x
)/4 + (2356*x^2)/9 + (1873*x^3)/4 + 382*x^4 + (507*x^5)/2 + 175*x^6 + 27*x^
7 - 12*x^8 + 1592/27))/3
```

sympy [A] time = 50.47, size = 162, normalized size = 1.47

$$-4x^8\sqrt{3x^2+2}+9x^7\sqrt{3x^2+2}+\frac{175x^6\sqrt{3x^2+2}}{3}+\frac{169x^5\sqrt{3x^2+2}}{2}+\frac{382x^4\sqrt{3x^2+2}}{3}+\frac{1873x^3\sqrt{3x^2+2}}{12}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+2)**(5/2),x)
```

```
[Out] -4*x**8*sqrt(3*x**2 + 2) + 9*x**7*sqrt(3*x**2 + 2) + 175*x**6*sqrt(3*x**2 +
 2)/3 + 169*x**5*sqrt(3*x**2 + 2)/2 + 382*x**4*sqrt(3*x**2 + 2)/3 + 1873*x*
*3*sqrt(3*x**2 + 2)/12 + 2356*x**2*sqrt(3*x**2 + 2)/27 + 1495*x*sqrt(3*x**2
 + 2)/12 + 1592*sqrt(3*x**2 + 2)/81 + 665*sqrt(3)*asinh(sqrt(6)*x/2)/18
```

3.1384 $\int (5-x)(3+2x)\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=88

$$\frac{1}{12}(4-x)\left(3x^2+2\right)^{7/2}+\frac{91}{36}x\left(3x^2+2\right)^{5/2}+\frac{455}{72}x\left(3x^2+2\right)^{3/2}+\frac{455}{24}x\sqrt{3x^2+2}+\frac{455\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{12\sqrt{3}}$$

```
[Out] 455/72*x*(3*x^2+2)^(3/2)+91/36*x*(3*x^2+2)^(5/2)+1/12*(4-x)*(3*x^2+2)^(7/2)
+455/36*arcsinh(1/2*x*6^(1/2))*3^(1/2)+455/24*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {780, 195, 215}

$$\frac{1}{12}(4-x)\left(3x^2+2\right)^{7/2}+\frac{91}{36}x\left(3x^2+2\right)^{5/2}+\frac{455}{72}x\left(3x^2+2\right)^{3/2}+\frac{455}{24}x\sqrt{3x^2+2}+\frac{455\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{12\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (455*x*Sqrt[2 + 3*x^2])/24 + (455*x*(2 + 3*x^2)^(3/2))/72 + (91*x*(2 + 3*x^
2)^(5/2))/36 + ((4 - x)*(2 + 3*x^2)^(7/2))/12 + (455*ArcSinh[Sqrt[3/2]*x])/
(12*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)\left(2+3x^2\right)^{5/2}\,dx &= \frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{91}{6}\int \left(2+3x^2\right)^{5/2}\,dx\\ &= \frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{455}{18}\int \left(2+3x^2\right)^{3/2}\,dx\\ &= \frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)\left(2+3x^2\right)^{7/2}+\frac{455}{12}\int\\ &= \frac{455}{24}x\sqrt{2+3x^2}+\frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)(2+\\ \\ &= \frac{455}{24}x\sqrt{2+3x^2}+\frac{455}{72}x\left(2+3x^2\right)^{3/2}+\frac{91}{36}x\left(2+3x^2\right)^{5/2}+\frac{1}{12}(4-x)(2+\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 70, normalized size = 0.80

$$\frac{1}{72}\left(910\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-3\sqrt{3x^2+2}\left(54x^7-216x^6-438x^5-432x^4-1111x^3-288x^2-985x-64\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-3*Sqrt[2 + 3*x^2]*(-64 - 985*x - 288*x^2 - 1111*x^3 - 432*x^4 - 438*x^5 -
 216*x^6 + 54*x^7) + 910*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/72
```

fricas [**A**] time = 0.55, size = 75, normalized size = 0.85

$$-\frac{1}{24}\left(54x^7-216x^6-438x^5-432x^4-1111x^3-288x^2-985x-64\right)\sqrt{3x^2+2}+\frac{455}{72}\sqrt{3}\log(-\sqrt{3}\sqrt{3x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/24*(54*x^7 - 216*x^6 - 438*x^5 - 432*x^4 - 1111*x^3 - 288*x^2 - 985*x -
64)*sqrt(3*x^2 + 2) + 455/72*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2
 - 1)
```

giac [**A**] time = 0.21, size = 63, normalized size = 0.72

$$-\frac{1}{24}((((6((9(x-4)x-73)x-72)x-1111)x-288)x-985)x-64)\sqrt{3x^2+2}-\frac{455}{36}\sqrt{3}\log(-\sqrt{3}x+\sqrt{3x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/24*((((6*((9*(x - 4)*x - 73)*x - 72)*x - 1111)*x - 288)*x - 985)*x - 64)
*sqrt(3*x^2 + 2) - 455/36*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [**A**] time = 0.05, size = 73, normalized size = 0.83

$$-\frac{\left(3x^2+2\right)^{\frac{7}{2}}x}{12}+\frac{91\left(3x^2+2\right)^{\frac{5}{2}}x}{36}+\frac{455\left(3x^2+2\right)^{\frac{3}{2}}x}{72}+\frac{455\sqrt{3x^2+2}\,x}{24}+\frac{455\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\left(3x^2+2\right)^{\frac{7}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+2)^(5/2),x)
```

```
[Out] -1/12*(3*x^2+2)^(7/2)*x+91/36*(3*x^2+2)^(5/2)*x+455/72*(3*x^2+2)^(3/2)*x+45
5/24*(3*x^2+2)^(1/2)*x+455/36*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+1/3*(3*x^2+2)^
(7/2)
```

maxima [A] time = 1.16, size = 72, normalized size = 0.82

$$-\frac{1}{12}\left(3x^2+2\right)^{\frac{7}{2}}x+\frac{1}{3}\left(3x^2+2\right)^{\frac{7}{2}}+\frac{91}{36}\left(3x^2+2\right)^{\frac{5}{2}}x+\frac{455}{72}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{455}{24}\sqrt{3x^2+2}\,x+\frac{455}{36}\sqrt{3}\ \operatorname{arsinh}\Bigl(\frac{1}{2}\sqrt{6}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(7/2)*x + 1/3*(3*x^2 + 2)^(7/2) + 91/36*(3*x^2 + 2)^(5/2)
*x + 455/72*(3*x^2 + 2)^(3/2)*x + 455/24*sqrt(3*x^2 + 2)*x + 455/36*sqrt(3)
*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.86, size = 60, normalized size = 0.68

$$\frac{455\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{36}+\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\ \left(-\frac{27x^7}{4}+27x^6+\frac{219x^5}{4}+54x^4+\frac{1111x^3}{8}+36x^2+\frac{985x}{8}+8\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (455*3^(1/2)*asinh((6^(1/2)*x)/2))/36 + (3^(1/2)*(x^2 + 2/3)^(1/2)*((985*x)
/8 + 36*x^2 + (1111*x^3)/8 + 54*x^4 + (219*x^5)/4 + 27*x^6 - (27*x^7)/4 + 8
))/3
```

sympy [A] time = 34.01, size = 143, normalized size = 1.62

$$-\frac{9x^7\sqrt{3x^2+2}}{4}+9x^6\sqrt{3x^2+2}+\frac{73x^5\sqrt{3x^2+2}}{4}+18x^4\sqrt{3x^2+2}+\frac{1111x^3\sqrt{3x^2+2}}{24}+12x^2\sqrt{3x^2+2}+\frac{985x\sqrt{3x^2+}}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+2)**(5/2),x)
```

```
[Out] -9*x**7*sqrt(3*x**2 + 2)/4 + 9*x**6*sqrt(3*x**2 + 2) + 73*x**5*sqrt(3*x**2
+ 2)/4 + 18*x**4*sqrt(3*x**2 + 2) + 1111*x**3*sqrt(3*x**2 + 2)/24 + 12*x**2
*sqrt(3*x**2 + 2) + 985*x*sqrt(3*x**2 + 2)/24 + 8*sqrt(3*x**2 + 2)/3 + 455*
sqrt(3)*asinh(sqrt(6)*x/2)/36
```

3.1385 $\int (5-x)\left(2+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=83

$$-\frac{1}{21}\left(3x^2+2\right)^{7/2}+\frac{5}{6}x\left(3x^2+2\right)^{5/2}+\frac{25}{12}x\left(3x^2+2\right)^{3/2}+\frac{25}{4}x\sqrt{3x^2+2}+\frac{25\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

```
[Out] 25/12*x*(3*x^2+2)^(3/2)+5/6*x*(3*x^2+2)^(5/2)-1/21*(3*x^2+2)^(7/2)+25/6*arc
sinh(1/2*x*6^(1/2))*3^(1/2)+25/4*x*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.176, Rules used = {641, 195, 215}

$$-\frac{1}{21}\left(3x^2+2\right)^{7/2}+\frac{5}{6}x\left(3x^2+2\right)^{5/2}+\frac{25}{12}x\left(3x^2+2\right)^{3/2}+\frac{25}{4}x\sqrt{3x^2+2}+\frac{25\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (25*x*Sqrt[2 + 3*x^2])/4 + (25*x*(2 + 3*x^2)^(3/2))/12 + (5*x*(2 + 3*x^2)^(
5/2))/6 - (2 + 3*x^2)^(7/2)/21 + (25*ArcSinh[Sqrt[3/2]*x])/(2*Sqrt[3])
```

Rule 195

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^p)/(n*p
 + 1), x] + Dist[(a*n*p)/(n*p + 1), Int[(a + b*x^n)^(p - 1), x], x] /; Free
Q[{a, b}, x] && IGtQ[n, 0] && GtQ[p, 0] && (IntegerQ[2*p] || (EqQ[n, 2] &&
IntegerQ[4*p]) || (EqQ[n, 2] && IntegerQ[3*p]) || LtQ[Denominator[p + 1/n],
 Denominator[p]])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\left(2+3x^2\right)^{5/2}\,dx &= -\frac{1}{21}\left(2+3x^2\right)^{7/2}+5\int \left(2+3x^2\right)^{5/2}\,dx\\ &= \frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{3}\int \left(2+3x^2\right)^{3/2}\,dx\\ &= \frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{2}\int \sqrt{2+3x^2}\,dx\\ &= \frac{25}{4}x\sqrt{2+3x^2}+\frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25}{2}\int \frac{}{\sqrt{2}}\\ &= \frac{25}{4}x\sqrt{2+3x^2}+\frac{25}{12}x\left(2+3x^2\right)^{3/2}+\frac{5}{6}x\left(2+3x^2\right)^{5/2}-\frac{1}{21}\left(2+3x^2\right)^{7/2}+\frac{25\sinh^{-1}}{2\surd}\end{aligned}$$

Mathematica [A] time = 0.04, size = 65, normalized size = 0.78

$$\frac{1}{84}\left(350\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(108x^6-630x^5+216x^4-1365x^3+144x^2-1155x+32\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(32 - 1155*x + 144*x^2 - 1365*x^3 + 216*x^4 - 630*x^5 +
108*x^6)) + 350*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/84
```

fricas [A] time = 0.64, size = 70, normalized size = 0.84

$$-\frac{1}{84}\left(108\,x^6-630\,x^5+216\,x^4-1365\,x^3+144\,x^2-1155\,x+32\right)\sqrt{3\,x^2+2}+\frac{25}{12}\sqrt{3}\log\Big(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/84*(108*x^6 - 630*x^5 + 216*x^4 - 1365*x^3 + 144*x^2 - 1155*x + 32)*sqrt
(3*x^2 + 2) + 25/12*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 61, normalized size = 0.73

$$-\frac{1}{84}\left(3\left(\left(\left(6\left(\left(6\,x-35\right)x+12\right)x-455\right)x+48\right)x-385\right)x+32\right)\sqrt{3\,x^2+2}-\frac{25}{6}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/84*(3*(((6*((6*x - 35)*x + 12)*x - 455)*x + 48)*x - 385)*x + 32)*sqrt(3*
x^2 + 2) - 25/6*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 61, normalized size = 0.73

$$\frac{25\left(3x^2+2\right)^{\frac{3}{2}}x}{12}+\frac{5\left(3x^2+2\right)^{\frac{5}{2}}x}{6}+\frac{25\sqrt{3x^2+2}\,x}{4}+\frac{25\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{\left(3x^2+2\right)^{\frac{7}{2}}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2),x)
```

```
[Out] 25/12*(3*x^2+2)^(3/2)*x+5/6*(3*x^2+2)^(5/2)*x-1/21*(3*x^2+2)^(7/2)+25/6*arc
sinh(1/2*6^(1/2)*x)*3^(1/2)+25/4*(3*x^2+2)^(1/2)*x
```

maxima [A] time = 1.13, size = 60, normalized size = 0.72

$$-\frac{1}{21}\left(3\,x^2+2\right)^{\frac{7}{2}}+\frac{5}{6}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{25}{12}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{25}{4}\sqrt{3\,x^2+2}\,x+\frac{25}{6}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/21*(3*x^2 + 2)^(7/2) + 5/6*(3*x^2 + 2)^(5/2)*x + 25/12*(3*x^2 + 2)^(3/2)
*x + 25/4*sqrt(3*x^2 + 2)*x + 25/6*sqrt(3)*arcsinh(1/2*sqrt(6)*x)
```

mupad [B] time = 1.74, size = 55, normalized size = 0.66

$$\frac{25\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{27\,x^6}{7}-\frac{45\,x^5}{2}+\frac{54\,x^4}{7}-\frac{195\,x^3}{4}+\frac{36\,x^2}{7}-\frac{165\,x}{4}+\frac{8}{7}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x^2 + 2)^(5/2)*(x - 5),x)
```

```
[Out] (25*3^(1/2)*asinh((6^(1/2)*x)/2))/6 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((36*x^2)/
7 - (165*x)/4 - (195*x^3)/4 + (54*x^4)/7 - (45*x^5)/2 + (27*x^6)/7 + 8/7))/
3
```

sympy [A] time = 20.99, size = 131, normalized size = 1.58

$$-\frac{9x^6\sqrt{3x^2+2}}{7}+\frac{15x^5\sqrt{3x^2+2}}{2}-\frac{18x^4\sqrt{3x^2+2}}{7}+\frac{65x^3\sqrt{3x^2+2}}{4}-\frac{12x^2\sqrt{3x^2+2}}{7}+\frac{55x\sqrt{3x^2+2}}{4}-\frac{8\sqrt{3x^2+2}}{21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2),x)
```

```
[Out] -9*x**6*sqrt(3*x**2 + 2)/7 + 15*x**5*sqrt(3*x**2 + 2)/2 - 18*x**4*sqrt(3*x*
*2 + 2)/7 + 65*x**3*sqrt(3*x**2 + 2)/4 - 12*x**2*sqrt(3*x**2 + 2)/7 + 55*x*
sqrt(3*x**2 + 2)/4 - 8*sqrt(3*x**2 + 2)/21 + 25*sqrt(3)*asinh(sqrt(6)*x/2)/
6
```

3.1386 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{3+2x}\,dx$

Optimal. Leaf size=112

$$\frac{1}{60}(39-5x)\left(3x^2+2\right)^{5/2}+\frac{7}{96}(130-53x)\left(3x^2+2\right)^{3/2}+\frac{7}{64}(2275-691x)\sqrt{3x^2+2}-\frac{15925}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+}}\right.$$

```
[Out] 7/96*(130-53*x)*(3*x^2+2)^(3/2)+1/60*(39-5*x)*(3*x^2+2)^(5/2)-162673/384*ar
csinh(1/2*x*6^(1/2))*3^(1/2)-15925/128*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2
+2)^(1/2))*35^(1/2)+7/64*(2275-691*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {815, 844, 215, 725, 206}

$$\frac{1}{60}(39-5x)\left(3x^2+2\right)^{5/2}+\frac{7}{96}(130-53x)\left(3x^2+2\right)^{3/2}+\frac{7}{64}(2275-691x)\sqrt{3x^2+2}-\frac{15925}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (7*(2275 - 691*x)*Sqrt[2 + 3*x^2])/64 + (7*(130 - 53*x)*(2 + 3*x^2)^(3/2))/
96 + ((39 - 5*x)*(2 + 3*x^2)^(5/2))/60 - (162673*ArcSinh[Sqrt[3/2]*x])/(128
*Sqrt[3]) - (15925*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/
128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{3+2x}\,dx = \frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2} + \frac{1}{72}\int \frac{(756-2226x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx$$

$$= \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2} + \frac{1}{60}(39-5x)\left(2+3x^2\right)^{5/2} + \frac{\int \frac{(152712-1044792x)\sqrt{2+3x^2}}{3+2x}}{3456}$$

$$= \frac{7}{64}(2275-691x)\sqrt{2+3x^2} + \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2} + \frac{1}{60}(39-5x)\,(2+3x^2)$$

$$= \frac{7}{64}(2275-691x)\sqrt{2+3x^2} + \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2} + \frac{1}{60}(39-5x)\,(2+3x^2)$$

$$= \frac{7}{64}(2275-691x)\sqrt{2+3x^2} + \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2} + \frac{1}{60}(39-5x)\,(2+3x^2)$$

$$= \frac{7}{64}(2275-691x)\sqrt{2+3x^2} + \frac{7}{96}(130-53x)\left(2+3x^2\right)^{3/2} + \frac{1}{60}(39-5x)\,(2+3x^2)$$

Mathematica [A] time = 0.05, size = 90, normalized size = 0.80

$$\frac{-238875\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - 2\sqrt{3x^2+2}\left(720x^5-5616x^4+12090x^3-34788x^2+80295x-259571\right)}{1920}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 3*x^2]*(-259571 + 80295*x - 34788*x^2 + 12090*x^3 - 5616*x^4 +
 720*x^5) - 813365*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 238875*Sqrt[35]*ArcTanh[(
4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1920
```

fricas [A] time = 0.57, size = 112, normalized size = 1.00

$$-\frac{1}{960}\left(720\,x^5-5616\,x^4+12090\,x^3-34788\,x^2+80295\,x-259571\right)\sqrt{3\,x^2+2}+\frac{162673}{768}\sqrt{3}\,\log(\sqrt{3}\,\sqrt{3\,x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/960*(720*x^5 - 5616*x^4 + 12090*x^3 - 34788*x^2 + 80295*x - 259571)*sqrt
(3*x^2 + 2) + 162673/768*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 + 15925/256*sqrt(35)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 3
6*x + 43)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.28, size = 125, normalized size = 1.12

$$-\frac{1}{960}\,(3\,(2\,((24\,(5\,x-39)x+2015)x-5798)x+26765)x-259571)\sqrt{3\,x^2+2}+\frac{162673}{384}\sqrt{3}\,\log(-\sqrt{3}\,x+\sqrt{3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/960*(3*(2*((24*(5*x - 39)*x + 2015)*x - 5798)*x + 26765)*x - 259571)*sqr
t(3*x^2 + 2) + 162673/384*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 15925
/128*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 +
 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 162, normalized size = 1.45

$$-\frac{\left(3x^2+2\right)^{\frac{5}{2}} x}{12}-\frac{5\left(3x^2+2\right)^{\frac{3}{2}} x}{24}-\frac{5\sqrt{3x^2+2}\, x}{8}-\frac{117\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}} x}{32}-\frac{4797\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\, x}{64}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3),x)
```

```
[Out] -1/12*(3*x^2+2)^(5/2)*x-5/24*(3*x^2+2)^(3/2)*x-5/8*(3*x^2+2)^(1/2)*x-162673
/384*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+13/20*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-117
/32*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x-4797/64*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
+455/48*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+15925/128*(-36*x+12*(x+3/2)^2-19)^(1/
2)-15925/128*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19
)^(1/2))
```

maxima [A] time = 1.31, size = 116, normalized size = 1.04

$$-\frac{1}{12}\left(3\,x^2+2\right)^{\frac{5}{2}}x+\frac{13}{20}\left(3\,x^2+2\right)^{\frac{5}{2}}-\frac{371}{96}\left(3\,x^2+2\right)^{\frac{3}{2}}x+\frac{455}{48}\left(3\,x^2+2\right)^{\frac{3}{2}}-\frac{4837}{64}\sqrt{3\,x^2+2}\,x-\frac{162673}{384}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 2)^(5/2)*x + 13/20*(3*x^2 + 2)^(5/2) - 371/96*(3*x^2 + 2)^(3
/2)*x + 455/48*(3*x^2 + 2)^(3/2) - 4837/64*sqrt(3*x^2 + 2)*x - 162673/384*s
qrt(3)*arcsinh(1/2*sqrt(6)*x) + 15925/128*sqrt(35)*arcsinh(3/2*sqrt(6)*x/ab
s(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 15925/64*sqrt(3*x^2 + 2)
```

mupad [B] time = 1.81, size = 86, normalized size = 0.77

$$\frac{\sqrt{35}\,\left(1114750\,\ln\left(x+\frac{3}{2}\right)-1114750\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{8960}-\frac{162673\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{384}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3),x)
```

```
[Out] (35^(1/2)*(1114750*log(x + 3/2) - 1114750*log(x - (3^(1/2)*35^(1/2)*(x^2 +
2/3)^(1/2))/9 - 4/9)))/8960 - (162673*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))
/384 - (3^(1/2)*(x^2 + 2/3)^(1/2)*((16059*x)/64 - (8697*x^2)/80 + (1209*x^3
)/32 - (351*x^4)/20 + (9*x^5)/4 - 259571/320))/3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x),x)
```

```
[Out] Timed out
```

3.1387 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=117

$$-\frac{(x+34)\left(3x^2+2\right)^{5/2}}{10(2x+3)}-\frac{1}{24}(310-153x)\left(3x^2+2\right)^{3/2}-\frac{7}{16}(775-243x)\sqrt{3x^2+2}+\frac{5425}{32}\sqrt{35}\tanh^{-1}\Bigg(\frac{4-9x}{\sqrt{35}\sqrt{3x^2}}$$

```
[Out] -1/24*(310-153*x)*(3*x^2+2)^(3/2)-1/10*(34+x)*(3*x^2+2)^(5/2)/(3+2*x)+18543
/32*arcsinh(1/2*x*6^(1/2))*3^(1/2)+5425/32*arctanh(1/35*(4-9*x)*35^(1/2)/(3
*x^2+2)^(1/2))*35^(1/2)-7/16*(775-243*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = $\{813, 815, 844, 215, 725, 206\}$

$$-\frac{(x+34)\left(3x^2+2\right)^{5/2}}{10(2x+3)}-\frac{1}{24}(310-153x)\left(3x^2+2\right)^{3/2}-\frac{7}{16}(775-243x)\sqrt{3x^2+2}+\frac{5425}{32}\sqrt{35}\tanh^{-1}\Bigg(\frac{4-9x}{\sqrt{35}\sqrt{3x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] (-7*(775 - 243*x)*Sqrt[2 + 3*x^2])/16 - ((310 - 153*x)*(2 + 3*x^2)^(3/2))/2
4 - ((34 + x)*(2 + 3*x^2)^(5/2))/(10*(3 + 2*x)) + (18543*Sqrt[3]*ArcSinh[Sq
rt[3/2]*x])/32 + (5425*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2]
)])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^2}\,dx &= -\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}-\frac{1}{8}\int \frac{(8-408x)\left(2+3x^2\right)^{3/2}}{3+2x}\,dx\\
&= -\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2}-\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}-\frac{1}{384}\int \frac{(15456-163296x)\surd}{3+2x}\\
&= -\frac{7}{16}(775-243x)\sqrt{2+3x^2}-\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2}-\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}-\\
&= -\frac{7}{16}(775-243x)\sqrt{2+3x^2}-\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2}-\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}+\\
&= -\frac{7}{16}(775-243x)\sqrt{2+3x^2}-\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2}-\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}+\\
&= -\frac{7}{16}(775-243x)\sqrt{2+3x^2}-\frac{1}{24}(310-153x)\left(2+3x^2\right)^{3/2}-\frac{(34+x)\left(2+3x^2\right)^{5/2}}{10(3+2x)}+
\end{aligned}
$$

Mathematica [A] time = 0.13, size = 97, normalized size = 0.83

$$\frac{1}{480}\left(81375\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{2\sqrt{3x^2+2}\,\left(216x^5-1836x^4+5118x^3-19458x^2+89521x+26598\right.}{2x+3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(265989 + 89521*x - 19458*x^2 + 5118*x^3 - 1836*x^4 +
216*x^5))/(3 + 2*x) + 278145*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + 81375*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/480
```

fricas [A] time = 0.75, size = 131, normalized size = 1.12

$$\frac{278145\,\sqrt{3}\,(2\,x+3)\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+81375\,\sqrt{35}\,(2\,x+3)\log\left(\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)-93\,x^2+36\,x-43}{4\,x^2+12\,x+9}\right)-}{960\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/960*(278145*sqrt(3)*(2*x + 3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 + 81375*sqrt(35)*(2*x + 3)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^
2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 4*(216*x^5 - 1836*x^4 + 5118*x^3 - 194
58*x^2 + 89521*x + 265989)*sqrt(3*x^2 + 2))/(2*x + 3)
```

giac [**B**] time = 1.02, size = 665, normalized size = 5.68

$$\frac{5425}{32}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{18543}{32}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\right.}{2\left(\sqrt{3}+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] 5425/32*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + s
qrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) - 18543/32*sqrt(3)*log(1/2*abs(-2*
sqrt(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*x + 3)
)/(sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))
)*sgn(1/(2*x + 3)) - 15925/128*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3)*sgn
(1/(2*x + 3)) + 9/320*(238455*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + s
qrt(35)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 149045*sqrt(35)*(sqrt(-18/(2*x + 3)
 + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^8*sgn(1/(2*x + 3)) - 697600*(s
qrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^7*sgn(1/(2*x
+ 3)) + 719040*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35
)/(2*x + 3))^6*sgn(1/(2*x + 3)) + 4150566*(sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) + sqrt(35)/(2*x + 3))^5*sgn(1/(2*x + 3)) - 2707250*sqrt(35)*(sqrt(
-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^4*sgn(1/(2*x + 3)
) - 6756120*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))
^3*sgn(1/(2*x + 3)) + 4557000*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2
 + 3) + sqrt(35)/(2*x + 3))^2*sgn(1/(2*x + 3)) + 3563595*(sqrt(-18/(2*x + 3
) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))*sgn(1/(2*x + 3)) - 2833425*sq
rt(35)*sgn(1/(2*x + 3)))/((sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(
35)/(2*x + 3))^2 - 3)^5
```

maple [**A**] time = 0.05, size = 164, normalized size = 1.40

$$\frac{51\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{8}+\frac{1701\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{16}+\frac{39\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{70}+\frac{18543\sqrt{3}\ a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^2,x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-31/35*(-9*x+3*(x+3/2)^2-19/4)^
(5/2)+51/8*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+1701/16*(-9*x+3*(x+3/2)^2-19/4)^
(1/2)*x+18543/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-155/12*(-9*x+3*(x+3/2)^2-19
/4)^(3/2)-5425/32*(-36*x+12*(x+3/2)^2-19)^(1/2)+5425/32*35^(1/2)*arctanh(2/
35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+39/70*x*(-9*x+3*(x+3/2)
^2-19/4)^(5/2)
```

maxima [**A**] time = 1.24, size = 122, normalized size = 1.04

$$-\frac{1}{20}\left(3x^2+2\right)^{\frac{5}{2}}+\frac{51}{8}\left(3x^2+2\right)^{\frac{3}{2}}x-\frac{155}{12}\left(3x^2+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+2\right)^{\frac{5}{2}}}{4(2x+3)}+\frac{1701}{16}\sqrt{3x^2+2}\,x+\frac{18543}{32}\sqrt{3}\ \mathrm{arsinh}\left(\frac{1}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/20*(3*x^2 + 2)^(5/2) + 51/8*(3*x^2 + 2)^(3/2)*x - 155/12*(3*x^2 + 2)^(3/
2) - 13/4*(3*x^2 + 2)^(5/2)/(2*x + 3) + 1701/16*sqrt(3*x^2 + 2)*x + 18543/3
2*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 5425/32*sqrt(35)*arcsinh(3/2*sqrt(6)*x/a
bs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 5425/16*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 138, normalized size = 1.18

$$\frac{18543\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{32}-\frac{275027\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{960}-\frac{5425\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{32}+\frac{5425\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^2,x)
```

```
[Out] (18543*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 - (275027*3^(1/2)*(x^2 + 2/
3)^(1/2))/960 - (5425*35^(1/2)*log(x + 3/2))/32 + (5425*35^(1/2)*log(x - (3
^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/32 - (1393*3^(1/2)*x^2*(x^2 +
2/3)^(1/2))/80 + (9*3^(1/2)*x^3*(x^2 + 2/3)^(1/2))/2 - (9*3^(1/2)*x^4*(x^2
+ 2/3)^(1/2))/20 - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(128*(x + 3/2)) + (213
3*3^(1/2)*x*(x^2 + 2/3)^(1/2))/32
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**2,x)
```

```
[Out] Timed out
```

3.1388 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=126

$$-\frac{(2x+29)\left(3x^2+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(29x+178)\left(3x^2+2\right)^{3/2}}{32(2x+3)}+\frac{15}{64}(859-267x)\sqrt{3x^2+2}-\frac{12885}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9}{\sqrt{35}\sqrt{3x^2}}\right.$$

```
[Out] 5/32*(178+29*x)*(3*x^2+2)^(3/2)/(3+2*x)-1/16*(29+2*x)*(3*x^2+2)^(5/2)/(3+2*
x)^2-43995/128*arcsinh(1/2*x*6^(1/2))*3^(1/2)-12885/128*arctanh(1/35*(4-9*x
)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+15/64*(859-267*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {813, 815, 844, 215, 725, 206}

$$-\frac{(2x+29)\left(3x^2+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(29x+178)\left(3x^2+2\right)^{3/2}}{32(2x+3)}+\frac{15}{64}(859-267x)\sqrt{3x^2+2}-\frac{12885}{128}\sqrt{35}\tanh^{-1}\left(\frac{4-9}{\sqrt{35}\sqrt{3x^2}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (15*(859 - 267*x)*Sqrt[2 + 3*x^2])/64 + (5*(178 + 29*x)*(2 + 3*x^2)^(3/2))/
(32*(3 + 2*x)) - ((29 + 2*x)*(2 + 3*x^2)^(5/2))/(16*(3 + 2*x)^2) - (43995*S
qrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (12885*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^3}\,dx = -\frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{5}{64}\int \frac{(16-348x)\left(2+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$$

$$= \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} + \frac{5}{512}\int \frac{(2784-25632x)\sqrt{2+}}{3+2x}$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} + \frac{5}{}$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{13}{1}$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{43}{1}$$

$$= \frac{15}{64}(859-267x)\sqrt{2+3x^2} + \frac{5(178+29x)\left(2+3x^2\right)^{3/2}}{32(3+2x)} - \frac{(29+2x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^2} - \frac{43}{1}$$

Mathematica [A] time = 0.15, size = 97, normalized size = 0.77

$$\frac{1}{128}\left(-12885\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{2\sqrt{3x^2+2}\left(72x^5-696x^4+2826x^3-19268x^2-127403x-12618\right.}{(2x+3)^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-2*Sqrt[2 + 3*x^2]*(-126181 - 127403*x - 19268*x^2 + 2826*x^3 - 696*x^4 +
 72*x^5))/(3 + 2*x)^2 - 43995*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 12885*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/128
```

fricas [A] time = 0.63, size = 146, normalized size = 1.16

$$\frac{43995\sqrt{3}\left(4x^2+12x+9\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+12885\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)}{4x^2+12}\right.}{256\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/256*(43995*sqrt(3)*(4*x^2 + 12*x + 9)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x
^2 - 1) + 12885*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*
(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 4*(72*x^5 - 696*x^4 +
 2826*x^3 - 19268*x^2 - 127403*x - 126181)*sqrt(3*x^2 + 2))/(4*x^2 + 12*x +
 9)
```

giac [B] time = 0.29, size = 230, normalized size = 1.83

$$-\frac{1}{32}\left(3\left((3x-38)x+225\right)x-4177\right)\sqrt{3x^2+2}+\frac{43995}{128}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{12885}{128}\sqrt{35}\log\left(-\frac{|-2}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/32*(3*((3*x - 38)*x + 225)*x - 4177)*sqrt(3*x^2 + 2) + 43995/128*sqrt(3)
*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 12885/128*sqrt(35)*log(-abs(-2*sqrt(3)
*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*
sqrt(3) - 2*sqrt(3*x^2 + 2))) + 35/256*(11472*(sqrt(3)*x - sqrt(3*x^2 + 2))
^3 + 25829*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 57912*sqrt(3)*x + 8984
*sqrt(3) + 57912*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [A] time = 0.06, size = 185, normalized size = 1.47

$$-\frac{807\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{224}-\frac{4005\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{64}-\frac{1263\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{4900}-\frac{43995}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^3,x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+421/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(7/2)+2577/4900*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-807/224*(-9*x+3
*(x+3/2)^2-19/4)^(3/2)*x-4005/64*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-43995/128*
arcsinh(1/2*6^(1/2)*x)*3^(1/2)+859/112*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+12885/
128*(-36*x+12*(x+3/2)^2-19)^(1/2)-12885/128*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-1263/4900*(-9*x+3*(x+3/2)^2-19/4)^(
5/2)*x
```

maxima [A] time = 1.32, size = 145, normalized size = 1.15

$$\frac{39}{280}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{70\left(4x^2+12x+9\right)}-\frac{807}{224}\left(3x^2+2\right)^{\frac{3}{2}}x+\frac{859}{112}\left(3x^2+2\right)^{\frac{3}{2}}+\frac{421\left(3x^2+2\right)^{\frac{5}{2}}}{280\left(2x+3\right)}-\frac{4005}{64}\sqrt{3x^2+2}\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/280*(3*x^2 + 2)^(5/2) - 13/70*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) - 807
/224*(3*x^2 + 2)^(3/2)*x + 859/112*(3*x^2 + 2)^(3/2) + 421/280*(3*x^2 + 2)^
(5/2)/(2*x + 3) - 4005/64*sqrt(3*x^2 + 2)*x - 43995/128*sqrt(3)*arcsinh(1/2
*sqrt(6)*x) + 12885/128*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*s
qrt(6)/abs(2*x + 3)) + 12885/64*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 147, normalized size = 1.17

$$\frac{12885\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{128}+\frac{4177\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{32}-\frac{43995\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{12885\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{128}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^3,x)
```

```
[Out] (12885*35^(1/2)*log(x + 3/2))/128 + (4177*3^(1/2)*(x^2 + 2/3)^(1/2))/32 - (
43995*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/128 - (12885*35^(1/2)*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/128 + (57*3^(1/2)*x^2*(x^2 +
2/3)^(1/2))/16 - (9*3^(1/2)*x^3*(x^2 + 2/3)^(1/2))/32 + (39305*3^(1/2)*(x^2
 + 2/3)^(1/2))/(256*(x + 3/2)) - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(512*(3*
x + x^2 + 9/4)) - (675*3^(1/2)*x*(x^2 + 2/3)^(1/2))/32
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**3,x)
```

```
[Out] Timed out
```

3.1389 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=133

$$-\frac{(x+8)\left(3x^2+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(12x+37)\left(3x^2+2\right)^{3/2}}{12(2x+3)^2}-\frac{15(37x+119)\sqrt{3x^2+2}}{8(2x+3)}+\frac{3657}{16}\sqrt{\frac{5}{7}}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right.$$

```
[Out] 5/12*(37+12*x)*(3*x^2+2)^(3/2)/(3+2*x)^2-1/6*(8+x)*(3*x^2+2)^(5/2)/(3+2*x)^
3+3657/112*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1785/16*
arcsinh(1/2*x*6^(1/2))*3^(1/2)-15/8*(119+37*x)*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi **[A]** time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {813, 844, 215, 725, 206}

$$-\frac{(x+8)\left(3x^2+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(12x+37)\left(3x^2+2\right)^{3/2}}{12(2x+3)^2}-\frac{15(37x+119)\sqrt{3x^2+2}}{8(2x+3)}+\frac{3657}{16}\sqrt{\frac{5}{7}}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (-15*(119 + 37*x)*Sqrt[2 + 3*x^2])/(8*(3 + 2*x)) + (5*(37 + 12*x)*(2 + 3*x^
2)^(3/2))/(12*(3 + 2*x)^2) - ((8 + x)*(2 + 3*x^2)^(5/2))/(6*(3 + 2*x)^3) +
(1785*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/16 + (3657*Sqrt[5/7]*ArcTanh[(4 - 9*x)/
(Sqrt[35]*Sqrt[2 + 3*x^2])])/16
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^4}\,dx &= -\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}-\frac{5}{72}\int \frac{(24-288x)\left(2+3x^2\right)^{3/2}}{(3+2x)^3}\,dx\\
&= \frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{5}{768}\int \frac{(4608-21312x)\sqrt{2+3x^2}}{(3+2x)^2}\\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}-5\int\\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{5355}{16}\\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{1785}{16}\\
&= -\frac{15(119+37x)\sqrt{2+3x^2}}{8(3+2x)}+\frac{5(37+12x)\left(2+3x^2\right)^{3/2}}{12(3+2x)^2}-\frac{(8+x)\left(2+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{1785}{16}
\end{aligned}$$

Mathematica [A] time = 0.16, size = 97, normalized size = 0.73

$$\frac{1}{336}\left(10971\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{14\sqrt{3x^2+2}\left(36x^5-432x^4+3408x^3+37974x^2+77061x+46103\right)}{(2x+3)^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-14*Sqrt[2 + 3*x^2]*(46103 + 77061*x + 37974*x^2 + 3408*x^3 - 432*x^4 + 3
6*x^5))/(3 + 2*x)^3 + 37485*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] + 10971*Sqrt[35]*A
rcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/336
```

fricas [A] time = 0.69, size = 167, normalized size = 1.26

$$\frac{10971\sqrt{7}\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(\frac{\sqrt{7}\sqrt{5}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right)+37485\sqrt{3}\left(8x^3+36x^2+54x+2\right.}{672\left(8x^3+36x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/672*(10971*sqrt(7)*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log((sqrt(7)*sqrt
(5)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) + 3
7485*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
3*x^2 - 1) - 28*(36*x^5 - 432*x^4 + 3408*x^3 + 37974*x^2 + 77061*x + 46103)
*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.37, size = 275, normalized size = 2.07

$$-\frac{1}{32}\left(3\left(2x-33\right)x+973\right)\sqrt{3x^{2}+2}-\frac{1785}{16}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^{2}+2}\right)-\frac{3657}{112}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-\right.}{2\sqrt{3}x-\sqrt{35}+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/32*(3*(2*x - 33)*x + 973)*sqrt(3*x^2 + 2) - 1785/16*sqrt(3)*log(-sqrt(3)
*x + sqrt(3*x^2 + 2)) - 3657/112*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35)
- 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sq
rt(3*x^2 + 2))) - 1/128*sqrt(3)*(40667*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)
)^5 + 589140*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 467730*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^3 - 1939920*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 585700*sqrt(
3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 166304)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2
 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^3
```

maple [A] time = 0.07, size = 206, normalized size = 1.55

$$\frac{591\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{490}+\frac{1143\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{56}+\frac{8457\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{85750}+\frac{1785\sqrt{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^4,x)
```

```
[Out] 37/4900/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2819/85750/(x+3/2)*(-9*x+3*
(x+3/2)^2-19/4)^(7/2)-7314/42875*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+591/490*(-9*
x+3*(x+3/2)^2-19/4)^(3/2)*x+1143/56*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x+1785/16
*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-1219/490*(-9*x+3*(x+3/2)^2-19/4)^(3/2)-3657
/112*(-36*x+12*(x+3/2)^2-19)^(1/2)+3657/112*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+8457/85750*(-9*x+3*(x+3/2)^2-19/4)^
(5/2)*x-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.44, size = 173, normalized size = 1.30

$$-\frac{111}{4900}\left(3x^{2}+2\right)^{\frac{5}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{7}{2}}}{105\left(8x^{3}+36x^{2}+54x+27\right)}+\frac{37\left(3x^{2}+2\right)^{\frac{7}{2}}}{1225\left(4x^{2}+12x+9\right)}+\frac{591}{490}\left(3x^{2}+2\right)^{\frac{3}{2}}x-\frac{1219}{490}\left(3x^{2}+2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -111/4900*(3*x^2 + 2)^(5/2) - 13/105*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54
*x + 27) + 37/1225*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 591/490*(3*x^2 +
2)^(3/2)*x - 1219/490*(3*x^2 + 2)^(3/2) - 2819/4900*(3*x^2 + 2)^(5/2)/(2*x
+ 3) + 1143/56*sqrt(3*x^2 + 2)*x + 1785/16*sqrt(3)*arcsinh(1/2*sqrt(6)*x) -
 3657/112*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) - 3657/56*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.12, size = 161, normalized size = 1.21

$$\frac{1785\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{16}-\frac{973\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{32}-\frac{3657\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{112}+\frac{3657\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{112}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^4,x)
```

```
[Out] (1785*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/16 - (973*3^(1/2)*(x^2 + 2/3)^(
1/2))/32 - (3657*35^(1/2)*log(x + 3/2))/112 + (3657*35^(1/2)*log(x - (3^(1/
2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/112 - (3*3^(1/2)*x^2*(x^2 + 2/3)^(
1/2))/16 - (5197*3^(1/2)*(x^2 + 2/3)^(1/2))/(64*(x + 3/2)) + (9485*3^(1/2)*
(x^2 + 2/3)^(1/2))/(256*(3*x + x^2 + 9/4)) + (99*3^(1/2)*x*(x^2 + 2/3)^(1/2
))/32 - (15925*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536*((27*x)/4 + (9*x^2)/2 + x^3
 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**4,x)
```

```
[Out] Timed out
```

3.1390 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=133

$$-\frac{(4x+19)\left(3x^2+2\right)^{5/2}}{16(2x+3)^4}-\frac{(5517x+5003)\left(3x^2+2\right)^{3/2}}{672(2x+3)^3}+\frac{3(1917x+6125)\sqrt{3x^2+2}}{448(2x+3)}-\frac{188379\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+}}\right.}{896\sqrt{35}}$$

```
[Out] -1/672*(5003+5517*x)*(3*x^2+2)^(3/2)/(3+2*x)^3-1/16*(19+4*x)*(3*x^2+2)^(5/2
)/(3+2*x)^4-2625/128*arcsinh(1/2*x*6^(1/2))*3^(1/2)-188379/31360*arctanh(1/
35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+3/448*(6125+1917*x)*(3*x^2+2)
^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.250$, Rules used = {813, 811, 844, 215, 725, 206}

$$-\frac{(4x+19)\left(3x^2+2\right)^{5/2}}{16(2x+3)^4}-\frac{(5517x+5003)\left(3x^2+2\right)^{3/2}}{672(2x+3)^3}+\frac{3(1917x+6125)\sqrt{3x^2+2}}{448(2x+3)}-\frac{188379\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+}}\right.}{896\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] (3*(6125 + 1917*x)*Sqrt[2 + 3*x^2])/(448*(3 + 2*x)) - ((5003 + 5517*x)*(2 +
 3*x^2)^(3/2))/(672*(3 + 2*x)^3) - ((19 + 4*x)*(2 + 3*x^2)^(5/2))/(16*(3 +
2*x)^4) - (2625*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (188379*ArcTanh[(4 - 9*
x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(896*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^5}\,dx &= -\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}-\frac{5}{64}\int \frac{(32-228x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx\\
&= -\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3}-\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}+\frac{\int \frac{(-35904+184032x)\sqrt{2+3x^2}}{(3+2x)^2}\,dx}{7168}\\
&= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)}-\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3}-\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}-\\
&= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)}-\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3}-\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}-\\
&= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)}-\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3}-\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}-\\
&= \frac{3(6125+1917x)\sqrt{2+3x^2}}{448(3+2x)}-\frac{(5003+5517x)\left(2+3x^2\right)^{3/2}}{672(3+2x)^3}-\frac{(19+4x)\left(2+3x^2\right)^{5/2}}{16(3+2x)^4}-
\end{aligned}$$

Mathematica [A] time = 0.16, size = 97, normalized size = 0.73

$$\frac{-565137\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{70\sqrt{3x^2+2}\left(3024x^5-57456x^4-898734x^3-2762820x^2-3335009x-1421955\right)}{(2x+3)^4}-1929375\sqrt{3}\,\sinh}{94080}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-70*Sqrt[2 + 3*x^2]*(-1421955 - 3335009*x - 2762820*x^2 - 898734*x^3 - 57
456*x^4 + 3024*x^5))/(3 + 2*x)^4 - 1929375*Sqrt[3]*ArcSinh[Sqrt[3/2]*x] - 5
65137*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/94080
```

fricas [A] time = 0.87, size = 176, normalized size = 1.32

$$\frac{1929375\,\sqrt{3}\left(16\,x^4+96\,x^3+216\,x^2+216\,x+81\right)\log\left(\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+565137\,\sqrt{35}\left(16\,x^4+96\,x^3+\right.}{18816}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/188160*(1929375*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(sqrt
(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 565137*sqrt(35)*(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x
 + 43)/(4*x^2 + 12*x + 9)) - 140*(3024*x^5 - 57456*x^4 - 898734*x^3 - 27628
20*x^2 - 3335009*x - 1421955)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3 + 216*x^2 +
 216*x + 81)
```

giac [B] time = 0.82, size = 440, normalized size = 3.31

$$-\frac{188379}{31360}\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\frac{\sqrt{35}}{2x+3}\right)-9\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+\frac{2625}{128}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}\right.}{2\left(\sqrt{3}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -188379/31360*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 +
3) + sqrt(35)/(2*x + 3)) - 9)*sgn(1/(2*x + 3)) + 2625/128*sqrt(3)*log(1/2*a
bs(-2*sqrt(3) + 2*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 2*sqrt(35)/(2*
x + 3))/(sqrt(3) + sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x
 + 3)))*sgn(1/(2*x + 3)) - 1/10752*(7*(35*(1365*sgn(1/(2*x + 3))/(2*x + 3)
- 2129*sgn(1/(2*x + 3)))/(2*x + 3) + 57681*sgn(1/(2*x + 3)))/(2*x + 3) - 24
2979*sgn(1/(2*x + 3)))*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 9/64*(256
*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^3*sgn(1/(2
*x + 3)) - 93*sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)
/(2*x + 3))^2*sgn(1/(2*x + 3)) - 582*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 +
 3) + sqrt(35)/(2*x + 3))*sgn(1/(2*x + 3)) + 225*sqrt(35)*sgn(1/(2*x + 3)))
/((sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3))^2 - 3)^2
```

maple [B] time = 0.07, size = 227, normalized size = 1.71

$$-\frac{58629\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{274400}-\frac{58491\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{15680}-\frac{89151\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{6002500}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^5,x)
```

```
[Out] 23/117600/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1041/343000/(x+3/2)^2*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)+29717/6002500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7
/2)+188379/6002500*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-58629/274400*(-9*x+3*(x+3/
2)^2-19/4)^(3/2)*x-58491/15680*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-2625/128*arc
sinh(1/2*6^(1/2)*x)*3^(1/2)+62793/137200*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1883
79/31360*(-36*x+12*(x+3/2)^2-19)^(1/2)-188379/31360*35^(1/2)*arctanh(2/35*(
-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-89151/6002500*(-9*x+3*(x+3/
2)^2-19/4)^(5/2)*x-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.54, size = 206, normalized size = 1.55

$$\frac{3123}{343000}\left(3\,x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+2\right)^{\frac{7}{2}}}{140\left(16\,x^4+96\,x^3+216\,x^2+216\,x+81\right)}+\frac{23\left(3\,x^2+2\right)^{\frac{7}{2}}}{14700\left(8\,x^3+36\,x^2+54\,x+27\right)}-\frac{1041\left(3\,x^2\right.}{85750\left(4\,x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 3123/343000*(3*x^2 + 2)^(5/2) - 13/140*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 +
 216*x^2 + 216*x + 81) + 23/14700*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x
+ 27) - 1041/85750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) - 58629/274400*(3*x
^2 + 2)^(3/2)*x + 62793/137200*(3*x^2 + 2)^(3/2) + 29717/343000*(3*x^2 + 2)
^(5/2)/(2*x + 3) - 58491/15680*sqrt(3*x^2 + 2)*x - 2625/128*sqrt(3)*arcsinh
(1/2*sqrt(6)*x) + 188379/31360*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3)
- 2/3*sqrt(6)/abs(2*x + 3)) + 188379/15680*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.13, size = 180, normalized size = 1.35

$$\frac{188379\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{31360}+\frac{225\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{64}-\frac{2625\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{188379\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{31360}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^5,x)
```

```
[Out] (188379*35^(1/2)*log(x + 3/2))/31360 + (225*3^(1/2)*(x^2 + 2/3)^(1/2))/64 -
 (2625*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/128 - (188379*35^(1/2)*log(x -
 (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/31360 - (15925*3^(1/2)*(x^2
 + 2/3)^(1/2))/(4096*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (8099
3*3^(1/2)*(x^2 + 2/3)^(1/2))/(3584*(x + 3/2)) - (19227*3^(1/2)*(x^2 + 2/3)^
(1/2))/(1024*(3*x + x^2 + 9/4)) - (9*3^(1/2)*x*(x^2 + 2/3)^(1/2))/64 + (745
15*3^(1/2)*(x^2 + 2/3)^(1/2))/(6144*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**5,x)
```

```
[Out] Timed out
```

3.1391 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=133

$$\frac{(76x+23)\left(3x^2+2\right)^{5/2}}{140(2x+3)^5}+\frac{(8193x+6637)\left(3x^2+2\right)^{3/2}}{9800(2x+3)^3}-\frac{9(2643x+8575)\sqrt{3x^2+2}}{19600(2x+3)}+\frac{789723\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+}}\right.}{39200\sqrt{35}}$$

```
[Out] 1/9800*(6637+8193*x)*(3*x^2+2)^(3/2)/(3+2*x)^3+1/140*(23+76*x)*(3*x^2+2)^(5
/2)/(3+2*x)^5+63/32*arcsinh(1/2*x*6^(1/2))*3^(1/2)+789723/1372000*arctanh(1
/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-9/19600*(8575+2643*x)*(3*x^2
+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.250, Rules used = {811, 813, 844, 215, 725, 206}

$$\frac{(76x+23)\left(3x^2+2\right)^{5/2}}{140(2x+3)^5}+\frac{(8193x+6637)\left(3x^2+2\right)^{3/2}}{9800(2x+3)^3}-\frac{9(2643x+8575)\sqrt{3x^2+2}}{19600(2x+3)}+\frac{789723\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+}}\right.}{39200\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (-9*(8575 + 2643*x)*Sqrt[2 + 3*x^2])/(19600*(3 + 2*x)) + ((6637 + 8193*x)*(
2 + 3*x^2)^(3/2))/(9800*(3 + 2*x)^3) + ((23 + 76*x)*(2 + 3*x^2)^(5/2))/(140
*(3 + 2*x)^5) + (63*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + (789723*ArcTanh[(4 -
 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(39200*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^6}\,dx &= \frac{(23+76x)\left(2+3x^2\right)^{5/2}}{140(3+2x)^5}-\frac{\int \frac{(-1248+1752x)\left(2+3x^2\right)^{3/2}}{(3+2x)^4}\,dx}{1120}\\
&= \frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3}+\frac{(23+76x)\left(2+3x^2\right)^{5/2}}{140(3+2x)^5}+\frac{\int \frac{(372096-1522368x)\sqrt{2+3x^2}}{(3+2x)^2}\,d}{627200}\\
&= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)}+\frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3}+\frac{(23+76x)\left(2+3x^2\right)^{5}}{140(3+2x)^5}\\
&= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)}+\frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3}+\frac{(23+76x)\left(2+3x^2\right)^{5}}{140(3+2x)^5}\\
&= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)}+\frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3}+\frac{(23+76x)\left(2+3x^2\right)^{5}}{140(3+2x)^5}\\
&= -\frac{9(8575+2643x)\sqrt{2+3x^2}}{19600(3+2x)}+\frac{(6637+8193x)\left(2+3x^2\right)^{3/2}}{9800(3+2x)^3}+\frac{(23+76x)\left(2+3x^2\right)^{5}}{140(3+2x)^5}
\end{aligned}
$$

Mathematica [A] time = 0.20, size = 100, normalized size = 0.75

$$
\frac{789723\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right)-\frac{70\sqrt{3x^2+2}\left(88200x^5+2740188x^4+11367738x^3+20911298x^2+17940463x+5999363\right)}{(2x+3)^5}}{1372000}+\frac{63}{32}\sqrt{3}\,\sinh
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] (63*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/32 + ((-70*Sqrt[2 + 3*x^2]*(5999363 + 179
40463*x + 20911298*x^2 + 11367738*x^3 + 2740188*x^4 + 88200*x^5))/(3 + 2*x)
^5 + 789723*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/1372000
```

fricas [A] time = 0.78, size = 191, normalized size = 1.44

$$\frac{2701125\sqrt{3}\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)+789723\,\sqrt{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/2744000*(2701125*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
 243)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 789723*sqrt(35)*(32*x^5
 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log((sqrt(35)*sqrt(3*x^2 + 2
)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 140*(88200*x^5 + 27
40188*x^4 + 11367738*x^3 + 20911298*x^2 + 17940463*x + 5999363)*sqrt(3*x^2
+ 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.32, size = 355, normalized size = 2.67

$$-\frac{63}{32}\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)-\frac{789723}{1372000}\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}\,-3\,\sqrt{3}\,+2\,\sqrt{3\,x^2+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}\,+3\,\sqrt{3}\,-2\,\sqrt{3\,x^2+2}}\right)-\frac{9}{64}\sqrt{3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -63/32*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 789723/1372000*sqrt(35)*
log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3
)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9/64*sqrt(3*x^2 + 2) - 3
/156800*sqrt(3)*(1034487*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 28143036
*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 94364251*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 2))^7 + 328235733*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 120044232*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 2))^5 - 774358774*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 +
 578739476*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 495467552*(sqrt(3)*x -
 sqrt(3*x^2 + 2))^2 + 66595728*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 1108
6336)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2)) - 2)^5
```

maple [B] time = 0.06, size = 248, normalized size = 1.86

$$\frac{1131399\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{525218750}+\frac{267723\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{12005000}+\frac{248967\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\;x}{686000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^6,x)
```

```
[Out] -11/24500/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/5600/(x+3/2)^5*(-9*x+3
*(x+3/2)^2-19/4)^(7/2)-521/857500/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2
241/30012500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+1131399/525218750*(-9*
x+3*(x+3/2)^2-19/4)^(5/2)*x-377133/525218750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4
)^(7/2)+267723/12005000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+248967/686000*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)*x+789723/1372000*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+63/32*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-
789723/262609375*(-9*x+3*(x+3/2)^2-19/4)^(5/2)-263241/6002500*(-9*x+3*(x+3/
2)^2-19/4)^(3/2)-789723/1372000*(-36*x+12*(x+3/2)^2-19)^(1/2)
```

maxima [B] time = 1.24, size = 244, normalized size = 1.83

$$\frac{6723}{30012500}\left(3\,x^{2}+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^{2}+2\right)^{\frac{7}{2}}}{175\left(32\,x^{5}+240\,x^{4}+720\,x^{3}+1080\,x^{2}+810\,x+243\right)}-\frac{44\left(3\,x^{2}+2\right)^{\frac{7}{2}}}{6125\left(16\,x^{4}+96\,x^{3}+216\,x^{2}+\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 6723/30012500*(3*x^2 + 2)^(5/2) - 13/175*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^
4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 44/6125*(3*x^2 + 2)^(7/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 1042/214375*(3*x^2 + 2)^(7/2)/(8*x^3 + 36
*x^2 + 54*x + 27) - 2241/7503125*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 267
723/12005000*(3*x^2 + 2)^(3/2)*x - 263241/6002500*(3*x^2 + 2)^(3/2) - 37713
3/30012500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 248967/686000*sqrt(3*x^2 + 2)*x +
63/32*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 789723/1372000*sqrt(35)*arcsinh(3/2*
sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) - 789723/686000*sqrt(3*x
^2 + 2)
```

mupad [B] time = 1.95, size = 206, normalized size = 1.55

$$\frac{63\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{32}-\frac{9\,\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{64}-\frac{789723\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1372000}+\frac{789723\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1372000}+\frac{}{512}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^6,x)
```

```
[Out] (63*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/32 - (9*3^(1/2)*(x^2 + 2/3)^(1/2)
)/64 - (789723*35^(1/2)*log(x + 3/2))/1372000 + (789723*35^(1/2)*log(x - (3
^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1372000 + (2303*3^(1/2)*(x^2 +
 2/3)^(1/2))/(512*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (3185*3^
(1/2)*(x^2 + 2/3)^(1/2))/(2048*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15
*x^4)/2 + x^5 + 243/32)) - (64959*3^(1/2)*(x^2 + 2/3)^(1/2))/(19600*(x + 3/
2)) + (44127*3^(1/2)*(x^2 + 2/3)^(1/2))/(8960*(3*x + x^2 + 9/4)) - (15397*3
^(1/2)*(x^2 + 2/3)^(1/2))/(2560*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**6,x)
```

```
[Out] Timed out
```

3.1392 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=133

$$\frac{(159x+11)\left(3x^2+2\right)^{5/2}}{420(2x+3)^6}+\frac{(403x+202)\left(3x^2+2\right)^{3/2}}{1568(2x+3)^4}+\frac{9(5167x+4373)\sqrt{3x^2+2}}{109760(2x+3)^2}-\frac{159759\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right.}{219520\sqrt{35}}$$

```
[Out] 1/1568*(202+403*x)*(3*x^2+2)^(3/2)/(3+2*x)^4+1/420*(11+159*x)*(3*x^2+2)^(5/
2)/(3+2*x)^6-9/128*arcsinh(1/2*x*6^(1/2))*3^(1/2)-159759/7683200*arctanh(1/
35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+9/109760*(4373+5167*x)*(3*x^2
+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.08, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {811, 844, 215, 725, 206}

$$\frac{(159x+11)\left(3x^2+2\right)^{5/2}}{420(2x+3)^6}+\frac{(403x+202)\left(3x^2+2\right)^{3/2}}{1568(2x+3)^4}+\frac{9(5167x+4373)\sqrt{3x^2+2}}{109760(2x+3)^2}-\frac{159759\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right.}{219520\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (9*(4373 + 5167*x)*Sqrt[2 + 3*x^2])/(109760*(3 + 2*x)^2) + ((202 + 403*x)*(
2 + 3*x^2)^(3/2))/(1568*(3 + 2*x)^4) + ((11 + 159*x)*(2 + 3*x^2)^(5/2))/(42
0*(3 + 2*x)^6) - (9*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 - (159759*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(219520*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx &= \frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}-\frac{\int \frac{(-1560+1260x)\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx}{1680}\\
&= \frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4}+\frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}+\frac{\int \frac{(496800-1058400x)\sqrt{2+3x^2}}{(3+2x)^3}\,dx}{1881600}\\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2}+\frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4}+\frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}-\\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2}+\frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4}+\frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}-\\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2}+\frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4}+\frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}-\\
&= \frac{9(4373+5167x)\sqrt{2+3x^2}}{109760(3+2x)^2}+\frac{(202+403x)\left(2+3x^2\right)^{3/2}}{1568(3+2x)^4}+\frac{(11+159x)\left(2+3x^2\right)^{5/2}}{420(3+2x)^6}-\end{aligned}$$

Mathematica [A] time = 0.24, size = 100, normalized size = 0.75

$$\frac{\frac{70\sqrt{3x^2+2}\left(4369608x^5+18915336x^4+47453802x^3+59256588x^2+39843609x+10361807\right)}{(2x+3)^6}-479277\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{23049600}-\frac{9}{128}\sqrt{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] (-9*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/128 + ((70*Sqrt[2 + 3*x^2]*(10361807 + 39
843609*x + 59256588*x^2 + 47453802*x^3 + 18915336*x^4 + 4369608*x^5))/(3 +
2*x)^6 - 479277*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/230
49600
```

fricas [A] time = 0.66, size = 206, normalized size = 1.55

$$1620675\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+47$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/46099200*(1620675*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 479277*sqr
t(35)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)*lo
g(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
+ 9)) + 140*(4369608*x^5 + 18915336*x^4 + 47453802*x^3 + 59256588*x^2 + 398
43609*x + 10361807)*sqrt(3*x^2 + 2))/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^
3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.34, size = 389, normalized size = 2.92

$$\frac{9}{128}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{159759}{7683200}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3\sqrt{3}\left(566\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 9/128*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 159759/7683200*sqrt(35)*l
og(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)
*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 3/878080*sqrt(3)*(566976*
sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 16427322*(sqrt(3)*x - sqrt(3*x^2
 + 2))^10 + 70792520*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 421378065*(s
qrt(3)*x - sqrt(3*x^2 + 2))^8 + 244013814*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2))^7 - 879808433*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 512612604*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 2))^5 + 2079633300*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 -
831934400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 500387712*(sqrt(3)*x -
sqrt(3*x^2 + 2))^2 - 51770496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 77681
92)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
2)) - 2)^6
```

maple [B] time = 0.07, size = 269, normalized size = 2.02

$$\frac{123129\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{1470612500}-\frac{27009\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{67228000}-\frac{45711\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\,x}{3841600}-\frac{9}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^7,x)
```

```
[Out] -13/13440/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-113/548800/(x+3/2)^4*(-9*
x+3*(x+3/2)^2-19/4)^(7/2)-1/3136/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-10
39/9604000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-6561/84035000/(x+3/2)^2*
(-9*x+3*(x+3/2)^2-19/4)^(7/2)+123129/1470612500*(-9*x+3*(x+3/2)^2-19/4)^(5/
2)*x-41043/1470612500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-27009/67228000*
(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x-45711/3841600*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
*x-159759/7683200*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)
^2-19)^(1/2))-9/128*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+159759/1470612500*(-9*x+
3*(x+3/2)^2-19/4)^(5/2)+53253/33614000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+159759
/7683200*(-36*x+12*(x+3/2)^2-19)^(1/2)
```

maxima [B] time = 1.56, size = 287, normalized size = 2.16

$$\frac{19683}{84035000}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{210\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{}{98\left(32x^5+240\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 19683/84035000*(3*x^2 + 2)^(5/2) - 13/210*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x
^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 1/98*(3*x^2 + 2)^(7/2
)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 113/34300*(3*x^2
+ 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 1039/1200500*(3*x^2 +
 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 6561/21008750*(3*x^2 + 2)^(7/2)/(4
*x^2 + 12*x + 9) - 27009/67228000*(3*x^2 + 2)^(3/2)*x + 53253/33614000*(3*x
^2 + 2)^(3/2) - 41043/84035000*(3*x^2 + 2)^(5/2)/(2*x + 3) - 45711/3841600*
sqrt(3*x^2 + 2)*x - 9/128*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 159759/7683200*s
qrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 15
9759/3841600*sqrt(3*x^2 + 2)
```

mupad [**B**] time = 0.14, size = 238, normalized size = 1.79

$$\frac{159759\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{7683200}-\frac{9\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{128}-\frac{159759\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{7683200}-\frac{9019\,\sqrt{3}\,\sqrt{x^2}}{4096\,\left(x^4+6\,x^3+\frac{27\,x}{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^7,x)
```

```
[Out] (159759*35^(1/2)*log(x + 3/2))/7683200 - (9*3^(1/2)*asinh((2^(1/2)*3^(1/2)*
x)/2))/128 - (159759*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/
9 - 4/9))/7683200 - (9019*3^(1/2)*(x^2 + 2/3)^(1/2))/(4096*((27*x)/2 + (27*
x^2)/2 + 6*x^3 + x^4 + 81/16)) + (7315*3^(1/2)*(x^2 + 2/3)^(1/2))/(4096*((4
05*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 + 243/32)) + (182067
*3^(1/2)*(x^2 + 2/3)^(1/2))/(878080*(x + 3/2)) - (15925*3^(1/2)*(x^2 + 2/3)
^(1/2))/(24576*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*
x^5 + x^6 + 729/64)) - (164961*3^(1/2)*(x^2 + 2/3)^(1/2))/(250880*(3*x + x^
2 + 9/4)) + (109789*3^(1/2)*(x^2 + 2/3)^(1/2))/(71680*((27*x)/4 + (9*x^2)/2
 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**7,x)
```

```
[Out] Timed out
```

3.1393 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=136

$$-\frac{13\left(3x^2+2\right)^{7/2}}{245(2x+3)^7}-\frac{41(4-9x)\left(3x^2+2\right)^{5/2}}{7350(2x+3)^6}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{34300(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{1200500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4}{\sqrt{35}}\right.}{600250\sqrt{35}}$$

```
[Out] -41/34300*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-41/7350*(4-9*x)*(3*x^2+2)^(5/2)
/(3+2*x)^6-13/245*(3*x^2+2)^(7/2)/(3+2*x)^7-1107/21008750*arctanh(1/35*(4-9
*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-369/1200500*(4-9*x)*(3*x^2+2)^(1/2)/
(3+2*x)^2
```

Rubi [A] time = 0.07, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{807, 721, 725, 206\}$

$$-\frac{13\left(3x^2+2\right)^{7/2}}{245(2x+3)^7}-\frac{41(4-9x)\left(3x^2+2\right)^{5/2}}{7350(2x+3)^6}-\frac{41(4-9x)\left(3x^2+2\right)^{3/2}}{34300(2x+3)^4}-\frac{369(4-9x)\sqrt{3x^2+2}}{1200500(2x+3)^2}-\frac{1107\tanh^{-1}\left(\frac{4}{\sqrt{35}}\right.}{600250\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (-369*(4 - 9*x)*Sqrt[2 + 3*x^2])/(1200500*(3 + 2*x)^2) - (41*(4 - 9*x)*(2 +
 3*x^2)^(3/2))/(34300*(3 + 2*x)^4) - (41*(4 - 9*x)*(2 + 3*x^2)^(5/2))/(7350
*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(245*(3 + 2*x)^7) - (1107*ArcTanh[(4
 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(600250*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{41}{35}\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$$

$$= -\frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{41}{245}\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$$

$$= -\frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{245(3+2x)^7} + \frac{369\int \frac{\sqrt{2+3x^2}}{(3+2x)^3}}{17150}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\,(2}{245(}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\,(2}{245(}$$

$$= -\frac{369(4-9x)\sqrt{2+3x^2}}{1200500(3+2x)^2} - \frac{41(4-9x)\left(2+3x^2\right)^{3/2}}{34300(3+2x)^4} - \frac{41(4-9x)\left(2+3x^2\right)^{5/2}}{7350(3+2x)^6} - \frac{13\,(2}{245(}$$

Mathematica [A] time = 0.18, size = 122, normalized size = 0.90

$$\frac{1}{490}\left(-\frac{26\left(3x^2+2\right)^{7/2}}{(2x+3)^7} + \frac{41(9x-4)\left(3x^2+2\right)^{5/2}}{15(2x+3)^6} + \frac{41\left(\frac{35\sqrt{3x^2+2}\left(1269x^3+408x^2+927x-604\right)}{(2x+3)^4} - 54\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2}}\right.\right.}{85750}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] ((41*(-4 + 9*x)*(2 + 3*x^2)^(5/2))/(15*(3 + 2*x)^6) - (26*(2 + 3*x^2)^(7/2)
)/(3 + 2*x)^7 + (41*((35*Sqrt[2 + 3*x^2]*(-604 + 927*x + 408*x^2 + 1269*x^3
))/(3 + 2*x)^4 - 54*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])
)/85750)/490
```

fricas [A] time = 0.62, size = 164, normalized size = 1.21

$$\frac{3321\sqrt{35}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x}{4x^2+}\right.}{126052500\left(128x^7+1344x^6+6048x^5\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/126052500*(3321*sqrt(35)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 226
80*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x -
4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(656424*x^6 - 9455994*x^5
 - 2997810*x^4 - 15015225*x^3 + 3488490*x^2 - 593639*x + 4499004)*sqrt(3*x^
2 + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2
+ 10206*x + 2187)
```

giac [B] time = 0.32, size = 408, normalized size = 3.00

$$\frac{1107}{21008750}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right) - \frac{9\left(908247\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{13}+3755004\sqrt{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 1107/21008750*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqr
t(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 9
/38416000*(908247*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 + 3755004*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 2))^12 + 52905908*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 + 11
4259794*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 + 422075810*(sqrt(3)*x - s
qrt(3*x^2 + 2))^9 - 16674486*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 1093
657086*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 205745364*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 2))^6 + 1886581864*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 1023977040*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 660654976*(sqrt(3)*x - sqrt(3*x^2
+ 2))^3 - 94952448*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 9114816*sqrt(3
)*x - 1555968*sqrt(3) + 9114816*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 +
 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^7
```

maple [B] time = 0.07, size = 278, normalized size = 2.04

$$\frac{4612869\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{128678593750}+\frac{129519\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{1470612500}+\frac{9963\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\,x}{42017500}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^8,x)
```

```
[Out] -41/235200/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1189/24010000/(x+3/2)^4*
(-9*x+3*(x+3/2)^2-19/4)^(7/2)-123/1372000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)
^(7/2)-12177/420175000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-132471/73530
62500/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+4612869/128678593750*(-9*x+3*
(x+3/2)^2-19/4)^(5/2)*x-1537623/128678593750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4
)^(7/2)+129519/1470612500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+9963/42017500*(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-1107/21008750*35^(1/2)*arctanh(2/35*(-9*x+4)*3
5^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+17712/64339296875*(-9*x+3*(x+3/2)^2-
19/4)^(5/2)+1476/367653125*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1107/21008750*(-36
*x+12*(x+3/2)^2-19)^(1/2)-13/31360/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.29, size = 323, normalized size = 2.38

$$\frac{397413}{7353062500}\left(3x^{2}+2\right)^{\frac{5}{2}}-\frac{13\left(3x^{2}+2\right)^{\frac{7}{2}}}{245\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+218\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 397413/7353062500*(3*x^2 + 2)^(5/2) - 13/245*(3*x^2 + 2)^(7/2)/(128*x^7 + 1
344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
41/3675*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729) - 123/42875*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3
 + 1080*x^2 + 810*x + 243) - 1189/1500625*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^
3 + 216*x^2 + 216*x + 81) - 12177/52521875*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^
2 + 54*x + 27) - 132471/1838265625*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 1
29519/1470612500*(3*x^2 + 2)^(3/2)*x + 1476/367653125*(3*x^2 + 2)^(3/2) - 1
537623/7353062500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 9963/42017500*sqrt(3*x^2 +
2)*x + 1107/21008750*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt
(6)/abs(2*x + 3)) + 1107/10504375*sqrt(3*x^2 + 2)
```

mupad [**B**] time = 2.03, size = 272, normalized size = 2.00

$$\frac{1107\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{21008750}-\frac{1107\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{21008750}+\frac{34571\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{62720\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{}{7168\left(x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^8,x)
```

```
[Out] (1107*35^(1/2)*log(x + 3/2))/21008750 - (1107*35^(1/2)*log(x - (3^(1/2)*35^
(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/21008750 + (34571*3^(1/2)*(x^2 + 2/3)^(1
/2))/(62720*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (6213*3^(1/2)*
(x^2 + 2/3)^(1/2))/(7168*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/
2 + x^5 + 243/32)) - (27351*3^(1/2)*(x^2 + 2/3)^(1/2))/(19208000*(x + 3/2))
 + (9095*3^(1/2)*(x^2 + 2/3)^(1/2))/(12288*((729*x)/16 + (1215*x^2)/16 + (1
35*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (73161*3^(1/2)*(x^2 + 2/
3)^(1/2))/(2195200*(3*x + x^2 + 9/4)) - (2275*3^(1/2)*(x^2 + 2/3)^(1/2))/(8
192*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/
4 + (21*x^6)/2 + x^7 + 2187/128)) - (122553*3^(1/2)*(x^2 + 2/3)^(1/2))/(627
200*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**8,x)
```

```
[Out] Timed out
```

3.1394 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=158

$$-\frac{773\left(3x^2+2\right)^{7/2}}{68600(2x+3)^7}-\frac{13\left(3x^2+2\right)^{7/2}}{280(2x+3)^8}-\frac{233(4-9x)\left(3x^2+2\right)^{5/2}}{171500(2x+3)^6}-\frac{699(4-9x)\left(3x^2+2\right)^{3/2}}{2401000(2x+3)^4}-\frac{6291(4-9x)\sqrt{3x^2+}}{84035000(2x+3)^2}$$

```
[Out] -699/2401000*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-233/171500*(4-9*x)*(3*x^2+2)
^(5/2)/(3+2*x)^6-13/280*(3*x^2+2)^(7/2)/(3+2*x)^8-773/68600*(3*x^2+2)^(7/2)
/(3+2*x)^7-18873/1470612500*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*
35^(1/2)-6291/84035000*(4-9*x)*(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.08, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {835, 807, 721, 725, 206}

$$-\frac{773\left(3x^2+2\right)^{7/2}}{68600(2x+3)^7}-\frac{13\left(3x^2+2\right)^{7/2}}{280(2x+3)^8}-\frac{233(4-9x)\left(3x^2+2\right)^{5/2}}{171500(2x+3)^6}-\frac{699(4-9x)\left(3x^2+2\right)^{3/2}}{2401000(2x+3)^4}-\frac{6291(4-9x)\sqrt{3x^2+}}{84035000(2x+3)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (-6291*(4 - 9*x)*Sqrt[2 + 3*x^2])/(84035000*(3 + 2*x)^2) - (699*(4 - 9*x)*(
2 + 3*x^2)^(3/2))/(2401000*(3 + 2*x)^4) - (233*(4 - 9*x)*(2 + 3*x^2)^(5/2))
/(171500*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(280*(3 + 2*x)^8) - (773*(2
+ 3*x^2)^(7/2))/(68600*(3 + 2*x)^7) - (18873*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sq
rt[2 + 3*x^2])])/(42017500*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx &= -\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8}-\frac{1}{280}\int \frac{(-328+39x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx\\
&= -\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8}-\frac{773\left(2+3x^2\right)^{7/2}}{68600(3+2x)^7}+\frac{699\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx}{2450}\\
&= -\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6}-\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8}-\frac{773\left(2+3x^2\right)^{7/2}}{68600(3+2x)^7}+\frac{699\int \frac{\left(2+3x^2\right)^{3/2}}{(3+2x)^5}\,dx}{17150}\\
&= -\frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4}-\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6}-\frac{13\left(2+3x^2\right)^{7/2}}{280(3+2x)^8}-\frac{773\,(2+3}{68600(3+}\\
&= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2}-\frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4}-\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6}-\frac{13}{2}\\
&= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2}-\frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4}-\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6}-\frac{13}{2}\\
&= -\frac{6291(4-9x)\sqrt{2+3x^2}}{84035000(3+2x)^2}-\frac{699(4-9x)\left(2+3x^2\right)^{3/2}}{2401000(3+2x)^4}-\frac{233(4-9x)\left(2+3x^2\right)^{5/2}}{171500(3+2x)^6}-\frac{13}{2}
\end{aligned}$$

Mathematica [A] time = 0.21, size = 144, normalized size = 0.91

$$\frac{1}{280}\left(-\frac{773\left(3x^2+2\right)^{7/2}}{245(2x+3)^7}-\frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^8}+\frac{466(9x-4)\left(3x^2+2\right)^{5/2}}{1225(2x+3)^6}+\frac{699\left(\frac{35\sqrt{3x^2+2}\left(1269x^3+408x^2+927x-604\right)}{(2x+3)^4}-54\right.}{10504375}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] ((466*(-4 + 9*x)*(2 + 3*x^2)^(5/2))/(1225*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7
/2))/(3 + 2*x)^8 - (773*(2 + 3*x^2)^(7/2))/(245*(3 + 2*x)^7) + (699*((35*Sq
rt[2 + 3*x^2]*(-604 + 927*x + 408*x^2 + 1269*x^3))/(3 + 2*x)^4 - 54*Sqrt[35
]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])]))/10504375)/280
```

fricas [A] time = 0.80, size = 179, normalized size = 1.13

$$\frac{18873\sqrt{35}\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561\right)\log\left(\right.}{2941225000\left(256x^8+3072\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/2941225000*(18873*sqrt(35)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-(sqrt(35)*sqrt(3*
x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(49626*x^
7 + 2206008*x^6 + 210306726*x^5 + 33613440*x^4 + 226355535*x^3 - 178164896*
x^2 - 38788883*x - 104577556)*sqrt(3*x^2 + 2))/(256*x^8 + 3072*x^7 + 16128*
x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)
```

giac [B] time = 0.33, size = 457, normalized size = 2.89

$$\frac{18873}{1470612500}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{9\sqrt{3}\left(178944\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^{15}+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 18873/1470612500*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
- 9/10756480000*sqrt(3)*(178944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^15 +
138131220*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 + 30787400*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^13 + 573375810*(sqrt(3)*x - sqrt(3*x^2 + 2))^12 - 33288777
20*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 - 8681082564*(sqrt(3)*x - sqrt(
3*x^2 + 2))^10 - 13787031160*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 1566
458475*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 28541438480*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 2))^7 + 30582301680*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 - 231405274
24*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 - 12885596640*(sqrt(3)*x - sqrt(
3*x^2 + 2))^4 + 1726278400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 910154
1120*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 39843840*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 2)) - 1411584)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 2)) - 2)^8
```

maple [B] time = 0.09, size = 299, normalized size = 1.89

$$\frac{78643791\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}x}{9007501562500}+\frac{2208141\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}x}{102942875000}+\frac{169857\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{2941225000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^9,x)
```

```
[Out] -233/5488000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/71680/(x+3/2)^8*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)-20271/1680700000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/
4)^(7/2)-2097/96040000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-207603/29412
250000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-2258469/514714375000/(x+3/2)
^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+78643791/9007501562500*(-9*x+3*(x+3/2)^2-1
9/4)^(5/2)*x-26214597/9007501562500/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+2
208141/102942875000*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+169857/2941225000*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)*x-18873/1470612500*35^(1/2)*arctanh(2/35*(-9*x+4)*
35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))+150984/2251875390625*(-9*x+3*(x+3/2
)^2-19/4)^(5/2)+12582/12867859375*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+18873/14706
12500*(-36*x+12*(x+3/2)^2-19)^(1/2)-773/8780800/(x+3/2)^7*(-9*x+3*(x+3/2)^2
-19/4)^(7/2)
```

maxima [B] time = 1.45, size = 376, normalized size = 2.38

$$\frac{6775407}{514714375000}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{280\left(256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 6775407/514714375000*(3*x^2 + 2)^(5/2) - 13/280*(3*x^2 + 2)^(7/2)/(256*x^8
+ 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 3
4992*x + 6561) - 773/68600*(3*x^2 + 2)^(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5
 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 233/85750*(3*x^2 +
 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729
) - 2097/3001250*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 +
 810*x + 243) - 20271/105043750*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^
2 + 216*x + 81) - 207603/3676531250*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*
x + 27) - 2258469/128678593750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 22081
41/102942875000*(3*x^2 + 2)^(3/2)*x + 12582/12867859375*(3*x^2 + 2)^(3/2) -
 26214597/514714375000*(3*x^2 + 2)^(5/2)/(2*x + 3) + 169857/2941225000*sqrt
(3*x^2 + 2)*x + 18873/1470612500*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3
) - 2/3*sqrt(6)/abs(2*x + 3)) + 18873/735306250*sqrt(3*x^2 + 2)
```

mupad [B] time = 1.89, size = 326, normalized size = 2.06

$$\frac{18873\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1470612500}-\frac{18873\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1470612500}-\frac{15925\sqrt{3}\,\sqrt{x^2+}}{131072\left(x^8+12x^7+63x^6+189x^5+\frac{2835x^4}{8}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^9,x)
```

```
[Out] (18873*35^(1/2)*log(x + 3/2))/1470612500 - (18873*35^(1/2)*log(x - (3^(1/2)
*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1470612500 - (15925*3^(1/2)*(x^2 + 2
/3)^(1/2))/(131072*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 + (2835*x^4)
/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) - (4816641*3^(1/2)*(x^2 +
 2/3)^(1/2))/(70246400*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) + (86
1381*3^(1/2)*(x^2 + 2/3)^(1/2))/(4014080*((405*x)/16 + (135*x^2)/4 + (45*x^
3)/2 + (15*x^4)/2 + x^5 + 243/32)) + (24813*3^(1/2)*(x^2 + 2/3)^(1/2))/(107
56480000*(x + 3/2)) - (81899*3^(1/2)*(x^2 + 2/3)^(1/2))/(229376*((729*x)/16
 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4)/4 + 9*x^5 + x^6 + 729/64)) + (48
141*3^(1/2)*(x^2 + 2/3)^(1/2))/(614656000*(3*x + x^2 + 9/4)) + (20705*3^(1/
2)*(x^2 + 2/3)^(1/2))/(65536*((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 +
 (945*x^4)/8 + (189*x^5)/4 + (21*x^6)/2 + x^7 + 2187/128)) + (1573857*3^(1/
2)*(x^2 + 2/3)^(1/2))/(175616000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**9,x)
```

```
[Out] Timed out
```

3.1395 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=180

$$-\frac{4741\left(3x^2+2\right)^{7/2}}{1800750(2x+3)^7}-\frac{27\left(3x^2+2\right)^{7/2}}{2450(2x+3)^8}-\frac{13\left(3x^2+2\right)^{7/2}}{315(2x+3)^9}-\frac{949(4-9x)\left(3x^2+2\right)^{5/2}}{3001250(2x+3)^6}-\frac{2847(4-9x)\left(3x^2+2\right)^{3/2}}{42017500(2x+3)^4}-2$$

```
[Out] -2847/42017500*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-949/3001250*(4-9*x)*(3*x^2
+2)^(5/2)/(3+2*x)^6-13/315*(3*x^2+2)^(7/2)/(3+2*x)^9-27/2450*(3*x^2+2)^(7/2
)/(3+2*x)^8-4741/1800750*(3*x^2+2)^(7/2)/(3+2*x)^7-76869/25735718750*arctan
h(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-25623/1470612500*(4-9*x)*
(3*x^2+2)^(1/2)/(3+2*x)^2
```

Rubi **[A]** time = 0.11, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{4741\left(3x^2+2\right)^{7/2}}{1800750(2x+3)^7}-\frac{27\left(3x^2+2\right)^{7/2}}{2450(2x+3)^8}-\frac{13\left(3x^2+2\right)^{7/2}}{315(2x+3)^9}-\frac{949(4-9x)\left(3x^2+2\right)^{5/2}}{3001250(2x+3)^6}-\frac{2847(4-9x)\left(3x^2+2\right)^{3/2}}{42017500(2x+3)^4}-2$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (-25623*(4 - 9*x)*Sqrt[2 + 3*x^2])/(1470612500*(3 + 2*x)^2) - (2847*(4 - 9*
x)*(2 + 3*x^2)^(3/2))/(42017500*(3 + 2*x)^4) - (949*(4 - 9*x)*(2 + 3*x^2)^(
5/2))/(3001250*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(315*(3 + 2*x)^9) - (2
7*(2 + 3*x^2)^(7/2))/(2450*(3 + 2*x)^8) - (4741*(2 + 3*x^2)^(7/2))/(1800750
*(3 + 2*x)^7) - (76869*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(7353
06250*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{1}{315}\int \frac{(-369+78x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} + \frac{\int \frac{(24072-2916x)\left(2+3x^2\right)^{5/2}}{(3+2x)^8}\,dx}{88200}$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} - \frac{4741\left(2+3x^2\right)^{7/2}}{1800750(3+2x)^7} + \frac{2847\int \frac{\left(2+3x^2\right)^{5/2}}{(3+2x)^7}\,dx}{42875}$$

$$= -\frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27\left(2+3x^2\right)^{7/2}}{2450(3+2x)^8} - \frac{4741\left(2+3x^2\right)^{7/2}}{1800750(3+2x)^7} +$$

$$= -\frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} - \frac{13\left(2+3x^2\right)^{7/2}}{315(3+2x)^9} - \frac{27(2+3}{2450(3+}$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} -$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} -$$

$$= -\frac{25623(4-9x)\sqrt{2+3x^2}}{1470612500(3+2x)^2} - \frac{2847(4-9x)\left(2+3x^2\right)^{3/2}}{42017500(3+2x)^4} - \frac{949(4-9x)\left(2+3x^2\right)^{5/2}}{3001250(3+2x)^6} -$$

Mathematica [A] time = 0.31, size = 185, normalized size = 1.03

$$\frac{1}{315}\left(-\frac{243\left(3x^2+2\right)^{7/2}}{70(2x+3)^8} - \frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^9} - \frac{3\left(406540750\left(3x^2+2\right)^{7/2} + 2847(2x+3)\left(-945(9x-4)\sqrt{3x^2+2}\,(2\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(7/2))/(3 + 2*x)^9 - (243*(2 + 3*x^2)^(7/2))/(70*(3 + 2*x
)^8) - (3*(406540750*(2 + 3*x^2)^(7/2) + 2847*(3 + 2*x)*(-945*(3 + 2*x)^4*(
-4 + 9*x)*Sqrt[2 + 3*x^2] - 3675*(3 + 2*x)^2*(-4 + 9*x)*(2 + 3*x^2)^(3/2) -
 17150*(-4 + 9*x)*(2 + 3*x^2)^(5/2) + 162*Sqrt[35]*(3 + 2*x)^6*ArcTanh[(4 -
 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])))/(1470612500*(3 + 2*x)^7))/315
```

fricas [A] time = 0.71, size = 194, normalized size = 1.08

$$\frac{691821\,\sqrt{35}\,\left(512\,x^{9}+6912\,x^{8}+41472\,x^{7}+145152\,x^{6}+326592\,x^{5}+489888\,x^{4}+489888\,x^{3}+314928\,x^{2}+1\right.}{463242}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/463242937500*(691821*sqrt(35)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^
6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*l
og(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
 + 9)) - 35*(10968696*x^8 + 30006612*x^7 - 620594352*x^6 - 25197346566*x^5
+ 9750269970*x^4 - 11567526201*x^3 + 42455611758*x^2 + 11990965797*x + 1594
8113036)*sqrt(3*x^2 + 2))/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 32
6592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)
```

giac [B] time = 0.31, size = 502, normalized size = 2.79

$$\frac{76869}{25735718750}\,\sqrt{35}\,\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^{2}+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^{2}+2}}\right)-\frac{9\,\sqrt{3}\left(364416\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+2}\right)^{17}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] 76869/25735718750*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2
*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
 - 9/94119200000*sqrt(3)*(364416*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^17 +
 27877824*(sqrt(3)*x - sqrt(3*x^2 + 2))^16 + 1042205258*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^15 - 956098170*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 + 100362
5490*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^13 - 85987901496*(sqrt(3)*x - sq
rt(3*x^2 + 2))^12 - 60468401868*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 -
331045664193*(sqrt(3)*x - sqrt(3*x^2 + 2))^10 - 22913148915*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 2))^9 - 544736640510*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 2
84856270864*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 - 908850124224*(sqrt(3)
*x - sqrt(3*x^2 + 2))^6 + 90616216992*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))
^5 - 115517223360*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 52895204480*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 2))^3 - 565618176*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 +
140708352*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 17333248)/((sqrt(3)*x - s
qrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^9
```

maple [B] time = 0.10, size = 320, normalized size = 1.78

$$\frac{320313123\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{157631277343750}+\frac{8993673\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{1801500312500}+\frac{691821\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-}}{51471437500}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^10,x)
```

```
[Out] -949/96040000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-27/627200/(x+3/2)^8*(
-9*x+3*(x+3/2)^2-19/4)^(7/2)-13/161280/(x+3/2)^9*(-9*x+3*(x+3/2)^2-19/4)^(7
/2)-82563/29412250000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-8541/16807000
00/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-845559/514714375000/(x+3/2)^3*(-
9*x+3*(x+3/2)^2-19/4)^(7/2)-9198657/9007501562500/(x+3/2)^2*(-9*x+3*(x+3/2)
^2-19/4)^(7/2)+320313123/157631277343750*(-9*x+3*(x+3/2)^2-19/4)^(5/2)*x-10
6771041/157631277343750/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+8993673/18015
00312500*(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+691821/51471437500*(-9*x+3*(x+3/2)
^2-19/4)^(1/2)*x-76869/25735718750*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/
(-36*x+12*(x+3/2)^2-19)^(1/2))+1229904/78815638671875*(-9*x+3*(x+3/2)^2-19/
4)^(5/2)+102492/450375078125*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+76869/2573571875
0*(-36*x+12*(x+3/2)^2-19)^(1/2)-4741/230496000/(x+3/2)^7*(-9*x+3*(x+3/2)^2-
19/4)^(7/2)
```

maxima [**B**] time = 1.71, size = 434, normalized size = 2.41

$$\frac{27595971}{9007501562500}\left(3x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+2\right)^{\frac{7}{2}}}{315\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 27595971/9007501562500*(3*x^2 + 2)^(5/2) - 13/315*(3*x^2 + 2)^(7/2)/(512*x^
9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^
3 + 314928*x^2 + 118098*x + 19683) - 27/2450*(3*x^2 + 2)^(7/2)/(256*x^8 + 3
072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 3499
2*x + 6561) - 4741/1800750*(3*x^2 + 2)^(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5
 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 949/1500625*(3*x^2
 + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 7
29) - 8541/52521875*(3*x^2 + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^
2 + 810*x + 243) - 82563/1838265625*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 21
6*x^2 + 216*x + 81) - 845559/64339296875*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2
+ 54*x + 27) - 9198657/2251875390625*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) +
 8993673/1801500312500*(3*x^2 + 2)^(3/2)*x + 102492/450375078125*(3*x^2 + 2
)^(3/2) - 106771041/9007501562500*(3*x^2 + 2)^(5/2)/(2*x + 3) + 691821/5147
1437500*sqrt(3*x^2 + 2)*x + 76869/25735718750*sqrt(35)*arcsinh(3/2*sqrt(6)*
x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 76869/12867859375*sqrt(3*x^2 +
 2)
```

mupad [**B**] time = 0.16, size = 385, normalized size = 2.14

$$\frac{76869\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{25735718750}-\frac{76869\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{25735718750}+\frac{4515\sqrt{3}\,\sqrt{x^2+}}{32768\left(x^8+12x^7+63x^6+189x^5+\frac{2835x^4}{8}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^10,x)
```

```
[Out] (76869*35^(1/2)*log(x + 3/2))/25735718750 - (76869*35^(1/2)*log(x - (3^(1/2
)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/25735718750 + (4515*3^(1/2)*(x^2 +
2/3)^(1/2))/(32768*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 + (2835*x^4)
/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) + (1838301*3^(1/2)*(x^2 +
 2/3)^(1/2))/(614656000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (1
5925*3^(1/2)*(x^2 + 2/3)^(1/2))/(294912*((59049*x)/256 + (19683*x^2)/32 + (
15309*x^3)/16 + (15309*x^4)/16 + (5103*x^5)/8 + (567*x^6)/2 + 81*x^7 + (27*
x^8)/2 + x^9 + 19683/512)) - (923241*3^(1/2)*(x^2 + 2/3)^(1/2))/(35123200*(
(405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5 + 243/32)) - (1523
43*3^(1/2)*(x^2 + 2/3)^(1/2))/(94119200000*(x + 3/2)) + (35213*3^(1/2)*(x^2
 + 2/3)^(1/2))/(401408*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^4
)/4 + 9*x^5 + x^6 + 729/64)) + (80649*3^(1/2)*(x^2 + 2/3)^(1/2))/(537824000
0*(3*x + x^2 + 9/4)) - (52201*3^(1/2)*(x^2 + 2/3)^(1/2))/(344064*((5103*x)/
64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/4 + (21*x^6)/2
 + x^7 + 2187/128)) + (55473*3^(1/2)*(x^2 + 2/3)^(1/2))/(1536640000*((27*x)
/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**10,x)
```

```
[Out] Timed out
```

3.1396 $\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{11}}\,dx$

Optimal. Leaf size=202

$$-\frac{739619\left(3x^2+2\right)^{7/2}}{1260525000(2x+3)^7}-\frac{4393\left(3x^2+2\right)^{7/2}}{1715000(2x+3)^8}-\frac{1171\left(3x^2+2\right)^{7/2}}{110250(2x+3)^9}-\frac{13\left(3x^2+2\right)^{7/2}}{350(2x+3)^{10}}-\frac{73233(4-9x)\left(3x^2+2\right)^{5/2}}{1050437500(2x+3)^6}-\frac{219}{1}$$

```
[Out] -219699/14706125000*(4-9*x)*(3*x^2+2)^(3/2)/(3+2*x)^4-73233/1050437500*(4-9
*x)*(3*x^2+2)^(5/2)/(3+2*x)^6-13/350*(3*x^2+2)^(7/2)/(3+2*x)^10-1171/110250
*(3*x^2+2)^(7/2)/(3+2*x)^9-4393/1715000*(3*x^2+2)^(7/2)/(3+2*x)^8-739619/12
60525000*(3*x^2+2)^(7/2)/(3+2*x)^7-5931873/9007501562500*arctanh(1/35*(4-9*
x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-1977291/514714375000*(4-9*x)*(3*x^2+2
)^(1/2)/(3+2*x)^2
```

Rubi **[A]** time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {835, 807, 721, 725, 206}

$$-\frac{739619\left(3x^2+2\right)^{7/2}}{1260525000(2x+3)^7}-\frac{4393\left(3x^2+2\right)^{7/2}}{1715000(2x+3)^8}-\frac{1171\left(3x^2+2\right)^{7/2}}{110250(2x+3)^9}-\frac{13\left(3x^2+2\right)^{7/2}}{350(2x+3)^{10}}-\frac{73233(4-9x)\left(3x^2+2\right)^{5/2}}{1050437500(2x+3)^6}-\frac{219}{1}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^11,x]
```

```
[Out] (-1977291*(4 - 9*x)*Sqrt[2 + 3*x^2])/(514714375000*(3 + 2*x)^2) - (219699*(
4 - 9*x)*(2 + 3*x^2)^(3/2))/(14706125000*(3 + 2*x)^4) - (73233*(4 - 9*x)*(2
 + 3*x^2)^(5/2))/(1050437500*(3 + 2*x)^6) - (13*(2 + 3*x^2)^(7/2))/(350*(3
+ 2*x)^10) - (1171*(2 + 3*x^2)^(7/2))/(110250*(3 + 2*x)^9) - (4393*(2 + 3*x
^2)^(7/2))/(1715000*(3 + 2*x)^8) - (739619*(2 + 3*x^2)^(7/2))/(1260525000*(
3 + 2*x)^7) - (5931873*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(2573
57187500*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 721

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> -Simp
[((d + e*x)^(m + 1)*(-2*a*e + (2*c*d)*x)*(a + c*x^2)^p)/(2*(m + 1)*(c*d^2 +
 a*e^2)), x] - Dist[(4*a*c*p)/(2*(m + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m
 + 2)*(a + c*x^2)^(p - 1), x], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 +
a*e^2, 0] && EqQ[m + 2*p + 2, 0] && GtQ[p, 0]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{11}}\,dx = -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1}{350}\int \frac{(-410+117x)\left(2+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^{9}} + \frac{\int \frac{(28998-7026x)\left(2+3x^2\right)^{5/2}}{(3+2x)^9}\,dx}{110250}$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^{9}} - \frac{4393\left(2+3x^2\right)^{7/2}}{1715000(3+2x)^{8}} - \frac{\int \frac{(-1863024+237222x)(2-}{(3+2x)^8}}{30870000}$$

$$= -\frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^{9}} - \frac{4393\left(2+3x^2\right)^{7/2}}{1715000(3+2x)^{8}} - \frac{739619\left(2+3x^2\right)^{7/2}}{1260525000(3+2x)}$$

$$= -\frac{73233(4-9x)\left(2+3x^2\right)^{5/2}}{1050437500(3+2x)^{6}} - \frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1171\left(2+3x^2\right)^{7/2}}{110250(3+2x)^{9}} - \frac{4393\left(2+3\right.}{1715000(3-}$$

$$= -\frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^{4}} - \frac{73233(4-9x)\left(2+3x^2\right)^{5/2}}{1050437500(3+2x)^{6}} - \frac{13\left(2+3x^2\right)^{7/2}}{350(3+2x)^{10}} - \frac{1}{1}$$

$$= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^{2}} - \frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^{4}} - \frac{73233(4-9x)\left(2+\right.}{1050437500(3+}$$

$$= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^{2}} - \frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^{4}} - \frac{73233(4-9x)\left(2+\right.}{1050437500(3+}$$

$$= -\frac{1977291(4-9x)\sqrt{2+3x^2}}{514714375000(3+2x)^{2}} - \frac{219699(4-9x)\left(2+3x^2\right)^{3/2}}{14706125000(3+2x)^{4}} - \frac{73233(4-9x)\left(2+\right.}{1050437500(3+}$$

Mathematica [A] time = 0.27, size = 207, normalized size = 1.02

$$\frac{1}{350}\left(-\frac{4393\left(3x^2+2\right)^{7/2}}{4900(2x+3)^8} - \frac{1171\left(3x^2+2\right)^{7/2}}{315(2x+3)^9} - \frac{13\left(3x^2+2\right)^{7/2}}{(2x+3)^{10}} - \frac{31711164625\left(3x^2+2\right)^{7/2} + 219699(2x+3)}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 3*x^2)^(5/2))/(3 + 2*x)^11,x]
```

```
[Out] ((-13*(2 + 3*x^2)^(7/2))/(3 + 2*x)^10 - (1171*(2 + 3*x^2)^(7/2))/(315*(3 +
2*x)^9) - (4393*(2 + 3*x^2)^(7/2))/(4900*(3 + 2*x)^8) - (31711164625*(2 + 3
*x^2)^(7/2) + 219699*(3 + 2*x)*(-945*(3 + 2*x)^4*(-4 + 9*x)*Sqrt[2 + 3*x^2]
 - 3675*(3 + 2*x)^2*(-4 + 9*x)*(2 + 3*x^2)^(3/2) - 17150*(-4 + 9*x)*(2 + 3*
x^2)^(5/2) + 162*Sqrt[35]*(3 + 2*x)^6*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])]))/(154414312500*(3 + 2*x)^7))/350
```

fricas [A] time = 0.74, size = 209, normalized size = 1.03

$$\frac{53386857\sqrt{35}\left(1024x^{10}+15360x^{9}+103680x^{8}+414720x^{7}+1088640x^{6}+1959552x^{5}+2449440x^{4}+20995\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="fricas")
```

```
[Out] 1/162135028125000*(53386857*sqrt(35)*(1024*x^10 + 15360*x^9 + 103680*x^8 +
414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 118098
0*x^2 + 393660*x + 59049)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2
 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(7968937464*x^9 + 101311348104*x^8 +
 544524933294*x^7 + 1541962687104*x^6 - 3078520541586*x^5 + 11369945485836*
x^4 + 4704132871221*x^3 + 18888919063956*x^2 + 5421307926571*x + 5288003538
036)*sqrt(3*x^2 + 2))/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 10
88640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*
x + 59049)
```

giac [B] time = 0.53, size = 547, normalized size = 2.71

$$\frac{5931873}{9007501562500}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^{2}+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^{2}+2}}\right)-\frac{9\sqrt{3}\left(56242944\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+2}\right)^{19}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="giac")
```

```
[Out] 5931873/9007501562500*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3)
 + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 +
2))) - 9/65883440000000*sqrt(3)*(56242944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2))^19 + 4808771712*(sqrt(3)*x - sqrt(3*x^2 + 2))^18 + 60161202432*sqrt(3)
*(sqrt(3)*x - sqrt(3*x^2 + 2))^17 + 2449600006086*(sqrt(3)*x - sqrt(3*x^2 +
 2))^16 + 650003734476*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^15 + 113243432
51586*(sqrt(3)*x - sqrt(3*x^2 + 2))^14 - 43249498138224*sqrt(3)*(sqrt(3)*x
- sqrt(3*x^2 + 2))^13 - 114750161469717*(sqrt(3)*x - sqrt(3*x^2 + 2))^12 -
263561308381422*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^11 - 64560900263031*(
sqrt(3)*x - sqrt(3*x^2 + 2))^10 - 173527579922724*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 2))^9 + 409007369125548*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 - 81251529
2998272*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^7 + 775661489485344*(sqrt(3)*
x - sqrt(3*x^2 + 2))^6 - 309262645005696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
2))^5 + 53888888658816*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 21200045958144*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 6293205518848*(sqrt(3)*x - sqrt(3*x^
2 + 2))^2 - 348990277632*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 2518577766
4)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2
)) - 2)^10
```

maple [B] time = 0.15, size = 341, normalized size = 1.69

$$\frac{24718114791\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}x}{55170947070312500}+\frac{694029141\left(-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}x}{630525109375000}+\frac{53386857\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}}}{18015003125000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+2)^(5/2)/(2*x+3)^11,x)
```

```
[Out] -73233/33614000000/(x+3/2)^6*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-4393/439040000/(
x+3/2)^8*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-1171/56448000/(x+3/2)^9*(-9*x+3*(x+3
/2)^2-19/4)^(7/2)-6371271/10294287500000/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^
(7/2)-659097/588245000000/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-65250603/
180150031250000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(7/2)-709847469/315262554
6875000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(7/2)+24718114791/551709470703125
00*(-9*x+3*(x+3/2)^2-19/4)^(5/2)*x-8239371597/5517094707031250O/(x+3/2)*(-9
*x+3*(x+3/2)^2-19/4)^(7/2)+694029141/630525109375000*(-9*x+3*(x+3/2)^2-19/4
)^(3/2)*x+53386857/18015003125000*(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-5931873/9
007501562500*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19
)^(1/2))+47454984/13792736767578125*(-9*x+3*(x+3/2)^2-19/4)^(5/2)+3954582/7
881563867187 5*(-9*x+3*(x+3/2)^2-19/4)^(3/2)+5931873/9007501562500*(-36*x+12
*(x+3/2)^2-19)^(1/2)-739619/161347200000/(x+3/2)^7*(-9*x+3*(x+3/2)^2-19/4)^
(7/2)-13/358400/(x+3/2)^10*(-9*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.47, size = 497, normalized size = 2.46

$$\frac{2129542407}{3152625546875000}\left(3\,x^2+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+2\right.}{350\left(1024\,x^{10}+15360\,x^9+103680\,x^8+414720\,x^7+1088640\,x^6+1959552\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+2)^(5/2)/(3+2*x)^11,x, algorithm="maxima")
```

```
[Out] 2129542407/3152625546875000*(3*x^2 + 2)^(5/2) - 13/350*(3*x^2 + 2)^(7/2)/(1
024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552*x^5
+ 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049) - 1171/110250
*(3*x^2 + 2)^(7/2)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^
5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683) - 4393/1715000
*(3*x^2 + 2)^(7/2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4
+ 108864*x^3 + 81648*x^2 + 34992*x + 6561) - 739619/1260525000*(3*x^2 + 2)^
(7/2)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 +
10206*x + 2187) - 73233/525218750*(3*x^2 + 2)^(7/2)/(64*x^6 + 576*x^5 + 216
0*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 659097/18382656250*(3*x^2 + 2
)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 6371271/643
392968750*(3*x^2 + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 6525
0603/22518753906250*(3*x^2 + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 709847
469/788156386718750*(3*x^2 + 2)^(7/2)/(4*x^2 + 12*x + 9) + 694029141/630525
109375000*(3*x^2 + 2)^(3/2)*x + 3954582/7881563867187 5*(3*x^2 + 2)^(3/2) -
8239371597/3152625546875000*(3*x^2 + 2)^(5/2)/(2*x + 3) + 53386857/18015003
125000*sqrt(3*x^2 + 2)*x + 5931873/9007501562500*sqrt(35)*arcsinh(3/2*sqrt(
6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3)) + 5931873/4503750781250*sqrt(
3*x^2 + 2)
```

mupad [B] time = 1.90, size = 449, normalized size = 2.22

$$\frac{5931873\,\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{9007501562500}-\frac{5931873\,\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{9007501562500}-\frac{43213\,\sqrt{3}}{655360\,\left(x^8+12\,x^7+63\,x^6+189\,x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((3*x^2 + 2)^(5/2)*(x - 5))/(2*x + 3)^11,x)
```

```
[Out] (5931873*35^(1/2)*log(x + 3/2))/9007501562500 - (5931873*35^(1/2)*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/9007501562500 - (43213*3^(1/2
)*(x^2 + 2/3)^(1/2))/(655360*((2187*x)/16 + (5103*x^2)/16 + (1701*x^3)/4 +
(2835*x^4)/8 + 189*x^5 + 63*x^6 + 12*x^7 + x^8 + 6561/256)) + (4728159*3^(1
/2)*(x^2 + 2/3)^(1/2))/(430259200000*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 +
 81/16)) + (36029*3^(1/2)*(x^2 + 2/3)^(1/2))/(589824*((59049*x)/256 + (1968
3*x^2)/32 + (15309*x^3)/16 + (15309*x^4)/16 + (5103*x^5)/8 + (567*x^6)/2 +
81*x^7 + (27*x^8)/2 + x^9 + 19683/512)) + (27428781*3^(1/2)*(x^2 + 2/3)^(1/
2))/(24586240000*((405*x)/16 + (135*x^2)/4 + (45*x^3)/2 + (15*x^4)/2 + x^5
+ 243/32)) - (3185*3^(1/2)*(x^2 + 2/3)^(1/2))/(131072*((98415*x)/256 + (295
245*x^2)/256 + (32805*x^3)/16 + (76545*x^4)/32 + (15309*x^5)/8 + (8505*x^6)
/8 + 405*x^7 + (405*x^8)/4 + 15*x^9 + x^10 + 59049/1024)) - (110679687*3^(1
/2)*(x^2 + 2/3)^(1/2))/(65883440000000*(x + 3/2)) - (2988711*3^(1/2)*(x^2 +
 2/3)^(1/2))/(280985600*((729*x)/16 + (1215*x^2)/16 + (135*x^3)/2 + (135*x^
4)/4 + 9*x^5 + x^6 + 729/64)) + (4975641*3^(1/2)*(x^2 + 2/3)^(1/2))/(376476
8000000*(3*x + x^2 + 9/4)) + (1785563*3^(1/2)*(x^2 + 2/3)^(1/2))/(48168960*
((5103*x)/64 + (5103*x^2)/32 + (2835*x^3)/16 + (945*x^4)/8 + (189*x^5)/4 +
(21*x^6)/2 + x^7 + 2187/128)) + (5833857*3^(1/2)*(x^2 + 2/3)^(1/2))/(107564
8000000*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+2)**(5/2)/(3+2*x)**11,x)
```

```
[Out] Timed out
```

3.1397 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=106

$$-\frac{1}{15}\sqrt{3x^2+2}\,(2x+3)^4+\frac{19}{30}\sqrt{3x^2+2}\,(2x+3)^3+\frac{1477}{270}\sqrt{3x^2+2}\,(2x+3)^2+\frac{49}{81}(99x+383)\sqrt{3x^2+2}+\frac{343\sinh^{-1}(}{3\sqrt{3}}$$

```
[Out] 343/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)+1477/270*(3+2*x)^2*(3*x^2+2)^(1/2)+19/
30*(3+2*x)^3*(3*x^2+2)^(1/2)-1/15*(3+2*x)^4*(3*x^2+2)^(1/2)+49/81*(383+99*x
)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = $\{833, 780, 215\}$

$$-\frac{1}{15}\sqrt{3x^2+2}\,(2x+3)^4+\frac{19}{30}\sqrt{3x^2+2}\,(2x+3)^3+\frac{1477}{270}\sqrt{3x^2+2}\,(2x+3)^2+\frac{49}{81}(99x+383)\sqrt{3x^2+2}+\frac{343\sinh^{-1}(}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (1477*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/270 + (19*(3 + 2*x)^3*Sqrt[2 + 3*x^2])/3
0 - ((3 + 2*x)^4*Sqrt[2 + 3*x^2])/15 + (49*(383 + 99*x)*Sqrt[2 + 3*x^2])/81
 + (343*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{1}{15}\int \frac{(3+2x)^3(241+114x)}{\sqrt{2+3x^2}}\,dx \\
&= \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{1}{180}\int \frac{(3+2x)^2(7308+8862x)}{\sqrt{2+3x^2}}\,dx \\
&= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{\int \frac{(3+2x)(126}{\sqrt{2}}}{1} \\
&= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{49}{81}(383+9 \\
&= \frac{1477}{270}(3+2x)^2\sqrt{2+3x^2} + \frac{19}{30}(3+2x)^3\sqrt{2+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+3x^2} + \frac{49}{81}(383+9
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 55, normalized size = 0.52

$$
\frac{1}{405}\left(15435\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right) - \sqrt{3x^2+2}\left(432x^4+540x^3-12264x^2-58860x-118513\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-118513 - 58860*x - 12264*x^2 + 540*x^3 + 432*x^4)) + 1
5435*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/405
```

fricas [A] time = 0.69, size = 60, normalized size = 0.57

$$
-\frac{1}{405}\left(432\,x^4+540\,x^3-12264\,x^2-58860\,x-118513\right)\sqrt{3\,x^2+2}+\frac{343}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/405*(432*x^4 + 540*x^3 - 12264*x^2 - 58860*x - 118513)*sqrt(3*x^2 + 2) +
 343/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.19, size = 53, normalized size = 0.50

$$
-\frac{1}{405}\left(12\left(\left(9\left(4\,x+5\right)x-1022\right)x-4905\right)x-118513\right)\sqrt{3\,x^2+2}-\frac{343}{9}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/405*(12*((9*(4*x + 5)*x - 1022)*x - 4905)*x - 118513)*sqrt(3*x^2 + 2) -
343/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 79, normalized size = 0.75

$$
-\frac{16\sqrt{3x^2+2}\;x^4}{15}-\frac{4\sqrt{3x^2+2}\;x^3}{3}+\frac{4088\sqrt{3x^2+2}\;x^2}{135}+\frac{436\sqrt{3x^2+2}\;x}{3}+\frac{343\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{118513\sqrt{3x^2+2}}{405}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(1/2),x)
```

```
[Out] -16/15*x^4*(3*x^2+2)^(1/2)+4088/135*x^2*(3*x^2+2)^(1/2)+118513/405*(3*x^2+2
)^(1/2)-4/3*x^3*(3*x^2+2)^(1/2)+436/3*(3*x^2+2)^(1/2)*x+343/9*arcsinh(1/2*6
^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.42, size = 78, normalized size = 0.74

$$-\frac{16}{15}\sqrt{3x^2+2}\,x^4-\frac{4}{3}\sqrt{3x^2+2}\,x^3+\frac{4088}{135}\sqrt{3x^2+2}\,x^2+\frac{436}{3}\sqrt{3x^2+2}\,x+\frac{343}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{118513}{405}\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(3*x^2 + 2)*x^4 - 4/3*sqrt(3*x^2 + 2)*x^3 + 4088/135*sqrt(3*x^2
+ 2)*x^2 + 436/3*sqrt(3*x^2 + 2)*x + 343/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) +
 118513/405*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 45, normalized size = 0.42

$$\frac{343\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-\frac{16\,x^4}{5}-4\,x^3+\frac{4088\,x^2}{45}+436\,x+\frac{118513}{135}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (343*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(436*x +
(4088*x^2)/45 - 4*x^3 - (16*x^4)/5 + 118513/135))/3
```

sympy [A] time = 1.93, size = 97, normalized size = 0.92

$$-\frac{16x^4\sqrt{3x^2+2}}{15}-\frac{4x^3\sqrt{3x^2+2}}{3}+\frac{4088x^2\sqrt{3x^2+2}}{135}+\frac{436x\sqrt{3x^2+2}}{3}+\frac{118513\sqrt{3x^2+2}}{405}+\frac{343\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(1/2),x)
```

```
[Out] -16*x**4*sqrt(3*x**2 + 2)/15 - 4*x**3*sqrt(3*x**2 + 2)/3 + 4088*x**2*sqrt(3
*x**2 + 2)/135 + 436*x*sqrt(3*x**2 + 2)/3 + 118513*sqrt(3*x**2 + 2)/405 + 3
43*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1398 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=84

$$-\frac{1}{12}\sqrt{3x^2+2}\,(2x+3)^3+\frac{31}{36}\sqrt{3x^2+2}\,(2x+3)^2+\frac{5}{54}(171x+809)\sqrt{3x^2+2}+\frac{275\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] 275/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)+31/36*(3+2*x)^2*(3*x^2+2)^(1/2)-1/12*(
3+2*x)^3*(3*x^2+2)^(1/2)+5/54*(809+171*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {833, 780, 215}

$$-\frac{1}{12}\sqrt{3x^2+2}\,(2x+3)^3+\frac{31}{36}\sqrt{3x^2+2}\,(2x+3)^2+\frac{5}{54}(171x+809)\sqrt{3x^2+2}+\frac{275\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (31*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/36 - ((3 + 2*x)^3*Sqrt[2 + 3*x^2])/12 + (5
*(809 + 171*x)*Sqrt[2 + 3*x^2])/54 + (275*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{12}(3+2x)^3\sqrt{2+3x^2} + \frac{1}{12}\int \frac{(3+2x)^2(192+93x)}{\sqrt{2+3x^2}}\,dx \\
&= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+3x^2} + \frac{1}{108}\int \frac{(3+2x)(4440+5130x)}{\sqrt{2+3x^2}}\,dx \\
&= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+3x^2} + \frac{5}{54}(809+171x)\sqrt{2+3x^2} + \frac{275}{3}\int \\
&= \frac{31}{36}(3+2x)^2\sqrt{2+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+3x^2} + \frac{5}{54}(809+171x)\sqrt{2+3x^2} + \frac{275\,\mathrm{si}}{}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 50, normalized size = 0.60

$$
\frac{1}{27}\left(825\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(18x^3-12x^2-585x-2171\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-2171 - 585*x - 12*x^2 + 18*x^3)) + 825*Sqrt[3]*ArcSinh
[Sqrt[3/2]*x])/27
```

fricas [A] time = 0.74, size = 55, normalized size = 0.65

$$
-\frac{1}{27}\left(18\,x^{3}-12\,x^{2}-585\,x-2171\right)\sqrt{3\,x^{2}+2}+\frac{275}{18}\,\sqrt{3}\,\log\left(-\sqrt{3}\,\sqrt{3\,x^{2}+2}\,x-3\,x^{2}-1\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/27*(18*x^3 - 12*x^2 - 585*x - 2171)*sqrt(3*x^2 + 2) + 275/18*sqrt(3)*log
(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.25, size = 49, normalized size = 0.58

$$
-\frac{1}{27}\,(3\,(2\,(3\,x-2)x-195)x-2171)\sqrt{3\,x^{2}+2}-\frac{275}{9}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^{2}+2}\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/27*(3*(2*(3*x - 2)*x - 195)*x - 2171)*sqrt(3*x^2 + 2) - 275/9*sqrt(3)*lo
g(-sqrt(3)*x + sqrt(3*x^2 + 2))
```

maple [A] time = 0.06, size = 65, normalized size = 0.77

$$
-\frac{2\sqrt{3x^2+2}\;x^3}{3}+\frac{4\sqrt{3x^2+2}\;x^2}{9}+\frac{65\sqrt{3x^2+2}\;x}{3}+\frac{275\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{2171\sqrt{3x^2+2}}{27}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(1/2),x)
```

```
[Out] -2/3*(3*x^2+2)^(1/2)*x^3+65/3*(3*x^2+2)^(1/2)*x+275/9*arcsinh(1/2*6^(1/2)*x
)*3^(1/2)+4/9*(3*x^2+2)^(1/2)*x^2+2171/27*(3*x^2+2)^(1/2)
```

maxima [A] time = 1.46, size = 64, normalized size = 0.76

$$-\frac{2}{3}\sqrt{3x^2+2}\,x^3+\frac{4}{9}\sqrt{3x^2+2}\,x^2+\frac{65}{3}\sqrt{3x^2+2}\,x+\frac{275}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{2171}{27}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(3*x^2 + 2)*x^3 + 4/9*sqrt(3*x^2 + 2)*x^2 + 65/3*sqrt(3*x^2 + 2)*x
 + 275/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 2171/27*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 40, normalized size = 0.48

$$\frac{275\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(-2x^3+\frac{4x^2}{3}+65x+\frac{2171}{9}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (275*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(65*x + (
4*x^2)/3 - 2*x^3 + 2171/9))/3
```

sympy [A] time = 1.08, size = 80, normalized size = 0.95

$$-\frac{2x^3\sqrt{3x^2+2}}{3}+\frac{4x^2\sqrt{3x^2+2}}{9}+\frac{65x\sqrt{3x^2+2}}{3}+\frac{2171\sqrt{3x^2+2}}{27}+\frac{275\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(1/2),x)
```

```
[Out] -2*x**3*sqrt(3*x**2 + 2)/3 + 4*x**2*sqrt(3*x**2 + 2)/9 + 65*x*sqrt(3*x**2 +
 2)/3 + 2171*sqrt(3*x**2 + 2)/27 + 275*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1399 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=62

$$-\frac{1}{9}\sqrt{3x^2+2}\,(2x+3)^2+\frac{2}{27}(36x+251)\sqrt{3x^2+2}\,+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

```
[Out] 127/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)-1/9*(3+2*x)^2*(3*x^2+2)^(1/2)+2/27*(25
1+36*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {833, 780, 215}

$$-\frac{1}{9}\sqrt{3x^2+2}\,(2x+3)^2+\frac{2}{27}(36x+251)\sqrt{3x^2+2}\,+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -((3 + 2*x)^2*Sqrt[2 + 3*x^2])/9 + (2*(251 + 36*x)*Sqrt[2 + 3*x^2])/27 + (1
27*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}\,+\frac{1}{9}\int \frac{(3+2x)(143+72x)}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}\,+\frac{2}{27}(251+36x)\sqrt{2+3x^2}\,+\frac{127}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{1}{9}(3+2x)^2\sqrt{2+3x^2}\,+\frac{2}{27}(251+36x)\sqrt{2+3x^2}\,+\frac{127\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 45, normalized size = 0.73

$$\frac{1}{27}\left(381\sqrt{3}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-\sqrt{3x^2+2}\left(12x^2-36x-475\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-(Sqrt[2 + 3*x^2]*(-475 - 36*x + 12*x^2)) + 381*Sqrt[3]*ArcSinh[Sqrt[3/2]*
x])/27
```

fricas [A] time = 0.79, size = 50, normalized size = 0.81

$$-\frac{1}{27}\left(12x^2-36x-475\right)\sqrt{3x^2+2}+\frac{127}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/27*(12*x^2 - 36*x - 475)*sqrt(3*x^2 + 2) + 127/18*sqrt(3)*log(-sqrt(3)*s
qrt(3*x^2 + 2)*x - 3*x^2 - 1)
```

giac [A] time = 0.18, size = 42, normalized size = 0.68

$$-\frac{1}{27}(12(x-3)x-475)\sqrt{3x^2+2}-\frac{127}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/27*(12*(x - 3)*x - 475)*sqrt(3*x^2 + 2) - 127/9*sqrt(3)*log(-sqrt(3)*x +
 sqrt(3*x^2 + 2))
```

maple [A] time = 0.05, size = 51, normalized size = 0.82

$$-\frac{4\sqrt{3x^2+2}\,x^2}{9}+\frac{4\sqrt{3x^2+2}\,x}{3}+\frac{127\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{475\sqrt{3x^2+2}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+2)^(1/2)*x^2+475/27*(3*x^2+2)^(1/2)+4/3*(3*x^2+2)^(1/2)*x+127/9
*arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.40, size = 50, normalized size = 0.81

$$-\frac{4}{9}\sqrt{3x^2+2}x^2+\frac{4}{3}\sqrt{3x^2+2}x+\frac{127}{9}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)+\frac{475}{27}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*sqrt(3*x^2 + 2)*x^2 + 4/3*sqrt(3*x^2 + 2)*x + 127/9*sqrt(3)*arcsinh(1/
2*sqrt(6)*x) + 475/27*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.03, size = 35, normalized size = 0.56

$$\frac{127\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\left(-\frac{4x^2}{3}+4x+\frac{475}{9}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (127*3^(1/2)*asinh((6^(1/2)*x)/2))/9 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(4*x - (4
*x^2)/3 + 475/9))/3
```

sympy [A] time = 0.54, size = 63, normalized size = 1.02

$$-\frac{4x^2\sqrt{3x^2+2}}{9}+\frac{4x\sqrt{3x^2+2}}{3}+\frac{475\sqrt{3x^2+2}}{27}+\frac{127\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(1/2),x)
```

```
[Out] -4*x**2*sqrt(3*x**2 + 2)/9 + 4*x*sqrt(3*x**2 + 2)/3 + 475*sqrt(3*x**2 + 2)/
27 + 127*sqrt(3)*asinh(sqrt(6)*x/2)/9
```

3.1400 $\int \frac{(5-x)(3+2x)}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=40

$$\frac{1}{3}\sqrt{3x^2+2}\,(7-x)+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

```
[Out] 47/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)+1/3*(7-x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {780, 215}

$$\frac{1}{3}\sqrt{3x^2+2}\,(7-x)+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/Sqrt[2 + 3*x^2],x]
```

```
[Out] ((7 - x)*Sqrt[2 + 3*x^2])/3 + (47*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\sqrt{2+3x^2}}\,dx &= \frac{1}{3}(7-x)\sqrt{2+3x^2}+\frac{47}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= \frac{1}{3}(7-x)\sqrt{2+3x^2}+\frac{47\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.95

$$\frac{1}{9}\left(47\sqrt{3}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-3(x-7)\sqrt{3x^2+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/Sqrt[2 + 3*x^2],x]
```

```
[Out] (-3*(-7 + x)*Sqrt[2 + 3*x^2] + 47*Sqrt[3]*ArcSinh[Sqrt[3/2]*x])/9
```

fricas [A] time = 0.64, size = 43, normalized size = 1.08

$$-\frac{1}{3}\sqrt{3x^2+2}\,(x-7)+\frac{47}{18}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*(x - 7) + 47/18*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x
 - 3*x^2 - 1)
```

giac [A] time = 0.17, size = 37, normalized size = 0.92

$$-\frac{1}{3}\sqrt{3x^2+2}\,(x-7)-\frac{47}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*(x - 7) - 47/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2
))
```

maple [A] time = 0.05, size = 37, normalized size = 0.92

$$-\frac{\sqrt{3x^2+2}\;x}{3}+\frac{47\sqrt{3}\;\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}+\frac{7\sqrt{3x^2+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(1/2),x)
```

```
[Out] -1/3*(3*x^2+2)^(1/2)*x+47/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)+7/3*(3*x^2+2)^(1
/2)
```

maxima [A] time = 1.29, size = 36, normalized size = 0.90

$$-\frac{1}{3}\sqrt{3x^2+2}\,x+\frac{47}{9}\sqrt{3}\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{7}{3}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(3*x^2 + 2)*x + 47/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 7/3*sqrt(3*x
^2 + 2)
```

mupad [B] time = 0.03, size = 28, normalized size = 0.70

$$\frac{47\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{\sqrt{3}\sqrt{x^2+\frac{2}{3}}\;(x-7)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (47*3^(1/2)*asinh((6^(1/2)*x)/2))/9 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(x - 7))/3
```

sympy [A] time = 0.30, size = 44, normalized size = 1.10

$$-\frac{x\sqrt{3x^2+2}}{3}+\frac{7\sqrt{3x^2+2}}{3}+\frac{47\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}x}{2}\right)}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -x*sqrt(3*x**2 + 2)/3 + 7*sqrt(3*x**2 + 2)/3 + 47*sqrt(3)*asinh(sqrt(6)*x/2
)/9
```

3.1401 $\int \frac{5-x}{\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=33

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

```
[Out] 5/3*arcsinh(1/2*x*6^(1/2))*3^(1/2)-1/3*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = $\{641, 215\}$

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -Sqrt[2 + 3*x^2]/3 + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[3]
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{2+3x^2}}\,dx &= -\frac{1}{3}\sqrt{2+3x^2}+5\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{1}{3}\sqrt{2+3x^2}+\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 33, normalized size = 1.00

$$\frac{5\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/Sqrt[2 + 3*x^2],x]
```

```
[Out] -1/3*Sqrt[2 + 3*x^2] + (5*ArcSinh[Sqrt[3/2]*x])/Sqrt[3]
```

fricas [A] time = 0.69, size = 40, normalized size = 1.21

$$\frac{5}{6}\sqrt{3}\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\frac{1}{3}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 5/6*sqrt(3)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) - 1/3*sqrt(3*x^2 +
2)
```

giac [A] time = 0.19, size = 34, normalized size = 1.03

$$-\frac{5}{3}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{1}{3}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -5/3*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/3*sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 25, normalized size = 0.76

$$\frac{5\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3x^2+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(1/2),x)
```

```
[Out] 5/3*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-1/3*(3*x^2+2)^(1/2)
```

maxima [A] time = 1.30, size = 24, normalized size = 0.73

$$\frac{5}{3}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}x\right)-\frac{1}{3}\sqrt{3x^2+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 5/3*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 1/3*sqrt(3*x^2 + 2)
```

mupad [B] time = 0.03, size = 25, normalized size = 0.76

$$\frac{5\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}-\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(1/2),x)
```

```
[Out] (5*3^(1/2)*asinh((6^(1/2)*x)/2))/3 - (3^(1/2)*(x^2 + 2/3)^(1/2))/3
```

sympy [A] time = 0.18, size = 29, normalized size = 0.88

$$-\frac{\sqrt{3x^2+2}}{3}+\frac{5\sqrt{3}\ \operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -sqrt(3*x**2 + 2)/3 + 5*sqrt(3)*asinh(sqrt(6)*x/2)/3
```

3.1402 $\int \frac{5-x}{(3+2x)\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=52

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

```
[Out] -1/6*arcsinh(1/2*x*6^(1/2))*3^(1/2)-13/70*arctanh(1/35*(4-9*x)*35^(1/2)/(3*
x^2+2)^(1/2))*35^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 52, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {844, 215, 725, 206}

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -ArcSinh[Sqrt[3/2]*x]/(2*Sqrt[3]) - (13*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
+ 3*x^2])])/(2*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\sqrt{2+3x^2}}\,dx &= -\left(\frac{1}{2}\int \frac{1}{\sqrt{2+3x^2}}\,dx\right)+\frac{13}{2}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{2\sqrt{3}}-\frac{13}{2}\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\ &= -\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{2\sqrt{3}}-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{2\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 52, normalized size = 1.00

$$-\frac{13\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{2\sqrt{35}}-\frac{\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -1/2*ArcSinh[Sqrt[3/2]*x]/Sqrt[3] - (13*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
 + 3*x^2])])/(2*Sqrt[35])
```

fricas [A] time = 0.78, size = 76, normalized size = 1.46

$$\frac{1}{12}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+\frac{13}{140}\sqrt{35}\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 13/140*sqrt(35)*l
og(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x
 + 9))
```

giac [B] time = 0.25, size = 90, normalized size = 1.73

$$\frac{1}{6}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{13}{70}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 13/70*sqrt(35)*log(-abs(-2*
sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(3
5) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
```

maple [A] time = 0.05, size = 44, normalized size = 0.85

$$-\frac{\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{6}-\frac{13\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{70}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(1/2),x)
```

```
[Out] -1/6*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-13/70*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.60, size = 47, normalized size = 0.90

$$-\frac{1}{6}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{13}{70}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 13/70*sqrt(35)*arcsinh(3/2*sqrt(6)*x/
abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x + 3))
```

mupad [B] time = 0.12, size = 49, normalized size = 0.94

$$\frac{\sqrt{35}\left(26\,\ln\left(x+\frac{3}{2}\right)-26\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{140}-\frac{\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (35^(1/2)*(26*log(x + 3/2) - 26*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2)
)/9 - 4/9)))/140 - (3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/6
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{2x\sqrt{3x^2+2}+3\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{2x\sqrt{3x^2+2}+3\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(2*x*sqrt(3*x**2 + 2) + 3*sqrt(3*x**2 + 2)), x) - Integral(-5/(
2*x*sqrt(3*x**2 + 2) + 3*sqrt(3*x**2 + 2)), x)
```

3.1403 $\int \frac{5-x}{(3+2x)^2\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=55

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

```
[Out] -41/1225*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-13/35*(3*x
^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.02, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = $\{807, 725, 206\}$

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(35*(3 + 2*x)) - (41*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt
[2 + 3*x^2])])/(35*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}+\frac{41}{35}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx\\ &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}-\frac{41}{35}\operatorname{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)\\ &= -\frac{13\sqrt{2+3x^2}}{35(3+2x)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{35\sqrt{35}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 55, normalized size = 1.00

$$-\frac{13\sqrt{3x^2+2}}{35(2x+3)}-\frac{41\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(35*(3 + 2*x)) - (41*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt
[2 + 3*x^2])])/(35*Sqrt[35])
```

fricas [A] time = 0.58, size = 74, normalized size = 1.35

$$\frac{41\sqrt{35}\,(2x+3)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-910\sqrt{3x^2+2}}{2450\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2450*(41*sqrt(35)*(2*x + 3)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93
*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 910*sqrt(3*x^2 + 2))/(2*x + 3)
```

giac [B] time = 0.27, size = 125, normalized size = 2.27

$$\frac{1}{2450}\sqrt{35}\left(13\sqrt{35}\sqrt{3}+82\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{41\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}+\right.\right.}{1225\operatorname{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2450*sqrt(35)*(13*sqrt(35)*sqrt(3) + 82*log(sqrt(35)*sqrt(3) - 9))*sgn(1/
(2*x + 3)) - 41/1225*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x +
3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3)) - 13/70*sqrt(-18/(2*x
 + 3) + 35/(2*x + 3)^2 + 3)/sgn(1/(2*x + 3))
```

maple [A] time = 0.06, size = 53, normalized size = 0.96

$$-\frac{41\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1225}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{70\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/70/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-41/1225*35^(1/2)*arctanh(2/35*
(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.35, size = 53, normalized size = 0.96

$$\frac{41}{1225}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{35\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 41/1225*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x +
 3)) - 13/35*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 1.92, size = 53, normalized size = 0.96

$$\frac{41\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1225}-\frac{41\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1225}-\frac{13\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{70\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (41*35^(1/2)*log(x + 3/2))/1225 - (41*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(x
^2 + 2/3)^(1/2))/9 - 4/9))/1225 - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(70*(x + 3
/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{4x^2\sqrt{3x^2+2}+12x\sqrt{3x^2+2}+9\sqrt{3x^2+2}}\,dx-\int\left(-\frac{5}{4x^2\sqrt{3x^2+2}+12x\sqrt{3x^2+2}+9\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(4*x**2*sqrt(3*x**2 + 2) + 12*x*sqrt(3*x**2 + 2) + 9*sqrt(3*x**
2 + 2)), x) - Integral(-5/(4*x**2*sqrt(3*x**2 + 2) + 12*x*sqrt(3*x**2 + 2)
+ 9*sqrt(3*x**2 + 2)), x)
```

3.1404 $\int \frac{5-x}{(3+2x)^3\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=77

$$-\frac{281\sqrt{3x^2+2}}{2450(2x+3)}-\frac{13\sqrt{3x^2+2}}{70(2x+3)^2}-\frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

```
[Out] -291/42875*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-13/70*(3
*x^2+2)^(1/2)/(3+2*x)^2-281/2450*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.04, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{281\sqrt{3x^2+2}}{2450(2x+3)}-\frac{13\sqrt{3x^2+2}}{70(2x+3)^2}-\frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(70*(3 + 2*x)^2) - (281*Sqrt[2 + 3*x^2])/(2450*(3 + 2
*x)) - (291*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2}-\frac{1}{70}\int \frac{-82+39x}{(3+2x)^2\sqrt{2+3x^2}}\,dx\\ &= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2}-\frac{281\sqrt{2+3x^2}}{2450(3+2x)}+\frac{291\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}\\ &= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2}-\frac{281\sqrt{2+3x^2}}{2450(3+2x)}-\frac{291\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}\\ &= -\frac{13\sqrt{2+3x^2}}{70(3+2x)^2}-\frac{281\sqrt{2+3x^2}}{2450(3+2x)}-\frac{291\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}\end{aligned}$$

Mathematica [**A**] time = 0.07, size = 60, normalized size = 0.78

$$\frac{-\frac{35\sqrt{3x^2+2}(281x+649)}{(2x+3)^2}-291\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*(649 + 281*x)*Sqrt[2 + 3*x^2])/(3 + 2*x)^2 - 291*Sqrt[35]*ArcTanh[(4
- 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/42875
```

fricas [**A**] time = 0.70, size = 89, normalized size = 1.16

$$\frac{291\sqrt{35}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-70\sqrt{3x^2+2}(281x+649)}{85750\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/85750*(291*sqrt(35)*(4*x^2 + 12*x + 9)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*
x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 70*sqrt(3*x^2 + 2)*(281*
x + 649))/(4*x^2 + 12*x + 9)
```

giac [**B**] time = 0.29, size = 183, normalized size = 2.38

$$\frac{291}{42875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{1164\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3+6463\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2}\right.}{4900\left(\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 291/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/490
0*(1164*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 6463*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 2))^2 - 17904*sqrt(3)*x + 2248*sqrt(3) + 17904*sqrt(3*x^2 + 2))/((sqr
t(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^
2
```

maple [A] time = 0.06, size = 74, normalized size = 0.96

$$-\frac{291\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{42875}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{280\left(x+\frac{3}{2}\right)^{2}}-\frac{281\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{4900\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/280/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-281/4900/(x+3/2)*(-9*x+3*(x
+3/2)^2-19/4)^(1/2)-291/42875*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*
x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.45, size = 76, normalized size = 0.99

$$\frac{291}{42875}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\,|2x+3|}-\frac{2\sqrt{6}}{3\,|2x+3|}\right)-\frac{13\sqrt{3x^{2}+2}}{70\left(4x^{2}+12x+9\right)}-\frac{281\sqrt{3x^{2}+2}}{2450\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 291/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) - 13/70*sqrt(3*x^2 + 2)/(4*x^2 + 12*x + 9) - 281/2450*sqrt(3*x^2 + 2
)/(2*x + 3)
```

mupad [B] time = 1.86, size = 77, normalized size = 1.00

$$\frac{291\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{42875}-\frac{291\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}-\frac{281\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{4900\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{3}\,\sqrt{x^{2}+\frac{2}{3}}}{280\left(x^{2}+3x+\frac{9}{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (291*35^(1/2)*log(x + 3/2))/42875 - (291*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 - (281*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900
*(x + 3/2)) - (13*3^(1/2)*(x^2 + 2/3)^(1/2))/(280*(3*x + x^2 + 9/4))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{8x^{3}\sqrt{3x^{2}+2}+36x^{2}\sqrt{3x^{2}+2}+54x\sqrt{3x^{2}+2}+27\sqrt{3x^{2}+2}}\,dx-\int\left(-\frac{5}{8x^{3}\sqrt{3x^{2}+2}+36x^{2}\sqrt{3x^{2}+2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(1/2),x)
```

```
[Out] -Integral(x/(8*x**3*sqrt(3*x**2 + 2) + 36*x**2*sqrt(3*x**2 + 2) + 54*x*sqrt
(3*x**2 + 2) + 27*sqrt(3*x**2 + 2)), x) - Integral(-5/(8*x**3*sqrt(3*x**2 +
 2) + 36*x**2*sqrt(3*x**2 + 2) + 54*x*sqrt(3*x**2 + 2) + 27*sqrt(3*x**2 + 2
)), x)
```

3.1405 $\int \frac{5-x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=99

$$-\frac{10\sqrt{3x^2+2}}{343(2x+3)}-\frac{16\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{13\sqrt{3x^2+2}}{105(2x+3)^3}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

```
[Out] -57/60025*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-13/105*(3
*x^2+2)^(1/2)/(3+2*x)^3-16/245*(3*x^2+2)^(1/2)/(3+2*x)^2-10/343*(3*x^2+2)^(
1/2)/(3+2*x)
```

Rubi **[A]** time = 0.06, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{835, 807, 725, 206\}$

$$-\frac{10\sqrt{3x^2+2}}{343(2x+3)}-\frac{16\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{13\sqrt{3x^2+2}}{105(2x+3)^3}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(105*(3 + 2*x)^3) - (16*Sqrt[2 + 3*x^2])/(245*(3 + 2*
x)^2) - (10*Sqrt[2 + 3*x^2])/(343*(3 + 2*x)) - (57*ArcTanh[(4 - 9*x)/(Sqrt[
35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^4\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3}-\frac{1}{105}\int \frac{-123+78x}{(3+2x)^3\sqrt{2+3x^2}}\,dx\\
&= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3}-\frac{16\sqrt{2+3x^2}}{245(3+2x)^2}+\frac{\int \frac{1590-1440x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{7350}\\
&= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3}-\frac{16\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{10\sqrt{2+3x^2}}{343(3+2x)}+\frac{57\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1715}\\
&= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3}-\frac{16\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{10\sqrt{2+3x^2}}{343(3+2x)}-\frac{57\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1715}\\
&= -\frac{13\sqrt{2+3x^2}}{105(3+2x)^3}-\frac{16\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{10\sqrt{2+3x^2}}{343(3+2x)}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1715\sqrt{35}}
\end{aligned}
$$

Mathematica [**A**] time = 0.07, size = 65, normalized size = 0.66

$$
-\frac{\sqrt{3x^2+2}\left(600x^2+2472x+2995\right)}{5145(2x+3)^3}-\frac{57\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 3*x^2]),x]
```

```
[Out] -1/5145*(Sqrt[2 + 3*x^2]*(2995 + 2472*x + 600*x^2))/(3 + 2*x)^3 - (57*ArcTa
nh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

fricas [**A**] time = 0.55, size = 104, normalized size = 1.05

$$
\frac{171\sqrt{35}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)-70\left(600x^2+2472x+2995\right)\sqrt{3x^2}}{360150\left(8x^3+36x^2+54x+27\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/360150*(171*sqrt(35)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(35)*sqrt(3*x
^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 70*(600*x^2 +
 2472*x + 2995)*sqrt(3*x^2 + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [**B**] time = 0.32, size = 232, normalized size = 2.34

$$
\frac{57}{60025}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{\sqrt{3}\left(38\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^5+855\left(\sqrt{3}x-\right.\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 57/60025*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x
^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 1/3430
*sqrt(3)*(38*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 855*(sqrt(3)*x - sqr
t(3*x^2 + 2))^4 + 2250*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 13290*(sqr
t(3)*x - sqrt(3*x^2 + 2))^2 + 3448*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
800)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 2)) - 2)^3
```

maple [A] time = 0.06, size = 95, normalized size = 0.96

$$-\frac{57\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{60025}-\frac{4\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{245\left(x+\frac{3}{2}\right)^{2}}-\frac{5\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{343\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-9x+3\,(}}{840\,(x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(1/2),x)
```

```
[Out] -4/245/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-5/343/(x+3/2)*(-9*x+3*(x+3/2
)^2-19/4)^(1/2)-57/60025*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*
(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.38, size = 104, normalized size = 1.05

$$\frac{57}{60025}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{13\sqrt{3\,x^{2}+2}}{105\left(8\,x^{3}+36\,x^{2}+54\,x+27\right)}-\frac{16\sqrt{3\,x^{2}+2}}{245\left(4\,x^{2}+12\,x+9\right)}-\frac{10\sqrt{3\,x^{2}+}}{343\,(2\,x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 57/60025*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
+ 3)) - 13/105*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 16/245*sqrt(3
*x^2 + 2)/(4*x^2 + 12*x + 9) - 10/343*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.11, size = 106, normalized size = 1.07

$$\frac{57\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{60025}-\frac{57\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^{2}+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{60025}-\frac{5\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{343\left(x+\frac{3}{2}\right)}-\frac{4\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}}{245\left(x^{2}+3\,x+\frac{9}{4}\right)}-\frac{13\sqrt{3}\ \sqrt{x^{2}}}{840\left(x^{3}+\frac{9\,x^{2}}{2}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (57*35^(1/2)*log(x + 3/2))/60025 - (57*35^(1/2)*log(x - (3^(1/2)*35^(1/2)*(
x^2 + 2/3)^(1/2))/9 - 4/9))/60025 - (5*3^(1/2)*(x^2 + 2/3)^(1/2))/(343*(x +
 3/2)) - (4*3^(1/2)*(x^2 + 2/3)^(1/2))/(245*(3*x + x^2 + 9/4)) - (13*3^(1/2
)*(x^2 + 2/3)^(1/2))/(840*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(1/2),x)
```

```
[Out] Timed out
```

3.1406 $\int \frac{5-x}{(3+2x)^5\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=121

$$-\frac{991\sqrt{3x^2+2}}{171500(2x+3)}-\frac{87\sqrt{3x^2+2}}{4900(2x+3)^2}-\frac{97\sqrt{3x^2+2}}{2100(2x+3)^3}-\frac{13\sqrt{3x^2+2}}{140(2x+3)^4}+\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

```
[Out] 27/1500625*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-13/140*(
3*x^2+2)^(1/2)/(3+2*x)^4-97/2100*(3*x^2+2)^(1/2)/(3+2*x)^3-87/4900*(3*x^2+2
)^(1/2)/(3+2*x)^2-991/171500*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{835, 807, 725, 206\}$

$$-\frac{991\sqrt{3x^2+2}}{171500(2x+3)}-\frac{87\sqrt{3x^2+2}}{4900(2x+3)^2}-\frac{97\sqrt{3x^2+2}}{2100(2x+3)^3}-\frac{13\sqrt{3x^2+2}}{140(2x+3)^4}+\frac{27\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(140*(3 + 2*x)^4) - (97*Sqrt[2 + 3*x^2])/(2100*(3 + 2
*x)^3) - (87*Sqrt[2 + 3*x^2])/(4900*(3 + 2*x)^2) - (991*Sqrt[2 + 3*x^2])/(1
71500*(3 + 2*x)) + (27*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(4287
5*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\sqrt{2+3x^2}}\,dx = -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{1}{140}\int \frac{-164+117x}{(3+2x)^4\sqrt{2+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} + \frac{\int \frac{3024-4074x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{14700}$$

$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{\int \frac{-21840+54810x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{1029000}$$

$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} - \frac{27\int \frac{1}{(3+2x)\sqrt{2+}}}{42875}$$

$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} + \frac{27\,\mathrm{Subst}\left(\int \frac{}{3}\right.}{4}$$

$$= -\frac{13\sqrt{2+3x^2}}{140(3+2x)^4} - \frac{97\sqrt{2+3x^2}}{2100(3+2x)^3} - \frac{87\sqrt{2+3x^2}}{4900(3+2x)^2} - \frac{991\sqrt{2+3x^2}}{171500(3+2x)} + \frac{27\tanh^{-1}\left(\frac{}{\sqrt{3}}\right.}{42875\sqrt{}}$$

Mathematica [**A**] time = 0.08, size = 70, normalized size = 0.58

$$\frac{81\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\sqrt{3x^2+2}\left(5946x^3+35892x^2+79423x+70389\right)}{(2x+3)^4}}{4501875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(70389 + 79423*x + 35892*x^2 + 5946*x^3))/(3 + 2*x)^4
 + 81*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/4501875
```

fricas [**A**] time = 0.66, size = 118, normalized size = 0.98

$$\frac{81\sqrt{35}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)-93x^2+36x-43}{4x^2+12x+9}\right) - 70\left(5946x^3+35892x^2+794\right.}{9003750\left(16x^4+96x^3+216x^2+216x+81\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/9003750*(81*sqrt(35)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((sqrt(3
5)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2 + 12*x + 9)) - 70
*(5946*x^3 + 35892*x^2 + 79423*x + 70389)*sqrt(3*x^2 + 2))/(16*x^4 + 96*x^3
 + 216*x^2 + 216*x + 81)
```

giac [**A**] time = 0.26, size = 191, normalized size = 1.58

$$\frac{1}{12005000}\sqrt{35}\left(991\sqrt{35}\sqrt{3} - 216\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right) - \frac{1}{1029000}\left(\frac{35\left(\frac{7\left(\frac{97}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)} + \frac{195}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3} + \right.}{2x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/12005000*sqrt(35)*(991*sqrt(35)*sqrt(3) - 216*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 1/1029000*(35*(7*(97/sgn(1/(2*x + 3)) + 195/((2*x + 3)*s
gn(1/(2*x + 3))))/(2*x + 3) + 261/sgn(1/(2*x + 3)))/(2*x + 3) + 2973/sgn(1/
(2*x + 3)))*sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + 27/1500625*sqrt(35)*
log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)
) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.07, size = 116, normalized size = 0.96

$$\frac{27\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1500625}-\frac{97\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{16800\left(x+\frac{3}{2}\right)^3}-\frac{87\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{19600\left(x+\frac{3}{2}\right)^2}-\frac{991\sqrt{-9x}}{343}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^5/(3*x^2+2)^(1/2),x)
```

```
[Out] -97/16800/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-87/19600/(x+3/2)^2*(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-991/343000/(x+3/2)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)+27
/1500625*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1
/2))-13/2240/(x+3/2)^4*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.30, size = 137, normalized size = 1.13

$$-\frac{27}{1500625}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{13\sqrt{3x^2+2}}{140\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{97\sqrt{3x}}{2100\left(8x^3+36\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -27/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2
*x + 3)) - 13/140*sqrt(3*x^2 + 2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
- 97/2100*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 87/4900*sqrt(3*x^2
 + 2)/(4*x^2 + 12*x + 9) - 991/171500*sqrt(3*x^2 + 2)/(2*x + 3)
```

mupad [B] time = 0.21, size = 146, normalized size = 1.21

$$\frac{\sqrt{35}\left(\frac{2808\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{2808\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}\right)}{560}-\frac{\sqrt{35}\left(\frac{324\ln\left(x+\frac{3}{2}\right)}{8575}-\frac{324\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{8575}\right)}{280}-\sqrt{3}\sqrt{x^2+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (35^(1/2)*((2808*log(x + 3/2))/42875 - (2808*log(x - (3^(1/2)*35^(1/2)*(x^2
 + 2/3)^(1/2))/9 - 4/9))/42875))/560 - (35^(1/2)*((324*log(x + 3/2))/8575 -
 (324*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/8575))/280 - (
3^(1/2)*(x^2 + 2/3)^(1/2)*(18252/(42875*(x + 3/2)) + 702/(1225*(x + 3/2)^2)
 + 117/(175*(x + 3/2)^3) + 39/(70*(x + 3/2)^4)))/96 + (3^(1/2)*(x^2 + 2/3)^
(1/2)*(636/(8575*(x + 3/2)) + 18/(245*(x + 3/2)^2) + 2/(35*(x + 3/2)^3)))/4
8
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+2)**(1/2),x)
```

```
[Out] Timed out
```

3.1407 $\int \frac{5-x}{(3+2x)^6\sqrt{2+3x^2}}\,dx$

Optimal. Leaf size=143

$$-\frac{10023\sqrt{3x^2+2}}{15006250(2x+3)}-\frac{1611\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{797\sqrt{3x^2+2}}{61250(2x+3)^3}-\frac{439\sqrt{3x^2+2}}{12250(2x+3)^4}-\frac{13\sqrt{3x^2+2}}{175(2x+3)^5}+\frac{19737\tanh^{-1}\left(\frac{4-}{\sqrt{35}}\right.}{7503125\sqrt{35}}$$

```
[Out] 19737/262609375*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)-13/
175*(3*x^2+2)^(1/2)/(3+2*x)^5-439/12250*(3*x^2+2)^(1/2)/(3+2*x)^4-797/61250
*(3*x^2+2)^(1/2)/(3+2*x)^3-1611/428750*(3*x^2+2)^(1/2)/(3+2*x)^2-10023/1500
6250*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.10, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {835, 807, 725, 206}

$$-\frac{10023\sqrt{3x^2+2}}{15006250(2x+3)}-\frac{1611\sqrt{3x^2+2}}{428750(2x+3)^2}-\frac{797\sqrt{3x^2+2}}{61250(2x+3)^3}-\frac{439\sqrt{3x^2+2}}{12250(2x+3)^4}-\frac{13\sqrt{3x^2+2}}{175(2x+3)^5}+\frac{19737\tanh^{-1}\left(\frac{4-}{\sqrt{35}}\right.}{7503125\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 3*x^2])/(175*(3 + 2*x)^5) - (439*Sqrt[2 + 3*x^2])/(12250*(3 +
 2*x)^4) - (797*Sqrt[2 + 3*x^2])/(61250*(3 + 2*x)^3) - (1611*Sqrt[2 + 3*x^2
])/(428750*(3 + 2*x)^2) - (10023*Sqrt[2 + 3*x^2])/(15006250*(3 + 2*x)) + (1
9737*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(7503125*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^6\sqrt{2+3x^2}}\,dx &= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{1}{175}\int \frac{-205+156x}{(3+2x)^5\sqrt{2+3x^2}}\,dx \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}+\frac{\int \frac{4884-7902x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{24500} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}-\frac{797\sqrt{2+3x^2}}{61250(3+2x)^3}-\frac{\int \frac{-37044+200844x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{2572500} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}-\frac{797\sqrt{2+3x^2}}{61250(3+2x)^3}-\frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2}+\frac{\int \frac{-939960-}{(3+2x)^2}}{1800} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}-\frac{797\sqrt{2+3x^2}}{61250(3+2x)^3}-\frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{10023\sqrt{2}}{15006250} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}-\frac{797\sqrt{2+3x^2}}{61250(3+2x)^3}-\frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{10023\sqrt{2}}{15006250} \\
&= -\frac{13\sqrt{2+3x^2}}{175(3+2x)^5}-\frac{439\sqrt{2+3x^2}}{12250(3+2x)^4}-\frac{797\sqrt{2+3x^2}}{61250(3+2x)^3}-\frac{1611\sqrt{2+3x^2}}{428750(3+2x)^2}-\frac{10023\sqrt{2}}{15006250}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 75, normalized size = 0.52

$$\frac{19737\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35\sqrt{3x^2+2}\left(80184x^4+706644x^3+2487944x^2+4314244x+3409859\right)}{(2x+3)^5}}{262609375}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 3*x^2]),x]
```

```
[Out] ((-35*Sqrt[2 + 3*x^2]*(3409859 + 4314244*x + 2487944*x^2 + 706644*x^3 + 801
84*x^4))/(3 + 2*x)^5 + 19737*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
3*x^2])])/262609375
```

fricas [A] time = 0.72, size = 133, normalized size = 0.93

$$\frac{19737\,\sqrt{35}\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)\log\left(\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)-93\,x^2+36\,x-43}{4\,x^2+12\,x+9}\right)-70\left(80184\,x^4\right.}{525218750\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/525218750*(19737*sqrt(35)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x
+ 243)*log((sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) - 93*x^2 + 36*x - 43)/(4*x^2
 + 12*x + 9)) - 70*(80184*x^4 + 706644*x^3 + 2487944*x^2 + 4314244*x + 3409
859)*sqrt(3*x^2 + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [B] time = 0.27, size = 322, normalized size = 2.25

$$-\frac{19737}{262609375}\sqrt{35}\log\left(-\frac{\left|-2\,\sqrt{3}\,x-\sqrt{35}-3\,\sqrt{3}+2\,\sqrt{3\,x^2+2}\right|}{2\,\sqrt{3}\,x-\sqrt{35}+3\,\sqrt{3}-2\,\sqrt{3\,x^2+2}}\right)+\frac{3\,\sqrt{3}\left(8772\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+2}\right)^9+35526\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="giac")
```

```
[Out] -19737/262609375*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*
sqrt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2)))
+ 3/30012500*sqrt(3)*(8772*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^9 + 355266
*(sqrt(3)*x - sqrt(3*x^2 + 2))^8 + 1773406*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 2))^7 + 11098773*(sqrt(3)*x - sqrt(3*x^2 + 2))^6 + 2315313*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 2))^5 + 49794206*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 - 2553
5944*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 16740688*(sqrt(3)*x - sqrt(3
*x^2 + 2))^2 - 1744032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) + 213824)/((sq
rt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)
^5
```

maple [A] time = 0.07, size = 137, normalized size = 0.96

$$\frac{19737\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{262609375}-\frac{13\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{5600\left(x+\frac{3}{2}\right)^{5}}-\frac{439\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{196000\left(x+\frac{3}{2}\right)^{4}}-797$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^6/(3*x^2+2)^(1/2),x)
```

```
[Out] -13/5600/(x+3/2)^5*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-439/196000/(x+3/2)^4*(-9*x
+3*(x+3/2)^2-19/4)^(1/2)-797/490000/(x+3/2)^3*(-9*x+3*(x+3/2)^2-19/4)^(1/2)
-1611/1715000/(x+3/2)^2*(-9*x+3*(x+3/2)^2-19/4)^(1/2)-10023/30012500/(x+3/2
)*(-9*x+3*(x+3/2)^2-19/4)^(1/2)+19737/262609375*35^(1/2)*arctanh(2/35*(-9*x
+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.16, size = 175, normalized size = 1.22

$$-\frac{19737}{262609375}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)-\frac{13\sqrt{3\,x^{2}+2}}{175\left(32\,x^{5}+240\,x^{4}+720\,x^{3}+1080\,x^{2}+810\,x+243\right)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -19737/262609375*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/
abs(2*x + 3)) - 13/175*sqrt(3*x^2 + 2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x
^2 + 810*x + 243) - 439/12250*sqrt(3*x^2 + 2)/(16*x^4 + 96*x^3 + 216*x^2 +
216*x + 81) - 797/61250*sqrt(3*x^2 + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1611
/428750*sqrt(3*x^2 + 2)/(4*x^2 + 12*x + 9) - 10023/15006250*sqrt(3*x^2 + 2)
/(2*x + 3)
```

mupad [B] time = 1.93, size = 160, normalized size = 1.12

$$\frac{\sqrt{3}\ \sqrt{x^{2}+\frac{2}{3}}\ \left(\frac{1404}{42875\left(x+\frac{3}{2}\right)}+\frac{54}{1225\left(x+\frac{3}{2}\right)^{2}}+\frac{9}{175\left(x+\frac{3}{2}\right)^{3}}+\frac{3}{70\left(x+\frac{3}{2}\right)^{4}}\right)}{96}-\frac{\sqrt{35}\ \left(\frac{555984\ \ln\left(x+\frac{3}{2}\right)}{7503125}-\frac{555984\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^{2}+\frac{2}{3}}}{9}\right.}{7503125}\right.}{1120}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^6*(3*x^2 + 2)^(1/2)),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(1404/(42875*(x + 3/2)) + 54/(1225*(x + 3/2)^2)
+ 9/(175*(x + 3/2)^3) + 3/(70*(x + 3/2)^4)))/96 - (35^(1/2)*((555984*log(x
+ 3/2))/7503125 - (555984*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 -
4/9))/7503125))/1120 - (35^(1/2)*((216*log(x + 3/2))/42875 - (216*log(x - (
3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875))/560 - (3^(1/2)*(x^2 +
 2/3)^(1/2)*(972504/(7503125*(x + 3/2)) + 57564/(214375*(x + 3/2)^2) + 1271
4/(30625*(x + 3/2)^3) + 3159/(6125*(x + 3/2)^4) + 78/(175*(x + 3/2)^5)))/19
2
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**6/(3*x**2+2)**(1/2),x)
```

```
[Out] Timed out
```

3.1408 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=89

$$-\frac{7(2-7x)(2x+3)^3}{6\sqrt{3x^2+2}}-\frac{151}{27}\sqrt{3x^2+2}\,(2x+3)^2-\frac{10}{81}(207x+185)\sqrt{3x^2+2}+\frac{880\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] 880/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)-7/6*(2-7*x)*(3+2*x)^3/(3*x^2+2)^(1/2)-
151/27*(3+2*x)^2*(3*x^2+2)^(1/2)-10/81*(185+207*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {819, 833, 780, 215}

$$-\frac{7(2-7x)(2x+3)^3}{6\sqrt{3x^2+2}}-\frac{151}{27}\sqrt{3x^2+2}\,(2x+3)^2-\frac{10}{81}(207x+185)\sqrt{3x^2+2}+\frac{880\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^3)/(6*Sqrt[2 + 3*x^2]) - (151*(3 + 2*x)^2*Sqrt[2 +
3*x^2])/27 - (10*(185 + 207*x)*Sqrt[2 + 3*x^2])/81 + (880*ArcSinh[Sqrt[3/2]
*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}}+\frac{1}{6}\int \frac{(72-302x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}}-\frac{151}{27}(3+2x)^2\sqrt{2+3x^2}+\frac{1}{54}\int \frac{(4360-4140x)(3+2x)}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}}-\frac{151}{27}(3+2x)^2\sqrt{2+3x^2}-\frac{10}{81}(185+207x)\sqrt{2+3x^2}+\frac{880}{3}\int\\ &= -\frac{7(2-7x)(3+2x)^3}{6\sqrt{2+3x^2}}-\frac{151}{27}(3+2x)^2\sqrt{2+3x^2}-\frac{10}{81}(185+207x)\sqrt{2+3x^2}+\frac{880\sinh^{-}}{3\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 58, normalized size = 0.65

$$-\frac{288x^4+432x^3-15024x^2-15840\sqrt{9x^2+6}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)+14715x+33914}{162\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/162*(33914 + 14715*x - 15024*x^2 + 432*x^3 + 288*x^4 - 15840*Sqrt[6 + 9*
x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt[2 + 3*x^2]
```

fricas [A] time = 0.71, size = 78, normalized size = 0.88

$$\frac{7920\,\sqrt{3}\left(3\,x^{2}+2\right)\log\left(-\sqrt{3}\,\sqrt{3\,x^{2}+2}\,x-3\,x^{2}-1\right)-\left(288\,x^{4}+432\,x^{3}-15024\,x^{2}+14715\,x+33914\right)\sqrt{3\,x^{2}+2}}{162\left(3\,x^{2}+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/162*(7920*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1)
 - (288*x^4 + 432*x^3 - 15024*x^2 + 14715*x + 33914)*sqrt(3*x^2 + 2))/(3*x^
2 + 2)
```

giac [A] time = 0.19, size = 54, normalized size = 0.61

$$-\frac{880}{9}\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^{2}+2}\right)-\frac{3\,(16\,(3\,(2\,x+3)x-313)x+4905)x+33914}{162\,\sqrt{3\,x^{2}+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -880/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(3*(16*(3*(2*x + 3
)*x - 313)*x + 4905)*x + 33914)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.06, size = 79, normalized size = 0.89

$$-\frac{16x^4}{9\sqrt{3x^2+2}}-\frac{8x^3}{3\sqrt{3x^2+2}}+\frac{2504x^2}{27\sqrt{3x^2+2}}-\frac{545x}{6\sqrt{3x^2+2}}+\frac{880\sqrt{3}\;\mathrm{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{16957}{81\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(3/2),x)
```

```
[Out] -16/9*x^4/(3*x^2+2)^(1/2)+2504/27*x^2/(3*x^2+2)^(1/2)-16957/81/(3*x^2+2)^(1
/2)-8/3*x^3/(3*x^2+2)^(1/2)-545/6*x/(3*x^2+2)^(1/2)+880/9*arcsinh(1/2*6^(1/
2)*x)*3^(1/2)
```

maxima [A] time = 1.41, size = 78, normalized size = 0.88

$$-\frac{16\,x^{4}}{9\,\sqrt{3\,x^{2}+2}}-\frac{8\,x^{3}}{3\,\sqrt{3\,x^{2}+2}}+\frac{2504\,x^{2}}{27\,\sqrt{3\,x^{2}+2}}+\frac{880}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)-\frac{545\,x}{6\,\sqrt{3\,x^{2}+2}}-\frac{16957}{81\,\sqrt{3\,x^{2}+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/9*x^4/sqrt(3*x^2 + 2) - 8/3*x^3/sqrt(3*x^2 + 2) + 2504/27*x^2/sqrt(3*x^
2 + 2) + 880/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) - 545/6*x/sqrt(3*x^2 + 2) - 1
6957/81/sqrt(3*x^2 + 2)
```

mupad [B] time = 0.06, size = 110, normalized size = 1.24

$$\frac{880\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{16\,x^2}{9}+\frac{8\,x}{3}-\frac{2536}{27}\right)}{3}+\frac{\sqrt{3}\,\sqrt{6}\,\left(-44058+\sqrt{6}\,4809\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{1944\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] (880*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(
(8*x)/3 + (16*x^2)/9 - 2536/27))/3 + (3^(1/2)*6^(1/2)*(6^(1/2)*4809i - 4405
8)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x + (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(6^
(1/2)*4809i + 44058)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x - (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{3x^{2}\sqrt{3x^{2}+2}+2\sqrt{3x^{2}+2}}\right)dx-\int\left(-\frac{864x^{2}}{3x^{2}\sqrt{3x^{2}+2}+2\sqrt{3x^{2}+2}}\right)dx-\int\left(-\frac{264x^{3}}{3x^{2}\sqrt{3x^{2}+2}+2\sqrt{3x^{2}}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(-999*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integ
ral(-864*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral
(-264*x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(16
*x**4/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(16*x**5
/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-405/(3*x**2
*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)
```

3.1409 $\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{7(2-7x)(2x+3)^2}{6\sqrt{3x^2+2}}-\frac{2}{9}(51x+131)\sqrt{3x^2+2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] 134/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)-7/6*(2-7*x)*(3+2*x)^2/(3*x^2+2)^(1/2)-
2/9*(131+51*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 780, 215}

$$-\frac{7(2-7x)(2x+3)^2}{6\sqrt{3x^2+2}}-\frac{2}{9}(51x+131)\sqrt{3x^2+2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^2)/(6*Sqrt[2 + 3*x^2]) - (2*(131 + 51*x)*Sqrt[2 + 3
*x^2])/9 + (134*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}+\frac{1}{6}\int \frac{(44-204x)(3+2x)}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}-\frac{2}{9}(131+51x)\sqrt{2+3x^2}+\frac{134}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{6\sqrt{2+3x^2}}-\frac{2}{9}(131+51x)\sqrt{2+3x^2}+\frac{134\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 53, normalized size = 0.79

$$-\frac{24x^3-24x^2-268\sqrt{9x^2+6}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-411x+1426}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(1426 - 411*x - 24*x^2 + 24*x^3 - 268*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/
2]*x])/Sqrt[2 + 3*x^2]
```

fricas [A] time = 0.79, size = 73, normalized size = 1.09

$$\frac{134\sqrt{3}\left(3x^2+2\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(24x^3-24x^2-411x+1426\right)\sqrt{3x^2+2}}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(134*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) -
 (24*x^3 - 24*x^2 - 411*x + 1426)*sqrt(3*x^2 + 2))/(3*x^2 + 2)
```

giac [A] time = 0.18, size = 47, normalized size = 0.70

$$-\frac{134}{9}\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)-\frac{3\,(8\,(x-1)x-137)x+1426}{18\,\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -134/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/18*(3*(8*(x - 1)*x - 1
37)*x + 1426)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 65, normalized size = 0.97

$$-\frac{4x^3}{3\sqrt{3x^2+2}}+\frac{4x^2}{3\sqrt{3x^2+2}}+\frac{137x}{6\sqrt{3x^2+2}}+\frac{134\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{713}{9\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+2)^(1/2)*x^3+137/6/(3*x^2+2)^(1/2)*x+134/9*arcsinh(1/2*6^(1/2)*
x)*3^(1/2)+4/3/(3*x^2+2)^(1/2)*x^2-713/9/(3*x^2+2)^(1/2)
```

maxima [A] time = 1.30, size = 64, normalized size = 0.96

$$-\frac{4\,x^3}{3\,\sqrt{3\,x^2+2}}+\frac{4\,x^2}{3\,\sqrt{3\,x^2+2}}+\frac{134}{9}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{137\,x}{6\,\sqrt{3\,x^2+2}}-\frac{713}{9\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^3/sqrt(3*x^2 + 2) + 4/3*x^2/sqrt(3*x^2 + 2) + 134/9*sqrt(3)*arcsinh(
1/2*sqrt(6)*x) + 137/6*x/sqrt(3*x^2 + 2) - 713/9/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.76, size = 105, normalized size = 1.57

$$\frac{134\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\,\left(\frac{4\,x}{3}-\frac{4}{3}\right)\,\sqrt{x^2+\frac{2}{3}}}{3}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-12978+\sqrt{6}\,1281\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{1944\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(12978+\right.}{1944}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] (134*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*((4*x)/3 - 4/3)*(x^
2 + 2/3)^(1/2))/3 - (3^(1/2)*6^(1/2)*(6^(1/2)*1281i - 12978)*(x^2 + 2/3)^(1
/2)*1i)/(1944*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*1281i + 129
78)*(x^2 + 2/3)^(1/2)*1i)/(1944*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{126x^2}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{4x^3}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(-243*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integ
ral(-126*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral
(-4*x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(8*x*
*4/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-135/(3*x*
*2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)
```

3.1410 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$-\frac{7(2-7x)(2x+3)}{6\sqrt{3x^2+2}}-\frac{53}{9}\sqrt{3x^2+2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

```
[Out] 8/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)-7/6*(2-7*x)*(3+2*x)/(3*x^2+2)^(1/2)-53/9
*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 641, 215}

$$-\frac{7(2-7x)(2x+3)}{6\sqrt{3x^2+2}}-\frac{53}{9}\sqrt{3x^2+2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x))/(6*Sqrt[2 + 3*x^2]) - (53*Sqrt[2 + 3*x^2])/9 + (8*
ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}+\frac{1}{6}\int \frac{16-106x}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}-\frac{53}{9}\sqrt{2+3x^2}+\frac{8}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)}{6\sqrt{2+3x^2}}-\frac{53}{9}\sqrt{2+3x^2}+\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 48, normalized size = 0.80

$$-\frac{24x^2-16\sqrt{9x^2+6}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-357x+338}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(338 - 357*x + 24*x^2 - 16*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt
[2 + 3*x^2]
```

fricas [A] time = 0.72, size = 68, normalized size = 1.13

$$\frac{8\sqrt{3}\left(3x^2+2\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(24x^2-357x+338\right)\sqrt{3x^2+2}}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(8*sqrt(3)*(3*x^2 + 2)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) - (
24*x^2 - 357*x + 338)*sqrt(3*x^2 + 2))/(3*x^2 + 2)
```

giac [A] time = 0.17, size = 44, normalized size = 0.73

$$-\frac{8}{9}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)-\frac{3(8x-119)x+338}{18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -8/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/18*(3*(8*x - 119)*x + 33
8)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.05, size = 51, normalized size = 0.85

$$-\frac{4x^2}{3\sqrt{3x^2+2}}+\frac{119x}{6\sqrt{3x^2+2}}+\frac{8\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{169}{9\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+2)^(1/2)*x^2-169/9/(3*x^2+2)^(1/2)+119/6/(3*x^2+2)^(1/2)*x+8/9*
arcsinh(1/2*6^(1/2)*x)*3^(1/2)
```

maxima [A] time = 1.12, size = 50, normalized size = 0.83

$$-\frac{4x^2}{3\sqrt{3x^2+2}}+\frac{8}{9}\sqrt{3}\ \operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{119x}{6\sqrt{3x^2+2}}-\frac{169}{9\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^2/sqrt(3*x^2 + 2) + 8/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 119/6*x/sqr
t(3*x^2 + 2) - 169/9/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.75, size = 100, normalized size = 1.67

$$\frac{8\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{4\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-966+\sqrt{6}\,357\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(966+\sqrt{6}\,357\mathrm{i}\right)\sqrt{}}{648\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] (8*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (4*3^(1/2)*(x^2 + 2/3)^(1/2))/
9 - (3^(1/2)*6^(1/2)*(6^(1/2)*357i - 966)*(x^2 + 2/3)^(1/2)*1i)/(648*(x - (
6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*357i + 966)*(x^2 + 2/3)^(1/2)*1
i)/(648*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{8x^2}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}\right)dx-\int\frac{4x^3}{3x^2\sqrt{3x^2+2}+2\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(-51*x/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integr
al(-8*x**2/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(4*
x**3/(3*x**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x) - Integral(-45/(3*x
**2*sqrt(3*x**2 + 2) + 2*sqrt(3*x**2 + 2)), x)
```

3.1411 $\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=40

$$-\frac{7(2-7x)}{6\sqrt{3x^2+2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

```
[Out] -2/9*arcsinh(1/2*x*6^(1/2))*3^(1/2)-7/6*(2-7*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 40, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {778, 215}

$$-\frac{7(2-7x)}{6\sqrt{3x^2+2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (-7*(2 - 7*x))/(6*Sqrt[2 + 3*x^2]) - (2*ArcSinh[Sqrt[3/2]*x])/(3*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx &= -\frac{7(2-7x)}{6\sqrt{2+3x^2}}-\frac{2}{3}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)}{6\sqrt{2+3x^2}}-\frac{2\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 43, normalized size = 1.08

$$-\frac{4\sqrt{9x^2+6}\,\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-147x+42}{18\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(3/2),x]
```

```
[Out] -1/18*(42 - 147*x + 4*Sqrt[6 + 9*x^2]*ArcSinh[Sqrt[3/2]*x])/Sqrt[2 + 3*x^2]
```

fricas [**B**] time = 0.63, size = 62, normalized size = 1.55

$$\frac{2\sqrt{3}\left(3x^2+2\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+21\sqrt{3x^2+2}\,(7x-2)}{18\left(3x^2+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/18*(2*sqrt(3)*(3*x^2 + 2)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2 - 1) + 21
*sqrt(3*x^2 + 2)*(7*x - 2))/(3*x^2 + 2)
```

giac [**A**] time = 0.18, size = 39, normalized size = 0.98

$$\frac{2}{9}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)+\frac{7(7x-2)}{6\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 7/6*(7*x - 2)/sqrt(3*x^2 +
2)
```

maple [**A**] time = 0.05, size = 37, normalized size = 0.92

$$\frac{49x}{6\sqrt{3x^2+2}}-\frac{2\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{9}-\frac{7}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(3/2),x)
```

```
[Out] 49/6/(3*x^2+2)^(1/2)*x-2/9*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-7/3/(3*x^2+2)^(1/
2)
```

maxima [**A**] time = 1.24, size = 36, normalized size = 0.90

$$-\frac{2}{9}\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\sqrt{6}\,x\right)+\frac{49x}{6\sqrt{3x^2+2}}-\frac{7}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -2/9*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 49/6*x/sqrt(3*x^2 + 2) - 7/3/sqrt(3*x
^2 + 2)
```

mupad [**B**] time = 1.78, size = 88, normalized size = 2.20

$$-\frac{2\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{9}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-126+\sqrt{6}\,147\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,\left(126+\sqrt{6}\,147\mathrm{i}\right)\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{648\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(3/2),x)
```

```
[Out] - (2*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/9 - (3^(1/2)*6^(1/2)*(6^(1/2)*14
7i - 126)*(x^2 + 2/3)^(1/2)*1i)/(648*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/
2)*(6^(1/2)*147i + 126)*(x^2 + 2/3)^(1/2)*1i)/(648*(x + (6^(1/2)*1i)/3))
```

sympy [B] time = 14.98, size = 99, normalized size = 2.48

$$-\frac{6\sqrt{3}\,x^{2}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27x^{2}+18}+\frac{6x\sqrt{3x^{2}+2}}{27x^{2}+18}+\frac{15x}{2\sqrt{3x^{2}+2}}-\frac{4\sqrt{3}\operatorname{asinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27x^{2}+18}-\frac{7}{3\sqrt{3x^{2}+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(3/2),x)
```

```
[Out] -6*sqrt(3)*x**2*asinh(sqrt(6)*x/2)/(27*x**2 + 18) + 6*x*sqrt(3*x**2 + 2)/(2
7*x**2 + 18) + 15*x/(2*sqrt(3*x**2 + 2)) - 4*sqrt(3)*asinh(sqrt(6)*x/2)/(27
*x**2 + 18) - 7/(3*sqrt(3*x**2 + 2))
```

3.1412 $\int \frac{5-x}{\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=20

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

```
[Out] 1/6*(2+15*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.00, antiderivative size = 20, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {637}

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2 + 15*x)/(6*Sqrt[2 + 3*x^2])
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rubi steps

$$\int \frac{5-x}{\left(2+3x^2\right)^{3/2}}\,dx=\frac{2+15x}{6\sqrt{2+3x^2}}$$

Mathematica [A] time = 0.01, size = 20, normalized size = 1.00

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 3*x^2)^(3/2),x]
```

```
[Out] (2 + 15*x)/(6*Sqrt[2 + 3*x^2])
```

fricas [A] time = 0.67, size = 16, normalized size = 0.80

$$\frac{15\,x+2}{6\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/6*(15*x + 2)/sqrt(3*x^2 + 2)
```

giac [A] time = 0.17, size = 16, normalized size = 0.80

$$\frac{15\,x+2}{6\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*(15*x + 2)/sqrt(3*x^2 + 2)
```

maple [A] time = 0.04, size = 17, normalized size = 0.85

$$\frac{15x+2}{6\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(3/2),x)
```

```
[Out] 1/6*(2+15*x)/(3*x^2+2)^(1/2)
```

maxima [A] time = 0.54, size = 24, normalized size = 1.20

$$\frac{5\,x}{2\,\sqrt{3\,x^2+2}}+\frac{1}{3\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 5/2*x/sqrt(3*x^2 + 2) + 1/3/sqrt(3*x^2 + 2)
```

mupad [B] time = 0.04, size = 15, normalized size = 0.75

$$\frac{\frac{5\,x}{2}+\frac{1}{3}}{\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(3/2),x)
```

```
[Out] ((5*x)/2 + 1/3)/(3*x^2 + 2)^(1/2)
```

sympy [A] time = 14.37, size = 27, normalized size = 1.35

$$\frac{5x}{2\sqrt{3x^2+2}}+\frac{1}{3\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(3/2),x)
```

```
[Out] 5*x/(2*sqrt(3*x**2 + 2)) + 1/(3*sqrt(3*x**2 + 2))
```

3.1413 $\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=53

$$\frac{41x+26}{70\sqrt{3x^2+2}}-\frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

```
[Out] -26/1225*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/70*(26+4
1*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 12, 725, 206}

$$\frac{41x+26}{70\sqrt{3x^2+2}}-\frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*Sqrt[2 + 3*x^2]) - (26*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 +
 3*x^2])])/(35*Sqrt[35])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx &= \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{1}{210}\int -\frac{156}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= \frac{26+41x}{70\sqrt{2+3x^2}} + \frac{26}{35}\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx \\
&= \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{26}{35}\,\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,dx, x, \frac{4-9x}{\sqrt{2+3x^2}}\right) \\
&= \frac{26+41x}{70\sqrt{2+3x^2}} - \frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{35\sqrt{35}}
\end{aligned}
$$

Mathematica [**A**] time = 0.02, size = 53, normalized size = 1.00

$$
\frac{123x+78}{210\sqrt{3x^2+2}} - \frac{26\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{35\sqrt{35}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (78 + 123*x)/(210*Sqrt[2 + 3*x^2]) - (26*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
 + 3*x^2])])/(35*Sqrt[35])
```

fricas [**A**] time = 0.64, size = 83, normalized size = 1.57

$$
\frac{26\sqrt{35}\left(3x^2+2\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\sqrt{3x^2+2}\,(41x+26)}{2450\left(3x^2+2\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/2450*(26*sqrt(35)*(3*x^2 + 2)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) +
93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*sqrt(3*x^2 + 2)*(41*x + 26))/(
3*x^2 + 2)
```

giac [**A**] time = 0.21, size = 84, normalized size = 1.58

$$
\frac{26}{1225}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{41x+26}{70\sqrt{3x^2+2}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 26/1225*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*x^
2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/70*(4
1*x + 26)/sqrt(3*x^2 + 2)
```

maple [**A**] time = 0.05, size = 77, normalized size = 1.45

$$
-\frac{x}{4\sqrt{3x^2+2}}+\frac{117x}{140\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{26\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1225}+\frac{13}{35\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(3/2),x)
```

```
[Out] -1/4/(3*x^2+2)^(1/2)*x+13/35/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+117/140*x/(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-26/1225*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-3
6*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.24, size = 58, normalized size = 1.09

$$\frac{26}{1225}\,\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\,\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\,\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{41\,x}{70\,\sqrt{3\,x^2+2}}+\frac{13}{35\,\sqrt{3\,x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 26/1225*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x +
 3)) + 41/70*x/sqrt(3*x^2 + 2) + 13/35/sqrt(3*x^2 + 2)
```

mupad [B] time = 1.81, size = 106, normalized size = 2.00

$$\frac{\sqrt{35}\,\left(26\,\ln\left(x+\frac{3}{2}\right)-26\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{1225}-\frac{\sqrt{3}\,\sqrt{6}\,\left(-234+\sqrt{6}\,123\mathrm{i}\right)\,\sqrt{x^2+\frac{2}{3}}\,1\mathrm{i}}{7560\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{6}\,(234}{756}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (35^(1/2)*(26*log(x + 3/2) - 26*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2)
)/9 - 4/9)))/1225 - (3^(1/2)*6^(1/2)*(6^(1/2)*123i - 234)*(x^2 + 2/3)^(1/2)
*1i)/(7560*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*123i + 234)*(x
^2 + 2/3)^(1/2)*1i)/(7560*(x - (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{6x^3\sqrt{3x^2+2}+9x^2\sqrt{3x^2+2}+4x\sqrt{3x^2+2}+6\sqrt{3x^2+2}}\,dx-\int\Bigg(-\frac{5}{6x^3\sqrt{3x^2+2}+9x^2\sqrt{3x^2+2}+4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(3/2),x)
```

```
[Out] -Integral(x/(6*x**3*sqrt(3*x**2 + 2) + 9*x**2*sqrt(3*x**2 + 2) + 4*x*sqrt(3
*x**2 + 2) + 6*sqrt(3*x**2 + 2)), x) - Integral(-5/(6*x**3*sqrt(3*x**2 + 2)
 + 9*x**2*sqrt(3*x**2 + 2) + 4*x*sqrt(3*x**2 + 2) + 6*sqrt(3*x**2 + 2)), x)
```

3.1414 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=82

$$\frac{41x+26}{70(2x+3)\sqrt{3x^2+2}}+\frac{19\sqrt{3x^2+2}}{1225(2x+3)}-\frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

```
[Out] -632/42875*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/70*(26
+41*x)/(3+2*x)/(3*x^2+2)^(1/2)+19/1225*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.04, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)\sqrt{3x^2+2}}+\frac{19\sqrt{3x^2+2}}{1225(2x+3)}-\frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)*Sqrt[2 + 3*x^2]) + (19*Sqrt[2 + 3*x^2])/(1225*(3
+ 2*x)) - (632*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35
])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx &= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}}-\frac{1}{210}\int \frac{-312-246x}{(3+2x)^2\sqrt{2+3x^2}}\,dx \\
&= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}}+\frac{19\sqrt{2+3x^2}}{1225(3+2x)}+\frac{632\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225} \\
&= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}}+\frac{19\sqrt{2+3x^2}}{1225(3+2x)}-\frac{632\,\text{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225} \\
&= \frac{26+41x}{70(3+2x)\sqrt{2+3x^2}}+\frac{19\sqrt{2+3x^2}}{1225(3+2x)}-\frac{632\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 65, normalized size = 0.79

$$
\frac{\frac{35\left(114x^2+1435x+986\right)}{(2x+3)\sqrt{3x^2+2}}-1264\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{85750}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((35*(986 + 1435*x + 114*x^2))/((3 + 2*x)*Sqrt[2 + 3*x^2]) - 1264*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/85750
```

fricas [A] time = 0.60, size = 104, normalized size = 1.27

$$
\frac{632\sqrt{35}\left(6x^3+9x^2+4x+6\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\left(114x^2+1435x+986\right)\sqrt{3x^2+2}}{85750\left(6x^3+9x^2+4x+6\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/85750*(632*sqrt(35)*(6*x^3 + 9*x^2 + 4*x + 6)*log(-(sqrt(35)*sqrt(3*x^2 +
 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(114*x^2 + 143
5*x + 986)*sqrt(3*x^2 + 2))/(6*x^3 + 9*x^2 + 4*x + 6)
```

giac [B] time = 0.27, size = 168, normalized size = 2.05

$$
-\frac{1}{85750}\sqrt{35}\left(19\sqrt{35}\sqrt{3}-1264\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\text{sgn}\left(\frac{1}{2x+3}\right)+\frac{\frac{\frac{1093}{\text{sgn}\left(\frac{1}{2x+3}\right)}-\frac{1820}{(2x+3)\text{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}+\frac{57}{\text{sgn}\left(\frac{1}{2x+3}\right)}}{2450\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}+3}}-\frac{632}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/85750*sqrt(35)*(19*sqrt(35)*sqrt(3) - 1264*log(sqrt(35)*sqrt(3) - 9))*sg
n(1/(2*x + 3)) + 1/2450*((1093/sgn(1/(2*x + 3)) - 1820/((2*x + 3)*sgn(1/(2*
x + 3))))/(2*x + 3) + 57/sgn(1/(2*x + 3)))/sqrt(-18/(2*x + 3) + 35/(2*x + 3
)^2 + 3) - 632/42875*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x +
3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.05, size = 86, normalized size = 1.05

$$\frac{57x}{2450\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{632\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{42875}-\frac{13}{70\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(3/2),x)
```

```
[Out] -13/70/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+316/1225/(-9*x+3*(x+3/2)^2-19/
4)^(1/2)+57/2450/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-632/42875*35^(1/2)*arctanh
(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.43, size = 86, normalized size = 1.05

$$\frac{632}{42875}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{57\,x}{2450\sqrt{3\,x^2+2}}+\frac{316}{1225\sqrt{3\,x^2+2}}-\frac{13}{35\left(2\sqrt{3\,x^2+2}\,x+3\sqrt{3\,x^2+2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 632/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 57/2450*x/sqrt(3*x^2 + 2) + 316/1225/sqrt(3*x^2 + 2) - 13/35/(2*sq
rt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 0.12, size = 157, normalized size = 1.91

$$\frac{632\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{42875}-\frac{632\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}+\frac{71\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{4900\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{71\sqrt{3}\sqrt{x^2+\frac{2}{3}}}{4900\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{26\sqrt{3}\sqrt{x^2+}}{1225\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (632*35^(1/2)*log(x + 3/2))/42875 - (632*35^(1/2)*log(x - (3^(1/2)*35^(1/2)
*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875 + (71*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*
(x - (6^(1/2)*1i)/3)) + (71*3^(1/2)*(x^2 + 2/3)^(1/2))/(4900*(x + (6^(1/2)*
1i)/3)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(1225*(x + 3/2)) - (3^(1/2)*6^(1/2
)*(x^2 + 2/3)^(1/2)*199i)/(14700*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(
x^2 + 2/3)^(1/2)*199i)/(14700*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1415 $\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=104

$$\frac{41x+26}{70(2x+3)^2\sqrt{3x^2+2}}-\frac{331\sqrt{3x^2+2}}{8575(2x+3)}+\frac{9\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

```
[Out] -1962/300125*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/70*(
26+41*x)/(3+2*x)^2/(3*x^2+2)^(1/2)+9/245*(3*x^2+2)^(1/2)/(3+2*x)^2-331/8575
*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^2\sqrt{3x^2+2}}-\frac{331\sqrt{3x^2+2}}{8575(2x+3)}+\frac{9\sqrt{3x^2+2}}{245(2x+3)^2}-\frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{8575\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^2*Sqrt[2 + 3*x^2]) + (9*Sqrt[2 + 3*x^2])/(245*(3
+ 2*x)^2) - (331*Sqrt[2 + 3*x^2])/(8575*(3 + 2*x)) - (1962*ArcTanh[(4 - 9*x
)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(8575*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx &= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}}-\frac{1}{210}\int \frac{-468-492x}{(3+2x)^3\sqrt{2+3x^2}}\,dx\\
&= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}}+\frac{9\sqrt{2+3x^2}}{245(3+2x)^2}+\frac{\int \frac{12360+1620x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{14700}\\
&= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}}+\frac{9\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{331\sqrt{2+3x^2}}{8575(3+2x)}+\frac{1962\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{8575}\\
&= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}}+\frac{9\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{331\sqrt{2+3x^2}}{8575(3+2x)}-\frac{1962\,\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,dx,\right.}{8575}\\
&= \frac{26+41x}{70(3+2x)^2\sqrt{2+3x^2}}+\frac{9\sqrt{2+3x^2}}{245(3+2x)^2}-\frac{331\sqrt{2+3x^2}}{8575(3+2x)}-\frac{1962\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right.}{8575\sqrt{35}}
\end{aligned}$$

Mathematica [A] time = 0.08, size = 70, normalized size = 0.67

$$\frac{-3924\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)-\frac{35\left(3972x^3+4068x^2-7397x-3658\right)}{(2x+3)^2\sqrt{3x^2+2}}}{600250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(-3658 - 7397*x + 4068*x^2 + 3972*x^3))/((3 + 2*x)^2*Sqrt[2 + 3*x^2])
 - 3924*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/600250
```

fricas [A] time = 0.65, size = 119, normalized size = 1.14

$$\frac{1962\,\sqrt{35}\left(12\,x^4+36\,x^3+35\,x^2+24\,x+18\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right)-35\left(3972\,x^3+4068\,x^2-739\right.}{600250\left(12\,x^4+36\,x^3+35\,x^2+24\,x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/600250*(1962*sqrt(35)*(12*x^4 + 36*x^3 + 35*x^2 + 24*x + 18)*log(-(sqrt(3
5)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35
*(3972*x^3 + 4068*x^2 - 7397*x - 3658)*sqrt(3*x^2 + 2))/(12*x^4 + 36*x^3 +
35*x^2 + 24*x + 18)
```

giac [B] time = 0.25, size = 199, normalized size = 1.91

$$\frac{1962}{300125}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3(157x-1478)}{85750\sqrt{3x^2+2}}-\frac{768\left(\sqrt{3}x-\sqrt{3x^2+2}\right)^3+2}{6125\left(\left(\sqrt{}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 1962/300125*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(
3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/8
5750*(157*x - 1478)/sqrt(3*x^2 + 2) - 1/6125*(768*(sqrt(3)*x - sqrt(3*x^2 +
 2))^3 + 2461*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 - 6168*sqrt(3)*x + 85
6*sqrt(3) + 6168*sqrt(3*x^2 + 2))/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^2
```

maple [A] time = 0.08, size = 107, normalized size = 1.03

$$-\frac{993x}{17150\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{1962\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{300125}-\frac{103}{980\left(x+\frac{3}{2}\right)\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(3/2),x)
```

```
[Out] -103/980/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+981/8575/(-9*x+3*(x+3/2)^2-1
9/4)^(1/2)-993/17150/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x-1962/300125*35^(1/2)*a
rctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/280/(x+3/2)
^2/(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.42, size = 128, normalized size = 1.23

$$\frac{1962}{300125}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{993x}{17150\sqrt{3x^2+2}}+\frac{981}{8575\sqrt{3x^2+2}}-\frac{1}{70\left(4\sqrt{3x^2+2}x^2+12\sqrt{}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1962/300125*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2
*x + 3)) - 993/17150*x/sqrt(3*x^2 + 2) + 981/8575/sqrt(3*x^2 + 2) - 13/70/(
4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*x + 9*sqrt(3*x^2 + 2)) - 103/490
/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 1.78, size = 181, normalized size = 1.74

$$\frac{1962\sqrt{35}\ \ln\left(x+\frac{3}{2}\right)}{300125}-\frac{1962\sqrt{35}\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{300125}-\frac{157\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{171500\left(x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)}-\frac{157\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}}{171500\left(x+\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)}-\frac{107\sqrt{}}{612}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (1962*35^(1/2)*log(x + 3/2))/300125 - (1962*35^(1/2)*log(x - (3^(1/2)*35^(1
/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/300125 - (157*3^(1/2)*(x^2 + 2/3)^(1/2))/(
171500*(x - (6^(1/2)*1i)/3)) - (157*3^(1/2)*(x^2 + 2/3)^(1/2))/(171500*(x +
 (6^(1/2)*1i)/3)) - (107*3^(1/2)*(x^2 + 2/3)^(1/2))/(6125*(x + 3/2)) - (13*
3^(1/2)*(x^2 + 2/3)^(1/2))/(2450*(3*x + x^2 + 9/4)) - (3^(1/2)*6^(1/2)*(x^2
 + 2/3)^(1/2)*739i)/(171500*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 +
 2/3)^(1/2)*739i)/(171500*(x + (6^(1/2)*1i)/3))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1416 $\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{41x+26}{70(2x+3)^3\sqrt{3x^2+2}}-\frac{1051\sqrt{3x^2+2}}{42875(2x+3)}-\frac{27\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{23\sqrt{3x^2+2}}{525(2x+3)^3}-\frac{3312\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

```
[Out] -3312/1500625*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/70*
(26+41*x)/(3+2*x)^3/(3*x^2+2)^(1/2)+23/525*(3*x^2+2)^(1/2)/(3+2*x)^3-27/122
5*(3*x^2+2)^(1/2)/(3+2*x)^2-1051/42875*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^3\sqrt{3x^2+2}}-\frac{1051\sqrt{3x^2+2}}{42875(2x+3)}-\frac{27\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{23\sqrt{3x^2+2}}{525(2x+3)^3}-\frac{3312\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^3*Sqrt[2 + 3*x^2]) + (23*Sqrt[2 + 3*x^2])/(525*(3
 + 2*x)^3) - (27*Sqrt[2 + 3*x^2])/(1225*(3 + 2*x)^2) - (1051*Sqrt[2 + 3*x^2
])/(42875*(3 + 2*x)) - (3312*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])
/(42875*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx &= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-624-738x}{(3+2x)^4\sqrt{2+3x^2}}\,dx\\
&= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} + \frac{\int \frac{25704+5796x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{22050}\\
&= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{\int \frac{-509040+102060x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{1543500}\\
&= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} + \frac{3312}{}\\
&= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} - \frac{3312}{}\\
&= \frac{26+41x}{70(3+2x)^3\sqrt{2+3x^2}} + \frac{23\sqrt{2+3x^2}}{525(3+2x)^3} - \frac{27\sqrt{2+3x^2}}{1225(3+2x)^2} - \frac{1051\sqrt{2+3x^2}}{42875(3+2x)} - \frac{3312}{}
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 75, normalized size = 0.60

$$
\frac{-19872\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right) - \frac{35\left(75672x^4+261036x^3+237930x^2+23349x+29438\right)}{(2x+3)^3\sqrt{3x^2+2}}}{9003750}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(29438 + 23349*x + 237930*x^2 + 261036*x^3 + 75672*x^4))/((3 + 2*x)^3
*Sqrt[2 + 3*x^2]) - 19872*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x
^2])])/9003750
```

fricas [A] time = 0.67, size = 134, normalized size = 1.06

$$
\frac{9936\,\sqrt{35}\left(24\,x^5+108\,x^4+178\,x^3+153\,x^2+108\,x+54\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-36\,x+43}{4\,x^2+12\,x+9}\right) - 35\left(75672\,x^4+\right.}{9003750\left(24\,x^5+108\,x^4+178\,x^3+153\,x^2+108\,x+54\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9003750*(9936*sqrt(35)*(24*x^5 + 108*x^4 + 178*x^3 + 153*x^2 + 108*x + 54
)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 1
2*x + 9)) - 35*(75672*x^4 + 261036*x^3 + 237930*x^2 + 23349*x + 29438)*sqrt
(3*x^2 + 2))/(24*x^5 + 108*x^4 + 178*x^3 + 153*x^2 + 108*x + 54)
```

giac [B] time = 0.29, size = 248, normalized size = 1.97

$$\frac{3312}{1500625}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)-\frac{3(10281x-12674)}{3001250\sqrt{3x^2+2}}-\frac{2\sqrt{3}\left(12983\sqrt{3}\left(\sqrt{3}x-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 3312/1500625*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) - 3/
3001250*(10281*x - 12674)/sqrt(3*x^2 + 2) - 2/1500625*sqrt(3)*(12983*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 253320*(sqrt(3)*x - sqrt(3*x^2 + 2))^4
+ 298170*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 - 1481160*(sqrt(3)*x - sqr
t(3*x^2 + 2))^2 + 425140*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 106016)/((
sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) -
2)^3
```

maple [A] time = 0.06, size = 128, normalized size = 1.02

$$-\frac{3153x}{85750\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{3312\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1500625}-\frac{17}{700\left(x+\frac{3}{2}\right)^2\sqrt{-9x+3\left(x+\frac{3}{2}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(3/2),x)
```

```
[Out] -17/700/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-101/2450/(x+3/2)/(-9*x+3*(x
+3/2)^2-19/4)^(1/2)+1656/42875/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-3153/85750/(-9
*x+3*(x+3/2)^2-19/4)^(1/2)*x-3312/1500625*35^(1/2)*arctanh(2/35*(-9*x+4)*35
^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3/(-9*x+3*(x+3/2)^2-19
/4)^(1/2)
```

maxima [A] time = 1.30, size = 184, normalized size = 1.46

$$\frac{3312}{1500625}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{3153x}{85750\sqrt{3x^2+2}}+\frac{1656}{42875\sqrt{3x^2+2}}-\frac{}{105\left(8\sqrt{3x^2+2}x^3+3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 3312/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) - 3153/85750*x/sqrt(3*x^2 + 2) + 1656/42875/sqrt(3*x^2 + 2) - 13/
105/(8*sqrt(3*x^2 + 2)*x^3 + 36*sqrt(3*x^2 + 2)*x^2 + 54*sqrt(3*x^2 + 2)*x
+ 27*sqrt(3*x^2 + 2)) - 17/175/(4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*
x + 9*sqrt(3*x^2 + 2)) - 101/1225/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 1.79, size = 210, normalized size = 1.67

$$\frac{3312\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1500625}-\frac{3312\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1500625}-\frac{10281\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6002500\left(x-\frac{\sqrt{6}\,1i}{3}\right)}-\frac{10281\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{6002500\left(x+\frac{\sqrt{6}\,1i}{3}\right)}-\frac{13}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (3312*35^(1/2)*log(x + 3/2))/1500625 - (3312*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1500625 - (10281*3^(1/2)*(x^2 + 2/3)^(1/2
))/(6002500*(x - (6^(1/2)*1i)/3)) - (10281*3^(1/2)*(x^2 + 2/3)^(1/2))/(6002
500*(x + (6^(1/2)*1i)/3)) - (13252*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(x +
 3/2)) - (197*3^(1/2)*(x^2 + 2/3)^(1/2))/(42875*(3*x + x^2 + 9/4)) - (13*3^
(1/2)*(x^2 + 2/3)^(1/2))/(7350*((27*x)/4 + (9*x^2)/2 + x^3 + 27/8)) - (3^(1
/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*6337i)/(6002500*(x - (6^(1/2)*1i)/3)) + (3^(1
/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*6337i)/(6002500*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1417 $\int \frac{5-x}{(3+2x)^5\left(2+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{41x+26}{70(2x+3)^4\sqrt{3x^2+2}}-\frac{14944\sqrt{3x^2+2}}{1500625(2x+3)}-\frac{708\sqrt{3x^2+2}}{42875(2x+3)^2}-\frac{298\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{58\sqrt{3x^2+2}}{1225(2x+3)^4}-\frac{30078\tanh^{-1}\left(\right.}{1500625}$$

```
[Out] -30078/52521875*arctanh(1/35*(4-9*x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/7
0*(26+41*x)/(3+2*x)^4/(3*x^2+2)^(1/2)+58/1225*(3*x^2+2)^(1/2)/(3+2*x)^4-298
/18375*(3*x^2+2)^(1/2)/(3+2*x)^3-708/42875*(3*x^2+2)^(1/2)/(3+2*x)^2-14944/
1500625*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.208$, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{70(2x+3)^4\sqrt{3x^2+2}}-\frac{14944\sqrt{3x^2+2}}{1500625(2x+3)}-\frac{708\sqrt{3x^2+2}}{42875(2x+3)^2}-\frac{298\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{58\sqrt{3x^2+2}}{1225(2x+3)^4}-\frac{30078\tanh^{-1}\left(\right.}{1500625}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] (26 + 41*x)/(70*(3 + 2*x)^4*Sqrt[2 + 3*x^2]) + (58*Sqrt[2 + 3*x^2])/(1225*(
3 + 2*x)^4) - (298*Sqrt[2 + 3*x^2])/(18375*(3 + 2*x)^3) - (708*Sqrt[2 + 3*x
^2])/(42875*(3 + 2*x)^2) - (14944*Sqrt[2 + 3*x^2])/(1500625*(3 + 2*x)) - (3
0078*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1500625*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^5\left(2+3x^2\right)^{3/2}}\,dx = \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} - \frac{1}{210}\int \frac{-780-984x}{(3+2x)^5\sqrt{2+3x^2}}\,dx$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} + \frac{\int \frac{43824+12528x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{29400}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{\int \frac{-1333584+300384x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{3087000}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} + \int$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} - \frac{14}{15}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} - \frac{14}{15}$$

$$= \frac{26+41x}{70(3+2x)^4\sqrt{2+3x^2}} + \frac{58\sqrt{2+3x^2}}{1225(3+2x)^4} - \frac{298\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{708\sqrt{2+3x^2}}{42875(3+2x)^2} - \frac{14}{15}$$

Mathematica [**A**] time = 0.09, size = 80, normalized size = 0.54

$$\frac{-180468\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right) - \frac{35\left(2151936x^5+11467872x^4+22188792x^3+18957672x^2+8562487x+4197366\right)}{(2x+3)^4\sqrt{3x^2+2}}}{315131250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*(2 + 3*x^2)^(3/2)),x]
```

```
[Out] ((-35*(4197366 + 8562487*x + 18957672*x^2 + 22188792*x^3 + 11467872*x^4 + 2
151936*x^5))/((3 + 2*x)^4*Sqrt[2 + 3*x^2]) - 180468*Sqrt[35]*ArcTanh[(4 - 9
*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/315131250
```

fricas [**A**] time = 0.56, size = 149, normalized size = 1.01

$$\frac{90234\sqrt{35}\left(48x^6+288x^5+680x^4+840x^3+675x^2+432x+162\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right) - 35\,(}{315131250\,(48x^6+288x^5+680x^4+840x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/315131250*(90234*sqrt(35)*(48*x^6 + 288*x^5 + 680*x^4 + 840*x^3 + 675*x^2
 + 432*x + 162)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x +
43)/(4*x^2 + 12*x + 9)) - 35*(2151936*x^5 + 11467872*x^4 + 22188792*x^3 + 1
8957672*x^2 + 8562487*x + 4197366)*sqrt(3*x^2 + 2))/(48*x^6 + 288*x^5 + 680
*x^4 + 840*x^3 + 675*x^2 + 432*x + 162)
```

giac [A] time = 0.29, size = 234, normalized size = 1.58

$$\frac{2}{52521875}\sqrt{35}\left(3736\sqrt{35}\sqrt{3}+15039\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{\frac{\frac{35\left(\frac{7\left(\frac{5\left(\frac{913}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{1365}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{264}{\mathrm{sgn}\left(\frac{}{2}\right.}\right.}{2x+3}\right.}{2x+3}}{2x+3}}{9003750\sqrt{-\frac{1}{2x}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/52521875*sqrt(35)*(3736*sqrt(35)*sqrt(3) + 15039*log(sqrt(35)*sqrt(3) - 9
))*sgn(1/(2*x + 3)) - 1/9003750*((35*(7*(5*(913/sgn(1/(2*x + 3)) + 1365/((2
*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) + 2646/sgn(1/(2*x + 3)))/(2*x + 3) + 1
2858/sgn(1/(2*x + 3)))/(2*x + 3) - 583956/sgn(1/(2*x + 3)))/(2*x + 3) + 134
496/sgn(1/(2*x + 3)))/sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) - 30078/5252
1875*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35/(2*x + 3)^2 + 3) + sqrt
(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3))
```

maple [A] time = 0.10, size = 149, normalized size = 1.01

$$-\frac{22416x}{1500625\sqrt{-9x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{30078\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{52521875}-\frac{913}{117600\left(x+\frac{3}{2}\right)^{3}\sqrt{-9x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^5/(3*x^2+2)^(3/2),x)
```

```
[Out] -913/117600/(x+3/2)^3/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-9/1000/(x+3/2)^2/(-9*x+
3*(x+3/2)^2-19/4)^(1/2)-2143/171500/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(1/2)+1
5039/1500625/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-22416/1500625/(-9*x+3*(x+3/2)^2-
19/4)^(1/2)*x-30078/52521875*35^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x
+12*(x+3/2)^2-19)^(1/2))-13/2240/(x+3/2)^4/(-9*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [B] time = 1.30, size = 254, normalized size = 1.72

$$\frac{30078}{52521875}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2|2x+3|}-\frac{2\sqrt{6}}{3|2x+3|}\right)-\frac{22416x}{1500625\sqrt{3x^{2}+2}}+\frac{15039}{1500625\sqrt{3x^{2}+2}}-\frac{}{140\left(16\sqrt{3x^{2}+2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+2)^(3/2),x, algorithm="maxima")
```

```
[Out] 30078/52521875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/ab
s(2*x + 3)) - 22416/1500625*x/sqrt(3*x^2 + 2) + 15039/1500625/sqrt(3*x^2 +
2) - 13/140/(16*sqrt(3*x^2 + 2)*x^4 + 96*sqrt(3*x^2 + 2)*x^3 + 216*sqrt(3*x
^2 + 2)*x^2 + 216*sqrt(3*x^2 + 2)*x + 81*sqrt(3*x^2 + 2)) - 913/14700/(8*sq
rt(3*x^2 + 2)*x^3 + 36*sqrt(3*x^2 + 2)*x^2 + 54*sqrt(3*x^2 + 2)*x + 27*sqrt
(3*x^2 + 2)) - 9/250/(4*sqrt(3*x^2 + 2)*x^2 + 12*sqrt(3*x^2 + 2)*x + 9*sqrt
(3*x^2 + 2)) - 2143/85750/(2*sqrt(3*x^2 + 2)*x + 3*sqrt(3*x^2 + 2))
```

mupad [B] time = 0.14, size = 244, normalized size = 1.65

$$\frac{30078\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{52521875}-\frac{30078\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{52521875}-\frac{13\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{19600\left(x^4+6x^3+\frac{27x^2}{2}+\frac{27x}{2}+\frac{81}{16}\right)}-\frac{168573}{2100875}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(3*x^2 + 2)^(3/2)),x)
```

```
[Out] (30078*35^(1/2)*log(x + 3/2))/52521875 - (30078*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/52521875 - (13*3^(1/2)*(x^2 + 2/3)^(1/
2))/(19600*((27*x)/2 + (27*x^2)/2 + 6*x^3 + x^4 + 81/16)) - (168573*3^(1/2)
*(x^2 + 2/3)^(1/2))/(210087500*(x - (6^(1/2)*1i)/3)) - (168573*3^(1/2)*(x^2
 + 2/3)^(1/2))/(210087500*(x + (6^(1/2)*1i)/3)) - (354467*3^(1/2)*(x^2 + 2/
3)^(1/2))/(105043750*(x + 3/2)) - (14499*3^(1/2)*(x^2 + 2/3)^(1/2))/(600250
0*(3*x + x^2 + 9/4)) - (323*3^(1/2)*(x^2 + 2/3)^(1/2))/(205800*((27*x)/4 +
(9*x^2)/2 + x^3 + 27/8)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*36471i)/(2100
87500*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*36471i)/(2
10087500*(x + (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+2)**(3/2),x)
```

```
[Out] Timed out
```

3.1418 $\int \frac{(5-x)(3+2x)^6}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=116

$$-\frac{7(2-7x)(2x+3)^5}{18\left(3x^2+2\right)^{3/2}}+\frac{(2427x+158)(2x+3)^3}{54\sqrt{3x^2+2}}-\frac{2639}{81}\sqrt{3x^2+2}\,(2x+3)^2-\frac{70}{243}(801x+2167)\sqrt{3x^2+2}+\frac{20720\,\mathrm{si}}{2}$$

```
[Out] -7/18*(2-7*x)*(3+2*x)^5/(3*x^2+2)^(3/2)+20720/81*arcsinh(1/2*x*6^(1/2))*3^(
1/2)+1/54*(3+2*x)^3*(158+2427*x)/(3*x^2+2)^(1/2)-2639/81*(3+2*x)^2*(3*x^2+2
)^(1/2)-70/243*(2167+801*x)*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{819, 833, 780, 215\}$

$$-\frac{7(2-7x)(2x+3)^5}{18\left(3x^2+2\right)^{3/2}}+\frac{(2427x+158)(2x+3)^3}{54\sqrt{3x^2+2}}-\frac{2639}{81}\sqrt{3x^2+2}\,(2x+3)^2-\frac{70}{243}(801x+2167)\sqrt{3x^2+2}+\frac{20720\,\mathrm{si}}{2}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^6)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^5)/(18*(2 + 3*x^2)^(3/2)) + ((3 + 2*x)^3*(158 + 242
7*x))/(54*Sqrt[2 + 3*x^2]) - (2639*(3 + 2*x)^2*Sqrt[2 + 3*x^2])/81 - (70*(2
167 + 801*x)*Sqrt[2 + 3*x^2])/243 + (20720*ArcSinh[Sqrt[3/2]*x])/(27*Sqrt[3
])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^6}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{1}{18}\int \frac{(398-318x)(3+2x)^4}{\left(2+3x^2\right)^{3/2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}+\frac{1}{108}\int \frac{(-5712-31668x)(3+2x)^2}{\sqrt{2+3x^2}}\,dx\\
&= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}+\frac{1}{972}\int (99\\
&= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}-\frac{70}{243}(2167\\
&= -\frac{7(2-7x)(3+2x)^5}{18\left(2+3x^2\right)^{3/2}}+\frac{(3+2x)^3(158+2427x)}{54\sqrt{2+3x^2}}-\frac{2639}{81}(3+2x)^2\sqrt{2+3x^2}-\frac{70}{243}(2167
\end{aligned}$$

Mathematica [A] time = 0.08, size = 73, normalized size = 0.63

$$-\frac{3456x^6+20736x^5-130464x^4-1125999x^3+2363976x^2-124320\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-139815x}{486\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^6)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/486*(1798610 - 139815*x + 2363976*x^2 - 1125999*x^3 - 130464*x^4 + 20736
*x^5 + 3456*x^6 - 124320*Sqrt[3]*(2 + 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2
 + 3*x^2)^(3/2)
```

fricas [A] time = 0.83, size = 98, normalized size = 0.84

$$\frac{62160\,\sqrt{3}\left(9\,x^4+12\,x^2+4\right)\log\left(-\sqrt{3}\,\sqrt{3\,x^2+2}\,x-3\,x^2-1\right)-\left(3456\,x^6+20736\,x^5-130464\,x^4-1125999\,x^3+\right.}{486\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/486*(62160*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x -
3*x^2 - 1) - (3456*x^6 + 20736*x^5 - 130464*x^4 - 1125999*x^3 + 2363976*x^2
 - 139815*x + 1798610)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 60, normalized size = 0.52

$$-\frac{20720}{81}\,\sqrt{3}\,\log\left(-\sqrt{3}\,x+\sqrt{3\,x^2+2}\right)-\frac{9\,(((96\,(4\,(x+6)x-151)x-125111)x+262664)x-15535)x+1798610}{486\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -20720/81*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/486*(9*(((96*(4*(x
+ 6)*x - 151)*x - 125111)*x + 262664)*x - 15535)*x + 1798610)/(3*x^2 + 2)^(
3/2)
```

maple [A] time = 0.06, size = 119, normalized size = 1.03

$$-\frac{64x^6}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{128x^5}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{2416x^4}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{20720x^3}{27\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{131332x^2}{27\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{55517x}{54\sqrt{3x^2+2}}-\frac{3537x}{2\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{207}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^6/(3*x^2+2)^(5/2),x)
```

```
[Out] -64/9*x^6/(3*x^2+2)^(3/2)+2416/9*x^4/(3*x^2+2)^(3/2)-131332/27*x^2/(3*x^2+2
)^(3/2)-899305/243/(3*x^2+2)^(3/2)-128/3*x^5/(3*x^2+2)^(3/2)-20720/27*x^3/(
3*x^2+2)^(3/2)+55517/54/(3*x^2+2)^(1/2)*x+20720/81*arcsinh(1/2*6^(1/2)*x)*3
^(1/2)-3537/2*x/(3*x^2+2)^(3/2)
```

maxima [A] time = 1.44, size = 133, normalized size = 1.15

$$-\frac{64\,x^6}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{128\,x^5}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{2416\,x^4}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{20720}{81}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)+\frac{20720}{81}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^6/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -64/9*x^6/(3*x^2 + 2)^(3/2) - 128/3*x^5/(3*x^2 + 2)^(3/2) + 2416/9*x^4/(3*x
^2 + 2)^(3/2) - 20720/81*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2))
+ 20720/81*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 249431/162*x/sqrt(3*x^2 + 2) -
131332/27*x^2/(3*x^2 + 2)^(3/2) - 3537/2*x/(3*x^2 + 2)^(3/2) - 899305/243/(
3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.71, size = 222, normalized size = 1.91

$$\frac{20720\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{81}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{64\,x^2}{27}+\frac{128\,x}{9}-\frac{7504}{81}\right)}{3}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{206689}{144}+\frac{\sqrt{6}\,81809\mathrm{i}}{432}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(-\frac{206689}{216}+\right.}{2\left(x-\frac{\sqrt{6}}{3}\right.}\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^6*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (20720*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/81 - (3^(1/2)*(x^2 + 2/3)^(1/2
)*((128*x)/9 + (64*x^2)/27 - 7504/81))/3 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^
(1/2)*81809i)/432 - 206689/144)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*8
1809i)/648 - 206689/216)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*(x^
2 + 2/3)^(1/2)*(((6^(1/2)*81809i)/432 + 206689/144)/(x + (6^(1/2)*1i)/3) +
(6^(1/2)*((6^(1/2)*81809i)/648 + 206689/216)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)
))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*719421i - 3390048)*(x^2 + 2/3)^(1/2)*1i)/
(23328*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*719421i + 3390048)
*(x^2 + 2/3)^(1/2)*1i)/(23328*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{13851x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{21384x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**6/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-13851*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*
sqrt(3*x**2 + 2)), x) - Integral(-21384*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*
x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-16740*x**3/(9*x
**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) -
 Integral(-6480*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) +
4*sqrt(3*x**2 + 2)), x) - Integral(-720*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*
x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(256*x**6/(9*x**4
*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - In
tegral(64*x**7/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt
(3*x**2 + 2)), x) - Integral(-3645/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(
3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1419 $\int \frac{(5-x)(3+2x)^5}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{7(2-7x)(2x+3)^4}{18\left(3x^2+2\right)^{3/2}}-\frac{5(16-421x)(2x+3)^2}{54\sqrt{3x^2+2}}-\frac{50}{81}(93x+299)\sqrt{3x^2+2}+\frac{1600\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

```
[Out] -7/18*(2-7*x)*(3+2*x)^4/(3*x^2+2)^(3/2)+1600/81*arcsinh(1/2*x*6^(1/2))*3^(1
/2)-5/54*(16-421*x)*(3+2*x)^2/(3*x^2+2)^(1/2)-50/81*(299+93*x)*(3*x^2+2)^(1
/2)
```

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 780, 215}

$$-\frac{7(2-7x)(2x+3)^4}{18\left(3x^2+2\right)^{3/2}}-\frac{5(16-421x)(2x+3)^2}{54\sqrt{3x^2+2}}-\frac{50}{81}(93x+299)\sqrt{3x^2+2}+\frac{1600\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^5)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^4)/(18*(2 + 3*x^2)^(3/2)) - (5*(16 - 421*x)*(3 + 2*
x)^2)/(54*Sqrt[2 + 3*x^2]) - (50*(299 + 93*x)*Sqrt[2 + 3*x^2])/81 + (1600*A
rcSinh[Sqrt[3/2]*x])/(27*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 780

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[(((e*f + d*g)*(2*p + 3) + 2*e*g*(p + 1)*x)*(a + c*x^2)^(p
+ 1))/(2*c*(p + 1)*(2*p + 3)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(c*(2*p
+ 3)), Int[(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] &&  !Le
Q[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^5}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} + \frac{1}{18}\int \frac{(370-220x)(3+2x)^3}{\left(2+3x^2\right)^{3/2}}\,dx \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} + \frac{1}{108}\int \frac{(-2000-18600x)(3+2x)}{\sqrt{2+3x^2}}\,dx \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} - \frac{50}{81}(299+93x)\sqrt{2+3x^2} + \frac{1600}{27}\int \frac{}{\sqrt{2}} \\
&= -\frac{7(2-7x)(3+2x)^4}{18\left(2+3x^2\right)^{3/2}} - \frac{5(16-421x)(3+2x)^2}{54\sqrt{2+3x^2}} - \frac{50}{81}(299+93x)\sqrt{2+3x^2} + \frac{1600\sinh^{-1}}{27\sqrt{}}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 68, normalized size = 0.72

$$
-\frac{864x^5+4320x^4-183945x^3+147600x^2-3200\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-79215x+134126}{162\left(3x^2+2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^5)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/162*(134126 - 79215*x + 147600*x^2 - 183945*x^3 + 4320*x^4 + 864*x^5 - 3
200*Sqrt[3]*(2 + 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

fricas [A] time = 0.67, size = 93, normalized size = 0.99

$$
\frac{1600\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(-\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(864x^5+4320x^4-183945x^3+147600x^2-7921\right.}{162\left(9x^4+12x^2+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/162*(1600*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(-sqrt(3)*sqrt(3*x^2 + 2)*x - 3
*x^2 - 1) - (864*x^5 + 4320*x^4 - 183945*x^3 + 147600*x^2 - 79215*x + 13412
6)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.25, size = 55, normalized size = 0.59

$$
-\frac{1600}{81}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)-\frac{3\,(((288\,(x+5)x-61315)x+49200)x-26405)x+134126}{162\left(3x^2+2\right)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1600/81*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(3*((((288*(x + 5
)*x - 61315)*x + 49200)*x - 26405)*x + 134126)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.07, size = 105, normalized size = 1.12

$$
-\frac{16x^5}{3\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{80x^4}{3\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{1600x^3}{27\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{8200x^2}{9\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{21505x}{54\sqrt{3x^2+2}}-\frac{615x}{2\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{1600\sqrt{3}\ \operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right.}{81}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^5/(3*x^2+2)^(5/2),x)
```

```
[Out] -16/3/(3*x^2+2)^(3/2)*x^5-1600/27/(3*x^2+2)^(3/2)*x^3+21505/54/(3*x^2+2)^(1
/2)*x+1600/81*arcsinh(1/2*6^(1/2)*x)*3^(1/2)-80/3/(3*x^2+2)^(3/2)*x^4-8200/
9/(3*x^2+2)^(3/2)*x^2-67063/81/(3*x^2+2)^(3/2)-615/2/(3*x^2+2)^(3/2)*x
```

maxima [A] time = 1.31, size = 119, normalized size = 1.27

$$-\frac{16\,x^{5}}{3\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}-\frac{80\,x^{4}}{3\,\left(3\,x^{2}+2\right)^{\frac{3}{2}}}-\frac{1600}{81}\,x\left(\frac{9\,x^{2}}{\left(3\,x^{2}+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^{2}+2\right)^{\frac{3}{2}}}\right)+\frac{1600}{81}\,\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{70915\,x}{162\,\sqrt{3\,x^{2}+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^5/(3*x^2 + 2)^(3/2) - 80/3*x^4/(3*x^2 + 2)^(3/2) - 1600/81*x*(9*x^2
/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2)) + 1600/81*sqrt(3)*arcsinh(1/2*sqr
t(6)*x) + 70915/162*x/sqrt(3*x^2 + 2) - 8200/9*x^2/(3*x^2 + 2)^(3/2) - 615/
2*x/(3*x^2 + 2)^(3/2) - 67063/81/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.05, size = 217, normalized size = 2.31

$$\frac{1600\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{81}-\frac{\sqrt{3}\,\left(\frac{16\,x}{9}+\frac{80}{9}\right)\,\sqrt{x^2+\frac{2}{3}}}{3}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{43799}{144}+\frac{\sqrt{6}\,18823{}\mathrm{i}}{144}}{x-\frac{\sqrt{6}\,1{}\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(-\frac{43799}{216}+\frac{\sqrt{6}\,18823{}\mathrm{i}}{216}\right)\,1{}\mathrm{i}}{2\,{\left(x-\frac{\sqrt{6}\,1{}\mathrm{i}}{3}\right)}^2}\right)}{27}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^5*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (1600*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/81 - (3^(1/2)*((16*x)/9 + 80/9)
*(x^2 + 2/3)^(1/2))/3 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*18823i)/144 -
 43799/144)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*18823i)/216 - 43799/2
16)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(
1/2)*18823i)/144 + 43799/144)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*188
23i)/216 + 43799/216)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2
)*(6^(1/2)*290595i - 567360)*(x^2 + 2/3)^(1/2)*1i)/(23328*(x - (6^(1/2)*1i)
/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*290595i + 567360)*(x^2 + 2/3)^(1/2)*1i)/(2
3328*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{3807x}{9x^{4}\sqrt{3x^{2}+2}+12x^{2}\sqrt{3x^{2}+2}+4\sqrt{3x^{2}+2}}\right)dx-\int\left(-\frac{4590x^{2}}{9x^{4}\sqrt{3x^{2}+2}+12x^{2}\sqrt{3x^{2}+2}+4\sqrt{3x^{2}+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**5/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-3807*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*s
qrt(3*x**2 + 2)), x) - Integral(-4590*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x*
*2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-2520*x**3/(9*x**4
*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - In
tegral(-480*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(80*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*s
qrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(32*x**6/(9*x**4*sqrt(3
*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(
-1215/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 +
 2)), x)
```

3.1420 $\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=87

$$-\frac{7(2-7x)(2x+3)^3}{18\left(3x^2+2\right)^{3/2}}-\frac{(318-1783x)(2x+3)}{54\sqrt{3x^2+2}}-\frac{2027}{81}\sqrt{3x^2+2}-\frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

```
[Out] -7/18*(2-7*x)*(3+2*x)^3/(3*x^2+2)^(3/2)-16/27*arcsinh(1/2*x*6^(1/2))*3^(1/2
)-1/54*(318-1783*x)*(3+2*x)/(3*x^2+2)^(1/2)-2027/81*(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 641, 215}

$$-\frac{7(2-7x)(2x+3)^3}{18\left(3x^2+2\right)^{3/2}}-\frac{(318-1783x)(2x+3)}{54\sqrt{3x^2+2}}-\frac{2027}{81}\sqrt{3x^2+2}-\frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^3)/(18*(2 + 3*x^2)^(3/2)) - ((318 - 1783*x)*(3 + 2*
x))/(54*Sqrt[2 + 3*x^2]) - (2027*Sqrt[2 + 3*x^2])/81 - (16*ArcSinh[Sqrt[3/2
]*x])/(9*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 641

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(e*(
a + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[d, Int[(a + c*x^2)^p, x], x] /
; FreeQ[{a, c, d, e, p}, x] && NeQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}}+\frac{1}{18}\int \frac{(342-122x)(3+2x)^2}{\left(2+3x^2\right)^{3/2}}\,dx \\
&= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}}-\frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}}+\frac{1}{108}\int \frac{-192-8108x}{\sqrt{2+3x^2}}\,dx \\
&= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}}-\frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}}-\frac{2027}{81}\sqrt{2+3x^2}-\frac{16}{9}\int \frac{1}{\sqrt{2+3x^2}}\,d \\
&= -\frac{7(2-7x)(3+2x)^3}{18\left(2+3x^2\right)^{3/2}}-\frac{(318-1783x)(3+2x)}{54\sqrt{2+3x^2}}-\frac{2027}{81}\sqrt{2+3x^2}-\frac{16\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)}{9\sqrt{3}}
\end{aligned}
$$

Mathematica [**A**] time = 0.06, size = 63, normalized size = 0.72

$$
-\frac{864x^4-57285x^3+16560x^2+96\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}\,x\right)-33381x+25342}{162\left(3x^2+2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/162*(25342 - 33381*x + 16560*x^2 - 57285*x^3 + 864*x^4 + 96*Sqrt[3]*(2 +
 3*x^2)^(3/2)*ArcSinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

fricas [**A**] time = 0.65, size = 87, normalized size = 1.00

$$
\frac{48\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)-\left(864x^4-57285x^3+16560x^2-33381x+25342\right)}{162\left(9x^4+12x^2+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/162*(48*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^
2 - 1) - (864*x^4 - 57285*x^3 + 16560*x^2 - 33381*x + 25342)*sqrt(3*x^2 + 2
))/(9*x^4 + 12*x^2 + 4)
```

giac [**A**] time = 0.18, size = 52, normalized size = 0.60

$$
\frac{16}{27}\sqrt{3}\log\left(-\sqrt{3}\,x+\sqrt{3x^2+2}\right)-\frac{9\left(\left(\left(96x-6365\right)x+1840\right)x-3709\right)x+25342}{162\left(3x^2+2\right)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 16/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) - 1/162*(9*(((96*x - 6365)*
x + 1840)*x - 3709)*x + 25342)/(3*x^2 + 2)^(3/2)
```

maple [**A**] time = 0.06, size = 91, normalized size = 1.05

$$
-\frac{16x^4}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{16x^3}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{920x^2}{9\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{2111x}{18\sqrt{3x^2+2}}-\frac{57x}{2\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{16\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}-\frac{12671}{81\left(3x^2+2\right.}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+2)^(5/2),x)
```

```
[Out] -16/3/(3*x^2+2)^(3/2)*x^4-920/9/(3*x^2+2)^(3/2)*x^2-12671/81/(3*x^2+2)^(3/2
)+16/9/(3*x^2+2)^(3/2)*x^3+2111/18/(3*x^2+2)^(1/2)*x-16/27*arcsinh(1/2*6^(1
/2)*x)*3^(1/2)-57/2/(3*x^2+2)^(3/2)*x
```

maxima [A] time = 1.35, size = 105, normalized size = 1.21

$$-\frac{16\,x^4}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{16}{27}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)-\frac{16}{27}\,\sqrt{3}\,\operatorname{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{6269\,x}{54\,\sqrt{3\,x^2+2}}-\frac{920\,x^2}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{5}{2\,(3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^4/(3*x^2 + 2)^(3/2) + 16/27*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 +
 2)^(3/2)) - 16/27*sqrt(3)*arcsinh(1/2*sqrt(6)*x) + 6269/54*x/sqrt(3*x^2 +
2) - 920/9*x^2/(3*x^2 + 2)^(3/2) - 57/2*x/(3*x^2 + 2)^(3/2) - 12671/81/(3*x
^2 + 2)^(3/2)
```

mupad [B] time = 1.72, size = 212, normalized size = 2.44

$$-\frac{16\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{27}-\frac{16\,\sqrt{3}\,\operatorname{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{1603}{48}+\frac{\sqrt{6}\,7343\mathrm{i}}{144}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(-\frac{1603}{72}+\frac{\sqrt{6}\,7343\mathrm{i}}{216}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}-\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*7343i)/144 - 1603/48)/(x - (6^(1/2)*1
i)/3) - (6^(1/2)*((6^(1/2)*7343i)/216 - 1603/72)*1i)/(2*(x - (6^(1/2)*1i)/3
)^2)))/27 - (16*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/27 - (16*3^(1/2)*(x^2
 + 2/3)^(1/2))/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*7343i)/144 + 1603
/48)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*7343i)/216 + 1603/72)*1i)/(2
*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*27063i - 20544)*(
x^2 + 2/3)^(1/2)*1i)/(7776*(x - (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2
)*27063i + 20544)*(x^2 + 2/3)^(1/2)*1i)/(7776*(x + (6^(1/2)*1i)/3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{864x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-999*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(-864*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2
*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-264*x**3/(9*x**4*sq
rt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integ
ral(16*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*
x**2 + 2)), x) - Integral(16*x**5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3
*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-405/(9*x**4*sqrt(3*x**2 +
2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1421 $\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=67

$$-\frac{7(2-7x)(2x+3)^2}{18\left(3x^2+2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{3x^2+2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

```
[Out] -7/18*(2-7*x)*(3+2*x)^2/(3*x^2+2)^(3/2)-8/27*arcsinh(1/2*x*6^(1/2))*3^(1/2)
+1/54*(-556+1461*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {819, 778, 215}

$$-\frac{7(2-7x)(2x+3)^2}{18\left(3x^2+2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{3x^2+2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x)*(3 + 2*x)^2)/(18*(2 + 3*x^2)^(3/2)) - (556 - 1461*x)/(54*Sqrt
[2 + 3*x^2]) - (8*ArcSinh[Sqrt[3/2]*x])/(9*Sqrt[3])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+3x^2\right)^{5/2}}\,dx &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}+\frac{1}{18}\int \frac{(314-24x)(3+2x)}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{2+3x^2}}-\frac{8}{9}\int \frac{1}{\sqrt{2+3x^2}}\,dx\\ &= -\frac{7(2-7x)(3+2x)^2}{18\left(2+3x^2\right)^{3/2}}-\frac{556-1461x}{54\sqrt{2+3x^2}}-\frac{8\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)}{9\sqrt{3}}\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 58, normalized size = 0.87

$$-\frac{-4971x^3+72x^2+16\sqrt{3}\left(3x^2+2\right)^{3/2}\sinh^{-1}\left(\sqrt{\frac{3}{2}}x\right)-3741x+1490}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/54*(1490 - 3741*x + 72*x^2 - 4971*x^3 + 16*Sqrt[3]*(2 + 3*x^2)^(3/2)*Arc
Sinh[Sqrt[3/2]*x])/(2 + 3*x^2)^(3/2)
```

fricas [**A**] time = 0.70, size = 81, normalized size = 1.21

$$\frac{8\sqrt{3}\left(9x^4+12x^2+4\right)\log\left(\sqrt{3}\sqrt{3x^2+2}\,x-3x^2-1\right)+\left(4971x^3-72x^2+3741x-1490\right)\sqrt{3x^2+2}}{54\left(9x^4+12x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/54*(8*sqrt(3)*(9*x^4 + 12*x^2 + 4)*log(sqrt(3)*sqrt(3*x^2 + 2)*x - 3*x^2
- 1) + (4971*x^3 - 72*x^2 + 3741*x - 1490)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2
 + 4)
```

giac [**A**] time = 0.20, size = 48, normalized size = 0.72

$$\frac{8}{27}\sqrt{3}\log\left(-\sqrt{3}x+\sqrt{3x^2+2}\right)+\frac{3\left((1657x-24)x+1247\right)x-1490}{54\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 8/27*sqrt(3)*log(-sqrt(3)*x + sqrt(3*x^2 + 2)) + 1/54*(3*((1657*x - 24)*x +
 1247)*x - 1490)/(3*x^2 + 2)^(3/2)
```

maple [**A**] time = 0.05, size = 77, normalized size = 1.15

$$\frac{8x^3}{9\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{4x^2}{3\left(3x^2+2\right)^{\frac{3}{2}}}+\frac{547x}{18\sqrt{3x^2+2}}+\frac{17x}{2\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{8\sqrt{3}\,\operatorname{arcsinh}\left(\frac{\sqrt{6}\,x}{2}\right)}{27}-\frac{745}{27\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+2)^(5/2),x)
```

```
[Out] 8/9/(3*x^2+2)^(3/2)*x^3+547/18/(3*x^2+2)^(1/2)*x-8/27*arcsinh(1/2*6^(1/2)*x
)*3^(1/2)-4/3/(3*x^2+2)^(3/2)*x^2-745/27/(3*x^2+2)^(3/2)+17/2/(3*x^2+2)^(3/
2)*x
```

maxima [**A**] time = 1.18, size = 91, normalized size = 1.36

$$\frac{8}{27}\,x\left(\frac{9\,x^2}{\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{4}{\left(3\,x^2+2\right)^{\frac{3}{2}}}\right)-\frac{8}{27}\,\sqrt{3}\,\mathrm{arsinh}\left(\frac{1}{2}\,\sqrt{6}\,x\right)+\frac{1609\,x}{54\,\sqrt{3\,x^2+2}}-\frac{4\,x^2}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{17\,x}{2\left(3\,x^2+2\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8/27*x*(9*x^2/(3*x^2 + 2)^(3/2) + 4/(3*x^2 + 2)^(3/2)) - 8/27*sqrt(3)*arcsi
nh(1/2*sqrt(6)*x) + 1609/54*x/sqrt(3*x^2 + 2) - 4/3*x^2/(3*x^2 + 2)^(3/2) +
 17/2*x/(3*x^2 + 2)^(3/2) - 745/27/(3*x^2 + 2)^(3/2)
```

mupad [**B**] time = 1.70, size = 200, normalized size = 2.99

$$-\frac{8\,\sqrt{3}\,\mathrm{asinh}\left(\frac{\sqrt{2}\,\sqrt{3}\,x}{2}\right)}{27}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{427}{48}+\frac{\sqrt{6}\,721\mathrm{i}}{48}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(-\frac{427}{72}+\frac{\sqrt{6}\,721\mathrm{i}}{72}\right)\,1\mathrm{i}}{2\,{\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*721i)/48 + 427/48)/(x - (6^(1/2)*1i)/
3) - (6^(1/2)*((6^(1/2)*721i)/72 + 427/72)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))
/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*721i)/48 - 427/48)/(x + (6^(1/2
)*1i)/3) + (6^(1/2)*((6^(1/2)*721i)/72 - 427/72)*1i)/(2*(x + (6^(1/2)*1i)/3
)^2)))/27 - (8*3^(1/2)*asinh((2^(1/2)*3^(1/2)*x)/2))/27 - (3^(1/2)*6^(1/2)*
(6^(1/2)*2067i - 96)*(x^2 + 2/3)^(1/2)*1i)/(2592*(x - (6^(1/2)*1i)/3)) - (3
^(1/2)*6^(1/2)*(6^(1/2)*2067i + 96)*(x^2 + 2/3)^(1/2)*1i)/(2592*(x + (6^(1/
2)*1i)/3))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{126x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-243*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sq
rt(3*x**2 + 2)), x) - Integral(-126*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2
*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-4*x**3/(9*x**4*sqrt
(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integra
l(8*x**4/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**
2 + 2)), x) - Integral(-135/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2
+ 2) + 4*sqrt(3*x**2 + 2)), x)
```

3.1422 $\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=48

$$\frac{(2x+3)^2(15x+2)}{18\left(3x^2+2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{3x^2+2}}$$

```
[Out] 1/18*(3+2*x)^2*(2+15*x)/(3*x^2+2)^(3/2)-41/54*(4-9*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {805, 637}

$$\frac{(2x+3)^2(15x+2)}{18\left(3x^2+2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{3x^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] ((3 + 2*x)^2*(2 + 15*x))/(18*(2 + 3*x^2)^(3/2)) - (41*(4 - 9*x))/(54*Sqrt[2
 + 3*x^2])
```

Rule 637

```
Int[((d_) + (e_.)*(x_))/((a_) + (c_.)*(x_)^2)^(3/2), x_Symbol] :> Simp[(-(a
*e) + c*d*x)/(a*c*Sqrt[a + c*x^2]), x] /; FreeQ[{a, c, d, e}, x]
```

Rule 805

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[(m*(c*d*f + a*e*g))/(2*a*c*(p + 1)), Int[(d + e*x)^(m
 - 1)*(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+3x^2\right)^{5/2}}\,dx &= \frac{(3+2x)^2(2+15x)}{18\left(2+3x^2\right)^{3/2}}+\frac{41}{9}\int \frac{3+2x}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= \frac{(3+2x)^2(2+15x)}{18\left(2+3x^2\right)^{3/2}}-\frac{41(4-9x)}{54\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.13, size = 30, normalized size = 0.62

$$-\frac{-1287x^3-72x^2-1215x+274}{54\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/54*(274 - 1215*x - 72*x^2 - 1287*x^3)/(2 + 3*x^2)^(3/2)
```

fricas [A] time = 0.73, size = 40, normalized size = 0.83

$$\frac{\left(1287\,x^3+72\,x^2+1215\,x-274\right)\sqrt{3\,x^2+2}}{54\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/54*(1287*x^3 + 72*x^2 + 1215*x - 274)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4
)
```

giac [A] time = 0.18, size = 25, normalized size = 0.52

$$\frac{9\left(\left(143\,x+8\right)x+135\right)x-274}{54\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/54*(9*((143*x + 8)*x + 135)*x - 274)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.04, size = 27, normalized size = 0.56

$$\frac{1287x^3+72x^2+1215x-274}{54\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+2)^(5/2),x)
```

```
[Out] 1/54*(1287*x^3+72*x^2+1215*x-274)/(3*x^2+2)^(3/2)
```

maxima [A] time = 0.53, size = 50, normalized size = 1.04

$$\frac{143\,x}{18\sqrt{3\,x^2+2}}+\frac{4\,x^2}{3\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{119\,x}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{137}{27\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 143/18*x/sqrt(3*x^2 + 2) + 4/3*x^2/(3*x^2 + 2)^(3/2) + 119/18*x/(3*x^2 + 2)
^(3/2) - 137/27/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.70, size = 185, normalized size = 3.85

$$-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{119}{16}+\frac{\sqrt{6}\,161\mathrm{i}}{48}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\left(-\frac{119}{24}+\frac{\sqrt{6}\,161\mathrm{i}}{72}\right)1\mathrm{i}}{2\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\left(\frac{\frac{119}{16}+\frac{\sqrt{6}\,161\mathrm{i}}{48}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(\frac{119}{24}+\frac{\sqrt{6}\,161\mathrm{i}}{72}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)^2}\right)}{27}-\sqrt{3}\,\sqrt{6}\,\left(-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*161i)/48 + 119/16)/(x - (6^(1/2)*1i)/
3) - (6^(1/2)*((6^(1/2)*161i)/72 + 119/24)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))
```

```
/27 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*161i)/48 - 119/16)/(x + (6^(1/2
)*1i)/3) + (6^(1/2)*((6^(1/2)*161i)/72 - 119/24)*1i)/(2*(x + (6^(1/2)*1i)/3
)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*453i - 96)*(x^2 + 2/3)^(1/2)*1i)/(259
2*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*453i + 96)*(x^2 + 2/3)^
(1/2)*1i)/(2592*(x - (6^(1/2)*1i)/3))
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)dx-\int\left(-\frac{8x^2}{9x^4\sqrt{3x^2+2}+12x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}\right)d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+2)**(5/2),x)
```

```
[Out] -Integral(-51*x/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqr
t(3*x**2 + 2)), x) - Integral(-8*x**2/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sq
rt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(4*x**3/(9*x**4*sqrt(3*x
**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)), x) - Integral(-4
5/(9*x**4*sqrt(3*x**2 + 2) + 12*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2))
, x)
```

3.1423 $\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{5/2}} \, dx$

Optimal. Leaf size=37

$$\frac{43x}{18\sqrt{3x^2+2}}-\frac{7(2-7x)}{18\left(3x^2+2\right)^{3/2}}$$

```
[Out] -7/18*(2-7*x)/(3*x^2+2)^(3/2)+43/18*x/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {778, 191}

$$\frac{43x}{18\sqrt{3x^2+2}}-\frac{7(2-7x)}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (-7*(2 - 7*x))/(18*(2 + 3*x^2)^(3/2)) + (43*x)/(18*Sqrt[2 + 3*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 778

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x
_Symbol] :> Simp[((a*(e*f + d*g) - (c*d*f - a*e*g)*x)*(a + c*x^2)^(p + 1))/
(2*a*c*(p + 1)), x] - Dist[(a*e*g - c*d*f*(2*p + 3))/(2*a*c*(p + 1)), Int[(
a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e, f, g}, x] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+3x^2\right)^{5/2}} \, dx &= -\frac{7(2-7x)}{18\left(2+3x^2\right)^{3/2}}+\frac{43}{9}\int \frac{1}{\left(2+3x^2\right)^{3/2}} \, dx\\ &= -\frac{7(2-7x)}{18\left(2+3x^2\right)^{3/2}}+\frac{43x}{18\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 0.68

$$-\frac{-129x^3-135x+14}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 3*x^2)^(5/2),x]
```

```
[Out] -1/18*(14 - 135*x - 129*x^3)/(2 + 3*x^2)^(3/2)
```

fricas [A] time = 0.73, size = 35, normalized size = 0.95

$$\frac{\left(129\,x^3+135\,x-14\right)\sqrt{3\,x^2+2}}{18\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/18*(129*x^3 + 135*x - 14)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 23, normalized size = 0.62

$$\frac{3\left(43\,x^2+45\right)x-14}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/18*(3*(43*x^2 + 45)*x - 14)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.04, size = 22, normalized size = 0.59

$$\frac{129x^3+135x-14}{18\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+2)^(5/2),x)
```

```
[Out] 1/18*(129*x^3+135*x-14)/(3*x^2+2)^(3/2)
```

maxima [A] time = 0.50, size = 36, normalized size = 0.97

$$\frac{43\,x}{18\,\sqrt{3\,x^2+2}}+\frac{49\,x}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{7}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 43/18*x/sqrt(3*x^2 + 2) + 49/18*x/(3*x^2 + 2)^(3/2) - 7/9/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.04, size = 161, normalized size = 4.35

$$\frac{41\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{144\,\left(x-\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}+\frac{41\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{144\,\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{49}{16}+\frac{\sqrt{6}\,7\mathrm{i}}{16}}{x+\frac{\sqrt{6}\,1\mathrm{i}}{3}}+\frac{\sqrt{6}\,\left(-\frac{49}{24}+\frac{\sqrt{6}\,7\mathrm{i}}{24}\right)\,1\mathrm{i}}{2\,{\left(x+\frac{\sqrt{6}\,1\mathrm{i}}{3}\right)}^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{\frac{49}{16}+\frac{\sqrt{6}\,7\mathrm{i}}{16}}{x-\frac{\sqrt{6}\,1\mathrm{i}}{3}}-\frac{\sqrt{6}\,\left(\frac{49}{24}\right.}{2\left(x-\right.}\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (41*3^(1/2)*(x^2 + 2/3)^(1/2))/(144*(x - (6^(1/2)*1i)/3)) + (41*3^(1/2)*(x^
2 + 2/3)^(1/2))/(144*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((
6^(1/2)*7i)/16 - 49/16)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*7i)/24 -
49/24)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((
6^(1/2)*7i)/16 + 49/16)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*7i)/24 +
49/24)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27
```

sympy [B] time = 58.40, size = 122, normalized size = 3.30

$$-\frac{2x^3}{18x^2\sqrt{3x^2+2}+12\sqrt{3x^2+2}}+\frac{15x^3}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{15x}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}-\frac{7}{27x^2\sqrt{3x^2+2}+18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+2)**(5/2),x)
```

```
[Out] -2*x**3/(18*x**2*sqrt(3*x**2 + 2) + 12*sqrt(3*x**2 + 2)) + 15*x**3/(6*x**2*
sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 15*x/(6*x**2*sqrt(3*x**2 + 2) + 4*
sqrt(3*x**2 + 2)) - 7/(27*x**2*sqrt(3*x**2 + 2) + 18*sqrt(3*x**2 + 2))
```

3.1424 $\int \frac{5-x}{\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=37

$$\frac{5x}{6\sqrt{3x^2+2}}+\frac{15x+2}{18\left(3x^2+2\right)^{3/2}}$$

```
[Out] 1/18*(2+15*x)/(3*x^2+2)^(3/2)+5/6*x/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 37, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.118, Rules used = {639, 191}

$$\frac{5x}{6\sqrt{3x^2+2}}+\frac{15x+2}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (2 + 15*x)/(18*(2 + 3*x^2)^(3/2)) + (5*x)/(6*Sqrt[2 + 3*x^2])
```

Rule 191

```
Int[((a_) + (b_.)*(x_)^(n_))^(p_), x_Symbol] :> Simp[(x*(a + b*x^n)^(p + 1)
)/a, x] /; FreeQ[{a, b, n, p}, x] && EqQ[1/n + p + 1, 0]
```

Rule 639

```
Int[((d_) + (e_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((a*e
 - c*d*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)), x] + Dist[(d*(2*p + 3))/(2*
a*(p + 1)), Int[(a + c*x^2)^(p + 1), x], x] /; FreeQ[{a, c, d, e}, x] && Lt
Q[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\left(2+3x^2\right)^{5/2}}\,dx &= \frac{2+15x}{18\left(2+3x^2\right)^{3/2}}+\frac{5}{3}\int \frac{1}{\left(2+3x^2\right)^{3/2}}\,dx\\ &= \frac{2+15x}{18\left(2+3x^2\right)^{3/2}}+\frac{5x}{6\sqrt{2+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.68

$$\frac{45x^3+45x+2}{18\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 3*x^2)^(5/2),x]
```

```
[Out] (2 + 45*x + 45*x^3)/(18*(2 + 3*x^2)^(3/2))
```

fricas [A] time = 0.57, size = 35, normalized size = 0.95

$$\frac{\left(45\,x^3+45\,x+2\right)\sqrt{3\,x^2+2}}{18\left(9\,x^4+12\,x^2+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/18*(45*x^3 + 45*x + 2)*sqrt(3*x^2 + 2)/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.18, size = 21, normalized size = 0.57

$$\frac{45\left(x^2+1\right)x+2}{18\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/18*(45*(x^2 + 1)*x + 2)/(3*x^2 + 2)^(3/2)
```

maple [A] time = 0.04, size = 22, normalized size = 0.59

$$\frac{45x^3+45x+2}{18\left(3x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+2)^(5/2),x)
```

```
[Out] 1/18*(45*x^3+45*x+2)/(3*x^2+2)^(3/2)
```

maxima [A] time = 0.45, size = 36, normalized size = 0.97

$$\frac{5\,x}{6\,\sqrt{3\,x^2+2}}+\frac{5\,x}{6\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{1}{9\left(3\,x^2+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 5/6*x/sqrt(3*x^2 + 2) + 5/6*x/(3*x^2 + 2)^(3/2) + 1/9/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.69, size = 161, normalized size = 4.35

$$\frac{5\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{48\,\left(x-\frac{\sqrt{6}\,1i}{3}\right)}+\frac{5\,\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{48\,\left(x+\frac{\sqrt{6}\,1i}{3}\right)}-\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{-\frac{15}{16}+\frac{\sqrt{6}\,1i}{16}}{x-\frac{\sqrt{6}\,1i}{3}}-\frac{\sqrt{6}\,\left(-\frac{5}{8}+\frac{\sqrt{6}\,1i}{24}\right)1i}{2\left(x-\frac{\sqrt{6}\,1i}{3}\right)^2}\right)}{27}+\frac{\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}\,\left(\frac{\frac{15}{16}+\frac{\sqrt{6}\,1i}{16}}{x+\frac{\sqrt{6}\,1i}{3}}+\frac{\sqrt{6}\,\left(\frac{5}{8}\right.}{2\left(x+\right.}\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(3*x^2 + 2)^(5/2),x)
```

```
[Out] (5*3^(1/2)*(x^2 + 2/3)^(1/2))/(48*(x - (6^(1/2)*1i)/3)) + (5*3^(1/2)*(x^2 +
 2/3)^(1/2))/(48*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1
/2)*1i)/16 - 15/16)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*1i)/24 - 5/8)
*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2
)*1i)/16 + 15/16)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*1i)/24 + 5/8)*1
i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27
```

sympy [B] time = 43.08, size = 90, normalized size = 2.43

$$\frac{5x^3}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{5x}{6x^2\sqrt{3x^2+2}+4\sqrt{3x^2+2}}+\frac{1}{27x^2\sqrt{3x^2+2}+18\sqrt{3x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+2)**(5/2),x)
```

```
[Out] 5*x**3/(6*x**2*sqrt(3*x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 5*x/(6*x**2*sqrt(3*
x**2 + 2) + 4*sqrt(3*x**2 + 2)) + 1/(27*x**2*sqrt(3*x**2 + 2) + 18*sqrt(3*x
**2 + 2))
```

3.1425 $\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=73

$$\frac{41x+26}{210\left(3x^2+2\right)^{3/2}}+\frac{2137x+312}{7350\sqrt{3x^2+2}}-\frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

```
[Out] 1/210*(26+41*x)/(3*x^2+2)^(3/2)-104/42875*arctanh(1/35*(4-9*x)*35^(1/2)/(3*
x^2+2)^(1/2))*35^(1/2)+1/7350*(312+2137*x)/(3*x^2+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {823, 12, 725, 206}

$$\frac{41x+26}{210\left(3x^2+2\right)^{3/2}}+\frac{2137x+312}{7350\sqrt{3x^2+2}}-\frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1225\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(2 + 3*x^2)^(3/2)) + (312 + 2137*x)/(7350*Sqrt[2 + 3*x^2])
 - (104*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1225*Sqrt[35])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)\left(2+3x^2\right)^{5/2}}\,dx &= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}}-\frac{1}{630}\int \frac{-1206-492x}{(3+2x)\left(2+3x^2\right)^{3/2}}\,dx\\
&= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}}+\frac{312+2137x}{7350\sqrt{2+3x^2}}+\frac{\int \frac{11232}{(3+2x)\sqrt{2+3x^2}}\,dx}{132300}\\
&= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}}+\frac{312+2137x}{7350\sqrt{2+3x^2}}+\frac{104\int \frac{1}{(3+2x)\sqrt{2+3x^2}}\,dx}{1225}\\
&= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}}+\frac{312+2137x}{7350\sqrt{2+3x^2}}-\frac{104\,\mathrm{Subst}\left(\int \frac{1}{35-x^2}\,dx,x,\frac{4-9x}{\sqrt{2+3x^2}}\right)}{1225}\\
&= \frac{26+41x}{210\left(2+3x^2\right)^{3/2}}+\frac{312+2137x}{7350\sqrt{2+3x^2}}-\frac{104\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{2+3x^2}}\right)}{1225\sqrt{35}}
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 63, normalized size = 0.86

$$
\frac{\frac{35\left(6411x^3+936x^2+5709x+1534\right)}{\left(3x^2+2\right)^{3/2}}-624\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{257250}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((35*(1534 + 5709*x + 936*x^2 + 6411*x^3))/(2 + 3*x^2)^(3/2) - 624*Sqrt[35]
*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/257250
```

fricas [A] time = 0.68, size = 103, normalized size = 1.41

$$
\frac{312\sqrt{35}\left(9x^4+12x^2+4\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\left(6411x^3+936x^2+5709x+1534\right)\sqrt{3x^2+}}{257250\left(9x^4+12x^2+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/257250*(312*sqrt(35)*(9*x^4 + 12*x^2 + 4)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*
(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9)) + 35*(6411*x^3 + 936*x^
2 + 5709*x + 1534)*sqrt(3*x^2 + 2))/(9*x^4 + 12*x^2 + 4)
```

giac [A] time = 0.21, size = 93, normalized size = 1.27

$$
\frac{104}{42875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3((2137x+312)x+1903)x+1534}{7350\left(3x^2+2\right)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 104/42875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt(3*
x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/735
0*(3*((2137*x + 312)*x + 1903)*x + 1534)/(3*x^2 + 2)^(3/2)
```

maple [B] time = 0.05, size = 122, normalized size = 1.67

$$-\frac{x}{12\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{x}{12\sqrt{3x^2+2}}+\frac{39x}{140\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{1833x}{4900\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{104\sqrt{35}\ \mathrm{arcta}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+2)^(5/2),x)
```

```
[Out] -1/12/(3*x^2+2)^(3/2)*x-1/12/(3*x^2+2)^(1/2)*x+13/105/(-9*x+3*(x+3/2)^2-19/
4)^(3/2)+39/140*x/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+1833/4900/(-9*x+3*(x+3/2)^2
-19/4)^(1/2)*x+52/1225/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-104/42875*35^(1/2)*arc
tanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.28, size = 81, normalized size = 1.11

$$\frac{104}{42875}\sqrt{35}\ \operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{2137\,x}{7350\sqrt{3\,x^2+2}}+\frac{52}{1225\sqrt{3\,x^2+2}}+\frac{41\,x}{210\left(3\,x^2+2\right)^{\frac{3}{2}}}+\frac{13}{105\left(3\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 104/42875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 2137/7350*x/sqrt(3*x^2 + 2) + 52/1225/sqrt(3*x^2 + 2) + 41/210*x/(
3*x^2 + 2)^(3/2) + 13/105/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 0.14, size = 218, normalized size = 2.99

$$\frac{\sqrt{35}\left(104\ \ln\left(x+\frac{3}{2}\right)-104\ \ln\left(x-\frac{\sqrt{3}\ \sqrt{35}\ \sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{42875}-\frac{\sqrt{3}\ \sqrt{x^2+\frac{2}{3}}\left(\frac{-\frac{123}{560}+\frac{\sqrt{6}\ 39\mathrm{i}}{560}}{x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}}-\frac{\sqrt{6}\left(-\frac{41}{280}+\frac{\sqrt{6}\ 13\mathrm{i}}{280}\right)1\mathrm{i}}{2\left(x-\frac{\sqrt{6}\ 1\mathrm{i}}{3}\right)^2}\right)}{27}+\frac{\sqrt{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (35^(1/2)*(104*log(x + 3/2) - 104*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/
2))/9 - 4/9)))/42875 - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*39i)/560 - 123
/560)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*13i)/280 - 41/280)*1i)/(2*(
x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(1/2)*39i)/56
0 + 123/560)/(x + (6^(1/2)*1i)/3) + (6^(1/2)*((6^(1/2)*13i)/280 + 41/280)*1
i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (3^(1/2)*6^(1/2)*(6^(1/2)*7113i - 3744
)*(x^2 + 2/3)^(1/2)*1i)/(1058400*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(
6^(1/2)*7113i + 3744)*(x^2 + 2/3)^(1/2)*1i)/(1058400*(x - (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1426 $\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=109

$$\frac{41x+26}{210(2x+3)\left(3x^2+2\right)^{3/2}}+\frac{277\sqrt{3x^2+2}}{5145(2x+3)}+\frac{507x+34}{1470(2x+3)\sqrt{3x^2+2}}-\frac{176\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

```
[Out] 1/210*(26+41*x)/(3+2*x)/(3*x^2+2)^(3/2)-176/60025*arctanh(1/35*(4-9*x)*35^(
1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/1470*(34+507*x)/(3+2*x)/(3*x^2+2)^(1/2)+27
7/5145*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {823, 807, 725, 206}

$$\frac{41x+26}{210(2x+3)\left(3x^2+2\right)^{3/2}}+\frac{277\sqrt{3x^2+2}}{5145(2x+3)}+\frac{507x+34}{1470(2x+3)\sqrt{3x^2+2}}-\frac{176\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{1715\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)*(2 + 3*x^2)^(3/2)) + (34 + 507*x)/(1470*(3 + 2*x
)*Sqrt[2 + 3*x^2]) + (277*Sqrt[2 + 3*x^2])/(5145*(3 + 2*x)) - (176*ArcTanh[
(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1715*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^2\left(2+3x^2\right)^{5/2}}\,dx &= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}}-\frac{1}{630}\int \frac{-1362-738x}{(3+2x)^2\left(2+3x^2\right)^{3/2}}\,dx\\
&= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}}+\frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}}+\frac{\int \frac{12240+91260x}{(3+2x)^2\sqrt{2+3x^2}}\,dx}{132300}\\
&= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}}+\frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}}+\frac{277\sqrt{2+3x^2}}{5145(3+2x)}+\frac{176\int \frac{}{(3}}{}\\
&= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}}+\frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}}+\frac{277\sqrt{2+3x^2}}{5145(3+2x)}-\frac{176\,\mathrm{Sub}}{}\\
&= \frac{26+41x}{210(3+2x)\left(2+3x^2\right)^{3/2}}+\frac{34+507x}{1470(3+2x)\sqrt{2+3x^2}}+\frac{277\sqrt{2+3x^2}}{5145(3+2x)}-\frac{176\tanh}{1}
\end{aligned}$$

Mathematica [A] time = 0.05, size = 101, normalized size = 0.93

$$\frac{35\left(4986x^4+10647x^3+7362x^2+9107x+3966\right)-1056\sqrt{35}\sqrt{3x^2+2}\left(6x^3+9x^2+4x+6\right)\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x}}\right.}{360150(2x+3)\left(3x^2+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (35*(3966 + 9107*x + 7362*x^2 + 10647*x^3 + 4986*x^4) - 1056*Sqrt[35]*Sqrt[
2 + 3*x^2]*(6 + 4*x + 9*x^2 + 6*x^3)*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3
*x^2])])/(360150*(3 + 2*x)*(2 + 3*x^2)^(3/2))
```

fricas [A] time = 0.70, size = 134, normalized size = 1.23

$$\frac{528\sqrt{35}\left(18x^5+27x^4+24x^3+36x^2+8x+12\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\left(4986x^4+1064\right.}{360150\left(18x^5+27x^4+24x^3+36x^2+8x+12\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/360150*(528*sqrt(35)*(18*x^5 + 27*x^4 + 24*x^3 + 36*x^2 + 8*x + 12)*log(-
(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(4*x^2 + 12*x + 9
)) + 35*(4986*x^4 + 10647*x^3 + 7362*x^2 + 9107*x + 3966)*sqrt(3*x^2 + 2))/
(18*x^5 + 27*x^4 + 24*x^3 + 36*x^2 + 8*x + 12)
```

giac [B] time = 0.31, size = 233, normalized size = 2.14

$$-\frac{1}{360150}\sqrt{35}\left(277\sqrt{35}\sqrt{3}-1056\log\left(\sqrt{35}\sqrt{3}-9\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{176\sqrt{35}\log\left(\sqrt{35}\left(\sqrt{-\frac{18}{2x+3}+\frac{35}{(2x+3)^2}}\right.\right.}{60025\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/360150*sqrt(35)*(277*sqrt(35)*sqrt(3) - 1056*log(sqrt(35)*sqrt(3) - 9))*
sgn(1/(2*x + 3)) - 176/60025*sqrt(35)*log(sqrt(35)*(sqrt(-18/(2*x + 3) + 35
/(2*x + 3)^2 + 3) + sqrt(35)/(2*x + 3)) - 9)/sgn(1/(2*x + 3)) + 1/10290*(((
7*(4813/sgn(1/(2*x + 3)) + 4368/((2*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) - 5
3523/sgn(1/(2*x + 3)))/(2*x + 3) + 19269/sgn(1/(2*x + 3)))/(2*x + 3) - 2493
/sgn(1/(2*x + 3)))/((18/(2*x + 3) - 35/(2*x + 3)^2 - 3)*sqrt(-18/(2*x + 3)
+ 35/(2*x + 3)^2 + 3))
```

maple [A] time = 0.06, size = 119, normalized size = 1.09

$$-\frac{17x}{490\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{277x}{3430\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{176\sqrt{35}\,\operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{60025}-\frac{}{70\,(x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+2)^(5/2),x)
```

```
[Out] -13/70/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+22/147/(-9*x+3*(x+3/2)^2-19/4)
^(3/2)-17/490/(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+277/3430/(-9*x+3*(x+3/2)^2-19
/4)^(1/2)*x+88/1715/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-176/60025*35^(1/2)*arctan
h(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.22, size = 109, normalized size = 1.00

$$\frac{176}{60025}\sqrt{35}\,\operatorname{arsinh}\left(\frac{3\sqrt{6}\,x}{2\,|2\,x+3|}-\frac{2\sqrt{6}}{3\,|2\,x+3|}\right)+\frac{277\,x}{3430\sqrt{3\,x^2+2}}+\frac{88}{1715\sqrt{3\,x^2+2}}-\frac{17\,x}{490\left(3\,x^2+2\right)^{\frac{3}{2}}}-\frac{}{35\,(2\,(3\,x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 176/60025*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(2*x
 + 3)) + 277/3430*x/sqrt(3*x^2 + 2) + 88/1715/sqrt(3*x^2 + 2) - 17/490*x/(3
*x^2 + 2)^(3/2) - 13/35/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2 + 2)^(3/2)) + 22/
147/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.88, size = 270, normalized size = 2.48

$$\frac{\sqrt{35}\left(3464\ln\left(x+\frac{3}{2}\right)-3464\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)\right)}{1500625}+\frac{\sqrt{35}\left(\frac{1872\ln\left(x+\frac{3}{2}\right)}{42875}-\frac{1872\ln\left(x-\frac{\sqrt{3}\sqrt{35}\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{42875}\right)}{70}-\frac{104}{42}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (35^(1/2)*(3464*log(x + 3/2) - 3464*log(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(
1/2))/9 - 4/9)))/1500625 + (35^(1/2)*((1872*log(x + 3/2))/42875 - (1872*log
(x - (3^(1/2)*35^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/42875))/70 - (104*3^(1/
2)*(x^2 + 2/3)^(1/2))/(42875*(x + 3/2)) - (3^(1/2)*(x^2 + 2/3)^(1/2)*(((6^(
1/2)*597i)/19600 - 639/19600)/(x - (6^(1/2)*1i)/3) - (6^(1/2)*((6^(1/2)*199
i)/9800 - 213/9800)*1i)/(2*(x - (6^(1/2)*1i)/3)^2)))/27 + (3^(1/2)*(x^2 + 2
/3)^(1/2)*(((6^(1/2)*597i)/19600 + 639/19600)/(x + (6^(1/2)*1i)/3) + (6^(1/
2)*((6^(1/2)*199i)/9800 + 213/9800)*1i)/(2*(x + (6^(1/2)*1i)/3)^2)))/27 - (
3^(1/2)*6^(1/2)*(6^(1/2)*27711i - 41568)*(x^2 + 2/3)^(1/2)*1i)/(12348000*(x
 + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(6^(1/2)*27711i + 41568)*(x^2 + 2/3)
^(1/2)*1i)/(12348000*(x - (6^(1/2)*1i)/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1427 $\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=131

$$\frac{41x+26}{210(2x+3)^2\left(3x^2+2\right)^{3/2}}+\frac{857\sqrt{3x^2+2}}{128625(2x+3)}+\frac{83\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{419x+4}{1050(2x+3)^2\sqrt{3x^2+2}}-\frac{3072\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

```
[Out] 1/210*(26+41*x)/(3+2*x)^2/(3*x^2+2)^(3/2)-3072/1500625*arctanh(1/35*(4-9*x)
*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/1050*(4+419*x)/(3+2*x)^2/(3*x^2+2)^(1
/2)+83/1225*(3*x^2+2)^(1/2)/(3+2*x)^2+857/128625*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$\frac{41x+26}{210(2x+3)^2\left(3x^2+2\right)^{3/2}}+\frac{857\sqrt{3x^2+2}}{128625(2x+3)}+\frac{83\sqrt{3x^2+2}}{1225(2x+3)^2}+\frac{419x+4}{1050(2x+3)^2\sqrt{3x^2+2}}-\frac{3072\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{42875\sqrt{35}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)^2*(2 + 3*x^2)^(3/2)) + (4 + 419*x)/(1050*(3 + 2*
x)^2*Sqrt[2 + 3*x^2]) + (83*Sqrt[2 + 3*x^2])/(1225*(3 + 2*x)^2) + (857*Sqrt
[2 + 3*x^2])/(128625*(3 + 2*x)) - (3072*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2
+ 3*x^2])])/(42875*Sqrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^3\left(2+3x^2\right)^{5/2}}\,dx &= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}-\frac{1}{630}\int \frac{-1518-984x}{(3+2x)^3\left(2+3x^2\right)^{3/2}}\,dx\\
&= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}+\frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}}+\frac{\int \frac{3024+211176x}{(3+2x)^3\sqrt{2+3x^2}}\,dx}{132300}\\
&= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}+\frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}}+\frac{83\sqrt{2+3x^2}}{1225(3+2x)^2}-\int \frac{-174}{(3}\\
&= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}+\frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}}+\frac{83\sqrt{2+3x^2}}{1225(3+2x)^2}+\frac{857\sqrt{}}{12862}\\
&= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}+\frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}}+\frac{83\sqrt{2+3x^2}}{1225(3+2x)^2}+\frac{857\sqrt{}}{12862}\\
&= \frac{26+41x}{210(3+2x)^2\left(2+3x^2\right)^{3/2}}+\frac{4+419x}{1050(3+2x)^2\sqrt{2+3x^2}}+\frac{83\sqrt{2+3x^2}}{1225(3+2x)^2}+\frac{857\sqrt{}}{12862}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 80, normalized size = 0.61

$$\frac{\frac{35\left(10284x^5+67716x^4+116367x^3+91268x^2+89749x+41366\right)}{(2x+3)^2\left(3x^2+2\right)^{3/2}}-6144\sqrt{35}\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\sqrt{3x^2+2}}\right)}{3001250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((35*(41366 + 89749*x + 91268*x^2 + 116367*x^3 + 67716*x^4 + 10284*x^5))/((
3 + 2*x)^2*(2 + 3*x^2)^(3/2)) - 6144*Sqrt[35]*ArcTanh[(4 - 9*x)/(Sqrt[35]*S
qrt[2 + 3*x^2])])/3001250
```

fricas [A] time = 0.61, size = 149, normalized size = 1.14

$$\frac{3072\sqrt{35}\left(36x^6+108x^5+129x^4+144x^3+124x^2+48x+36\right)\log\left(-\frac{\sqrt{35}\sqrt{3x^2+2}\,(9x-4)+93x^2-36x+43}{4x^2+12x+9}\right)+35\,(}{3001250\left(36x^6+108x^5+129x^4+144x^3+124\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/3001250*(3072*sqrt(35)*(36*x^6 + 108*x^5 + 129*x^4 + 144*x^3 + 124*x^2 +
48*x + 36)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^2 - 36*x + 43)/(
4*x^2 + 12*x + 9)) + 35*(10284*x^5 + 67716*x^4 + 116367*x^3 + 91268*x^2 + 8
9749*x + 41366)*sqrt(3*x^2 + 2))/(36*x^6 + 108*x^5 + 129*x^4 + 144*x^3 + 12
4*x^2 + 48*x + 36)
```

giac [A] time = 0.27, size = 208, normalized size = 1.59

$$\frac{3072}{1500625}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{3\left(\left(59203x+69168\right)x+37637\right)x+190066}{3001250\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{4\left(9\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 3072/1500625*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sqrt
(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) + 1/
3001250*(3*((59203*x + 69168)*x + 37637)*x + 190066)/(3*x^2 + 2)^(3/2) - 4/
1500625*(9588*(sqrt(3)*x - sqrt(3*x^2 + 2))^3 + 27991*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 2))^2 - 68448*sqrt(3)*x + 9736*sqrt(3) + 68448*sqrt(3*x^2 + 2)
)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)
) - 2)^2
```

maple [A] time = 0.05, size = 140, normalized size = 1.07

$$-\frac{173x}{2450\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{857x}{85750\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{3072\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1500625}-\frac{}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+2)^(5/2),x)
```

```
[Out] -107/700/(x+3/2)/(-9*x+3*(x+3/2)^2-19/4)^(3/2)+128/1225/(-9*x+3*(x+3/2)^2-1
9/4)^(3/2)-173/2450/(-9*x+3*(x+3/2)^2-19/4)^(3/2)*x+857/85750/(-9*x+3*(x+3/
2)^2-19/4)^(1/2)*x+1536/42875/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-3072/1500625*35
^(1/2)*arctanh(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/280
/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.23, size = 151, normalized size = 1.15

$$\frac{3072}{1500625}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\left|2x+3\right|}-\frac{2\sqrt{6}}{3\left|2x+3\right|}\right)+\frac{857x}{85750\sqrt{3x^2+2}}+\frac{1536}{42875\sqrt{3x^2+2}}-\frac{173x}{2450\left(3x^2+2\right)^{\frac{3}{2}}}-\frac{}{70\left(4\left(3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 3072/1500625*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/abs(
2*x + 3)) + 857/85750*x/sqrt(3*x^2 + 2) + 1536/42875/sqrt(3*x^2 + 2) - 173/
2450*x/(3*x^2 + 2)^(3/2) - 13/70/(4*(3*x^2 + 2)^(3/2)*x^2 + 12*(3*x^2 + 2)^
(3/2)*x + 9*(3*x^2 + 2)^(3/2)) - 107/350/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2
+ 2)^(3/2)) + 128/1225/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.83, size = 301, normalized size = 2.30

$$\frac{3072\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{1500625}-\frac{3072\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{1500625}-\frac{739\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{1029000\left(x^2+\frac{2i\sqrt{6}\,x}{3}-\frac{2}{3}\right)}+\frac{59203\sqrt{3}\,\sqrt{x^2+}}{18007500\left(x-\frac{\sqrt{6}}{}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (3072*35^(1/2)*log(x + 3/2))/1500625 - (3072*35^(1/2)*log(x - (3^(1/2)*35^(
1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/1500625 - (739*3^(1/2)*(x^2 + 2/3)^(1/2))
/(1029000*((6^(1/2)*x*2i)/3 + x^2 - 2/3)) + (59203*3^(1/2)*(x^2 + 2/3)^(1/2
))/(18007500*(x - (6^(1/2)*1i)/3)) + (59203*3^(1/2)*(x^2 + 2/3)^(1/2))/(180
07500*(x + (6^(1/2)*1i)/3)) + (739*3^(1/2)*(x^2 + 2/3)^(1/2))/(1029000*((6^
(1/2)*x*2i)/3 - x^2 + 2/3)) - (4868*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(x
+ 3/2)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(42875*(3*x + x^2 + 9/4)) - (3^(1/
2)*6^(1/2)*(x^2 + 2/3)^(1/2)*157i)/(6174000*((6^(1/2)*x*2i)/3 + x^2 - 2/3))
 - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*164201i)/(72030000*(x - (6^(1/2)*1i)/
3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*164201i)/(72030000*(x + (6^(1/2)*1
i)/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*157i)/(6174000*((6^(1/2)*x*2i)/
3 - x^2 + 2/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1428 $\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=153

$$-\frac{114-3331x}{7350(2x+3)^3\sqrt{3x^2+2}}-\frac{5987\sqrt{3x^2+2}}{1500625(2x+3)}+\frac{541\sqrt{3x^2+2}}{42875(2x+3)^2}+\frac{1471\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{41x+26}{210(2x+3)^3\left(3x^2+2\right)^{3/2}}-\frac{553}{}$$

```
[Out] 1/210*(26+41*x)/(3+2*x)^3/(3*x^2+2)^(3/2)-55344/52521875*arctanh(1/35*(4-9*
x)*35^(1/2)/(3*x^2+2)^(1/2))*35^(1/2)+1/7350*(-114+3331*x)/(3+2*x)^3/(3*x^2
+2)^(1/2)+1471/18375*(3*x^2+2)^(1/2)/(3+2*x)^3+541/42875*(3*x^2+2)^(1/2)/(3
+2*x)^2-5987/1500625*(3*x^2+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.10, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {823, 835, 807, 725, 206}

$$-\frac{114-3331x}{7350(2x+3)^3\sqrt{3x^2+2}}-\frac{5987\sqrt{3x^2+2}}{1500625(2x+3)}+\frac{541\sqrt{3x^2+2}}{42875(2x+3)^2}+\frac{1471\sqrt{3x^2+2}}{18375(2x+3)^3}+\frac{41x+26}{210(2x+3)^3\left(3x^2+2\right)^{3/2}}-\frac{553}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] (26 + 41*x)/(210*(3 + 2*x)^3*(2 + 3*x^2)^(3/2)) - (114 - 3331*x)/(7350*(3 +
 2*x)^3*Sqrt[2 + 3*x^2]) + (1471*Sqrt[2 + 3*x^2])/(18375*(3 + 2*x)^3) + (54
1*Sqrt[2 + 3*x^2])/(42875*(3 + 2*x)^2) - (5987*Sqrt[2 + 3*x^2])/(1500625*(3
 + 2*x)) - (55344*ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/(1500625*S
qrt[35])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 725

```
Int[1/(((d_) + (e_.)*(x_))*Sqrt[(a_) + (c_.)*(x_)^2]), x_Symbol] :> -Subst[
Int[1/(c*d^2 + a*e^2 - x^2), x], x, (a*e - c*d*x)/Sqrt[a + c*x^2]] /; FreeQ
[{a, c, d, e}, x]
```

Rule 807

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[(c*d*f + a*e*g)/(c*d^2 + a*e^2), In
t[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d, e, f, g, m, p}
, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\left(2+3x^2\right)^{5/2}}\,dx = \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{1}{630}\int \frac{-1674-1230x}{(3+2x)^4\left(2+3x^2\right)^{3/2}}\,dx$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{\int \frac{-16416+359748x}{(3+2x)^4\sqrt{2+3x^2}}\,dx}{132300}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} - \frac{\int \frac{-3}{(}}{}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541}{4287}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541}{4287}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541}{4287}$$

$$= \frac{26+41x}{210(3+2x)^3\left(2+3x^2\right)^{3/2}} - \frac{114-3331x}{7350(3+2x)^3\sqrt{2+3x^2}} + \frac{1471\sqrt{2+3x^2}}{18375(3+2x)^3} + \frac{541}{4287}$$

Mathematica [A] time = 0.12, size = 85, normalized size = 0.56

$$\frac{-332064\sqrt{35}\,\tanh^{-1}\left(\frac{4-9x}{\sqrt{35}\,\sqrt{3x^2+2}}\right) - \frac{35\left(1293192x^6+1834596x^5-4920642x^4-9795297x^3-7866162x^2-9103449x-3788738\right)}{(2x+3)^3\left(3x^2+2\right)^{3/2}}}{315131250}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 3*x^2)^(5/2)),x]
```

```
[Out] ((-35*(-3788738 - 9103449*x - 7866162*x^2 - 9795297*x^3 - 4920642*x^4 + 183
4596*x^5 + 1293192*x^6))/((3 + 2*x)^3*(2 + 3*x^2)^(3/2)) - 332064*Sqrt[35]*
ArcTanh[(4 - 9*x)/(Sqrt[35]*Sqrt[2 + 3*x^2])])/315131250
```

fricas [A] time = 0.57, size = 164, normalized size = 1.07

$$\frac{166032\,\sqrt{35}\left(72\,x^7+324\,x^6+582\,x^5+675\,x^4+680\,x^3+468\,x^2+216\,x+108\right)\log\left(-\frac{\sqrt{35}\,\sqrt{3\,x^2+2}\,(9\,x-4)+93\,x^2-}{4\,x^2+12\,x+9}\right.}{315131250\left(72\,x^7+324\,x^6+582\,x^5\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/315131250*(166032*sqrt(35)*(72*x^7 + 324*x^6 + 582*x^5 + 675*x^4 + 680*x^
3 + 468*x^2 + 216*x + 108)*log(-(sqrt(35)*sqrt(3*x^2 + 2)*(9*x - 4) + 93*x^
2 - 36*x + 43)/(4*x^2 + 12*x + 9)) - 35*(1293192*x^6 + 1834596*x^5 - 492064
2*x^4 - 9795297*x^3 - 7866162*x^2 - 9103449*x - 3788738)*sqrt(3*x^2 + 2))/(
72*x^7 + 324*x^6 + 582*x^5 + 675*x^4 + 680*x^3 + 468*x^2 + 216*x + 108)
```

giac [**B**]   time = 0.47, size = 257, normalized size = 1.68

$$\frac{55344}{52521875}\sqrt{35}\log\left(-\frac{\left|-2\sqrt{3}x-\sqrt{35}-3\sqrt{3}+2\sqrt{3x^2+2}\right|}{2\sqrt{3}x-\sqrt{35}+3\sqrt{3}-2\sqrt{3x^2+2}}\right)+\frac{9\left(\left(49879x+344464\right)x-6729\right)x+2510374}{105043750\left(3x^2+2\right)^{\frac{3}{2}}}-8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="giac")
```

```
[Out] 55344/52521875*sqrt(35)*log(-abs(-2*sqrt(3)*x - sqrt(35) - 3*sqrt(3) + 2*sq
rt(3*x^2 + 2))/(2*sqrt(3)*x - sqrt(35) + 3*sqrt(3) - 2*sqrt(3*x^2 + 2))) +
1/105043750*(9*((49879*x + 344464)*x - 6729)*x + 2510374)/(3*x^2 + 2)^(3/2)
 - 8/52521875*sqrt(3)*(37652*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 2))^5 + 6958
65*(sqrt(3)*x - sqrt(3*x^2 + 2))^4 + 729630*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 2))^3 - 3472470*(sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 1016800*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 2)) - 259424)/((sqrt(3)*x - sqrt(3*x^2 + 2))^2 + 3*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 2)) - 2)^3
```

maple [**A**]   time = 0.07, size = 161, normalized size = 1.05

$$-\frac{4071x}{85750\left(-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{17961x}{3001250\sqrt{-9x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{55344\sqrt{35}\ \operatorname{arctanh}\left(\frac{2(-9x+4)\sqrt{35}}{35\sqrt{-36x+12\left(x+\frac{3}{2}\right)^2-19}}\right.}{52521875}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+2)^(5/2),x)
```

```
[Out] -79/2450/(x+3/2)^2/(-9*x+3*(x+3/2)^2-19/4)^(3/2)-516/6125/(x+3/2)/(-9*x+3*(
x+3/2)^2-19/4)^(3/2)+2306/42875/(-9*x+3*(x+3/2)^2-19/4)^(3/2)-4071/85750/(-
9*x+3*(x+3/2)^2-19/4)^(3/2)*x-17961/3001250/(-9*x+3*(x+3/2)^2-19/4)^(1/2)*x
+27672/1500625/(-9*x+3*(x+3/2)^2-19/4)^(1/2)-55344/52521875*35^(1/2)*arctan
h(2/35*(-9*x+4)*35^(1/2)/(-36*x+12*(x+3/2)^2-19)^(1/2))-13/840/(x+3/2)^3/(-
9*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [**A**]   time = 1.42, size = 207, normalized size = 1.35

$$\frac{55344}{52521875}\sqrt{35}\operatorname{arsinh}\left(\frac{3\sqrt{6}x}{2\left|2x+3\right|}-\frac{2\sqrt{6}}{3\left|2x+3\right|}\right)-\frac{17961x}{3001250\sqrt{3x^2+2}}+\frac{27672}{1500625\sqrt{3x^2+2}}-\frac{4071x}{85750\left(3x^2+2\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 55344/52521875*sqrt(35)*arcsinh(3/2*sqrt(6)*x/abs(2*x + 3) - 2/3*sqrt(6)/ab
s(2*x + 3)) - 17961/3001250*x/sqrt(3*x^2 + 2) + 27672/1500625/sqrt(3*x^2 +
2) - 4071/85750*x/(3*x^2 + 2)^(3/2) - 13/105/(8*(3*x^2 + 2)^(3/2)*x^3 + 36*
(3*x^2 + 2)^(3/2)*x^2 + 54*(3*x^2 + 2)^(3/2)*x + 27*(3*x^2 + 2)^(3/2)) - 15
8/1225/(4*(3*x^2 + 2)^(3/2)*x^2 + 12*(3*x^2 + 2)^(3/2)*x + 9*(3*x^2 + 2)^(3
/2)) - 1032/6125/(2*(3*x^2 + 2)^(3/2)*x + 3*(3*x^2 + 2)^(3/2)) + 2306/42875
/(3*x^2 + 2)^(3/2)
```

mupad [B] time = 1.86, size = 330, normalized size = 2.16

$$\frac{55344\sqrt{35}\,\ln\left(x+\frac{3}{2}\right)}{52521875}-\frac{55344\sqrt{35}\,\ln\left(x-\frac{\sqrt{3}\,\sqrt{35}\,\sqrt{x^2+\frac{2}{3}}}{9}-\frac{4}{9}\right)}{52521875}-\frac{6337\sqrt{3}\,\sqrt{x^2+\frac{2}{3}}}{36015000\left(x^2+\frac{2\mathrm{i}\,\sqrt{6}\,x}{3}-\frac{2}{3}\right)}+\frac{49879\sqrt{3}\,\sqrt{}}{210087500\,(x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(3*x^2 + 2)^(5/2)),x)
```

```
[Out] (55344*35^(1/2)*log(x + 3/2))/52521875 - (55344*35^(1/2)*log(x - (3^(1/2)*3
5^(1/2)*(x^2 + 2/3)^(1/2))/9 - 4/9))/52521875 - (6337*3^(1/2)*(x^2 + 2/3)^(
1/2))/(36015000*((6^(1/2)*x*2i)/3 + x^2 - 2/3)) + (49879*3^(1/2)*(x^2 + 2/3
)^(1/2))/(210087500*(x - (6^(1/2)*1i)/3)) + (49879*3^(1/2)*(x^2 + 2/3)^(1/2
))/(210087500*(x + (6^(1/2)*1i)/3)) + (6337*3^(1/2)*(x^2 + 2/3)^(1/2))/(360
15000*((6^(1/2)*x*2i)/3 - x^2 + 2/3)) - (129712*3^(1/2)*(x^2 + 2/3)^(1/2))/
(52521875*(x + 3/2)) - (1256*3^(1/2)*(x^2 + 2/3)^(1/2))/(1500625*(3*x + x^2
 + 9/4)) - (26*3^(1/2)*(x^2 + 2/3)^(1/2))/(128625*((27*x)/4 + (9*x^2)/2 + x
^3 + 27/8)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*3427i)/(72030000*((6^(1/2)
*x*2i)/3 + x^2 - 2/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*2288579i)/(2521
050000*(x - (6^(1/2)*1i)/3)) + (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*2288579i)
/(2521050000*(x + (6^(1/2)*1i)/3)) - (3^(1/2)*6^(1/2)*(x^2 + 2/3)^(1/2)*342
7i)/(72030000*((6^(1/2)*x*2i)/3 - x^2 + 2/3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+2)**(5/2),x)
```

```
[Out] Timed out
```

3.1429 $\int (A+Bx)(d+ex)^{3/2}\left(a+cx^2\right)\,dx$

Optimal. Leaf size=116

$$\frac{2(d+ex)^{7/2}\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4}-\frac{2c(d+ex)^{9/2}(3Bd-Ae)}{9e^4}+\frac{2Bc(d+ex)^{1}}{11e^4}$$

```
[Out] -2/5*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^(5/2)/e^4+2/7*(-2*A*c*d*e+B*a*e^2+3*B
*c*d^2)*(e*x+d)^(7/2)/e^4-2/9*c*(-A*e+3*B*d)*(e*x+d)^(9/2)/e^4+2/11*B*c*(e*
x+d)^(11/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{7/2}\left(aBe^2-2Acde+3Bcd^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4}-\frac{2c(d+ex)^{9/2}(3Bd-Ae)}{9e^4}+\frac{2Bc(d+ex)^{1}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a + c*x^2),x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(5/2))/(5*e^4) + (2*(3*B*c*d^2 -
2*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^4) - (2*c*(3*B*d - A*e)*(d + e*x
)^(9/2))/(9*e^4) + (2*B*c*(d + e*x)^(11/2))/(11*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2}\left(a+cx^2\right)\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^{3/2}}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{5}}{e^3}\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{5/2}}{5e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{7/}}{7e^4}\end{aligned}$$

Mathematica [A] time = 0.09, size = 99, normalized size = 0.85

$$\frac{2(d+ex)^{5/2}\left(11Ae\left(63ae^2+c\left(8d^2-20dex+35e^2x^2\right)\right)-3B\left(33ae^2(2d-5ex)+c\left(16d^3-40d^2ex+70de^2x^2-105\right.\right.\right.}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(11*A*e*(63*a*e^2 + c*(8*d^2 - 20*d*e*x + 35*e^2*x^2)) -
 3*B*(33*a*e^2*(2*d - 5*e*x) + c*(16*d^3 - 40*d^2*e*x + 70*d*e^2*x^2 - 105*
e^3*x^3))))/(3465*e^4)
```

fricas [A] time = 0.67, size = 190, normalized size = 1.64

$$2\left(315\,Bce^5x^5-48\,Bcd^5+88\,Acd^4e-198\,Bad^3e^2+693\,Aad^2e^3+35\left(12\,Bcde^4+11\,Ace^5\right)x^4+5\left(3\,Bcd^2e^3+110\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c*e^5*x^5 - 48*B*c*d^5 + 88*A*c*d^4*e - 198*B*a*d^3*e^2 + 693
*A*a*d^2*e^3 + 35*(12*B*c*d*e^4 + 11*A*c*e^5)*x^4 + 5*(3*B*c*d^2*e^3 + 110*
A*c*d*e^4 + 99*B*a*e^5)*x^3 - 3*(6*B*c*d^3*e^2 - 11*A*c*d^2*e^3 - 264*B*a*d
*e^4 - 231*A*a*e^5)*x^2 + (24*B*c*d^4*e - 44*A*c*d^3*e^2 + 99*B*a*d^2*e^3 +
 1386*A*a*d*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.35, size = 580, normalized size = 5.00

$$\frac{2}{3465}\left(1155\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)Bad^2e^{(-1)} + 231\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\right)Acd^2e^{(-2)} +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^2*e^(-1) + 231*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d^2*e^(-
2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*c*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10*(x*e +
 d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*d*e^(-1) + 198*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*
d*e^(-2) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*d*e^(-3) +
3465*sqrt(x*e + d)*A*a*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a
*d + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*a*e^(-1) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*c*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*B*c*e^(-3) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.87

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(315Bc\,x^3e^3 + 385Ac\,e^3x^2 - 210Bcd\,e^2x^2 - 220Acd\,e^2x + 495Ba\,e^3x + 120Bc\,d^2ex + 693aA\,e^3 + 88\right.}{3465e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x)
```

```
[Out] 2/3465*(e*x+d)^(5/2)*(315*B*c*e^3*x^3+385*A*c*e^3*x^2-210*B*c*d*e^2*x^2-220
*A*c*d*e^2*x+495*B*a*e^3*x+120*B*c*d^2*e*x+693*A*a*e^3+88*A*c*d^2*e-198*B*a
*d*e^2-48*B*c*d^3)/e^4
```

maxima [A] time = 0.64, size = 104, normalized size = 0.90

$$\frac{2\left(315\,(ex+d)^{\frac{11}{2}}Bc - 385\,(3\,Bcd - Ace)(ex+d)^{\frac{9}{2}} + 495\left(3\,Bcd^2 - 2\,Acde + Bae^2\right)(ex+d)^{\frac{7}{2}} - 693\left(Bcd^3 - Acd\right.\right.}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c - 385*(3*B*c*d - A*c*e)*(e*x + d)^(9/2) +
495*(3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(7/2) - 693*(B*c*d^3 - A*c*
d^2*e + B*a*d*e^2 - A*a*e^3)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 0.09, size = 100, normalized size = 0.86

$$\frac{(d+e\,x)^{7/2}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{7\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{2\,c\,(A\,e-3\,B\,d)\,(d+e\,x)^{9/2}}{9\,e^4}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,(A\,e-}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(7*e^4) + (2*B*c*(d +
 e*x)^(11/2))/(11*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(9/2))/(9*e^4) + (2*(
a*e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(5/2))/(5*e^4)
```

sympy [A] time = 15.78, size = 379, normalized size = 3.27

$$Aad\left(\begin{cases}\sqrt{d}x & \text{for}\: e = 0 \\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2Aa\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{2Acd\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}+\frac{(d+ex)^{\frac{7}{2}}}{7}\right)}{e^3}+2Ac\Big(-\frac{d^3(d+ex)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(c*x**2+a),x)
```

```
[Out] A*a*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
2*A*a*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*c*d*(d**2*(d + e
*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 2*A*c*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*a*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**
(5/2)/5)/e**2 + 2*B*a*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (
d + e*x)**(7/2)/7)/e**2 + 2*B*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*c*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1430 $\int (A+Bx)\sqrt{d+ex}\,\left(a+cx^2\right)\,dx$

Optimal. Leaf size=116

$$\frac{2(d+ex)^{5/2}\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{2c(d+ex)^{7/2}(3Bd-Ae)}{7e^4}+\frac{2Bc(d+e}{9e^4}$$

```
[Out] -2/3*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^(3/2)/e^4+2/5*(-2*A*c*d*e+B*a*e^2+3*B
*c*d^2)*(e*x+d)^(5/2)/e^4-2/7*c*(-A*e+3*B*d)*(e*x+d)^(7/2)/e^4+2/9*B*c*(e*x
+d)^(9/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 116, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{5/2}\left(aBe^2-2Acde+3Bcd^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4}-\frac{2c(d+ex)^{7/2}(3Bd-Ae)}{7e^4}+\frac{2Bc(d+e}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2),x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(3/2))/(3*e^4) + (2*(3*B*c*d^2 -
2*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^4) - (2*c*(3*B*d - A*e)*(d + e*x
)^(7/2))/(7*e^4) + (2*B*c*(d + e*x)^(9/2))/(9*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(a+cx^2\right)\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)\sqrt{d+ex}}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{3/}}{e^3}\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{3/2}}{3e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{5}}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 96, normalized size = 0.83

$$\frac{2(d+ex)^{3/2}\left(105aAe^3+21aBe^2(3ex-2d)+3Ace\left(8d^2-12dex+15e^2x^2\right)+Bc\left(-16d^3+24d^2ex-30de^2x^2+\right.\right.}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(105*a*A*e^3 + 21*a*B*e^2*(-2*d + 3*e*x) + 3*A*c*e*(8*d^
2 - 12*d*e*x + 15*e^2*x^2) + B*c*(-16*d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*
e^3*x^3)))/(315*e^4)
```

fricas [A] time = 0.68, size = 143, normalized size = 1.23

$$\frac{2\left(35\,Bce^4x^4-16\,Bcd^4+24\,Acd^3e-42\,Bad^2e^2+105\,Aade^3+5\left(Bcde^3+9\,Ace^4\right)x^3-3\left(2\,Bcd^2e^2-3\,Acde^3-\right.\right.}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c*e^4*x^4 - 16*B*c*d^4 + 24*A*c*d^3*e - 42*B*a*d^2*e^2 + 105*A*
a*d*e^3 + 5*(B*c*d*e^3 + 9*A*c*e^4)*x^3 - 3*(2*B*c*d^2*e^2 - 3*A*c*d*e^3 -
21*B*a*e^4)*x^2 + (8*B*c*d^3*e - 12*A*c*d^2*e^2 + 21*B*a*d*e^3 + 105*A*a*e^
4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.16, size = 327, normalized size = 2.82

$$\frac{2}{315}\Big(105\Big((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\Big)Bade^{(-1)}+21\Big(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\Big)Acde^{(-2)}+9\Big(5\,(xe$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d*e^(-1) + 21*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*d*e^(-2) + 9*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*c*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*B*a*e^(-1) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*c*e^(-2) + (35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*c*e^(-3) + 315*sqrt(x*e + d)*A*a*
d + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.87

$$\frac{2\,(ex+d)^{\frac{3}{2}}\big(35Bc\,x^3e^3+45Ac\,e^3x^2-30Bcd\,e^2x^2-36Acd\,e^2x+63Ba\,e^3x+24Bc\,d^2ex+105aA\,e^3+24Ac\,d^2e-}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*B*c*e^3*x^3+45*A*c*e^3*x^2-30*B*c*d*e^2*x^2-36*A*c*
d*e^2*x+63*B*a*e^3*x+24*B*c*d^2*e*x+105*A*a*e^3+24*A*c*d^2*e-42*B*a*d*e^2-1
6*B*c*d^3)/e^4
```

maxima [A] time = 0.77, size = 104, normalized size = 0.90

$$\frac{2\Big(35\,(ex+d)^{\frac{9}{2}}Bc-45\,(3\,Bcd-Ace)(ex+d)^{\frac{7}{2}}+63\,\big(3\,Bcd^2-2\,Acde+Bae^2\big)(ex+d)^{\frac{5}{2}}-105\,\big(Bcd^3-Acd^2e+Ba}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*c - 45*(3*B*c*d - A*c*e)*(e*x + d)^(7/2) + 63*(
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(5/2) - 105*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 1.74, size = 100, normalized size = 0.86

$$\frac{(d+e\,x)^{5/2}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{5\,e^4}+\frac{2\,B\,c\,(d+e\,x)^{9/2}}{9\,e^4}+\frac{2\,c\,\left(A\,e-3\,B\,d\right)\,(d+e\,x)^{7/2}}{7\,e^4}+\frac{2\,\left(c\,d^2+a\,e^2\right)\,(A\,e-}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(5*e^4) + (2*B*c*(d +
 e*x)^(9/2))/(9*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(7/2))/(7*e^4) + (2*(a*
e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 3.74, size = 131, normalized size = 1.13

$$\frac{2\left(\frac{Bc(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}(Ace-3Bcd)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(-2Acde+Bae^2+3Bcd^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(Aae^3+Acd^2e-Bade^2-Bcd^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*c*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*c*e - 3*B*c*d)/(7*e*
*3) + (d + e*x)**(5/2)*(-2*A*c*d*e + B*a*e**2 + 3*B*c*d**2)/(5*e**3) + (d +
 e*x)**(3/2)*(A*a*e**3 + A*c*d**2*e - B*a*d*e**2 - B*c*d**3)/(3*e**3))/e
```

3.1431 $\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=114

$$\frac{2(d+ex)^{3/2}\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)(Bd-Ae)}{e^4}-\frac{2c(d+ex)^{5/2}(3Bd-Ae)}{5e^4}+\frac{2Bc(d+ex)^{7/2}}{7e^4}$$

```
[Out] 2/3*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)*(e*x+d)^(3/2)/e^4-2/5*c*(-A*e+3*B*d)*(e*
x+d)^(5/2)/e^4+2/7*B*c*(e*x+d)^(7/2)/e^4-2*(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)
^(1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$\frac{2(d+ex)^{3/2}\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)(Bd-Ae)}{e^4}-\frac{2c(d+ex)^{5/2}(3Bd-Ae)}{5e^4}+\frac{2Bc(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)*Sqrt[d + e*x])/e^4 + (2*(3*B*c*d^2 - 2*A*c*
d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^4) - (2*c*(3*B*d - A*e)*(d + e*x)^(5/2
))/(5*e^4) + (2*B*c*(d + e*x)^(7/2))/(7*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{\sqrt{d+ex}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3\sqrt{d+ex}}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)\sqrt{d+ex}}{e^3}+\frac{c(-3Bd+Ae)(d+\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)\sqrt{d+ex}}{e^4}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{3/2}}{3e^4}-\frac{2c(3Bd}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 96, normalized size = 0.84

$$\frac{2\sqrt{d+ex}\left(105aAe^3+35aBe^2(ex-2d)+7Ace\left(8d^2-4dex+3e^2x^2\right)-3Bc\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(105*a*A*e^3 + 35*a*B*e^2*(-2*d + e*x) + 7*A*c*e*(8*d^2 -
4*d*e*x + 3*e^2*x^2) - 3*B*c*(16*d^3 - 8*d^2*e*x + 6*d*e^2*x^2 - 5*e^3*x^3)
))/(105*e^4)
```

fricas [A] time = 0.53, size = 100, normalized size = 0.88

$$\frac{2\left(15\,Bce^3x^3-48\,Bcd^3+56\,Acd^2e-70\,Bade^2+105\,Aae^3-3\left(6\,Bcde^2-7\,Ace^3\right)x^2+\left(24\,Bcd^2e-28\,Acde^2+35\right.\right.}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c*e^3*x^3 - 48*B*c*d^3 + 56*A*c*d^2*e - 70*B*a*d*e^2 + 105*A*a*
e^3 - 3*(6*B*c*d*e^2 - 7*A*c*e^3)*x^2 + (24*B*c*d^2*e - 28*A*c*d*e^2 + 35*B
*a*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.20, size = 138, normalized size = 1.21

$$\frac{2}{105}\left(35\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bae^{(-1)}+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\,\sqrt{xe+d}\,d^{2}\right)Ace^{(-2)}+3\left(5\,(xe+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*e^(-1) + 7*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*c*e^(-2) + 3*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*B*c*e^(-3) + 105*sqrt(x*e + d)*A*a)*e^(-1)
```

maple [A] time = 0.05, size = 101, normalized size = 0.89

$$\frac{2\sqrt{ex+d}\,\left(15Bc\,x^{3}e^{3}+21Ac\,e^{3}x^{2}-18Bcd\,e^{2}x^{2}-28Acd\,e^{2}x+35Ba\,e^{3}x+24Bc\,d^{2}ex+105aA\,e^{3}+56Ac\,d^{2}e-\right.}{105e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(1/2)*(15*B*c*e^3*x^3+21*A*c*e^3*x^2-18*B*c*d*e^2*x^2-28*A*c*
d*e^2*x+35*B*a*e^3*x+24*B*c*d^2*e*x+105*A*a*e^3+56*A*c*d^2*e-70*B*a*d*e^2-4
8*B*c*d^3)/e^4
```

maxima [A] time = 0.58, size = 104, normalized size = 0.91

$$\frac{2\left(15\,(ex+d)^{\frac{7}{2}}Bc-21\,(3\,Bcd-Ace)(ex+d)^{\frac{5}{2}}+35\left(3\,Bcd^{2}-2\,Acde+Bae^{2}\right)(ex+d)^{\frac{3}{2}}-105\left(Bcd^{3}-Acd^{2}e+\right.\right.}{105\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*c - 21*(3*B*c*d - A*c*e)*(e*x + d)^(5/2) + 35*(
3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*(e*x + d)^(3/2) - 105*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 100, normalized size = 0.88

$$\frac{(d+e\,x)^{3/2}\,\left(6\,B\,c\,d^{2}-4\,A\,c\,d\,e+2\,B\,a\,e^{2}\right)}{3\,e^{4}}+\frac{2\,B\,c\,(d+e\,x)^{7/2}}{7\,e^{4}}+\frac{2\,c\,(A\,e-3\,B\,d)\,(d+e\,x)^{5/2}}{5\,e^{4}}+\frac{2\,\left(c\,d^{2}+a\,e^{2}\right)\,(A}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/(3*e^4) + (2*B*c*(d +
 e*x)^(7/2))/(7*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(5/2))/(5*e^4) + (2*(a*
e^2 + c*d^2)*(A*e - B*d)*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 36.49, size = 374, normalized size = 3.28

$$\begin{cases} \frac{-\frac{2Aad}{\sqrt{d+ex}} - 2Aa\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{2Acd\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2} - \frac{2Ac\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\sqrt{d+ex} + d(d+ex)^{\frac{3}{2}} - \frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2} - \frac{2Bad\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{2Ba\left(\frac{d^2}{\sqrt{d+ex}}\right.}{}}{e} \\ \frac{Aax + \frac{Acx^3}{3} + \frac{Bax^2}{2} + \frac{Bcx^4}{4}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a*d/sqrt(d + e*x) - 2*A*a*(-d/sqrt(d + e*x) - sqrt(d + e*x
)) - 2*A*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/
e**2 - 2*A*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/
2) - (d + e*x)**(5/2)/5)/e**2 - 2*B*a*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/
e - 2*B*a*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e -
 2*B*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) -
 (d + e*x)**(5/2)/5)/e**3 - 2*B*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x
) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/
e**3)/e, Ne(e, 0)), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/sqrt(d)
, True))
```

3.1432 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=112

$$\frac{2\sqrt{d+ex}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(3Bd-Ae)}{3e^4}+\frac{2Bc(d+ex)^{5/2}}{5e^4}$$

```
[Out] -2/3*c*(-A*e+3*B*d)*(e*x+d)^(3/2)/e^4+2/5*B*c*(e*x+d)^(5/2)/e^4+2*(-A*e+B*d
)*(a*e^2+c*d^2)/e^4/(e*x+d)^(1/2)+2*(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)*(e*x+d)^
(1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$\frac{2\sqrt{d+ex}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(3Bd-Ae)}{3e^4}+\frac{2Bc(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(e^4*Sqrt[d + e*x]) + (2*(3*B*c*d^2 - 2*A*c
*d*e + a*B*e^2)*Sqrt[d + e*x])/e^4 - (2*c*(3*B*d - A*e)*(d + e*x)^(3/2))/(3
*e^4) + (2*B*c*(d + e*x)^(5/2))/(5*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{3/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{3/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3\sqrt{d+ex}}+\frac{c(-3Bd+Ae)\sqrt{d+ex}}{e^3}+\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(3Bcd^2-2Acde+aBe^2\right)\sqrt{d+ex}}{e^4}-\frac{2c(3Bd-Ae)(d+}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 97, normalized size = 0.87

$$\frac{6B\left(5ae^2(2d+ex)+c\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)-10Ae\left(3ae^2+c\left(8d^2+4dex-e^2x^2\right)\right)}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (-10*A*e*(3*a*e^2 + c*(8*d^2 + 4*d*e*x - e^2*x^2)) + 6*B*(5*a*e^2*(2*d + e*
x) + c*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)))/(15*e^4*Sqrt[d + e*x]
)
```

fricas [A] time = 0.64, size = 110, normalized size = 0.98

$$\frac{2\left(3\,Bce^3x^3+48\,Bcd^3-40\,Acd^2e+30\,Bade^2-15\,Aae^3-\left(6\,Bcde^2-5\,Ace^3\right)x^2+\left(24\,Bcd^2e-20\,Acde^2+15\,B\right.}{15\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c*e^3*x^3 + 48*B*c*d^3 - 40*A*c*d^2*e + 30*B*a*d*e^2 - 15*A*a*e^3
 - (6*B*c*d*e^2 - 5*A*c*e^3)*x^2 + (24*B*c*d^2*e - 20*A*c*d*e^2 + 15*B*a*e^
3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [**A**] time = 0.17, size = 135, normalized size = 1.21

$$\frac{2}{15}\Big(3\,(xe+d)^{\frac{5}{2}}Bce^{16} - 15\,(xe+d)^{\frac{3}{2}}Bcde^{16} + 45\,\sqrt{xe+d}\,Bcd^2e^{16} + 5\,(xe+d)^{\frac{3}{2}}Ace^{17} - 30\,\sqrt{xe+d}\,Acde^{17} + 15$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c*e^16 - 15*(x*e + d)^(3/2)*B*c*d*e^16 + 45*sqrt(
x*e + d)*B*c*d^2*e^16 + 5*(x*e + d)^(3/2)*A*c*e^17 - 30*sqrt(x*e + d)*A*c*d
*e^17 + 15*sqrt(x*e + d)*B*a*e^18)*e^(-20) + 2*(B*c*d^3 - A*c*d^2*e + B*a*d
*e^2 - A*a*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [**A**] time = 0.05, size = 101, normalized size = 0.90

$$-\frac{2\Big(-3Bc\,x^3e^3 - 5Ac\,e^3x^2 + 6Bcd\,e^2x^2 + 20Acd\,e^2x - 15Ba\,e^3x - 24Bc\,d^2ex + 15aA\,e^3 + 40Ac\,d^2e - 30aBd\,e^2 - 4}{15\sqrt{ex+d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x)
```

```
[Out] -2/15/(e*x+d)^(1/2)*(-3*B*c*e^3*x^3-5*A*c*e^3*x^2+6*B*c*d*e^2*x^2+20*A*c*d*
e^2*x-15*B*a*e^3*x-24*B*c*d^2*e*x+15*A*a*e^3+40*A*c*d^2*e-30*B*a*d*e^2-48*B
*c*d^3)/e^4
```

maxima [**A**] time = 0.51, size = 112, normalized size = 1.00

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc-5\,(3\,Bcd-Ace)(ex+d)^{\frac{3}{2}}+15\left(3\,Bcd^2-2\,Acde+Bae^2\right)\sqrt{ex+d}}{e^3}+\frac{15\left(Bcd^3-Acd^2e+Bade^2-Aae^3\right)}{\sqrt{ex+d}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c - 5*(3*B*c*d - A*c*e)*(e*x + d)^(3/2) + 15*(3*
B*c*d^2 - 2*A*c*d*e + B*a*e^2)*sqrt(e*x + d))/e^3 + 15*(B*c*d^3 - A*c*d^2*e
 + B*a*d*e^2 - A*a*e^3)/(sqrt(e*x + d)*e^3))/e
```

mupad [**B**] time = 0.07, size = 111, normalized size = 0.99

$$\frac{\sqrt{d+e\,x}\,\left(6\,B\,c\,d^2-4\,A\,c\,d\,e+2\,B\,a\,e^2\right)}{e^4}-\frac{-2\,B\,c\,d^3+2\,A\,c\,d^2\,e-2\,B\,a\,d\,e^2+2\,A\,a\,e^3}{e^4\,\sqrt{d+e\,x}}+\frac{2\,B\,c\,(d+e\,x)^{5/2}}{5\,e^4}+2\,c\,(A\,e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(2*B*a*e^2 + 6*B*c*d^2 - 4*A*c*d*e))/e^4 - (2*A*a*e^3 - 2*
B*c*d^3 - 2*B*a*d*e^2 + 2*A*c*d^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*c*(d + e*
x)^(5/2))/(5*e^4) + (2*c*(A*e - 3*B*d)*(d + e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 21.21, size = 112, normalized size = 1.00

$$\frac{2Bc\,(d+ex)^{\frac{5}{2}}}{5e^4}+\frac{(d+ex)^{\frac{3}{2}}\,(2Ace-6Bcd)}{3e^4}+\frac{\sqrt{d+ex}\,\left(-4Acde+2Bae^2+6Bcd^2\right)}{e^4}+\frac{2\,(-Ae+Bd)\left(ae^2+cd^2\right)}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(2*A*c*e - 6*B*c*d)/(3*e
**4) + sqrt(d + e*x)*(-4*A*c*d*e + 2*B*a*e**2 + 6*B*c*d**2)/e**4 + 2*(-A*e
+ B*d)*(a*e**2 + c*d**2)/(e**4*sqrt(d + e*x))
```

3.1433 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2c\sqrt{d+ex}\,(3Bd-Ae)}{e^4}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

```
[Out] 2/3*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^(3/2)+2/3*B*c*(e*x+d)^(3/2)/e^4-2*
(-2*A*c*d*e+B*a*e^2+3*B*c*d^2)/e^4/(e*x+d)^(1/2)-2*c*(-A*e+3*B*d)*(e*x+d)^(
1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2c\sqrt{d+ex}\,(3Bd-Ae)}{e^4}+\frac{2Bc(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(3*e^4*(d + e*x)^(3/2)) - (2*(3*B*c*d^2 - 2
*A*c*d*e + a*B*e^2))/(e^4*Sqrt[d + e*x]) - (2*c*(3*B*d - A*e)*Sqrt[d + e*x]
)/e^4 + (2*B*c*(d + e*x)^(3/2))/(3*e^4)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{5/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{5/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^{3/2}}+\frac{c(-3Bd+Ae)}{e^3\sqrt{d+ex}}+\frac{Bc\sqrt{d+ex}}{e^3}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{3e^4(d+ex)^{3/2}}-\frac{2\left(3Bcd^2-2Acde+aBe^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(3Bd-Ae)\sqrt{d+ex}}{e^4}+2Bc\end{aligned}$$

Mathematica [A] time = 0.07, size = 94, normalized size = 0.84

$$-\frac{2\left(aAe^3+aBe^2(2d+3ex)-Ace\left(8d^2+12dex+3e^2x^2\right)+Bc\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(a*A*e^3 + a*B*e^2*(2*d + 3*e*x) - A*c*e*(8*d^2 + 12*d*e*x + 3*e^2*x^2)
 + B*c*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3)))/(3*e^4*(d + e*x)^(3/
2))
```

fricas [A] time = 0.56, size = 120, normalized size = 1.07

$$\frac{2\left(Bce^3x^3-16\,Bcd^3+8\,Acd^2e-2\,Bade^2-Aae^3-3\left(2\,Bcde^2-Ace^3\right)x^2-3\left(8\,Bcd^2e-4\,Acde^2+Bae^3\right)x\right)\sqrt{ex+}}{3\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*c*e^3*x^3 - 16*B*c*d^3 + 8*A*c*d^2*e - 2*B*a*d*e^2 - A*a*e^3 - 3*(2*
B*c*d*e^2 - A*c*e^3)*x^2 - 3*(8*B*c*d^2*e - 4*A*c*d*e^2 + B*a*e^3)*x)*sqrt(
e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.17, size = 126, normalized size = 1.12

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bce^8 - 9\sqrt{xe+d}\,Bcde^8 + 3\sqrt{xe+d}\,Ace^9\right)e^{(-12)} - \frac{2\left(9\,(xe+d)Bcd^2 - Bcd^3 - 6\,(xe+d)Acde + Acd}{3\,(xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c*e^8 - 9*sqrt(x*e + d)*B*c*d*e^8 + 3*sqrt(x*e + d)*
A*c*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*c*d^2 - B*c*d^3 - 6*(x*e + d)*A*c*d*e
 + A*c*d^2*e + 3*(x*e + d)*B*a*e^2 - B*a*d*e^2 + A*a*e^3)*e^(-4)/(x*e + d)^
(3/2)
```

maple [A] time = 0.05, size = 100, normalized size = 0.89

$$-\frac{2\left(-Bc\,x^3e^3 - 3Ac\,e^3x^2 + 6Bcd\,e^2x^2 - 12Acd\,e^2x + 3Ba\,e^3x + 24Bc\,d^2ex + aA\,e^3 - 8Ac\,d^2e + 2aBd\,e^2 + 16Bc}{3\,(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-B*c*e^3*x^3-3*A*c*e^3*x^2+6*B*c*d*e^2*x^2-12*A*c*d*e^2
*x+3*B*a*e^3*x+24*B*c*d^2*e*x+A*a*e^3-8*A*c*d^2*e+2*B*a*d*e^2+16*B*c*d^3)/e
^4
```

maxima [A] time = 0.50, size = 108, normalized size = 0.96

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}}Bc - 3\,(3\,Bcd - Ace)\sqrt{ex+d}}{e^3} + \frac{Bcd^3 - Acd^2e + Bade^2 - Aae^3 - 3\left(3\,Bcd^2 - 2\,Acde + Bae^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*c - 3*(3*B*c*d - A*c*e)*sqrt(e*x + d))/e^3 + (B*c*d
^3 - A*c*d^2*e + B*a*d*e^2 - A*a*e^3 - 3*(3*B*c*d^2 - 2*A*c*d*e + B*a*e^2)*
(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 1.77, size = 113, normalized size = 1.01

$$\frac{2\,B\,c\,(d+e\,x)^3 - 2\,A\,a\,e^3 + 2\,B\,c\,d^3 + 2\,B\,a\,d\,e^2 - 2\,A\,c\,d^2\,e - 6\,B\,a\,e^2\,(d+e\,x) + 6\,A\,c\,e\,(d+e\,x)^2 - 18\,B\,c\,d\,(d+}{3\,e^4\,(d+e\,x)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*c*(d + e*x)^3 - 2*A*a*e^3 + 2*B*c*d^3 + 2*B*a*d*e^2 - 2*A*c*d^2*e - 6*
B*a*e^2*(d + e*x) + 6*A*c*e*(d + e*x)^2 - 18*B*c*d*(d + e*x)^2 - 18*B*c*d^2
*(d + e*x) + 12*A*c*d*e*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [**A**] time = 1.44, size = 449, normalized size = 4.01

$$\begin{cases} -\frac{2Aae^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{16Acd^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{24Acde^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} + \frac{6Ace^3x^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{4Bade^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \\ \frac{Aax+\frac{Acx^3}{3}+\frac{Bax^2}{2}+\frac{Bcx^4}{4}}{d^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*A*a*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) +
16*A*c*d**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*c*d*
e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*c*e**3*x**2/
(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*B*a*d*e**2/(3*d*e**4*
sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*B*a*e**3*x/(3*d*e**4*sqrt(d + e
*x) + 3*e**5*x*sqrt(d + e*x)) - 32*B*c*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**
5*x*sqrt(d + e*x)) - 48*B*c*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqr
t(d + e*x)) - 12*B*c*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
+ e*x)) + 2*B*c*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
, Ne(e, 0)), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/d**(5/2), True
))
```

3.1434 $\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

```
[Out] 2/5*(-A*e+B*d)*(a*e^2+c*d^2)/e^4/(e*x+d)^(5/2)-2/3*(-2*A*c*d*e+B*a*e^2+3*B*
c*d^2)/e^4/(e*x+d)^(3/2)+2*c*(-A*e+3*B*d)/e^4/(e*x+d)^(1/2)+2*B*c*(e*x+d)^(
1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{2\left(aBe^2-2Acde+3Bcd^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2))/(5*e^4*(d + e*x)^(5/2)) - (2*(3*B*c*d^2 - 2
*A*c*d*e + a*B*e^2))/(3*e^4*(d + e*x)^(3/2)) + (2*c*(3*B*d - A*e))/(e^4*Sqr
t[d + e*x]) + (2*B*c*Sqrt[d + e*x])/e^4
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)}{(d+ex)^{7/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)}{e^3(d+ex)^{7/2}}+\frac{3Bcd^2-2Acde+aBe^2}{e^3(d+ex)^{5/2}}+\frac{c(-3Bd+Ae)}{e^3(d+ex)^{3/2}}+\frac{Bc}{e^3\sqrt{d+}}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)}{5e^4(d+ex)^{5/2}}-\frac{2\left(3Bcd^2-2Acde+aBe^2\right)}{3e^4(d+ex)^{3/2}}+\frac{2c(3Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2Bc\sqrt{d+}}{e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 95, normalized size = 0.85

$$-\frac{2\left(3aAe^3+aBe^2(2d+5ex)+Ace\left(8d^2+20dex+15e^2x^2\right)-3Bc\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)\right)}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(3*a*A*e^3 + a*B*e^2*(2*d + 5*e*x) + A*c*e*(8*d^2 + 20*d*e*x + 15*e^2*x
^2) - 3*B*c*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3)))/(15*e^4*(d +
 e*x)^(5/2))
```

fricas [A] time = 0.49, size = 133, normalized size = 1.19

$$\frac{2\left(15\,Bce^3x^3+48\,Bcd^3-8\,Acd^2e-2\,Bade^2-3\,Aae^3+15\left(6\,Bcde^2-Ace^3\right)x^2+5\left(24\,Bcd^2e-4\,Acde^2-Bae^3\right)\right.}{15\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(15*B*c*e^3*x^3 + 48*B*c*d^3 - 8*A*c*d^2*e - 2*B*a*d*e^2 - 3*A*a*e^3 +
 15*(6*B*c*d*e^2 - A*c*e^3)*x^2 + 5*(24*B*c*d^2*e - 4*A*c*d*e^2 - B*a*e^3)*
x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.17, size = 122, normalized size = 1.09

$$2\sqrt{xe+d}\,Bce^{(-4)}+\frac{2\left(45\,(xe+d)^2Bcd-15\,(xe+d)Bcd^2+3\,Bcd^3-15\,(xe+d)^2Ace+10\,(xe+d)Acde-3\,Acd^2e\right.}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*c*e^(-4) + 2/15*(45*(x*e + d)^2*B*c*d - 15*(x*e + d)*B*c*
d^2 + 3*B*c*d^3 - 15*(x*e + d)^2*A*c*e + 10*(x*e + d)*A*c*d*e - 3*A*c*d^2*e
 - 5*(x*e + d)*B*a*e^2 + 3*B*a*d*e^2 - 3*A*a*e^3)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 101, normalized size = 0.90

$$-\frac{2\left(-15Bc\,x^3e^3+15Ac\,e^3x^2-90Bcd\,e^2x^2+20Acd\,e^2x+5Ba\,e^3x-120Bc\,d^2ex+3aA\,e^3+8Ac\,d^2e+2aBd\,e^2-4\right.}{15\,(ex+d)^{\frac{5}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-15*B*c*e^3*x^3+15*A*c*e^3*x^2-90*B*c*d*e^2*x^2+20*A*c
*d*e^2*x+5*B*a*e^3*x-120*B*c*d^2*e*x+3*A*a*e^3+8*A*c*d^2*e+2*B*a*d*e^2-48*B
*c*d^3)/e^4
```

maxima [A] time = 0.52, size = 109, normalized size = 0.97

$$\frac{2\left(\frac{15\,\sqrt{ex+d}\,Bc}{e^3}+\frac{3\,Bcd^3-3\,Acd^2e+3\,Bade^2-3\,Aae^3+15\,(3\,Bcd-Ace)(ex+d)^2-5\,\left(3\,Bcd^2-2\,Acde+Bae^2\right)(ex+d)}{(ex+d)^{\frac{5}{2}}\,e^3}\right)}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*c/e^3 + (3*B*c*d^3 - 3*A*c*d^2*e + 3*B*a*d*e^2 - 3
*A*a*e^3 + 15*(3*B*c*d - A*c*e)*(e*x + d)^2 - 5*(3*B*c*d^2 - 2*A*c*d*e + B*
a*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 1.74, size = 100, normalized size = 0.89

$$-\frac{2\,\left(-48\,B\,c\,d^3-120\,B\,c\,d^2\,e\,x+8\,A\,c\,d^2\,e-90\,B\,c\,d\,e^2\,x^2+20\,A\,c\,d\,e^2\,x+2\,B\,a\,d\,e^2-15\,B\,c\,e^3\,x^3+15\,A\,c\,e^3\,x^2+\right.}{15\,e^4\,{\left(d+e\,x\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(3*A*a*e^3 - 48*B*c*d^3 + 2*B*a*d*e^2 + 8*A*c*d^2*e + 5*B*a*e^3*x + 15*
A*c*e^3*x^2 - 15*B*c*e^3*x^3 - 90*B*c*d*e^2*x^2 + 20*A*c*d*e^2*x - 120*B*c*
d^2*e*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.22, size = 653, normalized size = 5.83

$$\begin{cases} -\frac{6Aae^3}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{16Acd^2e}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{40Acde^2x}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2} \\ \frac{Aax+\frac{Acx^3}{3}+\frac{Bax^2}{2}+\frac{Bcx^4}{4}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a*e**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e
*x) + 15*e**6*x**2*sqrt(d + e*x)) - 16*A*c*d**2*e/(15*d**2*e**4*sqrt(d + e*
x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 40*A*c*d*e**
2*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*
sqrt(d + e*x)) - 30*A*c*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x
*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 4*B*a*d*e**2/(15*d**2*e**4*s
qrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10
*B*a*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) + 96*B*c*d**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**
5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B*c*d**2*e*x/(15*d**2
*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x
)) + 180*B*c*d*e**2*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d +
 e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 30*B*c*e**3*x**3/(15*d**2*e**4*sqrt(d
 + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)
), ((A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4)/d**(7/2), True))
```

3.1435 $\int (A+Bx)\sqrt{d+ex}\,\left(a+cx^2\right)^2\,dx$

Optimal. Leaf size=218

$$\frac{4c(d+ex)^{9/2}\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}+\frac{2(d+ex)^{5/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)}{3e^6}$$

```
[Out] -2/3*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^(3/2)/e^6+2/5*(a*e^2+c*d^2)*(-4*A*c
*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(5/2)/e^6-4/7*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a
*d*e^2+5*B*c*d^3)*(e*x+d)^(7/2)/e^6+4/9*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e
*x+d)^(9/2)/e^6-2/11*c^2*(-A*e+5*B*d)*(e*x+d)^(11/2)/e^6+2/13*B*c^2*(e*x+d)
^(13/2)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{9/2}\left(aBe^2-2Acde+5Bcd^2\right)}{9e^6}-\frac{4c(d+ex)^{7/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{7e^6}+\frac{2(d+ex)^{5/2}(ae^2+c}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2)^2,x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^(3/2))/(3*e^6) + (2*(c*d^2 + a*
e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^6) - (4*c*(5*B
*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(7/2))/(7*e^6) + (4
*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(9/2))/(9*e^6) - (2*c^2*(5*B
*d - A*e)*(d + e*x)^(11/2))/(11*e^6) + (2*B*c^2*(d + e*x)^(13/2))/(13*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(a+cx^2\right)^2\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2\sqrt{d+ex}}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right.}{e^5}\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^{3/2}}{3e^6}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe\right.}{5e^6}\end{aligned}$$

Mathematica [A] time = 0.19, size = 214, normalized size = 0.98

$$\frac{2(d+ex)^{3/2}\left(13Ae\left(1155a^2e^4+66ace^2\left(8d^2-12dex+15e^2x^2\right)+c^2\left(128d^4-192d^3ex+240d^2e^2x^2-280de^3x^3+3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(13*A*e*(1155*a^2*e^4 + 66*a*c*e^2*(8*d^2 - 12*d*e*x + 1
5*e^2*x^2) + c^2*(128*d^4 - 192*d^3*e*x + 240*d^2*e^2*x^2 - 280*d*e^3*x^3 +
 315*e^4*x^4)) + B*(3003*a^2*e^4*(-2*d + 3*e*x) + 286*a*c*e^2*(-16*d^3 + 24
*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) - 5*c^2*(256*d^5 - 384*d^4*e*x + 480*
d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5))))/(45045*e^6)
```

fricas [A] time = 0.76, size = 320, normalized size = 1.47

$$\frac{2\left(3465\,Bc^2e^6x^6 - 1280\,Bc^2d^6 + 1664\,Ac^2d^5e - 4576\,Bacd^4e^2 + 6864\,Aacd^3e^3 - 6006\,Ba^2d^2e^4 + 15015\,Aa^2de^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3465*B*c^2*e^6*x^6 - 1280*B*c^2*d^6 + 1664*A*c^2*d^5*e - 4576*B*a*
c*d^4*e^2 + 6864*A*a*c*d^3*e^3 - 6006*B*a^2*d^2*e^4 + 15015*A*a^2*d*e^5 + 3
15*(B*c^2*d*e^5 + 13*A*c^2*e^6)*x^5 - 35*(10*B*c^2*d^2*e^4 - 13*A*c^2*d*e^5
 - 286*B*a*c*e^6)*x^4 + 10*(40*B*c^2*d^3*e^3 - 52*A*c^2*d^2*e^4 + 143*B*a*c
*d*e^5 + 1287*A*a*c*e^6)*x^3 - 3*(160*B*c^2*d^4*e^2 - 208*A*c^2*d^3*e^3 + 5
72*B*a*c*d^2*e^4 - 858*A*a*c*d*e^5 - 3003*B*a^2*e^6)*x^2 + (640*B*c^2*d^5*e
 - 832*A*c^2*d^4*e^2 + 2288*B*a*c*d^3*e^3 - 3432*A*a*c*d^2*e^4 + 3003*B*a^2
*d*e^5 + 15015*A*a^2*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.19, size = 670, normalized size = 3.07

$$\frac{2}{45045}\left(15015\left((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\right)Ba^2de^{(-1)} + 6006\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\,\sqrt{xe+d}\,d^2\right)Aacde^{(}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d*e^(-1) + 6006*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*c*d*e
^(-2) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*c*d*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*A*c^2*d*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*c^2*d*e^(-5) + 3003*(3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*e^(-1) + 2574*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a*c*e^(-2) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*B*a*c*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*A*c^2*e^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e
+ d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*
(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*
c^2*e^(-5) + 45045*sqrt(x*e + d)*A*a^2*d + 15015*((x*e + d)^(3/2) - 3*sqrt(
x*e + d)*d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 259, normalized size = 1.19

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(3465B\,c^2x^5e^5 + 4095A\,c^2e^5x^4 - 3150B\,c^2d\,e^4x^4 - 3640A\,c^2d\,e^4x^3 + 10010Bac\,e^5x^3 + 2800B\,c^2d^2e^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*c^2*e^5*x^5+4095*A*c^2*e^5*x^4-3150*B*c^2*d*e
^4*x^4-3640*A*c^2*d*e^4*x^3+10010*B*a*c*e^5*x^3+2800*B*c^2*d^2*e^3*x^3+1287
0*A*a*c*e^5*x^2+3120*A*c^2*d^2*e^3*x^2-8580*B*a*c*d*e^4*x^2-2400*B*c^2*d^3*
e^2*x^2-10296*A*a*c*d*e^4*x-2496*A*c^2*d^3*e^2*x+9009*B*a^2*e^5*x+6864*B*a*
c*d^2*e^3*x+1920*B*c^2*d^4*e*x+15015*A*a^2*e^5+6864*A*a*c*d^2*e^3+1664*A*c^
2*d^4*e-6006*B*a^2*d*e^4-4576*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.54, size = 248, normalized size = 1.14

$$\frac{2 (3465 (ex+d)^{\frac{13}{2}} Bc^2 - 4095 (5 Bc^2 d - Ac^2 e)(ex+d)^{\frac{11}{2}} + 10010 (5 Bc^2 d^2 - 2 Ac^2 de + Bace^2)(ex+d)^{\frac{9}{2}} - 12870 (}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*c^2 - 4095*(5*B*c^2*d - A*c^2*e)*(e*x + d)
^(11/2) + 10010*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(9/2) - 1
2870*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(7
/2) + 9009*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 +
 B*a^2*e^4)*(e*x + d)^(5/2) - 15015*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*
e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*(e*x + d)^(3/2))/e^6
```

mupad [B] time = 1.79, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{9/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{9\,e^6}+\frac{4\,c\,(d+e\,x)^{7/2}\,\left(-5\,B\,c\,d^3+3\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{7\,e^6}+\frac{2\,B\,c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(9*e^6) + (4*c
*(d + e*x)^(7/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(7*e^6)
 + (2*B*c^2*(d + e*x)^(13/2))/(13*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(5/2)
*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*e))/(5*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(11/2))/(11*e^6) + (2*(a*e^2 + c*d^2)^2*(A*e - B*d)*(d + e*x)^(3/2))/(3*e
^6)
```

sympy [A] time = 5.56, size = 308, normalized size = 1.41

$$\frac{2 \left(\frac{Bc^2(d+ex)^{\frac{13}{2}}}{13e^5} + \frac{(d+ex)^{\frac{11}{2}}\left(Ac^2e-5Bc^2d\right)}{11e^5} + \frac{(d+ex)^{\frac{9}{2}}\left(-4Ac^2de+2Bace^2+10Bc^2d^2\right)}{9e^5} + \frac{(d+ex)^{\frac{7}{2}}\left(2Aace^3+6Ac^2d^2e-6Bacde^2-10Bc^2d^3\right)}{7e^5} + \frac{(d+ex)^{\frac{5}{2}}}{} \right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*c**2*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*c**2*e - 5*B*c
**2*d)/(11*e**5) + (d + e*x)**(9/2)*(-4*A*a*c**2*d*e + 2*B*a*c*e**2 + 10*B*c*
*2*d**2)/(9*e**5) + (d + e*x)**(7/2)*(2*A*a*c*e**3 + 6*A*c**2*d**2*e - 6*B*
a*c*d*e**2 - 10*B*c**2*d**3)/(7*e**5) + (d + e*x)**(5/2)*(-4*A*a*c*d*e**3 -
 4*A*c**2*d**3*e + B*a**2*e**4 + 6*B*a*c*d**2*e**2 + 5*B*c**2*d**4)/(5*e**5
) + (d + e*x)**(3/2)*(A*a**2*e**5 + 2*A*a*c*d**2*e**3 + A*c**2*d**4*e - B*a
**2*d*e**4 - 2*B*a*c*d**3*e**2 - B*c**2*d**5)/(3*e**5))/e
```

3.1436 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=216

$$\frac{4c(d+ex)^{7/2}\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}+\frac{2(d+ex)^{3/2}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\,\left(ae^2+cd\right.}{e^6}$$

```
[Out] 2/3*(a*e^2+c*d^2)*(-4*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(3/2)/e^6-4/5*c*(-
A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*B*c*d^3)*(e*x+d)^(5/2)/e^6+4/7*c*(-2*A*c*
d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(7/2)/e^6-2/9*c^2*(-A*e+5*B*d)*(e*x+d)^(9/2)
/e^6+2/11*B*c^2*(e*x+d)^(11/2)/e^6-2*(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^(1/
2)/e^6
```

Rubi [A] time = 0.09, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$\frac{4c(d+ex)^{7/2}\left(aBe^2-2Acde+5Bcd^2\right)}{7e^6}-\frac{4c(d+ex)^{5/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{5e^6}+\frac{2(d+ex)^{3/2}\left(ae^2+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^2*Sqrt[d + e*x])/e^6 + (2*(c*d^2 + a*e^2)*(
5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^6) - (4*c*(5*B*c*d^3
 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(5/2))/(5*e^6) + (4*c*(5*
B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^6) - (2*c^2*(5*B*d - A
*e)*(d + e*x)^(9/2))/(9*e^6) + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5\sqrt{d+ex}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)\sqrt{d+ex}}{e^5}+\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2\sqrt{d+ex}}{e^6}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)(d+}{3e^6}\end{aligned}$$

Mathematica [A] time = 0.16, size = 213, normalized size = 0.99

$$\frac{2\sqrt{d+ex}\,\left(11Ae\left(315a^2e^4+42ace^2\left(8d^2-4dex+3e^2x^2\right)+c^2\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+35e^4x^4\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(11*A*e*(315*a^2*e^4 + 42*a*c*e^2*(8*d^2 - 4*d*e*x + 3*e^2
*x^2) + c^2*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*
x^4)) + B*(1155*a^2*e^4*(-2*d + e*x) + 198*a*c*e^2*(-16*d^3 + 8*d^2*e*x - 6
*d*e^2*x^2 + 5*e^3*x^3) - 5*c^2*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 8
0*d^2*e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5))))/(3465*e^6)
```

fricas [A] time = 0.68, size = 247, normalized size = 1.14

$$2\left(315\,Bc^2e^5x^5 - 1280\,Bc^2d^5 + 1408\,Ac^2d^4e - 3168\,Bacd^3e^2 + 3696\,Aacd^2e^3 - 2310\,Ba^2de^4 + 3465\,Aa^2e^5 - 35\,\left(1\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 1408*A*c^2*d^4*e - 3168*B*a*c*
d^3*e^2 + 3696*A*a*c*d^2*e^3 - 2310*B*a^2*d*e^4 + 3465*A*a^2*e^5 - 35*(10*B
*c^2*d*e^4 - 11*A*c^2*e^5)*x^4 + 10*(40*B*c^2*d^2*e^3 - 44*A*c^2*d*e^4 + 99
*B*a*c*e^5)*x^3 - 6*(80*B*c^2*d^3*e^2 - 88*A*c^2*d^2*e^3 + 198*B*a*c*d*e^4
- 231*A*a*c*e^5)*x^2 + (640*B*c^2*d^4*e - 704*A*c^2*d^3*e^2 + 1584*B*a*c*d^
2*e^3 - 1848*A*a*c*d*e^4 + 1155*B*a^2*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [A] time = 0.18, size = 295, normalized size = 1.37

$$\frac{2}{3465}\left(1155\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)Ba^2e^{(-1)} + 462\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\right)Aace^{(-2)} + 198\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*e^(-1) + 462*(3*(x
*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*c*e^(-2) +
 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*B*a*c*e^(-3) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*A*c^2*e^(-4) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*B*c^2*e^(-5) + 3465*sqrt(x*e + d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 259, normalized size = 1.20

$$2\sqrt{ex+d}\,\left(315B\,c^2x^5e^5 + 385A\,c^2e^5x^4 - 350B\,c^2d\,e^4x^4 - 440A\,c^2d\,e^4x^3 + 990Bac\,e^5x^3 + 400B\,c^2d^2e^3x^3 + 1386A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(1/2)*(315*B*c^2*e^5*x^5+385*A*c^2*e^5*x^4-350*B*c^2*d*e^4*x
^4-440*A*c^2*d*e^4*x^3+990*B*a*c*e^5*x^3+400*B*c^2*d^2*e^3*x^3+1386*A*a*c*e
^5*x^2+528*A*c^2*d^2*e^3*x^2-1188*B*a*c*d*e^4*x^2-480*B*c^2*d^3*e^2*x^2-184
8*A*a*c*d*e^4*x-704*A*c^2*d^3*e^2*x+1155*B*a^2*e^5*x+1584*B*a*c*d^2*e^3*x+6
40*B*c^2*d^4*e*x+3465*A*a^2*e^5+3696*A*a*c*d^2*e^3+1408*A*c^2*d^4*e-2310*B*
a^2*d*e^4-3168*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.46, size = 248, normalized size = 1.15

$$2\left(315\,(ex+d)^{\frac{11}{2}}Bc^2 - 385\left(5\,Bc^2d - Ac^2e\right)(ex+d)^{\frac{9}{2}} + 990\left(5\,Bc^2d^2 - 2\,Ac^2de + Bace^2\right)(ex+d)^{\frac{7}{2}} - 1386\left(5\,Bc^2d^{\cdots}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*c^2 - 385*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(9
/2) + 990*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(7/2) - 1386*(5
*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(5/2) + 1
155*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*
e^4)*(e*x + d)^(3/2) - 3465*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*
A*a*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)*sqrt(e*x + d))/e^6
```

mupad **[B]** time = 1.71, size = 197, normalized size = 0.91

$$\frac{(d+e\,x)^{7/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{7\,e^6}+\frac{4\,c\,(d+e\,x)^{5/2}\,\left(-5\,B\,c\,d^3+3\,A\,c\,d^2\,e-3\,B\,a\,d\,e^2+A\,a\,e^3\right)}{5\,e^6}+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(7*e^6) + (4*c
*(d + e*x)^(5/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(5*e^6)
 + (2*B*c^2*(d + e*x)^(11/2))/(11*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(3/2)
*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*e))/(3*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(9/2))/(9*e^6) + (2*(a*e^2 + c*d^2)^2*(A*e - B*d)*(d + e*x)^(1/2))/e^6
```

sympy **[A]** time = 79.70, size = 772, normalized size = 3.57

$$\begin{cases} \frac{-\frac{2Aa^2d}{\sqrt{d+ex}}-2Aa^2\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)-\frac{4Aacd\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{4Aac\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\sqrt{d+ex}+d(d+ex)^{\frac{3}{2}}-\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}-\frac{2Ac^2d\left(\frac{d^4}{\sqrt{d+ex}}+4d^3\sqrt{d+ex}-2d^2\right.}{e}}{} \\ \frac{Aa^2x+\frac{2Aacx^3}{3}+\frac{Ac^2x^5}{5}+\frac{Ba^2x^2}{2}+\frac{Bacx^4}{2}+\frac{Bc^2x^6}{6}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**2*d/sqrt(d + e*x) - 2*A*a**2*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*A*a*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(
3/2)/3)/e**2 - 4*A*a*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d +
 e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 2*A*c**2*d*(d**4/sqrt(d + e*x) +
4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (
d + e*x)**(7/2)/7)/e**4 - 2*A*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e
*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)*
*(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*a**2*d*(-d/sqrt(d + e*x) - sqrt(d
 + e*x))/e - 2*B*a**2*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**
(3/2)/3)/e - 4*B*a*c*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d +
 e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 4*B*a*c*(d**4/sqrt(d + e*x) + 4*d
**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d +
 e*x)**(7/2)/7)/e**3 - 2*B*c**2*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*
x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**
(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*B*c**2*(d**6/sqrt(d + e*x) + 6*d**5*
sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2
*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5)/
e, Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5/5 + B*a**2*x**2/2 +
 B*a*c*x**4/2 + B*c**2*x**6/6)/sqrt(d), True))
```

3.1437 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c(d+ex)^{5/2}\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6}+\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{e^6\sqrt{d+ex}}$$

```
[Out] -4/3*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*B*c*d^3)*(e*x+d)^(3/2)/e^6+4/5*c
*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(5/2)/e^6-2/7*c^2*(-A*e+5*B*d)*(e*x
+d)^(7/2)/e^6+2/9*B*c^2*(e*x+d)^(9/2)/e^6+2*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/
(e*x+d)^(1/2)+2*(a*e^2+c*d^2)*(-4*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(1/2)/
e^6
```

Rubi [**A**] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c(d+ex)^{5/2}\left(aBe^2-2Acde+5Bcd^2\right)}{5e^6}-\frac{4c(d+ex)^{3/2}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6}+\frac{2\sqrt{d+ex}\left(ae^2+cd^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(e^6*Sqrt[d + e*x]) + (2*(c*d^2 + a*e^2)*
(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^6 - (4*c*(5*B*c*d^3 - 3*
A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3/2))/(3*e^6) + (4*c*(5*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^6) - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(7/2))/(7*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(9*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{3/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5\sqrt{d+ex}}+\frac{2c\left(-5Bcd^3+\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{e^6\sqrt{d+ex}}+\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)\sqrt{d+ex}}{e^6}-\frac{4c\left(5B\right.}{}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 214, normalized size = 1.00

$$\frac{2B\left(315a^2e^4(2d+ex)+126ace^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+5c^2\left(256d^5+128d^4ex-32d^3e^2x^2+16d^2e^3x^3-\right.\right.}{315}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (-6*A*e*(105*a^2*e^4 + 70*a*c*e^2*(8*d^2 + 4*d*e*x - e^2*x^2) + 3*c^2*(128*
d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 2*B*(315*a^
2*e^4*(2*d + e*x) + 126*a*c*e^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3
) + 5*c^2*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e
^4*x^4 + 7*e^5*x^5)))/(315*e^6*Sqrt[d + e*x])
```

fricas [A] time = 0.76, size = 257, normalized size = 1.20

$$2\left(35\,Bc^2e^5x^5 + 1280\,Bc^2d^5 - 1152\,Ac^2d^4e + 2016\,Bacd^3e^2 - 1680\,Aacd^2e^3 + 630\,Ba^2de^4 - 315\,Aa^2e^5 - 5\left(10\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^2*e^5*x^5 + 1280*B*c^2*d^5 - 1152*A*c^2*d^4*e + 2016*B*a*c*d^
3*e^2 - 1680*A*a*c*d^2*e^3 + 630*B*a^2*d*e^4 - 315*A*a^2*e^5 - 5*(10*B*c^2*
d*e^4 - 9*A*c^2*e^5)*x^4 + 2*(40*B*c^2*d^2*e^3 - 36*A*c^2*d*e^4 + 63*B*a*c*
e^5)*x^3 - 2*(80*B*c^2*d^3*e^2 - 72*A*c^2*d^2*e^3 + 126*B*a*c*d*e^4 - 105*A
*a*c*e^5)*x^2 + (640*B*c^2*d^4*e - 576*A*c^2*d^3*e^2 + 1008*B*a*c*d^2*e^3 -
 840*A*a*c*d*e^4 + 315*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [A] time = 0.19, size = 331, normalized size = 1.55

$$\frac{2}{315}\left(35\,(xe+d)^{\frac{9}{2}}Bc^2e^{48} - 225\,(xe+d)^{\frac{7}{2}}Bc^2de^{48} + 630\,(xe+d)^{\frac{5}{2}}Bc^2d^2e^{48} - 1050\,(xe+d)^{\frac{3}{2}}Bc^2d^3e^{48} + 1575\,\sqrt{x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^2*e^48 - 225*(x*e + d)^(7/2)*B*c^2*d*e^48 + 6
30*(x*e + d)^(5/2)*B*c^2*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*c^2*d^3*e^48 + 1
575*sqrt(x*e + d)*B*c^2*d^4*e^48 + 45*(x*e + d)^(7/2)*A*c^2*e^49 - 252*(x*e
 + d)^(5/2)*A*c^2*d*e^49 + 630*(x*e + d)^(3/2)*A*c^2*d^2*e^49 - 1260*sqrt(x
*e + d)*A*c^2*d^3*e^49 + 126*(x*e + d)^(5/2)*B*a*c*e^50 - 630*(x*e + d)^(3/
2)*B*a*c*d*e^50 + 1890*sqrt(x*e + d)*B*a*c*d^2*e^50 + 210*(x*e + d)^(3/2)*A
*a*c*e^51 - 1260*sqrt(x*e + d)*A*a*c*d*e^51 + 315*sqrt(x*e + d)*B*a^2*e^52)
*e^(-54) + 2*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 +
 B*a^2*d*e^4 - A*a^2*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-35B\,c^2x^5e^5 - 45A\,c^2e^5x^4 + 50B\,c^2d\,e^4x^4 + 72A\,c^2d\,e^4x^3 - 126Bac\,e^5x^3 - 80B\,c^2d^2e^3x^3 - 210Aac\,e^5x^2 - 1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315/(e*x+d)^(1/2)*(-35*B*c^2*e^5*x^5-45*A*c^2*e^5*x^4+50*B*c^2*d*e^4*x^4
+72*A*c^2*d*e^4*x^3-126*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3-210*A*a*c*e^5*x^
2-144*A*c^2*d^2*e^3*x^2+252*B*a*c*d*e^4*x^2+160*B*c^2*d^3*e^2*x^2+840*A*a*c
*d*e^4*x+576*A*c^2*d^3*e^2*x-315*B*a^2*e^5*x-1008*B*a*c*d^2*e^3*x-640*B*c^2
*d^4*e*x+315*A*a^2*e^5+1680*A*a*c*d^2*e^3+1152*A*c^2*d^4*e-630*B*a^2*d*e^4-
2016*B*a*c*d^3*e^2-1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.48, size = 256, normalized size = 1.20

$$\frac{2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bc^2 - 45\left(5\,Bc^2d - Ac^2e\right)(ex+d)^{\frac{7}{2}} + 126\left(5\,Bc^2d^2 - 2\,Ac^2de + Bace^2\right)(ex+d)^{\frac{5}{2}} - 210\left(5\,Bc^2d^3 - 3\,Ac^2d^2e + 3\,Bacde^2 - Aace^3\right)(ex+d)^{\frac{3}{2}} + 315\left(5\right.}{e^5}\right.}{315\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^2 - 45*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(7/2)
 + 126*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(5/2) - 210*(5*B*c
^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*x + d)^(3/2) + 315*(
5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3 + B*a^2*e^4)*
sqrt(e*x + d))/e^5 + 315*(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a
*c*d^2*e^3 + B*a^2*d*e^4 - A*a^2*e^5)/(sqrt(e*x + d)*e^5))/e
```

mupad [B]   time = 0.07, size = 237, normalized size = 1.11

$$\frac{(d+e\,x)^{5/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{5\,e^6}-\frac{-2\,B\,a^2\,d\,e^4+2\,A\,a^2\,e^5-4\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3-2\,B\,c^2\,d^5+}{e^6\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(5*e^6) - (2*A
*a^2*e^5 - 2*B*c^2*d^5 - 2*B*a^2*d*e^4 + 2*A*c^2*d^4*e + 4*A*a*c*d^2*e^3 -
4*B*a*c*d^3*e^2)/(e^6*(d + e*x)^(1/2)) + (4*c*(d + e*x)^(3/2)*(A*a*e^3 - 5*
B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*e))/(3*e^6) + (2*B*c^2*(d + e*x)^(9/2))/(
9*e^6) + (2*(a*e^2 + c*d^2)*(d + e*x)^(1/2)*(B*a*e^2 + 5*B*c*d^2 - 4*A*c*d*
e))/e^6 + (2*c^2*(A*e - 5*B*d)*(d + e*x)^(7/2))/(7*e^6)
```

sympy [A]   time = 48.99, size = 253, normalized size = 1.18

$$\frac{2Bc^2\left(d+ex\right)^{\frac{9}{2}}}{9e^6}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(2Ac^2e-10Bc^2d\right)}{7e^6}+\frac{\left(d+ex\right)^{\frac{5}{2}}\left(-8Ac^2de+4Bace^2+20Bc^2d^2\right)}{5e^6}+\frac{\left(d+ex\right)^{\frac{3}{2}}(4Aace^3+12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(2*A*c**2*e - 10*B*c*
*2*d)/(7*e**6) + (d + e*x)**(5/2)*(-8*A*c**2*d*e + 4*B*a*c*e**2 + 20*B*c**2
*d**2)/(5*e**6) + (d + e*x)**(3/2)*(4*A*a*c*e**3 + 12*A*c**2*d**2*e - 12*B*
a*c*d*e**2 - 20*B*c**2*d**3)/(3*e**6) + sqrt(d + e*x)*(-8*A*a*c*d*e**3 - 8*
A*c**2*d**3*e + 2*B*a**2*e**4 + 12*B*a*c*d**2*e**2 + 10*B*c**2*d**4)/e**6 +
 2*(-A*e + B*d)*(a*e**2 + c*d**2)**2/(e**6*sqrt(d + e*x))
```

3.1438 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c(d+ex)^{3/2}\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{3e^6(d+ex)^{3/2}}-4c\sqrt{}$$

```
[Out] 2/3*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^(3/2)+4/3*c*(-2*A*c*d*e+B*a*e^2+
5*B*c*d^2)*(e*x+d)^(3/2)/e^6-2/5*c^2*(-A*e+5*B*d)*(e*x+d)^(5/2)/e^6+2/7*B*c
^2*(e*x+d)^(7/2)/e^6-2*(a*e^2+c*d^2)*(-4*A*c*d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*
x+d)^(1/2)-4*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*B*c*d^3)*(e*x+d)^(1/2)/e
^6
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$\frac{4c(d+ex)^{3/2}\left(aBe^2-2Acde+5Bcd^2\right)}{3e^6}-\frac{4c\sqrt{d+ex}\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2\right.}{e^6\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(3*e^6*(d + e*x)^(3/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(e^6*Sqrt[d + e*x]) - (4*c*(5*B*c*d^
3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Sqrt[d + e*x])/e^6 + (4*c*(5*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^6) - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(5/2))/(5*e^6) + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{5/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{3/2}}+\frac{2c\left(-5Bc\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{3e^6(d+ex)^{3/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^6\sqrt{d+ex}}-\frac{4c\left(5Bcd^3-\right.}{}\end{aligned}$$

Mathematica [A] time = 0.14, size = 214, normalized size = 1.00

$$\frac{14Ae\left(-5a^2e^4+10ace^2\left(8d^2+12dex+3e^2x^2\right)+c^2\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)\right)-10B\left(7a\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (14*A*e*(-5*a^2*e^4 + 10*a*c*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + c^2*(128*
d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) - 10*B*(7*a^
2*e^4*(2*d + 3*e*x) + 14*a*c*e^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x
^3) + c^2*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^
4*x^4 - 3*e^5*x^5)))/(105*e^6*(d + e*x)^(3/2))
```

fricas [A] time = 0.73, size = 269, normalized size = 1.26

$$\frac{2\left(15\,Bc^2e^5x^5 - 1280\,Bc^2d^5 + 896\,Ac^2d^4e - 1120\,Bacd^3e^2 + 560\,Aacd^2e^3 - 70\,Ba^2de^4 - 35\,Aa^2e^5 - 3\left(10\,Bc^2de^4 -\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 896*A*c^2*d^4*e - 1120*B*a*c*d^3
*e^2 + 560*A*a*c*d^2*e^3 - 70*B*a^2*d*e^4 - 35*A*a^2*e^5 - 3*(10*B*c^2*d*e^
4 - 7*A*c^2*e^5)*x^4 + 2*(40*B*c^2*d^2*e^3 - 28*A*c^2*d*e^4 + 35*B*a*c*e^5)
*x^3 - 6*(80*B*c^2*d^3*e^2 - 56*A*c^2*d^2*e^3 + 70*B*a*c*d*e^4 - 35*A*a*c*e
^5)*x^2 - 3*(640*B*c^2*d^4*e - 448*A*c^2*d^3*e^2 + 560*B*a*c*d^2*e^3 - 280*
A*a*c*d*e^4 + 35*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6
)
```

giac [A] time = 0.27, size = 319, normalized size = 1.49

$$\frac{2}{105}\left(15\,(xe+d)^{\frac{7}{2}}Bc^2e^{36} - 105\,(xe+d)^{\frac{5}{2}}Bc^2de^{36} + 350\,(xe+d)^{\frac{3}{2}}Bc^2d^2e^{36} - 1050\,\sqrt{xe+d}\,Bc^2d^3e^{36} + 21\,(xe+d)^{\frac{5}{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*c^2*e^36 - 105*(x*e + d)^(5/2)*B*c^2*d*e^36 + 3
50*(x*e + d)^(3/2)*B*c^2*d^2*e^36 - 1050*sqrt(x*e + d)*B*c^2*d^3*e^36 + 21*
(x*e + d)^(5/2)*A*c^2*e^37 - 140*(x*e + d)^(3/2)*A*c^2*d*e^37 + 630*sqrt(x*
e + d)*A*c^2*d^2*e^37 + 70*(x*e + d)^(3/2)*B*a*c*e^38 - 630*sqrt(x*e + d)*B
*a*c*d*e^38 + 210*sqrt(x*e + d)*A*a*c*e^39)*e^(-42) - 2/3*(15*(x*e + d)*B*c
^2*d^4 - B*c^2*d^5 - 12*(x*e + d)*A*c^2*d^3*e + A*c^2*d^4*e + 18*(x*e + d)*
B*a*c*d^2*e^2 - 2*B*a*c*d^3*e^2 - 12*(x*e + d)*A*a*c*d*e^3 + 2*A*a*c*d^2*e^
3 + 3*(x*e + d)*B*a^2*e^4 - B*a^2*d*e^4 + A*a^2*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-15B\,c^2x^5e^5 - 21A\,c^2e^5x^4 + 30B\,c^2d\,e^4x^4 + 56A\,c^2d\,e^4x^3 - 70Bac\,e^5x^3 - 80B\,c^2d^2e^3x^3 - 210Aac\,e^5x^2 - 336A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/105/(e*x+d)^(3/2)*(-15*B*c^2*e^5*x^5-21*A*c^2*e^5*x^4+30*B*c^2*d*e^4*x^4
+56*A*c^2*d*e^4*x^3-70*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3-210*A*a*c*e^5*x^2
-336*A*c^2*d^2*e^3*x^2+420*B*a*c*d*e^4*x^2+480*B*c^2*d^3*e^2*x^2-840*A*a*c*
d*e^4*x-1344*A*c^2*d^3*e^2*x+105*B*a^2*e^5*x+1680*B*a*c*d^2*e^3*x+1920*B*c^
2*d^4*e*x+35*A*a^2*e^5-560*A*a*c*d^2*e^3-896*A*c^2*d^4*e+70*B*a^2*d*e^4+112
0*B*a*c*d^3*e^2+1280*B*c^2*d^5)/e^6
```

maxima [A] time = 0.68, size = 254, normalized size = 1.19

$$\frac{2\left(\frac{15\,(ex+d)^{\frac{7}{2}}Bc^2-21\left(5\,Bc^2d-Ac^2e\right)(ex+d)^{\frac{5}{2}}+70\left(5\,Bc^2d^2-2\,Ac^2de+Bace^2\right)(ex+d)^{\frac{3}{2}}-210\left(5\,Bc^2d^3-3\,Ac^2d^2e+3\,Bacde^2-Aace^3\right)\sqrt{ex+d}}{e^5} + \frac{35\left(Bc^2d^5-\right.}{}\right.}{105\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*c^2 - 21*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(5/2)
 + 70*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*(e*x + d)^(3/2) - 210*(5*B*c^
2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*sqrt(e*x + d))/e^5 + 35*
(B*c^2*d^5 - A*c^2*d^4*e + 2*B*a*c*d^3*e^2 - 2*A*a*c*d^2*e^3 + B*a^2*d*e^4
- A*a^2*e^5 - 3*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*
e^3 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 1.73, size = 249, normalized size = 1.16

$$\frac{(d+e\,x)^{3/2}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{3\,e^6}-\frac{(d+e\,x)\,\left(2\,B\,a^2\,e^4+12\,B\,a\,c\,d^2\,e^2-8\,A\,a\,c\,d\,e^3+10\,B\,c^2\,d^4-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/(3*e^6) - ((d
+ e*x)*(2*B*a^2*e^4 + 10*B*c^2*d^4 - 8*A*c^2*d^3*e - 8*A*a*c*d*e^3 + 12*B*a
*c*d^2*e^2) + (2*A*a^2*e^5)/3 - (2*B*c^2*d^5)/3 - (2*B*a^2*d*e^4)/3 + (2*A*
c^2*d^4*e)/3 + (4*A*a*c*d^2*e^3)/3 - (4*B*a*c*d^3*e^2)/3)/(e^6*(d + e*x)^(3
/2)) + (4*c*(d + e*x)^(1/2)*(A*a*e^3 - 5*B*c*d^3 - 3*B*a*d*e^2 + 3*A*c*d^2*
e))/e^6 + (2*B*c^2*(d + e*x)^(7/2))/(7*e^6) + (2*c^2*(A*e - 5*B*d)*(d + e*x
)^(5/2))/(5*e^6)
```

sympy [A] time = 61.95, size = 231, normalized size = 1.08

$$\frac{2Bc^2\,(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(2Ac^2e-10Bc^2d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(-8Ac^2de+4Bace^2+20Bc^2d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\,\left(4Aace^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**2*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(2*A*c**2*e - 10*B*c*
*2*d)/(5*e**6) + (d + e*x)**(3/2)*(-8*A*c**2*d*e + 4*B*a*c*e**2 + 20*B*c**2
*d**2)/(3*e**6) + sqrt(d + e*x)*(4*A*a*c*e**3 + 12*A*c**2*d**2*e - 12*B*a*c
*d*e**2 - 20*B*c**2*d**3)/e**6 - 2*(a*e**2 + c*d**2)*(-4*A*c*d*e + B*a*e**2
 + 5*B*c*d**2)/(e**6*sqrt(d + e*x)) + 2*(-A*e + B*d)*(a*e**2 + c*d**2)**2/(
3*e**6*(d + e*x)**(3/2))
```

3.1439 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=214

$$\frac{4c\sqrt{d+ex}\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{3e^6(d+ex)^{3/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{5e^6(d+ex)^{5/2}}+4c\left(-aA\right.$$

```
[Out] 2/5*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^(5/2)-2/3*(a*e^2+c*d^2)*(-4*A*c*
d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^(3/2)-2/3*c^2*(-A*e+5*B*d)*(e*x+d)^(3/2)
/e^6+2/5*B*c^2*(e*x+d)^(5/2)/e^6+4*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*d*e^2+5*B*
c*d^3)/e^6/(e*x+d)^(1/2)+4*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(1/2)/e
^6
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$\frac{4c\sqrt{d+ex}\left(aBe^2-2Acde+5Bcd^2\right)}{e^6}+\frac{4c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{e^6\sqrt{d+ex}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5B\right.}{3e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(5*e^6*(d + e*x)^(5/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(3*e^6*(d + e*x)^(3/2)) + (4*c*(5*B*
c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^6*Sqrt[d + e*x]) + (4*c*(5
*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^6 - (2*c^2*(5*B*d - A*e)*(
d + e*x)^(3/2))/(3*e^6) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{7/2}}\,dx&=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{7/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{5/2}}+\frac{2c\left(-5Bcd^3+\right.}{}\right.\\&=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{5e^6(d+ex)^{5/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{3e^6(d+ex)^{3/2}}+\frac{4c\left(5Bcd^3-3A\right.}{e^6}\end{aligned}$$

Mathematica [A] time = 0.14, size = 212, normalized size = 0.99

$$-\frac{2\left(3a^2Ae^5+a^2Be^4(2d+5ex)+2aAce^3\left(8d^2+20dex+15e^2x^2\right)-6aBce^2\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(3*a^2*A*e^5 + a^2*B*e^4*(2*d + 5*e*x) + 2*a*A*c*e^3*(8*d^2 + 20*d*e*x
+ 15*e^2*x^2) - 6*a*B*c*e^2*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3
) + A*c^2*e*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4
*x^4) - B*c^2*(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^2 + 80*d^2*e^3*x^3 - 1
0*d*e^4*x^4 + 3*e^5*x^5)))/(15*e^6*(d + e*x)^(5/2))
```

fricas [A] time = 0.68, size = 280, normalized size = 1.31

$$2\left(3\,Bc^2e^5x^5 + 256\,Bc^2d^5 - 128\,Ac^2d^4e + 96\,Bacd^3e^2 - 16\,Aacd^2e^3 - 2\,Ba^2de^4 - 3\,Aa^2e^5 - 5\left(2\,Bc^2de^4 - Ac^2e^5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*c^2*e^5*x^5 + 256*B*c^2*d^5 - 128*A*c^2*d^4*e + 96*B*a*c*d^3*e^2
- 16*A*a*c*d^2*e^3 - 2*B*a^2*d*e^4 - 3*A*a^2*e^5 - 5*(2*B*c^2*d*e^4 - A*c^2
*e^5)*x^4 + 10*(8*B*c^2*d^2*e^3 - 4*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^3 + 30*(16
*B*c^2*d^3*e^2 - 8*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 - A*a*c*e^5)*x^2 + 5*(128*
B*c^2*d^4*e - 64*A*c^2*d^3*e^2 + 48*B*a*c*d^2*e^3 - 8*A*a*c*d*e^4 - B*a^2*e
^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.21, size = 319, normalized size = 1.49

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}Bc^2e^{24} - 25\,(xe+d)^{\frac{3}{2}}Bc^2de^{24} + 150\,\sqrt{xe+d}\,Bc^2d^2e^{24} + 5\,(xe+d)^{\frac{3}{2}}Ac^2e^{25} - 60\,\sqrt{xe+d}\,Ac^2de^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^2*e^24 - 25*(x*e + d)^(3/2)*B*c^2*d*e^24 + 150*
sqrt(x*e + d)*B*c^2*d^2*e^24 + 5*(x*e + d)^(3/2)*A*c^2*e^25 - 60*sqrt(x*e +
 d)*A*c^2*d*e^25 + 30*sqrt(x*e + d)*B*a*c*e^26)*e^(-30) + 2/15*(150*(x*e +
d)^2*B*c^2*d^3 - 25*(x*e + d)*B*c^2*d^4 + 3*B*c^2*d^5 - 90*(x*e + d)^2*A*c^
2*d^2*e + 20*(x*e + d)*A*c^2*d^3*e - 3*A*c^2*d^4*e + 90*(x*e + d)^2*B*a*c*d
*e^2 - 30*(x*e + d)*B*a*c*d^2*e^2 + 6*B*a*c*d^3*e^2 - 30*(x*e + d)^2*A*a*c*
e^3 + 20*(x*e + d)*A*a*c*d*e^3 - 6*A*a*c*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4 +
3*B*a^2*d*e^4 - 3*A*a^2*e^5)*e^(-6)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-3B\,c^2x^5e^5 - 5A\,c^2e^5x^4 + 10B\,c^2d\,e^4x^4 + 40A\,c^2d\,e^4x^3 - 30Bac\,e^5x^3 - 80B\,c^2d^2e^3x^3 + 30Aac\,e^5x^2 + 240A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-3*B*c^2*e^5*x^5-5*A*c^2*e^5*x^4+10*B*c^2*d*e^4*x^4+40
*A*c^2*d*e^4*x^3-30*B*a*c*e^5*x^3-80*B*c^2*d^2*e^3*x^3+30*A*a*c*e^5*x^2+240
*A*c^2*d^2*e^3*x^2-180*B*a*c*d*e^4*x^2-480*B*c^2*d^3*e^2*x^2+40*A*a*c*d*e^4
*x+320*A*c^2*d^3*e^2*x+5*B*a^2*e^5*x-240*B*a*c*d^2*e^3*x-640*B*c^2*d^4*e*x+
3*A*a^2*e^5+16*A*a*c*d^2*e^3+128*A*c^2*d^4*e+2*B*a^2*d*e^4-96*B*a*c*d^3*e^2
-256*B*c^2*d^5)/e^6
```

maxima [A] time = 0.57, size = 255, normalized size = 1.19

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bc^2-5\left(5\,Bc^2d-Ac^2e\right)(ex+d)^{\frac{3}{2}}+30\left(5\,Bc^2d^2-2\,Ac^2de+Bace^2\right)\sqrt{ex+d}}{e^5}+\frac{3\,Bc^2d^5-3\,Ac^2d^4e+6\,Bacd^3e^2-6\,Aacd^2e^3+3\,Ba^2de^4-3\,Aa^2e^5}{}\right.}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*c^2 - 5*(5*B*c^2*d - A*c^2*e)*(e*x + d)^(3/2) +
30*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2)*sqrt(e*x + d))/e^5 + (3*B*c^2*d^
5 - 3*A*c^2*d^4*e + 6*B*a*c*d^3*e^2 - 6*A*a*c*d^2*e^3 + 3*B*a^2*d*e^4 - 3*A
*a^2*e^5 + 30*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3)*(e*
x + d)^2 - 5*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c*d*e^3
 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B]   time = 1.79, size = 251, normalized size = 1.17

$$\frac{\sqrt{d+e\,x}\,\left(20\,B\,c^2\,d^2-8\,A\,c^2\,d\,e+4\,B\,a\,c\,e^2\right)}{e^6}-\frac{(d+e\,x)\,\left(\frac{2\,B\,a^2\,e^4}{3}+4\,B\,a\,c\,d^2\,e^2-\frac{8\,A\,a\,c\,d\,e^3}{3}+\frac{10\,B\,c^2\,d^4}{3}-\frac{8\,A\,c^2\,d^3\,e}{3}\right)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(20*B*c^2*d^2 + 4*B*a*c*e^2 - 8*A*c^2*d*e))/e^6 - ((d + e*
x)*((2*B*a^2*e^4)/3 + (10*B*c^2*d^4)/3 - (8*A*c^2*d^3*e)/3 - (8*A*a*c*d*e^3
)/3 + 4*B*a*c*d^2*e^2) - (d + e*x)^2*(20*B*c^2*d^3 - 4*A*a*c*e^3 - 12*A*c^2
*d^2*e + 12*B*a*c*d*e^2) + (2*A*a^2*e^5)/5 - (2*B*c^2*d^5)/5 - (2*B*a^2*d*e
^4)/5 + (2*A*c^2*d^4*e)/5 + (4*A*a*c*d^2*e^3)/5 - (4*B*a*c*d^3*e^2)/5)/(e^6
*(d + e*x)^(5/2)) + (2*B*c^2*(d + e*x)^(5/2))/(5*e^6) + (2*c^2*(A*e - 5*B*d
)*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A]   time = 4.40, size = 1426, normalized size = 6.66

$$\begin{cases} -\frac{6Aa^2e^5}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}}-\frac{32Aacd^2e^3}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}}-\frac{80Aacde^4x}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}} \\ \frac{Aa^2x+\frac{2Aacx^3}{3}+\frac{Ac^2x^5}{5}+\frac{Ba^2x^2}{2}+\frac{Bacx^4}{2}+\frac{Bc^2x^6}{6}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a**2*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
+ e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 32*A*a*c*d**2*e**3/(15*d**2*e**6*sqr
t(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 80*A
*a*c*d*e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*
e**8*x**2*sqrt(d + e*x)) - 60*A*a*c*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) +
 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 256*A*c**2*d**4*
e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sq
rt(d + e*x)) - 640*A*c**2*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e*
*7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 480*A*c**2*d**2*e**3*x**
2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sq
rt(d + e*x)) - 80*A*c**2*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**
7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 10*A*c**2*e**5*x**4/(15*d
**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d +
e*x)) - 4*B*a**2*d*e**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d +
e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 10*B*a**2*e**5*x/(15*d**2*e**6*sqrt(d
+ e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 192*B*a*
c*d**3*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e*
*8*x**2*sqrt(d + e*x)) + 480*B*a*c*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x)
+ 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 360*B*a*c*d*e**
4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) + 60*B*a*c*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e
**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 512*B*c**2*d**5/(15*d**
2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*
x)) + 1280*B*c**2*d**4*e*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
 + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*c**2*d**3*e**2*x**2/(15*d**2*
e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)
) + 160*B*c**2*d**2*e**3*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqr
t(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B*c**2*d*e**4*x**4/(15*d**2*e
**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
 + 6*B*c**2*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 +
A*c**2*x**5/5 + B*a**2*x**2/2 + B*a*c*x**4/2 + B*c**2*x**6/6)/d**(7/2), Tru
e))
```

3.1440 $\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{4c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^{5/2}}+\frac{2\left(ae^2+cd^2\right)^2(Bd-Ae)}{7e^6(d+ex)^{7/2}}+\frac{4c\left(-aAe^3+3a\right.}{3e}$$

```
[Out] 2/7*(-A*e+B*d)*(a*e^2+c*d^2)^2/e^6/(e*x+d)^(7/2)-2/5*(a*e^2+c*d^2)*(-4*A*c*
d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^(5/2)+4/3*c*(-A*a*e^3-3*A*c*d^2*e+3*B*a*
d*e^2+5*B*c*d^3)/e^6/(e*x+d)^(3/2)+2/3*B*c^2*(e*x+d)^(3/2)/e^6-4*c*(-2*A*c*
d*e+B*a*e^2+5*B*c*d^2)/e^6/(e*x+d)^(1/2)-2*c^2*(-A*e+5*B*d)*(e*x+d)^(1/2)/e
^6
```

Rubi **[A]** time = 0.10, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$-\frac{4c\left(aBe^2-2Acde+5Bcd^2\right)}{e^6\sqrt{d+ex}}+\frac{4c\left(-aAe^3+3aBde^2-3Acd^2e+5Bcd^3\right)}{3e^6(d+ex)^{3/2}}-\frac{2\left(ae^2+cd^2\right)\left(aBe^2-4Acde+5Bcd^2\right)}{5e^6(d+ex)^{5/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^2)/(7*e^6*(d + e*x)^(7/2)) - (2*(c*d^2 + a*e
^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2))/(5*e^6*(d + e*x)^(5/2)) + (4*c*(5*B*
c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(3*e^6*(d + e*x)^(3/2)) - (4*
c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2))/(e^6*Sqrt[d + e*x]) - (2*c^2*(5*B*d -
A*e)*Sqrt[d + e*x])/e^6 + (2*B*c^2*(d + e*x)^(3/2))/(3*e^6)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^2}{(d+ex)^{9/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2}{e^5(d+ex)^{9/2}}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{e^5(d+ex)^{7/2}}+\frac{2c\left(-5Bcd^3+\right.}{}\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^2}{7e^6(d+ex)^{7/2}}-\frac{2\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+aBe^2\right)}{5e^6(d+ex)^{5/2}}+\frac{4c\left(5Bcd^3-3A\right.}{3e^6}$$

Mathematica **[A]** time = 0.15, size = 214, normalized size = 1.00

$$-\frac{2\left(Ae\left(15a^2e^4+2ace^2\left(8d^2+28dex+35e^2x^2\right)-3c^2\left(128d^4+448d^3ex+560d^2e^2x^2+280de^3x^3+35e^4x^4\right)\right)+B\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^2)/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(A*e*(15*a^2*e^4 + 2*a*c*e^2*(8*d^2 + 28*d*e*x + 35*e^2*x^2) - 3*c^2*(1
28*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d*e^3*x^3 + 35*e^4*x^4)) + B*(
3*a^2*e^4*(2*d + 7*e*x) + 6*a*c*e^2*(16*d^3 + 56*d^2*e*x + 70*d*e^2*x^2 + 3
5*e^3*x^3) + 5*c^2*(256*d^5 + 896*d^4*e*x + 1120*d^3*e^2*x^2 + 560*d^2*e^3*
x^3 + 70*d*e^4*x^4 - 7*e^5*x^5))))/(105*e^6*(d + e*x)^(7/2))
```

fricas [**A**] time = 0.68, size = 290, normalized size = 1.36

$$\frac{2\left(35\,Bc^2e^5x^5-1280\,Bc^2d^5+384\,Ac^2d^4e-96\,Bacd^3e^2-16\,Aacd^2e^3-6\,Ba^2de^4-15\,Aa^2e^5-35\left(10\,Bc^2de^4-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/105*(35*B*c^2*e^5*x^5 - 1280*B*c^2*d^5 + 384*A*c^2*d^4*e - 96*B*a*c*d^3*e
^2 - 16*A*a*c*d^2*e^3 - 6*B*a^2*d*e^4 - 15*A*a^2*e^5 - 35*(10*B*c^2*d*e^4 -
 3*A*c^2*e^5)*x^4 - 70*(40*B*c^2*d^2*e^3 - 12*A*c^2*d*e^4 + 3*B*a*c*e^5)*x^
3 - 70*(80*B*c^2*d^3*e^2 - 24*A*c^2*d^2*e^3 + 6*B*a*c*d*e^4 + A*a*c*e^5)*x^
2 - 7*(640*B*c^2*d^4*e - 192*A*c^2*d^3*e^2 + 48*B*a*c*d^2*e^3 + 8*A*a*c*d*e
^4 + 3*B*a^2*e^5)*x)*sqrt(e*x + d)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2
+ 4*d^3*e^7*x + d^4*e^6)
```

giac [**A**] time = 0.22, size = 316, normalized size = 1.48

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bc^2e^{12}-15\,\sqrt{xe+d}\,Bc^2de^{12}+3\,\sqrt{xe+d}\,Ac^2e^{13}\right)e^{(-18)}-\frac{2\left(1050\,(xe+d)^3Bc^2d^2-350\,(xe+d)^2Bc^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*c^2*e^12 - 15*sqrt(x*e + d)*B*c^2*d*e^12 + 3*sqrt(x*
e + d)*A*c^2*e^13)*e^(-18) - 2/105*(1050*(x*e + d)^3*B*c^2*d^2 - 350*(x*e +
 d)^2*B*c^2*d^3 + 105*(x*e + d)*B*c^2*d^4 - 15*B*c^2*d^5 - 420*(x*e + d)^3*
A*c^2*d*e + 210*(x*e + d)^2*A*c^2*d^2*e - 84*(x*e + d)*A*c^2*d^3*e + 15*A*c
^2*d^4*e + 210*(x*e + d)^3*B*a*c*e^2 - 210*(x*e + d)^2*B*a*c*d*e^2 + 126*(x
*e + d)*B*a*c*d^2*e^2 - 30*B*a*c*d^3*e^2 + 70*(x*e + d)^2*A*a*c*e^3 - 84*(x
*e + d)*A*a*c*d*e^3 + 30*A*a*c*d^2*e^3 + 21*(x*e + d)*B*a^2*e^4 - 15*B*a^2*
d*e^4 + 15*A*a^2*e^5)*e^(-6)/(x*e + d)^(7/2)
```

maple [**A**] time = 0.05, size = 259, normalized size = 1.21

$$-\frac{2\left(-35B\,c^2x^5e^5-105A\,c^2e^5x^4+350B\,c^2d\,e^4x^4-840A\,c^2d\,e^4x^3+210Bac\,e^5x^3+2800B\,c^2d^2e^3x^3+70Aac\,e^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x)
```

```
[Out] -2/105/(e*x+d)^(7/2)*(-35*B*c^2*e^5*x^5-105*A*c^2*e^5*x^4+350*B*c^2*d*e^4*x
^4-840*A*c^2*d*e^4*x^3+210*B*a*c*e^5*x^3+2800*B*c^2*d^2*e^3*x^3+70*A*a*c*e^
5*x^2-1680*A*c^2*d^2*e^3*x^2+420*B*a*c*d*e^4*x^2+5600*B*c^2*d^3*e^2*x^2+56*
A*a*c*d*e^4*x-1344*A*c^2*d^3*e^2*x+21*B*a^2*e^5*x+336*B*a*c*d^2*e^3*x+4480*
B*c^2*d^4*e*x+15*A*a^2*e^5+16*A*a*c*d^2*e^3-384*A*c^2*d^4*e+6*B*a^2*d*e^4+9
6*B*a*c*d^3*e^2+1280*B*c^2*d^5)/e^6
```

maxima [**A**] time = 0.68, size = 255, normalized size = 1.19

$$\frac{2\left(\frac{35\left((ex+d)^{\frac{3}{2}}Bc^2-3\left(5\,Bc^2d-Ac^2e\right)\sqrt{ex+d}\right)}{e^5}+\frac{15\,Bc^2d^5-15\,Ac^2d^4e+30\,Bacd^3e^2-30\,Aacd^2e^3+15\,Ba^2de^4-15\,Aa^2e^5-210\left(5\,Bc^2d^2-2\,Ac^2de+Bac\right.}{}\right.}{105\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^2/(e*x+d)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/105*(35*((e*x + d)^(3/2)*B*c^2 - 3*(5*B*c^2*d - A*c^2*e)*sqrt(e*x + d))/e
^5 + (15*B*c^2*d^5 - 15*A*c^2*d^4*e + 30*B*a*c*d^3*e^2 - 30*A*a*c*d^2*e^3 +
 15*B*a^2*d*e^4 - 15*A*a^2*e^5 - 210*(5*B*c^2*d^2 - 2*A*c^2*d*e + B*a*c*e^2
)*(e*x + d)^3 + 70*(5*B*c^2*d^3 - 3*A*c^2*d^2*e + 3*B*a*c*d*e^2 - A*a*c*e^3
)*(e*x + d)^2 - 21*(5*B*c^2*d^4 - 4*A*c^2*d^3*e + 6*B*a*c*d^2*e^2 - 4*A*a*c
*d*e^3 + B*a^2*e^4)*(e*x + d))/((e*x + d)^(7/2)*e^5))/e
```

mupad [B] time = 1.82, size = 258, normalized size = 1.21

$$-\frac{2\,\left(6\,B\,a^2\,d\,e^4+21\,B\,a^2\,e^5\,x+15\,A\,a^2\,e^5+96\,B\,a\,c\,d^3\,e^2+336\,B\,a\,c\,d^2\,e^3\,x+16\,A\,a\,c\,d^2\,e^3+420\,B\,a\,c\,d\,e^4\,x^2+56}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^2*(A + B*x))/(d + e*x)^(9/2),x)
```

```
[Out] -(2*(15*A*a^2*e^5 + 1280*B*c^2*d^5 + 6*B*a^2*d*e^4 - 384*A*c^2*d^4*e + 21*B
*a^2*e^5*x - 105*A*c^2*e^5*x^4 - 35*B*c^2*e^5*x^5 + 70*A*a*c*e^5*x^2 + 210*
B*a*c*e^5*x^3 + 4480*B*c^2*d^4*e*x - 1344*A*c^2*d^3*e^2*x - 840*A*c^2*d*e^4
*x^3 + 350*B*c^2*d*e^4*x^4 - 1680*A*c^2*d^2*e^3*x^2 + 5600*B*c^2*d^3*e^2*x^
2 + 2800*B*c^2*d^2*e^3*x^3 + 16*A*a*c*d^2*e^3 + 96*B*a*c*d^3*e^2 + 56*A*a*c
*d*e^4*x + 336*B*a*c*d^2*e^3*x + 420*B*a*c*d*e^4*x^2))/(105*e^6*(d + e*x)^(
7/2))
```

sympy [A] time = 8.15, size = 1855, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**2/(e*x+d)**(9/2),x)
```

```
[Out] Piecewise((-30*A*a**2*e**5/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*s
qrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x))
 - 32*A*a*c*d**2*e**3/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d
 + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 11
2*A*a*c*d*e**4*x/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*
x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 140*A*a
*c*e**5*x**2/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) +
 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 768*A*c**2*
d**4*e/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 2688*A*c**2*d**3*
e**2*x/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 3360*A*c**2*d**2*
e**3*x**2/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 31
5*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 1680*A*c**2*d*
e**4*x**3/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 31
5*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) + 210*A*c**2*e**
5*x**4/(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d
*e**8*x**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 12*B*a**2*d*e**4/
(105*d**3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x
**2*sqrt(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 42*B*a**2*e**5*x/(105*d*
*3*e**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqr
t(d + e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 192*B*a*c*d**3*e**2/(105*d**3*e
**6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d
+ e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 672*B*a*c*d**2*e**3*x/(105*d**3*e**
6*sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d +
e*x) + 105*e**9*x**3*sqrt(d + e*x)) - 840*B*a*c*d*e**4*x**2/(105*d**3*e**6*
sqrt(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*
x) + 105*e**9*x**3*sqrt(d + e*x)) - 420*B*a*c*e**5*x**3/(105*d**3*e**6*sqrt
(d + e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) +
 105*e**9*x**3*sqrt(d + e*x)) - 2560*B*c**2*d**5/(105*d**3*e**6*sqrt(d + e*
x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e*
*9*x**3*sqrt(d + e*x)) - 8960*B*c**2*d**4*e*x/(105*d**3*e**6*sqrt(d + e*x)
+ 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**9*
x**3*sqrt(d + e*x)) - 11200*B*c**2*d**3*e**2*x**2/(105*d**3*e**6*sqrt(d + e
*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e
**9*x**3*sqrt(d + e*x)) - 5600*B*c**2*d**2*e**3*x**3/(105*d**3*e**6*sqrt(d
+ e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 10
5*e**9*x**3*sqrt(d + e*x)) - 700*B*c**2*d*e**4*x**4/(105*d**3*e**6*sqrt(d +
 e*x) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105
*e**9*x**3*sqrt(d + e*x)) + 70*B*c**2*e**5*x**5/(105*d**3*e**6*sqrt(d + e*x
) + 315*d**2*e**7*x*sqrt(d + e*x) + 315*d*e**8*x**2*sqrt(d + e*x) + 105*e**
9*x**3*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + 2*A*a*c*x**3/3 + A*c**2*x**5
/5 + B*a**2*x**2/2 + B*a*c*x**4/2 + B*c**2*x**6/6)/d**(9/2), True))
```

3.1441 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=348

$$-\frac{2c(d+ex)^{7/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{6c^2(d+ex)^{11/2}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}$$

```
[Out] 2/3*(a*e^2+c*d^2)^2*(-6*A*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(3/2)/e^8-6/5*c*
(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^(5/2)/e^
8-2/7*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4
))*(e*x+d)^(7/2)/e^8-2/9*c^2*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d
^3)*(e*x+d)^(9/2)/e^8+6/11*c^2*(-2*A*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(11/2
)/e^8-2/13*c^3*(-A*e+7*B*d)*(e*x+d)^(13/2)/e^8+2/15*B*c^3*(e*x+d)^(15/2)/e^
8-2*(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.21, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$-\frac{2c(d+ex)^{7/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{7e^8}+\frac{6c^2(d+ex)^{11/2}\left(aBe^2-2Acde+7Bcd^2\right)}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(B*d - A*e)*(c*d^2 + a*e^2)^3*Sqrt[d + e*x])/e^8 + (2*(c*d^2 + a*e^2)^2
*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/(3*e^8) - (6*c*(c*d^2 +
 a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(5/2))/
(5*e^8) - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*
e^2 + 3*a^2*e^4))*(d + e*x)^(7/2))/(7*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^
2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(9/2))/(9*e^8) + (6*c^2*(7*B*c*d^
2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(11/2))/(11*e^8) - (2*c^3*(7*B*d - A*e)*
(d + e*x)^(13/2))/(13*e^8) + (2*B*c^3*(d + e*x)^(15/2))/(15*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{\sqrt{d+ex}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7\sqrt{d+ex}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)\sqrt{d+ex}}{e^7}+\frac{3c}{}\right.\\ &= -\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3\sqrt{d+ex}}{e^8}+\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)(d+ex}{3e^8}\end{aligned}$$

Mathematica [A] time = 0.35, size = 373, normalized size = 1.07

$$\frac{2\sqrt{d+ex}\left(3Ae\left(15015a^3e^6+3003a^2ce^4\left(8d^2-4dex+3e^2x^2\right)+143ac^2e^2\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(3*A*e*(15015*a^3*e^6 + 3003*a^2*c*e^4*(8*d^2 - 4*d*e*x +
3*e^2*x^2) + 143*a*c^2*e^2*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^
3*x^3 + 35*e^4*x^4) + 5*c^3*(1024*d^6 - 512*d^5*e*x + 384*d^4*e^2*x^2 - 320
*d^3*e^3*x^3 + 280*d^2*e^4*x^4 - 252*d*e^5*x^5 + 231*e^6*x^6)) + B*(15015*a
^3*e^6*(-2*d + e*x) + 3861*a^2*c*e^4*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5
*e^3*x^3) + 195*a*c^2*e^2*(-256*d^5 + 128*d^4*e*x - 96*d^3*e^2*x^2 + 80*d^2
*e^3*x^3 - 70*d*e^4*x^4 + 63*e^5*x^5) - 7*c^3*(2048*d^7 - 1024*d^6*e*x + 76
8*d^5*e^2*x^2 - 640*d^4*e^3*x^3 + 560*d^3*e^4*x^4 - 504*d^2*e^5*x^5 + 462*d
*e^6*x^6 - 429*e^7*x^7))))/(45045*e^8)
```

fricas [**A**] time = 0.57, size = 454, normalized size = 1.30

$$2\left(3003\,Bc^{3}e^{7}x^{7} - 14336\,Bc^{3}d^{7} + 15360\,Ac^{3}d^{6}e - 49920\,Bac^{2}d^{5}e^{2} + 54912\,Aac^{2}d^{4}e^{3} - 61776\,Ba^{2}cd^{3}e^{4} + 7207\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(3003*B*c^3*e^7*x^7 - 14336*B*c^3*d^7 + 15360*A*c^3*d^6*e - 49920*B
*a*c^2*d^5*e^2 + 54912*A*a*c^2*d^4*e^3 - 61776*B*a^2*c*d^3*e^4 + 72072*A*a^
2*c*d^2*e^5 - 30030*B*a^3*d*e^6 + 45045*A*a^3*e^7 - 231*(14*B*c^3*d*e^6 - 1
5*A*c^3*e^7)*x^6 + 63*(56*B*c^3*d^2*e^5 - 60*A*c^3*d*e^6 + 195*B*a*c^2*e^7)
*x^5 - 35*(112*B*c^3*d^3*e^4 - 120*A*c^3*d^2*e^5 + 390*B*a*c^2*d*e^6 - 429*
A*a*c^2*e^7)*x^4 + 5*(896*B*c^3*d^4*e^3 - 960*A*c^3*d^3*e^4 + 3120*B*a*c^2*
d^2*e^5 - 3432*A*a*c^2*d*e^6 + 3861*B*a^2*c*e^7)*x^3 - 3*(1792*B*c^3*d^5*e^
2 - 1920*A*c^3*d^4*e^3 + 6240*B*a*c^2*d^3*e^4 - 6864*A*a*c^2*d^2*e^5 + 7722
*B*a^2*c*d*e^6 - 9009*A*a^2*c*e^7)*x^2 + (7168*B*c^3*d^6*e - 7680*A*c^3*d^5
*e^2 + 24960*B*a*c^2*d^4*e^3 - 27456*A*a*c^2*d^3*e^4 + 30888*B*a^2*c*d^2*e^
5 - 36036*A*a^2*c*d*e^6 + 15015*B*a^3*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [**A**] time = 0.22, size = 504, normalized size = 1.45

$$\frac{2}{45045}\left(15015\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)Ba^{3}e^{(-1)} + 9009\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^{2}\right)Aa^{2}ce\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*e^(-1) + 9009*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*c*e^(
-2) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*c*e^(-3) + 429*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*A*a*c^2*e^(-4) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*c^2*e^(-5) + 15*(231*(x*e + d)^
(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d
)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sq
rt(x*e + d)*d^6)*A*c^3*e^(-6) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(1
3/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*
e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
6435*sqrt(x*e + d)*d^7)*B*c^3*e^(-7) + 45045*sqrt(x*e + d)*A*a^3)*e^(-1)
```

maple [**A**] time = 0.05, size = 489, normalized size = 1.41

$$2\sqrt{ex+d}\,\left(3003B\,c^{3}x^{7}e^{7} + 3465A\,c^{3}e^{7}x^{6} - 3234B\,c^{3}d\,e^{6}x^{6} - 3780A\,c^{3}d\,e^{6}x^{5} + 12285Ba\,c^{2}e^{7}x^{5} + 3528B\,c^{3}d^{2}e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(1/2)*(3003*B*c^3*e^7*x^7+3465*A*c^3*e^7*x^6-3234*B*c^3*d*e
^6*x^6-3780*A*c^3*d*e^6*x^5+12285*B*a*c^2*e^7*x^5+3528*B*c^3*d^2*e^5*x^5+15
015*A*a*c^2*e^7*x^4+4200*A*c^3*d^2*e^5*x^4-13650*B*a*c^2*d*e^6*x^4-3920*B*c
^3*d^3*e^4*x^4-17160*A*a*c^2*d*e^6*x^3-4800*A*c^3*d^3*e^4*x^3+19305*B*a^2*c
*e^7*x^3+15600*B*a*c^2*d^2*e^5*x^3+4480*B*c^3*d^4*e^3*x^3+27027*A*a^2*c*e^7
*x^2+20592*A*a*c^2*d^2*e^5*x^2+5760*A*c^3*d^4*e^3*x^2-23166*B*a^2*c*d*e^6*x
^2-18720*B*a*c^2*d^3*e^4*x^2-5376*B*c^3*d^5*e^2*x^2-36036*A*a^2*c*d*e^6*x-2
7456*A*a*c^2*d^3*e^4*x-7680*A*c^3*d^5*e^2*x+15015*B*a^3*e^7*x+30888*B*a^2*c
*d^2*e^5*x+24960*B*a*c^2*d^4*e^3*x+7168*B*c^3*d^6*e*x+45045*A*a^3*e^7+72072
*A*a^2*c*d^2*e^5+54912*A*a*c^2*d^4*e^3+15360*A*c^3*d^6*e-30030*B*a^3*d*e^6-
61776*B*a^2*c*d^3*e^4-49920*B*a*c^2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.56, size = 453, normalized size = 1.30

$$2\Big(3003\,(ex+d)^{\frac{15}{2}}Bc^3 - 3465\left(7\,Bc^3d - Ac^3e\right)(ex+d)^{\frac{13}{2}} + 12285\left(7\,Bc^3d^2 - 2\,Ac^3de + Bac^2e^2\right)(ex+d)^{\frac{11}{2}} - 5005$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*c^3 - 3465*(7*B*c^3*d - A*c^3*e)*(e*x + d)
^(13/2) + 12285*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(11/2)
- 5005*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(
e*x + d)^(9/2) + 6435*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 -
 12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(7/2) - 27027*(7*B*c^3*d^5 - 5
*A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A
*a^2*c*e^5)*(e*x + d)^(5/2) + 15015*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c
^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a
^3*e^6)*(e*x + d)^(3/2) - 45045*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^
2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6
 - A*a^3*e^7)*sqrt(e*x + d))/e^8
```

mupad [B] time = 0.14, size = 324, normalized size = 0.93

$$\frac{(d+e\,x)^{7/2}\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)}{7\,e^8}+\frac{(d+e\,x)^{11/2}\,\big(42\,B\,c^3\,d^2-12}{11\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(7*e^8) + ((d + e*x)^(11/2)*(42*B*c^3*d^2 -
12*A*c^3*d*e + 6*B*a*c^2*e^2))/(11*e^8) + (2*(a*e^2 + c*d^2)^2*(d + e*x)^(3
/2)*(B*a*e^2 + 7*B*c*d^2 - 6*A*c*d*e))/(3*e^8) + (2*B*c^3*(d + e*x)^(15/2))
/(15*e^8) + (2*c^2*(d + e*x)^(9/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d*e^2 +
 15*A*c*d^2*e))/(9*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(13/2))/(13*e^8) +
 (2*(a*e^2 + c*d^2)^3*(A*e - B*d)*(d + e*x)^(1/2))/e^8 + (6*c*(a*e^2 + c*d^
2)*(d + e*x)^(5/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a*d*e^2 + 5*A*c*d^2*e))/(5*e^
8)
```

sympy [A] time = 139.19, size = 1284, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**3*d/sqrt(d + e*x) - 2*A*a**3*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 6*A*a**2*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)
**(3/2)/3)/e**2 - 6*A*a**2*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) +
d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 6*A*a*c**2*d*(d**4/sqrt(d +
 e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/
2)/5 - (d + e*x)**(7/2)/7)/e**4 - 6*A*a*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*
sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*
(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*A*c**3*d*(d**6/sqrt(d + e
*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5
/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/
2)/11)/e**6 - 2*A*c**3*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5
*(d + e*x)**(3/2) - 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d
**2*(d + e*x)**(9/2)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e
**6 - 2*B*a**3*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*B*a**3*(d**2/sqrt
(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 6*B*a**2*c*d*(-d**3
/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/
2)/5)/e**3 - 6*B*a**2*c*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2
*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 6*B
*a*c**2*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**
(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/
2)/9)/e**5 - 6*B*a*c**2*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4
*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 +
2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5 - 2*B*c**3*d*(-d**7/sqr
t(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)**(3/2) - 7*d**4*(d + e
*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*x)**(9/2)/3 + 7*d*(d +
 e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**7 - 2*B*c**3*(d**8/sqrt(d + e*x
) + 8*d**7*sqrt(d + e*x) - 28*d**6*(d + e*x)**(3/2)/3 + 56*d**5*(d + e*x)**
(5/2)/5 - 10*d**4*(d + e*x)**(7/2) + 56*d**3*(d + e*x)**(9/2)/9 - 28*d**2*(
d + e*x)**(11/2)/11 + 8*d*(d + e*x)**(13/2)/13 - (d + e*x)**(15/2)/15)/e**7
)/e, Ne(e, 0)), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**
7/7 + B*a**3*x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/
sqrt(d), True))
```

3.1442 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=344

$$-\frac{2c(d+ex)^{5/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8}+\frac{2c^2(d+ex)^{9/2}\left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-$$

```
[Out] -2*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^(3/
2)/e^8-2/5*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^
2*d^4))*(e*x+d)^(5/2)/e^8-2/7*c^2*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*
B*c*d^3)*(e*x+d)^(7/2)/e^8+2/3*c^2*(-2*A*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(
9/2)/e^8-2/11*c^3*(-A*e+7*B*d)*(e*x+d)^(11/2)/e^8+2/13*B*c^3*(e*x+d)^(13/2)
/e^8+2*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^(1/2)+2*(a*e^2+c*d^2)^2*(-6*A
*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.16, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$-\frac{2c(d+ex)^{5/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{5e^8}+\frac{2c^2(d+ex)^{9/2}\left(aBe^2-2Acde+7Bcd^2\right)}{3e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(e^8*Sqrt[d + e*x]) + (2*(c*d^2 + a*e^2)^
2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^8 - (2*c*(c*d^2 + a*e^
2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3/2))/e^8 -
 (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a
^2*e^4))*(d + e*x)^(5/2))/(5*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*
a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(7/2))/(7*e^8) + (2*c^2*(7*B*c*d^2 - 2*A*c
*d*e + a*B*e^2)*(d + e*x)^(9/2))/(3*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*x)^(
11/2))/(11*e^8) + (2*B*c^3*(d + e*x)^(13/2))/(13*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int\frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{3/2}}\,dx &= \int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{3/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7\sqrt{d+ex}}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{e^8\sqrt{d+ex}}+\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)\sqrt{d+ex}}{e^8}-\frac{2c\left(c\right.}{}\end{aligned}$$

Mathematica [A] time = 0.29, size = 373, normalized size = 1.08

$$\frac{2B\left(15015a^3e^6(2d+ex)+9009a^2ce^4\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+715ac^2e^2\left(256d^5+128d^4ex-32d^3e^2x^2+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (-26*A*e*(1155*a^3*e^6 + 1155*a^2*c*e^4*(8*d^2 + 4*d*e*x - e^2*x^2) + 99*a*
c^2*e^2*(128*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4) +
 5*c^3*(1024*d^6 + 512*d^5*e*x - 128*d^4*e^2*x^2 + 64*d^3*e^3*x^3 - 40*d^2*
e^4*x^4 + 28*d*e^5*x^5 - 21*e^6*x^6)) + 2*B*(15015*a^3*e^6*(2*d + e*x) + 90
09*a^2*c*e^4*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 715*a*c^2*e^2*(
256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*x^4 + 7*
e^5*x^5) + 35*c^3*(2048*d^7 + 1024*d^6*e*x - 256*d^5*e^2*x^2 + 128*d^4*e^3*
x^3 - 80*d^3*e^4*x^4 + 56*d^2*e^5*x^5 - 42*d*e^6*x^6 + 33*e^7*x^7)))/(15015
*e^8*Sqrt[d + e*x])
```

fricas [A] time = 0.66, size = 463, normalized size = 1.35

$$2\left(1155\,Bc^3e^7x^7 + 71680\,Bc^3d^7 - 66560\,Ac^3d^6e + 183040\,Bac^2d^5e^2 - 164736\,Aac^2d^4e^3 + 144144\,Ba^2cd^3e^4 -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(1155*B*c^3*e^7*x^7 + 71680*B*c^3*d^7 - 66560*A*c^3*d^6*e + 183040*
B*a*c^2*d^5*e^2 - 164736*A*a*c^2*d^4*e^3 + 144144*B*a^2*c*d^3*e^4 - 120120*
A*a^2*c*d^2*e^5 + 30030*B*a^3*d*e^6 - 15015*A*a^3*e^7 - 105*(14*B*c^3*d*e^6
 - 13*A*c^3*e^7)*x^6 + 35*(56*B*c^3*d^2*e^5 - 52*A*c^3*d*e^6 + 143*B*a*c^2*
e^7)*x^5 - 5*(560*B*c^3*d^3*e^4 - 520*A*c^3*d^2*e^5 + 1430*B*a*c^2*d*e^6 -
1287*A*a*c^2*e^7)*x^4 + (4480*B*c^3*d^4*e^3 - 4160*A*c^3*d^3*e^4 + 11440*B*
a*c^2*d^2*e^5 - 10296*A*a*c^2*d*e^6 + 9009*B*a^2*c*e^7)*x^3 - (8960*B*c^3*d
^5*e^2 - 8320*A*c^3*d^4*e^3 + 22880*B*a*c^2*d^3*e^4 - 20592*A*a*c^2*d^2*e^5
 + 18018*B*a^2*c*d*e^6 - 15015*A*a^2*c*e^7)*x^2 + (35840*B*c^3*d^6*e - 3328
0*A*c^3*d^5*e^2 + 91520*B*a*c^2*d^4*e^3 - 82368*A*a*c^2*d^3*e^4 + 72072*B*a
^2*c*d^2*e^5 - 60060*A*a^2*c*d*e^6 + 15015*B*a^3*e^7)*x)*sqrt(e*x + d)/(e^9
*x + d*e^8)
```

giac [A] time = 0.29, size = 615, normalized size = 1.79

$$\frac{2}{15015}\left(1155\,(xe+d)^{\frac{13}{2}}Bc^3e^{96} - 9555\,(xe+d)^{\frac{11}{2}}Bc^3de^{96} + 35035\,(xe+d)^{\frac{9}{2}}Bc^3d^2e^{96} - 75075\,(xe+d)^{\frac{7}{2}}Bc^3d^3e^{96}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15015*(1155*(x*e + d)^(13/2)*B*c^3*e^96 - 9555*(x*e + d)^(11/2)*B*c^3*d*e
^96 + 35035*(x*e + d)^(9/2)*B*c^3*d^2*e^96 - 75075*(x*e + d)^(7/2)*B*c^3*d^
3*e^96 + 105105*(x*e + d)^(5/2)*B*c^3*d^4*e^96 - 105105*(x*e + d)^(3/2)*B*c
^3*d^5*e^96 + 105105*sqrt(x*e + d)*B*c^3*d^6*e^96 + 1365*(x*e + d)^(11/2)*A
*c^3*e^97 - 10010*(x*e + d)^(9/2)*A*c^3*d*e^97 + 32175*(x*e + d)^(7/2)*A*c^
3*d^2*e^97 - 60060*(x*e + d)^(5/2)*A*c^3*d^3*e^97 + 75075*(x*e + d)^(3/2)*A
*c^3*d^4*e^97 - 90090*sqrt(x*e + d)*A*c^3*d^5*e^97 + 5005*(x*e + d)^(9/2)*B
*a*c^2*e^98 - 32175*(x*e + d)^(7/2)*B*a*c^2*d*e^98 + 90090*(x*e + d)^(5/2)*
B*a*c^2*d^2*e^98 - 150150*(x*e + d)^(3/2)*B*a*c^2*d^3*e^98 + 225225*sqrt(x*
e + d)*B*a*c^2*d^4*e^98 + 6435*(x*e + d)^(7/2)*A*a*c^2*e^99 - 36036*(x*e +
d)^(5/2)*A*a*c^2*d*e^99 + 90090*(x*e + d)^(3/2)*A*a*c^2*d^2*e^99 - 180180*s
qrt(x*e + d)*A*a*c^2*d^3*e^99 + 9009*(x*e + d)^(5/2)*B*a^2*c*e^100 - 45045*
(x*e + d)^(3/2)*B*a^2*c*d*e^100 + 135135*sqrt(x*e + d)*B*a^2*c*d^2*e^100 +
15015*(x*e + d)^(3/2)*A*a^2*c*e^101 - 90090*sqrt(x*e + d)*A*a^2*c*d*e^101 +
 15015*sqrt(x*e + d)*B*a^3*e^102)*e^(-104) + 2*(B*c^3*d^7 - A*c^3*d^6*e + 3
*B*a*c^2*d^5*e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^
5 + B*a^3*d*e^6 - A*a^3*e^7)*e^(-8)/sqrt(x*e + d)
```

maple [**A**] time = 0.05, size = 489, normalized size = 1.42

$$-\frac{2\left(-1155B\,c^3x^7e^7-1365A\,c^3e^7x^6+1470B\,c^3d\,e^6x^6+1820A\,c^3d\,e^6x^5-5005Ba\,c^2e^7x^5-1960B\,c^3d^2e^5x^5-6435\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/15015/(e*x+d)^(1/2)*(-1155*B*c^3*e^7*x^7-1365*A*c^3*e^7*x^6+1470*B*c^3*d
*e^6*x^6+1820*A*c^3*d*e^6*x^5-5005*B*a*c^2*e^7*x^5-1960*B*c^3*d^2*e^5*x^5-6
435*A*a*c^2*e^7*x^4-2600*A*c^3*d^2*e^5*x^4+7150*B*a*c^2*d*e^6*x^4+2800*B*c^
3*d^3*e^4*x^4+10296*A*a*c^2*d*e^6*x^3+4160*A*c^3*d^3*e^4*x^3-9009*B*a^2*c*e
^7*x^3-11440*B*a*c^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3-15015*A*a^2*c*e^7*x
^2-20592*A*a*c^2*d^2*e^5*x^2-8320*A*c^3*d^4*e^3*x^2+18018*B*a^2*c*d*e^6*x^2
+22880*B*a*c^2*d^3*e^4*x^2+8960*B*c^3*d^5*e^2*x^2+60060*A*a^2*c*d*e^6*x+823
68*A*a*c^2*d^3*e^4*x+33280*A*c^3*d^5*e^2*x-15015*B*a^3*e^7*x-72072*B*a^2*c*
d^2*e^5*x-91520*B*a*c^2*d^4*e^3*x-35840*B*c^3*d^6*e*x+15015*A*a^3*e^7+12012
0*A*a^2*c*d^2*e^5+164736*A*a*c^2*d^4*e^3+66560*A*c^3*d^6*e-30030*B*a^3*d*e^
6-144144*B*a^2*c*d^3*e^4-183040*B*a*c^2*d^5*e^2-71680*B*c^3*d^7)/e^8
```

maxima [**A**] time = 0.55, size = 461, normalized size = 1.34

$$2\left(\frac{1155\,(ex+d)^{\frac{13}{2}}Bc^3-1365\left(7\,Bc^3d-Ac^3e\right)(ex+d)^{\frac{11}{2}}+5005\left(7\,Bc^3d^2-2\,Ac^3de+Bac^2e^2\right)(ex+d)^{\frac{9}{2}}-2145\left(35\,Bc^3d^3-15\,Ac^3d^2e+15\,Bac^2de^2-3\,Aac^2e^3\right)(ex}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15015*((1155*(e*x + d)^(13/2)*B*c^3 - 1365*(7*B*c^3*d - A*c^3*e)*(e*x + d
)^(11/2) + 5005*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(9/2) -
 2145*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e
*x + d)^(7/2) + 3003*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 -
12*A*a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(5/2) - 15015*(7*B*c^3*d^5 - 5*
A*c^3*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*
a^2*c*e^5)*(e*x + d)^(3/2) + 15015*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^
2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^
3*e^6)*sqrt(e*x + d))/e^7 + 15015*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*
e^2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e
^6 - A*a^3*e^7)/(sqrt(e*x + d)*e^7))/e
```

mupad [**B**] time = 1.84, size = 394, normalized size = 1.15

$$\frac{(d+e\,x)^{5/2}\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)}{5\,e^8}-\frac{-2\,B\,a^3\,d\,e^6+2\,A\,a^3\,e^7-6\,B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(5*e^8) - (2*A*a^3*e^7 - 2*B*c^3*d^7 - 2*B*a
^3*d*e^6 + 2*A*c^3*d^6*e + 6*A*a*c^2*d^4*e^3 + 6*A*a^2*c*d^2*e^5 - 6*B*a*c^
2*d^5*e^2 - 6*B*a^2*c*d^3*e^4)/(e^8*(d + e*x)^(1/2)) + ((d + e*x)^(9/2)*(42
*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(9*e^8) + (2*(a*e^2 + c*d^2)^2*
(d + e*x)^(1/2)*(B*a*e^2 + 7*B*c*d^2 - 6*A*c*d*e))/e^8 + (2*B*c^3*(d + e*x)
^(13/2))/(13*e^8) + (2*c^2*(d + e*x)^(7/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a
*d*e^2 + 15*A*c*d^2*e))/(7*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(11/2))/(1
1*e^8) + (2*c*(a*e^2 + c*d^2)*(d + e*x)^(3/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a*
d*e^2 + 5*A*c*d^2*e))/e^8
```

sympy [A] time = 101.30, size = 461, normalized size = 1.34

$$\frac{2Bc^3\left(d+ex\right)^{\frac{13}{2}}}{13e^8}+\frac{\left(d+ex\right)^{\frac{11}{2}}\left(2Ac^3e-14Bc^3d\right)}{11e^8}+\frac{\left(d+ex\right)^{\frac{9}{2}}\left(-12Ac^3de+6Bac^2e^2+42Bc^3d^2\right)}{9e^8}+\left(d+ex\right)^{\frac{7}{2}}\left(6Aac\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*c**3*(d + e*x)**(13/2)/(13*e**8) + (d + e*x)**(11/2)*(2*A*c**3*e - 14*B
*c**3*d)/(11*e**8) + (d + e*x)**(9/2)*(-12*A*c**3*d*e + 6*B*a*c**2*e**2 + 4
2*B*c**3*d**2)/(9*e**8) + (d + e*x)**(7/2)*(6*A*a*c**2*e**3 + 30*A*c**3*d**
2*e - 30*B*a*c**2*d*e**2 - 70*B*c**3*d**3)/(7*e**8) + (d + e*x)**(5/2)*(-24
*A*a*c**2*d*e**3 - 40*A*c**3*d**3*e + 6*B*a**2*c*e**4 + 60*B*a*c**2*d**2*e*
*2 + 70*B*c**3*d**4)/(5*e**8) + (d + e*x)**(3/2)*(6*A*a**2*c*e**5 + 36*A*a*
c**2*d**2*e**3 + 30*A*c**3*d**4*e - 18*B*a**2*c*d*e**4 - 60*B*a*c**2*d**3*e
**2 - 42*B*c**3*d**5)/(3*e**8) + sqrt(d + e*x)*(-12*A*a**2*c*d*e**5 - 24*A*
a*c**2*d**3*e**3 - 12*A*c**3*d**5*e + 2*B*a**3*e**6 + 18*B*a**2*c*d**2*e**4
 + 30*B*a*c**2*d**4*e**2 + 14*B*c**3*d**6)/e**8 + 2*(-A*e + B*d)*(a*e**2 +
c*d**2)**3/(e**8*sqrt(d + e*x))
```

3.1443 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=346

$$-\frac{2c(d+ex)^{3/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8}+\frac{6c^2(d+ex)^{7/2}\left(aBe^2-2Acde+7Bcd^2\right)}{7e^8}-$$

```
[Out] 2/3*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^(3/2)-2/3*c*(4*A*c*d*e*(3*a*e^2+
5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^(3/2)/e^8-2/5*c^2
*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^(5/2)/e^8+6/7*c^
2*(-2*A*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(7/2)/e^8-2/9*c^3*(-A*e+7*B*d)*(e*
x+d)^(9/2)/e^8+2/11*B*c^3*(e*x+d)^(11/2)/e^8-2*(a*e^2+c*d^2)^2*(-6*A*c*d*e+
B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^(1/2)-6*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*
e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{2c(d+ex)^{3/2}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8}+\frac{6c^2(d+ex)^{7/2}\left(aBe^2-2Acde+7Bcd^2\right)}{7e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(3*e^8*(d + e*x)^(3/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(e^8*Sqrt[d + e*x]) - (6*c*(c*d^2
+ a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*Sqrt[d + e*x])/e
^8 - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2*e^2 +
 3*a^2*e^4))*(d + e*x)^(3/2))/(3*e^8) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e +
 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(5/2))/(5*e^8) + (6*c^2*(7*B*c*d^2 - 2
*A*c*d*e + a*B*e^2)*(d + e*x)^(7/2))/(7*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(9/2))/(9*e^8) + (2*B*c^3*(d + e*x)^(11/2))/(11*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{5/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{5/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{3/2}}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{3e^8(d+ex)^{3/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^8\sqrt{d+ex}}-\frac{6c\left(cd^2+ae^2\right)(}{}\end{aligned}$$

Mathematica [A] time = 0.28, size = 375, normalized size = 1.08

$$\frac{22Ae\left(-105a^3e^6+315a^2ce^4\left(8d^2+12dex+3e^2x^2\right)+63ac^2e^2\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (22*A*e*(-105*a^3*e^6 + 315*a^2*c*e^4*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 63*a
*c^2*e^2*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)
 + 5*c^3*(1024*d^6 + 1536*d^5*e*x + 384*d^4*e^2*x^2 - 64*d^3*e^3*x^3 + 24*d
^2*e^4*x^4 - 12*d*e^5*x^5 + 7*e^6*x^6)) - 10*B*(231*a^3*e^6*(2*d + 3*e*x) +
 693*a^2*c*e^4*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3) + 99*a*c^2*e^2
*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3
*e^5*x^5) + 7*c^3*(2048*d^7 + 3072*d^6*e*x + 768*d^5*e^2*x^2 - 128*d^4*e^3*
x^3 + 48*d^3*e^4*x^4 - 24*d^2*e^5*x^5 + 14*d*e^6*x^6 - 9*e^7*x^7)))/(3465*e
^8*(d + e*x)^(3/2))
```

fricas [A] time = 0.80, size = 475, normalized size = 1.37

$$2\left(315\,Bc^{3}e^{7}x^{7} - 71680\,Bc^{3}d^{7} + 56320\,Ac^{3}d^{6}e - 126720\,Bac^{2}d^{5}e^{2} + 88704\,Aac^{2}d^{4}e^{3} - 55440\,Ba^{2}cd^{3}e^{4} + 2772\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(315*B*c^3*e^7*x^7 - 71680*B*c^3*d^7 + 56320*A*c^3*d^6*e - 126720*B*
a*c^2*d^5*e^2 + 88704*A*a*c^2*d^4*e^3 - 55440*B*a^2*c*d^3*e^4 + 27720*A*a^2
*c*d^2*e^5 - 2310*B*a^3*d*e^6 - 1155*A*a^3*e^7 - 35*(14*B*c^3*d*e^6 - 11*A*
c^3*e^7)*x^6 + 15*(56*B*c^3*d^2*e^5 - 44*A*c^3*d*e^6 + 99*B*a*c^2*e^7)*x^5
- 3*(560*B*c^3*d^3*e^4 - 440*A*c^3*d^2*e^5 + 990*B*a*c^2*d*e^6 - 693*A*a*c^
2*e^7)*x^4 + (4480*B*c^3*d^4*e^3 - 3520*A*c^3*d^3*e^4 + 7920*B*a*c^2*d^2*e^
5 - 5544*A*a*c^2*d*e^6 + 3465*B*a^2*c*e^7)*x^3 - 3*(8960*B*c^3*d^5*e^2 - 70
40*A*c^3*d^4*e^3 + 15840*B*a*c^2*d^3*e^4 - 11088*A*a*c^2*d^2*e^5 + 6930*B*a
^2*c*d*e^6 - 3465*A*a^2*c*e^7)*x^2 - 3*(35840*B*c^3*d^6*e - 28160*A*c^3*d^5
*e^2 + 63360*B*a*c^2*d^4*e^3 - 44352*A*a*c^2*d^3*e^4 + 27720*B*a^2*c*d^2*e^
5 - 13860*A*a^2*c*d*e^6 + 1155*B*a^3*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*
e^9*x + d^2*e^8)
```

giac [A] time = 0.23, size = 599, normalized size = 1.73

$$\frac{2}{3465}\left(315\,(xe+d)^{\frac{11}{2}}Bc^{3}e^{80} - 2695\,(xe+d)^{\frac{9}{2}}Bc^{3}de^{80} + 10395\,(xe+d)^{\frac{7}{2}}Bc^{3}d^{2}e^{80} - 24255\,(xe+d)^{\frac{5}{2}}Bc^{3}d^{3}e^{80} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3465*(315*(x*e + d)^(11/2)*B*c^3*e^80 - 2695*(x*e + d)^(9/2)*B*c^3*d*e^80
 + 10395*(x*e + d)^(7/2)*B*c^3*d^2*e^80 - 24255*(x*e + d)^(5/2)*B*c^3*d^3*e
^80 + 40425*(x*e + d)^(3/2)*B*c^3*d^4*e^80 - 72765*sqrt(x*e + d)*B*c^3*d^5*
e^80 + 385*(x*e + d)^(9/2)*A*c^3*e^81 - 2970*(x*e + d)^(7/2)*A*c^3*d*e^81 +
 10395*(x*e + d)^(5/2)*A*c^3*d^2*e^81 - 23100*(x*e + d)^(3/2)*A*c^3*d^3*e^8
1 + 51975*sqrt(x*e + d)*A*c^3*d^4*e^81 + 1485*(x*e + d)^(7/2)*B*a*c^2*e^82
- 10395*(x*e + d)^(5/2)*B*a*c^2*d*e^82 + 34650*(x*e + d)^(3/2)*B*a*c^2*d^2*
e^82 - 103950*sqrt(x*e + d)*B*a*c^2*d^3*e^82 + 2079*(x*e + d)^(5/2)*A*a*c^2
*e^83 - 13860*(x*e + d)^(3/2)*A*a*c^2*d*e^83 + 62370*sqrt(x*e + d)*A*a*c^2*
d^2*e^83 + 3465*(x*e + d)^(3/2)*B*a^2*c*e^84 - 31185*sqrt(x*e + d)*B*a^2*c*
d*e^84 + 10395*sqrt(x*e + d)*A*a^2*c*e^85)*e^(-88) - 2/3*(21*(x*e + d)*B*c^
3*d^6 - B*c^3*d^7 - 18*(x*e + d)*A*c^3*d^5*e + A*c^3*d^6*e + 45*(x*e + d)*B
*a*c^2*d^4*e^2 - 3*B*a*c^2*d^5*e^2 - 36*(x*e + d)*A*a*c^2*d^3*e^3 + 3*A*a*c
^2*d^4*e^3 + 27*(x*e + d)*B*a^2*c*d^2*e^4 - 3*B*a^2*c*d^3*e^4 - 18*(x*e + d
)*A*a^2*c*d*e^5 + 3*A*a^2*c*d^2*e^5 + 3*(x*e + d)*B*a^3*e^6 - B*a^3*d*e^6 +
 A*a^3*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [**A**] time = 0.06, size = 489, normalized size = 1.41

$$-\frac{2\left(-315B\,c^3x^7e^7-385A\,c^3e^7x^6+490B\,c^3d\,e^6x^6+660A\,c^3d\,e^6x^5-1485Ba\,c^2e^7x^5-840B\,c^3d^2e^5x^5-2079Aa\,c^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/3465/(e*x+d)^(3/2)*(-315*B*c^3*e^7*x^7-385*A*c^3*e^7*x^6+490*B*c^3*d*e^6
*x^6+660*A*c^3*d*e^6*x^5-1485*B*a*c^2*e^7*x^5-840*B*c^3*d^2*e^5*x^5-2079*A*
a*c^2*e^7*x^4-1320*A*c^3*d^2*e^5*x^4+2970*B*a*c^2*d*e^6*x^4+1680*B*c^3*d^3*
e^4*x^4+5544*A*a*c^2*d*e^6*x^3+3520*A*c^3*d^3*e^4*x^3-3465*B*a^2*c*e^7*x^3-
7920*B*a*c^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3-10395*A*a^2*c*e^7*x^2-33264
*A*a*c^2*d^2*e^5*x^2-21120*A*c^3*d^4*e^3*x^2+20790*B*a^2*c*d*e^6*x^2+47520*
B*a*c^2*d^3*e^4*x^2+26880*B*c^3*d^5*e^2*x^2-41580*A*a^2*c*d*e^6*x-133056*A*
a*c^2*d^3*e^4*x-84480*A*c^3*d^5*e^2*x+3465*B*a^3*e^7*x+83160*B*a^2*c*d^2*e^
5*x+190080*B*a*c^2*d^4*e^3*x+107520*B*c^3*d^6*e*x+1155*A*a^3*e^7-27720*A*a^
2*c*d^2*e^5-88704*A*a*c^2*d^4*e^3-56320*A*c^3*d^6*e+2310*B*a^3*d*e^6+55440*
B*a^2*c*d^3*e^4+126720*B*a*c^2*d^5*e^2+71680*B*c^3*d^7)/e^8
```

maxima [**A**] time = 0.65, size = 459, normalized size = 1.33

$$2\left(\frac{315\,(ex+d)^{\frac{11}{2}}Bc^3-385\left(7\,Bc^3d-Ac^3e\right)(ex+d)^{\frac{9}{2}}+1485\left(7\,Bc^3d^2-2\,Ac^3de+Bac^2e^2\right)(ex+d)^{\frac{7}{2}}-693\left(35\,Bc^3d^3-15\,Ac^3d^2e+15\,Bac^2de^2-3\,Aac^2e^3\right)(ex+d)^{\frac{5}{2}}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3465*((315*(e*x + d)^(11/2)*B*c^3 - 385*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(
9/2) + 1485*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(7/2) - 693
*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x +
d)^(5/2) + 1155*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*
a*c^2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^(3/2) - 10395*(7*B*c^3*d^5 - 5*A*c^3
*d^4*e + 10*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c
*e^5)*sqrt(e*x + d))/e^7 + 1155*(B*c^3*d^7 - A*c^3*d^6*e + 3*B*a*c^2*d^5*e^
2 - 3*A*a*c^2*d^4*e^3 + 3*B*a^2*c*d^3*e^4 - 3*A*a^2*c*d^2*e^5 + B*a^3*d*e^6
 - A*a^3*e^7 - 3*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a
*c^2*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/
((e*x + d)^(3/2)*e^7))/e
```

mupad [**B**] time = 1.83, size = 434, normalized size = 1.25

$$\frac{(d+e\,x)^{3/2}\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)}{3\,e^8}+\frac{(d+e\,x)^{7/2}\,\left(42\,B\,c^3\,d^2-12\,A\right.}{7\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/(3*e^8) + ((d + e*x)^(7/2)*(42*B*c^3*d^2 - 1
2*A*c^3*d*e + 6*B*a*c^2*e^2))/(7*e^8) - ((d + e*x)*(2*B*a^3*e^6 + 14*B*c^3*
d^6 - 12*A*c^3*d^5*e - 24*A*a*c^2*d^3*e^3 + 30*B*a*c^2*d^4*e^2 + 18*B*a^2*c
*d^2*e^4 - 12*A*a^2*c*d*e^5) + (2*A*a^3*e^7)/3 - (2*B*c^3*d^7)/3 - (2*B*a^3
*d*e^6)/3 + (2*A*c^3*d^6*e)/3 + 2*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 - 2*B
*a*c^2*d^5*e^2 - 2*B*a^2*c*d^3*e^4)/(e^8*(d + e*x)^(3/2)) + (2*B*c^3*(d + e
*x)^(11/2))/(11*e^8) + (2*c^2*(d + e*x)^(5/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*
B*a*d*e^2 + 15*A*c*d^2*e))/(5*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(9/2))/
(9*e^8) + (6*c*(a*e^2 + c*d^2)*(d + e*x)^(1/2)*(A*a*e^3 - 7*B*c*d^3 - 3*B*a
*d*e^2 + 5*A*c*d^2*e))/e^8
```

sympy [A] time = 113.12, size = 406, normalized size = 1.17

$$\frac{2Bc^3\left(d+ex\right)^{\frac{11}{2}}}{11e^8}+\frac{\left(d+ex\right)^{\frac{9}{2}}\left(2Ac^3e-14Bc^3d\right)}{9e^8}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(-12Ac^3de+6Bac^2e^2+42Bc^3d^2\right)}{7e^8}+\frac{\left(d+ex\right)^{\frac{5}{2}}\big(6Aac^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*c**3*(d + e*x)**(11/2)/(11*e**8) + (d + e*x)**(9/2)*(2*A*c**3*e - 14*B*
c**3*d)/(9*e**8) + (d + e*x)**(7/2)*(-12*A*c**3*d*e + 6*B*a*c**2*e**2 + 42*
B*c**3*d**2)/(7*e**8) + (d + e*x)**(5/2)*(6*A*a*c**2*e**3 + 30*A*c**3*d**2*
e - 30*B*a*c**2*d*e**2 - 70*B*c**3*d**3)/(5*e**8) + (d + e*x)**(3/2)*(-24*A
*a*c**2*d*e**3 - 40*A*c**3*d**3*e + 6*B*a**2*c*e**4 + 60*B*a*c**2*d**2*e**2
 + 70*B*c**3*d**4)/(3*e**8) + sqrt(d + e*x)*(6*A*a**2*c*e**5 + 36*A*a*c**2*
d**2*e**3 + 30*A*c**3*d**4*e - 18*B*a**2*c*d*e**4 - 60*B*a*c**2*d**3*e**2 -
 42*B*c**3*d**5)/e**8 - 2*(a*e**2 + c*d**2)**2*(-6*A*c*d*e + B*a*e**2 + 7*B
*c*d**2)/(e**8*sqrt(d + e*x)) + 2*(-A*e + B*d)*(a*e**2 + c*d**2)**3/(3*e**8
*(d + e*x)**(3/2))
```

3.1444 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=346

$$-\frac{2c\sqrt{d+ex}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{6c^2(d+ex)^{5/2}\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8}-$$

```
[Out] 2/5*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^(5/2)-2/3*(a*e^2+c*d^2)^2*(-6*A*
c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^(3/2)-2/3*c^2*(-3*A*a*e^3-15*A*c*d^2*e
+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^(3/2)/e^8+6/5*c^2*(-2*A*c*d*e+B*a*e^2+7*B
*c*d^2)*(e*x+d)^(5/2)/e^8-2/7*c^3*(-A*e+7*B*d)*(e*x+d)^(7/2)/e^8+2/9*B*c^3*
(e*x+d)^(9/2)/e^8+6*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c
*d^3)/e^8/(e*x+d)^(1/2)-2*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*
c*d^2*e^2+35*c^2*d^4))*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {772}

$$-\frac{2c\sqrt{d+ex}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8}+\frac{6c^2(d+ex)^{5/2}\left(aBe^2-2Acde+7Bcd^2\right)}{5e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(5*e^8*(d + e*x)^(5/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(3*e^8*(d + e*x)^(3/2)) + (6*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*Sqrt[d
 + e*x]) - (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d^2
*e^2 + 3*a^2*e^4))*Sqrt[d + e*x])/e^8 - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2*e +
 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(3/2))/(3*e^8) + (6*c^2*(7*B*c*d^2 - 2
*A*c*d*e + a*B*e^2)*(d + e*x)^(5/2))/(5*e^8) - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(7/2))/(7*e^8) + (2*B*c^3*(d + e*x)^(9/2))/(9*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{7/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{5/2}}+3c\left(cd^2+ae\right.\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{5e^8(d+ex)^{5/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{3e^8(d+ex)^{3/2}}+6c\left(cd^2+ae^2\right)\end{aligned}$$

Mathematica [A] time = 0.28, size = 373, normalized size = 1.08

$$2\left(7B\left(-3a^3e^6(2d+5ex)+27a^2ce^4\left(16d^3+40d^2ex+30de^2x^2+5e^3x^3\right)+9ac^2e^2\left(256d^5+640d^4ex+480d^3e^2x^2+\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(-9*A*e*(7*a^3*e^6 + 7*a^2*c*e^4*(8*d^2 + 20*d*e*x + 15*e^2*x^2) + 7*a*c
^2*e^2*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4)
 + c^3*(1024*d^6 + 2560*d^5*e*x + 1920*d^4*e^2*x^2 + 320*d^3*e^3*x^3 - 40*d
^2*e^4*x^4 + 12*d*e^5*x^5 - 5*e^6*x^6)) + 7*B*(-3*a^3*e^6*(2*d + 5*e*x) + 2
7*a^2*c*e^4*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) + 9*a*c^2*e^2*
(256*d^5 + 640*d^4*e*x + 480*d^3*e^2*x^2 + 80*d^2*e^3*x^3 - 10*d*e^4*x^4 +
3*e^5*x^5) + c^3*(2048*d^7 + 5120*d^6*e*x + 3840*d^5*e^2*x^2 + 640*d^4*e^3*
x^3 - 80*d^3*e^4*x^4 + 24*d^2*e^5*x^5 - 10*d*e^6*x^6 + 5*e^7*x^7))))/(315*e
^8*(d + e*x)^(5/2))
```

fricas [A] time = 0.70, size = 487, normalized size = 1.41

$$2\left(35\,Bc^{3}e^{7}x^{7}+14336\,Bc^{3}d^{7}-9216\,Ac^{3}d^{6}e+16128\,Bac^{2}d^{5}e^{2}-8064\,Aac^{2}d^{4}e^{3}+3024\,Ba^{2}cd^{3}e^{4}-504\,Aa^{2}c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*c^3*e^7*x^7 + 14336*B*c^3*d^7 - 9216*A*c^3*d^6*e + 16128*B*a*c^
2*d^5*e^2 - 8064*A*a*c^2*d^4*e^3 + 3024*B*a^2*c*d^3*e^4 - 504*A*a^2*c*d^2*e
^5 - 42*B*a^3*d*e^6 - 63*A*a^3*e^7 - 5*(14*B*c^3*d*e^6 - 9*A*c^3*e^7)*x^6 +
 3*(56*B*c^3*d^2*e^5 - 36*A*c^3*d*e^6 + 63*B*a*c^2*e^7)*x^5 - 5*(112*B*c^3*
d^3*e^4 - 72*A*c^3*d^2*e^5 + 126*B*a*c^2*d*e^6 - 63*A*a*c^2*e^7)*x^4 + 5*(8
96*B*c^3*d^4*e^3 - 576*A*c^3*d^3*e^4 + 1008*B*a*c^2*d^2*e^5 - 504*A*a*c^2*d
*e^6 + 189*B*a^2*c*e^7)*x^3 + 15*(1792*B*c^3*d^5*e^2 - 1152*A*c^3*d^4*e^3 +
 2016*B*a*c^2*d^3*e^4 - 1008*A*a*c^2*d^2*e^5 + 378*B*a^2*c*d*e^6 - 63*A*a^2
*c*e^7)*x^2 + 5*(7168*B*c^3*d^6*e - 4608*A*c^3*d^5*e^2 + 8064*B*a*c^2*d^4*e
^3 - 4032*A*a*c^2*d^3*e^4 + 1512*B*a^2*c*d^2*e^5 - 252*A*a^2*c*d*e^6 - 21*B
*a^3*e^7)*x)*sqrt(e*x + d)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8
)
```

giac [A] time = 0.23, size = 599, normalized size = 1.73

$$\frac{2}{315}\left(35\,(xe+d)^{\frac{9}{2}}Bc^{3}e^{64}-315\,(xe+d)^{\frac{7}{2}}Bc^{3}de^{64}+1323\,(xe+d)^{\frac{5}{2}}Bc^{3}d^{2}e^{64}-3675\,(xe+d)^{\frac{3}{2}}Bc^{3}d^{3}e^{64}+11025\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*c^3*e^64 - 315*(x*e + d)^(7/2)*B*c^3*d*e^64 + 1
323*(x*e + d)^(5/2)*B*c^3*d^2*e^64 - 3675*(x*e + d)^(3/2)*B*c^3*d^3*e^64 +
11025*sqrt(x*e + d)*B*c^3*d^4*e^64 + 45*(x*e + d)^(7/2)*A*c^3*e^65 - 378*(x
*e + d)^(5/2)*A*c^3*d*e^65 + 1575*(x*e + d)^(3/2)*A*c^3*d^2*e^65 - 6300*sqr
t(x*e + d)*A*c^3*d^3*e^65 + 189*(x*e + d)^(5/2)*B*a*c^2*e^66 - 1575*(x*e +
d)^(3/2)*B*a*c^2*d*e^66 + 9450*sqrt(x*e + d)*B*a*c^2*d^2*e^66 + 315*(x*e +
d)^(3/2)*A*a*c^2*e^67 - 3780*sqrt(x*e + d)*A*a*c^2*d*e^67 + 945*sqrt(x*e +
d)*B*a^2*c*e^68)*e^(-72) + 2/15*(315*(x*e + d)^2*B*c^3*d^5 - 35*(x*e + d)*B
*c^3*d^6 + 3*B*c^3*d^7 - 225*(x*e + d)^2*A*c^3*d^4*e + 30*(x*e + d)*A*c^3*d
^5*e - 3*A*c^3*d^6*e + 450*(x*e + d)^2*B*a*c^2*d^3*e^2 - 75*(x*e + d)*B*a*c
^2*d^4*e^2 + 9*B*a*c^2*d^5*e^2 - 270*(x*e + d)^2*A*a*c^2*d^2*e^3 + 60*(x*e
+ d)*A*a*c^2*d^3*e^3 - 9*A*a*c^2*d^4*e^3 + 135*(x*e + d)^2*B*a^2*c*d*e^4 -
45*(x*e + d)*B*a^2*c*d^2*e^4 + 9*B*a^2*c*d^3*e^4 - 45*(x*e + d)^2*A*a^2*c*e
^5 + 30*(x*e + d)*A*a^2*c*d*e^5 - 9*A*a^2*c*d^2*e^5 - 5*(x*e + d)*B*a^3*e^6
 + 3*B*a^3*d*e^6 - 3*A*a^3*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.41

$$-\frac{2\left(-35B\,c^{3}x^{7}e^{7}-45A\,c^{3}e^{7}x^{6}+70B\,c^{3}d\,e^{6}x^{6}+108A\,c^{3}d\,e^{6}x^{5}-189Ba\,c^{2}e^{7}x^{5}-168B\,c^{3}d^{2}e^{5}x^{5}-315Aa\,c^{2}e^{7}x^{4}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/315/(e*x+d)^(5/2)*(-35*B*c^3*e^7*x^7-45*A*c^3*e^7*x^6+70*B*c^3*d*e^6*x^6
+108*A*c^3*d*e^6*x^5-189*B*a*c^2*e^7*x^5-168*B*c^3*d^2*e^5*x^5-315*A*a*c^2*
e^7*x^4-360*A*c^3*d^2*e^5*x^4+630*B*a*c^2*d*e^6*x^4+560*B*c^3*d^3*e^4*x^4+2
520*A*a*c^2*d*e^6*x^3+2880*A*c^3*d^3*e^4*x^3-945*B*a^2*c*e^7*x^3-5040*B*a*c
^2*d^2*e^5*x^3-4480*B*c^3*d^4*e^3*x^3+945*A*a^2*c*e^7*x^2+15120*A*a*c^2*d^2
*e^5*x^2+17280*A*c^3*d^4*e^3*x^2-5670*B*a^2*c*d*e^6*x^2-30240*B*a*c^2*d^3*e
^4*x^2-26880*B*c^3*d^5*e^2*x^2+1260*A*a^2*c*d*e^6*x+20160*A*a*c^2*d^3*e^4*x
+23040*A*c^3*d^5*e^2*x+105*B*a^3*e^7*x-7560*B*a^2*c*d^2*e^5*x-40320*B*a*c^2
*d^4*e^3*x-35840*B*c^3*d^6*e*x+63*A*a^3*e^7+504*A*a^2*c*d^2*e^5+8064*A*a*c^
2*d^4*e^3+9216*A*c^3*d^6*e+42*B*a^3*d*e^6-3024*B*a^2*c*d^3*e^4-16128*B*a*c^
2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.64, size = 461, normalized size = 1.33

$$\frac{2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bc^{3}-45\left(7\,Bc^{3}d-Ac^{3}e\right)(ex+d)^{\frac{7}{2}}+189\left(7\,Bc^{3}d^{2}-2\,Ac^{3}de+Bac^{2}e^{2}\right)(ex+d)^{\frac{5}{2}}-105\left(35\,Bc^{3}d^{3}-15\,Ac^{3}d^{2}e+15\,Bac^{2}de^{2}-3\,Aac^{2}e^{3}\right)(ex+d)^{\frac{3}{2}}+31}{e^{7}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*c^3 - 45*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(7/2)
 + 189*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(5/2) - 105*(35*
B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x + d)^(3
/2) + 315*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*
d*e^3 + 3*B*a^2*c*e^4)*sqrt(e*x + d))/e^7 + 21*(3*B*c^3*d^7 - 3*A*c^3*d^6*e
 + 9*B*a*c^2*d^5*e^2 - 9*A*a*c^2*d^4*e^3 + 9*B*a^2*c*d^3*e^4 - 9*A*a^2*c*d^
2*e^5 + 3*B*a^3*d*e^6 - 3*A*a^3*e^7 + 45*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*
B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x +
 d)^2 - 5*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^
3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*x +
 d)^(5/2)*e^7))/e
```

mupad [B] time = 1.84, size = 455, normalized size = 1.32

$$\frac{\sqrt{d+e\,x}\,\left(6\,B\,a^2\,c\,e^4+60\,B\,a\,c^2\,d^2\,e^2-24\,A\,a\,c^2\,d\,e^3+70\,B\,c^3\,d^4-40\,A\,c^3\,d^3\,e\right)}{e^8}-\frac{(d+e\,x)\,\left(\frac{2\,B\,a^3\,e^6}{3}+6\,B\,a^2\,c\,d^2\,e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 60*B*a*c^
2*d^2*e^2 - 24*A*a*c^2*d*e^3))/e^8 - ((d + e*x)*((2*B*a^3*e^6)/3 + (14*B*c^
3*d^6)/3 - 4*A*c^3*d^5*e - 8*A*a*c^2*d^3*e^3 + 10*B*a*c^2*d^4*e^2 + 6*B*a^2
*c*d^2*e^4 - 4*A*a^2*c*d*e^5) - (d + e*x)^2*(42*B*c^3*d^5 - 6*A*a^2*c*e^5 -
 30*A*c^3*d^4*e - 36*A*a*c^2*d^2*e^3 + 60*B*a*c^2*d^3*e^2 + 18*B*a^2*c*d*e^
4) + (2*A*a^3*e^7)/5 - (2*B*c^3*d^7)/5 - (2*B*a^3*d*e^6)/5 + (2*A*c^3*d^6*e
)/5 + (6*A*a*c^2*d^4*e^3)/5 + (6*A*a^2*c*d^2*e^5)/5 - (6*B*a*c^2*d^5*e^2)/5
```

```
 - (6*B*a^2*c*d^3*e^4)/5)/(e^8*(d + e*x)^(5/2)) + ((d + e*x)^(5/2)*(42*B*c^
3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(5*e^8) + (2*B*c^3*(d + e*x)^(9/2))/
(9*e^8) + (2*c^2*(d + e*x)^(3/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d*e^2 + 1
5*A*c*d^2*e))/(3*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(7/2))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1445 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=342

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8\sqrt{d+ex}}+\frac{2c^2(d+ex)^{3/2}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}-\frac{2c^2\sqrt{d+ex}$$

```
[Out] 2/7*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^(7/2)-2/5*(a*e^2+c*d^2)^2*(-6*A*
c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^(5/2)+2*c*(a*e^2+c*d^2)*(-A*a*e^3-5*A*
c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^(3/2)+2*c^2*(-2*A*c*d*e+B*a*e^2+
7*B*c*d^2)*(e*x+d)^(3/2)/e^8-2/5*c^3*(-A*e+7*B*d)*(e*x+d)^(5/2)/e^8+2/7*B*c
^3*(e*x+d)^(7/2)/e^8+2*c*(4*A*c*d*e*(3*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d
^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^(1/2)-2*c^2*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a
*d*e^2+35*B*c*d^3)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.16, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8\sqrt{d+ex}}+\frac{2c^2(d+ex)^{3/2}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}-\frac{2c^2\sqrt{d+ex}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(9/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(7*e^8*(d + e*x)^(7/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(5*e^8*(d + e*x)^(5/2)) + (2*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(e^8*(d + e
*x)^(3/2)) + (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c*d
^2*e^2 + 3*a^2*e^4)))/(e^8*Sqrt[d + e*x]) - (2*c^2*(35*B*c*d^3 - 15*A*c*d^2
*e + 15*a*B*d*e^2 - 3*a*A*e^3)*Sqrt[d + e*x])/e^8 + (2*c^2*(7*B*c*d^2 - 2*A
*c*d*e + a*B*e^2)*(d + e*x)^(3/2))/e^8 - (2*c^3*(7*B*d - A*e)*(d + e*x)^(5/
2))/(5*e^8) + (2*B*c^3*(d + e*x)^(7/2))/(7*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{9/2}}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{9/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{7/2}}+\frac{3c\left(cd^2+ae\right.}{}\right.\\ &= \frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{7e^8(d+ex)^{7/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{5e^8(d+ex)^{5/2}}+\frac{2c\left(cd^2+ae^2\right)}{}\end{aligned}$$

Mathematica [A] time = 0.29, size = 372, normalized size = 1.09

$$\frac{2Ae\left(-5a^3e^6-a^2ce^4\left(8d^2+28dex+35e^2x^2\right)+3ac^2e^2\left(128d^4+448d^3ex+560d^2e^2x^2+280de^3x^3+35e^4x^4\right)+c^3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(9/2),x]
```

```
[Out] (2*A*e*(-5*a^3*e^6 - a^2*c*e^4*(8*d^2 + 28*d*e*x + 35*e^2*x^2) + 3*a*c^2*e^
2*(128*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d*e^3*x^3 + 35*e^4*x^4) +
c^3*(1024*d^6 + 3584*d^5*e*x + 4480*d^4*e^2*x^2 + 2240*d^3*e^3*x^3 + 280*d^
2*e^4*x^4 - 28*d*e^5*x^5 + 7*e^6*x^6)) - 2*B*(a^3*e^6*(2*d + 7*e*x) + 3*a^2
*c*e^4*(16*d^3 + 56*d^2*e*x + 70*d*e^2*x^2 + 35*e^3*x^3) + 5*a*c^2*e^2*(256
*d^5 + 896*d^4*e*x + 1120*d^3*e^2*x^2 + 560*d^2*e^3*x^3 + 70*d*e^4*x^4 - 7*
e^5*x^5) + c^3*(2048*d^7 + 7168*d^6*e*x + 8960*d^5*e^2*x^2 + 4480*d^4*e^3*x
^3 + 560*d^3*e^4*x^4 - 56*d^2*e^5*x^5 + 14*d*e^6*x^6 - 5*e^7*x^7)))/(35*e^8
*(d + e*x)^(7/2))
```

fricas [A] time = 0.77, size = 496, normalized size = 1.45

$$2\left(5\,Bc^{3}e^{7}x^{7}-2048\,Bc^{3}d^{7}+1024\,Ac^{3}d^{6}e-1280\,Bac^{2}d^{5}e^{2}+384\,Aac^{2}d^{4}e^{3}-48\,Ba^{2}cd^{3}e^{4}-8\,Aa^{2}cd^{2}e^{5}-2\,Ba\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="fricas")
```

```
[Out] 2/35*(5*B*c^3*e^7*x^7 - 2048*B*c^3*d^7 + 1024*A*c^3*d^6*e - 1280*B*a*c^2*d^
5*e^2 + 384*A*a*c^2*d^4*e^3 - 48*B*a^2*c*d^3*e^4 - 8*A*a^2*c*d^2*e^5 - 2*B*
a^3*d*e^6 - 5*A*a^3*e^7 - 7*(2*B*c^3*d*e^6 - A*c^3*e^7)*x^6 + 7*(8*B*c^3*d^
2*e^5 - 4*A*c^3*d*e^6 + 5*B*a*c^2*e^7)*x^5 - 35*(16*B*c^3*d^3*e^4 - 8*A*c^3
*d^2*e^5 + 10*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 - 35*(128*B*c^3*d^4*e^3 -
64*A*c^3*d^3*e^4 + 80*B*a*c^2*d^2*e^5 - 24*A*a*c^2*d*e^6 + 3*B*a^2*c*e^7)*x
^3 - 35*(256*B*c^3*d^5*e^2 - 128*A*c^3*d^4*e^3 + 160*B*a*c^2*d^3*e^4 - 48*A
*a*c^2*d^2*e^5 + 6*B*a^2*c*d*e^6 + A*a^2*c*e^7)*x^2 - 7*(1024*B*c^3*d^6*e -
 512*A*c^3*d^5*e^2 + 640*B*a*c^2*d^4*e^3 - 192*A*a*c^2*d^3*e^4 + 24*B*a^2*c
*d^2*e^5 + 4*A*a^2*c*d*e^6 + B*a^3*e^7)*x)*sqrt(e*x + d)/(e^12*x^4 + 4*d*e^
11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8)
```

giac [A] time = 0.25, size = 597, normalized size = 1.75

$$\frac{2}{35}\left(5\,(xe+d)^{\frac{7}{2}}Bc^{3}e^{48}-49\,(xe+d)^{\frac{5}{2}}Bc^{3}de^{48}+245\,(xe+d)^{\frac{3}{2}}Bc^{3}d^{2}e^{48}-1225\,\sqrt{xe+d}\,Bc^{3}d^{3}e^{48}+7\,(xe+d)^{\frac{5}{2}}A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="giac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*B*c^3*e^48 - 49*(x*e + d)^(5/2)*B*c^3*d*e^48 + 245*
(x*e + d)^(3/2)*B*c^3*d^2*e^48 - 1225*sqrt(x*e + d)*B*c^3*d^3*e^48 + 7*(x*e
 + d)^(5/2)*A*c^3*e^49 - 70*(x*e + d)^(3/2)*A*c^3*d*e^49 + 525*sqrt(x*e + d
)*A*c^3*d^2*e^49 + 35*(x*e + d)^(3/2)*B*a*c^2*e^50 - 525*sqrt(x*e + d)*B*a*
c^2*d*e^50 + 105*sqrt(x*e + d)*A*a*c^2*e^51)*e^(-56) - 2/35*(1225*(x*e + d)
^3*B*c^3*d^4 - 245*(x*e + d)^2*B*c^3*d^5 + 49*(x*e + d)*B*c^3*d^6 - 5*B*c^3
*d^7 - 700*(x*e + d)^3*A*c^3*d^3*e + 175*(x*e + d)^2*A*c^3*d^4*e - 42*(x*e
+ d)*A*c^3*d^5*e + 5*A*c^3*d^6*e + 1050*(x*e + d)^3*B*a*c^2*d^2*e^2 - 350*(
x*e + d)^2*B*a*c^2*d^3*e^2 + 105*(x*e + d)*B*a*c^2*d^4*e^2 - 15*B*a*c^2*d^5
*e^2 - 420*(x*e + d)^3*A*a*c^2*d*e^3 + 210*(x*e + d)^2*A*a*c^2*d^2*e^3 - 84
*(x*e + d)*A*a*c^2*d^3*e^3 + 15*A*a*c^2*d^4*e^3 + 105*(x*e + d)^3*B*a^2*c*e
^4 - 105*(x*e + d)^2*B*a^2*c*d*e^4 + 63*(x*e + d)*B*a^2*c*d^2*e^4 - 15*B*a^
2*c*d^3*e^4 + 35*(x*e + d)^2*A*a^2*c*e^5 - 42*(x*e + d)*A*a^2*c*d*e^5 + 15*
A*a^2*c*d^2*e^5 + 7*(x*e + d)*B*a^3*e^6 - 5*B*a^3*d*e^6 + 5*A*a^3*e^7)*e^(-
8)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.43

$$-\frac{2\left(-5B\,c^{3}x^{7}e^{7}-7A\,c^{3}e^{7}x^{6}+14B\,c^{3}d\,e^{6}x^{6}+28A\,c^{3}d\,e^{6}x^{5}-35Ba\,c^{2}e^{7}x^{5}-56B\,c^{3}d^{2}e^{5}x^{5}-105Aa\,c^{2}e^{7}x^{4}-280A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-5*B*c^3*e^7*x^7-7*A*c^3*e^7*x^6+14*B*c^3*d*e^6*x^6+28
*A*c^3*d*e^6*x^5-35*B*a*c^2*e^7*x^5-56*B*c^3*d^2*e^5*x^5-105*A*a*c^2*e^7*x^
4-280*A*c^3*d^2*e^5*x^4+350*B*a*c^2*d*e^6*x^4+560*B*c^3*d^3*e^4*x^4-840*A*a
*c^2*d*e^6*x^3-2240*A*c^3*d^3*e^4*x^3+105*B*a^2*c*e^7*x^3+2800*B*a*c^2*d^2*
e^5*x^3+4480*B*c^3*d^4*e^3*x^3+35*A*a^2*c*e^7*x^2-1680*A*a*c^2*d^2*e^5*x^2-
4480*A*c^3*d^4*e^3*x^2+210*B*a^2*c*d*e^6*x^2+5600*B*a*c^2*d^3*e^4*x^2+8960*
B*c^3*d^5*e^2*x^2+28*A*a^2*c*d*e^6*x-1344*A*a*c^2*d^3*e^4*x-3584*A*c^3*d^5*
e^2*x+7*B*a^3*e^7*x+168*B*a^2*c*d^2*e^5*x+4480*B*a*c^2*d^4*e^3*x+7168*B*c^3
*d^6*e*x+5*A*a^3*e^7+8*A*a^2*c*d^2*e^5-384*A*a*c^2*d^4*e^3-1024*A*c^3*d^6*e
+2*B*a^3*d*e^6+48*B*a^2*c*d^3*e^4+1280*B*a*c^2*d^5*e^2+2048*B*c^3*d^7)/e^8
```

maxima [A] time = 0.63, size = 460, normalized size = 1.35

$$\frac{2\left(\frac{5\,(ex+d)^{\frac{7}{2}}Bc^{3}-7\left(7\,Bc^{3}d-Ac^{3}e\right)(ex+d)^{\frac{5}{2}}+35\left(7\,Bc^{3}d^{2}-2\,Ac^{3}de+Bac^{2}e^{2}\right)(ex+d)^{\frac{3}{2}}-35\left(35\,Bc^{3}d^{3}-15\,Ac^{3}d^{2}e+15\,Bac^{2}de^{2}-3\,Aac^{2}e^{3}\right)\sqrt{ex+d}}{e^{7}}+\frac{5\,Bc^{3}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(9/2),x, algorithm="maxima")
```

```
[Out] 2/35*((5*(e*x + d)^(7/2)*B*c^3 - 7*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(5/2) +
35*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*(e*x + d)^(3/2) - 35*(35*B*c^3
*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*sqrt(e*x + d))/e^
7 + (5*B*c^3*d^7 - 5*A*c^3*d^6*e + 15*B*a*c^2*d^5*e^2 - 15*A*a*c^2*d^4*e^3
+ 15*B*a^2*c*d^3*e^4 - 15*A*a^2*c*d^2*e^5 + 5*B*a^3*d*e^6 - 5*A*a^3*e^7 - 3
5*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^2*d*e^3 +
3*B*a^2*c*e^4)*(e*x + d)^3 + 35*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 10*B*a*c^2*d
^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x + d)^2 - 7
*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2*d^3*e^3 + 9
*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*x + d)^(7/2)
*e^7))/e
```

mupad [B] time = 1.85, size = 452, normalized size = 1.32

$$\frac{(d+e\,x)^{3/2}\,\left(42\,B\,c^{3}\,d^{2}-12\,A\,c^{3}\,d\,e+6\,B\,a\,c^{2}\,e^{2}\right)}{3\,e^{8}}-\frac{(d+e\,x)\,\left(\frac{2\,B\,a^{3}\,e^{6}}{5}+\frac{18\,B\,a^{2}\,c\,d^{2}\,e^{4}}{5}-\frac{12\,A\,a^{2}\,c\,d\,e^{5}}{5}+6\,B\,a\,c^{2}\,d^{4}\,e^{2}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(9/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(42*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))/(3*e^8) - (
(d + e*x)*((2*B*a^3*e^6)/5 + (14*B*c^3*d^6)/5 - (12*A*c^3*d^5*e)/5 - (24*A*
a*c^2*d^3*e^3)/5 + 6*B*a*c^2*d^4*e^2 + (18*B*a^2*c*d^2*e^4)/5 - (12*A*a^2*c
*d*e^5)/5) + (d + e*x)^3*(70*B*c^3*d^4 + 6*B*a^2*c*e^4 - 40*A*c^3*d^3*e + 6
0*B*a*c^2*d^2*e^2 - 24*A*a*c^2*d*e^3) - (d + e*x)^2*(14*B*c^3*d^5 - 2*A*a^2
*c*e^5 - 10*A*c^3*d^4*e - 12*A*a*c^2*d^2*e^3 + 20*B*a*c^2*d^3*e^2 + 6*B*a^2
*c*d*e^4) + (2*A*a^3*e^7)/7 - (2*B*c^3*d^7)/7 - (2*B*a^3*d*e^6)/7 + (2*A*c^
3*d^6*e)/7 + (6*A*a*c^2*d^4*e^3)/7 + (6*A*a^2*c*d^2*e^5)/7 - (6*B*a*c^2*d^5
*e^2)/7 - (6*B*a^2*c*d^3*e^4)/7)/(e^8*(d + e*x)^(7/2)) + (2*B*c^3*(d + e*x)
^(7/2))/(7*e^8) + (2*c^2*(d + e*x)^(1/2)*(3*A*a*e^3 - 35*B*c*d^3 - 15*B*a*d
*e^2 + 15*A*c*d^2*e))/e^8 + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(5/2))/(5*e^8)
```

sympy [A] time = 9.86, size = 3218, normalized size = 9.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(9/2),x)
```

```
[Out] Piecewise((-10*A*a**3*e**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sq
rt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
 - 16*A*a**2*c*d**2*e**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt
(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) -
 56*A*a**2*c*d*e**6*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 70
*A*a**2*c*e**7*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 768*
A*a*c**2*d**4*e**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e
*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 2688*
A*a*c**2*d**3*e**4*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 336
0*A*a*c**2*d**2*e**5*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqr
t(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
+ 1680*A*a*c**2*d*e**6*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 210*A*a*c**2*e**7*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sq
rt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x))
 + 2048*A*c**3*d**6*e/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 71
68*A*c**3*d**5*e**2*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
+ e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 89
60*A*c**3*d**4*e**3*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt
(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) +
 4480*A*c**3*d**3*e**4*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 560*A*c**3*d**2*e**5*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x
*sqrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*
x)) - 56*A*c**3*d*e**6*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*s
qrt(d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)
) + 14*A*c**3*e**7*x**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(
d + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) -
4*B*a**3*d*e**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
 + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 14*B*a**
3*e**7*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*
d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 96*B*a**2*c*d**
3*e**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d*
e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 336*B*a**2*c*d**2
*e**5*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 420*B*a**2*c*d*e
**6*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*
d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 210*B*a**2*c*e*
*7*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 2560*B*a*c**2*d*
*5*e**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105*d
*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 8960*B*a*c**2*d*
*4*e**3*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 105
*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 11200*B*a*c**2
*d**3*e**4*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
 + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 5600*B*a
*c**2*d**2*e**5*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 700
*B*a*c**2*d*e**6*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
 + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 70
*B*a*c**2*e**7*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 4096
*B*c**3*d**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) +
105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 14336*B*c**
3*d**6*e*x/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x) + 10
5*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 17920*B*c**3*
d**5*e**2*x**2/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x)
+ 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 8960*B*c*
*3*d**4*e**3*x**3/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*
x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 1120*B
*c**3*d**3*e**4*x**4/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 112
*B*c**3*d**2*e**5*x**5/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d
 + e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) - 2
8*B*c**3*d*e**6*x**6/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d +
 e*x) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)) + 10*
B*c**3*e**7*x**7/(35*d**3*e**8*sqrt(d + e*x) + 105*d**2*e**9*x*sqrt(d + e*x
) + 105*d*e**10*x**2*sqrt(d + e*x) + 35*e**11*x**3*sqrt(d + e*x)), Ne(e, 0)
), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a**3*
x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/d**(9/2), Tru
e))
```

3.1446 $\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=346

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^{3/2}}+\frac{6c^2\sqrt{d+ex}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+2c^2\left(-3aA\right.$$

```
[Out] 2/9*(-A*e+B*d)*(a*e^2+c*d^2)^3/e^8/(e*x+d)^(9/2)-2/7*(a*e^2+c*d^2)^2*(-6*A*
c*d*e+B*a*e^2+7*B*c*d^2)/e^8/(e*x+d)^(7/2)+6/5*c*(a*e^2+c*d^2)*(-A*a*e^3-5*
A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)/e^8/(e*x+d)^(5/2)+2/3*c*(4*A*c*d*e*(3*a*e^
2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))/e^8/(e*x+d)^(3/2)-2/3*c
^3*(-A*e+7*B*d)*(e*x+d)^(3/2)/e^8+2/5*B*c^3*(e*x+d)^(5/2)/e^8+2*c^2*(-3*A*a
*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)/e^8/(e*x+d)^(1/2)+6*c^2*(-2*A*c*
d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.16, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {772}

$$\frac{2c\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{3e^8(d+ex)^{3/2}}+\frac{6c^2\sqrt{d+ex}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8}+2c^2\left(-3aA\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(11/2),x]
```

```
[Out] (2*(B*d - A*e)*(c*d^2 + a*e^2)^3)/(9*e^8*(d + e*x)^(9/2)) - (2*(c*d^2 + a*e
^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2))/(7*e^8*(d + e*x)^(7/2)) + (6*c*(c*
d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3))/(5*e^8*(d +
 e*x)^(5/2)) + (2*c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B*(35*c^2*d^4 + 30*a*c
*d^2*e^2 + 3*a^2*e^4)))/(3*e^8*(d + e*x)^(3/2)) + (2*c^2*(35*B*c*d^3 - 15*A
*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3))/(e^8*Sqrt[d + e*x]) + (6*c^2*(7*B*c*d
^2 - 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/e^8 - (2*c^3*(7*B*d - A*e)*(d + e*
x)^(3/2))/(3*e^8) + (2*B*c^3*(d + e*x)^(5/2))/(5*e^8)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^3}{(d+ex)^{11/2}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3}{e^7(d+ex)^{11/2}}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{e^7(d+ex)^{9/2}}+3c\left(cd^2+\right.\right.$$

$$=\frac{2(Bd-Ae)\left(cd^2+ae^2\right)^3}{9e^8(d+ex)^{9/2}}-\frac{2\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe^2\right)}{7e^8(d+ex)^{7/2}}+6c\left(cd^2+ae\right.$$

Mathematica [A] time = 0.30, size = 375, normalized size = 1.08

$$2B\left(-5a^3e^6(2d+9ex)-3a^2ce^4\left(16d^3+72d^2ex+126de^2x^2+105e^3x^3\right)+15ac^2e^2\left(256d^5+1152d^4ex+2016d^3\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^3)/(d + e*x)^(11/2),x]
```

```
[Out] (-2*A*e*(35*a^3*e^6 + 3*a^2*c*e^4*(8*d^2 + 36*d*e*x + 63*e^2*x^2) + 3*a*c^2
*e^2*(128*d^4 + 576*d^3*e*x + 1008*d^2*e^2*x^2 + 840*d*e^3*x^3 + 315*e^4*x^
4) + 5*c^3*(1024*d^6 + 4608*d^5*e*x + 8064*d^4*e^2*x^2 + 6720*d^3*e^3*x^3 +
 2520*d^2*e^4*x^4 + 252*d*e^5*x^5 - 21*e^6*x^6)) + 2*B*(-5*a^3*e^6*(2*d + 9
*e*x) - 3*a^2*c*e^4*(16*d^3 + 72*d^2*e*x + 126*d*e^2*x^2 + 105*e^3*x^3) + 1
5*a*c^2*e^2*(256*d^5 + 1152*d^4*e*x + 2016*d^3*e^2*x^2 + 1680*d^2*e^3*x^3 +
 630*d*e^4*x^4 + 63*e^5*x^5) + 7*c^3*(2048*d^7 + 9216*d^6*e*x + 16128*d^5*e
^2*x^2 + 13440*d^4*e^3*x^3 + 5040*d^3*e^4*x^4 + 504*d^2*e^5*x^5 - 42*d*e^6*
x^6 + 9*e^7*x^7)))/(315*e^8*(d + e*x)^(9/2))
```

fricas [A] time = 0.69, size = 509, normalized size = 1.47

$$2\,(63\,Bc^3e^7x^7+14336\,Bc^3d^7-5120\,Ac^3d^6e+3840\,Bac^2d^5e^2-384\,Aac^2d^4e^3-48\,Ba^2cd^3e^4-24\,Aa^2cd^2e^5-10\,B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="fricas")
```

```
[Out] 2/315*(63*B*c^3*e^7*x^7 + 14336*B*c^3*d^7 - 5120*A*c^3*d^6*e + 3840*B*a*c^2
*d^5*e^2 - 384*A*a*c^2*d^4*e^3 - 48*B*a^2*c*d^3*e^4 - 24*A*a^2*c*d^2*e^5 -
10*B*a^3*d*e^6 - 35*A*a^3*e^7 - 21*(14*B*c^3*d*e^6 - 5*A*c^3*e^7)*x^6 + 63*
(56*B*c^3*d^2*e^5 - 20*A*c^3*d*e^6 + 15*B*a*c^2*e^7)*x^5 + 315*(112*B*c^3*d
^3*e^4 - 40*A*c^3*d^2*e^5 + 30*B*a*c^2*d*e^6 - 3*A*a*c^2*e^7)*x^4 + 105*(89
6*B*c^3*d^4*e^3 - 320*A*c^3*d^3*e^4 + 240*B*a*c^2*d^2*e^5 - 24*A*a*c^2*d*e^
6 - 3*B*a^2*c*e^7)*x^3 + 63*(1792*B*c^3*d^5*e^2 - 640*A*c^3*d^4*e^3 + 480*B
*a*c^2*d^3*e^4 - 48*A*a*c^2*d^2*e^5 - 6*B*a^2*c*d*e^6 - 3*A*a^2*c*e^7)*x^2
+ 9*(7168*B*c^3*d^6*e - 2560*A*c^3*d^5*e^2 + 1920*B*a*c^2*d^4*e^3 - 192*A*a
*c^2*d^3*e^4 - 24*B*a^2*c*d^2*e^5 - 12*A*a^2*c*d*e^6 - 5*B*a^3*e^7)*x)*sqrt
(e*x + d)/(e^13*x^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*
d^4*e^9*x + d^5*e^8)
```

giac [A] time = 0.24, size = 595, normalized size = 1.72

$$\frac{2}{15}\,\Big(3\,(xe+d)^{\frac{5}{2}}Bc^3e^{32}-35\,(xe+d)^{\frac{3}{2}}Bc^3de^{32}+315\,\sqrt{xe+d}\,Bc^3d^2e^{32}+5\,(xe+d)^{\frac{3}{2}}Ac^3e^{33}-90\,\sqrt{xe+d}\,Ac^3de^{33}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*c^3*e^32 - 35*(x*e + d)^(3/2)*B*c^3*d*e^32 + 315*
sqrt(x*e + d)*B*c^3*d^2*e^32 + 5*(x*e + d)^(3/2)*A*c^3*e^33 - 90*sqrt(x*e +
 d)*A*c^3*d*e^33 + 45*sqrt(x*e + d)*B*a*c^2*e^34)*e^(-40) + 2/315*(11025*(x
*e + d)^4*B*c^3*d^3 - 3675*(x*e + d)^3*B*c^3*d^4 + 1323*(x*e + d)^2*B*c^3*d
^5 - 315*(x*e + d)*B*c^3*d^6 + 35*B*c^3*d^7 - 4725*(x*e + d)^4*A*c^3*d^2*e
+ 2100*(x*e + d)^3*A*c^3*d^3*e - 945*(x*e + d)^2*A*c^3*d^4*e + 270*(x*e + d
)*A*c^3*d^5*e - 35*A*c^3*d^6*e + 4725*(x*e + d)^4*B*a*c^2*d*e^2 - 3150*(x*e
 + d)^3*B*a*c^2*d^2*e^2 + 1890*(x*e + d)^2*B*a*c^2*d^3*e^2 - 675*(x*e + d)*
B*a*c^2*d^4*e^2 + 105*B*a*c^2*d^5*e^2 - 945*(x*e + d)^4*A*a*c^2*e^3 + 1260*
(x*e + d)^3*A*a*c^2*d*e^3 - 1134*(x*e + d)^2*A*a*c^2*d^2*e^3 + 540*(x*e + d
)*A*a*c^2*d^3*e^3 - 105*A*a*c^2*d^4*e^3 - 315*(x*e + d)^3*B*a^2*c*e^4 + 567
*(x*e + d)^2*B*a^2*c*d*e^4 - 405*(x*e + d)*B*a^2*c*d^2*e^4 + 105*B*a^2*c*d^
3*e^4 - 189*(x*e + d)^2*A*a^2*c*e^5 + 270*(x*e + d)*A*a^2*c*d*e^5 - 105*A*a
^2*c*d^2*e^5 - 45*(x*e + d)*B*a^3*e^6 + 35*B*a^3*d*e^6 - 35*A*a^3*e^7)*e^(-
8)/(x*e + d)^(9/2)
```

maple [A] time = 0.05, size = 489, normalized size = 1.41

$$-\frac{2\left(-63B\,c^3x^7e^7-105A\,c^3e^7x^6+294B\,c^3d\,e^6x^6+1260A\,c^3d\,e^6x^5-945Ba\,c^2e^7x^5-3528B\,c^3d^2e^5x^5+945Aa\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x)
```

```
[Out] -2/315/(e*x+d)^(9/2)*(-63*B*c^3*e^7*x^7-105*A*c^3*e^7*x^6+294*B*c^3*d*e^6*x
^6+1260*A*c^3*d*e^6*x^5-945*B*a*c^2*e^7*x^5-3528*B*c^3*d^2*e^5*x^5+945*A*a*
c^2*e^7*x^4+12600*A*c^3*d^2*e^5*x^4-9450*B*a*c^2*d*e^6*x^4-35280*B*c^3*d^3*
e^4*x^4+2520*A*a*c^2*d*e^6*x^3+33600*A*c^3*d^3*e^4*x^3+315*B*a^2*c*e^7*x^3-
25200*B*a*c^2*d^2*e^5*x^3-94080*B*c^3*d^4*e^3*x^3+189*A*a^2*c*e^7*x^2+3024*
A*a*c^2*d^2*e^5*x^2+40320*A*c^3*d^4*e^3*x^2+378*B*a^2*c*d*e^6*x^2-30240*B*a
*c^2*d^3*e^4*x^2-112896*B*c^3*d^5*e^2*x^2+108*A*a^2*c*d*e^6*x+1728*A*a*c^2*
d^3*e^4*x+23040*A*c^3*d^5*e^2*x+45*B*a^3*e^7*x+216*B*a^2*c*d^2*e^5*x-17280*
B*a*c^2*d^4*e^3*x-64512*B*c^3*d^6*e*x+35*A*a^3*e^7+24*A*a^2*c*d^2*e^5+384*A
*a*c^2*d^4*e^3+5120*A*c^3*d^6*e+10*B*a^3*d*e^6+48*B*a^2*c*d^3*e^4-3840*B*a*
c^2*d^5*e^2-14336*B*c^3*d^7)/e^8
```

maxima [A] time = 0.58, size = 461, normalized size = 1.33

$$\frac{2\left(\frac{21\left(3\,(ex+d)^{\frac{5}{2}}Bc^3-5\left(7\,Bc^3d-Ac^3e\right)(ex+d)^{\frac{3}{2}}+45\left(7\,Bc^3d^2-2\,Ac^3de+Bac^2e^2\right)\sqrt{ex+d}\right)}{e^7}+\frac{35\,Bc^3d^7-35\,Ac^3d^6e+105\,Bac^2d^5e^2-105\,Aac^2d^4e^3+10}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^3/(e*x+d)^(11/2),x, algorithm="maxima")
```

```
[Out] 2/315*(21*(3*(e*x + d)^(5/2)*B*c^3 - 5*(7*B*c^3*d - A*c^3*e)*(e*x + d)^(3/2
) + 45*(7*B*c^3*d^2 - 2*A*c^3*d*e + B*a*c^2*e^2)*sqrt(e*x + d))/e^7 + (35*B
*c^3*d^7 - 35*A*c^3*d^6*e + 105*B*a*c^2*d^5*e^2 - 105*A*a*c^2*d^4*e^3 + 105
*B*a^2*c*d^3*e^4 - 105*A*a^2*c*d^2*e^5 + 35*B*a^3*d*e^6 - 35*A*a^3*e^7 + 31
5*(35*B*c^3*d^3 - 15*A*c^3*d^2*e + 15*B*a*c^2*d*e^2 - 3*A*a*c^2*e^3)*(e*x +
 d)^4 - 105*(35*B*c^3*d^4 - 20*A*c^3*d^3*e + 30*B*a*c^2*d^2*e^2 - 12*A*a*c^
2*d*e^3 + 3*B*a^2*c*e^4)*(e*x + d)^3 + 189*(7*B*c^3*d^5 - 5*A*c^3*d^4*e + 1
0*B*a*c^2*d^3*e^2 - 6*A*a*c^2*d^2*e^3 + 3*B*a^2*c*d*e^4 - A*a^2*c*e^5)*(e*x
 + d)^2 - 45*(7*B*c^3*d^6 - 6*A*c^3*d^5*e + 15*B*a*c^2*d^4*e^2 - 12*A*a*c^2
*d^3*e^3 + 9*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5 + B*a^3*e^6)*(e*x + d))/((e*
x + d)^(9/2)*e^7))/e
```

mupad [B] time = 1.89, size = 454, normalized size = 1.31

$$\frac{(d+e\,x)^4\,\left(70\,B\,c^3\,d^3-30\,A\,c^3\,d^2\,e+30\,B\,a\,c^2\,d\,e^2-6\,A\,a\,c^2\,e^3\right)-(d+e\,x)\,\left(\frac{2\,B\,a^3\,e^6}{7}+\frac{18\,B\,a^2\,c\,d^2\,e^4}{7}-\frac{12\,A\,a^2\,c\,d\,e^5}{7}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^3*(A + B*x))/(d + e*x)^(11/2),x)
```

```
[Out] ((d + e*x)^4*(70*B*c^3*d^3 - 6*A*a*c^2*e^3 - 30*A*c^3*d^2*e + 30*B*a*c^2*d*
e^2) - (d + e*x)*((2*B*a^3*e^6)/7 + 2*B*c^3*d^6 - (12*A*c^3*d^5*e)/7 - (24*
A*a*c^2*d^3*e^3)/7 + (30*B*a*c^2*d^4*e^2)/7 + (18*B*a^2*c*d^2*e^4)/7 - (12*
A*a^2*c*d*e^5)/7) - (d + e*x)^3*((70*B*c^3*d^4)/3 + 2*B*a^2*c*e^4 - (40*A*c
^3*d^3*e)/3 + 20*B*a*c^2*d^2*e^2 - 8*A*a*c^2*d*e^3) + (d + e*x)^2*((42*B*c^
3*d^5)/5 - (6*A*a^2*c*e^5)/5 - 6*A*c^3*d^4*e - (36*A*a*c^2*d^2*e^3)/5 + 12*
B*a*c^2*d^3*e^2 + (18*B*a^2*c*d*e^4)/5) - (2*A*a^3*e^7)/9 + (2*B*c^3*d^7)/9
```

```
 + (2*B*a^3*d*e^6)/9 - (2*A*c^3*d^6*e)/9 - (2*A*a*c^2*d^4*e^3)/3 - (2*A*a^2
*c*d^2*e^5)/3 + (2*B*a*c^2*d^5*e^2)/3 + (2*B*a^2*c*d^3*e^4)/3)/(e^8*(d + e*
x)^(9/2)) + ((d + e*x)^(1/2)*(42*B*c^3*d^2 - 12*A*c^3*d*e + 6*B*a*c^2*e^2))
/e^8 + (2*B*c^3*(d + e*x)^(5/2))/(5*e^8) + (2*c^3*(A*e - 7*B*d)*(d + e*x)^(
3/2))/(3*e^8)
```

sympy [A] time = 16.44, size = 3952, normalized size = 11.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**3/(e*x+d)**(11/2),x)
```

```
[Out] Piecewise((-70*A*a**3*e**7/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*
sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt
(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 48*A*a**2*c*d**2*e**5/(315*d**4
*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2
*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
e*x)) - 216*A*a**2*c*d*e**6*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9
*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*s
qrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 378*A*a**2*c*e**7*x**2/(315*
d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*
x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(
d + e*x)) - 768*A*a*c**2*d**4*e**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3
*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x
**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 3456*A*a*c**2*d**3*e**4
*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**
2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x*
*4*sqrt(d + e*x)) - 6048*A*a*c**2*d**2*e**5*x**2/(315*d**4*e**8*sqrt(d + e*
x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) +
1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 5040*A*a*
c**2*d*e**6*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) - 1890*A*a*c**2*e**7*x**4/(315*d**4*e**8*sq
rt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d
+ e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) -
10240*A*c**3*d**6*e/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
+ e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*
x) + 315*e**12*x**4*sqrt(d + e*x)) - 46080*A*c**3*d**5*e**2*x/(315*d**4*e**
8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqr
t(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)
) - 80640*A*c**3*d**4*e**3*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e*
*9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3
*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 67200*A*c**3*d**3*e**4*x**
3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2
*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**
4*sqrt(d + e*x)) - 25200*A*c**3*d**2*e**5*x**4/(315*d**4*e**8*sqrt(d + e*x)
 + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 12
60*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 2520*A*c**3
*d*e**6*x**5/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x)
+ 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 31
5*e**12*x**4*sqrt(d + e*x)) + 210*A*c**3*e**7*x**6/(315*d**4*e**8*sqrt(d +
e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x)
+ 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 20*B*a*
*3*d*e**6/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1
890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e
**12*x**4*sqrt(d + e*x)) - 90*B*a**3*e**7*x/(315*d**4*e**8*sqrt(d + e*x) +
1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*
d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 96*B*a**2*c*d*
*3*e**4/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 189
0*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**
12*x**4*sqrt(d + e*x)) - 432*B*a**2*c*d**2*e**5*x/(315*d**4*e**8*sqrt(d + e
*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) +
 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 756*B*a*
*2*c*d*e**6*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) - 630*B*a**2*c*e**7*x**3/(315*d**4*e**8*sqr
t(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d +
 e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 7
680*B*a*c**2*d**5*e**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt
(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d +
 e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 34560*B*a*c**2*d**4*e**3*x/(315*d**
4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**
2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
 e*x)) + 60480*B*a*c**2*d**3*e**4*x**2/(315*d**4*e**8*sqrt(d + e*x) + 1260*
d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**
11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 50400*B*a*c**2*d**2
*e**5*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) +
1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*
e**12*x**4*sqrt(d + e*x)) + 18900*B*a*c**2*d*e**6*x**4/(315*d**4*e**8*sqrt(
d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e
*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 189
0*B*a*c**2*e**7*x**5/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
 + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e
*x) + 315*e**12*x**4*sqrt(d + e*x)) + 28672*B*c**3*d**7/(315*d**4*e**8*sqrt
(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d +
e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 12
9024*B*c**3*d**6*e*x/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d
 + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e
*x) + 315*e**12*x**4*sqrt(d + e*x)) + 225792*B*c**3*d**5*e**2*x**2/(315*d**
4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**
2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d +
 e*x)) + 188160*B*c**3*d**4*e**3*x**3/(315*d**4*e**8*sqrt(d + e*x) + 1260*d
**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**1
1*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) + 70560*B*c**3*d**3*e*
*4*x**4/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 189
0*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**
12*x**4*sqrt(d + e*x)) + 7056*B*c**3*d**2*e**5*x**5/(315*d**4*e**8*sqrt(d +
 e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x)
 + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)) - 588*B*
c**3*d*e**6*x**6/(315*d**4*e**8*sqrt(d + e*x) + 1260*d**3*e**9*x*sqrt(d + e
*x) + 1890*d**2*e**10*x**2*sqrt(d + e*x) + 1260*d*e**11*x**3*sqrt(d + e*x)
+ 315*e**12*x**4*sqrt(d + e*x)) + 126*B*c**3*e**7*x**7/(315*d**4*e**8*sqrt(
d + e*x) + 1260*d**3*e**9*x*sqrt(d + e*x) + 1890*d**2*e**10*x**2*sqrt(d + e
*x) + 1260*d*e**11*x**3*sqrt(d + e*x) + 315*e**12*x**4*sqrt(d + e*x)), Ne(e
, 0)), ((A*a**3*x + A*a**2*c*x**3 + 3*A*a*c**2*x**5/5 + A*c**3*x**7/7 + B*a
**3*x**2/2 + 3*B*a**2*c*x**4/4 + B*a*c**2*x**6/2 + B*c**3*x**8/8)/d**(11/2)
, True))
```

3.1447 $\int \frac{(A+Bx)(d+ex)^{5/2}}{a-cx^2}\,dx$

Optimal. Leaf size=237

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}\,c^{9/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}\,c^{9/4}}-2\sqrt{d}$$

```
[Out] -2/3*(A*e+B*d)*(e*x+d)^(3/2)/c-2/5*B*(e*x+d)^(5/2)/c+arctanh(c^(1/4)*(e*x+d
)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)-A*c^(1/2))*(-e*a^(1/2)+d*c
^(1/2))^(5/2)/c^(9/4)/a^(1/2)+arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^
(1/2))^(1/2))*(B*a^(1/2)+A*c^(1/2))*(e*a^(1/2)+d*c^(1/2))^(5/2)/c^(9/4)/a^(
1/2)-2*(2*A*c*d*e+B*a*e^2+B*c*d^2)*(e*x+d)^(1/2)/c^2
```

Rubi [A] time = 0.64, antiderivative size = 237, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {825, 827, 1166, 208}

$$-\frac{2\sqrt{d+ex}\left(aBe^2+2Acde+Bcd^2\right)}{c^2}+\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}\,c^{9/4}}+\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x]
```

```
[Out] (-2*(B*c*d^2 + 2*A*c*d*e + a*B*e^2)*Sqrt[d + e*x])/c^2 - (2*(B*d + A*e)*(d
+ e*x)^(3/2))/(3*c) - (2*B*(d + e*x)^(5/2))/(5*c) + ((Sqrt[a]*B - A*Sqrt[c]
)*(Sqrt[c]*d - Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c
]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(9/4)) + ((Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d
+ Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]
*e]])/(Sqrt[a]*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{5/2}}{a-cx^2}\,dx &= -\frac{2B(d+ex)^{5/2}}{5c} - \frac{\int \frac{(d+ex)^{3/2}(-Acd-aBe-c(Bd+Ae)x)}{a-cx^2}\,dx}{c} \\
&= -\frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} + \frac{\int \frac{\sqrt{d+ex}\left(c\left(Acd^2+2aBde+aAe^2\right)+c\left(Bcd^2+2Acde-\right.\right.}{a-cx^2}}{c^2} \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} - \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} - \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} + \\
&= -\frac{2\left(Bcd^2+2Acde+aBe^2\right)\sqrt{d+ex}}{c^2} - \frac{2(Bd+Ae)(d+ex)^{3/2}}{3c} - \frac{2B(d+ex)^{5/2}}{5c} +
\end{aligned}
$$

Mathematica [A] time = 0.46, size = 223, normalized size = 0.94

$$
\frac{-2\sqrt{a}\,\sqrt[4]{c}\,\sqrt{d+ex}\,\left(15aBe^2+5Ace(7d+ex)+Bc\left(23d^2+11dex+3e^2x^2\right)\right)-15\left(A\sqrt{c}-\sqrt{a}\,B\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/}}{15\sqrt{a}\,c^{9/4}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*c^(1/4)*Sqrt[d + e*x]*(15*a*B*e^2 + 5*A*c*e*(7*d + e*x) + B*c*(
23*d^2 + 11*d*e*x + 3*e^2*x^2)) - 15*(-(Sqrt[a]*B) + A*Sqrt[c])*(Sqrt[c]*d
- Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]
*e]] + 15*(Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^
(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(15*Sqrt[a]*c^(9/4))
```

fricas [B] time = 13.36, size = 7410, normalized size = 31.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/30*(15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e
^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^
2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5
 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*
e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^
2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*
d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6
 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*
a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (
B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))*log(-(2*(
A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4*c^6)*d^8*e + 16*(A*B^3*
a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3 - A^3*B*a^2*c^4)*d^5*e^4
 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4*a^5*c - A^4*a^3*c^3)*d^2
*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^4*a^6 - A^4*a^4*c^2)*e^9
)*sqrt(e*x + d) + (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c^5 + 9*A^2*B*a*c^6)*d^6*
e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5*(3*B^3*a^3*c^4 + 11*A^2*
B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^2*c^5)*d^3*e^4 + (11*B^3
*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d*
e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 - (A*a*c^8*d^2 + 2*B*a^2*c^7*d*e +
A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*
e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a
^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*
A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B
^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*
c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*
c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^
2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^
2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A
^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c
^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^
2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 +
20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*
a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3
+ 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 2
0*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c +
 A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*
c^9)))/(a*c^4))) - 15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 +
 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3
*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*
(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A
^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3
*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3
*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*
c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c
+ 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^
2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4
))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4*c^6)*d^8*e
+ 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3 - A^3*B*a^2*
c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4*a^5*c - A^4*
a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^4*a^6 - A^4*
a^4*c^2)*e^9)*sqrt(e*x + d) - (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c^5 + 9*A^2*B
*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5*(3*B^3*a^3*c
^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^2*c^5)*d^3*e
^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a^4*c^3 + A^3
*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 - (A*a*c^8*d^2 + 2*B*a^
2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3
*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 +
240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*
a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^
5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240
*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^
2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^
6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B*a*c^2*d^4*e
 + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B
^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 + a*c^4*sqrt(
(4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4
 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5
)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 +
 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*
B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)
*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A
*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^
2)*e^10)/(a*c^9)))/(a*c^4))) + 15*c^2*sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2
*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^
2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^
6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2
*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 2
0*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a
^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 +
 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20
*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c +
A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c
^9)))/(a*c^4))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a^2*c^4 - A^4
*c^6)*d^8*e + 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*B^3*a^3*c^3
- A^3*B*a^2*c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e^5 + 8*(B^4*
a^5*c - A^4*a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)*d*e^8 + (B^
4*a^6 - A^4*a^4*c^2)*e^9)*sqrt(e*x + d) + (2*A*B^2*a*c^6*d^7 + (5*B^3*a^2*c
^5 + 9*A^2*B*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*d^5*e^2 + 5*
(3*B^3*a^3*c^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^4 + 2*A^3*a^
2*c^5)*d^3*e^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 + 2*(6*A*B^2*a
^4*c^3 + A^3*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7 + (A*a*c^8*
d^2 + 2*B*a^2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3
*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6
)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 +
 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2
*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d
^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^
2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e
^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*sqrt((10*A*B
*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)
*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 -
 a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5
*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 +
 A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^
5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c
^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^
3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2
*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c
+ A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))) - 15*c^2*sqrt((10*A*B*a*c^2*d^4*e
+ 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^2 + A^2*c^3)*d^5 + 10*(B^
2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^2*c)*d*e^4 - a*c^4*sqrt((
4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4
+ 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)
*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 +
504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B
^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*
d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*
B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2
)*e^10)/(a*c^9)))/(a*c^4))*log(-(2*(A*B^3*a*c^5 - A^3*B*c^6)*d^9 + 5*(B^4*a
^2*c^4 - A^4*c^6)*d^8*e + 16*(A*B^3*a^2*c^4 - A^3*B*a*c^5)*d^7*e^2 - 28*(A*
B^3*a^3*c^3 - A^3*B*a^2*c^4)*d^5*e^4 - 14*(B^4*a^4*c^2 - A^4*a^2*c^4)*d^4*e
^5 + 8*(B^4*a^5*c - A^4*a^3*c^3)*d^2*e^7 + 10*(A*B^3*a^5*c - A^3*B*a^4*c^2)
*d*e^8 + (B^4*a^6 - A^4*a^4*c^2)*e^9)*sqrt(e*x + d) - (2*A*B^2*a*c^6*d^7 +
(5*B^3*a^2*c^5 + 9*A^2*B*a*c^6)*d^6*e + 2*(16*A*B^2*a^2*c^5 + 5*A^3*a*c^6)*
d^5*e^2 + 5*(3*B^3*a^3*c^4 + 11*A^2*B*a^2*c^5)*d^4*e^3 + 10*(5*A*B^2*a^3*c^
4 + 2*A^3*a^2*c^5)*d^3*e^4 + (11*B^3*a^4*c^3 + 31*A^2*B*a^3*c^4)*d^2*e^5 +
2*(6*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d*e^6 + (B^3*a^5*c^2 + A^2*B*a^4*c^3)*e^7
```

```
 + (A*a*c^8*d^2 + 2*B*a^2*c^7*d*e + A*a^2*c^7*e^2)*sqrt((4*A^2*B^2*c^6*d^10
 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5
 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B
^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4 + 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3
 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^
4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*
a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*
a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))*
sqrt((10*A*B*a*c^2*d^4*e + 20*A*B*a^2*c*d^2*e^3 + 2*A*B*a^3*e^5 + (B^2*a*c^
2 + A^2*c^3)*d^5 + 10*(B^2*a^2*c + A^2*a*c^2)*d^3*e^2 + 5*(B^2*a^3 + A^2*a^
2*c)*d*e^4 - a*c^4*sqrt((4*A^2*B^2*c^6*d^10 + 20*(A*B^3*a*c^5 + A^3*B*c^6)*
d^9*e + 5*(5*B^4*a^2*c^4 + 26*A^2*B^2*a*c^5 + 5*A^4*c^6)*d^8*e^2 + 240*(A*B
^3*a^2*c^4 + A^3*B*a*c^5)*d^7*e^3 + 20*(5*B^4*a^3*c^3 + 32*A^2*B^2*a^2*c^4
+ 5*A^4*a*c^5)*d^6*e^4 + 504*(A*B^3*a^3*c^3 + A^3*B*a^2*c^4)*d^5*e^5 + 10*(
11*B^4*a^4*c^2 + 62*A^2*B^2*a^3*c^3 + 11*A^4*a^2*c^4)*d^4*e^6 + 240*(A*B^3*
a^4*c^2 + A^3*B*a^3*c^3)*d^3*e^7 + 20*(B^4*a^5*c + 7*A^2*B^2*a^4*c^2 + A^4*
a^3*c^3)*d^2*e^8 + 20*(A*B^3*a^5*c + A^3*B*a^4*c^2)*d*e^9 + (B^4*a^6 + 2*A^
2*B^2*a^5*c + A^4*a^4*c^2)*e^10)/(a*c^9)))/(a*c^4))) + 4*(3*B*c*e^2*x^2 + 2
3*B*c*d^2 + 35*A*c*d*e + 15*B*a*e^2 + (11*B*c*d*e + 5*A*c*e^2)*x)*sqrt(e*x
+ d))/c^2
```

giac [B] time = 0.44, size = 655, normalized size = 2.76

$$\frac{\left(\left(3\sqrt{ac}\,acd^2e^2+\sqrt{ac}\,a^2e^4\right)Ac^2+\left(\sqrt{ac}\,acd^3e+3\sqrt{ac}\,a^2de^3\right)Bc^2-2\left(ac^3d^3e-a^2c^2de^3\right)A|c|-\left(ac^3d^4-a^3ce^4\right)B|c|}{\left(ac^4d-\sqrt{ac}\,ac^3e\right)\sqrt{-c^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] ((3*sqrt(a*c)*a*c*d^2*e^2 + sqrt(a*c)*a^2*e^4)*A*c^2 + (sqrt(a*c)*a*c*d^3*e
 + 3*sqrt(a*c)*a^2*d*e^3)*B*c^2 - 2*(a*c^3*d^3*e - a^2*c^2*d*e^3)*A*abs(c)
- (a*c^3*d^4 - a^3*c*e^4)*B*abs(c) - (sqrt(a*c)*c^4*d^4 + 3*sqrt(a*c)*a*c^3
*d^2*e^2)*A - (3*sqrt(a*c)*a*c^3*d^3*e + sqrt(a*c)*a^2*c^2*d*e^3)*B)*arctan
(sqrt(x*e + d)/sqrt(-(c^6*d + sqrt(c^12*d^2 - (c^6*d^2 - a*c^5*e^2)*c^6))/c
^6))/((a*c^4*d - sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)) - ((3*sqr
t(a*c)*a*c*d^2*e^2 + sqrt(a*c)*a^2*e^4)*A*c^2 + (sqrt(a*c)*a*c*d^3*e + 3*sq
rt(a*c)*a^2*d*e^3)*B*c^2 + 2*(a*c^3*d^3*e - a^2*c^2*d*e^3)*A*abs(c) + (a*c^
3*d^4 - a^3*c*e^4)*B*abs(c) - (sqrt(a*c)*c^4*d^4 + 3*sqrt(a*c)*a*c^3*d^2*e^
2)*A - (3*sqrt(a*c)*a*c^3*d^3*e + sqrt(a*c)*a^2*c^2*d*e^3)*B)*arctan(sqrt(x
*e + d)/sqrt(-(c^6*d - sqrt(c^12*d^2 - (c^6*d^2 - a*c^5*e^2)*c^6))/c^6))/((
a*c^4*d + sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d + sqrt(a*c)*c*e)) - 2/15*(3*(x*e +
 d)^(5/2)*B*c^4 + 5*(x*e + d)^(3/2)*B*c^4*d + 15*sqrt(x*e + d)*B*c^4*d^2 +
5*(x*e + d)^(3/2)*A*c^4*e + 30*sqrt(x*e + d)*A*c^4*d*e + 15*sqrt(x*e + d)*B
*a*c^3*e^2)/c^5
```

maple [B] time = 0.10, size = 981, normalized size = 4.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x)
```

```
[Out] -2/5*(e*x+d)^(5/2)*B/c-2/3/c*A*(e*x+d)^(3/2)*e-2/3/c*B*(e*x+d)^(3/2)*d-4/c*
A*(e*x+d)^(1/2)*d*e-2/c^2*B*(e*x+d)^(1/2)*a*e^2-2/c*B*(e*x+d)^(1/2)*d^2+3/(
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*a*d*e^3+c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^
3*e+1/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/
2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a^2*e^4+3/(a*c*e^2)^(1/2)/((c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*c)*B*a*d^2*e^2+1/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*a*e^3+3/((c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+3/c/((c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*c)*B*a*d*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)
/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3+3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*
A*a*d*e^3+c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+
d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*A*d^3*e+1/c/(a*c*e^2)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2))*B*a^2*e^4+3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arc
tan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*B*a*d^2*e^2-1/c/((-c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2))*A*a*e^3-3/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*A*d^2*e-3/c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2))*B*a*d*e^2-1/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan(c*(e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2))*B*d^3
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{cx^2 - a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a), x)
```

mupad [**B**] time = 3.13, size = 11383, normalized size = 48.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2),x)
```

```
[Out] - (2*d*((2*A*e - 2*B*d)/c + (4*B*d)/c) + (2*B*(a*e^2 - c*d^2))/c^2)*(d + e*
x)^(1/2) - ((2*A*e - 2*B*d)/(3*c) + (4*B*d)/(3*c))*(d + e*x)^(3/2) - atan((
(((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d
^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e
^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^
6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d
^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4
+ 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^
(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*
B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20
*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 +
 B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*
B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5
*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*
c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*
(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2
*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^
(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (16*(d +
 e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2
*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^
2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A
*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A
^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*
e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) +
 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4
+ 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d
^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3
*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^
3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i - (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3
*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(d + e*
x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 +
10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(
1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*
(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^
7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9
)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 1
0*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(
4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*
c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(
a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*
B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*
A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^
3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)
^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9
)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^
6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 1
5*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3
*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7
*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2
 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e
^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^
2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*
d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c
^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3
*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i)/
((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*
d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*
e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c
^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*
d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4
 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)
^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10
*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 2
0*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5
+ B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10
*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 +
5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3
*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e
*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^
2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)
^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (16*(d
+ e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^
2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e
^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*
A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) +
A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c
*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2)
```

```
+ 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4
 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*
d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^
3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a
^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e
^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10
*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/
2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a
^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*
d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^
(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*
A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*
a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^
8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^
3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*
c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*
B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*
(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(
1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^
(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*
e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*
A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c
*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d
^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 +
 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5
 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*
a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2*d^
4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6
*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^3*c
^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*
(3*A^3*c^5*d^8*e^3 + A*B^2*a^5*e^11 - A^3*a^4*c*e^11 + 3*B^3*a^5*d*e^10 + 6
*A^3*a^2*c^3*d^4*e^7 + 6*B^3*a^3*c^2*d^5*e^6 + A^2*B*c^5*d^9*e^2 - 8*A^3*a*
c^4*d^6*e^5 - B^3*a*c^4*d^9*e^2 - 8*B^3*a^4*c*d^3*e^8 + 8*A*B^2*a^2*c^3*d^6
*e^5 - 6*A*B^2*a^3*c^2*d^4*e^7 - 6*A^2*B*a^2*c^3*d^5*e^6 + 8*A^2*B*a^3*c^2*
d^3*e^8 - 3*A^2*B*a^4*c*d*e^10 - 3*A*B^2*a*c^4*d^8*e^3))/c^3))*((B^2*a^2*c^
7*d^5 + B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^
2 + 10*B^2*a^3*c^6*d^3*e^2 + A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*
e^5 + 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) + 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A
^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e + 5*B^2*a*c^2
*d^4*e*(a^3*c^9)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*
c^6*d^2*e^3 + 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) + 10*A*B*a^2*c*d*e^4*(a^
3*c^9)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*2i
- atan(((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B
*a*c^6*d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B
^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^
2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A
^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^
6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a
^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e
^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1
/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c
^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e
^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5
*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*
A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^
2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3
*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a
^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) +
(16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2
*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^
3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^
3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(
1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^
2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)
^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^
5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2
*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*
e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3
*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2)*1i - (((8*(4*B*a^3*c^4*e^6 - 8*A*a
*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2
*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^
8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^
3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*
c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*
B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*
(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(
1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^
(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2)
+ A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2
*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2
) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e
^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^
2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(
a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*
(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^
2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4
*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12
*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2
*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7
*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a
^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2
) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^
2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A
*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*
e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1
/2)*1i)/((((8*(4*B*a^3*c^4*e^6 - 8*A*a*c^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*
B*a*c^6*d^4*e^2))/c^3 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 -
B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B
^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*
A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c
^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(
a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*
e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(
1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*
c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*
e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^
5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5
*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c
^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^
3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(
a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) +
 (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^
2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c
^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e
^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^
(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A
^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9
)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c
^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^
2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2
*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^
3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) + (((8*(4*B*a^3*c^4*e^6 - 8*A*a*c
^6*d^3*e^3 + 8*A*a^2*c^5*d*e^5 - 4*B*a*c^6*d^4*e^2))/c^3 + 64*a*c^4*d*e^2*(
d + e*x)^(1/2)*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*
d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*
c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^
3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*
a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a
^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/
2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1
/2))/(4*a^2*c^9))^(1/2))*((B^2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) +
A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c
*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2)
- 2*A*B*c^3*d^5*(a^3*c^9)^(1/2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4
 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*
d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^
3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a
^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2) - (16*(d + e*x)^(1/2)*(B^2*a^4*e^8 + A^2*
c^4*d^6*e^2 + A^2*a^3*c*e^8 + 15*A^2*a^2*c^2*d^2*e^6 + 15*B^2*a^2*c^2*d^4*e
^4 + 15*A^2*a*c^3*d^4*e^4 + B^2*a*c^3*d^6*e^2 + 15*B^2*a^3*c*d^2*e^6 + 12*A
*B*a^3*c*d*e^7 + 12*A*B*a*c^3*d^5*e^3 + 40*A*B*a^2*c^2*d^3*e^5))/c)*((B^2*a
^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^7*d
^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*a^4
*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/2)
+ 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B^2*
a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*A*B
*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d*e^
4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(1/2
) - (16*(3*A^3*c^5*d^8*e^3 + A*B^2*a^5*e^11 - A^3*a^4*c*e^11 + 3*B^3*a^5*d*
e^10 + 6*A^3*a^2*c^3*d^4*e^7 + 6*B^3*a^3*c^2*d^5*e^6 + A^2*B*c^5*d^9*e^2 -
8*A^3*a*c^4*d^6*e^5 - B^3*a*c^4*d^9*e^2 - 8*B^3*a^4*c*d^3*e^8 + 8*A*B^2*a^2
*c^3*d^6*e^5 - 6*A*B^2*a^3*c^2*d^4*e^7 - 6*A^2*B*a^2*c^3*d^5*e^6 + 8*A^2*B*
a^3*c^2*d^3*e^8 - 3*A^2*B*a^4*c*d*e^10 - 3*A*B^2*a*c^4*d^8*e^3))/c^3))*((B^
2*a^2*c^7*d^5 - B^2*a^3*e^5*(a^3*c^9)^(1/2) + A^2*a*c^8*d^5 + 10*A^2*a^2*c^
7*d^3*e^2 + 10*B^2*a^3*c^6*d^3*e^2 - A^2*a^2*c*e^5*(a^3*c^9)^(1/2) + 2*A*B*
a^4*c^5*e^5 - 5*A^2*c^3*d^4*e*(a^3*c^9)^(1/2) - 2*A*B*c^3*d^5*(a^3*c^9)^(1/
2) + 5*A^2*a^3*c^6*d*e^4 + 5*B^2*a^4*c^5*d*e^4 + 10*A*B*a^2*c^7*d^4*e - 5*B
^2*a*c^2*d^4*e*(a^3*c^9)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c^9)^(1/2) + 20*
A*B*a^3*c^6*d^2*e^3 - 10*B^2*a^2*c*d^2*e^3*(a^3*c^9)^(1/2) - 10*A*B*a^2*c*d
*e^4*(a^3*c^9)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c^9)^(1/2))/(4*a^2*c^9))^(
1/2)*2i - (2*B*(d + e*x)^(5/2))/(5*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1448 $\int \frac{(A+Bx)(d+ex)^{3/2}}{a-cx^2} dx$

Optimal. Leaf size=202

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{7/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{7/4}}-2\sqrt{d}$$

```
[Out] -2/3*B*(e*x+d)^(3/2)/c+arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))
^(1/2))*(B*a^(1/2)-A*c^(1/2))*(-e*a^(1/2)+d*c^(1/2))^(3/2)/c^(7/4)/a^(1/2)+
arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)+A*c^(
1/2))*(e*a^(1/2)+d*c^(1/2))^(3/2)/c^(7/4)/a^(1/2)-2*(A*e+B*d)*(e*x+d)^(1/2)
/c
```

Rubi [A] time = 0.44, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {825, 827, 1166, 208}

$$\frac{\left(\sqrt{a}B-A\sqrt{c}\right)\left(\sqrt{c}d-\sqrt{a}e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}c^{7/4}}+\frac{\left(\sqrt{a}B+A\sqrt{c}\right)\left(\sqrt{a}e+\sqrt{c}d\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{a}c^{7/4}}-2\sqrt{d}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x]
```

```
[Out] (-2*(B*d + A*e)*Sqrt[d + e*x])/c - (2*B*(d + e*x)^(3/2))/(3*c) + ((Sqrt[a]*
B - A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x]
)/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(7/4)) + ((Sqrt[a]*B + A*Sqrt[c]
)*(Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c
]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(7/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{a-cx^2}\,dx = -\frac{2B(d+ex)^{3/2}}{3c} - \frac{\int \frac{\sqrt{d+ex}\,(-Acd-aBe-c(Bd+Ae)x)}{a-cx^2}\,dx}{c}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\int \frac{c\left(Acd^2+2aBde+aAe^2\right)+c\left(Bcd^2+2Acde+aBe^2\right)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,d}{c^2}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(Acd^2+2aBde+aAe^2\right)-cd\left(Bcd^2+2A}{-cd^2+ae^2+2}\right.}{}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^2\right)\mathrm{Subst}\left(\right.}{\sqrt{a}\,c}$$

$$= -\frac{2(Bd+Ae)\sqrt{d+ex}}{c} - \frac{2B(d+ex)^{3/2}}{3c} + \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\tanh^{-1}\left(\right.}{\sqrt{a}\,c^{7/4}}$$

Mathematica [A] time = 0.24, size = 194, normalized size = 0.96

$$\frac{-2\sqrt{a}\,c^{3/4}\sqrt{d+ex}\,(3Ae+4Bd+Bex)-3\left(A\sqrt{c}-\sqrt{a}\,B\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)+3\left(\sqrt{a}\,B+A\right.}{3\sqrt{a}\,c^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*c^(3/4)*Sqrt[d + e*x]*(4*B*d + 3*A*e + B*e*x) - 3*(-(Sqrt[a]*B)
 + A*Sqrt[c])*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])
/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] + 3*(Sqrt[a]*B + A*Sqrt[c])*(Sqrt[c]*d + Sqrt
[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/
(3*Sqrt[a]*c^(7/4))
```

fricas [B] time = 2.39, size = 4480, normalized size = 22.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*
d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*
c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^
4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*
a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) +
(B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((2*(A*B
^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^3*a^2*
c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A*B^3*a
^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x + d) +
(2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B^2*a^2
*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (A*B^2*
a^3*c^2 + A^3*a^2*c^3)*e^4 - (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^2*c^4*
d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*
c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^
4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*
a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)))*s
qrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(
A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^
4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c +
8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d
*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c +
 A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))) - 3*c*sqrt((6*A*B*a*
c*d^2*e + 2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 +
 A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2
*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a
^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3
 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((2*(A*B^3*a*c^3 - A^3*B*c^4)*d
^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*
e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A*B^3*a^3*c - A^3*B*a^2*c^2)*d
*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^4*d^4 + (3
*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B^2*a^2*c^3 + A^3*a*c^4)*d^2*e
^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (A*B^2*a^3*c^2 + A^3*a^2*c^3)*
e^4 - (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 +
 A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2
*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a
^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)))*sqrt((6*A*B*a*c*d^2*e +
2*A*B*a^2*e^3 + a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4
)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*
B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4
*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2
*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*
a^2 + A^2*a*c)*d*e^2)/(a*c^3))) + 3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3
 - a*c^3*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(
3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 +
 A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e
^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c +
A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c
)*d*e^2)/(a*c^3))*log((2*(A*B^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A
^4*c^4)*d^4*e + 4*(A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^
4*a*c^3)*d^2*e^3 - 6*(A*B^3*a^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a
^2*c^2)*e^5)*sqrt(e*x + d) + (2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*
a*c^4)*d^3*e + 3*(3*A*B^2*a^2*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A
^2*B*a^2*c^3)*d*e^3 + (A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (A*a*c^6*d + B*a^
2*c^5*e)*sqrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(
3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 +
 A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e
^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c +
A^4*a^2*c^2)*e^6)/(a*c^7)))*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*s
qrt((4*A^2*B^2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*
c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c
^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A
*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^
2)*e^6)/(a*c^7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(
a*c^3))) - 3*c*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*sqrt((4*A^2*B^
2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7)) + (B^2*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))*log((
2*(A*B^3*a*c^3 - A^3*B*c^4)*d^5 + 3*(B^4*a^2*c^2 - A^4*c^4)*d^4*e + 4*(A*B^
3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^2 - 2*(B^4*a^3*c - A^4*a*c^3)*d^2*e^3 - 6*(A
*B^3*a^3*c - A^3*B*a^2*c^2)*d*e^4 - (B^4*a^4 - A^4*a^2*c^2)*e^5)*sqrt(e*x +
 d) - (2*A*B^2*a*c^4*d^4 + (3*B^3*a^2*c^3 + 5*A^2*B*a*c^4)*d^3*e + 3*(3*A*B
^2*a^2*c^3 + A^3*a*c^4)*d^2*e^2 + (B^3*a^3*c^2 + 7*A^2*B*a^2*c^3)*d*e^3 + (
A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (A*a*c^6*d + B*a^2*c^5*e)*sqrt((4*A^2*B^
2*c^4*d^6 + 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7)))*sqrt((6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - a*c^3*sqrt((4*A^2*B^2*c^4*d^6
+ 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3
+ 3*A^4*c^4)*d^4*e^2 + 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^
3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 + 12*(A*B^3*a^3*c + A^3*B*a^2*
c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7)) + (B^2
*a*c + A^2*c^2)*d^3 + 3*(B^2*a^2 + A^2*a*c)*d*e^2)/(a*c^3))) - 4*(B*e*x + 4
*B*d + 3*A*e)*sqrt(e*x + d))/c
```

giac [B] time = 0.41, size = 528, normalized size = 2.61

$$-\frac{\left(2\sqrt{ac}\,Bac^3d^2e-2\sqrt{ac}\,Aac^3de^2-\left(\sqrt{ac}\,acd^2e+\sqrt{ac}\,a^2e^3\right)Bc^2+\left(ac^3d^2e-a^2c^2e^3\right)A|c|+\left(ac^3d^3-a^2c^2de^2\right)B|}{\left(ac^4d-\sqrt{ac}\,ac^3e\right)\sqrt{-c^2d-\sqrt{ac}\,ce}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -(2*sqrt(a*c)*B*a*c^3*d^2*e - 2*sqrt(a*c)*A*a*c^3*d*e^2 - (sqrt(a*c)*a*c*d^
2*e + sqrt(a*c)*a^2*e^3)*B*c^2 + (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c) + (a*
c^3*d^3 - a^2*c^2*d*e^2)*B*abs(c) + (sqrt(a*c)*c^4*d^3 + sqrt(a*c)*a*c^3*d*
e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(c^4*d + sqrt(c^8*d^2 - (c^4*d^2 - a*c^3
*e^2)*c^4))/c^4))/((a*c^4*d - sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*
e)) + (2*sqrt(a*c)*B*a*c^3*d^2*e - 2*sqrt(a*c)*A*a*c^3*d*e^2 - (sqrt(a*c)*a
*c*d^2*e + sqrt(a*c)*a^2*e^3)*B*c^2 - (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c)
- (a*c^3*d^3 - a^2*c^2*d*e^2)*B*abs(c) + (sqrt(a*c)*c^4*d^3 + sqrt(a*c)*a*c
^3*d*e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(c^4*d - sqrt(c^8*d^2 - (c^4*d^2 -
a*c^3*e^2)*c^4))/c^4))/((a*c^4*d + sqrt(a*c)*a*c^3*e)*sqrt(-c^2*d + sqrt(a*
c)*c*e)) - 2/3*((x*e + d)^(3/2)*B*c^2 + 3*sqrt(x*e + d)*B*c^2*d + 3*sqrt(x*
e + d)*A*c^2*e)/c^3
```

maple [B] time = 0.08, size = 689, normalized size = 3.41

$$\frac{Aa\,e^3\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Aa\,e^3\,\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ac\,d^2e\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ac\,d^2e\,\mathrm{arcta}}{\sqrt{ac\,e^2}\,\sqrt{\left(\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x)
```

```
[Out] -2/3*(e*x+d)^(3/2)*B/c-2/c*A*e*(e*x+d)^(1/2)-2/c*B*d*(e*x+d)^(1/2)+1/(a*c*e
^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+2/(
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*B*d*e^2+2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+1/c/((c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*a*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(
a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+1/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+
c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e+2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)
^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a
*B*d*e^2-2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e-1/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*B*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{cx^2 - a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a), x)
```

mupad [B] time = 2.71, size = 7560, normalized size = 37.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2),x)
```

```
[Out] - ((2*A*e - 2*B*d)/c + (4*B*d)/c)*(d + e*x)^(1/2) - atan(((((8*(4*A*a^2*c^4
*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 - 64
*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2
) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2
*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 +
A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c
^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c
^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 +
3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2
*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*
d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/
2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e
^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^
2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c
^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 +
3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2
*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*
d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/
2))/(4*a^2*c^7))^(1/2)*1i - (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B
*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(
(B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*
c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) +
 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) +
3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^
3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)
^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2
) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e
```

```
^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*
a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) - (d +
e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2
*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*
c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)
^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2
) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e
^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*
a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*1i)/((1
6*(B^3*a^4*e^8 - 2*A^3*c^4*d^5*e^3 - B^3*a^2*c^2*d^4*e^4 - A^2*B*a^3*c*e^8
- A^2*B*c^4*d^6*e^2 + 4*A^3*a*c^3*d^3*e^5 - 2*A^3*a^2*c^2*d*e^7 + B^3*a*c^3
*d^6*e^2 - B^3*a^3*c*d^2*e^6 - 4*A*B^2*a^2*c^2*d^3*e^5 + A^2*B*a^2*c^2*d^2*
e^6 + 2*A*B^2*a^3*c*d*e^7 + 2*A*B^2*a*c^3*d^5*e^3 + A^2*B*a*c^3*d^4*e^4))/c
^2 + (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^
2*c^4*d*e^4))/c^2 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*
a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2
*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 +
3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^
7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^
7))^(1/2))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
+ 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*
c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c
^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a
*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*
e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2
*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2
*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
+ 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*
c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c
^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a
*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (((8*(4*A*a^2*c^4*e^5 - 4*A*
a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^
2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c
^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^
3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3
*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e +
6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 + B^
2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d
^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
+ 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*
c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*
c^7))^(1/2) - (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2
*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2
*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 + B^
2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d
^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
+ 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*
c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*
c^7))^(1/2)))*((B^2*a^2*c^5*d^3 + B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d
^3 + 2*A*B*a^3*c^4*e^3 + 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) + 2*A*B*c^2*d^3*(a
^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 + A^2*a*c*e^3*(a^
3*c^7)^(1/2) + 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e + 6*A*
B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*2i - atan(((((8*(4*A*a^2*c^
4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 - 6
4*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/
2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) -
2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 -
 A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*
c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*
```

```
c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 -
 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^
2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c
*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1
/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*
e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B
^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*
c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 -
 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^
2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c
*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1
/2))/(4*a^2*c^7))^(1/2)*1i - (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*
B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*
((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3
*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2)
+ 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) -
 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a
^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7
)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/
2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*
e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B
*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) - (d +
 e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^
2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2
*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7
)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/
2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*
e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B
*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*1i)/((
16*(B^3*a^4*e^8 - 2*A^3*c^4*d^5*e^3 - B^3*a^2*c^2*d^4*e^4 - A^2*B*a^3*c*e^8
 - A^2*B*c^4*d^6*e^2 + 4*A^3*a*c^3*d^3*e^5 - 2*A^3*a^2*c^2*d*e^7 + B^3*a*c^
3*d^6*e^2 - B^3*a^3*c*d^2*e^6 - 4*A*B^2*a^2*c^2*d^3*e^5 + A^2*B*a^2*c^2*d^2
*e^6 + 2*A*B^2*a^3*c*d*e^7 + 2*A*B^2*a*c^3*d^5*e^3 + A^2*B*a*c^3*d^4*e^4))/
c^2 + (((8*(4*A*a^2*c^4*e^5 - 4*A*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a
^2*c^4*d*e^4))/c^2 - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2
*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^
2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 +
 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c
^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c
^7))^(1/2))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3
*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*
c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*
a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (d + e*x)^(1/2)*(16*B^2*a^3
*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^
2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^
2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3
 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3
*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*
c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*
a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2) + (((8*(4*A*a^2*c^4*e^5 - 4*A
*a*c^5*d^2*e^3 - 4*B*a*c^5*d^3*e^2 + 4*B*a^2*c^4*d*e^4))/c^2 + 64*a*c^4*d*e
^2*(d + e*x)^(1/2)*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*
c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d
^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^
3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e -
 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2))*((B^2*a^2*c^5*d^3 - B
^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*
d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
```

```
 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3
*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2
*c^7))^(1/2) - (d + e*x)^(1/2)*(16*B^2*a^3*e^6 + 16*A^2*c^3*d^4*e^2 + 16*A^
2*a^2*c*e^6 + 96*A^2*a*c^2*d^2*e^4 + 16*B^2*a*c^2*d^4*e^2 + 96*B^2*a^2*c*d^
2*e^4 + 128*A*B*a^2*c*d*e^5 + 128*A*B*a*c^2*d^3*e^3))*((B^2*a^2*c^5*d^3 - B
^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*
d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2
 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3
*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2
*c^7))^(1/2)))*((B^2*a^2*c^5*d^3 - B^2*a^2*e^3*(a^3*c^7)^(1/2) + A^2*a*c^6*
d^3 + 2*A*B*a^3*c^4*e^3 - 3*A^2*c^2*d^2*e*(a^3*c^7)^(1/2) - 2*A*B*c^2*d^3*(
a^3*c^7)^(1/2) + 3*A^2*a^2*c^5*d*e^2 + 3*B^2*a^3*c^4*d*e^2 - A^2*a*c*e^3*(a
^3*c^7)^(1/2) - 3*B^2*a*c*d^2*e*(a^3*c^7)^(1/2) + 6*A*B*a^2*c^5*d^2*e - 6*A
*B*a*c*d*e^2*(a^3*c^7)^(1/2))/(4*a^2*c^7))^(1/2)*2i - (2*B*(d + e*x)^(3/2))
/(3*c)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1449 $\int \frac{(A+Bx)\sqrt{d+ex}}{a-cx^2}\,dx$

Optimal. Leaf size=179

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,c^{5/4}}-\frac{2B\sqrt{d+}}{c}$$

```
[Out] -2*B*(e*x+d)^(1/2)/c+arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(
1/2))*(B*a^(1/2)-A*c^(1/2))*(-e*a^(1/2)+d*c^(1/2))^(1/2)/c^(5/4)/a^(1/2)+ar
ctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)+A*c^(1/
2))*(e*a^(1/2)+d*c^(1/2))^(1/2)/c^(5/4)/a^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {825, 827, 1166, 208}

$$\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,c^{5/4}}-\frac{2B\sqrt{d+}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2),x]
```

```
[Out] (-2*B*Sqrt[d + e*x])/c + ((Sqrt[a]*B - A*Sqrt[c])*Sqrt[Sqrt[c]*d - Sqrt[a]*
e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c
^(5/4)) + ((Sqrt[a]*B + A*Sqrt[c])*Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(5/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{a-cx^2}\,dx = -\frac{2B\sqrt{d+ex}}{c} - \frac{\int \frac{-Acd-aBe-c(Bd+Ae)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{c}$$

$$= -\frac{2B\sqrt{d+ex}}{c} - \frac{2\,\text{Subst}\left(\int \frac{cd(Bd+Ae)+e(-Acd-aBe)-c(Bd+Ae)x^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right)}{c}$$

$$= -\frac{2B\sqrt{d+ex}}{c} + \frac{\left(\left(\sqrt{a}\,B+A\sqrt{c}\right)\left(\sqrt{c}\,d+\sqrt{a}\,e\right)\right)\text{Subst}\left(\int \frac{1}{cd+\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+\right.}{\sqrt{a}\,\sqrt{c}}$$

$$= -\frac{2B\sqrt{d+ex}}{c} + \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,c^{5/4}} + \frac{\left(\sqrt{a}\,B+A\sqrt{c}\right.}{}$$

Mathematica [A] time = 0.15, size = 178, normalized size = 0.99

$$\frac{-\left(A\sqrt{c}-\sqrt{a}\,B\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)+\left(\sqrt{a}\,B+A\sqrt{c}\right)\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)-2}{\sqrt{a}\,c^{5/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2),x]
```

```
[Out] (-2*Sqrt[a]*B*c^(1/4)*Sqrt[d + e*x] - (-(Sqrt[a]*B) + A*Sqrt[c])*Sqrt[Sqrt[
c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*
e]] + (Sqrt[a]*B + A*Sqrt[c])*Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*
Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(5/4))
```

fricas [B] time = 0.71, size = 1538, normalized size = 8.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] -1/2*(c*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^
3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a +
 A^2*c)*d)/(a*c^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)
*e)*sqrt(e*x + d) + (2*A*B^2*a*c^2*d - A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*
(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c
^5)) + (B^3*a^2*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2
*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c
^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))) - c*sqrt((2*A*B*a*e + a*c^
2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^
2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))*log(-(2*(A
*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) - (2*A*B^2*a
*c^2*d - A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^3*a^2*c + A^2*B*a*c^
2)*e)*sqrt((2*A*B*a*e + a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*
B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A
^2*c)*d)/(a*c^2))) + c*sqrt((2*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*
(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c
^5)) + (B^2*a + A^2*c)*d)/(a*c^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4
*a^2 - A^4*c^2)*e)*sqrt(e*x + d) + (2*A*B^2*a*c^2*d + A*a*c^4*sqrt((4*A^2*B
^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4
*c^2)*e^2)/(a*c^5)) + (B^3*a^2*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e - a*c^2*
sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*
B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c^2))) - c*sqrt((2
*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^2*a + A^2*c)*d)/(a*c
^2))*log(-(2*(A*B^3*a*c - A^3*B*c^2)*d + (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x +
d) - (2*A*B^2*a*c^2*d + A*a*c^4*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A*B^3*a*c + A^
3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5)) + (B^3*a^2
*c + A^2*B*a*c^2)*e)*sqrt((2*A*B*a*e - a*c^2*sqrt((4*A^2*B^2*c^2*d^2 + 4*(A
*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5
)) + (B^2*a + A^2*c)*d)/(a*c^2))) + 4*sqrt(e*x + d)*B)/c
```

giac [B] time = 0.37, size = 303, normalized size = 1.69

$$-\frac{2\sqrt{xe+d}\,B}{c}-\frac{\left(\sqrt{ac}\,Ac^{3}d^{2}-\sqrt{ac}\,Aac^{2}e^{2}+\left(ac^{2}d^{2}-a^{2}ce^{2}\right)B|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{c^{2}d+\sqrt{c^{4}d^{2}-\left(c^{2}d^{2}-ace^{2}\right)c^{2}}}{c^{2}}}}\right)}{\left(ac^{3}d-\sqrt{ac}\,ac^{2}e\right)\sqrt{-c^{2}d-\sqrt{ac}\,ce}}+\frac{\left(\sqrt{ac}\,Ac^{3}d^{2}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*sqrt(x*e + d)*B/c - (sqrt(a*c)*A*c^3*d^2 - sqrt(a*c)*A*a*c^2*e^2 + (a*c^
2*d^2 - a^2*c*e^2)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d + sqrt(c^4*d
^2 - (c^2*d^2 - a*c*e^2)*c^2))/c^2))/((a*c^3*d - sqrt(a*c)*a*c^2*e)*sqrt(-c
^2*d - sqrt(a*c)*c*e)) + (sqrt(a*c)*A*c^3*d^2 - sqrt(a*c)*A*a*c^2*e^2 - (a*
c^2*d^2 - a^2*c*e^2)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d - sqrt(c^4
*d^2 - (c^2*d^2 - a*c*e^2)*c^2))/c^2))/((a*c^3*d + sqrt(a*c)*a*c^2*e)*sqrt(
-c^2*d + sqrt(a*c)*c*e))
```

maple [B] time = 0.07, size = 427, normalized size = 2.39

$$\frac{Acde\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{\sqrt{ac\,e^{2}}\,\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}+\frac{Acde\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{\sqrt{ac\,e^{2}}\,\sqrt{\left(-cd+\sqrt{ac\,e^{2}}\right)c}}+\frac{Ba\,e^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}\right)}{\sqrt{ac\,e^{2}}\,\sqrt{\left(cd+\sqrt{ac\,e^{2}}\right)c}}+\frac{Ba\,e^{2}\arctan\left(\right.}{\sqrt{ac\,e^{2}}\,\sqrt{\left(-cd+\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x)
```

```
[Out] -2*(e*x+d)^(1/2)*B/c+1/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arct
anh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d*e+1/(a*c*e^2)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(
1/2))*c)^(1/2)*c)*B*a*e^2+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/((c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d+1/(a*c*e^
2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*A*c*d*e+1/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*c)*A*e-1/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{(Bx+A)\sqrt{ex+d}}{cx^{2}-a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a), x)
```

mupad [B] time = 0.44, size = 4276, normalized size = 23.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2),x)
```

```
[Out] - 2*atanh((32*A^2*a*c^2*e^4*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c
^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c
^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*
c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(
1/2))/c^2 - (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16
*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a
^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/
2))/(a*c) + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)) + (32*B^2*a^2*c*e^4*(
d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*
e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d
*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5
- 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 - (16*B^3*a*e^5*(a^
3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))
/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2
*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) + (16*A^2*B*d^2*e^3
*(a^3*c^5)^(1/2))/(a*c)) + (32*A^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((
B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2)
)/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))
/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5 + 16*A^3*a^2*c*e^5 + (16*B^3*a^2*e^5
*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d^2*e^3 + (16*A^2*B*a*e^5*(a^3*c^5)^(1
/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c - (1
6*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^
2*d^3*e^2 - (16*B^3*a*d^2*e^3*(a^3*c^5)^(1/2))/c^2 + (32*A*B^2*a*d*e^4*(a^3
*c^5)^(1/2))/c^2) - (32*B^2*d*e^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/
(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^
2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2
*c^4))^(1/2))/(16*A^3*c^3*d^2*e^3 - 16*A^3*a*c^2*e^5 - (16*A^2*B*e^5*(a^3*c
^5)^(1/2))/c - 16*A*B^2*a^2*c*e^5 - (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32
*A^2*B*c^3*d^3*e^2 + (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c - (32*A*B^2*d*e^4*(
a^3*c^5)^(1/2))/c - 32*A^2*B*a*c^2*d*e^4 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2
))/a + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/a + 16*A*B^2*a*c^2*d^2*e^3) + (64
*A*B*d^2*e^2*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*
c^2) + (A^2*d)/(4*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*
c^5)^(1/2))/(4*a*c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B
^2*a^3*e^5 + 16*A^3*a^2*c*e^5 + (16*B^3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A
^3*a*c^2*d^2*e^3 + (16*A^2*B*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*
e^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1
/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^2*d^3*e^2 - (16*B^3*a*d^2*e^
3*(a^3*c^5)^(1/2))/c^2 + (32*A*B^2*a*d*e^4*(a^3*c^5)^(1/2))/c^2) + (64*A*B*
a*c^2*d*e^3*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4
*a*c) + (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) + (B^2*e*(a^3*c^5)^(1/2))/(4*a*
c^5) + (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16
*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 - (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 - (16*
B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 + (16*B^3*d^2*e^3*(a^
3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 - (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c
^2 + 16*A*B^2*a*c*d^2*e^3 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) + (16*
A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)))*((B^2*a*e*(a^3*c^5)^(1/2) + A^2*c*e*
(a^3*c^5)^(1/2) + A^2*a*c^4*d + B^2*a^2*c^3*d + 2*A*B*a^2*c^3*e + 2*A*B*c*d
*(a^3*c^5)^(1/2))/(4*a^2*c^5))^(1/2) - 2*atanh((32*A^2*a*c^2*e^4*(d + e*x)^
(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^
5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5
)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^
2*a^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1
/2))/c^3 + 32*A^2*B*c^2*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32
*A^2*B*a*c*d*e^4 + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*
e^3 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5
)^(1/2))/(a*c)) + (32*B^2*a^2*c*e^4*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B
*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*
e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/
(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 + (16*A^2*B*e^5*(a^
3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^2*B*c^2*d^3*e
^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4 + (32*A*B^2*
d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 - (32*A*B^2*d^3*e^2*(a^3*
c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)) - (32*A^2*d*e
^3*(a^3*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^
2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2)
)/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5
 + 16*A^3*a^2*c*e^5 - (16*B^3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d
^2*e^3 - (16*A^2*B*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 + (32*
A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/c + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 1
6*A*B^2*a^2*c*d^2*e^3 - 32*A^2*B*a*c^2*d^3*e^2 + (16*B^3*a*d^2*e^3*(a^3*c^5
)^(1/2))/c^2 - (32*A*B^2*a*d*e^4*(a^3*c^5)^(1/2))/c^2) + (32*B^2*d*e^3*(a^3
*c^5)^(1/2)*(d + e*x)^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4
*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*
c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A^3*c^3*d^2*e^3 - 16
*A^3*a*c^2*e^5 + (16*A^2*B*e^5*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*e^5 + (1
6*B^3*a*e^5*(a^3*c^5)^(1/2))/c^2 + 32*A^2*B*c^3*d^3*e^2 - (16*B^3*d^2*e^3*(
a^3*c^5)^(1/2))/c + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c - 32*A^2*B*a*c^2*d*e
^4 - (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2))/a - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/
2))/a + 16*A*B^2*a*c^2*d^2*e^3) - (64*A*B*d^2*e^2*(a^3*c^5)^(1/2)*(d + e*x)
^(1/2)*((B^2*d)/(4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c
^5)^(1/2))/(4*a^2*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^
5)^(1/2))/(2*a^2*c^4))^(1/2))/(16*A*B^2*a^3*e^5 + 16*A^3*a^2*c*e^5 - (16*B^
3*a^2*e^5*(a^3*c^5)^(1/2))/c^3 - 16*A^3*a*c^2*d^2*e^3 - (16*A^2*B*a*e^5*(a^
3*c^5)^(1/2))/c^2 + 32*A^2*B*a^2*c*d*e^4 + (32*A*B^2*d^3*e^2*(a^3*c^5)^(1/2
))/c + (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/c - 16*A*B^2*a^2*c*d^2*e^3 - 32*A
^2*B*a*c^2*d^3*e^2 + (16*B^3*a*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - (32*A*B^2*a*d
*e^4*(a^3*c^5)^(1/2))/c^2) + (64*A*B*a*c^2*d*e^3*(d + e*x)^(1/2)*((B^2*d)/(
4*c^2) + (A*B*e)/(2*c^2) + (A^2*d)/(4*a*c) - (A^2*e*(a^3*c^5)^(1/2))/(4*a^2
*c^4) - (B^2*e*(a^3*c^5)^(1/2))/(4*a*c^5) - (A*B*d*(a^3*c^5)^(1/2))/(2*a^2*
c^4))^(1/2))/(16*A^3*c^2*d^2*e^3 - 16*A^3*a*c*e^5 - 16*A*B^2*a^2*e^5 + (16*
A^2*B*e^5*(a^3*c^5)^(1/2))/c^2 + (16*B^3*a*e^5*(a^3*c^5)^(1/2))/c^3 + 32*A^
2*B*c^2*d^3*e^2 - (16*B^3*d^2*e^3*(a^3*c^5)^(1/2))/c^2 - 32*A^2*B*a*c*d*e^4
 + (32*A*B^2*d*e^4*(a^3*c^5)^(1/2))/c^2 + 16*A*B^2*a*c*d^2*e^3 - (32*A*B^2*
d^3*e^2*(a^3*c^5)^(1/2))/(a*c) - (16*A^2*B*d^2*e^3*(a^3*c^5)^(1/2))/(a*c)))
*(-(B^2*a*e*(a^3*c^5)^(1/2) + A^2*c*e*(a^3*c^5)^(1/2) - A^2*a*c^4*d - B^2*a
^2*c^3*d - 2*A*B*a^2*c^3*e + 2*A*B*c*d*(a^3*c^5)^(1/2))/(4*a^2*c^5))^(1/2)
- (2*B*(d + e*x)^(1/2))/c
```

sympy [B] time = 38.49, size = 396, normalized size = 2.21

$$-2Ae\operatorname{RootSum}\left(256t^{4}a^{2}c^{3}e^{4}-32t^{2}ac^{2}de^{2}-ae^{2}+cd^{2},\left(t\mapsto t\log\left(-64t^{3}ac^{2}e^{2}+4tcd+\sqrt{d+ex}\right)\right)\right)-\frac{2Bae^{2}\,\mathrm{Roo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a),x)
```

```
[Out] -2*A*e*RootSum(256*_t**4*a**2*c**3*e**4 - 32*_t**2*a*c**2*d*e**2 - a*e**2 +
 c*d**2, Lambda(_t, _t*log(-64*_t**3*a*c**2*e**2 + 4*_t*c*d + sqrt(d + e*x)
))) - 2*B*a*e**2*RootSum(_t**4*(256*a**3*c*e**6 - 256*a**2*c**2*d**2*e**4)
+ 32*_t**2*a*c*d*e**2 - 1, Lambda(_t, _t*log(-64*_t**3*a**2*c*d*e**4 + 64*_
t**3*a*c**2*d**3*e**2 - 4*_t*a*e**2 - 4*_t*c*d**2 + sqrt(d + e*x))))/c + 2*
B*d**2*RootSum(_t**4*(256*a**3*c*e**6 - 256*a**2*c**2*d**2*e**4) + 32*_t**2
*a*c*d*e**2 - 1, Lambda(_t, _t*log(-64*_t**3*a**2*c*d*e**4 + 64*_t**3*a*c**
2*d**3*e**2 - 4*_t*a*e**2 - 4*_t*c*d**2 + sqrt(d + e*x)))) - 2*B*d*RootSum(
256*_t**4*a**2*c**3*e**4 - 32*_t**2*a*c**2*d*e**2 - a*e**2 + c*d**2, Lambda
(_t, _t*log(-64*_t**3*a*c**2*e**2 + 4*_t*c*d + sqrt(d + e*x)))) - 2*B*sqrt(
d + e*x)/c
```

3.1450 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx$

Optimal. Leaf size=152

$$\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{c^{3/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}$$

```
[Out] arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(B-A*c^(1/2)/a^
(1/2))/c^(3/4)/(-e*a^(1/2)+d*c^(1/2))^(1/2)+arctanh(c^(1/4)*(e*x+d)^(1/2)/(
e*a^(1/2)+d*c^(1/2))^(1/2))*(B+A*c^(1/2)/a^(1/2))/c^(3/4)/(e*a^(1/2)+d*c^(1
/2))^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = $\{827, 1166, 208\}$

$$\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\frac{A\sqrt{c}}{\sqrt{a}}+B\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{c^{3/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)),x]
```

```
[Out] ((B - (A*Sqrt[c])/Sqrt[a])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
 Sqrt[a]*e]])/(c^(3/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ((B + (A*Sqrt[c])/Sqr
t[a])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(c^(3/4
)*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right)\\ &= \left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\left(\int \frac{1}{cd-\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+ex}\right)+\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\text{Subst}\Bigg(\int\\ &= \frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d+\sqrt{a}\,e}}\right)}{c^{3/4}\sqrt{\sqrt{c}\,d+\sqrt{a}\,e}}\end{aligned}$$

Mathematica [**A**] time = 0.18, size = 155, normalized size = 1.02

$$\frac{\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}}{\sqrt{a}\,c^{3/4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)),x]
```

```
[Out] (((Sqrt[a]*B - A*Sqrt[c])*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
Sqrt[a]*e]])/Sqrt[Sqrt[c]*d - Sqrt[a]*e] + ((Sqrt[a]*B + A*Sqrt[c])*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/Sqrt[Sqrt[c]*d + Sqr
t[a]*e])/(Sqrt[a]*c^(3/4))
```

fricas [**B**] time = 0.80, size = 2385, normalized size = 15.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*
A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c
+ A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2
- a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*sqr
t(e*x + d) + (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B^2*
a^2*c + A^3*a*c^2)*e^2 + (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^2 +
 B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^
3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2*d^2 - a^2*c*e^2)
*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2
*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a
*c^2*d^2 - a^2*c*e^2))) - 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d + (a*c^2
*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e +
 (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 +
a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d -
(B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) - (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*
A^2*B*a*c^2)*d*e + (A*B^2*a^2*c + A^3*a*c^2)*e^2 + (A*a*c^4*d^3 - B*a^2*c^3
*d^2*e - A*a^2*c^3*d*e^2 + B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^
3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^
4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d
 + (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c
^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d
^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))) + 1/2*sqrt(-(2*A*B*a*e -
(B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*
B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*
d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2))*log((2*(A
*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*sqrt(e*x + d) + (2*A*B^2*a
*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B^2*a^2*c + A^3*a*c^2)*e^2
- (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^2 + B*a^3*c^2*e^3)*sqrt((4
*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c
 + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))*sqrt(-(2*A
*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt((4*A^2*B^2*c^2*d^
2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2
)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d^2 - a^2*c*e^2)))
 - 1/2*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e^2)*sqrt(
(4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*A^2*B^2*a
*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))/(a*c^2*d
^2 - a^2*c*e^2))*log((2*(A*B^3*a*c - A^3*B*c^2)*d - (B^4*a^2 - A^4*c^2)*e)*
sqrt(e*x + d) - (2*A*B^2*a*c^2*d^2 - (B^3*a^2*c + 3*A^2*B*a*c^2)*d*e + (A*B
^2*a^2*c + A^3*a*c^2)*e^2 - (A*a*c^4*d^3 - B*a^2*c^3*d^2*e - A*a^2*c^3*d*e^
2 + B*a^3*c^2*e^3)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e
+ (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 +
 a^3*c^3*e^4)))*sqrt(-(2*A*B*a*e - (B^2*a + A^2*c)*d - (a*c^2*d^2 - a^2*c*e
^2)*sqrt((4*A^2*B^2*c^2*d^2 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e + (B^4*a^2 + 2*
A^2*B^2*a*c + A^4*c^2)*e^2)/(a*c^5*d^4 - 2*a^2*c^4*d^2*e^2 + a^3*c^3*e^4)))
/(a*c^2*d^2 - a^2*c*e^2)))
```

giac [A] time = 0.26, size = 177, normalized size = 1.16

$$-\frac{\left(Ba|c|+\sqrt{ac}\,A|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{cd+\sqrt{c^2d^2-(cd^2-ae^2)c}}{c}}}\right)}{\sqrt{-c^2d-\sqrt{ac}\,ce}\,ac}-\frac{\left(Ba|c|-\sqrt{ac}\,A|c|\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{cd-\sqrt{c^2d^2-(cd^2-ae^2)c}}{c}}}\right)}{\sqrt{-c^2d+\sqrt{ac}\,ce}\,ac}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -(B*a*abs(c) + sqrt(a*c)*A*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c*d + sqrt(c
^2*d^2 - (c*d^2 - a*e^2)*c))/c))/(sqrt(-c^2*d - sqrt(a*c)*c*e)*a*c) - (B*a*
abs(c) - sqrt(a*c)*A*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c*d - sqrt(c^2*d^2
 - (c*d^2 - a*e^2)*c))/c))/(sqrt(-c^2*d + sqrt(a*c)*c*e)*a*c)
```

maple [A] time = 0.08, size = 203, normalized size = 1.34

$$\frac{Ace\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}+\frac{Ace\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{B\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x)
```

```
[Out] c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arcta
nh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+c/(a*c*e^2)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A*e-1/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)\sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*sqrt(e*x + d)), x)
```

mupad [B] time = 3.31, size = 2065, normalized size = 13.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(1/2)),x)
```

```
[Out] atan((a^2*c^5*d^3*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2
*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*
a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(3/2)*(d + e*x)^(1/2)*8i + A^2*a^2*c^3*e^2*((
B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c
^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*
c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - B^2*a^2*c^3*d^2*((B^2*a*e*(a^3*c^3)^(1
/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2
*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d +
 e*x)^(1/2)*2i + B^2*a^3*c^2*e^2*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c
^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*
c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - A^2
*a*c^4*d^2*((B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*
d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4
*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - a^3*c^4*d*e^2*((B^2*a*e*(
a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*
A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))
^(3/2)*(d + e*x)^(1/2)*8i)/(A^3*c*e^2*(a^3*c^3)^(1/2) - B^3*a^3*c*e^2 - 2*A
^2*B*a*c^3*d^2 - B^3*a*d*e*(a^3*c^3)^(1/2) - A^2*B*a^2*c^2*e^2 + A*B^2*a*e^
2*(a^3*c^3)^(1/2) + 2*A*B^2*c*d^2*(a^3*c^3)^(1/2) + A^3*a*c^3*d*e + 3*A*B^2
*a^2*c^2*d*e - 3*A^2*B*c*d*e*(a^3*c^3)^(1/2)))*((B^2*a*e*(a^3*c^3)^(1/2) +
A^2*c*e*(a^3*c^3)^(1/2) + A^2*a*c^3*d + B^2*a^2*c^2*d - 2*A*B*a^2*c^2*e - 2
*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*2i - atan(
(a^2*c^5*d^3*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c
^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*
c^4*d^2 - 4*a^3*c^3*e^2))^(3/2)*(d + e*x)^(1/2)*8i + A^2*a^2*c^3*e^2*(-(B^2
*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*
d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3
*e^2))^(1/2)*(d + e*x)^(1/2)*2i - B^2*a^2*c^3*d^2*(-(B^2*a*e*(a^3*c^3)^(1/2
) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e
 - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e
*x)^(1/2)*2i + B^2*a^3*c^2*e^2*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^
3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c
^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - A^2*
a*c^4*d^2*(-(B^2*a*e*(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*
d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4
*d^2 - 4*a^3*c^3*e^2))^(1/2)*(d + e*x)^(1/2)*2i - a^3*c^4*d*e^2*(-(B^2*a*e*
(a^3*c^3)^(1/2) + A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2
*A*B*a^2*c^2*e - 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2)
)^(3/2)*(d + e*x)^(1/2)*8i)/(A^3*c*e^2*(a^3*c^3)^(1/2) + B^3*a^3*c*e^2 + 2*
A^2*B*a*c^3*d^2 - B^3*a*d*e*(a^3*c^3)^(1/2) + A^2*B*a^2*c^2*e^2 + A*B^2*a*e
^2*(a^3*c^3)^(1/2) + 2*A*B^2*c*d^2*(a^3*c^3)^(1/2) - A^3*a*c^3*d*e - 3*A*B^
2*a^2*c^2*d*e - 3*A^2*B*c*d*e*(a^3*c^3)^(1/2)))*(-(B^2*a*e*(a^3*c^3)^(1/2)
+ A^2*c*e*(a^3*c^3)^(1/2) - A^2*a*c^3*d - B^2*a^2*c^2*d + 2*A*B*a^2*c^2*e -
 2*A*B*c*d*(a^3*c^3)^(1/2))/(4*a^2*c^4*d^2 - 4*a^3*c^3*e^2))^(1/2)*2i
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{A}{-a\sqrt{d+ex}+cx^2\sqrt{d+ex}}\,dx-\int \frac{Bx}{-a\sqrt{d+ex}+cx^2\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a),x)
```

```
[Out] -Integral(A/(-a*sqrt(d + e*x) + c*x**2*sqrt(d + e*x)), x) - Integral(B*x/(-
a*sqrt(d + e*x) + c*x**2*sqrt(d + e*x)), x)
```

3.1451 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx$

<u>**Optimal**</u>. Leaf size=197

$$-\frac{2(Bd-Ae)}{\sqrt{d+ex}\,\left(cd^2-ae^2\right)}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}$$

```
[Out] arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)-A*c^
(1/2))/c^(1/4)/a^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(3/2)+arctanh(c^(1/4)*(e*x+d)
^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)+A*c^(1/2))/c^(1/4)/a^(1/2)/(
e*a^(1/2)+d*c^(1/2))^(3/2)-2*(-A*e+B*d)/(-a*e^2+c*d^2)/(e*x+d)^(1/2)
```

<u>**Rubi**</u> [A] time = 0.40, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {829, 827, 1166, 208}

$$-\frac{2(Bd-Ae)}{\sqrt{d+ex}\,\left(cd^2-ae^2\right)}+\frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(\sqrt{a}\,B+A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{a}\,\sqrt[4]{c}\,\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*d - A*e))/((c*d^2 - a*e^2)*Sqrt[d + e*x]) + ((Sqrt[a]*B - A*Sqrt[c])
*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sqrt[a]*c^(
1/4)*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)) + ((Sqrt[a]*B + A*Sqrt[c])*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*c^(1/4)*(Sqrt[c]
*d + Sqrt[a]*e)^(3/2))
```

<u>Rule 208</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

<u>Rule 827</u>

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

<u>Rule 829</u>

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

<u>Rule 1166</u>

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx &= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}}+\frac{\int \frac{-Acd+aBe-c(Bd-Ae)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{-cd^2+ae^2}\\
&= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}}-\frac{2\,\text{Subst}\left(\int \frac{cd(Bd-Ae)+e(-Acd+aBe)-c(Bd-Ae)x^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx,x,\sqrt{d+ex}\right)}{cd^2-ae^2}\\
&= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}}+\frac{\left(\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\sqrt{c}\right)\text{Subst}\left(\int \frac{1}{cd-\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx,x,\sqrt{d+ex}\right)}{\sqrt{c}\,d-\sqrt{a}\,e}+\\
&= -\frac{2(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{d+ex}}+\frac{\left(B-\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt[4]{c}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(B+\frac{A\sqrt{c}}{\sqrt{a}}\right)\tanh^{-1}}{\sqrt[4]{c}\left(\sqrt{c}\,d+\sqrt{a}\,e\right)}
\end{aligned}
$$

Mathematica [C] time = 0.33, size = 271, normalized size = 1.38

$$
\frac{\frac{B\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt[4]{c}}-\frac{(Bd-Ae)\left(\left(\sqrt{a}\,e+\sqrt{c}\,d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{a}\,e}\right)+\left(\sqrt{a}\,e-\sqrt{c}\,d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{a}\,e}\right)\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)}}{\sqrt{a}\,e}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)),x]
```

```
[Out] ((B*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]/Sqrt[Sq
rt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sq
rt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/c^(1/4) - ((B*d - A*e)*((Sqrt[c]*d
+ Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d
 - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2,
 (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)]))/((c*d^2 - a*e^2)*Sqrt[d + e
*x]))/(Sqrt[a]*e)
```

fricas [B] time = 4.71, size = 6448, normalized size = 32.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/2*((c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B
*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d
^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6
 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3
 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a
^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2
*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 -
6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d
^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2
```

```
+ 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 - 3*(B^4
*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*a^3 -
A^4*a*c^2)*e^3)*sqrt(e*x + d) + (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 + 7*A^2
*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*a^3*c
+ 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 - (B^3*a
^4 + A^2*B*a^3*c)*e^5 + (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^4*d^6*
e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6 + 2*B
*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3
*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 -
40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2
 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 +
 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*
a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e
^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2
*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 +
3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*
B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 4
0*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2
+ A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 +
2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a
^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^
10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e
^6))) - (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e + 2*
A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^
3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*
d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*
c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^
4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*
a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12
 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^
3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e
^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 - 3*(
B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*a^3
 - A^4*a*c^2)*e^3)*sqrt(e*x + d) - (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 + 7*
A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*a^3
*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 - (B^
3*a^4 + A^2*B*a^3*c)*e^5 + (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^4*d
^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6 +
2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 +
A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2
 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*
c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^
4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 +
15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^
2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c +
A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 + (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2
 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3 + A
^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2
- 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c
^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4
 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2 + 1
5*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2
*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^
4*e^6))) + (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*e +
 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a
*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c
^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2
*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*
(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3
*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d
^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5
*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^
4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3 -
3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B^4*
a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) + (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^2 +
 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B^3*
a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4 -
(B^3*a^4 + A^2*B*a^3*c)*e^5 - (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2*c^
4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*e^6
 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3
 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*
e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a
^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4
*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2
 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2
*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*a*c
 + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a*c^3*d^6 - 3*a^2*c^2*d^4*
e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c^3
+ A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e
^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2*a^
2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B^4*
a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e^2
+ 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c^2*
d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 -
 a^4*e^6))) - (c*d^3 - a*d*e^2 + (c*d^2*e - a*e^3)*x)*sqrt(-(6*A*B*a*c*d^2*
e + 2*A*B*a^2*e^3 - (B^2*a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 -
 (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^
2*c^4*d^6 - 12*(A*B^3*a*c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*
B^2*a*c^3 + 3*A^4*c^4)*d^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 +
 6*(B^4*a^3*c + 8*A^2*B^2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c +
A^3*B*a^2*c^2)*d*e^5 + (B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^
7*d^12 - 6*a^2*c^6*d^10*e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*
a^5*c^3*d^4*e^8 - 6*a^6*c^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2
*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6))*log((2*(A*B^3*a*c^2 - A^3*B*c^3)*d^3
 - 3*(B^4*a^2*c - A^4*c^3)*d^2*e + 6*(A*B^3*a^2*c - A^3*B*a*c^2)*d*e^2 - (B
^4*a^3 - A^4*a*c^2)*e^3)*sqrt(e*x + d) - (2*A*B^2*a*c^3*d^5 - (3*B^3*a^2*c^
2 + 7*A^2*B*a*c^3)*d^4*e + 2*(7*A*B^2*a^2*c^2 + 3*A^3*a*c^3)*d^3*e^2 - 4*(B
^3*a^3*c + 4*A^2*B*a^2*c^2)*d^2*e^3 + 2*(4*A*B^2*a^3*c + A^3*a^2*c^2)*d*e^4
 - (B^3*a^4 + A^2*B*a^3*c)*e^5 - (A*a*c^5*d^8 - 2*B*a^2*c^4*d^7*e - 2*A*a^2
*c^4*d^6*e^2 + 6*B*a^3*c^3*d^5*e^3 - 6*B*a^4*c^2*d^3*e^5 + 2*A*a^4*c^2*d^2*
e^6 + 2*B*a^5*c*d*e^7 - A*a^5*c*e^8)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*
c^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d
^4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^
2*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (
B^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*
e^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*
c^2*d^2*e^10 + a^7*c*e^12)))*sqrt(-(6*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 - (B^2*
a*c + A^2*c^2)*d^3 - 3*(B^2*a^2 + A^2*a*c)*d*e^2 - (a*c^3*d^6 - 3*a^2*c^2*d
^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*sqrt((4*A^2*B^2*c^4*d^6 - 12*(A*B^3*a*c
^3 + A^3*B*c^4)*d^5*e + 3*(3*B^4*a^2*c^2 + 14*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^
4*e^2 - 40*(A*B^3*a^2*c^2 + A^3*B*a*c^3)*d^3*e^3 + 6*(B^4*a^3*c + 8*A^2*B^2
*a^2*c^2 + A^4*a*c^3)*d^2*e^4 - 12*(A*B^3*a^3*c + A^3*B*a^2*c^2)*d*e^5 + (B
^4*a^4 + 2*A^2*B^2*a^3*c + A^4*a^2*c^2)*e^6)/(a*c^7*d^12 - 6*a^2*c^6*d^10*e
^2 + 15*a^3*c^5*d^8*e^4 - 20*a^4*c^4*d^6*e^6 + 15*a^5*c^3*d^4*e^8 - 6*a^6*c
^2*d^2*e^10 + a^7*c*e^12)))/(a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^
4 - a^4*e^6))) - 4*(B*d - A*e)*sqrt(e*x + d))/(c*d^3 - a*d*e^2 + (c*d^2*e -
 a*e^3)*x)
```

giac [B] time = 0.70, size = 920, normalized size = 4.67

$$-\frac{2\,(Bd-Ae)}{\left(cd^2-ae^2\right)\sqrt{xe+d}}+\frac{\left(\left(cd^2e-ae^3\right)^2\sqrt{ac}\,Bad|c|-\left(cd^2e-ae^3\right)^2\sqrt{ac}\,Aa|c|e+2\left(ac^2d^3e-a^2cde^3\right)A\left|cd^2e-ae^3\right|}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] -2*(B*d - A*e)/((c*d^2 - a*e^2)*sqrt(x*e + d)) + ((c*d^2*e - a*e^3)^2*sqrt(
a*c)*B*a*d*abs(c) - (c*d^2*e - a*e^3)^2*sqrt(a*c)*A*a*abs(c)*e + 2*(a*c^2*d
^3*e - a^2*c*d*e^3)*A*abs(c*d^2*e - a*e^3)*abs(c) - (a*c^2*d^4 - a^3*e^4)*B
*abs(c*d^2*e - a*e^3)*abs(c) - (sqrt(a*c)*c^3*d^6*e - 2*sqrt(a*c)*a*c^2*d^4
*e^3 + sqrt(a*c)*a^2*c*d^2*e^5)*A*abs(c) + (sqrt(a*c)*a*c^2*d^5*e^2 - 2*sqr
t(a*c)*a^2*c*d^3*e^4 + sqrt(a*c)*a^3*d*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/
sqrt(-(c^2*d^3 - a*c*d*e^2 + sqrt((c^2*d^3 - a*c*d*e^2)^2 - (c^2*d^4 - 2*a*
c*d^2*e^2 + a^2*e^4)*(c^2*d^2 - a*c*e^2)))/(c^2*d^2 - a*c*e^2)))/((a*c^3*d^
5 - sqrt(a*c)*a*c^2*d^4*e - 2*a^2*c^2*d^3*e^2 + 2*sqrt(a*c)*a^2*c*d^2*e^3 +
 a^3*c*d*e^4 - sqrt(a*c)*a^3*e^5)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(c*d^2*e
- a*e^3)) - ((c*d^2*e - a*e^3)^2*sqrt(a*c)*B*a*d*abs(c) - (c*d^2*e - a*e^3)
^2*sqrt(a*c)*A*a*abs(c)*e - 2*(a*c^2*d^3*e - a^2*c*d*e^3)*A*abs(c*d^2*e - a
*e^3)*abs(c) + (a*c^2*d^4 - a^3*e^4)*B*abs(c*d^2*e - a*e^3)*abs(c) - (sqrt(
a*c)*c^3*d^6*e - 2*sqrt(a*c)*a*c^2*d^4*e^3 + sqrt(a*c)*a^2*c*d^2*e^5)*A*abs
(c) + (sqrt(a*c)*a*c^2*d^5*e^2 - 2*sqrt(a*c)*a^2*c*d^3*e^4 + sqrt(a*c)*a^3*
d*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(c^2*d^3 - a*c*d*e^2 - sqrt((c^
2*d^3 - a*c*d*e^2)^2 - (c^2*d^4 - 2*a*c*d^2*e^2 + a^2*e^4)*(c^2*d^2 - a*c*e
^2)))/(c^2*d^2 - a*c*e^2)))/((a*c^3*d^5 + sqrt(a*c)*a*c^2*d^4*e - 2*a^2*c^2
*d^3*e^2 - 2*sqrt(a*c)*a^2*c*d^2*e^3 + a^3*c*d*e^4 + sqrt(a*c)*a^3*e^5)*sqr
t(-c^2*d + sqrt(a*c)*c*e)*abs(c*d^2*e - a*e^3))
```

maple [B] time = 0.08, size = 588, normalized size = 2.98

$$-\frac{A\,c^2de\,\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{\left(a\,e^2-c\,d^2\right)\sqrt{ac\,e^2}\;\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{A\,c^2de\,\arctan\left(\frac{\sqrt{ex+d}\;c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{\left(a\,e^2-c\,d^2\right)\sqrt{ac\,e^2}\;\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}+\frac{Bac\,e^2\,\operatorname{arctanh}}{\left(a\,e^2-c\,d^2\right)\sqrt{ac\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x)
```

```
[Out] -2/(a*e^2-c*d^2)/(e*x+d)^(1/2)*A*e+2/(a*e^2-c*d^2)/(e*x+d)^(1/2)*B*d-1/(a*e
^2-c*d^2)*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+1/(a*e^2-c*d^2)*c/(a*c*e^
2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*B*a*e^2+1/(a*e^2-c*d^2)*c/((c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*e-1/(a*e^2
-c*d^2)*c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*c)*B*d-1/(a*e^2-c*d^2)*c^2/(a*c*e^2)^(1/2)/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*A*d*e+1/(a*e^2-c*d^2)*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-1/(a*e^2
-c*d^2)*c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*c)*A*e+1/(a*e^2-c*d^2)*c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)(ex + d)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*(e*x + d)^(3/2)), x)
```

mupad [B] time = 5.67, size = 10288, normalized size = 52.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(3/2)),x)
```

```
[Out] atan((((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A
*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) +
3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A
*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^
(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)
))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) +
A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e
^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*
(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B
*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 -
 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^
2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3
*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5*c^4*d*e^11 - 32*
B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d^5*e^7 - 256*A*a^
4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^6 - 64*B*a^4*c^5*
d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 1
6*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a
^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c
^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*
d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c
)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 +
 A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*
c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/
2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3
*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*1i + ((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^
3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c
*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3
+ 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^
3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3
*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c
^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^
(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2
 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e +
3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^
6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*
d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 -
640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^12 - 64*A*a*c^
8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A*a^2*c^7*d^7*e
^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2*c^7*d^8*e^4 +
 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d^2*e^10) + (d
+ e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^
2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^
8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64
*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-
(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^
3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2
*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^
2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4
*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*
1i)/(((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*
B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3
*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*
B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(
1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4))
)^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A
^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^
3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(
a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*
a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 -
3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2
*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*
e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5*c^4*d*e^11 - 32*B
*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d^5*e^7 - 256*A*a^4
*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^6 - 64*B*a^4*c^5*d
^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16
*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^
2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^
7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d
^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)
^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 +
A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c
^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2
) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*
d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - ((-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a
^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e
^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*
A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)
^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3
*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d
^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a^3*c)^(1/2
) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2
*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e + 3*B^
2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 -
a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11
*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*
a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^12 - 64*A*a*c^8*d^
9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A*a^2*c^7*d^7*e^5 -
 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2*c^7*d^8*e^4 + 64*
B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d^2*e^10) + (d + e*
x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 -
32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 +
32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B
*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2
*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 - 2*A*B*c^2*d^3*(a
^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2
*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^
2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^
5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - 16
*A^3*a^3*c^4*e^9 + 16*A^3*c^7*d^6*e^3 + 48*A^3*a^2*c^5*d^2*e^7 - 48*B^3*a^2
*c^5*d^5*e^4 + 48*B^3*a^3*c^4*d^3*e^6 + 16*A*B^2*a^4*c^3*e^9 - 16*A^2*B*c^7
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*d^7*e^2 - 48*A^3*a*c^6*d^4*e^5 + 16*B^3*a*c^6*d^7*e^2 - 16*B^3*a^4*c^3*d*e
^8 + 48*A*B^2*a^2*c^5*d^4*e^5 - 48*A*B^2*a^3*c^4*d^2*e^7 - 48*A^2*B*a^2*c^5
*d^3*e^6 - 16*A*B^2*a*c^6*d^6*e^3 + 48*A^2*B*a*c^6*d^5*e^4 + 16*A^2*B*a^3*c
^4*d*e^8))*(-(B^2*a^2*c^2*d^3 + B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 -
 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 + A^2*a*c*e^3*(a^3*c)^(1/2
) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 + 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) -
 6*A*B*a^2*c^2*d^2*e + 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) - 6*A*B*a*c*d*e^2*(a^3
*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*
e^4)))^(1/2)*2i + atan((((-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A
^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^
3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(
a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*
a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 -
3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^
3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c
*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3
- 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^
3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3
*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c
^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8
 + 320*a^5*c^5*d^3*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^
5*c^4*d*e^11 - 32*B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*
d^5*e^7 - 256*A*a^4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e
^6 - 64*B*a^4*c^5*d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^
2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*
d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^
6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9
- 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 -
B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3
*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*
a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c
*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c
^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*1i + ((-(B^2*a^2*c^
2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(
1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2
- 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3
*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6
 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^
(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*
B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3
*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*
B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(
1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4))
)^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*
a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^
3*e^12 - 64*A*a*c^8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 2
56*A*a^2*c^7*d^7*e^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B
*a^2*c^7*d^8*e^4 + 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c
^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 -
 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*
B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*
a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^
3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*
d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)
^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1
/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2
*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2
*d^2*e^4)))^(1/2)*1i)/(((-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^
2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3
*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a
^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a
*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3
*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3
*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*
d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 -
 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3
*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*
a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^
4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8
+ 320*a^5*c^5*d^3*e^10) - 32*B*a^6*c^3*e^12 + 64*A*a*c^8*d^9*e^3 + 64*A*a^5
*c^4*d*e^11 - 32*B*a*c^8*d^10*e^2 - 256*A*a^2*c^7*d^7*e^5 + 384*A*a^3*c^6*d
^5*e^7 - 256*A*a^4*c^5*d^3*e^9 + 96*B*a^2*c^7*d^8*e^4 - 64*B*a^3*c^6*d^6*e^
6 - 64*B*a^4*c^5*d^4*e^8 + 96*B*a^5*c^4*d^2*e^10) + (d + e*x)^(1/2)*(16*A^2
*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d
^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6
*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 -
 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B
^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*
B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a
^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*
d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^
4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2) - ((-(B^2*a^2*c^2*d^
3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2)
 + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*
A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2
*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a
^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*((d + e*x)^(1/2
)*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3 + 2*A*B*c^
2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/2) + 3*A^2
*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2) - 6*A*B*a^
2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^3*c)^(1/2)
)/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2*e^4)))^(1
/2)*(64*a*c^9*d^11*e^2 - 64*a^6*c^4*d*e^12 - 320*a^2*c^8*d^9*e^4 + 640*a^3*
c^7*d^7*e^6 - 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10) + 32*B*a^6*c^3*e^
12 - 64*A*a*c^8*d^9*e^3 - 64*A*a^5*c^4*d*e^11 + 32*B*a*c^8*d^10*e^2 + 256*A
*a^2*c^7*d^7*e^5 - 384*A*a^3*c^6*d^5*e^7 + 256*A*a^4*c^5*d^3*e^9 - 96*B*a^2
*c^7*d^8*e^4 + 64*B*a^3*c^6*d^6*e^6 + 64*B*a^4*c^5*d^4*e^8 - 96*B*a^5*c^4*d
^2*e^10) + (d + e*x)^(1/2)*(16*A^2*a^4*c^4*e^10 + 16*B^2*a^5*c^3*e^10 - 16*
A^2*c^8*d^8*e^2 - 32*A^2*a^3*c^5*d^2*e^8 + 32*B^2*a^2*c^6*d^6*e^4 - 32*B^2*
a^4*c^4*d^2*e^8 + 32*A^2*a*c^7*d^6*e^4 - 16*B^2*a*c^7*d^8*e^2 + 64*A*B*a*c^
7*d^7*e^3 - 64*A*B*a^4*c^4*d*e^9 - 192*A*B*a^2*c^6*d^5*e^5 + 192*A*B*a^3*c^
5*d^3*e^7))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2) + A^2*a*c^3*d^3
+ 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*c*e^3*(a^3*c)^(1/
2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2*e*(a^3*c)^(1/2)
- 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*A*B*a*c*d*e^2*(a^
3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^2 - 3*a^4*c^2*d^2
*e^4)))^(1/2) - 16*A^3*a^3*c^4*e^9 + 16*A^3*c^7*d^6*e^3 + 48*A^3*a^2*c^5*d^
2*e^7 - 48*B^3*a^2*c^5*d^5*e^4 + 48*B^3*a^3*c^4*d^3*e^6 + 16*A*B^2*a^4*c^3*
e^9 - 16*A^2*B*c^7*d^7*e^2 - 48*A^3*a*c^6*d^4*e^5 + 16*B^3*a*c^6*d^7*e^2 -
16*B^3*a^4*c^3*d*e^8 + 48*A*B^2*a^2*c^5*d^4*e^5 - 48*A*B^2*a^3*c^4*d^2*e^7
- 48*A^2*B*a^2*c^5*d^3*e^6 - 16*A*B^2*a*c^6*d^6*e^3 + 48*A^2*B*a*c^6*d^5*e^
4 + 16*A^2*B*a^3*c^4*d*e^8))*(-(B^2*a^2*c^2*d^3 - B^2*a^2*e^3*(a^3*c)^(1/2)
 + A^2*a*c^3*d^3 + 2*A*B*c^2*d^3*(a^3*c)^(1/2) + 3*B^2*a^3*c*d*e^2 - A^2*a*
c*e^3*(a^3*c)^(1/2) + 3*A^2*a^2*c^2*d*e^2 - 2*A*B*a^3*c*e^3 - 3*A^2*c^2*d^2
*e*(a^3*c)^(1/2) - 6*A*B*a^2*c^2*d^2*e - 3*B^2*a*c*d^2*e*(a^3*c)^(1/2) + 6*
A*B*a*c*d*e^2*(a^3*c)^(1/2))/(4*(a^5*c*e^6 - a^2*c^4*d^6 + 3*a^3*c^3*d^4*e^
2 - 3*a^4*c^2*d^2*e^4)))^(1/2)*2i - (2*(A*e - B*d))/((a*e^2 - c*d^2)*(d + e
*x)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1452 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a-cx^2\right)}\,dx$

Optimal. Leaf size=243

$$-\frac{2(Bd-Ae)}{3(d+ex)^{3/2}\left(cd^2-ae^2\right)}-\frac{2\left(aBe^2-2Acde+Bcd^2\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)^2}+\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}}+\frac{\sqrt[4]{c}\,(\sqrt{a}B+A}{\sqrt{a}\,(}$$

```
[Out] -2/3*(-A*e+B*d)/(-a*e^2+c*d^2)/(e*x+d)^(3/2)+c^(1/4)*arctanh(c^(1/4)*(e*x+d
)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(B*a^(1/2)-A*c^(1/2))/a^(1/2)/(-e*a^(
1/2)+d*c^(1/2))^(5/2)+c^(1/4)*arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^
(1/2))^(1/2))*(B*a^(1/2)+A*c^(1/2))/a^(1/2)/(e*a^(1/2)+d*c^(1/2))^(5/2)-2*(
-2*A*c*d*e+B*a*e^2+B*c*d^2)/(-a*e^2+c*d^2)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.54, antiderivative size = 243, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {829, 827, 1166, 208}

$$-\frac{2(Bd-Ae)}{3(d+ex)^{3/2}\left(cd^2-ae^2\right)}-\frac{2\left(aBe^2-2Acde+Bcd^2\right)}{\sqrt{d+ex}\left(cd^2-ae^2\right)^2}+\frac{\sqrt[4]{c}\left(\sqrt{a}B-A\sqrt{c}\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{a}\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}}+\frac{\sqrt[4]{c}\,(\sqrt{a}B+A}{\sqrt{a}\,(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a - c*x^2)),x]
```

```
[Out] (-2*(B*d - A*e))/(3*(c*d^2 - a*e^2)*(d + e*x)^(3/2)) - (2*(B*c*d^2 - 2*A*c*
d*e + a*B*e^2))/((c*d^2 - a*e^2)^2*Sqrt[d + e*x]) + ((Sqrt[a]*B - A*Sqrt[c]
)*c^(1/4)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(Sq
rt[a]*(Sqrt[c]*d - Sqrt[a]*e)^(5/2)) + ((Sqrt[a]*B + A*Sqrt[c])*c^(1/4)*Arc
Tanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(Sqrt[a]*(Sqrt[c
]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a-cx^2\right)}\,dx = -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} + \frac{\int \frac{-Acd+aBe-c(Bd-Ae)x}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx}{-cd^2+ae^2}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\int \frac{c\left(Acd^2-2aBde+aAe^2\right)+c\left(Bcd^2-2\right.}{\sqrt{d+ex}\left(a-cx^2\right)}}{\left(cd^2-ae^2\right)^2}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(Acd^2-2aBde+aAe\right.}{}\right.}{}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\left(\left(\sqrt{a}\,B-A\sqrt{c}\right)c\right)\mathrm{Subst}\left(\int\right.}{\sqrt{a}\,\left(\sqrt{c}\right.}$$

$$= -\frac{2(Bd-Ae)}{3\left(cd^2-ae^2\right)(d+ex)^{3/2}} - \frac{2\left(Bcd^2-2Acde+aBe^2\right)}{\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{\left(\sqrt{a}\,B-A\sqrt{c}\right)\sqrt[4]{c}\,\tanh^{-1}\left(\right.}{\sqrt{a}\,\left(\sqrt{c}\,d-\sqrt{a}\,e\right)}$$

Mathematica [C] time = 0.14, size = 266, normalized size = 1.09

$$\frac{3B(d+ex)\left(\left(\sqrt{a}\,e+\sqrt{c}\,d\right)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{a}\,e}\right)+\left(\sqrt{a}\,e-\sqrt{c}\,d\right)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{a}\,e}\right)\right)-(Bd-Ae)\left(\left(\sqrt{a}\,e+\right.\right.}{3\sqrt{a}\,(d+ex)^{3/2}\left(cd^2e-ae^3\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a - c*x^2)),x]
```

```
[Out] (-((B*d - A*e)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometric2F1[-3/2, 1, -1/2, (S
qrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*Hyp
ergeometric2F1[-3/2, 1, -1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)])
) + 3*B*(d + e*x)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2,
(Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c]*d) + Sqrt[a]*e)*H
ypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[a]*e)]
))/(3*Sqrt[a]*(c*d^2*e - a*e^3)*(d + e*x)^(3/2))
```

fricas [B] time = 23.89, size = 11231, normalized size = 46.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^
4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A
*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^
2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*
c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*
```

```
c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*
B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*
c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^
4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*
a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5
)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 +
 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c
^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^2
0 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*
a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c
^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^
5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^
5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*
c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a
^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B
^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d) + (2*A*B^2*a*c^5*d^8 - (5*B^3*a^
2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 -
 (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^
2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^
4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 +
(A*B^2*a^5*c + A^3*a^4*c^2)*e^8 + (A*a*c^7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*
a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c
^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5
*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3
*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 +
A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2
 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B
^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5
*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 -
240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a
^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 +
(B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c
^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12
*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14
+ 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))*sqrt(-(10*A*B*a*c
^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)
*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d
*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^
4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*
c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d
^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32
*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^
5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*
e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2
*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*
e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10
*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^
6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6
*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10
 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^
2*e^8 - a^6*e^10))) - 3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e
^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^
5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5
- (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2
*a^3*c + A^2*a^2*c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*
d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*
c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B
^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 +
 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3
*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4
 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 +
20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*
c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*
e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^
7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8
*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a
^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c
^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*
d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^
3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^
2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^
5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3
*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2
*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e
^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*
a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c^2)*e^8 + (A*a*c^7*d^13 - 3*B*a^2*
c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9
*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 -
 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a
^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 2
0*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5
*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a
^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A
^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^
2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*
c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*
a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^1
0*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 +
 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*
a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))*
sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2
*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c
 + A^2*a^2*c^2)*d*e^4 + (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^
4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^
10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c
^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5
*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c
^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*
A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^
4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 +
A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/
(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14
*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12
- 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^
20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4
*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) + 3*(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2
*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d
^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 +
 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)
*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a^2*c^4*d^8*
e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)
*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a
^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B
*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6
*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 6
2*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^
3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8
 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^
2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16
*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10
+ 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^
10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d
^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))*log((2*(A*B^3*a*
c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 20*(A*B^3*a^2*c^3
- A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*e^3 + 10*(A*B^3*a
^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*e^5)*sqrt(e*x + d
) + (2*A*B^2*a*c^5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*d^7*e + (41*A*B^2
*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^2*B*a^2*c^4)*d^5*
e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3*a^4*c^2 + 81*A^2
*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*d^2*e^6 - (3*B^3*
a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c^2)*e^8 - (A*a*c^
7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*a^3*c^5*d^10*e^3
- 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^4*d^7*e^6 + 20*B*
a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e^9 + 14*A*a^6*c^2
*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*e^13)*sqrt((4*A^2
*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5 + 26*
A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6)*d^7*
e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 - 504*(
A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*B^2*a^
3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)*d^3*e
^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*(A*B^3
*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^4*a^4*
c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 - 120*a
^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*a^7*c^
4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d^2*e^1
8 + a^11*e^20)))*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^2*d^2*e^3 + 2*A*B
*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 + A^2*a*c^3)*d^3*e
^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 +
10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10)*sqrt(
(4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*B^4*a^2*c^5
 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 + A^3*B*a*c^6
)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6)*d^6*e^4 -
 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^3 + 62*A^2*
B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3*B*a^3*c^4)
*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^2*e^8 - 20*
(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a^5*c^2 + A^
4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8*d^16*e^4 -
 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*e^10 + 210*
a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 - 10*a^10*c*d
^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4
 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) - 3*(c^2*d^6 - 2*a*c*
d^4*e^2 + a^2*d^2*e^4 + (c^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^
2*d^5*e - 2*a*c*d^3*e^3 + a^2*d*e^5)*x)*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*
a^2*c^2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2
*c^2 + A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10
 - 5*a^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^
2*e^8 - a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d
^9*e + 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^
3*a^2*c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 +
 5*A^4*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(1
1*B^4*a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a
^4*c^3 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4
*a^3*c^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c +
 2*A^2*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2
+ 45*a^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a
^6*c^5*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2
*d^4*e^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e
```

```
^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))
*log((2*(A*B^3*a*c^4 - A^3*B*c^5)*d^5 - 5*(B^4*a^2*c^3 - A^4*c^5)*d^4*e + 2
0*(A*B^3*a^2*c^3 - A^3*B*a*c^4)*d^3*e^2 - 10*(B^4*a^3*c^2 - A^4*a*c^4)*d^2*
e^3 + 10*(A*B^3*a^3*c^2 - A^3*B*a^2*c^3)*d*e^4 - (B^4*a^4*c - A^4*a^2*c^3)*
e^5)*sqrt(e*x + d) - (2*A*B^2*a*c^5*d^8 - (5*B^3*a^2*c^4 + 11*A^2*B*a*c^5)*
d^7*e + (41*A*B^2*a^2*c^4 + 15*A^3*a*c^5)*d^6*e^2 - (25*B^3*a^3*c^3 + 87*A^
2*B*a^2*c^4)*d^5*e^3 + 35*(3*A*B^2*a^3*c^3 + A^3*a^2*c^4)*d^4*e^4 - (31*B^3
*a^4*c^2 + 81*A^2*B*a^3*c^3)*d^3*e^5 + (43*A*B^2*a^4*c^2 + 13*A^3*a^3*c^3)*
d^2*e^6 - (3*B^3*a^5*c + 13*A^2*B*a^4*c^2)*d*e^7 + (A*B^2*a^5*c + A^3*a^4*c
^2)*e^8 - (A*a*c^7*d^13 - 3*B*a^2*c^6*d^12*e - 2*A*a^2*c^6*d^11*e^2 + 14*B*
a^3*c^5*d^10*e^3 - 5*A*a^3*c^5*d^9*e^4 - 25*B*a^4*c^4*d^8*e^5 + 20*A*a^4*c^
4*d^7*e^6 + 20*B*a^5*c^3*d^6*e^7 - 25*A*a^5*c^3*d^5*e^8 - 5*B*a^6*c^2*d^4*e
^9 + 14*A*a^6*c^2*d^3*e^10 - 2*B*a^7*c*d^2*e^11 - 3*A*a^7*c*d*e^12 + B*a^8*
e^13)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e + 5*(5*
B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*c^5 +
A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4*a*c^6
)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*a^4*c^
3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3 + A^3
*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c^4)*d^
2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2*B^2*a
^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a^3*c^8
*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5*d^10*
e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e^16 -
10*a^10*c*d^2*e^18 + a^11*e^20)))*sqrt(-(10*A*B*a*c^3*d^4*e + 20*A*B*a^2*c^
2*d^2*e^3 + 2*A*B*a^3*c*e^5 - (B^2*a*c^3 + A^2*c^4)*d^5 - 10*(B^2*a^2*c^2 +
 A^2*a*c^3)*d^3*e^2 - 5*(B^2*a^3*c + A^2*a^2*c^2)*d*e^4 - (a*c^5*d^10 - 5*a
^2*c^4*d^8*e^2 + 10*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8
- a^6*e^10)*sqrt((4*A^2*B^2*c^7*d^10 - 20*(A*B^3*a*c^6 + A^3*B*c^7)*d^9*e +
 5*(5*B^4*a^2*c^5 + 26*A^2*B^2*a*c^6 + 5*A^4*c^7)*d^8*e^2 - 240*(A*B^3*a^2*
c^5 + A^3*B*a*c^6)*d^7*e^3 + 20*(5*B^4*a^3*c^4 + 32*A^2*B^2*a^2*c^5 + 5*A^4
*a*c^6)*d^6*e^4 - 504*(A*B^3*a^3*c^4 + A^3*B*a^2*c^5)*d^5*e^5 + 10*(11*B^4*
a^4*c^3 + 62*A^2*B^2*a^3*c^4 + 11*A^4*a^2*c^5)*d^4*e^6 - 240*(A*B^3*a^4*c^3
 + A^3*B*a^3*c^4)*d^3*e^7 + 20*(B^4*a^5*c^2 + 7*A^2*B^2*a^4*c^3 + A^4*a^3*c
^4)*d^2*e^8 - 20*(A*B^3*a^5*c^2 + A^3*B*a^4*c^3)*d*e^9 + (B^4*a^6*c + 2*A^2
*B^2*a^5*c^2 + A^4*a^4*c^3)*e^10)/(a*c^10*d^20 - 10*a^2*c^9*d^18*e^2 + 45*a
^3*c^8*d^16*e^4 - 120*a^4*c^7*d^14*e^6 + 210*a^5*c^6*d^12*e^8 - 252*a^6*c^5
*d^10*e^10 + 210*a^7*c^4*d^8*e^12 - 120*a^8*c^3*d^6*e^14 + 45*a^9*c^2*d^4*e
^16 - 10*a^10*c*d^2*e^18 + a^11*e^20)))/(a*c^5*d^10 - 5*a^2*c^4*d^8*e^2 + 1
0*a^3*c^3*d^6*e^4 - 10*a^4*c^2*d^4*e^6 + 5*a^5*c*d^2*e^8 - a^6*e^10))) - 4*
(4*B*c*d^3 - 7*A*c*d^2*e + 2*B*a*d*e^2 + A*a*e^3 + 3*(B*c*d^2*e - 2*A*c*d*e
^2 + B*a*e^3)*x)*sqrt(e*x + d))/(c^2*d^6 - 2*a*c*d^4*e^2 + a^2*d^2*e^4 + (c
^2*d^4*e^2 - 2*a*c*d^2*e^4 + a^2*e^6)*x^2 + 2*(c^2*d^5*e - 2*a*c*d^3*e^3 +
a^2*d*e^5)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 973, normalized size = 4.00

$$\frac{A a\, c^{2} e^{3} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(c d+\sqrt{a c\, e^{2}}\right) c}}\right)}{\left(a\, e^{2}-c\, d^{2}\right)^{2} \sqrt{a c\, e^{2}}\, \sqrt{\left(c d+\sqrt{a c\, e^{2}}\right) c}}+\frac{A a\, c^{2} e^{3} \arctan\left(\frac{\sqrt{e x+d}\, c}{\sqrt{\left(-c d+\sqrt{a c\, e^{2}}\right) c}}\right)}{\left(a\, e^{2}-c\, d^{2}\right)^{2} \sqrt{a c\, e^{2}}\, \sqrt{\left(-c d+\sqrt{a c\, e^{2}}\right) c}}+\frac{A\, c^{3} d^{2} e \operatorname{arctanh}\left(\frac{\sqrt{e x+}}{\sqrt{\left(c d+\sqrt{\right.}}}\right.}{\left(a\, e^{2}-c\, d^{2}\right)^{2} \sqrt{a c\, e^{2}}\, \sqrt{\left(c d+\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x)
```

```
[Out] c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c^3/(a*e^2-c*d^2)
^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e-2*c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(
1/2))*c)^(1/2)*c)*a*B*d*e^2-2*c^2/(a*e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e+c/(a*
e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2+c^2/(a*e^2-c*d^2)^2/((c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+
c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*a*A*e^3+c^3/(a*e^2-c*d^2
)^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2*e-2*c^2/(a*e^2-c*d^2)^2/(a*c*e^2)^
(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*c)*a*B*d*e^2+2*c^2/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2)^(1/2)
)*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d*e-c
/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*a*e^2-c^2/(a*e^2-c*d^2)^2/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*
B*d^2-2/3/(a*e^2-c*d^2)/(e*x+d)^(3/2)*A*e+2/3/(a*e^2-c*d^2)/(e*x+d)^(3/2)*B
*d+4/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*A*c*d*e-2/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*
B*a*e^2-2/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*B*c*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(-c*x^2+a),x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)*(e*x + d)^(5/2)), x)
```

mupad [B] time = 7.42, size = 17610, normalized size = 72.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)*(d + e*x)^(5/2)),x)
```

```
[Out] - atan((((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^
2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 -
1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4
*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^
5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*
B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 64
0*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*
e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^
6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^
5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)
^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1
/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(
a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e +
10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*
d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^
2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*
a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*
(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3
*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^
4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)
^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/
2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3
*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3
*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^
2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 +
64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*
a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13
440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*
a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96*A*a*c^13*d^18*e^3 + 32*B*a*c^1
3*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^2*c^12*d^16*e^5 - 2432*A*a^3*c^
11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 4928*A*a^5*c^9*d^10*e^11 + 3136*A*
a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 - 128*A*a^8*c^6*d^4*e^17 + 160*A*
a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 + 128*B*a^3*c^11*d^15*e^6 + 896*
B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^10 + 4928*B*a^6*c^8*d^9*e^12 -
4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5*e^16 - 736*B*a^9*c^5*d^3*e^18)
)*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a
^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B
^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*
a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2)
 + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c
*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c
)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 -
 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*
e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^
18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d
^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a
^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1
440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*
e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d
*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^
4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*
A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^
2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d
^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*
(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c
^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^
3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*
A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7
*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6
*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 + B^
2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a
^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^
3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4
*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(
a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) -
20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^
3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*
c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d
^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e
^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11
*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e
^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 -
32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 243
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2*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11
 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^1
7 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*
e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d
^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5
*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5
+ 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(
1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2
) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^
3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10
*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*
e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*
c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^
5*c^2*d^4*e^6)))^(1/2)*1i)/(((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*
a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*
a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 -
 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^
10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^
7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B
*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 +
640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e
^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^
(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2
*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*
a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) +
 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*
A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2
*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2
))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a
^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^
3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2
+ 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4
+ 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A
^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2
*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c
)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*
B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^
8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(6
4*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c
^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 16128*a^
6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9
*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96*A*a*c^13*d
^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^2*c^12*d^16
*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 4928*A*a^5*c^9
*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 - 128*A*a^8*c
^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 + 128*B*a^3*
c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^10 + 4928*B
*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5*e^16 - 736
*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*
a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5
*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a
^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2
*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*
d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*
B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e
^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e
^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) - ((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^18 +
16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6 + 10
24*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8*d^6
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*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2*a^4
*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 - 320
*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^3 -
128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*d^11
*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^6*c^
7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(
a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*
e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4
 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^
(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2
) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*
c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*
c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2
 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-(B^2
*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d
^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c
*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^
5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^
2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3
*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2)
 - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c
*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(
1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 + 288
0*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 - 1
6128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16 + 2
880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4*e^21 + 96*A*a
*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20 - 736*A*a^2*c^
12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12*e^9 + 4928*A*
a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d^6*e^15 + 128*
A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*d^17*e^4 - 128
*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c^9*d^11*e^10 -
 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a^8*c^6*d^5*e^1
6 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2)
 + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*
c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c
*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^
2*a*c^2*d^4*e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a
^2*c^3*d^4*e + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3
 - 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4
*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^
3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) + 16*B^3*a^8*c^4*e^16 + 32*A^3*c^12
*d^13*e^3 + 480*A^3*a^2*c^10*d^9*e^7 - 640*A^3*a^3*c^9*d^7*e^9 + 480*A^3*a^
4*c^8*d^5*e^11 - 192*A^3*a^5*c^7*d^3*e^13 - 80*B^3*a^2*c^10*d^12*e^4 + 144*
B^3*a^3*c^9*d^10*e^6 - 80*B^3*a^4*c^8*d^8*e^8 - 80*B^3*a^5*c^7*d^6*e^10 + 1
44*B^3*a^6*c^6*d^4*e^12 - 80*B^3*a^7*c^5*d^2*e^14 - 16*A^2*B*a^7*c^5*e^16 -
 16*A^2*B*c^12*d^14*e^2 - 192*A^3*a*c^11*d^11*e^5 + 32*A^3*a^6*c^6*d*e^15 +
 16*B^3*a*c^11*d^14*e^2 + 192*A*B^2*a^2*c^10*d^11*e^5 - 480*A*B^2*a^3*c^9*d
^9*e^7 + 640*A*B^2*a^4*c^8*d^7*e^9 - 480*A*B^2*a^5*c^7*d^5*e^11 + 192*A*B^2
*a^6*c^6*d^3*e^13 - 144*A^2*B*a^2*c^10*d^10*e^6 + 80*A^2*B*a^3*c^9*d^8*e^8
+ 80*A^2*B*a^4*c^8*d^6*e^10 - 144*A^2*B*a^5*c^7*d^4*e^12 + 80*A^2*B*a^6*c^6
*d^2*e^14 - 32*A*B^2*a*c^11*d^13*e^3 - 32*A*B^2*a^7*c^5*d*e^15 + 80*A^2*B*a
*c^11*d^12*e^4))*(-(B^2*a^2*c^3*d^5 + B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4
*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 - 2*A*B*c^3*d^5*(a^3
*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 + A^2*a^2*c*e^5*(a^3*c)
^(1/2) - 2*A*B*a^4*c*e^5 + 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) + 5*B^2*a*c^2*d^4*
e*(a^3*c)^(1/2) + 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e
 + 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 - 10*A*B*a^2
*c*d*e^4*(a^3*c)^(1/2) - 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 -
 a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 +
10*a^5*c^2*d^4*e^6)))^(1/2)*2i - atan((((d + e*x)^(1/2)*(16*A^2*a^8*c^5*e^1
8 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11*d^12*e^6
+ 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A^2*a^5*c^8
*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6 + 1024*B^2
*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*d^6*e^12 -
 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^12*d^15*e^
3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B*a^3*c^10*
d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1152*A*B*a^
6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 - B^2*a^3*e
^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*
d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d
*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3
*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^
(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*
a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(
a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8
*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-
(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c
^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a
^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*
c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 1
0*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2
*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1
/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a
^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)
))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*d^19*e^4 +
 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10
 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^7*d^7*e^16
 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*A*a^10*c^4*e^21 - 96
*A*a*c^13*d^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c^4*d*e^20 + 736*A*a^
2*c^12*d^16*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4*c^10*d^12*e^9 - 492
8*A*a^5*c^9*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A*a^7*c^7*d^6*e^15 -
128*A*a^8*c^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B*a^2*c^12*d^17*e^4 +
 128*B*a^3*c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 3136*B*a^5*c^9*d^11*e^
10 + 4928*B*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14 + 2432*B*a^8*c^6*d^5
*e^16 - 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(
1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*
A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a
^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) -
5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A
*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*
e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2)
)/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^
4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*1i + ((d + e*x)^(1/2)*(16*A^2*a
^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^2*a^2*c^11
*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^10 + 1024*A
^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10*d^12*e^6
+ 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^2*a^6*c^7*
d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 128*A*B*a*c^
12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5 - 1152*A*B
*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^7*e^11 - 1
152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2*c^3*d^5 -
 B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^
2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2
*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*
d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^
3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2)
 - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2
*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a
^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*((d + e*x
)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10
*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2)
 + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) -
2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)
^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2
*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*
(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*
d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^
2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640*a^2*c^13*
d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10
*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7680*a^8*c^
7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) + 32*A*a^10*c^4
*e^21 + 96*A*a*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B*a^10*c^4*d*e^20
- 736*A*a^2*c^12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 4480*A*a^4*c^10*d^12
*e^9 + 4928*A*a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13 + 896*A*a^7*c^7*d
^6*e^15 + 128*A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19 + 160*B*a^2*c^12*
d^17*e^4 - 128*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e^8 + 3136*B*a^5*c
^9*d^11*e^10 - 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^7*e^14 - 2432*B*a
^8*c^6*d^5*e^16 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5
*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^
3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e
^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c
)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1
/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^
3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^
3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e
^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*1i)/(((d + e*x)^(1/2)
*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 - 320*A^
2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*d^8*e^1
0 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a^3*c^10
*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 + 1024*B^
2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e^2 - 12
8*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^13*e^5
- 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5*c^8*d^
7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(B^2*a^2
*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e
^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e
^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 -
5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*
c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^
3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20
*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2
*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)
*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^
4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^
3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c
)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4
*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*
e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^
2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10
- a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 +
 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^22 - 640
*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8 + 1344
0*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 - 7
680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20) - 32*
A*a^10*c^4*e^21 - 96*A*a*c^13*d^18*e^3 + 32*B*a*c^13*d^19*e^2 + 96*B*a^10*c
^4*d*e^20 + 736*A*a^2*c^12*d^16*e^5 - 2432*A*a^3*c^11*d^14*e^7 + 4480*A*a^4
*c^10*d^12*e^9 - 4928*A*a^5*c^9*d^10*e^11 + 3136*A*a^6*c^8*d^8*e^13 - 896*A
```

```
*a^7*c^7*d^6*e^15 - 128*A*a^8*c^6*d^4*e^17 + 160*A*a^9*c^5*d^2*e^19 - 160*B
*a^2*c^12*d^17*e^4 + 128*B*a^3*c^11*d^15*e^6 + 896*B*a^4*c^10*d^13*e^8 - 31
36*B*a^5*c^9*d^11*e^10 + 4928*B*a^6*c^8*d^9*e^12 - 4480*B*a^7*c^7*d^7*e^14
+ 2432*B*a^8*c^6*d^5*e^16 - 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*d^5 - B
^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*
a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a
^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^
4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*
(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) -
 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d
^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3
*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) - ((d + e*x
)^(1/2)*(16*A^2*a^8*c^5*e^18 + 16*B^2*a^9*c^4*e^18 + 16*A^2*c^13*d^16*e^2 -
 320*A^2*a^2*c^11*d^12*e^6 + 1024*A^2*a^3*c^10*d^10*e^8 - 1440*A^2*a^4*c^9*
d^8*e^10 + 1024*A^2*a^5*c^8*d^6*e^12 - 320*A^2*a^6*c^7*d^4*e^14 - 320*B^2*a
^3*c^10*d^12*e^6 + 1024*B^2*a^4*c^9*d^10*e^8 - 1440*B^2*a^5*c^8*d^8*e^10 +
1024*B^2*a^6*c^7*d^6*e^12 - 320*B^2*a^7*c^6*d^4*e^14 + 16*B^2*a*c^12*d^16*e
^2 - 128*A*B*a*c^12*d^15*e^3 - 128*A*B*a^8*c^5*d*e^17 + 640*A*B*a^2*c^11*d^
13*e^5 - 1152*A*B*a^3*c^10*d^11*e^7 + 640*A*B*a^4*c^9*d^9*e^9 + 640*A*B*a^5
*c^8*d^7*e^11 - 1152*A*B*a^6*c^7*d^5*e^13 + 640*A*B*a^7*c^6*d^3*e^15) - (-(
B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^
3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^
4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c
*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10
*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*
e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/
2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^
6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6))
)^(1/2)*((d + e*x)^(1/2)*(-(B^2*a^2*c^3*d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A
^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*
d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5
*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*
c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c
^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10
*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^
7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^
6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 + 64*a^11*c^4*d*e^2
2 - 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 - 7680*a^4*c^11*d^15*e^8
 + 13440*a^5*c^10*d^13*e^10 - 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e
^14 - 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 - 640*a^10*c^5*d^3*e^20
) + 32*A*a^10*c^4*e^21 + 96*A*a*c^13*d^18*e^3 - 32*B*a*c^13*d^19*e^2 - 96*B
*a^10*c^4*d*e^20 - 736*A*a^2*c^12*d^16*e^5 + 2432*A*a^3*c^11*d^14*e^7 - 448
0*A*a^4*c^10*d^12*e^9 + 4928*A*a^5*c^9*d^10*e^11 - 3136*A*a^6*c^8*d^8*e^13
+ 896*A*a^7*c^7*d^6*e^15 + 128*A*a^8*c^6*d^4*e^17 - 160*A*a^9*c^5*d^2*e^19
+ 160*B*a^2*c^12*d^17*e^4 - 128*B*a^3*c^11*d^15*e^6 - 896*B*a^4*c^10*d^13*e
^8 + 3136*B*a^5*c^9*d^11*e^10 - 4928*B*a^6*c^8*d^9*e^12 + 4480*B*a^7*c^7*d^
7*e^14 - 2432*B*a^8*c^6*d^5*e^16 + 736*B*a^9*c^5*d^3*e^18))*(-(B^2*a^2*c^3*
d^5 - B^2*a^3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 +
10*B^2*a^3*c^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 +
5*A^2*a^3*c^2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2
*c^3*d^4*e*(a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d
^2*e^3*(a^3*c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^
(1/2) - 20*A*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*
a*c^2*d^3*e^2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8
+ 5*a^3*c^4*d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2) + 16
*B^3*a^8*c^4*e^16 + 32*A^3*c^12*d^13*e^3 + 480*A^3*a^2*c^10*d^9*e^7 - 640*A
^3*a^3*c^9*d^7*e^9 + 480*A^3*a^4*c^8*d^5*e^11 - 192*A^3*a^5*c^7*d^3*e^13 -
80*B^3*a^2*c^10*d^12*e^4 + 144*B^3*a^3*c^9*d^10*e^6 - 80*B^3*a^4*c^8*d^8*e^
8 - 80*B^3*a^5*c^7*d^6*e^10 + 144*B^3*a^6*c^6*d^4*e^12 - 80*B^3*a^7*c^5*d^2
```

```
*e^14 - 16*A^2*B*a^7*c^5*e^16 - 16*A^2*B*c^12*d^14*e^2 - 192*A^3*a*c^11*d^1
1*e^5 + 32*A^3*a^6*c^6*d*e^15 + 16*B^3*a*c^11*d^14*e^2 + 192*A*B^2*a^2*c^10
*d^11*e^5 - 480*A*B^2*a^3*c^9*d^9*e^7 + 640*A*B^2*a^4*c^8*d^7*e^9 - 480*A*B
^2*a^5*c^7*d^5*e^11 + 192*A*B^2*a^6*c^6*d^3*e^13 - 144*A^2*B*a^2*c^10*d^10*
e^6 + 80*A^2*B*a^3*c^9*d^8*e^8 + 80*A^2*B*a^4*c^8*d^6*e^10 - 144*A^2*B*a^5*
c^7*d^4*e^12 + 80*A^2*B*a^6*c^6*d^2*e^14 - 32*A*B^2*a*c^11*d^13*e^3 - 32*A*
B^2*a^7*c^5*d*e^15 + 80*A^2*B*a*c^11*d^12*e^4))*(-(B^2*a^2*c^3*d^5 - B^2*a^
3*e^5*(a^3*c)^(1/2) + A^2*a*c^4*d^5 + 10*A^2*a^2*c^3*d^3*e^2 + 10*B^2*a^3*c
^2*d^3*e^2 + 2*A*B*c^3*d^5*(a^3*c)^(1/2) + 5*B^2*a^4*c*d*e^4 + 5*A^2*a^3*c^
2*d*e^4 - A^2*a^2*c*e^5*(a^3*c)^(1/2) - 2*A*B*a^4*c*e^5 - 5*A^2*c^3*d^4*e*(
a^3*c)^(1/2) - 5*B^2*a*c^2*d^4*e*(a^3*c)^(1/2) - 10*A^2*a*c^2*d^2*e^3*(a^3*
c)^(1/2) - 10*A*B*a^2*c^3*d^4*e - 10*B^2*a^2*c*d^2*e^3*(a^3*c)^(1/2) - 20*A
*B*a^3*c^2*d^2*e^3 + 10*A*B*a^2*c*d*e^4*(a^3*c)^(1/2) + 20*A*B*a*c^2*d^3*e^
2*(a^3*c)^(1/2))/(4*(a^7*e^10 - a^2*c^5*d^10 - 5*a^6*c*d^2*e^8 + 5*a^3*c^4*
d^8*e^2 - 10*a^4*c^3*d^6*e^4 + 10*a^5*c^2*d^4*e^6)))^(1/2)*2i - ((2*(A*e -
B*d))/(3*(a*e^2 - c*d^2)) + (2*(d + e*x)*(B*a*e^2 + B*c*d^2 - 2*A*c*d*e))/(
a*e^2 - c*d^2)^2)/(d + e*x)^(3/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(-c*x**2+a),x)
```

```
[Out] Timed out
```

3.1453 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=269

$$-\frac{\big(\sqrt{c}\,d-\sqrt{a}\,e\big)^{3/2}\big(3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\big)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{9/4}}+\frac{\big(\sqrt{a}\,e+\sqrt{c}\,d\big)^{3/2}\big(-3\sqrt{a}\,A\sqrt{c}\,e-5aBe+}{4a^{3/2}c^{9/4}}$$

```
[Out] 1/2*(e*x+d)^(3/2)*(a*(A*e+B*d)+(A*c*d+B*a*e)*x)/a/c/(-c*x^2+a)+1/4*arctanh(
c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(e*a^(1/2)+d*c^(1/2))^(3
/2)*(2*A*c*d-5*a*B*e-3*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(9/4)-1/4*arctanh(c^(
1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(-e*a^(1/2)+d*c^(1/2))^(3/
2)*(2*A*c*d-5*a*B*e+3*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(9/4)+1/2*e*(A*c*d+5*B
*a*e)*(e*x+d)^(1/2)/a/c^2
```

Rubi [A] time = 0.54, antiderivative size = 269, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 825, 827, 1166, 208}

$$-\frac{\big(\sqrt{c}\,d-\sqrt{a}\,e\big)^{3/2}\big(3\sqrt{a}\,A\sqrt{c}\,e-5aBe+2Acd\big)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{9/4}}+\frac{\big(\sqrt{a}\,e+\sqrt{c}\,d\big)^{3/2}\big(-3\sqrt{a}\,A\sqrt{c}\,e-5aBe+}{4a^{3/2}c^{9/4}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x]
```

```
[Out] (e*(A*c*d + 5*a*B*e)*Sqrt[d + e*x])/(2*a*c^2) + ((d + e*x)^(3/2)*(a*(B*d +
A*e) + (A*c*d + a*B*e)*x))/(2*a*c*(a - c*x^2)) - ((Sqrt[c]*d - Sqrt[a]*e)^(
3/2)*(2*A*c*d - 5*a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d +
e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4)) + ((Sqrt[c]*d + Sqr
t[a]*e)^(3/2)*(2*A*c*d - 5*a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*
Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^2}\,dx = \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\sqrt{d+ex}\big(\frac{1}{2}\big(-2Acd^2+ae(5Bd+3Ae)\big)+\frac{1}{2}e(Acd+5aBe)x}{a-cx^2}}{2ac}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\int \frac{\frac{1}{2}\big(2Acd\big(cd^2-2a}{}}{}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\text{Subst}\Big(\int \frac{-\frac{1}{2}cde}{}}{}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\Big(\big(\sqrt{c}\,d+\sqrt{a}\,e\big)}{}$$

$$= \frac{e(Acd+5aBe)\sqrt{d+ex}}{2ac^2} + \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/}}{}$$

Mathematica [A] time = 0.56, size = 279, normalized size = 1.04

$$\frac{2\sqrt{a}\,\sqrt[4]{c}\,\sqrt{d+ex}\,\left(5a^2Be^2+ac\left(Ae(2d+ex)+B\left(d^2+2dex-4e^2x^2\right)\right)+Ac^2d^2x\right)+\left(cx^2-a\right)\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\big(3\sqrt{}}{4a}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x]
```

```
[Out] (2*Sqrt[a]*c^(1/4)*Sqrt[d + e*x]*(5*a^2*B*e^2 + A*c^2*d^2*x + a*c*(A*e*(2*d
 + e*x) + B*(d^2 + 2*d*e*x - 4*e^2*x^2))) + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*(
2*A*c*d - 5*a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*(
2*A*c*d - 5*a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(9/4)*(a - c*x^2))
```

fricas [B] time = 12.74, size = 5611, normalized size = 20.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="fricas")

[Out] -1/8*((a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A
*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 -
 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B
^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e
^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(
25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c
+ 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2
+ 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2
- 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*
B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4
)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*
a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*
c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x
+ d) + (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e
^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 +
 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (2*A*a^3
*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4
 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2
*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3
*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140
*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*
c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^
4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4
*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 -
 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*
c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e
^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*
B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2
)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) - (a*c^3*x^2 - a^
2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30
*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3
- A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d
^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*
c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^
3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^1
0)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2
*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^
4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1
875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4)*d^4*e^5 - 20*(175*A
*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*a^4*c - 1050*A^2*B^2*
a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)
*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) - (30*A^2*B*a^2*
c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c
^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6
 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (2*A*a^3*c^8*d^2 - 5*B*a^4*c^
7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^
3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)
*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^
3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*
A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e
^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^
2*e^3 + 30*A*B*a^3*e^5 + a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*
B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 +
A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(12
5*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^
3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^
2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2
*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) + (a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^
3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^
4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5
+ 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^
3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c
^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 +
(625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*
B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c
^4))*log(-(120*A^3*B*c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3
+ 10*(225*A*B^3*a^2*c^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 300
0*A^2*B^2*a^2*c^3 + 101*A^4*a*c^4)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3
*B*a^2*c^3)*d^3*e^6 + 2*(625*B^4*a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*
c^3)*d^2*e^7 + 10*(125*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5
 - 81*A^4*a^3*c^2)*e^9)*sqrt(e*x + d) + (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A
*B^2*a^3*c^4 + A^3*a^2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)
*d^2*e^5 - 3*(125*A*B^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2
+ 9*A^2*B*a^4*c^3)*e^7 + (2*A*a^3*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e
^2)*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^
5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*
B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2
*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9
+ (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt
((4*A^2*c^3*d^5 - 20*A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^
5 - a^3*c^4*sqrt((900*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4
)*d^5*e^5 + 25*(225*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40
*(225*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2
*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2
)*d*e^9 + (625*B^4*a^4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9
)) + 5*(5*B^2*a^2*c - 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e
^4)/(a^3*c^4))) - (a*c^3*x^2 - a^2*c^2)*sqrt((4*A^2*c^3*d^5 - 20*A*B*a*c^2*
d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900*A^2*B^2*c
^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c^2
 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*B*
a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2
*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*A^
2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c - 3*A^2*a*c
^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))*log(-(120*A^3*B*
c^5*d^7*e^2 - 20*(45*A^2*B^2*a*c^4 - A^4*c^5)*d^6*e^3 + 10*(225*A*B^3*a^2*c
^3 - 77*A^3*B*a*c^4)*d^5*e^4 - (1875*B^4*a^3*c^2 - 3000*A^2*B^2*a^2*c^3 + 1
01*A^4*a*c^4)*d^4*e^5 - 20*(175*A*B^3*a^3*c^2 - 73*A^3*B*a^2*c^3)*d^3*e^6 +
 2*(625*B^4*a^4*c - 1050*A^2*B^2*a^3*c^2 + 81*A^4*a^2*c^3)*d^2*e^7 + 10*(12
5*A*B^3*a^4*c - 81*A^3*B*a^3*c^2)*d*e^8 + (625*B^4*a^5 - 81*A^4*a^3*c^2)*e^
9)*sqrt(e*x + d) - (30*A^2*B*a^2*c^5*d^4*e^3 + 5*(15*A*B^2*a^3*c^4 + A^3*a^
2*c^5)*d^3*e^4 - 15*(25*B^3*a^4*c^3 + 3*A^2*B*a^3*c^4)*d^2*e^5 - 3*(125*A*B
^2*a^4*c^3 + 3*A^3*a^3*c^4)*d*e^6 - 5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^
7 + (2*A*a^3*c^8*d^2 - 5*B*a^4*c^7*d*e - 3*A*a^4*c^7*e^2)*sqrt((900*A^2*B^2
*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B^4*a^2*c
^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 - 31*A^3*
B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d
^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^4 + 450*
A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)))*sqrt((4*A^2*c^3*d^5 - 20*
A*B*a*c^2*d^4*e + 30*A*B*a^2*c*d^2*e^3 + 30*A*B*a^3*e^5 - a^3*c^4*sqrt((900
*A^2*B^2*c^4*d^6*e^4 - 300*(15*A*B^3*a*c^3 - A^3*B*c^4)*d^5*e^5 + 25*(225*B
^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^6 + 40*(225*A*B^3*a^2*c^2 -
 31*A^3*B*a*c^3)*d^3*e^7 + 30*(125*B^4*a^3*c + 200*A^2*B^2*a^2*c^2 - 3*A^4*
a*c^3)*d^2*e^8 + 140*(25*A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (625*B^4*a^
4 + 450*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9)) + 5*(5*B^2*a^2*c -
 3*A^2*a*c^2)*d^3*e^2 + 15*(5*B^2*a^3 + A^2*a^2*c)*d*e^4)/(a^3*c^4))) - 4*(
4*B*a*c*e^2*x^2 - B*a*c*d^2 - 2*A*a*c*d*e - 5*B*a^2*e^2 - (A*c^2*d^2 + 2*B*
a*c*d*e + A*a*c*e^2)*x)*sqrt(e*x + d))/(a*c^3*x^2 - a^2*c^2)
```

giac [B] time = 0.78, size = 728, normalized size = 2.71

$$\frac{2\sqrt{xe+d}\,Be^2}{c^2} - \frac{\Big(10\sqrt{ac}\,Ba^3d|c|e^3 - \Big(\sqrt{ac}\,cd^2e^2 - 3\sqrt{ac}\,ae^4\Big)Aa^2|c| - \Big(ac^2d^3e - a^2cde^3\Big)A|a||c| - 5\Big(a^2cd^2e^2 - a^3}{4\Big(a^2c^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^2/c^2 - 1/4*(10*sqrt(a*c)*B*a^3*d*abs(c)*e^3 - (sqrt(a*
c)*c*d^2*e^2 - 3*sqrt(a*c)*a*e^4)*A*a^2*abs(c) - (a*c^2*d^3*e - a^2*c*d*e^3
)*A*abs(a)*abs(c) - 5*(a^2*c*d^2*e^2 - a^3*e^4)*B*abs(a)*abs(c) + 2*(sqrt(a
*c)*a*c^2*d^4 - 2*sqrt(a*c)*a^2*c*d^2*e^2)*A*abs(c) - 5*(sqrt(a*c)*a^2*c*d^
3*e + sqrt(a*c)*a^3*d*e^3)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a*c^3*d +
sqrt(a^2*c^6*d^2 - (a*c^3*d^2 - a^2*c^2*e^2)*a*c^3))/(a*c^3)))/((a^2*c^3*d
- sqrt(a*c)*a^2*c^2*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) + 1/4*(10*B*a^3
*c*d*abs(c)*e^3 - (c^2*d^2*e^2 - 3*a*c*e^4)*A*a^2*abs(c) + (sqrt(a*c)*c^2*d
^3*e - sqrt(a*c)*a*c*d*e^3)*A*abs(a)*abs(c) + 5*(sqrt(a*c)*a*c*d^2*e^2 - sq
rt(a*c)*a^2*e^4)*B*abs(a)*abs(c) + 2*(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2)*A*abs(
c) - 5*(a^2*c^2*d^3*e + a^3*c*d*e^3)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(
a*c^3*d - sqrt(a^2*c^6*d^2 - (a*c^3*d^2 - a^2*c^2*e^2)*a*c^3))/(a*c^3)))/((
a^2*c^3*e + sqrt(a*c)*a*c^3*d)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a)) - 1/2*(
(x*e + d)^(3/2)*A*c^2*d^2*e - sqrt(x*e + d)*A*c^2*d^3*e + 2*(x*e + d)^(3/2)
*B*a*c*d*e^2 - sqrt(x*e + d)*B*a*c*d^2*e^2 + (x*e + d)^(3/2)*A*a*c*e^3 + sq
rt(x*e + d)*A*a*c*d*e^3 + sqrt(x*e + d)*B*a^2*e^4)/(((x*e + d)^2*c - 2*(x*e
 + d)*c*d + c*d^2 - a*e^2)*a*c^2)
```

maple [B] time = 0.10, size = 1055, normalized size = 3.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x)
```

```
[Out] 2*e^2*B/c^2*(e*x+d)^(1/2)-1/2*e^3/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(3/2)*A-1/2*e
/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(3/2)*A*d^2-e^2/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(3
/2)*B*d-1/2*e^3/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*A*d+1/2*e/(c*e^2*x^2-a*e^
2)/a*(e*x+d)^(1/2)*A*d^3-1/2*e^4/c^2/(c*e^2*x^2-a*e^2)*a*(e*x+d)^(1/2)*B+1/
2*e^2/c/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*B*d^2-e^3/(a*c*e^2)^(1/2)/((c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*c)*A*d+1/2*e*c/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh(
(e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3-5/4*e^4/c*a/(a*c*e^2
)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*c)*B-5/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-3/4*e^3
/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*c)*A+1/4*e/a/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^
(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-5/2*e^2/c/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-
e^3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e*c/a/(a*c*e^2)^(1/2)/((-c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2
)*c)*A*d^3-5/4*e^4/c*a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arc
```

```
tan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-5/4*e^2/(a*c*e^2)^(
1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)
^(1/2))*c)^(1/2)*c)*B*d^2+3/4*e^3/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/4*e/a/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A*d^2+5/2*e^2/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(cx^2 - a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a)^2, x)
```

mupad [B] time = 3.02, size = 9253, normalized size = 34.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 32
0*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a
^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B
^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2)
 + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1
/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*
c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*
c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*
c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c
^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*
a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9
)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*
B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) +
 ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 1
0*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150
*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*
((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e
^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c
^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^
9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e -
75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*
e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i - (((320*B*a^5*c^4*e^6 + 64*A*a
^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) +
64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^
9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5
*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^
6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^
(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*
a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((
4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2
 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9
)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*
c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75
*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^
4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 +
 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*
c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*
d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^
5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*
B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 +
75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(
a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2)
+ 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^
(1/2)*1i)/((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3
 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*
A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 +
 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^
(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^
9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B
^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*
(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*
(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*
a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75
*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^
9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) +
30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1
/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^
8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4
+ 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2
*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*
d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(
a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^
5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4
*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a
*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + (((320*B*a^5*c^4*e^6 + 64*A
*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3)
+ 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*
c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c
^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*
a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9
)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*
B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*
((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e
^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c
^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^
9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e -
75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*
e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8
 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^
2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*
c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*
e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*
A*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4
+ 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2
*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2
) + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9)
)^(1/2) + (4*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c*e^11 - 250*
B^3*a^5*d*e^10 + 73*A^3*a^2*c^3*d^4*e^7 - 75*A^3*a^3*c^2*d^2*e^9 - 250*B^3*
a^3*c^2*d^5*e^6 - 29*A^3*a*c^4*d^6*e^5 + 500*B^3*a^4*c*d^3*e^8 + 225*A*B^2*
a^2*c^3*d^6*e^5 - 525*A*B^2*a^3*c^2*d^4*e^7 + 270*A^2*B*a^2*c^3*d^5*e^6 - 3
60*A^2*B*a^3*c^2*d^3*e^8 + 150*A^2*B*a^4*c*d*e^10 + 375*A*B^2*a^4*c*d^2*e^9
 - 60*A^2*B*a*c^4*d^7*e^4)/(4*a^3*c^3)))*((4*A^2*a^3*c^8*d^5 - 25*B^2*a^2*e
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^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A
*B*a^6*c^5*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 +
 75*B^2*a^6*c^5*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) + 30*A*B*c^2*d^3*e^2*
(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e - 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2)
 + 30*A*B*a^5*c^6*d^2*e^3 - 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))
^(1/2)*2i + atan((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*
d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/
2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^
3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^
9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*
(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e
 + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c
*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a
^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 +
30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e
^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*
e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(
1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c
^9))^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a
^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d
^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3
))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a
^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^
2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2
*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*
c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 7
0*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2)*1i - (((320*B*a^5*c^4*
e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8
*a^3*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2
*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30
*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4
 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^
2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/
2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9
))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4
*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*
e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a
*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^
7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*
A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25*B
^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 +
 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 10
0*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 2
5*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3
*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*
c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c
^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9
*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(6
4*a^6*c^9))^(1/2)*1i)/((((320*B*a^5*c^4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3
*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/(8*a^3*c^3) - 64*a*c^4*d*e^2*(d + e*x
)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c
^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^
3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c
*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*
d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*
B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*
B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e
^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^
6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2
*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c
^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*
a^6*c^9))^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*
A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*
c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 + 100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^
5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*
A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c
^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 +
9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B
*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^
3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) + (((320*B*a^5*c^
4*e^6 + 64*A*a^4*c^5*d*e^5 - 64*A*a^3*c^6*d^3*e^3 - 320*B*a^4*c^5*d^2*e^4)/
(8*a^3*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^8*d^5 + 25*B^2*a
^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 +
30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e
^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*
e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(
1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c
^9))^(1/2))*((4*A^2*a^3*c^8*d^5 + 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a
^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^
2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2
*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*
c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 7
0*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(64*a^6*c^9))^(1/2) - ((d + e*x)^(1/2)*(25
*B^2*a^4*e^8 + 4*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 10*A^2*a^2*c^2*d^2*e^6
 + 25*B^2*a^2*c^2*d^4*e^4 - 15*A^2*a*c^3*d^4*e^4 + 150*B^2*a^3*c*d^2*e^6 +
100*A*B*a^3*c*d*e^7 - 20*A*B*a*c^3*d^5*e^3))/(a^2*c))*((4*A^2*a^3*c^8*d^5 +
 25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d
^3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^
5*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B
*c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a
^9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/
(64*a^6*c^9))^(1/2) + (4*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c
*e^11 - 250*B^3*a^5*d*e^10 + 73*A^3*a^2*c^3*d^4*e^7 - 75*A^3*a^3*c^2*d^2*e^
9 - 250*B^3*a^3*c^2*d^5*e^6 - 29*A^3*a*c^4*d^6*e^5 + 500*B^3*a^4*c*d^3*e^8
+ 225*A*B^2*a^2*c^3*d^6*e^5 - 525*A*B^2*a^3*c^2*d^4*e^7 + 270*A^2*B*a^2*c^3
*d^5*e^6 - 360*A^2*B*a^3*c^2*d^3*e^8 + 150*A^2*B*a^4*c*d*e^10 + 375*A*B^2*a
^4*c*d^2*e^9 - 60*A^2*B*a*c^4*d^7*e^4)/(4*a^3*c^3)))*((4*A^2*a^3*c^8*d^5 +
25*B^2*a^2*e^5*(a^9*c^9)^(1/2) - 15*A^2*a^4*c^7*d^3*e^2 + 25*B^2*a^5*c^6*d^
3*e^2 + 30*A*B*a^6*c^5*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^9)^(1/2) + 15*A^2*a^5
*c^6*d*e^4 + 75*B^2*a^6*c^5*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^9)^(1/2) - 30*A*B*
c^2*d^3*e^2*(a^9*c^9)^(1/2) - 20*A*B*a^4*c^7*d^4*e + 75*B^2*a*c*d^2*e^3*(a^
9*c^9)^(1/2) + 30*A*B*a^5*c^6*d^2*e^3 + 70*A*B*a*c*d*e^4*(a^9*c^9)^(1/2))/(
64*a^6*c^9))^(1/2)*2i - (((d + e*x)^(1/2)*(B*a^2*e^4 - A*c^2*d^3*e + A*a*c*
d*e^3 - B*a*c*d^2*e^2))/(2*a) + ((d + e*x)^(3/2)*(A*a*c*e^3 + A*c^2*d^2*e +
 2*B*a*c*d*e^2))/(2*a))/(c^3*(d + e*x)^2 + c^3*d^2 - a*c^2*e^2 - 2*c^3*d*(d
 + e*x)) + (2*B*e^2*(d + e*x)^(1/2))/c^2
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1454 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=238

$$-\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{7/4}}+\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\left(-\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\mathrm{ta}}{4a^{3/2}c^{7/4}}$$

```
[Out] 1/2*(a*(A*e+B*d)+(A*c*d+B*a*e)*x)*(e*x+d)^(1/2)/a/c/(-c*x^2+a)-1/4*arctanh(
c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d-3*a*B*e+A*e*a^
(1/2)*c^(1/2))*(-e*a^(1/2)+d*c^(1/2))^(1/2)/a^(3/2)/c^(7/4)+1/4*arctanh(c^(
1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d-3*a*B*e-A*e*a^(1/2
)*c^(1/2))*(e*a^(1/2)+d*c^(1/2))^(1/2)/a^(3/2)/c^(7/4)
```

Rubi [A] time = 0.39, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {819, 827, 1166, 208}

$$-\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{7/4}}+\frac{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\left(-\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\mathrm{ta}}{4a^{3/2}c^{7/4}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(2*a*c*(a - c*x^2)) - (
Sqrt[Sqrt[c]*d - Sqrt[a]*e]*(2*A*c*d - 3*a*B*e + Sqrt[a]*A*Sqrt[c]*e)*ArcTa
nh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(7/4)
) + (Sqrt[Sqrt[c]*d + Sqrt[a]*e]*(2*A*c*d - 3*a*B*e - Sqrt[a]*A*Sqrt[c]*e)*
ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^
(7/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^2}\,dx = \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(-2Acd^2+3aBde+aAe^2\right)-\frac{1}{2}e(Acd-3aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{2ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}de(Acd-3aBe)+\frac{1}{2}e\left(-2Acd^2+3aBde+a\right.}{-cd^2+ae^2+2cdx^2-c}\right.}{ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} + \frac{\left(\left(\sqrt{c}\,d+\sqrt{a}\,e\right)\left(2Acd-3aBe-\sqrt{a}\,A\sqrt{c}\right.\right.}{4}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{2ac\left(a-cx^2\right)} - \frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(2Acd-3aBe+\sqrt{a}\,A\sqrt{c}\right.}{4a^{3/2}c^{7/4}}$$

Mathematica [A] time = 0.37, size = 244, normalized size = 1.03

$$\frac{2\sqrt{a}\,c^{3/4}\sqrt{d+ex}\,(aAe+aB(d+ex)+Acdx)+\left(cx^2-a\right)\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(\sqrt{a}\,A\sqrt{c}\,e-3aBe+2Acd\right)\tanh^{-1}\left(\right.}{4a^{3/2}c^{7/4}\left(a-cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x]
```

```
[Out] (2*Sqrt[a]*c^(3/4)*Sqrt[d + e*x]*(a*A*e + A*c*d*x + a*B*(d + e*x)) + Sqrt[S
qrt[c]*d - Sqrt[a]*e]*(2*A*c*d - 3*a*B*e + Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2
)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[
c]*d + Sqrt[a]*e]*(2*A*c*d - 3*a*B*e - Sqrt[a]*A*Sqrt[c]*e)*(-a + c*x^2)*Ar
cTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(7
/4)*(a - c*x^2))
```

fricas [B] time = 1.05, size = 2327, normalized size = 9.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2
*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*
d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*
a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*
a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4
*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) + (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^
3*c^2 + A^3*a^2*c^3)*e^4 - (2*A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2
*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^
2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e +
6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^
3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) +
3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))) - (a*c^2*x^2 - a^2*c)*sqrt((4*A^
2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^2*B^2*c^2
*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*
c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*lo
g((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*
B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d
) - (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 - (2*A*a^3
*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^
3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*s
qrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 + a^3*c^3*sqrt((36*A^
2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A
^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3
*c^3))) + (a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*
B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*
c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3
*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2
*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (8
1*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) + (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B
^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (2*A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^
2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A
^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2
*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c
 + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7
)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3))) - (a*c^2*x^2 - a^2*c)*sqrt(
(4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((36*A^2*B^
2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B
^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)/(a^3*c^3
))*log((24*A^3*B*c^3*d^3*e^2 - 4*(27*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 6*(
27*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (81*B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*
x + d) - (6*A^2*B*a^2*c^3*d*e^3 - (9*A*B^2*a^3*c^2 + A^3*a^2*c^3)*e^4 + (2*
A*a^3*c^6*d - 3*B*a^4*c^5*e)*sqrt((36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c
 + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 + 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7
)))*sqrt((4*A^2*c^2*d^3 - 12*A*B*a*c*d^2*e + 6*A*B*a^2*e^3 - a^3*c^3*sqrt((
36*A^2*B^2*c^2*d^2*e^4 - 12*(9*A*B^3*a*c + A^3*B*c^2)*d*e^5 + (81*B^4*a^2 +
 18*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7)) + 3*(3*B^2*a^2 - A^2*a*c)*d*e^2)
/(a^3*c^3))) - 4*(B*a*d + A*a*e + (A*c*d + B*a*e)*x)*sqrt(e*x + d))/(a*c^2*
x^2 - a^2*c)
```

giac [B] time = 0.71, size = 533, normalized size = 2.24

$$\frac{\left(3\sqrt{ac}\,Ba^2c^3d^2e+\sqrt{ac}\,Aa^2c^3de^2-3\sqrt{ac}\,Ba^3c^2e^3+\left(ac^3d^2e-a^2c^2e^3\right)A|a||c|-\left(2\sqrt{ac}\,ac^4d^3-\sqrt{ac}\,a^2c^3de^2\right)A\right)\mathrm{arc}}{4\left(a^2c^4d-\sqrt{ac}\,a^2c^3e\right)\sqrt{-c^2d-\sqrt{ac}\,ce}\,|a|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(3*sqrt(a*c)*B*a^2*c^3*d^2*e + sqrt(a*c)*A*a^2*c^3*d*e^2 - 3*sqrt(a*c)*
B*a^3*c^2*e^3 + (a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(a)*abs(c) - (2*sqrt(a*c)*
a*c^4*d^3 - sqrt(a*c)*a^2*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)/sqrt(-(a*c^2*d
 + sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*c^4*d
 - sqrt(a*c)*a^2*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) - 1/4*(3*B*a^2
*c^3*d^2*e + A*a^2*c^3*d*e^2 - 3*B*a^3*c^2*e^3 - (sqrt(a*c)*c^2*d^2*e - sqr
t(a*c)*a*c*e^3)*A*abs(a)*abs(c) - (2*a*c^4*d^3 - a^2*c^3*d*e^2)*A)*arctan(s
qrt(x*e + d)/sqrt(-(a*c^2*d - sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*
c^2))/(a*c^2)))/((a^2*c^3*e + sqrt(a*c)*a*c^3*d)*sqrt(-c^2*d + sqrt(a*c)*c*
e)*abs(a)) - 1/2*((x*e + d)^(3/2)*A*c*d*e - sqrt(x*e + d)*A*c*d^2*e + (x*e
+ d)^(3/2)*B*a*e^2 + sqrt(x*e + d)*A*a*e^3)/(((x*e + d)^2*c - 2*(x*e + d)*c
*d + c*d^2 - a*e^2)*a*c)
```

maple [B] time = 0.11, size = 694, normalized size = 2.92

$$\frac{A c\, d^{2} e \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\, c}{\sqrt{\left(cd+\sqrt{ac\, e^{2}}\right)c}}\right)}{2\sqrt{ac\, e^{2}}\, \sqrt{\left(cd+\sqrt{ac\, e^{2}}\right)c}\; a}+\frac{A c\, d^{2} e \arctan\left(\frac{\sqrt{ex+d}\, c}{\sqrt{\left(-cd+\sqrt{ac\, e^{2}}\right)c}}\right)}{2\sqrt{ac\, e^{2}}\, \sqrt{\left(-cd+\sqrt{ac\, e^{2}}\right)c}\; a}-\frac{A\, e^{3} \operatorname{arctanh}\left(\frac{\sqrt{ex+d}\, c}{\sqrt{\left(cd+\sqrt{ac\, e^{2}}\right)c}}\right)}{4\sqrt{ac\, e^{2}}\, \sqrt{\left(cd+\sqrt{ac\, e^{2}}\right)c}}-\frac{A\, e^{3} \arctan}{4\sqrt{ac\, e^{2}}\, \sqrt{\left(-\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(3/2)*A*d-1/2*e^2/(c*e^2*x^2-a*e^2)/c*(e
*x+d)^(3/2)*B-1/2*e^3/(c*e^2*x^2-a*e^2)*A/c*(e*x+d)^(1/2)+1/2*e/(c*e^2*x^2-
a*e^2)*A/a*(e*x+d)^(1/2)*d^2-1/4*e^3/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/2*e/
a*c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/(
(c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*B*d+1/4*e/a/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-3/4*e^2/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-1/4*e^3/(a*c*e^2
)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*A+1/2*e/a*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/4
*e^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-1/4*e/a/((-c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+3/4*e^2/
c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^{2} - a\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a)^2, x)
```

mupad [B] time = 0.92, size = 5212, normalized size = 21.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*
e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2
*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^
5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6
*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3
*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*
d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))
^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^
6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)
*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1
/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*
B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i - (
((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d
+ e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*
(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d
*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^
(1/2))*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c
^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 -
 12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)
- ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A
^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^
2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6
*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c
^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i)/((((64*A*
a^4*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^
(1/2)*((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^
7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 -
12*A*B*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*
((4*A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/
2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B
*a^4*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d +
 e*x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^
2*d^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c
^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^
5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*
e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (((64*A*a^4*c^4*e^
5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*
A^2*a^3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) +
 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4
*c^5*d^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^
3*c^6*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B
*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d
^2*e - 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2
)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4
+ 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 + 9
*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3
- 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e - 6*A*B*
c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (27*B^3*a^4*e^8 + 4*A^3*c^4*
d^5*e^3 - 3*A^2*B*a^3*c*e^8 - 5*A^3*a*c^3*d^3*e^5 + A^3*a^2*c^2*d*e^7 - 27*
B^3*a^3*c*d^2*e^6 + 45*A*B^2*a^2*c^2*d^3*e^5 + 27*A^2*B*a^2*c^2*d^2*e^6 - 4
5*A*B^2*a^3*c*d*e^7 - 24*A^2*B*a*c^3*d^4*e^4)/(4*a^3*c^2)))*((4*A^2*a^3*c^6
*d^3 + 9*B^2*a*e^3*(a^9*c^7)^(1/2) + A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*
c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e
- 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*2i - (((B*a*e^2 + A*c*
d*e)*(d + e*x)^(3/2))/(2*a*c) + ((A*a*e^3 - A*c*d^2*e)*(d + e*x)^(1/2))/(2*
a*c))/(c*(d + e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x)) + atan(((((64*A*a^4
*c^4*e^5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/
2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^
(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*
A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4
*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2)
+ 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^
```

```
4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*
x)^(1/2)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d
^2*e^4 + 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*
d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c
^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e +
 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i - (((64*A*a^4*c^4*e^
5 - 64*A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*
A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) +
 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4
*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^
3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B
*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d
^2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2
)*(9*B^2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4
+ 9*B^2*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9
*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3
- 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*
c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*1i)/((((64*A*a^4*c^4*e^5 - 64*
A*a^3*c^5*d^2*e^3)/(8*a^3*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3
*c^6*d^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*
a^5*c^4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^
2*e + 6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d
^3 - 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^
4*e^3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e +
6*A*B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + ((d + e*x)^(1/2)*(9*B^
2*a^3*e^6 + 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2
*a^2*c*d^2*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*
e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2
*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2
*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) + (((64*A*a^4*c^4*e^5 - 64*A*a^3*c^5*
d^2*e^3)/(8*a^3*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^6*d^3 -
 9*B^2*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^
3 - 3*A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*
B*c*d*e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2))*((4*A^2*a^3*c^6*d^3 - 9*B^2
*a*e^3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*
A^2*a^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*
e^2*(a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6
+ 4*A^2*c^3*d^4*e^2 + A^2*a^2*c*e^6 - 3*A^2*a*c^2*d^2*e^4 + 9*B^2*a^2*c*d^2
*e^4 - 12*A*B*a*c^2*d^3*e^3))/a^2)*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^3*(a^9*c
^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a^4*c^5*d
*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(a^9*c^7)
^(1/2))/(64*a^6*c^7))^(1/2) + (27*B^3*a^4*e^8 + 4*A^3*c^4*d^5*e^3 - 3*A^2*B
*a^3*c*e^8 - 5*A^3*a*c^3*d^3*e^5 + A^3*a^2*c^2*d*e^7 - 27*B^3*a^3*c*d^2*e^6
 + 45*A*B^2*a^2*c^2*d^3*e^5 + 27*A^2*B*a^2*c^2*d^2*e^6 - 45*A*B^2*a^3*c*d*e
^7 - 24*A^2*B*a*c^3*d^4*e^4)/(4*a^3*c^2)))*((4*A^2*a^3*c^6*d^3 - 9*B^2*a*e^
3*(a^9*c^7)^(1/2) - A^2*c*e^3*(a^9*c^7)^(1/2) + 6*A*B*a^5*c^4*e^3 - 3*A^2*a
^4*c^5*d*e^2 + 9*B^2*a^5*c^4*d*e^2 - 12*A*B*a^4*c^5*d^2*e + 6*A*B*c*d*e^2*(
a^9*c^7)^(1/2))/(64*a^6*c^7))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1455 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=225

$$-\frac{\left(-\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}+\frac{\sqrt{d+ex}\,(aB}{2ac\left(a-\right.}$$

```
[Out] 1/2*(A*c*x+B*a)*(e*x+d)^(1/2)/a/c/(-c*x^2+a)-1/4*arctanh(c^(1/4)*(e*x+d)^(1
/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d-a*B*e-A*e*a^(1/2)*c^(1/2))/a^(3/
2)/c^(5/4)/(-e*a^(1/2)+d*c^(1/2))^(1/2)+1/4*arctanh(c^(1/4)*(e*x+d)^(1/2)/(
e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d-a*B*e+A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(
5/4)/(e*a^(1/2)+d*c^(1/2))^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {821, 827, 1166, 208}

$$-\frac{\left(-\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}+\frac{\left(\sqrt{a}\,A\sqrt{c}\,e-aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}+\frac{\sqrt{d+ex}\,(aB}{2ac\left(a-\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^2,x]
```

```
[Out] ((a*B + A*c*x)*Sqrt[d + e*x])/(2*a*c*(a - c*x^2)) - ((2*A*c*d - a*B*e - Sqr
t[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*
e]])/(4*a^(3/2)*c^(5/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ((2*A*c*d - a*B*e +
Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[
a]*e]])/(4*a^(3/2)*c^(5/4)*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^2}\,dx &= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\int \frac{\frac{1}{2}(-2Acd+aBe)-\frac{1}{2}Acex}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{2ac} \\
&= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\text{Subst}\left(\int \frac{\frac{1}{2}Acde+\frac{1}{2}e(-2Acd+aBe)-\frac{1}{2}Acex^2}{-cd^2+ae^2+2cdx^2-cx^4}\,dx, x, \sqrt{d+ex}\right)}{ac} \\
&= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\left(2Acd-aBe-\sqrt{a}\,A\sqrt{c}\,e\right)\text{Subst}\left(\int \frac{1}{cd-\sqrt{a}\,\sqrt{c}\,e-cx^2}\,dx, x, \sqrt{d+}\right.}{4a^{3/2}\sqrt{c}} \\
&= \frac{(aB+Acx)\sqrt{d+ex}}{2ac\left(a-cx^2\right)} - \frac{\left(2Acd-aBe-\sqrt{a}\,A\sqrt{c}\,e\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{5/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}} + \frac{\left(2Acd-a\right.}{}
\end{aligned}$$

Mathematica [A] time = 0.47, size = 375, normalized size = 1.67

$$\frac{-\frac{\sqrt[4]{c}\left(aAe^2+2aBde-3Acd^2\right)\left(\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)-\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)\right)}{2\sqrt{a}}+\frac{c(d+ex)^{3/2}(-aAe+aB(d-ex)+Acdx)}{cx^2-a}+\left(\right.}{2ac\left(ae^2-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^2,x]
```

```
[Out] ((c*(d + e*x)^(3/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(-a + c*x^2) - (c
^(1/4)*(-3*A*c*d^2 + 2*a*B*d*e + a*A*e^2)*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d +
 Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/
(2*Sqrt[a]) + ((-(A*c*d) + a*B*e)*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x] + (Sqr
t[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d -
Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])
/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(2*Sqrt[a]*c^(1/4)))/(2*a*c*(-(c*d^2) + a*e
^2))
```

fricas [B] time = 3.53, size = 3195, normalized size = 14.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*((a*c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*
e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2
*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a
*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c
^3*d^2 - a^4*c^2*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*
c^3)*d^2*e^3 + 2*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2
)*e^5)*sqrt(e*x + d) + (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^
2*c^3)*d*e^4 + (B^3*a^4*c + A^2*B*a^3*c^2)*e^5 + (2*A*a^3*c^6*d^4 - B*a^4*c
^5*d^3*e - 3*A*a^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A
^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2
*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt
((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d
*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a
*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d
^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - (a*
c^2*x^2 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B
^2*a^2 - 3*A^2*a*c)*d*e^2 + (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2
*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4
*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 -
 a^4*c^2*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2
*e^3 + 2*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*s
qrt(e*x + d) - (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d
*e^4 + (B^3*a^4*c + A^2*B*a^3*c^2)*e^5 + (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e
 - 3*A*a^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c
^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A
^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*
c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 + (
a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3
*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a
^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) + (a*c^2*x^2
 - a^2*c)*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 -
 3*A^2*a*c)*d*e^2 - (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4
 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^
6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2
*e^2))*log((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 2
*(3*A*B^3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x
+ d) + (2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d*e^4 + (
B^3*a^4*c + A^2*B*a^3*c^2)*e^5 - (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e - 3*A*a
^4*c^5*d^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c^2*d^2*e
^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*c^2*d^3
- 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 - (a^3*c^3*
d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*
d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d
^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - (a*c^2*x^2 - a^2*c)
*sqrt((4*A^2*c^2*d^3 - 4*A*B*a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a
*c)*d*e^2 - (a^3*c^3*d^2 - a^4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*
B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*
c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))*l
og((8*A^3*B*c^3*d^3*e^2 - 4*(3*A^2*B^2*a*c^2 + A^4*c^3)*d^2*e^3 + 2*(3*A*B^
3*a^2*c + A^3*B*a*c^2)*d*e^4 - (B^4*a^3 - A^4*a*c^2)*e^5)*sqrt(e*x + d) - (
2*A^2*B*a^2*c^3*d^2*e^3 - (3*A*B^2*a^3*c^2 + A^3*a^2*c^3)*d*e^4 + (B^3*a^4*
c + A^2*B*a^3*c^2)*e^5 - (2*A*a^3*c^6*d^4 - B*a^4*c^5*d^3*e - 3*A*a^4*c^5*d
^2*e^2 + B*a^5*c^4*d*e^3 + A*a^5*c^4*e^4)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(
A*B^3*a*c + A^3*B*c^2)*d*e^5 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^
3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 + a^5*c^5*e^4)))*sqrt((4*A^2*c^2*d^3 - 4*A*B*
a*c*d^2*e + 2*A*B*a^2*e^3 + (B^2*a^2 - 3*A^2*a*c)*d*e^2 - (a^3*c^3*d^2 - a^
4*c^2*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^4 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^5 +
(B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^6)/(a^3*c^7*d^4 - 2*a^4*c^6*d^2*e^2 +
 a^5*c^5*e^4)))/(a^3*c^3*d^2 - a^4*c^2*e^2))) - 4*(A*c*x + B*a)*sqrt(e*x +
d))/(a*c^2*x^2 - a^2*c)
```

giac [B] time = 0.54, size = 436, normalized size = 1.94

$$\frac{\left(2\,Aac^3d^2 - Ba^2c^2de - \sqrt{ac}\,Acd|a||c|e - Aa^2c^2e^2 + \sqrt{ac}\,Ba|a||c|e^2\right)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-\frac{ac^2d+\sqrt{a^2c^4d^2-\left(ac^2d^2-a^2ce^2\right)ac^2}}{ac^2}}}\right)}{4\left(a^2c^2e-\sqrt{ac}\,ac^2d\right)\sqrt{-c^2d-\sqrt{ac}\,ce}\,|a|} + \left(2\,Aa\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(2*A*a*c^3*d^2 - B*a^2*c^2*d*e - sqrt(a*c)*A*c*d*abs(a)*abs(c)*e - A*a^
2*c^2*e^2 + sqrt(a*c)*B*a*abs(a)*abs(c)*e^2)*arctan(sqrt(x*e + d)/sqrt(-(a*
c^2*d + sqrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*
c^2*e - sqrt(a*c)*a*c^2*d)*sqrt(-c^2*d - sqrt(a*c)*c*e)*abs(a)) + 1/4*(2*A*
a*c^3*d^2 - B*a^2*c^2*d*e + sqrt(a*c)*A*c*d*abs(a)*abs(c)*e - A*a^2*c^2*e^2
 - sqrt(a*c)*B*a*abs(a)*abs(c)*e^2)*arctan(sqrt(x*e + d)/sqrt(-(a*c^2*d - s
qrt(a^2*c^4*d^2 - (a*c^2*d^2 - a^2*c*e^2)*a*c^2))/(a*c^2)))/((a^2*c^2*e + s
qrt(a*c)*a*c^2*d)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a)) - 1/2*((x*e + d)^(3/
2)*A*c*e - sqrt(x*e + d)*A*c*d*e + sqrt(x*e + d)*B*a*e^2)/(((x*e + d)^2*c -
 2*(x*e + d)*c*d + c*d^2 - a*e^2)*a*c)
```

maple [B] time = 0.09, size = 432, normalized size = 1.92

$$\frac{Acde\,\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{2\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}\,a}+\frac{Acde\arctan\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}}\right)}{2\sqrt{ac\,e^2}\,\sqrt{\left(-cd+\sqrt{ac\,e^2}\right)c}\,a}-\frac{B\,e^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,c}{\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}\right)}{4\sqrt{ac\,e^2}\,\sqrt{\left(cd+\sqrt{ac\,e^2}\right)c}}-\frac{B\,e^2\arctan\left(\right.}{4\sqrt{ac\,e^2}\,\sqrt{\left(-c\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e/(c*e^2*x^2-a*e^2)*A/a*(e*x+d)^(3/2)+1/2*e/(c*e^2*x^2-a*e^2)/a*(e*x+d
)^(1/2)*A*d-1/2*e^2/(c*e^2*x^2-a*e^2)/c*(e*x+d)^(1/2)*B+1/2*e/a/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*c*d-1/4*e^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+1/4*e/a/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A+1/2*e/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arct
an((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d-1/4*e^2/(a*c*e^2
)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*c)*B-1/4*e/a/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2-a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a)^2, x)
```

mupad [B] time = 4.10, size = 5062, normalized size = 22.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2)^2,x)
```

```
[Out] atan(((((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d
 + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(
a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^
2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 -
 a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^
2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5
*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*
c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*
a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 +
B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 -
 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*
e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*1i - (((64*B*a
^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(
(4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2)
+ 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c
^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))
^(1/2))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^
5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*
A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c
^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2
*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*
c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*
d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(
1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*1i)/((4*A^3*c^2*d^2*e^3 - A^3
*a*c*e^5 + A*B^2*a^2*e^5 - 4*A^2*B*a*c*d*e^4)/(4*a^3) + (((64*B*a^4*c^2*e^4
 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3
*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^
5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e -
 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((
4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) +
 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^
4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^
(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4
 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2)
 + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^
2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*
(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*
e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e
^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*
a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^
9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3
+ B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3
 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*
d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) - ((d + e*x)
^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e
^3))/a^2)*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c*e^3*(a^9*
c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 -
4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7
*c^5*e^2)))^(1/2)))*((4*A^2*a^3*c^5*d^3 + B^2*a*e^3*(a^9*c^5)^(1/2) + A^2*c
*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^
3*d*e^2 - 4*A*B*a^4*c^4*d^2*e - 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6
*d^2 - a^7*c^5*e^2)))^(1/2)*2i + atan(((((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d
*e^3)/(8*a^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*
e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2
*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a
^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3
```

```
 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^
3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c
*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x
)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*
e^3))/a^2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9
*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 -
 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^
7*c^5*e^2)))^(1/2)*1i - (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) +
 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(
1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2
+ B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/
(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a
^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c
^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5
)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*
c^3*d^2*e^2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*
A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2
*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*
d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1
/2)*1i)/((4*A^3*c^2*d^2*e^3 - A^3*a*c*e^5 + A*B^2*a^2*e^5 - 4*A^2*B*a*c*d*e
^4)/(4*a^3) + (((64*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) - 64*a*c^4*
d*e^2*(d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2
*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*
c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c
^6*d^2 - a^7*c^5*e^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1
/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 +
 B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(
64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^
2 + A^2*a*c^2*e^4 + B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^
5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c
^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*
A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2) + (((6
4*B*a^4*c^2*e^4 - 64*A*a^3*c^3*d*e^3)/(8*a^3) + 64*a*c^4*d*e^2*(d + e*x)^(1
/2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(
1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*
a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e
^2)))^(1/2))*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a
^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2
 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 -
a^7*c^5*e^2)))^(1/2) - ((d + e*x)^(1/2)*(4*A^2*c^3*d^2*e^2 + A^2*a*c^2*e^4
+ B^2*a^2*c*e^4 - 4*A*B*a*c^2*d*e^3))/a^2)*((4*A^2*a^3*c^5*d^3 - B^2*a*e^3*
(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 - 3*A^2*a^4
*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*e^2*(a^9*c
^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)))*((4*A^2*a^3*c^5*d^3 -
B^2*a*e^3*(a^9*c^5)^(1/2) - A^2*c*e^3*(a^9*c^5)^(1/2) + 2*A*B*a^5*c^3*e^3 -
 3*A^2*a^4*c^4*d*e^2 + B^2*a^5*c^3*d*e^2 - 4*A*B*a^4*c^4*d^2*e + 2*A*B*c*d*
e^2*(a^9*c^5)^(1/2))/(64*(a^6*c^6*d^2 - a^7*c^5*e^2)))^(1/2)*2i - ((A*e*(d
+ e*x)^(3/2))/(2*a) + ((B*a*e^2 - A*c*d*e)*(d + e*x)^(1/2))/(2*a*c))/(c*(d
+ e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1456 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=250

$$-\frac{\left(-3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}+\frac{\sqrt{d+ex}\,(}{2a}$$

```
[Out] -1/4*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d+a
*B*e-3*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(3/4)/(-e*a^(1/2)+d*c^(1/2))^(3/2)+1/
4*arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d+a*B*e
+3*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(3/4)/(e*a^(1/2)+d*c^(1/2))^(3/2)+1/2*(a*
(-A*e+B*d)+(A*c*d-B*a*e)*x)*(e*x+d)^(1/2)/a/(-a*e^2+c*d^2)/(-c*x^2+a)
```

Rubi [A] time = 0.50, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {823, 827, 1166, 208}

$$-\frac{\left(-3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}+\frac{\left(3\sqrt{a}\,A\sqrt{c}\,e+aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{4a^{3/2}c^{3/4}\left(\sqrt{a}\,e+\sqrt{c}\,d\right)^{3/2}}+\frac{\sqrt{d+ex}\,(}{2a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^2),x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d - A*e) + (A*c*d - a*B*e)*x))/(2*a*(c*d^2 - a*e^2)*(a
 - c*x^2)) - ((2*A*c*d + a*B*e - 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(3/4)*(Sqrt[c]*d -
Sqrt[a]*e)^(3/2)) + ((2*A*c*d + a*B*e + 3*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(
1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(3/4)*(Sqrt[
c]*d + Sqrt[a]*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx &= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)}-\frac{\int \frac{-\frac{1}{2}c\left(2Acd^2+aBde-3aAe^2\right)-\frac{1}{2}ce(Acd-aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)}\,dx}{2ac\left(cd^2-ae^2\right)}\\
&= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)}-\frac{\text{Subst}\left(\int \frac{\frac{1}{2}cde(Acd-aBe)-\frac{1}{2}ce\left(2Acd^2+aBde-3aAe\right.}{-cd^2+ae^2+2cdx^2-cx^4}\right.}{ac\left(cd^2-ae\right.}\\
&= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)}-\frac{\left(2Acd+aBe-3\sqrt{a}\,A\sqrt{c}\,e\right)\text{Subst}\left(\int \frac{}{cd-}\right.}{4a^{3/2}\left(\sqrt{c}\,d-\sqrt{a}\right.}\\
&= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{2a\left(cd^2-ae^2\right)\left(a-cx^2\right)}-\frac{\left(2Acd+aBe-3\sqrt{a}\,A\sqrt{c}\,e\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}}{\sqrt{\sqrt{c}}}\right.}{4a^{3/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.45, size = 353, normalized size = 1.41

$$
\frac{-\frac{c^{3/4}\left(-3aAe^2+2aBde+Acd^2\right)\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}\right)}{\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{2\sqrt{a}}+\frac{c\sqrt{d+ex}\,(-aAe+aB(d-ex)+Acdx)}{cx^2-a}+\frac{\sqrt[4]{c}\,(Acd-aBe)\left(\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\right.}{}}{2ac\left(ae^2-cd^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^2),x]
```

```
[Out] ((c*Sqrt[d + e*x]*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(-a + c*x^2) - (c^(
3/4)*(A*c*d^2 + 2*a*B*d*e - 3*a*A*e^2)*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x]])/S
qrt[Sqrt[c]*d - Sqrt[a]*e]]/Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)
*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/
(2*Sqrt[a]) + (c^(1/4)*(A*c*d - a*B*e)*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sq
rt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(2*
Sqrt[a]))/(2*a*c*(-(c*d^2) + a*e^2))
```

fricas [B] time = 52.56, size = 7506, normalized size = 30.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] -1/8*((a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d
^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c -
 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3
```

```
*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*
e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B
^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e
^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*
a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c
^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*
c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^
3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^
3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*
c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*
a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81
*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) + (6*A^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^
3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 -
12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*
c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^2)*e^8 - (2*A*a^3*c^7*d^9 + B*a^4
*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*
e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^
8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*
d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A
*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2
 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a
^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^1
0*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^
8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e -
6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 +
3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*
c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 -
 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^
4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^
2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*
d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 -
 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*
d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4
*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) - (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2
 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^
2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5
*A^2*a^2*c)*d*e^4 + (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 -
a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*
d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A
*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2
 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a
^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^1
0*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^
8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c
^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 -
5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*
a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*
A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) - (6*A
^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a
^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^
2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4
*c^2)*e^8 - (2*A*a^3*c^7*d^9 + B*a^4*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B
*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^
3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4
 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*
a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7
+ 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3
*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)
*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6
*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((
4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (
B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 + (a^3*
c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B
^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2
- 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a
*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 -
 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 8
1*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^
4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*
e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)))
 + (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 - a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5
+ 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15
*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^
4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4
 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*
a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7
+ 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3
*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)
*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6
*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c
^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B
*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2
 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c
^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^
4*a^2*c^2)*e^7)*sqrt(e*x + d) + (6*A^2*B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c
^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*
(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2
)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^2)*e^8 + (2*A*a^3*c^7*d^9 + B*a^4*c^
6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4
 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c
^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5
*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^
3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 1
5*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4
+ 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e
^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c
^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A
*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(
B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2
*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*
A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e
^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B
^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e
^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*
a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4
*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^
2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) - (a^2*c*d^2 - a^3*e^2 - (a*c^2*d^2 -
a^2*c*e^2)*x^2)*sqrt((4*A^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e
^3 - 6*A*B*a^3*e^5 + (B^2*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^
2*a^2*c)*d*e^4 - (a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6
*c*e^6)*sqrt((36*A^2*B^2*c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5
*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^
3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 1
5*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4
+ 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e
^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c
^4*d^2*e^10 + a^9*c^3*e^12)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*
d^2*e^4 - a^6*c*e^6))*log(-(24*A^3*B*c^4*d^5*e^2 + 4*(9*A^2*B^2*a*c^3 - 5*A
^4*c^4)*d^4*e^3 + 2*(9*A*B^3*a^2*c^2 - 65*A^3*B*a*c^3)*d^3*e^4 + 3*(B^4*a^3
*c - 28*A^2*B^2*a^2*c^2 + 27*A^4*a*c^3)*d^2*e^5 - 2*(5*A*B^3*a^3*c - 81*A^3
*B*a^2*c^2)*d*e^6 + (B^4*a^4 - 81*A^4*a^2*c^2)*e^7)*sqrt(e*x + d) - (6*A^2*
B*a^2*c^4*d^5*e^3 + 5*(3*A*B^2*a^3*c^3 - A^3*a^2*c^4)*d^4*e^4 + 6*(B^3*a^4*
c^2 - 7*A^2*B*a^3*c^3)*d^3*e^5 - 12*(3*A*B^2*a^4*c^2 - 2*A^3*a^3*c^3)*d^2*e
^6 + 2*(B^3*a^5*c + 30*A^2*B*a^4*c^2)*d*e^7 - 3*(A*B^2*a^5*c + 9*A^3*a^4*c^
2)*e^8 + (2*A*a^3*c^7*d^9 + B*a^4*c^6*d^8*e - 10*A*a^4*c^6*d^7*e^2 - 2*B*a^
5*c^5*d^6*e^3 + 18*A*a^5*c^5*d^5*e^4 - 14*A*a^6*c^4*d^3*e^6 + 2*B*a^7*c^3*d
^2*e^7 + 4*A*a^7*c^3*d*e^8 - B*a^8*c^2*e^9)*sqrt((36*A^2*B^2*c^4*d^6*e^4 +
12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 198*A^2*B^2*a*c
^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^3)*d^3*e^7 + 6
*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28*(A*B^3*a^3*c
+ 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A^4*a^2*c^2)*e^
10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 - 20*a^6*c^6*d^
6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^12)))*sqrt((4*A
^2*c^3*d^5 + 4*A*B*a*c^2*d^4*e - 6*A*B*a^2*c*d^2*e^3 - 6*A*B*a^3*e^5 + (B^2
*a^2*c - 15*A^2*a*c^2)*d^3*e^2 + 3*(B^2*a^3 + 5*A^2*a^2*c)*d*e^4 - (a^3*c^4
*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6)*sqrt((36*A^2*B^2*
c^4*d^6*e^4 + 12*(3*A*B^3*a*c^3 - 5*A^3*B*c^4)*d^5*e^5 + (9*B^4*a^2*c^2 - 1
98*A^2*B^2*a*c^3 + 25*A^4*c^4)*d^4*e^6 - 8*(9*A*B^3*a^2*c^2 - 31*A^3*B*a*c^
3)*d^3*e^7 + 6*(B^4*a^3*c + 40*A^2*B^2*a^2*c^2 - 15*A^4*a*c^3)*d^2*e^8 - 28
*(A*B^3*a^3*c + 9*A^3*B*a^2*c^2)*d*e^9 + (B^4*a^4 + 18*A^2*B^2*a^3*c + 81*A
^4*a^2*c^2)*e^10)/(a^3*c^9*d^12 - 6*a^4*c^8*d^10*e^2 + 15*a^5*c^7*d^8*e^4 -
 20*a^6*c^6*d^6*e^6 + 15*a^7*c^5*d^4*e^8 - 6*a^8*c^4*d^2*e^10 + a^9*c^3*e^1
2)))/(a^3*c^4*d^6 - 3*a^4*c^3*d^4*e^2 + 3*a^5*c^2*d^2*e^4 - a^6*c*e^6))) -
4*(B*a*d - A*a*e + (A*c*d - B*a*e)*x)*sqrt(e*x + d))/(a^2*c*d^2 - a^3*e^2 -
 (a*c^2*d^2 - a^2*c*e^2)*x^2)
```

giac [B] time = 0.91, size = 1156, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] -1/4*((a*c*d^2*e - a^2*e^3)^2*A*c*d*abs(c)*e - (a*c*d^2*e - a^2*e^3)^2*B*a*
abs(c)*e^2 + (sqrt(a*c)*c^2*d^4*e - 4*sqrt(a*c)*a*c*d^2*e^3 + 3*sqrt(a*c)*a
^2*e^5)*A*abs(a*c*d^2*e - a^2*e^3)*abs(c) + 2*(sqrt(a*c)*a*c*d^3*e^2 - sqrt
(a*c)*a^2*d*e^4)*B*abs(a*c*d^2*e - a^2*e^3)*abs(c) - (2*a*c^4*d^7*e - 7*a^2
*c^3*d^5*e^3 + 8*a^3*c^2*d^3*e^5 - 3*a^4*c*d*e^7)*A*abs(c) - (a^2*c^3*d^6*e
^2 - 2*a^3*c^2*d^4*e^4 + a^4*c*d^2*e^6)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt
(-(a*c^2*d^3 - a^2*c*d*e^2 + sqrt((a*c^2*d^3 - a^2*c*d*e^2)^2 - (a*c^2*d^4
- 2*a^2*c*d^2*e^2 + a^3*e^4)*(a*c^2*d^2 - a^2*c*e^2)))/(a*c^2*d^2 - a^2*c*e
^2)))/((a^2*c^3*d^4*e - sqrt(a*c)*a*c^3*d^5 + 2*sqrt(a*c)*a^2*c^2*d^3*e^2 -
 2*a^3*c^2*d^2*e^3 - sqrt(a*c)*a^3*c*d*e^4 + a^4*c*e^5)*sqrt(-c^2*d - sqrt(
a*c)*c*e)*abs(a*c*d^2*e - a^2*e^3)) - 1/4*((a*c*d^2*e - a^2*e^3)^2*sqrt(a*c
)*A*c*d*abs(c)*e - (a*c*d^2*e - a^2*e^3)^2*sqrt(a*c)*B*a*abs(c)*e^2 - (a*c^
3*d^4*e - 4*a^2*c^2*d^2*e^3 + 3*a^3*c*e^5)*A*abs(a*c*d^2*e - a^2*e^3)*abs(c
) - 2*(a^2*c^2*d^3*e^2 - a^3*c*d*e^4)*B*abs(a*c*d^2*e - a^2*e^3)*abs(c) - (
2*sqrt(a*c)*a*c^4*d^7*e - 7*sqrt(a*c)*a^2*c^3*d^5*e^3 + 8*sqrt(a*c)*a^3*c^2
*d^3*e^5 - 3*sqrt(a*c)*a^4*c*d*e^7)*A*abs(c) - (sqrt(a*c)*a^2*c^3*d^6*e^2 -
 2*sqrt(a*c)*a^3*c^2*d^4*e^4 + sqrt(a*c)*a^4*c*d^2*e^6)*B*abs(c))*arctan(sq
rt(x*e + d)/sqrt(-(a*c^2*d^3 - a^2*c*d*e^2 - sqrt((a*c^2*d^3 - a^2*c*d*e^2)
^2 - (a*c^2*d^4 - 2*a^2*c*d^2*e^2 + a^3*e^4)*(a*c^2*d^2 - a^2*c*e^2)))/(a*c
^2*d^2 - a^2*c*e^2)))/((a^2*c^4*d^5 + sqrt(a*c)*a^2*c^3*d^4*e - 2*a^3*c^3*d
^3*e^2 - 2*sqrt(a*c)*a^3*c^2*d^2*e^3 + a^4*c^2*d*e^4 + sqrt(a*c)*a^4*c*e^5)
*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a*c*d^2*e - a^2*e^3)) - 1/2*((x*e + d)^(3
/2)*A*c*d*e - sqrt(x*e + d)*A*c*d^2*e - (x*e + d)^(3/2)*B*a*e^2 + 2*sqrt(x*
e + d)*B*a*d*e^2 - sqrt(x*e + d)*A*a*e^3)/((a*c*d^2 - a^2*e^2)*((x*e + d)^2
*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2))
```

maple [B] time = 0.29, size = 635, normalized size = 2.54

$$\frac{A\,c^{2} d e \,\mathrm{arctanh}\left(\frac{\sqrt{e x +d}\, c}{\sqrt{\left(c d +\sqrt{a c \,e^{2}}\right) c}}\right)}{2 \sqrt{a c \,e^{2}}\, \left(c d +\sqrt{a c \,e^{2}}\right) \sqrt{\left(c d +\sqrt{a c \,e^{2}}\right) c}\, a}-\frac{A\,c^{2} d e \arctan \left(\frac{\sqrt{e x +d}\, c}{\sqrt{\left(-c d +\sqrt{a c \,e^{2}}\right) c}}\right)}{2 \sqrt{a c \,e^{2}}\, \left(-c d +\sqrt{a c \,e^{2}}\right) \sqrt{\left(-c d +\sqrt{a c \,e^{2}}\right) c}\, a}+\frac{B c \,e^{2} \,\mathrm{arc}}{4 \sqrt{a c \,e^{2}}\, \left(c d +\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/4*e^2/(a*c*e^2)^(1/2)/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)/(e*x-(a*c*e^2)
^(1/2)/c)*B-1/4*e/a/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)/(e*x-(a*c*e^2)^(1/2
)/c)*A+1/2*c^2*e/(a*c*e^2)^(1/2)/a/(c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+
1/4*c*e^2/(a*c*e^2)^(1/2)/(c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*c*e/a/(
c*d+(a*c*e^2)^(1/2))/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/4*e^2/(a*c*e^2)^(1/2)/(c*d-(a*c*e^2)
^(1/2))*(e*x+d)^(1/2)/(e*x+(a*c*e^2)^(1/2)/c)*B-1/4*e/a/(c*d-(a*c*e^2)^(1/2
))*(e*x+d)^(1/2)/(e*x+(a*c*e^2)^(1/2)/c)*A-1/2*c^2*e/(a*c*e^2)^(1/2)/a/(-c*
d+(a*c*e^2)^(1/2))/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-1/4*c*e^2/(a*c*e^2)^(1/2)/(-c*d+(a*c*
e^2)^(1/2))/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*c*e/a/(-c*d+(a*c*e^2)^(1/2))/((-c*d+(a*c*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c
)*A
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{{\left(cx^{2} - a\right)}^{2} \sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 - a)^2*sqrt(e*x + d)), x)
```

mupad [B] time = 6.24, size = 10862, normalized size = 43.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^2*(d + e*x)^(1/2)),x)
```

```
[Out] atan(((((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 2
56*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2
*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*
c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e
^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c
^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2
) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3
*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6
 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^
3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*
e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^
3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^
3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*
c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^
2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a
^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c
^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6
 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a
*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e
^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3
*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3
)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c
^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2
*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^
9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^
4*d^2*e^4)))^(1/2)*1i - (((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a
^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4
 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 +
 B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2
 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d
*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*
e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/
2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6
*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5
*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*
d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) -
 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c
^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9
*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^
4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 1
4*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5
*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6
 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4
*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d
^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) -
15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^
2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*
A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4
*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14
*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*
d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i)/((B^3*a^3*c*e^6 - 4*A^3*c^4*d^3*e^
3 + 9*A^3*a*c^3*d*e^5 - 9*A^2*B*a^2*c^2*e^6 + 3*A*B^2*a^2*c^2*d*e^5)/(4*(a^
5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + (((192*A*a^5*c^3*e^7 - 128*B*a^5*
c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^
3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4
*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2
*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(
a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5
*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6
*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2
*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3
)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a
^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c
^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*
(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*
e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a
```

```
^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*
(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*
c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*
a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)
^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^
5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^
3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + (((192*A*a^5*c^3*e
^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 1
28*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d +
 e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*
c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(
a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5
*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e
+ 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*
e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3
*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*
c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^
5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*
e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^
3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d
^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^
(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*
c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((
d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B
^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2
*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5
 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e
^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3
*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) + 6*A*B*c^2*d^
3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(
1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c
^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)))*((4
*A^2*a^3*c^5*d^5 + B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 - 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 + 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) + 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e + 3*B^2*a*c*d^2
*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 - 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)*2i + atan(((((192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3
*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 +
 a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B
^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 -
 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e
^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^
2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2)
 - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d
^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c
^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^
4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 1
5*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2
*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A
^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*
c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*
A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d
^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 +
 B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d
^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4
 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15
*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*
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d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^
2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c
^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A
*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^
4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i - (((192*A*a^5*c^3*e^7 - 128*B*a^5*c^
3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*
e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) - ((d + e*x)^(1/2)*((4*A
^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2
*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) +
15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2)
- 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e
^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/
2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)
))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^
4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(
a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c
^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a
^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^
(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5
*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3
*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(9
*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^
4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4
*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a
^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^
2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^
6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(
1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*
c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*
e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*1i)/((B^3*a^3*c*e^6 -
4*A^3*c^4*d^3*e^3 + 9*A^3*a*c^3*d*e^5 - 9*A^2*B*a^2*c^2*e^6 + 3*A*B^2*a^2*c
^2*d*e^5)/(4*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + (((192*A*a^5*c^3*
e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4*c^4*d^2*e^5 +
128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d^2*e^2)) + ((d
+ e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4
*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*
(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^
5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e
 - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d
*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 +
3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^5*e^2 - 128*a^4
*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d
^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3
*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c
^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*
d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)
^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6
*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) - (
(d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2*c^5*d^4*e^2 +
B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3*e^3 - 8*A*B*a^
2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4*A^2*a^3*c^5*d^
5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*
e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^
3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d
^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^
(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*
c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2) + ((
(192*A*a^5*c^3*e^7 - 128*B*a^5*c^3*d*e^6 + 64*A*a^3*c^5*d^4*e^3 - 256*A*a^4
*c^4*d^2*e^5 + 128*B*a^4*c^4*d^3*e^4)/(8*(a^5*e^4 + a^3*c^2*d^4 - 2*a^4*c*d
^2*e^2)) - ((d + e*x)^(1/2)*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/
2) - 15*A^2*a^4*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A
^2*c^2*d^2*e^3*(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4
 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*
B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3
 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7
*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^4)))^(1/2)*(64*a^5*c^4*d*e^6 + 64*a^3*c^6*d^
5*e^2 - 128*a^4*c^5*d^3*e^4))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((
4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 +
B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
 + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/
2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^
2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^
(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e
^4)))^(1/2) + ((d + e*x)^(1/2)*(9*A^2*a^2*c^3*e^6 + B^2*a^3*c^2*e^6 + 4*A^2
*c^5*d^4*e^2 + B^2*a^2*c^3*d^2*e^4 - 11*A^2*a*c^4*d^2*e^4 + 4*A*B*a*c^4*d^3
*e^3 - 8*A*B*a^2*c^3*d*e^5))/(a^4*e^4 + a^2*c^2*d^4 - 2*a^3*c*d^2*e^2))*((4
*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4*c^4*d^3*e^2 + B
^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*(a^9*c^3)^(1/2)
+ 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^5*(a^9*c^3)^(1/2
) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e - 3*B^2*a*c*d^2
*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d*e^4*(a^9*c^3)^(
1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 + 3*a^8*c^4*d^2*e^
4)))^(1/2)))*((4*A^2*a^3*c^5*d^5 - B^2*a^2*e^5*(a^9*c^3)^(1/2) - 15*A^2*a^4
*c^4*d^3*e^2 + B^2*a^5*c^3*d^3*e^2 - 6*A*B*a^6*c^2*e^5 + 5*A^2*c^2*d^2*e^3*
(a^9*c^3)^(1/2) + 15*A^2*a^5*c^3*d*e^4 + 3*B^2*a^6*c^2*d*e^4 - 9*A^2*a*c*e^
5*(a^9*c^3)^(1/2) - 6*A*B*c^2*d^3*e^2*(a^9*c^3)^(1/2) + 4*A*B*a^4*c^4*d^4*e
 - 3*B^2*a*c*d^2*e^3*(a^9*c^3)^(1/2) - 6*A*B*a^5*c^3*d^2*e^3 + 14*A*B*a*c*d
*e^4*(a^9*c^3)^(1/2))/(64*(a^6*c^6*d^6 - a^9*c^3*e^6 - 3*a^7*c^5*d^4*e^2 +
3*a^8*c^4*d^2*e^4)))^(1/2)*2i - (((B*a*e^2 - A*c*d*e)*(d + e*x)^(3/2))/(2*a
*(a*e^2 - c*d^2)) + ((d + e*x)^(1/2)*(A*a*e^3 - 2*B*a*d*e^2 + A*c*d^2*e))/(
2*a*(a*e^2 - c*d^2)))/(c*(d + e*x)^2 - a*e^2 + c*d^2 - 2*c*d*(d + e*x))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1457 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)^2}\,dx$

Optimal. Leaf size=303

$$-\frac{\left(-5\sqrt{a}A\sqrt{c}e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{4a^{3/2}\sqrt[4]{c}\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}}+\frac{\left(5\sqrt{a}A\sqrt{c}e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{4a^{3/2}\sqrt[4]{c}\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}}+\frac{x(A}{2a(a-}$$

```
[Out] -1/4*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d+3
*a*B*e-5*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(1/4)/(-e*a^(1/2)+d*c^(1/2))^(5/2)+
1/4*arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(2*A*c*d+3*a
*B*e+5*A*e*a^(1/2)*c^(1/2))/a^(3/2)/c^(1/4)/(e*a^(1/2)+d*c^(1/2))^(5/2)-1/2
*e*(5*A*a*e^2+A*c*d^2-6*B*a*d*e)/a/(-a*e^2+c*d^2)^2/(e*x+d)^(1/2)+1/2*(a*(-
A*e+B*d)+(A*c*d-B*a*e)*x)/a/(-a*e^2+c*d^2)/(-c*x^2+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.69, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {823, 829, 827, 1166, 208}

$$-\frac{\left(-5\sqrt{a}A\sqrt{c}e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{4a^{3/2}\sqrt[4]{c}\left(\sqrt{c}d-\sqrt{a}e\right)^{5/2}}+\frac{\left(5\sqrt{a}A\sqrt{c}e+3aBe+2Acd\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{4a^{3/2}\sqrt[4]{c}\left(\sqrt{a}e+\sqrt{c}d\right)^{5/2}}+\frac{x(A}{2a(a-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)^2),x]
```

```
[Out] -(e*(A*c*d^2 - 6*a*B*d*e + 5*a*A*e^2))/(2*a*(c*d^2 - a*e^2)^2*Sqrt[d + e*x]
) + (a*(B*d - A*e) + (A*c*d - a*B*e)*x)/(2*a*(c*d^2 - a*e^2)*Sqrt[d + e*x]*
(a - c*x^2)) - ((2*A*c*d + 3*a*B*e - 5*Sqrt[a]*A*Sqrt[c]*e)*ArcTanh[(c^(1/4
)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(4*a^(3/2)*c^(1/4)*(Sqrt[c]*
d - Sqrt[a]*e)^(5/2)) + ((2*A*c*d + 3*a*B*e + 5*Sqrt[a]*A*Sqrt[c]*e)*ArcTan
h[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(4*a^(3/2)*c^(1/4)*
(Sqrt[c]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
```

```
eQ[c*d^2 + a*e^2, 0]
```

Rule 829

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(c*d^2 + a*e^2)
), x] + Dist[1/(c*d^2 + a*e^2), Int[((d + e*x)^(m + 1)*Simp[c*d*f + a*e*g -
 c*(e*f - d*g)*x, x])/(a + c*x^2), x], x] /; FreeQ[{a, c, d, e, f, g, m}, x
] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a-cx^2\right)^2}\,dx = \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\,\left(a-cx^2\right)} - \frac{\int \frac{-\frac{1}{2}c\left(2Acd^2+3aBde-5aAe^2\right)-\frac{3}{2}ce(Acd-aBe)x}{(d+ex)^{3/2}\left(a-cx^2\right)}\,dx}{2ac\left(cd^2-ae^2\right)}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\,\left(a-cx^2\right)} + \frac{\int \frac{\frac{1}{2}c\left(2Acd\left(cd^2\right.\right.}{}}{}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\,\left(a-cx^2\right)} + \frac{\mathrm{Subst}\left(\int \frac{-\frac{1}{2}}{}\right.}{}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\,\left(a-cx^2\right)} - \frac{\left(\sqrt{c}\left(2Acd+\right.\right.}{}$$

$$= -\frac{e\left(Acd^2-6aBde+5aAe^2\right)}{2a\left(cd^2-ae^2\right)^2\sqrt{d+ex}} + \frac{a(Bd-Ae)+(Acd-aBe)x}{2a\left(cd^2-ae^2\right)\sqrt{d+ex}\,\left(a-cx^2\right)} - \frac{\left(2Acd+3aB\right.}{4}$$

Mathematica [C] time = 0.61, size = 365, normalized size = 1.20

$$\frac{-\frac{3c^{3/4}(Acd-aBe)\left(\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{a}e+\sqrt{c}d}}\right)}{\sqrt{\sqrt{a}e+\sqrt{c}d}}-\frac{\tanh^{-1}\left(\frac{\sqrt[4]{c}\sqrt{d+ex}}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{\sqrt{\sqrt{c}d-\sqrt{a}e}}\right)}{2\sqrt{a}}+\frac{c\left(5aAe^2-6aBde+Acd^2\right)\left(\left(\sqrt{a}e+\sqrt{c}d\right){}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{a}e}\right)+\left(\sqrt{a}e-\sqrt{c}d\right){}_2F_1\right.}{2\sqrt{a}\sqrt{d+ex}\left(cd^2-ae^2\right)}}{2ac\left(ae^2-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a - c*x^2)^2),x]
```

```
[Out] ((c*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)))/(Sqrt[d + e*x]*(-a + c*x^2)) - (3
*c^(3/4)*(A*c*d - a*B*e)*(-(ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d
- Sqrt[a]*e]]/Sqrt[Sqrt[c]*d - Sqrt[a]*e]) + ArcTanh[(c^(1/4)*Sqrt[d + e*x]
)/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]/Sqrt[Sqrt[c]*d + Sqrt[a]*e]))/(2*Sqrt[a]) +
(c*(A*c*d^2 - 6*a*B*d*e + 5*a*A*e^2)*((Sqrt[c]*d + Sqrt[a]*e)*Hypergeometri
c2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[a]*e)] + (-(Sqrt[c
]*d) + Sqrt[a]*e)*Hypergeometric2F1[-1/2, 1, 1/2, (Sqrt[c]*(d + e*x))/(Sqrt
[c]*d + Sqrt[a]*e)]))/(2*Sqrt[a]*(c*d^2 - a*e^2)*Sqrt[d + e*x]))/(2*a*c*(-(
c*d^2) + a*e^2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 2.07, size = 1895, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*(6*(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)^2*B*a*c*d*abs(c)*e^2 - (a*
c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)^2*(c^2*d^2*e + 5*a*c*e^3)*A*abs(c) -
 (sqrt(a*c)*c^4*d^7*e - 15*sqrt(a*c)*a*c^3*d^5*e^3 + 27*sqrt(a*c)*a^2*c^2*d
^3*e^5 - 13*sqrt(a*c)*a^3*c*d*e^7)*A*abs(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^
3*e^5)*abs(c) - 3*(3*sqrt(a*c)*a*c^3*d^6*e^2 - 5*sqrt(a*c)*a^2*c^2*d^4*e^4
+ sqrt(a*c)*a^3*c*d^2*e^6 + sqrt(a*c)*a^4*e^8)*B*abs(a*c^2*d^4*e - 2*a^2*c*
d^2*e^3 + a^3*e^5)*abs(c) + 2*(a*c^7*d^12*e - 8*a^2*c^6*d^10*e^3 + 22*a^3*c
^5*d^8*e^5 - 28*a^4*c^4*d^6*e^7 + 17*a^5*c^3*d^4*e^9 - 4*a^6*c^2*d^2*e^11)*
A*abs(c) + 3*(a^2*c^6*d^11*e^2 - 3*a^3*c^5*d^9*e^4 + 2*a^4*c^4*d^7*e^6 + 2*
a^5*c^3*d^5*e^8 - 3*a^6*c^2*d^3*e^10 + a^7*c*d*e^12)*B*abs(c))*arctan(sqrt(
x*e + d)/sqrt(-(a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4 + sqrt((a*c^3*d
^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)^2 - (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 +
3*a^3*c*d^2*e^4 - a^4*e^6)*(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/(a
*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/((a^2*c^5*d^8*e - sqrt(a*c)*a*c
^5*d^9 + 4*sqrt(a*c)*a^2*c^4*d^7*e^2 - 4*a^3*c^4*d^6*e^3 - 6*sqrt(a*c)*a^3*
c^3*d^5*e^4 + 6*a^4*c^3*d^4*e^5 + 4*sqrt(a*c)*a^4*c^2*d^3*e^6 - 4*a^5*c^2*d
^2*e^7 - sqrt(a*c)*a^5*c*d*e^8 + a^6*c*e^9)*sqrt(-c^2*d - sqrt(a*c)*c*e)*ab
s(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)) + 1/4*(6*(a*c^2*d^4*e - 2*a^2*c
*d^2*e^3 + a^3*e^5)^2*sqrt(a*c)*B*a*d*abs(c)*e^2 - (a*c^2*d^4*e - 2*a^2*c*d
^2*e^3 + a^3*e^5)^2*(sqrt(a*c)*c*d^2*e + 5*sqrt(a*c)*a*e^3)*A*abs(c) + (a*c
^4*d^7*e - 15*a^2*c^3*d^5*e^3 + 27*a^3*c^2*d^3*e^5 - 13*a^4*c*d*e^7)*A*abs(
a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)*abs(c) + 3*(3*a^2*c^3*d^6*e^2 - 5*
a^3*c^2*d^4*e^4 + a^4*c*d^2*e^6 + a^5*e^8)*B*abs(a*c^2*d^4*e - 2*a^2*c*d^2*
e^3 + a^3*e^5)*abs(c) + 2*(sqrt(a*c)*a*c^6*d^12*e - 8*sqrt(a*c)*a^2*c^5*d^1
0*e^3 + 22*sqrt(a*c)*a^3*c^4*d^8*e^5 - 28*sqrt(a*c)*a^4*c^3*d^6*e^7 + 17*sq
rt(a*c)*a^5*c^2*d^4*e^9 - 4*sqrt(a*c)*a^6*c*d^2*e^11)*A*abs(c) + 3*(sqrt(a*
c)*a^2*c^5*d^11*e^2 - 3*sqrt(a*c)*a^3*c^4*d^9*e^4 + 2*sqrt(a*c)*a^4*c^3*d^7
*e^6 + 2*sqrt(a*c)*a^5*c^2*d^5*e^8 - 3*sqrt(a*c)*a^6*c*d^3*e^10 + sqrt(a*c)
*a^7*d*e^12)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a*c^3*d^5 - 2*a^2*c^2*d^
3*e^2 + a^3*c*d*e^4 - sqrt((a*c^3*d^5 - 2*a^2*c^2*d^3*e^2 + a^3*c*d*e^4)^2
- (a*c^3*d^6 - 3*a^2*c^2*d^4*e^2 + 3*a^3*c*d^2*e^4 - a^4*e^6)*(a*c^3*d^4 -
2*a^2*c^2*d^2*e^2 + a^3*c*e^4)))/(a*c^3*d^4 - 2*a^2*c^2*d^2*e^2 + a^3*c*e^4
)))/((a^2*c^5*d^9 + sqrt(a*c)*a^2*c^4*d^8*e - 4*a^3*c^4*d^7*e^2 - 4*sqrt(a*
c)*a^3*c^3*d^6*e^3 + 6*a^4*c^3*d^5*e^4 + 6*sqrt(a*c)*a^4*c^2*d^4*e^5 - 4*a^
5*c^2*d^3*e^6 - 4*sqrt(a*c)*a^5*c*d^2*e^7 + a^6*c*d*e^8 + sqrt(a*c)*a^6*e^9
)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a*c^2*d^4*e - 2*a^2*c*d^2*e^3 + a^3*e^5)
) - 1/2*((x*e + d)^2*A*c^2*d^2*e - (x*e + d)*A*c^2*d^3*e - 6*(x*e + d)^2*B*
a*c*d*e^2 + 11*(x*e + d)*B*a*c*d^2*e^2 - 4*B*a*c*d^3*e^2 + 5*(x*e + d)^2*A*
a*c*e^3 - 11*(x*e + d)*A*a*c*d*e^3 + 4*A*a*c*d^2*e^3 + (x*e + d)*B*a^2*e^4
+ 4*B*a^2*d*e^4 - 4*A*a^2*e^5)/((a*c^2*d^4 - 2*a^2*c*d^2*e^2 + a^3*e^4)*((x
*e + d)^(5/2)*c - 2*(x*e + d)^(3/2)*c*d + sqrt(x*e + d)*c*d^2 - sqrt(x*e +
d)*a*e^2))
```

maple [B] time = 0.10, size = 1392, normalized size = 4.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x)
```

```
[Out] -1/2*e^3/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*c*(e*x+d)^(3/2)*A-1/2*e/(a*e^2-c
*d^2)^2/(c*e^2*x^2-a*e^2)*c^2/a*(e*x+d)^(3/2)*A*d^2+e^2/(a*e^2-c*d^2)^2/(c*
e^2*x^2-a*e^2)*c*(e*x+d)^(3/2)*B*d+3/2*e^3/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2
)*(e*x+d)^(1/2)*A*c*d+1/2*e/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)/a*(e*x+d)^(1/
2)*A*c^2*d^3-1/2*e^4/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*a*(e*x+d)^(1/2)*B-3/
2*e^2/(a*e^2-c*d^2)^2/(c*e^2*x^2-a*e^2)*(e*x+d)^(1/2)*B*c*d^2-2*e^3/(a*e^2-
c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e/(a*e^2-c*d^2)^2/a*c^3/
(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/4*e^4/(a*e^2-c*d^2)^2*a*c/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*B+3/4*e^2/(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*d^2+5/4*e^3/(a*e^2-c*d^2)^2*c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+1/4*e/(a*e^2-c*d^2)^2/a
*c^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*d^2-3/2*e^2/(a*e^2-c*d^2)^2*c/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-2*e^3/
(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+1/2*e/(a*e^2-c*d^2)^
2/a*c^3/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/
2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/4*e^4/(a*e^2-c*d^2)^2*a*c/(a
*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+3/4*e^2/(a*e^2-c*d^2)^2*c^2/(a*c*e^2)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2
))*c)^(1/2)*c)*B*d^2-5/4*e^3/(a*e^2-c*d^2)^2*c/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/4*e/(a*e^
2-c*d^2)^2/a*c^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/2*e^2/(a*e^2-c*d^2)^2*c/((-c*d+(a*c
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)
*c)*B*d-2*e^3/(a*e^2-c*d^2)^2/(e*x+d)^(1/2)*A+2*e^2/(a*e^2-c*d^2)^2/(e*x+d)
^(1/2)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 - a\right)^2 (ex + d)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(-c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 - a)^2*(e*x + d)^(3/2)), x)
```

mupad [B] time = 8.12, size = 19787, normalized size = 65.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^2*(d + e*x)^(3/2)),x)
```

```
[Out] (((d + e*x)*(B*a^2*e^4 - A*c^2*d^3*e - 11*A*a*c*d*e^3 + 11*B*a*c*d^2*e^2))/
(2*a*(a*e^2 - c*d^2)^2) - (2*(A*e^3 - B*d*e^2))/(a*e^2 - c*d^2) + (c*(d + e
*x)^2*(5*A*a*e^3 - 6*B*a*d*e^2 + A*c*d^2*e))/(2*a*(a*e^2 - c*d^2)^2))/((a*e
^2 - c*d^2)*(d + e*x)^(1/2) - c*(d + e*x)^(5/2) + 2*c*d*(d + e*x)^(3/2)) -
atan((((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128
*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^
14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*
A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e
^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7
*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 +
18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^
4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A
*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^
11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a
^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35
*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*
B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6
 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^
7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2)
+ 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*
d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 -
138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(6
4*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10
*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d +
e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*
c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c
^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^
2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*
B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*
a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(
a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a
^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c
*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*
d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14
*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*
c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 43
0080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18
 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*
e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c
^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 19
3536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3
*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*
c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 -
75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4
*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^
9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^
3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*
B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) -
30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5
*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2)
+ 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6
*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a
^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c
^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i + ((d + e*
x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*
d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848
```

```
*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^
8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2
*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8
+ 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10
*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384
*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^
13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B
*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^
17) - (-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d
^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^
3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6
*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3
*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c
^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c
)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*
d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10
 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e
^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*
B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4
 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9
*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(
a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^
2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3
*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^
3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a
*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8
*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2
)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4
+ 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^1
3*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13
*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*
a^15*c^3*e^22 - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a
^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 +
 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^
7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B
*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8
- 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c
^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B
*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 3
5*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90
*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^
6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e
^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2)
 + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c
*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 -
 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(
64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 1
0*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(800*
A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 176
0*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*
d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600
*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*
e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^
8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14
- 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*
d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*
A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e
^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) + (-(4*A^2
*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^
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2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2
*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 2
5*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*
c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*
B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A
*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^
(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^1
0 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^
2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*
d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3
*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*
e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2
*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2)
+ 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2
*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^
3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 1
80*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7
*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8
)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d
^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*
c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245
760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20)
- 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e
^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*
c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 9
5232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18
*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9
*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 +
21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*
e^20))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*
d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d
^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^
6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^
3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*
c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*
c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c
*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^1
0 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*
e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20
 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^
16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*
A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*
e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^
5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 -
 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c
^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A
*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*
e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a
^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7 + 9*
B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4
 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9
*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(
a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^
2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3
*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^
3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a
*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8
*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2
)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*
A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B
^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6
+ 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7
 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) +
 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d
^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 1
38*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64
*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*
a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*
a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245
760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e
^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*
d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*a^15*c^3*e^22 - 3328*A*a^14*c^4
*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*
c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 2
47296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d
^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^
7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 +
118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*
d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a
^3*c^5*d^7 + 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*
a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c
^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*
A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)
^(1/2) + 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^
2*a*c^2*d^4*e^3*(a^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B
*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1
/2) - 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10
+ 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*
d^2*e^8)))^(1/2) + 1000*A^3*a^10*c^4*e^19 - 32*A^3*a^2*c^12*d^16*e^3 + 232*
A^3*a^3*c^11*d^14*e^5 + 280*A^3*a^4*c^10*d^12*e^7 - 4760*A^3*a^5*c^9*d^10*e
^9 + 13720*A^3*a^6*c^8*d^8*e^11 - 19208*A^3*a^7*c^7*d^6*e^13 + 14728*A^3*a^
8*c^6*d^4*e^15 - 5960*A^3*a^9*c^5*d^2*e^17 + 432*B^3*a^5*c^9*d^13*e^6 - 259
2*B^3*a^6*c^8*d^11*e^8 + 6480*B^3*a^7*c^7*d^9*e^10 - 8640*B^3*a^8*c^6*d^7*e
^12 + 6480*B^3*a^9*c^5*d^5*e^14 - 2592*B^3*a^10*c^4*d^3*e^16 - 360*A*B^2*a^
11*c^3*e^19 + 432*B^3*a^11*c^3*d*e^18 + 504*A*B^2*a^4*c^10*d^14*e^5 - 3384*
A*B^2*a^5*c^9*d^12*e^7 + 9720*A*B^2*a^6*c^8*d^10*e^9 - 15480*A*B^2*a^7*c^7*
d^8*e^11 + 14760*A*B^2*a^8*c^6*d^6*e^13 - 8424*A*B^2*a^9*c^5*d^4*e^15 + 266
4*A*B^2*a^10*c^4*d^2*e^17 + 96*A^2*B*a^3*c^11*d^15*e^4 - 2256*A^2*B*a^4*c^1
0*d^13*e^6 + 11520*A^2*B*a^5*c^9*d^11*e^8 - 27120*A^2*B*a^6*c^8*d^9*e^10 +
35040*A^2*B*a^7*c^7*d^7*e^12 - 25776*A^2*B*a^8*c^6*d^5*e^14 + 10176*A^2*B*a
^9*c^5*d^3*e^16 - 1680*A^2*B*a^10*c^4*d*e^18))*(-(4*A^2*a^3*c^5*d^7 + 9*B^2
*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 +
9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 - 35*A^2*c^3*d^4*e^3*(a^9*c)
^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 + 25*A^2*a^2*c*e^7*(a^9
*c)^(1/2) - 30*A*B*a^7*c*e^7 + 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) + 154*A^2*a
*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e + 45*B^2*a*c^2*d^4*e^3*(a
^9*c)^(1/2) + 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 -
 240*A*B*a^6*c^2*d^2*e^5 - 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) - 180*A*B*a*c^
2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^
2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*2
i - atan((((d + e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 +
 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^1
1*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51
008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d
^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2
*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^1
2 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^1
2*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 115
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20*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^
9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A
*B*a^11*c^5*d^3*e^17) + (-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2)
- 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 +
 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d
*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*
c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1
/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^
2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^
5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2)
)/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4
+ 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (
d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*
a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a
^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 10
5*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 3
0*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*
A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e
^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A
*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^
11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*
c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*
c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*
a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12
+ 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*
e^18 - 20480*a^15*c^5*d^3*e^20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d
^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a
^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13
+ 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5
*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*
a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^1
2 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5
*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7
*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^
5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) +
 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2
) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2
*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1
/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B
*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^
4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a
^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i + ((d
+ e*x)^(1/2)*(800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c
^13*d^18*e^2 - 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 3
0848*A^2*a^6*c^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^
8*d^8*e^12 + 25600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432
*A^2*a^11*c^5*d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*
e^8 + 18432*B^2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*
a^10*c^6*d^6*e^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 +
 384*A*B*a^4*c^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^1
0*d^13*e^7 - 9984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776
*A*B*a^9*c^7*d^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^
3*e^17) - (-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c
^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^
2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2
*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B
*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a
^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a
^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^
```

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2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*
e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d
^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7
 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3
*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*
(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e
^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 15
4*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4
*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^
4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A
*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5
*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^
(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*
e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10
*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*
a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 76
8*B*a^15*c^3*e^22 - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376
*A*a^6*c^12*d^17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e
^9 + 204288*A*a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^1
1*c^7*d^7*e^15 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 23
04*B*a^6*c^12*d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*
e^8 - 107520*B*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^
11*c^7*d^8*e^14 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 38
40*B*a^14*c^4*d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2)
 - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2
+ 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*
d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7
*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(
1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a
^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e
^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2
))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4
 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*1i)/(((d + e*x)^(1/2)*(
800*A^2*a^12*c^4*e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 -
 1760*A^2*a^4*c^12*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c
^10*d^12*e^8 + 52480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 2
5600*A^2*a^9*c^7*d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*
d^2*e^18 + 288*B^2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^
2*a^8*c^8*d^10*e^10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e
^14 - 5760*B^2*a^11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c
^12*d^17*e^3 - 3840*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9
984*A*B*a^7*c^9*d^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d
^7*e^13 - 42240*A*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) + (-(4
*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 7
0*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35
*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6
 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(
a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e -
 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) -
30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9
*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6
*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^1
0*c^2*d^2*e^8)))^(1/2)*(768*B*a^15*c^3*e^22 - (d + e*x)^(1/2)*(-(4*A^2*a^3*
c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5
*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*
d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2
*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1
/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a
*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^
5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2)
 + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5
*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2
*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2048*a^6*c^14*d^21*e^2 - 20480*a^7*c^
13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 - 245760*a^9*c^11*d^15*e^8 + 430080*a
^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^11*e^12 + 430080*a^12*c^8*d^9*e^14 -
 245760*a^13*c^7*d^7*e^16 + 92160*a^14*c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^
20) - 3328*A*a^14*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^
17*e^5 + 33792*A*a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*
a^9*c^9*d^11*e^11 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15
 - 95232*A*a^12*c^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*
d^18*e^4 - 17664*B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B
*a^9*c^9*d^12*e^10 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^1
4 + 21504*B*a^12*c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*
d^2*e^20))*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*
c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c
^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^
2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*
B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*
a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(
a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a
^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c
*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*
d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(800*A^2*a^12*c^4*
e^20 + 288*B^2*a^13*c^3*e^20 + 128*A^2*a^3*c^13*d^18*e^2 - 1760*A^2*a^4*c^1
2*d^16*e^4 + 10240*A^2*a^5*c^11*d^14*e^6 - 30848*A^2*a^6*c^10*d^12*e^8 + 52
480*A^2*a^7*c^9*d^10*e^10 - 51008*A^2*a^8*c^8*d^8*e^12 + 25600*A^2*a^9*c^7*
d^6*e^14 - 3200*A^2*a^10*c^6*d^4*e^16 - 2432*A^2*a^11*c^5*d^2*e^18 + 288*B^
2*a^5*c^11*d^16*e^4 - 5760*B^2*a^7*c^9*d^12*e^8 + 18432*B^2*a^8*c^8*d^10*e^
10 - 25920*B^2*a^9*c^7*d^8*e^12 + 18432*B^2*a^10*c^6*d^6*e^14 - 5760*B^2*a^
11*c^5*d^4*e^16 - 3456*A*B*a^12*c^4*d*e^19 + 384*A*B*a^4*c^12*d^17*e^3 - 38
40*A*B*a^5*c^11*d^15*e^5 + 11520*A*B*a^6*c^10*d^13*e^7 - 9984*A*B*a^7*c^9*d
^11*e^9 - 15360*A*B*a^8*c^8*d^9*e^11 + 43776*A*B*a^9*c^7*d^7*e^13 - 42240*A
*B*a^10*c^6*d^5*e^15 + 19200*A*B*a^11*c^5*d^3*e^17) - (-(4*A^2*a^3*c^5*d^7
 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3
*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*
(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e
^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 15
4*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4
*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^
4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A
*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5
*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^
(1/2)*((d + e*x)^(1/2)*(-(4*A^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) -
 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 +
90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*
e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c
*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/
2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2
*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5
 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))
/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 +
 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/2)*(2048*a^16*c^4*d*e^22 + 2
048*a^6*c^14*d^21*e^2 - 20480*a^7*c^13*d^19*e^4 + 92160*a^8*c^12*d^17*e^6 -
 245760*a^9*c^11*d^15*e^8 + 430080*a^10*c^10*d^13*e^10 - 516096*a^11*c^9*d^
11*e^12 + 430080*a^12*c^8*d^9*e^14 - 245760*a^13*c^7*d^7*e^16 + 92160*a^14*
c^6*d^5*e^18 - 20480*a^15*c^5*d^3*e^20) + 768*B*a^15*c^3*e^22 - 3328*A*a^14
*c^4*d*e^21 + 256*A*a^5*c^13*d^19*e^3 - 5376*A*a^6*c^12*d^17*e^5 + 33792*A*
a^7*c^11*d^15*e^7 - 107520*A*a^8*c^10*d^13*e^9 + 204288*A*a^9*c^9*d^11*e^11
```

```
 - 247296*A*a^10*c^8*d^9*e^13 + 193536*A*a^11*c^7*d^7*e^15 - 95232*A*a^12*c
^6*d^5*e^17 + 26880*A*a^13*c^5*d^3*e^19 + 2304*B*a^6*c^12*d^18*e^4 - 17664*
B*a^7*c^11*d^16*e^6 + 58368*B*a^8*c^10*d^14*e^8 - 107520*B*a^9*c^9*d^12*e^1
0 + 118272*B*a^10*c^8*d^10*e^12 - 75264*B*a^11*c^7*d^8*e^14 + 21504*B*a^12*
c^6*d^6*e^16 + 3072*B*a^13*c^5*d^4*e^18 - 3840*B*a^14*c^4*d^2*e^20))*(-(4*A
^2*a^3*c^5*d^7 - 9*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*
A^2*a^5*c^3*d^3*e^4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A
^2*c^3*d^4*e^3*(a^9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 -
 25*A^2*a^2*c*e^7*(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^
9*c)^(1/2) - 154*A^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 4
5*B^2*a*c^2*d^4*e^3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30
*A*B*a^5*c^3*d^4*e^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c
)^(1/2) + 180*A*B*a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d
^10 + 5*a^7*c^5*d^8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*
c^2*d^2*e^8)))^(1/2) + 1000*A^3*a^10*c^4*e^19 - 32*A^3*a^2*c^12*d^16*e^3 +
232*A^3*a^3*c^11*d^14*e^5 + 280*A^3*a^4*c^10*d^12*e^7 - 4760*A^3*a^5*c^9*d^
10*e^9 + 13720*A^3*a^6*c^8*d^8*e^11 - 19208*A^3*a^7*c^7*d^6*e^13 + 14728*A^
3*a^8*c^6*d^4*e^15 - 5960*A^3*a^9*c^5*d^2*e^17 + 432*B^3*a^5*c^9*d^13*e^6 -
 2592*B^3*a^6*c^8*d^11*e^8 + 6480*B^3*a^7*c^7*d^9*e^10 - 8640*B^3*a^8*c^6*d
^7*e^12 + 6480*B^3*a^9*c^5*d^5*e^14 - 2592*B^3*a^10*c^4*d^3*e^16 - 360*A*B^
2*a^11*c^3*e^19 + 432*B^3*a^11*c^3*d*e^18 + 504*A*B^2*a^4*c^10*d^14*e^5 - 3
384*A*B^2*a^5*c^9*d^12*e^7 + 9720*A*B^2*a^6*c^8*d^10*e^9 - 15480*A*B^2*a^7*
c^7*d^8*e^11 + 14760*A*B^2*a^8*c^6*d^6*e^13 - 8424*A*B^2*a^9*c^5*d^4*e^15 +
 2664*A*B^2*a^10*c^4*d^2*e^17 + 96*A^2*B*a^3*c^11*d^15*e^4 - 2256*A^2*B*a^4
*c^10*d^13*e^6 + 11520*A^2*B*a^5*c^9*d^11*e^8 - 27120*A^2*B*a^6*c^8*d^9*e^1
0 + 35040*A^2*B*a^7*c^7*d^7*e^12 - 25776*A^2*B*a^8*c^6*d^5*e^14 + 10176*A^2
*B*a^9*c^5*d^3*e^16 - 1680*A^2*B*a^10*c^4*d*e^18))*(-(4*A^2*a^3*c^5*d^7 - 9
*B^2*a^3*e^7*(a^9*c)^(1/2) - 35*A^2*a^4*c^4*d^5*e^2 + 70*A^2*a^5*c^3*d^3*e^
4 + 9*B^2*a^5*c^3*d^5*e^2 + 90*B^2*a^6*c^2*d^3*e^4 + 35*A^2*c^3*d^4*e^3*(a^
9*c)^(1/2) + 45*B^2*a^7*c*d*e^6 + 105*A^2*a^6*c^2*d*e^6 - 25*A^2*a^2*c*e^7*
(a^9*c)^(1/2) - 30*A*B*a^7*c*e^7 - 30*A*B*c^3*d^5*e^2*(a^9*c)^(1/2) - 154*A
^2*a*c^2*d^2*e^5*(a^9*c)^(1/2) + 12*A*B*a^4*c^4*d^6*e - 45*B^2*a*c^2*d^4*e^
3*(a^9*c)^(1/2) - 90*B^2*a^2*c*d^2*e^5*(a^9*c)^(1/2) - 30*A*B*a^5*c^3*d^4*e
^3 - 240*A*B*a^6*c^2*d^2*e^5 + 138*A*B*a^2*c*d*e^6*(a^9*c)^(1/2) + 180*A*B*
a*c^2*d^3*e^4*(a^9*c)^(1/2))/(64*(a^11*c*e^10 - a^6*c^6*d^10 + 5*a^7*c^5*d^
8*e^2 - 10*a^8*c^4*d^6*e^4 + 10*a^9*c^3*d^4*e^6 - 5*a^10*c^2*d^2*e^8)))^(1/
2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(-c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1458 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=396

$$\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(7aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{11/4}}-\frac{\left(\sqrt{a}\,e+\sqrt{c}\,d\right.}{}$$

```
[Out] 1/4*(e*x+d)^(5/2)*(a*(A*e+B*d)+(A*c*d+B*a*e)*x)/a/c/(-c*x^2+a)^2-1/32*arcta
nh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(e*a^(1/2)+d*c^(1/2))
^(3/2)*(7*a*B*e*(-3*e*a^(1/2)+2*d*c^(1/2))-A*(12*c^(3/2)*d^2-18*c*d*e*a^(1/
2)+5*a*e^2*c^(1/2)))/a^(5/2)/c^(11/4)+1/32*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-
e*a^(1/2)+d*c^(1/2))^(1/2))*(-e*a^(1/2)+d*c^(1/2))^(3/2)*(7*a*B*e*(3*e*a^(1
/2)+2*d*c^(1/2))-A*(12*c^(3/2)*d^2+18*c*d*e*a^(1/2)+5*a*e^2*c^(1/2)))/a^(5/
2)/c^(11/4)+1/16*(a*e*(-5*A*a*e^2+7*A*c*d^2-14*B*a*d*e)+(2*A*c*d*(-2*a*e^2+
3*c*d^2)-7*a*B*e*(a*e^2+c*d^2))*x)*(e*x+d)^(1/2)/a^2/c^2/(-c*x^2+a)
```

Rubi [**A**] time = 0.88, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {819, 827, 1166, 208}

$$\frac{\sqrt{d+ex}\left(x\left(2Acd\left(3cd^2-2ae^2\right)-7aBe\left(ae^2+cd^2\right)\right)+ae\left(-5aAe^2-14aBde+7Acd^2\right)\right)}{16a^2c^2\left(a-cx^2\right)}+\frac{\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}\left(7aBe\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(5/2)*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2)
 + (Sqrt[d + e*x]*(a*e*(7*A*c*d^2 - 14*a*B*d*e - 5*a*A*e^2) + (2*A*c*d*(3*c
*d^2 - 2*a*e^2) - 7*a*B*e*(c*d^2 + a*e^2))*x))/(16*a^2*c^2*(a - c*x^2)) + (
(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*(7*a*B*e*(2*Sqrt[c]*d + 3*Sqrt[a]*e) - A*(12*
c^(3/2)*d^2 + 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d
+ e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(11/4)) - ((Sqrt[c]*d +
 Sqrt[a]*e)^(3/2)*(7*a*B*e*(2*Sqrt[c]*d - 3*Sqrt[a]*e) - A*(12*c^(3/2)*d^2
- 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt
[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(11/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a-cx^2\right)^3}\,dx = \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{(d+ex)^{3/2}\left(\frac{1}{2}\left(-6Acd^2+ae(7Bd+5Ae)\right)-\frac{1}{2}e(Acd-7}{\left(a-cx^2\right)^2}}{4ac}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

$$= \frac{(d+ex)^{5/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,\left(ae\left(7Acd^2-14aBde-5aAe\right.\right.}{16a}$$

Mathematica [B] time = 2.96, size = 802, normalized size = 2.03

$$\frac{\frac{2ac^2\left(cd^2-ae^2\right)(-aAe+Acdx+aB(d-ex))(d+ex)^{9/2}}{\left(a-cx^2\right)^2}+\frac{c^2\left(6Ac^2xd^3+ace(-9Ad-7Bxd+4Aex)d-a^2e^2(-10Bd+Ae+3Bex)\right)(d+ex)^{9/2}}{2\left(a-cx^2\right)}-\frac{\left(A\left(54c^2d^4+81a\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(9/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(9/2)*(6*A*c^2*d^3*x + a*c*d*e*(-9*A*d
- 7*B*d*x + 4*A*e*x) - a^2*e^2*(-10*B*d + A*e + 3*B*e*x)))/(2*(a - c*x^2))
- ((-7*a*B*d*e*(9*c*d^2 + 11*a*e^2) + A*(54*c^2*d^4 + 81*a*c*d^2*e^2 + 5*a^
2*e^4))*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x]*(15*a*e^2 + c*(58*d^2 + 16*d*e*x
 + 3*e^2*x^2)) + 15*(Sqrt[c]*d - Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt[d +
 e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - 15*(Sqrt[c]*d + Sqrt[a]*e)^(7/2)*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(60*Sqrt[a]*c^(1
/4)) - ((2*A*c*d*(3*c*d^2 + 2*a*e^2) - a*B*e*(7*c*d^2 + 3*a*e^2))*((Sqrt[c]
*d - Sqrt[a]*e)*(15*c^(7/4)*(d + e*x)^(7/2) + 7*(Sqrt[c]*d - Sqrt[a]*e)*(3*
c^(5/4)*(d + e*x)^(5/2) + 5*(Sqrt[c]*d - Sqrt[a]*e)*(c^(1/4)*Sqrt[d + e*x]*
(-3*Sqrt[a]*e + Sqrt[c]*(4*d + e*x)) - 3*(Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcT
anh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]))) - (Sqrt[c]*d +
Sqrt[a]*e)*(15*c^(7/4)*(d + e*x)^(7/2) + 7*(Sqrt[c]*d + Sqrt[a]*e)*(3*c^(5/
4)*(d + e*x)^(5/2) + 5*(Sqrt[c]*d + Sqrt[a]*e)*(c^(1/4)*Sqrt[d + e*x]*(3*Sq
rt[a]*e + Sqrt[c]*(4*d + e*x)) - 3*(Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c
^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])))))/(60*Sqrt[a]*c^(3/4)
))/(8*a^2*c^2*(c*d^2 - a*e^2)^2)
```

fricas [B] time = 29.56, size = 6669, normalized size = 16.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*
A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A
*B*a^4*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3
 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4
*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5
145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B
^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c
 + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d
^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*
a^3*c)*d*e^6)/(a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a
*c^5 + A^4*c^6)*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6
 - 4*(12005*B^4*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7
- 14*(40523*A*B^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c
^2 - 573888*A^2*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*
a^4*c^2 - 1051*A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B
^2*a^4*c^2 - 3125*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B
*a^4*c^2)*d*e^12 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) +
 (1260*A^2*B*a^3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^
6 + 49*(35*B^3*a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4
+ 85*A^3*a^4*c^5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 -
 5*(441*A*B^2*a^6*c^3 + 25*A^3*a^5*c^4)*e^10 + (12*A*a^5*c^10*d^3 - 14*B*a^
6*c^9*d^2*e - 13*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^
4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*
c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 3
87*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^
4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (1944
81*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt
((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A
*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^
8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 20
70*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B
*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)
*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a
^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a
^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4
 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - (a^2*c^4*x^4 - 2*a^3*c^
3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2
*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 + a^5*c^5*sqrt((441
00*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(
1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^
3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^
```

```
2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d
*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5
*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11
*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))*log(-
(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a*c^5 + A^4*c^6)*d^8*e^5 + 504*
(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6 - 4*(12005*B^4*a^3*c^3 - 1084
86*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7 - 14*(40523*A*B^3*a^3*c^3 - 80
19*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c^2 - 573888*A^2*B^2*a^3*c^3 -
13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*a^4*c^2 - 1051*A^3*B*a^3*c^3)*
d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B^2*a^4*c^2 - 3125*A^4*a^3*c^3)
*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B*a^4*c^2)*d*e^12 + (194481*B^4
*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) - (1260*A^2*B*a^3*c^6*d^5*e^5 -
 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^6 + 49*(35*B^3*a^5*c^4 - 51*A^
2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4 + 85*A^3*a^4*c^5)*d^2*e^8 - 21
*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 - 5*(441*A*B^2*a^6*c^3 + 25*A^3
*a^5*c^4)*e^10 + (12*A*a^5*c^10*d^3 - 14*B*a^6*c^9*d^2*e - 13*A*a^6*c^9*d*e
^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c
^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A
^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*
(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A
*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3
*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*
c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4
*e^7 + a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A
^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*
d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^
4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3
*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625
*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2
 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)
*d*e^6)/(a^5*c^5))) + (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2
*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*
d^2*e^5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*
(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^
2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d
^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12
 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 2205
0*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 -
15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7
*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 302
4*(35*A^2*B^2*a*c^5 + A^4*c^6)*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B
*a*c^5)*d^7*e^6 - 4*(12005*B^4*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*
a*c^5)*d^6*e^7 - 14*(40523*A*B^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (2
42501*B^4*a^4*c^2 - 573888*A^2*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 2
8*(29743*A*B^3*a^4*c^2 - 1051*A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c
 - 122892*A^2*B^2*a^4*c^2 - 3125*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^
5*c + 625*A^3*B*a^4*c^2)*d*e^12 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*
sqrt(e*x + d) + (1260*A^2*B*a^3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*
a^3*c^6)*d^4*e^6 + 49*(35*B^3*a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911
*A*B^2*a^5*c^4 + 85*A^3*a^4*c^5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a
^5*c^4)*d*e^9 - 5*(441*A*B^2*a^6*c^3 + 25*A^3*a^5*c^4)*e^10 - (12*A*a^5*c^1
0*d^3 - 14*B*a^6*c^9*d^2*e - 13*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((4
4100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49
*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*
B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*
a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)
*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a
^5*c^11)))*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d
^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2
*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B
^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*
c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2
+ 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13
+ (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)
) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a
^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - (a^2*c^4
*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^4*d^7 - 336*A*B*a*c^3*d^6*e
 + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^5 + 210*A*B*a^4*e^7 - a^
5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)
*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10
+ 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 42*(5145*B^4*a^3*c -
 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532*(441*A*B^3*a^3*c + 25*A
^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*B^2*a^3*c + 625*A^4*a^2*
c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2*a*c^3)*d^5*e^2 - 35*(21
*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a^4 - A^2*a^3*c)*d*e^6)/(
a^5*c^5))*log(-(30240*A^3*B*c^6*d^9*e^4 - 3024*(35*A^2*B^2*a*c^5 + A^4*c^6)
*d^8*e^5 + 504*(245*A*B^3*a^2*c^4 - 207*A^3*B*a*c^5)*d^7*e^6 - 4*(12005*B^4
*a^3*c^3 - 108486*A^2*B^2*a^2*c^4 - 2727*A^4*a*c^5)*d^6*e^7 - 14*(40523*A*B
^3*a^3*c^3 - 8019*A^3*B*a^2*c^4)*d^5*e^8 + (242501*B^4*a^4*c^2 - 573888*A^2
*B^2*a^3*c^3 - 13509*A^4*a^2*c^4)*d^4*e^9 + 28*(29743*A*B^3*a^4*c^2 - 1051*
A^3*B*a^3*c^3)*d^3*e^10 - 2*(194481*B^4*a^5*c - 122892*A^2*B^2*a^4*c^2 - 31
25*A^4*a^3*c^3)*d^2*e^11 - 14*(27783*A*B^3*a^5*c + 625*A^3*B*a^4*c^2)*d*e^1
2 + (194481*B^4*a^6 - 625*A^4*a^4*c^2)*e^13)*sqrt(e*x + d) - (1260*A^2*B*a^
3*c^6*d^5*e^5 - 42*(70*A*B^2*a^4*c^5 + 3*A^3*a^3*c^6)*d^4*e^6 + 49*(35*B^3*
a^5*c^4 - 51*A^2*B*a^4*c^5)*d^3*e^7 + 3*(1911*A*B^2*a^5*c^4 + 85*A^3*a^4*c^
5)*d^2*e^8 - 21*(147*B^3*a^6*c^3 - 55*A^2*B*a^5*c^4)*d*e^9 - 5*(441*A*B^2*a
^6*c^3 + 25*A^3*a^5*c^4)*e^10 - (12*A*a^5*c^10*d^3 - 14*B*a^6*c^9*d^2*e - 1
3*A*a^6*c^9*d*e^2 + 21*B*a^7*c^8*e^3)*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 294
0*(35*A*B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*
B^2*a*c^3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)
*d^3*e^11 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^
12 - 532*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22
050*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)))*sqrt((144*A^2*c^4*d
^7 - 336*A*B*a*c^3*d^6*e + 1120*A*B*a^2*c^2*d^4*e^3 - 1050*A*B*a^3*c*d^2*e^
5 + 210*A*B*a^4*e^7 - a^5*c^5*sqrt((44100*A^2*B^2*c^4*d^6*e^8 - 2940*(35*A*
B^3*a*c^3 + 3*A^3*B*c^4)*d^5*e^9 + 49*(1225*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^
3 + 9*A^4*c^4)*d^4*e^10 + 56*(5635*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^1
1 - 42*(5145*B^4*a^3*c - 952*A^2*B^2*a^2*c^2 + 25*A^4*a*c^3)*d^2*e^12 - 532
*(441*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (194481*B^4*a^4 + 22050*A^2*
B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11)) + 28*(7*B^2*a^2*c^2 - 15*A^2
*a*c^3)*d^5*e^2 - 35*(21*B^2*a^3*c - 11*A^2*a^2*c^2)*d^3*e^4 + 105*(7*B^2*a
^4 - A^2*a^3*c)*d*e^6)/(a^5*c^5))) - 4*(4*B*a^2*c*d^3 + 11*A*a^2*c*d^2*e -
14*B*a^3*d*e^2 - 5*A*a^3*e^3 - (6*A*c^3*d^3 - 7*B*a*c^2*d^2*e - 8*A*a*c^2*d
*e^2 - 11*B*a^2*c*e^3)*x^3 + (A*a*c^2*d^2*e + 26*B*a^2*c*d*e^2 + 9*A*a^2*c*
e^3)*x^2 + (10*A*a*c^2*d^3 + 5*B*a^2*c*d^2*e + 4*A*a^2*c*d*e^2 - 7*B*a^3*e^
3)*x)*sqrt(e*x + d))/(a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] sage2
```

maple [B] time = 0.11, size = 1828, normalized size = 4.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x)
```

```
[Out] 3/8*e/a^2*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^4+3/8*e/a^2*c/(a*c*e^2)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*A*d^4-21/32*e^4/c^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+11/16*e^4/(c*e^2*x^2-a
*e^2)^2/c*(e*x+d)^(7/2)*B+9/16*e^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(5/2)*A+21
/32*e^4/c^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*
c*e^2)^(1/2))*c)^(1/2)*c)*B+7/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-1/4*e^3/a/c/(
(c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*c)*A*d-7/32*e^2/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2+7/8*e^4/c/(a*c*e^2)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*B*d-7/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(
1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3-19/32*e
^3/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/
((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(
e*x+d)^(1/2)*A*d^6+21/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^4-5/16
*e^7/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)^(1/2)*A+e^5/(c*e^2*x^2-a*e^2)^2/c*(e
*x+d)^(1/2)*A*d^2-17/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*A*d^4-7/16*
e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*B*d^5-7/16*e^4/(c*e^2*x^2-a*e^2)^2/
c*(e*x+d)^(5/2)*B*d-7/8*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*B*d^2+7/8*e
^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d^3+5/32*e^5/c/(a*c*e^2)^(1/2)/((-
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A-3/16*e/a^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1
/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+5/32*e^5/c/(a*c*e^2)^(1/2)/((
c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*
c)^(1/2)*c)*A+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*
(e*x+d)^(7/2)*A*d+7/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2)*B*d^2-23/16*
e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A*d^2-21/16*e^2/(c*e^2*x^2-a*e^2)^2
/a*(e*x+d)^(5/2)*B*d^3-7/8*e^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*A*d+2*e^
3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d^3-7/16*e^6/(c*e^2*x^2-a*e^2)^2/c^
2*a*(e*x+d)^(3/2)*B-3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(7/2)*A*d^3+9/8
*e/(c*e^2*x^2-a*e^2)^2*c/a^2*(e*x+d)^(5/2)*A*d^4+1/4*e^3/a/c/((-c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A*d-7/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*
x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^3-19/32*e^3/a/(a*c*e^2)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*A*d^2+7/8*e^4/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-7/16*e
^6/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)^(1/2)*B*d-9/8*e/(c*e^2*x^2-a*e^2)^2*c/
a^2*(e*x+d)^(3/2)*A*d^5
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{7}{2}}}{\left(cx^2 - a\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(7/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 3.69, size = 11687, normalized size = 29.51

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a - c*x^2)^3,x)
```

```
[Out] - atan(((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^
4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) -
 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a
^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B
^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2
*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*
e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1
/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*
A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^
11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^
7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 1
96*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21
*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^
6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11
)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1
120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^1
5*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2*a^5*e^10
 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*
A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 4
20*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B
*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a
^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A
^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 73
5*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11
)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a
^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d
^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1
050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c
^11))^(1/2)*1i - (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a
^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a
^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 - 441*B^2*a
^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^
4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7
 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a
^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15
*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2
) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6
*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 - 441*B
^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^
3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6
*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B
^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(
a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^
(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d
*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(441*B^2
*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e
^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^
4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9
- 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^
7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2
) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5
*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(
a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a
*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*
a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^
4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(40
96*a^10*c^11))^(1/2)*1i)/((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 +
24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4
)/(4096*a^6*c^5) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 -
441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c
^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^
9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 +
735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*
e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c
^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*
a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^
7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a
^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*
B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^
6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*
d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^
15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*
A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)
*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*
c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a
^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4
*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c
^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(a^15*c
^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^
7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*
d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 -
 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) -
 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a
^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c^11)^(
1/2))/(4096*a^10*c^11))^(1/2) + (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*
e^6 + 24576*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d
^3*e^4)/(4096*a^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*
d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2
*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*
A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*
e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^
2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(
a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 26
6*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c
^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385
*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 +
210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^
7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*
B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e
^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5
+ 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)
^(1/2)*(441*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^
2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735
*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A
*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B
*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 - 441*B^2*a^2*e^7*(
a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*
B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 + 21*A^
2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d
*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(
1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120
*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 + 266*A*B*a*c*d*e^6*(a^15*c
^11)^(1/2))/(4096*a^10*c^11))^(1/2) + (9261*B^3*a^7*e^14 - 864*A^3*c^7*d^11
*e^3 - 7398*A^3*a^2*c^5*d^7*e^7 + 6140*A^3*a^3*c^4*d^5*e^9 - 2182*A^3*a^4*c
^3*d^3*e^11 + 1372*B^3*a^3*c^4*d^8*e^6 - 9947*B^3*a^4*c^3*d^6*e^8 + 25039*B
```

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^3*a^5*c^2*d^4*e^10 - 525*A^2*B*a^6*c*e^14 + 4104*A^3*a*c^6*d^9*e^5 + 200*A
^3*a^5*c^2*d*e^13 - 25725*B^3*a^6*c*d^2*e^12 - 3528*A*B^2*a^2*c^5*d^9*e^5 +
 22638*A*B^2*a^3*c^4*d^7*e^7 - 51156*A*B^2*a^4*c^3*d^5*e^9 + 48510*A*B^2*a^
5*c^2*d^3*e^11 - 16884*A^2*B*a^2*c^5*d^8*e^6 + 34083*A^2*B*a^3*c^4*d^6*e^8
- 30135*A^2*B*a^4*c^3*d^4*e^10 + 10437*A^2*B*a^5*c^2*d^2*e^12 - 16464*A*B^2
*a^6*c*d*e^13 + 3024*A^2*B*a*c^6*d^10*e^4)/(2048*a^6*c^5)))*((144*A^2*a^5*c
^10*d^7 - 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385
*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 +
210*A*B*a^9*c^6*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^
7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) - 210*A*
B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e + 245*B^2*a*c*d^2*e
^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5
+ 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*2i - atan(((
((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^4*e^3 - 4
5056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) - 64*a*c^4
*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)
^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^
8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*
e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*
A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336
*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c
^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2)
)/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c
^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^
7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*
d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 +
 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) -
 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a
^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(
1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2*a^5*e^10 + 144*A^
2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*A^2*a^3*c
^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 420*A^2*a*
c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B*a*c^4*d^
7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a^4*c^2))*
((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^
9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8
*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) -
 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)
^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 24
5*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a
^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/
2)*1i - (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a^5*c^8*d^
4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a^6*c^5) +
 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a
^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B
^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2
*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*
e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1
/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*
A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^
11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^
7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 1
96*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21
*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^
6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11
)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1
120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^1
5*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(441*B^2*a^5*e^10
 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e^6 - 126*
```

```
A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^4*e^6 - 4
20*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9 - 336*A*B
*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^7))/(64*a
^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A
^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 73
5*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11
)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a
^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d
^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1
050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c
^11))^(1/2)*1i)/((((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 24576*A*a
^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(4096*a
^6*c^5) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441*B^2*a
^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^
4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7
 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a
^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15
*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2
) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6
*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 + 441*B
^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^
3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6
*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B
^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(
a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^
(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d
*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) + ((d + e*x)^(1/2)*(441*B^2
*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3*d^4*e
^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*c^2*d^
4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*d*e^9
- 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*d^3*e^
7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11)^(1/2
) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5
*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(
a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a
*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 336*A*B*
a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*c^8*d^
4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2))/(40
96*a^10*c^11))^(1/2) + (((20480*A*a^7*c^6*e^7 + 28672*B*a^7*c^6*d*e^6 + 245
76*A*a^5*c^8*d^4*e^3 - 45056*A*a^6*c^7*d^2*e^5 - 28672*B*a^6*c^7*d^3*e^4)/(
4096*a^6*c^5) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^10*d^7 + 441
*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*
d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c
^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735
*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4
*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11
)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c
*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2))*((144*A^2*a^5*c^10*d^7 +
 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*
c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a
^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 +
 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3
*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*
c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B
*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2) - ((d + e*x)^(1/2)*(4
41*B^2*a^5*e^10 + 144*A^2*c^5*d^8*e^2 + 25*A^2*a^4*c*e^10 + 385*A^2*a^2*c^3
*d^4*e^6 - 126*A^2*a^3*c^2*d^2*e^8 + 196*B^2*a^2*c^3*d^6*e^4 - 735*B^2*a^3*
c^2*d^4*e^6 - 420*A^2*a*c^4*d^6*e^4 + 490*B^2*a^4*c*d^2*e^8 - 56*A*B*a^4*c*
d*e^9 - 336*A*B*a*c^4*d^7*e^3 + 1120*A*B*a^2*c^3*d^5*e^5 - 840*A*B*a^3*c^2*
```

```
d^3*e^7))/(64*a^4*c^2))*((144*A^2*a^5*c^10*d^7 + 441*B^2*a^2*e^7*(a^15*c^11
)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*c^8*d^3*e^4 + 196*B^2*a^7*c
^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a^9*c^6*e^7 - 21*A^2*c^2*d^2
*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 + 735*B^2*a^9*c^6*d*e^6 + 25
*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3*e^4*(a^15*c^11)^(1/2) - 33
6*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*c^11)^(1/2) + 1120*A*B*a^7*
c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B*a*c*d*e^6*(a^15*c^11)^(1/2
))/(4096*a^10*c^11))^(1/2) + (9261*B^3*a^7*e^14 - 864*A^3*c^7*d^11*e^3 - 73
98*A^3*a^2*c^5*d^7*e^7 + 6140*A^3*a^3*c^4*d^5*e^9 - 2182*A^3*a^4*c^3*d^3*e^
11 + 1372*B^3*a^3*c^4*d^8*e^6 - 9947*B^3*a^4*c^3*d^6*e^8 + 25039*B^3*a^5*c^
2*d^4*e^10 - 525*A^2*B*a^6*c*e^14 + 4104*A^3*a*c^6*d^9*e^5 + 200*A^3*a^5*c^
2*d*e^13 - 25725*B^3*a^6*c*d^2*e^12 - 3528*A*B^2*a^2*c^5*d^9*e^5 + 22638*A*
B^2*a^3*c^4*d^7*e^7 - 51156*A*B^2*a^4*c^3*d^5*e^9 + 48510*A*B^2*a^5*c^2*d^3
*e^11 - 16884*A^2*B*a^2*c^5*d^8*e^6 + 34083*A^2*B*a^3*c^4*d^6*e^8 - 30135*A
^2*B*a^4*c^3*d^4*e^10 + 10437*A^2*B*a^5*c^2*d^2*e^12 - 16464*A*B^2*a^6*c*d*
e^13 + 3024*A^2*B*a*c^6*d^10*e^4)/(2048*a^6*c^5)))*((144*A^2*a^5*c^10*d^7 +
 441*B^2*a^2*e^7*(a^15*c^11)^(1/2) - 420*A^2*a^6*c^9*d^5*e^2 + 385*A^2*a^7*
c^8*d^3*e^4 + 196*B^2*a^7*c^8*d^5*e^2 - 735*B^2*a^8*c^7*d^3*e^4 + 210*A*B*a
^9*c^6*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^11)^(1/2) - 105*A^2*a^8*c^7*d*e^6 +
 735*B^2*a^9*c^6*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^11)^(1/2) + 210*A*B*c^2*d^3
*e^4*(a^15*c^11)^(1/2) - 336*A*B*a^6*c^9*d^6*e - 245*B^2*a*c*d^2*e^5*(a^15*
c^11)^(1/2) + 1120*A*B*a^7*c^8*d^4*e^3 - 1050*A*B*a^8*c^7*d^2*e^5 - 266*A*B
*a*c*d*e^6*(a^15*c^11)^(1/2))/(4096*a^10*c^11))^(1/2)*2i - (((d + e*x)^(1/2
)*(5*A*a^3*e^7 + 7*B*a^3*d*e^6 - 6*A*c^3*d^6*e + 17*A*a*c^2*d^4*e^3 - 16*A*
a^2*c*d^2*e^5 + 7*B*a*c^2*d^5*e^2 - 14*B*a^2*c*d^3*e^4))/(16*a^2*c^2) + ((d
 + e*x)^(3/2)*(7*B*a^3*e^6 + 18*A*c^3*d^5*e - 32*A*a*c^2*d^3*e^3 - 21*B*a*c
^2*d^4*e^2 + 14*B*a^2*c*d^2*e^4 + 14*A*a^2*c*d*e^5))/(16*a^2*c^2) + ((d + e
*x)^(5/2)*(7*B*a^2*d*e^4 - 9*A*a^2*e^5 - 18*A*c^2*d^4*e + 23*A*a*c*d^2*e^3
+ 21*B*a*c*d^3*e^2))/(16*a^2*c) - ((d + e*x)^(7/2)*(11*B*a^2*e^4 - 6*A*c^2*
d^3*e + 8*A*a*c*d*e^3 + 7*B*a*c*d^2*e^2))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^
2*e^4 + c^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*
d*e^2)*(d + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1459 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=372

$$\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(5aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-3A\left(2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{9/4}}-\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}$$

```
[Out] 1/4*(e*x+d)^(3/2)*(a*(A*e+B*d)+(A*c*d+B*a*e)*x)/a/c/(-c*x^2+a)^2+1/16*(a*e*
(3*A*c*d-5*B*a*e)+c*(6*A*c*d^2-a*e*(3*A*e+5*B*d))*x)*(e*x+d)^(1/2)/a^2/c^2/
(-c*x^2+a)+1/32*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))
*(5*a*B*e*(e*a^(1/2)+2*d*c^(1/2))-3*A*(4*c^(3/2)*d^2+2*c*d*e*a^(1/2)-a*e^2*
c^(1/2)))*(-e*a^(1/2)+d*c^(1/2))^(1/2)/a^(5/2)/c^(9/4)-1/32*arctanh(c^(1/4)
*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(5*a*B*e*(-e*a^(1/2)+2*d*c^(1/2
))-A*(12*c^(3/2)*d^2-6*c*d*e*a^(1/2)-3*a*e^2*c^(1/2)))*(e*a^(1/2)+d*c^(1/2)
)^(1/2)/a^(5/2)/c^(9/4)
```

Rubi **[A]** time = 0.69, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {819, 821, 827, 1166, 208}

$$\frac{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\left(5aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-3A\left(2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{9/4}}-\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(3/2)*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2)
 + (Sqrt[d + e*x]*(a*e*(3*A*c*d - 5*a*B*e) + c*(6*A*c*d^2 - a*e*(5*B*d + 3*
A*e))*x))/(16*a^2*c^2*(a - c*x^2)) + (Sqrt[Sqrt[c]*d - Sqrt[a]*e]*(5*a*B*e*
(2*Sqrt[c]*d + Sqrt[a]*e) - 3*A*(4*c^(3/2)*d^2 + 2*Sqrt[a]*c*d*e - a*Sqrt[c
]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a
^(5/2)*c^(9/4)) - (Sqrt[Sqrt[c]*d + Sqrt[a]*e]*(5*a*B*e*(2*Sqrt[c]*d - Sqrt
[a]*e) - A*(12*c^(3/2)*d^2 - 6*Sqrt[a]*c*d*e - 3*a*Sqrt[c]*e^2))*ArcTanh[(c
^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(9/4))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a-cx^2\right)^3}\,dx = \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{\sqrt{d+ex}\,(\frac{1}{2}\left(-6Acd^2+ae(5Bd+3Ae)\right)-\frac{1}{2}e(3Acd-5aBe)}{\left(a-cx^2\right)^2}}{4ac}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,(ae(3Acd-5aBe)+c\,(6Acd^2 -}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,(ae(3Acd-5aBe)+c\,(6Acd^2 -}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,(ae(3Acd-5aBe)+c\,(6Acd^2 -}{16a^2c^2\left(a-cx^2\right)}$$

$$= \frac{(d+ex)^{3/2}(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} + \frac{\sqrt{d+ex}\,(ae(3Acd-5aBe)+c\,(6Acd^2 -}{16a^2c^2\left(a-cx^2\right)}$$

Mathematica [A] time = 1.56, size = 569, normalized size = 1.53

$$\frac{\frac{c^2(d+ex)^{7/2}\left(a^2e^2(Ae+6Bd-Bex)-acd^2e(7A+5Bx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)} + \frac{\sqrt[4]{c}\left(5aBde\left(5ae^2+7cd^2\right)-3A\left(-a^2e^4+7acd^2e^2+14c^2d^4\right)\right)(2\sqrt{a}\,c^{3/4}e\sqrt{d+ex}\,(7d+ex)+3(\sqrt{}}{12\sqrt{a}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(7/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(7/2)*(6*A*c^2*d^3*x - a*c*d^2*e*(7*A +
 5*B*x) + a^2*e^2*(6*B*d + A*e - B*e*x)))/(2*(a - c*x^2)) + (c^(1/4)*(5*a*B
*d*e*(7*c*d^2 + 5*a*e^2) - 3*A*(14*c^2*d^4 + 7*a*c*d^2*e^2 - a^2*e^4))*(2*S
qrt[a]*c^(3/4)*e*Sqrt[d + e*x]*(7*d + e*x) + 3*(Sqrt[c]*d - Sqrt[a]*e)^(5/2
)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - 3*(Sqrt[c]
*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt
[a]*e]]))/(12*Sqrt[a]) + ((6*A*c^2*d^3 - a*B*e*(5*c*d^2 + a*e^2))*(2*Sqrt[a
]*c^(1/4)*e*Sqrt[d + e*x]*(15*a*e^2 + c*(58*d^2 + 16*d*e*x + 3*e^2*x^2)) +
15*(Sqrt[c]*d - Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[
c]*d - Sqrt[a]*e]] - 15*(Sqrt[c]*d + Sqrt[a]*e)^(7/2)*ArcTanh[(c^(1/4)*Sqrt
[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(12*Sqrt[a]*c^(1/4)))/(8*a^2*c^2*
(c*d^2 - a*e^2)^2)
```

fricas [B] time = 3.42, size = 3382, normalized size = 9.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*((a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^3*d^5 - 240*
A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 + a^5*c^4*sqrt((90
0*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 + (625*B^4*a^
2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*a^2*c - 9*A^
2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4))*log(-(432
0*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^5 + 360*(25*
A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 1350*A^2*B^2*a^
2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B*a^2*c^2)*d*
e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) + (180*A^2*B*a^3*c^
4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*B^3*a^5*c^2
+ 9*A^2*B*a^4*c^3)*e^7 - (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e - 3*A*a^6*c^7
*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9
 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)))*sqrt((144
*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5
 + a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*
d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*
(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(
a^5*c^4))) - (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^3*d^5
- 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 + a^5*c^4*sq
rt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 + (625*
B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*a^2*c
- 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4))*log
(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^5 + 36
0*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 1350*A^2*
B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B*a^2*c
^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - (180*A^2*B*
a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*B^3*a^
5*c^2 + 9*A^2*B*a^4*c^3)*e^7 - (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e - 3*A*a
^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)
*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)))*sqr
t((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a
^3*e^5 + a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B
*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9))
 + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*
e^4)/(a^5*c^4))) + (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*A^2*c^
3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5 - a^5*
c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d*e^9 +
(625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(5*B^2*
a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a^5*c^4
))*log(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*d^4*e^
5 + 360*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c - 135
0*A^2*B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27*A^3*B
*a^2*c^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) + (180*
A^2*B*a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 + 5*(25*
B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7*d*e -
 3*A*a^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*
B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)
))*sqrt((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30
*A*B*a^3*e^5 - a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9
*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5
*c^9)) + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2
*c)*d*e^4)/(a^5*c^4))) - (a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)*sqrt((144*
A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^3 - 30*A*B*a^3*e^5
- a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c + 9*A^3*B*c^2)*d
*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^5*c^9)) + 20*(
5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A^2*a^2*c)*d*e^4)/(a
^5*c^4))*log(-(4320*A^3*B*c^4*d^5*e^4 - 432*(25*A^2*B^2*a*c^3 + 3*A^4*c^4)*
d^4*e^5 + 360*(25*A*B^3*a^2*c^2 - 3*A^3*B*a*c^3)*d^3*e^6 - 4*(625*B^4*a^3*c
 - 1350*A^2*B^2*a^2*c^2 - 243*A^4*a*c^3)*d^2*e^7 - 30*(125*A*B^3*a^3*c + 27
*A^3*B*a^2*c^2)*d*e^8 + (625*B^4*a^4 - 81*A^4*a^2*c^2)*e^9)*sqrt(e*x + d) -
 (180*A^2*B*a^3*c^4*d^2*e^5 - 6*(50*A*B^2*a^4*c^3 + 9*A^3*a^3*c^4)*d*e^6 +
5*(25*B^3*a^5*c^2 + 9*A^2*B*a^4*c^3)*e^7 + (12*A*a^5*c^8*d^2 - 10*B*a^6*c^7
*d*e - 3*A*a^6*c^7*e^2)*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a*c +
9*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10)/(a^
5*c^9)))*sqrt((144*A^2*c^3*d^5 - 240*A*B*a*c^2*d^4*e + 240*A*B*a^2*c*d^2*e^
3 - 30*A*B*a^3*e^5 - a^5*c^4*sqrt((900*A^2*B^2*c^2*d^2*e^8 - 60*(25*A*B^3*a
*c + 9*A^3*B*c^2)*d*e^9 + (625*B^4*a^2 + 450*A^2*B^2*a*c + 81*A^4*c^2)*e^10
)/(a^5*c^9)) + 20*(5*B^2*a^2*c - 9*A^2*a*c^2)*d^3*e^2 - 15*(5*B^2*a^3 - 3*A
^2*a^2*c)*d*e^4)/(a^5*c^4))) - 4*(4*B*a^2*c*d^2 + 7*A*a^2*c*d*e - 5*B*a^3*e
^2 - (6*A*c^3*d^2 - 5*B*a*c^2*d*e - 3*A*a*c^2*e^2)*x^3 + (A*a*c^2*d*e + 9*B
*a^2*c*e^2)*x^2 + (10*A*a*c^2*d^2 + 3*B*a^2*c*d*e + A*a^2*c*e^2)*x)*sqrt(e*
x + d))/(a^2*c^4*x^4 - 2*a^3*c^3*x^2 + a^4*c^2)
```

giac [B] time = 0.60, size = 728, normalized size = 1.96

$$-\frac{6\,(xe+d)^{\frac{7}{2}}Ac^3d^2e-18\,(xe+d)^{\frac{5}{2}}Ac^3d^3e+18\,(xe+d)^{\frac{3}{2}}Ac^3d^4e-6\,\sqrt{xe+d}\,Ac^3d^5e-5\,(xe+d)^{\frac{7}{2}}Bac^2de^2+15\,(x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] -1/16*(6*(x*e + d)^(7/2)*A*c^3*d^2*e - 18*(x*e + d)^(5/2)*A*c^3*d^3*e + 18*
(x*e + d)^(3/2)*A*c^3*d^4*e - 6*sqrt(x*e + d)*A*c^3*d^5*e - 5*(x*e + d)^(7/
2)*B*a*c^2*d*e^2 + 15*(x*e + d)^(5/2)*B*a*c^2*d^2*e^2 - 15*(x*e + d)^(3/2)*
B*a*c^2*d^3*e^2 + 5*sqrt(x*e + d)*B*a*c^2*d^4*e^2 - 3*(x*e + d)^(7/2)*A*a*c
^2*e^3 + 8*(x*e + d)^(5/2)*A*a*c^2*d*e^3 - 17*(x*e + d)^(3/2)*A*a*c^2*d^2*e
^3 + 12*sqrt(x*e + d)*A*a*c^2*d^3*e^3 - 9*(x*e + d)^(5/2)*B*a^2*c*e^4 + 15*
(x*e + d)^(3/2)*B*a^2*c*d*e^4 - 10*sqrt(x*e + d)*B*a^2*c*d^2*e^4 - (x*e + d
)^(3/2)*A*a^2*c*e^5 - 6*sqrt(x*e + d)*A*a^2*c*d*e^5 + 5*sqrt(x*e + d)*B*a^3
*e^6)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2*a^2*c^2) - 1/32*
(3*(2*a*c*d*e - 4*sqrt(a*c)*c*d^2 + sqrt(a*c)*a*e^2)*sqrt(-c^2*d - sqrt(a*c
)*c*e)*A*abs(c) + 5*(2*sqrt(a*c)*a*d*e - a^2*e^2)*sqrt(-c^2*d - sqrt(a*c)*c
*e)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d + sqrt(a^4*c^6*d^2 - (a
^2*c^3*d^2 - a^3*c^2*e^2)*a^2*c^3))/(a^2*c^3)))/(a^3*c^4) - 1/32*(3*(2*a*c*
d*e + 4*sqrt(a*c)*c*d^2 - sqrt(a*c)*a*e^2)*sqrt(-c^2*d + sqrt(a*c)*c*e)*A*a
bs(c) - 5*(2*sqrt(a*c)*a*d*e + a^2*e^2)*sqrt(-c^2*d + sqrt(a*c)*c*e)*B*abs(
c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d - sqrt(a^4*c^6*d^2 - (a^2*c^3*d^2
 - a^3*c^2*e^2)*a^2*c^3))/(a^2*c^3)))/(a^3*c^4)
```

maple [B] time = 0.11, size = 1447, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x)
```

```
[Out] 3/8*e/a^2*c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^3+3/8*e^5/(c*e^2*x^2-a*e^2)^2
/c*(e*x+d)^(1/2)*A*d+5/8*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d^2+5/32
*e^4/c/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^4/c/(a*c*e^2)^(1/2)/((-c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*c)*B-3/16*e/a^2/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-15/1
6*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(3/2)*B*d+3/8*e/a^2*c/(a*c*e^2)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2)
)*c)^(1/2)*c)*A*d^3+17/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d^2+15/
16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^3-3/32*e^3/a/c/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*A+3/32*e^3/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*
d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-15/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5
/2)*B*d^2-1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A*d-3/4*e^3/(c*e^2*x^
2-a*e^2)^2/a*(e*x+d)^(1/2)*A*d^3-5/16*e^6/(c*e^2*x^2-a*e^2)^2*a/c^2*(e*x+d)
^(1/2)*B+9/16*e^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(5/2)*B-5/16*e^2/(c*e^2*x^2
-a*e^2)^2/a*(e*x+d)^(1/2)*B*d^4+5/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2
)*B*d+3/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(7/2)*A+1/16*e^5/(c*e^2*x^2-a*
e^2)^2/c*(e*x+d)^(3/2)*A-5/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))
*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-9/
32*e^3/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+9/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*
(e*x+d)^(5/2)*A*d^3+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^5-3/8
*e/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(7/2)*A*c*d^2-9/32*e^3/a/(a*c*e^2)^(1/2)
/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/
2))*c)^(1/2)*c)*A*d-5/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1
/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d^2-5/32*e^2
/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^
(1/2))*c)^(1/2)*c)*B*d+5/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-9/8*e/(c*e^2*x^2-a*e
^2)^2/a^2*c*(e*x+d)^(3/2)*A*d^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(cx^2 - a\right)^3}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 3.00, size = 7702, normalized size = 20.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a - c*x^2)^3,x)
```

```
[Out] ((e*(d + e*x)^(7/2)*(3*A*a*e^2 - 6*A*c*d^2 + 5*B*a*d*e))/(16*a^2) - ((d + e
*x)^(1/2)*(5*B*a^3*e^6 - 6*A*c^3*d^5*e + 12*A*a*c^2*d^3*e^3 + 5*B*a*c^2*d^4
*e^2 - 10*B*a^2*c*d^2*e^4 - 6*A*a^2*c*d*e^5))/(16*a^2*c^2) + ((d + e*x)^(3/
2)*(A*a^2*e^5 - 15*B*a^2*d*e^4 - 18*A*c^2*d^4*e + 17*A*a*c*d^2*e^3 + 15*B*a
*c*d^3*e^2))/(16*a^2*c) + (e*(d + e*x)^(5/2)*(18*A*c^2*d^3 + 9*B*a^2*e^3 -
8*A*a*c*d*e^2 - 15*B*a*c*d^2*e))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^2*e^4 + c
^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d
 + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2) - atan(((((20480*B*a^7*c^4*e
^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*
e^4)/(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15*
c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a
^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*
c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(
a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B^
2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/
2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5
 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30
*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(
1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c
*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4
*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 14
4*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
- 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*
B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i - (((20480*B*a^7*c^4*
e^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2
*e^4)/(4096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15
*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*
a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7
*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*
(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B
^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1
/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^
5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 3
0*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^
(1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*
c*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^
4*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
 240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 1
44*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75
*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2
) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i)/((((20480*B*a^7*c^4
*e^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^
2*e^4)/(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^1
5*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2
*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^
7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4
*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*
B^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(
1/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e
```

```
^5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e -
30*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))
^(1/2) + ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3
*c*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d
^4*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3
+ 240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) -
144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^
2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 7
5*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/
2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + (((20480*B*a^7*c^4*e
^6 - 24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*
e^4)/(4096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(25*B^2*a*e^5*(a^15*
c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a
^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*
c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(
a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*(-(25*B^
2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/
2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5
 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30
*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(
1/2) - ((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c
*e^8 + 45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4
*e^4 - 75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 +
240*A*B*a^2*c^2*d^3*e^5))/(64*a^4*c))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 14
4*A^2*a^5*c^8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2
- 100*B^2*a^7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*
B^2*a^8*c^5*d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 - 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - (864*A^3*c^5*d^8*e^3 -
 75*A*B^2*a^5*e^11 + 27*A^3*a^4*c*e^11 - 125*B^3*a^5*d*e^10 + 1458*A^3*a^2*
c^3*d^4*e^7 - 405*A^3*a^3*c^2*d^2*e^9 - 500*B^3*a^3*c^2*d^5*e^6 - 1944*A^3*
a*c^4*d^6*e^5 + 625*B^3*a^4*c*d^3*e^8 + 1800*A*B^2*a^2*c^3*d^6*e^5 - 2850*A
*B^2*a^3*c^2*d^4*e^7 + 4140*A^2*B*a^2*c^3*d^5*e^6 - 2385*A^2*B*a^3*c^2*d^3*
e^8 + 405*A^2*B*a^4*c*d*e^10 + 1125*A*B^2*a^4*c*d^2*e^9 - 2160*A^2*B*a*c^4*
d^7*e^4)/(2048*a^6*c^3)))*(-(25*B^2*a*e^5*(a^15*c^9)^(1/2) - 144*A^2*a^5*c^
8*d^5 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) + 180*A^2*a^6*c^7*d^3*e^2 - 100*B^2*a^
7*c^6*d^3*e^2 + 30*A*B*a^8*c^5*e^5 - 45*A^2*a^7*c^6*d*e^4 + 75*B^2*a^8*c^5*
d*e^4 + 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) - 240*A*B*a
^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*2i - atan(((((20480*B*a^7*c^4*e^6 -
24576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/
(4096*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*
B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7
*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*
e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c
^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*
c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 18
0*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A
^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*
d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) +
((d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 +
45*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 -
75*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B
*a^2*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c
^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^
2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*
c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A
*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i - (((20480*B*a^7*c^4*e^6 - 24
576*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(4
096*a^6*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^
2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d
^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^
4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9
)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^
8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*
A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2
*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*
e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - ((
d + e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45
*A^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75
*B^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a
^2*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9
)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*
a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^
5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B
*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2)*1i)/((((20480*B*a^7*c^4*e^6 - 2457
6*A*a^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(409
6*a^6*c^3) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^2*
a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3
*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4
 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^
(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^8*
d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^
2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a
^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^
4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + ((d
+ e*x)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45*A
^2*a^2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75*B
^2*a^3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a^2
*c^2*d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^
(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^
7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*
d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a
^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) + (((20480*B*a^7*c^4*e^6 - 24576*A*a
^6*c^5*d*e^5 + 24576*A*a^5*c^6*d^3*e^3 - 20480*B*a^6*c^5*d^2*e^4)/(4096*a^6
*c^3) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5
*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2
+ 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*
B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2)
 + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2))*((144*A^2*a^5*c^8*d^5 +
 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6
*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^
6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^
15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - ((d + e*x
)^(1/2)*(25*B^2*a^4*e^8 + 144*A^2*c^4*d^6*e^2 + 9*A^2*a^3*c*e^8 + 45*A^2*a^
2*c^2*d^2*e^6 + 100*B^2*a^2*c^2*d^4*e^4 - 180*A^2*a*c^3*d^4*e^4 - 75*B^2*a^
3*c*d^2*e^6 - 60*A*B*a^3*c*d*e^7 - 240*A*B*a*c^3*d^5*e^3 + 240*A*B*a^2*c^2*
d^3*e^5))/(64*a^4*c))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2)
 + 9*A^2*c*e^5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6
*d^3*e^2 - 30*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4
 - 240*A*B*a^6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^
6*d^2*e^3)/(4096*a^10*c^9))^(1/2) - (864*A^3*c^5*d^8*e^3 - 75*A*B^2*a^5*e^1
1 + 27*A^3*a^4*c*e^11 - 125*B^3*a^5*d*e^10 + 1458*A^3*a^2*c^3*d^4*e^7 - 405
*A^3*a^3*c^2*d^2*e^9 - 500*B^3*a^3*c^2*d^5*e^6 - 1944*A^3*a*c^4*d^6*e^5 + 6
25*B^3*a^4*c*d^3*e^8 + 1800*A*B^2*a^2*c^3*d^6*e^5 - 2850*A*B^2*a^3*c^2*d^4*
e^7 + 4140*A^2*B*a^2*c^3*d^5*e^6 - 2385*A^2*B*a^3*c^2*d^3*e^8 + 405*A^2*B*a
^4*c*d*e^10 + 1125*A*B^2*a^4*c*d^2*e^9 - 2160*A^2*B*a*c^4*d^7*e^4)/(2048*a^
6*c^3)))*((144*A^2*a^5*c^8*d^5 + 25*B^2*a*e^5*(a^15*c^9)^(1/2) + 9*A^2*c*e^
5*(a^15*c^9)^(1/2) - 180*A^2*a^6*c^7*d^3*e^2 + 100*B^2*a^7*c^6*d^3*e^2 - 30
*A*B*a^8*c^5*e^5 + 45*A^2*a^7*c^6*d*e^4 - 75*B^2*a^8*c^5*d*e^4 - 240*A*B*a^
```

```
6*c^7*d^4*e - 30*A*B*c*d*e^4*(a^15*c^9)^(1/2) + 240*A*B*a^7*c^6*d^2*e^3)/(4
096*a^10*c^9))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1460 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=350

$$\frac{3\left(aBe\left(2\sqrt{c}\,d-\sqrt{a}\,e\right)-A\left(-2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{7/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}-\frac{3\left(aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(2\sqrt{a}\right.\right.}{32a^{5/2}}$$

```
[Out] 1/4*(a*(A*e+B*d)+(A*c*d+B*a*e)*x)*(e*x+d)^(1/2)/a/c/(-c*x^2+a)^2-1/16*(a*A*
e-3*(2*A*c*d-B*a*e)*x)*(e*x+d)^(1/2)/a^2/c/(-c*x^2+a)+3/32*arctanh(c^(1/4)*
(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(a*B*e*(-e*a^(1/2)+2*d*c^(1/2))
-A*(4*c^(3/2)*d^2-2*c*d*e*a^(1/2)-a*e^2*c^(1/2)))/a^(5/2)/c^(7/4)/(-e*a^(1/
2)+d*c^(1/2))^(1/2)-3/32*arctanh(c^(1/4)*(e*x+d)^(1/2)/(e*a^(1/2)+d*c^(1/2)
)^(1/2))*(a*B*e*(e*a^(1/2)+2*d*c^(1/2))-A*(4*c^(3/2)*d^2+2*c*d*e*a^(1/2)-a*
e^2*c^(1/2)))/a^(5/2)/c^(7/4)/(e*a^(1/2)+d*c^(1/2))^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {819, 823, 827, 1166, 208}

$$\frac{3\left(aBe\left(2\sqrt{c}\,d-\sqrt{a}\,e\right)-A\left(-2\sqrt{a}\,cde-a\sqrt{c}\,e^2+4c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{7/4}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}-\frac{3\left(aBe\left(\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(2\sqrt{a}\right.\right.}{32a^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d + A*e) + (A*c*d + a*B*e)*x))/(4*a*c*(a - c*x^2)^2) -
 (Sqrt[d + e*x]*(a*A*e - 3*(2*A*c*d - a*B*e)*x))/(16*a^2*c*(a - c*x^2)) + (
3*(a*B*e*(2*Sqrt[c]*d - Sqrt[a]*e) - A*(4*c^(3/2)*d^2 - 2*Sqrt[a]*c*d*e - a
*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]]
)/(32*a^(5/2)*c^(7/4)*Sqrt[Sqrt[c]*d - Sqrt[a]*e]) - (3*(a*B*e*(2*Sqrt[c]*d
 + Sqrt[a]*e) - A*(4*c^(3/2)*d^2 + 2*Sqrt[a]*c*d*e - a*Sqrt[c]*e^2))*ArcTan
h[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]])/(32*a^(5/2)*c^(7/4)
*Sqrt[Sqrt[c]*d + Sqrt[a]*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a-cx^2\right)^3}\,dx = \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}\left(-6Acd^2+3aBde+aAe^2\right)-\frac{1}{2}e(5Acd-3aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{\int \frac{3}{4}}{}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{\text{Sub}}{}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{\left(3\left(\right.\right.}{}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd+Ae)+(Acd+aBe)x)}{4ac\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,(aAe-3(2Acd-aBe)x)}{16a^2c\left(a-cx^2\right)} + \frac{3\left(a\right.}{}$$

Mathematica [A] time = 1.42, size = 550, normalized size = 1.57

$$\frac{\frac{c^2(d+ex)^{5/2}\left(a^2e^2(3Ae+2Bd+Bex)-acde(5Ad+4Aex+3Bdx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)} + \frac{3c^{3/4}\left(A\left(a^2e^4+5acd^2e^2-10c^2d^4\right)+aBde\left(5cd^2-ae^2\right)\right)\left(2\sqrt{a}\,\sqrt[4]{c}\,e\sqrt{d+ex}+\left(\right.\right.}{4}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(5/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(5/2)*(6*A*c^2*d^3*x - a*c*d*e*(5*A*d +
 3*B*d*x + 4*A*e*x) + a^2*e^2*(2*B*d + 3*A*e + B*e*x)))/(2*(a - c*x^2)) + (
3*c^(3/4)*(a*B*d*e*(5*c*d^2 - a*e^2) + A*(-10*c^2*d^4 + 5*a*c*d^2*e^2 + a^2
*e^4))*(2*Sqrt[a]*c^(1/4)*e*Sqrt[d + e*x] + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*A
rcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d +
Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e
]]))/(4*Sqrt[a]) + (c^(1/4)*(2*A*c*d*(3*c*d^2 - 2*a*e^2) + a*B*e*(-3*c*d^2
+ a*e^2))*(2*Sqrt[a]*c^(3/4)*e*Sqrt[d + e*x]*(7*d + e*x) + 3*(Sqrt[c]*d - S
qrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]
] - 3*(Sqrt[c]*d + Sqrt[a]*e)^(5/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sq
rt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2*c^2*(c*d^2 - a*e^2)^2)
```

fricas [B] time = 4.83, size = 4176, normalized size = 11.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] -1/64*(3*(a^2*c^3*x^4 - 2*a^3*c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*
B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2
*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*
e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a
^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*
c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*
(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3
*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3
*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d
) + 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6
 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8
+ (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*
d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 -
4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)
/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 1
6*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5
*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*
c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B
^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))) - 3*(a^2*c^3*x^4 - 2*a^3*c^2*x
^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^
3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^
2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 -
4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)
/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e
^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5
 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2
*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (
B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2
*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*
e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8 + (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^
4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8
*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
 a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^
2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 -
5*A^2*a^2*c)*d*e^4 + (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^
8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e
^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c
^3*e^2))) + 3*(a^2*c^3*x^4 - 2*a^3*c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 -
16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c -
5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6
*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (
B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 +
 a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4
- 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3
)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*
A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*
x + d) + 27*(4*A^2*B*a^3*c^4*d^3*e^5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^
2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)
*e^8 - (4*A*a^5*c^8*d^5 - 2*B*a^6*c^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7
*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 - B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e
^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^
5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*
c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 -
 a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9
 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e
^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*c^3*e^2))) - 3*(a^2*c^3*x^4 - 2*a^3*
c^2*x^2 + a^4*c)*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2*c*d
^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a^3 -
 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d^2*e
^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*
e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 - a^6*
c^3*e^2))*log(-27*(32*A^3*B*c^4*d^5*e^4 - 16*(3*A^2*B^2*a*c^3 + A^4*c^4)*d^
4*e^5 + 8*(3*A*B^3*a^2*c^2 - A^3*B*a*c^3)*d^3*e^6 - 4*(B^4*a^3*c - 6*A^2*B^
2*a^2*c^2 - 3*A^4*a*c^3)*d^2*e^7 - 2*(5*A*B^3*a^3*c + 3*A^3*B*a^2*c^2)*d*e^
8 + (B^4*a^4 - A^4*a^2*c^2)*e^9)*sqrt(e*x + d) - 27*(4*A^2*B*a^3*c^4*d^3*e^
5 - 2*(2*A*B^2*a^4*c^3 + A^3*a^3*c^4)*d^2*e^6 + (B^3*a^5*c^2 - A^2*B*a^4*c^
3)*d*e^7 + (A*B^2*a^5*c^2 + A^3*a^4*c^3)*e^8 - (4*A*a^5*c^8*d^5 - 2*B*a^6*c
^7*d^4*e - 7*A*a^6*c^7*d^3*e^2 + 3*B*a^7*c^6*d^2*e^3 + 3*A*a^7*c^6*d*e^4 -
B*a^8*c^5*e^5)*sqrt((4*A^2*B^2*c^2*d^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^
9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*
e^2 + a^7*c^7*e^4)))*sqrt((16*A^2*c^3*d^5 - 16*A*B*a*c^2*d^4*e + 16*A*B*a^2
*c*d^2*e^3 - 2*A*B*a^3*e^5 + 4*(B^2*a^2*c - 5*A^2*a*c^2)*d^3*e^2 - (3*B^2*a
^3 - 5*A^2*a^2*c)*d*e^4 - (a^5*c^4*d^2 - a^6*c^3*e^2)*sqrt((4*A^2*B^2*c^2*d
^2*e^8 - 4*(A*B^3*a*c + A^3*B*c^2)*d*e^9 + (B^4*a^2 + 2*A^2*B^2*a*c + A^4*c
^2)*e^10)/(a^5*c^9*d^4 - 2*a^6*c^8*d^2*e^2 + a^7*c^7*e^4)))/(a^5*c^4*d^2 -
a^6*c^3*e^2))) - 4*(A*a*c*e*x^2 + 4*B*a^2*d + 3*A*a^2*e - 3*(2*A*c^2*d - B*
a*c*e)*x^3 + (10*A*a*c*d + B*a^2*e)*x)*sqrt(e*x + d))/(a^2*c^3*x^4 - 2*a^3*
c^2*x^2 + a^4*c)
```

giac [B] time = 0.74, size = 754, normalized size = 2.15

$$\frac{3\left(2\sqrt{ac}\,Bac^3d^2e - Ba^2c^2d|c|e^2 + 2\sqrt{ac}\,Aac^3de^2 - \sqrt{ac}\,Ba^2c^2e^3 + \left(2\,ac^3d^2e - a^2c^2e^3\right)A|c| - \left(4\sqrt{ac}\,c^4d^3 - \sqrt{ac}\right.}{32\left(a^3c^4d - \sqrt{ac}\,a^3c^3e\right)\sqrt{-c^2d - \sqrt{ac}\,ce}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 3/32*(2*sqrt(a*c)*B*a*c^3*d^2*e - B*a^2*c^2*d*abs(c)*e^2 + 2*sqrt(a*c)*A*a*
c^3*d*e^2 - sqrt(a*c)*B*a^2*c^2*e^3 + (2*a*c^3*d^2*e - a^2*c^2*e^3)*A*abs(c
) - (4*sqrt(a*c)*c^4*d^3 - sqrt(a*c)*a*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)/s
qrt(-(a^2*c^2*d + sqrt(a^4*c^4*d^2 - (a^2*c^2*d^2 - a^3*c*e^2)*a^2*c^2))/(a
^2*c^2)))/((a^3*c^4*d - sqrt(a*c)*a^3*c^3*e)*sqrt(-c^2*d - sqrt(a*c)*c*e))
- 3/32*(2*sqrt(a*c)*B*a*c^3*d^2*e + B*a^2*c^2*d*abs(c)*e^2 + 2*sqrt(a*c)*A*
a*c^3*d*e^2 - sqrt(a*c)*B*a^2*c^2*e^3 - (2*a*c^3*d^2*e - a^2*c^2*e^3)*A*abs
(c) - (4*sqrt(a*c)*c^4*d^3 - sqrt(a*c)*a*c^3*d*e^2)*A)*arctan(sqrt(x*e + d)
/sqrt(-(a^2*c^2*d - sqrt(a^4*c^4*d^2 - (a^2*c^2*d^2 - a^3*c*e^2)*a^2*c^2))/
(a^2*c^2)))/((a^3*c^4*d + sqrt(a*c)*a^3*c^3*e)*sqrt(-c^2*d + sqrt(a*c)*c*e)
) - 1/16*(6*(x*e + d)^(7/2)*A*c^2*d*e - 18*(x*e + d)^(5/2)*A*c^2*d^2*e + 18
*(x*e + d)^(3/2)*A*c^2*d^3*e - 6*sqrt(x*e + d)*A*c^2*d^4*e - 3*(x*e + d)^(7
/2)*B*a*c*e^2 + 9*(x*e + d)^(5/2)*B*a*c*d*e^2 - 9*(x*e + d)^(3/2)*B*a*c*d^2
*e^2 + 3*sqrt(x*e + d)*B*a*c*d^3*e^2 - (x*e + d)^(5/2)*A*a*c*e^3 - 8*(x*e +
 d)^(3/2)*A*a*c*d*e^3 + 9*sqrt(x*e + d)*A*a*c*d^2*e^3 - (x*e + d)^(3/2)*B*a
^2*e^4 - 3*sqrt(x*e + d)*B*a^2*d*e^4 - 3*sqrt(x*e + d)*A*a^2*e^5)/(((x*e +
d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2*a^2*c)
```

maple [B] time = 0.09, size = 1060, normalized size = 3.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x)
```

```
[Out] -3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(7/2)*A*c*d+3/16*e^2/(c*e^2*x^2-a*e^
2)^2/a*(e*x+d)^(7/2)*B+1/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(5/2)*A+9/8*e
/(c*e^2*x^2-a*e^2)^2/a^2*(e*x+d)^(5/2)*A*c*d^2-9/16*e^2/(c*e^2*x^2-a*e^2)^2
/a*(e*x+d)^(5/2)*B*d+1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*A*d-9/8*e/
(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(3/2)*A*d^3+1/16*e^4/(c*e^2*x^2-a*e^2)^2/
c*(e*x+d)^(3/2)*B+9/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(3/2)*B*d^2+3/16*e
^5/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*A-9/16*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*
x+d)^(1/2)*A*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^4+3/16*e
^4/(c*e^2*x^2-a*e^2)^2/c*(e*x+d)^(1/2)*B*d-3/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(
e*x+d)^(1/2)*B*d^3-3/32*e^3/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+3/8*e/a^2*c/(
a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+
(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/16*e^2/a/(a*c*e^2)^(1/2)/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)
*B*d+3/16*e/a^2/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d-3/32*e^2/a/c/((c*d+(a*c*e^2)^(1/2))*c)^(1
/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-3/32*e^3/a/(
a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d
+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A+3/8*e/a^2*c/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*
A*d^2-3/16*e^2/a/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-3/16*e/a^2/((-c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*A*d+3/32*e^2/a/c/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^2-a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 - a)^3, x)
```

mupad [B] time = 8.08, size = 7239, normalized size = 20.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a - c*x^2)^3,x)
```

```
[Out] ((3*(B*a*e^2 - 2*A*c*d*e)*(d + e*x)^(7/2))/(16*a^2) + ((d + e*x)^(5/2)*(A*a
*e^3 - 9*B*a*d*e^2 + 18*A*c*d^2*e))/(16*a^2) + (3*(d + e*x)^(1/2)*(A*a^2*e^
5 + B*a^2*d*e^4 + 2*A*c^2*d^4*e - 3*A*a*c*d^2*e^3 - B*a*c*d^3*e^2))/(16*a^2
*c) + ((d + e*x)^(3/2)*(B*a^2*e^4 - 18*A*c^2*d^3*e + 8*A*a*c*d*e^3 + 9*B*a*
c*d^2*e^2))/(16*a^2*c))/(c^2*(d + e*x)^4 + a^2*e^4 + c^2*d^4 + (6*c^2*d^2 -
 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d + e*x) - 4*c^2*d*(d
+ e*x)^3 - 2*a*c*d^2*e^2) + atan(((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4
*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a
^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8
*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e
 - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^
8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^
5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7
*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^
4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*
d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9
*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4
 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5
*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^
2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c
^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15
*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2))
)^(1/2)*1i - (((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c
^5*d^2*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(9*(B^2*a*e^
5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A
^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*
c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^1
5*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)
))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5
*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*
a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^
4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10
*c^8*d^2 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^
2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e
^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 1
6*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4
*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*
c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*
a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*1i)/((((3*(40
96*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^
6*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) -
16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 -
4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8
*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B
*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a
*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 2
0*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a
^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(
a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e
^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2
*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^
3*e^3))/(64*a^4))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A
^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2
+ 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^
6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(40
```

```
96*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + (((3*(4096*A*a^6*c^4*e^5 + 4096*
B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*
(d + e*x)^(1/2)*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2
*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 +
2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*
c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096
*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*(-(9*(B^2*a*e^5*(a^15*c^7)^(1/2) -
16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^3*e^2 -
4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3*B^2*a^8
*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) - 16*A*B
*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)
^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^
2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*(-(9*(
B^2*a*e^5*(a^15*c^7)^(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2
) + 20*A^2*a^6*c^6*d^3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*
A^2*a^7*c^5*d*e^4 + 3*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*
e^4*(a^15*c^7)^(1/2) - 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*
c^7*e^2)))^(1/2) + (3*(9*B^3*a^4*e^8 + 288*A^3*c^4*d^5*e^3 - 9*A^2*B*a^3*c*
e^8 - 216*A^3*a*c^3*d^3*e^5 + 18*A^3*a^2*c^2*d*e^7 - 36*B^3*a^3*c*d^2*e^6 +
 216*A*B^2*a^2*c^2*d^3*e^5 + 252*A^2*B*a^2*c^2*d^2*e^6 - 90*A*B^2*a^3*c*d*e
^7 - 432*A^2*B*a*c^3*d^4*e^4))/(2048*a^6*c^2)))*(-(9*(B^2*a*e^5*(a^15*c^7)^
(1/2) - 16*A^2*a^5*c^7*d^5 + A^2*c*e^5*(a^15*c^7)^(1/2) + 20*A^2*a^6*c^6*d^
3*e^2 - 4*B^2*a^7*c^5*d^3*e^2 + 2*A*B*a^8*c^4*e^5 - 5*A^2*a^7*c^5*d*e^4 + 3
*B^2*a^8*c^4*d*e^4 + 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2)
- 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*2i +
 atan(((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2
*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*
d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*
c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e
^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^
(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2
))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c
^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*
e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*
A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2
 - a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^
4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144
*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)*1i - (((3*(4096*A*a^6*
c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) +
64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2))*((9*(16*A^2*a^5*c^7*d
^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c
^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^
4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(
1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2)
 - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6
- 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64
*a^4))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^
15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*
c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e
- 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8
*d^2 - a^11*c^7*e^2)))^(1/2)*1i)/((((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4
*d*e^4 - 8192*A*a^5*c^5*d^2*e^3))/(4096*a^6*c^2) - 64*a*c^4*d*e^2*(d + e*x)
^(1/2)*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^
15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*
c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e
- 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8
*d^2 - a^11*c^7*e^2)))^(1/2))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7
)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c
^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
- 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^
2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + ((d + e*x)^(1/2)*(9*B
^2*a^3*e^6 + 144*A^2*c^3*d^4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 +
 36*B^2*a^2*c*d^2*e^4 - 144*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c
^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a
^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*
d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^
7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(
1/2) + (((3*(4096*A*a^6*c^4*e^5 + 4096*B*a^6*c^4*d*e^4 - 8192*A*a^5*c^5*d^2
*e^3))/(4096*a^6*c^2) + 64*a*c^4*d*e^2*(d + e*x)^(1/2)*((9*(16*A^2*a^5*c^7*
d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*
c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e
^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^
(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2
))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(a^15*c
^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^8*c^4*
e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*e - 2*
A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c^8*d^2
 - a^11*c^7*e^2)))^(1/2) - ((d + e*x)^(1/2)*(9*B^2*a^3*e^6 + 144*A^2*c^3*d^
4*e^2 + 9*A^2*a^2*c*e^6 - 36*A^2*a*c^2*d^2*e^4 + 36*B^2*a^2*c*d^2*e^4 - 144
*A*B*a*c^2*d^3*e^3))/(64*a^4))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^
7)^(1/2) + A^2*c*e^5*(a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*
c^5*d^3*e^2 - 2*A*B*a^8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4
 - 16*A*B*a^6*c^6*d^4*e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d
^2*e^3))/(4096*(a^10*c^8*d^2 - a^11*c^7*e^2)))^(1/2) + (3*(9*B^3*a^4*e^8 +
288*A^3*c^4*d^5*e^3 - 9*A^2*B*a^3*c*e^8 - 216*A^3*a*c^3*d^3*e^5 + 18*A^3*a^
2*c^2*d*e^7 - 36*B^3*a^3*c*d^2*e^6 + 216*A*B^2*a^2*c^2*d^3*e^5 + 252*A^2*B*
a^2*c^2*d^2*e^6 - 90*A*B^2*a^3*c*d*e^7 - 432*A^2*B*a*c^3*d^4*e^4))/(2048*a^
6*c^2)))*((9*(16*A^2*a^5*c^7*d^5 + B^2*a*e^5*(a^15*c^7)^(1/2) + A^2*c*e^5*(
a^15*c^7)^(1/2) - 20*A^2*a^6*c^6*d^3*e^2 + 4*B^2*a^7*c^5*d^3*e^2 - 2*A*B*a^
8*c^4*e^5 + 5*A^2*a^7*c^5*d*e^4 - 3*B^2*a^8*c^4*d*e^4 - 16*A*B*a^6*c^6*d^4*
e - 2*A*B*c*d*e^4*(a^15*c^7)^(1/2) + 16*A*B*a^7*c^5*d^2*e^3))/(4096*(a^10*c
^8*d^2 - a^11*c^7*e^2)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1461 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=372

$$\frac{\left(aBe\left(2\sqrt{c}\,d-3\sqrt{a}\,e\right)-A\left(-18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{5/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}-\frac{\left(aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(1\right.\right.}{3}$$

```
[Out] 1/32*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(a*B*e*(-3
*e*a^(1/2)+2*d*c^(1/2))-A*(12*c^(3/2)*d^2-18*c*d*e*a^(1/2)+5*a*e^2*c^(1/2))
)/a^(5/2)/c^(5/4)/(-e*a^(1/2)+d*c^(1/2))^(3/2)-1/32*arctanh(c^(1/4)*(e*x+d)
^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(a*B*e*(3*e*a^(1/2)+2*d*c^(1/2))-A*(12*
c^(3/2)*d^2+18*c*d*e*a^(1/2)+5*a*e^2*c^(1/2)))/a^(5/2)/c^(5/4)/(e*a^(1/2)+d
*c^(1/2))^(3/2)+1/4*(A*c*x+B*a)*(e*x+d)^(1/2)/a/c/(-c*x^2+a)^2-1/16*(a*e*(A
*c*d-B*a*e)-c*(-5*A*a*e^2+6*A*c*d^2-B*a*d*e)*x)*(e*x+d)^(1/2)/a^2/c/(-a*e^2
+c*d^2)/(-c*x^2+a)
```

Rubi [A] time = 0.76, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {821, 823, 827, 1166, 208}

$$\frac{\left(aBe\left(2\sqrt{c}\,d-3\sqrt{a}\,e\right)-A\left(-18\sqrt{a}\,cde+5a\sqrt{c}\,e^2+12c^{3/2}d^2\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{5/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{3/2}}-\frac{\left(aBe\left(3\sqrt{a}\,e+2\sqrt{c}\,d\right)-A\left(1\right.\right.}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^3,x]
```

```
[Out] ((a*B + A*c*x)*Sqrt[d + e*x])/(4*a*c*(a - c*x^2)^2) - (Sqrt[d + e*x]*(a*e*(
A*c*d - a*B*e) - c*(6*A*c*d^2 - a*B*d*e - 5*a*A*e^2)*x))/(16*a^2*c*(c*d^2 -
 a*e^2)*(a - c*x^2)) + ((a*B*e*(2*Sqrt[c]*d - 3*Sqrt[a]*e) - A*(12*c^(3/2)*
d^2 - 18*Sqrt[a]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/
Sqrt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(5/4)*(Sqrt[c]*d - Sqrt[a]*e)^(
3/2)) - ((a*B*e*(2*Sqrt[c]*d + 3*Sqrt[a]*e) - A*(12*c^(3/2)*d^2 + 18*Sqrt[a
]*c*d*e + 5*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d
+ Sqrt[a]*e]])/(32*a^(5/2)*c^(5/4)*(Sqrt[c]*d + Sqrt[a]*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a-cx^2\right)^3}\,dx=\frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2}-\frac{\int \frac{\frac{1}{2}(-6Acd+aBe)-\frac{5}{2}Acex}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac}$$

$$=\frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2}-\frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)}+$$

$$=\frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2}-\frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)}+$$

$$=\frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2}-\frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)}+$$

$$=\frac{(aB+Acx)\sqrt{d+ex}}{4ac\left(a-cx^2\right)^2}-\frac{\sqrt{d+ex}\left(ae(Acd-aBe)-c\left(6Acd^2-aBde-5aAe^2\right)x\right)}{16a^2c\left(cd^2-ae^2\right)\left(a-cx^2\right)}+$$

Mathematica [A] time = 1.04, size = 522, normalized size = 1.40

$$\frac{\frac{c^2(d+ex)^{3/2}\left(a^2e^2(5Ae-2Bd+3Bex)-acde(3Ad+8Aex+Bdx)+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}-\frac{c^{5/4}\left(A\left(5a^2e^4-27acd^2e^2+18c^2d^4\right)+aBde\left(7ae^2-3cd^2\right)\right)\left(\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\ \tanh\right.}{4\sqrt{a}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a - c*x^2)^3,x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*(d + e*x)^(3/2)*(-(a*A*e) + A*c*d*x + a*B*(d - e*
x)))/(a - c*x^2)^2 + (c^2*(d + e*x)^(3/2)*(6*A*c^2*d^3*x - a*c*d*e*(3*A*d +
 B*d*x + 8*A*e*x) + a^2*e^2*(-2*B*d + 5*A*e + 3*B*e*x)))/(2*(a - c*x^2)) -
(c^(5/4)*(a*B*d*e*(-3*c*d^2 + 7*a*e^2) + A*(18*c^2*d^4 - 27*a*c*d^2*e^2 + 5
*a^2*e^4))*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqr
t[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sq
rt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]) + (c^(3/4)*(2*A*c*d
*(3*c*d^2 - 4*a*e^2) + a*B*e*(-(c*d^2) + 3*a*e^2))*(2*Sqrt[a]*c^(1/4)*e*Sqr
t[d + e*x] + (Sqrt[c]*d - Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/
Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - (Sqrt[c]*d + Sqrt[a]*e)^(3/2)*ArcTanh[(c^(1/
4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2*c^2*(c
*d^2 - a*e^2)^2)
```

fricas [B] time = 120.32, size = 8803, normalized size = 23.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] 1/64*((a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c
^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e + 160
*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a^2*
c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4 + 1
5*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*
c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^
3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*
c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^
4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c
 + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2
*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*
a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)
))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*log
((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 72*(
5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2*B^
2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*a^2
*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^3)*
d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 - 62
5*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) + (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*A*B
^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4*c^4)*
d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6*c^2 -
 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*e^10 +
 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 - (12*A*a^5*c^9*d^10 - 2*B*a^6*c^8
*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d^6*e^4
 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7 + 34*
A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900*A^2*B
^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^
2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387
*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*
c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4
+ 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^
10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a
^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^
6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*
(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^
3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2
 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A
*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 +
 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 -
 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*
B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 62
5*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*
e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*
c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*
e^6))) - (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^
3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e +
160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^2*a
^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e^4
+ 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a
^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a
*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A
^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15
*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^
3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*
a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 -
20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^
12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6))*
log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5 + 7
2*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*A^2
*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3*B*
a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2*c^
3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^5 -
 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) - (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(10*
A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4*c^
4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6*c^
2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*e^1
0 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 - (12*A*a^5*c^9*d^10 - 2*B*a^6*
c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d^6*
e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7 +
34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900*A^
2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2
*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 +
387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4
*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a
^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10
*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 -
6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3
*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 +
 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)
*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 + (a^5*c^5*d^6 - 3*a^6*c^4*d^4*
e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(
5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^
3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^1
1 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9
*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c +
 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d
^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^
11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c
^2*e^6))) + (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*
(a^3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^6*e
 + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*(B^
2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^3*e
^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 +
3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^
3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 44
1*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*
(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3
*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A
^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4
```

```
 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5
*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6
))*log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e^5
+ 72*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 1674*
A^2*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*A^3
*B*a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*a^2
*c^3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4*a^
5 - 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) + (180*A^2*B*a^3*c^5*d^6*e^5 - 6*(
10*A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*a^4
*c^4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*a^6
*c^2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)*d*
e^10 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 + (12*A*a^5*c^9*d^10 - 2*B*a
^6*c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^7*d
^6*e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*e^7
 + 34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((900
*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*
a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2
 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*
A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^
4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c
^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8
 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*
c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^
7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c
^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d
^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 6
0*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a
*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*
e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76
*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*
c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^
9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 +
 a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^
8*c^2*e^6))) - (a^4*c^2*d^2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 -
 2*(a^3*c^3*d^2 - a^4*c^2*e^2)*x^2)*sqrt((144*A^2*c^4*d^7 - 48*A*B*a*c^3*d^
6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4*e^7 + 4*
(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^2*c^2)*d^
3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2
 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A
*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 +
 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d^3*e^11 -
 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 - 76*(9*A*
B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a^3*c + 62
5*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*
e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^10 + a^11*
c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*
e^6))*log((4320*A^3*B*c^5*d^7*e^4 - 432*(5*A^2*B^2*a*c^4 + 7*A^4*c^5)*d^6*e
^5 + 72*(5*A*B^3*a^2*c^3 - 147*A^3*B*a*c^4)*d^5*e^6 - 4*(5*B^4*a^3*c^2 - 16
74*A^2*B^2*a^2*c^3 - 1971*A^4*a*c^4)*d^4*e^7 - 2*(647*A*B^3*a^3*c^2 - 2727*
A^3*B*a^2*c^3)*d^3*e^8 + 3*(27*B^4*a^4*c - 1672*A^2*B^2*a^3*c^2 - 1875*A^4*
a^2*c^3)*d^2*e^9 + 2*(567*A*B^3*a^4*c + 625*A^3*B*a^3*c^2)*d*e^10 - (81*B^4
*a^5 - 625*A^4*a^3*c^2)*e^11)*sqrt(e*x + d) - (180*A^2*B*a^3*c^5*d^6*e^5 -
6*(10*A*B^2*a^4*c^4 + 21*A^3*a^3*c^5)*d^5*e^6 + (5*B^3*a^5*c^3 - 447*A^2*B*
a^4*c^4)*d^4*e^7 + 6*(37*A*B^2*a^5*c^3 + 53*A^3*a^4*c^4)*d^3*e^8 - 24*(B^3*
a^6*c^2 - 9*A^2*B*a^5*c^3)*d^2*e^9 - 2*(93*A*B^2*a^6*c^2 + 100*A^3*a^5*c^3)
*d*e^10 + 3*(9*B^3*a^7*c + 25*A^2*B*a^6*c^2)*e^11 + (12*A*a^5*c^9*d^10 - 2*
B*a^6*c^8*d^9*e - 55*A*a^6*c^8*d^8*e^2 + 10*B*a^7*c^7*d^7*e^3 + 98*A*a^7*c^
7*d^6*e^4 - 18*B*a^8*c^6*d^5*e^5 - 84*A*a^8*c^6*d^4*e^6 + 14*B*a^9*c^5*d^3*
e^7 + 34*A*a^9*c^5*d^2*e^8 - 4*B*a^10*c^4*d*e^9 - 5*A*a^10*c^4*e^10)*sqrt((
900*A^2*B^2*c^4*d^6*e^8 - 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B
^4*a^2*c^2 - 2070*A^2*B^2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*
c^2 + 387*A^3*B*a*c^3)*d^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 1
75*A^4*a*c^3)*d^2*e^12 - 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81
*B^4*a^4 + 450*A^2*B^2*a^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^
6*c^10*d^10*e^2 + 15*a^7*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*
e^8 - 6*a^10*c^6*d^2*e^10 + a^11*c^5*e^12)))*sqrt((144*A^2*c^4*d^7 - 48*A*B
*a*c^3*d^6*e + 160*A*B*a^2*c^2*d^4*e^3 - 150*A*B*a^3*c*d^2*e^5 + 30*A*B*a^4
*e^7 + 4*(B^2*a^2*c^2 - 105*A^2*a*c^3)*d^5*e^2 - 5*(3*B^2*a^3*c - 77*A^2*a^
2*c^2)*d^3*e^4 + 15*(B^2*a^4 - 7*A^2*a^3*c)*d*e^6 - (a^5*c^5*d^6 - 3*a^6*c^
4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 - a^8*c^2*e^6)*sqrt((900*A^2*B^2*c^4*d^6*e^8
- 60*(5*A*B^3*a*c^3 + 21*A^3*B*c^4)*d^5*e^9 + (25*B^4*a^2*c^2 - 2070*A^2*B^
2*a*c^3 + 441*A^4*c^4)*d^4*e^10 + 8*(115*A*B^3*a^2*c^2 + 387*A^3*B*a*c^3)*d
^3*e^11 - 6*(15*B^4*a^3*c - 136*A^2*B^2*a^2*c^2 + 175*A^4*a*c^3)*d^2*e^12 -
 76*(9*A*B^3*a^3*c + 25*A^3*B*a^2*c^2)*d*e^13 + (81*B^4*a^4 + 450*A^2*B^2*a
^3*c + 625*A^4*a^2*c^2)*e^14)/(a^5*c^11*d^12 - 6*a^6*c^10*d^10*e^2 + 15*a^7
*c^9*d^8*e^4 - 20*a^8*c^8*d^6*e^6 + 15*a^9*c^7*d^4*e^8 - 6*a^10*c^6*d^2*e^1
0 + a^11*c^5*e^12)))/(a^5*c^5*d^6 - 3*a^6*c^4*d^4*e^2 + 3*a^7*c^3*d^2*e^4 -
 a^8*c^2*e^6))) + 4*(4*B*a^2*c*d^2 - A*a^2*c*d*e - 3*B*a^3*e^2 - (6*A*c^3*d
^2 - B*a*c^2*d*e - 5*A*a*c^2*e^2)*x^3 + (A*a*c^2*d*e - B*a^2*c*e^2)*x^2 + (
10*A*a*c^2*d^2 - B*a^2*c*d*e - 9*A*a^2*c*e^2)*x)*sqrt(e*x + d))/(a^4*c^2*d^
2 - a^5*c*e^2 + (a^2*c^4*d^2 - a^3*c^3*e^2)*x^4 - 2*(a^3*c^3*d^2 - a^4*c^2*
e^2)*x^2)
```

giac [B] time = 1.25, size = 1637, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] 1/32*((a^2*c^2*d^2*e - a^3*c*e^3)^2*B*a*d*abs(c)*e^2 - (a^2*c^2*d^2*e - a^3
*c*e^3)^2*(6*c*d^2*e - 5*a*e^3)*A*abs(c) - 2*(3*sqrt(a*c)*a*c^3*d^5*e - 7*s
qrt(a*c)*a^2*c^2*d^3*e^3 + 4*sqrt(a*c)*a^3*c*d*e^5)*A*abs(a^2*c^2*d^2*e - a
^3*c*e^3)*abs(c) + (sqrt(a*c)*a^2*c^2*d^4*e^2 - 4*sqrt(a*c)*a^3*c*d^2*e^4 +
 3*sqrt(a*c)*a^4*e^6)*B*abs(a^2*c^2*d^2*e - a^3*c*e^3)*abs(c) + (12*a^3*c^6
*d^8*e - 37*a^4*c^5*d^6*e^3 + 38*a^5*c^4*d^4*e^5 - 13*a^6*c^3*d^2*e^7)*A*ab
s(c) - (2*a^4*c^5*d^7*e^2 - 7*a^5*c^4*d^5*e^4 + 8*a^6*c^3*d^3*e^6 - 3*a^7*c
^2*d*e^8)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^2*c^3*d^3 - a^3*c^2*d*e^2
 + sqrt((a^2*c^3*d^3 - a^3*c^2*d*e^2)^2 - (a^2*c^3*d^4 - 2*a^3*c^2*d^2*e^2
+ a^4*c*e^4)*(a^2*c^3*d^2 - a^3*c^2*e^2)))/(a^2*c^3*d^2 - a^3*c^2*e^2)))/((
a^4*c^4*d^4*e - sqrt(a*c)*a^3*c^4*d^5 + 2*sqrt(a*c)*a^4*c^3*d^3*e^2 - 2*a^5
*c^3*d^2*e^3 - sqrt(a*c)*a^5*c^2*d*e^4 + a^6*c^2*e^5)*sqrt(-c^2*d - sqrt(a*
c)*c*e)*abs(a^2*c^2*d^2*e - a^3*c*e^3)) + 1/32*((a^2*c^2*d^2*e - a^3*c*e^3)
^2*sqrt(a*c)*B*a*d*abs(c)*e^2 - (a^2*c^2*d^2*e - a^3*c*e^3)^2*(6*sqrt(a*c)*
c*d^2*e - 5*sqrt(a*c)*a*e^3)*A*abs(c) + 2*(3*a^2*c^4*d^5*e - 7*a^3*c^3*d^3*
e^3 + 4*a^4*c^2*d*e^5)*A*abs(a^2*c^2*d^2*e - a^3*c*e^3)*abs(c) - (a^3*c^3*d
^4*e^2 - 4*a^4*c^2*d^2*e^4 + 3*a^5*c*e^6)*B*abs(a^2*c^2*d^2*e - a^3*c*e^3)*
abs(c) + (12*sqrt(a*c)*a^3*c^6*d^8*e - 37*sqrt(a*c)*a^4*c^5*d^6*e^3 + 38*sq
rt(a*c)*a^5*c^4*d^4*e^5 - 13*sqrt(a*c)*a^6*c^3*d^2*e^7)*A*abs(c) - (2*sqrt(
a*c)*a^4*c^5*d^7*e^2 - 7*sqrt(a*c)*a^5*c^4*d^5*e^4 + 8*sqrt(a*c)*a^6*c^3*d^
3*e^6 - 3*sqrt(a*c)*a^7*c^2*d*e^8)*B*abs(c))*arctan(sqrt(x*e + d)/sqrt(-(a^
2*c^3*d^3 - a^3*c^2*d*e^2 - sqrt((a^2*c^3*d^3 - a^3*c^2*d*e^2)^2 - (a^2*c^3
*d^4 - 2*a^3*c^2*d^2*e^2 + a^4*c*e^4)*(a^2*c^3*d^2 - a^3*c^2*e^2)))/(a^2*c^
3*d^2 - a^3*c^2*e^2)))/((a^4*c^5*d^5 + sqrt(a*c)*a^4*c^4*d^4*e - 2*a^5*c^4*
d^3*e^2 - 2*sqrt(a*c)*a^5*c^3*d^2*e^3 + a^6*c^3*d*e^4 + sqrt(a*c)*a^6*c^2*e
^5)*sqrt(-c^2*d + sqrt(a*c)*c*e)*abs(a^2*c^2*d^2*e - a^3*c*e^3)) - 1/16*(6*
(x*e + d)^(7/2)*A*c^3*d^2*e - 18*(x*e + d)^(5/2)*A*c^3*d^3*e + 18*(x*e + d)
^(3/2)*A*c^3*d^4*e - 6*sqrt(x*e + d)*A*c^3*d^5*e - (x*e + d)^(7/2)*B*a*c^2*
d*e^2 + 3*(x*e + d)^(5/2)*B*a*c^2*d^2*e^2 - 3*(x*e + d)^(3/2)*B*a*c^2*d^3*e
^2 + sqrt(x*e + d)*B*a*c^2*d^4*e^2 - 5*(x*e + d)^(7/2)*A*a*c^2*e^3 + 14*(x*
e + d)^(5/2)*A*a*c^2*d*e^3 - 23*(x*e + d)^(3/2)*A*a*c^2*d^2*e^3 + 14*sqrt(x
*e + d)*A*a*c^2*d^3*e^3 + (x*e + d)^(5/2)*B*a^2*c*e^4 - (x*e + d)^(3/2)*B*a
^2*c*d*e^4 - 4*sqrt(x*e + d)*B*a^2*c*d^2*e^4 + 9*(x*e + d)^(3/2)*A*a^2*c*e^
5 - 8*sqrt(x*e + d)*A*a^2*c*d*e^5 + 3*sqrt(x*e + d)*B*a^3*e^6)/((a^2*c^2*d^
2 - a^3*c*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 - a*e^2)^2)
```

maple [B] time = 0.10, size = 1733, normalized size = 4.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x)
```

```
[Out] 13/32*e^3/a/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d-3/8*e/a^2/(a
*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c^2*d^3+1/16*e^2/a/(a*e^2-c*d^
2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*c*d^2+1/16*e^2/a/(a*e^2-c*d^2)/(a*c*e^2
)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^
2)^(1/2))*c)^(1/2)*c)*B*c*d^2+13/32*e^3/a/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((c
*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c
)^(1/2)*c)*A*c*d-3/8*e/a^2/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c^
2*d^3+9/8*e/(c*e^2*x^2-a*e^2)^2/a^2/(a*e^2-c*d^2)*(e*x+d)^(3/2)*A*c^2*d^4+1
/16*e^4/(c*e^2*x^2-a*e^2)^2/(a*e^2-c*d^2)*(e*x+d)^(5/2)*B+3/16*e^4/(c*e^2*x
^2-a*e^2)^2/c*(e*x+d)^(1/2)*B-1/16*e^2/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(1/2)*
B*d^2-3/32*e^4/(a*e^2-c*d^2)/(a*c*e^2)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B-3/32*e^4/(a*e
^2-c*d^2)/(a*c*e^2)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(
1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^3/a/(a*e^2-c*d^2)/((c*d+(a
*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/
2)*c)*A-1/16*e^4/(c*e^2*x^2-a*e^2)^2/(a*e^2-c*d^2)*(e*x+d)^(3/2)*B*d-5/32*e
^3/a/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((
-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-1/2*e^3/(c*e^2*x^2-a*e^2)^2/a*(e*x+d)^(
1/2)*A*d+7/8*e^3/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(5/2)*A*c*d-3/
16*e/a^2/(a*e^2-c*d^2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*d^2+3/8*e/(c*e^2*x^2-a*e^2)^2*c^2/
a^2/(a*e^2-c*d^2)*(e*x+d)^(7/2)*A*d^2-9/8*e/(c*e^2*x^2-a*e^2)^2/a^2/(a*e^2-
c*d^2)*(e*x+d)^(5/2)*A*c^2*d^3+3/16*e/a^2/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*c*
d^2-3/16*e^2/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(3/2)*B*c*d^3+3/16
*e^2/(c*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(5/2)*B*c*d^2-23/16*e^3/(c
*e^2*x^2-a*e^2)^2/a/(a*e^2-c*d^2)*(e*x+d)^(3/2)*A*c*d^2-1/16*e^2/(c*e^2*x^2
-a*e^2)^2*c/a/(a*e^2-c*d^2)*(e*x+d)^(7/2)*B*d+9/16*e^5/(c*e^2*x^2-a*e^2)^2/
(a*e^2-c*d^2)*(e*x+d)^(3/2)*A-5/16*e^3/(c*e^2*x^2-a*e^2)^2*c/a/(a*e^2-c*d^2
)*(e*x+d)^(7/2)*A+3/8*e/(c*e^2*x^2-a*e^2)^2/a^2*c*(e*x+d)^(1/2)*A*d^3-1/32*
e^2/a/(a*e^2-c*d^2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)/(
(-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d+1/32*e^2/a/(a*e^2-c*d^2)/((c*d+(a*c*
e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*
c)*B*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(Bx + A)\sqrt{ex + d}}{\left(cx^2 - a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 - a)^3, x)
```

mupad **[B]** time = 7.83, size = 13200, normalized size = 35.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a - c*x^2)^3,x)
```

```
[Out] atan(((((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*
e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^
2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*
((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^
5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^
3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*
a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30
*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^
5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38
*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^1
1*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*
c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d
^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*
a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*
a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2)
- 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^
(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*
a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^
2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e
^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(2
5*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3
*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d
^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*
e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2)*1i - (((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7
- 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^
4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2
)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2
) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e
^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15
*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7
*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^
6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*
B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
- a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7
*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a
^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15
*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7
*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2
*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A
^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*
a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^
```

```
3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^1
0*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)
 - ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c
*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2
*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7
 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 3
8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^
11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i)/((((12288*B*a^8*c^2*e^8 -
32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 +
 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2
*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 - 9*B^2*a
^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4
 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21
*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*
d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/
2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^
7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2)
)/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*
e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*
e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5
*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^
4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 -
 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^
4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/
2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*
e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^1
5*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^
7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d
^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A
*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + (((122
88*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*
A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096
*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e*x)^(1/2)*((144*A^2*a^
5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*
A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A
*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^
6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3
*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)
^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e
^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^
2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2
- 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((
144*A^2*a^5*c^7*d^7 - 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*
e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*
```

```
e^4 + 30*A*B*a^9*c^3*e^7 + 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^
8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A
*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*
(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A
*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*
c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(25*A^2*a^3*c^
2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4
*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*
A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a
^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 - 9*B^2*a^2
*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 +
 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 + 21*A
^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*
e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2)
 - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*
c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/
(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^
4)))^(1/2) + (864*A^3*c^4*d^6*e^3 + 45*A*B^2*a^4*e^9 - 125*A^3*a^3*c*e^9 +
9*B^3*a^4*d*e^8 + 1170*A^3*a^2*c^2*d^2*e^7 - 1944*A^3*a*c^3*d^4*e^5 - 4*B^3
*a^3*c*d^3*e^6 + 72*A*B^2*a^2*c^2*d^4*e^5 + 972*A^2*B*a^2*c^2*d^3*e^6 - 465
*A^2*B*a^3*c*d*e^8 - 162*A*B^2*a^3*c*d^2*e^7 - 432*A^2*B*a*c^3*d^5*e^4)/(20
48*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2))))*((144*A^2*a^5*c^7*d^7 - 9*B
^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3
*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7
+ 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*
c^3*d*e^6 - 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) - 30*A*B*c^2*d^3*e^4*(a^15*c^5)
^(1/2) - 48*A*B*a^6*c^6*d^6*e + 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*
B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 + 38*A*B*a*c*d*e^6*(a^15*c^5)^(
1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*
d^2*e^4)))^(1/2)*2i + atan(((((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7
- 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^
4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2
)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2
) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e
^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15
*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7
*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^
6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*
B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
- a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7
*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a
^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15
*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7
*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2
*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A
^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*
a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^
3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^1
0*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)
 + ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c
*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2
*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7
+ 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 3
```

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8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^
11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i - (((12288*B*a^8*c^2*e^8 -
32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 +
 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2
*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^7 + 9*B^2*a
^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4
 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21
*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*
d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/
2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^
7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2)
)/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*
e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*
e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7
 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c
^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^
3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^
2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^1
5*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) +
160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*
c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^1
2*c^6*d^2*e^4)))^(1/2) - ((d + e*x)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5
*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^
4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 -
 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^
4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/
2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*
e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^1
5*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^
7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d
^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A
*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6
 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*1i)/((((
12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^5*c^5*d^5*e^3 + 573
44*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*a^7*c^3*d^2*e^6)/(4
096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) - ((d + e*x)^(1/2)*((144*A^2
*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 3
85*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 3
0*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d
*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*
d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c
^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*
d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4
*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 + 4096*a^5*c^6*d^5*e
^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))
*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d
^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d
^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2
*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 3
0*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e
^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 3
8*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^
11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + ((d + e*x)^(1/2)*(25*A^2*a^3
*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A^2*a^2*c^3*d^2*e^6
+ 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A^2*a*c^4*d^4*e^4 -
48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^2*c^3*d^3*e^5))/(64
*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*
a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^
4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 2
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1*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3
*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1
/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a
^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2
))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2
*e^4)))^(1/2) + (((12288*B*a^8*c^2*e^8 - 32768*A*a^7*c^3*d*e^7 - 24576*A*a^
5*c^5*d^5*e^3 + 57344*A*a^6*c^4*d^3*e^5 + 4096*B*a^6*c^4*d^4*e^4 - 16384*B*
a^7*c^3*d^2*e^6)/(4096*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2)) + ((d + e
*x)^(1/2)*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*
a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*
a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2)
- 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^
(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*
a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^
2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e
^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*(4096*a^7*c^4*d*e^6 +
 4096*a^5*c^6*d^5*e^2 - 8192*a^6*c^5*d^3*e^4))/(64*(a^6*e^4 + a^4*c^2*d^4 -
 2*a^5*c*d^2*e^2)))*((144*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2)
- 420*A^2*a^6*c^6*d^5*e^2 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2
 - 15*B^2*a^8*c^4*d^3*e^4 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c
^5)^(1/2) - 105*A^2*a^8*c^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(
a^15*c^5)^(1/2) + 30*A*B*c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*
e - 5*B^2*a*c*d^2*e^5*(a^15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*
a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 -
a^13*c^5*e^6 - 3*a^11*c^7*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) - ((d + e*x
)^(1/2)*(25*A^2*a^3*c^2*e^8 + 144*A^2*c^5*d^6*e^2 + 9*B^2*a^4*c*e^8 + 109*A
^2*a^2*c^3*d^2*e^6 + 4*B^2*a^2*c^3*d^4*e^4 - 11*B^2*a^3*c^2*d^2*e^6 - 276*A
^2*a*c^4*d^4*e^4 - 48*A*B*a*c^4*d^5*e^3 - 68*A*B*a^3*c^2*d*e^7 + 112*A*B*a^
2*c^3*d^3*e^5))/(64*(a^6*e^4 + a^4*c^2*d^4 - 2*a^5*c*d^2*e^2)))*((144*A^2*a
^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2 + 385
*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4 + 30*
A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c^4*d*e
^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*c^2*d^
3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^15*c^5
)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*a*c*d*
e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7*d^4*e
^2 + 3*a^12*c^6*d^2*e^4)))^(1/2) + (864*A^3*c^4*d^6*e^3 + 45*A*B^2*a^4*e^9
- 125*A^3*a^3*c*e^9 + 9*B^3*a^4*d*e^8 + 1170*A^3*a^2*c^2*d^2*e^7 - 1944*A^3
*a*c^3*d^4*e^5 - 4*B^3*a^3*c*d^3*e^6 + 72*A*B^2*a^2*c^2*d^4*e^5 + 972*A^2*B
*a^2*c^2*d^3*e^6 - 465*A^2*B*a^3*c*d*e^8 - 162*A*B^2*a^3*c*d^2*e^7 - 432*A^
2*B*a*c^3*d^5*e^4)/(2048*(a^8*e^4 + a^6*c^2*d^4 - 2*a^7*c*d^2*e^2))))*((144
*A^2*a^5*c^7*d^7 + 9*B^2*a^2*e^7*(a^15*c^5)^(1/2) - 420*A^2*a^6*c^6*d^5*e^2
 + 385*A^2*a^7*c^5*d^3*e^4 + 4*B^2*a^7*c^5*d^5*e^2 - 15*B^2*a^8*c^4*d^3*e^4
 + 30*A*B*a^9*c^3*e^7 - 21*A^2*c^2*d^2*e^5*(a^15*c^5)^(1/2) - 105*A^2*a^8*c
^4*d*e^6 + 15*B^2*a^9*c^3*d*e^6 + 25*A^2*a*c*e^7*(a^15*c^5)^(1/2) + 30*A*B*
c^2*d^3*e^4*(a^15*c^5)^(1/2) - 48*A*B*a^6*c^6*d^6*e - 5*B^2*a*c*d^2*e^5*(a^
15*c^5)^(1/2) + 160*A*B*a^7*c^5*d^4*e^3 - 150*A*B*a^8*c^4*d^2*e^5 - 38*A*B*
a*c*d*e^6*(a^15*c^5)^(1/2))/(4096*(a^10*c^8*d^6 - a^13*c^5*e^6 - 3*a^11*c^7
*d^4*e^2 + 3*a^12*c^6*d^2*e^4)))^(1/2)*2i - (((d + e*x)^(3/2)*(B*a^2*d*e^4
- 9*A*a^2*e^5 - 18*A*c^2*d^4*e + 23*A*a*c*d^2*e^3 + 3*B*a*c*d^3*e^2))/(16*a
^2*(a*e^2 - c*d^2)) - ((d + e*x)^(1/2)*(3*B*a^2*e^4 + 6*A*c^2*d^3*e - 8*A*a
*c*d*e^3 - B*a*c*d^2*e^2))/(16*a^2*c) - ((d + e*x)^(5/2)*(B*a^2*e^4 - 18*A*
c^2*d^3*e + 14*A*a*c*d*e^3 + 3*B*a*c*d^2*e^2))/(16*a^2*(a*e^2 - c*d^2)) + (
c*(d + e*x)^(7/2)*(5*A*a*e^3 + B*a*d*e^2 - 6*A*c*d^2*e))/(16*a^2*(a*e^2 - c
*d^2)))/(c^2*(d + e*x)^4 + a^2*e^4 + c^2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d +
 e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d + e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c
*d^2*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1462 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^3}\,dx$

Optimal. Leaf size=417

$$-\frac{\left(3A\left(-10\sqrt{a}\,cde+7a\sqrt{c}\,e^2+4c^{3/2}d^2\right)+aBe\left(2\sqrt{c}\,d-5\sqrt{a}\,e\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(3A\left(10\sqrt{a}\,cde+7a\sqrt{c}\,e\right.\right.}{}$$

```
[Out] -1/32*arctanh(c^(1/4)*(e*x+d)^(1/2)/(-e*a^(1/2)+d*c^(1/2))^(1/2))*(a*B*e*(-
5*e*a^(1/2)+2*d*c^(1/2))+3*A*(4*c^(3/2)*d^2-10*c*d*e*a^(1/2)+7*a*e^2*c^(1/2
)))/a^(5/2)/c^(3/4)/(-e*a^(1/2)+d*c^(1/2))^(5/2)+1/32*arctanh(c^(1/4)*(e*x+
d)^(1/2)/(e*a^(1/2)+d*c^(1/2))^(1/2))*(a*B*e*(5*e*a^(1/2)+2*d*c^(1/2))+3*A*
(4*c^(3/2)*d^2+10*c*d*e*a^(1/2)+7*a*e^2*c^(1/2)))/a^(5/2)/c^(3/4)/(e*a^(1/2
)+d*c^(1/2))^(5/2)+1/4*(a*(-A*e+B*d)+(A*c*d-B*a*e)*x)*(e*x+d)^(1/2)/a/(-a*e
^2+c*d^2)/(-c*x^2+a)^2-1/16*(a*e*(-7*A*a*e^2+A*c*d^2+6*B*a*d*e)-(6*A*c*d*(-
2*a*e^2+c*d^2)+a*B*e*(5*a*e^2+c*d^2))*x)*(e*x+d)^(1/2)/a^2/(-a*e^2+c*d^2)^2
/(-c*x^2+a)
```

Rubi [A] time = 0.93, antiderivative size = 417, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {823, 827, 1166, 208}

$$-\frac{\left(3A\left(-10\sqrt{a}\,cde+7a\sqrt{c}\,e^2+4c^{3/2}d^2\right)+aBe\left(2\sqrt{c}\,d-5\sqrt{a}\,e\right)\right)\tanh^{-1}\left(\frac{\sqrt[4]{c}\,\sqrt{d+ex}}{\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}}\right)}{32a^{5/2}c^{3/4}\left(\sqrt{c}\,d-\sqrt{a}\,e\right)^{5/2}}+\frac{\left(3A\left(10\sqrt{a}\,cde+7a\sqrt{c}\,e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^3),x]
```

```
[Out] (Sqrt[d + e*x]*(a*(B*d - A*e) + (A*c*d - a*B*e)*x))/(4*a*(c*d^2 - a*e^2)*(a
 - c*x^2)^2) - (Sqrt[d + e*x]*(a*e*(A*c*d^2 + 6*a*B*d*e - 7*a*A*e^2) - (6*A
*c*d*(c*d^2 - 2*a*e^2) + a*B*e*(c*d^2 + 5*a*e^2))*x))/(16*a^2*(c*d^2 - a*e^
2)^2*(a - c*x^2)) - ((a*B*e*(2*Sqrt[c]*d - 5*Sqrt[a]*e) + 3*A*(4*c^(3/2)*d^
2 - 10*Sqrt[a]*c*d*e + 7*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sq
rt[Sqrt[c]*d - Sqrt[a]*e]])/(32*a^(5/2)*c^(3/4)*(Sqrt[c]*d - Sqrt[a]*e)^(5/
2)) + ((a*B*e*(2*Sqrt[c]*d + 5*Sqrt[a]*e) + 3*A*(4*c^(3/2)*d^2 + 10*Sqrt[a]
*c*d*e + 7*a*Sqrt[c]*e^2))*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d +
 Sqrt[a]*e]])/(32*a^(5/2)*c^(3/4)*(Sqrt[c]*d + Sqrt[a]*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a-cx^2\right)^3}\,dx = \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\int \frac{-\frac{1}{2}c\left(6Acd^2+aBde-7aAe^2\right)-\frac{5}{2}ce(Acd-aBe)x}{\sqrt{d+ex}\left(a-cx^2\right)^2}\,dx}{4ac\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6\right.\right.}{16a^2\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6\right.\right.}{16a^2\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6\right.\right.}{16a^2\left(cd^2-ae^2\right)}$$

$$= \frac{\sqrt{d+ex}\,(a(Bd-Ae)+(Acd-aBe)x)}{4a\left(cd^2-ae^2\right)\left(a-cx^2\right)^2} - \frac{\sqrt{d+ex}\,\left(ae\left(Acd^2+6aBde-7aAe^2\right)-\left(6\right.\right.}{16a^2\left(cd^2-ae^2\right)}$$

Mathematica [A] time = 1.06, size = 536, normalized size = 1.29

$$\frac{\frac{c^2\sqrt{d+ex}\left(a^2e^2(7Ae-6Bd+5Bex)+acde(Bdx-A(d+12ex))+6Ac^2d^3x\right)}{2\left(a-cx^2\right)}+\frac{c^{7/4}\left(3A\left(7a^2e^4-5acd^2e^2+2c^2d^4\right)+aBde\left(cd^2-13ae^2\right)\right)\left(\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\,\tanh^{-1}\left(\frac{\sqrt[4]{c}}{\sqrt{\sqrt{}}}\right.\right.}{4\sqrt{a}\sqrt{\sqrt{c}\,d-\sqrt{a}\,e}\sqrt{\sqrt{a}\,e+\sqrt{c}\,d}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a - c*x^2)^3),x]
```

```
[Out] ((2*a*c^2*(c*d^2 - a*e^2)*Sqrt[d + e*x]*(-(a*A*e) + A*c*d*x + a*B*(d - e*x)
))/(a - c*x^2)^2 + (c^2*Sqrt[d + e*x]*(6*A*c^2*d^3*x + a^2*e^2*(-6*B*d + 7*
A*e + 5*B*e*x) + a*c*d*e*(B*d*x - A*(d + 12*e*x))))/(2*(a - c*x^2)) + (c^(7
/4)*(a*B*d*e*(c*d^2 - 13*a*e^2) + 3*A*(2*c^2*d^4 - 5*a*c*d^2*e^2 + 7*a^2*e^
4))*(-(Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqr
t[c]*d - Sqrt[a]*e]]) + Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d
 + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]*Sqrt[Sqrt[c]*d - Sqrt[a]
*e]*Sqrt[Sqrt[c]*d + Sqrt[a]*e]) - (c^(5/4)*(6*A*c*d*(c*d^2 - 2*a*e^2) + a*
B*e*(c*d^2 + 5*a*e^2))*(Sqrt[Sqrt[c]*d - Sqrt[a]*e]*ArcTanh[(c^(1/4)*Sqrt[d
 + e*x])/Sqrt[Sqrt[c]*d - Sqrt[a]*e]] - Sqrt[Sqrt[c]*d + Sqrt[a]*e]*ArcTanh
[(c^(1/4)*Sqrt[d + e*x])/Sqrt[Sqrt[c]*d + Sqrt[a]*e]]))/(4*Sqrt[a]))/(8*a^2
*c^2*(c*d^2 - a*e^2)^2)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Value
```

maple [B] time = 0.71, size = 1778, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x)
```

```
[Out] 15/16*e*c/a^2/(-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+15/16*e
*c/a^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d+9/32*e/c*(a*c*e^
2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e
*x+d)^(3/2)*A-11/32*e/c*(a*c*e^2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-
(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*A-21/32*e^3*c/(a*c*e^2)^(1/2)/a/(-a*e^2-c*d^
2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2
)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A-9/32*e/c*(a*c*e^2)^(1/2)/a^2/(e*x-(
a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*A+11/32
*e/c*(a*c*e^2)^(1/2)/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e
*x+d)^(1/2)*A+21/32*e^3*c/(a*c*e^2)^(1/2)/a/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*
d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2)^(1
/2))*c)^(1/2)*c)*A+1/16*e^2*c/(a*c*e^2)^(1/2)/a/(a*e^2+c*d^2+2*(a*c*e^2)^(1
/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(a*c*e^2
)^(1/2))*c)^(1/2)*c)*B*d+3/8*e*c^2/(a*c*e^2)^(1/2)/a^2/(a*e^2+c*d^2+2*(a*c*
e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/((c*d+(
a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-3/8*e*c^2/(a*c*e^2)^(1/2)/a^2/(-a*e^2-c*d
^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/
2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*A*d^2-1/16*e^2*c/(a*c*e^2)^(1/2)/a/(
-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B*d-1/16/c*(a*c*e^2)^(1/2)
/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3
/2)*B*d+1/16/c*(a*c*e^2)^(1/2)/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)
^(1/2))*(e*x+d)^(1/2)*B*d+1/16/c*(a*c*e^2)^(1/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c
)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B*d-1/16/c*(a*c*e^2)^(1
/2)/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B*d+3
```

```
/16*e/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*A*d
-3/16*e/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*
x+d)^(3/2)*A*d+3/16*e/a^2/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-(a*c*e^2)^(1/2))*(
e*x+d)^(1/2)*A*d-3/16*e/a^2/(e*x-(a*c*e^2)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e
^2)^(1/2)*d)*(e*x+d)^(3/2)*A*d+7/32*e^2/c/a/(e*x+(a*c*e^2)^(1/2)/c)^2/(c*d-
(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B-5/32*e^2/c/a/(e*x+(a*c*e^2)^(1/2)/c)^2/(a*
e^2+c*d^2-2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B+7/32*e^2/c/a/(e*x-(a*c*e^2)^
(1/2)/c)^2/(c*d+(a*c*e^2)^(1/2))*(e*x+d)^(1/2)*B-5/32*e^2/c/a/(e*x-(a*c*e^2
)^(1/2)/c)^2/(a*e^2+c*d^2+2*(a*c*e^2)^(1/2)*d)*(e*x+d)^(3/2)*B+5/32*e^2/a/(
-a*e^2-c*d^2+2*(a*c*e^2)^(1/2)*d)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)/((-c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B+5/32*e^2/a/(a*e^2+c*d^2+
2*(a*c*e^2)^(1/2)*d)/((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)/
((c*d+(a*c*e^2)^(1/2))*c)^(1/2)*c)*B
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx + A}{\left(cx^2 - a\right)^3 \sqrt{ex + d}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(-c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] -integrate((B*x + A)/((c*x^2 - a)^3*sqrt(e*x + d)), x)
```

mupad [B] time = 9.23, size = 19125, normalized size = 45.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a - c*x^2)^3*(d + e*x)^(1/2)),x)
```

```
[Out] - atan(((((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*
d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^
8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B
*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c
^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 -
 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c
^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*
c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) -
 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*
c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) +
 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^
7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*
a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 6
66*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2
))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*
d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d
*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^
6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 -
4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3
*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4
- 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4
 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^
10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 +
 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6
*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e
^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e
^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*
c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a
^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 1
0*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^
2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c
^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c
^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*
d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4
*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2
 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(
1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^
4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3
*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*
A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2
*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*
A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*
c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/
2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3
)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^
15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^
6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i - (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*
c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*
a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440
*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^
8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^
(1/2)*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6
*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*
a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2
*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a
^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c
^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*
(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*
A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c
*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*
a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^
11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2
*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d
^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4
*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144
*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^
2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7
*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*
(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1
/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*
(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^
(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3
*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a
^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e
^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*
e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/
2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2
*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a
^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*
a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*
c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*
c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9
- 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*
c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8
*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2)
- 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9
*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2)
```

```
+ 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a
^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2
*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) +
666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/
2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6
*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i)/((((86016*
A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*
A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4
096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)
/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^
8*c^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(
a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890
*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*
B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2
*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B
^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d
^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 6
30*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^
15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^
8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^
8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13
*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*
c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5
*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2
 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(
1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^
4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3
*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*
A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2
*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*
A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*
c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/
2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3
)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^
15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^
6 + 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 +
25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*
A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B
^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B
*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a
^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*
e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^
6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2
*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^
2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(
a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*
c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7
*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420
*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*
c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B
*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a
^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^
2*e^8)))^(1/2) - (864*A^3*c^6*d^7*e^3 - 125*B^3*a^5*c*e^10 + 7398*A^3*a^2*c
^4*d^3*e^7 + 4*B^3*a^3*c^3*d^4*e^6 - 5*B^3*a^4*c^2*d^2*e^8 + 2205*A^2*B*a^4
*c^2*e^10 - 4104*A^3*a*c^5*d^5*e^5 - 5292*A^3*a^3*c^3*d*e^9 + 72*A*B^2*a^2*
c^4*d^5*e^5 - 174*A*B^2*a^3*c^3*d^3*e^7 - 1548*A^2*B*a^2*c^4*d^4*e^6 + 1053
*A^2*B*a^3*c^3*d^2*e^8 - 780*A*B^2*a^4*c^2*d*e^9 + 432*A^2*B*a*c^5*d^6*e^4)
/(2048*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^
8*c^2*d^4*e^4)) + (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*
A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 2
33472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6
+ 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6
 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5
*c^7*d^9 - 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701
*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 3
5*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^
3)^(1/2) - 210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 94
5*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^
3)^(1/2) + 48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) -
336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7
 + 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)
^(1/2) + 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15
*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10
*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096
*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*
c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*
d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 -
25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^
5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c
^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) -
210*A*B*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c
^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) +
48*A*B*a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7
*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a
*c^2*d^4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 66
6*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2)
)/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d
^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/
2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089
*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31
*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*
A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A
*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c
^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*a^3*e^9*(a
^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*
A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B
^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*
e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^
2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^
8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 63
0*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^4*e^5*(a^1
5*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a^2*c*d*e^8
*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8
*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*
c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)))*((144*A^2*a^5*c^7*d^9 - 25*B^2*
a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e
^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*
e^4 + 70*B^2*a^9*c^3*d^3*e^6 - 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B
*a^10*c^2*e^9 - 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^
8 + 105*B^2*a^10*c^2*d*e^8 + 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*
a^6*c^6*d^8*e + 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^
6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 + 35*B^2*a*c^2*d^
4*e^5*(a^15*c^3)^(1/2) - 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) + 666*A*B*a
^2*c*d*e^8*(a^15*c^3)^(1/2) - 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096
*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4
- 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*2i - atan(((((86016*A*a
^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a
^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096
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*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4
096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c
^2*d^4*e^4)) - ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^1
5*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^
2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2
*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^
9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*
a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*
e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*
A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*
c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(
a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d
^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^
5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8
*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^
3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 +
6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2
) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d
^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^
3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2
*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*
e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2
*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4
*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2)
+ 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(
1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*
c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 +
 5*a^14*c^4*d^2*e^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*
B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2
*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*
a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^
4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*
e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4
)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c
^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^
7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a
^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^1
5*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3
*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a
^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*
B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d
^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*
c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11
*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e
^8)))^(1/2)*1i - (((86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A
*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 23
3472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 +
 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6
- 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*
c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*
A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35
*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3
)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945
*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3
)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 3
36*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7
- 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^
(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*
c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*
a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*
a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c
^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d
^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 2
5*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5
*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^
4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 2
10*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^
3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 4
8*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*
c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*
c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666
*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))
/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^
6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2
)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*
A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*
B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A
*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*
B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^
3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^
15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A
^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^
2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e
^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2
*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8
*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630
*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15
*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*
(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*
d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c
^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*1i)/((((86016*A*a^9*c^3*e^11 - 532
48*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 - 110592*A*a^6*c^6*d^6*e^5 +
233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*e^9 + 4096*B*a^6*c^6*d^7*e^
4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d^3*e^8)/(4096*(a^10*e^8 + a
^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) - ((
d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 75
6*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6
 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6
+ 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d
^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 -
210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2
*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e
^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*
B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) +
 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^
10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^1
4*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 4096*a^5*c^8*d^9*e^2 - 16384*
a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*a^8*c^5*d^3*e^8))/(64*(a^8*
e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4
)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c
^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^
7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a
^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^1
5*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3
*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a
^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*
B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d
^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*
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c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11
*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e
^8)))^(1/2) + ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*e^10 + 25*B^2*a^5*c^2*e^10
+ 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6 - 990*A^2*a^3*c^4*d^2*e^8
+ 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6 + 74*B^2*a^4*c^3*d^2*e^8 -
 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 - 456*A*B*a^4*c^3*d*e^9 - 288
*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))/(64*(a^8*e^8 + a^4*c^4*d^8
 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5
*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701
*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 3
5*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^
3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 94
5*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^
3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) -
336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7
 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)
^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15
*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10
*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - (86
4*A^3*c^6*d^7*e^3 - 125*B^3*a^5*c*e^10 + 7398*A^3*a^2*c^4*d^3*e^7 + 4*B^3*a
^3*c^3*d^4*e^6 - 5*B^3*a^4*c^2*d^2*e^8 + 2205*A^2*B*a^4*c^2*e^10 - 4104*A^3
*a*c^5*d^5*e^5 - 5292*A^3*a^3*c^3*d*e^9 + 72*A*B^2*a^2*c^4*d^5*e^5 - 174*A*
B^2*a^3*c^3*d^3*e^7 - 1548*A^2*B*a^2*c^4*d^4*e^6 + 1053*A^2*B*a^3*c^3*d^2*e
^8 - 780*A*B^2*a^4*c^2*d*e^9 + 432*A^2*B*a*c^5*d^6*e^4)/(2048*(a^10*e^8 + a
^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2 + 6*a^8*c^2*d^4*e^4)) + ((
(86016*A*a^9*c^3*e^11 - 53248*B*a^9*c^3*d*e^10 + 24576*A*a^5*c^7*d^8*e^3 -
110592*A*a^6*c^6*d^6*e^5 + 233472*A*a^7*c^5*d^4*e^7 - 233472*A*a^8*c^4*d^2*
e^9 + 4096*B*a^6*c^6*d^7*e^4 - 61440*B*a^7*c^5*d^5*e^6 + 110592*B*a^8*c^4*d
^3*e^8)/(4096*(a^10*e^8 + a^6*c^4*d^8 - 4*a^9*c*d^2*e^6 - 4*a^7*c^3*d^6*e^2
 + 6*a^8*c^2*d^4*e^4)) + ((d + e*x)^(1/2)*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^
3*e^9*(a^15*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4
 - 1890*A^2*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^
4 + 70*B^2*a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a
^10*c^2*e^9 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8
+ 105*B^2*a^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^
6*c^6*d^8*e - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*
e^3 + 630*A*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*
e^5*(a^15*c^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2
*c*d*e^8*(a^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(
a^10*c^8*d^10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 -
10*a^13*c^5*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*(4096*a^9*c^4*d*e^10 + 40
96*a^5*c^8*d^9*e^2 - 16384*a^6*c^7*d^7*e^4 + 24576*a^7*c^6*d^5*e^6 - 16384*
a^8*c^5*d^3*e^8))/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*
d^6*e^2 + 6*a^6*c^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15
*c^3)^(1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2
*a^8*c^4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*
a^9*c^3*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9
 + 189*A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a
^10*c^2*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e
 - 486*A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A
*B*a^8*c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c
^3)^(1/2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a
^15*c^3)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^
10 - a^15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5
*d^4*e^6 + 5*a^14*c^4*d^2*e^8)))^(1/2) - ((d + e*x)^(1/2)*(441*A^2*a^4*c^3*
e^10 + 25*B^2*a^5*c^2*e^10 + 144*A^2*c^7*d^8*e^2 + 1089*A^2*a^2*c^5*d^4*e^6
 - 990*A^2*a^3*c^4*d^2*e^8 + 4*B^2*a^2*c^5*d^6*e^4 - 31*B^2*a^3*c^4*d^4*e^6
 + 74*B^2*a^4*c^3*d^2*e^8 - 612*A^2*a*c^6*d^6*e^4 + 48*A*B*a*c^6*d^7*e^3 -
456*A*B*a^4*c^3*d*e^9 - 288*A*B*a^2*c^5*d^5*e^5 + 552*A*B*a^3*c^4*d^3*e^7))
```

```
/(64*(a^8*e^8 + a^4*c^4*d^8 - 4*a^7*c*d^2*e^6 - 4*a^5*c^3*d^6*e^2 + 6*a^6*c
^2*d^4*e^4)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(1/2) - 756
*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^4*d^3*e^6
+ 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3*d^3*e^6 +
 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*A^2*c^3*d^
4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2*d*e^8 - 2
10*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*A^2*a*c^2*
d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*c^4*d^4*e^
5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/2) + 154*B
^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3)^(1/2) +
588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^15*c^3*e^1
0 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^6 + 5*a^14
*c^4*d^2*e^8)))^(1/2)))*((144*A^2*a^5*c^7*d^9 + 25*B^2*a^3*e^9*(a^15*c^3)^(
1/2) - 756*A^2*a^6*c^6*d^7*e^2 + 1701*A^2*a^7*c^5*d^5*e^4 - 1890*A^2*a^8*c^
4*d^3*e^6 + 4*B^2*a^7*c^5*d^7*e^2 - 35*B^2*a^8*c^4*d^5*e^4 + 70*B^2*a^9*c^3
*d^3*e^6 + 441*A^2*a^2*c*e^9*(a^15*c^3)^(1/2) - 210*A*B*a^10*c^2*e^9 + 189*
A^2*c^3*d^4*e^5*(a^15*c^3)^(1/2) + 945*A^2*a^9*c^3*d*e^8 + 105*B^2*a^10*c^2
*d*e^8 - 210*A*B*c^3*d^5*e^4*(a^15*c^3)^(1/2) + 48*A*B*a^6*c^6*d^8*e - 486*
A^2*a*c^2*d^2*e^7*(a^15*c^3)^(1/2) - 336*A*B*a^7*c^5*d^6*e^3 + 630*A*B*a^8*
c^4*d^4*e^5 - 420*A*B*a^9*c^3*d^2*e^7 - 35*B^2*a*c^2*d^4*e^5*(a^15*c^3)^(1/
2) + 154*B^2*a^2*c*d^2*e^7*(a^15*c^3)^(1/2) - 666*A*B*a^2*c*d*e^8*(a^15*c^3
)^(1/2) + 588*A*B*a*c^2*d^3*e^6*(a^15*c^3)^(1/2))/(4096*(a^10*c^8*d^10 - a^
15*c^3*e^10 - 5*a^11*c^7*d^8*e^2 + 10*a^12*c^6*d^6*e^4 - 10*a^13*c^5*d^4*e^
6 + 5*a^14*c^4*d^2*e^8)))^(1/2)*2i - (((d + e*x)^(3/2)*(18*A*c^3*d^5*e - 9*
B*a^3*e^6 - 44*A*a*c^2*d^3*e^3 + 3*B*a*c^2*d^4*e^2 + 30*B*a^2*c*d^2*e^4 + 2
*A*a^2*c*d*e^5))/(16*a^2*(a*e^2 - c*d^2)^2) + ((d + e*x)^(1/2)*(19*B*a^2*d*
e^4 - 11*A*a^2*e^5 + 6*A*c^2*d^4*e - 15*A*a*c*d^2*e^3 + B*a*c*d^3*e^2))/(16
*a^2*(a*e^2 - c*d^2)) - (c*(d + e*x)^(5/2)*(21*B*a^2*d*e^4 - 7*A*a^2*e^5 +
18*A*c^2*d^4*e - 35*A*a*c*d^2*e^3 + 3*B*a*c*d^3*e^2))/(16*a^2*(a*e^2 - c*d^
2)^2) + (c*(d + e*x)^(7/2)*(5*B*a^2*e^4 + 6*A*c^2*d^3*e - 12*A*a*c*d*e^3 +
B*a*c*d^2*e^2))/(16*a^2*(a*e^2 - c*d^2)^2))/(c^2*(d + e*x)^4 + a^2*e^4 + c^
2*d^4 + (6*c^2*d^2 - 2*a*c*e^2)*(d + e*x)^2 - (4*c^2*d^3 - 4*a*c*d*e^2)*(d
+ e*x) - 4*c^2*d*(d + e*x)^3 - 2*a*c*d^2*e^2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(-c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1463 $\int \frac{A+Bx}{\sqrt{d+ex}\left(2ABd-A^2e-B^2ex^2\right)}\,dx$

Optimal. Leaf size=155

$$\frac{\log\left(\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+Bd\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}-\frac{\log\left(-\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+\right.}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}$$

```
[Out] -1/2*ln(B*d-A*e+B*(e*x+d)-2^(1/2)*B^(1/2)*(-A*e+2*B*d)^(1/2)*(e*x+d)^(1/2))
/e*2^(1/2)/B^(1/2)/(-A*e+2*B*d)^(1/2)+1/2*ln(B*d-A*e+B*(e*x+d)+2^(1/2)*B^(1
/2)*(-A*e+2*B*d)^(1/2)*(e*x+d)^(1/2))/e*2^(1/2)/B^(1/2)/(-A*e+2*B*d)^(1/2)
```

Rubi [A] time = 0.21, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.079, Rules used = {827, 1164, 628}

$$\frac{\log\left(\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+Bd\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}-\frac{\log\left(-\sqrt{2}\sqrt{B}\sqrt{d+ex}\sqrt{2Bd-Ae}-Ae+B(d+ex)+\right.}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(2*A*B*d - A^2*e - B^2*e*x^2)),x]
```

```
[Out] -(Log[B*d - A*e - Sqrt[2]*Sqrt[B]*Sqrt[2*B*d - A*e]*Sqrt[d + e*x] + B*(d +
e*x)]/(Sqrt[2]*Sqrt[B]*e*Sqrt[2*B*d - A*e])) + Log[B*d - A*e + Sqrt[2]*Sqrt
[B]*Sqrt[2*B*d - A*e]*Sqrt[d + e*x] + B*(d + e*x)]/(Sqrt[2]*Sqrt[B]*e*Sqrt[
2*B*d - A*e])
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1164

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(-2*d)/e - b/c, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e
+ q*x - x^2, x], x], x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^
2, x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c
*d^2 - a*e^2, 0] &&  !GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(2ABd-A^2e-B^2ex^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-B^2d^2e+e^2\left(2ABd-A^2e\right)+2B^2dex^2-B^2ex^4}\,dx, x, \sqrt{d}\right.$$

$$= -\frac{\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt{2Bd-Ae}}{\sqrt{B}}+2x}{-d+\frac{Ae}{B}-\frac{\sqrt{2}\sqrt{2Bd-Ae}\,x}{\sqrt{B}}-x^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}} - \frac{\text{Subst}\left(\int \frac{\frac{\sqrt{2}\sqrt{2}}{\sqrt{}}}{-d+\frac{Ae}{B}+\sqrt{}}\right.}{\sqrt{2}\sqrt{}}$$

$$= -\frac{\log\left(Bd-Ae-\sqrt{2}\sqrt{B}\sqrt{2Bd-Ae}\sqrt{d+ex}+B(d+ex)\right)}{\sqrt{2}\sqrt{B}\,e\sqrt{2Bd-Ae}} + \frac{\log\left(Bd\right.}{}$$

Mathematica [**A**] time = 1.23, size = 302, normalized size = 1.95

$$-\frac{\left(\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Ae-2Bd\right)\left(\sqrt{Bd-\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}}\sqrt{\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Bd}\,\tanh^{-1}\left(\frac{\sqrt{B}}{\sqrt{Bd-\sqrt{A}}}\right.\right.}{\sqrt{B}\sqrt{2Bd-Ae}\sqrt{\sqrt{A}\sqrt{e}\sqrt{2Bd-Ae}+Bd}\left(A^{3/2}e^{5/2}-2\sqrt{A}\,Bde^{3/2}+B\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(2*A*B*d - A^2*e - B^2*e*x^2)),x]
```

```
[Out] -(((-2*B*d + A*e + Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e])*(Sqrt[B*d - Sqrt[A]*S
qrt[e]*Sqrt[2*B*d - A*e]]*Sqrt[B*d + Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e]]*Arc
Tanh[(Sqrt[B]*Sqrt[d + e*x])/Sqrt[B*d - Sqrt[A]*Sqrt[e]*Sqrt[2*B*d - A*e]]]
 + (B*d - A*e)*ArcTanh[(Sqrt[B]*Sqrt[d + e*x])/Sqrt[B*d + Sqrt[A]*Sqrt[e]*S
qrt[2*B*d - A*e]]]))/(Sqrt[B]*Sqrt[2*B*d - A*e]*Sqrt[B*d + Sqrt[A]*Sqrt[e]*
Sqrt[2*B*d - A*e]]*(-2*Sqrt[A]*B*d*e^(3/2) + A^(3/2)*e^(5/2) + B*d*e*Sqrt[2
*B*d - A*e])))
```

fricas [**A**] time = 1.39, size = 236, normalized size = 1.52

$$\left[\frac{\sqrt{2}\log\left(\frac{B^2e^2x^2+8\,B^2d^2-6\,ABde+A^2e^2+4\left(2\,B^2de-ABe^2\right)x+\frac{2\,\sqrt{2}\left(4\,B^3d^2-4\,AB^2de+A^2Be^2+\left(2\,B^3de-AB^2e^2\right)x\right)\sqrt{ex+d}}{\sqrt{2\,B^2d-ABe}}}{B^2ex^2-2\,ABd+A^2e}\right)}{2\,\sqrt{2\,B^2d-ABe}\,e}, -\frac{\sqrt{2}\sqrt{-\frac{1}{2\,B^2d-ABe}}\,\text{ar}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="fr
icas")
```

```
[Out] [1/2*sqrt(2)*log((B^2*e^2*x^2 + 8*B^2*d^2 - 6*A*B*d*e + A^2*e^2 + 4*(2*B^2*
d*e - A*B*e^2)*x + 2*sqrt(2)*(4*B^3*d^2 - 4*A*B^2*d*e + A^2*B*e^2 + (2*B^3*
d*e - A*B^2*e^2)*x)*sqrt(e*x + d)/sqrt(2*B^2*d - A*B*e))/(B^2*e*x^2 - 2*A*B
*d + A^2*e))/(sqrt(2*B^2*d - A*B*e)*e), -sqrt(2)*sqrt(-1/(2*B^2*d - A*B*e))
*arctan(1/2*sqrt(2)*(B*e*x + 2*B*d - A*e)*sqrt(-1/(2*B^2*d - A*B*e))/sqrt(e
*x + d))/e]
```

giac [**B**] time = 1.85, size = 2892, normalized size = 18.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="gi
ac")
```

```
[Out] -(4*A*B^6*d^2*e - 2*A^2*B^5*d*e^2 - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d
 - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e - 4*sqrt(2*A*B*d*e - A^2*e^2)*s
qrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 + 4*sqrt(2*A*B*d*e - A^2*
e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 2*(2*A*B*d*
e - A^2*e^2)*B^5*d - sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e
 - A^2*e^2)*B)*B^5*d - (8*A*B^4*d^2*e - 8*A^2*B^3*d*e^2 - 16*sqrt(2*A*B*d*e
 - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d^2*e - 8*sqrt
(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d^2 +
2*A^3*B^2*e^3 + 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e -
 A^2*e^2)*B)*A^2*B*d*e^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2
*A*B*d*e - A^2*e^2)*B)*A*B^2*d*e - 4*(2*A*B*d*e - A^2*e^2)*B^3*d - 2*sqrt(2
*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d - 4*sq
rt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*e^3
+ 2*(2*A*B*d*e - A^2*e^2)*A*B^2*e + sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d -
 sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*e)*B^2 - (16*A*B^5*d^3*e + 16*sqrt(-B^2
*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^3*e - 32*A^2*B^4*d^2*e^2 + 8*sqrt
(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^3 - 32*sqrt(-B^2*d - sqrt(2*A*
B*d*e - A^2*e^2)*B)*A^2*B^3*d^2*e^2 - 12*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2
*e^2)*B)*A*B^4*d^2*e + 20*A^3*B^3*d*e^3 + 2*sqrt(-B^2*d - sqrt(2*A*B*d*e -
A^2*e^2)*B)*B^5*d^2 + 20*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*B^2
*d*e^3 + 4*sqrt(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 3*sqr
t(-B^2*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d*e - 8*(2*A*B*d*e - A^2*e^2)
*B^4*d^2 - 4*A^4*B^2*e^4 + 12*(2*A*B*d*e - A^2*e^2)*A*B^3*d*e - 4*sqrt(-B^2
*d - sqrt(2*A*B*d*e - A^2*e^2)*B)*A^4*B*e^4 + sqrt(-B^2*d - sqrt(2*A*B*d*e
 - A^2*e^2)*B)*A^2*B^3*e^2 - 4*(2*A*B*d*e - A^2*e^2)*A^2*B^2*e^2)*abs(B))*ar
ctan(sqrt(x*e + d)/sqrt(-(B^2*d*e + sqrt(B^4*d^2*e^2 - (B^2*d^2*e - 2*A*B*d
*e^2 + A^2*e^3)*B^2*e))*e^(-1)/B^2))/(16*A*B^7*d^4*e^2 + 8*B^8*d^4*e - 48*A
^2*B^6*d^3*e^3 - 20*A*B^7*d^3*e^2 + 2*B^8*d^3*e + 52*A^3*B^5*d^2*e^4 + 16*A
^2*B^6*d^2*e^3 - 5*A*B^7*d^2*e^2 - 24*A^4*B^4*d*e^5 - 4*A^3*B^5*d*e^4 + 4*A
^2*B^6*d*e^3 + 4*A^5*B^3*e^6 - A^3*B^5*e^4) + (4*A*B^6*d^2*e - 2*A^2*B^5*d*
e^2 - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B
)*A*B^4*d^2*e - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e -
A^2*e^2)*B)*B^5*d^2 + 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*
d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 - 2*(2*A*B*d*e - A^2*e^2)*B^5*d - sqrt(2*A*
B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d - (8*A*B^
4*d^2*e - 8*A^2*B^3*d*e^2 - 16*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt
(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d^2*e - 8*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^
2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d^2 + 2*A^3*B^2*e^3 + 16*sqrt(2*A*B*
d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B*d*e^2 + 4*s
qrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^2*d
*e - 4*(2*A*B*d*e - A^2*e^2)*B^3*d - 2*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*
d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^3*d - 4*sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-
B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*e^3 + 2*(2*A*B*d*e - A^2*e^2)*A*B^
2*e + sqrt(2*A*B*d*e - A^2*e^2)*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*
A*B^2*e)*B^2 - (16*A*B^5*d^3*e - 16*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)
*B)*A*B^4*d^3*e - 32*A^2*B^4*d^2*e^2 - 8*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2
*e^2)*B)*B^5*d^3 + 32*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d^
2*e^2 + 12*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A*B^4*d^2*e + 20*A^3*
B^3*d*e^3 - 2*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*B^5*d^2 - 20*sqrt(
-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^3*B^2*d*e^3 - 4*sqrt(-B^2*d + sqrt(
2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*d*e^2 + 3*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^
2*e^2)*B)*A*B^4*d*e - 8*(2*A*B*d*e - A^2*e^2)*B^4*d^2 - 4*A^4*B^2*e^4 + 12*
(2*A*B*d*e - A^2*e^2)*A*B^3*d*e + 4*sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)
*B)*A^4*B*e^4 - sqrt(-B^2*d + sqrt(2*A*B*d*e - A^2*e^2)*B)*A^2*B^3*e^2 - 4*
(2*A*B*d*e - A^2*e^2)*A^2*B^2*e^2)*abs(B))*arctan(sqrt(x*e + d)/sqrt(-(B^2*
d*e - sqrt(B^4*d^2*e^2 - (B^2*d^2*e - 2*A*B*d*e^2 + A^2*e^3)*B^2*e))*e^(-1)
/B^2))/(16*A*B^7*d^4*e^2 + 8*B^8*d^4*e - 48*A^2*B^6*d^3*e^3 - 20*A*B^7*d^3*
e^2 + 2*B^8*d^3*e + 52*A^3*B^5*d^2*e^4 + 16*A^2*B^6*d^2*e^3 - 5*A*B^7*d^2*e
^2 - 24*A^4*B^4*d*e^5 - 4*A^3*B^5*d*e^4 + 4*A^2*B^6*d*e^3 + 4*A^5*B^3*e^6 -
 A^3*B^5*e^4)
```

maple [A] time = 0.19, size = 223, normalized size = 1.44

$$-\frac{2\left(-\frac{\left(-ABe+\sqrt{-(Ae-2Bd)AB^2e}\right)\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,B}{\sqrt{B^2d-\sqrt{-(Ae-2Bd)AB^2e}}}\right)}{2\sqrt{-(Ae-2Bd)AB^2e}\,\sqrt{B^2d-\sqrt{-(Ae-2Bd)AB^2e}}\,B^2}-\frac{\left(ABe+\sqrt{-(Ae-2Bd)AB^2e}\right)\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,B}{\sqrt{B^2d+\sqrt{-(Ae-2Bd)AB^2e}}}\right)}{2\sqrt{-(Ae-2Bd)AB^2e}\,\sqrt{B^2d+\sqrt{-(Ae-2Bd)AB^2e}}\,B^2}\right)B^2}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x)
```

```
[Out] -2/e*B^2*(-1/2*(A*e*B+(-A*B^2*e*(A*e-2*B*d))^(1/2))/B^2/(-A*B^2*e*(A*e-2*B*
d))^(1/2)/(B^2*d+(-A*B^2*e*(A*e-2*B*d))^(1/2))^(1/2)*arctanh(B*(e*x+d)^(1/2
)/(B^2*d+(-A*B^2*e*(A*e-2*B*d))^(1/2))^(1/2))-1/2*(-A*e*B+(-A*B^2*e*(A*e-2*
B*d))^(1/2))/B^2/(-A*B^2*e*(A*e-2*B*d))^(1/2)/(B^2*d-(-A*B^2*e*(A*e-2*B*d))
^(1/2))^(1/2)*arctanh(B*(e*x+d)^(1/2)/(B^2*d-(-A*B^2*e*(A*e-2*B*d))^(1/2))^
(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{Bx+A}{\left(B^2ex^2-2\,ABd+A^2e\right)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B^2*e*x^2-A^2*e+2*A*B*d)/(e*x+d)^(1/2),x, algorithm="ma
xima")
```

```
[Out] -integrate((B*x + A)/((B^2*e*x^2 - 2*A*B*d + A^2*e)*sqrt(e*x + d)), x)
```

mupad [B] time = 0.31, size = 310, normalized size = 2.00

$$\frac{\sqrt{2}\left(\operatorname{atan}\left(\frac{\left(A\,e^2\,\sqrt{A\,B\,e-2\,B^2\,d}-2\,B\,d\,e\,\sqrt{A\,B\,e-2\,B^2\,d}\right)\left(\left(\frac{\sqrt{2}\left(\frac{2\,B^4\,d-2\,A\,B^3\,e}{e^2}-\frac{4\,A^2\,B^4\,e^4-8\,A\,B^5\,d\,e^3+4\,B^6\,d^2\,e^2}{e^4\,\left(2\,B^2\,d-A\,B\,e\right)}\right)}{\left(A\,e-B\,d\right)\,\left(A\,e-2\,B\,d\right)}+\frac{4\,\sqrt{2}\,A\,B^4}{e\,\left(2\,B^2\,d-A\,B\,e\right)\,\left(A\,e-B\,d\right)}\right)\sqrt{d+e\,x}-\right.\right.}{4\,A\,B^3}\right.\right.}{e\,\sqrt{A\,B\,e-2\,B^2\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(A + B*x)/((d + e*x)^(1/2)*(A^2*e + B^2*e*x^2 - 2*A*B*d)),x)
```

```
[Out] (2^(1/2)*(atan(((A*e^2*(A*B*e - 2*B^2*d)^(1/2) - 2*B*d*e*(A*B*e - 2*B^2*d)^
(1/2))*(((2^(1/2)*((2*B^4*d - 2*A*B^3*e)/e^2 - (4*A^2*B^4*e^4 + 4*B^6*d^2*e
^2 - 8*A*B^5*d*e^3)/(e^4*(2*B^2*d - A*B*e))))/((A*e - B*d)*(A*e - 2*B*d)) +
 (4*2^(1/2)*A*B^4)/(e*(2*B^2*d - A*B*e)*(A*e - B*d)))*(d + e*x)^(1/2) - (2^
(1/2)*((2*B^4)/e^2 - (4*B^6*d)/(e^2*(2*B^2*d - A*B*e)))*(d + e*x)^(3/2))/((
A*e - B*d)*(A*e - 2*B*d))))/(4*A*B^3)) - atan((2^(1/2)*(A*B*e - 2*B^2*d)^(1
/2)*(d + e*x)^(1/2))/(2*(A*e - 2*B*d)))))/(e*(A*B*e - 2*B^2*d)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{A}{A^2e\sqrt{d+ex}-2ABd\sqrt{d+ex}+B^2ex^2\sqrt{d+ex}}\,dx-\int \frac{Bx}{A^2e\sqrt{d+ex}-2ABd\sqrt{d+ex}+B^2ex^2\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-B**2*e*x**2-A**2*e+2*A*B*d)/(e*x+d)**(1/2),x)
```

```
[Out] -Integral(A/(A**2*e*sqrt(d + e*x) - 2*A*B*d*sqrt(d + e*x) + B**2*e*x**2*sqr
t(d + e*x)), x) - Integral(B*x/(A**2*e*sqrt(d + e*x) - 2*A*B*d*sqrt(d + e*x
) + B**2*e*x**2*sqrt(d + e*x)), x)
```

3.1464 $\int \frac{A+Bx}{\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\left(1+x^2\right)}\,dx$

Optimal. Leaf size=133

$$\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}+\frac{A}{B}\right)}{\sqrt{e}}-\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{A}{B}-\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}\right)}{\sqrt{e}}$$

```
[Out] -arctan(A/B-A^(1/2)*(e*(A/B-B/A+2*x))^(1/2)/B^(1/2)/e^(1/2))*2^(1/2)*A^(1/2
)*B^(1/2)/e^(1/2)+arctan(A/B+A^(1/2)*(e*(A/B-B/A+2*x))^(1/2)/B^(1/2)/e^(1/2
))*2^(1/2)*A^(1/2)*B^(1/2)/e^(1/2)
```

Rubi [A] time = 0.43, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 43, $\frac{\text{number of rules}}{\text{integrand size}} = 0.093$, Rules used = $\{827, 1161, 618, 204\}$

$$\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}+\frac{A}{B}\right)}{\sqrt{e}}-\frac{\sqrt{2}\sqrt{A}\sqrt{B}\tan^{-1}\left(\frac{A}{B}-\frac{\sqrt{A}\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}{\sqrt{B}\sqrt{e}}\right)}{\sqrt{e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[(A^2*e - B^2*e)/(2*A*B) + e*x]*(1 + x^2)),x]
```

```
[Out] -((Sqrt[2]*Sqrt[A]*Sqrt[B]*ArcTan[A/B - (Sqrt[A]*Sqrt[e*(A/B - B/A + 2*x)])
/(Sqrt[B]*Sqrt[e])])/Sqrt[e]) + (Sqrt[2]*Sqrt[A]*Sqrt[B]*ArcTan[A/B + (Sqrt
[A]*Sqrt[e*(A/B - B/A + 2*x)])/(Sqrt[B]*Sqrt[e])])/Sqrt[e]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\,\left(1+x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{Ae-\frac{A^2e-B^2e}{2A}+Bx^2}{e^2+\frac{\left(A^2e-B^2e\right)^2}{4A^2B^2}-\frac{\left(A^2e-B^2e\right)x^2}{AB}+x^4}\,dx,x,\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\right)\\
&= B\,\text{Subst}\left(\int \frac{1}{\frac{\left(A^2+B^2\right)e}{2AB}-\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{e}\,x}{\sqrt{B}}+x^2}\,dx,x,\sqrt{\frac{A^2e-B^2e}{2AB}+ex}\right)+B\,\text{Subst}\Bigg(\int\\
&= -\left((2B)\,\text{Subst}\left(\int \frac{1}{-\frac{2Be}{A}-x^2}\,dx,x,\sqrt{2}\left(-\frac{\sqrt{A}\,\sqrt{e}}{\sqrt{B}}+\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}\right)\right)\right)-(2B\\
&= -\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\tan^{-1}\left(\frac{\sqrt{A}\left(\frac{\sqrt{A}\,\sqrt{e}}{\sqrt{B}}-\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}\right)}{\sqrt{B}\,\sqrt{e}}\right)}{\sqrt{e}}+\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\tan^{-1}\Bigg(}{\sqrt{e}}
\end{aligned}
$$

Mathematica [C] time = 0.18, size = 142, normalized size = 1.07

$$
-\frac{i\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\sqrt{\frac{A}{B}-\frac{B}{A}+2x}\left(\tanh^{-1}\left(\frac{\sqrt{A}\,\sqrt{B}\,\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A-iB}\right)-\tanh^{-1}\left(\frac{\sqrt{A}\,\sqrt{B}\,\sqrt{\frac{A}{B}-\frac{B}{A}+2x}}{A+iB}\right)\right)}{\sqrt{e\left(\frac{A}{B}-\frac{B}{A}+2x\right)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[(A^2*e - B^2*e)/(2*A*B) + e*x]*(1 + x^2)),x]
```

```
[Out] ((-I)*Sqrt[2]*Sqrt[A]*Sqrt[B]*Sqrt[A/B - B/A + 2*x]*(ArcTanh[(Sqrt[A]*Sqrt[
B]*Sqrt[A/B - B/A + 2*x])/(A - I*B)] - ArcTanh[(Sqrt[A]*Sqrt[B]*Sqrt[A/B -
B/A + 2*x])/(A + I*B)]))/Sqrt[e*(A/B - B/A + 2*x)]
```

fricas [A] time = 1.15, size = 164, normalized size = 1.23

$$
\left[\frac{1}{2}\sqrt{2}\sqrt{-\frac{AB}{e}}\,\log\left(\frac{A^2x^2-4\,ABx-A^2+2\,B^2+2\,(Ax-B)\sqrt{-\frac{AB}{e}}\,\sqrt{\frac{2\,ABex+\left(A^2-B^2\right)e}{AB}}}{x^2+1}\right),\sqrt{2}\sqrt{\frac{AB}{e}}\,\arctan\Bigg((Ax-\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"fricas")
```

```
[Out] [1/2*sqrt(2)*sqrt(-A*B/e)*log((A^2*x^2 - 4*A*B*x - A^2 + 2*B^2 + 2*(A*x - B
)*sqrt(-A*B/e)*sqrt((2*A*B*e*x + (A^2 - B^2)*e)/(A*B)))/(x^2 + 1)), sqrt(2)
*sqrt(A*B/e)*arctan((A*x - B)*sqrt(A*B/e)*sqrt((2*A*B*e*x + (A^2 - B^2)*e)/
(A*B))/(2*A*B*x + A^2 - B^2))]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Undef
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ncountered in limit2*((8*(A^2*B^8*exp(1)^2-A^4*B^6*exp(1)^2-A^6*B^4*exp(1)^
2+A^8*B^2*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)
^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B
*exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(cos(acos((A^3*B*exp(
1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^3*B^7*exp(1)^2
+A^7*B^3*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^
2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*
exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(sin(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^3*B^7*exp(1)^2+
A^7*B^3*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2
-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*e
xp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(cos(acos((A^3*B*exp(1)
-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+8*(A^2*B^8*exp(1)^2-A^4
*B^6*exp(1)^2-A^6*B^4*exp(1)^2+A^8*B^2*exp(1)^2)*sqrt(A^2*B^6*exp(1)^2+2*A^
4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2
*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3
))/2)))+8*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2
*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*ab
s(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*ex
p(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3))/2)))^3+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A
^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2
```

```
-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*e
xp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3))/2)))^2*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^5*B^11*exp(1)^4-A^7*B^9*exp(1)^4+A^9*
B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8
*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(cos(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*
exp(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*
B^4*exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A
^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-
A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*ex
p(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^
4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3
*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*ex
p(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+48*(A^5*B^13*exp(
1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*
exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B
*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(
1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3
*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+96*(-A^6*B^12*
exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^
6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B
*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(cos(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign
(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*
re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
)/2)))+24*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2
*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B^7*ab
s(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*ex
p(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+
A*exp(1)*B^3))/2)))^2+96*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp
(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*e
xp(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+
A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*
exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*exp(1)^4-2*A^9*B^9*
exp(1)^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^
2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(
1)+A^3*B*exp(1))*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A
^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1)
)/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+16*(-A^5*B^11*exp(1)^4-A^7*B^9*exp
(1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*ex
p(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(
1))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(sin(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3+48*(-A^6*B
^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^4+A^12*B^6*exp(1)^4)*sqrt(A^
2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2+A*B^3*abs(A*B^3*exp(1)+A
^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(si
n(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*r
e(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
/2)))+24*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A^12*B^4*exp(1)^4)*sqrt(A^2*
B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs
```

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(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp
(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B
+A*exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(
1)^4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*ex
p(1)^2-A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A
^3*B*exp(1))*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*e
xp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/ab
s(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+48*(A^5*B^13*exp(1)^4-2*A^9*B^9*exp(1)
^4+A^13*B^5*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(
1)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3
*B*exp(1))*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^5*B^11*exp(1)^4-A^7*B^9*exp(
1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp
(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1
))*exp(1)-A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1))*im(sign(sin(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(a
cos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+16*(
-A^5*B^11*exp(1)^4-A^7*B^9*exp(1)^4+A^9*B^7*exp(1)^4+A^11*B^5*exp(1)^4)*sqr
t(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+A^10*B^2*exp(1)^2-A*B
^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^7*B*abs(A*B^3*exp(1)+A^3*B*exp(1
))*exp(1))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))^3+24*(A^5*B^13*exp(1)^4-2*A^9*B^9*exp(1)^4+A^13*B^5*exp(1
)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1)^2-A*B^3*abs(A*
B^3*exp(1)+A^3*B*exp(1))*exp(1)+A^3*B*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)
)*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^4-A^8*B^10*exp(1)^4+A^10*B^8*exp(1)^
4+A^12*B^6*exp(1)^4)*sqrt(A^2*B^6*exp(1)^2+2*A^4*B^4*exp(1)^2+A^6*B^2*exp(1
)^2+A*B^3*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^3*B*abs(A*B^3*exp(1)+A^3*
B*exp(1))*exp(1))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A
^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+8*(A^4*B^12*exp(1)^4-2*A^8*B^8*exp(1)^4+A
^12*B^4*exp(1)^4)*sqrt(A^2*B^10*exp(1)^2+A^4*B^8*exp(1)^2+A^8*B^4*exp(1)^2+
A^10*B^2*exp(1)^2+A*B^7*abs(A*B^3*exp(1)+A^3*B*exp(1))*exp(1)-A^7*B*abs(A*B
^3*exp(1)+A^3*B*exp(1))*exp(1))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1)
)/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3)/(-64*A^3*exp(1)+64*A*B^2*exp(1))/
sqrt(-A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*B*exp(1)+A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3)/(A^3*exp(1)*B+A*exp(1)*B^3)^2*ln((A^2*exp(1)+2*A*B*x*ex
p(1)-B^2*exp(1))/A/B-2*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/
B^2)^(1/4)*sqrt((1+(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)*sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3))/2))*sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/B)+((A^4*exp(1)^2+2
*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)*((A^4*exp(1)^2+2*A^2*B^2*exp
(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))+(16*(A^4*B^8*exp(1)^3-A^8*B^4*exp(1)^3)
*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1)
)-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*(A^3*exp(1)*
B+A*exp(1)*B^3)^2*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))+8*(A^3*B^9*exp(1)^3-A^5*B^7*exp(1)^3-A^7*B^5*exp(1
)^3+A^9*B^3*exp(1)^3)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3
*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*
exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+8*(A^3*B^9*exp(1)^3-A^5*B^7*ex
p(1)^3-A^7*B^5*exp(1)^3+A^9*B^3*exp(1)^3)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*
A^5*B^3*exp(1)-A^7*B*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(cos(acos
((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(A^4*B
```

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^8*exp(1)^3-A^8*B^4*exp(1)^3)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*a
bs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1
)-A^7*B*exp(1))*(A^3*exp(1)*B+A*exp(1)*B^3)^2*re(sign(sin(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+16*(-A^6*B^12*exp(1)^5
-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*exp(1)^5)*sqrt(-A^8*abs(A*B^3
*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*
B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*
abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1
))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))^3+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*s
qrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-
A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*im(si
gn(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))
)+24*(A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(-A^8*abs
(A*B^3*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1
)+A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^
6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B
*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*ex
p(1)*B^3))/2)))^2*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3))/2)))+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*
exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*ab
s(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)
-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^1
1*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B
^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*e
xp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+96*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^
5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp
(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5
*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(A^6*B^14*exp(1)^5-2*A^10
*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B
^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*e
xp(1)-A^7*B*exp(1))*im(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3))/2)))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(
1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+48*(-A^6*B^12*exp(1)^5-A^8*B^10*ex
p(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*exp(1)^5)*sqrt(-A^8*abs(A*B^3*exp(1)+A^3*
B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*B^6*abs(A*B^
3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*abs(A*B^3*ex
p(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(c
os(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re
(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/
2)))^2+48*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(-
A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7
*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(cos(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(si
gn(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))
)+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1
)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp
(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(c
os(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re
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(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/
2)))^2+8*(A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(A^8*
abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*ex
p(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)
+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^1
1*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A
*exp(1)*B^3))/2)))^3+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*ex
p(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*im(sig
n(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))
^2*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))+48*(-A^6*B^12*exp(1)^5-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B
^6*exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A
^3*B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9
*exp(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1
)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(
1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^6*B^14*exp(1)^5-2*A
^10*B^10*exp(1)^5+A^14*B^6*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1
))+B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B
^3*exp(1)-A^7*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+96*(-A^7*B^13*exp(1)^5-A^9*B^11*exp
(1)^5+A^11*B^9*exp(1)^5+A^13*B^7*exp(1)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*
exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*
A^5*B^3*exp(1)-A^7*B*exp(1))*im(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))+24*(A^5*B^13*exp(1)^5-2*A
^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-
B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A
^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B
*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1))*im(sign(sin(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re(sign(sin(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^2+8*(
A^5*B^13*exp(1)^5-2*A^9*B^9*exp(1)^5+A^13*B^5*exp(1)^5)*sqrt(-A^8*abs(A*B^3
*exp(1)+A^3*B*exp(1))+B^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-A*B^11*exp(1)+A^2*
B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*exp(1)-A^5*B^7*exp(1)-A^6*B^2*
abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2*A^9*B^3*exp(1)-A^11*B*exp(1
))*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3))/2)))^3+48*(-A^7*B^13*exp(1)^5-A^9*B^11*exp(1)^5+A^11*B^9*exp(1)^5+A^13
*B^7*exp(1)^5)*sqrt(-A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))+B^4*abs(A*B^3*exp(1
)+A^3*B*exp(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1)
)*re(sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3))/2)))^2*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3))/2)))+24*(A^6*B^14*exp(1)^5-2*A^10*B^10*exp(1)^5+A^14*B^6*exp(1
)^5)*sqrt(A^4*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^4*abs(A*B^3*exp(1)+A^3*B*exp
(1))-A*B^7*exp(1)-3*A^3*B^5*exp(1)-3*A^5*B^3*exp(1)-A^7*B*exp(1))*re(sign(c
os(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))*re
(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/
2)))^2+16*(-A^6*B^12*exp(1)^5-A^8*B^10*exp(1)^5+A^10*B^8*exp(1)^5+A^12*B^6*
exp(1)^5)*sqrt(A^8*abs(A*B^3*exp(1)+A^3*B*exp(1))-B^8*abs(A*B^3*exp(1)+A^3*
B*exp(1))-A*B^11*exp(1)-A^2*B^6*abs(A*B^3*exp(1)+A^3*B*exp(1))-2*A^3*B^9*ex
p(1)-A^5*B^7*exp(1)+A^6*B^2*abs(A*B^3*exp(1)+A^3*B*exp(1))-A^7*B^5*exp(1)-2
*A^9*B^3*exp(1)-A^11*B*exp(1))*re(sign(sin(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)))^3)/(32*A^6*B*exp(1)^2-32*A^2*B^5*exp(
1)^2)/abs(A^3*B*exp(1)+A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)/(A^3*ex
p(1)*B+A*exp(1)*B^3)^2*atan((sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/
B)-sign(cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
)/2))*sqrt((1+(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2
)*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))/sign(sin(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2))/sqrt((
1-(A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)/((A^4*exp(
1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))+(-2*A*B*sqrt(-A^3*B*e
xp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(i
m(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*si
nh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-
6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(
1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+2*A*B*sqrt(-A^3*B*exp(1)-A*
B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(
1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3)))/2)^3+(3*A^2-3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(ac
os((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(i
m(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*si
n(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(
-9*A^2+9*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1
)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*ex
p(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*
exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(9*A^2-9*B^2)*sqrt
(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/ab
s(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*
B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(
1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*e
xp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A
*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3
*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A
^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos
((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2-18*A*B*s
qrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/a
bs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1)
)/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+18*A*B*sqrt(-A^3*B*exp(1)-A*B^3*e
xp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^
3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*ex
p(1)*B^3)))/2)^2+2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*
exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-6*A*B*sqrt(-A^3*
B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp
(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^3-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(r
e(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh
(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(-
A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A*B
^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(3*A^2-3*B^2)*sqrt(-A^3*B*
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exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1
)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^
3*exp(1)*B+A*exp(1)*B^3)))/2)+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1
))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
)/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B
*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(A^2-B^2)*sqrt(-
A^3*B*exp(1)-A*B^3*exp(1))*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*
exp(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(
A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1)
)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/
2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))
)/2))/(4*sqrt(2)*A^3*exp(1)+4*sqrt(2)*A*B^2*exp(1))*ln((A^2*exp(1)+2*A*B*x*
exp(1)-B^2*exp(1))/A/B+2*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^
2/B^2)^(1/4)*cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)*sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*exp(1))/A/B)+((A^4*exp(1)^2+2
*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)*((A^4*exp(1)^2+2*A^2*B^2*exp
(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))-((A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp
(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)
))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^3+(-3*A^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos
((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(
acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(3*A^2
-3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*ex
p(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*cosh(im(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*ex
p(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B
+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(aco
s((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im
(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin
(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-18
*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1
))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*e
xp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+18*A*B*sqrt(-A^3*B*exp(1)-A
*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)^2*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A
*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+
A*exp(1)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*
B+A*exp(1)*B^3)))/2)^2-6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((
A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(aco
s((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(a
cos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(-3*A
^2+3*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*
exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^
3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B*exp(1)-A
*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2+(9*A^2-9*B^2)*sqrt(-A^3*
B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(
1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(-9*A^2+9*B^2)*sqrt(-A^3*B*exp(1)-A*B^3*ex
```

```
p(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3
)))/2)*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B
^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*
B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)^2+(-A^2+B^2)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*cosh(im(acos((
A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+(3*A^2-3*B^2
)*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/
abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))
/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^2*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp
(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+(A^2-B^2)*sqrt(-A^3*B*exp(1)-A*B
^3*exp(1))*cos(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1
)*B^3)))/2)*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp
(1)*B^3)))/2)-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*ex
p(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3*sin(re(acos((A^3*B
*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^3+6*A*B*sqrt(-A^3
*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*ex
p(1)*B+A*exp(1)*B^3)))/2)^2*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3
*exp(1)*B+A*exp(1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs
(A^3*exp(1)*B+A*exp(1)*B^3)))/2)-6*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cos
h(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*s
in(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)^
3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))
/2)^2-2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*cosh(im(acos((A^3*B*exp(1)-A*B
^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sin(re(acos((A^3*B*exp(1)-A*
B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)+2*A*B*sqrt(-A^3*B*exp(1)-A*
B^3*exp(1))*sin(re(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(
1)*B^3)))/2)^3*sinh(im(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*
exp(1)*B^3)))/2)^3+2*A*B*sqrt(-A^3*B*exp(1)-A*B^3*exp(1))*sin(re(acos((A^3*
B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2)*sinh(im(acos((A^
3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3)))/2))/(2*sqrt(2)*A^
3*exp(1)+2*sqrt(2)*A*B^2*exp(1))*atan((sqrt((A^2*exp(1)+2*A*B*x*exp(1)-B^2*
exp(1))/A/B)+cos(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)
*B^3))/2)*((A^4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4))/s
in(acos((A^3*B*exp(1)-A*B^3*exp(1))/abs(A^3*exp(1)*B+A*exp(1)*B^3))/2)/((A^
4*exp(1)^2+2*A^2*B^2*exp(1)^2+B^4*exp(1)^2)/A^2/B^2)^(1/4)))
```

maple [A] time = 0.33, size = 128, normalized size = 0.96

$$\frac{\sqrt{2}\, AB \arctan\left(\frac{2\sqrt{2ex+\frac{\left(A^2-B^2\right)e}{AB}}\, AB-2\sqrt{A^3Be}}{2\sqrt{ABe}\, B}\right)}{\sqrt{ABe}}+\frac{\sqrt{2}\, AB \arctan\left(\frac{2\sqrt{2ex+\frac{\left(A^2-B^2\right)e}{AB}}\, AB+2\sqrt{A^3Be}}{2\sqrt{ABe}\, B}\right)}{\sqrt{ABe}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x)
```

```
[Out] 2^(1/2)*A*B/(A*B*e)^(1/2)*arctan(1/2*(2*(2*e*x+e*(A^2-B^2)/A/B)^(1/2)*A*B+2
*(A^3*B*e)^(1/2))/B/(A*B*e)^(1/2))+2^(1/2)*A*B/(A*B*e)^(1/2)*arctan(1/2*(2*
(2*e*x+e*(A^2-B^2)/A/B)^(1/2)*A*B-2*(A^3*B*e)^(1/2))/B/(A*B*e)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$2 \int \frac{Bx+A}{\sqrt{4\, ex+\frac{2\left(A^2e-B^2e\right)}{AB}}\left(x^2+1\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x^2+1)/(2*(A^2*e-B^2*e)/A/B+4*e*x)^(1/2),x, algorithm=
"maxima")
```

```
[Out] 2*integrate((B*x + A)/(sqrt(4*e*x + 2*(A^2*e - B^2*e)/(A*B))*(x^2 + 1)), x)
```

mupad [B] time = 0.22, size = 206, normalized size = 1.55

$$\frac{\sqrt{2}\,\sqrt{A}\,\sqrt{B}\,\left(\mathrm{atan}\left(\frac{A^{3/2}\left(4\,e\,x+\frac{2\,A^2\,e-2\,B^2\,e}{A\,B}\right)^{3/2}\sqrt{2\,B}}{8\,e^{3/2}\left(A^2+B^2\right)}-\frac{A^{5/2}\,\sqrt{8\,e\,x+\frac{2\left(2\,A^2\,e-2\,B^2\,e\right)}{A\,B}}}{4\,\sqrt{B}\,\sqrt{e}\,\left(A^2+B^2\right)}+\frac{3\,\sqrt{2}\,\sqrt{A}\,B^{3/2}\,\sqrt{4\,e\,x+\frac{2\,A^2\,e-2\,B^2\,e}{A\,B}}}{4\,\sqrt{e}\,\left(A^2+B^2\right)}\right)+\mathrm{atan}\left(\right.\right.}{\sqrt{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*A + 2*B*x)/((x^2 + 1)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2)),x)
```

```
[Out] (2^(1/2)*A^(1/2)*B^(1/2)*(atan((A^(3/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))
^(3/2)*(2*B)^(1/2))/(8*e^(3/2)*(A^2 + B^2)) - (A^(5/2)*(8*e*x + (2*(2*A^2*e
 - 2*B^2*e))/(A*B))^(1/2))/(4*B^(1/2)*e^(1/2)*(A^2 + B^2)) + (3*2^(1/2)*A^(
1/2)*B^(3/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2))/(4*e^(1/2)*(A^2 + B
^2))) + atan((2^(1/2)*A^(1/2)*(4*e*x + (2*A^2*e - 2*B^2*e)/(A*B))^(1/2))/(4
*B^(1/2)*e^(1/2)))))/e^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(2*(B*x+A)/(x**2+1)/(2*(A**2*e-B**2*e)/A/B+4*e*x)**(1/2),x)
```

```
[Out] Timed out
```

3.1465 $\int \frac{A+Bx}{\sqrt{d+ex}\left(1-x^2\right)}\,dx$

Optimal. Leaf size=66

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

```
[Out] -(A-B)*arctanh((e*x+d)^(1/2)/(d-e)^(1/2))/(d-e)^(1/2)+(A+B)*arctanh((e*x+d)
^(1/2)/(d+e)^(1/2))/(d+e)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.125$, Rules used = {827, 1166, 206}

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(1 - x^2)),x]
```

```
[Out] -(((A - B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - e]])/Sqrt[d - e]) + ((A + B)*ArcT
anh[Sqrt[d + e*x]/Sqrt[d + e]])/Sqrt[d + e]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(1-x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{-d^2+e^2+2dx^2-x^4}\,dx, x, \sqrt{d+ex}\right)\\
&= (-A+B)\,\text{Subst}\left(\int \frac{1}{d-e-x^2}\,dx, x, \sqrt{d+ex}\right)+(A+B)\,\text{Subst}\left(\int \frac{1}{d+e-x^2}\,dx, x, \surd\right.\\
&= -\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}+\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}
\end{aligned}$$

Mathematica [**A**] time = 0.07, size = 66, normalized size = 1.00

$$\frac{(A+B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{(A-B)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-e}}\right)}{\sqrt{d-e}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(1 - x^2)),x]
```

```
[Out] -(((A - B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - e]])/Sqrt[d - e]) + ((A + B)*ArcT
anh[Sqrt[d + e*x]/Sqrt[d + e]])/Sqrt[d + e]
```

fricas [**A**] time = 1.29, size = 451, normalized size = 6.83

$$\left[-\frac{((A-B)d+(A-B)e)\sqrt{d-e}\,\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d-e}+2d-e}{x+1}\right)-((A+B)d-(A+B)e)\sqrt{d+e}\,\log\left(\frac{ex+2\sqrt{ex+d}\sqrt{d+e}}{x-1}\right.}{2\left(d^2-e^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(((A - B)*d + (A - B)*e)*sqrt(d - e)*log((e*x + 2*sqrt(e*x + d)*sqrt(
d - e) + 2*d - e)/(x + 1)) - ((A + B)*d - (A + B)*e)*sqrt(d + e)*log((e*x +
 2*sqrt(e*x + d)*sqrt(d + e) + 2*d + e)/(x - 1)))/(d^2 - e^2), -1/2*(2*((A
- B)*d + (A - B)*e)*sqrt(-d + e)*arctan(-sqrt(e*x + d)*sqrt(-d + e)/(d - e)
) - ((A + B)*d - (A + B)*e)*sqrt(d + e)*log((e*x + 2*sqrt(e*x + d)*sqrt(d +
 e) + 2*d + e)/(x - 1)))/(d^2 - e^2), -1/2*(2*((A + B)*d - (A + B)*e)*sqrt(
-d - e)*arctan(sqrt(e*x + d)*sqrt(-d - e)/(d + e)) + ((A - B)*d + (A - B)*e
)*sqrt(d - e)*log((e*x + 2*sqrt(e*x + d)*sqrt(d - e) + 2*d - e)/(x + 1)))/(
d^2 - e^2), -(((A - B)*d + (A - B)*e)*sqrt(-d + e)*arctan(-sqrt(e*x + d)*sq
rt(-d + e)/(d - e)) + ((A + B)*d - (A + B)*e)*sqrt(-d - e)*arctan(sqrt(e*x
+ d)*sqrt(-d - e)/(d + e)))/(d^2 - e^2)]
```

giac [**A**] time = 0.19, size = 68, normalized size = 1.03

$$\frac{(A-B)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}-\frac{(A+B)\arctan\left(\frac{\sqrt{xe+d}}{\sqrt{-d-e}}\right)}{\sqrt{-d-e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] (A - B)*arctan(sqrt(x*e + d)/sqrt(-d + e))/sqrt(-d + e) - (A + B)*arctan(sq
rt(x*e + d)/sqrt(-d - e))/sqrt(-d - e)
```

maple [**A**] time = 0.09, size = 95, normalized size = 1.44

$$\frac{A\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}+\frac{A\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}+\frac{B\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}}{\sqrt{d+e}}\right)}{\sqrt{d+e}}-\frac{B\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{-d+e}}\right)}{\sqrt{-d+e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x)
```

```
[Out] 1/(d+e)^(1/2)*arctanh((e*x+d)^(1/2)/(d+e)^(1/2))*A+1/(d+e)^(1/2)*arctanh((e
*x+d)^(1/2)/(d+e)^(1/2))*B+1/(-d+e)^(1/2)*arctan((e*x+d)^(1/2)/(-d+e)^(1/2)
)*A-1/(-d+e)^(1/2)*arctan((e*x+d)^(1/2)/(-d+e)^(1/2))*B
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x^2+1)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*d-4*e>0)', see `assume?` for more
 details)Is 4*d-4*e positive or negative?
```

mupad [B] time = 1.99, size = 773, normalized size = 11.71

$$-\frac{\operatorname{atan}\left(\frac{\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Bde^2-32Ae^3+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)\,1i}{2\sqrt{d-e}}+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Ae^3-32Bde^2+32d\right.}{2\sqrt{d-e}}\right.}{2\sqrt{d-e}}}{16B^3e^2-16A^2Be^2+\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Bde^2-32Ae^3+\frac{32de^2(A-B)\sqrt{d+ex}}{\sqrt{d-e}}\right)}{2\sqrt{d-e}}\right)(A-B)}{2\sqrt{d-e}}-\frac{\left(\left(16A^2e^2+16B^2e^2\right)\sqrt{d+ex}-\frac{(A-B)\left(32Ae^3-32\right.}{}\right.}{2\sqrt{d-e}}}\right.}{\sqrt{d-e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(A + B*x)/((x^2 - 1)*(d + e*x)^(1/2)),x)
```

```
[Out] - (atan(((((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A - B)*(32*B*d*e^2
 - 32*A*e^3 + (32*d*e^2*(A - B)*(d + e*x)^(1/2))/(d - e)^(1/2)))/(2*(d - e)
^(1/2)))*(A - B)*1i)/(2*(d - e)^(1/2)) + (((16*A^2*e^2 + 16*B^2*e^2)*(d + e
*x)^(1/2) - ((A - B)*(32*A*e^3 - 32*B*d*e^2 + (32*d*e^2*(A - B)*(d + e*x)^(
1/2))/(d - e)^(1/2)))/(2*(d - e)^(1/2)))*(A - B)*1i)/(2*(d - e)^(1/2)))/(16
*B^3*e^2 - 16*A^2*B*e^2 + (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A
 - B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2*(A - B)*(d + e*x)^(1/2))/(d - e)^(
1/2)))/(2*(d - e)^(1/2)))*(A - B))/(2*(d - e)^(1/2)) - (((16*A^2*e^2 + 16*B
^2*e^2)*(d + e*x)^(1/2) - ((A - B)*(32*A*e^3 - 32*B*d*e^2 + (32*d*e^2*(A -
B)*(d + e*x)^(1/2))/(d - e)^(1/2)))/(2*(d - e)^(1/2)))*(A - B))/(2*(d - e)^
(1/2))))*(A - B)*1i)/(d - e)^(1/2) - (atan(((((16*A^2*e^2 + 16*B^2*e^2)*(d
+ e*x)^(1/2) - ((A + B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2*(A + B)*(d + e*x
)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))*(A + B)*1i)/(2*(d + e)^(1/2)) +
 (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*A*e^3 - 32*B*d*
e^2 + (32*d*e^2*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))
*(A + B)*1i)/(2*(d + e)^(1/2)))/(16*B^3*e^2 - 16*A^2*B*e^2 + (((16*A^2*e^2
+ 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*B*d*e^2 - 32*A*e^3 + (32*d*e^2
*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(d + e)^(1/2)))*(A + B))/(2*(d
 + e)^(1/2)) - (((16*A^2*e^2 + 16*B^2*e^2)*(d + e*x)^(1/2) - ((A + B)*(32*A
*e^3 - 32*B*d*e^2 + (32*d*e^2*(A + B)*(d + e*x)^(1/2))/(d + e)^(1/2)))/(2*(
d + e)^(1/2)))*(A + B))/(2*(d + e)^(1/2))))*(A + B)*1i)/(d + e)^(1/2)
```

sympy [A] time = 57.36, size = 78, normalized size = 1.18

$$\frac{(-A-B)\operatorname{atan}\left(\frac{1}{\sqrt{-\frac{1}{d+e}}\sqrt{d+ex}}\right)}{\sqrt{-\frac{1}{d+e}}\,(d+e)}+\frac{(A-B)\operatorname{atan}\left(\frac{1}{\sqrt{-\frac{1}{d-e}}\sqrt{d+ex}}\right)}{\sqrt{-\frac{1}{d-e}}\,(d-e)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(-x**2+1)/(e*x+d)**(1/2),x)
```

```
[Out] (-A - B)*atan(1/(sqrt(-1/(d + e))*sqrt(d + e*x)))/(sqrt(-1/(d + e))*(d + e)
) + (A - B)*atan(1/(sqrt(-1/(d - e))*sqrt(d + e*x)))/(sqrt(-1/(d - e))*(d -
 e))
```

3.1466 $\int \frac{A+Bx}{\sqrt{d+ex}\left(1+x^2\right)}\,dx$

Optimal. Leaf size=440

$$-\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)\log\left(-\sqrt{2}\sqrt{\sqrt{d^2+e^2}+d}\sqrt{d+ex}+\sqrt{d^2+e^2}+d+ex\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{\sqrt{d^2+e^2}+d}}+\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)}{2}$$

```
[Out] 1/2*arctanh((-2^(1/2)*(e*x+d)^(1/2)+(d+(d^2+e^2)^(1/2))^(1/2))/(d-(d^2+e^2)
^(1/2))^(1/2))*(A*e-B*(d-(d^2+e^2)^(1/2)))*2^(1/2)/(d^2+e^2)^(1/2)/(d-(d^2+
e^2)^(1/2))^(1/2)-1/2*arctanh((2^(1/2)*(e*x+d)^(1/2)+(d+(d^2+e^2)^(1/2))^(1
/2))/(d-(d^2+e^2)^(1/2))^(1/2))*(A*e-B*(d-(d^2+e^2)^(1/2)))*2^(1/2)/(d^2+e^
2)^(1/2)/(d-(d^2+e^2)^(1/2))^(1/2)-1/4*ln(d+e*x+(d^2+e^2)^(1/2)-2^(1/2)*(e*
x+d)^(1/2)*(d+(d^2+e^2)^(1/2))^(1/2))*(A*e-B*(d+(d^2+e^2)^(1/2)))*2^(1/2)/(
d^2+e^2)^(1/2)/(d+(d^2+e^2)^(1/2))^(1/2)+1/4*ln(d+e*x+(d^2+e^2)^(1/2)+2^(1/
2)*(e*x+d)^(1/2)*(d+(d^2+e^2)^(1/2))^(1/2))*(A*e-B*(d+(d^2+e^2)^(1/2)))*2^(
1/2)/(d^2+e^2)^(1/2)/(d+(d^2+e^2)^(1/2))^(1/2)
```

Rubi [A] time = 0.66, antiderivative size = 440, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.273, Rules used = {827, 1169, 634, 618, 206, 628}

$$-\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)\log\left(-\sqrt{2}\sqrt{\sqrt{d^2+e^2}+d}\sqrt{d+ex}+\sqrt{d^2+e^2}+d+ex\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{\sqrt{d^2+e^2}+d}}+\frac{\left(Ae-B\left(\sqrt{d^2+e^2}+d\right)\right)}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(1 + x^2)),x]
```

```
[Out] ((A*e - B*(d - Sqrt[d^2 + e^2]))*ArcTanh[(Sqrt[d + Sqrt[d^2 + e^2]] - Sqrt[
2]*Sqrt[d + e*x])/Sqrt[d - Sqrt[d^2 + e^2]]])/(Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt
[d - Sqrt[d^2 + e^2]]) - ((A*e - B*(d - Sqrt[d^2 + e^2]))*ArcTanh[(Sqrt[d +
 Sqrt[d^2 + e^2]] + Sqrt[2]*Sqrt[d + e*x])/Sqrt[d - Sqrt[d^2 + e^2]]])/(Sqr
t[2]*Sqrt[d^2 + e^2]*Sqrt[d - Sqrt[d^2 + e^2]]) - ((A*e - B*(d + Sqrt[d^2 +
 e^2]))*Log[d + Sqrt[d^2 + e^2] + e*x - Sqrt[2]*Sqrt[d + Sqrt[d^2 + e^2]]*S
qrt[d + e*x]])/(2*Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt[d + Sqrt[d^2 + e^2]]) + ((A*
e - B*(d + Sqrt[d^2 + e^2]))*Log[d + Sqrt[d^2 + e^2] + e*x + Sqrt[2]*Sqrt[d
 + Sqrt[d^2 + e^2]]*Sqrt[d + e*x]])/(2*Sqrt[2]*Sqrt[d^2 + e^2]*Sqrt[d + Sqr
t[d^2 + e^2]])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1169

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[a/c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int
[(d*r - (d - e*q)*x)/(q - r*x + x^2), x], x] + Dist[1/(2*c*q*r), Int[(d*r +
 (d - e*q)*x)/(q + r*x + x^2), x], x]]] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NegQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(1+x^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{-Bd+Ae+Bx^2}{d^2+e^2-2dx^2+x^4}\,dx, x, \sqrt{d+ex}\right)$$

$$= \frac{\text{Subst}\left(\int \frac{\sqrt{2}\,(-Bd+Ae)\sqrt{d+\sqrt{d^2+e^2}}-\left(-Bd+Ae-B\sqrt{d^2+e^2}\right)x}{\sqrt{d^2+e^2}-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\,x+x^2}\,dx, x, \sqrt{d+ex}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}} +$$

$$= \frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\text{Subst}\left(\int \frac{1}{\sqrt{d^2+e^2}-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\,x+x^2}\,dx, x, \sqrt{d+ex}\right)}{2\sqrt{d^2+e^2}} +$$

$$= -\frac{\left(Ae-B\left(d+\sqrt{d^2+e^2}\right)\right)\log\left(d+\sqrt{d^2+e^2}+ex-\sqrt{2}\sqrt{d+\sqrt{d^2+e^2}}\sqrt{d+ex}\right)}{2\sqrt{2}\sqrt{d^2+e^2}\sqrt{d+\sqrt{d^2+e^2}}}$$

$$= \frac{\left(Ae-B\left(d-\sqrt{d^2+e^2}\right)\right)\tanh^{-1}\left(\frac{\sqrt{d+\sqrt{d^2+e^2}}-\sqrt{2}\sqrt{d+ex}}{\sqrt{d-\sqrt{d^2+e^2}}}\right)}{\sqrt{2}\sqrt{d^2+e^2}\sqrt{d-\sqrt{d^2+e^2}}} -$$

Mathematica [C] time = 0.09, size = 89, normalized size = 0.20

$$\frac{i(A+iB)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d+ie}}\right)}{\sqrt{d+ie}}-\frac{i(A-iB)\tanh^{-1}\left(\frac{\sqrt{d+ex}}{\sqrt{d-ie}}\right)}{\sqrt{d-ie}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(1 + x^2)),x]
```

```
[Out] ((-I)*(A - I*B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d - I*e]])/Sqrt[d - I*e] + (I*(A
 + I*B)*ArcTanh[Sqrt[d + e*x]/Sqrt[d + I*e]])/Sqrt[d + I*e]
```

fricas [B] time = 9.45, size = 7715, normalized size = 17.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*(4*sqrt(2)*(d^2 + e^2)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A
^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt(((A^4 + 2*A^2*B^2
+ B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2
- B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/
(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^
4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4)*arctan((sqrt(2)*sqrt(e*x + d)*((2*(
A^3*B^2 + A*B^4)*d^6 - (3*A^4*B + 2*A^2*B^3 - B^5)*d^5*e + (A^5 + 4*A^3*B^2
 + 3*A*B^4)*d^4*e^2 - 2*(3*A^4*B + 2*A^2*B^3 - B^5)*d^3*e^3 + 2*(A^5 + A^3*
B^2)*d^2*e^4 - (3*A^4*B + 2*A^2*B^3 - B^5)*d*e^5 + (A^5 - A*B^4)*e^6)*sqrt(
(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4
+ 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^5*B^2
 + 2*A^3*B^4 + A*B^6)*d^5 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^4*e + 4*(A^
5*B^2 + 2*A^3*B^4 + A*B^6)*d^3*e^2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^
2*e^3 + 2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d*e^4 - (A^6*B + A^4*B^3 - A^2*B^5
- B^7)*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2
+ B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (
A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (
A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2
 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2
+ B^4)/(d^2 + e^2))^(3/4) - sqrt(2)*sqrt(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*
d^3 - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)
*d*e^2 + sqrt(2)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^
6)*d^2*e + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A
^3*B^4 + A*B^6)*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B +
 2*A^2*B^3 + B^5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3
+ B^5)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt((
(A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e +
2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^
4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2
+ B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*
A^4*B^4 + A^2*B^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A
^8 - 2*A^4*B^4 + B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^
5)*d^3*e + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*
d*e^3 + (A^6 - A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(
d^2 + e^2)))*((B*d^5 - A*d^4*e + 2*B*d^3*e^2 - 2*A*d^2*e^3 + B*d*e^4 - A*e^
5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^
2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + ((A
^2*B + B^3)*d^4 + 2*(A^2*B + B^3)*d^2*e^2 + (A^2*B + B^3)*e^4)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e
^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((
A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e
 + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4
) + (2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^5 - (A^8 + 2*A^6*B^2 - 2*A
^2*B^6 - B^8)*d^4*e + 4*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^3*e^2 - 2
*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*d^2*e^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3
*B^5 + A*B^7)*d*e^4 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*e^5)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^9*B + 4*A^7*
B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*d^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 -
2*A^4*B^6 - 3*A^2*B^8 - B^10)*d^3*e + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*
A^3*B^7 + A*B^9)*d^2*e^2 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^
2*B^8 - B^10)*d*e^3)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2
*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))/(4*(A^10*B^2 + 4*A^8*B^4 + 6
*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*d^2*e - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5
- 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)*d*e^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*
A^6*B^6 - A^4*B^8 + 2*A^2*B^10 + B^12)*e^3)) + 4*sqrt(2)*(d^2 + e^2)*sqrt((
4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 +
 2*d^2*e^2 + e^4))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B
^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*s
qrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3
)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))
^(3/4)*arctan((sqrt(2)*sqrt(e*x + d)*((2*(A^3*B^2 + A*B^4)*d^6 - (3*A^4*B +
 2*A^2*B^3 - B^5)*d^5*e + (A^5 + 4*A^3*B^2 + 3*A*B^4)*d^4*e^2 - 2*(3*A^4*B
+ 2*A^2*B^3 - B^5)*d^3*e^3 + 2*(A^5 + A^3*B^2)*d^2*e^4 - (3*A^4*B + 2*A^2*B
^3 - B^5)*d*e^5 + (A^5 - A*B^4)*e^6)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3
)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2
*A^2*B^2 + B^4)/(d^2 + e^2)) + (2*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d^5 - (A^6*
B + A^4*B^3 - A^2*B^5 - B^7)*d^4*e + 4*(A^5*B^2 + 2*A^3*B^4 + A*B^6)*d^3*e^
2 - 2*(A^6*B + A^4*B^3 - A^2*B^5 - B^7)*d^2*e^3 + 2*(A^5*B^2 + 2*A^3*B^4 +
A*B^6)*d*e^4 - (A^6*B + A^4*B^3 - A^2*B^5 - B^7)*e^5)*sqrt((4*A^2*B^2*d^2 -
 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^
4)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A
*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A
^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 -
 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4) - sqrt(
2)*sqrt(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*(A^7*B + A^5*B^3 - A^3*B^
5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 - sqrt(2)*(4*(A^4*B^3 + A^
2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e + (5*A^6*B - A^4*B^3 - 5
*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)*e^3 + (4*A^2*B^3*
d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B^3 + B^5)*d^2*e^2 - 4*(A^
3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e^4)*sqrt((A^4 + 2*A^2*B^2
 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^
4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^
2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 -
 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 +
B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^2*e - 4*(A^7
*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A^4*B^4 + B^8)*e^3)*x + (4
*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e + (A^6 + 3*A^4*B^2 + 3*A
^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 + (A^6 - A^4*B^2 - A^2*B^4
+ B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*((B*d^5 - A*d^4*e +
2*B*d^3*e^2 - 2*A*d^2*e^3 + B*d*e^4 - A*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B
 - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt(
(A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)) + ((A^2*B + B^3)*d^4 + 2*(A^2*B + B^3)
*d^2*e^2 + (A^2*B + B^3)*e^4)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e +
 (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4)))*sqrt(((A^4 + 2*A^2*
B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (
A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2
)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*
((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(3/4) - (2*(A^7*B + 3*A^5*B^3 + 3*A^3
*B^5 + A*B^7)*d^5 - (A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B^8)*d^4*e + 4*(A^7*B +
3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d^3*e^2 - 2*(A^8 + 2*A^6*B^2 - 2*A^2*B^6 - B
^8)*d^2*e^3 + 2*(A^7*B + 3*A^5*B^3 + 3*A^3*B^5 + A*B^7)*d*e^4 - (A^8 + 2*A^
6*B^2 - 2*A^2*B^6 - B^8)*e^5)*sqrt((4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e +
 (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2*e^2 + e^4))*sqrt((A^4 + 2*A^2*B^
2 + B^4)/(d^2 + e^2)) - (2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B
^9)*d^4 - (A^10 + 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*d^3
```

```
*e + 2*(A^9*B + 4*A^7*B^3 + 6*A^5*B^5 + 4*A^3*B^7 + A*B^9)*d^2*e^2 - (A^10
+ 3*A^8*B^2 + 2*A^6*B^4 - 2*A^4*B^6 - 3*A^2*B^8 - B^10)*d*e^3)*sqrt((4*A^2*
B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2)/(d^4 + 2*d^2
*e^2 + e^4)))/(4*(A^10*B^2 + 4*A^8*B^4 + 6*A^6*B^6 + 4*A^4*B^8 + A^2*B^10)*
d^2*e - 4*(A^11*B + 3*A^9*B^3 + 2*A^7*B^5 - 2*A^5*B^7 - 3*A^3*B^9 - A*B^11)
*d*e^2 + (A^12 + 2*A^10*B^2 - A^8*B^4 - 4*A^6*B^6 - A^4*B^8 + 2*A^2*B^10 +
B^12)*e^3)) - sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B*e + (A^2 - B^2)*d)*sq
rt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2
+ (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3
+ (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*
d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B
^2 + B^4)/(d^2 + e^2))^(1/4)*log(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*
(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 +
 sqrt(2)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e
 + (5*A^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 +
 A*B^6)*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B
^3 + B^5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e
^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2
*A^2*B^2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^
3 + (A^2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2
+ e^2)))/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e
^2))*((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4
+ A^2*B^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A
^4*B^4 + B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e
 + (A^6 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 +
(A^6 - A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^
2))) + sqrt(2)*(A^4 + 2*A^2*B^2 + B^4 - (2*A*B*e + (A^2 - B^2)*d)*sqrt((A^4
 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(((A^4 + 2*A^2*B^2 + B^4)*d^2 + (A^4
+ 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^2 - B^2)*d^3 + (A^2
- B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))/(4*A^2*B^2*d^2 - 4
*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((A^4 + 2*A^2*B^2 + B^
4)/(d^2 + e^2))^(1/4)*log(4*(A^6*B^2 + 2*A^4*B^4 + A^2*B^6)*d^3 - 4*(A^7*B
+ A^5*B^3 - A^3*B^5 - A*B^7)*d^2*e + (A^8 - 2*A^4*B^4 + B^8)*d*e^2 - sqrt(2
)*(4*(A^4*B^3 + A^2*B^5)*d^3 - 4*(2*A^5*B^2 + A^3*B^4 - A*B^6)*d^2*e + (5*A
^6*B - A^4*B^3 - 5*A^2*B^5 + B^7)*d*e^2 - (A^7 - A^5*B^2 - A^3*B^4 + A*B^6)
*e^3 + (4*A^2*B^3*d^4 - 4*(A^3*B^2 - A*B^4)*d^3*e + (A^4*B + 2*A^2*B^3 + B^
5)*d^2*e^2 - 4*(A^3*B^2 - A*B^4)*d*e^3 + (A^4*B - 2*A^2*B^3 + B^5)*e^4)*sqr
t((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2)))*sqrt(e*x + d)*sqrt(((A^4 + 2*A^2*B^
2 + B^4)*d^2 + (A^4 + 2*A^2*B^2 + B^4)*e^2 + (2*A*B*d^2*e + 2*A*B*e^3 + (A^
2 - B^2)*d^3 + (A^2 - B^2)*d*e^2)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))
)/(4*A^2*B^2*d^2 - 4*(A^3*B - A*B^3)*d*e + (A^4 - 2*A^2*B^2 + B^4)*e^2))*((
A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))^(1/4) + (4*(A^6*B^2 + 2*A^4*B^4 + A^2*B
^6)*d^2*e - 4*(A^7*B + A^5*B^3 - A^3*B^5 - A*B^7)*d*e^2 + (A^8 - 2*A^4*B^4
+ B^8)*e^3)*x + (4*(A^4*B^2 + A^2*B^4)*d^4 - 4*(A^5*B - A*B^5)*d^3*e + (A^6
 + 3*A^4*B^2 + 3*A^2*B^4 + B^6)*d^2*e^2 - 4*(A^5*B - A*B^5)*d*e^3 + (A^6 -
A^4*B^2 - A^2*B^4 + B^6)*e^4)*sqrt((A^4 + 2*A^2*B^2 + B^4)/(d^2 + e^2))))/(
A^4 + 2*A^2*B^2 + B^4)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.28, size = 3511, normalized size = 7.98

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x)
```

```
[Out] -1/(d^2+e^2)^(3/2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2
)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+
e^2)^(3/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+
e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^4-(d^2+e^2)^(1/2)
/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/
2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(1/2)/e^2/(2*
(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^
(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^3+1/(d^2+e^2)/e^2/(2*(d^2+e^2)^(1
/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d
^2+e^2)^(1/2)-2*d)^(1/2))*B*d^4-1/4/(d^2+e^2)/e^2*ln(e*x+d+(e*x+d)^(1/2)*(2
*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2
)*d^3-(d^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(
1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d+1/(d
^2+e^2)^(1/2)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*
(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^3+1/(d^2+e^2
)/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1
/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^4-1/4/(d^2+e^2)^(3/2)/e*
ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*
(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3-1/4/(d^2+e^2)^(3/2)*e*ln(e*x+d+(e*x+d)^(1/2)
*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(
1/2)*d+1/4/(d^2+e^2)^(3/2)/e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)
^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3+1/4/(d^2+e^2)^(
3/2)*e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2)
)*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+1/4/(d^2+e^2)/e*ln(e*x+d+(e*x+d)^(1/2)*
(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1
/2)*d^2-1/(d^2+e^2)^(1/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)
^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2+
3/(d^2+e^2)^(3/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(
2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2-1/(d^2+e
^2)^(1/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e
^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2-1/4/(d^2+e^2)/e*
ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*A*(2*
(d^2+e^2)^(1/2)+2*d)^(1/2)*d^2-1/(d^2+e^2)^(3/2)*e^2/(2*(d^2+e^2)^(1/2)-2*d
)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)
^(1/2)-2*d)^(1/2))*B*d+1/(d^2+e^2)^(3/2)/e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*ar
ctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d
)^(1/2))*A*d^4+1/4/(d^2+e^2)/e^2*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+
2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^3+1/4/(d^2+e^
2)*e*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*
A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+1/(d^2+e^2)^(1/2)/(2*(d^2+e^2)^(1/2)-2*d)^(
1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1
/2)-2*d)^(1/2))*B*d+2/(d^2+e^2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*
x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*
d^2+1/4/(d^2+e^2)*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2
+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+1/4/(d^2+e^2)^(3/2)*e^2*ln(e
*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2
+e^2)^(1/2)+2*d)^(1/2)+2/(d^2+e^2)^(3/2)*e^3/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*
arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2
*d)^(1/2))*A-1/(d^2+e^2)^(3/2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x
+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d
^3-1/(d^2+e^2)^(1/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2
)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A+1/4/(d^2+
e^2)^(3/2)*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(
1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d^2-1/4/e^2*ln(e*x+d-(e*x+d)^(1/2)*(2
*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2
)*d-1/4/(d^2+e^2)*e*ln(e*x+d-(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d
^2+e^2)^(1/2))*A*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)-1/e^2/(2*(d^2+e^2)^(1/2)-2*d
)^(1/2)*arctan((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)
^(1/2)-2*d)^(1/2))*B*d^2+1/(d^2+e^2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arct
an((2*(e*x+d)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^
(1/2))*B+3/(d^2+e^2)^(3/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d
)^(1/2)-(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A*d^2
-1/4/(d^2+e^2)*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^
2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d+2/(d^2+e^2)^(3/2)*e^3/(2*(d^2+e
^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))
/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*A+1/(d^2+e^2)*e^2/(2*(d^2+e^2)^(1/2)-2*d)^(
1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1
/2)-2*d)^(1/2))*B+1/(d^2+e^2)^(1/2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2
*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)
)*B*d+2/(d^2+e^2)/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*
(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^2-1/4/(d^2+e
^2)^(3/2)*e^2*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2
)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)-1/(d^2+e^2)^(3/2)/(2*(d^2+e^2)^(1/
2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^
2+e^2)^(1/2)-2*d)^(1/2))*B*d^3-1/(d^2+e^2)^(1/2)*e/(2*(d^2+e^2)^(1/2)-2*d)^
(1/2)*arctan((2*(e*x+d)^(1/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(
1/2)-2*d)^(1/2))*A-1/e^2/(2*(d^2+e^2)^(1/2)-2*d)^(1/2)*arctan((2*(e*x+d)^(1
/2)+(2*(d^2+e^2)^(1/2)+2*d)^(1/2))/(2*(d^2+e^2)^(1/2)-2*d)^(1/2))*B*d^2+1/4
/e^2*ln(e*x+d+(e*x+d)^(1/2)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*
B*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)*d-1/4/(d^2+e^2)^(3/2)*ln(e*x+d+(e*x+d)^(1/2
)*(2*(d^2+e^2)^(1/2)+2*d)^(1/2)+(d^2+e^2)^(1/2))*B*(2*(d^2+e^2)^(1/2)+2*d)^
(1/2)*d^2
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{ex + d}\left(x^2 + 1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x^2+1)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(e*x + d)*(x^2 + 1)), x)
```

mupad [**B**] time = 2.17, size = 1244, normalized size = 2.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((x^2 + 1)*(d + e*x)^(1/2)),x)
```

```
[Out] - atan((((32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1
i + 2*A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e))
)^(1/2) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*
A*B)/(4*(d*1i - e)))^(1/2)*1i + ((32*A*e^3 - 32*B*d*e^2 + 64*d*e^2*(d + e*x
)^(1/2)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i
 + 2*A*B)/(4*(d*1i - e)))^(1/2) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2)
)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2)*1i)/(((32*A*e^3 - 32*B*d
*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^
(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2) + (16*A^2*e^2 - 16*
B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2)
- ((32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2*1i - A^2*1i + 2*
A*B)/(4*(d*1i - e)))^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(4*(d*1i - e)))^(1/2
) + (16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2))*((B^2*1i - A^2*1i + 2*A*B)/(
4*(d*1i - e)))^(1/2) + 16*B^3*e^2 + 16*A^2*B*e^2))*((B^2*1i - A^2*1i + 2*A*
B)/(4*(d*1i - e)))^(1/2)*2i - atan((((16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1
/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*(32*B*d*e^2 - 32*A*e^3 +
64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)))*((B^
2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*1i + ((16*A^2*e^2 - 16*B^2*e^2)*(d
+ e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*(32*A*e^3 - 32*B
*d*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/
2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*1i)/(16*B^3*e^2 - ((16*A^2
*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^
(1/2)*(32*B*d*e^2 - 32*A*e^3 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 + A*B*2
i)/(4*(d - e*1i)))^(1/2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2) + ((
16*A^2*e^2 - 16*B^2*e^2)*(d + e*x)^(1/2) + ((B^2 - A^2 + A*B*2i)/(4*(d - e*
1i)))^(1/2)*(32*A*e^3 - 32*B*d*e^2 + 64*d*e^2*(d + e*x)^(1/2)*((B^2 - A^2 +
 A*B*2i)/(4*(d - e*1i)))^(1/2)))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2
) + 16*A^2*B*e^2))*((B^2 - A^2 + A*B*2i)/(4*(d - e*1i)))^(1/2)*2i
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(x**2+1)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(d + e*x)*(x**2 + 1)), x)
```

3.1467 $\int \frac{(1-x)\sqrt{1+x}}{1+x^2}\,dx$

Optimal. Leaf size=202

$$-2\sqrt{x+1}-\frac{\log\left(x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(x+\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}-\sqrt{1+\sqrt{2}}\tan$$

```
[Out] -2*(1+x)^(1/2)-1/2*ln(1+x+2^(1/2)-(1+x)^(1/2)*(2+2*2^(1/2))^(1/2))/(1+2^(1/
2))^(1/2)+1/2*ln(1+x+2^(1/2)+(1+x)^(1/2)*(2+2*2^(1/2))^(1/2))/(1+2^(1/2))^(
1/2)-arctan((-2*(1+x)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/2))*(1+2
^(1/2))^(1/2)+arctan((2*(1+x)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/
2))*(1+2^(1/2))^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 12, number of rules used = 8, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.400, Rules used = {825, 12, 708, 1094, 634, 618, 204, 628}

$$-2\sqrt{x+1}-\frac{\log\left(x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(x+\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{x+1}+\sqrt{2}+1\right)}{2\sqrt{1+\sqrt{2}}}-\sqrt{1+\sqrt{2}}\tan$$

Antiderivative was successfully verified.

```
[In] Int[((1 - x)*Sqrt[1 + x])/(1 + x^2),x]
```

```
[Out] -2*Sqrt[1 + x] - Sqrt[1 + Sqrt[2]]*ArcTan[(Sqrt[2*(1 + Sqrt[2])] - 2*Sqrt[1
 + x])/Sqrt[2*(-1 + Sqrt[2])]] + Sqrt[1 + Sqrt[2]]*ArcTan[(Sqrt[2*(1 + Sqrt
[2])] + 2*Sqrt[1 + x])/Sqrt[2*(-1 + Sqrt[2])]] - Log[1 + Sqrt[2] + x - Sqrt
[2*(1 + Sqrt[2])]*Sqrt[1 + x]]/(2*Sqrt[1 + Sqrt[2]]) + Log[1 + Sqrt[2] + x
+ Sqrt[2*(1 + Sqrt[2])]*Sqrt[1 + x]]/(2*Sqrt[1 + Sqrt[2]])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 708

```
Int[1/(Sqrt[(d_) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)), x_Symbol] :> Dist[2*
e, Subst[Int[1/(c*d^2 + a*e^2 - 2*c*d*x^2 + c*x^4), x], x, Sqrt[d + e*x]],
x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0]
```

Rule 825

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[((d + e*x)^(m
- 1)*Simp[c*d*f - a*e*g + (g*c*d + c*e*f)*x, x])/(a + c*x^2), x], x] /; Fre
eQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && FractionQ[m] && GtQ[m
, 0]
```

Rule 1094

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[a/
c, 2]}, With[{r = Rt[2*q - b/c, 2]}, Dist[1/(2*c*q*r), Int[(r - x)/(q - r*x
 + x^2), x], x] + Dist[1/(2*c*q*r), Int[(r + x)/(q + r*x + x^2), x], x]]] /
; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && NegQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(1-x)\sqrt{1+x}}{1+x^2}\,dx &= -2\sqrt{1+x}+\int \frac{2}{\sqrt{1+x}\left(1+x^2\right)}\,dx\\
&= -2\sqrt{1+x}+2\int \frac{1}{\sqrt{1+x}\left(1+x^2\right)}\,dx\\
&= -2\sqrt{1+x}+4\,\text{Subst}\left(\int \frac{1}{2-2x^2+x^4}\,dx,x,\sqrt{1+x}\right)\\
&= -2\sqrt{1+x}+\frac{\text{Subst}\left(\int \frac{\sqrt{2\left(1+\sqrt{2}\right)}-x}{\sqrt{2}-\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,x,\sqrt{1+x}\right)}{\sqrt{1+\sqrt{2}}}+\frac{\text{Subst}\left(\int \frac{\sqrt{2\left(1+\sqrt{2}\right)}+x}{\sqrt{2}+\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\right.}{\sqrt{1+\sqrt{2}}}\\
&= -2\sqrt{1+x}+\frac{\text{Subst}\left(\int \frac{1}{\sqrt{2}-\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\,dx,x,\sqrt{1+x}\right)}{\sqrt{2}}+\frac{\text{Subst}\left(\int \frac{1}{\sqrt{2}+\sqrt{2\left(1+\sqrt{2}\right)}x+x^2}\right.}{\sqrt{2}}\\
&= -2\sqrt{1+x}-\frac{\log\left(1+\sqrt{2}+x-\sqrt{2\left(1+\sqrt{2}\right)}\sqrt{1+x}\right)}{2\sqrt{1+\sqrt{2}}}+\frac{\log\left(1+\sqrt{2}+x+\sqrt{2\left(1+\right.}\right.}{2\sqrt{1+\sqrt{2}}}\\
&= -2\sqrt{1+x}-\frac{\tan^{-1}\left(\frac{\sqrt{2\left(1+\sqrt{2}\right)}-2\sqrt{1+x}}{\sqrt{2\left(-1+\sqrt{2}\right)}}\right)}{\sqrt{-1+\sqrt{2}}}+\frac{\tan^{-1}\left(\frac{\sqrt{2\left(1+\sqrt{2}\right)}+2\sqrt{1+x}}{\sqrt{2\left(-1+\sqrt{2}\right)}}\right)}{\sqrt{-1+\sqrt{2}}}-\frac{\log\left(1+\sqrt{2}+x\right.}{2}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 58, normalized size = 0.29

$$
-2\sqrt{x+1}+(1-i)^{3/2}\tanh^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{1-i}}\right)+(1+i)^{3/2}\tanh^{-1}\left(\frac{\sqrt{x+1}}{\sqrt{1+i}}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((1 - x)*Sqrt[1 + x])/(1 + x^2),x]
```

```
[Out] -2*Sqrt[1 + x] + (1 - I)^(3/2)*ArcTanh[Sqrt[1 + x]/Sqrt[1 - I]] + (1 + I)^(
3/2)*ArcTanh[Sqrt[1 + x]/Sqrt[1 + I]]
```

fricas [A] time = 1.14, size = 294, normalized size = 1.46

$$-\frac{1}{8}\cdot 8^{\frac{1}{4}}\sqrt{2\sqrt{2}+4}\left(\sqrt{2}-2\right)\log\left(2\cdot 8^{\frac{1}{4}}\sqrt{x+1}\sqrt{2\sqrt{2}+4}+4x+4\sqrt{2}+4\right)+\frac{1}{8}\cdot 8^{\frac{1}{4}}\sqrt{2\sqrt{2}+4}\left(\sqrt{2}-2\right)\log\left(-2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="fricas")
```

```
[Out] -1/8*8^(1/4)*sqrt(2*sqrt(2) + 4)*(sqrt(2) - 2)*log(2*8^(1/4)*sqrt(x + 1)*sq
rt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) + 4) + 1/8*8^(1/4)*sqrt(2*sqrt(2) + 4)*
(sqrt(2) - 2)*log(-2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt
(2) + 4) - 1/2*8^(1/4)*sqrt(2)*sqrt(2*sqrt(2) + 4)*arctan(1/16*8^(3/4)*sqrt
(2)*sqrt(2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) + 4)*s
qrt(2*sqrt(2) + 4) - 1/8*8^(3/4)*sqrt(2)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) -
sqrt(2) - 1) - 1/2*8^(1/4)*sqrt(2)*sqrt(2*sqrt(2) + 4)*arctan(1/16*8^(3/4)*
sqrt(2)*sqrt(-2*8^(1/4)*sqrt(x + 1)*sqrt(2*sqrt(2) + 4) + 4*x + 4*sqrt(2) +
 4)*sqrt(2*sqrt(2) + 4) - 1/8*8^(3/4)*sqrt(2)*sqrt(x + 1)*sqrt(2*sqrt(2) +
4) + sqrt(2) + 1) - 2*sqrt(x + 1)
```

giac [A] time = 0.93, size = 157, normalized size = 0.78

$$\sqrt{\sqrt{2}+1}\,\arctan\left(\frac{2^{\frac{3}{4}}\left(2^{\frac{1}{4}}\sqrt{\sqrt{2}+2}+2\sqrt{x+1}\right)}{2\sqrt{-\sqrt{2}+2}}\right)+\sqrt{\sqrt{2}+1}\,\arctan\left(-\frac{2^{\frac{3}{4}}\left(2^{\frac{1}{4}}\sqrt{\sqrt{2}+2}-2\sqrt{x+1}\right)}{2\sqrt{-\sqrt{2}+2}}\right)+\frac{1}{2}\sqrt{\sqrt{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="giac")
```

```
[Out] sqrt(sqrt(2) + 1)*arctan(1/2*2^(3/4)*(2^(1/4)*sqrt(sqrt(2) + 2) + 2*sqrt(x
+ 1))/sqrt(-sqrt(2) + 2)) + sqrt(sqrt(2) + 1)*arctan(-1/2*2^(3/4)*(2^(1/4)*
sqrt(sqrt(2) + 2) - 2*sqrt(x + 1))/sqrt(-sqrt(2) + 2)) + 1/2*sqrt(sqrt(2) -
 1)*log(2^(1/4)*sqrt(x + 1)*sqrt(sqrt(2) + 2) + x + sqrt(2) + 1) - 1/2*sqrt
(sqrt(2) - 1)*log(-2^(1/4)*sqrt(x + 1)*sqrt(sqrt(2) + 2) + x + sqrt(2) + 1)
 - 2*sqrt(x + 1)
```

maple [B] time = 0.14, size = 429, normalized size = 2.12

$$\frac{\left(2+2\sqrt{2}\right)\sqrt{2}\,\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{2\sqrt{-2+2\sqrt{2}}}-\frac{\left(2+2\sqrt{2}\right)\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+\frac{2\sqrt{2}\,\arctan\left(\frac{2\sqrt{x+1}-\sqrt{2+2\sqrt{2}}}{\sqrt{-2+2\sqrt{2}}}\right)}{\sqrt{-2+2\sqrt{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-x+1)*(x+1)^(1/2)/(x^2+1),x)
```

```
[Out] -2*(x+1)^(1/2)-1/4*ln(x+1+2^(1/2)+(x+1)^(1/2)*(2+2*2^(1/2))^(1/2))*(2+2*2^(
1/2))^(1/2)*2^(1/2)+1/2*ln(x+1+2^(1/2)+(x+1)^(1/2)*(2+2*2^(1/2))^(1/2))*(2+
2*2^(1/2))^(1/2)+1/2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2
))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(1/2))*2^(1/2)-1/(-2+2*2^(1/2))^(1/2
)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(
1/2))+2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)+(2+2*2^(1/2))^(1/2))/(-2
+2*2^(1/2))^(1/2))*2^(1/2)+1/4*ln(x+1+2^(1/2)-(x+1)^(1/2)*(2+2*2^(1/2))^(1/
2))*(2+2*2^(1/2))^(1/2)*2^(1/2)-1/2*ln(x+1+2^(1/2)-(x+1)^(1/2)*(2+2*2^(1/2)
)^(1/2))*(2+2*2^(1/2))^(1/2)+1/2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)
-(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/2))*(2+2*2^(1/2))*2^(1/2)-1/(-2+2*2
^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)-(2+2*2^(1/2))^(1/2))/(-2+2*2^(1/2))^(1/
2))*(2+2*2^(1/2))+2/(-2+2*2^(1/2))^(1/2)*arctan((2*(x+1)^(1/2)-(2+2*2^(1/2)
)^(1/2))/(-2+2*2^(1/2))^(1/2))*2^(1/2)
```

maxima [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{x+1}\,(x-1)}{x^2+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)^(1/2)/(x^2+1),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(x + 1)*(x - 1)/(x^2 + 1), x)
```

mupad [**B**]   time = 1.81, size = 233, normalized size = 1.15

$$\operatorname{atanh}\left(\frac{64\sqrt{2}\,\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}\,\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\,\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}-64}-\frac{64\sqrt{2}\,\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\,\sqrt{x+1}}{256\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\,\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}-64}\right)\left(2\sqrt{-\frac{\sqrt{2}}{4}-\frac{1}{4}}+2\sqrt{\frac{\sqrt{2}}{4}-\frac{1}{4}}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 1)*(x + 1)^(1/2))/(x^2 + 1),x)
```

```
[Out] atanh((64*2^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4
- 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2) - 64) - (64*2^(1/2)*(2^(1/2)/4 - 1/4
)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/
2) - 64))*(2*(- 2^(1/2)/4 - 1/4)^(1/2) + 2*(2^(1/2)/4 - 1/4)^(1/2)) - 2*(x
+ 1)^(1/2) - atanh((64*2^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(25
6*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)/4 - 1/4)^(1/2) + 64) + (64*2^(1/2)*(2^
(1/2)/4 - 1/4)^(1/2)*(x + 1)^(1/2))/(256*(2^(1/2)/4 - 1/4)^(1/2)*(- 2^(1/2)
/4 - 1/4)^(1/2) + 64))*(2*(- 2^(1/2)/4 - 1/4)^(1/2) - 2*(2^(1/2)/4 - 1/4)^(
1/2))
```

sympy [**A**]   time = 10.72, size = 36, normalized size = 0.18

$$-2\sqrt{x+1}+4\operatorname{RootSum}\left(512t^4+32t^2+1,\left(t\mapsto t\log\left(-128t^3+\sqrt{x+1}\right)\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-x)*(1+x)**(1/2)/(x**2+1),x)
```

```
[Out] -2*sqrt(x + 1) + 4*RootSum(512*_t**4 + 32*_t**2 + 1, Lambda(_t, _t*log(-128
*_t**3 + sqrt(x + 1))))
```

3.1468 $\int \frac{3+x}{\sqrt{4+3x}\left(1+x^2\right)}\,dx$

Optimal. Leaf size=45

$$\sqrt{2}\tan^{-1}\left(\sqrt{6x+8}+3\right)-\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{3x+4}\right)$$

```
[Out] arctan(-3+2^(1/2)*(4+3*x)^(1/2))*2^(1/2)+arctan(3+(8+6*x)^(1/2))*2^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {827, 1161, 618, 204}

$$\sqrt{2}\tan^{-1}\left(\sqrt{6x+8}+3\right)-\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{3x+4}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(3 + x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] -(Sqrt[2]*ArcTan[3 - Sqrt[2]*Sqrt[4 + 3*x]]) + Sqrt[2]*ArcTan[3 + Sqrt[8 +
6*x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\int \frac{3+x}{\sqrt{4+3x}\left(1+x^2\right)}\,dx = 2\,\text{Subst}\left(\int \frac{5+x^2}{25-8x^2+x^4}\,dx, x, \sqrt{4+3x}\right)$$

$$= \text{Subst}\left(\int \frac{1}{5-3\sqrt{2}\,x+x^2}\,dx, x, \sqrt{4+3x}\right) + \text{Subst}\Bigg(\int \frac{1}{5+3\sqrt{2}\,x+x^2}\,dx, x, \sqrt{4+$$

$$= -\left(2\,\text{Subst}\left(\int \frac{1}{-2-x^2}\,dx, x, -3\sqrt{2}+2\sqrt{4+3x}\right)\right) - 2\,\text{Subst}\Bigg(\int \frac{1}{-2-x^2}\,dx, x, 3\sqrt{$$

$$= -\sqrt{2}\tan^{-1}\left(3-\sqrt{2}\sqrt{4+3x}\right) + \sqrt{2}\tan^{-1}\left(3+\sqrt{2}\sqrt{4+3x}\right)$$

Mathematica [**C**] time = 0.04, size = 63, normalized size = 1.40

$$\frac{1}{5}\left((1-3i)\sqrt{4-3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4-3i}}\right)+(1+3i)\sqrt{4+3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4+3i}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(3 + x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] ((1 - 3*I)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 - 3*I]] + (1 + 3*I)*S
qrt[4 + 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 + 3*I]])/5
```

fricas [**A**] time = 1.06, size = 22, normalized size = 0.49

$$\sqrt{2}\arctan\left(\frac{\sqrt{2}\,(3\,x-1)}{2\,\sqrt{3\,x+4}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="fricas")
```

```
[Out] sqrt(2)*arctan(1/2*sqrt(2)*(3*x - 1)/sqrt(3*x + 4))
```

giac [**A**] time = 0.24, size = 63, normalized size = 1.40

$$\sqrt{2}\arctan\left(\frac{1}{250}\cdot 25^{\frac{3}{4}}\sqrt{10}\left(3\cdot 25^{\frac{1}{4}}\sqrt{10}+10\,\sqrt{3\,x+4}\right)\right)+\sqrt{2}\arctan\Bigg(-\frac{1}{250}\cdot 25^{\frac{3}{4}}\sqrt{10}\Bigg(3\cdot 25^{\frac{1}{4}}\sqrt{10}-10\,\sqrt{3\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(2)*arctan(1/250*25^(3/4)*sqrt(10)*(3*25^(1/4)*sqrt(10) + 10*sqrt(3*x +
 4))) + sqrt(2)*arctan(-1/250*25^(3/4)*sqrt(10)*(3*25^(1/4)*sqrt(10) - 10*s
qrt(3*x + 4)))
```

maple [**A**] time = 0.16, size = 52, normalized size = 1.16

$$\sqrt{2}\arctan\left(\frac{\left(2\sqrt{3x+4}-3\sqrt{2}\right)\sqrt{2}}{2}\right)+\sqrt{2}\arctan\left(\frac{\left(2\sqrt{3x+4}+3\sqrt{2}\right)\sqrt{2}}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+3)/(x^2+1)/(3*x+4)^(1/2),x)
```

```
[Out] 2^(1/2)*arctan(1/2*(2*(3*x+4)^(1/2)+3*2^(1/2))*2^(1/2))+2^(1/2)*arctan(1/2*
(2*(3*x+4)^(1/2)-3*2^(1/2))*2^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x+3}{\left(x^2+1\right)\sqrt{3\,x+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((x + 3)/((x^2 + 1)*sqrt(3*x + 4)), x)
```

mupad [B] time = 1.76, size = 38, normalized size = 0.84

$$\sqrt{2}\,\left(\mathrm{atan}\left(\frac{\sqrt{2}\,{\left(3\,x+4\right)}^{3/2}}{10}-\frac{3\,\sqrt{6\,x+8}}{10}\right)+\mathrm{atan}\left(\frac{\sqrt{6\,x+8}}{2}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 3)/((3*x + 4)^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*(atan((2^(1/2)*(3*x + 4)^(3/2))/10 - (3*(6*x + 8)^(1/2))/10) + atan
((6*x + 8)^(1/2)/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x+3}{\sqrt{3x+4}\,\left(x^2+1\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((3+x)/(x**2+1)/(4+3*x)**(1/2),x)
```

```
[Out] Integral((x + 3)/(sqrt(3*x + 4)*(x**2 + 1)), x)
```

3.1469 $\int \frac{1-3x}{\sqrt{4+3x}\left(1+x^2\right)}\,dx$

Optimal. Leaf size=53

$$\frac{\log\left(x+\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}$$

```
[Out] -1/2*ln(3+x-2^(1/2)*(4+3*x)^(1/2))*2^(1/2)+1/2*ln(3+x+2^(1/2)*(4+3*x)^(1/2)
)*2^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {827, 1164, 628}

$$\frac{\log\left(x+\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}-\frac{\log\left(x-\sqrt{2}\sqrt{3x+4}+3\right)}{\sqrt{2}}$$

Antiderivative was successfully verified.

```
[In] Int[(1 - 3*x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] -(Log[3 + x - Sqrt[2]*Sqrt[4 + 3*x]]/Sqrt[2]) + Log[3 + x + Sqrt[2]*Sqrt[4
+ 3*x]]/Sqrt[2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1164

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(-2*d)/e - b/c, 2]}, Dist[e/(2*c*q), Int[(q - 2*x)/Simp[d/e
+ q*x - x^2, x], x], x] + Dist[e/(2*c*q), Int[(q + 2*x)/Simp[d/e - q*x - x^
2, x], x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c
*d^2 - a*e^2, 0] &&  !GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{1-3x}{\sqrt{4+3x}\left(1+x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{15-3x^2}{25-8x^2+x^4}\,dx,x,\sqrt{4+3x}\right)\\
&= -\frac{\text{Subst}\left(\int \frac{3\sqrt{2}+2x}{-5-3\sqrt{2}\,x-x^2}\,dx,x,\sqrt{4+3x}\right)}{\sqrt{2}}-\frac{\text{Subst}\left(\int \frac{3\sqrt{2}-2x}{-5+3\sqrt{2}\,x-x^2}\,dx,x,\sqrt{4+3x}\right)}{\sqrt{2}}\\
&= -\frac{\log\left(3+x-\sqrt{2}\sqrt{4+3x}\right)}{\sqrt{2}}+\frac{\log\left(3+x+\sqrt{2}\sqrt{4+3x}\right)}{\sqrt{2}}
\end{aligned}$$

Mathematica [C] time = 0.03, size = 63, normalized size = 1.19

$$\frac{1}{5}\left((3+i)\sqrt{4-3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4-3i}}\right)+(3-i)\sqrt{4+3i}\tanh^{-1}\left(\frac{\sqrt{3x+4}}{\sqrt{4+3i}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 - 3*x)/(Sqrt[4 + 3*x]*(1 + x^2)),x]
```

```
[Out] ((3 + I)*Sqrt[4 - 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 - 3*I]] + (3 - I)*Sqrt[
4 + 3*I]*ArcTanh[Sqrt[4 + 3*x]/Sqrt[4 + 3*I]])/5
```

fricas [A] time = 0.91, size = 37, normalized size = 0.70

$$\frac{1}{2}\sqrt{2}\log\left(\frac{2\sqrt{2}\sqrt{3x+4}(x+3)+x^2+12x+17}{x^2+1}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*log((2*sqrt(2)*sqrt(3*x + 4)*(x + 3) + x^2 + 12*x + 17)/(x^2 +
1))
```

giac [A] time = 0.22, size = 53, normalized size = 1.00

$$\frac{1}{2}\sqrt{2}\log\left(\frac{3}{5}\cdot 25^{\frac{1}{4}}\sqrt{10}\sqrt{3x+4}+3x+9\right)-\frac{1}{2}\sqrt{2}\log\left(-\frac{3}{5}\cdot 25^{\frac{1}{4}}\sqrt{10}\sqrt{3x+4}+3x+9\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(2)*log(3/5*25^(1/4)*sqrt(10)*sqrt(3*x + 4) + 3*x + 9) - 1/2*sqrt(2
)*log(-3/5*25^(1/4)*sqrt(10)*sqrt(3*x + 4) + 3*x + 9)
```

maple [A] time = 0.07, size = 48, normalized size = 0.91

$$-\frac{\sqrt{2}\,\ln\left(3x+9-3\sqrt{2}\,\sqrt{3x+4}\right)}{2}+\frac{\sqrt{2}\,\ln\left(3x+9+3\sqrt{2}\,\sqrt{3x+4}\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((1-3*x)/(x^2+1)/(3*x+4)^(1/2),x)
```

```
[Out] 1/2*2^(1/2)*ln(3*x+9+3*2^(1/2)*(3*x+4)^(1/2))-1/2*2^(1/2)*ln(3*x+9-3*2^(1/2
)*(3*x+4)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{3x-1}{\left(x^2+1\right)\sqrt{3x+4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x^2+1)/(4+3*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x - 1)/((x^2 + 1)*sqrt(3*x + 4)), x)
```

mupad [B] time = 1.84, size = 21, normalized size = 0.40

$$\sqrt{2}\,\mathrm{atanh}\left(\frac{24\sqrt{6x+8}}{24x+72}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(3*x - 1)/((3*x + 4)^(1/2)*(x^2 + 1)),x)
```

```
[Out] 2^(1/2)*atanh((24*(6*x + 8)^(1/2))/(24*x + 72))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{3x}{x^2\sqrt{3x+4}+\sqrt{3x+4}}\,dx-\int \left(-\frac{1}{x^2\sqrt{3x+4}+\sqrt{3x+4}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1-3*x)/(x**2+1)/(4+3*x)**(1/2),x)
```

```
[Out] -Integral(3*x/(x**2*sqrt(3*x + 4) + sqrt(3*x + 4)), x) - Integral(-1/(x**2*
sqrt(3*x + 4) + sqrt(3*x + 4)), x)
```

3.1470 $\int \frac{2+x}{\sqrt{3+4x}\left(1+x^2\right)}\,dx$

Optimal. Leaf size=29

$$\tan^{-1}\left(\sqrt{4x+3}+2\right)-\tan^{-1}\left(2-\sqrt{4x+3}\right)$$

```
[Out] arctan(-2+(3+4*x)^(1/2))+arctan(2+(3+4*x)^(1/2))
```

Rubi [A] time = 0.03, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {827, 1161, 618, 204}

$$\tan^{-1}\left(\sqrt{4x+3}+2\right)-\tan^{-1}\left(2-\sqrt{4x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(2 + x)/(Sqrt[3 + 4*x]*(1 + x^2)),x]
```

```
[Out] -ArcTan[2 - Sqrt[3 + 4*x]] + ArcTan[2 + Sqrt[3 + 4*x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\begin{aligned}
\int \frac{2+x}{\sqrt{3+4x}\left(1+x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{5+x^2}{25-6x^2+x^4}\,dx,x,\sqrt{3+4x}\right)\\
&= \text{Subst}\left(\int \frac{1}{5-4x+x^2}\,dx,x,\sqrt{3+4x}\right)+\text{Subst}\left(\int \frac{1}{5+4x+x^2}\,dx,x,\sqrt{3+4x}\right)\\
&= -\left(2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,-4+2\sqrt{3+4x}\right)\right)-2\,\text{Subst}\left(\int \frac{1}{-4-x^2}\,dx,x,4+2\sqrt{3}\right.\\
&= -\tan^{-1}\left(2-\sqrt{3+4x}\right)+\tan^{-1}\left(2+\sqrt{3+4x}\right)
\end{aligned}$$

Mathematica [C] time = 0.02, size = 41, normalized size = 1.41

$$\tan^{-1}\left(\left(\frac{1}{5}+\frac{2i}{5}\right)\sqrt{4x+3}\right)-i\tanh^{-1}\left(\left(\frac{2}{5}+\frac{i}{5}\right)\sqrt{4x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(2 + x)/(Sqrt[3 + 4*x]*(1 + x^2)),x]
```

```
[Out] ArcTan[(1/5 + (2*I)/5)*Sqrt[3 + 4*x]] - I*ArcTanh[(2/5 + I/5)*Sqrt[3 + 4*x]
]
```

fricas [A] time = 1.08, size = 14, normalized size = 0.48

$$\arctan\left(\frac{2x-1}{\sqrt{4x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="fricas")
```

```
[Out] arctan((2*x - 1)/sqrt(4*x + 3))
```

giac [A] time = 0.19, size = 21, normalized size = 0.72

$$\arctan\left(\sqrt{4x+3}+2\right)+\arctan\left(\sqrt{4x+3}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="giac")
```

```
[Out] arctan(sqrt(4*x + 3) + 2) + arctan(sqrt(4*x + 3) - 2)
```

maple [A] time = 0.05, size = 22, normalized size = 0.76

$$\arctan\left(-2+\sqrt{4x+3}\right)+\arctan\left(2+\sqrt{4x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+2)/(x^2+1)/(4*x+3)^(1/2),x)
```

```
[Out] arctan(-2+(4*x+3)^(1/2))+arctan(2+(4*x+3)^(1/2))
```

maxima [A] time = 1.20, size = 21, normalized size = 0.72

$$\arctan\left(\sqrt{4x+3}+2\right)+\arctan\left(\sqrt{4x+3}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x^2+1)/(3+4*x)^(1/2),x, algorithm="maxima")
```

```
[Out] arctan(sqrt(4*x + 3) + 2) + arctan(sqrt(4*x + 3) - 2)
```

mupad [B] time = 0.14, size = 26, normalized size = 0.90

$$\mathrm{atan}\left(\frac{\sqrt{4x+3}}{2}\right)+\mathrm{atan}\left(\frac{(4x+2)\sqrt{4x+3}}{10}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 2)/((4*x + 3)^(1/2)*(x^2 + 1)),x)
```

```
[Out] atan((4*x + 3)^(1/2)/2) + atan(((4*x + 2)*(4*x + 3)^(1/2))/10)
```

sympy [**A**] time = 99.08, size = 26, normalized size = 0.90

$$\operatorname{atan}\left(2-\frac{5}{\sqrt{4x+3}}\right)-\operatorname{atan}\left(2+\frac{5}{\sqrt{4x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2+x)/(x**2+1)/(3+4*x)**(1/2),x)
```

```
[Out] atan(2 - 5/sqrt(4*x + 3)) - atan(2 + 5/sqrt(4*x + 3))
```

3.1471 $\int \frac{-2+x}{\sqrt{-3+x}\left(-8+x^2\right)}\,dx$

Optimal. Leaf size=45

$$\frac{\tan^{-1}\left(\left(\sqrt{2}-1\right)\sqrt{x-3}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\left(1+\sqrt{2}\right)\sqrt{x-3}\right)}{\sqrt{2}}$$

```
[Out] 1/2*arctan((2^(1/2)-1)*(-3+x)^(1/2))*2^(1/2)+1/2*arctan((1+2^(1/2))*(-3+x)^
(1/2))*2^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 57, normalized size of antiderivative = 1.27, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {827, 1163, 203}

$$\frac{\tan^{-1}\left(\frac{\sqrt{x-3}}{\sqrt{3-2\sqrt{2}}}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\frac{\sqrt{x-3}}{\sqrt{3+2\sqrt{2}}}\right)}{\sqrt{2}}$$

Warning: Unable to verify antiderivative.

```
[In] Int[(-2 + x)/(Sqrt[-3 + x]*(-8 + x^2)),x]
```

```
[Out] ArcTan[Sqrt[-3 + x]/Sqrt[3 - 2*Sqrt[2]]]/Sqrt[2] + ArcTan[Sqrt[-3 + x]/Sqrt
[3 + 2*Sqrt[2]]]/Sqrt[2]
```

Rule 203

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTan[(Rt[b, 2]*x)/Rt
[a, 2]])/(Rt[a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (GtQ[a
, 0] || GtQ[b, 0])
```

Rule 827

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_) + (c_.)*(x_)^2)),
x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 + a*e^2 - 2*c*d*x
^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, c, d, e, f, g}, x] && N
eQ[c*d^2 + a*e^2, 0]
```

Rule 1163

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Eq
Q[c*d^2 - a*e^2, 0] && GtQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{-2+x}{\sqrt{-3+x}\left(-8+x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{1+x^2}{1+6x^2+x^4}\,dx,x,\sqrt{-3+x}\right)\\
&= \frac{1}{2}\left(2-\sqrt{2}\right)\text{Subst}\left(\int \frac{1}{3-2\sqrt{2}+x^2}\,dx,x,\sqrt{-3+x}\right)+\frac{1}{2}\left(2+\sqrt{2}\right)\text{Subst}\left(\int \frac{}{3}\right.\\
&= \frac{\tan^{-1}\left(\frac{\sqrt{-3+x}}{\sqrt{3-2\sqrt{2}}}\right)}{\sqrt{2}}+\frac{\tan^{-1}\left(\frac{\sqrt{-3+x}}{\sqrt{3+2\sqrt{2}}}\right)}{\sqrt{2}}
\end{aligned}$$

Mathematica [A] time = 0.14, size = 69, normalized size = 1.53

$$\frac{\left(2+\sqrt{2}\right)\left(\tan^{-1}\left(\sqrt{3-2\sqrt{2}}\,\sqrt{x-3}\right)+\tan^{-1}\left(\sqrt{3+2\sqrt{2}}\,\sqrt{x-3}\right)\right)}{2\sqrt{3+2\sqrt{2}}}$$

Warning: Unable to verify antiderivative.

```
[In] Integrate[(-2 + x)/(Sqrt[-3 + x]*(-8 + x^2)),x]
```

```
[Out] ((2 + Sqrt[2])*(ArcTan[Sqrt[3 - 2*Sqrt[2]]*Sqrt[-3 + x]] + ArcTan[Sqrt[3 +
2*Sqrt[2]]*Sqrt[-3 + x]]))/(2*Sqrt[3 + 2*Sqrt[2]])
```

fricas [A] time = 0.89, size = 19, normalized size = 0.42

$$\frac{1}{2}\sqrt{2}\arctan\left(\frac{\sqrt{2}(x-4)}{4\sqrt{x-3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*sqrt(2)*arctan(1/4*sqrt(2)*(x - 4)/sqrt(x - 3))
```

giac [A] time = 0.18, size = 23, normalized size = 0.51

$$\frac{1}{4}\sqrt{2}\left(\pi+2\arctan\left(\frac{\sqrt{2}(x-4)}{4\sqrt{x-3}}\right)\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(2)*(pi + 2*arctan(1/4*sqrt(2)*(x - 4)/sqrt(x - 3)))
```

maple [B] time = 0.44, size = 119, normalized size = 2.64

$$\frac{2\arctan\left(\frac{2\sqrt{x-3}}{-2+2\sqrt{2}}\right)}{-2+2\sqrt{2}}-\frac{\sqrt{2}\,\arctan\left(\frac{2\sqrt{x-3}}{-2+2\sqrt{2}}\right)}{-2+2\sqrt{2}}+\frac{\sqrt{2}\,\arctan\left(\frac{2\sqrt{x-3}}{2+2\sqrt{2}}\right)}{2+2\sqrt{2}}+\frac{2\arctan\left(\frac{2\sqrt{x-3}}{2+2\sqrt{2}}\right)}{2+2\sqrt{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x-2)/(x^2-8)/(x-3)^(1/2),x)
```

```
[Out] 2/(-2+2*2^(1/2))*arctan(2*(x-3)^(1/2)/(-2+2*2^(1/2)))-2^(1/2)/(-2+2*2^(1/2)
)*arctan(2*(x-3)^(1/2)/(-2+2*2^(1/2)))+2^(1/2)/(2+2*2^(1/2))*arctan(2*(x-3)
^(1/2)/(2+2*2^(1/2)))+2/(2+2*2^(1/2))*arctan(2*(x-3)^(1/2)/(2+2*2^(1/2)))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-2}{\left(x^2-8\right)\sqrt{x-3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x^2-8)/(-3+x)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((x - 2)/((x^2 - 8)*sqrt(x - 3)), x)
```

mupad [B] time = 2.04, size = 39, normalized size = 0.87

$$\frac{\sqrt{2}\,\left(\mathrm{atan}\left(\frac{\sqrt{2}\,\sqrt{x-3}}{4}\right)+\mathrm{atan}\left(\frac{7\,\sqrt{2}\,\sqrt{x-3}}{4}+\frac{\sqrt{2}\,{\left(x-3\right)}^{3/2}}{4}\right)\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x - 2)/((x^2 - 8)*(x - 3)^(1/2)),x)
```

```
[Out] (2^(1/2)*(atan((2^(1/2)*(x - 3)^(1/2))/4) + atan((7*2^(1/2)*(x - 3)^(1/2))/
4 + (2^(1/2)*(x - 3)^(3/2))/4)))/2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-2}{\sqrt{x-3}\,\left(x^2-8\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-2+x)/(x**2-8)/(-3+x)**(1/2),x)
```

```
[Out] Integral((x - 2)/(sqrt(x - 3)*(x**2 - 8)), x)
```

3.1472 $\int (A+Bx)\sqrt{d+ex}\,\sqrt{a+cx^2}\,dx$

Optimal. Leaf size=438

$$\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\left(5aBe^2-7Acde+4Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{105c^{3/2}e^3\sqrt{a+cx^2}\,\sqrt{d+ex}}-2\sqrt{a+cx}$$

```
[Out] 2/7*B*(c*x^2+a)^(3/2)*(e*x+d)^(1/2)/c-2/105*(4*B*c*d^2-7*A*c*d*e+5*a*B*e^2-
3*c*e*(7*A*e+B*d)*x)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/c/e^2-4/105*(21*A*a*e^3-
7*A*c*d^2*e+8*B*a*d*e^2+4*B*c*d^3)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(
1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(e*x+d)
^(1/2)*(c*x^2/a+1)^(1/2)/e^3/c^(1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-
a)^(1/2)+d*c^(1/2)))^(1/2)+4/105*(a*e^2+c*d^2)*(-7*A*c*d*e+5*B*a*e^2+4*B*c*
d^2)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(
-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e
*(-a)^(1/2)+d*c^(1/2)))^(1/2)/c^(3/2)/e^3/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.231, Rules used = {833, 815, 844, 719, 424, 419}

$$\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\left(5aBe^2-7Acde+4Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{105c^{3/2}e^3\sqrt{a+cx^2}\,\sqrt{d+ex}}-2\sqrt{a+cx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*Sqrt[a + c*x^2],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(4*B*c*d^2 - 7*A*c*d*e + 5*a*B*e^2 - 3*c*e*(B*d + 7*A*e)*
x)*Sqrt[a + c*x^2])/(105*c*e^2) + (2*B*Sqrt[d + e*x]*(a + c*x^2)^(3/2))/(7*
c) - (4*Sqrt[-a]*(4*B*c*d^3 - 7*A*c*d^2*e + 8*a*B*d*e^2 + 21*a*A*e^3)*Sqrt[
d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]
]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(105*Sqrt[c]*e^3*Sqrt[(Sq
rt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (4*Sqrt[-a]*(
c*d^2 + a*e^2)*(4*B*c*d^2 - 7*A*c*d*e + 5*a*B*e^2)*Sqrt[(Sqrt[c]*(d + e*x))
/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (S
qrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(105*c^
(3/2)*e^3*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\,\sqrt{a+cx^2}\,dx = \frac{2B\sqrt{d+ex}\,\left(a+cx^2\right)^{3/2}}{7c} + \frac{2\int \frac{\left(\frac{1}{2}(7Acd-aBe)+\frac{1}{2}c(Bd+7Ae)x\right)\sqrt{a+cx^2}}{\sqrt{d+ex}}dx}{7c}$$

$$= -\frac{2\sqrt{d+ex}\,\left(4Bcd^2-7Acde+5aBe^2-3ce(Bd+7Ae)x\right)\sqrt{a+cx^2}}{105ce^2} + \frac{2B\sqrt{d+}}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(4Bcd^2-7Acde+5aBe^2-3ce(Bd+7Ae)x\right)\sqrt{a+cx^2}}{105ce^2} + \frac{2B\sqrt{d+}}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(4Bcd^2-7Acde+5aBe^2-3ce(Bd+7Ae)x\right)\sqrt{a+cx^2}}{105ce^2} + \frac{2B\sqrt{d+}}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(4Bcd^2-7Acde+5aBe^2-3ce(Bd+7Ae)x\right)\sqrt{a+cx^2}}{105ce^2} + \frac{2B\sqrt{d+}}{}$$

Mathematica [C] time = 4.55, size = 622, normalized size = 1.42

$$\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)\left(10aBe^2+7Ace(d+3ex)+Bc\left(-4d^2+3dex+15e^2x^2\right)\right)}{ce^2} + \frac{4\left(\sqrt{a}\,e(d+ex)^{3/2}\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+\frac{i\sqrt{a}\,e}{\sqrt{c}}}{d+ex}}\left(7A\left(cde+3i\sqrt{a}\,\sqrt{}\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[d + e*x]*((2*(a + c*x^2)*(10*a*B*e^2 + 7*A*c*e*(d + 3*e*x) + B*c*(-4*
d^2 + 3*d*e*x + 15*e^2*x^2)))/(c*e^2) + (4*(e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqr
t[c]]*(4*B*c*d^3 - 7*A*c*d^2*e + 8*a*B*d*e^2 + 21*a*A*e^3)*(a + c*x^2) - Sq
rt[c]*(I*Sqrt[c]*d - Sqrt[a]*e)*(4*B*c*d^3 - 7*A*c*d^2*e + 8*a*B*d*e^2 + 21
*a*A*e^3)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*
e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d -
 (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*
d + I*Sqrt[a]*e)] + Sqrt[a]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(B*(-4*c*d^2 + (3*I
)*Sqrt[a]*Sqrt[c]*d*e - 5*a*e^2) + 7*A*(c*d*e + (3*I)*Sqrt[a]*Sqrt[c]*e^2))
*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c
] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[
a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqr
t[a]*e)]))/(c*e^4*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(d + e*x))))/(105*Sqrt[a
 + c*x^2])
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2 + a}\,(Bx + A)\sqrt{ex + d}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d), x)
```

maple [B] time = 0.10, size = 2549, normalized size = 5.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2),x)
```

```
[Out] -2/105*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)*(B*x^3*c^3*d^2*e^3-18*B*x^4*c^3*d*e^4-
28*A*x^3*c^3*d*e^4+B*x*a*c^2*d^2*e^3-28*B*x^2*a*c^2*d*e^4-28*A*x*a*c^2*d*e^
4-21*A*x^2*a*c^2*e^5-15*B*x^5*c^3*e^5-21*A*x^4*c^3*e^5-7*A*x^2*c^3*d^2*e^3-
14*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a
*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*El
lipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c
*d+(-a*c)^(1/2)*e))^(1/2))*c^3*d^4*e+4*B*x^2*c^3*d^3*e^2-10*B*x*a^2*c*e^5-2
5*B*x^3*a*c^2*e^5-10*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*
c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1
/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+
(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*a^2*e^5+8*B*(-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*
e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-
(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^
(1/2)*e))^(1/2))*c^3*d^5+42*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c
*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-
a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(
-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*e^5-42*A*(-(e*x+d
)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*a^2*c*e^5-7*A*a*c^2*d^2*e^3-10*B*a^2*c*d*e^4+4*B*a*c^2*d^3*e^
2-8*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-
a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*E
llipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(
c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*c^2*d^4*e+28*A*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2
))*a*c^2*d^2*e^3-6*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)
^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-
a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*d*e^4-42*A*(-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-
c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^
(1/2))*a*c^2*d^2*e^3+14*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(
-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)
^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c
*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*c^2*d^3*e^2+24
*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Elli
pticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d
+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^2+16*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)
*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(
1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)
*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*d*e
^4-6*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(
-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*
EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/
(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^2+14*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2
)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*
c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(
1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c
)^(1/2)*a*c*d*e^4-18*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*
c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1
/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+
(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*a*c*d^2*e^3)/(c*e
*x^3+c*d*x^2+a*e*x+a*d)/e^4/c^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{c\,x^2+a}\,\left(A+B\,x\right)\,\sqrt{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] int((a + c*x^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{a+cx^2}\,\sqrt{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*(c*x**2+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + c*x**2)*sqrt(d + e*x), x)
```

3.1473 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=365

$$\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)(4Bd-5Ae)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\,F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}\,d-ae}\right)}{15\sqrt{c}\,e^3\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+}}{}$$

```
[Out] -2/15*(-3*B*e*x-5*A*e+4*B*d)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/e^2-4/15*(-5*A*c
*d*e+3*B*a*e^2+4*B*c*d^2)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1
/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(e*x+d)^(1/2)*(c
*x^2/a+1)^(1/2)/e^3/c^(1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+
d*c^(1/2)))^(1/2)+4/15*(-5*A*e+4*B*d)*(a*e^2+c*d^2)*EllipticF(1/2*(1-x*c^(1
/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(
-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2
)/e^3/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {815, 844, 719, 424, 419}

$$\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)(4Bd-5Ae)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\,F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}\,d-ae}\right)}{15\sqrt{c}\,e^3\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(4*B*d - 5*A*e - 3*B*e*x)*Sqrt[a + c*x^2])/(15*e^2) - (4*
Sqrt[-a]*(4*B*c*d^2 - 5*A*c*d*e + 3*a*B*e^2)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)
/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqr
t[-a]*Sqrt[c]*d - a*e)])/(15*Sqrt[c]*e^3*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*
d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (4*Sqrt[-a]*(4*B*d - 5*A*e)*(c*d^2 + a*
e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]
*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-
a]*Sqrt[c]*d - a*e)])/(15*Sqrt[c]*e^3*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(4Bd-5Ae-3Bex)\sqrt{a+cx^2}}{15e^2} + \frac{4\int \frac{-\frac{1}{2}ace(Bd-5Ae)+\frac{1}{2}c\left(4Bcd^2-5Acde+3aBe^2\right)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{15ce^2}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bd-5Ae-3Bex)\sqrt{a+cx^2}}{15e^2} - \frac{\left(2(4Bd-5Ae)\left(cd^2+ae^2\right)\right)\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+cx}}}{15e^3}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bd-5Ae-3Bex)\sqrt{a+cx^2}}{15e^2} + \frac{\left(4a\left(4Bcd^2-5Acde+3aBe^2\right)\sqrt{d+ex}\,\sqrt{}\right.}{15\sqrt{-a}\,\sqrt{c}}$$

$$= -\frac{2\sqrt{d+ex}\,(4Bd-5Ae-3Bex)\sqrt{a+cx^2}}{15e^2} - \frac{4\sqrt{-a}\,\left(4Bcd^2-5Acde+3aBe^2\right)\sqrt{d+ex}}{15\sqrt{c}\,e^3\sqrt{\frac{\sqrt{}}{\sqrt{c}}}}$$

Mathematica [C] time = 3.91, size = 549, normalized size = 1.50

$$\frac{\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)(5Ae-4Bd+3Bex)}{e^2} - \frac{4\left(e^2\left(a+cx^2\right)\left(-\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\right)\left(3aBe^2-5Acde+4Bcd^2\right)+\sqrt{c}\,(d+ex)^{3/2}\left(\sqrt{a}\,e-i\sqrt{c}\,d\right)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+\frac{i\sqrt{a}\,e}{\sqrt{c}}}{d+ex}}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (Sqrt[d + e*x]*((2*(-4*B*d + 5*A*e + 3*B*e*x)*(a + c*x^2))/e^2 - (4*(-(e^2*
Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(4*B*c*d^2 - 5*A*c*d*e + 3*a*B*e^2)*(a + c
*x^2)) + Sqrt[c]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(-4*B*c*d^2 + 5*A*c*d*e - 3*a
*B*e^2)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)
/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (
I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d
+ I*Sqrt[a]*e)] + Sqrt[a]*Sqrt[c]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(4*B*Sqrt[c]*
d - (3*I)*Sqrt[a]*B*e - 5*A*Sqrt[c]*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(
d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*
EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[
c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(c*e^4*Sqrt[-d - (I*Sqrt[a
]*e)/Sqrt[c]]*(d + e*x))))/(15*Sqrt[a + c*x^2])
```

fricas [F] time = 1.04, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)}{\sqrt{ex+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)/sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/sqrt(e*x + d), x)
```

maple [B] time = 0.11, size = 1826, normalized size = 5.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/15*(c*x^2+a)^(1/2)*(e*x+d)^(1/2)/c*(10*A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-
a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(
(c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/
2))*a*e^4+10*A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x
+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(
-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^2*e^2-10*A*a*c*(-(e*x
+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e
)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(
1/2)*e))^(1/2))*d*e^3-10*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+
(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-
c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^3*e-8*B*(-a*c)^(1/2)
*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^
(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Ellipt
icF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(
-a*c)^(1/2)*e))^(1/2))*a*d*e^3-8*B*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2
)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*
c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(
1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^3
*e-6*B*a^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c
*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1
/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)
*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*e^4-6*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)
*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e^2+
6*B*a^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)
/(c*d+(-a*c)^(1/2)*e))^(1/2))*e^4+14*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c
)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e^2+8*
B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)
^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Ellip
ticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+
(-a*c)^(1/2)*e))^(1/2))*c^2*d^4-3*B*x^4*c^2*e^4-5*A*x^3*c^2*e^4+B*x^3*c^2*d
*e^3-5*A*x^2*c^2*d*e^3-3*B*x^2*a*c*e^4+4*B*x^2*c^2*d^2*e^2-5*A*x*a*c*e^4+B*
x*a*c*d*e^3-5*A*a*c*d*e^3+4*B*a*c*d^2*e^2)/(c*e*x^3+c*d*x^2+a*e*x+a*d)/e^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\,\left(A+B\,x\right)}{\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + c*x**2)/sqrt(d + e*x), x)
```

3.1474 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=352

$$-\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(aBe^2-3Acde+4Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{3\sqrt{c}e^3\sqrt{a+cx^2}\sqrt{d+ex}}+\frac{4\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}}{}$$

```
[Out] 2/3*(B*e*x-3*A*e+4*B*d)*(c*x^2+a)^(1/2)/e^2/(e*x+d)^(1/2)+4/3*(-3*A*e+4*B*d
)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)
^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*c^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/
e^3/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)-4/3*(-
3*A*c*d*e+B*a*e^2+4*B*c*d^2)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2
^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(
1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^3/c^(1/2)/(e*x+d)^(
1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {813, 844, 719, 424, 419}

$$-\frac{4\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(aBe^2-3Acde+4Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{3\sqrt{c}e^3\sqrt{a+cx^2}\sqrt{d+ex}}+\frac{2\sqrt{a+cx^2}(-3Ae}{3e^2\sqrt{d+}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*(4*B*d - 3*A*e + B*e*x)*Sqrt[a + c*x^2])/(3*e^2*Sqrt[d + e*x]) + (4*Sqrt
[-a]*Sqrt[c]*(4*B*d - 3*A*e)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[Ar
cSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d
 - a*e)])/(3*e^3*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a +
 c*x^2]) - (4*Sqrt[-a]*(4*B*c*d^2 - 3*A*c*d*e + a*B*e^2)*Sqrt[(Sqrt[c]*(d +
 e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[
1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(
3*Sqrt[c]*e^3*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{3/2}}\,dx = \frac{2(4Bd-3Ae+Bex)\sqrt{a+cx^2}}{3e^2\sqrt{d+ex}} - \frac{2\int \frac{-aBe+c(4Bd-3Ae)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{3e^2}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{a+cx^2}}{3e^2\sqrt{d+ex}} - \frac{(2c(4Bd-3Ae))\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{3e^3} + \frac{\left(2\left(4Bcd^2-3Acde\right.\right.}{}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{a+cx^2}}{3e^2\sqrt{d+ex}} - \frac{\left(4a\sqrt{c}\,(4Bd-3Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\text{Subst}\left(\int \frac{\sqrt{1}}{}\right.}{3\sqrt{-a}\,e^3\sqrt{\frac{c(d+ex)}{cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}}}\,\sqrt{a+c}}$$

$$= \frac{2(4Bd-3Ae+Bex)\sqrt{a+cx^2}}{3e^2\sqrt{d+ex}} + \frac{4\sqrt{-a}\,\sqrt{c}\,(4Bd-3Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-1}\left(\frac{\sqrt{}}{}\right.\right.}{3e^3\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+cx^2}}$$

Mathematica [C] time = 3.28, size = 512, normalized size = 1.45

$$\frac{\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)(-3Ae+4Bd+Bex)}{e^2(d+ex)}+\frac{2(d+ex)\left(\frac{2e^2\left(a+cx^2\right)\sqrt{-d-\frac{i\sqrt{a}e}{\sqrt{c}}}(3Ae-4Bd)}{(d+ex)^2}-\frac{2\sqrt{a}e\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\sqrt{-\frac{-ex+\frac{i\sqrt{a}e}{\sqrt{c}}}{d+ex}}\left(-i\sqrt{a}Be+3A\sqrt{c}e-4B\sqrt{c}d\right)F\left(i\sin\right.}{\sqrt{d+ex}}\right.}{}\right.}{3\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*((2*(4*B*d - 3*A*e + B*e*x)*(a + c*x^2))/(e^2*(d + e*x)) + (
2*(d + e*x)*((2*e^2*(-4*B*d + 3*A*e)*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(a +
c*x^2))/(d + e*x)^2 + (2*Sqrt[c]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(-4*B*d + 3*A
*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqr
t[c] - e*x)/(d + e*x))]*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]
]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)])/Sqr
t[d + e*x] - (2*Sqrt[a]*e*(-4*B*Sqrt[c]*d - I*Sqrt[a]*B*e + 3*A*Sqrt[c]*e)*
Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c]
 - e*x)/(d + e*x))]*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sq
rt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)])/Sqrt[d
+ e*x]))/(e^4*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]])))/(3*Sqrt[a + c*x^2])
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}}{e^2x^2+2\,dex+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(e^2*x^2 + 2*d*e*x + d^2),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+a}\,(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x + d)^(3/2), x)
```

maple [B] time = 0.09, size = 1465, normalized size = 4.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/3*(c*x^2+a)^(1/2)*(e*x+d)^(1/2)*(6*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^
3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)
^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+6*A*E
llipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(
c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1
/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/
(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-6*A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e
)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^3*(-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-6*A*Ellipt
icF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(
-a*c)^(1/2)*e))^(1/2))*c*d*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-
c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(
-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)-8*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(
1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d
*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a
*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-8*
B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e
)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+6*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*
e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d*e^2*
(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(
1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+2*B*Ell
ipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*
d+(-a*c)^(1/2)*e))^(1/2))*a*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((
-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)+8*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^
(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^
2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a
*c)^(1/2)-B*x^3*c^2*e^3+3*A*x^2*c^2*e^3-4*B*x^2*c^2*d*e^2-B*x*a*c*e^3+3*a*A
*e^3*c-4*a*B*d*e^2*c)/c/(c*e*x^3+c*d*x^2+a*e*x+a*d)/e^4
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + a}\,(Bx + A)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x + d)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\sqrt{a + cx^2}}{(d + ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + c*x**2)/(d + e*x)**(3/2), x)
```

3.1475 $\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=420

$$-\frac{4\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\left(3aBe^2-Acde+4Bcd^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{3e^3\sqrt{a+cx^2}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}}-\frac{2\sqrt{a+cx^2}\left(ex\left(3aBe^2\right.\right.}{}$$

```
[Out] -2/3*(4*B*c*d^3-A*c*d^2*e+2*a*B*d*e^2+a*A*e^3+e*(-2*A*c*d*e+3*B*a*e^2+5*B*c
*d^2)*x)*(c*x^2+a)^(1/2)/e^2/(a*e^2+c*d^2)/(e*x+d)^(3/2)-4/3*(-A*c*d*e+3*B*
a*e^2+4*B*c*d^2)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a
*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*c^(1/2)*(e*x+d)^(1/2)*(c*
x^2/a+1)^(1/2)/e^3/(a*e^2+c*d^2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(
1/2)+d*c^(1/2)))^(1/2)+4/3*(-A*e+4*B*d)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/
2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*c^
(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^
3/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 420, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = $\{811, 844, 719, 424, 419\}$

$$-\frac{2\sqrt{a+cx^2}\left(ex\left(3aBe^2-2Acde+5Bcd^2\right)+aAe^3+2aBde^2-Acd^2e+4Bcd^3\right)}{3e^2(d+ex)^{3/2}\left(ae^2+cd^2\right)}-\frac{4\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\left(3a\right.}{3e^3\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(4*B*c*d^3 - A*c*d^2*e + 2*a*B*d*e^2 + a*A*e^3 + e*(5*B*c*d^2 - 2*A*c*d
*e + 3*a*B*e^2)*x)*Sqrt[a + c*x^2])/(3*e^2*(c*d^2 + a*e^2)*(d + e*x)^(3/2))
 - (4*Sqrt[-a]*Sqrt[c]*(4*B*c*d^2 - A*c*d*e + 3*a*B*e^2)*Sqrt[d + e*x]*Sqrt
[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (
-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(3*e^3*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(
d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (4*Sqrt[-a]*Sqrt[c]*
(4*B*d - A*e)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (
c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e
)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(3*e^3*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{a+cx^2}}{(d+ex)^{5/2}}\,dx = -\frac{2\left(4Bcd^3-Acd^2e+2aBde^2+aAe^3+e\left(5Bcd^2-2Acde+3aBe^2\right)x\right)\sqrt{a+cx^2}}{3e^2\left(cd^2+ae^2\right)(d+ex)^{3/2}} -$$

$$= -\frac{2\left(4Bcd^3-Acd^2e+2aBde^2+aAe^3+e\left(5Bcd^2-2Acde+3aBe^2\right)x\right)\sqrt{a+cx^2}}{3e^2\left(cd^2+ae^2\right)(d+ex)^{3/2}} -$$

$$= -\frac{2\left(4Bcd^3-Acd^2e+2aBde^2+aAe^3+e\left(5Bcd^2-2Acde+3aBe^2\right)x\right)\sqrt{a+cx^2}}{3e^2\left(cd^2+ae^2\right)(d+ex)^{3/2}} +$$

$$= -\frac{2\left(4Bcd^3-Acd^2e+2aBde^2+aAe^3+e\left(5Bcd^2-2Acde+3aBe^2\right)x\right)\sqrt{a+cx^2}}{3e^2\left(cd^2+ae^2\right)(d+ex)^{3/2}} -$$

Mathematica [C] time = 4.64, size = 609, normalized size = 1.45

$$-\frac{2\sqrt{a+cx^2}\left(aAe^3+aBe^2(2d+3ex)-Acde(d+2ex)+Bcd^2(4d+5ex)\right)}{3e^2(d+ex)^{3/2}\left(ae^2+cd^2\right)}+\frac{4\left(e^2\left(a+cx^2\right)\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\left(3aBe^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[a + c*x^2]*(a*A*e^3 - A*c*d*e*(d + 2*e*x) + a*B*e^2*(2*d + 3*e*x)
+ B*c*d^2*(4*d + 5*e*x)))/(3*e^2*(c*d^2 + a*e^2)*(d + e*x)^(3/2)) + (4*(e^2
*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(4*B*c*d^2 - A*c*d*e + 3*a*B*e^2)*(a + c*
x^2) - Sqrt[c]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(-4*B*c*d^2 + A*c*d*e - 3*a*B*e
^2)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqr
t[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sq
rt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*
Sqrt[a]*e)] + Sqrt[a]*Sqrt[c]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(-4*B*Sqrt[c]*d +
 (3*I)*Sqrt[a]*B*e + A*Sqrt[c]*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e
*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*Ellip
ticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d
- I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(3*e^4*Sqrt[-d - (I*Sqrt[a]*e)/
Sqrt[c]]*(c*d^2 + a*e^2)*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

fricas [F] time = 1.26, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(e^3*x^3 + 3*d*e^2*x^2 + 3
*d^2*e*x + d^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(d*exp(1)+x*exp(1
)^2)]integrate()  Bad Argument Typeintegrate()  Bad Argument TypeEvaluation
 time: 1.8Unable to transpose Error: Bad Argument Value
```

maple [B] time = 0.11, size = 3552, normalized size = 8.46

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] 2/3*(2*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^
(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c^2*d^3*e^2*(-(e*x+d)/(-c*d+(-a*c)^
(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+
(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-2*A*EllipticF((-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2
))*x*a*e^5*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a
*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(
1/2)*e)*e)^(1/2)-4*B*d^3*a*c*e^2+A*d^2*a*c*e^3-5*B*a*c*d^2*e^3*x+2*A*a*c*d*
e^4*x-2*B*a*c*d*e^4*x^2-A*a*c*e^5*x^2+A*c^2*d^2*e^3*x^2-4*B*c^2*d^3*e^2*x^2
+2*A*c^2*d*e^4*x^3-3*B*a*c*e^5*x^3-5*B*c^2*d^2*e^3*x^3-A*a^2*e^5-2*B*a^2*d*
```

```
e^4-6*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(
1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a^2*e^5*(-(e*x+d)/(-c*d+(-a*c)^(1/2)
*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c
)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+6*B*EllipticF((-(e*x+d)/(-c*d+(-a*c
)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*
c*d^3*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*
d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/
2)+8*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1
/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*d^2*e^3*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+8*B*EllipticF((-(e*x+d)
/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e
))^(1/2))*c*d^4*e*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-
c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(
-a*c)^(1/2)*e)*e)^(1/2)-14*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^3*e^2*(-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*
e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+6*B*Elliptic
F((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a
*c)^(1/2)*e))^(1/2))*a^2*d*e^4*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-
c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(
-a*c)^(1/2)*e)*e)^(1/2)+2*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1
/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^4*e*(-(e*x+d
)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-6*B*EllipticE((
-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)
^(1/2)*e))^(1/2))*a^2*d*e^4*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x
+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*
c)^(1/2)*e)*e)^(1/2)+6*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)
,(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a^2*e^5*(-(e*x+d)/(
-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^
(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-3*B*x*a^2*e^5-8*B*
EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/
(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c^2*d^4*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+2*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2
)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*
e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-2*A
*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)
/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^3*e^2*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)
^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x
+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-2*A*EllipticF((-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/
2))*a*d*e^4*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-
a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^
(1/2)*e)*e)^(1/2)+2*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-
(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*c*d*e^4*(-(e*x+d)/(-
c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(
1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-2*A*EllipticF((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*x*c*d^2*e^3*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+8*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*
e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c*d^3*e^
2*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2)
)/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e
)^(1/2)-14*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a
*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*c*d^2*e^3*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-8*B*EllipticE((-(e*x+d)/(-
c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^
(1/2))*c^2*d^5*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2)
)/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e
)^(1/2)+8*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*
c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*d*e^4*(-a*c)^(1/2)*(-(e*x+d)/(
-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^
(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+6*B*EllipticF((-(e
*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1
/2)*e))^(1/2))*x*a*c*d^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*
x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a
*c)^(1/2)*e)*e)^(1/2))/(c*x^2+a)^(1/2)/(a*e^2+c*d^2)/e^4/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + a}\,(Bx + A)}{(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate(sqrt(c*x^2 + a)*(B*x + A)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\sqrt{c\,x^2+a}\;\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] int(((a + c*x^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\sqrt{a + cx^2}}{(d + ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(a + c*x**2)/(d + e*x)**(5/2), x)
```

3.1476 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=498

$$\frac{8\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\left(36Acde\left(2ae^2+cd^2\right)-B\left(21a^2e^4+57acd^2e^2+32c^2d^4\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2}{\sqrt{-a}}\right.}{315\sqrt{c}\,e^5\sqrt{a+cx^2}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}}$$

```
[Out] -2/63*(-7*B*e*x-9*A*e+8*B*d)*(c*x^2+a)^(3/2)*(e*x+d)^(1/2)/e^2-4/315*(32*B*
c*d^3-36*A*c*d^2*e+33*a*B*d*e^2-45*a*A*e^3-3*e*(-9*A*c*d*e+7*B*a*e^2+8*B*c*
d^2)*x)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/e^4+8/315*(36*A*c*d*e*(2*a*e^2+c*d^2)
-B*(21*a^2*e^4+57*a*c*d^2*e^2+32*c^2*d^4))*EllipticE(1/2*(1-x*c^(1/2)/(-a)^
(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)
*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e^5/c^(1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/
2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+8/315*(a*e^2+c*d^2)*(-45*A*a*e^3-36*A*c*
d^2*e+33*B*a*d*e^2+32*B*c*d^3)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)
*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)
^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^5/c^(1/2)/(e*x+d)
^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 498, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {815, 844, 719, 424, 419}

$$\frac{8\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\left(36Acde\left(2ae^2+cd^2\right)-B\left(21a^2e^4+57acd^2e^2+32c^2d^4\right)\right)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2}{\sqrt{-a}}\right.}{315\sqrt{c}\,e^5\sqrt{a+cx^2}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (-4*Sqrt[d + e*x]*(32*B*c*d^3 - 36*A*c*d^2*e + 33*a*B*d*e^2 - 45*a*A*e^3 -
3*e*(8*B*c*d^2 - 9*A*c*d*e + 7*a*B*e^2)*x)*Sqrt[a + c*x^2])/(315*e^4) - (2*
Sqrt[d + e*x]*(8*B*d - 9*A*e - 7*B*e*x)*(a + c*x^2)^(3/2))/(63*e^2) + (8*Sq
rt[-a]*(36*A*c*d*e*(c*d^2 + 2*a*e^2) - B*(32*c^2*d^4 + 57*a*c*d^2*e^2 + 21*
a^2*e^4))*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt
[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(315*Sqrt[
c]*e^5*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2])
+ (8*Sqrt[-a]*(c*d^2 + a*e^2)*(32*B*c*d^3 - 36*A*c*d^2*e + 33*a*B*d*e^2 - 4
5*a*A*e^3)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x
^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(
Sqrt[-a]*Sqrt[c]*d - a*e)])/(315*Sqrt[c]*e^5*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(8Bd-9Ae-7Bex)\left(a+cx^2\right)^{3/2}}{63e^2} + \frac{4\int \frac{\left(-\frac{1}{2}ace(Bd-9Ae)+\frac{1}{2}c\left(8Bcd^2-9Acde+7aB\right.\right.}{\sqrt{d+ex}}}{21ce^2}$$

$$= -\frac{4\sqrt{d+ex}\,\left(32Bcd^3-36Acd^2e+33aBde^2-45aAe^3-3e\left(8Bcd^2-9Acde+7aBe\right.\right.}{315e^4}$$

$$= -\frac{4\sqrt{d+ex}\,\left(32Bcd^3-36Acd^2e+33aBde^2-45aAe^3-3e\left(8Bcd^2-9Acde+7aBe\right.\right.}{315e^4}$$

$$= -\frac{4\sqrt{d+ex}\,\left(32Bcd^3-36Acd^2e+33aBde^2-45aAe^3-3e\left(8Bcd^2-9Acde+7aBe\right.\right.}{315e^4}$$

$$= -\frac{4\sqrt{d+ex}\,\left(32Bcd^3-36Acd^2e+33aBde^2-45aAe^3-3e\left(8Bcd^2-9Acde+7aBe\right.\right.}{315e^4}$$

Mathematica [C] time = 5.45, size = 730, normalized size = 1.47

$$\frac{\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)\left(135aAe^3+aBe^2(77ex-106d)+9Ace\left(8d^2-6dex+5e^2x^2\right)+Bc\left(-64d^3+48d^2ex-40de^2x^2+35e^3x^3\right)\right)}{e^4}-\frac{8\left(-\sqrt{a}\sqrt{c}\,e(d+ex)^{3/2}\left(\sqrt{c}\right.\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (Sqrt[d + e*x]*((2*(a + c*x^2)*(135*a*A*e^3 + a*B*e^2*(-106*d + 77*e*x) + 9
*A*c*e*(8*d^2 - 6*d*e*x + 5*e^2*x^2) + B*c*(-64*d^3 + 48*d^2*e*x - 40*d*e^2
*x^2 + 35*e^3*x^3)))/e^4 - (8*(e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(36*A*c
*d*e*(c*d^2 + 2*a*e^2) - B*(32*c^2*d^4 + 57*a*c*d^2*e^2 + 21*a^2*e^4))*(a +
 c*x^2) + Sqrt[c]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(36*A*c*d*e*(c*d^2 + 2*a*e^2
) - B*(32*c^2*d^4 + 57*a*c*d^2*e^2 + 21*a^2*e^4))*Sqrt[(e*((I*Sqrt[a])/Sqrt
[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d +
e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*
x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)] - Sqrt[a]*Sqrt[c]
*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(9*A*Sqrt[c]*e*(4*c*d^2 - (3*I)*Sqrt[a]*Sqrt[c
]*d*e + 5*a*e^2) + B*(-32*c^(3/2)*d^3 + (24*I)*Sqrt[a]*c*d^2*e - 33*a*Sqrt[
c]*d*e^2 + (21*I)*a^(3/2)*e^3))*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x
)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*Ellipti
cF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d -
I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(c*e^6*Sqrt[-d - (I*Sqrt[a]*e)/Sq
rt[c]]*(d + e*x))))/(315*Sqrt[a + c*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}}{\sqrt{ex+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)/sqrt(e*x + d), x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/sqrt(e*x + d), x)
```

maple [B] time = 0.08, size = 3113, normalized size = 6.25

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/315*(c*x^2+a)^(1/2)*(e*x+d)^(1/2)/c*(64*B*d^4*a*c^2*e^2-72*A*d^3*a*c^2*e
^3-18*A*x^3*c^3*d^2*e^4+16*B*x^3*c^3*d^3*e^3-72*A*x^2*c^3*d^3*e^3-77*B*x^2*
a^2*c*e^6+64*B*x^2*c^3*d^4*e^2-135*A*x*a^2*c*e^6-18*A*x*a*c^2*d^2*e^4-126*A
*x^2*a*c^2*d*e^5+34*B*x^3*a*c^2*d*e^5-135*A*a^2*c*d*e^5+106*B*a^2*c*d^2*e^4
+180*A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^
(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)
*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a
*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*e^6+108*A*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2
))*a^2*c*d*e^5+108*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)
^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-
a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^3-288*A*a^2*c*(-(e*x
+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e
)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(
1/2)*e))^(1/2))*d*e^5-432*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x
+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(
-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^3-132*B*(-a*c
)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)
/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*d*e^5-128*B*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c
*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(
1/2))*c^2*d^5*e-180*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c
)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/
2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(
-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*d^2*e^4-96*B*(-(e*x+d)/(-
c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(
1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)
/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e
))^(1/2))*a*c^2*d^4*e^2-8*B*x^4*c^3*d^2*e^4+29*B*x*a^2*c*d*e^5+16*B*x*a*c^2
*d^3*e^3+98*B*x^2*a*c^2*d^2*e^4-144*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1
/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/
(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^3*d^5*e+5*B*x
^5*c^3*d*e^5+9*A*x^4*c^3*d*e^5-112*B*x^4*a*c^2*e^6-180*A*x^3*a*c^2*e^6+324*
A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2)
)/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e
)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(
1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e^4-260*B*(-a*c)^(1/2)*(-(e*x+
d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)
*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e
*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1
/2)*e))^(1/2))*a*c*d^3*e^3-35*B*x^6*c^3*e^6-45*A*x^5*c^3*e^6+312*B*(-(e*x+d
)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*a^2*c*d^2*e^4+356*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*
((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*
d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/
2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^4*e^2+144*A
*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))
/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)
^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1
/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^4*e^2-84*B*a^3*(-(e*x+d)/(-c*d+(-
a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(
(c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/
2))*e^6+84*B*a^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/
2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)
*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)
^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*e^6+128*B*(-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a
*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^
(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^3*
d^6)/e^6/(c*e*x^3+c*d*x^2+a*e*x+a*d)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^{2}+a\right)^{\frac{3}{2}}(Bx+A)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/sqrt(e*x + d), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^{2}+a\right)^{3/2}\,\left(A+B\,x\right)}{\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^{2}\right)^{\frac{3}{2}}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(a + c*x**2)**(3/2)/sqrt(d + e*x), x)
```

3.1477 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=448

$$-\frac{8\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(5aBe^2-28Acde+32Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{35\sqrt{c}e^5\sqrt{a+cx^2}\sqrt{d+ex}}+ 8\sqrt{-a}$$

```
[Out] 2/7*(B*e*x-7*A*e+8*B*d)*(c*x^2+a)^(3/2)/e^2/(e*x+d)^(1/2)+4/35*(5*a*B*e^2+4
*c*d*(-7*A*e+8*B*d)-3*c*e*(-7*A*e+8*B*d)*x)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/e
^4+8/35*(-21*A*a*e^3-28*A*c*d^2*e+29*B*a*d*e^2+32*B*c*d^3)*EllipticE(1/2*(1
-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(
1/2))*(-a)^(1/2)*c^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e^5/(c*x^2+a)^(1/2
)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)-8/35*(a*e^2+c*d^2)*(-28*
A*c*d*e+5*B*a*e^2+32*B*c*d^2)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*
2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^
(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^5/c^(1/2)/(e*x+d)^
(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = $\{813, 815, 844, 719, 424, 419\}$

$$-\frac{8\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(5aBe^2-28Acde+32Bcd^2\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{35\sqrt{c}e^5\sqrt{a+cx^2}\sqrt{d+ex}}+ 8\sqrt{-a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (4*Sqrt[d + e*x]*(5*a*B*e^2 + 4*c*d*(8*B*d - 7*A*e) - 3*c*e*(8*B*d - 7*A*e)
*x)*Sqrt[a + c*x^2])/(35*e^4) + (2*(8*B*d - 7*A*e + B*e*x)*(a + c*x^2)^(3/2
))/(7*e^2*Sqrt[d + e*x]) + (8*Sqrt[-a]*Sqrt[c]*(32*B*c*d^3 - 28*A*c*d^2*e +
 29*a*B*d*e^2 - 21*a*A*e^3)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[Arc
Sin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d -
 a*e)])/(35*e^5*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a +
 c*x^2]) - (8*Sqrt[-a]*(c*d^2 + a*e^2)*(32*B*c*d^2 - 28*A*c*d*e + 5*a*B*e^2
)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*El
lipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*
Sqrt[c]*d - a*e)])/(35*Sqrt[c]*e^5*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 815

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2) - g*c*d*(2*p
 + 1) + g*c*e*(m + 2*p + 1)*x)*(a + c*x^2)^p)/(c*e^2*(m + 2*p + 1)*(m + 2*p
 + 2)), x] + Dist[(2*p)/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), Int[(d + e*x)^
m*(a + c*x^2)^(p - 1)*Simp[f*a*c*e^2*(m + 2*p + 2) + a*c*d*e*g*m - (c^2*f*d
*e*(m + 2*p + 2) - g*(c^2*d^2*(2*p + 1) + a*c*e^2*(m + 2*p + 1)))*x, x], x]
, x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p,
0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[m, -1] && LtQ[m, 0])) &&  !ILt
Q[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{2(8Bd-7Ae+Bex)\left(a+cx^2\right)^{3/2}}{7e^2\sqrt{d+ex}} - \frac{6\int \frac{(-aBe+c(8Bd-7Ae)x)\sqrt{a+cx^2}}{\sqrt{d+ex}}\,dx}{7e^2}$$

$$= \frac{4\sqrt{d+ex}\left(5aBe^2+4cd(8Bd-7Ae)-3ce(8Bd-7Ae)x\right)\sqrt{a+cx^2}}{35e^4} + \frac{2(8Bd-7Ae}{7e}$$

$$= \frac{4\sqrt{d+ex}\left(5aBe^2+4cd(8Bd-7Ae)-3ce(8Bd-7Ae)x\right)\sqrt{a+cx^2}}{35e^4} + \frac{2(8Bd-7Ae}{7e}$$

$$= \frac{4\sqrt{d+ex}\left(5aBe^2+4cd(8Bd-7Ae)-3ce(8Bd-7Ae)x\right)\sqrt{a+cx^2}}{35e^4} + \frac{2(8Bd-7Ae}{7e}$$

$$= \frac{4\sqrt{d+ex}\left(5aBe^2+4cd(8Bd-7Ae)-3ce(8Bd-7Ae)x\right)\sqrt{a+cx^2}}{35e^4} + \frac{2(8Bd-7Ae}{7e}$$

Mathematica [C]   time = 4.87, size = 661, normalized size = 1.48

$$\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)\left(B\left(5ae^2(10d+3ex)+c\left(64d^3+16d^2ex-8de^2x^2+5e^3x^3\right)\right)-7Ae\left(5ae^2+c\left(8d^2+2dex-e^2x^2\right)\right)\right)}{e^4(d+ex)} + \frac{8\left(\sqrt{a}\,e(d+ex)^{3/2}\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\sqrt{\frac{e\left(x+\frac{i}{}\right.}{d+e}}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*((2*(a + c*x^2)*(-7*A*e*(5*a*e^2 + c*(8*d^2 + 2*d*e*x - e^2*
x^2)) + B*(5*a*e^2*(10*d + 3*e*x) + c*(64*d^3 + 16*d^2*e*x - 8*d*e^2*x^2 +
5*e^3*x^3))))/(e^4*(d + e*x)) + (8*(e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(-
32*B*c*d^3 + 28*A*c*d^2*e - 29*a*B*d*e^2 + 21*a*A*e^3)*(a + c*x^2) + Sqrt[c
]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(-32*B*c*d^3 + 28*A*c*d^2*e - 29*a*B*d*e^2 +
 21*a*A*e^3)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[
a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-
d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[
c]*d + I*Sqrt[a]*e)] + Sqrt[a]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(32*B*c*d^2 - (2
4*I)*Sqrt[a]*B*Sqrt[c]*d*e - 28*A*c*d*e + 5*a*B*e^2 + (21*I)*Sqrt[a]*A*Sqrt
[c]*e^2)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e
)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticF[I*ArcSinh[Sqrt[-d -
(I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d
 + I*Sqrt[a]*e)]))/(e^6*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(d + e*x))))/(35*S
qrt[a + c*x^2])
```

fricas [F] time = 1.20, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3 + Acx^2 + Bax + Aa\right)\sqrt{cx^2 + a}\,\sqrt{ex + d}}{e^2x^2 + 2\,dex + d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x + d)/(e
^2*x^2 + 2*d*e*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + a\right)^{\frac{3}{2}}(Bx + A)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(3/2), x)
```

maple [B] time = 0.10, size = 2561, normalized size = 5.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/35*(c*x^2+a)^(1/2)*(e*x+d)^(1/2)*(16*B*c^3*d^2*e^3*x^3-8*B*c^3*d*e^4*x^4-
14*A*c^3*d*e^4*x^3+16*B*a*c^2*d^2*e^3*x+42*B*a*c^2*d*e^4*x^2-14*A*a*c^2*d*e
^4*x-28*A*a*c^2*e^5*x^2+5*B*c^3*e^5*x^5+7*A*c^3*e^5*x^4-56*A*c^3*d^2*e^3*x^
2-112*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)
/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^3*d^4*e+64*B*c^3*d^3*e^2*x^2+15*B*a^2*c*e^5
*x+20*B*a*c^2*e^5*x^3-20*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+
(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-
c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*a^2*e^5+128*B
*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^
(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Ellipt
icE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(
-a*c)^(1/2)*e))^(1/2))*c^3*d^5-84*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2
)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-
c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*e^5+84*A*(-
(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/
2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF
((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*
c)^(1/2)*e))^(1/2))*a^2*c*e^5-56*A*a*c^2*d^2*e^3+50*B*a^2*c*d*e^4+64*B*a*c^
2*d^3*e^2-128*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2
))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^
(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*c^2*d^4*e-196*A*(-(e*x+d
)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*a*c^2*d^2*e^3-96*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*(
(-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d
+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2
),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*c*d*e^4+84*A*(-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF(
(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c
)^(1/2)*e))^(1/2))*a*c^2*d^2*e^3+112*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c
)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*c
^2*d^3*e^2+244*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/
2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)
*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)
^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^2+116*B*(-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c
*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(
1/2))*a^2*c*d*e^4-96*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*
c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1
/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+
(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c^2*d^3*e^2-35*A*a^2*c*e^5+1
12*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a
*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*El
lipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c
*d+(-a*c)^(1/2)*e))^(1/2))*(-a*c)^(1/2)*a*c*d*e^4-148*B*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2
))*(-a*c)^(1/2)*a*c*d^2*e^3)/c/e^6/(c*e*x^3+c*d*x^2+a*e*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2+a\right)^{3/2}\,\left(A+B\,x\right)}{\left(d+e\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x+d)**(3/2),x)
[Out] Integral((A + B*x)*(a + c*x**2)**(3/2)/(d + e*x)**(3/2), x)
```

3.1478 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=437

$$\frac{8\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(-5aAe^3+17aBde^2-20Acd^2e+32Bcd^3\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{15e^5\sqrt{a+cx^2}\sqrt{d+ex}}+\frac{2}{}$$

```
[Out] 2/15*(3*B*e*x-5*A*e+8*B*d)*(c*x^2+a)^(3/2)/e^2/(e*x+d)^(3/2)-4/15*(9*a*B*e^
2+4*c*d*(-5*A*e+8*B*d)+c*e*(-5*A*e+8*B*d)*x)*(c*x^2+a)^(1/2)/e^4/(e*x+d)^(1
/2)-8/15*(9*a*B*e^2+4*c*d*(-5*A*e+8*B*d))*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(
1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*
c^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e^5/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2
)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+8/15*(-5*A*a*e^3-20*A*c*d^2*e+17*B*a*d*e^
2+32*B*c*d^3)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/
(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*c^(1/2)*(c*x^2/a+1)^(1/2)*((
e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^5/(e*x+d)^(1/2)/(c*x^2+a)^
(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 437, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {813, 844, 719, 424, 419}

$$\frac{8\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}\left(-5aAe^3+17aBde^2-20Acd^2e+32Bcd^3\right)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{15e^5\sqrt{a+cx^2}\sqrt{d+ex}}+\frac{2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-4*(9*a*B*e^2 + 4*c*d*(8*B*d - 5*A*e) + c*e*(8*B*d - 5*A*e)*x)*Sqrt[a + c*
x^2])/(15*e^4*Sqrt[d + e*x]) + (2*(8*B*d - 5*A*e + 3*B*e*x)*(a + c*x^2)^(3/
2))/(15*e^2*(d + e*x)^(3/2)) - (8*Sqrt[-a]*Sqrt[c]*(9*a*B*e^2 + 4*c*d*(8*B*
d - 5*A*e))*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sq
rt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(15*e^5*
Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (8*Sq
rt[-a]*Sqrt[c]*(32*B*c*d^3 - 20*A*c*d^2*e + 17*a*B*d*e^2 - 5*a*A*e^3)*Sqrt[
(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF
[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]
*d - a*e)])/(15*e^5*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = \frac{2(8Bd-5Ae+3Bex)\left(a+cx^2\right)^{3/2}}{15e^2(d+ex)^{3/2}} - \frac{2\int \frac{(-3aBe+c(8Bd-5Ae)x)\sqrt{a+cx^2}}{(d+ex)^{3/2}}\,dx}{5e^2}$$

$$= -\frac{4\left(9aBe^2+4cd(8Bd-5Ae)+ce(8Bd-5Ae)x\right)\sqrt{a+cx^2}}{15e^4\sqrt{d+ex}} + \frac{2(8Bd-5Ae+3B}{15e^2(d+}$$

$$= -\frac{4\left(9aBe^2+4cd(8Bd-5Ae)+ce(8Bd-5Ae)x\right)\sqrt{a+cx^2}}{15e^4\sqrt{d+ex}} + \frac{2(8Bd-5Ae+3B}{15e^2(d+}$$

$$= -\frac{4\left(9aBe^2+4cd(8Bd-5Ae)+ce(8Bd-5Ae)x\right)\sqrt{a+cx^2}}{15e^4\sqrt{d+ex}} + \frac{2(8Bd-5Ae+3B}{15e^2(d+}$$

$$= -\frac{4\left(9aBe^2+4cd(8Bd-5Ae)+ce(8Bd-5Ae)x\right)\sqrt{a+cx^2}}{15e^4\sqrt{d+ex}} + \frac{2(8Bd-5Ae+3B}{15e^2(d+}$$

Mathematica [C] time = 4.54, size = 628, normalized size = 1.44

$$\sqrt{d+ex}\left(-\frac{2\left(a+cx^2\right)\left(5aAe^3+5aBe^2(2d+3ex)-5Ace\left(8d^2+10dex+e^2x^2\right)+Bc\left(64d^3+80d^2ex+8de^2x^2-3e^3x^3\right)\right)}{e^4(d+ex)^2}-\frac{8\left(e^2\left(a+cx^2\right)\left(-\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\right)\left(9aBe^2-\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (Sqrt[d + e*x]*((-2*(a + c*x^2)*(5*a*A*e^3 + 5*a*B*e^2*(2*d + 3*e*x) - 5*A*
c*e*(8*d^2 + 10*d*e*x + e^2*x^2) + B*c*(64*d^3 + 80*d^2*e*x + 8*d*e^2*x^2 -
 3*e^3*x^3)))/(e^4*(d + e*x)^2) - (8*(-(e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]
]*(32*B*c*d^2 - 20*A*c*d*e + 9*a*B*e^2)*(a + c*x^2)) + Sqrt[c]*((-I)*Sqrt[c
]*d + Sqrt[a]*e)*(-32*B*c*d^2 + 20*A*c*d*e - 9*a*B*e^2)*Sqrt[(e*((I*Sqrt[a]
)/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]
*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[
d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)] + Sqrt[a]*S
qrt[c]*e*(B*(32*c*d^2 + (8*I)*Sqrt[a]*Sqrt[c]*d*e + 9*a*e^2) - 5*A*(4*c*d*e
 + I*Sqrt[a]*Sqrt[c]*e^2))*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sq
rt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticF[I*
ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqr
t[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(e^6*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*
(d + e*x))))/(15*Sqrt[a + c*x^2])
```

fricas [F] time = 1.12, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bcx^3+Acx^2+Bax+Aa\right)\sqrt{cx^2+a}\,\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x + d)/(e
^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(5/2), x)
```

maple [B] time = 0.12, size = 3868, normalized size = 8.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] 2/15*(5*A*c^2*e^5*x^4+80*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/
2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c^2*d^3*e^2*(-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*
e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-20*A*Ellipti
cF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-
a*c)^(1/2)*e))^(1/2))*x*a*e^5*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*
c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1
/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-64*B*d^3*a*c*e^2+40*A*d^2*a*c*e^3-80*B*
a*c*d^2*e^3*x+50*A*a*c*d*e^4*x-18*B*a*c*d*e^4*x^2+40*A*c^2*d^2*e^3*x^2-64*B
*c^2*d^3*e^2*x^2-8*B*c^2*d*e^4*x^4+50*A*c^2*d*e^4*x^3-12*B*a*c*e^5*x^3-80*B
*c^2*d^2*e^3*x^3-5*A*a^2*e^5-10*B*a^2*d*e^4-36*B*EllipticE((-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2
))*x*a^2*e^5*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/
(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^
(1/2)-60*A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c
)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*c*d*e^4*(-(e*x+d)/(-c*d+(-a*c)^
(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+
(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+96*B*EllipticF((-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/
2))*a*c*d^3*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2
))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*
e)^(1/2)+68*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-
a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*d^2*e^3*(-a*c)^(1/2)*(-(e*x+d)
/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e
)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+128*B*EllipticF(
(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c
)^(1/2)*e))^(1/2))*c*d^4*e*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^
(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2)
)/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-164*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^3
*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a
*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+36
*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*
e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*d*e^4*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c
)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/
2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+80*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^
4*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-36*
B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e
)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*d*e^4*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+36*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a^2*e
^5*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-15*B
*x*a^2*e^5-128*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d
+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c^2*d^4*e*(-(e*x+d)/(-c*d+(
-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*
((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+80*A*EllipticE((-(e*x+d)
/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e
))^(1/2))*a*c*d^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c
)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/
2)*e)*e)^(1/2)-80*A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-
c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^3*e^2*(-a*c)^(1/2)*(-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-20*A*Ellip
ticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+
(-a*c)^(1/2)*e))^(1/2))*a*d*e^4*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e
)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^
(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+3*B*x^5*c^2*e^5-60*A*EllipticF((-(e*x
+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2
)*e))^(1/2))*a*c*d^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-
a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^
(1/2)*e)*e)^(1/2)+80*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(
-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*c*d*e^4*(-(e*x+d)/(
-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^
(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-80*A*EllipticF((-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(
1/2)*e))^(1/2))*x*c*d^2*e^3*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+128*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*c*d^
3*e^2*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(
1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*
e)*e)^(1/2)-164*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*
d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*c*d^2*e^3*(-(e*x+d)/(-c*
d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/
2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-128*B*EllipticE((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*c^2*d^5*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c
)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/
2)*e)*e)^(1/2)+68*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-
c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*x*a*d*e^4*(-a*c)^(1/2)*(-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2
)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+96*B*Ellip
ticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+
(-a*c)^(1/2)*e))^(1/2))*x*a*c*d^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1
/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/
(-c*d+(-a*c)^(1/2)*e)*e)^(1/2))/(c*x^2+a)^(1/2)/e^6/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+a\right)^{\frac{3}{2}}(Bx+A)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{{\left(c\,x^2+a\right)}^{3/2}\,\left(A+B\,x\right)}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(a + c*x**2)**(3/2)/(d + e*x)**(5/2), x)
```

3.1479 $\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=541

$$\frac{8\sqrt{-a}\,c^{3/2}\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,\left(-9aAe^3+29aBde^2-12Acd^2e+32Bcd^3\right)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{15e^5\sqrt{a+cx^2}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}-8\sqrt{-a}$$

```
[Out] -2/15*(2*B*(a*d*e^2+4*c*d^3)-3*A*(-a*e^3+c*d^2*e)+e*(-6*A*c*d*e+5*B*a*e^2+1
1*B*c*d^2)*x)*(c*x^2+a)^(3/2)/e^2/(a*e^2+c*d^2)/(e*x+d)^(5/2)+4/15*c*(32*B*
c*d^3-12*A*c*d^2*e+29*a*B*d*e^2-9*a*A*e^3+e*(-3*A*c*d*e+5*B*a*e^2+8*B*c*d^2
)*x)*(c*x^2+a)^(1/2)/e^4/(a*e^2+c*d^2)/(e*x+d)^(1/2)+8/15*c^(3/2)*(-9*A*a*e
^3-12*A*c*d^2*e+29*B*a*d*e^2+32*B*c*d^3)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1
/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(
e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e^5/(a*e^2+c*d^2)/(c*x^2+a)^(1/2)/((e*x+d)*c
^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)-8/15*(-12*A*c*d*e+5*B*a*e^2+32*B*c*d
^2)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-
a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*c^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(
1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e^5/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.47, antiderivative size = 541, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = $\{811, 813, 844, 719, 424, 419\}$

$$\frac{8\sqrt{-a}\,c^{3/2}\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,\left(-9aAe^3+29aBde^2-12Acd^2e+32Bcd^3\right)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{15e^5\sqrt{a+cx^2}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}+4c\sqrt{a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (4*c*(32*B*c*d^3 - 12*A*c*d^2*e + 29*a*B*d*e^2 - 9*a*A*e^3 + e*(8*B*c*d^2 -
 3*A*c*d*e + 5*a*B*e^2)*x)*Sqrt[a + c*x^2])/(15*e^4*(c*d^2 + a*e^2)*Sqrt[d
+ e*x]) - (2*(2*B*(4*c*d^3 + a*d*e^2) - 3*A*(c*d^2*e - a*e^3) + e*(11*B*c*d
^2 - 6*A*c*d*e + 5*a*B*e^2)*x)*(a + c*x^2)^(3/2))/(15*e^2*(c*d^2 + a*e^2)*(
d + e*x)^(5/2)) + (8*Sqrt[-a]*c^(3/2)*(32*B*c*d^3 - 12*A*c*d^2*e + 29*a*B*d
*e^2 - 9*a*A*e^3)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1
 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(1
5*e^5*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sq
rt[a + c*x^2]) - (8*Sqrt[-a]*Sqrt[c]*(32*B*c*d^2 - 12*A*c*d*e + 5*a*B*e^2)*
Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*Elli
pticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sq
rt[c]*d - a*e)])/(15*e^5*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 811

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + c*x^2)^p*((d*g - e*f*(m + 2
))*(c*d^2 + a*e^2) - 2*c*d^2*p*(e*f - d*g) - e*(g*(m + 1)*(c*d^2 + a*e^2) +
 2*c*d*p*(e*f - d*g))*x))/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), x] - Dist[
p/(e^2*(m + 1)*(m + 2)*(c*d^2 + a*e^2)), Int[(d + e*x)^(m + 2)*(a + c*x^2)^
(p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) - c*(2*c*d*(d*g*(2*p + 1) - e*f*(m
 + 2*p + 2)) - 2*a*e^2*g*(m + 1))*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}
, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[p, 0] && LtQ[m, -2] && LtQ[m + 2*p, 0]
 &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 813

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2) - d*g*(2*p + 1
) + e*g*(m + 1)*x)*(a + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p + 2)), x] + Dist[p/
(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a + c*x^2)^(p - 1)*Simp
[g*(2*a*e + 2*a*e*m) + (g*(2*c*d + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x, x],
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && NeQ[c*d^2 + a*e^2, 0] && Rati
onalQ[p] && p > 0 && (LtQ[m, -1] || EqQ[p, 1] || (IntegerQ[p] &&  !Rational
Q[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p + 1, 0] && (IntegerQ[m] || IntegerQ[
p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = -\frac{2\left(2B\left(4cd^3+ade^2\right)-3A\left(cd^2e-ae^3\right)+e\left(11Bcd^2-6Acde+5aBe^2\right)x\right)\left(a+cx^2\right)}{15e^2\left(cd^2+ae^2\right)(d+ex)^{5/2}}$$

$$= \frac{4c\left(32Bcd^3-12Acd^2e+29aBde^2-9aAe^3+e\left(8Bcd^2-3Acde+5aBe^2\right)x\right)\sqrt{a+c}}{15e^4\left(cd^2+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{4c\left(32Bcd^3-12Acd^2e+29aBde^2-9aAe^3+e\left(8Bcd^2-3Acde+5aBe^2\right)x\right)\sqrt{a+c}}{15e^4\left(cd^2+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{4c\left(32Bcd^3-12Acd^2e+29aBde^2-9aAe^3+e\left(8Bcd^2-3Acde+5aBe^2\right)x\right)\sqrt{a+c}}{15e^4\left(cd^2+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{4c\left(32Bcd^3-12Acd^2e+29aBde^2-9aAe^3+e\left(8Bcd^2-3Acde+5aBe^2\right)x\right)\sqrt{a+c}}{15e^4\left(cd^2+ae^2\right)\sqrt{d+ex}}$$

Mathematica [C] time = 5.41, size = 705, normalized size = 1.30

$$\frac{\sqrt{d+ex}\left(\frac{2\left(a+cx^2\right)\left(\frac{-5aBe^2+12Acde-17Bcd^2}{(d+ex)^2}+\frac{3\left(ae^2+cd^2\right)(Bd-Ae)}{(d+ex)^3}+\frac{c\left(-21aAe^3+61aBde^2-33Acd^2e+73Bcd^3\right)}{(d+ex)\left(ae^2+cd^2\right)}+5Bc\right)}{e^4}-\frac{8c\left(-\sqrt{a}\,e(d+ex)^{3/2}\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\sqrt{\frac{e\left(x+\right.}{d}}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (Sqrt[d + e*x]*((2*(a + c*x^2)*(5*B*c + (3*(B*d - A*e)*(c*d^2 + a*e^2))/(d
+ e*x)^3 + (-17*B*c*d^2 + 12*A*c*d*e - 5*a*B*e^2)/(d + e*x)^2 + (c*(73*B*c*
d^3 - 33*A*c*d^2*e + 61*a*B*d*e^2 - 21*a*A*e^3))/((c*d^2 + a*e^2)*(d + e*x)
)))/e^4 - (8*c*(e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(32*B*c*d^3 - 12*A*c*d
^2*e + 29*a*B*d*e^2 - 9*a*A*e^3)*(a + c*x^2) + I*Sqrt[c]*(Sqrt[c]*d + I*Sqr
t[a]*e)*(-32*B*c*d^3 + 12*A*c*d^2*e - 29*a*B*d*e^2 + 9*a*A*e^3)*Sqrt[(e*((I
*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d
+ e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c
]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)] - S
qrt[a]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(32*B*c*d^2 - (24*I)*Sqrt[a]*B*Sqrt[c]*d
*e - 12*A*c*d*e + 5*a*B*e^2 + (9*I)*Sqrt[a]*A*Sqrt[c]*e^2)*Sqrt[(e*((I*Sqrt
[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x
))]*(d + e*x)^(3/2)*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sq
rt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(e^6*S
qrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(c*d^2 + a*e^2)*(d + e*x))))/(15*Sqrt[a + c
*x^2])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bcx^3 + Acx^2 + Bax + Aa\right)\sqrt{cx^2 + a}\,\sqrt{ex + d}}{e^4x^4 + 4\,de^3x^3 + 6\,d^2e^2x^2 + 4\,d^3ex + d^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] integral((B*c*x^3 + A*c*x^2 + B*a*x + A*a)*sqrt(c*x^2 + a)*sqrt(e*x + d)/(e
^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + a\right)^{\frac{3}{2}}(Bx + A)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(7/2), x)
```

maple [B] time = 0.13, size = 7383, normalized size = 13.65

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + a\right)^{\frac{3}{2}}(Bx + A)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] integrate((c*x^2 + a)^(3/2)*(B*x + A)/(e*x + d)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(c\,x^2 + a\right)^{3/2}\,\left(A + B\,x\right)}{\left(d + e\,x\right)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] int(((a + c*x^2)^(3/2)*(A + B*x))/(d + e*x)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left(a + cx^2\right)^{\frac{3}{2}}}{(d + ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+a)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral((A + B*x)*(a + c*x**2)**(3/2)/(d + e*x)**(7/2), x)
```

3.1480 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=388

$$\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)(5Ae+3Bd)\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{15c^{3/2}e\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+}}{}$$

```
[Out] 2/5*B*(e*x+d)^(3/2)*(c*x^2+a)^(1/2)/c+2/15*(5*A*e+3*B*d)*(e*x+d)^(1/2)*(c*x
^2+a)^(1/2)/c-2/15*(20*A*c*d*e-9*B*a*e^2+3*B*c*d^2)*EllipticE(1/2*(1-x*c^(1
/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(
-a)^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/c^(3/2)/e/(c*x^2+a)^(1/2)/((e*x+d
)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+2/15*(5*A*e+3*B*d)*(a*e^2+c*d^2)*
EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(
1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)
^(1/2)+d*c^(1/2)))^(1/2)/c^(3/2)/e/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {833, 844, 719, 424, 419}

$$\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\left(ae^2+cd^2\right)(5Ae+3Bd)\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{15c^{3/2}e\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a + c*x^2],x]
```

```
[Out] (2*(3*B*d + 5*A*e)*Sqrt[d + e*x]*Sqrt[a + c*x^2])/(15*c) + (2*B*(d + e*x)^(
3/2)*Sqrt[a + c*x^2])/(5*c) - (2*Sqrt[-a]*(3*B*c*d^2 + 20*A*c*d*e - 9*a*B*e
^2)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)
/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(15*c^(3/2)*e*Sq
rt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (2*Sqrt
[-a]*(3*B*d + 5*A*e)*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d +
Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt
[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(15*c^(3/2)*e*Sqrt[d
+ e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+cx^2}}\,dx = \frac{2B(d+ex)^{3/2}\sqrt{a+cx^2}}{5c} + \frac{2\int \frac{\sqrt{d+ex}\left(\frac{1}{2}(5Acd-3aBe)+\frac{1}{2}c(3Bd+5Ae)x\right)}{\sqrt{a+cx^2}}\,dx}{5c}$$

$$= \frac{2(3Bd+5Ae)\sqrt{d+ex}\,\sqrt{a+cx^2}}{15c} + \frac{2B(d+ex)^{3/2}\sqrt{a+cx^2}}{5c} +$$

$$= \frac{2(3Bd+5Ae)\sqrt{d+ex}\,\sqrt{a+cx^2}}{15c} + \frac{2B(d+ex)^{3/2}\sqrt{a+cx^2}}{5c} -$$

$$= \frac{2(3Bd+5Ae)\sqrt{d+ex}\,\sqrt{a+cx^2}}{15c} + \frac{2B(d+ex)^{3/2}\sqrt{a+cx^2}}{5c} +$$

$$= \frac{2(3Bd+5Ae)\sqrt{d+ex}\,\sqrt{a+cx^2}}{15c} + \frac{2B(d+ex)^{3/2}\sqrt{a+cx^2}}{5c} -$$

Mathematica [C] time = 4.27, size = 550, normalized size = 1.42

$$\sqrt{d+ex}\,\Bigg(\frac{2(a+cx^2)(5Ae+6Bd+3Bex)}{c}+\frac{2\Big(e^2(a+cx^2)\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(-9aBe^2+20Acde+3Bcd^2)+\sqrt{c}\,(d+ex)^{3/2}(\sqrt{a}\,e-i\sqrt{c}\,d)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+}{d+e}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a + c*x^2],x]
```

```
[Out] (Sqrt[d + e*x]*((2*(6*B*d + 5*A*e + 3*B*e*x)*(a + c*x^2))/c + (2*(e^2*Sqrt[
-d - (I*Sqrt[a]*e)/Sqrt[c]]*(3*B*c*d^2 + 20*A*c*d*e - 9*a*B*e^2)*(a + c*x^2
) + Sqrt[c]*((-I)*Sqrt[c]*d + Sqrt[a]*e)*(3*B*c*d^2 + 20*A*c*d*e - 9*a*B*e^
2)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt
[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqr
t[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*S
qrt[a]*e)] + I*Sqrt[c]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*(15*A*c*d - 9*a*B*e + I*
Sqrt[a]*Sqrt[c]*(3*B*d + 5*A*e))*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*
x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*Ellipt
icF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d -
 I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(c^2*e^2*Sqrt[-d - (I*Sqrt[a]*e)
/Sqrt[c]]*(d + e*x))))/(15*Sqrt[a + c*x^2])
```

fricas [F] time = 1.12, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^2+Ad+(Bd+Ae)x\right)\sqrt{ex+d}}{\sqrt{cx^2+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(e*x + d)/sqrt(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + a), x)
```

maple [B] time = 0.16, size = 2127, normalized size = 5.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] 2/15*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/c^2*(5*A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-
a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(
(c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/
2))*a*e^4+5*A*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+
(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-
c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^2*e^2+15*A*((c*x+(-a*c
)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-(e*x
+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e
)*e)^(1/2)*a*c*d*e^3+15*A*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e
)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-
c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*c^2*d^3*e-20*A*a*c*(-(e*x+d
)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*
e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/
2)*e))^(1/2))*d*e^3-20*A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-
a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^
(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*
d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^3*e+3*B*(-a*c)^(1/2)*(
-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1
/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Elliptic
F((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a
*c)^(1/2)*e))^(1/2))*a*d*e^3+3*B*(-a*c)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*
e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)
^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^3*e
-9*B*a^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d
+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e
)/(c*d+(-a*c)^(1/2)*e))^(1/2))*e^4-9*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c
)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e^2+9*
B*a^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-
a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*E
llipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(
c*d+(-a*c)^(1/2)*e))^(1/2))*e^4+6*B*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2
)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-
c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e^2-3*B*(
-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1
/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*Elliptic
E((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a
*c)^(1/2)*e))^(1/2))*c^2*d^4+3*B*c^2*e^4*x^4+5*A*c^2*e^4*x^3+9*B*c^2*d*e^3*
x^3+5*A*c^2*d*e^3*x^2+3*B*a*c*e^4*x^2+6*B*c^2*d^2*e^2*x^2+5*A*a*c*e^4*x+9*B
*a*c*d*e^3*x+5*A*a*c*d*e^3+6*B*a*c*d^2*e^2)/e^2/(c*e*x^3+c*d*x^2+a*e*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\sqrt{cx^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{3/2}}{\sqrt{c\,x^2+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{a+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**(3/2)/sqrt(a + c*x**2), x)
```

3.1481 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=331

$$-\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\,(3Ae+Bd)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{3\sqrt{c}\,e\sqrt{a+cx^2}\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}+\frac{2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+1}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+e}{\sqrt{-a}\,e+\sqrt{}}}}{3c^{3/2}e\sqrt{a+c}}$$

```
[Out] 2/3*B*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/c-2/3*(3*A*e+B*d)*EllipticE(1/2*(1-x*c^
(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))
*(-a)^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e/c^(1/2)/(c*x^2+a)^(1/2)/((e*x
+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+2/3*B*(a*e^2+c*d^2)*EllipticF(1
/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2
)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^
(1/2)))^(1/2)/c^(3/2)/e/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 331, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {833, 844, 719, 424, 419}

$$-\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}\,(3Ae+Bd)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{3\sqrt{c}\,e\sqrt{a+cx^2}\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}+\frac{2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+1}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+e}{\sqrt{-a}\,e+\sqrt{}}}}{3c^{3/2}e\sqrt{a+c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/Sqrt[a + c*x^2],x]
```

```
[Out] (2*B*Sqrt[d + e*x]*Sqrt[a + c*x^2])/(3*c) - (2*Sqrt[-a]*(B*d + 3*A*e)*Sqrt[
d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]
]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(3*Sqrt[c]*e*Sqrt[(Sqrt[c
]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (2*Sqrt[-a]*B*(c*
d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c
*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)
/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(3*c^(3/2)*e*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 833

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + c*x^2)^(p + 1))/(c*(m + 2*p + 2)
), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^p*Simp[
c*d*f*(m + 2*p + 2) - a*e*g*m + c*(e*f*(m + 2*p + 2) + d*g*m)*x, x], x], x]
 /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 + a*e^2, 0] && GtQ[m, 0] &
& NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p]
) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx = \frac{2B\sqrt{d+ex}\,\sqrt{a+cx^2}}{3c} + \frac{2\int \frac{\frac{1}{2}(3Acd-aBe)+\frac{1}{2}c(Bd+3Ae)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{3c}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+cx^2}}{3c} + \frac{(Bd+3Ae)\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{3e} - \frac{\left(B\left(cd^2+ae^2\right)\right)\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,d}{3ce}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+cx^2}}{3c} + \frac{\left(2a(Bd+3Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\mathrm{Subst}\left(\int \frac{\sqrt{1+\frac{2a\sqrt{c}\,ex^2}{\sqrt{-a}\left(cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}\right.}}}{\sqrt{1-x^2}}\right.}{3\sqrt{-a}\,\sqrt{c}\,e\sqrt{\frac{c(d+ex)}{cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}}}\,\sqrt{a+cx^2}}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+cx^2}}{3c} - \frac{2\sqrt{-a}\,(Bd+3Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)\middle|-\right.}{3\sqrt{c}\,e\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+cx^2}}$$

Mathematica [C] time = 3.27, size = 464, normalized size = 1.40

$$\frac{2\sqrt{d+ex}\left(\frac{ic\sqrt{d+ex}\,\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(3Ae+Bd)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+\frac{i\sqrt{a}\,e}{\sqrt{c}}}{d+ex}}\,E\left(i\sinh^{-1}\left(\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+ex}}\right)\middle|\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right)}{e^2} + \frac{\left(a+cx^2\right)(3Ae+Bd)}{d+ex} + \frac{i\sqrt{d+ex}\,(3}{}\right.}{3c\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/Sqrt[a + c*x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(B*(a + c*x^2) + ((B*d + 3*A*e)*(a + c*x^2))/(d + e*x) + (
I*c*(B*d + 3*A*e)*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*Sqrt[(e*((I*Sqrt[a])/Sqr
t[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*Sqrt
[d + e*x]*EllipticE[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x
]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)])/e^2 + (I*(I*Sqrt[
a]*B + 3*A*Sqrt[c])*(Sqrt[c]*d + I*Sqrt[a]*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c]
+ x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*Sqrt[d +
e*x]*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (
Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)])/(e*Sqrt[-d - (I*Sqrt[a
]*e)/Sqrt[c]])))/(3*c*Sqrt[a + c*x^2])
```

fricas **[F]** time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx + A)\sqrt{ex + d}}{\sqrt{cx^2 + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + a), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex + d}}{\sqrt{cx^2 + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + a), x)
```

maple **[B]** time = 0.16, size = 1286, normalized size = 3.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] 2/3*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)*(3*A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^3
*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^
(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+3*A*(-
(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/
2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*EllipticF
((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*
c)^(1/2)*e))^(1/2))*c^2*d^2*e-3*A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)
*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^3*(-(e
*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)
*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-3*A*Ellipti
cE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-
a*c)^(1/2)*e))^(1/2))*c^2*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((
-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+
(-a*c)^(1/2)*e)*e)^(1/2)+B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/
2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^3*(-(e*x+d)/(-c
*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1
/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)+B*Ellip
ticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+
(-a*c)^(1/2)*e))^(1/2))*c*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((
-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)-B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d*
e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-B*E
llipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(
c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2
)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-
c*d+(-a*c)^(1/2)*e)*e)^(1/2)+B*c^2*e^3*x^3+B*c^2*d*e^2*x^2+B*a*c*e^3*x+B*a*
c*d*e^2)/(c*e*x^3+c*d*x^2+a*e*x+a*d)/c^2/e^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex + d}}{\sqrt{cx^2 + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + a), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{d + e\,x}}{\sqrt{c\,x^2 + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a + c*x^2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,\sqrt{d + ex}}{\sqrt{a + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/sqrt(a + c*x**2), x)
```

3.1482 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=288

$$\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\,(Bd-Ae)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\,F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)\middle|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{c}\,e\sqrt{a+cx^2}\,\sqrt{d+ex}}-\frac{2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\sqrt{1}\right.\right.}{\sqrt{c}\,e\sqrt{a+cx^2}\,\sqrt{\frac{\sqrt{c}\,(d}{\sqrt{-a}\,e}}}$$

```
[Out] -2*B*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(
-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e/c^(
1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+2*(-A
*e+B*d)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+
d*(-a)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)
/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/e/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {844, 719, 424, 419}

$$\frac{2\sqrt{-a}\sqrt{\frac{cx^2}{a}+1}\,(Bd-Ae)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}\,F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)\middle|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{c}\,e\sqrt{a+cx^2}\,\sqrt{d+ex}}-\frac{2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,E\left(\sin^{-1}\left(\sqrt{1}\right.\right.}{\sqrt{c}\,e\sqrt{a+cx^2}\,\sqrt{\frac{\sqrt{c}\,(d}{\sqrt{-a}\,e}}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*Sqrt[-a]*B*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 -
(Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt
[c]*e*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) +
 (2*Sqrt[-a]*(B*d - A*e)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]
*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2
]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt[c]*e*Sqrt[d + e*x]*Sqrt[a +
 c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
```

```
[m^2, 1/4]
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\sqrt{a+cx^2}}\,dx = \frac{B\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{e} + \frac{(-Bd+Ae)\int \frac{1}{\sqrt{d+ex}\sqrt{a+cx^2}}\,dx}{e}$$

$$= \frac{\left(2aB\sqrt{d+ex}\sqrt{1+\frac{cx^2}{a}}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2a\sqrt{c}ex^2}{\sqrt{-a}\left(cd-\frac{a\sqrt{c}e}{\sqrt{-a}}\right)}}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)}{\sqrt{-a}\sqrt{c}e\sqrt{\frac{c(d+ex)}{cd-\frac{a\sqrt{c}e}{\sqrt{-a}}}}\sqrt{a+cx^2}} + \frac{\left(2a(-Bd+A\right.}{}$$

$$= -\frac{2\sqrt{-a}B\sqrt{d+ex}\sqrt{1+\frac{cx^2}{a}}E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{\sqrt{c}e\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{c}d+\sqrt{-a}e}}\sqrt{a+cx^2}} + \frac{2\sqrt{-a}(Bd-Ae)\sqrt{}}{}$$

Mathematica [C] time = 1.59, size = 439, normalized size = 1.52

$$-\frac{2\left(\sqrt{c}e(d+ex)^{3/2}\left(\sqrt{a}B-iA\sqrt{c}\right)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\sqrt{-\frac{-ex+\frac{i\sqrt{a}e}{\sqrt{c}}}{d+ex}}F\left(i\sinh^{-1}\left(\frac{\sqrt{-d-\frac{i\sqrt{a}e}{\sqrt{c}}}}{\sqrt{d+ex}}\right)|\frac{\sqrt{c}d-i\sqrt{a}e}{\sqrt{c}d+i\sqrt{a}e}\right)-Be^2\left(a+cx^2\right)\right.}{ce^2\sqrt{a+cx^2}\sqrt{d+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a + c*x^2]),x]
```

```
[Out] (-2*(-(B*e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(a + c*x^2)) + I*B*Sqrt[c]*(S
qrt[c]*d + I*Sqrt[a]*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[
-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticE[I*Arc
Sinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a
]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)] + (Sqrt[a]*B - I*A*Sqrt[c])*Sqrt[c]*e*Sqrt[
(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*
x)/(d + e*x))]*(d + e*x)^(3/2)*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/
Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e
)]))/(c*e^2*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

fricas [F] time = 1.07, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}(Bx+A)\sqrt{ex+d}}{cex^3+cdx^2+aex+ad}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(c*e*x^3 + c*d*x^2 + a*e*x
 + a*d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*sqrt(e*x + d)), x)
```

maple [B] time = 0.15, size = 520, normalized size = 1.81

$$2\left(Acde\,\mathrm{EllipticF}\left(\sqrt{-\frac{(ex+d)c}{-cd+\sqrt{-ac}\,e}},\sqrt{-\frac{-cd+\sqrt{-ac}\,e}{cd+\sqrt{-ac}\,e}}\right)-Ba\,e^2\,\mathrm{EllipticE}\left(\sqrt{-\frac{(ex+d)c}{-cd+\sqrt{-ac}\,e}},\sqrt{-\frac{-cd+\sqrt{-ac}\,e}{cd+\sqrt{-ac}\,e}}\right)+Ba\,e^2\,\mathrm{Ellip}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] 2*(A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2
)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d*e-A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^
(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*(-a*
c)^(1/2)*e^2+B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(
-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^2+B*EllipticF((-(e*x+d)/(-c
*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(
1/2))*(-a*c)^(1/2)*d*e-B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)
,(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^2-B*EllipticE((-(
e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(
1/2)*e))^(1/2))*c*d^2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(
(-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/c/e^2/(c*e*x^3+c*d*x^2+a*e*x+
a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{c\,x^2+a}\,\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((a + c*x^2)^(1/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{a + cx^2}\,\sqrt{d + ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(a + c*x**2)*sqrt(d + e*x)), x)
```

3.1483 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+cx^2}}\,dx$

Optimal. Leaf size=344

$$\frac{2\sqrt{a+cx^2}\,(Bd-Ae)}{\sqrt{d+ex}\,\left(ae^2+cd^2\right)}+\frac{2\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{e\sqrt{a+cx^2}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}-2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+}$$

```
[Out] 2*(-A*e+B*d)*(c*x^2+a)^(1/2)/(a*e^2+c*d^2)/(e*x+d)^(1/2)+2*(-A*e+B*d)*Ellip
ticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*
c^(1/2)))^(1/2))*(-a)^(1/2)*c^(1/2)*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/e/(a*e^
2+c*d^2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)-2
*B*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a
)^(1/2)*c^(1/2)))^(1/2))*(-a)^(1/2)*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(
-a)^(1/2)+d*c^(1/2)))^(1/2)/e/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {835, 844, 719, 424, 419}

$$\frac{2\sqrt{a+cx^2}\,(Bd-Ae)}{\sqrt{d+ex}\,\left(ae^2+cd^2\right)}+\frac{2\sqrt{-a}\sqrt{c}\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{e\sqrt{a+cx^2}\,\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}-2\sqrt{-a}\,B\sqrt{\frac{cx^2}{a}+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[a + c*x^2])/((c*d^2 + a*e^2)*Sqrt[d + e*x]) + (2*Sqrt[-
a]*Sqrt[c]*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[S
qrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)
])/(e*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sq
rt[a + c*x^2]) - (2*Sqrt[-a]*B*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-
a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/
Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt[c]*e*Sqrt[d + e*x]*Sq
rt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 835

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))/
((m + 1)*(c*d^2 + a*e^2)), x] + Dist[1/((m + 1)*(c*d^2 + a*e^2)), Int[(d +
e*x)^(m + 1)*(a + c*x^2)^p*Simp[(c*d*f + a*e*g)*(m + 1) - c*(e*f - d*g)*(m
+ 2*p + 3)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g, p}, x] && NeQ[c*d^2 +
a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*
p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+cx^2}}\,dx &= \frac{2(Bd-Ae)\sqrt{a+cx^2}}{\left(cd^2+ae^2\right)\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}(-Acd-aBe)+\frac{1}{2}c(Bd-Ae)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{cd^2+ae^2}\\
&= \frac{2(Bd-Ae)\sqrt{a+cx^2}}{\left(cd^2+ae^2\right)\sqrt{d+ex}} + \frac{B\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{e} - \frac{(c(Bd-Ae))\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{e\left(cd^2+ae^2\right)}\\
&= \frac{2(Bd-Ae)\sqrt{a+cx^2}}{\left(cd^2+ae^2\right)\sqrt{d+ex}} - \frac{\left(2a\sqrt{c}\,(Bd-Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2a\sqrt{c}}{\sqrt{-a}\left(cd-\right.}}}{\sqrt{1-x^2}}\right.}{\sqrt{-a}\,e\left(cd^2+ae^2\right)\sqrt{\frac{c(d+ex)}{cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}}}\,\sqrt{a+cx}}\\
&= \frac{2(Bd-Ae)\sqrt{a+cx^2}}{\left(cd^2+ae^2\right)\sqrt{d+ex}} + \frac{2\sqrt{-a}\,\sqrt{c}\,(Bd-Ae)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)\right.}{e\left(cd^2+ae^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+cx^2}}
\end{aligned}$$

Mathematica [C] time = 1.50, size = 320, normalized size = 0.93

$$\frac{2(d+ex)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+\frac{i\sqrt{a}\,e}{\sqrt{c}}}{d+ex}}\,\left(e\left(\sqrt{a}\,B+iA\sqrt{c}\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+ex}}\right)|\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right)+i\sqrt{c}\,(Bd-Ae)E\left(i\sin\right.\right.}{e^2\sqrt{a+cx^2}\,\left(\sqrt{c}\,d-i\sqrt{a}\,e\right)\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a + c*x^2]),x]
```

```
[Out] (2*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt
[c] - e*x)/(d + e*x))]*(d + e*x)*(I*Sqrt[c]*(B*d - A*e)*EllipticE[I*ArcSinh
[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)
/(Sqrt[c]*d + I*Sqrt[a]*e)] + (Sqrt[a]*B + I*A*Sqrt[c])*e*EllipticF[I*ArcSi
nh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*
e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(e^2*(Sqrt[c]*d - I*Sqrt[a]*e)*Sqrt[-d - (I
*Sqrt[a]*e)/Sqrt[c]]*Sqrt[a + c*x^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}}{ce^2x^4+2\,cdex^3+2\,adex+ad^2+\left(cd^2+ae^2\right)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(c*e^2*x^4 + 2*c*d*e*x^3 +
 2*a*d*e*x + a*d^2 + (c*d^2 + a*e^2)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+a}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x + d)^(3/2)), x)
```

maple [B] time = 0.15, size = 1298, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x)
```

```
[Out] -2*(A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/
2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*
c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1
/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2
)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^2*
e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)
^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-A*Ell
ipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*
d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*
((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*
d+(-a*c)^(1/2)*e)*e)^(1/2)-A*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*
x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a
*c)^(1/2)*e)*e)^(1/2)*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-
(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^2*e-B*EllipticE((-
(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^
(1/2)*e))^(1/2))*a*c*d*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+
(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c
)^(1/2)*e)*e)^(1/2)-B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-
(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^3*(-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+B*EllipticF((-(e*x+d)/(
-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))
^(1/2))*a*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))
/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)
^(1/2)*(-a*c)^(1/2)+B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-
(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d^2*e*(-(e*x+d)/(-c*d+
(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)
*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)+A*c^2*e^3*
x^2-B*c^2*d*e^2*x^2+A*a*c*e^3-B*a*c*d*e^2)*(c*x^2+a)^(1/2)*(e*x+d)^(1/2)/e^
2/c/(a*e^2+c*d^2)/(c*e*x^3+c*d*x^2+a*e*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + a}\,(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + a)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{c\,x^2 + a}\,{\left(d + e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^(1/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((a + c*x^2)^(1/2)*(d + e*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{a + cx^2}\,(d + ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(a + c*x**2)*(d + e*x)**(3/2)), x)
```

3.1484 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=345

$$-\frac{\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(Acd-3aBe)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{-a}\,c^{3/2}\sqrt{a+cx^2}\,\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}-\frac{\sqrt{d+ex}\,(a(Ae+Bd)-x(Acd-aBe))}{ac\sqrt{a+cx^2}}+\frac{A\sqrt{}}{}$$

```
[Out] -(a*(A*e+B*d)-(A*c*d-B*a*e)*x)*(e*x+d)^(1/2)/a/c/(c*x^2+a)^(1/2)-(A*c*d-3*B
*a*e)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*
(-a)^(1/2)*c^(1/2)))^(1/2))*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/c^(3/2)/(-a)^(1
/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+A*(a*e
^2+c*d^2)*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*
e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^
(1/2)+d*c^(1/2)))^(1/2)/c^(3/2)/(-a)^(1/2)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {819, 844, 719, 424, 419}

$$-\frac{\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(Acd-3aBe)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{-a}\,c^{3/2}\sqrt{a+cx^2}\,\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}-\frac{\sqrt{d+ex}\,(a(Ae+Bd)-x(Acd-aBe))}{ac\sqrt{a+cx^2}}+\frac{A\sqrt{}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(3/2),x]
```

```
[Out] -((Sqrt[d + e*x]*(a*(B*d + A*e) - (A*c*d - a*B*e)*x))/(a*c*Sqrt[a + c*x^2])
) - ((A*c*d - 3*a*B*e)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*EllipticE[ArcSin[S
qrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)
])/(Sqrt[-a]*c^(3/2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqr
t[a + c*x^2]) + (A*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sq
rt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-
a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt[-a]*c^(3/2)*Sqrt[
d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 819

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Simp[((d + e*x)^(m - 1)*(a + c*x^2)^(p + 1)*(a*(e*f + d*g
) - (c*d*f - a*e*g)*x))/(2*a*c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(
d + e*x)^(m - 2)*(a + c*x^2)^(p + 1)*Simp[a*e*(e*f*(m - 1) + d*g*m) - c*d^2
*f*(2*p + 3) + e*(a*e*g*m - c*d*f*(m + 2*p + 2))*x, x], x], x] /; FreeQ[{a,
 c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] &&
(EqQ[d, 0] || (EqQ[m, 2] && EqQ[p, -3] && RationalQ[a, c, d, e, f, g]) ||
!ILtQ[m + 2*p + 3, 0])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{\sqrt{d+ex}\,(a(Bd+Ae)-(Acd-aBe)x)}{ac\sqrt{a+cx^2}} + \frac{\int \frac{\frac{1}{2}ae(3Bd+Ae)-\frac{1}{2}e(Acd-3aBe)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd+Ae)-(Acd-aBe)x)}{ac\sqrt{a+cx^2}} + \frac{(-Acd+3aBe)\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{2ac} + \frac{\left(A\left(cd^2\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd+Ae)-(Acd-aBe)x)}{ac\sqrt{a+cx^2}} + \frac{\left((-Acd+3aBe)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\mathrm{Su}}{\sqrt{-a}\,c^{3/2}\sqrt{\frac{c(d}{cd-}}}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd+Ae)-(Acd-aBe)x)}{ac\sqrt{a+cx^2}} - \frac{(Acd-3aBe)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-}\right.}{\sqrt{-a}\,c^{3/2}\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}}$$

Mathematica [C] time = 4.80, size = 465, normalized size = 1.35

$$\frac{\sqrt{d+ex}\left(\frac{e\left(a+cx^2\right)(3aBe-Acd)}{d+ex}+c(Acdx-a(Ae+B(d+ex)))-\sqrt{a}\,c\sqrt{d+ex}\left(A\sqrt{c}+3i\sqrt{a}\,B\right)\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\sqrt{\frac{e\left(x+\right.}{d-}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*((e*(-(A*c*d) + 3*a*B*e)*(a + c*x^2))/(d + e*x) + c*(A*c*d*x
 - a*(A*e + B*(d + e*x))) - (I*c*(A*c*d - 3*a*B*e)*Sqrt[-d - (I*Sqrt[a]*e)/
Sqrt[c]]*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e
)/Sqrt[c] - e*x)/(d + e*x))]*Sqrt[d + e*x]*EllipticE[I*ArcSinh[Sqrt[-d - (I
*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d +
 I*Sqrt[a]*e)])/e - Sqrt[a]*((3*I)*Sqrt[a]*B + A*Sqrt[c])*c*Sqrt[-d - (I*Sq
rt[a]*e)/Sqrt[c]]*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*
Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*Sqrt[d + e*x]*EllipticF[I*ArcSinh[Sqr
t[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sq
rt[c]*d + I*Sqrt[a]*e)]))/(a*c^2*Sqrt[a + c*x^2])
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^{2} + Ad + (Bd + Ae)x\right)\sqrt{cx^{2} + a}\,\sqrt{ex + d}}{c^{2}x^{4} + 2\,acx^{2} + a^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(c*x^2 + a)*sqrt(e*x + d)/(c^2
*x^4 + 2*a*c*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^{2} + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + a)^(3/2), x)
```

maple [B] time = 0.13, size = 1319, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] (-A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)
*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)-A*EllipticF((-(e*x+d)/(-c*d+(-
a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))
*c*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d
+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*(-a*c)^(1/2)+A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d
+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d*e^2*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*EllipticE((-(e*x+d)/(-c*
d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1
/2))*c^2*d^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/
(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^
(1/2)+3*B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)
^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)
*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c
)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+3*B*EllipticF((-(e*x+d)/(-c*d+(-a*c
)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*
c*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+
(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)
-3*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2
)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c
)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/
2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-3*B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/
2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2
*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c
)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*x^
2*c^2*d*e^2-B*x^2*a*c*e^3-A*x*a*c*e^3+A*x*c^2*d^2*e-2*B*x*a*c*d*e^2-A*c*d*e
^2*a-B*c*d^2*a*e)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/c^2/e/(c*e*x^3+c*d*x^2+a*e*
x+a*d)/a
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(cx^2 + a\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{3/2}}{\left(c\,x^2 + a\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1485 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=319

$$\frac{\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}(aBe+Acd)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{\sqrt{-a}c^{3/2}\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{\sqrt{d+ex}(aB-Acx)}{ac\sqrt{a+cx^2}}-\frac{A\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}}{\sqrt{-a}\sqrt{c}}$$

```
[Out] -(-A*c*x+B*a)*(e*x+d)^(1/2)/a/c/(c*x^2+a)^(1/2)-A*EllipticE(1/2*(1-x*c^(1/2
)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(e*
x+d)^(1/2)*(c*x^2/a+1)^(1/2)/(-a)^(1/2)/c^(1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^
(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)+(A*c*d+B*a*e)*EllipticF(1/2*(1-x*c^(1
/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(
c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/c^(3/2)/(
-a)^(1/2)/(e*x+d)^(1/2)/(c*x^2+a)^(1/2)
```

Rubi **[A]** time = 0.23, antiderivative size = 319, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = $\{821, 844, 719, 424, 419\}$

$$\frac{\sqrt{\frac{cx^2}{a}+1}\sqrt{\frac{\sqrt{c}(d+ex)}{\sqrt{-a}e+\sqrt{c}d}}(aBe+Acd)F\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\sqrt{c}d-ae}\right)}{\sqrt{-a}c^{3/2}\sqrt{a+cx^2}\sqrt{d+ex}}-\frac{\sqrt{d+ex}(aB-Acx)}{ac\sqrt{a+cx^2}}-\frac{A\sqrt{\frac{cx^2}{a}+1}\sqrt{d+ex}}{\sqrt{-a}\sqrt{c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a + c*x^2)^(3/2),x]
```

```
[Out] -(((a*B - A*c*x)*Sqrt[d + e*x])/(a*c*Sqrt[a + c*x^2])) - (A*Sqrt[d + e*x]*S
qrt[1 + (c*x^2)/a]*EllipticE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]]
, (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt[-a]*Sqrt[c]*Sqrt[(Sqrt[c]*(d
+ e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + ((A*c*d + a*B*e)*Sqrt[
(Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF
[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]
*d - a*e)])/(Sqrt[-a]*c^(3/2)*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 821

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> Simp[((d + e*x)^m*(a + c*x^2)^(p + 1)*(a*g - c*f*x))/(2*a*
c*(p + 1)), x] - Dist[1/(2*a*c*(p + 1)), Int[(d + e*x)^(m - 1)*(a + c*x^2)^
(p + 1)*Simp[a*e*g*m - c*d*f*(2*p + 3) - c*e*f*(m + 2*p + 3)*x, x], x], x]
/; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] && LtQ[p, -1] && G
tQ[m, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+cx^2\right)^{3/2}}\,dx = -\frac{(aB-Acx)\sqrt{d+ex}}{ac\sqrt{a+cx^2}}+\frac{\int \frac{\frac{aBe}{2}-\frac{1}{2}Acex}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{ac}$$

$$= -\frac{(aB-Acx)\sqrt{d+ex}}{ac\sqrt{a+cx^2}}-\frac{A\int \frac{\sqrt{d+ex}}{\sqrt{a+cx^2}}\,dx}{2a}+\frac{(Acd+aBe)\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{2ac}$$

$$= -\frac{(aB-Acx)\sqrt{d+ex}}{ac\sqrt{a+cx^2}}-\frac{\left(A\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2a\sqrt{c}\,ex^2}{\sqrt{-a}\left(cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}\right)}}}{\sqrt{1-x^2}}\,dx,x,\frac{\sqrt{1-}}{}\right.}{\sqrt{-a}\,\sqrt{c}\,\sqrt{\frac{c(d+ex)}{cd-\frac{a\sqrt{c}\,e}{\sqrt{-a}}}}\,\sqrt{a+cx^2}}$$

$$= -\frac{(aB-Acx)\sqrt{d+ex}}{ac\sqrt{a+cx^2}}-\frac{A\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{-a}\,\sqrt{c}\,\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}}\,\sqrt{a+cx^2}}+$$

Mathematica [C] time = 3.98, size = 431, normalized size = 1.35

$$\frac{\sqrt{d+ex}\left(\frac{\sqrt{a}\,\sqrt{d+ex}\left(A\sqrt{c}+i\sqrt{a}\,B\right)\sqrt{\frac{e\left(x+\frac{i\sqrt{a}}{\sqrt{c}}\right)}{d+ex}}\,\sqrt{-\frac{-ex+\frac{i\sqrt{a}\,e}{\sqrt{c}}}{d+ex}}\,F\left(i\sinh^{-1}\left(\frac{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{\sqrt{d+ex}}\right)|\frac{\sqrt{c}\,d-i\sqrt{a}\,e}{\sqrt{c}\,d+i\sqrt{a}\,e}\right)}{\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}-\frac{Ae\left(a+cx^2\right)}{d+ex}-\frac{iAc\sqrt{d+ex}\,\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}}{}\right.}{ac\sqrt{a+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*(-(a*B) + A*c*x - (A*e*(a + c*x^2))/(d + e*x)) - (I*A*c*Sqrt[
-d - (I*Sqrt[a]*e)/Sqrt[c]]*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*S
qrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*Sqrt[d + e*x]*EllipticE[I*A
rcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt
[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)])/e + (Sqrt[a]*(I*Sqrt[a]*B + A*Sqrt[c])*S
qrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c]
- e*x)/(d + e*x))]*Sqrt[d + e*x]*EllipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e
)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]
*e)])/Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]))/(a*c*Sqrt[a + c*x^2])
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}}{c^2x^4+2\,acx^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(c^2*x^4 + 2*a*c*x^2 + a^2
), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + a)^(3/2), x)
```

maple [B] time = 0.11, size = 979, normalized size = 3.07

$$\left(A\,c^2e^2x^2+\sqrt{-\frac{(ex+d)c}{-cd+\sqrt{-ac}\;e}}\;\sqrt{\frac{\left(-cx+\sqrt{-ac}\right)e}{cd+\sqrt{-ac}\;e}}\;\sqrt{\frac{\left(cx+\sqrt{-ac}\right)e}{-cd+\sqrt{-ac}\;e}}\;Aac\,e^2\,\text{EllipticE}\left(\sqrt{-\frac{(ex+d)c}{-cd+\sqrt{-ac}\;e}},\sqrt{-\frac{-cd+\sqrt{-ac}\;e}{cd+\sqrt{-ac}\;e}}\right)-\sqrt{-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(3/2),x)
```

```
[Out] (-A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)
*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*
e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c*d*e*(-(e
*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)
*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2
)+A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)
*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*e^2*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2
))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*
e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*c^2*d^2*(-
(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/
2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+B*Ellipti
cF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-
a*c)^(1/2)*e))^(1/2))*a*c*d*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c
*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-
a*c)^(1/2)*e)*e)^(1/2)-B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)
,(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^2*(-(e*x+d)/(-c*d
+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)+A*x^2*c^2
*e^2+A*x*c^2*d*e-B*x*a*c*e^2-B*a*c*d*e)*(e*x+d)^(1/2)*(c*x^2+a)^(1/2)/e/(c*
e*x^3+c*d*x^2+a*e*x+a*d)/a/c^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + a)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\left(c\,x^2+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a + c*x^2)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/(a + c*x**2)**(3/2), x)
```

3.1486 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=356

$$-\frac{\sqrt{d+ex}\,(a(Bd-Ae)-x(aBe+Acd))}{a\sqrt{a+cx^2}\left(ae^2+cd^2\right)}-\frac{\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(aBe+Acd)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{-a}\,\sqrt{c}\,\sqrt{a+cx^2}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}+A\sqrt{c}$$

```
[Out] -(a*(-A*e+B*d)-(A*c*d+B*a*e)*x)*(e*x+d)^(1/2)/a/(a*e^2+c*d^2)/(c*x^2+a)^(1/
2)-(A*c*d+B*a*e)*EllipticE(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(-2*a
*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(e*x+d)^(1/2)*(c*x^2/a+1)^(1/2)/(a*e
^2+c*d^2)/(-a)^(1/2)/c^(1/2)/(c*x^2+a)^(1/2)/((e*x+d)*c^(1/2)/(e*(-a)^(1/2)
+d*c^(1/2)))^(1/2)+A*EllipticF(1/2*(1-x*c^(1/2)/(-a)^(1/2))^(1/2)*2^(1/2),(
-2*a*e/(-a*e+d*(-a)^(1/2)*c^(1/2)))^(1/2))*(c*x^2/a+1)^(1/2)*((e*x+d)*c^(1/
2)/(e*(-a)^(1/2)+d*c^(1/2)))^(1/2)/(-a)^(1/2)/c^(1/2)/(e*x+d)^(1/2)/(c*x^2+
a)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {823, 844, 719, 424, 419}

$$-\frac{\sqrt{d+ex}\,(a(Bd-Ae)-x(aBe+Acd))}{a\sqrt{a+cx^2}\left(ae^2+cd^2\right)}-\frac{\sqrt{\frac{cx^2}{a}+1}\,\sqrt{d+ex}\,(aBe+Acd)E\left(\sin^{-1}\left(\frac{\sqrt{1-\frac{\sqrt{c}\,x}{\sqrt{-a}}}}{\sqrt{2}}\right)|-\frac{2ae}{\sqrt{-a}\,\sqrt{c}\,d-ae}\right)}{\sqrt{-a}\,\sqrt{c}\,\sqrt{a+cx^2}\left(ae^2+cd^2\right)\sqrt{\frac{\sqrt{c}\,(d+ex)}{\sqrt{-a}\,e+\sqrt{c}\,d}}}+A\sqrt{c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a + c*x^2)^(3/2)),x]
```

```
[Out] -((Sqrt[d + e*x]*(a*(B*d - A*e) - (A*c*d + a*B*e)*x))/(a*(c*d^2 + a*e^2)*Sq
rt[a + c*x^2])) - ((A*c*d + a*B*e)*Sqrt[d + e*x]*Sqrt[1 + (c*x^2)/a]*Ellipt
icE[ArcSin[Sqrt[1 - (Sqrt[c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt
[c]*d - a*e)])/(Sqrt[-a]*Sqrt[c]*(c*d^2 + a*e^2)*Sqrt[(Sqrt[c]*(d + e*x))/(
Sqrt[c]*d + Sqrt[-a]*e)]*Sqrt[a + c*x^2]) + (A*Sqrt[(Sqrt[c]*(d + e*x))/(Sq
rt[c]*d + Sqrt[-a]*e)]*Sqrt[1 + (c*x^2)/a]*EllipticF[ArcSin[Sqrt[1 - (Sqrt[
c]*x)/Sqrt[-a]]/Sqrt[2]], (-2*a*e)/(Sqrt[-a]*Sqrt[c]*d - a*e)])/(Sqrt[-a]*S
qrt[c]*Sqrt[d + e*x]*Sqrt[a + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 719

```
Int[((d_) + (e_.)*(x_))^(m_)/Sqrt[(a_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(
2*a*Rt[-(c/a), 2]*(d + e*x)^m*Sqrt[1 + (c*x^2)/a])/(c*Sqrt[a + c*x^2]*((c*(
d + e*x))/(c*d - a*e*Rt[-(c/a), 2]))^m), Subst[Int[(1 + (2*a*e*Rt[-(c/a), 2
]*x^2)/(c*d - a*e*Rt[-(c/a), 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(1 - Rt[-(c/
a), 2]*x)/2]], x] /; FreeQ[{a, c, d, e}, x] && NeQ[c*d^2 + a*e^2, 0] && EqQ
[m^2, 1/4]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 844

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + c*x^2)^p, x], x] + D
ist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + c*x^2)^p, x], x] /; FreeQ[{a, c, d,
 e, f, g, m, p}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a+cx^2\right)^{3/2}}\,dx = -\frac{\sqrt{d+ex}\,(a(Bd-Ae)-(Acd+aBe)x)}{a\left(cd^2+ae^2\right)\sqrt{a+cx^2}} - \frac{\int \frac{\frac{1}{2}ace(Bd-Ae)+\frac{1}{2}ce(Acd+aBe)x}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{ac\left(cd^2+ae^2\right)}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd-Ae)-(Acd+aBe)x)}{a\left(cd^2+ae^2\right)\sqrt{a+cx^2}} + \frac{A\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+cx^2}}\,dx}{2a} - \frac{(Acd+aBe)\int}{2a\left(cd^2+\right.}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd-Ae)-(Acd+aBe)x)}{a\left(cd^2+ae^2\right)\sqrt{a+cx^2}} - \frac{\left((Acd+aBe)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\right)\mathrm{Subs}}{\sqrt{-a}\,\sqrt{c}\,\left(cd^2+ae^2\right)}$$

$$= -\frac{\sqrt{d+ex}\,(a(Bd-Ae)-(Acd+aBe)x)}{a\left(cd^2+ae^2\right)\sqrt{a+cx^2}} - \frac{(Acd+aBe)\sqrt{d+ex}\,\sqrt{1+\frac{cx^2}{a}}\,E\left(\sin^{-}\right.}{\sqrt{-a}\,\sqrt{c}\,\left(cd^2+ae^2\right)\sqrt{\frac{\sqrt{c}}{\sqrt{c}\,d}}}$$

Mathematica [C] time = 3.25, size = 525, normalized size = 1.47

$$\frac{\sqrt{d+ex}\left(2(a(Ae-Bd+Bex)+Acdx)-\frac{2\left(e^2\left(a+cx^2\right)\sqrt{-d-\frac{i\sqrt{a}\,e}{\sqrt{c}}}\,(aBe+Acd)+\sqrt{a}\,\sqrt{c}\,e(d+ex)^{3/2}\left(-A\sqrt{c}+i\sqrt{a}\,B\right)\left(\sqrt{c}\,d+i\sqrt{a}\,e\right)\sqrt{\frac{e\left(x+\right.}{d+}}\right.}{}\right.}{2a\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[d + e*x]*(2*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)) - (2*(e^2*(A*c*d + a
*B*e)*Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]*(a + c*x^2) + Sqrt[c]*((-I)*Sqrt[c]*
d + Sqrt[a]*e)*(A*c*d + a*B*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d + e*x)
]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*Elliptic
E[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*d - I
*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)] + Sqrt[a]*(I*Sqrt[a]*B - A*Sqrt[c])*
Sqrt[c]*e*(Sqrt[c]*d + I*Sqrt[a]*e)*Sqrt[(e*((I*Sqrt[a])/Sqrt[c] + x))/(d +
 e*x)]*Sqrt[-(((I*Sqrt[a]*e)/Sqrt[c] - e*x)/(d + e*x))]*(d + e*x)^(3/2)*Ell
ipticF[I*ArcSinh[Sqrt[-d - (I*Sqrt[a]*e)/Sqrt[c]]/Sqrt[d + e*x]], (Sqrt[c]*
d - I*Sqrt[a]*e)/(Sqrt[c]*d + I*Sqrt[a]*e)]))/(c*e*Sqrt[-d - (I*Sqrt[a]*e)/
Sqrt[c]]*(d + e*x))))/(2*a*(c*d^2 + a*e^2)*Sqrt[a + c*x^2])
```

fricas [F] time = 0.98, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+a}\,(Bx+A)\sqrt{ex+d}}{c^2ex^5+c^2dx^4+2\,acex^3+2\,acdx^2+a^2ex+a^2d}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + a)*(B*x + A)*sqrt(e*x + d)/(c^2*e*x^5 + c^2*d*x^4 + 2
*a*c*e*x^3 + 2*a*c*d*x^2 + a^2*e*x + a^2*d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+a\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.14, size = 1317, normalized size = 3.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] (-A*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)
*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(
1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))
/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)*(-a*c)^(1/2)-A*EllipticF((-(e*x+d)/(-c*d+(-
a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))
*c*d^2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d
+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2
)*(-a*c)^(1/2)+A*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d
+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d*e^2*(-(e*x+d)/(-c*d+(-a
*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((
c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*EllipticE((-(e*x+d)/(-c*
d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1
/2))*c^2*d^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/
(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^
(1/2)-B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(
1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e
)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^
(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)-B*EllipticF((-(e*x+d)/(-c*d+(-a*c)^(1
/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^
2*e*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*
c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+B*E
llipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(
c*d+(-a*c)^(1/2)*e))^(1/2))*a^2*e^3*(-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2
)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-
c*d+(-a*c)^(1/2)*e)*e)^(1/2)+B*EllipticE((-(e*x+d)/(-c*d+(-a*c)^(1/2)*e)*c)
^(1/2),(-(-c*d+(-a*c)^(1/2)*e)/(c*d+(-a*c)^(1/2)*e))^(1/2))*a*c*d^2*e*(-(e*
x+d)/(-c*d+(-a*c)^(1/2)*e)*c)^(1/2)*((-c*x+(-a*c)^(1/2))/(c*d+(-a*c)^(1/2)*
e)*e)^(1/2)*((c*x+(-a*c)^(1/2))/(-c*d+(-a*c)^(1/2)*e)*e)^(1/2)+A*c^2*d*e^2*
x^2+B*a*c*e^3*x^2+A*a*c*e^3*x+A*c^2*d^2*e*x+A*a*c*d*e^2-B*a*c*d^2*e)*(e*x+d
)^(1/2)*(c*x^2+a)^(1/2)/c/e/a/(a*e^2+c*d^2)/(c*e*x^3+c*d*x^2+a*e*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(cx^2 + a\right)^{\frac{3}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + a)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(c\,x^2 + a\right)}^{3/2}\,\sqrt{d + e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + c*x^2)^(3/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/((a + c*x^2)^(3/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(a + cx^{2}\right)^{\frac{3}{2}}\sqrt{d + ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+a)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((a + c*x**2)**(3/2)*sqrt(d + e*x)), x)
```

3.1487 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^3 \, dx$

Optimal. Leaf size=372

$$-\frac{c(d+ex)^{m+4}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(m+4)}+\frac{3c^2(d+ex)^{m+6}\left(aBe^2-2Acde+7Bcd^2\right)}{e^8(m+6)}$$

```
[Out] -(-A*e+B*d)*(a*e^2+c*d^2)^3*(e*x+d)^(1+m)/e^8/(1+m)+(a*e^2+c*d^2)^2*(-6*A*c
*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(2+m)/e^8/(2+m)-3*c*(a*e^2+c*d^2)*(-A*a*e^3
-5*A*c*d^2*e+3*B*a*d*e^2+7*B*c*d^3)*(e*x+d)^(3+m)/e^8/(3+m)-c*(4*A*c*d*e*(3
*a*e^2+5*c*d^2)-B*(3*a^2*e^4+30*a*c*d^2*e^2+35*c^2*d^4))*(e*x+d)^(4+m)/e^8/
(4+m)-c^2*(-3*A*a*e^3-15*A*c*d^2*e+15*B*a*d*e^2+35*B*c*d^3)*(e*x+d)^(5+m)/e
^8/(5+m)+3*c^2*(-2*A*c*d*e+B*a*e^2+7*B*c*d^2)*(e*x+d)^(6+m)/e^8/(6+m)-c^3*(
-A*e+7*B*d)*(e*x+d)^(7+m)/e^8/(7+m)+B*c^3*(e*x+d)^(8+m)/e^8/(8+m)
```

Rubi **[A]** time = 0.25, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {772}

$$-\frac{c(d+ex)^{m+4}\left(4Acde\left(3ae^2+5cd^2\right)-B\left(3a^2e^4+30acd^2e^2+35c^2d^4\right)\right)}{e^8(m+4)}-\frac{c^2(d+ex)^{m+5}\left(-3aAe^3+15aBde^2-15A\right.}{e^8(m+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2)^3,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))) + ((c*d^
2 + a*e^2)^2*(7*B*c*d^2 - 6*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^8*(2 +
 m)) - (3*c*(c*d^2 + a*e^2)*(7*B*c*d^3 - 5*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^
3)*(d + e*x)^(3 + m))/(e^8*(3 + m)) - (c*(4*A*c*d*e*(5*c*d^2 + 3*a*e^2) - B
*(35*c^2*d^4 + 30*a*c*d^2*e^2 + 3*a^2*e^4))*(d + e*x)^(4 + m))/(e^8*(4 + m)
) - (c^2*(35*B*c*d^3 - 15*A*c*d^2*e + 15*a*B*d*e^2 - 3*a*A*e^3)*(d + e*x)^(
5 + m))/(e^8*(5 + m)) + (3*c^2*(7*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^
(6 + m))/(e^8*(6 + m)) - (c^3*(7*B*d - A*e)*(d + e*x)^(7 + m))/(e^8*(7 + m)
) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m\left(a+cx^2\right)^3\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^3(d+ex)^m}{e^7}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+a\right.}{e^7}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2+ae^2\right)^3(d+ex)^{1+m}}{e^8(1+m)}+\frac{\left(cd^2+ae^2\right)^2\left(7Bcd^2-6Acde+aBe\right.}{e^8(2+m)}$$

Mathematica **[B]** time = 1.62, size = 773, normalized size = 2.08

$$\frac{(d+ex)^{m+1}\left(B(m+1)(d+ex)\left(6(m+7)\left(ae^2+cd^2\right)\left(4(m+5)\left(ae^2+cd^2\right)\left(ae^2\left(m^2+7m+12\right)+c\left(2d^2-2de(m\right.\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((B*d - A*e)*(8 + m)*(e^6*(1 + m)*(2 + m)*(3 + m)*(4 +
 m)*(5 + m)*(6 + m)*(a + c*x^2)^3 + 6*(c*d^2 + a*e^2)*(6 + m)*(e^4*(1 + m)*
(2 + m)*(3 + m)*(4 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(4 + m)*(a*e^2*(6
 + 5*m + m^2) + c*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2)) - 4*
c*d*(1 + m)*(d + e*x)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x
+ e^2*(6 + 5*m + m^2)*x^2))) - 6*c*d*(1 + m)*(d + e*x)*(e^4*(2 + m)*(3 + m)
*(4 + m)*(5 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*e^2*(12 + 7*m
 + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2)) - 4*c*d*(2
 + m)*(d + e*x)*(a*e^2*(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*
(12 + 7*m + m^2)*x^2))))) + B*(1 + m)*(d + e*x)*(e^6*(2 + m)*(3 + m)*(4 + m
)*(5 + m)*(6 + m)*(7 + m)*(a + c*x^2)^3 + 6*(c*d^2 + a*e^2)*(7 + m)*(e^4*(2
 + m)*(3 + m)*(4 + m)*(5 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*
e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2
)) - 4*c*d*(2 + m)*(d + e*x)*(a*e^2*(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3
+ m)*x + e^2*(12 + 7*m + m^2)*x^2))) - 6*c*d*(2 + m)*(d + e*x)*(e^4*(3 + m)
*(4 + m)*(5 + m)*(6 + m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(6 + m)*(a*e^2*(
20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*(12 + 7*m + m^2)*x^2)) -
 4*c*d*(3 + m)*(d + e*x)*(a*e^2*(30 + 11*m + m^2) + c*(2*d^2 - 2*d*e*(4 + m
)*x + e^2*(20 + 9*m + m^2)*x^2))))))/(e^8*(1 + m)*(2 + m)*(3 + m)*(4 + m)*(
5 + m)*(6 + m)*(7 + m)*(8 + m))
```

fricas [B] time = 1.26, size = 3116, normalized size = 8.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="fricas")
```

```
[Out] (A*a^3*d*e^7*m^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 20160*B*a*c^2*d^6*e^
2 + 24192*A*a*c^2*d^5*e^3 - 30240*B*a^2*c*d^4*e^4 + 40320*A*a^2*c*d^3*e^5 -
 20160*B*a^3*d^2*e^6 + 40320*A*a^3*d*e^7 + (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^
6 + 322*B*c^3*e^8*m^5 + 1960*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c
^3*e^8*m^2 + 13068*B*c^3*e^8*m + 5040*B*c^3*e^8)*x^8 + (5760*A*c^3*e^8 + (B
*c^3*d*e^7 + A*c^3*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*A*c^3*e^8)*m^6 + 7*(25*B
*c^3*d*e^7 + 49*A*c^3*e^8)*m^5 + 35*(21*B*c^3*d*e^7 + 61*A*c^3*e^8)*m^4 + 5
6*(29*B*c^3*d*e^7 + 134*A*c^3*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*A*c^3*e^8
)*m^2 + 144*(5*B*c^3*d*e^7 + 103*A*c^3*e^8)*m)*x^7 - (B*a^3*d^2*e^6 - 35*A*
a^3*d*e^7)*m^6 + (20160*B*a*c^2*e^8 + (A*c^3*d*e^7 + 3*B*a*c^2*e^8)*m^7 - (
7*B*c^3*d^2*e^6 - 23*A*c^3*d*e^7 - 90*B*a*c^2*e^8)*m^6 - (105*B*c^3*d^2*e^6
 - 205*A*c^3*d*e^7 - 1098*B*a*c^2*e^8)*m^5 - 5*(119*B*c^3*d^2*e^6 - 181*A*c
^3*d*e^7 - 1404*B*a*c^2*e^8)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*A*c^3*d*e^7 -
 25227*B*a*c^2*e^8)*m^3 - 2*(959*B*c^3*d^2*e^6 - 1156*A*c^3*d*e^7 - 25245*B
*a*c^2*e^8)*m^2 - 24*(35*B*c^3*d^2*e^6 - 40*A*c^3*d*e^7 - 2143*B*a*c^2*e^8)
*m)*x^6 + (6*A*a^2*c*d^3*e^5 - 33*B*a^3*d^2*e^6 + 511*A*a^3*d*e^7)*m^5 + 3*
(8064*A*a*c^2*e^8 + (B*a*c^2*d*e^7 + A*a*c^2*e^8)*m^7 - (2*A*c^3*d^2*e^6 -
25*B*a*c^2*d*e^7 - 31*A*a*c^2*e^8)*m^6 + (14*B*c^3*d^3*e^5 - 36*A*c^3*d^2*e
^6 + 241*B*a*c^2*d*e^7 + 391*A*a*c^2*e^8)*m^5 + (140*B*c^3*d^3*e^5 - 230*A*
c^3*d^2*e^6 + 1135*B*a*c^2*d*e^7 + 2581*A*a*c^2*e^8)*m^4 + 2*(245*B*c^3*d^3
*e^5 - 330*A*c^3*d^2*e^6 + 1367*B*a*c^2*d*e^7 + 4772*A*a*c^2*e^8)*m^3 + 4*(
175*B*c^3*d^3*e^5 - 212*A*c^3*d^2*e^6 + 790*B*a*c^2*d*e^7 + 4891*A*a*c^2*e^
8)*m^2 + 48*(7*B*c^3*d^3*e^5 - 8*A*c^3*d^2*e^6 + 28*B*a*c^2*d*e^7 + 423*A*a
*c^2*e^8)*m)*x^5 - (18*B*a^2*c*d^4*e^4 - 180*A*a^2*c*d^3*e^5 + 445*B*a^3*d^
2*e^6 - 4025*A*a^3*d*e^7)*m^4 + 3*(10080*B*a^2*c*e^8 + (A*a*c^2*d*e^7 + B*a
^2*c*e^8)*m^7 - (5*B*a*c^2*d^2*e^6 - 27*A*a*c^2*d*e^7 - 32*B*a^2*c*e^8)*m^6
 + (10*A*c^3*d^3*e^5 - 105*B*a*c^2*d^2*e^6 + 283*A*a*c^2*d*e^7 + 418*B*a^2*
c*e^8)*m^5 - (70*B*c^3*d^4*e^4 - 140*A*c^3*d^3*e^5 + 785*B*a*c^2*d^2*e^6 -
1449*A*a*c^2*d*e^7 - 2864*B*a^2*c*e^8)*m^4 - (420*B*c^3*d^4*e^4 - 590*A*c^3
*d^3*e^5 + 2535*B*a*c^2*d^2*e^6 - 3748*A*a*c^2*d*e^7 - 10993*B*a^2*c*e^8)*m
^3 - 2*(385*B*c^3*d^4*e^4 - 470*A*c^3*d^3*e^5 + 1765*B*a*c^2*d^2*e^6 - 2286
*A*a*c^2*d*e^7 - 11656*B*a^2*c*e^8)*m^2 - 12*(35*B*c^3*d^4*e^4 - 40*A*c^3*d
^3*e^5 + 140*B*a*c^2*d^2*e^6 - 168*A*a*c^2*d*e^7 - 2073*B*a^2*c*e^8)*m)*x^4
 + (72*A*a*c^2*d^5*e^3 - 468*B*a^2*c*d^4*e^4 + 2130*A*a^2*c*d^3*e^5 - 3135*
B*a^3*d^2*e^6 + 18424*A*a^3*d*e^7)*m^3 + 3*(13440*A*a^2*c*e^8 + (B*a^2*c*d*
e^7 + A*a^2*c*e^8)*m^7 - (4*A*a*c^2*d^2*e^6 - 29*B*a^2*c*d*e^7 - 33*A*a^2*c
*e^8)*m^6 + (20*B*a*c^2*d^3*e^5 - 96*A*a*c^2*d^2*e^6 + 331*B*a^2*c*d*e^7 +
447*A*a^2*c*e^8)*m^5 - (40*A*c^3*d^4*e^4 - 360*B*a*c^2*d^3*e^5 + 844*A*a*c^
2*d^2*e^6 - 1871*B*a^2*c*d*e^7 - 3195*A*a^2*c*e^8)*m^4 + 4*(70*B*c^3*d^5*e^
3 - 110*A*c^3*d^4*e^4 + 515*B*a*c^2*d^3*e^5 - 816*A*a*c^2*d^2*e^6 + 1345*B*
a^2*c*d*e^7 + 3216*A*a^2*c*e^8)*m^3 + 4*(210*B*c^3*d^5*e^3 - 260*A*c^3*d^4*
e^4 + 990*B*a*c^2*d^3*e^5 - 1300*A*a*c^2*d^2*e^6 + 1793*B*a^2*c*d*e^7 + 717
3*A*a^2*c*e^8)*m^2 + 16*(35*B*c^3*d^5*e^3 - 40*A*c^3*d^4*e^4 + 140*B*a*c^2*
d^3*e^5 - 168*A*a*c^2*d^2*e^6 + 210*B*a^2*c*d*e^7 + 2003*A*a^2*c*e^8)*m)*x^
3 - 2*(180*B*a*c^2*d^6*e^2 - 756*A*a*c^2*d^5*e^3 + 2259*B*a^2*c*d^4*e^4 - 6
210*A*a^2*c*d^3*e^5 + 6077*B*a^3*d^2*e^6 - 24430*A*a^3*d*e^7)*m^2 + (20160*
B*a^3*e^8 + (3*A*a^2*c*d*e^7 + B*a^3*e^8)*m^7 - (9*B*a^2*c*d^2*e^6 - 93*A*a
^2*c*d*e^7 - 34*B*a^3*e^8)*m^6 + (36*A*a*c^2*d^3*e^5 - 243*B*a^2*c*d^2*e^6
+ 1155*A*a^2*c*d*e^7 + 478*B*a^3*e^8)*m^5 - (180*B*a*c^2*d^4*e^4 - 792*A*a*
c^2*d^3*e^5 + 2493*B*a^2*c*d^2*e^6 - 7275*A*a^2*c*d*e^7 - 3580*B*a^3*e^8)*m
^4 + (360*A*c^3*d^5*e^3 - 2880*B*a*c^2*d^4*e^4 + 6012*A*a*c^2*d^3*e^5 - 118
53*B*a^2*c*d^2*e^6 + 24042*A*a^2*c*d*e^7 + 15289*B*a^3*e^8)*m^3 - 2*(1260*B
*c^3*d^6*e^2 - 1620*A*c^3*d^5*e^3 + 6390*B*a*c^2*d^4*e^4 - 8676*A*a*c^2*d^3
*e^5 + 12357*B*a^2*c*d^2*e^6 - 18996*A*a^2*c*d*e^7 - 18353*B*a^3*e^8)*m^2 -
 72*(35*B*c^3*d^6*e^2 - 40*A*c^3*d^5*e^3 + 140*B*a*c^2*d^4*e^4 - 168*A*a*c^
2*d^3*e^5 + 210*B*a^2*c*d^2*e^6 - 280*A*a^2*c*d*e^7 - 621*B*a^3*e^8)*m)*x^2
 + 12*(60*A*c^3*d^7*e - 450*B*a*c^2*d^6*e^2 + 876*A*a*c^2*d^5*e^3 - 1599*B*
a^2*c*d^4*e^4 + 2972*A*a^2*c*d^3*e^5 - 2046*B*a^3*d^2*e^6 + 5772*A*a^3*d*e^
7)*m + (40320*A*a^3*e^8 + (B*a^3*d*e^7 + A*a^3*e^8)*m^7 - (6*A*a^2*c*d^2*e^
6 - 33*B*a^3*d*e^7 - 35*A*a^3*e^8)*m^6 + (18*B*a^2*c*d^3*e^5 - 180*A*a^2*c*
d^2*e^6 + 445*B*a^3*d*e^7 + 511*A*a^3*e^8)*m^5 - (72*A*a*c^2*d^4*e^4 - 468*
B*a^2*c*d^3*e^5 + 2130*A*a^2*c*d^2*e^6 - 3135*B*a^3*d*e^7 - 4025*A*a^3*e^8)
*m^4 + 2*(180*B*a*c^2*d^5*e^3 - 756*A*a*c^2*d^4*e^4 + 2259*B*a^2*c*d^3*e^5
- 6210*A*a^2*c*d^2*e^6 + 6077*B*a^3*d*e^7 + 9212*A*a^3*e^8)*m^3 - 4*(180*A*
c^3*d^6*e^2 - 1350*B*a*c^2*d^5*e^3 + 2628*A*a*c^2*d^4*e^4 - 4797*B*a^2*c*d^
3*e^5 + 8916*A*a^2*c*d^2*e^6 - 6138*B*a^3*d*e^7 - 12215*A*a^3*e^8)*m^2 + 14
4*(35*B*c^3*d^7*e - 40*A*c^3*d^6*e^2 + 140*B*a*c^2*d^5*e^3 - 168*A*a*c^2*d^
4*e^4 + 210*B*a^2*c*d^3*e^5 - 280*A*a^2*c*d^2*e^6 + 140*B*a^3*d*e^7 + 481*A
*a^3*e^8)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*
m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320
*e^8)
```

giac [B] time = 0.38, size = 5560, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + (x*e + d
)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*B*c^3*m^6*x^8*e^8 + (x*e + d)^m*A*c^
3*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*
d^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*a*c^2*m^7*x^6*e^8 + 29*(x*e + d)^m*A*c^3*
m^6*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^8*e^8 + 3*(x*e + d)^m*B*a*c^2*d*m
^7*x^5*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m
^5*x^7*e^7 - 6*(x*e + d)^m*A*c^3*d^2*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^
2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^3*d^3*m^5*x^5*e^5 + 3*(x*e + d)^m*A*a*c^
2*m^7*x^5*e^8 + 90*(x*e + d)^m*B*a*c^2*m^6*x^6*e^8 + 343*(x*e + d)^m*A*c^3*
```

```
m^5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8*e^8 + 3*(x*e + d)^m*A*a*c^2*d*
m^7*x^4*e^7 + 75*(x*e + d)^m*B*a*c^2*d*m^6*x^5*e^7 + 205*(x*e + d)^m*A*c^3*
d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d*m^4*x^7*e^7 - 15*(x*e + d)^m*B*a*c^
2*d^2*m^6*x^4*e^6 - 108*(x*e + d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m
*B*c^3*d^2*m^4*x^6*e^6 + 30*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 420*(x*e +
d)^m*B*c^3*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^4 + 3*(x*e
 + d)^m*B*a^2*c*m^7*x^4*e^8 + 93*(x*e + d)^m*A*a*c^2*m^6*x^5*e^8 + 1098*(x*
e + d)^m*B*a*c^2*m^5*x^6*e^8 + 2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 6769*(x
*e + d)^m*B*c^3*m^3*x^8*e^8 + 3*(x*e + d)^m*B*a^2*c*d*m^7*x^3*e^7 + 81*(x*e
 + d)^m*A*a*c^2*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*a*c^2*d*m^5*x^5*e^7 + 905
*(x*e + d)^m*A*c^3*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7*e^7 - 1
2*(x*e + d)^m*A*a*c^2*d^2*m^6*x^3*e^6 - 315*(x*e + d)^m*B*a*c^2*d^2*m^5*x^4
*e^6 - 690*(x*e + d)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m
^3*x^6*e^6 + 60*(x*e + d)^m*B*a*c^2*d^3*m^5*x^3*e^5 + 420*(x*e + d)^m*A*c^3
*d^3*m^4*x^4*e^5 + 1470*(x*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 120*(x*e + d)^m
*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m^3*x^4*e^4 + 840*(x*e
+ d)^m*B*c^3*d^5*m^3*x^3*e^3 + 3*(x*e + d)^m*A*a^2*c*m^7*x^3*e^8 + 96*(x*e
+ d)^m*B*a^2*c*m^6*x^4*e^8 + 1173*(x*e + d)^m*A*a*c^2*m^5*x^5*e^8 + 7020*(x
*e + d)^m*B*a*c^2*m^4*x^6*e^8 + 7504*(x*e + d)^m*A*c^3*m^3*x^7*e^8 + 13132*
(x*e + d)^m*B*c^3*m^2*x^8*e^8 + 3*(x*e + d)^m*A*a^2*c*d*m^7*x^2*e^7 + 87*(x
*e + d)^m*B*a^2*c*d*m^6*x^3*e^7 + 849*(x*e + d)^m*A*a*c^2*d*m^5*x^4*e^7 + 3
405*(x*e + d)^m*B*a*c^2*d*m^4*x^5*e^7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^
7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7*e^7 - 9*(x*e + d)^m*B*a^2*c*d^2*m^6*x^
2*e^6 - 288*(x*e + d)^m*A*a*c^2*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*a*c^2*
d^2*m^4*x^4*e^6 - 1980*(x*e + d)^m*A*c^3*d^2*m^3*x^5*e^6 - 1918*(x*e + d)^m
*B*c^3*d^2*m^2*x^6*e^6 + 36*(x*e + d)^m*A*a*c^2*d^3*m^5*x^2*e^5 + 1080*(x*e
 + d)^m*B*a*c^2*d^3*m^4*x^3*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 +
2100*(x*e + d)^m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*a*c^2*d^4*m^4*x^
2*e^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4
*m^2*x^4*e^4 + 360*(x*e + d)^m*A*c^3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*B*c
^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*B*c^3*d^6*m^2*x^2*e^2 + (x*e + d)^m*B
*a^3*m^7*x^2*e^8 + 99*(x*e + d)^m*A*a^2*c*m^6*x^3*e^8 + 1254*(x*e + d)^m*B*
a^2*c*m^5*x^4*e^8 + 7743*(x*e + d)^m*A*a*c^2*m^4*x^5*e^8 + 25227*(x*e + d)^
m*B*a*c^2*m^3*x^6*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8 + 13068*(x*e +
d)^m*B*c^3*m*x^8*e^8 + (x*e + d)^m*B*a^3*d*m^7*x*e^7 + 93*(x*e + d)^m*A*a^2
*c*d*m^6*x^2*e^7 + 993*(x*e + d)^m*B*a^2*c*d*m^5*x^3*e^7 + 4347*(x*e + d)^m
*A*a*c^2*d*m^4*x^4*e^7 + 8202*(x*e + d)^m*B*a*c^2*d*m^3*x^5*e^7 + 2312*(x*e
 + d)^m*A*c^3*d*m^2*x^6*e^7 + 720*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 6*(x*e +
d)^m*A*a^2*c*d^2*m^6*x*e^6 - 243*(x*e + d)^m*B*a^2*c*d^2*m^5*x^2*e^6 - 2532
*(x*e + d)^m*A*a*c^2*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*a*c^2*d^2*m^3*x^4
*e^6 - 2544*(x*e + d)^m*A*c^3*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m
*x^6*e^6 + 18*(x*e + d)^m*B*a^2*c*d^3*m^5*x*e^5 + 792*(x*e + d)^m*A*a*c^2*d
^3*m^4*x^2*e^5 + 6180*(x*e + d)^m*B*a*c^2*d^3*m^3*x^3*e^5 + 2820*(x*e + d)^
m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*e + d)^m*B*c^3*d^3*m*x^5*e^5 - 72*(x*e +
d)^m*A*a*c^2*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*a*c^2*d^4*m^3*x^2*e^4 - 312
0*(x*e + d)^m*A*c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m*x^4*e^4
+ 360*(x*e + d)^m*B*a*c^2*d^5*m^3*x*e^3 + 3240*(x*e + d)^m*A*c^3*d^5*m^2*x^
2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^3 - 720*(x*e + d)^m*A*c^3*d^6*m^
2*x*e^2 - 2520*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7
*m*x*e + (x*e + d)^m*A*a^3*m^7*x*e^8 + 34*(x*e + d)^m*B*a^3*m^6*x^2*e^8 + 1
341*(x*e + d)^m*A*a^2*c*m^5*x^3*e^8 + 8592*(x*e + d)^m*B*a^2*c*m^4*x^4*e^8
+ 28632*(x*e + d)^m*A*a*c^2*m^3*x^5*e^8 + 50490*(x*e + d)^m*B*a*c^2*m^2*x^6
*e^8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*B*c^3*x^8*e^8 +
 (x*e + d)^m*A*a^3*d*m^7*e^7 + 33*(x*e + d)^m*B*a^3*d*m^6*x*e^7 + 1155*(x*e
 + d)^m*A*a^2*c*d*m^5*x^2*e^7 + 5613*(x*e + d)^m*B*a^2*c*d*m^4*x^3*e^7 + 11
244*(x*e + d)^m*A*a*c^2*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*a*c^2*d*m^2*x^5*
e^7 + 960*(x*e + d)^m*A*c^3*d*m*x^6*e^7 - (x*e + d)^m*B*a^3*d^2*m^6*e^6 - 1
80*(x*e + d)^m*A*a^2*c*d^2*m^5*x*e^6 - 2493*(x*e + d)^m*B*a^2*c*d^2*m^4*x^2
*e^6 - 9792*(x*e + d)^m*A*a*c^2*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*a*c^2
```

```
*d^2*m^2*x^4*e^6 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5*e^6 + 6*(x*e + d)^m*A*a
^2*c*d^3*m^5*e^5 + 468*(x*e + d)^m*B*a^2*c*d^3*m^4*x*e^5 + 6012*(x*e + d)^m
*A*a*c^2*d^3*m^3*x^2*e^5 + 11880*(x*e + d)^m*B*a*c^2*d^3*m^2*x^3*e^5 + 1440
*(x*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 18*(x*e + d)^m*B*a^2*c*d^4*m^4*e^4 - 151
2*(x*e + d)^m*A*a*c^2*d^4*m^3*x*e^4 - 12780*(x*e + d)^m*B*a*c^2*d^4*m^2*x^2
*e^4 - 1920*(x*e + d)^m*A*c^3*d^4*m*x^3*e^4 + 72*(x*e + d)^m*A*a*c^2*d^5*m^
3*e^3 + 5400*(x*e + d)^m*B*a*c^2*d^5*m^2*x*e^3 + 2880*(x*e + d)^m*A*c^3*d^5
*m*x^2*e^3 - 360*(x*e + d)^m*B*a*c^2*d^6*m^2*e^2 - 5760*(x*e + d)^m*A*c^3*d
^6*m*x*e^2 + 720*(x*e + d)^m*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B*c^3*d^8 + 3
5*(x*e + d)^m*A*a^3*m^6*x*e^8 + 478*(x*e + d)^m*B*a^3*m^5*x^2*e^8 + 9585*(x
*e + d)^m*A*a^2*c*m^4*x^3*e^8 + 32979*(x*e + d)^m*B*a^2*c*m^3*x^4*e^8 + 586
92*(x*e + d)^m*A*a*c^2*m^2*x^5*e^8 + 51432*(x*e + d)^m*B*a*c^2*m*x^6*e^8 +
5760*(x*e + d)^m*A*c^3*x^7*e^8 + 35*(x*e + d)^m*A*a^3*d*m^6*e^7 + 445*(x*e
+ d)^m*B*a^3*d*m^5*x*e^7 + 7275*(x*e + d)^m*A*a^2*c*d*m^4*x^2*e^7 + 16140*(
x*e + d)^m*B*a^2*c*d*m^3*x^3*e^7 + 13716*(x*e + d)^m*A*a*c^2*d*m^2*x^4*e^7
+ 4032*(x*e + d)^m*B*a*c^2*d*m*x^5*e^7 - 33*(x*e + d)^m*B*a^3*d^2*m^5*e^6 -
 2130*(x*e + d)^m*A*a^2*c*d^2*m^4*x*e^6 - 11853*(x*e + d)^m*B*a^2*c*d^2*m^3
*x^2*e^6 - 15600*(x*e + d)^m*A*a*c^2*d^2*m^2*x^3*e^6 - 5040*(x*e + d)^m*B*a
*c^2*d^2*m*x^4*e^6 + 180*(x*e + d)^m*A*a^2*c*d^3*m^4*e^5 + 4518*(x*e + d)^m
*B*a^2*c*d^3*m^3*x*e^5 + 17352*(x*e + d)^m*A*a*c^2*d^3*m^2*x^2*e^5 + 6720*(
x*e + d)^m*B*a*c^2*d^3*m*x^3*e^5 - 468*(x*e + d)^m*B*a^2*c*d^4*m^3*e^4 - 10
512*(x*e + d)^m*A*a*c^2*d^4*m^2*x*e^4 - 10080*(x*e + d)^m*B*a*c^2*d^4*m*x^2
*e^4 + 1512*(x*e + d)^m*A*a*c^2*d^5*m^2*e^3 + 20160*(x*e + d)^m*B*a*c^2*d^5
*m*x*e^3 - 5400*(x*e + d)^m*B*a*c^2*d^6*m*e^2 + 5760*(x*e + d)^m*A*c^3*d^7*
e + 511*(x*e + d)^m*A*a^3*m^5*x*e^8 + 3580*(x*e + d)^m*B*a^3*m^4*x^2*e^8 +
38592*(x*e + d)^m*A*a^2*c*m^3*x^3*e^8 + 69936*(x*e + d)^m*B*a^2*c*m^2*x^4*e
^8 + 60912*(x*e + d)^m*A*a*c^2*m*x^5*e^8 + 20160*(x*e + d)^m*B*a*c^2*x^6*e^
8 + 511*(x*e + d)^m*A*a^3*d*m^5*e^7 + 3135*(x*e + d)^m*B*a^3*d*m^4*x*e^7 +
24042*(x*e + d)^m*A*a^2*c*d*m^3*x^2*e^7 + 21516*(x*e + d)^m*B*a^2*c*d*m^2*x
^3*e^7 + 6048*(x*e + d)^m*A*a*c^2*d*m*x^4*e^7 - 445*(x*e + d)^m*B*a^3*d^2*m
^4*e^6 - 12420*(x*e + d)^m*A*a^2*c*d^2*m^3*x*e^6 - 24714*(x*e + d)^m*B*a^2*
c*d^2*m^2*x^2*e^6 - 8064*(x*e + d)^m*A*a*c^2*d^2*m*x^3*e^6 + 2130*(x*e + d)
^m*A*a^2*c*d^3*m^3*e^5 + 19188*(x*e + d)^m*B*a^2*c*d^3*m^2*x*e^5 + 12096*(x
*e + d)^m*A*a*c^2*d^3*m*x^2*e^5 - 4518*(x*e + d)^m*B*a^2*c*d^4*m^2*e^4 - 24
192*(x*e + d)^m*A*a*c^2*d^4*m*x*e^4 + 10512*(x*e + d)^m*A*a*c^2*d^5*m*e^3 -
 20160*(x*e + d)^m*B*a*c^2*d^6*e^2 + 4025*(x*e + d)^m*A*a^3*m^4*x*e^8 + 152
89*(x*e + d)^m*B*a^3*m^3*x^2*e^8 + 86076*(x*e + d)^m*A*a^2*c*m^2*x^3*e^8 +
74628*(x*e + d)^m*B*a^2*c*m*x^4*e^8 + 24192*(x*e + d)^m*A*a*c^2*x^5*e^8 + 4
025*(x*e + d)^m*A*a^3*d*m^4*e^7 + 12154*(x*e + d)^m*B*a^3*d*m^3*x*e^7 + 379
92*(x*e + d)^m*A*a^2*c*d*m^2*x^2*e^7 + 10080*(x*e + d)^m*B*a^2*c*d*m*x^3*e^
7 - 3135*(x*e + d)^m*B*a^3*d^2*m^3*e^6 - 35664*(x*e + d)^m*A*a^2*c*d^2*m^2*
x*e^6 - 15120*(x*e + d)^m*B*a^2*c*d^2*m*x^2*e^6 + 12420*(x*e + d)^m*A*a^2*c
*d^3*m^2*e^5 + 30240*(x*e + d)^m*B*a^2*c*d^3*m*x*e^5 - 19188*(x*e + d)^m*B*
a^2*c*d^4*m*e^4 + 24192*(x*e + d)^m*A*a*c^2*d^5*e^3 + 18424*(x*e + d)^m*A*a
^3*m^3*x*e^8 + 36706*(x*e + d)^m*B*a^3*m^2*x^2*e^8 + 96144*(x*e + d)^m*A*a^
2*c*m*x^3*e^8 + 30240*(x*e + d)^m*B*a^2*c*x^4*e^8 + 18424*(x*e + d)^m*A*a^3
*d*m^3*e^7 + 24552*(x*e + d)^m*B*a^3*d*m^2*x*e^7 + 20160*(x*e + d)^m*A*a^2*
c*d*m*x^2*e^7 - 12154*(x*e + d)^m*B*a^3*d^2*m^2*e^6 - 40320*(x*e + d)^m*A*a
^2*c*d^2*m*x*e^6 + 35664*(x*e + d)^m*A*a^2*c*d^3*m*e^5 - 30240*(x*e + d)^m*
B*a^2*c*d^4*e^4 + 48860*(x*e + d)^m*A*a^3*m^2*x*e^8 + 44712*(x*e + d)^m*B*a
^3*m*x^2*e^8 + 40320*(x*e + d)^m*A*a^2*c*x^3*e^8 + 48860*(x*e + d)^m*A*a^3*
d*m^2*e^7 + 20160*(x*e + d)^m*B*a^3*d*m*x*e^7 - 24552*(x*e + d)^m*B*a^3*d^2
*m*e^6 + 40320*(x*e + d)^m*A*a^2*c*d^3*e^5 + 69264*(x*e + d)^m*A*a^3*m*x*e^
8 + 20160*(x*e + d)^m*B*a^3*x^2*e^8 + 69264*(x*e + d)^m*A*a^3*d*m*e^7 - 201
60*(x*e + d)^m*B*a^3*d^2*e^6 + 40320*(x*e + d)^m*A*a^3*x*e^8 + 40320*(x*e +
 d)^m*A*a^3*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 224
49*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.07, size = 3176, normalized size = 8.54

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x)
```

```
[Out] (e*x+d)^(m+1)*(B*c^3*e^7*m^7*x^7+A*c^3*e^7*m^7*x^6+28*B*c^3*e^7*m^6*x^7+29*
A*c^3*e^7*m^6*x^6+3*B*a*c^2*e^7*m^7*x^5-7*B*c^3*d*e^6*m^6*x^6+322*B*c^3*e^7
*m^5*x^7+3*A*a*c^2*e^7*m^7*x^4-6*A*c^3*d*e^6*m^6*x^5+343*A*c^3*e^7*m^5*x^6+
90*B*a*c^2*e^7*m^6*x^5-147*B*c^3*d*e^6*m^5*x^6+1960*B*c^3*e^7*m^4*x^7+93*A*
a*c^2*e^7*m^6*x^4-138*A*c^3*d*e^6*m^5*x^5+2135*A*c^3*e^7*m^4*x^6+3*B*a^2*c*
e^7*m^7*x^3-15*B*a*c^2*d*e^6*m^6*x^4+1098*B*a*c^2*e^7*m^5*x^5+42*B*c^3*d^2*
e^5*m^5*x^5-1225*B*c^3*d*e^6*m^4*x^6+6769*B*c^3*e^7*m^3*x^7+3*A*a^2*c*e^7*m
^7*x^2-12*A*a*c^2*d*e^6*m^6*x^3+1173*A*a*c^2*e^7*m^5*x^4+30*A*c^3*d^2*e^5*m
^5*x^4-1230*A*c^3*d*e^6*m^4*x^5+7504*A*c^3*e^7*m^3*x^6+96*B*a^2*c*e^7*m^6*x
^3-375*B*a*c^2*d*e^6*m^5*x^4+7020*B*a*c^2*e^7*m^4*x^5+630*B*c^3*d^2*e^5*m^4
*x^5-5145*B*c^3*d*e^6*m^3*x^6+13132*B*c^3*e^7*m^2*x^7+99*A*a^2*c*e^7*m^6*x^
2-324*A*a*c^2*d*e^6*m^5*x^3+7743*A*a*c^2*e^7*m^4*x^4+540*A*c^3*d^2*e^5*m^4*
x^4-5430*A*c^3*d*e^6*m^3*x^5+14756*A*c^3*e^7*m^2*x^6+B*a^3*e^7*m^7*x-9*B*a^
2*c*d*e^6*m^6*x^2+1254*B*a^2*c*e^7*m^5*x^3+60*B*a*c^2*d^2*e^5*m^5*x^3-3615*
B*a*c^2*d*e^6*m^4*x^4+25227*B*a*c^2*e^7*m^3*x^5-210*B*c^3*d^3*e^4*m^4*x^4+3
570*B*c^3*d^2*e^5*m^3*x^5-11368*B*c^3*d*e^6*m^2*x^6+13068*B*c^3*e^7*m*x^7+A
*a^3*e^7*m^7-6*A*a^2*c*d*e^6*m^6*x+1341*A*a^2*c*e^7*m^5*x^2+36*A*a*c^2*d^2*
e^5*m^5*x^2-3396*A*a*c^2*d*e^6*m^4*x^3+28632*A*a*c^2*e^7*m^3*x^4-120*A*c^3*
d^3*e^4*m^4*x^3+3450*A*c^3*d^2*e^5*m^3*x^4-12444*A*c^3*d*e^6*m^2*x^5+14832*
A*c^3*e^7*m*x^6+34*B*a^3*e^7*m^6*x-261*B*a^2*c*d*e^6*m^5*x^2+8592*B*a^2*c*e
^7*m^4*x^3+1260*B*a*c^2*d^2*e^5*m^4*x^3-17025*B*a*c^2*d*e^6*m^3*x^4+50490*B
*a*c^2*e^7*m^2*x^5-2100*B*c^3*d^3*e^4*m^3*x^4+9450*B*c^3*d^2*e^5*m^2*x^5-12
348*B*c^3*d*e^6*m*x^6+5040*B*c^3*e^7*x^7+35*A*a^3*e^7*m^6-186*A*a^2*c*d*e^6
*m^5*x+9585*A*a^2*c*e^7*m^4*x^2+864*A*a*c^2*d^2*e^5*m^4*x^2-17388*A*a*c^2*d
*e^6*m^3*x^3+58692*A*a*c^2*e^7*m^2*x^4-1680*A*c^3*d^3*e^4*m^3*x^3+9900*A*c^
3*d^2*e^5*m^2*x^4-13872*A*c^3*d*e^6*m*x^5+5760*A*c^3*e^7*x^6-B*a^3*d*e^6*m^
6+478*B*a^3*e^7*m^5*x+18*B*a^2*c*d^2*e^5*m^5*x-2979*B*a^2*c*d*e^6*m^4*x^2+3
2979*B*a^2*c*e^7*m^3*x^3-180*B*a*c^2*d^3*e^4*m^4*x^2+9420*B*a*c^2*d^2*e^5*m
^3*x^3-41010*B*a*c^2*d*e^6*m^2*x^4+51432*B*a*c^2*e^7*m*x^5+840*B*c^3*d^4*e^
3*m^3*x^3-7350*B*c^3*d^3*e^4*m^2*x^4+11508*B*c^3*d^2*e^5*m*x^5-5040*B*c^3*d
*e^6*x^6+511*A*a^3*e^7*m^5+6*A*a^2*c*d^2*e^5*m^5-2310*A*a^2*c*d*e^6*m^4*x+3
8592*A*a^2*c*e^7*m^3*x^2-72*A*a*c^2*d^3*e^4*m^4*x+7596*A*a*c^2*d^2*e^5*m^3*
x^2-44976*A*a*c^2*d*e^6*m^2*x^3+60912*A*a*c^2*e^7*m*x^4+360*A*c^3*d^4*e^3*m
^3*x^2-7080*A*c^3*d^3*e^4*m^2*x^3+12720*A*c^3*d^2*e^5*m*x^4-5760*A*c^3*d*e^
6*x^5-33*B*a^3*d*e^6*m^5+3580*B*a^3*e^7*m^4*x+486*B*a^2*c*d^2*e^5*m^4*x-168
39*B*a^2*c*d*e^6*m^3*x^2+69936*B*a^2*c*e^7*m^2*x^3-3240*B*a*c^2*d^3*e^4*m^3
*x^2+30420*B*a*c^2*d^2*e^5*m^2*x^3-47400*B*a*c^2*d*e^6*m*x^4+20160*B*a*c^2*
e^7*x^5+5040*B*c^3*d^4*e^3*m^2*x^3-10500*B*c^3*d^3*e^4*m*x^4+5040*B*c^3*d^2
*e^5*x^5+4025*A*a^3*e^7*m^4+180*A*a^2*c*d^2*e^5*m^4-14550*A*a^2*c*d*e^6*m^3
*x+86076*A*a^2*c*e^7*m^2*x^2-1584*A*a*c^2*d^3*e^4*m^3*x+29376*A*a*c^2*d^2*e
^5*m^2*x^2-54864*A*a*c^2*d*e^6*m*x^3+24192*A*a*c^2*e^7*x^4+3960*A*c^3*d^4*e
^3*m^2*x^2-11280*A*c^3*d^3*e^4*m*x^3+5760*A*c^3*d^2*e^5*x^4-445*B*a^3*d*e^6
*m^4+15289*B*a^3*e^7*m^3*x-18*B*a^2*c*d^3*e^4*m^4+4986*B*a^2*c*d^2*e^5*m^3*
x-48420*B*a^2*c*d*e^6*m^2*x^2+74628*B*a^2*c*e^7*m*x^3+360*B*a*c^2*d^4*e^3*m
^3*x-18540*B*a*c^2*d^3*e^4*m^2*x^2+42360*B*a*c^2*d^2*e^5*m*x^3-20160*B*a*c^
2*d*e^6*x^4-2520*B*c^3*d^5*e^2*m^2*x^2+9240*B*c^3*d^4*e^3*m*x^3-5040*B*c^3*
d^3*e^4*x^4+18424*A*a^3*e^7*m^3+2130*A*a^2*c*d^2*e^5*m^3-48084*A*a^2*c*d*e^
6*m^2*x+96144*A*a^2*c*e^7*m*x^2+72*A*a*c^2*d^4*e^3*m^3-12024*A*a*c^2*d^3*e^
4*m^2*x+46800*A*a*c^2*d^2*e^5*m*x^2-24192*A*a*c^2*d*e^6*x^3-720*A*c^3*d^5*e
^2*m^2*x+9360*A*c^3*d^4*e^3*m*x^2-5760*A*c^3*d^3*e^4*x^3-3135*B*a^3*d*e^6*m
^3+36706*B*a^3*e^7*m^2*x-468*B*a^2*c*d^3*e^4*m^3+23706*B*a^2*c*d^2*e^5*m^2*
x-64548*B*a^2*c*d*e^6*m*x^2+30240*B*a^2*c*e^7*x^3+5760*B*a*c^2*d^4*e^3*m^2*
x-35640*B*a*c^2*d^3*e^4*m*x^2+20160*B*a*c^2*d^2*e^5*x^3-7560*B*c^3*d^5*e^2*
m*x^2+5040*B*c^3*d^4*e^3*x^3+48860*A*a^3*e^7*m^2+12420*A*a^2*c*d^2*e^5*m^2-
75984*A*a^2*c*d*e^6*m*x+40320*A*a^2*c*e^7*x^2+1512*A*a*c^2*d^4*e^3*m^2-3470
4*A*a*c^2*d^3*e^4*m*x+24192*A*a*c^2*d^2*e^5*x^2-6480*A*c^3*d^5*e^2*m*x+5760
*A*c^3*d^4*e^3*x^2-12154*B*a^3*d*e^6*m^2+44712*B*a^3*e^7*m*x-4518*B*a^2*c*d
^3*e^4*m^2+49428*B*a^2*c*d^2*e^5*m*x-30240*B*a^2*c*d*e^6*x^2-360*B*a*c^2*d^
5*e^2*m^2+25560*B*a*c^2*d^4*e^3*m*x-20160*B*a*c^2*d^3*e^4*x^2+5040*B*c^3*d^
6*e*m*x-5040*B*c^3*d^5*e^2*x^2+69264*A*a^3*e^7*m+35664*A*a^2*c*d^2*e^5*m-40
320*A*a^2*c*d*e^6*x+10512*A*a*c^2*d^4*e^3*m-24192*A*a*c^2*d^3*e^4*x+720*A*c
^3*d^6*e*m-5760*A*c^3*d^5*e^2*x-24552*B*a^3*d*e^6*m+20160*B*a^3*e^7*x-19188
*B*a^2*c*d^3*e^4*m+30240*B*a^2*c*d^2*e^5*x-5400*B*a*c^2*d^5*e^2*m+20160*B*a
*c^2*d^4*e^3*x+5040*B*c^3*d^6*e*x+40320*A*a^3*e^7+40320*A*a^2*c*d^2*e^5+241
92*A*a*c^2*d^4*e^3+5760*A*c^3*d^6*e-20160*B*a^3*d*e^6-30240*B*a^2*c*d^3*e^4
-20160*B*a*c^2*d^5*e^2-5040*B*c^3*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+224
49*m^4+67284*m^3+118124*m^2+109584*m+40320)
```

maxima [**B**] time = 0.87, size = 1104, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^3,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^3/((m^2 + 3*m + 2)*e^2) +
 (e*x + d)^(m + 1)*A*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a^2*c/((m^3 + 6*m^2 + 11*
m + 6)*e^3) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e
^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a^2*c
/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 3*((m^4 + 10*m^3 + 35*m^2 + 50
*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2
+ 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
 + d)^m*A*a*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*(
(m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 3
5*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x
^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^
5*e*m*x - 120*d^6)*(e*x + d)^m*B*a*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 +
120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 +
30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e
^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*A
*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m +
 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 +
13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 17
64*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 +
120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^3*e^5*x^5
 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 + 840*(m^3 + 3*m^2 + 2*m)*d
^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^7*e*m*x - 5040*d^8)*(e*x +
 d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 1
18124*m^2 + 109584*m + 40320)*e^8)
```

mupad [**B**] time = 3.27, size = 2585, normalized size = 6.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^3*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(40320*A*a^3*d*e^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 20160
*B*a^3*d^2*e^6 + 24192*A*a*c^2*d^5*e^3 + 40320*A*a^2*c*d^3*e^5 - 20160*B*a*
```

```
c^2*d^6*e^2 - 30240*B*a^2*c*d^4*e^4 + 48860*A*a^3*d*e^7*m^2 + 18424*A*a^3*d
*e^7*m^3 + 4025*A*a^3*d*e^7*m^4 + 511*A*a^3*d*e^7*m^5 + 35*A*a^3*d*e^7*m^6
+ A*a^3*d*e^7*m^7 - 24552*B*a^3*d^2*e^6*m - 12154*B*a^3*d^2*e^6*m^2 - 3135*
B*a^3*d^2*e^6*m^3 - 445*B*a^3*d^2*e^6*m^4 - 33*B*a^3*d^2*e^6*m^5 - B*a^3*d^
2*e^6*m^6 + 69264*A*a^3*d*e^7*m + 720*A*c^3*d^7*e*m + 1512*A*a*c^2*d^5*e^3*
m^2 + 12420*A*a^2*c*d^3*e^5*m^2 + 72*A*a*c^2*d^5*e^3*m^3 + 2130*A*a^2*c*d^3
*e^5*m^3 + 180*A*a^2*c*d^3*e^5*m^4 + 6*A*a^2*c*d^3*e^5*m^5 - 360*B*a*c^2*d^
6*e^2*m^2 - 4518*B*a^2*c*d^4*e^4*m^2 - 468*B*a^2*c*d^4*e^4*m^3 - 18*B*a^2*c
*d^4*e^4*m^4 + 10512*A*a*c^2*d^5*e^3*m + 35664*A*a^2*c*d^3*e^5*m - 5400*B*a
*c^2*d^6*e^2*m - 19188*B*a^2*c*d^4*e^4*m))/(e^8*(109584*m + 118124*m^2 + 67
284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x*(d +
 e*x)^m*(40320*A*a^3*e^8 + 69264*A*a^3*e^8*m + 48860*A*a^3*e^8*m^2 + 18424*
A*a^3*e^8*m^3 + 4025*A*a^3*e^8*m^4 + 511*A*a^3*e^8*m^5 + 35*A*a^3*e^8*m^6 +
 A*a^3*e^8*m^7 + 24552*B*a^3*d*e^7*m^2 + 12154*B*a^3*d*e^7*m^3 + 3135*B*a^3
*d*e^7*m^4 + 445*B*a^3*d*e^7*m^5 + 33*B*a^3*d*e^7*m^6 + B*a^3*d*e^7*m^7 - 5
760*A*c^3*d^6*e^2*m - 720*A*c^3*d^6*e^2*m^2 + 20160*B*a^3*d*e^7*m + 5040*B*
c^3*d^7*e*m - 10512*A*a*c^2*d^4*e^4*m^2 - 35664*A*a^2*c*d^2*e^6*m^2 - 1512*
A*a*c^2*d^4*e^4*m^3 - 12420*A*a^2*c*d^2*e^6*m^3 - 72*A*a*c^2*d^4*e^4*m^4 -
2130*A*a^2*c*d^2*e^6*m^4 - 180*A*a^2*c*d^2*e^6*m^5 - 6*A*a^2*c*d^2*e^6*m^6
+ 5400*B*a*c^2*d^5*e^3*m^2 + 19188*B*a^2*c*d^3*e^5*m^2 + 360*B*a*c^2*d^5*e^
3*m^3 + 4518*B*a^2*c*d^3*e^5*m^3 + 468*B*a^2*c*d^3*e^5*m^4 + 18*B*a^2*c*d^3
*e^5*m^5 - 24192*A*a*c^2*d^4*e^4*m - 40320*A*a^2*c*d^2*e^6*m + 20160*B*a*c^
2*d^5*e^3*m + 30240*B*a^2*c*d^3*e^5*m))/(e^8*(109584*m + 118124*m^2 + 67284
*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (B*c^3*x^8
*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6
+ m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 +
546*m^6 + 36*m^7 + m^8 + 40320) + (x^2*(m + 1)*(d + e*x)^m*(20160*B*a^3*e^6
 + 24552*B*a^3*e^6*m - 2520*B*c^3*d^6*m + 12154*B*a^3*e^6*m^2 + 3135*B*a^3*
e^6*m^3 + 445*B*a^3*e^6*m^4 + 33*B*a^3*e^6*m^5 + B*a^3*e^6*m^6 + 360*A*c^3*
d^5*e*m^2 + 2880*A*c^3*d^5*e*m + 5256*A*a*c^2*d^3*e^3*m^2 + 756*A*a*c^2*d^3
*e^3*m^3 + 36*A*a*c^2*d^3*e^3*m^4 - 2700*B*a*c^2*d^4*e^2*m^2 - 9594*B*a^2*c
*d^2*e^4*m^2 - 180*B*a*c^2*d^4*e^2*m^3 - 2259*B*a^2*c*d^2*e^4*m^3 - 234*B*a
^2*c*d^2*e^4*m^4 - 9*B*a^2*c*d^2*e^4*m^5 + 20160*A*a^2*c*d*e^5*m + 12096*A*
a*c^2*d^3*e^3*m + 17832*A*a^2*c*d*e^5*m^2 + 6210*A*a^2*c*d*e^5*m^3 + 1065*A
*a^2*c*d*e^5*m^4 + 90*A*a^2*c*d*e^5*m^5 + 3*A*a^2*c*d*e^5*m^6 - 10080*B*a*c
^2*d^4*e^2*m - 15120*B*a^2*c*d^2*e^4*m))/(e^6*(109584*m + 118124*m^2 + 6728
4*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (3*c^2*x^
5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(336*A*a*e^3 + 146*A*a*e^
3*m + 14*B*c*d^3*m + 21*A*a*e^3*m^2 + A*a*e^3*m^3 + 56*B*a*d*e^2*m - 16*A*c
*d^2*e*m + 15*B*a*d*e^2*m^2 + B*a*d*e^2*m^3 - 2*A*c*d^2*e*m^2))/(e^3*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (3*c*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(1680*B*a^2*e^4
 + 1066*B*a^2*e^4*m - 70*B*c^2*d^4*m + 251*B*a^2*e^4*m^2 + 26*B*a^2*e^4*m^3
 + B*a^2*e^4*m^4 + 10*A*c^2*d^3*e*m^2 + 80*A*c^2*d^3*e*m + 146*A*a*c*d*e^3*
m^2 + 21*A*a*c*d*e^3*m^3 + A*a*c*d*e^3*m^4 - 280*B*a*c*d^2*e^2*m - 75*B*a*c
*d^2*e^2*m^2 - 5*B*a*c*d^2*e^2*m^3 + 336*A*a*c*d*e^3*m))/(e^4*(109584*m + 1
18124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 403
20)) + (c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)
*(168*B*a*e^2 + 45*B*a*e^2*m - 7*B*c*d^2*m + 3*B*a*e^2*m^2 + 8*A*c*d*e*m +
A*c*d*e*m^2))/(e^2*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^
5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c^3*x^7*(d + e*x)^m*(8*A*e + A*e*m
+ B*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(
109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7
 + m^8 + 40320)) + (3*c*x^3*(d + e*x)^m*(3*m + m^2 + 2)*(6720*A*a^2*e^5 + 5
944*A*a^2*e^5*m + 280*B*c^2*d^5*m + 2070*A*a^2*e^5*m^2 + 355*A*a^2*e^5*m^3
+ 30*A*a^2*e^5*m^4 + A*a^2*e^5*m^5 + 1066*B*a^2*d*e^4*m^2 + 251*B*a^2*d*e^4
*m^3 + 26*B*a^2*d*e^4*m^4 + B*a^2*d*e^4*m^5 - 40*A*c^2*d^4*e*m^2 + 1680*B*a
^2*d*e^4*m - 320*A*c^2*d^4*e*m - 1344*A*a*c*d^2*e^3*m + 1120*B*a*c*d^3*e^2*
m - 584*A*a*c*d^2*e^3*m^2 - 84*A*a*c*d^2*e^3*m^3 - 4*A*a*c*d^2*e^3*m^4 + 30
```

```
0*B*a*c*d^3*e^2*m^2 + 20*B*a*c*d^3*e^2*m^3))/(e^5*(109584*m + 118124*m^2 +
67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a)**3,x)
```

```
[Out] Timed out
```

3.1488 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right)^2 dx$

Optimal. Leaf size=234

$$-\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)(d+ex)^{m+1}}{e^6(m+1)}+\frac{\left(ae^2+cd^2\right)(d+ex)^{m+2}\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(m+2)}+\frac{2c(d+ex)^{m+4}\left(aBe^2-\right.}{e^6(m+}$$

```
[Out] -(-A*e+B*d)*(a*e^2+c*d^2)^2*(e*x+d)^(1+m)/e^6/(1+m)+(a*e^2+c*d^2)*(-4*A*c*d
*e+B*a*e^2+5*B*c*d^2)*(e*x+d)^(2+m)/e^6/(2+m)-2*c*(-A*a*e^3-3*A*c*d^2*e+3*B
*a*d*e^2+5*B*c*d^3)*(e*x+d)^(3+m)/e^6/(3+m)+2*c*(-2*A*c*d*e+B*a*e^2+5*B*c*d
^2)*(e*x+d)^(4+m)/e^6/(4+m)-c^2*(-A*e+5*B*d)*(e*x+d)^(5+m)/e^6/(5+m)+B*c^2*
(e*x+d)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.14, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.045$, Rules used = {772}

$$-\frac{\left(ae^2+cd^2\right)^2(Bd-Ae)(d+ex)^{m+1}}{e^6(m+1)}+\frac{\left(ae^2+cd^2\right)(d+ex)^{m+2}\left(aBe^2-4Acde+5Bcd^2\right)}{e^6(m+2)}-\frac{2c(d+ex)^{m+3}\left(-aAe^3\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2)^2,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))) + ((c*d^
2 + a*e^2)*(5*B*c*d^2 - 4*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^6*(2 + m
)) - (2*c*(5*B*c*d^3 - 3*A*c*d^2*e + 3*a*B*d*e^2 - a*A*e^3)*(d + e*x)^(3 +
m))/(e^6*(3 + m)) + (2*c*(5*B*c*d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(4 + m
))/(e^6*(4 + m)) - (c^2*(5*B*d - A*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B
*c^2*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a+cx^2\right)^2\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)^2(d+ex)^m}{e^5}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+\right.}{e^5}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{\left(cd^2+ae^2\right)\left(5Bcd^2-4Acde+a\right.}{e^6(2+m)}\end{aligned}$$

Mathematica [A] time = 0.53, size = 355, normalized size = 1.52

$$\frac{(d+ex)^{m+1}\left(B(m+1)(d+ex)\left(4(m+5)\left(ae^2+cd^2\right)\left(ae^2\left(m^2+7m+12\right)+c\left(2d^2-2de(m+2)x+e^2\left(m^2+5\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((B*d - A*e)*(6 + m)*(e^4*(1 + m)*(2 + m)*(3 + m)*(4 +
 m)*(a + c*x^2)^2 + 4*(c*d^2 + a*e^2)*(4 + m)*(a*e^2*(6 + 5*m + m^2) + c*(2
*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2)) - 4*c*d*(1 + m)*(d + e*x
)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*d*e*(2 + m)*x + e^2*(6 + 5*m + m^2
)*x^2)))) + B*(1 + m)*(d + e*x)*(e^4*(2 + m)*(3 + m)*(4 + m)*(5 + m)*(a + c
*x^2)^2 + 4*(c*d^2 + a*e^2)*(5 + m)*(a*e^2*(12 + 7*m + m^2) + c*(2*d^2 - 2*
d*e*(2 + m)*x + e^2*(6 + 5*m + m^2)*x^2)) - 4*c*d*(2 + m)*(d + e*x)*(a*e^2*
(20 + 9*m + m^2) + c*(2*d^2 - 2*d*e*(3 + m)*x + e^2*(12 + 7*m + m^2)*x^2)))
))/(e^6*(1 + m)*(2 + m)*(3 + m)*(4 + m)*(5 + m)*(6 + m))
```

fricas [**B**] time = 1.36, size = 1373, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^5*m^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e - 360*B*a*c*d^4*e^2 + 48
0*A*a*c*d^3*e^3 - 360*B*a^2*d^2*e^4 + 720*A*a^2*d*e^5 + (B*c^2*e^6*m^5 + 15
*B*c^2*e^6*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 1
20*B*c^2*e^6)*x^6 + (144*A*c^2*e^6 + (B*c^2*d*e^5 + A*c^2*e^6)*m^5 + 2*(5*B
*c^2*d*e^5 + 8*A*c^2*e^6)*m^4 + 5*(7*B*c^2*d*e^5 + 19*A*c^2*e^6)*m^3 + 10*(
5*B*c^2*d*e^5 + 26*A*c^2*e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*A*c^2*e^6)*m)*x^
5 - (B*a^2*d^2*e^4 - 20*A*a^2*d*e^5)*m^4 + (360*B*a*c*e^6 + (A*c^2*d*e^5 +
2*B*a*c*e^6)*m^5 - (5*B*c^2*d^2*e^4 - 12*A*c^2*d*e^5 - 34*B*a*c*e^6)*m^4 -
(30*B*c^2*d^2*e^4 - 47*A*c^2*d*e^5 - 214*B*a*c*e^6)*m^3 - (55*B*c^2*d^2*e^4
 - 72*A*c^2*d*e^5 - 614*B*a*c*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*A*c^2*d*e^5
 - 132*B*a*c*e^6)*m)*x^4 + (4*A*a*c*d^3*e^3 - 18*B*a^2*d^2*e^4 + 155*A*a^2*
d*e^5)*m^3 + 2*(240*A*a*c*e^6 + (B*a*c*d*e^5 + A*a*c*e^6)*m^5 - 2*(A*c^2*d^
2*e^4 - 7*B*a*c*d*e^5 - 9*A*a*c*e^6)*m^4 + (10*B*c^2*d^3*e^3 - 18*A*c^2*d^2
*e^4 + 65*B*a*c*d*e^5 + 121*A*a*c*e^6)*m^3 + 2*(15*B*c^2*d^3*e^3 - 20*A*c^2
*d^2*e^4 + 56*B*a*c*d*e^5 + 186*A*a*c*e^6)*m^2 + 4*(5*B*c^2*d^3*e^3 - 6*A*c
^2*d^2*e^4 + 15*B*a*c*d*e^5 + 127*A*a*c*e^6)*m)*x^3 - (12*B*a*c*d^4*e^2 - 6
0*A*a*c*d^3*e^3 + 119*B*a^2*d^2*e^4 - 580*A*a^2*d*e^5)*m^2 + (360*B*a^2*e^6
 + (2*A*a*c*d*e^5 + B*a^2*e^6)*m^5 - (6*B*a*c*d^2*e^4 - 32*A*a*c*d*e^5 - 19
*B*a^2*e^6)*m^4 + (12*A*c^2*d^3*e^3 - 72*B*a*c*d^2*e^4 + 178*A*a*c*d*e^5 +
137*B*a^2*e^6)*m^3 - (60*B*c^2*d^4*e^2 - 84*A*c^2*d^3*e^3 + 246*B*a*c*d^2*e
^4 - 388*A*a*c*d*e^5 - 461*B*a^2*e^6)*m^2 - 6*(10*B*c^2*d^4*e^2 - 12*A*c^2*
d^3*e^3 + 30*B*a*c*d^2*e^4 - 40*A*a*c*d*e^5 - 117*B*a^2*e^6)*m)*x^2 + 2*(12
*A*c^2*d^5*e - 66*B*a*c*d^4*e^2 + 148*A*a*c*d^3*e^3 - 171*B*a^2*d^2*e^4 + 5
22*A*a^2*d*e^5)*m + (720*A*a^2*e^6 + (B*a^2*d*e^5 + A*a^2*e^6)*m^5 - 2*(2*A
*a*c*d^2*e^4 - 9*B*a^2*d*e^5 - 10*A*a^2*e^6)*m^4 + (12*B*a*c*d^3*e^3 - 60*A
*a*c*d^2*e^4 + 119*B*a^2*d*e^5 + 155*A*a^2*e^6)*m^3 - 2*(12*A*c^2*d^4*e^2 -
 66*B*a*c*d^3*e^3 + 148*A*a*c*d^2*e^4 - 171*B*a^2*d*e^5 - 290*A*a^2*e^6)*m^
2 + 12*(10*B*c^2*d^5*e - 12*A*c^2*d^4*e^2 + 30*B*a*c*d^3*e^3 - 40*A*a*c*d^2
*e^4 + 30*B*a^2*d*e^5 + 87*A*a^2*e^6)*m)*x)*(e*x + d)^m/(e^6*m^6 + 21*e^6*m
^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^6)
```

giac [**B**] time = 0.26, size = 2435, normalized size = 10.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + (x*e + d
)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*c^2*m^4*x^6*e^6 + (x*e + d)^m*A*c^
2*d*m^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*
d^2*m^4*x^4*e^4 + 2*(x*e + d)^m*B*a*c*m^5*x^4*e^6 + 16*(x*e + d)^m*A*c^2*m^
4*x^5*e^6 + 85*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + 2*(x*e + d)^m*B*a*c*d*m^5*x^
3*e^5 + 12*(x*e + d)^m*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5
*e^5 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*B*c^2*d^2*m^3*x
^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + 2*(x*e + d)^m*A*a*c*m^5*x^3
*e^6 + 34*(x*e + d)^m*B*a*c*m^4*x^4*e^6 + 95*(x*e + d)^m*A*c^2*m^3*x^5*e^6
+ 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 + 2*(x*e + d)^m*A*a*c*d*m^5*x^2*e^5 + 2
8*(x*e + d)^m*B*a*c*d*m^4*x^3*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*x^4*e^5 + 50
*(x*e + d)^m*B*c^2*d*m^2*x^5*e^5 - 6*(x*e + d)^m*B*a*c*d^2*m^4*x^2*e^4 - 36
*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*c^2*d^2*m^2*x^4*e^4 +
 12*(x*e + d)^m*A*c^2*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^
3 - 60*(x*e + d)^m*B*c^2*d^4*m^2*x^2*e^2 + (x*e + d)^m*B*a^2*m^5*x^2*e^6 +
36*(x*e + d)^m*A*a*c*m^4*x^3*e^6 + 214*(x*e + d)^m*B*a*c*m^3*x^4*e^6 + 260*
(x*e + d)^m*A*c^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x^6*e^6 + (x*e + d)
^m*B*a^2*d*m^5*x*e^5 + 32*(x*e + d)^m*A*a*c*d*m^4*x^2*e^5 + 130*(x*e + d)^m
*B*a*c*d*m^3*x^3*e^5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*
B*c^2*d*m*x^5*e^5 - 4*(x*e + d)^m*A*a*c*d^2*m^4*x*e^4 - 72*(x*e + d)^m*B*a*
c*d^2*m^3*x^2*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B
*c^2*d^2*m*x^4*e^4 + 12*(x*e + d)^m*B*a*c*d^3*m^3*x*e^3 + 84*(x*e + d)^m*A*
c^2*d^3*m^2*x^2*e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 24*(x*e + d)^m*A
*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m*x^2*e^2 + 120*(x*e + d)^m*B
*c^2*d^5*m*x*e + (x*e + d)^m*A*a^2*m^5*x*e^6 + 19*(x*e + d)^m*B*a^2*m^4*x^2
*e^6 + 242*(x*e + d)^m*A*a*c*m^3*x^3*e^6 + 614*(x*e + d)^m*B*a*c*m^2*x^4*e^
6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*(x*e + d)^m*B*c^2*x^6*e^6 + (x*e
+ d)^m*A*a^2*d*m^5*e^5 + 18*(x*e + d)^m*B*a^2*d*m^4*x*e^5 + 178*(x*e + d)^m
*A*a*c*d*m^3*x^2*e^5 + 224*(x*e + d)^m*B*a*c*d*m^2*x^3*e^5 + 36*(x*e + d)^m
*A*c^2*d*m*x^4*e^5 - (x*e + d)^m*B*a^2*d^2*m^4*e^4 - 60*(x*e + d)^m*A*a*c*d
^2*m^3*x*e^4 - 246*(x*e + d)^m*B*a*c*d^2*m^2*x^2*e^4 - 48*(x*e + d)^m*A*c^2
*d^2*m*x^3*e^4 + 4*(x*e + d)^m*A*a*c*d^3*m^3*e^3 + 132*(x*e + d)^m*B*a*c*d^
3*m^2*x*e^3 + 72*(x*e + d)^m*A*c^2*d^3*m*x^2*e^3 - 12*(x*e + d)^m*B*a*c*d^4
*m^2*e^2 - 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 24*(x*e + d)^m*A*c^2*d^5*m*e
 - 120*(x*e + d)^m*B*c^2*d^6 + 20*(x*e + d)^m*A*a^2*m^4*x*e^6 + 137*(x*e +
d)^m*B*a^2*m^3*x^2*e^6 + 744*(x*e + d)^m*A*a*c*m^2*x^3*e^6 + 792*(x*e + d)^
m*B*a*c*m*x^4*e^6 + 144*(x*e + d)^m*A*c^2*x^5*e^6 + 20*(x*e + d)^m*A*a^2*d*
m^4*e^5 + 119*(x*e + d)^m*B*a^2*d*m^3*x*e^5 + 388*(x*e + d)^m*A*a*c*d*m^2*x
^2*e^5 + 120*(x*e + d)^m*B*a*c*d*m*x^3*e^5 - 18*(x*e + d)^m*B*a^2*d^2*m^3*e
^4 - 296*(x*e + d)^m*A*a*c*d^2*m^2*x*e^4 - 180*(x*e + d)^m*B*a*c*d^2*m*x^2*
e^4 + 60*(x*e + d)^m*A*a*c*d^3*m^2*e^3 + 360*(x*e + d)^m*B*a*c*d^3*m*x*e^3
- 132*(x*e + d)^m*B*a*c*d^4*m*e^2 + 144*(x*e + d)^m*A*c^2*d^5*e + 155*(x*e
+ d)^m*A*a^2*m^3*x*e^6 + 461*(x*e + d)^m*B*a^2*m^2*x^2*e^6 + 1016*(x*e + d)
^m*A*a*c*m*x^3*e^6 + 360*(x*e + d)^m*B*a*c*x^4*e^6 + 155*(x*e + d)^m*A*a^2*
d*m^3*e^5 + 342*(x*e + d)^m*B*a^2*d*m^2*x*e^5 + 240*(x*e + d)^m*A*a*c*d*m*x
^2*e^5 - 119*(x*e + d)^m*B*a^2*d^2*m^2*e^4 - 480*(x*e + d)^m*A*a*c*d^2*m*x*
e^4 + 296*(x*e + d)^m*A*a*c*d^3*m*e^3 - 360*(x*e + d)^m*B*a*c*d^4*e^2 + 580
*(x*e + d)^m*A*a^2*m^2*x*e^6 + 702*(x*e + d)^m*B*a^2*m*x^2*e^6 + 480*(x*e +
 d)^m*A*a*c*x^3*e^6 + 580*(x*e + d)^m*A*a^2*d*m^2*e^5 + 360*(x*e + d)^m*B*a
^2*d*m*x*e^5 - 342*(x*e + d)^m*B*a^2*d^2*m*e^4 + 480*(x*e + d)^m*A*a*c*d^3*
e^3 + 1044*(x*e + d)^m*A*a^2*m*x*e^6 + 360*(x*e + d)^m*B*a^2*x^2*e^6 + 1044
*(x*e + d)^m*A*a^2*d*m*e^5 - 360*(x*e + d)^m*B*a^2*d^2*e^4 + 720*(x*e + d)^
m*A*a^2*x*e^6 + 720*(x*e + d)^m*A*a^2*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^
4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1271, normalized size = 5.43

$$\left(B c^{2} e^{5} m^{5} x^{5}+A c^{2} e^{5} m^{5} x^{4}+15 B c^{2} e^{5} m^{4} x^{5}+16 A c^{2} e^{5} m^{4} x^{4}+2 B a c e^{5} m^{5} x^{3}-5 B c^{2} d e^{4} m^{4} x^{4}+85 B c^{2} e^{5} m^{3} x^{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+15*B*c^2*e^5*m^4*x^5+16*
A*c^2*e^5*m^4*x^4+2*B*a*c*e^5*m^5*x^3-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^5*m^
3*x^5+2*A*a*c*e^5*m^5*x^2-4*A*c^2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+34*B*a
*c*e^5*m^4*x^3-50*B*c^2*d*e^4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+36*A*a*c*e^5*m^
4*x^2-48*A*c^2*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4+B*a^2*e^5*m^5*x-6*B*a*c*
d*e^4*m^4*x^2+214*B*a*c*e^5*m^3*x^3+20*B*c^2*d^2*e^3*m^3*x^3-175*B*c^2*d*e^
4*m^2*x^4+274*B*c^2*e^5*m*x^5+A*a^2*e^5*m^5-4*A*a*c*d*e^4*m^4*x+242*A*a*c*e
^5*m^3*x^2+12*A*c^2*d^2*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*m
*x^4+19*B*a^2*e^5*m^4*x-84*B*a*c*d*e^4*m^3*x^2+614*B*a*c*e^5*m^2*x^3+120*B*
c^2*d^2*e^3*m^2*x^3-250*B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5+20*A*a^2*e^5*m^
4-64*A*a*c*d*e^4*m^3*x+744*A*a*c*e^5*m^2*x^2+108*A*c^2*d^2*e^3*m^2*x^2-288*
A*c^2*d*e^4*m*x^3+144*A*c^2*e^5*x^4-B*a^2*d*e^4*m^4+137*B*a^2*e^5*m^3*x+12*
B*a*c*d^2*e^3*m^3*x-390*B*a*c*d*e^4*m^2*x^2+792*B*a*c*e^5*m*x^3-60*B*c^2*d^
3*e^2*m^2*x^2+220*B*c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+155*A*a^2*e^5*m^3
+4*A*a*c*d^2*e^3*m^3-356*A*a*c*d*e^4*m^2*x+1016*A*a*c*e^5*m*x^2-24*A*c^2*d^
3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^4*x^3-18*B*a^2*d*e^4*m^3+
461*B*a^2*e^5*m^2*x+144*B*a*c*d^2*e^3*m^2*x-672*B*a*c*d*e^4*m*x^2+360*B*a*c
*e^5*x^3-180*B*c^2*d^3*e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+580*A*a^2*e^5*m^2+60
*A*a*c*d^2*e^3*m^2-776*A*a*c*d*e^4*m*x+480*A*a*c*e^5*x^2-168*A*c^2*d^3*e^2*
m*x+144*A*c^2*d^2*e^3*x^2-119*B*a^2*d*e^4*m^2+702*B*a^2*e^5*m*x-12*B*a*c*d^
3*e^2*m^2+492*B*a*c*d^2*e^3*m*x-360*B*a*c*d*e^4*x^2+120*B*c^2*d^4*e*m*x-120
*B*c^2*d^3*e^2*x^2+1044*A*a^2*e^5*m+296*A*a*c*d^2*e^3*m-480*A*a*c*d*e^4*x+2
4*A*c^2*d^4*e*m-144*A*c^2*d^3*e^2*x-342*B*a^2*d*e^4*m+360*B*a^2*e^5*x-132*B
*a*c*d^3*e^2*m+360*B*a*c*d^2*e^3*x+120*B*c^2*d^4*e*x+720*A*a^2*e^5+480*A*a*
c*d^2*e^3+144*A*c^2*d^4*e-360*B*a^2*d*e^4-360*B*a*c*d^3*e^2-120*B*c^2*d^5)/
e^6/(m^6+21*m^5+175*m^4+735*m^3+1624*m^2+1764*m+720)
```

<u>maxima</u> [B] time = 0.74, size = 575, normalized size = 2.46

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m Ba^2}{\left(m^2+3m+2\right)e^2}+\frac{(ex+d)^{m+1}Aa^2}{e(m+1)}+\frac{2\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx+\right.}{\left(m^3+6m^2+11m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a*c/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3
*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a*c/((m
^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 2
4)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)
*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^
m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^5 + 15*
m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50
*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m
^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x -
120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 +
1764*m + 720)*e^6)
```

<u>mupad</u> [B] time = 2.46, size = 1229, normalized size = 5.25

$$\frac{(d+e\,x)^m\,\left(-B\,a^2\,d^2\,e^4\,m^4-18\,B\,a^2\,d^2\,e^4\,m^3-119\,B\,a^2\,d^2\,e^4\,m^2-342\,B\,a^2\,d^2\,e^4\,m-360\,B\,a^2\,d^2\,e^4+A\,a^2\,d\,e^5\,m^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)^2*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^2*d*e^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e - 360*B*a^2
*d^2*e^4 + 580*A*a^2*d*e^5*m^2 + 155*A*a^2*d*e^5*m^3 + 20*A*a^2*d*e^5*m^4 +
 A*a^2*d*e^5*m^5 - 342*B*a^2*d^2*e^4*m - 119*B*a^2*d^2*e^4*m^2 - 18*B*a^2*d
^2*e^4*m^3 - B*a^2*d^2*e^4*m^4 + 480*A*a*c*d^3*e^3 - 360*B*a*c*d^4*e^2 + 10
44*A*a^2*d*e^5*m + 24*A*c^2*d^5*e*m + 296*A*a*c*d^3*e^3*m - 132*B*a*c*d^4*e
^2*m + 60*A*a*c*d^3*e^3*m^2 + 4*A*a*c*d^3*e^3*m^3 - 12*B*a*c*d^4*e^2*m^2))/
(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d
+ e*x)^m*(720*A*a^2*e^6 + 1044*A*a^2*e^6*m + 580*A*a^2*e^6*m^2 + 155*A*a^2*
e^6*m^3 + 20*A*a^2*e^6*m^4 + A*a^2*e^6*m^5 + 342*B*a^2*d*e^5*m^2 + 119*B*a^
2*d*e^5*m^3 + 18*B*a^2*d*e^5*m^4 + B*a^2*d*e^5*m^5 - 144*A*c^2*d^4*e^2*m -
24*A*c^2*d^4*e^2*m^2 + 360*B*a^2*d*e^5*m + 120*B*c^2*d^5*e*m - 480*A*a*c*d^
2*e^4*m + 360*B*a*c*d^3*e^3*m - 296*A*a*c*d^2*e^4*m^2 - 60*A*a*c*d^2*e^4*m^
3 - 4*A*a*c*d^2*e^4*m^4 + 132*B*a*c*d^3*e^3*m^2 + 12*B*a*c*d^3*e^3*m^3))/(e
^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m
+ 1)*(d + e*x)^m*(360*B*a^2*e^4 + 342*B*a^2*e^4*m - 60*B*c^2*d^4*m + 119*B*
a^2*e^4*m^2 + 18*B*a^2*e^4*m^3 + B*a^2*e^4*m^4 + 12*A*c^2*d^3*e*m^2 + 72*A*
c^2*d^3*e*m + 148*A*a*c*d*e^3*m^2 + 30*A*a*c*d*e^3*m^3 + 2*A*a*c*d*e^3*m^4
- 180*B*a*c*d^2*e^2*m - 66*B*a*c*d^2*e^2*m^2 - 6*B*a*c*d^2*e^2*m^3 + 240*A*
a*c*d*e^3*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 1
20))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (c^2*x^
5*(d + e*x)^m*(6*A*e + A*e*m + B*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/
(e*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c*x^4*(
d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(60*B*a*e^2 + 22*B*a*e^2*m - 5*B*c*d^2*
m + 2*B*a*e^2*m^2 + 6*A*c*d*e*m + A*c*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 7
35*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (2*c*x^3*(d + e*x)^m*(3*m + m^2 +
 2)*(120*A*a*e^3 + 74*A*a*e^3*m + 10*B*c*d^3*m + 15*A*a*e^3*m^2 + A*a*e^3*m
^3 + 30*B*a*d*e^2*m - 12*A*c*d^2*e*m + 11*B*a*d*e^2*m^2 + B*a*d*e^2*m^3 - 2
*A*c*d^2*e*m^2))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6
 + 720))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1489 $\int (A+Bx)(d+ex)^m \left(a+cx^2\right) dx$

Optimal. Leaf size=126

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4(m+2)}-\frac{c(3Bd-Ae)(d+ex)^{m+3}}{e^4(m+3)}+\frac{Bc(d+ex)^{m}}{e^4(m+4}$$

```
[Out] -(-A*e+B*d)*(a*e^2+c*d^2)*(e*x+d)^(1+m)/e^4/(1+m)+(-2*A*c*d*e+B*a*e^2+3*B*c
*d^2)*(e*x+d)^(2+m)/e^4/(2+m)-c*(-A*e+3*B*d)*(e*x+d)^(3+m)/e^4/(3+m)+B*c*(e
*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {772}

$$-\frac{\left(ae^2+cd^2\right)(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(aBe^2-2Acde+3Bcd^2\right)}{e^4(m+2)}-\frac{c(3Bd-Ae)(d+ex)^{m+3}}{e^4(m+3)}+\frac{Bc(d+ex)^{m}}{e^4(m+4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + c*x^2),x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((3*B*c*
d^2 - 2*A*c*d*e + a*B*e^2)*(d + e*x)^(2 + m))/(e^4*(2 + m)) - (c*(3*B*d - A
*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (B*c*(d + e*x)^(4 + m))/(e^4*(4 + m)
)
```

Rule 772

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(
p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*(a + c*x^2)^p,
 x], x] /; FreeQ[{a, c, d, e, f, g, m}, x] && IGtQ[p, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a+cx^2\right)dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{1+}}{e^3}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3Bcd^2-2Acde+aBe^2\right)(d+ex)^{2+m}}{e^4(2+m)}\end{aligned}$$

Mathematica [A] time = 0.20, size = 122, normalized size = 0.97

$$\frac{(d+ex)^{m+1}\left((Ae-Bd)\left(\frac{ae^2+cd^2}{m+1}+\frac{c(d+ex)^2}{m+3}-\frac{2cd(d+ex)}{m+2}\right)+B(d+ex)\left(\frac{ae^2+cd^2}{m+2}+\frac{c(d+ex)^2}{m+4}-\frac{2cd(d+ex)}{m+3}\right)\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*((-(B*d) + A*e)*((c*d^2 + a*e^2)/(1 + m) - (2*c*d*(d + e
*x))/(2 + m) + (c*(d + e*x)^2)/(3 + m)) + B*(d + e*x)*((c*d^2 + a*e^2)/(2 +
 m) - (2*c*d*(d + e*x))/(3 + m) + (c*(d + e*x)^2)/(4 + m))))/e^4
```

fricas [B] time = 0.95, size = 434, normalized size = 3.44

$$\left(Aade^3m^3-6\,Bcd^4+8\,Acd^3e-12\,Bad^2e^2+24\,Aade^3+\left(Bce^4m^3+6\,Bce^4m^2+11\,Bce^4m+6\,Bce^4\right)x^4+\left(8\,Ace^4\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="fricas")
```

```
[Out] (A*a*d*e^3*m^3 - 6*B*c*d^4 + 8*A*c*d^3*e - 12*B*a*d^2*e^2 + 24*A*a*d*e^3 +
(B*c*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^4 + (8*A*c*e^4 +
 (B*c*d*e^3 + A*c*e^4)*m^3 + (3*B*c*d*e^3 + 7*A*c*e^4)*m^2 + 2*(B*c*d*e^3 +
 7*A*c*e^4)*m)*x^3 - (B*a*d^2*e^2 - 9*A*a*d*e^3)*m^2 + (12*B*a*e^4 + (A*c*d
*e^3 + B*a*e^4)*m^3 - (3*B*c*d^2*e^2 - 5*A*c*d*e^3 - 8*B*a*e^4)*m^2 - (3*B*
c*d^2*e^2 - 4*A*c*d*e^3 - 19*B*a*e^4)*m)*x^2 + (2*A*c*d^3*e - 7*B*a*d^2*e^2
 + 26*A*a*d*e^3)*m + (24*A*a*e^4 + (B*a*d*e^3 + A*a*e^4)*m^3 - (2*A*c*d^2*e
^2 - 7*B*a*d*e^3 - 9*A*a*e^4)*m^2 + 2*(3*B*c*d^3*e - 4*A*c*d^2*e^2 + 6*B*a*
d*e^3 + 13*A*a*e^4)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 +
50*e^4*m + 24*e^4)
```

giac [B] time = 0.18, size = 770, normalized size = 6.11

$$\frac{(xe+d)^m Bcm^3x^4e^4 + (xe+d)^m Bcdm^3x^3e^3 + (xe+d)^m Acm^3x^3e^4 + 6\,(xe+d)^m Bcm^2x^4e^4 + (xe+d)^m Acdm^3x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*
A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e^4 + (x*e + d)^m*A*c*d*m^3*x^2
*e^3 + 3*(x*e + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2
+ (x*e + d)^m*B*a*m^3*x^2*e^4 + 7*(x*e + d)^m*A*c*m^2*x^3*e^4 + 11*(x*e + d
)^m*B*c*m*x^4*e^4 + (x*e + d)^m*B*a*d*m^3*x*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x
^2*e^3 + 2*(x*e + d)^m*B*c*d*m*x^3*e^3 - 2*(x*e + d)^m*A*c*d^2*m^2*x*e^2 -
3*(x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e + (x*e + d)^m
*A*a*m^3*x*e^4 + 8*(x*e + d)^m*B*a*m^2*x^2*e^4 + 14*(x*e + d)^m*A*c*m*x^3*e
^4 + 6*(x*e + d)^m*B*c*x^4*e^4 + (x*e + d)^m*A*a*d*m^3*e^3 + 7*(x*e + d)^m*
B*a*d*m^2*x*e^3 + 4*(x*e + d)^m*A*c*d*m*x^2*e^3 - (x*e + d)^m*B*a*d^2*m^2*e
^2 - 8*(x*e + d)^m*A*c*d^2*m*x*e^2 + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e + d
)^m*B*c*d^4 + 9*(x*e + d)^m*A*a*m^2*x*e^4 + 19*(x*e + d)^m*B*a*m*x^2*e^4 +
8*(x*e + d)^m*A*c*x^3*e^4 + 9*(x*e + d)^m*A*a*d*m^2*e^3 + 12*(x*e + d)^m*B*
a*d*m*x*e^3 - 7*(x*e + d)^m*B*a*d^2*m*e^2 + 8*(x*e + d)^m*A*c*d^3*e + 26*(x
*e + d)^m*A*a*m*x*e^4 + 12*(x*e + d)^m*B*a*x^2*e^4 + 26*(x*e + d)^m*A*a*d*m
*e^3 - 12*(x*e + d)^m*B*a*d^2*e^2 + 24*(x*e + d)^m*A*a*x*e^4 + 24*(x*e + d)
^m*A*a*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 338, normalized size = 2.68

$$\frac{\left(Bc\,e^3m^3x^3 + Ac\,e^3m^3x^2 + 6Bc\,e^3m^2x^3 + 7Ac\,e^3m^2x^2 + Ba\,e^3m^3x - 3Bcd\,e^2m^2x^2 + 11Bc\,e^3m\,x^3 + Aa\,e^3m^3 - 2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+a),x)
```

```
[Out] (e*x+d)^(m+1)*(B*c*e^3*m^3*x^3+A*c*e^3*m^3*x^2+6*B*c*e^3*m^2*x^3+7*A*c*e^3*
m^2*x^2+B*a*e^3*m^3*x-3*B*c*d*e^2*m^2*x^2+11*B*c*e^3*m*x^3+A*a*e^3*m^3-2*A*
c*d*e^2*m^2*x+14*A*c*e^3*m*x^2+8*B*a*e^3*m^2*x-9*B*c*d*e^2*m*x^2+6*B*c*e^3*
x^3+9*A*a*e^3*m^2-10*A*c*d*e^2*m*x+8*A*c*e^3*x^2-B*a*d*e^2*m^2+19*B*a*e^3*m
*x+6*B*c*d^2*e*m*x-6*B*c*d*e^2*x^2+26*A*a*e^3*m+2*A*c*d^2*e*m-8*A*c*d*e^2*x
-7*B*a*d*e^2*m+12*B*a*e^3*x+6*B*c*d^2*e*x+24*A*a*e^3+8*A*c*d^2*e-12*B*a*d*e
^2-6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [A] time = 0.67, size = 238, normalized size = 1.89

$$\frac{\left(e^2(m+1)x^2 + demx - d^2\right)(ex+d)^m Ba}{\left(m^2+3\,m+2\right)e^2} + \frac{(ex+d)^{m+1}Aa}{e(m+1)} + \frac{\left(\left(m^2+3\,m+2\right)e^3x^3 + \left(m^2+m\right)de^2x^2 - 2\,d^2emx +\right.}{\left(m^3+6\,m^2+11\,m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a/((m^2 + 3*m + 2)*e^2) + (
e*x + d)^(m + 1)*A*a/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e
^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m + 6)*e^3
) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(
m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.04, size = 446, normalized size = 3.54

$$\frac{(d+e\,x)^m\,\left(-6\,B\,c\,d^4+2\,A\,c\,d^3\,e\,m+8\,A\,c\,d^3\,e-B\,a\,d^2\,e^2\,m^2-7\,B\,a\,d^2\,e^2\,m-12\,B\,a\,d^2\,e^2+A\,a\,d\,e^3\,m^3+9\,A\,a\,d}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + c*x^2)*(A + B*x)*(d + e*x)^m,x)
```

```
[Out] ((d + e*x)^m*(24*A*a*d*e^3 - 6*B*c*d^4 + 8*A*c*d^3*e - 12*B*a*d^2*e^2 - B*a
*d^2*e^2*m^2 + 26*A*a*d*e^3*m + 2*A*c*d^3*e*m + 9*A*a*d*e^3*m^2 + A*a*d*e^3
*m^3 - 7*B*a*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x*(d
+ e*x)^m*(24*A*a*e^4 + 26*A*a*e^4*m + 9*A*a*e^4*m^2 + A*a*e^4*m^3 - 2*A*c*d
^2*e^2*m^2 + 12*B*a*d*e^3*m + 6*B*c*d^3*e*m + 7*B*a*d*e^3*m^2 + B*a*d*e^3*m
^3 - 8*A*c*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^2*(m
+ 1)*(d + e*x)^m*(12*B*a*e^2 + 7*B*a*e^2*m - 3*B*c*d^2*m + B*a*e^2*m^2 + 4*
A*c*d*e*m + A*c*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (B*c*
x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 2
4) + (c*x^3*(d + e*x)^m*(4*A*e + A*e*m + B*d*m)*(3*m + m^2 + 2))/(e*(50*m +
 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.75, size = 3958, normalized size = 31.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+a),x)
```

```
[Out] Piecewise((d**m*(A*a*x + A*c*x**3/3 + B*a*x**2/2 + B*c*x**4/4), Eq(e, 0)),
(-2*A*a*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
- 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3
) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*
x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - B*a*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - 3*B*a*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) + 6*B*c*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*
d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*c*d**2*e*x/(6*d**3*e**4
 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d*e**2*x**2*log(
d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18
*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x*
*3) + 6*B*c*e**3*x**3*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**
6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*a*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2
*e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**
2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*
d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a*d*e**2/(2*d**2*e**4 + 4*d*e**5*
```

```
x + 2*e**6*x**2) - 2*B*a*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) -
6*B*c*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*c*d*
*3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x*log(d/e + x)/
(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*d**2*e*x/(2*d**2*e**4 + 4
*d*e**5*x + 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*
d*e**5*x + 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**
6*x**2), Eq(m, -3)), (-2*A*a*e**3/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e*log(
d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*A*c
*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x**2/(2*d*e**4 +
2*e**5*x) + 2*B*a*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*B*a*d*e**2/
(2*d*e**4 + 2*e**5*x) + 2*B*a*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6
*B*c*d**3*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**
5*x) + 6*B*c*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**
2/(2*d*e**4 + 2*e**5*x) + B*c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)),
(A*a*log(d/e + x)/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**2/
(2*e) - B*a*d*log(d/e + x)/e**2 + B*a*x/e - B*c*d**3*log(d/e + x)/e**4 + B*
c*d**2*x/e**3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e), Eq(m, -1)), (A*a*d*e*
*3*m**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
 24*e**4) + 9*A*a*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a*d*e**3*m*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*d*e**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a
*e**4*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 9*A*a*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a*e**4*m*x*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*e**4*x*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 2*A*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*x*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*c*d**2
*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
 + 24*e**4) + A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*c*d*e
**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*(d + e*x)**m/(e*
*4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*c*e**4*
m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) - B*a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a*d**2*e**2*m*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) -
 12*B*a*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + B*a*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a*d*e**3*m**2*x*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a*
d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + B*a*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a*e**4*m**2*x**2*(d + e*x)**m/(e*
*4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*B*a*e**4*
m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 12*B*a*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) - 6*B*c*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*d**3*e*m*x*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d
**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*
```

```
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*d*e**3*m**3*x**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
3*B*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 2*B*c*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*e**4*m**3*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6
*B*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) + 11*B*c*e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4*x**4*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1490 $\int \frac{(A+Bx)(d+ex)^m}{a+cx^2}\,dx$

Optimal. Leaf size=202

$$-\frac{\left(\sqrt{-a}\,A\sqrt{c}\,+aB\right)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2a\sqrt{c}\,(m+1)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)}-\frac{\left(\frac{\sqrt{-a}\,B}{\sqrt{c}}+A\right)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2\right.}{2\sqrt{-a}\,(m+1)\left(\sqrt{-a}\,e+\sqrt{c}\,d\right)}$$

```
[Out] -1/2*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],(e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d
*c^(1/2)))*(A+B*(-a)^(1/2)/c^(1/2))/(1+m)/(-a)^(1/2)/(e*(-a)^(1/2)+d*c^(1/2
))-1/2*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],(e*x+d)*c^(1/2)/(-e*(-a)^(1/2
)+d*c^(1/2)))*(a*B+A*(-a)^(1/2)*c^(1/2))/a/(1+m)/c^(1/2)/(-e*(-a)^(1/2)+d*c
^(1/2))
```

Rubi [A] time = 0.27, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {831, 68}

$$-\frac{\left(\sqrt{-a}\,A\sqrt{c}\,+aB\right)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2a\sqrt{c}\,(m+1)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)}-\frac{\left(\frac{\sqrt{-a}\,B}{\sqrt{c}}+A\right)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2\right.}{2\sqrt{-a}\,(m+1)\left(\sqrt{-a}\,e+\sqrt{c}\,d\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a + c*x^2),x]
```

```
[Out] -((a*B + Sqrt[-a]*A*Sqrt[c])*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m,
2 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[-a]*e)])/(2*a*Sqrt[c]*(Sqrt[c]
*d - Sqrt[-a]*e)*(1 + m)) - ((A + (Sqrt[-a]*B)/Sqrt[c])*(d + e*x)^(1 + m)*H
ypergeometric2F1[1, 1 + m, 2 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]
*e)])/(2*Sqrt[-a]*(Sqrt[c]*d + Sqrt[-a]*e)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 831

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a + c*x^2), x], x
] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !RationalQ[m
]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^m}{a+cx^2}\,dx &= \int \left(\frac{\left(\sqrt{-a}\,A-\frac{aB}{\sqrt{c}}\right)(d+ex)^m}{2a\left(\sqrt{-a}\,-\sqrt{c}\,x\right)}+\frac{\left(\sqrt{-a}\,A+\frac{aB}{\sqrt{c}}\right)(d+ex)^m}{2a\left(\sqrt{-a}\,+\sqrt{c}\,x\right)}\right)dx\\ &= \frac{1}{2}\left(\frac{aA}{(-a)^{3/2}}-\frac{B}{\sqrt{c}}\right)\int \frac{(d+ex)^m}{\sqrt{-a}\,-\sqrt{c}\,x}\,dx+\frac{1}{2}\left(\frac{aA}{(-a)^{3/2}}+\frac{B}{\sqrt{c}}\right)\int \frac{(d+ex)^m}{\sqrt{-a}\,+\sqrt{c}\,x}\,dx\\ &= -\frac{\left(\frac{aA}{(-a)^{3/2}}+\frac{B}{\sqrt{c}}\right)(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;2+m;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)(1+m)}+\frac{\left(\frac{aA}{(-a)^{3/2}}-\frac{B}{\sqrt{c}}\right)(d+e}{2\left(\right.}\end{aligned}$$

Mathematica [A] time = 0.25, size = 182, normalized size = 0.90

$$\frac{(d+ex)^{m+1}\left(\frac{\left(\sqrt{-a}A\sqrt{c}+aB\right){}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{-a}e}\right)}{\sqrt{-a}e-\sqrt{c}d}+\frac{\left(\sqrt{-a}A\sqrt{c}-aB\right){}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}(d+ex)}{\sqrt{c}d+\sqrt{-a}e}\right)}{\sqrt{-a}e+\sqrt{c}d}\right)}{2a\sqrt{c}(m+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(((a*B + Sqrt[-a]*A*Sqrt[c])*Hypergeometric2F1[1, 1 + m,
 2 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[-a]*e)])/(-(Sqrt[c]*d) + Sqrt
[-a]*e) + ((-(a*B) + Sqrt[-a]*A*Sqrt[c])*Hypergeometric2F1[1, 1 + m, 2 + m,
 (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)])/(Sqrt[c]*d + Sqrt[-a]*e)))/
(2*a*Sqrt[c]*(1 + m))
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{cx^2+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{cx^2+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + a), x)
```

maple [F] time = 1.57, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{c\,x^2+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(c*x^2+a),x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(c*x^2+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{cx^2+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{c\,x^2+a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a + c*x^2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a + c*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^m}{a+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(c*x**2+a),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m/(a + c*x**2), x)
```

3.1491 $\int \frac{(A+Bx)(d+ex)^m}{\left(a+cx^2\right)^2}\,dx$

Optimal. Leaf size=361

$$\frac{(d+ex)^{m+1}\left(aem(aBe+Acd)-\sqrt{-a}\,\sqrt{c}\,\left(A\left(ae^2(1-m)+cd^2\right)+aBdem\right)\right){}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{4a^2\sqrt{c}\,(m+1)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)\left(ae^2+cd^2\right)}+$$

```
[Out] -1/2*(e*x+d)^(1+m)*(a*(-A*e+B*d)-(A*c*d+B*a*e)*x)/a/(a*e^2+c*d^2)/(c*x^2+a)
+1/4*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],(e*x+d)*c^(1/2)/(-e*(-a)^(1/2)+
d*c^(1/2)))*(a*e*(A*c*d+B*a*e)*m-(A*(c*d^2+a*e^2*(1-m))+a*B*d*e*m)*(-a)^(1/
2)*c^(1/2))/a^2/(a*e^2+c*d^2)/(1+m)/c^(1/2)/(-e*(-a)^(1/2)+d*c^(1/2))+1/4*(
e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],(e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d*c^(1/
2)))*(a*e*(A*c*d+B*a*e)*m+(A*(c*d^2+a*e^2*(1-m))+a*B*d*e*m)*(-a)^(1/2)*c^(1
/2))/a^2/(a*e^2+c*d^2)/(1+m)/c^(1/2)/(e*(-a)^(1/2)+d*c^(1/2))
```

Rubi [A] time = 0.58, antiderivative size = 359, normalized size of antiderivative = 0.99, number of steps used = 5, number of rules used = 3, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {823, 831, 68}

$$\frac{(d+ex)^{m+1}\left(aem(aBe+Acd)-\sqrt{-a}\,\sqrt{c}\,\left(aAe^2(1-m)+aBdem+Acd^2\right)\right){}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{4a^2\sqrt{c}\,(m+1)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)\left(ae^2+cd^2\right)}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^(1 + m)*(a*(B*d - A*e) - (A*c*d + a*B*e)*x))/(2*a*(c*d^2 + a*e^
2)*(a + c*x^2)) + ((a*e*(A*c*d + a*B*e)*m - Sqrt[-a]*Sqrt[c]*(A*c*d^2 + a*A
*e^2*(1 - m) + a*B*d*e*m))*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2
+ m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[-a]*e)])/(4*a^2*Sqrt[c]*(Sqrt[c]
*d - Sqrt[-a]*e)*(c*d^2 + a*e^2)*(1 + m)) + ((a*e*(A*c*d + a*B*e)*m + Sqrt[
-a]*Sqrt[c]*(A*c*d^2 + a*A*e^2*(1 - m) + a*B*d*e*m))*(d + e*x)^(1 + m)*Hype
rgeometric2F1[1, 1 + m, 2 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)
])/(4*a^2*Sqrt[c]*(Sqrt[c]*d + Sqrt[-a]*e)*(c*d^2 + a*e^2)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 823

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(f*a*c*e - a*g*c*d + c*(c*d*f + a
*e*g)*x)*(a + c*x^2)^(p + 1))/(2*a*c*(p + 1)*(c*d^2 + a*e^2)), x] + Dist[1/
(2*a*c*(p + 1)*(c*d^2 + a*e^2)), Int[(d + e*x)^m*(a + c*x^2)^(p + 1)*Simp[f
*(c^2*d^2*(2*p + 3) + a*c*e^2*(m + 2*p + 3)) - a*c*d*e*g*m + c*e*(c*d*f + a
*e*g)*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*
d^2 + a*e^2, 0] && LtQ[p, -1] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2
*m, 2*p])
```

Rule 831

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a + c*x^2), x], x
] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !RationalQ[m
]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^m}{\left(a+cx^2\right)^2}\,dx = -\frac{(d+ex)^{1+m}(a(Bd-Ae)-(Acd+aBe)x)}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \frac{(d+ex)^m\left(-c\left(Acd^2+aAe^2(1-m)+aBdem\right)+ce(A}{a+cx^2}}{2ac\left(cd^2+ae^2\right)}$$

$$= -\frac{(d+ex)^{1+m}(a(Bd-Ae)-(Acd+aBe)x)}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\int \left(\frac{\left(-a\sqrt{c}\,e(Acd+aBe)m-\sqrt{-a}\,c\left(Acd^2+aAe^2(1-\right.\right.}{2a\left(\sqrt{-a}-\sqrt{c}\,x\right)}}{}$$

$$= -\frac{(d+ex)^{1+m}(a(Bd-Ae)-(Acd+aBe)x)}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} - \frac{\left(ae(Acd+aBe)m-\sqrt{-a}\sqrt{c}\left(Acd^2+\right.\right.}{4a^2\sqrt{c}\,(}$$

$$= -\frac{(d+ex)^{1+m}(a(Bd-Ae)-(Acd+aBe)x)}{2a\left(cd^2+ae^2\right)\left(a+cx^2\right)} + \frac{\left(ae(Acd+aBe)m-\sqrt{-a}\sqrt{c}\left(Acd^2+\right.\right.}{4a^2\sqrt{}}$$

Mathematica [A] time = 0.75, size = 310, normalized size = 0.86

$$\frac{(d+ex)^{m+1}\left(\frac{\sqrt{c}\left(aem(aBe+Acd)-\sqrt{-a}\sqrt{c}\left(-aAe^2(m-1)+aBdem+Acd^2\right)\right){}_2F_1\left(1,m+1;m+2;\frac{\sqrt{c}(d+ex)}{\sqrt{c}d-\sqrt{-a}e}\right)}{a(m+1)\left(\sqrt{c}d-\sqrt{-a}e\right)}+\frac{\sqrt{c}\left(\sqrt{-a}\sqrt{c}\left(-aAe^2(m-1)+aBdem\right.\right.}{a}\right.}{4ac\left(ae^2+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*((2*c*(A*c*d*x + a*(-(B*d) + A*e + B*e*x)))/(a + c*x^2)
+ (Sqrt[c]*(a*e*(A*c*d + a*B*e)*m - Sqrt[-a]*Sqrt[c]*(A*c*d^2 - a*A*e^2*(-1
 + m) + a*B*d*e*m))*Hypergeometric2F1[1, 1 + m, 2 + m, (Sqrt[c]*(d + e*x))/
(Sqrt[c]*d - Sqrt[-a]*e)])/(a*(Sqrt[c]*d - Sqrt[-a]*e)*(1 + m)) + (Sqrt[c]*
(a*e*(A*c*d + a*B*e)*m + Sqrt[-a]*Sqrt[c]*(A*c*d^2 - a*A*e^2*(-1 + m) + a*B
*d*e*m))*Hypergeometric2F1[1, 1 + m, 2 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d
+ Sqrt[-a]*e)])/(a*(Sqrt[c]*d + Sqrt[-a]*e)*(1 + m))))/(4*a*c*(c*d^2 + a*e^
2))
```

fricas [F] time = 1.23, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{c^2x^4+2\,acx^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(c^2*x^4 + 2*a*c*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(cx^2+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a)^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + a)^2, x)
```

maple **[F]** time = 1.20, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^{m}}{\left(c\,x^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(c*x^2+a)^2,x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(c*x^2+a)^2,x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{m}}{\left(cx^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + a)^2, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{m}}{\left(c\,x^{2}+a\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a + c*x^2)^2,x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a + c*x^2)^2, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(c*x**2+a)**2,x)
```

```
[Out] Timed out
```

3.1492 $\int \frac{(A+Bx)(d+ex)^{1+m}}{a+cx^2} \, dx$

Optimal. Leaf size=202

$$-\frac{\left(\sqrt{-a}\, A\sqrt{c}\, + aB\right)(d+ex)^{m+2}\, {}_2F_1\left(1,m+2;m+3;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2a\sqrt{c}\,(m+2)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)}-\frac{\left(\frac{\sqrt{-a}\,B}{\sqrt{c}}+A\right)(d+ex)^{m+2}\, {}_2F_1\left(1,m+2;m+3\right.}{2\sqrt{-a}\,(m+2)\left(\sqrt{-a}\,e+\sqrt{c}\,d\right)}$$

```
[Out] -1/2*(e*x+d)^(2+m)*hypergeom([1, 2+m],[3+m],(e*x+d)*c^(1/2)/(e*(-a)^(1/2)+d
*c^(1/2)))*(A+B*(-a)^(1/2)/c^(1/2))/(2+m)/(-a)^(1/2)/(e*(-a)^(1/2)+d*c^(1/2
))-1/2*(e*x+d)^(2+m)*hypergeom([1, 2+m],[3+m],(e*x+d)*c^(1/2)/(-e*(-a)^(1/2
)+d*c^(1/2)))*(a*B+A*(-a)^(1/2)*c^(1/2))/a/(2+m)/c^(1/2)/(-e*(-a)^(1/2)+d*c
^(1/2))
```

Rubi [A] time = 0.19, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {831, 68}

$$-\frac{\left(\sqrt{-a}\, A\sqrt{c}\, + aB\right)(d+ex)^{m+2}\, {}_2F_1\left(1,m+2;m+3;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2a\sqrt{c}\,(m+2)\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)}-\frac{\left(\frac{\sqrt{-a}\,B}{\sqrt{c}}+A\right)(d+ex)^{m+2}\, {}_2F_1\left(1,m+2;m+3\right.}{2\sqrt{-a}\,(m+2)\left(\sqrt{-a}\,e+\sqrt{c}\,d\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(1 + m))/(a + c*x^2),x]
```

```
[Out] -((a*B + Sqrt[-a]*A*Sqrt[c])*(d + e*x)^(2 + m)*Hypergeometric2F1[1, 2 + m,
3 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[-a]*e)])/(2*a*Sqrt[c]*(Sqrt[c]
*d - Sqrt[-a]*e)*(2 + m)) - ((A + (Sqrt[-a]*B)/Sqrt[c])*(d + e*x)^(2 + m)*H
ypergeometric2F1[1, 2 + m, 3 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]
*e)])/(2*Sqrt[-a]*(Sqrt[c]*d + Sqrt[-a]*e)*(2 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 831

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_) + (c_.)*(x_)^2),
 x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a + c*x^2), x], x
] /; FreeQ[{a, c, d, e, f, g}, x] && NeQ[c*d^2 + a*e^2, 0] &&  !RationalQ[m
]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{1+m}}{a+cx^2}\,dx &= \int \left(\frac{\left(\sqrt{-a}\,A-\frac{aB}{\sqrt{c}}\right)(d+ex)^{1+m}}{2a\left(\sqrt{-a}\,-\sqrt{c}\,x\right)}+\frac{\left(\sqrt{-a}\,A+\frac{aB}{\sqrt{c}}\right)(d+ex)^{1+m}}{2a\left(\sqrt{-a}\,+\sqrt{c}\,x\right)}\right)dx\\
&= \frac{1}{2}\left(\frac{aA}{(-a)^{3/2}}-\frac{B}{\sqrt{c}}\right)\int \frac{(d+ex)^{1+m}}{\sqrt{-a}\,-\sqrt{c}\,x}\,dx+\frac{1}{2}\left(\frac{aA}{(-a)^{3/2}}+\frac{B}{\sqrt{c}}\right)\int \frac{(d+ex)^{1+m}}{\sqrt{-a}\,+\sqrt{c}\,x}\,dx\\
&= -\frac{\left(\frac{aA}{(-a)^{3/2}}+\frac{B}{\sqrt{c}}\right)(d+ex)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{2\left(\sqrt{c}\,d-\sqrt{-a}\,e\right)(2+m)}+\frac{\left(\frac{aA}{(-a)^{3/2}}-\frac{B}{\sqrt{c}}\right)(d}{2}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 182, normalized size = 0.90

$$\frac{(d+ex)^{m+2}\left(\frac{\left(\sqrt{-a}\,A\sqrt{c}+aB\right){}_2F_1\left(1,m+2;m+3;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d-\sqrt{-a}\,e}\right)}{\sqrt{-a}\,e-\sqrt{c}\,d}+\frac{\left(\sqrt{-a}\,A\sqrt{c}-aB\right){}_2F_1\left(1,m+2;m+3;\frac{\sqrt{c}\,(d+ex)}{\sqrt{c}\,d+\sqrt{-a}\,e}\right)}{\sqrt{-a}\,e+\sqrt{c}\,d}\right)}{2a\sqrt{c}\,(m+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(1 + m))/(a + c*x^2),x]
```

```
[Out] ((d + e*x)^(2 + m)*(((a*B + Sqrt[-a]*A*Sqrt[c])*Hypergeometric2F1[1, 2 + m,
 3 + m, (Sqrt[c]*(d + e*x))/(Sqrt[c]*d - Sqrt[-a]*e)])/(-(Sqrt[c]*d) + Sqrt
[-a]*e) + ((-(a*B) + Sqrt[-a]*A*Sqrt[c])*Hypergeometric2F1[1, 2 + m, 3 + m,
 (Sqrt[c]*(d + e*x))/(Sqrt[c]*d + Sqrt[-a]*e)])/(Sqrt[c]*d + Sqrt[-a]*e)))/
(2*a*Sqrt[c]*(2 + m))
```

fricas [F] time = 0.86, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^{m+1}}{cx^2+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{m+1}}{cx^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + a), x)
```

maple [F] time = 0.87, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^{m+1}}{c\,x^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(m+1)/(c*x^2+a),x)
```

```
[Out] int((B*x+A)*(e*x+d)^(m+1)/(c*x^2+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{m+1}}{cx^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{m+1}}{c\,x^2+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(m + 1))/(a + c*x^2),x)
[Out] int(((A + B*x)*(d + e*x)^(m + 1))/(a + c*x^2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1+m)/(c*x**2+a),x)
[Out] Timed out
```

3.1493 $\int (-ae+cdx)(d+ex)^{-3-2p}\left(a+cx^2\right)^p\,dx$

Optimal. Leaf size=31

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)}$$

```
[Out] 1/2*(c*x^2+a)^(1+p)/(1+p)/((e*x+d)^(2+2*p))
```

Rubi [A] time = 0.02, antiderivative size = 31, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.033, Rules used = {803}

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)^p,x]
```

```
[Out] (a + c*x^2)^(1 + p)/(2*(1 + p)*(d + e*x)^(2*(1 + p)))
```

Rule 803

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (c_.)*(x_)^2)^(p
_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + c*x^2)^(p + 1))
/(2*(p + 1)*(c*d^2 + a*e^2)), x] /; FreeQ[{a, c, d, e, f, g, m, p}, x] && N
eQ[c*d^2 + a*e^2, 0] && EqQ[Simplify[m + 2*p + 3], 0] && EqQ[c*d*f + a*e*g,
 0]
```

Rubi steps

$$\int (-ae+cdx)(d+ex)^{-3-2p}\left(a+cx^2\right)^p\,dx=\frac{(d+ex)^{-2(1+p)}\left(a+cx^2\right)^{1+p}}{2(1+p)}$$

Mathematica [A] time = 0.06, size = 31, normalized size = 1.00

$$\frac{\left(a+cx^2\right)^{p+1}(d+ex)^{-2p-2}}{2(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(-(a*e) + c*d*x)*(d + e*x)^(-3 - 2*p)*(a + c*x^2)^p,x]
```

```
[Out] ((d + e*x)^(-2 - 2*p)*(a + c*x^2)^(1 + p))/(2*(1 + p))
```

fricas [A] time = 1.13, size = 47, normalized size = 1.52

$$\frac{\left(cex^3+cdx^2+aex+ad\right)\left(cx^2+a\right)^p(ex+d)^{-2\,p-3}}{2\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(c*e*x^3 + c*d*x^2 + a*e*x + a*d)*(c*x^2 + a)^p*(e*x + d)^(-2*p - 3)/(p
 + 1)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (cdx-ae)\left(cx^2+a\right)^p(ex+d)^{-2p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="giac")
```

```
[Out] integrate((c*d*x - a*e)*(c*x^2 + a)^p*(e*x + d)^(-2*p - 3), x)
```

maple [**A**] time = 0.05, size = 30, normalized size = 0.97

$$\frac{\left(c\,x^2+a\right)^{p+1}(ex+d)^{-2p-2}}{2p+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((c*d*x-a*e)*(e*x+d)^(-2*p-3)*(c*x^2+a)^p,x)
```

```
[Out] 1/2*(c*x^2+a)^(p+1)*(e*x+d)^(-2*p-2)/(p+1)
```

maxima [**A**] time = 1.28, size = 58, normalized size = 1.87

$$\frac{\left(cx^2+a\right)e^{\left(p\log\left(cx^2+a\right)-2\,p\log(ex+d)\right)}}{2\left(e^2\left(p+1\right)x^2+2\,de\left(p+1\right)x+d^2\left(p+1\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)^(-3-2*p)*(c*x^2+a)^p,x, algorithm="maxima")
```

```
[Out] 1/2*(c*x^2 + a)*e^(p*log(c*x^2 + a) - 2*p*log(e*x + d))/(e^2*(p + 1)*x^2 +
2*d*e*(p + 1)*x + d^2*(p + 1))
```

mupad [**B**] time = 1.90, size = 98, normalized size = 3.16

$$\frac{\frac{a\,d\,\left(c\,x^2+a\right)^p}{2\,p+2}+\frac{a\,e\,x\,\left(c\,x^2+a\right)^p}{2\,p+2}+\frac{c\,d\,x^2\,\left(c\,x^2+a\right)^p}{2\,p+2}+\frac{c\,e\,x^3\,\left(c\,x^2+a\right)^p}{2\,p+2}}{{\left(d+e\,x\right)}^{2\,p+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((a*e - c*d*x)*(a + c*x^2)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] ((a*d*(a + c*x^2)^p)/(2*p + 2) + (a*e*x*(a + c*x^2)^p)/(2*p + 2) + (c*d*x^2
*(a + c*x^2)^p)/(2*p + 2) + (c*e*x^3*(a + c*x^2)^p)/(2*p + 2))/(d + e*x)^(2
*p + 3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((c*d*x-a*e)*(e*x+d)**(-3-2*p)*(c*x**2+a)**p,x)
```

```
[Out] Timed out
```

3.1494 $\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^6\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{6e^4}-\frac{(d+ex)^5(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{3c(d+ex)^7(2cd-be)}{7e^4}+\frac{c^2(d+e}{4e^4}$$

```
[Out] -1/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^5/e^4+1/6*(6*c^2*d^2+b^2*e^2-
2*c*e*(-a*e+3*b*d))*(e*x+d)^6/e^4-3/7*c*(-b*e+2*c*d)*(e*x+d)^7/e^4+1/4*c^2*
(e*x+d)^8/e^4
```

Rubi [A] time = 0.19, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^6\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{6e^4}-\frac{(d+ex)^5(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{3c(d+ex)^7(2cd-be)}{7e^4}+\frac{c^2(d+e}{4e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^6)/(6*e^4) - (3*c*(2*c*d - b*e)*
(d + e*x)^7)/(7*e^4) + (c^2*(d + e*x)^8)/(4*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-}{e^3}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right.}{6e^4}$$

Mathematica [A] time = 0.07, size = 229, normalized size = 1.85

$$\frac{1}{6}e^2x^6\left(2ce(ae+6bd)+b^2e^2+12c^2d^2\right)+\frac{1}{2}d^3x^2\left(4abe+2acd+b^2d\right)+\frac{1}{3}d^2x^3\left(6abe^2+8acde+4b^2de+3bcd^2\right)+\frac{1}{5}e$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^4*x + (d^3*(b^2*d + 2*a*c*d + 4*a*b*e)*x^2)/2 + (d^2*(3*b*c*d^2 + 4*b
^2*d*e + 8*a*c*d*e + 6*a*b*e^2)*x^3)/3 + (d*(c^2*d^3 + 6*c*d*e*(b*d + a*e)
+ b*e^2*(3*b*d + 2*a*e))*x^4)/2 + (e*(8*c^2*d^3 + b*e^2*(4*b*d + a*e) + 2*c
*d*e*(9*b*d + 4*a*e))*x^5)/5 + (e^2*(12*c^2*d^2 + b^2*e^2 + 2*c*e*(6*b*d +
a*e))*x^6)/6 + (c*e^3*(8*c*d + 3*b*e)*x^7)/7 + (c^2*e^4*x^8)/4
```

fricas [B] time = 0.77, size = 280, normalized size = 2.26

$$\frac{1}{4}x^8e^4c^2+\frac{8}{7}x^7e^3dc^2+\frac{3}{7}x^7e^4cb+2x^6e^2d^2c^2+2x^6e^3dcb+\frac{1}{6}x^6e^4b^2+\frac{1}{3}x^6e^4ca+\frac{8}{5}x^5ed^3c^2+\frac{18}{5}x^5e^2d^2cb+\frac{4}{5}x^5e^3db^2+\frac{8}{5}x^5e^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^8*e^4*c^2 + 8/7*x^7*e^3*d*c^2 + 3/7*x^7*e^4*c*b + 2*x^6*e^2*d^2*c^2 +
 2*x^6*e^3*d*c*b + 1/6*x^6*e^4*b^2 + 1/3*x^6*e^4*c*a + 8/5*x^5*e*d^3*c^2 +
18/5*x^5*e^2*d^2*c*b + 4/5*x^5*e^3*d*b^2 + 8/5*x^5*e^3*d*c*a + 1/5*x^5*e^4*
b*a + 1/2*x^4*d^4*c^2 + 3*x^4*e*d^3*c*b + 3/2*x^4*e^2*d^2*b^2 + 3*x^4*e^2*d
^2*c*a + x^4*e^3*d*b*a + x^3*d^4*c*b + 4/3*x^3*e*d^3*b^2 + 8/3*x^3*e*d^3*c*
a + 2*x^3*e^2*d^2*b*a + 1/2*x^2*d^4*b^2 + x^2*d^4*c*a + 2*x^2*e*d^3*b*a + x
*d^4*b*a
```

giac [**B**] time = 0.16, size = 270, normalized size = 2.18

$$\frac{1}{4}c^2x^8e^4+\frac{8}{7}c^2dx^7e^3+2c^2d^2x^6e^2+\frac{8}{5}c^2d^3x^5e+\frac{1}{2}c^2d^4x^4+\frac{3}{7}bcx^7e^4+2bcdx^6e^3+\frac{18}{5}bcd^2x^5e^2+3bcd^3x^4e+bcd^4x^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*c^2*x^8*e^4 + 8/7*c^2*d*x^7*e^3 + 2*c^2*d^2*x^6*e^2 + 8/5*c^2*d^3*x^5*e
 + 1/2*c^2*d^4*x^4 + 3/7*b*c*x^7*e^4 + 2*b*c*d*x^6*e^3 + 18/5*b*c*d^2*x^5*e
^2 + 3*b*c*d^3*x^4*e + b*c*d^4*x^3 + 1/6*b^2*x^6*e^4 + 1/3*a*c*x^6*e^4 + 4/
5*b^2*d*x^5*e^3 + 8/5*a*c*d*x^5*e^3 + 3/2*b^2*d^2*x^4*e^2 + 3*a*c*d^2*x^4*e
^2 + 4/3*b^2*d^3*x^3*e + 8/3*a*c*d^3*x^3*e + 1/2*b^2*d^4*x^2 + a*c*d^4*x^2
+ 1/5*a*b*x^5*e^4 + a*b*d*x^4*e^3 + 2*a*b*d^2*x^3*e^2 + 2*a*b*d^3*x^2*e + a
*b*d^4*x
```

maple [**B**] time = 0.04, size = 290, normalized size = 2.34

$$\frac{c^2e^4x^8}{4}+abd^4x+\frac{\left(2bce^4+\left(be^4+8cde^3\right)c\right)x^7}{7}+\frac{\left(2ace^4+\left(be^4+8cde^3\right)b+\left(4bde^3+12cd^2e^2\right)c\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/4*c^2*e^4*x^8+1/7*((b*e^4+8*c*d*e^3)*c+2*c*e^4*b)*x^7+1/6*((4*b*d*e^3+12*
c*d^2*e^2)*c+(b*e^4+8*c*d*e^3)*b+2*a*c*e^4)*x^6+1/5*((6*b*d^2*e^2+8*c*d^3*e
)*c+(4*b*d*e^3+12*c*d^2*e^2)*b+(b*e^4+8*c*d*e^3)*a)*x^5+1/4*((4*b*d^3*e+2*c
*d^4)*c+(6*b*d^2*e^2+8*c*d^3*e)*b+(4*b*d*e^3+12*c*d^2*e^2)*a)*x^4+1/3*(b*d^
4*c+(4*b*d^3*e+2*c*d^4)*b+(6*b*d^2*e^2+8*c*d^3*e)*a)*x^3+1/2*(b^2*d^4+(4*b*
d^3*e+2*c*d^4)*a)*x^2+b*d^4*a*x
```

maxima [**A**] time = 0.60, size = 231, normalized size = 1.86

$$\frac{1}{4}c^2e^4x^8+\frac{1}{7}\left(8c^2de^3+3bce^4\right)x^7+abd^4x+\frac{1}{6}\left(12c^2d^2e^2+12bcde^3+\left(b^2+2ac\right)e^4\right)x^6+\frac{1}{5}\left(8c^2d^3e+18bcd^2e^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*c^2*e^4*x^8 + 1/7*(8*c^2*d*e^3 + 3*b*c*e^4)*x^7 + a*b*d^4*x + 1/6*(12*c
^2*d^2*e^2 + 12*b*c*d*e^3 + (b^2 + 2*a*c)*e^4)*x^6 + 1/5*(8*c^2*d^3*e + 18*
b*c*d^2*e^2 + a*b*e^4 + 4*(b^2 + 2*a*c)*d*e^3)*x^5 + 1/2*(c^2*d^4 + 6*b*c*d
^3*e + 2*a*b*d*e^3 + 3*(b^2 + 2*a*c)*d^2*e^2)*x^4 + 1/3*(3*b*c*d^4 + 6*a*b*
d^2*e^2 + 4*(b^2 + 2*a*c)*d^3*e)*x^3 + 1/2*(4*a*b*d^3*e + (b^2 + 2*a*c)*d^4
)*x^2
```

mupad [**B**] time = 0.11, size = 238, normalized size = 1.92

$$x^5\left(\frac{4b^2de^3}{5}+\frac{18bcd^2e^2}{5}+\frac{abe^4}{5}+\frac{8c^2d^3e}{5}+\frac{8acde^3}{5}\right)+x^6\left(\frac{b^2e^4}{6}+2bcde^3+2c^2d^2e^2+\frac{ace^4}{3}\right)+x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^5*((4*b^2*d*e^3)/5 + (8*c^2*d^3*e)/5 + (a*b*e^4)/5 + (8*a*c*d*e^3)/5 + (1
8*b*c*d^2*e^2)/5) + x^6*((b^2*e^4)/6 + 2*c^2*d^2*e^2 + (a*c*e^4)/3 + 2*b*c*
d*e^3) + x^4*((c^2*d^4)/2 + (3*b^2*d^2*e^2)/2 + a*b*d*e^3 + 3*b*c*d^3*e + 3
*a*c*d^2*e^2) + x^2*((b^2*d^4)/2 + a*c*d^4 + 2*a*b*d^3*e) + x^3*((4*b^2*d^3
*e)/3 + b*c*d^4 + (8*a*c*d^3*e)/3 + 2*a*b*d^2*e^2) + (c^2*e^4*x^8)/4 + (c*e
^3*x^7*(3*b*e + 8*c*d))/7 + a*b*d^4*x
```

sympy [B] time = 0.11, size = 279, normalized size = 2.25

$$abd^4x+\frac{c^2e^4x^8}{4}+x^7\left(\frac{3bce^4}{7}+\frac{8c^2de^3}{7}\right)+x^6\left(\frac{ace^4}{3}+\frac{b^2e^4}{6}+2bcde^3+2c^2d^2e^2\right)+x^5\left(\frac{abe^4}{5}+\frac{8acde^3}{5}+\frac{4b^2de^3}{5}+\frac{18bc}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**4*x + c**2*e**4*x**8/4 + x**7*(3*b*c*e**4/7 + 8*c**2*d*e**3/7) + x**
6*(a*c*e**4/3 + b**2*e**4/6 + 2*b*c*d*e**3 + 2*c**2*d**2*e**2) + x**5*(a*b*
e**4/5 + 8*a*c*d*e**3/5 + 4*b**2*d*e**3/5 + 18*b*c*d**2*e**2/5 + 8*c**2*d**
3*e/5) + x**4*(a*b*d*e**3 + 3*a*c*d**2*e**2 + 3*b**2*d**2*e**2/2 + 3*b*c*d*
*3*e + c**2*d**4/2) + x**3*(2*a*b*d**2*e**2 + 8*a*c*d**3*e/3 + 4*b**2*d**3*
e/3 + b*c*d**4) + x**2*(2*a*b*d**3*e + a*c*d**4 + b**2*d**4/2)
```

3.1495 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^5\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{(d+ex)^4(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{c(d+ex)^6(2cd-be)}{2e^4}+\frac{2c^2(d}{7}$$

```
[Out] -1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^4/e^4+1/5*(6*c^2*d^2+b^2*e^2-
2*c*e*(-a*e+3*b*d))*(e*x+d)^5/e^4-1/2*c*(-b*e+2*c*d)*(e*x+d)^6/e^4+2/7*c^2*
(e*x+d)^7/e^4
```

Rubi [A] time = 0.14, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$\frac{(d+ex)^5\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{(d+ex)^4(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{c(d+ex)^6(2cd-be)}{2e^4}+\frac{2c^2(d}{7}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^5)/(5*e^4) - (c*(2*c*d - b*e)*(d
 + e*x)^6)/(2*e^4) + (2*c^2*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)\,dx &= \int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^3}\right.\\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-\right.}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 175, normalized size = 1.41

$$\frac{1}{5}ex^5\left(ce(2ae+9bd)+b^2e^2+6c^2d^2\right)+dx^3\left(abe^2+2acde+b^2de+bcd^2\right)+\frac{1}{2}d^2x^2\left(3abe+2acd+b^2d\right)+\frac{1}{4}x^4\left(3cd\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^3*x + (d^2*(b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + d*(b*c*d^2 + b^2*d*e
+ 2*a*c*d*e + a*b*e^2)*x^3 + ((2*c^2*d^3 + b*e^2*(3*b*d + a*e) + 3*c*d*e*(3
*b*d + 2*a*e))*x^4)/4 + (e*(6*c^2*d^2 + b^2*e^2 + c*e*(9*b*d + 2*a*e))*x^5)
/5 + (c*e^2*(2*c*d + b*e)*x^6)/2 + (2*c^2*e^3*x^7)/7
```

fricas [A] time = 1.06, size = 211, normalized size = 1.70

$$\frac{2}{7}x^7e^3c^2+x^6e^2dc^2+\frac{1}{2}x^6e^3cb+\frac{6}{5}x^5ed^2c^2+\frac{9}{5}x^5e^2dcb+\frac{1}{5}x^5e^3b^2+\frac{2}{5}x^5e^3ca+\frac{1}{2}x^4d^3c^2+\frac{9}{4}x^4ed^2cb+\frac{3}{4}x^4e^2db^2+\frac{3}{2}x^4e^2d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/7*x^7*e^3*c^2 + x^6*e^2*d*c^2 + 1/2*x^6*e^3*c*b + 6/5*x^5*e*d^2*c^2 + 9/5
*x^5*e^2*d*c*b + 1/5*x^5*e^3*b^2 + 2/5*x^5*e^3*c*a + 1/2*x^4*d^3*c^2 + 9/4*
x^4*e*d^2*c*b + 3/4*x^4*e^2*d*b^2 + 3/2*x^4*e^2*d*c*a + 1/4*x^4*e^3*b*a + x
^3*d^3*c*b + x^3*e*d^2*b^2 + 2*x^3*e*d^2*c*a + x^3*e^2*d*b*a + 1/2*x^2*d^3*
b^2 + x^2*d^3*c*a + 3/2*x^2*e*d^2*b*a + x*d^3*b*a
```

giac [**A**] time = 0.16, size = 206, normalized size = 1.66

$$\frac{2}{7}\,c^2x^7e^3+c^2dx^6e^2+\frac{6}{5}\,c^2d^2x^5e+\frac{1}{2}\,c^2d^3x^4+\frac{1}{2}\,bcx^6e^3+\frac{9}{5}\,bcdx^5e^2+\frac{9}{4}\,bcd^2x^4e+bcd^3x^3+\frac{1}{5}\,b^2x^5e^3+\frac{2}{5}\,acx^5e^3+\frac{3}{4}\,b^2dx^4e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/7*c^2*x^7*e^3 + c^2*d*x^6*e^2 + 6/5*c^2*d^2*x^5*e + 1/2*c^2*d^3*x^4 + 1/2
*b*c*x^6*e^3 + 9/5*b*c*d*x^5*e^2 + 9/4*b*c*d^2*x^4*e + b*c*d^3*x^3 + 1/5*b^
2*x^5*e^3 + 2/5*a*c*x^5*e^3 + 3/4*b^2*d*x^4*e^2 + 3/2*a*c*d*x^4*e^2 + b^2*d
^2*x^3*e + 2*a*c*d^2*x^3*e + 1/2*b^2*d^3*x^2 + a*c*d^3*x^2 + 1/4*a*b*x^4*e^
3 + a*b*d*x^3*e^2 + 3/2*a*b*d^2*x^2*e + a*b*d^3*x
```

maple [**A**] time = 0.05, size = 221, normalized size = 1.78

$$\frac{2c^2e^3x^7}{7}+ab\,d^3x+\frac{\left(2bc\,e^3+\left(b\,e^3+6d\,e^2c\right)c\right)x^6}{6}+\frac{\left(2ac\,e^3+\left(b\,e^3+6d\,e^2c\right)b+\left(3bd\,e^2+6c\,d^2e\right)c\right)x^5}{5}+\frac{\big(\big(b\,e^3+6d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 2/7*c^2*e^3*x^7+1/6*((b*e^3+6*c*d*e^2)*c+2*c*e^3*b)*x^6+1/5*((3*b*d*e^2+6*c
*d^2*e)*c+(b*e^3+6*c*d*e^2)*b+2*a*c*e^3)*x^5+1/4*((3*b*d^2*e+2*c*d^3)*c+(3*
b*d*e^2+6*c*d^2*e)*b+(b*e^3+6*c*d*e^2)*a)*x^4+1/3*(b*c*d^3+(3*b*d^2*e+2*c*d
^3)*b+(3*b*d*e^2+6*c*d^2*e)*a)*x^3+1/2*(b^2*d^3+(3*b*d^2*e+2*c*d^3)*a)*x^2+
b*d^3*a*x
```

maxima [**A**] time = 0.53, size = 174, normalized size = 1.40

$$\frac{2}{7}\,c^2e^3x^7+\frac{1}{2}\left(2\,c^2de^2+bce^3\right)x^6+abd^3x+\frac{1}{5}\left(6\,c^2d^2e+9\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x^5+\frac{1}{4}\big(2\,c^2d^3+9\,bcd^2e+abe^3+3\,\big(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/7*c^2*e^3*x^7 + 1/2*(2*c^2*d*e^2 + b*c*e^3)*x^6 + a*b*d^3*x + 1/5*(6*c^2*
d^2*e + 9*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x^5 + 1/4*(2*c^2*d^3 + 9*b*c*d^2*e
 + a*b*e^3 + 3*(b^2 + 2*a*c)*d*e^2)*x^4 + (b*c*d^3 + a*b*d*e^2 + (b^2 + 2*a
*c)*d^2*e)*x^3 + 1/2*(3*a*b*d^2*e + (b^2 + 2*a*c)*d^3)*x^2
```

mupad [**B**] time = 0.07, size = 179, normalized size = 1.44

$$x^4\,\left(\frac{3\,b^2\,d\,e^2}{4}+\frac{9\,b\,c\,d^2\,e}{4}+\frac{a\,b\,e^3}{4}+\frac{c^2\,d^3}{2}+\frac{3\,a\,c\,d\,e^2}{2}\right)+x^3\,\left(b^2\,d^2\,e+c\,b\,d^3+a\,b\,d\,e^2+2\,a\,c\,d^2\,e\right)+x^2\,\Bigg(\frac{b^2\,d^3}{2}+\frac{3\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((c^2*d^3)/2 + (3*b^2*d*e^2)/4 + (a*b*e^3)/4 + (3*a*c*d*e^2)/2 + (9*b*c
*d^2*e)/4) + x^3*(b^2*d^2*e + b*c*d^3 + a*b*d*e^2 + 2*a*c*d^2*e) + x^2*((b^
2*d^3)/2 + a*c*d^3 + (3*a*b*d^2*e)/2) + x^5*((b^2*e^3)/5 + (6*c^2*d^2*e)/5
+ (2*a*c*e^3)/5 + (9*b*c*d*e^2)/5) + (2*c^2*e^3*x^7)/7 + (c*e^2*x^6*(b*e +
2*c*d))/2 + a*b*d^3*x
```

sympy [A] time = 0.10, size = 211, normalized size = 1.70

$$abd^3x+\frac{2c^2e^3x^7}{7}+x^6\left(\frac{bce^3}{2}+c^2de^2\right)+x^5\left(\frac{2ace^3}{5}+\frac{b^2e^3}{5}+\frac{9bcde^2}{5}+\frac{6c^2d^2e}{5}\right)+x^4\left(\frac{abe^3}{4}+\frac{3acde^2}{2}+\frac{3b^2de^2}{4}+\frac{9b}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**3*x + 2*c**2*e**3*x**7/7 + x**6*(b*c*e**3/2 + c**2*d*e**2) + x**5*(2
*a*c*e**3/5 + b**2*e**3/5 + 9*b*c*d*e**2/5 + 6*c**2*d**2*e/5) + x**4*(a*b*e
**3/4 + 3*a*c*d*e**2/2 + 3*b**2*d*e**2/4 + 9*b*c*d**2*e/4 + c**2*d**3/2) +
x**3*(a*b*d*e**2 + 2*a*c*d**2*e + b**2*d**2*e + b*c*d**3) + x**2*(3*a*b*d**
2*e/2 + a*c*d**3 + b**2*d**3/2)
```

3.1496 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=124

$$\frac{(d+ex)^4\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{4e^4}-\frac{(d+ex)^3(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{3c(d+ex)^5(2cd-be)}{5e^4}+\frac{c^2(d+e}{3e^4}$$

```
[Out] -1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^3/e^4+1/4*(6*c^2*d^2+b^2*e^2-
2*c*e*(-a*e+3*b*d))*(e*x+d)^4/e^4-3/5*c*(-b*e+2*c*d)*(e*x+d)^5/e^4+1/3*c^2*
(e*x+d)^6/e^4
```

Rubi [A] time = 0.11, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^4\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{4e^4}-\frac{(d+ex)^3(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{3c(d+ex)^5(2cd-be)}{5e^4}+\frac{c^2(d+e}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)/(3*e^4) + ((6*c^2*d^2
+ b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^4)/(4*e^4) - (3*c*(2*c*d - b*e)*
(d + e*x)^5)/(5*e^4) + (c^2*(d + e*x)^6)/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)\,dx &= \int \Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-}{e^3}\\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-ae)}{4e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 133, normalized size = 1.07

$$\frac{1}{4}x^4\left(2ace^2+b^2e^2+6bcde+2c^2d^2\right)+\frac{1}{3}x^3\left(abe^2+4acde+2b^2de+3bcd^2\right)+\frac{1}{2}dx^2\left(2abe+2acd+b^2d\right)+abd^2x+\frac{1}{5}c$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d^2*x + (d*(b^2*d + 2*a*c*d + 2*a*b*e)*x^2)/2 + ((3*b*c*d^2 + 2*b^2*d*e
 + 4*a*c*d*e + a*b*e^2)*x^3)/3 + ((2*c^2*d^2 + 6*b*c*d*e + b^2*e^2 + 2*a*c*
e^2)*x^4)/4 + (c*e*(4*c*d + 3*b*e)*x^5)/5 + (c^2*e^2*x^6)/3
```

fricas [A] time = 0.66, size = 146, normalized size = 1.18

$$\frac{1}{3}x^6e^2c^2+\frac{4}{5}x^5edc^2+\frac{3}{5}x^5e^2cb+\frac{1}{2}x^4d^2c^2+\frac{3}{2}x^4edcb+\frac{1}{4}x^4e^2b^2+\frac{1}{2}x^4e^2ca+x^3d^2cb+\frac{2}{3}x^3edb^2+\frac{4}{3}x^3edca+\frac{1}{3}x^3e^2ba+\frac{1}{2}x^2d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/3*x^6*e^2*c^2 + 4/5*x^5*e*d*c^2 + 3/5*x^5*e^2*c*b + 1/2*x^4*d^2*c^2 + 3/2
*x^4*e*d*c*b + 1/4*x^4*e^2*b^2 + 1/2*x^4*e^2*c*a + x^3*d^2*c*b + 2/3*x^3*e*
d*b^2 + 4/3*x^3*e*d*c*a + 1/3*x^3*e^2*b*a + 1/2*x^2*d^2*b^2 + x^2*d^2*c*a +
 x^2*e*d*b*a + x*d^2*b*a
```

giac [A] time = 0.18, size = 146, normalized size = 1.18

$$\frac{1}{3}c^2x^6e^2+\frac{4}{5}c^2dx^5e+\frac{1}{2}c^2d^2x^4+\frac{3}{5}bcx^5e^2+\frac{3}{2}bcdx^4e+bcd^2x^3+\frac{1}{4}b^2x^4e^2+\frac{1}{2}acx^4e^2+\frac{2}{3}b^2dx^3e+\frac{4}{3}acdx^3e+\frac{1}{2}b^2d^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/3*c^2*x^6*e^2 + 4/5*c^2*d*x^5*e + 1/2*c^2*d^2*x^4 + 3/5*b*c*x^5*e^2 + 3/2
*b*c*d*x^4*e + b*c*d^2*x^3 + 1/4*b^2*x^4*e^2 + 1/2*a*c*x^4*e^2 + 2/3*b^2*d*
x^3*e + 4/3*a*c*d*x^3*e + 1/2*b^2*d^2*x^2 + a*c*d^2*x^2 + 1/3*a*b*x^3*e^2 +
 a*b*d*x^2*e + a*b*d^2*x
```

maple [A] time = 0.04, size = 152, normalized size = 1.23

$$\frac{c^2e^2x^6}{3}+abd^2x+\frac{\left(2bce^2+\left(be^2+4cde\right)c\right)x^5}{5}+\frac{\left(2ace^2+\left(be^2+4cde\right)b+\left(2bde+2cd^2\right)c\right)x^4}{4}+\frac{(bcd^2+(be^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/3*c^2*e^2*x^6+1/5*((b*e^2+4*c*d*e)*c+2*c*e^2*b)*x^5+1/4*((2*b*d*e+2*c*d^2
)*c+(b*e^2+4*c*d*e)*b+2*a*c*e^2)*x^4+1/3*(b*c*d^2+(2*b*d*e+2*c*d^2)*b+(b*e^
2+4*c*d*e)*a)*x^3+1/2*(b^2*d^2+(2*b*d*e+2*c*d^2)*a)*x^2+b*d^2*a*x
```

maxima [A] time = 0.51, size = 126, normalized size = 1.02

$$\frac{1}{3}c^2e^2x^6+\frac{1}{5}\left(4c^2de+3bce^2\right)x^5+abd^2x+\frac{1}{4}\left(2c^2d^2+6bcde+\left(b^2+2ac\right)e^2\right)x^4+\frac{1}{3}(3bcd^2+abe^2+2(b^2+2ac)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/3*c^2*e^2*x^6 + 1/5*(4*c^2*d*e + 3*b*c*e^2)*x^5 + a*b*d^2*x + 1/4*(2*c^2*
d^2 + 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*x^4 + 1/3*(3*b*c*d^2 + a*b*e^2 + 2*(b^
2 + 2*a*c)*d*e)*x^3 + 1/2*(2*a*b*d*e + (b^2 + 2*a*c)*d^2)*x^2
```

mupad [B] time = 0.05, size = 124, normalized size = 1.00

$$x^4\left(\frac{b^2e^2}{4}+\frac{3bcde}{2}+\frac{c^2d^2}{2}+\frac{ace^2}{2}\right)+x^3\left(\frac{2b^2de}{3}+cbd^2+\frac{abe^2}{3}+\frac{4acde}{3}\right)+x^2\left(\frac{b^2d^2}{2}+aebd+acd^2\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((b^2*e^2)/4 + (c^2*d^2)/2 + (a*c*e^2)/2 + (3*b*c*d*e)/2) + x^3*((a*b*e
^2)/3 + b*c*d^2 + (2*b^2*d*e)/3 + (4*a*c*d*e)/3) + x^2*((b^2*d^2)/2 + a*c*d
^2 + a*b*d*e) + (c^2*e^2*x^6)/3 + a*b*d^2*x + (c*e*x^5*(3*b*e + 4*c*d))/5
```

sympy [A] time = 0.09, size = 146, normalized size = 1.18

$$abd^2x+\frac{c^2e^2x^6}{3}+x^5\left(\frac{3bce^2}{5}+\frac{4c^2de}{5}\right)+x^4\left(\frac{ace^2}{2}+\frac{b^2e^2}{4}+\frac{3bcde}{2}+\frac{c^2d^2}{2}\right)+x^3\left(\frac{abe^2}{3}+\frac{4acde}{3}+\frac{2b^2de}{3}+bcd^2\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d**2*x + c**2*e**2*x**6/3 + x**5*(3*b*c*e**2/5 + 4*c**2*d*e/5) + x**4*(
a*c*e**2/2 + b**2*e**2/4 + 3*b*c*d*e/2 + c**2*d**2/2) + x**3*(a*b*e**2/3 +
4*a*c*d*e/3 + 2*b**2*d*e/3 + b*c*d**2) + x**2*(a*b*d*e + a*c*d**2 + b**2*d*
*2/2)
```

3.1497 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=79

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

```
[Out] a*b*d*x+1/2*(a*b*e+2*a*c*d+b^2*d)*x^2+1/3*(2*a*c*e+b^2*e+3*b*c*d)*x^3+1/4*c
*(3*b*e+2*c*d)*x^4+2/5*c^2*e*x^5
```

Rubi [A] time = 0.06, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {771}

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d*x + ((b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((3*b*c*d + b^2*e + 2*a*c*e)*
x^3)/3 + (c*(2*c*d + 3*b*e)*x^4)/4 + (2*c^2*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)\,dx&=\int \left(abd+\left(b^2d+2acd+abe\right)x+\left(3bcd+b^2e+2ace\right)x^2+c(2cd+3b\right.\\&=abdx+\frac{1}{2}\left(b^2d+2acd+abe\right)x^2+\frac{1}{3}\left(3bcd+b^2e+2ace\right)x^3+\frac{1}{4}c(2cd\end{aligned}$$

Mathematica [A] time = 0.02, size = 79, normalized size = 1.00

$$\frac{1}{3}x^3\left(2ace+b^2e+3bcd\right)+\frac{1}{2}x^2\left(abe+2acd+b^2d\right)+abdx+\frac{1}{4}cx^4(3be+2cd)+\frac{2}{5}c^2ex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*b*d*x + ((b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((3*b*c*d + b^2*e + 2*a*c*e)*
x^3)/3 + (c*(2*c*d + 3*b*e)*x^4)/4 + (2*c^2*e*x^5)/5
```

fricas [A] time = 0.52, size = 80, normalized size = 1.01

$$\frac{2}{5}x^5ec^2+\frac{1}{2}x^4dc^2+\frac{3}{4}x^4ecb+x^3dcb+\frac{1}{3}x^3eb^2+\frac{2}{3}x^3eca+\frac{1}{2}x^2db^2+x^2dca+\frac{1}{2}x^2eba+xdba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/5*x^5*e*c^2 + 1/2*x^4*d*c^2 + 3/4*x^4*e*c*b + x^3*d*c*b + 1/3*x^3*e*b^2 +
 2/3*x^3*e*c*a + 1/2*x^2*d*b^2 + x^2*d*c*a + 1/2*x^2*e*b*a + x*d*b*a
```

giac [A] time = 0.19, size = 85, normalized size = 1.08

$$\frac{2}{5}c^2x^5e+\frac{1}{2}c^2dx^4+\frac{3}{4}bcx^4e+bcdx^3+\frac{1}{3}b^2x^3e+\frac{2}{3}acx^3e+\frac{1}{2}b^2dx^2+acdx^2+\frac{1}{2}abx^2e+abdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/5*c^2*x^5*e + 1/2*c^2*d*x^4 + 3/4*b*c*x^4*e + b*c*d*x^3 + 1/3*b^2*x^3*e +
 2/3*a*c*x^3*e + 1/2*b^2*d*x^2 + a*c*d*x^2 + 1/2*a*b*x^2*e + a*b*d*x
```

maple [A] time = 0.04, size = 83, normalized size = 1.05

$$\frac{2c^2e\,x^5}{5}+abdx+\frac{(2bce+(be+2cd)\,c)\,x^4}{4}+\frac{(2ace+bcd+(be+2cd)\,b)\,x^3}{3}+\frac{\left(b^2d+(be+2cd)\,a\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 2/5*c^2*e*x^5+1/4*((b*e+2*c*d)*c+2*b*c*e)*x^4+1/3*(b*c*d+(b*e+2*c*d)*b+2*a*
c*e)*x^3+1/2*(b^2*d+(b*e+2*c*d)*a)*x^2+a*b*d*x
```

maxima [A] time = 0.53, size = 73, normalized size = 0.92

$$\frac{2}{5}c^2ex^5+\frac{1}{4}\left(2\,c^2d+3\,bce\right)x^4+abdx+\frac{1}{3}\left(3\,bcd+\left(b^2+2\,ac\right)e\right)x^3+\frac{1}{2}\left(abe+\left(b^2+2\,ac\right)d\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/5*c^2*e*x^5 + 1/4*(2*c^2*d + 3*b*c*e)*x^4 + a*b*d*x + 1/3*(3*b*c*d + (b^2
 + 2*a*c)*e)*x^3 + 1/2*(a*b*e + (b^2 + 2*a*c)*d)*x^2
```

mupad [B] time = 0.03, size = 71, normalized size = 0.90

$$x^2\left(\frac{d\,b^2}{2}+\frac{a\,e\,b}{2}+a\,c\,d\right)+x^3\left(\frac{e\,b^2}{3}+c\,d\,b+\frac{2\,a\,c\,e}{3}\right)+x^4\left(\frac{d\,c^2}{2}+\frac{3\,b\,e\,c}{4}\right)+\frac{2\,c^2\,e\,x^5}{5}+a\,b\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((b^2*d)/2 + (a*b*e)/2 + a*c*d) + x^3*((b^2*e)/3 + (2*a*c*e)/3 + b*c*d)
 + x^4*((c^2*d)/2 + (3*b*c*e)/4) + (2*c^2*e*x^5)/5 + a*b*d*x
```

sympy [A] time = 0.08, size = 82, normalized size = 1.04

$$abdx+\frac{2c^2ex^5}{5}+x^4\left(\frac{3bce}{4}+\frac{c^2d}{2}\right)+x^3\left(\frac{2ace}{3}+\frac{b^2e}{3}+bcd\right)+x^2\left(\frac{abe}{2}+acd+\frac{b^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d*x + 2*c**2*e*x**5/5 + x**4*(3*b*c*e/4 + c**2*d/2) + x**3*(2*a*c*e/3 +
 b**2*e/3 + b*c*d) + x**2*(a*b*e/2 + a*c*d + b**2*d/2)
```

3.1498 $\int (b+2cx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=16

$$\frac{1}{2}\left(a+bx+cx^2\right)^2$$

```
[Out] 1/2*(c*x^2+b*x+a)^2
```

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {629}

$$\frac{1}{2}\left(a+bx+cx^2\right)^2$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2),x]
[Out] (a + b*x + c*x^2)^2/2
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)\,dx=\frac{1}{2}\left(a+bx+cx^2\right)^2$$

Mathematica [A] time = 0.00, size = 21, normalized size = 1.31

$$\frac{1}{2}x(b+cx)(2a+x(b+cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2),x]
[Out] (x*(b + c*x)*(2*a + x*(b + c*x)))/2
```

fricas [B] time = 0.69, size = 33, normalized size = 2.06

$$\frac{1}{2}x^4c^2+x^3cb+\frac{1}{2}x^2b^2+x^2ca+xba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="fricas")
[Out] 1/2*x^4*c^2 + x^3*c*b + 1/2*x^2*b^2 + x^2*c*a + x*b*a
```

giac [A] time = 0.15, size = 25, normalized size = 1.56

$$\frac{1}{2}\left(cx^2+bx\right)^2+\left(cx^2+bx\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(c*x^2 + b*x)^2 + (c*x^2 + b*x)*a
```

maple [B] time = 0.04, size = 33, normalized size = 2.06

$$\frac{c^2x^4}{2}+bc\,x^3+abx+\frac{\left(2ac+b^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*c^2*x^4+b*c*x^3+1/2*(2*a*c+b^2)*x^2+a*b*x
```

maxima [A] time = 0.60, size = 14, normalized size = 0.88

$$\frac{1}{2}\left(cx^2+bx+a\right)^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/2*(c*x^2 + b*x + a)^2
```

mupad [B] time = 0.04, size = 32, normalized size = 2.00

$$x^2\left(\frac{b^2}{2}+a\,c\right)+\frac{c^2\,x^4}{2}+a\,b\,x+b\,c\,x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*(a*c + b^2/2) + (c^2*x^4)/2 + a*b*x + b*c*x^3
```

sympy [B] time = 0.07, size = 31, normalized size = 1.94

$$abx+bcx^3+\frac{c^2x^4}{2}+x^2\left(ac+\frac{b^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a),x)
```

```
[Out] a*b*x + b*c*x**3 + c**2*x**4/2 + x**2*(a*c + b**2/2)
```

3.1499 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{d+ex}\,dx$

Optimal. Leaf size=104

$$\frac{x\left(-ce(3bd-2ae)+b^2e^2+2c^2d^2\right)}{e^3}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{cx^2(2cd-3be)}{2e^2}+\frac{2c^2x^3}{3e}$$

```
[Out] (2*c^2*d^2+b^2*e^2-c*e*(-2*a*e+3*b*d))*x/e^3-1/2*c*(-3*b*e+2*c*d)*x^2/e^2+2
/3*c^2*x^3/e-(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.11, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = $\{771\}$

$$\frac{x\left(-ce(3bd-2ae)+b^2e^2+2c^2d^2\right)}{e^3}-\frac{(2cd-be)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{cx^2(2cd-3be)}{2e^2}+\frac{2c^2x^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - 2*a*e))*x)/e^3 - (c*(2*c*d - 3*b*e)*x^
2)/(2*e^2) + (2*c^2*x^3)/(3*e) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Log
[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{d+ex}\,dx &= \int \Bigg(\frac{2c^2d^2+b^2e^2-ce(3bd-2ae)}{e^3}-\frac{c(2cd-3be)x}{e^2}+\frac{2c^2x^2}{e}+\frac{(-2cd+be)(cd}{e^3(d+}\\ &= \frac{\left(2c^2d^2+b^2e^2-ce(3bd-2ae)\right)x}{e^3}-\frac{c(2cd-3be)x^2}{2e^2}+\frac{2c^2x^3}{3e}-\frac{(2cd-be)(cd^2}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 95, normalized size = 0.91

$$\frac{ex\left(3ce(4ae-6bd+3bex)+6b^2e^2+2c^2\left(6d^2-3dex+2e^2x^2\right)\right)-6(2cd-be)\log(d+ex)\left(e(ae-bd)+cd^2\right)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*b^2*e^2 + 3*c*e*(-6*b*d + 4*a*e + 3*b*e*x) + 2*c^2*(6*d^2 - 3*d*e*x
 + 2*e^2*x^2)) - 6*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*Log[d + e*x])/(
6*e^4)
```

fricas [A] time = 0.76, size = 117, normalized size = 1.12

$$\frac{4\,c^2e^3x^3-3\left(2\,c^2de^2-3\,bce^3\right)x^2+6\left(2\,c^2d^2e-3\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x-6\left(2\,c^2d^3-3\,bcd^2e-abe^3+(b^2+2\right.}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(4*c^2*e^3*x^3 - 3*(2*c^2*d*e^2 - 3*b*c*e^3)*x^2 + 6*(2*c^2*d^2*e - 3*b
*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x - 6*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b
^2 + 2*a*c)*d*e^2)*log(e*x + d))/e^4
```

giac [A] time = 0.15, size = 118, normalized size = 1.13

$$-\left(2\,c^2d^3-3\,bcd^2e+b^2de^2+2\,acde^2-abe^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(4\,c^2x^3e^2-6\,c^2dx^2e+12\,c^2d^2x+9\,bcx^2e^2-18\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)*e^(-4)*log(a
bs(x*e + d)) + 1/6*(4*c^2*x^3*e^2 - 6*c^2*d*x^2*e + 12*c^2*d^2*x + 9*b*c*x^
2*e^2 - 18*b*c*d*x*e + 6*b^2*x*e^2 + 12*a*c*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 146, normalized size = 1.40

$$\frac{2c^2x^3}{3e}+\frac{3bc\,x^2}{2e}-\frac{c^2d\,x^2}{e^2}+\frac{ab\ln\left(ex+d\right)}{e}-\frac{2acd\ln\left(ex+d\right)}{e^2}+\frac{2acx}{e}-\frac{b^2d\ln\left(ex+d\right)}{e^2}+\frac{b^2x}{e}+\frac{3bc\,d^2\ln\left(ex+d\right)}{e^3}-\frac{3bcdx}{e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] 2/3*c^2*x^3/e+3/2/e*x^2*b*c-1/e^2*x^2*c^2*d+2/e*x*a*c+1/e*x*b^2-3/e^2*x*b*c
*d+2/e^3*x*c^2*d^2+1/e*ln(e*x+d)*a*b-2/e^2*ln(e*x+d)*a*c*d-1/e^2*ln(e*x+d)*
b^2*d+3/e^3*ln(e*x+d)*b*c*d^2-2/e^4*ln(e*x+d)*c^2*d^3
```

maxima [A] time = 0.53, size = 116, normalized size = 1.12

$$\frac{4\,c^2e^2x^3-3\left(2\,c^2de-3\,bce^2\right)x^2+6\left(2\,c^2d^2-3\,bcde+\left(b^2+2\,ac\right)e^2\right)x}{6\,e^3}-\frac{\left(2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(4*c^2*e^2*x^3 - 3*(2*c^2*d*e - 3*b*c*e^2)*x^2 + 6*(2*c^2*d^2 - 3*b*c*d
*e + (b^2 + 2*a*c)*e^2)*x)/e^3 - (2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2
+ 2*a*c)*d*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 1.78, size = 121, normalized size = 1.16

$$x\left(\frac{b^2+2\,a\,c}{e}+\frac{d\left(\frac{2\,c^2\,d}{e^2}-\frac{3\,b\,c}{e}\right)}{e}\right)-x^2\left(\frac{c^2\,d}{e^2}-\frac{3\,b\,c}{2\,e}\right)-\frac{\ln\left(d+e\,x\right)\left(b^2\,d\,e^2-3\,b\,c\,d^2\,e-a\,b\,e^3+2\,c^2\,d^3+2\,a\,c\,d\,e^2\right)}{e^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x),x)
```

```
[Out] x*((2*a*c + b^2)/e + (d*((2*c^2*d)/e^2 - (3*b*c)/e))/e) - x^2*((c^2*d)/e^2
- (3*b*c)/(2*e)) - (log(d + e*x)*(2*c^2*d^3 + b^2*d*e^2 - a*b*e^3 + 2*a*c*d
*e^2 - 3*b*c*d^2*e))/e^4 + (2*c^2*x^3)/(3*e)
```

sympy [A] time = 0.35, size = 100, normalized size = 0.96

$$\frac{2c^2x^3}{3e}+x^2\left(\frac{3bc}{2e}-\frac{c^2d}{e^2}\right)+x\left(\frac{2ac}{e}+\frac{b^2}{e}-\frac{3bcd}{e^2}+\frac{2c^2d^2}{e^3}\right)+\frac{(be-2cd)\left(ae^2-bde+cd^2\right)\log\left(d+ex\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] 2*c**2*x**3/(3*e) + x**2*(3*b*c/(2*e) - c**2*d/e**2) + x*(2*a*c/e + b**2/e
- 3*b*c*d/e**2 + 2*c**2*d**2/e**3) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2
)*log(d + e*x)/e**4
```

3.1500 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=102

$$\frac{\log(d+ex)\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{cx(4cd-3be)}{e^3}+\frac{c^2x^2}{e^2}$$

```
[Out] -c*(-3*b*e+4*c*d)*x/e^3+c^2*x^2/e^2+(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e
*x+d)+(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d))*ln(e*x+d)/e^4
```

Rubi [A] time = 0.10, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{\log(d+ex)\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{cx(4cd-3be)}{e^3}+\frac{c^2x^2}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -((c*(4*c*d - 3*b*e)*x)/e^3) + (c^2*x^2)/e^2 + ((2*c*d - b*e)*(c*d^2 - b*d*
e + a*e^2))/(e^4*(d + e*x)) + ((6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*
Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx &= \int \Bigg(-\frac{c(4cd-3be)}{e^3}+\frac{2c^2x}{e^2}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{6c^2d^2+b^2e^2-2ce}{e^3(d+ex}\\ &= -\frac{c(4cd-3be)x}{e^3}+\frac{c^2x^2}{e^2}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\Big(6c^2d^2+b^2e^2-2ce(3b}{e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 97, normalized size = 0.95

$$\frac{\log(d+ex)\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+\frac{(2cd-be)\left(e(ae-bd)+cd^2\right)}{d+ex}-cex(4cd-3be)+c^2e^2x^2}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (-(c*e*(4*c*d - 3*b*e)*x) + c^2*e^2*x^2 + ((2*c*d - b*e)*(c*d^2 + e*(-(b*d)
 + a*e)))/(d + e*x) + (6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e))*Log[d +
e*x])/e^4
```

fricas [A] time = 1.16, size = 172, normalized size = 1.69

$$\frac{c^2e^3x^3+2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2-3\left(c^2de^2-bce^3\right)x^2-\left(4\,c^2d^2e-3\,bcde^2\right)x+\Big(6\,c^2d^3-6\,bcd^2e+}{e^5x+de^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (c^2*e^3*x^3 + 2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2 - 3*
(c^2*d*e^2 - b*c*e^3)*x^2 - (4*c^2*d^2*e - 3*b*c*d*e^2)*x + (6*c^2*d^3 - 6*
b*c*d^2*e + (b^2 + 2*a*c)*d*e^2 + (6*c^2*d^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c
)*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A] time = 0.17, size = 177, normalized size = 1.74

$$\left(c^2 - \frac{3\left(2\,c^2de - bce^2\right)e^{(-1)}}{xe+d}\right)(xe+d)^2e^{(-4)} - \left(6\,c^2d^2 - 6\,bcde + b^2e^2 + 2\,ace^2\right)e^{(-4)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) + \left(\frac{2\,c^2d^3e^2}{xe+d}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] (c^2 - 3*(2*c^2*d*e - b*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - (6*c^
2*d^2 - 6*b*c*d*e + b^2*e^2 + 2*a*c*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*
e + d)^2) + (2*c^2*d^3*e^2/(x*e + d) - 3*b*c*d^2*e^3/(x*e + d) + b^2*d*e^4/
(x*e + d) + 2*a*c*d*e^4/(x*e + d) - a*b*e^5/(x*e + d))*e^(-6)
```

maple [A] time = 0.09, size = 166, normalized size = 1.63

$$\frac{c^2x^2}{e^2} - \frac{ab}{(ex+d)\,e} + \frac{2acd}{(ex+d)\,e^2} + \frac{2ac\ln(ex+d)}{e^2} + \frac{b^2d}{(ex+d)\,e^2} + \frac{b^2\ln(ex+d)}{e^2} - \frac{3bc\,d^2}{(ex+d)\,e^3} - \frac{6bcd\ln(ex+d)}{e^3} + \frac{3bcx}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] c^2*x^2/e^2+3*c/e^2*b*x-4*c^2/e^3*x*d-1/e/(e*x+d)*a*b+2/e^2/(e*x+d)*a*c*d+1
/e^2/(e*x+d)*b^2*d-3/e^3/(e*x+d)*b*c*d^2+2/e^4/(e*x+d)*c^2*d^3+2/e^2*ln(e*x
+d)*a*c+1/e^2*ln(e*x+d)*b^2-6/e^3*ln(e*x+d)*b*c*d+6/e^4*ln(e*x+d)*c^2*d^2
```

maxima [A] time = 0.49, size = 117, normalized size = 1.15

$$\frac{2\,c^2d^3 - 3\,bcd^2e - abe^3 + \left(b^2 + 2\,ac\right)de^2}{e^5x + de^4} + \frac{c^2ex^2 - \left(4\,c^2d - 3\,bce\right)x}{e^3} + \frac{\left(6\,c^2d^2 - 6\,bcde + \left(b^2 + 2\,ac\right)e^2\right)\log\left(ex+\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)/(e^5*x + d*e^4) +
 (c^2*e*x^2 - (4*c^2*d - 3*b*c*e)*x)/e^3 + (6*c^2*d^2 - 6*b*c*d*e + (b^2 +
2*a*c)*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 0.07, size = 127, normalized size = 1.25

$$\frac{b^2\,d\,e^2 - 3\,b\,c\,d^2\,e - a\,b\,e^3 + 2\,c^2\,d^3 + 2\,a\,c\,d\,e^2}{e\,\left(x\,e^4 + d\,e^3\right)} - x\,\left(\frac{4\,c^2\,d}{e^3} - \frac{3\,b\,c}{e^2}\right) + \frac{\ln\left(d + e\,x\right)\,\left(b^2\,e^2 - 6\,b\,c\,d\,e + 6\,c^2\,d^2 + 2\,a\,c\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] (2*c^2*d^3 + b^2*d*e^2 - a*b*e^3 + 2*a*c*d*e^2 - 3*b*c*d^2*e)/(e*(d*e^3 + e
^4*x)) - x*((4*c^2*d)/e^3 - (3*b*c)/e^2) + (log(d + e*x)*(b^2*e^2 + 6*c^2*d
^2 + 2*a*c*e^2 - 6*b*c*d*e))/e^4 + (c^2*x^2)/e^2
```

sympy [A] time = 0.67, size = 126, normalized size = 1.24

$$\frac{c^2x^2}{e^2}+x\left(\frac{3bc}{e^2}-\frac{4c^2d}{e^3}\right)+\frac{-abe^3+2acde^2+b^2de^2-3bcd^2e+2c^2d^3}{de^4+e^5x}+\frac{(2ace^2+b^2e^2-6bcde+6c^2d^2)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] c**2*x**2/e**2 + x*(3*b*c/e**2 - 4*c**2*d/e**3) + (-a*b*e**3 + 2*a*c*d*e**2
 + b**2*d*e**2 - 3*b*c*d**2*e + 2*c**2*d**3)/(d*e**4 + e**5*x) + (2*a*c*e**
2 + b**2*e**2 - 6*b*c*d*e + 6*c**2*d**2)*log(d + e*x)/e**4
```

3.1501 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=111

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{e^4(d+ex)}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3c(2cd-be)\log(d+ex)}{e^4}+\frac{2c^2x}{e^3}$$

```
[Out] 2*c^2*x/e^3+1/2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^2+(-6*c^2*d^2-
b^2*e^2+2*c*e*(-a*e+3*b*d))/e^4/(e*x+d)-3*c*(-b*e+2*c*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.09, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{e^4(d+ex)}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3c(2cd-be)\log(d+ex)}{e^4}+\frac{2c^2x}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*c^2*x)/e^3 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2)
 - (6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))/(e^4*(d + e*x)) - (3*c*(2*c*
d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{2c^2}{e^3}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^2}-\frac{3c}{e}\right.\\ &= \frac{2c^2x}{e^3}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^4(d+ex)}-\frac{3c(2cd}{}\end{aligned}$$

Mathematica [A] time = 0.05, size = 118, normalized size = 1.06

$$\frac{ce(3bd(3d+4ex)-2ae(d+2ex))-be^2(ae+b(d+2ex))-6c(d+ex)^2(2cd-be)\log(d+ex)+c^2\left(-10d^3-8d^2\right.}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (c^2*(-10*d^3 - 8*d^2*e*x + 8*d*e^2*x^2 + 4*e^3*x^3) - b*e^2*(a*e + b*(d +
2*e*x)) + c*e*(-2*a*e*(d + 2*e*x) + 3*b*d*(3*d + 4*e*x)) - 6*c*(2*c*d - b*e
)*(d + e*x)^2*Log[d + e*x])/(2*e^4*(d + e*x)^2)
```

fricas [A] time = 0.96, size = 187, normalized size = 1.68

$$\frac{4\,c^2e^3x^3+8\,c^2de^2x^2-10\,c^2d^3+9\,bcd^2e-abe^3-\left(b^2+2\,ac\right)de^2-2\left(4\,c^2d^2e-6\,bcde^2+\left(b^2+2\,ac\right)e^3\right)x-6\left(2\right.}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(4*c^2*e^3*x^3 + 8*c^2*d*e^2*x^2 - 10*c^2*d^3 + 9*b*c*d^2*e - a*b*e^3 -
 (b^2 + 2*a*c)*d*e^2 - 2*(4*c^2*d^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x
- 6*(2*c^2*d^3 - b*c*d^2*e + (2*c^2*d*e^2 - b*c*e^3)*x^2 + 2*(2*c^2*d^2*e -
 b*c*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [**A**] time = 0.15, size = 116, normalized size = 1.05

$$2\,c^2 x e^{(-3)} - 3\,\bigl(2\,c^2 d - bce\bigr) e^{(-4)} \log\left(|xe+d|\right) - \frac{\bigl(10\,c^2 d^3 - 9\,bcd^2 e + b^2 de^2 + 2\,acde^2 + abe^3 + 2\,\bigl(6\,c^2 d^2 e - 6\,bcde^2 +}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] 2*c^2*x*e^(-3) - 3*(2*c^2*d - b*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(10*c^2
*d^3 - 9*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 + a*b*e^3 + 2*(6*c^2*d^2*e - 6
*b*c*d*e^2 + b^2*e^3 + 2*a*c*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [**A**] time = 0.05, size = 179, normalized size = 1.61

$$-\frac{ab}{2\,(ex+d)^2\,e} + \frac{acd}{(ex+d)^2\,e^2} + \frac{b^2 d}{2\,(ex+d)^2\,e^2} - \frac{3bc\,d^2}{2\,(ex+d)^2\,e^3} + \frac{c^2 d^3}{(ex+d)^2\,e^4} - \frac{2ac}{(ex+d)\,e^2} - \frac{b^2}{(ex+d)\,e^2} + \frac{6bcd}{(ex+d)\,e^3} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] 2*c^2*x/e^3-2/e^2/(e*x+d)*a*c-1/e^2/(e*x+d)*b^2+6/e^3/(e*x+d)*b*c*d-6/e^4/(
e*x+d)*c^2*d^2-1/2/e/(e*x+d)^2*a*b+1/e^2/(e*x+d)^2*a*c*d+1/2/e^2/(e*x+d)^2*
b^2*d-3/2/e^3/(e*x+d)^2*b*c*d^2+1/e^4/(e*x+d)^2*c^2*d^3+3*c/e^3*ln(e*x+d)*b
-6*c^2/e^4*ln(e*x+d)*d
```

maxima [**A**] time = 0.65, size = 128, normalized size = 1.15

$$-\frac{10\,c^2 d^3 - 9\,bcd^2 e + abe^3 + \bigl(b^2 + 2\,ac\bigr)de^2 + 2\,\bigl(6\,c^2 d^2 e - 6\,bcde^2 + \bigl(b^2 + 2\,ac\bigr)e^3\bigr)x}{2\,\bigl(e^6 x^2 + 2\,de^5 x + d^2 e^4\bigr)} + \frac{2\,c^2 x}{e^3} - \frac{3\,\bigl(2\,c^2 d - bce\bigr)\log\bigl(ex}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(10*c^2*d^3 - 9*b*c*d^2*e + a*b*e^3 + (b^2 + 2*a*c)*d*e^2 + 2*(6*c^2*d
^2*e - 6*b*c*d*e^2 + (b^2 + 2*a*c)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
+ 2*c^2*x/e^3 - 3*(2*c^2*d - b*c*e)*log(e*x + d)/e^4
```

mupad [**B**] time = 0.11, size = 135, normalized size = 1.22

$$\frac{2\,c^2\,x}{e^3} - \frac{\frac{b^2\,d\,e^2 - 9\,b\,c\,d^2\,e + a\,b\,e^3 + 10\,c^2\,d^3 + 2\,a\,c\,d\,e^2}{2\,e} + x\,\left(b^2\,e^2 - 6\,b\,c\,d\,e + 6\,c^2\,d^2 + 2\,a\,c\,e^2\right)}{d^2\,e^3 + 2\,d\,e^4\,x + e^5\,x^2} - \frac{\ln\left(d + e\,x\right)\,\left(6\,c^2\,d - 3\,b\,c\,e\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (2*c^2*x)/e^3 - ((10*c^2*d^3 + b^2*d*e^2 + a*b*e^3 + 2*a*c*d*e^2 - 9*b*c*d^
2*e)/(2*e) + x*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e))/(d^2*e^3 + e^
5*x^2 + 2*d*e^4*x) - (log(d + e*x)*(6*c^2*d - 3*b*c*e))/e^4
```

sympy [**A**] time = 1.71, size = 139, normalized size = 1.25

$$\frac{2c^2x}{e^3}+\frac{3c\,(be-2cd)\log{(d+ex)}}{e^4}+\frac{-abe^3-2acde^2-b^2de^2+9bcd^2e-10c^2d^3+x\big(-4ace^3-2b^2e^3+12bcde^2-1}{2d^2e^4+4de^5x+2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] 2*c**2*x/e**3 + 3*c*(b*e - 2*c*d)*log(d + e*x)/e**4 + (-a*b*e**3 - 2*a*c*d*
e**2 - b**2*d*e**2 + 9*b*c*d**2*e - 10*c**2*d**3 + x*(-4*a*c*e**3 - 2*b**2*
e**3 + 12*b*c*d*e**2 - 12*c**2*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2)
```

3.1502 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=119

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{2e^4(d+ex)^2}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{e^4(d+ex)}+\frac{2c^2\log(d+ex)}{e^4}$$

```
[Out] 1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^3+1/2*(-6*c^2*d^2-b^2*e^2+
2*c*e*(-a*e+3*b*d))/e^4/(e*x+d)^2+3*c*(-b*e+2*c*d)/e^4/(e*x+d)+2*c^2*ln(e*x
+d)/e^4
```

Rubi [A] time = 0.09, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{2e^4(d+ex)^2}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{e^4(d+ex)}+\frac{2c^2\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (6*c^2*d^2 +
b^2*e^2 - 2*c*e*(3*b*d - a*e))/(2*e^4*(d + e*x)^2) + (3*c*(2*c*d - b*e))/(e
^4*(d + e*x)) + (2*c^2*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^3}-\frac{3c(2cd-be}{e^3(d+ex)^2}\right.$$
$$= \frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{2e^4(d+ex)^2}+\frac{3c(2cd-be)}{e^4(d+ex)}+2$$

Mathematica [A] time = 0.05, size = 111, normalized size = 0.93

$$\frac{-2ce\left(ae(d+3ex)+3b\left(d^2+3dex+3e^2x^2\right)\right)-be^2(2ae+b(d+3ex))+2c^2d\left(11d^2+27dex+18e^2x^2\right)+12c^2(d+}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (2*c^2*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - b*e^2*(2*a*e + b*(d + 3*e*x)) -
 2*c*e*(a*e*(d + 3*e*x) + 3*b*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 12*c^2*(d + e*
x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

fricas [A] time = 0.92, size = 179, normalized size = 1.50

$$\frac{22\,c^2d^3-6\,bcd^2e-2\,abe^3-\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2-bce^3\right)x^2+3\left(18\,c^2d^2e-6\,bcde^2-\left(b^2+2\,ac\right)e^3\right)x+12\,(}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(22*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 - (b^2 + 2*a*c)*d*e^2 + 18*(2*c^2
*d*e^2 - b*c*e^3)*x^2 + 3*(18*c^2*d^2*e - 6*b*c*d*e^2 - (b^2 + 2*a*c)*e^3)*
x + 12*(c^2*e^3*x^3 + 3*c^2*d*e^2*x^2 + 3*c^2*d^2*e*x + c^2*d^3)*log(e*x +
d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A]   time = 0.15, size = 123, normalized size = 1.03

$$2\,c^2e^{(-4)}\log\left(|xe+d|\right)+\frac{\big(18\,\big(2\,c^2de-bce^2\big)x^2+3\,\big(18\,c^2d^2-6\,bcde-b^2e^2-2\,ace^2\big)x+\big(22\,c^2d^3-6\,bcd^2e-b^2de}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 2*c^2*e^(-4)*log(abs(x*e + d)) + 1/6*(18*(2*c^2*d*e - b*c*e^2)*x^2 + 3*(18*
c^2*d^2 - 6*b*c*d*e - b^2*e^2 - 2*a*c*e^2)*x + (22*c^2*d^3 - 6*b*c*d^2*e -
b^2*d*e^2 - 2*a*c*d*e^2 - 2*a*b*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [A]   time = 0.05, size = 188, normalized size = 1.58

$$-\frac{ab}{3\,(ex+d)^3\,e}+\frac{2acd}{3\,(ex+d)^3\,e^2}+\frac{b^2d}{3\,(ex+d)^3\,e^2}-\frac{bc\,d^2}{(ex+d)^3\,e^3}+\frac{2c^2d^3}{3\,(ex+d)^3\,e^4}-\frac{ac}{(ex+d)^2\,e^2}-\frac{b^2}{2\,(ex+d)^2\,e^2}+\frac{3bc}{(ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -3*c/e^3/(e*x+d)*b+6*c^2/e^4/(e*x+d)*d-1/3/e/(e*x+d)^3*a*b+2/3/e^2/(e*x+d)^
3*a*c*d+1/3/e^2/(e*x+d)^3*b^2*d-1/e^3/(e*x+d)^3*b*c*d^2+2/3/e^4/(e*x+d)^3*c
^2*d^3-1/e^2/(e*x+d)^2*a*c-1/2/e^2/(e*x+d)^2*b^2+3/e^3/(e*x+d)^2*b*c*d-3/e^
4/(e*x+d)^2*c^2*d^2+2*c^2*ln(e*x+d)/e^4
```

maxima [A]   time = 0.48, size = 146, normalized size = 1.23

$$\frac{22\,c^2d^3-6\,bcd^2e-2\,abe^3-\left(b^2+2\,ac\right)de^2+18\,\left(2\,c^2de^2-bce^3\right)x^2+3\,\left(18\,c^2d^2e-6\,bcde^2-\left(b^2+2\,ac\right)e^3\right)x}{6\,\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(22*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 - (b^2 + 2*a*c)*d*e^2 + 18*(2*c^2
*d*e^2 - b*c*e^3)*x^2 + 3*(18*c^2*d^2*e - 6*b*c*d*e^2 - (b^2 + 2*a*c)*e^3)*
x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + 2*c^2*log(e*x + d)/e^4
```

mupad [B]   time = 1.83, size = 144, normalized size = 1.21

$$\frac{2\,c^2\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{b^2\,d\,e^2+6\,b\,c\,d^2\,e+2\,a\,b\,e^3-22\,c^2\,d^3+2\,a\,c\,d\,e^2}{6\,e^4}+\frac{x\,\left(b^2\,e^2+6\,b\,c\,d\,e-18\,c^2\,d^2+2\,a\,c\,e^2\right)}{2\,e^3}+\frac{3\,c\,x^2\,\left(b\,e-2\,c\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (2*c^2*log(d + e*x))/e^4 - ((b^2*d*e^2 - 22*c^2*d^3 + 2*a*b*e^3 + 2*a*c*d*e
^2 + 6*b*c*d^2*e)/(6*e^4) + (x*(b^2*e^2 - 18*c^2*d^2 + 2*a*c*e^2 + 6*b*c*d*
e))/(2*e^3) + (3*c*x^2*(b*e - 2*c*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3
*d^2*e*x)
```

sympy [**A**] time = 3.82, size = 158, normalized size = 1.33

$$\frac{2c^2\log\left(d+ex\right)}{e^4}+\frac{-2abe^3-2acde^2-b^2de^2-6bcd^2e+22c^2d^3+x^2\left(-18bce^3+36c^2de^2\right)+x\left(-6ace^3-3b^2e^3-18\right.}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] 2*c**2*log(d + e*x)/e**4 + (-2*a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 - 6*b*
c*d**2*e + 22*c**2*d**3 + x**2*(-18*b*c*e**3 + 36*c**2*d*e**2) + x*(-6*a*c*
e**3 - 3*b**2*e**3 - 18*b*c*d*e**2 + 54*c**2*d**2*e))/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.1503 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=122

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{3e^4(d+ex)^3}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3c(2cd-be)}{2e^4(d+ex)^2}-\frac{2c^2}{e^4(d+ex)}$$

```
[Out] 1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^4+1/3*(-6*c^2*d^2-b^2*e^2+
2*c*e*(-a*e+3*b*d))/e^4/(e*x+d)^3+3/2*c*(-b*e+2*c*d)/e^4/(e*x+d)^2-2*c^2/e^
4/(e*x+d)
```

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {771}

$$-\frac{-2ce(3bd-ae)+b^2e^2+6c^2d^2}{3e^4(d+ex)^3}+\frac{(2cd-be)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3c(2cd-be)}{2e^4(d+ex)^2}-\frac{2c^2}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (6*c^2*d^2 +
b^2*e^2 - 2*c*e*(3*b*d - a*e))/(3*e^4*(d + e*x)^3) + (3*c*(2*c*d - b*e))/(2
*e^4*(d + e*x)^2) - (2*c^2)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx &= \int \Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^4}-\frac{3c(2cd -}{e^3(d+e}\\ &= \frac{(2cd-be)\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{3e^4(d+ex)^3}+\frac{3c(2cd-be)}{2e^4(d+ex)^2} -\end{aligned}$$

Mathematica [A] time = 0.04, size = 100, normalized size = 0.82

$$-\frac{ce\left(2ae(d+4ex)+3b\left(d^2+4dex+6e^2x^2\right)\right)+be^2(3ae+b(d+4ex))+6c^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(6*c^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + b*e^2*(3*a*e + b
*(d + 4*e*x)) + c*e*(2*a*e*(d + 4*e*x) + 3*b*(d^2 + 4*d*e*x + 6*e^2*x^2)))/
(e^4*(d + e*x)^4)
```

fricas [A] time = 1.07, size = 150, normalized size = 1.23

$$-\frac{24\,c^2e^3x^3+6\,c^2d^3+3\,bcd^2e+3\,abe^3+\left(b^2+2\,ac\right)de^2+18\left(2\,c^2de^2+bce^3\right)x^2+4\left(6\,c^2d^2e+3\,bcde^2+\big(b^2+\right.}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(24*c^2*e^3*x^3 + 6*c^2*d^3 + 3*b*c*d^2*e + 3*a*b*e^3 + (b^2 + 2*a*c)
*d*e^2 + 18*(2*c^2*d*e^2 + b*c*e^3)*x^2 + 4*(6*c^2*d^2*e + 3*b*c*d*e^2 + (b
^2 + 2*a*c)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x +
d^4*e^4)
```

giac [**A**] time = 0.19, size = 186, normalized size = 1.52

$$-\frac{1}{12}\left(\frac{24\,c^{2}e^{(-1)}}{xe+d}-\frac{36\,c^{2}de^{(-1)}}{(xe+d)^{2}}+\frac{24\,c^{2}d^{2}e^{(-1)}}{(xe+d)^{3}}-\frac{6\,c^{2}d^{3}e^{(-1)}}{(xe+d)^{4}}+\frac{18\,bc}{(xe+d)^{2}}-\frac{24\,bcd}{(xe+d)^{3}}+\frac{9\,bcd^{2}}{(xe+d)^{4}}+\frac{4\,b^{2}e}{(xe+d)^{3}}+\frac{8}{(xe}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(24*c^2*e^(-1)/(x*e + d) - 36*c^2*d*e^(-1)/(x*e + d)^2 + 24*c^2*d^2*e
^(-1)/(x*e + d)^3 - 6*c^2*d^3*e^(-1)/(x*e + d)^4 + 18*b*c/(x*e + d)^2 - 24*
b*c*d/(x*e + d)^3 + 9*b*c*d^2/(x*e + d)^4 + 4*b^2*e/(x*e + d)^3 + 8*a*c*e/(
x*e + d)^3 - 3*b^2*d*e/(x*e + d)^4 - 6*a*c*d*e/(x*e + d)^4 + 3*a*b*e^2/(x*e
 + d)^4)*e^(-3)
```

maple [**A**] time = 0.05, size = 131, normalized size = 1.07

$$-\frac{2c^{2}}{(ex+d)\,e^{4}}-\frac{3\,(be-2cd)\,c}{2\,(ex+d)^{2}\,e^{4}}-\frac{2ac\,e^{2}+b^{2}e^{2}-6bcde+6c^{2}d^{2}}{3\,(ex+d)^{3}\,e^{4}}-\frac{ab\,e^{3}-2acd\,e^{2}-b^{2}d\,e^{2}+3bc\,d^{2}e-2c^{2}d^{3}}{4\,(ex+d)^{4}\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x)
```

```
[Out] -2*c^2/e^4/(e*x+d)-1/3*(2*a*c*e^2+b^2*e^2-6*b*c*d*e+6*c^2*d^2)/e^4/(e*x+d)^
3-3/2*c*(b*e-2*c*d)/e^4/(e*x+d)^2-1/4*(a*b*e^3-2*a*c*d*e^2-b^2*d*e^2+3*b*c*
d^2*e-2*c^2*d^3)/e^4/(e*x+d)^4
```

maxima [**A**] time = 0.53, size = 150, normalized size = 1.23

$$-\frac{24\,c^{2}e^{3}x^{3}+6\,c^{2}d^{3}+3\,bcd^{2}e+3\,abe^{3}+\left(b^{2}+2\,ac\right)de^{2}+18\left(2\,c^{2}de^{2}+bce^{3}\right)x^{2}+4\left(6\,c^{2}d^{2}e+3\,bcde^{2}+\left(b^{2}+2\,a\right.\right.}{12\left(e^{8}x^{4}+4\,de^{7}x^{3}+6\,d^{2}e^{6}x^{2}+4\,d^{3}e^{5}x+d^{4}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(24*c^2*e^3*x^3 + 6*c^2*d^3 + 3*b*c*d^2*e + 3*a*b*e^3 + (b^2 + 2*a*c)
*d*e^2 + 18*(2*c^2*d*e^2 + b*c*e^3)*x^2 + 4*(6*c^2*d^2*e + 3*b*c*d*e^2 + (b
^2 + 2*a*c)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x +
d^4*e^4)
```

mupad [**B**] time = 1.81, size = 151, normalized size = 1.24

$$-\frac{\frac{b^{2}\,d\,e^{2}+3\,b\,c\,d^{2}\,e+3\,a\,b\,e^{3}+6\,c^{2}\,d^{3}+2\,a\,c\,d\,e^{2}}{12\,e^{4}}+\frac{x\,\left(b^{2}\,e^{2}+3\,b\,c\,d\,e+6\,c^{2}\,d^{2}+2\,a\,c\,e^{2}\right)}{3\,e^{3}}+\frac{2\,c^{2}\,x^{3}}{e}+\frac{3\,c\,x^{2}\,\left(b\,e+2\,c\,d\right)}{2\,e^{2}}}{d^{4}+4\,d^{3}\,e\,x+6\,d^{2}\,e^{2}\,x^{2}+4\,d\,e^{3}\,x^{3}+e^{4}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((6*c^2*d^3 + b^2*d*e^2 + 3*a*b*e^3 + 2*a*c*d*e^2 + 3*b*c*d^2*e)/(12*e^4)
+ (x*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 + 3*b*c*d*e))/(3*e^3) + (2*c^2*x^3)/e
```

```
 + (3*c*x^2*(b*e + 2*c*d))/(2*e^2))/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^
2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 7.37, size = 170, normalized size = 1.39

$$\frac{-3abe^3-2acde^2-b^2de^2-3bcd^2e-6c^2d^3-24c^2e^3x^3+x^2\left(-18bce^3-36c^2de^2\right)+x\left(-8ace^3-4b^2e^3-12bcde^2\right.}{12d^4e^4+48d^3e^5x+72d^2e^6x^2+48de^7x^3+12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-3*a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 - 3*b*c*d**2*e - 6*c**2*d**3 - 24
*c**2*e**3*x**3 + x**2*(-18*b*c*e**3 - 36*c**2*d*e**2) + x*(-8*a*c*e**3 - 4
*b**2*e**3 - 12*b*c*d*e**2 - 24*c**2*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*
x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.1504 $\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=240

$$\frac{c(d+ex)^8\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{2e^6}-\frac{(d+ex)^7(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+(d+ex)^6\left(ae^2\right.$$

```
[Out] -1/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^5/e^6+1/3*(a*e^2-b*d*e+c*d^
2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^6/e^6-1/7*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^7/e^6+1/2*c*(5*c^2*d^2+b^2*e^
2-c*e*(-a*e+5*b*d))*(e*x+d)^8/e^6-5/9*c^2*(-b*e+2*c*d)*(e*x+d)^9/e^6+1/5*c^
3*(e*x+d)^10/e^6
```

Rubi [A] time = 0.42, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{c(d+ex)^8\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{2e^6}-\frac{(d+ex)^7(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+(d+ex)^6\left(ae^2\right.$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 -
b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^6)/(3*e^
6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x
)^7)/(7*e^6) + (c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^8)/(2
*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^9)/(9*e^6) + (c^3*(d + e*x)^10)/(5*e
^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{e^5}+2\left(cd^2-bde+ae^2\right)\left(5c^2\right.\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^5}{5e^6}+\left(cd^2-bde+ae^2\right)\left(5c^2d^2+\right.$$

Mathematica [A] time = 0.16, size = 433, normalized size = 1.80

$$\frac{1}{3}x^6\left(ce^2\left(a^2e^2+12abde+12b^2d^2\right)+b^2e^3(ae+2bd)+2c^2d^2e(6ae+5bd)+c^3d^4\right)+\frac{1}{5}x^5\left(b\left(a^2e^4+36acd^2e^2+5c^2d\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^4*x + a*d^3*(b^2*d + a*c*d + 2*a*b*e)*x^2 + (d^2*(b^3*d^2 + 8*a*b^2
*d*e + 8*a^2*c*d*e + 6*a*b*(c*d^2 + a*e^2))*x^3)/3 + d*(b^3*d^2*e + a*b*e*(
6*c*d^2 + a*e^2) + a*c*d*(c*d^2 + 3*a*e^2) + b^2*(c*d^3 + 3*a*d*e^2))*x^4 +
 ((6*b^3*d^2*e^2 + 8*a*c*d*e*(2*c*d^2 + a*e^2) + 8*b^2*(2*c*d^3*e + a*d*e^3
) + b*(5*c^2*d^4 + 36*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + ((c^3*d^4 + b^2*e^3*
(2*b*d + a*e) + 2*c^2*d^2*e*(5*b*d + 6*a*e) + c*e^2*(12*b^2*d^2 + 12*a*b*d*
e + a^2*e^2))*x^6)/3 + (e*(8*c^3*d^3 + b^3*e^3 + 2*b*c*e^2*(8*b*d + 3*a*e)
+ 2*c^2*d*e*(15*b*d + 8*a*e))*x^7)/7 + (c*e^2*(3*c^2*d^2 + b^2*e^2 + c*e*(5
*b*d + a*e))*x^8)/2 + (c^2*e^3*(8*c*d + 5*b*e)*x^9)/9 + (c^3*e^4*x^10)/5
```

fricas [B] time = 1.30, size = 561, normalized size = 2.34

$$\frac{1}{5}x^{10}e^4c^3+\frac{8}{9}x^9e^3dc^3+\frac{5}{9}x^9e^4c^2b+\frac{3}{2}x^8e^2d^2c^3+\frac{5}{2}x^8e^3dc^2b+\frac{1}{2}x^8e^4cb^2+\frac{1}{2}x^8e^4c^2a+\frac{8}{7}x^7ed^3c^3+\frac{30}{7}x^7e^2d^2c^2b+\frac{16}{7}x^7e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/5*x^10*e^4*c^3 + 8/9*x^9*e^3*d*c^3 + 5/9*x^9*e^4*c^2*b + 3/2*x^8*e^2*d^2*
c^3 + 5/2*x^8*e^3*d*c^2*b + 1/2*x^8*e^4*c*b^2 + 1/2*x^8*e^4*c^2*a + 8/7*x^7
*e*d^3*c^3 + 30/7*x^7*e^2*d^2*c^2*b + 16/7*x^7*e^3*d*c*b^2 + 1/7*x^7*e^4*b^
3 + 16/7*x^7*e^3*d*c^2*a + 6/7*x^7*e^4*c*b*a + 1/3*x^6*d^4*c^3 + 10/3*x^6*e
*d^3*c^2*b + 4*x^6*e^2*d^2*c*b^2 + 2/3*x^6*e^3*d*b^3 + 4*x^6*e^2*d^2*c^2*a
+ 4*x^6*e^3*d*c*b*a + 1/3*x^6*e^4*b^2*a + 1/3*x^6*e^4*c*a^2 + x^5*d^4*c^2*b
 + 16/5*x^5*e*d^3*c*b^2 + 6/5*x^5*e^2*d^2*b^3 + 16/5*x^5*e*d^3*c^2*a + 36/5
*x^5*e^2*d^2*c*b*a + 8/5*x^5*e^3*d*b^2*a + 8/5*x^5*e^3*d*c*a^2 + 1/5*x^5*e^
4*b*a^2 + x^4*d^4*c*b^2 + x^4*e*d^3*b^3 + x^4*d^4*c^2*a + 6*x^4*e*d^3*c*b*a
 + 3*x^4*e^2*d^2*b^2*a + 3*x^4*e^2*d^2*c*a^2 + x^4*e^3*d*b*a^2 + 1/3*x^3*d^
4*b^3 + 2*x^3*d^4*c*b*a + 8/3*x^3*e*d^3*b^2*a + 8/3*x^3*e*d^3*c*a^2 + 2*x^3
*e^2*d^2*b*a^2 + x^2*d^4*b^2*a + x^2*d^4*c*a^2 + 2*x^2*e*d^3*b*a^2 + x*d^4*
b*a^2
```

giac [B] time = 0.17, size = 543, normalized size = 2.26

$$\frac{1}{5}\,c^3x^{10}e^4+\frac{8}{9}\,c^3dx^9e^3+\frac{3}{2}\,c^3d^2x^8e^2+\frac{8}{7}\,c^3d^3x^7e+\frac{1}{3}\,c^3d^4x^6+\frac{5}{9}\,bc^2x^9e^4+\frac{5}{2}\,bc^2dx^8e^3+\frac{30}{7}\,bc^2d^2x^7e^2+\frac{10}{3}\,bc^2d^3x^6e+b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/5*c^3*x^10*e^4 + 8/9*c^3*d*x^9*e^3 + 3/2*c^3*d^2*x^8*e^2 + 8/7*c^3*d^3*x^
7*e + 1/3*c^3*d^4*x^6 + 5/9*b*c^2*x^9*e^4 + 5/2*b*c^2*d*x^8*e^3 + 30/7*b*c^
2*d^2*x^7*e^2 + 10/3*b*c^2*d^3*x^6*e + b*c^2*d^4*x^5 + 1/2*b^2*c*x^8*e^4 +
1/2*a*c^2*x^8*e^4 + 16/7*b^2*c*d*x^7*e^3 + 16/7*a*c^2*d*x^7*e^3 + 4*b^2*c*d
^2*x^6*e^2 + 4*a*c^2*d^2*x^6*e^2 + 16/5*b^2*c*d^3*x^5*e + 16/5*a*c^2*d^3*x^
5*e + b^2*c*d^4*x^4 + a*c^2*d^4*x^4 + 1/7*b^3*x^7*e^4 + 6/7*a*b*c*x^7*e^4 +
 2/3*b^3*d*x^6*e^3 + 4*a*b*c*d*x^6*e^3 + 6/5*b^3*d^2*x^5*e^2 + 36/5*a*b*c*d
^2*x^5*e^2 + b^3*d^3*x^4*e + 6*a*b*c*d^3*x^4*e + 1/3*b^3*d^4*x^3 + 2*a*b*c*
d^4*x^3 + 1/3*a*b^2*x^6*e^4 + 1/3*a^2*c*x^6*e^4 + 8/5*a*b^2*d*x^5*e^3 + 8/5
*a^2*c*d*x^5*e^3 + 3*a*b^2*d^2*x^4*e^2 + 3*a^2*c*d^2*x^4*e^2 + 8/3*a*b^2*d^
3*x^3*e + 8/3*a^2*c*d^3*x^3*e + a*b^2*d^4*x^2 + a^2*c*d^4*x^2 + 1/5*a^2*b*x
^5*e^4 + a^2*b*d*x^4*e^3 + 2*a^2*b*d^2*x^3*e^2 + 2*a^2*b*d^3*x^2*e + a^2*b*
d^4*x
```

maple [B] time = 0.04, size = 554, normalized size = 2.31

$$\frac{c^3e^4x^{10}}{5}+\frac{\left(4b\,c^2e^4+\left(b\,e^4+8cd\,e^3\right)c^2\right)x^9}{9}+a^2b\,d^4x+\frac{\left(2\left(2ac+b^2\right)c\,e^4+2\left(b\,e^4+8cd\,e^3\right)bc+\left(4bd\,e^3+12c\,d^2e\right.\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/5*c^3*e^4*x^10+1/9*((b*e^4+8*c*d*e^3)*c^2+4*c^2*e^4*b)*x^9+1/8*((4*b*d*e^
3+12*c*d^2*e^2)*c^2+2*(b*e^4+8*c*d*e^3)*b*c+2*c*e^4*(2*a*c+b^2))*x^8+1/7*((
6*b*d^2*e^2+8*c*d^3*e)*c^2+2*(4*b*d*e^3+12*c*d^2*e^2)*b*c+(b*e^4+8*c*d*e^3)
*(2*a*c+b^2)+4*a*b*c*e^4)*x^7+1/6*((4*b*d^3*e+2*c*d^4)*c^2+2*(6*b*d^2*e^2+8
*c*d^3*e)*b*c+(4*b*d*e^3+12*c*d^2*e^2)*(2*a*c+b^2)+2*(b*e^4+8*c*d*e^3)*a*b+
2*a^2*c*e^4)*x^6+1/5*(b*d^4*c^2+2*(4*b*d^3*e+2*c*d^4)*b*c+(6*b*d^2*e^2+8*c*
d^3*e)*(2*a*c+b^2)+2*(4*b*d*e^3+12*c*d^2*e^2)*a*b+(b*e^4+8*c*d*e^3)*a^2)*x^
5+1/4*(2*b^2*d^4*c+(4*b*d^3*e+2*c*d^4)*(2*a*c+b^2)+2*(6*b*d^2*e^2+8*c*d^3*e
)*a*b+(4*b*d*e^3+12*c*d^2*e^2)*a^2)*x^4+1/3*(b*d^4*(2*a*c+b^2)+2*(4*b*d^3*e
+2*c*d^4)*a*b+(6*b*d^2*e^2+8*c*d^3*e)*a^2)*x^3+1/2*(2*b^2*d^4*a+(4*b*d^3*e+
2*c*d^4)*a^2)*x^2+b*d^4*a^2*x
```

maxima [**A**] time = 0.54, size = 430, normalized size = 1.79

$$\frac{1}{5}\,c^3e^4x^{10}+\frac{1}{9}\left(8\,c^3de^3+5\,bc^2e^4\right)x^9+\frac{1}{2}\left(3\,c^3d^2e^2+5\,bc^2de^3+\left(b^2c+ac^2\right)e^4\right)x^8+a^2bd^4x+\frac{1}{7}\left(8\,c^3d^3e+30\,bc^2d^2e^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/5*c^3*e^4*x^10 + 1/9*(8*c^3*d*e^3 + 5*b*c^2*e^4)*x^9 + 1/2*(3*c^3*d^2*e^2
 + 5*b*c^2*d*e^3 + (b^2*c + a*c^2)*e^4)*x^8 + a^2*b*d^4*x + 1/7*(8*c^3*d^3*
e + 30*b*c^2*d^2*e^2 + 16*(b^2*c + a*c^2)*d*e^3 + (b^3 + 6*a*b*c)*e^4)*x^7
+ 1/3*(c^3*d^4 + 10*b*c^2*d^3*e + 12*(b^2*c + a*c^2)*d^2*e^2 + 2*(b^3 + 6*a
*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*x^6 + 1/5*(5*b*c^2*d^4 + a^2*b*e^4 + 16*
(b^2*c + a*c^2)*d^3*e + 6*(b^3 + 6*a*b*c)*d^2*e^2 + 8*(a*b^2 + a^2*c)*d*e^3
)*x^5 + (a^2*b*d*e^3 + (b^2*c + a*c^2)*d^4 + (b^3 + 6*a*b*c)*d^3*e + 3*(a*b
^2 + a^2*c)*d^2*e^2)*x^4 + 1/3*(6*a^2*b*d^2*e^2 + (b^3 + 6*a*b*c)*d^4 + 8*(
a*b^2 + a^2*c)*d^3*e)*x^3 + (2*a^2*b*d^3*e + (a*b^2 + a^2*c)*d^4)*x^2
```

mupad [**B**] time = 1.88, size = 454, normalized size = 1.89

$$x^3\left(2\,a^2\,b\,d^2\,e^2+\frac{8\,c\,a^2\,d^3\,e}{3}+\frac{8\,a\,b^2\,d^3\,e}{3}+2\,c\,a\,b\,d^4+\frac{b^3\,d^4}{3}\right)+x^7\left(\frac{b^3\,e^4}{7}+\frac{16\,b^2\,c\,d\,e^3}{7}+\frac{30\,b\,c^2\,d^2\,e^2}{7}+\frac{6\,a\,b\,c\,e^4}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((b^3*d^4)/3 + 2*a^2*b*d^2*e^2 + 2*a*b*c*d^4 + (8*a*b^2*d^3*e)/3 + (8*a
^2*c*d^3*e)/3) + x^7*((b^3*e^4)/7 + (8*c^3*d^3*e)/7 + (30*b*c^2*d^2*e^2)/7
+ (6*a*b*c*e^4)/7 + (16*a*c^2*d*e^3)/7 + (16*b^2*c*d*e^3)/7) + x^5*((a^2*b*
e^4)/5 + b*c^2*d^4 + (6*b^3*d^2*e^2)/5 + (8*a*b^2*d*e^3)/5 + (16*a*c^2*d^3*
e)/5 + (8*a^2*c*d*e^3)/5 + (16*b^2*c*d^3*e)/5 + (36*a*b*c*d^2*e^2)/5) + x^6
*((c^3*d^4)/3 + (a*b^2*e^4)/3 + (a^2*c*e^4)/3 + (2*b^3*d*e^3)/3 + 4*a*c^2*d
^2*e^2 + 4*b^2*c*d^2*e^2 + (10*b*c^2*d^3*e)/3 + 4*a*b*c*d*e^3) + x^4*(a*c^2
*d^4 + b^2*c*d^4 + b^3*d^3*e + 3*a*b^2*d^2*e^2 + 3*a^2*c*d^2*e^2 + a^2*b*d*
e^3 + 6*a*b*c*d^3*e) + (c^3*e^4*x^10)/5 + a*d^3*x^2*(b^2*d + 2*a*b*e + a*c*
d) + (c*e^2*x^8*(b^2*e^2 + 3*c^2*d^2 + a*c*e^2 + 5*b*c*d*e))/2 + (c^2*e^3*x
^9*(5*b*e + 8*c*d))/9 + a^2*b*d^4*x
```

sympy [**B**] time = 0.16, size = 552, normalized size = 2.30

$$a^2bd^4x+\frac{c^3e^4x^{10}}{5}+x^9\left(\frac{5bc^2e^4}{9}+\frac{8c^3de^3}{9}\right)+x^8\left(\frac{ac^2e^4}{2}+\frac{b^2ce^4}{2}+\frac{5bc^2de^3}{2}+\frac{3c^3d^2e^2}{2}\right)+x^7\left(\frac{6abce^4}{7}+\frac{16ac^2de^3}{7}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**4*x + c**3*e**4*x**10/5 + x**9*(5*b*c**2*e**4/9 + 8*c**3*d*e**3/9
) + x**8*(a*c**2*e**4/2 + b**2*c*e**4/2 + 5*b*c**2*d*e**3/2 + 3*c**3*d**2*e
**2/2) + x**7*(6*a*b*c*e**4/7 + 16*a*c**2*d*e**3/7 + b**3*e**4/7 + 16*b**2*
c*d*e**3/7 + 30*b*c**2*d**2*e**2/7 + 8*c**3*d**3*e/7) + x**6*(a**2*c*e**4/3
 + a*b**2*e**4/3 + 4*a*b*c*d*e**3 + 4*a*c**2*d**2*e**2 + 2*b**3*d*e**3/3 +
4*b**2*c*d**2*e**2 + 10*b*c**2*d**3*e/3 + c**3*d**4/3) + x**5*(a**2*b*e**4/
5 + 8*a**2*c*d*e**3/5 + 8*a*b**2*d*e**3/5 + 36*a*b*c*d**2*e**2/5 + 16*a*c**
2*d**3*e/5 + 6*b**3*d**2*e**2/5 + 16*b**2*c*d**3*e/5 + b*c**2*d**4) + x**4*
(a**2*b*d*e**3 + 3*a**2*c*d**2*e**2 + 3*a*b**2*d**2*e**2 + 6*a*b*c*d**3*e +
 a*c**2*d**4 + b**3*d**3*e + b**2*c*d**4) + x**3*(2*a**2*b*d**2*e**2 + 8*a*
*2*c*d**3*e/3 + 8*a*b**2*d**3*e/3 + 2*a*b*c*d**4 + b**3*d**4/3) + x**2*(2*a
**2*b*d**3*e + a**2*c*d**4 + a*b**2*d**4)
```

3.1505 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=240

$$\frac{4c(d+ex)^7\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{(d+ex)^6(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{6e^6}+$$

```
[Out] -1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^4/e^6+2/5*(a*e^2-b*d*e+c*d^
2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^5/e^6-1/6*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^6/e^6+4/7*c*(5*c^2*d^2+b^2*e^
2-c*e*(-a*e+5*b*d))*(e*x+d)^7/e^6-5/8*c^2*(-b*e+2*c*d)*(e*x+d)^8/e^6+2/9*c^
3*(e*x+d)^9/e^6
```

Rubi [A] time = 0.32, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{4c(d+ex)^7\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{(d+ex)^6(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{6e^6}+$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4)/(4*e^6) + (2*(c*d^2
- b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^5)/(5*
e^6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e
*x)^6)/(6*e^6) + (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^7
)/(7*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^8)/(8*e^6) + (2*c^3*(d + e*x)^9)
/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx&=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{e^5}+\right.\\&=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{4e^6}+\end{aligned}$$

Mathematica [A] time = 0.12, size = 351, normalized size = 1.46

$$\frac{1}{3}dx^3\left(6a^2cde+6ab^2de+3ab\left(ae^2+2cd^2\right)+b^3d^2\right)+a^2bd^3x+\frac{1}{6}x^6\left(3c^2de(4ae+5bd)+6bce^2(ae+2bd)+b^3e^3+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^3*x + (a*d^2*(2*b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + (d*(b^3*d^2 + 6
*a*b^2*d*e + 6*a^2*c*d*e + 3*a*b*(2*c*d^2 + a*e^2))*x^3)/3 + ((3*b^3*d^2*e
+ a*b*e*(18*c*d^2 + a*e^2) + 2*a*c*d*(2*c*d^2 + 3*a*e^2) + b^2*(4*c*d^3 + 6
*a*d*e^2))*x^4)/4 + ((3*b^3*d*e^2 + 2*a*c*e*(6*c*d^2 + a*e^2) + b*c*d*(5*c*
d^2 + 18*a*e^2) + 2*b^2*(6*c*d^2*e + a*e^3))*x^5)/5 + ((2*c^3*d^3 + b^3*e^3
 + 6*b*c*e^2*(2*b*d + a*e) + 3*c^2*d*e*(5*b*d + 4*a*e))*x^6)/6 + (c*e*(6*c^
2*d^2 + 4*b^2*e^2 + c*e*(15*b*d + 4*a*e))*x^7)/7 + (c^2*e^2*(6*c*d + 5*b*e)
*x^8)/8 + (2*c^3*e^3*x^9)/9
```

fricas [**A**] time = 1.07, size = 429, normalized size = 1.79

$$\frac{2}{9}x^9e^3c^3+\frac{3}{4}x^8e^2dc^3+\frac{5}{8}x^8e^3c^2b+\frac{6}{7}x^7ed^2c^3+\frac{15}{7}x^7e^2dc^2b+\frac{4}{7}x^7e^3cb^2+\frac{4}{7}x^7e^3c^2a+\frac{1}{3}x^6d^3c^3+\frac{5}{2}x^6ed^2c^2b+2x^6e^2dcb^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/9*x^9*e^3*c^3 + 3/4*x^8*e^2*d*c^3 + 5/8*x^8*e^3*c^2*b + 6/7*x^7*e*d^2*c^3
 + 15/7*x^7*e^2*d*c^2*b + 4/7*x^7*e^3*c*b^2 + 4/7*x^7*e^3*c^2*a + 1/3*x^6*d
^3*c^3 + 5/2*x^6*e*d^2*c^2*b + 2*x^6*e^2*d*c*b^2 + 1/6*x^6*e^3*b^3 + 2*x^6*
e^2*d*c^2*a + x^6*e^3*c*b*a + x^5*d^3*c^2*b + 12/5*x^5*e*d^2*c*b^2 + 3/5*x^
5*e^2*d*b^3 + 12/5*x^5*e*d^2*c^2*a + 18/5*x^5*e^2*d*c*b*a + 2/5*x^5*e^3*b^2
*a + 2/5*x^5*e^3*c*a^2 + x^4*d^3*c*b^2 + 3/4*x^4*e*d^2*b^3 + x^4*d^3*c^2*a
+ 9/2*x^4*e*d^2*c*b*a + 3/2*x^4*e^2*d*b^2*a + 3/2*x^4*e^2*d*c*a^2 + 1/4*x^4
*e^3*b*a^2 + 1/3*x^3*d^3*b^3 + 2*x^3*d^3*c*b*a + 2*x^3*e*d^2*b^2*a + 2*x^3*
e*d^2*c*a^2 + x^3*e^2*d*b*a^2 + x^2*d^3*b^2*a + x^2*d^3*c*a^2 + 3/2*x^2*e*d
^2*b*a^2 + x*d^3*b*a^2
```

giac [**A**] time = 0.16, size = 420, normalized size = 1.75

$$\frac{2}{9}c^3x^9e^3+\frac{3}{4}c^3dx^8e^2+\frac{6}{7}c^3d^2x^7e+\frac{1}{3}c^3d^3x^6+\frac{5}{8}bc^2x^8e^3+\frac{15}{7}bc^2dx^7e^2+\frac{5}{2}bc^2d^2x^6e+bc^2d^3x^5+\frac{4}{7}b^2cx^7e^3+\frac{4}{7}ac^2x^7e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/9*c^3*x^9*e^3 + 3/4*c^3*d*x^8*e^2 + 6/7*c^3*d^2*x^7*e + 1/3*c^3*d^3*x^6 +
 5/8*b*c^2*x^8*e^3 + 15/7*b*c^2*d*x^7*e^2 + 5/2*b*c^2*d^2*x^6*e + b*c^2*d^3
*x^5 + 4/7*b^2*c*x^7*e^3 + 4/7*a*c^2*x^7*e^3 + 2*b^2*c*d*x^6*e^2 + 2*a*c^2*
d*x^6*e^2 + 12/5*b^2*c*d^2*x^5*e + 12/5*a*c^2*d^2*x^5*e + b^2*c*d^3*x^4 + a
*c^2*d^3*x^4 + 1/6*b^3*x^6*e^3 + a*b*c*x^6*e^3 + 3/5*b^3*d*x^5*e^2 + 18/5*a
*b*c*d*x^5*e^2 + 3/4*b^3*d^2*x^4*e + 9/2*a*b*c*d^2*x^4*e + 1/3*b^3*d^3*x^3
+ 2*a*b*c*d^3*x^3 + 2/5*a*b^2*x^5*e^3 + 2/5*a^2*c*x^5*e^3 + 3/2*a*b^2*d*x^4
*e^2 + 3/2*a^2*c*d*x^4*e^2 + 2*a*b^2*d^2*x^3*e + 2*a^2*c*d^2*x^3*e + a*b^2*
d^3*x^2 + a^2*c*d^3*x^2 + 1/4*a^2*b*x^4*e^3 + a^2*b*d*x^3*e^2 + 3/2*a^2*b*d
^2*x^2*e + a^2*b*d^3*x
```

maple [**A**] time = 0.04, size = 428, normalized size = 1.78

$$\frac{2c^3e^3x^9}{9}+\frac{\left(4b\,c^2e^3+\left(b\,e^3+6d\,e^2c\right)c^2\right)x^8}{8}+a^2b\,d^3x+\frac{\left(2\left(2ac+b^2\right)c\,e^3+2\left(b\,e^3+6d\,e^2c\right)bc+\left(3bd\,e^2+6c\,d^2e\right)\right.}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/9*c^3*e^3*x^9+1/8*((b*e^3+6*c*d*e^2)*c^2+4*c^2*e^3*b)*x^8+1/7*((3*b*d*e^2
+6*c*d^2*e)*c^2+2*(b*e^3+6*c*d*e^2)*b*c+2*c*e^3*(2*a*c+b^2))*x^7+1/6*((3*b*
d^2*e+2*c*d^3)*c^2+2*(3*b*d*e^2+6*c*d^2*e)*b*c+(b*e^3+6*c*d*e^2)*(2*a*c+b^2
)+4*a*b*c*e^3)*x^6+1/5*(b*d^3*c^2+2*(3*b*d^2*e+2*c*d^3)*b*c+(3*b*d*e^2+6*c*
d^2*e)*(2*a*c+b^2)+2*(b*e^3+6*c*d*e^2)*a*b+2*a^2*c*e^3)*x^5+1/4*(2*b^2*d^3*
c+(3*b*d^2*e+2*c*d^3)*(2*a*c+b^2)+2*(3*b*d*e^2+6*c*d^2*e)*a*b+(b*e^3+6*c*d*
e^2)*a^2)*x^4+1/3*(b*d^3*(2*a*c+b^2)+2*(3*b*d^2*e+2*c*d^3)*a*b+(3*b*d*e^2+6
*c*d^2*e)*a^2)*x^3+1/2*(2*b^2*d^3*a+(3*b*d^2*e+2*c*d^3)*a^2)*x^2+b*d^3*a^2*
x
```

maxima [A] time = 0.49, size = 343, normalized size = 1.43

$$\frac{2}{9}\,c^3e^3x^9+\frac{1}{8}\left(6\,c^3de^2+5\,bc^2e^3\right)x^8+\frac{1}{7}\left(6\,c^3d^2e+15\,bc^2de^2+4\left(b^2c+ac^2\right)e^3\right)x^7+a^2bd^3x+\frac{1}{6}\left(2\,c^3d^3+15\,bc^2d^2e+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/9*c^3*e^3*x^9 + 1/8*(6*c^3*d*e^2 + 5*b*c^2*e^3)*x^8 + 1/7*(6*c^3*d^2*e +
15*b*c^2*d*e^2 + 4*(b^2*c + a*c^2)*e^3)*x^7 + a^2*b*d^3*x + 1/6*(2*c^3*d^3
+ 15*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 + (b^3 + 6*a*b*c)*e^3)*x^6 + 1/
5*(5*b*c^2*d^3 + 12*(b^2*c + a*c^2)*d^2*e + 3*(b^3 + 6*a*b*c)*d*e^2 + 2*(a*
b^2 + a^2*c)*e^3)*x^5 + 1/4*(a^2*b*e^3 + 4*(b^2*c + a*c^2)*d^3 + 3*(b^3 + 6
*a*b*c)*d^2*e + 6*(a*b^2 + a^2*c)*d*e^2)*x^4 + 1/3*(3*a^2*b*d*e^2 + (b^3 +
6*a*b*c)*d^3 + 6*(a*b^2 + a^2*c)*d^2*e)*x^3 + 1/2*(3*a^2*b*d^2*e + 2*(a*b^2
 + a^2*c)*d^3)*x^2
```

mupad [B] time = 0.11, size = 349, normalized size = 1.45

$$x^6\left(\frac{b^3\,e^3}{6}+2\,b^2\,c\,d\,e^2+\frac{5\,b\,c^2\,d^2\,e}{2}+a\,b\,c\,e^3+\frac{c^3\,d^3}{3}+2\,a\,c^2\,d\,e^2\right)+x^4\left(\frac{a^2\,b\,e^3}{4}+\frac{3\,a^2\,c\,d\,e^2}{2}+\frac{3\,a\,b^2\,d\,e^2}{2}+\frac{9\,a\,b\,c\,d}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((b^3*e^3)/6 + (c^3*d^3)/3 + a*b*c*e^3 + 2*a*c^2*d*e^2 + (5*b*c^2*d^2*e
)/2 + 2*b^2*c*d*e^2) + x^4*(a*c^2*d^3 + (a^2*b*e^3)/4 + b^2*c*d^3 + (3*b^3*
d^2*e)/4 + (3*a*b^2*d*e^2)/2 + (3*a^2*c*d*e^2)/2 + (9*a*b*c*d^2*e)/2) + x^5
*((2*a*b^2*e^3)/5 + b*c^2*d^3 + (2*a^2*c*e^3)/5 + (3*b^3*d*e^2)/5 + (12*a*c
^2*d^2*e)/5 + (12*b^2*c*d^2*e)/5 + (18*a*b*c*d*e^2)/5) + x^3*((b^3*d^3)/3 +
 2*a*b*c*d^3 + 2*a*b^2*d^2*e + a^2*b*d*e^2 + 2*a^2*c*d^2*e) + (2*c^3*e^3*x^
9)/9 + (a*d^2*x^2*(2*b^2*d + 3*a*b*e + 2*a*c*d))/2 + (c^2*e^2*x^8*(5*b*e +
6*c*d))/8 + a^2*b*d^3*x + (c*e*x^7*(4*b^2*e^2 + 6*c^2*d^2 + 4*a*c*e^2 + 15*
b*c*d*e))/7
```

sympy [A] time = 0.14, size = 430, normalized size = 1.79

$$a^2bd^3x+\frac{2c^3e^3x^9}{9}+x^8\left(\frac{5bc^2e^3}{8}+\frac{3c^3de^2}{4}\right)+x^7\left(\frac{4ac^2e^3}{7}+\frac{4b^2ce^3}{7}+\frac{15bc^2de^2}{7}+\frac{6c^3d^2e}{7}\right)+x^6\left(abce^3+2ac^2de^2+\frac{b^3e^3}{6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**3*x + 2*c**3*e**3*x**9/9 + x**8*(5*b*c**2*e**3/8 + 3*c**3*d*e**2/
4) + x**7*(4*a*c**2*e**3/7 + 4*b**2*c*e**3/7 + 15*b*c**2*d*e**2/7 + 6*c**3*
d**2*e/7) + x**6*(a*b*c*e**3 + 2*a*c**2*d*e**2 + b**3*e**3/6 + 2*b**2*c*d*e
**2 + 5*b*c**2*d**2*e/2 + c**3*d**3/3) + x**5*(2*a**2*c*e**3/5 + 2*a*b**2*e
**3/5 + 18*a*b*c*d*e**2/5 + 12*a*c**2*d**2*e/5 + 3*b**3*d*e**2/5 + 12*b**2*
c*d**2*e/5 + b*c**2*d**3) + x**4*(a**2*b*e**3/4 + 3*a**2*c*d*e**2/2 + 3*a*b
**2*d*e**2/2 + 9*a*b*c*d**2*e/2 + a*c**2*d**3 + 3*b**3*d**2*e/4 + b**2*c*d*
*3) + x**3*(a**2*b*d*e**2 + 2*a**2*c*d**2*e + 2*a*b**2*d**2*e + 2*a*b*c*d**
3 + b**3*d**3/3) + x**2*(3*a**2*b*d**2*e/2 + a**2*c*d**3 + a*b**2*d**3)
```

3.1506 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=240

$$\frac{2c(d+ex)^6\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^5(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{(d+ex)^4}{}$$

```
[Out] -1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^3/e^6+1/2*(a*e^2-b*d*e+c*d^
2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^4/e^6-1/5*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^5/e^6+2/3*c*(5*c^2*d^2+b^2*e^
2-c*e*(-a*e+5*b*d))*(e*x+d)^6/e^6-5/7*c^2*(-b*e+2*c*d)*(e*x+d)^7/e^6+1/4*c^
3*(e*x+d)^8/e^6
```

Rubi [A] time = 0.23, antiderivative size = 240, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{2c(d+ex)^6\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^5(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+\frac{(d+ex)^4}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 -
b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^4)/(2*e^
6) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x
)^5)/(5*e^6) + (2*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^6)/
(3*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^7)/(7*e^6) + (c^3*(d + e*x)^8)/(4*
e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^2}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(\right.}{}\right.$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{3e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5c^2d^2\right.}{}$$

Mathematica [A] time = 0.08, size = 244, normalized size = 1.02

$$\frac{1}{3}x^3\left(4a^2cde+4ab^2de+ab\left(ae^2+6cd^2\right)+b^3d^2\right)+a^2bd^2x+\frac{1}{3}cx^6\left(ce(2ae+5bd)+2b^2e^2+c^2d^2\right)+adx^2\left(abe+ac\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d^2*x + a*d*(b^2*d + a*c*d + a*b*e)*x^2 + ((b^3*d^2 + 4*a*b^2*d*e + 4
*a^2*c*d*e + a*b*(6*c*d^2 + a*e^2))*x^3)/3 + ((b^3*d*e + 6*a*b*c*d*e + b^2*
(2*c*d^2 + a*e^2) + a*c*(2*c*d^2 + a*e^2))*x^4)/2 + ((8*b^2*c*d*e + 8*a*c^2
*d*e + b^3*e^2 + b*c*(5*c*d^2 + 6*a*e^2))*x^5)/5 + (c*(c^2*d^2 + 2*b^2*e^2
+ c*e*(5*b*d + 2*a*e))*x^6)/3 + (c^2*e*(4*c*d + 5*b*e)*x^7)/7 + (c^3*e^2*x^
8)/4
```

fricas [A] time = 0.82, size = 298, normalized size = 1.24

$$\frac{1}{4}x^8e^2c^3+\frac{4}{7}x^7edc^3+\frac{5}{7}x^7e^2c^2b+\frac{1}{3}x^6d^2c^3+\frac{5}{3}x^6edc^2b+\frac{2}{3}x^6e^2cb^2+\frac{2}{3}x^6e^2c^2a+x^5d^2c^2b+\frac{8}{5}x^5edcb^2+\frac{1}{5}x^5e^2b^3+\frac{8}{5}x^5edc^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/4*x^8*e^2*c^3 + 4/7*x^7*e*d*c^3 + 5/7*x^7*e^2*c^2*b + 1/3*x^6*d^2*c^3 + 5
/3*x^6*e*d*c^2*b + 2/3*x^6*e^2*c*b^2 + 2/3*x^6*e^2*c^2*a + x^5*d^2*c^2*b +
8/5*x^5*e*d*c*b^2 + 1/5*x^5*e^2*b^3 + 8/5*x^5*e*d*c^2*a + 6/5*x^5*e^2*c*b*a
 + x^4*d^2*c*b^2 + 1/2*x^4*e*d*b^3 + x^4*d^2*c^2*a + 3*x^4*e*d*c*b*a + 1/2*
x^4*e^2*b^2*a + 1/2*x^4*e^2*c*a^2 + 1/3*x^3*d^2*b^3 + 2*x^3*d^2*c*b*a + 4/3
*x^3*e*d*b^2*a + 4/3*x^3*e*d*c*a^2 + 1/3*x^3*e^2*b*a^2 + x^2*d^2*b^2*a + x^
2*d^2*c*a^2 + x^2*e*d*b*a^2 + x*d^2*b*a^2
```

giac [A] time = 0.17, size = 298, normalized size = 1.24

$$\frac{1}{4}\,c^3x^8e^2+\frac{4}{7}\,c^3dx^7e+\frac{1}{3}\,c^3d^2x^6+\frac{5}{7}\,bc^2x^7e^2+\frac{5}{3}\,bc^2dx^6e+bc^2d^2x^5+\frac{2}{3}\,b^2cx^6e^2+\frac{2}{3}\,ac^2x^6e^2+\frac{8}{5}\,b^2cdx^5e+\frac{8}{5}\,ac^2dx^5e+b^2cd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/4*c^3*x^8*e^2 + 4/7*c^3*d*x^7*e + 1/3*c^3*d^2*x^6 + 5/7*b*c^2*x^7*e^2 + 5
/3*b*c^2*d*x^6*e + b*c^2*d^2*x^5 + 2/3*b^2*c*x^6*e^2 + 2/3*a*c^2*x^6*e^2 +
8/5*b^2*c*d*x^5*e + 8/5*a*c^2*d*x^5*e + b^2*c*d^2*x^4 + a*c^2*d^2*x^4 + 1/5
*b^3*x^5*e^2 + 6/5*a*b*c*x^5*e^2 + 1/2*b^3*d*x^4*e + 3*a*b*c*d*x^4*e + 1/3*
b^3*d^2*x^3 + 2*a*b*c*d^2*x^3 + 1/2*a*b^2*x^4*e^2 + 1/2*a^2*c*x^4*e^2 + 4/3
*a*b^2*d*x^3*e + 4/3*a^2*c*d*x^3*e + a*b^2*d^2*x^2 + a^2*c*d^2*x^2 + 1/3*a^
2*b*x^3*e^2 + a^2*b*d*x^2*e + a^2*b*d^2*x
```

maple [A] time = 0.04, size = 302, normalized size = 1.26

$$\frac{c^3e^2x^8}{4}+\frac{\left(4b\,c^2e^2+\left(b\,e^2+4cde\right)c^2\right)x^7}{7}+a^2b\,d^2x+\frac{\left(2\left(2ac+b^2\right)c\,e^2+2\left(b\,e^2+4cde\right)bc+\left(2bde+2c\,d^2\right)c^2\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/4*c^3*e^2*x^8+1/7*((b*e^2+4*c*d*e)*c^2+4*c^2*e^2*b)*x^7+1/6*((2*b*d*e+2*c
*d^2)*c^2+2*(b*e^2+4*c*d*e)*b*c+2*c*e^2*(2*a*c+b^2))*x^6+1/5*(b*c^2*d^2+2*(
2*b*d*e+2*c*d^2)*b*c+(b*e^2+4*c*d*e)*(2*a*c+b^2)+4*c*e^2*a*b)*x^5+1/4*(2*b^
2*d^2*c+(2*b*d*e+2*c*d^2)*(2*a*c+b^2)+2*(b*e^2+4*c*d*e)*a*b+2*c*e^2*a^2)*x^
4+1/3*(b*d^2*(2*a*c+b^2)+2*(2*b*d*e+2*c*d^2)*a*b+(b*e^2+4*c*d*e)*a^2)*x^3+1
/2*(2*a*b^2*d^2+(2*b*d*e+2*c*d^2)*a^2)*x^2+b*d^2*a^2*x
```

maxima [A] time = 0.60, size = 241, normalized size = 1.00

$$\frac{1}{4}\,c^3e^2x^8+\frac{1}{7}\left(4\,c^3de+5\,bc^2e^2\right)x^7+\frac{1}{3}\left(c^3d^2+5\,bc^2de+2\left(b^2c+ac^2\right)e^2\right)x^6+a^2bd^2x+\frac{1}{5}\left(5\,bc^2d^2+8\left(b^2c+ac^2\right)de+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/4*c^3*e^2*x^8 + 1/7*(4*c^3*d*e + 5*b*c^2*e^2)*x^7 + 1/3*(c^3*d^2 + 5*b*c^
2*d*e + 2*(b^2*c + a*c^2)*e^2)*x^6 + a^2*b*d^2*x + 1/5*(5*b*c^2*d^2 + 8*(b^
2*c + a*c^2)*d*e + (b^3 + 6*a*b*c)*e^2)*x^5 + 1/2*(2*(b^2*c + a*c^2)*d^2 +
(b^3 + 6*a*b*c)*d*e + (a*b^2 + a^2*c)*e^2)*x^4 + 1/3*(a^2*b*e^2 + (b^3 + 6*
a*b*c)*d^2 + 4*(a*b^2 + a^2*c)*d*e)*x^3 + (a^2*b*d*e + (a*b^2 + a^2*c)*d^2)
*x^2
```

mupad [B] time = 1.83, size = 242, normalized size = 1.01

$$x^6\left(\frac{2\,b^2\,c\,e^2}{3}+\frac{5\,b\,c^2\,d\,e}{3}+\frac{c^3\,d^2}{3}+\frac{2\,a\,c^2\,e^2}{3}\right)+x^3\left(\frac{a^2\,b\,e^2}{3}+\frac{4\,c\,a^2\,d\,e}{3}+\frac{4\,a\,b^2\,d\,e}{3}+2\,c\,a\,b\,d^2+\frac{b^3\,d^2}{3}\right)+x^5\Bigg(\frac{b^3\,e}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((c^3*d^2)/3 + (2*a*c^2*e^2)/3 + (2*b^2*c*e^2)/3 + (5*b*c^2*d*e)/3) + x
^3*((b^3*d^2)/3 + (a^2*b*e^2)/3 + 2*a*b*c*d^2 + (4*a*b^2*d*e)/3 + (4*a^2*c*
d*e)/3) + x^5*((b^3*e^2)/5 + b*c^2*d^2 + (6*a*b*c*e^2)/5 + (8*a*c^2*d*e)/5
+ (8*b^2*c*d*e)/5) + x^4*((a*b^2*e^2)/2 + a*c^2*d^2 + (a^2*c*e^2)/2 + b^2*c
*d^2 + (b^3*d*e)/2 + 3*a*b*c*d*e) + (c^3*e^2*x^8)/4 + (c^2*e*x^7*(5*b*e + 4
*c*d))/7 + a^2*b*d^2*x + a*d*x^2*(b^2*d + a*b*e + a*c*d)
```

sympy [A] time = 0.12, size = 294, normalized size = 1.22

$$a^2bd^2x+\frac{c^3e^2x^8}{4}+x^7\left(\frac{5bc^2e^2}{7}+\frac{4c^3de}{7}\right)+x^6\left(\frac{2ac^2e^2}{3}+\frac{2b^2ce^2}{3}+\frac{5bc^2de}{3}+\frac{c^3d^2}{3}\right)+x^5\Bigg(\frac{6abce^2}{5}+\frac{8ac^2de}{5}+\frac{b^3e^2}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**2*x + c**3*e**2*x**8/4 + x**7*(5*b*c**2*e**2/7 + 4*c**3*d*e/7) +
x**6*(2*a*c**2*e**2/3 + 2*b**2*c*e**2/3 + 5*b*c**2*d*e/3 + c**3*d**2/3) + x
**5*(6*a*b*c*e**2/5 + 8*a*c**2*d*e/5 + b**3*e**2/5 + 8*b**2*c*d*e/5 + b*c**
2*d**2) + x**4*(a**2*c*e**2/2 + a*b**2*e**2/2 + 3*a*b*c*d*e + a*c**2*d**2 +
 b**3*d*e/2 + b**2*c*d**2) + x**3*(a**2*b*e**2/3 + 4*a**2*c*d*e/3 + 4*a*b**
2*d*e/3 + 2*a*b*c*d**2 + b**3*d**2/3) + x**2*(a**2*b*d*e + a**2*c*d**2 + a*
b**2*d**2)
```

3.1507 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=153

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax^2\left(abe+2acd+2b^2d\right)+\frac{1}{4}x^4\left(6abce+\right.$$

```
[Out] a^2*b*d*x+1/2*a*(a*b*e+2*a*c*d+2*b^2*d)*x^2+1/3*(2*a^2*c*e+2*a*b^2*e+6*a*b*
c*d+b^3*d)*x^3+1/4*(6*a*b*c*e+4*a*c^2*d+b^3*e+4*b^2*c*d)*x^4+1/5*c*(4*a*c*e
+4*b^2*e+5*b*c*d)*x^5+1/6*c^2*(5*b*e+2*c*d)*x^6+2/7*c^3*e*x^7
```

Rubi [A] time = 0.13, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{4}x^4\left(6abce+4ac^2d+4b^2cd+b^3e\right)+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d*x + (a*(2*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((b^3*d + 6*a*b*c*d + 2
*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((4*b^2*c*d + 4*a*c^2*d + b^3*e + 6*a*b*c*e)
*x^4)/4 + (c*(5*b*c*d + 4*b^2*e + 4*a*c*e)*x^5)/5 + (c^2*(2*c*d + 5*b*e)*x^
6)/6 + (2*c^3*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2bd+a\left(2b^2d+2acd+abe\right)x+\left(b^3d+6abcd+2ab^2e+2a^2ce\right)x^2\right.\\ &= a^2bdx+\frac{1}{2}a\left(2b^2d+2acd+abe\right)x^2+\frac{1}{3}\left(b^3d+6abcd+2ab^2e+2a^2ce\right)\end{aligned}$$

Mathematica [A] time = 0.04, size = 153, normalized size = 1.00

$$\frac{1}{3}x^3\left(2a^2ce+2ab^2e+6abcd+b^3d\right)+a^2bdx+\frac{1}{5}cx^5\left(4ace+4b^2e+5bcd\right)+\frac{1}{2}ax^2\left(abe+2acd+2b^2d\right)+\frac{1}{4}x^4\left(6abce+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*b*d*x + (a*(2*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + ((b^3*d + 6*a*b*c*d + 2
*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((4*b^2*c*d + 4*a*c^2*d + b^3*e + 6*a*b*c*e)
*x^4)/4 + (c*(5*b*c*d + 4*b^2*e + 4*a*c*e)*x^5)/5 + (c^2*(2*c*d + 5*b*e)*x^
6)/6 + (2*c^3*e*x^7)/7
```

fricas [A] time = 0.69, size = 167, normalized size = 1.09

$$\frac{2}{7}x^7ec^3+\frac{1}{3}x^6dc^3+\frac{5}{6}x^6ec^2b+x^5dc^2b+\frac{4}{5}x^5ecb^2+\frac{4}{5}x^5ec^2a+x^4dcb^2+\frac{1}{4}x^4eb^3+x^4dc^2a+\frac{3}{2}x^4ecba+\frac{1}{3}x^3db^3+2x^3dcba+\frac{2}{3}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/7*x^7*e*c^3 + 1/3*x^6*d*c^3 + 5/6*x^6*e*c^2*b + x^5*d*c^2*b + 4/5*x^5*e*c
*b^2 + 4/5*x^5*e*c^2*a + x^4*d*c*b^2 + 1/4*x^4*e*b^3 + x^4*d*c^2*a + 3/2*x^
4*e*c*b*a + 1/3*x^3*d*b^3 + 2*x^3*d*c*b*a + 2/3*x^3*e*b^2*a + 2/3*x^3*e*c*a
^2 + x^2*d*b^2*a + x^2*d*c*a^2 + 1/2*x^2*e*b*a^2 + x*d*b*a^2
```

giac [A] time = 0.19, size = 176, normalized size = 1.15

$$\frac{2}{7}c^3x^7e+\frac{1}{3}c^3dx^6+\frac{5}{6}bc^2x^6e+bc^2dx^5+\frac{4}{5}b^2cx^5e+\frac{4}{5}ac^2x^5e+b^2cdx^4+ac^2dx^4+\frac{1}{4}b^3x^4e+\frac{3}{2}abcx^4e+\frac{1}{3}b^3dx^3+2\,abcd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/7*c^3*x^7*e + 1/3*c^3*d*x^6 + 5/6*b*c^2*x^6*e + b*c^2*d*x^5 + 4/5*b^2*c*x
^5*e + 4/5*a*c^2*x^5*e + b^2*c*d*x^4 + a*c^2*d*x^4 + 1/4*b^3*x^4*e + 3/2*a*
b*c*x^4*e + 1/3*b^3*d*x^3 + 2*a*b*c*d*x^3 + 2/3*a*b^2*x^3*e + 2/3*a^2*c*x^3
*e + a*b^2*d*x^2 + a^2*c*d*x^2 + 1/2*a^2*b*x^2*e + a^2*b*d*x
```

maple [A] time = 0.04, size = 176, normalized size = 1.15

$$\frac{2c^3e\,x^7}{7}+\frac{\left(4b\,c^2e+(be+2cd)\,c^2\right)x^6}{6}+a^2bdx+\frac{\left(b\,c^2d+2\,(be+2cd)\,bc+2\left(2ac+b^2\right)ce\right)x^5}{5}+\frac{(4abce+2b^2cd+(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/7*c^3*e*x^7+1/6*((b*e+2*c*d)*c^2+4*c^2*e*b)*x^6+1/5*(b*c^2*d+2*(b*e+2*c*d
)*b*c+2*c*e*(2*a*c+b^2))*x^5+1/4*(2*b^2*c*d+(b*e+2*c*d)*(2*a*c+b^2)+4*a*b*c
*e)*x^4+1/3*(b*d*(2*a*c+b^2)+2*(b*e+2*c*d)*a*b+2*a^2*c*e)*x^3+1/2*(2*b^2*d*
a+(b*e+2*c*d)*a^2)*x^2+a^2*b*d*x
```

maxima [A] time = 0.55, size = 151, normalized size = 0.99

$$\frac{2}{7}c^3ex^7+\frac{1}{6}\left(2\,c^3d+5\,bc^2e\right)x^6+\frac{1}{5}\left(5\,bc^2d+4\left(b^2c+ac^2\right)e\right)x^5+a^2bdx+\frac{1}{4}\left(4\left(b^2c+ac^2\right)d+\left(b^3+6\,abc\right)e\right)x^4+\frac{1}{3}($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/7*c^3*e*x^7 + 1/6*(2*c^3*d + 5*b*c^2*e)*x^6 + 1/5*(5*b*c^2*d + 4*(b^2*c +
 a*c^2)*e)*x^5 + a^2*b*d*x + 1/4*(4*(b^2*c + a*c^2)*d + (b^3 + 6*a*b*c)*e)*
x^4 + 1/3*((b^3 + 6*a*b*c)*d + 2*(a*b^2 + a^2*c)*e)*x^3 + 1/2*(a^2*b*e + 2*
(a*b^2 + a^2*c)*d)*x^2
```

mupad [B] time = 0.06, size = 144, normalized size = 0.94

$$x^6\left(\frac{d\,c^3}{3}+\frac{5\,b\,e\,c^2}{6}\right)+x^2\left(\frac{e\,a^2\,b}{2}+c\,d\,a^2+d\,a\,b^2\right)+x^5\left(\frac{4\,e\,b^2\,c}{5}+d\,b\,c^2+\frac{4\,a\,e\,c^2}{5}\right)+x^3\left(\frac{2\,c\,e\,a^2}{3}+\frac{2\,e\,a\,b^2}{3}+2\,c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^6*((c^3*d)/3 + (5*b*c^2*e)/6) + x^2*(a*b^2*d + (a^2*b*e)/2 + a^2*c*d) + x
^5*((4*a*c^2*e)/5 + b*c^2*d + (4*b^2*c*e)/5) + x^3*((b^3*d)/3 + (2*a*b^2*e)
/3 + (2*a^2*c*e)/3 + 2*a*b*c*d) + x^4*((b^3*e)/4 + a*c^2*d + b^2*c*d + (3*a
*b*c*e)/2) + (2*c^3*e*x^7)/7 + a^2*b*d*x
```

sympy [A] time = 0.10, size = 168, normalized size = 1.10

$$a^{2}bdx+\frac{2c^{3}ex^{7}}{7}+x^{6}\left(\frac{5bc^{2}e}{6}+\frac{c^{3}d}{3}\right)+x^{5}\left(\frac{4ac^{2}e}{5}+\frac{4b^{2}ce}{5}+bc^{2}d\right)+x^{4}\left(\frac{3abce}{2}+ac^{2}d+\frac{b^{3}e}{4}+b^{2}cd\right)+x^{3}\left(\frac{2a^{2}ce}{3}+2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d*x + 2*c**3*e*x**7/7 + x**6*(5*b*c**2*e/6 + c**3*d/3) + x**5*(4*a*c
**2*e/5 + 4*b**2*c*e/5 + b*c**2*d) + x**4*(3*a*b*c*e/2 + a*c**2*d + b**3*e/
4 + b**2*c*d) + x**3*(2*a**2*c*e/3 + 2*a*b**2*e/3 + 2*a*b*c*d + b**3*d/3) +
 x**2*(a**2*b*e/2 + a**2*c*d + a*b**2*d)
```

3.1508 $\int (b+2cx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=16

$$\frac{1}{3}\left(a+bx+cx^2\right)^3$$

```
[Out] 1/3*(c*x^2+b*x+a)^3
```

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$\frac{1}{3}\left(a+bx+cx^2\right)^3$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (a + b*x + c*x^2)^3/3
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^2\,dx=\frac{1}{3}\left(a+bx+cx^2\right)^3$$

Mathematica [B] time = 0.01, size = 36, normalized size = 2.25

$$\frac{1}{3}x(b+cx)\left(3a^2+3ax(b+cx)+x^2(b+cx)^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (x*(b + c*x)*(3*a^2 + 3*a*x*(b + c*x) + x^2*(b + c*x)^2))/3
```

fricas [B] time = 1.06, size = 71, normalized size = 4.44

$$\frac{1}{3}x^6c^3+x^5c^2b+x^4cb^2+x^4c^2a+\frac{1}{3}x^3b^3+2x^3cba+x^2b^2a+x^2ca^2+xba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/3*x^6*c^3 + x^5*c^2*b + x^4*c*b^2 + x^4*c^2*a + 1/3*x^3*b^3 + 2*x^3*c*b*a
 + x^2*b^2*a + x^2*c*a^2 + x*b*a^2
```

giac [B] time = 0.16, size = 40, normalized size = 2.50

$$\frac{1}{3}\left(cx^2+bx\right)^3+\left(cx^2+bx\right)^2a+\left(cx^2+bx\right)a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/3*(c*x^2 + b*x)^3 + (c*x^2 + b*x)^2*a + (c*x^2 + b*x)*a^2
```

maple [B] time = 0.05, size = 86, normalized size = 5.38

$$\frac{c^3x^6}{3}+b\,c^2x^5+a^2bx+\frac{\left(2b^2c+2\left(2ac+b^2\right)c\right)x^4}{4}+\frac{\left(4abc+\left(2ac+b^2\right)b\right)x^3}{3}+\frac{\left(2c\,a^2+2a\,b^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/3*c^3*x^6+b*c^2*x^5+1/4*(2*b^2*c+2*c*(2*a*c+b^2))*x^4+1/3*(b*(2*a*c+b^2)+
4*a*b*c)*x^3+1/2*(2*a^2*c+2*a*b^2)*x^2+a^2*b*x
```

maxima [A] time = 0.53, size = 14, normalized size = 0.88

$$\frac{1}{3}\left(cx^2+bx+a\right)^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/3*(c*x^2 + b*x + a)^3
```

mupad [B] time = 0.03, size = 62, normalized size = 3.88

$$x^3\left(\frac{b^3}{3}+2\,a\,c\,b\right)+\frac{c^3\,x^6}{3}+b\,c^2\,x^5+a\,x^2\,\left(b^2+a\,c\right)+c\,x^4\,\left(b^2+a\,c\right)+a^2\,b\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*(b^3/3 + 2*a*b*c) + (c^3*x^6)/3 + b*c^2*x^5 + a*x^2*(a*c + b^2) + c*x^4
*(a*c + b^2) + a^2*b*x
```

sympy [B] time = 0.09, size = 65, normalized size = 4.06

$$a^2bx+bc^2x^5+\frac{c^3x^6}{3}+x^4\left(ac^2+b^2c\right)+x^3\left(2abc+\frac{b^3}{3}\right)+x^2\left(a^2c+ab^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*x + b*c**2*x**5 + c**3*x**6/3 + x**4*(a*c**2 + b**2*c) + x**3*(2*a*b
*c + b**3/3) + x**2*(a**2*c + a*b**2)
```

3.1509 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=229

$$\frac{4c(d+ex)^3\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^2(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6}+\frac{2x\left(ae^2-\right.}{}$$

```
[Out] 2*(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*x/e^5-1/2*(-b*e+
2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^2/e^6+4/3*c*(5*c^2
*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^3/e^6-5/4*c^2*(-b*e+2*c*d)*(e*x+d)^4
/e^6+2/5*c^3*(e*x+d)^5/e^6-(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.28, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{4c(d+ex)^3\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{(d+ex)^2(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6}+\frac{2x\left(ae^2-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*x)/e^5
 - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d + e*x)^
2)/(2*e^6) + (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^3)/(3
*e^6) - (5*c^2*(2*c*d - b*e)*(d + e*x)^4)/(4*e^6) + (2*c^3*(d + e*x)^5)/(5*
e^6) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int\frac{(b+2cx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx=\int\left(\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b^2e^2+ace^2\right)}{e^5}+\frac{(-2cd+be)\left(cd^2-\right.}{e^5(d+ex}\right.$$

$$=\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)x}{e^5}-\frac{(2cd-be)\left(10c^2d^2+b\right.}{}$$

Mathematica [A] time = 0.11, size = 228, normalized size = 1.00

$$\frac{ex\left(20ce^2\left(6a^2e^2+9abe(ex-2d)+2b^2\left(6d^2-3dex+2e^2x^2\right)\right)+30b^2e^3(4ae-2bd+bex)+5c^2e\left(8ae\left(6d^2-3d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(30*b^2*e^3*(-2*b*d + 4*a*e + b*e*x) + 2*c^3*(60*d^4 - 30*d^3*e*x + 20
*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + 20*c*e^2*(6*a^2*e^2 + 9*a*b*e*(
-2*d + e*x) + 2*b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 5*c^2*e*(8*a*e*(6*d^2
- 3*d*e*x + 2*e^2*x^2) - 5*b*(12*d^3 - 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3)
)) - 60*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))^2*Log[d + e*x])/(60*e^6)
```

fricas [**A**] time = 0.80, size = 308, normalized size = 1.34

$$\frac{24\,c^3e^5x^5 - 15\left(2\,c^3de^4 - 5\,bc^2e^5\right)x^4 + 20\left(2\,c^3d^2e^3 - 5\,bc^2de^4 + 4\left(b^2c + ac^2\right)e^5\right)x^3 - 30\left(2\,c^3d^3e^2 - 5\,bc^2d^2e^3 + 4\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(24*c^3*e^5*x^5 - 15*(2*c^3*d*e^4 - 5*b*c^2*e^5)*x^4 + 20*(2*c^3*d^2*e
^3 - 5*b*c^2*d*e^4 + 4*(b^2*c + a*c^2)*e^5)*x^3 - 30*(2*c^3*d^3*e^2 - 5*b*c
^2*d^2*e^3 + 4*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 + 60*(2*c^3
*d^4*e - 5*b*c^2*d^3*e^2 + 4*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^
4 + 2*(a*b^2 + a^2*c)*e^5)*x - 60*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 +
4*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e
^4)*log(e*x + d))/e^6
```

giac [**A**] time = 0.16, size = 337, normalized size = 1.47

$$-\left(2\,c^3d^5 - 5\,bc^2d^4e + 4\,b^2cd^3e^2 + 4\,ac^2d^3e^2 - b^3d^2e^3 - 6\,abcd^2e^3 + 2\,ab^2de^4 + 2\,a^2cde^4 - a^2be^5\right)e^{(-6)}\log\left(|xe + d|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e
^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)*e^(-6)*lo
g(abs(x*e + d)) + 1/60*(24*c^3*x^5*e^4 - 30*c^3*d*x^4*e^3 + 40*c^3*d^2*x^3*
e^2 - 60*c^3*d^3*x^2*e + 120*c^3*d^4*x + 75*b*c^2*x^4*e^4 - 100*b*c^2*d*x^3
*e^3 + 150*b*c^2*d^2*x^2*e^2 - 300*b*c^2*d^3*x*e + 80*b^2*c*x^3*e^4 + 80*a*
c^2*x^3*e^4 - 120*b^2*c*d*x^2*e^3 - 120*a*c^2*d*x^2*e^3 + 240*b^2*c*d^2*x*e
^2 + 240*a*c^2*d^2*x*e^2 + 30*b^3*x^2*e^4 + 180*a*b*c*x^2*e^4 - 60*b^3*d*x*
e^3 - 360*a*b*c*d*x*e^3 + 120*a*b^2*x*e^4 + 120*a^2*c*x*e^4)*e^(-5)
```

maple [**A**] time = 0.05, size = 406, normalized size = 1.77

$$\frac{2c^3x^5}{5e}+\frac{5b\,c^2x^4}{4e}-\frac{c^3d\,x^4}{2e^2}+\frac{4a\,c^2x^3}{3e}+\frac{4b^2c\,x^3}{3e}-\frac{5b\,c^2d\,x^3}{3e^2}+\frac{2c^3d^2x^3}{3e^3}+\frac{3abc\,x^2}{e}-\frac{2a\,c^2d\,x^2}{e^2}+\frac{b^3x^2}{2e}-\frac{2b^2cd\,x^2}{e^2}+\frac{5b\,c^2d^2x^2}{2e^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x)
```

```
[Out] 4/3/e*x^3*a*c^2+4/3/e*x^3*b^2*c+2/3/e^3*x^3*c^3*d^2-1/e^4*x^2*c^3*d^3+5/4/e
*x^4*b*c^2+1/e*ln(e*x+d)*a^2*b+2/e^5*x*c^3*d^4+2/e*x*a^2*c+2/e*x*a*b^2-1/e^
2*x*b^3*d-1/2/e^2*x^4*c^3*d+1/e^3*ln(e*x+d)*b^3*d^2-2/e^6*ln(e*x+d)*c^3*d^5
+6/e^3*ln(e*x+d)*a*b*c*d^2-6/e^2*x*a*b*c*d-2/e^2*x^2*b^2*c*d+5/2/e^3*x^2*b*
c^2*d^2-5/3/e^2*x^3*b*c^2*d+3/e*x^2*a*b*c-2/e^2*x^2*a*c^2*d-5/e^4*x*b*c^2*d
^3+4/e^3*x*b^2*c*d^2-4/e^4*ln(e*x+d)*a*c^2*d^3-4/e^4*ln(e*x+d)*b^2*c*d^3-2/
e^2*ln(e*x+d)*a^2*c*d+4/e^3*x*a*c^2*d^2+5/e^5*ln(e*x+d)*b*c^2*d^4-2/e^2*ln(
e*x+d)*a*b^2*d+2/5/e*c^3*x^5+1/2/e*x^2*b^3
```

maxima [**A**] time = 0.50, size = 307, normalized size = 1.34

$$\frac{24\,c^3e^4x^5 - 15\left(2\,c^3de^3 - 5\,bc^2e^4\right)x^4 + 20\left(2\,c^3d^2e^2 - 5\,bc^2de^3 + 4\left(b^2c + ac^2\right)e^4\right)x^3 - 30\left(2\,c^3d^3e - 5\,bc^2d^2e^2 + 4\,(b}{60}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(24*c^3*e^4*x^5 - 15*(2*c^3*d*e^3 - 5*b*c^2*e^4)*x^4 + 20*(2*c^3*d^2*e
^2 - 5*b*c^2*d*e^3 + 4*(b^2*c + a*c^2)*e^4)*x^3 - 30*(2*c^3*d^3*e - 5*b*c^2
*d^2*e^2 + 4*(b^2*c + a*c^2)*d*e^3 - (b^3 + 6*a*b*c)*e^4)*x^2 + 60*(2*c^3*d
^4 - 5*b*c^2*d^3*e + 4*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + 2*
(a*b^2 + a^2*c)*e^4)*x)/e^5 - (2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b
^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*
log(e*x + d)/e^6
```

mupad [B] time = 1.81, size = 326, normalized size = 1.42

$$x^4\left(\frac{5\,b\,c^2}{4\,e}-\frac{c^3\,d}{2\,e^2}\right)+x^2\left(\frac{b^3+6\,a\,c\,b}{2\,e}+\frac{d\left(\frac{d\left(\frac{5\,b\,c^2}{e}-\frac{2\,c^3\,d}{e^2}\right)}{e}-\frac{4\,c\,\left(b^2+a\,c\right)}{e}\right)}{2\,e}\right)-x^3\left(\frac{d\,\left(\frac{5\,b\,c^2}{e}-\frac{2\,c^3\,d}{e^2}\right)}{3\,e}-\frac{4\,c\,\left(b^2+a\,c\right)}{3\,e}\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x),x)
```

```
[Out] x^4*((5*b*c^2)/(4*e) - (c^3*d)/(2*e^2)) + x^2*((b^3 + 6*a*b*c)/(2*e) + (d*(
(d*((5*b*c^2)/e - (2*c^3*d)/e^2))/e - (4*c*(a*c + b^2))/e))/(2*e)) - x^3*((
d*((5*b*c^2)/e - (2*c^3*d)/e^2))/(3*e) - (4*c*(a*c + b^2))/(3*e)) + x*((2*a
*(a*c + b^2))/e - (d*((b^3 + 6*a*b*c)/e + (d*((d*((5*b*c^2)/e - (2*c^3*d)/e
^2))/e - (4*c*(a*c + b^2))/e))/e))/e) + (2*c^3*x^5)/(5*e) - (log(d + e*x)*(
2*c^3*d^5 - a^2*b*e^5 - b^3*d^2*e^3 + 4*a*c^2*d^3*e^2 + 4*b^2*c*d^3*e^2 + 2
*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 5*b*c^2*d^4*e - 6*a*b*c*d^2*e^3))/e^6
```

sympy [A] time = 0.75, size = 280, normalized size = 1.22

$$\frac{2c^3x^5}{5e}+x^4\left(\frac{5bc^2}{4e}-\frac{c^3d}{2e^2}\right)+x^3\left(\frac{4ac^2}{3e}+\frac{4b^2c}{3e}-\frac{5bc^2d}{3e^2}+\frac{2c^3d^2}{3e^3}\right)+x^2\left(\frac{3abc}{e}-\frac{2ac^2d}{e^2}+\frac{b^3}{2e}-\frac{2b^2cd}{e^2}+\frac{5bc^2d^2}{2e^3}-\frac{c^3}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d),x)
```

```
[Out] 2*c**3*x**5/(5*e) + x**4*(5*b*c**2/(4*e) - c**3*d/(2*e**2)) + x**3*(4*a*c**
2/(3*e) + 4*b**2*c/(3*e) - 5*b*c**2*d/(3*e**2) + 2*c**3*d**2/(3*e**3)) + x*
*2*(3*a*b*c/e - 2*a*c**2*d/e**2 + b**3/(2*e) - 2*b**2*c*d/e**2 + 5*b*c**2*d
**2/(2*e**3) - c**3*d**3/e**4) + x*(2*a**2*c/e + 2*a*b**2/e - 6*a*b*c*d/e**
2 + 4*a*c**2*d**2/e**3 - b**3*d/e**2 + 4*b**2*c*d**2/e**3 - 5*b*c**2*d**3/e
**4 + 2*c**3*d**4/e**5) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2*log(d
+ e*x)/e**6
```

3.1510 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=223

$$-\frac{x\left(-c^2de(15bd-8ae)+2bce^2(4bd-3ae)-b^3e^3+8c^3d^3\right)}{e^5}+\frac{2\log(d+ex)\left(ae^2-bde+cd^2\right)\big(-ce(5bd-ae)+b^2e^2}{e^6}$$

```
[Out] -(8*c^3*d^3-b^3*e^3-c^2*d*e*(-8*a*e+15*b*d)+2*b*c*e^2*(-3*a*e+4*b*d))*x/e^5
+c*(3*c^2*d^2+2*b^2*e^2-c*e*(-2*a*e+5*b*d))*x^2/e^4-1/3*c^2*(-5*b*e+4*c*d)*
x^3/e^3+1/2*c^3*x^4/e^2+(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)+2*(a
*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.29, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{cx^2\left(-ce(5bd-2ae)+2b^2e^2+3c^2d^2\right)}{e^4}-\frac{x\left(-c^2de(15bd-8ae)+2bce^2(4bd-3ae)-b^3e^3+8c^3d^3\right)}{e^5}+\frac{2\log(d+ex)\big(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -(((8*c^3*d^3 - b^3*e^3 - c^2*d*e*(15*b*d - 8*a*e) + 2*b*c*e^2*(4*b*d - 3*a
*e))*x)/e^5) + (c*(3*c^2*d^2 + 2*b^2*e^2 - c*e*(5*b*d - 2*a*e))*x^2)/e^4 -
(c^2*(4*c*d - 5*b*e)*x^3)/(3*e^3) + (c^3*x^4)/(2*e^2) + ((2*c*d - b*e)*(c*d
^2 - b*d*e + a*e^2)^2)/(e^6*(d + e*x)) + (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*
d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int\frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx &= \int\Bigg(\frac{-8c^3d^3+b^3e^3+c^2de(15bd-8ae)-2bce^2(4bd-3ae)}{e^5}+\frac{2c\big(3c^2d^2+2b^2e^2}{e}\\ &= -\frac{\left(8c^3d^3-b^3e^3-c^2de(15bd-8ae)+2bce^2(4bd-3ae)\right)x}{e^5}+\frac{c\big(3c^2d^2+2b^2e^2-}{e^4}\end{aligned}$$

Mathematica [A] time = 0.18, size = 241, normalized size = 1.08

$$\frac{12\log(d+ex)\left(ce^2\left(a^2e^2-6abde+6b^2d^2\right)+b^2e^3(ae-bd)+2c^2d^2e(3ae-5bd)+5c^3d^4\right)+6ex\big(c^2de(15bd-8ae)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (6*e*(-8*c^3*d^3 + b^3*e^3 + c^2*d*e*(15*b*d - 8*a*e) + 2*b*c*e^2*(-4*b*d +
 3*a*e))*x + 6*c*e^2*(3*c^2*d^2 + 2*b^2*e^2 + c*e*(-5*b*d + 2*a*e))*x^2 - 2
*c^2*e^3*(4*c*d - 5*b*e)*x^3 + 3*c^3*e^4*x^4 + (6*(2*c*d - b*e)*(c*d^2 + e*
(-(b*d) + a*e))^2)/(d + e*x) + 12*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c
^2*d^2*e*(-5*b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2))*Log[d
+ e*x])/(6*e^6)
```

fricas [**B**] time = 1.00, size = 444, normalized size = 1.99

$$\frac{3\,c^3e^5x^5 + 12\,c^3d^5 - 30\,bc^2d^4e - 6\,a^2be^5 + 24\left(b^2c + ac^2\right)d^3e^2 - 6\left(b^3 + 6\,abc\right)d^2e^3 + 12\left(ab^2 + a^2c\right)de^4 - 5\left(c^3d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(3*c^3*e^5*x^5 + 12*c^3*d^5 - 30*b*c^2*d^4*e - 6*a^2*b*e^5 + 24*(b^2*c
+ a*c^2)*d^3*e^2 - 6*(b^3 + 6*a*b*c)*d^2*e^3 + 12*(a*b^2 + a^2*c)*d*e^4 - 5
*(c^3*d*e^4 - 2*b*c^2*e^5)*x^4 + 2*(5*c^3*d^2*e^3 - 10*b*c^2*d*e^4 + 6*(b^2
*c + a*c^2)*e^5)*x^3 - 6*(5*c^3*d^3*e^2 - 10*b*c^2*d^2*e^3 + 6*(b^2*c + a*c
^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 - 6*(8*c^3*d^4*e - 15*b*c^2*d^3*e^2 +
8*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^4)*x + 12*(5*c^3*d^5 - 10*b
*c^2*d^4*e + 6*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + (a*b^2 +
 a^2*c)*d*e^4 + (5*c^3*d^4*e - 10*b*c^2*d^3*e^2 + 6*(b^2*c + a*c^2)*d^2*e^3
 - (b^3 + 6*a*b*c)*d*e^4 + (a*b^2 + a^2*c)*e^5)*x)*log(e*x + d))/(e^7*x + d
*e^6)
```

giac [**A**] time = 0.17, size = 420, normalized size = 1.88

$$\frac{1}{6}\left(3\,c^3 - \frac{10\left(2\,c^3de - bc^2e^2\right)e^{(-1)}}{xe + d} + \frac{12\left(5\,c^3d^2e^2 - 5\,bc^2de^3 + b^2ce^4 + ac^2e^4\right)e^{(-2)}}{(xe + d)^2} - \frac{6\left(20\,c^3d^3e^3 - 30\,bc^2d^2e^4 + \right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/6*(3*c^3 - 10*(2*c^3*d*e - b*c^2*e^2)*e^(-1)/(x*e + d) + 12*(5*c^3*d^2*e^
2 - 5*b*c^2*d*e^3 + b^2*c*e^4 + a*c^2*e^4)*e^(-2)/(x*e + d)^2 - 6*(20*c^3*d
^3*e^3 - 30*b*c^2*d^2*e^4 + 12*b^2*c*d*e^5 + 12*a*c^2*d*e^5 - b^3*e^6 - 6*a
*b*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6) - 2*(5*c^3*d^4 - 10*b*c^2*
d^3*e + 6*b^2*c*d^2*e^2 + 6*a*c^2*d^2*e^2 - b^3*d*e^3 - 6*a*b*c*d*e^3 + a*b
^2*e^4 + a^2*c*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (2*c^3*d^
5*e^4/(x*e + d) - 5*b*c^2*d^4*e^5/(x*e + d) + 4*b^2*c*d^3*e^6/(x*e + d) + 4
*a*c^2*d^3*e^6/(x*e + d) - b^3*d^2*e^7/(x*e + d) - 6*a*b*c*d^2*e^7/(x*e + d
) + 2*a*b^2*d*e^8/(x*e + d) + 2*a^2*c*d*e^8/(x*e + d) - a^2*b*e^9/(x*e + d)
)*e^(-10)
```

maple [**B**] time = 0.06, size = 444, normalized size = 1.99

$$\frac{c^3x^4}{2e^2} + \frac{5b\,c^2x^3}{3e^2} - \frac{4c^3d\,x^3}{3e^3} + \frac{2a\,c^2x^2}{e^2} + \frac{2b^2c\,x^2}{e^2} - \frac{5b\,c^2d\,x^2}{e^3} + \frac{3c^3d^2x^2}{e^4} - \frac{a^2b}{(ex + d)\,e} + \frac{2a^2cd}{(ex + d)\,e^2} + \frac{2a^2c\ln(ex + d)}{e^2} + \frac{2a}{(ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x)
```

```
[Out] 2/e^6/(e*x+d)*c^3*d^5+2/e^2*x^2*a*c^2+2/e^2*x^2*b^2*c+5/3/e^2*x^3*b*c^2-4/3
/e^3*x^3*c^3*d+3/e^4*x^2*c^3*d^2-8/e^5*c^3*d^3*x-1/e/(e*x+d)*a^2*b-1/e^3/(e
*x+d)*b^3*d^2+2/e^2*ln(e*x+d)*a^2*c+2/e^2*ln(e*x+d)*a*b^2+10/e^6*ln(e*x+d)*
c^3*d^4-2/e^3*ln(e*x+d)*b^3*d-12/e^3*ln(e*x+d)*a*b*c*d-6/e^3/(e*x+d)*a*b*c*
d^2+4/e^4/(e*x+d)*b^2*c*d^3-5/e^5/(e*x+d)*b*c^2*d^4+12/e^4*ln(e*x+d)*a*c^2*
d^2+12/e^4*ln(e*x+d)*b^2*c*d^2-20/e^5*ln(e*x+d)*b*c^2*d^3-8/e^3*c^2*a*d*x-8
/e^3*b^2*c*d*x+15/e^4*b*c^2*d^2*x+2/e^2/(e*x+d)*a^2*c*d-5/e^3*x^2*b*c^2*d+6
```

```
/e^2*a*b*c*x+2/e^2/(e*x+d)*d*a*b^2+4/e^4/(e*x+d)*a*c^2*d^3+1/e^2*b^3*x+1/2*
c^3*x^4/e^2
```

maxima [A] time = 0.64, size = 310, normalized size = 1.39

$$\frac{2\,c^3d^5-5\,bc^2d^4e-a^2be^5+4\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3+2\left(ab^2+a^2c\right)de^4}{e^7x+de^6}+\frac{3\,c^3e^3x^4-2\,(4\,c^3de^2-5\,bc^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 - (b^3 +
 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)/(e^7*x + d*e^6) + 1/6*(3*c^3*e
^3*x^4 - 2*(4*c^3*d*e^2 - 5*b*c^2*e^3)*x^3 + 6*(3*c^3*d^2*e - 5*b*c^2*d*e^2
 + 2*(b^2*c + a*c^2)*e^3)*x^2 - 6*(8*c^3*d^3 - 15*b*c^2*d^2*e + 8*(b^2*c +
a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^3)*x)/e^5 + 2*(5*c^3*d^4 - 10*b*c^2*d^3*e
+ 6*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*
log(e*x + d)/e^6
```

mupad [B] time = 1.84, size = 387, normalized size = 1.74

$$x^3\left(\frac{5\,b\,c^2}{3\,e^2}-\frac{4\,c^3\,d}{3\,e^3}\right)-x^2\left(\frac{d\left(\frac{5\,b\,c^2}{e^2}-\frac{4\,c^3\,d}{e^3}\right)}{e}+\frac{c^3\,d^2}{e^4}-\frac{2\,c\,\left(b^2+a\,c\right)}{e^2}\right)+x\,\left(\frac{b^3+6\,a\,c\,b}{e^2}+\frac{2\,d\,\left(\frac{2\,d\left(\frac{5\,b\,c^2}{e^2}-\frac{4\,c^3\,d}{e^3}\right)}{e}+\frac{2\,c^3\,d^2}{e^4}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((5*b*c^2)/(3*e^2) - (4*c^3*d)/(3*e^3)) - x^2*((d*((5*b*c^2)/e^2 - (4*c
^3*d)/e^3))/e + (c^3*d^2)/e^4 - (2*c*(a*c + b^2))/e^2) + x*((b^3 + 6*a*b*c)
/e^2 + (2*d*((2*d*((5*b*c^2)/e^2 - (4*c^3*d)/e^3))/e + (2*c^3*d^2)/e^4 - (4
*c*(a*c + b^2))/e^2))/e - (d^2*((5*b*c^2)/e^2 - (4*c^3*d)/e^3))/e^2) + (log
(d + e*x)*(10*c^3*d^4 + 2*a*b^2*e^4 + 2*a^2*c*e^4 - 2*b^3*d*e^3 + 12*a*c^2*
d^2*e^2 + 12*b^2*c*d^2*e^2 - 20*b*c^2*d^3*e - 12*a*b*c*d*e^3))/e^6 + (2*c^3
*d^5 - a^2*b*e^5 - b^3*d^2*e^3 + 4*a*c^2*d^3*e^2 + 4*b^2*c*d^3*e^2 + 2*a*b^
2*d*e^4 + 2*a^2*c*d*e^4 - 5*b*c^2*d^4*e - 6*a*b*c*d^2*e^3)/(e*(d*e^5 + e^6*
x)) + (c^3*x^4)/(2*e^2)
```

sympy [A] time = 1.82, size = 325, normalized size = 1.46

$$\frac{c^3x^4}{2e^2}+x^3\left(\frac{5bc^2}{3e^2}-\frac{4c^3d}{3e^3}\right)+x^2\left(\frac{2ac^2}{e^2}+\frac{2b^2c}{e^2}-\frac{5bc^2d}{e^3}+\frac{3c^3d^2}{e^4}\right)+x\left(\frac{6abc}{e^2}-\frac{8ac^2d}{e^3}+\frac{b^3}{e^2}-\frac{8b^2cd}{e^3}+\frac{15bc^2d^2}{e^4}-\frac{8c^3d^3}{e^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**2,x)
```

```
[Out] c**3*x**4/(2*e**2) + x**3*(5*b*c**2/(3*e**2) - 4*c**3*d/(3*e**3)) + x**2*(2
*a*c**2/e**2 + 2*b**2*c/e**2 - 5*b*c**2*d/e**3 + 3*c**3*d**2/e**4) + x*(6*a
*b*c/e**2 - 8*a*c**2*d/e**3 + b**3/e**2 - 8*b**2*c*d/e**3 + 15*b*c**2*d**2/
e**4 - 8*c**3*d**3/e**5) + (-a**2*b*e**5 + 2*a**2*c*d*e**4 + 2*a*b**2*d*e**
4 - 6*a*b*c*d**2*e**3 + 4*a*c**2*d**3*e**2 - b**3*d**2*e**3 + 4*b**2*c*d**3
*e**2 - 5*b*c**2*d**4*e + 2*c**3*d**5)/(d*e**6 + e**7*x) + 2*(a*e**2 - b*d*
e + c*d**2)*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d**2)*log(d + e*x)/e
**6
```

3.1511 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=219

$$-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}-\frac{(2cd-be)\log(d+ex)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}$$

```
[Out] c*(12*c^2*d^2+4*b^2*e^2-c*e*(-4*a*e+15*b*d))*x/e^5-1/2*c^2*(-5*b*e+6*c*d)*x
^2/e^4+2/3*c^3*x^3/e^3+1/2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^2
-2*(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))/e^6/(e*x+d)-(-b
*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.25, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{cx\left(-ce(15bd-4ae)+4b^2e^2+12c^2d^2\right)}{e^5}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}-(2cd-be)\log(d+$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (c*(12*c^2*d^2 + 4*b^2*e^2 - c*e*(15*b*d - 4*a*e))*x)/e^5 - (c^2*(6*c*d - 5
*b*e)*x^2)/(2*e^4) + (2*c^3*x^3)/(3*e^3) + ((2*c*d - b*e)*(c*d^2 - b*d*e +
a*e^2)^2)/(2*e^6*(d + e*x)^2) - (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2
*e^2 - c*e*(5*b*d - a*e)))/(e^6*(d + e*x)) - ((2*c*d - b*e)*(10*c^2*d^2 + b
^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx &= \int \left(\frac{c\left(12c^2d^2+4b^2e^2-ce(15bd-4ae)\right)}{e^5}-\frac{c^2(6cd-5be)x}{e^4}+\frac{2c^3x^2}{e^3}+(-2cd\right.\\ &= \frac{c\left(12c^2d^2+4b^2e^2-ce(15bd-4ae)\right)x}{e^5}-\frac{c^2(6cd-5be)x^2}{2e^4}+\frac{2c^3x^3}{3e^3}+(2cd-b\end{aligned}$$

Mathematica [A] time = 0.08, size = 233, normalized size = 1.06

$$\frac{-\frac{12\left(ce^2\left(a^2e^2-6abde+6b^2d^2\right)+b^2e^3(ae-bd)+2c^2d^2e(3ae-5bd)+5c^3d^4\right)}{d+ex}+6cex\left(ce(4ae-15bd)+4b^2e^2+12c^2d^2\right)-6(2cd-be)\,\mathrm{lo}}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*c*e*(12*c^2*d^2 + 4*b^2*e^2 + c*e*(-15*b*d + 4*a*e))*x - 3*c^2*e^2*(6*c*
d - 5*b*e)*x^2 + 4*c^3*e^3*x^3 + (3*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e)
)^2)/(d + e*x)^2 - (12*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c^2*d^2*e*(-
5*b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))/(d + e*x) - 6*(2
*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e))*Log[d + e*x])/(
6*e^6)
```

fricas [B] time = 0.91, size = 487, normalized size = 2.22

$$\frac{4\,c^3e^5x^5 - 54\,c^3d^5 + 105\,bc^2d^4e - 3\,a^2be^5 - 60\,(b^2c + ac^2)d^3e^2 + 9\,(b^3 + 6\,abc)d^2e^3 - 6\,(ab^2 + a^2c)de^4 - 5\,(2\,c^3de}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(4*c^3*e^5*x^5 - 54*c^3*d^5 + 105*b*c^2*d^4*e - 3*a^2*b*e^5 - 60*(b^2*c
 + a*c^2)*d^3*e^2 + 9*(b^3 + 6*a*b*c)*d^2*e^3 - 6*(a*b^2 + a^2*c)*d*e^4 - 5
*(2*c^3*d*e^4 - 3*b*c^2*e^5)*x^4 + 4*(10*c^3*d^2*e^3 - 15*b*c^2*d*e^4 + 6*(
b^2*c + a*c^2)*e^5)*x^3 + 3*(42*c^3*d^3*e^2 - 55*b*c^2*d^2*e^3 + 16*(b^2*c
+ a*c^2)*d*e^4)*x^2 + 6*(2*c^3*d^4*e + 5*b*c^2*d^3*e^2 - 8*(b^2*c + a*c^2)*
d^2*e^3 + 2*(b^3 + 6*a*b*c)*d*e^4 - 2*(a*b^2 + a^2*c)*e^5)*x - 6*(20*c^3*d^
5 - 30*b*c^2*d^4*e + 12*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 +
 (20*c^3*d^3*e^2 - 30*b*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a
*b*c)*e^5)*x^2 + 2*(20*c^3*d^4*e - 30*b*c^2*d^3*e^2 + 12*(b^2*c + a*c^2)*d^
2*e^3 - (b^3 + 6*a*b*c)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x + d^2*
e^6)
```

giac [A] time = 0.16, size = 317, normalized size = 1.45

$$-\left(20\,c^3d^3 - 30\,bc^2d^2e + 12\,b^2cde^2 + 12\,ac^2de^2 - b^3e^3 - 6\,abce^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{6}\,(4\,c^3x^3e^6 - 18\,c^3dx^2e^5 + 72\,c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*b^2*c*d*e^2 + 12*a*c^2*d*e^2 - b^3*e^3 -
 6*a*b*c*e^3)*e^(-6)*log(abs(x*e + d)) + 1/6*(4*c^3*x^3*e^6 - 18*c^3*d*x^2*
e^5 + 72*c^3*d^2*x*e^4 + 15*b*c^2*x^2*e^6 - 90*b*c^2*d*x*e^5 + 24*b^2*c*x*e
^6 + 24*a*c^2*x*e^6)*e^(-9) - 1/2*(18*c^3*d^5 - 35*b*c^2*d^4*e + 20*b^2*c*d
^3*e^2 + 20*a*c^2*d^3*e^2 - 3*b^3*d^2*e^3 - 18*a*b*c*d^2*e^3 + 2*a*b^2*d*e^
4 + 2*a^2*c*d*e^4 + a^2*b*e^5 + 4*(5*c^3*d^4*e - 10*b*c^2*d^3*e^2 + 6*b^2*c
*d^2*e^3 + 6*a*c^2*d^2*e^3 - b^3*d*e^4 - 6*a*b*c*d*e^4 + a*b^2*e^5 + a^2*c*
e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.05, size = 471, normalized size = 2.15

$$\frac{2c^3x^3}{3e^3} - \frac{a^2b}{2\left(ex + d\right)^2 e} + \frac{a^2cd}{\left(ex + d\right)^2 e^2} + \frac{a\,b^2d}{\left(ex + d\right)^2 e^2} - \frac{3abc\,d^2}{\left(ex + d\right)^2 e^3} + \frac{2a\,c^2d^3}{\left(ex + d\right)^2 e^4} - \frac{b^3d^2}{2\left(ex + d\right)^2 e^3} + \frac{2b^2c\,d^3}{\left(ex + d\right)^2 e^4} - \frac{5b\,c^2d}{2\,(ex + d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x)
```

```
[Out] 12/e^3/(e*x+d)*a*b*c*d-3/e^3/(e*x+d)^2*d^2*a*b*c+1/e^6/(e*x+d)^2*c^3*d^5-20
/e^6*ln(e*x+d)*c^3*d^3-3*c^3/e^4*x^2*d+4*c^2/e^3*x*a-1/2/e^3/(e*x+d)^2*d^2*
b^3+4*c/e^3*x*b^2+12*c^3/e^5*x*d^2-2/e^2/(e*x+d)*a^2*c-2/e^2/(e*x+d)*a*b^2+
2/e^3/(e*x+d)*b^3*d-10/e^6/(e*x+d)*c^3*d^4-1/2/e/(e*x+d)^2*a^2*b+5/2*c^2/e^
3*x^2*b-12/e^4/(e*x+d)*b^2*c*d^2+20/e^5/(e*x+d)*b*c^2*d^3-5/2/e^5/(e*x+d)^2
*b*c^2*d^4-12/e^4*ln(e*x+d)*b^2*c*d+1/e^2/(e*x+d)^2*a^2*c*d+1/e^2/(e*x+d)^2
```

```
*d*a*b^2+2/e^4/(e*x+d)^2*a*c^2*d^3+2/e^4/(e*x+d)^2*b^2*c*d^3-12/e^4/(e*x+d)
*a*c^2*d^2-15*c^2/e^4*x*b*d+30/e^5*ln(e*x+d)*b*c^2*d^2+6/e^3*ln(e*x+d)*a*b*
c-12/e^4*ln(e*x+d)*c^2*a*d+1/e^3*ln(e*x+d)*b^3+2/3*c^3*x^3/e^3
```

maxima [A] time = 0.68, size = 317, normalized size = 1.45

$$-\frac{18\,c^3d^5 - 35\,bc^2d^4e + a^2be^5 + 20\left(b^2c + ac^2\right)d^3e^2 - 3\left(b^3 + 6\,abc\right)d^2e^3 + 2\left(ab^2 + a^2c\right)de^4 + 4\left(5\,c^3d^4e - 10\,bc^2\right.}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(18*c^3*d^5 - 35*b*c^2*d^4*e + a^2*b*e^5 + 20*(b^2*c + a*c^2)*d^3*e^2
- 3*(b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 + 4*(5*c^3*d^4*e - 10
*b*c^2*d^3*e^2 + 6*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)*d*e^4 + (a*b^2
 + a^2*c)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(4*c^3*e^2*x^3 - 3*
(6*c^3*d*e - 5*b*c^2*e^2)*x^2 + 6*(12*c^3*d^2 - 15*b*c^2*d*e + 4*(b^2*c + a
*c^2)*e^2)*x)/e^5 - (20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2
 - (b^3 + 6*a*b*c)*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 1.84, size = 358, normalized size = 1.63

$$x^2\left(\frac{5\,b\,c^2}{2\,e^3}-\frac{3\,c^3\,d}{e^4}\right)-x\left(\frac{3\,d\,\left(\frac{5\,b\,c^2}{e^3}-\frac{6\,c^3\,d}{e^4}\right)}{e}+\frac{6\,c^3\,d^2}{e^5}-\frac{4\,c\,\left(b^2+a\,c\right)}{e^3}\right)-\frac{x\,\left(2\,a^2\,c\,e^4+2\,a\,b^2\,e^4-12\,a\,b\,c\,d\,e^3+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((5*b*c^2)/(2*e^3) - (3*c^3*d)/e^4) - x*((3*d*((5*b*c^2)/e^3 - (6*c^3*d
)/e^4))/e + (6*c^3*d^2)/e^5 - (4*c*(a*c + b^2))/e^3) - (x*(10*c^3*d^4 + 2*a
*b^2*e^4 + 2*a^2*c*e^4 - 2*b^3*d*e^3 + 12*a*c^2*d^2*e^2 + 12*b^2*c*d^2*e^2
- 20*b*c^2*d^3*e - 12*a*b*c*d*e^3) + (18*c^3*d^5 + a^2*b*e^5 - 3*b^3*d^2*e^
3 + 20*a*c^2*d^3*e^2 + 20*b^2*c*d^3*e^2 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 3
5*b*c^2*d^4*e - 18*a*b*c*d^2*e^3)/(2*e))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) +
(log(d + e*x)*(b^3*e^3 - 20*c^3*d^3 + 6*a*b*c*e^3 - 12*a*c^2*d*e^2 + 30*b*c
^2*d^2*e - 12*b^2*c*d*e^2))/e^6 + (2*c^3*x^3)/(3*e^3)
```

sympy [A] time = 6.71, size = 360, normalized size = 1.64

$$\frac{2c^3x^3}{3e^3}+x^2\left(\frac{5bc^2}{2e^3}-\frac{3c^3d}{e^4}\right)+x\left(\frac{4ac^2}{e^3}+\frac{4b^2c}{e^3}-\frac{15bc^2d}{e^4}+\frac{12c^3d^2}{e^5}\right)+\frac{-a^2be^5-2a^2cde^4-2ab^2de^4+18abcd^2e^3-2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**3,x)
```

```
[Out] 2*c**3*x**3/(3*e**3) + x**2*(5*b*c**2/(2*e**3) - 3*c**3*d/e**4) + x*(4*a*c*
*2/e**3 + 4*b**2*c/e**3 - 15*b*c**2*d/e**4 + 12*c**3*d**2/e**5) + (-a**2*b*
e**5 - 2*a**2*c*d*e**4 - 2*a*b**2*d*e**4 + 18*a*b*c*d**2*e**3 - 20*a*c**2*d
**3*e**2 + 3*b**3*d**2*e**3 - 20*b**2*c*d**3*e**2 + 35*b*c**2*d**4*e - 18*c
**3*d**5 + x*(-4*a**2*c*e**5 - 4*a*b**2*e**5 + 24*a*b*c*d*e**4 - 24*a*c**2*
d**2*e**3 + 4*b**3*d*e**4 - 24*b**2*c*d**2*e**3 + 40*b*c**2*d**3*e**2 - 20*
c**3*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2) + (b*e - 2*c*d)*(6*a
*c*e**2 + b**2*e**2 - 10*b*c*d*e + 10*c**2*d**2)*log(d + e*x)/e**6
```

3.1512 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=217

$$\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}-\frac{\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)^2}+\frac{4c\log(d+ex)\,(}{}$$

```
[Out] -c^2*(-5*b*e+8*c*d)*x/e^5+c^3*x^2/e^4+1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^
2/e^6/(e*x+d)^3-(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))/e^
6/(e*x+d)^2+(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))/e^6/(e*x
+d)+4*c*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.23, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}-\frac{\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)^2}+\frac{4c\log(d+ex)\,(}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c^2*(8*c*d - 5*b*e)*x)/e^5) + (c^3*x^2)/e^4 + ((2*c*d - b*e)*(c*d^2 - b*
d*e + a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 +
 b^2*e^2 - c*e*(5*b*d - a*e)))/(e^6*(d + e*x)^2) + ((2*c*d - b*e)*(10*c^2*d
^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)))/(e^6*(d + e*x)) + (4*c*(5*c^2*d^2 +
b^2*e^2 - c*e*(5*b*d - a*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx=\int \left(-\frac{c^2(8cd-5be)}{e^5}+\frac{2c^3x}{e^4}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^4}+\frac{2\left(cd^2-bde+\right.}{}\right.$$

$$=-\frac{c^2(8cd-5be)x}{e^5}+\frac{c^3x^2}{e^4}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2-bde+ae^2\right)(5}{e^6}$$

Mathematica [A] time = 0.13, size = 300, normalized size = 1.38

$$\frac{-ce^2\left(a^2e^2(d+3ex)+6abe\left(d^2+3dex+3e^2x^2\right)-2b^2d\left(11d^2+27dex+18e^2x^2\right)\right)-be^3\left(a^2e^2+abe(d+3ex)+b^2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (c^3*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 +
 3*e^5*x^5) - b*e^3*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^2 + 3*d*e*x + 3*e
^2*x^2)) - c*e^2*(a^2*e^2*(d + 3*e*x) + 6*a*b*e*(d^2 + 3*d*e*x + 3*e^2*x^2)
 - 2*b^2*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + c^2*e*(2*a*d*e*(11*d^2 + 27*
d*e*x + 18*e^2*x^2) - 5*b*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^
3 - 3*e^4*x^4)) + 12*c*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e))*(d + e*x)
^3*Log[d + e*x])/(3*e^6*(d + e*x)^3)
```

fricas [B] time = 1.16, size = 487, normalized size = 2.24

$$3\,c^{3}e^{5}x^{5}+47\,c^{3}d^{5}-65\,bc^{2}d^{4}e-a^{2}be^{5}+22\left(b^{2}c+ac^{2}\right)d^{3}e^{2}-\left(b^{3}+6\,abc\right)d^{2}e^{3}-\left(ab^{2}+a^{2}c\right)de^{4}-15\left(c^{3}de^{4}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/3*(3*c^3*e^5*x^5 + 47*c^3*d^5 - 65*b*c^2*d^4*e - a^2*b*e^5 + 22*(b^2*c +
a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 - (a*b^2 + a^2*c)*d*e^4 - 15*(c^3*
d*e^4 - b*c^2*e^5)*x^4 - 9*(7*c^3*d^2*e^3 - 5*b*c^2*d*e^4)*x^3 - 3*(3*c^3*d
^3*e^2 + 15*b*c^2*d^2*e^3 - 12*(b^2*c + a*c^2)*d*e^4 + (b^3 + 6*a*b*c)*e^5)
*x^2 + 3*(27*c^3*d^4*e - 45*b*c^2*d^3*e^2 + 18*(b^2*c + a*c^2)*d^2*e^3 - (b
^3 + 6*a*b*c)*d*e^4 - (a*b^2 + a^2*c)*e^5)*x + 12*(5*c^3*d^5 - 5*b*c^2*d^4*
e + (b^2*c + a*c^2)*d^3*e^2 + (5*c^3*d^2*e^3 - 5*b*c^2*d*e^4 + (b^2*c + a*c
^2)*e^5)*x^3 + 3*(5*c^3*d^3*e^2 - 5*b*c^2*d^2*e^3 + (b^2*c + a*c^2)*d*e^4)*
x^2 + 3*(5*c^3*d^4*e - 5*b*c^2*d^3*e^2 + (b^2*c + a*c^2)*d^2*e^3)*x)*log(e*
x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [A] time = 0.16, size = 314, normalized size = 1.45

$$4\left(5\,c^{3}d^{2}-5\,bc^{2}de+b^{2}ce^{2}+ac^{2}e^{2}\right)e^{(-6)}\log\left(|xe+d|\right)+\left(c^{3}x^{2}e^{4}-8\,c^{3}dxe^{3}+5\,bc^{2}xe^{4}\right)e^{(-8)}+\frac{\left(47\,c^{3}d^{5}-65\,bc^{2}d^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 4*(5*c^3*d^2 - 5*b*c^2*d*e + b^2*c*e^2 + a*c^2*e^2)*e^(-6)*log(abs(x*e + d)
) + (c^3*x^2*e^4 - 8*c^3*d*x*e^3 + 5*b*c^2*x*e^4)*e^(-8) + 1/3*(47*c^3*d^5
- 65*b*c^2*d^4*e + 22*b^2*c*d^3*e^2 + 22*a*c^2*d^3*e^2 - b^3*d^2*e^3 - 6*a*
b*c*d^2*e^3 - a*b^2*d*e^4 - a^2*c*d*e^4 - a^2*b*e^5 + 3*(20*c^3*d^3*e^2 - 3
0*b*c^2*d^2*e^3 + 12*b^2*c*d*e^4 + 12*a*c^2*d*e^4 - b^3*e^5 - 6*a*b*c*e^5)*
x^2 + 3*(35*c^3*d^4*e - 50*b*c^2*d^3*e^2 + 18*b^2*c*d^2*e^3 + 18*a*c^2*d^2*
e^3 - b^3*d*e^4 - 6*a*b*c*d*e^4 - a*b^2*e^5 - a^2*c*e^5)*x)*e^(-6)/(x*e + d
)^3
```

maple [B] time = 0.05, size = 495, normalized size = 2.28

$$-\frac{a^{2}b}{3\left(ex+d\right)^{3}e}+\frac{2a^{2}cd}{3\left(ex+d\right)^{3}e^{2}}+\frac{2a\,b^{2}d}{3\left(ex+d\right)^{3}e^{2}}-\frac{2abc\,d^{2}}{\left(ex+d\right)^{3}e^{3}}+\frac{4a\,c^{2}d^{3}}{3\left(ex+d\right)^{3}e^{4}}-\frac{b^{3}d^{2}}{3\left(ex+d\right)^{3}e^{3}}+\frac{4b^{2}c\,d^{3}}{3\left(ex+d\right)^{3}e^{4}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x)
```

```
[Out] 6/e^3/(e*x+d)^2*a*b*c*d-2/e^3/(e*x+d)^3*d^2*a*b*c-1/e^3/(e*x+d)*b^3-1/3/e/(
e*x+d)^3*a^2*b-1/3/e^3/(e*x+d)^3*d^2*b^3+2/3/e^6/(e*x+d)^3*c^3*d^5+20/e^6/(
e*x+d)*c^3*d^3+5*c^2/e^4*b*x-8*c^3/e^5*x*d+4*c^2/e^4*ln(e*x+d)*a+4*c/e^4*ln
(e*x+d)*b^2+20*c^3/e^6*ln(e*x+d)*d^2-1/e^2/(e*x+d)^2*a*b^2+1/e^3/(e*x+d)^2*
b^3*d-5/e^6/(e*x+d)^2*c^3*d^4-1/e^2/(e*x+d)^2*a^2*c-6/e^4/(e*x+d)^2*a*c^2*d
^2-6/e^4/(e*x+d)^2*b^2*c*d^2-30/e^5/(e*x+d)*b*c^2*d^2-5/3/e^5/(e*x+d)^3*b*c
^2*d^4+10/e^5/(e*x+d)^2*b*c^2*d^3+2/3/e^2/(e*x+d)^3*a^2*c*d+2/3/e^2/(e*x+d)
^3*d*a*b^2+4/3/e^4/(e*x+d)^3*a*c^2*d^3+4/3/e^4/(e*x+d)^3*d^3*b^2*c-20*c^2/e
```

```
^5*ln(e*x+d)*b*d-6/e^3/(e*x+d)*a*b*c+12/e^4/(e*x+d)*c^2*a*d+12/e^4/(e*x+d)*
b^2*c*d+c^3*x^2/e^4
```

maxima [A] time = 0.63, size = 327, normalized size = 1.51

$$\frac{47\,c^3d^5-65\,bc^2d^4e-a^2be^5+22\left(b^2c+ac^2\right)d^3e^2-\left(b^3+6\,abc\right)d^2e^3-\left(ab^2+a^2c\right)de^4+3\left(20\,c^3d^3e^2-30\,bc^2d^2e^3\right.}{3\left(e^9x^3+3\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/3*(47*c^3*d^5 - 65*b*c^2*d^4*e - a^2*b*e^5 + 22*(b^2*c + a*c^2)*d^3*e^2 -
 (b^3 + 6*a*b*c)*d^2*e^3 - (a*b^2 + a^2*c)*d*e^4 + 3*(20*c^3*d^3*e^2 - 30*b
*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 - (b^3 + 6*a*b*c)*e^5)*x^2 + 3*(35*
c^3*d^4*e - 50*b*c^2*d^3*e^2 + 18*(b^2*c + a*c^2)*d^2*e^3 - (b^3 + 6*a*b*c)
*d*e^4 - (a*b^2 + a^2*c)*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3
*e^6) + (c^3*e*x^2 - (8*c^3*d - 5*b*c^2*e)*x)/e^5 + 4*(5*c^3*d^2 - 5*b*c^2*
d*e + (b^2*c + a*c^2)*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 1.86, size = 349, normalized size = 1.61

$$x\left(\frac{5\,b\,c^2}{e^4}-\frac{8\,c^3\,d}{e^5}\right)-\frac{x\,\left(a^2\,c\,e^4+a\,b^2\,e^4+6\,a\,b\,c\,d\,e^3-18\,a\,c^2\,d^2\,e^2+b^3\,d\,e^3-18\,b^2\,c\,d^2\,e^2+50\,b\,c^2\,d^3\,e-35\,c^3\,d^4\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x)
```

```
[Out] x*((5*b*c^2)/e^4 - (8*c^3*d)/e^5) - (x*(a*b^2*e^4 - 35*c^3*d^4 + a^2*c*e^4
+ b^3*d*e^3 - 18*a*c^2*d^2*e^2 - 18*b^2*c*d^2*e^2 + 50*b*c^2*d^3*e + 6*a*b*
c*d*e^3) + x^2*(b^3*e^4 - 20*c^3*d^3*e + 30*b*c^2*d^2*e^2 + 6*a*b*c*e^4 - 1
2*a*c^2*d*e^3 - 12*b^2*c*d*e^3) + (a^2*b*e^5 - 47*c^3*d^5 + b^3*d^2*e^3 - 2
2*a*c^2*d^3*e^2 - 22*b^2*c*d^3*e^2 + a*b^2*d*e^4 + a^2*c*d*e^4 + 65*b*c^2*d
^4*e + 6*a*b*c*d^2*e^3)/(3*e))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x
^2) + (log(d + e*x)*(20*c^3*d^2 + 4*a*c^2*e^2 + 4*b^2*c*e^2 - 20*b*c^2*d*e)
)/e^6 + (c^3*x^2)/e^4
```

sympy [A] time = 21.03, size = 379, normalized size = 1.75

$$\frac{c^3x^2}{e^4}+\frac{4c\left(ace^2+b^2e^2-5bcde+5c^2d^2\right)\log\left(d+ex\right)}{e^6}+x\left(\frac{5bc^2}{e^4}-\frac{8c^3d}{e^5}\right)+\frac{-a^2be^5-a^2cde^4-ab^2de^4-6abcd^2e^3+22}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**4,x)
```

```
[Out] c**3*x**2/e**4 + 4*c*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d**2)*log(d
 + e*x)/e**6 + x*(5*b*c**2/e**4 - 8*c**3*d/e**5) + (-a**2*b*e**5 - a**2*c*d
*e**4 - a*b**2*d*e**4 - 6*a*b*c*d**2*e**3 + 22*a*c**2*d**3*e**2 - b**3*d**2
*e**3 + 22*b**2*c*d**3*e**2 - 65*b*c**2*d**4*e + 47*c**3*d**5 + x**2*(-18*a
*b*c*e**5 + 36*a*c**2*d*e**4 - 3*b**3*e**5 + 36*b**2*c*d*e**4 - 90*b*c**2*d
**2*e**3 + 60*c**3*d**3*e**2) + x*(-3*a**2*c*e**5 - 3*a*b**2*e**5 - 18*a*b*
c*d*e**4 + 54*a*c**2*d**2*e**3 - 3*b**3*d*e**4 + 54*b**2*c*d**2*e**3 - 150*
b*c**2*d**3*e**2 + 105*c**3*d**4*e))/(3*d**3*e**6 + 9*d**2*e**7*x + 9*d*e**
8*x**2 + 3*e**9*x**3)
```

3.1513 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=227

$$-\frac{4c\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}+\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5\right.}{3e^6(d+}$$

```
[Out] 2*c^3*x/e^5+1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^4-2/3*(a*e^2
-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))/e^6/(e*x+d)^3+1/2*(-b*e+
2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))/e^6/(e*x+d)^2-4*c*(5*c^2*d
^2+b^2*e^2-c*e*(-a*e+5*b*d))/e^6/(e*x+d)-5*c^2*(-b*e+2*c*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.21, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{4c\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(d+ex)}+\frac{(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}-\frac{2\left(ae^2-bde+cd^2\right)\left(-ce(5\right.}{3e^6(d+}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (2*c^3*x)/e^5 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(4*e^6*(d + e*x)^
4) - (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/
(3*e^6*(d + e*x)^3) + ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d -
 3*a*e)))/(2*e^6*(d + e*x)^2) - (4*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*
e)))/(e^6*(d + e*x)) - (5*c^2*(2*c*d - b*e)*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx=\int\left(\frac{2c^3}{e^5}+\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5b\right.}{e^5(d+ex)^4}\right.$$

$$=\frac{2c^3x}{e^5}+\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-c\right.}{3e^6(d+ex)^3}$$

Mathematica [A] time = 0.18, size = 292, normalized size = 1.29

$$-\frac{2ce^2\left(a^2e^2(d+4ex)+3abe\left(d^2+4dex+6e^2x^2\right)+6b^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+be^3\left(3a^2e^2+2abe(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(2*c^3*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*
d*e^4*x^4 - 12*e^5*x^5) + b*e^3*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2
 + 4*d*e*x + 6*e^2*x^2)) + 2*c*e^2*(a^2*e^2*(d + 4*e*x) + 3*a*b*e*(d^2 + 4*
d*e*x + 6*e^2*x^2) + 6*b^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + c
^2*e*(12*a*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - 5*b*d*(25*d^3 +
88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) + 60*c^2*(2*c*d - b*e)*(d + e*x)^
4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

fricas [B] time = 0.76, size = 458, normalized size = 2.02

$$\frac{24\,c^3e^5x^5 + 96\,c^3de^4x^4 - 154\,c^3d^5 + 125\,bc^2d^4e - 3\,a^2be^5 - 12\left(b^2c + ac^2\right)d^3e^2 - \left(b^3 + 6\,abc\right)d^2e^3 - 2\left(ab^2 + a^2c\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(24*c^3*e^5*x^5 + 96*c^3*d*e^4*x^4 - 154*c^3*d^5 + 125*b*c^2*d^4*e - 3
*a^2*b*e^5 - 12*(b^2*c + a*c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 - 2*(a*b^
2 + a^2*c)*d*e^4 - 48*(2*c^3*d^2*e^3 - 5*b*c^2*d*e^4 + (b^2*c + a*c^2)*e^5)
*x^3 - 6*(84*c^3*d^3*e^2 - 90*b*c^2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 + (b
^3 + 6*a*b*c)*e^5)*x^2 - 4*(124*c^3*d^4*e - 110*b*c^2*d^3*e^2 + 12*(b^2*c +
 a*c^2)*d^2*e^3 + (b^3 + 6*a*b*c)*d*e^4 + 2*(a*b^2 + a^2*c)*e^5)*x - 60*(2*
c^3*d^5 - b*c^2*d^4*e + (2*c^3*d*e^4 - b*c^2*e^5)*x^4 + 4*(2*c^3*d^2*e^3 -
b*c^2*d*e^4)*x^3 + 6*(2*c^3*d^3*e^2 - b*c^2*d^2*e^3)*x^2 + 4*(2*c^3*d^4*e -
 b*c^2*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.20, size = 525, normalized size = 2.31

$$2\,(xe + d)c^3e^{(-6)} + 5\left(2\,c^3d - bc^2e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\left(\frac{240\,c^3d^2e^{22}}{xe + d} - \frac{120\,c^3d^3e^{22}}{(xe + d)^2} + \frac{40\,c^3d^4e^{22}}{(xe + d)^3} - \frac{6\,c^3d^5e^{22}}{(xe + d)^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 2*(x*e + d)*c^3*e^(-6) + 5*(2*c^3*d - b*c^2*e)*e^(-6)*log(abs(x*e + d)*e^(-
1)/(x*e + d)^2) - 1/12*(240*c^3*d^2*e^22/(x*e + d) - 120*c^3*d^3*e^22/(x*e
+ d)^2 + 40*c^3*d^4*e^22/(x*e + d)^3 - 6*c^3*d^5*e^22/(x*e + d)^4 - 240*b*c
^2*d*e^23/(x*e + d) + 180*b*c^2*d^2*e^23/(x*e + d)^2 - 80*b*c^2*d^3*e^23/(x
*e + d)^3 + 15*b*c^2*d^4*e^23/(x*e + d)^4 + 48*b^2*c*e^24/(x*e + d) + 48*a*
c^2*e^24/(x*e + d) - 72*b^2*c*d*e^24/(x*e + d)^2 - 72*a*c^2*d*e^24/(x*e + d
)^2 + 48*b^2*c*d^2*e^24/(x*e + d)^3 + 48*a*c^2*d^2*e^24/(x*e + d)^3 - 12*b^
2*c*d^3*e^24/(x*e + d)^4 - 12*a*c^2*d^3*e^24/(x*e + d)^4 + 6*b^3*e^25/(x*e
+ d)^2 + 36*a*b*c*e^25/(x*e + d)^2 - 8*b^3*d*e^25/(x*e + d)^3 - 48*a*b*c*d*
e^25/(x*e + d)^3 + 3*b^3*d^2*e^25/(x*e + d)^4 + 18*a*b*c*d^2*e^25/(x*e + d)
^4 + 8*a*b^2*e^26/(x*e + d)^3 + 8*a^2*c*e^26/(x*e + d)^3 - 6*a*b^2*d*e^26/(
x*e + d)^4 - 6*a^2*c*d*e^26/(x*e + d)^4 + 3*a^2*b*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.06, size = 507, normalized size = 2.23

$$-\frac{a^2b}{4\,(ex + d)^4\,e} + \frac{a^2cd}{2\,(ex + d)^4\,e^2} + \frac{a\,b^2d}{2\,(ex + d)^4\,e^2} - \frac{3abc\,d^2}{2\,(ex + d)^4\,e^3} + \frac{a\,c^2d^3}{(ex + d)^4\,e^4} - \frac{b^3d^2}{4\,(ex + d)^4\,e^3} + \frac{b^2c\,d^3}{(ex + d)^4\,e^4} - \frac{5b\,c^2d^4}{4\,(ex + d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x)
```

```
[Out] -3/2/e^3/(e*x+d)^4*d^2*a*b*c+4/e^3/(e*x+d)^3*a*b*c*d+1/2/e^2/(e*x+d)^4*a^2*
c*d-15/e^5/(e*x+d)^2*b*c^2*d^2-4*c/e^4/(e*x+d)*b^2-20*c^3/e^6/(e*x+d)*d^2-4
*c^2/e^4/(e*x+d)*a-2/3/e^2/(e*x+d)^3*a^2*c-2/3/e^2/(e*x+d)^3*a*b^2+2/3/e^3/
(e*x+d)^3*b^3*d-10/3/e^6/(e*x+d)^3*c^3*d^4+10/e^6/(e*x+d)^2*c^3*d^3-1/4/e/(
e*x+d)^4*a^2*b-1/4/e^3/(e*x+d)^4*d^2*b^3+5*c^2/e^5*ln(e*x+d)*b-10*c^3/e^6*l
n(e*x+d)*d+1/2/e^6/(e*x+d)^4*c^3*d^5-1/2/e^3/(e*x+d)^2*b^3-3/e^3/(e*x+d)^2*
a*b*c+6/e^4/(e*x+d)^2*c^2*a*d+6/e^4/(e*x+d)^2*b^2*c*d+20*c^2/e^5/(e*x+d)*b*
d-4/e^4/(e*x+d)^3*a*c^2*d^2-4/e^4/(e*x+d)^3*b^2*c*d^2-5/4/e^5/(e*x+d)^4*d^4
*b*c^2+20/3/e^5/(e*x+d)^3*b*c^2*d^3+1/2/e^2/(e*x+d)^4*d*a*b^2+1/e^4/(e*x+d)
^4*a*c^2*d^3+1/e^4/(e*x+d)^4*d^3*b^2*c+2*c^3*x/e^5
```

maxima [**A**] time = 0.66, size = 338, normalized size = 1.49

$$-\frac{154\,c^3d^5 - 125\,bc^2d^4e + 3\,a^2be^5 + 12\left(b^2c + ac^2\right)d^3e^2 + \left(b^3 + 6\,abc\right)d^2e^3 + 2\left(ab^2 + a^2c\right)de^4 + 48\left(5\,c^3d^2e^3 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(154*c^3*d^5 - 125*b*c^2*d^4*e + 3*a^2*b*e^5 + 12*(b^2*c + a*c^2)*d^3
*e^2 + (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 + 48*(5*c^3*d^2*e^
3 - 5*b*c^2*d*e^4 + (b^2*c + a*c^2)*e^5)*x^3 + 6*(100*c^3*d^3*e^2 - 90*b*c^
2*d^2*e^3 + 12*(b^2*c + a*c^2)*d*e^4 + (b^3 + 6*a*b*c)*e^5)*x^2 + 4*(130*c^
3*d^4*e - 110*b*c^2*d^3*e^2 + 12*(b^2*c + a*c^2)*d^2*e^3 + (b^3 + 6*a*b*c)*
d*e^4 + 2*(a*b^2 + a^2*c)*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 +
 4*d^3*e^7*x + d^4*e^6) + 2*c^3*x/e^5 - 5*(2*c^3*d - b*c^2*e)*log(e*x + d)/
e^6
```

mupad [**B**] time = 1.92, size = 369, normalized size = 1.63

$$\frac{2\,c^3\,x}{e^5}-\frac{x\,\left(\frac{2\,a^2\,c\,e^4}{3}+\frac{2\,a\,b^2\,e^4}{3}+2\,a\,b\,c\,d\,e^3+4\,a\,c^2\,d^2\,e^2+\frac{b^3\,d\,e^3}{3}+4\,b^2\,c\,d^2\,e^2-\frac{110\,b\,c^2\,d^3\,e}{3}+\frac{130\,c^3\,d^4}{3}\right)+x^2\,\left(\frac{b^3\,e^4}{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x)
```

```
[Out] (2*c^3*x)/e^5 - (x*((130*c^3*d^4)/3 + (2*a*b^2*e^4)/3 + (2*a^2*c*e^4)/3 + (
b^3*d*e^3)/3 + 4*a*c^2*d^2*e^2 + 4*b^2*c*d^2*e^2 - (110*b*c^2*d^3*e)/3 + 2*
a*b*c*d*e^3) + x^2*((b^3*e^4)/2 + 50*c^3*d^3*e - 45*b*c^2*d^2*e^2 + 3*a*b*c
*e^4 + 6*a*c^2*d*e^3 + 6*b^2*c*d*e^3) + x^3*(4*a*c^2*e^4 + 4*b^2*c*e^4 + 20
*c^3*d^2*e^2 - 20*b*c^2*d*e^3) + (154*c^3*d^5 + 3*a^2*b*e^5 + b^3*d^2*e^3 +
 12*a*c^2*d^3*e^2 + 12*b^2*c*d^3*e^2 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - 125*
b*c^2*d^4*e + 6*a*b*c*d^2*e^3)/(12*e))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^6*x + 4
*d*e^8*x^3 + 6*d^2*e^7*x^2) - (log(d + e*x)*(10*c^3*d - 5*b*c^2*e))/e^6
```

sympy [**A**] time = 58.01, size = 401, normalized size = 1.77

$$\frac{2c^3x}{e^5}+\frac{5c^2\left(be-2cd\right)\log\left(d+ex\right)}{e^6}+\frac{-3a^2be^5-2a^2cde^4-2ab^2de^4-6abcd^2e^3-12ac^2d^3e^2-b^3d^2e^3-12b^2cd^3e^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**5,x)
```

```
[Out] 2*c**3*x/e**5 + 5*c**2*(b*e - 2*c*d)*log(d + e*x)/e**6 + (-3*a**2*b*e**5 -
2*a**2*c*d*e**4 - 2*a*b**2*d*e**4 - 6*a*b*c*d**2*e**3 - 12*a*c**2*d**3*e**2
 - b**3*d**2*e**3 - 12*b**2*c*d**3*e**2 + 125*b*c**2*d**4*e - 154*c**3*d**5
 + x**3*(-48*a*c**2*e**5 - 48*b**2*c*e**5 + 240*b*c**2*d*e**4 - 240*c**3*d*
*2*e**3) + x**2*(-36*a*b*c*e**5 - 72*a*c**2*d*e**4 - 6*b**3*e**5 - 72*b**2*
c*d*e**4 + 540*b*c**2*d**2*e**3 - 600*c**3*d**3*e**2) + x*(-8*a**2*c*e**5 -
 8*a*b**2*e**5 - 24*a*b*c*d*e**4 - 48*a*c**2*d**2*e**3 - 4*b**3*d*e**4 - 48
*b**2*c*d**2*e**3 + 440*b*c**2*d**3*e**2 - 520*c**3*d**4*e))/(12*d**4*e**6
+ 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e**9*x**3 + 12*e**10*x**4)
```

3.1514 $\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^8\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{8e^8}+3c^2(d+e$$

```
[Out] -1/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^5/e^8+1/6*(a*e^2-b*d*e+c*d^
2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^6/e^8-3/7*(-b*e+2*c*
d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^7/e^8
+1/8*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*
b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^8/e^8-5/9*c*(-b*e+2
*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^9/e^8+3/10*c^2*(14*c^2
*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^10/e^8-7/11*c^3*(-b*e+2*c*d)*(e*
x+d)^11/e^8+1/6*c^4*(e*x+d)^12/e^8
```

Rubi [A] time = 0.72, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{(d+ex)^8\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{8e^8}+3c^2(d+e$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^6
)/(6*e^8) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
 c*e*(7*b*d - 3*a*e))*(d + e*x)^7)/(7*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2
*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d
^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^8)/(8*e^8) - (5*c*(2*c*d - b*e)*(7*c^
2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^9)/(9*e^8) + (3*c^2*(14*c^
2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^10)/(10*e^8) - (7*c^3*(2
*c*d - b*e)*(d + e*x)^11)/(11*e^8) + (c^4*(d + e*x)^12)/(6*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^4\left(a+bx+cx^2\right)^3\,dx=\int\Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{e^7}+\left(cd^2-bde+ae^2\right)^2\Big(14c$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^5}{5e^8}+\left(cd^2-bde+ae^2\right)^2\Big(14c^2d^2$$

Mathematica [A] time = 0.24, size = 735, normalized size = 1.79

$$a^3bd^4x+\frac{1}{2}a^2d^3x^2\left(4abe+2acd+3b^2d\right)+\frac{1}{8}x^8\Big(6c^2e^2\left(a^2e^2+10abde+9b^2d^2\right)+4b^2ce^3(3ae+5bd)+4c^3d^2e(9ae+$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^4*x + (a^2*d^3*(3*b^2*d + 2*a*c*d + 4*a*b*e)*x^2)/2 + (a*d^2*(3*b^3
*d^2 + 12*a*b^2*d*e + 8*a^2*c*d*e + 3*a*b*(3*c*d^2 + 2*a*e^2))*x^3)/3 + (d*
(b^4*d^3 + 12*a*b^3*d^2*e + 4*a^2*b*e*(9*c*d^2 + a*e^2) + 6*a^2*c*d*(c*d^2
+ 2*a*e^2) + 6*a*b^2*d*(2*c*d^2 + 3*a*e^2))*x^4)/4 + ((4*b^4*d^3*e + 8*a^2*
c*d*e*(3*c*d^2 + a*e^2) + 12*a*b^2*d*e*(4*c*d^2 + a*e^2) + b^3*(5*c*d^4 + 1
8*a*d^2*e^2) + a*b*(15*c^2*d^4 + 54*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + ((6*b^
4*d^2*e^2 + 12*a*b*c*d*e*(5*c*d^2 + 3*a*e^2) + 4*b^3*(5*c*d^3*e + 3*a*d*e^3
) + 2*a*c*(3*c^2*d^4 + 18*a*c*d^2*e^2 + a^2*e^4) + 3*b^2*(3*c^2*d^4 + 24*a*
c*d^2*e^2 + a^2*e^4))*x^6)/6 + ((4*b^4*d*e^3 + 24*a*c^2*d*e*(c*d^2 + a*e^2)
 + 12*b^2*c*d*e*(3*c*d^2 + 4*a*e^2) + 3*b^3*(10*c*d^2*e^2 + a*e^4) + b*c*(7
*c^2*d^4 + 90*a*c*d^2*e^2 + 9*a^2*e^4))*x^7)/7 + ((2*c^4*d^4 + b^4*e^4 + 4*
b^2*c*e^3*(5*b*d + 3*a*e) + 4*c^3*d^2*e*(7*b*d + 9*a*e) + 6*c^2*e^2*(9*b^2*
d^2 + 10*a*b*d*e + a^2*e^2))*x^8)/8 + (c*e*(8*c^3*d^3 + 5*b^3*e^3 + 6*c^2*d
*e*(7*b*d + 4*a*e) + 3*b*c*e^2*(12*b*d + 5*a*e))*x^9)/9 + (c^2*e^2*(12*c^2*
d^2 + 9*b^2*e^2 + 2*c*e*(14*b*d + 3*a*e))*x^10)/10 + (c^3*e^3*(8*c*d + 7*b*
e)*x^11)/11 + (c^4*e^4*x^12)/6
```

fricas [**B**] time = 0.72, size = 936, normalized size = 2.28

$$\frac{1}{6}x^{12}e^4c^4+\frac{8}{11}x^{11}e^3dc^4+\frac{7}{11}x^{11}e^4c^3b+\frac{6}{5}x^{10}e^2d^2c^4+\frac{14}{5}x^{10}e^3dc^3b+\frac{9}{10}x^{10}e^4c^2b^2+\frac{3}{5}x^{10}e^4c^3a+\frac{8}{9}x^9ed^3c^4+\frac{14}{3}x^9e^2d^2c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/6*x^12*e^4*c^4 + 8/11*x^11*e^3*d*c^4 + 7/11*x^11*e^4*c^3*b + 6/5*x^10*e^2
*d^2*c^4 + 14/5*x^10*e^3*d*c^3*b + 9/10*x^10*e^4*c^2*b^2 + 3/5*x^10*e^4*c^3
*a + 8/9*x^9*e*d^3*c^4 + 14/3*x^9*e^2*d^2*c^3*b + 4*x^9*e^3*d*c^2*b^2 + 5/9
*x^9*e^4*c*b^3 + 8/3*x^9*e^3*d*c^3*a + 5/3*x^9*e^4*c^2*b*a + 1/4*x^8*d^4*c^
4 + 7/2*x^8*e*d^3*c^3*b + 27/4*x^8*e^2*d^2*c^2*b^2 + 5/2*x^8*e^3*d*c*b^3 +
1/8*x^8*e^4*b^4 + 9/2*x^8*e^2*d^2*c^3*a + 15/2*x^8*e^3*d*c^2*b*a + 3/2*x^8*
e^4*c*b^2*a + 3/4*x^8*e^4*c^2*a^2 + x^7*d^4*c^3*b + 36/7*x^7*e*d^3*c^2*b^2
+ 30/7*x^7*e^2*d^2*c*b^3 + 4/7*x^7*e^3*d*b^4 + 24/7*x^7*e*d^3*c^3*a + 90/7*
x^7*e^2*d^2*c^2*b*a + 48/7*x^7*e^3*d*c*b^2*a + 3/7*x^7*e^4*b^3*a + 24/7*x^7
*e^3*d*c^2*a^2 + 9/7*x^7*e^4*c*b*a^2 + 3/2*x^6*d^4*c^2*b^2 + 10/3*x^6*e*d^3
*c*b^3 + x^6*e^2*d^2*b^4 + x^6*d^4*c^3*a + 10*x^6*e*d^3*c^2*b*a + 12*x^6*e^
2*d^2*c*b^2*a + 2*x^6*e^3*d*b^3*a + 6*x^6*e^2*d^2*c^2*a^2 + 6*x^6*e^3*d*c*b
*a^2 + 1/2*x^6*e^4*b^2*a^2 + 1/3*x^6*e^4*c*a^3 + x^5*d^4*c*b^3 + 4/5*x^5*e*
d^3*b^4 + 3*x^5*d^4*c^2*b*a + 48/5*x^5*e*d^3*c*b^2*a + 18/5*x^5*e^2*d^2*b^3
*a + 24/5*x^5*e*d^3*c^2*a^2 + 54/5*x^5*e^2*d^2*c*b*a^2 + 12/5*x^5*e^3*d*b^2
*a^2 + 8/5*x^5*e^3*d*c*a^3 + 1/5*x^5*e^4*b*a^3 + 1/4*x^4*d^4*b^4 + 3*x^4*d^
4*c*b^2*a + 3*x^4*e*d^3*b^3*a + 3/2*x^4*d^4*c^2*a^2 + 9*x^4*e*d^3*c*b*a^2 +
 9/2*x^4*e^2*d^2*b^2*a^2 + 3*x^4*e^2*d^2*c*a^3 + x^4*e^3*d*b*a^3 + x^3*d^4*
b^3*a + 3*x^3*d^4*c*b*a^2 + 4*x^3*e*d^3*b^2*a^2 + 8/3*x^3*e*d^3*c*a^3 + 2*x
^3*e^2*d^2*b*a^3 + 3/2*x^2*d^4*b^2*a^2 + x^2*d^4*c*a^3 + 2*x^2*e*d^3*b*a^3
+ x*d^4*b*a^3
```

giac [**B**] time = 0.17, size = 908, normalized size = 2.21

$$\frac{1}{6}c^4x^{12}e^4+\frac{8}{11}c^4dx^{11}e^3+\frac{6}{5}c^4d^2x^{10}e^2+\frac{8}{9}c^4d^3x^9e+\frac{1}{4}c^4d^4x^8+\frac{7}{11}bc^3x^{11}e^4+\frac{14}{5}bc^3dx^{10}e^3+\frac{14}{3}bc^3d^2x^9e^2+\frac{7}{2}bc^3d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/6*c^4*x^12*e^4 + 8/11*c^4*d*x^11*e^3 + 6/5*c^4*d^2*x^10*e^2 + 8/9*c^4*d^3
*x^9*e + 1/4*c^4*d^4*x^8 + 7/11*b*c^3*x^11*e^4 + 14/5*b*c^3*d*x^10*e^3 + 14
```

```
/3*b*c^3*d^2*x^9*e^2 + 7/2*b*c^3*d^3*x^8*e + b*c^3*d^4*x^7 + 9/10*b^2*c^2*x
^10*e^4 + 3/5*a*c^3*x^10*e^4 + 4*b^2*c^2*d*x^9*e^3 + 8/3*a*c^3*d*x^9*e^3 +
27/4*b^2*c^2*d^2*x^8*e^2 + 9/2*a*c^3*d^2*x^8*e^2 + 36/7*b^2*c^2*d^3*x^7*e +
 24/7*a*c^3*d^3*x^7*e + 3/2*b^2*c^2*d^4*x^6 + a*c^3*d^4*x^6 + 5/9*b^3*c*x^9
*e^4 + 5/3*a*b*c^2*x^9*e^4 + 5/2*b^3*c*d*x^8*e^3 + 15/2*a*b*c^2*d*x^8*e^3 +
 30/7*b^3*c*d^2*x^7*e^2 + 90/7*a*b*c^2*d^2*x^7*e^2 + 10/3*b^3*c*d^3*x^6*e +
 10*a*b*c^2*d^3*x^6*e + b^3*c*d^4*x^5 + 3*a*b*c^2*d^4*x^5 + 1/8*b^4*x^8*e^4
 + 3/2*a*b^2*c*x^8*e^4 + 3/4*a^2*c^2*x^8*e^4 + 4/7*b^4*d*x^7*e^3 + 48/7*a*b
^2*c*d*x^7*e^3 + 24/7*a^2*c^2*d*x^7*e^3 + b^4*d^2*x^6*e^2 + 12*a*b^2*c*d^2*
x^6*e^2 + 6*a^2*c^2*d^2*x^6*e^2 + 4/5*b^4*d^3*x^5*e + 48/5*a*b^2*c*d^3*x^5*
e + 24/5*a^2*c^2*d^3*x^5*e + 1/4*b^4*d^4*x^4 + 3*a*b^2*c*d^4*x^4 + 3/2*a^2*
c^2*d^4*x^4 + 3/7*a*b^3*x^7*e^4 + 9/7*a^2*b*c*x^7*e^4 + 2*a*b^3*d*x^6*e^3 +
 6*a^2*b*c*d*x^6*e^3 + 18/5*a*b^3*d^2*x^5*e^2 + 54/5*a^2*b*c*d^2*x^5*e^2 +
3*a*b^3*d^3*x^4*e + 9*a^2*b*c*d^3*x^4*e + a*b^3*d^4*x^3 + 3*a^2*b*c*d^4*x^3
 + 1/2*a^2*b^2*x^6*e^4 + 1/3*a^3*c*x^6*e^4 + 12/5*a^2*b^2*d*x^5*e^3 + 8/5*a
^3*c*d*x^5*e^3 + 9/2*a^2*b^2*d^2*x^4*e^2 + 3*a^3*c*d^2*x^4*e^2 + 4*a^2*b^2*
d^3*x^3*e + 8/3*a^3*c*d^3*x^3*e + 3/2*a^2*b^2*d^4*x^2 + a^3*c*d^4*x^2 + 1/5
*a^3*b*x^5*e^4 + a^3*b*d*x^4*e^3 + 2*a^3*b*d^2*x^3*e^2 + 2*a^3*b*d^3*x^2*e
+ a^3*b*d^4*x
```

maple [B] time = 0.04, size = 1052, normalized size = 2.56

$$\frac{c^{4}e^{4}x^{12}}{6}+\frac{\left(6b\,c^{3}e^{4}+\left(b\,e^{4}+8cd\,e^{3}\right)c^{3}\right)x^{11}}{11}+\frac{\left(2\left(a\,c^{2}+2b^{2}c+\left(2ac+b^{2}\right)c\right)c\,e^{4}+3\left(b\,e^{4}+8cd\,e^{3}\right)b\,c^{2}+\left(4bd\,e^{3}+\right.}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/6*c^4*e^4*x^12+1/11*((b*e^4+8*c*d*e^3)*c^3+6*c^3*e^4*b)*x^11+1/10*((4*b*d
*e^3+12*c*d^2*e^2)*c^3+3*(b*e^4+8*c*d*e^3)*b*c^2+2*c*e^4*(a*c^2+2*b^2*c+(2*
a*c+b^2)*c))*x^10+1/9*((6*b*d^2*e^2+8*c*d^3*e)*c^3+3*(4*b*d*e^3+12*c*d^2*e^
2)*b*c^2+(b*e^4+8*c*d*e^3)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e^4*(4*a*b*c+(
2*a*c+b^2)*b))*x^9+1/8*((4*b*d^3*e+2*c*d^4)*c^3+3*(6*b*d^2*e^2+8*c*d^3*e)*b
*c^2+(4*b*d*e^3+12*c*d^2*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^4+8*c*d*e^
3)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e^4*(a*(2*a*c+b^2)+2*a*b^2+c*a^2))*x^8+1/7*(
b*d^4*c^3+3*(4*b*d^3*e+2*c*d^4)*b*c^2+(6*b*d^2*e^2+8*c*d^3*e)*(a*c^2+2*b^2*
c+(2*a*c+b^2)*c)+(4*b*d*e^3+12*c*d^2*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+(b*e^4+8*
c*d*e^3)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+6*c*e^4*a^2*b)*x^7+1/6*(3*b^2*d^4*c^
2+(4*b*d^3*e+2*c*d^4)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(6*b*d^2*e^2+8*c*d^3*e)
*(4*a*b*c+(2*a*c+b^2)*b)+(4*b*d*e^3+12*c*d^2*e^2)*(a*(2*a*c+b^2)+2*a*b^2+c*
a^2)+3*(b*e^4+8*c*d*e^3)*a^2*b+2*c*e^4*a^3)*x^6+1/5*(b*d^4*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c)+(4*b*d^3*e+2*c*d^4)*(4*a*b*c+(2*a*c+b^2)*b)+(6*b*d^2*e^2+8*c*
d^3*e)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(4*b*d*e^3+12*c*d^2*e^2)*a^2*b+(b*e^
4+8*c*d*e^3)*a^3)*x^5+1/4*(b*d^4*(4*a*b*c+(2*a*c+b^2)*b)+(4*b*d^3*e+2*c*d^4
)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(6*b*d^2*e^2+8*c*d^3*e)*a^2*b+(4*b*d*e^3+
12*c*d^2*e^2)*a^3)*x^4+1/3*(b*d^4*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(4*b*d^3*
e+2*c*d^4)*a^2*b+(6*b*d^2*e^2+8*c*d^3*e)*a^3)*x^3+1/2*(3*b^2*d^4*a^2+(4*b*d
^3*e+2*c*d^4)*a^3)*x^2+b*d^4*a^3*x
```

maxima [A] time = 0.55, size = 729, normalized size = 1.77

$$\frac{1}{6}\,c^{4}e^{4}x^{12}+\frac{1}{11}\left(8\,c^{4}de^{3}+7\,bc^{3}e^{4}\right)x^{11}+\frac{1}{10}\left(12\,c^{4}d^{2}e^{2}+28\,bc^{3}de^{3}+3\left(3\,b^{2}c^{2}+2\,ac^{3}\right)e^{4}\right)x^{10}+\frac{1}{9}\left(8\,c^{4}d^{3}e+42\,bc^{3}d^{2}e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/6*c^4*e^4*x^12 + 1/11*(8*c^4*d*e^3 + 7*b*c^3*e^4)*x^11 + 1/10*(12*c^4*d^2
*e^2 + 28*b*c^3*d*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*e^4)*x^10 + 1/9*(8*c^4*d^3*
e + 42*b*c^3*d^2*e^2 + 12*(3*b^2*c^2 + 2*a*c^3)*d*e^3 + 5*(b^3*c + 3*a*b*c^
2)*e^4)*x^9 + a^3*b*d^4*x + 1/8*(2*c^4*d^4 + 28*b*c^3*d^3*e + 18*(3*b^2*c^2
 + 2*a*c^3)*d^2*e^2 + 20*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*
a^2*c^2)*e^4)*x^8 + 1/7*(7*b*c^3*d^4 + 12*(3*b^2*c^2 + 2*a*c^3)*d^3*e + 30*
(b^3*c + 3*a*b*c^2)*d^2*e^2 + 4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^3 + 3*(a
*b^3 + 3*a^2*b*c)*e^4)*x^7 + 1/6*(3*(3*b^2*c^2 + 2*a*c^3)*d^4 + 20*(b^3*c +
 3*a*b*c^2)*d^3*e + 6*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^2 + 12*(a*b^3 +
3*a^2*b*c)*d*e^3 + (3*a^2*b^2 + 2*a^3*c)*e^4)*x^6 + 1/5*(a^3*b*e^4 + 5*(b^3
*c + 3*a*b*c^2)*d^4 + 4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e + 18*(a*b^3 +
3*a^2*b*c)*d^2*e^2 + 4*(3*a^2*b^2 + 2*a^3*c)*d*e^3)*x^5 + 1/4*(4*a^3*b*d*e^
3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4 + 12*(a*b^3 + 3*a^2*b*c)*d^3*e + 6*(
3*a^2*b^2 + 2*a^3*c)*d^2*e^2)*x^4 + 1/3*(6*a^3*b*d^2*e^2 + 3*(a*b^3 + 3*a^2
*b*c)*d^4 + 4*(3*a^2*b^2 + 2*a^3*c)*d^3*e)*x^3 + 1/2*(4*a^3*b*d^3*e + (3*a^
2*b^2 + 2*a^3*c)*d^4)*x^2
```

mupad [B] time = 0.24, size = 768, normalized size = 1.87

$$x^3\left(2\,a^3\,b\,d^2\,e^2+\frac{8\,c\,a^3\,d^3\,e}{3}+4\,a^2\,b^2\,d^3\,e+3\,c\,a^2\,b\,d^4+a\,b^3\,d^4\right)+x^5\left(\frac{a^3\,b\,e^4}{5}+\frac{8\,a^3\,c\,d\,e^3}{5}+\frac{12\,a^2\,b^2\,d\,e^3}{5}+54$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^3*(a*b^3*d^4 + 4*a^2*b^2*d^3*e + 2*a^3*b*d^2*e^2 + 3*a^2*b*c*d^4 + (8*a^3
*c*d^3*e)/3) + x^5*((a^3*b*e^4)/5 + b^3*c*d^4 + (4*b^4*d^3*e)/5 + (18*a*b^3
*d^2*e^2)/5 + (12*a^2*b^2*d*e^3)/5 + (24*a^2*c^2*d^3*e)/5 + 3*a*b*c^2*d^4 +
 (8*a^3*c*d*e^3)/5 + (48*a*b^2*c*d^3*e)/5 + (54*a^2*b*c*d^2*e^2)/5) + x^7*(
(3*a*b^3*e^4)/7 + b*c^3*d^4 + (4*b^4*d*e^3)/7 + (24*a^2*c^2*d*e^3)/7 + (36*
b^2*c^2*d^3*e)/7 + (30*b^3*c*d^2*e^2)/7 + (9*a^2*b*c*e^4)/7 + (24*a*c^3*d^3
*e)/7 + (48*a*b^2*c*d*e^3)/7 + (90*a*b*c^2*d^2*e^2)/7) + x^6*(a*c^3*d^4 + (
a^3*c*e^4)/3 + (a^2*b^2*e^4)/2 + (3*b^2*c^2*d^4)/2 + b^4*d^2*e^2 + 6*a^2*c^
2*d^2*e^2 + 2*a*b^3*d*e^3 + (10*b^3*c*d^3*e)/3 + 10*a*b*c^2*d^3*e + 6*a^2*b
*c*d*e^3 + 12*a*b^2*c*d^2*e^2) + x^8*((b^4*e^4)/8 + (c^4*d^4)/4 + (3*a^2*c^
2*e^4)/4 + (9*a*c^3*d^2*e^2)/2 + (27*b^2*c^2*d^2*e^2)/4 + (3*a*b^2*c*e^4)/2
 + (7*b*c^3*d^3*e)/2 + (5*b^3*c*d*e^3)/2 + (15*a*b*c^2*d*e^3)/2) + x^9*((5*
b^3*c*e^4)/9 + (8*c^4*d^3*e)/9 + (14*b*c^3*d^2*e^2)/3 + 4*b^2*c^2*d*e^3 + (
5*a*b*c^2*e^4)/3 + (8*a*c^3*d*e^3)/3) + x^4*((b^4*d^4)/4 + (3*a^2*c^2*d^4)/
2 + 3*a^3*c*d^2*e^2 + (9*a^2*b^2*d^2*e^2)/2 + 3*a*b^2*c*d^4 + 3*a*b^3*d^3*e
 + a^3*b*d*e^3 + 9*a^2*b*c*d^3*e) + (c^4*e^4*x^12)/6 + (c^3*e^3*x^11*(7*b*e
 + 8*c*d))/11 + (a^2*d^3*x^2*(3*b^2*d + 4*a*b*e + 2*a*c*d))/2 + (c^2*e^2*x^
10*(9*b^2*e^2 + 12*c^2*d^2 + 6*a*c*e^2 + 28*b*c*d*e))/10 + a^3*b*d^4*x
```

sympy [B] time = 0.21, size = 935, normalized size = 2.27

$$a^3bd^4x+\frac{c^4e^4x^{12}}{6}+x^{11}\left(\frac{7bc^3e^4}{11}+\frac{8c^4de^3}{11}\right)+x^{10}\left(\frac{3ac^3e^4}{5}+\frac{9b^2c^2e^4}{10}+\frac{14bc^3de^3}{5}+\frac{6c^4d^2e^2}{5}\right)+x^9\left(\frac{5abc^2e^4}{3}+\frac{8ac^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**4*x + c**4*e**4*x**12/6 + x**11*(7*b*c**3*e**4/11 + 8*c**4*d*e**3
/11) + x**10*(3*a*c**3*e**4/5 + 9*b**2*c**2*e**4/10 + 14*b*c**3*d*e**3/5 +
6*c**4*d**2*e**2/5) + x**9*(5*a*b*c**2*e**4/3 + 8*a*c**3*d*e**3/3 + 5*b**3*
c*e**4/9 + 4*b**2*c**2*d*e**3 + 14*b*c**3*d**2*e**2/3 + 8*c**4*d**3*e/9) +
x**8*(3*a**2*c**2*e**4/4 + 3*a*b**2*c*e**4/2 + 15*a*b*c**2*d*e**3/2 + 9*a*c
**3*d**2*e**2/2 + b**4*e**4/8 + 5*b**3*c*d*e**3/2 + 27*b**2*c**2*d**2*e**2/
4 + 7*b*c**3*d**3*e/2 + c**4*d**4/4) + x**7*(9*a**2*b*c*e**4/7 + 24*a**2*c*
*2*d*e**3/7 + 3*a*b**3*e**4/7 + 48*a*b**2*c*d*e**3/7 + 90*a*b*c**2*d**2*e**
2/7 + 24*a*c**3*d**3*e/7 + 4*b**4*d*e**3/7 + 30*b**3*c*d**2*e**2/7 + 36*b**
2*c**2*d**3*e/7 + b*c**3*d**4) + x**6*(a**3*c*e**4/3 + a**2*b**2*e**4/2 + 6
*a**2*b*c*d*e**3 + 6*a**2*c**2*d**2*e**2 + 2*a*b**3*d*e**3 + 12*a*b**2*c*d*
*2*e**2 + 10*a*b*c**2*d**3*e + a*c**3*d**4 + b**4*d**2*e**2 + 10*b**3*c*d**
3*e/3 + 3*b**2*c**2*d**4/2) + x**5*(a**3*b*e**4/5 + 8*a**3*c*d*e**3/5 + 12*
a**2*b**2*d*e**3/5 + 54*a**2*b*c*d**2*e**2/5 + 24*a**2*c**2*d**3*e/5 + 18*a
*b**3*d**2*e**2/5 + 48*a*b**2*c*d**3*e/5 + 3*a*b*c**2*d**4 + 4*b**4*d**3*e/
5 + b**3*c*d**4) + x**4*(a**3*b*d*e**3 + 3*a**3*c*d**2*e**2 + 9*a**2*b**2*d
**2*e**2/2 + 9*a**2*b*c*d**3*e + 3*a**2*c**2*d**4/2 + 3*a*b**3*d**3*e + 3*a
*b**2*c*d**4 + b**4*d**4/4) + x**3*(2*a**3*b*d**2*e**2 + 8*a**3*c*d**3*e/3
+ 4*a**2*b**2*d**3*e + 3*a**2*b*c*d**4 + a*b**3*d**4) + x**2*(2*a**3*b*d**3
*e + a**3*c*d**4 + 3*a**2*b**2*d**4/2)
```

3.1515 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^7\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{c^2(d+}{}$$

```
[Out] -1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^4/e^8+1/5*(a*e^2-b*d*e+c*d^
2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^5/e^8-1/2*(-b*e+2*c*
d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^6/e^8
+1/7*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*
b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^7/e^8-5/8*c*(-b*e+2
*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^8/e^8+1/3*c^2*(14*c^2*
d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^9/e^8-7/10*c^3*(-b*e+2*c*d)*(e*x+
d)^10/e^8+2/11*c^4*(e*x+d)^11/e^8
```

Rubi [A] time = 0.59, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^7\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{c^2(d+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^5
)/(5*e^8) - ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c
*e*(7*b*d - 3*a*e))*(d + e*x)^6)/(2*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c
*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2
 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^7)/(7*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*
d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^8)/(8*e^8) + (c^2*(14*c^2*d^
2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^9)/(3*e^8) - (7*c^3*(2*c*d -
 b*e)*(d + e*x)^10)/(10*e^8) + (2*c^4*(d + e*x)^11)/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(}{}\right.\\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{4e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2\right.}{}\end{aligned}$$

Mathematica [A] time = 0.20, size = 562, normalized size = 1.37

$$a^3bd^3x+\frac{1}{2}a^2d^2x^2\left(3abe+2acd+3b^2d\right)+adx^3\left(2a^2cde+3ab^2de+ab\left(ae^2+3cd^2\right)+b^3d^2\right)+\frac{1}{5}x^5\left(2a^2ce\left(ae^2+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^3*x + (a^2*d^2*(3*b^2*d + 2*a*c*d + 3*a*b*e)*x^2)/2 + a*d*(b^3*d^2
+ 3*a*b^2*d*e + 2*a^2*c*d*e + a*b*(3*c*d^2 + a*e^2))*x^3 + ((b^4*d^3 + 9*a*
b^3*d^2*e + 6*a^2*c*d*(c*d^2 + a*e^2) + a^2*b*e*(27*c*d^2 + a*e^2) + 3*a*b^
2*d*(4*c*d^2 + 3*a*e^2))*x^4)/4 + ((3*b^4*d^2*e + 2*a^2*c*e*(9*c*d^2 + a*e^
2) + 3*a*b^2*e*(12*c*d^2 + a*e^2) + 3*a*b*c*d*(5*c*d^2 + 9*a*e^2) + b^3*(5*
c*d^3 + 9*a*d*e^2))*x^5)/5 + ((b^4*d*e^2 + 3*a*b*c*e*(5*c*d^2 + a*e^2) + 2*
a*c^2*d*(c*d^2 + 3*a*e^2) + 3*b^2*c*d*(c*d^2 + 4*a*e^2) + b^3*(5*c*d^2*e +
a*e^3))*x^6)/2 + ((15*b^3*c*d*e^2 + b^4*e^3 + 6*a*c^2*e*(3*c*d^2 + a*e^2) +
 3*b^2*c*e*(9*c*d^2 + 4*a*e^2) + b*c^2*d*(7*c*d^2 + 45*a*e^2))*x^7)/7 + (c*
(2*c^3*d^3 + 5*b^3*e^3 + 3*b*c*e^2*(9*b*d + 5*a*e) + 3*c^2*d*e*(7*b*d + 6*a
*e))*x^8)/8 + (c^2*e*(2*c^2*d^2 + 3*b^2*e^2 + c*e*(7*b*d + 2*a*e))*x^9)/3 +
 (c^3*e^2*(6*c*d + 7*b*e)*x^10)/10 + (2*c^4*e^3*x^11)/11
```

fricas [A] time = 0.82, size = 719, normalized size = 1.75

$$\frac{2}{11}x^{11}e^3c^4+\frac{3}{5}x^{10}e^2dc^4+\frac{7}{10}x^{10}e^3c^3b+\frac{2}{3}x^9ed^2c^4+\frac{7}{3}x^9e^2dc^3b+x^9e^3c^2b^2+\frac{2}{3}x^9e^3c^3a+\frac{1}{4}x^8d^3c^4+\frac{21}{8}x^8ed^2c^3b+\frac{27}{8}x^8e^2dc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/11*x^11*e^3*c^4 + 3/5*x^10*e^2*d*c^4 + 7/10*x^10*e^3*c^3*b + 2/3*x^9*e*d^
2*c^4 + 7/3*x^9*e^2*d*c^3*b + x^9*e^3*c^2*b^2 + 2/3*x^9*e^3*c^3*a + 1/4*x^8
*d^3*c^4 + 21/8*x^8*e*d^2*c^3*b + 27/8*x^8*e^2*d*c^2*b^2 + 5/8*x^8*e^3*c*b^
3 + 9/4*x^8*e^2*d*c^3*a + 15/8*x^8*e^3*c^2*b*a + x^7*d^3*c^3*b + 27/7*x^7*e
*d^2*c^2*b^2 + 15/7*x^7*e^2*d*c*b^3 + 1/7*x^7*e^3*b^4 + 18/7*x^7*e*d^2*c^3*
a + 45/7*x^7*e^2*d*c^2*b*a + 12/7*x^7*e^3*c*b^2*a + 6/7*x^7*e^3*c^2*a^2 + 3
/2*x^6*d^3*c^2*b^2 + 5/2*x^6*e*d^2*c*b^3 + 1/2*x^6*e^2*d*b^4 + x^6*d^3*c^3*
a + 15/2*x^6*e*d^2*c^2*b*a + 6*x^6*e^2*d*c*b^2*a + 1/2*x^6*e^3*b^3*a + 3*x^
6*e^2*d*c^2*a^2 + 3/2*x^6*e^3*c*b*a^2 + x^5*d^3*c*b^3 + 3/5*x^5*e*d^2*b^4 +
 3*x^5*d^3*c^2*b*a + 36/5*x^5*e*d^2*c*b^2*a + 9/5*x^5*e^2*d*b^3*a + 18/5*x^
5*e*d^2*c^2*a^2 + 27/5*x^5*e^2*d*c*b*a^2 + 3/5*x^5*e^3*b^2*a^2 + 2/5*x^5*e^
3*c*a^3 + 1/4*x^4*d^3*b^4 + 3*x^4*d^3*c*b^2*a + 9/4*x^4*e*d^2*b^3*a + 3/2*x
^4*d^3*c^2*a^2 + 27/4*x^4*e*d^2*c*b*a^2 + 9/4*x^4*e^2*d*b^2*a^2 + 3/2*x^4*e
^2*d*c*a^3 + 1/4*x^4*e^3*b*a^3 + x^3*d^3*b^3*a + 3*x^3*d^3*c*b*a^2 + 3*x^3*
e*d^2*b^2*a^2 + 2*x^3*e*d^2*c*a^3 + x^3*e^2*d*b*a^3 + 3/2*x^2*d^3*b^2*a^2 +
 x^2*d^3*c*a^3 + 3/2*x^2*e*d^2*b*a^3 + x*d^3*b*a^3
```

giac [A] time = 0.18, size = 705, normalized size = 1.72

$$\frac{2}{11}c^4x^{11}e^3+\frac{3}{5}c^4dx^{10}e^2+\frac{2}{3}c^4d^2x^9e+\frac{1}{4}c^4d^3x^8+\frac{7}{10}bc^3x^{10}e^3+\frac{7}{3}bc^3dx^9e^2+\frac{21}{8}bc^3d^2x^8e+bc^3d^3x^7+b^2c^2x^9e^3+\frac{2}{3}ac^3x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/11*c^4*x^11*e^3 + 3/5*c^4*d*x^10*e^2 + 2/3*c^4*d^2*x^9*e + 1/4*c^4*d^3*x^
8 + 7/10*b*c^3*x^10*e^3 + 7/3*b*c^3*d*x^9*e^2 + 21/8*b*c^3*d^2*x^8*e + b*c^
3*d^3*x^7 + b^2*c^2*x^9*e^3 + 2/3*a*c^3*x^9*e^3 + 27/8*b^2*c^2*d*x^8*e^2 +
9/4*a*c^3*d*x^8*e^2 + 27/7*b^2*c^2*d^2*x^7*e + 18/7*a*c^3*d^2*x^7*e + 3/2*b
^2*c^2*d^3*x^6 + a*c^3*d^3*x^6 + 5/8*b^3*c*x^8*e^3 + 15/8*a*b*c^2*x^8*e^3 +
 15/7*b^3*c*d*x^7*e^2 + 45/7*a*b*c^2*d*x^7*e^2 + 5/2*b^3*c*d^2*x^6*e + 15/2
*a*b*c^2*d^2*x^6*e + b^3*c*d^3*x^5 + 3*a*b*c^2*d^3*x^5 + 1/7*b^4*x^7*e^3 +
12/7*a*b^2*c*x^7*e^3 + 6/7*a^2*c^2*x^7*e^3 + 1/2*b^4*d*x^6*e^2 + 6*a*b^2*c*
d*x^6*e^2 + 3*a^2*c^2*d*x^6*e^2 + 3/5*b^4*d^2*x^5*e + 36/5*a*b^2*c*d^2*x^5*
e + 18/5*a^2*c^2*d^2*x^5*e + 1/4*b^4*d^3*x^4 + 3*a*b^2*c*d^3*x^4 + 3/2*a^2*
```

```
c^2*d^3*x^4 + 1/2*a*b^3*x^6*e^3 + 3/2*a^2*b*c*x^6*e^3 + 9/5*a*b^3*d*x^5*e^2
 + 27/5*a^2*b*c*d*x^5*e^2 + 9/4*a*b^3*d^2*x^4*e + 27/4*a^2*b*c*d^2*x^4*e +
a*b^3*d^3*x^3 + 3*a^2*b*c*d^3*x^3 + 3/5*a^2*b^2*x^5*e^3 + 2/5*a^3*c*x^5*e^3
 + 9/4*a^2*b^2*d*x^4*e^2 + 3/2*a^3*c*d*x^4*e^2 + 3*a^2*b^2*d^2*x^3*e + 2*a^
3*c*d^2*x^3*e + 3/2*a^2*b^2*d^3*x^2 + a^3*c*d^3*x^2 + 1/4*a^3*b*x^4*e^3 + a
^3*b*d*x^3*e^2 + 3/2*a^3*b*d^2*x^2*e + a^3*b*d^3*x
```

maple [B] time = 0.04, size = 830, normalized size = 2.02

$$\frac{2c^4e^3x^{11}}{11}+\frac{\left(6b\,c^3e^3+\left(b\,e^3+6d\,e^2c\right)c^3\right)x^{10}}{10}+\frac{\left(2\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)c\,e^3+3\left(b\,e^3+6d\,e^2c\right)b\,c^2+(3bd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/11*c^4*e^3*x^11+1/10*((b*e^3+6*c*d*e^2)*c^3+6*c^3*e^3*b)*x^10+1/9*((3*b*d
*e^2+6*c*d^2*e)*c^3+3*(b*e^3+6*c*d*e^2)*b*c^2+2*c*e^3*(a*c^2+2*b^2*c+(2*a*c
+b^2)*c))*x^9+1/8*((3*b*d^2*e+2*c*d^3)*c^3+3*(3*b*d*e^2+6*c*d^2*e)*b*c^2+(b
*e^3+6*c*d*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e^3*(4*a*b*c+(2*a*c+b^2)*
b))*x^8+1/7*(b*d^3*c^3+3*(3*b*d^2*e+2*c*d^3)*b*c^2+(3*b*d*e^2+6*c*d^2*e)*(a
*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^3+6*c*d*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e
^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^7+1/6*(3*b^2*d^3*c^2+(3*b*d^2*e+2*c*d^3
)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*b*d*e^2+6*c*d^2*e)*(4*a*b*c+(2*a*c+b^2)*
b)+(b*e^3+6*c*d*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*c*e^3*a^2*b)*x^6+1/5*(
b*d^3*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*b*d^2*e+2*c*d^3)*(4*a*b*c+(2*a*c+b^2
)*b)+(3*b*d*e^2+6*c*d^2*e)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(b*e^3+6*c*d*e^2
)*a^2*b+2*c*e^3*a^3)*x^5+1/4*(b*d^3*(4*a*b*c+(2*a*c+b^2)*b)+(3*b*d^2*e+2*c*
d^3)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*b*d*e^2+6*c*d^2*e)*a^2*b+(b*e^3+6*c
*d*e^2)*a^3)*x^4+1/3*(b*d^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*b*d^2*e+2*c*
d^3)*a^2*b+(3*b*d*e^2+6*c*d^2*e)*a^3)*x^3+1/2*(3*b^2*d^3*a^2+(3*b*d^2*e+2*c
*d^3)*a^3)*x^2+b*d^3*a^3*x
```

maxima [A] time = 0.54, size = 565, normalized size = 1.37

$$\frac{2}{11}\,c^4e^3x^{11}+\frac{1}{10}\left(6\,c^4de^2+7\,bc^3e^3\right)x^{10}+\frac{1}{3}\left(2\,c^4d^2e+7\,bc^3de^2+\left(3\,b^2c^2+2\,ac^3\right)e^3\right)x^9+\frac{1}{8}\,(2\,c^4d^3+21\,bc^3d^2e+9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/11*c^4*e^3*x^11 + 1/10*(6*c^4*d*e^2 + 7*b*c^3*e^3)*x^10 + 1/3*(2*c^4*d^2*
e + 7*b*c^3*d*e^2 + (3*b^2*c^2 + 2*a*c^3)*e^3)*x^9 + 1/8*(2*c^4*d^3 + 21*b*
c^3*d^2*e + 9*(3*b^2*c^2 + 2*a*c^3)*d*e^2 + 5*(b^3*c + 3*a*b*c^2)*e^3)*x^8
+ a^3*b*d^3*x + 1/7*(7*b*c^3*d^3 + 9*(3*b^2*c^2 + 2*a*c^3)*d^2*e + 15*(b^3*
c + 3*a*b*c^2)*d*e^2 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^3)*x^7 + 1/2*((3*b^
2*c^2 + 2*a*c^3)*d^3 + 5*(b^3*c + 3*a*b*c^2)*d^2*e + (b^4 + 12*a*b^2*c + 6*
a^2*c^2)*d*e^2 + (a*b^3 + 3*a^2*b*c)*e^3)*x^6 + 1/5*(5*(b^3*c + 3*a*b*c^2)*
d^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e + 9*(a*b^3 + 3*a^2*b*c)*d*e^2
+ (3*a^2*b^2 + 2*a^3*c)*e^3)*x^5 + 1/4*(a^3*b*e^3 + (b^4 + 12*a*b^2*c + 6*a
^2*c^2)*d^3 + 9*(a*b^3 + 3*a^2*b*c)*d^2*e + 3*(3*a^2*b^2 + 2*a^3*c)*d*e^2)*
x^4 + (a^3*b*d*e^2 + (a*b^3 + 3*a^2*b*c)*d^3 + (3*a^2*b^2 + 2*a^3*c)*d^2*e)
*x^3 + 1/2*(3*a^3*b*d^2*e + (3*a^2*b^2 + 2*a^3*c)*d^3)*x^2
```

mupad [B] time = 0.18, size = 589, normalized size = 1.43

$$x^4\left(\frac{a^3\,b\,e^3}{4}+\frac{3\,a^3\,c\,d\,e^2}{2}+\frac{9\,a^2\,b^2\,d\,e^2}{4}+\frac{27\,a^2\,b\,c\,d^2\,e}{4}+\frac{3\,a^2\,c^2\,d^3}{2}+\frac{9\,a\,b^3\,d^2\,e}{4}+3\,a\,b^2\,c\,d^3+\frac{b^4\,d^3}{4}\right)+x^7\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((b^4*d^3)/4 + (a^3*b*e^3)/4 + (3*a^2*c^2*d^3)/2 + (9*a^2*b^2*d*e^2)/4
+ 3*a*b^2*c*d^3 + (9*a*b^3*d^2*e)/4 + (3*a^3*c*d*e^2)/2 + (27*a^2*b*c*d^2*e
)/4) + x^7*((b^4*e^3)/7 + b*c^3*d^3 + (6*a^2*c^2*e^3)/7 + (27*b^2*c^2*d^2*e
)/7 + (12*a*b^2*c*e^3)/7 + (18*a*c^3*d^2*e)/7 + (15*b^3*c*d*e^2)/7 + (45*a*
b*c^2*d*e^2)/7) + x^5*((2*a^3*c*e^3)/5 + b^3*c*d^3 + (3*b^4*d^2*e)/5 + (3*a
^2*b^2*e^3)/5 + (18*a^2*c^2*d^2*e)/5 + 3*a*b*c^2*d^3 + (9*a*b^3*d*e^2)/5 +
(36*a*b^2*c*d^2*e)/5 + (27*a^2*b*c*d*e^2)/5) + x^6*((a*b^3*e^3)/2 + a*c^3*d
^3 + (b^4*d*e^2)/2 + (3*b^2*c^2*d^3)/2 + 3*a^2*c^2*d*e^2 + (3*a^2*b*c*e^3)/
2 + (5*b^3*c*d^2*e)/2 + (15*a*b*c^2*d^2*e)/2 + 6*a*b^2*c*d*e^2) + x^8*((c^4
*d^3)/4 + (5*b^3*c*e^3)/8 + (27*b^2*c^2*d*e^2)/8 + (15*a*b*c^2*e^3)/8 + (9*
a*c^3*d*e^2)/4 + (21*b*c^3*d^2*e)/8) + x^3*(a*b^3*d^3 + 3*a^2*b^2*d^2*e + 3
*a^2*b*c*d^3 + a^3*b*d*e^2 + 2*a^3*c*d^2*e) + (2*c^4*e^3*x^11)/11 + (c^2*e*
x^9*(3*b^2*e^2 + 2*c^2*d^2 + 2*a*c*e^2 + 7*b*c*d*e))/3 + (c^3*e^2*x^10*(7*b
*e + 6*c*d))/10 + (a^2*d^2*x^2*(3*b^2*d + 3*a*b*e + 2*a*c*d))/2 + a^3*b*d^3
*x
```

sympy **[A]** time = 0.18, size = 726, normalized size = 1.77

$$a^3bd^3x+\frac{2c^4e^3x^{11}}{11}+x^{10}\left(\frac{7bc^3e^3}{10}+\frac{3c^4de^2}{5}\right)+x^9\left(\frac{2ac^3e^3}{3}+b^2c^2e^3+\frac{7bc^3de^2}{3}+\frac{2c^4d^2e}{3}\right)+x^8\Bigg(\frac{15abc^2e^3}{8}+\frac{9ac^3de^2}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**3*x + 2*c**4*e**3*x**11/11 + x**10*(7*b*c**3*e**3/10 + 3*c**4*d*e
**2/5) + x**9*(2*a*c**3*e**3/3 + b**2*c**2*e**3 + 7*b*c**3*d*e**2/3 + 2*c**
4*d**2*e/3) + x**8*(15*a*b*c**2*e**3/8 + 9*a*c**3*d*e**2/4 + 5*b**3*c*e**3/
8 + 27*b**2*c**2*d*e**2/8 + 21*b*c**3*d**2*e/8 + c**4*d**3/4) + x**7*(6*a**
2*c**2*e**3/7 + 12*a*b**2*c*e**3/7 + 45*a*b*c**2*d*e**2/7 + 18*a*c**3*d**2*
e/7 + b**4*e**3/7 + 15*b**3*c*d*e**2/7 + 27*b**2*c**2*d**2*e/7 + b*c**3*d**
3) + x**6*(3*a**2*b*c*e**3/2 + 3*a**2*c**2*d*e**2 + a*b**3*e**3/2 + 6*a*b**
2*c*d*e**2 + 15*a*b*c**2*d**2*e/2 + a*c**3*d**3 + b**4*d*e**2/2 + 5*b**3*c*
d**2*e/2 + 3*b**2*c**2*d**3/2) + x**5*(2*a**3*c*e**3/5 + 3*a**2*b**2*e**3/5
 + 27*a**2*b*c*d*e**2/5 + 18*a**2*c**2*d**2*e/5 + 9*a*b**3*d*e**2/5 + 36*a*
b**2*c*d**2*e/5 + 3*a*b*c**2*d**3 + 3*b**4*d**2*e/5 + b**3*c*d**3) + x**4*(
a**3*b*e**3/4 + 3*a**3*c*d*e**2/2 + 9*a**2*b**2*d*e**2/4 + 27*a**2*b*c*d**2
*e/4 + 3*a**2*c**2*d**3/2 + 9*a*b**3*d**2*e/4 + 3*a*b**2*c*d**3 + b**4*d**3
/4) + x**3*(a**3*b*d*e**2 + 2*a**3*c*d**2*e + 3*a**2*b**2*d**2*e + 3*a**2*b
*c*d**3 + a*b**3*d**3) + x**2*(3*a**3*b*d**2*e/2 + a**3*c*d**3 + 3*a**2*b**
2*d**3/2)
```

3.1516 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=411

$$\frac{(d+ex)^6\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{6e^8}+\frac{3c^2(d-$$

```
[Out] -1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^3/e^8+1/4*(a*e^2-b*d*e+c*d^
2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^4/e^8-3/5*(-b*e+2*c*
d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^5/e^8
+1/6*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*
b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^6/e^8-5/7*c*(-b*e+2
*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^7/e^8+3/8*c^2*(14*c^2*
d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^8/e^8-7/9*c^3*(-b*e+2*c*d)*(e*x+d
)^9/e^8+1/5*c^4*(e*x+d)^10/e^8
```

Rubi [A] time = 0.45, antiderivative size = 411, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^6\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{6e^8}+\frac{3c^2(d-$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 -
b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^4
)/(4*e^8) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
 c*e*(7*b*d - 3*a*e))*(d + e*x)^5)/(5*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2
*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d
^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^6)/(6*e^8) - (5*c*(2*c*d - b*e)*(7*c^
2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^7)/(7*e^8) + (3*c^2*(14*c^
2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^8)/(8*e^8) - (7*c^3*(2*c
*d - b*e)*(d + e*x)^9)/(9*e^8) + (c^4*(d + e*x)^10)/(5*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^2}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(1$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{3e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2$$

Mathematica [A] time = 0.14, size = 413, normalized size = 1.00

$$a^3bd^2x+\frac{1}{2}a^2dx^2\left(2abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(4a^2cde+6ab^2de+ab\left(ae^2+9cd^2\right)+3b^3d^2\right)+\frac{1}{5}x^5\left(12a^2c^2de+b$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d^2*x + (a^2*d*(3*b^2*d + 2*a*c*d + 2*a*b*e)*x^2)/2 + (a*(3*b^3*d^2 +
 6*a*b^2*d*e + 4*a^2*c*d*e + a*b*(9*c*d^2 + a*e^2))*x^3)/3 + ((b^4*d^2 + 6*
a*b^3*d*e + 18*a^2*b*c*d*e + 2*a^2*c*(3*c*d^2 + a*e^2) + 3*a*b^2*(4*c*d^2 +
 a*e^2))*x^4)/4 + ((2*b^4*d*e + 24*a*b^2*c*d*e + 12*a^2*c^2*d*e + b^3*(5*c*
d^2 + 3*a*e^2) + 3*a*b*c*(5*c*d^2 + 3*a*e^2))*x^5)/5 + ((10*b^3*c*d*e + 30*
a*b*c^2*d*e + b^4*e^2 + 6*a*c^2*(c*d^2 + a*e^2) + 3*b^2*c*(3*c*d^2 + 4*a*e^
2))*x^6)/6 + (c*(18*b^2*c*d*e + 12*a*c^2*d*e + 5*b^3*e^2 + b*c*(7*c*d^2 + 1
5*a*e^2))*x^7)/7 + (c^2*(2*c^2*d^2 + 9*b^2*e^2 + 2*c*e*(7*b*d + 3*a*e))*x^8
)/8 + (c^3*e*(4*c*d + 7*b*e)*x^9)/9 + (c^4*e^2*x^10)/5
```

fricas [A] time = 0.87, size = 502, normalized size = 1.22

$$\frac{1}{5}x^{10}e^2c^4+\frac{4}{9}x^9edc^4+\frac{7}{9}x^9e^2c^3b+\frac{1}{4}x^8d^2c^4+\frac{7}{4}x^8edc^3b+\frac{9}{8}x^8e^2c^2b^2+\frac{3}{4}x^8e^2c^3a+x^7d^2c^3b+\frac{18}{7}x^7edc^2b^2+\frac{5}{7}x^7e^2cb^3+\frac{12}{7}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/5*x^10*e^2*c^4 + 4/9*x^9*e*d*c^4 + 7/9*x^9*e^2*c^3*b + 1/4*x^8*d^2*c^4 +
7/4*x^8*e*d*c^3*b + 9/8*x^8*e^2*c^2*b^2 + 3/4*x^8*e^2*c^3*a + x^7*d^2*c^3*b
 + 18/7*x^7*e*d*c^2*b^2 + 5/7*x^7*e^2*c*b^3 + 12/7*x^7*e*d*c^3*a + 15/7*x^7
*e^2*c^2*b*a + 3/2*x^6*d^2*c^2*b^2 + 5/3*x^6*e*d*c*b^3 + 1/6*x^6*e^2*b^4 +
x^6*d^2*c^3*a + 5*x^6*e*d*c^2*b*a + 2*x^6*e^2*c*b^2*a + x^6*e^2*c^2*a^2 + x
^5*d^2*c*b^3 + 2/5*x^5*e*d*b^4 + 3*x^5*d^2*c^2*b*a + 24/5*x^5*e*d*c*b^2*a +
 3/5*x^5*e^2*b^3*a + 12/5*x^5*e*d*c^2*a^2 + 9/5*x^5*e^2*c*b*a^2 + 1/4*x^4*d
^2*b^4 + 3*x^4*d^2*c*b^2*a + 3/2*x^4*e*d*b^3*a + 3/2*x^4*d^2*c^2*a^2 + 9/2*
x^4*e*d*c*b*a^2 + 3/4*x^4*e^2*b^2*a^2 + 1/2*x^4*e^2*c*a^3 + x^3*d^2*b^3*a +
 3*x^3*d^2*c*b*a^2 + 2*x^3*e*d*b^2*a^2 + 4/3*x^3*e*d*c*a^3 + 1/3*x^3*e^2*b*
a^3 + 3/2*x^2*d^2*b^2*a^2 + x^2*d^2*c*a^3 + x^2*e*d*b*a^3 + x*d^2*b*a^3
```

giac [A] time = 0.16, size = 502, normalized size = 1.22

$$\frac{1}{5}\,c^4x^{10}e^2+\frac{4}{9}\,c^4dx^9e+\frac{1}{4}\,c^4d^2x^8+\frac{7}{9}\,bc^3x^9e^2+\frac{7}{4}\,bc^3dx^8e+bc^3d^2x^7+\frac{9}{8}\,b^2c^2x^8e^2+\frac{3}{4}\,ac^3x^8e^2+\frac{18}{7}\,b^2c^2dx^7e+\frac{12}{7}\,ac^3dx^7e+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/5*c^4*x^10*e^2 + 4/9*c^4*d*x^9*e + 1/4*c^4*d^2*x^8 + 7/9*b*c^3*x^9*e^2 +
7/4*b*c^3*d*x^8*e + b*c^3*d^2*x^7 + 9/8*b^2*c^2*x^8*e^2 + 3/4*a*c^3*x^8*e^2
 + 18/7*b^2*c^2*d*x^7*e + 12/7*a*c^3*d*x^7*e + 3/2*b^2*c^2*d^2*x^6 + a*c^3*
d^2*x^6 + 5/7*b^3*c*x^7*e^2 + 15/7*a*b*c^2*x^7*e^2 + 5/3*b^3*c*d*x^6*e + 5*
a*b*c^2*d*x^6*e + b^3*c*d^2*x^5 + 3*a*b*c^2*d^2*x^5 + 1/6*b^4*x^6*e^2 + 2*a
*b^2*c*x^6*e^2 + a^2*c^2*x^6*e^2 + 2/5*b^4*d*x^5*e + 24/5*a*b^2*c*d*x^5*e +
 12/5*a^2*c^2*d*x^5*e + 1/4*b^4*d^2*x^4 + 3*a*b^2*c*d^2*x^4 + 3/2*a^2*c^2*d
^2*x^4 + 3/5*a*b^3*x^5*e^2 + 9/5*a^2*b*c*x^5*e^2 + 3/2*a*b^3*d*x^4*e + 9/2*
a^2*b*c*d*x^4*e + a*b^3*d^2*x^3 + 3*a^2*b*c*d^2*x^3 + 3/4*a^2*b^2*x^4*e^2 +
 1/2*a^3*c*x^4*e^2 + 2*a^2*b^2*d*x^3*e + 4/3*a^3*c*d*x^3*e + 3/2*a^2*b^2*d^
2*x^2 + a^3*c*d^2*x^2 + 1/3*a^3*b*x^3*e^2 + a^3*b*d*x^2*e + a^3*b*d^2*x
```

maple [A] time = 0.04, size = 608, normalized size = 1.48

$$\frac{c^4e^2x^{10}}{5}+\frac{\left(6b\,c^3e^2+\left(b\,e^2+4cde\right)c^3\right)x^9}{9}+\frac{\left(3\left(b\,e^2+4cde\right)b\,c^2+\left(2bde+2c\,d^2\right)c^3+2\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)\right.}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/5*c^4*e^2*x^10+1/9*((b*e^2+4*c*d*e)*c^3+6*c^3*e^2*b)*x^9+1/8*((2*b*d*e+2*
c*d^2)*c^3+3*(b*e^2+4*c*d*e)*b*c^2+2*c*e^2*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x
^8+1/7*(b*d^2*c^3+3*(2*b*d*e+2*c*d^2)*b*c^2+(b*e^2+4*c*d*e)*(a*c^2+2*b^2*c+
(2*a*c+b^2)*c)+2*c*e^2*(4*a*b*c+(2*a*c+b^2)*b))*x^7+1/6*(3*b^2*d^2*c^2+(2*b
*d*e+2*c*d^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e^2+4*c*d*e)*(4*a*b*c+(2*a*c
+b^2)*b)+2*c*e^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^6+1/5*(b*d^2*(a*c^2+2*b^2
*c+(2*a*c+b^2)*c)+(2*b*d*e+2*c*d^2)*(4*a*b*c+(2*a*c+b^2)*b)+(b*e^2+4*c*d*e)
*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*c*e^2*a^2*b)*x^5+1/4*(b*d^2*(4*a*b*c+(2*a*
c+b^2)*b)+(2*b*d*e+2*c*d^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(b*e^2+4*c*d*e)
*a^2*b+2*c*e^2*a^3)*x^4+1/3*(b*d^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(2*b*d*e
+2*c*d^2)*a^2*b+(b*e^2+4*c*d*e)*a^3)*x^3+1/2*(3*b^2*d^2*a^2+(2*b*d*e+2*c*d^
2)*a^3)*x^2+b*d^2*a^3*x
```

maxima [A] time = 0.55, size = 417, normalized size = 1.01

$$\frac{1}{5}\,c^4e^2x^{10}+\frac{1}{9}\,(4\,c^4de+7\,bc^3e^2)x^9+\frac{1}{8}\,(2\,c^4d^2+14\,bc^3de+3\,(3\,b^2c^2+2\,ac^3)e^2)x^8+\frac{1}{7}\,(7\,bc^3d^2+6\,(3\,b^2c^2+2\,ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/5*c^4*e^2*x^10 + 1/9*(4*c^4*d*e + 7*b*c^3*e^2)*x^9 + 1/8*(2*c^4*d^2 + 14*
b*c^3*d*e + 3*(3*b^2*c^2 + 2*a*c^3)*e^2)*x^8 + 1/7*(7*b*c^3*d^2 + 6*(3*b^2*
c^2 + 2*a*c^3)*d*e + 5*(b^3*c + 3*a*b*c^2)*e^2)*x^7 + a^3*b*d^2*x + 1/6*(3*
(3*b^2*c^2 + 2*a*c^3)*d^2 + 10*(b^3*c + 3*a*b*c^2)*d*e + (b^4 + 12*a*b^2*c
+ 6*a^2*c^2)*e^2)*x^6 + 1/5*(5*(b^3*c + 3*a*b*c^2)*d^2 + 2*(b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d*e + 3*(a*b^3 + 3*a^2*b*c)*e^2)*x^5 + 1/4*((b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^2 + 6*(a*b^3 + 3*a^2*b*c)*d*e + (3*a^2*b^2 + 2*a^3*c)*e^2)
*x^4 + 1/3*(a^3*b*e^2 + 3*(a*b^3 + 3*a^2*b*c)*d^2 + 2*(3*a^2*b^2 + 2*a^3*c)
*d*e)*x^3 + 1/2*(2*a^3*b*d*e + (3*a^2*b^2 + 2*a^3*c)*d^2)*x^2
```

mupad [B] time = 1.89, size = 414, normalized size = 1.01

$$x^4\,\left(\frac{a^3\,c\,e^2}{2}+\frac{3\,a^2\,b^2\,e^2}{4}+\frac{9\,a^2\,b\,c\,d\,e}{2}+\frac{3\,a^2\,c^2\,d^2}{2}+\frac{3\,a\,b^3\,d\,e}{2}+3\,a\,b^2\,c\,d^2+\frac{b^4\,d^2}{4}\right)+x^6\,(a^2\,c^2\,e^2+2\,a\,b^2\,c\,e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((b^4*d^2)/4 + (a^3*c*e^2)/2 + (3*a^2*b^2*e^2)/4 + (3*a^2*c^2*d^2)/2 +
(3*a*b^3*d*e)/2 + 3*a*b^2*c*d^2 + (9*a^2*b*c*d*e)/2) + x^6*((b^4*e^2)/6 + a
*c^3*d^2 + a^2*c^2*e^2 + (3*b^2*c^2*d^2)/2 + (5*b^3*c*d*e)/3 + 2*a*b^2*c*e^
2 + 5*a*b*c^2*d*e) + x^8*((c^4*d^2)/4 + (3*a*c^3*e^2)/4 + (9*b^2*c^2*e^2)/8
 + (7*b*c^3*d*e)/4) + x^5*((3*a*b^3*e^2)/5 + b^3*c*d^2 + (2*b^4*d*e)/5 + 3*
a*b*c^2*d^2 + (9*a^2*b*c*e^2)/5 + (12*a^2*c^2*d*e)/5 + (24*a*b^2*c*d*e)/5)
+ x^3*(a*b^3*d^2 + (a^3*b*e^2)/3 + (4*a^3*c*d*e)/3 + 3*a^2*b*c*d^2 + 2*a^2*
b^2*d*e) + x^7*(b*c^3*d^2 + (5*b^3*c*e^2)/7 + (12*a*c^3*d*e)/7 + (15*a*b*c^
2*e^2)/7 + (18*b^2*c^2*d*e)/7) + (c^4*e^2*x^10)/5 + (c^3*e*x^9*(7*b*e + 4*c
*d))/9 + (a^2*d*x^2*(3*b^2*d + 2*a*b*e + 2*a*c*d))/2 + a^3*b*d^2*x
```

sympy [A] time = 0.15, size = 503, normalized size = 1.22

$$a^3bd^2x+\frac{c^4e^2x^{10}}{5}+x^9\left(\frac{7bc^3e^2}{9}+\frac{4c^4de}{9}\right)+x^8\left(\frac{3ac^3e^2}{4}+\frac{9b^2c^2e^2}{8}+\frac{7bc^3de}{4}+\frac{c^4d^2}{4}\right)+x^7\,(\frac{15abc^2e^2}{7}+\frac{12ac^3de}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**2*x + c**4*e**2*x**10/5 + x**9*(7*b*c**3*e**2/9 + 4*c**4*d*e/9) +
 x**8*(3*a*c**3*e**2/4 + 9*b**2*c**2*e**2/8 + 7*b*c**3*d*e/4 + c**4*d**2/4)
 + x**7*(15*a*b*c**2*e**2/7 + 12*a*c**3*d*e/7 + 5*b**3*c*e**2/7 + 18*b**2*c
**2*d*e/7 + b*c**3*d**2) + x**6*(a**2*c**2*e**2 + 2*a*b**2*c*e**2 + 5*a*b*c
**2*d*e + a*c**3*d**2 + b**4*e**2/6 + 5*b**3*c*d*e/3 + 3*b**2*c**2*d**2/2)
+ x**5*(9*a**2*b*c*e**2/5 + 12*a**2*c**2*d*e/5 + 3*a*b**3*e**2/5 + 24*a*b**
2*c*d*e/5 + 3*a*b*c**2*d**2 + 2*b**4*d*e/5 + b**3*c*d**2) + x**4*(a**3*c*e*
*2/2 + 3*a**2*b**2*e**2/4 + 9*a**2*b*c*d*e/2 + 3*a**2*c**2*d**2/2 + 3*a*b**
3*d*e/2 + 3*a*b**2*c*d**2 + b**4*d**2/4) + x**3*(a**3*b*e**2/3 + 4*a**3*c*d
*e/3 + 2*a**2*b**2*d*e + 3*a**2*b*c*d**2 + a*b**3*d**2) + x**2*(a**3*b*d*e
+ a**3*c*d**2 + 3*a**2*b**2*d**2/2)
```

3.1517 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=251

$$a^3bdx+\frac{1}{2}a^2x^2\left(abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(2a^2ce+3ab^2e+9abcd+3b^3d\right)+\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+\right.$$

```
[Out] a^3*b*d*x+1/2*a^2*(a*b*e+2*a*c*d+3*b^2*d)*x^2+1/3*a*(2*a^2*c*e+3*a*b^2*e+9*
a*b*c*d+3*b^3*d)*x^3+1/4*(9*a^2*b*c*e+6*a^2*c^2*d+3*a*b^3*e+12*a*b^2*c*d+b^
4*d)*x^4+1/5*(6*a^2*c^2*e+12*a*b^2*c*e+15*a*b*c^2*d+b^4*e+5*b^3*c*d)*x^5+1/
6*c*(15*a*b*c*e+6*a*c^2*d+5*b^3*e+9*b^2*c*d)*x^6+1/7*c^2*(6*a*c*e+9*b^2*e+7
*b*c*d)*x^7+1/8*c^3*(7*b*e+2*c*d)*x^8+2/9*c^4*e*x^9
```

Rubi [A] time = 0.23, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+5b^3cd+b^4e\right)+\frac{1}{4}x^4\left(9a^2bce+6a^2c^2d+12ab^2cd+3ab^3e+b^4d\right)+\frac{1}{3}ax^3\left(2a^2\right.$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d*x + (a^2*(3*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + (a*(3*b^3*d + 9*a*b*c
*d + 3*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((b^4*d + 12*a*b^2*c*d + 6*a^2*c^2*d +
 3*a*b^3*e + 9*a^2*b*c*e)*x^4)/4 + ((5*b^3*c*d + 15*a*b*c^2*d + b^4*e + 12*
a*b^2*c*e + 6*a^2*c^2*e)*x^5)/5 + (c*(9*b^2*c*d + 6*a*c^2*d + 5*b^3*e + 15*
a*b*c*e)*x^6)/6 + (c^2*(7*b*c*d + 9*b^2*e + 6*a*c*e)*x^7)/7 + (c^3*(2*c*d +
 7*b*e)*x^8)/8 + (2*c^4*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^3\,dx &= \int \left(a^3bd+a^2\left(3b^2d+2acd+abe\right)x+a\left(3b^3d+9abcd+3ab^2e+2a\right.\right.\\ &= a^3bdx+\frac{1}{2}a^2\left(3b^2d+2acd+abe\right)x^2+\frac{1}{3}a\left(3b^3d+9abcd+3ab^2e+2\right.\end{aligned}$$

Mathematica [A] time = 0.06, size = 251, normalized size = 1.00

$$a^3bdx+\frac{1}{2}a^2x^2\left(abe+2acd+3b^2d\right)+\frac{1}{3}ax^3\left(2a^2ce+3ab^2e+9abcd+3b^3d\right)+\frac{1}{5}x^5\left(6a^2c^2e+12ab^2ce+15abc^2d+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*b*d*x + (a^2*(3*b^2*d + 2*a*c*d + a*b*e)*x^2)/2 + (a*(3*b^3*d + 9*a*b*c
*d + 3*a*b^2*e + 2*a^2*c*e)*x^3)/3 + ((b^4*d + 12*a*b^2*c*d + 6*a^2*c^2*d +
 3*a*b^3*e + 9*a^2*b*c*e)*x^4)/4 + ((5*b^3*c*d + 15*a*b*c^2*d + b^4*e + 12*
a*b^2*c*e + 6*a^2*c^2*e)*x^5)/5 + (c*(9*b^2*c*d + 6*a*c^2*d + 5*b^3*e + 15*
a*b*c*e)*x^6)/6 + (c^2*(7*b*c*d + 9*b^2*e + 6*a*c*e)*x^7)/7 + (c^3*(2*c*d +
 7*b*e)*x^8)/8 + (2*c^4*e*x^9)/9
```

fricas [A] time = 0.86, size = 286, normalized size = 1.14

$$\frac{2}{9}x^9ec^4+\frac{1}{4}x^8dc^4+\frac{7}{8}x^8ec^3b+x^7dc^3b+\frac{9}{7}x^7ec^2b^2+\frac{6}{7}x^7ec^3a+\frac{3}{2}x^6dc^2b^2+\frac{5}{6}x^6ecb^3+x^6dc^3a+\frac{5}{2}x^6ec^2ba+x^5dcb^3+\frac{1}{5}x^5eb^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/9*x^9*e*c^4 + 1/4*x^8*d*c^4 + 7/8*x^8*e*c^3*b + x^7*d*c^3*b + 9/7*x^7*e*c
^2*b^2 + 6/7*x^7*e*c^3*a + 3/2*x^6*d*c^2*b^2 + 5/6*x^6*e*c*b^3 + x^6*d*c^3*
a + 5/2*x^6*e*c^2*b*a + x^5*d*c*b^3 + 1/5*x^5*e*b^4 + 3*x^5*d*c^2*b*a + 12/
5*x^5*e*c*b^2*a + 6/5*x^5*e*c^2*a^2 + 1/4*x^4*d*b^4 + 3*x^4*d*c*b^2*a + 3/4
*x^4*e*b^3*a + 3/2*x^4*d*c^2*a^2 + 9/4*x^4*e*c*b*a^2 + x^3*d*b^3*a + 3*x^3*
d*c*b*a^2 + x^3*e*b^2*a^2 + 2/3*x^3*e*c*a^3 + 3/2*x^2*d*b^2*a^2 + x^2*d*c*a
^3 + 1/2*x^2*e*b*a^3 + x*d*b*a^3
```

giac [A] time = 0.18, size = 300, normalized size = 1.20

$$\frac{2}{9}c^4x^9e+\frac{1}{4}c^4dx^8+\frac{7}{8}bc^3x^8e+bc^3dx^7+\frac{9}{7}b^2c^2x^7e+\frac{6}{7}ac^3x^7e+\frac{3}{2}b^2c^2dx^6+ac^3dx^6+\frac{5}{6}b^3cx^6e+\frac{5}{2}abc^2x^6e+b^3cdx^5+3ab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/9*c^4*x^9*e + 1/4*c^4*d*x^8 + 7/8*b*c^3*x^8*e + b*c^3*d*x^7 + 9/7*b^2*c^2
*x^7*e + 6/7*a*c^3*x^7*e + 3/2*b^2*c^2*d*x^6 + a*c^3*d*x^6 + 5/6*b^3*c*x^6*
e + 5/2*a*b*c^2*x^6*e + b^3*c*d*x^5 + 3*a*b*c^2*d*x^5 + 1/5*b^4*x^5*e + 12/
5*a*b^2*c*x^5*e + 6/5*a^2*c^2*x^5*e + 1/4*b^4*d*x^4 + 3*a*b^2*c*d*x^4 + 3/2
*a^2*c^2*d*x^4 + 3/4*a*b^3*x^4*e + 9/4*a^2*b*c*x^4*e + a*b^3*d*x^3 + 3*a^2*
b*c*d*x^3 + a^2*b^2*x^3*e + 2/3*a^3*c*x^3*e + 3/2*a^2*b^2*d*x^2 + a^3*c*d*x
^2 + 1/2*a^3*b*x^2*e + a^3*b*d*x
```

maple [A] time = 0.04, size = 386, normalized size = 1.54

$$\frac{2c^4e\,x^9}{9}+\frac{\left(6b\,c^3e+(be+2cd)\,c^3\right)x^8}{8}+\frac{\left(b\,c^3d+3\,(be+2cd)\,b\,c^2+2\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)ce\right)x^7}{7}+a^3bdx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/9*c^4*e*x^9+1/8*((b*e+2*c*d)*c^3+6*c^3*e*b)*x^8+1/7*(b*c^3*d+3*(b*e+2*c*d
)*b*c^2+2*c*e*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^7+1/6*(3*b^2*d*c^2+(b*e+2*c*
d)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*e*(4*a*b*c+(2*a*c+b^2)*b))*x^6+1/5*(b*
d*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(b*e+2*c*d)*(4*a*b*c+(2*a*c+b^2)*b)+2*c*e*(
a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^5+1/4*(b*d*(4*a*b*c+(2*a*c+b^2)*b)+(b*e+2*c
*d)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*a^2*b*c*e)*x^4+1/3*(b*d*(a^2*c+2*a*b^2+
(2*a*c+b^2)*a)+3*(b*e+2*c*d)*a^2*b+2*c*e*a^3)*x^3+1/2*(3*b^2*d*a^2+(b*e+2*c
*d)*a^3)*x^2+a^3*b*d*x
```

maxima [A] time = 0.59, size = 261, normalized size = 1.04

$$\frac{2}{9}c^4ex^9+\frac{1}{8}\left(2c^4d+7bc^3e\right)x^8+\frac{1}{7}\left(7bc^3d+3\left(3b^2c^2+2ac^3\right)e\right)x^7+\frac{1}{6}\left(3\left(3b^2c^2+2ac^3\right)d+5\left(b^3c+3abc^2\right)e\right)x^6+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/9*c^4*e*x^9 + 1/8*(2*c^4*d + 7*b*c^3*e)*x^8 + 1/7*(7*b*c^3*d + 3*(3*b^2*c
^2 + 2*a*c^3)*e)*x^7 + 1/6*(3*(3*b^2*c^2 + 2*a*c^3)*d + 5*(b^3*c + 3*a*b*c^
2)*e)*x^6 + a^3*b*d*x + 1/5*(5*(b^3*c + 3*a*b*c^2)*d + (b^4 + 12*a*b^2*c +
6*a^2*c^2)*e)*x^5 + 1/4*((b^4 + 12*a*b^2*c + 6*a^2*c^2)*d + 3*(a*b^3 + 3*a^
2*b*c)*e)*x^4 + 1/3*(3*(a*b^3 + 3*a^2*b*c)*d + (3*a^2*b^2 + 2*a^3*c)*e)*x^3
 + 1/2*(a^3*b*e + (3*a^2*b^2 + 2*a^3*c)*d)*x^2
```

mupad [B] time = 0.11, size = 243, normalized size = 0.97

$$x^8\,\left(\frac{d\,c^4}{4}+\frac{7\,b\,e\,c^3}{8}\right)+x^2\,\left(\frac{e\,a^3\,b}{2}+c\,d\,a^3+\frac{3\,d\,a^2\,b^2}{2}\right)+x^7\,\left(\frac{9\,e\,b^2\,c^2}{7}+d\,b\,c^3+\frac{6\,a\,e\,c^3}{7}\right)+x^4\,\Bigg(\frac{9\,e\,a^2\,b\,c}{4}+\frac{3\,d\,a^2\,c^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^8*((c^4*d)/4 + (7*b*c^3*e)/8) + x^2*((3*a^2*b^2*d)/2 + (a^3*b*e)/2 + a^3*
c*d) + x^7*((9*b^2*c^2*e)/7 + (6*a*c^3*e)/7 + b*c^3*d) + x^4*((b^4*d)/4 + (
3*a^2*c^2*d)/2 + (3*a*b^3*e)/4 + 3*a*b^2*c*d + (9*a^2*b*c*e)/4) + x^5*((b^4
*e)/5 + (6*a^2*c^2*e)/5 + b^3*c*d + 3*a*b*c^2*d + (12*a*b^2*c*e)/5) + x^3*(
a^2*b^2*e + a*b^3*d + (2*a^3*c*e)/3 + 3*a^2*b*c*d) + x^6*((3*b^2*c^2*d)/2 +
 a*c^3*d + (5*b^3*c*e)/6 + (5*a*b*c^2*e)/2) + (2*c^4*e*x^9)/9 + a^3*b*d*x
```

sympy [A] time = 0.12, size = 291, normalized size = 1.16

$$a^{3}bdx+\frac{2c^{4}ex^{9}}{9}+x^{8}\left(\frac{7bc^{3}e}{8}+\frac{c^{4}d}{4}\right)+x^{7}\left(\frac{6ac^{3}e}{7}+\frac{9b^{2}c^{2}e}{7}+bc^{3}d\right)+x^{6}\left(\frac{5abc^{2}e}{2}+ac^{3}d+\frac{5b^{3}ce}{6}+\frac{3b^{2}c^{2}d}{2}\right)+x^{5}\Bigg(6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d*x + 2*c**4*e*x**9/9 + x**8*(7*b*c**3*e/8 + c**4*d/4) + x**7*(6*a*c
**3*e/7 + 9*b**2*c**2*e/7 + b*c**3*d) + x**6*(5*a*b*c**2*e/2 + a*c**3*d + 5
*b**3*c*e/6 + 3*b**2*c**2*d/2) + x**5*(6*a**2*c**2*e/5 + 12*a*b**2*c*e/5 +
3*a*b*c**2*d + b**4*e/5 + b**3*c*d) + x**4*(9*a**2*b*c*e/4 + 3*a**2*c**2*d/
2 + 3*a*b**3*e/4 + 3*a*b**2*c*d + b**4*d/4) + x**3*(2*a**3*c*e/3 + a**2*b**
2*e + 3*a**2*b*c*d + a*b**3*d) + x**2*(a**3*b*e/2 + a**3*c*d + 3*a**2*b**2*
d/2)
```

3.1518 $\int (b+2cx)\left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=16

$$\frac{1}{4}\left(a+bx+cx^2\right)^4$$

```
[Out] 1/4*(c*x^2+b*x+a)^4
```

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$, Rules used = {629}

$$\frac{1}{4}\left(a+bx+cx^2\right)^4$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (a + b*x + c*x^2)^4/4
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^3 \, dx = \frac{1}{4}\left(a+bx+cx^2\right)^4$$

Mathematica [B] time = 0.02, size = 51, normalized size = 3.19

$$\frac{1}{4}x(b+cx)\left(4a^3+6a^2x(b+cx)+4ax^2(b+cx)^2+x^3(b+cx)^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (x*(b + c*x)*(4*a^3 + 6*a^2*x*(b + c*x) + 4*a*x^2*(b + c*x)^2 + x^3*(b + c*
x)^3))/4
```

fricas [B] time = 0.84, size = 126, normalized size = 7.88

$$\frac{1}{4}x^8c^4+x^7c^3b+\frac{3}{2}x^6c^2b^2+x^6c^3a+x^5cb^3+3x^5c^2ba+\frac{1}{4}x^4b^4+3x^4cb^2a+\frac{3}{2}x^4c^2a^2+x^3b^3a+3x^3cba^2+\frac{3}{2}x^2b^2a^2+x^2ca^3+xb$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/4*x^8*c^4 + x^7*c^3*b + 3/2*x^6*c^2*b^2 + x^6*c^3*a + x^5*c*b^3 + 3*x^5*c
^2*b*a + 1/4*x^4*b^4 + 3*x^4*c*b^2*a + 3/2*x^4*c^2*a^2 + x^3*b^3*a + 3*x^3*
c*b*a^2 + 3/2*x^2*b^2*a^2 + x^2*c*a^3 + x*b*a^3
```

giac [B] time = 0.15, size = 56, normalized size = 3.50

$$\frac{1}{4}\left(cx^2+bx\right)^4+\left(cx^2+bx\right)^3a+\frac{3}{2}\left(cx^2+bx\right)^2a^2+\left(cx^2+bx\right)a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/4*(c*x^2 + b*x)^4 + (c*x^2 + b*x)^3*a + 3/2*(c*x^2 + b*x)^2*a^2 + (c*x^2
+ b*x)*a^3
```

maple [B] time = 0.05, size = 218, normalized size = 13.62

$$\frac{c^4x^8}{4}+b\,c^3x^7+\frac{\left(3b^2c^2+2\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)c\right)x^6}{6}+a^3bx+\frac{\left(\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)b+2\left(4abc+\left(\right.\right.\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/4*c^4*x^8+b*c^3*x^7+1/6*(3*b^2*c^2+2*c*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^6
+1/5*(b*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+2*c*(4*a*b*c+(2*a*c+b^2)*b))*x^5+1/4*
(b*(4*a*b*c+(2*a*c+b^2)*b)+2*c*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^4+1/3*(b*(a
^2*c+2*a*b^2+(2*a*c+b^2)*a)+6*a^2*b*c)*x^3+1/2*(2*a^3*c+3*a^2*b^2)*x^2+b*a^
3*x
```

maxima [A] time = 0.49, size = 14, normalized size = 0.88

$$\frac{1}{4}\left(cx^2+bx+a\right)^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/4*(c*x^2 + b*x + a)^4
```

mupad [B] time = 1.89, size = 112, normalized size = 7.00

$$x^4\left(\frac{3\,a^2\,c^2}{2}+3\,a\,b^2\,c+\frac{b^4}{4}\right)+\frac{c^4\,x^8}{4}+x^2\left(c\,a^3+\frac{3\,a^2\,b^2}{2}\right)+x^6\left(\frac{3\,b^2\,c^2}{2}+a\,c^3\right)+b\,c^3\,x^7+a^3\,b\,x+a\,b\,x^3\left(b^2+3\,a\,c\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*(b^4/4 + (3*a^2*c^2)/2 + 3*a*b^2*c) + (c^4*x^8)/4 + x^2*(a^3*c + (3*a^2
*b^2)/2) + x^6*(a*c^3 + (3*b^2*c^2)/2) + b*c^3*x^7 + a^3*b*x + a*b*x^3*(3*a
*c + b^2) + b*c*x^5*(3*a*c + b^2)
```

sympy [B] time = 0.10, size = 121, normalized size = 7.56

$$a^3bx+bc^3x^7+\frac{c^4x^8}{4}+x^6\left(ac^3+\frac{3b^2c^2}{2}\right)+x^5\left(3abc^2+b^3c\right)+x^4\left(\frac{3a^2c^2}{2}+3ab^2c+\frac{b^4}{4}\right)+x^3\left(3a^2bc+ab^3\right)+x^2\left(a^3c+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*x + b*c**3*x**7 + c**4*x**8/4 + x**6*(a*c**3 + 3*b**2*c**2/2) + x**5
*(3*a*b*c**2 + b**3*c) + x**4*(3*a**2*c**2/2 + 3*a*b**2*c + b**4/4) + x**3*
(3*a**2*b*c + a*b**3) + x**2*(a**3*c + 3*a**2*b**2/2)
```

3.1519 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=399

$$\frac{(d+ex)^3\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{3c^2(d+e}{}$$

```
[Out] (a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*x/e^7-3/2*(
-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x
+d)^2/e^8+1/3*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(
-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^3/e^8-5/4*
c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^4/e^8+3/5*c^2
*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^5/e^8-7/6*c^3*(-b*e+2*c*
d)*(e*x+d)^6/e^8+2/7*c^4*(e*x+d)^7/e^8-(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*l
n(e*x+d)/e^8
```

Rubi [A] time = 0.58, antiderivative size = 399, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{(d+ex)^3\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+\frac{3c^2(d+e}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*x
)/e^7 - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e
*(7*b*d - 3*a*e))*(d + e*x)^2)/(2*e^8) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e
^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 -
 10*a*b*d*e + a^2*e^2))*(d + e*x)^3)/(3*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*d^
2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^4)/(4*e^8) + (3*c^2*(14*c^2*d^
2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^5)/(5*e^8) - (7*c^3*(2*c*d -
 b*e)*(d + e*x)^6)/(6*e^8) + (2*c^4*(d + e*x)^7)/(7*e^8) - ((2*c*d - b*e)*(
c*d^2 - b*d*e + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx &= \int \Bigg(\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7bd-ae)\right)}{e^7}+\frac{(-2cd+be)\big(cd^2-b}{e^7(d+ex}\\ &= \frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7bd-ae)\right)x}{e^7}-\frac{3(2cd-be)\big(cd^2-bde}{}\end{aligned}$$

Mathematica [A] time = 0.24, size = 483, normalized size = 1.21

$$\frac{ex\Big(21c^2e^2\left(20a^2e^2\left(6d^2-3dex+2e^2x^2\right)+25abe\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)+3b^2\big(60d^4-30d^3ex+20d^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(2*c^4*(420*d^6 - 210*d^5*e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84
*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6) + 70*b^2*e^4*(18*a^2*e^2 + 9*a*b*
e*(-2*d + e*x) + b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 35*c*e^3*(24*a^3*e^3
+ 54*a^2*b*e^2*(-2*d + e*x) + 24*a*b^2*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) - 5*
b^3*(12*d^3 - 6*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3)) + 21*c^2*e^2*(20*a^2*e^
2*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 25*a*b*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x
^2 + 3*e^3*x^3) + 3*b^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^
3 + 12*e^4*x^4)) + 7*c^3*e*(6*a*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 1
5*d*e^3*x^3 + 12*e^4*x^4) - 7*b*(60*d^5 - 30*d^4*e*x + 20*d^3*e^2*x^2 - 15*
d^2*e^3*x^3 + 12*d*e^4*x^4 - 10*e^5*x^5))) - 420*(2*c*d - b*e)*(c*d^2 + e*(
-(b*d) + a*e))^3*Log[d + e*x])/(420*e^8)
```

fricas [A] time = 1.27, size = 645, normalized size = 1.62

$$120\,c^4e^7x^7-70\,\big(2\,c^4de^6-7\,bc^3e^7\big)x^6+84\,\big(2\,c^4d^2e^5-7\,bc^3de^6+3\,\big(3\,b^2c^2+2\,ac^3\big)e^7\big)x^5-105\,\big(2\,c^4d^3e^4-7\,bc^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(120*c^4*e^7*x^7 - 70*(2*c^4*d*e^6 - 7*b*c^3*e^7)*x^6 + 84*(2*c^4*d^2
*e^5 - 7*b*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 105*(2*c^4*d^3*e^
4 - 7*b*c^3*d^2*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 5*(b^3*c + 3*a*b*c^2)
*e^7)*x^4 + 140*(2*c^4*d^4*e^3 - 7*b*c^3*d^3*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^5 - 5*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)
*x^3 - 210*(2*c^4*d^5*e^2 - 7*b*c^3*d^4*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*d^3*e
^4 - 5*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 -
 3*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 420*(2*c^4*d^6*e - 7*b*c^3*d^5*e^2 + 3*(3
*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 5*(b^3*c + 3*a*b*c^2)*d^3*e^4 + (b^4 + 12*a*b
^2*c + 6*a^2*c^2)*d^2*e^5 - 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^
3*c)*e^7)*x - 420*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2
*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6
)*log(e*x + d))/e^8
```

giac [A] time = 0.17, size = 742, normalized size = 1.86

$$-\big(2\,c^4d^7-7\,bc^3d^6e+9\,b^2c^2d^5e^2+6\,ac^3d^5e^2-5\,b^3cd^4e^3-15\,abc^2d^4e^3+b^4d^3e^4+12\,ab^2cd^3e^4+6\,a^2c^2d^3e^4-3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(2*c^4*d^7 - 7*b*c^3*d^6*e + 9*b^2*c^2*d^5*e^2 + 6*a*c^3*d^5*e^2 - 5*b^3*c
*d^4*e^3 - 15*a*b*c^2*d^4*e^3 + b^4*d^3*e^4 + 12*a*b^2*c*d^3*e^4 + 6*a^2*c^
2*d^3*e^4 - 3*a*b^3*d^2*e^5 - 9*a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c
*d*e^6 - a^3*b*e^7)*e^(-8)*log(abs(x*e + d)) + 1/420*(120*c^4*x^7*e^6 - 140
*c^4*d*x^6*e^5 + 168*c^4*d^2*x^5*e^4 - 210*c^4*d^3*x^4*e^3 + 280*c^4*d^4*x^
3*e^2 - 420*c^4*d^5*x^2*e + 840*c^4*d^6*x + 490*b*c^3*x^6*e^6 - 588*b*c^3*d
*x^5*e^5 + 735*b*c^3*d^2*x^4*e^4 - 980*b*c^3*d^3*x^3*e^3 + 1470*b*c^3*d^4*x
^2*e^2 - 2940*b*c^3*d^5*x*e + 756*b^2*c^2*x^5*e^6 + 504*a*c^3*x^5*e^6 - 945
*b^2*c^2*d*x^4*e^5 - 630*a*c^3*d*x^4*e^5 + 1260*b^2*c^2*d^2*x^3*e^4 + 840*a
*c^3*d^2*x^3*e^4 - 1890*b^2*c^2*d^3*x^2*e^3 - 1260*a*c^3*d^3*x^2*e^3 + 3780
*b^2*c^2*d^4*x*e^2 + 2520*a*c^3*d^4*x*e^2 + 525*b^3*c*x^4*e^6 + 1575*a*b*c^
2*x^4*e^6 - 700*b^3*c*d*x^3*e^5 - 2100*a*b*c^2*d*x^3*e^5 + 1050*b^3*c*d^2*x
^2*e^4 + 3150*a*b*c^2*d^2*x^2*e^4 - 2100*b^3*c*d^3*x*e^3 - 6300*a*b*c^2*d^3
*x*e^3 + 140*b^4*x^3*e^6 + 1680*a*b^2*c*x^3*e^6 + 840*a^2*c^2*x^3*e^6 - 210
*b^4*d*x^2*e^5 - 2520*a*b^2*c*d*x^2*e^5 - 1260*a^2*c^2*d*x^2*e^5 + 420*b^4*
d^2*x*e^4 + 5040*a*b^2*c*d^2*x*e^4 + 2520*a^2*c^2*d^2*x*e^4 + 630*a*b^3*x^2
*e^6 + 1890*a^2*b*c*x^2*e^6 - 1260*a*b^3*d*x*e^5 - 3780*a^2*b*c*d*x*e^5 + 1
260*a^2*b^2*x*e^6 + 840*a^3*c*x*e^6)*e^(-7)
```

maple [**B**] time = 0.06, size = 872, normalized size = 2.19

$$\frac{2c^{4}x^{7}}{7e}+\frac{7b\,c^{3}x^{6}}{6e}-\frac{c^{4}d\,x^{6}}{3e^{2}}+\frac{6a\,c^{3}x^{5}}{5e}+\frac{9b^{2}c^{2}x^{5}}{5e}-\frac{7b\,c^{3}d\,x^{5}}{5e^{2}}+\frac{2c^{4}d^{2}x^{5}}{5e^{3}}+\frac{15ab\,c^{2}x^{4}}{4e}-\frac{3a\,c^{3}d\,x^{4}}{2e^{2}}+\frac{5b^{3}c\,x^{4}}{4e}-\frac{9b^{2}c^{2}d\,x^{4}}{4e^{2}}+\frac{7b\,c^{3}}{4e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x)
```

```
[Out] -15/e^4*x*a*b*c^2*d^3+12/e^3*x*a*b^2*c*d^2-9/e^2*x*a^2*b*c*d+15/2/e^3*x^2*a
*b*c^2*d^2-6/e^2*x^2*a*b^2*c*d+15/e^5*ln(e*x+d)*a*b*c^2*d^4-12/e^4*ln(e*x+d
)*a*b^2*c*d^3+9/e^3*ln(e*x+d)*a^2*b*c*d^2-5/e^2*x^3*a*b*c^2*d+2/e^7*x*c^4*d
^6+1/e*ln(e*x+d)*a^3*b-1/e^4*ln(e*x+d)*b^4*d^3-2/e^8*ln(e*x+d)*c^4*d^7+7/6/
e*x^6*b*c^3-1/3/e^2*x^6*c^4*d+1/e^3*x*b^4*d^2+2/5/e^3*x^5*c^4*d^2+6/5/e*x^5
*a*c^3+9/5/e*x^5*b^2*c^2-1/2/e^2*x^2*b^4*d+3/2/e*x^2*a*b^3+2/3/e^5*x^3*c^4*
d^4+2/e*x^3*a^2*c^2-1/2/e^4*x^4*c^4*d^3+5/4/e*x^4*b^3*c+2/e*x*a^3*c+3/e*x*a
^2*b^2-1/e^6*x^2*c^4*d^5-6/e^6*ln(e*x+d)*a*c^3*d^5+5/e^5*ln(e*x+d)*b^3*c*d^
4-9/e^6*ln(e*x+d)*b^2*c^2*d^5+7/e^7*ln(e*x+d)*b*c^3*d^6-3/e^2*x^2*a^2*c^2*d
+2/e^3*x^3*a*c^3*d^2+3/e^3*ln(e*x+d)*a*b^3*d^2-3/e^4*x^2*a*c^3*d^3+5/2/e^3*
x^2*b^3*c*d^2+6/e^3*x*a^2*c^2*d^2+7/2/e^5*x^2*b*c^3*d^4-3/e^2*x*a*b^3*d+3/e
^3*x^3*b^2*c^2*d^2-7/3/e^4*x^3*b*c^3*d^3+9/2/e*x^2*a^2*b*c+6/e^5*x*a*c^3*d^
4-5/e^4*x*b^3*c*d^3-2/e^2*ln(e*x+d)*a^3*c*d-3/e^2*ln(e*x+d)*a^2*b^2*d-6/e^4
*ln(e*x+d)*a^2*c^2*d^3-9/2/e^4*x^2*b^2*c^2*d^3+4/e*x^3*a*b^2*c-9/4/e^2*x^4*
b^2*c^2*d+7/4/e^3*x^4*b*c^3*d^2+15/4/e*x^4*a*b*c^2-3/2/e^2*x^4*a*c^3*d-7/5/
e^2*x^5*b*c^3*d-5/3/e^2*x^3*b^3*c*d-7/e^6*x*b*c^3*d^5+9/e^5*x*b^2*c^2*d^4+2
/7/e*c^4*x^7+1/3/e*x^3*b^4
```

maxima [**A**] time = 0.66, size = 644, normalized size = 1.61

$$120\,c^{4}e^{6}x^{7}-70\left(2\,c^{4}de^{5}-7\,bc^{3}e^{6}\right)x^{6}+84\left(2\,c^{4}d^{2}e^{4}-7\,bc^{3}de^{5}+3\left(3\,b^{2}c^{2}+2\,ac^{3}\right)e^{6}\right)x^{5}-105\left(2\,c^{4}d^{3}e^{3}-7\,bc^{3}d^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(120*c^4*e^6*x^7 - 70*(2*c^4*d*e^5 - 7*b*c^3*e^6)*x^6 + 84*(2*c^4*d^2
*e^4 - 7*b*c^3*d*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*e^6)*x^5 - 105*(2*c^4*d^3*e^
3 - 7*b*c^3*d^2*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^5 - 5*(b^3*c + 3*a*b*c^2)
*e^6)*x^4 + 140*(2*c^4*d^4*e^2 - 7*b*c^3*d^3*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^4 - 5*(b^3*c + 3*a*b*c^2)*d*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^6)
*x^3 - 210*(2*c^4*d^5*e - 7*b*c^3*d^4*e^2 + 3*(3*b^2*c^2 + 2*a*c^3)*d^3*e^3
 - 5*(b^3*c + 3*a*b*c^2)*d^2*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^5 - 3
*(a*b^3 + 3*a^2*b*c)*e^6)*x^2 + 420*(2*c^4*d^6 - 7*b*c^3*d^5*e + 3*(3*b^2*c
^2 + 2*a*c^3)*d^4*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^3*e^3 + (b^4 + 12*a*b^2*c +
 6*a^2*c^2)*d^2*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e
^6)*x)/e^7 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^
3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)
*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6)*log
(e*x + d)/e^8
```

mupad [B] time = 0.10, size = 697, normalized size = 1.75

$$x^{3}\left(\frac{6\,a^{2}\,c^{2}+12\,a\,b^{2}\,c+b^{4}}{3\,e}+\frac{d\left(\frac{d\left(\frac{9\,b^{2}\,c^{2}+6\,a\,c^{3}}{e}-\frac{d\left(\frac{7\,b\,c^{3}}{e}-\frac{2\,c^{4}\,d}{e^{2}}\right)}{e}\right)}{e}-\frac{5\,b\,c\,\left(b^{2}+3\,a\,c\right)}{e}\right)}{3\,e}\right)-x^{4}\left(\frac{d\left(\frac{9\,b^{2}\,c^{2}+6\,a\,c^{3}}{e}-\frac{d\left(\frac{7\,b\,c^{3}}{e}-\frac{2\,c^{4}\,d}{e^{2}}\right)}{e}\right)}{4\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x),x)
```

```
[Out] x^3*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)/(3*e) + (d*((d*((6*a*c^3 + 9*b^2*c^2)/e
 - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/(3*e
)) - x^4*((d*((6*a*c^3 + 9*b^2*c^2)/e - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e
))/(4*e) - (5*b*c*(3*a*c + b^2))/(4*e)) - x^2*((d*((b^4 + 6*a^2*c^2 + 12*a*
b^2*c)/e + (d*((d*((6*a*c^3 + 9*b^2*c^2)/e - (d*((7*b*c^3)/e - (2*c^4*d)/e^
2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/e))/(2*e) - (3*a*b*(3*a*c + b^2))/(2*
e)) + x^6*((7*b*c^3)/(6*e) - (c^4*d)/(3*e^2)) + x*((2*a^3*c + 3*a^2*b^2)/e
+ (d*((d*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)/e + (d*((d*((6*a*c^3 + 9*b^2*c^2)/
e - (d*((7*b*c^3)/e - (2*c^4*d)/e^2))/e))/e - (5*b*c*(3*a*c + b^2))/e))/e))
/e - (3*a*b*(3*a*c + b^2))/e))/e) + x^5*((6*a*c^3 + 9*b^2*c^2)/(5*e) - (d*(
(7*b*c^3)/e - (2*c^4*d)/e^2))/(5*e)) - (log(d + e*x)*(2*c^4*d^7 - a^3*b*e^7
 + b^4*d^3*e^4 - 3*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 6*a*c^3*d^5*e^2 - 5*b^
3*c*d^4*e^3 + 6*a^2*c^2*d^3*e^4 + 9*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 7*b*c
^3*d^6*e - 15*a*b*c^2*d^4*e^3 + 12*a*b^2*c*d^3*e^4 - 9*a^2*b*c*d^2*e^5))/e^
8 + (2*c^4*x^7)/(7*e)
```

sympy [**A**] time = 1.36, size = 641, normalized size = 1.61

$$\frac{2c^4x^7}{7e}+x^6\left(\frac{7bc^3}{6e}-\frac{c^4d}{3e^2}\right)+x^5\left(\frac{6ac^3}{5e}+\frac{9b^2c^2}{5e}-\frac{7bc^3d}{5e^2}+\frac{2c^4d^2}{5e^3}\right)+x^4\left(\frac{15abc^2}{4e}-\frac{3ac^3d}{2e^2}+\frac{5b^3c}{4e}-\frac{9b^2c^2d}{4e^2}+\frac{7bc^3d^2}{4e^3}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d),x)
```

```
[Out] 2*c**4*x**7/(7*e) + x**6*(7*b*c**3/(6*e) - c**4*d/(3*e**2)) + x**5*(6*a*c**
3/(5*e) + 9*b**2*c**2/(5*e) - 7*b*c**3*d/(5*e**2) + 2*c**4*d**2/(5*e**3)) +
 x**4*(15*a*b*c**2/(4*e) - 3*a*c**3*d/(2*e**2) + 5*b**3*c/(4*e) - 9*b**2*c*
*2*d/(4*e**2) + 7*b*c**3*d**2/(4*e**3) - c**4*d**3/(2*e**4)) + x**3*(2*a**2
*c**2/e + 4*a*b**2*c/e - 5*a*b*c**2*d/e**2 + 2*a*c**3*d**2/e**3 + b**4/(3*e
) - 5*b**3*c*d/(3*e**2) + 3*b**2*c**2*d**2/e**3 - 7*b*c**3*d**3/(3*e**4) +
2*c**4*d**4/(3*e**5)) + x**2*(9*a**2*b*c/(2*e) - 3*a**2*c**2*d/e**2 + 3*a*b
**3/(2*e) - 6*a*b**2*c*d/e**2 + 15*a*b*c**2*d**2/(2*e**3) - 3*a*c**3*d**3/e
**4 - b**4*d/(2*e**2) + 5*b**3*c*d**2/(2*e**3) - 9*b**2*c**2*d**3/(2*e**4)
+ 7*b*c**3*d**4/(2*e**5) - c**4*d**5/e**6) + x*(2*a**3*c/e + 3*a**2*b**2/e
- 9*a**2*b*c*d/e**2 + 6*a**2*c**2*d**2/e**3 - 3*a*b**3*d/e**2 + 12*a*b**2*c
*d**2/e**3 - 15*a*b*c**2*d**3/e**4 + 6*a*c**3*d**4/e**5 + b**4*d**2/e**3 -
5*b**3*c*d**3/e**4 + 9*b**2*c**2*d**4/e**5 - 7*b*c**3*d**5/e**6 + 2*c**4*d*
*6/e**7) + (b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**3*log(d + e*x)/e**8
```

3.1520 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=396

$$\frac{(d+ex)^2\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{2e^8}+3c^2(d-$$

```
[Out] -3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*
x/e^7+(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)+1/2*(70*c^4*d^4+b^4*e^
4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2
-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^2/e^8-5/3*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^
2-c*e*(-3*a*e+7*b*d))*(e*x+d)^3/e^8+3/4*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a
*e+7*b*d))*(e*x+d)^4/e^8-7/5*c^3*(-b*e+2*c*d)*(e*x+d)^5/e^8+1/3*c^4*(e*x+d)
^6/e^8+(a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*ln(e
*x+d)/e^8
```

Rubi [A] time = 0.57, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^2\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{2e^8}+3c^2(d-$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d
 - 3*a*e))*x)/e^7 + ((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(e^8*(d + e*x
)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7
*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^2)
/(2*e^8) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(
d + e*x)^3)/(3*e^8) + (3*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))
*(d + e*x)^4)/(4*e^8) - (7*c^3*(2*c*d - b*e)*(d + e*x)^5)/(5*e^8) + (c^4*(d
 + e*x)^6)/(3*e^8) + ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2
*c*e*(7*b*d - a*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx = \int \left(\frac{3(2cd-be)\left(cd^2-bde+ae^2\right)\left(-7c^2d^2+7bcde-b^2e^2-3ace^2\right)}{e^7}+(-2cd\right.$$

$$= -\frac{3(2cd-be)\left(cd^2-bde+ae^2\right)\left(7c^2d^2+b^2e^2-ce(7bd-3ae)\right)x}{e^7}+(2cd-be$$

Mathematica [A] time = 0.25, size = 637, normalized size = 1.61

$$15c^2e^2\left(12a^2e^2\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+20abe\left(-3d^4+9d^3ex+6d^2e^2x^2-2de^3x^3+e^4x^4\right)+3b^2\left(12d^5-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (2*c^4*(60*d^7 - 360*d^6*e*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^
4*x^4 + 21*d^2*e^5*x^5 - 14*d*e^6*x^6 + 10*e^7*x^7) + 30*b*e^4*(6*a^2*b*d*e
^2 - 2*a^3*e^3 + 6*a*b^2*e*(-d^2 + d*e*x + e^2*x^2) + b^3*(2*d^3 - 4*d^2*e*
x - 3*d*e^2*x^2 + e^3*x^3)) + 20*c*e^3*(6*a^3*d*e^3 + 27*a^2*b*e^2*(-d^2 +
d*e*x + e^2*x^2) + 18*a*b^2*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) -
 5*b^3*(3*d^4 - 9*d^3*e*x - 6*d^2*e^2*x^2 + 2*d*e^3*x^3 - e^4*x^4)) + 15*c^
2*e^2*(12*a^2*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 20*a*b*e*(-
3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + 3*b^2*(12*d^5
- 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5))
+ 6*c^3*e*(5*a*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5
*d*e^4*x^4 + 3*e^5*x^5) - 7*b*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^
3*e^3*x^3 - 5*d^2*e^4*x^4 + 3*d*e^5*x^5 - 2*e^6*x^6)) + 60*(14*c^2*d^2 + 3*
b^2*e^2 + 2*c*e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)*Log[
d + e*x])/(60*e^8*(d + e*x))
```

fricas [B] time = 1.21, size = 903, normalized size = 2.28

$$\frac{20\,c^4e^7x^7 + 120\,c^4d^7 - 420\,bc^3d^6e - 60\,a^3be^7 + 180\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 - 300\left(b^3c + 3\,abc^2\right)d^4e^3 + 60\left(b^4 + 12\,ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(20*c^4*e^7*x^7 + 120*c^4*d^7 - 420*b*c^3*d^6*e - 60*a^3*b*e^7 + 180*(
3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 300*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 60*(b^4 +
12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 180*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + 60*(3*a
^2*b^2 + 2*a^3*c)*d*e^6 - 28*(c^4*d*e^6 - 3*b*c^3*e^7)*x^6 + 3*(14*c^4*d^2*
e^5 - 42*b*c^3*d*e^6 + 15*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 5*(14*c^4*d^3*e^
4 - 42*b*c^3*d^2*e^5 + 15*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 20*(b^3*c + 3*a*b*c
^2)*e^7)*x^4 + 10*(14*c^4*d^4*e^3 - 42*b*c^3*d^3*e^4 + 15*(3*b^2*c^2 + 2*a*
c^3)*d^2*e^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c
^2)*e^7)*x^3 - 30*(14*c^4*d^5*e^2 - 42*b*c^3*d^4*e^3 + 15*(3*b^2*c^2 + 2*a*
c^3)*d^3*e^4 - 20*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 3*(b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d*e^6 - 6*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 - 60*(12*c^4*d^6*e - 35*b*c^3*
d^5*e^2 + 12*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 15*(b^3*c + 3*a*b*c^2)*d^3*e^4
 + 2*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 3*(a*b^3 + 3*a^2*b*c)*d*e^6)*
x + 60*(14*c^4*d^7 - 42*b*c^3*d^6*e + 15*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 20
*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 6
*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 + (14*c^4*d^6*e
- 42*b*c^3*d^5*e^2 + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3*c + 3*a*b*c
^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b^3 + 3*a^2*b
*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7)*x)*log(e*x + d))/(e^9*x + d*e^8)
```

giac [B] time = 0.20, size = 828, normalized size = 2.09

$$\frac{1}{60}\left(20\,c^4 - \frac{84\left(2\,c^4de - bc^3e^2\right)e^{(-1)}}{xe + d} + \frac{45\left(14\,c^4d^2e^2 - 14\,bc^3de^3 + 3\,b^2c^2e^4 + 2\,ac^3e^4\right)e^{(-2)}}{(xe + d)^2} - \frac{100\left(14\,c^4d^3e^3 - 21\,bc\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(20*c^4 - 84*(2*c^4*d*e - b*c^3*e^2)*e^(-1)/(x*e + d) + 45*(14*c^4*d^2
*e^2 - 14*b*c^3*d*e^3 + 3*b^2*c^2*e^4 + 2*a*c^3*e^4)*e^(-2)/(x*e + d)^2 - 1
00*(14*c^4*d^3*e^3 - 21*b*c^3*d^2*e^4 + 9*b^2*c^2*d*e^5 + 6*a*c^3*d*e^5 - b
^3*c*e^6 - 3*a*b*c^2*e^6)*e^(-3)/(x*e + d)^3 + 30*(70*c^4*d^4*e^4 - 140*b*c
^3*d^3*e^5 + 90*b^2*c^2*d^2*e^6 + 60*a*c^3*d^2*e^6 - 20*b^3*c*d*e^7 - 60*a*
b*c^2*d*e^7 + b^4*e^8 + 12*a*b^2*c*e^8 + 6*a^2*c^2*e^8)*e^(-4)/(x*e + d)^4
- 180*(14*c^4*d^5*e^5 - 35*b*c^3*d^4*e^6 + 30*b^2*c^2*d^3*e^7 + 20*a*c^3*d^
3*e^7 - 10*b^3*c*d^2*e^8 - 30*a*b*c^2*d^2*e^8 + b^4*d*e^9 + 12*a*b^2*c*d*e^
9 + 6*a^2*c^2*d*e^9 - a*b^3*e^10 - 3*a^2*b*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e
 + d)^6*e^(-8) - (14*c^4*d^6 - 42*b*c^3*d^5*e + 45*b^2*c^2*d^4*e^2 + 30*a*c
^3*d^4*e^2 - 20*b^3*c*d^3*e^3 - 60*a*b*c^2*d^3*e^3 + 3*b^4*d^2*e^4 + 36*a*b
^2*c*d^2*e^4 + 18*a^2*c^2*d^2*e^4 - 6*a*b^3*d*e^5 - 18*a^2*b*c*d*e^5 + 3*a^
2*b^2*e^6 + 2*a^3*c*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (2*c
^4*d^7*e^6/(x*e + d) - 7*b*c^3*d^6*e^7/(x*e + d) + 9*b^2*c^2*d^5*e^8/(x*e +
 d) + 6*a*c^3*d^5*e^8/(x*e + d) - 5*b^3*c*d^4*e^9/(x*e + d) - 15*a*b*c^2*d^
4*e^9/(x*e + d) + b^4*d^3*e^10/(x*e + d) + 12*a*b^2*c*d^3*e^10/(x*e + d) +
6*a^2*c^2*d^3*e^10/(x*e + d) - 3*a*b^3*d^2*e^11/(x*e + d) - 9*a^2*b*c*d^2*e
^11/(x*e + d) + 3*a^2*b^2*d*e^12/(x*e + d) + 2*a^3*c*d*e^12/(x*e + d) - a^3
*b*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 930, normalized size = 2.35

$$\frac{c^4x^6}{3e^2}+\frac{7b\,c^3x^5}{5e^2}-\frac{4c^4d\,x^5}{5e^3}+\frac{3a\,c^3x^4}{2e^2}+\frac{9b^2c^2x^4}{4e^2}-\frac{7b\,c^3d\,x^4}{2e^3}+\frac{3c^4d^2x^4}{2e^4}+\frac{5ab\,c^2x^3}{e^2}-\frac{4a\,c^3d\,x^3}{e^3}+\frac{5b^3c\,x^3}{3e^2}-\frac{6b^2c^2d\,x^3}{e^3}+\frac{7b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x)
```

```
[Out] 9/4/e^2*x^4*b^2*c^2+3/2/e^4*x^4*c^4*d^2-1/e/(e*x+d)*a^3*b-12/e^7*c^4*d^5*x+
3/e^2*a*b^3*x-2/e^3*b^4*d*x-8/3/e^5*x^3*c^4*d^3+3/e^2*x^2*a^2*c^2+5/3/e^2*x
^3*b^3*c+7/5/e^2*x^5*b*c^3-4/5/e^3*x^5*c^4*d+3/2/e^2*x^4*a*c^3+5/e^6*x^2*c^
4*d^4+14/e^8*ln(e*x+d)*c^4*d^6+1/e^4/(e*x+d)*b^4*d^3+2/e^8/(e*x+d)*c^4*d^7+
2/e^2*ln(e*x+d)*a^3*c+3/e^2*ln(e*x+d)*a^2*b^2+3/e^4*ln(e*x+d)*b^4*d^2-24/e^
3*a*b^2*c*d*x+45/e^4*a*b*c^2*d^2*x-15/e^3*x^2*a*b*c^2*d-9/e^3/(e*x+d)*a^2*b
*c*d^2+12/e^4/(e*x+d)*a*b^2*c*d^3-15/e^5/(e*x+d)*a*b*c^2*d^4-18/e^3*ln(e*x+
d)*a^2*b*c*d+1/2/e^2*x^2*b^4+1/3/e^2*c^4*x^6+6/e^4/(e*x+d)*a^2*c^2*d^3-24/e
^5*a*c^3*d^3*x+15/e^4*b^3*c*d^2*x-3/e^3/(e*x+d)*a*b^3*d^2+6/e^6/(e*x+d)*a*c
^3*d^5-5/e^5/(e*x+d)*b^3*c*d^4+9/e^6/(e*x+d)*b^2*c^2*d^5-7/e^7/(e*x+d)*b*c^
3*d^6+2/e^2/(e*x+d)*a^3*c*d+3/e^2/(e*x+d)*d*a^2*b^2+36/e^4*ln(e*x+d)*a*b^2*
c*d^2-60/e^5*ln(e*x+d)*a*b*c^2*d^3+18/e^4*ln(e*x+d)*a^2*c^2*d^2-6/e^3*ln(e*
x+d)*a*b^3*d+30/e^6*ln(e*x+d)*a*c^3*d^4-20/e^5*ln(e*x+d)*b^3*c*d^3+45/e^6*l
n(e*x+d)*b^2*c^2*d^4-42/e^7*ln(e*x+d)*b*c^3*d^5-36/e^5*b^2*c^2*d^3*x+35/e^6
*b*c^3*d^4*x+9/e^2*a^2*b*c*x-12/e^3*a^2*c^2*d*x+9/e^4*x^2*a*c^3*d^2-14/e^5*
x^2*b*c^3*d^3-5/e^3*x^2*b^3*c*d+27/2/e^4*x^2*b^2*c^2*d^2-7/2/e^3*x^4*b*c^3*
d+5/e^2*x^3*a*b*c^2-4/e^3*x^3*a*c^3*d-6/e^3*x^3*b^2*c^2*d+7/e^4*x^3*b*c^3*d
^2+6/e^2*x^2*a*b^2*c
```

maxima [A] time = 0.71, size = 649, normalized size = 1.64

$$\frac{2\,c^4d^7-7\,bc^3d^6e-a^3be^7+3\left(3\,b^2c^2+2\,ac^3\right)d^5e^2-5\left(b^3c+3\,abc^2\right)d^4e^3+\left(b^4+12\,ab^2c+6\,a^2c^2\right)d^3e^4-3\,(ab^3}{e^9x+de^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 -
5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*
(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6)/(e^9*x + d*e^8)
+ 1/60*(20*c^4*e^5*x^6 - 12*(4*c^4*d*e^4 - 7*b*c^3*e^5)*x^5 + 15*(6*c^4*d^2
*e^3 - 14*b*c^3*d*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*e^5)*x^4 - 20*(8*c^4*d^3*e^
2 - 21*b*c^3*d^2*e^3 + 6*(3*b^2*c^2 + 2*a*c^3)*d*e^4 - 5*(b^3*c + 3*a*b*c^2
)*e^5)*x^3 + 30*(10*c^4*d^4*e - 28*b*c^3*d^3*e^2 + 9*(3*b^2*c^2 + 2*a*c^3)*
d^2*e^3 - 10*(b^3*c + 3*a*b*c^2)*d*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^5
)*x^2 - 60*(12*c^4*d^5 - 35*b*c^3*d^4*e + 12*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2
- 15*(b^3*c + 3*a*b*c^2)*d^2*e^3 + 2*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 -
 3*(a*b^3 + 3*a^2*b*c)*e^5)*x)/e^7 + (14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b
^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*
b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a
^3*c)*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 1.82, size = 1090, normalized size = 2.75

$$x^5\left(\frac{7\,b\,c^3}{5\,e^2}-\frac{4\,c^4\,d}{5\,e^3}\right)+x^3\left(\frac{2\,d\left(\frac{2\,d\left(\frac{7\,b\,c^3}{e^2}-\frac{4\,c^4\,d}{e^3}\right)}{e}-\frac{9\,b^2\,c^2+6\,a\,c^3}{e^2}+\frac{2\,c^4\,d^2}{e^4}\right)}{3\,e}-\frac{d^2\left(\frac{7\,b\,c^3}{e^2}-\frac{4\,c^4\,d}{e^3}\right)}{3\,e^2}+\frac{5\,b\,c\,\left(b^2+3\,a\,c\right)}{3\,e^2}\right)-x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x)
```

```
[Out] x^5*((7*b*c^3)/(5*e^2) - (4*c^4*d)/(5*e^3)) + x^3*((2*d*((2*d*((7*b*c^3)/e^
2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/(3*e)
 - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/(3*e^2) + (5*b*c*(3*a*c + b^2))/(3
*e^2)) - x^4*((d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/(2*e) - (6*a*c^3 + 9*b^2*
c^2)/(4*e^2) + (c^4*d^2)/(2*e^4)) - x*((2*d*((b^4 + 6*a^2*c^2 + 12*a*b^2*c)
/e^2 + (d^2*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2
)/e^2 + (2*c^4*d^2)/e^4))/e^2 - (2*d*((2*d*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)
/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/e - (d^2*((7*b*c^3
)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a*c + b^2))/e^2))/e))/e + (d^2*((2*
d*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2
*c^4*d^2)/e^4))/e - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a
*c + b^2))/e^2))/e^2 - (3*a*b*(3*a*c + b^2))/e^2) + x^2*((b^4 + 6*a^2*c^2 +
 12*a*b^2*c)/(2*e^2) + (d^2*((2*d*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e - (6*a
*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/(2*e^2) - (d*((2*d*((2*d*((7*b*c^
3)/e^2 - (4*c^4*d)/e^3))/e - (6*a*c^3 + 9*b^2*c^2)/e^2 + (2*c^4*d^2)/e^4))/
e - (d^2*((7*b*c^3)/e^2 - (4*c^4*d)/e^3))/e^2 + (5*b*c*(3*a*c + b^2))/e^2))
/e) + (log(d + e*x)*(14*c^4*d^6 + 2*a^3*c*e^6 + 3*a^2*b^2*e^6 + 3*b^4*d^2*e
^4 + 30*a*c^3*d^4*e^2 - 20*b^3*c*d^3*e^3 + 18*a^2*c^2*d^2*e^4 + 45*b^2*c^2*
d^4*e^2 - 6*a*b^3*d*e^5 - 42*b*c^3*d^5*e - 18*a^2*b*c*d*e^5 - 60*a*b*c^2*d^
3*e^3 + 36*a*b^2*c*d^2*e^4))/e^8 + (c^4*x^6)/(3*e^2) + (2*c^4*d^7 - a^3*b*e
^7 + b^4*d^3*e^4 - 3*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 6*a*c^3*d^5*e^2 - 5*
b^3*c*d^4*e^3 + 6*a^2*c^2*d^3*e^4 + 9*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 7*b
*c^3*d^6*e - 15*a*b*c^2*d^4*e^3 + 12*a*b^2*c*d^3*e^4 - 9*a^2*b*c*d^2*e^5)/(
e*(d*e^7 + e^8*x))
```

sympy **[A]** time = 4.11, size = 688, normalized size = 1.74

$$\frac{c^4x^6}{3e^2}+x^5\left(\frac{7bc^3}{5e^2}-\frac{4c^4d}{5e^3}\right)+x^4\left(\frac{3ac^3}{2e^2}+\frac{9b^2c^2}{4e^2}-\frac{7bc^3d}{2e^3}+\frac{3c^4d^2}{2e^4}\right)+x^3\left(\frac{5abc^2}{e^2}-\frac{4ac^3d}{e^3}+\frac{5b^3c}{3e^2}-\frac{6b^2c^2d}{e^3}+\frac{7bc^3d^2}{e^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**2,x)
```

```
[Out] c**4*x**6/(3*e**2) + x**5*(7*b*c**3/(5*e**2) - 4*c**4*d/(5*e**3)) + x**4*(3
*a*c**3/(2*e**2) + 9*b**2*c**2/(4*e**2) - 7*b*c**3*d/(2*e**3) + 3*c**4*d**2
/(2*e**4)) + x**3*(5*a*b*c**2/e**2 - 4*a*c**3*d/e**3 + 5*b**3*c/(3*e**2) -
6*b**2*c**2*d/e**3 + 7*b*c**3*d**2/e**4 - 8*c**4*d**3/(3*e**5)) + x**2*(3*a
**2*c**2/e**2 + 6*a*b**2*c/e**2 - 15*a*b*c**2*d/e**3 + 9*a*c**3*d**2/e**4 +
 b**4/(2*e**2) - 5*b**3*c*d/e**3 + 27*b**2*c**2*d**2/(2*e**4) - 14*b*c**3*d
**3/e**5 + 5*c**4*d**4/e**6) + x*(9*a**2*b*c/e**2 - 12*a**2*c**2*d/e**3 + 3
*a*b**3/e**2 - 24*a*b**2*c*d/e**3 + 45*a*b*c**2*d**2/e**4 - 24*a*c**3*d**3/
e**5 - 2*b**4*d/e**3 + 15*b**3*c*d**2/e**4 - 36*b**2*c**2*d**3/e**5 + 35*b*
c**3*d**4/e**6 - 12*c**4*d**5/e**7) + (-a**3*b*e**7 + 2*a**3*c*d*e**6 + 3*a
**2*b**2*d*e**6 - 9*a**2*b*c*d**2*e**5 + 6*a**2*c**2*d**3*e**4 - 3*a*b**3*d
**2*e**5 + 12*a*b**2*c*d**3*e**4 - 15*a*b*c**2*d**4*e**3 + 6*a*c**3*d**5*e*
*2 + b**4*d**3*e**4 - 5*b**3*c*d**4*e**3 + 9*b**2*c**2*d**5*e**2 - 7*b*c**3
*d**6*e + 2*c**4*d**7)/(d*e**8 + e**9*x) + (a*e**2 - b*d*e + c*d**2)**2*(2*
a*c*e**2 + 3*b**2*e**2 - 14*b*c*d*e + 14*c**2*d**2)*log(d + e*x)/e**8
```

3.1521 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=390

$$\frac{x\left(3c^2e^2\left(2a^2e^2-15abde+18b^2d^2\right)-3b^2ce^3(5bd-4ae)-2c^3d^2e(35bd-18ae)+b^4e^4+30c^4d^4\right)}{e^7}-\frac{cx^2\left(-6c^2de(7b\right.}{}$$

```
[Out] (30*c^4*d^4+b^4*e^4-2*c^3*d^2*e*(-18*a*e+35*b*d)-3*b^2*c*e^3*(-4*a*e+5*b*d)
+3*c^2*e^2*(2*a^2*e^2-15*a*b*d*e+18*b^2*d^2))*x/e^7-1/2*c*(20*c^3*d^3-5*b^3
*e^3+3*b*c*e^2*(-5*a*e+9*b*d)-6*c^2*d*e*(-3*a*e+7*b*d))*x^2/e^6+c^2*(4*c^2*
d^2+3*b^2*e^2-c*e*(-2*a*e+7*b*d))*x^3/e^5-1/4*c^3*(-7*b*e+6*c*d)*x^4/e^4+2/
5*c^4*x^5/e^3+1/2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^2-(a*e^2-b
*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))/e^8/(e*x+d)-3*(-b*e
+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*ln(e*x+d
)/e^8
```

Rubi [A] time = 0.51, antiderivative size = 390, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{x\left(3c^2e^2\left(2a^2e^2-15abde+18b^2d^2\right)-3b^2ce^3(5bd-4ae)-2c^3d^2e(35bd-18ae)+b^4e^4+30c^4d^4\right)}{e^7}+\frac{c^2x^3\left(-ce(7bd\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] ((30*c^4*d^4 + b^4*e^4 - 2*c^3*d^2*e*(35*b*d - 18*a*e) - 3*b^2*c*e^3*(5*b*d
 - 4*a*e) + 3*c^2*e^2*(18*b^2*d^2 - 15*a*b*d*e + 2*a^2*e^2))*x)/e^7 - (c*(2
0*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(9*b*d - 5*a*e) - 6*c^2*d*e*(7*b*d - 3*a*
e))*x^2)/(2*e^6) + (c^2*(4*c^2*d^2 + 3*b^2*e^2 - c*e*(7*b*d - 2*a*e))*x^3)/
e^5 - (c^3*(6*c*d - 7*b*e)*x^4)/(4*e^4) + (2*c^4*x^5)/(5*e^3) + ((2*c*d - b
*e)*(c*d^2 - b*d*e + a*e^2)^3)/(2*e^8*(d + e*x)^2) - ((c*d^2 - b*d*e + a*e^
2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(e^8*(d + e*x)) - (3*(
2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*
a*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx=\int\left(\frac{30c^4d^4+b^4e^4-2c^3d^2e(35bd-18ae)-3b^2ce^3(5bd-4ae)+3c^2e^2\left(18b^2d^2\right.}{e^7}\right.$$

$$=\frac{\left(30c^4d^4+b^4e^4-2c^3d^2e(35bd-18ae)-3b^2ce^3(5bd-4ae)+3c^2e^2\left(18b^2d^2-1\right.\right.}{e^7}$$

Mathematica [A] time = 0.16, size = 403, normalized size = 1.03

$$\frac{-60(2cd-be)\log(d+ex)\left(ce^2\left(3a^2e^2-10abde+8b^2d^2\right)+b^2e^3(ae-bd)-2c^2d^2e(7bd-5ae)+7c^3d^4\right)+20ex\left(3c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(30*c^4*d^4 + b^4*e^4 - 3*b^2*c*e^3*(5*b*d - 4*a*e) + 2*c^3*d^2*e*(-3
5*b*d + 18*a*e) + 3*c^2*e^2*(18*b^2*d^2 - 15*a*b*d*e + 2*a^2*e^2))*x - 10*c
*e^2*(20*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(9*b*d - 5*a*e) - 6*c^2*d*e*(7*b*d
 - 3*a*e))*x^2 + 20*c^2*e^3*(4*c^2*d^2 + 3*b^2*e^2 + c*e*(-7*b*d + 2*a*e))*
x^3 - 5*c^3*e^4*(6*c*d - 7*b*e)*x^4 + 8*c^4*e^5*x^5 + (10*(2*c*d - b*e)*(c*
d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^2 - (20*(14*c^2*d^2 + 3*b^2*e^2 + 2*c*
e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x) - 60*(2*c*d - b*e
)*(7*c^3*d^4 - 2*c^2*d^2*e*(7*b*d - 5*a*e) + b^2*e^3*(-(b*d) + a*e) + c*e^2
*(8*b^2*d^2 - 10*a*b*d*e + 3*a^2*e^2))*Log[d + e*x])/(20*e^8)
```

fricas [**B**] time = 1.21, size = 990, normalized size = 2.54

$$\frac{8\,c^4e^7x^7 - 260\,c^4d^7 + 770\,bc^3d^6e - 10\,a^3be^7 - 270\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 + 350\left(b^3c + 3\,abc^2\right)d^4e^3 - 50\left(b^4 + 12\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(8*c^4*e^7*x^7 - 260*c^4*d^7 + 770*b*c^3*d^6*e - 10*a^3*b*e^7 - 270*(3
*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 350*(b^3*c + 3*a*b*c^2)*d^4*e^3 - 50*(b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 90*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - 10*(3*a^2
*b^2 + 2*a^3*c)*d*e^6 - 7*(2*c^4*d*e^6 - 5*b*c^3*e^7)*x^6 + 2*(14*c^4*d^2*e
^5 - 35*b*c^3*d*e^6 + 10*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 5*(14*c^4*d^3*e^4
 - 35*b*c^3*d^2*e^5 + 10*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 10*(b^3*c + 3*a*b*c^
2)*e^7)*x^4 + 20*(14*c^4*d^4*e^3 - 35*b*c^3*d^3*e^4 + 10*(3*b^2*c^2 + 2*a*c
^3)*d^2*e^5 - 10*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)
*e^7)*x^3 + 10*(100*c^4*d^5*e^2 - 238*b*c^3*d^4*e^3 + 63*(3*b^2*c^2 + 2*a*c
^3)*d^3*e^4 - 55*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 4*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d*e^6)*x^2 + 20*(16*c^4*d^6*e - 28*b*c^3*d^5*e^2 + 3*(3*b^2*c^2 + 2*a*
c^3)*d^4*e^3 + 5*(b^3*c + 3*a*b*c^2)*d^3*e^4 - 2*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^2*e^5 + 6*(a*b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 + 2*a^3*c)*e^7)*x -
 60*(14*c^4*d^7 - 35*b*c^3*d^6*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 10*(b
^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - (a*b^3
 + 3*a^2*b*c)*d^2*e^5 + (14*c^4*d^5*e^2 - 35*b*c^3*d^4*e^3 + 10*(3*b^2*c^2
+ 2*a*c^3)*d^3*e^4 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d*e^6 - (a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 2*(14*c^4*d^6*e - 35*b*c^3
*d^5*e^2 + 10*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 10*(b^3*c + 3*a*b*c^2)*d^3*e^
4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - (a*b^3 + 3*a^2*b*c)*d*e^6)*x)*
log(e*x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [**A**] time = 0.17, size = 694, normalized size = 1.78

$$-3\left(14\,c^4d^5 - 35\,bc^3d^4e + 30\,b^2c^2d^3e^2 + 20\,ac^3d^3e^2 - 10\,b^3cd^2e^3 - 30\,abc^2d^2e^3 + b^4de^4 + 12\,ab^2cde^4 + 6\,a^2c^2de\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(14*c^4*d^5 - 35*b*c^3*d^4*e + 30*b^2*c^2*d^3*e^2 + 20*a*c^3*d^3*e^2 - 1
0*b^3*c*d^2*e^3 - 30*a*b*c^2*d^2*e^3 + b^4*d*e^4 + 12*a*b^2*c*d*e^4 + 6*a^2
*c^2*d*e^4 - a*b^3*e^5 - 3*a^2*b*c*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(8*
c^4*x^5*e^12 - 30*c^4*d*x^4*e^11 + 80*c^4*d^2*x^3*e^10 - 200*c^4*d^3*x^2*e^
9 + 600*c^4*d^4*x*e^8 + 35*b*c^3*x^4*e^12 - 140*b*c^3*d*x^3*e^11 + 420*b*c^
3*d^2*x^2*e^10 - 1400*b*c^3*d^3*x*e^9 + 60*b^2*c^2*x^3*e^12 + 40*a*c^3*x^3*
e^12 - 270*b^2*c^2*d*x^2*e^11 - 180*a*c^3*d*x^2*e^11 + 1080*b^2*c^2*d^2*x*e
^10 + 720*a*c^3*d^2*x*e^10 + 50*b^3*c*x^2*e^12 + 150*a*b*c^2*x^2*e^12 - 300
*b^3*c*d*x*e^11 - 900*a*b*c^2*d*x*e^11 + 20*b^4*x*e^12 + 240*a*b^2*c*x*e^12
 + 120*a^2*c^2*x*e^12)*e^(-15) - 1/2*(26*c^4*d^7 - 77*b*c^3*d^6*e + 81*b^2*
c^2*d^5*e^2 + 54*a*c^3*d^5*e^2 - 35*b^3*c*d^4*e^3 - 105*a*b*c^2*d^4*e^3 + 5
*b^4*d^3*e^4 + 60*a*b^2*c*d^3*e^4 + 30*a^2*c^2*d^3*e^4 - 9*a*b^3*d^2*e^5 -
27*a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c*d*e^6 + a^3*b*e^7 + 2*(14*c^
4*d^6*e - 42*b*c^3*d^5*e^2 + 45*b^2*c^2*d^4*e^3 + 30*a*c^3*d^4*e^3 - 20*b^3
*c*d^3*e^4 - 60*a*b*c^2*d^3*e^4 + 3*b^4*d^2*e^5 + 36*a*b^2*c*d^2*e^5 + 18*a
^2*c^2*d^2*e^5 - 6*a*b^3*d*e^6 - 18*a^2*b*c*d*e^6 + 3*a^2*b^2*e^7 + 2*a^3*c
*e^7)*x)*e^(-8)/(x*e + d)^2
```

maple [B] time = 0.07, size = 978, normalized size = 2.51

$$\frac{2c^4x^5}{5e^3}+\frac{7b\,c^3x^4}{4e^3}-\frac{3c^4d\,x^4}{2e^4}+\frac{2a\,c^3x^3}{e^3}+\frac{3b^2c^2x^3}{e^3}-\frac{7b\,c^3d\,x^3}{e^4}+\frac{4c^4d^2x^3}{e^5}-\frac{a^3b}{2\left(ex+d\right)^2e}+\frac{a^3cd}{\left(ex+d\right)^2e^2}+\frac{3a^2b^2d}{2\left(ex+d\right)^2e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x)
```

```
[Out] 6/e^4/(e*x+d)^2*a*b^2*c*d^3+60/e^5/(e*x+d)*a*b*c^2*d^3-9/2/e^3/(e*x+d)^2*d^
2*a^2*b*c-15/2/e^5/(e*x+d)^2*a*b*c^2*d^4-45/e^4*a*b*c^2*d*x+18/e^3/(e*x+d)*
a^2*b*c*d-36/e^4/(e*x+d)*a*b^2*c*d^2+3/2/e^2/(e*x+d)^2*d*a^2*b^2+3/e^4/(e*x
+d)^2*a^2*c^2*d^3-3/2/e^3/(e*x+d)^2*d^2*a*b^3+3/e^6/(e*x+d)^2*a*c^3*d^5-5/2
/e^5/(e*x+d)^2*b^3*c*d^4+9/2/e^6/(e*x+d)^2*b^2*c^2*d^5+30/e^5*ln(e*x+d)*b^3
*c*d^2-18/e^4/(e*x+d)*a^2*c^2*d^2+6/e^3/(e*x+d)*a*b^3*d-30/e^6/(e*x+d)*a*c^
3*d^4+20/e^5/(e*x+d)*b^3*c*d^3-45/e^6/(e*x+d)*b^2*c^2*d^4+42/e^7/(e*x+d)*b*
c^3*d^5+1/e^2/(e*x+d)^2*a^3*c*d+7/4/e^3*x^4*b*c^3+2/e^3*x^3*a*c^3-3/2/e^4*x
^4*c^4*d-2/e^2/(e*x+d)*a^3*c-3/e^2/(e*x+d)*a^2*b^2-3/e^4/(e*x+d)*b^4*d^2-14
/e^8/(e*x+d)*c^4*d^6-1/2/e/(e*x+d)^2*a^3*b+1/2/e^4/(e*x+d)^2*b^4*d^3+1/e^8/
(e*x+d)^2*c^4*d^7+3/e^3*ln(e*x+d)*a*b^3-3/e^4*ln(e*x+d)*b^4*d-42/e^8*ln(e*x
+d)*c^4*d^5+3/e^3*x^3*b^2*c^2+4/e^5*x^3*c^4*d^2+5/2/e^3*x^2*b^3*c-10/e^6*x^
2*c^4*d^3-36/e^4*ln(e*x+d)*a*b^2*c*d+90/e^5*ln(e*x+d)*a*b*c^2*d^2+1/e^3*b^4
*x-7/e^4*x^3*b*c^3*d+6/e^3*c^2*a^2*x+30/e^7*c^4*d^4*x-7/2/e^7/(e*x+d)^2*b*c
^3*d^6+2/5*c^4*x^5/e^3+15/2/e^3*x^2*a*b*c^2-9/e^4*x^2*a*c^3*d-27/2/e^4*x^2*
b^2*c^2*d+21/e^5*x^2*b*c^3*d^2+12/e^3*a*b^2*c*x+36/e^5*a*c^3*d^2*x-15/e^4*b
^3*c*d*x+54/e^5*b^2*c^2*d^2*x-70/e^6*b*c^3*d^3*x-90/e^6*ln(e*x+d)*b^2*c^2*d
^3+105/e^7*ln(e*x+d)*b*c^3*d^4+9/e^3*ln(e*x+d)*a^2*b*c-18/e^4*ln(e*x+d)*a^2
*c^2*d-60/e^6*ln(e*x+d)*a*c^3*d^3
```

maxima [A] time = 0.69, size = 656, normalized size = 1.68

$$-\frac{26\,c^4d^7-77\,bc^3d^6e+a^3be^7+27\left(3\,b^2c^2+2\,ac^3\right)d^5e^2-35\left(b^3c+3\,abc^2\right)d^4e^3+5\left(b^4+12\,ab^2c+6\,a^2c^2\right)d^3e^4-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(26*c^4*d^7 - 77*b*c^3*d^6*e + a^3*b*e^7 + 27*(3*b^2*c^2 + 2*a*c^3)*d^
5*e^2 - 35*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 5*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d
^3*e^4 - 9*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 + 2*(1
4*c^4*d^6*e - 42*b*c^3*d^5*e^2 + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3
*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b
^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
 + d^2*e^8) + 1/20*(8*c^4*e^4*x^5 - 5*(6*c^4*d*e^3 - 7*b*c^3*e^4)*x^4 + 20*
(4*c^4*d^2*e^2 - 7*b*c^3*d*e^3 + (3*b^2*c^2 + 2*a*c^3)*e^4)*x^3 - 10*(20*c^
4*d^3*e - 42*b*c^3*d^2*e^2 + 9*(3*b^2*c^2 + 2*a*c^3)*d*e^3 - 5*(b^3*c + 3*a
*b*c^2)*e^4)*x^2 + 20*(30*c^4*d^4 - 70*b*c^3*d^3*e + 18*(3*b^2*c^2 + 2*a*c^
3)*d^2*e^2 - 15*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*
e^4)*x)/e^7 - 3*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3
*e^2 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^
4 - (a*b^3 + 3*a^2*b*c)*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 1.88, size = 936, normalized size = 2.40

$$x^4\left(\frac{7\,b\,c^3}{4\,e^3}-\frac{3\,c^4\,d}{2\,e^4}\right)-\frac{x\,\left(2\,a^3\,c\,e^6+3\,a^2\,b^2\,e^6-18\,a^2\,b\,c\,d\,e^5+18\,a^2\,c^2\,d^2\,e^4-6\,a\,b^3\,d\,e^5+36\,a\,b^2\,c\,d^2\,e^4-60\,a\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x)
```

```
[Out] x^4*((7*b*c^3)/(4*e^3) - (3*c^4*d)/(2*e^4)) - (x*(14*c^4*d^6 + 2*a^3*c*e^6
+ 3*a^2*b^2*e^6 + 3*b^4*d^2*e^4 + 30*a*c^3*d^4*e^2 - 20*b^3*c*d^3*e^3 + 18*
a^2*c^2*d^2*e^4 + 45*b^2*c^2*d^4*e^2 - 6*a*b^3*d*e^5 - 42*b*c^3*d^5*e - 18*
a^2*b*c*d*e^5 - 60*a*b*c^2*d^3*e^3 + 36*a*b^2*c*d^2*e^4) + (26*c^4*d^7 + a^
3*b*e^7 + 5*b^4*d^3*e^4 - 9*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 + 54*a*c^3*d^5*
e^2 - 35*b^3*c*d^4*e^3 + 30*a^2*c^2*d^3*e^4 + 81*b^2*c^2*d^5*e^2 + 2*a^3*c*
d*e^6 - 77*b*c^3*d^6*e - 105*a*b*c^2*d^4*e^3 + 60*a*b^2*c*d^3*e^4 - 27*a^2*
b*c*d^2*e^5)/(2*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) - x^2*((c^4*d^3)/e^6 +
(3*d^2*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/(2*e^2) - (3*d*((3*d*((7*b*c^3)/e^3
 - (6*c^4*d)/e^4))/e - (6*a*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/(2*e)
- (5*b*c*(3*a*c + b^2))/(2*e^3)) - x^3*((d*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))
/e - (6*a*c^3 + 9*b^2*c^2)/(3*e^3) + (2*c^4*d^2)/e^5) + x*((b^4 + 6*a^2*c^2
 + 12*a*b^2*c)/e^3 + (3*d^2*((3*d*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e - (6*a
*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/e^2 + (3*d*((2*c^4*d^3)/e^6 + (3*
d^2*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e^2 - (3*d*((3*d*((7*b*c^3)/e^3 - (6*c
^4*d)/e^4))/e - (6*a*c^3 + 9*b^2*c^2)/e^3 + (6*c^4*d^2)/e^5))/e - (5*b*c*(3
*a*c + b^2))/e^3))/e - (d^3*((7*b*c^3)/e^3 - (6*c^4*d)/e^4))/e^3) + (2*c^4*
x^5)/(5*e^3) - (log(d + e*x)*(42*c^4*d^5 - 3*a*b^3*e^5 + 3*b^4*d*e^4 + 60*a
*c^3*d^3*e^2 + 18*a^2*c^2*d*e^4 - 30*b^3*c*d^2*e^3 + 90*b^2*c^2*d^3*e^2 - 9
*a^2*b*c*e^5 - 105*b*c^3*d^4*e + 36*a*b^2*c*d*e^4 - 90*a*b*c^2*d^2*e^3))/e^
8
```

sympy [A] time = 17.28, size = 733, normalized size = 1.88

$$\frac{2c^4x^5}{5e^3}+x^4\left(\frac{7bc^3}{4e^3}-\frac{3c^4d}{2e^4}\right)+x^3\left(\frac{2ac^3}{e^3}+\frac{3b^2c^2}{e^3}-\frac{7bc^3d}{e^4}+\frac{4c^4d^2}{e^5}\right)+x^2\left(\frac{15abc^2}{2e^3}-\frac{9ac^3d}{e^4}+\frac{5b^3c}{2e^3}-\frac{27b^2c^2d}{2e^4}+\frac{21b}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**3,x)
```

```
[Out] 2*c**4*x**5/(5*e**3) + x**4*(7*b*c**3/(4*e**3) - 3*c**4*d/(2*e**4)) + x**3*
(2*a*c**3/e**3 + 3*b**2*c**2/e**3 - 7*b*c**3*d/e**4 + 4*c**4*d**2/e**5) + x
**2*(15*a*b*c**2/(2*e**3) - 9*a*c**3*d/e**4 + 5*b**3*c/(2*e**3) - 27*b**2*c
**2*d/(2*e**4) + 21*b*c**3*d**2/e**5 - 10*c**4*d**3/e**6) + x*(6*a**2*c**2/
e**3 + 12*a*b**2*c/e**3 - 45*a*b*c**2*d/e**4 + 36*a*c**3*d**2/e**5 + b**4/e
**3 - 15*b**3*c*d/e**4 + 54*b**2*c**2*d**2/e**5 - 70*b*c**3*d**3/e**6 + 30*
c**4*d**4/e**7) + (-a**3*b*e**7 - 2*a**3*c*d*e**6 - 3*a**2*b**2*d*e**6 + 27
*a**2*b*c*d**2*e**5 - 30*a**2*c**2*d**3*e**4 + 9*a*b**3*d**2*e**5 - 60*a*b*
*2*c*d**3*e**4 + 105*a*b*c**2*d**4*e**3 - 54*a*c**3*d**5*e**2 - 5*b**4*d**3
*e**4 + 35*b**3*c*d**4*e**3 - 81*b**2*c**2*d**5*e**2 + 77*b*c**3*d**6*e - 2
6*c**4*d**7 + x*(-4*a**3*c*e**7 - 6*a**2*b**2*e**7 + 36*a**2*b*c*d*e**6 - 3
6*a**2*c**2*d**2*e**5 + 12*a*b**3*d*e**6 - 72*a*b**2*c*d**2*e**5 + 120*a*b*
c**2*d**3*e**4 - 60*a*c**3*d**4*e**3 - 6*b**4*d**2*e**5 + 40*b**3*c*d**3*e*
*4 - 90*b**2*c**2*d**4*e**3 + 84*b*c**3*d**5*e**2 - 28*c**4*d**6*e))/(2*d**
2*e**8 + 4*d*e**9*x + 2*e**10*x**2) + 3*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d
**2)*(3*a*c*e**2 + b**2*e**2 - 7*b*c*d*e + 7*c**2*d**2)*log(d + e*x)/e**8
```

3.1522 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=396

$$\frac{\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8}-\frac{cx\,(-}{}$$

```
[Out] -c*(40*c^3*d^3-5*b^3*e^3-2*c^2*d*e*(-12*a*e+35*b*d)+3*b*c*e^2*(-5*a*e+12*b*
d))*x/e^7+1/2*c^2*(6*a*c*e^2+9*b^2*e^2-28*b*c*d*e+20*c^2*d^2)*x^2/e^6-1/3*c
^3*(-7*b*e+8*c*d)*x^3/e^5+1/2*c^4*x^4/e^4+1/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d
^2)^3/e^8/(e*x+d)^3-1/2*(a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(
-a*e+7*b*d))/e^8/(e*x+d)^2+3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^
2*e^2-c*e*(-3*a*e+7*b*d))/e^8/(e*x+d)+(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a
*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*
d^2))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.51, antiderivative size = 396, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8}+\frac{c^2x^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] -((c*(40*c^3*d^3 - 5*b^3*e^3 - 2*c^2*d*e*(35*b*d - 12*a*e) + 3*b*c*e^2*(12*
b*d - 5*a*e))*x)/e^7) + (c^2*(20*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2 + 6*a*c*e
^2)*x^2)/(2*e^6) - (c^3*(8*c*d - 7*b*e)*x^3)/(3*e^5) + (c^4*x^4)/(2*e^4) +
((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^3) - ((c*d^2 - b
*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(2*e^8*(d +
 e*x)^2) + (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 -
c*e*(7*b*d - 3*a*e)))/(e^8*(d + e*x)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^
3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 -
10*a*b*d*e + a^2*e^2))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx &= \int \left(\frac{c\left(-40c^3d^3+5b^3e^3+2c^2de(35bd-12ae)-3bce^2(12bd-5ae)\right)}{e^7}+\frac{c^2\left(20\right.}{}\right.\\ &= -\frac{c\left(40c^3d^3-5b^3e^3-2c^2de(35bd-12ae)+3bce^2(12bd-5ae)\right)x}{e^7}+\frac{c^2\left(20c^2\right.}{}\end{aligned}$$

Mathematica [A] time = 0.15, size = 404, normalized size = 1.02

$$\frac{\frac{18(2cd-be)\left(ce^2\left(3a^2e^2-10abde+8b^2d^2\right)+b^2e^3(ae-bd)-2c^2d^2e(7bd-5ae)+7c^3d^4\right)}{d+ex}+6\log(d+ex)\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-6*c*e*(40*c^3*d^3 - 5*b^3*e^3 + 3*b*c*e^2*(12*b*d - 5*a*e) + 2*c^2*d*e*(-
35*b*d + 12*a*e))*x + 3*c^2*e^2*(20*c^2*d^2 - 28*b*c*d*e + 9*b^2*e^2 + 6*a*
c*e^2)*x^2 - 2*c^3*e^3*(8*c*d - 7*b*e)*x^3 + 3*c^4*e^4*x^4 + (2*(2*c*d - b*
e)*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^3 - (3*(14*c^2*d^2 + 3*b^2*e^2 +
 2*c*e*(-7*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 + (18*(2*c
*d - b*e)*(7*c^3*d^4 - 2*c^2*d^2*e*(7*b*d - 5*a*e) + b^2*e^3*(-(b*d) + a*e)
 + c*e^2*(8*b^2*d^2 - 10*a*b*d*e + 3*a^2*e^2)))/(d + e*x) + 6*(70*c^4*d^4 +
 b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c
^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*Log[d + e*x])/(6*e^8)
```

fricas [B]   time = 0.77, size = 1031, normalized size = 2.60

$$\frac{3\,c^4e^7x^7 + 214\,c^4d^7 - 518\,bc^3d^6e - 2\,a^3be^7 + 141\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 - 130\left(b^3c + 3\,abc^2\right)d^4e^3 + 11\left(b^4 + 12\,ab^2c -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*c^4*e^7*x^7 + 214*c^4*d^7 - 518*b*c^3*d^6*e - 2*a^3*b*e^7 + 141*(3*b
^2*c^2 + 2*a*c^3)*d^5*e^2 - 130*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 11*(b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2 +
 2*a^3*c)*d*e^6 - 7*(c^4*d*e^6 - 2*b*c^3*e^7)*x^6 + 3*(7*c^4*d^2*e^5 - 14*b
*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 - 15*(7*c^4*d^3*e^4 - 14*b*c^
3*d^2*e^5 + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^6 - 2*(b^3*c + 3*a*b*c^2)*e^7)*x^4
- (556*c^4*d^4*e^3 - 1022*b*c^3*d^3*e^4 + 189*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5
 - 90*(b^3*c + 3*a*b*c^2)*d*e^6)*x^3 - 3*(136*c^4*d^5*e^2 - 182*b*c^3*d^4*e
^3 + 9*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 + 30*(b^3*c + 3*a*b*c^2)*d^2*e^5 - 6*(
b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 + 6*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 3*(7
4*c^4*d^6*e - 238*b*c^3*d^5*e^2 + 81*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 90*(b^
3*c + 3*a*b*c^2)*d^3*e^4 + 9*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*
b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 + 2*a^3*c)*e^7)*x + 6*(70*c^4*d^7 - 140
*b*c^3*d^6*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^
4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + (70*c^4*d^4*e^3 - 140*b*c^
3*d^3*e^4 + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 + 3*(70*c^4*d^5*e^2 - 140*b*c^3*
d^4*e^3 + 30*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 20*(b^3*c + 3*a*b*c^2)*d^2*e^5
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6)*x^2 + 3*(70*c^4*d^6*e - 140*b*c^3*
d^5*e^2 + 30*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^4
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d
*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [A]   time = 0.17, size = 678, normalized size = 1.71

$$\left(70\,c^4d^4 - 140\,bc^3d^3e + 90\,b^2c^2d^2e^2 + 60\,ac^3d^2e^2 - 20\,b^3cde^3 - 60\,abc^2de^3 + b^4e^4 + 12\,ab^2ce^4 + 6\,a^2c^2e^4\right)e^{(-8)}\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (70*c^4*d^4 - 140*b*c^3*d^3*e + 90*b^2*c^2*d^2*e^2 + 60*a*c^3*d^2*e^2 - 20*
b^3*c*d*e^3 - 60*a*b*c^2*d*e^3 + b^4*e^4 + 12*a*b^2*c*e^4 + 6*a^2*c^2*e^4)*
e^(-8)*log(abs(x*e + d)) + 1/6*(3*c^4*x^4*e^12 - 16*c^4*d*x^3*e^11 + 60*c^4
*d^2*x^2*e^10 - 240*c^4*d^3*x*e^9 + 14*b*c^3*x^3*e^12 - 84*b*c^3*d*x^2*e^11
 + 420*b*c^3*d^2*x*e^10 + 27*b^2*c^2*x^2*e^12 + 18*a*c^3*x^2*e^12 - 216*b^2
*c^2*d*x*e^11 - 144*a*c^3*d*x*e^11 + 30*b^3*c*x*e^12 + 90*a*b*c^2*x*e^12)*e
```

```
^(-16) + 1/6*(214*c^4*d^7 - 518*b*c^3*d^6*e + 423*b^2*c^2*d^5*e^2 + 282*a*c
^3*d^5*e^2 - 130*b^3*c*d^4*e^3 - 390*a*b*c^2*d^4*e^3 + 11*b^4*d^3*e^4 + 132
*a*b^2*c*d^3*e^4 + 66*a^2*c^2*d^3*e^4 - 6*a*b^3*d^2*e^5 - 18*a^2*b*c*d^2*e^
5 - 3*a^2*b^2*d*e^6 - 2*a^3*c*d*e^6 - 2*a^3*b*e^7 + 18*(14*c^4*d^5*e^2 - 35
*b*c^3*d^4*e^3 + 30*b^2*c^2*d^3*e^4 + 20*a*c^3*d^3*e^4 - 10*b^3*c*d^2*e^5 -
 30*a*b*c^2*d^2*e^5 + b^4*d*e^6 + 12*a*b^2*c*d*e^6 + 6*a^2*c^2*d*e^6 - a*b^
3*e^7 - 3*a^2*b*c*e^7)*x^2 + 3*(154*c^4*d^6*e - 378*b*c^3*d^5*e^2 + 315*b^2
*c^2*d^4*e^3 + 210*a*c^3*d^4*e^3 - 100*b^3*c*d^3*e^4 - 300*a*b*c^2*d^3*e^4
+ 9*b^4*d^2*e^5 + 108*a*b^2*c*d^2*e^5 + 54*a^2*c^2*d^2*e^5 - 6*a*b^3*d*e^6
- 18*a^2*b*c*d*e^6 - 3*a^2*b^2*e^7 - 2*a^3*c*e^7)*x)*e^(-8)/(x*e + d)^3
```

maple [B] time = 0.06, size = 1023, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x)
```

```
[Out] -5/e^5/(e*x+d)^3*a*b*c^2*d^4+9/e^3/(e*x+d)^2*a^2*b*c*d-18/e^4/(e*x+d)^2*a*b
^2*c*d^2+30/e^5/(e*x+d)^2*a*b*c^2*d^3-60/e^5*ln(e*x+d)*a*b*c^2*d+4/e^4/(e*x
+d)^3*d^3*a*b^2*c+1/2*c^4*x^4/e^4-3/e^3/(e*x+d)*a*b^3+3/e^4/(e*x+d)*b^4*d+4
2/e^8/(e*x+d)*c^4*d^5-1/3/e/(e*x+d)^3*a^3*b+1/3/e^4/(e*x+d)^3*d^3*b^4+2/3/e
^8/(e*x+d)^3*c^4*d^7-1/e^2/(e*x+d)^2*a^3*c+36/e^4/(e*x+d)*a*b^2*c*d+15*c^2/
e^4*a*b*x-14*c^3/e^5*x^2*b*d+70*c^3/e^6*b*d^2*x-9/e^3/(e*x+d)*a^2*b*c+18/e^
4/(e*x+d)*a^2*c^2*d+60/e^6/(e*x+d)*a*c^3*d^3-30/e^5/(e*x+d)*b^3*c*d^2+90/e^
6/(e*x+d)*b^2*c^2*d^3+12/e^4*ln(e*x+d)*a*b^2*c+60/e^6*ln(e*x+d)*a*c^3*d^2-2
0/e^5*ln(e*x+d)*b^3*c*d+90/e^6*ln(e*x+d)*b^2*c^2*d^2-140/e^7*ln(e*x+d)*b*c^
3*d^3-105/e^7/(e*x+d)*b*c^3*d^4+2/3/e^2/(e*x+d)^3*a^3*c*d+1/e^2/(e*x+d)^3*d
*a^2*b^2+2/e^4/(e*x+d)^3*a^2*c^2*d^3-1/e^3/(e*x+d)^3*d^2*a*b^3-90/e^5/(e*x+
d)*a*b*c^2*d^2+1/e^4*ln(e*x+d)*b^4-3/e^3/(e*x+d)^3*d^2*a^2*b*c-3/2/e^2/(e*x
+d)^2*a^2*b^2-3/2/e^4/(e*x+d)^2*b^4*d^2-7/e^8/(e*x+d)^2*c^4*d^6+6/e^4*ln(e*
x+d)*c^2*a^2+70/e^8*ln(e*x+d)*c^4*d^4-8/3*c^4/e^5*x^3*d+3*c^3/e^4*x^2*a+9/2
*c^2/e^4*x^2*b^2+10*c^4/e^6*x^2*d^2+5*c/e^4*b^3*x-40*c^4/e^7*d^3*x+7/3*c^3/
e^4*x^3*b-24*c^3/e^5*a*d*x-36*c^2/e^5*b^2*d*x-15/e^6/(e*x+d)^2*a*c^3*d^4+10
/e^5/(e*x+d)^2*b^3*c*d^3-45/2/e^6/(e*x+d)^2*b^2*c^2*d^4+21/e^7/(e*x+d)^2*b*
c^3*d^5+2/e^6/(e*x+d)^3*a*c^3*d^5-5/3/e^5/(e*x+d)^3*b^3*c*d^4+3/e^6/(e*x+d)
^3*b^2*c^2*d^5-7/3/e^7/(e*x+d)^3*b*c^3*d^6-9/e^4/(e*x+d)^2*a^2*c^2*d^2+3/e^
3/(e*x+d)^2*a*b^3*d
```

maxima [A] time = 0.65, size = 670, normalized size = 1.69

$$214\,c^4d^7 - 518\,bc^3d^6e - 2\,a^3be^7 + 141\,\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 - 130\,\left(b^3c + 3\,abc^2\right)d^4e^3 + 11\,\left(b^4 + 12\,ab^2c + 6\,a^2c^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(214*c^4*d^7 - 518*b*c^3*d^6*e - 2*a^3*b*e^7 + 141*(3*b^2*c^2 + 2*a*c^3
)*d^5*e^2 - 130*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 11*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^3*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2 + 2*a^3*c)*d*e^6
+ 18*(14*c^4*d^5*e^2 - 35*b*c^3*d^4*e^3 + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4
- 10*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 - (
a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 3*(154*c^4*d^6*e - 378*b*c^3*d^5*e^2 + 105*(3
*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 100*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 9*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 6*(a*b^3 + 3*a^2*b*c)*d*e^6 - (3*a^2*b^2 +
2*a^3*c)*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8) + 1/6*(3
*c^4*e^3*x^4 - 2*(8*c^4*d*e^2 - 7*b*c^3*e^3)*x^3 + 3*(20*c^4*d^2*e - 28*b*c
^3*d*e^2 + 3*(3*b^2*c^2 + 2*a*c^3)*e^3)*x^2 - 6*(40*c^4*d^3 - 70*b*c^3*d^2*
e + 12*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - 5*(b^3*c + 3*a*b*c^2)*e^3)*x)/e^7 + (7
0*c^4*d^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c
+ 3*a*b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*log(e*x + d)/e^8
```

mupad [B] time = 1.87, size = 807, normalized size = 2.04

$$x^3\left(\frac{7\,b\,c^3}{3\,e^4}-\frac{8\,c^4\,d}{3\,e^5}\right)-\frac{x\left(a^3\,c\,e^6+\frac{3\,a^2\,b^2\,e^6}{2}+9\,a^2\,b\,c\,d\,e^5-27\,a^2\,c^2\,d^2\,e^4+3\,a\,b^3\,d\,e^5-54\,a\,b^2\,c\,d^2\,e^4+150\,a\,b\,c^2\,d^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x)
```

```
[Out] x^3*((7*b*c^3)/(3*e^4) - (8*c^4*d)/(3*e^5)) - (x*(a^3*c*e^6 - 77*c^4*d^6 +
(3*a^2*b^2*e^6)/2 - (9*b^4*d^2*e^4)/2 - 105*a*c^3*d^4*e^2 + 50*b^3*c*d^3*e^
3 - 27*a^2*c^2*d^2*e^4 - (315*b^2*c^2*d^4*e^2)/2 + 3*a*b^3*d*e^5 + 189*b*c^
3*d^5*e + 9*a^2*b*c*d*e^5 + 150*a*b*c^2*d^3*e^3 - 54*a*b^2*c*d^2*e^4) - x^2
*(3*b^4*d*e^5 - 3*a*b^3*e^6 + 42*c^4*d^5*e + 60*a*c^3*d^3*e^3 + 18*a^2*c^2*
d*e^5 - 105*b*c^3*d^4*e^2 - 30*b^3*c*d^2*e^4 + 90*b^2*c^2*d^3*e^3 - 9*a^2*b
*c*e^6 + 36*a*b^2*c*d*e^5 - 90*a*b*c^2*d^2*e^4) + (2*a^3*b*e^7 - 214*c^4*d^
7 - 11*b^4*d^3*e^4 + 6*a*b^3*d^2*e^5 + 3*a^2*b^2*d*e^6 - 282*a*c^3*d^5*e^2
+ 130*b^3*c*d^4*e^3 - 66*a^2*c^2*d^3*e^4 - 423*b^2*c^2*d^5*e^2 + 2*a^3*c*d*
e^6 + 518*b*c^3*d^6*e + 390*a*b*c^2*d^4*e^3 - 132*a*b^2*c*d^3*e^4 + 18*a^2*
b*c*d^2*e^5)/(6*e))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) - x^2*
((2*d*((7*b*c^3)/e^4 - (8*c^4*d)/e^5))/e - (6*a*c^3 + 9*b^2*c^2)/(2*e^4) +
(6*c^4*d^2)/e^6) - x*((8*c^4*d^3)/e^7 + (6*d^2*((7*b*c^3)/e^4 - (8*c^4*d)/e
^5))/e^2 - (4*d*((4*d*((7*b*c^3)/e^4 - (8*c^4*d)/e^5))/e - (6*a*c^3 + 9*b^2
*c^2)/e^4 + (12*c^4*d^2)/e^6))/e - (5*b*c*(3*a*c + b^2))/e^4) + (c^4*x^4)/(
2*e^4) + (log(d + e*x)*(b^4*e^4 + 70*c^4*d^4 + 6*a^2*c^2*e^4 + 60*a*c^3*d^2
*e^2 + 90*b^2*c^2*d^2*e^2 + 12*a*b^2*c*e^4 - 140*b*c^3*d^3*e - 20*b^3*c*d*e
^3 - 60*a*b*c^2*d*e^3))/e^8
```

sympy [B] time = 71.72, size = 821, normalized size = 2.07

$$\frac{c^4x^4}{2e^4}+x^3\left(\frac{7bc^3}{3e^4}-\frac{8c^4d}{3e^5}\right)+x^2\left(\frac{3ac^3}{e^4}+\frac{9b^2c^2}{2e^4}-\frac{14bc^3d}{e^5}+\frac{10c^4d^2}{e^6}\right)+x\left(\frac{15abc^2}{e^4}-\frac{24ac^3d}{e^5}+\frac{5b^3c}{e^4}-\frac{36b^2c^2d}{e^5}+\frac{70bc^3}{e^6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**4,x)
```

```
[Out] c**4*x**4/(2*e**4) + x**3*(7*b*c**3/(3*e**4) - 8*c**4*d/(3*e**5)) + x**2*(3
*a*c**3/e**4 + 9*b**2*c**2/(2*e**4) - 14*b*c**3*d/e**5 + 10*c**4*d**2/e**6)
 + x*(15*a*b*c**2/e**4 - 24*a*c**3*d/e**5 + 5*b**3*c/e**4 - 36*b**2*c**2*d/
e**5 + 70*b*c**3*d**2/e**6 - 40*c**4*d**3/e**7) + (-2*a**3*b*e**7 - 2*a**3*
c*d*e**6 - 3*a**2*b**2*d*e**6 - 18*a**2*b*c*d**2*e**5 + 66*a**2*c**2*d**3*e
**4 - 6*a*b**3*d**2*e**5 + 132*a*b**2*c*d**3*e**4 - 390*a*b*c**2*d**4*e**3
+ 282*a*c**3*d**5*e**2 + 11*b**4*d**3*e**4 - 130*b**3*c*d**4*e**3 + 423*b**
2*c**2*d**5*e**2 - 518*b*c**3*d**6*e + 214*c**4*d**7 + x**2*(-54*a**2*b*c*e
**7 + 108*a**2*c**2*d*e**6 - 18*a*b**3*e**7 + 216*a*b**2*c*d*e**6 - 540*a*b
*c**2*d**2*e**5 + 360*a*c**3*d**3*e**4 + 18*b**4*d*e**6 - 180*b**3*c*d**2*e
**5 + 540*b**2*c**2*d**3*e**4 - 630*b*c**3*d**4*e**3 + 252*c**4*d**5*e**2)
+ x*(-6*a**3*c*e**7 - 9*a**2*b**2*e**7 - 54*a**2*b*c*d*e**6 + 162*a**2*c**2
*d**2*e**5 - 18*a*b**3*d*e**6 + 324*a*b**2*c*d**2*e**5 - 900*a*b*c**2*d**3*
e**4 + 630*a*c**3*d**4*e**3 + 27*b**4*d**2*e**5 - 300*b**3*c*d**3*e**4 + 94
5*b**2*c**2*d**4*e**3 - 1134*b*c**3*d**5*e**2 + 462*c**4*d**6*e))/(6*d**3*e
**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3) + (6*a**2*c**2*e**4
+ 12*a*b**2*c*e**4 - 60*a*b*c**2*d*e**3 + 60*a*c**3*d**2*e**2 + b**4*e**4 -
 20*b**3*c*d*e**3 + 90*b**2*c**2*d**2*e**2 - 140*b*c**3*d**3*e + 70*c**4*d*
*4)*log(d + e*x)/e**8
```

3.1523 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx$

Optimal. Leaf size=389

$$-\frac{6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4}{e^8(d+ex)}+\frac{3(2cd-be)\left(ae^2-b\right.}{}$$

```
[Out] c^2*(30*c^2*d^2+9*b^2*e^2-c*e*(-6*a*e+35*b*d))*x/e^7-1/2*c^3*(-7*b*e+10*c*d
)*x^2/e^6+2/3*c^4*x^3/e^5+1/4*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d
)^4-1/3*(a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))/e^8
/(e*x+d)^3+3/2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*
a*e+7*b*d))/e^8/(e*x+d)^2+(-70*c^4*d^4-b^4*e^4+4*b^2*c*e^3*(-3*a*e+5*b*d)+2
0*c^3*d^2*e*(-3*a*e+7*b*d)-6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))/e^8/(
e*x+d)-5*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*ln(e*x+d)/e^
8
```

Rubi [A] time = 0.48, antiderivative size = 389, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4}{e^8(d+ex)}+\frac{c^2x\left(-ce(35bd-6a\right.}{e}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (c^2*(30*c^2*d^2 + 9*b^2*e^2 - c*e*(35*b*d - 6*a*e))*x)/e^7 - (c^3*(10*c*d
- 7*b*e)*x^2)/(2*e^6) + (2*c^4*x^3)/(3*e^5) + ((2*c*d - b*e)*(c*d^2 - b*d*e
 + a*e^2)^3)/(4*e^8*(d + e*x)^4) - ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 +
 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(3*e^8*(d + e*x)^3) + (3*(2*c*d - b*e)*(
c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e)))/(2*e^8*
(d + e*x)^2) - (70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3
*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))/(e^
8*(d + e*x)) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e
))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx &= \int \left(\frac{c^2\left(30c^2d^2+9b^2e^2-ce(35bd-6ae)\right)}{e^7}-\frac{c^3(10cd-7be)x}{e^6}+\frac{2c^4x^2}{e^5}+\frac{(-2cd}{}\right.\\ &= \frac{c^2\left(30c^2d^2+9b^2e^2-ce(35bd-6ae)\right)x}{e^7}-\frac{c^3(10cd-7be)x^2}{2e^6}+\frac{2c^4x^3}{3e^5}+\frac{(2cd-b}{}\end{aligned}$$

Mathematica [A] time = 0.30, size = 614, normalized size = 1.58

$$-\frac{3c^2e^2\left(6a^2e^2\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)-5abde\left(25d^3+88d^2ex+108de^2x^2+48e^3x^3\right)+3b^2\left(77d^5+248d^4\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -1/12*(2*c^4*(319*d^7 + 856*d^6*e*x + 444*d^5*e^2*x^2 - 544*d^4*e^3*x^3 - 5
56*d^3*e^4*x^4 - 84*d^2*e^5*x^5 + 14*d*e^6*x^6 - 4*e^7*x^7) + 3*b*e^4*(a^3*
e^3 + a^2*b*e^2*(d + 4*e*x) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + b^3*(d^
3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + c*e^3*(2*a^3*e^3*(d + 4*e*x) +
9*a^2*b*e^2*(d^2 + 4*d*e*x + 6*e^2*x^2) + 36*a*b^2*e*(d^3 + 4*d^2*e*x + 6*d
*e^2*x^2 + 4*e^3*x^3) - 5*b^3*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e
^3*x^3)) + 3*c^2*e^2*(6*a^2*e^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)
 - 5*a*b*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) + 3*b^2*(77
*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e
^5*x^5)) - 3*c^3*e*(2*a*e*(-77*d^5 - 248*d^4*e*x - 252*d^3*e^2*x^2 - 48*d^2
*e^3*x^3 + 48*d*e^4*x^4 + 12*e^5*x^5) + 7*b*(57*d^6 + 168*d^5*e*x + 132*d^4
*e^2*x^2 - 32*d^3*e^3*x^3 - 68*d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^6*x^6)) + 6
0*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 + c*e*(-7*b*d + 3*a*e))*(d + e*x)^4*
Log[d + e*x])/(e^8*(d + e*x)^4)
```

fricas [B] time = 0.79, size = 1017, normalized size = 2.61

$$\frac{8\,c^4e^7x^7 - 638\,c^4d^7 + 1197\,bc^3d^6e - 3\,a^3be^7 - 231\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 + 125\left(b^3c + 3\,abc^2\right)d^4e^3 - 3\big(b^4 + 12\,ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(8*c^4*e^7*x^7 - 638*c^4*d^7 + 1197*b*c^3*d^6*e - 3*a^3*b*e^7 - 231*(3
*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 125*(b^3*c + 3*a*b*c^2)*d^4*e^3 - 3*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 - (3*a^2*b^2
+ 2*a^3*c)*d*e^6 - 14*(2*c^4*d*e^6 - 3*b*c^3*e^7)*x^6 + 12*(14*c^4*d^2*e^5
- 21*b*c^3*d*e^6 + 3*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^5 + 4*(278*c^4*d^3*e^4 -
357*b*c^3*d^2*e^5 + 36*(3*b^2*c^2 + 2*a*c^3)*d*e^6)*x^4 + 4*(272*c^4*d^4*e^
3 - 168*b*c^3*d^3*e^4 - 36*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 + 60*(b^3*c + 3*a*
b*c^2)*d*e^6 - 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 6*(148*c^4*d^5*e
^2 - 462*b*c^3*d^4*e^3 + 126*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 90*(b^3*c + 3*
a*b*c^2)*d^2*e^5 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 + 3*(a*b^3 + 3*a^
2*b*c)*e^7)*x^2 - 4*(428*c^4*d^6*e - 882*b*c^3*d^5*e^2 + 186*(3*b^2*c^2 + 2
*a*c^3)*d^4*e^3 - 110*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d^2*e^5 + 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2 + 2*a^3*c)*e^7
)*x - 60*(14*c^4*d^7 - 21*b*c^3*d^6*e + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - (
b^3*c + 3*a*b*c^2)*d^4*e^3 + (14*c^4*d^3*e^4 - 21*b*c^3*d^2*e^5 + 3*(3*b^2*
c^2 + 2*a*c^3)*d*e^6 - (b^3*c + 3*a*b*c^2)*e^7)*x^4 + 4*(14*c^4*d^4*e^3 - 2
1*b*c^3*d^3*e^4 + 3*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - (b^3*c + 3*a*b*c^2)*d*e
^6)*x^3 + 6*(14*c^4*d^5*e^2 - 21*b*c^3*d^4*e^3 + 3*(3*b^2*c^2 + 2*a*c^3)*d^
3*e^4 - (b^3*c + 3*a*b*c^2)*d^2*e^5)*x^2 + 4*(14*c^4*d^6*e - 21*b*c^3*d^5*e
^2 + 3*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - (b^3*c + 3*a*b*c^2)*d^3*e^4)*x)*log(
e*x + d))/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8
)
```

giac [B] time = 0.22, size = 1057, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 1/6*(4*c^4 - 21*(2*c^4*d*e - b*c^3*e^2)*e^(-1)/(x*e + d) + 18*(14*c^4*d^2*e
^2 - 14*b*c^3*d*e^3 + 3*b^2*c^2*e^4 + 2*a*c^3*e^4)*e^(-2)/(x*e + d)^2)*(x*e
```

```
 + d)^3*e^(-8) + 5*(14*c^4*d^3 - 21*b*c^3*d^2*e + 9*b^2*c^2*d*e^2 + 6*a*c^3
*d*e^2 - b^3*c*e^3 - 3*a*b*c^2*e^3)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d
)^2) - 1/12*(840*c^4*d^4*e^36/(x*e + d) - 252*c^4*d^5*e^36/(x*e + d)^2 + 56
*c^4*d^6*e^36/(x*e + d)^3 - 6*c^4*d^7*e^36/(x*e + d)^4 - 1680*b*c^3*d^3*e^3
7/(x*e + d) + 630*b*c^3*d^4*e^37/(x*e + d)^2 - 168*b*c^3*d^5*e^37/(x*e + d)
^3 + 21*b*c^3*d^6*e^37/(x*e + d)^4 + 1080*b^2*c^2*d^2*e^38/(x*e + d) + 720*
a*c^3*d^2*e^38/(x*e + d) - 540*b^2*c^2*d^3*e^38/(x*e + d)^2 - 360*a*c^3*d^3
*e^38/(x*e + d)^2 + 180*b^2*c^2*d^4*e^38/(x*e + d)^3 + 120*a*c^3*d^4*e^38/(
x*e + d)^3 - 27*b^2*c^2*d^5*e^38/(x*e + d)^4 - 18*a*c^3*d^5*e^38/(x*e + d)^
4 - 240*b^3*c*d*e^39/(x*e + d) - 720*a*b*c^2*d*e^39/(x*e + d) + 180*b^3*c*d
^2*e^39/(x*e + d)^2 + 540*a*b*c^2*d^2*e^39/(x*e + d)^2 - 80*b^3*c*d^3*e^39/
(x*e + d)^3 - 240*a*b*c^2*d^3*e^39/(x*e + d)^3 + 15*b^3*c*d^4*e^39/(x*e + d
)^4 + 45*a*b*c^2*d^4*e^39/(x*e + d)^4 + 12*b^4*e^40/(x*e + d) + 144*a*b^2*c
*e^40/(x*e + d) + 72*a^2*c^2*e^40/(x*e + d) - 18*b^4*d*e^40/(x*e + d)^2 - 2
16*a*b^2*c*d*e^40/(x*e + d)^2 - 108*a^2*c^2*d*e^40/(x*e + d)^2 + 12*b^4*d^2
*e^40/(x*e + d)^3 + 144*a*b^2*c*d^2*e^40/(x*e + d)^3 + 72*a^2*c^2*d^2*e^40/
(x*e + d)^3 - 3*b^4*d^3*e^40/(x*e + d)^4 - 36*a*b^2*c*d^3*e^40/(x*e + d)^4
- 18*a^2*c^2*d^3*e^40/(x*e + d)^4 + 18*a*b^3*e^41/(x*e + d)^2 + 54*a^2*b*c*
e^41/(x*e + d)^2 - 24*a*b^3*d*e^41/(x*e + d)^3 - 72*a^2*b*c*d*e^41/(x*e + d
)^3 + 9*a*b^3*d^2*e^41/(x*e + d)^4 + 27*a^2*b*c*d^2*e^41/(x*e + d)^4 + 12*a
^2*b^2*e^42/(x*e + d)^3 + 8*a^3*c*e^42/(x*e + d)^3 - 9*a^2*b^2*d*e^42/(x*e
+ d)^4 - 6*a^3*c*d*e^42/(x*e + d)^4 + 3*a^3*b*e^43/(x*e + d)^4)*e^(-44)
```

maple [**B**] time = 0.06, size = 1056, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x)
```

```
[Out] 3/e^4/(e*x+d)^4*d^3*a*b^2*c+18/e^4/(e*x+d)^2*a*b^2*c*d-45/e^5/(e*x+d)^2*a*b
*c^2*d^2+20/e^5/(e*x+d)^3*a*b*c^2*d^3+6/e^3/(e*x+d)^3*a^2*b*c*d-12/e^4/(e*x
+d)^3*a*b^2*c*d^2+60/e^5/(e*x+d)*a*b*c^2*d-9/4/e^3/(e*x+d)^4*d^2*a^2*b*c+2/
3*c^4*x^3/e^5-15/4/e^5/(e*x+d)^4*d^4*a*b*c^2-35*c^3/e^6*x*b*d-12/e^4/(e*x+d
)*a*b^2*c+3/2/e^4/(e*x+d)^2*b^4*d+21/e^8/(e*x+d)^2*c^4*d^5-1/4/e/(e*x+d)^4*
a^3*b+1/4/e^4/(e*x+d)^4*d^3*b^4+1/2/e^8/(e*x+d)^4*c^4*d^7+5*c/e^5*ln(e*x+d)
*b^3-70*c^4/e^8*ln(e*x+d)*d^3-1/e^4/(e*x+d)*b^4+30*c^4/e^7*x*d^2-6/e^4/(e*x
+d)*c^2*a^2-70/e^8/(e*x+d)*c^4*d^4-2/3/e^2/(e*x+d)^3*a^3*c-1/e^2/(e*x+d)^3*
a^2*b^2-1/e^4/(e*x+d)^3*b^4*d^2-14/3/e^8/(e*x+d)^3*c^4*d^6+7/2*c^3/e^5*x^2*
b-5*c^4/e^6*x^2*d+6*c^3/e^5*x*a+9*c^2/e^5*x*b^2-3/2/e^3/(e*x+d)^2*a*b^3+140
/e^7/(e*x+d)*b*c^3*d^3+15*c^2/e^5*ln(e*x+d)*a*b-30*c^3/e^6*ln(e*x+d)*a*d-45
*c^2/e^6*ln(e*x+d)*b^2*d+105*c^3/e^7*ln(e*x+d)*b*d^2+14/e^7/(e*x+d)^3*b*c^3
*d^5-9/2/e^3/(e*x+d)^2*a^2*b*c-60/e^6/(e*x+d)*a*c^3*d^2+20/e^5/(e*x+d)*b^3*
c*d-90/e^6/(e*x+d)*b^2*c^2*d^2+9/e^4/(e*x+d)^2*a^2*c^2*d+30/e^6/(e*x+d)^2*a
*c^3*d^3-15/e^5/(e*x+d)^2*b^3*c*d^2+45/e^6/(e*x+d)^2*b^2*c^2*d^3-105/2/e^7/
(e*x+d)^2*b*c^3*d^4+1/2/e^2/(e*x+d)^4*a^3*c*d+3/4/e^2/(e*x+d)^4*d*a^2*b^2+3
/2/e^4/(e*x+d)^4*a^2*c^2*d^3-3/4/e^3/(e*x+d)^4*d^2*a*b^3+3/2/e^6/(e*x+d)^4*
a*c^3*d^5-5/4/e^5/(e*x+d)^4*d^4*b^3*c+9/4/e^6/(e*x+d)^4*b^2*c^2*d^5-7/4/e^7
/(e*x+d)^4*b*c^3*d^6+20/3/e^5/(e*x+d)^3*b^3*c*d^3-15/e^6/(e*x+d)^3*b^2*c^2*
d^4-6/e^4/(e*x+d)^3*a^2*c^2*d^2+2/e^3/(e*x+d)^3*a*b^3*d-10/e^6/(e*x+d)^3*a*
c^3*d^4
```

maxima [**A**] time = 0.66, size = 679, normalized size = 1.75

$$-\frac{638\,c^4d^7 - 1197\,bc^3d^6e + 3\,a^3be^7 + 231\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 - 125\left(b^3c + 3\,abc^2\right)d^4e^3 + 3\left(b^4 + 12\,ab^2c + 6\,a^2c^2\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(638*c^4*d^7 - 1197*b*c^3*d^6*e + 3*a^3*b*e^7 + 231*(3*b^2*c^2 + 2*a*
c^3)*d^5*e^2 - 125*(b^3*c + 3*a*b*c^2)*d^4*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^
2*c^2)*d^3*e^4 + 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^
6 + 12*(70*c^4*d^4*e^3 - 140*b*c^3*d^3*e^4 + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e
^5 - 20*(b^3*c + 3*a*b*c^2)*d*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3
 + 18*(126*c^4*d^5*e^2 - 245*b*c^3*d^4*e^3 + 50*(3*b^2*c^2 + 2*a*c^3)*d^3*e
^4 - 30*(b^3*c + 3*a*b*c^2)*d^2*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6
+ (a*b^3 + 3*a^2*b*c)*e^7)*x^2 + 4*(518*c^4*d^6*e - 987*b*c^3*d^5*e^2 + 195
*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 110*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 3*(b^4 +
 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 + 3*(a*b^3 + 3*a^2*b*c)*d*e^6 + (3*a^2*b^2
 + 2*a^3*c)*e^7)*x)/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2 + 4*d^3*e^9*x
 + d^4*e^8) + 1/6*(4*c^4*e^2*x^3 - 3*(10*c^4*d*e - 7*b*c^3*e^2)*x^2 + 6*(30
*c^4*d^2 - 35*b*c^3*d*e + 3*(3*b^2*c^2 + 2*a*c^3)*e^2)*x)/e^7 - 5*(14*c^4*d
^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e
^3)*log(e*x + d)/e^8
```

mupad [**B**] time = 1.88, size = 763, normalized size = 1.96

$$x^2\left(\frac{7\,b\,c^3}{2\,e^5}-\frac{5\,c^4\,d}{e^6}\right)-x\left(\frac{5\,d\left(\frac{7\,b\,c^3}{e^5}-\frac{10\,c^4\,d}{e^6}\right)}{e}-\frac{9\,b^2\,c^2+6\,a\,c^3}{e^5}+\frac{20\,c^4\,d^2}{e^7}\right)-\frac{x^2\left(\frac{9\,a^2\,b\,c\,e^6}{2}+9\,a^2\,c^2\,d\,e^5+\frac{3\,a\,b^3\,e^6}{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x)
```

```
[Out] x^2*((7*b*c^3)/(2*e^5) - (5*c^4*d)/e^6) - x*((5*d*((7*b*c^3)/e^5 - (10*c^4*
d)/e^6))/e - (6*a*c^3 + 9*b^2*c^2)/e^5 + (20*c^4*d^2)/e^7) - (x^2*((3*a*b^3
*e^6)/2 + (3*b^4*d*e^5)/2 + 189*c^4*d^5*e + 150*a*c^3*d^3*e^3 + 9*a^2*c^2*d
*e^5 - (735*b*c^3*d^4*e^2)/2 - 45*b^3*c*d^2*e^4 + 225*b^2*c^2*d^3*e^3 + (9*
a^2*b*c*e^6)/2 + 18*a*b^2*c*d*e^5 - 135*a*b*c^2*d^2*e^4) + x^3*(b^4*e^6 + 6
*a^2*c^2*e^6 + 70*c^4*d^4*e^2 + 60*a*c^3*d^2*e^4 - 140*b*c^3*d^3*e^3 + 90*b
^2*c^2*d^2*e^4 + 12*a*b^2*c*e^6 - 20*b^3*c*d*e^5 - 60*a*b*c^2*d*e^5) + x*((
518*c^4*d^6)/3 + (2*a^3*c*e^6)/3 + a^2*b^2*e^6 + b^4*d^2*e^4 + 130*a*c^3*d^
4*e^2 - (110*b^3*c*d^3*e^3)/3 + 6*a^2*c^2*d^2*e^4 + 195*b^2*c^2*d^4*e^2 + a
*b^3*d*e^5 - 329*b*c^3*d^5*e + 3*a^2*b*c*d*e^5 - 110*a*b*c^2*d^3*e^3 + 12*a
*b^2*c*d^2*e^4) + (638*c^4*d^7 + 3*a^3*b*e^7 + 3*b^4*d^3*e^4 + 3*a*b^3*d^2*
e^5 + 3*a^2*b^2*d*e^6 + 462*a*c^3*d^5*e^2 - 125*b^3*c*d^4*e^3 + 18*a^2*c^2*
d^3*e^4 + 693*b^2*c^2*d^5*e^2 + 2*a^3*c*d*e^6 - 1197*b*c^3*d^6*e - 375*a*b*
c^2*d^4*e^3 + 36*a*b^2*c*d^3*e^4 + 9*a^2*b*c*d^2*e^5)/(12*e))/(d^4*e^7 + e^
11*x^4 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2*e^9*x^2) - (log(d + e*x)*(70*c^
4*d^3 - 5*b^3*c*e^3 + 45*b^2*c^2*d*e^2 - 15*a*b*c^2*e^3 + 30*a*c^3*d*e^2 -
105*b*c^3*d^2*e))/e^8 + (2*c^4*x^3)/(3*e^5)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.1524 $\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2}\,dx$

Optimal. Leaf size=299

$$\frac{\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log\left(a+bx+cx^2\right)}{2c^4}+\frac{ex\left(-2c^2\right.}{}$$

```
[Out] e*(8*c^3*d^3-b^3*e^3+b*c*e^2*(3*a*e+4*b*d)-2*c^2*d*e*(4*a*e+3*b*d))*x/c^3+1
/2*e^2*(12*c^2*d^2+b^2*e^2-2*c*e*(a*e+2*b*d))*x^2/c^2+1/3*e^3*(-b*e+8*c*d)*
x^3/c+1/2*e^4*x^4+1/2*(2*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(a*e+b*d)-4*c^3*d^2*e*
(3*a*e+b*d)+2*c^2*e^2*(a^2*e^2+6*a*b*d*e+3*b^2*d^2))*ln(c*x^2+b*x+a)/c^4-e*
(-b*e+2*c*d)*(2*c^2*d^2+b^2*e^2-2*c*e*(a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+
b^2)^(1/2))*(-4*a*c+b^2)^(1/2)/c^4
```

Rubi [**A**] time = 0.40, antiderivative size = 299, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log\left(a+bx+cx^2\right)}{2c^4}+\frac{e^2x^2\left(-2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(8*c^3*d^3 - b^3*e^3 + b*c*e^2*(4*b*d + 3*a*e) - 2*c^2*d*e*(3*b*d + 4*a*
e))*x)/c^3 + (e^2*(12*c^2*d^2 + b^2*e^2 - 2*c*e*(2*b*d + a*e))*x^2)/(2*c^2)
 + (e^3*(8*c*d - b*e)*x^3)/(3*c) + (e^4*x^4)/2 - (Sqrt[b^2 - 4*a*c]*e*(2*c*
d - b*e)*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt
[b^2 - 4*a*c]])/c^4 + ((2*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(b*d + a*e) - 4*c
^3*d^2*e*(b*d + 3*a*e) + 2*c^2*e^2*(3*b^2*d^2 + 6*a*b*d*e + a^2*e^2))*Log[a
 + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{a+bx+cx^2}\,dx = \int \Bigg(\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)}{c^3}+\frac{e^2\left(12c^2d^2+b^2e^2-2c\right.}{c^2}$$

$$=\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3}+\frac{e^2\left(12c^2d^2+b^2e^2-2ce(\right.}{2c^2}$$

$$=\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3}+\frac{e^2\left(12c^2d^2+b^2e^2-2ce(\right.}{2c^2}$$

$$=\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3}+\frac{e^2\left(12c^2d^2+b^2e^2-2ce(\right.}{2c^2}$$

$$=\frac{e\left(8c^3d^3-b^3e^3+bce^2(4bd+3ae)-2c^2de(3bd+4ae)\right)x}{c^3}+\frac{e^2\left(12c^2d^2+b^2e^2-2ce(\right.}{2c^2}$$

Mathematica [A] time = 0.22, size = 297, normalized size = 0.99

$$\frac{3\left(2c^2e^2\left(a^2e^2+6abde+3b^2d^2\right)-4b^2ce^3(ae+bd)-4c^3d^2e(3ae+bd)+b^4e^4+2c^4d^4\right)\log(a+x(b+cx))+6ce}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x]
```

```
[Out] (6*c*e*(8*c^3*d^3 - b^3*e^3 + b*c*e^2*(4*b*d + 3*a*e) - 2*c^2*d*e*(3*b*d +
4*a*e))*x + 3*c^2*e^2*(12*c^2*d^2 + b^2*e^2 - 2*c*e*(2*b*d + a*e))*x^2 + 2*
c^3*e^3*(8*c*d - b*e)*x^3 + 3*c^4*e^4*x^4 - 6*Sqrt[-b^2 + 4*a*c]*e*(2*c*d -
 b*e)*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]] + 3*(2*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(b*d + a*e) - 4*c^3*d^2*
e*(b*d + 3*a*e) + 2*c^2*e^2*(3*b^2*d^2 + 6*a*b*d*e + a^2*e^2))*Log[a + x*(b
 + c*x)])/(6*c^4)
```

fricas [A] time = 0.72, size = 709, normalized size = 2.37

$$\left[\frac{3\,c^4e^4x^4+2\left(8\,c^4de^3-bc^3e^4\right)x^3+3\left(12\,c^4d^2e^2-4\,bc^3de^3+\left(b^2c^2-2\,ac^3\right)e^4\right)x^2+3\left(4\,c^3d^3e-6\,bc^2d^2e^2+4\,(b\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(3*c^4*e^4*x^4 + 2*(8*c^4*d*e^3 - b*c^3*e^4)*x^3 + 3*(12*c^4*d^2*e^2 -
 4*b*c^3*d*e^3 + (b^2*c^2 - 2*a*c^3)*e^4)*x^2 + 3*(4*c^3*d^3*e - 6*b*c^2*d^
2*e^2 + 4*(b^2*c - a*c^2)*d*e^3 - (b^3 - 2*a*b*c)*e^4)*sqrt(b^2 - 4*a*c)*lo
g((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^
2 + b*x + a)) + 6*(8*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 4*(b^2*c^2 - 2*a*c^3)*d*
e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x + 3*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*(b^2*c^
2 - 2*a*c^3)*d^2*e^2 - 4*(b^3*c - 3*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c + 2*a
^2*c^2)*e^4)*log(c*x^2 + b*x + a))/c^4, 1/6*(3*c^4*e^4*x^4 + 2*(8*c^4*d*e^3
 - b*c^3*e^4)*x^3 + 3*(12*c^4*d^2*e^2 - 4*b*c^3*d*e^3 + (b^2*c^2 - 2*a*c^3)
*e^4)*x^2 - 6*(4*c^3*d^3*e - 6*b*c^2*d^2*e^2 + 4*(b^2*c - a*c^2)*d*e^3 - (b
^3 - 2*a*b*c)*e^4)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b
)/(b^2 - 4*a*c)) + 6*(8*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 4*(b^2*c^2 - 2*a*c^3)
*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x + 3*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*(b^2
*c^2 - 2*a*c^3)*d^2*e^2 - 4*(b^3*c - 3*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c +
2*a^2*c^2)*e^4)*log(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.16, size = 401, normalized size = 1.34

$$\frac{\left(2\,c^4d^4-4\,bc^3d^3e+6\,b^2c^2d^2e^2-12\,ac^3d^2e^2-4\,b^3cde^3+12\,abc^2de^3+b^4e^4-4\,ab^2ce^4+2\,a^2c^2e^4\right)\log\left(cx^2+bx+\right.}{2\,c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^4*d^4 - 4*b*c^3*d^3*e + 6*b^2*c^2*d^2*e^2 - 12*a*c^3*d^2*e^2 - 4*b
^3*c*d*e^3 + 12*a*b*c^2*d*e^3 + b^4*e^4 - 4*a*b^2*c*e^4 + 2*a^2*c^2*e^4)*lo
g(c*x^2 + b*x + a)/c^4 + (4*b^2*c^3*d^3*e - 16*a*c^4*d^3*e - 6*b^3*c^2*d^2*
e^2 + 24*a*b*c^3*d^2*e^2 + 4*b^4*c*d*e^3 - 20*a*b^2*c^2*d*e^3 + 16*a^2*c^3*
d*e^3 - b^5*e^4 + 6*a*b^3*c*e^4 - 8*a^2*b*c^2*e^4)*arctan((2*c*x + b)/sqrt(
-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^4) + 1/6*(3*c^4*x^4*e^4 + 16*c^4*d*x^3
*e^3 + 36*c^4*d^2*x^2*e^2 + 48*c^4*d^3*x*e - 2*b*c^3*x^3*e^4 - 12*b*c^3*d*x
^2*e^3 - 36*b*c^3*d^2*x*e^2 + 3*b^2*c^2*x^2*e^4 - 6*a*c^3*x^2*e^4 + 24*b^2*
c^2*d*x*e^3 - 48*a*c^3*d*x*e^3 - 6*b^3*c*x*e^4 + 18*a*b*c^2*x*e^4)/c^4
```

maple [B] time = 0.05, size = 781, normalized size = 2.61

$$\frac{e^4x^4}{2}-\frac{b\,e^4x^3}{3c}+\frac{8d\,e^3x^3}{3}-\frac{8a^2b\,e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}+\frac{16a^2d\,e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{6a\,b^3e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^3}-\frac{20a\,b^2d\,}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x)
```

```
[Out] 3*e^4/c^2*a*b*x-e^4/c^3*b^3*x-1/3*e^4/c*x^3*b-e^4/c*x^2*a+1/2*e^4/c^2*x^2*b
^2+1/c^2*ln(c*x^2+b*x+a)*a^2*e^4+1/2/c^4*ln(c*x^2+b*x+a)*b^4*e^4+4/c^3/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*d*e^3-6/c^2/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d^2*e^2-8/c^2/(4*a*c-b^2)^
(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*b*e^4+16/c/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*d*e^3+6/c^3/(4*a*c-b^2)^(1/2)*arcta
n((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e^4+4/c/(4*a*c-b^2)^(1/2)*arctan((2*c*
x+b)/(4*a*c-b^2)^(1/2))*b^2*d^3*e+6/c^2*ln(c*x^2+b*x+a)*a*b*d*e^3-20/c^2/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*d*e^3+24/c/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d^2*e^2-2*e^3/c*x^2*b*d
+8*e*d^3*x+8/3*e^3*x^3*d+6*e^2*x^2*d^2+ln(c*x^2+b*x+a)*d^4+3/c^2*ln(c*x^2+b
*x+a)*b^2*d^2*e^2-2/c*ln(c*x^2+b*x+a)*b*d^3*e-16/(4*a*c-b^2)^(1/2)*arctan((
2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d^3*e-8*e^3/c*a*d*x+4*e^3/c^2*b^2*d*x-6/c*ln(
c*x^2+b*x+a)*a*d^2*e^2-2/c^3*ln(c*x^2+b*x+a)*b^3*d*e^3-6*e^2/c*b*d^2*x-1/c^
4/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e^4-2/c^3*ln(c*
x^2+b*x+a)*a*b^2*e^4+1/2*e^4*x^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.09, size = 726, normalized size = 2.43

$$x\left(\frac{b\left(\frac{b\left(\frac{be^4+8cde^3}{c}-\frac{2be^4}{c}\right)}{c}+\frac{2ae^4}{c}-\frac{4de^2\,(be+3cd)}{c}\right)}{c}-\frac{a\left(\frac{be^4+8cde^3}{c}-\frac{2be^4}{c}\right)}{c}+\frac{2d^2e\,(3be+4cd)}{c}\right)+x^3\left(\frac{be^4+8cd}{3c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2),x)
```

```
[Out] x*((b*((b*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/c + (2*a*e^4)/c - (4*d*e^2
*(b*e + 3*c*d))/c))/c - (a*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/c + (2*d^
2*e*(3*b*e + 4*c*d))/c) + x^3*((b*e^4 + 8*c*d*e^3)/(3*c) - (2*b*e^4)/(3*c))
 - x^2*((b*((b*e^4 + 8*c*d*e^3)/c - (2*b*e^4)/c))/(2*c) + (a*e^4)/c - (2*d*
e^2*(b*e + 3*c*d))/c) + (e^4*x^4)/2 + (log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c +
b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^4*e^4 + 2*c^4*d^4 + b^3*e^4*(b^2 - 4*a*
c)^(1/2) + 2*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 + 6*b^2*c^2*d^2*e^2 - 4*a*b^2*c
*e^4 - 4*b*c^3*d^3*e - 4*b^3*c*d*e^3 - 4*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 12
*a*b*c^2*d*e^3 + 4*a*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 4*b^2*c*d*e^3*(b^2 - 4
*a*c)^(1/2) + 6*b*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) - 2*a*b*c*e^4*(b^2 - 4*a*
c)^(1/2)))/(2*c^4) + (log(4*a*c + b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2
- 4*a*c)^(1/2))*(b^4*e^4 + 2*c^4*d^4 - b^3*e^4*(b^2 - 4*a*c)^(1/2) + 2*a^2*
c^2*e^4 - 12*a*c^3*d^2*e^2 + 6*b^2*c^2*d^2*e^2 - 4*a*b^2*c*e^4 - 4*b*c^3*d^
3*e - 4*b^3*c*d*e^3 + 4*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 12*a*b*c^2*d*e^3 -
4*a*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) + 4*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 6*b
*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 2*a*b*c*e^4*(b^2 - 4*a*c)^(1/2)))/(2*c^4
)
```

sympy [B] time = 12.74, size = 1056, normalized size = 3.53

$$\frac{e^4x^4}{2}+x^3\left(-\frac{be^4}{3c}+\frac{8de^3}{3}\right)+x^2\left(-\frac{ae^4}{c}+\frac{b^2e^4}{2c^2}-\frac{2bde^3}{c}+6d^2e^2\right)+x\left(\frac{3abe^4}{c^2}-\frac{8ade^3}{c}-\frac{b^3e^4}{c^3}+\frac{4b^2de^3}{c^2}-\frac{6bd^2e^2}{c}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a),x)
```

```
[Out] e**4*x**4/2 + x**3*(-b*e**4/(3*c) + 8*d*e**3/3) + x**2*(-a*e**4/c + b**2*e*
*4/(2*c**2) - 2*b*d*e**3/c + 6*d**2*e**2) + x*(3*a*b*e**4/c**2 - 8*a*d*e**3
/c - b**3*e**4/c**3 + 4*b**2*d*e**3/c**2 - 6*b*d**2*e**2/c + 8*d**3*e) + (-
e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2
*c**2*d**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*
e**3 - 12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2
*e**2 - 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4))*log(x + (a**2*c*e**4 - a*b
**2*e**4 + 4*a*b*c*d*e**3 - 6*a*c**2*d**2*e**2 + c**3*d**4 - c**3*(-e*sqrt(
-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d
**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**3 -
12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e**2 -
 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4)))/(2*a*b*c*e**4 - 4*a*c**2*d*e**3
- b**3*e**4 + 4*b**2*c*d*e**3 - 6*b*c**2*d**2*e**2 + 4*c**3*d**3*e)) + (e*s
qrt(-4*a*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c*
*2*d**2)/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**
3 - 12*a*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e*
*2 - 4*b*c**3*d**3*e + 2*c**4*d**4)/(2*c**4))*log(x + (a**2*c*e**4 - a*b**2
*e**4 + 4*a*b*c*d*e**3 - 6*a*c**2*d**2*e**2 + c**3*d**4 - c**3*(e*sqrt(-4*a
*c + b**2)*(b*e - 2*c*d)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)
/(2*c**4) + (2*a**2*c**2*e**4 - 4*a*b**2*c*e**4 + 12*a*b*c**2*d*e**3 - 12*a
*c**3*d**2*e**2 + b**4*e**4 - 4*b**3*c*d*e**3 + 6*b**2*c**2*d**2*e**2 - 4*b
*c**3*d**3*e + 2*c**4*d**4)/(2*c**4)))/(2*a*b*c*e**4 - 4*a*c**2*d*e**3 - b*
*3*e**4 + 4*b**2*c*d*e**3 - 6*b*c**2*d**2*e**2 + 4*c**3*d**3*e))
```

3.1525 $\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx$

Optimal. Leaf size=188

$$\frac{ex\left(-ce(2ae+3bd)+b^2e^2+6c^2d^2\right)}{c^2}+\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^3}-\frac{e\sqrt{b^2-4ac}}{}$$

```
[Out] e*(6*c^2*d^2+b^2*e^2-c*e*(2*a*e+3*b*d))*x/c^2+1/2*e^2*(-b*e+6*c*d)*x^2/c+2/
3*e^3*x^3+1/2*(-b*e+2*c*d)*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*ln(c*x^2+b*x+a
)/c^3-e*(3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^
(1/2))*(-4*a*c+b^2)^(1/2)/c^3
```

Rubi [A] time = 0.24, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^3}+\frac{ex\left(-ce(2ae+3bd)+b^2e^2+6c^2d^2\right)}{c^2}-\frac{e\sqrt{b^2-4ac}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(6*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + 2*a*e))*x)/c^2 + (e^2*(6*c*d - b*e)*
x^2)/(2*c) + (2*e^3*x^3)/3 - (Sqrt[b^2 - 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*
e*(3*b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c^3 + ((2*c*d - b*
e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{a+bx+cx^2}\,dx = \int \left(\frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)}{c^2} + \frac{e^2(6cd-be)x}{c} + 2e^3x^2 + \frac{-ab^2e^3-2ace\left(3cd^2-\right.}{}\right.$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \frac{\int \frac{-ab^2e^3-2ace\left(3cd^2-ae^2\right)+b}{}}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \frac{\left(\left(b^2-4ac\right)e\left(3c^2d^2+\right.\right.}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} + \frac{(2cd-be)\left(c^2d^2+b^2e^2\right.}{}$$

$$= \frac{e\left(6c^2d^2+b^2e^2-ce(3bd+2ae)\right)x}{c^2} + \frac{e^2(6cd-be)x^2}{2c} + \frac{2e^3x^3}{3} - \frac{\sqrt{b^2-4ac}\,e\left(3c^2d^2+b\right.}{}$$

Mathematica [**A**] time = 0.18, size = 177, normalized size = 0.94

$$\frac{cex\left(-3ce(4ae+6bd+bex)+6b^2e^2+2c^2\left(18d^2+9dex+2e^2x^2\right)\right)+3(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log}{6c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (c*e*x*(6*b^2*e^2 - 3*c*e*(6*b*d + 4*a*e + b*e*x) + 2*c^2*(18*d^2 + 9*d*e*x
 + 2*e^2*x^2)) - 6*Sqrt[-b^2 + 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d +
 a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + 3*(2*c*d - b*e)*(c^2*d^2 +
b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + x*(b + c*x)])/(6*c^3)
```

fricas [**A**] time = 0.93, size = 458, normalized size = 2.44

$$\left[\frac{4\,c^3e^3x^3+3\left(6\,c^3de^2-bc^2e^3\right)x^2-3\left(3\,c^2d^2e-3\,bcde^2+\left(b^2-ac\right)e^3\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,c}{cx^2+bx+a}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(4*c^3*e^3*x^3 + 3*(6*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(3*c^2*d^2*e - 3*
b*c*d*e^2 + (b^2 - a*c)*e^3)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b
^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 6*(6*c^3*d
^2*e - 3*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x + 3*(2*c^3*d^3 - 3*b*c^2*d^
2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3)*log(c*x^2 + b*x + a)
)/c^3, 1/6*(4*c^3*e^3*x^3 + 3*(6*c^3*d*e^2 - b*c^2*e^3)*x^2 - 6*(3*c^2*d^2*
e - 3*b*c*d*e^2 + (b^2 - a*c)*e^3)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4
*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 6*(6*c^3*d^2*e - 3*b*c^2*d*e^2 + (b^2*c
- 2*a*c^2)*e^3)*x + 3*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - 3*a*b*c)*e^3)*log(c*x^2 + b*x + a))/c^3]
```

giac [**A**] time = 0.16, size = 251, normalized size = 1.34

$$\frac{\left(2\,c^3d^3-3\,bc^2d^2e+3\,b^2cde^2-6\,ac^2de^2-b^3e^3+3\,abce^3\right)\log\left(cx^2+bx+a\right)}{2\,c^3}+\frac{\left(3\,b^2c^2d^2e-12\,ac^3d^2e-3\,b^3cde^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*b^2*c*d*e^2 - 6*a*c^2*d*e^2 - b^3*e^3 +
3*a*b*c*e^3)*log(c*x^2 + b*x + a)/c^3 + (3*b^2*c^2*d^2*e - 12*a*c^3*d^2*e -
 3*b^3*c*d*e^2 + 12*a*b*c^2*d*e^2 + b^4*e^3 - 5*a*b^2*c*e^3 + 4*a^2*c^2*e^3
)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3) + 1/6*(4*
c^3*x^3*e^3 + 18*c^3*d*x^2*e^2 + 36*c^3*d^2*x*e - 3*b*c^2*x^2*e^3 - 18*b*c^
2*d*x*e^2 + 6*b^2*c*x*e^3 - 12*a*c^2*x*e^3)/c^3
```

maple [**B**] time = 0.05, size = 492, normalized size = 2.62

$$\frac{2e^3x^3}{3}+\frac{4a^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{5a\,b^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c^2}+\frac{12abd\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\,c}-\frac{12a\,d^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right.}{\sqrt{4ac-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] 2/3*e^3*x^3-1/2/c*e^3*x^2*b+3*e^2*x^2*d-2/c*e^3*x*a+1/c^2*e^3*x*b^2-3/c*e^2
*x*b*d+6*e*x*d^2+3/2/c^2*ln(c*x^2+b*x+a)*a*b*e^3-3/c*ln(c*x^2+b*x+a)*a*d*e^
2-1/2/c^3*ln(c*x^2+b*x+a)*b^3*e^3+3/2/c^2*ln(c*x^2+b*x+a)*b^2*d*e^2-3/2/c*l
n(c*x^2+b*x+a)*b*d^2*e+ln(c*x^2+b*x+a)*d^3+4/c/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^3-5/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
(4*a*c-b^2)^(1/2))*a*b^2*e^3+12/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*a*b*d*e^2-12/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*d^2*e+1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
4*e^3-3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d*e^2
+3/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^2*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 2.00, size = 433, normalized size = 2.30

$$x^2\left(\frac{b\,e^3+6\,c\,d\,e^2}{2\,c}-\frac{b\,e^3}{c}\right)-x\left(\frac{b\left(\frac{b\,e^3+6\,c\,d\,e^2}{c}-\frac{2\,b\,e^3}{c}\right)}{c}+\frac{2\,a\,e^3}{c}-\frac{3\,d\,e\,\left(b\,e+2\,c\,d\right)}{c}\right)+\frac{2\,e^3\,x^3}{3}-\frac{\ln\Bigl(b\,\sqrt{b^2-4\,a\,c}\,-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2),x)
```

```
[Out] x^2*((b*e^3 + 6*c*d*e^2)/(2*c) - (b*e^3)/c) - x*((b*((b*e^3 + 6*c*d*e^2)/c
- (2*b*e^3)/c))/c + (2*a*e^3)/c - (3*d*e*(b*e + 2*c*d))/c) + (2*e^3*x^3)/3
- (log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^
3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^
2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^
2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2)))/(2*c^3) - (log(
4*a*c + b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(b^3*e^3 -
```

```
 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2)))/(2*c^3)
```

sympy [B] time = 4.81, size = 561, normalized size = 2.98

$$\frac{2e^3x^3}{3}+x^2\left(-\frac{be^3}{2c}+3de^2\right)+x\left(-\frac{2ae^3}{c}+\frac{b^2e^3}{c^2}-\frac{3bde^2}{c}+6d^2e\right)+\left(-\frac{e\sqrt{-4ac+b^2}\,\left(ace^2-b^2e^2+3bcde-3c^2d^2\right)}{2c^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] 2*e**3*x**3/3 + x**2*(-b*e**3/(2*c) + 3*d*e**2) + x*(-2*a*e**3/c + b**2*e**
3/c**2 - 3*b*d*e**2/c + 6*d**2*e) + (-e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**
2*e**2 + 3*b*c*d*e - 3*c**2*d**2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b*
*2*e**2 + b*c*d*e - c**2*d**2)/(2*c**3))*log(x + (-a*b*e**3 + 3*a*c*d*e**2
- c**2*d**3 + c**2*(-e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*
e - 3*c**2*d**2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e
 - c**2*d**2)/(2*c**3)))/(a*c*e**3 - b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2
*e)) + (e*sqrt(-4*a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e - 3*c**2*d*
*2)/(2*c**3) + (b*e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)
/(2*c**3))*log(x + (-a*b*e**3 + 3*a*c*d*e**2 - c**2*d**3 + c**2*(e*sqrt(-4*
a*c + b**2)*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e - 3*c**2*d**2)/(2*c**3) + (b*
e - 2*c*d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(2*c**3)))/(a*c*e
**3 - b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2*e))
```

3.1526 $\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx$

Optimal. Leaf size=114

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{e\sqrt{b^2-4ac}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+ex\left(4d-\frac{be}{c}\right)+e^2$$

```
[Out] e*(4*d-b*e/c)*x+e^2*x^2+1/2*(2*c^2*d^2+b^2*e^2-2*c*e*(a*e+b*d))*ln(c*x^2+b*
x+a)/c^2-e*(-b*e+2*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))*(-4*a*c+b^2)^
(1/2)/c^2
```

Rubi [A] time = 0.13, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{e\sqrt{b^2-4ac}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+ex\left(4d-\frac{be}{c}\right)+e^2$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] e*(4*d - (b*e)/c)*x + e^2*x^2 - (Sqrt[b^2 - 4*a*c]*e*(2*c*d - b*e)*ArcTanh[
(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c^2 + ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d +
a*e))*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{a+bx+cx^2}\,dx = \int \left(e\left(4d-\frac{be}{c}\right)+2e^2x+\frac{bcd^2-4acde+abe^2+\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{c\left(a+bx+cx^2\right)}\right)dx$$

$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\int \frac{bcd^2-4acde+abe^2+\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{a+bx+cx^2}\,dx}{c}$$

$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\left(\left(b^2-4ac\right)e(2cd-be)\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c^2}+\frac{\left(2c^2d^2+b^2e^2-2ce(ba}{2c}$$

$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2+\frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{\left(\left(b^2-4ac\right)}{}$$

$$= e\left(4d-\frac{be}{c}\right)x+e^2x^2-\frac{\sqrt{b^2-4ac}\,e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2}+\frac{\left(2c^2d^2+b^2e^2-2ce(}{}$$

Mathematica [A] time = 0.09, size = 111, normalized size = 0.97

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log(a+x(b+cx))+2e\sqrt{4ac-b^2}\,(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)+2cex(-be+4cd+c}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*x*(4*c*d - b*e + c*e*x) + 2*Sqrt[-b^2 + 4*a*c]*e*(-2*c*d + b*e)*ArcT
an[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + (2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*
e))*Log[a + x*(b + c*x)])/(2*c^2)
```

fricas [A] time = 1.13, size = 282, normalized size = 2.47

$$\left[\frac{2\,c^2e^2x^2-\left(2\,cde-be^2\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+2\left(4\,c^2de-bce^2\right)x+\left(2\,c^2d^2-2\,bcde}{2\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*c^2*e^2*x^2 - (2*c*d*e - b*e^2)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 +
2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
 2*(4*c^2*d*e - b*c*e^2)*x + (2*c^2*d^2 - 2*b*c*d*e + (b^2 - 2*a*c)*e^2)*lo
g(c*x^2 + b*x + a))/c^2, 1/2*(2*c^2*e^2*x^2 - 2*(2*c*d*e - b*e^2)*sqrt(-b^2
 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(4*c^2*
d*e - b*c*e^2)*x + (2*c^2*d^2 - 2*b*c*d*e + (b^2 - 2*a*c)*e^2)*log(c*x^2 +
b*x + a))/c^2]
```

giac [A] time = 0.18, size = 144, normalized size = 1.26

$$\frac{\left(2\,c^2d^2-2\,bcde+b^2e^2-2\,ace^2\right)\log\left(cx^2+bx+a\right)}{2\,c^2}+\frac{\left(2\,b^2cde-8\,ac^2de-b^3e^2+4\,abce^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}+\frac{c^2x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^2*d^2 - 2*b*c*d*e + b^2*e^2 - 2*a*c*e^2)*log(c*x^2 + b*x + a)/c^2
+ (2*b^2*c*d*e - 8*a*c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*arctan((2*c*x + b)/sq
rt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2) + (c^2*x^2*e^2 + 4*c^2*d*x*e - b
*c*x*e^2)/c^2
```

maple [B] time = 0.05, size = 264, normalized size = 2.32

$$\frac{4ab\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c}-\frac{8ade\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}}-\frac{b^{3}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{2}}+\frac{2b^{2}de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c}+e^{2}x^{2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] e^2*x^2-1/c*e^2*b*x+4*d*x*e-1/c*ln(c*x^2+b*x+a)*a*e^2+1/2/c^2*ln(c*x^2+b*x+
a)*b^2*e^2-1/c*ln(c*x^2+b*x+a)*b*d*e+ln(c*x^2+b*x+a)*d^2+4/c/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*e^2-8/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d*e-1/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*b^3*e^2+2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^2*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.26, size = 230, normalized size = 2.02

$$\ln\left(b\,\sqrt{b^{2}-4\,a\,c}-4\,a\,c+b^{2}+2\,c\,x\,\sqrt{b^{2}-4\,a\,c}\right)\left(\frac{\frac{b^{2}\,e^{2}}{2}-c\,\left(a\,e^{2}+b\,d\,e+d\,e\,\sqrt{b^{2}-4\,a\,c}\right)+\frac{b\,e^{2}\,\sqrt{b^{2}-4\,a\,c}}{2}}{c^{2}}+d^{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2),x)
```

```
[Out] log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(((b^2
*e^2)/2 - c*(a*e^2 + b*d*e + d*e*(b^2 - 4*a*c)^(1/2)) + (b*e^2*(b^2 - 4*a*c
)^(1/2))/2)/c^2 + d^2) + x*((b*e^2 + 4*c*d*e)/c - (2*b*e^2)/c) - log(4*a*c
+ b*(b^2 - 4*a*c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*((c*(a*e^2 + b*d
*e - d*e*(b^2 - 4*a*c)^(1/2)) - (b^2*e^2)/2 + (b*e^2*(b^2 - 4*a*c)^(1/2))/2
)/c^2 - d^2) + e^2*x^2
```

sympy [B] time = 1.80, size = 335, normalized size = 2.94

$$e^{2}x^{2}+x\left(-\frac{be^{2}}{c}+4de\right)+\left(-\frac{e\sqrt{-4ac+b^{2}}\;(be-2cd)}{2c^{2}}-\frac{2ace^{2}-b^{2}e^{2}+2bcde-2c^{2}d^{2}}{2c^{2}}\right)\log\left(x+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] e**2*x**2 + x*(-b*e**2/c + 4*d*e) + (-e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(
2*c**2) - (2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2))*log(
x + (a*e**2 - c*d**2 + c*(-e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (
2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2)))/(b*e**2 - 2*c*
d*e)) + (e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (2*a*c*e**2 - b**2*
e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2))*log(x + (a*e**2 - c*d**2 + c*(e*s
qrt(-4*a*c + b**2)*(b*e - 2*c*d)/(2*c**2) - (2*a*c*e**2 - b**2*e**2 + 2*b*c
*d*e - 2*c**2*d**2)/(2*c**2)))/(b*e**2 - 2*c*d*e))
```

3.1527 $\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=70

$$-\frac{e\sqrt{b^2-4ac}\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}+2ex$$

```
[Out] 2*e*x+1/2*(-b*e+2*c*d)*ln(c*x^2+b*x+a)/c-e*arctanh((2*c*x+b)/(-4*a*c+b^2)^(
1/2))*(-4*a*c+b^2)^(1/2)/c
```

Rubi [A] time = 0.09, antiderivative size = 70, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.208, Rules used = {773, 634, 618, 206, 628}

$$-\frac{e\sqrt{b^2-4ac}\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}+2ex$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] 2*e*x - (Sqrt[b^2 - 4*a*c]*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/c + ((
2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)}{a+bx+cx^2}\,dx = 2ex + \frac{\int \frac{bcd-2ace+\left(2c^2d-bce\right)x}{a+bx+cx^2}\,dx}{c}$$

$$= 2ex + \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{a+bx+cx^2}\,dx}{2c} + \frac{(2cd-be)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c}$$

$$= 2ex + \frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c} - \frac{\left(\left(b^2-4ac\right)e\right)\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx, x, b+2cx\right)}{c}$$

$$= 2ex - \frac{\sqrt{b^2-4ac}\,e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c} + \frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2c}$$

Mathematica [A] time = 0.06, size = 72, normalized size = 1.03

$$\frac{-2e\sqrt{4ac-b^2}\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)+(2cd-be)\log(a+x(b+cx))+4cex}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (4*c*e*x - 2*Sqrt[-b^2 + 4*a*c]*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] +
(2*c*d - b*e)*Log[a + x*(b + c*x)])/(2*c)
```

fricas [A] time = 0.91, size = 176, normalized size = 2.51

$$\left[\frac{4\,cex+\sqrt{b^2-4\,ac}\,e\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+(2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,c},\ 4\,cex-2\,\sqrt{-b^2+4\,ac}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(4*c*e*x + sqrt(b^2 - 4*a*c)*e*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c
- sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (2*c*d - b*e)*log(c*x
^2 + b*x + a))/c, 1/2*(4*c*e*x - 2*sqrt(-b^2 + 4*a*c)*e*arctan(-sqrt(-b^2 +
 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c*d - b*e)*log(c*x^2 + b*x + a))/c]
```

giac [A] time = 0.16, size = 81, normalized size = 1.16

$$2\,xe+\frac{(2\,cd-be)\log\left(cx^2+bx+a\right)}{2\,c}+\frac{\left(b^2e-4\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2*x*e + 1/2*(2*c*d - b*e)*log(c*x^2 + b*x + a)/c + (b^2*e - 4*a*c*e)*arctan
((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)
```

maple [A] time = 0.06, size = 113, normalized size = 1.61

$$-\frac{4ae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}-\frac{be\ln\left(c\,x^2+bx+a\right)}{2c}+d\ln\left(c\,x^2+bx+a\right)+2ex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 2*e*x-1/2/c*ln(c*x^2+b*x+a)*b*e+d*ln(c*x^2+b*x+a)-4/(4*a*c-b^2)^(1/2)*arcta
n((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*e+1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*b^2/c*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.32, size = 129, normalized size = 1.84

$$\ln\Big(b\sqrt{b^2-4ac}-4ac+b^2+2cx\sqrt{b^2-4ac}\Big)\left(d-\frac{\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}}{c}\right)+2ex+\ln\Big(4ac+b\sqrt{b^2-4ac}-b^2+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] log(b*(b^2 - 4*a*c)^(1/2) - 4*a*c + b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(d - (
(b*e)/2 + (e*(b^2 - 4*a*c)^(1/2))/2)/c) + 2*e*x + log(4*a*c + b*(b^2 - 4*a*
c)^(1/2) - b^2 + 2*c*x*(b^2 - 4*a*c)^(1/2))*(d - ((b*e)/2 - (e*(b^2 - 4*a*c
)^(1/2))/2)/c)
```

sympy [B] time = 0.71, size = 134, normalized size = 1.91

$$2ex+\left(-\frac{e\sqrt{-4ac+b^2}}{2c}-\frac{be-2cd}{2c}\right)\log\left(x+\frac{d+\frac{e\sqrt{-4ac+b^2}}{2c}+\frac{be-2cd}{2c}}{e}\right)+\left(\frac{e\sqrt{-4ac+b^2}}{2c}-\frac{be-2cd}{2c}\right)\log\Bigg(x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] 2*e*x + (-e*sqrt(-4*a*c + b**2)/(2*c) - (b*e - 2*c*d)/(2*c))*log(x + (d + e
*sqrt(-4*a*c + b**2)/(2*c) + (b*e - 2*c*d)/(2*c))/e) + (e*sqrt(-4*a*c + b**
2)/(2*c) - (b*e - 2*c*d)/(2*c))*log(x + (d - e*sqrt(-4*a*c + b**2)/(2*c) +
(b*e - 2*c*d)/(2*c))/e)
```

3.1528 $\int \frac{b+2cx}{a+bx+cx^2}\,dx$

Optimal. Leaf size=11

$$\log\left(a+bx+cx^2\right)$$

```
[Out] ln(c*x^2+b*x+a)
```

Rubi [A] time = 0.00, antiderivative size = 11, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {628}

$$\log\left(a+bx+cx^2\right)$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2),x]
```

```
[Out] Log[a + b*x + c*x^2]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{b+2cx}{a+bx+cx^2}\,dx=\log\left(a+bx+cx^2\right)$$

Mathematica [A] time = 0.00, size = 10, normalized size = 0.91

$$\log(a+x(b+cx))$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2),x]
```

```
[Out] Log[a + x*(b + c*x)]
```

fricas [A] time = 0.94, size = 11, normalized size = 1.00

$$\log\left(cx^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] log(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 12, normalized size = 1.09

$$\log\left(\left|cx^2+bx+a\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] log(abs(c*x^2 + b*x + a))
```

maple [A] time = 0.05, size = 12, normalized size = 1.09

$$\ln\left(c\,x^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a),x)
```

```
[Out] ln(c*x^2+b*x+a)
```

maxima [A] time = 0.71, size = 11, normalized size = 1.00

$$\log\left(cx^2+bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] log(c*x^2 + b*x + a)
```

mupad [B] time = 0.04, size = 11, normalized size = 1.00

$$\ln\left(c\,x^2+b\,x+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2),x)
```

```
[Out] log(a + b*x + c*x^2)
```

sympy [A] time = 0.15, size = 10, normalized size = 0.91

$$\log\left(a+bx+cx^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a),x)
```

```
[Out] log(a + b*x + c*x**2)
```

3.1529 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=130

$$\frac{e\sqrt{b^2-4ac}\,\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{ae^2-bde+cd^2}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\log(d+ex)}{ae^2-bde+cd^2}$$

```
[Out] -(-b*e+2*c*d)*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)+1/2*(-b*e+2*c*d)*ln(c*x^2+b*x+a
)/(a*e^2-b*d*e+c*d^2)+e*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))*(-4*a*c+b^2)^
(1/2)/(a*e^2-b*d*e+c*d^2)
```

Rubi [A] time = 0.18, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.192, Rules used = {800, 634, 618, 206, 628}

$$\frac{e\sqrt{b^2-4ac}\,\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{ae^2-bde+cd^2}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\log(d+ex)}{ae^2-bde+cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (Sqrt[b^2 - 4*a*c]*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*d^2 - b*d*e
 + a*e^2) - ((2*c*d - b*e)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2) + ((2*c*d
- b*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)}\,dx=\int\left(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{bcd-b^2e+2ace+c(2cd-be)x}{\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}\right)dx$$

$$=-\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2}+\frac{\int\frac{bcd-b^2e+2ace+c(2cd-be)x}{a+bx+cx^2}\,dx}{cd^2-bde+ae^2}$$

$$=-\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2}-\frac{\left(\left(b^2-4ac\right)e\right)\int\frac{1}{a+bx+cx^2}\,dx}{2\left(cd^2-bde+ae^2\right)}+\frac{(2cd-be)\int\frac{b+2cx}{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right.}$$

$$=-\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2}+\frac{(2cd-be)\log\left(a+bx+cx^2\right)}{2\left(cd^2-bde+ae^2\right)}+\frac{\left(\left(b^2-4ac\right)e\right)\text{Subs}}{cd^2}$$

$$=\frac{\sqrt{b^2-4ac}\,e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{cd^2-bde+ae^2}-\frac{(2cd-be)\log(d+ex)}{cd^2-bde+ae^2}+\frac{(2cd-be)\log\left(a+b\right.}{2\left(cd^2-bde+\right.}$$

Mathematica [A] time = 0.12, size = 116, normalized size = 0.89

$$\frac{\sqrt{4ac-b^2}\,(2cd-be)(2\log(d+ex)-\log(a+x(b+cx)))+2e\left(b^2-4ac\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{2\sqrt{4ac-b^2}\,\left(e(bd-ae)-cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(b^2 - 4*a*c)*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + Sqrt[-b^2 + 4*a
*c]*(2*c*d - b*e)*(2*Log[d + e*x] - Log[a + x*(b + c*x)]))/(2*Sqrt[-b^2 + 4
*a*c]*(-(c*d^2) + e*(b*d - a*e)))
```

fricas [A] time = 0.82, size = 229, normalized size = 1.76

$$\left[\frac{\sqrt{b^2-4\,ac}\,e\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+(2\,cd-be)\log\left(cx^2+bx+a\right)-2\,(2\,cd-be)\log\left(ex+d\right)}{2\left(cd^2-bde+ae^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*e*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2
 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (2*c*d - b*e)*log(c*x^2 + b*x +
 a) - 2*(2*c*d - b*e)*log(e*x + d))/(c*d^2 - b*d*e + a*e^2), 1/2*(2*sqrt(-b
^2 + 4*a*c)*e*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c*
d - b*e)*log(c*x^2 + b*x + a) - 2*(2*c*d - b*e)*log(e*x + d))/(c*d^2 - b*d*
e + a*e^2)]
```

giac [A] time = 0.16, size = 149, normalized size = 1.15

$$\frac{(2\,cd-be)\log\left(cx^2+bx+a\right)}{2\left(cd^2-bde+ae^2\right)}-\frac{\left(2\,cde-be^2\right)\log\left(|xe+d|\right)}{cd^2e-bde^2+ae^3}-\frac{\left(b^2e-4\,ace\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-b^2+4\,ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d - b*e)*log(c*x^2 + b*x + a)/(c*d^2 - b*d*e + a*e^2) - (2*c*d*e -
 b*e^2)*log(abs(x*e + d))/(c*d^2*e - b*d*e^2 + a*e^3) - (b^2*e - 4*a*c*e)*a
rctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c*d^2 - b*d*e + a*e^2)*sqrt(-b^2 +
4*a*c))
```

maple [**A**] time = 0.07, size = 233, normalized size = 1.79

$$\frac{4ace\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{4ac-b^2}}-\frac{b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(ae^2-bde+cd^2\right)\sqrt{4ac-b^2}}+\frac{be\ln\left(ex+d\right)}{ae^2-bde+cd^2}-\frac{be\ln\left(cx^2+bx+a\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{2cd\ln\left(ex\right.}{ae^2-bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*b*e-2/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*c*d-1/2
/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b*x+a)*b*e+1/(a*e^2-b*d*e+c*d^2)*c*ln(c*x^2+b
*x+a)*d+4/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*a*c*e-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*e*b^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 4.38, size = 515, normalized size = 3.96

$$\frac{\ln\left(2bc^2e-\frac{\left(cd-\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(2ac^2e^2-b^2ce^2+bc^2de-c^2ex\left(be-2cd\right)+\frac{ce\left(cd-\frac{be}{2}+\frac{e\sqrt{b^2-4ac}}{2}\right)\left(b^2de+2xb^2e^2+bcd^2-2xbcde+abe^2+2xc^2d^2-8a\right.}{cd^2-bde+ae^2}\right.}{cd^2-bde+ae^2}\right.}{cd^2-bde+ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*b*c^2*e - ((c*d - (b*e)/2 + (e*(b^2 - 4*a*c)^(1/2))/2)*(2*a*c^2*e^2
- b^2*c*e^2 + b*c^2*d*e - c^2*e*x*(b*e - 2*c*d) + (c*e*(c*d - (b*e)/2 + (e*
(b^2 - 4*a*c)^(1/2))/2)*(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^
2*d*e - 6*a*c*e^2*x - 8*a*c*d*e - 2*b*c*d*e*x))/(a*e^2 + c*d^2 - b*d*e)))/(
a*e^2 + c*d^2 - b*d*e) + 4*c^3*e*x)*(c*d - e*(b/2 - (b^2 - 4*a*c)^(1/2)/2))
)/(a*e^2 + c*d^2 - b*d*e) + (log(2*b*c^2*e - (((b*e)/2 - c*d + (e*(b^2 - 4*
a*c)^(1/2))/2)*(b^2*c*e^2 - 2*a*c^2*e^2 - b*c^2*d*e + c^2*e*x*(b*e - 2*c*d)
 + (c*e*((b*e)/2 - c*d + (e*(b^2 - 4*a*c)^(1/2))/2)*(2*b^2*e^2*x + 2*c^2*d^
2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e^2*x - 8*a*c*d*e - 2*b*c*d*e*x))
/(a*e^2 + c*d^2 - b*d*e)))/(a*e^2 + c*d^2 - b*d*e) + 4*c^3*e*x)*(c*d - e*(b
/2 + (b^2 - 4*a*c)^(1/2)/2)))/(a*e^2 + c*d^2 - b*d*e) + (log(d + e*x)*(b*e
- 2*c*d))/(a*e^2 + c*d^2 - b*d*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1530 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=210

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^2}-\frac{\log(d+ex)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^2}+\frac{e\sqrt{b^2-4ac}\,(2cd}{\left(ae^2-\right.}$$

```
[Out] (-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)-(2*c^2*d^2+b^2*e^2-2*c*e*(a*e+b*d)
)*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^2+1/2*(2*c^2*d^2+b^2*e^2-2*c*e*(a*e+b*d))*l
n(c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^2+e*(-b*e+2*c*d)*arctanh((2*c*x+b)/(-4*a
*c+b^2)^(1/2))*(-4*a*c+b^2)^(1/2)/(a*e^2-b*d*e+c*d^2)^2
```

Rubi **[A]** time = 0.30, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^2}-\frac{\log(d+ex)\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^2}+\frac{e\sqrt{b^2-4ac}\,(2cd}{\left(ae^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] (2*c*d - b*e)/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) + (Sqrt[b^2 - 4*a*c]*e*(2
*c*d - b*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*d^2 - b*d*e + a*e^2)
^2 - ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*Log[d + e*x])/(c*d^2 - b*d*
e + a*e^2)^2 + ((2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e))*Log[a + b*x + c*x
^2])/(2*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx &= \int \Bigg(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)^2}+\frac{e\left(-2c^2d^2-b^2e^2+2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}+\frac{-2b^2cd}{}\\
&= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)}-\frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}+\frac{\int -}{}\\
&= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)}-\frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}-\frac{((b^2}{}\\
&= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)}-\frac{\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}+\frac{(2c}{}\\
&= \frac{2cd-be}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{\sqrt{b^2-4ac}\,e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(cd^2-bde+ae^2\right)^2}-\frac{(2c^2d}{}
\end{aligned}
$$

Mathematica [A] time = 0.29, size = 177, normalized size = 0.84

$$
\frac{\log(d+ex)\left(4ce(ae+bd)-2b^2e^2-4c^2d^2\right)+\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\log(a+x(b+cx))-2e\sqrt{4ac-b^2}}{2\left(e(ae-bd)+cd^2\right)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((2*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x) - 2*Sqrt[-b^2 + 4*a
*c]*e*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]] + (-4*c^2*d^2 -
 2*b^2*e^2 + 4*c*e*(b*d + a*e))*Log[d + e*x] + (2*c^2*d^2 + b^2*e^2 - 2*c*e
*(b*d + a*e))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [A] time = 4.88, size = 745, normalized size = 3.55

$$
\Bigg[\frac{4\,c^2d^3-6\,bcd^2e-2\,abe^3+2\left(b^2+2\,ac\right)de^2-\left(2\,cd^2e-bde^2+\left(2\,cde^2-be^3\right)x\right)\sqrt{b^2-4\,ac}\,\log\Bigg(\frac{2\,c^2x^2+2\,bcx+b^2-2}{cx^2}}{2\left(c^2d^5-\right.}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(4*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 + 2*(b^2 + 2*a*c)*d*e^2 - (2*c*d^
2*e - b*d*e^2 + (2*c*d*e^2 - b*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2
*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
(2*c^2*d^3 - 2*b*c*d^2*e + (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2
 + (b^2 - 2*a*c)*e^3)*x)*log(c*x^2 + b*x + a) - 2*(2*c^2*d^3 - 2*b*c*d^2*e
+ (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*c)*e^3)*x)*
log(e*x + d))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2
*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 +
 2*a*c)*d^2*e^3)*x), 1/2*(4*c^2*d^3 - 6*b*c*d^2*e - 2*a*b*e^3 + 2*(b^2 + 2*
a*c)*d*e^2 + 2*(2*c*d^2*e - b*d*e^2 + (2*c*d*e^2 - b*e^3)*x)*sqrt(-b^2 + 4*
a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*c^2*d^3 - 2
*b*c*d^2*e + (b^2 - 2*a*c)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*
c)*e^3)*x)*log(c*x^2 + b*x + a) - 2*(2*c^2*d^3 - 2*b*c*d^2*e + (b^2 - 2*a*c
)*d*e^2 + (2*c^2*d^2*e - 2*b*c*d*e^2 + (b^2 - 2*a*c)*e^3)*x)*log(e*x + d))/
(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2
+ (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^
3)*x)]
```

giac [**A**] time = 0.26, size = 362, normalized size = 1.72

$$-\frac{\left(2\,b^{2}cde^{3}-8\,ac^{2}de^{3}-b^{3}e^{4}+4\,abce^{4}\right)\arctan\left(\frac{\left(2\,cd-\frac{2\,cd^{2}}{xe+d}-be+\frac{2\,bde}{xe+d}-\frac{2\,ae^{2}}{xe+d}\right)e^{(-1)}}{\sqrt{-b^{2}+4\,ac}}\right)e^{(-2)}}{\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\sqrt{-b^{2}+4\,ac}}+\frac{(2\,c^{2}d^{2}-2\,bcde+b^{2}e^{2}-2\,ace^{2})}{2\,(c^{2}d^{4}-2\,bcd^{3}e+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -(2*b^2*c*d*e^3 - 8*a*c^2*d*e^3 - b^3*e^4 + 4*a*b*c*e^4)*arctan((2*c*d - 2*
c*d^2/(x*e + d) - b*e + 2*b*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(
-b^2 + 4*a*c))*e^(-2)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2
 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-b^2 + 4*a*c)) + 1/2*(2*c^2*d^2 - 2*b*c*d*e
+ b^2*e^2 - 2*a*c*e^2)*log(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x
*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^2*d^4 - 2*b*c*d^3*e + b
^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) + (2*c*d*e^2/(x*e + d)
- b*e^3/(x*e + d))/(c*d^2*e^2 - b*d*e^3 + a*e^4)
```

maple [**B**] time = 0.05, size = 560, normalized size = 2.67

$$-\frac{4abc\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}+\frac{8a\,c^{2}de\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}+\frac{b^{3}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(a\,e^{2}-bde+c\,d^{2}\right)^{2}\sqrt{4ac-b^{2}}}-\frac{2b^{2}cde\,\mathrm{arcta}}{(a\,e^{2}-bde+c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] 2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*a*c*e^2-1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)
*b^2*e^2+2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*b*c*d*e-2/(a*e^2-b*d*e+c*d^2)^2*
ln(e*x+d)*c^2*d^2-1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*b*e+2/(a*e^2-b*d*e+c*d^2)/(
e*x+d)*c*d-1/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)*a*e^2+1/2/(a*e^2-b*d*e
+c*d^2)^2*ln(c*x^2+b*x+a)*b^2*e^2-1/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)
*b*d*e+1/(a*e^2-b*d*e+c*d^2)^2*c^2*ln(c*x^2+b*x+a)*d^2-4/(a*e^2-b*d*e+c*d^2
)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*c*e^2+8/(a*e^
2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c^
2*d*e+1/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*b^3*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*b^2*c*d*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 4.08, size = 1637, normalized size = 7.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(d + e*x)*(e^2*(2*a*c - b^2) - 2*c^2*d^2 + 2*b*c*d*e))/(a^2*e^4 + c^2*d
^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (log(3*b^2*
c^3*d^4 - 12*a*c^4*d^4 - 2*b^5*e^4*x - 12*a^3*c^2*e^4 - 2*a*b^4*e^4 + 2*b^4
*e^4*x*(b^2 - 4*a*c)^(1/2) + 6*c^4*d^4*x*(b^2 - 4*a*c)^(1/2) + 11*a^2*b^2*c
*e^4 - 2*b^3*c^2*d^3*e + b^4*c*d^2*e^2 + 40*a^2*c^3*d^2*e^2 + 2*a*b^3*e^4*(
b^2 - 4*a*c)^(1/2) + 3*b*c^3*d^4*(b^2 - 4*a*c)^(1/2) + 8*a*b*c^3*d^3*e + 6*
a*b^3*c*d*e^3 + 12*a*b^3*c*e^4*x - 32*a*c^4*d^3*e*x + 8*b^4*c*d*e^3*x - 5*a
^2*b*c*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) - 24*a^
2*b*c^2*d*e^3 - 16*a^2*b*c^2*e^4*x + 32*a^2*c^3*d*e^3*x + 8*b^2*c^3*d^3*e*x
 + 16*a^2*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*b^2*c^2*d^3*e*(b^2 - 4*a*c)^(1/
2) + b^3*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 6*a^2*c^2*e^4*x*(b^2 - 4*a*c)^(1/2
) - 14*a*b^2*c^2*d^2*e^2 - 12*b^3*c^2*d^2*e^2*x + 14*a*b*c^2*d^2*e^2*(b^2 -
 4*a*c)^(1/2) - 20*a*c^3*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 14*b^2*c^2*d^2*e^2
*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 8*a*b^2*c*e
^4*x*(b^2 - 4*a*c)^(1/2) - 12*b*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 8*b^3*c*d
*e^3*x*(b^2 - 4*a*c)^(1/2) + 48*a*b*c^3*d^2*e^2*x - 40*a*b^2*c^2*d*e^3*x +
20*a*b*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(e^2*(a*c + (b*(b^2 - 4*a*c)^(1/2))
/2 - b^2/2) + e*(b*c*d - c*d*(b^2 - 4*a*c)^(1/2)) - c^2*d^2))/(a^2*e^4 + c^
2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (log(2*a
*b^4*e^4 + 12*a*c^4*d^4 + 2*b^5*e^4*x + 12*a^3*c^2*e^4 - 3*b^2*c^3*d^4 + 2*
b^4*e^4*x*(b^2 - 4*a*c)^(1/2) + 6*c^4*d^4*x*(b^2 - 4*a*c)^(1/2) - 11*a^2*b^
2*c*e^4 + 2*b^3*c^2*d^3*e - b^4*c*d^2*e^2 - 40*a^2*c^3*d^2*e^2 + 2*a*b^3*e^
4*(b^2 - 4*a*c)^(1/2) + 3*b*c^3*d^4*(b^2 - 4*a*c)^(1/2) - 8*a*b*c^3*d^3*e -
 6*a*b^3*c*d*e^3 - 12*a*b^3*c*e^4*x + 32*a*c^4*d^3*e*x - 8*b^4*c*d*e^3*x -
5*a^2*b*c*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*c^3*d^3*e*(b^2 - 4*a*c)^(1/2) + 24
*a^2*b*c^2*d*e^3 + 16*a^2*b*c^2*e^4*x - 32*a^2*c^3*d*e^3*x - 8*b^2*c^3*d^3*
e*x + 16*a^2*c^2*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*b^2*c^2*d^3*e*(b^2 - 4*a*c)^
(1/2) + b^3*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 6*a^2*c^2*e^4*x*(b^2 - 4*a*c)^(
1/2) + 14*a*b^2*c^2*d^2*e^2 + 12*b^3*c^2*d^2*e^2*x + 14*a*b*c^2*d^2*e^2*(b^
2 - 4*a*c)^(1/2) - 20*a*c^3*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 14*b^2*c^2*d^2*
e^2*x*(b^2 - 4*a*c)^(1/2) - 10*a*b^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 8*a*b^2*
c*e^4*x*(b^2 - 4*a*c)^(1/2) - 12*b*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 8*b^3*
c*d*e^3*x*(b^2 - 4*a*c)^(1/2) - 48*a*b*c^3*d^2*e^2*x + 40*a*b^2*c^2*d*e^3*x
 + 20*a*b*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(e^2*((b*(b^2 - 4*a*c)^(1/2))/2
- a*c + b^2/2) - e*(b*c*d + c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (b*e
- 2*c*d)/((d + e*x)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1531 $\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=303

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^3}+\frac{-2ce(ae+bd)+b^2e^2+2c^2d^2}{(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{(2cd-be)\log(d+ex}{\left(ae^2\right.}$$

```
[Out] 1/2*(-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2+(2*c^2*d^2+b^2*e^2-2*c*e*(a*
e+b*d))/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)-(-b*e+2*c*d)*(c^2*d^2+b^2*e^2-c*e*(3*
a*e+b*d))*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^3+1/2*(-b*e+2*c*d)*(c^2*d^2+b^2*e^2
-c*e*(3*a*e+b*d))*ln(c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^3+e*(3*c^2*d^2+b^2*e^
2-c*e*(a*e+3*b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))*(-4*a*c+b^2)^(1/2)
/(a*e^2-b*d*e+c*d^2)^3
```

Rubi [A] time = 0.48, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = {800, 634, 618, 206, 628}

$$\frac{(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)^3}+\frac{-2ce(ae+bd)+b^2e^2+2c^2d^2}{(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{(2cd-be)\log(d+ex}{\left(ae^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (2*c*d - b*e)/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2) + (2*c^2*d^2 + b^2*e^
2 - 2*c*e*(b*d + a*e))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + (Sqrt[b^2 -
4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt
[b^2 - 4*a*c]])/(c*d^2 - b*d*e + a*e^2)^3 - ((2*c*d - b*e)*(c^2*d^2 + b^2*e
^2 - c*e*(b*d + 3*a*e))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + ((2*c*d -
 b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Log[a + b*x + c*x^2])/(2*(c*d
^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx = \int \left(\frac{e(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{e\left(-2c^2d^2-b^2e^2+2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)^2} + \frac{e(2cd -}{} \right.$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} - \frac{(2cd-be)\left(c^2d\right.}{}$$

$$= \frac{2cd-be}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{2c^2d^2+b^2e^2-2ce(bd+ae)}{\left(cd^2-bde+ae^2\right)^2(d+ex)} + \frac{\sqrt{b^2-4ac}\,e\left(3\right.}{}$$

Mathematica [**A**] time = 0.37, size = 268, normalized size = 0.88

$$\frac{\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\left(e(ae-bd)+cd^2\right)}{d+ex} - 2(2cd-be)\log(d+ex)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right) + (2cd-be)\left(-ce(3a\right.}{2\left(\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (((2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 + (2*(c*d^2 + e*(
-(b*d) + a*e))*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d + a*e)))/(d + e*x) + 2*Sqr
t[-b^2 + 4*a*c]*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*ArcTan[(b + 2*c
*x)/Sqrt[-b^2 + 4*a*c]] - 2*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3
*a*e))*Log[d + e*x] + (2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))
*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^3)
```

fricas [**B**] time = 31.92, size = 1961, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e - a^2*b*e^5 + 2*(5*b^2*c + 2*a*c^2)*d^3*e^
2 - 3*(b^3 + 2*a*b*c)*d^2*e^3 + 2*(2*a*b^2 - a^2*c)*d*e^4 - (3*c^2*d^4*e -
3*b*c*d^3*e^2 + (b^2 - a*c)*d^2*e^3 + (3*c^2*d^2*e^3 - 3*b*c*d*e^4 + (b^2 -
 a*c)*e^5)*x^2 + 2*(3*c^2*d^3*e^2 - 3*b*c*d^2*e^3 + (b^2 - a*c)*d*e^4)*x)*s
qrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)
*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3*b^2
*c*d^2*e^3 - b^3*d*e^4 + (a*b^2 - 2*a^2*c)*e^5)*x + (2*c^3*d^5 - 3*b*c^2*d^
4*e + 3*(b^2*c - 2*a*c^2)*d^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^
2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2
+ 2*(2*c^3*d^4*e - 3*b*c^2*d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3
*a*b*c)*d*e^4)*x)*log(c*x^2 + b*x + a) - 2*(2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(
b^2*c - 2*a*c^2)*d^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c
^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^
3*d^4*e - 3*b*c^2*d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d
*e^4)*x)*log(e*x + d))/(c^3*d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2
*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2
*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*
(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e
^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*
(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e
^5)*x), 1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e - a^2*b*e^5 + 2*(5*b^2*c + 2*a*c^2)
*d^3*e^2 - 3*(b^3 + 2*a*b*c)*d^2*e^3 + 2*(2*a*b^2 - a^2*c)*d*e^4 + 2*(3*c^2
*d^4*e - 3*b*c*d^3*e^2 + (b^2 - a*c)*d^2*e^3 + (3*c^2*d^2*e^3 - 3*b*c*d*e^4
 + (b^2 - a*c)*e^5)*x^2 + 2*(3*c^2*d^3*e^2 - 3*b*c*d^2*e^3 + (b^2 - a*c)*d*
e^4)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*
a*c)) + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3*b^2*c*d^2*e^3 - b^3*d*e^4 + (a
*b^2 - 2*a^2*c)*e^5)*x + (2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(b^2*c - 2*a*c^2)*d
^3*e^2 - (b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^
2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^3*d^4*e - 3*b*c^2*
d^3*e^2 + 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d*e^4)*x)*log(c*x^2
 + b*x + a) - 2*(2*c^3*d^5 - 3*b*c^2*d^4*e + 3*(b^2*c - 2*a*c^2)*d^3*e^2 -
(b^3 - 3*a*b*c)*d^2*e^3 + (2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a
*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5)*x^2 + 2*(2*c^3*d^4*e - 3*b*c^2*d^3*e^2 +
 3*(b^2*c - 2*a*c^2)*d^2*e^3 - (b^3 - 3*a*b*c)*d*e^4)*x)*log(e*x + d))/(c^3
*d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^
6*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2
- 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (
b^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*
b*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (
b^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [**B**]   time = 0.20, size = 710, normalized size = 2.34

$$\frac{\left(2\,c^{3}d^{3}-3\,bc^{2}d^{2}e+3\,b^{2}cde^{2}-6\,ac^{2}de^{2}-b^{3}e^{3}+3\,abce^{3}\right)\log\left(cx^{2}+bx+a\right)}{2\left(c^{3}d^{6}-3\,bc^{2}d^{5}e+3\,b^{2}cd^{4}e^{2}+3\,ac^{2}d^{4}e^{2}-b^{3}d^{3}e^{3}-6\,abcd^{3}e^{3}+3\,ab^{2}d^{2}e^{4}+3\,a^{2}cd^{2}e^{4}-3\,a^{2}bde^{5}+a^{3}e^{6}\right)}-\frac{}{c^{3}d^{6}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*b^2*c*d*e^2 - 6*a*c^2*d*e^2 - b^3*e^3 +
3*a*b*c*e^3)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^
2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a
^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (2*c^3*d^3*e - 3*b*c^2*d^2*e^2 +
3*b^2*c*d*e^3 - 6*a*c^2*d*e^3 - b^3*e^4 + 3*a*b*c*e^4)*log(abs(x*e + d))/(c
^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^
4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a
^3*e^7) - (3*b^2*c^2*d^2*e - 12*a*c^3*d^2*e - 3*b^3*c*d*e^2 + 12*a*b*c^2*d*
e^2 + b^4*e^3 - 5*a*b^2*c*e^3 + 4*a^2*c^2*e^3)*arctan((2*c*x + b)/sqrt(-b^2
 + 4*a*c))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b
*d*e^5 + a^3*e^6)*sqrt(-b^2 + 4*a*c)) + 1/2*(6*c^3*d^5 - 13*b*c^2*d^4*e + 1
0*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - 3*b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 4*a*b
^2*d*e^4 - 2*a^2*c*d*e^4 - a^2*b*e^5 + 2*(2*c^3*d^4*e - 4*b*c^2*d^3*e^2 + 3
*b^2*c*d^2*e^3 - b^3*d*e^4 + a*b^2*e^5 - 2*a^2*c*e^5)*x)/((c*d^2 - b*d*e +
a*e^2)^3*(x*e + d)^2)
```

maple [**B**] time = 0.06, size = 1033, normalized size = 3.41

$$-\frac{4a^2c^2e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)^3\sqrt{4ac-b^2}}+\frac{5a b^2c e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)^3\sqrt{4ac-b^2}}-\frac{12ab c^2d e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)^3\sqrt{4ac-b^2}}+\frac{12a c^3d^2e}{(a e^2-bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] -12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*b*c^2*d*e^2+6/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c^2*a*d*e^2-3/(a*e^2-b
*d*e+c*d^2)^3*ln(e*x+d)*a*b*c*e^3-3/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*
x+a)*b*d^2*e-4/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*a^2*c^2*e^3-3/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^2*c*d*e^2+3
/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b*c^2*d^2*e-3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c^2*d^2*e+5/(a*e^2-b*d*
e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*c*e^
3+12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*a*c^3*d^2*e+3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*b^3*c*d*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b*c*d*e+3/
2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*a*b*e^3-3/(a*e^2-b*d*e+c*d^2)^3*c
^2*ln(c*x^2+b*x+a)*a*d*e^2+3/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*b^2*
d*e^2+1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^3*e^3-2/(a*e^2-b*d*e+c*d^2)^3*ln(
e*x+d)*c^3*d^3+1/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b^2*e^2+2/(a*e^2-b*d*e+c*d^2
)^2/(e*x+d)*c^2*d^2-1/2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2*b*e+1/(a*e^2-b*d*e+c*
d^2)/(e*x+d)^2*c*d-1/2/(a*e^2-b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*b^3*e^3+1/(a*e
^2-b*d*e+c*d^2)^3*c^3*ln(c*x^2+b*x+a)*d^3-2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*a
*c*e^2-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*b^4*e^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 10.98, size = 2608, normalized size = 8.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*a*e^5*(b^2 - 4*a*c)^(5/2) + 32*a*b^5*e^5 - 192*a*c^5*d^5 + 32*b^6*e^
5*x + 48*b^2*c^4*d^5 + 18*b^3*e^5*x*(b^2 - 4*a*c)^(3/2) + 3*b^5*e^5*x*(b^2
- 4*a*c)^(1/2) - 96*c^5*d^5*x*(b^2 - 4*a*c)^(1/2) - 208*a^2*b^3*c*e^5 + 320
*a^3*b*c^2*e^5 - 704*a^3*c^3*d*e^4 - 48*b^3*c^3*d^4*e - 16*b^5*c*d^2*e^3 -
64*a^3*c^3*e^5*x + 1152*a^2*c^4*d^3*e^2 + 48*b^4*c^2*d^3*e^2 + 33*b*d*e^4*(
b^2 - 4*a*c)^(5/2) + 11*b*e^5*x*(b^2 - 4*a*c)^(5/2) + 24*a*b^2*e^5*(b^2 - 4
*a*c)^(3/2) + 6*a*b^4*e^5*(b^2 - 4*a*c)^(1/2) - 48*b*c^4*d^5*(b^2 - 4*a*c)^
(1/2) - 18*b^3*d*e^4*(b^2 - 4*a*c)^(3/2) - 15*b^5*d*e^4*(b^2 - 4*a*c)^(1/2)
 - 44*c*d^2*e^3*(b^2 - 4*a*c)^(5/2) - 72*c^3*d^4*e*(b^2 - 4*a*c)^(3/2) - 22
*c*d*e^4*x*(b^2 - 4*a*c)^(5/2) + 192*a*b*c^4*d^4*e - 128*a*b^4*c*d*e^4 - 12
0*b^3*c^2*d^3*e^2*(b^2 - 4*a*c)^(1/2) - 224*a*b^4*c*e^5*x - 576*a*c^5*d^4*e
*x - 160*b^5*c*d*e^4*x + 144*b^2*c^4*d^4*e*x + 72*b*c^2*d^3*e^2*(b^2 - 4*a*
c)^(3/2) + 120*b^2*c^3*d^4*e*(b^2 - 4*a*c)^(1/2) + 60*b^4*c*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 144*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(3/2) - 480*a*b^2*c^3*d^3*e^
2 + 320*a*b^3*c^2*d^2*e^3 - 1024*a^2*b*c^3*d^2*e^3 + 688*a^2*b^2*c^2*d*e^4
+ 400*a^2*b^2*c^2*e^5*x + 1408*a^2*c^4*d^2*e^3*x - 288*b^3*c^3*d^3*e^2*x +
304*b^4*c^2*d^2*e^3*x + 216*b*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(3/2) - 1568*a*b^
2*c^3*d^2*e^3*x - 240*b^2*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(1/2) + 120*b^3*c^2*d
^2*e^3*x*(b^2 - 4*a*c)^(1/2) + 240*b*c^4*d^4*e*x*(b^2 - 4*a*c)^(1/2) - 108*
b^2*c*d*e^4*x*(b^2 - 4*a*c)^(3/2) - 30*b^4*c*d*e^4*x*(b^2 - 4*a*c)^(1/2) +
1152*a*b*c^4*d^3*e^2*x + 992*a*b^3*c^2*d*e^4*x - 1408*a^2*b*c^3*d*e^4*x)*(e
^2*((3*b^2*c*d)/2 - 3*a*c^2*d + (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) - e^3*(b^3
/2 + (b^2*(b^2 - 4*a*c)^(1/2))/2 - (3*a*b*c)/2 - (a*c*(b^2 - 4*a*c)^(1/2))/
2) + c^3*d^3 - e*((3*b*c^2*d^2)/2 + (3*c^2*d^2*(b^2 - 4*a*c)^(1/2))/2)))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*
c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e
^3) - (log(32*a*b^5*e^5 - 2*a*e^5*(b^2 - 4*a*c)^(5/2) - 192*a*c^5*d^5 + 32*
b^6*e^5*x + 48*b^2*c^4*d^5 - 18*b^3*e^5*x*(b^2 - 4*a*c)^(3/2) - 3*b^5*e^5*x
*(b^2 - 4*a*c)^(1/2) + 96*c^5*d^5*x*(b^2 - 4*a*c)^(1/2) - 208*a^2*b^3*c*e^5
 + 320*a^3*b*c^2*e^5 - 704*a^3*c^3*d*e^4 - 48*b^3*c^3*d^4*e - 16*b^5*c*d^2*
e^3 - 64*a^3*c^3*e^5*x + 1152*a^2*c^4*d^3*e^2 + 48*b^4*c^2*d^3*e^2 - 33*b*d
*e^4*(b^2 - 4*a*c)^(5/2) - 11*b*e^5*x*(b^2 - 4*a*c)^(5/2) - 24*a*b^2*e^5*(b
^2 - 4*a*c)^(3/2) - 6*a*b^4*e^5*(b^2 - 4*a*c)^(1/2) + 48*b*c^4*d^5*(b^2 - 4
*a*c)^(1/2) + 18*b^3*d*e^4*(b^2 - 4*a*c)^(3/2) + 15*b^5*d*e^4*(b^2 - 4*a*c)
^(1/2) + 44*c*d^2*e^3*(b^2 - 4*a*c)^(5/2) + 72*c^3*d^4*e*(b^2 - 4*a*c)^(3/2
) + 22*c*d*e^4*x*(b^2 - 4*a*c)^(5/2) + 192*a*b*c^4*d^4*e - 128*a*b^4*c*d*e^
4 + 120*b^3*c^2*d^3*e^2*(b^2 - 4*a*c)^(1/2) - 224*a*b^4*c*e^5*x - 576*a*c^5
*d^4*e*x - 160*b^5*c*d*e^4*x + 144*b^2*c^4*d^4*e*x - 72*b*c^2*d^3*e^2*(b^2
- 4*a*c)^(3/2) - 120*b^2*c^3*d^4*e*(b^2 - 4*a*c)^(1/2) - 60*b^4*c*d^2*e^3*(
b^2 - 4*a*c)^(1/2) + 144*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(3/2) - 480*a*b^2*c^3*
d^3*e^2 + 320*a*b^3*c^2*d^2*e^3 - 1024*a^2*b*c^3*d^2*e^3 + 688*a^2*b^2*c^2*
d*e^4 + 400*a^2*b^2*c^2*e^5*x + 1408*a^2*c^4*d^2*e^3*x - 288*b^3*c^3*d^3*e^
2*x + 304*b^4*c^2*d^2*e^3*x - 216*b*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(3/2) - 156
8*a*b^2*c^3*d^2*e^3*x + 240*b^2*c^3*d^3*e^2*x*(b^2 - 4*a*c)^(1/2) - 120*b^3
*c^2*d^2*e^3*x*(b^2 - 4*a*c)^(1/2) - 240*b*c^4*d^4*e*x*(b^2 - 4*a*c)^(1/2)
+ 108*b^2*c*d*e^4*x*(b^2 - 4*a*c)^(3/2) + 30*b^4*c*d*e^4*x*(b^2 - 4*a*c)^(1
/2) + 1152*a*b*c^4*d^3*e^2*x + 992*a*b^3*c^2*d*e^4*x - 1408*a^2*b*c^3*d*e^4
*x)*(e^2*(3*a*c^2*d - (3*b^2*c*d)/2 + (3*b*c*d*(b^2 - 4*a*c)^(1/2))/2) + e^
3*(b^3/2 - (b^2*(b^2 - 4*a*c)^(1/2))/2 - (3*a*b*c)/2 + (a*c*(b^2 - 4*a*c)^(
1/2))/2) - c^3*d^3 + e*((3*b*c^2*d^2)/2 - (3*c^2*d^2*(b^2 - 4*a*c)^(1/2))/2
)))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3) - ((a*b*e^3 - 3*b^2*d*e^2 - 6*c^2*d^3 + 2*a*c*d*e^2 + 7*b*c*d^2*e
)/(2*(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d
^2*e^2)) - (x*(b^2*e^3 + 2*c^2*d^2*e - 2*a*c*e^3 - 2*b*c*d*e^2))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))/(d^2 +
 e^2*x^2 + 2*d*e*x) + (log(d + e*x)*(e^2*(6*a*c^2*d - 3*b^2*c*d) + e^3*(b^3
 - 3*a*b*c) - 2*c^3*d^3 + 3*b*c^2*d^2*e))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3
+ 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3
*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1532 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=172

$$\frac{2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{c^3}-\frac{4e(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4a}}\right.}{c^3\sqrt{b^2-4ac}}$$

```
[Out] 4*e^3*(-b*e+3*c*d)*x/c^2+2*e^4*x^2/c-(e*x+d)^4/(c*x^2+b*x+a)+2*e^2*(3*c^2*d
^2+b^2*e^2-c*e*(a*e+3*b*d))*ln(c*x^2+b*x+a)/c^3-4*e*(-b*e+2*c*d)*(c^2*d^2+b
^2*e^2-c*e*(3*a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3/(-4*a*c+b
^2)^(1/2)
```

Rubi **[A]** time = 0.22, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {768, 701, 634, 618, 206, 628}

$$\frac{2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{c^3}-\frac{4e(2cd-be)\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4a}}\right.}{c^3\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (4*e^3*(3*c*d - b*e)*x)/c^2 + (2*e^4*x^2)/c - (d + e*x)^4/(a + b*x + c*x^2)
 - (4*e*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*ArcTanh[(b +
2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[b^2 - 4*a*c]) + (2*e^2*(3*c^2*d^2 + b^
2*e^2 - c*e*(3*b*d + a*e))*Log[a + b*x + c*x^2])/c^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 701

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Int[PolynomialDivide[(d + e*x)^m, a + b*x + c*x^2, x], x] /; FreeQ[{a,
b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&
NeQ[2*c*d - b*e, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^4}{a+bx+cx^2} + (4e)\int \frac{(d+ex)^3}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^4}{a+bx+cx^2} + (4e)\int \Bigg(\frac{e^2(3cd-be)}{c^2} + \frac{e^3x}{c} + \frac{c^2d^3-3acde^2+abe^3+e(3c^2d^2+b}{c^2(a+bx+cx^2}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{(4e)\int \frac{c^2d^3-3acde^2+abe^3+e(3c^2d^2+b^2e^2-ce(3bd+ae}{a+bx+cx^2}}{c^2}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{\left(2e^2\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)\int \frac{b}{a+b}}{c^3}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} + \frac{2e^2\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\log(a}{c^3}$$

$$= \frac{4e^3(3cd-be)x}{c^2} + \frac{2e^4x^2}{c} - \frac{(d+ex)^4}{a+bx+cx^2} - \frac{4e(2cd-be)\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)}{c^3\sqrt{b^2-4ac}}$$

Mathematica [A] time = 0.28, size = 241, normalized size = 1.40

$$\frac{\frac{-ce^3\left(a^2e+2ab(2d+ex)+4b^2dx\right)+b^2e^4(a+bx)+2c^2de^2(3ad+2aex+3bdx)-c^3d^3(d+4ex)}{a+x(b+cx)} + 2e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log(a+x}{c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (c*e^3*(8*c*d - 3*b*e)*x + c^2*e^4*x^2 + (b^2*e^4*(a + b*x) - c^3*d^3*(d +
4*e*x) + 2*c^2*d*e^2*(3*a*d + 3*b*d*x + 2*a*e*x) - c*e^3*(a^2*e + 4*b^2*d*x
 + 2*a*b*(2*d + e*x)))/(a + x*(b + c*x)) + (4*e*(-2*c*d + b*e)*(-(c^2*d^2)
- b^2*e^2 + c*e*(b*d + 3*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt
[-b^2 + 4*a*c] + 2*e^2*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*Log[a + x*
(b + c*x)])/c^3
```

fricas [B] time = 0.95, size = 1701, normalized size = 9.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [((b^2*c^3 - 4*a*c^4)*e^4*x^4 - (b^2*c^3 - 4*a*c^4)*d^4 + 6*(a*b^2*c^2 - 4*
a^2*c^3)*d^2*e^2 - 4*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c +
 4*a^3*c^2)*e^4 + 2*(4*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^
4)*x^3 + (8*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (3*b^4*c - 13*a*b^2*c^2 + 4*a^2*c
^3)*e^4)*x^2 + 2*(2*a*c^3*d^3*e - 3*a*b*c^2*d^2*e^2 + 3*(a*b^2*c - 2*a^2*c^
2)*d*e^3 - (a*b^3 - 3*a^2*b*c)*e^4 + (2*c^4*d^3*e - 3*b*c^3*d^2*e^2 + 3*(b^
2*c^2 - 2*a*c^3)*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x^2 + (2*b*c^3*d^3*e - 3*
b^2*c^2*d^2*e^2 + 3*(b^3*c - 2*a*b*c^2)*d*e^3 - (b^4 - 3*a*b^2*c)*e^4)*x)*s
qrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)
*(2*c*x + b))/(c*x^2 + b*x + a)) - (4*(b^2*c^3 - 4*a*c^4)*d^3*e - 6*(b^3*c^
2 - 4*a*b*c^3)*d^2*e^2 + 4*(b^4*c - 7*a*b^2*c^2 + 12*a^2*c^3)*d*e^3 - (b^5
- 9*a*b^3*c + 20*a^2*b*c^2)*e^4)*x + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 -
 3*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^4 +
(3*(b^2*c^3 - 4*a*c^4)*d^2*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^3 + (b^4*c - 5
*a*b^2*c^2 + 4*a^2*c^3)*e^4)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^2 - 3*(b^
4*c - 4*a*b^2*c^2)*d*e^3 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^4)*x)*log(c*x^
2 + b*x + a))/(a*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 -
 4*a*b*c^4)*x), ((b^2*c^3 - 4*a*c^4)*e^4*x^4 - (b^2*c^3 - 4*a*c^4)*d^4 + 6*
(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 - 4*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a*b^4
- 5*a^2*b^2*c + 4*a^3*c^2)*e^4 + 2*(4*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2
- 4*a*b*c^3)*e^4)*x^3 + (8*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (3*b^4*c - 13*a*b^
2*c^2 + 4*a^2*c^3)*e^4)*x^2 - 4*(2*a*c^3*d^3*e - 3*a*b*c^2*d^2*e^2 + 3*(a*b
^2*c - 2*a^2*c^2)*d*e^3 - (a*b^3 - 3*a^2*b*c)*e^4 + (2*c^4*d^3*e - 3*b*c^3*
d^2*e^2 + 3*(b^2*c^2 - 2*a*c^3)*d*e^3 - (b^3*c - 3*a*b*c^2)*e^4)*x^2 + (2*b
*c^3*d^3*e - 3*b^2*c^2*d^2*e^2 + 3*(b^3*c - 2*a*b*c^2)*d*e^3 - (b^4 - 3*a*b
^2*c)*e^4)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^
2 - 4*a*c)) - (4*(b^2*c^3 - 4*a*c^4)*d^3*e - 6*(b^3*c^2 - 4*a*b*c^3)*d^2*e^
2 + 4*(b^4*c - 7*a*b^2*c^2 + 12*a^2*c^3)*d*e^3 - (b^5 - 9*a*b^3*c + 20*a^2*
b*c^2)*e^4)*x + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^2*e^2 - 3*(a*b^3*c - 4*a^2*b
*c^2)*d*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^4 + (3*(b^2*c^3 - 4*a*c^4
)*d^2*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^3 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^
3)*e^4)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^2 - 3*(b^4*c - 4*a*b^2*c^2)*d*
e^3 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^4)*x)*log(c*x^2 + b*x + a))/(a*b^2*
c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x)]
```

giac [**A**]   time = 0.16, size = 285, normalized size = 1.66

$$\frac{2\left(3\,c^2d^2e^2-3\,bcde^3+b^2e^4-ace^4\right)\log\left(cx^2+bx+a\right)}{c^3}+\frac{4\left(2\,c^3d^3e-3\,bc^2d^2e^2+3\,b^2cde^3-6\,ac^2de^3-b^3e^4+3\,ab\right.}{\sqrt{-b^2+4\,ac}\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*(3*c^2*d^2*e^2 - 3*b*c*d*e^3 + b^2*e^4 - a*c*e^4)*log(c*x^2 + b*x + a)/c^
3 + 4*(2*c^3*d^3*e - 3*b*c^2*d^2*e^2 + 3*b^2*c*d*e^3 - 6*a*c^2*d*e^3 - b^3*
e^4 + 3*a*b*c*e^4)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*
c)*c^3) + (c^3*x^2*e^4 + 8*c^3*d*x*e^3 - 3*b*c^2*x*e^4)/c^4 - (c^3*d^4 - 6*
a*c^2*d^2*e^2 + 4*a*b*c*d*e^3 - a*b^2*e^4 + a^2*c*e^4 + (4*c^3*d^3*e - 6*b*
c^2*d^2*e^2 + 4*b^2*c*d*e^3 - 4*a*c^2*d*e^3 - b^3*e^4 + 2*a*b*c*e^4)*x)/((c
*x^2 + b*x + a)*c^3)
```

maple [**B**]   time = 0.06, size = 618, normalized size = 3.59

$$-\frac{2ab\,e^4x}{\left(c\,x^2+bx+a\right)c^2}+\frac{12ab\,e^4\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}+\frac{4ad\,e^3x}{\left(c\,x^2+bx+a\right)c}-\frac{24ad\,e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{b^3e^4x}{\left(c\,x^2+bx+a\right)c^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x)
```

```
[Out] e^4*x^2/c-3*e^4/c^2*b*x+8*e^3/c*x*d-2/c^2/(c*x^2+b*x+a)*e^4*x*a*b+4/c/(c*x^
2+b*x+a)*e^3*x*a*d+1/c^3/(c*x^2+b*x+a)*e^4*x*b^3-4/c^2/(c*x^2+b*x+a)*e^3*x*
b^2*d+6/c/(c*x^2+b*x+a)*e^2*x*b*d^2-4/(c*x^2+b*x+a)*e*x*d^3-1/c^2/(c*x^2+b*
x+a)*a^2*e^4+1/c^3/(c*x^2+b*x+a)*a*b^2*e^4-4/c^2/(c*x^2+b*x+a)*a*b*d*e^3+6/
c/(c*x^2+b*x+a)*a*d^2*e^2-1/(c*x^2+b*x+a)*d^4-2/c^2*ln(c*x^2+b*x+a)*a*e^4+2
/c^3*ln(c*x^2+b*x+a)*b^2*e^4-6/c^2*ln(c*x^2+b*x+a)*b*d*e^3+6/c*ln(c*x^2+b*x
+a)*d^2*e^2+12/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*
b*e^4-24/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d*e^3+8*
e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^3-4/c^3/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*e^4+12/c^2/(4*a*c-b^2)^(1/
2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d*e^3-12/c/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^2*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 0.32, size = 358, normalized size = 2.08

$$x\left(\frac{b\,e^4+8\,c\,d\,e^3}{c^2}-\frac{4\,b\,e^4}{c^2}\right)-\frac{\frac{a^2\,c\,e^4-a\,b^2\,e^4+4\,a\,b\,c\,d\,e^3-6\,a\,c^2\,d^2\,e^2+c^3\,d^4}{c}-\frac{x\,\left(b^3\,e^4-4\,b^2\,c\,d\,e^3+6\,b\,c^2\,d^2\,e^2-2\,a\,b\,c\,e^4-4\,c^3\,d^3\,e+4\,a\,c^2\,d\,e^3\right)}{c}}{c^3\,x^2+b\,c^2\,x+a\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^2,x)
```

```
[Out] x*((b*e^4 + 8*c*d*e^3)/c^2 - (4*b*e^4)/c^2) - ((c^3*d^4 - a*b^2*e^4 + a^2*c
*e^4 - 6*a*c^2*d^2*e^2 + 4*a*b*c*d*e^3)/c - (x*(b^3*e^4 - 4*c^3*d^3*e + 6*b
*c^2*d^2*e^2 - 2*a*b*c*e^4 + 4*a*c^2*d*e^3 - 4*b^2*c*d*e^3))/c)/(a*c^2 + c^
3*x^2 + b*c^2*x) - (log(a + b*x + c*x^2)*(4*b^4*e^4 + 16*a^2*c^2*e^4 - 48*a
*c^3*d^2*e^2 + 12*b^2*c^2*d^2*e^2 - 20*a*b^2*c*e^4 - 12*b^3*c*d*e^3 + 48*a*
b*c^2*d*e^3))/(2*(4*a*c^4 - b^2*c^3)) + (e^4*x^2)/c - (4*e*atan((b + 2*c*x)
/(4*a*c - b^2)^(1/2))*(b*e - 2*c*d)*(b^2*e^2 + c^2*d^2 - 3*a*c*e^2 - b*c*d*
e))/(c^3*(4*a*c - b^2)^(1/2))
```

sympy [**B**] time = 25.12, size = 1071, normalized size = 6.23

$$x\left(-\frac{3be^4}{c^2}+\frac{8de^3}{c}\right)+\left(-\frac{2e^2\left(ace^2-b^2e^2+3bcde-3c^2d^2\right)}{c^3}-\frac{2e\sqrt{-4ac+b^2}\,(be-2cd)\left(3ace^2-b^2e^2+bcde-c^2\right.}{c^3\left(4ac-b^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**2,x)
```

```
[Out] x*(-3*b*e**4/c**2 + 8*d*e**3/c) + (-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*
e - 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 -
 b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2)))*log(x + (8*a**2*c*
e**4 - 4*a*b**2*e**4 + 12*a*b*c*d*e**3 + 4*a*c**3*(-2*e**2*(a*c*e**2 - b**2
*e**2 + 3*b*c*d*e - 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*
d)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) -
24*a*c**2*d**2*e**2 - b**2*c**2*(-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e
- 3*c**2*d**2)/c**3 - 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 - b
**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) + 4*b*c**2*d**3*e)/(
12*a*b*c*e**4 - 24*a*c**2*d*e**3 - 4*b**3*e**4 + 12*b**2*c*d*e**3 - 12*b*c*
*2*d**2*e**2 + 8*c**3*d**3*e)) + (-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e
 - 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 -
b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2)))*log(x + (8*a**2*c*e
**4 - 4*a*b**2*e**4 + 12*a*b*c*d*e**3 + 4*a*c**3*(-2*e**2*(a*c*e**2 - b**2*
e**2 + 3*b*c*d*e - 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d
)*(3*a*c*e**2 - b**2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) - 2
4*a*c**2*d**2*e**2 - b**2*c**2*(-2*e**2*(a*c*e**2 - b**2*e**2 + 3*b*c*d*e -
 3*c**2*d**2)/c**3 + 2*e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)*(3*a*c*e**2 - b*
*2*e**2 + b*c*d*e - c**2*d**2)/(c**3*(4*a*c - b**2))) + 4*b*c**2*d**3*e)/(1
2*a*b*c*e**4 - 24*a*c**2*d*e**3 - 4*b**3*e**4 + 12*b**2*c*d*e**3 - 12*b*c**
2*d**2*e**2 + 8*c**3*d**3*e)) + (-a**2*c*e**4 + a*b**2*e**4 - 4*a*b*c*d*e**
3 + 6*a*c**2*d**2*e**2 - c**3*d**4 + x*(-2*a*b*c*e**4 + 4*a*c**2*d*e**3 + b
**3*e**4 - 4*b**2*c*d*e**3 + 6*b*c**2*d**2*e**2 - 4*c**3*d**3*e))/(a*c**3 +
 b*c**3*x + c**4*x**2) + e**4*x**2/c
```

3.1533 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=126

$$-\frac{3e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{3e^3x}{c}$$

```
[Out] 3*e^3*x/c-(e*x+d)^3/(c*x^2+b*x+a)+3/2*e^2*(-b*e+2*c*d)*ln(c*x^2+b*x+a)/c^2-
3*e*(2*c^2*d^2+b^2*e^2-2*c*e*(a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2
))/c^2/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {768, 701, 634, 618, 206, 628}

$$-\frac{3e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{3e^3x}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (3*e^3*x)/c - (d + e*x)^3/(a + b*x + c*x^2) - (3*e*(2*c^2*d^2 + b^2*e^2 - 2
*c*e*(b*d + a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*Sqrt[b^2 - 4
*a*c]) + (3*e^2*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 701

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Int[PolynomialDivide[(d + e*x)^m, a + b*x + c*x^2, x], x] /; FreeQ[{a,
 b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&
 NeQ[2*c*d - b*e, 0] && IGtQ[m, 1] && (NeQ[d, 0] || GtQ[m, 2])
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx &= -\frac{(d+ex)^3}{a+bx+cx^2}+(3e)\int \frac{(d+ex)^2}{a+bx+cx^2}\,dx \\
&= -\frac{(d+ex)^3}{a+bx+cx^2}+(3e)\int \left(\frac{e^2}{c}+\frac{cd^2-ae^2+e(2cd-be)x}{c\left(a+bx+cx^2\right)}\right)dx \\
&= \frac{3e^3x}{c}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{(3e)\int \frac{cd^2-ae^2+e(2cd-be)x}{a+bx+cx^2}\,dx}{c} \\
&= \frac{3e^3x}{c}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{\left(3e^2(2cd-be)\right)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2}+\frac{\big(3e\big(2c^2d^2+b^2e^2-2ce(bd+a}{2c^2} \\
&= \frac{3e^3x}{c}-\frac{(d+ex)^3}{a+bx+cx^2}+\frac{3e^2(2cd-be)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{\big(3e\big(2c^2d^2+b^2e^2-2ce(bd}{} \\
&= \frac{3e^3x}{c}-\frac{(d+ex)^3}{a+bx+cx^2}-\frac{3e\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{3e^2(2cd-}{}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 161, normalized size = 1.28

$$\frac{\frac{6e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{2\left(-ce^2(3ad+aex+3bdx)+be^3(a+bx)+c^2d^2(d+3ex)\right)}{a+x(b+cx)}-3e^2(be-2cd)\log(a+x(b+cx))+}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x]
```

```
[Out] (4*c*e^3*x - (2*(b*e^3*(a + b*x) + c^2*d^2*(d + 3*e*x) - c*e^2*(3*a*d + 3*b
*d*x + a*e*x)))/(a + x*(b + c*x)) + (6*e*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d
+ a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 3*e^2*
(-2*c*d + b*e)*Log[a + x*(b + c*x)])/(2*c^2)
```

fricas [B] time = 0.82, size = 1050, normalized size = 8.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [1/2*(4*(b^2*c^2 - 4*a*c^3)*e^3*x^3 + 4*(b^3*c - 4*a*b*c^2)*e^3*x^2 - 2*(b^
2*c^2 - 4*a*c^3)*d^3 + 6*(a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c
)*e^3 - 3*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d
^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*
c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*
x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 2*(3*
(b^2*c^2 - 4*a*c^3)*d^2*e - 3*(b^3*c - 4*a*b*c^2)*d*e^2 + (b^4 - 7*a*b^2*c
+ 12*a^2*c^2)*e^3)*x + 3*(2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*
c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(
b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a))/
(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)
, 1/2*(4*(b^2*c^2 - 4*a*c^3)*e^3*x^3 + 4*(b^3*c - 4*a*b*c^2)*e^3*x^2 - 2*(b
^2*c^2 - 4*a*c^3)*d^3 + 6*(a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*
c)*e^3 - 6*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*
d^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2
*c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4
*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(3*(b^2*c^2 - 4*a*c^3)*d^2*e - 3*(b^3*
c - 4*a*b*c^2)*d*e^2 + (b^4 - 7*a*b^2*c + 12*a^2*c^2)*e^3)*x + 3*(2*(a*b^2*
c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e
^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4
*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 -
 4*a*c^4)*x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [**A**] time = 0.16, size = 173, normalized size = 1.37

$$\frac{2\,xe^{3}}{c}+\frac{3\left(2\,cde^{2}-be^{3}\right)\log\left(cx^{2}+bx+a\right)}{2\,c^{2}}+\frac{3\left(2\,c^{2}d^{2}e-2\,bcde^{2}+b^{2}e^{3}-2\,ace^{3}\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\sqrt{-b^{2}+4\,ac}\,c^{2}}-\frac{c^{2}d^{3}-3\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*x*e^3/c + 3/2*(2*c*d*e^2 - b*e^3)*log(c*x^2 + b*x + a)/c^2 + 3*(2*c^2*d^2
*e - 2*b*c*d*e^2 + b^2*e^3 - 2*a*c*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*
c))/(sqrt(-b^2 + 4*a*c)*c^2) - (c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3 + (3*c^2*d^
2*e - 3*b*c*d*e^2 + b^2*e^3 - a*c*e^3)*x)/((c*x^2 + b*x + a)*c^2)
```

maple [**B**] time = 0.06, size = 363, normalized size = 2.88

$$\frac{a\,e^{3}x}{\left(c\,x^{2}+bx+a\right)c}-\frac{6a\,e^{3}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c}-\frac{b^{2}e^{3}x}{\left(c\,x^{2}+bx+a\right)c^{2}}+\frac{3b^{2}e^{3}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c^{2}}+\frac{3bd\,e^{2}x}{\left(c\,x^{2}+bx+a\right)c}-\frac{6bd}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x)
```

```
[Out] 2*e^3*x/c+1/c/(c*x^2+b*x+a)*e^3*x*a-1/c^2/(c*x^2+b*x+a)*e^3*x*b^2+3/c/(c*x^
2+b*x+a)*e^2*x*b*d-3/(c*x^2+b*x+a)*e*x*d^2-1/c^2/(c*x^2+b*x+a)*a*b*e^3+3/c/
(c*x^2+b*x+a)*a*d*e^2-1/(c*x^2+b*x+a)*d^3-3/2/c^2*ln(c*x^2+b*x+a)*b*e^3+3/c
*ln(c*x^2+b*x+a)*d*e^2-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))*a*e^3+6*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^2+3
/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e^3-6/c/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 1.95, size = 226, normalized size = 1.79

$$\frac{2\,e^3\,x}{c}-\frac{\frac{c^2\,d^3-3\,a\,c\,d\,e^2+a\,b\,e^3}{c}+\frac{x\left(b^2\,e^3-3\,b\,c\,d\,e^2+3\,c^2\,d^2\,e-a\,c\,e^3\right)}{c}}{c^2\,x^2+b\,c\,x+a\,c}+\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(3\,b^3\,e^3-6\,d\,b^2\,c\,e^2-12\,a\,b\,c\,e^3+24\,a\,a}{2\,\left(4\,a\,c^3-b^2\,c^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*e^3*x)/c - ((c^2*d^3 + a*b*e^3 - 3*a*c*d*e^2)/c + (x*(b^2*e^3 + 3*c^2*d^
2*e - a*c*e^3 - 3*b*c*d*e^2))/c)/(a*c + c^2*x^2 + b*c*x) + (log(a + b*x + c
*x^2)*(3*b^3*e^3 - 12*a*b*c*e^3 + 24*a*c^2*d*e^2 - 6*b^2*c*d*e^2))/(2*(4*a*
c^3 - b^2*c^2)) + (3*e*atan((b + 2*c*x)/(4*a*c - b^2)^(1/2))*(b^2*e^2 + 2*c
^2*d^2 - 2*a*c*e^2 - 2*b*c*d*e))/(c^2*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 11.14, size = 733, normalized size = 5.82

$$\left(-\frac{3e^2\left(be-2cd\right)}{2c^2}-\frac{3e\sqrt{-4ac+b^2}\left(2ace^2-b^2e^2+2bcde-2c^2d^2\right)}{2c^2\left(4ac-b^2\right)}\right)\log\left(x+\frac{-3abe^3-4ac^2\left(-\frac{3e^2(be-2cd)}{2c^2}-\frac{3e\sqrt{-4ac+}}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**2,x)
```

```
[Out] (-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c + b**2)*(2*a*c*e**2 - b**
2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))*log(x + (-3*a*b*
e**3 - 4*a*c**2*(-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c + b**2)*(
2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))
+ 12*a*c*d*e**2 + b**2*c*(-3*e**2*(b*e - 2*c*d)/(2*c**2) - 3*e*sqrt(-4*a*c
+ b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c -
 b**2))) - 3*b*c*d**2*e)/(6*a*c*e**3 - 3*b**2*e**3 + 6*b*c*d*e**2 - 6*c**2*
d**2*e)) + (-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*sqrt(-4*a*c + b**2)*(2*a*c
*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c - b**2)))*log(x
 + (-3*a*b*e**3 - 4*a*c**2*(-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*sqrt(-4*a*
c + b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c**2*(4*a*c
 - b**2))) + 12*a*c*d*e**2 + b**2*c*(-3*e**2*(b*e - 2*c*d)/(2*c**2) + 3*e*s
qrt(-4*a*c + b**2)*(2*a*c*e**2 - b**2*e**2 + 2*b*c*d*e - 2*c**2*d**2)/(2*c*
*2*(4*a*c - b**2))) - 3*b*c*d**2*e)/(6*a*c*e**3 - 3*b**2*e**3 + 6*b*c*d*e**
2 - 6*c**2*d**2*e)) + (-a*b*e**3 + 3*a*c*d*e**2 - c**2*d**3 + x*(a*c*e**3 -
 b**2*e**3 + 3*b*c*d*e**2 - 3*c**2*d**2*e))/(a*c**2 + b*c**2*x + c**3*x**2)
 + 2*e**3*x/c
```

3.1534 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=87

$$-\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{(d+ex)^2}{a+bx+cx^2}+\frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

```
[Out] -(e*x+d)^2/(c*x^2+b*x+a)+e^2*ln(c*x^2+b*x+a)/c-2*e*(-b*e+2*c*d)*arctanh((2*
c*x+b)/(-4*a*c+b^2)^(1/2))/c/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.192$, Rules used = $\{768, 634, 618, 206, 628\}$

$$-\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}-\frac{(d+ex)^2}{a+bx+cx^2}+\frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^2/(a + b*x + c*x^2)) - (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/S
qrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*c]) + (e^2*Log[a + b*x + c*x^2])/c
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^2}{a+bx+cx^2} + (2e)\int \frac{d+ex}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} + \frac{e^2\int \frac{b+2cx}{a+bx+cx^2}\,dx}{c} + \frac{(e(2cd-be))\int \frac{1}{a+bx+cx^2}\,dx}{c}$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} + \frac{e^2\log\left(a+bx+cx^2\right)}{c} - \frac{(2e(2cd-be))\operatorname{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx, x, b+2}{c}$$

$$= -\frac{(d+ex)^2}{a+bx+cx^2} - \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}} + \frac{e^2\log\left(a+bx+cx^2\right)}{c}$$

Mathematica [A] time = 0.11, size = 98, normalized size = 1.13

$$\frac{-\frac{2e(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{e^2(a+bx)-cd(d+2ex)}{a+x(b+cx)} + e^2\log(a+x(b+cx))}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((e^2*(a + b*x) - c*d*(d + 2*e*x))/(a + x*(b + c*x)) - (2*e*(-2*c*d + b*e)*
ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + e^2*Log[a + x*
(b + c*x)])/c
```

fricas [B] time = 0.84, size = 573, normalized size = 6.59

$$\left[-\frac{\left(b^2c-4\,ac^2\right)d^2-\left(ab^2-4\,a^2c\right)e^2+\left(2\,acde-abe^2+\left(2\,c^2de-bce^2\right)x^2+\left(2\,bcde-b^2e^2\right)x\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2}{}\right.}{ab^2c-4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2*c - 4*a*c^2)*d^2 - (a*b^2 - 4*a^2*c)*e^2 + (2*a*c*d*e - a*b*e^2 + (
2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt(b^2 - 4*a*c)*log((
2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 +
 b*x + a)) + (2*(b^2*c - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*x - ((b^2*c -
4*a*c^2)*e^2*x^2 + (b^3 - 4*a*b*c)*e^2*x + (a*b^2 - 4*a^2*c)*e^2)*log(c*x^2
 + b*x + a))/(a*b^2*c - 4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*
b*c^2)*x), -((b^2*c - 4*a*c^2)*d^2 - (a*b^2 - 4*a^2*c)*e^2 + 2*(2*a*c*d*e -
 a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt(-b^2 +
 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (2*(b^2*c -
 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*x - ((b^2*c - 4*a*c^2)*e^2*x^2 + (b^3
- 4*a*b*c)*e^2*x + (a*b^2 - 4*a^2*c)*e^2)*log(c*x^2 + b*x + a))/(a*b^2*c -
4*a^2*c^2 + (b^2*c^2 - 4*a*c^3)*x^2 + (b^3*c - 4*a*b*c^2)*x)]
```

giac [A] time = 0.18, size = 114, normalized size = 1.31

$$\frac{e^2\log\left(cx^2+bx+a\right)}{c} + \frac{2\left(2\,cde-be^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c} - \frac{\frac{\left(2\,cde-be^2\right)x}{c}+\frac{cd^2-ae^2}{c}}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] e^2*log(c*x^2 + b*x + a)/c + 2*(2*c*d*e - b*e^2)*arctan((2*c*x + b)/sqrt(-b
^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c) - ((2*c*d*e - b*e^2)*x/c + (c*d^2 - a*e
^2)/c)/(c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 141, normalized size = 1.62

$$-\frac{2b\,e^{2} \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}\;c}+\frac{4de \arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\sqrt{4ac-b^{2}}}+\frac{e^{2} \ln\left(c\,x^{2}+bx+a\right)}{c}+\frac{\frac{(be-2cd)ex}{c}+\frac{a\,e^{2}-c\,d^{2}}{c}}{c\,x^{2}+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*(b*e-2*c*d)/c*x+(a*e^2-c*d^2)/c)/(c*x^2+b*x+a)+e^2*ln(c*x^2+b*x+a)/c+4*e
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d-2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b/c*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.18, size = 248, normalized size = 2.85

$$\frac{a\,e^{2}}{c^{2}\,x^{2}+b\,c\,x+a\,c}-\frac{d^{2}}{c\,x^{2}+b\,x+a}+\frac{b\,e^{2}\,x}{c^{2}\,x^{2}+b\,c\,x+a\,c}-\frac{2\,d\,e\,x}{c\,x^{2}+b\,x+a}-\frac{b^{2}\,e^{2}\,\ln\left(c\,x^{2}+b\,x+a\right)}{4\,a\,c^{2}-b^{2}\,c}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^2,x)
```

```
[Out] (a*e^2)/(a*c + c^2*x^2 + b*c*x) - d^2/(a + b*x + c*x^2) + (b*e^2*x)/(a*c +
c^2*x^2 + b*c*x) - (2*d*e*x)/(a + b*x + c*x^2) - (b^2*e^2*log(a + b*x + c*x
^2))/(4*a*c^2 - b^2*c) + (4*d*e*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c
 - b^2)^(1/2)))/(4*a*c - b^2)^(1/2) - (2*b*e^2*atan(b/(4*a*c - b^2)^(1/2) +
 (2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2)) + (4*a*c*e^2*log(a +
 b*x + c*x^2))/(4*a*c^2 - b^2*c)
```

sympy [B] time = 4.35, size = 340, normalized size = 3.91

$$\left(\frac{e^{2}}{c}-\frac{e\sqrt{-4ac+b^{2}}\,\left(be-2cd\right)}{c\left(4ac-b^{2}\right)}\right)\log{\left(x+\frac{-4ac\left(\frac{e^{2}}{c}-\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{c\left(4ac-b^{2}\right)}\right)+4ae^{2}+b^{2}\left(\frac{e^{2}}{c}-\frac{e\sqrt{-4ac+b^{2}}\,(be-2cd)}{c\left(4ac-b^{2}\right)}\right)-2b}{2be^{2}-4cde}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**2,x)
```

```
[Out] (e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2)))*log(x + (
-4*a*c*(e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) +
4*a*e**2 + b**2*(e**2/c - e*sqrt(-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b
**2))) - 2*b*d*e)/(2*b*e**2 - 4*c*d*e)) + (e**2/c + e*sqrt(-4*a*c + b**2)*(
b*e - 2*c*d)/(c*(4*a*c - b**2)))*log(x + (-4*a*c*(e**2/c + e*sqrt(-4*a*c +
b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) + 4*a*e**2 + b**2*(e**2/c + e*sqrt(
-4*a*c + b**2)*(b*e - 2*c*d)/(c*(4*a*c - b**2))) - 2*b*d*e)/(2*b*e**2 - 4*c
*d*e)) + (a*e**2 - c*d**2 + x*(b*e**2 - 2*c*d*e))/(a*c + b*c*x + c**2*x**2)
```

3.1535 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=55

$$-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{d+ex}{a+bx+cx^2}$$

```
[Out] (-e*x-d)/(c*x^2+b*x+a)-2*e*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^
2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {768, 618, 206}

$$-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}-\frac{d+ex}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)/(a + b*x + c*x^2)) - (2*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]
])/Sqrt[b^2 - 4*a*c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^2}\,dx&=-\frac{d+ex}{a+bx+cx^2}+e\int \frac{1}{a+bx+cx^2}\,dx\\&=-\frac{d+ex}{a+bx+cx^2}-(2e)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)\\&=-\frac{d+ex}{a+bx+cx^2}-\frac{2e\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 58, normalized size = 1.05

$$\frac{2e\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{d+ex}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)/(a + x*(b + c*x))) + (2*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]
])/Sqrt[-b^2 + 4*a*c]
```

fricas [B] time = 0.97, size = 269, normalized size = 4.89

$$\left[-\frac{\left(b^2-4\,ac\right)ex-\left(cex^2+bex+ae\right)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(b^2-4\,ac\right)d}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x},-\left(b^2-4\,ac\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2 - 4*a*c)*e*x - (c*e*x^2 + b*e*x + a*e)*sqrt(b^2 - 4*a*c)*log((2*c^2
*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x
+ a)) + (b^2 - 4*a*c)*d)/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 -
4*a*b*c)*x), -((b^2 - 4*a*c)*e*x + 2*(c*e*x^2 + b*e*x + a*e)*sqrt(-b^2 + 4*
a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (b^2 - 4*a*c)*
d)/(a*b^2 - 4*a^2*c + (b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)]
```

giac [A] time = 0.16, size = 57, normalized size = 1.04

$$\frac{2\,\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)e}{\sqrt{-b^2+4\,ac}}-\frac{xe+d}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))*e/sqrt(-b^2 + 4*a*c) - (x*e + d)/(
c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 58, normalized size = 1.05

$$\frac{2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{-ex-d}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] (-e*x-d)/(c*x^2+b*x+a)+2*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(
1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.06, size = 73, normalized size = 1.33

$$\frac{2\,e\,\mathrm{atan}\left(\frac{\frac{b\,e}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,e\,x}{\sqrt{4\,a\,c-b^2}}}{e}\right)}{\sqrt{4\,a\,c-b^2}}-\frac{d+e\,x}{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*e*atan(((b*e)/(4*a*c - b^2)^(1/2) + (2*c*e*x)/(4*a*c - b^2)^(1/2))/e))/(
4*a*c - b^2)^(1/2) - (d + e*x)/(a + b*x + c*x^2)
```

sympy [B] time = 1.20, size = 158, normalized size = 2.87

$$-e\sqrt{-\frac{1}{4ac-b^2}}\log\left(x+\frac{-4ace\sqrt{-\frac{1}{4ac-b^2}}+b^2e\sqrt{-\frac{1}{4ac-b^2}}+be}{2ce}\right)+e\sqrt{-\frac{1}{4ac-b^2}}\log\left(x+\frac{4ace\sqrt{-\frac{1}{4ac-b^2}}-b^2e}{2ce}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] -e*sqrt(-1/(4*a*c - b**2))*log(x + (-4*a*c*e*sqrt(-1/(4*a*c - b**2)) + b**2
*e*sqrt(-1/(4*a*c - b**2)) + b*e)/(2*c*e)) + e*sqrt(-1/(4*a*c - b**2))*log(
x + (4*a*c*e*sqrt(-1/(4*a*c - b**2)) - b**2*e*sqrt(-1/(4*a*c - b**2)) + b*e
)/(2*c*e)) + (-d - e*x)/(a + b*x + c*x**2)
```

3.1536 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=14

$$-\frac{1}{a+bx+cx^2}$$

```
[Out] -1/(c*x^2+b*x+a)
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$-\frac{1}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(a + b*x + c*x^2)^(-1)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^2} \, dx = -\frac{1}{a+bx+cx^2}$$

Mathematica [A] time = 0.00, size = 13, normalized size = 0.93

$$-\frac{1}{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(a + x*(b + c*x))^(-1)
```

fricas [A] time = 0.87, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/(c*x^2 + b*x + a)
```

giac [A] time = 0.17, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -1/(c*x^2 + b*x + a)
```

maple **[A]** time = 0.04, size = 15, normalized size = 1.07

$$-\frac{1}{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -1/(c*x^2+b*x+a)
```

maxima **[A]** time = 0.56, size = 14, normalized size = 1.00

$$-\frac{1}{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] -1/(c*x^2 + b*x + a)
```

mupad **[B]** time = 0.03, size = 14, normalized size = 1.00

$$-\frac{1}{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^2,x)
```

```
[Out] -1/(a + b*x + c*x^2)
```

sympy **[A]** time = 0.38, size = 12, normalized size = 0.86

$$-\frac{1}{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**2,x)
```

```
[Out] -1/(a + b*x + c*x**2)
```

3.1537 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=236

$$\frac{e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{e^2(2cd-be)\log}{2\left(ae^2-b\right.}$$

```
[Out] (-(-4*a*c+b^2)*(-b*e+c*d)+c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d
^2)/(c*x^2+b*x+a)-e^2*(-b*e+2*c*d)*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^2+1/2*e^2*
(-b*e+2*c*d)*ln(c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^2+e*(2*c^2*d^2+b^2*e^2-2*c
*e*(a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(a*e^2-b*d*e+c*d^2)^2/(
-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.36, antiderivative size = 236, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{e\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{e^2(2cd-be)\log}{2\left(ae^2-b\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x]
```

```
[Out] -(((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 -
 b*d*e + a*e^2)*(a + b*x + c*x^2))) + (e*(2*c^2*d^2 + b^2*e^2 - 2*c*e*(b*d
+ a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 -
 b*d*e + a*e^2)^2) - (e^2*(2*c*d - b*e)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^
2)^2 + (e^2*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^
2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^2}\,dx &= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{\int \frac{\left(b^2-4ac\right)e(cd-be)-c\left(b^2-4ac\right)e^2x}{(d+ex)\left(a+bx+cx^2\right)}\,dx}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{\int\left(-\frac{\left(b^2-4ac\right)e^3(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{\left(b^2-4a\right.}{}\right.}{\left(b^2-4ac\right)}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}-\frac{e\int}{}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}+\frac{\left(e\right.}{}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e^2(2cd-be)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}+\frac{e^2}{}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}+\frac{e\left(2c^2d^2+b^2e^2-2ce(bd+ae\right.}{\sqrt{b^2-4ac}\left(cd^2-bd\right.}
\end{aligned}
$$

Mathematica [A] time = 0.24, size = 173, normalized size = 0.73

$$
\frac{\frac{2e\left(2ce(ae+bd)-b^2e^2-2c^2d^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{2\left(e(ae-bd)+cd^2\right)(be-cd+cex)}{a+x(b+cx)}-e^2(be-2cd)\log(a+x(b+cx))+2e^2(be-2cd)\,\mathrm{lo}}{2\left(e(ae-bd)+cd^2\right)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((2*(c*d^2 + e*(-(b*d) + a*e))*(-(c*d) + b*e + c*e*x))/(a + x*(b + c*x)) +
(2*e*(-2*c^2*d^2 - b^2*e^2 + 2*c*e*(b*d + a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 2*e^2*(-2*c*d + b*e)*Log[d + e*x] - e^2*(
-2*c*d + b*e)*Log[a + x*(b + c*x)]])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [B] time = 5.80, size = 1834, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 4*(b^3*c - 4*a*b*c^2)*d^2*e + 2*(b^4 - 3
*a*b^2*c - 4*a^2*c^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c)*e^3 + (2*a*c^2*d^2*e -
2*a*b*c*d*e^2 + (a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d^2*e - 2*b*c^2*d*e^2 + (b^2
*c - 2*a*c^2)*e^3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*c*d*e^2 + (b^3 - 2*a*b*c)*e
^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2
- 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - 2*((b^2*c^2 - 4*a*c^3)*d^2*e - (
b^3*c - 4*a*b*c^2)*d*e^2 + (a*b^2*c - 4*a^2*c^2)*e^3)*x - (2*(a*b^2*c - 4*a
^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b
^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*
c)*e^3)*x)*log(c*x^2 + b*x + a) + 2*(2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3
 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)
*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(e*x + d
))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4
- 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b
^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*
e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d
*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b
^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*
b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4)*x), -1/2*(2*(b^2*c^2
- 4*a*c^3)*d^3 - 4*(b^3*c - 4*a*b*c^2)*d^2*e + 2*(b^4 - 3*a*b^2*c - 4*a^2*c
^2)*d*e^2 - 2*(a*b^3 - 4*a^2*b*c)*e^3 - 2*(2*a*c^2*d^2*e - 2*a*b*c*d*e^2 +
(a*b^2 - 2*a^2*c)*e^3 + (2*c^3*d^2*e - 2*b*c^2*d*e^2 + (b^2*c - 2*a*c^2)*e^
3)*x^2 + (2*b*c^2*d^2*e - 2*b^2*c*d*e^2 + (b^3 - 2*a*b*c)*e^3)*x)*sqrt(-b^2
 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*((b^2*c
^2 - 4*a*c^3)*d^2*e - (b^3*c - 4*a*b*c^2)*d*e^2 + (a*b^2*c - 4*a^2*c^2)*e^3
)*x - (2*(a*b^2*c - 4*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^
2 - 4*a*c^3)*d*e^2 - (b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*
d*e^2 - (b^4 - 4*a*b^2*c)*e^3)*x)*log(c*x^2 + b*x + a) + 2*(2*(a*b^2*c - 4*
a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3 + (2*(b^2*c^2 - 4*a*c^3)*d*e^2 - (
b^3*c - 4*a*b*c^2)*e^3)*x^2 + (2*(b^3*c - 4*a*b*c^2)*d*e^2 - (b^4 - 4*a*b^2
*c)*e^3)*x)*log(e*x + d))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2
*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*
a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^
3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a
*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2
- 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2
*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4
)*x)]
```

giac [A] time = 0.21, size = 357, normalized size = 1.51

$$\frac{\left(2\,cde^2-be^3\right)\log\left(cx^2+bx+a\right)}{2\left(c^2d^4-2\,bcd^3e+b^2d^2e^2+2\,acd^2e^2-2\,abde^3+a^2e^4\right)}-\frac{\left(2\,cde^3-be^4\right)\log\left(|xe+d|\right)}{c^2d^4e-2\,bcd^3e^2+b^2d^2e^3+2\,acd^2e^3-2\,abde^4+a^2e^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d*e^2 - b*e^3)*log(c*x^2 + b*x + a)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d
^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) - (2*c*d*e^3 - b*e^4)*log(a
bs(x*e + d))/(c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3 + 2*a*c*d^2*e^3 - 2*a
*b*d*e^4 + a^2*e^5) - (2*c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3 - 2*a*c*e^3)*arc
tan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 +
 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-b^2 + 4*a*c)) - (c^2*d^3 - 2*
b*c*d^2*e + b^2*d*e^2 + a*c*d*e^2 - a*b*e^3 - (c^2*d^2*e - b*c*d*e^2 + a*c*
e^3)*x)/((c*d^2 - b*d*e + a*e^2)^2*(c*x^2 + b*x + a))
```

maple [B] time = 0.10, size = 668, normalized size = 2.83

$$\frac{a c\,e^{3} x}{\left(a\,e^{2}-b d e +c\,d^{2}\right)^{2} \left(c\,x^{2}+b x +a \right)}+\frac{2 a c\,e^{3} \arctan \left(\frac{2 c x +b}{\sqrt{4 a c -b^{2}}}\right)}{\left(a\,e^{2}-b d e +c\,d^{2}\right)^{2} \sqrt{4 a c -b^{2}}}-\frac{b^{2} e^{3} \arctan \left(\frac{2 c x +b}{\sqrt{4 a c -b^{2}}}\right)}{\left(a\,e^{2}-b d e +c\,d^{2}\right)^{2} \sqrt{4 a c -b^{2}}}-\left(a\,e^{2}-b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x)
```

```
[Out] e^3/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*b-2*e^2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)
*c*d+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*x*a*c*e^3-1/(a*e^2-b*d*e+c*d^2)^
2/(c*x^2+b*x+a)*x*b*c*d*e^2+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*x*c^2*d^2
*e+1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*a*b*e^3-1/(a*e^2-b*d*e+c*d^2)^2/(c
*x^2+b*x+a)*a*c*d*e^2-1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*b^2*d*e^2+2/(a*
e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)*b*c*d^2*e-1/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b
*x+a)*c^2*d^3-1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a)*b*e^3+1/(a*e^2-b*d*
e+c*d^2)^2*c*ln(c*x^2+b*x+a)*d*e^2+2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e^3-1/(a*e^2-b*d*e+c*d^2)^2/(4*a*
c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e^3+2/(a*e^2-b*d*e+c*d
^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d*e^2-2/(a*
e^2-b*d*e+c*d^2)^2*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
c^2*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 7.93, size = 1833, normalized size = 7.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((b*e - c*d)/(a*e^2 + c*d^2 - b*d*e) + (c*e*x)/(a*e^2 + c*d^2 - b*d*e))/(a
+ b*x + c*x^2) + (log(d + e*x)*(b*e^3 - 2*c*d*e^2))/(a^2*e^4 + c^2*d^4 + b^
2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (log(a*e^4*(b^2 -
4*a*c)^(5/2) + 8*a*b^5*e^4 + 8*b^6*e^4*x - 4*c^3*d^4*(b^2 - 4*a*c)^(3/2) +
4*b^3*c^3*d^4 + 4*b^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 60*a^2*b^3*c*e^4 + 112*a^
3*b*c^2*e^4 + 256*a^2*c^4*d^3*e - 256*a^3*c^3*d*e^3 + 8*b^4*c^2*d^3*e - 4*b
^5*c*d^2*e^2 - 32*a^3*c^3*e^4*x + 8*b^2*c^4*d^4*x + 10*b*d*e^3*(b^2 - 4*a*c
)^(5/2) + 4*b*e^4*x*(b^2 - 4*a*c)^(5/2) - 16*a*b*c^4*d^4 - 32*a*c^5*d^4*x +
 7*a*b^2*e^4*(b^2 - 4*a*c)^(3/2) - 10*b^3*d*e^3*(b^2 - 4*a*c)^(3/2) - 14*c*
d^2*e^2*(b^2 - 4*a*c)^(5/2) - 8*c*d*e^3*x*(b^2 - 4*a*c)^(5/2) - 24*a*b^4*c*
d*e^3 - 64*a*b^4*c*e^4*x - 32*b^5*c*d*e^3*x - 8*b*c^2*d^3*e*(b^2 - 4*a*c)^(
3/2) - 32*c^3*d^3*e*x*(b^2 - 4*a*c)^(3/2) - 96*a*b^2*c^3*d^3*e - 16*b^3*c^3
*d^3*e*x + 18*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(3/2) + 56*a*b^3*c^2*d^2*e^2 - 16
0*a^2*b*c^3*d^2*e^2 + 160*a^2*b^2*c^2*d*e^3 + 136*a^2*b^2*c^2*e^4*x + 448*a
^2*c^4*d^2*e^2*x + 40*b^4*c^2*d^2*e^2*x + 48*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^
(3/2) - 272*a*b^2*c^3*d^2*e^2*x + 64*a*b*c^4*d^3*e*x - 24*b^2*c*d*e^3*x*(b^
2 - 4*a*c)^(3/2) + 240*a*b^3*c^2*d*e^3*x - 448*a^2*b*c^3*d*e^3*x)*(e^3*(b^3
/2 + (b^2*(b^2 - 4*a*c)^(1/2))/2) - a*(e^3*(2*b*c + c*(b^2 - 4*a*c)^(1/2))
- 4*c^2*d*e^2) - e^2*(b^2*c*d + b*c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2*e*(b^2
 - 4*a*c)^(1/2)))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 -
b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2
*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2) - (log(a*e^4*(b^2 - 4*a*c)^(5
/2) - 8*a*b^5*e^4 - 8*b^6*e^4*x - 4*c^3*d^4*(b^2 - 4*a*c)^(3/2) - 4*b^3*c^3
*d^4 + 4*b^3*e^4*x*(b^2 - 4*a*c)^(3/2) + 60*a^2*b^3*c*e^4 - 112*a^3*b*c^2*e
^4 - 256*a^2*c^4*d^3*e + 256*a^3*c^3*d*e^3 - 8*b^4*c^2*d^3*e + 4*b^5*c*d^2*
e^2 + 32*a^3*c^3*e^4*x - 8*b^2*c^4*d^4*x + 10*b*d*e^3*(b^2 - 4*a*c)^(5/2) +
 4*b*e^4*x*(b^2 - 4*a*c)^(5/2) + 16*a*b*c^4*d^4 + 32*a*c^5*d^4*x + 7*a*b^2*
e^4*(b^2 - 4*a*c)^(3/2) - 10*b^3*d*e^3*(b^2 - 4*a*c)^(3/2) - 14*c*d^2*e^2*(
b^2 - 4*a*c)^(5/2) - 8*c*d*e^3*x*(b^2 - 4*a*c)^(5/2) + 24*a*b^4*c*d*e^3 + 6
4*a*b^4*c*e^4*x + 32*b^5*c*d*e^3*x - 8*b*c^2*d^3*e*(b^2 - 4*a*c)^(3/2) - 32
*c^3*d^3*e*x*(b^2 - 4*a*c)^(3/2) + 96*a*b^2*c^3*d^3*e + 16*b^3*c^3*d^3*e*x
+ 18*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(3/2) - 56*a*b^3*c^2*d^2*e^2 + 160*a^2*b*c
^3*d^2*e^2 - 160*a^2*b^2*c^2*d*e^3 - 136*a^2*b^2*c^2*e^4*x - 448*a^2*c^4*d^
2*e^2*x - 40*b^4*c^2*d^2*e^2*x + 48*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(3/2) + 2
72*a*b^2*c^3*d^2*e^2*x - 64*a*b*c^4*d^3*e*x - 24*b^2*c*d*e^3*x*(b^2 - 4*a*c
)^(3/2) - 240*a*b^3*c^2*d*e^3*x + 448*a^2*b*c^3*d*e^3*x)*(a*(e^3*(2*b*c - c
*(b^2 - 4*a*c)^(1/2)) - 4*c^2*d*e^2) - e^3*(b^3/2 - (b^2*(b^2 - 4*a*c)^(1/2
))/2) + e^2*(b^2*c*d - b*c*d*(b^2 - 4*a*c)^(1/2)) + c^2*d^2*e*(b^2 - 4*a*c)
^(1/2)))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e
^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e -
8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1538 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=327

$$\frac{e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{\left(ae^2-bde+cd^2\right)^3}-\frac{2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{2e(2cd}{}$$

```
[Out] 2*e^2*(-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)+(-(-4*a*c+b^2)*(-b*e+c*d)+
c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)/(c*x^2+b*x+a)-
2*e^2*(3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d))*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^3+e
^2*(3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d))*ln(c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^
3+2*e*(-b*e+2*c*d)*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*arctanh((2*c*x+b)/(-4*
a*c+b^2)^(1/2))/(a*e^2-b*d*e+c*d^2)^3/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.53, antiderivative size = 327, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{e^2\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\log\left(a+bx+cx^2\right)}{\left(ae^2-bde+cd^2\right)^3}-\frac{2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)}{\left(ae^2-bde+cd^2\right)^3}+\frac{2e(2cd}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] (2*e^2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - ((b^2 - 4*a*c
)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)
*(d + e*x)*(a + b*x + c*x^2)) + (2*e*(2*c*d - b*e)*(c^2*d^2 + b^2*e^2 - c*e
*(b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*
(c*d^2 - b*d*e + a*e^2)^3) - (2*e^2*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e
))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + (e^2*(3*c^2*d^2 + b^2*e^2 - c*
e*(3*b*d + a*e))*Log[a + b*x + c*x^2])/(c*d^2 - b*d*e + a*e^2)^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^2}\,dx &= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)}-\frac{\int \frac{2\left(b^2-4ac\right)e(cd-be)-2c\left(b^2-\right.}{(d+ex)^2\left(a+bx+cx^2\right)}}{\left(b^2-4ac\right)\left(cd^2-bde\right.}\\
&= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)}-\frac{\int\left(-\frac{2\left(b^2-4ac\right)e^3(-2cd+be)}{\left(cd^2-bde+ae^2\right)(d+ex)^2}\right.}{}\\
&= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx\right.}\\
&= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx\right.}\\
&= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx\right.}\\
&= \frac{2e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx\right.}
\end{aligned}
$$

Mathematica [A] time = 0.60, size = 275, normalized size = 0.84

$$
\frac{-\frac{\left(e(ae-bd)+cd^2\right)\left(ce(-ae-2bd+bex)+b^2e^2+c^2d(d-2ex)\right)}{a+x(b+cx)}-2e^2\log(d+ex)\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+e^2\left(-ce(ae+3bd)+\right.}{\left(e(ae-bd)+cd\right.}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x]
```

```
[Out] (-((e^2*(-2*c*d + b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x)) - ((c*d^2 + e
*(-(b*d) + a*e))*(b^2*e^2 + c^2*d*(d - 2*e*x) + c*e*(-2*b*d - a*e + b*e*x))
)/(a + x*(b + c*x)) + (2*e*(-2*c*d + b*e)*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3
*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 2*e^2*(
3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e))*Log[d + e*x] + e^2*(3*c^2*d^2 + b^
2*e^2 - c*e*(3*b*d + a*e))*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))
^3
```

fricas [B] time = 89.11, size = 4494, normalized size = 13.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] [-((b^2*c^3 - 4*a*c^4)*d^5 - 3*(b^3*c^2 - 4*a*b*c^3)*d^4*e + (3*b^4*c - 14*
a*b^2*c^2 + 8*a^2*c^3)*d^3*e^2 - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d^2*e^3 -
3*(a^2*b^2*c - 4*a^3*c^2)*d*e^4 + (a^2*b^3 - 4*a^3*b*c)*e^5 - 2*(2*(b^2*c^3
 - 4*a*c^4)*d^3*e^2 - 3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + (b^4*c - 2*a*b^2*c^
2 - 8*a^2*c^3)*d*e^4 - (a*b^3*c - 4*a^2*b*c^2)*e^5)*x^2 - (2*a*c^3*d^4*e -
3*a*b*c^2*d^3*e^2 + 3*(a*b^2*c - 2*a^2*c^2)*d^2*e^3 - (a*b^3 - 3*a^2*b*c)*d
*e^4 + (2*c^4*d^3*e^2 - 3*b*c^3*d^2*e^3 + 3*(b^2*c^2 - 2*a*c^3)*d*e^4 - (b^
3*c - 3*a*b*c^2)*e^5)*x^3 + (2*c^4*d^4*e - b*c^3*d^3*e^2 - 6*a*c^3*d^2*e^3
+ (2*b^3*c - 3*a*b*c^2)*d*e^4 - (b^4 - 3*a*b^2*c)*e^5)*x^2 + (2*b*c^3*d^4*e
 - (3*b^2*c^2 - 2*a*c^3)*d^3*e^2 + 3*(b^3*c - 3*a*b*c^2)*d^2*e^3 - (b^4 - 6
*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 - 3*a^2*b*c)*e^5)*x)*sqrt(b^2 - 4*a*c)
*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c
*x^2 + b*x + a)) - ((b^2*c^3 - 4*a*c^4)*d^4*e + 2*(b^3*c^2 - 4*a*b*c^3)*d^3
*e^2 - (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d^2*e^3 + 2*(b^5 - 3*a*b^3*c -
4*a^2*b*c^2)*d*e^4 - (2*a*b^4 - 9*a^2*b^2*c + 4*a^3*c^2)*e^5)*x - (3*(a*b^2
*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e^3 + (a*b^4 - 5*
a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^2*e^3 - 3*(b^3*c^2
 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e^5)*x^3 + (3*(b^2*c
^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c^3)*d*e^4 + (b^5 -
5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^3*e^2 - 3*(b
^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*
d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*
(3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e^3 + (a
*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^2*e^3 - 3*
(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e^5)*x^3 +
(3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c^3)*d*e^4
+ (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*c^3)*d^3*e
^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3*c + 16*a^
2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(e*x + d))/((
a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*b*c^3)*d^6*e + 3*(a*b^4*c
 - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2*a^2*b^3*c - 24*a^3*b*c^2
)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*d^3*e^4 - 3*(a^3*b^3 - 4*
a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b^2*c^4 - 4*a*c^5)*d^6*e -
 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*a*b^2*c^3 - 4*a^2*c^4)*d^
4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e^4 + 3*(a*b^4*c - 3*a^2*b
^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3*b*c^2)*d*e^6 + (a^3*b^2*
c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7 - 2*(b^3*c^3 - 4*a*b*c^4
)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b^5*c - 11*a*b^3*c^2 + 12*
a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^3*e^4
+ 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 13*a^3*b^2*c + 4*a^4*c^2)*
d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3 - 4*a*b*c^4)*d^7 - (3*b^
4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c - 4*a*b^3*c^2)*d^5*e^2 -
 (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4*e^3 + (2*a*b^5 - 11*a^2*
b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a^4*c^2)*d^2*e^5 - 2*(a^3*
b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*x), -((b^2*c^3 - 4*a*c^4)
*d^5 - 3*(b^3*c^2 - 4*a*b*c^3)*d^4*e + (3*b^4*c - 14*a*b^2*c^2 + 8*a^2*c^3)
*d^3*e^2 - (b^5 - 6*a*b^3*c + 8*a^2*b*c^2)*d^2*e^3 - 3*(a^2*b^2*c - 4*a^3*c
^2)*d*e^4 + (a^2*b^3 - 4*a^3*b*c)*e^5 - 2*(2*(b^2*c^3 - 4*a*c^4)*d^3*e^2 -
3*(b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d*e^4 -
 (a*b^3*c - 4*a^2*b*c^2)*e^5)*x^2 - 2*(2*a*c^3*d^4*e - 3*a*b*c^2*d^3*e^2 +
3*(a*b^2*c - 2*a^2*c^2)*d^2*e^3 - (a*b^3 - 3*a^2*b*c)*d*e^4 + (2*c^4*d^3*e^
2 - 3*b*c^3*d^2*e^3 + 3*(b^2*c^2 - 2*a*c^3)*d*e^4 - (b^3*c - 3*a*b*c^2)*e^5
)*x^3 + (2*c^4*d^4*e - b*c^3*d^3*e^2 - 6*a*c^3*d^2*e^3 + (2*b^3*c - 3*a*b*c
^2)*d*e^4 - (b^4 - 3*a*b^2*c)*e^5)*x^2 + (2*b*c^3*d^4*e - (3*b^2*c^2 - 2*a*
c^3)*d^3*e^2 + 3*(b^3*c - 3*a*b*c^2)*d^2*e^3 - (b^4 - 6*a*b^2*c + 6*a^2*c^2
)*d*e^4 - (a*b^3 - 3*a^2*b*c)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2
+ 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^2*c^3 - 4*a*c^4)*d^4*e + 2*(b^3*c
^2 - 4*a*b*c^3)*d^3*e^2 - (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d^2*e^3 + 2*
(b^5 - 3*a*b^3*c - 4*a^2*b*c^2)*d*e^4 - (2*a*b^4 - 9*a^2*b^2*c + 4*a^3*c^2)
*e^5)*x - (3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*b*c^2)*d^
2*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*a*c^4)*d^
2*e^3 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*e
^5)*x^3 + (3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2 - 4*a^2*c
^3)*d*e^4 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2 - 4*a*b*
c^3)*d^3*e^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5 - 8*a*b^3
*c + 16*a^2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*x)*log(c*
x^2 + b*x + a) + 2*(3*(a*b^2*c^2 - 4*a^2*c^3)*d^3*e^2 - 3*(a*b^3*c - 4*a^2*
b*c^2)*d^2*e^3 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*d*e^4 + (3*(b^2*c^3 - 4*
a*c^4)*d^2*e^3 - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^4 + (b^4*c - 5*a*b^2*c^2 + 4*a
^2*c^3)*e^5)*x^3 + (3*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - (2*b^4*c - 7*a*b^2*c^2
- 4*a^2*c^3)*d*e^4 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^5)*x^2 + (3*(b^3*c^2
 - 4*a*b*c^3)*d^3*e^2 - 3*(b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e^3 + (b^5
- 8*a*b^3*c + 16*a^2*b*c^2)*d*e^4 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^5)*
x)*log(e*x + d))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*b*c^3)
*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2*a^2*b
^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*d^3*e^
4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b^2*c^4
 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*a*b^2*
c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e^4 + 3
*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3*b*c^2
)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7 - 2*(
b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b^5*c -
 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 1
2*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 13*a^3*
b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3 - 4*a
*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c - 4*a
*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4*e^3 +
 (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a^4*c^2
)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*x)]
```

giac [B] time = 0.24, size = 741, normalized size = 2.27

$$-\frac{2\left(2\,c^{3}d^{3}e^{3}-3\,bc^{2}d^{2}e^{4}+3\,b^{2}cde^{5}-6\,ac^{2}de^{5}-b^{3}e^{6}+3\,abce^{6}\right)\arctan\left(\frac{\left(2\,cd-\frac{2\,cd^{2}}{xe+d}-be+\frac{2\,bde}{xe+d}-\frac{2\,ae^{2}}{xe+d}\right)e^{(-1)}}{\sqrt{-b^{2}+4\,ac}}\right)e^{(-2)}}{\left(c^{3}d^{6}-3\,bc^{2}d^{5}e+3\,b^{2}cd^{4}e^{2}+3\,ac^{2}d^{4}e^{2}-b^{3}d^{3}e^{3}-6\,abcd^{3}e^{3}+3\,ab^{2}d^{2}e^{4}+3\,a^{2}cd^{2}e^{4}-3\,a^{2}bde^{5}+a^{3}e^{6}\right)\sqrt{-b^{2}+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -2*(2*c^3*d^3*e^3 - 3*b*c^2*d^2*e^4 + 3*b^2*c*d*e^5 - 6*a*c^2*d*e^5 - b^3*e
^6 + 3*a*b*c*e^6)*arctan((2*c*d - 2*c*d^2/(x*e + d) - b*e + 2*b*d*e/(x*e +
d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(-2)/((c^3*d^6 - 3*b*c
^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^
3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-b^2
+ 4*a*c)) + (3*c^2*d^2*e^2 - 3*b*c*d*e^3 + b^2*e^4 - a*c*e^4)*log(c - 2*c*d
/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/
(x*e + d)^2)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
 b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*
b*d*e^5 + a^3*e^6) + (2*c*d*e^6/(x*e + d) - b*e^7/(x*e + d))/(c^2*d^4*e^4 -
 2*b*c*d^3*e^5 + b^2*d^2*e^6 + 2*a*c*d^2*e^6 - 2*a*b*d*e^7 + a^2*e^8) + ((3
*c^3*d^2*e^2 - 3*b*c^2*d*e^3 + b^2*c*e^4 - a*c^2*e^4)/(c*d^2 - b*d*e + a*e^
2) - (4*c^3*d^3*e^3 - 6*b*c^2*d^2*e^4 + 4*b^2*c*d*e^5 - 4*a*c^2*d*e^5 - b^3
*e^6 + 2*a*b*c*e^6)*e^(-1)/((c*d^2 - b*d*e + a*e^2)*(x*e + d)))/((c*d^2 - b
*d*e + a*e^2)^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) -
b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2))
```

maple [B] time = 0.08, size = 1177, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x)
```

```
[Out] -6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/
2))*a*b*c*e^4+12/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*c^2*a*d*e^3-6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*c*d*e^3+6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c
-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c^2*d^2*e^2+1/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)*x*b^2*c*d*e^3-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a
)*x*b*c^2*d^2*e^2+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*a*b*c*d*e^3-1/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*x*a*b*c*e^4+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b
*x+a)*x*a*c^2*d*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*c^3*d^4+1/(a*e^2-
b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*b^2*e^4-e^3/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*b-
2*e^4/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*b^2+6*e^3/(a*e^2-b*d*e+c*d^2)^3*ln(e*
x+d)*b*c*d+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*x*c^3*d^3*e-3/(a*e^2-b*d*e
+c*d^2)^3/(c*x^2+b*x+a)*b^2*c*d^2*e^2+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)
*b*c^2*d^3*e-3/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*b*d*e^3-4/(a*e^2-b*d
*e+c*d^2)^3*e/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^3*d^3
-1/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*a*e^4+2/(a*e^2-b*d*e+c*d^2)^3/(4
*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*e^4+1/(a*e^2-b*d*e+
c*d^2)^3/(c*x^2+b*x+a)*a^2*c*e^4-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*a*b^
2*e^4+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)*b^3*d*e^3+2*e^4/(a*e^2-b*d*e+c*
d^2)^3*ln(e*x+d)*a*c-6*e^2/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c^2*d^2+2*e^2/(a
*e^2-b*d*e+c*d^2)^2/(e*x+d)*c*d+3/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)
*d^2*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 8.68, size = 3631, normalized size = 11.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((x*(c^2*d^2*e - 2*b^2*e^3 + a*c*e^3 + 3*b*c*d*e^2))/(a^2*e^4 + c^2*d^4 + b
^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (c^2*d^3 + b^2*d*
e^2 + a*b*e^3 - 3*a*c*d*e^2 - 2*b*c*d^2*e)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2
 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*x^2*(2*c^2*d*e^2 - b*c*e
^3))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d
^2*e^2))/(a*d + x*(a*e + b*d) + x^2*(b*e + c*d) + c*e*x^3) + (log(d + e*x)*
(e^4*(2*a*c - 2*b^2) - 6*c^2*d^2*e^2 + 6*b*c*d*e^3))/(a^3*e^6 + c^3*d^6 - b
^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*
d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3) + (log((27*d*e^6
*(b^2 - 4*a*c)^(7/2))/16 + (9*e^7*x*(b^2 - 4*a*c)^(7/2))/16 + 8*a*b^6*e^7 -
 4*b*c^6*d^7 + 8*b^7*e^7*x - 8*c^7*d^7*x + 4*c^6*d^7*(b^2 - 4*a*c)^(1/2) -
72*a^4*c^3*e^7 + (57*b^2*e^7*x*(b^2 - 4*a*c)^(5/2))/16 + (51*b^4*e^7*x*(b^2
 - 4*a*c)^(3/2))/16 + (11*b^6*e^7*x*(b^2 - 4*a*c)^(1/2))/16 - 60*a^2*b^4*c*
e^7 - 8*b^2*c^5*d^6*e - 4*b^6*c*d^2*e^5 + (75*c^2*d^3*e^4*(b^2 - 4*a*c)^(5/
2))/4 + 25*c^4*d^5*e^2*(b^2 - 4*a*c)^(3/2) + 132*a^3*b^2*c^2*e^7 - 408*a^2*
c^5*d^4*e^3 + 456*a^3*c^4*d^2*e^5 + 20*b^3*c^4*d^5*e^2 - 28*b^4*c^3*d^4*e^3
 + 16*b^5*c^2*d^3*e^4 + (9*a*b*e^7*(b^2 - 4*a*c)^(5/2))/4 + 88*a*c^6*d^6*e
+ (9*a*b^3*e^7*(b^2 - 4*a*c)^(3/2))/2 + (5*a*b^5*e^7*(b^2 - 4*a*c)^(1/2))/4
 + (111*b^2*d*e^6*(b^2 - 4*a*c)^(5/2))/16 - (79*b^4*d*e^6*(b^2 - 4*a*c)^(3/
2))/16 - (59*b^6*d*e^6*(b^2 - 4*a*c)^(1/2))/16 - 40*a*b^5*c*d*e^6 + (23*b^2
*c^2*d^3*e^4*(b^2 - 4*a*c)^(3/2))/2 - 45*b^2*c^4*d^5*e^2*(b^2 - 4*a*c)^(1/2
) + 65*b^3*c^3*d^4*e^3*(b^2 - 4*a*c)^(1/2) - (185*b^4*c^2*d^3*e^4*(b^2 - 4*
a*c)^(1/2))/4 - 64*a*b^5*c*e^7*x + 28*b*c^6*d^6*e*x - 48*b^6*c*d*e^6*x - 50
4*a^2*b^2*c^3*d^2*e^5 - 21*b*c*d^2*e^5*(b^2 - 4*a*c)^(5/2) + 8*b*c^5*d^6*e*
(b^2 - 4*a*c)^(1/2) + 44*c^6*d^6*e*x*(b^2 - 4*a*c)^(1/2) - 164*a*b*c^5*d^5*
e^2 - 348*a^3*b*c^3*d*e^6 - 108*a^3*b*c^3*e^7*x + 200*a*c^6*d^5*e^2*x + 216
*a^3*c^4*d*e^6*x - 37*b*c^3*d^4*e^3*(b^2 - 4*a*c)^(3/2) + 7*b^3*c*d^2*e^5*(
b^2 - 4*a*c)^(3/2) + 18*b^5*c*d^2*e^5*(b^2 - 4*a*c)^(1/2) + (57*c^2*d^2*e^5
*x*(b^2 - 4*a*c)^(5/2))/4 + 51*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(3/2) + 284*a*b^
2*c^4*d^4*e^3 - 228*a*b^3*c^3*d^3*e^4 + 124*a*b^4*c^2*d^2*e^5 + 516*a^2*b*c
^4*d^3*e^4 + 240*a^2*b^3*c^2*d*e^6 + 156*a^2*b^3*c^2*e^7*x - 600*a^2*c^5*d^
3*e^4*x - 92*b^2*c^5*d^5*e^2*x + 160*b^3*c^4*d^4*e^3*x - 180*b^4*c^3*d^3*e^
4*x + 124*b^5*c^2*d^2*e^5*x - 102*b*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 132
*b*c^5*d^5*e^2*x*(b^2 - 4*a*c)^(1/2) + 800*a*b^2*c^4*d^3*e^4*x - 700*a*b^3*
c^3*d^2*e^5*x + 900*a^2*b*c^4*d^2*e^5*x - 612*a^2*b^2*c^3*d*e^6*x - (57*b*c
*d*e^6*x*(b^2 - 4*a*c)^(5/2))/4 + (153*b^2*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(3/2
))/2 + 165*b^2*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(1/2) - 110*b^3*c^3*d^3*e^4*x*(b
^2 - 4*a*c)^(1/2) + (165*b^4*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(1/2))/4 - (51*b^3
*c*d*e^6*x*(b^2 - 4*a*c)^(3/2))/2 - (33*b^5*c*d*e^6*x*(b^2 - 4*a*c)^(1/2))/
4 - 500*a*b*c^5*d^4*e^3*x + 328*a*b^4*c^2*d*e^6*x)*(e^3*((3*c*d*(b^2 - 4*a*
c)^(3/2))/2 - 3*b*c*d*(4*a*c - b^2) + (3*b^2*c*d*(b^2 - 4*a*c)^(1/2))/2) -
e^4*((4*a*c - b^2)^2/4 + (3*b*(b^2 - 4*a*c)^(3/2))/4 - (3*b^2*(4*a*c - b^2)
)/4 + (b^3*(b^2 - 4*a*c)^(1/2))/4) + e^2*(3*c^2*d^2*(4*a*c - b^2) - 3*b*c^2
*d^2*(b^2 - 4*a*c)^(1/2)) + 2*c^3*d^3*e*(b^2 - 4*a*c)^(1/2)))/((4*a*c - b^2
)*((4*a*c - b^2)*((3*a*d^2*e^4)/4 - (3*b*d^3*e^3)/2 + (3*c*d^4*e^2)/4) + a^
3*e^6 + c^3*d^6 - (5*b^3*d^3*e^3)/2 + (15*a*b^2*d^2*e^4)/4 + (15*b^2*c*d^4*
e^2)/4 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e)) - (log((27*d*e^6*(b^2 - 4*a*c)^(7/
2))/16 + (9*e^7*x*(b^2 - 4*a*c)^(7/2))/16 - 8*a*b^6*e^7 + 4*b*c^6*d^7 - 8*b
^7*e^7*x + 8*c^7*d^7*x + 4*c^6*d^7*(b^2 - 4*a*c)^(1/2) + 72*a^4*c^3*e^7 + (
57*b^2*e^7*x*(b^2 - 4*a*c)^(5/2))/16 + (51*b^4*e^7*x*(b^2 - 4*a*c)^(3/2))/1
6 + (11*b^6*e^7*x*(b^2 - 4*a*c)^(1/2))/16 + 60*a^2*b^4*c*e^7 + 8*b^2*c^5*d^
6*e + 4*b^6*c*d^2*e^5 + (75*c^2*d^3*e^4*(b^2 - 4*a*c)^(5/2))/4 + 25*c^4*d^5
*e^2*(b^2 - 4*a*c)^(3/2) - 132*a^3*b^2*c^2*e^7 + 408*a^2*c^5*d^4*e^3 - 456*
a^3*c^4*d^2*e^5 - 20*b^3*c^4*d^5*e^2 + 28*b^4*c^3*d^4*e^3 - 16*b^5*c^2*d^3*
e^4 + (9*a*b*e^7*(b^2 - 4*a*c)^(5/2))/4 - 88*a*c^6*d^6*e + (9*a*b^3*e^7*(b^
2 - 4*a*c)^(3/2))/2 + (5*a*b^5*e^7*(b^2 - 4*a*c)^(1/2))/4 + (111*b^2*d*e^6*
(b^2 - 4*a*c)^(5/2))/16 - (79*b^4*d*e^6*(b^2 - 4*a*c)^(3/2))/16 - (59*b^6*d
*e^6*(b^2 - 4*a*c)^(1/2))/16 + 40*a*b^5*c*d*e^6 + (23*b^2*c^2*d^3*e^4*(b^2
- 4*a*c)^(3/2))/2 - 45*b^2*c^4*d^5*e^2*(b^2 - 4*a*c)^(1/2) + 65*b^3*c^3*d^4
*e^3*(b^2 - 4*a*c)^(1/2) - (185*b^4*c^2*d^3*e^4*(b^2 - 4*a*c)^(1/2))/4 + 64
*a*b^5*c*e^7*x - 28*b*c^6*d^6*e*x + 48*b^6*c*d*e^6*x + 504*a^2*b^2*c^3*d^2*
e^5 - 21*b*c*d^2*e^5*(b^2 - 4*a*c)^(5/2) + 8*b*c^5*d^6*e*(b^2 - 4*a*c)^(1/2
) + 44*c^6*d^6*e*x*(b^2 - 4*a*c)^(1/2) + 164*a*b*c^5*d^5*e^2 + 348*a^3*b*c^
3*d*e^6 + 108*a^3*b*c^3*e^7*x - 200*a*c^6*d^5*e^2*x - 216*a^3*c^4*d*e^6*x -
 37*b*c^3*d^4*e^3*(b^2 - 4*a*c)^(3/2) + 7*b^3*c*d^2*e^5*(b^2 - 4*a*c)^(3/2)
 + 18*b^5*c*d^2*e^5*(b^2 - 4*a*c)^(1/2) + (57*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(
5/2))/4 + 51*c^4*d^4*e^3*x*(b^2 - 4*a*c)^(3/2) - 284*a*b^2*c^4*d^4*e^3 + 22
8*a*b^3*c^3*d^3*e^4 - 124*a*b^4*c^2*d^2*e^5 - 516*a^2*b*c^4*d^3*e^4 - 240*a
^2*b^3*c^2*d*e^6 - 156*a^2*b^3*c^2*e^7*x + 600*a^2*c^5*d^3*e^4*x + 92*b^2*c
^5*d^5*e^2*x - 160*b^3*c^4*d^4*e^3*x + 180*b^4*c^3*d^3*e^4*x - 124*b^5*c^2*
d^2*e^5*x - 102*b*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(3/2) - 132*b*c^5*d^5*e^2*x*(
b^2 - 4*a*c)^(1/2) - 800*a*b^2*c^4*d^3*e^4*x + 700*a*b^3*c^3*d^2*e^5*x - 90
0*a^2*b*c^4*d^2*e^5*x + 612*a^2*b^2*c^3*d*e^6*x - (57*b*c*d*e^6*x*(b^2 - 4*
a*c)^(5/2))/4 + (153*b^2*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(3/2))/2 + 165*b^2*c^4
*d^4*e^3*x*(b^2 - 4*a*c)^(1/2) - 110*b^3*c^3*d^3*e^4*x*(b^2 - 4*a*c)^(1/2)
+ (165*b^4*c^2*d^2*e^5*x*(b^2 - 4*a*c)^(1/2))/4 - (51*b^3*c*d*e^6*x*(b^2 -
4*a*c)^(3/2))/2 - (33*b^5*c*d*e^6*x*(b^2 - 4*a*c)^(1/2))/4 + 500*a*b*c^5*d^
4*e^3*x - 328*a*b^4*c^2*d*e^6*x)*(e^3*((3*c*d*(b^2 - 4*a*c)^(3/2))/2 + 3*b*
c*d*(4*a*c - b^2) + (3*b^2*c*d*(b^2 - 4*a*c)^(1/2))/2) - e^4*((3*b*(b^2 - 4
*a*c)^(3/2))/4 - (4*a*c - b^2)^2/4 + (3*b^2*(4*a*c - b^2))/4 + (b^3*(b^2 -
4*a*c)^(1/2))/4) - e^2*(3*c^2*d^2*(4*a*c - b^2) + 3*b*c^2*d^2*(b^2 - 4*a*c)
^(1/2)) + 2*c^3*d^3*e*(b^2 - 4*a*c)^(1/2)))/((4*a*c - b^2)*((4*a*c - b^2)*(
(3*a*d^2*e^4)/4 - (3*b*d^3*e^3)/2 + (3*c*d^4*e^2)/4) + a^3*e^6 + c^3*d^6 -
(5*b^3*d^3*e^3)/2 + (15*a*b^2*d^2*e^4)/4 + (15*b^2*c*d^4*e^2)/4 - 3*a^2*b*d
*e^5 - 3*b*c^2*d^5*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1539 $\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=293

$$\frac{5e^3x\left(-ce(3ae+2bd)+b^2e^2+3c^2d^2\right)}{c^2\left(b^2-4ac\right)}+\frac{5e^4x^2(2cd-be)}{2c\left(b^2-4ac\right)}-\frac{5e(d+ex)^3(-2ae+x(2cd-be)+bd)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{5e\left(2b^2ce^3(3ae+\right.}{}$$

```
[Out] 5*e^3*(3*c^2*d^2+b^2*e^2-c*e*(3*a*e+2*b*d))*x/c^2/(-4*a*c+b^2)+5/2*e^4*(-b*
e+2*c*d)*x^2/c/(-4*a*c+b^2)-1/2*(e*x+d)^5/(c*x^2+b*x+a)^2-5/2*e*(e*x+d)^3*(
b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)+5*e*(2*c^4*d^4-b^4*e^4
-4*c^3*d^2*e*(-3*a*e+b*d)-6*a*c^2*e^3*(a*e+2*b*d)+2*b^2*c*e^3*(3*a*e+b*d))*
arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3/(-4*a*c+b^2)^(3/2)+5/2*e^4*(-b*e+
2*c*d)*ln(c*x^2+b*x+a)/c^3
```

Rubi [A] time = 0.68, antiderivative size = 293, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {768, 738, 800, 634, 618, 206, 628}

$$\frac{5e^3x\left(-ce(3ae+2bd)+b^2e^2+3c^2d^2\right)}{c^2\left(b^2-4ac\right)}+\frac{5e\left(2b^2ce^3(3ae+bd)-4c^3d^2e(bd-3ae)-6ac^2e^3(ae+2bd)-b^4e^4+2c^4d\right.}{c^3\left(b^2-4ac\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (5*e^3*(3*c^2*d^2 + b^2*e^2 - c*e*(2*b*d + 3*a*e))*x)/(c^2*(b^2 - 4*a*c)) +
 (5*e^4*(2*c*d - b*e)*x^2)/(2*c*(b^2 - 4*a*c)) - (d + e*x)^5/(2*(a + b*x +
c*x^2)^2) - (5*e*(d + e*x)^3*(b*d - 2*a*e + (2*c*d - b*e)*x))/(2*(b^2 - 4*a
*c)*(a + b*x + c*x^2)) + (5*e*(2*c^4*d^4 - b^4*e^4 - 4*c^3*d^2*e*(b*d - 3*a
*e) - 6*a*c^2*e^3*(2*b*d + a*e) + 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTanh[(b + 2
*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*(b^2 - 4*a*c)^(3/2)) + (5*e^4*(2*c*d - b*e)*
Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)^5}{\left(a+bx+cx^2\right)^3}\,dx &= -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}+\frac{1}{2}(5e)\int \frac{(d+ex)^4}{\left(a+bx+cx^2\right)^2}\,dx \\
&= -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+ex)^3(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\int \frac{(d+ex)^2\left(2\left(cd^2-2bde-\right.\right.}{a+bx}}{2\left(b^2-\right.} \\
&= -\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d+ex)^3(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\int\left(-\frac{2e^2\left(3c^2d^2+b^2e^2-\right.}{c^2}\right.}{} \\
&= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d}{} \\
&= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d}{} \\
&= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d}{} \\
&= \frac{5e^3\left(3c^2d^2+b^2e^2-ce(2bd+3ae)\right)x}{c^2\left(b^2-4ac\right)}+\frac{5e^4(2cd-be)x^2}{2c\left(b^2-4ac\right)}-\frac{(d+ex)^5}{2\left(a+bx+cx^2\right)^2}-\frac{5e(d}{}
\end{aligned}$$

Mathematica [A] time = 0.80, size = 480, normalized size = 1.64

$$-\frac{c^2e^3\left(a^2e(5d+ex)+10abd(d+ex)+10b^2d^2x\right)-bce^4\left(2a^2e+ab(5d+3ex)+5b^2dx\right)+b^3e^5(a+bx)-10c^3d^2e^2(a(d+ex)+bdx)+c^4d^4(d+5ex)}{(a+x(b+cx))^2}+\frac{e\left(bc^2\left(31a^2e^4-10ac\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (4*c^2*e^5*x - (b^3*e^5*(a + b*x) + c^4*d^4*(d + 5*e*x) - 10*c^3*d^2*e^2*(b
*d*x + a*(d + e*x)) + c^2*e^3*(10*b^2*d^2*x + 10*a*b*d*(d + e*x) + a^2*e*(5
*d + e*x)) - b*c*e^4*(2*a^2*e + 5*b^2*d*x + a*b*(5*d + 3*e*x)))/(a + x*(b +
 c*x))^2 + (e*(b^5*e^4 - b^4*c*e^3*(5*d + 8*e*x) + b^3*c*e^2*(-13*a*e^2 + 1
0*c*d*(d + 3*e*x)) - 2*c^3*(5*c^2*d^4*x - 10*a*c*d^2*e*(4*d + 5*e*x) + a^2*
e^3*(40*d + 9*e*x)) + b*c^2*(31*a^2*e^4 - 5*c^2*d^3*(d - 4*e*x) - 10*a*c*d*
e^2*(7*d + 10*e*x)) + 2*b^2*c^2*e*(-5*c*d^2*(d + 4*e*x) + a*e^2*(25*d + 17*
e*x))))/((b^2 - 4*a*c)*(a + x*(b + c*x))) - (10*c*e*(-2*c^4*d^4 + b^4*e^4 +
 4*c^3*d^2*e*(b*d - 3*a*e) + 6*a*c^2*e^3*(2*b*d + a*e) - 2*b^2*c*e^3*(b*d +
 3*a*e))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 5*c
*e^4*(2*c*d - b*e)*Log[a + x*(b + c*x)])/(2*c^4)
```

fricas [B] time = 0.93, size = 3618, normalized size = 12.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(4*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*e^5*x^5 + 8*(b^5*c^2 - 8*a*b^3
*c^3 + 16*a^2*b*c^4)*e^5*x^4 - (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - 5
*(a*b^3*c^3 - 4*a^2*b*c^4)*d^4*e + 40*(a^2*b^2*c^3 - 4*a^3*c^4)*d^3*e^2 - 3
0*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e^3 + 5*(5*a^2*b^4*c - 32*a^3*b^2*c^2 + 4
8*a^4*c^3)*d*e^4 - (7*a^2*b^5 - 51*a^3*b^3*c + 92*a^4*b*c^2)*e^5 - 2*(5*(b^
2*c^5 - 4*a*c^6)*d^4*e - 10*(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 10*(2*b^4*c^3 -
 13*a*b^2*c^4 + 20*a^2*c^5)*d^2*e^3 - 5*(3*b^5*c^2 - 22*a*b^3*c^3 + 40*a^2*
b*c^4)*d*e^4 + (2*b^6*c - 21*a*b^4*c^2 + 77*a^2*b^2*c^3 - 100*a^3*c^4)*e^5)
*x^3 - (15*(b^3*c^4 - 4*a*b*c^5)*d^4*e - 10*(b^4*c^3 + 4*a*b^2*c^4 - 32*a^2
*c^5)*d^3*e^2 + 30*(b^5*c^2 - 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^2*e^3 - 5*(5*b^6
*c - 30*a*b^4*c^2 + 24*a^2*b^2*c^3 + 64*a^3*c^4)*d*e^4 + (7*b^7 - 57*a*b^5*
c + 135*a^2*b^3*c^2 - 76*a^3*b*c^3)*e^5)*x^2 + 5*(2*a^2*c^4*d^4*e - 4*a^2*b
*c^3*d^3*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^
2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*
a*c^5*d^2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*
a^2*c^4)*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e
^3 + 2*(b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*
e^5)*x^3 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 +
 12*(a*b^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3
)*d*e^4 - (b^6 - 4*a*b^4*c - 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*
b*c^4*d^4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a
^2*b^2*c^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(b^2 -
4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x +
b))/(c*x^2 + b*x + a)) - 2*(5*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3
0*(a*b^3*c^3 - 4*a^2*b*c^4)*d^3*e^2 + 30*(a*b^4*c^2 - 5*a^2*b^2*c^3 + 4*a^3
*c^4)*d^2*e^3 - 5*(5*a*b^5*c - 34*a^2*b^3*c^2 + 56*a^3*b*c^3)*d*e^4 + (7*a*
b^6 - 56*a^2*b^4*c + 127*a^3*b^2*c^2 - 60*a^4*c^3)*e^5)*x + 5*(2*(a^2*b^4*c
 - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^
2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b^3
*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)
*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*a*
b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 + 2
*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c +
 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4
 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a
*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2
*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x), 1/2*(4*(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5)*e^5*x^5 + 8*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5*x^4
 - (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - 5*(a*b^3*c^3 - 4*a^2*b*c^4)*d
^4*e + 40*(a^2*b^2*c^3 - 4*a^3*c^4)*d^3*e^2 - 30*(a^2*b^3*c^2 - 4*a^3*b*c^3
)*d^2*e^3 + 5*(5*a^2*b^4*c - 32*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^4 - (7*a^2*b^
5 - 51*a^3*b^3*c + 92*a^4*b*c^2)*e^5 - 2*(5*(b^2*c^5 - 4*a*c^6)*d^4*e - 10*
(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 10*(2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*
d^2*e^3 - 5*(3*b^5*c^2 - 22*a*b^3*c^3 + 40*a^2*b*c^4)*d*e^4 + (2*b^6*c - 21
*a*b^4*c^2 + 77*a^2*b^2*c^3 - 100*a^3*c^4)*e^5)*x^3 - (15*(b^3*c^4 - 4*a*b*
c^5)*d^4*e - 10*(b^4*c^3 + 4*a*b^2*c^4 - 32*a^2*c^5)*d^3*e^2 + 30*(b^5*c^2
- 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^2*e^3 - 5*(5*b^6*c - 30*a*b^4*c^2 + 24*a^2*b
^2*c^3 + 64*a^3*c^4)*d*e^4 + (7*b^7 - 57*a*b^5*c + 135*a^2*b^3*c^2 - 76*a^3
*b*c^3)*e^5)*x^2 + 10*(2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3*e^2 + 12*a^3*c^3*d
^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 - 6*a^3*b^2*c + 6*a^4
*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^2*e^3 + 2*(b^3*c^3
- 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*e^5)*x^4 + 2*(2*b*
c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(b^4*c^2 - 6*a*b^2*c
^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3 + (2*(b^2*c^4 + 2*
a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b^2*c^3 + 2*a^2*c^4)
*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4 - (b^6 - 4*a*b^4*c
- 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^4*e - 4*a*b^2*c^3*d
^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c^2)*d*e^4 - (a*b^5
- 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 +
 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - 2*(5*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^
5)*d^4*e - 30*(a*b^3*c^3 - 4*a^2*b*c^4)*d^3*e^2 + 30*(a*b^4*c^2 - 5*a^2*b^2
*c^3 + 4*a^3*c^4)*d^2*e^3 - 5*(5*a*b^5*c - 34*a^2*b^3*c^2 + 56*a^3*b*c^3)*d
*e^4 + (7*a*b^6 - 56*a^2*b^4*c + 127*a^3*b^2*c^2 - 60*a^4*c^3)*e^5)*x + 5*(
2*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c +
 16*a^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c
^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 1
6*a^2*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(
b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*
e^5)*x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8
*a^2*b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8
*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b
^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*
c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x)]
```

giac [B] time = 0.21, size = 636, normalized size = 2.17

$$-\frac{5\left(2\,c^4d^4e-4\,bc^3d^3e^2+12\,ac^3d^2e^3+2\,b^3cde^4-12\,abc^2de^4-b^4e^5+6\,ab^2ce^5-6\,a^2c^2e^5\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^2c^3-4\,ac^4\right)\sqrt{-b^2+4\,ac}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -5*(2*c^4*d^4*e - 4*b*c^3*d^3*e^2 + 12*a*c^3*d^2*e^3 + 2*b^3*c*d*e^4 - 12*a
*b*c^2*d*e^4 - b^4*e^5 + 6*a*b^2*c*e^5 - 6*a^2*c^2*e^5)*arctan((2*c*x + b)/
sqrt(-b^2 + 4*a*c))/((b^2*c^3 - 4*a*c^4)*sqrt(-b^2 + 4*a*c)) + 2*x*e^5/c^2
+ 5/2*(2*c*d*e^4 - b*e^5)*log(c*x^2 + b*x + a)/c^3 - 1/2*(b^2*c^3*d^5 - 4*a
*c^4*d^5 + 5*a*b*c^3*d^4*e - 40*a^2*c^3*d^3*e^2 + 30*a^2*b*c^2*d^2*e^3 - 25
*a^2*b^2*c*d*e^4 + 60*a^3*c^2*d*e^4 + 7*a^2*b^3*e^5 - 23*a^3*b*c*e^5 + 2*(5
*c^5*d^4*e - 10*b*c^4*d^3*e^2 + 20*b^2*c^3*d^2*e^3 - 50*a*c^4*d^2*e^3 - 15*
b^3*c^2*d*e^4 + 50*a*b*c^3*d*e^4 + 4*b^4*c*e^5 - 17*a*b^2*c^2*e^5 + 9*a^2*c
^3*e^5)*x^3 + (15*b*c^4*d^4*e - 10*b^2*c^3*d^3*e^2 - 80*a*c^4*d^3*e^2 + 30*
b^3*c^2*d^2*e^3 - 30*a*b*c^3*d^2*e^3 - 25*b^4*c*d*e^4 + 50*a*b^2*c^2*d*e^4
+ 80*a^2*c^3*d*e^4 + 7*b^5*e^5 - 21*a*b^3*c*e^5 - 13*a^2*b*c^2*e^5)*x^2 + 2
*(5*b^2*c^3*d^4*e - 5*a*c^4*d^4*e - 30*a*b*c^3*d^3*e^2 + 30*a*b^2*c^2*d^2*e
^3 - 30*a^2*c^3*d^2*e^3 - 25*a*b^3*c*d*e^4 + 70*a^2*b*c^2*d*e^4 + 7*a*b^4*e
^5 - 26*a^2*b^2*c*e^5 + 7*a^3*c^2*e^5)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c
)*c^3)
```

maple [B] time = 0.09, size = 1921, normalized size = 6.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x)
```

```
[Out] 25/c/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x^2*a*b^2*d-25/c^2/(c*x^2+b*x+a)^2*e^4
/(4*a*c-b^2)*x*a*b^3*d+30/c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a*b^2*d^2-5*c
/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*a*d^4+15/2*c/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)
*x^2*b*d^4-50*c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^3*a*d^2-15/c/(c*x^2+b*x+a
)^2*e^4/(4*a*c-b^2)*x^3*b^3*d+15/c/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^2*b^3*
d^2-15/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x^2*a*b*d^2-30/(c*x^2+b*x+a)^2*e^2/(
4*a*c-b^2)*x*a*b*d^3+15/c/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b*d^2*e^3-10*c/(c
*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x^3*b*d^3-13/2/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b
^2)*x^2*a^2*b-40*c/(c*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x^2*a*d^3-21/2/c^2/(c*x^
2+b*x+a)^2*e^5/(4*a*c-b^2)*x^2*a*b^3-25/2/c^2/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^
2)*x^2*b^4*d-26/c^2/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^2*b^2-25/2/c^2/(c*x
^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^2*d*e^4-60/c*e^4/(4*a*c-b^2)^(3/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d+9/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*a^2-2
0/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*d^3*e^2+5/2/c^3*e^5/(4*a*c-b^2)*ln(c*x^2+
b*x+a)*b^3+2*e^5/c^2*x+70/c/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x*a^2*b*d+1/2/(
c*x^2+b*x+a)^2/(4*a*c-b^2)*b^2*d^5+50/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x^3*a
*b*d-17/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*a*b^2+7/c^3/(c*x^2+b*x+a)^2*e
^5/(4*a*c-b^2)*x*a*b^4-30/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a^2*d^2-5/(c*x^
2+b*x+a)^2*e^2/(4*a*c-b^2)*x^2*b^2*d^3+40/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x
^2*a^2*d+5/2/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b*d^4*e+20/(c*x^2+b*x+a)^2*e^3/(
4*a*c-b^2)*x^3*b^2*d^2+5/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*b^2*d^4+30/c/(c*x^
2+b*x+a)^2/(4*a*c-b^2)*a^3*d*e^4-23/2/c^2/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*b
*e^5+20/c*e^4/(4*a*c-b^2)*ln(c*x^2+b*x+a)*a*d-5/c^2*e^4/(4*a*c-b^2)*ln(c*x^
2+b*x+a)*b^2*d+7/2/c^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^3*e^5+5*c^2/(c*x^2
+b*x+a)^2*e/(4*a*c-b^2)*x^3*d^4+7/2/c^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^2
*b^5+7/c/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^3-20*e^2/(4*a*c-b^2)^(3/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^3+60*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*a*d^2+10*c*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*d^4-5/c^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*b^4-30/c*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2)
)*a^2+4/c^2/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x^3*b^4+10/c^2*e^4/(4*a*c-b^2)^
(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*d+30/c^2*e^5/(4*a*c-b^2)^(3/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2-10/c^2*e^5/(4*a*c-b^2)*ln(c*x^2
+b*x+a)*a*b-2*c/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*d^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^5/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.02, size = 1148, normalized size = 3.92

$$\frac{x^{3}\left(9\,a^{2}\,c^{2}\,e^{5}-17\,a\,b^{2}\,c\,e^{5}+50\,a\,b\,c^{2}\,d\,e^{4}-50\,a\,c^{3}\,d^{2}\,e^{3}+4\,b^{4}\,e^{5}-15\,b^{3}\,c\,d\,e^{4}+20\,b^{2}\,c^{2}\,d^{2}\,e^{3}-10\,b\,c^{3}\,d^{3}\,e^{2}+5\,c^{4}\,d^{4}\,e\right)}{4\,a\,c-b^{2}}+\frac{-23\,a^{3}\,b\,c\,e^{5}+60\,a^{3}\,c^{2}\,d\,e^{4}+7\,a^{2}\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^5)/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((x^3*(4*b^4*e^5 + 5*c^4*d^4*e + 9*a^2*c^2*e^5 - 50*a*c^3*d^2*e^3 - 10*b*c^
3*d^3*e^2 + 20*b^2*c^2*d^2*e^3 - 17*a*b^2*c*e^5 - 15*b^3*c*d*e^4 + 50*a*b*c
^2*d*e^4))/(4*a*c - b^2) + (7*a^2*b^3*e^5 - 4*a*c^4*d^5 + b^2*c^3*d^5 + 60*
a^3*c^2*d*e^4 - 40*a^2*c^3*d^3*e^2 - 23*a^3*b*c*e^5 + 5*a*b*c^3*d^4*e - 25*
a^2*b^2*c*d*e^4 + 30*a^2*b*c^2*d^2*e^3)/(2*c*(4*a*c - b^2)) - (x^2*(13*a^2*
b*c^2*e^5 - 7*b^5*e^5 + 80*a*c^4*d^3*e^2 - 80*a^2*c^3*d*e^4 + 10*b^2*c^3*d^
3*e^2 - 30*b^3*c^2*d^2*e^3 + 21*a*b^3*c*e^5 - 15*b*c^4*d^4*e + 25*b^4*c*d*e
^4 + 30*a*b*c^3*d^2*e^3 - 50*a*b^2*c^2*d*e^4))/(2*c*(4*a*c - b^2)) + (x*(7*
a*b^4*e^5 + 7*a^3*c^2*e^5 - 26*a^2*b^2*c*e^5 + 5*b^2*c^3*d^4*e - 30*a^2*c^3
*d^2*e^3 - 5*a*c^4*d^4*e - 25*a*b^3*c*d*e^4 - 30*a*b*c^3*d^3*e^2 + 70*a^2*b
*c^2*d*e^4 + 30*a*b^2*c^2*d^2*e^3))/(c*(4*a*c - b^2)))/(a^2*c^2 + c^4*x^4 +
 x^2*(2*a*c^3 + b^2*c^2) + 2*b*c^3*x^3 + 2*a*b*c^2*x) + (log(a + b*x + c*x^
2)*(5*b^7*e^5 - 320*a^3*b*c^3*e^5 + 640*a^3*c^4*d*e^4 + 240*a^2*b^3*c^2*e^5
 - 60*a*b^5*c*e^5 - 10*b^6*c*d*e^4 + 120*a*b^4*c^2*d*e^4 - 480*a^2*b^2*c^3*
d*e^4))/(2*(64*a^3*c^6 - b^6*c^3 + 12*a*b^4*c^4 - 48*a^2*b^2*c^5)) + (2*e^5
*x)/c^2 + (5*e*atan((c^3*(4*a*c - b^2)^(5/2)*((5*e*(b^3*c^2 - 4*a*b*c^3)*(b
^4*e^4 - 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^4 + 4*b
*c^3*d^3*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^5*(4*a*c - b^2)^4) - (10
*e*x*(b^4*e^4 - 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^
4 + 4*b*c^3*d^3*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^2*(4*a*c - b^2)^3
)))/(5*b^4*e^5 - 10*c^4*d^4*e + 30*a^2*c^2*e^5 - 60*a*c^3*d^2*e^3 + 20*b*c^
3*d^3*e^2 - 30*a*b^2*c*e^5 - 10*b^3*c*d*e^4 + 60*a*b*c^2*d*e^4))*(b^4*e^4 -
 2*c^4*d^4 + 6*a^2*c^2*e^4 - 12*a*c^3*d^2*e^2 - 6*a*b^2*c*e^4 + 4*b*c^3*d^3
*e - 2*b^3*c*d*e^3 + 12*a*b*c^2*d*e^3))/(c^3*(4*a*c - b^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**5/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1540 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=197

$$\frac{2e(2cd-be)\left(-2ce(bd-3ae)-b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{2e^3x(2cd-be)}{c\left(b^2-4ac\right)}-\frac{2e(d+ex)^2(-2ae+x(2cd-be)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

```
[Out] 2*e^3*(-b*e+2*c*d)*x/c/(-4*a*c+b^2)-1/2*(e*x+d)^4/(c*x^2+b*x+a)^2-2*e*(e*x+
d)^2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)+2*e*(-b*e+2*c*d)
*(2*c^2*d^2-b^2*e^2-2*c*e*(-3*a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2
))/c^2/(-4*a*c+b^2)^(3/2)+e^4*ln(c*x^2+b*x+a)/c^2
```

Rubi [A] time = 0.33, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.269$, Rules used = {768, 738, 773, 634, 618, 206, 628}

$$\frac{2e(2cd-be)\left(-2ce(bd-3ae)-b^2e^2+2c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\left(b^2-4ac\right)^{3/2}}+\frac{2e^3x(2cd-be)}{c\left(b^2-4ac\right)}-\frac{2e(d+ex)^2(-2ae+x(2cd-be)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*e^3*(2*c*d - b*e)*x)/(c*(b^2 - 4*a*c)) - (d + e*x)^4/(2*(a + b*x + c*x^2
)^2) - (2*e*(d + e*x)^2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*(a
+ b*x + c*x^2)) + (2*e*(2*c*d - b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*
a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*(b^2 - 4*a*c)^(3/2)) + (
e^4*Log[a + b*x + c*x^2])/c^2
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^3}\,dx &= -\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}+(2e)\int \frac{(d+ex)^3}{\left(a+bx+cx^2\right)^2}\,dx\\
&= -\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}-\frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2e)\int \frac{(d+ex)\left(2cd^2-e(3bd-\right.}{a+bx+}}{b^2-4a}\\
&= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)}-\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}-\frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(2e)\int}{}\\
&= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)}-\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}-\frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e^4\int \frac{}{a}}{}\\
&= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)}-\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}-\frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{e^4\log}{}\\
&= \frac{2e^3(2cd-be)x}{c\left(b^2-4ac\right)}-\frac{(d+ex)^4}{2\left(a+bx+cx^2\right)^2}-\frac{2e(d+ex)^2(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2e(2c}{}
\end{aligned}$$

Mathematica [A] time = 0.54, size = 334, normalized size = 1.70

$$\frac{\frac{-ce^3\left(a^2e+2ab(2d+ex)+4b^2dx\right)+b^2e^4(a+bx)+2c^2de^2(3ad+2aex+3bdx)-c^3d^3(d+4ex)}{(a+x(b+cx))^2}-\frac{e\left(8c^2\left(2a^2e^3-acde(6d+5ex)+c^2d^3x\right)+2b^2ce\left(cd(3d+8ex)-5ae^2\right.\right.}{\left(b^2-4ac\right)(a}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^2*e^4*(a + b*x) - c^3*d^3*(d + 4*e*x) + 2*c^2*d*e^2*(3*a*d + 3*b*d*x +
2*a*e*x) - c*e^3*(a^2*e + 4*b^2*d*x + 2*a*b*(2*d + e*x))))/(a + x*(b + c*x))
^2 - (e*(b^4*e^3 - 2*b^3*c*e^2*(2*d + 3*e*x) + 8*c^2*(2*a^2*e^3 + c^2*d^3*x
 - a*c*d*e*(6*d + 5*e*x)) + 4*b*c^2*(c*d^2*(d - 3*e*x) + a*e^2*(7*d + 5*e*x
)) + 2*b^2*c*e*(-5*a*e^2 + c*d*(3*d + 8*e*x))))/((b^2 - 4*a*c)*(a + x*(b +
c*x))) + (4*c*e*(-2*c*d + b*e)*(-2*c^2*d^2 + b^2*e^2 + 2*c*e*(b*d - 3*a*e))
*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2) + 2*c*e^4*Log
[a + x*(b + c*x)])/(2*c^3)
```

fricas [B] time = 0.92, size = 2400, normalized size = 12.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^4 + 4*(a*b^3*c^2 - 4*a^2*b*c^
3)*d^3*e - 24*(a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^2 + 12*(a^2*b^3*c - 4*a^3*b*c
^2)*d*e^3 - (5*a^2*b^4 - 32*a^3*b^2*c + 48*a^4*c^2)*e^4 + 2*(4*(b^2*c^4 - 4
*a*c^5)*d^3*e - 6*(b^3*c^3 - 4*a*b*c^4)*d^2*e^2 + 4*(2*b^4*c^2 - 13*a*b^2*c
^3 + 20*a^2*c^4)*d*e^3 - (3*b^5*c - 22*a*b^3*c^2 + 40*a^2*b*c^3)*e^4)*x^3 +
 (12*(b^3*c^3 - 4*a*b*c^4)*d^3*e - 6*(b^4*c^2 + 4*a*b^2*c^3 - 32*a^2*c^4)*d
^2*e^2 + 12*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^3 - (5*b^6 - 30*a*b^4*c
 + 24*a^2*b^2*c^2 + 64*a^3*c^3)*e^4)*x^2 - 2*(4*a^2*c^3*d^3*e - 6*a^2*b*c^2
*d^2*e^2 + 12*a^3*c^2*d*e^3 + (a^2*b^3 - 6*a^3*b*c)*e^4 + (4*c^5*d^3*e - 6*
b*c^4*d^2*e^2 + 12*a*c^4*d*e^3 + (b^3*c^2 - 6*a*b*c^3)*e^4)*x^4 + 2*(4*b*c^
4*d^3*e - 6*b^2*c^3*d^2*e^2 + 12*a*b*c^3*d*e^3 + (b^4*c - 6*a*b^2*c^2)*e^4)
*x^3 + (4*(b^2*c^3 + 2*a*c^4)*d^3*e - 6*(b^3*c^2 + 2*a*b*c^3)*d^2*e^2 + 12*
(a*b^2*c^2 + 2*a^2*c^3)*d*e^3 + (b^5 - 4*a*b^3*c - 12*a^2*b*c^2)*e^4)*x^2 +
 2*(4*a*b*c^3*d^3*e - 6*a*b^2*c^2*d^2*e^2 + 12*a^2*b*c^2*d*e^3 + (a*b^4 - 6
*a^2*b^2*c)*e^4)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*
c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(4*(b^4*c^2 - 5*a
*b^2*c^3 + 4*a^2*c^4)*d^3*e - 18*(a*b^3*c^2 - 4*a^2*b*c^3)*d^2*e^2 + 12*(a*
b^4*c - 5*a^2*b^2*c^2 + 4*a^3*c^3)*d*e^3 - (5*a*b^5 - 34*a^2*b^3*c + 56*a^3
*b*c^2)*e^4)*x - 2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e^4*x^4 + 2*(b^5*c
 - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e^4*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*e^4
*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e^4*x + (a^2*b^4 - 8*a^3*b^2*
c + 16*a^4*c^2)*e^4)*log(c*x^2 + b*x + a))/(a^2*b^4*c^2 - 8*a^3*b^2*c^3 + 1
6*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 - 8*a*b^3
*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2 + 2*(a*
b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x), -1/2*((b^4*c^2 - 8*a*b^2*c^3 +
16*a^2*c^4)*d^4 + 4*(a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e - 24*(a^2*b^2*c^2 - 4*a
^3*c^3)*d^2*e^2 + 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e^3 - (5*a^2*b^4 - 32*a^3*
b^2*c + 48*a^4*c^2)*e^4 + 2*(4*(b^2*c^4 - 4*a*c^5)*d^3*e - 6*(b^3*c^3 - 4*a
*b*c^4)*d^2*e^2 + 4*(2*b^4*c^2 - 13*a*b^2*c^3 + 20*a^2*c^4)*d*e^3 - (3*b^5*
c - 22*a*b^3*c^2 + 40*a^2*b*c^3)*e^4)*x^3 + (12*(b^3*c^3 - 4*a*b*c^4)*d^3*e
 - 6*(b^4*c^2 + 4*a*b^2*c^3 - 32*a^2*c^4)*d^2*e^2 + 12*(b^5*c - 5*a*b^3*c^2
 + 4*a^2*b*c^3)*d*e^3 - (5*b^6 - 30*a*b^4*c + 24*a^2*b^2*c^2 + 64*a^3*c^3)*
e^4)*x^2 - 4*(4*a^2*c^3*d^3*e - 6*a^2*b*c^2*d^2*e^2 + 12*a^3*c^2*d*e^3 + (a
^2*b^3 - 6*a^3*b*c)*e^4 + (4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + 12*a*c^4*d*e^3 +
 (b^3*c^2 - 6*a*b*c^3)*e^4)*x^4 + 2*(4*b*c^4*d^3*e - 6*b^2*c^3*d^2*e^2 + 12
*a*b*c^3*d*e^3 + (b^4*c - 6*a*b^2*c^2)*e^4)*x^3 + (4*(b^2*c^3 + 2*a*c^4)*d^
3*e - 6*(b^3*c^2 + 2*a*b*c^3)*d^2*e^2 + 12*(a*b^2*c^2 + 2*a^2*c^3)*d*e^3 +
(b^5 - 4*a*b^3*c - 12*a^2*b*c^2)*e^4)*x^2 + 2*(4*a*b*c^3*d^3*e - 6*a*b^2*c^
2*d^2*e^2 + 12*a^2*b*c^2*d*e^3 + (a*b^4 - 6*a^2*b^2*c)*e^4)*x)*sqrt(-b^2 +
4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 2*(4*(b^4*c^
2 - 5*a*b^2*c^3 + 4*a^2*c^4)*d^3*e - 18*(a*b^3*c^2 - 4*a^2*b*c^3)*d^2*e^2 +
 12*(a*b^4*c - 5*a^2*b^2*c^2 + 4*a^3*c^3)*d*e^3 - (5*a*b^5 - 34*a^2*b^3*c +
 56*a^3*b*c^2)*e^4)*x - 2*((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*e^4*x^4 + 2
*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*e^4*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c
^3)*e^4*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*e^4*x + (a^2*b^4 - 8*a
^3*b^2*c + 16*a^4*c^2)*e^4)*log(c*x^2 + b*x + a))/(a^2*b^4*c^2 - 8*a^3*b^2*
c^3 + 16*a^4*c^4 + (b^4*c^4 - 8*a*b^2*c^5 + 16*a^2*c^6)*x^4 + 2*(b^5*c^3 -
8*a*b^3*c^4 + 16*a^2*b*c^5)*x^3 + (b^6*c^2 - 6*a*b^4*c^3 + 32*a^3*c^5)*x^2
+ 2*(a*b^5*c^2 - 8*a^2*b^3*c^3 + 16*a^3*b*c^4)*x)]
```

giac [B] time = 0.18, size = 439, normalized size = 2.23

$$-\frac{2\left(4\,c^{3}d^{3}e-6\,bc^{2}d^{2}e^{2}+12\,ac^{2}de^{3}+b^{3}e^{4}-6\,abce^{4}\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}c^{2}-4\,ac^{3}\right)\sqrt{-b^{2}+4\,ac}}+\frac{e^{4}\log\left(cx^{2}+bx+a\right)}{c^{2}}-b^{2}c^{2}d^{4}-4\,ac$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -2*(4*c^3*d^3*e - 6*b*c^2*d^2*e^2 + 12*a*c^2*d*e^3 + b^3*e^4 - 6*a*b*c*e^4)
*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^2 - 4*a*c^3)*sqrt(-b^2 + 4*
a*c)) + e^4*log(c*x^2 + b*x + a)/c^2 - 1/2*(b^2*c^2*d^4 - 4*a*c^3*d^4 + 4*a
*b*c^2*d^3*e - 24*a^2*c^2*d^2*e^2 + 12*a^2*b*c*d*e^3 - 5*a^2*b^2*e^4 + 12*a
^3*c*e^4 + 2*(4*c^4*d^3*e - 6*b*c^3*d^2*e^2 + 8*b^2*c^2*d*e^3 - 20*a*c^3*d*
e^3 - 3*b^3*c*e^4 + 10*a*b*c^2*e^4)*x^3 + (12*b*c^3*d^3*e - 6*b^2*c^2*d^2*e
^2 - 48*a*c^3*d^2*e^2 + 12*b^3*c*d*e^3 - 12*a*b*c^2*d*e^3 - 5*b^4*e^4 + 10*
a*b^2*c*e^4 + 16*a^2*c^2*e^4)*x^2 + 2*(4*b^2*c^2*d^3*e - 4*a*c^3*d^3*e - 18
*a*b*c^2*d^2*e^2 + 12*a*b^2*c*d*e^3 - 12*a^2*c^2*d*e^3 - 5*a*b^3*e^4 + 14*a
^2*b*c*e^4)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c)*c^2)
```

maple [B] time = 0.06, size = 649, normalized size = 3.29

$$-\frac{12ab\,e^{4}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c}+\frac{24ad\,e^{3}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{2b^{3}e^{4}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}c^{2}}-\frac{12b\,d^{2}e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+8c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x)
```

```
[Out] (1/c*e*(10*a*b*c*e^3-20*a*c^2*d*e^2-3*b^3*e^3+8*b^2*c*d*e^2-6*b*c^2*d^2*e+4
*c^3*d^3)/(4*a*c-b^2)*x^3+1/2*e*(16*a^2*c^2*e^3+10*a*b^2*c*e^3-12*a*b*c^2*d
*e^2-48*a*c^3*d^2*e-5*b^4*e^3+12*b^3*c*d*e^2-6*b^2*c^2*d^2*e+12*b*c^3*d^3)/
c^2/(4*a*c-b^2)*x^2+e*(14*a^2*b*c*e^3-12*a^2*c^2*d*e^2-5*a*b^3*e^3+12*a*b^2
*c*d*e^2-18*a*b*c^2*d^2*e-4*a*c^3*d^3+4*b^2*c^2*d^3)/(4*a*c-b^2)/c^2*x+1/2*
(12*a^3*c*e^4-5*a^2*b^2*e^4+12*a^2*b*c*d*e^3-24*a^2*c^2*d^2*e^2+4*a*b*c^2*d
^3*e-4*a*c^3*d^4+b^2*c^2*d^4)/c^2/(4*a*c-b^2))/(c*x^2+b*x+a)^2+4*e^4/(4*a*c
-b^2)/c*ln(c*x^2+b*x+a)*a-e^4/(4*a*c-b^2)/c^2*ln(c*x^2+b*x+a)*b^2-12*e^4/(4
*a*c-b^2)^(3/2)/c*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b+24*e^3/(4*a*c-b^2
)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d-12*e^2/(4*a*c-b^2)^(3/2)*ar
ctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^2+8*e/(4*a*c-b^2)^(3/2)*c*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*d^3+2*e^4/(4*a*c-b^2)^(3/2)/c^2*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*b^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.92, size = 753, normalized size = 3.82

$$\frac{2\,e\,\mathrm{atan}\left(\frac{c^2\left(\frac{2\,e\,x\,(b\,e-2\,c\,d)\left(b^2\,e^2+2\,b\,c\,d\,e-2\,c^2\,d^2-6\,a\,c\,e^2\right)}{c\left(4\,a\,c-b^2\right)^3}-\frac{e\,(b\,e-2\,c\,d)\left(b^3\,c-4\,a\,b\,c^2\right)\left(b^2\,e^2+2\,b\,c\,d\,e-2\,c^2\,d^2-6\,a\,c\,e^2\right)}{c^3\left(4\,a\,c-b^2\right)^4}\right)\left(4\,a\,c-b^2\right)^{5/2}}{b^3\,e^4-6\,b\,c^2\,d^2\,e^2-6\,a\,b\,c\,e^4+4\,c^3\,d^3\,e+12\,a\,c^2\,d\,e^3}\right)(b\,e-2\,c\,d)\,\left(b^2\,e^2+}{c^2\left(4\,a\,c-b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*e*atan((c^2*((2*e*x*(b*e - 2*c*d)*(b^2*e^2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b
*c*d*e))/(c*(4*a*c - b^2)^3) - (e*(b*e - 2*c*d)*(b^3*c - 4*a*b*c^2)*(b^2*e^
2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b*c*d*e))/(c^3*(4*a*c - b^2)^4))*(4*a*c - b^2
)^(5/2))/(b^3*e^4 + 4*c^3*d^3*e - 6*b*c^2*d^2*e^2 - 6*a*b*c*e^4 + 12*a*c^2*
d*e^3))*(b*e - 2*c*d)*(b^2*e^2 - 2*c^2*d^2 - 6*a*c*e^2 + 2*b*c*d*e))/(c^2*(
4*a*c - b^2)^(3/2)) - (log(a + b*x + c*x^2)*(2*b^6*e^4 - 128*a^3*c^3*e^4 +
96*a^2*b^2*c^2*e^4 - 24*a*b^4*c*e^4))/(2*(64*a^3*c^5 - b^6*c^2 + 12*a*b^4*c
^3 - 48*a^2*b^2*c^4)) - ((x*(5*a*b^3*e^4 + 12*a^2*c^2*d*e^3 - 4*b^2*c^2*d^3
*e - 14*a^2*b*c*e^4 + 4*a*c^3*d^3*e - 12*a*b^2*c*d*e^3 + 18*a*b*c^2*d^2*e^2
))/(c^2*(4*a*c - b^2)) - (12*a^3*c*e^4 - 4*a*c^3*d^4 - 5*a^2*b^2*e^4 + b^2*
c^2*d^4 - 24*a^2*c^2*d^2*e^2 + 4*a*b*c^2*d^3*e + 12*a^2*b*c*d*e^3)/(2*c^2*(
4*a*c - b^2)) + (x^2*(5*b^4*e^4 - 16*a^2*c^2*e^4 + 48*a*c^3*d^2*e^2 + 6*b^2
*c^2*d^2*e^2 - 10*a*b^2*c*e^4 - 12*b*c^3*d^3*e - 12*b^3*c*d*e^3 + 12*a*b*c^
2*d*e^3))/(2*c^2*(4*a*c - b^2)) + (e*x^3*(3*b^3*e^3 - 4*c^3*d^3 - 10*a*b*c*
e^3 + 20*a*c^2*d*e^2 + 6*b*c^2*d^2*e - 8*b^2*c*d*e^2))/(c*(4*a*c - b^2)))/(
x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [B] time = 133.50, size = 1545, normalized size = 7.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**3,x)
```

```
[Out] (e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e*
*2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*
a*b**4*c - b**6)))*log(x + (-16*a**2*c**3*(e**4/c**2 - e*sqrt(-(4*a*c - b**
2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c*
*2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) + 16*a**2*c*e*
*4 + 8*a*b**2*c**2*(e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6
*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a
**2*b**2*c**2 + 12*a*b**4*c - b**6))) - 2*a*b**2*e**4 - 12*a*b*c*d*e**3 - b
**4*c*(e**4/c**2 - e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b
**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2
 + 12*a*b**4*c - b**6))) + 6*b**2*c*d**2*e**2 - 4*b*c**2*d**3*e)/(12*a*b*c*
e**4 - 24*a*c**2*d*e**3 - 2*b**3*e**4 + 12*b*c**2*d**2*e**2 - 8*c**3*d**3*e
)) + (e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b*
*2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2
+ 12*a*b**4*c - b**6)))*log(x + (-16*a**2*c**3*(e**4/c**2 + e*sqrt(-(4*a*c
- b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2
)/(c**2*(64*a**3*c**3 - 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) + 16*a**2
*c*e**4 + 8*a*b**2*c**2*(e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*
d)*(6*a*c*e**2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 -
 48*a**2*b**2*c**2 + 12*a*b**4*c - b**6))) - 2*a*b**2*e**4 - 12*a*b*c*d*e**
3 - b**4*c*(e**4/c**2 + e*sqrt(-(4*a*c - b**2)**3)*(b*e - 2*c*d)*(6*a*c*e**
2 - b**2*e**2 - 2*b*c*d*e + 2*c**2*d**2)/(c**2*(64*a**3*c**3 - 48*a**2*b**2
*c**2 + 12*a*b**4*c - b**6))) + 6*b**2*c*d**2*e**2 - 4*b*c**2*d**3*e)/(12*a
*b*c*e**4 - 24*a*c**2*d*e**3 - 2*b**3*e**4 + 12*b*c**2*d**2*e**2 - 8*c**3*d
**3*e)) + (12*a**3*c*e**4 - 5*a**2*b**2*e**4 + 12*a**2*b*c*d*e**3 - 24*a**2
*c**2*d**2*e**2 + 4*a*b*c**2*d**3*e - 4*a*c**3*d**4 + b**2*c**2*d**4 + x**3
*(20*a*b*c**2*e**4 - 40*a*c**3*d*e**3 - 6*b**3*c*e**4 + 16*b**2*c**2*d*e**3
 - 12*b*c**3*d**2*e**2 + 8*c**4*d**3*e) + x**2*(16*a**2*c**2*e**4 + 10*a*b*
*2*c*e**4 - 12*a*b*c**2*d*e**3 - 48*a*c**3*d**2*e**2 - 5*b**4*e**4 + 12*b**
3*c*d*e**3 - 6*b**2*c**2*d**2*e**2 + 12*b*c**3*d**3*e) + x*(28*a**2*b*c*e**
4 - 24*a**2*c**2*d*e**3 - 10*a*b**3*e**4 + 24*a*b**2*c*d*e**3 - 36*a*b*c**2
*d**2*e**2 - 8*a*c**3*d**3*e + 8*b**2*c**2*d**3*e))/(8*a**3*c**3 - 2*a**2*b
**2*c**2 + x**4*(8*a*c**5 - 2*b**2*c**4) + x**3*(16*a*b*c**4 - 4*b**3*c**3)
 + x**2*(16*a**2*c**4 + 4*a*b**2*c**3 - 2*b**4*c**2) + x*(16*a**2*b*c**3 -
4*a*b**3*c**2))
```

3.1541 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=126

$$\frac{6e\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{3e(d+ex)(-2ae+x(2cd-be)+bd)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}$$

```
[Out] -1/2*(e*x+d)^3/(c*x^2+b*x+a)^2-3/2*e*(e*x+d)*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4
*a*c+b^2)/(c*x^2+b*x+a)+6*e*(a*e^2-b*d*e+c*d^2)*arctanh((2*c*x+b)/(-4*a*c+b
^2)^(1/2))/(-4*a*c+b^2)^(3/2)
```

Rubi [A] time = 0.08, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {768, 722, 618, 206}

$$\frac{6e\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{3e(d+ex)(-2ae+x(2cd-be)+bd)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^3/(2*(a + b*x + c*x^2)^2) - (3*e*(d + e*x)*(b*d - 2*a*e + (2*c*d
 - b*e)*x))/(2*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (6*e*(c*d^2 - b*d*e + a*e
^2)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}+\frac{1}{2}(3e)\int\frac{(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}-\frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3e\left(cd^2-bde+ae^2\right)\right)\int}{b^2-4ac}$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}-\frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{\left(6e\left(cd^2-bde+ae^2\right)\right)\mathrm{S}}{}$$

$$= -\frac{(d+ex)^3}{2\left(a+bx+cx^2\right)^2}-\frac{3e(d+ex)(bd-2ae+(2cd-be)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{6e\left(cd^2-bde+ae^2\right)\tan}{\left(b^2-4ac\right)^3}$$

Mathematica [A] time = 0.28, size = 216, normalized size = 1.71

$$\frac{1}{2}\left(\frac{12e\left(e(ae-bd)+cd^2\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}+\frac{e\left(bc\left(7ae^2+3cd(d-2ex)\right)+2c^2\left(3cd^2x-ae(12d+5ex)\right)+b^3\left(-\right.\right.}{c^2\left(4ac-b^2\right)(a+x(b+cx))}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((-(b*e^3*(a + b*x)) - c^2*d^2*(d + 3*e*x) + c*e^2*(3*a*d + 3*b*d*x + a*e*x
))/(c^2*(a + x*(b + c*x))^2) + (e*(-(b^3*e^2) + b^2*c*e*(3*d + 4*e*x) + b*c
*(7*a*e^2 + 3*c*d*(d - 2*e*x)) + 2*c^2*(3*c*d^2*x - a*e*(12*d + 5*e*x))))/(
c^2*(-b^2 + 4*a*c)*(a + x*(b + c*x))) + (12*e*(c*d^2 + e*(-(b*d) + a*e))*Ar
cTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(3/2))/2
```

fricas [B] time = 0.95, size = 1455, normalized size = 11.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3 + 3*(a*b^3*c - 4*a^2*b*c^2)*d
^2*e - 12*(a^2*b^2*c - 4*a^3*c^2)*d*e^2 + 3*(a^2*b^3 - 4*a^3*b*c)*e^3 + 2*(
3*(b^2*c^3 - 4*a*c^4)*d^2*e - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^2 + (2*b^4*c - 13
*a*b^2*c^2 + 20*a^2*c^3)*e^3)*x^3 + 3*(3*(b^3*c^2 - 4*a*b*c^3)*d^2*e - (b^4
*c + 4*a*b^2*c^2 - 32*a^2*c^3)*d*e^2 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^3)
*x^2 + 6*(a^2*c^2*d^2*e - a^2*b*c*d*e^2 + a^3*c*e^3 + (c^4*d^2*e - b*c^3*d*
e^2 + a*c^3*e^3)*x^4 + 2*(b*c^3*d^2*e - b^2*c^2*d*e^2 + a*b*c^2*e^3)*x^3 +
((b^2*c^2 + 2*a*c^3)*d^2*e - (b^3*c + 2*a*b*c^2)*d*e^2 + (a*b^2*c + 2*a^2*c
^2)*e^3)*x^2 + 2*(a*b*c^2*d^2*e - a*b^2*c*d*e^2 + a^2*b*c*e^3)*x)*sqrt(b^2
- 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x
+ b))/(c*x^2 + b*x + a)) + 6*((b^4*c - 5*a*b^2*c^2 + 4*a^2*c^3)*d^2*e - 3*(
a*b^3*c - 4*a^2*b*c^2)*d*e^2 + (a*b^4 - 5*a^2*b^2*c + 4*a^3*c^2)*e^3)*x)/(a
^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5
)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2
 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*x), -1/2*((
b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3 + 3*(a*b^3*c - 4*a^2*b*c^2)*d^2*e - 1
2*(a^2*b^2*c - 4*a^3*c^2)*d*e^2 + 3*(a^2*b^3 - 4*a^3*b*c)*e^3 + 2*(3*(b^2*c
^3 - 4*a*c^4)*d^2*e - 3*(b^3*c^2 - 4*a*b*c^3)*d*e^2 + (2*b^4*c - 13*a*b^2*c
^2 + 20*a^2*c^3)*e^3)*x^3 + 3*(3*(b^3*c^2 - 4*a*b*c^3)*d^2*e - (b^4*c + 4*a
*b^2*c^2 - 32*a^2*c^3)*d*e^2 + (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^3)*x^2 - 1
2*(a^2*c^2*d^2*e - a^2*b*c*d*e^2 + a^3*c*e^3 + (c^4*d^2*e - b*c^3*d*e^2 + a
*c^3*e^3)*x^4 + 2*(b*c^3*d^2*e - b^2*c^2*d*e^2 + a*b*c^2*e^3)*x^3 + ((b^2*c
^2 + 2*a*c^3)*d^2*e - (b^3*c + 2*a*b*c^2)*d*e^2 + (a*b^2*c + 2*a^2*c^2)*e^3
)*x^2 + 2*(a*b*c^2*d^2*e - a*b^2*c*d*e^2 + a^2*b*c*e^3)*x)*sqrt(-b^2 + 4*a*
c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + 6*((b^4*c - 5*a*
b^2*c^2 + 4*a^2*c^3)*d^2*e - 3*(a*b^3*c - 4*a^2*b*c^2)*d*e^2 + (a*b^4 - 5*a
^2*b^2*c + 4*a^3*c^2)*e^3)*x)/(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3 + (b^
4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*x^4 + 2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b
*c^4)*x^3 + (b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*x^2 + 2*(a*b^5*c - 8*a^2*b^3
*c^2 + 16*a^3*b*c^3)*x)]
```

giac [**B**] time = 0.18, size = 292, normalized size = 2.32

$$-\frac{6\left(cd^2e - bde^2 + ae^3\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\left(b^2-4ac\right)\sqrt{-b^2+4ac}} - 6c^3d^2x^3e - 6bc^2dx^3e^2 + 9bc^2d^2x^2e + 4b^2cx^3e^3 - 10ac^2x^3e^3 - 3b^2cd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -6*(c*d^2*e - b*d*e^2 + a*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2
 - 4*a*c)*sqrt(-b^2 + 4*a*c)) - 1/2*(6*c^3*d^2*x^3*e - 6*b*c^2*d*x^3*e^2 +
9*b*c^2*d^2*x^2*e + 4*b^2*c*x^3*e^3 - 10*a*c^2*x^3*e^3 - 3*b^2*c*d*x^2*e^2
- 24*a*c^2*d*x^2*e^2 + 6*b^2*c*d^2*x*e - 6*a*c^2*d^2*x*e + b^2*c*d^3 - 4*a*
c^2*d^3 + 3*b^3*x^2*e^3 - 3*a*b*c*x^2*e^3 - 18*a*b*c*d*x*e^2 + 3*a*b*c*d^2*
e + 6*a*b^2*x*e^3 - 6*a^2*c*x*e^3 - 12*a^2*c*d*e^2 + 3*a^2*b*e^3)/((b^2*c -
 4*a*c^2)*(c*x^2 + b*x + a)^2)
```

maple [**B**] time = 0.06, size = 365, normalized size = 2.90

$$\frac{6ae^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}} - \frac{6bde^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}} + \frac{6cd^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}} + -\frac{\left(5ace^2-2b^2e^2+3bcde-3c^2d^2\right)ex^3}{4ac-b^2} - 3\left(abce^2+8\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-e*(5*a*c*e^2-2*b^2*e^2+3*b*c*d*e-3*c^2*d^2)/(4*a*c-b^2)*x^3-3/2*e*(a*b*c*
e^2+8*a*c^2*d*e-b^3*e^2+b^2*c*d*e-3*b*c^2*d^2)/(4*a*c-b^2)/c*x^2-3/c*e*(a^2
*c*e^2-a*b^2*e^2+3*a*b*c*d*e+a*c^2*d^2-b^2*c*d^2)/(4*a*c-b^2)*x+1/2*(3*a^2*
b*e^3-12*a^2*c*d*e^2+3*a*b*c*d^2*e-4*a*c^2*d^3+b^2*c*d^3)/(4*a*c-b^2)/c)/(c
*x^2+b*x+a)^2+6*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a
-6*e^2/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d+6*e/(4*a*c
-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.13, size = 412, normalized size = 3.27

$$\frac{\frac{3\,a^2\,b\,e^3-12\,a^2\,c\,d\,e^2+3\,a\,b\,c\,d^2\,e-4\,a\,c^2\,d^3+b^2\,c\,d^3}{2\,c\,\left(4\,a\,c-b^2\right)}+\frac{e\,x^3\,\left(2\,b^2\,e^2-3\,b\,c\,d\,e+3\,c^2\,d^2-5\,a\,c\,e^2\right)}{4\,a\,c-b^2}-\frac{3\,e\,x\,\left(a^2\,c\,e^2-a\,b^2\,e^2+3\,a\,b\,c\,d\,e+a\,c^2\,d^2-b^2\,c\,d^2\right)}{c\,\left(4\,a\,c-b^2\right)}-3}{x^2\,\left(b^2+2\,a\,c\right)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((3*a^2*b*e^3 - 4*a*c^2*d^3 + b^2*c*d^3 - 12*a^2*c*d*e^2 + 3*a*b*c*d^2*e)/(
2*c*(4*a*c - b^2)) + (e*x^3*(2*b^2*e^2 + 3*c^2*d^2 - 5*a*c*e^2 - 3*b*c*d*e)
)/(4*a*c - b^2) - (3*e*x*(a*c^2*d^2 - a*b^2*e^2 + a^2*c*e^2 - b^2*c*d^2 + 3
*a*b*c*d*e))/(c*(4*a*c - b^2)) - (3*e*x^2*(a*b*c*e^2 - 3*b*c^2*d^2 - b^3*e^
2 + 8*a*c^2*d*e + b^2*c*d*e))/(2*c*(4*a*c - b^2)))/(x^2*(2*a*c + b^2) + a^2
 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) - (6*e*atan((((3*e*(b^3 - 4*a*b*c)*(a*e^2
 + c*d^2 - b*d*e))/(4*a*c - b^2)^(5/2) - (6*c*e*x*(a*e^2 + c*d^2 - b*d*e))/
(4*a*c - b^2)^(3/2))*(4*a*c - b^2))/(3*a*e^3 - 3*b*d*e^2 + 3*c*d^2*e))*(a*e
^2 + c*d^2 - b*d*e))/(4*a*c - b^2)^(3/2)
```

sympy [B] time = 40.98, size = 762, normalized size = 6.05

$$-3e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\left(ae^2-bde+cd^2\right)\log\left(x+\frac{-48a^2c^2e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\left(ae^2-bde+cd^2\right)+24ab^2ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}}{6a}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**3,x)
```

```
[Out] -3*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2)*log(x + (-48*a**2
*c**2*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 24*a*b**2*c*
e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 3*a*b*e**3 - 3*b**
4*e*sqrt(-1/(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 3*b**2*d*e**2 +
3*b*c*d**2*e)/(6*a*c*e**3 - 6*b*c*d*e**2 + 6*c**2*d**2*e)) + 3*e*sqrt(-1/(4
*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2)*log(x + (48*a**2*c**2*e*sqrt(-1/
(4*a*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 24*a*b**2*c*e*sqrt(-1/(4*a*c
 - b**2)**3)*(a*e**2 - b*d*e + c*d**2) + 3*a*b*e**3 + 3*b**4*e*sqrt(-1/(4*a
*c - b**2)**3)*(a*e**2 - b*d*e + c*d**2) - 3*b**2*d*e**2 + 3*b*c*d**2*e)/(6
*a*c*e**3 - 6*b*c*d*e**2 + 6*c**2*d**2*e)) + (3*a**2*b*e**3 - 12*a**2*c*d*e
**2 + 3*a*b*c*d**2*e - 4*a*c**2*d**3 + b**2*c*d**3 + x**3*(-10*a*c**2*e**3
+ 4*b**2*c*e**3 - 6*b*c**2*d*e**2 + 6*c**3*d**2*e) + x**2*(-3*a*b*c*e**3 -
24*a*c**2*d*e**2 + 3*b**3*e**3 - 3*b**2*c*d*e**2 + 9*b*c**2*d**2*e) + x*(-6
*a**2*c*e**3 + 6*a*b**2*e**3 - 18*a*b*c*d*e**2 - 6*a*c**2*d**2*e + 6*b**2*c
*d**2*e))/(8*a**3*c**2 - 2*a**2*b**2*c + x**4*(8*a*c**4 - 2*b**2*c**3) + x*
*3*(16*a*b*c**3 - 4*b**3*c**2) + x**2*(16*a**2*c**3 + 4*a*b**2*c**2 - 2*b**
4*c) + x*(16*a**2*b*c**2 - 4*a*b**3*c))
```

3.1542 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=112

$$-\frac{e(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2}$$

```
[Out] -1/2*(e*x+d)^2/(c*x^2+b*x+a)^2-e*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)/(c
*x^2+b*x+a)+2*e*(-b*e+2*c*d)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+
b^2)^(3/2)
```

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.154$, Rules used = {768, 638, 618, 206}

$$-\frac{e(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^2/(2*(a + b*x + c*x^2)^2) - (e*(b*d - 2*a*e + (2*c*d - b*e)*x))/
((b^2 - 4*a*c)*(a + b*x + c*x^2)) + (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/
Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^3}\,dx &= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} + e\int \frac{d+ex}{\left(a+bx+cx^2\right)^2}\,dx \\
&= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} - \frac{(e(2cd-be))\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac} \\
&= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{(2e(2cd-be))\,\mathrm{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\right.}{b^2-4ac} \\
&= -\frac{(d+ex)^2}{2\left(a+bx+cx^2\right)^2} - \frac{e(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)} + \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 143, normalized size = 1.28

$$
\frac{1}{2}\left(\frac{e\left(4c(cdx-2ae)+b^2e+2bc(d-ex)\right)}{c\left(4ac-b^2\right)(a+x(b+cx))} - \frac{4e(be-2cd)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}} + \frac{e^2(a+bx)-cd(d+2ex)}{c(a+x(b+cx))^2}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((e*(b^2*e + 4*c*(-2*a*e + c*d*x) + 2*b*c*(d - e*x)))/(c*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))) + (e^2*(a + b*x) - c*d*(d + 2*e*x))/(c*(a + x*(b + c*x))^2)
 - (4*e*(-2*c*d + b*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*
c)^(3/2))/2
```

fricas [B] time = 0.92, size = 1004, normalized size = 8.96

$$
\left[-\frac{2\left(2\left(b^2c^2-4\,ac^3\right)de-\left(b^3c-4\,abc^2\right)e^2\right)x^3+\left(b^4-8\,ab^2c+16\,a^2c^2\right)d^2+2\left(ab^3-4\,a^2bc\right)de-4\left(a^2b^2-4\,a^3c\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(2*(b^2*c^2 - 4*a*c^3)*d*e - (b^3*c - 4*a*b*c^2)*e^2)*x^3 + (b^4 -
 8*a*b^2*c + 16*a^2*c^2)*d^2 + 2*(a*b^3 - 4*a^2*b*c)*d*e - 4*(a^2*b^2 - 4*a
^3*c)*e^2 + (6*(b^3*c - 4*a*b*c^2)*d*e - (b^4 + 4*a*b^2*c - 32*a^2*c^2)*e^2
)*x^2 - 2*(2*a^2*c*d*e - a^2*b*e^2 + (2*c^3*d*e - b*c^2*e^2)*x^4 + 2*(2*b*c
^2*d*e - b^2*c*e^2)*x^3 + (2*(b^2*c + 2*a*c^2)*d*e - (b^3 + 2*a*b*c)*e^2)*x
^2 + 2*(2*a*b*c*d*e - a*b^2*e^2)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*
c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(
2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*d*e - 3*(a*b^3 - 4*a^2*b*c)*e^2)*x)/(a^2*b^
4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2
*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*
x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), -1/2*(2*(2*(b^2*c^2 - 4*a*
c^3)*d*e - (b^3*c - 4*a*b*c^2)*e^2)*x^3 + (b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^
2 + 2*(a*b^3 - 4*a^2*b*c)*d*e - 4*(a^2*b^2 - 4*a^3*c)*e^2 + (6*(b^3*c - 4*a
*b*c^2)*d*e - (b^4 + 4*a*b^2*c - 32*a^2*c^2)*e^2)*x^2 - 4*(2*a^2*c*d*e - a^
2*b*e^2 + (2*c^3*d*e - b*c^2*e^2)*x^4 + 2*(2*b*c^2*d*e - b^2*c*e^2)*x^3 + (
2*(b^2*c + 2*a*c^2)*d*e - (b^3 + 2*a*b*c)*e^2)*x^2 + 2*(2*a*b*c*d*e - a*b^2
*e^2)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4
*a*c)) + 2*(2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*d*e - 3*(a*b^3 - 4*a^2*b*c)*e^2
)*x)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*
c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c +
32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)]
```

giac [**A**] time = 0.17, size = 183, normalized size = 1.63

$$-\frac{2\left(2\,cde-be^{2}\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^{2}+4\,ac}}\right)}{\left(b^{2}-4\,ac\right)\sqrt{-b^{2}+4\,ac}}-\frac{4\,c^{2}dx^{3}e-2\,bcx^{3}e^{2}+6\,bcdx^{2}e-b^{2}x^{2}e^{2}-8\,acx^{2}e^{2}+4\,b^{2}dxe-4\,acdxe+b^{2}d}{2\left(cx^{2}+bx+a\right)^{2}\left(b^{2}-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -2*(2*c*d*e - b*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2 - 4*a*c)*
sqrt(-b^2 + 4*a*c)) - 1/2*(4*c^2*d*x^3*e - 2*b*c*x^3*e^2 + 6*b*c*d*x^2*e -
b^2*x^2*e^2 - 8*a*c*x^2*e^2 + 4*b^2*d*x*e - 4*a*c*d*x*e + b^2*d^2 - 4*a*c*d
^2 - 6*a*b*x*e^2 + 2*a*b*d*e - 4*a^2*e^2)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c
))
```

maple [**B**] time = 0.05, size = 229, normalized size = 2.04

$$-\frac{2b\,e^{2}\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{4cde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^{2}}}\right)}{\left(4ac-b^{2}\right)^{\frac{3}{2}}}+\frac{-\frac{(be-2cd)ce\,x^{3}}{4ac-b^{2}}-\frac{\left(8ace+e\,b^{2}-6bcd\right)e\,x^{2}}{2\left(4ac-b^{2}\right)}-\frac{\left(3abe+2acd-2b^{2}d\right)ex}{4ac-b^{2}}-\frac{4a^{2}e^{2}-2abde}{2(4ac}}{\left(c\,x^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-(b*e-2*c*d)*c*e/(4*a*c-b^2)*x^3-1/2*e*(8*a*c*e+b^2*e-6*b*c*d)/(4*a*c-b^2)
*x^2-e*(3*a*b*e+2*a*c*d-2*b^2*d)/(4*a*c-b^2)*x-1/2*(4*a^2*e^2-2*a*b*d*e+4*a
*c*d^2-b^2*d^2)/(4*a*c-b^2))/(c*x^2+b*x+a)^2-2*e^2/(4*a*c-b^2)^(3/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*b+4*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a
*c-b^2)^(1/2))*c*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 2.00, size = 284, normalized size = 2.54

$$\frac{2\,e\,\mathrm{atan}\left(\frac{\left(4\,a\,c-b^{2}\right)\left(\frac{e\left(b^{3}-4\,a\,b\,c\right)\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{5/2}}-\frac{2\,c\,e\,x\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{3/2}}\right)}{b\,e^{2}-2\,c\,d\,e}\right)\left(b\,e-2\,c\,d\right)}{\left(4\,a\,c-b^{2}\right)^{3/2}}-\frac{\frac{4\,a^{2}\,e^{2}-2\,a\,b\,d\,e+4\,c\,a\,d^{2}-b^{2}\,d^{2}}{2\left(4\,a\,c-b^{2}\right)}-\frac{e\,x^{3}\left(2\,c^{2}\,d-b\,c\,e\right)}{4\,a\,c-b^{2}}+\frac{e\,x\left(-2\,d\,b^{2}+3}{4\,a\,c-}}{x^{2}\,\left(b^{2}+2\,a\,c\right)+a^{2}+c^{2}\,x^{4}+2\,a\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*e*atan(((4*a*c - b^2)*((e*(b^3 - 4*a*b*c)*(b*e - 2*c*d))/(4*a*c - b^2)^(
5/2) - (2*c*e*x*(b*e - 2*c*d))/(4*a*c - b^2)^(3/2)))/(b*e^2 - 2*c*d*e))*(b*
e - 2*c*d))/(4*a*c - b^2)^(3/2) - ((4*a^2*e^2 - b^2*d^2 + 4*a*c*d^2 - 2*a*b
*d*e)/(2*(4*a*c - b^2)) - (e*x^3*(2*c^2*d - b*c*e))/(4*a*c - b^2) + (e*x*(3
*a*b*e - 2*b^2*d + 2*a*c*d))/(4*a*c - b^2) + (e*x^2*(b^2*e + 8*a*c*e - 6*b*
c*d))/(2*(4*a*c - b^2)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b
*c*x^3)
```

sympy [B] time = 12.58, size = 530, normalized size = 4.73

$$e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)\log\left(x+\frac{-16a^2c^2e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)+8ab^2ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\,(be-2cd)-b^4e\sqrt{-}}{2bce^2-4c^2de}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**3,x)
```

```
[Out] e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d)*log(x + (-16*a**2*c**2*e*sqrt(-1
/(4*a*c - b**2)**3)*(b*e - 2*c*d) + 8*a*b**2*c*e*sqrt(-1/(4*a*c - b**2)**3)
*(b*e - 2*c*d) - b**4*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e**
2 - 2*b*c*d*e)/(2*b*c*e**2 - 4*c**2*d*e)) - e*sqrt(-1/(4*a*c - b**2)**3)*(b
*e - 2*c*d)*log(x + (16*a**2*c**2*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d
) - 8*a*b**2*c*e*sqrt(-1/(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**4*e*sqrt(-1/
(4*a*c - b**2)**3)*(b*e - 2*c*d) + b**2*e**2 - 2*b*c*d*e)/(2*b*c*e**2 - 4*c
**2*d*e)) + (-4*a**2*e**2 + 2*a*b*d*e - 4*a*c*d**2 + b**2*d**2 + x**3*(-2*b
*c*e**2 + 4*c**2*d*e) + x**2*(-8*a*c*e**2 - b**2*e**2 + 6*b*c*d*e) + x*(-6*
a*b*e**2 - 4*a*c*d*e + 4*b**2*d*e))/(8*a**3*c - 2*a**2*b**2 + x**4*(8*a*c**
3 - 2*b**2*c**2) + x**3*(16*a*b*c**2 - 4*b**3*c) + x**2*(16*a**2*c**2 + 4*a
*b**2*c - 2*b**4) + x*(16*a**2*b*c - 4*a*b**3))
```

3.1543 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=94

$$-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}+\frac{-d-ex}{2\left(a+bx+cx^2\right)^2}$$

```
[Out] 1/2*(-e*x-d)/(c*x^2+b*x+a)^2-1/2*e*(2*c*x+b)/(-4*a*c+b^2)/(c*x^2+b*x+a)+2*c
*e*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(3/2)
```

Rubi [A] time = 0.04, antiderivative size = 91, normalized size of antiderivative = 0.97, number of steps used = 4, number of rules used = 4, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {768, 614, 618, 206}

$$-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}-\frac{d+ex}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)/(2*(a + b*x + c*x^2)^2) - (e*(b + 2*c*x))/(2*(b^2 - 4*a*c)*(a +
b*x + c*x^2)) + (2*c*e*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c
)^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}+\frac{1}{2}e\int \frac{1}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(ce)\int \frac{1}{a+bx+cx^2}\,dx}{b^2-4ac}$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(2ce)\,\text{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b\right.}{b^2-4ac}$$

$$= -\frac{d+ex}{2\left(a+bx+cx^2\right)^2}-\frac{e(b+2cx)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{2ce\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{3/2}}$$

Mathematica [**A**] time = 0.12, size = 93, normalized size = 0.99

$$\frac{1}{2}\left(-\frac{e(b+2cx)}{\left(b^2-4ac\right)(a+x(b+cx))}+\frac{4ce\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}}-\frac{d+ex}{(a+x(b+cx))^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (-((d + e*x)/(a + x*(b + c*x))^2) - (e*(b + 2*c*x))/((b^2 - 4*a*c)*(a + x*(
b + c*x))) + (4*c*e*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^
(3/2))/2
```

fricas [**B**] time = 0.79, size = 681, normalized size = 7.24

$$\left[-\frac{2\left(b^2c^2-4\,ac^3\right)ex^3+3\left(b^3c-4\,abc^2\right)ex^2+2\left(b^4-5\,ab^2c+4\,a^2c^2\right)ex+2\left(c^3ex^4+2\,bc^2ex^3+2\,abcex+a^2ce\right.}{2\left(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)x^4+2\left(b^5c-8\,ab\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*(2*(b^2*c^2 - 4*a*c^3)*e*x^3 + 3*(b^3*c - 4*a*b*c^2)*e*x^2 + 2*(b^4 -
 5*a*b^2*c + 4*a^2*c^2)*e*x + 2*(c^3*e*x^4 + 2*b*c^2*e*x^3 + 2*a*b*c*e*x +
a^2*c*e + (b^2*c + 2*a*c^2)*e*x^2)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c
*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + (b^4
 - 8*a*b^2*c + 16*a^2*c^2)*d + (a*b^3 - 4*a^2*b*c)*e)/(a^2*b^4 - 8*a^3*b^2*
c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*
b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5
 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x), -1/2*(2*(b^2*c^2 - 4*a*c^3)*e*x^3 + 3*(b
^3*c - 4*a*b*c^2)*e*x^2 + 2*(b^4 - 5*a*b^2*c + 4*a^2*c^2)*e*x - 4*(c^3*e*x^
4 + 2*b*c^2*e*x^3 + 2*a*b*c*e*x + a^2*c*e + (b^2*c + 2*a*c^2)*e*x^2)*sqrt(-
b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (b^4 -
 8*a*b^2*c + 16*a^2*c^2)*d + (a*b^3 - 4*a^2*b*c)*e)/(a^2*b^4 - 8*a^3*b^2*c
+ 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^
3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 -
 8*a^2*b^3*c + 16*a^3*b*c^2)*x)]
```

giac [**A**] time = 0.16, size = 122, normalized size = 1.30

$$-\frac{2\,c\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)e}{\left(b^2-4\,ac\right)\sqrt{-b^2+4\,ac}}-\frac{2\,c^2x^3e+3\,bcx^2e+2\,b^2xe-2\,acxe+b^2d-4\,acd+abe}{2\left(cx^2+bx+a\right)^2\left(b^2-4\,ac\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -2*c*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))*e/((b^2 - 4*a*c)*sqrt(-b^2 + 4*
a*c)) - 1/2*(2*c^2*x^3*e + 3*b*c*x^2*e + 2*b^2*x*e - 2*a*c*x*e + b^2*d - 4*
a*c*d + a*b*e)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c))
```

maple [**A**] time = 0.06, size = 146, normalized size = 1.55

$$\frac{2ce\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{3}{2}}}+\frac{\frac{c^2e\,x^3}{4ac-b^2}+\frac{3bce\,x^2}{2\left(4ac-b^2\right)}-\frac{\left(ac-b^2\right)ex}{4ac-b^2}+\frac{abe-4acd+b^2d}{8ac-2b^2}}{\left(c\,x^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (c^2*e/(4*a*c-b^2)*x^3+3/2*b*c*e/(4*a*c-b^2)*x^2-e*(a*c-b^2)/(4*a*c-b^2)*x+
1/2*(a*b*e-4*a*c*d+b^2*d)/(4*a*c-b^2))/(c*x^2+b*x+a)^2+2*c*e/(4*a*c-b^2)^(3
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 1.91, size = 213, normalized size = 2.27

$$\frac{\frac{d\,b^2+a\,e\,b-4\,a\,c\,d}{2\,\left(4\,a\,c-b^2\right)}+\frac{c^2\,e\,x^3}{4\,a\,c-b^2}-\frac{e\,x\,\left(a\,c-b^2\right)}{4\,a\,c-b^2}+\frac{3\,b\,c\,e\,x^2}{2\,\left(4\,a\,c-b^2\right)}}{x^2\,\left(b^2+2\,a\,c\right)+a^2+c^2\,x^4+2\,a\,b\,x+2\,b\,c\,x^3}-\frac{2\,c\,e\,\mathrm{atan}\left(-\frac{\left(\frac{2\,c^2\,e\,x}{{\left(4\,a\,c-b^2\right)}^{3/2}}-\frac{c\,e\,\left(b^3-4\,a\,b\,c\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}\right)\,\left(4\,a\,c-b^2\right)}{c\,e}\right)}{{\left(4\,a\,c-b^2\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] ((b^2*d + a*b*e - 4*a*c*d)/(2*(4*a*c - b^2)) + (c^2*e*x^3)/(4*a*c - b^2) -
(e*x*(a*c - b^2))/(4*a*c - b^2) + (3*b*c*e*x^2)/(2*(4*a*c - b^2)))/(x^2*(2*
a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) - (2*c*e*atan(-(((2*c^2*e
*x)/(4*a*c - b^2)^(3/2) - (c*e*(b^3 - 4*a*b*c))/(4*a*c - b^2)^(5/2))*(4*a*c
 - b^2))/(c*e)))/(4*a*c - b^2)^(3/2)
```

sympy [**B**] time = 3.40, size = 377, normalized size = 4.01

$$-ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}\log\left(x+\frac{-16a^2c^3e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+8ab^2c^2e\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}-b^4ce\sqrt{-\frac{1}{\left(4ac-b^2\right)^3}}+bce}{2c^2e}\right)+ce\sqrt{-\frac{}{(4ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -c*e*sqrt(-1/(4*a*c - b**2)**3)*log(x + (-16*a**2*c**3*e*sqrt(-1/(4*a*c - b
**2)**3) + 8*a*b**2*c**2*e*sqrt(-1/(4*a*c - b**2)**3) - b**4*c*e*sqrt(-1/(4
*a*c - b**2)**3) + b*c*e)/(2*c**2*e)) + c*e*sqrt(-1/(4*a*c - b**2)**3)*log(
x + (16*a**2*c**3*e*sqrt(-1/(4*a*c - b**2)**3) - 8*a*b**2*c**2*e*sqrt(-1/(4
*a*c - b**2)**3) + b**4*c*e*sqrt(-1/(4*a*c - b**2)**3) + b*c*e)/(2*c**2*e))
 + (a*b*e - 4*a*c*d + b**2*d + 3*b*c*e*x**2 + 2*c**2*e*x**3 + x*(-2*a*c*e +
 2*b**2*e))/(8*a**3*c - 2*a**2*b**2 + x**4*(8*a*c**3 - 2*b**2*c**2) + x**3*
(16*a*b*c**2 - 4*b**3*c) + x**2*(16*a**2*c**2 + 4*a*b**2*c - 2*b**4) + x*(1
6*a**2*b*c - 4*a*b**3))
```

3.1544 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=16

$$-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

```
[Out] -1/2/(c*x^2+b*x+a)^2
```

Rubi [A] time = 0.00, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {629}

$$-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/(2*(a + b*x + c*x^2)^2)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^3}\,dx=-\frac{1}{2\left(a+bx+cx^2\right)^2}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$-\frac{1}{2(a+x(b+cx))^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*1/(a + x*(b + c*x))^2
```

fricas [B] time = 0.62, size = 39, normalized size = 2.44

$$-\frac{1}{2\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] -1/2/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)
```

giac [A] time = 0.16, size = 14, normalized size = 0.88

$$-\frac{1}{2\left(cx^2+bx+a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/2/(c*x^2 + b*x + a)^2
```

maple [**A**] time = 0.04, size = 15, normalized size = 0.94

$$-\frac{1}{2\left(c\,x^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -1/2/(c*x^2+b*x+a)^2
```

maxima [**A**] time = 0.69, size = 14, normalized size = 0.88

$$-\frac{1}{2\left(cx^{2}+bx+a\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] -1/2/(c*x^2 + b*x + a)^2
```

mupad [**B**] time = 0.06, size = 43, normalized size = 2.69

$$-\frac{1}{2\,\left(x^{2}\,\left(b^{2}+2\,a\,c\right)+a^{2}+c^{2}\,x^{4}+2\,a\,b\,x+2\,b\,c\,x^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^3,x)
```

```
[Out] -1/(2*(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3))
```

sympy [**B**] time = 0.82, size = 44, normalized size = 2.75

$$-\frac{1}{2a^{2}+4abx+4bcx^{3}+2c^{2}x^{4}+x^{2}\left(4ac+2b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -1/(2*a**2 + 4*a*b*x + 4*b*c*x**3 + 2*c**2*x**4 + x**2*(4*a*c + 2*b**2))
```

3.1545 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=397

$$\frac{cex\left(b^2-4ac\right)-\left(b^2-4ac\right)(cd-be)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2\left(ae^2-bde+cd^2\right)}-\frac{e\left(2b^2ce^3(3ae+bd)-4c^3d^2e(bd-3ae)-6ac^2e^3(ae+2bd)-b^4e^4\right.}{\left(b^2-4ac\right)^{3/2}\left(ae^2-bde+cd^2\right)^3}$$

```
[Out] 1/2*(-(-4*a*c+b^2)*(-b*e+c*d)+c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e
+c*d^2)/(c*x^2+b*x+a)^2-1/2*e*(3*b^2*c*d*e-8*a*c^2*d*e-2*b^3*e^2-b*c*(-7*a*
e^2+c*d^2)-2*c*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*x)/(-4*a*c+b^2)/(a*e^2-b*d
*e+c*d^2)^2/(c*x^2+b*x+a)-e*(2*c^4*d^4-b^4*e^4-4*c^3*d^2*e*(-3*a*e+b*d)-6*a
*c^2*e^3*(a*e+2*b*d)+2*b^2*c*e^3*(3*a*e+b*d))*arctanh((2*c*x+b)/(-4*a*c+b^2
)^(1/2))/(-4*a*c+b^2)^(3/2)/(a*e^2-b*d*e+c*d^2)^3-e^4*(-b*e+2*c*d)*ln(e*x+d
)/(a*e^2-b*d*e+c*d^2)^3+1/2*e^4*(-b*e+2*c*d)*ln(c*x^2+b*x+a)/(a*e^2-b*d*e+c
*d^2)^3
```

Rubi **[A]** time = 0.82, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.231$, Rules used = {822, 800, 634, 618, 206, 628}

$$-\frac{e\left(-2cx\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)-bc\left(cd^2-7ae^2\right)-8ac^2de+3b^2cde-2b^3e^2\right)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{e\left(2b^2ce^3(3ae+bd)-4c^3d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] -((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/(2*(b^2 - 4*a*c)*(c*d^2
- b*d*e + a*e^2)*(a + b*x + c*x^2)^2) - (e*(3*b^2*c*d*e - 8*a*c^2*d*e - 2*b
^3*e^2 - b*c*(c*d^2 - 7*a*e^2) - 2*c*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e)
)*x))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2)) - (e*(2
*c^4*d^4 - b^4*e^4 - 4*c^3*d^2*e*(b*d - 3*a*e) - 6*a*c^2*e^3*(2*b*d + a*e)
+ 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/((b^2
- 4*a*c)^(3/2)*(c*d^2 - b*d*e + a*e^2)^3) - (e^4*(2*c*d - b*e)*Log[d + e*x]
)/(c*d^2 - b*d*e + a*e^2)^3 + (e^4*(2*c*d - b*e)*Log[a + b*x + c*x^2])/(2*(
c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\left(b^2-4ac\right)e(cd-2be)-3c\left(b^2-4ac\right)e}{(d+ex)\left(a+bx+cx^2\right)^2}}{2\left(b^2-4ac\right)\left(cd^2-bde+\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

$$= -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{e\left(3b^2cde-8ac^2de-2b^3e^2\right.}{2\left(b^2-4\right.}$$

Mathematica [A] time = 1.11, size = 356, normalized size = 0.90

$$\frac{1}{2}\left(-\frac{2e\left(-2b^2ce^3(3ae+bd)+4c^3d^2e(bd-3ae)+6ac^2e^3(ae+2bd)+b^4e^4-2c^4d^4\right)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{3/2}\left(e(bd-ae)-cd^2\right)^3}+\frac{e\left(bc\left(cd(d-\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((-(c*d) + b*e + c*e*x)/((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^2) +
(e*(2*b^3*e^2 + b^2*c*e*(-3*d + 2*e*x) + 2*c^2*(c*d^2*x + a*e*(4*d - 3*e*x)
) + b*c*(-7*a*e^2 + c*d*(d - 2*e*x))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) +
a*e))^2*(a + x*(b + c*x))) - (2*e*(-2*c^4*d^4 + b^4*e^4 + 4*c^3*d^2*e*(b*d
- 3*a*e) + 6*a*c^2*e^3*(2*b*d + a*e) - 2*b^2*c*e^3*(b*d + 3*a*e))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/((-b^2 + 4*a*c)^(3/2)*(-(c*d^2) + e*(b*d - a
*e))^3) + (2*e^4*(-2*c*d + b*e)*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3
+ (e^4*(2*c*d - b*e)*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))^3)/2
```

fricas [B] time = 152.53, size = 6667, normalized size = 16.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [-1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^5 - (3*b^5*c^2 - 23*a*b^3*c^3
 + 44*a^2*b*c^4)*d^4*e + (3*b^6*c - 18*a*b^4*c^2 + 8*a^2*b^2*c^3 + 64*a^3*c
^4)*d^3*e^2 - (b^7 + a*b^5*c - 50*a^2*b^3*c^2 + 120*a^3*b*c^3)*d^2*e^3 + (4
*a*b^6 - 27*a^2*b^4*c + 32*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^4 - (3*a^2*b^5 - 2
3*a^3*b^3*c + 44*a^4*b*c^2)*e^5 - 2*((b^2*c^5 - 4*a*c^6)*d^4*e - 2*(b^3*c^4
 - 4*a*b*c^5)*d^3*e^2 + 2*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^3 - (b^
5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d*e^4 + (a*b^4*c^2 - 7*a^2*b^2*c^3 + 12*
a^3*c^4)*e^5)*x^3 - (3*(b^3*c^4 - 4*a*b*c^5)*d^4*e - 8*(b^4*c^3 - 5*a*b^2*c
^4 + 4*a^2*c^5)*d^3*e^2 + 9*(b^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^2*e^3 -
 4*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^2*c^3 + 8*a^3*c^4)*d*e^4 + (4*a*b^5*c - 2
9*a^2*b^3*c^2 + 52*a^3*b*c^3)*e^5)*x^2 - (2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3
*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 -
6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^
2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)
*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(
b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3
 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e - 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b
^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4
- (b^6 - 4*a*b^4*c - 6*a^2*b^2*c^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^
4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c
^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c + 6*a^3*b*c^2)*e^5)*x)*sqrt(b^2 - 4*a*c)*l
og((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x
^2 + b*x + a)) - 2*((b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3*(b^5*c^2
- 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^3*e^2 + 3*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^2*c
^3 + 8*a^3*c^4)*d^2*e^3 - (b^7 - 4*a*b^5*c - 10*a^2*b^3*c^2 + 40*a^3*b*c^3)
*d*e^4 + (a*b^6 - 6*a^2*b^4*c + 3*a^3*b^2*c^2 + 20*a^4*c^3)*e^5)*x - (2*(a^
2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a
^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 -
8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2
*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c
 - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*
x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*
b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*(2*(a^2*b^4*c - 8*
a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*c^2)*e^
```

```
5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b^3*c^3
+ 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d*e^
4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*a*b^4*c
^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 + 2*(2*(
a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c + 16*a
^3*b^2*c^2)*e^5)*x)*log(e*x + d))/((a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^
5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^5*e + 3*(a^2*b^6*
c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4*e^2 - (a^2*b^7 - 2*a^3*
b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(a^3*b^6 - 7*a^4*b^4*c +
 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*
c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^6 + ((b^4*c^5 - 8*a*b^2
*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^5*e + 3
*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6)*d^4*e^2 - (b^7*c^2 -
2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3 + 3*(a*b^6*c^2 - 7*a^2
*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(a^2*b^5*c^2 - 8*a^3*b^3
*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c^4)*e^6
)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^6 - 3*(b^6*c^3 - 8*a*b^
4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5*c^3 + 8*a^2*b^3*c^4 +
16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^2*b^4*c^3 + 96*a^3*b^2*
c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d
^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c^3)*d*e^5 + (a^3*b^5*c
- 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3 - 6*a*b^4*c^4 + 32*a^3
*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5)*d^5*e + 3*(b^8*c - 5*a
*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c^5)*d^4*e^2 - (b^9 - 36
*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e^3 + 3*(a*b^8 - 5*a^2*b
^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)*d^2*e^4 - 3*(a^2*b^7 -
6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*c^3)*e^
6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^6 - 3*(a*b^6*c^2 -
 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3
*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^6*c - 32*a^3*b^4*c^2 +
96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c + 8*a^4*b^3*c^2 + 16*a^5
*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*b^2*c^2)*d*e^5 + (a^4*b
^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x), -1/2*((b^4*c^3 - 8*a*b^2*c^4 + 16
*a^2*c^5)*d^5 - (3*b^5*c^2 - 23*a*b^3*c^3 + 44*a^2*b*c^4)*d^4*e + (3*b^6*c
- 18*a*b^4*c^2 + 8*a^2*b^2*c^3 + 64*a^3*c^4)*d^3*e^2 - (b^7 + a*b^5*c - 50*
a^2*b^3*c^2 + 120*a^3*b*c^3)*d^2*e^3 + (4*a*b^6 - 27*a^2*b^4*c + 32*a^3*b^2
*c^2 + 48*a^4*c^3)*d*e^4 - (3*a^2*b^5 - 23*a^3*b^3*c + 44*a^4*b*c^2)*e^5 -
2*((b^2*c^5 - 4*a*c^6)*d^4*e - 2*(b^3*c^4 - 4*a*b*c^5)*d^3*e^2 + 2*(b^4*c^3
 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^3 - (b^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)
*d*e^4 + (a*b^4*c^2 - 7*a^2*b^2*c^3 + 12*a^3*c^4)*e^5)*x^3 - (3*(b^3*c^4 -
4*a*b*c^5)*d^4*e - 8*(b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^3*e^2 + 9*(b^5*c
^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^2*e^3 - 4*(b^6*c - 6*a*b^4*c^2 + 6*a^2*b^
2*c^3 + 8*a^3*c^4)*d*e^4 + (4*a*b^5*c - 29*a^2*b^3*c^2 + 52*a^3*b*c^3)*e^5)
*x^2 + 2*(2*a^2*c^4*d^4*e - 4*a^2*b*c^3*d^3*e^2 + 12*a^3*c^3*d^2*e^3 + 2*(a
^2*b^3*c - 6*a^3*b*c^2)*d*e^4 - (a^2*b^4 - 6*a^3*b^2*c + 6*a^4*c^2)*e^5 + (
2*c^6*d^4*e - 4*b*c^5*d^3*e^2 + 12*a*c^5*d^2*e^3 + 2*(b^3*c^3 - 6*a*b*c^4)*
d*e^4 - (b^4*c^2 - 6*a*b^2*c^3 + 6*a^2*c^4)*e^5)*x^4 + 2*(2*b*c^5*d^4*e - 4
*b^2*c^4*d^3*e^2 + 12*a*b*c^4*d^2*e^3 + 2*(b^4*c^2 - 6*a*b^2*c^3)*d*e^4 - (
b^5*c - 6*a*b^3*c^2 + 6*a^2*b*c^3)*e^5)*x^3 + (2*(b^2*c^4 + 2*a*c^5)*d^4*e
- 4*(b^3*c^3 + 2*a*b*c^4)*d^3*e^2 + 12*(a*b^2*c^3 + 2*a^2*c^4)*d^2*e^3 + 2*
(b^5*c - 4*a*b^3*c^2 - 12*a^2*b*c^3)*d*e^4 - (b^6 - 4*a*b^4*c - 6*a^2*b^2*c
^2 + 12*a^3*c^3)*e^5)*x^2 + 2*(2*a*b*c^4*d^4*e - 4*a*b^2*c^3*d^3*e^2 + 12*a
^2*b*c^3*d^2*e^3 + 2*(a*b^4*c - 6*a^2*b^2*c^2)*d*e^4 - (a*b^5 - 6*a^2*b^3*c
 + 6*a^3*b*c^2)*e^5)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*
x + b)/(b^2 - 4*a*c)) - 2*((b^4*c^3 - 5*a*b^2*c^4 + 4*a^2*c^5)*d^4*e - 3*(b
^5*c^2 - 6*a*b^3*c^3 + 8*a^2*b*c^4)*d^3*e^2 + 3*(b^6*c - 6*a*b^4*c^2 + 6*a^
2*b^2*c^3 + 8*a^3*c^4)*d^2*e^3 - (b^7 - 4*a*b^5*c - 10*a^2*b^3*c^2 + 40*a^3
*b*c^3)*d*e^4 + (a*b^6 - 6*a^2*b^4*c + 3*a^3*b^2*c^2 + 20*a^4*c^3)*e^5)*x -
 (2*(a^2*b^4*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c
 + 16*a^4*b*c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5
*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 +
 16*a^2*b*c^4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2
*(b^6*c - 6*a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3
)*e^5)*x^2 + 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 -
 8*a^2*b^4*c + 16*a^3*b^2*c^2)*e^5)*x)*log(c*x^2 + b*x + a) + 2*(2*(a^2*b^4
*c - 8*a^3*b^2*c^2 + 16*a^4*c^3)*d*e^4 - (a^2*b^5 - 8*a^3*b^3*c + 16*a^4*b*
c^2)*e^5 + (2*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d*e^4 - (b^5*c^2 - 8*a*b
^3*c^3 + 16*a^2*b*c^4)*e^5)*x^4 + 2*(2*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^
4)*d*e^4 - (b^6*c - 8*a*b^4*c^2 + 16*a^2*b^2*c^3)*e^5)*x^3 + (2*(b^6*c - 6*
a*b^4*c^2 + 32*a^3*c^4)*d*e^4 - (b^7 - 6*a*b^5*c + 32*a^3*b*c^3)*e^5)*x^2 +
 2*(2*(a*b^5*c - 8*a^2*b^3*c^2 + 16*a^3*b*c^3)*d*e^4 - (a*b^6 - 8*a^2*b^4*c
 + 16*a^3*b^2*c^2)*e^5)*x)*log(e*x + d))/((a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16
*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^5*e + 3*(a
^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4*e^2 - (a^2*b^7 -
 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(a^3*b^6 - 7*a^4*
b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 - 8*a^5*b^3*c + 16
*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^6 + ((b^4*c^5 -
8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^
5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6)*d^4*e^2 - (b^7
*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3 + 3*(a*b^6*c^2
- 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(a^2*b^5*c^2 - 8*
a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^2*c^3 + 16*a^5*c
^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^6 - 3*(b^6*c^3 -
 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5*c^3 + 8*a^2*b^3
*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^2*b^4*c^3 + 96*a
^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b
*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c^3)*d*e^5 + (a^3
*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3 - 6*a*b^4*c^4 +
 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5)*d^5*e + 3*(b^8*
c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c^5)*d^4*e^2 - (b
^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e^3 + 3*(a*b^8 -
5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)*d^2*e^4 - 3*(a^2
*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4*b^4*c + 32*a^6*
c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^6 - 3*(a*b^
6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c - 7*a^2*b^5*c^2
+ 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^6*c - 32*a^3*b^4
*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c + 8*a^4*b^3*c^2 +
 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*b^2*c^2)*d*e^5 +
 (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x)]
```

giac [B]   time = 0.28, size = 1117, normalized size = 2.81

$$\frac{\left(2\,cde^4 - be^5\right)\log\left(cx^2 + bx + a\right)}{2\left(c^3d^6 - 3\,bc^2d^5e + 3\,b^2cd^4e^2 + 3\,ac^2d^4e^2 - b^3d^3e^3 - 6\,abcd^3e^3 + 3\,ab^2d^2e^4 + 3\,a^2cd^2e^4 - 3\,a^2bde^5 + a^3e^6\right)} - \frac{}{c^3d^6e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(2*c*d*e^4 - b*e^5)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b
^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^
2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (2*c*d*e^5 - b*e^6)*lo
g(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^
4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 -
 3*a^2*b*d*e^6 + a^3*e^7) + (2*c^4*d^4*e - 4*b*c^3*d^3*e^2 + 12*a*c^3*d^2*e
^3 + 2*b^3*c*d*e^4 - 12*a*b*c^2*d*e^4 - b^4*e^5 + 6*a*b^2*c*e^5 - 6*a^2*c^2
*e^5)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^2*c^3*d^6 - 4*a*c^4*d^6 -
3*b^3*c^2*d^5*e + 12*a*b*c^3*d^5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*c^2*d^4*e^2
- 12*a^2*c^3*d^4*e^2 - b^5*d^3*e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2*b*c^2*d^3*e
^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4 - 3*a^2*b^3
*d*e^5 + 12*a^3*b*c*d*e^5 + a^3*b^2*e^6 - 4*a^4*c*e^6)*sqrt(-b^2 + 4*a*c))
- 1/2*(b^2*c^3*d^5 - 4*a*c^4*d^5 - 3*b^3*c^2*d^4*e + 11*a*b*c^3*d^4*e + 3*b
^4*c*d^3*e^2 - 6*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 5*a
*b^3*c*d^2*e^3 + 30*a^2*b*c^2*d^2*e^3 + 4*a*b^4*d*e^4 - 11*a^2*b^2*c*d*e^4
- 12*a^3*c^2*d*e^4 - 3*a^2*b^3*e^5 + 11*a^3*b*c*e^5 - 2*(c^5*d^4*e - 2*b*c^
4*d^3*e^2 + 2*b^2*c^3*d^2*e^3 - 2*a*c^4*d^2*e^3 - b^3*c^2*d*e^4 + 2*a*b*c^3
*d*e^4 + a*b^2*c^2*e^5 - 3*a^2*c^3*e^5)*x^3 - (3*b*c^4*d^4*e - 8*b^2*c^3*d^
3*e^2 + 8*a*c^4*d^3*e^2 + 9*b^3*c^2*d^2*e^3 - 18*a*b*c^3*d^2*e^3 - 4*b^4*c*
d*e^4 + 8*a*b^2*c^2*d*e^4 + 8*a^2*c^3*d*e^4 + 4*a*b^3*c*e^5 - 13*a^2*b*c^2*
e^5)*x^2 - 2*(b^2*c^3*d^4*e - a*c^4*d^4*e - 3*b^3*c^2*d^3*e^2 + 6*a*b*c^3*d
^3*e^2 + 3*b^4*c*d^2*e^3 - 6*a*b^2*c^2*d^2*e^3 - 6*a^2*c^3*d^2*e^3 - b^5*d*
e^4 + 10*a^2*b*c^2*d*e^4 + a*b^4*e^5 - 2*a^2*b^2*c*e^5 - 5*a^3*c^2*e^5)*x)/
((c*d^2 - b*d*e + a*e^2)^3*(c*x^2 + b*x + a)^2*(b^2 - 4*a*c))
```

maple [B] time = 0.08, size = 3233, normalized size = 8.14

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 6/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^
(1/2))*c^2*a^2-2/(a*e^2-b*d*e+c*d^2)^3*e/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)
/(4*a*c-b^2)^(1/2))*c^4*d^4-2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^4
/(4*a*c-b^2)*x^3*a*b*d-6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^2/(4*a*c-b
^2)*x*a*b*c^3*d^3-4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^4/(4*a*c-b^
2)*x^2*a*b^2*d+9/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^3/(4*a*c-b^2)*
x^2*a*b*d^2+2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e^3/(4*a*c-b^2)*x^3
*a*d^2+6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a^2*c^3*d^
2+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*a*c^4*d^4+2/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e^2/(4*a*c-b^2)*x^3*b*d^3+2/(a*e^2-b*d
*e+c*d^2)^3/(c*x^2+b*x+a)^2*c*e^4/(4*a*c-b^2)*x^2*b^4*d-9/2/(a*e^2-b*d*e+c*
d^2)^3/(c*x^2+b*x+a)^2*c^2*e^3/(4*a*c-b^2)*x^2*b^3*d^2-4/(a*e^2-b*d*e+c*d^2
)^3/(c*x^2+b*x+a)^2*c^3*e^4/(4*a*c-b^2)*x^2*a^2*d-2/(a*e^2-b*d*e+c*d^2)^3/(
c*x^2+b*x+a)^2*c*e^5/(4*a*c-b^2)*x^2*a*b^3-4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b
*x+a)^2*c^4*e^2/(4*a*c-b^2)*x^2*a*d^3+1/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+
a)^2/(4*a*c-b^2)*b^2*c^3*d^5-5/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a
*c-b^2)*a*b^3*c*d^2*e^3+13/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^5/
(4*a*c-b^2)*x^2*a^2*b+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^4/(4*a*
c-b^2)*x^3*b^3*d-2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^3/(4*a*c-b^2
)*x^3*b^2*d^2-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b^2*c^2
*d^3*e^2+11/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*b*c^3*d^4
*e-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^2*e^5/(4*a*c-b^2)*x^3*a*b^2+2/
(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^2*b^2*c+12/(a*e^2
-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a
*b*c^2*d-3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*b^4*c*d^
2+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^2/(4*a*c-b^2)*x*b^3*c^2*d^3-1/(
a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e/(4*a*c-b^2)*x*b^2*c^3*d^4-11/2/(a*e^
2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^2*c*d*e^4+15/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b*c^2*d^2*e^3-6/(a*e^2-b*d*e+c*d
^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^2*c-1/(
a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)*c*ln(c*x^2+b*x+a)*b^2*d-12/(a*e^2-b*d*
e+c*d^2)^3*e^3/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c^3*
d^2-2/(a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*b^3*c*d+4/(a*e^2-b*d*e+c*d^2)^3*e^2/(4*a*c-b^2)^(3/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*c^3*d^3-2/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)
*c*ln(c*x^2+b*x+a)*a*b+4/(a*e^2-b*d*e+c*d^2)^3*e^4/(4*a*c-b^2)*c^2*ln(c*x^2
+b*x+a)*a*d-10/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^4/(4*a*c-b^2)*x*a^2*
```

```
b*c^2*d+6/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e^3/(4*a*c-b^2)*x*a*b^2*c^2
*d^2+4/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^2/(4*a*c-b^2)*x^2*b^2*d^
3-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^4*e/(4*a*c-b^2)*x^2*b*d^4+11/
2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*b*c*e^5-6/(a*e^2-b*
d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^3*c^2*d*e^4-8/(a*e^2-b*d*e+c*d^2
)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*c^3*d^3*e^2+2/(a*e^2-b*d*e+c*d^2)^3/(c*
x^2+b*x+a)^2/(4*a*c-b^2)*a*b^4*d*e^4+3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a
)^2/(4*a*c-b^2)*b^4*c*d^3*e^2-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*
a*c-b^2)*b^3*c^2*d^4*e+3/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^3*e^5/(4*a
*c-b^2)*x^3*a^2-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*c^5*e/(4*a*c-b^2)*x
^3*d^4-3/2/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a^2*b^3*e^5-2/
(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*a*c^4*d^5-1/2/(a*e^2-b*d*
e+c*d^2)^3/(c*x^2+b*x+a)^2/(4*a*c-b^2)*b^5*d^2*e^3+e^5/(a*e^2-b*d*e+c*d^2)^
3*ln(e*x+d)*b+1/2/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)*ln(c*x^2+b*x+a)*b^3
+1/(a*e^2-b*d*e+c*d^2)^3*e^5/(4*a*c-b^2)^(3/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b^4-2*e^4/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*c*d+5/(a*e^2-b*d*e+c*d^2)
^3/(c*x^2+b*x+a)^2*e^5/(4*a*c-b^2)*x*a^3*c^2-1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2
+b*x+a)^2*e^5/(4*a*c-b^2)*x*a*b^4+1/(a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^2*e
^4/(4*a*c-b^2)*x*b^5*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 5.46, size = 2461, normalized size = 6.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^3),x)
```

```
[Out] (log((-(4*a*c - b^2)^3)^(1/2) - b^3 + 4*a*b*c + 8*a*c^2*x - 2*b^2*c*x)*(b^7
*e^5 + b^4*e^5*(-(4*a*c - b^2)^3)^(1/2) - 64*a^3*b*c^3*e^5 + 128*a^3*c^4*d*
e^4 - 2*c^4*d^4*e*(-(4*a*c - b^2)^3)^(1/2) + 48*a^2*b^3*c^2*e^5 + 6*a^2*c^2
*e^5*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b^5*c*e^5 - 2*b^6*c*d*e^4 - 6*a*b^2*c*
e^5*(-(4*a*c - b^2)^3)^(1/2) + 24*a*b^4*c^2*d*e^4 - 2*b^3*c*d*e^4*(-(4*a*c
- b^2)^3)^(1/2) - 96*a^2*b^2*c^3*d*e^4 - 12*a*c^3*d^2*e^3*(-(4*a*c - b^2)^3
)^(1/2) + 4*b*c^3*d^3*e^2*(-(4*a*c - b^2)^3)^(1/2) + 12*a*b*c^2*d*e^4*(-(4*
a*c - b^2)^3)^(1/2)))/(2*(64*a^3*c^6*d^6 - a^3*b^6*e^6 + 64*a^6*c^3*e^6 - b
^6*c^3*d^6 + b^9*d^3*e^3 + 12*a*b^4*c^4*d^6 + 12*a^4*b^4*c*e^6 - 3*a*b^8*d^
2*e^4 + 3*a^2*b^7*d*e^5 + 3*b^7*c^2*d^5*e - 3*b^8*c*d^4*e^2 - 48*a^2*b^2*c^
5*d^6 - 48*a^5*b^2*c^2*e^6 + 192*a^4*c^5*d^4*e^2 + 192*a^5*c^4*d^2*e^4 - 10
8*a^2*b^4*c^3*d^4*e^2 - 24*a^2*b^5*c^2*d^3*e^3 + 48*a^3*b^2*c^4*d^4*e^2 + 2
24*a^3*b^3*c^3*d^3*e^3 - 108*a^3*b^4*c^2*d^2*e^4 + 48*a^4*b^2*c^3*d^2*e^4 -
 36*a*b^5*c^3*d^5*e - 6*a*b^7*c*d^3*e^3 - 192*a^3*b*c^5*d^5*e - 36*a^3*b^5*
c*d*e^5 - 192*a^5*b*c^3*d*e^5 + 33*a*b^6*c^2*d^4*e^2 + 144*a^2*b^3*c^4*d^5*
e + 33*a^2*b^6*c*d^2*e^4 - 384*a^4*b*c^4*d^3*e^3 + 144*a^4*b^3*c^2*d*e^5))
- ((3*a*b^3*e^3 + 4*a*c^3*d^3 - b^4*d*e^2 - b^2*c^2*d^3 + 12*a^2*c^2*d*e^2
- 11*a^2*b*c*e^3 + 2*b^3*c*d^2*e - 7*a*b*c^2*d^2*e)/(2*(4*a*c^3*d^4 + 4*a^3
*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*
b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d
^2*e^2)) - (x*(5*a^2*c^2*e^3 - b^4*e^3 - b^2*c^2*d^2*e + 2*a*b^2*c*e^3 + a*
c^3*d^2*e + 2*b^3*c*d*e^2 - 5*a*b*c^2*d*e^2))/(4*a*c^3*d^4 + 4*a^3*c*e^4 -
a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3
 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2) +
 (x^2*(4*b^3*c*e^3 - 5*b^2*c^2*d*e^2 - 13*a*b*c^2*e^3 + 8*a*c^3*d*e^2 + 3*b
*c^3*d^2*e))/(2*(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^
4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d
^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)) + (e*x^3*(c^4*d^2 - 3*a*c^3*e^
2 + b^2*c^2*e^2 - b*c^3*d*e))/(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^
2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e
 - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2))/(x^2*(2*a*c + b^
2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) + (log(d + e*x)*(b*e^5 - 2*c*d*e^
4))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3) + (log(b^3 + (-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c - 8*a*c^2*x + 2*b
^2*c*x)*((b^7*e^5)/2 - (b^4*e^5*(-(4*a*c - b^2)^3)^(1/2))/2 - 32*a^3*b*c^3*
e^5 + 64*a^3*c^4*d*e^4 + c^4*d^4*e*(-(4*a*c - b^2)^3)^(1/2) + 24*a^2*b^3*c^
2*e^5 - 3*a^2*c^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 6*a*b^5*c*e^5 - b^6*c*d*e^
4 + 3*a*b^2*c*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a*b^4*c^2*d*e^4 + b^3*c*d*e
^4*(-(4*a*c - b^2)^3)^(1/2) - 48*a^2*b^2*c^3*d*e^4 + 6*a*c^3*d^2*e^3*(-(4*a
*c - b^2)^3)^(1/2) - 2*b*c^3*d^3*e^2*(-(4*a*c - b^2)^3)^(1/2) - 6*a*b*c^2*d
*e^4*(-(4*a*c - b^2)^3)^(1/2)))/(64*a^3*c^6*d^6 - a^3*b^6*e^6 + 64*a^6*c^3*
e^6 - b^6*c^3*d^6 + b^9*d^3*e^3 + 12*a*b^4*c^4*d^6 + 12*a^4*b^4*c*e^6 - 3*a
*b^8*d^2*e^4 + 3*a^2*b^7*d*e^5 + 3*b^7*c^2*d^5*e - 3*b^8*c*d^4*e^2 - 48*a^2
*b^2*c^5*d^6 - 48*a^5*b^2*c^2*e^6 + 192*a^4*c^5*d^4*e^2 + 192*a^5*c^4*d^2*e
^4 - 108*a^2*b^4*c^3*d^4*e^2 - 24*a^2*b^5*c^2*d^3*e^3 + 48*a^3*b^2*c^4*d^4*
e^2 + 224*a^3*b^3*c^3*d^3*e^3 - 108*a^3*b^4*c^2*d^2*e^4 + 48*a^4*b^2*c^3*d^
2*e^4 - 36*a*b^5*c^3*d^5*e - 6*a*b^7*c*d^3*e^3 - 192*a^3*b*c^5*d^5*e - 36*a
^3*b^5*c*d*e^5 - 192*a^5*b*c^3*d*e^5 + 33*a*b^6*c^2*d^4*e^2 + 144*a^2*b^3*c
^4*d^5*e + 33*a^2*b^6*c*d^2*e^4 - 384*a^4*b*c^4*d^3*e^3 + 144*a^4*b^3*c^2*d
*e^5)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1546 $\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=431

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(8c^2e^2\left(32a^2e^2+231abde+87b^2d^2\right)+6cex(2cd-be)\left(-4ce(19ae+2bd)+21b^2e^2+8c^2d^2\right)-14}{1680c^4}$$

```
[Out] 1/35*(4*c^2*d^2+3*b^2*e^2-4*c*e*(2*a*e+b*d))*(e*x+d)^2*(c*x^2+b*x+a)^(3/2)/
c^2+2/21*(-b*e+2*c*d)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2)/c+2/7*(e*x+d)^4*(c*x^2+
b*x+a)^(3/2)+1/1680*(128*c^4*d^4+105*b^4*e^4-14*b^2*c*e^3*(34*a*e+35*b*d)-1
6*c^3*d^2*e*(144*a*e+13*b*d)+8*c^2*e^2*(32*a^2*e^2+231*a*b*d*e+87*b^2*d^2)+
6*c*e*(-b*e+2*c*d)*(8*c^2*d^2+21*b^2*e^2-4*c*e*(19*a*e+2*b*d))*x)*(c*x^2+b*
x+a)^(3/2)/c^4-1/256*(-4*a*c+b^2)^2*e*(-b*e+2*c*d)*(8*c^2*d^2+3*b^2*e^2-4*c
*e*(a*e+2*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(11/2)
+1/128*(-4*a*c+b^2)*e*(-b*e+2*c*d)*(8*c^2*d^2+3*b^2*e^2-4*c*e*(a*e+2*b*d))*
(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi **[A]** time = 0.79, antiderivative size = 431, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(8c^2e^2\left(32a^2e^2+231abde+87b^2d^2\right)+6cex(2cd-be)\left(-4ce(19ae+2bd)+21b^2e^2+8c^2d^2\right)-14}{1680c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^4*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e)
)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(128*c^5) + ((4*c^2*d^2 + 3*b^2*e^2 -
4*c*e*(b*d + 2*a*e))*(d + e*x)^2*(a + b*x + c*x^2)^(3/2))/(35*c^2) + (2*(2*
c*d - b*e)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2))/(21*c) + (2*(d + e*x)^4*(a
+ b*x + c*x^2)^(3/2))/7 + ((128*c^4*d^4 + 105*b^4*e^4 - 14*b^2*c*e^3*(35*b*
d + 34*a*e) - 16*c^3*d^2*e*(13*b*d + 144*a*e) + 8*c^2*e^2*(87*b^2*d^2 + 231
*a*b*d*e + 32*a^2*e^2) + 6*c*e*(2*c*d - b*e)*(8*c^2*d^2 + 21*b^2*e^2 - 4*c*
e*(2*b*d + 19*a*e))*x)*(a + b*x + c*x^2)^(3/2))/(1680*c^4) - ((b^2 - 4*a*c)
^2*e*(2*c*d - b*e)*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(256*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx &= \frac{2}{7}(d+ex)^4\left(a+bx+cx^2\right)^{3/2}+\frac{\int (d+ex)^3(4c(bd-2ae)+4c(2cd-be}{7c} \\
&= \frac{2(2cd-be)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}{21c}+\frac{2}{7}(d+ex)^4\left(a+bx+cx^2\right)^{3/2} \\
&= \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{35c^2}+\frac{2(2cd}{} \\
&= \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{35c^2}+\frac{2(2cd}{} \\
&= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+}}{128c^5} \\
&= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+}}{128c^5} \\
&= \frac{\left(b^2-4ac\right)e(2cd-be)\left(8c^2d^2+3b^2e^2-4ce(2bd+ae)\right)(b+2cx)\sqrt{a+}}{128c^5}
\end{aligned}
$$

Mathematica [A] time = 0.85, size = 549, normalized size = 1.27

$$
\frac{\sqrt{a+x(b+cx)}\left(2048a^3c^3e^4-16a^2c^2e^2\left(343b^2e^2-2bce(567d+73ex)+4c^2\left(336d^2+105dex+16e^2x^2\right)\right)+8a}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^4*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(-315*b^6*e^4 + 2048*a^3*c^3*e^4 + 210*b^5*c*e^3*(7*
d + e*x) - 28*b^4*c^2*e^2*(90*d^2 + 35*d*e*x + 6*e^2*x^2) - 32*b^2*c^4*e*x*
(35*d^3 + 42*d^2*e*x + 21*d*e^2*x^2 + 4*e^3*x^3) + 16*b^3*c^3*e*(105*d^3 +
105*d^2*e*x + 49*d*e^2*x^2 + 9*e^3*x^3) + 256*c^6*x^2*(35*d^4 + 105*d^3*e*x
 + 126*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 128*b*c^5*x*(70*d^4 + 175
*d^3*e*x + 189*d^2*e^2*x^2 + 98*d*e^3*x^3 + 20*e^4*x^4) - 16*a^2*c^2*e^2*(3
43*b^2*e^2 - 2*b*c*e*(567*d + 73*e*x) + 4*c^2*(336*d^2 + 105*d*e*x + 16*e^2
*x^2)) + 8*a*c*(315*b^4*e^4 - 14*b^3*c*e^3*(95*d + 13*e*x) + 4*b^2*c^2*e^2*
(525*d^2 + 189*d*e*x + 31*e^2*x^2) - 8*b*c^3*e*(175*d^3 + 147*d^2*e*x + 63*
d*e^2*x^2 + 11*e^3*x^3) + 16*c^4*(70*d^4 + 105*d^3*e*x + 84*d^2*e^2*x^2 + 3
5*d*e^3*x^3 + 6*e^4*x^4))))/(13440*c^5) + ((b^2 - 4*a*c)^2*e*(-2*c*d + b*e)
*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[
c]*Sqrt[a + x*(b + c*x)])])/(256*c^(11/2))
```

fricas [**A**] time = 0.96, size = 1445, normalized size = 3.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/53760*(105*(16*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e - 24*(b^5*c^2
- 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^2 + 2*(7*b^6*c - 60*a*b^4*c^2 + 144*a^2
*b^2*c^3 - 64*a^3*c^4)*d*e^3 - (3*b^7 - 28*a*b^5*c + 80*a^2*b^3*c^2 - 64*a^
3*b*c^3)*e^4)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(3840*c^7*e^4*x^6 + 8960*a*c^6*d^4 + 2
560*(7*c^7*d*e^3 + b*c^6*e^4)*x^5 + 560*(3*b^3*c^4 - 20*a*b*c^5)*d^3*e - 16
8*(15*b^4*c^3 - 100*a*b^2*c^4 + 128*a^2*c^5)*d^2*e^2 + 14*(105*b^5*c^2 - 76
0*a*b^3*c^3 + 1296*a^2*b*c^4)*d*e^3 - (315*b^6*c - 2520*a*b^4*c^2 + 5488*a^
2*b^2*c^3 - 2048*a^3*c^4)*e^4 + 128*(252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - (b^
2*c^5 - 6*a*c^6)*e^4)*x^4 + 16*(1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 14*(3
*b^2*c^5 - 20*a*c^6)*d*e^3 + (9*b^3*c^4 - 44*a*b*c^5)*e^4)*x^3 + 8*(1120*c^
7*d^4 + 2800*b*c^6*d^3*e - 168*(b^2*c^5 - 8*a*c^6)*d^2*e^2 + 14*(7*b^3*c^4
- 36*a*b*c^5)*d*e^3 - (21*b^4*c^3 - 124*a*b^2*c^4 + 128*a^2*c^5)*e^4)*x^2 +
 2*(4480*b*c^6*d^4 - 560*(b^2*c^5 - 12*a*c^6)*d^3*e + 168*(5*b^3*c^4 - 28*a
*b*c^5)*d^2*e^2 - 14*(35*b^4*c^3 - 216*a*b^2*c^4 + 240*a^2*c^5)*d*e^3 + (10
5*b^5*c^2 - 728*a*b^3*c^3 + 1168*a^2*b*c^4)*e^4)*x)*sqrt(c*x^2 + b*x + a))/
c^6, 1/26880*(105*(16*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e - 24*(b^5*
c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^2 + 2*(7*b^6*c - 60*a*b^4*c^2 + 144
*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^3 - (3*b^7 - 28*a*b^5*c + 80*a^2*b^3*c^2 - 6
4*a^3*b*c^3)*e^4)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(3840*c^7*e^4*x^6 + 8960*a*c^6*d^4 + 256
0*(7*c^7*d*e^3 + b*c^6*e^4)*x^5 + 560*(3*b^3*c^4 - 20*a*b*c^5)*d^3*e - 168*
(15*b^4*c^3 - 100*a*b^2*c^4 + 128*a^2*c^5)*d^2*e^2 + 14*(105*b^5*c^2 - 760*
a*b^3*c^3 + 1296*a^2*b*c^4)*d*e^3 - (315*b^6*c - 2520*a*b^4*c^2 + 5488*a^2*
b^2*c^3 - 2048*a^3*c^4)*e^4 + 128*(252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - (b^2*
c^5 - 6*a*c^6)*e^4)*x^4 + 16*(1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 14*(3*b
^2*c^5 - 20*a*c^6)*d*e^3 + (9*b^3*c^4 - 44*a*b*c^5)*e^4)*x^3 + 8*(1120*c^7*
d^4 + 2800*b*c^6*d^3*e - 168*(b^2*c^5 - 8*a*c^6)*d^2*e^2 + 14*(7*b^3*c^4 -
36*a*b*c^5)*d*e^3 - (21*b^4*c^3 - 124*a*b^2*c^4 + 128*a^2*c^5)*e^4)*x^2 + 2
*(4480*b*c^6*d^4 - 560*(b^2*c^5 - 12*a*c^6)*d^3*e + 168*(5*b^3*c^4 - 28*a*b
*c^5)*d^2*e^2 - 14*(35*b^4*c^3 - 216*a*b^2*c^4 + 240*a^2*c^5)*d*e^3 + (105*
b^5*c^2 - 728*a*b^3*c^3 + 1168*a^2*b*c^4)*e^4)*x)*sqrt(c*x^2 + b*x + a))/c^
6]
```

giac [**A**] time = 0.25, size = 759, normalized size = 1.76

$$\frac{1}{13440}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\left(3\,cxe^4+\frac{2\left(7\,c^7de^3+bc^6e^4\right)}{c^6}\right)x+\frac{252\,c^7d^2e^2+98\,bc^6de^3-b^2c^5e^4+6\,ac^6e^4}{c^6}\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/13440*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(3*c*x*e^4 + 2*(7*c^7*d*e^3 +
 b*c^6*e^4)/c^6)*x + (252*c^7*d^2*e^2 + 98*b*c^6*d*e^3 - b^2*c^5*e^4 + 6*a*
c^6*e^4)/c^6)*x + (1680*c^7*d^3*e + 1512*b*c^6*d^2*e^2 - 42*b^2*c^5*d*e^3 +
 280*a*c^6*d*e^3 + 9*b^3*c^4*e^4 - 44*a*b*c^5*e^4)/c^6)*x + (1120*c^7*d^4 +
 2800*b*c^6*d^3*e - 168*b^2*c^5*d^2*e^2 + 1344*a*c^6*d^2*e^2 + 98*b^3*c^4*d
*e^3 - 504*a*b*c^5*d*e^3 - 21*b^4*c^3*e^4 + 124*a*b^2*c^4*e^4 - 128*a^2*c^5
*e^4)/c^6)*x + (4480*b*c^6*d^4 - 560*b^2*c^5*d^3*e + 6720*a*c^6*d^3*e + 840
*b^3*c^4*d^2*e^2 - 4704*a*b*c^5*d^2*e^2 - 490*b^4*c^3*d*e^3 + 3024*a*b^2*c^
4*d*e^3 - 3360*a^2*c^5*d*e^3 + 105*b^5*c^2*e^4 - 728*a*b^3*c^3*e^4 + 1168*a
^2*b*c^4*e^4)/c^6)*x + (8960*a*c^6*d^4 + 1680*b^3*c^4*d^3*e - 11200*a*b*c^5
*d^3*e - 2520*b^4*c^3*d^2*e^2 + 16800*a*b^2*c^4*d^2*e^2 - 21504*a^2*c^5*d^2
*e^2 + 1470*b^5*c^2*d*e^3 - 10640*a*b^3*c^3*d*e^3 + 18144*a^2*b*c^4*d*e^3 -
 315*b^6*c*e^4 + 2520*a*b^4*c^2*e^4 - 5488*a^2*b^2*c^3*e^4 + 2048*a^3*c^4*e
^4)/c^6) + 1/256*(16*b^4*c^3*d^3*e - 128*a*b^2*c^4*d^3*e + 256*a^2*c^5*d^3*
e - 24*b^5*c^2*d^2*e^2 + 192*a*b^3*c^3*d^2*e^2 - 384*a^2*b*c^4*d^2*e^2 + 14
*b^6*c*d*e^3 - 120*a*b^4*c^2*d*e^3 + 288*a^2*b^2*c^3*d*e^3 - 128*a^3*c^4*d*
e^3 - 3*b^7*e^4 + 28*a*b^5*c*e^4 - 80*a^2*b^3*c^2*e^4 + 64*a^3*b*c^3*e^4)*l
og(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.07, size = 1537, normalized size = 3.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/16*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^3*e-a^2/c^(
1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^3*e+12/5*x^2*(c*x^2+b*x+
a)^(3/2)*d^2*e^2+3/256/c^(11/2)*e^4*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+4/3*x^3*(c*x^2+b*x+a)^(3/2)*d*e^3+2*x*(c*x^2+b*x+a)^(3/2)*d^3*e+1/
16/c^4*e^4*b^4*(c*x^2+b*x+a)^(3/2)-3/128/c^5*e^4*b^6*(c*x^2+b*x+a)^(1/2)+16
/105/c^2*e^4*a^2*(c*x^2+b*x+a)^(3/2)+19/70/c^2*e^4*b*a*x*(c*x^2+b*x+a)^(3/2
)-1/4/c^2*e^4*b*a^2*x*(c*x^2+b*x+a)^(1/2)+1/4/c^3*e^4*b^3*a*x*(c*x^2+b*x+a)
^(1/2)+1/2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^3*e+
1/4*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d^3*e+3/32*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))*d^2*e^2-7/128*b^6/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*d*e^3+1/2*a^3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*d*e^3-1/4/c^(5/2)*e^4*b*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))+5/16/c^(7/2)*e^4*b^3*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
-7/64/c^(9/2)*e^4*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-17/60/c
^3*e^4*b^2*a*(c*x^2+b*x+a)^(3/2)-a*x*(c*x^2+b*x+a)^(1/2)*d^3*e+1/2*b^2/c^2*
(c*x^2+b*x+a)^(3/2)*d^2*e^2+3/2*b/c*a*x*(c*x^2+b*x+a)^(1/2)*d^2*e^2-b^2/c^2
*a*x*(c*x^2+b*x+a)^(1/2)*d*e^3+2/7*e^4*x^4*(c*x^2+b*x+a)^(3/2)+2/3*(c*x^2+b
*x+a)^(3/2)*d^4-1/2*a/c*(c*x^2+b*x+a)^(1/2)*b*d^3*e+3/4*b^2/c^2*a*(c*x^2+b*
x+a)^(1/2)*d^2*e^2-3/5*b/c*x*(c*x^2+b*x+a)^(3/2)*d^2*e^2-3/8*b^3/c^2*x*(c*x
^2+b*x+a)^(1/2)*d^2*e^2+3/2*b/c^(3/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*d^2*e^2-3/4*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a*d^2*e^2-9/8*b^2/c^(5/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*d*e^3+15/32*b^4/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*
e^3-2/5*b/c*x^2*(c*x^2+b*x+a)^(3/2)*d*e^3+7/20*b^2/c^2*x*(c*x^2+b*x+a)^(3/2
)*d*e^3+7/32*b^4/c^3*x*(c*x^2+b*x+a)^(1/2)*d*e^3+11/10*b/c^2*a*(c*x^2+b*x+a
)^(3/2)*d*e^3+1/2*a^2/c*x*(c*x^2+b*x+a)^(1/2)*d*e^3-a/c*x*(c*x^2+b*x+a)^(3/
2)*d*e^3-1/2*b^3/c^3*a*(c*x^2+b*x+a)^(1/2)*d*e^3+1/4*a^2/c^2*(c*x^2+b*x+a)^
(1/2)*b*d*e^3+1/8*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d^3*e+1/8/c^4*e^4*b^4*a*(c*x^
2+b*x+a)^(1/2)-3/16*b^4/c^3*(c*x^2+b*x+a)^(1/2)*d^2*e^2-8/5*a/c*(c*x^2+b*x+
a)^(3/2)*d^2*e^2-1/3*b/c*(c*x^2+b*x+a)^(3/2)*d^3*e-8/35/c*e^4*a*x^2*(c*x^2+
b*x+a)^(3/2)-2/21/c*e^4*b*x^3*(c*x^2+b*x+a)^(3/2)+3/35/c^2*e^4*b^2*x^2*(c*x
^2+b*x+a)^(3/2)-3/40/c^3*e^4*b^3*x*(c*x^2+b*x+a)^(3/2)-1/8/c^3*e^4*b^2*a^2*
(c*x^2+b*x+a)^(1/2)-3/64/c^4*e^4*b^5*x*(c*x^2+b*x+a)^(1/2)-7/24*b^3/c^3*(c*
x^2+b*x+a)^(3/2)*d*e^3+7/64*b^5/c^4*(c*x^2+b*x+a)^(1/2)*d*e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 13.55, size = 2712, normalized size = 6.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^4*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (2*e^4*x^4*(a + b*x + c*x^2)^(3/2))/7 - 6*b*d*e^3*((7*b*((5*b*((log((b + 2*
c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (
(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*
c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x
^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/
4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c
*x^2)^(3/2))/(5*c)) + (d^4*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c
*x^2)^(1/2))/(12*c) + (33*b^7*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2)
 + 2*c*x))/(1024*c^(11/2)) + b*d^4*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2)
+ (4*d*e^3*x^3*(a + b*x + c*x^2)^(3/2))/3 - 2*a*d^3*e*((x/2 + b/(4*c))*(a +
 b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(
a*c - b^2/4))/(2*c^(3/2))) + (42*b*d^2*e^2*((5*b*((log((b + 2*c*x)/c^(1/2)
+ 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x
^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a +
b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (
log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2
))))/(4*c)))/5 + (16*a^3*e^4*(a + b*x + c*x^2)^(1/2))/(105*c^2) - (33*b^6*e
^4*(a + b*x + c*x^2)^(1/2))/(512*c^5) - 5*b*d^3*e*((log((b + 2*c*x)/c^(1/2)
 + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*
x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)) + (12*d^2*e^2*x^
2*(a + b*x + c*x^2)^(3/2))/5 - (3*b^2*e^4*((7*b*((5*b*((log((b + 2*c*x)/c^(
1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a
+ c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*
(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2
) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c
^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*
x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b
*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(a + b*x + c*x^2)^(3
/2))/(5*c)))/(4*c) + (d^4*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/
2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + 2*d^3*e*x*(a + b*x + c*x^2)^(3/2) - (24*
a*d^2*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a
*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2
)^(1/2))/(24*c^2)))/5 + 4*a*d*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a +
b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x
^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2
+ c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c
)) - (8*a*e^4*x^2*(a + b*x + c*x^2)^(3/2))/(35*c) - (2*b*e^4*x^3*(a + b*x +
 c*x^2)^(3/2))/(21*c) - (33*b^3*e^4*x*(a + b*x + c*x^2)^(3/2))/(160*c^3) +
(11*b^5*e^4*x*(a + b*x + c*x^2)^(1/2))/(256*c^4) - (15*b^2*d^2*e^2*((log((b
 + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)
) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2))
)/(4*c) + (14*b^2*d*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^
2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c
*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))
/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(
1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(5*c)
+ (b*d^4*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/
(2*c^(3/2)) - (103*a^2*b^2*e^4*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (16*a^2
*e^4*x^2*(a + b*x + c*x^2)^(1/2))/(105*c) + (33*b^2*e^4*x^2*(a + b*x + c*x^
2)^(3/2))/(140*c^2) + (11*b^4*e^4*x^2*(a + b*x + c*x^2)^(1/2))/(64*c^3) - (
5*a^3*b*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(16*c^(5/2)
) - (63*a*b^5*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(256*
c^(9/2)) + (a*b*e^4*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(
1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*
(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*
c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2)
 + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(2*c) + (3
5*a^2*b^3*e^4*log(b + 2*c^(1/2)*(a + b*x + c*x^2)^(1/2) + 2*c*x))/(64*c^(7/
2)) + (13*a*b^4*e^4*(a + b*x + c*x^2)^(1/2))/(32*c^4) + (111*a*b*e^4*x*(a +
 b*x + c*x^2)^(3/2))/(280*c^2) - (269*a^2*b*e^4*x*(a + b*x + c*x^2)^(1/2))/
(1680*c^2) - (3*a*b^3*e^4*x*(a + b*x + c*x^2)^(1/2))/(160*c^3) + (3*b*d^2*e
^2*x*(a + b*x + c*x^2)^(3/2))/(2*c) + (4*b*d*e^3*x^2*(a + b*x + c*x^2)^(3/2
))/(5*c) + (b*d^3*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b
^3 - 4*a*b*c))/(4*c^(5/2)) - (8*a*b*d*e^3*((log((b + 2*c*x)/c^(1/2) + 2*(a
+ b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3
*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) - (39*a*b^2*e^4*x
^2*(a + b*x + c*x^2)^(1/2))/(80*c^2) + (b*d^3*e*(8*c*(a + c*x^2) - 3*b^2 +
2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(6*c^2) - (3*a*b*d^2*e^2*((x/2 + b/(4*c))
*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/
2))*(a*c - b^2/4))/(2*c^(3/2))))/(2*c)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)(d+ex)^4\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**4*sqrt(a + b*x + c*x**2), x)
```

3.1547 $\int (b+2cx)(d+ex)^3\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=312

$$-\frac{e\left(b^2-4ac\right)^2\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\ (}{256c}$$

```
[Out] 1/10*(-b*e+2*c*d)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2)/c+1/3*(e*x+d)^3*(c*x^2+b*x+
a)^(3/2)+1/480*(64*c^3*d^3-35*b^3*e^3+12*b*c*e^2*(11*a*e+10*b*d)-24*c^2*d*e
*(16*a*e+3*b*d)+6*c*e*(8*c^2*d^2+7*b^2*e^2-4*c*e*(5*a*e+2*b*d))*x)*(c*x^2+b
*x+a)^(3/2)/c^3-1/512*(-4*a*c+b^2)^2*e*(24*c^2*d^2+7*b^2*e^2-4*c*e*(a*e+6*b
*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)+1/256*(-4*a
*c+b^2)*e*(24*c^2*d^2+7*b^2*e^2-4*c*e*(a*e+6*b*d))*(2*c*x+b)*(c*x^2+b*x+a)^
(1/2)/c^4
```

Rubi [A] time = 0.42, antiderivative size = 312, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = $\{832, 779, 612, 621, 206\}$

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(6cex\left(-4ce(5ae+2bd)+7b^2e^2+8c^2d^2\right)-24c^2de(16ae+3bd)+12bce^2(11ae+10bd)-35b^3e^3\right.}{480c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(b + 2*c*x)
*Sqrt[a + b*x + c*x^2])/(256*c^4) + ((2*c*d - b*e)*(d + e*x)^2*(a + b*x + c
*x^2)^(3/2))/(10*c) + ((d + e*x)^3*(a + b*x + c*x^2)^(3/2))/3 + ((64*c^3*d^
3 - 35*b^3*e^3 + 12*b*c*e^2*(10*b*d + 11*a*e) - 24*c^2*d*e*(3*b*d + 16*a*e)
 + 6*c*e*(8*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(2*b*d + 5*a*e))*x)*(a + b*x + c*x^
2)^(3/2))/(480*c^3) - ((b^2 - 4*a*c)^2*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6
*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c
^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
```

```
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\sqrt{a+bx+cx^2}\,dx &= \frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2}+\frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-be}{6c}\\
&= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{10c}+\frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2} -\\
&= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}{10c}+\frac{1}{3}(d+ex)^3\left(a+bx+cx^2\right)^{3/2} -\\
&= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}\\
&= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}\\
&= \frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}\end{aligned}$$

Mathematica [A] time = 0.51, size = 270, normalized size = 0.87

$$\frac{1}{6}\left(\frac{(a+x(b+cx))^{3/2}\left(-24c^2e(ae(16d+5ex)+bd(3d+2ex))+6bce^2(22ae+20bd+7bex)-35b^3e^3+16c^3d^2(4}{80c^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((3*(2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(3/2))/(5*c) + 2*(d + e*x)^
3*(a + x*(b + c*x))^(3/2) + ((a + x*(b + c*x))^(3/2)*(-35*b^3*e^3 + 16*c^3*
d^2*(4*d + 3*e*x) + 6*b*c*e^2*(20*b*d + 22*a*e + 7*b*e*x) - 24*c^2*e*(b*d*(
3*d + 2*e*x) + a*e*(16*d + 5*e*x))))/(80*c^3) - (3*(b^2 - 4*a*c)*e*(24*c^2*
d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(
b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*
x)])]))/(256*c^(9/2)))/6
```

fricas [A] time = 0.93, size = 985, normalized size = 3.16

$$\left[-\frac{15\left(24\left(b^4c^2-8\,ab^2c^3+16\,a^2c^4\right)d^2e-24\left(b^5c-8\,ab^3c^2+16\,a^2bc^3\right)de^2+\left(7\,b^6-60\,ab^4c+144\,a^2b^2c^2-64\,a^3c^3\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e - 24*(b^5*c -
8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 -
 64*a^3*c^3)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b
*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(1280*c^6*e^3*x^5 + 2560*a*c^5*d^3
 + 128*(36*c^6*d*e^2 + 7*b*c^5*e^3)*x^4 + 120*(3*b^3*c^3 - 20*a*b*c^4)*d^2*
e - 24*(15*b^4*c^2 - 100*a*b^2*c^3 + 128*a^2*c^4)*d*e^2 + (105*b^5*c - 760*
a*b^3*c^2 + 1296*a^2*b*c^3)*e^3 + 16*(360*c^6*d^2*e + 216*b*c^5*d*e^2 - (3*
b^2*c^4 - 20*a*c^5)*e^3)*x^3 + 8*(320*c^6*d^3 + 600*b*c^5*d^2*e - 24*(b^2*c
^4 - 8*a*c^5)*d*e^2 + (7*b^3*c^3 - 36*a*b*c^4)*e^3)*x^2 + 2*(1280*b*c^5*d^3
 - 120*(b^2*c^4 - 12*a*c^5)*d^2*e + 24*(5*b^3*c^3 - 28*a*b*c^4)*d*e^2 - (35
*b^4*c^2 - 216*a*b^2*c^3 + 240*a^2*c^4)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^5,
 1/7680*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e - 24*(b^5*c - 8*
a*b^3*c^2 + 16*a^2*b*c^3)*d*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 6
4*a^3*c^3)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(
-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1280*c^6*e^3*x^5 + 2560*a*c^5*d^3 + 128*(
36*c^6*d*e^2 + 7*b*c^5*e^3)*x^4 + 120*(3*b^3*c^3 - 20*a*b*c^4)*d^2*e - 24*(
15*b^4*c^2 - 100*a*b^2*c^3 + 128*a^2*c^4)*d*e^2 + (105*b^5*c - 760*a*b^3*c^
2 + 1296*a^2*b*c^3)*e^3 + 16*(360*c^6*d^2*e + 216*b*c^5*d*e^2 - (3*b^2*c^4
- 20*a*c^5)*e^3)*x^3 + 8*(320*c^6*d^3 + 600*b*c^5*d^2*e - 24*(b^2*c^4 - 8*a
*c^5)*d*e^2 + (7*b^3*c^3 - 36*a*b*c^4)*e^3)*x^2 + 2*(1280*b*c^5*d^3 - 120*(
b^2*c^4 - 12*a*c^5)*d^2*e + 24*(5*b^3*c^3 - 28*a*b*c^4)*d*e^2 - (35*b^4*c^2
 - 216*a*b^2*c^3 + 240*a^2*c^4)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [A] time = 0.24, size = 506, normalized size = 1.62

$$\frac{1}{3840}\,\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\,cxe^3+\frac{36\,c^6de^2+7\,bc^5e^3}{c^5}\right)x+\frac{360\,c^6d^2e+216\,bc^5de^2-3\,b^2c^4e^3+20\,ac^5e^3}{c^5}\right)x\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3840*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*c*x*e^3 + (36*c^6*d*e^2 + 7*b*
c^5*e^3)/c^5)*x + (360*c^6*d^2*e + 216*b*c^5*d*e^2 - 3*b^2*c^4*e^3 + 20*a*c
^5*e^3)/c^5)*x + (320*c^6*d^3 + 600*b*c^5*d^2*e - 24*b^2*c^4*d*e^2 + 192*a*
c^5*d*e^2 + 7*b^3*c^3*e^3 - 36*a*b*c^4*e^3)/c^5)*x + (1280*b*c^5*d^3 - 120*
b^2*c^4*d^2*e + 1440*a*c^5*d^2*e + 120*b^3*c^3*d*e^2 - 672*a*b*c^4*d*e^2 -
35*b^4*c^2*e^3 + 216*a*b^2*c^3*e^3 - 240*a^2*c^4*e^3)/c^5)*x + (2560*a*c^5*
d^3 + 360*b^3*c^3*d^2*e - 2400*a*b*c^4*d^2*e - 360*b^4*c^2*d*e^2 + 2400*a*b
^2*c^3*d*e^2 - 3072*a^2*c^4*d*e^2 + 105*b^5*c*e^3 - 760*a*b^3*c^2*e^3 + 129
6*a^2*b*c^3*e^3)/c^5) + 1/512*(24*b^4*c^2*d^2*e - 192*a*b^2*c^3*d^2*e + 384
*a^2*c^4*d^2*e - 24*b^5*c*d*e^2 + 192*a*b^3*c^2*d*e^2 - 384*a^2*b*c^3*d*e^2
 + 7*b^6*e^3 - 60*a*b^4*c*e^3 + 144*a^2*b^2*c^2*e^3 - 64*a^3*c^3*e^3)*log(a
bs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.09, size = 992, normalized size = 3.18

$$\frac{\left(c\,x^2+bx+a\right)^{\frac{3}{2}}e^3x^3}{3}+\frac{a^3e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}-\frac{9a^2b^2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{32c^{\frac{5}{2}}}+\frac{3a^2bd\,e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}\right.}{4c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -3/10*b/c*x*(c*x^2+b*x+a)^(3/2)*d*e^2-3/16*b^3/c^2*x*(c*x^2+b*x+a)^(1/2)*d*
e^2-1/4/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(1/2)-3/8*a/c*(c*x^2+b*x+a)^(1/2)*b*d
^2*e+3/16*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d^2*e+3/8*b^2/c^2*a*(c*x^2+b*x+a)^(1/
2)*d*e^2+3/4*b/c^(3/2)*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^
2+3/8*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^2*e-3/8*b
^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e^2+3/4*b/c*a*x*
(c*x^2+b*x+a)^(1/2)*d*e^2+3/64*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*d*e^2-9/32/c^(5/2)*e^3*b^2*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))+15/128/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))*a-1/4*b/c*(c*x^2+b*x+a)^(3/2)*d^2*e-1/10/c*e^3*b*x^2*(c*x^2+b*x+a)^(3/2
)-3/64*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-3/4*a^
2/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+2/3*(c*x^2+b*x+
a)^(3/2)*d^3+1/3*e^3*x^3*(c*x^2+b*x+a)^(3/2)+7/256/c^4*e^3*b^5*(c*x^2+b*x+a
)^(1/2)+6/5*x^2*(c*x^2+b*x+a)^(3/2)*d*e^2-7/512/c^(9/2)*e^3*b^6*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8/c^(3/2)*e^3*a^3*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))+3/2*x*(c*x^2+b*x+a)^(3/2)*d^2*e-7/96/c^3*e^3*b^3*(c*x
^2+b*x+a)^(3/2)+7/128/c^3*e^3*b^4*x*(c*x^2+b*x+a)^(1/2)-1/8/c^3*e^3*b^3*a*(
c*x^2+b*x+a)^(1/2)+11/40/c^2*e^3*b*a*(c*x^2+b*x+a)^(3/2)-1/4/c*e^3*a*x*(c*x
^2+b*x+a)^(3/2)+1/8/c*e^3*a^2*x*(c*x^2+b*x+a)^(1/2)+1/16/c^2*e^3*a^2*(c*x^2
+b*x+a)^(1/2)*b+3/32*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d^2*e-3/4*a*x*(c*x^2+b*x+a
)^(1/2)*d^2*e+1/4*b^2/c^2*(c*x^2+b*x+a)^(3/2)*d*e^2-3/32*b^4/c^3*(c*x^2+b*x
+a)^(1/2)*d*e^2-4/5*a/c*(c*x^2+b*x+a)^(3/2)*d*e^2+7/80/c^2*e^3*b^2*x*(c*x^2
+b*x+a)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**B**] time = 5.08, size = 1679, normalized size = 5.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] a*e^3*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4
*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x
^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2
+ b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x +
c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)) - (3*b*e^3*((7*b*((5*b*((
log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c
^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24
*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a
+ b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*
(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) - (2*a*((log((b + 2*c*x)/c^(1/2
) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c
*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(5*c) + (x^2*(
a + b*x + c*x^2)^(3/2))/(5*c)))/2 + (e^3*x^3*(a + b*x + c*x^2)^(3/2))/3 + (
d^3*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b
*d^3*(x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (6*d*e^2*x^2*(a + b*x + c*x^
2)^(3/2))/5 - (3*a*d^2*e*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b
/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/2
 - (12*a*d*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3
- 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2)))/5 - (15*b*d^2*e*((log((b + 2*c*x)/c^(1/2) + 2*(a +
 b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*
b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/4 + (7*b^2*e^3*((5*b*((l
og((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^
(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*
c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a +
 b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(
a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/(10*c) + (d^3*log((b + 2*c*x)/c^(1/2) +
 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + (3*d^2*e*x*(a +
b*x + c*x^2)^(3/2))/2 + (21*b*d*e^2*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a
+ b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3
*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c
*x^2)^(3/2))/(4*c) + (a*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/
2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4
*c)))/5 + (b*e^3*x^2*(a + b*x + c*x^2)^(3/2))/(5*c) + (b*d^3*log((b/2 + c*x
)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2)) - (2*a*b*e^
3*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(
16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))
/(24*c^2)))/(5*c) - (15*b^2*d*e^2*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2
*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) + (3*b*d*e^2*x*(a + b*x +
 c*x^2)^(3/2))/(4*c) - (3*a*b*d*e^2*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2
) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c
^(3/2))))/(4*c) + (3*b*d^2*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^
(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + (b*d^2*e*(8*c*(a + c*x^2) - 3*b^2 +
2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(8*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)\,(d + ex)^3\,\sqrt{a + bx + cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3*sqrt(a + b*x + c*x**2), x)
```

3.1548 $\int (b+2cx)(d+ex)^2\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=195

$$-\frac{e\left(b^2-4ac\right)^2(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{32c^3}+\frac{\left(a+bx+c}{}$$

```
[Out] 2/5*(e*x+d)^2*(c*x^2+b*x+a)^(3/2)+1/60*(16*c^2*d^2+5*b^2*e^2-2*c*e*(8*a*e+5
*b*d)+6*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(3/2)/c^2-1/64*(-4*a*c+b^2)^2*e*(
-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+1/32
*(-4*a*c+b^2)*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.33, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = $\{832, 779, 612, 621, 206\}$

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-2ce(8ae+5bd)+5b^2e^2+6cex(2cd-be)+16c^2d^2\right)}{60c^2}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}\,(2}{32c^3}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32*c^3)
+ (2*(d + e*x)^2*(a + b*x + c*x^2)^(3/2))/5 + ((16*c^2*d^2 + 5*b^2*e^2 - 2*
c*e*(5*b*d + 8*a*e) + 6*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(60*c
^2) - ((b^2 - 4*a*c)^2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (b+2cx)(d+ex)^2\sqrt{a+bx+cx^2}\,dx &= \frac{2}{5}(d+ex)^2\left(a+bx+cx^2\right)^{3/2}+\frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-be)x)}{5c}\\
&= \frac{2}{5}(d+ex)^2\left(a+bx+cx^2\right)^{3/2}+\frac{\big(16c^2d^2+5b^2e^2-2ce(5bd+8ae)+6ce(2}{60c^2}\\
&= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3}+\frac{2}{5}(d+ex)^2\big(a+bx+cx\\
&= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3}+\frac{2}{5}(d+ex)^2\big(a+bx+cx\\
&= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{32c^3}+\frac{2}{5}(d+ex)^2\big(a+bx+cx
\end{aligned}$$

Mathematica [A] time = 0.25, size = 177, normalized size = 0.91

$$\frac{e\left(b^2-4ac\right)(be-2cd)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx)}\right)}{64c^{7/2}}+\frac{(a+x(b+cx))^{3/2}\big(-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(3/2))/5 + ((a + x*(b + c*x))^(3/2)*(5*b^2
*e^2 + 4*c^2*d*(4*d + 3*e*x) - 2*c*e*(5*b*d + 8*a*e + 3*b*e*x)))/(60*c^2) +
 ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*
x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])
)/(64*c^(7/2))
```

fricas [A] time = 0.77, size = 617, normalized size = 3.16

$$\Bigg[-\frac{15\left(2\left(b^4c-8ab^2c^2+16a^2c^3\right)de-\left(b^5-8ab^3c+16a^2bc^2\right)e^2\right)\sqrt{c}\log\Big(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/1920*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e - (b^5 - 8*a*b^3*c +
 16*a^2*b*c^2)*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 +
 b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(192*c^5*e^2*x^4 + 320*a*c^4*d^2
 + 48*(10*c^5*d*e + 3*b*c^4*e^2)*x^3 + 10*(3*b^3*c^2 - 20*a*b*c^3)*d*e - (1
5*b^4*c - 100*a*b^2*c^2 + 128*a^2*c^3)*e^2 + 8*(40*c^5*d^2 + 50*b*c^4*d*e -
```

```
 (b^2*c^3 - 8*a*c^4)*e^2)*x^2 + 2*(160*b*c^4*d^2 - 10*(b^2*c^3 - 12*a*c^4)*
d*e + (5*b^3*c^2 - 28*a*b*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/960*(1
5*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e - (b^5 - 8*a*b^3*c + 16*a^2*b*c
^2)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^
2*x^2 + b*c*x + a*c)) + 2*(192*c^5*e^2*x^4 + 320*a*c^4*d^2 + 48*(10*c^5*d*e
 + 3*b*c^4*e^2)*x^3 + 10*(3*b^3*c^2 - 20*a*b*c^3)*d*e - (15*b^4*c - 100*a*b
^2*c^2 + 128*a^2*c^3)*e^2 + 8*(40*c^5*d^2 + 50*b*c^4*d*e - (b^2*c^3 - 8*a*c
^4)*e^2)*x^2 + 2*(160*b*c^4*d^2 - 10*(b^2*c^3 - 12*a*c^4)*d*e + (5*b^3*c^2
- 28*a*b*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [**A**] time = 0.24, size = 308, normalized size = 1.58

$$\frac{1}{480}\sqrt{cx^{2}+bx+a}\left(2\left(4\left(6\left(4\,cxe^{2}+\frac{10\,c^{5}de+3\,bc^{4}e^{2}}{c^{4}}\right)x+\frac{40\,c^{5}d^{2}+50\,bc^{4}de-b^{2}c^{3}e^{2}+8\,ac^{4}e^{2}}{c^{4}}\right)x+160\,bc^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/480*sqrt(c*x^2 + b*x + a)*(2*(4*(6*(4*c*x*e^2 + (10*c^5*d*e + 3*b*c^4*e^2
)/c^4)*x + (40*c^5*d^2 + 50*b*c^4*d*e - b^2*c^3*e^2 + 8*a*c^4*e^2)/c^4)*x +
 (160*b*c^4*d^2 - 10*b^2*c^3*d*e + 120*a*c^4*d*e + 5*b^3*c^2*e^2 - 28*a*b*c
^3*e^2)/c^4)*x + (320*a*c^4*d^2 + 30*b^3*c^2*d*e - 200*a*b*c^3*d*e - 15*b^4
*c*e^2 + 100*a*b^2*c^2*e^2 - 128*a^2*c^3*e^2)/c^4) + 1/64*(2*b^4*c*d*e - 16
*a*b^2*c^2*d*e + 32*a^2*c^3*d*e - b^5*e^2 + 8*a*b^3*c*e^2 - 16*a^2*b*c^2*e^
2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.11, size = 535, normalized size = 2.74

$$\frac{a^{2}b\,e^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{4c^{\frac{3}{2}}}-\frac{a^{2}de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{2\sqrt{c}}-\frac{a\,b^{3}e^{2}\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{8c^{\frac{5}{2}}}+a\,b^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/4*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e-1/2*a^2/c
^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/4*a/c*(c*x^2+b*x+a
)^(1/2)*b*d*e+1/8*b^2/c*x*(c*x^2+b*x+a)^(1/2)*d*e-1/32*b^4/c^(5/2)*ln((c*x+
1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+1/4/c*e^2*b*a*x*(c*x^2+b*x+a)^(1/2)
+1/4/c^(3/2)*e^2*b*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/8/c^(5
/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+2/5*e^2*x^2*(c*x^
2+b*x+a)^(3/2)+x*(c*x^2+b*x+a)^(3/2)*d*e+1/12/c^2*e^2*b^2*(c*x^2+b*x+a)^(3/
2)-1/32/c^3*e^2*b^4*(c*x^2+b*x+a)^(1/2)-4/15/c*e^2*a*(c*x^2+b*x+a)^(3/2)-1/
6*b/c*(c*x^2+b*x+a)^(3/2)*d*e+1/16*b^3/c^2*(c*x^2+b*x+a)^(1/2)*d*e-1/2*a*x*
(c*x^2+b*x+a)^(1/2)*d*e+2/3*(c*x^2+b*x+a)^(3/2)*d^2-1/10/c*e^2*b*x*(c*x^2+b
*x+a)^(3/2)-1/16/c^2*e^2*b^3*x*(c*x^2+b*x+a)^(1/2)+1/64/c^(7/2)*e^2*b^5*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/8/c^2*e^2*b^2*a*(c*x^2+b*x+a)^(1
/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [B] time = 3.63, size = 876, normalized size = 4.49

$$\frac{7\,b\,e^2\left(\frac{5\,b\left(\frac{\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right)\left(b^3-4\,a\,b\,c\right)}{16\,c^{5/2}}+\frac{\left(-3\,b^2+2\,c\,x\,b+8\,c\left(c\,x^2+a\right)\right)\sqrt{c\,x^2+b\,x+a}}{24\,c^2}\right)}{8\,c}-\frac{x\left(c\,x^2+b\,x+a\right)^{3/2}}{4\,c}+\frac{a\left(\left(\frac{x}{2}+\frac{b}{4\,c}\right)\sqrt{c\,x^2+b\,x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c}\right.}{}\right.}{4\,c}\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (7*b*e^2*((5*b*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3
- 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x +
c*x^2)^(1/2))/(24*c^2)))/(8*c) - (x*(a + b*x + c*x^2)^(3/2))/(4*c) + (a*((x
/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x
 + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/2))))/(4*c)))/5 - (4*a*e^2*((log((b
 + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)
) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2))
)/5 + (2*e^2*x^2*(a + b*x + c*x^2)^(3/2))/5 + (d^2*(8*c*(a + c*x^2) - 3*b^2
 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b*d^2*(x/2 + b/(4*c))*(a + b*
x + c*x^2)^(1/2) - (5*b*d*e*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)
^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x
)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/2 - (5*b^2*e^2*((log((b + 2*c*x)/c^(1
/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a +
 c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(24*c^2)))/(8*c) + d*e*
x*(a + b*x + c*x^2)^(3/2) + (d^2*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x
^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) - a*d*e*((x/2 + b/(4*c))*(a + b*x +
 c*x^2)^(1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c -
b^2/4))/(2*c^(3/2))) - (a*b*e^2*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(1/2) +
(log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(2*c^(3/
2))))/(4*c) + (b*d^2*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*
c - b^2/4))/(2*c^(3/2)) + (b*e^2*x*(a + b*x + c*x^2)^(3/2))/(4*c) + (b*d*e*
log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^
(5/2)) + (b*d*e*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2)
)/(12*c^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b + 2cx)\,(d + ex)^2\,\sqrt{a + bx + cx^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*sqrt(a + b*x + c*x**2), x)
```

3.1549 $\int (b+2cx)(d+ex)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=122

$$-\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{5/2}}+\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}}{32c^2}+\frac{\left(a+bx+cx^2\right)^{3/2}(-be+8cd+6}{12c}$$

```
[Out] 1/12*(6*c*e*x-b*e+8*c*d)*(c*x^2+b*x+a)^(3/2)/c-1/64*(-4*a*c+b^2)^2*e*arctan
h(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)+1/32*(-4*a*c+b^2)*e*(2
*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.09, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$\frac{e\left(b^2-4ac\right)(b+2cx)\sqrt{a+bx+cx^2}}{32c^2}-\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{5/2}}+\frac{\left(a+bx+cx^2\right)^{3/2}(-be+8cd+6c}{12c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((b^2 - 4*a*c)*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(32*c^2) + ((8*c*d - b*
e + 6*c*e*x)*(a + b*x + c*x^2)^(3/2))/(12*c) - ((b^2 - 4*a*c)^2*e*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)(d+ex)\sqrt{a+bx+cx^2}\,dx = \frac{(8cd-be+6cex)\left(a+bx+cx^2\right)^{3/2}}{12c} + \frac{\left(\left(b^2-4ac\right)e\right)\int\sqrt{a+bx+cx^2}\,dx}{8c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right)^{3/}}{12c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right)^{3/}}{12c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\sqrt{a+bx+cx^2}}{32c^2} + \frac{(8cd-be+6cex)\left(a+bx+cx^2\right)^{3/}}{12c}$$

Mathematica [A] time = 0.14, size = 134, normalized size = 1.10

$$\frac{\sqrt{a+x(b+cx)}\left(4ac(-5be+16cd+6cex)+3b^3e-2b^2cex+8bc^2x(8d+5ex)+16c^3x^2(4d+3ex)\right)}{96c^2} - \frac{e\left(b^2-4ac\right)^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[a + x*(b + c*x)]*(3*b^3*e - 2*b^2*c*e*x + 16*c^3*x^2*(4*d + 3*e*x) +
8*b*c^2*x*(8*d + 5*e*x) + 4*a*c*(16*c*d - 5*b*e + 6*c*e*x)))/(96*c^2) - ((b
^2 - 4*a*c)^2*e*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(64
*c^(5/2))
```

fricas [A] time = 0.70, size = 343, normalized size = 2.81

$$\left[\frac{3\left(b^4-8ab^2c+16a^2c^2\right)\sqrt{c}\,e\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}(2cx+b)\sqrt{c}-4ac\right)+4\left(48c^4ex^3+6\right.}{384c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/384*(3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x
 - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(48*c^4*e
*x^3 + 64*a*c^3*d + 8*(8*c^4*d + 5*b*c^3*e)*x^2 + (3*b^3*c - 20*a*b*c^2)*e
+ 2*(32*b*c^3*d - (b^2*c^2 - 12*a*c^3)*e)*x)*sqrt(c*x^2 + b*x + a))/c^3, 1/
192*(3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*
x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(48*c^4*e*x^3 + 64
*a*c^3*d + 8*(8*c^4*d + 5*b*c^3*e)*x^2 + (3*b^3*c - 20*a*b*c^2)*e + 2*(32*b
*c^3*d - (b^2*c^2 - 12*a*c^3)*e)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.22, size = 170, normalized size = 1.39

$$\frac{1}{96}\sqrt{cx^2+bx+a}\left(2\left(4\left(6cxe+\frac{8c^4d+5bc^3e}{c^3}\right)x+\frac{32bc^3d-b^2c^2e+12ac^3e}{c^3}\right)x+\frac{64ac^3d+3b^3ce-20abc^2e}{c^3}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/96*sqrt(c*x^2 + b*x + a)*(2*(4*(6*c*x*e + (8*c^4*d + 5*b*c^3*e)/c^3)*x +
(32*b*c^3*d - b^2*c^2*e + 12*a*c^3*e)/c^3)*x + (64*a*c^3*d + 3*b^3*c*e - 20
*a*b*c^2*e)/c^3) + 1/64*(b^4*e - 8*a*b^2*c*e + 16*a^2*c^2*e)*log(abs(-2*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [**B**]   time = 0.05, size = 235, normalized size = 1.93

$$-\frac{a^2 e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4\sqrt{c}}+\frac{a\,b^2 e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}-\frac{b^4 e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{64c^{\frac{5}{2}}}-\frac{\sqrt{c\,x^2+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*e*x*(c*x^2+b*x+a)^(3/2)-1/12/c*e*b*(c*x^2+b*x+a)^(3/2)+1/16/c*e*b^2*x*(
c*x^2+b*x+a)^(1/2)+1/32/c^2*e*b^3*(c*x^2+b*x+a)^(1/2)+1/8/c^(3/2)*e*b^2*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/64/c^(5/2)*e*b^4*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/4*e*a*x*(c*x^2+b*x+a)^(1/2)-1/8/c*e*a*(c*x
^2+b*x+a)^(1/2)*b-1/4/c^(1/2)*e*a^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))+2/3*(c*x^2+b*x+a)^(3/2)*d
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**B**]   time = 2.79, size = 395, normalized size = 3.24

$$\frac{e\,x\left(c\,x^2+b\,x+a\right)^{3/2}}{2}-\frac{a\,e\left(\left(\frac{x}{2}+\frac{b}{4\,c}\right)\sqrt{c\,x^2+b\,x+a}+\frac{\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)\left(a\,c-\frac{b^2}{4}\right)}{2\,c^{3/2}}\right)}{2}-\frac{5\,b\,e\left(\frac{\ln\left(\frac{b+2\,c\,x}{\sqrt{c}}+2\,\sqrt{c\,x^2+b\,x+a}\right.}{16\,c^{5/2}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (e*x*(a + b*x + c*x^2)^(3/2))/2 - (a*e*((x/2 + b/(4*c))*(a + b*x + c*x^2)^(
1/2) + (log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2))*(a*c - b^2/4))/(
2*c^(3/2))))/2 - (5*b*e*((log((b + 2*c*x)/c^(1/2) + 2*(a + b*x + c*x^2)^(1/
2))*(b^3 - 4*a*b*c))/(16*c^(5/2)) + ((8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a
 + b*x + c*x^2)^(1/2))/(24*c^2)))/4 + (d*log((b + 2*c*x)/c^(1/2) + 2*(a + b
*x + c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(8*c^(3/2)) + (d*(8*c*(a + c*x^2) - 3*b
^2 + 2*b*c*x)*(a + b*x + c*x^2)^(1/2))/(12*c) + b*d*(x/2 + b/(4*c))*(a + b*
x + c*x^2)^(1/2) + (b*e*(8*c*(a + c*x^2) - 3*b^2 + 2*b*c*x)*(a + b*x + c*x^
2)^(1/2))/(24*c^2) + (b*d*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)
)*(a*c - b^2/4))/(2*c^(3/2)) + (b*e*log((b + 2*c*x)/c^(1/2) + 2*(a + b*x +
c*x^2)^(1/2))*(b^3 - 4*a*b*c))/(16*c^(5/2))
```

sympy [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)\,\sqrt{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)*sqrt(a + b*x + c*x**2), x)
```

3.1550 $\int (b+2cx)\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

```
[Out] 2/3*(c*x^2+b*x+a)^(3/2)
```

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(a + b*x + c*x^2)^(3/2))/3
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\sqrt{a+bx+cx^2}\,dx=\frac{2}{3}\left(a+bx+cx^2\right)^{3/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{3}(a+x(b+cx))^{3/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(a + x*(b + c*x))^(3/2))/3
```

fricas [A] time = 0.84, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^2+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

giac [A] time = 0.17, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^2+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

maple [**A**] time = 0.05, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2/3*(c*x^2+b*x+a)^(3/2)
```

maxima [**A**] time = 0.62, size = 14, normalized size = 0.78

$$\frac{2}{3}\left(cx^{2}+bx+a\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(c*x^2 + b*x + a)^(3/2)
```

mupad [**B**] time = 1.83, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^{2}+b\,x+a\right)^{3/2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (2*(a + b*x + c*x^2)^(3/2))/3
```

sympy [**B**] time = 0.17, size = 60, normalized size = 3.33

$$\frac{2a\sqrt{a+bx+cx^{2}}}{3}+\frac{2bx\sqrt{a+bx+cx^{2}}}{3}+\frac{2cx^{2}\sqrt{a+bx+cx^{2}}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] 2*a*sqrt(a + b*x + c*x**2)/3 + 2*b*x*sqrt(a + b*x + c*x**2)/3 + 2*c*x**2*sq
rt(a + b*x + c*x**2)/3
```

3.1551 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx$

Optimal. Leaf size=199

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^3}-\frac{(2cd-be)\sqrt{ae^2-bde+cd^2}\,\tanh^{-1}\left(\frac{-2ae+x(2cd-be)}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-}}\right.}{e^3}$$

```
[Out] 1/4*(8*c^2*d^2+b^2*e^2-4*c*e*(-a*e+2*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c
*x^2+b*x+a)^(1/2))/e^3/c^(1/2)-(-b*e+2*c*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*
c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))*(a*e^2-b*d*e+c*d^2)^
(1/2)/e^3-1/2*(-2*c*e*x-3*b*e+4*c*d)*(c*x^2+b*x+a)^(1/2)/e^2
```

Rubi [A] time = 0.26, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {814, 843, 621, 206, 724}

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^3}-\frac{(2cd-be)\sqrt{ae^2-bde+cd^2}\,\tanh^{-1}\left(\frac{-2ae+x(2cd-be)}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-}}\right.}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x),x]
```

```
[Out] -((4*c*d - 3*b*e - 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*e^2) + ((8*c^2*d^2 +
b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x
+ c*x^2])])/(4*Sqrt[c]*e^3) - ((2*c*d - b*e)*Sqrt[c*d^2 - b*d*e + a*e^2]*Ar
cTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a
 + b*x + c*x^2])])/e^3
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx &= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} - \frac{\int \frac{c\left(3b^2de+4acde-4b\left(cd^2+ae^2\right)\right)-c\left(8c^2d^2+b^2e^2-4ce(2b}{(d+ex)\sqrt{a+bx+cx^2}}}{4ce^2} \\
&= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} - \frac{\left((2cd-be)\left(cd^2-bde+ae^2\right)\right)\int \frac{1}{(d+ex)\sqrt{a+b}}}{e^3} \\
&= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} + \frac{\left(2(2cd-be)\left(cd^2-bde+ae^2\right)\right)\operatorname{Subst}\left(\int\right.}{e^3} \\
&= -\frac{(4cd-3be-2cex)\sqrt{a+bx+cx^2}}{2e^2} + \frac{\left(8c^2d^2+b^2e^2-4ce(2bd-ae)\right)\tanh^{-1}\left(\frac{}{2}\right.}{4\sqrt{c}\,e^3}
\end{aligned}
$$

Mathematica [A] time = 0.25, size = 195, normalized size = 0.98

$$
\frac{\left(4ce(ae-2bd)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+2\sqrt{c}\left(2(2cd-be)\sqrt{e(ae-bd)+cd^2}\tanh^{-1}\left(\frac{2ae-bd+}{2\sqrt{a+x(b+cx)}}\right.\right.}{4\sqrt{c}\,e^3}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x),x]
```

```
[Out] ((8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c
]*Sqrt[a + x*(b + c*x)])] + 2*Sqrt[c]*(e*(-4*c*d + 3*b*e + 2*c*e*x)*Sqrt[a
+ x*(b + c*x)] + 2*(2*c*d - b*e)*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(
b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a +
x*(b + c*x)])]))/(4*Sqrt[c]*e^3)
```

fricas [A] time = 17.69, size = 1196, normalized size = 6.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] [1/8*((8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2
*c^2*d - b*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b
^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(
c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x
) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
 d^2)) + 4*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2 + b*x + a))/(c*
e^3), -1/8*(8*(2*c^2*d - b*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sq
rt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*
e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b
*c*d^2 - b^2*d*e + a*b*e^2)*x)) - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^
2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x
+ b)*sqrt(c) - 4*a*c) - 4*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2
+ b*x + a))/(c*e^3), -1/4*((8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) + 2*(2*c^2*d - b*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e -
 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2
)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e +
(2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*
x^2 + 2*d*e*x + d^2)) - 2*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sqrt(c*x^2
+ b*x + a))/(c*e^3), -1/4*(4*(2*c^2*d - b*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + (8*c^2*d^2 - 8*b*c*d*e + (
b^2 + 4*a*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqr
t(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^2*e^2*x - 4*c^2*d*e + 3*b*c*e^2)*sq
rt(c*x^2 + b*x + a))/(c*e^3)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.06, size = 1302, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x)
```

```
[Out] c/e*(c*x^2+b*x+a)^(1/2)*x+1/2/e*(c*x^2+b*x+a)^(1/2)*b+c^(1/2)/e*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/4/c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))*b^2+1/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*b-2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*c*d+1/2/e*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/c^(1/2)*b^2-2/e^
2*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*b*d+2/e^3*ln(((x+d/e)*c+1/2*(b*e
-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2))*c^(3/2)*d^2-1/e/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d
*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b+
2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*
c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c*d+1/e^2/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*d-3/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
))/(x+d/e))*b*d^2*c+2/e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*
e+c*d^2)/e^2+(b*e-2*c*d)*(x+d/e)/e+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d
^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x), x)
```

3.1552 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=203

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^3\sqrt{ae^2-bde+cd^2}}-\frac{2\sqrt{c}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3}+\sqrt{a}$$

```
[Out] -2*(-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))*c^(1/2)/
e^3+1/2*(8*c^2*d^2+b^2*e^2-4*c*e*(-a*e+2*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*e
+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^3/(a*e^2-b*d*e+
c*d^2)^(1/2)+(2*c*e*x-b*e+4*c*d)*(c*x^2+b*x+a)^(1/2)/e^2/(e*x+d)
```

Rubi [A] time = 0.21, antiderivative size = 203, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {812, 843, 621, 206, 724}

$$\frac{\left(-4ce(2bd-ae)+b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2e^3\sqrt{ae^2-bde+cd^2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{e^2(d+ex)}-2\sqrt{c}\,(2c$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(e^2*(d + e*x)) - (2*Sqrt[c
]*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/e^3
 + ((8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b*d - 2*a*e + (2*c
*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*e^3
*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx &= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)}-\frac{\int \frac{4bcd-b^2e-4ace+4c(2cd-be)x}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2e^2}\\
&= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)}-\frac{(2c(2cd-be))\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e^3}+\frac{\bigl(8c^2d^2+b^2e}{}\\
&= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)}-\frac{(4c(2cd-be))\,\mathrm{Subst}\bigl(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}}{e^3}\\
&= \frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{e^2(d+ex)}-\frac{2\sqrt{c}\,(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e^3}+\frac{\bigl(8c}{}
\end{aligned}
$$

Mathematica [**A**] time = 0.41, size = 280, normalized size = 1.38

$$
\frac{\frac{\left(4ce(ae-2bd)+b^2e^2+8c^2d^2\right)\sqrt{e(ae-bd)+cd^2}\,\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)+4\sqrt{c}\,(2cd-be)\left(e(ae-bd)+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2e^3}-\frac{\sqrt{a+x(b+cx}}{}}{e(bd-ae)-cd^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x) - (Sqrt[a + x*(b + c*x)
]*(b^2*e^2 + 2*c^2*d*(2*d - e*x) + c*e*(-5*b*d + 2*a*e + b*e*x)))/e^2 + (4*
Sqrt[c]*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + x*(b + c*x)])] + (8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*b*d + a*e))
*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/
(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*e^3))/(-(c*d^
2) + e*(b*d - a*e))
```

fricas [**B**] time = 31.89, size = 1964, normalized size = 9.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] [-1/4*(4*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c)*d^2*e^2 + (2*
c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x)*sqrt(c)*log(-
8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4
*a*c) - (8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b
*c*d*e^2 + (b^2 + 4*a*c)*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e
 - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e
^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e
+ (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^
2*x^2 + 2*d*e*x + d^2)) - 4*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 +
 4*a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x +
 a))/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1
/4*(8*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c)*d^2*e^2 + (2*c^2
*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x)*sqrt(-c)*arctan(
1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + (
8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^2
+ (b^2 + 4*a*c)*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*
e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 -
 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d
- b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2
*d*e*x + d^2)) + 4*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*a*c)*d
*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c*d
^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1/2*((8*c^
2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^2 + (b
^2 + 4*a*c)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 +
b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d
^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2
*d*e + a*b*e^2)*x)) - 2*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 + 2*a*c
)*d^2*e^2 + (2*c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*e^3)*x
)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
 b)*sqrt(c) - 4*a*c) + 2*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*
a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a)
)/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x), 1/2*
((8*c^2*d^3 - 8*b*c*d^2*e + (b^2 + 4*a*c)*d*e^2 + (8*c^2*d^2*e - 8*b*c*d*e^
2 + (b^2 + 4*a*c)*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*
d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/
(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2
 - b^2*d*e + a*b*e^2)*x)) + 4*(2*c^2*d^4 - 3*b*c*d^3*e - a*b*d*e^3 + (b^2 +
 2*a*c)*d^2*e^2 + (2*c^2*d^3*e - 3*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 2*a*c)*d*
e^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2
*x^2 + b*c*x + a*c)) + 2*(4*c^2*d^3*e - 5*b*c*d^2*e^2 - a*b*e^4 + (b^2 + 4*
a*c)*d*e^3 + 2*(c^2*d^2*e^2 - b*c*d*e^3 + a*c*e^4)*x)*sqrt(c*x^2 + b*x + a)
)/(c*d^3*e^3 - b*d^2*e^4 + a*d*e^5 + (c*d^2*e^4 - b*d*e^5 + a*e^6)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, integration of abs or sign assumes
constant sign by intervals (correct if the argument is real):Check [abs(t_n
ostep)]Unable to divide, perhaps due to rounding error%%%{%%%{32,[2,11,0,0,
2]%%%}+%%%{-16,[1,11,2,0,1]%%%}+%%%{2,[0,11,4,0,0]%%%},[4]%%%}+%%%{%%%{-64,
[2,11,0,0,3]%%%}+%%%{32,[1,11,2,0,2]%%%}+%%%{-4,[0,11,4,0,1]%%%},[2]%%%}+%%
%{%%%{32,[2,11,0,0,4]%%%}+%%%{-16,[1,11,2,0,3]%%%}+%%%{2,[0,11,4,0,2]%%%},[
0]%%%} / %%%{%%%{1,[1,2,0,0,0]%%%}+%%%{-1,[0,1,1,1,0]%%%}+%%%{1,[0,0,0,2,1]
%%%},[4]%%%}+%%%{%%%{-2,[1,2,0,0,1]%%%}+%%%{2,[0,1,1,1,1]%%%}+%%%{-2,[0,0,0
,2,2]%%%},[2]%%%}+%%%{%%%{1,[1,2,0,0,2]%%%}+%%%{-1,[0,1,1,1,2]%%%}+%%%{1,[0
,0,0,2,3]%%%},[0]%%%} Error: Bad Argument Value
```

maple [B] time = 0.06, size = 3088, normalized size = 15.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x)
```

```
[Out] -2/e^3/(a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e
)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(5/2)*d^3+2/e
^2/(a*e^2-b*d*e+c*d^2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*c^2*d^2+2*c/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*
d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((
x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b
*d-2/e/(a*e^2-b*d*e+c*d^2)*c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)
+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*a*d-1/e
/(a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*d*b^2+3/e^2/(
a*e^2-b*d*e+c*d^2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(3/2)*d^2*b-2/e/(a*e^
2-b*d*e+c*d^2)*c^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*x*d+2/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((
b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x
+d/e))*a*b*c*d-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b+c^(1/2)/e^2*ln(((x+d/e)*c+1/2*(b*e-2*
c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2))*b-2*c^(3/2)/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*d+2*c/e^2*((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)+1/(a*e^2-b*d*e+c*
d^2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-
2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(
x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c^2
*d^2-5/2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2
*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e)
)*b^2*d^2*c+4/e^3/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((
b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x
+d/e))*b*d^3*c^2-2/e^4/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
))/(x+d/e))*c^3*d^4+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d-3/e/(a*e^2-b*d*e+c*d^2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d+1/2/e/(
a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/
e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*d-1/2/(a
*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e
+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(
b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b^2+1/(a*e^
2-b*d*e+c*d^2)*c*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*x*b+1/(a*e^2-b*d*e+c*d^2)*c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/
c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*
a*b-2*c/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*
e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*
c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a-2*c^2/e^4/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**2, x)
```

3.1553 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=280

$$-\frac{(2cd-be)\left(-4ce(2bd-3ae)-b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{8e^3\left(ae^2-bde+cd^2\right)^{3/2}}-\frac{\sqrt{a+bx+cx^2}\,\left(ex\left(-4ce(3bd-2\right.\right.}{}$$

```
[Out] 2*c^(3/2)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/e^3-1/8*(-b*e+
2*c*d)*(8*c^2*d^2-b^2*e^2-4*c*e*(-3*a*e+2*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*
e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^3/(a*e^2-b*d*e
+c*d^2)^(3/2)-1/4*(8*c^2*d^3-b*e^2*(-2*a*e+b*d)-2*c*d*e*(-2*a*e+3*b*d)+e*(1
2*c^2*d^2+b^2*e^2-4*c*e*(-2*a*e+3*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^2/(a*e^2-b
*d*e+c*d^2)/(e*x+d)^2
```

Rubi [A] time = 0.32, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {810, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\,\left(ex\left(-4ce(3bd-2ae)+b^2e^2+12c^2d^2\right)-2cde(3bd-2ae)-be^2(bd-2ae)+8c^2d^3\right)}{4e^2(d+ex)^2\left(ae^2-bde+cd^2\right)}-\frac{(2cd-be)\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] -((8*c^2*d^3 - b*e^2*(b*d - 2*a*e) - 2*c*d*e*(3*b*d - 2*a*e) + e*(12*c^2*d^
2 + b^2*e^2 - 4*c*e*(3*b*d - 2*a*e))*x)*Sqrt[a + b*x + c*x^2])/(4*e^2*(c*d^
2 - b*d*e + a*e^2)*(d + e*x)^2) + (2*c^(3/2)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/e^3 - ((2*c*d - b*e)*(8*c^2*d^2 - b^2*e^2 - 4*c*e
*(2*b*d - 3*a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b
*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(8*e^3*(c*d^2 - b*d*e + a*e^2)^(3/2)
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx = -\frac{\Big(8c^2d^3 - be^2(bd-2ae) - 2cde(3bd-2ae) + e\Big(12c^2d^2 + b^2e^2 - 4ce(3bd-2a}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\Big(8c^2d^3 - be^2(bd-2ae) - 2cde(3bd-2ae) + e\Big(12c^2d^2 + b^2e^2 - 4ce(3bd-2a}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\Big(8c^2d^3 - be^2(bd-2ae) - 2cde(3bd-2ae) + e\Big(12c^2d^2 + b^2e^2 - 4ce(3bd-2a}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

$$= -\frac{\Big(8c^2d^3 - be^2(bd-2ae) - 2cde(3bd-2ae) + e\Big(12c^2d^2 + b^2e^2 - 4ce(3bd-2a}{4e^2\left(cd^2-bde+ae^2\right)(d+ex)^2}$$

Mathematica [A] time = 1.21, size = 389, normalized size = 1.39

$$\frac{\frac{2(a+x(b+cx))^{3/2}\left(4ce(bd-2ae)+b^2e^2-4c^2d^2\right)}{d+ex} + \frac{-2ce\sqrt{a+x(b+cx)}\Big(-2c^2e(2ae(2ex-3d)+bd(7d-2ex))+bce^2(-10ae+5bd+bex)+b^3e^3+4c^3d^2(2d-ex)\Big)+c}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^3,x]
```

```
[Out] ((4*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2))/(d +
e*x)^2 + (2*(-4*c^2*d^2 + b^2*e^2 + 4*c*e*(b*d - 2*a*e))*(a + x*(b + c*x))^
(3/2))/(d + e*x) + (-2*c*e*Sqrt[a + x*(b + c*x)]*(b^3*e^3 + 4*c^3*d^2*(2*d
- e*x) + b*c*e^2*(5*b*d - 10*a*e + b*e*x) - 2*c^2*e*(b*d*(7*d - 2*e*x) + 2*
a*e*(-3*d + 2*e*x))) + 16*c^(5/2)*(c*d^2 + e*(-(b*d) + a*e))^2*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + c*(2*c*d - b*e)*Sqrt[c*d^2 + e
*(-(b*d) + a*e)]*(8*c^2*d^2 - b^2*e^2 + 4*c*e*(-2*b*d + 3*a*e))*ArcTanh[(-(
b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a +
x*(b + c*x)])])/(c*e^3))/(8*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.51Unable to divide, perha
ps due to rounding error%%%{1,[6,0,0,6,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[5,0,0,5,1]%%%}+%%%{3,[4,1,0,5,1]%%%}+%%%{-3,[4,0,1,6,0]%%%}+%%%{%
%%{12,[1]%%%},[4,0,0,4,2]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0
,4,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,1,5,1]%%%}+%%%{%%{[%%%
{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,0,3,3]%%%}+%%%{3,[2,2,0,4,2]%%%
}+%%%{-6,[2,1,1,5,1]%%%}+%%%{%%%{12,[1]%%%},[2,1,0,3,3]%%%}+%%%{3,[2,0,2,6,
0]%%%}+%%%{%%%{-12,[1]%%%},[2,0,1,4,2]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[1,2,0,3,3]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,1,4,2]%%%}
+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,2,5,1]%%%}+%%%{1,[0,3,0,3,3]%%%
}+%%%{-3,[0,2,1,4,2]%%%}+%%%{3,[0,1,2,5,1]%%%}+%%%{-1,[0,0,3,6,0]%%%} / %%%
{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,0,3,0]%%%}+%%%{%%%{
-6,[2]%%%},[5,0,0,2,1]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[4,1,0,2,1]%%%}+%%%{%%{poly1[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,1,3,0]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,0,
1,2]%%%}+%%%{%%%{-12,[2]%%%},[3,1,0,1,2]%%%}+%%%{%%%{12,[2]%%%},[3,0,1,2,1]
%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[2,2,0,1,2]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[2,1,1,2,1]%%%}+%%%{%%{[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,1
,0,0,3]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,2,3,
0]%%%}+%%%{%%{poly1[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,1,1,2]%
%%}+%%%{%%%{-6,[2]%%%},[1,2,0,0,3]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%%}+%
%%{%%%{-6,[2]%%%},[1,0,2,2,1]%%%}+%%%{%%{[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%
%%}]%%},[0,3,0,0,3]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
0,2,1,1,2]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,2,2,1]
%%%}+%%%{%%{poly1[%%%{-1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,3,3,0]%%%}
 Error: Bad Argument Value
```

maple **[B]** time = 0.07, size = 5046, normalized size = 18.02

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                           +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{{(d+e\,x)}^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**3, x)
```

3.1554 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=217

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(-2ae+x(2cd-be)+bd)}{8(d+ex)^2\left(ae^2-bde+cd^2\right)^2}+\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\left(a+bx+\right.}{3(d+ex)}$$

```
[Out] 1/3*(-b*e+2*c*d)*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^3+1/16*(-4
*a*c+b^2)^2*e*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1
/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(5/2)-1/8*(-4*a*c+b^2)*e*(b*d-
2*a*e+(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^2
```

Rubi [A] time = 0.23, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {806, 720, 724, 206}

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(-2ae+x(2cd-be)+bd)}{8(d+ex)^2\left(ae^2-bde+cd^2\right)^2}+\frac{e\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{16\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{\left(a+bx+\right.}{3(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] -((b^2 - 4*a*c)*e*(b*d - 2*a*e + (2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(8
*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((2*c*d - b*e)*(a + b*x + c*x^2)^
(3/2))/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3) + ((b^2 - 4*a*c)^2*e*ArcTanh
[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*
x + c*x^2])])/(16*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx &= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}-\frac{\left(\left(b^2-4ac\right)e\right)\int\frac{\sqrt{a+bx+cx^2}}{(d+ex)^3}\,dx}{2\left(cd^2-bde+ae^2\right)}\\ &= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2}+\frac{(2cd-be)\left(a+bx+\right.}{3\left(cd^2-bde+ae^2\right)(d}\\ &= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2}+\frac{(2cd-be)\left(a+bx+\right.}{3\left(cd^2-bde+ae^2\right)(d}\\ &= -\frac{\left(b^2-4ac\right)e(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{8\left(cd^2-bde+ae^2\right)^2(d+ex)^2}+\frac{(2cd-be)\left(a+bx+\right.}{3\left(cd^2-bde+ae^2\right)(d}\end{aligned}$$

Mathematica [A] time = 0.47, size = 214, normalized size = 0.99

$$\frac{\frac{2(a+x(b+cx))^{3/2}(2cd-be)}{(d+ex)^3}-3e\left(b^2-4ac\right)\left(\frac{\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}}+\frac{\sqrt{a+x(b+cx)}(-2ae+b(d-ex)+2cdx)}{4(d+ex)^2\left(e(ae-bd)+cd^2\right)}\right)}{6\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^4,x]
```

```
[Out] ((2*(2*c*d - b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x)^3 - 3*(b^2 - 4*a*c)*e*
((Sqrt[a + x*(b + c*x)]*(-2*a*e + 2*c*d*x + b*(d - e*x)))/(4*(c*d^2 + e*(-(
b*d) + a*e))*(d + e*x)^2) + ((b^2 - 4*a*c)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*
x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c
*d^2 + e*(-(b*d) + a*e))^(3/2))))/(6*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [B] time = 7.00, size = 2040, normalized size = 9.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] [1/96*(3*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^4*x^3 + 3*(b^4 - 8*a*b^2*c + 16*
a^2*c^2)*d*e^3*x^2 + 3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^2*e^2*x + (b^4 - 8*
a*b^2*c + 16*a^2*c^2)*d^3*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8
*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*
x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^
2 + 2*d*e*x + d^2)) + 4*(16*a*c^3*d^5 - 8*a^3*b*e^5 - (3*b^3*c + 28*a*b*c^2
)*d^4*e + (3*b^4 + 26*a*b^2*c + 8*a^2*c^2)*d^3*e^2 - (17*a*b^3 + 12*a^2*b*c
)*d^2*e^3 + 2*(11*a^2*b^2 - 4*a^3*c)*d*e^4 + (16*c^4*d^5 - 40*b*c^3*d^4*e +
 2*(13*b^2*c^2 + 28*a*c^3)*d^3*e^2 + (b^3*c - 84*a*b*c^2)*d^2*e^3 - (3*b^4
- 22*a*b^2*c - 40*a^2*c^2)*d*e^4 + (3*a*b^3 - 20*a^2*b*c)*e^5)*x^2 + 2*(8*b
*c^3*d^5 - (23*b^2*c^2 - 12*a*c^3)*d^4*e + (19*b^3*c + 4*a*b*c^2)*d^3*e^2 -
 4*(b^4 + 6*a*b^2*c)*d^2*e^3 + 5*(a*b^3 + 4*a^2*b*c)*d*e^4 - (a^2*b^2 + 12*
a^3*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^9 - 3*b*c^2*d^8*e - 3*a^2*b*d^
4*e^5 + a^3*d^3*e^6 + 3*(b^2*c + a*c^2)*d^7*e^2 - (b^3 + 6*a*b*c)*d^6*e^3 +
 3*(a*b^2 + a^2*c)*d^5*e^4 + (c^3*d^6*e^3 - 3*b*c^2*d^5*e^4 - 3*a^2*b*d*e^8
 + a^3*e^9 + 3*(b^2*c + a*c^2)*d^4*e^5 - (b^3 + 6*a*b*c)*d^3*e^6 + 3*(a*b^2
 + a^2*c)*d^2*e^7)*x^3 + 3*(c^3*d^7*e^2 - 3*b*c^2*d^6*e^3 - 3*a^2*b*d^2*e^7
 + a^3*d*e^8 + 3*(b^2*c + a*c^2)*d^5*e^4 - (b^3 + 6*a*b*c)*d^4*e^5 + 3*(a*b
^2 + a^2*c)*d^3*e^6)*x^2 + 3*(c^3*d^8*e - 3*b*c^2*d^7*e^2 - 3*a^2*b*d^3*e^6
 + a^3*d^2*e^7 + 3*(b^2*c + a*c^2)*d^6*e^3 - (b^3 + 6*a*b*c)*d^5*e^4 + 3*(a
*b^2 + a^2*c)*d^4*e^5)*x), 1/48*(3*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^4*x^3
+ 3*(b^4 - 8*a*b^2*c + 16*a^2*c^2)*d*e^3*x^2 + 3*(b^4 - 8*a*b^2*c + 16*a^2*
c^2)*d^2*e^2*x + (b^4 - 8*a*b^2*c + 16*a^2*c^2)*d^3*e)*sqrt(-c*d^2 + b*d*e
- a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*
d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*
d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(16*a*c^3*d^5 -
8*a^3*b*e^5 - (3*b^3*c + 28*a*b*c^2)*d^4*e + (3*b^4 + 26*a*b^2*c + 8*a^2*c^
2)*d^3*e^2 - (17*a*b^3 + 12*a^2*b*c)*d^2*e^3 + 2*(11*a^2*b^2 - 4*a^3*c)*d*e
^4 + (16*c^4*d^5 - 40*b*c^3*d^4*e + 2*(13*b^2*c^2 + 28*a*c^3)*d^3*e^2 + (b^
3*c - 84*a*b*c^2)*d^2*e^3 - (3*b^4 - 22*a*b^2*c - 40*a^2*c^2)*d*e^4 + (3*a*
b^3 - 20*a^2*b*c)*e^5)*x^2 + 2*(8*b*c^3*d^5 - (23*b^2*c^2 - 12*a*c^3)*d^4*e
 + (19*b^3*c + 4*a*b*c^2)*d^3*e^2 - 4*(b^4 + 6*a*b^2*c)*d^2*e^3 + 5*(a*b^3
+ 4*a^2*b*c)*d*e^4 - (a^2*b^2 + 12*a^3*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c
^3*d^9 - 3*b*c^2*d^8*e - 3*a^2*b*d^4*e^5 + a^3*d^3*e^6 + 3*(b^2*c + a*c^2)*
d^7*e^2 - (b^3 + 6*a*b*c)*d^6*e^3 + 3*(a*b^2 + a^2*c)*d^5*e^4 + (c^3*d^6*e^
3 - 3*b*c^2*d^5*e^4 - 3*a^2*b*d*e^8 + a^3*e^9 + 3*(b^2*c + a*c^2)*d^4*e^5 -
 (b^3 + 6*a*b*c)*d^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^7)*x^3 + 3*(c^3*d^7*e^2
- 3*b*c^2*d^6*e^3 - 3*a^2*b*d^2*e^7 + a^3*d*e^8 + 3*(b^2*c + a*c^2)*d^5*e^4
 - (b^3 + 6*a*b*c)*d^4*e^5 + 3*(a*b^2 + a^2*c)*d^3*e^6)*x^2 + 3*(c^3*d^8*e
- 3*b*c^2*d^7*e^2 - 3*a^2*b*d^3*e^6 + a^3*d^2*e^7 + 3*(b^2*c + a*c^2)*d^6*e
^3 - (b^3 + 6*a*b*c)*d^5*e^4 + 3*(a*b^2 + a^2*c)*d^4*e^5)*x)]
```

giac [B] time = 0.77, size = 2611, normalized size = 12.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 1/8*(b^4*e - 8*a*b^2*c*e + 16*a^2*c^2*e)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d
^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b
*d*e - a*e^2)) + 1/24*(192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*c^(9/2)*d^
5*e + 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*c^5*d^6 + 96*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^5*c^4*d^4*e^2 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*b*c^(9/2)*d^6 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b*c^(7/2)*d^
4*e^2 - 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^2*c^(7/2)*d^5*e - 192*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*c^(9/2)*d^5*e + 96*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))*b^2*c^4*d^6 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*
b*c^3*d^3*e^3 - 272*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^3*d^4*e^2 +
 128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*c^4*d^4*e^2 - 144*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*b^3*c^3*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*a*b*c^4*d^5*e + 16*b^3*c^(7/2)*d^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^4*b^2*c^(5/2)*d^3*e^3 + 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*c
^(7/2)*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(5/2)*d^4*e
^2 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c^(7/2)*d^4*e^2 - 24*b^4
*c^(5/2)*d^5*e - 48*a*b^2*c^(7/2)*d^5*e + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^5*b^2*c^2*d^2*e^4 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*c^3*d
^2*e^4 + 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*c^2*d^3*e^3 + 512*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c^3*d^3*e^3 + 12*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*b^4*c^2*d^4*e^2 + 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*
a*b^2*c^3*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^4*d^4*e^2
+ 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^3*c^(3/2)*d^2*e^4 - 96*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^4*a*b*c^(5/2)*d^2*e^4 + 42*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^2*b^4*c^(3/2)*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a*b^2*c^(5/2)*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
^2*c^(7/2)*d^3*e^3 + 2*b^5*c^(3/2)*d^4*e^2 + 112*a*b^3*c^(5/2)*d^4*e^2 + 48
*a^2*b*c^(7/2)*d^4*e^2 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b*c^2*
d*e^5 + 90*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^4*c*d^2*e^4 - 240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^2*c^2*d^2*e^4 - 480*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*a^2*c^3*d^2*e^4 + 18*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*b^5*c*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*c^2*d^3*e^3
- 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b*c^3*d^3*e^3 - 15*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^4*b^4*sqrt(c)*d*e^5 - 168*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*a*b^2*c^(3/2)*d*e^5 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*a^2*c^(5/2)*d*e^5 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*sqrt(c)
*d^2*e^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(3/2)*d^2*e^4 +
 3*b^6*sqrt(c)*d^3*e^3 - 26*a*b^4*c^(3/2)*d^3*e^3 - 192*a^2*b^2*c^(5/2)*d^3
*e^3 - 32*a^3*c^(7/2)*d^3*e^3 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4
*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^2*c*e^6 + 48*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^5*a^2*c^2*e^6 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^3*b^5*d*e^5 - 160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^3*c*d*e^5
+ 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b*c^2*d*e^5 + 3*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*b^6*d^2*e^4 - 42*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*a*b^4*c*d^2*e^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^2*d^
2*e^4 + 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*c^3*d^2*e^4 + 144*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b*c^(3/2)*e^6 - 72*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*a*b^4*sqrt(c)*d*e^5 + 144*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a^2*b^2*c^(3/2)*d*e^5 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
^3*c^(5/2)*d*e^5 - 6*a*b^5*sqrt(c)*d^2*e^4 + 48*a^2*b^3*c^(3/2)*d^2*e^4 + 1
92*a^3*b*c^(5/2)*d^2*e^4 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*e^
6 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c*e^6 - 6*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*a*b^5*d*e^5 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)*a^3*b*c^2*d*e^5 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^3*sqrt(c
)*e^6 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b*c^(3/2)*e^6 + 3*a^2*
b^4*sqrt(c)*d*e^5 - 40*a^3*b^2*c^(3/2)*d*e^5 - 80*a^4*c^(5/2)*d*e^5 + 3*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^4*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*a^3*b^2*c*e^6 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c^2*e
^6 + 16*a^4*b*c^(3/2)*e^6)/((c^2*d^4*e^3 - 2*b*c*d^3*e^4 + b^2*d^2*e^5 + 2*
a*c*d^2*e^5 - 2*a*b*d*e^6 + a^2*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2
*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.14, size = 7916, normalized size = 36.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**4, x)
```

3.1555 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=307

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{24(d+ex)^3\left(ae^2-bde+cd^2\right)^2}-\frac{5e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(2cd-be)(-2ae+x(2cd-be}{64(d+ex)^2\left(ae^2-bde+cd^2\right)^3}$$

```
[Out] 1/4*(-b*e+2*c*d)*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^4+1/24*(4*
c^2*d^2+5*b^2*e^2-4*c*e*(4*a*e+b*d))*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d^2
)^2/(e*x+d)^3+5/128*(-4*a*c+b^2)^2*e*(-b*e+2*c*d)*arctanh(1/2*(b*d-2*a*e+(-
b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c
*d^2)^(7/2)-5/64*(-4*a*c+b^2)*e*(-b*e+2*c*d)*(b*d-2*a*e+(-b*e+2*c*d)*x)*(c*
x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^3/(e*x+d)^2
```

Rubi [**A**] time = 0.46, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {834, 806, 720, 724, 206}

$$\frac{\left(a+bx+cx^2\right)^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{24(d+ex)^3\left(ae^2-bde+cd^2\right)^2}-\frac{5e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,(2cd-be)(-2ae+x(2cd-be}{64(d+ex)^2\left(ae^2-bde+cd^2\right)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] (-5*(b^2 - 4*a*c)*e*(2*c*d - b*e)*(b*d - 2*a*e + (2*c*d - b*e)*x)*Sqrt[a +
b*x + c*x^2])/(64*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^2) + ((2*c*d - b*e)*(
a + b*x + c*x^2)^(3/2))/(4*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4) + ((4*c^2*d
^2 + 5*b^2*e^2 - 4*c*e*(b*d + 4*a*e))*(a + b*x + c*x^2)^(3/2))/(24*(c*d^2 -
 b*d*e + a*e^2)^2*(d + e*x)^3) + (5*(b^2 - 4*a*c)^2*e*(2*c*d - b*e)*ArcTanh
[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*
x + c*x^2])])/(128*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx = \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{4\left(cd^2-bde+ae^2\right)(d+ex)^4} - \frac{\int \frac{\left(\frac{1}{2}\left(-2bcd+5b^2e-16ace\right)-c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^4}\,dx}{4\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{4\left(cd^2-bde+ae^2\right)(d+ex)^4} + \frac{\left(4c^2d^2+5b^2e^2-4ce(bd+4ae)\right)\left(a+bx+cx^2\right)^{3/}}{24\left(cd^2-bde+ae^2\right)^2(d+ex)^3}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be)\left(a\right.}{4\left(cd^2-bde\right.}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be)\left(a\right.}{4\left(cd^2-bde\right.}$$

$$= -\frac{5\left(b^2-4ac\right)e(2cd-be)(bd-2ae+(2cd-be)x)\sqrt{a+bx+cx^2}}{64\left(cd^2-bde+ae^2\right)^3(d+ex)^2} + \frac{(2cd-be)\left(a\right.}{4\left(cd^2-bde\right.}$$

Mathematica [A] time = 0.74, size = 290, normalized size = 0.94

$$\frac{\frac{(a+x(b+cx))^{3/2}\left(-4ce(4ae+bd)+5b^2e^2+4c^2d^2\right)}{(d+ex)^3} + \frac{15}{2}e\left(b^2-4ac\right)(be-2cd)\left(\frac{\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{3/2}} + \frac{\sqrt{a+x(b+cx)}\,(-2a}{4(d+ex)^2\left(e(\right.}\right.}{24\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^5,x]
```

```
[Out] ((6*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2))/(d +
e*x)^4 + ((4*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(b*d + 4*a*e))*(a + x*(b + c*x))^(
3/2))/(d + e*x)^3 + (15*(b^2 - 4*a*c)*e*(-2*c*d + b*e)*((Sqrt[a + x*(b + c*
x)]*(-2*a*e + 2*c*d*x + b*(d - e*x)))/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*
x)^2) + ((b^2 - 4*a*c)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c
*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a
*e))^(3/2))))/2)/(24*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [**B**] time = 38.09, size = 3996, normalized size = 13.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] [-1/768*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^5*e - (b^5 - 8*a*b^3*c
+ 16*a^2*b*c^2)*d^4*e^2 + (2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^5 - (b^
5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^6)*x^4 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2
*c^3)*d^2*e^4 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*e^5)*x^3 + 6*(2*(b^4*c -
 8*a*b^2*c^2 + 16*a^2*c^3)*d^3*e^3 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d^2*e
^4)*x^2 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^4*e^2 - (b^5 - 8*a*b^3*
c + 16*a^2*b*c^2)*d^3*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e -
8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)
*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (
2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x
^2 + 2*d*e*x + d^2)) - 4*(128*a*c^4*d^7 - 48*a^4*b*e^7 - 6*(5*b^3*c^2 + 52*
a*b*c^3)*d^6*e + (45*b^4*c + 448*a*b^2*c^2 - 16*a^2*c^3)*d^5*e^2 - (15*b^5
+ 412*a*b^3*c + 112*a^2*b*c^2)*d^4*e^3 + (133*a*b^4 + 472*a^2*b^2*c - 176*a
^3*c^2)*d^3*e^4 - 2*(127*a^2*b^3 + 44*a^3*b*c)*d^2*e^5 + 8*(23*a^3*b^2 - 4*
a^4*c)*d*e^6 + (32*c^5*d^6*e - 96*b*c^4*d^5*e^2 + 4*(19*b^2*c^3 + 44*a*c^4)
*d^4*e^3 + 8*(b^3*c^2 - 44*a*b*c^3)*d^3*e^4 - (35*b^4*c - 256*a*b^2*c^2 - 1
6*a^2*c^3)*d^2*e^5 + (15*b^5 - 80*a*b^3*c - 16*a^2*b*c^2)*d*e^6 - (15*a*b^4
 - 100*a^2*b^2*c + 128*a^3*c^2)*e^7)*x^3 + (128*c^5*d^7 - 400*b*c^4*d^6*e +
 352*(b^2*c^3 + 2*a*c^4)*d^5*e^2 - 2*(3*b^3*c^2 + 748*a*b*c^3)*d^4*e^3 - (1
29*b^4*c - 1080*a*b^2*c^2 - 304*a^2*c^3)*d^3*e^4 + (55*b^5 - 268*a*b^3*c -
432*a^2*b*c^2)*d^2*e^5 - (65*a*b^4 - 408*a^2*b^2*c + 272*a^3*c^2)*d*e^6 + 2
*(5*a^2*b^3 - 28*a^3*b*c)*e^7)*x^2 + (128*b*c^4*d^7 - 4*(123*b^2*c^3 - 68*a
*c^4)*d^6*e + 4*(157*b^3*c^2 - 28*a*b*c^3)*d^5*e^2 - (337*b^4*c + 456*a*b^2
*c^2 + 304*a^2*c^3)*d^4*e^3 + (73*b^5 + 360*a*b^3*c + 912*a^2*b*c^2)*d^3*e^
4 - (109*a*b^4 + 372*a^2*b^2*c + 704*a^3*c^2)*d^2*e^5 + 4*(11*a^2*b^3 + 108
*a^3*b*c)*d*e^6 - 8*(a^3*b^2 + 16*a^4*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^
4*d^12 - 4*b*c^3*d^11*e - 4*a^3*b*d^5*e^7 + a^4*d^4*e^8 + 2*(3*b^2*c^2 + 2*
a*c^3)*d^10*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^9*e^3 + (b^4 + 12*a*b^2*c + 6*a^2
*c^2)*d^8*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^7*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^6
*e^6 + (c^4*d^8*e^4 - 4*b*c^3*d^7*e^5 - 4*a^3*b*d*e^11 + a^4*e^12 + 2*(3*b^
2*c^2 + 2*a*c^3)*d^6*e^6 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^7 + (b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^4*e^8 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^9 + 2*(3*a^2*b^2 + 2*a
^3*c)*d^2*e^10)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 - 4*a^3*b*d^2*e^10 +
 a^4*d*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^6*e
^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^8
 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^9)*x^3 + 6*(c^4*d^10*e^2 - 4*b*c^3*d^9*e^3
 - 4*a^3*b*d^3*e^9 + a^4*d^2*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^4 - 4*(b^
3*c + 3*a*b*c^2)*d^7*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^6 - 4*(a*b^
3 + 3*a^2*b*c)*d^5*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^8)*x^2 + 4*(c^4*d^11
*e - 4*b*c^3*d^10*e^2 - 4*a^3*b*d^4*e^8 + a^4*d^3*e^9 + 2*(3*b^2*c^2 + 2*a*
c^3)*d^9*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^
2)*d^7*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^
7)*x), 1/384*(15*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^5*e - (b^5 - 8*a*b
^3*c + 16*a^2*b*c^2)*d^4*e^2 + (2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^5
- (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^6)*x^4 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 1
6*a^2*c^3)*d^2*e^4 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*d*e^5)*x^3 + 6*(2*(b^
4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^3*e^3 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*
d^2*e^4)*x^2 + 4*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d^4*e^2 - (b^5 - 8*a
*b^3*c + 16*a^2*b*c^2)*d^3*e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2
*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 +
 (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(128*a*c^4*d^7 - 48*a^4*b*e^7 - 6*(5
*b^3*c^2 + 52*a*b*c^3)*d^6*e + (45*b^4*c + 448*a*b^2*c^2 - 16*a^2*c^3)*d^5*
e^2 - (15*b^5 + 412*a*b^3*c + 112*a^2*b*c^2)*d^4*e^3 + (133*a*b^4 + 472*a^2
*b^2*c - 176*a^3*c^2)*d^3*e^4 - 2*(127*a^2*b^3 + 44*a^3*b*c)*d^2*e^5 + 8*(2
3*a^3*b^2 - 4*a^4*c)*d*e^6 + (32*c^5*d^6*e - 96*b*c^4*d^5*e^2 + 4*(19*b^2*c
^3 + 44*a*c^4)*d^4*e^3 + 8*(b^3*c^2 - 44*a*b*c^3)*d^3*e^4 - (35*b^4*c - 256
*a*b^2*c^2 - 16*a^2*c^3)*d^2*e^5 + (15*b^5 - 80*a*b^3*c - 16*a^2*b*c^2)*d*e
^6 - (15*a*b^4 - 100*a^2*b^2*c + 128*a^3*c^2)*e^7)*x^3 + (128*c^5*d^7 - 400
*b*c^4*d^6*e + 352*(b^2*c^3 + 2*a*c^4)*d^5*e^2 - 2*(3*b^3*c^2 + 748*a*b*c^3
)*d^4*e^3 - (129*b^4*c - 1080*a*b^2*c^2 - 304*a^2*c^3)*d^3*e^4 + (55*b^5 -
268*a*b^3*c - 432*a^2*b*c^2)*d^2*e^5 - (65*a*b^4 - 408*a^2*b^2*c + 272*a^3*
c^2)*d*e^6 + 2*(5*a^2*b^3 - 28*a^3*b*c)*e^7)*x^2 + (128*b*c^4*d^7 - 4*(123*
b^2*c^3 - 68*a*c^4)*d^6*e + 4*(157*b^3*c^2 - 28*a*b*c^3)*d^5*e^2 - (337*b^4
*c + 456*a*b^2*c^2 + 304*a^2*c^3)*d^4*e^3 + (73*b^5 + 360*a*b^3*c + 912*a^2
*b*c^2)*d^3*e^4 - (109*a*b^4 + 372*a^2*b^2*c + 704*a^3*c^2)*d^2*e^5 + 4*(11
*a^2*b^3 + 108*a^3*b*c)*d*e^6 - 8*(a^3*b^2 + 16*a^4*c)*e^7)*x)*sqrt(c*x^2 +
 b*x + a))/(c^4*d^12 - 4*b*c^3*d^11*e - 4*a^3*b*d^5*e^7 + a^4*d^4*e^8 + 2*(
3*b^2*c^2 + 2*a*c^3)*d^10*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^9*e^3 + (b^4 + 12*a
*b^2*c + 6*a^2*c^2)*d^8*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^7*e^5 + 2*(3*a^2*b^2
+ 2*a^3*c)*d^6*e^6 + (c^4*d^8*e^4 - 4*b*c^3*d^7*e^5 - 4*a^3*b*d*e^11 + a^4*
e^12 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^6 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^7 + (b
^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^8 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^9 + 2*(3
*a^2*b^2 + 2*a^3*c)*d^2*e^10)*x^4 + 4*(c^4*d^9*e^3 - 4*b*c^3*d^8*e^4 - 4*a^
3*b*d^2*e^10 + a^4*d*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^5 - 4*(b^3*c + 3*
a*b*c^2)*d^6*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^7 - 4*(a*b^3 + 3*a^
2*b*c)*d^4*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^9)*x^3 + 6*(c^4*d^10*e^2 - 4
*b*c^3*d^9*e^3 - 4*a^3*b*d^3*e^9 + a^4*d^2*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d
^8*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6
*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^8)*x^2
 + 4*(c^4*d^11*e - 4*b*c^3*d^10*e^2 - 4*a^3*b*d^4*e^8 + a^4*d^3*e^9 + 2*(3*
b^2*c^2 + 2*a*c^3)*d^9*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^4 + (b^4 + 12*a*b^
2*c + 6*a^2*c^2)*d^7*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^6 + 2*(3*a^2*b^2 + 2
*a^3*c)*d^5*e^7)*x)]
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] Timed out
```

maple **[B]** time = 0.11, size = 10723, normalized size = 34.93

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^5,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^5, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**5,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**5, x)
```

3.1556 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=430

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)(-2ae+x(2cd-be)+bd)}{128(d+ex)^2\left(ae^2-bde+cd^2\right)^4}+\frac{\left(a+bx+cx^2\right)^{3/2}(2c}{240}$$

```
[Out] 1/5*(-b*e+2*c*d)*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^5+1/40*(8*
c^2*d^2+7*b^2*e^2-4*c*e*(5*a*e+2*b*d))*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d
^2)^2/(e*x+d)^4+1/240*(-b*e+2*c*d)*(8*c^2*d^2+35*b^2*e^2-4*c*e*(33*a*e+2*b*
d))*(c*x^2+b*x+a)^(3/2)/(a*e^2-b*d*e+c*d^2)^3/(e*x+d)^3+1/256*(-4*a*c+b^2)^
2*e*(24*c^2*d^2+7*b^2*e^2-4*c*e*(a*e+6*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*e+2
*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)
^(9/2)-1/128*(-4*a*c+b^2)*e*(24*c^2*d^2+7*b^2*e^2-4*c*e*(a*e+6*b*d))*(b*d-2
*a*e+(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^4/(e*x+d)^2
```

Rubi **[A]** time = 0.65, antiderivative size = 430, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{e\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\,\left(-4ce(ae+6bd)+7b^2e^2+24c^2d^2\right)(-2ae+x(2cd-be)+bd)}{128(d+ex)^2\left(ae^2-bde+cd^2\right)^4}+\frac{\left(a+bx+cx^2\right)^{3/2}(2c}{240}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*(b*d - 2*a
*e + (2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(128*(c*d^2 - b*d*e + a*e^2)^4
*(d + e*x)^2) + ((2*c*d - b*e)*(a + b*x + c*x^2)^(3/2))/(5*(c*d^2 - b*d*e +
 a*e^2)*(d + e*x)^5) + ((8*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(2*b*d + 5*a*e))*(a
+ b*x + c*x^2)^(3/2))/(40*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4) + ((2*c*d
- b*e)*(8*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(2*b*d + 33*a*e))*(a + b*x + c*x^2)^
(3/2))/(240*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3) + ((b^2 - 4*a*c)^2*e*(24
*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(256*(c*d^
2 - b*d*e + a*e^2)^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^6}\,dx = \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} - \frac{\int \frac{\left(\frac{1}{2}\left(-4bcd+7b^2e-20ace\right)-2c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^5}\,dx}{5\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} + \frac{\left(8c^2d^2+7b^2e^2-4ce(2bd+5ae)\right)(a+bx+c}{40\left(cd^2-bde+ae^2\right)^2(d+ex)^4}$$

$$= \frac{(2cd-be)\left(a+bx+cx^2\right)^{3/2}}{5\left(cd^2-bde+ae^2\right)(d+ex)^5} + \frac{\left(8c^2d^2+7b^2e^2-4ce(2bd+5ae)\right)(a+bx+c}{40\left(cd^2-bde+ae^2\right)^2(d+ex)^4}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

$$= -\frac{\left(b^2-4ac\right)e\left(24c^2d^2+7b^2e^2-4ce(6bd+ae)\right)(bd-2ae+(2cd-be)x)\sqrt{a+}}{128\left(cd^2-bde+ae^2\right)^4(d+ex)^2}$$

Mathematica [A] time = 3.11, size = 401, normalized size = 0.93

$$\frac{\frac{(a+x(b+cx))^{3/2}(2cd-be)\left(-4ce(33ae+2bd)+35b^2e^2+8c^2d^2\right)}{48(d+ex)^3\left(e(ae-bd)+cd^2\right)^2} + \frac{(a+x(b+cx))^{3/2}\left(-4ce(5ae+2bd)+7b^2e^2+8c^2d^2\right)}{8(d+ex)^4\left(e(ae-bd)+cd^2\right)} - \frac{5e\left(b^2-4ac\right)(-4ce(ae+6bd)+7b^2e^2+}{}}{5(e(ae-b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^6,x]
```

```
[Out] (((2*c*d - b*e)*(a + x*(b + c*x))^(3/2))/(d + e*x)^5 + ((8*c^2*d^2 + 7*b^2*
e^2 - 4*c*e*(2*b*d + 5*a*e))*(a + x*(b + c*x))^(3/2))/(8*(c*d^2 + e*(-(b*d)
 + a*e))*(d + e*x)^4) + ((2*c*d - b*e)*(8*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(2*b
*d + 33*a*e))*(a + x*(b + c*x))^(3/2))/(48*(c*d^2 + e*(-(b*d) + a*e))^2*(d
+ e*x)^3) - (5*(b^2 - 4*a*c)*e*(24*c^2*d^2 + 7*b^2*e^2 - 4*c*e*(6*b*d + a*e
))*(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)]*(-2*a*e + 2*c*d*
x + b*(d - e*x)) + (b^2 - 4*a*c)*(d + e*x)^2*ArcTanh[(-(b*d) + 2*a*e - 2*c*
d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])]))/(2
56*(c*d^2 + e*(-(b*d) + a*e))^(7/2)*(d + e*x)^2))/(5*(c*d^2 + e*(-(b*d) + a
*e)))
```

<u>**fricas**</u> **[B]** time = 174.37, size = 6858, normalized size = 15.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] [-1/7680*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^7*e - 24*(b^5*c - 8
*a*b^3*c^2 + 16*a^2*b*c^3)*d^6*e^2 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2
- 64*a^3*c^3)*d^5*e^3 + (24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^2*e^6 -
24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^7 + (7*b^6 - 60*a*b^4*c + 144*a
^2*b^2*c^2 - 64*a^3*c^3)*e^8)*x^5 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c
^4)*d^3*e^5 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^2*e^6 + (7*b^6 - 60
*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d*e^7)*x^4 + 10*(24*(b^4*c^2 - 8*a
*b^2*c^3 + 16*a^2*c^4)*d^4*e^4 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^
3*e^5 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^2*e^6)*x^3 +
10*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^5*e^3 - 24*(b^5*c - 8*a*b^3*c
^2 + 16*a^2*b*c^3)*d^4*e^4 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3
*c^3)*d^3*e^5)*x^2 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^6*e^2 - 2
4*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^5*e^3 + (7*b^6 - 60*a*b^4*c + 144*
a^2*b^2*c^2 - 64*a^3*c^3)*d^4*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*
b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a
*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2
*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x
)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(1280*a*c^5*d^9 - 384*a^5*b*e^9 - 40*(9*b^
3*c^3 + 100*a*b*c^4)*d^8*e + 16*(45*b^4*c^2 + 485*a*b^2*c^3 - 92*a^2*c^4)*d
^7*e^2 - (465*b^5*c + 9520*a*b^3*c^2 - 272*a^2*b*c^3)*d^6*e^3 + (105*b^6 +
5690*a*b^4*c + 8496*a^2*b^2*c^2 - 3616*a^3*c^3)*d^5*e^4 - 5*(263*a*b^5 + 19
84*a^2*b^3*c - 48*a^3*b*c^2)*d^4*e^5 + 2*(1657*a^2*b^4 + 3024*a^3*b^2*c - 5
28*a^4*c^2)*d^3*e^6 - 8*(449*a^3*b^3 + 132*a^4*b*c)*d^2*e^7 + 48*(39*a^4*b^
2 - 4*a^5*c)*d*e^8 + (128*c^6*d^7*e^2 - 448*b*c^5*d^6*e^3 + 32*(13*b^2*c^4
+ 32*a*c^5)*d^5*e^4 + 80*(b^3*c^3 - 32*a*b*c^4)*d^4*e^5 - 2*(233*b^4*c^2 -
1704*a*b^2*c^3 + 848*a^2*c^4)*d^3*e^6 + (395*b^5*c - 2552*a*b^3*c^2 + 2544*
a^2*b*c^3)*d^2*e^7 - (105*b^6 - 470*a*b^4*c - 672*a^2*b^2*c^2 + 2592*a^3*c^
3)*d*e^8 + (105*a*b^5 - 760*a^2*b^3*c + 1296*a^3*b*c^2)*e^9)*x^4 + 2*(320*c
^6*d^8*e - 1152*b*c^5*d^7*e^2 + 128*(9*b^2*c^4 + 20*a*c^5)*d^6*e^3 + 32*(3*
b^3*c^3 - 208*a*b*c^4)*d^5*e^4 - 5*(219*b^4*c^2 - 1688*a*b^2*c^3 + 560*a^2*
c^4)*d^4*e^5 + 4*(231*b^5*c - 1448*a*b^3*c^2 + 976*a^2*b*c^3)*d^3*e^6 - (24
5*b^6 - 958*a*b^4*c - 2304*a^2*b^2*c^2 + 5280*a^3*c^3)*d^2*e^7 + 8*(35*a*b^
5 - 236*a^2*b^3*c + 336*a^3*b*c^2)*d*e^8 - (35*a^2*b^4 - 216*a^3*b^2*c + 24
0*a^4*c^2)*e^9)*x^3 + 2*(640*c^6*d^9 - 2400*b*c^5*d^8*e + 24*(111*b^2*c^4 +
 212*a*c^5)*d^7*e^2 - 12*(17*b^3*c^3 + 1164*a*b*c^4)*d^6*e^3 - 3*(649*b^4*c
^2 - 5696*a*b^2*c^3 + 752*a^2*c^4)*d^5*e^4 + 15*(113*b^5*c - 700*a*b^3*c^2
+ 96*a^2*b*c^3)*d^4*e^5 - 8*(56*b^6 - 171*a*b^4*c - 855*a^2*b^2*c^2 + 892*a
^3*c^3)*d^3*e^6 + 3*(203*a*b^5 - 1220*a^2*b^3*c + 928*a^3*b*c^2)*d^2*e^7 -
```

```
3*(63*a^2*b^4 - 352*a^3*b^2*c + 144*a^4*c^2)*d*e^8 + 4*(7*a^3*b^3 - 36*a^4*
b*c)*e^9)*x^2 + 2*(640*b*c^5*d^9 - 440*(7*b^2*c^4 - 4*a*c^5)*d^8*e + 8*(665
*b^3*c^3 - 244*a*b*c^4)*d^7*e^2 - (4565*b^4*c^2 + 1128*a*b^2*c^3 + 4880*a^2
*c^4)*d^6*e^3 + 8*(260*b^5*c + 337*a*b^3*c^2 + 1548*a^2*b*c^3)*d^5*e^4 - 5*
(79*b^6 + 454*a*b^4*c + 1632*a^2*b^2*c^2 + 1760*a^3*c^3)*d^4*e^5 + 4*(171*a
*b^5 + 622*a^2*b^3*c + 2616*a^3*b*c^2)*d^3*e^6 - 3*(139*a^2*b^4 + 1272*a^3*
b^2*c + 880*a^4*c^2)*d^2*e^7 + 8*(19*a^3*b^3 + 276*a^4*b*c)*d*e^8 - 24*(a^4
*b^2 + 20*a^5*c)*e^9)*x)*sqrt(c*x^2 + b*x + a))/(c^5*d^15 - 5*b*c^4*d^14*e
 - 5*a^4*b*d^6*e^9 + a^5*d^5*e^10 + 5*(2*b^2*c^3 + a*c^4)*d^13*e^2 - 10*(b^3
*c^2 + 2*a*b*c^3)*d^12*e^3 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^11*e^4 -
 (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^10*e^5 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^
3*c^2)*d^9*e^6 - 10*(a^2*b^3 + 2*a^3*b*c)*d^8*e^7 + 5*(2*a^3*b^2 + a^4*c)*d
^7*e^8 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 - 5*a^4*b*d*e^14 + a^5*e^15 + 5*(2
*b^2*c^3 + a*c^4)*d^8*e^7 - 10*(b^3*c^2 + 2*a*b*c^3)*d^7*e^8 + 5*(b^4*c + 6
*a*b^2*c^2 + 2*a^2*c^3)*d^6*e^9 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^5*e^1
0 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^4*e^11 - 10*(a^2*b^3 + 2*a^3*b*c)
*d^3*e^12 + 5*(2*a^3*b^2 + a^4*c)*d^2*e^13)*x^5 + 5*(c^5*d^11*e^4 - 5*b*c^4
*d^10*e^5 - 5*a^4*b*d^2*e^13 + a^5*d*e^14 + 5*(2*b^2*c^3 + a*c^4)*d^9*e^6 -
 10*(b^3*c^2 + 2*a*b*c^3)*d^8*e^7 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^7
*e^8 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^6*e^9 + 5*(a*b^4 + 6*a^2*b^2*c +
 2*a^3*c^2)*d^5*e^10 - 10*(a^2*b^3 + 2*a^3*b*c)*d^4*e^11 + 5*(2*a^3*b^2 + a
^4*c)*d^3*e^12)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^11*e^4 - 5*a^4*b*d^3*e^1
2 + a^5*d^2*e^13 + 5*(2*b^2*c^3 + a*c^4)*d^10*e^5 - 10*(b^3*c^2 + 2*a*b*c^3
)*d^9*e^6 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^8*e^7 - (b^5 + 20*a*b^3*c
 + 30*a^2*b*c^2)*d^7*e^8 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^6*e^9 - 10
*(a^2*b^3 + 2*a^3*b*c)*d^5*e^10 + 5*(2*a^3*b^2 + a^4*c)*d^4*e^11)*x^3 + 10*
(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 - 5*a^4*b*d^4*e^11 + a^5*d^3*e^12 + 5*(2*b
^2*c^3 + a*c^4)*d^11*e^4 - 10*(b^3*c^2 + 2*a*b*c^3)*d^10*e^5 + 5*(b^4*c + 6
*a*b^2*c^2 + 2*a^2*c^3)*d^9*e^6 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^8*e^7
 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^7*e^8 - 10*(a^2*b^3 + 2*a^3*b*c)*d
^6*e^9 + 5*(2*a^3*b^2 + a^4*c)*d^5*e^10)*x^2 + 5*(c^5*d^14*e - 5*b*c^4*d^13
*e^2 - 5*a^4*b*d^5*e^10 + a^5*d^4*e^11 + 5*(2*b^2*c^3 + a*c^4)*d^12*e^3 - 1
0*(b^3*c^2 + 2*a*b*c^3)*d^11*e^4 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^10
*e^5 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^9*e^6 + 5*(a*b^4 + 6*a^2*b^2*c +
 2*a^3*c^2)*d^8*e^7 - 10*(a^2*b^3 + 2*a^3*b*c)*d^7*e^8 + 5*(2*a^3*b^2 + a^4
*c)*d^6*e^9)*x), 1/3840*(15*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^7*e
 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^6*e^2 + (7*b^6 - 60*a*b^4*c + 1
44*a^2*b^2*c^2 - 64*a^3*c^3)*d^5*e^3 + (24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*
c^4)*d^2*e^6 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d*e^7 + (7*b^6 - 60*
a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*e^8)*x^5 + 5*(24*(b^4*c^2 - 8*a*b^2
*c^3 + 16*a^2*c^4)*d^3*e^5 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^2*e^
6 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d*e^7)*x^4 + 10*(24
*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^4*e^4 - 24*(b^5*c - 8*a*b^3*c^2 + 1
6*a^2*b*c^3)*d^3*e^5 + (7*b^6 - 60*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*
d^2*e^6)*x^3 + 10*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*d^5*e^3 - 24*(b^
5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^4*e^4 + (7*b^6 - 60*a*b^4*c + 144*a^2*b
^2*c^2 - 64*a^3*c^3)*d^3*e^5)*x^2 + 5*(24*(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c
^4)*d^6*e^2 - 24*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*d^5*e^3 + (7*b^6 - 60
*a*b^4*c + 144*a^2*b^2*c^2 - 64*a^3*c^3)*d^4*e^4)*x)*sqrt(-c*d^2 + b*d*e -
a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d
 - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*
e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(1280*a*c^5*d^9 -
384*a^5*b*e^9 - 40*(9*b^3*c^3 + 100*a*b*c^4)*d^8*e + 16*(45*b^4*c^2 + 485*a
*b^2*c^3 - 92*a^2*c^4)*d^7*e^2 - (465*b^5*c + 9520*a*b^3*c^2 - 272*a^2*b*c^
3)*d^6*e^3 + (105*b^6 + 5690*a*b^4*c + 8496*a^2*b^2*c^2 - 3616*a^3*c^3)*d^5
*e^4 - 5*(263*a*b^5 + 1984*a^2*b^3*c - 48*a^3*b*c^2)*d^4*e^5 + 2*(1657*a^2*
b^4 + 3024*a^3*b^2*c - 528*a^4*c^2)*d^3*e^6 - 8*(449*a^3*b^3 + 132*a^4*b*c)
*d^2*e^7 + 48*(39*a^4*b^2 - 4*a^5*c)*d*e^8 + (128*c^6*d^7*e^2 - 448*b*c^5*d
^6*e^3 + 32*(13*b^2*c^4 + 32*a*c^5)*d^5*e^4 + 80*(b^3*c^3 - 32*a*b*c^4)*d^4
```

```
*e^5 - 2*(233*b^4*c^2 - 1704*a*b^2*c^3 + 848*a^2*c^4)*d^3*e^6 + (395*b^5*c
- 2552*a*b^3*c^2 + 2544*a^2*b*c^3)*d^2*e^7 - (105*b^6 - 470*a*b^4*c - 672*a
^2*b^2*c^2 + 2592*a^3*c^3)*d*e^8 + (105*a*b^5 - 760*a^2*b^3*c + 1296*a^3*b*
c^2)*e^9)*x^4 + 2*(320*c^6*d^8*e - 1152*b*c^5*d^7*e^2 + 128*(9*b^2*c^4 + 20
*a*c^5)*d^6*e^3 + 32*(3*b^3*c^3 - 208*a*b*c^4)*d^5*e^4 - 5*(219*b^4*c^2 - 1
688*a*b^2*c^3 + 560*a^2*c^4)*d^4*e^5 + 4*(231*b^5*c - 1448*a*b^3*c^2 + 976*
a^2*b*c^3)*d^3*e^6 - (245*b^6 - 958*a*b^4*c - 2304*a^2*b^2*c^2 + 5280*a^3*c
^3)*d^2*e^7 + 8*(35*a*b^5 - 236*a^2*b^3*c + 336*a^3*b*c^2)*d*e^8 - (35*a^2*
b^4 - 216*a^3*b^2*c + 240*a^4*c^2)*e^9)*x^3 + 2*(640*c^6*d^9 - 2400*b*c^5*d
^8*e + 24*(111*b^2*c^4 + 212*a*c^5)*d^7*e^2 - 12*(17*b^3*c^3 + 1164*a*b*c^4
)*d^6*e^3 - 3*(649*b^4*c^2 - 5696*a*b^2*c^3 + 752*a^2*c^4)*d^5*e^4 + 15*(11
3*b^5*c - 700*a*b^3*c^2 + 96*a^2*b*c^3)*d^4*e^5 - 8*(56*b^6 - 171*a*b^4*c -
 855*a^2*b^2*c^2 + 892*a^3*c^3)*d^3*e^6 + 3*(203*a*b^5 - 1220*a^2*b^3*c + 9
28*a^3*b*c^2)*d^2*e^7 - 3*(63*a^2*b^4 - 352*a^3*b^2*c + 144*a^4*c^2)*d*e^8
+ 4*(7*a^3*b^3 - 36*a^4*b*c)*e^9)*x^2 + 2*(640*b*c^5*d^9 - 440*(7*b^2*c^4 -
 4*a*c^5)*d^8*e + 8*(665*b^3*c^3 - 244*a*b*c^4)*d^7*e^2 - (4565*b^4*c^2 + 1
128*a*b^2*c^3 + 4880*a^2*c^4)*d^6*e^3 + 8*(260*b^5*c + 337*a*b^3*c^2 + 1548
*a^2*b*c^3)*d^5*e^4 - 5*(79*b^6 + 454*a*b^4*c + 1632*a^2*b^2*c^2 + 1760*a^3
*c^3)*d^4*e^5 + 4*(171*a*b^5 + 622*a^2*b^3*c + 2616*a^3*b*c^2)*d^3*e^6 - 3*
(139*a^2*b^4 + 1272*a^3*b^2*c + 880*a^4*c^2)*d^2*e^7 + 8*(19*a^3*b^3 + 276*
a^4*b*c)*d*e^8 - 24*(a^4*b^2 + 20*a^5*c)*e^9)*x)*sqrt(c*x^2 + b*x + a))/(c^
5*d^15 - 5*b*c^4*d^14*e - 5*a^4*b*d^6*e^9 + a^5*d^5*e^10 + 5*(2*b^2*c^3 + a
*c^4)*d^13*e^2 - 10*(b^3*c^2 + 2*a*b*c^3)*d^12*e^3 + 5*(b^4*c + 6*a*b^2*c^2
 + 2*a^2*c^3)*d^11*e^4 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^10*e^5 + 5*(a*
b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^9*e^6 - 10*(a^2*b^3 + 2*a^3*b*c)*d^8*e^7 +
 5*(2*a^3*b^2 + a^4*c)*d^7*e^8 + (c^5*d^10*e^5 - 5*b*c^4*d^9*e^6 - 5*a^4*b*
d*e^14 + a^5*e^15 + 5*(2*b^2*c^3 + a*c^4)*d^8*e^7 - 10*(b^3*c^2 + 2*a*b*c^3
)*d^7*e^8 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^6*e^9 - (b^5 + 20*a*b^3*c
 + 30*a^2*b*c^2)*d^5*e^10 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^4*e^11 -
10*(a^2*b^3 + 2*a^3*b*c)*d^3*e^12 + 5*(2*a^3*b^2 + a^4*c)*d^2*e^13)*x^5 + 5
*(c^5*d^11*e^4 - 5*b*c^4*d^10*e^5 - 5*a^4*b*d^2*e^13 + a^5*d*e^14 + 5*(2*b^
2*c^3 + a*c^4)*d^9*e^6 - 10*(b^3*c^2 + 2*a*b*c^3)*d^8*e^7 + 5*(b^4*c + 6*a*
b^2*c^2 + 2*a^2*c^3)*d^7*e^8 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^6*e^9 +
5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^5*e^10 - 10*(a^2*b^3 + 2*a^3*b*c)*d^4
*e^11 + 5*(2*a^3*b^2 + a^4*c)*d^3*e^12)*x^4 + 10*(c^5*d^12*e^3 - 5*b*c^4*d^
11*e^4 - 5*a^4*b*d^3*e^12 + a^5*d^2*e^13 + 5*(2*b^2*c^3 + a*c^4)*d^10*e^5 -
 10*(b^3*c^2 + 2*a*b*c^3)*d^9*e^6 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^8
*e^7 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^7*e^8 + 5*(a*b^4 + 6*a^2*b^2*c +
 2*a^3*c^2)*d^6*e^9 - 10*(a^2*b^3 + 2*a^3*b*c)*d^5*e^10 + 5*(2*a^3*b^2 + a^
4*c)*d^4*e^11)*x^3 + 10*(c^5*d^13*e^2 - 5*b*c^4*d^12*e^3 - 5*a^4*b*d^4*e^11
 + a^5*d^3*e^12 + 5*(2*b^2*c^3 + a*c^4)*d^11*e^4 - 10*(b^3*c^2 + 2*a*b*c^3)
*d^10*e^5 + 5*(b^4*c + 6*a*b^2*c^2 + 2*a^2*c^3)*d^9*e^6 - (b^5 + 20*a*b^3*c
 + 30*a^2*b*c^2)*d^8*e^7 + 5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^7*e^8 - 10
*(a^2*b^3 + 2*a^3*b*c)*d^6*e^9 + 5*(2*a^3*b^2 + a^4*c)*d^5*e^10)*x^2 + 5*(c
^5*d^14*e - 5*b*c^4*d^13*e^2 - 5*a^4*b*d^5*e^10 + a^5*d^4*e^11 + 5*(2*b^2*c
^3 + a*c^4)*d^12*e^3 - 10*(b^3*c^2 + 2*a*b*c^3)*d^11*e^4 + 5*(b^4*c + 6*a*b
^2*c^2 + 2*a^2*c^3)*d^10*e^5 - (b^5 + 20*a*b^3*c + 30*a^2*b*c^2)*d^9*e^6 +
5*(a*b^4 + 6*a^2*b^2*c + 2*a^3*c^2)*d^8*e^7 - 10*(a^2*b^3 + 2*a^3*b*c)*d^7*
e^8 + 5*(2*a^3*b^2 + a^4*c)*d^6*e^9)*x)]
```

giac [B] time = 73.16, size = 10103, normalized size = 23.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 1/128*(24*b^4*c^2*d^2*e - 192*a*b^2*c^3*d^2*e + 384*a^2*c^4*d^2*e - 24*b^5*
c*d*e^2 + 192*a*b^3*c^2*d*e^2 - 384*a^2*b*c^3*d*e^2 + 7*b^6*e^3 - 60*a*b^4*
c*e^3 + 144*a^2*b^2*c^2*e^3 - 64*a^3*c^3*e^3)*arctan(-((sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^4*d^8 - 4*
b*c^3*d^7*e + 6*b^2*c^2*d^6*e^2 + 4*a*c^3*d^6*e^2 - 4*b^3*c*d^5*e^3 - 12*a*
b*c^2*d^5*e^3 + b^4*d^4*e^4 + 12*a*b^2*c*d^4*e^4 + 6*a^2*c^2*d^4*e^4 - 4*a*
b^3*d^3*e^5 - 12*a^2*b*c*d^3*e^5 + 6*a^2*b^2*d^2*e^6 + 4*a^3*c*d^2*e^6 - 4*
a^3*b*d*e^7 + a^4*e^8)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/1920*(10240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*c^(15/2)*d^9*e + 4096*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*c^8*d^10 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*c^7
*d^8*e^2 + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b*c^7*d^9*e + 10240*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b*c^(15/2)*d^10 - 10240*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^6*b*c^(13/2)*d^8*e^2 - 10240*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*b^2*c^(13/2)*d^9*e - 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^4*a*c^(15/2)*d^9*e + 10240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^7
*d^10 - 40960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b*c^6*d^7*e^3 - 40448*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^2*c^6*d^8*e^2 + 8192*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^5*a*c^7*d^8*e^2 - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^3*b^3*c^6*d^9*e - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c^7
*d^9*e + 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(13/2)*d^10 - 614
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^2*c^(11/2)*d^7*e^3 + 40960*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^6*a*c^(13/2)*d^7*e^3 - 29440*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^4*b^3*c^(11/2)*d^8*e^2 + 66560*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^4*a*b*c^(13/2)*d^8*e^2 - 12160*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))^2*b^4*c^(11/2)*d^9*e - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b
^2*c^(13/2)*d^9*e + 1280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^4*c^6*d^10 +
 61440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^2*c^5*d^6*e^4 + 40960*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^7*a*c^6*d^6*e^4 - 22528*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*b^3*c^5*d^7*e^3 + 90112*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*a*b*c^6*d^7*e^3 - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^4*c^5*d^
8*e^2 + 107520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^2*c^6*d^8*e^2 + 10
240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*c^7*d^8*e^2 - 3200*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*b^5*c^5*d^9*e - 5120*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*a*b^3*c^6*d^9*e + 128*b^5*c^(11/2)*d^10 + 143360*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^6*b^3*c^(9/2)*d^6*e^4 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^4*b^4*c^(9/2)*d^7*e^3 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
4*a*b^2*c^(11/2)*d^7*e^3 - 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*
c^(13/2)*d^7*e^3 + 2240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*c^(9/2)*d
^8*e^2 + 71680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(11/2)*d^8*e^2
 + 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b*c^(13/2)*d^8*e^2 - 320
*b^6*c^(9/2)*d^9*e - 640*a*b^4*c^(11/2)*d^9*e - 40960*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^7*b^3*c^4*d^5*e^5 - 122880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^7*a*b*c^5*d^5*e^5 + 133280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4*c^4
*d^6*e^4 - 48384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^2*c^5*d^6*e^4 -
218624*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*c^6*d^6*e^4 + 16640*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*b^5*c^4*d^7*e^3 - 71680*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^3*a*b^3*c^5*d^7*e^3 - 184320*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^3*a^2*b*c^6*d^7*e^3 + 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^6*c^
4*d^8*e^2 + 21760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^4*c^5*d^8*e^2 + 7
680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^6*d^8*e^2 - 131120*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^6*b^4*c^(7/2)*d^5*e^5 - 97920*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^6*a*b^2*c^(9/2)*d^5*e^5 - 234240*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^6*a^2*c^(11/2)*d^5*e^5 + 53200*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*b^5*c^(7/2)*d^6*e^4 + 40320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*
a*b^3*c^(9/2)*d^6*e^4 - 295680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b*
c^(11/2)*d^6*e^4 + 7520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^6*c^(7/2)*d
^7*e^3 - 58240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^4*c^(9/2)*d^7*e^3
- 161280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^2*c^(11/2)*d^7*e^3 - 1
0240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*c^(13/2)*d^7*e^3 + 96*b^7*c^
(7/2)*d^8*e^2 + 2496*a*b^5*c^(9/2)*d^8*e^2 + 1280*a^2*b^3*c^(11/2)*d^8*e^2
- 1040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b^4*c^3*d^4*e^6 + 213120*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^2*c^4*d^4*e^6 - 119040*(sqrt(c)*x - sq
```

```
rt(c*x^2 + b*x + a))^7*a^2*c^5*d^4*e^6 - 155248*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^5*b^5*c^3*d^5*e^5 - 33920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*
b^3*c^4*d^5*e^5 - 46848*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b*c^5*d^5
*e^5 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^6*c^3*d^6*e^4 + 93440*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*c^4*d^6*e^4 - 42240*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c^5*d^6*e^4 + 92160*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*a^3*c^6*d^6*e^4 + 1760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*
b^7*c^3*d^7*e^3 - 17280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^5*c^4*d^7*e
^3 - 58880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^3*c^5*d^7*e^3 - 10240*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b*c^6*d^7*e^3 - 3240*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^8*b^4*c^(5/2)*d^3*e^7 + 25920*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^8*a*b^2*c^(7/2)*d^3*e^7 - 51840*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^8*a^2*c^(9/2)*d^3*e^7 + 37440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b
^5*c^(5/2)*d^4*e^6 + 273920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^3*c^(
7/2)*d^4*e^6 + 168960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b*c^(9/2)*d
^4*e^6 - 85120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^6*c^(5/2)*d^5*e^5 -
74000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^4*c^(7/2)*d^5*e^5 + 90240*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^2*c^(9/2)*d^5*e^5 + 392960*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*c^(11/2)*d^5*e^5 - 7480*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^2*b^7*c^(5/2)*d^6*e^4 + 52800*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^2*a*b^5*c^(7/2)*d^6*e^4 + 80000*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a^2*b^3*c^(9/2)*d^6*e^4 + 174080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*a^3*b*c^(11/2)*d^6*e^4 + 176*b^8*c^(5/2)*d^7*e^3 - 1824*a*b^6*c^(7/2)*d
^7*e^3 - 7680*a^2*b^4*c^(9/2)*d^7*e^3 - 2560*a^3*b^2*c^(11/2)*d^7*e^3 - 360
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^4*c^2*d^2*e^8 + 2880*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^9*a*b^2*c^3*d^2*e^8 - 5760*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^9*a^2*c^4*d^2*e^8 + 9600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b
^5*c^2*d^3*e^7 - 117760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^3*c^3*d^3
*e^7 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b*c^4*d^3*e^7 + 6370
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^6*c^2*d^4*e^6 + 236480*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^5*a*b^4*c^3*d^4*e^6 - 39360*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*a^2*b^2*c^4*d^4*e^6 + 468480*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^5*a^3*c^5*d^4*e^6 - 20480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^7*
c^2*d^5*e^5 - 55200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^5*c^3*d^5*e^5
 - 152320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^3*c^4*d^5*e^5 + 50944
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b*c^5*d^5*e^5 - 2540*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*b^8*c^2*d^6*e^4 + 13360*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*a*b^6*c^3*d^6*e^4 + 33120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^
2*b^4*c^4*d^6*e^4 + 102400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^2*c^5*
d^6*e^4 + 2560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c^6*d^6*e^4 + 3240*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^8*b^5*c^(3/2)*d^2*e^8 - 25920*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^8*a*b^3*c^(5/2)*d^2*e^8 + 51840*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^8*a^2*b*c^(7/2)*d^2*e^8 + 6370*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^6*b^6*c^(3/2)*d^3*e^7 - 159000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^6*a*b^4*c^(5/2)*d^3*e^7 - 324000*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a
^2*b^2*c^(7/2)*d^3*e^7 + 278400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^3*c
^(9/2)*d^3*e^7 + 39170*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^7*c^(3/2)*d^
4*e^6 + 195720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^5*c^(5/2)*d^4*e^6
- 202400*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^3*c^(7/2)*d^4*e^6 + 18
8800*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b*c^(9/2)*d^4*e^6 - 490*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^2*b^8*c^(3/2)*d^5*e^5 - 8720*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^2*a*b^6*c^(5/2)*d^5*e^5 - 188880*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^2*a^2*b^4*c^(7/2)*d^5*e^5 + 191360*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^2*a^3*b^2*c^(9/2)*d^5*e^5 - 70400*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*a^4*c^(11/2)*d^5*e^5 - 290*b^9*c^(3/2)*d^6*e^4 + 1448*a*b^7*c^(5/2
)*d^6*e^4 + 2928*a^2*b^5*c^(7/2)*d^6*e^4 + 19200*a^3*b^3*c^(9/2)*d^6*e^4 +
1280*a^4*b*c^(11/2)*d^6*e^4 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^5
*c*d*e^9 - 2880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a*b^3*c^2*d*e^9 + 576
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a^2*b*c^3*d*e^9 - 1610*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^7*b^6*c*d^2*e^8 + 16440*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^7*a*b^4*c^2*d^2*e^8 + 7200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a
^2*b^2*c^3*d^2*e^8 + 97920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^3*c^4*d^
2*e^8 - 5426*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^7*c*d^3*e^7 - 140616*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^5*c^2*d^3*e^7 - 246880*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^5*a^2*b^3*c^3*d^3*e^7 - 101760*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^5*a^3*b*c^4*d^3*e^7 + 10930*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^3*b^8*c*d^4*e^6 + 84200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^6*c
^2*d^4*e^6 + 24240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^4*c^3*d^4*e^
6 - 80640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^2*c^4*d^4*e^6 - 36736
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*c^5*d^4*e^6 + 690*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*b^9*c*d^5*e^5 + 1840*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*a*b^7*c^2*d^5*e^5 - 61680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^5*
c^3*d^5*e^5 + 13440*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^3*c^4*d^5*e^5
 - 78080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b*c^5*d^5*e^5 - 945*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^8*b^6*sqrt(c)*d*e^9 + 8100*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^8*a*b^4*c^(3/2)*d*e^9 - 19440*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^8*a^2*b^2*c^(5/2)*d*e^9 + 8640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^8*a^3*c^(7/2)*d*e^9 - 3430*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*b^7*sqrt(
c)*d^2*e^8 + 17640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^5*c^(3/2)*d^2*
e^8 + 207840*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^2*b^3*c^(5/2)*d^2*e^8
 - 74880*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^6*a^3*b*c^(7/2)*d^2*e^8 - 4480*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^8*sqrt(c)*d^3*e^7 - 112130*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^4*a*b^6*c^(3/2)*d^3*e^7 - 70200*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^4*a^2*b^4*c^(5/2)*d^3*e^7 + 45600*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*a^3*b^2*c^(7/2)*d^3*e^7 - 361600*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))^4*a^4*c^(9/2)*d^3*e^7 + 1470*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*b^9*sqrt(c)*d^4*e^6 + 8780*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^7*
c^(3/2)*d^4*e^6 + 86640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^5*c^(5/
2)*d^4*e^6 + 50240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^3*c^(7/2)*d^
4*e^6 - 375040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b*c^(9/2)*d^4*e^6
+ 105*b^10*sqrt(c)*d^5*e^5 + 330*a*b^8*c^(3/2)*d^5*e^5 - 6064*a^2*b^6*c^(5/
2)*d^5*e^5 - 2160*a^3*b^4*c^(7/2)*d^5*e^5 - 21120*a^4*b^2*c^(9/2)*d^5*e^5 -
 256*a^5*c^(11/2)*d^5*e^5 - 105*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*b^6*e
^10 + 900*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^9*a*b^4*c*e^10 - 2160*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^9*a^2*b^2*c^2*e^10 + 960*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^9*a^3*c^3*e^10 - 490*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*b
^7*d*e^9 + 2520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a*b^5*c*d*e^9 + 3360*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^2*b^3*c^2*d*e^9 - 63360*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^7*a^3*b*c^3*d*e^9 - 896*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^5*b^8*d^2*e^8 + 10034*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^6
*c*d^2*e^8 + 203640*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^2*b^4*c^2*d^2*e
^8 + 119520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^3*b^2*c^3*d^2*e^8 - 155
520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*c^4*d^2*e^8 - 790*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*b^9*d^3*e^7 - 47420*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^3*a*b^7*c*d^3*e^7 - 60720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2
*b^5*c^2*d^3*e^7 + 76480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^3*c^3*
d^3*e^7 + 11520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b*c^4*d^3*e^7 + 1
05*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^10*d^4*e^6 - 2610*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*a*b^8*c*d^4*e^6 + 25060*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*a^2*b^6*c^2*d^4*e^6 + 60320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^
4*c^3*d^4*e^6 - 112320*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^2*c^4*d^4*
e^6 + 17920*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*c^5*d^4*e^6 + 3430*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^6*a*b^6*sqrt(c)*d*e^9 - 29400*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^6*a^2*b^4*c^(3/2)*d*e^9 - 52320*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^6*a^3*b^2*c^(5/2)*d*e^9 - 21120*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))^6*a^4*c^(7/2)*d*e^9 + 8960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a
*b^7*sqrt(c)*d^2*e^8 + 130560*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^5
*c^(3/2)*d^2*e^8 - 25600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b^3*c^(5
/2)*d^2*e^8 + 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^4*b*c^(7/2)*d^
2*e^8 - 8250*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b^8*sqrt(c)*d^3*e^7 -
22690*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^6*c^(3/2)*d^3*e^7 - 85480
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^4*c^(5/2)*d^3*e^7 + 178080*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^2*c^(7/2)*d^3*e^7 + 164480*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*a^5*c^(9/2)*d^3*e^7 - 420*a*b^9*sqrt(c)*d^4*
e^6 + 1650*a^2*b^7*c^(3/2)*d^4*e^6 + 10760*a^3*b^5*c^(5/2)*d^4*e^6 - 9120*a
^4*b^3*c^(7/2)*d^4*e^6 + 9600*a^5*b*c^(9/2)*d^4*e^6 + 490*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^7*a*b^6*e^10 - 4200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
7*a^2*b^4*c*e^10 + 10080*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^3*b^2*c^2*
e^10 + 5760*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^7*a^4*c^3*e^10 + 1792*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b^7*d*e^9 - 12288*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^5*a^2*b^5*c*d*e^9 - 153600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*a^3*b^3*c^2*d*e^9 + 92160*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*b*c
^3*d*e^9 + 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^8*d^2*e^8 + 70090
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^6*c*d^2*e^8 - 45560*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^3*a^3*b^4*c^2*d^2*e^8 + 8160*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*a^4*b^2*c^3*d^2*e^8 + 109440*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^3*a^5*c^4*d^2*e^8 - 420*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^9*d
^3*e^7 + 750*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^7*c*d^3*e^7 - 52040*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^5*c^2*d^3*e^7 + 27040*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*a^4*b^3*c^3*d^3*e^7 + 128640*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*a^5*b*c^4*d^3*e^7 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^6*a^4*b*c^(5/2)*e^10 - 4480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*b^6
*sqrt(c)*d*e^9 - 89600*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^3*b^4*c^(3/2
)*d*e^9 + 30720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^5*c^(7/2)*d*e^9 + 1
5930*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*b^7*sqrt(c)*d^2*e^8 + 18440*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^5*c^(3/2)*d^2*e^8 - 16160*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^3*c^(5/2)*d^2*e^8 - 82560*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^2*a^5*b*c^(7/2)*d^2*e^8 + 630*a^2*b^8*sqrt(c)*d^3
*e^7 - 5310*a^3*b^6*c^(3/2)*d^3*e^7 - 7840*a^4*b^4*c^(5/2)*d^3*e^7 + 25248*
a^5*b^2*c^(7/2)*d^3*e^7 - 1792*a^6*c^(9/2)*d^3*e^7 - 896*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*a^2*b^6*e^10 + 7680*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^5*a^3*b^4*c*e^10 + 23040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a^4*b^2*c^2
*e^10 - 2370*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^7*d*e^9 - 41640*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^3*b^5*c*d*e^9 + 37280*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^3*a^4*b^3*c^2*d*e^9 - 48000*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))^3*a^5*b*c^3*d*e^9 + 630*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b
^8*d^2*e^8 + 6510*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b^6*c*d^2*e^8 + 2
8720*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^4*c^2*d^2*e^8 - 68640*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*a^5*b^2*c^3*d^2*e^8 - 46080*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))*a^6*c^4*d^2*e^8 + 32000*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^4*a^4*b^3*c^(3/2)*e^10 - 15360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^
5*b*c^(5/2)*e^10 - 12990*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b^6*sqrt
(c)*d*e^9 - 1480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^4*b^4*c^(3/2)*d*e^
9 + 31200*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^5*b^2*c^(5/2)*d*e^9 - 172
80*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^6*c^(7/2)*d*e^9 - 420*a^3*b^7*sq
rt(c)*d^2*e^8 + 7080*a^4*b^5*c^(3/2)*d^2*e^8 - 3712*a^5*b^3*c^(5/2)*d^2*e^8
 - 20352*a^6*b*c^(7/2)*d^2*e^8 + 790*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
a^3*b^6*e^10 + 8040*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^4*b^4*c*e^10 +
5280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^5*b^2*c^2*e^10 - 5760*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^3*a^6*c^3*e^10 - 420*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))*a^3*b^7*d*e^9 - 8280*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^5*
c*d*e^9 + 4480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^5*b^3*c^2*d*e^9 + 2880
0*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^6*b*c^3*d*e^9 + 3840*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))^2*a^4*b^5*sqrt(c)*e^10 - 2560*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^2*a^5*b^3*c^(3/2)*e^10 + 105*a^4*b^6*sqrt(c)*d*e^9 - 4740*a^5*
b^4*c^(3/2)*d*e^9 + 8304*a^6*b^2*c^(5/2)*d*e^9 + 5184*a^7*c^(7/2)*d*e^9 + 1
05*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*b^6*e^10 + 2940*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))*a^5*b^4*c*e^10 - 5520*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))*a^6*b^2*c^2*e^10 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^7*c^3*e^10
+ 1280*a^6*b^3*c^(3/2)*e^10 - 3072*a^7*b*c^(5/2)*e^10)/((c^4*d^8*e^3 - 4*b*
c^3*d^7*e^4 + 6*b^2*c^2*d^6*e^5 + 4*a*c^3*d^6*e^5 - 4*b^3*c*d^5*e^6 - 12*a*
b*c^2*d^5*e^6 + b^4*d^4*e^7 + 12*a*b^2*c*d^4*e^7 + 6*a^2*c^2*d^4*e^7 - 4*a*
b^3*d^3*e^8 - 12*a^2*b*c*d^3*e^8 + 6*a^2*b^2*d^2*e^9 + 4*a^3*c*d^2*e^9 - 4*
a^3*b*d*e^10 + a^4*e^11)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^5)
```

maple [B] time = 0.09, size = 15192, normalized size = 35.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                              +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{{(d+e\,x)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^6,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx) \sqrt{a + bx + cx^{2}}}{(d + ex)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**6,x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**6, x)
```

3.1557 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=379

$$\frac{3e\left(b^2-4ac\right)^3\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}-\frac{3e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}}{8192}$$

```
[Out] 1/1024*(-4*a*c+b^2)*e*(32*c^2*d^2+9*b^2*e^2-4*c*e*(a*e+8*b*d))*(2*c*x+b)*(c
*x^2+b*x+a)^(3/2)/c^4+3/56*(-b*e+2*c*d)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2)/c+1/4
*(e*x+d)^3*(c*x^2+b*x+a)^(5/2)+1/2240*(96*c^3*d^3-63*b^3*e^3+4*b*c*e^2*(61*
a*e+56*b*d)-8*c^2*d*e*(96*a*e+13*b*d)+10*c*e*(8*c^2*d^2+9*b^2*e^2-4*c*e*(7*
a*e+2*b*d))*x)*(c*x^2+b*x+a)^(5/2)/c^3+3/16384*(-4*a*c+b^2)^3*e*(32*c^2*d^2
+9*b^2*e^2-4*c*e*(a*e+8*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(
1/2))/c^(11/2)-3/8192*(-4*a*c+b^2)^2*e*(32*c^2*d^2+9*b^2*e^2-4*c*e*(a*e+8*b
*d))*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi [A] time = 0.51, antiderivative size = 379, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = $\{832, 779, 612, 621, 206\}$

$$-\frac{3e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\left(-4ce(ae+8bd)+9b^2e^2+32c^2d^2\right)}{8192c^5}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)}{10}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-3*(b^2 - 4*a*c)^2*e*(32*c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*(b + 2
*c*x)*Sqrt[a + b*x + c*x^2])/(8192*c^5) + ((b^2 - 4*a*c)*e*(32*c^2*d^2 + 9*
b^2*e^2 - 4*c*e*(8*b*d + a*e))*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(1024*c
^4) + (3*(2*c*d - b*e)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2))/(56*c) + ((d +
e*x)^3*(a + b*x + c*x^2)^(5/2))/4 + ((96*c^3*d^3 - 63*b^3*e^3 + 4*b*c*e^2*(
56*b*d + 61*a*e) - 8*c^2*d*e*(13*b*d + 96*a*e) + 10*c*e*(8*c^2*d^2 + 9*b^2*
e^2 - 4*c*e*(2*b*d + 7*a*e))*x)*(a + b*x + c*x^2)^(5/2))/(2240*c^3) + (3*(b
^2 - 4*a*c)^3*e*(32*c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{3/2}\,dx = \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)^{5/2} + \frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-}{8c}$$

$$= \frac{3(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}{56c} + \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)$$

$$= \frac{3(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}{56c} + \frac{1}{4}(d+ex)^3\left(a+bx+cx^2\right)$$

$$= \frac{\left(b^2-4ac\right)e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\left(a+bx+\right.}{1024c^4}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+b}}{8192c^5}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+b}}{8192c^5}$$

$$= -\frac{3\left(b^2-4ac\right)^2e\left(32c^2d^2+9b^2e^2-4ce(8bd+ae)\right)(b+2cx)\sqrt{a+b}}{8192c^5}$$

Mathematica [**A**] time = 0.69, size = 297, normalized size = 0.78

$$\frac{1}{8}\left(\frac{(a+x(b+cx))^{5/2}\left(-8c^2e(ae(96d+35ex)+bd(13d+10ex))+2bce^2(122ae+112bd+45bex)-63b^3e^3+16\right.}{280c^3}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((3*(2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(5/2))/(7*c) + 2*(d + e*x)^
3*(a + x*(b + c*x))^(5/2) + ((a + x*(b + c*x))^(5/2)*(-63*b^3*e^3 + 16*c^3*
d^2*(6*d + 5*e*x) + 2*b*c*e^2*(112*b*d + 122*a*e + 45*b*e*x) - 8*c^2*e*(b*d
*(13*d + 10*e*x) + a*e*(96*d + 35*e*x))))/(280*c^3) + ((b^2 - 4*a*c)*e*(32*
c^2*d^2 + 9*b^2*e^2 - 4*c*e*(8*b*d + a*e))*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a +
x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*A
rcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(2048*c^(11/2)))/8
```

fricas [B] time = 1.28, size = 1587, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/1146880*(105*(32*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*
d^2*e - 32*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d*e^2 + (
9*b^8 - 112*a*b^6*c + 480*a^2*b^4*c^2 - 768*a^3*b^2*c^3 + 256*a^4*c^4)*e^3)
*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(c) - 4*a*c) + 4*(71680*c^8*e^3*x^7 + 114688*a^2*c^6*d^3 + 5120*(48*
c^8*d*e^2 + 25*b*c^7*e^3)*x^6 + 1280*(224*c^8*d^2*e + 352*b*c^7*d*e^2 + (41
*b^2*c^6 + 84*a*c^7)*e^3)*x^5 + 128*(896*c^8*d^3 + 4256*b*c^7*d^2*e + 32*(4
7*b^2*c^6 + 96*a*c^7)*d*e^2 - 3*(b^3*c^5 - 188*a*b*c^6)*e^3)*x^4 - 224*(15*
b^5*c^3 - 160*a*b^3*c^4 + 528*a^2*b*c^5)*d^2*e + 32*(105*b^6*c^2 - 1120*a*b
^4*c^3 + 3696*a^2*b^2*c^4 - 3072*a^3*c^5)*d*e^2 - (945*b^7*c - 10500*a*b^5*
c^2 + 37744*a^2*b^3*c^3 - 42432*a^3*b*c^4)*e^3 + 16*(14336*b*c^7*d^3 + 224*
(69*b^2*c^6 + 140*a*c^7)*d^2*e - 32*(3*b^3*c^5 - 556*a*b*c^6)*d*e^2 + (27*b
^4*c^4 - 216*a*b^2*c^5 + 560*a^2*c^6)*e^3)*x^3 + 8*(14336*(b^2*c^6 + 2*a*c^
7)*d^3 - 224*(b^3*c^5 - 228*a*b*c^6)*d^2*e + 32*(7*b^4*c^4 - 60*a*b^2*c^5 +
 192*a^2*c^6)*d*e^2 - (63*b^5*c^3 - 568*a*b^3*c^4 + 1392*a^2*b*c^5)*e^3)*x^
2 + 2*(114688*a*b*c^6*d^3 + 224*(5*b^4*c^4 - 48*a*b^2*c^5 + 240*a^2*c^6)*d^
2*e - 32*(35*b^5*c^3 - 336*a*b^3*c^4 + 912*a^2*b*c^5)*d*e^2 + (315*b^6*c^2
- 3164*a*b^4*c^3 + 9552*a^2*b^2*c^4 - 6720*a^3*c^5)*e^3)*x)*sqrt(c*x^2 + b*
x + a))/c^6, -1/573440*(105*(32*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
64*a^3*c^5)*d^2*e - 32*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^
4)*d*e^2 + (9*b^8 - 112*a*b^6*c + 480*a^2*b^4*c^2 - 768*a^3*b^2*c^3 + 256*a
^4*c^4)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)
/(c^2*x^2 + b*c*x + a*c)) - 2*(71680*c^8*e^3*x^7 + 114688*a^2*c^6*d^3 + 512
0*(48*c^8*d*e^2 + 25*b*c^7*e^3)*x^6 + 1280*(224*c^8*d^2*e + 352*b*c^7*d*e^2
 + (41*b^2*c^6 + 84*a*c^7)*e^3)*x^5 + 128*(896*c^8*d^3 + 4256*b*c^7*d^2*e +
 32*(47*b^2*c^6 + 96*a*c^7)*d*e^2 - 3*(b^3*c^5 - 188*a*b*c^6)*e^3)*x^4 - 22
4*(15*b^5*c^3 - 160*a*b^3*c^4 + 528*a^2*b*c^5)*d^2*e + 32*(105*b^6*c^2 - 11
20*a*b^4*c^3 + 3696*a^2*b^2*c^4 - 3072*a^3*c^5)*d*e^2 - (945*b^7*c - 10500*
a*b^5*c^2 + 37744*a^2*b^3*c^3 - 42432*a^3*b*c^4)*e^3 + 16*(14336*b*c^7*d^3
+ 224*(69*b^2*c^6 + 140*a*c^7)*d^2*e - 32*(3*b^3*c^5 - 556*a*b*c^6)*d*e^2 +
 (27*b^4*c^4 - 216*a*b^2*c^5 + 560*a^2*c^6)*e^3)*x^3 + 8*(14336*(b^2*c^6 +
2*a*c^7)*d^3 - 224*(b^3*c^5 - 228*a*b*c^6)*d^2*e + 32*(7*b^4*c^4 - 60*a*b^2
*c^5 + 192*a^2*c^6)*d*e^2 - (63*b^5*c^3 - 568*a*b^3*c^4 + 1392*a^2*b*c^5)*e
^3)*x^2 + 2*(114688*a*b*c^6*d^3 + 224*(5*b^4*c^4 - 48*a*b^2*c^5 + 240*a^2*c
^6)*d^2*e - 32*(35*b^5*c^3 - 336*a*b^3*c^4 + 912*a^2*b*c^5)*d*e^2 + (315*b^
6*c^2 - 3164*a*b^4*c^3 + 9552*a^2*b^2*c^4 - 6720*a^3*c^5)*e^3)*x)*sqrt(c*x^
2 + b*x + a))/c^6]
```

giac [B] time = 0.27, size = 856, normalized size = 2.26

$$\frac{1}{286720}\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\left(4\left(14\,c^2xe^3+\frac{48\,c^9de^2+25\,bc^8e^3}{c^7}\right)x+\frac{224\,c^9d^2e+352\,bc^8de^2+41\,b^2c^7e^3}{c^7}\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/286720*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(4*(14*c^2*x*e^3 + (48*c^9*d
*e^2 + 25*b*c^8*e^3)/c^7)*x + (224*c^9*d^2*e + 352*b*c^8*d*e^2 + 41*b^2*c^7
*e^3 + 84*a*c^8*e^3)/c^7)*x + (896*c^9*d^3 + 4256*b*c^8*d^2*e + 1504*b^2*c^
7*d*e^2 + 3072*a*c^8*d*e^2 - 3*b^3*c^6*e^3 + 564*a*b*c^7*e^3)/c^7)*x + (143
36*b*c^8*d^3 + 15456*b^2*c^7*d^2*e + 31360*a*c^8*d^2*e - 96*b^3*c^6*d*e^2 +
 17792*a*b*c^7*d*e^2 + 27*b^4*c^5*e^3 - 216*a*b^2*c^6*e^3 + 560*a^2*c^7*e^3
)/c^7)*x + (14336*b^2*c^7*d^3 + 28672*a*c^8*d^3 - 224*b^3*c^6*d^2*e + 51072
*a*b*c^7*d^2*e + 224*b^4*c^5*d*e^2 - 1920*a*b^2*c^6*d*e^2 + 6144*a^2*c^7*d*
e^2 - 63*b^5*c^4*e^3 + 568*a*b^3*c^5*e^3 - 1392*a^2*b*c^6*e^3)/c^7)*x + (11
4688*a*b*c^7*d^3 + 1120*b^4*c^5*d^2*e - 10752*a*b^2*c^6*d^2*e + 53760*a^2*c
^7*d^2*e - 1120*b^5*c^4*d*e^2 + 10752*a*b^3*c^5*d*e^2 - 29184*a^2*b*c^6*d*e
^2 + 315*b^6*c^3*e^3 - 3164*a*b^4*c^4*e^3 + 9552*a^2*b^2*c^5*e^3 - 6720*a^3
*c^6*e^3)/c^7)*x + (114688*a^2*c^7*d^3 - 3360*b^5*c^4*d^2*e + 35840*a*b^3*c
^5*d^2*e - 118272*a^2*b*c^6*d^2*e + 3360*b^6*c^3*d*e^2 - 35840*a*b^4*c^4*d*
e^2 + 118272*a^2*b^2*c^5*d*e^2 - 98304*a^3*c^6*d*e^2 - 945*b^7*c^2*e^3 + 10
500*a*b^5*c^3*e^3 - 37744*a^2*b^3*c^4*e^3 + 42432*a^3*b*c^5*e^3)/c^7) - 3/1
6384*(32*b^6*c^2*d^2*e - 384*a*b^4*c^3*d^2*e + 1536*a^2*b^2*c^4*d^2*e - 204
8*a^3*c^5*d^2*e - 32*b^7*c*d*e^2 + 384*a*b^5*c^2*d*e^2 - 1536*a^2*b^3*c^3*d
*e^2 + 2048*a^3*b*c^4*d*e^2 + 9*b^8*e^3 - 112*a*b^6*c*e^3 + 480*a^2*b^4*c^2
*e^3 - 768*a^3*b^2*c^3*e^3 + 256*a^4*c^4*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.08, size = 1607, normalized size = 4.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 9/512/c^3*e^3*b^4*x*(c*x^2+b*x+a)^(3/2)-27/4096/c^4*e^3*b^6*(c*x^2+b*x+a)^(
1/2)*x+57/2048/c^4*e^3*b^5*(c*x^2+b*x+a)^(1/2)*a-5/128/c^3*e^3*b^3*a*(c*x^2
+b*x+a)^(3/2)+2/5*(c*x^2+b*x+a)^(5/2)*d^3+9/128*b^5/c^(7/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e^2-9/32*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2
)+(c*x^2+b*x+a)^(1/2))*a^2*d*e^2+3/8*b/c^(3/2)*a^3*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))*d*e^2-3/32*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a*d*e^2-1/16*b^3
/c^2*x*(c*x^2+b*x+a)^(3/2)*d*e^2-1/7*b/c*x*(c*x^2+b*x+a)^(5/2)*d*e^2+3/16*b
^2/c^2*a^2*(c*x^2+b*x+a)^(1/2)*d*e^2+1/8*b^2/c^2*a*(c*x^2+b*x+a)^(3/2)*d*e^
2+3/128*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x*d*e^2+57/1024/c^3*e^3*b^4*(c*x^2+b*x+
a)^(1/2)*x*a-33/512/c^3*e^3*b^3*a^2*(c*x^2+b*x+a)^(1/2)-1/8/c*e^3*a*x*(c*x^
2+b*x+a)^(5/2)+1/32/c*e^3*a^2*x*(c*x^2+b*x+a)^(3/2)+1/64/c^2*e^3*a^2*(c*x^2
+b*x+a)^(3/2)*b+3/64/c*e^3*a^3*(c*x^2+b*x+a)^(1/2)*x+3/128/c^2*e^3*a^3*(c*x
^2+b*x+a)^(1/2)*b+3/8*b/c*a^2*(c*x^2+b*x+a)^(1/2)*x*d*e^2+1/4*b/c*a*x*(c*x^
2+b*x+a)^(3/2)*d*e^2+3/16*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a*d^2*e-3/16*b^3/c^2*
(c*x^2+b*x+a)^(1/2)*x*a*d*e^2+6/7*x^2*(c*x^2+b*x+a)^(5/2)*d*e^2+x*(c*x^2+b*
x+a)^(5/2)*d^2*e-9/320/c^3*e^3*b^3*(c*x^2+b*x+a)^(5/2)+9/1024/c^4*e^3*b^5*(
c*x^2+b*x+a)^(3/2)-27/8192/c^5*e^3*b^7*(c*x^2+b*x+a)^(1/2)+27/16384/c^(11/2
)*e^3*b^8*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/64/c^(3/2)*e^3*a^4*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3/8*a^3/c^(1/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+3/256*b^6/c^4*(c*x^2+b*x+a)^(1/2)*d*e^2-
3/8*a^2*(c*x^2+b*x+a)^(1/2)*x*d^2*e+1/4*e^3*x^3*(c*x^2+b*x+a)^(5/2)-3/128*b
^4/c^2*(c*x^2+b*x+a)^(1/2)*x*d^2*e+3/32*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a*d^2*e
+1/16*b^2/c*x*(c*x^2+b*x+a)^(3/2)*d^2*e-3/16*a^2/c*(c*x^2+b*x+a)^(1/2)*b*d^
2*e-9/128*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d^2*e+9
/32*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d^2*e-1/8*a
/c*(c*x^2+b*x+a)^(3/2)*b*d^2*e-5/64/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(3/2)-33/
256/c^2*e^3*b^2*a^2*(c*x^2+b*x+a)^(1/2)*x+1/32*b^3/c^2*(c*x^2+b*x+a)^(3/2)*
d^2*e-3/256*b^5/c^3*(c*x^2+b*x+a)^(1/2)*d^2*e-1/4*a*x*(c*x^2+b*x+a)^(3/2)*d
^2*e+1/10*b^2/c^2*(c*x^2+b*x+a)^(5/2)*d*e^2-1/32*b^4/c^3*(c*x^2+b*x+a)^(3/2
)*d*e^2-12/35*a/c*(c*x^2+b*x+a)^(5/2)*d*e^2-3/56/c*e^3*b*x^2*(c*x^2+b*x+a)^
(5/2)+61/560/c^2*e^3*b*a*(c*x^2+b*x+a)^(5/2)+9/224/c^2*e^3*b^2*x*(c*x^2+b*x
+a)^(5/2)-9/64/c^(5/2)*e^3*b^2*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/
2))+45/512/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-
```

```
21/1024/c^(9/2)*e^3*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+3/512
*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-1/10*b/c*(c*
x^2+b*x+a)^(5/2)*d^2*e-3/512*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*d*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,(d+e\,x)^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(3/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)^3\,\left(a+bx+cx^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3*(a + b*x + c*x**2)**(3/2), x)
```

3.1558 $\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=242

$$\frac{e\left(b^2-4ac\right)^3(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{9/2}}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}\,(2cd-be)}{256c^4}+\frac{e\left(b^2-4ac\right)}{}$$

```
[Out] 1/96*(-4*a*c+b^2)*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^3+2/7*(e*x
+d)^2*(c*x^2+b*x+a)^(5/2)+1/210*(24*c^2*d^2+7*b^2*e^2-2*c*e*(12*a*e+7*b*d)+
10*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(5/2)/c^2+1/512*(-4*a*c+b^2)^3*e*(-b*e
+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)-1/256*(-
4*a*c+b^2)^2*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^4
```

Rubi [A] time = 0.45, antiderivative size = 242, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {832, 779, 612, 621, 206}

$$\frac{\left(a+bx+cx^2\right)^{5/2}\left(-2ce(12ae+7bd)+7b^2e^2+10cex(2cd-be)+24c^2d^2\right)}{210c^2}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx}}{256c^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(256*c
^4) + ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(
96*c^3) + (2*(d + e*x)^2*(a + b*x + c*x^2)^(5/2))/7 + ((24*c^2*d^2 + 7*b^2*
e^2 - 2*c*e*(7*b*d + 12*a*e) + 10*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(5
/2))/(210*c^2) + ((b^2 - 4*a*c)^3*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sq
rt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{3/2}\,dx &= \frac{2}{7}(d+ex)^2\left(a+bx+cx^2\right)^{5/2}+\frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-be)}{7c} \\
&= \frac{2}{7}(d+ex)^2\left(a+bx+cx^2\right)^{5/2}+\frac{\left(24c^2d^2+7b^2e^2-2ce(7bd+12ae)+1\right.}{210c^2} \\
&= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^3}+\frac{2}{7}(d+ex)^2\left(a+b\right. \\
&= -\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2cd-}{} \\
&= -\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2cd-}{} \\
&= -\frac{\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{256c^4}+\frac{\left(b^2-4ac\right)e(2cd-}{}
\end{aligned}$$

Mathematica [A] time = 0.34, size = 204, normalized size = 0.84

$$-\frac{e\left(b^2-4ac\right)(be-2cd)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\,\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{}{2\sqrt{c}}\right.\right.}{1536c^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(5/2))/7 + ((a + x*(b + c*x))^(5/2)*(7*b^2
*e^2 + 4*c^2*d*(6*d + 5*e*x) - 2*c*e*(7*b*d + 12*a*e + 5*b*e*x)))/(210*c^2)
 - ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c
*x)]*(-3*b^2 + 8*b*c*x + 4*c*(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(1536*c^(9/2))
```

fricas [B] time = 1.27, size = 1015, normalized size = 4.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/107520*(105*(2*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d*e
- (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*e^2)*sqrt(c)*log(-8*c^
2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c
) + 4*(7680*c^7*e^2*x^6 + 10752*a^2*c^5*d^2 + 1280*(14*c^7*d*e + 11*b*c^6*e
^2)*x^5 + 128*(84*c^7*d^2 + 266*b*c^6*d*e + (47*b^2*c^5 + 96*a*c^6)*e^2)*x^
4 + 16*(1344*b*c^6*d^2 + 14*(69*b^2*c^5 + 140*a*c^6)*d*e - (3*b^3*c^4 - 556
*a*b*c^5)*e^2)*x^3 - 14*(15*b^5*c^2 - 160*a*b^3*c^3 + 528*a^2*b*c^4)*d*e +
(105*b^6*c - 1120*a*b^4*c^2 + 3696*a^2*b^2*c^3 - 3072*a^3*c^4)*e^2 + 8*(134
4*(b^2*c^5 + 2*a*c^6)*d^2 - 14*(b^3*c^4 - 228*a*b*c^5)*d*e + (7*b^4*c^3 - 6
0*a*b^2*c^4 + 192*a^2*c^5)*e^2)*x^2 + 2*(10752*a*b*c^5*d^2 + 14*(5*b^4*c^3
- 48*a*b^2*c^4 + 240*a^2*c^5)*d*e - (35*b^5*c^2 - 336*a*b^3*c^3 + 912*a^2*b
*c^4)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^5, -1/53760*(105*(2*(b^6*c - 12*a*b^
4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d*e - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c
^2 - 64*a^3*b*c^3)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(7680*c^7*e^2*x^6 + 10752*a^2*c^5*
d^2 + 1280*(14*c^7*d*e + 11*b*c^6*e^2)*x^5 + 128*(84*c^7*d^2 + 266*b*c^6*d*
e + (47*b^2*c^5 + 96*a*c^6)*e^2)*x^4 + 16*(1344*b*c^6*d^2 + 14*(69*b^2*c^5
+ 140*a*c^6)*d*e - (3*b^3*c^4 - 556*a*b*c^5)*e^2)*x^3 - 14*(15*b^5*c^2 - 16
0*a*b^3*c^3 + 528*a^2*b*c^4)*d*e + (105*b^6*c - 1120*a*b^4*c^2 + 3696*a^2*b
^2*c^3 - 3072*a^3*c^4)*e^2 + 8*(1344*(b^2*c^5 + 2*a*c^6)*d^2 - 14*(b^3*c^4
- 228*a*b*c^5)*d*e + (7*b^4*c^3 - 60*a*b^2*c^4 + 192*a^2*c^5)*e^2)*x^2 + 2*
(10752*a*b*c^5*d^2 + 14*(5*b^4*c^3 - 48*a*b^2*c^4 + 240*a^2*c^5)*d*e - (35*
b^5*c^2 - 336*a*b^3*c^3 + 912*a^2*b*c^4)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^5
]
```

giac [B] time = 0.25, size = 534, normalized size = 2.21

$$\frac{1}{26880}\sqrt{cx^2+bx+a}\,\Bigg(2\,\Bigg(4\,\Bigg(2\,\Bigg(8\,\Bigg(10\,\Bigg(6\,c^2xe^2+\frac{14\,c^8de+11\,bc^7e^2}{c^6}\Bigg)x+\frac{84\,c^8d^2+266\,bc^7de+47\,b^2c^6e^2+96\,a}{c^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/26880*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*(6*c^2*x*e^2 + (14*c^8*d*e +
11*b*c^7*e^2)/c^6)*x + (84*c^8*d^2 + 266*b*c^7*d*e + 47*b^2*c^6*e^2 + 96*a*
c^7*e^2)/c^6)*x + (1344*b*c^7*d^2 + 966*b^2*c^6*d*e + 1960*a*c^7*d*e - 3*b^
3*c^5*e^2 + 556*a*b*c^6*e^2)/c^6)*x + (1344*b^2*c^6*d^2 + 2688*a*c^7*d^2 -
14*b^3*c^5*d*e + 3192*a*b*c^6*d*e + 7*b^4*c^4*e^2 - 60*a*b^2*c^5*e^2 + 192*
a^2*c^6*e^2)/c^6)*x + (10752*a*b*c^6*d^2 + 70*b^4*c^4*d*e - 672*a*b^2*c^5*d
*e + 3360*a^2*c^6*d*e - 35*b^5*c^3*e^2 + 336*a*b^3*c^4*e^2 - 912*a^2*b*c^5*
e^2)/c^6)*x + (10752*a^2*c^6*d^2 - 210*b^5*c^3*d*e + 2240*a*b^3*c^4*d*e - 7
392*a^2*b*c^5*d*e + 105*b^6*c^2*e^2 - 1120*a*b^4*c^3*e^2 + 3696*a^2*b^2*c^4
*e^2 - 3072*a^3*c^5*e^2)/c^6) - 1/512*(2*b^6*c*d*e - 24*a*b^4*c^2*d*e + 96*
a^2*b^2*c^3*d*e - 128*a^3*c^4*d*e - b^7*e^2 + 12*a*b^5*c*e^2 - 48*a^2*b^3*c
^2*e^2 + 64*a^3*b*c^3*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*s
qrt(c) - b))/c^(9/2)
```

maple [B] time = 0.08, size = 895, normalized size = 3.70

$$\frac{a^3b\,e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{3}{2}}}-\frac{a^3de\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4\sqrt{c}}-\frac{3a^2b^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{32c^{\frac{5}{2}}}+3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 1/8/c*e^2*b*a^2*(c*x^2+b*x+a)^(1/2)*x+1/12/c*e^2*b*a*x*(c*x^2+b*x+a)^(3/2)-
1/16/c^2*e^2*b^3*(c*x^2+b*x+a)^(1/2)*x*a-1/12*a/c*(c*x^2+b*x+a)^(3/2)*b*d*e
-1/8*a^2/c*(c*x^2+b*x+a)^(1/2)*b*d*e+1/8*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a*d*e-
1/512/c^(9/2)*e^2*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/96/c^3*
```

```
e^2*b^4*(c*x^2+b*x+a)^(3/2)+1/256/c^4*e^2*b^6*(c*x^2+b*x+a)^(1/2)-4/35/c*e^
2*a*(c*x^2+b*x+a)^(5/2)+1/30/c^2*e^2*b^2*(c*x^2+b*x+a)^(5/2)+2/3*x*(c*x^2+b
*x+a)^(5/2)*d*e+2/7*e^2*x^2*(c*x^2+b*x+a)^(5/2)-1/4*a^3/c^(1/2)*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+2/5*(c*x^2+b*x+a)^(5/2)*d^2+1/256*b^6/
c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/6*a*x*(c*x^2+b*x+
a)^(3/2)*d*e-1/21/c*e^2*b*x*(c*x^2+b*x+a)^(5/2)-1/48/c^2*e^2*b^3*x*(c*x^2+b
*x+a)^(3/2)+1/128/c^3*e^2*b^5*(c*x^2+b*x+a)^(1/2)*x-1/4*a^2*(c*x^2+b*x+a)^(
1/2)*x*d*e+1/16*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a*d*e+1/24*b^2/c*x*(c*x^2+b*x+a
)^(3/2)*d*e+1/8/c^(3/2)*e^2*b*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))-3/32/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+3/1
28/c^(7/2)*e^2*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-1/15*b/c*(
c*x^2+b*x+a)^(5/2)*d*e+1/48*b^3/c^2*(c*x^2+b*x+a)^(3/2)*d*e-1/128*b^5/c^3*(
c*x^2+b*x+a)^(1/2)*d*e+1/24/c^2*e^2*b^2*a*(c*x^2+b*x+a)^(3/2)+1/16/c^2*e^2*
b^2*a^2*(c*x^2+b*x+a)^(1/2)-1/32/c^3*e^2*b^4*(c*x^2+b*x+a)^(1/2)*a-1/64*b^4
/c^2*(c*x^2+b*x+a)^(1/2)*x*d*e+3/16*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x
^2+b*x+a)^(1/2))*a^2*d*e-3/64*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))*a*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b + 2cx\right) \left(d + ex\right)^{2} \left(a + bx + cx^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*(a + b*x + c*x**2)**(3/2), x)
```

3.1559 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=160

$$\frac{e\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{512c^{7/2}}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}}{256c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+c\right.}{96c^2}$$

```
[Out] 1/96*(-4*a*c+b^2)*e*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^2+1/30*(10*c*e*x-b*e+12
*c*d)*(c*x^2+b*x+a)^(5/2)/c+1/512*(-4*a*c+b^2)^3*e*arctanh(1/2*(2*c*x+b)/c^
(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)-1/256*(-4*a*c+b^2)^2*e*(2*c*x+b)*(c*x^2+
b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.12, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$-\frac{e\left(b^2-4ac\right)^2(b+2cx)\sqrt{a+bx+cx^2}}{256c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^2}+\frac{e\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2}{2\sqrt{c}\sqrt{a+}}\right.}{512c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -((b^2 - 4*a*c)^2*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(256*c^3) + ((b^2 -
4*a*c)*e*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(96*c^2) + ((12*c*d - b*e + 1
0*c*e*x)*(a + b*x + c*x^2)^(5/2))/(30*c) + ((b^2 - 4*a*c)^3*e*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{3/2}\,dx &= \frac{(12cd-be+10cex)\left(a+bx+cx^2\right)^{5/2}}{30c} + \frac{\left(\left(b^2-4ac\right)e\right)\int \left(a+bx+cx^2\right.}{12c} \\
&= \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{96c^2} + \frac{(12cd-be+10cex)\left(a+bx\right.}{30c} \\
&= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx\right.}{96c^2} \\
&= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx\right.}{96c^2} \\
&= -\frac{\left(b^2-4ac\right)^2 e(b+2cx)\sqrt{a+bx+cx^2}}{256c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx\right.}{96c^2}
\end{aligned}
$$

Mathematica [A] time = 0.19, size = 147, normalized size = 0.92

$$
\frac{e\left(b^2-4ac\right)\left(2\sqrt{c}\,(b+2cx)\sqrt{a+x(b+cx)}\,\left(4c\left(5a+2cx^2\right)-3b^2+8bcx\right)+3\left(b^2-4ac\right)^2\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)\right)}{1536c^{7/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((a + x*(b + c*x))^(5/2)*(-(b*e) + 2*c*(6*d + 5*e*x)))/(30*c) + ((b^2 - 4*a
*c)*e*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)]*(-3*b^2 + 8*b*c*x + 4*c*
(5*a + 2*c*x^2)) + 3*(b^2 - 4*a*c)^2*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
+ x*(b + c*x)])]))/(1536*c^(7/2))
```

fricas [B] time = 0.80, size = 559, normalized size = 3.49

$$
\left[-\frac{15\left(b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3\right)\sqrt{c}\,e\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)-}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/15360*(15*(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3)*sqrt(c)*e*lo
g(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
- 4*a*c) - 4*(1280*c^6*e*x^5 + 1536*a^2*c^4*d + 128*(12*c^6*d + 19*b*c^5*e)
*x^4 + 16*(192*b*c^5*d + (69*b^2*c^4 + 140*a*c^5)*e)*x^3 + 8*(192*(b^2*c^4
+ 2*a*c^5)*d - (b^3*c^3 - 228*a*b*c^4)*e)*x^2 - (15*b^5*c - 160*a*b^3*c^2 +
 528*a^2*b*c^3)*e + 2*(1536*a*b*c^4*d + (5*b^4*c^2 - 48*a*b^2*c^3 + 240*a^2
*c^4)*e)*x)*sqrt(c*x^2 + b*x + a))/c^4, -1/7680*(15*(b^6 - 12*a*b^4*c + 48*
a^2*b^2*c^2 - 64*a^3*c^3)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*
x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(1280*c^6*e*x^5 + 1536*a^2*c^4
*d + 128*(12*c^6*d + 19*b*c^5*e)*x^4 + 16*(192*b*c^5*d + (69*b^2*c^4 + 140*
a*c^5)*e)*x^3 + 8*(192*(b^2*c^4 + 2*a*c^5)*d - (b^3*c^3 - 228*a*b*c^4)*e)*x
^2 - (15*b^5*c - 160*a*b^3*c^2 + 528*a^2*b*c^3)*e + 2*(1536*a*b*c^4*d + (5*
b^4*c^2 - 48*a*b^2*c^3 + 240*a^2*c^4)*e)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [B] time = 0.26, size = 294, normalized size = 1.84

$$
\frac{1}{3840}\,\sqrt{cx^2+bx+a}\left(2\left(4\left(2\left(8\left(10\,c^2xe+\frac{12\,c^7d+19\,bc^6e}{c^5}\right)x+\frac{192\,bc^6d+69\,b^2c^5e+140\,ac^6e}{c^5}\right)x+\frac{192\,b^2c^5d+}{}\right.\right.\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/3840*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(10*c^2*x*e + (12*c^7*d + 19*b*c^6
*e)/c^5)*x + (192*b*c^6*d + 69*b^2*c^5*e + 140*a*c^6*e)/c^5)*x + (192*b^2*c
^5*d + 384*a*c^6*d - b^3*c^4*e + 228*a*b*c^5*e)/c^5)*x + (1536*a*b*c^5*d +
5*b^4*c^3*e - 48*a*b^2*c^4*e + 240*a^2*c^5*e)/c^5)*x + (1536*a^2*c^5*d - 15
*b^5*c^2*e + 160*a*b^3*c^3*e - 528*a^2*b*c^4*e)/c^5) - 1/512*(b^6*e - 12*a*
b^4*c*e + 48*a^2*b^2*c^2*e - 64*a^3*c^3*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 401, normalized size = 2.51

$$-\frac{a^{3}e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{8\sqrt{c}}+\frac{3a^{2}b^{2}e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{32c^{\frac{3}{2}}}-\frac{3a\,b^{4}e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{128c^{\frac{5}{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/8*e*a^2*(c*x^2+b*x+a)^(1/2)*x-1/12*e*a*x*(c*x^2+b*x+a)^(3/2)+1/96/c^2*e*
b^3*(c*x^2+b*x+a)^(3/2)-1/256/c^3*e*b^5*(c*x^2+b*x+a)^(1/2)-1/30/c*e*b*(c*x
^2+b*x+a)^(5/2)-3/128/c^(5/2)*e*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*a+1/16/c*e*b^2*(c*x^2+b*x+a)^(1/2)*x*a+3/32/c^(3/2)*e*b^2*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-1/16/c*e*a^2*(c*x^2+b*x+a)^(1/2)*b-1/8/
c^(1/2)*e*a^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/24/c*e*a*(c*x^2
+b*x+a)^(3/2)*b+1/512/c^(7/2)*e*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))-1/128/c^2*e*b^4*(c*x^2+b*x+a)^(1/2)*x+1/32/c^2*e*b^3*(c*x^2+b*x+a)^(1/
2)*a+1/48/c*e*b^2*x*(c*x^2+b*x+a)^(3/2)+2/5*(c*x^2+b*x+a)^(5/2)*d+1/3*e*x*(
c*x^2+b*x+a)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (b+2\,c\,x)\,(d+e\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b + 2cx\right) \left(d + ex\right) \left(a + bx + cx^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)*(a + b*x + c*x**2)**(3/2), x)
```

3.1560 $\int (b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

```
[Out] 2/5*(c*x^2+b*x+a)^(5/2)
```

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(5/2))/5
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^{3/2}\,dx=\frac{2}{5}\left(a+bx+cx^2\right)^{5/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{5}(a+x(b+cx))^{5/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(a + x*(b + c*x))^(5/2))/5
```

fricas [B] time = 0.90, size = 49, normalized size = 2.72

$$\frac{2}{5}\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2)*sqrt(c*x^2 +
b*x + a)
```

giac [A] time = 0.19, size = 14, normalized size = 0.78

$$\frac{2}{5}\left(cx^2+bx+a\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(c*x^2 + b*x + a)^(5/2)
```

maple **[A]** time = 0.04, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^2+bx+a\right)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/5*(c*x^2+b*x+a)^(5/2)
```

maxima **[A]** time = 0.51, size = 14, normalized size = 0.78

$$\frac{2}{5}\left(cx^2+bx+a\right)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*(c*x^2 + b*x + a)^(5/2)
```

mupad **[B]** time = 1.92, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^2+b\,x+a\right)^{5/2}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*(a + b*x + c*x^2)^(5/2))/5
```

sympy **[B]** time = 0.61, size = 136, normalized size = 7.56

$$\frac{2a^2\sqrt{a+bx+cx^2}}{5}+\frac{4abx\sqrt{a+bx+cx^2}}{5}+\frac{4acx^2\sqrt{a+bx+cx^2}}{5}+\frac{2b^2x^2\sqrt{a+bx+cx^2}}{5}+\frac{4bcx^3\sqrt{a+bx+cx^2}}{5}+2c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] 2*a**2*sqrt(a + b*x + c*x**2)/5 + 4*a*b*x*sqrt(a + b*x + c*x**2)/5 + 4*a*c*
x**2*sqrt(a + b*x + c*x**2)/5 + 2*b**2*x**2*sqrt(a + b*x + c*x**2)/5 + 4*b*
c*x**3*sqrt(a + b*x + c*x**2)/5 + 2*c**2*x**4*sqrt(a + b*x + c*x**2)/5
```

3.1561 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=360

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx}}\right.}{64c^{3/2}e^5}$$

```
[Out] -1/12*(-6*c*e*x-7*b*e+8*c*d)*(c*x^2+b*x+a)^(3/2)/e^2+1/64*(128*c^4*d^4-b^4*
e^4-8*b^2*c*e^3*(-3*a*e+2*b*d)-64*c^3*d^2*e*(-3*a*e+4*b*d)+48*c^2*e^2*(a^2*
e^2-4*a*b*d*e+3*b^2*d^2))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2)
)/c^(3/2)/e^5-(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^(3/2)*arctanh(1/2*(b*d-2*a*e
+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^5-1/32*(6
4*c^3*d^3-b^3*e^3+4*b*c*e^2*(-11*a*e+12*b*d)-16*c^2*d*e*(-4*a*e+7*b*d)-2*c*
e*(16*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))*x)*(c*x^2+b*x+a)^(1/2)/c/e^4
```

Rubi [A] time = 0.60, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {814, 843, 621, 206, 724}

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx}}\right.}{64c^{3/2}e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((64*c^3*d^3 - b^3*e^3 + 4*b*c*e^2*(12*b*d - 11*a*e) - 16*c^2*d*e*(7*b*d -
 4*a*e) - 2*c*e*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))*x)*Sqrt[a +
b*x + c*x^2])/(32*c*e^4) - ((8*c*d - 7*b*e - 6*c*e*x)*(a + b*x + c*x^2)^(3/
2))/(12*e^2) + ((128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c
^3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(3/2)*e^5) - ((
2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^(3/2)*ArcTanh[(b*d - 2*a*e + (2*c*d -
b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/e^5
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{d+ex}\,dx = -\frac{(8cd-7be-6cex)\left(a+bx+cx^2\right)^{3/2}}{12e^2} - \frac{\int \frac{(c(7b^2de+4acde-8b(cd^2+ae^2))-c(16c^2d^2+b^2e}{d+ex}}{8ce^2}$$

$$= -\frac{(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\,(16c^2d^2+b^2}{32ce^4}$$

$$= -\frac{(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\,(16c^2d^2+b^2}{32ce^4}$$

$$= -\frac{(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\,(16c^2d^2+b^2}{32ce^4}$$

$$= -\frac{(64c^3d^3-b^3e^3+4bce^2(12bd-11ae)-16c^2de(7bd-4ae)-2ce\,(16c^2d^2+b^2}{32ce^4}$$

Mathematica [A] time = 0.74, size = 342, normalized size = 0.95

$$\frac{3\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (3*(128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c^3*d^2*e*(4*b
*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*
c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 2*Sqrt[c]*(e*Sqrt[a + x*(b + c*x)
]*(3*b^3*e^3 + 2*b*c*e^2*(-72*b*d + 94*a*e + 31*b*e*x) - 16*c^3*(12*d^3 - 6
*d^2*e*x + 4*d*e^2*x^2 - 3*e^3*x^3) + 8*c^2*e*(a*e*(-32*d + 15*e*x) + b*(42
*d^2 - 20*d*e*x + 13*e^2*x^2))) + 96*c*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a
*e))^(3/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(
b*d) + a*e)]*Sqrt[a + x*(b + c*x)])]))/(192*c^(3/2)*e^5)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 3119, normalized size = 8.66

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x)
```

```
[Out] -6/e^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b
*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*
(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b*d^2*c-4/e^4*ln(((x+d
/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2))*c^(3/2)*d^3*b+3/4*c/e*(c*x^2+b*x+a)^(1/2)*x*a+1/4/
e*(c*x^2+b*x+a)^(3/2)*b+1/3/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(3/2)*b+2/e^5*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(5/2)*d^4+3
/4*c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+3/64/c^(3/2)/e
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*b^4-3/32/c/e*(c*x^2+b*x+a)^(1/
2)*b^3-3/16/e*(c*x^2+b*x+a)^(1/2)*x*b^2+1/2*c/e*(c*x^2+b*x+a)^(3/2)*x-1/16/
e/c^(3/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*b^4-2/e^4*((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c^2*d^3+3/8/e*(c*x^2+b*x+a)^(1/
2)*b*a+1/8/e/c*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*b^3-2/3/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(3/2)*c*d-3/2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*b^2*d+1/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*a*b+1/4/e*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*x*b^2+2/e^6/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(
x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d
^5+7/2/e^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*b*d^2*c+3/4/e/c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*a*b^2-1/e/((a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2
+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a^2*b+1/e^3*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2-1/e^3/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*b^3*d^2+3/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1
/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(3
/2)*d^2*a+9/4/e^3*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*c^(1/2)*b^2*d^2-1/4/e^2/
c^(1/2)*ln(((x+d/e)*c+1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))*b^3*d-3/e^2*c^(1/2)*ln(((x+d/e)*c+
1/2*(b*e-2*c*d)/e)/c^(1/2)+((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2))*a*b*d+4/e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c
*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*
b^2*d^3*c-1/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*x*b*c*d+2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e
)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a^2*c*d+4/
e^4/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*
e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*c^2*d^3+2/e^2/((a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*a*b^2*d-5/e^5/((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2))/(x+d/e))*b*d^4*c^2-3/8/c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*b^2*a-2/e^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*a*c*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x), x)
```

3.1562 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=303

$$-\frac{(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4\sqrt{c}\,e^5}+\frac{\sqrt{ae^2-bde+cd^2}\left(-4ce(4bd-ae)+3\right.}{}$$

```
[Out] 1/3*(2*c*e*x-3*b*e+8*c*d)*(c*x^2+b*x+a)^(3/2)/e^2/(e*x+d)-1/4*(-b*e+2*c*d)*
(16*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*
x^2+b*x+a)^(1/2))/e^5/c^(1/2)+1/2*(16*c^2*d^2+3*b^2*e^2-4*c*e*(-a*e+4*b*d))
*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*
x+a)^(1/2))*(a*e^2-b*d*e+c*d^2)^(1/2)/e^5+1/2*(16*c^2*d^2+5*b^2*e^2-4*c*e*(
-a*e+5*b*d)-4*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/e^4
```

Rubi [**A**] time = 0.48, antiderivative size = 303, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {812, 814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(5bd-ae)+5b^2e^2-4cex(2cd-be)+16c^2d^2\right)}{2e^4}-\frac{(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^{2}\right.}{4\sqrt{c}\,e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] ((16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(5*b*d - a*e) - 4*c*e*(2*c*d - b*e)*x)*Sqr
t[a + b*x + c*x^2])/(2*e^4) + ((8*c*d - 3*b*e + 2*c*e*x)*(a + b*x + c*x^2)^
(3/2))/(3*e^2*(d + e*x)) - ((2*c*d - b*e)*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*
b*d - 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(4*Sq
rt[c]*e^5) + (Sqrt[c*d^2 - b*d*e + a*e^2]*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(
4*b*d - a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e
 + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*e^5)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
```

```
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{(8cd-3be+2cex)\left(a+bx+cx^2\right)^{3/2}}{3e^2(d+ex)} - \frac{\int \frac{\left(8bcd-3b^2e-4ace+8c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{d+ex}\,dx}{2e^2}$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + (8cd-3b$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + (8cd-3b$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + (8cd-3b$$

$$= \frac{\left(16c^2d^2+5b^2e^2-4ce(5bd-ae)-4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{2e^4} + (8cd-3b$$

Mathematica [A]   time = 1.06, size = 395, normalized size = 1.30

$$\frac{(a+x(b+cx))^{3/2}\left(ce(-2ae+11bd-3bex)-3b^2e^2+c^2\left(6dex-8d^2\right)\right)}{3e^2} + -2c^2e\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)\left(4ce(ae-5bd+bex)+5b^2e^2+8c^2d(2d-ex)\right)+2c^2\left(4ce(ae$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(5/2))/(d + e*x) + ((a + x*(b + c*x))^(3
/2)*(-3*b^2*e^2 + c*e*(11*b*d - 2*a*e - 3*b*e*x) + c^2*(-8*d^2 + 6*d*e*x)))
/(3*e^2) + (-2*c^2*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]*(5*b^
2*e^2 + 8*c^2*d*(2*d - e*x) + 4*c*e*(-5*b*d + a*e + b*e*x)) + c^(3/2)*(2*c*
d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d +
 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 2*c^2*(16
*c^2*d^2 + 3*b^2*e^2 + 4*c*e*(-4*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^(3/
2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a
*e)]*Sqrt[a + x*(b + c*x)])])/(4*c^2*e^5))/(-(c*d^2) + e*(b*d - a*e))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 6898, normalized size = 22.77

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                 +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}{{(d+e\,x)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**2, x)
```

3.1563 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=309

$$\frac{3\sqrt{c}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4e^5}-\frac{3(2cd-be)\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right.}{8e^5\sqrt{ae^2-bde+}}$$

```
[Out] 1/2*(2*c*e*x-b*e+4*c*d)*(c*x^2+b*x+a)^(3/2)/e^2/(e*x+d)^2+3/4*(16*c^2*d^2+3
*b^2*e^2-4*c*e*(-a*e+4*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1
/2))*c^(1/2)/e^5-3/8*(-b*e+2*c*d)*(16*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))
*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*
x+a)^(1/2))/e^5/(a*e^2-b*d*e+c*d^2)^(1/2)-3/4*(16*c^2*d^2+b^2*e^2-4*c*e*(-a
*e+3*b*d)+4*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/e^4/(e*x+d)
```

Rubi [A] time = 0.37, antiderivative size = 309, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {812, 843, 621, 206, 724}

$$-\frac{3\sqrt{a+bx+cx^2}\left(-4ce(3bd-ae)+b^2e^2+4cex(2cd-be)+16c^2d^2\right)}{4e^4(d+ex)}+\frac{3\sqrt{c}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)}{4e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(3*b*d - a*e) + 4*c*e*(2*c*d - b*e)*x)*Sq
rt[a + b*x + c*x^2])/(4*e^4*(d + e*x)) + ((4*c*d - b*e + 2*c*e*x)*(a + b*x
+ c*x^2)^(3/2))/(2*e^2*(d + e*x)^2) + (3*Sqrt[c]*(16*c^2*d^2 + 3*b^2*e^2 -
4*c*e*(4*b*d - a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])]
)/(4*e^5) - (3*(2*c*d - b*e)*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))
*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqr
t[a + b*x + c*x^2])])/(8*e^5*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
```

```
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{(4cd-be+2cex)\left(a+bx+cx^2\right)^{3/2}}{2e^2(d+ex)^2} - \frac{3\int \frac{\left(2\left(4bcd-b^2e-4ace\right)+8c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{(d+ex)^2}}{8e^2}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

$$= -\frac{3\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{4e^4(d+ex)} + \frac{(4cd-}{}$$

Mathematica [A] time = 2.31, size = 544, normalized size = 1.76

$$-\frac{(a+x(b+cx))^{5/2}\left(4ce(2ae-3bd)+b^2e^2+12c^2d^2\right)}{2(d+ex)\left(e(ae-bd)+cd^2\right)} - \frac{2e^3(a+x(b+cx))^{3/2}\left(2c^2e(2ae(2ex-3d)+3bd(5d-2ex))+bce^2(10ae-15bd+bex)+b^3e^3-4c^3d^2(4d-3ex)\right)+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (((2*c*d - b*e)*(a + x*(b + c*x))^(5/2))/(d + e*x)^2 - ((12*c^2*d^2 + b^2*e
^2 + 4*c*e*(-3*b*d + 2*a*e))*(a + x*(b + c*x))^(5/2))/(2*(c*d^2 + e*(-(b*d)
 + a*e))*(d + e*x)) - (6*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]
*(b^3*e^3 + 8*c^3*d^2*(-2*d + e*x) + b*c*e^2*(-13*b*d + 8*a*e + b*e*x) + 4*
c^2*e*(b*d*(7*d - 2*e*x) + a*e*(-3*d + e*x))) + 2*e^3*(a + x*(b + c*x))^(3/
2)*(b^3*e^3 - 4*c^3*d^2*(4*d - 3*e*x) + b*c*e^2*(-15*b*d + 10*a*e + b*e*x)
+ 2*c^2*e*(3*b*d*(5*d - 2*e*x) + 2*a*e*(-3*d + 2*e*x))) + 6*Sqrt[c]*(16*c^2
*d^2 + 3*b^2*e^2 + 4*c*e*(-4*b*d + a*e))*(c*d^2 + e*(-(b*d) + a*e))^2*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 3*(2*c*d - b*e)*(c*d^2
+ e*(-(b*d) + a*e))^(3/2)*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d + 3*a*e))*A
rcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]
*Sqrt[a + x*(b + c*x)])])/(4*e^5*(-(c*d^2) + e*(b*d - a*e))))/(2*(c*d^2 + e
*(-(b*d) + a*e)))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.82Unable to divide, perha
ps due to rounding error%%%{1,[6,0,8,0,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[5,0,7,0,1]%%%}+%%%{-3,[4,1,8,0,0]%%%}+%%%{3,[4,0,7,1,1]%%%}+%%%{%
%%{12,[1]%%%},[4,0,6,0,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,7,
0,1]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,6,1,2]%%%}+%%%{%%{[%%%
{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,5,0,3]%%%}+%%%{3,[2,2,8,0,0]%%%
}+%%%{-6,[2,1,7,1,1]%%%}+%%%{%%%{-12,[1]%%%},[2,1,6,0,2]%%%}+%%%{3,[2,0,6,2
,2]%%%}+%%%{%%%{12,[1]%%%},[2,0,5,1,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[1,2,7,0,1]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,6,1,2]%%%}
+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,5,2,3]%%%}+%%%{-1,[0,3,8,0,0]%%
%}+%%%{3,[0,2,7,1,1]%%%}+%%%{-3,[0,1,6,2,2]%%%}+%%%{1,[0,0,5,3,3]%%%} / %%%
{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,3,0,0]%%%}+%%%{%%%{
-6,[2]%%%},[5,0,2,0,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%
},[4,1,3,0,0]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,2,1,1]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,1,
0,2]%%%}+%%%{%%%{12,[2]%%%},[3,1,2,0,1]%%%}+%%%{%%%{-12,[2]%%%},[3,0,1,1,2]
%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[2,2,3,0,0]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[2,1,2,1,1]%%%}+%%%{%%{[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,
1,1,0,2]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,1,2
,2]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,0,1,3]%
%%}+%%%{%%%{-6,[2]%%%},[1,2,2,0,1]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%%}+%
%%{%%%{-6,[2]%%%},[1,0,0,2,3]%%%}+%%%{%%{[%%%{-1,[1]%%%},0]:[1,0,%%%{-1,[1]
%%%}]%%},[0,3,3,0,0]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
0,2,2,1,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,1,2,2
]%%%}+%%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,0,3,3]%%%}
 Error: Bad Argument Value
```

maple [B] time = 0.08, size = 10362, normalized size = 33.53

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**3, x)
```

3.1564 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=462

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x}{2\sqrt{a+bx+cx}}\right.}{16e^5\left(ae^2-bde+cd^2\right)^{3/2}}$$

```
[Out] -1/12*(16*c^2*d^3-b*e^2*(-4*a*e+b*d)-4*c*d*e*(-a*e+3*b*d)+3*e*(8*c^2*d^2+b^
2*e^2-4*c*e*(-a*e+2*b*d))*x)*(c*x^2+b*x+a)^(3/2)/e^2/(a*e^2-b*d*e+c*d^2)/(e
*x+d)^3-4*c^(3/2)*(-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^
(1/2))/e^5+1/16*(128*c^4*d^4-b^4*e^4-8*b^2*c*e^3*(-3*a*e+2*b*d)-64*c^3*d^2*
e*(-3*a*e+4*b*d)+48*c^2*e^2*(a^2*e^2-4*a*b*d*e+3*b^2*d^2))*arctanh(1/2*(b*d
-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^5/(
a*e^2-b*d*e+c*d^2)^(3/2)+1/8*(64*c^3*d^3+b^3*e^3+4*b*c*e^2*(-5*a*e+4*b*d)-1
6*c^2*d*e*(-4*a*e+5*b*d)+2*c*e*(16*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))*x)
*(c*x^2+b*x+a)^(1/2)/e^4/(a*e^2-b*d*e+c*d^2)/(e*x+d)
```

Rubi [A] time = 0.63, antiderivative size = 462, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{\left(48c^2e^2\left(a^2e^2-4abde+3b^2d^2\right)-8b^2ce^3(2bd-3ae)-64c^3d^2e(4bd-3ae)-b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x}{2\sqrt{a+bx+cx}}\right.}{16e^5\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((64*c^3*d^3 + b^3*e^3 + 4*b*c*e^2*(4*b*d - 5*a*e) - 16*c^2*d*e*(5*b*d - 4*
a*e) + 2*c*e*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e))*x)*Sqrt[a + b*x
 + c*x^2])/(8*e^4*(c*d^2 - b*d*e + a*e^2)*(d + e*x)) - ((16*c^2*d^3 - b*e^2
*(b*d - 4*a*e) - 4*c*d*e*(3*b*d - a*e) + 3*e*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(
2*b*d - a*e))*x)*(a + b*x + c*x^2)^(3/2))/(12*e^2*(c*d^2 - b*d*e + a*e^2)*(
d + e*x)^3) - (4*c^(3/2)*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[
a + b*x + c*x^2])])/e^5 + ((128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*
a*e) - 64*c^3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a
^2*e^2))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*
e^2]*Sqrt[a + b*x + c*x^2])])/(16*e^5*(c*d^2 - b*d*e + a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^4}\,dx = -\frac{\left(16c^2d^3-be^2(bd-4ae)-4cde(3bd-ae)+3e\left(8c^2d^2+b^2e^2-4ce(2bd-\right.\right.}{12e^2\left(cd^2-bde+ae^2\right)(d+ex)^3}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

$$= \frac{\left(64c^3d^3+b^3e^3+4bce^2(4bd-5ae)-16c^2de(5bd-4ae)+2ce\left(16c^2d^2+b^2\right.\right.}{8e^4\left(cd^2-bde+ae^2\right)(d+ex)}$$

Mathematica [A] time = 2.96, size = 485, normalized size = 1.05

$$\frac{\frac{2e\sqrt{a+x(b+cx)}\left(2ce^2\left(-4a^2e^2(d+3ex)-2abe\left(9d^2+20dex+23e^2x^2\right)+b^2d\left(24d^2+63dex+55e^2x^2\right)\right)+be^3\left(-8a^2e^2+2abe(d-7ex)+b^2\left(3d^2+8dex-3e^2x^2\right)\right)-8c\right.}{(d+ex)^3\left(e(ae-bd)+cd^2\right)}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] ((2*e*Sqrt[a + x*(b + c*x)]*(16*c^3*d^2*(12*d^3 + 30*d^2*e*x + 22*d*e^2*x^2
 + 3*e^3*x^3) + b*e^3*(-8*a^2*e^2 + 2*a*b*e*(d - 7*e*x) + b^2*(3*d^2 + 8*d*
e*x - 3*e^2*x^2)) + 2*c*e^2*(-4*a^2*e^2*(d + 3*e*x) - 2*a*b*e*(9*d^2 + 20*d
*e*x + 23*e^2*x^2) + b^2*d*(24*d^2 + 63*d*e*x + 55*e^2*x^2)) - 8*c^2*e*(-(a
*e*(20*d^3 + 51*d^2*e*x + 41*d*e^2*x^2 + 6*e^3*x^3)) + b*d*(30*d^3 + 76*d^2
*e*x + 57*d*e^2*x^2 + 6*e^3*x^3))))/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)^3
) - 192*c^(3/2)*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b
+ c*x)])] - (3*(128*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(2*b*d - 3*a*e) - 64*c^
3*d^2*e*(4*b*d - 3*a*e) + 48*c^2*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2))*Arc
Tanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*S
qrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(3/2))/(48*e^5)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 42.28Unable to divide, perh
aps due to rounding error%%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[8,0,9,0,0]%
%%}+%%%{%%%{8,[1]%%%},[7,0,8,1,0]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%}
,[6,1,8,1,0]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,9,0,1]%%%}+%%%{%
%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,7,2,0]%%%}+%%%{%%%{24,[1
]%%%},[5,1,7,2,0]%%%}+%%%{%%%{-24,[1]%%%},[5,0,8,1,1]%%%}+%%%{%%%{32,[2]%%%
},[5,0,6,3,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,2,7,2,0]%%%}+%%%
{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,8,1,1]%%%}+%%%{%%{[%%%{-48,[1]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,6,3,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%
}]%%},[4,0,9,0,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,7,2,1]%%%}+%%%{%%{[%%%{-16,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0,5,4,0]
%%%}+%%%{%%%{24,[1]%%%},[3,2,6,3,0]%%%}+%%%{%%%{-48,[1]%%%},[3,1,7,2,1]%%%}
+%%%{%%%{32,[2]%%%},[3,1,5,4,0]%%%}+%%%{%%%{24,[1]%%%},[3,0,8,1,2]%%%}+%%%{
%%%{-32,[2]%%%},[3,0,6,3,1]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,3,
6,3,0]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,7,2,1]%%%}+%%%{%%{[%%
%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,5,4,0]%%%}+%%%{%%{[-12,0]:[1,
0,%%%{-1,[1]%%%}]%%},[2,1,8,1,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,0,%%%{-1,
[1]%%%}]%%},[2,1,6,3,1]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,9,0,3
]%%%}+%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,7,2,2]%%%}+%%
%{%%%{8,[1]%%%},[1,3,5,4,0]%%%}+%%%{%%%{-24,[1]%%%},[1,2,6,3,1]%%%}+%%%{%%%
{24,[1]%%%},[1,1,7,2,2]%%%}+%%%{%%%{-8,[1]%%%},[1,0,8,1,3]%%%}+%%%{%%{[-1,0
]:[1,0,%%%{-1,[1]%%%}]%%},[0,4,5,4,0]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]
%%},[0,3,6,3,1]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,2,7,2,2]%%%}+%
%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,8,1,3]%%%}+%%%{%%{[-1,0]:[1,0,%%%{
-1,[1]%%%}]%%},[0,0,9,0,4]%%%} / %%%{%%%{1,[2]%%%},[8,0,4,0,0]%%%}+%%%{%%{p
oly1[%%%{-8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[7,0,3,1,0]%%%}+%%%{%%%{4,[2
]%%%},[6,1,3,1,0]%%%}+%%%{%%%{-4,[2]%%%},[6,0,4,0,1]%%%}+%%%{%%%{24,[3]%%%}
,[6,0,2,2,0]%%%}+%%%{%%{[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,1,2,
2,0]%%%}+%%%{%%{poly1[%%%{24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,0,3,1,1]
%%%}+%%%{%%{poly1[%%%{-32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[5,0,1,3,0]%%%
}+%%%{%%%{6,[2]%%%},[4,2,2,2,0]%%%}+%%%{%%%{-12,[2]%%%},[4,1,3,1,1]%%%}+%%%
{%%%{48,[3]%%%},[4,1,1,3,0]%%%}+%%%{%%%{6,[2]%%%},[4,0,4,0,2]%%%}+%%%{%%%{-
48,[3]%%%},[4,0,2,2,1]%%%}+%%%{%%%{16,[4]%%%},[4,0,0,4,0]%%%}+%%%{%%{poly1[
%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,2,1,3,0]%%%}+%%%{%%{[%%%{48,[
2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,2,2,1]%%%}+%%%{%%{[%%%{-32,[3]%%%},0
]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0,4,0]%%%}+%%%{%%{poly1[%%%{-24,[2]%%%},0]:[
1,0,%%%{-1,[1]%%%}]%%},[3,0,3,1,2]%%%}+%%%{%%{poly1[%%%{32,[3]%%%},0]:[1,0,
%%%{-1,[1]%%%}]%%},[3,0,1,3,1]%%%}+%%%{%%%{4,[2]%%%},[2,3,1,3,0]%%%}+%%%{%%
%{-12,[2]%%%},[2,2,2,2,1]%%%}+%%%{%%%{24,[3]%%%},[2,2,0,4,0]%%%}+%%%{%%%{12
,[2]%%%},[2,1,3,1,2]%%%}+%%%{%%%{-48,[3]%%%},[2,1,1,3,1]%%%}+%%%{%%%{-4,[2]
%%%},[2,0,4,0,3]%%%}+%%%{%%%{24,[3]%%%},[2,0,2,2,2]%%%}+%%%{%%{[%%%{-8,[2]%
%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3,0,4,0]%%%}+%%%{%%{poly1[%%%{24,[2]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[1,2,1,3,1]%%%}+%%%{%%{[%%%{-24,[2]%%%},0]:[1,0,
%%%{-1,[1]%%%}]%%},[1,1,2,2,2]%%%}+%%%{%%{poly1[%%%{8,[2]%%%},0]:[1,0,%%%{-
1,[1]%%%}]%%},[1,0,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,4,0,4,0]%%%}+%%%{%%%{-4,
[2]%%%},[0,3,1,3,1]%%%}+%%%{%%%{6,[2]%%%},[0,2,2,2,2]%%%}+%%%{%%%{-4,[2]%%%
},[0,1,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,0,4,0,4]%%%} Error: Bad Argument Val
ue
```

maple [B] time = 0.09, size = 15982, normalized size = 34.59

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2 zero or nonze
ro?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^4, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{3}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**4, x)
```

3.1565 $\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=446

$$-\frac{3e\left(b^2-4ac\right)^4\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{131072c^{13/2}}+\frac{3e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+}}{6}$$

```
[Out] -1/8192*(-4*a*c+b^2)^2*e*(40*c^2*d^2+11*b^2*e^2-4*c*e*(a*e+10*b*d))*(2*c*x+
b)*(c*x^2+b*x+a)^(3/2)/c^5+1/2560*(-4*a*c+b^2)*e*(40*c^2*d^2+11*b^2*e^2-4*c
*e*(a*e+10*b*d))*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^4+1/30*(-b*e+2*c*d)*(e*x+d
)^2*(c*x^2+b*x+a)^(7/2)/c+1/5*(e*x+d)^3*(c*x^2+b*x+a)^(7/2)+1/6720*(128*c^3
*d^3-99*b^3*e^3+4*b*c*e^2*(97*a*e+90*b*d)-8*c^2*d*e*(160*a*e+17*b*d)+14*c*e
*(8*c^2*d^2+11*b^2*e^2-4*c*e*(9*a*e+2*b*d))*x)*(c*x^2+b*x+a)^(7/2)/c^3-3/13
1072*(-4*a*c+b^2)^4*e*(40*c^2*d^2+11*b^2*e^2-4*c*e*(a*e+10*b*d))*arctanh(1/
2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(13/2)+3/65536*(-4*a*c+b^2)^3*e*
(40*c^2*d^2+11*b^2*e^2-4*c*e*(a*e+10*b*d))*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^
6
```

Rubi [A] time = 0.62, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {832, 779, 612, 621, 206}

$$\frac{3e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)}{65536c^6}-\frac{e\left(b^2-4ac\right)^2(b+2cx)\left(a+bx+cx\right.}{8}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (3*(b^2 - 4*a*c)^3*e*(40*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(b +
2*c*x)*Sqrt[a + b*x + c*x^2])/(65536*c^6) - ((b^2 - 4*a*c)^2*e*(40*c^2*d^2
+ 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(
8192*c^5) + ((b^2 - 4*a*c)*e*(40*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e
))*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(2560*c^4) + ((2*c*d - b*e)*(d + e*
x)^2*(a + b*x + c*x^2)^(7/2))/(30*c) + ((d + e*x)^3*(a + b*x + c*x^2)^(7/2)
)/5 + ((128*c^3*d^3 - 99*b^3*e^3 + 4*b*c*e^2*(90*b*d + 97*a*e) - 8*c^2*d*e*
(17*b*d + 160*a*e) + 14*c*e*(8*c^2*d^2 + 11*b^2*e^2 - 4*c*e*(2*b*d + 9*a*e)
)*x)*(a + b*x + c*x^2)^(7/2))/(6720*c^3) - (3*(b^2 - 4*a*c)^4*e*(40*c^2*d^2
 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
 + b*x + c*x^2])])/(131072*c^(13/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^3\left(a+bx+cx^2\right)^{5/2}\,dx &= \frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7/2}+\frac{\int (d+ex)^2(3c(bd-2ae)+3c(2cd-}{10c}\\ &= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{7/2}}{30c}+\frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7}\\ &= \frac{(2cd-be)(d+ex)^2\left(a+bx+cx^2\right)^{7/2}}{30c}+\frac{1}{5}(d+ex)^3\left(a+bx+cx^2\right)^{7}\\ &= \frac{\left(b^2-4ac\right)e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\left(a+bx\right.}{2560c^4}\\ &= -\frac{\left(b^2-4ac\right)^2e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\left(a+b\right.}{8192c^5}\\ &= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}\\ &= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}\\ &= \frac{3\left(b^2-4ac\right)^3e\left(40c^2d^2+11b^2e^2-4ce(10bd+ae)\right)(b+2cx)\sqrt{a+}}{65536c^6}\end{aligned}$$

Mathematica [A] time = 1.10, size = 345, normalized size = 0.77

$$\frac{1}{10}\left(-\frac{e\left(b^2-4ac\right)\left(-4ce(ae+10bd)+11b^2e^2+40c^2d^2\right)\left(15\left(b^2-4ac\right)^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx\right.}{65}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (((2*c*d - b*e)*(d + e*x)^2*(a + x*(b + c*x))^(7/2))/(3*c) + 2*(d + e*x)^3*
(a + x*(b + c*x))^(7/2) + ((a + x*(b + c*x))^(7/2)*(-99*b^3*e^3 + 16*c^3*d^
2*(8*d + 7*e*x) + 2*b*c*e^2*(180*b*d + 194*a*e + 77*b*e*x) - 8*c^2*e*(b*d*(
17*d + 14*e*x) + a*e*(160*d + 63*e*x))))/(672*c^3) - ((b^2 - 4*a*c)*e*(40*c
^2*d^2 + 11*b^2*e^2 - 4*c*e*(10*b*d + a*e))*(-2*Sqrt[c]*(b + 2*c*x)*Sqrt[a
+ x*(b + c*x)]*(15*b^4 - 40*b^3*c*x + 32*b*c^2*x*(13*a + 8*c*x^2) + 8*b^2*c
*(-20*a + 11*c*x^2) + 16*c^2*(33*a^2 + 26*a*c*x^2 + 8*c^2*x^4)) + 15*(b^2 -
 4*a*c)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))/(65536*c
^(13/2)))/10
```

fricas [B] time = 1.87, size = 2343, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/27525120*(315*(40*(b^8*c^2 - 16*a*b^6*c^3 + 96*a^2*b^4*c^4 - 256*a^3*b^
2*c^5 + 256*a^4*c^6)*d^2*e - 40*(b^9*c - 16*a*b^7*c^2 + 96*a^2*b^5*c^3 - 25
6*a^3*b^3*c^4 + 256*a^4*b*c^5)*d*e^2 + (11*b^10 - 180*a*b^8*c + 1120*a^2*b^
6*c^2 - 3200*a^3*b^4*c^3 + 3840*a^4*b^2*c^4 - 1024*a^5*c^5)*e^3)*sqrt(c)*lo
g(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c)
- 4*a*c) - 4*(1376256*c^10*e^3*x^9 + 1966080*a^3*c^7*d^3 + 229376*(20*c^10*
d*e^2 + 17*b*c^9*e^3)*x^8 + 14336*(360*c^10*d^2*e + 920*b*c^9*d*e^2 + (251*
b^2*c^8 + 252*a*c^9)*e^3)*x^7 + 1024*(1920*c^10*d^3 + 14760*b*c^9*d^2*e + 4
0*(303*b^2*c^8 + 304*a*c^9)*d*e^2 + (1035*b^3*c^7 + 6268*a*b*c^8)*e^3)*x^6
+ 256*(23040*b*c^9*d^3 + 120*(475*b^2*c^8 + 476*a*c^9)*d^2*e + 40*(367*b^3*
c^7 + 2220*a*b*c^8)*d*e^2 - (5*b^4*c^6 - 10200*a*b^2*c^7 - 10416*a^2*c^8)*e
^3)*x^5 + 128*(46080*(b^2*c^8 + a*c^9)*d^3 + 120*(299*b^3*c^7 + 1804*a*b*c^
8)*d^2*e - 40*(b^4*c^6 - 1884*a*b^2*c^7 - 1920*a^2*c^8)*d*e^2 + (11*b^5*c^5
 - 120*a*b^3*c^6 + 13680*a^2*b*c^7)*e^3)*x^4 + 120*(105*b^7*c^3 - 1540*a*b^
5*c^4 + 8176*a^2*b^3*c^5 - 17856*a^3*b*c^6)*d^2*e - 40*(315*b^8*c^2 - 4620*
a*b^6*c^3 + 24528*a^2*b^4*c^4 - 53568*a^3*b^2*c^5 + 32768*a^4*c^6)*d*e^2 +
(3465*b^9*c - 52080*a*b^7*c^2 + 288288*a^2*b^5*c^3 - 687360*a^3*b^3*c^4 + 5
74720*a^4*b*c^5)*e^3 + 16*(122880*(b^3*c^7 + 6*a*b*c^8)*d^3 - 120*(3*b^4*c^
6 - 6520*a*b^2*c^7 - 6608*a^2*c^8)*d^2*e + 40*(9*b^5*c^5 - 104*a*b^3*c^6 +
10896*a^2*b*c^7)*d*e^2 - (99*b^6*c^4 - 1180*a*b^4*c^5 + 4560*a^2*b^2*c^6 -
6720*a^3*c^7)*e^3)*x^3 + 8*(737280*(a*b^2*c^7 + a^2*c^8)*d^3 + 120*(7*b^5*c
^5 - 88*a*b^3*c^6 + 10608*a^2*b*c^7)*d^2*e - 40*(21*b^6*c^4 - 264*a*b^4*c^5
 + 1104*a^2*b^2*c^6 - 2048*a^3*c^7)*d*e^2 + (231*b^7*c^3 - 2988*a*b^5*c^4 +
 13200*a^2*b^3*c^5 - 20800*a^3*b*c^6)*e^3)*x^2 + 2*(2949120*a^2*b*c^7*d^3 -
 120*(35*b^6*c^4 - 476*a*b^4*c^5 + 2256*a^2*b^2*c^6 - 6720*a^3*c^7)*d^2*e +
 40*(105*b^7*c^3 - 1428*a*b^5*c^4 + 6768*a^2*b^3*c^5 - 11968*a^3*b*c^6)*d*e
^2 - (1155*b^8*c^2 - 16128*a*b^6*c^3 + 80160*a^2*b^4*c^4 - 158720*a^3*b^2*c
^5 + 80640*a^4*c^6)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^7, 1/13762560*(315*(40
*(b^8*c^2 - 16*a*b^6*c^3 + 96*a^2*b^4*c^4 - 256*a^3*b^2*c^5 + 256*a^4*c^6)*
d^2*e - 40*(b^9*c - 16*a*b^7*c^2 + 96*a^2*b^5*c^3 - 256*a^3*b^3*c^4 + 256*a
^4*b*c^5)*d*e^2 + (11*b^10 - 180*a*b^8*c + 1120*a^2*b^6*c^2 - 3200*a^3*b^4*
c^3 + 3840*a^4*b^2*c^4 - 1024*a^5*c^5)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2
+ b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(1376256*c^10*
e^3*x^9 + 1966080*a^3*c^7*d^3 + 229376*(20*c^10*d*e^2 + 17*b*c^9*e^3)*x^8 +
 14336*(360*c^10*d^2*e + 920*b*c^9*d*e^2 + (251*b^2*c^8 + 252*a*c^9)*e^3)*x
^7 + 1024*(1920*c^10*d^3 + 14760*b*c^9*d^2*e + 40*(303*b^2*c^8 + 304*a*c^9)
*d*e^2 + (1035*b^3*c^7 + 6268*a*b*c^8)*e^3)*x^6 + 256*(23040*b*c^9*d^3 + 12
0*(475*b^2*c^8 + 476*a*c^9)*d^2*e + 40*(367*b^3*c^7 + 2220*a*b*c^8)*d*e^2 -
 (5*b^4*c^6 - 10200*a*b^2*c^7 - 10416*a^2*c^8)*e^3)*x^5 + 128*(46080*(b^2*c
^8 + a*c^9)*d^3 + 120*(299*b^3*c^7 + 1804*a*b*c^8)*d^2*e - 40*(b^4*c^6 - 18
84*a*b^2*c^7 - 1920*a^2*c^8)*d*e^2 + (11*b^5*c^5 - 120*a*b^3*c^6 + 13680*a^
2*b*c^7)*e^3)*x^4 + 120*(105*b^7*c^3 - 1540*a*b^5*c^4 + 8176*a^2*b^3*c^5 -
17856*a^3*b*c^6)*d^2*e - 40*(315*b^8*c^2 - 4620*a*b^6*c^3 + 24528*a^2*b^4*c
^4 - 53568*a^3*b^2*c^5 + 32768*a^4*c^6)*d*e^2 + (3465*b^9*c - 52080*a*b^7*c
^2 + 288288*a^2*b^5*c^3 - 687360*a^3*b^3*c^4 + 574720*a^4*b*c^5)*e^3 + 16*(
122880*(b^3*c^7 + 6*a*b*c^8)*d^3 - 120*(3*b^4*c^6 - 6520*a*b^2*c^7 - 6608*a
^2*c^8)*d^2*e + 40*(9*b^5*c^5 - 104*a*b^3*c^6 + 10896*a^2*b*c^7)*d*e^2 - (9
9*b^6*c^4 - 1180*a*b^4*c^5 + 4560*a^2*b^2*c^6 - 6720*a^3*c^7)*e^3)*x^3 + 8*
(737280*(a*b^2*c^7 + a^2*c^8)*d^3 + 120*(7*b^5*c^5 - 88*a*b^3*c^6 + 10608*a
^2*b*c^7)*d^2*e - 40*(21*b^6*c^4 - 264*a*b^4*c^5 + 1104*a^2*b^2*c^6 - 2048*
a^3*c^7)*d*e^2 + (231*b^7*c^3 - 2988*a*b^5*c^4 + 13200*a^2*b^3*c^5 - 20800*
a^3*b*c^6)*e^3)*x^2 + 2*(2949120*a^2*b*c^7*d^3 - 120*(35*b^6*c^4 - 476*a*b^
4*c^5 + 2256*a^2*b^2*c^6 - 6720*a^3*c^7)*d^2*e + 40*(105*b^7*c^3 - 1428*a*b
^5*c^4 + 6768*a^2*b^3*c^5 - 11968*a^3*b*c^6)*d*e^2 - (1155*b^8*c^2 - 16128*
a*b^6*c^3 + 80160*a^2*b^4*c^4 - 158720*a^3*b^2*c^5 + 80640*a^4*c^6)*e^3)*x)
*sqrt(c*x^2 + b*x + a))/c^7]
```

giac [**B**] time = 0.32, size = 1302, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6881280*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(16*(6*c^3*x*e^3 + (2
0*c^12*d*e^2 + 17*b*c^11*e^3)/c^9)*x + (360*c^12*d^2*e + 920*b*c^11*d*e^2 +
 251*b^2*c^10*e^3 + 252*a*c^11*e^3)/c^9)*x + (1920*c^12*d^3 + 14760*b*c^11*
d^2*e + 12120*b^2*c^10*d*e^2 + 12160*a*c^11*d*e^2 + 1035*b^3*c^9*e^3 + 6268
*a*b*c^10*e^3)/c^9)*x + (23040*b*c^11*d^3 + 57000*b^2*c^10*d^2*e + 57120*a*
c^11*d^2*e + 14680*b^3*c^9*d*e^2 + 88800*a*b*c^10*d*e^2 - 5*b^4*c^8*e^3 + 1
0200*a*b^2*c^9*e^3 + 10416*a^2*c^10*e^3)/c^9)*x + (46080*b^2*c^10*d^3 + 460
80*a*c^11*d^3 + 35880*b^3*c^9*d^2*e + 216480*a*b*c^10*d^2*e - 40*b^4*c^8*d*
e^2 + 75360*a*b^2*c^9*d*e^2 + 76800*a^2*c^10*d*e^2 + 11*b^5*c^7*e^3 - 120*a
*b^3*c^8*e^3 + 13680*a^2*b*c^9*e^3)/c^9)*x + (122880*b^3*c^9*d^3 + 737280*a
*b*c^10*d^3 - 360*b^4*c^8*d^2*e + 782400*a*b^2*c^9*d^2*e + 792960*a^2*c^10*
d^2*e + 360*b^5*c^7*d*e^2 - 4160*a*b^3*c^8*d*e^2 + 435840*a^2*b*c^9*d*e^2 -
 99*b^6*c^6*e^3 + 1180*a*b^4*c^7*e^3 - 4560*a^2*b^2*c^8*e^3 + 6720*a^3*c^9*
e^3)/c^9)*x + (737280*a*b^2*c^9*d^3 + 737280*a^2*c^10*d^3 + 840*b^5*c^7*d^2
*e - 10560*a*b^3*c^8*d^2*e + 1272960*a^2*b*c^9*d^2*e - 840*b^6*c^6*d*e^2 +
10560*a*b^4*c^7*d*e^2 - 44160*a^2*b^2*c^8*d*e^2 + 81920*a^3*c^9*d*e^2 + 231
*b^7*c^5*e^3 - 2988*a*b^5*c^6*e^3 + 13200*a^2*b^3*c^7*e^3 - 20800*a^3*b*c^8
*e^3)/c^9)*x + (2949120*a^2*b*c^9*d^3 - 4200*b^6*c^6*d^2*e + 57120*a*b^4*c^
7*d^2*e - 270720*a^2*b^2*c^8*d^2*e + 806400*a^3*c^9*d^2*e + 4200*b^7*c^5*d*
e^2 - 57120*a*b^5*c^6*d*e^2 + 270720*a^2*b^3*c^7*d*e^2 - 478720*a^3*b*c^8*d
*e^2 - 1155*b^8*c^4*e^3 + 16128*a*b^6*c^5*e^3 - 80160*a^2*b^4*c^6*e^3 + 158
720*a^3*b^2*c^7*e^3 - 80640*a^4*c^8*e^3)/c^9)*x + (1966080*a^3*c^9*d^3 + 12
600*b^7*c^5*d^2*e - 184800*a*b^5*c^6*d^2*e + 981120*a^2*b^3*c^7*d^2*e - 214
2720*a^3*b*c^8*d^2*e - 12600*b^8*c^4*d*e^2 + 184800*a*b^6*c^5*d*e^2 - 98112
0*a^2*b^4*c^6*d*e^2 + 2142720*a^3*b^2*c^7*d*e^2 - 1310720*a^4*c^8*d*e^2 + 3
465*b^9*c^3*e^3 - 52080*a*b^7*c^4*e^3 + 288288*a^2*b^5*c^5*e^3 - 687360*a^3
*b^3*c^6*e^3 + 574720*a^4*b*c^7*e^3)/c^9) + 3/131072*(40*b^8*c^2*d^2*e - 64
0*a*b^6*c^3*d^2*e + 3840*a^2*b^4*c^4*d^2*e - 10240*a^3*b^2*c^5*d^2*e + 1024
0*a^4*c^6*d^2*e - 40*b^9*c*d*e^2 + 640*a*b^7*c^2*d*e^2 - 3840*a^2*b^5*c^3*d
*e^2 + 10240*a^3*b^3*c^4*d*e^2 - 10240*a^4*b*c^5*d*e^2 + 11*b^10*e^3 - 180*
a*b^8*c*e^3 + 1120*a^2*b^6*c^2*e^3 - 3200*a^3*b^4*c^3*e^3 + 3840*a^4*b^2*c^
4*e^3 - 1024*a^5*c^5*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sq
rt(c) - b))/c^(13/2)
```

maple [**B**] time = 0.07, size = 2387, normalized size = 5.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3*x^2*(c*x^2+b*x+a)^(7/2)*d*e^2+33/65536/c^6*e^3*b^9*(c*x^2+b*x+a)^(1/2)-
33/2240/c^3*e^3*b^3*(c*x^2+b*x+a)^(7/2)+11/2560/c^4*e^3*b^5*(c*x^2+b*x+a)^(
5/2)-11/8192/c^5*e^3*b^7*(c*x^2+b*x+a)^(3/2)+3/4*x*(c*x^2+b*x+a)^(7/2)*d^2*
e-33/131072/c^(13/2)*e^3*b^10*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3
/128/c^(3/2)*e^3*a^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/5*e^3*x^
3*(c*x^2+b*x+a)^(7/2)+1/16*b^2/c^2*a*(c*x^2+b*x+a)^(5/2)*d*e^2-1/12*b/c*x*(
c*x^2+b*x+a)^(7/2)*d*e^2+2/7*(c*x^2+b*x+a)^(7/2)*d^3-13/256/c^2*e^3*b^2*a^2
*(c*x^2+b*x+a)^(3/2)*x-3/80/c^2*e^3*b^2*a*x*(c*x^2+b*x+a)^(5/2)-51/4096/c^4
*e^3*b^6*(c*x^2+b*x+a)^(1/2)*x*a+23/1024/c^3*e^3*b^4*(c*x^2+b*x+a)^(3/2)*x*
a-21/256/c^2*e^3*b^2*a^3*(c*x^2+b*x+a)^(1/2)*x+75/1024/c^(7/2)*e^3*b^4*ln((
c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3+15/16384*b^9/c^(11/2)*ln((c*x+1
/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2+15/128*b^2/c^2*a^3*(c*x^2+b*x+a)^(
1/2)*d*e^2-45/512*b^4/c^3*(c*x^2+b*x+a)^(1/2)*a^2*d*e^2+27/512/c^3*e^3*b^4*
(c*x^2+b*x+a)^(1/2)*x*a^2+15/64*b/c^(3/2)*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*d*e^2-15/1024*b^7/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*a*d*e^2-15/128*a^3/c*(c*x^2+b*x+a)^(1/2)*b*d^2*e-5/512*b^4/c^2*(c
*x^2+b*x+a)^(3/2)*x*d^2*e+5/128*b^3/c^2*(c*x^2+b*x+a)^(3/2)*a*d^2*e+15/64*b
^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3*d^2*e-1/16*a/c*(
c*x^2+b*x+a)^(5/2)*b*d^2*e-5/64*a^2/c*(c*x^2+b*x+a)^(3/2)*b*d^2*e+1/32*b^2/
c*x*(c*x^2+b*x+a)^(5/2)*d^2*e+15/4096*b^6/c^3*(c*x^2+b*x+a)^(1/2)*x*d^2*e+4
5/512*b^5/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d*e^2+5/5
12*b^5/c^3*(c*x^2+b*x+a)^(3/2)*x*d*e^2-5/128*b^4/c^3*(c*x^2+b*x+a)^(3/2)*a*
d*e^2+45/2048*b^6/c^4*(c*x^2+b*x+a)^(1/2)*a*d*e^2-15/4096*b^7/c^4*(c*x^2+b*
x+a)^(1/2)*x*d*e^2-1/32*b^3/c^2*x*(c*x^2+b*x+a)^(5/2)*d*e^2+5/64*b^2/c^2*a^
2*(c*x^2+b*x+a)^(3/2)*d*e^2-15/64*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*a^3*d*e^2-45/512*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b
*x+a)^(1/2))*a^2*d^2*e+15/1024*b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*a*d^2*e+45/512*b^3/c^2*(c*x^2+b*x+a)^(1/2)*a^2*d^2*e-45/2048*b^
5/c^3*(c*x^2+b*x+a)^(1/2)*a*d^2*e-21/512/c^3*e^3*b^3*a^3*(c*x^2+b*x+a)^(1/2
)+27/1024/c^4*e^3*b^5*(c*x^2+b*x+a)^(1/2)*a^2-51/8192/c^5*e^3*b^7*(c*x^2+b*
x+a)^(1/2)*a-11/4096/c^4*e^3*b^6*(c*x^2+b*x+a)^(3/2)*x+11/1280/c^3*e^3*b^4*
x*(c*x^2+b*x+a)^(5/2)-15/64*a^4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*d^2*e-15/16384*b^8/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1
/2))*d^2*e-15/64*a^3*(c*x^2+b*x+a)^(1/2)*x*d^2*e-5/32*a^2*(c*x^2+b*x+a)^(3/
2)*x*d^2*e-1/8*a*x*(c*x^2+b*x+a)^(5/2)*d^2*e-15/8192*b^8/c^5*(c*x^2+b*x+a)^
(1/2)*d*e^2+3/56*b^2/c^2*(c*x^2+b*x+a)^(7/2)*d*e^2-1/64*b^4/c^3*(c*x^2+b*x+
a)^(5/2)*d*e^2+5/1024*b^6/c^4*(c*x^2+b*x+a)^(3/2)*d*e^2-4/21*a/c*(c*x^2+b*x
+a)^(7/2)*d*e^2+1/64*b^3/c^2*(c*x^2+b*x+a)^(5/2)*d^2*e-5/1024*b^5/c^3*(c*x^
2+b*x+a)^(3/2)*d^2*e+15/8192*b^7/c^4*(c*x^2+b*x+a)^(1/2)*d^2*e-3/56*b/c*(c*
x^2+b*x+a)^(7/2)*d^2*e+97/1680/c^2*e^3*b*a*(c*x^2+b*x+a)^(7/2)-3/40/c*e^3*a
*x*(c*x^2+b*x+a)^(7/2)+1/80/c*e^3*a^2*x*(c*x^2+b*x+a)^(5/2)+1/160/c^2*e^3*a
^2*(c*x^2+b*x+a)^(5/2)*b+1/64/c*e^3*a^3*(c*x^2+b*x+a)^(3/2)*x+1/128/c^2*e^3
*a^3*(c*x^2+b*x+a)^(3/2)*b+3/128/c*e^3*a^4*(c*x^2+b*x+a)^(1/2)*x+3/256/c^2*
e^3*a^4*(c*x^2+b*x+a)^(1/2)*b+11/480/c^2*e^3*b^2*x*(c*x^2+b*x+a)^(7/2)-1/30
/c*e^3*b*x^2*(c*x^2+b*x+a)^(7/2)-3/160/c^3*e^3*b^3*a*(c*x^2+b*x+a)^(5/2)-13
/512/c^3*e^3*b^3*a^2*(c*x^2+b*x+a)^(3/2)+135/32768/c^(11/2)*e^3*b^8*ln((c*x
+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a-105/4096/c^(9/2)*e^3*b^6*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2-45/512/c^(5/2)*e^3*b^2*a^4*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+23/2048/c^4*e^3*b^5*(c*x^2+b*x+a)^(3/2)*a+
33/32768/c^5*e^3*b^8*(c*x^2+b*x+a)^(1/2)*x+5/64*b^2/c*(c*x^2+b*x+a)^(3/2)*x
*a*d^2*e+45/256*b^2/c*(c*x^2+b*x+a)^(1/2)*x*a^2*d^2*e-5/64*b^3/c^2*(c*x^2+b
*x+a)^(3/2)*x*a*d*e^2+1/8*b/c*a*x*(c*x^2+b*x+a)^(5/2)*d*e^2-45/1024*b^4/c^2
*(c*x^2+b*x+a)^(1/2)*x*a*d^2*e+15/64*b/c*a^3*(c*x^2+b*x+a)^(1/2)*x*d*e^2+5/
32*b/c*a^2*(c*x^2+b*x+a)^(3/2)*x*d*e^2-45/256*b^3/c^2*(c*x^2+b*x+a)^(1/2)*x
*a^2*d*e^2+45/1024*b^5/c^3*(c*x^2+b*x+a)^(1/2)*x*a*d*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\left(d+e\,x\right)^3\,{\left(c\,x^2+b\,x+a\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^3*(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(b + 2 c x\right) \left(d + e x\right)^{3} \left(a + b x + c x^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3*(a + b*x + c*x**2)**(5/2), x)
```

3.1566 $\int (b+2cx)(d+ex)^2 \left(a+bx+cx^2\right)^{5/2} dx$

Optimal. Leaf size=289

$$-\frac{5e\left(b^2-4ac\right)^4(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{11/2}}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}(2cd-be)}{8192c^5}-5e\left(b^2-4a$$

```
[Out] -5/3072*(-4*a*c+b^2)^2*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^4+1/1
92*(-4*a*c+b^2)*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^3+2/9*(e*x+d
)^2*(c*x^2+b*x+a)^(7/2)+1/504*(32*c^2*d^2+9*b^2*e^2-2*c*e*(16*a*e+9*b*d)+14
*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(7/2)/c^2-5/16384*(-4*a*c+b^2)^4*e*(-b*e
+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(11/2)+5/8192*
(-4*a*c+b^2)^3*e*(-b*e+2*c*d)*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)/c^5
```

Rubi **[A]** time = 0.55, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = $\{832, 779, 612, 621, 206\}$

$$\frac{\left(a+bx+cx^2\right)^{7/2}\left(-2ce(16ae+9bd)+9b^2e^2+14cex(2cd-be)+32c^2d^2\right)}{504c^2}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^3*e*(2*c*d - b*e)*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8192
*c^5) - (5*(b^2 - 4*a*c)^2*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x^2)^(3
/2))/(3072*c^4) + ((b^2 - 4*a*c)*e*(2*c*d - b*e)*(b + 2*c*x)*(a + b*x + c*x
^2)^(5/2))/(192*c^3) + (2*(d + e*x)^2*(a + b*x + c*x^2)^(7/2))/9 + ((32*c^2
*d^2 + 9*b^2*e^2 - 2*c*e*(9*b*d + 16*a*e) + 14*c*e*(2*c*d - b*e)*x)*(a + b*
x + c*x^2)^(7/2))/(504*c^2) - (5*(b^2 - 4*a*c)^4*e*(2*c*d - b*e)*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(11/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (b+2cx)(d+ex)^2\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{2}{9}(d+ex)^2\left(a+bx+cx^2\right)^{7/2} + \frac{\int (d+ex)(2c(bd-2ae)+2c(2cd-}{9c}$$

$$= \frac{2}{9}(d+ex)^2\left(a+bx+cx^2\right)^{7/2} + \frac{(32c^2d^2+9b^2e^2-2ce(9bd+16ae)}{50}$$

$$= \frac{\left(b^2-4ac\right)e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{192c^3} + \frac{2}{9}(d+ex)^2(a$$

$$= -\frac{5\left(b^2-4ac\right)^2e(2cd-be)(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^4} + \frac{\left(b^2-4ac\right)}{}$$

$$= \frac{5\left(b^2-4ac\right)^3e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2e}{}$$

$$= \frac{5\left(b^2-4ac\right)^3e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2e}{}$$

$$= \frac{5\left(b^2-4ac\right)^3e(2cd-be)(b+2cx)\sqrt{a+bx+cx^2}}{8192c^5} - \frac{5\left(b^2-4ac\right)^2e}{}$$

Mathematica [A] time = 0.68, size = 252, normalized size = 0.87

$$-\frac{e\left(b^2-4ac\right)(be-2cd)(256c^{5/2}(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)(16c^{3/2}(b+2cx)(a+x(b+cx))^{3/2}-}{49152c^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^2*(a + x*(b + c*x))^(7/2))/9 + ((a + x*(b + c*x))^(7/2)*(9*b^2
*e^2 + 4*c^2*d*(8*d + 7*e*x) - 2*c*e*(9*b*d + 16*a*e + 7*b*e*x)))/(504*c^2)
 - ((b^2 - 4*a*c)*e*(-2*c*d + b*e)*(256*c^(5/2)*(b + 2*c*x)*(a + x*(b + c*x
))^(5/2) - 5*(b^2 - 4*a*c)*(16*c^(3/2)*(b + 2*c*x)*(a + x*(b + c*x))^(3/2)
- 3*(b^2 - 4*a*c)*(2*Sqrt[c]*(b + 2*c*x)*Sqrt[a + x*(b + c*x)] - (b^2 - 4*a
*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])]))))/(49152*c^(11
/2))
```

fricas [B] time = 2.03, size = 1523, normalized size = 5.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/2064384*(315*(2*(b^8*c - 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^
4 + 256*a^4*c^5)*d*e - (b^9 - 16*a*b^7*c + 96*a^2*b^5*c^2 - 256*a^3*b^3*c^3
 + 256*a^4*b*c^4)*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^
2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(114688*c^9*e^2*x^8 + 147456*
a^3*c^6*d^2 + 14336*(18*c^9*d*e + 23*b*c^8*e^2)*x^7 + 1024*(144*c^9*d^2 + 7
38*b*c^8*d*e + (303*b^2*c^7 + 304*a*c^8)*e^2)*x^6 + 256*(1728*b*c^8*d^2 + 6
*(475*b^2*c^7 + 476*a*c^8)*d*e + (367*b^3*c^6 + 2220*a*b*c^7)*e^2)*x^5 + 12
8*(3456*(b^2*c^7 + a*c^8)*d^2 + 6*(299*b^3*c^6 + 1804*a*b*c^7)*d*e - (b^4*c
^5 - 1884*a*b^2*c^6 - 1920*a^2*c^7)*e^2)*x^4 + 16*(9216*(b^3*c^6 + 6*a*b*c^
7)*d^2 - 6*(3*b^4*c^5 - 6520*a*b^2*c^6 - 6608*a^2*c^7)*d*e + (9*b^5*c^4 - 1
04*a*b^3*c^5 + 10896*a^2*b*c^6)*e^2)*x^3 + 6*(105*b^7*c^2 - 1540*a*b^5*c^3
+ 8176*a^2*b^3*c^4 - 17856*a^3*b*c^5)*d*e - (315*b^8*c - 4620*a*b^6*c^2 + 2
4528*a^2*b^4*c^3 - 53568*a^3*b^2*c^4 + 32768*a^4*c^5)*e^2 + 8*(55296*(a*b^2
*c^6 + a^2*c^7)*d^2 + 6*(7*b^5*c^4 - 88*a*b^3*c^5 + 10608*a^2*b*c^6)*d*e -
(21*b^6*c^3 - 264*a*b^4*c^4 + 1104*a^2*b^2*c^5 - 2048*a^3*c^6)*e^2)*x^2 + 2
*(221184*a^2*b*c^6*d^2 - 6*(35*b^6*c^3 - 476*a*b^4*c^4 + 2256*a^2*b^2*c^5 -
 6720*a^3*c^6)*d*e + (105*b^7*c^2 - 1428*a*b^5*c^3 + 6768*a^2*b^3*c^4 - 119
68*a^3*b*c^5)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^6, 1/1032192*(315*(2*(b^8*c
- 16*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^3*b^2*c^4 + 256*a^4*c^5)*d*e - (b^9
 - 16*a*b^7*c + 96*a^2*b^5*c^2 - 256*a^3*b^3*c^3 + 256*a^4*b*c^4)*e^2)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) + 2*(114688*c^9*e^2*x^8 + 147456*a^3*c^6*d^2 + 14336*(18*c^9*d*e +
 23*b*c^8*e^2)*x^7 + 1024*(144*c^9*d^2 + 738*b*c^8*d*e + (303*b^2*c^7 + 304
*a*c^8)*e^2)*x^6 + 256*(1728*b*c^8*d^2 + 6*(475*b^2*c^7 + 476*a*c^8)*d*e +
(367*b^3*c^6 + 2220*a*b*c^7)*e^2)*x^5 + 128*(3456*(b^2*c^7 + a*c^8)*d^2 + 6
*(299*b^3*c^6 + 1804*a*b*c^7)*d*e - (b^4*c^5 - 1884*a*b^2*c^6 - 1920*a^2*c^
7)*e^2)*x^4 + 16*(9216*(b^3*c^6 + 6*a*b*c^7)*d^2 - 6*(3*b^4*c^5 - 6520*a*b^
2*c^6 - 6608*a^2*c^7)*d*e + (9*b^5*c^4 - 104*a*b^3*c^5 + 10896*a^2*b*c^6)*e
^2)*x^3 + 6*(105*b^7*c^2 - 1540*a*b^5*c^3 + 8176*a^2*b^3*c^4 - 17856*a^3*b*
c^5)*d*e - (315*b^8*c - 4620*a*b^6*c^2 + 24528*a^2*b^4*c^3 - 53568*a^3*b^2*
c^4 + 32768*a^4*c^5)*e^2 + 8*(55296*(a*b^2*c^6 + a^2*c^7)*d^2 + 6*(7*b^5*c^
4 - 88*a*b^3*c^5 + 10608*a^2*b*c^6)*d*e - (21*b^6*c^3 - 264*a*b^4*c^4 + 110
4*a^2*b^2*c^5 - 2048*a^3*c^6)*e^2)*x^2 + 2*(221184*a^2*b*c^6*d^2 - 6*(35*b^
6*c^3 - 476*a*b^4*c^4 + 2256*a^2*b^2*c^5 - 6720*a^3*c^6)*d*e + (105*b^7*c^2
 - 1428*a*b^5*c^3 + 6768*a^2*b^3*c^4 - 11968*a^3*b*c^5)*e^2)*x)*sqrt(c*x^2
+ b*x + a))/c^6]
```

giac [B] time = 0.30, size = 824, normalized size = 2.85

$$\frac{1}{516096}\sqrt{cx^2+bx+a}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(4\Bigg(14\Bigg(8\,c^3xe^2+\frac{18\,c^{11}de+23\,bc^{10}e^2}{c^8}\Bigg)x+\frac{144\,c^{11}d^2+738\,bc^{10}de+303\,b^2c}{c^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/516096*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(4*(14*(8*c^3*x*e^2 + (18*c^1
1*d*e + 23*b*c^10*e^2)/c^8)*x + (144*c^11*d^2 + 738*b*c^10*d*e + 303*b^2*c^
9*e^2 + 304*a*c^10*e^2)/c^8)*x + (1728*b*c^10*d^2 + 2850*b^2*c^9*d*e + 2856
*a*c^10*d*e + 367*b^3*c^8*e^2 + 2220*a*b*c^9*e^2)/c^8)*x + (3456*b^2*c^9*d^
2 + 3456*a*c^10*d^2 + 1794*b^3*c^8*d*e + 10824*a*b*c^9*d*e - b^4*c^7*e^2 +
1884*a*b^2*c^8*e^2 + 1920*a^2*c^9*e^2)/c^8)*x + (9216*b^3*c^8*d^2 + 55296*a
*b*c^9*d^2 - 18*b^4*c^7*d*e + 39120*a*b^2*c^8*d*e + 39648*a^2*c^9*d*e + 9*b
^5*c^6*e^2 - 104*a*b^3*c^7*e^2 + 10896*a^2*b*c^8*e^2)/c^8)*x + (55296*a*b^2
*c^8*d^2 + 55296*a^2*c^9*d^2 + 42*b^5*c^6*d*e - 528*a*b^3*c^7*d*e + 63648*a
^2*b*c^8*d*e - 21*b^6*c^5*e^2 + 264*a*b^4*c^6*e^2 - 1104*a^2*b^2*c^7*e^2 +
2048*a^3*c^8*e^2)/c^8)*x + (221184*a^2*b*c^8*d^2 - 210*b^6*c^5*d*e + 2856*a
*b^4*c^6*d*e - 13536*a^2*b^2*c^7*d*e + 40320*a^3*c^8*d*e + 105*b^7*c^4*e^2
- 1428*a*b^5*c^5*e^2 + 6768*a^2*b^3*c^6*e^2 - 11968*a^3*b*c^7*e^2)/c^8)*x +
 (147456*a^3*c^8*d^2 + 630*b^7*c^4*d*e - 9240*a*b^5*c^5*d*e + 49056*a^2*b^3
*c^6*d*e - 107136*a^3*b*c^7*d*e - 315*b^8*c^3*e^2 + 4620*a*b^6*c^4*e^2 - 24
528*a^2*b^4*c^5*e^2 + 53568*a^3*b^2*c^6*e^2 - 32768*a^4*c^7*e^2)/c^8) + 5/1
6384*(2*b^8*c*d*e - 32*a*b^6*c^2*d*e + 192*a^2*b^4*c^3*d*e - 512*a^3*b^2*c^
4*d*e + 512*a^4*c^5*d*e - b^9*e^2 + 16*a*b^7*c*e^2 - 96*a^2*b^5*c^2*e^2 + 2
56*a^3*b^3*c^3*e^2 - 256*a^4*b*c^4*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*sqrt(c) - b))/c^(11/2)
```

maple [B] time = 0.06, size = 1358, normalized size = 4.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -5/64*a^3/c*(c*x^2+b*x+a)^(1/2)*b*d*e-5/96*a^2/c*(c*x^2+b*x+a)^(3/2)*b*d*e+
5/32*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^3*d*e+5/512*
b^6/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a*d*e+2/9*e^2*x^2*(
c*x^2+b*x+a)^(7/2)+2/7*(c*x^2+b*x+a)^(7/2)*d^2+15/128*b^2/c*(c*x^2+b*x+a)^(
1/2)*x*a^2*d*e+5/96*b^2/c*(c*x^2+b*x+a)^(3/2)*x*a*d*e-15/512*b^4/c^2*(c*x^2
+b*x+a)^(1/2)*x*a*d*e+1/2*x*(c*x^2+b*x+a)^(7/2)*d*e+5/3072/c^4*e^2*b^6*(c*x
^2+b*x+a)^(3/2)-5/8192/c^5*e^2*b^8*(c*x^2+b*x+a)^(1/2)-1/192/c^3*e^2*b^4*(c
*x^2+b*x+a)^(5/2)+1/56/c^2*e^2*b^2*(c*x^2+b*x+a)^(7/2)-4/63/c*e^2*a*(c*x^2+
b*x+a)^(7/2)+5/16384/c^(11/2)*e^2*b^9*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^
(1/2))-15/256*b^4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2*d
*e+5/64/c*e^2*b*a^3*(c*x^2+b*x+a)^(1/2)*x+5/96/c*e^2*b*a^2*(c*x^2+b*x+a)^(3
/2)*x+5/64/c^(3/2)*e^2*b*a^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/
1024/c^(9/2)*e^2*b^7*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+5/192*b^
3/c^2*(c*x^2+b*x+a)^(3/2)*a*d*e-1/24*a/c*(c*x^2+b*x+a)^(5/2)*b*d*e+15/256*b
^3/c^2*(c*x^2+b*x+a)^(1/2)*a^2*d*e+5/2048*b^6/c^3*(c*x^2+b*x+a)^(1/2)*x*d*e
-5/768*b^4/c^2*(c*x^2+b*x+a)^(3/2)*x*d*e+1/48*b^2/c*x*(c*x^2+b*x+a)^(5/2)*d
*e+5/128/c^2*e^2*b^2*a^3*(c*x^2+b*x+a)^(1/2)+5/1536/c^3*e^2*b^5*(c*x^2+b*x+
a)^(3/2)*x-5/384/c^3*e^2*b^4*(c*x^2+b*x+a)^(3/2)*a-5/4096/c^4*e^2*b^7*(c*x^
2+b*x+a)^(1/2)*x+15/512/c^(7/2)*e^2*b^5*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))*a^2-5/64/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*a^3-5/32*a^4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-5/8
192*b^8/c^(9/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e-1/12*a*x*(c
*x^2+b*x+a)^(5/2)*d*e-5/48*a^2*(c*x^2+b*x+a)^(3/2)*x*d*e-15/256/c^2*e^2*b^3
*(c*x^2+b*x+a)^(1/2)*x*a^2+15/1024/c^3*e^2*b^5*(c*x^2+b*x+a)^(1/2)*x*a+1/24
/c*e^2*b*a*x*(c*x^2+b*x+a)^(5/2)-15/1024*b^5/c^3*(c*x^2+b*x+a)^(1/2)*a*d*e-
5/192/c^2*e^2*b^3*(c*x^2+b*x+a)^(3/2)*x*a-15/512/c^3*e^2*b^4*(c*x^2+b*x+a)^
(1/2)*a^2+15/2048/c^4*e^2*b^6*(c*x^2+b*x+a)^(1/2)*a-1/96/c^2*e^2*b^3*x*(c*x
^2+b*x+a)^(5/2)-1/36/c*e^2*b*x*(c*x^2+b*x+a)^(7/2)+1/48/c^2*e^2*b^2*a*(c*x^
2+b*x+a)^(5/2)+5/192/c^2*e^2*b^2*a^2*(c*x^2+b*x+a)^(3/2)-5/32*a^3*(c*x^2+b*
x+a)^(1/2)*x*d*e-5/1536*b^5/c^3*(c*x^2+b*x+a)^(3/2)*d*e+5/4096*b^7/c^4*(c*x
^2+b*x+a)^(1/2)*d*e+1/96*b^3/c^2*(c*x^2+b*x+a)^(5/2)*d*e-1/28*b/c*(c*x^2+b*
x+a)^(7/2)*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^2*(a + b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)^{2}\left(a+bx+cx^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2*(a + b*x + c*x**2)**(5/2), x)
```

3.1567 $\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=198

$$-\frac{5e\left(b^2-4ac\right)^4\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{16384c^{9/2}}+\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4}-\frac{5e\left(b^2-4ac\right)^2(b+2cx)\left(a+\right.}{3072c^3}$$

```
[Out] -5/3072*(-4*a*c+b^2)^2*e*(2*c*x+b)*(c*x^2+b*x+a)^(3/2)/c^3+1/192*(-4*a*c+b^
2)*e*(2*c*x+b)*(c*x^2+b*x+a)^(5/2)/c^2+1/56*(14*c*e*x-b*e+16*c*d)*(c*x^2+b*
x+a)^(7/2)/c-5/16384*(-4*a*c+b^2)^4*e*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+
b*x+a)^(1/2))/c^(9/2)+5/8192*(-4*a*c+b^2)^3*e*(2*c*x+b)*(c*x^2+b*x+a)^(1/2)
/c^4
```

Rubi [A] time = 0.17, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.154, Rules used = {779, 612, 621, 206}

$$\frac{5e\left(b^2-4ac\right)^3(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4}-\frac{5e\left(b^2-4ac\right)^2(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^3}+\frac{e\left(b^2-4ac\right)(b+2cx)\left(a+\right.}{192c^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (5*(b^2 - 4*a*c)^3*e*(b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(8192*c^4) - (5*(b^
2 - 4*a*c)^2*e*(b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(3072*c^3) + ((b^2 - 4*
a*c)*e*(b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(192*c^2) + ((16*c*d - b*e + 14
*c*e*x)*(a + b*x + c*x^2)^(7/2))/(56*c) - (5*(b^2 - 4*a*c)^4*e*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(16384*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)(d+ex)\left(a+bx+cx^2\right)^{5/2}\,dx = \frac{(16cd-be+14cex)\left(a+bx+cx^2\right)^{7/2}}{56c} + \frac{\left(\left(b^2-4ac\right)e\right)\int\left(a+bx+cx^2\right.}{16c}$$

$$= \frac{\left(b^2-4ac\right)e(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{192c^2} + \frac{(16cd-be+14cex)\left(a+bx\right.}{56c}$$

$$= -\frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{3072c^3} + \frac{\left(b^2-4ac\right)e(b+2cx)\left(a\right.}{192c^2}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

$$= \frac{5\left(b^2-4ac\right)^3 e(b+2cx)\sqrt{a+bx+cx^2}}{8192c^4} - \frac{5\left(b^2-4ac\right)^2 e(b+2cx)\left(a+\right.}{3072c^3}$$

Mathematica [A] time = 0.52, size = 194, normalized size = 0.98

$$\frac{\frac{7}{24}e\left(b^2-4ac\right)\left(2(b+2cx)(a+x(b+cx))^{5/2}-5\left(b^2-4ac\right)\left(\frac{3\left(b^2-4ac\right)\left(\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)-2\sqrt{c}(b+2cx)\sqrt{a+x(b+cx}\right.\right.}{128c^{5/2}}\right.\right.}{112c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*c*(a + x*(b + c*x))^(7/2)*(-(b*e) + 2*c*(8*d + 7*e*x)) + (7*(b^2 - 4*a*c
)*e*(2*(b + 2*c*x)*(a + x*(b + c*x))^(5/2) - 5*(b^2 - 4*a*c)*(((b + 2*c*x)*
(a + x*(b + c*x))^(3/2))/(8*c) + (3*(b^2 - 4*a*c)*(-2*Sqrt[c]*(b + 2*c*x)*S
qrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a
+ x*(b + c*x)])]))/(128*c^(5/2)))))/24)/(112*c^2)
```

fricas [B] time = 0.95, size = 841, normalized size = 4.25

$$\left[\frac{105\left(b^8-16\,ab^6c+96\,a^2b^4c^2-256\,a^3b^2c^3+256\,a^4c^4\right)\sqrt{c}\,e\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx+b\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/688128*(105*(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a
^4*c^4)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*
(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(43008*c^8*e*x^7 + 49152*a^3*c^5*d + 3072*
(16*c^8*d + 41*b*c^7*e)*x^6 + 256*(576*b*c^7*d + (475*b^2*c^6 + 476*a*c^7)*
e)*x^5 + 128*(1152*(b^2*c^6 + a*c^7)*d + (299*b^3*c^5 + 1804*a*b*c^6)*e)*x^
4 + 16*(3072*(b^3*c^5 + 6*a*b*c^6)*d - (3*b^4*c^4 - 6520*a*b^2*c^5 - 6608*a
^2*c^6)*e)*x^3 + 8*(18432*(a*b^2*c^5 + a^2*c^6)*d + (7*b^5*c^3 - 88*a*b^3*c
^4 + 10608*a^2*b*c^5)*e)*x^2 + (105*b^7*c - 1540*a*b^5*c^2 + 8176*a^2*b^3*c
^3 - 17856*a^3*b*c^4)*e + 2*(73728*a^2*b*c^5*d - (35*b^6*c^2 - 476*a*b^4*c^
3 + 2256*a^2*b^2*c^4 - 6720*a^3*c^5)*e)*x)*sqrt(c*x^2 + b*x + a))/c^5, 1/34
4064*(105*(b^8 - 16*a*b^6*c + 96*a^2*b^4*c^2 - 256*a^3*b^2*c^3 + 256*a^4*c^
4)*sqrt(-c)*e*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^
2 + b*c*x + a*c)) + 2*(43008*c^8*e*x^7 + 49152*a^3*c^5*d + 3072*(16*c^8*d +
 41*b*c^7*e)*x^6 + 256*(576*b*c^7*d + (475*b^2*c^6 + 476*a*c^7)*e)*x^5 + 12
8*(1152*(b^2*c^6 + a*c^7)*d + (299*b^3*c^5 + 1804*a*b*c^6)*e)*x^4 + 16*(307
2*(b^3*c^5 + 6*a*b*c^6)*d - (3*b^4*c^4 - 6520*a*b^2*c^5 - 6608*a^2*c^6)*e)*
x^3 + 8*(18432*(a*b^2*c^5 + a^2*c^6)*d + (7*b^5*c^3 - 88*a*b^3*c^4 + 10608*
a^2*b*c^5)*e)*x^2 + (105*b^7*c - 1540*a*b^5*c^2 + 8176*a^2*b^3*c^3 - 17856*
a^3*b*c^4)*e + 2*(73728*a^2*b*c^5*d - (35*b^6*c^2 - 476*a*b^4*c^3 + 2256*a^
2*b^2*c^4 - 6720*a^3*c^5)*e)*x)*sqrt(c*x^2 + b*x + a))/c^5]
```

giac [B] time = 0.27, size = 452, normalized size = 2.28

$$\frac{1}{172032}\sqrt{cx^2+bx+a}\,\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(2\Bigg(12\Bigg(14\,c^3xe+\frac{16\,c^{10}d+41\,bc^9e}{c^7}\Bigg)x+\frac{576\,bc^9d+475\,b^2c^8e+476\,ac^9e}{c^7}\Bigg)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/172032*sqrt(c*x^2 + b*x + a)*(2*(4*(2*(8*(2*(12*(14*c^3*x*e + (16*c^10*d
+ 41*b*c^9*e)/c^7)*x + (576*b*c^9*d + 475*b^2*c^8*e + 476*a*c^9*e)/c^7)*x +
 (1152*b^2*c^8*d + 1152*a*c^9*d + 299*b^3*c^7*e + 1804*a*b*c^8*e)/c^7)*x +
(3072*b^3*c^7*d + 18432*a*b*c^8*d - 3*b^4*c^6*e + 6520*a*b^2*c^7*e + 6608*a
^2*c^8*e)/c^7)*x + (18432*a*b^2*c^7*d + 18432*a^2*c^8*d + 7*b^5*c^5*e - 88*
a*b^3*c^6*e + 10608*a^2*b*c^7*e)/c^7)*x + (73728*a^2*b*c^7*d - 35*b^6*c^4*e
 + 476*a*b^4*c^5*e - 2256*a^2*b^2*c^6*e + 6720*a^3*c^7*e)/c^7)*x + (49152*a
^3*c^7*d + 105*b^7*c^3*e - 1540*a*b^5*c^4*e + 8176*a^2*b^3*c^5*e - 17856*a^
3*b*c^6*e)/c^7) + 5/16384*(b^8*e - 16*a*b^6*c*e + 96*a^2*b^4*c^2*e - 256*a^
3*b^2*c^3*e + 256*a^4*c^4*e)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.06, size = 616, normalized size = 3.11

$$-\frac{5a^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{64\sqrt{c}}+\frac{5a^3b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{64c^{\frac{3}{2}}}-\frac{15a^2b^4e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{512c^{\frac{5}{2}}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 5/4096/c^3*e*b^6*(c*x^2+b*x+a)^(1/2)*x-15/1024/c^2*e*b^4*(c*x^2+b*x+a)^(1/2
)*x*a+5/192/c*e*b^2*(c*x^2+b*x+a)^(3/2)*x*a+15/256/c*e*b^2*(c*x^2+b*x+a)^(1
/2)*x*a^2+5/64/c^(3/2)*e*b^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^
3-5/192/c*e*a^2*(c*x^2+b*x+a)^(3/2)*b-5/1536/c^2*e*b^4*(c*x^2+b*x+a)^(3/2)*
x-15/2048/c^3*e*b^5*(c*x^2+b*x+a)^(1/2)*a+1/96/c*e*b^2*x*(c*x^2+b*x+a)^(5/2
)-5/128/c*e*a^3*(c*x^2+b*x+a)^(1/2)*b-1/48/c*e*a*(c*x^2+b*x+a)^(5/2)*b+15/5
12/c^2*e*b^3*(c*x^2+b*x+a)^(1/2)*a^2+5/384/c^2*e*b^3*(c*x^2+b*x+a)^(3/2)*a-
15/512/c^(5/2)*e*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a^2+5/1024
/c^(7/2)*e*b^6*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*a+2/7*(c*x^2+b*x
+a)^(7/2)*d+1/4*e*x*(c*x^2+b*x+a)^(7/2)-1/56/c*e*b*(c*x^2+b*x+a)^(7/2)+1/19
2/c^2*e*b^3*(c*x^2+b*x+a)^(5/2)+5/8192/c^4*e*b^7*(c*x^2+b*x+a)^(1/2)-5/3072
/c^3*e*b^5*(c*x^2+b*x+a)^(3/2)-5/96*e*a^2*(c*x^2+b*x+a)^(3/2)*x-5/64*e*a^3*
(c*x^2+b*x+a)^(1/2)*x-1/24*e*a*x*(c*x^2+b*x+a)^(5/2)-5/16384/c^(9/2)*e*b^8*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-5/64/c^(1/2)*e*a^4*ln((c*x+1/2*
b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive, negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int (b+2\,c\,x)\,(d+e\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)*(a + b*x + c*x^2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,(d+ex)\left(a+bx+cx^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)*(a + b*x + c*x**2)**(5/2), x)
```

3.1568 $\int (b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx$

Optimal. Leaf size=18

$$\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

```
[Out] 2/7*(c*x^2+b*x+a)^(7/2)
```

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(a + b*x + c*x^2)^(7/2))/7
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (b+2cx)\left(a+bx+cx^2\right)^{5/2}\,dx=\frac{2}{7}\left(a+bx+cx^2\right)^{7/2}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$\frac{2}{7}(a+x(b+cx))^{7/2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(a + x*(b + c*x))^(7/2))/7
```

fricas [B] time = 0.92, size = 86, normalized size = 4.78

$$\frac{2}{7}\left(c^3x^6+3\,bc^2x^5+3\left(b^2c+ac^2\right)x^4+3\,a^2bx+\left(b^3+6\,abc\right)x^3+a^3+3\left(ab^2+a^2c\right)x^2\right)\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/7*(c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a
*b*c)*x^3 + a^3 + 3*(a*b^2 + a^2*c)*x^2)*sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 14, normalized size = 0.78

$$\frac{2}{7}\left(cx^2+bx+a\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/7*(c*x^2 + b*x + a)^(7/2)
```

maple [A] time = 0.05, size = 15, normalized size = 0.83

$$\frac{2\left(c\,x^{2}+bx+a\right)^{\frac{7}{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/7*(c*x^2+b*x+a)^(7/2)
```

maxima [A] time = 0.47, size = 14, normalized size = 0.78

$$\frac{2}{7}\left(cx^{2}+bx+a\right)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/7*(c*x^2 + b*x + a)^(7/2)
```

mupad [B] time = 2.03, size = 14, normalized size = 0.78

$$\frac{2\left(c\,x^{2}+b\,x+a\right)^{7/2}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(a + b*x + c*x^2)^(7/2))/7
```

sympy [B] time = 2.90, size = 243, normalized size = 13.50

$$\frac{2a^{3}\sqrt{a+bx+cx^{2}}}{7}+\frac{6a^{2}bx\sqrt{a+bx+cx^{2}}}{7}+\frac{6a^{2}cx^{2}\sqrt{a+bx+cx^{2}}}{7}+\frac{6ab^{2}x^{2}\sqrt{a+bx+cx^{2}}}{7}+\frac{12abcx^{3}\sqrt{a+bx+cx^{2}}}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] 2*a**3*sqrt(a + b*x + c*x**2)/7 + 6*a**2*b*x*sqrt(a + b*x + c*x**2)/7 + 6*a
**2*c*x**2*sqrt(a + b*x + c*x**2)/7 + 6*a*b**2*x**2*sqrt(a + b*x + c*x**2)/
7 + 12*a*b*c*x**3*sqrt(a + b*x + c*x**2)/7 + 6*a*c**2*x**4*sqrt(a + b*x + c
*x**2)/7 + 2*b**3*x**3*sqrt(a + b*x + c*x**2)/7 + 6*b**2*c*x**4*sqrt(a + b*
x + c*x**2)/7 + 6*b*c**2*x**5*sqrt(a + b*x + c*x**2)/7 + 2*c**3*x**6*sqrt(a
 + b*x + c*x**2)/7
```

3.1569 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=627

$$\frac{\bigl(640c^4d^2e^2\bigl(3a^2e^2-8abde+5b^2d^2\bigr)+40b^2c^2e^4\bigl(6a^2e^2-8abde+3b^2d^2\bigr)+4b^4ce^5(2bd-5ae)-512c^5d^4e(6bd -}{512c^{5/2}e^7}$$

```
[Out] -1/96*(64*c^3*d^3-b^3*e^3+4*b*c*e^2*(-13*a*e+14*b*d)-8*c^2*d*e*(-8*a*e+15*b
*d)-2*c*e*(24*c^2*d^2+b^2*e^2-4*c*e*(-5*a*e+6*b*d))*x)*(c*x^2+b*x+a)^(3/2)/
c/e^4-1/30*(-10*c*e*x-11*b*e+12*c*d)*(c*x^2+b*x+a)^(5/2)/e^2+1/512*(1024*c^
6*d^6+b^6*e^6+4*b^4*c*e^5*(-5*a*e+2*b*d)-512*c^5*d^4*e*(-5*a*e+6*b*d)-320*c
^3*e^3*(-a*e+b*d)^2*(-a*e+4*b*d)+640*c^4*d^2*e^2*(3*a^2*e^2-8*a*b*d*e+5*b^2
*d^2)+40*b^2*c^2*e^4*(6*a^2*e^2-8*a*b*d*e+3*b^2*d^2))*arctanh(1/2*(2*c*x+b)
/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)/e^7-(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^
(5/2)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x
^2+b*x+a)^(1/2))/e^7-1/256*(512*c^5*d^5+b^5*e^5-128*c^4*d^3*e*(-8*a*e+11*b*
d)+8*b^3*c*e^4*(-2*a*e+b*d)+32*c^3*d*e^2*(16*a^2*e^2-55*a*b*d*e+40*b^2*d^2)
-8*b*c^2*e^3*(42*a^2*e^2-92*a*b*d*e+49*b^2*d^2)-2*c*e*(16*c^2*d^2-b^2*e^2-4
*c*e*(-5*a*e+4*b*d))*(8*c^2*d^2+b^2*e^2-4*c*e*(-a*e+2*b*d))*x)*(c*x^2+b*x+a
)^(1/2)/c^2/e^6
```

Rubi [A] time = 1.14, antiderivative size = 627, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {814, 843, 621, 206, 724}

$$-\frac{\sqrt{a+bx+cx^2}\,\bigl(32c^3de^2\bigl(16a^2e^2-55abde+40b^2d^2\bigr)-8bc^2e^3\bigl(42a^2e^2-92abde+49b^2d^2\bigr)-2cex\bigl(-4ce(4bd}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((512*c^5*d^5 + b^5*e^5 - 128*c^4*d^3*e*(11*b*d - 8*a*e) + 8*b^3*c*e^4*(b*
d - 2*a*e) + 32*c^3*d*e^2*(40*b^2*d^2 - 55*a*b*d*e + 16*a^2*e^2) - 8*b*c^2*
e^3*(49*b^2*d^2 - 92*a*b*d*e + 42*a^2*e^2) - 2*c*e*(16*c^2*d^2 - b^2*e^2 -
4*c*e*(4*b*d - 5*a*e))*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*x)*Sqrt[
a + b*x + c*x^2])/(256*c^2*e^6) - ((64*c^3*d^3 - b^3*e^3 + 4*b*c*e^2*(14*b*
d - 13*a*e) - 8*c^2*d*e*(15*b*d - 8*a*e) - 2*c*e*(24*c^2*d^2 + b^2*e^2 - 4*
c*e*(6*b*d - 5*a*e))*x)*(a + b*x + c*x^2)^(3/2))/(96*c*e^4) - ((12*c*d - 11
*b*e - 10*c*e*x)*(a + b*x + c*x^2)^(5/2))/(30*e^2) + ((1024*c^6*d^6 + b^6*e
^6 + 4*b^4*c*e^5*(2*b*d - 5*a*e) - 512*c^5*d^4*e*(6*b*d - 5*a*e) - 320*c^3*
e^3*(b*d - a*e)^2*(4*b*d - a*e) + 640*c^4*d^2*e^2*(5*b^2*d^2 - 8*a*b*d*e +
3*a^2*e^2) + 40*b^2*c^2*e^4*(3*b^2*d^2 - 8*a*b*d*e + 6*a^2*e^2))*ArcTanh[(b
 + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(512*c^(5/2)*e^7) - ((2*c*d -
 b*e)*(c*d^2 - b*d*e + a*e^2)^(5/2)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)
/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/e^7
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{d+ex}\,dx = -\frac{(12cd-11be-10cex)\left(a+bx+cx^2\right)^{5/2}}{30e^2} - \frac{\int \frac{(c(11b^2de+4acde-12b(cd^2+ae^2))-c(24c^2}{d+}}{12}$$

$$= -\frac{(64c^3d^3-b^3e^3+4bce^2(14bd-13ae)-8c^2de(15bd-8ae)-2ce(24c^2d^2+b^2}{96ce^4}$$

$$= -\frac{(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2(40b^2}{}$$

$$= -\frac{(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2(40b^2}{}$$

$$= -\frac{(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2(40b^2}{}$$

$$= -\frac{(512c^5d^5+b^5e^5-128c^4d^3e(11bd-8ae)+8b^3ce^4(bd-2ae)+32c^3de^2(40b^2}{}$$

Mathematica [A] time = 1.63, size = 607, normalized size = 0.97

$$\frac{\sqrt{c}\left(640c^4d^2e^2\left(3a^2e^2-8abde+5b^2d^2\right)+40b^2c^2e^4\left(6a^2e^2-8abde+3b^2d^2\right)+4b^4ce^5(2bd-5ae)-512c^5d^4e(6bd\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] ((-12*c*d + 11*b*e + 10*c*e*x)*(a + x*(b + c*x))^(5/2))/(30*e^2) + ((a + x*
(b + c*x))^(3/2)*(b^3*e^3 + 16*c^3*d^2*(-4*d + 3*e*x) + 2*b*c*e^2*(-28*b*d
+ 26*a*e + b*e*x) + 8*c^2*e*(3*b*d*(5*d - 2*e*x) + a*e*(-8*d + 5*e*x))))/(9
6*c*e^4) + (-2*c*e*Sqrt[a + x*(b + c*x)]*(b^5*e^5 + 256*c^5*d^4*(2*d - e*x)
 + 2*b^3*c*e^4*(4*b*d - 8*a*e + b*e*x) - 8*b*c^2*e^3*(42*a^2*e^2 + b^2*d*(4
9*d - 2*e*x) + 4*a*b*e*(-23*d + e*x)) - 64*c^4*d^2*e*(2*b*d*(11*d - 4*e*x)
+ a*e*(-16*d + 7*e*x)) + 16*c^3*e^2*(b^2*d^2*(80*d - 17*e*x) + 2*a^2*e^2*(1
6*d - 5*e*x) + 2*a*b*d*e*(-55*d + 14*e*x))) + Sqrt[c]*(1024*c^6*d^6 + b^6*e
^6 + 4*b^4*c*e^5*(2*b*d - 5*a*e) - 512*c^5*d^4*e*(6*b*d - 5*a*e) + 320*c^3*
e^3*(b*d - a*e)^2*(-4*b*d + a*e) + 640*c^4*d^2*e^2*(5*b^2*d^2 - 8*a*b*d*e +
 3*a^2*e^2) + 40*b^2*c^2*e^4*(3*b^2*d^2 - 8*a*b*d*e + 6*a^2*e^2))*ArcTanh[(
b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + 512*c^3*(2*c*d - b*e)*(c*d^
2 + e*(-(b*d) + a*e))^(5/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*S
qrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(512*c^3*e^7)
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [**B**] time = 0.06, size = 6077, normalized size = 9.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx) \left(a + bx + cx^{2}\right)^{\frac{5}{2}}}{d + ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x), x)
```

3.1570 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=508

$$\frac{\sqrt{a+bx+cx^2}\,\left(8c^2e^2\left(8a^2e^2-67abde+76b^2d^2\right)-2cex(2cd-be)\left(44ace^2+b^2e^2-48bcde+48c^2d^2\right)-2b^2ce^3}{32ce^6}$$

```
[Out] 1/12*(48*c^2*d^2-66*b*c*d*e+19*b^2*e^2+8*a*c*e^2-18*c*e*(-b*e+2*c*d)*x)*(c*
x^2+b*x+a)^(3/2)/e^4+1/5*(2*c*e*x-5*b*e+12*c*d)*(c*x^2+b*x+a)^(5/2)/e^2/(e*
x+d)-1/64*(-b*e+2*c*d)*(384*c^4*d^4-b^4*e^4-8*b^2*c*e^3*(-5*a*e+4*b*d)-128*
c^3*d^2*e*(-5*a*e+6*b*d)+16*c^2*e^2*(15*a^2*e^2-40*a*b*d*e+26*b^2*d^2))*arc
tanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)/e^7+1/2*(a*e^2-b*d*
e+c*d^2)^(3/2)*(24*c^2*d^2+5*b^2*e^2-4*c*e*(-a*e+6*b*d))*arctanh(1/2*(b*d-2
*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^7+1/3
2*(384*c^4*d^4+b^4*e^4-2*b^2*c*e^3*(-62*a*e+65*b*d)-32*c^3*d^2*e*(-14*a*e+2
7*b*d)+8*c^2*e^2*(8*a^2*e^2-67*a*b*d*e+76*b^2*d^2)-2*c*e*(-b*e+2*c*d)*(44*a
*c*e^2+b^2*e^2-48*b*c*d*e+48*c^2*d^2)*x)*(c*x^2+b*x+a)^(1/2)/c/e^6
```

Rubi [**A**] time = 0.75, antiderivative size = 508, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {812, 814, 843, 621, 206, 724}

$$\frac{\sqrt{a+bx+cx^2}\,\left(8c^2e^2\left(8a^2e^2-67abde+76b^2d^2\right)-2cex(2cd-be)\left(44ace^2+b^2e^2-48bcde+48c^2d^2\right)-2b^2ce^3}{32ce^6}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] ((384*c^4*d^4 + b^4*e^4 - 2*b^2*c*e^3*(65*b*d - 62*a*e) - 32*c^3*d^2*e*(27*
b*d - 14*a*e) + 8*c^2*e^2*(76*b^2*d^2 - 67*a*b*d*e + 8*a^2*e^2) - 2*c*e*(2*
c*d - b*e)*(48*c^2*d^2 - 48*b*c*d*e + b^2*e^2 + 44*a*c*e^2)*x)*Sqrt[a + b*x
 + c*x^2])/(32*c*e^6) + ((48*c^2*d^2 - 66*b*c*d*e + 19*b^2*e^2 + 8*a*c*e^2
- 18*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(12*e^4) + ((12*c*d - 5*
b*e + 2*c*e*x)*(a + b*x + c*x^2)^(5/2))/(5*e^2*(d + e*x)) - ((2*c*d - b*e)*
(384*c^4*d^4 - b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 5*a*e) - 128*c^3*d^2*e*(6*b*d
 - 5*a*e) + 16*c^2*e^2*(26*b^2*d^2 - 40*a*b*d*e + 15*a^2*e^2))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(64*c^(3/2)*e^7) + ((c*d^2 - b*
d*e + a*e^2)^(3/2)*(24*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(6*b*d - a*e))*ArcTanh[(
b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x
+ c*x^2])])/(2*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{(12cd-5be+2cex)\left(a+bx+cx^2\right)^{5/2}}{5e^2(d+ex)} - \frac{\int \frac{\left(12bcd-5b^2e-4ace+12c(2cd-be)x\right)\left(a+bx+\right.}{d+ex}}{2e^2}$$

$$= \frac{\left(48c^2d^2-66bcde+19b^2e^2+8ace^2-18ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{12e^4} +$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(7\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(7\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(7\right.\right.}{}$$

$$= \frac{\left(384c^4d^4+b^4e^4-2b^2ce^3(65bd-62ae)-32c^3d^2e(27bd-14ae)+8c^2e^2\left(7\right.\right.}{}$$

Mathematica [**A**] time = 2.45, size = 659, normalized size = 1.30

$$\frac{\frac{-2c^2e\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)\left(4c^2e^2\left(16a^2e^2+2abe(11ex-67d)+b^2d(152d-25ex)\right)+2b^2ce^3(62ae-65bd+bex)-16c^3de(ae(11ex-28d)+18bd(3d-ex)\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (((-2*c*d + b*e)*(a + x*(b + c*x))^(7/2))/(d + e*x) + ((a + x*(b + c*x))^(5
/2)*(-5*b^2*e^2 - 2*c^2*d*(6*d - 5*e*x) + c*e*(17*b*d - 2*a*e - 5*b*e*x)))/
(5*e^2) - ((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^(3/2)*(19*b^2*e^2 +
 12*c^2*d*(4*d - 3*e*x) + 2*c*e*(-33*b*d + 4*a*e + 9*b*e*x)))/(12*e^4) + (-
2*c^2*e*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)]*(b^4*e^4 + 192*c^4
*d^3*(2*d - e*x) + 2*b^2*c*e^3*(-65*b*d + 62*a*e + b*e*x) + 4*c^2*e^2*(16*a
^2*e^2 + b^2*d*(152*d - 25*e*x) + 2*a*b*e*(-67*d + 11*e*x)) - 16*c^3*d*e*(1
8*b*d*(3*d - e*x) + a*e*(-28*d + 11*e*x))) + c^(3/2)*(2*c*d - b*e)*(384*c^5
*d^6 - 128*c^4*d^4*e*(9*b*d - 8*a*e) + b^4*e^5*(b*d - a*e) + b^2*c*e^4*(31*
b^2*d^2 - 72*a*b*d*e + 40*a^2*e^2) + 16*c^3*d^2*e^2*(74*b^2*d^2 - 128*a*b*d
*e + 55*a^2*e^2) + 8*c^2*e^3*(-56*b^3*d^3 + 137*a*b^2*d^2*e - 110*a^2*b*d*e
^2 + 30*a^3*e^3))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] +
32*c^3*(24*c^2*d^2 + 5*b^2*e^2 + 4*c*e*(-6*b*d + a*e))*(c*d^2 + e*(-(b*d) +
 a*e))^(5/2)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(
-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(64*c^3*e^7))/(-(c*d^2) + e*(b*d -
a*e))
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.07, size = 13167, normalized size = 25.92

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                 +c*d^2 zero or nonze
ro?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{{(d+e\,x)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**2, x)
```

3.1571 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=464

$$\frac{15\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b}{2\sqrt{c}\,\sqrt{}}\right.}{64\sqrt{c}\,e^7}$$

```
[Out] -5/4*(8*c^2*d^2+b^2*e^2-c*e*(-2*a*e+7*b*d)+c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a
)^(3/2)/e^4/(e*x+d)+1/2*(c*e*x-b*e+3*c*d)*(c*x^2+b*x+a)^(5/2)/e^2/(e*x+d)^2
+15/64*(128*c^4*d^4+b^4*e^4-8*b^2*c*e^3*(-3*a*e+4*b*d)-128*c^3*d^2*e*(-a*e+
2*b*d)+16*c^2*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2))*arctanh(1/2*(2*c*x+b)/c^(
1/2)/(c*x^2+b*x+a)^(1/2))/e^7/c^(1/2)-15/8*(-b*e+2*c*d)*(8*c^2*d^2+b^2*e^2-
4*c*e*(-a*e+2*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d
^2)^(1/2)/(c*x^2+b*x+a)^(1/2))*(a*e^2-b*d*e+c*d^2)^(1/2)/e^7-15/32*(64*c^3*
d^3-7*b^3*e^3+4*b*c*e^2*(-5*a*e+14*b*d)-16*c^2*d*e*(-2*a*e+7*b*d)-2*c*e*(16
*c^2*d^2+3*b^2*e^2-4*c*e*(-a*e+4*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^6
```

Rubi [A] time = 0.85, antiderivative size = 464, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.214$, Rules used = $\{812, 814, 843, 621, 206, 724\}$

$$\frac{15\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{b}{2\sqrt{c}\,\sqrt{}}\right.}{64\sqrt{c}\,e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-15*(64*c^3*d^3 - 7*b^3*e^3 + 4*b*c*e^2*(14*b*d - 5*a*e) - 16*c^2*d*e*(7*b
*d - 2*a*e) - 2*c*e*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(4*b*d - a*e))*x)*Sqrt[
a + b*x + c*x^2])/(32*e^6) - (5*(8*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 2*a*e)
+ c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(4*e^4*(d + e*x)) + ((3*c*d
 - b*e + c*e*x)*(a + b*x + c*x^2)^(5/2))/(2*e^2*(d + e*x)^2) + (15*(128*c^4
*d^4 + b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e)
+ 16*c^2*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqr
t[c]*Sqrt[a + b*x + c*x^2])])/(64*Sqrt[c]*e^7) - (15*(2*c*d - b*e)*Sqrt[c*d
^2 - b*d*e + a*e^2]*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh[(b*
d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x +
c*x^2])])/(8*e^7)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{(3cd-be+cex)\left(a+bx+cx^2\right)^{5/2}}{2e^2(d+ex)^2} - \frac{5\int \frac{\left(4\left(3bcd-b^2e-2ace\right)+12c(2cd-be)x\right)(a+bx+cx}{(d+ex)^2}}{16e^2}$$

$$= -\frac{5\left(8c^2d^2+b^2e^2-ce(7bd-2ae)+ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{4e^4(d+ex)} + (3cd$$

$$= -\frac{15\,(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\,(16c^2d}{32e^6}$$

$$= -\frac{15\,(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\,(16c^2d}{32e^6}$$

$$= -\frac{15\,(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\,(16c^2d}{32e^6}$$

$$= -\frac{15\,(64c^3d^3-7b^3e^3+4bce^2(14bd-5ae)-16c^2de(7bd-2ae)-2ce\,(16c^2d}{32e^6}$$

Mathematica [**A**] time = 2.13, size = 535, normalized size = 1.15

$$-\frac{2e\sqrt{a+x(b+cx)}\,(2ce^2(16a^2e^2(d+2ex)-2abe(145d^2+234dex+65e^2x^2)+b^2(420d^3+655d^2ex+166de^2x^2-37e^3x^3))+be^3(16a^2e^2+8abe(5d+9ex)-(b^2(10}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] ((-2*e*Sqrt[a + x*(b + c*x)]*(16*c^3*(60*d^5 + 90*d^4*e*x + 20*d^3*e^2*x^2
- 5*d^2*e^3*x^3 + 2*d*e^4*x^4 - e^5*x^5) + b*e^3*(16*a^2*e^2 + 8*a*b*e*(5*d
 + 9*e*x) - b^2*(105*d^2 + 170*d*e*x + 49*e^2*x^2)) + 2*c*e^2*(16*a^2*e^2*(
d + 2*e*x) - 2*a*b*e*(145*d^2 + 234*d*e*x + 65*e^2*x^2) + b^2*(420*d^3 + 65
5*d^2*e*x + 166*d*e^2*x^2 - 37*e^3*x^3)) - 8*c^2*e*(a*e*(-100*d^3 - 155*d^2
*e*x - 38*d*e^2*x^2 + 9*e^3*x^3) + b*(210*d^4 + 320*d^3*e*x + 75*d^2*e^2*x^
2 - 18*d*e^3*x^3 + 7*e^4*x^4))))/(d + e*x)^2 + (15*(128*c^4*d^4 + b^4*e^4 -
 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*c^2*e^2*(10
*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*
(b + c*x)])])/Sqrt[c] + 120*(2*c*d - b*e)*(8*c^2*d^2 + b^2*e^2 + 4*c*e*(-2*
b*d + a*e))*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*
x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(64*e
^7)
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.07Unable to divide, perha
ps due to rounding error%%%{1,[6,0,10,0,0]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1
]%%%}]%%},[5,0,9,0,1]%%%}+%%%{-3,[4,1,10,0,0]%%%}+%%%{3,[4,0,9,1,1]%%%}+%%%
{%%%{12,[1]%%%},[4,0,8,0,2]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,
9,0,1]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,8,1,2]%%%}+%%%{%%{[%
%%{-8,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,7,0,3]%%%}+%%%{3,[2,2,10,0,0]
%%%}+%%%{-6,[2,1,9,1,1]%%%}+%%%{%%%{-12,[1]%%%},[2,1,8,0,2]%%%}+%%%{3,[2,0,
8,2,2]%%%}+%%%{%%%{12,[1]%%%},[2,0,7,1,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]
%%%}]%%},[1,2,9,0,1]%%%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,8,1,2]%
%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,7,2,3]%%%}+%%%{-1,[0,3,10,0,
0]%%%}+%%%{3,[0,2,9,1,1]%%%}+%%%{-3,[0,1,8,2,2]%%%}+%%%{1,[0,0,7,3,3]%%%} /
 %%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,3,0,0]%%%}+%%%{
%%%{-6,[2]%%%},[5,0,2,0,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%
}]%%},[4,1,3,0,0]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[4,0,2,1,1]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,
0,1,0,2]%%%}+%%%{%%%{12,[2]%%%},[3,1,2,0,1]%%%}+%%%{%%%{-12,[2]%%%},[3,0,1,
1,2]%%%}+%%%{%%%{-8,[3]%%%},[3,0,0,0,3]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%
%%{-1,[1]%%%}]%%},[2,2,3,0,0]%%%}+%%%{%%{[%%%{-6,[1]%%%},0]:[1,0,%%%{-1,[1]
%%%}]%%},[2,1,2,1,1]%%%}+%%%{%%{[%%%{-12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%}
,[2,1,1,0,2]%%%}+%%%{%%{poly1[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0
,1,2,2]%%%}+%%%{%%{poly1[%%%{12,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,0,1
,3]%%%}+%%%{%%%{-6,[2]%%%},[1,2,2,0,1]%%%}+%%%{%%%{12,[2]%%%},[1,1,1,1,2]%%
%}+%%%{%%%{-6,[2]%%%},[1,0,0,2,3]%%%}+%%%{%%{[%%%{-1,[1]%%%},0]:[1,0,%%%{-1
,[1]%%%}]%%},[0,3,3,0,0]%%%}+%%%{%%{[%%%{3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%
%},[0,2,2,1,1]%%%}+%%%{%%{[%%%{-3,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,1
,2,2]%%%}+%%%{%%{poly1[%%%{1,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,0,3,3]
%%%} Error: Bad Argument Value
```

maple [B] time = 0.08, size = 18705, normalized size = 40.31

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                 +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}}{{(d+e\,x)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**3, x)
```

3.1572 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=473

$$\frac{5\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x}{2\sqrt{a+bx+cx}}\right.}{16e^7\sqrt{ae^2-bde+cd^2}}$$

```
[Out] -5/12*(16*c^2*d^2+b^2*e^2-4*c*e*(-a*e+3*b*d)+4*c*e*(-b*e+2*c*d)*x)*(c*x^2+b
*x+a)^(3/2)/e^4/(e*x+d)^2+1/3*(2*c*e*x-b*e+4*c*d)*(c*x^2+b*x+a)^(5/2)/e^2/(
e*x+d)^3-5/2*(-b*e+2*c*d)*(8*c^2*d^2+b^2*e^2-4*c*e*(-a*e+2*b*d))*arctanh(1/
2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))*c^(1/2)/e^7+5/16*(128*c^4*d^4+b^4*
e^4-8*b^2*c*e^3*(-3*a*e+4*b*d)-128*c^3*d^2*e*(-a*e+2*b*d)+16*c^2*e^2*(a^2*e
^2-8*a*b*d*e+10*b^2*d^2))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d
*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/e^7/(a*e^2-b*d*e+c*d^2)^(1/2)+5/8*(64*
c^3*d^3-b^3*e^3-16*c^2*d*e*(-2*a*e+5*b*d)+12*b*c*e^2*(-a*e+2*b*d)+2*c*e*(16
*c^2*d^2+3*b^2*e^2-4*c*e*(-a*e+4*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^6/(e*x+d)
```

Rubi [A] time = 0.75, antiderivative size = 473, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {812, 843, 621, 206, 724}

$$\frac{5\left(16c^2e^2\left(a^2e^2-8abde+10b^2d^2\right)-8b^2ce^3(4bd-3ae)-128c^3d^2e(2bd-ae)+b^4e^4+128c^4d^4\right)\tanh^{-1}\left(\frac{-2ae+x}{2\sqrt{a+bx+cx}}\right.}{16e^7\sqrt{ae^2-bde+cd^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (5*(64*c^3*d^3 - b^3*e^3 - 16*c^2*d*e*(5*b*d - 2*a*e) + 12*b*c*e^2*(2*b*d -
 a*e) + 2*c*e*(16*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(4*b*d - a*e))*x)*Sqrt[a + b*
x + c*x^2])/(8*e^6*(d + e*x)) - (5*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(3*b*d - a
*e) + 4*c*e*(2*c*d - b*e)*x)*(a + b*x + c*x^2)^(3/2))/(12*e^4*(d + e*x)^2)
+ ((4*c*d - b*e + 2*c*e*x)*(a + b*x + c*x^2)^(5/2))/(3*e^2*(d + e*x)^3) - (
5*Sqrt[c]*(2*c*d - b*e)*(8*c^2*d^2 + b^2*e^2 - 4*c*e*(2*b*d - a*e))*ArcTanh
[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*e^7) + (5*(128*c^4*d^4
+ b^4*e^4 - 8*b^2*c*e^3*(4*b*d - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*
c^2*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))*ArcTanh[(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(16*e^7*Sq
rt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{(4cd-be+2cex)\left(a+bx+cx^2\right)^{5/2}}{3e^2(d+ex)^3} - \frac{5\int \frac{\left(3\left(4bcd-b^2e-4ace\right)+12c(2cd-be)x\right)\left(a+bx+c\right.}{(d+ex)^3}}{18e^2}$$

$$= -\frac{5\left(16c^2d^2+b^2e^2-4ce(3bd-ae)+4ce(2cd-be)x\right)\left(a+bx+cx^2\right)^{3/2}}{12e^4(d+ex)^2} + \frac{(4}{}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3\right.\right.}{8e^6(d+ex)}$$

$$= \frac{5\left(64c^3d^3-b^3e^3-16c^2de(5bd-2ae)+12bce^2(2bd-ae)+2ce\left(16c^2d^2+3\right.\right.}{8e^6(d+ex)}$$

Mathematica [A] time = 2.62, size = 823, normalized size = 1.74

$$\frac{-120\sqrt{c}\,(2cd-be)\left(8c^3d^4-4c^2e(4bd-3ae)d^2+ce^2(3bd-2ae)^2+b^2e^3(ae-bd)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)(d+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (2*e*Sqrt[a + x*(b + c*x)]*(16*c^4*d^2*(60*d^5 + 150*d^4*e*x + 110*d^3*e^2*
x^2 + 15*d^2*e^3*x^3 - 3*d*e^4*x^4 + e^5*x^5) + b*e^4*(b*d - a*e)*(8*a^2*e^
2 + 2*a*b*e*(5*d + 13*e*x) + b^2*(15*d^2 + 40*d*e*x + 33*e^2*x^2)) - c*e^3*
(8*a^3*e^3*(d + 3*e*x) + 4*a^2*b*e^2*(15*d^2 + 38*d*e*x + 41*e^2*x^2) + 5*b
^3*d*(75*d^3 + 194*d^2*e*x + 151*d*e^2*x^2 + 24*e^3*x^3) - 2*a*b^2*e*(205*d
^3 + 540*d^2*e*x + 443*d*e^2*x^2 + 60*e^3*x^3)) + 2*c^2*e^2*(4*a^2*e^2*(39*
d^3 + 102*d^2*e*x + 83*d*e^2*x^2 + 14*e^3*x^3) + b^2*d*(780*d^4 + 1985*d^3*
e*x + 1501*d^2*e^2*x^2 + 228*d*e^3*x^3 - 32*e^4*x^4) - 2*a*b*e*(395*d^4 + 1
014*d^3*e*x + 777*d^2*e^2*x^2 + 112*d*e^3*x^3 - 16*e^4*x^4)) + 8*c^3*e*(-(b
*d*(270*d^5 + 680*d^4*e*x + 505*d^3*e^2*x^2 + 72*d^2*e^3*x^3 - 14*d*e^4*x^4
 + 2*e^5*x^5)) + a*e*(160*d^5 + 405*d^4*e*x + 303*d^3*e^2*x^2 + 44*d^2*e^3*
x^3 - 6*d*e^4*x^4 + 2*e^5*x^5))) - 120*Sqrt[c]*(2*c*d - b*e)*(8*c^3*d^4 - 4
*c^2*d^2*e*(4*b*d - 3*a*e) + c*e^2*(3*b*d - 2*a*e)^2 + b^2*e^3*(-(b*d) + a*
e))*(d + e*x)^3*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] - 15
*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*(128*c^4*d^4 + b^4*e^4 - 8*b^2*c*e^3*(4*b*d
 - 3*a*e) - 128*c^3*d^2*e*(2*b*d - a*e) + 16*c^2*e^2*(10*b^2*d^2 - 8*a*b*d*
e + a^2*e^2))*(d + e*x)^3*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqr
t[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(48*e^7*(c*d^2 + e*(-(
b*d) + a*e))*(d + e*x)^3)
```

<u>fricas</u> [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] Timed out
```

<u>giac</u> [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 42.98Unable to divide, perh
aps due to rounding error%%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[8,0,0,11,0]
%%%}+%%%{%%%{8,[1]%%%},[7,0,0,10,1]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%
},[6,1,0,11,0]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,1,10,1]%%%}+%
%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[6,0,0,9,2]%%%}+%%%{%%%{-
24,[1]%%%},[5,1,0,10,1]%%%}+%%%{%%%{24,[1]%%%},[5,0,1,9,2]%%%}+%%%{%%%{32,[
2]%%%},[5,0,0,8,3]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,2,0,11,0]%%
%}+%%%{%%{[12,0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,1,10,1]%%%}+%%%{%%{[%%%{48,[1
]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,1,0,9,2]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,
[1]%%%}]%%},[4,0,2,9,2]%%%}+%%%{%%{[%%%{-48,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]
%%},[4,0,1,8,3]%%%}+%%%{%%{[%%%{-16,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[4,0
,0,7,4]%%%}+%%%{%%%{24,[1]%%%},[3,2,0,10,1]%%%}+%%%{%%%{-48,[1]%%%},[3,1,1,
9,2]%%%}+%%%{%%%{-32,[2]%%%},[3,1,0,8,3]%%%}+%%%{%%%{24,[1]%%%},[3,0,2,8,3]
%%%}+%%%{%%%{32,[2]%%%},[3,0,1,7,4]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%
},[2,3,0,11,0]%%%}+%%%{%%{[-12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,1,10,1]%%%}+
%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,2,0,9,2]%%%}+%%%{%%{[
12,0]:[1,0,%%%{-1,[1]%%%}]%%},[2,1,2,9,2]%%%}+%%%{%%{[%%%{48,[1]%%%},0]:[1,
0,%%%{-1,[1]%%%}]%%},[2,1,1,8,3]%%%}+%%%{%%{[-4,0]:[1,0,%%%{-1,[1]%%%}]%%},
[2,0,3,8,3]%%%}+%%%{%%{[%%%{-24,[1]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[2,0,2,7
,4]%%%}+%%%{%%%{-8,[1]%%%},[1,3,0,10,1]%%%}+%%%{%%%{24,[1]%%%},[1,2,1,9,2]%
%%}+%%%{%%%{-24,[1]%%%},[1,1,2,8,3]%%%}+%%%{%%%{8,[1]%%%},[1,0,3,7,4]%%%}+%
%%{%%{[-1,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,4,0,11,0]%%%}+%%%{%%{[4,0]:[1,0,%%%
{-1,[1]%%%}]%%},[0,3,1,10,1]%%%}+%%%{%%{[-6,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,2
,2,9,2]%%%}+%%%{%%{[4,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,1,3,8,3]%%%}+%%%{%%{[-1
,0]:[1,0,%%%{-1,[1]%%%}]%%},[0,0,4,7,4]%%%} / %%%{%%%{1,[2]%%%},[8,0,0,4,0]
%%%}+%%%{%%{poly1[%%%{-8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[7,0,0,3,1]%%%}
+%%%{%%%{-4,[2]%%%},[6,1,0,4,0]%%%}+%%%{%%%{4,[2]%%%},[6,0,1,3,1]%%%}+%%%{%
%%{24,[3]%%%},[6,0,0,2,2]%%%}+%%%{%%{[%%%{24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}
]%%},[5,1,0,3,1]%%%}+%%%{%%{poly1[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%
},[5,0,1,2,2]%%%}+%%%{%%{poly1[%%%{-32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[
5,0,0,1,3]%%%}+%%%{%%%{6,[2]%%%},[4,2,0,4,0]%%%}+%%%{%%%{-12,[2]%%%},[4,1,1
,3,1]%%%}+%%%{%%%{-48,[3]%%%},[4,1,0,2,2]%%%}+%%%{%%%{6,[2]%%%},[4,0,2,2,2]
%%%}+%%%{%%%{48,[3]%%%},[4,0,1,1,3]%%%}+%%%{%%%{16,[4]%%%},[4,0,0,0,4]%%%}+
%%%{%%{poly1[%%%{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,2,0,3,1]%%%}+%%%
{%%{[%%%{48,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,1,2,2]%%%}+%%%{%%{[%%%{
32,[3]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,1,0,1,3]%%%}+%%%{%%{poly1[%%%{-24,
[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,2,1,3]%%%}+%%%{%%{poly1[%%%{-32,[3]
%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[3,0,1,0,4]%%%}+%%%{%%%{-4,[2]%%%},[2,3,0,4
,0]%%%}+%%%{%%%{12,[2]%%%},[2,2,1,3,1]%%%}+%%%{%%%{24,[3]%%%},[2,2,0,2,2]%%
%}+%%%{%%%{-12,[2]%%%},[2,1,2,2,2]%%%}+%%%{%%%{-48,[3]%%%},[2,1,1,1,3]%%%}+
%%%{%%%{4,[2]%%%},[2,0,3,1,3]%%%}+%%%{%%%{24,[3]%%%},[2,0,2,0,4]%%%}+%%%{%%
{[%%%{8,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,3,0,3,1]%%%}+%%%{%%{poly1[%%%
{-24,[2]%%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,2,1,2,2]%%%}+%%%{%%{[%%%{24,[2]%
%%},0]:[1,0,%%%{-1,[1]%%%}]%%},[1,1,2,1,3]%%%}+%%%{%%{poly1[%%%{-8,[2]%%%},
0]:[1,0,%%%{-1,[1]%%%}]%%},[1,0,3,0,4]%%%}+%%%{%%%{1,[2]%%%},[0,4,0,4,0]%%%
}+%%%{%%%{-4,[2]%%%},[0,3,1,3,1]%%%}+%%%{%%%{6,[2]%%%},[0,2,2,2,2]%%%}+%%%{
%%%{-4,[2]%%%},[0,1,3,1,3]%%%}+%%%{%%%{1,[2]%%%},[0,0,4,0,4]%%%} Error: Bad
 Argument Value
```

maple [B] time = 0.32, size = 28593, normalized size = 60.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(5/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                             +c*d^2 zero or nonze
ro?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(c\,x^2+b\,x+a\right)^{5/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{\frac{5}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(5/2)/(d + e*x)**4, x)
```

3.1573 $\int \frac{(b+2cx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=245

$$\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{64c^{7/2}}+\frac{\sqrt{a+bx+cx^2}\,\Big(2cex\Big(-4ce(3ae+2b}{}$$

```
[Out] 3/64*(-4*a*c+b^2)*e*(16*c^2*d^2+5*b^2*e^2-4*c*e*(a*e+4*b*d))*arctanh(1/2*(2
*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+1/4*(-b*e+2*c*d)*(e*x+d)^2*(c*
x^2+b*x+a)^(1/2)/c+1/2*(e*x+d)^3*(c*x^2+b*x+a)^(1/2)+1/32*(32*c^3*d^3-15*b^
3*e^3+4*b*c*e^2*(13*a*e+12*b*d)-8*c^2*d*e*(16*a*e+5*b*d)+2*c*e*(8*c^2*d^2+5
*b^2*e^2-4*c*e*(3*a*e+2*b*d))*x)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.33, antiderivative size = 245, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\,\Big(2cex\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)-8c^2de(16ae+5bd)+4bce^2(13ae+12bd)-15b^3e^3+}{32c^3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((2*c*d - b*e)*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(4*c) + ((d + e*x)^3*Sqrt
[a + b*x + c*x^2])/2 + ((32*c^3*d^3 - 15*b^3*e^3 + 4*b*c*e^2*(12*b*d + 13*a
*e) - 8*c^2*d*e*(5*b*d + 16*a*e) + 2*c*e*(8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*
b*d + 3*a*e))*x)*Sqrt[a + b*x + c*x^2])/(32*c^3) + (3*(b^2 - 4*a*c)*e*(16*c
^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/(64*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx = \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)^2(3c(bd-2ae)+3c(2cd-be)x)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)\left(\frac{3}{2}c\left(b^2de-20acde\right.\right.}{}}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3+\right.}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3+\right.}{}$$

$$= \frac{(2cd-be)(d+ex)^2\sqrt{a+bx+cx^2}}{4c} + \frac{1}{2}(d+ex)^3\sqrt{a+bx+cx^2} + \frac{\left(32c^3d^3-15b^3e^3+\right.}{}$$

Mathematica [A]   time = 0.39, size = 302, normalized size = 1.23

$$\frac{-4a^2ce^2(-13be+32cd+6cex)+a\left(-15b^3e^3+2b^2ce^2(24d+31ex)+4bc^2e\left(-12d^2-40dex+5e^2x^2\right)+8c^3\left(8d^3+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-4*a^2*c*e^2*(32*c*d - 13*b*e + 6*c*e*x) + a*(-15*b^3*e^3 + 2*b^2*c*e^2*(2
4*d + 31*e*x) + 4*b*c^2*e*(-12*d^2 - 40*d*e*x + 5*e^2*x^2) + 8*c^3*(8*d^3 +
 12*d^2*e*x - 8*d*e^2*x^2 - e^3*x^3)) + x*(b + c*x)*(-15*b^3*e^3 + 2*b^2*c*
e^2*(24*d + 5*e*x) - 8*b*c^2*e*(6*d^2 + 4*d*e*x + e^2*x^2) + 16*c^3*(4*d^3
+ 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)))/(32*c^3*Sqrt[a + x*(b + c*x)]) + (3*
(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTanh[(b +
 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(64*c^(7/2))
```

fricas [A]   time = 1.18, size = 545, normalized size = 2.22

$$\left[\frac{3\left(16\left(b^2c^2-4\,ac^3\right)d^2e-16\left(b^3c-4\,abc^2\right)de^2+\left(5\,b^4-24\,ab^2c+16\,a^2c^2\right)e^3\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{c}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/128*(3*(16*(b^2*c^2 - 4*a*c^3)*d^2*e - 16*(b^3*c - 4*a*b*c^2)*d*e^2 + (5
*b^4 - 24*a*b^2*c + 16*a^2*c^2)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(16*c^4*e^3*x^3
 + 64*c^4*d^3 - 48*b*c^3*d^2*e + 16*(3*b^2*c^2 - 8*a*c^3)*d*e^2 - (15*b^3*c
 - 52*a*b*c^2)*e^3 + 8*(8*c^4*d*e^2 - b*c^3*e^3)*x^2 + 2*(48*c^4*d^2*e - 16
*b*c^3*d*e^2 + (5*b^2*c^2 - 12*a*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^4, -
1/64*(3*(16*(b^2*c^2 - 4*a*c^3)*d^2*e - 16*(b^3*c - 4*a*b*c^2)*d*e^2 + (5*b
^4 - 24*a*b^2*c + 16*a^2*c^2)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(16*c^4*e^3*x^3 + 64*c^
4*d^3 - 48*b*c^3*d^2*e + 16*(3*b^2*c^2 - 8*a*c^3)*d*e^2 - (15*b^3*c - 52*a*
b*c^2)*e^3 + 8*(8*c^4*d*e^2 - b*c^3*e^3)*x^2 + 2*(48*c^4*d^2*e - 16*b*c^3*d
*e^2 + (5*b^2*c^2 - 12*a*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [**A**] time = 0.26, size = 252, normalized size = 1.03

$$\frac{1}{32}\sqrt{cx^2+bx+a}\left(2\left(4\left(2xe^3+\frac{8c^3de^2-bc^2e^3}{c^3}\right)x+\frac{48c^3d^2e-16bc^2de^2+5b^2ce^3-12ac^2e^3}{c^3}\right)x+\frac{64c^3d^3-4}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/32*sqrt(c*x^2 + b*x + a)*(2*(4*(2*x*e^3 + (8*c^3*d*e^2 - b*c^2*e^3)/c^3)*
x + (48*c^3*d^2*e - 16*b*c^2*d*e^2 + 5*b^2*c*e^3 - 12*a*c^2*e^3)/c^3)*x + (
64*c^3*d^3 - 48*b*c^2*d^2*e + 48*b^2*c*d*e^2 - 128*a*c^2*d*e^2 - 15*b^3*e^3
 + 52*a*b*c*e^3)/c^3) - 3/64*(16*b^2*c^2*d^2*e - 64*a*c^3*d^2*e - 16*b^3*c*
d*e^2 + 64*a*b*c^2*d*e^2 + 5*b^4*e^3 - 24*a*b^2*c*e^3 + 16*a^2*c^2*e^3)*log
(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [**B**] time = 0.07, size = 539, normalized size = 2.20

$$\frac{\sqrt{cx^2+bx+a}\,e^3x^3}{2}-\frac{\sqrt{cx^2+bx+a}\,be^3x^2}{4c}+2\sqrt{cx^2+bx+a}\,de^2x^2+\frac{3a^2e^3\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{4c^{\frac{3}{2}}}-\frac{9ab^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -3*a/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+3/4*b^2/c^(3
/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e+2*(c*x^2+b*x+a)^(1/2)
*d^3-3/4*b^3/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2-b/c*
x*(c*x^2+b*x+a)^(1/2)*d*e^2-9/8/c^(5/2)*e^3*b^2*a*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))-15/32/c^3*e^3*b^3*(c*x^2+b*x+a)^(1/2)+13/8/c^2*e^3*b*a*(
c*x^2+b*x+a)^(1/2)-3/4/c*e^3*a*x*(c*x^2+b*x+a)^(1/2)+3/4/c^(3/2)*e^3*a^2*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3/2*b/c*(c*x^2+b*x+a)^(1/2)*d^2*e
+2*x^2*(c*x^2+b*x+a)^(1/2)*d*e^2+3*x*(c*x^2+b*x+a)^(1/2)*d^2*e+5/16/c^2*e^3
*b^2*x*(c*x^2+b*x+a)^(1/2)+15/64/c^(7/2)*e^3*b^4*ln((c*x+1/2*b)/c^(1/2)+(c*
x^2+b*x+a)^(1/2))-1/4/c*e^3*b*x^2*(c*x^2+b*x+a)^(1/2)+1/2*e^3*x^3*(c*x^2+b*
x+a)^(1/2)-4*a/c*(c*x^2+b*x+a)^(1/2)*d*e^2+3/2*b^2/c^2*(c*x^2+b*x+a)^(1/2)*
d*e^2+3*b/c^(3/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^3}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3/sqrt(a + b*x + c*x**2), x)
```

3.1574 $\int \frac{(b+2cx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=148

$$\frac{e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8\right.}{6c^2}$$

```
[Out] 1/4*(-4*a*c+b^2)*e*(-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)
^(1/2))/c^(5/2)+2/3*(e*x+d)^2*(c*x^2+b*x+a)^(1/2)+1/6*(8*c^2*d^2+3*b^2*e^2-
2*c*e*(4*a*e+3*b*d)+2*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.20, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{6c^2}+\frac{e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx}}\right.}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/3 + ((8*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(
3*b*d + 4*a*e) + 2*c*e*(2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(6*c^2) + ((
b^2 - 4*a*c)*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x +
c*x^2])])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx = \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\int \frac{(d+ex)(2c(bd-2ae)+2c(2cd-be)x)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a+b}}{6c^2}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a+b}}{6c^2}$$

$$= \frac{2}{3}(d+ex)^2\sqrt{a+bx+cx^2} + \frac{\left(8c^2d^2+3b^2e^2-2ce(3bd+4ae)+2ce(2cd-be)x\right)\sqrt{a+b}}{6c^2}$$

Mathematica [A] time = 0.18, size = 185, normalized size = 1.25

$$\frac{-8a^2ce^2+a\left(3b^2e^2-2bce(3d+5ex)+4c^2\left(3d^2+3dex-e^2x^2\right)\right)+x(b+cx)\left(3b^2e^2-2bce(3d+ex)+4c^2\left(3d^2+3\right.\right.}{6c^2\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-8*a^2*c*e^2 + a*(3*b^2*e^2 - 2*b*c*e*(3*d + 5*e*x) + 4*c^2*(3*d^2 + 3*d*e
*x - e^2*x^2)) + x*(b + c*x)*(3*b^2*e^2 - 2*b*c*e*(3*d + e*x) + 4*c^2*(3*d^
2 + 3*d*e*x + e^2*x^2)))/(6*c^2*Sqrt[a + x*(b + c*x)]) - ((b^2 - 4*a*c)*e*(
-2*c*d + b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^
(5/2))
```

fricas [A] time = 1.00, size = 335, normalized size = 2.26

$$\left[\frac{3\left(2\left(b^2c-4ac^2\right)de-\left(b^3-4abc\right)e^2\right)\sqrt{c}\,\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-4ac\right)+4\left(4\right.}{24c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/24*(3*(2*(b^2*c - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*sqrt(c)*log(-8*c^2
*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c)
 + 4*(4*c^3*e^2*x^2 + 12*c^3*d^2 - 6*b*c^2*d*e + (3*b^2*c - 8*a*c^2)*e^2 +
2*(6*c^3*d*e - b*c^2*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^3, -1/12*(3*(2*(b^2*c
 - 4*a*c^2)*d*e - (b^3 - 4*a*b*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(4*c^3*e^2*x^2 + 12
*c^3*d^2 - 6*b*c^2*d*e + (3*b^2*c - 8*a*c^2)*e^2 + 2*(6*c^3*d*e - b*c^2*e^2
)*x)*sqrt(c*x^2 + b*x + a))/c^3]
```

giac [A] time = 0.28, size = 146, normalized size = 0.99

$$\frac{1}{6}\sqrt{cx^2+bx+a}\left(2\left(2xe^2+\frac{6c^2de-bce^2}{c^2}\right)x+\frac{12c^2d^2-6bcde+3b^2e^2-8ace^2}{c^2}\right)-\frac{\left(2b^2cde-8ac^2de-b^3e^2+4a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*sqrt(c*x^2 + b*x + a)*(2*(2*x*e^2 + (6*c^2*d*e - b*c*e^2)/c^2)*x + (12*
c^2*d^2 - 6*b*c*d*e + 3*b^2*e^2 - 8*a*c*e^2)/c^2) - 1/4*(2*b^2*c*d*e - 8*a*
c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 280, normalized size = 1.89

$$\frac{2\sqrt{c\,x^2+bx+a}\;e^2x^2}{3}+\frac{ab\,e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{c^{\frac{3}{2}}}-\frac{2ade\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}-\frac{b^3e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{}\right.}{4c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2/3*e^2*x^2*(c*x^2+b*x+a)^(1/2)-1/3/c*e^2*b*x*(c*x^2+b*x+a)^(1/2)+1/2/c^2*e
^2*b^2*(c*x^2+b*x+a)^(1/2)-1/4/c^(5/2)*e^2*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^
2+b*x+a)^(1/2))+1/c^(3/2)*e^2*b*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))-4/3/c*e^2*a*(c*x^2+b*x+a)^(1/2)+2*x*(c*x^2+b*x+a)^(1/2)*d*e-b/c*(c*x^2+b
*x+a)^(1/2)*d*e+1/2*b^2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))
*d*e-2*a/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e+2*(c*x^2+b
*x+a)^(1/2)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^2}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2/sqrt(a + b*x + c*x**2), x)
```

3.1575 $\int \frac{(b+2cx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=84

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{2c}$$

```
[Out] 1/4*(-4*a*c+b^2)*e*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/
2)+1/2*(2*c*e*x-b*e+4*c*d)*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.05, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {779, 621, 206}

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}+\frac{\sqrt{a+bx+cx^2}\,(-be+4cd+2cex)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(2*c) + ((b^2 - 4*a*c)*e*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(4*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx&=\frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{4c}\\&=\frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(\left(b^2-4ac\right)e\right)\operatorname{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{2c}\\&=\frac{(4cd-be+2cex)\sqrt{a+bx+cx^2}}{2c}+\frac{\left(b^2-4ac\right)e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{4c^{3/2}}\end{aligned}$$

Mathematica [**A**] time = 0.12, size = 82, normalized size = 0.98

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^{3/2}}+\frac{\sqrt{a+x(b+cx)}\,(-be+4cd+2cex)}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*c*d - b*e + 2*c*e*x)*Sqrt[a + x*(b + c*x)])/(2*c) + ((b^2 - 4*a*c)*e*Ar
cTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(3/2))
```

fricas [**A**] time = 0.74, size = 197, normalized size = 2.35

$$\left[-\frac{\left(b^2-4\,ac\right)\sqrt{c}\,e\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}-4\,ac\right)-4\left(2\,c^2ex+4\,c^2d-bce\right)\sqrt{}}{8\,c^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/8*((b^2 - 4*a*c)*sqrt(c)*e*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^
2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*c^2*e*x + 4*c^2*d - b*c*e)
*sqrt(c*x^2 + b*x + a))/c^2, -1/4*((b^2 - 4*a*c)*sqrt(-c)*e*arctan(1/2*sqrt
(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^2*
e*x + 4*c^2*d - b*c*e)*sqrt(c*x^2 + b*x + a))/c^2]
```

giac [**A**] time = 0.44, size = 84, normalized size = 1.00

$$\frac{1}{2}\sqrt{cx^2+bx+a}\left(2\,xe+\frac{4\,cd-be}{c}\right)-\frac{\left(b^2e-4\,ace\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{4\,c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*sqrt(c*x^2 + b*x + a)*(2*x*e + (4*c*d - b*e)/c) - 1/4*(b^2*e - 4*a*c*e)
*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [**A**] time = 0.05, size = 117, normalized size = 1.39

$$-\frac{ae\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{\sqrt{c}}+\frac{b^2e\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{4c^{\frac{3}{2}}}+\sqrt{c\,x^2+bx+a}\;ex-\frac{\sqrt{c\,x^2+bx+a}\;be}{2c}+2\sqrt{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] e*x*(c*x^2+b*x+a)^(1/2)-1/2/c*e*b*(c*x^2+b*x+a)^(1/2)+1/4/c^(3/2)*e*b^2*ln(
(c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/c^(1/2)*e*a*ln((c*x+1/2*b)/c^(1/
2)+(c*x^2+b*x+a)^(1/2))+2*(c*x^2+b*x+a)^(1/2)*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,(d+e\,x)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.1576 $\int \frac{b+2cx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=16

$$2\sqrt{a+bx+cx^2}$$

```
[Out] 2*(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$2\sqrt{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] 2*Sqrt[a + b*x + c*x^2]
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{a+bx+cx^2}}\,dx = 2\sqrt{a+bx+cx^2}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$2\sqrt{a+x(b+cx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] 2*Sqrt[a + x*(b + c*x)]
```

fricas [A] time = 0.85, size = 14, normalized size = 0.88

$$2\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.15, size = 14, normalized size = 0.88

$$2\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)
```

maple [**A**] time = 0.05, size = 15, normalized size = 0.94

$$2\sqrt{c\,x^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2*(c*x^2+b*x+a)^(1/2)
```

maxima [**A**] time = 0.56, size = 14, normalized size = 0.88

$$2\,\sqrt{cx^2+bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)
```

mupad [**B**] time = 1.89, size = 14, normalized size = 0.88

$$2\,\sqrt{c\,x^2+b\,x+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] 2*(a + b*x + c*x^2)^(1/2)
```

sympy [**A**] time = 0.16, size = 14, normalized size = 0.88

$$2\sqrt{a+bx+cx^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] 2*sqrt(a + b*x + c*x**2)
```

3.1577 $\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=133

$$\frac{2\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e}-\frac{(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

```
[Out] 2*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))*c^(1/2)/e-(-b*e+2*c*d)
*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*
x+a)^(1/2))/e/(a*e^2-b*d*e+c*d^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {843, 621, 206, 724}

$$\frac{2\sqrt{c}\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{e}-\frac{(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/e - ((2*
c*d - b*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e +
a*e^2]*Sqrt[a + b*x + c*x^2])])/(e*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx &= \frac{(2c)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e} + \frac{(-2cd+be)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{e} \\
&= \frac{(4c)\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{e} - \frac{(2(-2cd+be))\,\mathrm{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2-x^2}\right.}{e} \\
&= \frac{2\sqrt{c}\,\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{e} - \frac{(2cd-be)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\,\sqrt{a+bx+cx^2}}\right)}{e\sqrt{cd^2-bde+ae^2}}
\end{aligned}
$$

Mathematica [**A**]   time = 0.14, size = 127, normalized size = 0.95

$$
\frac{\frac{(2cd-be)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\,\sqrt{e(ae-bd)+cd^2}}\right)}{\sqrt{e(ae-bd)+cd^2}} + 2\sqrt{c}\,\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)}{e}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[c]*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])] + ((2*c*d
 - b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d
) + a*e)]*Sqrt[a + x*(b + c*x)])])/Sqrt[c*d^2 + e*(-(b*d) + a*e)])/e
```

fricas [**B**]   time = 3.27, size = 1048, normalized size = 7.88

$$
\left[\frac{2\left(cd^2-bde+ae^2\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)-\sqrt{cd^2-bde+ae^2}\,(2\,cd}{2\left(cd\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(c*d^2 - b*d*e + a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*
sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - sqrt(c*d^2 - b*d*e + a
*e^2)*(2*c*d - b*e)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2
*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*s
qrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b
*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)))/(c*d^2*e - b*d*e
^2 + a*e^3), -(sqrt(-c*d^2 + b*d*e - a*e^2)*(2*c*d - b*e)*arctan(-1/2*sqrt(
-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*
x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*
d^2 - b^2*d*e + a*b*e^2)*x)) - (c*d^2 - b*d*e + a*e^2)*sqrt(c)*log(-8*c^2*x
^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/
(c*d^2*e - b*d*e^2 + a*e^3), -1/2*(4*(c*d^2 - b*d*e + a*e^2)*sqrt(-c)*arcta
n(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) +
 sqrt(c*d^2 - b*d*e + a*e^2)*(2*c*d - b*e)*log((8*a*b*d*e - 8*a^2*e^2 - (b^
2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c
*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)
 - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
d^2)))/(c*d^2*e - b*d*e^2 + a*e^3), -(sqrt(-c*d^2 + b*d*e - a*e^2)*(2*c*d -
 b*e)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d -
 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e
 + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(c*d^2 - b*d*e + a*
e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^
2 + b*c*x + a*c)))/(c*d^2*e - b*d*e^2 + a*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 350, normalized size = 2.63

$$-\frac{b\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^2-2bde+2c\,d^2}{e^2}+2\sqrt{\frac{a\,e^2-bde+c\,d^2}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^2-bde+c\,d^2}{e^2}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a\,e^2-bde+c\,d^2}{e^2}}\;e}+\frac{2cd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^2-2bde+2c\,d^2}{e^2}+2}{}\right.}{\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2*c^(1/2)/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/e/((a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e
+c*d^2)/e^2)^(1/2))/(x+d/e))*b+2/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{(d+e\,x)\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.1578 $\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=141

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

```
[Out] -1/2*(-4*a*c+b^2)*e*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d
^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(3/2)+(-b*e+2*c*d)*(c*x^
2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)
```

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) -
 ((b^2 - 4*a*c)*e*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b
*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(\left(b^2-4ac\right)e\right)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{\left(\left(b^2-4ac\right)e\right)\text{Subst}\left(\int \frac{1}{4cd^2-4bde+4ae^2-x^2}\,dx, x, \frac{-bd+2}{\sqrt{a}}\right.}{cd^2-bde+ae^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{\left(b^2-4ac\right)e\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\sqrt{a+bx+cx^2}}\right)}{2\left(cd^2-bde+ae^2\right)^{3/2}}$$

Mathematica [**A**] time = 0.11, size = 138, normalized size = 0.98

$$\frac{e\left(b^2-4ac\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{3/2}} + \frac{\sqrt{a+x(b+cx)}(2cd-be)}{(d+ex)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)
) + ((b^2 - 4*a*c)*e*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d
^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d^2 + e*(-(b*d) + a*e
))^(3/2))
```

fricas [**B**] time = 1.28, size = 686, normalized size = 4.87

$$\left[-\frac{\left(\left(b^2-4\,ac\right)e^2x+\left(b^2-4\,ac\right)de\right)\sqrt{cd^2-bde+ae^2}\,\log\left(\frac{8\,abde-8\,a^2e^2-\left(b^2+4\,ac\right)d^2-\left(8\,c^2d^2-8\,bcde+\left(b^2+4\,ac\right)e^2\right)x^2-4\,\sqrt{cd^2-bde+}}{e^2x^2+2\,d}\right.}{4\left(c^2d^5-2\,bcd^4e-2\,abd^2e^3+a^2de^4+\left(b^2+2\,ac\right)d^3e^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/4*(((b^2 - 4*a*c)*e^2*x + (b^2 - 4*a*c)*d*e)*sqrt(c*d^2 - b*d*e + a*e^2
)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e +
 (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x +
a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*
a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*
e^3 + (b^2 + 2*a*c)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e -
2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*
e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x), -1/2*(((b^2 - 4*a*
c)*e^2*x + (b^2 - 4*a*c)*d*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt
(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)
*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c
*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2
 + 2*a*c)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*
e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*
b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 860, normalized size = 6.10

$$\frac{b^2\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^2-2bde+2c\,d^2}{e^2}+2\sqrt{\frac{a\,e^2-bde+c\,d^2}{e^2}}\,\sqrt{\left(x+\frac{d}{e}\right)^2c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^2-bde+c\,d^2}{e^2}}}{x+\frac{d}{e}}\right)}{2\left(a\,e^2-bde+c\,d^2\right)\sqrt{\frac{a\,e^2-bde+c\,d^2}{e^2}}}-\frac{2bcd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^2-2bde+2c\,d^2}{e^2}+}{}\right.}{\left(a\,e^2-bde\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*b+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+1/2/(a*e^2-b*d*e+c*d^2)/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-2/e/(a*e^2-b*d*e+c*d^2)/((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2
)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c*d+2/e^2/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2-2*c/e^2/((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2))/(x+d/e))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                            +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^2\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b + 2cx}{\left(d + ex\right)^{2} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**2*sqrt(a + b*x + c*x**2)), x)
```

3.1579 $\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=225

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{3e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{}{2}$$

```
[Out] -3/8*(-4*a*c+b^2)*e*(-b*e+2*c*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*
e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(5/2)+1/2*(
-b*e+2*c*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2+1/4*(4*c^2*d^
2+3*b^2*e^2-4*c*e*(2*a*e+b*d))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e
*x+d)
```

Rubi [A] time = 0.27, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(ae^2-bde+cd^2\right)^2}-\frac{3e\left(b^2-4ac\right)(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+\frac{}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^
2) + ((4*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(b*d + 2*a*e))*Sqrt[a + b*x + c*x^2])/
(4*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (3*(b^2 - 4*a*c)*e*(2*c*d - b*e)*
ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt
[a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} - \frac{\int \frac{\frac{1}{2}\left(-2bcd+3b^2e-8ace\right)-c(2cd-be)x}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx^2}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx^2}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2} + \frac{\left(4c^2d^2+3b^2e^2-4ce(bd+2ae)\right)\sqrt{a+bx+cx^2}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}$$

Mathematica [A] time = 0.32, size = 220, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)^2} - \frac{3e\left(b^2-4ac\right)(be-2cd)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{8\left(e(ae-bd)+cd^2\right)^{5/2}} + \frac{\surd}{2(}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*
x)^2) + ((4*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(b*d + 2*a*e))*Sqrt[a + x*(b + c*x)
])/(4*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) - (3*(b^2 - 4*a*c)*e*(-2*c*d
+ b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d)
 + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

fricas [B] time = 1.94, size = 1500, normalized size = 6.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*(3*(2*(b^2*c - 4*a*c^2)*d^3*e - (b^3 - 4*a*b*c)*d^2*e^2 + (2*(b^2*c -
 4*a*c^2)*d*e^3 - (b^3 - 4*a*b*c)*e^4)*x^2 + 2*(2*(b^2*c - 4*a*c^2)*d^2*e^2
 - (b^3 - 4*a*b*c)*d*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8
*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*
x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^
2 + 2*d*e*x + d^2)) + 4*(8*c^3*d^5 - 18*b*c^2*d^4*e - 2*a^2*b*e^5 + (15*b^2
*c + 4*a*c^2)*d^3*e^2 - (5*b^3 + 8*a*b*c)*d^2*e^3 + (7*a*b^2 - 4*a^2*c)*d*e
^4 + (4*c^3*d^4*e - 8*b*c^2*d^3*e^2 + (7*b^2*c - 4*a*c^2)*d^2*e^3 - (3*b^3
- 4*a*b*c)*d*e^4 + (3*a*b^2 - 8*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*
d^8 - 3*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6
*e^2 - (b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 -
 3*b*c^2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b
^3 + 6*a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b
*c^2*d^6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b
^3 + 6*a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x), -1/8*(3*(2*(b^2*c -
4*a*c^2)*d^3*e - (b^3 - 4*a*b*c)*d^2*e^2 + (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^
3 - 4*a*b*c)*e^4)*x^2 + 2*(2*(b^2*c - 4*a*c^2)*d^2*e^2 - (b^3 - 4*a*b*c)*d*
e^3)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^
2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e
 + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e
^2)*x)) - 2*(8*c^3*d^5 - 18*b*c^2*d^4*e - 2*a^2*b*e^5 + (15*b^2*c + 4*a*c^2
)*d^3*e^2 - (5*b^3 + 8*a*b*c)*d^2*e^3 + (7*a*b^2 - 4*a^2*c)*d*e^4 + (4*c^3*
d^4*e - 8*b*c^2*d^3*e^2 + (7*b^2*c - 4*a*c^2)*d^2*e^3 - (3*b^3 - 4*a*b*c)*d
*e^4 + (3*a*b^2 - 8*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3*b*c^
2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3
+ 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5
*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c
)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2
 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c
)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [**B**] time = 0.39, size = 1046, normalized size = 4.65

$$-\frac{3\left(2\,b^{2}cde-8\,ac^{2}de-b^{3}e^{2}+4\,abce^{2}\right)\arctan\left(-\frac{\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)e+\sqrt{c}\,d}{\sqrt{-cd^{2}+bde-ae^{2}}}\right)}{4\left(c^{2}d^{4}-2\,bcd^{3}e+b^{2}d^{2}e^{2}+2\,acd^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\sqrt{-cd^{2}+bde-ae^{2}}}+\frac{16\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)^{2}c^{\frac{7}{2}}d^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -3/4*(2*b^2*c*d*e - 8*a*c^2*d*e - b^3*e^2 + 4*a*b*c*e^2)*arctan(-((sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c
^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)
*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/4*(16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*c^(7/2)*d^4 - 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b*c^(5/2)*d^3*e
+ 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b*c^3*d^4 - 24*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*b^2*c^2*d^3*e - 32*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*c
^3*d^3*e + 4*b^2*c^(5/2)*d^4 + 34*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^2
*c^(3/2)*d^2*e^2 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*c^(5/2)*d^2*e
^2 - 4*b^3*c^(3/2)*d^3*e - 16*a*b*c^(5/2)*d^3*e + 6*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*b^2*c*d*e^3 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*c^2
*d*e^3 + 22*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^3*c*d^2*e^2 + 8*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*a*b*c^2*d^2*e^2 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^2*b^3*sqrt(c)*d*e^3 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c
^(3/2)*d*e^3 + 3*b^4*sqrt(c)*d^2*e^2 + 10*a*b^2*c^(3/2)*d^2*e^2 + 8*a^2*c^(
5/2)*d^2*e^2 - 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*e^4 + 12*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^3*a*b*c*e^4 - 5*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*b^4*d*e^3 - 22*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^2*c*d*e^3 + 40
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^2*d*e^3 + 16*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))^2*a^2*c^(3/2)*e^4 - 11*a*b^3*sqrt(c)*d*e^3 + 12*a^2*b*c^(3
/2)*d*e^3 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*e^4 - 4*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*a^2*b*c*e^4 + 8*a^2*b^2*sqrt(c)*e^4 - 16*a^3*c^(3/
2)*e^4)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*d^2*e^3 + 2*a*c*d^2*e^3 - 2*a*b*d
*e^4 + a^2*e^5)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - s
qrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^2)
```

maple [**B**] time = 0.06, size = 1588, normalized size = 7.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -2*c/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)+3/2*c/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2))/(x+d/e))*b-3*c^2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*d-1/2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b+1/e^2/(a*e^2-b*d*e+c
*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*c*d+3/4*e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-3/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d+3/e/
(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*c^2*d^2-3/8*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))*b^3+9/4/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d
^2)/e^2)^(1/2))/(x+d/e))*b^2*c*d-9/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^2+3/e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                             +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^3\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**3*sqrt(a + b*x + c*x**2)), x)
```

3.1580 $\int \frac{b+2cx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=328

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}+\frac{\sqrt{a+bx+cx^2}\,\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right.}{12(d+ex)^2\left(ae^2-bde+cd^2\right)^2}$$

```
[Out] -1/16*(-4*a*c+b^2)*e*(16*c^2*d^2+5*b^2*e^2-4*c*e*(a*e+4*b*d))*arctanh(1/2*(
b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a
*e^2-b*d*e+c*d^2)^(7/2)+1/3*(-b*e+2*c*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c
*d^2)/(e*x+d)^3+1/12*(8*c^2*d^2+5*b^2*e^2-4*c*e*(3*a*e+2*b*d))*(c*x^2+b*x+a
)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^2+1/24*(-b*e+2*c*d)*(8*c^2*d^2+15*b^2
*e^2-4*c*e*(13*a*e+2*b*d))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^3/(e*x+d
)
```

Rubi [A] time = 0.45, antiderivative size = 328, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}+\frac{\sqrt{a+bx+cx^2}\,\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right.}{12(d+ex)^2\left(ae^2-bde+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^
3) + ((8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*Sqrt[a + b*x + c*x^2]
)/(12*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((2*c*d - b*e)*(8*c^2*d^2 +
15*b^2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + b*x + c*x^2])/(24*(c*d^2 - b*
d*e + a*e^2)^3*(d + e*x)) - ((b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*
e*(4*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*
d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(16*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx = \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} - \frac{\int \frac{\frac{1}{2}\left(-4bcd+5b^2e-12ace\right)-2c(2cd-be)x}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

$$= \frac{(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3} + \frac{\left(8c^2d^2+5b^2e^2-4ce(2bd+3ae)\right)\sqrt{a+bx+c}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}$$

Mathematica [A] time = 0.56, size = 323, normalized size = 0.98

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)}{2(d+ex)^2} + \frac{\sqrt{a+x(b+cx)}(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)} + \frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c\right.}{8\left(e(ae-b\right.}}{6\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*(2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)])/(d + e*
x)^3 + ((8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*Sqrt[a + x*(b + c*x
)])/(2*(d + e*x)^2) + ((2*c*d - b*e)*(8*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(2*b*d
 + 13*a*e))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x))
 + (3*(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4*b*d + a*e))*ArcTan
h[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt
[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(3/2)))/(6*(c*d^2 + e*(-
(b*d) + a*e))^2)
```

fricas [B] time = 9.88, size = 2998, normalized size = 9.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")

[Out] [1/96*(3*(16*(b^2*c^2 - 4*a*c^3)*d^5*e - 16*(b^3*c - 4*a*b*c^2)*d^4*e^2 + (
5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^3*e^3 + (16*(b^2*c^2 - 4*a*c^3)*d^2*e^4
- 16*(b^3*c - 4*a*b*c^2)*d*e^5 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*e^6)*x^3
 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^3*e^3 - 16*(b^3*c - 4*a*b*c^2)*d^2*e^4 + (5*
b^4 - 24*a*b^2*c + 16*a^2*c^2)*d*e^5)*x^2 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^4*e
^2 - 16*(b^3*c - 4*a*b*c^2)*d^3*e^3 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^2
*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*
a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 -
 b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(
4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2))
+ 4*(48*c^4*d^7 - 144*b*c^3*d^6*e - 8*a^3*b*e^7 + 32*(6*b^2*c^2 - a*c^3)*d^
5*e^2 - (129*b^3*c + 4*a*b*c^2)*d^4*e^3 + 11*(3*b^4 + 10*a*b^2*c - 8*a^2*c^
2)*d^3*e^4 - (59*a*b^3 - 12*a^2*b*c)*d^2*e^5 + 2*(17*a^2*b^2 - 4*a^3*c)*d*e
^6 + (16*c^4*d^5*e^2 - 40*b*c^3*d^4*e^3 + 2*(31*b^2*c^2 - 44*a*c^3)*d^3*e^4
 - (53*b^3*c - 132*a*b*c^2)*d^2*e^5 + (15*b^4 - 14*a*b^2*c - 104*a^2*c^2)*d
*e^6 - (15*a*b^3 - 52*a^2*b*c)*e^7)*x^2 + 2*(24*c^4*d^6*e - 64*b*c^3*d^5*e^
2 + 7*(13*b^2*c^2 - 12*a*c^3)*d^4*e^3 - (71*b^3*c - 124*a*b*c^2)*d^3*e^4 +
20*(b^4 - 6*a^2*c^2)*d^2*e^5 - (25*a*b^3 - 68*a^2*b*c)*d*e^6 + (5*a^2*b^2 -
 12*a^3*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^
3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*
a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^
2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d
^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b
^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b
^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9
*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*
c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^
2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^
8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 +
2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^
2 + 2*a^3*c)*d^4*e^7)*x), -1/48*(3*(16*(b^2*c^2 - 4*a*c^3)*d^5*e - 16*(b^3*
c - 4*a*b*c^2)*d^4*e^2 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d^3*e^3 + (16*(b
^2*c^2 - 4*a*c^3)*d^2*e^4 - 16*(b^3*c - 4*a*b*c^2)*d*e^5 + (5*b^4 - 24*a*b^
2*c + 16*a^2*c^2)*e^6)*x^3 + 3*(16*(b^2*c^2 - 4*a*c^3)*d^3*e^3 - 16*(b^3*c
- 4*a*b*c^2)*d^2*e^4 + (5*b^4 - 24*a*b^2*c + 16*a^2*c^2)*d*e^5)*x^2 + 3*(16
*(b^2*c^2 - 4*a*c^3)*d^4*e^2 - 16*(b^3*c - 4*a*b*c^2)*d^3*e^3 + (5*b^4 - 24
*a*b^2*c + 16*a^2*c^2)*d^2*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2
*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d -
 b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 +
 (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(48*c^4*d^7 - 144*b*c^3*d^6*e - 8*a^
3*b*e^7 + 32*(6*b^2*c^2 - a*c^3)*d^5*e^2 - (129*b^3*c + 4*a*b*c^2)*d^4*e^3
+ 11*(3*b^4 + 10*a*b^2*c - 8*a^2*c^2)*d^3*e^4 - (59*a*b^3 - 12*a^2*b*c)*d^2
*e^5 + 2*(17*a^2*b^2 - 4*a^3*c)*d*e^6 + (16*c^4*d^5*e^2 - 40*b*c^3*d^4*e^3
+ 2*(31*b^2*c^2 - 44*a*c^3)*d^3*e^4 - (53*b^3*c - 132*a*b*c^2)*d^2*e^5 + (1
5*b^4 - 14*a*b^2*c - 104*a^2*c^2)*d*e^6 - (15*a*b^3 - 52*a^2*b*c)*e^7)*x^2
+ 2*(24*c^4*d^6*e - 64*b*c^3*d^5*e^2 + 7*(13*b^2*c^2 - 12*a*c^3)*d^4*e^3 -
(71*b^3*c - 124*a*b*c^2)*d^3*e^4 + 20*(b^4 - 6*a^2*c^2)*d^2*e^5 - (25*a*b^3
 - 68*a^2*b*c)*d*e^6 + (5*a^2*b^2 - 12*a^3*c)*e^7)*x)*sqrt(c*x^2 + b*x + a)
)/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2
 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)
*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(
3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*
b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 +
 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9
 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6
*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e
^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2
 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3
*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3
 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^7)*x)]
```

giac [B] time = 0.77, size = 2666, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(16*b^2*c^2*d^2*e - 64*a*c^3*d^2*e - 16*b^3*c*d*e^2 + 64*a*b*c^2*d*e^2
 + 5*b^4*e^3 - 24*a*b^2*c*e^3 + 16*a^2*c^2*e^3)*arctan(-((sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^3*d^6 -
3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d
^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(
-c*d^2 + b*d*e - a*e^2)) + 1/24*(128*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
c^5*d^6 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b*c^4*d^5*e + 192*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^2*b*c^(9/2)*d^6 - 480*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*b^2*c^(7/2)*d^5*e - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*a*c^(9/2)*d^5*e + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^2*c^4*d^6 + 7
36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^2*c^3*d^4*e^2 - 1024*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*a*c^4*d^4*e^2 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))*b^3*c^3*d^5*e - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b*c^4*d^5
*e + 16*b^3*c^(7/2)*d^6 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*b^2*c^(
5/2)*d^3*e^3 - 960*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*c^(7/2)*d^3*e^3
+ 864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^3*c^(5/2)*d^4*e^2 - 576*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^2*a*b*c^(7/2)*d^4*e^2 - 24*b^4*c^(5/2)*d^5*e
 - 96*a*b^2*c^(7/2)*d^5*e + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^2*c^
2*d^2*e^4 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*c^3*d^2*e^4 - 352*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^3*c^2*d^3*e^3 + 128*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^3*a*b*c^3*d^3*e^3 + 324*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*b^4*c^2*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^2*c^3*d^4
*e^2 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*c^4*d^4*e^2 - 240*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^4*b^3*c^(3/2)*d^2*e^4 + 960*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^4*a*b*c^(5/2)*d^2*e^4 - 546*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^2*b^4*c^(3/2)*d^3*e^3 - 144*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a
*b^2*c^(5/2)*d^3*e^3 + 1632*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^2*c^(7/
2)*d^3*e^3 + 38*b^5*c^(3/2)*d^4*e^2 + 64*a*b^3*c^(5/2)*d^4*e^2 + 96*a^2*b*c
^(7/2)*d^4*e^2 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^3*c*d*e^5 + 192
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*a*b*c^2*d*e^5 - 18*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*b^4*c*d^2*e^4 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^3*a*b^2*c^2*d^2*e^4 + 1248*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*c^3*
d^2*e^4 - 186*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^5*c*d^3*e^3 - 528*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))*a*b^3*c^2*d^3*e^3 + 1248*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*a^2*b*c^3*d^3*e^3 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^4*b^4*sqrt(c)*d*e^5 - 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a*b^2*c^(3
/2)*d*e^5 + 240*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*a^2*c^(5/2)*d*e^5 + 1
20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*b^5*sqrt(c)*d^2*e^4 + 384*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^2*a*b^3*c^(3/2)*d^2*e^4 - 576*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^2*a^2*b*c^(5/2)*d^2*e^4 - 15*b^6*sqrt(c)*d^3*e^3 - 158*a
*b^4*c^(3/2)*d^3*e^3 + 240*a^2*b^2*c^(5/2)*d^3*e^3 - 32*a^3*c^(7/2)*d^3*e^3
 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*b^4*e^6 - 72*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*a*b^2*c*e^6 + 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*
a^2*c^2*e^6 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*b^5*d*e^5 - 64*(sqrt
(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^3*c*d*e^5 - 768*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^3*a^2*b*c^2*d*e^5 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*b^
6*d^2*e^4 + 402*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a*b^4*c*d^2*e^4 - 432*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^2*c^2*d^2*e^4 - 1056*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*a^3*c^3*d^2*e^4 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*a*b^4*sqrt(c)*d*e^5 - 384*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3
*c^(5/2)*d*e^5 + 78*a*b^5*sqrt(c)*d^2*e^4 + 48*a^2*b^3*c^(3/2)*d^2*e^4 - 48
0*a^3*b*c^(5/2)*d^2*e^4 - 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a*b^4*e^
6 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*a^2*b^2*c*e^6 - 66*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))*a*b^5*d*e^5 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*a^2*b^3*c*d*e^5 + 672*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^3*b*c^2*d*
e^5 + 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*a^3*b*c^(3/2)*e^6 - 111*a^2
*b^4*sqrt(c)*d*e^5 + 200*a^3*b^2*c^(3/2)*d*e^5 + 208*a^4*c^(5/2)*d*e^5 + 33
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^2*b^4*e^6 - 24*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*a^3*b^2*c*e^6 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*a^4*c
^2*e^6 + 48*a^3*b^3*sqrt(c)*e^6 - 128*a^4*b*c^(3/2)*e^6)/((c^3*d^6*e - 3*b*
c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3
*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*((sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*s
qrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.08, size = 2659, normalized size = 8.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 5/e^2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^4
*d^4-6/e^2/(a*e^2-b*d*e+c*d^2)^2*c^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*d^2-13/3/e/(a*e^2-b*d*e+c*d^2)^2*c^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*d+5/3/e^2/(a*e^2-b*d*e+c*d^2)^2/(
x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
c^2*d^2+5/e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c^3*d^3+2/3/e^3/(a*e^2-b*d*e+c*d^2)/(x+d/e
)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d-1
5/2/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2+15/2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*c^2*d^2+5/12/(a*e^2-b*d*e+c*d^2)^2/(x+d/
e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-
c/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)+c^2/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))-3/2/(a*e^2-b*d*e+c*d^2)^2*c/((a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2))/(x+d/e))*b^2+13/6/(a*e^2-b*d*e+c*d^2)^2*c/(x+d/e)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-1/3/e^2/(a*e^2-b*d*e
+c*d^2)/(x+d/e)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*b-5/8*e^2/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+5/16*e^2/(a*e^2-b*d*e+c*d^2)^3/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^4-5/2*e/(a*e^2-b*d*e+c*d^2)^3
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*c*d+15/4*e/(a*e^2-b*d*e+c*
d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*b^2*c*d-5/3/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d-10/e/(a*e^2-b*d*e+c*d^2)^3
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^3*d^3+6/e/(a*e^2-b*d*e+c*d
^2)^2*c^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^
2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                              +c*d^2    positive,
negative or zero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^4\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b + 2cx}{\left(d + ex\right)^{4} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**4*sqrt(a + b*x + c*x**2)), x)
```

3.1581 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=202

$$\frac{e(2cd-be)\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{7/2}}+\frac{e^2\sqrt{a+bx+cx^2}\,\left(-2ce(8ae+27bd)+15\right.}{3c^3}$$

```
[Out] 1/2*e*(-b*e+2*c*d)*(8*c^2*d^2+5*b^2*e^2-4*c*e*(3*a*e+2*b*d))*arctanh(1/2*(2
*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)-2*(e*x+d)^4/(c*x^2+b*x+a)^(1/2
)+8/3*e^2*(e*x+d)^2*(c*x^2+b*x+a)^(1/2)/c+1/3*e^2*(64*c^2*d^2+15*b^2*e^2-2*
c*e*(8*a*e+27*b*d)+10*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.21, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 742, 779, 621, 206}

$$\frac{e^2\sqrt{a+bx+cx^2}\,\left(-2ce(8ae+27bd)+15b^2e^2+10cex(2cd-be)+64c^2d^2\right)}{3c^3}+\frac{e(2cd-be)\left(-4ce(3ae+2bd)+5b^2e^2\right.}{2c^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^4)/Sqrt[a + b*x + c*x^2] + (8*e^2*(d + e*x)^2*Sqrt[a + b*x +
c*x^2])/(3*c) + (e^2*(64*c^2*d^2 + 15*b^2*e^2 - 2*c*e*(27*b*d + 8*a*e) + 10
*c*e*(2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(3*c^3) + (e*(2*c*d - b*e)*(8*
c^2*d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + (8e)\int \frac{(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{(8e)\int \frac{(d+ex)\left(\frac{1}{2}\left(6cd^2-e(bd+4ae)\right)+\frac{5}{2}e(2c}{\sqrt{a+bx+cx^2}}}{3c}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

$$= -\frac{2(d+ex)^4}{\sqrt{a+bx+cx^2}} + \frac{8e^2(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{e^2\left(64c^2d^2+15b^2e^2-2ce(27bd+\right.}{}$$

Mathematica [A] time = 0.33, size = 248, normalized size = 1.23

$$\frac{-ce^3\left(16a^2e+ab(54d+26ex)+b^2x(54d-5ex)\right)+15b^2e^4(a+bx)+2c^2e^2\left(2a\left(18d^2+9dex-2e^2x^2\right)-bx\left(-3\right.\right.}{3c^3\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (15*b^2*e^4*(a + b*x) + c^3*(-6*d^4 - 24*d^3*e*x + 36*d^2*e^2*x^2 + 12*d*e^
3*x^3 + 2*e^4*x^4) - c*e^3*(16*a^2*e + b^2*x*(54*d - 5*e*x) + a*b*(54*d + 2
6*e*x)) + 2*c^2*e^2*(2*a*(18*d^2 + 9*d*e*x - 2*e^2*x^2) - b*x*(-36*d^2 + 9*
d*e*x + e^2*x^2)))/(3*c^3*Sqrt[a + x*(b + c*x)]) + (e*(2*c*d - b*e)*(8*c^2*
d^2 + 5*b^2*e^2 - 4*c*e*(2*b*d + 3*a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + x*(b + c*x)])])/(2*c^(7/2))
```

fricas [B] time = 1.23, size = 965, normalized size = 4.78

$$\left[\frac{3\left(16\,ac^3d^3e-24\,abc^2d^2e^2+6\left(3\,ab^2c-4\,a^2c^2\right)de^3-\left(5\,ab^3-12\,a^2bc\right)e^4+\left(16\,c^4d^3e-24\,bc^3d^2e^2+6\left(3\,b^2c^2\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(16*a*c^3*d^3*e - 24*a*b*c^2*d^2*e^2 + 6*(3*a*b^2*c - 4*a^2*c^2)*d
*e^3 - (5*a*b^3 - 12*a^2*b*c)*e^4 + (16*c^4*d^3*e - 24*b*c^3*d^2*e^2 + 6*(3
*b^2*c^2 - 4*a*c^3)*d*e^3 - (5*b^3*c - 12*a*b*c^2)*e^4)*x^2 + (16*b*c^3*d^3
*e - 24*b^2*c^2*d^2*e^2 + 6*(3*b^3*c - 4*a*b*c^2)*d*e^3 - (5*b^4 - 12*a*b^2
*c)*e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a
)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*(2*c^4*e^4*x^4 - 6*c^4*d^4 + 72*a*c^3*d^
2*e^2 - 54*a*b*c^2*d*e^3 + (15*a*b^2*c - 16*a^2*c^2)*e^4 + 2*(6*c^4*d*e^3 -
 b*c^3*e^4)*x^3 + (36*c^4*d^2*e^2 - 18*b*c^3*d*e^3 + (5*b^2*c^2 - 8*a*c^3)*
e^4)*x^2 - (24*c^4*d^3*e - 72*b*c^3*d^2*e^2 + 18*(3*b^2*c^2 - 2*a*c^3)*d*e^
3 - (15*b^3*c - 26*a*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c^5*x^2 + b*c^4
*x + a*c^4), -1/6*(3*(16*a*c^3*d^3*e - 24*a*b*c^2*d^2*e^2 + 6*(3*a*b^2*c -
4*a^2*c^2)*d*e^3 - (5*a*b^3 - 12*a^2*b*c)*e^4 + (16*c^4*d^3*e - 24*b*c^3*d^
2*e^2 + 6*(3*b^2*c^2 - 4*a*c^3)*d*e^3 - (5*b^3*c - 12*a*b*c^2)*e^4)*x^2 + (
16*b*c^3*d^3*e - 24*b^2*c^2*d^2*e^2 + 6*(3*b^3*c - 4*a*b*c^2)*d*e^3 - (5*b^
4 - 12*a*b^2*c)*e^4)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x +
b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*(2*c^4*e^4*x^4 - 6*c^4*d^4 + 72*a*
c^3*d^2*e^2 - 54*a*b*c^2*d*e^3 + (15*a*b^2*c - 16*a^2*c^2)*e^4 + 2*(6*c^4*d
*e^3 - b*c^3*e^4)*x^3 + (36*c^4*d^2*e^2 - 18*b*c^3*d*e^3 + (5*b^2*c^2 - 8*a
*c^3)*e^4)*x^2 - (24*c^4*d^3*e - 72*b*c^3*d^2*e^2 + 18*(3*b^2*c^2 - 2*a*c^3
)*d*e^3 - (15*b^3*c - 26*a*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(c^5*x^2 +
 b*c^4*x + a*c^4)]
```

giac [B] time = 0.37, size = 545, normalized size = 2.70

$$\frac{\left(\left(2\left(\frac{\left(b^2c^3e^4-4\,ac^4e^4\right)x}{b^2c^3-4\,ac^4}+\frac{6\,b^2c^3de^3-24\,ac^4de^3-b^3c^2e^4+4\,abc^3e^4}{b^2c^3-4\,ac^4}\right)x+\frac{36\,b^2c^3d^2e^2-144\,ac^4d^2e^2-18\,b^3c^2de^3+72\,abc^3de^3+5\,b^4ce^4-28\,ab^2c^2e^4+32\,a^2}{b^2c^3-4\,ac^4}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/3*(((2*((b^2*c^3*e^4 - 4*a*c^4*e^4)*x/(b^2*c^3 - 4*a*c^4) + (6*b^2*c^3*d*
e^3 - 24*a*c^4*d*e^3 - b^3*c^2*e^4 + 4*a*b*c^3*e^4)/(b^2*c^3 - 4*a*c^4))*x
+ (36*b^2*c^3*d^2*e^2 - 144*a*c^4*d^2*e^2 - 18*b^3*c^2*d*e^3 + 72*a*b*c^3*d
*e^3 + 5*b^4*c*e^4 - 28*a*b^2*c^2*e^4 + 32*a^2*c^3*e^4)/(b^2*c^3 - 4*a*c^4)
)*x - (24*b^2*c^3*d^3*e - 96*a*c^4*d^3*e - 72*b^3*c^2*d^2*e^2 + 288*a*b*c^3
*d^2*e^2 + 54*b^4*c*d*e^3 - 252*a*b^2*c^2*d*e^3 + 144*a^2*c^3*d*e^3 - 15*b^
5*e^4 + 86*a*b^3*c*e^4 - 104*a^2*b*c^2*e^4)/(b^2*c^3 - 4*a*c^4))*x - (6*b^2
*c^3*d^4 - 24*a*c^4*d^4 - 72*a*b^2*c^2*d^2*e^2 + 288*a^2*c^3*d^2*e^2 + 54*a
*b^3*c*d*e^3 - 216*a^2*b*c^2*d*e^3 - 15*a*b^4*e^4 + 76*a^2*b^2*c*e^4 - 64*a
^3*c^2*e^4)/(b^2*c^3 - 4*a*c^4))/sqrt(c*x^2 + b*x + a) - 1/2*(16*c^3*d^3*e
- 24*b*c^2*d^2*e^2 + 18*b^2*c*d*e^3 - 24*a*c^2*d*e^3 - 5*b^3*e^4 + 12*a*b*c
*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.07, size = 1320, normalized size = 6.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*b*d^4*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-32/3/c*e^4*a^2*b/(4*a*c-b
^2)/(c*x^2+b*x+a)^(1/2)*x+24*a/c*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^2*e^
2-12*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d^2*e^2+48*a*b/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x*d^2*e^2+2/3*e^4*x^4/(c*x^2+b*x+a)^(1/2)-8*x/(c*x^2+b*x+a
)^(1/2)*d^3*e-2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^4+4*x^3/(c*x^2+b*x+a)
^(1/2)*d*e^3-5/2/c^(7/2)*e^4*b^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-5/4/c^4*e^4*b^4/(c*x^2+b*x+a)^(1/2)-16/3/c^2*e^4*a^2/(c*x^2+b*x+a)^(1/2)+
12*x^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2+8/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))*d^3*e-36*b^2/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3+5/3/
c^2*e^4*b^2*x^2/(c*x^2+b*x+a)^(1/2)-2/(c*x^2+b*x+a)^(1/2)*d^4+12*a/c*x/(c*x
^2+b*x+a)^(1/2)*d*e^3-16/3/c^2*e^4*a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-
4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d^4-18*b^3/c^2*a/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)*d*e^3+9*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3+38/3/
c^2*e^4*b^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-2/3/c*e^4*b*x^3/(c*x^2+b*x+
a)^(1/2)+9*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^3-12
*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e^2-12*a/c^(3/2)
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d*e^3+12*b/c*x/(c*x^2+b*x+a)^(
1/2)*d^2*e^2+19/3/c^3*e^4*b^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-6/c^2*e^4*b
*a*x/(c*x^2+b*x+a)^(1/2)-5/2/c^3*e^4*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-
6*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^2*e^2-6*b/c*x^2/(c*x^2+b*x+a)^(
1/2)*d*e^3-9*b^2/c^2*x/(c*x^2+b*x+a)^(1/2)*d*e^3+9/2*b^5/c^3/(4*a*c-b^2)/(c
*x^2+b*x+a)^(1/2)*d*e^3-18*b/c^2*a/(c*x^2+b*x+a)^(1/2)*d*e^3-5/4/c^4*e^4*b^
6/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+19/3/c^3*e^4*b^2*a/(c*x^2+b*x+a)^(1/2)-8/
3/c*e^4*a*x^2/(c*x^2+b*x+a)^(1/2)+6/c^(5/2)*e^4*b*a*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))-6*b^2/c^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2+24*a/c/(c*x^2+b*
x+a)^(1/2)*d^2*e^2+9/2*b^3/c^3/(c*x^2+b*x+a)^(1/2)*d*e^3+5/2/c^3*e^4*b^3*x/
(c*x^2+b*x+a)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^4}{\left(c\,x^2+b\,x+a\right)^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**4/(a + b*x + c*x**2)**(3/2), x)
```

3.1582 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=153

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{9e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{2c^2}+\frac{3e^2(d+ex)\sqrt{a+bx+}{c}$$

```
[Out] 3/4*e*(8*c^2*d^2+3*b^2*e^2-4*c*e*(a*e+2*b*d))*arctanh(1/2*(2*c*x+b)/c^(1/2)
/(c*x^2+b*x+a)^(1/2))/c^(5/2)-2*(e*x+d)^3/(c*x^2+b*x+a)^(1/2)+9/2*e^2*(-b*e
+2*c*d)*(c*x^2+b*x+a)^(1/2)/c^2+3*e^2*(e*x+d)*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.15, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 742, 640, 621, 206}

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+bx+cx^2}}\right)}{4c^{5/2}}+\frac{9e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{2c^2}+\frac{3e^2(d+ex)\sqrt{a+bx+}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^3)/Sqrt[a + b*x + c*x^2] + (9*e^2*(2*c*d - b*e)*Sqrt[a + b*x
+ c*x^2])/(2*c^2) + (3*e^2*(d + e*x)*Sqrt[a + b*x + c*x^2])/c + (3*e*(8*c^2
*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt
[a + b*x + c*x^2])])/(4*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + (6e)\int \frac{(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3e)\int \frac{\frac{1}{2}\left(4cd^2-e(bd+2ae)\right)+\frac{3}{2}e(2cd-be)x}{\sqrt{a+bx+cx^2}}\,d}{c}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3}{}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{(3}{}$$

$$= -\frac{2(d+ex)^3}{\sqrt{a+bx+cx^2}} + \frac{9e^2(2cd-be)\sqrt{a+bx+cx^2}}{2c^2} + \frac{3e^2(d+ex)\sqrt{a+bx+cx^2}}{c} + \frac{3e}{}$$

Mathematica [A] time = 0.22, size = 164, normalized size = 1.07

$$\frac{3e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{4c^{5/2}}+\frac{3ce^2(2a(4d+ex)+bx(8d-ex))-9be^3(a+bx)}{2c^2\sqrt{a+x(b+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-9*b*e^3*(a + b*x) - 2*c^2*(2*d^3 + 6*d^2*e*x - 6*d*e^2*x^2 - e^3*x^3) + 3
*c*e^2*(b*x*(8*d - e*x) + 2*a*(4*d + e*x)))/(2*c^2*Sqrt[a + x*(b + c*x)]) +
 (3*e*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b + 2*c*x)/(2*
Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(5/2))
```

fricas [B] time = 1.26, size = 615, normalized size = 4.02

$$\left[-\frac{3\left(8\,ac^2d^2e-8\,abcde^2+\left(3\,ab^2-4\,a^2c\right)e^3+\left(8\,c^3d^2e-8\,bc^2de^2+\left(3\,b^2c-4\,ac^2\right)e^3\right)x^2+\left(8\,bc^2d^2e-8\,b^2cde^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/8*(3*(8*a*c^2*d^2*e - 8*a*b*c*d*e^2 + (3*a*b^2 - 4*a^2*c)*e^3 + (8*c^3*
d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c - 4*a*c^2)*e^3)*x^2 + (8*b*c^2*d^2*e - 8*b
^2*c*d*e^2 + (3*b^3 - 4*a*b*c)*e^3)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b
^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(2*c^3*e^3*x^
3 - 4*c^3*d^3 + 24*a*c^2*d*e^2 - 9*a*b*c*e^3 + 3*(4*c^3*d*e^2 - b*c^2*e^3)*
x^2 - 3*(4*c^3*d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c - 2*a*c^2)*e^3)*x)*sqrt(c*x
^2 + b*x + a))/(c^4*x^2 + b*c^3*x + a*c^3), -1/4*(3*(8*a*c^2*d^2*e - 8*a*b*
c*d*e^2 + (3*a*b^2 - 4*a^2*c)*e^3 + (8*c^3*d^2*e - 8*b*c^2*d*e^2 + (3*b^2*c
 - 4*a*c^2)*e^3)*x^2 + (8*b*c^2*d^2*e - 8*b^2*c*d*e^2 + (3*b^3 - 4*a*b*c)*e
^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) - 2*(2*c^3*e^3*x^3 - 4*c^3*d^3 + 24*a*c^2*d*e^2 - 9*a*b
*c*e^3 + 3*(4*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(4*c^3*d^2*e - 8*b*c^2*d*e^2 +
 (3*b^2*c - 2*a*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(c^4*x^2 + b*c^3*x + a*
c^3)]
```

giac [B] time = 0.32, size = 347, normalized size = 2.27

$$\frac{\Bigg(\Bigg(\frac{2\left(b^{2}c^{2}e^{3}-4\,ac^{3}e^{3}\right)x}{b^{2}c^{2}-4\,ac^{3}}+\frac{3\left(4\,b^{2}c^{2}de^{2}-16\,ac^{3}de^{2}-b^{3}ce^{3}+4\,abc^{2}e^{3}\right)}{b^{2}c^{2}-4\,ac^{3}}\Bigg)x-\frac{3\left(4\,b^{2}c^{2}d^{2}e-16\,ac^{3}d^{2}e-8\,b^{3}cde^{2}+32\,abc^{2}de^{2}+3\,b^{4}e^{3}-14\,ab^{2}ce^{3}+8\,a^{2}c^{2}e^{3}\right)}{b^{2}c^{2}-4\,ac^{3}}\Bigg)x}{2\,\sqrt{cx^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/2*(((2*(b^2*c^2*e^3 - 4*a*c^3*e^3)*x/(b^2*c^2 - 4*a*c^3) + 3*(4*b^2*c^2*d
*e^2 - 16*a*c^3*d*e^2 - b^3*c*e^3 + 4*a*b*c^2*e^3)/(b^2*c^2 - 4*a*c^3))*x -
 3*(4*b^2*c^2*d^2*e - 16*a*c^3*d^2*e - 8*b^3*c*d*e^2 + 32*a*b*c^2*d*e^2 + 3
*b^4*e^3 - 14*a*b^2*c*e^3 + 8*a^2*c^2*e^3)/(b^2*c^2 - 4*a*c^3))*x - (4*b^2*
c^2*d^3 - 16*a*c^3*d^3 - 24*a*b^2*c*d*e^2 + 96*a^2*c^2*d*e^2 + 9*a*b^3*e^3
- 36*a^2*b*c*e^3)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a) - 3/4*(8*c^2*d
^2*e - 8*b*c*d*e^2 + 3*b^2*e^3 - 4*a*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 788, normalized size = 5.15

$$-\frac{9a\,b^{2}e^{3}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}+\frac{24abd\,e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{9b^{4}e^{3}x}{4\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c^{2}}-\frac{6b^{3}d\,e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 24*a*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^2+12*a/c*b^2/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*d*e^2-6*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^2-2/(c*x
^2+b*x+a)^(1/2)*d^3+9/4/c^(5/2)*e^3*b^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+6/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*d^2*e-6*x/(c
*x^2+b*x+a)^(1/2)*d^2*e-2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d^3+6*x^2/(c*
x^2+b*x+a)^(1/2)*d*e^2+9/8/c^3*e^3*b^3/(c*x^2+b*x+a)^(1/2)-3/c^(3/2)*e^3*a*
ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-9/2/c^2*e^3*b^3*a/(4*a*c-b^2)/(
c*x^2+b*x+a)^(1/2)-3*b^2/c^2/(c*x^2+b*x+a)^(1/2)*d*e^2-3/2/c*e^3*b*x^2/(c*x
^2+b*x+a)^(1/2)-9/4/c^2*e^3*b^2*x/(c*x^2+b*x+a)^(1/2)+e^3*x^3/(c*x^2+b*x+a)
^(1/2)-9/c*e^3*b^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+3/c*e^3*a*x/(c*x^2+b
*x+a)^(1/2)+12*a/c/(c*x^2+b*x+a)^(1/2)*d*e^2-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^
(1/2)*x*c*d^3-9/2/c^2*e^3*b*a/(c*x^2+b*x+a)^(1/2)+2*b*d^3*(2*c*x+b)/(4*a*c-
b^2)/(c*x^2+b*x+a)^(1/2)-6*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*d*e^2+9/8/c^3*e^3*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3*b^4/c^2/(4*a*
c-b^2)/(c*x^2+b*x+a)^(1/2)*d*e^2+6*b/c*x/(c*x^2+b*x+a)^(1/2)*d*e^2+9/4/c^2*
e^3*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^3}{\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^3}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**3/(a + b*x + c*x**2)**(3/2), x)
```

3.1583 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}} \, dx$

Optimal. Leaf size=93

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}}+\frac{4e^2\sqrt{a+bx+cx^2}}{c}$$

```
[Out] 2*e*(-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)
-2*(e*x+d)^2/(c*x^2+b*x+a)^(1/2)+4*e^2*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.05, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 640, 621, 206}

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}}+\frac{4e^2\sqrt{a+bx+cx^2}}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^2)/Sqrt[a + b*x + c*x^2] + (4*e^2*Sqrt[a + b*x + c*x^2])/c +
(2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/
c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + (4e)\int \frac{d+ex}{\sqrt{a+bx+cx^2}}\,dx \\
&= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{(2e(2cd-be))\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{c} \\
&= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{(4e(2cd-be))\,\mathrm{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2c}{\sqrt{a+bx+}}\right.}{c} \\
&= -\frac{2(d+ex)^2}{\sqrt{a+bx+cx^2}} + \frac{4e^2\sqrt{a+bx+cx^2}}{c} + \frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}
\end{aligned}$$

Mathematica [A] time = 0.17, size = 95, normalized size = 1.02

$$\frac{2e(2cd-be)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{c^{3/2}} + \frac{4e^2(a+bx)-2c\left(d^2+2dex-e^2x^2\right)}{c\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (4*e^2*(a + b*x) - 2*c*(d^2 + 2*d*e*x - e^2*x^2))/(c*Sqrt[a + x*(b + c*x)])
 + (2*e*(2*c*d - b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])
])/c^(3/2)
```

fricas [B] time = 1.09, size = 363, normalized size = 3.90

$$\left[-\frac{\left(2\,acde-abe^2+\left(2\,c^2de-bce^2\right)x^2+\left(2\,bcde-b^2e^2\right)x\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2+4\,\sqrt{cx^2+bx+a}\,(2\,cx\right.}{c^3x^2+bc^2x+ac^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)
*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x
 + b)*sqrt(c) - 4*a*c) - 2*(c^2*e^2*x^2 - c^2*d^2 + 2*a*c*e^2 - 2*(c^2*d*e
- b*c*e^2)*x)*sqrt(c*x^2 + b*x + a))/(c^3*x^2 + b*c^2*x + a*c^2), -2*((2*a*
c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*x)*sqrt
(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x
 + a*c)) - (c^2*e^2*x^2 - c^2*d^2 + 2*a*c*e^2 - 2*(c^2*d*e - b*c*e^2)*x)*sq
rt(c*x^2 + b*x + a))/(c^3*x^2 + b*c^2*x + a*c^2)]
```

giac [B] time = 0.33, size = 197, normalized size = 2.12

$$\frac{2\left(\left(\frac{\left(b^2ce^2-4\,ac^2e^2\right)x}{b^2c-4\,ac^2}-\frac{2\left(b^2cde-4\,ac^2de-b^3e^2+4\,abce^2\right)}{b^2c-4\,ac^2}\right)x-\frac{b^2cd^2-4\,ac^2d^2-2\,ab^2e^2+8\,a^2ce^2}{b^2c-4\,ac^2}\right)}{\sqrt{cx^2+bx+a}}-\frac{2\left(2\,cde-be^2\right)\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{\right.\right.\right.}}{c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*(((b^2*c*e^2 - 4*a*c^2*e^2)*x/(b^2*c - 4*a*c^2) - 2*(b^2*c*d*e - 4*a*c^2*
d*e - b^3*e^2 + 4*a*b*c*e^2)/(b^2*c - 4*a*c^2))*x - (b^2*c*d^2 - 4*a*c^2*d^
2 - 2*a*b^2*e^2 + 8*a^2*c*e^2)/(b^2*c - 4*a*c^2))/sqrt(c*x^2 + b*x + a) - 2
*(2*c*d*e - b*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) -
 b))/c^(3/2)
```

maple [B] time = 0.06, size = 427, normalized size = 4.59

$$\frac{8ab\,e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}-\frac{2b^{3}e^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}-\frac{4bc\,d^{2}x}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{4a\,b^{2}e^{2}}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/c*e^2*b*x/(c*x^2+b*x+a)^(1/2)-1/c^2*e^2*b^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)-2/c^(3/2)*e^2*b*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+4/c*e^2*a*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+8*e^2*a*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)
*x-2/c*e^2*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-2*b^2/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)*d^2-4*x/(c*x^2+b*x+a)^(1/2)*d*e-1/c^2*e^2*b^2/(c*x^2+b*x+a)^(1/
2)+4/c*e^2*a/(c*x^2+b*x+a)^(1/2)+2*b*d^2*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a
)^(1/2)-2/(c*x^2+b*x+a)^(1/2)*d^2-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d
^2+2*e^2*x^2/(c*x^2+b*x+a)^(1/2)+4/c^(1/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*d*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^2}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(b + 2cx\right) \left(d + ex\right)^{2}}{\left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**2/(a + b*x + c*x**2)**(3/2), x)
```

3.1584 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=60

$$\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}$$

```
[Out] 2*e*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(1/2)-2*(e*x+d)/(c
*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {768, 621, 206}

$$\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x))/Sqrt[a + b*x + c*x^2] + (2*e*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*
Sqrt[a + b*x + c*x^2])])/Sqrt[c]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+(2e)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx\\ &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+(4e)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)\\ &= -\frac{2(d+ex)}{\sqrt{a+bx+cx^2}}+\frac{2e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}}\end{aligned}$$

Mathematica [**A**] time = 0.27, size = 56, normalized size = 0.93

$$\frac{2e\log\left(2\sqrt{c}\sqrt{a+x(b+cx)}+b+2cx\right)}{\sqrt{c}}-\frac{2(d+ex)}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x))/Sqrt[a + x*(b + c*x)] + (2*e*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[
a + x*(b + c*x)]])/Sqrt[c]
```

fricas [**B**] time = 0.99, size = 211, normalized size = 3.52

$$\left[\frac{\left(cex^2+bex+ae\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)-2\,(cex+cd)\sqrt{cx^2+bx+}}{c^2x^2+bcx+ac}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [((c*e*x^2 + b*e*x + a*e)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(c*e*x + c*d)*sqrt(c*x^2 +
 b*x + a))/(c^2*x^2 + b*c*x + a*c), -2*((c*e*x^2 + b*e*x + a*e)*sqrt(-c)*ar
ctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)
) + (c*e*x + c*d)*sqrt(c*x^2 + b*x + a))/(c^2*x^2 + b*c*x + a*c)]
```

giac [**B**] time = 0.30, size = 101, normalized size = 1.68

$$-\frac{2\,e\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}\,-b\right|\right)}{\sqrt{c}}-\frac{2\left(\frac{\left(b^2e-4\,ace\right)x}{b^2-4\,ac}+\frac{b^2d-4\,acd}{b^2-4\,ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/sqrt(c) -
 2*((b^2*e - 4*a*c*e)*x/(b^2 - 4*a*c) + (b^2*d - 4*a*c*d)/(b^2 - 4*a*c))/sq
rt(c*x^2 + b*x + a)
```

maple [**B**] time = 0.05, size = 158, normalized size = 2.63

$$-\frac{4bcdx}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}}-\frac{2b^2d}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}}+\frac{2\,(2cx+b)\,bd}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}}-\frac{2ex}{\sqrt{c\,x^2+bx+a}}+\frac{2e\ln\left(\frac{cx+}{\sqrt{c}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2*e*x/(c*x^2+b*x+a)^(1/2)+2/c^(1/2)*e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))-2/(c*x^2+b*x+a)^(1/2)*d-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*c*d-2
*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d+2*b*d*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b
*x+a)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.62, size = 161, normalized size = 2.68

$$\frac{2\,b^2\,d-4\,a\,b\,e-2\,b^2\,e\,x+4\,b\,c\,d\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}+\frac{2\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}+\frac{2\,e\,\left(\frac{a\,b}{2}-x\,\left(a\,c-\frac{b^2}{2}\right)\right)}{\left(a\,c-\frac{b^2}{4}\right)\,\sqrt{c\,x^2+b\,x+a}}-\frac{2\,c\,d\,(}{\left(4\,a\,c-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*b^2*d - 4*a*b*e - 2*b^2*e*x + 4*b*c*d*x)/((4*a*c - b^2)*(a + b*x + c*x^2
)^(1/2)) + (2*e*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(1/2)
 + (2*e*((a*b)/2 - x*(a*c - b^2/2)))/((a*c - b^2/4)*(a + b*x + c*x^2)^(1/2)
) - (2*c*d*(4*a + 2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.1585 $\int \frac{b+2cx}{(a+bx+cx^2)^{3/2}}\,dx$

Optimal. Leaf size=16

$$-\frac{2}{\sqrt{a+bx+cx^2}}$$

```
[Out] -2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 16, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$-\frac{2}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -2/Sqrt[a + b*x + c*x^2]
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{(a+bx+cx^2)^{3/2}}\,dx = -\frac{2}{\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.01, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] -2/Sqrt[a + x*(b + c*x)]
```

fricas [A] time = 0.64, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] -2/sqrt(c*x^2 + b*x + a)
```

giac [A] time = 0.21, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -2/sqrt(c*x^2 + b*x + a)
```

maple [A] time = 0.05, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{c\,x^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2/(c*x^2+b*x+a)^(1/2)
```

maxima [A] time = 0.51, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{cx^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] -2/sqrt(c*x^2 + b*x + a)
```

mupad [B] time = 1.89, size = 14, normalized size = 0.88

$$-\frac{2}{\sqrt{c\,x^{2}+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] -2/(a + b*x + c*x^2)^(1/2)
```

sympy [A] time = 0.92, size = 15, normalized size = 0.94

$$-\frac{2}{\sqrt{a+bx+cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] -2/sqrt(a + b*x + c*x**2)
```

3.1586 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=166

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

```
[Out] -e*(-b*e+2*c*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^
(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(3/2)-2*((-4*a*c+b^2)*(-b*e+
c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/
2)
```

Rubi [A] time = 0.13, antiderivative size = 166, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 12, 724, 206}

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(2cd-be)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) - (e*(2*c*d - b*e)*ArcTanh[(b*d -
 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x
^2])])/(c*d^2 - b*d*e + a*e^2)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\left(b^2-4ac\right)e(2cd-be)}{2(d+ex)\sqrt{a+bx+cx^2}}\,dx}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right.} \\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{(e(2cd-be))\int \frac{1}{(d+ex)\sqrt{a+bx+c}}}{cd^2-bde+ae^2} \\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} + \frac{(2e(2cd-be))\,\mathrm{Subst}\left(\int \frac{}{4cd^2}\right.}{cd^2} \\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{e(2cd-be)\tanh^{-1}\left(\frac{bd-2}{2\sqrt{cd^2-bd}}\right.}{\left(cd^2-bde+ae^2\right.}
\end{aligned}
$$

Mathematica [A] time = 0.19, size = 133, normalized size = 0.80

$$
\frac{2(be-cd+cex)}{\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)}+\frac{e(2cd-be)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\left(e(ae-bd)+cd^2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)
]) + (e*(2*c*d - b*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*
d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))
^(3/2)
```

fricas [B] time = 1.50, size = 918, normalized size = 5.53

$$
\left[-\frac{\left(2\,acde-abe^2+\left(2\,c^2de-bce^2\right)x^2+\left(2\,bcde-b^2e^2\right)x\right)\sqrt{cd^2-bde+ae^2}\,\log\left(\frac{8\,abde-8\,a^2e^2-\left(b^2+4\,ac\right)d^2-\left(8\,c^2d^2-8\,bc\right.}{}\right.}{2\left(ac^2d^4-2\,abcd^3e-2\,a^2bde^3+a^3e^4+\left(ab^2+2\,a^2c\right)d^2e^2+\left(c\right.\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*
e^2)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a
*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 -
b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4
*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) +
 4*(c^2*d^3 - 2*b*c*d^2*e - a*b*e^3 + (b^2 + a*c)*d*e^2 - (c^2*d^2*e - b*c*
d*e^2 + a*c*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*c^2*d^4 - 2*a*b*c*d^3*e - 2*a
^2*b*d*e^3 + a^3*e^4 + (a*b^2 + 2*a^2*c)*d^2*e^2 + (c^3*d^4 - 2*b*c^2*d^3*e
 - 2*a*b*c*d*e^3 + a^2*c*e^4 + (b^2*c + 2*a*c^2)*d^2*e^2)*x^2 + (b*c^2*d^4
- 2*b^2*c*d^3*e - 2*a*b^2*d*e^3 + a^2*b*e^4 + (b^3 + 2*a*b*c)*d^2*e^2)*x),
-((2*a*c*d*e - a*b*e^2 + (2*c^2*d*e - b*c*e^2)*x^2 + (2*b*c*d*e - b^2*e^2)*
x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sq
rt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^
2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x
)) + 2*(c^2*d^3 - 2*b*c*d^2*e - a*b*e^3 + (b^2 + a*c)*d*e^2 - (c^2*d^2*e -
b*c*d*e^2 + a*c*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*c^2*d^4 - 2*a*b*c*d^3*e -
 2*a^2*b*d*e^3 + a^3*e^4 + (a*b^2 + 2*a^2*c)*d^2*e^2 + (c^3*d^4 - 2*b*c^2*d
^3*e - 2*a*b*c*d*e^3 + a^2*c*e^4 + (b^2*c + 2*a*c^2)*d^2*e^2)*x^2 + (b*c^2*
d^4 - 2*b^2*c*d^3*e - 2*a*b^2*d*e^3 + a^2*b*e^4 + (b^3 + 2*a*b*c)*d^2*e^2)*
x)]
```

giac [B] time = 0.31, size = 501, normalized size = 3.02

$$\frac{2\left(\frac{\left(b^{2}c^{2}d^{2}e-4\,ac^{3}d^{2}e-b^{3}cde^{2}+4\,abc^{2}de^{2}+ab^{2}ce^{3}-4\,a^{2}c^{2}e^{3}\right)x}{b^{2}c^{2}d^{4}-4\,ac^{3}d^{4}-2\,b^{3}cd^{3}e+8\,abc^{2}d^{3}e+b^{4}d^{2}e^{2}-2\,ab^{2}cd^{2}e^{2}-8\,a^{2}c^{2}d^{2}e^{2}-2\,ab^{3}de^{3}+8\,a^{2}bcde^{3}+a^{2}b^{2}e^{4}-4\,a^{3}ce^{4}}-\frac{b^{2}c^{2}d^{3}-4\,ac^{3}d^{3}-2\,b^{3}cd^{2}e-}{b^{2}c^{2}d^{4}-4\,ac^{3}d^{4}-2\,b^{3}cd^{3}e+8\,abc^{2}d^{3}e+}\right.}{\sqrt{cx^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((b^2*c^2*d^2*e - 4*a*c^3*d^2*e - b^3*c*d*e^2 + 4*a*b*c^2*d*e^2 + a*b^2*c
*e^3 - 4*a^2*c^2*e^3)*x/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*
c^2*d^3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d
*e^3 + 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4) - (b^2*c^2*d^3 - 4*a*c^
3*d^3 - 2*b^3*c*d^2*e + 8*a*b*c^2*d^2*e + b^4*d*e^2 - 3*a*b^2*c*d*e^2 - 4*a
^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e^3)/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^
3*c*d^3*e + 8*a*b*c^2*d^3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d
^2*e^2 - 2*a*b^3*d*e^3 + 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4))/sqrt
(c*x^2 + b*x + a) - 2*(2*c*d*e - b*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c*d^2 - b*d*e + a*
e^2)*sqrt(-c*d^2 + b*d*e - a*e^2))
```

maple [B] time = 0.06, size = 1084, normalized size = 6.53

$$-\frac{2b^{2}cex}{\left(a\,e^{2}-bde+c\,d^{2}\right)\left(4ac-b^{2}\right)\sqrt{\left(x+\frac{d}{e}\right)^{2}c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}}+\frac{8b\,c^{2}dx}{\left(a\,e^{2}-bde+c\,d^{2}\right)\left(4ac-b^{2}\right)\sqrt{\left(x+\frac{d}{e}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 4*c/e*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+e/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-2/(a*e^2-b*d
*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*c*d-2*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*c+8/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d-
8/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2-e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+4/(a*e^2-
b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*b^2*c*d-4/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2-e/(a*e^2-b*d*e
+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-
b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b+2/(a*e^2-b*d*e+c*d^2)
/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c
*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{b+2\,c\,x}{(d+e\,x)\,\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)*(a + b*x + c*x**2)**(3/2)), x)
```

3.1587 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=248

$$-\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{5/2}}-\frac{2\Big(\left(b^2-4ac\right)(cd-be)-cex\Big(b^2-4a}{\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\Big(ae^2-b}$$

```
[Out] -1/2*e*(8*c^2*d^2+3*b^2*e^2-4*c*e*(a*e+2*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*e
+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^
2)^(5/2)-2*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2
-b*d*e+c*d^2)/(e*x+d)/(c*x^2+b*x+a)^(1/2)+3*e^2*(-b*e+2*c*d)*(c*x^2+b*x+a)^
(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)
```

Rubi [A] time = 0.27, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {822, 806, 724, 206}

$$-\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{5/2}}-\frac{2\Big(\left(b^2-4ac\right)(cd-be)-cex\Big(b^2-4a}{\left(b^2-4ac\right)(d+ex)\sqrt{a+bx+cx^2}\Big(ae^2-b}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2)*(d + e*x)*Sqrt[a + b*x + c*x^2]) + (3*e^2*(2*c*d - b*e)*
Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (e*(8*c^2*d^
2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x
)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e
 + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}-\frac{2\int\frac{\frac{1}{2}\left(b^2-4ac\right)e(4cd-3b}{(d+ex)^2\sqrt{a}}}{\left(b^2-4ac\right)\left(cd^2\right.}\\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{3e^2(2cd-be)\sqrt{a+}}{\left(cd^2-bde+ae^2\right)^2}\\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{3e^2(2cd-be)\sqrt{a+}}{\left(cd^2-bde+ae^2\right)^2}\\
&= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{3e^2(2cd-be)\sqrt{a+}}{\left(cd^2-bde+ae^2\right)^2}
\end{aligned}
$$

Mathematica [A] time = 0.54, size = 215, normalized size = 0.87

$$
\frac{e\left(-4ce(ae+2bd)+3b^2e^2+8c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{3e^2\sqrt{a+x(b+cx)}(2cd-be)}{(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{}{(d+ex)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x)*Sqrt[a + x
*(b + c*x)]) + (3*e^2*(2*c*d - b*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b
*d) + a*e))^2*(d + e*x)) + (e*(8*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(2*b*d + a*e))
*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e
)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

fricas [B] time = 4.25, size = 2102, normalized size = 8.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/4*((8*a*c^2*d^3*e - 8*a*b*c*d^2*e^2 + (3*a*b^2 - 4*a^2*c)*d*e^3 + (8*c^
3*d^2*e^2 - 8*b*c^2*d*e^3 + (3*b^2*c - 4*a*c^2)*e^4)*x^3 + (8*c^3*d^3*e - (
5*b^2*c + 4*a*c^2)*d*e^3 + (3*b^3 - 4*a*b*c)*e^4)*x^2 + (8*b*c^2*d^3*e - 8*
(b^2*c - a*c^2)*d^2*e^2 + 3*(b^3 - 4*a*b*c)*d*e^3 + (3*a*b^2 - 4*a^2*c)*e^4
)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)
*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d
*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*
c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*
(2*c^3*d^5 - 6*b*c^2*d^4*e + a^2*b*e^5 + 2*(3*b^2*c - a*c^2)*d^3*e^2 - (2*b
^3 - a*b*c)*d^2*e^3 + (a*b^2 - 4*a^2*c)*d*e^4 - 3*(2*c^3*d^3*e^2 - 3*b*c^2*
d^2*e^3 - a*b*c*e^5 + (b^2*c + 2*a*c^2)*d*e^4)*x^2 - (2*c^3*d^4*e + 2*b*c^2
*d^3*e^2 - (7*b^2*c - 4*a*c^2)*d^2*e^3 + (3*b^3 + 2*a*b*c)*d*e^4 - (3*a*b^2
 - 2*a^2*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a*c^3*d^7 - 3*a*b*c^2*d^6*e - 3
*a^3*b*d^2*e^5 + a^4*d*e^6 + 3*(a*b^2*c + a^2*c^2)*d^5*e^2 - (a*b^3 + 6*a^2
*b*c)*d^4*e^3 + 3*(a^2*b^2 + a^3*c)*d^3*e^4 + (c^4*d^6*e - 3*b*c^3*d^5*e^2
- 3*a^2*b*c*d*e^6 + a^3*c*e^7 + 3*(b^2*c^2 + a*c^3)*d^4*e^3 - (b^3*c + 6*a*
b*c^2)*d^3*e^4 + 3*(a*b^2*c + a^2*c^2)*d^2*e^5)*x^3 + (c^4*d^7 - 2*b*c^3*d^
6*e + 3*a*c^3*d^5*e^2 + 3*a*b^3*d^2*e^5 + a^3*b*e^7 + (2*b^3*c - 3*a*b*c^2)
*d^4*e^3 - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^3*e^4 - (3*a^2*b^2 - a^3*c)*d*e^
6)*x^2 + (b*c^3*d^7 + 3*b^3*c*d^5*e^2 + 3*a^3*c*d^2*e^5 - 2*a^3*b*d*e^6 + a
^4*e^7 - (3*b^2*c^2 - a*c^3)*d^6*e - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^4*e^3
+ (2*a*b^3 - 3*a^2*b*c)*d^3*e^4)*x), -1/2*((8*a*c^2*d^3*e - 8*a*b*c*d^2*e^2
 + (3*a*b^2 - 4*a^2*c)*d*e^3 + (8*c^3*d^2*e^2 - 8*b*c^2*d*e^3 + (3*b^2*c -
4*a*c^2)*e^4)*x^3 + (8*c^3*d^3*e - (5*b^2*c + 4*a*c^2)*d*e^3 + (3*b^3 - 4*a
*b*c)*e^4)*x^2 + (8*b*c^2*d^3*e - 8*(b^2*c - a*c^2)*d^2*e^2 + 3*(b^3 - 4*a*
b*c)*d*e^3 + (3*a*b^2 - 4*a^2*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arcta
n(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2
*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)
*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*c^3*d^5 - 6*b*c^2*d^4*e + a
^2*b*e^5 + 2*(3*b^2*c - a*c^2)*d^3*e^2 - (2*b^3 - a*b*c)*d^2*e^3 + (a*b^2 -
 4*a^2*c)*d*e^4 - 3*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 - a*b*c*e^5 + (b^2*c +
 2*a*c^2)*d*e^4)*x^2 - (2*c^3*d^4*e + 2*b*c^2*d^3*e^2 - (7*b^2*c - 4*a*c^2)
*d^2*e^3 + (3*b^3 + 2*a*b*c)*d*e^4 - (3*a*b^2 - 2*a^2*c)*e^5)*x)*sqrt(c*x^2
 + b*x + a))/(a*c^3*d^7 - 3*a*b*c^2*d^6*e - 3*a^3*b*d^2*e^5 + a^4*d*e^6 + 3
*(a*b^2*c + a^2*c^2)*d^5*e^2 - (a*b^3 + 6*a^2*b*c)*d^4*e^3 + 3*(a^2*b^2 + a
^3*c)*d^3*e^4 + (c^4*d^6*e - 3*b*c^3*d^5*e^2 - 3*a^2*b*c*d*e^6 + a^3*c*e^7
+ 3*(b^2*c^2 + a*c^3)*d^4*e^3 - (b^3*c + 6*a*b*c^2)*d^3*e^4 + 3*(a*b^2*c +
a^2*c^2)*d^2*e^5)*x^3 + (c^4*d^7 - 2*b*c^3*d^6*e + 3*a*c^3*d^5*e^2 + 3*a*b^
3*d^2*e^5 + a^3*b*e^7 + (2*b^3*c - 3*a*b*c^2)*d^4*e^3 - (b^4 + 3*a*b^2*c -
3*a^2*c^2)*d^3*e^4 - (3*a^2*b^2 - a^3*c)*d*e^6)*x^2 + (b*c^3*d^7 + 3*b^3*c*
d^5*e^2 + 3*a^3*c*d^2*e^5 - 2*a^3*b*d*e^6 + a^4*e^7 - (3*b^2*c^2 - a*c^3)*d
^6*e - (b^4 + 3*a*b^2*c - 3*a^2*c^2)*d^4*e^3 + (2*a*b^3 - 3*a^2*b*c)*d^3*e^
4)*x)]
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple **[B]** time = 0.06, size = 2293, normalized size = 9.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 18/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c^2*d^2+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+6*e/(a*e
^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*b*c*d-12*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c
*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b-18*e/(a*e^2-b*d*e+c*d^2)^2
/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*x*b^2*c^2*d-3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d
/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b-6/(a*e^2-b*
d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*c^2*d^2-2*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*
e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d
/e))+2*c/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)+6/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2))/(x+d/e))*c^2*d^2+3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+3/2*e^2/(a*e^2-b*
d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a
*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-24/e/(a*e^2-b*
d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*x*c^4*d^3-9*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*c*d+24/e*c^3/(a*
e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*x*d+12/e*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2
*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d-6*c/(a*e^2-b*d*
e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*b^2+36/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^3*d^2-12/e/(a*e^2-b*d*e+c
*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*b*c^3*d^3-6*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2))/(x+d/e))*b*c*d+3*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^3*c
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1588 $\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=208

$$\frac{8e^2\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{3c^2\left(b^2-4ac\right)}-\frac{16e(d+ex)^2(-2ae+x(2cd-be)+bd}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

```
[Out] -2/3*(e*x+d)^4/(c*x^2+b*x+a)^(3/2)+4*e^3*(-b*e+2*c*d)*arctanh(1/2*(2*c*x+b)
/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-16/3*e*(e*x+d)^2*(b*d-2*a*e+(-b*e+2*c
*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+8/3*e^2*(8*c^2*d^2+3*b^2*e^2-2*c*e*
(4*a*e+3*b*d)+2*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x+a)^(1/2)/c^2/(-4*a*c+b^2)
```

Rubi [A] time = 0.23, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 738, 779, 621, 206}

$$\frac{8e^2\sqrt{a+bx+cx^2}\left(-2ce(4ae+3bd)+3b^2e^2+2cex(2cd-be)+8c^2d^2\right)}{3c^2\left(b^2-4ac\right)}-\frac{16e(d+ex)^2(-2ae+x(2cd-be)+bd}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^4)/(3*(a + b*x + c*x^2)^(3/2)) - (16*e*(d + e*x)^2*(b*d - 2*a
*e + (2*c*d - b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (8*e^2*(8*
c^2*d^2 + 3*b^2*e^2 - 2*c*e*(3*b*d + 4*a*e) + 2*c*e*(2*c*d - b*e)*x)*Sqrt[a
 + b*x + c*x^2])/(3*c^2*(b^2 - 4*a*c)) + (4*e^3*(2*c*d - b*e)*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(8e)\int \frac{(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(16e)\int \frac{(d+ex)(-2e(bd-2ae)}{\sqrt{a+bx+}}}{3\left(b^2-4ac\right.}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{8e^2\left(8c^2d^2+3b^2e^2-2\right.}{}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{8e^2\left(8c^2d^2+3b^2e^2-2\right.}{}$$

$$= -\frac{2(d+ex)^4}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{16e(d+ex)^2(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{8e^2\left(8c^2d^2+3b^2e^2-2\right.}{}$$

Mathematica [A] time = 1.01, size = 354, normalized size = 1.70

$$\frac{2\left(\frac{\sqrt{c}\left(b^2\left(-12a^2e^4+24ace^3x(2d+ex)+c^2\left(d^4+12d^3ex-18d^2e^2x^2+28de^3x^3-3e^4x^4\right)\right)+8bce\left(3a^2e^2(d+3ex)+ac\left(d^3-9d^2ex-3de^2x^2+7e^3x^3\right)+3c^2d^2x^2(d-ex)\right)-\right.}{(a+x(b+cx))^{3/2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*((Sqrt[c]*(-12*b^4*e^4*x^2 - 8*b^3*e^3*x*(3*a*e + c*x*(-3*d + 2*e*x)) +
8*b*c*e*(3*c^2*d^2*x^2*(d - e*x) + 3*a^2*e^2*(d + 3*e*x) + a*c*(d^3 - 9*d^2
*e*x - 3*d*e^2*x^2 + 7*e^3*x^3)) + 4*c*(8*a^3*e^4 + 4*c^3*d^3*e*x^3 - 12*a^
2*c*e^2*(d^2 + d*e*x - e^2*x^2) - a*c^2*(d^4 + 18*d^2*e^2*x^2 + 16*d*e^3*x^
3 - 3*e^4*x^4)) + b^2*(-12*a^2*e^4 + 24*a*c*e^3*x*(2*d + e*x) + c^2*(d^4 +
12*d^3*e*x - 18*d^2*e^2*x^2 + 28*d*e^3*x^3 - 3*e^4*x^4))))/(a + x*(b + c*x)
)^(3/2) + 6*(b^2 - 4*a*c)*e^3*(-2*c*d + b*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + x*(b + c*x)])]))/(3*c^(5/2)*(-b^2 + 4*a*c))
```

fricas [B] time = 2.61, size = 1493, normalized size = 7.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-2/3*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*
(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2
- 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c
^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*
b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(c)*log(-8*c
^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*
c) + (8*a*b*c^3*d^3*e - 48*a^2*c^3*d^2*e^2 + 24*a^2*b*c^2*d*e^3 - 3*(b^2*c^
3 - 4*a*c^4)*e^4*x^4 + (b^2*c^3 - 4*a*c^4)*d^4 - 4*(3*a^2*b^2*c - 8*a^3*c^2
)*e^4 + 4*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + (7*b^2*c^3 - 16*a*c^4)*d*e^3 - 2
*(2*b^3*c^2 - 7*a*b*c^3)*e^4)*x^3 + 6*(4*b*c^4*d^3*e - 3*(b^2*c^3 + 4*a*c^4
)*d^2*e^2 + 4*(b^3*c^2 - a*b*c^3)*d*e^3 - 2*(b^4*c - 2*a*b^2*c^2 - 4*a^2*c^
3)*e^4)*x^2 + 12*(b^2*c^3*d^3*e - 6*a*b*c^3*d^2*e^2 + 4*(a*b^2*c^2 - a^2*c^
3)*d*e^3 - 2*(a*b^3*c - 3*a^2*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^
2*c^3 - 4*a^3*c^4 + (b^2*c^5 - 4*a*c^6)*x^4 + 2*(b^3*c^4 - 4*a*b*c^5)*x^3 +
 (b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*x^2 + 2*(a*b^3*c^3 - 4*a^2*b*c^4)*x),
-2/3*(6*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*(
b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2 -
 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c^
2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*b
^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(-c)*arctan(1
/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + (8
*a*b*c^3*d^3*e - 48*a^2*c^3*d^2*e^2 + 24*a^2*b*c^2*d*e^3 - 3*(b^2*c^3 - 4*a
*c^4)*e^4*x^4 + (b^2*c^3 - 4*a*c^4)*d^4 - 4*(3*a^2*b^2*c - 8*a^3*c^2)*e^4 +
 4*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 + (7*b^2*c^3 - 16*a*c^4)*d*e^3 - 2*(2*b^3
*c^2 - 7*a*b*c^3)*e^4)*x^3 + 6*(4*b*c^4*d^3*e - 3*(b^2*c^3 + 4*a*c^4)*d^2*e
^2 + 4*(b^3*c^2 - a*b*c^3)*d*e^3 - 2*(b^4*c - 2*a*b^2*c^2 - 4*a^2*c^3)*e^4)
*x^2 + 12*(b^2*c^3*d^3*e - 6*a*b*c^3*d^2*e^2 + 4*(a*b^2*c^2 - a^2*c^3)*d*e^
3 - 2*(a*b^3*c - 3*a^2*b*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^3 -
 4*a^3*c^4 + (b^2*c^5 - 4*a*c^6)*x^4 + 2*(b^3*c^4 - 4*a*b*c^5)*x^3 + (b^4*c
^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*x^2 + 2*(a*b^3*c^3 - 4*a^2*b*c^4)*x)]
```

giac [B] time = 0.38, size = 754, normalized size = 3.62

$$2\left(\left(\left(\left(\frac{3\left(b^{4}c^{2}e^{4}-8\,ab^{2}c^{3}e^{4}+16\,a^{2}c^{4}e^{4}\right)x}{b^{4}c^{2}-8\,ab^{2}c^{3}+16\,a^{2}c^{4}}-\frac{4\left(4\,b^{2}c^{4}d^{3}e-16\,ac^{5}d^{3}e-6\,b^{3}c^{3}d^{2}e^{2}+24\,abc^{4}d^{2}e^{2}+7\,b^{4}c^{2}de^{3}-44\,ab^{2}c^{3}de^{3}+64\,a^{2}c^{4}de^{3}-4\,b^{5}ce^{4}+30\,ab^{3}c\right.}{b^{4}c^{2}-8\,ab^{2}c^{3}+16\,a^{2}c^{4}}\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((((3*(b^4*c^2*e^4 - 8*a*b^2*c^3*e^4 + 16*a^2*c^4*e^4)*x/(b^4*c^2 - 8*a
*b^2*c^3 + 16*a^2*c^4) - 4*(4*b^2*c^4*d^3*e - 16*a*c^5*d^3*e - 6*b^3*c^3*d^
2*e^2 + 24*a*b*c^4*d^2*e^2 + 7*b^4*c^2*d*e^3 - 44*a*b^2*c^3*d*e^3 + 64*a^2*
c^4*d*e^3 - 4*b^5*c*e^4 + 30*a*b^3*c^2*e^4 - 56*a^2*b*c^3*e^4)/(b^4*c^2 - 8
*a*b^2*c^3 + 16*a^2*c^4))*x - 6*(4*b^3*c^3*d^3*e - 16*a*b*c^4*d^3*e - 3*b^4
*c^2*d^2*e^2 + 48*a^2*c^4*d^2*e^2 + 4*b^5*c*d*e^3 - 20*a*b^3*c^2*d*e^3 + 16
*a^2*b*c^3*d*e^3 - 2*b^6*e^4 + 12*a*b^4*c*e^4 - 8*a^2*b^2*c^2*e^4 - 32*a^3*
c^3*e^4)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x - 12*(b^4*c^2*d^3*e - 4*a*
b^2*c^3*d^3*e - 6*a*b^3*c^2*d^2*e^2 + 24*a^2*b*c^3*d^2*e^2 + 4*a*b^4*c*d*e^
3 - 20*a^2*b^2*c^2*d*e^3 + 16*a^3*c^3*d*e^3 - 2*a*b^5*e^4 + 14*a^2*b^3*c*e^
4 - 24*a^3*b*c^2*e^4)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x - (b^4*c^2*d^
4 - 8*a*b^2*c^3*d^4 + 16*a^2*c^4*d^4 + 8*a*b^3*c^2*d^3*e - 32*a^2*b*c^3*d^3
*e - 48*a^2*b^2*c^2*d^2*e^2 + 192*a^3*c^3*d^2*e^2 + 24*a^2*b^3*c*d*e^3 - 96
*a^3*b*c^2*d*e^3 - 12*a^2*b^4*e^4 + 80*a^3*b^2*c*e^4 - 128*a^4*c^2*e^4)/(b^
4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2) - 4*(2*c*d*e^3 -
 b*e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2
)
```

maple [B] time = 0.07, size = 1692, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -12*x^2/(c*x^2+b*x+a)^(3/2)*d^2*e^2-4*x/(c*x^2+b*x+a)^(3/2)*d^3*e+16/3/c^2*
e^4*a^2/(c*x^2+b*x+a)^(3/2)+1/12/c^4*e^4*b^4/(c*x^2+b*x+a)^(3/2)-2/c^3*e^4*
b^2/(c*x^2+b*x+a)^(1/2)-8/3*x^3/(c*x^2+b*x+a)^(3/2)*d*e^3-4/c^(5/2)*e^4*b*l
n((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+8/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))*d*e^3-2/3/(c*x^2+b*x+a)^(3/2)*d^4+2*e^4*x^4/(c*x^2+b*
x+a)^(3/2)-64*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*c*d^2*e^2+b^4/c^2/(4*
a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e^2-64/3/c*e^4*b^3*a/(4*a*c-b^2)^2/(c*x^2+
b*x+a)^(1/2)*x-8/3/c^2*e^4*b^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+16*b^3/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*d^2*e^2+2/c^2*e^4*a*b*x/(c*x^2+b*x+a)^(3
/2)+4/c^2*e^4*a^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+32/c*e^4*a^2*b^2/(4*a
*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-6*b/c*x/(c*x^2+b*x+a)^(3/2)*d^2*e^2+4/c^2*b^3
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*d*e^3+64*e^4*a^2*b/(4*a*c-b^2)^2/(c*x^2+b*
x+a)^(1/2)*x-1/2/c^3*e^4*b^3*x/(c*x^2+b*x+a)^(3/2)-2/c^3*e^4*b^4/(4*a*c-b^2
)/(c*x^2+b*x+a)^(1/2)-4/c^2*e^4*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x-4/3*b
^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^3*e-2/3*b^3/c/(4*a*c-b^2)/(c*x^2+b*x
+a)^(3/2)*d^3*e+8/3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*d^3*e+1/12/c^4*e^4*
b^6/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+2/3/c^3*e^4*b^6/(4*a*c-b^2)^2/(c*x^2+b*
x+a)^(1/2)-5/3/c^3*e^4*b^2*a/(c*x^2+b*x+a)^(3/2)+4/c^2*e^4*b*x/(c*x^2+b*x+a
)^(1/2)+8/c*e^4*a*x^2/(c*x^2+b*x+a)^(3/2)+4/3/c*e^4*b*x^3/(c*x^2+b*x+a)^(3/
2)-2/c^2*e^4*b^2*x^2/(c*x^2+b*x+a)^(3/2)+b^2/c^2/(c*x^2+b*x+a)^(3/2)*d^2*e^
2-8*a/c/(c*x^2+b*x+a)^(3/2)*d^2*e^2-8/c*x/(c*x^2+b*x+a)^(1/2)*d*e^3+4/c^2*b
/(c*x^2+b*x+a)^(1/2)*d*e^3+4/3/c^2*e^4*b^5/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)*x-4/3/c^3*e^4*b^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-32/3/c^2*e^4*b^4*a/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/6/c^3*e^4*b^5/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*x+8*b^4/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2-32*b^2*a/(4*a*c-b^
2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e^2-2/3*b/c/(c*x^2+b*x+a)^(3/2)*d^3*e-16/3*b^3
/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^3*e+8/c*e^4*a^2*b/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*x-32/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*c*d^3*e+16/3*a/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*c*d^3*e+128/3*a*c^2/(4*a*c-b^2)^2/(c*x^2+b
*x+a)^(1/2)*x*d^3*e+64/3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*c*d^3*e+2*b^
3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^2*e^2-8*b*a/(4*a*c-b^2)/(c*x^2+b*x+
a)^(3/2)*x*d^2*e^2-4*b^2/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e^2+8/c*b^
2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*d*e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^4}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**4/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1589 $\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=158

$$\frac{4e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{c\left(b^2-4ac\right)}-\frac{4e(d+ex)(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2e^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)}$$

```
[Out] -2/3*(e*x+d)^3/(c*x^2+b*x+a)^(3/2)+2*e^3*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x
^2+b*x+a)^(1/2))/c^(3/2)-4*e*(e*x+d)*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2
)/(c*x^2+b*x+a)^(1/2)+4*e^2*(-b*e+2*c*d)*(c*x^2+b*x+a)^(1/2)/c/(-4*a*c+b^2)
```

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 738, 640, 621, 206}

$$\frac{4e^2\sqrt{a+bx+cx^2}\,(2cd-be)}{c\left(b^2-4ac\right)}-\frac{4e(d+ex)(-2ae+x(2cd-be)+bd)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2e^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}-\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^3)/(3*(a + b*x + c*x^2)^(3/2)) - (4*e*(d + e*x)*(b*d - 2*a*e
+ (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (4*e^2*(2*c*d -
 b*e)*Sqrt[a + b*x + c*x^2])/(c*(b^2 - 4*a*c)) + (2*e^3*ArcTanh[(b + 2*c*x)
/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}} + (2e)\int \frac{(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{(4e)\int \frac{-e(bd-2ae)-e(2cd-b}{\sqrt{a+bx+cx^2}}}{b^2-4ac}$$

$$= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a+bx}}{c\left(b^2-4ac\right)}$$

$$= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a+bx}}{c\left(b^2-4ac\right)}$$

$$= -\frac{2(d+ex)^3}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{4e(d+ex)(bd-2ae+(2cd-be)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a+bx}}{c\left(b^2-4ac\right)}$$

Mathematica [A] time = 0.49, size = 285, normalized size = 1.80

$$6e^3\sqrt{a+x(b+cx)}\left(4a^2c+a\left(-b^2+4bcx+4c^2x^2\right)-b^2x(b+cx)\right)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)+2\sqrt{c}\left(6be\left(a^2e^2+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[c]*(6*b^3*e^3*x^2 + 6*b*e*(a^2*e^2 + c^2*d*x^2*(3*d - 2*e*x) + a*c*
(d^2 - 6*d*e*x - e^2*x^2)) - 4*c*(-3*c^2*d^2*e*x^3 + 3*a^2*e^2*(2*d + e*x)
+ a*c*(d^3 + 9*d*e^2*x^2 + 4*e^3*x^3)) + b^2*(12*a*e^3*x + c*(d^3 + 9*d^2*e
*x - 9*d*e^2*x^2 + 7*e^3*x^3))) + 6*e^3*Sqrt[a + x*(b + c*x)]*(4*a^2*c - b^
2*x*(b + c*x) + a*(-b^2 + 4*b*c*x + 4*c^2*x^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)]])])/(3*c^(3/2)*(-b^2 + 4*a*c)*(a + x*(b + c*x))^(3
/2))
```

fricas [B] time = 2.43, size = 958, normalized size = 6.06

$$\left[3\left(\left(b^2c^2-4\,ac^3\right)e^3x^4+2\left(b^3c-4\,abc^2\right)e^3x^3+\left(b^4-2\,ab^2c-8\,a^2c^2\right)e^3x^2+2\left(ab^3-4\,a^2bc\right)e^3x+\left(a^2b^2-4\,a^3c\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/3*(3*((b^2*c^2 - 4*a*c^3)*e^3*x^4 + 2*(b^3*c - 4*a*b*c^2)*e^3*x^3 + (b^4
 - 2*a*b^2*c - 8*a^2*c^2)*e^3*x^2 + 2*(a*b^3 - 4*a^2*b*c)*e^3*x + (a^2*b^2
- 4*a^3*c)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x
 + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 2*(6*a*b*c^2*d^2*e - 24*a^2*c^2*d*e^2
+ 6*a^2*b*c*e^3 + (b^2*c^2 - 4*a*c^3)*d^3 + (12*c^4*d^2*e - 12*b*c^3*d*e^2
+ (7*b^2*c^2 - 16*a*c^3)*e^3)*x^3 + 3*(6*b*c^3*d^2*e - 3*(b^2*c^2 + 4*a*c^3
)*d*e^2 + 2*(b^3*c - a*b*c^2)*e^3)*x^2 + 3*(3*b^2*c^2*d^2*e - 12*a*b*c^2*d*
e^2 + 4*(a*b^2*c - a^2*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^2 - 4
*a^3*c^3 + (b^2*c^4 - 4*a*c^5)*x^4 + 2*(b^3*c^3 - 4*a*b*c^4)*x^3 + (b^4*c^2
 - 2*a*b^2*c^3 - 8*a^2*c^4)*x^2 + 2*(a*b^3*c^2 - 4*a^2*b*c^3)*x), -2/3*(3*(
(b^2*c^2 - 4*a*c^3)*e^3*x^4 + 2*(b^3*c - 4*a*b*c^2)*e^3*x^3 + (b^4 - 2*a*b^
2*c - 8*a^2*c^2)*e^3*x^2 + 2*(a*b^3 - 4*a^2*b*c)*e^3*x + (a^2*b^2 - 4*a^3*c
)*e^3)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*
x^2 + b*c*x + a*c)) + (6*a*b*c^2*d^2*e - 24*a^2*c^2*d*e^2 + 6*a^2*b*c*e^3 +
 (b^2*c^2 - 4*a*c^3)*d^3 + (12*c^4*d^2*e - 12*b*c^3*d*e^2 + (7*b^2*c^2 - 16
*a*c^3)*e^3)*x^3 + 3*(6*b*c^3*d^2*e - 3*(b^2*c^2 + 4*a*c^3)*d*e^2 + 2*(b^3*
c - a*b*c^2)*e^3)*x^2 + 3*(3*b^2*c^2*d^2*e - 12*a*b*c^2*d*e^2 + 4*(a*b^2*c
- a^2*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^2*c^2 - 4*a^3*c^3 + (b^2*c
^4 - 4*a*c^5)*x^4 + 2*(b^3*c^3 - 4*a*b*c^4)*x^3 + (b^4*c^2 - 2*a*b^2*c^3 -
8*a^2*c^4)*x^2 + 2*(a*b^3*c^2 - 4*a^2*b*c^3)*x)]
```

giac [B] time = 0.35, size = 492, normalized size = 3.11

$$-\frac{2\,e^{3}\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^{2}+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}-\frac{2\left(\left(\left(\frac{\left(12\,b^{2}c^{3}d^{2}e-48\,ac^{4}d^{2}e-12\,b^{3}c^{2}de^{2}+48\,abc^{3}de^{2}+7\,b^{4}ce^{3}-44\,ab^{2}c^{2}e^{3}+64\,a^{2}c^{3}e^{3}\right.}{b^{4}c-8\,ab^{2}c^{2}+16\,a^{2}c^{3}}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
 - 2/3*((((12*b^2*c^3*d^2*e - 48*a*c^4*d^2*e - 12*b^3*c^2*d*e^2 + 48*a*b*c^
3*d*e^2 + 7*b^4*c*e^3 - 44*a*b^2*c^2*e^3 + 64*a^2*c^3*e^3)*x/(b^4*c - 8*a*b
^2*c^2 + 16*a^2*c^3) + 3*(6*b^3*c^2*d^2*e - 24*a*b*c^3*d^2*e - 3*b^4*c*d*e^
2 + 48*a^2*c^3*d*e^2 + 2*b^5*e^3 - 10*a*b^3*c*e^3 + 8*a^2*b*c^2*e^3)/(b^4*c
 - 8*a*b^2*c^2 + 16*a^2*c^3))*x + 3*(3*b^4*c*d^2*e - 12*a*b^2*c^2*d^2*e - 1
2*a*b^3*c*d*e^2 + 48*a^2*b*c^2*d*e^2 + 4*a*b^4*e^3 - 20*a^2*b^2*c*e^3 + 16*
a^3*c^2*e^3)/(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3))*x + (b^4*c*d^3 - 8*a*b^2*c
^2*d^3 + 16*a^2*c^3*d^3 + 6*a*b^3*c*d^2*e - 24*a^2*b*c^2*d^2*e - 24*a^2*b^2
*c*d*e^2 + 96*a^3*c^2*d*e^2 + 6*a^2*b^3*e^3 - 24*a^3*b*c*e^3)/(b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.06, size = 865, normalized size = 5.47

$$-\frac{32abcd\,e^{2}x}{\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}}+\frac{32a\,c^{2}d^{2}ex}{\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}}+\frac{8b^{3}d\,e^{2}x}{\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+a}}-\frac{8b^{2}c\,d^{2}ex}{\left(4ac-b^{2}\right)^{2}\sqrt{c\,x^{2}+bx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 1/c^2*e^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+1/2*b^2/c^2/(c*x^2+b*x+a)^(3/
2)*d*e^2-32*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*d*e^2*c+16*a/(4*a*c-b^2
)^2/(c*x^2+b*x+a)^(1/2)*b*c*d^2*e-2/3/(c*x^2+b*x+a)^(3/2)*d^3+2/c*e^3*b^2/(
4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+4*b^4/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*
```

```
d*e^2-16*b^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d*e^2+1/c^2*e^3*b/(c*x^2+b
*x+a)^(1/2)-6*x^2/(c*x^2+b*x+a)^(3/2)*d*e^2-3*x/(c*x^2+b*x+a)^(3/2)*d^2*e-2
/3*e^3*x^3/(c*x^2+b*x+a)^(3/2)+2/c^(3/2)*e^3*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+
b*x+a)^(1/2))-2/c*e^3*x/(c*x^2+b*x+a)^(1/2)+b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)
^(3/2)*x*d*e^2-4*b*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d*e^2-2*b^2/c*a/(4*a
*c-b^2)/(c*x^2+b*x+a)^(3/2)*d*e^2-8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x
*c*d^2*e+4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*c*d^2*e+32*a*c^2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*x*d^2*e-b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*d^2*e-
1/2*b^3/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d^2*e-3*b/c*x/(c*x^2+b*x+a)^(3/2)
*d*e^2+2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*d^2*e+8*b^3/(4*a*c-b^2)^2/(c*x
^2+b*x+a)^(1/2)*x*d*e^2+1/2*b^4/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*d*e^2-1
/2*b/c/(c*x^2+b*x+a)^(3/2)*d^2*e-4*a/c/(c*x^2+b*x+a)^(3/2)*d*e^2-4*b^3/(4*a
*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*d^2*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x+a\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1590 $\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=74

$$-\frac{8e(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(e*x+d)^2/(c*x^2+b*x+a)^(3/2)-8/3*e*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c
+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.071, Rules used = {768, 636}

$$-\frac{8e(-2ae+x(2cd-be)+bd)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^2)/(3*(a + b*x + c*x^2)^(3/2)) - (8*e*(b*d - 2*a*e + (2*c*d -
 b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}}\,dx&=-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(4e)\int \frac{d+ex}{\left(a+bx+cx^2\right)^{3/2}}\,dx\\&=-\frac{2(d+ex)^2}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{8e(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.79, size = 110, normalized size = 1.49

$$\frac{2\left(8a^2e^2+4be\left(cx^2(ex-3d)-a(d-3ex)\right)+4ac\left(d^2+3e^2x^2\right)-b^2\left(d^2+6dex-3e^2x^2\right)-8c^2dex^3\right)}{3\left(b^2-4ac\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(8*a^2*e^2 - 8*c^2*d*e*x^3 - b^2*(d^2 + 6*d*e*x - 3*e^2*x^2) + 4*a*c*(d^
2 + 3*e^2*x^2) + 4*b*e*(-(a*(d - 3*e*x)) + c*x^2*(-3*d + e*x))))/(3*(b^2 -
4*a*c)*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 2.13, size = 194, normalized size = 2.62

$$-\frac{2\left(4\,abde-8\,a^{2}e^{2}+4\left(2\,c^{2}de-bce^{2}\right)x^{3}+\left(b^{2}-4\,ac\right)d^{2}+3\left(4\,bcde-\left(b^{2}+4\,ac\right)e^{2}\right)x^{2}+6\left(b^{2}de-2\,abe^{2}\right)x\right)\sqrt{\right.}{3\left(\left(b^{2}c^{2}-4\,ac^{3}\right)x^{4}+a^{2}b^{2}-4\,a^{3}c+2\left(b^{3}c-4\,abc^{2}\right)x^{3}+\left(b^{4}-2\,ab^{2}c-8\,a^{2}c^{2}\right)x^{2}+2\left(ab^{3}-4\,a^{2}bc\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(4*a*b*d*e - 8*a^2*e^2 + 4*(2*c^2*d*e - b*c*e^2)*x^3 + (b^2 - 4*a*c)*d
^2 + 3*(4*b*c*d*e - (b^2 + 4*a*c)*e^2)*x^2 + 6*(b^2*d*e - 2*a*b*e^2)*x)*sqr
t(c*x^2 + b*x + a)/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c
- 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c
)*x)
```

giac [B] time = 0.32, size = 289, normalized size = 3.91

$$-\frac{2\left(\left(\left(\frac{4\left(2\,b^{2}c^{2}de-8\,ac^{3}de-b^{3}ce^{2}+4\,abc^{2}e^{2}\right)x}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}+\frac{3\left(4\,b^{3}cde-16\,abc^{2}de-b^{4}e^{2}+16\,a^{2}c^{2}e^{2}\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{6\left(b^{4}de-4\,ab^{2}cde-2\,ab^{3}e^{2}+8\,a^{2}bce^{2}\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{b^{4}d^{2}-}{}\right.}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(((4*(2*b^2*c^2*d*e - 8*a*c^3*d*e - b^3*c*e^2 + 4*a*b*c^2*e^2)*x/(b^4
- 8*a*b^2*c + 16*a^2*c^2) + 3*(4*b^3*c*d*e - 16*a*b*c^2*d*e - b^4*e^2 + 16*
a^2*c^2*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 6*(b^4*d*e - 4*a*b^2*c*d*e
 - 2*a*b^3*e^2 + 8*a^2*b*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (b^4*d^
2 - 8*a*b^2*c*d^2 + 16*a^2*c^2*d^2 + 4*a*b^3*d*e - 16*a^2*b*c*d*e - 8*a^2*b
^2*e^2 + 32*a^3*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3
/2)
```

maple [A] time = 0.06, size = 123, normalized size = 1.66

$$-\frac{2\left(4bc\,e^{2}x^{3}-8c^{2}de\,x^{3}+12ac\,e^{2}x^{2}+3b^{2}e^{2}x^{2}-12bcde\,x^{2}+12ab\,e^{2}x-6b^{2}dex+8a^{2}e^{2}-4abde+4ac\,d^{2}-b^{2}d\right.}{3\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}\left(4ac-b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(4*b*c*e^2*x^3-8*c^2*d*e*x^3+12*a*c*e^2*x^2+3*b^2*
e^2*x^2-12*b*c*d*e*x^2+12*a*b*e^2*x-6*b^2*d*e*x+8*a^2*e^2-4*a*b*d*e+4*a*c*d
^2-b^2*d^2)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.27, size = 122, normalized size = 1.65

$$-\frac{2\,\left(8\,a^2\,e^2-4\,a\,b\,d\,e+12\,a\,b\,e^2\,x+4\,a\,c\,d^2+12\,a\,c\,e^2\,x^2-b^2\,d^2-6\,b^2\,d\,e\,x+3\,b^2\,e^2\,x^2-12\,b\,c\,d\,e\,x^2+4\,b\,c\,e^2\,x^3}{3\,\left(4\,a\,c-b^2\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(8*a^2*e^2 - b^2*d^2 + 3*b^2*e^2*x^2 + 4*a*c*d^2 + 12*a*b*e^2*x - 6*b^2
*d*e*x + 12*a*c*e^2*x^2 + 4*b*c*e^2*x^3 - 8*c^2*d*e*x^3 - 4*a*b*d*e - 12*b*
c*d*e*x^2))/(3*(4*a*c - b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1591 $\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=59

$$-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(e*x+d)/(c*x^2+b*x+a)^(3/2)-4/3*e*(2*c*x+b)/(-4*a*c+b^2)/(c*x^2+b*x+a)
^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {768, 613}

$$-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x))/(3*(a + b*x + c*x^2)^(3/2)) - (4*e*(b + 2*c*x))/(3*(b^2 - 4*
a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(2e)\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx\\ &= -\frac{2(d+ex)}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{4e(b+2cx)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.20, size = 64, normalized size = 1.08

$$-\frac{2\left(2be\left(a+3cx^2\right)+4c\left(cex^3-ad\right)+b^2(d+3ex)\right)}{3\left(b^2-4ac\right)(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(b^2*(d + 3*e*x) + 2*b*e*(a + 3*c*x^2) + 4*c*(-(a*d) + c*e*x^3)))/(3*(b
^2 - 4*a*c)*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 1.92, size = 145, normalized size = 2.46

$$-\frac{2\left(4\,c^{2}ex^{3}+6\,bcex^{2}+3\,b^{2}ex+2\,abe+\left(b^{2}-4\,ac\right)d\right)\sqrt{cx^{2}+bx+a}}{3\left(\left(b^{2}c^{2}-4\,ac^{3}\right)x^{4}+a^{2}b^{2}-4\,a^{3}c+2\left(b^{3}c-4\,abc^{2}\right)x^{3}+\left(b^{4}-2\,ab^{2}c-8\,a^{2}c^{2}\right)x^{2}+2\left(ab^{3}-4\,a^{2}bc\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(4*c^2*e*x^3 + 6*b*c*e*x^2 + 3*b^2*e*x + 2*a*b*e + (b^2 - 4*a*c)*d)*sq
rt(c*x^2 + b*x + a)/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c
 - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*
c)*x)
```

giac [B] time = 0.28, size = 205, normalized size = 3.47

$$-\frac{2\left(\left(2\left(\frac{2\left(b^{2}c^{2}e-4\,ac^{3}e\right)x}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}+\frac{3\left(b^{3}ce-4\,abc^{2}e\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{3\left(b^{4}e-4\,ab^{2}ce\right)}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)x+\frac{b^{4}d-8\,ab^{2}cd+16\,a^{2}c^{2}d+2\,ab^{3}e-8\,a^{2}bce}{b^{4}-8\,ab^{2}c+16\,a^{2}c^{2}}\right)}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((2*(2*(b^2*c^2*e - 4*a*c^3*e)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(b
^3*c*e - 4*a*b*c^2*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(b^4*e - 4*a*b^
2*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (b^4*d - 8*a*b^2*c*d + 16*a^2*c^
2*d + 2*a*b^3*e - 8*a^2*b*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x
 + a)^(3/2)
```

maple [A] time = 0.05, size = 67, normalized size = 1.14

$$\frac{\frac{8}{3}c^{2}e\,x^{3}+4bce\,x^{2}+2b^{2}ex+\frac{4}{3}abe-\frac{8}{3}acd+\frac{2}{3}b^{2}d}{\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}\left(4ac-b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(4*c^2*e*x^3+6*b*c*e*x^2+3*b^2*e*x+2*a*b*e-4*a*c*d+
b^2*d)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.06, size = 66, normalized size = 1.12

$$\frac{2\left(3\,e\,b^{2}\,x+d\,b^{2}+6\,e\,b\,c\,x^{2}+2\,a\,e\,b+4\,e\,c^{2}\,x^{3}-4\,a\,d\,c\right)}{3\left(4\,a\,c-b^{2}\right)\left(c\,x^{2}+b\,x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] (2*(b^2*d + 4*c^2*e*x^3 + 2*a*b*e - 4*a*c*d + 3*b^2*e*x + 6*b*c*e*x^2))/(3*
(4*a*c - b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1592 $\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=18

$$-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)
```

Rubi [A] time = 0.01, antiderivative size = 18, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {629}

$$-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -2/(3*(a + b*x + c*x^2)^(3/2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{b+2cx}{\left(a+bx+cx^2\right)^{5/2}}\,dx=-\frac{2}{3\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 0.01, size = 17, normalized size = 0.94

$$-\frac{2}{3(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] -2/(3*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 0.87, size = 51, normalized size = 2.83

$$-\frac{2\sqrt{cx^2+bx+a}}{3\left(c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(c*x^2 + b*x + a)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x
^2 + a^2)
```

giac [**A**] time = 0.28, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
[Out] -2/3/(c*x^2 + b*x + a)^(3/2)
```

maple [**A**] time = 0.06, size = 15, normalized size = 0.83

$$-\frac{2}{3\left(c\,x^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x)
[Out] -2/3/(c*x^2+b*x+a)^(3/2)
```

maxima [**A**] time = 0.53, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
[Out] -2/3/(c*x^2 + b*x + a)^(3/2)
```

mupad [**B**] time = 1.99, size = 14, normalized size = 0.78

$$-\frac{2}{3\left(c\,x^{2}+b\,x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/(a + b*x + c*x^2)^(5/2),x)
[Out] -2/(3*(a + b*x + c*x^2)^(3/2))
```

sympy [**B**] time = 1.70, size = 58, normalized size = 3.22

$$-\frac{2}{3a\sqrt{a+bx+cx^{2}}+3bx\sqrt{a+bx+cx^{2}}+3cx^{2}\sqrt{a+bx+cx^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(5/2),x)
[Out] -2/(3*a*sqrt(a + b*x + c*x**2) + 3*b*x*sqrt(a + b*x + c*x**2) + 3*c*x**2*sq
rt(a + b*x + c*x**2))
```

3.1593 $\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}\left(ae^2-bde+cd^2\right)}-\frac{2e\left(-cx\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)-2bc\left(cd^2-5ae^2\right)-\right.}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+\right.}$$

```
[Out] -2/3*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e
+c*d^2)/(c*x^2+b*x+a)^(3/2)-e^3*(-b*e+2*c*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2
*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)
^(5/2)-2/3*e*(5*b^2*c*d*e-12*a*c^2*d*e-3*b^3*e^2-2*b*c*(-5*a*e^2+c*d^2)-c*(
4*c^2*d^2+3*b^2*e^2-4*c*e*(2*a*e+b*d))*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^
2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{822, 12, 724, 206\}$

$$-\frac{2e\left(-cx\left(-4ce(2ae+bd)+3b^2e^2+4c^2d^2\right)-2bc\left(cd^2-5ae^2\right)-12ac^2de+5b^2cde-3b^3e^2\right)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2}-\frac{2\left(\left(b^2-4ac\right)(cd\right.}{3\left(b^2-4ac\right)\left(a+bx\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^(3/2)) - (2*e*(5*b^2*c*d*e - 12*a*c^
2*d*e - 3*b^3*e^2 - 2*b*c*(c*d^2 - 5*a*e^2) - c*(4*c^2*d^2 + 3*b^2*e^2 - 4*
c*e*(b*d + 2*a*e))*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[a +
b*x + c*x^2]) - (e^3*(2*c*d - b*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/
(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(c*d^2 - b*d*e + a*
e^2)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
```

```
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(2cd-3be)-2c(}{(d+ex)\left(a+bx+cx^2\right.}}{3\left(b^2-4ac\right)\left(cd^2-b\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-\right.}{3(}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-\right.}{3(}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-\right.}{3(}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(5b^2cde-12ac^2de-\right.}{3(}$$

Mathematica [A] time = 0.42, size = 249, normalized size = 0.86

$$\frac{2e\left(2bc\left(cd(d-2ex)-5ae^2\right)+4c^2\left(ae(3d-2ex)+cd^2x\right)+3b^3e^2+b^2ce(3ex-5d)\right)}{3\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)^2}+\frac{e^3(2cd-be)\tanh^{-1}\left(\frac{}{2\sqrt{a+}}\right.}{\left(e(ae-bd)+\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x))/(3*(c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))^
(3/2)) + (2*e*(3*b^3*e^2 + b^2*c*e*(-5*d + 3*e*x) + 2*b*c*(-5*a*e^2 + c*d*(
d - 2*e*x)) + 4*c^2*(c*d^2*x + a*e*(3*d - 2*e*x))))/(3*(b^2 - 4*a*c)*(c*d^2
 + e*(-(b*d) + a*e))^2*Sqrt[a + x*(b + c*x)]) + (e^3*(2*c*d - b*e)*ArcTanh[
(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a
 + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2)
```

fricas [B] time = 4.93, size = 3858, normalized size = 13.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 - (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*
(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2
- 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c
^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*
b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2*b^2*c)*e^4)*x)*sqrt(c*d^2 - b*d
*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8
*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^
2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (
3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*((b^2*c^3 - 4*a*c^4)*
d^5 - (3*b^3*c^2 - 10*a*b*c^3)*d^4*e + (3*b^4*c - 3*a*b^2*c^2 - 20*a^2*c^3)
*d^3*e^2 - (b^5 + 8*a*b^3*c - 36*a^2*b*c^2)*d^2*e^3 + (5*a*b^4 - 12*a^2*b^2
*c - 16*a^3*c^2)*d*e^4 - 2*(2*a^2*b^3 - 7*a^3*b*c)*e^5 - (4*c^5*d^4*e - 8*b
*c^4*d^3*e^2 + (7*b^2*c^3 - 4*a*c^4)*d^2*e^3 - (3*b^3*c^2 - 4*a*b*c^3)*d*e^
4 + (3*a*b^2*c^2 - 8*a^2*c^3)*e^5)*x^3 - 3*(2*b*c^4*d^4*e - (5*b^2*c^3 - 4*
a*c^4)*d^3*e^2 + (5*b^3*c^2 - 8*a*b*c^3)*d^2*e^3 - (2*b^4*c - 3*a*b^2*c^2 -
 4*a^2*c^3)*d*e^4 + 2*(a*b^3*c - 3*a^2*b*c^2)*e^5)*x^2 - 3*(b^2*c^3*d^4*e -
 (3*b^3*c^2 - 4*a*b*c^3)*d^3*e^2 + (3*b^4*c - 5*a*b^2*c^2 - 4*a^2*c^3)*d^2*
e^3 - (b^5 - 8*a^2*b*c^2)*d*e^4 + (a*b^4 - 2*a^2*b^2*c - 4*a^3*c^2)*e^5)*x)
*sqrt(c*x^2 + b*x + a))/((a^2*b^2*c^3 - 4*a^3*c^4)*d^6 - 3*(a^2*b^3*c^2 - 4
*a^3*b*c^3)*d^5*e + 3*(a^2*b^4*c - 3*a^3*b^2*c^2 - 4*a^4*c^3)*d^4*e^2 - (a^
2*b^5 + 2*a^3*b^3*c - 24*a^4*b*c^2)*d^3*e^3 + 3*(a^3*b^4 - 3*a^4*b^2*c - 4*
a^5*c^2)*d^2*e^4 - 3*(a^4*b^3 - 4*a^5*b*c)*d*e^5 + (a^5*b^2 - 4*a^6*c)*e^6
+ ((b^2*c^5 - 4*a*c^6)*d^6 - 3*(b^3*c^4 - 4*a*b*c^5)*d^5*e + 3*(b^4*c^3 - 3
*a*b^2*c^4 - 4*a^2*c^5)*d^4*e^2 - (b^5*c^2 + 2*a*b^3*c^3 - 24*a^2*b*c^4)*d^
3*e^3 + 3*(a*b^4*c^2 - 3*a^2*b^2*c^3 - 4*a^3*c^4)*d^2*e^4 - 3*(a^2*b^3*c^2
- 4*a^3*b*c^3)*d*e^5 + (a^3*b^2*c^2 - 4*a^4*c^3)*e^6)*x^4 + 2*((b^3*c^4 - 4
*a*b*c^5)*d^6 - 3*(b^4*c^3 - 4*a*b^2*c^4)*d^5*e + 3*(b^5*c^2 - 3*a*b^3*c^3
- 4*a^2*b*c^4)*d^4*e^2 - (b^6*c + 2*a*b^4*c^2 - 24*a^2*b^2*c^3)*d^3*e^3 + 3
*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e^4 - 3*(a^2*b^4*c - 4*a^3*b^2
*c^2)*d*e^5 + (a^3*b^3*c - 4*a^4*b*c^2)*e^6)*x^3 + ((b^4*c^3 - 2*a*b^2*c^4
- 8*a^2*c^5)*d^6 - 3*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^5*e + 3*(b^6*c
 - a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a^3*c^4)*d^4*e^2 - (b^7 + 4*a*b^5*c - 20*
a^2*b^3*c^2 - 48*a^3*b*c^3)*d^3*e^3 + 3*(a*b^6 - a^2*b^4*c - 10*a^3*b^2*c^2
 - 8*a^4*c^3)*d^2*e^4 - 3*(a^2*b^5 - 2*a^3*b^3*c - 8*a^4*b*c^2)*d*e^5 + (a^
3*b^4 - 2*a^4*b^2*c - 8*a^5*c^2)*e^6)*x^2 + 2*((a*b^3*c^3 - 4*a^2*b*c^4)*d^
6 - 3*(a*b^4*c^2 - 4*a^2*b^2*c^3)*d^5*e + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^
3*b*c^3)*d^4*e^2 - (a*b^6 + 2*a^2*b^4*c - 24*a^3*b^2*c^2)*d^3*e^3 + 3*(a^2*
b^5 - 3*a^3*b^3*c - 4*a^4*b*c^2)*d^2*e^4 - 3*(a^3*b^4 - 4*a^4*b^2*c)*d*e^5
+ (a^4*b^3 - 4*a^5*b*c)*e^6)*x), -1/3*(3*(2*(a^2*b^2*c - 4*a^3*c^2)*d*e^3 -
 (a^2*b^3 - 4*a^3*b*c)*e^4 + (2*(b^2*c^3 - 4*a*c^4)*d*e^3 - (b^3*c^2 - 4*a*
b*c^3)*e^4)*x^4 + 2*(2*(b^3*c^2 - 4*a*b*c^3)*d*e^3 - (b^4*c - 4*a*b^2*c^2)*
e^4)*x^3 + (2*(b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*d*e^3 - (b^5 - 2*a*b^3*c -
8*a^2*b*c^2)*e^4)*x^2 + 2*(2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 - (a*b^4 - 4*a^2
*b^2*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*
e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 -
 a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e
 + a*b*e^2)*x)) + 2*((b^2*c^3 - 4*a*c^4)*d^5 - (3*b^3*c^2 - 10*a*b*c^3)*d^4
*e + (3*b^4*c - 3*a*b^2*c^2 - 20*a^2*c^3)*d^3*e^2 - (b^5 + 8*a*b^3*c - 36*a
^2*b*c^2)*d^2*e^3 + (5*a*b^4 - 12*a^2*b^2*c - 16*a^3*c^2)*d*e^4 - 2*(2*a^2*
b^3 - 7*a^3*b*c)*e^5 - (4*c^5*d^4*e - 8*b*c^4*d^3*e^2 + (7*b^2*c^3 - 4*a*c^
4)*d^2*e^3 - (3*b^3*c^2 - 4*a*b*c^3)*d*e^4 + (3*a*b^2*c^2 - 8*a^2*c^3)*e^5)
*x^3 - 3*(2*b*c^4*d^4*e - (5*b^2*c^3 - 4*a*c^4)*d^3*e^2 + (5*b^3*c^2 - 8*a*
b*c^3)*d^2*e^3 - (2*b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d*e^4 + 2*(a*b^3*c - 3
*a^2*b*c^2)*e^5)*x^2 - 3*(b^2*c^3*d^4*e - (3*b^3*c^2 - 4*a*b*c^3)*d^3*e^2 +
 (3*b^4*c - 5*a*b^2*c^2 - 4*a^2*c^3)*d^2*e^3 - (b^5 - 8*a^2*b*c^2)*d*e^4 +
(a*b^4 - 2*a^2*b^2*c - 4*a^3*c^2)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^2*
c^3 - 4*a^3*c^4)*d^6 - 3*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^5*e + 3*(a^2*b^4*c -
 3*a^3*b^2*c^2 - 4*a^4*c^3)*d^4*e^2 - (a^2*b^5 + 2*a^3*b^3*c - 24*a^4*b*c^2
)*d^3*e^3 + 3*(a^3*b^4 - 3*a^4*b^2*c - 4*a^5*c^2)*d^2*e^4 - 3*(a^4*b^3 - 4*
a^5*b*c)*d*e^5 + (a^5*b^2 - 4*a^6*c)*e^6 + ((b^2*c^5 - 4*a*c^6)*d^6 - 3*(b^
3*c^4 - 4*a*b*c^5)*d^5*e + 3*(b^4*c^3 - 3*a*b^2*c^4 - 4*a^2*c^5)*d^4*e^2 -
```

```
(b^5*c^2 + 2*a*b^3*c^3 - 24*a^2*b*c^4)*d^3*e^3 + 3*(a*b^4*c^2 - 3*a^2*b^2*c
^3 - 4*a^3*c^4)*d^2*e^4 - 3*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d*e^5 + (a^3*b^2*c^
2 - 4*a^4*c^3)*e^6)*x^4 + 2*((b^3*c^4 - 4*a*b*c^5)*d^6 - 3*(b^4*c^3 - 4*a*b
^2*c^4)*d^5*e + 3*(b^5*c^2 - 3*a*b^3*c^3 - 4*a^2*b*c^4)*d^4*e^2 - (b^6*c +
2*a*b^4*c^2 - 24*a^2*b^2*c^3)*d^3*e^3 + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*
b*c^3)*d^2*e^4 - 3*(a^2*b^4*c - 4*a^3*b^2*c^2)*d*e^5 + (a^3*b^3*c - 4*a^4*b
*c^2)*e^6)*x^3 + ((b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d^6 - 3*(b^5*c^2 - 2*
a*b^3*c^3 - 8*a^2*b*c^4)*d^5*e + 3*(b^6*c - a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*
a^3*c^4)*d^4*e^2 - (b^7 + 4*a*b^5*c - 20*a^2*b^3*c^2 - 48*a^3*b*c^3)*d^3*e^
3 + 3*(a*b^6 - a^2*b^4*c - 10*a^3*b^2*c^2 - 8*a^4*c^3)*d^2*e^4 - 3*(a^2*b^5
 - 2*a^3*b^3*c - 8*a^4*b*c^2)*d*e^5 + (a^3*b^4 - 2*a^4*b^2*c - 8*a^5*c^2)*e
^6)*x^2 + 2*((a*b^3*c^3 - 4*a^2*b*c^4)*d^6 - 3*(a*b^4*c^2 - 4*a^2*b^2*c^3)*
d^5*e + 3*(a*b^5*c - 3*a^2*b^3*c^2 - 4*a^3*b*c^3)*d^4*e^2 - (a*b^6 + 2*a^2*
b^4*c - 24*a^3*b^2*c^2)*d^3*e^3 + 3*(a^2*b^5 - 3*a^3*b^3*c - 4*a^4*b*c^2)*d
^2*e^4 - 3*(a^3*b^4 - 4*a^4*b^2*c)*d*e^5 + (a^4*b^3 - 4*a^5*b*c)*e^6)*x)]
```

giac [**B**]   time = 2.40, size = 8417, normalized size = 28.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*(2*c*d*e^3 - b*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqr
t(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2
 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 2
/3*((((4*b^2*c^10*d^14*e - 16*a*c^11*d^14*e - 28*b^3*c^9*d^13*e^2 + 112*a*b
*c^10*d^13*e^2 + 87*b^4*c^8*d^12*e^3 - 332*a*b^2*c^9*d^12*e^3 - 64*a^2*c^10
*d^12*e^3 - 158*b^5*c^7*d^11*e^4 + 536*a*b^3*c^8*d^11*e^4 + 384*a^2*b*c^9*d
^11*e^4 + 185*b^6*c^6*d^10*e^5 - 482*a*b^4*c^7*d^10*e^5 - 1020*a^2*b^2*c^8*
d^10*e^5 - 48*a^3*c^9*d^10*e^5 - 144*b^7*c^5*d^9*e^6 + 166*a*b^5*c^6*d^9*e^
6 + 1580*a^2*b^3*c^7*d^9*e^6 + 240*a^3*b*c^8*d^9*e^6 + 73*b^8*c^4*d^8*e^7 +
 128*a*b^6*c^5*d^8*e^7 - 1515*a^2*b^4*c^6*d^8*e^7 - 700*a^3*b^2*c^7*d^8*e^7
 + 160*a^4*c^8*d^8*e^7 - 22*b^9*c^3*d^7*e^8 - 188*a*b^7*c^4*d^7*e^8 + 804*a
^2*b^5*c^5*d^7*e^8 + 1360*a^3*b^3*c^6*d^7*e^8 - 640*a^4*b*c^7*d^7*e^8 + 3*b
^10*c^2*d^6*e^9 + 94*a*b^8*c^3*d^6*e^9 - 94*a^2*b^6*c^4*d^6*e^9 - 1500*a^3*
b^4*c^5*d^6*e^9 + 620*a^4*b^2*c^6*d^6*e^9 + 400*a^5*c^7*d^6*e^9 - 18*a*b^9*
c^2*d^5*e^10 - 120*a^2*b^7*c^3*d^5*e^10 + 748*a^3*b^5*c^4*d^5*e^10 + 380*a^
4*b^3*c^5*d^5*e^10 - 1200*a^5*b*c^6*d^5*e^10 + 45*a^2*b^8*c^2*d^4*e^11 - 40
*a^3*b^6*c^3*d^4*e^11 - 815*a^4*b^4*c^4*d^4*e^11 + 924*a^5*b^2*c^5*d^4*e^11
 + 384*a^6*c^6*d^4*e^11 - 60*a^3*b^7*c^2*d^3*e^12 + 250*a^4*b^5*c^3*d^3*e^1
2 + 152*a^5*b^3*c^4*d^3*e^12 - 768*a^6*b*c^5*d^3*e^12 + 45*a^4*b^6*c^2*d^2*
e^13 - 258*a^5*b^4*c^3*d^2*e^13 + 268*a^6*b^2*c^4*d^2*e^13 + 176*a^7*c^5*d^
2*e^13 - 18*a^5*b^5*c^2*d*e^14 + 116*a^6*b^3*c^3*d*e^14 - 176*a^7*b*c^4*d*e
^14 + 3*a^6*b^4*c^2*e^15 - 20*a^7*b^2*c^3*e^15 + 32*a^8*c^4*e^15)*x/(b^4*c^
8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*
c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^1
4*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e
^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13
*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*
e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^
5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d
^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^1
0*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^
2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^
9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c
^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 -
12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^
8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 10
4*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 -
6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 +
56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^
10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11
 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^
5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*
e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d
^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^
3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e
^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 +
64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^1
6 + 16*a^10*c^2*e^16) + 3*(2*b^3*c^9*d^14*e - 8*a*b*c^10*d^14*e - 15*b^4*c^
8*d^13*e^2 + 64*a*b^2*c^9*d^13*e^2 - 16*a^2*c^10*d^13*e^2 + 50*b^5*c^7*d^12
*e^3 - 218*a*b^3*c^8*d^12*e^3 + 72*a^2*b*c^9*d^12*e^3 - 97*b^6*c^6*d^11*e^4
 + 406*a*b^4*c^7*d^11*e^4 - 48*a^2*b^2*c^8*d^11*e^4 - 96*a^3*c^9*d^11*e^4 +
 120*b^7*c^5*d^10*e^5 - 428*a*b^5*c^6*d^10*e^5 - 334*a^2*b^3*c^7*d^10*e^5 +
 504*a^3*b*c^8*d^10*e^5 - 97*b^8*c^4*d^9*e^6 + 208*a*b^6*c^5*d^9*e^6 + 975*
a^2*b^4*c^6*d^9*e^6 - 960*a^3*b^2*c^7*d^9*e^6 - 240*a^4*c^8*d^9*e^6 + 50*b^
9*c^3*d^8*e^7 + 46*a*b^7*c^4*d^8*e^7 - 1194*a^2*b^5*c^5*d^8*e^7 + 550*a^3*b
^3*c^6*d^8*e^7 + 1160*a^4*b*c^7*d^8*e^7 - 15*b^10*c^2*d^7*e^8 - 122*a*b^8*c
^3*d^7*e^8 + 698*a^2*b^6*c^4*d^7*e^8 + 660*a^3*b^4*c^5*d^7*e^8 - 2080*a^4*b
^2*c^6*d^7*e^8 - 320*a^5*c^7*d^7*e^8 + 2*b^11*c*d^6*e^9 + 64*a*b^9*c^2*d^6*
e^9 - 102*a^2*b^7*c^3*d^6*e^9 - 1184*a^3*b^5*c^4*d^6*e^9 + 1430*a^4*b^3*c^5
*d^6*e^9 + 1320*a^5*b*c^6*d^6*e^9 - 12*a*b^10*c*d^5*e^10 - 81*a^2*b^8*c^2*d
^5*e^10 + 596*a^3*b^6*c^3*d^5*e^10 + 175*a^4*b^4*c^4*d^5*e^10 - 1920*a^5*b^
2*c^5*d^5*e^10 - 240*a^6*c^6*d^5*e^10 + 30*a^2*b^9*c*d^4*e^11 - 30*a^3*b^7*
c^2*d^4*e^11 - 650*a^4*b^5*c^3*d^4*e^11 + 962*a^5*b^3*c^4*d^4*e^11 + 792*a^
6*b*c^5*d^4*e^11 - 40*a^3*b^8*c*d^3*e^12 + 175*a^4*b^6*c^2*d^3*e^12 + 150*a
^5*b^4*c^3*d^3*e^12 - 816*a^6*b^2*c^4*d^3*e^12 - 96*a^7*c^5*d^3*e^12 + 30*a
^4*b^7*c*d^2*e^13 - 180*a^5*b^5*c^2*d^2*e^13 + 182*a^6*b^3*c^3*d^2*e^13 + 2
32*a^7*b*c^4*d^2*e^13 - 12*a^5*b^6*c*d*e^14 + 81*a^6*b^4*c^2*d*e^14 - 128*a
^7*b^2*c^3*d*e^14 - 16*a^8*c^4*d*e^14 + 2*a^6*b^5*c*e^15 - 14*a^7*b^3*c^2*e
^15 + 24*a^8*b*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^1
6 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*
c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*
c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c
^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*
d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c
^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c
^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10
*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^
3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b
^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*
b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*
d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d
^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6
*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e
^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d
^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^
6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^
5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^
2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b
^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*
b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5
*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^
6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^
3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15
+ a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + 3*(b^4*c^8*d^14*
e - 4*a*b^2*c^9*d^14*e - 8*b^5*c^7*d^13*e^2 + 36*a*b^3*c^8*d^13*e^2 - 16*a^
2*b*c^9*d^13*e^2 + 28*b^6*c^6*d^12*e^3 - 132*a*b^4*c^7*d^12*e^3 + 76*a^2*b^
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2*c^8*d^12*e^3 + 16*a^3*c^9*d^12*e^3 - 56*b^7*c^5*d^11*e^4 + 254*a*b^5*c^6*
d^11*e^4 - 72*a^2*b^3*c^7*d^11*e^4 - 192*a^3*b*c^8*d^11*e^4 + 70*b^8*c^4*d^
10*e^5 - 264*a*b^6*c^5*d^10*e^5 - 241*a^2*b^4*c^6*d^10*e^5 + 684*a^3*b^2*c^
7*d^10*e^5 + 96*a^4*c^8*d^10*e^5 - 56*b^9*c^3*d^9*e^6 + 114*a*b^7*c^4*d^9*e
^6 + 730*a^2*b^5*c^5*d^9*e^6 - 980*a^3*b^3*c^6*d^9*e^6 - 720*a^4*b*c^7*d^9*
e^6 + 28*b^10*c^2*d^8*e^7 + 44*a*b^8*c^3*d^8*e^7 - 819*a^2*b^6*c^4*d^8*e^7
+ 290*a^3*b^4*c^5*d^8*e^7 + 1900*a^4*b^2*c^6*d^8*e^7 + 240*a^5*c^7*d^8*e^7
- 8*b^11*c*d^7*e^8 - 78*a*b^9*c^2*d^7*e^8 + 404*a^2*b^7*c^3*d^7*e^8 + 764*a
^3*b^5*c^4*d^7*e^8 - 2160*a^4*b^3*c^5*d^7*e^8 - 1280*a^5*b*c^6*d^7*e^8 + b^
12*d^6*e^9 + 36*a*b^10*c*d^6*e^9 - 23*a^2*b^8*c^2*d^6*e^9 - 888*a^3*b^6*c^3
*d^6*e^9 + 735*a^4*b^4*c^4*d^6*e^9 + 2420*a^5*b^2*c^5*d^6*e^9 + 320*a^6*c^6
*d^6*e^9 - 6*a*b^11*d^5*e^10 - 54*a^2*b^9*c*d^5*e^10 + 316*a^3*b^7*c^2*d^5*
e^10 + 524*a^4*b^5*c^3*d^5*e^10 - 1860*a^5*b^3*c^4*d^5*e^10 - 1200*a^6*b*c^
5*d^5*e^10 + 15*a^2*b^10*d^4*e^11 + 10*a^3*b^8*c*d^4*e^11 - 450*a^4*b^6*c^2
*d^4*e^11 + 296*a^5*b^4*c^3*d^4*e^11 + 1476*a^6*b^2*c^4*d^4*e^11 + 240*a^7*
c^5*d^4*e^11 - 20*a^3*b^9*d^3*e^12 + 60*a^4*b^7*c*d^3*e^12 + 262*a^5*b^5*c^
2*d^3*e^12 - 584*a^6*b^3*c^3*d^3*e^12 - 576*a^7*b*c^4*d^3*e^12 + 15*a^4*b^8
*d^2*e^13 - 72*a^5*b^6*c*d^2*e^13 - 47*a^6*b^4*c^2*d^2*e^13 + 356*a^7*b^2*c
^3*d^2*e^13 + 96*a^8*c^4*d^2*e^13 - 6*a^5*b^7*d*e^14 + 34*a^6*b^5*c*d*e^14
- 12*a^7*b^3*c^2*d*e^14 - 112*a^8*b*c^3*d*e^14 + a^6*b^6*e^15 - 6*a^7*b^4*c
*e^15 + 4*a^8*b^2*c^2*e^15 + 16*a^9*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d
^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b
*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^
8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^1
3*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12
*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7
*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11
*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c
^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c
^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a
^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^
3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*
b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8
 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d
^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 +
656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e
^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10
- 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*
d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e
^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^
4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2
*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d
^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3
*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*
d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 -
128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))
*x - (b^4*c^8*d^15 - 8*a*b^2*c^9*d^15 + 16*a^2*c^10*d^15 - 8*b^5*c^7*d^14*e
 + 62*a*b^3*c^8*d^14*e - 120*a^2*b*c^9*d^14*e + 28*b^6*c^6*d^13*e^2 - 200*a
*b^4*c^7*d^13*e^2 + 312*a^2*b^2*c^8*d^13*e^2 + 160*a^3*c^9*d^13*e^2 - 56*b^
7*c^5*d^12*e^3 + 336*a*b^5*c^6*d^12*e^3 - 182*a^2*b^3*c^7*d^12*e^3 - 1064*a
^3*b*c^8*d^12*e^3 + 70*b^8*c^4*d^11*e^4 - 280*a*b^6*c^5*d^11*e^4 - 717*a^2*
b^4*c^6*d^11*e^4 + 2712*a^3*b^2*c^7*d^11*e^4 + 624*a^4*c^8*d^11*e^4 - 56*b^
9*c^3*d^10*e^5 + 28*a*b^7*c^4*d^10*e^5 + 1740*a^2*b^5*c^5*d^10*e^5 - 2930*a
^3*b^3*c^6*d^10*e^5 - 3576*a^4*b*c^7*d^10*e^5 + 28*b^10*c^2*d^9*e^6 + 168*a
*b^8*c^3*d^9*e^6 - 1655*a^2*b^6*c^4*d^9*e^6 + 90*a^3*b^4*c^5*d^9*e^6 + 7880
*a^4*b^2*c^6*d^9*e^6 + 1280*a^5*c^7*d^9*e^6 - 8*b^11*c*d^8*e^7 - 160*a*b^9*
c^2*d^8*e^7 + 618*a^2*b^7*c^3*d^8*e^7 + 2900*a^3*b^5*c^4*d^8*e^7 - 7670*a^4
*b^3*c^5*d^8*e^7 - 6120*a^5*b*c^6*d^8*e^7 + b^12*d^7*e^8 + 64*a*b^10*c*d^7*
e^8 + 117*a^2*b^8*c^2*d^7*e^8 - 2676*a^3*b^6*c^3*d^7*e^8 + 1655*a^4*b^4*c^4
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*d^7*e^8 + 10920*a^5*b^2*c^5*d^7*e^8 + 1520*a^6*c^6*d^7*e^8 - 10*a*b^11*d^6
*e^9 - 168*a^2*b^9*c*d^6*e^9 + 758*a^3*b^7*c^2*d^6*e^9 + 2696*a^4*b^5*c^3*d
^6*e^9 - 8150*a^5*b^3*c^4*d^6*e^9 - 5800*a^6*b*c^5*d^6*e^9 + 39*a^2*b^10*d^
5*e^10 + 130*a^3*b^8*c*d^5*e^10 - 1894*a^4*b^6*c^2*d^5*e^10 + 996*a^5*b^4*c
^3*d^5*e^10 + 7752*a^6*b^2*c^4*d^5*e^10 + 1056*a^7*c^5*d^5*e^10 - 80*a^3*b^
9*d^4*e^11 + 190*a^4*b^7*c*d^4*e^11 + 1632*a^5*b^5*c^2*d^4*e^11 - 3698*a^6*
b^3*c^3*d^4*e^11 - 3000*a^7*b*c^4*d^4*e^11 + 95*a^4*b^8*d^3*e^12 - 492*a^5*
b^6*c*d^3*e^12 - 235*a^6*b^4*c^2*d^3*e^12 + 2632*a^7*b^2*c^3*d^3*e^12 + 400
*a^8*c^4*d^3*e^12 - 66*a^5*b^7*d^2*e^13 + 436*a^6*b^5*c*d^2*e^13 - 502*a^7*
b^3*c^2*d^2*e^13 - 744*a^8*b*c^3*d^2*e^13 + 25*a^6*b^6*d*e^14 - 182*a^7*b^4
*c*d*e^14 + 312*a^8*b^2*c^2*d*e^14 + 64*a^9*c^3*d*e^14 - 4*a^7*b^5*e^15 + 3
0*a^8*b^3*c*e^15 - 56*a^9*b*c^2*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16
*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^1
5*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e
^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 -
448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 3
92*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^
4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1
176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*
e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*
e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d
^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^
7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^
9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*
a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 +
 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*
b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 448
0*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a
^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10
 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 11
76*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^
11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^1
2 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13
+ 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^1
3 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14
 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*
b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))/(c*x^2
+ b*x + a)^(3/2)
```

maple [B] time = 0.07, size = 2451, normalized size = 8.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d
-8/3*e/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3+4/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*c*d+32
/3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*d+8*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^
2*d+e^3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*b-2/3/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d+1/3*e/(a*e^2-b*d*e+c*d^2)/((x+d/e
)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b-e^3/(a*e^2-b*d
*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*
e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*
c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b-2*e^2/(a*e^2-b*d*
e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*c*d-1/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^3+32/3*c^2/e/(4*a*c-b^2)^2/(c*x^2+b*x+
a)^(1/2)*b+64/3*c^3/e/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+4/3*c/e/(4*a*c-b^
2)/(c*x^2+b*x+a)^(3/2)*b+8/3*c^2/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-8*e/(a
*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2-e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3-32/3/e/(a
*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d^2-2*e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((
x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*c-8/3
/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(3/2)*c^3*x*d^2+64/3/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2
)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*d
+8/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x*b*d-4/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c^2*d^
2-16/3*e/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+
d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2-4*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*
c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*
c^2*d^2-2/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d
/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b^2-64/3/e/(a*e^2-b*d*e+c*d^2)*c^4
/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^
(1/2)*x*d^2+4*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))      /e^2 zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{\left(d+e\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1594 $\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=423

$$\frac{e^2\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{3\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{e^3\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\Bigl(}{2\left(ae^2-bde+cd^2\right)^{7/2}}$$

```
[Out] -2/3*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e
+c*d^2)/(e*x+d)/(c*x^2+b*x+a)^(3/2)-1/2*e^3*(16*c^2*d^2+5*b^2*e^2-4*c*e*(a*
e+4*b*d))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/
(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(7/2)-2/3*e*(9*b^2*c*d*e-20*a*c^2*
d*e-5*b^3*e^2-4*b*c*(-4*a*e^2+c*d^2)-c*(8*c^2*d^2+5*b^2*e^2-4*c*e*(3*a*e+2*
b*d))*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)/(c*x^2+b*x+a)^(1/2)+1/3
*e^2*(-b*e+2*c*d)*(8*c^2*d^2+15*b^2*e^2-4*c*e*(13*a*e+2*b*d))*(c*x^2+b*x+a)
^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^3/(e*x+d)
```

Rubi [A] time = 0.57, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 806, 724, 206}

$$\frac{e^2\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{3\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^3}-\frac{2e\Bigl(-cx\left(-4ce(3ae+2bd)+5b^2e^2+8c^2d^2\right)-4}{3\left(b^2-4ac\right)(d+ex)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)*(d + e*x)*(a + b*x + c*x^2)^(3/2)) - (2*e*(9*b^2*c*d*e
 - 20*a*c^2*d*e - 5*b^3*e^2 - 4*b*c*(c*d^2 - 4*a*e^2) - c*(8*c^2*d^2 + 5*b^
2*e^2 - 4*c*e*(2*b*d + 3*a*e))*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)
^2*(d + e*x)*Sqrt[a + b*x + c*x^2]) + (e^2*(2*c*d - b*e)*(8*c^2*d^2 + 15*b^
2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + b*x + c*x^2])/(3*(b^2 - 4*a*c)*(c*
d^2 - b*d*e + a*e^2)^3*(d + e*x)) - (e^3*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(4
*b*d + a*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e
+ a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
```

```
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(4}{(d+ex}}{3\left(b^2-4ac\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(9b^2cde-2\right.}{}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(9b^2cde-2\right.}{}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(9b^2cde-2\right.}{}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\left(9b^2cde-2\right.}{}$$

Mathematica [A] time = 1.35, size = 384, normalized size = 0.91

$$\frac{2\left(\frac{1}{4}e^2\left(\frac{2\sqrt{a+x(b+cx)}\,(2cd-be)\left(-4ce(13ae+2bd)+15b^2e^2+8c^2d^2\right)}{(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{3e\left(b^2-4ac\right)\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\,\sqrt{e(ae-bd)+cd}}\right.}{\left(e(ae-bd)+cd^2\right)^{5/2}}\right.\right.}{3\left(b^2-4ac\right)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(((b^2 - 4*a*c)*(-(c*d) + b*e + c*e*x))/((d + e*x)*(a + x*(b + c*x))^(3/
2)) + (e*(5*b^3*e^2 + b^2*c*e*(-9*d + 5*e*x) + 4*c^2*(2*c*d^2*x + a*e*(5*d
- 3*e*x)) + 4*b*c*(-4*a*e^2 + c*d*(d - 2*e*x))))/((c*d^2 + e*(-(b*d) + a*e)
)*(d + e*x)*Sqrt[a + x*(b + c*x)]) + (e^2*((2*(2*c*d - b*e)*(8*c^2*d^2 + 15
*b^2*e^2 - 4*c*e*(2*b*d + 13*a*e))*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*
d) + a*e))^2*(d + e*x)) + (3*(b^2 - 4*a*c)*e*(16*c^2*d^2 + 5*b^2*e^2 - 4*c*
e*(4*b*d + a*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 +
 e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2
)))/4))/(3*(b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [B] time = 20.35, size = 7442, normalized size = 17.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/12*(3*(16*(a^2*b^2*c^2 - 4*a^3*c^3)*d^3*e^3 - 16*(a^2*b^3*c - 4*a^3*b*c
^2)*d^2*e^4 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)*d*e^5 + (16*(b^2*c^4
- 4*a*c^5)*d^2*e^4 - 16*(b^3*c^3 - 4*a*b*c^4)*d*e^5 + (5*b^4*c^2 - 24*a*b^2
*c^3 + 16*a^2*c^4)*e^6)*x^5 + (16*(b^2*c^4 - 4*a*c^5)*d^3*e^3 + 16*(b^3*c^3
 - 4*a*b*c^4)*d^2*e^4 - (27*b^4*c^2 - 104*a*b^2*c^3 - 16*a^2*c^4)*d*e^5 + 2
*(5*b^5*c - 24*a*b^3*c^2 + 16*a^2*b*c^3)*e^6)*x^4 + (32*(b^3*c^3 - 4*a*b*c^
4)*d^3*e^3 - 16*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 2*(3*b^5*c +
8*a*b^3*c^2 - 80*a^2*b*c^3)*d*e^5 + (5*b^6 - 14*a*b^4*c - 32*a^2*b^2*c^2 +
32*a^3*c^3)*e^6)*x^3 + (16*(b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d^3*e^3 - 16
*(b^5*c - 4*a*b^3*c^2)*d^2*e^4 + (5*b^6 - 46*a*b^4*c + 96*a^2*b^2*c^2 + 32*
a^3*c^3)*d*e^5 + 2*(5*a*b^5 - 24*a^2*b^3*c + 16*a^3*b*c^2)*e^6)*x^2 + (32*(
a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e^3 - 16*(2*a*b^4*c - 9*a^2*b^2*c^2 + 4*a^3*c^
3)*d^2*e^4 + 2*(5*a*b^5 - 32*a^2*b^3*c + 48*a^3*b*c^2)*d*e^5 + (5*a^2*b^4 -
 24*a^3*b^2*c + 16*a^4*c^2)*e^6)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*
d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c
)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a
*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/
(e^2*x^2 + 2*d*e*x + d^2)) + 4*(2*(b^2*c^4 - 4*a*c^5)*d^7 - 8*(b^3*c^3 - 3*
a*b*c^4)*d^6*e + 4*(3*b^4*c^2 - 2*a*b^2*c^3 - 20*a^2*c^4)*d^5*e^2 - 8*(b^5*
c + 5*a*b^3*c^2 - 26*a^2*b*c^3)*d^4*e^3 + 2*(b^6 + 24*a*b^4*c - 90*a^2*b^2*
c^2 - 8*a^3*c^3)*d^3*e^4 - (16*a*b^5 - 41*a^2*b^3*c - 52*a^3*b*c^2)*d^2*e^5
 + (11*a^2*b^4 - 54*a^3*b^2*c + 56*a^4*c^2)*d*e^6 + 3*(a^3*b^3 - 4*a^4*b*c)
*e^7 - (16*c^6*d^5*e^2 - 40*b*c^5*d^4*e^3 + 2*(31*b^2*c^4 - 44*a*c^5)*d^3*e
^4 - (53*b^3*c^3 - 132*a*b*c^4)*d^2*e^5 + (15*b^4*c^2 - 14*a*b^2*c^3 - 104*
a^2*c^4)*d*e^6 - (15*a*b^3*c^2 - 52*a^2*b*c^3)*e^7)*x^4 - 2*(8*c^6*d^6*e -
8*b*c^5*d^5*e^2 - (11*b^2*c^4 - 4*a*c^5)*d^4*e^3 + 4*(11*b^3*c^3 - 24*a*b*c
^4)*d^3*e^4 - 2*(24*b^4*c^2 - 73*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^5 + (15*b^5*c
 - 24*a*b^3*c^2 - 88*a^2*b*c^3)*d*e^6 - 3*(5*a*b^4*c - 19*a^2*b^2*c^2 + 4*a
^3*c^3)*e^7)*x^3 - 3*(8*b*c^5*d^6*e - 2*(11*b^2*c^4 - 12*a*c^5)*d^5*e^2 + 8
*(3*b^3*c^3 - 7*a*b*c^4)*d^4*e^3 - 4*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^
3*e^4 - (11*b^5*c - 26*a*b^3*c^2 - 32*a^2*b*c^3)*d^2*e^5 + (5*b^6 - 8*a*b^4
*c - 18*a^2*b^2*c^2 - 56*a^3*c^3)*d*e^6 - (5*a*b^5 - 14*a^2*b^3*c - 16*a^3*
b*c^2)*e^7)*x^2 - 2*((5*b^2*c^4 + 4*a*c^5)*d^6*e - 4*(5*b^3*c^3 - 6*a*b*c^4
)*d^5*e^2 + 2*(15*b^4*c^2 - 34*a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - 4*(5*b^5*c
- 17*a*b^3*c^2 + 8*a^2*b*c^3)*d^3*e^4 + (5*b^6 - 33*a*b^4*c + 69*a^2*b^2*c^
2 - 28*a^3*c^3)*d^2*e^5 + (5*a*b^5 - 4*a^2*b^3*c - 56*a^3*b*c^2)*d*e^6 - 2*
(5*a^2*b^4 - 21*a^3*b^2*c + 8*a^4*c^2)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a^2
*b^2*c^4 - 4*a^3*c^5)*d^9 - 4*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^8*e + 2*(3*a^2*
b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^7*e^2 - 4*(a^2*b^5*c - a^3*b^3*c^2
- 12*a^4*b*c^3)*d^6*e^3 + (a^2*b^6 + 8*a^3*b^4*c - 42*a^4*b^2*c^2 - 24*a^5*
c^3)*d^5*e^4 - 4*(a^3*b^5 - a^4*b^3*c - 12*a^5*b*c^2)*d^4*e^5 + 2*(3*a^4*b^
4 - 10*a^5*b^2*c - 8*a^6*c^2)*d^3*e^6 - 4*(a^5*b^3 - 4*a^6*b*c)*d^2*e^7 + (
a^6*b^2 - 4*a^7*c)*d*e^8 + ((b^2*c^6 - 4*a*c^7)*d^8*e - 4*(b^3*c^5 - 4*a*b*
c^6)*d^7*e^2 + 2*(3*b^4*c^4 - 10*a*b^2*c^5 - 8*a^2*c^6)*d^6*e^3 - 4*(b^5*c^
3 - a*b^3*c^4 - 12*a^2*b*c^5)*d^5*e^4 + (b^6*c^2 + 8*a*b^4*c^3 - 42*a^2*b^2
*c^4 - 24*a^3*c^5)*d^4*e^5 - 4*(a*b^5*c^2 - a^2*b^3*c^3 - 12*a^3*b*c^4)*d^3
*e^6 + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^2*e^7 - 4*(a^3*b^3*
c^2 - 4*a^4*b*c^3)*d*e^8 + (a^4*b^2*c^2 - 4*a^5*c^3)*e^9)*x^5 + ((b^2*c^6 -
```

```
 4*a*c^7)*d^9 - 2*(b^3*c^5 - 4*a*b*c^6)*d^8*e - 2*(b^4*c^4 - 6*a*b^2*c^5 +
8*a^2*c^6)*d^7*e^2 + 4*(2*b^5*c^3 - 9*a*b^3*c^4 + 4*a^2*b*c^5)*d^6*e^3 - (7
*b^6*c^2 - 16*a*b^4*c^3 - 54*a^2*b^2*c^4 + 24*a^3*c^5)*d^5*e^4 + 2*(b^7*c +
 6*a*b^5*c^2 - 40*a^2*b^3*c^3)*d^4*e^5 - 2*(4*a*b^6*c - 7*a^2*b^4*c^2 - 38*
a^3*b^2*c^3 + 8*a^4*c^4)*d^3*e^6 + 4*(3*a^2*b^5*c - 11*a^3*b^3*c^2 - 4*a^4*
b*c^3)*d^2*e^7 - (8*a^3*b^4*c - 33*a^4*b^2*c^2 + 4*a^5*c^3)*d*e^8 + 2*(a^4*
b^3*c - 4*a^5*b*c^2)*e^9)*x^4 + (2*(b^3*c^5 - 4*a*b*c^6)*d^9 - (7*b^4*c^4 -
 30*a*b^2*c^5 + 8*a^2*c^6)*d^8*e + 8*(b^5*c^3 - 4*a*b^3*c^4)*d^7*e^2 - 2*(b
^6*c^2 - 20*a^2*b^2*c^4 + 16*a^3*c^5)*d^6*e^3 - 2*(b^7*c - 6*a*b^5*c^2 + 14
*a^2*b^3*c^3 - 24*a^3*b*c^4)*d^5*e^4 + (b^8 + 2*a*b^6*c - 18*a^2*b^4*c^2 -
12*a^3*b^2*c^3 - 48*a^4*c^4)*d^4*e^5 - 4*(a*b^7 - 2*a^2*b^5*c - 4*a^3*b^3*c
^2 - 16*a^4*b*c^3)*d^3*e^6 + 2*(3*a^2*b^6 - 8*a^3*b^4*c - 12*a^4*b^2*c^2 -
16*a^5*c^3)*d^2*e^7 - 2*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d*e^8 + (a
^4*b^4 - 2*a^5*b^2*c - 8*a^6*c^2)*e^9)*x^3 + ((b^4*c^4 - 2*a*b^2*c^5 - 8*a^
2*c^6)*d^9 - 2*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^8*e + 2*(3*b^6*c^
2 - 8*a*b^4*c^3 - 12*a^2*b^2*c^4 - 16*a^3*c^5)*d^7*e^2 - 4*(b^7*c - 2*a*b^5
*c^2 - 4*a^2*b^3*c^3 - 16*a^3*b*c^4)*d^6*e^3 + (b^8 + 2*a*b^6*c - 18*a^2*b^
4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^5*e^4 - 2*(a*b^7 - 6*a^2*b^5*c + 14*
a^3*b^3*c^2 - 24*a^4*b*c^3)*d^4*e^5 - 2*(a^2*b^6 - 20*a^4*b^2*c^2 + 16*a^5*
c^3)*d^3*e^6 + 8*(a^3*b^5 - 4*a^4*b^3*c)*d^2*e^7 - (7*a^4*b^4 - 30*a^5*b^2*
c + 8*a^6*c^2)*d*e^8 + 2*(a^5*b^3 - 4*a^6*b*c)*e^9)*x^2 + (2*(a*b^3*c^4 - 4
*a^2*b*c^5)*d^9 - (8*a*b^4*c^3 - 33*a^2*b^2*c^4 + 4*a^3*c^5)*d^8*e + 4*(3*a
*b^5*c^2 - 11*a^2*b^3*c^3 - 4*a^3*b*c^4)*d^7*e^2 - 2*(4*a*b^6*c - 7*a^2*b^4
*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^6*e^3 + 2*(a*b^7 + 6*a^2*b^5*c - 40*a^
3*b^3*c^2)*d^5*e^4 - (7*a^2*b^6 - 16*a^3*b^4*c - 54*a^4*b^2*c^2 + 24*a^5*c^
3)*d^4*e^5 + 4*(2*a^3*b^5 - 9*a^4*b^3*c + 4*a^5*b*c^2)*d^3*e^6 - 2*(a^4*b^4
 - 6*a^5*b^2*c + 8*a^6*c^2)*d^2*e^7 - 2*(a^5*b^3 - 4*a^6*b*c)*d*e^8 + (a^6*
b^2 - 4*a^7*c)*e^9)*x), -1/6*(3*(16*(a^2*b^2*c^2 - 4*a^3*c^3)*d^3*e^3 - 16*
(a^2*b^3*c - 4*a^3*b*c^2)*d^2*e^4 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)
*d*e^5 + (16*(b^2*c^4 - 4*a*c^5)*d^2*e^4 - 16*(b^3*c^3 - 4*a*b*c^4)*d*e^5 +
 (5*b^4*c^2 - 24*a*b^2*c^3 + 16*a^2*c^4)*e^6)*x^5 + (16*(b^2*c^4 - 4*a*c^5)
*d^3*e^3 + 16*(b^3*c^3 - 4*a*b*c^4)*d^2*e^4 - (27*b^4*c^2 - 104*a*b^2*c^3 -
 16*a^2*c^4)*d*e^5 + 2*(5*b^5*c - 24*a*b^3*c^2 + 16*a^2*b*c^3)*e^6)*x^4 + (
32*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 - 16*(b^4*c^2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d
^2*e^4 - 2*(3*b^5*c + 8*a*b^3*c^2 - 80*a^2*b*c^3)*d*e^5 + (5*b^6 - 14*a*b^4
*c - 32*a^2*b^2*c^2 + 32*a^3*c^3)*e^6)*x^3 + (16*(b^4*c^2 - 2*a*b^2*c^3 - 8
*a^2*c^4)*d^3*e^3 - 16*(b^5*c - 4*a*b^3*c^2)*d^2*e^4 + (5*b^6 - 46*a*b^4*c
+ 96*a^2*b^2*c^2 + 32*a^3*c^3)*d*e^5 + 2*(5*a*b^5 - 24*a^2*b^3*c + 16*a^3*b
*c^2)*e^6)*x^2 + (32*(a*b^3*c^2 - 4*a^2*b*c^3)*d^3*e^3 - 16*(2*a*b^4*c - 9*
a^2*b^2*c^2 + 4*a^3*c^3)*d^2*e^4 + 2*(5*a*b^5 - 32*a^2*b^3*c + 48*a^3*b*c^2
)*d*e^5 + (5*a^2*b^4 - 24*a^3*b^2*c + 16*a^4*c^2)*e^6)*x)*sqrt(-c*d^2 + b*d
*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*
(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b
*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*(b^2*c^4 -
 4*a*c^5)*d^7 - 8*(b^3*c^3 - 3*a*b*c^4)*d^6*e + 4*(3*b^4*c^2 - 2*a*b^2*c^3
- 20*a^2*c^4)*d^5*e^2 - 8*(b^5*c + 5*a*b^3*c^2 - 26*a^2*b*c^3)*d^4*e^3 + 2*
(b^6 + 24*a*b^4*c - 90*a^2*b^2*c^2 - 8*a^3*c^3)*d^3*e^4 - (16*a*b^5 - 41*a^
2*b^3*c - 52*a^3*b*c^2)*d^2*e^5 + (11*a^2*b^4 - 54*a^3*b^2*c + 56*a^4*c^2)*
d*e^6 + 3*(a^3*b^3 - 4*a^4*b*c)*e^7 - (16*c^6*d^5*e^2 - 40*b*c^5*d^4*e^3 +
2*(31*b^2*c^4 - 44*a*c^5)*d^3*e^4 - (53*b^3*c^3 - 132*a*b*c^4)*d^2*e^5 + (1
5*b^4*c^2 - 14*a*b^2*c^3 - 104*a^2*c^4)*d*e^6 - (15*a*b^3*c^2 - 52*a^2*b*c^
3)*e^7)*x^4 - 2*(8*c^6*d^6*e - 8*b*c^5*d^5*e^2 - (11*b^2*c^4 - 4*a*c^5)*d^4
*e^3 + 4*(11*b^3*c^3 - 24*a*b*c^4)*d^3*e^4 - 2*(24*b^4*c^2 - 73*a*b^2*c^3 +
 8*a^2*c^4)*d^2*e^5 + (15*b^5*c - 24*a*b^3*c^2 - 88*a^2*b*c^3)*d*e^6 - 3*(5
*a*b^4*c - 19*a^2*b^2*c^2 + 4*a^3*c^3)*e^7)*x^3 - 3*(8*b*c^5*d^6*e - 2*(11*
b^2*c^4 - 12*a*c^5)*d^5*e^2 + 8*(3*b^3*c^3 - 7*a*b*c^4)*d^4*e^3 - 4*(b^4*c^
2 - 6*a*b^2*c^3 + 8*a^2*c^4)*d^3*e^4 - (11*b^5*c - 26*a*b^3*c^2 - 32*a^2*b*
c^3)*d^2*e^5 + (5*b^6 - 8*a*b^4*c - 18*a^2*b^2*c^2 - 56*a^3*c^3)*d*e^6 - (5
*a*b^5 - 14*a^2*b^3*c - 16*a^3*b*c^2)*e^7)*x^2 - 2*((5*b^2*c^4 + 4*a*c^5)*d
```

```
^6*e - 4*(5*b^3*c^3 - 6*a*b*c^4)*d^5*e^2 + 2*(15*b^4*c^2 - 34*a*b^2*c^3 - 4
*a^2*c^4)*d^4*e^3 - 4*(5*b^5*c - 17*a*b^3*c^2 + 8*a^2*b*c^3)*d^3*e^4 + (5*b
^6 - 33*a*b^4*c + 69*a^2*b^2*c^2 - 28*a^3*c^3)*d^2*e^5 + (5*a*b^5 - 4*a^2*b
^3*c - 56*a^3*b*c^2)*d*e^6 - 2*(5*a^2*b^4 - 21*a^3*b^2*c + 8*a^4*c^2)*e^7)*
x)*sqrt(c*x^2 + b*x + a))/((a^2*b^2*c^4 - 4*a^3*c^5)*d^9 - 4*(a^2*b^3*c^3 -
 4*a^3*b*c^4)*d^8*e + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8*a^4*c^4)*d^7*e^
2 - 4*(a^2*b^5*c - a^3*b^3*c^2 - 12*a^4*b*c^3)*d^6*e^3 + (a^2*b^6 + 8*a^3*b
^4*c - 42*a^4*b^2*c^2 - 24*a^5*c^3)*d^5*e^4 - 4*(a^3*b^5 - a^4*b^3*c - 12*a
^5*b*c^2)*d^4*e^5 + 2*(3*a^4*b^4 - 10*a^5*b^2*c - 8*a^6*c^2)*d^3*e^6 - 4*(a
^5*b^3 - 4*a^6*b*c)*d^2*e^7 + (a^6*b^2 - 4*a^7*c)*d*e^8 + ((b^2*c^6 - 4*a*c
^7)*d^8*e - 4*(b^3*c^5 - 4*a*b*c^6)*d^7*e^2 + 2*(3*b^4*c^4 - 10*a*b^2*c^5 -
 8*a^2*c^6)*d^6*e^3 - 4*(b^5*c^3 - a*b^3*c^4 - 12*a^2*b*c^5)*d^5*e^4 + (b^6
*c^2 + 8*a*b^4*c^3 - 42*a^2*b^2*c^4 - 24*a^3*c^5)*d^4*e^5 - 4*(a*b^5*c^2 -
a^2*b^3*c^3 - 12*a^3*b*c^4)*d^3*e^6 + 2*(3*a^2*b^4*c^2 - 10*a^3*b^2*c^3 - 8
*a^4*c^4)*d^2*e^7 - 4*(a^3*b^3*c^2 - 4*a^4*b*c^3)*d*e^8 + (a^4*b^2*c^2 - 4*
a^5*c^3)*e^9)*x^5 + ((b^2*c^6 - 4*a*c^7)*d^9 - 2*(b^3*c^5 - 4*a*b*c^6)*d^8*
e - 2*(b^4*c^4 - 6*a*b^2*c^5 + 8*a^2*c^6)*d^7*e^2 + 4*(2*b^5*c^3 - 9*a*b^3*
c^4 + 4*a^2*b*c^5)*d^6*e^3 - (7*b^6*c^2 - 16*a*b^4*c^3 - 54*a^2*b^2*c^4 + 2
4*a^3*c^5)*d^5*e^4 + 2*(b^7*c + 6*a*b^5*c^2 - 40*a^2*b^3*c^3)*d^4*e^5 - 2*(
4*a*b^6*c - 7*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^3*e^6 + 4*(3*a^2*
b^5*c - 11*a^3*b^3*c^2 - 4*a^4*b*c^3)*d^2*e^7 - (8*a^3*b^4*c - 33*a^4*b^2*c
^2 + 4*a^5*c^3)*d*e^8 + 2*(a^4*b^3*c - 4*a^5*b*c^2)*e^9)*x^4 + (2*(b^3*c^5
- 4*a*b*c^6)*d^9 - (7*b^4*c^4 - 30*a*b^2*c^5 + 8*a^2*c^6)*d^8*e + 8*(b^5*c^
3 - 4*a*b^3*c^4)*d^7*e^2 - 2*(b^6*c^2 - 20*a^2*b^2*c^4 + 16*a^3*c^5)*d^6*e^
3 - 2*(b^7*c - 6*a*b^5*c^2 + 14*a^2*b^3*c^3 - 24*a^3*b*c^4)*d^5*e^4 + (b^8
+ 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^4*e^5 - 4*(a*
b^7 - 2*a^2*b^5*c - 4*a^3*b^3*c^2 - 16*a^4*b*c^3)*d^3*e^6 + 2*(3*a^2*b^6 -
8*a^3*b^4*c - 12*a^4*b^2*c^2 - 16*a^5*c^3)*d^2*e^7 - 2*(2*a^3*b^5 - 5*a^4*b
^3*c - 12*a^5*b*c^2)*d*e^8 + (a^4*b^4 - 2*a^5*b^2*c - 8*a^6*c^2)*e^9)*x^3 +
 ((b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^9 - 2*(2*b^5*c^3 - 5*a*b^3*c^4 - 12
*a^2*b*c^5)*d^8*e + 2*(3*b^6*c^2 - 8*a*b^4*c^3 - 12*a^2*b^2*c^4 - 16*a^3*c^
5)*d^7*e^2 - 4*(b^7*c - 2*a*b^5*c^2 - 4*a^2*b^3*c^3 - 16*a^3*b*c^4)*d^6*e^3
 + (b^8 + 2*a*b^6*c - 18*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 48*a^4*c^4)*d^5*e^4
 - 2*(a*b^7 - 6*a^2*b^5*c + 14*a^3*b^3*c^2 - 24*a^4*b*c^3)*d^4*e^5 - 2*(a^2
*b^6 - 20*a^4*b^2*c^2 + 16*a^5*c^3)*d^3*e^6 + 8*(a^3*b^5 - 4*a^4*b^3*c)*d^2
*e^7 - (7*a^4*b^4 - 30*a^5*b^2*c + 8*a^6*c^2)*d*e^8 + 2*(a^5*b^3 - 4*a^6*b*
c)*e^9)*x^2 + (2*(a*b^3*c^4 - 4*a^2*b*c^5)*d^9 - (8*a*b^4*c^3 - 33*a^2*b^2*
c^4 + 4*a^3*c^5)*d^8*e + 4*(3*a*b^5*c^2 - 11*a^2*b^3*c^3 - 4*a^3*b*c^4)*d^7
*e^2 - 2*(4*a*b^6*c - 7*a^2*b^4*c^2 - 38*a^3*b^2*c^3 + 8*a^4*c^4)*d^6*e^3 +
 2*(a*b^7 + 6*a^2*b^5*c - 40*a^3*b^3*c^2)*d^5*e^4 - (7*a^2*b^6 - 16*a^3*b^4
*c - 54*a^4*b^2*c^2 + 24*a^5*c^3)*d^4*e^5 + 4*(2*a^3*b^5 - 9*a^4*b^3*c + 4*
a^5*b*c^2)*d^3*e^6 - 2*(a^4*b^4 - 6*a^5*b^2*c + 8*a^6*c^2)*d^2*e^7 - 2*(a^5
*b^3 - 4*a^6*b*c)*d*e^8 + (a^6*b^2 - 4*a^7*c)*e^9)*x)]
```

giac [B] time = 3.18, size = 6103, normalized size = 14.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -1/6*((32*sqrt(c*d^2 - b*d*e + a*e^2)*c^4*d^3*e^3 + 48*b^2*c^(5/2)*d^2*e^5*
log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 192*a*c^(7
/2)*d^2*e^5*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c)))
- 48*sqrt(c*d^2 - b*d*e + a*e^2)*b*c^3*d^2*e^4 - 48*b^3*c^(3/2)*d*e^6*log(a
bs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 192*a*b*c^(5/2)
*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 76*
sqrt(c*d^2 - b*d*e + a*e^2)*b^2*c^2*d*e^5 - 208*sqrt(c*d^2 - b*d*e + a*e^2)
*a*c^3*d*e^5 + 15*b^4*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d
*e + a*e^2)*sqrt(c))) - 72*a*b^2*c^(3/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(
c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 48*a^2*c^(5/2)*e^7*log(abs(-2*c*d + b*e
+ 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 30*sqrt(c*d^2 - b*d*e + a*e^2)*
b^3*c*e^6 + 104*sqrt(c*d^2 - b*d*e + a*e^2)*a*b*c^2*e^6)*sgn(1/(x*e + d))/(
sqrt(c*d^2 - b*d*e + a*e^2)*b^2*c^(7/2)*d^6 - 4*sqrt(c*d^2 - b*d*e + a*e^2)
*a*c^(9/2)*d^6 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^3*c^(5/2)*d^5*e + 12*sqrt(
c*d^2 - b*d*e + a*e^2)*a*b*c^(7/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^
4*c^(3/2)*d^4*e^2 - 9*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^2*c^(5/2)*d^4*e^2 - 1
2*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*c^(7/2)*d^4*e^2 - sqrt(c*d^2 - b*d*e + a*
e^2)*b^5*sqrt(c)*d^3*e^3 - 2*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^3*c^(3/2)*d^3*
e^3 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b*c^(5/2)*d^3*e^3 + 3*sqrt(c*d^2 -
 b*d*e + a*e^2)*a*b^4*sqrt(c)*d^2*e^4 - 9*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b
^2*c^(3/2)*d^2*e^4 - 12*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*c^(5/2)*d^2*e^4 - 3
*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^3*sqrt(c)*d*e^5 + 12*sqrt(c*d^2 - b*d*e
+ a*e^2)*a^3*b*c^(3/2)*d*e^5 + sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^2*sqrt(c)*
e^6 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*c^(3/2)*e^6) + 2*((((4*(4*b^2*c^5*d
^6*e^17*sgn(1/(x*e + d)) - 16*a*c^6*d^6*e^17*sgn(1/(x*e + d)) - 12*b^3*c^4*
d^5*e^18*sgn(1/(x*e + d)) + 48*a*b*c^5*d^5*e^18*sgn(1/(x*e + d)) + 31*b^4*c
^3*d^4*e^19*sgn(1/(x*e + d)) - 188*a*b^2*c^4*d^4*e^19*sgn(1/(x*e + d)) + 25
6*a^2*c^5*d^4*e^19*sgn(1/(x*e + d)) - 42*b^5*c^2*d^3*e^20*sgn(1/(x*e + d))
+ 296*a*b^3*c^3*d^3*e^20*sgn(1/(x*e + d)) - 512*a^2*b*c^4*d^3*e^20*sgn(1/(x
*e + d)) + 24*b^6*c*d^2*e^21*sgn(1/(x*e + d)) - 162*a*b^4*c^2*d^2*e^21*sgn(
1/(x*e + d)) + 204*a^2*b^2*c^3*d^2*e^21*sgn(1/(x*e + d)) + 240*a^3*c^4*d^2*
e^21*sgn(1/(x*e + d)) - 5*b^7*d*e^22*sgn(1/(x*e + d)) + 22*a*b^5*c*d*e^22*s
gn(1/(x*e + d)) + 52*a^2*b^3*c^2*d*e^22*sgn(1/(x*e + d)) - 240*a^3*b*c^3*d*
e^22*sgn(1/(x*e + d)) + 5*a*b^6*e^23*sgn(1/(x*e + d)) - 41*a^2*b^4*c*e^23*s
gn(1/(x*e + d)) + 92*a^3*b^2*c^2*e^23*sgn(1/(x*e + d)) - 32*a^4*c^3*e^23*sg
n(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11
*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^
5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a
^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2
- 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/
(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/
(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e
^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6
*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 2
4*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e
+ d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(
x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(
x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(
x*e + d))^2) - 3*(2*b^4*c^3*d^5*e^20*sgn(1/(x*e + d)) - 16*a*b^2*c^4*d^5*e^
20*sgn(1/(x*e + d)) + 32*a^2*c^5*d^5*e^20*sgn(1/(x*e + d)) - 5*b^5*c^2*d^4*
e^21*sgn(1/(x*e + d)) + 40*a*b^3*c^3*d^4*e^21*sgn(1/(x*e + d)) - 80*a^2*b*c
^4*d^4*e^21*sgn(1/(x*e + d)) + 4*b^6*c*d^3*e^22*sgn(1/(x*e + d)) - 28*a*b^4
*c^2*d^3*e^22*sgn(1/(x*e + d)) + 32*a^2*b^2*c^3*d^3*e^22*sgn(1/(x*e + d)) +
 64*a^3*c^4*d^3*e^22*sgn(1/(x*e + d)) - b^7*d^2*e^23*sgn(1/(x*e + d)) + 2*a
*b^5*c*d^2*e^23*sgn(1/(x*e + d)) + 32*a^2*b^3*c^2*d^2*e^23*sgn(1/(x*e + d))
 - 96*a^3*b*c^3*d^2*e^23*sgn(1/(x*e + d)) + 2*a*b^6*d*e^24*sgn(1/(x*e + d))
 - 14*a^2*b^4*c*d*e^24*sgn(1/(x*e + d)) + 16*a^3*b^2*c^2*d*e^24*sgn(1/(x*e
+ d)) + 32*a^4*c^3*d*e^24*sgn(1/(x*e + d)) - a^2*b^5*e^25*sgn(1/(x*e + d))
+ 8*a^3*b^3*c*e^25*sgn(1/(x*e + d)) - 16*a^4*b*c^2*e^25*sgn(1/(x*e + d)))*e
^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x
*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sg
n(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*
d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^
4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d)
)^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d)
)^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1
/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15
*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2
*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 -
 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))
^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))
^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e + d))
^2)*(x*e + d)))*e^(-1)/(x*e + d) - 3*(16*b^2*c^5*d^5*e^16*sgn(1/(x*e + d))
- 64*a*c^6*d^5*e^16*sgn(1/(x*e + d)) - 40*b^3*c^4*d^4*e^17*sgn(1/(x*e + d))
 + 160*a*b*c^5*d^4*e^17*sgn(1/(x*e + d)) + 84*b^4*c^3*d^3*e^18*sgn(1/(x*e +
 d)) - 512*a*b^2*c^4*d^3*e^18*sgn(1/(x*e + d)) + 704*a^2*c^5*d^3*e^18*sgn(1
/(x*e + d)) - 86*b^5*c^2*d^2*e^19*sgn(1/(x*e + d)) + 608*a*b^3*c^3*d^2*e^19
*sgn(1/(x*e + d)) - 1056*a^2*b*c^4*d^2*e^19*sgn(1/(x*e + d)) + 36*b^6*c*d*e
^20*sgn(1/(x*e + d)) - 260*a*b^4*c^2*d*e^20*sgn(1/(x*e + d)) + 432*a^2*b^2*
c^3*d*e^20*sgn(1/(x*e + d)) + 128*a^3*c^4*d*e^20*sgn(1/(x*e + d)) - 5*b^7*e
^21*sgn(1/(x*e + d)) + 34*a*b^5*c*e^21*sgn(1/(x*e + d)) - 40*a^2*b^3*c^2*e^
21*sgn(1/(x*e + d)) - 64*a^3*b*c^3*e^21*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11
*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*
d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*
b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d)
)^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*
e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^1
3*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14
*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b
*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21
*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e
 + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/
(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16
*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sg
n(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e + d))^2))*e^(-1)/(x*e + d) +
6*(8*b^2*c^5*d^4*e^15*sgn(1/(x*e + d)) - 32*a*c^6*d^4*e^15*sgn(1/(x*e + d))
 - 16*b^3*c^4*d^3*e^16*sgn(1/(x*e + d)) + 64*a*b*c^5*d^3*e^16*sgn(1/(x*e +
d)) + 29*b^4*c^3*d^2*e^17*sgn(1/(x*e + d)) - 184*a*b^2*c^4*d^2*e^17*sgn(1/(
x*e + d)) + 272*a^2*c^5*d^2*e^17*sgn(1/(x*e + d)) - 21*b^5*c^2*d*e^18*sgn(1
/(x*e + d)) + 152*a*b^3*c^3*d*e^18*sgn(1/(x*e + d)) - 272*a^2*b*c^4*d*e^18*
sgn(1/(x*e + d)) + 5*b^6*c*e^19*sgn(1/(x*e + d)) - 39*a*b^4*c^2*e^19*sgn(1/
(x*e + d)) + 80*a^2*b^2*c^3*e^19*sgn(1/(x*e + d)) - 16*a^3*c^4*e^19*sgn(1/(
x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*sgn(
1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5*e^1
2*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^2*b*
c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 - 21*
a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(x*e
+ d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(x*e
+ d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^14*s
gn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*d^2*
e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24*a^3
*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e + d))
^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x*e +
 d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x*e +
 d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x*e +
 d))^2))*e^(-1)/(x*e + d) - (16*b^2*c^5*d^3*e^14*sgn(1/(x*e + d)) - 64*a*c^
6*d^3*e^14*sgn(1/(x*e + d)) - 24*b^3*c^4*d^2*e^15*sgn(1/(x*e + d)) + 96*a*b
*c^5*d^2*e^15*sgn(1/(x*e + d)) + 38*b^4*c^3*d*e^16*sgn(1/(x*e + d)) - 256*a
*b^2*c^4*d*e^16*sgn(1/(x*e + d)) + 416*a^2*c^5*d*e^16*sgn(1/(x*e + d)) - 15
*b^5*c^2*e^17*sgn(1/(x*e + d)) + 112*a*b^3*c^3*e^17*sgn(1/(x*e + d)) - 208*
a^2*b*c^4*e^17*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a
*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))
^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x
*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sg
n(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^
3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^
7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*
```

```
a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e
+ d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1
/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2
*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3
*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3
*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5
*c^2*e^17*sgn(1/(x*e + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b
*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^(3/2) - 3*(16*c^2*d^2
*e^6 - 16*b*c*d*e^7 + 5*b^2*e^8 - 4*a*c*e^8)*log(abs(-2*c*d + b*e + 2*sqrt(
c*d^2 - b*d*e + a*e^2)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/
(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2) + sqrt(c*d^2*e^2 - b*d*e
^3 + a*e^4)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4
*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 +
3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*sqrt(c*d^2 - b*d*e + a*e^2)*sgn(
1/(x*e + d))))*e^(-2)
```

maple [**B**] time = 0.11, size = 4855, normalized size = 11.48

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)+2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d-160/3/(a*e^2-b*d*e+c*d^2)*c
^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*x*b+20/3*e^2/(a*e^2-b*d*e+c*d^2)^2*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+10*e^2/(a*e^2-b*d*e+c
*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-
b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2+10*e^3/(a*e^2-b
*d*e+c*d^2)^3/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*c*d*b+10/3*e/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*d*b+10/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*c^2*d^
2+80/(a*e^2-b*d*e+c*d^2)^2*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*d^2+2/3*c/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)-20/3/(a*e^2-b*
d*e+c*d^2)*c^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(3/2)*x*b-2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-30*e^3/(a*e^2-b*
d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*x*b^2*c^2*d+60*e^2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^3*d^2-80*
e/(a*e^2-b*d*e+c*d^2)^2*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^2*d-10*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-
b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*
x*b^2*d-5/6*e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a
*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2-5/2*e^4/(a*e^2-b*d*e+c*d^2)^3/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-1/(a*e^2-b*d*e+c*
d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3
/2)*b-10/3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(3/2)*c^2*d^2-2*c*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))-80/3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2-10/3/(
a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(3/2)*b^2+5/6*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^4-10*e^2/(a*
e^2-b*d*e+c*d^2)^3/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*c^2*d^2+5/2*e^4/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b
*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^4+5/2*e^4/(a*e^2-b*d*e
+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^
2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2-4*c^2*e^2/(a*e^2-
b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*x*b+8*c^3*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*d+4*c^2*e/(a*e^2-b
*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*b*d+20/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e
-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^3*x*b*d^2+160/(a*e^2-b*d
*e+c*d^2)^2*c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*x*b*d^2-40/3/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^4*x*d^3-20*e
/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^3*d^3+5/3*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b^
3+40/3*e^2/(a*e^2-b*d*e+c*d^2)^2*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)
*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b^3-320/3/e/(a*e^2-b*d*e+c*d^2)
^2*c^5/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*x*d^3-20/3/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c^3*d^3-5*e/(a*e^2-b*d*
e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(3/2)*b^3*c*d+30*e^2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c^2*d^2-15*e^3/(a
*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*b^3*c*d+160/3/e/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^
2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d-160
/3/e/(a*e^2-b*d*e+c*d^2)^2*c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*d^3+5*e^4/(a*e^2-b*d*e+c*d^2)^3/(4*a*
c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*
b^3*c-40*e/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^4*d^3+40/3/e/(a*e^2-b*d*e+c*d^2)*c^
3/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(
3/2)*x*d+20/3/e/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d
)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*d+320/3/e/(a*e^2-b*d*e+c*d^2)*
c^4/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*x*d-10*e^3/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*l
n(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
)/(x+d/e))*c*d*b-40*e/(a*e^2-b*d*e+c*d^2)^2*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                             +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{\left(d+e\,x\right)^2\,\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1595 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{9/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{9e^4}-\frac{2(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{7e^4}-\frac{6c(d+ex)^{11/2}(2cd-be)}{11e^4}+$$

```
[Out] -2/7*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(7/2)/e^4+2/9*(6*c^2*d^2+b^2*
e^2-2*c*e*(-a*e+3*b*d))*(e*x+d)^(9/2)/e^4-6/11*c*(-b*e+2*c*d)*(e*x+d)^(11/2
)/e^4+4/13*c^2*(e*x+d)^(13/2)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{9/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{9e^4}-\frac{2(d+ex)^{7/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{7e^4}-\frac{6c(d+ex)^{11/2}(2cd-be)}{11e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(7/2))/(7*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(9/2))/(9*e^4) - (6*c*(2
*c*d - b*e)*(d + e*x)^(11/2))/(11*e^4) + (4*c^2*(d + e*x)^(13/2))/(13*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)\,dx=\int \Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^3}$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{7/2}}{7e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd\right.}{9e^4}$$

Mathematica [A] time = 0.14, size = 111, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(13ce\left(22ae(7ex-2d)+3b\left(8d^2-28dex+63e^2x^2\right)\right)+143be^2(9ae-2bd+7bex)-6c^2\left(16d^3-56d^2e\right.\right.}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(143*b*e^2*(-2*b*d + 9*a*e + 7*b*e*x) - 6*c^2*(16*d^3 -
56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3) + 13*c*e*(22*a*e*(-2*d + 7*e*x) +
 3*b*(8*d^2 - 28*d*e*x + 63*e^2*x^2))))/(9009*e^4)
```

fricas [B] time = 0.88, size = 272, normalized size = 2.06

$$\frac{2\left(1386\,c^2e^6x^6-96\,c^2d^6+312\,bcd^5e+1287\,abd^3e^3-286\left(b^2+2\,ac\right)d^4e^2+189\left(18\,c^2de^5+13\,bce^6\right)x^5+7\left(318\,c^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/9009*(1386*c^2*e^6*x^6 - 96*c^2*d^6 + 312*b*c*d^5*e + 1287*a*b*d^3*e^3 -
286*(b^2 + 2*a*c)*d^4*e^2 + 189*(18*c^2*d*e^5 + 13*b*c*e^6)*x^5 + 7*(318*c^
2*d^2*e^4 + 897*b*c*d*e^5 + 143*(b^2 + 2*a*c)*e^6)*x^4 + (30*c^2*d^3*e^3 +
4407*b*c*d^2*e^4 + 1287*a*b*e^6 + 2717*(b^2 + 2*a*c)*d*e^5)*x^3 - 3*(12*c^2
*d^4*e^2 - 39*b*c*d^3*e^3 - 1287*a*b*d*e^5 - 715*(b^2 + 2*a*c)*d^2*e^4)*x^2
 + (48*c^2*d^5*e - 156*b*c*d^4*e^2 + 3861*a*b*d^2*e^4 + 143*(b^2 + 2*a*c)*d
^3*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.23, size = 1087, normalized size = 8.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d^3*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d^3*e^(-1) + 9009*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d^3*e^(-2) + 2574*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*c^2*d^3*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*b^2*d^2*e^(-1) + 18018*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*c*d^2*e^(-1) + 11583*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*b*c*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^
2*d^2*e^(-3) + 45045*sqrt(x*e + d)*a*b*d^3 + 45045*((x*e + d)^(3/2) - 3*sqr
t(x*e + d)*d)*a*b*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*d*e^(-1) + 7722*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*a*c*d*e^(-1) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378
*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c
*d*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*c^2*d*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a*b*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*b^2*e^(-1) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*
c*e^(-1) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*b*c*e^(-2) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^2*e^(-3) +
 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2\left(ex+d\right)^{\frac{7}{2}}\left(1386c^{2}x^{3}e^{3}+2457bc\,e^{3}x^{2}-756c^{2}d\,e^{2}x^{2}+2002ac\,e^{3}x+1001b^{2}e^{3}x-1092bcd\,e^{2}x+336c^{2}d^{2}ex+1\right.}{9009e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x)
```

```
[Out] 2/9009*(e*x+d)^(7/2)*(1386*c^2*e^3*x^3+2457*b*c*e^3*x^2-756*c^2*d*e^2*x^2+2
002*a*c*e^3*x+1001*b^2*e^3*x-1092*b*c*d*e^2*x+336*c^2*d^2*e*x+1287*a*b*e^3-
572*a*c*d*e^2-286*b^2*d*e^2+312*b*c*d^2*e-96*c^2*d^3)/e^4
```

maxima [**A**] time = 0.55, size = 121, normalized size = 0.92

$$\frac{2\Big(1386\,(ex+d)^{\frac{13}{2}}c^2 - 2457\,\big(2\,c^2d - bce\big)(ex+d)^{\frac{11}{2}} + 1001\,\big(6\,c^2d^2 - 6\,bcde + \big(b^2+2\,ac\big)e^2\big)(ex+d)^{\frac{9}{2}} - 1287\,\big(2\,c^2}{9009\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/9009*(1386*(e*x + d)^(13/2)*c^2 - 2457*(2*c^2*d - b*c*e)*(e*x + d)^(11/2)
 + 1001*(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(9/2) - 1287*
(2*c^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(7/2))/
e^4
```

mupad [**B**] time = 0.09, size = 118, normalized size = 0.89

$$\frac{4\,c^2\,(d+e\,x)^{13/2}}{13\,e^4} + \frac{(d+e\,x)^{9/2}\,\left(2\,b^2\,e^2 - 12\,b\,c\,d\,e + 12\,c^2\,d^2 + 4\,a\,c\,e^2\right)}{9\,e^4} - \frac{\left(12\,c^2\,d - 6\,b\,c\,e\right)\,(d+e\,x)^{11/2}}{11\,e^4} + \frac{2\,(b\,e - 2\,c}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(13/2))/(13*e^4) + ((d + e*x)^(9/2)*(2*b^2*e^2 + 12*c^2*d^
2 + 4*a*c*e^2 - 12*b*c*d*e))/(9*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(11/
2))/(11*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e))/(7
*e^4)
```

sympy [**A**] time = 4.92, size = 643, normalized size = 4.87

$$\begin{cases} \frac{2abd^3\sqrt{d+ex}}{7e} + \frac{6abd^2x\sqrt{d+ex}}{7} + \frac{6abdex^2\sqrt{d+ex}}{7} + \frac{2abe^2x^3\sqrt{d+ex}}{7} - \frac{8acd^4\sqrt{d+ex}}{63e^2} + \frac{4acd^3x\sqrt{d+ex}}{63e} + \frac{20acd^2x^2\sqrt{d+ex}}{21} + \frac{76acdex^3\sqrt{d+e}}{63} \\ d^{\frac{5}{2}}\left(abx + acx^2 + \frac{b^2x^2}{2} + bcx^3 + \frac{c^2x^4}{2}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((2*a*b*d**3*sqrt(d + e*x)/(7*e) + 6*a*b*d**2*x*sqrt(d + e*x)/7 +
6*a*b*d*e*x**2*sqrt(d + e*x)/7 + 2*a*b*e**2*x**3*sqrt(d + e*x)/7 - 8*a*c*d*
*4*sqrt(d + e*x)/(63*e**2) + 4*a*c*d**3*x*sqrt(d + e*x)/(63*e) + 20*a*c*d**
2*x**2*sqrt(d + e*x)/21 + 76*a*c*d*e*x**3*sqrt(d + e*x)/63 + 4*a*c*e**2*x**
4*sqrt(d + e*x)/9 - 4*b**2*d**4*sqrt(d + e*x)/(63*e**2) + 2*b**2*d**3*x*sqr
t(d + e*x)/(63*e) + 10*b**2*d**2*x**2*sqrt(d + e*x)/21 + 38*b**2*d*e*x**3*s
qrt(d + e*x)/63 + 2*b**2*e**2*x**4*sqrt(d + e*x)/9 + 16*b*c*d**5*sqrt(d + e
*x)/(231*e**3) - 8*b*c*d**4*x*sqrt(d + e*x)/(231*e**2) + 2*b*c*d**3*x**2*sq
rt(d + e*x)/(77*e) + 226*b*c*d**2*x**3*sqrt(d + e*x)/231 + 46*b*c*d*e*x**4*
sqrt(d + e*x)/33 + 6*b*c*e**2*x**5*sqrt(d + e*x)/11 - 64*c**2*d**6*sqrt(d +
 e*x)/(3003*e**4) + 32*c**2*d**5*x*sqrt(d + e*x)/(3003*e**3) - 8*c**2*d**4*
x**2*sqrt(d + e*x)/(1001*e**2) + 20*c**2*d**3*x**3*sqrt(d + e*x)/(3003*e) +
 212*c**2*d**2*x**4*sqrt(d + e*x)/429 + 108*c**2*d*e*x**5*sqrt(d + e*x)/143
 + 4*c**2*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(a*b*x + a*c*x**
2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2), True))
```

3.1596 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{7/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{2c(d+ex)^{9/2}(2cd-be)}{3e^4}$$

```
[Out] -2/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(5/2)/e^4+2/7*(6*c^2*d^2+b^2*
e^2-2*c*e*(-a*e+3*b*d))*(e*x+d)^(7/2)/e^4-2/3*c*(-b*e+2*c*d)*(e*x+d)^(9/2)/
e^4+4/11*c^2*(e*x+d)^(11/2)/e^4
```

Rubi **[A]** time = 0.07, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{7/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{7e^4}-\frac{2(d+ex)^{5/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{2c(d+ex)^{9/2}(2cd-be)}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(5/2))/(5*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(7/2))/(7*e^4) - (2*c*(2
*c*d - b*e)*(d + e*x)^(9/2))/(3*e^4) + (4*c^2*(d + e*x)^(11/2))/(11*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce\right.}{}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}{5e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(\right.}{7e}$$

Mathematica **[A]** time = 0.13, size = 109, normalized size = 0.83

$$\frac{2(d+ex)^{5/2}\left(11ce\left(6ae(5ex-2d)+b\left(8d^2-20dex+35e^2x^2\right)\right)+33be^2(7ae-2bd+5bex)+c^2\left(-32d^3+80d^2e\right.\right.}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(33*b*e^2*(-2*b*d + 7*a*e + 5*b*e*x) + c^2*(-32*d^3 + 80
*d^2*e*x - 140*d*e^2*x^2 + 210*e^3*x^3) + 11*c*e*(6*a*e*(-2*d + 5*e*x) + b*
(8*d^2 - 20*d*e*x + 35*e^2*x^2))))/(1155*e^4)
```

fricas **[A]** time = 0.82, size = 220, normalized size = 1.67

$$\frac{2\left(210\,c^2e^5x^5-32\,c^2d^5+88\,bcd^4e+231\,abd^2e^3-66\left(b^2+2\,ac\right)d^3e^2+35\left(8\,c^2de^4+11\,bce^5\right)x^4+5\left(2\,c^2d^2e^3+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 2/1155*(210*c^2*e^5*x^5 - 32*c^2*d^5 + 88*b*c*d^4*e + 231*a*b*d^2*e^3 - 66*
(b^2 + 2*a*c)*d^3*e^2 + 35*(8*c^2*d*e^4 + 11*b*c*e^5)*x^4 + 5*(2*c^2*d^2*e^
3 + 110*b*c*d*e^4 + 33*(b^2 + 2*a*c)*e^5)*x^3 - 3*(4*c^2*d^3*e^2 - 11*b*c*d
^2*e^3 - 77*a*b*e^5 - 88*(b^2 + 2*a*c)*d*e^4)*x^2 + (16*c^2*d^4*e - 44*b*c*
d^3*e^2 + 462*a*b*d*e^4 + 33*(b^2 + 2*a*c)*d^2*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [**B**] time = 0.19, size = 711, normalized size = 5.39

$$\frac{2}{3465}\left(1155\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)b^2d^2e^{(-1)}+2310\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)acd^2e^{(-1)}+693\left(3(xe+d)^{\frac{5}{2}}-10\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d^2*e^(-1) + 2310*((
x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d^2*e^(-1) + 693*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d^2*e^(-2) + 198*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*c^2*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*b^2*d*e^(-1) + 924*(3*(x*e + d)^(5/2) - 10*(x*e + d)^
(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*c*d*e^(-1) + 594*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b*c*d*e^
(-2) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^2*d*e^(-3) + 3465
*sqrt(x*e + d)*a*b*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d +
 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*b^2*e^(-1) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c*e^(-1) + 33*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c*e^(-2) + 10*(63*(x*e + d)^(11/2
) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*
d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*c^2*e^(-3) + 231*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b)*e^(-1)
```

maple [**A**] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2(ex+d)^{\frac{5}{2}}\left(210c^2x^3e^3+385bc\,e^3x^2-140c^2d\,e^2x^2+330ac\,e^3x+165b^2e^3x-220bcd\,e^2x+80c^2d^2ex+231ab\,e^3-\right.}{1155e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x)
```

```
[Out] 2/1155*(e*x+d)^(5/2)*(210*c^2*e^3*x^3+385*b*c*e^3*x^2-140*c^2*d*e^2*x^2+330
*a*c*e^3*x+165*b^2*e^3*x-220*b*c*d*e^2*x+80*c^2*d^2*e*x+231*a*b*e^3-132*a*c
*d*e^2-66*b^2*d*e^2+88*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [**A**] time = 0.81, size = 121, normalized size = 0.92

$$\frac{2\left(210(ex+d)^{\frac{11}{2}}c^2-385\left(2c^2d-bce\right)(ex+d)^{\frac{9}{2}}+165\left(6c^2d^2-6bcde+\left(b^2+2ac\right)e^2\right)(ex+d)^{\frac{7}{2}}-231\left(2c^2d^3-\right.\right.}{1155e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 2/1155*(210*(e*x + d)^(11/2)*c^2 - 385*(2*c^2*d - b*c*e)*(e*x + d)^(9/2) +
165*(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(7/2) - 231*(2*c^
2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(5/2))/e^4
```

mupad [B] time = 1.88, size = 118, normalized size = 0.89

$$\frac{4\,c^2\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{(d+e\,x)^{7/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{7\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,(d+e\,x)^{9/2}}{9\,e^4}+2\,(b\,e-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(11/2))/(11*e^4) + ((d + e*x)^(7/2)*(2*b^2*e^2 + 12*c^2*d^
2 + 4*a*c*e^2 - 12*b*c*d*e))/(7*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(9/2
))/(9*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e))/(5*e
^4)
```

sympy [A] time = 20.23, size = 457, normalized size = 3.46

$$abd\left(\begin{cases}\sqrt{d}\,x & \text{for}\ e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2ab\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{4acd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+4ac\Bigg(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-\frac{2d(d+ex)^{\frac{5}{2}}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a),x)
```

```
[Out] a*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
2*a*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a*c*d*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a*c*(d**2*(d + e*x)**(3/2)/3 - 2*
d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*b**2*d*(-d*(d + e*x)**(
3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*b**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(
d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*b*c*d*(d**2*(d + e*x)**(3/
2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*b*c*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**3 + 4*c**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x
)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*c**2*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1597 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=132

$$\frac{2(d+ex)^{5/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{6c(d+ex)^{7/2}(2cd-be)}{7e^4}+$$

```
[Out] -2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(3/2)/e^4+2/5*(6*c^2*d^2+b^2*
e^2-2*c*e*(-a*e+3*b*d))*(e*x+d)^(5/2)/e^4-6/7*c*(-b*e+2*c*d)*(e*x+d)^(7/2)/
e^4+4/9*c^2*(e*x+d)^(9/2)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{5/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{5e^4}-\frac{2(d+ex)^{3/2}(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{6c(d+ex)^{7/2}(2cd-be)}{7e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2),x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(3/2))/(3*e^4) + (2*(6*
c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(5/2))/(5*e^4) - (6*c*(2
*c*d - b*e)*(d + e*x)^(7/2))/(7*e^4) + (4*c^2*(d + e*x)^(9/2))/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-\right.}{e^3}\right.\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}{3e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-\right.}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.12, size = 110, normalized size = 0.83

$$\frac{2(d+ex)^{3/2}\left(3ce\left(14ae(3ex-2d)+3b\left(8d^2-12dex+15e^2x^2\right)\right)+21be^2(5ae-2bd+3bex)+c^2\left(-32d^3+48d^2ex-\right.\right.}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(21*b*e^2*(-2*b*d + 5*a*e + 3*b*e*x) + c^2*(-32*d^3 + 48
*d^2*e*x - 60*d*e^2*x^2 + 70*e^3*x^3) + 3*c*e*(14*a*e*(-2*d + 3*e*x) + 3*b*
(8*d^2 - 12*d*e*x + 15*e^2*x^2))))/(315*e^4)
```

fricas [A] time = 0.90, size = 167, normalized size = 1.27

$$\frac{2\left(70\,c^2e^4x^4-32\,c^2d^4+72\,bcd^3e+105\,abde^3-42\left(b^2+2\,ac\right)d^2e^2+5\left(2\,c^2de^3+27\,bce^4\right)x^3-3\left(4\,c^2d^2e^2-9\,bcde\right.\right.}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(70*c^2*e^4*x^4 - 32*c^2*d^4 + 72*b*c*d^3*e + 105*a*b*d*e^3 - 42*(b^2
 + 2*a*c)*d^2*e^2 + 5*(2*c^2*d*e^3 + 27*b*c*e^4)*x^3 - 3*(4*c^2*d^2*e^2 - 9
*b*c*d*e^3 - 21*(b^2 + 2*a*c)*e^4)*x^2 + (16*c^2*d^3*e - 36*b*c*d^2*e^2 + 1
05*a*b*e^4 + 21*(b^2 + 2*a*c)*d*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [**B**] time = 0.27, size = 400, normalized size = 3.03

$$\frac{2}{315}\Big(105\Big((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\Big)b^2de^{(-1)}+210\Big((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\Big)acde^{(-1)}+63\Big(3(xe+d)^{\frac{5}{2}}-10(xe$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*d*e^(-1) + 210*((x*e +
 d)^(3/2) - 3*sqrt(x*e + d)*d)*a*c*d*e^(-1) + 63*(3*(x*e + d)^(5/2) - 10*(x
*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*d*e^(-2) + 18*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*c
^2*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*b^2*e^(-1) + 42*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*a*c*e^(-1) + 27*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b*c*e^(-2) + 2*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*c^2*e^(-3) + 315*sqrt(x*e + d)*a*b*d + 105
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b)*e^(-1)
```

maple [**A**] time = 0.05, size = 123, normalized size = 0.93

$$\frac{2(ex+d)^{\frac{3}{2}}\big(70c^2x^3e^3+135bc\,e^3x^2-60c^2d\,e^2x^2+126ac\,e^3x+63b^2e^3x-108bcd\,e^2x+48c^2d^2ex+105ab\,e^3-}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(70*c^2*e^3*x^3+135*b*c*e^3*x^2-60*c^2*d*e^2*x^2+126*a*
c*e^3*x+63*b^2*e^3*x-108*b*c*d*e^2*x+48*c^2*d^2*e*x+105*a*b*e^3-84*a*c*d*e^
2-42*b^2*d*e^2+72*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [**A**] time = 0.52, size = 121, normalized size = 0.92

$$\frac{2\Big(70(ex+d)^{\frac{9}{2}}c^2-135\big(2c^2d-bce\big)(ex+d)^{\frac{7}{2}}+63\big(6c^2d^2-6bcde+\big(b^2+2ac\big)e^2\big)(ex+d)^{\frac{5}{2}}-105\big(2c^2d^3-}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/315*(70*(e*x + d)^(9/2)*c^2 - 135*(2*c^2*d - b*c*e)*(e*x + d)^(7/2) + 63*
(6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(5/2) - 105*(2*c^2*d^
3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*(e*x + d)^(3/2))/e^4
```

mupad [**B**] time = 0.07, size = 118, normalized size = 0.89

$$\frac{4c^2(d+ex)^{9/2}}{9e^4}+\frac{(d+ex)^{5/2}\left(2b^2e^2-12bcde+12c^2d^2+4ace^2\right)}{5e^4}-\frac{\left(12c^2d-6bce\right)(d+ex)^{7/2}}{7e^4}+\frac{2(be-2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2),x)
```

```
[Out] (4*c^2*(d + e*x)^(9/2))/(9*e^4) + ((d + e*x)^(5/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/(5*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(7/2))
/(7*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e))/(3*e^4
)
```

sympy [A] time = 5.14, size = 155, normalized size = 1.17

$$\frac{2\left(\frac{2c^2(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}\left(3bce-6c^2d\right)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(2ace^2+b^2e^2-6bcde+6c^2d^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(abe^3-2acde^2-b^2de^2+3bcd^2e-2c^2d^3\right)}{3e^3}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**2*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(3*b*c*e - 6*c**2*d)
/(7*e**3) + (d + e*x)**(5/2)*(2*a*c*e**2 + b**2*e**2 - 6*b*c*d*e + 6*c**2*d
**2)/(5*e**3) + (d + e*x)**(3/2)*(a*b*e**3 - 2*a*c*d*e**2 - b**2*d*e**2 + 3
*b*c*d**2*e - 2*c**2*d**3)/(3*e**3))/e
```

3.1598 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=130

$$\frac{2(d+ex)^{3/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{6c(d+ex)^{5/2}(2cd-be)}{5e^4}+$$

```
[Out] 2/3*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d))*(e*x+d)^(3/2)/e^4-6/5*c*(-b*e+2*
c*d)*(e*x+d)^(5/2)/e^4+4/7*c^2*(e*x+d)^(7/2)/e^4-2*(-b*e+2*c*d)*(a*e^2-b*d*
e+c*d^2)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{3/2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{3e^4}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{6c(d+ex)^{5/2}(2cd-be)}{5e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x])/e^4 + (2*(6*c^2*d^
2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(3/2))/(3*e^4) - (6*c*(2*c*d -
 b*e)*(d + e*x)^(5/2))/(5*e^4) + (4*c^2*(d + e*x)^(7/2))/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{\sqrt{d+ex}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3\sqrt{d+ex}}+\frac{\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\sqrt{d+ex}}{e^3}\right.\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}{e^4}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)(}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.11, size = 109, normalized size = 0.84

$$\frac{2\sqrt{d+ex}\left(7ce\left(10ae(ex-2d)+3b\left(8d^2-4dex+3e^2x^2\right)\right)+35be^2(3ae-2bd+bex)-6c^2\left(16d^3-8d^2ex+6de\right.\right.}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(35*b*e^2*(-2*b*d + 3*a*e + b*e*x) - 6*c^2*(16*d^3 - 8*d^2
*e*x + 6*d*e^2*x^2 - 5*e^3*x^3) + 7*c*e*(10*a*e*(-2*d + e*x) + 3*b*(8*d^2 -
 4*d*e*x + 3*e^2*x^2))))/(105*e^4)
```

fricas [A] time = 0.83, size = 116, normalized size = 0.89

$$\frac{2\left(30\,c^2e^3x^3-96\,c^2d^3+168\,bcd^2e+105\,abe^3-70\left(b^2+2\,ac\right)de^2-9\left(4\,c^2de^2-7\,bce^3\right)x^2+\left(48\,c^2d^2e-84\,bcd\right.\right.}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(30*c^2*e^3*x^3 - 96*c^2*d^3 + 168*b*c*d^2*e + 105*a*b*e^3 - 70*(b^2
+ 2*a*c)*d*e^2 - 9*(4*c^2*d*e^2 - 7*b*c*e^3)*x^2 + (48*c^2*d^2*e - 84*b*c*d
*e^2 + 35*(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.27, size = 166, normalized size = 1.28

$$\frac{2}{105}\,(35\,((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d)b^2e^{(-1)}+70\,((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d)ace^{(-1)}+21\,(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*b^2*e^(-1) + 70*((x*e + d)^
(3/2) - 3*sqrt(x*e + d)*d)*a*c*e^(-1) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b*c*e^(-2) + 6*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*c^2*e^(-3)
 + 105*sqrt(x*e + d)*a*b)*e^(-1)
```

maple [A] time = 0.05, size = 123, normalized size = 0.95

$$\frac{2\sqrt{ex+d}\,\,(30c^2x^3e^3+63bc\,e^3x^2-36c^2d\,e^2x^2+70ac\,e^3x+35b^2e^3x-84bcd\,e^2x+48c^2d^2ex+105ab\,e^3-140acd}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(1/2)*(30*c^2*e^3*x^3+63*b*c*e^3*x^2-36*c^2*d*e^2*x^2+70*a*c*
e^3*x+35*b^2*e^3*x-84*b*c*d*e^2*x+48*c^2*d^2*e*x+105*a*b*e^3-140*a*c*d*e^2-
70*b^2*d*e^2+168*b*c*d^2*e-96*c^2*d^3)/e^4
```

maxima [A] time = 0.53, size = 121, normalized size = 0.93

$$\frac{2\,(30\,(ex+d)^{\frac{7}{2}}c^2-63\,(2\,c^2d-bce)(ex+d)^{\frac{5}{2}}+35\,(6\,c^2d^2-6\,bcde+(b^2+2\,ac)e^2)(ex+d)^{\frac{3}{2}}-105\,(2\,c^2d^3-3\,bcd}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/105*(30*(e*x + d)^(7/2)*c^2 - 63*(2*c^2*d - b*c*e)*(e*x + d)^(5/2) + 35*(
6*c^2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d)^(3/2) - 105*(2*c^2*d^3
 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 118, normalized size = 0.91

$$\frac{4\,c^2\,(d+e\,x)^{7/2}}{7\,e^4}+\frac{(d+e\,x)^{3/2}\,\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{3\,e^4}-\frac{\left(12\,c^2\,d-6\,b\,c\,e\right)\,(d+e\,x)^{5/2}}{5\,e^4}+\frac{2\,(b\,e-2\,c\,d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(1/2),x)
```

```
[Out] (4*c^2*(d + e*x)^(7/2))/(7*e^4) + ((d + e*x)^(3/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/(3*e^4) - ((12*c^2*d - 6*b*c*e)*(d + e*x)^(5/2))
/(5*e^4) + (2*(b*e - 2*c*d)*(d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e))/e^4
```

sympy [A] time = 45.95, size = 427, normalized size = 3.28

$$\begin{cases} \frac{-\frac{2abd}{\sqrt{d+ex}} - 2ab\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{4acd\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{4ac\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{2b^2d\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{2b^2\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} -}{} \\ \frac{\left(a+bx+cx^2\right)^2}{2\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a*b*d/sqrt(d + e*x) - 2*a*b*(-d/sqrt(d + e*x) - sqrt(d + e*x
)) - 4*a*c*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a*c*(d**2/sqrt(d + e*
x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*b**2*d*(-d/sqrt(d + e*x)
 - sqrt(d + e*x))/e - 2*b**2*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d +
 e*x)**(3/2)/3)/e - 6*b*c*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d +
e*x)**(3/2)/3)/e**2 - 6*b*c*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d
*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 4*c**2*d*(-d**3/sqrt(d + e*x
) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 -
4*c**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2)
 + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((a + b
*x + c*x**2)**2/(2*sqrt(d)), True))
```

3.1599 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{2\sqrt{d+ex}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{5/}}{5e^4}$$

```
[Out] -2*c*(-b*e+2*c*d)*(e*x+d)^(3/2)/e^4+4/5*c^2*(e*x+d)^(5/2)/e^4+2*(-b*e+2*c*d
)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^(1/2)+2*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*
b*d))*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2\sqrt{d+ex}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{e^4\sqrt{d+ex}}-\frac{2c(d+ex)^{3/2}(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{5/}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(e^4*Sqrt[d + e*x]) + (2*(6*c^2*d
^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*Sqrt[d + e*x])/e^4 - (2*c*(2*c*d - b*e)
*(d + e*x)^(3/2))/e^4 + (4*c^2*(d + e*x)^(5/2))/(5*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{3/2}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^{3/2}}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3\sqrt{d+ex}}-\frac{3c(2cd-be}{e^3}\right.\\ &= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)}{e^4\sqrt{d+ex}}+\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\sqrt{d+ex}}{e^4}-\frac{2c(}{}\end{aligned}$$

Mathematica [A] time = 0.11, size = 106, normalized size = 0.84

$$\frac{2\left(5ce\left(2ae(2d+ex)+b\left(-8d^2-4dex+e^2x^2\right)\right)+5be^2(-ae+2bd+bex)+2c^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*b*e^2*(2*b*d - a*e + b*e*x) + 2*c^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2
 + e^3*x^3) + 5*c*e*(2*a*e*(2*d + e*x) + b*(-8*d^2 - 4*d*e*x + e^2*x^2))))/
(5*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.87, size = 126, normalized size = 1.00

$$\frac{2\big(2\,c^2e^3x^3+32\,c^2d^3-40\,bcd^2e-5\,abe^3+10\,\big(b^2+2\,ac\big)de^2-\big(4\,c^2de^2-5\,bce^3\big)x^2+\big(16\,c^2d^2e-20\,bcde^2+5\,\big(}{5\,\big(e^5x+de^4\big)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/5*(2*c^2*e^3*x^3 + 32*c^2*d^3 - 40*b*c*d^2*e - 5*a*b*e^3 + 10*(b^2 + 2*a*
c)*d*e^2 - (4*c^2*d*e^2 - 5*b*c*e^3)*x^2 + (16*c^2*d^2*e - 20*b*c*d*e^2 + 5
*(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.19, size = 163, normalized size = 1.29

$$\frac{2}{5}\big(2\,(xe+d)^{\frac{5}{2}}c^2e^{16}-10\,(xe+d)^{\frac{3}{2}}c^2de^{16}+30\,\sqrt{xe+d}\,c^2d^2e^{16}+5\,(xe+d)^{\frac{3}{2}}bce^{17}-30\,\sqrt{xe+d}\,bcde^{17}+5\,\sqrt{xe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*(2*(x*e + d)^(5/2)*c^2*e^16 - 10*(x*e + d)^(3/2)*c^2*d*e^16 + 30*sqrt(x
*e + d)*c^2*d^2*e^16 + 5*(x*e + d)^(3/2)*b*c*e^17 - 30*sqrt(x*e + d)*b*c*d*
e^17 + 5*sqrt(x*e + d)*b^2*e^18 + 10*sqrt(x*e + d)*a*c*e^18)*e^(-20) + 2*(2
*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)*e^(-4)/sqrt(x*e
 + d)
```

maple [A] time = 0.05, size = 123, normalized size = 0.98

$$-\frac{2\big(-2c^2x^3e^3-5bc\,e^3x^2+4c^2d\,e^2x^2-10ac\,e^3x-5b^2e^3x+20bcd\,e^2x-16c^2d^2ex+5ab\,e^3-20acd\,e^2-10b^2d\,e}{5\sqrt{ex+d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x)
```

```
[Out] -2/5/(e*x+d)^(1/2)*(-2*c^2*e^3*x^3-5*b*c*e^3*x^2+4*c^2*d*e^2*x^2-10*a*c*e^3
*x-5*b^2*e^3*x+20*b*c*d*e^2*x-16*c^2*d^2*e*x+5*a*b*e^3-20*a*c*d*e^2-10*b^2*
d*e^2+40*b*c*d^2*e-32*c^2*d^3)/e^4
```

maxima [A] time = 0.72, size = 129, normalized size = 1.02

$$\frac{2\left(\frac{2\,(ex+d)^{\frac{5}{2}}c^2-5\,\left(2\,c^2d-bce\right)(ex+d)^{\frac{3}{2}}+5\,\left(6\,c^2d^2-6\,bcde+\left(b^2+2\,ac\right)e^2\right)\sqrt{ex+d}}{e^3}+\frac{5\,\left(2\,c^2d^3-3\,bcd^2e-abe^3+\left(b^2+2\,ac\right)de^2\right)}{\sqrt{ex+d}\,e^3}\right)}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/5*((2*(e*x + d)^(5/2)*c^2 - 5*(2*c^2*d - b*c*e)*(e*x + d)^(3/2) + 5*(6*c^
2*d^2 - 6*b*c*d*e + (b^2 + 2*a*c)*e^2)*sqrt(e*x + d))/e^3 + 5*(2*c^2*d^3 -
3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 0.07, size = 133, normalized size = 1.06

$$\frac{4\,c^2\,{(d+e\,x)}^{5/2}}{5\,e^4}+\frac{\sqrt{d+e\,x}\;\left(2\,b^2\,e^2-12\,b\,c\,d\,e+12\,c^2\,d^2+4\,a\,c\,e^2\right)}{e^4}+\frac{2\,b^2\,d\,e^2-6\,b\,c\,d^2\,e-2\,a\,b\,e^3+4\,c^2\,d^3+4}{e^4\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(3/2),x)
```

```
[Out] (4*c^2*(d + e*x)^(5/2))/(5*e^4) + ((d + e*x)^(1/2)*(2*b^2*e^2 + 12*c^2*d^2
+ 4*a*c*e^2 - 12*b*c*d*e))/e^4 + (4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a
*c*d*e^2 - 6*b*c*d^2*e)/(e^4*(d + e*x)^(1/2)) - ((12*c^2*d - 6*b*c*e)*(d +
e*x)^(3/2))/(3*e^4)
```

sympy [A] time = 28.77, size = 128, normalized size = 1.02

$$\frac{4c^{2}(d+ex)^{\frac{5}{2}}}{5e^{4}}+\frac{(d+ex)^{\frac{3}{2}}\left(6bce-12c^{2}d\right)}{3e^{4}}+\frac{\sqrt{d+ex}\left(4ace^{2}+2b^{2}e^{2}-12bcde+12c^{2}d^{2}\right)}{e^{4}}-\frac{2(be-2cd)\,(ae^{2}-bde+}{e^{4}\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(3/2),x)
```

```
[Out] 4*c**2*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(6*b*c*e - 12*c**2*d)/(
3*e**4) + sqrt(d + e*x)*(4*a*c*e**2 + 2*b**2*e**2 - 12*b*c*d*e + 12*c**2*d*
*2)/e**4 - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)/(e**4*sqrt(d + e*x))
```

3.1600 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{5/2}} \, dx$

Optimal. Leaf size=128

$$-\frac{2\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^{3/2}}-\frac{6c\sqrt{d+ex}\,(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{3/2}}{3e^4}$$

```
[Out] 2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^(3/2)+4/3*c^2*(e*x+d)^(3/2
)/e^4-2*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d))/e^4/(e*x+d)^(1/2)-6*c*(-b*e+
2*c*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$-\frac{2\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4\sqrt{d+ex}}+\frac{2(2cd-be)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^{3/2}}-\frac{6c\sqrt{d+ex}\,(2cd-be)}{e^4}+\frac{4c^2(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^(3/2)) - (2*(6*c
^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(e^4*Sqrt[d + e*x]) - (6*c*(2*c*d
- b*e)*Sqrt[d + e*x])/e^4 + (4*c^2*(d + e*x)^(3/2))/(3*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)}{(d+ex)^{5/2}}\,dx &= \int \Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^{5/2}}+\frac{6c^2d^2+b^2e^2-2ce(3bd-ae)}{e^3(d+ex)^{3/2}}-\frac{3c(2cd-}{e^3\sqrt{d+}}\\ &= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^{3/2}}-\frac{2\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)}{e^4\sqrt{d+ex}}-\frac{6c(2cd-}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 108, normalized size = 0.84

$$-\frac{2\Big(ce\left(2ae(2d+3ex)-3b\left(8d^2+12dex+3e^2x^2\right)\right)+be^2(ae+2bd+3bex)+2c^2\,(16d^3+24d^2ex+6de^2x^2-e^3}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*e^2*(2*b*d + a*e + 3*b*e*x) + 2*c^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x
^2 - e^3*x^3) + c*e*(2*a*e*(2*d + 3*e*x) - 3*b*(8*d^2 + 12*d*e*x + 3*e^2*x^
2))))/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.83, size = 137, normalized size = 1.07

$$\frac{2\,(2\,c^2e^3x^3-32\,c^2d^3+24\,bcd^2e-abe^3-2\left(b^2+2\,ac\right)de^2-3\left(4\,c^2de^2-3\,bce^3\right)x^2-3\,(16\,c^2d^2e-12\,bcde^2+(b}{3\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(2*c^2*e^3*x^3 - 32*c^2*d^3 + 24*b*c*d^2*e - a*b*e^3 - 2*(b^2 + 2*a*c)*
d*e^2 - 3*(4*c^2*d*e^2 - 3*b*c*e^3)*x^2 - 3*(16*c^2*d^2*e - 12*b*c*d*e^2 +
(b^2 + 2*a*c)*e^3)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [**A**]   time = 0.20, size = 153, normalized size = 1.20

$$\frac{2}{3}\left(2(xe+d)^{\frac{3}{2}}c^2e^8 - 18\sqrt{xe+d}\,c^2de^8 + 9\sqrt{xe+d}\,bce^9\right)e^{(-12)} - \frac{2\,(18(xe+d)c^2d^2 - 2c^2d^3 - 18(xe+d)bcde + 3bc}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*(2*(x*e + d)^(3/2)*c^2*e^8 - 18*sqrt(x*e + d)*c^2*d*e^8 + 9*sqrt(x*e +
d)*b*c*e^9)*e^(-12) - 2/3*(18*(x*e + d)*c^2*d^2 - 2*c^2*d^3 - 18*(x*e + d)*
b*c*d*e + 3*b*c*d^2*e + 3*(x*e + d)*b^2*e^2 + 6*(x*e + d)*a*c*e^2 - b^2*d*e
^2 - 2*a*c*d*e^2 + a*b*e^3)*e^(-4)/(x*e + d)^(3/2)
```

maple [**A**]   time = 0.04, size = 122, normalized size = 0.95

$$-\frac{2\,(-2c^2x^3e^3 - 9bc\,e^3x^2 + 12c^2d\,e^2x^2 + 6ac\,e^3x + 3b^2e^3x - 36bcd\,e^2x + 48c^2d^2ex + ab\,e^3 + 4acd\,e^2 + 2b^2d\,e^2 - 24}{3(ex+d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-2*c^2*e^3*x^3-9*b*c*e^3*x^2+12*c^2*d*e^2*x^2+6*a*c*e^3
*x+3*b^2*e^3*x-36*b*c*d*e^2*x+48*c^2*d^2*e*x+a*b*e^3+4*a*c*d*e^2+2*b^2*d*e^
2-24*b*c*d^2*e+32*c^2*d^3)/e^4
```

maxima [**A**]   time = 0.60, size = 126, normalized size = 0.98

$$\frac{2\left(\frac{2(ex+d)^{\frac{3}{2}}c^2-9\left(2c^2d-bce\right)\sqrt{ex+d}}{e^3}+\frac{2c^2d^3-3bcd^2e-abe^3+\left(b^2+2ac\right)de^2-3\left(6c^2d^2-6bcde+\left(b^2+2ac\right)e^2\right)(ex+d)}{(ex+d)^{\frac{3}{2}}e^3}\right)}{3e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/3*((2*(e*x + d)^(3/2)*c^2 - 9*(2*c^2*d - b*c*e)*sqrt(e*x + d))/e^3 + (2*c
^2*d^3 - 3*b*c*d^2*e - a*b*e^3 + (b^2 + 2*a*c)*d*e^2 - 3*(6*c^2*d^2 - 6*b*c
*d*e + (b^2 + 2*a*c)*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [**B**]   time = 0.09, size = 139, normalized size = 1.09

$$\frac{4c^2(d+e\,x)^3 + 4c^2d^3 + 2b^2d\,e^2 - 6b^2e^2\,(d+e\,x) - 36c^2d\,(d+e\,x)^2 - 36c^2d^2\,(d+e\,x) - 2\,a\,b\,e^3 + 4\,a\,c\,d\,e^2 -}{3\,e^4\,(d+e\,x)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2))/(d + e*x)^(5/2),x)
```

```
[Out] (4*c^2*(d + e*x)^3 + 4*c^2*d^3 + 2*b^2*d*e^2 - 6*b^2*e^2*(d + e*x) - 36*c^2
*d*(d + e*x)^2 - 36*c^2*d^2*(d + e*x) - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2
*e - 12*a*c*e^2*(d + e*x) + 18*b*c*e*(d + e*x)^2 + 36*b*c*d*e*(d + e*x))/(3
*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.65, size = 536, normalized size = 4.19

$$\begin{cases} -\frac{2abe^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{8acde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{12ace^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{4b^2de^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}} - \frac{6b^2e^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+e}} \\ \frac{abx+acx^2+\frac{b^2x^2}{2}+bcx^3+\frac{c^2x^4}{2}}{d^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*a*b*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
8*a*c*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*a*c*e**
3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*b**2*d*e**2/(3*d*
e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*b**2*e**3*x/(3*d*e**4*sqrt
(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 48*b*c*d**2*e/(3*d*e**4*sqrt(d + e*x)
 + 3*e**5*x*sqrt(d + e*x)) + 72*b*c*d*e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e*
*5*x*sqrt(d + e*x)) + 18*b*c*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*s
qrt(d + e*x)) - 64*c**2*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*
x)) - 96*c**2*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
24*c**2*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 4*c
**2*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)), Ne(e, 0)),
 ((a*b*x + a*c*x**2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2)/d**(5/2), True)
)
```

3.1601 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{13/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{13e^6}-\frac{2(d+ex)^{11/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{11e^6}+4(d+$$

```
[Out] -2/7*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(7/2)/e^6+4/9*(a*e^2-b*d*e+
c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(9/2)/e^6-2/11*(-b*e+2*
c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(11/2)/e^6+8/13*c*(5
*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(13/2)/e^6-2/3*c^2*(-b*e+2*c*d)*
(e*x+d)^(15/2)/e^6+4/17*c^3*(e*x+d)^(17/2)/e^6
```

Rubi [A] time = 0.17, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{13/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{13e^6}-\frac{2(d+ex)^{11/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{11e^6}+4(d+$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(7/2))/(7*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(9/2))/(9*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(11/2))/(11*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d -
 a*e))*(d + e*x)^(13/2))/(13*e^6) - (2*c^2*(2*c*d - b*e)*(d + e*x)^(15/2))/
(3*e^6) + (4*c^3*(d + e*x)^(17/2))/(17*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^2\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{5/2}}{e^5}+2\left(cd^2-bde+ae^2\right)\left(\right.\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{7/2}}{7e^6}+4\left(cd^2-bde+ae^2\right)\left(5c^2\right.$$

Mathematica [A] time = 0.41, size = 291, normalized size = 1.15

$$2(d+ex)^{7/2}\left(-34ce^2\left(143a^2e^2(2d-7ex)-39abe\left(8d^2-28dex+63e^2x^2\right)+6b^2\left(16d^3-56d^2ex+126de^2x^2-231e\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-2*c^3*(256*d^5 - 896*d^4*e*x + 2016*d^3*e^2*x^2 - 3696
*d^2*e^3*x^3 + 6006*d*e^4*x^4 - 9009*e^5*x^5) + 221*b*e^3*(99*a^2*e^2 + 22*
a*b*e*(-2*d + 7*e*x) + b^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2)) - 34*c*e^2*(143
*a^2*e^2*(2*d - 7*e*x) - 39*a*b*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 6*b^2*(
16*d^3 - 56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3)) + 17*c^2*e*(12*a*e*(-16
*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b*(128*d^4 - 448*d^3*e*x
 + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4))))/(153153*e^6)
```

fricas [B] time = 0.64, size = 590, normalized size = 2.34

$$\underline{2\left(18018\,c^{3}e^{8}x^{8} - 512\,c^{3}d^{8} + 2176\,bc^{2}d^{7}e + 21879\,a^{2}bd^{3}e^{5} - 3264\left(b^{2}c + ac^{2}\right)d^{6}e^{2} + 1768\left(b^{3} + 6\,abc\right)d^{5}e^{3} - 9\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/153153*(18018*c^3*e^8*x^8 - 512*c^3*d^8 + 2176*b*c^2*d^7*e + 21879*a^2*b*
d^3*e^5 - 3264*(b^2*c + a*c^2)*d^6*e^2 + 1768*(b^3 + 6*a*b*c)*d^5*e^3 - 972
4*(a*b^2 + a^2*c)*d^4*e^4 + 3003*(14*c^3*d*e^7 + 17*b*c^2*e^8)*x^7 + 231*(1
10*c^3*d^2*e^6 + 527*b*c^2*d*e^7 + 204*(b^2*c + a*c^2)*e^8)*x^6 + 63*(2*c^3
*d^3*e^5 + 1207*b*c^2*d^2*e^6 + 1836*(b^2*c + a*c^2)*d*e^7 + 221*(b^3 + 6*a
*b*c)*e^8)*x^5 - 7*(20*c^3*d^4*e^4 - 85*b*c^2*d^3*e^5 - 10812*(b^2*c + a*c^
2)*d^2*e^6 - 5083*(b^3 + 6*a*b*c)*d*e^7 - 4862*(a*b^2 + a^2*c)*e^8)*x^4 + (
160*c^3*d^5*e^3 - 680*b*c^2*d^4*e^4 + 21879*a^2*b*e^8 + 1020*(b^2*c + a*c^2
)*d^3*e^5 + 24973*(b^3 + 6*a*b*c)*d^2*e^6 + 92378*(a*b^2 + a^2*c)*d*e^7)*x^
3 - 3*(64*c^3*d^6*e^2 - 272*b*c^2*d^5*e^3 - 21879*a^2*b*d*e^7 + 408*(b^2*c
+ a*c^2)*d^4*e^4 - 221*(b^3 + 6*a*b*c)*d^3*e^5 - 24310*(a*b^2 + a^2*c)*d^2*
e^6)*x^2 + (256*c^3*d^7*e - 1088*b*c^2*d^6*e^2 + 65637*a^2*b*d^2*e^6 + 1632
*(b^2*c + a*c^2)*d^5*e^3 - 884*(b^3 + 6*a*b*c)*d^4*e^4 + 4862*(a*b^2 + a^2*
c)*d^3*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.33, size = 2447, normalized size = 9.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/765765*(510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d^3*e^(-1) + 5
10510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d^3*e^(-1) + 51051*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d^3*e^(-2)
+ 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a*b*c*d^3*e^(-2) + 87516*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*
e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d^3*e^(-3) + 87516*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a*c^2*d^3*e^(-3) + 12155*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*b*c^2*d^3*e^(-4) + 2210*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*c^3*d^3*e^(-5) + 306306*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d^2*e^(-1) + 306306*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*c*d^2*e^(-1)
 + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*b^3*d^2*e^(-2) + 393822*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*c*d^2*
e^(-2) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*c*d^2*e^(-
3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*c^2*d^2*e^(-3) +
 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*b*c^2*d^2*e^(-4) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^3*d^2*e^(-
5) + 765765*sqrt(x*e + d)*a^2*b*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*a^2*b*d^2 + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*d*e^(-1) + 131274*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*a^2*c*d*e^(-1) + 7293*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*b^3*d*e^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c*d
*e^(-2) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c*d*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^2*d*e^(-3) + 3825*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*b*c^2*d*e^(-4) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e +
d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3217
5*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d
^6 - 6435*sqrt(x*e + d)*d^7)*c^3*d*e^(-5) + 153153*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d + 4862*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*e^(-1) + 4862*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*a^2*c*e^(-1) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*e^(-2) + 6630*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c*e^(-2) + 102
0*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^
2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3
/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*c*e^(-3) + 1020*(231*(x*e + d)^(13/2)
 - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2
)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e
 + d)*d^6)*a*c^2*e^(-3) + 595*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*b*c^2*e^(-4) + 14*(6435*(x*e + d)^(17/2) - 58344*(x*e +
 d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 +
850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^
(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^3*e^(-
5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*a^2*b)*e^(-1)
```

maple [**A**] time = 0.06, size = 359, normalized size = 1.42

$$2\left(ex+d\right)^{\frac{7}{2}}\left(18018c^{3}e^{5}x^{5}+51051b\,c^{2}e^{5}x^{4}-12012c^{3}d\,e^{4}x^{4}+47124a\,c^{2}e^{5}x^{3}+47124b^{2}c\,e^{5}x^{3}-31416b\,c^{2}d\,e^{4}x^{3}+7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/153153*(e*x+d)^(7/2)*(18018*c^3*e^5*x^5+51051*b*c^2*e^5*x^4-12012*c^3*d*e
^4*x^4+47124*a*c^2*e^5*x^3+47124*b^2*c*e^5*x^3-31416*b*c^2*d*e^4*x^3+7392*c
^3*d^2*e^3*x^3+83538*a*b*c*e^5*x^2-25704*a*c^2*d*e^4*x^2+13923*b^3*e^5*x^2-
25704*b^2*c*d*e^4*x^2+17136*b*c^2*d^2*e^3*x^2-4032*c^3*d^3*e^2*x^2+34034*a^
2*c*e^5*x+34034*a*b^2*e^5*x-37128*a*b*c*d*e^4*x+11424*a*c^2*d^2*e^3*x-6188*
b^3*d*e^4*x+11424*b^2*c*d^2*e^3*x-7616*b*c^2*d^3*e^2*x+1792*c^3*d^4*e*x+218
79*a^2*b*e^5-9724*a^2*c*d*e^4-9724*a*b^2*d*e^4+10608*a*b*c*d^2*e^3-3264*a*c
^2*d^3*e^2+1768*b^3*d^2*e^3-3264*b^2*c*d^3*e^2+2176*b*c^2*d^4*e-512*c^3*d^5
)/e^6
```

maxima [A] time = 0.60, size = 308, normalized size = 1.22

$$2\left(18018\,(ex+d)^{\frac{17}{2}}c^3 - 51051\left(2\,c^3d - bc^2e\right)(ex+d)^{\frac{15}{2}} + 47124\left(5\,c^3d^2 - 5\,bc^2de + \left(b^2c + ac^2\right)e^2\right)(ex+d)^{\frac{13}{2}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/153153*(18018*(e*x + d)^(17/2)*c^3 - 51051*(2*c^3*d - b*c^2*e)*(e*x + d)^
(15/2) + 47124*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(1
3/2) - 13923*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3
 + 6*a*b*c)*e^3)*(e*x + d)^(11/2) + 34034*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(
b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x
+ d)^(9/2) - 21879*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^
2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(
7/2))/e^6
```

mupad [B] time = 0.10, size = 267, normalized size = 1.06

$$\frac{(d+e\,x)^{9/2}\,\left(4\,a^2\,c\,e^4 + 4\,a\,b^2\,e^4 - 24\,a\,b\,c\,d\,e^3 + 24\,a\,c^2\,d^2\,e^2 - 4\,b^3\,d\,e^3 + 24\,b^2\,c\,d^2\,e^2 - 40\,b\,c^2\,d^3\,e + 20\,c^3\,d^4\right)}{9\,e^6} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(9/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(9*e^
6) + (4*c^3*(d + e*x)^(17/2))/(17*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(15/2))/(15*e^6) + ((d + e*x)^(13/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e
^2 - 40*b*c^2*d*e))/(13*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(11/2)*(b^2*e^2 +
 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(11*e^6) + (2*(b*e - 2*c*d)*(d + e*x
)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(7*e^6)
```

sympy [A] time = 70.39, size = 1860, normalized size = 7.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*a**2*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**2*b*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 4*a**2*c*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a**2*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**2 + 4*a**2*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d
*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 4*a*b**2*d**2*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a*b**2*d*(d**2*(d + e*x)**(3/2)/3
 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*a*b**2*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**2 + 12*a*b*c*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x
)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 24*a*b*c*d*(-d**3*(d + e*x)**(3/2)/
3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9
)/e**3 + 12*a*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*
d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e*
*3 + 8*a*c**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 -
3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 16*a*c**2*d*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 8*a*c**2*(-d**5*(d + e*x
)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(
d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 +
 2*b**3*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)*
*(7/2)/7)/e**3 + 4*b**3*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/
2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*b**3*(d**4*(d
+ e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4
*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 8*b**2*c*d**2*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**4 + 16*b**2*c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
 e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
e*x)**(11/2)/11)/e**4 + 8*b**2*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*b*c**2*d**2*(d**4*(d +
e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d
*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*b*c**2*d*(-d**5*(d +
e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**
2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**
5 + 10*b*c**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**
4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/
2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 4*c**3*d**2
*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/
2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(
13/2)/13)/e**6 + 8*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2
)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
+ e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 +
 4*c**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
 e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 +
21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)
/17)/e**6
```

3.1602 $\int(b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{11/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{11e^6}-\frac{2(d+ex)^{9/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{9e^6}+4(d$$

```
[Out] -2/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(5/2)/e^6+4/7*(a*e^2-b*d*e+
c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(7/2)/e^6-2/9*(-b*e+2*c
*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(9/2)/e^6+8/11*c*(5*c
^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(11/2)/e^6-10/13*c^2*(-b*e+2*c*d)*
(e*x+d)^(13/2)/e^6+4/15*c^3*(e*x+d)^(15/2)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{8c(d+ex)^{11/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{11e^6}-\frac{2(d+ex)^{9/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{9e^6}+4(d$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(5/2))/(5*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(7/2))/(7*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(9/2))/(9*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a
*e))*(d + e*x)^(11/2))/(11*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(13/2))/(
13*e^6) + (4*c^3*(d + e*x)^(15/2))/(15*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int(b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^2\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{3/2}}{e^5}+2\left(cd^2-bde+ae\right.\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{5/2}}{5e^6}+4\left(cd^2-bde+ae^2\right)\left(\right.$$

Mathematica [A] time = 0.36, size = 291, normalized size = 1.15

$$2(d+ex)^{5/2}\left(-78ce^2\left(33a^2e^2(2d-5ex)-11abe\left(8d^2-20dex+35e^2x^2\right)+2b^2\left(16d^3-40d^2ex+70de^2x^2-105\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(c^3*(-512*d^5 + 1280*d^4*e*x - 2240*d^3*e^2*x^2 + 3360*
d^2*e^3*x^3 - 4620*d*e^4*x^4 + 6006*e^5*x^5) + 143*b*e^3*(63*a^2*e^2 + 18*a
*b*e*(-2*d + 5*e*x) + b^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2)) - 78*c*e^2*(33*a
^2*e^2*(2*d - 5*e*x) - 11*a*b*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 2*b^2*(16
*d^3 - 40*d^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3)) + 3*c^2*e*(52*a*e*(-16*d^3
 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + 5*b*(128*d^4 - 320*d^3*e*x +
560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4))))/(45045*e^6)
```

fricas [**B**] time = 0.56, size = 495, normalized size = 1.96

$$2\left(6006\,c^3e^7x^7 - 512\,c^3d^7 + 1920\,bc^2d^6e + 9009\,a^2bd^2e^5 - 2496\left(b^2c + ac^2\right)d^5e^2 + 1144\left(b^3 + 6\,abc\right)d^4e^3 - 5148\,(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 2/45045*(6006*c^3*e^7*x^7 - 512*c^3*d^7 + 1920*b*c^2*d^6*e + 9009*a^2*b*d^2
*e^5 - 2496*(b^2*c + a*c^2)*d^5*e^2 + 1144*(b^3 + 6*a*b*c)*d^4*e^3 - 5148*(
a*b^2 + a^2*c)*d^3*e^4 + 231*(32*c^3*d*e^6 + 75*b*c^2*e^7)*x^6 + 126*(c^3*d
^2*e^5 + 175*b*c^2*d*e^6 + 130*(b^2*c + a*c^2)*e^7)*x^5 - 35*(4*c^3*d^3*e^4
 - 15*b*c^2*d^2*e^5 - 624*(b^2*c + a*c^2)*d*e^6 - 143*(b^3 + 6*a*b*c)*e^7)*
x^4 + 10*(16*c^3*d^4*e^3 - 60*b*c^2*d^3*e^4 + 78*(b^2*c + a*c^2)*d^2*e^5 +
715*(b^3 + 6*a*b*c)*d*e^6 + 1287*(a*b^2 + a^2*c)*e^7)*x^3 - 3*(64*c^3*d^5*e
^2 - 240*b*c^2*d^4*e^3 - 3003*a^2*b*e^7 + 312*(b^2*c + a*c^2)*d^3*e^4 - 143
*(b^3 + 6*a*b*c)*d^2*e^5 - 6864*(a*b^2 + a^2*c)*d*e^6)*x^2 + 2*(128*c^3*d^6
*e - 480*b*c^2*d^5*e^2 + 9009*a^2*b*d*e^6 + 624*(b^2*c + a*c^2)*d^4*e^3 - 2
86*(b^3 + 6*a*b*c)*d^3*e^4 + 1287*(a*b^2 + a^2*c)*d^2*e^5)*x)*sqrt(e*x + d)
/e^6
```

giac [**B**] time = 0.29, size = 1648, normalized size = 6.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d^2*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d^2*e^(-1) + 3003*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d^2*e^(-2) + 18
018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c
*d^2*e^(-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)
^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d^2*e^(-3) + 5148*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
a*c^2*d^2*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*
d^2*e^(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*c^3*d^2*e^(-5) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d*e^(-1) + 12012*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*c*d*e^(-1) + 2574*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*b^3*d*e^(-2) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*c*d*e^(-2) + 1144*(35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*c*d*e^(-3) + 1144*(35*(x*e + d)^(
9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2
)*d^3 + 315*sqrt(x*e + d)*d^4)*a*c^2*d*e^(-3) + 650*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b*c^2*d*e^(-4) + 60*(23
1*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8
580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d
^5 + 3003*sqrt(x*e + d)*d^6)*c^3*d*e^(-5) + 45045*sqrt(x*e + d)*a^2*b*d^2 +
 30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d + 2574*(5*(x*e + d)^(7
/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)
*a*b^2*e^(-1) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c*e^(-1) + 143*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*b^3*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*a*b*c*e^(-2) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2
)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(
3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*c*e^(-3) + 260*(63*(x*e + d)^(11/2) -
 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^2*e^(-3) + 75*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
5 + 3003*sqrt(x*e + d)*d^6)*b*c^2*e^(-4) + 14*(429*(x*e + d)^(15/2) - 3465*
(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^
(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^3*e^(-5) + 3003*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b)*e^(-1)
```

maple [A] time = 0.06, size = 359, normalized size = 1.42

$$2\left(ex+d\right)^{\frac{5}{2}}\left(6006c^3e^5x^5+17325b\,c^2e^5x^4-4620c^3d\,e^4x^4+16380a\,c^2e^5x^3+16380b^2c\,e^5x^3-12600b\,c^2d\,e^4x^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(6006*c^3*e^5*x^5+17325*b*c^2*e^5*x^4-4620*c^3*d*e^4*
x^4+16380*a*c^2*e^5*x^3+16380*b^2*c*e^5*x^3-12600*b*c^2*d*e^4*x^3+3360*c^3*
d^2*e^3*x^3+30030*a*b*c*e^5*x^2-10920*a*c^2*d*e^4*x^2+5005*b^3*e^5*x^2-1092
0*b^2*c*d*e^4*x^2+8400*b*c^2*d^2*e^3*x^2-2240*c^3*d^3*e^2*x^2+12870*a^2*c*e
^5*x+12870*a*b^2*e^5*x-17160*a*b*c*d*e^4*x+6240*a*c^2*d^2*e^3*x-2860*b^3*d*
e^4*x+6240*b^2*c*d^2*e^3*x-4800*b*c^2*d^3*e^2*x+1280*c^3*d^4*e*x+9009*a^2*b
*e^5-5148*a^2*c*d*e^4-5148*a*b^2*d*e^4+6864*a*b*c*d^2*e^3-2496*a*c^2*d^3*e^
2+1144*b^3*d^2*e^3-2496*b^2*c*d^3*e^2+1920*b*c^2*d^4*e-512*c^3*d^5)/e^6
```

maxima [A] time = 0.53, size = 308, normalized size = 1.22

$$2\left(6006\left(ex+d\right)^{\frac{15}{2}}c^3-17325\left(2c^3d-bc^2e\right)\left(ex+d\right)^{\frac{13}{2}}+16380\left(5c^3d^2-5bc^2de+\left(b^2c+ac^2\right)e^2\right)\left(ex+d\right)^{\frac{11}{2}}-5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2/45045*(6006*(e*x + d)^(15/2)*c^3 - 17325*(2*c^3*d - b*c^2*e)*(e*x + d)^(1
3/2) + 16380*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(11/
2) - 5005*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 +
6*a*b*c)*e^3)*(e*x + d)^(9/2) + 12870*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*
c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)
^(7/2) - 9009*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^
3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(5/2))
/e^6
```

mupad [B] time = 0.07, size = 267, normalized size = 1.06

$$\frac{\left(d+e\,x\right)^{7/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{7\,e^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(7/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(7*e^
6) + (4*c^3*(d + e*x)^(15/2))/(15*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(13/2))/(13*e^6) + ((d + e*x)^(11/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e
^2 - 40*b*c^2*d*e))/(11*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(9/2)*(b^2*e^2 +
10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(9*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^
(5/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(5*e^6)
```

sympy [A] time = 43.46, size = 1093, normalized size = 4.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a)**2,x)
```

```
[Out] a**2*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*a**2*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a**2*c*d*(-d
*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a**2*c*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*a*b**2*d*(-
d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a*b**2*(d**2*(d + e*x)*
*(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 12*a*b*c*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3
 + 12*a*b*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
+ e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*a*c**2*d*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**4 + 8*a*c**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5
 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/1
1)/e**4 + 2*b**3*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d +
 e*x)**(7/2)/7)/e**3 + 2*b**3*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)*
*(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*b**2*c*d*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**4 + 8*b**2*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*
(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (
d + e*x)**(11/2)/11)/e**4 + 10*b*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(
d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
 + e*x)**(11/2)/11)/e**5 + 10*b*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d
*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 4*c**3*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6
 + 4*c**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1603 $\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=252

$$\frac{8c(d+ex)^{9/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{9e^6}-\frac{2(d+ex)^{7/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{4(d+$$

```
[Out] -2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(3/2)/e^6+4/5*(a*e^2-b*d*e+
c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(5/2)/e^6-2/7*(-b*e+2*c
*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(7/2)/e^6+8/9*c*(5*c^
2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(9/2)/e^6-10/11*c^2*(-b*e+2*c*d)*(e
*x+d)^(11/2)/e^6+4/13*c^3*(e*x+d)^(13/2)/e^6
```

Rubi [A] time = 0.12, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{9/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{9e^6}-\frac{2(d+ex)^{7/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{7e^6}+\frac{4(d+$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^2,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(3/2))/(3*e^6) + (4*(
c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^
(5/2))/(5*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*
a*e))*(d + e*x)^(7/2))/(7*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a
*e))*(d + e*x)^(9/2))/(9*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(11/2))/(11
*e^6) + (4*c^3*(d + e*x)^(13/2))/(13*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)\sqrt{d+ex}\left(a+bx+cx^2\right)^2\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)\left(5\right.}{}\right.\\ &= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{3/2}}{3e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c\right.}{}\end{aligned}$$

Mathematica [A] time = 0.36, size = 291, normalized size = 1.15

$$\frac{2(d+ex)^{3/2}\left(-286ce^2\left(21a^2e^2(2d-3ex)-9abe\left(8d^2-12dex+15e^2x^2\right)+b^2\left(32d^3-48d^2ex+60de^2x^2-70e^3x\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-10*c^3*(256*d^5 - 384*d^4*e*x + 480*d^3*e^2*x^2 - 560*
d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5) + 429*b*e^3*(35*a^2*e^2 + 14*a*b
*e*(-2*d + 3*e*x) + b^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2)) - 286*c*e^2*(21*a^
2*e^2*(2*d - 3*e*x) - 9*a*b*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + b^2*(32*d^3
 - 48*d^2*e*x + 60*d*e^2*x^2 - 70*e^3*x^3)) + 13*c^2*e*(44*a*e*(-16*d^3 + 2
4*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + 5*b*(128*d^4 - 192*d^3*e*x + 240*d
^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4))))/(45045*e^6)
```

fricas [**A**]   time = 0.63, size = 399, normalized size = 1.58

$$\underline{2\left(6930\,c^3e^6x^6 - 2560\,c^3d^6 + 8320\,bc^2d^5e + 15015\,a^2bde^5 - 9152\left(b^2c + ac^2\right)d^4e^2 + 3432\left(b^3 + 6\,abc\right)d^3e^3 - 12012\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(6930*c^3*e^6*x^6 - 2560*c^3*d^6 + 8320*b*c^2*d^5*e + 15015*a^2*b*d
*e^5 - 9152*(b^2*c + a*c^2)*d^4*e^2 + 3432*(b^3 + 6*a*b*c)*d^3*e^3 - 12012*
(a*b^2 + a^2*c)*d^2*e^4 + 315*(2*c^3*d*e^5 + 65*b*c^2*e^6)*x^5 - 35*(20*c^3
*d^2*e^4 - 65*b*c^2*d*e^5 - 572*(b^2*c + a*c^2)*e^6)*x^4 + 5*(160*c^3*d^3*e
^3 - 520*b*c^2*d^2*e^4 + 572*(b^2*c + a*c^2)*d*e^5 + 1287*(b^3 + 6*a*b*c)*e
^6)*x^3 - 3*(320*c^3*d^4*e^2 - 1040*b*c^2*d^3*e^3 + 1144*(b^2*c + a*c^2)*d^
2*e^4 - 429*(b^3 + 6*a*b*c)*d*e^5 - 6006*(a*b^2 + a^2*c)*e^6)*x^2 + (1280*c
^3*d^5*e - 4160*b*c^2*d^4*e^2 + 15015*a^2*b*e^6 + 4576*(b^2*c + a*c^2)*d^3*
e^3 - 1716*(b^3 + 6*a*b*c)*d^2*e^4 + 6006*(a*b^2 + a^2*c)*d*e^5)*x)*sqrt(e*
x + d)/e^6
```

giac [**B**]   time = 0.22, size = 966, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*d*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*d*e^(-1) + 3003*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*d*e^(-2) + 18018*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c*d*e^(
-2) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*b^2*c*d*e^(-3) + 5148*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c^2*d*e^
(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*d*e^(-4) + 1
30*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^
5)*c^3*d*e^(-5) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*a*b^2*e^(-1) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*a^2*c*e^(-1) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*e^(-2) + 7
722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*a*b*c*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*b^2*c*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
a*c^2*e^(-3) + 325*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*b*c^2*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*c^3*e^
(-5) + 45045*sqrt(x*e + d)*a^2*b*d + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^2*b)*e^(-1)
```

maple [A] time = 0.06, size = 359, normalized size = 1.42

$$\frac{2\left(ex+d\right)^{\frac{3}{2}}\left(6930c^{3}e^{5}x^{5}+20475b\,c^{2}e^{5}x^{4}-6300c^{3}d\,e^{4}x^{4}+20020a\,c^{2}e^{5}x^{3}+20020b^{2}c\,e^{5}x^{3}-18200b\,c^{2}d\,e^{4}x^{3}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(6930*c^3*e^5*x^5+20475*b*c^2*e^5*x^4-6300*c^3*d*e^4*
x^4+20020*a*c^2*e^5*x^3+20020*b^2*c*e^5*x^3-18200*b*c^2*d*e^4*x^3+5600*c^3*
d^2*e^3*x^3+38610*a*b*c*e^5*x^2-17160*a*c^2*d*e^4*x^2+6435*b^3*e^5*x^2-1716
0*b^2*c*d*e^4*x^2+15600*b*c^2*d^2*e^3*x^2-4800*c^3*d^3*e^2*x^2+18018*a^2*c*
e^5*x+18018*a*b^2*e^5*x-30888*a*b*c*d*e^4*x+13728*a*c^2*d^2*e^3*x-5148*b^3*
d*e^4*x+13728*b^2*c*d^2*e^3*x-12480*b*c^2*d^3*e^2*x+3840*c^3*d^4*e*x+15015*
a^2*b*e^5-12012*a^2*c*d*e^4-12012*a*b^2*d*e^4+20592*a*b*c*d^2*e^3-9152*a*c^
2*d^3*e^2+3432*b^3*d^2*e^3-9152*b^2*c*d^3*e^2+8320*b*c^2*d^4*e-2560*c^3*d^5
)/e^6
```

maxima [A] time = 0.54, size = 308, normalized size = 1.22

$$\frac{2\left(6930\left(ex+d\right)^{\frac{13}{2}}c^{3}-20475\left(2\,c^{3}d-bc^{2}e\right)\left(ex+d\right)^{\frac{11}{2}}+20020\left(5\,c^{3}d^{2}-5\,bc^{2}de+\left(b^{2}c+ac^{2}\right)e^{2}\right)\left(ex+d\right)^{\frac{9}{2}}-6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(6930*(e*x + d)^(13/2)*c^3 - 20475*(2*c^3*d - b*c^2*e)*(e*x + d)^(1
1/2) + 20020*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(9/2
) - 6435*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6
*a*b*c)*e^3)*(e*x + d)^(7/2) + 18018*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c
 + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)^
(5/2) - 15015*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^
3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*(e*x + d)^(3/2))
/e^6
```

mupad [B] time = 1.92, size = 267, normalized size = 1.06

$$\frac{{\left(d+e\,x\right)}^{5/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{5\,e^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^(5/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(5*e^
6) + (4*c^3*(d + e*x)^(13/2))/(13*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(11/2))/(11*e^6) + ((d + e*x)^(9/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^
2 - 40*b*c^2*d*e))/(9*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(7/2)*(b^2*e^2 + 10
*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(7*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(3
/2)*(a*e^2 + c*d^2 - b*d*e)^2)/(3*e^6)
```

sympy [A] time = 8.78, size = 405, normalized size = 1.61

$$\frac{2\left(\frac{2c^{3}\left(d+ex\right)^{\frac{13}{2}}}{13e^{5}}+\frac{\left(d+ex\right)^{\frac{11}{2}}\left(5bc^{2}e-10c^{3}d\right)}{11e^{5}}+\frac{\left(d+ex\right)^{\frac{9}{2}}\left(4ac^{2}e^{2}+4b^{2}ce^{2}-20bc^{2}de+20c^{3}d^{2}\right)}{9e^{5}}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(6abce^{3}-12ac^{2}de^{2}+b^{3}e^{3}-12b^{2}cde^{2}+30bc^{2}\right.}{7e^{5}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**3*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(5*b*c**2*e - 10*
c**3*d)/(11*e**5) + (d + e*x)**(9/2)*(4*a*c**2*e**2 + 4*b**2*c*e**2 - 20*b*
c**2*d*e + 20*c**3*d**2)/(9*e**5) + (d + e*x)**(7/2)*(6*a*b*c*e**3 - 12*a*c
**2*d*e**2 + b**3*e**3 - 12*b**2*c*d*e**2 + 30*b*c**2*d**2*e - 20*c**3*d**3
)/(7*e**5) + (d + e*x)**(5/2)*(2*a**2*c*e**4 + 2*a*b**2*e**4 - 12*a*b*c*d*e
**3 + 12*a*c**2*d**2*e**2 - 2*b**3*d*e**3 + 12*b**2*c*d**2*e**2 - 20*b*c**2
*d**3*e + 10*c**3*d**4)/(5*e**5) + (d + e*x)**(3/2)*(a**2*b*e**5 - 2*a**2*c
*d*e**4 - 2*a*b**2*d*e**4 + 6*a*b*c*d**2*e**3 - 4*a*c**2*d**3*e**2 + b**3*d
**2*e**3 - 4*b**2*c*d**3*e**2 + 5*b*c**2*d**4*e - 2*c**3*d**5)/(3*e**5))/e
```

3.1604 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=250

$$\frac{8c(d+ex)^{7/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{2(d+ex)^{5/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+4(d+$$

```
[Out] 4/3*(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(3/2)/
e^6-2/5*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(5/2
)/e^6+8/7*c*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(7/2)/e^6-10/9*c^2
*(-b*e+2*c*d)*(e*x+d)^(9/2)/e^6+4/11*c^3*(e*x+d)^(11/2)/e^6-2*(-b*e+2*c*d)*
(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = $\{771\}$

$$\frac{8c(d+ex)^{7/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{7e^6}-\frac{2(d+ex)^{5/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{5e^6}+4(d+$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x])/e^6 + (4*(c*d^2
- b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^(3/2))
/(3*e^6) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*
(d + e*x)^(5/2))/(5*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(
d + e*x)^(7/2))/(7*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(9/2))/(9*e^6) +
(4*c^3*(d + e*x)^(11/2))/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{\sqrt{d+ex}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5\sqrt{d+ex}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b\right.}{e^5}\right.$$

$$= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}{e^6}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e\right.}{3e^6}$$

Mathematica [A] time = 0.39, size = 290, normalized size = 1.16

$$2\sqrt{d+ex}\left(-66ce^2\left(-35a^2e^2(ex-2d)-21abe\left(8d^2-4dex+3e^2x^2\right)+6b^2\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)\right)+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-10*c^3*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 80*d^2*
e^3*x^3 + 70*d*e^4*x^4 - 63*e^5*x^5) + 231*b*e^3*(15*a^2*e^2 + 10*a*b*e*(-2
*d + e*x) + b^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2)) - 66*c*e^2*(-35*a^2*e^2*(-2*
d + e*x) - 21*a*b*e*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 6*b^2*(16*d^3 - 8*d^2*e
*x + 6*d*e^2*x^2 - 5*e^3*x^3)) + 11*c^2*e*(36*a*e*(-16*d^3 + 8*d^2*e*x - 6*
d*e^2*x^2 + 5*e^3*x^3) + 5*b*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*
e^3*x^3 + 35*e^4*x^4))))/(3465*e^6)
```

fricas [A] time = 0.59, size = 306, normalized size = 1.22

$$2\,\big(630\,c^3e^5x^5 - 2560\,c^3d^5 + 7040\,bc^2d^4e + 3465\,a^2be^5 - 6336\,\big(b^2c + ac^2\big)d^3e^2 + 1848\,\big(b^3 + 6\,abc\big)d^2e^3 - 4620\,\big(ab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3465*(630*c^3*e^5*x^5 - 2560*c^3*d^5 + 7040*b*c^2*d^4*e + 3465*a^2*b*e^5
- 6336*(b^2*c + a*c^2)*d^3*e^2 + 1848*(b^3 + 6*a*b*c)*d^2*e^3 - 4620*(a*b^2
 + a^2*c)*d*e^4 - 175*(4*c^3*d*e^4 - 11*b*c^2*e^5)*x^4 + 20*(40*c^3*d^2*e^3
 - 110*b*c^2*d*e^4 + 99*(b^2*c + a*c^2)*e^5)*x^3 - 3*(320*c^3*d^3*e^2 - 880
*b*c^2*d^2*e^3 + 792*(b^2*c + a*c^2)*d*e^4 - 231*(b^3 + 6*a*b*c)*e^5)*x^2 +
 2*(640*c^3*d^4*e - 1760*b*c^2*d^3*e^2 + 1584*(b^2*c + a*c^2)*d^2*e^3 - 462
*(b^3 + 6*a*b*c)*d*e^4 + 1155*(a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [A] time = 0.18, size = 421, normalized size = 1.68

$$\frac{2}{3465}\,\Big(2310\,\Big((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\Big)ab^2e^{(-1)} + 2310\,\Big((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\Big)a^2ce^{(-1)} + 231\,\Big(3\,(xe+d)^{\frac{5}{2}} - 10\,(x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b^2*e^(-1) + 2310*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*c*e^(-1) + 231*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^3*e^(-2) + 1386*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*c*e^(-2) + 396*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*b^2*c*e^(-3) + 396*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*c^2*e^(-3) + 55*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b*c^2*e^(-4) + 10*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*c^3*e^(-5) + 3465*sq
rt(x*e + d)*a^2*b)*e^(-1)
```

maple [A] time = 0.05, size = 359, normalized size = 1.44

$$2\sqrt{ex+d}\;\big(630c^3e^5x^5 + 1925b\,c^2e^5x^4 - 700c^3d\,e^4x^4 + 1980a\,c^2e^5x^3 + 1980b^2c\,e^5x^3 - 2200b\,c^2d\,e^4x^3 + 800c^3d^2e^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(1/2)*(630*c^3*e^5*x^5+1925*b*c^2*e^5*x^4-700*c^3*d*e^4*x^4+
1980*a*c^2*e^5*x^3+1980*b^2*c*e^5*x^3-2200*b*c^2*d*e^4*x^3+800*c^3*d^2*e^3*
x^3+4158*a*b*c*e^5*x^2-2376*a*c^2*d*e^4*x^2+693*b^3*e^5*x^2-2376*b^2*c*d*e^
4*x^2+2640*b*c^2*d^2*e^3*x^2-960*c^3*d^3*e^2*x^2+2310*a^2*c*e^5*x+2310*a*b^
2*e^5*x-5544*a*b*c*d*e^4*x+3168*a*c^2*d^2*e^3*x-924*b^3*d*e^4*x+3168*b^2*c*
d^2*e^3*x-3520*b*c^2*d^3*e^2*x+1280*c^3*d^4*e*x+3465*a^2*b*e^5-4620*a^2*c*d
*e^4-4620*a*b^2*d*e^4+11088*a*b*c*d^2*e^3-6336*a*c^2*d^3*e^2+1848*b^3*d^2*e
^3-6336*b^2*c*d^3*e^2+7040*b*c^2*d^4*e-2560*c^3*d^5)/e^6
```

maxima [A] time = 0.53, size = 308, normalized size = 1.23

$$2\left(630\,(ex+d)^{\frac{11}{2}}c^{3} - 1925\left(2\,c^{3}d - bc^{2}e\right)(ex+d)^{\frac{9}{2}} + 1980\left(5\,c^{3}d^{2} - 5\,bc^{2}de + \left(b^{2}c + ac^{2}\right)e^{2}\right)(ex+d)^{\frac{7}{2}} - 693\,\left(2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3465*(630*(e*x + d)^(11/2)*c^3 - 1925*(2*c^3*d - b*c^2*e)*(e*x + d)^(9/2)
 + 1980*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(7/2) - 6
93*(20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c
)*e^3)*(e*x + d)^(5/2) + 2310*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^
2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*(e*x + d)^(3/2) -
 3465*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 -
(b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)*sqrt(e*x + d))/e^6
```

mupad [B] time = 1.85, size = 267, normalized size = 1.07

$$\frac{(d+e\,x)^{3/2}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{3\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/(3*e^
6) + (4*c^3*(d + e*x)^(11/2))/(11*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)
^(9/2))/(9*e^6) + ((d + e*x)^(7/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2
- 40*b*c^2*d*e))/(7*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^2 + 10*c
^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(5*e^6) + (2*(b*e - 2*c*d)*(d + e*x)^(1/2
)*(a*e^2 + c*d^2 - b*d*e)^2)/e^6
```

sympy [A] time = 121.36, size = 1025, normalized size = 4.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**2*b*d/sqrt(d + e*x) - 2*a**2*b*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*a**2*c*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a**2*c*(d**2
/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 4*a*b**2*d*(-d
/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*a*b**2*(d**2/sqrt(d + e*x) + 2*d*sqrt
(d + e*x) - (d + e*x)**(3/2)/3)/e - 12*a*b*c*d*(d**2/sqrt(d + e*x) + 2*d*sq
rt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 12*a*b*c*(-d**3/sqrt(d + e*x) - 3*
d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*a*c*
*2*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
+ e*x)**(5/2)/5)/e**3 - 8*a*c**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x)
 - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e
**3 - 2*b**3*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3
)/e**2 - 2*b**3*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**
(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*b**2*c*d*(-d**3/sqrt(d + e*x) - 3*d**2
*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 8*b**2*c*(
d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(
d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 10*b*c**2*d*(d**4/sqrt(d + e
*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)
/5 - (d + e*x)**(7/2)/7)/e**4 - 10*b*c**2*(-d**5/sqrt(d + e*x) - 5*d**4*sqr
t(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d
+ e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 4*c**3*d*(-d**5/sqrt(d + e*x)
- 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/
2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 4*c**3*(d**6/sqrt(
d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x
)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)*
*(11/2)/11)/e**5)/e, Ne(e, 0)), ((a + b*x + c*x**2)**3/(3*sqrt(d)), True))
```

3.1605 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=248

$$\frac{8c(d+ex)^{5/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{3e^6}+\frac{4\sqrt{d}}{}$$

```
[Out] -2/3*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(3/2)/e
^6+8/5*c*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(5/2)/e^6-10/7*c^2*(-
b*e+2*c*d)*(e*x+d)^(7/2)/e^6+4/9*c^3*(e*x+d)^(9/2)/e^6+2*(-b*e+2*c*d)*(a*e^
2-b*d*e+c*d^2)^2/e^6/(e*x+d)^(1/2)+4*(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2
-c*e*(-a*e+5*b*d))*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{5/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{5e^6}-\frac{2(d+ex)^{3/2}(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{3e^6}+\frac{4\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(e^6*Sqrt[d + e*x]) + (4*(c*d^2
 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*Sqrt[d + e*x])/
e^6 - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))*(d +
e*x)^(3/2))/(3*e^6) + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e
*x)^(5/2))/(5*e^6) - (10*c^2*(2*c*d - b*e)*(d + e*x)^(7/2))/(7*e^6) + (4*c^
3*(d + e*x)^(9/2))/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^{3/2}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b\right.}{e^5\sqrt{d+ex}}\right.\\ &= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2}{e^6\sqrt{d+ex}}+\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd\right.}{e^6}\end{aligned}$$

Mathematica [A] time = 0.34, size = 287, normalized size = 1.16

$$\frac{252ce^2\left(5a^2e^2(2d+ex)+5abe\left(-8d^2-4dex+e^2x^2\right)+2b^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)\right)-210be^3\left(3a^2e^2-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (20*c^3*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4
*x^4 + 7*e^5*x^5) - 210*b*e^3*(3*a^2*e^2 - 6*a*b*e*(2*d + e*x) + b^2*(8*d^2
 + 4*d*e*x - e^2*x^2)) + 252*c*e^2*(5*a^2*e^2*(2*d + e*x) + 5*a*b*e*(-8*d^2
 - 4*d*e*x + e^2*x^2) + 2*b^2*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3))
 - 18*c^2*e*(-28*a*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 5*b*(12
8*d^4 + 64*d^3*e*x - 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)))/(315*e^6*S
qrt[d + e*x])
```

fricas [A] time = 0.80, size = 316, normalized size = 1.27

$$2\bigl(70\,c^3e^5x^5 + 2560\,c^3d^5 - 5760\,bc^2d^4e - 315\,a^2be^5 + 4032\,\bigl(b^2c + ac^2\bigr)d^3e^2 - 840\,\bigl(b^3 + 6\,abc\bigr)d^2e^3 + 1260\,\bigl(ab^2 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/315*(70*c^3*e^5*x^5 + 2560*c^3*d^5 - 5760*b*c^2*d^4*e - 315*a^2*b*e^5 + 4
032*(b^2*c + a*c^2)*d^3*e^2 - 840*(b^3 + 6*a*b*c)*d^2*e^3 + 1260*(a*b^2 + a
^2*c)*d*e^4 - 25*(4*c^3*d*e^4 - 9*b*c^2*e^5)*x^4 + 4*(40*c^3*d^2*e^3 - 90*b
*c^2*d*e^4 + 63*(b^2*c + a*c^2)*e^5)*x^3 - (320*c^3*d^3*e^2 - 720*b*c^2*d^2
*e^3 + 504*(b^2*c + a*c^2)*d*e^4 - 105*(b^3 + 6*a*b*c)*e^5)*x^2 + 2*(640*c^
3*d^4*e - 1440*b*c^2*d^3*e^2 + 1008*(b^2*c + a*c^2)*d^2*e^3 - 210*(b^3 + 6*
a*b*c)*d*e^4 + 315*(a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [B] time = 0.21, size = 460, normalized size = 1.85

$$\frac{2}{315}\bigl(70\,(xe+d)^{\frac{9}{2}}c^3e^{48} - 450\,(xe+d)^{\frac{7}{2}}c^3de^{48} + 1260\,(xe+d)^{\frac{5}{2}}c^3d^2e^{48} - 2100\,(xe+d)^{\frac{3}{2}}c^3d^3e^{48} + 3150\,\sqrt{xe+d}\,c^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/315*(70*(x*e + d)^(9/2)*c^3*e^48 - 450*(x*e + d)^(7/2)*c^3*d*e^48 + 1260*
(x*e + d)^(5/2)*c^3*d^2*e^48 - 2100*(x*e + d)^(3/2)*c^3*d^3*e^48 + 3150*sqr
t(x*e + d)*c^3*d^4*e^48 + 225*(x*e + d)^(7/2)*b*c^2*e^49 - 1260*(x*e + d)^(
5/2)*b*c^2*d*e^49 + 3150*(x*e + d)^(3/2)*b*c^2*d^2*e^49 - 6300*sqrt(x*e + d
)*b*c^2*d^3*e^49 + 252*(x*e + d)^(5/2)*b^2*c*e^50 + 252*(x*e + d)^(5/2)*a*c
^2*e^50 - 1260*(x*e + d)^(3/2)*b^2*c*d*e^50 - 1260*(x*e + d)^(3/2)*a*c^2*d*
e^50 + 3780*sqrt(x*e + d)*b^2*c*d^2*e^50 + 3780*sqrt(x*e + d)*a*c^2*d^2*e^5
0 + 105*(x*e + d)^(3/2)*b^3*e^51 + 630*(x*e + d)^(3/2)*a*b*c*e^51 - 630*sqr
t(x*e + d)*b^3*d*e^51 - 3780*sqrt(x*e + d)*a*b*c*d*e^51 + 630*sqrt(x*e + d)
*a*b^2*e^52 + 630*sqrt(x*e + d)*a^2*c*e^52)*e^(-54) + 2*(2*c^3*d^5 - 5*b*c^
2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3
 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 359, normalized size = 1.45

$$-2\bigl(-70c^3e^5x^5 - 225b\,c^2e^5x^4 + 100c^3d\,e^4x^4 - 252a\,c^2e^5x^3 - 252b^2c\,e^5x^3 + 360b\,c^2d\,e^4x^3 - 160c^3d^2e^3x^3 - 630abc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315/(e*x+d)^(1/2)*(-70*c^3*e^5*x^5-225*b*c^2*e^5*x^4+100*c^3*d*e^4*x^4-2
52*a*c^2*e^5*x^3-252*b^2*c*e^5*x^3+360*b*c^2*d*e^4*x^3-160*c^3*d^2*e^3*x^3-
630*a*b*c*e^5*x^2+504*a*c^2*d*e^4*x^2-105*b^3*e^5*x^2+504*b^2*c*d*e^4*x^2-7
20*b*c^2*d^2*e^3*x^2+320*c^3*d^3*e^2*x^2-630*a^2*c*e^5*x-630*a*b^2*e^5*x+25
20*a*b*c*d*e^4*x-2016*a*c^2*d^2*e^3*x+420*b^3*d*e^4*x-2016*b^2*c*d^2*e^3*x+
2880*b*c^2*d^3*e^2*x-1280*c^3*d^4*e*x+315*a^2*b*e^5-1260*a^2*c*d*e^4-1260*a
*b^2*d*e^4+5040*a*b*c*d^2*e^3-4032*a*c^2*d^3*e^2+840*b^3*d^2*e^3-4032*b^2*c
*d^3*e^2+5760*b*c^2*d^4*e-2560*c^3*d^5)/e^6
```

maxima [A] time = 0.64, size = 316, normalized size = 1.27

$$2\left(\frac{70\,(ex+d)^{\frac{9}{2}}c^3-225\left(2\,c^3d-bc^2e\right)(ex+d)^{\frac{7}{2}}+252\left(5\,c^3d^2-5\,bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{5}{2}}-105\left(20\,c^3d^3-30\,bc^2d^2e+12\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)(}{e^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/315*((70*(e*x + d)^(9/2)*c^3 - 225*(2*c^3*d - b*c^2*e)*(e*x + d)^(7/2) +
252*(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(5/2) - 105*(
20*c^3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^
3)*(e*x + d)^(3/2) + 630*(5*c^3*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^2)*d^
2*e^2 - (b^3 + 6*a*b*c)*d*e^3 + (a*b^2 + a^2*c)*e^4)*sqrt(e*x + d))/e^5 + 3
15*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*c^2)*d^3*e^2 - (b^
3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 0.07, size = 333, normalized size = 1.34

$$\frac{\sqrt{d+e\,x}\,\left(4\,a^2\,c\,e^4+4\,a\,b^2\,e^4-24\,a\,b\,c\,d\,e^3+24\,a\,c^2\,d^2\,e^2-4\,b^3\,d\,e^3+24\,b^2\,c\,d^2\,e^2-40\,b\,c^2\,d^3\,e+20\,c^3\,d^4\right)}{e^6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(1/2)*(20*c^3*d^4 + 4*a*b^2*e^4 + 4*a^2*c*e^4 - 4*b^3*d*e^3 + 24
*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*d^3*e - 24*a*b*c*d*e^3))/e^6 +
 (4*c^3*(d + e*x)^(9/2))/(9*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)^(7/2)
)/(7*e^6) + ((d + e*x)^(5/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2 - 40*b
*c^2*d*e))/(5*e^6) + (4*c^3*d^5 - 2*a^2*b*e^5 - 2*b^3*d^2*e^3 + 8*a*c^2*d^3
*e^2 + 8*b^2*c*d^3*e^2 + 4*a*b^2*d*e^4 + 4*a^2*c*d*e^4 - 10*b*c^2*d^4*e - 1
2*a*b*c*d^2*e^3)/(e^6*(d + e*x)^(1/2)) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(
b^2*e^2 + 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/(3*e^6)
```

sympy [A] time = 90.27, size = 316, normalized size = 1.27

$$\frac{4c^3\,(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{(d+ex)^{\frac{7}{2}}\left(10bc^2e-20c^3d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(8ac^2e^2+8b^2ce^2-40bc^2de+40c^3d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(12abc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(3/2),x)
```

```
[Out] 4*c**3*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(10*b*c**2*e - 20*c**3*
d)/(7*e**6) + (d + e*x)**(5/2)*(8*a*c**2*e**2 + 8*b**2*c*e**2 - 40*b*c**2*d
*e + 40*c**3*d**2)/(5*e**6) + (d + e*x)**(3/2)*(12*a*b*c*e**3 - 24*a*c**2*d
*e**2 + 2*b**3*e**3 - 24*b**2*c*d*e**2 + 60*b*c**2*d**2*e - 40*c**3*d**3)/(
3*e**6) + sqrt(d + e*x)*(4*a**2*c*e**4 + 4*a*b**2*e**4 - 24*a*b*c*d*e**3 +
24*a*c**2*d**2*e**2 - 4*b**3*d*e**3 + 24*b**2*c*d**2*e**2 - 40*b*c**2*d**3*
e + 20*c**3*d**4)/e**6 - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2/(e**6
*sqrt(d + e*x))
```

3.1606 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=246

$$\frac{8c(d+ex)^{3/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}-\frac{4\left(ae^2-bc\right.}{}$$

```
[Out] 2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^(3/2)+8/3*c*(5*c^2*d^2+b
^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(3/2)/e^6-2*c^2*(-b*e+2*c*d)*(e*x+d)^(5/2)
/e^6+4/7*c^3*(e*x+d)^(7/2)/e^6-4*(a*e^2-b*d*e+c*d^2)*(5*c^2*d^2+b^2*e^2-c*e
*(-a*e+5*b*d))/e^6/(e*x+d)^(1/2)-2*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(
-3*a*e+5*b*d))*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 246, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{8c(d+ex)^{3/2}\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{3e^6}-\frac{2\sqrt{d+ex}\,(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)}{e^6}-\frac{4\left(ae^2-bc\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2)/(3*e^6*(d + e*x)^(3/2)) - (4*(c
*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(e^6*Sqrt[
d + e*x]) - (2*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e))
*Sqrt[d + e*x])/e^6 + (8*c*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d + e
*x)^(3/2))/(3*e^6) - (2*c^2*(2*c*d - b*e)*(d + e*x)^(5/2))/e^6 + (4*c^3*(d
+ e*x)^(7/2))/(7*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)\left(a+bx+cx^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^{5/2}}+\frac{2\left(cd^2-bde+ae^2\right)\left(5c^2d^2-5bcde+b^2e^2\right.}{e^5(d+ex)^{3/2}}\right.\\ &= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^{3/2}}-\frac{4\left(cd^2-bde+ae^2\right)\left(5c^2d^2+b^2e^2-ce(5bd-a\right.}{e^6\sqrt{d+ex}}\end{aligned}$$

Mathematica [A] time = 0.33, size = 289, normalized size = 1.17

$$-\frac{2\left(14ce^2\left(a^2e^2(2d+3ex)-3abe\left(8d^2+12dex+3e^2x^2\right)+2b^2\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)\right)+7be^3\left(a^2e^2+2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(2*c^3*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e
^4*x^4 - 3*e^5*x^5) + 7*b*e^3*(a^2*e^2 + 2*a*b*e*(2*d + 3*e*x) - b^2*(8*d^2
 + 12*d*e*x + 3*e^2*x^2)) + 14*c*e^2*(a^2*e^2*(2*d + 3*e*x) - 3*a*b*e*(8*d^
2 + 12*d*e*x + 3*e^2*x^2) + 2*b^2*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*
x^3)) - 7*c^2*e*(4*a*e*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + b*(
128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4))))/(21*e^
6*(d + e*x)^(3/2))
```

fricas [**A**] time = 0.75, size = 327, normalized size = 1.33

$$\frac{2\left(6\,c^3e^5x^5-512\,c^3d^5+896\,bc^2d^4e-7\,a^2be^5-448\left(b^2c+ac^2\right)d^3e^2+56\left(b^3+6\,abc\right)d^2e^3-28\left(ab^2+a^2c\right)de^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/21*(6*c^3*e^5*x^5 - 512*c^3*d^5 + 896*b*c^2*d^4*e - 7*a^2*b*e^5 - 448*(b^
2*c + a*c^2)*d^3*e^2 + 56*(b^3 + 6*a*b*c)*d^2*e^3 - 28*(a*b^2 + a^2*c)*d*e^
4 - 3*(4*c^3*d*e^4 - 7*b*c^2*e^5)*x^4 + 4*(8*c^3*d^2*e^3 - 14*b*c^2*d*e^4 +
 7*(b^2*c + a*c^2)*e^5)*x^3 - 3*(64*c^3*d^3*e^2 - 112*b*c^2*d^2*e^3 + 56*(b
^2*c + a*c^2)*d*e^4 - 7*(b^3 + 6*a*b*c)*e^5)*x^2 - 6*(128*c^3*d^4*e - 224*b
*c^2*d^3*e^2 + 112*(b^2*c + a*c^2)*d^2*e^3 - 14*(b^3 + 6*a*b*c)*d*e^4 + 7*(
a*b^2 + a^2*c)*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [**A**] time = 0.22, size = 440, normalized size = 1.79

$$\frac{2}{21}\left(6\,(xe+d)^{\frac{7}{2}}c^3e^{36}-42\,(xe+d)^{\frac{5}{2}}c^3de^{36}+140\,(xe+d)^{\frac{3}{2}}c^3d^2e^{36}-420\,\sqrt{xe+d}\,c^3d^3e^{36}+21\,(xe+d)^{\frac{5}{2}}bc^2e^{37}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/21*(6*(x*e + d)^(7/2)*c^3*e^36 - 42*(x*e + d)^(5/2)*c^3*d*e^36 + 140*(x*e
 + d)^(3/2)*c^3*d^2*e^36 - 420*sqrt(x*e + d)*c^3*d^3*e^36 + 21*(x*e + d)^(5
/2)*b*c^2*e^37 - 140*(x*e + d)^(3/2)*b*c^2*d*e^37 + 630*sqrt(x*e + d)*b*c^2
*d^2*e^37 + 28*(x*e + d)^(3/2)*b^2*c*e^38 + 28*(x*e + d)^(3/2)*a*c^2*e^38 -
 252*sqrt(x*e + d)*b^2*c*d*e^38 - 252*sqrt(x*e + d)*a*c^2*d*e^38 + 21*sqrt(
x*e + d)*b^3*e^39 + 126*sqrt(x*e + d)*a*b*c*e^39)*e^(-42) - 2/3*(30*(x*e +
d)*c^3*d^4 - 2*c^3*d^5 - 60*(x*e + d)*b*c^2*d^3*e + 5*b*c^2*d^4*e + 36*(x*e
 + d)*b^2*c*d^2*e^2 + 36*(x*e + d)*a*c^2*d^2*e^2 - 4*b^2*c*d^3*e^2 - 4*a*c^
2*d^3*e^2 - 6*(x*e + d)*b^3*d*e^3 - 36*(x*e + d)*a*b*c*d*e^3 + b^3*d^2*e^3
+ 6*a*b*c*d^2*e^3 + 6*(x*e + d)*a*b^2*e^4 + 6*(x*e + d)*a^2*c*e^4 - 2*a*b^2
*d*e^4 - 2*a^2*c*d*e^4 + a^2*b*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [**A**] time = 0.05, size = 359, normalized size = 1.46

$$-\frac{2\left(-6c^3e^5x^5-21b\,c^2e^5x^4+12c^3d\,e^4x^4-28a\,c^2e^5x^3-28b^2c\,e^5x^3+56b\,c^2d\,e^4x^3-32c^3d^2e^3x^3-126abc\,e^5x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/21/(e*x+d)^(3/2)*(-6*c^3*e^5*x^5-21*b*c^2*e^5*x^4+12*c^3*d*e^4*x^4-28*a*
c^2*e^5*x^3-28*b^2*c*e^5*x^3+56*b*c^2*d*e^4*x^3-32*c^3*d^2*e^3*x^3-126*a*b*
c*e^5*x^2+168*a*c^2*d*e^4*x^2-21*b^3*e^5*x^2+168*b^2*c*d*e^4*x^2-336*b*c^2*
d^2*e^3*x^2+192*c^3*d^3*e^2*x^2+42*a^2*c*e^5*x+42*a*b^2*e^5*x-504*a*b*c*d*e
^4*x+672*a*c^2*d^2*e^3*x-84*b^3*d*e^4*x+672*b^2*c*d^2*e^3*x-1344*b*c^2*d^3*
e^2*x+768*c^3*d^4*e*x+7*a^2*b*e^5+28*a^2*c*d*e^4+28*a*b^2*d*e^4-336*a*b*c*d
^2*e^3+448*a*c^2*d^3*e^2-56*b^3*d^2*e^3+448*b^2*c*d^3*e^2-896*b*c^2*d^4*e+5
12*c^3*d^5)/e^6
```

maxima [**A**] time = 0.53, size = 314, normalized size = 1.28

$$2\left(\frac{6\,(ex+d)^{\frac{7}{2}}c^3-21\left(2\,c^3d-bc^2e\right)(ex+d)^{\frac{5}{2}}+28\left(5\,c^3d^2-5\,bc^2de+\left(b^2c+ac^2\right)e^2\right)(ex+d)^{\frac{3}{2}}-21\left(20\,c^3d^3-30\,bc^2d^2e+12\left(b^2c+ac^2\right)de^2-\left(b^3+6\,abc\right)e^3\right)\sqrt{ex+d}}{e^5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^2/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/21*((6*(e*x + d)^(7/2)*c^3 - 21*(2*c^3*d - b*c^2*e)*(e*x + d)^(5/2) + 28*
(5*c^3*d^2 - 5*b*c^2*d*e + (b^2*c + a*c^2)*e^2)*(e*x + d)^(3/2) - 21*(20*c^
3*d^3 - 30*b*c^2*d^2*e + 12*(b^2*c + a*c^2)*d*e^2 - (b^3 + 6*a*b*c)*e^3)*sq
rt(e*x + d))/e^5 + 7*(2*c^3*d^5 - 5*b*c^2*d^4*e - a^2*b*e^5 + 4*(b^2*c + a*
c^2)*d^3*e^2 - (b^3 + 6*a*b*c)*d^2*e^3 + 2*(a*b^2 + a^2*c)*d*e^4 - 6*(5*c^3
*d^4 - 10*b*c^2*d^3*e + 6*(b^2*c + a*c^2)*d^2*e^2 - (b^3 + 6*a*b*c)*d*e^3 +
 (a*b^2 + a^2*c)*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [**B**] time = 1.89, size = 329, normalized size = 1.34

$$\frac{4\,c^3\,(d+e\,x)^{7/2}}{7\,e^6}-\frac{\left(20\,c^3\,d-10\,b\,c^2\,e\right)\,(d+e\,x)^{5/2}}{5\,e^6}+\frac{(d+e\,x)^{3/2}\,\left(8\,b^2\,c\,e^2-40\,b\,c^2\,d\,e+40\,c^3\,d^2+8\,a\,c^2\,e^2\right)}{3\,e^6}+\frac{\frac{4\,c^3\,d^5}{3}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^2)/(d + e*x)^(5/2),x)
```

```
[Out] (4*c^3*(d + e*x)^(7/2))/(7*e^6) - ((20*c^3*d - 10*b*c^2*e)*(d + e*x)^(5/2))
/(5*e^6) + ((d + e*x)^(3/2)*(40*c^3*d^2 + 8*a*c^2*e^2 + 8*b^2*c*e^2 - 40*b*
c^2*d*e))/(3*e^6) + ((4*c^3*d^5)/3 - (d + e*x)*(20*c^3*d^4 + 4*a*b^2*e^4 +
4*a^2*c*e^4 - 4*b^3*d*e^3 + 24*a*c^2*d^2*e^2 + 24*b^2*c*d^2*e^2 - 40*b*c^2*
d^3*e - 24*a*b*c*d*e^3) - (2*a^2*b*e^5)/3 - (2*b^3*d^2*e^3)/3 + (8*a*c^2*d^
3*e^2)/3 + (8*b^2*c*d^3*e^2)/3 + (4*a*b^2*d*e^4)/3 + (4*a^2*c*d*e^4)/3 - (1
0*b*c^2*d^4*e)/3 - 4*a*b*c*d^2*e^3)/(e^6*(d + e*x)^(3/2)) + (2*(b*e - 2*c*d
)*(d + e*x)^(1/2)*(b^2*e^2 + 10*c^2*d^2 + 6*a*c*e^2 - 10*b*c*d*e))/e^6
```

sympy [**A**] time = 113.80, size = 274, normalized size = 1.11

$$\frac{4c^3\,(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(10bc^2e-20c^3d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(8ac^2e^2+8b^2ce^2-40bc^2de+40c^3d^2\right)}{3e^6}+\frac{\sqrt{d+ex}\,\left(12abce^3-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**2/(e*x+d)**(5/2),x)
```

```
[Out] 4*c**3*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(10*b*c**2*e - 20*c**3*
d)/(5*e**6) + (d + e*x)**(3/2)*(8*a*c**2*e**2 + 8*b**2*c*e**2 - 40*b*c**2*d
*e + 40*c**3*d**2)/(3*e**6) + sqrt(d + e*x)*(12*a*b*c*e**3 - 24*a*c**2*d*e*
*2 + 2*b**3*e**3 - 24*b**2*c*d*e**2 + 60*b*c**2*d**2*e - 40*c**3*d**3)/e**6
 - 4*(a*e**2 - b*d*e + c*d**2)*(a*c*e**2 + b**2*e**2 - 5*b*c*d*e + 5*c**2*d
**2)/(e**6*sqrt(d + e*x)) - 2*(b*e - 2*c*d)*(a*e**2 - b*d*e + c*d**2)**2/(3
*e**6*(d + e*x)**(3/2))
```

3.1607 $\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{13/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{13e^8}+\frac{6c^2}{}$$

```
[Out] -2/7*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(7/2)/e^8+2/9*(a*e^2-b*d*e+
c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(9/2)/e^8-6/11*(
-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x
+d)^(11/2)/e^8+2/13*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d
^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(13/
2)/e^8-2/3*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^(1
5/2)/e^8+6/17*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(17/2)/
e^8-14/19*c^3*(-b*e+2*c*d)*(e*x+d)^(19/2)/e^8+4/21*c^4*(e*x+d)^(21/2)/e^8
```

Rubi [A] time = 0.30, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{13/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{13e^8}+\frac{6c^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(7/2))/(7*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(9/2))/(9*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(11/2))/(11*e^8) + (2*(70*c^4*d
^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) +
 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(13/2))/(13*e^8)
- (2*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^
(15/2))/(3*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(17/2))/(17*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(19/2))/(19*e^8)
+ (4*c^4*(d + e*x)^(21/2))/(21*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{5/2}\left(a+bx+cx^2\right)^3\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{5/2}}{e^7}+\frac{\left(cd^2-bde+ae^2\right)}{}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{7/2}}{7e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2}{}$$

Mathematica [A] time = 0.62, size = 600, normalized size = 1.41

$$\frac{2(d+ex)^{7/2}\left(-57c^2e^2\left(102a^2e^2\left(16d^3-56d^2ex+126de^2x^2-231e^3x^3\right)-17abe\left(128d^4-448d^3ex+1008d^2e^2x^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-2*c^4*(2048*d^7 - 7168*d^6*e*x + 16128*d^5*e^2*x^2 - 2
9568*d^4*e^3*x^3 + 48048*d^3*e^4*x^4 - 72072*d^2*e^5*x^5 + 102102*d*e^6*x^6
 - 138567*e^7*x^7) + 969*b*e^4*(429*a^3*e^3 + 143*a^2*b*e^2*(-2*d + 7*e*x)
+ 13*a*b^2*e*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + b^3*(-16*d^3 + 56*d^2*e*x -
126*d*e^2*x^2 + 231*e^3*x^3)) + 323*c*e^3*(286*a^3*e^3*(-2*d + 7*e*x) + 117
*a^2*b*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 36*a*b^2*e*(-16*d^3 + 56*d^2*e
*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b^3*(128*d^4 - 448*d^3*e*x + 1008*d^2*e
^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)) - 57*c^2*e^2*(102*a^2*e^2*(16*d^3
- 56*d^2*e*x + 126*d*e^2*x^2 - 231*e^3*x^3) - 17*a*b*e*(128*d^4 - 448*d^3*e
*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4) + 3*b^2*(256*d^5 - 8
96*d^4*e*x + 2016*d^3*e^2*x^2 - 3696*d^2*e^3*x^3 + 6006*d*e^4*x^4 - 9009*e^
5*x^5)) + 3*c^3*e*(38*a*e*(-256*d^5 + 896*d^4*e*x - 2016*d^3*e^2*x^2 + 3696
*d^2*e^3*x^3 - 6006*d*e^4*x^4 + 9009*e^5*x^5) + 7*b*(1024*d^6 - 3584*d^5*e*
x + 8064*d^4*e^2*x^2 - 14784*d^3*e^3*x^3 + 24024*d^2*e^4*x^4 - 36036*d*e^5*
x^5 + 51051*e^6*x^6))))/(2909907*e^8)
```

fricas [B] time = 0.84, size = 1113, normalized size = 2.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/2909907*(277134*c^4*e^10*x^10 - 4096*c^4*d^10 + 21504*b*c^3*d^9*e + 41570
1*a^3*b*d^3*e^7 - 14592*(3*b^2*c^2 + 2*a*c^3)*d^8*e^2 + 41344*(b^3*c + 3*a*
b*c^2)*d^7*e^3 - 15504*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^4 + 100776*(a*b
^3 + 3*a^2*b*c)*d^5*e^5 - 92378*(3*a^2*b^2 + 2*a^3*c)*d^4*e^6 + 7293*(86*c^
4*d*e^9 + 147*b*c^3*e^10)*x^9 + 3861*(94*c^4*d^2*e^8 + 637*b*c^3*d*e^9 + 13
3*(3*b^2*c^2 + 2*a*c^3)*e^10)*x^8 + 429*(2*c^4*d^3*e^7 + 3381*b*c^3*d^2*e^8
 + 2793*(3*b^2*c^2 + 2*a*c^3)*d*e^9 + 2261*(b^3*c + 3*a*b*c^2)*e^10)*x^7 -
231*(4*c^4*d^4*e^6 - 21*b*c^3*d^3*e^7 - 3135*(3*b^2*c^2 + 2*a*c^3)*d^2*e^8
- 10013*(b^3*c + 3*a*b*c^2)*d*e^9 - 969*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^10
)*x^6 + 63*(16*c^4*d^5*e^5 - 84*b*c^3*d^4*e^6 + 57*(3*b^2*c^2 + 2*a*c^3)*d^
3*e^7 + 22933*(b^3*c + 3*a*b*c^2)*d^2*e^8 + 8721*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d*e^9 + 12597*(a*b^3 + 3*a^2*b*c)*e^10)*x^5 - 7*(160*c^4*d^6*e^4 - 840
*b*c^3*d^5*e^5 + 570*(3*b^2*c^2 + 2*a*c^3)*d^4*e^6 - 1615*(b^3*c + 3*a*b*c^
2)*d^3*e^7 - 51357*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^8 - 289731*(a*b^3 +
 3*a^2*b*c)*d*e^9 - 46189*(3*a^2*b^2 + 2*a^3*c)*e^10)*x^4 + (1280*c^4*d^7*e
^3 - 6720*b*c^3*d^6*e^4 + 415701*a^3*b*e^10 + 4560*(3*b^2*c^2 + 2*a*c^3)*d^
5*e^5 - 12920*(b^3*c + 3*a*b*c^2)*d^4*e^6 + 4845*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^3*e^7 + 1423461*(a*b^3 + 3*a^2*b*c)*d^2*e^8 + 877591*(3*a^2*b^2 + 2*
a^3*c)*d*e^9)*x^3 - 3*(512*c^4*d^8*e^2 - 2688*b*c^3*d^7*e^3 - 415701*a^3*b*
d*e^9 + 1824*(3*b^2*c^2 + 2*a*c^3)*d^6*e^4 - 5168*(b^3*c + 3*a*b*c^2)*d^5*e
^5 + 1938*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^6 - 12597*(a*b^3 + 3*a^2*b*c
)*d^3*e^7 - 230945*(3*a^2*b^2 + 2*a^3*c)*d^2*e^8)*x^2 + (2048*c^4*d^9*e - 1
0752*b*c^3*d^8*e^2 + 1247103*a^3*b*d^2*e^8 + 7296*(3*b^2*c^2 + 2*a*c^3)*d^7
*e^3 - 20672*(b^3*c + 3*a*b*c^2)*d^6*e^4 + 7752*(b^4 + 12*a*b^2*c + 6*a^2*c
^2)*d^5*e^5 - 50388*(a*b^3 + 3*a^2*b*c)*d^4*e^6 + 46189*(3*a^2*b^2 + 2*a^3*
c)*d^3*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.59, size = 4552, normalized size = 10.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/14549535*(14549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d^3*e^(-
1) + 9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d^3*e^(-1) + 29099
07*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*
d^3*e^(-2) + 8729721*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*b*c*d^3*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d^3*e^(-3) + 49
88412*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b^2*c*d^3*e^(-3) + 2494206*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*
d^3*e^(-3) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d^3
*e^(-4) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d^3*
e^(-4) + 188955*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c^2*d^3*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*d^3*e^(-5) + 33915*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*b*c^3*d^3*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3
465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)
*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
 d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*d^3*e^(-7) + 8729721*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b^2*d^2*e^(-1)
+ 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^3*c*d^2*e^(-1) + 3741309*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^2*e^(-2) + 11223927*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*a^2*b*c*d^2*e^(-2) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*b^4*d^2*e^(-3) + 1662804*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a*b^2*c*d^2*e^(-3) + 831402*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*a^2*c^2*d^2*e^(-3) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/
2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^
(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*c*d^2*e^(-4) + 944775*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*d^2*e^
(-4) + 130815*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
 d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*
(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*c^2*d^2*e^(-5) + 87210*(2
31*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*
d^5 + 3003*sqrt(x*e + d)*d^6)*a*c^3*d^2*e^(-5) + 47481*(429*(x*e + d)^(15/2
) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^
(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(
x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b*c^3*d^2*e^(-6) + 798*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*c^4*d^2*e^(-7) + 14549535*sqrt(x*e + d)*a^3*b*d^3 + 1
4549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^2 + 3741309*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a^2*b^2*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*c*d*e^(-1) + 415701*(
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^3*d*e^(-2) + 1247103*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b*c*d*e^(-2) + 62985*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d*e^(
-3) + 755820*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*a*b^2*c*d*e^(-3) + 377910*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*c^2*d*e^(-3) + 72675*(231*(x*e +
 d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
 + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 300
3*sqrt(x*e + d)*d^6)*b^3*c*d*e^(-4) + 218025*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*a*b*c^2*d*e^(-4) + 61047*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
+ 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^
(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sq
rt(x*e + d)*d^7)*b^2*c^2*d*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*c^3*d*e^(-5) + 2793*(6435*(x*e + d)^(17/2
) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 6
12612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
d)*d^8)*b*c^3*d*e^(-6) + 378*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17
/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 264537
0*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7
/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945
*sqrt(x*e + d)*d^9)*c^4*d*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b*d + 138567*(35*(x*e + d)^(9/2) - 18
0*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 3
15*sqrt(x*e + d)*d^4)*a^2*b^2*e^(-1) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*a^3*c*e^(-1) + 62985*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^3*e^(-2) + 188955*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b*c*e^(-2) +
 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2
)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d
)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^4*e^(-3) + 58140*(231*(x*e + d)^(13
/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(
7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(
x*e + d)*d^6)*a*b^2*c*e^(-3) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*c^
2*e^(-3) + 11305*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x
*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
- 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d
)*d^7)*b^3*c*e^(-4) + 33915*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
 + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)
^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*s
qrt(x*e + d)*d^7)*a*b*c^2*e^(-4) + 1197*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^2*c^
2*e^(-5) + 798*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(
x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*
d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e
 + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*c^3*e^(-5) + 441*(12155*(x*e
+ d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 149
2260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d
)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 6
92835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b*c^3*e^(-6) + 30*(46
189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)
*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221
108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d
)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 9
69969*sqrt(x*e + d)*d^10)*c^4*e^(-7) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b)*e^(-1)
```

maple [B] time = 0.05, size = 795, normalized size = 1.86

$$2\,(ex+d)^{\frac{7}{2}}\left(277134c^4e^7x^7+1072071b\,c^3e^7x^6-204204c^4d\,e^6x^6+1027026a\,c^3e^7x^5+1540539b^2c^2e^7x^5-7567\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(277134*c^4*e^7*x^7+1072071*b*c^3*e^7*x^6-204204*c^
4*d*e^6*x^6+1027026*a*c^3*e^7*x^5+1540539*b^2*c^2*e^7*x^5-756756*b*c^3*d*e^
6*x^5+144144*c^4*d^2*e^5*x^5+2909907*a*b*c^2*e^7*x^4-684684*a*c^3*d*e^6*x^4
+969969*b^3*c*e^7*x^4-1027026*b^2*c^2*d*e^6*x^4+504504*b*c^3*d^2*e^5*x^4-96
096*c^4*d^3*e^4*x^4+1343034*a^2*c^2*e^7*x^3+2686068*a*b^2*c*e^7*x^3-1790712
*a*b*c^2*d*e^6*x^3+421344*a*c^3*d^2*e^5*x^3+223839*b^4*e^7*x^3-596904*b^3*c
*d*e^6*x^3+632016*b^2*c^2*d^2*e^5*x^3-310464*b*c^3*d^3*e^4*x^3+59136*c^4*d^
4*e^3*x^3+2380833*a^2*b*c*e^7*x^2-732564*a^2*c^2*d*e^6*x^2+793611*a*b^3*e^7
*x^2-1465128*a*b^2*c*d*e^6*x^2+976752*a*b*c^2*d^2*e^5*x^2-229824*a*c^3*d^3*
e^4*x^2-122094*b^4*d*e^6*x^2+325584*b^3*c*d^2*e^5*x^2-344736*b^2*c^2*d^3*e^
4*x^2+169344*b*c^3*d^4*e^3*x^2-32256*c^4*d^5*e^2*x^2+646646*a^3*c*e^7*x+969
969*a^2*b^2*e^7*x-1058148*a^2*b*c*d*e^6*x+325584*a^2*c^2*d^2*e^5*x-352716*a
*b^3*d*e^6*x+651168*a*b^2*c*d^2*e^5*x-434112*a*b*c^2*d^3*e^4*x+102144*a*c^3
*d^4*e^3*x+54264*b^4*d^2*e^5*x-144704*b^3*c*d^3*e^4*x+153216*b^2*c^2*d^4*e^
3*x-75264*b*c^3*d^5*e^2*x+14336*c^4*d^6*e*x+415701*a^3*b*e^7-184756*a^3*c*d
*e^6-277134*a^2*b^2*d*e^6+302328*a^2*b*c*d^2*e^5-93024*a^2*c^2*d^3*e^4+1007
76*a*b^3*d^2*e^5-186048*a*b^2*c*d^3*e^4+124032*a*b*c^2*d^4*e^3-29184*a*c^3*
d^5*e^2-15504*b^4*d^3*e^4+41344*b^3*c*d^4*e^3-43776*b^2*c^2*d^5*e^2+21504*b
*c^3*d^6*e-4096*c^4*d^7)/e^8
```

maxima [A] time = 0.54, size = 645, normalized size = 1.51

$$2\left(277134\,(ex+d)^{\frac{21}{2}}c^4-1072071\left(2\,c^4d-bc^3e\right)(ex+d)^{\frac{19}{2}}+513513\left(14\,c^4d^2-14\,bc^3de+\left(3\,b^2c^2+2\,ac^3\right)e^2\right)(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/2909907*(277134*(e*x + d)^(21/2)*c^4 - 1072071*(2*c^4*d - b*c^3*e)*(e*x +
 d)^(19/2) + 513513*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)
*(e*x + d)^(17/2) - 969969*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*
a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(15/2) + 223839*(70*c^4*d
^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b
*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(13/2) - 793611
*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*
c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*
a^2*b*c)*e^5)*(e*x + d)^(11/2) + 323323*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(
3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12
*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 +
2*a^3*c)*e^6)*(e*x + d)^(9/2) - 415701*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e
^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2
*b^2 + 2*a^3*c)*d*e^6)*(e*x + d)^(7/2))/e^8
```

mupad [**B**]   time = 1.96, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{17/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{17\,e^8}+\frac{4\,c^4\,(d+e\,x)^{21/2}}{21\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{19/2}}{19\,e^8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(5/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(17/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(17*e^8) + (4*c^4*(d + e*x)^(21/2))/(21*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(19/2))/(19*e^8) + ((d + e*x)^(13/2)*(2*b^4*e^4 + 140*c^4*d^4 +
12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(13*e^8) + (2*(b*e
- 2*c*d)*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(7*e^8) + (6*(b*e - 2*c
*d)*(d + e*x)^(11/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*
a*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(11*e^8
) + (2*(d + e*x)^(9/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 +
2*a*c*e^2 - 14*b*c*d*e))/(9*e^8) + (2*c*(b*e - 2*c*d)*(d + e*x)^(15/2)*(b^2
*e^2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(3*e^8)
```

sympy [**A**]   time = 126.02, size = 3529, normalized size = 8.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*a**3*b*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**3*b*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 4*a**3*c*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*a**3*c
*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**2 + 4*a**3*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d
*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 6*a**2*b**2*d**2*(-d*(d +
e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 12*a**2*b**2*d*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a**2*b**2*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**2 + 18*a**2*b*c*d**2*(d**2*(d + e*x)**(3/2)/3 -
 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 36*a**2*b*c*d*(-d**3*(
d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d
 + e*x)**(9/2)/9)/e**3 + 18*a**2*b*c*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
 e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
e*x)**(11/2)/11)/e**3 + 12*a**2*c**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**
2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 +
24*a**2*c**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**
2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
+ 12*a**2*c**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*
(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11
+ (d + e*x)**(13/2)/13)/e**4 + 6*a*b**3*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d
*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 12*a*b**3*d*(-d**3*(d + e*
x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x
)**(9/2)/9)/e**3 + 6*a*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5
/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11
```

```
/2)/11)/e**3 + 24*a*b**2*c*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x
)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 48*a*b**2*
c*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)
**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 24*a*b**2
*c*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(
7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)*
*(13/2)/13)/e**4 + 30*a*b*c**2*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**5 + 60*a*b*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d
*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 30*a*b*c**2*(d**6*(d +
 e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 2
0*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(
13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 12*a*c**3*d**2*(-d**5*(d + e*x)**(3
/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e
*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 24*a
*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d +
 e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
- 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*a*c**3*(-d**7*
(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) +
35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*
x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 2*b
**4*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e
*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 4*b**4*d*(d**4*(d + e*x)**(3/2)/3
 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(
9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 2*b**4*(-d**5*(d + e*x)**(3/2)/3 + d*
*4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)
/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*b**3*c*d**2
*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(
7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*b**3*c*d*
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**5 + 10*b**3*c*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2
)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
+ e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 +
 18*b**2*c**2*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d
**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)
/11 + (d + e*x)**(13/2)/13)/e**6 + 36*b**2*c**2*d*(d**6*(d + e*x)**(3/2)/3
- 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x
)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d +
 e*x)**(15/2)/15)/e**6 + 18*b**2*c**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d
 + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 3
5*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)*
*(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 14*b*c**3*d**2*(d**6*(d + e*x)**(
3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(
d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13
 + (d + e*x)**(15/2)/15)/e**7 + 28*b*c**3*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d
**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)
/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d +
 e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 14*b*c**3*(d**8*(d + e*x)**
(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d
+ e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/
13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(
19/2)/19)/e**7 + 4*c**4*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**
(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d
 + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/1
5 + (d + e*x)**(17/2)/17)/e**8 + 8*c**4*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7
*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9
+ 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d
+ e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 +
 4*c**4*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d
+ e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/1
1 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(
d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.1608 $\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{11/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{11e^8}+2c^2$$

```
[Out] -2/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(5/2)/e^8+2/7*(a*e^2-b*d*e+
c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(7/2)/e^8-2/3*(-
b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+
d)^(9/2)/e^8+2/11*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2
*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(11/2)
/e^8-10/13*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^(1
3/2)/e^8+2/5*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(15/2)/e
^8-14/17*c^3*(-b*e+2*c*d)*(e*x+d)^(17/2)/e^8+4/19*c^4*(e*x+d)^(19/2)/e^8
```

Rubi [A] time = 0.24, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{11/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{11e^8}+2c^2$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(5/2))/(5*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(7/2))/(7*e^8) - (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(9/2))/(3*e^8) + (2*(70*c^4*d^4
 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6
*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(11/2))/(11*e^8) -
(10*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(
13/2))/(13*e^8) + (2*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(15/2))/(5*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(17/2))/(17*e^8) +
 (4*c^4*(d + e*x)^(19/2))/(19*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^{3/2}\left(a+bx+cx^2\right)^3\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{3/2}}{e^7}+\frac{\left(cd^2-bde+ae^2\right)}{}\right.$$

$$= -\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{5/2}}{5e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2}{}$$

Mathematica [A] time = 0.62, size = 600, normalized size = 1.41

$$\frac{2(d+ex)^{5/2}\left(-969c^2e^2\left(26a^2e^2\left(16d^3-40d^2ex+70de^2x^2-105e^3x^3\right)-5abe\left(128d^4-320d^3ex+560d^2e^2x^2-\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-14*c^4*(2048*d^7 - 5120*d^6*e*x + 8960*d^5*e^2*x^2 - 1
3440*d^4*e^3*x^3 + 18480*d^3*e^4*x^4 - 24024*d^2*e^5*x^5 + 30030*d*e^6*x^6
- 36465*e^7*x^7) + 4199*b*e^4*(231*a^3*e^3 + 99*a^2*b*e^2*(-2*d + 5*e*x) +
11*a*b^2*e*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + b^3*(-16*d^3 + 40*d^2*e*x - 70
*d*e^2*x^2 + 105*e^3*x^3)) + 323*c*e^3*(858*a^3*e^3*(-2*d + 5*e*x) + 429*a^
2*b*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 156*a*b^2*e*(-16*d^3 + 40*d^2*e*x
 - 70*d*e^2*x^2 + 105*e^3*x^3) + 5*b^3*(128*d^4 - 320*d^3*e*x + 560*d^2*e^2
*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)) - 969*c^2*e^2*(26*a^2*e^2*(16*d^3 - 4
0*d^2*e*x + 70*d*e^2*x^2 - 105*e^3*x^3) - 5*a*b*e*(128*d^4 - 320*d^3*e*x +
560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4) + b^2*(256*d^5 - 640*d^4*e*
x + 1120*d^3*e^2*x^2 - 1680*d^2*e^3*x^3 + 2310*d*e^4*x^4 - 3003*e^5*x^5)) +
 19*c^3*e*(34*a*e*(-256*d^5 + 640*d^4*e*x - 1120*d^3*e^2*x^2 + 1680*d^2*e^3
*x^3 - 2310*d*e^4*x^4 + 3003*e^5*x^5) + 7*b*(1024*d^6 - 2560*d^5*e*x + 4480
*d^4*e^2*x^2 - 6720*d^3*e^3*x^3 + 9240*d^2*e^4*x^4 - 12012*d*e^5*x^5 + 1501
5*e^6*x^6))))/(4849845*e^8)
```

fricas [B] time = 0.89, size = 958, normalized size = 2.24

$$\frac{2\left(510510\,c^{4}e^{9}x^{9} - 28672\,c^{4}d^{9} + 136192\,bc^{3}d^{8}e + 969969\,a^{3}bd^{2}e^{7} - 82688\left(3\,b^{2}c^{2} + 2\,ac^{3}\right)d^{7}e^{2} + 206720\left(b^{3}c + 3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 2/4849845*(510510*c^4*e^9*x^9 - 28672*c^4*d^9 + 136192*b*c^3*d^8*e + 969969
*a^3*b*d^2*e^7 - 82688*(3*b^2*c^2 + 2*a*c^3)*d^7*e^2 + 206720*(b^3*c + 3*a*
b*c^2)*d^6*e^3 - 67184*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*e^4 + 369512*(a*b
^3 + 3*a^2*b*c)*d^4*e^5 - 277134*(3*a^2*b^2 + 2*a^3*c)*d^3*e^6 + 15015*(40*
c^4*d*e^8 + 133*b*c^3*e^9)*x^8 + 3003*(2*c^4*d^2*e^7 + 798*b*c^3*d*e^8 + 32
3*(3*b^2*c^2 + 2*a*c^3)*e^9)*x^7 - 231*(28*c^4*d^3*e^6 - 133*b*c^3*d^2*e^7
- 5168*(3*b^2*c^2 + 2*a*c^3)*d*e^8 - 8075*(b^3*c + 3*a*b*c^2)*e^9)*x^6 + 21
*(336*c^4*d^4*e^5 - 1596*b*c^3*d^3*e^6 + 969*(3*b^2*c^2 + 2*a*c^3)*d^2*e^7
+ 113050*(b^3*c + 3*a*b*c^2)*d*e^8 + 20995*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e
^9)*x^5 - 35*(224*c^4*d^5*e^4 - 1064*b*c^3*d^4*e^5 + 646*(3*b^2*c^2 + 2*a*c
^3)*d^3*e^6 - 1615*(b^3*c + 3*a*b*c^2)*d^2*e^7 - 16796*(b^4 + 12*a*b^2*c +
6*a^2*c^2)*d*e^8 - 46189*(a*b^3 + 3*a^2*b*c)*e^9)*x^4 + 5*(1792*c^4*d^6*e^3
 - 8512*b*c^3*d^5*e^4 + 5168*(3*b^2*c^2 + 2*a*c^3)*d^4*e^5 - 12920*(b^3*c +
 3*a*b*c^2)*d^3*e^6 + 4199*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^7 + 461890*
(a*b^3 + 3*a^2*b*c)*d*e^8 + 138567*(3*a^2*b^2 + 2*a^3*c)*e^9)*x^3 - 3*(3584
*c^4*d^7*e^2 - 17024*b*c^3*d^6*e^3 - 323323*a^3*b*e^9 + 10336*(3*b^2*c^2 +
2*a*c^3)*d^5*e^4 - 25840*(b^3*c + 3*a*b*c^2)*d^4*e^5 + 8398*(b^4 + 12*a*b^2
*c + 6*a^2*c^2)*d^3*e^6 - 46189*(a*b^3 + 3*a^2*b*c)*d^2*e^7 - 369512*(3*a^2
*b^2 + 2*a^3*c)*d*e^8)*x^2 + (14336*c^4*d^8*e - 68096*b*c^3*d^7*e^2 + 19399
38*a^3*b*d*e^8 + 41344*(3*b^2*c^2 + 2*a*c^3)*d^6*e^3 - 103360*(b^3*c + 3*a*
b*c^2)*d^5*e^4 + 33592*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^5 - 184756*(a*b
^3 + 3*a^2*b*c)*d^3*e^6 + 138567*(3*a^2*b^2 + 2*a^3*c)*d^2*e^7)*x)*sqrt(e*x
 + d)/e^8
```

giac [B] time = 0.37, size = 3123, normalized size = 7.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2/14549535*(14549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d^2*e^(-
1) + 9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d^2*e^(-1) + 29099
```

```
07*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*
d^2*e^(-2) + 8729721*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*b*c*d^2*e^(-2) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d^2*e^(-3) + 49
88412*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a*b^2*c*d^2*e^(-3) + 2494206*(5*(x*e + d)^(7/2) - 21*
(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*
d^2*e^(-3) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d^2
*e^(-4) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d^2*
e^(-4) + 188955*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d
)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqr
t(x*e + d)*d^5)*b^2*c^2*d^2*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*d^2*e^(-5) + 33915*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*b*c^3*d^2*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3
465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)
*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
 d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*d^2*e^(-7) + 5819814*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b^2*d*e^(-1) +
3879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^3*c*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d*e^(-2) + 7482618*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*a^2*b*c*d*e^(-2) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*b^4*d*e^(-3) + 1108536*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*
(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^
2*c*d*e^(-3) + 554268*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*c^2
*d*e^(-3) + 209950*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*b^3*c*d*e^(-4) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e
+ d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x
*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*d*e^(-4) + 87210*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
 3003*sqrt(x*e + d)*d^6)*b^2*c^2*d*e^(-5) + 58140*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*a*c^3*d*e^(-5) + 31654*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*b*c^3*d*e^(-6) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*
e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e +
d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^4*d
*e^(-7) + 14549535*sqrt(x*e + d)*a^3*b*d^2 + 9699690*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^3*b*d + 1247103*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^2*e^(-1) + 831402*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*a^3*c*e^(-1) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a*b^3*e^(-2) + 415701*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*a^2*b*c*e^(-2) + 20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*b^4*e^(-3) + 251940*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^2*c*e^(-3) + 125970*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*c^2
*e^(-3) + 24225*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*c*e^(-4) + 72675*(231*(
x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580
*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
+ 3003*sqrt(x*e + d)*d^6)*a*b*c^2*e^(-4) + 20349*(429*(x*e + d)^(15/2) - 34
65*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*
d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^2*c^2*e^(-5) + 13566*(429*(x*e + d
)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*
e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 +
15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*c^3*e^(-5) + 931*(643
5*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2
 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e +
 d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1
09395*sqrt(x*e + d)*d^8)*b*c^3*e^(-6) + 126*(12155*(x*e + d)^(19/2) - 12226
5*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/
2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 27713
40*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/
2)*d^8 - 230945*sqrt(x*e + d)*d^9)*c^4*e^(-7) + 969969*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b)*e^(-1)
```

maple [**B**] time = 0.05, size = 795, normalized size = 1.86

$$2\,(ex+d)^{\frac{5}{2}}\left(510510c^4e^7x^7+1996995b\,c^3e^7x^6-420420c^4d\,e^6x^6+1939938a\,c^3e^7x^5+2909907b^2c^2e^7x^5-159759\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 2/4849845*(e*x+d)^(5/2)*(510510*c^4*e^7*x^7+1996995*b*c^3*e^7*x^6-420420*c^
4*d*e^6*x^6+1939938*a*c^3*e^7*x^5+2909907*b^2*c^2*e^7*x^5-1597596*b*c^3*d*e
^6*x^5+336336*c^4*d^2*e^5*x^5+5595975*a*b*c^2*e^7*x^4-1492260*a*c^3*d*e^6*x
^4+1865325*b^3*c*e^7*x^4-2238390*b^2*c^2*d*e^6*x^4+1228920*b*c^3*d^2*e^5*x^
4-258720*c^4*d^3*e^4*x^4+2645370*a^2*c^2*e^7*x^3+5290740*a*b^2*c*e^7*x^3-40
69800*a*b*c^2*d*e^6*x^3+1085280*a*c^3*d^2*e^5*x^3+440895*b^4*e^7*x^3-135660
0*b^3*c*d*e^6*x^3+1627920*b^2*c^2*d^2*e^5*x^3-893760*b*c^3*d^3*e^4*x^3+1881
60*c^4*d^4*e^3*x^3+4849845*a^2*b*c*e^7*x^2-1763580*a^2*c^2*d*e^6*x^2+161661
5*a*b^3*e^7*x^2-3527160*a*b^2*c*d*e^6*x^2+2713200*a*b*c^2*d^2*e^5*x^2-72352
0*a*c^3*d^3*e^4*x^2-293930*b^4*d*e^6*x^2+904400*b^3*c*d^2*e^5*x^2-1085280*b
^2*c^2*d^3*e^4*x^2+595840*b*c^3*d^4*e^3*x^2-125440*c^4*d^5*e^2*x^2+1385670*
a^3*c*e^7*x+2078505*a^2*b^2*e^7*x-2771340*a^2*b*c*d*e^6*x+1007760*a^2*c^2*d
^2*e^5*x-923780*a*b^3*d*e^6*x+2015520*a*b^2*c*d^2*e^5*x-1550400*a*b*c^2*d^3
*e^4*x+413440*a*c^3*d^4*e^3*x+167960*b^4*d^2*e^5*x-516800*b^3*c*d^3*e^4*x+6
20160*b^2*c^2*d^4*e^3*x-340480*b*c^3*d^5*e^2*x+71680*c^4*d^6*e*x+969969*a^3
*b*e^7-554268*a^3*c*d*e^6-831402*a^2*b^2*d*e^6+1108536*a^2*b*c*d^2*e^5-4031
04*a^2*c^2*d^3*e^4+369512*a*b^3*d^2*e^5-806208*a*b^2*c*d^3*e^4+620160*a*b*c
^2*d^4*e^3-165376*a*c^3*d^5*e^2-67184*b^4*d^3*e^4+206720*b^3*c*d^4*e^3-2480
64*b^2*c^2*d^5*e^2+136192*b*c^3*d^6*e-28672*c^4*d^7)/e^8
```

maxima [**A**] time = 0.54, size = 645, normalized size = 1.51

$$2\left(510510\,(ex+d)^{\frac{19}{2}}c^4-1996995\left(2\,c^4d-bc^3e\right)(ex+d)^{\frac{17}{2}}+969969\left(14\,c^4d^2-14\,bc^3de+\left(3\,b^2c^2+2\,ac^3\right)e^2\right)(ex\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 2/4849845*(510510*(e*x + d)^(19/2)*c^4 - 1996995*(2*c^4*d - b*c^3*e)*(e*x +
 d)^(17/2) + 969969*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)
*(e*x + d)^(15/2) - 1865325*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2
*a*c^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(13/2) + 440895*(70*c^4*
d^4 - 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*
b*c^2)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(11/2) - 16166
15*(14*c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^
3*c + 3*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 +
3*a^2*b*c)*e^5)*(e*x + d)^(9/2) + 692835*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*
(3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 +
 2*a^3*c)*e^6)*(e*x + d)^(7/2) - 969969*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*
e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^
4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^
2*b^2 + 2*a^3*c)*d*e^6)*(e*x + d)^(5/2))/e^8
```

mupad [B] time = 0.12, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{15/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{15\,e^8}+\frac{4\,c^4\,(d+e\,x)^{19/2}}{19\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{17/2}}{17\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(3/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(15/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(15*e^8) + (4*c^4*(d + e*x)^(19/2))/(19*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(17/2))/(17*e^8) + ((d + e*x)^(11/2)*(2*b^4*e^4 + 140*c^4*d^4 +
12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(11*e^8) + (2*(b*e
- 2*c*d)*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(5*e^8) + (2*(b*e - 2*c
*d)*(d + e*x)^(9/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a
*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(3*e^8)
+ (2*(d + e*x)^(7/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*
a*c*e^2 - 14*b*c*d*e))/(7*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(13/2)*(b^2*
e^2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(13*e^8)
```

sympy [A] time = 77.35, size = 2122, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)*(c*x**2+b*x+a)**3,x)
```

```
[Out] a**3*b*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*a**3*b*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*a**3*c*d*(-d
*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*a**3*c*(d**2*(d + e*x)**
(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a**2*b**2*d
*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*a**2*b**2*(d**2*(d +
 e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 18*a**
2*b*c*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**3 + 18*a**2*b*c*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*a**2*c**2*d*(-d
**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
 + (d + e*x)**(9/2)/9)/e**4 + 12*a**2*c**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**
3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 +
 (d + e*x)**(11/2)/11)/e**4 + 6*a*b**3*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d
+ e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*a*b**3*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**3 + 24*a*b**2*c*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/
2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 24*a*b**2*c*(d**
4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/
7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*a*b*c**2*d*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 30*a*b*c**2*(-d*
*5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
+ 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)
/13)/e**5 + 12*a*c**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) -
 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(
11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 12*a*c**3*(d**6*(d + e*x)**(3/2)/3
- 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x
)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d +
 e*x)**(15/2)/15)/e**6 + 2*b**4*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*b**4*(
d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/
2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 10*b**3*c*d*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 10*b**3*c*(-d**
5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/
13)/e**5 + 18*b**2*c**2*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2)
 - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)*
*(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 18*b**2*c**2*(d**6*(d + e*x)**(3/
2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
+ e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 +
 (d + e*x)**(15/2)/15)/e**6 + 14*b*c**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5
*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)
/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(
15/2)/15)/e**7 + 14*b*c**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5
/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d +
 e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15
+ (d + e*x)**(17/2)/17)/e**7 + 4*c**4*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*
(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 -
 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x
)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 4*c**4*(d**8*(d + e*x)**(3/2)/3
 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)*
*(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28
*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/1
9)/e**8
```

3.1609 $\int (b+2cx)\sqrt{d+ex}\,\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=427

$$\frac{2(d+ex)^{9/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{9e^8}+6c^2($$

```
[Out] -2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(3/2)/e^8+2/5*(a*e^2-b*d*e+
c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(5/2)/e^8-6/7*(-
b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+
d)^(7/2)/e^8+2/9*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*
e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(9/2)/e
^8-10/11*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^(11/
2)/e^8+6/13*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(13/2)/e^
8-14/15*c^3*(-b*e+2*c*d)*(e*x+d)^(15/2)/e^8+4/17*c^4*(e*x+d)^(17/2)/e^8
```

Rubi [A] time = 0.24, antiderivative size = 427, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{9/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{9e^8}+6c^2($$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^3,x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(3/2))/(3*e^8) + (2*(
c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d
+ e*x)^(5/2))/(5*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2
 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(7/2))/(7*e^8) + (2*(70*c^4*d^4
 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6
*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(9/2))/(9*e^8) - (1
0*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(11
/2))/(11*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d +
e*x)^(13/2))/(13*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(15/2))/(15*e^8) +
(4*c^4*(d + e*x)^(17/2))/(17*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)\sqrt{d+ex}\,\left(a+bx+cx^2\right)^3\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3\sqrt{d+ex}}{e^7}+\left(cd^2-bde+ae^2\right)^2(1\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{3/2}}{3e^8}+2\left(cd^2-bde+ae^2\right)^2(1$$

Mathematica [A] time = 0.60, size = 601, normalized size = 1.41

$$2(d+ex)^{3/2}\left(-51c^2e^2\left(286a^2e^2\left(16d^3-24d^2ex+30de^2x^2-35e^3x^3\right)-65abe\left(128d^4-192d^3ex+240d^2e^2x^2-2\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-14*c^4*(2048*d^7 - 3072*d^6*e*x + 3840*d^5*e^2*x^2 - 4
480*d^4*e^3*x^3 + 5040*d^3*e^4*x^4 - 5544*d^2*e^5*x^5 + 6006*d*e^6*x^6 - 64
35*e^7*x^7) + 2431*b*e^4*(105*a^3*e^3 + 63*a^2*b*e^2*(-2*d + 3*e*x) + 9*a*b
^2*e*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + b^3*(-16*d^3 + 24*d^2*e*x - 30*d*e^2
*x^2 + 35*e^3*x^3)) + 221*c*e^3*(462*a^3*e^3*(-2*d + 3*e*x) + 297*a^2*b*e^2
*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 132*a*b^2*e*(-16*d^3 + 24*d^2*e*x - 30*d
*e^2*x^2 + 35*e^3*x^3) + 5*b^3*(128*d^4 - 192*d^3*e*x + 240*d^2*e^2*x^2 - 2
80*d*e^3*x^3 + 315*e^4*x^4)) - 51*c^2*e^2*(286*a^2*e^2*(16*d^3 - 24*d^2*e*x
 + 30*d*e^2*x^2 - 35*e^3*x^3) - 65*a*b*e*(128*d^4 - 192*d^3*e*x + 240*d^2*e
^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4) + 15*b^2*(256*d^5 - 384*d^4*e*x + 480
*d^3*e^2*x^2 - 560*d^2*e^3*x^3 + 630*d*e^4*x^4 - 693*e^5*x^5)) + 17*c^3*e*(
30*a*e*(-256*d^5 + 384*d^4*e*x - 480*d^3*e^2*x^2 + 560*d^2*e^3*x^3 - 630*d*
e^4*x^4 + 693*e^5*x^5) + 7*b*(1024*d^6 - 1536*d^5*e*x + 1920*d^4*e^2*x^2 -
2240*d^3*e^3*x^3 + 2520*d^2*e^4*x^4 - 2772*d*e^5*x^5 + 3003*e^6*x^6))))/(76
5765*e^8)
```

fricas [B] time = 0.83, size = 802, normalized size = 1.88

$$2\,\big(90090\,c^{4}e^{8}x^{8}-28672\,c^{4}d^{8}+121856\,bc^{3}d^{7}e+255255\,a^{3}bde^{7}-65280\,\big(3\,b^{2}c^{2}+2\,ac^{3}\big)d^{6}e^{2}+141440\,\big(b^{3}c+3\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/765765*(90090*c^4*e^8*x^8 - 28672*c^4*d^8 + 121856*b*c^3*d^7*e + 255255*a
^3*b*d*e^7 - 65280*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 141440*(b^3*c + 3*a*b*c^
2)*d^5*e^3 - 38896*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 175032*(a*b^3 +
 3*a^2*b*c)*d^3*e^5 - 102102*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6 + 3003*(2*c^4*d*
e^7 + 119*b*c^3*e^8)*x^7 - 231*(28*c^4*d^2*e^6 - 119*b*c^3*d*e^7 - 765*(3*b
^2*c^2 + 2*a*c^3)*e^8)*x^6 + 63*(112*c^4*d^3*e^5 - 476*b*c^3*d^2*e^6 + 255*
(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 5525*(b^3*c + 3*a*b*c^2)*e^8)*x^5 - 35*(224*c
^4*d^4*e^4 - 952*b*c^3*d^3*e^5 + 510*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 1105*(
b^3*c + 3*a*b*c^2)*d*e^7 - 2431*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*x^4 + 5
*(1792*c^4*d^5*e^3 - 7616*b*c^3*d^4*e^4 + 4080*(3*b^2*c^2 + 2*a*c^3)*d^3*e^
5 - 8840*(b^3*c + 3*a*b*c^2)*d^2*e^6 + 2431*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*
d*e^7 + 65637*(a*b^3 + 3*a^2*b*c)*e^8)*x^3 - 3*(3584*c^4*d^6*e^2 - 15232*b*
c^3*d^5*e^3 + 8160*(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 17680*(b^3*c + 3*a*b*c^2
)*d^3*e^5 + 4862*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 21879*(a*b^3 + 3*
a^2*b*c)*d*e^7 - 51051*(3*a^2*b^2 + 2*a^3*c)*e^8)*x^2 + (14336*c^4*d^7*e -
60928*b*c^3*d^6*e^2 + 255255*a^3*b*e^8 + 32640*(3*b^2*c^2 + 2*a*c^3)*d^5*e^
3 - 70720*(b^3*c + 3*a*b*c^2)*d^4*e^4 + 19448*(b^4 + 12*a*b^2*c + 6*a^2*c^2
)*d^3*e^5 - 87516*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 51051*(3*a^2*b^2 + 2*a^3*c)
*d*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.28, size = 1876, normalized size = 4.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/765765*(765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*d*e^(-1) + 5
10510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*d*e^(-1) + 153153*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*d*e^(-2) +
 459459*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^2*b*c*d*e^(-2) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^4*d*e^(-3) + 262548*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*a*b^2*c*d*e^(-3) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*c^2*d*e^(-3) + 12155*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*c*d*e^(-4) + 36465*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*c^2*d*e^(-4) + 9945*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*c^2*d*e^(-5)
 + 6630*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*a*c^3*d*e^(-5) + 1785*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b*c^3*d*e^(-6
) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(
11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(
x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^
4*d*e^(-7) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
 + d)*d^2)*a^2*b^2*e^(-1) + 102102*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*a^3*c*e^(-1) + 65637*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*e^(-2)
 + 196911*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^
2 - 35*sqrt(x*e + d)*d^3)*a^2*b*c*e^(-2) + 2431*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*b^4*e^(-3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*a*b^2*c*e^(-3) + 14586*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*a^2*c^2*e^(-3) + 5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*b^3*c*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b*c^2*e^(-4) + 2295*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
 3003*sqrt(x*e + d)*d^6)*b^2*c^2*e^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638
*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d
^6)*a*c^3*e^(-5) + 833*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12
285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2
)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x
*e + d)*d^7)*b*c^3*e^(-6) + 14*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15
/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*
(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d
^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*c^4*e^(-7) + 76
5765*sqrt(x*e + d)*a^3*b*d + 255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a
^3*b)*e^(-1)
```

maple [B] time = 0.05, size = 795, normalized size = 1.86

$$\frac{2 (ex+d)^{\frac{3}{2}} (90090c^4e^7x^7 + 357357b c^3e^7x^6 - 84084c^4d e^6x^6 + 353430a c^3e^7x^5 + 530145b^2c^2e^7x^5 - 329868b c^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/765765*(e*x+d)^(3/2)*(90090*c^4*e^7*x^7+357357*b*c^3*e^7*x^6-84084*c^4*d*
e^6*x^6+353430*a*c^3*e^7*x^5+530145*b^2*c^2*e^7*x^5-329868*b*c^3*d*e^6*x^5+
77616*c^4*d^2*e^5*x^5+1044225*a*b*c^2*e^7*x^4-321300*a*c^3*d*e^6*x^4+348075
*b^3*c*e^7*x^4-481950*b^2*c^2*d*e^6*x^4+299880*b*c^3*d^2*e^5*x^4-70560*c^4*
d^3*e^4*x^4+510510*a^2*c^2*e^7*x^3+1021020*a*b^2*c*e^7*x^3-928200*a*b*c^2*d
*e^6*x^3+285600*a*c^3*d^2*e^5*x^3+85085*b^4*e^7*x^3-309400*b^3*c*d*e^6*x^3+
428400*b^2*c^2*d^2*e^5*x^3-266560*b*c^3*d^3*e^4*x^3+62720*c^4*d^4*e^3*x^3+9
84555*a^2*b*c*e^7*x^2-437580*a^2*c^2*d*e^6*x^2+328185*a*b^3*e^7*x^2-875160*
a*b^2*c*d*e^6*x^2+795600*a*b*c^2*d^2*e^5*x^2-244800*a*c^3*d^3*e^4*x^2-72930
*b^4*d*e^6*x^2+265200*b^3*c*d^2*e^5*x^2-367200*b^2*c^2*d^3*e^4*x^2+228480*b
*c^3*d^4*e^3*x^2-53760*c^4*d^5*e^2*x^2+306306*a^3*c*e^7*x+459459*a^2*b^2*e^
7*x-787644*a^2*b*c*d*e^6*x+350064*a^2*c^2*d^2*e^5*x-262548*a*b^3*d*e^6*x+70
0128*a*b^2*c*d^2*e^5*x-636480*a*b*c^2*d^3*e^4*x+195840*a*c^3*d^4*e^3*x+5834
4*b^4*d^2*e^5*x-212160*b^3*c*d^3*e^4*x+293760*b^2*c^2*d^4*e^3*x-182784*b*c^
3*d^5*e^2*x+43008*c^4*d^6*e*x+255255*a^3*b*e^7-204204*a^3*c*d*e^6-306306*a^
2*b^2*d*e^6+525096*a^2*b*c*d^2*e^5-233376*a^2*c^2*d^3*e^4+175032*a*b^3*d^2*
e^5-466752*a*b^2*c*d^3*e^4+424320*a*b*c^2*d^4*e^3-130560*a*c^3*d^5*e^2-3889
6*b^4*d^3*e^4+141440*b^3*c*d^4*e^3-195840*b^2*c^2*d^5*e^2+121856*b*c^3*d^6*
e-28672*c^4*d^7)/e^8
```

maxima [A] time = 0.65, size = 645, normalized size = 1.51

$$2\left(90090\,(ex+d)^{\frac{17}{2}}c^4-357357\left(2\,c^4d-bc^3e\right)(ex+d)^{\frac{15}{2}}+176715\left(14\,c^4d^2-14\,bc^3de+\left(3\,b^2c^2+2\,ac^3\right)e^2\right)(ex+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3*(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/765765*(90090*(e*x + d)^(17/2)*c^4 - 357357*(2*c^4*d - b*c^3*e)*(e*x + d)
^(15/2) + 176715*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e
*x + d)^(13/2) - 348075*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c
^3)*d*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(11/2) + 85085*(70*c^4*d^4 -
 140*b*c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2
)*d*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(9/2) - 328185*(14*
c^4*d^5 - 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3
*a*b*c^2)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b
*c)*e^5)*(e*x + d)^(7/2) + 153153*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*
c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2
*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*
c)*e^6)*(e*x + d)^(5/2) - 255255*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3
*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 +
 2*a^3*c)*d*e^6)*(e*x + d)^(3/2))/e^8
```

mupad [B] time = 0.13, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{13/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{13\,e^8}+\frac{4\,c^4\,(d+e\,x)^{17/2}}{17\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{15/2}}{15\,e^8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^(13/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(13*e^8) + (4*c^4*(d + e*x)^(17/2))/(17*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(15/2))/(15*e^8) + ((d + e*x)^(9/2)*(2*b^4*e^4 + 140*c^4*d^4 + 1
2*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(9*e^8) + (2*(b*e -
2*c*d)*(d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e)^3)/(3*e^8) + (6*(b*e - 2*c*d
)*(d + e*x)^(7/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c
^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(7*e^8) +
(2*(d + e*x)^(5/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*
c*e^2 - 14*b*c*d*e))/(5*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(11/2)*(b^2*e^
2 + 7*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(11*e^8)
```

sympy [A] time = 13.41, size = 843, normalized size = 1.97

$$2\left(\frac{2c^4(d+ex)^{\frac{17}{2}}}{17e^7}+\frac{(d+ex)^{\frac{15}{2}}\left(7bc^3e-14c^4d\right)}{15e^7}+\frac{(d+ex)^{\frac{13}{2}}\left(6ac^3e^2+9b^2c^2e^2-42bc^3de+42c^4d^2\right)}{13e^7}+\frac{(d+ex)^{\frac{11}{2}}\left(15abc^2e^3-30ac^3de^2+5b^3ce^3-45b^2c^2de\right.}{11e^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(2*c**4*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(7*b*c**3*e - 14*
c**4*d)/(15*e**7) + (d + e*x)**(13/2)*(6*a*c**3*e**2 + 9*b**2*c**2*e**2 - 4
2*b*c**3*d*e + 42*c**4*d**2)/(13*e**7) + (d + e*x)**(11/2)*(15*a*b*c**2*e**
3 - 30*a*c**3*d*e**2 + 5*b**3*c*e**3 - 45*b**2*c**2*d*e**2 + 105*b*c**3*d**
2*e - 70*c**4*d**3)/(11*e**7) + (d + e*x)**(9/2)*(6*a**2*c**2*e**4 + 12*a*b
**2*c*e**4 - 60*a*b*c**2*d*e**3 + 60*a*c**3*d**2*e**2 + b**4*e**4 - 20*b**3
*c*d*e**3 + 90*b**2*c**2*d**2*e**2 - 140*b*c**3*d**3*e + 70*c**4*d**4)/(9*e
**7) + (d + e*x)**(7/2)*(9*a**2*b*c*e**5 - 18*a**2*c**2*d*e**4 + 3*a*b**3*e
**5 - 36*a*b**2*c*d*e**4 + 90*a*b*c**2*d**2*e**3 - 60*a*c**3*d**3*e**2 - 3*
b**4*d*e**4 + 30*b**3*c*d**2*e**3 - 90*b**2*c**2*d**3*e**2 + 105*b*c**3*d**
4*e - 42*c**4*d**5)/(7*e**7) + (d + e*x)**(5/2)*(2*a**3*c*e**6 + 3*a**2*b**
2*e**6 - 18*a**2*b*c*d*e**5 + 18*a**2*c**2*d**2*e**4 - 6*a*b**3*d*e**5 + 36
*a*b**2*c*d**2*e**4 - 60*a*b*c**2*d**3*e**3 + 30*a*c**3*d**4*e**2 + 3*b**4*
d**2*e**4 - 20*b**3*c*d**3*e**3 + 45*b**2*c**2*d**4*e**2 - 42*b*c**3*d**5*e
 + 14*c**4*d**6)/(5*e**7) + (d + e*x)**(3/2)*(a**3*b*e**7 - 2*a**3*c*d*e**6
 - 3*a**2*b**2*d*e**6 + 9*a**2*b*c*d**2*e**5 - 6*a**2*c**2*d**3*e**4 + 3*a*
b**3*d**2*e**5 - 12*a*b**2*c*d**3*e**4 + 15*a*b*c**2*d**4*e**3 - 6*a*c**3*d
**5*e**2 - b**4*d**3*e**4 + 5*b**3*c*d**4*e**3 - 9*b**2*c**2*d**5*e**2 + 7*
b*c**3*d**6*e - 2*c**4*d**7)/(3*e**7))/e
```

3.1610 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=425

$$\frac{2(d+ex)^{7/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{6c^2(d+}{}$$

```
[Out] 2/3*(a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)
^(3/2)/e^8-6/5*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*
a*e+7*b*d))*(e*x+d)^(5/2)/e^8+2/7*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5
*b*d)-20*c^3*d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2)
)*(e*x+d)^(7/2)/e^8-10/9*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*
d))*(e*x+d)^(9/2)/e^8+6/11*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e
*x+d)^(11/2)/e^8-14/13*c^3*(-b*e+2*c*d)*(e*x+d)^(13/2)/e^8+4/15*c^4*(e*x+d)
^(15/2)/e^8-2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.23, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{2(d+ex)^{7/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{7e^8}+\frac{6c^2(d+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*Sqrt[d + e*x])/e^8 + (2*(c*d^2
- b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)
^(3/2))/(3*e^8) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2
*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(5/2))/(5*e^8) + (2*(70*c^4*d^4 + b^4
*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e
^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(7/2))/(7*e^8) - (10*c*(2
*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(9/2))/(9
*e^8) + (6*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(11
/2))/(11*e^8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(13/2))/(13*e^8) + (4*c^4*(
d + e*x)^(15/2))/(15*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{\sqrt{d+ex}}\,dx=\int\left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7\sqrt{d+ex}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(}{e^7}\right.$$

$$=-\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3\sqrt{d+ex}}{e^8}+\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e\right.}{3e^8}$$

Mathematica [A] time = 0.62, size = 599, normalized size = 1.41

$$\frac{2\sqrt{d+ex}\left(-39c^2e^2\left(198a^2e^2\left(16d^3-8d^2ex+6de^2x^2-5e^3x^3\right)-55abe\left(128d^4-64d^3ex+48d^2e^2x^2-40de^3x^3+3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-14*c^4*(2048*d^7 - 1024*d^6*e*x + 768*d^5*e^2*x^2 - 640*
d^4*e^3*x^3 + 560*d^3*e^4*x^4 - 504*d^2*e^5*x^5 + 462*d*e^6*x^6 - 429*e^7*x
^7) + 1287*b*e^4*(35*a^3*e^3 + 35*a^2*b*e^2*(-2*d + e*x) + 7*a*b^2*e*(8*d^2
 - 4*d*e*x + 3*e^2*x^2) + b^3*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^
3)) + 143*c*e^3*(210*a^3*e^3*(-2*d + e*x) + 189*a^2*b*e^2*(8*d^2 - 4*d*e*x
+ 3*e^2*x^2) + 108*a*b^2*e*(-16*d^3 + 8*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3)
+ 5*b^3*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)
) - 39*c^2*e^2*(198*a^2*e^2*(16*d^3 - 8*d^2*e*x + 6*d*e^2*x^2 - 5*e^3*x^3)
- 55*a*b*e*(128*d^4 - 64*d^3*e*x + 48*d^2*e^2*x^2 - 40*d*e^3*x^3 + 35*e^4*x
^4) + 15*b^2*(256*d^5 - 128*d^4*e*x + 96*d^3*e^2*x^2 - 80*d^2*e^3*x^3 + 70*
d*e^4*x^4 - 63*e^5*x^5)) + 15*c^3*e*(26*a*e*(-256*d^5 + 128*d^4*e*x - 96*d^
3*e^2*x^2 + 80*d^2*e^3*x^3 - 70*d*e^4*x^4 + 63*e^5*x^5) + 7*b*(1024*d^6 - 5
12*d^5*e*x + 384*d^4*e^2*x^2 - 320*d^3*e^3*x^3 + 280*d^2*e^4*x^4 - 252*d*e^
5*x^5 + 231*e^6*x^6))))/(45045*e^8)
```

fricas [A] time = 0.81, size = 648, normalized size = 1.52

$$\frac{2\left(6006\,c^4e^7x^7 - 28672\,c^4d^7 + 107520\,bc^3d^6e + 45045\,a^3be^7 - 49920\left(3\,b^2c^2 + 2\,ac^3\right)d^5e^2 + 91520\left(b^3c + 3\,abc\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/45045*(6006*c^4*e^7*x^7 - 28672*c^4*d^7 + 107520*b*c^3*d^6*e + 45045*a^3*
b*e^7 - 49920*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 91520*(b^3*c + 3*a*b*c^2)*d^4
*e^3 - 20592*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 72072*(a*b^3 + 3*a^2*
b*c)*d^2*e^5 - 30030*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 1617*(4*c^4*d*e^6 - 15*b
*c^3*e^7)*x^6 + 63*(112*c^4*d^2*e^5 - 420*b*c^3*d*e^6 + 195*(3*b^2*c^2 + 2*
a*c^3)*e^7)*x^5 - 35*(224*c^4*d^3*e^4 - 840*b*c^3*d^2*e^5 + 390*(3*b^2*c^2
+ 2*a*c^3)*d*e^6 - 715*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + 5*(1792*c^4*d^4*e^3 -
 6720*b*c^3*d^3*e^4 + 3120*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 5720*(b^3*c + 3*
a*b*c^2)*d*e^6 + 1287*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 3*(3584*c^4
*d^5*e^2 - 13440*b*c^3*d^4*e^3 + 6240*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 11440
*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 2574*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 -
9009*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + (14336*c^4*d^6*e - 53760*b*c^3*d^5*e^2
+ 24960*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 45760*(b^3*c + 3*a*b*c^2)*d^3*e^4 +
 10296*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 36036*(a*b^3 + 3*a^2*b*c)*d
*e^6 + 15015*(3*a^2*b^2 + 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.23, size = 841, normalized size = 1.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b^2*e^(-1) + 30030
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*c*e^(-1) + 9009*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^3*e^(-2) + 27027*(3*(
x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*c*e^(-2
) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*b^4*e^(-3) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*c*e^(-3)
+ 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*a^2*c^2*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*b^3*c*e^(-4) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*a*b*c^2*e^(-4) + 585*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*b^2*c^2*e^(-5) + 390*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*c^3*e^(-5) + 105*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*b*c^3*e^(-6) + 14*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*c^4*e^(-7) + 45045*sqrt(x*e + d)*a^3*b)*e^(
-1)
```

maple [B] time = 0.06, size = 795, normalized size = 1.87

$$2\sqrt{ex+d}\,\left(6006c^4e^7x^7 + 24255b\,c^3e^7x^6 - 6468c^4d\,e^6x^6 + 24570a\,c^3e^7x^5 + 36855b^2c^2e^7x^5 - 26460b\,c^3d\,e^6x^5 + 7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(1/2)*(6006*c^4*e^7*x^7+24255*b*c^3*e^7*x^6-6468*c^4*d*e^6*
x^6+24570*a*c^3*e^7*x^5+36855*b^2*c^2*e^7*x^5-26460*b*c^3*d*e^6*x^5+7056*c^
4*d^2*e^5*x^5+75075*a*b*c^2*e^7*x^4-27300*a*c^3*d*e^6*x^4+25025*b^3*c*e^7*x
^4-40950*b^2*c^2*d*e^6*x^4+29400*b*c^3*d^2*e^5*x^4-7840*c^4*d^3*e^4*x^4+386
10*a^2*c^2*e^7*x^3+77220*a*b^2*c*e^7*x^3-85800*a*b*c^2*d*e^6*x^3+31200*a*c^
3*d^2*e^5*x^3+6435*b^4*e^7*x^3-28600*b^3*c*d*e^6*x^3+46800*b^2*c^2*d^2*e^5*
x^3-33600*b*c^3*d^3*e^4*x^3+8960*c^4*d^4*e^3*x^3+81081*a^2*b*c*e^7*x^2-4633
2*a^2*c^2*d*e^6*x^2+27027*a*b^3*e^7*x^2-92664*a*b^2*c*d*e^6*x^2+102960*a*b*
c^2*d^2*e^5*x^2-37440*a*c^3*d^3*e^4*x^2-7722*b^4*d*e^6*x^2+34320*b^3*c*d^2*
e^5*x^2-56160*b^2*c^2*d^3*e^4*x^2+40320*b*c^3*d^4*e^3*x^2-10752*c^4*d^5*e^2
*x^2+30030*a^3*c*e^7*x+45045*a^2*b^2*e^7*x-108108*a^2*b*c*d*e^6*x+61776*a^2
*c^2*d^2*e^5*x-36036*a*b^3*d*e^6*x+123552*a*b^2*c*d^2*e^5*x-137280*a*b*c^2*
d^3*e^4*x+49920*a*c^3*d^4*e^3*x+10296*b^4*d^2*e^5*x-45760*b^3*c*d^3*e^4*x+7
4880*b^2*c^2*d^4*e^3*x-53760*b*c^3*d^5*e^2*x+14336*c^4*d^6*e*x+45045*a^3*b*
e^7-60060*a^3*c*d*e^6-90090*a^2*b^2*d*e^6+216216*a^2*b*c*d^2*e^5-123552*a^2
*c^2*d^3*e^4+72072*a*b^3*d^2*e^5-247104*a*b^2*c*d^3*e^4+274560*a*b*c^2*d^4*
e^3-99840*a*c^3*d^5*e^2-20592*b^4*d^3*e^4+91520*b^3*c*d^4*e^3-149760*b^2*c^
2*d^5*e^2+107520*b*c^3*d^6*e-28672*c^4*d^7)/e^8
```

maxima [A] time = 0.55, size = 645, normalized size = 1.52

$$2\left(6006\,(ex+d)^{\frac{15}{2}}c^4 - 24255\left(2\,c^4d - bc^3e\right)(ex+d)^{\frac{13}{2}} + 12285\left(14\,c^4d^2 - 14\,bc^3de + \left(3\,b^2c^2 + 2\,ac^3\right)e^2\right)(ex+d)^{\frac{11}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/45045*(6006*(e*x + d)^(15/2)*c^4 - 24255*(2*c^4*d - b*c^3*e)*(e*x + d)^(1
3/2) + 12285*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x +
 d)^(11/2) - 25025*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d
*e^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(9/2) + 6435*(70*c^4*d^4 - 140*b*
c^3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3
 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(7/2) - 27027*(14*c^4*d^5
- 35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2
)*d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)
*(e*x + d)^(5/2) + 15015*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a
*c^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^
2*c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*(
e*x + d)^(3/2) - 45045*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^
2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c +
6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*
d*e^6)*sqrt(e*x + d))/e^8
```

mupad [B] time = 1.93, size = 444, normalized size = 1.04

$$\frac{(d+e\,x)^{11/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{11\,e^8}+\frac{4\,c^4\,(d+e\,x)^{15/2}}{15\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{13/2}}{13\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*
e))/(11*e^8) + (4*c^4*(d + e*x)^(15/2))/(15*e^8) - ((28*c^4*d - 14*b*c^3*e)
*(d + e*x)^(13/2))/(13*e^8) + ((d + e*x)^(7/2)*(2*b^4*e^4 + 140*c^4*d^4 + 1
2*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 -
280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(7*e^8) + (2*(b*e -
2*c*d)*(d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e)^3)/e^8 + (6*(b*e - 2*c*d)*(d
 + e*x)^(5/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c^2*d
^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/(5*e^8) + (2*(
d + e*x)^(3/2)*(a*e^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*c*e^
2 - 14*b*c*d*e))/(3*e^8) + (10*c*(b*e - 2*c*d)*(d + e*x)^(9/2)*(b^2*e^2 + 7
*c^2*d^2 + 3*a*c*e^2 - 7*b*c*d*e))/(9*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1611 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=421

$$\frac{2(d+ex)^{5/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{5e^8}+\frac{2c^2(d+}{}$$

```
[Out] -2*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*
(e*x+d)^(3/2)/e^8+2/5*(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3
*d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(5
/2)/e^8-10/7*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^
(7/2)/e^8+2/3*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(9/2)/e
^8-14/11*c^3*(-b*e+2*c*d)*(e*x+d)^(11/2)/e^8+4/13*c^4*(e*x+d)^(13/2)/e^8+2*
(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^(1/2)+2*(a*e^2-b*d*e+c*d^2)^
2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.24, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.036$, Rules used = {771}

$$\frac{2(d+ex)^{5/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{5e^8}+\frac{2c^2(d+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(e^8*Sqrt[d + e*x]) + (2*(c*d^2
 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*Sqrt[d +
 e*x])/e^8 - (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^2*e^2
- c*e*(7*b*d - 3*a*e))*(d + e*x)^(3/2))/e^8 + (2*(70*c^4*d^4 + b^4*e^4 - 4*
b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^
2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(5/2))/(5*e^8) - (10*c*(2*c*d - b*
e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(7/2))/(7*e^8) + (
2*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(9/2))/(3*e^
8) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(11/2))/(11*e^8) + (4*c^4*(d + e*x)^(1
3/2))/(13*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{3/2}}\,dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{3/2}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(\right.}{e^7\sqrt{d+ex}}\right.$$

$$= \frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3}{e^8\sqrt{d+ex}}+\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7b\right.}{e^8}$$

Mathematica [A]   time = 0.54, size = 594, normalized size = 1.41

$$2\left(429c^2e^2\left(42a^2e^2\left(16d^3+8d^2ex-2de^2x^2+e^3x^3\right)+15abe\left(-128d^4-64d^3ex+16d^2e^2x^2-8de^3x^3+5e^4x^4\right)+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(70*c^4*(2048*d^7 + 1024*d^6*e*x - 256*d^5*e^2*x^2 + 128*d^4*e^3*x^3 - 8
0*d^3*e^4*x^4 + 56*d^2*e^5*x^5 - 42*d*e^6*x^6 + 33*e^7*x^7) + 3003*b*e^4*(-
5*a^3*e^3 + 15*a^2*b*e^2*(2*d + e*x) + 5*a*b^2*e*(-8*d^2 - 4*d*e*x + e^2*x^
2) + b^3*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)) + 429*c*e^3*(70*a^3*
e^3*(2*d + e*x) + 105*a^2*b*e^2*(-8*d^2 - 4*d*e*x + e^2*x^2) + 84*a*b^2*e*(
16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) - 5*b^3*(128*d^4 + 64*d^3*e*x -
 16*d^2*e^2*x^2 + 8*d*e^3*x^3 - 5*e^4*x^4)) + 429*c^2*e^2*(42*a^2*e^2*(16*d
^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + 15*a*b*e*(-128*d^4 - 64*d^3*e*x +
 16*d^2*e^2*x^2 - 8*d*e^3*x^3 + 5*e^4*x^4) + 5*b^2*(256*d^5 + 128*d^4*e*x -
 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*x^4 + 7*e^5*x^5)) - 65*c^3*e*(-
22*a*e*(256*d^5 + 128*d^4*e*x - 32*d^3*e^2*x^2 + 16*d^2*e^3*x^3 - 10*d*e^4*
x^4 + 7*e^5*x^5) + 7*b*(1024*d^6 + 512*d^5*e*x - 128*d^4*e^2*x^2 + 64*d^3*e
^3*x^3 - 40*d^2*e^4*x^4 + 28*d*e^5*x^5 - 21*e^6*x^6))))/(15015*e^8*Sqrt[d +
 e*x])
```

fricas [A]   time = 0.74, size = 657, normalized size = 1.56

$$2\left(2310\,c^4e^7x^7+143360\,c^4d^7-465920\,bc^3d^6e-15015\,a^3be^7+183040\left(3\,b^2c^2+2\,ac^3\right)d^5e^2-274560\left(b^3c+3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/15015*(2310*c^4*e^7*x^7 + 143360*c^4*d^7 - 465920*b*c^3*d^6*e - 15015*a^3
*b*e^7 + 183040*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 274560*(b^3*c + 3*a*b*c^2)*
d^4*e^3 + 48048*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 120120*(a*b^3 + 3*
a^2*b*c)*d^2*e^5 + 30030*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 735*(4*c^4*d*e^6 - 1
3*b*c^3*e^7)*x^6 + 35*(112*c^4*d^2*e^5 - 364*b*c^3*d*e^6 + 143*(3*b^2*c^2 +
 2*a*c^3)*e^7)*x^5 - 25*(224*c^4*d^3*e^4 - 728*b*c^3*d^2*e^5 + 286*(3*b^2*c
^2 + 2*a*c^3)*d*e^6 - 429*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + (8960*c^4*d^4*e^3
- 29120*b*c^3*d^3*e^4 + 11440*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 17160*(b^3*c
+ 3*a*b*c^2)*d*e^6 + 3003*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - (17920*
c^4*d^5*e^2 - 58240*b*c^3*d^4*e^3 + 22880*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 3
4320*(b^3*c + 3*a*b*c^2)*d^2*e^5 + 6006*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^
6 - 15015*(a*b^3 + 3*a^2*b*c)*e^7)*x^2 + (71680*c^4*d^6*e - 232960*b*c^3*d^
5*e^2 + 91520*(3*b^2*c^2 + 2*a*c^3)*d^4*e^3 - 137280*(b^3*c + 3*a*b*c^2)*d^
3*e^4 + 24024*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^5 - 60060*(a*b^3 + 3*a^2
*b*c)*d*e^6 + 15015*(3*a^2*b^2 + 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/(e^9*x + d*
e^8)
```

giac [B]   time = 0.31, size = 1000, normalized size = 2.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15015*(2310*(x*e + d)^(13/2)*c^4*e^96 - 19110*(x*e + d)^(11/2)*c^4*d*e^96
 + 70070*(x*e + d)^(9/2)*c^4*d^2*e^96 - 150150*(x*e + d)^(7/2)*c^4*d^3*e^96
 + 210210*(x*e + d)^(5/2)*c^4*d^4*e^96 - 210210*(x*e + d)^(3/2)*c^4*d^5*e^9
6 + 210210*sqrt(x*e + d)*c^4*d^6*e^96 + 9555*(x*e + d)^(11/2)*b*c^3*e^97 -
70070*(x*e + d)^(9/2)*b*c^3*d*e^97 + 225225*(x*e + d)^(7/2)*b*c^3*d^2*e^97
- 420420*(x*e + d)^(5/2)*b*c^3*d^3*e^97 + 525525*(x*e + d)^(3/2)*b*c^3*d^4*
e^97 - 630630*sqrt(x*e + d)*b*c^3*d^5*e^97 + 15015*(x*e + d)^(9/2)*b^2*c^2*
e^98 + 10010*(x*e + d)^(9/2)*a*c^3*e^98 - 96525*(x*e + d)^(7/2)*b^2*c^2*d*e
^98 - 64350*(x*e + d)^(7/2)*a*c^3*d*e^98 + 270270*(x*e + d)^(5/2)*b^2*c^2*d
^2*e^98 + 180180*(x*e + d)^(5/2)*a*c^3*d^2*e^98 - 450450*(x*e + d)^(3/2)*b^
2*c^2*d^3*e^98 - 300300*(x*e + d)^(3/2)*a*c^3*d^3*e^98 + 675675*sqrt(x*e +
d)*b^2*c^2*d^4*e^98 + 450450*sqrt(x*e + d)*a*c^3*d^4*e^98 + 10725*(x*e + d)
^(7/2)*b^3*c*e^99 + 32175*(x*e + d)^(7/2)*a*b*c^2*e^99 - 60060*(x*e + d)^(5
/2)*b^3*c*d*e^99 - 180180*(x*e + d)^(5/2)*a*b*c^2*d*e^99 + 150150*(x*e + d)
^(3/2)*b^3*c*d^2*e^99 + 450450*(x*e + d)^(3/2)*a*b*c^2*d^2*e^99 - 300300*sq
rt(x*e + d)*b^3*c*d^3*e^99 - 900900*sqrt(x*e + d)*a*b*c^2*d^3*e^99 + 3003*(
x*e + d)^(5/2)*b^4*e^100 + 36036*(x*e + d)^(5/2)*a*b^2*c*e^100 + 18018*(x*e
 + d)^(5/2)*a^2*c^2*e^100 - 15015*(x*e + d)^(3/2)*b^4*d*e^100 - 180180*(x*e
 + d)^(3/2)*a*b^2*c*d*e^100 - 90090*(x*e + d)^(3/2)*a^2*c^2*d*e^100 + 45045
*sqrt(x*e + d)*b^4*d^2*e^100 + 540540*sqrt(x*e + d)*a*b^2*c*d^2*e^100 + 270
270*sqrt(x*e + d)*a^2*c^2*d^2*e^100 + 15015*(x*e + d)^(3/2)*a*b^3*e^101 + 4
5045*(x*e + d)^(3/2)*a^2*b*c*e^101 - 90090*sqrt(x*e + d)*a*b^3*d*e^101 - 27
0270*sqrt(x*e + d)*a^2*b*c*d*e^101 + 45045*sqrt(x*e + d)*a^2*b^2*e^102 + 30
030*sqrt(x*e + d)*a^3*c*e^102)*e^(-104) + 2*(2*c^4*d^7 - 7*b*c^3*d^6*e + 9*
b^2*c^2*d^5*e^2 + 6*a*c^3*d^5*e^2 - 5*b^3*c*d^4*e^3 - 15*a*b*c^2*d^4*e^3 +
b^4*d^3*e^4 + 12*a*b^2*c*d^3*e^4 + 6*a^2*c^2*d^3*e^4 - 3*a*b^3*d^2*e^5 - 9*
a^2*b*c*d^2*e^5 + 3*a^2*b^2*d*e^6 + 2*a^3*c*d*e^6 - a^3*b*e^7)*e^(-8)/sqrt(
x*e + d)
```

maple [**B**]   time = 0.06, size = 795, normalized size = 1.89

$$-\frac{2\left(-2310c^{4}e^{7}x^{7}-9555b\,c^{3}e^{7}x^{6}+2940c^{4}d\,e^{6}x^{6}-10010a\,c^{3}e^{7}x^{5}-15015b^{2}c^{2}e^{7}x^{5}+12740b\,c^{3}d\,e^{6}x^{5}-3920c^{4}d^{2}e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/15015/(e*x+d)^(1/2)*(-2310*c^4*e^7*x^7-9555*b*c^3*e^7*x^6+2940*c^4*d*e^6
*x^6-10010*a*c^3*e^7*x^5-15015*b^2*c^2*e^7*x^5+12740*b*c^3*d*e^6*x^5-3920*c
^4*d^2*e^5*x^5-32175*a*b*c^2*e^7*x^4+14300*a*c^3*d*e^6*x^4-10725*b^3*c*e^7*
x^4+21450*b^2*c^2*d*e^6*x^4-18200*b*c^3*d^2*e^5*x^4+5600*c^4*d^3*e^4*x^4-18
018*a^2*c^2*e^7*x^3-36036*a*b^2*c*e^7*x^3+51480*a*b*c^2*d*e^6*x^3-22880*a*c
^3*d^2*e^5*x^3-3003*b^4*e^7*x^3+17160*b^3*c*d*e^6*x^3-34320*b^2*c^2*d^2*e^5
*x^3+29120*b*c^3*d^3*e^4*x^3-8960*c^4*d^4*e^3*x^3-45045*a^2*b*c*e^7*x^2+360
36*a^2*c^2*d*e^6*x^2-15015*a*b^3*e^7*x^2+72072*a*b^2*c*d*e^6*x^2-102960*a*b
*c^2*d^2*e^5*x^2+45760*a*c^3*d^3*e^4*x^2+6006*b^4*d*e^6*x^2-34320*b^3*c*d^2
*e^5*x^2+68640*b^2*c^2*d^3*e^4*x^2-58240*b*c^3*d^4*e^3*x^2+17920*c^4*d^5*e^
2*x^2-30030*a^3*c*e^7*x-45045*a^2*b^2*e^7*x+180180*a^2*b*c*d*e^6*x-144144*a
^2*c^2*d^2*e^5*x+60060*a*b^3*d*e^6*x-288288*a*b^2*c*d^2*e^5*x+411840*a*b*c^
2*d^3*e^4*x-183040*a*c^3*d^4*e^3*x-24024*b^4*d^2*e^5*x+137280*b^3*c*d^3*e^4
*x-274560*b^2*c^2*d^4*e^3*x+232960*b*c^3*d^5*e^2*x-71680*c^4*d^6*e*x+15015*
a^3*b*e^7-60060*a^3*c*d*e^6-90090*a^2*b^2*d*e^6+360360*a^2*b*c*d^2*e^5-2882
88*a^2*c^2*d^3*e^4+120120*a*b^3*d^2*e^5-576576*a*b^2*c*d^3*e^4+823680*a*b*c
^2*d^4*e^3-366080*a*c^3*d^5*e^2-48048*b^4*d^3*e^4+274560*b^3*c*d^4*e^3-5491
20*b^2*c^2*d^5*e^2+465920*b*c^3*d^6*e-143360*c^4*d^7)/e^8
```

maxima [**A**]   time = 0.54, size = 653, normalized size = 1.55

$$\frac{2\left(\frac{2310\,(ex+d)^{\frac{13}{2}}c^{4}-9555\left(2\,c^{4}d-bc^{3}e\right)(ex+d)^{\frac{11}{2}}+5005\left(14\,c^{4}d^{2}-14\,bc^{3}de+\left(3\,b^{2}c^{2}+2\,ac^{3}\right)e^{2}\right)(ex+d)^{\frac{9}{2}}-10725\left(14\,c^{4}d^{3}-21\,bc^{3}d^{2}e+3\left(3\,b^{2}c^{2}+2\,ac^{3}\right)de^{2}-\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2/15015*((2310*(e*x + d)^(13/2)*c^4 - 9555*(2*c^4*d - b*c^3*e)*(e*x + d)^(1
1/2) + 5005*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x +
d)^(9/2) - 10725*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e
^2 - (b^3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(7/2) + 3003*(70*c^4*d^4 - 140*b*c^
3*d^3*e + 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3 +
 (b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(5/2) - 15015*(14*c^4*d^5 -
35*b*c^3*d^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2)*
d^2*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)*(
e*x + d)^(3/2) + 15015*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a*c
^3)*d^4*e^2 - 20*(b^3*c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*
c^2)*d^2*e^4 - 6*(a*b^3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*sqr
t(e*x + d))/e^7 + 15015*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c
^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c +
 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)
*d*e^6)/(sqrt(e*x + d)*e^7))/e
```

mupad [B] time = 1.94, size = 581, normalized size = 1.38

$$\frac{(d+e\,x)^{9/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{9\,e^8}+\frac{4\,c^4\,(d+e\,x)^{13/2}}{13\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{11/2}}{11\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*e
))/(9*e^8) + (4*c^4*(d + e*x)^(13/2))/(13*e^8) - ((28*c^4*d - 14*b*c^3*e)*(
d + e*x)^(11/2))/(11*e^8) + (4*c^4*d^7 - 2*a^3*b*e^7 + 2*b^4*d^3*e^4 - 6*a*
b^3*d^2*e^5 + 6*a^2*b^2*d*e^6 + 12*a*c^3*d^5*e^2 - 10*b^3*c*d^4*e^3 + 12*a^
2*c^2*d^3*e^4 + 18*b^2*c^2*d^5*e^2 + 4*a^3*c*d*e^6 - 14*b*c^3*d^6*e - 30*a*
b*c^2*d^4*e^3 + 24*a*b^2*c*d^3*e^4 - 18*a^2*b*c*d^2*e^5)/(e^8*(d + e*x)^(1/
2)) + ((d + e*x)^(5/2)*(2*b^4*e^4 + 140*c^4*d^4 + 12*a^2*c^2*e^4 + 120*a*c^
3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24*a*b^2*c*e^4 - 280*b*c^3*d^3*e - 40*b^3
*c*d*e^3 - 120*a*b*c^2*d*e^3))/(5*e^8) + (2*(b*e - 2*c*d)*(d + e*x)^(3/2)*(
7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4 - b^3*d*e^3 + 10*a*c^2*d^2*e^2 + 8*b^2*
c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*c*d*e^3))/e^8 + (2*(d + e*x)^(1/2)*(a*e
^2 + c*d^2 - b*d*e)^2*(3*b^2*e^2 + 14*c^2*d^2 + 2*a*c*e^2 - 14*b*c*d*e))/e^
8 + (10*c*(b*e - 2*c*d)*(d + e*x)^(7/2)*(b^2*e^2 + 7*c^2*d^2 + 3*a*c*e^2 -
7*b*c*d*e))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1612 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=421

$$\frac{2(d+ex)^{3/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+6c^2(d+$$

```
[Out] 2/3*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^(3/2)+2/3*(70*c^4*d^4+b^
4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2
*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(3/2)/e^8-2*c*(-b*e+2*c*d)*(7*c^2*d^2+
b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^(5/2)/e^8+6/7*c^2*(14*c^2*d^2+3*b^2*e^2
-2*c*e*(-a*e+7*b*d))*(e*x+d)^(7/2)/e^8-14/9*c^3*(-b*e+2*c*d)*(e*x+d)^(9/2)/
e^8+4/11*c^4*(e*x+d)^(11/2)/e^8-2*(a*e^2-b*d*e+c*d^2)^2*(14*c^2*d^2+3*b^2*e
^2-2*c*e*(-a*e+7*b*d))/e^8/(e*x+d)^(1/2)-6*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)
*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.23, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.036, Rules used = {771}

$$\frac{2(d+ex)^{3/2}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{3e^8}+6c^2(d+$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^(3/2)) - (2*(c
*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e)))/(e^
8*Sqrt[d + e*x]) - (6*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(7*c^2*d^2 + b^
2*e^2 - c*e*(7*b*d - 3*a*e))*Sqrt[d + e*x])/e^8 + (2*(70*c^4*d^4 + b^4*e^4
- 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e*(7*b*d - 3*a*e) + 6*c^2*e^2*(1
5*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)^(3/2))/(3*e^8) - (2*c*(2*c*d -
 b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(5/2))/e^8 + (6
*c^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(7/2))/(7*e^8
) - (14*c^3*(2*c*d - b*e)*(d + e*x)^(9/2))/(9*e^8) + (4*c^4*(d + e*x)^(11/2
))/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^3}{(d+ex)^{5/2}}\,dx=\int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{5/2}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(\right.}{e^7(d+ex)^{3/2}}\right.$$

$$=\frac{2(2cd-be)\left(cd^2-bde+ae^2\right)^3}{3e^8(d+ex)^{3/2}}-\frac{2\left(cd^2-bde+ae^2\right)^2\left(14c^2d^2+3b^2e^2-2ce(7b\right.}{e^8\sqrt{d+ex}}$$

Mathematica [A] time = 0.59, size = 598, normalized size = 1.42

$$-198c^2e^2\left(14a^2e^2\left(16d^3+24d^2ex+6de^2x^2-e^3x^3\right)-7abe\left(128d^4+192d^3ex+48d^2e^2x^2-8de^3x^3+3e^4x^4\right)+3$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (-28*c^4*(2048*d^7 + 3072*d^6*e*x + 768*d^5*e^2*x^2 - 128*d^4*e^3*x^3 + 48*
d^3*e^4*x^4 - 24*d^2*e^5*x^5 + 14*d*e^6*x^6 - 9*e^7*x^7) - 462*b*e^4*(a^3*e
^3 + 3*a^2*b*e^2*(2*d + 3*e*x) - 3*a*b^2*e*(8*d^2 + 12*d*e*x + 3*e^2*x^2) +
 b^3*(16*d^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3)) + 462*c*e^3*(-2*a^3*e^3
*(2*d + 3*e*x) + 9*a^2*b*e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 12*a*b^2*e*(-
16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + b^3*(128*d^4 + 192*d^3*e*x +
 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4)) - 198*c^2*e^2*(14*a^2*e^2*(16*d
^3 + 24*d^2*e*x + 6*d*e^2*x^2 - e^3*x^3) - 7*a*b*e*(128*d^4 + 192*d^3*e*x +
 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4) + 3*b^2*(256*d^5 + 384*d^4*e*x +
 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^4 - 3*e^5*x^5)) + 22*c^3*e*(-1
8*a*e*(256*d^5 + 384*d^4*e*x + 96*d^3*e^2*x^2 - 16*d^2*e^3*x^3 + 6*d*e^4*x^
4 - 3*e^5*x^5) + 7*b*(1024*d^6 + 1536*d^5*e*x + 384*d^4*e^2*x^2 - 64*d^3*e^
3*x^3 + 24*d^2*e^4*x^4 - 12*d*e^5*x^5 + 7*e^6*x^6)))/(693*e^8*(d + e*x)^(3/
2))
```

fricas [A] time = 0.96, size = 669, normalized size = 1.59

$$2\left(126\,c^4e^7x^7-28672\,c^4d^7+78848\,bc^3d^6e-231\,a^3be^7-25344\left(3\,b^2c^2+2\,ac^3\right)d^5e^2+29568\left(b^3c+3\,abc^2\right)d^4e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/693*(126*c^4*e^7*x^7 - 28672*c^4*d^7 + 78848*b*c^3*d^6*e - 231*a^3*b*e^7
- 25344*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 + 29568*(b^3*c + 3*a*b*c^2)*d^4*e^3 -
 3696*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 + 5544*(a*b^3 + 3*a^2*b*c)*d^2
*e^5 - 462*(3*a^2*b^2 + 2*a^3*c)*d*e^6 - 49*(4*c^4*d*e^6 - 11*b*c^3*e^7)*x^
6 + 3*(112*c^4*d^2*e^5 - 308*b*c^3*d*e^6 + 99*(3*b^2*c^2 + 2*a*c^3)*e^7)*x^
5 - 3*(224*c^4*d^3*e^4 - 616*b*c^3*d^2*e^5 + 198*(3*b^2*c^2 + 2*a*c^3)*d*e^
6 - 231*(b^3*c + 3*a*b*c^2)*e^7)*x^4 + (1792*c^4*d^4*e^3 - 4928*b*c^3*d^3*e
^4 + 1584*(3*b^2*c^2 + 2*a*c^3)*d^2*e^5 - 1848*(b^3*c + 3*a*b*c^2)*d*e^6 +
231*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^7)*x^3 - 3*(3584*c^4*d^5*e^2 - 9856*b*
c^3*d^4*e^3 + 3168*(3*b^2*c^2 + 2*a*c^3)*d^3*e^4 - 3696*(b^3*c + 3*a*b*c^2)
*d^2*e^5 + 462*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^6 - 693*(a*b^3 + 3*a^2*b*
c)*e^7)*x^2 - 3*(14336*c^4*d^6*e - 39424*b*c^3*d^5*e^2 + 12672*(3*b^2*c^2 +
 2*a*c^3)*d^4*e^3 - 14784*(b^3*c + 3*a*b*c^2)*d^3*e^4 + 1848*(b^4 + 12*a*b^
2*c + 6*a^2*c^2)*d^2*e^5 - 2772*(a*b^3 + 3*a^2*b*c)*d*e^6 + 231*(3*a^2*b^2
+ 2*a^3*c)*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [B] time = 0.30, size = 972, normalized size = 2.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/693*(126*(x*e + d)^(11/2)*c^4*e^80 - 1078*(x*e + d)^(9/2)*c^4*d*e^80 + 41
58*(x*e + d)^(7/2)*c^4*d^2*e^80 - 9702*(x*e + d)^(5/2)*c^4*d^3*e^80 + 16170
*(x*e + d)^(3/2)*c^4*d^4*e^80 - 29106*sqrt(x*e + d)*c^4*d^5*e^80 + 539*(x*e
 + d)^(9/2)*b*c^3*e^81 - 4158*(x*e + d)^(7/2)*b*c^3*d*e^81 + 14553*(x*e + d
)^(5/2)*b*c^3*d^2*e^81 - 32340*(x*e + d)^(3/2)*b*c^3*d^3*e^81 + 72765*sqrt(
x*e + d)*b*c^3*d^4*e^81 + 891*(x*e + d)^(7/2)*b^2*c^2*e^82 + 594*(x*e + d)^
(7/2)*a*c^3*e^82 - 6237*(x*e + d)^(5/2)*b^2*c^2*d*e^82 - 4158*(x*e + d)^(5/
2)*a*c^3*d*e^82 + 20790*(x*e + d)^(3/2)*b^2*c^2*d^2*e^82 + 13860*(x*e + d)^
(3/2)*a*c^3*d^2*e^82 - 62370*sqrt(x*e + d)*b^2*c^2*d^3*e^82 - 41580*sqrt(x*
e + d)*a*c^3*d^3*e^82 + 693*(x*e + d)^(5/2)*b^3*c*e^83 + 2079*(x*e + d)^(5/
2)*a*b*c^2*e^83 - 4620*(x*e + d)^(3/2)*b^3*c*d*e^83 - 13860*(x*e + d)^(3/2)
*a*b*c^2*d*e^83 + 20790*sqrt(x*e + d)*b^3*c*d^2*e^83 + 62370*sqrt(x*e + d)*
a*b*c^2*d^2*e^83 + 231*(x*e + d)^(3/2)*b^4*e^84 + 2772*(x*e + d)^(3/2)*a*b^
2*c*e^84 + 1386*(x*e + d)^(3/2)*a^2*c^2*e^84 - 2079*sqrt(x*e + d)*b^4*d*e^8
4 - 24948*sqrt(x*e + d)*a*b^2*c*d*e^84 - 12474*sqrt(x*e + d)*a^2*c^2*d*e^84
 + 2079*sqrt(x*e + d)*a*b^3*e^85 + 6237*sqrt(x*e + d)*a^2*b*c*e^85)*e^(-88)
 - 2/3*(42*(x*e + d)*c^4*d^6 - 2*c^4*d^7 - 126*(x*e + d)*b*c^3*d^5*e + 7*b*
c^3*d^6*e + 135*(x*e + d)*b^2*c^2*d^4*e^2 + 90*(x*e + d)*a*c^3*d^4*e^2 - 9*
b^2*c^2*d^5*e^2 - 6*a*c^3*d^5*e^2 - 60*(x*e + d)*b^3*c*d^3*e^3 - 180*(x*e +
 d)*a*b*c^2*d^3*e^3 + 5*b^3*c*d^4*e^3 + 15*a*b*c^2*d^4*e^3 + 9*(x*e + d)*b^
4*d^2*e^4 + 108*(x*e + d)*a*b^2*c*d^2*e^4 + 54*(x*e + d)*a^2*c^2*d^2*e^4 -
b^4*d^3*e^4 - 12*a*b^2*c*d^3*e^4 - 6*a^2*c^2*d^3*e^4 - 18*(x*e + d)*a*b^3*d
*e^5 - 54*(x*e + d)*a^2*b*c*d*e^5 + 3*a*b^3*d^2*e^5 + 9*a^2*b*c*d^2*e^5 + 9
*(x*e + d)*a^2*b^2*e^6 + 6*(x*e + d)*a^3*c*e^6 - 3*a^2*b^2*d*e^6 - 2*a^3*c*
d*e^6 + a^3*b*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [B] time = 0.06, size = 795, normalized size = 1.89

$$-\frac{2\,(-126c^4e^7x^7-539b\,c^3e^7x^6+196c^4d\,e^6x^6-594a\,c^3e^7x^5-891b^2c^2e^7x^5+924b\,c^3d\,e^6x^5-336c^4d^2e^5x^5-2079a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/693/(e*x+d)^(3/2)*(-126*c^4*e^7*x^7-539*b*c^3*e^7*x^6+196*c^4*d*e^6*x^6-
594*a*c^3*e^7*x^5-891*b^2*c^2*e^7*x^5+924*b*c^3*d*e^6*x^5-336*c^4*d^2*e^5*x
^5-2079*a*b*c^2*e^7*x^4+1188*a*c^3*d*e^6*x^4-693*b^3*c*e^7*x^4+1782*b^2*c^2
*d*e^6*x^4-1848*b*c^3*d^2*e^5*x^4+672*c^4*d^3*e^4*x^4-1386*a^2*c^2*e^7*x^3-
2772*a*b^2*c*e^7*x^3+5544*a*b*c^2*d*e^6*x^3-3168*a*c^3*d^2*e^5*x^3-231*b^4*
e^7*x^3+1848*b^3*c*d*e^6*x^3-4752*b^2*c^2*d^2*e^5*x^3+4928*b*c^3*d^3*e^4*x^
3-1792*c^4*d^4*e^3*x^3-6237*a^2*b*c*e^7*x^2+8316*a^2*c^2*d*e^6*x^2-2079*a*b
^3*e^7*x^2+16632*a*b^2*c*d*e^6*x^2-33264*a*b*c^2*d^2*e^5*x^2+19008*a*c^3*d^
3*e^4*x^2+1386*b^4*d*e^6*x^2-11088*b^3*c*d^2*e^5*x^2+28512*b^2*c^2*d^3*e^4*
x^2-29568*b*c^3*d^4*e^3*x^2+10752*c^4*d^5*e^2*x^2+1386*a^3*c*e^7*x+2079*a^2
*b^2*e^7*x-24948*a^2*b*c*d*e^6*x+33264*a^2*c^2*d^2*e^5*x-8316*a*b^3*d*e^6*x
+66528*a*b^2*c*d^2*e^5*x-133056*a*b*c^2*d^3*e^4*x+76032*a*c^3*d^4*e^3*x+554
4*b^4*d^2*e^5*x-44352*b^3*c*d^3*e^4*x+114048*b^2*c^2*d^4*e^3*x-118272*b*c^3
*d^5*e^2*x+43008*c^4*d^6*e*x+231*a^3*b*e^7+924*a^3*c*d*e^6+1386*a^2*b^2*d*e
^6-16632*a^2*b*c*d^2*e^5+22176*a^2*c^2*d^3*e^4-5544*a*b^3*d^2*e^5+44352*a*b
^2*c*d^3*e^4-88704*a*b*c^2*d^4*e^3+50688*a*c^3*d^5*e^2+3696*b^4*d^3*e^4-295
68*b^3*c*d^4*e^3+76032*b^2*c^2*d^5*e^2-78848*b*c^3*d^6*e+28672*c^4*d^7)/e^8
```

maxima [A] time = 0.67, size = 651, normalized size = 1.55

$$2\,(\frac{126\,(ex+d)^{\frac{11}{2}}c^4-539\,\left(2\,c^4d-bc^3e\right)(ex+d)^{\frac{9}{2}}+297\,\left(14\,c^4d^2-14\,bc^3de+\left(3\,b^2c^2+2\,ac^3\right)e^2\right)(ex+d)^{\frac{7}{2}}-693\,(14\,c^4d^3-21\,bc^3d^2e+3\,\left(3\,b^2c^2+2\,ac^3\right)de^2-(b^3c+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^3/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] 2/693*((126*(e*x + d)^(11/2)*c^4 - 539*(2*c^4*d - b*c^3*e)*(e*x + d)^(9/2)
+ 297*(14*c^4*d^2 - 14*b*c^3*d*e + (3*b^2*c^2 + 2*a*c^3)*e^2)*(e*x + d)^(7/
2) - 693*(14*c^4*d^3 - 21*b*c^3*d^2*e + 3*(3*b^2*c^2 + 2*a*c^3)*d*e^2 - (b^
3*c + 3*a*b*c^2)*e^3)*(e*x + d)^(5/2) + 231*(70*c^4*d^4 - 140*b*c^3*d^3*e +
 30*(3*b^2*c^2 + 2*a*c^3)*d^2*e^2 - 20*(b^3*c + 3*a*b*c^2)*d*e^3 + (b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*e^4)*(e*x + d)^(3/2) - 2079*(14*c^4*d^5 - 35*b*c^3*d
^4*e + 10*(3*b^2*c^2 + 2*a*c^3)*d^3*e^2 - 10*(b^3*c + 3*a*b*c^2)*d^2*e^3 +
(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^4 - (a*b^3 + 3*a^2*b*c)*e^5)*sqrt(e*x +
d))/e^7 + 231*(2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e^7 + 3*(3*b^2*c^2 + 2*a*c
^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2
)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2*b^2 + 2*a^3*c)*d*e^6 - 3
*(14*c^4*d^6 - 42*b*c^3*d^5*e + 15*(3*b^2*c^2 + 2*a*c^3)*d^4*e^2 - 20*(b^3*
c + 3*a*b*c^2)*d^3*e^3 + 3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^4 - 6*(a*b^
3 + 3*a^2*b*c)*d*e^5 + (3*a^2*b^2 + 2*a^3*c)*e^6)*(e*x + d))/((e*x + d)^(3/
2)*e^7))/e
```

mupad [**B**] time = 1.96, size = 677, normalized size = 1.61

$$\frac{(d+e\,x)^{7/2}\,\left(18\,b^2\,c^2\,e^2-84\,b\,c^3\,d\,e+84\,c^4\,d^2+12\,a\,c^3\,e^2\right)}{7\,e^8}+\frac{4\,c^4\,(d+e\,x)^{11/2}}{11\,e^8}-\frac{\left(28\,c^4\,d-14\,b\,c^3\,e\right)\,(d+e\,x)^{9/2}}{9\,e^8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^3)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(84*c^4*d^2 + 12*a*c^3*e^2 + 18*b^2*c^2*e^2 - 84*b*c^3*d*e
))/(7*e^8) + (4*c^4*(d + e*x)^(11/2))/(11*e^8) - ((28*c^4*d - 14*b*c^3*e)*(
d + e*x)^(9/2))/(9*e^8) + ((4*c^4*d^7)/3 - (d + e*x)*(28*c^4*d^6 + 4*a^3*c*
e^6 + 6*a^2*b^2*e^6 + 6*b^4*d^2*e^4 + 60*a*c^3*d^4*e^2 - 40*b^3*c*d^3*e^3 +
 36*a^2*c^2*d^2*e^4 + 90*b^2*c^2*d^4*e^2 - 12*a*b^3*d*e^5 - 84*b*c^3*d^5*e
- 36*a^2*b*c*d*e^5 - 120*a*b*c^2*d^3*e^3 + 72*a*b^2*c*d^2*e^4) - (2*a^3*b*e
^7)/3 + (2*b^4*d^3*e^4)/3 - 2*a*b^3*d^2*e^5 + 2*a^2*b^2*d*e^6 + 4*a*c^3*d^5
*e^2 - (10*b^3*c*d^4*e^3)/3 + 4*a^2*c^2*d^3*e^4 + 6*b^2*c^2*d^5*e^2 + (4*a^
3*c*d*e^6)/3 - (14*b*c^3*d^6*e)/3 - 10*a*b*c^2*d^4*e^3 + 8*a*b^2*c*d^3*e^4
- 6*a^2*b*c*d^2*e^5)/(e^8*(d + e*x)^(3/2)) + ((d + e*x)^(3/2)*(2*b^4*e^4 +
140*c^4*d^4 + 12*a^2*c^2*e^4 + 120*a*c^3*d^2*e^2 + 180*b^2*c^2*d^2*e^2 + 24
*a*b^2*c*e^4 - 280*b*c^3*d^3*e - 40*b^3*c*d*e^3 - 120*a*b*c^2*d*e^3))/(3*e^
8) + (6*(b*e - 2*c*d)*(d + e*x)^(1/2)*(7*c^3*d^4 + a*b^2*e^4 + 3*a^2*c*e^4
- b^3*d*e^3 + 10*a*c^2*d^2*e^2 + 8*b^2*c*d^2*e^2 - 14*b*c^2*d^3*e - 10*a*b*
c*d*e^3))/e^8 + (2*c*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^2 + 7*c^2*d^2 + 3
*a*c*e^2 - 7*b*c*d*e))/e^8
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**3/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1613 $\int \frac{(b+2cx)(d+ex)^{3/2}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=422

$$\frac{\sqrt{2}\left(-2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(-bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(b-\sqrt{b^2-4ac}\right)\right)\tanh}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

```
[Out] 4/3*(e*x+d)^(3/2)+2*(-b*e+2*c*d)*(e*x+d)^(1/2)/c+arctanh(2^(1/2)*c^(1/2)*(e
*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*(b^2*e^2*(b-(-4
*a*c+b^2)^(1/2))-2*c^2*d*(-4*a*e+d*(-4*a*c+b^2)^(1/2))-2*c*e*(b^2*d+2*a*b*e
-b*d*(-4*a*c+b^2)^(1/2)-a*e*(-4*a*c+b^2)^(1/2)))/c^(3/2)/(-4*a*c+b^2)^(1/2)
/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/
2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*(b^2*e^2*(b+(-4*a*c+b^2)
^(1/2))+2*c^2*d*(4*a*e+d*(-4*a*c+b^2)^(1/2))-2*c*e*(b^2*d+2*a*b*e+b*d*(-4*a
*c+b^2)^(1/2)+a*e*(-4*a*c+b^2)^(1/2)))/c^(3/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*
(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 2.23, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {824, 826, 1166, 208}

$$\frac{\sqrt{2}\left(-2c^2d\left(d\sqrt{b^2-4ac}-4ae\right)-2ce\left(-bd\sqrt{b^2-4ac}-ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(b-\sqrt{b^2-4ac}\right)\right)\tanh}{c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x]
```

```
[Out] (2*(2*c*d - b*e)*Sqrt[d + e*x])/c + (4*(d + e*x)^(3/2))/3 + (Sqrt[2]*(b^2*(
b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*
(b^2*d - b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[
(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(
c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]) - (Sqrt[
2]*(b^2*(b + Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d + 4*a*e)
 - 2*c*e*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))
*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)(d+ex)^{3/2}}{a+bx+cx^2}\,dx &= \frac{4}{3}(d+ex)^{3/2}+\frac{\int \frac{\sqrt{d+ex}\,(c(bd-2ae)+c(2cd-be)x)}{a+bx+cx^2}\,dx}{c}\\
&= \frac{2(2cd-be)\sqrt{d+ex}}{c}+\frac{4}{3}(d+ex)^{3/2}+\frac{\int \frac{c\left(bcd^2-4acde+abe^2\right)+c\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{c^2}\\
&= \frac{2(2cd-be)\sqrt{d+ex}}{c}+\frac{4}{3}(d+ex)^{3/2}+\frac{2\,\mathrm{Subst}\left(\int \frac{ce\left(bcd^2-4acde+abe^2\right)-cd\left(2c^2d^2+b^2e^2-2ce\right.}{cd^2-bde+ae^2+(-}\right.}{}\\
&= \frac{2(2cd-be)\sqrt{d+ex}}{c}+\frac{4}{3}(d+ex)^{3/2}-\frac{\left(b^2\left(b-\sqrt{b^2-4ac}\right)e^2-2c^2d\left(\sqrt{b^2-4ac}\,d\right.\right.}{}\\
&= \frac{2(2cd-be)\sqrt{d+ex}}{c}+\frac{4}{3}(d+ex)^{3/2}+\frac{\sqrt{2}\left(b^2\left(b-\sqrt{b^2-4ac}\right)e^2-2c^2d\left(\sqrt{b^2-4}\right.\right.}{}
\end{aligned}
$$

Mathematica [A] time = 2.42, size = 782, normalized size = 1.85

$$
\frac{(be-2cd)\left(\frac{\sqrt{2}\left(2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}-b\right)-2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{2}\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\right.}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right.}{c^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x]
```

```
[Out] ((-4*e*(-2*c*d + b*e)*Sqrt[d + e*x])/c + (4*e*(d + e*x)^(3/2))/3 - (2*Sqrt[
2]*(2*c^3*d^3 + b^2*(-b + Sqrt[b^2 - 4*a*c])*e^3 + 3*c^2*d*e*(-(b*d) + Sqrt
[b^2 - 4*a*c]*d - 2*a*e) + c*e^2*(3*b^2*d - 3*b*Sqrt[b^2 - 4*a*c]*d + 3*a*b
*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2
*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d +
 (-b + Sqrt[b^2 - 4*a*c])*e]) + (2*Sqrt[2]*(2*c^3*d^3 - b^2*(b + Sqrt[b^2 -
 4*a*c])*e^3 - 3*c^2*d*e*(b*d + Sqrt[b^2 - 4*a*c]*d + 2*a*e) + c*e^2*(3*b^2
*d + a*Sqrt[b^2 - 4*a*c]*e + 3*b*(Sqrt[b^2 - 4*a*c]*d + a*e)))*ArcTanh[(Sqr
t[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(c^(3
/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]) + ((-2*c*d +
 b*e)*(2*Sqrt[c]*e*Sqrt[d + e*x] + (Sqrt[2]*(-2*c^2*d^2 + b*(-b + Sqrt[b^2
- 4*a*c])*e^2 + 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*S
qrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[b^2 -
 4*a*c]*Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[2]*(2*c^2*d^2 + b
*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*a*c]*d + a*e))*Arc
Tanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e
]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])))/c^(3/2))/
e
```

fricas [B] time = 1.16, size = 2909, normalized size = 6.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*(3*sqrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3
*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^
4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*
b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3)*log(sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e
 + (5*b^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4
*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^
2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 +
(b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 -
3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt(
(9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^
4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*
b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3
) - 4*(3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a
*b*c)*d*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) - 3*sqrt(2)*c*sqrt((2*c^3
*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^
3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 +
3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 +
 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^
6))/c^3)*log(-sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e + (5*b^2*c - 2*a*c^2)*d*e^
2 - (b^3 - a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c
^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4
- 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^
2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c -
2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*
e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^
2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b
^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3) - 4*(3*c^3*d^4 - 6*b*c^2*
d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a*b*c)*d*e^3 + (a*b^2 - a^2*
c)*e^4)*sqrt(e*x + d)) + 3*sqrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b
^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^
5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3
 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6
- 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3)*log(sqrt(2)*(6*c^3
*d^3 - 9*b*c^2*d^2*e + (5*b^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 + c^3*
sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*
(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4
*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6)
)*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*
b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^
4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c -
5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3
*c^3)*e^6)/c^6))/c^3) - 4*(3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*
d^2*e^2 - (b^3 + 2*a*b*c)*d*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) - 3*s
qrt(2)*c*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3
 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4
*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b
^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2
- 4*a^3*c^3)*e^6)/c^6))/c^3)*log(-sqrt(2)*(6*c^3*d^3 - 9*b*c^2*d^2*e + (5*b
^2*c - 2*a*c^2)*d*e^2 - (b^3 - a*b*c)*e^3 + c^3*sqrt((9*(b^2*c^4 - 4*a*c^5)
*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 +
 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 -
6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))*sqrt((2*c^3*d^3 - 3*b*c^2
*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - c^3*sqrt((9*(b^2
*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 -
 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*
d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/c^6))/c^3) - 4*(
3*c^3*d^4 - 6*b*c^2*d^3*e + 2*(2*b^2*c + a*c^2)*d^2*e^2 - (b^3 + 2*a*b*c)*d
*e^3 + (a*b^2 - a^2*c)*e^4)*sqrt(e*x + d)) + 4*(2*c*e*x + 8*c*d - 3*b*e)*sq
rt(e*x + d))/c
```

giac [B] time = 0.48, size = 813, normalized size = 1.93

$$\Bigg(\bigg(2\sqrt{b^2-4\,ac}\,c^2d^2e-2\sqrt{b^2-4\,ac}\,bcde^2+\Big(b^2-2\,ac\Big)\sqrt{b^2-4\,ac}\,e^3\bigg)\sqrt{-4\,c^2d+2\Big(bc-\sqrt{b^2-4\,ac}\,c\Big)e}\,c^2-2\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*((2*sqrt(b^2 - 4*a*c)*c^2*d^2*e - 2*sqrt(b^2 - 4*a*c)*b*c*d*e^2 + (b^2
- 2*a*c)*sqrt(b^2 - 4*a*c)*e^3)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*
c)*e)*c^2 - 2*(2*c^4*d^3 - 3*b*c^3*d^2*e - a*b*c^2*e^3 + (b^2*c^2 + 2*a*c^3
)*d*e^2)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(c) - (4*sqrt(
b^2 - 4*a*c)*c^4*d^2*e - 4*sqrt(b^2 - 4*a*c)*b*c^3*d*e^2 + sqrt(b^2 - 4*a*c
)*b^2*c^2*e^3)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*s
qrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^4*d - b*c^3*e + sqrt(-4*(c^4*d^2 - b*c^3*
d*e + a*c^3*e^2)*c^4 + (2*c^4*d - b*c^3*e)^2))/c^4))/((c^4*d^2 - b*c^3*d*e
+ a*c^3*e^2)*c^2) - 1/4*((2*sqrt(b^2 - 4*a*c)*c^2*d^2*e - 2*sqrt(b^2 - 4*a*
c)*b*c*d*e^2 + (b^2 - 2*a*c)*sqrt(b^2 - 4*a*c)*e^3)*sqrt(-4*c^2*d + 2*(b*c
+ sqrt(b^2 - 4*a*c)*c)*e)*c^2 + 2*(2*c^4*d^3 - 3*b*c^3*d^2*e - a*b*c^2*e^3
+ (b^2*c^2 + 2*a*c^3)*d*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*
e)*abs(c) - (4*sqrt(b^2 - 4*a*c)*c^4*d^2*e - 4*sqrt(b^2 - 4*a*c)*b*c^3*d*e^
2 + sqrt(b^2 - 4*a*c)*b^2*c^2*e^3)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*
c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^4*d - b*c^3*e - sqrt(
-4*(c^4*d^2 - b*c^3*d*e + a*c^3*e^2)*c^4 + (2*c^4*d - b*c^3*e)^2))/c^4))/((
c^4*d^2 - b*c^3*d*e + a*c^3*e^2)*c^2) + 2/3*(2*(x*e + d)^(3/2)*c^3 + 6*sqrt
(x*e + d)*c^3*d - 3*sqrt(x*e + d)*b*c^2*e)/c^3
```

maple [B] time = 0.10, size = 1494, normalized size = 3.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4/3*(e*x+d)^(3/2)-2/c*b*e*(e*x+d)^(1/2)+4*(e*x+d)^(1/2)*d-4/(-(4*a*c-b^2)*e
^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((
e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b
*e^3+8*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*c)*a*d*e^2+1/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3-2/(-(4*a*c-b^2)*e^2)^(
1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^
2+2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)
^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/c
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2+2*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e-2*c*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-4/(-(4*a*c-b^2
)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan(
(e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b
*e^3+8*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*c)*a*d*e^2+1/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3-2/(-(4*a*c-b^2)*e^2)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^2-2*2^(1/
2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2+1/c*2^(1/2)/((b
*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-2*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e+2*c*2^(1/2)/((b*e-2*c*d+(-(
4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a), x)
```

mupad **[B]** time = 0.96, size = 6933, normalized size = 16.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2),x)
```

```
[Out] (4*(d + e*x)^(3/2))/3 - atan(((((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c
^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^
3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)
*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e
^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*
c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(
1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-
(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*
(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2
*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2
) - (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*
b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 +
6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28
*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^
3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 -
4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*
(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i -
(((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 -
 b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3
 + 2*a*b^2*c^3*d*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*
e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c
^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
- 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*
d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3
*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*
d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3
*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^
6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e
^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*
e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^
3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 -
 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*
e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i)/((16*(a^2*b^4*e^8 + 8*a^4*c^2*e
^8 + b^6*d^2*e^6 - 6*a^3*b^2*c*e^8 - 8*a*c^5*d^6*e^2 - 4*b^5*c*d^3*e^5 - 8*
a^2*c^4*d^4*e^4 + 8*a^3*c^3*d^2*e^6 + 2*b^2*c^4*d^6*e^2 - 6*b^3*c^3*d^5*e^3
 + 7*b^4*c^2*d^4*e^4 - 2*a*b^5*d*e^7 - 18*a^2*b^2*c^2*d^2*e^6 + 24*a*b*c^4*
d^5*e^3 + 10*a^2*b^3*c*d*e^7 - 8*a^3*b*c^2*d*e^7 - 26*a*b^2*c^3*d^4*e^4 + 1
2*a*b^3*c^2*d^3*e^5 + 16*a^2*b*c^3*d^3*e^5))/c + (((8*(a*b^3*c^2*e^5 - 4*a^
2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4
*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c -
 (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) -
3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c
)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*
a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a
*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*
b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(
1/2))/(2*c^3))^(1/2) - (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^
5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4
*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a
*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2
*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^
3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d
*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(
2*c^3))^(1/2) + (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8
*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12
*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 -
2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*
c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2
 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*
e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c
^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^
(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 -
4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*
```

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x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 +
48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*
e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e
^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3
+ b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) +
 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^
(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)))*(-(b^3*e^3 - 2*c^
3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(
1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4
*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*2i - atan((((
(8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b
^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 +
 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^
3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2
*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) +
3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*
e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(
b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*
e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b
*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) - (8*(d + e*x)^(1/2)*(b^6*e^6
- 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4
 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^
6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*
d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4
*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3
*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^
2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*1i - (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^
3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e
^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c + (8*(d
 + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*
c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2
*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2
))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*
d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e
^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*
d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/
(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*
e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c
^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4
*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))
/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*
c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 -
 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3)
)^(1/2)*1i)/((16*(a^2*b^4*e^8 + 8*a^4*c^2*e^8 + b^6*d^2*e^6 - 6*a^3*b^2*c*e
^8 - 8*a*c^5*d^6*e^2 - 4*b^5*c*d^3*e^5 - 8*a^2*c^4*d^4*e^4 + 8*a^3*c^3*d^2*
e^6 + 2*b^2*c^4*d^6*e^2 - 6*b^3*c^3*d^5*e^3 + 7*b^4*c^2*d^4*e^4 - 2*a*b^5*d
*e^7 - 18*a^2*b^2*c^2*d^2*e^6 + 24*a*b*c^4*d^5*e^3 + 10*a^2*b^3*c*d*e^7 - 8
*a^3*b*c^2*d*e^7 - 26*a*b^2*c^3*d^4*e^4 + 12*a*b^3*c^2*d^3*e^5 + 16*a^2*b*c
^3*d^3*e^5))/c + (((8*(a*b^3*c^2*e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 +
8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 - 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 1
2*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d*e^4))/c - (8*(d + e*x)^(1/2)*(-(b^3*e^3 -
 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3
*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*
c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)
^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 -
 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) - (8*(d + e
*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 +
 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2
*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*
e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3
 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2)
+ 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)
^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2) + (((8*(a*b^3*c^2*
e^5 - 4*a^2*b*c^3*e^5 + 8*a*c^5*d^3*e^2 + 8*a^2*c^4*d*e^4 - b^4*c^2*d*e^4 -
 2*b^2*c^4*d^3*e^2 + 3*b^3*c^3*d^2*e^3 - 12*a*b*c^4*d^2*e^3 + 2*a*b^2*c^3*d
*e^4))/c + (8*(d + e*x)^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c
)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c
^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b
^2 - 4*a*c)^(1/2))/(2*c^3))^(1/2)*(b^3*c^3*e^3 - 2*b^2*c^4*d*e^2 - 4*a*b*c^
4*e^3 + 8*a*c^5*d*e^2))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(
1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*
d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2
- 4*a*c)^(1/2))/(2*c^3))^(1/2) + (8*(d + e*x)^(1/2)*(b^6*e^6 - 8*a^3*c^3*e^
6 - 8*a*c^5*d^4*e^2 + 18*a^2*b^2*c^2*e^6 + 48*a^2*c^4*d^2*e^4 + 2*b^2*c^4*d
^4*e^2 - 4*b^3*c^3*d^3*e^3 + 6*b^4*c^2*d^2*e^4 - 8*a*b^4*c*e^6 - 4*b^5*c*d*
e^5 + 16*a*b*c^4*d^3*e^3 + 28*a*b^3*c^2*d*e^5 - 48*a^2*b*c^3*d*e^5 - 36*a*b
^2*c^3*d^2*e^4))/c)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) -
3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c
)^(1/2))/(2*c^3))^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1
/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d
^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 -
 4*a*c)^(1/2))/(2*c^3))^(1/2)*2i - ((4*(b*e - 2*c*d))/c - (2*b*e - 4*c*d)/c
)*(d + e*x)^(1/2)
```

sympy [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1614 $\int \frac{(b+2cx)\sqrt{d+ex}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=291

$$-\frac{\sqrt{2}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c(}{\sqrt{c}\sqrt{b^2-4a}}$$

```
[Out] 4*(e*x+d)^(1/2)-arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b
^2)^(1/2)))^(1/2))*2^(1/2)*(b*e*(b-(-4*a*c+b^2)^(1/2))+2*c*(-2*a*e+d*(-4*a*
c+b^2)^(1/2)))/c^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^
(1/2)+arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))
)^(1/2))*2^(1/2)*(b*e*(b+(-4*a*c+b^2)^(1/2))-2*c*(2*a*e+d*(-4*a*c+b^2)^(1/2
)))/c^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.89, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {824, 826, 1166, 208}

$$-\frac{\sqrt{2}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c(}{\sqrt{c}\sqrt{b^2-4a}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2),x]
```

```
[Out] 4*Sqrt[d + e*x] - (Sqrt[2]*(b*(b - Sqrt[b^2 - 4*a*c])*e + 2*c*(Sqrt[b^2 - 4
*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b -
 Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[
b^2 - 4*a*c])*e]) + (Sqrt[2]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^2 -
 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
 + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqr
t[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(b+2cx)\sqrt{d+ex}}{a+bx+cx^2}\,dx &= 4\sqrt{d+ex}+\frac{\int \frac{c(bd-2ae)+c(2cd-be)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{c}\\
&= 4\sqrt{d+ex}+\frac{2\,\text{Subst}\left(\int \frac{ce(bd-2ae)-cd(2cd-be)+c(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx,x,\sqrt{d+ex}\right)}{c}\\
&= 4\sqrt{d+ex}+\left(-b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e+c\left(2d-\frac{4ae}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{}{-\frac{1}{2}\sqrt{b^2-4ac}}\right.\\
&= 4\sqrt{d+ex}+\frac{\sqrt{2}\left(b\left(1-\frac{b}{\sqrt{b^2-4ac}}\right)e-c\left(2d-\frac{4ae}{\sqrt{b^2-4ac}}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{c}\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}
\end{aligned}$$

Mathematica [**A**] time = 0.35, size = 288, normalized size = 0.99

$$\frac{\sqrt{2}\left(c\left(4ae-2d\sqrt{b^2-4ac}\right)+be\left(\sqrt{b^2-4ac}-b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{c}\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{2}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(\right.\right.}{\sqrt{c}\sqrt{b^2-4}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2),x]
```

```
[Out] 4*Sqrt[d + e*x] + (Sqrt[2]*(b*(-b + Sqrt[b^2 - 4*a*c])*e + c*(-2*Sqrt[b^2 -
 4*a*c]*d + 4*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*
e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d + (-b + Sq
rt[b^2 - 4*a*c])*e]) + (Sqrt[2]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^
2 - 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
 (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[c]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e])
```

fricas [**A**] time = 0.94, size = 368, normalized size = 1.26

$$-\frac{1}{2}\sqrt{2}\sqrt{\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{c}}\log\left(\sqrt{2}\sqrt{\frac{2\,cd-be+c\sqrt{\frac{\left(b^2-4\,ac\right)e^2}{c^2}}}{c}}+2\sqrt{ex+d}\right)+\frac{1}{2}\sqrt{2}\sqrt{\frac{2\,cd-be+c}{c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*log(sqrt
(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e*x + d)
) + 1/2*sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*log(-
sqrt(2)*sqrt((2*c*d - b*e + c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e*x
+ d)) - 1/2*sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c)*l
og(sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sqrt(e
*x + d)) + 1/2*sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c
)*log(-sqrt(2)*sqrt((2*c*d - b*e - c*sqrt((b^2 - 4*a*c)*e^2/c^2))/c) + 2*sq
rt(e*x + d)) + 4*sqrt(e*x + d)
```

giac [**B**]   time = 0.46, size = 614, normalized size = 2.11

$$4\sqrt{xe+d}+\frac{\left(\left(2\sqrt{b^2-4\,ac}\,cde-\sqrt{b^2-4\,ac}\,be^2\right)\sqrt{-4\,c^2d+2\left(bc-\sqrt{b^2-4\,ac}\,c\right)e}\,c^2-4\left(c^3d^2-bc^2de+ac^2e^2\right)\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 4*sqrt(x*e + d) + 1/4*((2*sqrt(b^2 - 4*a*c)*c*d*e - sqrt(b^2 - 4*a*c)*b*e^2
)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^2 - 4*(c^3*d^2 - b*c^2
*d*e + a*c^2*e^2)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(c) -
 (2*sqrt(b^2 - 4*a*c)*c^3*d*e - sqrt(b^2 - 4*a*c)*b*c^2*e^2)*sqrt(-4*c^2*d
+ 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-
(2*c^2*d - b*c*e + sqrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b
*c*e)^2))/c^2))/((c^3*d^2 - b*c^2*d*e + a*c^2*e^2)*c^2) - 1/4*((2*sqrt(b^2
- 4*a*c)*c*d*e - sqrt(b^2 - 4*a*c)*b*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2
 - 4*a*c)*c)*e)*c^2 + 4*(c^3*d^2 - b*c^2*d*e + a*c^2*e^2)*sqrt(-4*c^2*d + 2
*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c) - (2*sqrt(b^2 - 4*a*c)*c^3*d*e - sqr
t(b^2 - 4*a*c)*b*c^2*e^2)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))
*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d - b*c*e - sqrt(-4*(c^2*d^2
 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2))/c^2))/((c^3*d^2 - b*c^2*d
*e + a*c^2*e^2)*c^2)
```

maple [**B**]   time = 0.09, size = 724, normalized size = 2.49

$$\frac{4\sqrt{2}\,ac\,e^2\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{4\sqrt{2}\,ac\,e^2\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4*(e*x+d)^(1/2)+4*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((
-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)
/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2+2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b
*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e-2*c*2^(1/2)/((-b*e+2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+4*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^
```

```
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(-(4*a*c-b
^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arcta
n((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b
^2*e^2-2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d
)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e+2*c*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a), x)
```

mupad [B] time = 2.14, size = 2611, normalized size = 8.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2),x)
```

```
[Out] 4*(d + e*x)^(1/2) + 2*atanh((128*a^2*c^3*e^4*(d + e*x)^(1/2)*(d - (e*(b^2 -
 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1
/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)
^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c
)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^4*c*e^4*(d + e*x)^(1
/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^
5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c
*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^
2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (8*b^3*
c*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c
) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^
2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d
*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^
2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (64*a*b^2*c^2*e^4*(d + e*x)^(1/2)*(d - (e*(b
^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c
)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*
a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (16*b^2*c^2*d*e^3*(b^
2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)
/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^
2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2
 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(
b^2 - 4*a*c)^(1/2)) + (32*a*b*c^2*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(
d - (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^
2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*
(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3
*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (64*a*c^3*d*
e^3*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d - (e*(b^2 - 4*a*c)^(1/2))/(2*c)
- (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*
e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e
^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*
d*e^4*(b^2 - 4*a*c)^(1/2)))*(-(b*e - 2*c*d + e*(b^2 - 4*a*c)^(1/2))/(2*c))^
(1/2) - 2*atanh((128*a^2*c^3*e^4*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2
))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2
*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*
b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64
*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^4*c*e^4*(d + e*x)^(1/2)*(d + (e*
(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a
*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 -
 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (8*b^3*c*e^4*(b^2 -
 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2
*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 -
 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 -
4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2)) - (64*a*b^2*c^2*e^4*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^
(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16
*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) +
 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2)
- 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) - (16*b^2*c^2*d*e^3*(b^2 - 4*a*c)^(
1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2
))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(
1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1
/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)
^(1/2)) - (32*a*b*c^2*e^4*(b^2 - 4*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2
- 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(
1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c
)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2)) + (64*a*c^3*d*e^3*(b^2 - 4
*a*c)^(1/2)*(d + e*x)^(1/2)*(d + (e*(b^2 - 4*a*c)^(1/2))/(2*c) - (b*e)/(2*c
))^(1/2))/(64*a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 16*b^2*c^2*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 16*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) + 16*b^3*c*d*e^4*(b^2 - 4*
a*c)^(1/2) + 64*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 64*a*b*c^2*d*e^4*(b^2 -
 4*a*c)^(1/2)))*((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*c))^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1615 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=175

$$-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}$$

```
[Out] -2*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(
1/2))*2^(1/2)*c^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-2*arctanh(2^(1
/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c
^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.107, Rules used = {826, 1166, 208}

$$-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)),x]
```

```
[Out] (-2*Sqrt[2]*Sqrt[c]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
 - Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e] - (2*Sqr
t[2]*Sqrt[c]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt
[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx &= 2\,\mathrm{Subst}\left(\int \frac{-2cd+be+2cx^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx, x, \sqrt{d+ex}\right)\\ &= (2c)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)+cx^2}\,dx, x, \sqrt{d+ex}\right)+(2c)\,\mathrm{Subst}\\ &= -\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}-\frac{2\sqrt{2}\sqrt{c}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\end{aligned}$$

Mathematica [A] time = 0.63, size = 165, normalized size = 0.94

$$2\sqrt{2}\sqrt{c}\left(-\frac{\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)),x]
```

```
[Out] 2*Sqrt[2]*Sqrt[c]*(-(ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b
*e + Sqrt[b^2 - 4*a*c]*e]]/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) - ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
]/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

fricas [B] time = 0.97, size = 1317, normalized size = 7.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*sqrt(2)*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)
*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2
)))/(c*d^2 - b*d*e + a*e^2))*log(sqrt(2)*(2*c*d - b*e - (c*d^2 - b*d*e + a*
e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4
+ (b^2 + 2*a*c)*d^2*e^2)))*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt
((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 +
2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) + 1/2*sqrt(
2)*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*
d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2
 - b*d*e + a*e^2))*log(-sqrt(2)*(2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt
((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 +
2*a*c)*d^2*e^2)))*sqrt((2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4
*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^
2*e^2)))/(c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) - 1/2*sqrt(2)*sqrt((
2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b
*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e
+ a*e^2))*log(sqrt(2)*(2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*
a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2
*e^2)))*sqrt((2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/
(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(
c*d^2 - b*d*e + a*e^2)) + 4*sqrt(e*x + d)*c) + 1/2*sqrt(2)*sqrt((2*c*d - b*
e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4 - 2*b*c*d^3*e -
 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b*d*e + a*e^2))*
log(-sqrt(2)*(2*c*d - b*e + (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/
(c^2*d^4 - 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))*s
qrt((2*c*d - b*e - (c*d^2 - b*d*e + a*e^2)*sqrt((b^2 - 4*a*c)*e^2/(c^2*d^4
- 2*b*c*d^3*e - 2*a*b*d*e^3 + a^2*e^4 + (b^2 + 2*a*c)*d^2*e^2)))/(c*d^2 - b
*d*e + a*e^2)) + 4*sqrt(e*x + d)*c)
```

giac [A]   time = 0.30, size = 254, normalized size = 1.45

$$-\frac{2\sqrt{-4c^2d+2\left(bc-\sqrt{b^2-4ac}\,c\right)e}\,c\arctan\left(\frac{2\sqrt{\frac{1}{2}}\sqrt{xe+d}}{\sqrt{-\frac{2cd-be+\sqrt{(2cd-be)^2-4\left(cd^2-bde+ae^2\right)c}}{c}}}\right)}{\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)|c|}-\frac{2\sqrt{-4c^2d+2\left(bc+\sqrt{b^2-4a}\right.}}{\left(2cd-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] -2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sq
rt(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e +
a*e^2)*c))/c))/((2*c*d - (b - sqrt(b^2 - 4*a*c))*e)*abs(c)) - 2*sqrt(-4*c^2
*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sq
rt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*e^2)*c))/c))
/((2*c*d - (b + sqrt(b^2 - 4*a*c))*e)*abs(c))
```

maple [A]   time = 0.07, size = 158, normalized size = 0.90

$$-\frac{2\sqrt{2}\,c\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{2\sqrt{2}\,c\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x)
```

```
[Out] -2*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+2*c*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

mupad [B]   time = 2.37, size = 205, normalized size = 1.17

$$\operatorname{atan}\left(\sqrt{\frac{2\,c\,d-b\,e+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,\sqrt{d+e\,x}\,1\mathrm{i}\right)\sqrt{\frac{2\,c\,d-b\,e+e\,\sqrt{b^2-4\,a\,c}}{2\,c\,d^2-2\,b\,d\,e+2\,a\,e^2}}\,2\mathrm{i}+\operatorname{atan}\left(\sqrt{-\frac{b\,e-2\,c\,d+e\,\sqrt{b^2-}}{2\,c\,d^2-2\,b\,d\,e+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan(((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^
(1/2)*(d + e*x)^(1/2)*1i)*((2*c*d - b*e + e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 +
 2*c*d^2 - 2*b*d*e))^(1/2)*2i + atan((-(b*e - 2*c*d + e*(b^2 - 4*a*c)^(1/2)
)/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^(1/2)*(d + e*x)^(1/2)*1i)*(-(b*e - 2*c*d +
 e*(b^2 - 4*a*c)^(1/2))/(2*a*e^2 + 2*c*d^2 - 2*b*d*e))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1616 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=354

$$\frac{\sqrt{2}\sqrt{c}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-\right.\right.}{\sqrt{b^2-4ac}\sqrt{}}$$

```
[Out] 2*(-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)+arctanh(2^(1/2)*c^(1/2)*(e
*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^(1/2)*(b*e*(b
+(-4*a*c+b^2)^(1/2))-2*c*(2*a*e+d*(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d*e+c*d^2)/
(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-arctanh(2^(1/2)*c
^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^(1/2
)*(b*e*(b-(-4*a*c+b^2)^(1/2))+2*c*(-2*a*e+d*(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d
*e+c*d^2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.70, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {828, 826, 1166, 208}

$$\frac{\sqrt{2}\sqrt{c}\left(be\left(\sqrt{b^2-4ac}+b\right)-2c\left(d\sqrt{b^2-4ac}+2ae\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-\right.\right.}{\sqrt{b^2-4ac}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]) + (Sqrt[2]*Sqrt[c
]*(b*(b + Sqrt[b^2 - 4*a*c])*e - 2*c*(Sqrt[b^2 - 4*a*c]*d + 2*a*e))*ArcTanh
[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/
(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e +
 a*e^2)) - (Sqrt[2]*Sqrt[c]*(b*(b - Sqrt[b^2 - 4*a*c])*e + 2*c*(Sqrt[b^2 -
4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4
*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx = \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{\int \frac{bcd-b^2e+2ace+c(2cd-be)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}\Big(\int \frac{-cd(2cd-be)+e\left(bcd-b^2e+2ace\right)+c(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx,}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \Big(2\Big(\frac{1}{2}c(2cd-be) - \frac{-c(2cd-be)(-2cd+be)+2c\big(-cd(2cd-be)+}{2\sqrt{b^2-4ac}\,e}$$

$$= \frac{2(2cd-be)}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{\sqrt{2}\sqrt{c}\,\Big(b\left(b+\sqrt{b^2-4ac}\right)e-2c\Big(\sqrt{b^2-4ac}\,d+}{\sqrt{b^2-4ac}\,\sqrt{2cd-\Big(b-\sqrt{b^2-4ac}}}$$

Mathematica [A] time = 0.50, size = 317, normalized size = 0.90

$$\frac{2\left(\frac{\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}+2ae\right)-be\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}} + \frac{\sqrt{c}\left(2c\left(d\sqrt{b^2-4ac}-2ae\right)+be\left(b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\Big(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\big(\sqrt{b^2-4ac}+b}}}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}{e(bd-ae)-cd^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*((-2*c*d + b*e)/Sqrt[d + e*x] + (Sqrt[c]*(-(b*(b + Sqrt[b^2 - 4*a*c])*e)
 + 2*c*(Sqrt[b^2 - 4*a*c]*d + 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x
])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqr
t[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[c]*(b*(b - Sqrt[b^2 - 4*a*c]
)*e + 2*c*(Sqrt[b^2 - 4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*
Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])))/(-(c*d^2) + e*(b*d - a*e))
```

fricas [B] time = 1.23, size = 8557, normalized size = 24.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/2*(sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sq
rt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)
*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^
2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(
b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^
2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^
3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6
*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^
2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^
4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*
b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10
*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*
a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6
 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b
^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(sqrt(2)*(6*c^4*d^4
- 12*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d
*e^3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3
*b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 +
(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3
*a^2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^
3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 -
 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2
*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^
12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3
+ 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 +
10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^
6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a
^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4
*b^2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*
a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e
^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b
^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*
a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^
5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 -
 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3
*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(
b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2
*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6
- 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2
*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 +
 2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 +
3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2
*e^4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d))
 - sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt
((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e
^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)
*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^
2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2
- 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)
*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b
*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2
- 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)
*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^
4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a
^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^
3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 -
```

```
 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3
 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(-sqrt(2)*(6*c^4*d^4 -
 12*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*
e^3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 - (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*
b*e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (
b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*
a^2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3
 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 -
6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*
c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^1
2 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 +
 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 1
0*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6
*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^
3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*
b^2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a
*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 + (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^
5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^
2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a
*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5
*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 -
4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*
(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b
^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*
b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 -
 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*
c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 +
2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3
*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*
e^4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d))
+ sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt(
(2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^
3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*
d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2
*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 -
 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*
d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*
c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 -
 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*
d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4
*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^
3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3
*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 -
3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3
+ 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(sqrt(2)*(6*c^4*d^4 - 1
2*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*e^
3 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 + (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*
e^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^
4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^
2*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 -
 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*
(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^
2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12
+ 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 1
5*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*
a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e
^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*
b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^
2 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c
^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5
+ a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2
+ a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b
*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c
 - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*
a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5
*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4
*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*
c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6
*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c
+ a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*
a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(
b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^
4)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d)) -
sqrt(2)*(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e^2 + a*e^3)*x)*sqrt((2
*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^2)*d*e^2 - (b^3 - 3*a*b*c)*e^3
- (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^
4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4)*sqrt((9*(b^2*c
^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 2
2*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*
e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^
5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 1
0*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^
8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c
 + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*
b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b
^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a^5*c)*d^2*e^10)))/(c^3*d^6 - 3*
b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 +
6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4))*log(-sqrt(2)*(6*c^4*d^4 - 12
*b*c^3*d^3*e + (11*b^2*c^2 - 8*a*c^3)*d^2*e^2 - (5*b^3*c - 8*a*b*c^2)*d*e^3
 + (b^4 - 3*a*b^2*c + 2*a^2*c^2)*e^4 + (2*c^4*d^7 - 7*b*c^3*d^6*e - a^3*b*e
^7 + 3*(3*b^2*c^2 + 2*a*c^3)*d^5*e^2 - 5*(b^3*c + 3*a*b*c^2)*d^4*e^3 + (b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^4 - 3*(a*b^3 + 3*a^2*b*c)*d^2*e^5 + (3*a^2
*b^2 + 2*a^3*c)*d*e^6)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 -
4*a*b*c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(
b^5*c - 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2
 - 4*a^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 +
 3*(5*b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15
*(b^4*c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a
^2*b*c^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^
6 - 6*(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b
^2*c + a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2
 + 2*a^5*c)*d^2*e^10)))*sqrt((2*c^3*d^3 - 3*b*c^2*d^2*e + 3*(b^2*c - 2*a*c^
2)*d*e^2 - (b^3 - 3*a*b*c)*e^3 - (c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 +
 a^3*e^6 + 3*(b^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 +
 a^2*c)*d^2*e^4)*sqrt((9*(b^2*c^4 - 4*a*c^5)*d^4*e^2 - 18*(b^3*c^3 - 4*a*b*
c^4)*d^3*e^3 + 3*(5*b^4*c^2 - 22*a*b^2*c^3 + 8*a^2*c^4)*d^2*e^4 - 6*(b^5*c
- 5*a*b^3*c^2 + 4*a^2*b*c^3)*d*e^5 + (b^6 - 6*a*b^4*c + 9*a^2*b^2*c^2 - 4*a
^3*c^3)*e^6)/(c^6*d^12 - 6*b*c^5*d^11*e - 6*a^5*b*d*e^11 + a^6*e^12 + 3*(5*
b^2*c^4 + 2*a*c^5)*d^10*e^2 - 10*(2*b^3*c^3 + 3*a*b*c^4)*d^9*e^3 + 15*(b^4*
c^2 + 4*a*b^2*c^3 + a^2*c^4)*d^8*e^4 - 6*(b^5*c + 10*a*b^3*c^2 + 10*a^2*b*c
^3)*d^7*e^5 + (b^6 + 30*a*b^4*c + 90*a^2*b^2*c^2 + 20*a^3*c^3)*d^6*e^6 - 6*
(a*b^5 + 10*a^2*b^3*c + 10*a^3*b*c^2)*d^5*e^7 + 15*(a^2*b^4 + 4*a^3*b^2*c +
 a^4*c^2)*d^4*e^8 - 10*(2*a^3*b^3 + 3*a^4*b*c)*d^3*e^9 + 3*(5*a^4*b^2 + 2*a
^5*c)*d^2*e^10)))/(c^3*d^6 - 3*b*c^2*d^5*e - 3*a^2*b*d*e^5 + a^3*e^6 + 3*(b
^2*c + a*c^2)*d^4*e^2 - (b^3 + 6*a*b*c)*d^3*e^3 + 3*(a*b^2 + a^2*c)*d^2*e^4
)) - 4*(3*c^4*d^2 - 3*b*c^3*d*e + (b^2*c^2 - a*c^3)*e^2)*sqrt(e*x + d)) + 4
*(2*c*d - b*e)*sqrt(e*x + d))/(c*d^3 - b*d^2*e + a*d*e^2 + (c*d^2*e - b*d*e
^2 + a*e^3)*x)
```

giac [B] time = 1.00, size = 1366, normalized size = 3.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 2*(2*c*d - b*e)/((c*d^2 - b*d*e + a*e^2)*sqrt(x*e + d)) + 1/4*((c*d^2*e - b
*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(2*sqrt(
b^2 - 4*a*c)*c*d - sqrt(b^2 - 4*a*c)*b*e) - 2*(2*c^3*d^4 - 4*b*c^2*d^3*e +
3*b^2*c*d^2*e^2 - b^3*d*e^3 + (a*b^2 - 2*a^2*c)*e^4)*sqrt(-4*c^2*d + 2*(b*c
 - sqrt(b^2 - 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e^2 + a*e^3) + (2*sqrt(b^2 - 4
*a*c)*c^3*d^5*e^2 - 5*sqrt(b^2 - 4*a*c)*b*c^2*d^4*e^3 + 4*(b^2*c + a*c^2)*s
qrt(b^2 - 4*a*c)*d^3*e^4 - sqrt(b^2 - 4*a*c)*a^2*b*e^7 - (b^3 + 6*a*b*c)*sq
rt(b^2 - 4*a*c)*d^2*e^5 + 2*(a*b^2 + a^2*c)*sqrt(b^2 - 4*a*c)*d*e^6)*sqrt(-
4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d
)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 + sqrt
((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)^2 - 4*(c^2*d
^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(c^
2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2)))/((c^3*d^6 - 3*
b*c^2*d^5*e + 3*(b^2*c + a*c^2)*d^4*e^2 - 3*a^2*b*d*e^5 - (b^3 + 6*a*b*c)*d
^3*e^3 + a^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3
)*abs(c)) - 1/4*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqr
t(b^2 - 4*a*c)*c)*e)*(2*sqrt(b^2 - 4*a*c)*c*d - sqrt(b^2 - 4*a*c)*b*e) + 2*
(2*c^3*d^4 - 4*b*c^2*d^3*e + 3*b^2*c*d^2*e^2 - b^3*d*e^3 + (a*b^2 - 2*a^2*c
)*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e
^2 + a*e^3) + (2*sqrt(b^2 - 4*a*c)*c^3*d^5*e^2 - 5*sqrt(b^2 - 4*a*c)*b*c^2*
d^4*e^3 + 4*(b^2*c + a*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^4 - sqrt(b^2 - 4*a*c)*a
^2*b*e^7 - (b^3 + 6*a*b*c)*sqrt(b^2 - 4*a*c)*d^2*e^5 + 2*(a*b^2 + a^2*c)*sq
rt(b^2 - 4*a*c)*d*e^6)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*ar
ctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 +
 2*a*c*d*e^2 - a*b*e^3 - sqrt((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*
d*e^2 - a*b*e^3)^2 - 4*(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2
 - 2*a*b*d*e^3 + a^2*e^4)*(c^2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*
e + a*c*e^2)))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*(b^2*c + a*c^2)*d^4*e^2 - 3*a^
2*b*d*e^5 - (b^3 + 6*a*b*c)*d^3*e^3 + a^3*e^6 + 3*(a*b^2 + a^2*c)*d^2*e^4)*
abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c))
```

maple [B] time = 0.11, size = 927, normalized size = 2.62

$$-\frac{4\sqrt{2}\, a\, c^{2} e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\, \sqrt{2}\, c}{\sqrt{\left(-b e+2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}\right)}{\left(a\, e^{2}-b d e+c\, d^{2}\right) \sqrt{-\left(4 a c-b^{2}\right) e^{2}}\, \sqrt{\left(-b e+2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}-\frac{4\sqrt{2}\, a\, c^{2} e^{2} \arctan\left(\right.}{\left(a\, e^{2}-b d e+c\, d^{2}\right) \sqrt{-\left(4 a c-b^{2}\right) e^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x)
```

```
[Out] -4/(a*e^2-b*d*e+c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)*c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2*e^2+1/(a*e^2-b*d*e+c*d^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*b*e-2/(a*e^2-b*d*e+c*d^2)*c^2*2^(1/2)/((-b*e+2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-4/(a*e^2-b*d*e+c*d^2)*c^2/(-(4*
a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-1/(a*e^2-b*d*e+c*d^2)*c*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)
*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*e+2/(a*e^2-b*d
*e+c*d^2)*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan
((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-
2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)*b*e+4/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)
*c*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

mupad [B] time = 9.40, size = 33147, normalized size = 93.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)),x)
```

```
[Out] (4*c*d - 2*b*e + 2^(1/2)*a*e^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2
*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*
c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
 - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*
b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b
*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9
*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128
*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^
7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b
^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2
*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*
b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*
d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e
^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 -
2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*
c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2
 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3
*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^
4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d
^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*
a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d
^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 +
192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*
d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3
*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e -
3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)
^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^
2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a
*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13
```

```
 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c
^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e
^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*
b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6
*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5
*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^
3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 2
00*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 60
0*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*
b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^
4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*
b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 +
432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8
 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*
e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 -
 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112
*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3
*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^
3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 -
4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e
^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4
+ 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b
*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 6
4*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6
*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*
b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e
^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2
*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9
+ 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48
*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*
b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 +
b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6
*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1
/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3
*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^
2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64
*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*
e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16
*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*
d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2
^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 -
 a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^
2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3
*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*
d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3
))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^
4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 +
 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*
c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*
e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1
680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9
 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^
4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c
^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*
d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*
e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*
e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^
12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*
```

```
c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b
^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a
*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c
^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d
^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e
^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11
))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b
^8*c^2*d*e^8 - 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 19
2*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*
d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 -
56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) + 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^
(1/2) + 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 -
 4*a*c)^(1/2) + 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^
4*(b^2 - 4*a*c)^(1/2) + 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c
^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1
536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*
a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) - 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) -
 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^
6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*
d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d
*e^8 + 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 -
4*a*c)^(1/2) - 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*
e^5*(b^2 - 4*a*c)^(1/2) + 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a
*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^
(1/2) + 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*
(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2)
- 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e
 - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a
*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4
*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e -
6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i + 2^(1/2)*a*e^2*atan(-((2^(1/2)*
(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^
3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c
^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 +
c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4
 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2
)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10
 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2
*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^
5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*
a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 25
6*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3
*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d
^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e
^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b
*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^
2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/
2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c
*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12
+ 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4
*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*
e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*
b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2
*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*
c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2)
 + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*
b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b
*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*
d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320
*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*
d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4
+ 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^
2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b
^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a
^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1
200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3
+ 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 2
08*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240
*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a
^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 -
 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^
10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^
2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^
11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6
+ 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768
*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^
4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 -
 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^
3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d
^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)
^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^
2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2
 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c
^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*
d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^
7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5
 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384
*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/
2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c
*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 -
3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6
 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*
e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(
1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2
*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8
 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^
4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*
e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 -
4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 +
3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e
^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4
+ 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b
*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 3
2*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9
*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 1
6*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^
5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 +
2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e
^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d
^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*
c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*
c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3
*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d
^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2
*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^
```

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3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3
*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*
a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b
^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c
^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d
^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*
e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e
^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/
2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a
^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3
*e^6 + 48*b^7*c^3*d^2*e^7 + 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^
3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) - 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2)
- 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c
)^(1/2) + 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^
2 - 4*a*c)^(1/2) + 128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2
*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e
^7 + 32*a*b^6*c^3*d*e^8 - 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d
^6*e^3*(b^2 - 4*a*c)^(1/2) + 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^
2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c
^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6
*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 - 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2)
- 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c
)^(1/2) + 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6
*(b^2 - 4*a*c)^(1/2) + 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*
b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/
2) + 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 -
b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6
*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1
/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3
*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^
2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i + 2^
(1/2)*c*d^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^
(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2
*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2
 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c
^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^
5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c
^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 -
128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6
*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 48
0*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 +
128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a
*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*
c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3
*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3
*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*
d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3
*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*
d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e
^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^
4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 1
28*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^
8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5
 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*
(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^
3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c
^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 +
c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4
 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2
)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^1
2 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^
4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^1
0*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 5
6*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2
*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a
^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 +
 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*
e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5
 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1
440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 4
0*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2
 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4
*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*
d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*
d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*
e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8
 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32
*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1
i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*
b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b
^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1
/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*
c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*
a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*
d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 8
8*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^
6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*
c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6
*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7
 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128
*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*
c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(
b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*
a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2
*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a
^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d
^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 +
 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c
^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 -
 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a
*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^
2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^
3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d
^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^
(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^
3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^
8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*
b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^
6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6
*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d
^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*
c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a
*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5
*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^
7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^
2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b
```

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^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^
2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 19
2*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 19
2*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*
b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c
^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2
*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b
^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 - 64*a
^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 -
 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c
^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 - 56*a^2*b^4*c^3*e^9*
(b^2 - 4*a*c)^(1/2) + 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) + 64*a^2*c^7*
d^4*e^5*(b^2 - 4*a*c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 48*
b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/
2) + 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c^4*d^3*e^6*(b^2 - 4
*a*c)^(1/2) + 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3
*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*a*b^6*c^2*e^9*(b^2
 - 4*a*c)^(1/2) - 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 8*b^7*c^2*d*e^8*(b
^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b
^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b
^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 + 576*a*b*c^7*
d^5*e^4*(b^2 - 4*a*c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) - 192*
a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(
1/2) + 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a*b^4*c^4*d^2*e^7*(b
^2 - 4*a*c)^(1/2) - 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 112*a^2*b^3
*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)
))*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c
*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 +
3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6
 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*
e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(
1/2)*(d + e*x)^(1/2)*1i + 2^(1/2)*c*d^2*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*
d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/
2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a
*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e
^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2
 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*
(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e
^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b
^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*
e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7
 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 +
 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a
*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*
c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b
^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b
^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d
^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*
d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3
*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(6
4*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^
12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*
a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d
^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8
*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^
(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2
*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2
 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c
^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^
5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b
*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 +
640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c
^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e
^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^
2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 24
0*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8
- 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3
*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9
*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^
8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7
- 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 +
 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d
^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^
5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2
*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*
d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*
e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5
- 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 1
76*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^
3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2
*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) +
3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2
*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*
e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^
8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^
2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e
^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*
c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^
4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c
^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4
*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5
+ 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c
^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^
(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 -
4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^
3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e
^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10
*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2
*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*
e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192
*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4
*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*
b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b
^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1
/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 +
 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*
c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 +
64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*
d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2
+ 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6
*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^
7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^
3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b
^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*
a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a
*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7
*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b
*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2
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*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432
*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 -
576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^1
0 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 57
6*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*
b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*
c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c
^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*
e^8 - 8*b^8*c^2*d*e^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3
*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48
*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d
^2*e^7 + 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^3*b^2*c^4*e^9*(b^2
- 4*a*c)^(1/2) - 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 192*a^3*c^6*d^2*e
^7*(b^2 - 4*a*c)^(1/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 144*b^3*c
^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) +
128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^
(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d
*e^8 - 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d^6*e^3*(b^2 - 4*a*c
)^(1/2) + 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960
*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a
^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*
b^2*c^5*d*e^8 - 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*b^5*c^3*d*e^
8*(b^2 - 4*a*c)^(1/2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) + 752*a*b^2
*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2
) + 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*b*c^6*d^3*e^6*(b^2
- 4*a*c)^(1/2) - 112*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) + 48*a^2*b^2*c^5
*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*
c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(
b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*
a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2
*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*1i - 2^(1/2)*b*d*e*atan(-(
(2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3
 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*
e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*
c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e
^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4
*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8
 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c
^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e
^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2
*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 -
256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*
b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^
3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2
) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2
*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4
*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d
^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e
- 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*
c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6
- 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3
*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*
e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*
d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/
2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a
*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e
^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2
- 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(
64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e
^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320
*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6
*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 -
 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 +
240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10
 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2
*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*
d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^
6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e
^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^1
2 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*
d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c
^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b
^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b
*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5
*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*
e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11
 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2 + (2^(1/2)*(-(
b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(
b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*
d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3
*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 +
3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(
(d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 +
48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^
8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 -
 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2
*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a
*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^
6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*
e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9)
 - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*
e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c
*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))
/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a
^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^
3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 4
8*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^
6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3
 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7
*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 + b^2*e^
3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2
*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) -
3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2
*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*
e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^1
1*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^
2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3
*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 2
40*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d
^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*
c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*
b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200
*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 7
20*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*
a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^
3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*
```

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b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 10
56*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10
+ 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e
^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11
+ 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 9
6*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^
2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b
*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/2)/(8*a*b^7*c^2*e^9 - 128*a^
4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e^8 - 64*a^4*c^5*e^9*(b^2 - 4
*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*c^4*e^9 - 768*a^2*c^8*d^5*e^
4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 + 120*b^5*c^5*d^4*e^5 - 112*b^
6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 - 56*a^2*b^4*c^3*e^9*(b^2 - 4*a*c)^(1/2)
 + 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) + 64*a^2*c^7*d^4*e^5*(b^2 - 4*a*
c)^(1/2) + 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1/2) + 48*b^2*c^7*d^6*e^3*(b^
2 - 4*a*c)^(1/2) - 144*b^3*c^6*d^5*e^4*(b^2 - 4*a*c)^(1/2) + 184*b^4*c^5*d^
4*e^5*(b^2 - 4*a*c)^(1/2) - 128*b^5*c^4*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 48*b^
6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^2*c^6*d^3*e^6 + 384*a^2*b^3*
c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 + 8*a*b^6*c^2*e^9*(b^2 - 4*a*c)^(1/2) - 19
2*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) - 8*b^7*c^2*d*e^8*(b^2 - 4*a*c)^(1/2) +
 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5 + 864*a*b^4*c^5*d^3*e^6 - 33
6*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 + 144*a^2*b^4*c^4*d*e^8 + 768*
a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 + 576*a*b*c^7*d^5*e^4*(b^2 - 4*a*
c)^(1/2) + 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/2) - 192*a^3*b*c^5*d*e^8*(b^
2 - 4*a*c)^(1/2) - 752*a*b^2*c^6*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 544*a*b^3*c^
5*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 192*a*b^4*c^4*d^2*e^7*(b^2 - 4*a*c)^(1/2) -
 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 112*a^2*b^3*c^4*d*e^8*(b^2 - 4
*a*c)^(1/2) - 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a*c)^(1/2)))*(-(b^3*e^3 - 2*c
^3*d^3 + b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 - a*c*e^3*(b^2 - 4*a*c)^
(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + 3*c^2*d^2*e*(b^2 -
4*a*c)^(1/2) - 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^
3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e
^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(d + e*x)^(1/2
)*1i - 2^(1/2)*b*d*e*atan(-((2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2
- 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2
+ 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d
*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^
4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3
*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 -
 64*a^5*c^5*e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d
^6*e^4 - 128*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 10
4*b^4*c^6*d^6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3
*e^7 + 480*a^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d
^2*e^8 + 128*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^
9 + 384*a*b^2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 +
48*a*b^5*c^4*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^
2*b^5*c^3*d*e^9 - 128*a^3*b^3*c^4*d*e^9) + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3
- b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) +
 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^
(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 +
 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*
a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 -
64*a^6*c^4*e^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^
8*e^4 + 128*a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 -
16*b^2*c^8*d^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^
5*d^7*e^5 - 128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 -
(2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3
 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*
e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a
^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*
c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e
^3))^(1/2)*(d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*
c^4*d*e^12 + 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6
 + 640*a^4*c^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^
3*c^7*d^10*e^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^
7*e^6 + 56*b^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 -
 1680*a^2*b^3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e
^9 - 80*a^2*b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*
d^4*e^9 + 80*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3
*c^3*d^2*e^11 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^
6*d^8*e^5 + 336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^
4*e^9 - 1440*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^
4*e^9 - 40*a^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*
e^12))/2 + 1248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^
4*c^4*d^4*e^8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3
*b^3*c^4*d^3*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320
*a*b*c^8*d^9*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3
*c^6*d^7*e^5 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3
*d^4*e^8 + 32*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5
*e^7 + 32*a^3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^
11))/2)*1i)/2 + (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/
2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^
2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 -
4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*
d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e
 - 6*a*b*c*d^3*e^3))^(1/2)*((d + e*x)^(1/2)*(64*a*c^9*d^8*e^2 - 64*a^5*c^5*
e^10 - 8*a^3*b^4*c^3*e^10 + 48*a^4*b^2*c^4*e^10 + 128*a^2*c^8*d^6*e^4 - 128
*a^4*c^6*d^2*e^8 - 16*b^2*c^8*d^8*e^2 + 64*b^3*c^7*d^7*e^3 - 104*b^4*c^6*d^
6*e^4 + 88*b^5*c^5*d^5*e^5 - 40*b^6*c^4*d^4*e^6 + 8*b^7*c^3*d^3*e^7 + 480*a
^2*b^2*c^6*d^4*e^6 - 320*a^2*b^3*c^5*d^3*e^7 + 72*a^2*b^4*c^4*d^2*e^8 + 128
*a^3*b^2*c^5*d^2*e^8 - 256*a*b*c^8*d^7*e^3 + 128*a^4*b*c^5*d*e^9 + 384*a*b^
2*c^7*d^6*e^4 - 256*a*b^3*c^6*d^5*e^5 + 40*a*b^4*c^5*d^4*e^6 + 48*a*b^5*c^4
*d^3*e^7 - 24*a*b^6*c^3*d^2*e^8 - 384*a^2*b*c^7*d^5*e^5 + 24*a^2*b^5*c^3*d*
e^9 - 128*a^3*b^3*c^4*d*e^9) - (2^(1/2)*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b
^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e
^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*
c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2
*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5
 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(64*a*c^9*d^10*e^2 - 64*a^6*c^4*e
^12 - 8*a^4*b^4*c^2*e^12 + 48*a^5*b^2*c^3*e^12 + 192*a^2*c^8*d^8*e^4 + 128*
a^3*c^7*d^6*e^6 - 128*a^4*c^6*d^4*e^8 - 192*a^5*c^5*d^2*e^10 - 16*b^2*c^8*d
^10*e^2 + 80*b^3*c^7*d^9*e^3 - 168*b^4*c^6*d^8*e^4 + 192*b^5*c^5*d^7*e^5 -
128*b^6*c^4*d^6*e^6 + 48*b^7*c^3*d^5*e^7 - 8*b^8*c^2*d^4*e^8 + (2^(1/2)*(-(
b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*e^3 + a*c*e^3*(
b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 - 3*c^2*
d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))/(a^3*e^6 + c^3
*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 +
3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3))^(1/2)*(
d + e*x)^(1/2)*(64*a*c^9*d^11*e^2 - 32*a^6*b*c^3*e^13 + 64*a^6*c^4*d*e^12 +
 8*a^5*b^3*c^2*e^13 + 320*a^2*c^8*d^9*e^4 + 640*a^3*c^7*d^7*e^6 + 640*a^4*c
^6*d^5*e^8 + 320*a^5*c^5*d^3*e^10 - 16*b^2*c^8*d^11*e^2 + 88*b^3*c^7*d^10*e
^3 - 200*b^4*c^6*d^9*e^4 + 240*b^5*c^5*d^8*e^5 - 160*b^6*c^4*d^7*e^6 + 56*b
^7*c^3*d^6*e^7 - 8*b^8*c^2*d^5*e^8 + 2400*a^2*b^2*c^6*d^7*e^6 - 1680*a^2*b^
3*c^5*d^6*e^7 + 240*a^2*b^4*c^4*d^5*e^8 + 240*a^2*b^5*c^3*d^4*e^9 - 80*a^2*
b^6*c^2*d^3*e^10 + 2720*a^3*b^2*c^5*d^5*e^8 - 1200*a^3*b^3*c^4*d^4*e^9 + 80
*a^3*b^5*c^2*d^2*e^11 + 1200*a^4*b^2*c^4*d^3*e^10 - 200*a^4*b^3*c^3*d^2*e^1
1 - 352*a*b*c^8*d^10*e^3 + 720*a*b^2*c^7*d^9*e^4 - 600*a*b^3*c^6*d^8*e^5 +
336*a*b^5*c^4*d^6*e^7 - 208*a*b^6*c^3*d^5*e^8 + 40*a*b^7*c^2*d^4*e^9 - 1440
*a^2*b*c^7*d^8*e^5 - 2240*a^3*b*c^6*d^6*e^7 - 1600*a^4*b*c^5*d^4*e^9 - 40*a
```

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^4*b^4*c^2*d*e^12 - 480*a^5*b*c^4*d^2*e^11 + 144*a^5*b^2*c^3*d*e^12))/2 + 1
248*a^2*b^2*c^6*d^6*e^6 - 1056*a^2*b^3*c^5*d^5*e^7 + 432*a^2*b^4*c^4*d^4*e^
8 - 48*a^2*b^6*c^2*d^2*e^10 + 608*a^3*b^2*c^5*d^4*e^8 - 576*a^3*b^3*c^4*d^3
*e^9 + 192*a^3*b^4*c^3*d^2*e^10 + 48*a^4*b^2*c^4*d^2*e^10 - 320*a*b*c^8*d^9
*e^3 + 192*a^5*b*c^4*d*e^11 + 624*a*b^2*c^7*d^8*e^4 - 576*a*b^3*c^6*d^7*e^5
 + 192*a*b^4*c^5*d^6*e^6 + 96*a*b^5*c^4*d^5*e^7 - 112*a*b^6*c^3*d^4*e^8 + 3
2*a*b^7*c^2*d^3*e^9 - 768*a^2*b*c^7*d^7*e^5 - 384*a^3*b*c^6*d^5*e^7 + 32*a^
3*b^5*c^2*d*e^11 + 256*a^4*b*c^5*d^3*e^9 - 176*a^4*b^3*c^3*d*e^11))/2)*1i)/
2)/(8*a*b^7*c^2*e^9 - 128*a^4*b*c^5*e^9 + 256*a^4*c^6*d*e^8 - 8*b^8*c^2*d*e
^8 + 64*a^4*c^5*e^9*(b^2 - 4*a*c)^(1/2) - 72*a^2*b^5*c^3*e^9 + 192*a^3*b^3*
c^4*e^9 - 768*a^2*c^8*d^5*e^4 - 512*a^3*c^7*d^3*e^6 - 48*b^4*c^6*d^5*e^4 +
120*b^5*c^5*d^4*e^5 - 112*b^6*c^4*d^3*e^6 + 48*b^7*c^3*d^2*e^7 + 56*a^2*b^4
*c^3*e^9*(b^2 - 4*a*c)^(1/2) - 112*a^3*b^2*c^4*e^9*(b^2 - 4*a*c)^(1/2) - 64
*a^2*c^7*d^4*e^5*(b^2 - 4*a*c)^(1/2) - 192*a^3*c^6*d^2*e^7*(b^2 - 4*a*c)^(1
/2) - 48*b^2*c^7*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 144*b^3*c^6*d^5*e^4*(b^2 - 4
*a*c)^(1/2) - 184*b^4*c^5*d^4*e^5*(b^2 - 4*a*c)^(1/2) + 128*b^5*c^4*d^3*e^6
*(b^2 - 4*a*c)^(1/2) - 48*b^6*c^3*d^2*e^7*(b^2 - 4*a*c)^(1/2) - 1536*a^2*b^
2*c^6*d^3*e^6 + 384*a^2*b^3*c^5*d^2*e^7 + 32*a*b^6*c^3*d*e^8 - 8*a*b^6*c^2*
e^9*(b^2 - 4*a*c)^(1/2) + 192*a*c^8*d^6*e^3*(b^2 - 4*a*c)^(1/2) + 8*b^7*c^2
*d*e^8*(b^2 - 4*a*c)^(1/2) + 384*a*b^2*c^7*d^5*e^4 - 960*a*b^3*c^6*d^4*e^5
+ 864*a*b^4*c^5*d^3*e^6 - 336*a*b^5*c^4*d^2*e^7 + 1920*a^2*b*c^7*d^4*e^5 +
144*a^2*b^4*c^4*d*e^8 + 768*a^3*b*c^6*d^2*e^7 - 640*a^3*b^2*c^5*d*e^8 - 576
*a*b*c^7*d^5*e^4*(b^2 - 4*a*c)^(1/2) - 16*a*b^5*c^3*d*e^8*(b^2 - 4*a*c)^(1/
2) + 192*a^3*b*c^5*d*e^8*(b^2 - 4*a*c)^(1/2) + 752*a*b^2*c^6*d^4*e^5*(b^2 -
 4*a*c)^(1/2) - 544*a*b^3*c^5*d^3*e^6*(b^2 - 4*a*c)^(1/2) + 192*a*b^4*c^4*d
^2*e^7*(b^2 - 4*a*c)^(1/2) + 128*a^2*b*c^6*d^3*e^6*(b^2 - 4*a*c)^(1/2) - 11
2*a^2*b^3*c^4*d*e^8*(b^2 - 4*a*c)^(1/2) + 48*a^2*b^2*c^5*d^2*e^7*(b^2 - 4*a
*c)^(1/2)))*(-(b^3*e^3 - 2*c^3*d^3 - b^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b*c*
e^3 + a*c*e^3*(b^2 - 4*a*c)^(1/2) + 6*a*c^2*d*e^2 + 3*b*c^2*d^2*e - 3*b^2*c
*d*e^2 - 3*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + 3*b*c*d*e^2*(b^2 - 4*a*c)^(1/2))
/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a
^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^5 - 3*b*c^2*d^5*e - 6*a*b*c*d^
3*e^3))^(1/2)*(d + e*x)^(1/2)*1i)/((d + e*x)^(1/2)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1617 $\int \frac{b+2cx}{(d+ex)^{5/2}\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=518

$$\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{2}\,\sqrt{c}\,\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+\right.\right.}{\sqrt{b^2-4ac}\,\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

```
[Out] 2/3*(-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)+2*(2*c^2*d^2+b^2*e^2-2*c
*e*(a*e+b*d))/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)-arctanh(2^(1/2)*c^(1/2)*(
e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^(1/2)*(b^2*e
^2*(b+(-4*a*c+b^2)^(1/2))+2*c^2*d*(4*a*e+d*(-4*a*c+b^2)^(1/2))-2*c*e*(b^2*d
+2*a*b*e+b*d*(-4*a*c+b^2)^(1/2)+a*e*(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d*e+c*d^2
)^2/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)+arctanh(2^(1/
2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^
(1/2)*(b^2*e^2*(b-(-4*a*c+b^2)^(1/2))-2*c^2*d*(-4*a*e+d*(-4*a*c+b^2)^(1/2))
-2*c*e*(b^2*d+2*a*b*e-b*d*(-4*a*c+b^2)^(1/2)-a*e*(-4*a*c+b^2)^(1/2)))/(a*e^
2-b*d*e+c*d^2)^2/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi **[A]** time = 1.90, antiderivative size = 518, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {828, 826, 1166, 208}

$$\frac{2\left(-2ce(ae+bd)+b^2e^2+2c^2d^2\right)}{\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{2}\,\sqrt{c}\,\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+\right.\right.}{\sqrt{b^2-4ac}\,\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(2*c*d - b*e))/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(3/2)) + (2*(2*c^2*d
^2 + b^2*e^2 - 2*c*e*(b*d + a*e)))/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]
) - (Sqrt[2]*Sqrt[c]*(b^2*(b + Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 -
 4*a*c]*d + 4*a*e) - 2*c*e*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqr
t[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b
- Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4
*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2) + (Sqrt[2]*Sqrt[c]*(b^2*(b - Sqrt[b^2
- 4*a*c])*e^2 - 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*(b^2*d - b*Sq
rt[b^2 - 4*a*c]*d + 2*a*b*e - a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt
[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 - 4*
a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{5/2}\left(a+bx+cx^2\right)}\,dx = \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{\int \frac{bcd-b^2e+2ace+c(2cd-be)x}{(d+ex)^{3/2}\left(a+bx+cx^2\right)}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} + \int \frac{-2b^2cd}{}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} + \frac{2\,\mathrm{Subst}}{}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\left(c\left(b^2\left(b\right.\right.\right.}{}$$

$$= \frac{2(2cd-be)}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(2c^2d^2+b^2e^2-2ce(bd+ae)\right)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{\sqrt{2}\sqrt{c}\,\left(\right.}{}$$

Mathematica [A] time = 1.67, size = 481, normalized size = 0.93

$$\frac{2\left(\frac{-6ce(ae+bd)+3b^2e^2+6c^2d^2}{\sqrt{d+ex}\left(e(ae-bd)+cd^2\right)} - \frac{3\sqrt{c}\left(-\frac{\left(2c^2d\left(d\sqrt{b^2-4ac}+4ae\right)-2ce\left(bd\sqrt{b^2-4ac}+ae\sqrt{b^2-4ac}+2abe+b^2d\right)+b^2e^2\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}} - \cdots\right)}{\sqrt{2}\sqrt{b^2-4ac}\,\left(e(bd\right.}\right)}{3\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*((2*c*d - b*e)/(d + e*x)^(3/2) + (6*c^2*d^2 + 3*b^2*e^2 - 6*c*e*(b*d + a
*e))/((c*d^2 + e*(-(b*d) + a*e))*Sqrt[d + e*x]) - (3*Sqrt[c]*(-(((b^2*(b +
Sqrt[b^2 - 4*a*c])*e^2 + 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d + 4*a*e) - 2*c*e*(b^2
*d + b*Sqrt[b^2 - 4*a*c]*d + 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqr
t[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/Sqrt[
2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e]) - ((b^2*(-b + Sqrt[b^2 - 4*a*c])*e^2 +
 2*c^2*d*(Sqrt[b^2 - 4*a*c]*d - 4*a*e) - 2*c*e*(-(b^2*d) + b*Sqrt[b^2 - 4*a
*c]*d - 2*a*b*e + a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2
 - 4*a*c])*e]))/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*(-(c*d^2) + e*(b*d - a*e)))))/(3
*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 4.00, size = 1255, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*
sqrt(x*e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*
d^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a
^2*b*e^5 + sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*
e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b
*e^5)^2 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 -
b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b
*d*e^5 + a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^
2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 +
 2*a*c^2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/((2*c^3*d^3 - 3*(b*c^2 - sq
rt(b^2 - 4*a*c)*c^2)*d^2*e + 3*(b^2*c - 2*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*d*
e^2 - (b^3 - 3*a*b*c - (b^2 - a*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) - 2*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*sqrt(x*
e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2
 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^
5 - sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b
^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)^2
 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3
*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5
+ a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2 - 2*a
*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^
2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/((2*c^3*d^3 - 3*(b*c^2 + sqrt(b^2
- 4*a*c)*c^2)*d^2*e + 3*(b^2*c - 2*a*c^2 + sqrt(b^2 - 4*a*c)*b*c)*d*e^2 - (
b^3 - 3*a*b*c + (b^2 - a*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) + 2/3*(6*(x*e +
 d)*c^2*d^2 + 2*c^2*d^3 - 6*(x*e + d)*b*c*d*e - 3*b*c*d^2*e + 3*(x*e + d)*b
^2*e^2 - 6*(x*e + d)*a*c*e^2 + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)/((c^2*d^4
 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(x*e
+ d)^(3/2))
```

maple [B] time = 0.14, size = 1962, normalized size = 3.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x)
```

```
[Out] 4/(a*e^2-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(
-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b*e^3-8/(a*e^2-b*d*e+c*d^2)^2*c^3
/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))
*c)^(1/2)*c)*a*d*e^2-1/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(
1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*
2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3+2/(a*e^2
-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*e^2+2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*e^2-1/(a*e^2-b*d
*e+c*d^2)^2*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arcta
nh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
*b^2*e^2+2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b*d*e-2/(a*e^2-b*d*e+c*d^2)^2*c^3*2^(1/2)/((-b*e+2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+4/(a*e^2-b*d*e+c*d^2)^2*c^
2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*c)*a*b*e^3-8/(a*e^2-b*d*e+c*d^2)^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d*e^2-1/(a*e^2-b*
d*e+c*d^2)^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b^3*e^3+2/(a*e^2-b*d*e+c*d^2)^2*c^2/(-(4*a*c-b^2)*e
^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*
x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d*
e^2-2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2
))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/
2))*c)^(1/2)*c)*a*e^2+1/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((b*e-2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a
*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*e^2-2/(a*e^2-b*d*e+c*d^2)^2*c^2*2^(1/2)
/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2
)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d*e+2/(a*e^2-b*d*e+c*
d^2)^2*c^3*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e
*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-2
/3/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)*b*e+4/3/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3
/2)*c*d-4/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*a*c*e^2+2/(a*e^2-b*d*e+c*d^2)
^2/(e*x+d)^(1/2)*b^2*e^2-4/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*b*c*d*e+4/(a
*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*c^2*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\left(cx^{2} + bx + a\right)\left(ex + d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

mupad [B] time = 11.38, size = 50695, normalized size = 97.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)),x)
```

```
[Out] atan((((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e
^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2)
- 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e -
 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2
- 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4
*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b
^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4
*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e
^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e
^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*
c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c
^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4
 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*(-
(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a
*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*
c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*
d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^
(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/
2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4
*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*
c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a
^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e
^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^
3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2
*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^1
1*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19
*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^1
3*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^
7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e
^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5
 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 +
3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 -
96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6
- 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*
c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 -
23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c
^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187
200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^
7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 1
9200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^
7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 3427
20*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5
*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a
^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^1
0*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*
a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^1
8 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*
b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 +
 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^
5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a
^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^
19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^
4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2
*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 652
8*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 -
 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^
11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^
12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360
*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15
 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^
22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^2
1 - 64*a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*
b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^1
1*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8
*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^1
9*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*
e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8
 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11
 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6
 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5
*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 +
 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*
d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a
^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*
e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^
8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27
104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7
*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*
a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17
+ 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^
6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232
*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^
14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*
c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312
*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e
^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*
c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^
3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 47
04*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10
- 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*
e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*
d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^
6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160
*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 62
4*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^1
6*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280
*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096
*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*
c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c
^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d
^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12
 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c
^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320
*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13
 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*
c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 1136
0*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^
14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*
c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360
```

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*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16
 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c
^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*
a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16
 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14
*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9
*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^
6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*
c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*
a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352
*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-
(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a
*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*
c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*
d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^
(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/
2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4
*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*
c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a
^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e
^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^
3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2
*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*1i - ((-(b^5*e^5 - 2*c^5*d^5
 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^
2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3
*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*
(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^
5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*
e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*
d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5
*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*
c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*
a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*
e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e
^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*
a^2*b^2*c*d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a
*c^14*d^19*e^2 - (d + e*x)^(1/2)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*
a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^
2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b
^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2)
+ 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2
) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d
*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c
)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b
^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*
d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10
*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9
- 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*
e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))
^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^
10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4
*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440
*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^1
0*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^1
1*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*
d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^
13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*
e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^
2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^
10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*
b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15
+ 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^
4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^1
2 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9
*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 -
327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^
5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 -
 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8
*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 1
20960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*
d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800
*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6
*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*
b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18
- 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*
d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8
*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 -
 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^
5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^
15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9
*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*
a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7
- 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d
^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b
*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*
b^2*c^3*d*e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d
^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^
11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*
e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3
 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 -
 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 13
28*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b
^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^
7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6
*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 -
3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d
^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a
^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*
e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9
*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 2
0944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6
*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^
4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12
- 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^
5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a
^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^
15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c
^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880
*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^
19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d
^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4
*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*
a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 +
2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14
 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d
^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*
b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8
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*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d +
e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*
a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4
*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*
c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*
d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^
11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^1
0 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6
 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c
^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a
^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14
 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^
8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976
*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15
 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c
^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a
^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12
 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^
5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a
^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16
 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e
^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^
10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d
^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^1
1*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b
^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^
7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^
5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e
^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*
e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*
a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*
a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(
b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c
^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d
^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a
^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a
^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c
*d^4*e^6)))^(1/2)*1i)/(128*a^8*c^7*e^16 - ((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5
*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^
4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e
^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a
*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4
*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a
*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b
^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^
5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
+ 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^
6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^
4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^
3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*
d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^19
*e^2 - (d + e*x)^(1/2)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2)
 + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2
 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 +
 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c
^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*
c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*
a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) +
10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5
 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 -
10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d
^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*
d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a
*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64
*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2
*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15
*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d
^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*
e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4
 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 -
 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 +
520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 252
00*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*
d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600
*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^
10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^
3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13
*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*
a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e
^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4
*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10
*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*
b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12
 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*
b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 -
 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c
^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 20
16*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^
7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7
*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 -
 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d
^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c
^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*
a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 1
5840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*
e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2
*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^
4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 -
 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e
^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*
e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 -
256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 +
9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 147
2*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4
*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*
c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^
5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^
8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*
a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*
e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b
^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 -
8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8
*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 179
52*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e
^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b
^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13
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- 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*
d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^
5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15
 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2
*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*
a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^1
8 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c
^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*
a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 -
2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15
*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*
d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^1
0*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^
2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 -
34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*
e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d
*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)
*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^
4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10
*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^
14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 -
 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1
688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^1
1*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2
*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9
 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5
*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^
3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10
 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c
^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a
^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^1
2 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4
*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a
^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15
 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6
*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*
c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*
a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 4
00*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 +
368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7
 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e
^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^
3*e^15 - 640*a^7*b^3*c^5*d*e^17))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4
*a*c)^(1/2) + 5*a^2*b*c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c
^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*
b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2)
 + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/
2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*
d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*
c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 -
b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c
*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 1
0*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9
 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3
*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6))
)^(1/2) - ((-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c
^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1
/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4
*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(
b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2
 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^
3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d
*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d
^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d
^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*
b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a
*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6
*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2
)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 +
20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*
b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^
4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a
*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)
^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 +
5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 +
10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d
^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^
7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30
*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32
*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*
d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10
*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^
7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^
21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18
*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^
8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^1
1 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*
e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*
b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^1
1 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^
10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 -
 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^
5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13
 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^
2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 +
342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6
*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 16
80*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7
*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13
440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5
*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*
a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^
18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^
3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 9
60*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^
4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^
2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a
*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 -
 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e
^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^
4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*
b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 8
7360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*
e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*
d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4
*e^21 - 64*a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*
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a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4
*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7
*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13
*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d
^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13
*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*
e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15
*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2
*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^
11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*
c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 262
08*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d
^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^
3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16
+ 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4
*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9
296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e
^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^
4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 +
1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^
7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*
b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 3
7312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d
^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*
b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*
a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7
- 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e
^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*
d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c
^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 4435
2*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 1
2160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19
+ 624*a^9*b^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14
*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 +
1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 +
4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*
b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b
^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c
^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*
e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b
^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 +
4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*
e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*
b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 -
11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^
4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*
b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 -
4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*
e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b
^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13
120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*
e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*
d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5
*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^
8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b
^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23
040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 +
 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17)
)*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*c^2*e^5 +
20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) - 10*
b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^4*e - 5*b^
4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a
*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)
^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 -
4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 +
5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 +
10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d
^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^
7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30
*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - 128*a*c^14*d^14*e^2 +
16*a^6*b^4*c^5*e^16 - 96*a^7*b^2*c^6*e^16 - 640*a^2*c^13*d^12*e^4 - 1152*a^
3*c^12*d^10*e^6 - 640*a^4*c^11*d^8*e^8 + 640*a^5*c^10*d^6*e^10 + 1152*a^6*c
^9*d^4*e^12 + 640*a^7*c^8*d^2*e^14 + 32*b^2*c^13*d^14*e^2 - 224*b^3*c^12*d^
13*e^3 + 688*b^4*c^11*d^12*e^4 - 1216*b^5*c^10*d^11*e^5 + 1360*b^6*c^9*d^10
*e^6 - 992*b^7*c^8*d^9*e^7 + 464*b^8*c^7*d^8*e^8 - 128*b^9*c^6*d^7*e^9 + 16
*b^10*c^5*d^6*e^10 - 9696*a^2*b^2*c^11*d^10*e^6 + 13280*a^2*b^3*c^10*d^9*e^
7 - 10320*a^2*b^4*c^9*d^8*e^8 + 3840*a^2*b^5*c^8*d^7*e^9 + 320*a^2*b^6*c^7*
d^6*e^10 - 864*a^2*b^7*c^6*d^5*e^11 + 240*a^2*b^8*c^5*d^4*e^12 - 12320*a^3*
b^2*c^10*d^8*e^8 + 14720*a^3*b^3*c^9*d^7*e^9 - 10240*a^3*b^4*c^8*d^6*e^10 +
 3392*a^3*b^5*c^7*d^5*e^11 + 160*a^3*b^6*c^6*d^4*e^12 - 320*a^3*b^7*c^5*d^3
*e^13 - 5280*a^4*b^2*c^9*d^6*e^10 + 6880*a^4*b^3*c^8*d^5*e^11 - 4720*a^4*b^
4*c^7*d^4*e^12 + 960*a^4*b^5*c^6*d^3*e^13 + 240*a^4*b^6*c^5*d^2*e^14 + 672*
a^5*b^2*c^8*d^4*e^12 + 1856*a^5*b^3*c^7*d^3*e^13 - 1152*a^5*b^4*c^6*d^2*e^1
4 + 608*a^6*b^2*c^7*d^2*e^14 + 896*a*b*c^13*d^13*e^3 - 640*a^7*b*c^7*d*e^15
 - 2592*a*b^2*c^12*d^12*e^4 + 3904*a*b^3*c^11*d^11*e^5 - 2944*a*b^4*c^10*d^
10*e^6 + 288*a*b^5*c^9*d^9*e^7 + 1504*a*b^6*c^8*d^8*e^8 - 1408*a*b^7*c^7*d^
7*e^9 + 576*a*b^8*c^6*d^6*e^10 - 96*a*b^9*c^5*d^5*e^11 + 3840*a^2*b*c^12*d^
11*e^5 + 5760*a^3*b*c^11*d^9*e^7 + 2560*a^4*b*c^10*d^7*e^9 - 1920*a^5*b*c^9
*d^5*e^11 - 96*a^5*b^5*c^5*d*e^15 - 2304*a^6*b*c^8*d^3*e^13 + 544*a^6*b^3*c
^6*d*e^15))*(-(b^5*e^5 - 2*c^5*d^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) + 5*a^2*b*
c^2*e^5 + 20*a*c^4*d^3*e^2 - 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(
1/2) - 10*b^2*c^3*d^3*e^2 + 10*b^3*c^2*d^2*e^3 - 5*a*b^3*c*e^5 + 5*b*c^4*d^
4*e - 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*
(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^
2 - 4*a*c)^(1/2) - 30*a*b*c^3*d^2*e^3 + 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e
^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*
d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*
d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*
d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10
*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*
a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^
6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*2i - ((2*(b*e
- 2*c*d))/(3*(a*e^2 + c*d^2 - b*d*e)) - (2*(d + e*x)*(b^2*e^2 + 2*c^2*d^2 -
 2*a*c*e^2 - 2*b*c*d*e))/(a*e^2 + c*d^2 - b*d*e)^2)/(d + e*x)^(3/2) + atan(
((((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 2
0*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b
^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4
*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*
c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^
(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4
*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2
- 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5
*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 1
0*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^
8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7
*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*
a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*((2*c^5*
d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^
3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3
*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 +
 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) -
 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30
*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2
) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(
1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8
*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*
d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10
*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*
a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*
d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3
*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 +
2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10
+ 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16
+ 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 16
8*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320
*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^
9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12
*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160
*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^1
4*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a
^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*
e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3
*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*
e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^
3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16
+ 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*
b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^
14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*
c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13
+ 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6
*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198
240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5
*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a
^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e
^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*
c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 24
00*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e
^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d
^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5
*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*
a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12
 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18
*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*
c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 2688
0*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 96
0*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^21 - 64*
a*c^14*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3
*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*
e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^
14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 -
 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3
200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704
*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b
^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 2576
0*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^
12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a
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^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^1
4 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*
c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 -
49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d
^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4
*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^
12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7
*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456
*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e
^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^
7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48
608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4
*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^
2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1
312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2
*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*
d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^
6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*
a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 +
64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^
7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8
*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*
c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b
^2*c^4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 -
 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^
12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^
9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^
15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12
*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9
+ 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*
a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10
*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^
7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*
a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9
*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b
^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 16
0*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7
*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^
6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 3417
6*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*
e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2
*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920
*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 +
4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e
^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e
^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5
*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c
^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^
5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d
^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3
*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*
e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 +
5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) -
3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*
a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2)
 - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1
/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*
e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d
^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*
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b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a
*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d
^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*1i - (((2*c^5*d^5 - b^5*e^5 + b^4*e^
5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e
^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*
e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*
a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 -
4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*
a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(
b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c
^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8
 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d
^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a
^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a
^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c
*d^4*e^6)))^(1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^1
9*e^2 - (d + e*x)^(1/2)*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2)
 - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2
 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 -
 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c
^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*
c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*
a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) +
10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5
 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 -
10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d
^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*
d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a
*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64
*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2
*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15
*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d
^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*
e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4
 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 -
 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 +
520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 252
00*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*
d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600
*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^
10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^
3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13
*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*
a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e
^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4
*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10
*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*
b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12
 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*
b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 -
 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c
^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 20
16*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^
7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7
*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 -
 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d
^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c
^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*
a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 1
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5840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*
e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2
*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^
4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 -
 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e
^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*
e^22) - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 -
256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 +
9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 147
2*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4
*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*
c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^
5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^
8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*
a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*
e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b
^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 -
8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8
*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 179
52*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e
^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b
^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13
- 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*
d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^
5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15
 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2
*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*
a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^1
8 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c
^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*
a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 -
2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15
*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*
d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^1
0*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^
2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 -
34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*
e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d
*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)
*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^
4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10
*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^
14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 -
 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1
688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^1
1*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2
*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9
 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5
*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^
3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10
 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c
^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a
^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^1
2 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4
*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a
^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15
 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6
*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*
c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*
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a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 4
00*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 +
368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7
 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e
^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^
3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*
a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^
2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b
^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2)
+ 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2
) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d
*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c
)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b
^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*
d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10
*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9
- 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*
e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))
^(1/2)*1i)/(128*a^8*c^7*e^16 - (((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*
c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*
e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3
*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) +
10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2)
- 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e
^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^
(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5
*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^
6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a
^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 -
5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^
7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(
1/2)*(192*a^10*c^5*d*e^20 - 96*a^10*b*c^4*e^21 - 64*a*c^14*d^19*e^2 - (d +
e*x)^(1/2)*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^
2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/
2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*
e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b
^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2
- 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3
*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*
e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^
4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^
3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b
^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*
b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*
e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*
e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a
^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*
a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 768
0*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2
*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c
^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7
*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*
d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^
11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70
560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*
d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 328
0*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^
15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 17472
0*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d
^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3
*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12
*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400
*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e
^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5
*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e
^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8
*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 +
 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^
3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 8736
0*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*
e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^
3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 560
0*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3
+ 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^
17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^
7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a
*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6
080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14
*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*
c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*
b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 8*a^8
*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*
d^15*e^6 + 1792*a^4*c^11*d^13*e^8 + 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*
d^9*e^12 + 8960*a^7*c^8*d^7*e^14 + 4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3
*e^18 + 16*b^2*c^13*d^19*e^2 - 152*b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^
4 - 1768*b^5*c^10*d^16*e^5 + 3200*b^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7
+ 3920*b^8*c^7*d^13*e^8 - 2704*b^9*c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 -
 440*b^11*c^4*d^10*e^11 + 88*b^12*c^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 1068
8*a^2*b^2*c^11*d^15*e^6 + 25760*a^2*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d
^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*
a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^
13 + 1568*a^2*b^10*c^3*d^7*e^14 - 224*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*
c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 +
66528*a^3*b^5*c^7*d^10*e^11 - 49280*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^
5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3
*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e
^11 - 18480*a^4*b^4*c^7*d^9*e^12 + 48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b
^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 56
0*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8
*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 + 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*
b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 7
3024*a^6*b^2*c^7*d^7*e^14 - 48608*a^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d
^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b
^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 -
 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d
^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^
12*d^17*e^4 + 6392*a*b^3*c^11*d^16*e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*
a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 58
88*a*b^8*c^6*d^11*e^10 - 4928*a*b^9*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^1
2 - 584*a*b^11*c^3*d^8*e^13 + 64*a*b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16
*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 11648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c
^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7
*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*
a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^4*d*e^20) - (d + e*x)^(1/2)*(8*a^6*b^6*c
^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*
a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a
^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c
^13*d^16*e^2 - 128*b^3*c^12*d^15*e^3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^1
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0*d^13*e^5 + 1800*b^6*c^9*d^12*e^6 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d
^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^1
1 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^1
1*e^7 - 14304*a^2*b^4*c^9*d^10*e^8 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*
b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 5
76*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^
10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*
b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 +
 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^
8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*
b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 1
20*a^4*b^8*c^3*d^2*e^16 + 34176*a^5*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^
5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^
6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 4
80*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3
 - 1920*a*b^2*c^12*d^14*e^4 + 4480*a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^
12*e^6 + 7296*a*b^5*c^9*d^11*e^7 - 4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*
d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 - 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^
4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*
b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a
^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*
a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) -
5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 -
4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*
b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*
d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d
*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c
^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*
a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 +
5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*
a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*
e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9
*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^
2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - (((2
*c^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c
^4*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^
3*d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*
e^4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1
/2) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2)
 + 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)
^(1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a
*c)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^
4*d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3
*b^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2
 - 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3
- 20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b
*c^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*((d + e*x)^(1/2)*((2*c^5*d^5 -
 b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2
 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2
- 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^
4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*
b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*
c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 1
0*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))
/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2
+ 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e
^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*
c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3
*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e
^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23
 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*
a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 161
28*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 288
0*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3
*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*
c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6
*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*
d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*
b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9
 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^
8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14
+ 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*
c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11
+ 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8
*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184
800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c
^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 +
10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d
^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285
600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*
d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a
^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*
e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^
7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 +
 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d
^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^
8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 -
 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e
^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*
d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8
*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 84
8*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5
 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d
^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8
*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^1
0*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 96*a^10*b*c^4*e^21 - 64*a*c^1
4*d^19*e^2 + 192*a^10*c^5*d*e^20 - 8*a^8*b^5*c^2*e^21 + 56*a^9*b^3*c^3*e^21
 - 320*a^2*c^13*d^17*e^4 - 256*a^3*c^12*d^15*e^6 + 1792*a^4*c^11*d^13*e^8 +
 6272*a^5*c^10*d^11*e^10 + 9856*a^6*c^9*d^9*e^12 + 8960*a^7*c^8*d^7*e^14 +
4864*a^8*c^7*d^5*e^16 + 1472*a^9*c^6*d^3*e^18 + 16*b^2*c^13*d^19*e^2 - 152*
b^3*c^12*d^18*e^3 + 664*b^4*c^11*d^17*e^4 - 1768*b^5*c^10*d^16*e^5 + 3200*b
^6*c^9*d^15*e^6 - 4144*b^7*c^8*d^14*e^7 + 3920*b^8*c^7*d^13*e^8 - 2704*b^9*
c^6*d^12*e^9 + 1328*b^10*c^5*d^11*e^10 - 440*b^11*c^4*d^10*e^11 + 88*b^12*c
^3*d^9*e^12 - 8*b^13*c^2*d^8*e^13 - 10688*a^2*b^2*c^11*d^15*e^6 + 25760*a^2
*b^3*c^10*d^14*e^7 - 41888*a^2*b^4*c^9*d^13*e^8 + 46592*a^2*b^5*c^8*d^12*e^
9 - 33376*a^2*b^6*c^7*d^11*e^10 + 11968*a^2*b^7*c^6*d^10*e^11 + 1760*a^2*b^
8*c^5*d^9*e^12 - 3872*a^2*b^9*c^4*d^8*e^13 + 1568*a^2*b^10*c^3*d^7*e^14 - 2
24*a^2*b^11*c^2*d^6*e^15 - 8512*a^3*b^2*c^10*d^13*e^8 + 26208*a^3*b^3*c^9*d
^12*e^9 - 52864*a^3*b^4*c^8*d^11*e^10 + 66528*a^3*b^5*c^7*d^10*e^11 - 49280
*a^3*b^6*c^6*d^9*e^12 + 17952*a^3*b^7*c^5*d^8*e^13 - 128*a^3*b^8*c^4*d^7*e^
14 - 2016*a^3*b^9*c^3*d^6*e^15 + 448*a^3*b^10*c^2*d^5*e^16 + 27104*a^4*b^2*
c^9*d^11*e^10 - 20944*a^4*b^3*c^8*d^10*e^11 - 18480*a^4*b^4*c^7*d^9*e^12 +
48048*a^4*b^5*c^6*d^8*e^13 - 35392*a^4*b^6*c^5*d^7*e^14 + 9296*a^4*b^7*c^4*
d^6*e^15 + 784*a^4*b^8*c^3*d^5*e^16 - 560*a^4*b^9*c^2*d^4*e^17 + 71456*a^5*
b^2*c^8*d^9*e^12 - 62832*a^5*b^3*c^7*d^8*e^13 + 8064*a^5*b^4*c^6*d^7*e^14 +
 23520*a^5*b^5*c^5*d^6*e^15 - 13664*a^5*b^6*c^4*d^5*e^16 + 1232*a^5*b^7*c^3
*d^4*e^17 + 448*a^5*b^8*c^2*d^3*e^18 + 73024*a^6*b^2*c^7*d^7*e^14 - 48608*a
^6*b^3*c^6*d^6*e^15 + 3808*a^6*b^4*c^5*d^5*e^16 + 8512*a^6*b^5*c^4*d^4*e^17
```

```
 - 2016*a^6*b^6*c^3*d^3*e^18 - 224*a^6*b^7*c^2*d^2*e^19 + 37312*a^7*b^2*c^6
*d^5*e^16 - 14880*a^7*b^3*c^5*d^4*e^17 - 1408*a^7*b^4*c^4*d^3*e^18 + 1312*a
^7*b^5*c^3*d^2*e^19 + 8848*a^8*b^2*c^5*d^3*e^18 - 1112*a^8*b^3*c^4*d^2*e^19
 + 608*a*b*c^13*d^18*e^3 - 2576*a*b^2*c^12*d^17*e^4 + 6392*a*b^3*c^11*d^16*
e^5 - 10112*a*b^4*c^10*d^15*e^6 + 10016*a*b^5*c^9*d^14*e^7 - 4704*a*b^6*c^8
*d^13*e^8 - 2288*a*b^7*c^7*d^12*e^9 + 5888*a*b^8*c^6*d^11*e^10 - 4928*a*b^9
*c^5*d^10*e^11 + 2288*a*b^10*c^4*d^9*e^12 - 584*a*b^11*c^3*d^8*e^13 + 64*a*
b^12*c^2*d^7*e^14 + 2720*a^2*b*c^12*d^16*e^5 + 1920*a^3*b*c^11*d^14*e^7 - 1
1648*a^4*b*c^10*d^12*e^9 - 34496*a^5*b*c^9*d^10*e^11 - 44352*a^6*b*c^8*d^8*
e^13 - 31360*a^7*b*c^7*d^6*e^15 + 64*a^7*b^6*c^2*d*e^20 - 12160*a^8*b*c^6*d
^4*e^17 - 424*a^8*b^4*c^3*d*e^20 - 2208*a^9*b*c^5*d^2*e^19 + 624*a^9*b^2*c^
4*d*e^20) + (d + e*x)^(1/2)*(8*a^6*b^6*c^3*e^18 - 64*a*c^14*d^16*e^2 - 64*a
^9*c^6*e^18 - 64*a^7*b^4*c^4*e^18 + 144*a^8*b^2*c^5*e^18 + 1280*a^3*c^12*d^
12*e^6 + 4096*a^4*c^11*d^10*e^8 + 5760*a^5*c^10*d^8*e^10 + 4096*a^6*c^9*d^6
*e^12 + 1280*a^7*c^8*d^4*e^14 + 16*b^2*c^13*d^16*e^2 - 128*b^3*c^12*d^15*e^
3 + 480*b^4*c^11*d^14*e^4 - 1120*b^5*c^10*d^13*e^5 + 1800*b^6*c^9*d^12*e^6
 - 2064*b^7*c^8*d^11*e^7 + 1688*b^8*c^7*d^10*e^8 - 960*b^9*c^6*d^9*e^9 + 360
*b^10*c^5*d^8*e^10 - 80*b^11*c^4*d^7*e^11 + 8*b^12*c^3*d^6*e^12 - 960*a^2*b
^2*c^11*d^12*e^6 + 5760*a^2*b^3*c^10*d^11*e^7 - 14304*a^2*b^4*c^9*d^10*e^8
 + 18720*a^2*b^5*c^8*d^9*e^9 - 13320*a^2*b^6*c^7*d^8*e^10 + 4320*a^2*b^7*c^6
*d^7*e^11 + 240*a^2*b^8*c^5*d^6*e^12 - 576*a^2*b^9*c^4*d^5*e^13 + 120*a^2*b
^10*c^3*d^4*e^14 + 17024*a^3*b^2*c^10*d^10*e^8 - 14720*a^3*b^3*c^9*d^9*e^9
 - 2880*a^3*b^4*c^8*d^8*e^10 + 15360*a^3*b^5*c^7*d^7*e^11 - 11360*a^3*b^6*c^
6*d^6*e^12 + 2976*a^3*b^7*c^5*d^5*e^13 + 160*a^3*b^8*c^4*d^4*e^14 - 160*a^3
*b^9*c^3*d^3*e^15 + 38880*a^4*b^2*c^9*d^8*e^10 - 32640*a^4*b^3*c^8*d^7*e^11
 + 7200*a^4*b^4*c^7*d^6*e^12 + 6624*a^4*b^5*c^6*d^5*e^13 - 4360*a^4*b^6*c^5
*d^4*e^14 + 560*a^4*b^7*c^4*d^3*e^15 + 120*a^4*b^8*c^3*d^2*e^16 + 34176*a^5
*b^2*c^8*d^6*e^12 - 21888*a^5*b^3*c^7*d^5*e^13 + 3840*a^5*b^4*c^6*d^4*e^14
 + 1920*a^5*b^5*c^5*d^3*e^15 - 720*a^5*b^6*c^4*d^2*e^16 + 13120*a^6*b^2*c^7*
d^4*e^14 - 5760*a^6*b^3*c^6*d^3*e^15 + 480*a^6*b^4*c^5*d^2*e^16 + 1920*a^7*
b^2*c^6*d^2*e^16 + 512*a*b*c^13*d^15*e^3 - 1920*a*b^2*c^12*d^14*e^4 + 4480*
a*b^3*c^11*d^13*e^5 - 7040*a*b^4*c^10*d^12*e^6 + 7296*a*b^5*c^9*d^11*e^7 -
4304*a*b^6*c^8*d^10*e^8 + 400*a*b^7*c^7*d^9*e^9 + 1440*a*b^8*c^6*d^8*e^10 -
 1120*a*b^9*c^5*d^7*e^11 + 368*a*b^10*c^4*d^6*e^12 - 48*a*b^11*c^3*d^5*e^13
 - 7680*a^3*b*c^11*d^11*e^7 - 20480*a^4*b*c^10*d^9*e^9 - 23040*a^5*b*c^9*d^
7*e^11 - 48*a^5*b^7*c^3*d*e^17 - 12288*a^6*b*c^8*d^5*e^13 + 352*a^6*b^5*c^4
*d*e^17 - 2560*a^7*b*c^7*d^3*e^15 - 640*a^7*b^3*c^5*d*e^17))*((2*c^5*d^5 -
b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4*d^3*e^2
+ 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*d^3*e^2 -
 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^4 + 5*c^4
*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 3*a*b
^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) + 30*a*b*c
^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(1/2) - 10
*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c)^(1/2))/
(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*d^8*e^2 +
 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b^2*d^2*e^
8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 - 10*b^3*c
^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 - 20*a*b^3*
c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c^2*d^5*e^
5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2) - 128*a*c^14*d^14*e^2 + 16*a^6*b^4*c^5*e^
16 - 96*a^7*b^2*c^6*e^16 - 640*a^2*c^13*d^12*e^4 - 1152*a^3*c^12*d^10*e^6 -
 640*a^4*c^11*d^8*e^8 + 640*a^5*c^10*d^6*e^10 + 1152*a^6*c^9*d^4*e^12 + 640
*a^7*c^8*d^2*e^14 + 32*b^2*c^13*d^14*e^2 - 224*b^3*c^12*d^13*e^3 + 688*b^4*
c^11*d^12*e^4 - 1216*b^5*c^10*d^11*e^5 + 1360*b^6*c^9*d^10*e^6 - 992*b^7*c^
8*d^9*e^7 + 464*b^8*c^7*d^8*e^8 - 128*b^9*c^6*d^7*e^9 + 16*b^10*c^5*d^6*e^1
0 - 9696*a^2*b^2*c^11*d^10*e^6 + 13280*a^2*b^3*c^10*d^9*e^7 - 10320*a^2*b^4
*c^9*d^8*e^8 + 3840*a^2*b^5*c^8*d^7*e^9 + 320*a^2*b^6*c^7*d^6*e^10 - 864*a^
2*b^7*c^6*d^5*e^11 + 240*a^2*b^8*c^5*d^4*e^12 - 12320*a^3*b^2*c^10*d^8*e^8
+ 14720*a^3*b^3*c^9*d^7*e^9 - 10240*a^3*b^4*c^8*d^6*e^10 + 3392*a^3*b^5*c^7
```

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*d^5*e^11 + 160*a^3*b^6*c^6*d^4*e^12 - 320*a^3*b^7*c^5*d^3*e^13 - 5280*a^4*
b^2*c^9*d^6*e^10 + 6880*a^4*b^3*c^8*d^5*e^11 - 4720*a^4*b^4*c^7*d^4*e^12 +
960*a^4*b^5*c^6*d^3*e^13 + 240*a^4*b^6*c^5*d^2*e^14 + 672*a^5*b^2*c^8*d^4*e
^12 + 1856*a^5*b^3*c^7*d^3*e^13 - 1152*a^5*b^4*c^6*d^2*e^14 + 608*a^6*b^2*c
^7*d^2*e^14 + 896*a*b*c^13*d^13*e^3 - 640*a^7*b*c^7*d*e^15 - 2592*a*b^2*c^1
2*d^12*e^4 + 3904*a*b^3*c^11*d^11*e^5 - 2944*a*b^4*c^10*d^10*e^6 + 288*a*b^
5*c^9*d^9*e^7 + 1504*a*b^6*c^8*d^8*e^8 - 1408*a*b^7*c^7*d^7*e^9 + 576*a*b^8
*c^6*d^6*e^10 - 96*a*b^9*c^5*d^5*e^11 + 3840*a^2*b*c^12*d^11*e^5 + 5760*a^3
*b*c^11*d^9*e^7 + 2560*a^4*b*c^10*d^7*e^9 - 1920*a^5*b*c^9*d^5*e^11 - 96*a^
5*b^5*c^5*d*e^15 - 2304*a^6*b*c^8*d^3*e^13 + 544*a^6*b^3*c^6*d*e^15))*((2*c
^5*d^5 - b^5*e^5 + b^4*e^5*(b^2 - 4*a*c)^(1/2) - 5*a^2*b*c^2*e^5 - 20*a*c^4
*d^3*e^2 + 10*a^2*c^3*d*e^4 + a^2*c^2*e^5*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^3*
d^3*e^2 - 10*b^3*c^2*d^2*e^3 + 5*a*b^3*c*e^5 - 5*b*c^4*d^4*e + 5*b^4*c*d*e^
4 + 5*c^4*d^4*e*(b^2 - 4*a*c)^(1/2) + 10*b^2*c^2*d^2*e^3*(b^2 - 4*a*c)^(1/2
) - 3*a*b^2*c*e^5*(b^2 - 4*a*c)^(1/2) - 5*b^3*c*d*e^4*(b^2 - 4*a*c)^(1/2) +
 30*a*b*c^3*d^2*e^3 - 20*a*b^2*c^2*d*e^4 - 10*a*c^3*d^2*e^3*(b^2 - 4*a*c)^(
1/2) - 10*b*c^3*d^3*e^2*(b^2 - 4*a*c)^(1/2) + 10*a*b*c^2*d*e^4*(b^2 - 4*a*c
)^(1/2))/(2*(a^5*e^10 + c^5*d^10 - b^5*d^5*e^5 + 5*a*b^4*d^4*e^6 + 5*a*c^4*
d^8*e^2 + 5*a^4*c*d^2*e^8 + 5*b^4*c*d^6*e^4 - 10*a^2*b^3*d^3*e^7 + 10*a^3*b
^2*d^2*e^8 + 10*a^2*c^3*d^6*e^4 + 10*a^3*c^2*d^4*e^6 + 10*b^2*c^3*d^8*e^2 -
 10*b^3*c^2*d^7*e^3 - 5*a^4*b*d*e^9 - 5*b*c^4*d^9*e - 20*a*b*c^3*d^7*e^3 -
20*a*b^3*c*d^5*e^5 - 20*a^3*b*c*d^3*e^7 + 30*a*b^2*c^2*d^6*e^4 - 30*a^2*b*c
^2*d^5*e^5 + 30*a^2*b^2*c*d^4*e^6)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(5/2)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.1618 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=350

$$-\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{5e\left(-2ce\left(d\sqrt{b\right.\right.}}{}$$

```
[Out] -(e*x+d)^(5/2)/(c*x^2+b*x+a)+5*e^2*(e*x+d)^(1/2)/c-5/2*e*arctanh(2^(1/2)*c^
(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*(2*c^2*d^2+b*e^
2*(b-(-4*a*c+b^2)^(1/2))-2*c*e*(b*d+a*e-d*(-4*a*c+b^2)^(1/2)))/c^(3/2)*2^(1
/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)+5/2*e*arctanh
(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*(2*c
^2*d^2+b*e^2*(b+(-4*a*c+b^2)^(1/2))-2*c*e*(b*d+a*e+d*(-4*a*c+b^2)^(1/2)))/c
^(3/2)*2^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 1.29, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 703, 826, 1166, 208}

$$-\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{5e\left(-2ce\left(d\sqrt{b\right.\right.}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] (5*e^2*Sqrt[d + e*x])/c - (d + e*x)^(5/2)/(a + b*x + c*x^2) - (5*e*(2*c^2*d
^2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e
))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a
*c])*e]])/(Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4
*a*c])*e]) + (5*e*(2*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d +
 Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2
*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*c^(3/2)*Sqrt[b^2 - 4*a*c]*Sqrt
[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 703

```
Int[((d_.) + (e_.)*(x_))^(m_)/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol
] :> Simp[(e*(d + e*x)^(m - 1))/(c*(m - 1)), x] + Dist[1/c, Int[((d + e*x)^
(m - 2)*Simp[c*d^2 - a*e^2 + e*(2*c*d - b*e)*x, x])/(a + b*x + c*x^2), x],
x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e
 + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && GtQ[m, 1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx &= -\frac{(d+ex)^{5/2}}{a+bx+cx^2}+\frac{1}{2}(5e)\int \frac{(d+ex)^{3/2}}{a+bx+cx^2}\,dx\\ &= \frac{5e^2\sqrt{d+ex}}{c}-\frac{(d+ex)^{5/2}}{a+bx+cx^2}+\frac{(5e)\int \frac{cd^2-ae^2+e(2cd-be)x}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{2c}\\ &= \frac{5e^2\sqrt{d+ex}}{c}-\frac{(d+ex)^{5/2}}{a+bx+cx^2}+\frac{(5e)\,\mathrm{Subst}\left(\int \frac{-de(2cd-be)+e\left(cd^2-ae^2\right)+e(2cd-be)x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx,x,\right.}{c}\\ &= \frac{5e^2\sqrt{d+ex}}{c}-\frac{(d+ex)^{5/2}}{a+bx+cx^2}+\frac{\left(5e\left(2c^2d^2+b\left(b-\sqrt{b^2-4ac}\right)e^2-2ce\left(bd-\sqrt{b^2\right.\right.\right.}{}\\ &= \frac{5e^2\sqrt{d+ex}}{c}-\frac{(d+ex)^{5/2}}{a+bx+cx^2}-\frac{5e\left(2c^2d^2+b\left(b-\sqrt{b^2-4ac}\right)e^2-2ce\left(bd-\sqrt{b^2-}\right.\right.}{\sqrt{2}\,c^{3/2}\sqrt{b^2-4ac}\sqrt{2cd-(}}\end{aligned}$$

Mathematica [A] time = 1.84, size = 297, normalized size = 0.85

$$-\frac{5e\left(-4\sqrt{c}\,e\sqrt{b^2-4ac}\sqrt{d+ex}+\sqrt{2}\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)^{3/2}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)-\sqrt{2}\left(2cd-e\left(\right.\right.\right.}{4c^{3/2}\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((e^2*(d + e*x)^(5/2))/(c*d^2 + e*(-(b*d) + a*e))) + ((d + e*x)^(7/2)*(-(c
*d) + b*e + c*e*x))/((c*d^2 + e*(-(b*d) + a*e))*(a + x*(b + c*x))) - (5*e*(
-4*Sqrt[c]*Sqrt[b^2 - 4*a*c]*e*Sqrt[d + e*x] + Sqrt[2]*(2*c*d + (-b + Sqrt[
b^2 - 4*a*c])*e)^(3/2)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
 b*e + Sqrt[b^2 - 4*a*c]*e]] - Sqrt[2]*(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)^
(3/2)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 -
4*a*c])*e]]))/(4*c^(3/2)*Sqrt[b^2 - 4*a*c])
```

fricas [B]   time = 1.09, size = 2928, normalized size = 8.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2
*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + (b^2*c^3 - 4*a*c^4
)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8
- 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 -
4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(125*sqrt(1/2)*(3*(b^2*c^2 - 4*a*c^3)*d^
2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e^6 - (
2*(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*e^6 - 18
*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^
9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2*c^3*d^3
*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 +
(b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 -
 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)
*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*e^4 - 6*
b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7 + (a*b^
2 - a^2*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((
2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*
c)*e^5 + (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*
b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
 a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-125*sqrt(1/
2)*(3*(b^2*c^2 - 4*a*c^3)*d^2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*
a*b^2*c + 4*a^2*c^2)*e^6 - (2*(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)
*e)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^
8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6
- 4*a*c^7)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*
e^4 - (b^3 - 3*a*b*c)*e^5 + (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*
c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 +
 (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4
)) - 250*(3*c^3*d^4*e^4 - 6*b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (
b^3 + 2*a*b*c)*d*e^7 + (a*b^2 - a^2*c)*e^8)*sqrt(e*x + d)) + 5*sqrt(1/2)*(c
^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*
a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3
- 4*a*c^4))*log(125*sqrt(1/2)*(3*(b^2*c^2 - 4*a*c^3)*d^2*e^4 - 3*(b^3*c - 4
*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)*e^6 + (2*(b^2*c^4 - 4*a*c^5
)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(
5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c
 + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e
^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 - 4*a*c^4)*
sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 -
6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*
a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*e^4 - 6*b*c^2*d^3*e^5 + 2*(2
*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7 + (a*b^2 - a^2*c)*e^8)*sqrt
(e*x + d)) - 5*sqrt(1/2)*(c^2*x^2 + b*c*x + a*c)*sqrt((2*c^3*d^3*e^2 - 3*b*
c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - (b^2*c^3 -
4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d
^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2
*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4))*log(-125*sqrt(1/2)*(3*(b^2*c^2 - 4*a
*c^3)*d^2*e^4 - 3*(b^3*c - 4*a*b*c^2)*d*e^5 + (b^4 - 5*a*b^2*c + 4*a^2*c^2)
*e^6 + (2*(b^2*c^4 - 4*a*c^5)*d - (b^3*c^3 - 4*a*b*c^4)*e)*sqrt((9*c^4*d^4*
e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c
^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))*sqrt((2
*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c
)*e^5 - (b^2*c^3 - 4*a*c^4)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b
^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
a^2*c^2)*e^10)/(b^2*c^6 - 4*a*c^7)))/(b^2*c^3 - 4*a*c^4)) - 250*(3*c^3*d^4*
e^4 - 6*b*c^2*d^3*e^5 + 2*(2*b^2*c + a*c^2)*d^2*e^6 - (b^3 + 2*a*b*c)*d*e^7
 + (a*b^2 - a^2*c)*e^8)*sqrt(e*x + d)) - 2*(4*c*e^2*x^2 - c*d^2 + 5*a*e^2 -
 (2*c*d*e - 5*b*e^2)*x)*sqrt(e*x + d))/(c^2*x^2 + b*c*x + a*c)
```

giac [**B**] time = 1.67, size = 772, normalized size = 2.21

$$\frac{4\sqrt{xe+d}\,e^2}{c}-\frac{2\,(xe+d)^{\frac{3}{2}}cde^2-\sqrt{xe+d}\,cd^2e^2-(xe+d)^{\frac{3}{2}}be^3+\sqrt{xe+d}\,bde^3-\sqrt{xe+d}\,ae^4}{\left((xe+d)^2c-2\,(xe+d)cd+cd^2+(xe+d)be-bde+ae^2\right)c}+\frac{5\Big(4\,c^5d^3e-6\,bc}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 4*sqrt(x*e + d)*e^2/c - (2*(x*e + d)^(3/2)*c*d*e^2 - sqrt(x*e + d)*c*d^2*e^
2 - (x*e + d)^(3/2)*b*e^3 + sqrt(x*e + d)*b*d*e^3 - sqrt(x*e + d)*a*e^4)/((
(x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)*c)
 + 5*(4*c^5*d^3*e - 6*b*c^4*d^2*e^2 - (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^3 - 4
*a*b*c)*e^4)*c^2 + 4*(b^2*c^3 - a*c^4)*d*e^3 + 2*(sqrt(b^2 - 4*a*c)*c^3*d^2
*e^2 - sqrt(b^2 - 4*a*c)*b*c^2*d*e^3 + sqrt(b^2 - 4*a*c)*a*c^2*e^4)*abs(c)
- (b^3*c^2 - 2*a*b*c^3)*e^4)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*
d - b*c*e + sqrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2
))/c^2))/((2*sqrt(b^2 - 4*a*c)*c^2*d - (b^2*c - 4*a*c^2 + sqrt(b^2 - 4*a*c)
*b*c)*e)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^2) - 5*(4*c^5*d
^3*e - 6*b*c^4*d^2*e^2 - (2*(b^2*c - 4*a*c^2)*d*e^3 - (b^3 - 4*a*b*c)*e^4)*
c^2 + 4*(b^2*c^3 - a*c^4)*d*e^3 - 2*(sqrt(b^2 - 4*a*c)*c^3*d^2*e^2 - sqrt(b
^2 - 4*a*c)*b*c^2*d*e^3 + sqrt(b^2 - 4*a*c)*a*c^2*e^4)*abs(c) - (b^3*c^2 -
2*a*b*c^3)*e^4)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d - b*c*e - s
qrt(-4*(c^2*d^2 - b*c*d*e + a*c*e^2)*c^2 + (2*c^2*d - b*c*e)^2))/c^2))/((2*
sqrt(b^2 - 4*a*c)*c^2*d + (b^2*c - 4*a*c^2 - sqrt(b^2 - 4*a*c)*b*c)*e)*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^2)
```

maple [**B**] time = 0.21, size = 1333, normalized size = 3.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] 4*e^2*(e*x+d)^(1/2)/c+e^3/c/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*b-2*e^2
/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*d+e^4/c/(c*e^2*x^2+b*e^2*x+a*e^2)*
(e*x+d)^(1/2)*a-e^3/c/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b*d+e^2/(c*e^
2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*d^2+5*e^4/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-5/2*e^4/c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2+5*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((
-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)
/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+5/2*e^3/c*2^(1/2)/(
(-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2
)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-5*e^2*2^(1/2)/((-b*e
+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-
b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+5*e^4/(-(4*a*c-b^2)*e^2)^
(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-5/2*e^4/
c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*c)*b^2+5*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c
-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)
/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/2*e^3/c*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/(
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5*e^2*2^(1/2)/((b*e-2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^2, x)
```

mupad [B] time = 1.44, size = 8776, normalized size = 25.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] ((b*e^3 - 2*c*d*e^2)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a*e^4 + c*d^2*e^2 -
 b*d*e^3))/(c^2*(d + e*x)^2 - (2*c^2*d - b*c*e)*(d + e*x) + c^2*d^2 + a*c*e
^2 - b*c*d*e) - atan(((((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2
*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d +
 e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^
2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*
d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*
(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(
1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 -
 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 3
2*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a
^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b
^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a
*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^
2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^
4*c^3 - 8*a*b^2*c^4)))^(1/2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*
e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*
d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*
(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^
3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^
```

```
2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)
^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*
d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1
/2)*1i - (((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*
c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(
-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c
^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c
^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^
2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b
*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)
))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2
))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5
+ 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^
3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a
*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) -
 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b
^2*c^4)))^(1/2) + (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*
d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100
*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^
2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^
2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*
c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^
4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*
a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((5
*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4
*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5
 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 -
24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-
(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) -
 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3
+ 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b
^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(
b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3
*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2
*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^
(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d
^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/
2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300
*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8
- 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*
c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 -
 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(
1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3
*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e
^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((5*(16*a^2*c^3*e^6
 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4
 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*
a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4
 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)
^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 -
 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d
*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b
^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 + b^2*e^
5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^
3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c -
b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*
d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^
2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (2*(d + e*x
)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 -
```

```
 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^
7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2
) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e
^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c
*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*
a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*
c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (10*(50*c^3*d^5*e^6 - 25*b^3*d^2*e^9
 - 25*a^2*b*e^11 + 100*a*c^2*d^3*e^8 - 125*b*c^2*d^4*e^7 + 100*b^2*c*d^3*e^
8 + 50*a*b^2*d*e^10 + 50*a^2*c*d*e^10 - 150*a*b*c*d^2*e^9))/c))*(-(25*(b^5*
e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2
 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3
*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e
^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2
i - atan(((((5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3
*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*
(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*
c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*
c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b
^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*
b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4
)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^
2))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5
 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e
^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*
a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2)
- 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*
b^2*c^4)))^(1/2) - (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4
*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 10
0*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b
^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a
^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a
*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b
^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18
*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i - (((
5*(16*a^2*c^3*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 -
4*b^2*c^3*d^2*e^4 - 16*a*b*c^3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^
5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 -
 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(
-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2)
- 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3
 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*
b^3*c^3*e^3 - 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*
(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^
3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^
2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)
^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*
d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1
/2) + (2*(d + e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 30
0*a*c^3*d^2*e^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8
 - 100*b^3*c*d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a
*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4
- 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^
(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 +
3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*
e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*1i)/((((5*(16*a^2*c^3
*e^6 - 4*a*b^2*c^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2
*e^4 - 16*a*b*c^3*d*e^5))/c - (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 - b^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d
*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2
)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e
^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c
^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 -
 8*b^2*c^4*d*e^2 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 - b^
2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^
2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*
c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^
4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*
a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) - (2*(d +
 e*x)^(1/2)*(25*b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e
^6 - 100*b*c^3*d^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*
d*e^7 + 300*a*b*c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^
(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d
^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b
^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(
-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*
a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (((5*(16*a^2*c^3*e^6 - 4*a*b^2*c
^2*e^6 + 16*a*c^4*d^2*e^4 + 4*b^3*c^2*d*e^5 - 4*b^2*c^3*d^2*e^4 - 16*a*b*c^
3*d*e^5))/c + (2*(d + e*x)^(1/2)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3
)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3
*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a
*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4
*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(1
6*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*(4*b^3*c^3*e^3 - 8*b^2*c^4*d*e^2
 - 16*a*b*c^4*e^3 + 32*a*c^5*d*e^2))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c -
 b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*
b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2
) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*
c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)
)/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2) + (2*(d + e*x)^(1/2)*(25*
b^4*e^8 + 50*a^2*c^2*e^8 + 50*c^4*d^4*e^4 - 300*a*c^3*d^2*e^6 - 100*b*c^3*d
^3*e^5 + 150*b^2*c^2*d^2*e^6 - 100*a*b^2*c*e^8 - 100*b^3*c*d*e^7 + 300*a*b*
c^2*d*e^7))/c)*(-(25*(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b
*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c
^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e
^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3
)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^
3 - 8*a*b^2*c^4)))^(1/2) - (10*(50*c^3*d^5*e^6 - 25*b^3*d^2*e^9 - 25*a^2*b*
e^11 + 100*a*c^2*d^3*e^8 - 125*b*c^2*d^4*e^7 + 100*b^2*c*d^3*e^8 + 50*a*b^2
*d*e^10 + 50*a^2*c*d*e^10 - 150*a*b*c*d^2*e^9))/c))*(-(25*(b^5*e^5 - b^2*e^
5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^
3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c -
b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*
d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^
2*c^2*d*e^4))/(8*(16*a^2*c^5 + b^4*c^3 - 8*a*b^2*c^4)))^(1/2)*2i + (4*e^2*(
d + e*x)^(1/2))/c
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1619 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=224

$$-\frac{3e\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}\right.}}\right.}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}$$

```
[Out] -(e*x+d)^(3/2)/(c*x^2+b*x+a)-3/2*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2
*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2
)*2^(1/2)/c^(1/2)/(-4*a*c+b^2)^(1/2)+3/2*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^
(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*(2*c*d-e*(b+(-4*a*c+b^2)^(1/2
)))^(1/2)*2^(1/2)/c^(1/2)/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {768, 699, 1130, 208}

$$-\frac{3e\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4a\right.}}}\right.}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^(3/2)/(a + b*x + c*x^2)) - (3*e*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*
a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2
 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]) + (3*e*Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 699

```
Int[Sqrt[(d_.) + (e_.)*(x_)]/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol]
 :> Dist[2*e, Subst[Int[x^2/(c*d^2 - b*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*
x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 1130

```
Int[((d_.)*(x_))^(m_)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :> Wi
th[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(d^2*(b/q + 1))/2, Int[(d*x)^(m - 2)/(b/2
 + q/2 + c*x^2), x], x] - Dist[(d^2*(b/q - 1))/2, Int[(d*x)^(m - 2)/(b/2 -
q/2 + c*x^2), x], x]] /; FreeQ[{a, b, c, d}, x] && NeQ[b^2 - 4*a*c, 0] && G
eQ[m, 2]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\frac{1}{2}(3e)\int \frac{\sqrt{d+ex}}{a+bx+cx^2}\,dx$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\left(3e^2\right)\text{Subst}\left(\int \frac{x^2}{cd^2-bde+ae^2+(-2cd+be)x^2+cx^4}\,dx,x,\sqrt{d}\right.$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}+\frac{1}{2}\left(3e\left(e-\frac{2cd-be}{\sqrt{b^2-4ac}}\right)\right)\text{Subst}\left(\int \frac{1}{\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)}\right.$$

$$= -\frac{(d+ex)^{3/2}}{a+bx+cx^2}-\frac{3e\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\,\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e}{}$$

Mathematica [A] time = 0.42, size = 221, normalized size = 0.99

$$-\frac{3e\sqrt{e\sqrt{b^2-4ac}-be+2cd}\,\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}+\frac{3e\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\,\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4a}\right.}}\right.}{\sqrt{2}\sqrt{c}\sqrt{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x]
```

```
[Out] -((d + e*x)^(3/2)/(a + x*(b + c*x))) - (3*e*Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^
2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c]) + (3*e*Sqrt[2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e]*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[c]*Sqrt[b^2 - 4*a*c])
```

fricas [B] time = 0.71, size = 828, normalized size = 3.70

$$-\frac{3\sqrt{\frac{1}{2}}\left(cx^2+bx+a\right)\sqrt{\frac{2cde^2-be^3+\sqrt{\frac{e^6}{b^2c^2-4ac^3}}\left(b^2c-4ac^2\right)}{b^2c-4ac^2}}\,\log\left(27\sqrt{ex+d}\,e^4+27\sqrt{\frac{1}{2}}\sqrt{\frac{e^6}{b^2c^2-4ac^3}}\left(b^2c-4ac^2\right)\sqrt{\frac{2cd}{}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2
*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*log(27*sqrt(e*x + d)
*e^4 + 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2)*sqrt((2
*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c
- 4*a*c^2))) - 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt
(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*log(27*sqrt
(e*x + d)*e^4 - 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2
)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2)
)/(b^2*c - 4*a*c^2))) - 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e
^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))*lo
g(27*sqrt(e*x + d)*e^4 + 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c
- 4*a*c^2)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c -
 4*a*c^2))/(b^2*c - 4*a*c^2))) + 3*sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*
e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))*(b^2*c - 4*a*c^2))/(b^2*c - 4*a
*c^2))*log(27*sqrt(e*x + d)*e^4 - 27*sqrt(1/2)*sqrt(e^6/(b^2*c^2 - 4*a*c^3)
)*(b^2*c - 4*a*c^2)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/(b^2*c^2 - 4*a*c^3))
*(b^2*c - 4*a*c^2))/(b^2*c - 4*a*c^2))) + 2*(e*x + d)^(3/2))/(c*x^2 + b*x +
 a)
```

giac [A]   time = 1.11, size = 288, normalized size = 1.29

$$-\frac{(xe+d)^{\frac{3}{2}}e^2}{(xe+d)^2c-2\,(xe+d)cd+cd^2+(xe+d)be-bde+ae^2}-\frac{3\sqrt{-4\,c^2d+2\left(bc-\sqrt{b^2-4\,ac}\,c\right)e}\,\arctan\left(\frac{}{\sqrt{-\frac{2\,cd-be+}{}}}\right.}{2\sqrt{b^2-4\,ac}\,|c|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -(x*e + d)^(3/2)*e^2/((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b
*e - b*d*e + a*e^2) - 3/2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*
arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2
- 4*(c*d^2 - b*d*e + a*e^2)*c))/c))*e/(sqrt(b^2 - 4*a*c)*abs(c)) + 3/2*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*arctan(2*sqrt(1/2)*sqrt(x*e +
d)/sqrt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*e^2)*c)
)/c))*e/(sqrt(b^2 - 4*a*c)*abs(c))
```

maple [B]   time = 0.09, size = 590, normalized size = 2.63

$$\frac{3\sqrt{2}\,b\,e^3\,\mathrm{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{2\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}+\frac{3\sqrt{2}\,b\,e^3\arctan\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}\right)}{2\sqrt{-\left(4ac-b^2\right)e^2}\,\sqrt{\left(be-2cd+\sqrt{-\left(4ac-b^2\right)e^2}\right)c}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^2*(e*x+d)^(3/2)/(c*e^2*x^2+b*e^2*x+a*e^2)+3/2*e^3/(-(4*a*c-b^2)*e^2)^(1/
2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^
(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2*c/
(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*
c)^(1/2)*c)*d-3/2*e^2*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*c)+3/2*e^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e
-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+3/2*e^2*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^2, x)
```

mupad [**B**] time = 0.47, size = 841, normalized size = 3.75

$$-2\,\mathrm{atanh}\left(\frac{2\left(\sqrt{d+e\,x}\,\left(-18\,b^2\,c\,e^6+36\,b\,c^2\,d\,e^5-36\,c^3\,d^2\,e^4+36\,a\,c^2\,e^6\right)+\frac{9\,\sqrt{d+e\,x}\,\left(8\,b^3\,c^2\,e^3-16\,d\,b^2\,c^3\,e^2-32\,a\,b\,c^3\right.}{}\right.}{54\,c^2\,d^2\,e^6-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] - 2*atanh((2*((d + e*x)^(1/2)*(36*a*c^2*e^6 - 18*b^2*c*e^6 - 36*c^3*d^2*e^4
 + 36*b*c^2*d*e^5) + (9*(d + e*x)^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 -
 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2)*(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) -
 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a
*b^2*c^2)))*(-(9*(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*
a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2)
)/(54*c^2*d^2*e^6 + 54*a*c*e^8 - 54*b*c*d*e^7))*(-(9*(b^3*e^3 + e^3*(-(4*a*
c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2))/(8*(b^4*c
 + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2) - 2*atanh((2*((d + e*x)^(1/2)*(36*a*c^
2*e^6 - 18*b^2*c*e^6 - 36*c^3*d^2*e^4 + 36*b*c^2*d*e^5) - (9*(d + e*x)^(1/2
)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2)*(e^3
*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c
*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((9*(e^3*(-(4*a*c - b^2)^3
)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2))/(8*(b^4*c
 + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2))/(54*c^2*d^2*e^6 + 54*a*c*e^8 - 54*b*c
*d*e^7))*((9*(e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^
2*d*e^2 + 2*b^2*c*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))^(1/2) - (
e^2*(d + e*x)^(3/2))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 + a*e^2 + c*d
^2 - b*d*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1620 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=223

$$-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{\sqrt{d+ex}}{a+bx+cx^2}$$

```
[Out] -(e*x+d)^(1/2)/(c*x^2+b*x+a)-e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d
-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d
-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)+e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2
*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*2^(1/2)*c^(1/2)/(-4*a*c+b^2)^(1/2)/(2
*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {768, 707, 1093, 208}

$$-\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}+\frac{\sqrt{2}\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}-\frac{\sqrt{d+ex}}{a+bx+cx^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(Sqrt[d + e*x]/(a + b*x + c*x^2)) - (Sqrt[2]*Sqrt[c]*e*ArcTanh[(Sqrt[2]*Sq
rt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[b^2 -
4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]) + (Sqrt[2]*Sqrt[c]*e*ArcTan
h[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])
/(Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 707

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)), x_Sym
bol] :> Dist[2*e, Subst[Int[1/(c*d^2 - b*d*e + a*e^2 - (2*c*d - b*e)*x^2 +
c*x^4), x], x, Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 -
 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 1093

```
Int[((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4)^(-1), x_Symbol] :> With[{q = Rt[b^
2 - 4*a*c, 2]}, Dist[c/q, Int[1/(b/2 - q/2 + c*x^2), x], x] - Dist[c/q, Int
[1/(b/2 + q/2 + c*x^2), x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2 - 4*a*c,
0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2}\,dx &= -\frac{\sqrt{d+ex}}{a+bx+cx^2}+\frac{1}{2}e\int \frac{1}{\sqrt{d+ex}\,\left(a+bx+cx^2\right)}\,dx\\
&= -\frac{\sqrt{d+ex}}{a+bx+cx^2}+e^2\,\mathrm{Subst}\left(\int \frac{1}{cd^2-bde+ae^2-(2cd-be)x^2+cx^4}\,dx,x,\sqrt{d+ex}\right)\\
&= -\frac{\sqrt{d+ex}}{a+bx+cx^2}+\frac{(ce)\,\mathrm{Subst}\left(\int \frac{1}{-\frac{1}{2}\sqrt{b^2-4ac}\,e+\frac{1}{2}(-2cd+be)+cx^2}\,dx,x,\sqrt{d+ex}\right)}{\sqrt{b^2-4ac}}-\ (ce)\,\mathrm{Sub}\\
&= -\frac{\sqrt{d+ex}}{a+bx+cx^2}-\frac{\sqrt{2}\,\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{d+ex}}{\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}\right)}{\sqrt{b^2-4ac}\,\sqrt{2cd-\left(b-\sqrt{b^2-4ac}\right)e}}+\frac{\sqrt{2}\,\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{}}{\sqrt{2cd-(b}}\right.}{\sqrt{b^2-4ac}\,\sqrt{2cd-\left(b+\right.}}
\end{aligned}
$$

Mathematica [A] time = 0.75, size = 221, normalized size = 0.99

$$
\frac{-\frac{\sqrt{b^2-4ac}\,\sqrt{d+ex}}{a+x(b+cx)}-\frac{\sqrt{2}\,\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}+\frac{\sqrt{2}\,\sqrt{c}\,e\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}{\sqrt{b^2-4ac}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^2,x]
```

```
[Out] (-((Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x])/(a + x*(b + c*x))) - (Sqrt[2]*Sqrt[c]*
e*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a
*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e] + (Sqrt[2]*Sqrt[c]*e*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])/Sqrt[b^2 - 4*a*c]
```

fricas [B] time = 1.09, size = 2750, normalized size = 12.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*
c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2
*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b
^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c
 - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(
e*x + d)*c*e^4 + sqrt(1/2)*((b^2 - 4*a*c)*e^4 - sqrt(e^6/((b^2*c^2 - 4*a*c^
3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^
2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4
*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d
*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c
^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*
c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^
2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c
- 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) - sqrt(1/2)
*(c*x^2 + b*x + a)*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*
d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 -
 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)
*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2
 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4
- sqrt(1/2)*((b^2 - 4*a*c)*e^4 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3
*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 -
4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3
*(b^3*c - 4*a*b*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 -
 4*a^2*b*c)*e^3))*sqrt((2*c*d*e^2 - b*e^3 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d
^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 -
2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*
d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2
- (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) + sqrt(1/2)*(c*x^2 + b*x +
 a)*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c
- 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a
^2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4
*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b
*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 + sqrt(1/2)*((b
^2 - 4*a*c)*e^4 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)
*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^
3 + (a^2*b^2 - 4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b
*c^2)*d^2*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3
))*sqrt((2*c*d*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c -
 4*a*b*c^2)*d^3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^
2*b*c)*d*e^3 + (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*
a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*
c)*d*e + (a*b^2 - 4*a^2*c)*e^2))) - sqrt(1/2)*(c*x^2 + b*x + a)*sqrt((2*c*d
*e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^
3*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 +
 (a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (
a*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^
2 - 4*a^2*c)*e^2))*log(2*sqrt(e*x + d)*c*e^4 - sqrt(1/2)*((b^2 - 4*a*c)*e^4
 + sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3*e + (b^4 -
 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 + (a^2*b^2 -
4*a^3*c)*e^4))*(2*(b^2*c^2 - 4*a*c^3)*d^3 - 3*(b^3*c - 4*a*b*c^2)*d^2*e + (
b^4 - 2*a*b^2*c - 8*a^2*c^2)*d*e^2 - (a*b^3 - 4*a^2*b*c)*e^3))*sqrt((2*c*d*
e^2 - b*e^3 - sqrt(e^6/((b^2*c^2 - 4*a*c^3)*d^4 - 2*(b^3*c - 4*a*b*c^2)*d^3
*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d*e^3 +
(a^2*b^2 - 4*a^3*c)*e^4))*((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a
*b^2 - 4*a^2*c)*e^2))/((b^2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2
 - 4*a^2*c)*e^2))) + 2*sqrt(e*x + d))/(c*x^2 + b*x + a)
```

giac [A] time = 1.08, size = 351, normalized size = 1.57

$$-\frac{\sqrt{-4\,c^2 d + 2\left(bc - \sqrt{b^2 - 4\,ac}\,c\right)e}\,c \arctan\left(\frac{2\,\sqrt{\frac{1}{2}}\,\sqrt{xe+d}}{\sqrt{-\frac{2\,cd - be + \sqrt{(2\,cd-be)^2 - 4\left(cd^2 - bde + ae^2\right)c}}{c}}}\right)e}{\left(2\,\sqrt{b^2 - 4\,ac}\,cd + \left(b^2 - 4\,ac - \sqrt{b^2 - 4\,ac}\,b\right)e\right)|c|} + \frac{\sqrt{-4\,c^2 d + 2\left(bc + \sqrt{b^2 - 4\,ac}\,c\right)e}}{\left(2\,\sqrt{b^2 - 4\,ac}\,cd - \left(\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] -sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(2*sqrt(1/2)*sqrt
(x*e + d)/sqrt(-(2*c*d - b*e + sqrt((2*c*d - b*e)^2 - 4*(c*d^2 - b*d*e + a*
e^2)*c))/c))*e/((2*sqrt(b^2 - 4*a*c)*c*d + (b^2 - 4*a*c - sqrt(b^2 - 4*a*c)
*b)*e)*abs(c)) + sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c*arctan(
2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*c*d - b*e - sqrt((2*c*d - b*e)^2 - 4*(c*
d^2 - b*d*e + a*e^2)*c))/c))*e/((2*sqrt(b^2 - 4*a*c)*c*d - (b^2 - 4*a*c + s
qrt(b^2 - 4*a*c)*b)*e)*abs(c)) - sqrt(x*e + d)*e^2/((x*e + d)^2*c - 2*(x*e
+ d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)
```

maple [A] time = 0.09, size = 232, normalized size = 1.04

$$-\frac{\sqrt{2}\, c\, e^{2} \operatorname{arctanh}\left(\frac{\sqrt{e x+d}\,\sqrt{2}\, c}{\sqrt{\left(-b e+2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}\right)}{\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\, \sqrt{\left(-b e+2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}-\frac{\sqrt{2}\, c\, e^{2} \arctan\left(\frac{\sqrt{e x+d}\,\sqrt{2}\, c}{\sqrt{\left(b e-2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}\right)}{\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\, \sqrt{\left(b e-2 c d+\sqrt{-\left(4 a c-b^{2}\right) e^{2}}\right) c}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^2*(e*x+d)^(1/2)/(c*e^2*x^2+b*e^2*x+a*e^2)-e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)
*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1
/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)-e^2*c/(-(4*a
*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^2, x)
```

mupad [B] time = 2.93, size = 4814, normalized size = 21.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^2,x)
```

```
[Out] atan((((4*b^2*c^2*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(
4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*
b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c
^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3
*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3
+ e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^
2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e -
8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/
2) + 4*c^3*e^4*(d + e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) -
 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 1
6*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^
2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*1i + ((16*a*c^3*e^4 - 4*b^2*c
^2*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*
c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c
^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*
a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 -
32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2)
 - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 +
 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*
e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2)
)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 -
 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2
 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3
*c*d*e)))^(1/2)*1i)/(((4*b^2*c^2*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*(-(b^
3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*
c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*
d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)
))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^
2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2
 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e
^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b
^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c -
b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2
+ b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 -
 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) - ((16*a*c^3*e
^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2)*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1
/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^
2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2
*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*
c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*(-(b^3*e^3 + e^3*(-(4*a*c - b
^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
 b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 -
8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d
+ e*x)^(1/2))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4*a*b*c*e^3 + 8*a
*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16
*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d
*e + 8*a*b^3*c*d*e)))^(1/2)))*(-(b^3*e^3 + e^3*(-(4*a*c - b^2)^3)^(1/2) - 4
*a*b*c*e^3 + 8*a*c^2*d*e^2 - 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*
a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2
 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*2i + atan((((4*b^2*c^2*e^4 - 16
*a*c^3*e^4 + (d + e*x)^(1/2)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a
*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^
2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 -
16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2
 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e
^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2
 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*
c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/
2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2
+ 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^
2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^
3*c*d*e)))^(1/2)*1i + ((16*a*c^3*e^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2)*((e^
3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*
c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*
d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)
))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^
2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2
+ 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^
2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^
3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3)^(1/2
) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8
*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*1i)/(((4*b^2*c^2
```

```
*e^4 - 16*a*c^3*e^4 + (d + e*x)^(1/2)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*
e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^
2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2
*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*
c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2
) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 +
b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8
*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d +
 e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c
^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a
^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e
 + 8*a*b^3*c*d*e)))^(1/2) - ((16*a*c^3*e^4 - 4*b^2*c^2*e^4 + (d + e*x)^(1/2
)*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 +
2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2
- b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*
c*d*e)))^(1/2)*(8*b^3*c^2*e^3 - 16*b^2*c^3*d*e^2 - 32*a*b*c^3*e^3 + 64*a*c^
4*d*e^2))*((e^3*(-(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*
d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*
c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e +
8*a*b^3*c*d*e)))^(1/2) + 4*c^3*e^4*(d + e*x)^(1/2))*((e^3*(-(4*a*c - b^2)^3
)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*e^2)/(8*(a*b^4*
e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e - 8*a*b^2*c^2*d
^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(1/2)))*((e^3*(-
(4*a*c - b^2)^3)^(1/2) - b^3*e^3 + 4*a*b*c*e^3 - 8*a*c^2*d*e^2 + 2*b^2*c*d*
e^2)/(8*(a*b^4*e^2 + b^4*c*d^2 + 16*a^2*c^3*d^2 + 16*a^3*c^2*e^2 - b^5*d*e
- 8*a*b^2*c^2*d^2 - 8*a^2*b^2*c*e^2 - 16*a^2*b*c^2*d*e + 8*a*b^3*c*d*e)))^(
1/2)*2i - (e^2*(d + e*x)^(1/2))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)^2 +
a*e^2 + c*d^2 - b*d*e)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1621 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=364

$$-\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{c}\,e\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-$$

```
[Out] -((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/(a
*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)+1/2*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)
/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(2*c*d-e*(b+(-4*a*c+b^2)^(
1/2)))/(a*e^2-b*d*e+c*d^2)*2^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b-(-4*a*c+b
^2)^(1/2)))^(1/2)-1/2*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(
-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))/(a*e^2-
b*d*e+c*d^2)*2^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1
/2)
```

Rubi [**A**] time = 0.76, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 826, 1166, 208}

$$-\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{c}\,e\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] -((Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 -
 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2))) + (Sqrt[c]*e*(2*c*d - (
b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*
d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b
 - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)) - (Sqrt[c]*e*(2*c*d - (b
- Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b +
 Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx = -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(cd-be)-\frac{1}{2}c\left(b^2-4}{\sqrt{d+ex}\left(a+bx+cx^2\right)}}{\left(b^2-4ac\right)\left(cd^2-bde\right.}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{2\,\mathrm{Subst}\left(\int \frac{\frac{1}{2}c\left(b^2-4ac\right)de^2+}{cd^2-b}\right.}{\left(b^2\right.}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} + \frac{\left(ce\left(2cd-\left(b-\sqrt{b^2-4a}\right.\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} + \frac{\sqrt{c}\,e\left(2cd-\left(b+\sqrt{b^2-}\right.\right.}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-\left(\right.}}$$

Mathematica [A] time = 1.21, size = 278, normalized size = 0.76

$$\frac{\frac{\sqrt{2}\sqrt{c}\,e\left(\frac{\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right)}{\sqrt{b^2-4ac}}+\frac{2\sqrt{d+ex}\,(be-cd+cex)}{a+x(b+cx)}}{2\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x))/(a + x*(b + c*x)) + (Sqrt[2]*Sqrt
[c]*e*(((2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d
 + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[
b^2 - 4*a*c])*e] - ((2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*S
qrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]))/Sqrt[b^2 - 4*a*c])/(2*(c*d^2 + e*(-(b*d) + a
*e)))
```

fricas [B] time = 1.27, size = 11482, normalized size = 31.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2
)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*
e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4
)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)
*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*
c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c
)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2
*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*
c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*
b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)
*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6
*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 3
0*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^
5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2
 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9
 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b
*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*
c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5
 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*
d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6))*log(sqr
t(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*d^2*e^5 + (
5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)
*e^7 - (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*e + (13*b^4
*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b^3*c^3 - 48
*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4*e^4 - (b^7
 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c - 16*a^3*b^
2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4*b*c^2)*d*e
^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^6 - 18*b*c^
3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (
b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4
*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(
2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*
c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3
*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80
*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)
*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^
5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a
^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^1
2)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b
^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*
e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2
*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3
- 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^
3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (
b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4
*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(
2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*
c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3
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*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80
*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)
*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^
5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a
^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^1
2)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c -
3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3
 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*
e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e^5 + (b^2*c
^2 - a*c^3)*e^6)*sqrt(e*x + d)) - sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 +
(c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((
2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*
c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*
c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3
*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c
)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 +
 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b
^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d
^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 -
 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3
*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7
*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d
^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 +
15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b
^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2
*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*
c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2
 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4
 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*
b^2 - 4*a^4*c)*e^6))*log(-sqrt(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3
*c^2 - 4*a*b*c^3)*d^2*e^5 + (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b
^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^7 - (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4
 - 4*a*b*c^5)*d^7*e + (13*b^4*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (1
1*b^5*c^2 - 32*a*b^3*c^3 - 48*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 1
2*a^2*b^2*c^3)*d^4*e^4 - (b^7 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*
b^6 - 9*a^2*b^4*c - 16*a^3*b^2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*
a^3*b^3*c + 16*a^4*b*c^2)*d*e^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*
sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 -
6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4
*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5
 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^
3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*
c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b
^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 3
0*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^
5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5
*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e
^11 + (a^6*b^2 - 4*a^7*c)*e^12)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3
*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 + ((b^2*c^3 - 4*a*c^4)*d^6 -
 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^
2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a
^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*
sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 -
6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4
*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5
 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^
3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*
c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b
^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 3
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0*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^
5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5
*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e
^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4
*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*
b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4
 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2
*e^4 - 3*b*c^3*d*e^5 + (b^2*c^2 - a*c^3)*e^6)*sqrt(e*x + d)) + sqrt(1/2)*(a
*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 -
 b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2
*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2
 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 +
2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2
*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4
*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c -
a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^1
2 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^
6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6
*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^
2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 34
0*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c
^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*
e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 -
18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*
b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d
^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*
a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b
^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6))*log(sqrt(1/2)*(6*(b^2*c^3
 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*d^2*e^5 + (5*b^4*c - 22*a*b^2
*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4*a^2*b*c^2)*e^7 + (2*(b^2*c^5
 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*e + (13*b^4*c^3 - 48*a*b^2*c^
4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b^3*c^3 - 48*a^2*b*c^4)*d^5*e^
3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4*e^4 - (b^7 + 6*a*b^5*c - 40*
a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c - 16*a^3*b^2*c^2 + 16*a^4*c^3
)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4*b*c^2)*d*e^7 + (a^3*b^4 - 6*
a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b
^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e +
 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^
3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d
^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 +
(b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6
- 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2
*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c -
12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 -
 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))*sqrt((2*c^3*d
^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5
- ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a
*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 +
3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5
 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b
^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c +
a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e +
 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^
3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d
^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 +
(b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6
- 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2
*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c -
```

```
12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 -
 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4
*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^
2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^
2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4
*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e^5 + (b^2*c^2 - a*c^3)*e^6)*s
qrt(e*x + d)) - sqrt(1/2)*(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e
 + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)*sqrt((2*c^3*d^3*e^2 - 3*
b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3
 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 -
4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 -
3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2
 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*
a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^
10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c
^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*
a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 - 15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*
(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a
*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7
 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a
^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 10*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^
2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3
 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6
 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*
e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4
*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6
))*log(-sqrt(1/2)*(6*(b^2*c^3 - 4*a*c^4)*d^3*e^4 - 9*(b^3*c^2 - 4*a*b*c^3)*
d^2*e^5 + (5*b^4*c - 22*a*b^2*c^2 + 8*a^2*c^3)*d*e^6 - (b^5 - 5*a*b^3*c + 4
*a^2*b*c^2)*e^7 + (2*(b^2*c^5 - 4*a*c^6)*d^8 - 8*(b^3*c^4 - 4*a*b*c^5)*d^7*
e + (13*b^4*c^3 - 48*a*b^2*c^4 - 16*a^2*c^5)*d^6*e^2 - (11*b^5*c^2 - 32*a*b
^3*c^3 - 48*a^2*b*c^4)*d^5*e^3 + 5*(b^6*c - a*b^4*c^2 - 12*a^2*b^2*c^3)*d^4
*e^4 - (b^7 + 6*a*b^5*c - 40*a^2*b^3*c^2)*d^3*e^5 + (3*a*b^6 - 9*a^2*b^4*c
 - 16*a^3*b^2*c^2 + 16*a^4*c^3)*d^2*e^6 - (3*a^2*b^5 - 16*a^3*b^3*c + 16*a^4
*b*c^2)*d*e^7 + (a^3*b^4 - 6*a^4*b^2*c + 8*a^5*c^2)*e^8)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(
b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10
*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 -
15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c
^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b
^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40
*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 1
0*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*
b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4
*a^7*c)*e^12)))*sqrt((2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3 + 3*(b^2*c - 2*a*c^2)
*d*e^4 - (b^3 - 3*a*b*c)*e^5 - ((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*
b*c^3)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3
*c - 24*a^2*b*c^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 -
3*(a^2*b^3 - 4*a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)*sqrt((9*c^4*d^4*e^
6 - 18*b*c^3*d^3*e^7 + 3*(5*b^2*c^2 - 2*a*c^3)*d^2*e^8 - 6*(b^3*c - a*b*c^2
)*d*e^9 + (b^4 - 2*a*b^2*c + a^2*c^2)*e^10)/((b^2*c^6 - 4*a*c^7)*d^12 - 6*(
b^3*c^5 - 4*a*b*c^6)*d^11*e + 3*(5*b^4*c^4 - 18*a*b^2*c^5 - 8*a^2*c^6)*d^10
*e^2 - 10*(2*b^5*c^3 - 5*a*b^3*c^4 - 12*a^2*b*c^5)*d^9*e^3 + 15*(b^6*c^2 -
15*a^2*b^2*c^4 - 4*a^3*c^5)*d^8*e^4 - 6*(b^7*c + 6*a*b^5*c^2 - 30*a^2*b^3*c
^3 - 40*a^3*b*c^4)*d^7*e^5 + (b^8 + 26*a*b^6*c - 30*a^2*b^4*c^2 - 340*a^3*b
^2*c^3 - 80*a^4*c^4)*d^6*e^6 - 6*(a*b^7 + 6*a^2*b^5*c - 30*a^3*b^3*c^2 - 40
*a^4*b*c^3)*d^5*e^7 + 15*(a^2*b^6 - 15*a^4*b^2*c^2 - 4*a^5*c^3)*d^4*e^8 - 1
0*(2*a^3*b^5 - 5*a^4*b^3*c - 12*a^5*b*c^2)*d^3*e^9 + 3*(5*a^4*b^4 - 18*a^5*
b^2*c - 8*a^6*c^2)*d^2*e^10 - 6*(a^5*b^3 - 4*a^6*b*c)*d*e^11 + (a^6*b^2 - 4
```

```
*a^7*c)*e^12)))/((b^2*c^3 - 4*a*c^4)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*d^5*e +
3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*d^4*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c
^2)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b^2*c - 4*a^3*c^2)*d^2*e^4 - 3*(a^2*b^3 - 4*
a^3*b*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*e^6)) - 2*(3*c^4*d^2*e^4 - 3*b*c^3*d*e
^5 + (b^2*c^2 - a*c^3)*e^6)*sqrt(e*x + d)) - 2*(c*e*x - c*d + b*e)*sqrt(e*x
 + d))/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (
b*c*d^2 - b^2*d*e + a*b*e^2)*x)
```

giac [**B**]   time = 1.53, size = 1534, normalized size = 4.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^(3/2)*c*e^2 - 2*sqrt(x*e + d)*c*d*e^2 + sqrt(x*e + d)*b*e^3)/(((
x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)*(c*
d^2 - b*d*e + a*e^2)) + 1/8*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d +
2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(b^2 - 4*a*c)*e^2 - 2*(2*sqrt(b^2 - 4*a*c)
*c^2*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c*d^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*e^5
+ (b^2 + 2*a*c)*sqrt(b^2 - 4*a*c)*d*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2
- 4*a*c)*c)*e)*abs(c*d^2*e - b*d*e^2 + a*e^3) + (4*c^4*d^6*e^2 - 12*b*c^3*d
^5*e^3 + (13*b^2*c^2 + 8*a*c^3)*d^4*e^4 + a^2*b^2*e^8 - 2*(3*b^3*c + 8*a*b*
c^2)*d^3*e^5 + (b^4 + 10*a*b^2*c + 4*a^2*c^2)*d^2*e^6 - 2*(a*b^3 + 2*a^2*b*
c)*d*e^7)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1
/2)*sqrt(x*e + d)/sqrt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2
- a*b*e^3 + sqrt((2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e
^3)^2 - 4*(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^
3 + a^2*e^4)*(c^2*d^2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2))
)/((sqrt(b^2 - 4*a*c)*c^3*d^6 - 3*sqrt(b^2 - 4*a*c)*b*c^2*d^5*e + 3*(b^2*c
+ a*c^2)*sqrt(b^2 - 4*a*c)*d^4*e^2 - 3*sqrt(b^2 - 4*a*c)*a^2*b*d*e^5 - (b^3
 + 6*a*b*c)*sqrt(b^2 - 4*a*c)*d^3*e^3 + sqrt(b^2 - 4*a*c)*a^3*e^6 + 3*(a*b^
2 + a^2*c)*sqrt(b^2 - 4*a*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c)
) - 1/8*((c*d^2*e - b*d*e^2 + a*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 -
4*a*c)*c)*e)*(b^2 - 4*a*c)*e^2 + 2*(2*sqrt(b^2 - 4*a*c)*c^2*d^3*e^2 - 3*sqr
t(b^2 - 4*a*c)*b*c*d^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*e^5 + (b^2 + 2*a*c)*sqrt
(b^2 - 4*a*c)*d*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(c
*d^2*e - b*d*e^2 + a*e^3) + (4*c^4*d^6*e^2 - 12*b*c^3*d^5*e^3 + (13*b^2*c^2
 + 8*a*c^3)*d^4*e^4 + a^2*b^2*e^8 - 2*(3*b^3*c + 8*a*b*c^2)*d^3*e^5 + (b^4
+ 10*a*b^2*c + 4*a^2*c^2)*d^2*e^6 - 2*(a*b^3 + 2*a^2*b*c)*d*e^7)*sqrt(-4*c^
2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sq
rt(-(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3 - sqrt((2*
c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2 + 2*a*c*d*e^2 - a*b*e^3)^2 - 4*(c^2*d^4 -
 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*(c^2*d^
2 - b*c*d*e + a*c*e^2)))/(c^2*d^2 - b*c*d*e + a*c*e^2)))/((sqrt(b^2 - 4*a*c
)*c^3*d^6 - 3*sqrt(b^2 - 4*a*c)*b*c^2*d^5*e + 3*(b^2*c + a*c^2)*sqrt(b^2 -
4*a*c)*d^4*e^2 - 3*sqrt(b^2 - 4*a*c)*a^2*b*d*e^5 - (b^3 + 6*a*b*c)*sqrt(b^2
 - 4*a*c)*d^3*e^3 + sqrt(b^2 - 4*a*c)*a^3*e^6 + 3*(a*b^2 + a^2*c)*sqrt(b^2
- 4*a*c)*d^2*e^4)*abs(c*d^2*e - b*d*e^2 + a*e^3)*abs(c))
```

maple [**A**]   time = 0.08, size = 469, normalized size = 1.29

$$-\frac{2\sqrt{-\left(4ac-b^{2}\right)e^{2}}\,\sqrt{2}\,c^{2}\operatorname{arctanh}\left(\frac{\sqrt{ex+d}\,\sqrt{2}\,c}{\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}\right)}{\left(4ac-b^{2}\right)\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)\sqrt{\left(-be+2cd+\sqrt{-\left(4ac-b^{2}\right)e^{2}}\right)c}}+\frac{2\sqrt{-\left(4ac-b^{2}\right)e^{2}}}{\left(4ac-b^{2}\right)\left(be-2cd+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x)
```

```
[Out] -4*c^2/(4*a*c-b^2)*(-(4*a*c-b^2)*e^2)^(1/2)*(e*x+d)^(1/2)/(-b*e+2*c*d+(-(4*
a*c-b^2)*e^2)^(1/2))/(-2*c*e*x-b*e+(-(4*a*c-b^2)*e^2)^(1/2))-2*c^2/(4*a*c-b
^2)*(-(4*a*c-b^2)*e^2)^(1/2)/(-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*2^(1/2)/
((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+4*c^2/(4*a*c-b^2)*(-(
4*a*c-b^2)*e^2)^(1/2)*(e*x+d)^(1/2)/(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))/(2
*c*e*x+b*e+(-(4*a*c-b^2)*e^2)^(1/2))+2*c^2/(4*a*c-b^2)*(-(4*a*c-b^2)*e^2)^(
1/2)/(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^2\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^2/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^2*sqrt(e*x + d)), x)
```

mupad [B] time = 5.32, size = 18615, normalized size = 51.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] ((c*e^2*(d + e*x)^(3/2))/(a*e^2 + c*d^2 - b*d*e) + (e^2*(b*e - 2*c*d)*(d +
e*x)^(1/2))/(a*e^2 + c*d^2 - b*d*e))/((b*e - 2*c*d)*(d + e*x) + c*(d + e*x)
^2 + a*e^2 + c*d^2 - b*d*e) - atan(((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 +
 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4
+ 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c
^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d +
 e*x)^(1/2)*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^
5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*
e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4
*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2)
 - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^
6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^
2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4
*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 3
2*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b
^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5
 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1
/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2
*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4
*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 +
 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2
*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3
*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2
*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3
*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c
*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)
^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a
^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 -
 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*
b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^
4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*
e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*
c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*
e^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^
4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*
d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*
a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*
b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 +
a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b
^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6
+ a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^
6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e +
 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3
*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d
^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4
*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d
^3*e^3)))^(1/2)*1i - (((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e
^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^
2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^
2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(
b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3
*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2
*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^
(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d
^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*
e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b
^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c
^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d
^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 -
48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2
*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d
^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c
^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 +
4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d
^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6)
)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*
e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*
a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 -
3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c -
 b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*
a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16
*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^
6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 +
 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*
b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d
^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*
a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) -
(2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e
^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d
^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 +
 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3
 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*
c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) -
12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 +
 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c
*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^
2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a
^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*
```

```
c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 -
21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)
*1i)/((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4
*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*
c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d
*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d + e*x)^(1/2)*(-(b^5*e^5 - b^2*e
^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c
^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c -
 b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c
*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b
^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d
^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*
a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48
*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3
*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^
5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a
^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3
*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*
b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e
^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^
3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^
2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^
5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 -
 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(
-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2)
- 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3
 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 +
b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2
*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4
*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3
 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2
*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e
^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1
/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 +
 c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5
*e^5 - b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^
2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^
3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/
2) - 3*b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*
e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6
 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*
d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*
d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*
e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*
a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^
4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (((4*a*b^3*c
^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2
*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*
b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e
 + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*e^5 - b^2*e^5*(-(4*a*c - b^2)
^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c
^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7
*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 + 3*b*c*d*e
^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(
16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 -
 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*
b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 +
 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 +
 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c
*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 -
 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^
3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 +
20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^
4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96
*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^
2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(4*a
*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4
- 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^
(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 +
3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*
e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*
d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d
*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*
d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*
d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*
a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*
d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 -
 b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2
*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 - b^2*e^5*(-(
4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e
^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*a*c - b^2)^
3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4
 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2
*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b
^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^
5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c
^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c
^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e +
24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4
*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*c^4*e^6)/(a^2*e^4 + c^2*d^4
 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)))*(-(b^5*e^5 -
b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*
a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 - 3*c^2*d^2*e^3*(-(4*
a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 + a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*
b^4*c*d*e^4 + 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 1
8*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*
c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4
 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2
 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 2
4*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c
^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 -
 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*2i - atan(((((4*a*b^3
*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c
^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*
a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3
*e + 2*a*c*d^2*e^2) - (2*(d + e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^
2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2
*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) -
 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d
*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8
*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3
 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 -
3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4
 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4
 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3
*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4
 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*
a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2
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+ 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*
d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 -
96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*
e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4
*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^
4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3
)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4
- 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*
d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^
7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5
*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^
3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^
2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 2
4*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*
c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6
 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d
^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d
*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2
)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e
^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c
^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 -
 b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*
b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4
*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2
*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e
+ 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b
^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*1i - (((4*a*b^3*c^2*e^7 - 16*a
^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^
2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6
)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*
e^2) + (2*(d + e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 1
2*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 +
3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5
- a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c -
 b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^
6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*
d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e
 + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c
^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3
*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a
^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3
*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 +
 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^
4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b
^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^
2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e
^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^
(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d
^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b
^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(
-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a
^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a
*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*
c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*
a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*
a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e
^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*
a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6
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- 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*
d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^
3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^
3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*
a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^
4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(1
6*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 -
8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b
^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 +
24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 +
24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*
d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 -
96*a^3*b*c^3*d^3*e^3)))^(1/2)*1i)/((((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 +
32*a*c^5*d^3*e^4 + 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 +
 12*b^3*c^3*d^2*e^5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^
2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (2*(d +
e*x)^(1/2)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5
 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e
^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*
a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2)
- 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6
 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2
*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*
e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32
*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^
5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5
- 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/
2)*(32*a*c^6*d^5*e^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*
e^7 + 64*a^2*c^5*d^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*
c^3*d^3*e^4 + 4*b^5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 +
48*a*b^2*c^4*d^3*e^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*
b^2*c^3*d*e^6))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*
e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*
b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*
c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*
e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^
3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^
3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 -
8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b
^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4
*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e
 + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c
^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e
^3)))^(1/2) + (2*(d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4
 + 2*b*c^4*d*e^5))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d
^3*e + 2*a*c*d^2*e^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a
^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b
^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a
*c*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^
2)^3)^(1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 +
 a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6
 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e +
3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*
d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^
5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*
b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^
3*e^3)))^(1/2) + (((4*a*b^3*c^2*e^7 - 16*a^2*b*c^3*e^7 + 32*a*c^5*d^3*e^4 +
 32*a^2*c^4*d*e^6 - 4*b^4*c^2*d*e^6 - 8*b^2*c^4*d^3*e^4 + 12*b^3*c^3*d^2*e^
5 - 48*a*b*c^4*d^2*e^5 + 8*a*b^2*c^3*d*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^
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2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + (2*(d + e*x)^(1/2)*(-(b^5*
e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^4*d^3*e^2
 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^2*d^2*e^3
*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*c^3*d^2*e
^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6
+ b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d
^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d
^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e
^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a
^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4
*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2)*(32*a*c^6*d^5*e
^2 - 16*a^3*b*c^3*e^7 + 32*a^3*c^4*d*e^6 + 4*a^2*b^3*c^2*e^7 + 64*a^2*c^5*d
^3*e^4 - 8*b^2*c^5*d^5*e^2 + 20*b^3*c^4*d^4*e^3 - 16*b^4*c^3*d^3*e^4 + 4*b^
5*c^2*d^2*e^5 - 80*a*b*c^5*d^4*e^3 - 8*a*b^4*c^2*d*e^6 + 48*a*b^2*c^4*d^3*e
^4 + 8*a*b^3*c^3*d^2*e^5 - 96*a^2*b*c^4*d^2*e^5 + 24*a^2*b^2*c^3*d*e^6))/(a
^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)
)*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a*c^
4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3*c^
2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c - b^2
)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a*b*
c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5
*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 +
3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*
a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*
c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e
^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^
4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (2*(
d + e*x)^(1/2)*(2*a*c^4*e^6 - b^2*c^3*e^6 - 2*c^5*d^2*e^4 + 2*b*c^4*d*e^5))
/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e
^2))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^2*e^5 + 8*a
*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*d^2*e^3 + 3
*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*(-(4*a*c -
b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(1/2) - 12*a
*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*
a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6
 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 +
48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b
^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^
3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a
*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))^(1/2) - (
2*c^4*e^6)/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2
*a*c*d^2*e^2)))*(-(b^5*e^5 + b^2*e^5*(-(4*a*c - b^2)^3)^(1/2) + 12*a^2*b*c^
2*e^5 + 8*a*c^4*d^3*e^2 - 24*a^2*c^3*d*e^4 - 2*b^2*c^3*d^3*e^2 + 3*b^3*c^2*
d^2*e^3 + 3*c^2*d^2*e^3*(-(4*a*c - b^2)^3)^(1/2) - 7*a*b^3*c*e^5 - a*c*e^5*
(-(4*a*c - b^2)^3)^(1/2) - 3*b^4*c*d*e^4 - 3*b*c*d*e^4*(-(4*a*c - b^2)^3)^(
1/2) - 12*a*b*c^3*d^2*e^3 + 18*a*b^2*c^2*d*e^4)/(8*(16*a^2*c^5*d^6 + a^3*b^
4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^
4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c
*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2
 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2
*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d
*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3))
)^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1622 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=469

$$\frac{3\sqrt{c}\,e\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{3\sqrt{c}\,e\left(-2c\right.}{}$$

```
[Out] 3*e^2*(-b*e+2*c*d)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)+(-(-4*a*c+b^2)*(-b*e
+c*d)+c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)/(e
*x+d)^(1/2)+3/2*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c
+b^2)^(1/2)))^(1/2))*c^(1/2)*(2*c^2*d^2+b*e^2*(b+(-4*a*c+b^2)^(1/2))-2*c*e*
(b*d+a*e+d*(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d*e+c*d^2)^2*2^(1/2)/(-4*a*c+b^2)^
(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-3/2*e*arctanh(2^(1/2)*c^(1/2)*
(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(2*c^2*d^2+b*
e^2*(b-(-4*a*c+b^2)^(1/2))-2*c*e*(b*d+a*e-d*(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d
*e+c*d^2)^2*2^(1/2)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/
2)
```

Rubi [A] time = 1.72, antiderivative size = 469, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = $\{822, 828, 826, 1166, 208\}$

$$\frac{3\sqrt{c}\,e\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{\sqrt{2}\sqrt{b^2-4ac}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)^2}-\frac{3\sqrt{c}\,e\left(-2c\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] (3*e^2*(2*c*d - b*e))/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - ((b^2 - 4
*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*
e^2)*Sqrt[d + e*x]*(a + b*x + c*x^2)) + (3*Sqrt[c]*e*(2*c^2*d^2 + b*(b + Sq
rt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(Sqr
t[2]*Sqrt[b^2 - 4*a*c]*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d
*e + a*e^2)^2) - (3*Sqrt[c]*e*(2*c^2*d^2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 -
2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(Sqrt[2]*Sqrt[b^2 - 4*a*c]*
Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^2}\,dx = -\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+cx^2\right)}-\frac{\int \frac{\frac{3}{2}\left(b^2-4ac\right)e(cd-be)-\frac{3}{2}c(}{(d+ex)^{3/2}\left(a+bx+c\right.}}{\left(b^2-4ac\right)\left(cd^2-b\right.}$$

$$=\frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\right.}$$

$$=\frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\right.}$$

$$=\frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\right.}$$

$$=\frac{3e^2(2cd-be)}{\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}-\frac{\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\left(a+bx+\right.}$$

Mathematica [**A**] time = 2.63, size = 381, normalized size = 0.81

$$\frac{\frac{3\sqrt{2}\sqrt{c}\,e\left(\frac{\left(-2ce\left(d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(\sqrt{b^2-4ac}+b\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{e\sqrt{b^2-4ac}-be+2cd}}\right)}{\sqrt{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}-\frac{\left(-2ce\left(-d\sqrt{b^2-4ac}+ae+bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+2c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}}{\sqrt{2cd-e}}\right.}{\sqrt{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\right.}{\sqrt{b^2-4ac}}}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x]
```

```
[Out] ((-6*e^2*(-2*c*d + b*e))/Sqrt[d + e*x] + (2*(c*d^2 + e*(-(b*d) + a*e))*(-(c
*d) + b*e + c*e*x))/(Sqrt[d + e*x]*(a + x*(b + c*x))) + (3*Sqrt[2]*Sqrt[c]*
e*(((2*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d + Sqrt[b^2 - 4*
a*c]*d + a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + S
qrt[b^2 - 4*a*c]*e]])/Sqrt[2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e] - ((2*c^2*d^
2 + b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(b*d - Sqrt[b^2 - 4*a*c]*d + a*e)
)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*
c])*e]])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]))/Sqrt[b^2 - 4*a*c])/(2*(c
*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**] time = 8.04, size = 1441, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 3*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*s
qrt(x*e + d)/sqrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d
^3*e^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^
2*b*e^5 + sqrt((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e
^2 - b^3*d^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*
e^5)^2 - 4*(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b
^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*
d*e^5 + a^3*e^6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2
 - 2*a*b*c*d*e^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 +
2*a*c^2*d^2*e^2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))*e/((2*sqrt(b^2 - 4*a*c)*c^3*
d^3 + 3*(b^2*c^2 - 4*a*c^3 - sqrt(b^2 - 4*a*c)*b*c^2)*d^2*e - 3*(b^3*c - 4*
a*b*c^2 - (b^2*c - 2*a*c^2)*sqrt(b^2 - 4*a*c))*d*e^2 + (b^4 - 5*a*b^2*c + 4
*a^2*c^2 - (b^3 - 3*a*b*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) - 3*sqrt(-4*c^2*
d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*c^3*arctan(2*sqrt(1/2)*sqrt(x*e + d)/s
qrt(-(2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d
^2*e^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5 - sqrt
((2*c^3*d^5 - 5*b*c^2*d^4*e + 4*b^2*c*d^3*e^2 + 4*a*c^2*d^3*e^2 - b^3*d^2*e
^3 - 6*a*b*c*d^2*e^3 + 2*a*b^2*d*e^4 + 2*a^2*c*d*e^4 - a^2*b*e^5)^2 - 4*(c^
3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6
*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^
6)*(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^2 - 2*a*b*c*d*e
^3 + a^2*c*e^4)))/(c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2 + 2*a*c^2*d^2*e^
2 - 2*a*b*c*d*e^3 + a^2*c*e^4)))*e/((2*sqrt(b^2 - 4*a*c)*c^3*d^3 - 3*(b^2*c
^2 - 4*a*c^3 + sqrt(b^2 - 4*a*c)*b*c^2)*d^2*e + 3*(b^3*c - 4*a*b*c^2 + (b^2
*c - 2*a*c^2)*sqrt(b^2 - 4*a*c))*d*e^2 - (b^4 - 5*a*b^2*c + 4*a^2*c^2 + (b^
3 - 3*a*b*c)*sqrt(b^2 - 4*a*c))*e^3)*abs(c)) + (6*(x*e + d)^2*c^2*d*e^2 - 1
1*(x*e + d)*c^2*d^2*e^2 + 4*c^2*d^3*e^2 - 3*(x*e + d)^2*b*c*e^3 + 11*(x*e +
 d)*b*c*d*e^3 - 6*b*c*d^2*e^3 - 3*(x*e + d)*b^2*e^4 + (x*e + d)*a*c*e^4 + 2
*b^2*d*e^4 + 4*a*c*d*e^4 - 2*a*b*e^5)/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2
 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*((x*e + d)^(5/2)*c - 2*(x*e + d)^
(3/2)*c*d + sqrt(x*e + d)*c*d^2 + (x*e + d)^(3/2)*b*e - sqrt(x*e + d)*b*d*e
 + sqrt(x*e + d)*a*e^2))
```

maple [B] time = 0.14, size = 1758, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x)
```

```
[Out] -e^3/(a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*b*c+2*e^
2/(a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(3/2)*c^2*d+e^4/(
a*e^2-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*a*c-e^4/(a*e^2
-b*d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b^2+3*e^3/(a*e^2-b*
d*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*b*c*d-3*e^2/(a*e^2-b*d
*e+c*d^2)^2/(c*e^2*x^2+b*e^2*x+a*e^2)*(e*x+d)^(1/2)*c^2*d^2-3*e^4/(a*e^2-b*
d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*a*c^2+3/2*e^4/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c-b^2
)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan
h((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*
b^2-3*e^3/(a*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*c^2*d+3*e^2/(a*e^2-b*d*e+c*d^
2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*c)*c^3*d^2+3/2*e^3/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+
2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2/(a*e^2-b*d*e+c*d^2)^2*2
^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2
)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*c^2*d-3*e^4/(a
*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*c^2+3/2*e^4/(a*e^2-b*d*e+c*d^2)^2*c/(-(4*a*c
-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arc
tan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
*b^2-3*e^3/(a*e^2-b*d*e+c*d^2)^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*c^2*d+3*e^2/(a*e^2-b*d*e+c*d^2)
^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*
c)^(1/2)*c)*c^3*d^2-3/2*e^3/(a*e^2-b*d*e+c*d^2)^2*c*2^(1/2)/((b*e-2*c*d+(-(
4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-
(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+3*e^2/(a*e^2-b*d*e+c*d^2)^2*2^(1/2)/(
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*c^2*d-2*e^3/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)^(1/2)*b+4*e^2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)*c*d
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\left(cx^2 + bx + a\right)^2 (ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^2*(e*x + d)^(3/2)), x)
```

mupad [B] time = 10.41, size = 58573, normalized size = 124.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^2),x)
```

```
[Out] - atan((((-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^
7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(
-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^
4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*
c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4
*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*
d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*
a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b
^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4
*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*
(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*
e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e
^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^
2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80
*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^
5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2
*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b
^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*
d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75
*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b
^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4
*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)
^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7
+ 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(
4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*
d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c
- b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a
*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^
4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*
b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2
*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(
-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(1
6*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^
5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9
 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*
e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a
^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*
d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c
^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2
*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^
5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a
```

*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6
*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d
^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d
^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 6
40*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13
440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 +
 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16
*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b
^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8
*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*
c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^
2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8
 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*
c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 -
 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^1
0*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 1
74720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c
^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960
*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*
d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 5
0400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d
^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424
*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d
^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5
*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^
15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^
6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 -
87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*
d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^
8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 +
 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*
e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^1
0*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^
7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 39
36*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14
 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*
d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^
7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*
a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 4
8*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^
3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^
12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6
*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4
+ 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 -
4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 19
68*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*
b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^
9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^
6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2
544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^
12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 665
28*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7
*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b
^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^1
4 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c
^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656
*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*
e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*
c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 16

```
80*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e
^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c
^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^
11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a
*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 -
8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^1
4 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^
13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b
*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b
*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*
e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2
*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*
d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^1
4*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*
e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12
 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^1
0 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c
^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a
^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^
13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^
4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*
a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17
 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*
d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2
*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*
a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 90
0*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 -
11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^
15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e
^19))*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 +
 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4
*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d
^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c -
 b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*
c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4
*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b
^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*
c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-
(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16
*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5
 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9
- 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e
^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^
6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d
^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^
4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*
c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5
*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*
b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*
c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^
5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i - ((-(9*(b
^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*
e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3
)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b
^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2
) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(
1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b
^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^
4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 1
0*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)
^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10
 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^
6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d
^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c
^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8
 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*
a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 8
0*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 +
 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2
*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e
^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 3
20*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^
4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*
a^10*c^4*e^22 - (d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^
(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*
c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2
*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5
+ 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 +
10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)
^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*
c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b
*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(
1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*
c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 +
b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*
d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*
d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 1
60*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d
^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^
2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*
c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*
c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 -
80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6
*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*
d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*
e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22
+ 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 76
80*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 +
 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 6
40*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b
^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^
7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*
c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2
*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84
480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d
^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 1232
0*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8
*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*
a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^
11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a
^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e
^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*
a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*
e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b
^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^
14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^
7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 -
226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c
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^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 10560
0*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5
*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^
2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 3
60*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*
e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d
^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*
c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400
*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13
 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^1
6*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b
*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200
*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304
*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^
2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a
^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*
c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d
^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^1
4*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*
e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^1
4 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^
4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12
+ 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*
d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664
*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d
^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3
*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12
 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^
5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 84
0*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7
*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b
^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 2
5872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d
^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b
^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 12
96*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10
272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^
9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d
^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^
2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a
^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 -
4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 -
444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^
16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*
a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*
a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3
*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c
^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d
^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^
3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 41
40*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e
^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^
4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360
*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*
e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c
^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a
^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 +
 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^
11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*
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e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*
d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5
*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*
e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2
 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(
1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*
c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) -
 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*
c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 -
 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a
*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)
^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 +
a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d
^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*
e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*
d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 +
10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2
*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a
^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 12
0*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*
c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2
+ 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*
a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b
^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i)/(108*c^12*d^13*e^6 - ((-(
9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*
d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^
2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 -
10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^
(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^
3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40
*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^
3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6
 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c -
b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*
d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^
2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c
^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a
^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2
*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 -
150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4
 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e
^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80
*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d
^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6
 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 7
5*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 -
 48*a^10*c^4*e^22 - (d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)
^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*
b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2
*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*
e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^
6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c -
b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(
4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a
^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^
3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(
4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^1
0 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*
b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*
b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4
 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c
^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^
5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*
b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*
b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^
9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a
*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^
5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*
d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e
^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6
+ 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^
12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18
 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 8
00*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 571
2*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b
^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13
*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7
+ 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c
^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 +
12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2
*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235
200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^
6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 72
00*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^
13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203
280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*
d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a
^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^
9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^
5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^1
4 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b
^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 1
05600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4
*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^
8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20
 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*
d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^
11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*
b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 1
0400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*
e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11
*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a
^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 -
7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 +
 304*a^10*b^2*c^3*d*e^22) - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 110
4*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 73
92*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*
a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^
11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8
*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d
^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8
*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^
2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e
^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*
c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 12
5664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c
^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696
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*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*
e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^
4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17
- 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6
*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a
^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16
 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c
^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a
^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20
- 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6
- 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^1
3*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c
^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^1
1*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 403
20*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^1
5 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^1
9 - 444*a^8*b^3*c^3*d*e^21) + (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^1
3*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 +
720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2
304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520
*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b
^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c
^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^
2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13
- 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d
^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^
3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 +
 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*
d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b
^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 5
40*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e
^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^
9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*
d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*
c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5
*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(
b^7*e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5
*e^2 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^
3)^(1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*
b^4*c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/
2) - 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^
(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*
b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e
^4 - 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 -
10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2
)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^1
0 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c
^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*
d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*
c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^
8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150
*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 -
80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6
+ 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^
2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*
e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 -
320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a
^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - ((-(9*(b^7*e^7 + b^4*e^
7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^
4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^
2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4
+ 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e
^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*
c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 -
5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^
3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5
*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*
a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10
 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*
b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*
d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 16
0*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d
^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6
*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d
^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^
2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e +
40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c
^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^
7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8
 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)^(1/2)*(-(9*(b^7*e^7 + b^4*e^7*
(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*
d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*
c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 +
10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7
 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*
e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*
b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*
d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*
b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 +
 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^
2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^
6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*
a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8
*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e
^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5
*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*
d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40
*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3
*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*
e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 -
 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 +
64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3
*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 16128*
a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a
^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^
12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9
*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^
14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^1
1*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3
*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 +
23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c
^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 3
60*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9
*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 6
0480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^
4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184800
*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*
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d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 108
00*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*
e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285600
*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7
*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*
b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^1
6 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c
^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31
680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*
e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b
^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 12
00*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4
 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^1
6*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^
6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a
*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 2
4480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12
*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*
c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b
*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^
18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6
 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^1
2 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 -
240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*
b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^
7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10
*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b
^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10
 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*
c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*
a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^
11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776
*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^
16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b
^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15
 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d
^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a
^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18
 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^
5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a
^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19
 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^1
7*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*
d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*
c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696
*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 88
32*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e
^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*
d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3
*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8
*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e
^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^1
4 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7
 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 +
2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^
10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11
 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*
d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3
*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14
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+ 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^
3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4
*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7
560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*
e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9
*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6
*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^
9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 1296
0*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1
440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*(-(9*(b^7*e^7 + b^4*e^7*(
-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2 + 40*a^3*c^4*d
*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) - 80*a^2*c
^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*c^3*d^3*e^4 + 1
0*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) - 9*a*b^5*c*e^7
- 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e
^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*c^2*d*e^6 - 5*b
^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 - 70*a*b^3*c^3*d
^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-
(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b
*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 +
16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2
*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6
*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a
^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*
e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^
4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*
e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d
^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*
a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*
d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e
^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 -
320*a^5*b*c^3*d^3*e^7)))^(1/2) - 54*a^6*b*c^5*e^19 + 648*a*c^11*d^11*e^8 +
108*a^6*c^6*d*e^18 - 702*b*c^11*d^12*e^7 + 1620*a^2*c^10*d^9*e^10 + 2160*a^
3*c^9*d^7*e^12 + 1620*a^4*c^8*d^5*e^14 + 648*a^5*c^7*d^3*e^16 + 1944*b^2*c^
10*d^11*e^8 - 2970*b^3*c^9*d^10*e^9 + 2700*b^4*c^8*d^9*e^10 - 1458*b^5*c^7*
d^8*e^11 + 432*b^6*c^6*d^7*e^12 - 54*b^7*c^5*d^6*e^13 + 12960*a^2*b^2*c^8*d
^7*e^12 - 11340*a^2*b^3*c^7*d^6*e^13 + 4860*a^2*b^4*c^6*d^5*e^14 - 810*a^2*
b^5*c^5*d^4*e^15 + 9720*a^3*b^2*c^7*d^5*e^14 - 5400*a^3*b^3*c^6*d^4*e^15 +
1080*a^3*b^4*c^5*d^3*e^16 + 3240*a^4*b^2*c^6*d^3*e^16 - 810*a^4*b^3*c^5*d^2
*e^17 - 3564*a*b*c^10*d^10*e^9 + 8100*a*b^2*c^9*d^9*e^10 - 9720*a*b^3*c^8*d
^8*e^11 + 6480*a*b^4*c^7*d^7*e^12 - 2268*a*b^5*c^6*d^6*e^13 + 324*a*b^6*c^5
*d^5*e^14 - 7290*a^2*b*c^9*d^8*e^11 - 7560*a^3*b*c^8*d^6*e^13 - 4050*a^4*b*
c^7*d^4*e^15 - 972*a^5*b*c^6*d^2*e^17 + 324*a^5*b^2*c^5*d*e^18))*(-(9*(b^7*
e^7 + b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a^3*b*c^3*e^7 + 8*a*c^6*d^5*e^2
 + 40*a^3*c^4*d*e^6 + 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(
1/2) - 80*a^2*c^5*d^3*e^4 - 2*b^2*c^5*d^5*e^2 + 5*b^3*c^4*d^4*e^3 - 10*b^4*
c^3*d^3*e^4 + 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) -
 9*a*b^5*c*e^7 - 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2
) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) - 20*a*b*c^5*d^4*e^3 + 40*a*b^4*
c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) + 60*a*b^2*c^4*d^3*e^4 -
 70*a*b^3*c^3*d^2*e^5 + 120*a^2*b*c^4*d^2*e^5 - 90*a^2*b^2*c^3*d*e^6 - 10*a
*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)
^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 +
a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d
^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*
e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*
d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 +
10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2
*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a
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^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 12
0*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*
c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2
+ 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*
a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b
^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*2i - atan(((((9*(b^4*e^7*(-(4
*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^
3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 8
0*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*
e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5
*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*
b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^
6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^
3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2
*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) +
 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*
e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*
a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^
8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2
+ 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c
^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3
*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c
^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^
2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*
e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b
^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^
5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2
*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*
c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c
^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a
^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4
 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*
e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2
*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 -
 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c
^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^
5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10
*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^1
0 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6
*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c
*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 1
60*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*
d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^
6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*
d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c
^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e +
 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*
c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d
^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^
8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23
 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2*c^13*d^19*e^4 + 2880*
a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^5*c^10*d^13*e^10 + 161
28*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*a^8*c^7*d^7*e^16 + 288
0*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c^13*d^21*e^2 + 168*b^3
*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^10*d^18*e^5 - 4320*b^6*
c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6
*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^12*e^11 - 96*b^12*c^3*
d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*
b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9
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 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^
8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*a^2*b^10*c^3*d^9*e^14
+ 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15*e^8 - 187200*a^3*b^3*
c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*a^3*b^5*c^7*d^12*e^11
+ 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8
*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b^10*c^2*d^7*e^16 + 184
800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e^11 + 342720*a^4*b^4*c
^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a^4*b^6*c^5*d^9*e^14 +
10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d
^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b^3*c^7*d^10*e^13 + 285
600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*
d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c^2*d^5*e^18 + 198240*a
^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*
e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^
7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*a^7*b^3*c^5*d^6*e^17 +
 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d
^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*c^4*d^4*e^19 + 2400*a^
8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 -
 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 + 3040*a*b^2*c^12*d^19*e
^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*
d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*d^14*e^9 - 16800*a*b^8
*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b^10*c^4*d^11*e^12 + 84
8*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 6080*a^2*b*c^12*d^18*e^5
- 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d
^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^7*d^8*e^15 - 26880*a^8
*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^4*c^2*d*e^22 - 960*a^1
0*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 48*a^10*c^4*e^22 + 144*a*c^13
*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*
e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*
e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18
 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 13
08*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208
*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b
^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^
2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e
^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b
^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 3
36*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8
*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13
776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6
*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^
4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^
15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^
2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 4939
2*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e
^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3
*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 33
6*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e
^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*
d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^
10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b
^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3
696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 -
 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^1
1*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c
^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*
c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*
a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^1
2*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*
```

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e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e
^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10
 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18
*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^
11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c
^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*
a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^
14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3
*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*
a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18
+ 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d
^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*
c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*
b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a
*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 1
2960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19
- 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c
- b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4
*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2
*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 -
 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^
7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c
*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5
*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3
*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*
(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a
*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10
+ 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b
^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d
^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160
*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^
8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*
e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^
5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2
*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 4
0*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^
3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7
*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8
- 320*a^5*b*c^3*d^3*e^7)))^(1/2)*1i - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2
) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^
2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 +
 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^
2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*
e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c
- b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(
-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120
*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2
)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(
-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e
^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*
a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^
2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e
^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7
*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*
b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^
3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*
a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*
e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10
*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*
b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^
3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*a^10*c^4*e^22 - (d + e*x)^(1/2
)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*
c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c
- b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^
3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)
^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b
^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3
- 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^
4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d
*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*
c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*
c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*
a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b
^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 +
80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3
*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^
2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6
*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d
^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5
- 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c
^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4
*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5
 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e^
2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^2
*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a^
5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680*
a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*c
^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^1
0*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*d
^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d^
12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^11
*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 7056
0*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d^
12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280*
a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^15
*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720*
a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^1
0*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*b
^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*e
^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*a
^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^1
6 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*b
^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^1
5 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*c
^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 + 1
34400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3*
d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360*
a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e^
19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3*
c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600*
a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 +
3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^17
*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7*
d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*b
^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 608
0*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*e
^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c^
7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b^
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4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 12*a^8*
b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11
*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8
*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*
e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^
6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 -
 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 +
 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8
 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5
*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7
632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6
*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968
*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8
*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9
*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13
+ 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c
^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*
a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e
^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c
^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 114
24*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e
^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*
c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*
b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664
*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 +
10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e
^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^
15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*
b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^
7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d +
e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a
^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^
10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*
d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d
^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9
*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14
+ 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c
^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*
a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^1
2 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^
5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a
^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^1
6 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*
d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*
b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508
*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 +
3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 -
 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*
e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^
3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b
^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3
*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^
2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5
 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 +
 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2
)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a
*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*
b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^
(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a
*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 +
 b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8
*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7
*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 +
160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*
d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c
^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4
*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3
*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 -
 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^
6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c
*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3
*e^7)))^(1/2)*1i)/(108*c^12*d^13*e^6 - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/
2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a
^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4
+ 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d
^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d
*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c
 - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*
(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 12
0*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^
2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*
(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*
e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5
*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a
^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*
e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^
7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2
*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a
^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40
*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d
*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 1
0*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3
*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c
^3*d^3*e^7)))^(1/2)*(144*a*c^13*d^18*e^4 - 48*a^10*c^4*e^22 - (d + e*x)^(1/
2)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a
*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c
 - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e
^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2
)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(-(4*a*c -
b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3
 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) - 60*a*b^2*c
^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*
d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a
*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/(8*(16*a^2
*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d^5*e^5 - 8
*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*
b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 +
 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 + 80*a^6*c^
3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e
^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^
6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*
d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5
 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 - 75*a*b^4*
c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^
4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^
5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a*c^14*d^21*e
^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e^23 + 640*a^
2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e^8 + 13440*a
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^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9*e^14 + 7680
*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^20 - 16*b^2*
c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 + 2280*b^5*c^
10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5376*b^8*c^7*
d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 520*b^11*c^4*d
^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200*a^2*b^2*c^1
1*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^15*e^8 - 705
60*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a^2*b^7*c^6*d
^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10*e^13 - 3280
*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*b^2*c^10*d^1
5*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e^10 - 174720
*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^3*b^7*c^5*d^
10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^15 - 960*a^3*
b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b^3*c^8*d^12*
e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e^13 + 50400*
a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^8*c^3*d^7*e^
16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 - 347424*a^5*
b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^5*c^5*d^8*e^
15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2016*a^5*b^8*
c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6*d^8*e^15 +
134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016*a^6*b^6*c^3
*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*e^16 - 87360
*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b^5*c^3*d^4*e
^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 17400*a^8*b^3
*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2*e^21 + 5600
*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^13*d^20*e^3 +
 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*b^4*c^10*d^1
7*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 15840*a*b^7*c^7
*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^11 - 3936*a*
b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d^9*e^14 - 60
80*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*b*c^10*d^14*
e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 60480*a^7*b*c
^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^19 - 80*a^9*b
^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^22) - 12*a^8
*b^4*c^2*e^22 + 60*a^9*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^1
1*d^14*e^8 + 6720*a^4*c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^
8*d^8*e^14 + 1344*a^7*c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2
*e^20 - 36*b^2*c^12*d^18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e
^6 + 3120*b^5*c^9*d^15*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9
- 3864*b^8*c^6*d^12*e^10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12
+ 132*b^11*c^3*d^9*e^13 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^
8 - 58128*a^2*b^3*c^9*d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^
5*c^7*d^11*e^11 + 7392*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 -
7632*a^2*b^8*c^4*d^8*e^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^
6*e^16 + 76272*a^3*b^2*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 12196
8*a^3*b^4*c^7*d^10*e^12 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^
8*e^14 + 5088*a^3*b^7*c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^
9*c^2*d^5*e^17 + 101640*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13
 + 108360*a^4*b^4*c^6*d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*
c^4*d^6*e^16 + 2520*a^4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104
*a^5*b^2*c^7*d^8*e^14 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*
e^16 - 14112*a^5*b^5*c^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*
c^2*d^3*e^19 + 30576*a^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11
424*a^6*b^4*c^4*d^4*e^18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*
e^20 + 5424*a^7*b^2*c^5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4
*c^3*d^2*e^20 + 252*a^8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9
*b*c^4*d*e^21 + 4956*a*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 1166
4*a*b^4*c^9*d^14*e^8 - 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 +
 10944*a*b^7*c^6*d^11*e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*
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e^13 - 900*a*b^10*c^3*d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d
^15*e^7 - 25536*a^3*b*c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5
*b*c^8*d^9*e^13 - 18816*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a
^7*b^5*c^2*d*e^21 + 384*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) + (d +
 e*x)^(1/2)*(288*b*c^12*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*
a^6*b^4*c^3*e^20 + 72*a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c
^10*d^10*e^10 + 3240*a^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7
*d^4*e^16 - 1080*b^2*c^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*
d^12*e^8 + 4644*b^5*c^8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^
9*e^11 - 810*b^8*c^5*d^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14
 + 10152*a^2*b^2*c^9*d^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*
c^7*d^8*e^12 + 3240*a^2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728
*a^2*b^7*c^4*d^5*e^15 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^
12 - 21600*a^3*b^3*c^7*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c
^5*d^5*e^15 - 1440*a^3*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*
a^4*b^2*c^7*d^6*e^14 - 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^
16 + 180*a^4*b^5*c^4*d^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6
*d^4*e^16 - 3600*a^5*b^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6
*b^2*c^5*d^2*e^18 - 360*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 550
8*a*b^4*c^8*d^10*e^10 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 +
 3240*a*b^7*c^5*d^7*e^13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15
- 4320*a^2*b*c^10*d^11*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7
*e^13 - 6912*a^5*b*c^7*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d
^3*e^17 - 360*a^6*b^3*c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) -
b^7*e^7 + 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^
3*c^2*e^7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b
^2*c^5*d^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^
5 + 5*c^4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6
+ 10*b^2*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^
2)^3)^(1/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*
a*c - b^2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2
*b*c^4*d^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)
^(1/2) - 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*
a*c - b^2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10
+ b^4*c^5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^
8*d^4*e^6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^
7*d^3*e^7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 +
 160*a^5*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2
*d^7*e^3 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*
c^2*d^5*e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^
4*c^2*d^4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^
3*c^5*d^9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9
- 80*a^6*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b
^6*c^2*d^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*
c*d^3*e^7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^
3*e^7)))^(1/2) - (((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*
b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c
^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 -
5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3
*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*
e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*
a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/
2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 +
90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3
*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/
2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 -
b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4
*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^
3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*
e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^
2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400
*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 4
00*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*
a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*
e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 -
10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a
^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*((
d + e*x)^(1/2)*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c
^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*
e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b
^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-
(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5
*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b
*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2)
- 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*
a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^
3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2))
)/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9
*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^
5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b
^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6
 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b
^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^
3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*
a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b
^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9
 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*
a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*
b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2)*(64*a
*c^14*d^21*e^2 - 32*a^11*b*c^3*e^23 + 64*a^11*c^4*d*e^22 + 8*a^10*b^3*c^2*e
^23 + 640*a^2*c^13*d^19*e^4 + 2880*a^3*c^12*d^17*e^6 + 7680*a^4*c^11*d^15*e
^8 + 13440*a^5*c^10*d^13*e^10 + 16128*a^6*c^9*d^11*e^12 + 13440*a^7*c^8*d^9
*e^14 + 7680*a^8*c^7*d^7*e^16 + 2880*a^9*c^6*d^5*e^18 + 640*a^10*c^5*d^3*e^
20 - 16*b^2*c^13*d^21*e^2 + 168*b^3*c^12*d^20*e^3 - 800*b^4*c^11*d^19*e^4 +
 2280*b^5*c^10*d^18*e^5 - 4320*b^6*c^9*d^17*e^6 + 5712*b^7*c^8*d^16*e^7 - 5
376*b^8*c^7*d^15*e^8 + 3600*b^9*c^6*d^14*e^9 - 1680*b^10*c^5*d^13*e^10 + 52
0*b^11*c^4*d^12*e^11 - 96*b^12*c^3*d^11*e^12 + 8*b^13*c^2*d^10*e^13 + 25200
*a^2*b^2*c^11*d^17*e^6 - 59160*a^2*b^3*c^10*d^16*e^7 + 84480*a^2*b^4*c^9*d^
15*e^8 - 70560*a^2*b^5*c^8*d^14*e^9 + 23520*a^2*b^6*c^7*d^13*e^10 + 15600*a
^2*b^7*c^6*d^12*e^11 - 23040*a^2*b^8*c^5*d^11*e^12 + 12320*a^2*b^9*c^4*d^10
*e^13 - 3280*a^2*b^10*c^3*d^9*e^14 + 360*a^2*b^11*c^2*d^8*e^15 + 90240*a^3*
b^2*c^10*d^15*e^8 - 187200*a^3*b^3*c^9*d^14*e^9 + 235200*a^3*b^4*c^8*d^13*e
^10 - 174720*a^3*b^5*c^7*d^12*e^11 + 60480*a^3*b^6*c^6*d^11*e^12 + 10560*a^
3*b^7*c^5*d^10*e^13 - 19200*a^3*b^8*c^4*d^9*e^14 + 7200*a^3*b^9*c^3*d^8*e^1
5 - 960*a^3*b^10*c^2*d^7*e^16 + 184800*a^4*b^2*c^9*d^13*e^10 - 327600*a^4*b
^3*c^8*d^12*e^11 + 342720*a^4*b^4*c^7*d^11*e^12 - 203280*a^4*b^5*c^6*d^10*e
^13 + 50400*a^4*b^6*c^5*d^9*e^14 + 10800*a^4*b^7*c^4*d^8*e^15 - 9600*a^4*b^
8*c^3*d^7*e^16 + 1680*a^4*b^9*c^2*d^6*e^17 + 237888*a^5*b^2*c^8*d^11*e^12 -
 347424*a^5*b^3*c^7*d^10*e^13 + 285600*a^5*b^4*c^6*d^9*e^14 - 120960*a^5*b^
5*c^5*d^8*e^15 + 13440*a^5*b^6*c^4*d^7*e^16 + 7392*a^5*b^7*c^3*d^6*e^17 - 2
016*a^5*b^8*c^2*d^5*e^18 + 198240*a^6*b^2*c^7*d^9*e^14 - 226800*a^6*b^3*c^6
*d^8*e^15 + 134400*a^6*b^4*c^5*d^7*e^16 - 32928*a^6*b^5*c^4*d^6*e^17 - 2016
*a^6*b^6*c^3*d^5*e^18 + 1680*a^6*b^7*c^2*d^4*e^19 + 105600*a^7*b^2*c^6*d^7*
e^16 - 87360*a^7*b^3*c^5*d^6*e^17 + 31680*a^7*b^4*c^4*d^5*e^18 - 1920*a^7*b
^5*c^3*d^4*e^19 - 960*a^7*b^6*c^2*d^3*e^20 + 33840*a^8*b^2*c^5*d^5*e^18 - 1
7400*a^8*b^3*c^4*d^4*e^19 + 2400*a^8*b^4*c^3*d^3*e^20 + 360*a^8*b^5*c^2*d^2
*e^21 + 5600*a^9*b^2*c^4*d^3*e^20 - 1200*a^9*b^3*c^3*d^2*e^21 - 672*a*b*c^1
3*d^20*e^3 + 3040*a*b^2*c^12*d^19*e^4 - 7600*a*b^3*c^11*d^18*e^5 + 10800*a*
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b^4*c^10*d^17*e^6 - 6528*a*b^5*c^9*d^16*e^7 - 5376*a*b^6*c^8*d^15*e^8 + 158
40*a*b^7*c^7*d^14*e^9 - 16800*a*b^8*c^6*d^13*e^10 + 10400*a*b^9*c^5*d^12*e^
11 - 3936*a*b^10*c^4*d^11*e^12 + 848*a*b^11*c^3*d^10*e^13 - 80*a*b^12*c^2*d
^9*e^14 - 6080*a^2*b*c^12*d^18*e^5 - 24480*a^3*b*c^11*d^16*e^7 - 57600*a^4*
b*c^10*d^14*e^9 - 87360*a^5*b*c^9*d^12*e^11 - 88704*a^6*b*c^8*d^10*e^13 - 6
0480*a^7*b*c^7*d^8*e^15 - 26880*a^8*b*c^6*d^6*e^17 - 7200*a^9*b*c^5*d^4*e^1
9 - 80*a^9*b^4*c^2*d*e^22 - 960*a^10*b*c^4*d^2*e^21 + 304*a^10*b^2*c^3*d*e^
22) - 48*a^10*c^4*e^22 + 144*a*c^13*d^18*e^4 - 12*a^8*b^4*c^2*e^22 + 60*a^9
*b^2*c^3*e^22 + 1104*a^2*c^12*d^16*e^6 + 3648*a^3*c^11*d^14*e^8 + 6720*a^4*
c^10*d^12*e^10 + 7392*a^5*c^9*d^10*e^12 + 4704*a^6*c^8*d^8*e^14 + 1344*a^7*
c^7*d^6*e^16 - 192*a^8*c^6*d^4*e^18 - 240*a^9*c^5*d^2*e^20 - 36*b^2*c^12*d^
18*e^4 + 324*b^3*c^11*d^17*e^5 - 1308*b^4*c^10*d^16*e^6 + 3120*b^5*c^9*d^15
*e^7 - 4872*b^6*c^8*d^14*e^8 + 5208*b^7*c^7*d^13*e^9 - 3864*b^8*c^6*d^12*e^
10 + 1968*b^9*c^5*d^11*e^11 - 660*b^10*c^4*d^10*e^12 + 132*b^11*c^3*d^9*e^1
3 - 12*b^12*c^2*d^8*e^14 + 30384*a^2*b^2*c^10*d^14*e^8 - 58128*a^2*b^3*c^9*
d^13*e^9 + 65856*a^2*b^4*c^8*d^12*e^10 - 41328*a^2*b^5*c^7*d^11*e^11 + 7392
*a^2*b^6*c^6*d^10*e^12 + 8976*a^2*b^7*c^5*d^9*e^13 - 7632*a^2*b^8*c^4*d^8*e
^14 + 2544*a^2*b^9*c^3*d^7*e^15 - 336*a^2*b^10*c^2*d^6*e^16 + 76272*a^3*b^2
*c^9*d^12*e^10 - 125664*a^3*b^3*c^8*d^11*e^11 + 121968*a^3*b^4*c^7*d^10*e^1
2 - 66528*a^3*b^5*c^6*d^9*e^13 + 13776*a^3*b^6*c^5*d^8*e^14 + 5088*a^3*b^7*
c^4*d^7*e^15 - 3696*a^3*b^8*c^3*d^6*e^16 + 672*a^3*b^9*c^2*d^5*e^17 + 10164
0*a^4*b^2*c^8*d^10*e^12 - 138600*a^4*b^3*c^7*d^9*e^13 + 108360*a^4*b^4*c^6*
d^8*e^14 - 45360*a^4*b^5*c^5*d^7*e^15 + 5880*a^4*b^6*c^4*d^6*e^16 + 2520*a^
4*b^7*c^3*d^5*e^17 - 840*a^4*b^8*c^2*d^4*e^18 + 76104*a^5*b^2*c^7*d^8*e^14
 - 82656*a^5*b^3*c^6*d^7*e^15 + 49392*a^5*b^4*c^5*d^6*e^16 - 14112*a^5*b^5*c
^4*d^5*e^17 + 168*a^5*b^6*c^3*d^4*e^18 + 672*a^5*b^7*c^2*d^3*e^19 + 30576*a
^6*b^2*c^6*d^6*e^16 - 25872*a^6*b^3*c^5*d^5*e^17 + 11424*a^6*b^4*c^4*d^4*e^
18 - 1680*a^6*b^5*c^3*d^3*e^19 - 336*a^6*b^6*c^2*d^2*e^20 + 5424*a^7*b^2*c^
5*d^4*e^18 - 4128*a^7*b^3*c^4*d^3*e^19 + 1296*a^7*b^4*c^3*d^2*e^20 + 252*a^
8*b^2*c^4*d^2*e^20 - 1296*a*b*c^12*d^17*e^5 + 240*a^9*b*c^4*d*e^21 + 4956*a
*b^2*c^11*d^16*e^6 - 10272*a*b^3*c^10*d^15*e^7 + 11664*a*b^4*c^9*d^14*e^8 -
 4704*a*b^5*c^8*d^13*e^9 - 5880*a*b^6*c^7*d^12*e^10 + 10944*a*b^7*c^6*d^11*
e^11 - 8448*a*b^8*c^5*d^10*e^12 + 3696*a*b^9*c^4*d^9*e^13 - 900*a*b^10*c^3*
d^8*e^14 + 96*a*b^11*c^2*d^7*e^15 - 8832*a^2*b*c^11*d^15*e^7 - 25536*a^3*b*
c^10*d^13*e^9 - 40320*a^4*b*c^9*d^11*e^11 - 36960*a^5*b*c^8*d^9*e^13 - 1881
6*a^6*b*c^7*d^7*e^15 - 4032*a^7*b*c^6*d^5*e^17 + 96*a^7*b^5*c^2*d*e^21 + 38
4*a^8*b*c^5*d^3*e^19 - 444*a^8*b^3*c^3*d*e^21) - (d + e*x)^(1/2)*(288*b*c^1
2*d^15*e^5 - 36*c^13*d^16*e^4 - 36*a^8*c^5*e^20 - 18*a^6*b^4*c^3*e^20 + 72*
a^7*b^2*c^4*e^20 + 720*a^2*c^11*d^12*e^8 + 2304*a^3*c^10*d^10*e^10 + 3240*a
^4*c^9*d^8*e^12 + 2304*a^5*c^8*d^6*e^14 + 720*a^6*c^7*d^4*e^16 - 1080*b^2*c
^11*d^14*e^6 + 2520*b^3*c^10*d^13*e^7 - 4050*b^4*c^9*d^12*e^8 + 4644*b^5*c^
8*d^11*e^9 - 3798*b^6*c^7*d^10*e^10 + 2160*b^7*c^6*d^9*e^11 - 810*b^8*c^5*d
^8*e^12 + 180*b^9*c^4*d^7*e^13 - 18*b^10*c^3*d^6*e^14 + 10152*a^2*b^2*c^9*d
^10*e^10 - 11160*a^2*b^3*c^8*d^9*e^11 + 4050*a^2*b^4*c^7*d^8*e^12 + 3240*a^
2*b^5*c^6*d^7*e^13 - 4140*a^2*b^6*c^5*d^6*e^14 + 1728*a^2*b^7*c^4*d^5*e^15
 - 270*a^2*b^8*c^3*d^4*e^16 + 22680*a^3*b^2*c^8*d^8*e^12 - 21600*a^3*b^3*c^7
*d^7*e^13 + 9000*a^3*b^4*c^6*d^6*e^14 + 216*a^3*b^5*c^5*d^5*e^15 - 1440*a^3
*b^6*c^4*d^4*e^16 + 360*a^3*b^7*c^3*d^3*e^17 + 19800*a^4*b^2*c^7*d^6*e^14 -
 14040*a^4*b^3*c^6*d^5*e^15 + 4050*a^4*b^4*c^5*d^4*e^16 + 180*a^4*b^5*c^4*d
^3*e^17 - 270*a^4*b^6*c^3*d^2*e^18 + 7560*a^5*b^2*c^6*d^4*e^16 - 3600*a^5*b
^3*c^5*d^3*e^17 + 540*a^5*b^4*c^4*d^2*e^18 + 1080*a^6*b^2*c^5*d^2*e^18 - 36
0*a*b^2*c^10*d^12*e^8 + 2160*a*b^3*c^9*d^11*e^9 - 5508*a*b^4*c^8*d^10*e^10
 + 7740*a*b^5*c^7*d^9*e^11 - 6480*a*b^6*c^6*d^8*e^12 + 3240*a*b^7*c^5*d^7*e^
13 - 900*a*b^8*c^4*d^6*e^14 + 108*a*b^9*c^3*d^5*e^15 - 4320*a^2*b*c^10*d^11
*e^9 - 11520*a^3*b*c^9*d^9*e^11 - 12960*a^4*b*c^8*d^7*e^13 - 6912*a^5*b*c^7
*d^5*e^15 + 108*a^5*b^5*c^3*d*e^19 - 1440*a^6*b*c^6*d^3*e^17 - 360*a^6*b^3*
c^4*d*e^19))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7 + 20*a^3*b*c^3
*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^7 + a^2*c^2*e^
7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d^5*e^2 - 5*b^3
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```
*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^4*d^4*e^3*(-(4
*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2*c^2*d^2*e^5*(
-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1/2) + 20*a*b*c
^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^2)^3)^(1/2) -
60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d^2*e^5 + 90*a^
2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 10*b*c^3*d^3*
e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^2)^3)^(1/2)))/
(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^5*d^10 - b^9*d
^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^6 - 5*a^4*b^5*
d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^7 + 10*a^3*b^6
*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5*c^4*d^4*e^6 +
 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3 + 120*a^2*b^2
*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*e^5 + 400*a^3*
b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^4*e^6 + 400*a^
4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^9*e - 12*a*b^7
*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6*b*c^2*d*e^9 -
 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d^6*e^4 - 10*a^
2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^7 - 480*a^4*b*
c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))^(1/2) - 54*a^
6*b*c^5*e^19 + 648*a*c^11*d^11*e^8 + 108*a^6*c^6*d*e^18 - 702*b*c^11*d^12*e
^7 + 1620*a^2*c^10*d^9*e^10 + 2160*a^3*c^9*d^7*e^12 + 1620*a^4*c^8*d^5*e^14
 + 648*a^5*c^7*d^3*e^16 + 1944*b^2*c^10*d^11*e^8 - 2970*b^3*c^9*d^10*e^9 +
2700*b^4*c^8*d^9*e^10 - 1458*b^5*c^7*d^8*e^11 + 432*b^6*c^6*d^7*e^12 - 54*b
^7*c^5*d^6*e^13 + 12960*a^2*b^2*c^8*d^7*e^12 - 11340*a^2*b^3*c^7*d^6*e^13 +
 4860*a^2*b^4*c^6*d^5*e^14 - 810*a^2*b^5*c^5*d^4*e^15 + 9720*a^3*b^2*c^7*d^
5*e^14 - 5400*a^3*b^3*c^6*d^4*e^15 + 1080*a^3*b^4*c^5*d^3*e^16 + 3240*a^4*b
^2*c^6*d^3*e^16 - 810*a^4*b^3*c^5*d^2*e^17 - 3564*a*b*c^10*d^10*e^9 + 8100*
a*b^2*c^9*d^9*e^10 - 9720*a*b^3*c^8*d^8*e^11 + 6480*a*b^4*c^7*d^7*e^12 - 22
68*a*b^5*c^6*d^6*e^13 + 324*a*b^6*c^5*d^5*e^14 - 7290*a^2*b*c^9*d^8*e^11 -
7560*a^3*b*c^8*d^6*e^13 - 4050*a^4*b*c^7*d^4*e^15 - 972*a^5*b*c^6*d^2*e^17
+ 324*a^5*b^2*c^5*d*e^18))*((9*(b^4*e^7*(-(4*a*c - b^2)^3)^(1/2) - b^7*e^7
+ 20*a^3*b*c^3*e^7 - 8*a*c^6*d^5*e^2 - 40*a^3*c^4*d*e^6 - 25*a^2*b^3*c^2*e^
7 + a^2*c^2*e^7*(-(4*a*c - b^2)^3)^(1/2) + 80*a^2*c^5*d^3*e^4 + 2*b^2*c^5*d
^5*e^2 - 5*b^3*c^4*d^4*e^3 + 10*b^4*c^3*d^3*e^4 - 10*b^5*c^2*d^2*e^5 + 5*c^
4*d^4*e^3*(-(4*a*c - b^2)^3)^(1/2) + 9*a*b^5*c*e^7 + 5*b^6*c*d*e^6 + 10*b^2
*c^2*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) - 3*a*b^2*c*e^7*(-(4*a*c - b^2)^3)^(1
/2) + 20*a*b*c^5*d^4*e^3 - 40*a*b^4*c^2*d*e^6 - 5*b^3*c*d*e^6*(-(4*a*c - b^
2)^3)^(1/2) - 60*a*b^2*c^4*d^3*e^4 + 70*a*b^3*c^3*d^2*e^5 - 120*a^2*b*c^4*d
^2*e^5 + 90*a^2*b^2*c^3*d*e^6 - 10*a*c^3*d^2*e^5*(-(4*a*c - b^2)^3)^(1/2) -
 10*b*c^3*d^3*e^4*(-(4*a*c - b^2)^3)^(1/2) + 10*a*b*c^2*d*e^6*(-(4*a*c - b^
2)^3)^(1/2)))/(8*(16*a^2*c^7*d^10 + a^5*b^4*e^10 + 16*a^7*c^2*e^10 + b^4*c^
5*d^10 - b^9*d^5*e^5 - 8*a*b^2*c^6*d^10 - 8*a^6*b^2*c*e^10 + 5*a*b^8*d^4*e^
6 - 5*a^4*b^5*d*e^9 - 5*b^5*c^4*d^9*e + 5*b^8*c*d^6*e^4 - 10*a^2*b^7*d^3*e^
7 + 10*a^3*b^6*d^2*e^8 + 80*a^3*c^6*d^8*e^2 + 160*a^4*c^5*d^6*e^4 + 160*a^5
*c^4*d^4*e^6 + 80*a^6*c^3*d^2*e^8 + 10*b^6*c^3*d^8*e^2 - 10*b^7*c^2*d^7*e^3
 + 120*a^2*b^2*c^5*d^8*e^2 - 150*a^2*b^4*c^3*d^6*e^4 + 114*a^2*b^5*c^2*d^5*
e^5 + 400*a^3*b^2*c^4*d^6*e^4 - 80*a^3*b^3*c^3*d^5*e^5 - 150*a^3*b^4*c^2*d^
4*e^6 + 400*a^4*b^2*c^3*d^4*e^6 + 120*a^5*b^2*c^2*d^2*e^8 + 40*a*b^3*c^5*d^
9*e - 12*a*b^7*c*d^5*e^5 - 80*a^2*b*c^6*d^9*e + 40*a^5*b^3*c*d*e^9 - 80*a^6
*b*c^2*d*e^9 - 75*a*b^4*c^4*d^8*e^2 + 60*a*b^5*c^3*d^7*e^3 - 10*a*b^6*c^2*d
^6*e^4 - 10*a^2*b^6*c*d^4*e^6 - 320*a^3*b*c^5*d^7*e^3 + 60*a^3*b^5*c*d^3*e^
7 - 480*a^4*b*c^4*d^5*e^5 - 75*a^4*b^4*c*d^2*e^8 - 320*a^5*b*c^3*d^3*e^7)))
^(1/2)*2i - ((2*(b*e^3 - 2*c*d*e^2))/(a*e^2 + c*d^2 - b*d*e) - (3*(2*c^2*d*
e^2 - b*c*e^3)*(d + e*x)^2)/(a*e^2 + c*d^2 - b*d*e)^2 + ((d + e*x)*(3*b^2*e
^4 + 11*c^2*d^2*e^2 - a*c*e^4 - 11*b*c*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^2)/(
c*(d + e*x)^(5/2) + (b*e - 2*c*d)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a*e^2
+ c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1623 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^3} \, dx$

Optimal. Leaf size=543

$$\frac{7e\left(-2c^2de\left(-d\sqrt{b^2-4ac}-8ae+6bd\right)+2ce^2\left(-bd\sqrt{b^2-4ac}+3ae\sqrt{b^2-4ac}-4abe+b^2d\right)+b^2e^3\left(b-\sqrt{b^2-4\right.\right.}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

```
[Out] -1/2*(e*x+d)^(7/2)/(c*x^2+b*x+a)^2-7/4*e*(e*x+d)^(3/2)*(b*d-2*a*e+(-b*e+2*c
*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)+7/4*e^2*(-b*e+2*c*d)*(e*x+d)^(1/2)/c/(-4*
a*c+b^2)+7/8*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^
2)^(1/2)))^(1/2))*(8*c^3*d^3+b^2*e^3*(b-(-4*a*c+b^2)^(1/2))-2*c^2*d*e*(6*b*
d-8*a*e-d*(-4*a*c+b^2)^(1/2))+2*c*e^2*(b^2*d-4*a*b*e-b*d*(-4*a*c+b^2)^(1/2)
+3*a*e*(-4*a*c+b^2)^(1/2)))/c^(3/2)/(-4*a*c+b^2)^(3/2)*2^(1/2)/(2*c*d-e*(b-
(-4*a*c+b^2)^(1/2)))^(1/2)-7/8*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c
*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*(8*c^3*d^3+b^2*e^3*(b+(-4*a*c+b^2)^(1/2
))-2*c^2*d*e*(6*b*d-8*a*e+d*(-4*a*c+b^2)^(1/2))+2*c*e^2*(b^2*d-4*a*b*e+b*d*
(-4*a*c+b^2)^(1/2)-3*a*e*(-4*a*c+b^2)^(1/2)))/c^(3/2)/(-4*a*c+b^2)^(3/2)*2^
(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi **[A]** time = 5.72, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.214, Rules used = {768, 738, 824, 826, 1166, 208}

$$\frac{7e\left(-2c^2de\left(-d\sqrt{b^2-4ac}-8ae+6bd\right)+2ce^2\left(-bd\sqrt{b^2-4ac}+3ae\sqrt{b^2-4ac}-4abe+b^2d\right)+b^2e^3\left(b-\sqrt{b^2-4\right.\right.}{4\sqrt{2}\,c^{3/2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (7*e^2*(2*c*d - b*e)*Sqrt[d + e*x])/(4*c*(b^2 - 4*a*c)) - (d + e*x)^(7/2)/(
2*(a + b*x + c*x^2)^2) - (7*e*(d + e*x)^(3/2)*(b*d - 2*a*e + (2*c*d - b*e)*
x))/(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (7*e*(8*c^3*d^3 + b^2*(b - Sqrt[b
^2 - 4*a*c])*e^3 - 2*c^2*d*e*(6*b*d - Sqrt[b^2 - 4*a*c]*d - 8*a*e) + 2*c*e^
2*(b^2*d - b*Sqrt[b^2 - 4*a*c]*d - 4*a*b*e + 3*a*Sqrt[b^2 - 4*a*c]*e))*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]
])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*
c])*e]) - (7*e*(8*c^3*d^3 + b^2*(b + Sqrt[b^2 - 4*a*c])*e^3 - 2*c^2*d*e*(6*
b*d + Sqrt[b^2 - 4*a*c]*d - 8*a*e) + 2*c*e^2*(b^2*d + b*Sqrt[b^2 - 4*a*c]*d
 - 4*a*b*e - 3*a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*
x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*c^(3/2)*(b^2 - 4*a
*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}(7e)\int \frac{(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(7e)\int \frac{\sqrt{d+ex}\left(\frac{1}{2}\left(4cd^2-5bd\right.\right.}{a+b}}{4\left(b^2-\right.}$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+$$

$$= \frac{7e^2(2cd-be)\sqrt{d+ex}}{4c\left(b^2-4ac\right)}-\frac{(d+ex)^{7/2}}{2\left(a+bx+cx^2\right)^2}-\frac{7e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+$$

Mathematica [**B**] time = 6.75, size = 1403, normalized size = 2.58

$$-\frac{\left(-2ac(2cd-be)+b\left(-eb^2+cdb+2ace\right)+c(b(2cd-be)-2c(bd-2ae))x\right)(d+ex)^{9/2}}{2\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}-\frac{-\frac{\left(-\frac{3}{2}ac\left(b^2-4ac\right)(2cd-be)e^2}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(9/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(9/2)*((-3*a*c*(b^2 - 4*a*c)
*e^2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(7*c*d - 5*b*e)*(b*c*d - b^2*e + 2
*a*c*e))/2 + c*((-3*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e
*(7*c*d - 5*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2)*(a + b*x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(14*c^2*d^2 + 5*b^2*e^2 - 2*c*
e*(7*b*d + 3*a*e))*(d + e*x)^(7/2))/2 + (2*((49*c*(b^2 - 4*a*c)*e^2*(2*c*d
- b*e)*(c*d^2 - e*(b*d - a*e))*(d + e*x)^(5/2))/4 + (2*((245*c^2*(b^2 - 4*a
*c)*e^2*(c*d^2 - e*(b*d - a*e))^2*(d + e*x)^(3/2))/4 + (2*((735*c^2*(b^2 -
4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2*Sqrt[d + e*x])/16 + (4*(
(Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*((-735*c^3*(b^2 - 4*a*c)*e^2*(2*c^
2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 - ((73
5*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d -
3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + 2*c*((-735*c^3*(b^2 - 4*a*c)*e^2*(4
*c^2*d^3 - a*b*e^3 - c*d*e*(5*b*d - 8*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 +
 (735*c^3*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(
c*d^2 - e*(b*d - a*e))^2)/64))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt
[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[
c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]*((-735*c^3*(b^2 - 4*a*c)*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3
*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + ((735*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d
+ b*e)*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^
2)/64 + 2*c*((-735*c^3*(b^2 - 4*a*c)*e^2*(4*c^2*d^3 - a*b*e^3 - c*d*e*(5*b*
d - 8*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64 + (735*c^3*(b^2 - 4*a*c)*d*e^2*(2
*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*e))*(c*d^2 - e*(b*d - a*e))^2)/64))/(
Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d -
b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*
a*c]*e))))/c))/(3*c)))/(5*c)))/(7*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2
)))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))
```

fricas [B] time = 1.75, size = 5701, normalized size = 10.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*
c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c -
 4*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 +
12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c
^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 -
 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c
^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^
13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2
*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*
c^6))*log(343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6
- 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^
2 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2
 - 144*a^3*b*c^3)*e^9 - (8*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^
3*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e
 - (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^
7)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*
d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*
e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5
*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^
2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5
 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^
5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6
*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a
^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6
*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 -
 240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a
*b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^
5 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3
*c^2)*e^12)*sqrt(e*x + d)) - 7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3
- 4*a*c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2
*c^3)*x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^
```

```
4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^
5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2
*b*c^2)*e^7 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((
25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*
(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6
 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 +
48*a^2*b^2*c^5 - 64*a^3*c^6))*log(-343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5)*d^3*e^6 - 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^
7 + 3*(b^6*c - 2*a*b^4*c^2 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17
*a*b^5*c + 88*a^2*b^3*c^2 - 144*a^3*b*c^3)*e^9 - (8*(b^6*c^5 - 12*a*b^4*c^6
 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^
3*c^6 - 64*a^3*b*c^7)*d*e - (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640
*a^3*b^2*c^6 + 768*a^4*c^7)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11
+ 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 -
18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 6
4*a^3*c^9)))*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a
*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 -
 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 + (b^6*c^3 - 12*
a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d
^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 +
 (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2
*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)
) + 343*(80*c^5*d^6*e^6 - 240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4
*e^8 + 2*(b^3*c^2 - 404*a*b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*
a^2*c^3)*d^2*e^10 - (5*b^5 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4
 - 81*a^2*b^2*c + 324*a^3*c^2)*e^12)*sqrt(e*x + d)) + 7*sqrt(1/2)*(a^2*b^2*
c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^
4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)*sqrt((32*
c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3
*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (
b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2
*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2
+ 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 8
1*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(
b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*log(343/2*sqrt(1/2)*
(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6 - 15*(b^5*c^2 - 8*a*b^3*c^
3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^2 - 32*a^2*b^2*c^3 + 96*a^
3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2 - 144*a^3*b*c^3)*e^9 + (8
*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*d^2 - 8*(b^7*c^4 -
12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e - (b^8*c^3 - 24*a*b^6*c^4
 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^7)*e^2)*sqrt((25*c^4*d^4*e
^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a
*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*
c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^
3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 -
5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c
^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c
^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3
*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 1
2*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a
^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 - 240*b*c^4*d^5*e^7 + (199*
b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a*b*c^3)*d^3*e^9 - 6*(6*b^4
*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^5 - 122*a*b^3*c + 648*a^2*
b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3*c^2)*e^12)*sqrt(e*x + d))
 - 7*sqrt(1/2)*(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*c^4)*x^4 + 2*(b^3*c^
2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*x^2 + 2*(a*b^3*c - 4
*a^2*b*c^2)*x)*sqrt((32*c^5*d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12
*a*c^4)*d^3*e^4 + 5*(b^3*c^2 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2
 - 24*a^2*c^3)*d*e^6 - (b^5 - 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 1
2*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3
*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13
 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b
^2*c^8 - 64*a^3*c^9)))/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^
6))*log(-343/2*sqrt(1/2)*(10*(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*d^3*e^6 -
 15*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4)*d^2*e^7 + 3*(b^6*c - 2*a*b^4*c^2
 - 32*a^2*b^2*c^3 + 96*a^3*c^4)*d*e^8 + (b^7 - 17*a*b^5*c + 88*a^2*b^3*c^2
- 144*a^3*b*c^3)*e^9 + (8*(b^6*c^5 - 12*a*b^4*c^6 + 48*a^2*b^2*c^7 - 64*a^3
*c^8)*d^2 - 8*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6 - 64*a^3*b*c^7)*d*e
- (b^8*c^3 - 24*a*b^6*c^4 + 192*a^2*b^4*c^5 - 640*a^3*b^2*c^6 + 768*a^4*c^7
)*e^2)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*a*c^3)*d
^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^2*c^2)*e
^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))*sqrt((32*c^5*
d^5*e^2 - 80*b*c^4*d^4*e^3 + 10*(5*b^2*c^3 + 12*a*c^4)*d^3*e^4 + 5*(b^3*c^2
 - 36*a*b*c^3)*d^2*e^5 - 5*(b^4*c - 6*a*b^2*c^2 - 24*a^2*c^3)*d*e^6 - (b^5
- 15*a*b^3*c + 60*a^2*b*c^2)*e^7 - (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5
 - 64*a^3*c^6)*sqrt((25*c^4*d^4*e^10 - 50*b*c^3*d^3*e^11 + 15*(b^2*c^2 + 6*
a*c^3)*d^2*e^12 + 10*(b^3*c - 9*a*b*c^2)*d*e^13 + (b^4 - 18*a*b^2*c + 81*a^
2*c^2)*e^14)/(b^6*c^6 - 12*a*b^4*c^7 + 48*a^2*b^2*c^8 - 64*a^3*c^9)))/(b^6*
c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)) + 343*(80*c^5*d^6*e^6 -
240*b*c^4*d^5*e^7 + (199*b^2*c^3 + 404*a*c^4)*d^4*e^8 + 2*(b^3*c^2 - 404*a*
b*c^3)*d^3*e^9 - 6*(6*b^4*c - 47*a*b^2*c^2 - 108*a^2*c^3)*d^2*e^10 - (5*b^5
 - 122*a*b^3*c + 648*a^2*b*c^2)*d*e^11 + (5*a*b^4 - 81*a^2*b^2*c + 324*a^3*
c^2)*e^12)*sqrt(e*x + d)) - 2*(7*a*b*c*d^2*e - 28*a^2*c*d*e^2 + 7*a^2*b*e^3
 + 2*(b^2*c - 4*a*c^2)*d^3 + (14*c^3*d^2*e - 14*b*c^2*d*e^2 + (9*b^2*c - 22
*a*c^2)*e^3)*x^3 + (21*b*c^2*d^2*e - 4*(2*b^2*c + 13*a*c^2)*d*e^2 + 7*(b^3
- a*b*c)*e^3)*x^2 - (42*a*b*c*d*e^2 - (13*b^2*c - 10*a*c^2)*d^2*e - 14*(a*b
^2 - a^2*c)*e^3)*x)*sqrt(e*x + d))/(a^2*b^2*c - 4*a^3*c^2 + (b^2*c^3 - 4*a*
c^4)*x^4 + 2*(b^3*c^2 - 4*a*b*c^3)*x^3 + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*
x^2 + 2*(a*b^3*c - 4*a^2*b*c^2)*x)
```

giac **[B]** time = 6.05, size = 1749, normalized size = 3.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -7/4*(16*(b^2*c^6 - 4*a*c^7)*d^4*e^2 - 32*(b^3*c^5 - 4*a*b*c^6)*d^3*e^3 + 1
6*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^4 - (2*c^2*d^2*e^2 - 2*b*c*d*e^
3 - (b^2 - 6*a*c)*e^4)*(b^2*c*e - 4*a*c^2*e)^2 - 32*(a*b^3*c^4 - 4*a^2*b*c^
5)*d*e^5 - 2*(2*sqrt(b^2 - 4*a*c)*c^4*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c^3*d
^2*e^3 - sqrt(b^2 - 4*a*c)*a*b*c^2*e^5 + (b^2*c^2 + 2*a*c^3)*sqrt(b^2 - 4*a
*c)*d*e^4)*abs(-b^2*c*e + 4*a*c^2*e) - (b^6*c^2 - 12*a*b^4*c^3 + 32*a^2*b^2
*c^4)*e^6)*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d - 8*a*c^3*d
- b^3*c*e + 4*a*b*c^2*e + sqrt((2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c
^2*e)^2 - 4*(b^2*c^2*d^2 - 4*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*
c*e^2 - 4*a^2*c^2*e^2)*(b^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/(sqrt(-4
*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*(b^2*c^2 - 4*a*c^3)*sqrt(b^2 -
 4*a*c)*d + (b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3 - (b^3*c - 4*a*b*c^2)*sqrt(b^
2 - 4*a*c))*e)*abs(-b^2*c*e + 4*a*c^2*e)*abs(c)) + 7/4*(16*(b^2*c^6 - 4*a*c
^7)*d^4*e^2 - 32*(b^3*c^5 - 4*a*b*c^6)*d^3*e^3 + 16*(b^4*c^4 - 2*a*b^2*c^5
- 8*a^2*c^6)*d^2*e^4 - (2*c^2*d^2*e^2 - 2*b*c*d*e^3 - (b^2 - 6*a*c)*e^4)*(b
^2*c*e - 4*a*c^2*e)^2 - 32*(a*b^3*c^4 - 4*a^2*b*c^5)*d*e^5 + 2*(2*sqrt(b^2
- 4*a*c)*c^4*d^3*e^2 - 3*sqrt(b^2 - 4*a*c)*b*c^3*d^2*e^3 - sqrt(b^2 - 4*a*c
)*a*b*c^2*e^5 + (b^2*c^2 + 2*a*c^3)*sqrt(b^2 - 4*a*c)*d*e^4)*abs(-b^2*c*e +
 4*a*c^2*e) - (b^6*c^2 - 12*a*b^4*c^3 + 32*a^2*b^2*c^4)*e^6)*arctan(2*sqrt(
1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c^2*e -
 sqrt((2*b^2*c^2*d - 8*a*c^3*d - b^3*c*e + 4*a*b*c^2*e)^2 - 4*(b^2*c^2*d^2
- 4*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)*(b
^2*c^2 - 4*a*c^3)))/(b^2*c^2 - 4*a*c^3)))/(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^
2 - 4*a*c)*c)*e)*(2*(b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*d - (b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3 + (b^3*c - 4*a*b*c^2)*sqrt(b^2 - 4*a*c))*e)*abs(-b^2*c
*e + 4*a*c^2*e)*abs(c)) - 1/4*(14*(x*e + d)^(7/2)*c^3*d^2*e^2 - 42*(x*e + d
)^(5/2)*c^3*d^3*e^2 + 42*(x*e + d)^(3/2)*c^3*d^4*e^2 - 14*sqrt(x*e + d)*c^3
*d^5*e^2 - 14*(x*e + d)^(7/2)*b*c^2*d*e^3 + 63*(x*e + d)^(5/2)*b*c^2*d^2*e^
3 - 84*(x*e + d)^(3/2)*b*c^2*d^3*e^3 + 35*sqrt(x*e + d)*b*c^2*d^4*e^3 + 9*(
x*e + d)^(7/2)*b^2*c*e^4 - 22*(x*e + d)^(7/2)*a*c^2*e^4 - 35*(x*e + d)^(5/2
)*b^2*c*d*e^4 + 14*(x*e + d)^(5/2)*a*c^2*d*e^4 + 56*(x*e + d)^(3/2)*b^2*c*d
^2*e^4 + 28*(x*e + d)^(3/2)*a*c^2*d^2*e^4 - 28*sqrt(x*e + d)*b^2*c*d^3*e^4
- 28*sqrt(x*e + d)*a*c^2*d^3*e^4 + 7*(x*e + d)^(5/2)*b^3*e^5 - 7*(x*e + d)^
(5/2)*a*b*c*e^5 - 14*(x*e + d)^(3/2)*b^3*d*e^5 - 28*(x*e + d)^(3/2)*a*b*c*d
*e^5 + 7*sqrt(x*e + d)*b^3*d^2*e^5 + 42*sqrt(x*e + d)*a*b*c*d^2*e^5 + 14*(x
*e + d)^(3/2)*a*b^2*e^6 - 14*(x*e + d)^(3/2)*a^2*c*e^6 - 14*sqrt(x*e + d)*a
*b^2*d*e^6 - 14*sqrt(x*e + d)*a^2*c*d*e^6 + 7*sqrt(x*e + d)*a^2*b*e^7)/(((x
*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2*(b
^2*c - 4*a*c^2))
```

maple [B] time = 0.15, size = 3503, normalized size = 6.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] -14*e^4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c
-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d+21/2*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2
)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+
d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d^2-14
*e^4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*
c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*d+21/2*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*
x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d^2
+21/4*e^4/(4*a*c-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*a-35/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*b^2*
d-11/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*a*c+14*e^4
/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*b^2*d^2-7/8*e^5/(4*a
*c-b^2)/c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^
(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*c)*b^3-7/4*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(
1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2*d-7/2*e^6/(c*e^2
*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*a*b^2*d-7*e^2/(4*a*c-b^2)
*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*c)*d^3+7*e^5/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b
*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((
b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b-7/8*e^5/(4*a*c-b^2)/c/(
-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1
/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(
1/2)*c)*b^3-7*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*
c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^3-7/4*e^4/(4*a*c-b^2)/(-(4*a*c
-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*ar
ctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*c)*b^2*d+7*e^5/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(
-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a*b+9/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^
2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*b^2-7/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a
*c-b^2)*(e*x+d)^(3/2)*a^2-7*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*b^2*d^3+21/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*
x+d)^(3/2)*d^4-7/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^
(1/2)*d^5-7/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*a*b
+7/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*c^2*d^2+7/4*
e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)/c*(e*x+d)^(5/2)*b^3-21/4*e^4/(4
*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((
e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-2
1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*c^2*(e*x+d)^(5/2)*d^3-7/2*e
^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a^2*d-7/4*e^3/(4*a
*c-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+
d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+7/8*
e^4/(4*a*c-b^2)/c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*c)*b^2+7/4*e^3/(4*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))
*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/
2))*c)^(1/2)*c)*b*d-7/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2+63/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*
c-b^2)*c*(e*x+d)^(5/2)*b*d^2+7/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b
^2)*(e*x+d)^(3/2)*a*b^2-7/2*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(
e*x+d)^(3/2)*b^3*d+7/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*c*(e*x+d
)^(5/2)*a*d-21*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(3/2)*
b*d^3+7/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*b^3*d
^2+21/2*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*b*d^2-7
*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*b*d+7/4*e^2/(4
*a*c-b^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((
e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-
7/8*e^4/(4*a*c-b^2)/c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2
)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*c)*b^2+7/4*e^7/(c*e^2*x^2+b*e^2*x+a*e^2)^2/c/(4*a*c-b^2)*(e*x+d)^(1/2)*a
^2*b+7*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(3/2)*a*d^2-7*
e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(1/2)*a*d^3+35/4*e^3/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(1/2)*b*d^4-7/2*e^3/(c*e^
2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(7/2)*b*c*d
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^3, x)
```

mupad **[B]** time = 6.07, size = 22151, normalized size = 40.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(7/2)*(9*b^2*e^4 + 14*c^2*d^2*e^2 - 22*a*c*e^4 - 14*b*c*d*e^3))
/(4*(4*a*c - b^2)) - (7*(d + e*x)^(1/2)*(2*c^3*d^5*e^2 - b^3*d^2*e^5 - a^2*
b*e^7 + 4*a*c^2*d^3*e^4 - 5*b*c^2*d^4*e^3 + 4*b^2*c*d^3*e^4 + 2*a*b^2*d*e^6
```

```
 + 2*a^2*c*d*e^6 - 6*a*b*c*d^2*e^5))/(4*c*(4*a*c - b^2)) + (7*(d + e*x)^(3/
2)*(a*b^2*e^6 - a^2*c*e^6 - b^3*d*e^5 + 3*c^3*d^4*e^2 + 2*a*c^2*d^2*e^4 - 6
*b*c^2*d^3*e^3 + 4*b^2*c*d^2*e^4 - 2*a*b*c*d*e^5))/(2*c*(4*a*c - b^2)) + (7
*(b*e - 2*c*d)*(d + e*x)^(5/2)*(b^2*e^4 + 3*c^2*d^2*e^2 - a*c*e^4 - 3*b*c*d
*e^3))/(4*c*(4*a*c - b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2
*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d +
e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^
4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) + at
an(((((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b
^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^
3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^
4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4
 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^
5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^
2*b^2*c^3)) - ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^1
1*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 150
4*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*
c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4
+ 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e
^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4
*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3
+ 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3
*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^
2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 -
 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 1
1520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12
*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^
7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^
3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3
 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 -
 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^
5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e
^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 3
2*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2
*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*
(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^
(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c
^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3
*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c
^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^
3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*
d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^1
0*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^
2*c^8)))^(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c
^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^1
0 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490
*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e
^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/
(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1
/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*
e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -
7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3
*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*
a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d
*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6
*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^
2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c
^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*
d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*
```

```
d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c
^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a
^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i - (((7*(4096*a^4*b*c^5*e^7 - 64*a
*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7
- 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b
^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*
a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^
2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b
^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49
*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a
^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^
4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 -
80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5
*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(
1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2
*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^
2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 9
0*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b
^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b
*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b
^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*
c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b
^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 -
128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*
b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 -
288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^
3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*
e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2
)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c
*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 -
3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e
^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e
^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4
- 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 +
320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/
(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*
b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(
49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4
704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2
*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10
 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2
*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^
2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7
 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a
^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d
^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^
2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c -
b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 153
6*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4
+ 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^
2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3
- 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5
120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3
840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240
*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1
/2)*1i)/((((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 +
 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c
^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d
```

```
^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^
3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d
^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 +
48*a^2*b^2*c^3)) - ((d + e*x)^(1/2)*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2)
- b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7
+ 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680
*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3
*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^
9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6
*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4
*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^
6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d
^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*
e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^
6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 +
 b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b
^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 40
96*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^
5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*
c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 38
40*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*
c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^
4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^
2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c
*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2
)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*
b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 896
0*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*
b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b
^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b
*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*
a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a
^5*b^2*c^8)))^(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1
568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^
2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7
- 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*
d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e
^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^
9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7
*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e
^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^
8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2)
+ 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*
b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^
3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a
^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*
b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7
*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4
*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*
a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3
840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + (((7*(4096*a^4*b*c^5*e^7 - 64
*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^
7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192
*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 64
0*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*
a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*
(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((
49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680
*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*
c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2
- 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e
^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)
^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b
^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*
a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 +
 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a
*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3
*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4
*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^
8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64
*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2
- 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^
2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(b^2*e^7*(-(
4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6
- 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*
a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^
4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b
^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10
*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2
- 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2
*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d
*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^
4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3
+ 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)
)/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^
3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)
*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 -
 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b
^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^
10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a
^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*
c^2)))*((49*(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e
^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840
*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5
*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*
c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c
- b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1
536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^
4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*
d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^
3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 +
 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 +
 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 2
40*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^
(1/2) - (7*(245*a^2*b^4*e^14 + 10584*a^4*c^2*e^14 + 245*b^6*d^2*e^12 + 1568
*c^6*d^8*e^6 - 3234*a^3*b^2*c*e^14 + 11368*a*c^5*d^6*e^8 - 6272*b*c^5*d^7*e
^7 + 784*b^5*c*d^3*e^11 + 28616*a^2*c^4*d^4*e^10 + 29400*a^3*c^3*d^2*e^12 +
 8134*b^2*c^4*d^6*e^8 - 2450*b^3*c^3*d^5*e^9 - 2009*b^4*c^2*d^4*e^10 - 490*
a*b^5*d*e^13 + 20874*a^2*b^2*c^2*d^2*e^12 - 34104*a*b*c^4*d^5*e^9 - 5292*a*
b^4*c*d^2*e^12 + 7742*a^2*b^3*c*d*e^13 - 29400*a^3*b*c^2*d*e^13 + 28322*a*b
^2*c^3*d^4*e^10 + 196*a*b^3*c^2*d^3*e^11 - 57232*a^2*b*c^3*d^3*e^11))/(32*(
b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3))))*((49*(b^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 2
88*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3
*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e
^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)
^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*
d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3
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840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^
5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^
6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 -
 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 3
20*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(
128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b
^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i + atan(((((7*(4096
*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 +
 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^
6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b
^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*
c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b
^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) -
((d + e*x)^(1/2)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2
) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*
e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 +
32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^
2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7
*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)
^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*
c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^
3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*
c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c
^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6
*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^
10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b
^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 +
8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*
c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2))
)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 -
7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*
b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*
e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d
^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2
)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a
^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2
400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e
^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 4
80*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120
*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840
*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^
2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)
 - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5
880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c
^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e
^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3
*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16
*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2
)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3
*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d
^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b
^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 +
9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c
- b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960
*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4
- 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 9
60*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*
a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*
a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3
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- 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6
144*a^5*b^2*c^8)))^(1/2)*1i - (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 -
 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3
*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5
 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^
6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^
6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*
c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(3840*a^5*b*c
^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 -
 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a
^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4
*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^
2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*
c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 -
 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*
e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*
e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4
 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 +
 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))
/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3
*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 7
68*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*
e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2)
)/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^
7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^
2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2
- 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c
^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 2
7*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c
*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c
^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*
b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4
*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^
3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^
4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6
*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840
*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(49*b^6*e^10 -
3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*
e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 -
 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d
*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 +
 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(384
0*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^
6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7
 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^
7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4
*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2)
- 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*
d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5
*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b
^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^
4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*
d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^
5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 -
 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*1i)/((((7*
(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*
e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 1
28*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*
a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a
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*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*
a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
)) - ((d + e*x)^(1/2)*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)
^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5
*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e
^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c
^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*
c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^
2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2
*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 89
60*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a
*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*
b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*
b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24
*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*
a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 - 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e
^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a
*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*
c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e
^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840
*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5
*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*
c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c
- b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1
536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^
4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*
d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^
3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 +
 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 +
 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 2
40*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^
(1/2) - ((d + e*x)^(1/2)*(49*b^6*e^10 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^
4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*
a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*
d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*
a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c
 + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c
- b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 150
4*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*
c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4
+ 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e
^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4
*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3
+ 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3
*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^
2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 -
 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 1
1520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12
*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^
7 - 6144*a^5*b^2*c^8)))^(1/2) + (((7*(4096*a^4*b*c^5*e^7 - 64*a*b^7*c^2*e^7
 - 8192*a^4*c^6*d*e^6 + 64*b^8*c^2*d*e^6 + 768*a^2*b^5*c^3*e^7 - 3072*a^3*b
^3*c^4*e^7 - 8192*a^3*c^7*d^3*e^4 + 128*b^6*c^4*d^3*e^4 - 192*b^7*c^3*d^2*e
^5 + 6144*a^2*b^2*c^6*d^3*e^4 - 9216*a^2*b^3*c^5*d^2*e^5 - 640*a*b^6*c^3*d*
e^6 - 1536*a*b^4*c^5*d^3*e^4 + 2304*a*b^5*c^4*d^2*e^5 + 1536*a^2*b^4*c^4*d*
e^6 + 12288*a^3*b*c^6*d^2*e^5 + 2048*a^3*b^2*c^5*d*e^6))/(64*(b^6*c - 64*a^
3*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3)) + ((d + e*x)^(1/2)*((49*(3840*a^5*b
*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6
 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048
*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d
^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c -
b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^1
0*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2
 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^
2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*
d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e
^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3
 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6
))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a
^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*(64*b^7*c^3*e^3 -
 768*a*b^5*c^4*e^3 - 4096*a^3*b*c^6*e^3 + 8192*a^3*c^7*d*e^2 - 128*b^6*c^4*
d*e^2 + 3072*a^2*b^3*c^5*e^3 + 1536*a*b^4*c^5*d*e^2 - 6144*a^2*b^2*c^6*d*e^
2))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3840*a^5*b*c^5*e^7 - b^2*
e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*
c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^
2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8
*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) +
 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b
*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3
*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^
3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b
^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*
c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*
c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a
^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 38
40*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) + ((d + e*x)^(1/2)*(49*b^6*e^10
 - 3528*a^3*c^3*e^10 + 1568*c^6*d^6*e^4 + 5880*a*c^5*d^4*e^6 - 4704*b*c^5*d^
5*e^5 + 3626*a^2*b^2*c^2*e^10 + 3920*a^2*c^4*d^2*e^8 + 4410*b^2*c^4*d^4*e^6
 - 980*b^3*c^3*d^3*e^7 - 490*b^4*c^2*d^2*e^8 - 784*a*b^4*c*e^10 + 196*b^5*c
*d*e^9 - 11760*a*b*c^4*d^3*e^7 - 980*a*b^3*c^2*d*e^9 - 3920*a^2*b*c^3*d*e^9
 + 6860*a*b^2*c^3*d^2*e^8))/(8*(b^4*c + 16*a^2*c^3 - 8*a*b^2*c^2)))*((49*(3
840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*
c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e
^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*
b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-
(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2
) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^
7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b
^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a
*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*
c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^
7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*
c^5*d*e^6))/(128*(4096*a^6*c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5
 - 1280*a^3*b^6*c^6 + 3840*a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2) - (7*(24
5*a^2*b^4*e^14 + 10584*a^4*c^2*e^14 + 245*b^6*d^2*e^12 + 1568*c^6*d^8*e^6 -
 3234*a^3*b^2*c*e^14 + 11368*a*c^5*d^6*e^8 - 6272*b*c^5*d^7*e^7 + 784*b^5*c
*d^3*e^11 + 28616*a^2*c^4*d^4*e^10 + 29400*a^3*c^3*d^2*e^12 + 8134*b^2*c^4*
d^6*e^8 - 2450*b^3*c^3*d^5*e^9 - 2009*b^4*c^2*d^4*e^10 - 490*a*b^5*d*e^13 +
 20874*a^2*b^2*c^2*d^2*e^12 - 34104*a*b*c^4*d^5*e^9 - 5292*a*b^4*c*d^2*e^12
 + 7742*a^2*b^3*c*d*e^13 - 29400*a^3*b*c^2*d*e^13 + 28322*a*b^2*c^3*d^4*e^1
0 + 196*a*b^3*c^2*d^3*e^11 - 57232*a^2*b*c^3*d^3*e^11))/(32*(b^6*c - 64*a^3
*c^4 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3))))*((49*(3840*a^5*b*c^5*e^7 - b^2*e^7
*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2
*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -
 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^
3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27
*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*
d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^
6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b
```

```
^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*
c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3
*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4
*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6))/(128*(4096*a^6*
c^9 + b^12*c^3 - 24*a*b^10*c^4 + 240*a^2*b^8*c^5 - 1280*a^3*b^6*c^6 + 3840*
a^4*b^4*c^7 - 6144*a^5*b^2*c^8)))^(1/2)*2i
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(7/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1624 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=398

$$\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}-2ae+4bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-5e\Big(-2ce\Big(d\sqrt{b}$$

```
[Out] -1/2*(e*x+d)^(5/2)/(c*x^2+b*x+a)^2-5/4*e*(b*d-2*a*e+(-b*e+2*c*d)*x)*(e*x+d)
^(1/2)/(-4*a*c+b^2)/(c*x^2+b*x+a)+5/8*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/
2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*(8*c^2*d^2+b*e^2*(b-(-4*a*c+b^2)
^(1/2))-2*c*e*(4*b*d-2*a*e-d*(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)*2^(1/2
)/c^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-5/8*e*arctanh(2^(1/2)*c^(1
/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*(8*c^2*d^2+b*e^2*
(b+(-4*a*c+b^2)^(1/2))-2*c*e*(4*b*d-2*a*e+d*(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^
2)^(3/2)*2^(1/2)/c^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 1.70, antiderivative size = 398, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}} = 0.179$, Rules used = {768, 738, 826, 1166, 208}

$$\frac{5e\left(-2ce\left(-d\sqrt{b^2-4ac}-2ae+4bd\right)+be^2\left(b-\sqrt{b^2-4ac}\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\sqrt{c}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-5e\Big(-2ce\Big(d\sqrt{b}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^(5/2)/(2*(a + b*x + c*x^2)^2) - (5*e*Sqrt[d + e*x]*(b*d - 2*a*e
+ (2*c*d - b*e)*x))/(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (5*e*(8*c^2*d^2 +
 b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4*b*d - Sqrt[b^2 - 4*a*c]*d - 2*a*e
))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a
*c])*e]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2
 - 4*a*c])*e]) - (5*e*(8*c^2*d^2 + b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4
*b*d + Sqrt[b^2 - 4*a*c]*d - 2*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x]
)/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*Sqrt[c]*(b^2 - 4*a*c
)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}(5e)\int \frac{(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}-\frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\int \frac{\frac{1}{2}(4cd^2-3bde+2ae^2}{\sqrt{d+ex}\,(a+b}}{4\,(b^2-4a}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}-\frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{(5e)\,\mathrm{Subst}\Big(\int \frac{-\frac{1}{2}de(2cd}{}}{}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}-\frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\Big(5e\Big(8c^2d^2+b\Big(b-\sqrt{}}{}$$

$$= -\frac{(d+ex)^{5/2}}{2\left(a+bx+cx^2\right)^2}-\frac{5e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{5e\Big(8c^2d^2+b\Big(b-\sqrt{b}}{}$$

Mathematica [B] time = 6.59, size = 1197, normalized size = 3.01

$$-\frac{\left(-2ac(2cd-be)+b\left(-eb^2+cdb+2ace\right)+c(b(2cd-be)-2c(bd-2ae))x\right)(d+ex)^{7/2}}{2\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}-\frac{\left(-\frac{1}{2}ac\left(b^2-4ac\right)(2cd-be)e^2-\frac{1}{2}(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(7/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(7/2)*(-1/2*(a*c*(b^2 - 4*a*
c)*e^2*(2*c*d - b*e)) - ((b^2 - 4*a*c)*e*(5*c*d - 3*b*e)*(b*c*d - b^2*e + 2
*a*c*e))/2 + c*(-1/2*(c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e)) - ((b^2 - 4*a*c)*e
*(5*c*d - 3*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2)*(a + b*x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(10*c^2*d^2 + 3*b^2*e^2 - 2*c*
e*(5*b*d + a*e))*(d + e*x)^(5/2))/2 + (2*((25*c*(b^2 - 4*a*c)*e^2*(2*c*d -
b*e)*(c*d^2 - e*(b*d - a*e))*(d + e*x)^(3/2))/4 + (2*((75*c^2*(b^2 - 4*a*c)
*e^2*(c*d^2 - e*(b*d - a*e))^2*Sqrt[d + e*x])/4 + (4*((Sqrt[2*c*d - b*e - S
qrt[b^2 - 4*a*c]*e]*((-75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b
*d - a*e))^2)/32 - ((75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*
(c*d^2 - e*(b*d - a*e))^2)/32 + 2*c*((75*c^3*(b^2 - 4*a*c)*d*e^2*(2*c*d - b
*e)*(c*d^2 - e*(b*d - a*e))^2)/32 - (75*c^3*(b^2 - 4*a*c)*e^2*(4*c*d^2 - e*
(3*b*d - 2*a*e))*(c*d^2 - e*(b*d - a*e))^2)/32))/(Sqrt[b^2 - 4*a*c]*e))*Arc
Tanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e
]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d -
b*e + Sqrt[b^2 - 4*a*c]*e]*((-75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2
 - e*(b*d - a*e))^2)/32 + ((75*c^3*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d
+ b*e)*(c*d^2 - e*(b*d - a*e))^2)/32 + 2*c*((75*c^3*(b^2 - 4*a*c)*d*e^2*(2*
c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/32 - (75*c^3*(b^2 - 4*a*c)*e^2*(4*c*d
^2 - e*(3*b*d - 2*a*e))*(c*d^2 - e*(b*d - a*e))^2)/32))/(Sqrt[b^2 - 4*a*c]*
e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4
*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/c))/(3*
c)))/(5*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2))
```

fricas [B] time = 1.20, size = 2773, normalized size = 6.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c -
4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*
x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 -
(b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c
- 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log(125*sqrt(1/2)*((b^4 - 8*
a*b^2*c + 16*a^2*c^2)*e^6 + 2*sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^
2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c
^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32
*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a
*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5
))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*
c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 +
(3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4
+ a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*
c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3
 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2
- 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a
^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c
^4))*log(-125*sqrt(1/2)*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^6 + 2*sqrt(e^10/(
b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b
^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^
3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^
2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/(b^6*c^2 - 12*a*b^4
*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125
*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) + 5*s
qrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^
2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt(
(32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 1
2*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*
c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b
^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log(125*sqrt(1/2)*((b^4 - 8*a*b^2*c
+ 16*a^2*c^2)*e^6 - 2*sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 -
64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d -
(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3
*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^
5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*
c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48
*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 +
 4*a*c)*e^8)*sqrt(e*x + d)) - 5*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^
2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2
 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*
b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b
^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c
^3 - 64*a^3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4))*log
(-125*sqrt(1/2)*((b^4 - 8*a*b^2*c + 16*a^2*c^2)*e^6 - 2*sqrt(e^10/(b^6*c^2
- 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5))*(2*(b^6*c^2 - 12*a*b^4*c^3 +
 48*a^2*b^2*c^4 - 64*a^3*c^5)*d - (b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 -
64*a^3*b*c^4)*e))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*
a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/(b^6*c^2 - 12*a*b^4*c^3 + 4
8*a^2*b^2*c^4 - 64*a^3*c^5))*(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^
3*c^4))/(b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)) + 125*(16*c^2
*d^2*e^6 - 16*b*c*d*e^7 + (3*b^2 + 4*a*c)*e^8)*sqrt(e*x + d)) - 2*(5*a*b*d*
e - 10*a^2*e^2 + 5*(2*c^2*d*e - b*c*e^2)*x^3 + 2*(b^2 - 4*a*c)*d^2 + 3*(5*b
*c*d*e - (b^2 + 6*a*c)*e^2)*x^2 - 3*(5*a*b*e^2 - (3*b^2 - 2*a*c)*d*e)*x)*sq
rt(e*x + d))/((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*
b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 3.66, size = 1425, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -5/32*(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e^2 - b*e^3)
*(b^2*e - 4*a*c*e)^2 + 4*(sqrt(b^2 - 4*a*c)*c^2*d^2*e^2 - sqrt(b^2 - 4*a*c)
*b*c*d*e^3 + sqrt(b^2 - 4*a*c)*a*c*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 -
 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - (16*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - 24*(
b^3*c^2 - 4*a*b*c^3)*d^2*e^3 + 2*(5*b^4*c - 16*a*b^2*c^2 - 16*a^2*c^3)*d*e^
4 - (b^5 - 16*a^2*b*c^2)*e^5)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)
*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e
+ 4*a*b*c*e + sqrt((2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c
*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*
c - 4*a*c^2)))/(b^2*c - 4*a*c^2)))/(((b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*
d^2 - (b^3*c - 4*a*b*c^2)*sqrt(b^2 - 4*a*c)*d*e + (a*b^2*c - 4*a^2*c^2)*sqr
t(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*a*c*e)*abs(c)) + 5/32*(sqrt(-4*c^2*d + 2*
(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e^2 - b*e^3)*(b^2*e - 4*a*c*e)^2 - 4*
(sqrt(b^2 - 4*a*c)*c^2*d^2*e^2 - sqrt(b^2 - 4*a*c)*b*c*d*e^3 + sqrt(b^2 - 4
*a*c)*a*c*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e -
 4*a*c*e) - (16*(b^2*c^3 - 4*a*c^4)*d^3*e^2 - 24*(b^3*c^2 - 4*a*b*c^3)*d^2*
e^3 + 2*(5*b^4*c - 16*a*b^2*c^2 - 16*a^2*c^3)*d*e^4 - (b^5 - 16*a^2*b*c^2)*
e^5)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*s
qrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e - sqrt((2*b^2
*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3*
d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c - 4
*a*c^2)))/(((b^2*c^2 - 4*a*c^3)*sqrt(b^2 - 4*a*c)*d^2 - (b^3*c - 4*a*b*c^2)
*sqrt(b^2 - 4*a*c)*d*e + (a*b^2*c - 4*a^2*c^2)*sqrt(b^2 - 4*a*c)*e^2)*abs(b
^2*e - 4*a*c*e)*abs(c)) - 1/4*(10*(x*e + d)^(7/2)*c^2*d*e^2 - 30*(x*e + d)^
(5/2)*c^2*d^2*e^2 + 30*(x*e + d)^(3/2)*c^2*d^3*e^2 - 10*sqrt(x*e + d)*c^2*d
^4*e^2 - 5*(x*e + d)^(7/2)*b*c*e^3 + 30*(x*e + d)^(5/2)*b*c*d*e^3 - 45*(x*e
 + d)^(3/2)*b*c*d^2*e^3 + 20*sqrt(x*e + d)*b*c*d^3*e^3 - 3*(x*e + d)^(5/2)*
b^2*e^4 - 18*(x*e + d)^(5/2)*a*c*e^4 + 15*(x*e + d)^(3/2)*b^2*d*e^4 + 30*(x
*e + d)^(3/2)*a*c*d*e^4 - 10*sqrt(x*e + d)*b^2*d^2*e^4 - 20*sqrt(x*e + d)*a
*c*d^2*e^4 - 15*(x*e + d)^(3/2)*a*b*e^5 + 20*sqrt(x*e + d)*a*b*d*e^5 - 10*s
qrt(x*e + d)*a^2*e^6)/(((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)
*b*e - b*d*e + a*e^2)^2*(b^2 - 4*a*c))
```

maple [B] time = 0.15, size = 2126, normalized size = 5.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 5*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+5*e^3/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/
2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^
(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d-5/2*e^
4/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)
*e^2)^(1/2))*c)^(1/2)*c)*a-5*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/2*e^4/(4*a*
c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*c)*a-5*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d^2-5/8*e^3/(4*a*c
-b^2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5/8*e^3/
(4*a*c-b^2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh
((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b
-5/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(7/2)*b+5/2*e^2/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(7/2)*d-15/2*e^2/(c*e^2
*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*c^2*d^2-15/4*e^5/(c*e^2*x^2
+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*b+15/2*e^2/(c*e^2*x^2+b*e^2*x
+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*c^2*d^3-5/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^
2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*c^2*d^4-9/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/
(4*a*c-b^2)*(e*x+d)^(5/2)*a*c+15/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b
^2)*(e*x+d)^(3/2)*b^2*d-5/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*b^2*d^2-5/2*e^6/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^
(1/2)*a^2-3/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(5/2)*b^2
-45/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*b*c*d^2-5/8
*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2+5*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b
^2)*(e*x+d)^(1/2)*b*c*d^3+5*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*
x+d)^(1/2)*a*b*d+15/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(
5/2)*b*c*d-5/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)
^(1/2))*c)^(1/2)*c)*d+5/4*e^2/(4*a*c-b^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^
2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b
^2)*e^2)^(1/2))*c)^(1/2)*c)*d-5/8*e^4/(4*a*c-b^2)/(-(4*a*c-b^2)*e^2)^(1/2)*
2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)
*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2+15/2*e^4/(c*
e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*c*d-5*e^4/(c*e^2*x^2+b
*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*c*d^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{5}{2}}}{\left(cx^2 + bx + a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 7.65, size = 12750, normalized size = 32.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] - atan(((((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 15
36*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*
c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*
c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64
*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(25*(b^9*e^5
+ e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 9
6*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3
*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 +
 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 5
76*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(12
8*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c
^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b
^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 +
3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(
b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/
2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*
b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^
3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 +
192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a
^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 2
4*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144
*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 +
800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5
 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 +
 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) -
768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c
^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 1
8*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a
*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^
4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b
^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*
b^2*c^6)))^(1/2)*1i - (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*
c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*
e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5
 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))
/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*(
-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4
*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^
2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2
*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c
^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5
*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 -
1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2
*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^
6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^
5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c
 - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*
e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*
b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*
c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d
^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 40
96*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*
b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*
a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600
*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e
^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^
2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 +
 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c
^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d
^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^
3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^
6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c
^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i)/((5*(800*c^5*d^5*e^6 - 100*a^2*b*c^2*e^1
1 + 1000*a*c^4*d^3*e^8 + 200*a^2*c^3*d*e^10 - 2000*b*c^4*d^4*e^7 + 1750*b^2
```

```
*c^3*d^3*e^8 - 625*b^3*c^2*d^2*e^9 - 75*a*b^3*c*e^11 + 75*b^4*c*d*e^10 - 15
00*a*b*c^3*d^2*e^9 + 650*a*b^2*c^2*d*e^10))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*
b^2*c^2 - 12*a*b^4*c)) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b
^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d
^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*
e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^
5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2
)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*
a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3
*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*
b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^
4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*
c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3
 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*
c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128
*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2
*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*
a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c
^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 +
48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b
^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^
3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c +
 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a
^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 2
00*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1
600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*
d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5*(-(4*a*c -
 b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^
5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^
7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^
4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2
*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096
*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^
4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + (((5*(8192*a^4*c^5*e^6 - 128*a*b^6*c^2*
e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c^4*e^6 + 819
2*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*e^4 - 1536*a
*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4 + 6144*a^2*b
^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d
+ e*x)^(1/2)*(-(25*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*
e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*
a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4
- 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4
 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 -
3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*
a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/
2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 8192*a^3*c^6*
d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^4*d*e^2 - 6
144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5
+ e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 9
6*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3
*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 +
 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 5
76*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(12
8*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c
^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((d + e*x)^(1/2)*(25*b^
4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 + 600*a*c^4*
d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d^2*e^6 - 6
00*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(25*(b^9*e^5 + e^5
*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2
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*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*
e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304
*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*
b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^
12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 +
3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)))*(-(25*(b^9*e^5 + e^5*(-(4*a*
c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2
*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48
*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3
*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*
d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4
096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4
*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*2i - atan(((((5*(8192*a^4*c^5*e^6 - 12
8*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 6144*a^3*b^2*c
^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b^2*c^5*d^2*
e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c^4*d^2*e^4
+ 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^
4*c)) - ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768
*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*
e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b
^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^
6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c
^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10
*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2
*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c^5*e^3 + 81
92*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 1536*a*b^4*c^
4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25
*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5
*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 +
32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5
*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d
^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2
*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280
*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((d + e*x)^(1
/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2*c^2*e^8 +
600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 1050*b^2*c^3*d
^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((25*(e^5*
(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4
 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6
*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e
^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2
 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))
/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b
^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i - (((5*(8192*a^4*c
^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 614
4*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b
^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c
^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^
2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^
9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a
^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2
*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3
 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 57
6*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7
- 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6
144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c
^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 15
36*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^
2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1
```

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536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6
*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*
a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*
a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^
3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8
*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + ((
d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2
*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 105
0*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))
*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^
4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e
^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^
2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*
c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^
5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 -
 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*1i)/((5*(8
00*c^5*d^5*e^6 - 100*a^2*b*c^2*e^11 + 1000*a*c^4*d^3*e^8 + 200*a^2*c^3*d*e^
10 - 2000*b*c^4*d^4*e^7 + 1750*b^2*c^3*d^3*e^8 - 625*b^3*c^2*d^2*e^9 - 75*a
*b^3*c*e^11 + 75*b^4*c*d*e^10 - 1500*a*b*c^3*d^2*e^9 + 650*a*b^2*c^2*d*e^10
))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + (((5*(8192*a^4*c
^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e^6 - 614
4*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 6144*a^2*b
^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536*a*b^4*c
^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^
2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^
9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a
^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2
*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3
 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 57
6*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7
 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6
144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096*a^3*b*c
^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*e^3 + 15
36*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^
2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1
536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6
*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*
a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*
a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^
3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8
*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) - ((
d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 + 50*a*b^2
*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e^7 + 105
0*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))
*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^
4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e
^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^
2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*
c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^
5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 -
 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2) + (((5*(81
92*a^4*c^5*e^6 - 128*a*b^6*c^2*e^6 + 128*b^7*c^2*d*e^5 + 1536*a^2*b^4*c^3*e
^6 - 6144*a^3*b^2*c^4*e^6 + 8192*a^3*c^6*d^2*e^4 - 128*b^6*c^3*d^2*e^4 - 61
44*a^2*b^2*c^5*d^2*e^4 - 1536*a*b^5*c^3*d*e^5 - 8192*a^3*b*c^5*d*e^5 + 1536
*a*b^4*c^4*d^2*e^4 + 6144*a^2*b^3*c^4*d*e^5))/(64*(b^6 - 64*a^3*c^3 + 48*a^
2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((25*(e^5*(-(4*a*c - b^2)^9)^(1
/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5
 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7
*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4
*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*
e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*
a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4
*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*(64*b^7*c^2*e^3 - 768*a*b^5*c^3*e^3 - 4096
*a^3*b*c^5*e^3 + 8192*a^3*c^6*d*e^2 - 128*b^6*c^3*d*e^2 + 3072*a^2*b^3*c^4*
e^3 + 1536*a*b^4*c^4*d*e^2 - 6144*a^2*b^2*c^5*d*e^2))/(8*(b^4 + 16*a^2*c^2
- 8*a*b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4
*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048
*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4
 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^
4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 +
 3072*a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240
*a^2*b^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1
/2) + ((d + e*x)^(1/2)*(25*b^4*c*e^8 + 200*a^2*c^3*e^8 + 800*c^5*d^4*e^4 +
50*a*b^2*c^2*e^8 + 600*a*c^4*d^2*e^6 - 1600*b*c^4*d^3*e^5 - 250*b^3*c^2*d*e
^7 + 1050*b^2*c^3*d^2*e^6 - 600*a*b*c^3*d*e^7))/(8*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)))*((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 -
 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c
^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 153
6*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 38
4*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*
a^3*b*c^5*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b
^8*c^3 - 1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)))*
((25*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4
*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^
2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2
*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c
^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5
*d^2*e^3))/(128*(b^12*c + 4096*a^6*c^7 - 24*a*b^10*c^2 + 240*a^2*b^8*c^3 -
1280*a^3*b^6*c^4 + 3840*a^4*b^4*c^5 - 6144*a^5*b^2*c^6)))^(1/2)*2i - ((3*(d
 + e*x)^(5/2)*(b^2*e^4 + 10*c^2*d^2*e^2 + 6*a*c*e^4 - 10*b*c*d*e^3))/(4*(4*
a*c - b^2)) - (15*(d + e*x)^(3/2)*(b^2*d*e^4 + 2*c^2*d^3*e^2 - a*b*e^5 + 2*
a*c*d*e^4 - 3*b*c*d^2*e^3))/(4*(4*a*c - b^2)) + (5*(d + e*x)^(1/2)*(a^2*e^6
 + b^2*d^2*e^4 + c^2*d^4*e^2 - 2*a*b*d*e^5 + 2*a*c*d^2*e^4 - 2*b*c*d^3*e^3)
)/(2*(4*a*c - b^2)) + (5*c*(b*e^3 - 2*c*d*e^2)*(d + e*x)^(7/2))/(4*(4*a*c -
 b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 +
 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2
*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*d^
2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1625 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=322

$$-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{3\sqrt{c}\,e\left(4cd-e\left(2b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{2\sqrt{2}\,\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{3\sqrt{c}\,e\Big(4cd-e\Big(}{2\sqrt{2}\,\big(b^2}$$

```
[Out] -1/2*(e*x+d)^(3/2)/(c*x^2+b*x+a)^2-3/4*e*(2*c*x+b)*(e*x+d)^(1/2)/(-4*a*c+b^
2)/(c*x^2+b*x+a)+3/4*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-
4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(4*c*d-e*(2*b-(-4*a*c+b^2)^(1/2)))/(-4*a*
c+b^2)^(3/2)*2^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2)-3/4*e*arctanh(2
^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2
)*(4*c*d-e*(2*b+(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)*2^(1/2)/(2*c*d-e*(b
+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 0.79, antiderivative size = 322, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 736, 826, 1166, 208}

$$-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{3\sqrt{c}\,e\left(4cd-e\left(2b-\sqrt{b^2-4ac}\right)\right)\tanh^{-1}\left(\frac{\sqrt{2}\,\sqrt{c}\,\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{2\sqrt{2}\,\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}-\frac{3\sqrt{c}\,e\Big(4cd-e\Big(}{2\sqrt{2}\,\big(b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(d + e*x)^(3/2)/(2*(a + b*x + c*x^2)^2) - (3*e*(b + 2*c*x)*Sqrt[d + e*x])/
(4*(b^2 - 4*a*c)*(a + b*x + c*x^2)) + (3*Sqrt[c]*e*(4*c*d - (2*b - Sqrt[b^2
 - 4*a*c])*e)*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqr
t[b^2 - 4*a*c])*e]])/(2*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[
b^2 - 4*a*c])*e]) - (3*Sqrt[c]*e*(4*c*d - (2*b + Sqrt[b^2 - 4*a*c])*e)*ArcT
anh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]
])/(2*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 736

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^m*(b + 2*c*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)
*(b^2 - 4*a*c)), x] - Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)
*(b*e*m + 2*c*d*(2*p + 3) + 2*c*e*(m + 2*p + 3)*x)*(a + b*x + c*x^2)^(p + 1
), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 0] && (L
tQ[m, 1] || (ILtQ[m + 2*p + 3, 0] && NeQ[m, 2])) && IntQuadraticQ[a, b, c,
d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^3}\,dx &= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}(3e)\int \frac{\sqrt{d+ex}}{\left(a+bx+cx^2\right)^2}\,dx\\
&= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(3e)\int \frac{-2cd+\frac{be}{2}-cex}{\sqrt{d+ex}\left(a+bx+cx^2\right)}\,dx}{4\left(b^2-4ac\right)}\\
&= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{(3e)\operatorname{Subst}\left(\int \frac{cde+e\left(-2cd+\frac{be}{2}\right)-c}{cd^2-bde+ae^2+(-2cd+be}\right.}{2\left(b^2-4ac\right.}\\
&= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}-\frac{\left(3ce\left(4cd-\left(2b-\sqrt{b^2-4ac}\right)e\right)\right.}{}\\
&= -\frac{(d+ex)^{3/2}}{2\left(a+bx+cx^2\right)^2}-\frac{3e(b+2cx)\sqrt{d+ex}}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)}+\frac{3\sqrt{c}\,e\left(4cd-\left(2b-\sqrt{b^2-4ac}\right)e\right.}{2\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd}}
\end{aligned}
$$

Mathematica [B] time = 6.46, size = 1069, normalized size = 3.32

$$-\frac{\left(-2ac(2cd-be)+b\left(-eb^2+cdb+2ace\right)+c(b(2cd-be)-2c(bd-2ae))x\right)(d+ex)^{5/2}}{2\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}-\frac{-\frac{\left(\frac{1}{2}ac\left(b^2-4ac\right)(2cd-be)e^2-\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(5/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(5/2)*((a*c*(b^2 - 4*a*c)*e^
2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(3*c*d - b*e)*(b*c*d - b^2*e + 2*a*c*
e))/2 + c*((c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e*(2*c*d
- b*e)*(3*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*
x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*
e))*(d + e*x)^(3/2))/2 + (2*((9*c*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 -
e*(b*d - a*e))*Sqrt[d + e*x])/4 + (4*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]
*e]*((-9*c^3*(b^2 - 4*a*c)*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - ((9*c^3*(b^2
- 4*a*c)*e^2*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))^2)/8 + 2*c*((9*c^3*(b^2
 - 4*a*c)*d*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - (9*c^2*(b^2 - 4*a*c)*e^2*(4*
c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/16))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(
Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(S
qrt[2]*Sqrt[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e +
Sqrt[b^2 - 4*a*c]*e]*((-9*c^3*(b^2 - 4*a*c)*e^2*(c*d^2 - e*(b*d - a*e))^2)/
8 + ((9*c^3*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))^2)/8 +
 2*c*((9*c^3*(b^2 - 4*a*c)*d*e^2*(c*d^2 - e*(b*d - a*e))^2)/8 - (9*c^2*(b^2
 - 4*a*c)*e^2*(4*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2)/16))/(Sqrt[b^2 - 4*a
*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2
 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/c))
/(3*c))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^2 -
b*d*e + a*e^2))
```

fricas [B] time = 1.02, size = 6728, normalized size = 20.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*(3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c -
4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*
x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 -
(b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4
- 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4
)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4
)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3
+ (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12
*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*
b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a
^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (
b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4
*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(27/2*sqrt(1/2)*(2*(b^4*c - 8*a*
b^2*c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 - sqrt(e
^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c
 - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c +
 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2
*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 4
8*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c
^5 - 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3
*b*c^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d
^2*e^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (
a*b^8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3
*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^
5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 -
 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10
*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^
7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3
*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2
*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*
c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6
*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c +
48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2
 - 64*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a
*c^2)*e^8)*sqrt(e*x + d)) - 3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2
 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 +
 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^
2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^
4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2
*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^
3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2
 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*
c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7
 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c
+ 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^
3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*
e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(-27/2*sq
rt(1/2)*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16
*a^2*b*c^2)*e^7 - sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*
a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3
*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2
*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^
2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*
a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 +
 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*
b^4*c^3 - 256*a^4*c^5)*d^2*e^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 -
768*a^4*b*c^4)*d*e^3 + (a*b^8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4
)*e^4))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e
^4 - (b^3 + 12*a*b*c)*e^5 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2
*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*
b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^
4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d
*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c
 - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48
*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 -
 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^
2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^
2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^
```

```
2*d*e^7 + (3*b^2*c + 4*a*c^2)*e^8)*sqrt(e*x + d)) + 3*sqrt(1/2)*((b^2*c^2 -
 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*
b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sqrt((32*c^3*d^3*e^2 - 48
*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(
e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c
 - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c
+ 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^
2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c +
48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3
- 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e
+ (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a
*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^
3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4
*c^3)*e^2))*log(27/2*sqrt(1/2)*(2*(b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*d*e^6
- (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 + sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3
 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*
c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2
*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64
*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*
e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*d^4 - 16*(b
^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*d^3*e + 3*(3*b^8*c -
 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d^2*e^2 - (b^9 - 96*a^2*b^5*c
^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (a*b^8 - 8*a^2*b^6*c + 128*a^
4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*
(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 - sqrt(e^10/((b^6*c^2 - 12
*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 4
8*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 +
32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^
3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64
*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 -
 (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b
^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b
^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^
3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2)) + 27*(1
6*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a*c^2)*e^8)*sqrt(e*x + d)) -
3*sqrt(1/2)*((b^2*c^2 - 4*a*c^3)*x^4 + a^2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b
*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)*sq
rt((32*c^3*d^3*e^2 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3
+ 12*a*b*c)*e^5 - sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*
a^3*c^5)*d^4 - 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3
*e + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2
*e^2 - 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^
2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^
4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c
^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^
3)*e^2))/((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 -
 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c +
48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))*log(-27/2*sqrt(1/2)*(2*(b^4*c - 8*a*b^2*
c^2 + 16*a^2*c^3)*d*e^6 - (b^5 - 8*a*b^3*c + 16*a^2*b*c^2)*e^7 + sqrt(e^10/
((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(b^7*c - 12
*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b^6*c + 24*
a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 - 12*a^2*b^5
*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4*c + 48*a^
4*b^2*c^2 - 64*a^5*c^3)*e^4))*(8*(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 -
 64*a^3*c^6)*d^4 - 16*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c
^5)*d^3*e + 3*(3*b^8*c - 32*a*b^6*c^2 + 96*a^2*b^4*c^3 - 256*a^4*c^5)*d^2*e
^2 - (b^9 - 96*a^2*b^5*c^2 + 512*a^3*b^3*c^3 - 768*a^4*b*c^4)*d*e^3 + (a*b^
8 - 8*a^2*b^6*c + 128*a^4*b^2*c^3 - 256*a^5*c^4)*e^4))*sqrt((32*c^3*d^3*e^2
 - 48*b*c^2*d^2*e^3 + 6*(3*b^2*c + 4*a*c^2)*d*e^4 - (b^3 + 12*a*b*c)*e^5 -
sqrt(e^10/((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*d^4 - 2*(
b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*d^3*e + (b^8 - 10*a*b
^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*d^2*e^2 - 2*(a*b^7 -
12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*d*e^3 + (a^2*b^6 - 12*a^3*b^4
*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4))*((b^6*c - 12*a*b^4*c^2 + 48*a^2*b^2
*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a^2*b^3*c^2 - 64*a^3*b*c^3)
*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 64*a^4*c^3)*e^2))/((b^6*c -
 12*a*b^4*c^2 + 48*a^2*b^2*c^3 - 64*a^3*c^4)*d^2 - (b^7 - 12*a*b^5*c + 48*a
^2*b^3*c^2 - 64*a^3*b*c^3)*d*e + (a*b^6 - 12*a^2*b^4*c + 48*a^3*b^2*c^2 - 6
4*a^4*c^3)*e^2)) + 27*(16*c^3*d^2*e^6 - 16*b*c^2*d*e^7 + (3*b^2*c + 4*a*c^2
)*e^8)*sqrt(e*x + d)) - 2*(6*c^2*e*x^3 + 9*b*c*e*x^2 + 3*a*b*e + (5*b^2 - 2
*a*c)*e*x + 2*(b^2 - 4*a*c)*d)*sqrt(e*x + d))/((b^2*c^2 - 4*a*c^3)*x^4 + a^
2*b^2 - 4*a^3*c + 2*(b^3*c - 4*a*b*c^2)*x^3 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)
*x^2 + 2*(a*b^3 - 4*a^2*b*c)*x)
```

giac [B] time = 3.70, size = 1189, normalized size = 3.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -3/16*(sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*(b^2*e - 4*a*c*e)^2
*e^2 + (2*sqrt(b^2 - 4*a*c)*c*d*e^2 - sqrt(b^2 - 4*a*c)*b*e^3)*sqrt(-4*c^2*
d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - 2*(4*(b^2*c^2 -
 4*a*c^3)*d^2*e^2 - 4*(b^3*c - 4*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c)*e^4)*sq
rt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e
 + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e + sqrt((2*b^2*c*d -
8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4
*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c - 4*a*c^2)
))/(((b^2*c - 4*a*c^2)*sqrt(b^2 - 4*a*c)*d^2 - (b^3 - 4*a*b*c)*sqrt(b^2 - 4
*a*c)*d*e + (a*b^2 - 4*a^2*c)*sqrt(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*a*c*e)*a
bs(c)) + 3/16*(sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(b^2*e - 4*
a*c*e)^2*e^2 - (2*sqrt(b^2 - 4*a*c)*c*d*e^2 - sqrt(b^2 - 4*a*c)*b*e^3)*sqrt
(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*e - 4*a*c*e) - 2*(4*(b
^2*c^2 - 4*a*c^3)*d^2*e^2 - 4*(b^3*c - 4*a*b*c^2)*d*e^3 + (b^4 - 4*a*b^2*c)
*e^4)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*
sqrt(x*e + d)/sqrt(-(2*b^2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e - sqrt((2*b^
2*c*d - 8*a*c^2*d - b^3*e + 4*a*b*c*e)^2 - 4*(b^2*c*d^2 - 4*a*c^2*d^2 - b^3
*d*e + 4*a*b*c*d*e + a*b^2*e^2 - 4*a^2*c*e^2)*(b^2*c - 4*a*c^2)))/(b^2*c -
4*a*c^2)))/(((b^2*c - 4*a*c^2)*sqrt(b^2 - 4*a*c)*d^2 - (b^3 - 4*a*b*c)*sqrt
(b^2 - 4*a*c)*d*e + (a*b^2 - 4*a^2*c)*sqrt(b^2 - 4*a*c)*e^2)*abs(b^2*e - 4*
a*c*e)*abs(c)) - 1/4*(6*(x*e + d)^(7/2)*c^2*e^2 - 18*(x*e + d)^(5/2)*c^2*d*
e^2 + 18*(x*e + d)^(3/2)*c^2*d^2*e^2 - 6*sqrt(x*e + d)*c^2*d^3*e^2 + 9*(x*e
 + d)^(5/2)*b*c*e^3 - 18*(x*e + d)^(3/2)*b*c*d*e^3 + 9*sqrt(x*e + d)*b*c*d^
2*e^3 + 5*(x*e + d)^(3/2)*b^2*e^4 - 2*(x*e + d)^(3/2)*a*c*e^4 - 3*sqrt(x*e
+ d)*b^2*d*e^4 - 6*sqrt(x*e + d)*a*c*d*e^4 + 3*sqrt(x*e + d)*a*b*e^5)/(((x*
e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2*(b^
2 - 4*a*c))
```

maple [B] time = 0.18, size = 1231, normalized size = 3.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 3/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(7/2)+9/4*e^3/(
c*e^2*x^2+b*e^2*x+a*e^2)^2*c/(4*a*c-b^2)*(e*x+d)^(5/2)*b-9/2*e^2/(c*e^2*x^2
+b*e^2*x+a*e^2)^2*c^2/(4*a*c-b^2)*(e*x+d)^(5/2)*d-1/2*e^4/(c*e^2*x^2+b*e^2*
x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(3/2)*a*c+5/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^
2/(4*a*c-b^2)*(e*x+d)^(3/2)*b^2-9/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-
b^2)*(e*x+d)^(3/2)*b*c*d+9/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e
*x+d)^(3/2)*c^2*d^2+3/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)
^(1/2)*a*b-3/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*
c*d-3/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b^2*d+9/4
*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b*c*d^2-3/2*e^2/
(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*c^2*d^3+3/2*e^3/(4*a*
c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(
1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*c)*b-3*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/
2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^
(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-3/4*e^2/(4*a*c-b
^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+
d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)+3/2*e^3
/(4*a*c-b^2)*c/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e
^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b-3*e^2/(4*a*c-b^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^
(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2
^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+3/4*e^2/(4*a*c-b
^2)*c*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)
^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^3, x)
```

mupad [B] time = 7.15, size = 16393, normalized size = 50.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(3/2)*(5*b^2*e^4 + 18*c^2*d^2*e^2 - 2*a*c*e^4 - 18*b*c*d*e^3))/
(4*(4*a*c - b^2)) - (3*(d + e*x)^(1/2)*(b^2*d*e^4 + 2*c^2*d^3*e^2 - a*b*e^5
 + 2*a*c*d*e^4 - 3*b*c*d^2*e^3))/(4*(4*a*c - b^2)) + (3*c^2*e^2*(d + e*x)^(
7/2))/(2*(4*a*c - b^2)) + (9*c*e^2*(b*e - 2*c*d)*(d + e*x)^(5/2))/(4*(4*a*c
 - b^2)))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3
 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)
^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*
d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - atan(((((3*(32*b^7*c
^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b
^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^
5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x
)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1
536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6
*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*
a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*
a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^
3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a
^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8
*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d
^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 61
44*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^
7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e))
)^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3
*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2
- 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(
4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 +
96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^
3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2
- 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 +
576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(1
28*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*
e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*
b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2
*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 -
 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4
*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)
^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))
/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^
9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a
^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2
*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3
 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 57
6*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^
2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24
*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4
*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^
2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*
a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^
3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*1i - (((3*(32*b^7*c^2*e^5 - 384*a*b^5*
c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536
*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6
- 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*((9*(e^5*(-
(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 +
 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c
^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2
 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 +
 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(
128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d
*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3
*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^
2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2
- 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^
4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2
*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6
*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*
d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/
2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5
- 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*
c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*
d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e
^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^
12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d
^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*
a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6
*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e
 - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144
```

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*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((d + e*x)^(1/2)*(36*a*c^4*e^
6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c
^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c
^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 20
48*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e
^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*
e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4
 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^
2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 2
40*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5
*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^
4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1
280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^
11*c*d*e)))^(1/2)*1i)/((((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*
b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 +
768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a
^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1
/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5
 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7
*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4
*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*
e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b
^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*
d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840
*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^
6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*
e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 614
4*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^
3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a
^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 1
6*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*
a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e
^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^
8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6
*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^
3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6
*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*
e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6
144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5
*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*
d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e +
24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6
- 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(
(9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c
^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2
+ 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c
^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4
*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d
^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^
2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2
- 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*
a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^
2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e
 - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) +
 (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c
^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 -
3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*
c)) + ((d + e*x)^(1/2)*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^
4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5
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 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*
c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c
^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*
d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c
^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^
2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 614
4*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b
^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*
e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24
*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5
*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a
*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)
))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a
^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*
e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b
^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4
*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c
^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^
6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*
d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 +
240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^
6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3
*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/
2) - ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 14
4*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*((9*(e^5*(-(4*a*c - b^2
)^9)^(1/2) - b^9*e^5 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*
c^2*e^5 - 512*a^3*b^3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 -
 48*b^7*c^2*d^2*e^3 + 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*
b^3*c^4*d^2*e^3 - 192*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c
^3*d^2*e^3 + 576*a^2*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*
e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^
10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2
 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280
*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b
*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*
e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (3*(36*a*c^4*e^8 + 27
*b^2*c^3*e^8 + 144*c^5*d^2*e^6 - 144*b*c^4*d*e^7))/(16*(b^6 - 64*a^3*c^3 +
48*a^2*b^2*c^2 - 12*a*b^4*c))))*((9*(e^5*(-(4*a*c - b^2)^9)^(1/2) - b^9*e^5
 + 768*a^4*b*c^4*e^5 - 1536*a^4*c^5*d*e^4 + 96*a^2*b^5*c^2*e^5 - 512*a^3*b^
3*c^3*e^5 - 2048*a^3*c^6*d^3*e^2 + 32*b^6*c^3*d^3*e^2 - 48*b^7*c^2*d^2*e^3
+ 18*b^8*c*d*e^4 + 1536*a^2*b^2*c^5*d^3*e^2 - 2304*a^2*b^3*c^4*d^2*e^3 - 19
2*a*b^6*c^2*d*e^4 - 384*a*b^4*c^4*d^3*e^2 + 576*a*b^5*c^3*d^2*e^3 + 576*a^2
*b^4*c^3*d*e^4 + 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4
096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*
b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*
d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3
840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b
^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5
*d*e + 24*a*b^11*c*d*e)))^(1/2)*2i - atan(((((3*(32*b^7*c^2*e^5 - 384*a*b^5
*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 153
6*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6
 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(9*(b^9*
e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4
 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6
*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e
^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2
 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))
/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13
*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a
```

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^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*
c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^
2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*
a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c
^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b
^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^
5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c
- b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e
^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b
^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c
^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^
2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 +
 b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^
2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 38
40*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*
b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*
d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6
144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4
*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^
2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4
*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5
+ 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c
*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^
2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d
*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^
7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2
 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144
*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^
4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e
 + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*
a*b^11*c*d*e)))^(1/2)*1i - (((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*
a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^
5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 +
48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a
*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^
2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 4
8*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^
3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3
*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^
2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10
*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 +
 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a
^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c
^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e
+ 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b
^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1
536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^
4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2)
- 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3
*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 -
 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192
*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*
b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 40
96*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b
^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d
^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 38
40*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^
9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*
d*e + 24*a*b^11*c*d*e)))^(1/2) - ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^
```

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3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*
c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 153
6*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d
^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^
2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*
b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*
b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7
*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c
^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2
 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144
*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*
c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^
(1/2)*1i)/((((3*(32*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 +
4096*a^3*c^6*d*e^4 - 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^
4*d*e^4 - 3072*a^2*b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 -
 12*a*b^4*c)) - ((d + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/
2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*
b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^
3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 +
192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a
^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 +
 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^
2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^
5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 +
 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2
*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c
^5*d*e + 24*a*b^11*c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 204
8*a^3*b*c^5*e^3 + 4096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*
e^3 + 768*a*b^4*c^4*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 -
 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*
e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*
a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4
- 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4
 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 -
3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 +
 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*
a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^
2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e
^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280
*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*
c*d*e)))^(1/2) + ((d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*
d^2*e^4 + 144*b*c^4*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e
^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4
- 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*
c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^
2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2
- 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/
(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*
d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^
3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c
^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2
 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a
^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (((3*(32
*b^7*c^2*e^5 - 384*a*b^5*c^3*e^5 - 2048*a^3*b*c^5*e^5 + 4096*a^3*c^6*d*e^4
- 64*b^6*c^3*d*e^4 + 1536*a^2*b^3*c^4*e^5 + 768*a*b^4*c^4*d*e^4 - 3072*a^2*
b^2*c^5*d*e^4))/(32*(b^6 - 64*a^3*c^3 + 48*a^2*b^2*c^2 - 12*a*b^4*c)) + ((d
 + e*x)^(1/2)*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*
e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*
a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4
- 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4
 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 -
3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 +
 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*
a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^
2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e
^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280
*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*
c*d*e)))^(1/2)*(32*b^7*c^2*e^3 - 384*a*b^5*c^3*e^3 - 2048*a^3*b*c^5*e^3 + 4
096*a^3*c^6*d*e^2 - 64*b^6*c^3*d*e^2 + 1536*a^2*b^3*c^4*e^3 + 768*a*b^4*c^4
*d*e^2 - 3072*a^2*b^2*c^5*d*e^2))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*
(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*
d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 3
2*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*
d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^
3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*
e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 -
 b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1
280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3
*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c
^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e -
3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) - ((
d + e*x)^(1/2)*(36*a*c^4*e^6 - 45*b^2*c^3*e^6 - 144*c^5*d^2*e^4 + 144*b*c^4
*d*e^5))/(4*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(-(9*(b^9*e^5 + e^5*(-(4*a*c -
 b^2)^9)^(1/2) - 768*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^
5 + 512*a^3*b^3*c^3*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^
7*c^2*d^2*e^3 - 18*b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^
4*d^2*e^3 + 192*a*b^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2
*e^3 - 576*a^2*b^4*c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 +
b^12*c*d^2 + 4096*a^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2
*d^2 - 24*a^2*b^10*c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 384
0*a^4*b^4*c^5*d^2 - 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b
^6*c^3*e^2 + 3840*a^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d
*e - 240*a^2*b^9*c^2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 61
44*a^5*b^3*c^5*d*e + 24*a*b^11*c*d*e)))^(1/2) + (3*(36*a*c^4*e^8 + 27*b^2*c
^3*e^8 + 144*c^5*d^2*e^6 - 144*b*c^4*d*e^7))/(16*(b^6 - 64*a^3*c^3 + 48*a^2
*b^2*c^2 - 12*a*b^4*c))))*(-(9*(b^9*e^5 + e^5*(-(4*a*c - b^2)^9)^(1/2) - 76
8*a^4*b*c^4*e^5 + 1536*a^4*c^5*d*e^4 - 96*a^2*b^5*c^2*e^5 + 512*a^3*b^3*c^3
*e^5 + 2048*a^3*c^6*d^3*e^2 - 32*b^6*c^3*d^3*e^2 + 48*b^7*c^2*d^2*e^3 - 18*
b^8*c*d*e^4 - 1536*a^2*b^2*c^5*d^3*e^2 + 2304*a^2*b^3*c^4*d^2*e^3 + 192*a*b
^6*c^2*d*e^4 + 384*a*b^4*c^4*d^3*e^2 - 576*a*b^5*c^3*d^2*e^3 - 576*a^2*b^4*
c^3*d*e^4 - 3072*a^3*b*c^5*d^2*e^3))/(128*(a*b^12*e^2 + b^12*c*d^2 + 4096*a
^6*c^7*d^2 + 4096*a^7*c^6*e^2 - b^13*d*e - 24*a*b^10*c^2*d^2 - 24*a^2*b^10*
c*e^2 + 240*a^2*b^8*c^3*d^2 - 1280*a^3*b^6*c^4*d^2 + 3840*a^4*b^4*c^5*d^2 -
 6144*a^5*b^2*c^6*d^2 + 240*a^3*b^8*c^2*e^2 - 1280*a^4*b^6*c^3*e^2 + 3840*a
^5*b^4*c^4*e^2 - 6144*a^6*b^2*c^5*e^2 - 4096*a^6*b*c^6*d*e - 240*a^2*b^9*c^
2*d*e + 1280*a^3*b^7*c^3*d*e - 3840*a^4*b^5*c^4*d*e + 6144*a^5*b^3*c^5*d*e
+ 24*a*b^11*c*d*e)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1626 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=463

$$\frac{\sqrt{c}\,e\left(-2ce\left(-d\sqrt{b^2-4ac}-6ae+4bd\right)-be^2\left(\sqrt{b^2-4ac}+b\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{c}\,e\left(-2ce\left(\right.\right.}{}$$

```
[Out] -1/2*(e*x+d)^(1/2)/(c*x^2+b*x+a)^2-1/4*e*(b*c*d-b^2*e+2*a*c*e+c*(-b*e+2*c*d
)*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)+1/8*e*arc
tanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*
c^(1/2)*(8*c^2*d^2-b*e^2*(b+(-4*a*c+b^2)^(1/2))-2*c*e*(4*b*d-6*a*e-d*(-4*a*
c+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)/(a*e^2-b*d*e+c*d^2)*2^(1/2)/(2*c*d-e*(b-(
-4*a*c+b^2)^(1/2)))^(1/2)-1/8*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*
d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(8*c^2*d^2-b*e^2*(b-(-4*a*c+b^2)
^(1/2))-2*c*e*(4*b*d-6*a*e+d*(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)/(a*e^2
-b*d*e+c*d^2)*2^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 1.89, antiderivative size = 463, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.179, Rules used = {768, 740, 826, 1166, 208}

$$\frac{\sqrt{c}\,e\left(-2ce\left(-d\sqrt{b^2-4ac}-6ae+4bd\right)-be^2\left(\sqrt{b^2-4ac}+b\right)+8c^2d^2\right)\tanh^{-1}\left(\frac{\sqrt{2}\sqrt{c}\sqrt{d+ex}}{\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}}\right)}{4\sqrt{2}\left(b^2-4ac\right)^{3/2}\sqrt{2cd-e\left(b-\sqrt{b^2-4ac}\right)}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{c}\,e\left(-2ce\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^3,x]
```

```
[Out] -Sqrt[d + e*x]/(2*(a + b*x + c*x^2)^2) - (e*Sqrt[d + e*x]*(b*c*d - b^2*e +
2*a*c*e + c*(2*c*d - b*e)*x))/(4*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a +
 b*x + c*x^2)) + (Sqrt[c]*e*(8*c^2*d^2 - b*(b + Sqrt[b^2 - 4*a*c])*e^2 - 2*
c*e*(4*b*d - Sqrt[b^2 - 4*a*c]*d - 6*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d
+ e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*(b^2 - 4*a*c)^
(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2)) - (S
qrt[c]*e*(8*c^2*d^2 - b*(b - Sqrt[b^2 - 4*a*c])*e^2 - 2*c*e*(4*b*d + Sqrt[b
^2 - 4*a*c]*d - 6*a*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d
- (b + Sqrt[b^2 - 4*a*c])*e]])/(4*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d -
(b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 - b*d*e + a*e^2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 740

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(b*c*d - b^2*e + 2*a*c*e + c*(2*c*d - b*e
)*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e
^2)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d +
 e*x)^m*Simp[b*c*d*e*(2*p - m + 2) + b^2*e^2*(m + p + 2) - 2*c^2*d^2*(2*p +
 3) - 2*a*c*e^2*(m + 2*p + 3) - c*e*(2*c*d - b*e)*(m + 2*p + 4)*x, x]*(a +
b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4
*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p,
-1] && IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}+\frac{1}{4}e\int \frac{1}{\sqrt{d+ex}\left(a+bx+cx^2\right)^2}\,dx$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e\int \frac{\frac{1}{2}\left(4c^2d^2-b^2e\right.}{}}{4\left(b^2-4\right.}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{e\,\mathrm{Subst}\left(\int \frac{-\frac{1}{2}}{}\right.}{}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}-\frac{\left(ce\left(8c^2d^2-b\right.\right.}{}$$

$$= -\frac{\sqrt{d+ex}}{2\left(a+bx+cx^2\right)^2}-\frac{e\sqrt{d+ex}\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{4\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}+\frac{\sqrt{c}\,e\left(8c^2d^2-\right.}{}$$

Mathematica [B] time = 6.41, size = 1080, normalized size = 2.33

$$-\frac{\left(-2ac(2cd-be)+b\left(-eb^2+cdb+2ace\right)+c(b(2cd-be)-2c(bd-2ae))x\right)(d+ex)^{3/2}}{2\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}-\frac{-\frac{\left(\frac{3}{2}ac\left(b^2-4ac\right)(2cd-be)e^2-\frac{1}{2}\left(b\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^3,x]
```

```
[Out] -1/2*((d + e*x)^(3/2)*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) +
 c*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)*(a + b*x + c*x^2)^2) - (-(((d + e*x)^(3/2)*((3*a*c*(b^2 - 4*a*c)*
e^2*(2*c*d - b*e))/2 - ((b^2 - 4*a*c)*e*(c*d + b*e)*(b*c*d - b^2*e + 2*a*c*
e))/2 + c*((3*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 - ((b^2 - 4*a*c)*e*(2*c*
d - b*e)*(c*d + b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*
x + c*x^2))) - (((b^2 - 4*a*c)*e^2*(2*c^2*d^2 - b^2*e^2 - 2*c*e*(b*d - 3*a*
e))*Sqrt[d + e*x])/2 + (4*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*(-1/8*(
c^2*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))) - ((c^2*(b^2 -
 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))))/8 + 2*c*(
-1/8*(c*(b^2 - 4*a*c)*e^2*(c*d^2 - b*d*e + a*e^2)*(4*c^2*d^2 - 3*b*c*d*e -
b^2*e^2 + 6*a*c*e^2)) + (c^2*(b^2 - 4*a*c)*d*e^2*(2*c*d - b*e)*(c*d^2 - e*(
b*d - a*e)))/8))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e
*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b
*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]*(-1/8
*(c^2*(b^2 - 4*a*c)*e^2*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))) + ((c^2*(b^2
 - 4*a*c)*e^2*(2*c*d - b*e)*(-2*c*d + b*e)*(c*d^2 - e*(b*d - a*e))))/8 + 2*c
*(-1/8*(c*(b^2 - 4*a*c)*e^2*(c*d^2 - b*d*e + a*e^2)*(4*c^2*d^2 - 3*b*c*d*e
- b^2*e^2 + 6*a*c*e^2)) + (c^2*(b^2 - 4*a*c)*d*e^2*(2*c*d - b*e)*(c*d^2 - e
*(b*d - a*e)))/8))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d +
 e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d +
 b*e - Sqrt[b^2 - 4*a*c]*e))))/c)/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/
(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 5.53, size = 3071, normalized size = 6.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] -1/32*((b^2*c*d^2*e - 4*a*c^2*d^2*e - b^3*d*e^2 + 4*a*b*c*d*e^2 + a*b^2*e^3
 - 4*a^2*c*e^3)^2*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*(2*c*d*e
^2 - b*e^3) + 2*(2*sqrt(b^2 - 4*a*c)*c^3*d^4*e^2 - 4*sqrt(b^2 - 4*a*c)*b*c^
2*d^3*e^3 + (b^2*c + 8*a*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 + (b^3 - 8*a*b*c)*s
qrt(b^2 - 4*a*c)*d*e^5 - (a*b^2 - 6*a^2*c)*sqrt(b^2 - 4*a*c)*e^6)*sqrt(-4*c
^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(-b^2*c*d^2*e + 4*a*c^2*d^2*e +
b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3) - (16*(b^2*c^5 - 4*a*c
^6)*d^7*e^2 - 56*(b^3*c^4 - 4*a*b*c^5)*d^6*e^3 + 14*(5*b^4*c^3 - 16*a*b^2*c
^4 - 16*a^2*c^5)*d^5*e^4 - 35*(b^5*c^2 - 16*a^2*b*c^4)*d^4*e^5 + 4*(b^6*c +
 23*a*b^4*c^2 - 92*a^2*b^2*c^3 - 64*a^3*c^4)*d^3*e^6 + (b^7 - 26*a*b^5*c -
8*a^2*b^3*c^2 + 384*a^3*b*c^3)*d^2*e^7 - 2*(a*b^6 - 19*a^2*b^4*c + 48*a^3*b
^2*c^2 + 48*a^4*c^3)*d*e^8 + (a^2*b^5 - 16*a^3*b^3*c + 48*a^4*b*c^2)*e^9)*s
qrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*
e + d)/sqrt(-(2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*c^2*d^2*
e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e
^3 + sqrt((2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*c^2*d^2*e +
 b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a^2*b*c*e^3)
^2 - 4*(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e + b^4*d
^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*a^2*b*c*
d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*(b^2*c^2*d^2 - 4*a*c^3*d^2 - b^3*c*d*e +
 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(b^2*c^2*d^2 - 4*a*c^3*d^2
- b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(((b^2*c^3 - 4
*a*c^4)*sqrt(b^2 - 4*a*c)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*sqrt(b^2 - 4*a*c)*d
^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^2 - (b^5
 + 2*a*b^3*c - 24*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^3 + 3*(a*b^4 - 3*a^2*b
^2*c - 4*a^3*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3*b*c)*sqrt(
b^2 - 4*a*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*sqrt(b^2 - 4*a*c)*e^6)*abs(-b^2*c*
d^2*e + 4*a*c^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3
)*abs(c)) + 1/32*((b^2*c*d^2*e - 4*a*c^2*d^2*e - b^3*d*e^2 + 4*a*b*c*d*e^2
+ a*b^2*e^3 - 4*a^2*c*e^3)^2*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*
e)*(2*c*d*e^2 - b*e^3) - 2*(2*sqrt(b^2 - 4*a*c)*c^3*d^4*e^2 - 4*sqrt(b^2 -
4*a*c)*b*c^2*d^3*e^3 + (b^2*c + 8*a*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 + (b^3 -
 8*a*b*c)*sqrt(b^2 - 4*a*c)*d*e^5 - (a*b^2 - 6*a^2*c)*sqrt(b^2 - 4*a*c)*e^6
)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e)*abs(-b^2*c*d^2*e + 4*a*c
^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 + 4*a^2*c*e^3) - (16*(b^2*
c^5 - 4*a*c^6)*d^7*e^2 - 56*(b^3*c^4 - 4*a*b*c^5)*d^6*e^3 + 14*(5*b^4*c^3 -
 16*a*b^2*c^4 - 16*a^2*c^5)*d^5*e^4 - 35*(b^5*c^2 - 16*a^2*b*c^4)*d^4*e^5 +
 4*(b^6*c + 23*a*b^4*c^2 - 92*a^2*b^2*c^3 - 64*a^3*c^4)*d^3*e^6 + (b^7 - 26
*a*b^5*c - 8*a^2*b^3*c^2 + 384*a^3*b*c^3)*d^2*e^7 - 2*(a*b^6 - 19*a^2*b^4*c
 + 48*a^3*b^2*c^2 + 48*a^4*c^3)*d*e^8 + (a^2*b^5 - 16*a^3*b^3*c + 48*a^4*b*
c^2)*e^9)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1
/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a
*b*c^2*d^2*e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 +
4*a^2*b*c*e^3 - sqrt((2*b^2*c^2*d^3 - 8*a*c^3*d^3 - 3*b^3*c*d^2*e + 12*a*b*
c^2*d^2*e + b^4*d*e^2 - 2*a*b^2*c*d*e^2 - 8*a^2*c^2*d*e^2 - a*b^3*e^3 + 4*a
^2*b*c*e^3)^2 - 4*(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^
3*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 +
 8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*(b^2*c^2*d^2 - 4*a*c^3*d^2 -
b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(b^2*c^2*d^2 - 4
*a*c^3*d^2 - b^3*c*d*e + 4*a*b*c^2*d*e + a*b^2*c*e^2 - 4*a^2*c^2*e^2)))/(((
b^2*c^3 - 4*a*c^4)*sqrt(b^2 - 4*a*c)*d^6 - 3*(b^3*c^2 - 4*a*b*c^3)*sqrt(b^2
 - 4*a*c)*d^5*e + 3*(b^4*c - 3*a*b^2*c^2 - 4*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^4
*e^2 - (b^5 + 2*a*b^3*c - 24*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^3 + 3*(a*b^
4 - 3*a^2*b^2*c - 4*a^3*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^4 - 3*(a^2*b^3 - 4*a^3
*b*c)*sqrt(b^2 - 4*a*c)*d*e^5 + (a^3*b^2 - 4*a^4*c)*sqrt(b^2 - 4*a*c)*e^6)*
abs(-b^2*c*d^2*e + 4*a*c^2*d^2*e + b^3*d*e^2 - 4*a*b*c*d*e^2 - a*b^2*e^3 +
4*a^2*c*e^3)*abs(c)) - 1/4*(2*(x*e + d)^(7/2)*c^3*d*e^2 - 6*(x*e + d)^(5/2)
*c^3*d^2*e^2 + 6*(x*e + d)^(3/2)*c^3*d^3*e^2 - 2*sqrt(x*e + d)*c^3*d^4*e^2
- (x*e + d)^(7/2)*b*c^2*e^3 + 6*(x*e + d)^(5/2)*b*c^2*d*e^3 - 9*(x*e + d)^(
3/2)*b*c^2*d^2*e^3 + 4*sqrt(x*e + d)*b*c^2*d^3*e^3 - 2*(x*e + d)^(5/2)*b^2*
c*e^4 + 2*(x*e + d)^(5/2)*a*c^2*e^4 + 5*(x*e + d)^(3/2)*b^2*c*d*e^4 - 2*(x*
e + d)^(3/2)*a*c^2*d*e^4 - sqrt(x*e + d)*b^2*c*d^2*e^4 - 8*sqrt(x*e + d)*a*
c^2*d^2*e^4 - (x*e + d)^(3/2)*b^3*e^5 + (x*e + d)^(3/2)*a*b*c*e^5 - sqrt(x*
e + d)*b^3*d*e^5 + 8*sqrt(x*e + d)*a*b*c*d*e^5 + sqrt(x*e + d)*a*b^2*e^6 -
```

```
6*sqrt(x*e + d)*a^2*c*e^6)/((b^2*c*d^2 - 4*a*c^2*d^2 - b^3*d*e + 4*a*b*c*d*
e + a*b^2*e^2 - 4*a^2*c*e^2)*((x*e + d)^2*c - 2*(x*e + d)*c*d + c*d^2 + (x*
e + d)*b*e - b*d*e + a*e^2)^2)
```

maple [B] time = 0.12, size = 3056, normalized size = 6.60

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c
/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)
^(1/2)*c)*b^2-e^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^
2*c*d^2)*c^3/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^
2)^(1/2))*c)^(1/2)*c)*d^2-3/2*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^
2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c
*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a-1/4*e^5/(c*e^2*x^2+b*e^2*x+a*e^2
)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+
d)^(3/2)*b^3+e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2
*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2
)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*
e^2)^(1/2))*c)^(1/2)*c)*b*d-3/2*e^4/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*
c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*
d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*a+e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*
c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2/(-(4*a*c-b^2)*e^2)^(1/2)*2^(1/2)/(
(b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/
((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b*d+1/8*e^4/(4*a^2*c*e^2-
a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c/(-(4*a*c-b^2)*e^2)^(
1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d
)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b^2-e^2/
(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^3/(-(4*
a*c-b^2)*e^2)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)
*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1
/2)*c)*d^2+1/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b^
2-3/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*
e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(5/2)*d^2+3/2*e^2/(c*e^2*x^2+b*e^2
*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^
2)*(e*x+d)^(3/2)*c^3*d^3-1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e
*x+d)^(1/2)*c^2*d^2-1/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a^2*c*e^2-a*
b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(7/2)*b+1/2*e^4/
(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*
d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(5/2)*a-1/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2*
c/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)
^(5/2)*b^2-3/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*a*
c+1/2*e^2/(c*e^2*x^2+b*e^2*x+a*e^2)^2*c^3/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*
e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(7/2)*d+1/2*e^3/(c*e^2*x^2+b*e^2*x
+a*e^2)^2/(4*a*c-b^2)*(e*x+d)^(1/2)*b*c*d+3/2*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)
^2*c^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e
*x+d)^(5/2)*b*d+1/4*e^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*
d*e-b^2*c*d^2)*c^2*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*a
rctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*
c)*d-1/2*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e
+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*c^2*a*d-1/8*e^3/(4*a^2*c*e^2-
a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+1/8*e^3/(4*a^2*c*e^2-a*b^2*e^2-4*a
*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2
)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-
b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+5/4*e^4/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c
*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*b^2
*c*d-9/4*e^3/(c*e^2*x^2+b*e^2*x+a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e
+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*(e*x+d)^(3/2)*b*c^2*d^2-1/4*e^2/(4*a^2*c*e^
2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*c^2*2^(1/2)/((-b*e+2
*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*
e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d+1/4*e^5/(c*e^2*x^2+b*e^2*x+
a*e^2)^2/(4*a^2*c*e^2-a*b^2*e^2-4*a*b*c*d*e+4*a*c^2*d^2+b^3*d*e-b^2*c*d^2)*
(e*x+d)^(3/2)*a*b*c
```

maxima [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^3, x)
```

mupad [**B**]   time = 9.03, size = 46559, normalized size = 100.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (((d + e*x)^(1/2)*(b^2*e^4 - 2*c^2*d^2*e^2 - 6*a*c*e^4 + 2*b*c*d*e^3))/(4*(
4*a*c - b^2)) + ((d + e*x)^(5/2)*(a*c^2*e^4 - b^2*c*e^4 - 3*c^3*d^2*e^2 + 3
*b*c^2*d*e^3))/(2*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) - ((d + e*x)^(3/2)
*(b^3*e^5 - 6*c^3*d^3*e^2 + 9*b*c^2*d^2*e^3 - a*b*c*e^5 + 2*a*c^2*d*e^4 - 5
*b^2*c*d*e^4))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) + (c*(2*c^2*d*e^2
- b*c*e^3)*(d + e*x)^(7/2))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)))/(c^2
*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2
 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 +
6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e) + a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*
b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - atan(((((24576*a^5*c^6*e^8 + 64*a*
b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^
8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 -
128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b
^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 204
80*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 153
6*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216
*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64
*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2
 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^
2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^
2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^
2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2
*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) - ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 -
288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^
3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*
e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2
)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c
*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 -
3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e
^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e
^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4
- 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 +
320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(
128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^
3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a
^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 +
 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a
^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2
*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3
*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9
*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a
^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 +
16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4
*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*
c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e
^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2
+ 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e +
11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e -
 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3
 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^
7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*
a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4
*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*
e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c
^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b
^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6
*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b
*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*
b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2
*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2
 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 -
 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7
*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*
e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2
048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^
4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c
 - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*
b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*
e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4
*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c
^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^
3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*
e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*
e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^
6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4
 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5
*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 -
 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a
^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^
10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a
^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 -
3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*
e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c
^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^
7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11
*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^
4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^
```

```
5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d
^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d
^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^
8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64
*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/
(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e
^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3
 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^
3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)
^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^
7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*
e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b
^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2)
 + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5
*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b
^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*
a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a
*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^
7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^
4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*
d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6
 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*
e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*
b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2
*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 -
 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 +
 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e
^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4
*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*
b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 327
68*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^
4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288
*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*
b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*
b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*
b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a
^7*b^3*c^5*d*e^5)))^(1/2)*1i - (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64
*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^
2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*
e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 +
 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d
^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*
e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e
^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 -
64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*
d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*
c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a
^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c
*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e -
 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1
/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*
e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -
7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3
*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*
a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d
*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6
*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^
2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c
^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*
d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*
d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^
3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*
a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 +
3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^
6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 +
 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288
*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^
2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 6
48*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e
^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^
5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6
*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72
*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b
*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^
4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^
6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^
3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3
*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c
^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2
+ 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b
^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*
b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 409
6*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1
536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 3
84*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4
608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/
(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e
^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3
 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^
3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)
^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^
7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*
e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b
^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2)
 + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5
*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b
^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*
a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a
*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^
7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^
4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*
d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6
 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*
e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*
b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2
*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 -
 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 +
 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e
^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4
*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*
b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 327
68*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^
4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288
*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*
b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*
b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*
b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a
^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8
```

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+ 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 +
 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4
+ 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3
*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e
 + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3
*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11
*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504
*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c
^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 +
 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^
7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*
a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 +
 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*
e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2
 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 -
480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11
520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a
^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4
*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2
*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 38
40*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*
b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d
^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2
*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^1
0*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*
a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3
- 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d
^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^
3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e
 + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e +
69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e +
720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 +
11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5
)))^(1/2)*1i)/((5*b^3*c^4*e^9 + 32*c^7*d^3*e^6 - 48*b*c^6*d^2*e^7 + 6*b^2*c
^5*d*e^8 - 36*a*b*c^5*e^9 + 72*a*c^6*d*e^8)/(32*(a^2*b^6*e^4 - 64*a^3*c^5*d
^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3
*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2
- 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d
^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128
*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*
c^2*d*e^3)) + (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 -
1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*
a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4
*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^
6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b
^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*
c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*
c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 -
64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*
c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a
*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^
2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*
b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d
*e^3)) - ((d + e*x)^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 +
3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^
5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*
e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*
c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a
*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b
^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^
2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8
960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*
a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2
*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4
*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*
d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 +
24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e
- 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*
b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3
*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2
- 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^
3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d
^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8
*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*
a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3
+ 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e
 - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 1228
8*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*
b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4
*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a
^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/
2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*
b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d
^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 +
64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 -
 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3
*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5
*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*
e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d
*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 +
 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*
d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e
+ 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*
c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*
e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*
a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^
7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 +
5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7
 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a
*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 +
960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e
^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2
+ 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 4
80*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 115
20*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^
6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*
d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*
d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 384
0*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b
^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^
4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*
d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10
*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a
^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 -
 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^
3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3
*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e
+ 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 6
```

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9*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 7
20*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 1
1520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)
))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4
- 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7
+ 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4
+ 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*
c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d
^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3
*b*c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b
*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7
- 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b
^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^
5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(
4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/
2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*
d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^
3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*
d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d
*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2
*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096
*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^1
0*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c
*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^
6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 384
0*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^
8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a
^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7
680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e
^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^
4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6
*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^
13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^
6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2
*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d
*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4
*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + (((24
576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^
8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 3
2768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c
^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^
2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 3276
8*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a
*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672
*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^
6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*
c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*
c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^
3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a
^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)
^(1/2)*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7
- 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^
4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^
5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2
*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b
^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536
*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 +
 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2
*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 -
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 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 51
20*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 38
40*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*
e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 -
 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2
- 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*
a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4
*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2
*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^
4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b
^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912
*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4
 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*
d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*
e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 +
 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 38
40*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18
432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 +
24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*
e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*
a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^
5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5
- 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d
^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^
3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c
^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*
c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*
c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 1
6*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e
^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*
e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*
c^2*d*e^3)))*(-(b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^
5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3
840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*
c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 -
 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a
*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2)
+ 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3
*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c
^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4
*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^
6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^
5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^
9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c
*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^
4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 +
 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a
^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c
^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*
b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680
*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4
+ 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d
^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^
4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*
c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d
*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^
4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^
5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*
e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*
```

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x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8
+ 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^
6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 +
b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*
d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^
2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(
b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5
*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*
e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80
*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(
-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/
2) - 5*b^10*c*d*e^6 + 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c
^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*
b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*
a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6
*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c
^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2
*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12
*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*
d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*
b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^
8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 +
 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648
*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2
+ 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4
*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c
^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^
6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 +
6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a
^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12
*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7
*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^
3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*
b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)))*(-(b^2*e^7*(-(4*a*c - b^
2)^9)^(1/2) - b^11*e^7 + 3840*a^5*b*c^5*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*
b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^
5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50
*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 - 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/
2) + 27*a*b^9*c*e^7 - 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 +
 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2
*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 256
0*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384
*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*
b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*
b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^1
5*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e
^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*
d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^
3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c
^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6
 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2
 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3
*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c
^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^
5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 3
2768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*
e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 122
88*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^
2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^
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4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^
5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432
*a^7*b^3*c^5*d*e^5)))^(1/2)*2i - atan(((((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*
e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 2252
8*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*
c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d
^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b
^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*
c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5
*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^
6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*
b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 -
128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^
2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a
^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3
*d^3*e - 96*a^3*b^3*c^2*d*e^3)) - ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 -
b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*
b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^
5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50
*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/
2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 -
 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2
*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 256
0*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384
*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*
b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*
b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^1
5*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e
^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*
d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^
3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c
^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6
 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2
 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3
*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c
^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^
5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 3
2768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*
e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 122
88*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^
2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^
4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^
5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432
*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a
^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*
d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3
 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15
360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e
^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d
*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3
*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4
*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*
d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b
^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b
^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*
b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*
e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 28
8*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*
c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^
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3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^
9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d
*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 38
40*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5
 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6
 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 -
240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 32
0*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(12
8*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*
b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2
*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1
280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5
*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c
^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d
^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c
^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4
*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16
896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e
^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^
6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5
 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 +
720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11
520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3
840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 -
 18432*a^7*b^3*c^5*d*e^5)))^(1/2) - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*
c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d
^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*
b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a
*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5
*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16
*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-
(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^
7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 76
80*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d
^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*
b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e
^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d
^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*
c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6
*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^
2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*
e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3
 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*
b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*
b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*
d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1
280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a
^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*
b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648
*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3
 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*
d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b
^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a
*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c
^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*
d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*
d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*
d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c
^5*d*e^5)))^(1/2)*1i - (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2
```

*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^
8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 25
6*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a
^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 +
 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 30
72*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 163
84*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c
^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12
*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*
e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c
^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 +
 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*
b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c
 - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 15
04*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4
*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4
 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*
e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(
4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3
 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^
3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e
^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5
 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 +
11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096
*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c
^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c
^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 -
3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^
6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8
*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c
^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b
^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 312
0*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^
3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6
*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*
c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5
*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e
+ 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e
+ 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5
+ 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e
^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 -
 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*
a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d
^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*
d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^
2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^
4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7
*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*
b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*
b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a
*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5
*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16
*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-
(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^
7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 76
80*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d
^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*
b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e
^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d

```
^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*
c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6
*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^
2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*
e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3
- 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*
b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*
b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*
d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1
280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a
^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*
b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648
*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3
 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*
d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b
^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a
*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c
^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*
d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*
d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*
d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c
^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7
*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c
^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2
*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8
*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*
b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3
 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)
^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5
*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e
^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c
^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*
c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^
2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2
*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 89
60*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a
*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*
b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*
b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d
^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 2
4*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e -
 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b
^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*
e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 -
 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3
 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^
2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*
c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a
^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 +
 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e
- 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288
*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b
^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*
b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^
6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2
)*1i)/((5*b^3*c^4*e^9 + 32*c^7*d^3*e^6 - 48*b*c^6*d^2*e^7 + 6*b^2*c^5*d*e^8
 - 36*a*b*c^5*e^9 + 72*a*c^6*d*e^8)/(32*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*
a^5*c^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e
^4 + 48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^
```

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7*d*e^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 +
 24*a*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c
^4*d^3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^
3)) + (((24576*a^5*c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2
*b^6*c^3*e^8 + 7680*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*
d^4*e^4 + 32768*a^4*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5
 - 64*b^8*c^3*d^2*e^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^
5 + 3072*a^2*b^4*c^5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d
*e^7 - 32768*a^4*b*c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*
e^5 + 256*a*b^6*c^4*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*
e^5 + 28672*a^3*b^3*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c
^3*e^4 + b^6*c^2*d^4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 +
48*a^2*b^2*c^4*d^4 + 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e
^3 - 2*b^7*c*d^3*e + 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a
*b^5*c^2*d^3*e - 10*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^
3*e + 128*a^4*b*c^3*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) -
 ((d + e*x)^(1/2)*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2)
- b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^
7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32
*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*
e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(
-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(
1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^
5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*
b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^
5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3
*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d
^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 40
96*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b
^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14
*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*
d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3
840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*
a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120
*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 -
 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2
*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*
c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a
^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*
b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*
c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d
^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2
*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c
^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192
*a^5*c^6*d*e^6 - 4096*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*
e^7 + 3072*a^4*b^3*c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 -
 128*b^6*c^5*d^5*e^2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c
^2*d^2*e^5 - 6144*a^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^
2*b^4*c^5*d^3*e^4 - 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 1
4336*a^3*b^3*c^5*d^2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3
840*a*b^5*c^5*d^4*e^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 14
08*a^2*b^6*c^3*d*e^6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 2
4576*a^4*b*c^6*d^2*e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*
c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*
a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b
^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3
- 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^
(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*
c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^
```

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4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^
2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c
*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2
)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*
b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 896
0*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*
b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b
^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b
*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^
6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24
*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e -
3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^
4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e
^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 -
12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3
+ 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2
*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c
^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^
5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 +
6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e -
 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*
a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^
12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b
^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6
*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)
 - ((d + e*x)^(1/2)*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b
^2*c^4*e^8 + 88*a*c^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2
*c^5*d^2*e^6 - 88*a*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4
*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 +
32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6
*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d
*e^3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7
 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a
^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d
^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^
2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c -
b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 153
6*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4
+ 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^
2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3
- 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5
120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3
840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6
*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6
- 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2
 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144
*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^
4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^
2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c
^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*
b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 691
2*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^
4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5
*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3
*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5
+ 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3
840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 1
8432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 +
 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + (((24576*a^5*
```

```
c^6*e^8 + 64*a*b^8*c^2*e^8 - 64*b^9*c^2*d*e^7 - 1152*a^2*b^6*c^3*e^8 + 7680
*a^3*b^4*c^4*e^8 - 22528*a^4*b^2*c^5*e^8 + 8192*a^3*c^8*d^4*e^4 + 32768*a^4
*c^7*d^2*e^6 - 128*b^6*c^5*d^4*e^4 + 256*b^7*c^4*d^3*e^5 - 64*b^8*c^3*d^2*e
^6 - 6144*a^2*b^2*c^7*d^4*e^4 + 12288*a^2*b^3*c^6*d^3*e^5 + 3072*a^2*b^4*c^
5*d^2*e^6 - 20480*a^3*b^2*c^6*d^2*e^6 + 1280*a*b^7*c^3*d*e^7 - 32768*a^4*b*
c^6*d*e^7 + 1536*a*b^4*c^6*d^4*e^4 - 3072*a*b^5*c^5*d^3*e^5 + 256*a*b^6*c^4
*d^2*e^6 - 9216*a^2*b^5*c^4*d*e^7 - 16384*a^3*b*c^7*d^3*e^5 + 28672*a^3*b^3
*c^5*d*e^7)/(64*(a^2*b^6*e^4 - 64*a^3*c^5*d^4 - 64*a^5*c^3*e^4 + b^6*c^2*d^
4 + b^8*d^2*e^2 - 12*a*b^4*c^3*d^4 - 12*a^3*b^4*c*e^4 + 48*a^2*b^2*c^4*d^4
+ 48*a^4*b^2*c^2*e^4 - 128*a^4*c^4*d^2*e^2 - 2*a*b^7*d*e^3 - 2*b^7*c*d^3*e
+ 24*a^2*b^4*c^2*d^2*e^2 + 32*a^3*b^2*c^3*d^2*e^2 + 24*a*b^5*c^2*d^3*e - 10
*a*b^6*c*d^2*e^2 + 24*a^2*b^5*c*d*e^3 + 128*a^3*b*c^4*d^3*e + 128*a^4*b*c^3
*d*e^3 - 96*a^2*b^3*c^3*d^3*e - 96*a^3*b^3*c^2*d*e^3)) + ((d + e*x)^(1/2)*(
-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a
^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^
4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 -
80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5
*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(
1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2
*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^
2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 9
0*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b
^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b
*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b
^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^
12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^1
4*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^
2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*
c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6
 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 6
48*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^
2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d
^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4
*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*
a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4
+ 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72
*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^
12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b
^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*
b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^
7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)*(8192*a^5*c^6*d*e^6 - 40
96*a^5*b*c^5*e^7 + 64*a^2*b^7*c^2*e^7 - 768*a^3*b^5*c^3*e^7 + 3072*a^4*b^3*
c^4*e^7 + 8192*a^3*c^8*d^5*e^2 + 16384*a^4*c^7*d^3*e^4 - 128*b^6*c^5*d^5*e^
2 + 320*b^7*c^4*d^4*e^3 - 256*b^8*c^3*d^3*e^4 + 64*b^9*c^2*d^2*e^5 - 6144*a
^2*b^2*c^7*d^5*e^2 + 15360*a^2*b^3*c^6*d^4*e^3 - 9216*a^2*b^4*c^5*d^3*e^4 -
 1536*a^2*b^5*c^4*d^2*e^5 + 4096*a^3*b^2*c^6*d^3*e^4 + 14336*a^3*b^3*c^5*d^
2*e^5 - 128*a*b^8*c^2*d*e^6 + 1536*a*b^4*c^6*d^5*e^2 - 3840*a*b^5*c^5*d^4*e
^3 + 2816*a*b^6*c^4*d^3*e^4 - 384*a*b^7*c^3*d^2*e^5 + 1408*a^2*b^6*c^3*d*e^
6 - 20480*a^3*b*c^7*d^4*e^3 - 4608*a^3*b^4*c^4*d*e^6 - 24576*a^4*b*c^6*d^2*
e^5 + 2048*a^4*b^2*c^5*d*e^6))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^
2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*
a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*
b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^
3)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 -
7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*
b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*
e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d
^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2
)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a
```

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^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2
400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e
^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 4
80*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120
*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840
*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^
6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3
*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 -
240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^
5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c
^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e
^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*
d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6
*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a
^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 +
 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^
2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^
3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 6
9*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840
*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 1843
2*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24
576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2) + ((d + e*x)^(1/2)
*(72*a^2*c^5*e^8 + b^4*c^3*e^8 + 32*c^7*d^4*e^4 - 14*a*b^2*c^4*e^8 + 88*a*c
^6*d^2*e^6 - 64*b*c^6*d^3*e^5 + 6*b^3*c^4*d*e^7 + 26*b^2*c^5*d^2*e^6 - 88*a
*b*c^5*d*e^7))/(8*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*
d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2
 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 -
32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)))*(-(3840*a^5
*b*c^5*e^7 - b^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e
^6 - 288*a^2*b^7*c^2*e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 20
48*a^3*c^8*d^5*e^2 - 7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4
*d^4*e^3 + 50*b^8*c^3*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c
- b^2)^9)^(1/2) + 27*a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b
^10*c*d*e^6 - 5*b*c*d*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e
^2 - 3840*a^2*b^3*c^6*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*
d^2*e^5 + 2560*a^3*b^2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^
2*d*e^6 - 384*a*b^4*c^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3
*e^4 - 240*a*b^7*c^3*d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e
^3 + 320*a^3*b^4*c^4*d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e
^6)/(128*(b^15*d^3*e^3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6
 - a^3*b^12*e^6 + 24*a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4
+ 3*a^2*b^13*d*e^5 + 3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*
d^6 + 1280*a^3*b^6*c^6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 -
240*a^5*b^8*c^2*e^6 + 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^
8*b^2*c^5*e^6 - 12288*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^1
0*c^3*d^4*e^2 + 96*a^2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^
3*b^9*c^3*d^3*e^3 - 648*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3
840*a^4*b^7*c^4*d^3*e^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e
^2 + 16896*a^5*b^5*c^5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^
7*d^4*e^2 - 32768*a^6*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7
*b^2*c^6*d^2*e^4 - 72*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*
c*d*e^5 + 12288*a^6*b*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4
*e^2 + 720*a^2*b^9*c^4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5
*e + 11520*a^4*b^5*c^6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^
5*e - 3840*a^5*b^7*c^3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^
3*e^3 - 18432*a^7*b^3*c^5*d*e^5)))^(1/2)))*(-(3840*a^5*b*c^5*e^7 - b^2*e^7*
(-(4*a*c - b^2)^9)^(1/2) - b^11*e^7 - 7680*a^5*c^6*d*e^6 - 288*a^2*b^7*c^2*
e^7 + 1504*a^3*b^5*c^3*e^7 - 3840*a^4*b^3*c^4*e^7 - 2048*a^3*c^8*d^5*e^2 -
7680*a^4*c^7*d^3*e^4 + 32*b^6*c^5*d^5*e^2 - 80*b^7*c^4*d^4*e^3 + 50*b^8*c^3
```

```
*d^3*e^4 + 5*b^9*c^2*d^2*e^5 + 5*c^2*d^2*e^5*(-(4*a*c - b^2)^9)^(1/2) + 27*
a*b^9*c*e^7 + 9*a*c*e^7*(-(4*a*c - b^2)^9)^(1/2) - 5*b^10*c*d*e^6 - 5*b*c*d
*e^6*(-(4*a*c - b^2)^9)^(1/2) + 1536*a^2*b^2*c^7*d^5*e^2 - 3840*a^2*b^3*c^6
*d^4*e^3 + 960*a^2*b^4*c^5*d^3*e^4 + 2400*a^2*b^5*c^4*d^2*e^5 + 2560*a^3*b^
2*c^6*d^3*e^4 - 8960*a^3*b^3*c^5*d^2*e^5 + 90*a*b^8*c^2*d*e^6 - 384*a*b^4*c
^6*d^5*e^2 + 960*a*b^5*c^5*d^4*e^3 - 480*a*b^6*c^4*d^3*e^4 - 240*a*b^7*c^3*
d^2*e^5 - 480*a^2*b^6*c^3*d*e^6 + 5120*a^3*b*c^7*d^4*e^3 + 320*a^3*b^4*c^4*
d*e^6 + 11520*a^4*b*c^6*d^2*e^5 + 3840*a^4*b^2*c^5*d*e^6)/(128*(b^15*d^3*e^
3 - 4096*a^6*c^9*d^6 - 4096*a^9*c^6*e^6 - b^12*c^3*d^6 - a^3*b^12*e^6 + 24*
a*b^10*c^4*d^6 + 24*a^4*b^10*c*e^6 - 3*a*b^14*d^2*e^4 + 3*a^2*b^13*d*e^5 +
3*b^13*c^2*d^5*e - 3*b^14*c*d^4*e^2 - 240*a^2*b^8*c^5*d^6 + 1280*a^3*b^6*c^
6*d^6 - 3840*a^4*b^4*c^7*d^6 + 6144*a^5*b^2*c^8*d^6 - 240*a^5*b^8*c^2*e^6 +
 1280*a^6*b^6*c^3*e^6 - 3840*a^7*b^4*c^4*e^6 + 6144*a^8*b^2*c^5*e^6 - 12288
*a^7*c^8*d^4*e^2 - 12288*a^8*c^7*d^2*e^4 - 648*a^2*b^10*c^3*d^4*e^2 + 96*a^
2*b^11*c^2*d^3*e^3 + 3120*a^3*b^8*c^4*d^4*e^2 + 160*a^3*b^9*c^3*d^3*e^3 - 6
48*a^3*b^10*c^2*d^2*e^4 - 7680*a^4*b^6*c^5*d^4*e^2 - 3840*a^4*b^7*c^4*d^3*e
^3 + 3120*a^4*b^8*c^3*d^2*e^4 + 6912*a^5*b^4*c^6*d^4*e^2 + 16896*a^5*b^5*c^
5*d^3*e^3 - 7680*a^5*b^6*c^4*d^2*e^4 + 6144*a^6*b^2*c^7*d^4*e^2 - 32768*a^6
*b^3*c^6*d^3*e^3 + 6912*a^6*b^4*c^5*d^2*e^4 + 6144*a^7*b^2*c^6*d^2*e^4 - 72
*a*b^11*c^3*d^5*e - 18*a*b^13*c*d^3*e^3 - 72*a^3*b^11*c*d*e^5 + 12288*a^6*b
*c^8*d^5*e + 12288*a^8*b*c^6*d*e^5 + 69*a*b^12*c^2*d^4*e^2 + 720*a^2*b^9*c^
4*d^5*e + 69*a^2*b^12*c*d^2*e^4 - 3840*a^3*b^7*c^5*d^5*e + 11520*a^4*b^5*c^
6*d^5*e + 720*a^4*b^9*c^2*d*e^5 - 18432*a^5*b^3*c^7*d^5*e - 3840*a^5*b^7*c^
3*d*e^5 + 11520*a^6*b^5*c^4*d*e^5 + 24576*a^7*b*c^7*d^3*e^3 - 18432*a^7*b^3
*c^5*d*e^5)))^(1/2)*2i
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1627 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=673

$$\frac{e\sqrt{d+ex}\left(cx\left(-2ce(5ae+bd)+3b^2e^2+2c^2d^2\right)+(cd-3be)\left(2ace+b^2(-e)+bcd\right)+5ace(2cd-be)\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{c}\,e\left(-\right.}{}$$

```
[Out] -1/2*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)*(e*x+d)^(1/2)/(-4*a*c+b^2
)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^2+1/4*e*(5*a*c*e*(-b*e+2*c*d)+(-3*b*e+c
*d)*(2*a*c*e-b^2*e+b*c*d)+c*(2*c^2*d^2+3*b^2*e^2-2*c*e*(5*a*e+b*d))*x)*(e*x
+d)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)-1/8*e*arctanh(2^
(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)
*(8*c^3*d^3+3*b^2*e^3*(b+(-4*a*c+b^2)^(1/2))-2*c^2*d*e*(6*b*d-16*a*e-d*(-4*
a*c+b^2)^(1/2))-2*c*e^2*(b^2*d+8*a*b*e+b*d*(-4*a*c+b^2)^(1/2)+5*a*e*(-4*a*c
+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)/(a*e^2-b*d*e+c*d^2)^2*2^(1/2)/(2*c*d-e*(b-
(-4*a*c+b^2)^(1/2)))^(1/2)+1/8*e*arctanh(2^(1/2)*c^(1/2)*(e*x+d)^(1/2)/(2*c
*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2))*c^(1/2)*(8*c^3*d^3+3*b^2*e^3*(b-(-4*a*c
+b^2)^(1/2))-2*c^2*d*e*(6*b*d-16*a*e+d*(-4*a*c+b^2)^(1/2))-2*c*e^2*(b^2*d+8
*a*b*e-b*d*(-4*a*c+b^2)^(1/2)-5*a*e*(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(3/2)
/(a*e^2-b*d*e+c*d^2)^2*2^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))^(1/2)
```

Rubi [A] time = 5.26, antiderivative size = 673, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 28, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {822, 826, 1166, 208}

$$\frac{e\sqrt{d+ex}\left(cx\left(-2ce(5ae+bd)+3b^2e^2+2c^2d^2\right)+(cd-3be)\left(2ace+b^2(-e)+bcd\right)+5ace(2cd-be)\right)}{4\left(b^2-4ac\right)\left(a+bx+cx^2\right)\left(ae^2-bde+cd^2\right)^2}-\frac{\sqrt{c}\,e\left(-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] -(Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(2*(b^2
- 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^2) + (e*Sqrt[d + e*x]*(5
*a*c*e*(2*c*d - b*e) + (c*d - 3*b*e)*(b*c*d - b^2*e + 2*a*c*e) + c*(2*c^2*d
^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e))*x))/(4*(b^2 - 4*a*c)*(c*d^2 - b*d*e +
 a*e^2)^2*(a + b*x + c*x^2)) - (Sqrt[c]*e*(8*c^3*d^3 + 3*b^2*(b + Sqrt[b^2
- 4*a*c])*e^3 - 2*c^2*d*e*(6*b*d - Sqrt[b^2 - 4*a*c]*d - 16*a*e) - 2*c*e^2*
(b^2*d + b*Sqrt[b^2 - 4*a*c]*d + 8*a*b*e + 5*a*Sqrt[b^2 - 4*a*c]*e))*ArcTan
h[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]])
/(4*Sqrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b - Sqrt[b^2 - 4*a*c])*e]*(c*
d^2 - b*d*e + a*e^2)^2) + (Sqrt[c]*e*(8*c^3*d^3 + 3*b^2*(b - Sqrt[b^2 - 4*a
*c])*e^3 - 2*c^2*d*e*(6*b*d + Sqrt[b^2 - 4*a*c]*d - 16*a*e) - 2*c*e^2*(b^2*
d - b*Sqrt[b^2 - 4*a*c]*d + 8*a*b*e - 5*a*Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sq
rt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]])/(4*S
qrt[2]*(b^2 - 4*a*c)^(3/2)*Sqrt[2*c*d - (b + Sqrt[b^2 - 4*a*c])*e]*(c*d^2 -
 b*d*e + a*e^2)^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\,\left(a+bx+cx^2\right)^3}\,dx = -\frac{\sqrt{d+ex}\,\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{\frac{1}{2}(b^2-4ac)e(cd-3be)-\frac{5}{2}c(b^2-4ac}{\sqrt{d+ex}\,(a+bx+cx^2)^2}}{2\left(b^2-4ac\right)(cd^2-bde+}$$

$$= -\frac{\sqrt{d+ex}\,\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\,(5ace(2cd-be)+}{4}$$

$$= -\frac{\sqrt{d+ex}\,\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\,(5ace(2cd-be)+}{4}$$

$$= -\frac{\sqrt{d+ex}\,\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\,(5ace(2cd-be)+}{4}$$

$$= -\frac{\sqrt{d+ex}\,\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} + \frac{e\sqrt{d+ex}\,(5ace(2cd-be)+}{4}$$

Mathematica [A] time = 6.20, size = 1033, normalized size = 1.53

$$-\frac{\sqrt{d+ex}\left(-2ac(2cd-be)+b\left(-eb^2+cdb+2ace\right)+c(b(2cd-be)-2c(bd-2ae))x\right)}{2\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}-\frac{\sqrt{d+ex}\left(\frac{5}{2}ac\left(b^2-4ac\right)(2cd-b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^3),x]
```

```
[Out] -1/2*(Sqrt[d + e*x]*(-2*a*c*(2*c*d - b*e) + b*(b*c*d - b^2*e + 2*a*c*e) + c
*(-2*c*(b*d - 2*a*e) + b*(2*c*d - b*e))*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e +
 a*e^2)*(a + b*x + c*x^2)^2) - (-((Sqrt[d + e*x]*((5*a*c*(b^2 - 4*a*c)*e^2*
(2*c*d - b*e))/2 + ((b^2 - 4*a*c)*e*(c*d - 3*b*e)*(b*c*d - b^2*e + 2*a*c*e)
)/2 + c*((5*c*(b^2 - 4*a*c)*e^2*(b*d - 2*a*e))/2 + ((b^2 - 4*a*c)*e*(c*d -
3*b*e)*(2*c*d - b*e))/2)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*
x + c*x^2))) - (2*((Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]*((c*(b^2 - 4*a*
c)*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e)))/4 - (-1/4*(c*(b^2 - 4
*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e))) + 2
*c*(-1/4*(c*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*e
))) + ((b^2 - 4*a*c)*e^2*(4*c^3*d^3 + 3*b^3*e^3 - c^2*d*e*(5*b*d - 16*a*e)
- b*c*e^2*(2*b*d + 13*a*e)))/4))/(Sqrt[b^2 - 4*a*c]*e))*ArcTanh[(Sqrt[2]*Sq
rt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e - Sqrt[b^2 - 4*a*c]*e]])/(Sqrt[2]*Sqr
t[c]*(-2*c*d + b*e + Sqrt[b^2 - 4*a*c]*e)) + (Sqrt[2*c*d - b*e + Sqrt[b^2 -
 4*a*c]*e]*((c*(b^2 - 4*a*c)*e^2*(2*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(b*d + 5*a*
e)))/4 + (-1/4*(c*(b^2 - 4*a*c)*e^2*(-2*c*d + b*e)*(2*c^2*d^2 + 3*b^2*e^2 -
 2*c*e*(b*d + 5*a*e))) + 2*c*(-1/4*(c*(b^2 - 4*a*c)*d*e^2*(2*c^2*d^2 + 3*b^
2*e^2 - 2*c*e*(b*d + 5*a*e))) + ((b^2 - 4*a*c)*e^2*(4*c^3*d^3 + 3*b^3*e^3 -
 c^2*d*e*(5*b*d - 16*a*e) - b*c*e^2*(2*b*d + 13*a*e)))/4))/(Sqrt[b^2 - 4*a*
c]*e))*ArcTanh[(Sqrt[2]*Sqrt[c]*Sqrt[d + e*x])/Sqrt[2*c*d - b*e + Sqrt[b^2
- 4*a*c]*e]])/(Sqrt[2]*Sqrt[c]*(-2*c*d + b*e - Sqrt[b^2 - 4*a*c]*e))))/((b^
2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)))/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^
2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 10.02, size = 5779, normalized size = 8.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 1/32*((b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2
+ b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a
^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)^2*(2*c^2*d^2*e^2 - 2*b*c*d*e^3 +
(3*b^2 - 10*a*c)*e^4)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2 - 4*a*c)*c)*e) + 2*
(2*sqrt(b^2 - 4*a*c)*c^5*d^7*e^2 - 7*sqrt(b^2 - 4*a*c)*b*c^4*d^6*e^3 + 3*(b
^2*c^3 + 10*a*c^4)*sqrt(b^2 - 4*a*c)*d^5*e^4 + 5*(2*b^3*c^2 - 15*a*b*c^3)*s
```

```
qrt(b^2 - 4*a*c)*d^4*e^5 - (11*b^4*c - 48*a*b^2*c^2 - 54*a^2*c^3)*sqrt(b^2
- 4*a*c)*d^3*e^6 + 3*(b^5 + a*b^3*c - 27*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^2*e
^7 - (6*a*b^4 - 21*a^2*b^2*c - 26*a^3*c^2)*sqrt(b^2 - 4*a*c)*d*e^8 + (3*a^2
*b^3 - 13*a^3*b*c)*sqrt(b^2 - 4*a*c)*e^9)*sqrt(-4*c^2*d + 2*(b*c - sqrt(b^2
 - 4*a*c)*c)*e)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b
*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^
3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5) - (16*(b^2*c^8 - 4*a
*c^9)*d^12*e^2 - 96*(b^3*c^7 - 4*a*b*c^8)*d^11*e^3 + 8*(29*b^4*c^6 - 100*a*
b^2*c^7 - 64*a^2*c^8)*d^10*e^4 - 40*(7*b^5*c^5 - 12*a*b^3*c^6 - 64*a^2*b*c^
7)*d^9*e^5 + (157*b^6*c^4 + 636*a*b^4*c^5 - 4704*a^2*b^2*c^6 - 1408*a^3*c^7
)*d^8*e^6 - 4*(b^7*c^3 + 300*a*b^5*c^4 - 864*a^2*b^3*c^5 - 1408*a^3*b*c^6)*
d^7*e^7 - 14*(3*b^8*c^2 - 50*a*b^6*c^3 + 576*a^3*b^2*c^5 + 128*a^4*c^6)*d^6
*e^8 + 4*(5*b^9*c - 27*a*b^7*c^2 - 336*a^2*b^5*c^3 + 1120*a^3*b^3*c^4 + 134
4*a^4*b*c^5)*d^5*e^9 - (3*b^10 + 40*a*b^8*c - 590*a^2*b^6*c^2 + 120*a^3*b^4
*c^3 + 5360*a^4*b^2*c^4 + 1088*a^5*c^5)*d^4*e^10 + 4*(3*a*b^9 - 7*a^2*b^7*c
 - 164*a^3*b^5*c^2 + 440*a^4*b^3*c^3 + 544*a^5*b*c^4)*d^3*e^11 - 2*(9*a^2*b
^8 - 62*a^3*b^6*c - 60*a^4*b^4*c^2 + 624*a^5*b^2*c^3 + 128*a^6*c^4)*d^2*e^1
2 + 4*(3*a^3*b^7 - 26*a^4*b^5*c + 40*a^5*b^3*c^2 + 64*a^6*b*c^3)*d*e^13 - (
3*a^4*b^6 - 28*a^5*b^4*c + 64*a^6*b^2*c^2)*e^14)*sqrt(-4*c^2*d + 2*(b*c - s
qrt(b^2 - 4*a*c)*c)*e))*arctan(2*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^3*d
^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 1
2*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3
+ 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^
4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5 + sqrt((2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3
*c^2*d^4*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16
*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 +
 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*
b*c*e^5)^2 - 4*(b^2*c^3*d^6 - 4*a*c^4*d^6 - 3*b^3*c^2*d^5*e + 12*a*b*c^3*d^
5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*c^2*d^4*e^2 - 12*a^2*c^3*d^4*e^2 - b^5*d^3*
e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2*b*c^2*d^3*e^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^
2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4 - 3*a^2*b^3*d*e^5 + 12*a^3*b*c*d*e^5 + a^3
*b^2*e^6 - 4*a^4*c*e^6)*(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*
b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a
*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(b^2*c^
3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2
*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^
3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(((b^2*c^5 - 4*a*c^6)*sqrt(b^2 - 4*a*c
)*d^10 - 5*(b^3*c^4 - 4*a*b*c^5)*sqrt(b^2 - 4*a*c)*d^9*e + 5*(2*b^4*c^3 - 7
*a*b^2*c^4 - 4*a^2*c^5)*sqrt(b^2 - 4*a*c)*d^8*e^2 - 10*(b^5*c^2 - 2*a*b^3*c
^3 - 8*a^2*b*c^4)*sqrt(b^2 - 4*a*c)*d^7*e^3 + 5*(b^6*c + 2*a*b^4*c^2 - 22*a
^2*b^2*c^3 - 8*a^3*c^4)*sqrt(b^2 - 4*a*c)*d^6*e^4 - (b^7 + 16*a*b^5*c - 50*
a^2*b^3*c^2 - 120*a^3*b*c^3)*sqrt(b^2 - 4*a*c)*d^5*e^5 + 5*(a*b^6 + 2*a^2*b
^4*c - 22*a^3*b^2*c^2 - 8*a^4*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^6 - 10*(a^2*b^5
 - 2*a^3*b^3*c - 8*a^4*b*c^2)*sqrt(b^2 - 4*a*c)*d^3*e^7 + 5*(2*a^3*b^4 - 7*a
^4*b^2*c - 4*a^5*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^8 - 5*(a^4*b^3 - 4*a^5*b*c)*s
qrt(b^2 - 4*a*c)*d*e^9 + (a^5*b^2 - 4*a^6*c)*sqrt(b^2 - 4*a*c)*e^10)*abs(b^
2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2
*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*
e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)*abs(c)) - 1/32*((b^2*c^2*d^4*e - 4*a*c^3*d
^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^
3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a
^3*c*e^5)^2*(2*c^2*d^2*e^2 - 2*b*c*d*e^3 + (3*b^2 - 10*a*c)*e^4)*sqrt(-4*c^
2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e) - 2*(2*sqrt(b^2 - 4*a*c)*c^5*d^7*e^2
 - 7*sqrt(b^2 - 4*a*c)*b*c^4*d^6*e^3 + 3*(b^2*c^3 + 10*a*c^4)*sqrt(b^2 - 4*
a*c)*d^5*e^4 + 5*(2*b^3*c^2 - 15*a*b*c^3)*sqrt(b^2 - 4*a*c)*d^4*e^5 - (11*b
^4*c - 48*a*b^2*c^2 - 54*a^2*c^3)*sqrt(b^2 - 4*a*c)*d^3*e^6 + 3*(b^5 + a*b^
3*c - 27*a^2*b*c^2)*sqrt(b^2 - 4*a*c)*d^2*e^7 - (6*a*b^4 - 21*a^2*b^2*c - 2
6*a^3*c^2)*sqrt(b^2 - 4*a*c)*d*e^8 + (3*a^2*b^3 - 13*a^3*b*c)*sqrt(b^2 - 4*
a*c)*e^9)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e)*abs(b^2*c^2*d^4*
```

```
e - 4*a*c^3*d^4*e - 2*b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a
*b^2*c*d^2*e^3 - 8*a^2*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*
b^2*e^5 - 4*a^3*c*e^5) - (16*(b^2*c^8 - 4*a*c^9)*d^12*e^2 - 96*(b^3*c^7 - 4
*a*b*c^8)*d^11*e^3 + 8*(29*b^4*c^6 - 100*a*b^2*c^7 - 64*a^2*c^8)*d^10*e^4 -
 40*(7*b^5*c^5 - 12*a*b^3*c^6 - 64*a^2*b*c^7)*d^9*e^5 + (157*b^6*c^4 + 636*
a*b^4*c^5 - 4704*a^2*b^2*c^6 - 1408*a^3*c^7)*d^8*e^6 - 4*(b^7*c^3 + 300*a*b
^5*c^4 - 864*a^2*b^3*c^5 - 1408*a^3*b*c^6)*d^7*e^7 - 14*(3*b^8*c^2 - 50*a*b
^6*c^3 + 576*a^3*b^2*c^5 + 128*a^4*c^6)*d^6*e^8 + 4*(5*b^9*c - 27*a*b^7*c^2
 - 336*a^2*b^5*c^3 + 1120*a^3*b^3*c^4 + 1344*a^4*b*c^5)*d^5*e^9 - (3*b^10 +
 40*a*b^8*c - 590*a^2*b^6*c^2 + 120*a^3*b^4*c^3 + 5360*a^4*b^2*c^4 + 1088*a
^5*c^5)*d^4*e^10 + 4*(3*a*b^9 - 7*a^2*b^7*c - 164*a^3*b^5*c^2 + 440*a^4*b^3
*c^3 + 544*a^5*b*c^4)*d^3*e^11 - 2*(9*a^2*b^8 - 62*a^3*b^6*c - 60*a^4*b^4*c
^2 + 624*a^5*b^2*c^3 + 128*a^6*c^4)*d^2*e^12 + 4*(3*a^3*b^7 - 26*a^4*b^5*c
+ 40*a^5*b^3*c^2 + 64*a^6*b*c^3)*d*e^13 - (3*a^4*b^6 - 28*a^5*b^4*c + 64*a^
6*b^2*c^2)*e^14)*sqrt(-4*c^2*d + 2*(b*c + sqrt(b^2 - 4*a*c)*c)*e))*arctan(2
*sqrt(1/2)*sqrt(x*e + d)/sqrt(-(2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4
*e + 20*a*b*c^3*d^4*e + 4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3
*d^3*e^2 - b^5*d^2*e^3 - 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4
*d*e^4 - 6*a^2*b^2*c*d*e^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5
- sqrt((2*b^2*c^3*d^5 - 8*a*c^4*d^5 - 5*b^3*c^2*d^4*e + 20*a*b*c^3*d^4*e +
4*b^4*c*d^3*e^2 - 12*a*b^2*c^2*d^3*e^2 - 16*a^2*c^3*d^3*e^2 - b^5*d^2*e^3 -
 2*a*b^3*c*d^2*e^3 + 24*a^2*b*c^2*d^2*e^3 + 2*a*b^4*d*e^4 - 6*a^2*b^2*c*d*e
^4 - 8*a^3*c^2*d*e^4 - a^2*b^3*e^5 + 4*a^3*b*c*e^5)^2 - 4*(b^2*c^3*d^6 - 4*
a*c^4*d^6 - 3*b^3*c^2*d^5*e + 12*a*b*c^3*d^5*e + 3*b^4*c*d^4*e^2 - 9*a*b^2*
c^2*d^4*e^2 - 12*a^2*c^3*d^4*e^2 - b^5*d^3*e^3 - 2*a*b^3*c*d^3*e^3 + 24*a^2
*b*c^2*d^3*e^3 + 3*a*b^4*d^2*e^4 - 9*a^2*b^2*c*d^2*e^4 - 12*a^3*c^2*d^2*e^4
 - 3*a^2*b^3*d*e^5 + 12*a^3*b*c*d*e^5 + a^3*b^2*e^6 - 4*a^4*c*e^6)*(b^2*c^3
*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*
a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3
 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^4)))/(b^2*c^3*d^4 - 4*a*c^4*d^4 - 2*b^3*c^2*
d^3*e + 8*a*b*c^3*d^3*e + b^4*c*d^2*e^2 - 2*a*b^2*c^2*d^2*e^2 - 8*a^2*c^3*d
^2*e^2 - 2*a*b^3*c*d*e^3 + 8*a^2*b*c^2*d*e^3 + a^2*b^2*c*e^4 - 4*a^3*c^2*e^
4)))/(((b^2*c^5 - 4*a*c^6)*sqrt(b^2 - 4*a*c)*d^10 - 5*(b^3*c^4 - 4*a*b*c^5)
*sqrt(b^2 - 4*a*c)*d^9*e + 5*(2*b^4*c^3 - 7*a*b^2*c^4 - 4*a^2*c^5)*sqrt(b^2
 - 4*a*c)*d^8*e^2 - 10*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*sqrt(b^2 - 4*a
*c)*d^7*e^3 + 5*(b^6*c + 2*a*b^4*c^2 - 22*a^2*b^2*c^3 - 8*a^3*c^4)*sqrt(b^2
 - 4*a*c)*d^6*e^4 - (b^7 + 16*a*b^5*c - 50*a^2*b^3*c^2 - 120*a^3*b*c^3)*sqr
t(b^2 - 4*a*c)*d^5*e^5 + 5*(a*b^6 + 2*a^2*b^4*c - 22*a^3*b^2*c^2 - 8*a^4*c^
3)*sqrt(b^2 - 4*a*c)*d^4*e^6 - 10*(a^2*b^5 - 2*a^3*b^3*c - 8*a^4*b*c^2)*sqr
t(b^2 - 4*a*c)*d^3*e^7 + 5*(2*a^3*b^4 - 7*a^4*b^2*c - 4*a^5*c^2)*sqrt(b^2 -
 4*a*c)*d^2*e^8 - 5*(a^4*b^3 - 4*a^5*b*c)*sqrt(b^2 - 4*a*c)*d*e^9 + (a^5*b^
2 - 4*a^6*c)*sqrt(b^2 - 4*a*c)*e^10)*abs(b^2*c^2*d^4*e - 4*a*c^3*d^4*e - 2*
b^3*c*d^3*e^2 + 8*a*b*c^2*d^3*e^2 + b^4*d^2*e^3 - 2*a*b^2*c*d^2*e^3 - 8*a^2
*c^2*d^2*e^3 - 2*a*b^3*d*e^4 + 8*a^2*b*c*d*e^4 + a^2*b^2*e^5 - 4*a^3*c*e^5)
*abs(c)) + 1/4*(2*(x*e + d)^(7/2)*c^4*d^2*e^2 - 6*(x*e + d)^(5/2)*c^4*d^3*e
^2 + 6*(x*e + d)^(3/2)*c^4*d^4*e^2 - 2*sqrt(x*e + d)*c^4*d^5*e^2 - 2*(x*e +
 d)^(7/2)*b*c^3*d*e^3 + 9*(x*e + d)^(5/2)*b*c^3*d^2*e^3 - 12*(x*e + d)^(3/2
)*b*c^3*d^3*e^3 + 5*sqrt(x*e + d)*b*c^3*d^4*e^3 + 3*(x*e + d)^(7/2)*b^2*c^2
*e^4 - 10*(x*e + d)^(7/2)*a*c^3*e^4 - 15*(x*e + d)^(5/2)*b^2*c^2*d*e^4 + 42
*(x*e + d)^(5/2)*a*c^3*d*e^4 + 24*(x*e + d)^(3/2)*b^2*c^2*d^2*e^4 - 60*(x*e
 + d)^(3/2)*a*c^3*d^2*e^4 - 14*sqrt(x*e + d)*b^2*c^2*d^3*e^4 + 36*sqrt(x*e
+ d)*a*c^3*d^3*e^4 + 6*(x*e + d)^(5/2)*b^3*c*e^5 - 21*(x*e + d)^(5/2)*a*b*c
^2*e^5 - 18*(x*e + d)^(3/2)*b^3*c*d*e^5 + 60*(x*e + d)^(3/2)*a*b*c^2*d*e^5
+ 16*sqrt(x*e + d)*b^3*c*d^2*e^5 - 54*sqrt(x*e + d)*a*b*c^2*d^2*e^5 + 3*(x*
e + d)^(3/2)*b^4*e^6 - 6*(x*e + d)^(3/2)*a*b^2*c*e^6 - 18*(x*e + d)^(3/2)*a
^2*c^2*e^6 - 5*sqrt(x*e + d)*b^4*d*e^6 + 8*sqrt(x*e + d)*a*b^2*c*d*e^6 + 38
*sqrt(x*e + d)*a^2*c^2*d*e^6 + 5*sqrt(x*e + d)*a*b^3*e^7 - 19*sqrt(x*e + d)
*a^2*b*c*e^7)/((b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e
 + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*
```

```
a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4)*((x*e + d)^2*c - 2*(x*e + d)*c*d
 + c*d^2 + (x*e + d)*b*e - b*d*e + a*e^2)^2)
```

maple [B] time = 0.62, size = 2743, normalized size = 4.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x)
```

```
[Out] e^3*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+
b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+
b^2*e^2)^(1/2)+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*b-2*e^2*c^3/
(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b^2)*e^2
)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+b^2*e^2)
^(1/2)+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*d-5/2*e^2*c^2/(-(4*a
*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b^2)*e^2)^(1/2
))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^2*d^2-b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)
+2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x+d)^(3/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)
-e^3*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c+b
^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*b+2
*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a*c
+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*d
+7/2*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2*b/c*e-1/2/c*((-4*a
*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d+(-4*a*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)
*(-4*a*c*e^2+b^2*e^2)^(1/2)+4*e^3*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/
(8*a*c*e^2-4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8
*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1
/2))*c)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)
^(1/2))*c)^(1/2)*c)*b-8*e^2*c^4/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(8*a*c
*e^2-4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4
*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c
)^(1/2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2)
)*c)^(1/2)*c)*d-10*e^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(8*a*c*e^2-
4*b^2*e^2+8*b*c*d*e-8*c^2*d^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*
e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/
2)*arctanh((e*x+d)^(1/2)*2^(1/2)/((-b*e+2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^
(1/2)*c)*(-4*a*c*e^2+b^2*e^2)^(1/2)-e^3*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c
-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-
2*b*c*d*e+2*c^2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)
^(1/2)*c)*(e*x+d)^(3/2)*b+2*e^2*c^3/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e
*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*
e+2*c^2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c
)*(e*x+d)^(3/2)*d-5/2*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(e*x+1/2
*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-2*a*c*e^2+b^2*e^2-2*b*c*d*e+2*c^
2*d^2+b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-2*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*(e*x
+d)^(3/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)+e^3*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-
b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a*c*e
^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*b-2*e^2*c^2/(-(4*a*c-b^2)*e^2)^(1/2)/(4*a*
c-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a*c
*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*d+7/2*e^2*c/(-(4*a*c-b^2)*e^2)^(1/2)/(4*
a*c-b^2)/(e*x+1/2*b/c*e+1/2/c*((-4*a*c+b^2)*e^2)^(1/2))^2/(-b*e+2*c*d-(-4*a
*c*e^2+b^2*e^2)^(1/2))*(e*x+d)^(1/2)*(-4*a*c*e^2+b^2*e^2)^(1/2)-4*e^3*c^3/(
-(4*a*c-b^2)*e^2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d
^2+4*b*e*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/
2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1
/2)/((b*e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*b+8*e^2*c^4/(-(4*a*c-
b^2)*e^2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d^2+4*b*e
*(-4*a*c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((b*e
-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*
e-2*c*d+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*d-10*e^2*c^3/(-(4*a*c-b^2)*e^
2)^(1/2)/(4*a*c-b^2)/(-8*a*c*e^2+4*b^2*e^2-8*b*c*d*e+8*c^2*d^2+4*b*e*(-4*a*
c*e^2+b^2*e^2)^(1/2)-8*d*(-4*a*c*e^2+b^2*e^2)^(1/2)*c)*2^(1/2)/((b*e-2*c*d+
(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*arctan((e*x+d)^(1/2)*2^(1/2)/((b*e-2*c*d
+(-(4*a*c-b^2)*e^2)^(1/2))*c)^(1/2)*c)*(-4*a*c*e^2+b^2*e^2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^3\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^3/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^3*sqrt(e*x + d)), x)
```

mupad [B] time = 11.82, size = 84064, normalized size = 124.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^3),x)
```

```
[Out] ((3*(d + e*x)^(3/2)*(6*a^2*c^2*e^6 - b^4*e^6 - 2*c^4*d^4*e^2 + 20*a*c^3*d^2
*e^4 + 4*b*c^3*d^3*e^3 - 8*b^2*c^2*d^2*e^4 + 2*a*b^2*c*e^6 + 6*b^3*c*d*e^5
- 20*a*b*c^2*d*e^5))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)^2) - ((d + e*
x)^(1/2)*(5*b^3*e^5 - 2*c^3*d^3*e^2 + 3*b*c^2*d^2*e^3 - 19*a*b*c*e^5 + 38*a
*c^2*d*e^4 - 11*b^2*c*d*e^4))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)) + (
3*(b*e - 2*c*d)*(d + e*x)^(5/2)*(7*a*c^2*e^4 - 2*b^2*c*e^4 - c^3*d^2*e^2 +
b*c^2*d*e^3))/(4*(4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e)^2) + (c*(d + e*x)^(7
/2)*(10*a*c^2*e^4 - 3*b^2*c*e^4 - 2*c^3*d^2*e^2 + 2*b*c^2*d*e^3))/(4*(4*a*c
 - b^2)*(a*e^2 + c*d^2 - b*d*e)^2))/(c^2*(d + e*x)^4 - (d + e*x)*(4*c^2*d^3
 + 2*b^2*d*e^2 - 2*a*b*e^3 + 4*a*c*d*e^2 - 6*b*c*d^2*e) - (4*c^2*d - 2*b*c*
e)*(d + e*x)^3 + (d + e*x)^2*(b^2*e^2 + 6*c^2*d^2 + 2*a*c*e^2 - 6*b*c*d*e)
+ a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e
^2) - atan(((((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c
^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^
5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^
3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 6
40*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2
*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 -
88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^
2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3
*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 +
261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4
 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7
 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^
10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*
d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^
2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*
d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5
+ 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8
- 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^
5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e
^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*
e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^
3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2
*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7
*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a
```

```
*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^
6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c
^2*d*e^7)) - ((d + e*x)^(1/2)*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c -
b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 1
0656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a
^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9
*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3
 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*
c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 +
21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 134
4*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^
6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7
*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^
4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*
c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4
*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896
*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a
*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*
a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 537
60*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*
c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2
*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 +
 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 2
4*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e
+ 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^
4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b
^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*
d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*
e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2
- 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e
^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^
6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*
b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 1
2800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^
5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^
4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 322
56*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e
^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*
c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680
*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^
8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4
*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 6144
0*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e
^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5
+ 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 -
235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1
200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 22
0*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 3
0720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 +
 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^
9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^
6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11
 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 +
49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b
^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*
d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^
8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^
2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 +
384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6
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*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6
*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 1024
0*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^
9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*
d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5
*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*
d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c
^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5
*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(
16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 -
 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*
b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 +
96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^
4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c
^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4
*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a
^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c
*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3
*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*
a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 -
 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c -
b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c
^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4
+ 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d
^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536
*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4
+ 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d
^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b
^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14
*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^
9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) -
 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1
120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 541
8*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44
800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 -
 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70
*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)
^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 +
b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*
a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 2
40*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*
a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9
*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*
d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^
4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3
+ 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*
d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b
^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490
*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e
^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c
^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*
a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5
 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2
*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a
^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 -
 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*
d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a
^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6
+ 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6
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*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9
 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2
 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e
- 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 -
 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e
 - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^
9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^
3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*e^10
 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^
6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^
7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 -
496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*
c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d
^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*
a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*
a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e
^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e
^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*
e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*
b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*
e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 -
 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)
^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656
*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c
^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5
*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 9
8*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*
d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b
^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^
2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 -
1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4
*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^
3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^
9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c
 - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b
^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9
*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*
b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a
^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c -
b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e
^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 409
6*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^
6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*
b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^
4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c
^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*
e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4
+ 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10
*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 +
 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^
8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11
*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800
*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^
5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^
8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a
^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 +
 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*
d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6
*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 +
61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6
*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^
8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 +
 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 12
0*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*
a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*
a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^
3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720
*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 640
0*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 -
81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*1i - (((106496*a
^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*
c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*
d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7
*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 70
4*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 2150
4*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e
^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c
^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 5913
6*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*
e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e
^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*
e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^
6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4
*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a
^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12
*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b
^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 -
6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4
*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5
*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d
^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4
*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*
c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7
 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*
a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b
*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)
^(1/2)*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a
^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 -
30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b
^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^
8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 +
 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^
4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*
a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 +
 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^
2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^
4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*
b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9
)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) -
384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 11
20*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418
*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 448
00*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 -
107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*
b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^
9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b
^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a
*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 24
0*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a
^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*
b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d
^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4
*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 +
 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d
^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^
9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*
a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^
3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^
3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a
^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5
- 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*
d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^
6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 -
12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d
^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^
7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 +
 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*
d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9
- 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2
+ 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e -
 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 -
19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e
- 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9
 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3
*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c
^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^1
1 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 +
 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b
^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d
^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b
^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 103
68*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9
 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^
6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3
*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 -
 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d
^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^
7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c
^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c
^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b
^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152
*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^
4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^
5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c
*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64
*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*
c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3
*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*
e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b
^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^
4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7
*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*
e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9
+ 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^
3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7
*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 -
70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^
9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 -
5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4
*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c
^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*
a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c
^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2
+ 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 +
 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7
168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 +
 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e
^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c
 - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^
12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^
5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*
b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1
280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240
*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^
10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^1
0*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*
d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8
*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*
c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^
3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 +
 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*
d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b
^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 7
1680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^
4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^
2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 35
84*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*
e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^
3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32
000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3
*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c
^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9
*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e
^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6
 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*
e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e
^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^
5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c
^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 3
2*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 -
12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*
d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 1
72*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^
2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*
b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c
^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^
4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6
*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^
4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*
e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*
c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*
e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)
))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b
*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 3024
0*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^
9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^
3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*
b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^
5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*
b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 100
80*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^
7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^
6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*
c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1
/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*
a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a
*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2
*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a
^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 1075
20*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^
3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(
1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*
c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^1
6*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^
2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b
^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*
c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e
^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6
 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 228
0*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e
^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^
5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*
b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 -
16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^
4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b
^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16
800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*
e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^
4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 1280
0*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e
^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^
5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 819
20*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*
e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20
480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 22
0*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*
a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 1920
0*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 12
00*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 1
22880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7
 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*1i)/((((106496*a^6*c^7*d*e^10 - 53248*a
^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^
5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^
9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*
e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 19
2*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 +
 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*
d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3
*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 +
 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*
e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*
e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^
2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c
^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^
```

```
5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^
8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5
*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*
d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256
*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^
6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d
^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^
3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*
c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*
c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7
+ 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*
a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*
b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) - ((d + e*x)^(1/2)*((53760*a^6*c^7*
d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e
^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 +
 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3
*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*
d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 7
0*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9
)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5
376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*
e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^
8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a
^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*
c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^
2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 +
 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 +
1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 71
68*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 +
78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^
8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c
- b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^1
2*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5
*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b
^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 12
80*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*
a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^1
0*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10
*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d
^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*
e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c
^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3
*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 +
32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d
^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^
11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71
680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4
*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2
*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 358
4*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e
^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3
*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 320
00*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*
e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^
5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*
e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^
3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6
+ 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e
 - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^
9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5
*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^
5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^
2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e
^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8
- 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^
9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c
^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*
a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7
+ 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^
7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b
^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 1105
92*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*
e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*
c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6
*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*
c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^
8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*
a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10
240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8
+ b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d
^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^
2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^
6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^
4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b
^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*
e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b
^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*
c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4
*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*
e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9
 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*
a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*
d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 1
4*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c
*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^
3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5
*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*
b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 4
4800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51
*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e
^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^
3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6
 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 -
 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^
8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*
(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*
a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11
*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d
^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4
*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 +
3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 128
0*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^
2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c
^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d
^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^
4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3
*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 28
00*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*
```

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e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9
*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240
*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^
4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^
3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a
^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5
+ 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3
*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*
a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8
 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^
5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d
^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d
*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*
e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9
*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*
e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^
7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c
^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d
 + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^
4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*
a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^
3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 59
2*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8
 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2
*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*
e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*
c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d
^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*
d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 -
 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^
3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5
*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^
8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 -
 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 448
00*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^1
0*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*
e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^
10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1
/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*
a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5
- 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^
5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b
^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c -
b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*
e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 134
4*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260
*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a
^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 7840
0*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 +
154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^
2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^
10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5
 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*
d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a
^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*
b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^
2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8
*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e
^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2
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- 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d
^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^1
0*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 3200
0*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e
^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c
^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*
a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6
 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9
*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^
6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 -
 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7
*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a
^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7
- 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^
9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e -
20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 -
90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 64
00*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 2
35*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 -
81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5
 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*
e^9)))^(1/2) - (1000*a^2*c^7*e^10 + 63*b^4*c^5*e^10 - 32*c^9*d^4*e^6 - 510*
a*b^2*c^6*e^10 - 40*a*c^8*d^2*e^8 + 64*b*c^8*d^3*e^7 + 6*b^3*c^6*d*e^9 - 38
*b^2*c^7*d^2*e^8 + 40*a*b*c^7*d*e^9)/(32*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64
*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c
*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^
3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c
^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2
- 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4
 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*
e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^
3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^
7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a
*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^
7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*
d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*
c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4
*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5
*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 -
 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^1
1*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 1382
4*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e
^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*
c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 3072
0*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10
+ 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 +
 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9
 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*
e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c
^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 6
4*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*
c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e
^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*
c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2
 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^
4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4
*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d
^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d
^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*
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a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b
^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4
*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)^(1/2)*((53760*a^6*c^7*d*e^8
 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 -
2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 4480
0*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10
*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e
^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^1
0*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/
2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a
^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 -
 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5
*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^
5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b
^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e
^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344
*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*
a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^
3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400
*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 1
54*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2
)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^1
0 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5
 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d
*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^
3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b
^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2
*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*
e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^
8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 -
 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^
5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10
*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000
*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^
4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^
2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a
^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6
+ 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*
d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6
*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 -
11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*
d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^
7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 -
 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9
*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 2
0480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 9
0*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 640
0*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 23
5*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 8
1920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5
- 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e
^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^1
1 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 +
32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128
*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4
*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^
9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b
^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 153
6*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4
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 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^
5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^
4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 +
 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d
^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*
d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d
^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2
*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b
*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a
^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4
*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^
5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6
 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2
*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2
*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^
2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 3
2*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^
2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2
*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c
 - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 +
 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25
*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c
^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e
^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^1
1*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9
 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1
344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*
e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c
^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*
a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^
2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-
(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 8
96*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98
*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 2822
4*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 5
3760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c
^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*
e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*
a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8
*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^1
5*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^
6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^
2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7
*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*
c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^
3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*
d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*
b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 3
2256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3
*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^
3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 716
80*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*
e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b
^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61
440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2
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*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^
5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9
- 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 -
 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e +
220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 +
 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3
 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*
e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*
x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4
*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b
^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7
 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2
*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16
*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^
8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 +
 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d
^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^
3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e
^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a
^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6
*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3
- 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*((53760*a^6*c^7*d*e^8 - 9
*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 26880*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077
*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9 - 30240*a^4*b^5*c^4*e^9 + 44800*a^
5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7
*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 -
 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^
3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) +
 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 1536*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b
^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^4 + 10080*a^2*b^5*c^6*d^4*e^5 - 784
0*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4
 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^
5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^
9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 +
 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b
^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 - 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^
8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*
c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 + 44800*a^4*b*c^8*d^4*e^5 + 78400*a^4
*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7 - 107520*a^5*b^2*c^6*d*e^8 + 154*a
*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)
^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 +
4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24
*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9
 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^
6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c
^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5
*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2
+ 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 +
10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 192
0*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^
5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4
*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4
*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 +
14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^
3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b
^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 80
00*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*
e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5
*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 1160
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0*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*
e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^
6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 422
40*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e +
 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480
*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*
b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^
3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^
4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920
*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19
200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9))
)^(1/2)))*((53760*a^6*c^7*d*e^8 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) - 2688
0*a^6*b*c^6*e^9 - 9*b^13*e^9 - 2077*a^2*b^9*c^2*e^9 + 10656*a^3*b^7*c^3*e^9
 - 30240*a^4*b^5*c^4*e^9 + 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c
 - b^2)^9)^(1/2) - 2048*a^3*c^10*d^7*e^2 - 17920*a^4*c^9*d^5*e^4 - 35840*a^5
*c^8*d^3*e^6 + 32*b^6*c^7*d^7*e^2 - 112*b^7*c^6*d^6*e^3 + 98*b^8*c^5*d^5*e^
4 + 35*b^9*c^4*d^4*e^5 - 70*b^10*c^3*d^3*e^6 + 14*b^11*c^2*d^2*e^7 + 35*c^4
*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) + 213*a*b^11*c*e^9 + 21*b^12*c*d*e^8 + 15
36*a^2*b^2*c^9*d^7*e^2 - 5376*a^2*b^3*c^8*d^6*e^3 + 1344*a^2*b^4*c^7*d^5*e^
4 + 10080*a^2*b^5*c^6*d^4*e^5 - 7840*a^2*b^6*c^5*d^3*e^6 - 1008*a^2*b^7*c^4
*d^2*e^7 + 7168*a^3*b^2*c^8*d^5*e^4 - 35840*a^3*b^3*c^7*d^4*e^5 + 17920*a^3
*b^4*c^6*d^3*e^6 + 12544*a^3*b^5*c^5*d^2*e^7 - 44800*a^4*b^3*c^6*d^2*e^7 +
 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2
)^9)^(1/2) - 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2)
 - 384*a*b^4*c^8*d^7*e^2 + 1344*a*b^5*c^7*d^6*e^3 - 896*a*b^6*c^6*d^5*e^4 -
 1120*a*b^7*c^5*d^4*e^5 + 1260*a*b^8*c^4*d^3*e^6 - 98*a*b^9*c^3*d^2*e^7 + 5
418*a^2*b^8*c^3*d*e^8 + 7168*a^3*b*c^9*d^6*e^3 - 28224*a^3*b^6*c^4*d*e^8 +
44800*a^4*b*c^8*d^4*e^5 + 78400*a^4*b^4*c^5*d*e^8 + 53760*a^5*b*c^7*d^2*e^7
 - 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) -
70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^
2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10
 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 +
5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 +
 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 614
4*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a
^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^1
4*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*
d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^
3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^
3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3
*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 4
90*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7
*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10
*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 1536
0*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e
^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c
^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440
*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6
 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^
8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360
*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^
6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c
^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e
^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e
^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*
e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7
 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9
*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*
e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*
```

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d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*2i - atan(((((106496*a^6*c^7*d*e
^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 -
 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 +
122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448
*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3
*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*
c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200
*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6
 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*
c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*
a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a
*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112
*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32
896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^1
0 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8
 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5
*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7
*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*
d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 -
 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*
a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 4
40*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 +
 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^
6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6
*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^
5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e
^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) - ((d + e*x)^(1/2)*(-(
9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 537
60*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4
*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1
/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6
 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c
^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(
4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c
^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^
2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7
168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3
*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d
^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) +
 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4
*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*
c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*
c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*
c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^
5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3
*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))
/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d
^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4
*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8
*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^
10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e
^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 +
20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20
480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2
*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 +
210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7
*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*
c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800
*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6
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 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^
7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a
^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 +
 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7
*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6
*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 +
102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5
*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^
8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 +
 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a
^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b
^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b
^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4
*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^
6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880
*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30
720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 +
 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*
a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^
6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^
7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 -
6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^
7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^
7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*
a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6
 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*
d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^
4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 +
12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3
 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^
6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^
3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*
e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^
6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 1
6*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e
^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3
 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*
d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e
^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*
e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*
a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^
6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3
 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^
9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 20
77*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*
a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d
^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2
 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*
c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2)
 - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2
*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7
840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e
^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*
c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2
)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8
 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a
*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*
b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*
b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a
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^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154
*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^
9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10
+ 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 -
24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e
^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*
b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8
*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c
^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^
2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8
+ 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1
920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*
e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c
^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a
^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4
+ 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*
d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5
*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 +
8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^
8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b
^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11
600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^
5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*
b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 4
2240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e
 + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 204
80*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*
a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*
a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*
a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 819
20*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 -
19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9
)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^
6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c
^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6
+ 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3
*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^
8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*
d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e
 - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^
4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 3
2*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 +
32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*
b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^
7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 19
2*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*
b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760
*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b
^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2
) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 -
 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4
*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*
a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9
*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*
b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 716
8*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e
^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2
*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 5
32*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c
```

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^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^
5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^
3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^
8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*
b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e
^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(
128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^1
0 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e
^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c
^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10
*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^1
0 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20
480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 2048
0*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b
^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 21
0*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e
^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^
2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a
^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 -
 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*
d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5
*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 1
0240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d
^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b
^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 10
2400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d
^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*
b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 1
20*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6
*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^1
3*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^1
4*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b
^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*
b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a
^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 3072
0*a^9*b^3*c^5*d*e^9)))^(1/2)*1i - (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^
6*e^11 - 192*a^2*b^9*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e
^11 + 52224*a^5*b^3*c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e
^6 + 221184*a^5*c^8*d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 1
92*b^8*c^5*d^5*e^6 - 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*
c^2*d^2*e^9 - 6144*a^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*
a^2*b^4*c^7*d^5*e^6 - 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8
 - 1728*a^2*b^7*c^4*d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^
7*d^4*e^7 - 151040*a^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*
a^4*b^2*c^7*d^3*e^8 + 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 +
1536*a*b^4*c^8*d^7*e^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 1
2480*a*b^7*c^5*d^4*e^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 -
 5952*a^2*b^8*c^3*d*e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^
10 - 307200*a^4*b*c^8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7
*d^2*e^9 + 6144*a^5*b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*
a^7*c^3*e^8 - b^6*c^4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*
e^8 + 4*a*b^9*d^3*e^5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3
 - 48*a^2*b^2*c^6*d^8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^
6*d^6*e^2 + 384*a^5*c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 -
 240*a^2*b^4*c^4*d^6*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4
+ 192*a^3*b^2*c^5*d^6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e
^4 + 48*a^3*b^5*c^2*d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3
*e^5 - 240*a^4*b^4*c^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7
*e - 256*a^3*b*c^6*d^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*
```

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b^6*c^3*d^6*e^2 - 36*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7
*c*d^3*e^5 + 68*a^3*b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d
^3*e^5 + 192*a^5*b^3*c^2*d*e^7)) + ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e
^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2
077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800
*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*
d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^
2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10
*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2
) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^
2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 +
7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*
e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5
*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^
2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^
8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*
a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a
*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3
*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*
a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 15
4*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)
^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10
 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 -
 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*
e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3
*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^
8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*
c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e
^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8
 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 -
1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5
*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*
c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*
a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4
 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2
*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^
5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 +
 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d
^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*
b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 1
1600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d
^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7
*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 -
42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*
e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20
480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90
*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400
*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235
*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81
920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 -
 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^
9)))^(1/2)*(8192*a^7*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11
 - 768*a^5*b^5*c^3*e^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 3
2768*a^4*c^9*d^7*e^4 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*
b^6*c^7*d^9*e^2 + 576*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*
d^6*e^5 - 384*b^10*c^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9
*e^2 + 27648*a^2*b^3*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^
5*c^6*d^6*e^5 + 8448*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536
*a^2*b^8*c^3*d^3*e^8 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4
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+ 28672*a^3*b^3*c^7*d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5
*d^4*e^7 + 5632*a^3*b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4
*b^2*c^7*d^5*e^6 + 10240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 +
9216*a^4*b^5*c^4*d^2*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^
2*e^9 + 1536*a*b^4*c^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d
^7*e^4 - 8960*a*b^7*c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^
4*e^7 - 256*a*b^10*c^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*
d*e^10 - 114688*a^4*b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*
c^7*d^4*e^7 - 10752*a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^
6*b^2*c^5*d*e^10))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*
c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5
 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6
+ 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*
d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*
d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2
*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32
*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2
*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*
e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)
^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 -
 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25
*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c
^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e
^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^1
1*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9
- 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1
344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*
e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c
^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*
a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^
2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-
(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 8
96*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98
*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 2822
4*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 5
3760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*
a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c
^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*
e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*
a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8
*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^1
5*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^
6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^
2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7
*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*
c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^
3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*
d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*
b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 3
2256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3
*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^
3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 716
80*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*
e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b
^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61
440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2
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*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^
5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9
- 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 -
 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e +
220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 +
 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3
 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*
e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*
x)^(1/2)*(9*b^6*c^3*e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4
*e^10 + 248*a*c^8*d^4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b
^2*c^5*e^10 + 592*a^2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7
 - 26*b^4*c^5*d^2*e^8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2
*b*c^6*d*e^9 + 76*a*b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16
*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^
8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 +
 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d
^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^
3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e
^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a
^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6
*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3
- 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9
*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 207
7*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a
^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^
7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2
+ 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c
^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2)
- 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*
b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 78
40*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^
4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c
^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)
^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8
+ 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*
b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b
^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b
*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^
4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*
a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9
)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 +
 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 2
4*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^
9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b
^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*
c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^
5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2
 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 +
 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 19
20*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e
^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^
4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^
4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 +
 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d
^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*
b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8
000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8
*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^
5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 116
```

```
00*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5
*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b
^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42
240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e
+ 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 2048
0*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a
*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a
^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a
^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 8192
0*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 1
9200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)
))^(1/2)*1i)/((((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9
*c^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*
c^5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*
d^3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 -
 640*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a
^2*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6
- 88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*
d^2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a
^3*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8
+ 261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e
^4 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e
^7 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*
e^10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^
8*d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*
b^2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^
4*d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^
5 + 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^
8 - 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*
c^5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6
*e^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^
6*e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*
d^3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c
^2*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d
^7*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36
*a*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*
b^6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3
*c^2*d*e^7)) - ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9
)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9
- 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 2
5*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*
c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*
e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^
11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9
 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 -
1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3
*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*
c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800
*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b
^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(
-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 +
896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 9
8*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 282
24*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 -
53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4
*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*
c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^1
0 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10
- 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9
*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840
*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^
8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^
15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d
^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e
^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^
7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8
*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a
^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2
- 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4
*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5
*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 -
32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^
3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b
^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71
680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2
*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*
b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 6
1440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^
2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e
^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9
 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4
- 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e +
 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8
+ 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^
3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d
*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7
*c^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e
^11 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4
 + 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 57
6*b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c
^3*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3
*c^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448
*a^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8
 + 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*
d^6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*
b^6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 1
0240*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2
*e^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c
^8*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*
c^5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c
^2*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*
b*c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*
a^5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(
8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^
4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 -
 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2
 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2
*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^
2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*
c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 6
4*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^
5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*
d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b
*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e
^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*
c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a
^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*
e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c
```

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^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 -
1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*
e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c
^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a
^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7
+ 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b
^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/
2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4
 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 -
 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8
- 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e
^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2)
- 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c -
b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^1
0 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10
+ 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4
 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6
144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840
*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b
^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^
8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*
e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*
c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a
^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 +
 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d
^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^
10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15
360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5
*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10
*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 1254
40*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e
^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*
c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 153
60*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*
e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2
*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d
*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8
*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^
9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e
^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d
^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*
d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^
7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - ((d + e*x)^(1/2)*(9*b^6*c^3*
e^10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^
4*e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^
2*c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^
8 - 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*
b^2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c
^4*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5
- 4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 +
 64*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d
^6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d
^4*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*
d^2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*
a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*
d^5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e
^6 - 192*a^4*b*c^3*d^3*e^5))))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^
(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 -
10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*
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a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^
9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^
3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11
*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 -
 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 13
44*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e
^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^
7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a
^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2
*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(
4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 89
6*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*
a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224
*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53
760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^
2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
+ 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e
 + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a
^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*
b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15
*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6
*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2
 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*
e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c
^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3
*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d
^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b
^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32
256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*
e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3
*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 7168
0*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e
^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^
4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 614
40*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*
e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5
 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 -
 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 -
1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 2
20*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 +
30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3
+ 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e
^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) - (1000*a^2
*c^7*e^10 + 63*b^4*c^5*e^10 - 32*c^9*d^4*e^6 - 510*a*b^2*c^6*e^10 - 40*a*c^
8*d^2*e^8 + 64*b*c^8*d^3*e^7 + 6*b^3*c^6*d*e^9 - 38*b^2*c^7*d^2*e^8 + 40*a*
b*c^7*d*e^9)/(32*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*d
^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5 +
 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8 -
 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^5
*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e^
2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*e
^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^3
*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2*
d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7*
e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a*
b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^6
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*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c^
2*d*e^7)) + (((106496*a^6*c^7*d*e^10 - 53248*a^6*b*c^6*e^11 - 192*a^2*b^9*c
^2*e^11 + 3136*a^3*b^7*c^3*e^11 - 19200*a^4*b^5*c^4*e^11 + 52224*a^5*b^3*c^
5*e^11 + 8192*a^3*c^10*d^7*e^4 + 122880*a^4*c^9*d^5*e^6 + 221184*a^5*c^8*d^
3*e^8 - 128*b^6*c^7*d^7*e^4 + 448*b^7*c^6*d^6*e^5 - 192*b^8*c^5*d^5*e^6 - 6
40*b^9*c^4*d^4*e^7 + 704*b^10*c^3*d^3*e^8 - 192*b^11*c^2*d^2*e^9 - 6144*a^2
*b^2*c^9*d^7*e^4 + 21504*a^2*b^3*c^8*d^6*e^5 + 13824*a^2*b^4*c^7*d^5*e^6 -
88320*a^2*b^5*c^6*d^4*e^7 + 67200*a^2*b^6*c^5*d^3*e^8 - 1728*a^2*b^7*c^4*d^
2*e^9 - 79872*a^3*b^2*c^8*d^5*e^6 + 271360*a^3*b^3*c^7*d^4*e^7 - 151040*a^3
*b^4*c^6*d^3*e^8 - 59136*a^3*b^5*c^5*d^2*e^9 + 30720*a^4*b^2*c^7*d^3*e^8 +
261120*a^4*b^3*c^6*d^2*e^9 + 384*a*b^10*c^2*d*e^10 + 1536*a*b^4*c^8*d^7*e^4
 - 5376*a*b^5*c^7*d^6*e^5 + 384*a*b^6*c^6*d^5*e^6 + 12480*a*b^7*c^5*d^4*e^7
 - 11520*a*b^8*c^4*d^3*e^8 + 2112*a*b^9*c^3*d^2*e^9 - 5952*a^2*b^8*c^3*d*e^
10 - 28672*a^3*b*c^9*d^6*e^5 + 32896*a^3*b^6*c^4*d*e^10 - 307200*a^4*b*c^8*
d^4*e^7 - 69120*a^4*b^4*c^5*d*e^10 - 331776*a^5*b*c^7*d^2*e^9 + 6144*a^5*b^
2*c^6*d*e^10)/(64*(64*a^3*c^7*d^8 - a^4*b^6*e^8 + 64*a^7*c^3*e^8 - b^6*c^4*
d^8 - b^10*d^4*e^4 + 12*a*b^4*c^5*d^8 + 12*a^5*b^4*c*e^8 + 4*a*b^9*d^3*e^5
+ 4*a^3*b^7*d*e^7 + 4*b^7*c^3*d^7*e + 4*b^9*c*d^5*e^3 - 48*a^2*b^2*c^6*d^8
- 48*a^6*b^2*c^2*e^8 - 6*a^2*b^8*d^2*e^6 + 256*a^4*c^6*d^6*e^2 + 384*a^5*c^
5*d^4*e^4 + 256*a^6*c^4*d^2*e^6 - 6*b^8*c^2*d^6*e^2 - 240*a^2*b^4*c^4*d^6*e
^2 + 48*a^2*b^5*c^3*d^5*e^3 + 90*a^2*b^6*c^2*d^4*e^4 + 192*a^3*b^2*c^5*d^6*
e^2 + 320*a^3*b^3*c^4*d^5*e^3 - 440*a^3*b^4*c^3*d^4*e^4 + 48*a^3*b^5*c^2*d^
3*e^5 + 480*a^4*b^2*c^4*d^4*e^4 + 320*a^4*b^3*c^3*d^3*e^5 - 240*a^4*b^4*c^2
*d^2*e^6 + 192*a^5*b^2*c^3*d^2*e^6 - 48*a*b^5*c^4*d^7*e - 256*a^3*b*c^6*d^7
*e - 48*a^4*b^5*c*d*e^7 - 256*a^6*b*c^3*d*e^7 + 68*a*b^6*c^3*d^6*e^2 - 36*a
*b^7*c^2*d^5*e^3 + 192*a^2*b^3*c^5*d^7*e - 36*a^2*b^7*c*d^3*e^5 + 68*a^3*b^
6*c*d^2*e^6 - 768*a^4*b*c^5*d^5*e^3 - 768*a^5*b*c^4*d^3*e^5 + 192*a^5*b^3*c
^2*d*e^7)) + ((d + e*x)^(1/2)*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^
(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 -
10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*
a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^
9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^
3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11
*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 -
 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 13
44*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e
^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^
7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a
^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2
*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(
4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 89
6*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*
a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224
*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53
760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a
*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^
2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10
+ 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 -
24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e
 + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a
^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*
b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15
*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6
*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2
 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*
e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c
^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3
*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 -
12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d
^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b
^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32
256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*
e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3
*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 7168
0*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e
^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^
4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 614
40*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*
e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5
 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 -
 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 -
1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 2
20*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 +
30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3
+ 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e
^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)*(8192*a^7*c
^6*d*e^10 - 4096*a^7*b*c^5*e^11 + 64*a^4*b^7*c^2*e^11 - 768*a^5*b^5*c^3*e^1
1 + 3072*a^6*b^3*c^4*e^11 + 8192*a^3*c^10*d^9*e^2 + 32768*a^4*c^9*d^7*e^4 +
 49152*a^5*c^8*d^5*e^6 + 32768*a^6*c^7*d^3*e^8 - 128*b^6*c^7*d^9*e^2 + 576*
b^7*c^6*d^8*e^3 - 1024*b^8*c^5*d^7*e^4 + 896*b^9*c^4*d^6*e^5 - 384*b^10*c^3
*d^5*e^6 + 64*b^11*c^2*d^4*e^7 - 6144*a^2*b^2*c^9*d^9*e^2 + 27648*a^2*b^3*c
^8*d^8*e^3 - 43008*a^2*b^4*c^7*d^7*e^4 + 21504*a^2*b^5*c^6*d^6*e^5 + 8448*a
^2*b^6*c^5*d^5*e^6 - 10368*a^2*b^7*c^4*d^4*e^7 + 1536*a^2*b^8*c^3*d^3*e^8 +
 384*a^2*b^9*c^2*d^2*e^9 + 40960*a^3*b^2*c^8*d^7*e^4 + 28672*a^3*b^3*c^7*d^
6*e^5 - 76800*a^3*b^4*c^6*d^5*e^6 + 34304*a^3*b^5*c^5*d^4*e^7 + 5632*a^3*b^
6*c^4*d^3*e^8 - 3840*a^3*b^7*c^3*d^2*e^9 + 110592*a^4*b^2*c^7*d^5*e^6 + 102
40*a^4*b^3*c^6*d^4*e^7 - 51200*a^4*b^4*c^5*d^3*e^8 + 9216*a^4*b^5*c^4*d^2*e
^9 + 73728*a^5*b^2*c^6*d^3*e^8 + 12288*a^5*b^3*c^5*d^2*e^9 + 1536*a*b^4*c^8
*d^9*e^2 - 6912*a*b^5*c^7*d^8*e^3 + 11776*a*b^6*c^6*d^7*e^4 - 8960*a*b^7*c^
5*d^6*e^5 + 2304*a*b^8*c^4*d^5*e^6 + 512*a*b^9*c^3*d^4*e^7 - 256*a*b^10*c^2
*d^3*e^8 - 36864*a^3*b*c^9*d^8*e^3 - 256*a^3*b^8*c^2*d*e^10 - 114688*a^4*b*
c^8*d^6*e^5 + 2944*a^4*b^6*c^3*d*e^10 - 122880*a^5*b*c^7*d^4*e^7 - 10752*a^
5*b^4*c^4*d*e^10 - 49152*a^6*b*c^6*d^2*e^9 + 10240*a^6*b^2*c^5*d*e^10))/(8*
(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4*d^8 + b^8*d^4*e^4
- 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 - 4*a^3*b^5*d*e^7 - 4
*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 64*a^3*c^5*d^6*e^2 +
 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6*e^2 + 64*a^2*b^2*c
^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*
c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^2*e^6 + 32*a*b^3*c^
4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^4*b^3*c*d*e^7 - 64*
a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^5*e^3 + 20*a^2*b^5*
c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6 - 192*a^4*b*c^3*d^
3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c
^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9
 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c
- b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5
*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^
4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4
*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 15
36*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^
4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4
*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3
*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 +
14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2
)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2)
 + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 +
 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5
418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 -
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44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7
 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) -
70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^
2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10
+ b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 +
5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 +
 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 614
4*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a
^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^1
4*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*
d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^
3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^
3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3
*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 4
90*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7
*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10
*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 1536
0*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e
^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c
^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440
*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6
 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^
8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360
*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^
6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c
^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e
^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e
^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*
e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7
 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9
*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*
e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*
d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2) + ((d + e*x)^(1/2)*(9*b^6*c^3*e^
10 - 200*a^3*c^6*e^10 + 32*c^9*d^6*e^4 - 96*a*b^4*c^4*e^10 + 248*a*c^8*d^4*
e^6 - 96*b*c^8*d^5*e^5 - 12*b^5*c^4*d*e^9 + 298*a^2*b^2*c^5*e^10 + 592*a^2*
c^7*d^2*e^8 + 58*b^2*c^7*d^4*e^6 + 44*b^3*c^6*d^3*e^7 - 26*b^4*c^5*d^2*e^8
- 496*a*b*c^7*d^3*e^7 + 172*a*b^3*c^5*d*e^9 - 592*a^2*b*c^6*d*e^9 + 76*a*b^
2*c^6*d^2*e^8))/(8*(16*a^2*c^6*d^8 + a^4*b^4*e^8 + 16*a^6*c^2*e^8 + b^4*c^4
*d^8 + b^8*d^4*e^4 - 8*a*b^2*c^5*d^8 - 8*a^5*b^2*c*e^8 - 4*a*b^7*d^3*e^5 -
4*a^3*b^5*d*e^7 - 4*b^5*c^3*d^7*e - 4*b^7*c*d^5*e^3 + 6*a^2*b^6*d^2*e^6 + 6
4*a^3*c^5*d^6*e^2 + 96*a^4*c^4*d^4*e^4 + 64*a^5*c^3*d^2*e^6 + 6*b^6*c^2*d^6
*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 32*a^2*b^3*c^3*d^5*e^3 - 74*a^2*b^4*c^2*d^4
*e^4 + 144*a^3*b^2*c^3*d^4*e^4 + 32*a^3*b^3*c^2*d^3*e^5 + 64*a^4*b^2*c^2*d^
2*e^6 + 32*a*b^3*c^4*d^7*e + 4*a*b^6*c*d^4*e^4 - 64*a^2*b*c^5*d^7*e + 32*a^
4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 - 44*a*b^4*c^3*d^6*e^2 + 20*a*b^5*c^2*d^
5*e^3 + 20*a^2*b^5*c*d^3*e^5 - 192*a^3*b*c^4*d^5*e^3 - 44*a^3*b^4*c*d^2*e^6
 - 192*a^4*b*c^3*d^3*e^5)))*(-(9*b^13*e^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1
/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10
656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^
2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 2048*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*
d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3
- 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c
^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c - b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 2
1*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344
*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6
 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*
d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 12544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4
*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c
*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*
a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*
a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*
b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a
^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*e^5 - 78400*a^4*b^4*c^5*d*e^8 - 5376
0*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c
 - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*
d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a^5*b^12*e^10 + 4096*a^6*c^11*d^10 +
4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24
*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e +
 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^10 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4
*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10 + 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^
6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 6144*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d
^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e
^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 -
 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^
3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6
*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 560*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b
^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12
800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5
*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4
*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^3 + 71680*a^5*b^6*c^6*d^6*e^4 - 3225
6*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^
7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c
^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*
a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8
 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*
c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440
*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^
8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 +
 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^10*d^9*e - 20480*a^10*b*c^6*d*e^9 - 2
35*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 12
00*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220
*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30
720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 +
6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9
 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*b^3*c^5*d*e^9)))^(1/2)))*(-(9*b^13*e
^9 - 9*b^4*e^9*(-(4*a*c - b^2)^9)^(1/2) + 26880*a^6*b*c^6*e^9 - 53760*a^6*c
^7*d*e^8 + 2077*a^2*b^9*c^2*e^9 - 10656*a^3*b^7*c^3*e^9 + 30240*a^4*b^5*c^4
*e^9 - 44800*a^5*b^3*c^5*e^9 - 25*a^2*c^2*e^9*(-(4*a*c - b^2)^9)^(1/2) + 20
48*a^3*c^10*d^7*e^2 + 17920*a^4*c^9*d^5*e^4 + 35840*a^5*c^8*d^3*e^6 - 32*b^
6*c^7*d^7*e^2 + 112*b^7*c^6*d^6*e^3 - 98*b^8*c^5*d^5*e^4 - 35*b^9*c^4*d^4*e
^5 + 70*b^10*c^3*d^3*e^6 - 14*b^11*c^2*d^2*e^7 + 35*c^4*d^4*e^5*(-(4*a*c -
b^2)^9)^(1/2) - 213*a*b^11*c*e^9 - 21*b^12*c*d*e^8 - 1536*a^2*b^2*c^9*d^7*e
^2 + 5376*a^2*b^3*c^8*d^6*e^3 - 1344*a^2*b^4*c^7*d^5*e^4 - 10080*a^2*b^5*c^
6*d^4*e^5 + 7840*a^2*b^6*c^5*d^3*e^6 + 1008*a^2*b^7*c^4*d^2*e^7 - 7168*a^3*
b^2*c^8*d^5*e^4 + 35840*a^3*b^3*c^7*d^4*e^5 - 17920*a^3*b^4*c^6*d^3*e^6 - 1
2544*a^3*b^5*c^5*d^2*e^7 + 44800*a^4*b^3*c^6*d^2*e^7 + 14*b^2*c^2*d^2*e^7*(
-(4*a*c - b^2)^9)^(1/2) + 51*a*b^2*c*e^9*(-(4*a*c - b^2)^9)^(1/2) + 532*a*b
^10*c^2*d*e^8 + 21*b^3*c*d*e^8*(-(4*a*c - b^2)^9)^(1/2) + 384*a*b^4*c^8*d^7
*e^2 - 1344*a*b^5*c^7*d^6*e^3 + 896*a*b^6*c^6*d^5*e^4 + 1120*a*b^7*c^5*d^4*
e^5 - 1260*a*b^8*c^4*d^3*e^6 + 98*a*b^9*c^3*d^2*e^7 - 5418*a^2*b^8*c^3*d*e^
8 - 7168*a^3*b*c^9*d^6*e^3 + 28224*a^3*b^6*c^4*d*e^8 - 44800*a^4*b*c^8*d^4*
e^5 - 78400*a^4*b^4*c^5*d*e^8 - 53760*a^5*b*c^7*d^2*e^7 + 107520*a^5*b^2*c^
6*d*e^8 + 154*a*c^3*d^2*e^7*(-(4*a*c - b^2)^9)^(1/2) - 70*b*c^3*d^3*e^6*(-(
4*a*c - b^2)^9)^(1/2) - 154*a*b*c^2*d*e^8*(-(4*a*c - b^2)^9)^(1/2))/(128*(a
^5*b^12*e^10 + 4096*a^6*c^11*d^10 + 4096*a^11*c^6*e^10 + b^12*c^5*d^10 - b^
17*d^5*e^5 - 24*a*b^10*c^6*d^10 - 24*a^6*b^10*c*e^10 + 5*a*b^16*d^4*e^6 - 5
*a^4*b^13*d*e^9 - 5*b^13*c^4*d^9*e + 5*b^16*c*d^6*e^4 + 240*a^2*b^8*c^7*d^1
0 - 1280*a^3*b^6*c^8*d^10 + 3840*a^4*b^4*c^9*d^10 - 6144*a^5*b^2*c^10*d^10
```

```
+ 240*a^7*b^8*c^2*e^10 - 1280*a^8*b^6*c^3*e^10 + 3840*a^9*b^4*c^4*e^10 - 61
44*a^10*b^2*c^5*e^10 - 10*a^2*b^15*d^3*e^7 + 10*a^3*b^14*d^2*e^8 + 20480*a^
7*c^10*d^8*e^2 + 40960*a^8*c^9*d^6*e^4 + 40960*a^9*c^8*d^4*e^6 + 20480*a^10
*c^7*d^2*e^8 + 10*b^14*c^3*d^8*e^2 - 10*b^15*c^2*d^7*e^3 + 2280*a^2*b^10*c^
5*d^8*e^2 - 1920*a^2*b^11*c^4*d^7*e^3 + 490*a^2*b^12*c^3*d^6*e^4 + 210*a^2*
b^13*c^2*d^5*e^5 - 11600*a^3*b^8*c^6*d^8*e^2 + 8000*a^3*b^9*c^5*d^7*e^3 + 5
60*a^3*b^10*c^4*d^6*e^4 - 2800*a^3*b^11*c^3*d^5*e^5 + 490*a^3*b^12*c^2*d^4*
e^6 + 32000*a^4*b^6*c^7*d^8*e^2 - 12800*a^4*b^7*c^6*d^7*e^3 - 16800*a^4*b^8
*c^5*d^6*e^4 + 14560*a^4*b^9*c^4*d^5*e^5 + 560*a^4*b^10*c^3*d^4*e^6 - 1920*
a^4*b^11*c^2*d^3*e^7 - 42240*a^5*b^4*c^8*d^8*e^2 - 15360*a^5*b^5*c^7*d^7*e^
3 + 71680*a^5*b^6*c^6*d^6*e^4 - 32256*a^5*b^7*c^5*d^5*e^5 - 16800*a^5*b^8*c
^4*d^4*e^6 + 8000*a^5*b^9*c^3*d^3*e^7 + 2280*a^5*b^10*c^2*d^2*e^8 + 10240*a
^6*b^2*c^9*d^8*e^2 + 81920*a^6*b^3*c^8*d^7*e^3 - 125440*a^6*b^4*c^7*d^6*e^4
 + 3584*a^6*b^5*c^6*d^5*e^5 + 71680*a^6*b^6*c^5*d^4*e^6 - 12800*a^6*b^7*c^4
*d^3*e^7 - 11600*a^6*b^8*c^3*d^2*e^8 + 61440*a^7*b^2*c^8*d^6*e^4 + 102400*a
^7*b^3*c^7*d^5*e^5 - 125440*a^7*b^4*c^6*d^4*e^6 - 15360*a^7*b^5*c^5*d^3*e^7
 + 32000*a^7*b^6*c^4*d^2*e^8 + 61440*a^8*b^2*c^7*d^4*e^6 + 81920*a^8*b^3*c^
6*d^3*e^7 - 42240*a^8*b^4*c^5*d^2*e^8 + 10240*a^9*b^2*c^6*d^2*e^8 + 120*a*b
^11*c^5*d^9*e + 4*a*b^15*c*d^5*e^5 + 120*a^5*b^11*c*d*e^9 - 20480*a^6*b*c^1
0*d^9*e - 20480*a^10*b*c^6*d*e^9 - 235*a*b^12*c^4*d^8*e^2 + 220*a*b^13*c^3*
d^7*e^3 - 90*a*b^14*c^2*d^6*e^4 - 1200*a^2*b^9*c^6*d^9*e - 90*a^2*b^14*c*d^
4*e^6 + 6400*a^3*b^7*c^7*d^9*e + 220*a^3*b^13*c*d^3*e^7 - 19200*a^4*b^5*c^8
*d^9*e - 235*a^4*b^12*c*d^2*e^8 + 30720*a^5*b^3*c^9*d^9*e - 1200*a^6*b^9*c^
2*d*e^9 - 81920*a^7*b*c^9*d^7*e^3 + 6400*a^7*b^7*c^3*d*e^9 - 122880*a^8*b*c
^8*d^5*e^5 - 19200*a^8*b^5*c^4*d*e^9 - 81920*a^9*b*c^7*d^3*e^7 + 30720*a^9*
b^3*c^5*d*e^9)))^(1/2)*2i
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1628 $\int (b+2cx)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,dx$

Optimal. Leaf size=576

$$-\frac{2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,\left(-ce(11bd-10ae)+b^2e^2-3cex(2cd-be)+8c^2d^2\right)}{105ce^2}-\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}}{}$$

```
[Out] 4/7*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(3/2)-2/105*(8*c^2*d^2+b^2*e^2-c*e*(-10*a*e
+11*b*d)-3*c*e*(-b*e+2*c*d)*x)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c/e^2+2/10
5*(-b*e+2*c*d)*(4*c^2*d^2-b^2*e^2-4*c*e*(-2*a*e+b*d))*EllipticE(1/2*((b+2*c
*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)
^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*
(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^2/e^3/(c*x^2+b*x+a)^(
1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/105*(a*e^2-b*d*e+
c*d^2)*(16*c^2*d^2-b^2*e^2-4*c*e*(-5*a*e+4*b*d))*EllipticF(1/2*((b+2*c*x+(-
4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2
)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(
c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))
))^(1/2)/c^2/e^3/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.79, antiderivative size = 576, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,\left(-ce(11bd-10ae)+b^2e^2-3cex(2cd-be)+8c^2d^2\right)}{105ce^2}-\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(8*c^2*d^2 + b^2*e^2 - c*e*(11*b*d - 10*a*e) - 3*c*e*(2*c
*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(105*c*e^2) + (4*Sqrt[d + e*x]*(a + b*x
 + c*x^2)^(3/2))/7 + (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(4*c^2*d^2
- b^2*e^2 - 4*c*e*(b*d - 2*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))
/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt
[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 -
4*a*c])*e)])/(105*c^2*e^3*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e)]*Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e
 + a*e^2)*(16*c^2*d^2 - b^2*e^2 - 4*c*e*(4*b*d - 5*a*e))*Sqrt[(c*(d + e*x))
/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4
*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*
a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e
)])/(105*c^2*e^3*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (b+2cx)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,dx = \frac{4}{7}\sqrt{d+ex}\,\left(a+bx+cx^2\right)^{3/2} + \frac{2\int \frac{\left(\frac{1}{2}c(bd-2ae)+\frac{1}{2}c(2cd-be)x\right)\sqrt{a+bx+cx^2}}{\sqrt{d+ex}}\,dx}{7c}$$

$$= -\frac{2\sqrt{d+ex}\,\left(8c^2d^2+b^2e^2-ce(11bd-10ae)-3ce(2cd-be)x\right)\sqrt{a+b}}{105ce^2}$$

$$= -\frac{2\sqrt{d+ex}\,\left(8c^2d^2+b^2e^2-ce(11bd-10ae)-3ce(2cd-be)x\right)\sqrt{a+b}}{105ce^2}$$

$$= -\frac{2\sqrt{d+ex}\,\left(8c^2d^2+b^2e^2-ce(11bd-10ae)-3ce(2cd-be)x\right)\sqrt{a+b}}{105ce^2}$$

$$= -\frac{2\sqrt{d+ex}\,\left(8c^2d^2+b^2e^2-ce(11bd-10ae)-3ce(2cd-be)x\right)\sqrt{a+b}}{105ce^2}$$

Mathematica [C] time = 12.58, size = 833, normalized size = 1.45

$$\frac{\frac{4(2cd-be)\left(4c^2d^2-b^2e^2+4ce(2ae-bd)\right)(a+x(b+cx))e^2}{\sqrt{d+ex}} - 2c\sqrt{d+ex}\,(a+x(b+cx))\left(\left(8d^2-6exd-30e^2x^2\right)c^2-e(11bd+20ae\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*e^2*(2*c*d - b*e)*(4*c^2*d^2 - b^2*e^2 + 4*c*e*(-(b*d) + 2*a*e))*(a + x
*(b + c*x)))/Sqrt[d + e*x] - 2*c*e^2*Sqrt[d + e*x]*(a + x*(b + c*x))*(b^2*e
^2 - c*e*(11*b*d + 20*a*e + 27*b*e*x) + c^2*(8*d^2 - 6*d*e*x - 30*e^2*x^2))
 - (I*(d + e*x)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqr
t[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[2 + (4*(c*d^2 + e*(-(b*d) + a*e)))/(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((-2*c*d + b*e)*(2*c*d
 - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(-4*c^2*d^2 + b^2*e^2 + 4*c*e*(b*d - 2*a*
e))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e
 + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 -
 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (b^4*e^4 - b^3*e^
3*(-(c*d) + Sqrt[(b^2 - 4*a*c)*e^2]) - b^2*c*e^2*(c*d^2 + 9*a*e^2 + 2*d*Sqr
t[(b^2 - 4*a*c)*e^2]) + 4*c^2*(5*a^2*e^4 - 2*c*d^3*Sqrt[(b^2 - 4*a*c)*e^2]
+ a*d*e^2*(c*d - 4*Sqrt[(b^2 - 4*a*c)*e^2])) + 4*b*c*e*(3*c*d^2*Sqrt[(b^2 -
 4*a*c)*e^2] + a*e^2*(-(c*d) + 2*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*Arc
Sinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*
c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*
d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*
c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/(105*c^2*e^4*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d), x)
```

maple [B] time = 0.11, size = 6516, normalized size = 11.31

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (b+2\,c\,x)\,\sqrt{d+e\,x}\,\sqrt{c\,x^2+b\,x+a}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int((b + 2*c*x)*(d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (b+2cx)\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)*(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(d + e*x)*sqrt(a + b*x + c*x**2), x)
```

3.1629 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=487

$$\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-}}{2cd-(b+\sqrt{}}\right.}{15ce^3\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}$$

```
[Out] -2/15*(-6*c*e*x-7*b*e+8*c*d)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/e^2+1/15*(16
*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)
^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e
*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(
-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c/e^3/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(
2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-16/15*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^
2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^
(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(
1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2
*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e^3/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/
2)
```

Rubi [A] time = 0.43, antiderivative size = 487, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{814, 843, 718, 424, 419\}$

$$\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-}}{2cd-(b+\sqrt{}}\right.}{15ce^3\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(8*c*d - 7*b*e - 6*c*e*x)*Sqrt[a + b*x + c*x^2])/(15*e^2)
 + (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(16*c^2*d^2 + b^2*e^2 - 4*c*e*(4*b*d - 3*a*e)
)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcS
in[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sq
rt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(15*c*e^3*Sqrt[(c*
(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (1
6*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(
d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))
/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt
[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 -
4*a*c])*e)])/(15*c*e^3*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(8cd-7be-6cex)\sqrt{a+bx+cx^2}}{15e^2} - \frac{2\int \frac{\frac{1}{2}c\left(7b^2de+4acde-8b\left(cd^2+ae^2\right)\right)-}{\sqrt{d+ex}\,\sqrt{a}}}{15c}$$

$$= -\frac{2\sqrt{d+ex}\,(8cd-7be-6cex)\sqrt{a+bx+cx^2}}{15e^2} - \frac{\left(8(2cd-be)\left(cd^2-bde+ae^2\right.\right.}{15e^3}$$

$$= -\frac{2\sqrt{d+ex}\,(8cd-7be-6cex)\sqrt{a+bx+cx^2}}{15e^2} + \frac{\left(\sqrt{2}\sqrt{b^2-4ac}\,\left(16c^2d^2+b^2e\right.\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\,(8cd-7be-6cex)\sqrt{a+bx+cx^2}}{15e^2} + \frac{\sqrt{2}\sqrt{b^2-4ac}\,\left(16c^2d^2+b^2e^2\right.}{}$$

Mathematica [C] time = 3.73, size = 709, normalized size = 1.46

$$\frac{\frac{4e^2(a+x(b+cx))\left(4ce(3ae-4bd)+b^2e^2+16c^2d^2\right)}{c\sqrt{d+ex}} - \frac{i(d+ex)\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\sqrt{\frac{4\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+be-2cd\right)}+2}\left(\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/Sqrt[d + e*x],x]
```

```
[Out] ((4*e^2*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d + 3*a*e))*(a + x*(b + c*x)))/
(c*Sqrt[d + e*x]) + 4*e^2*Sqrt[d + e*x]*(-8*c*d + 7*b*e + 6*c*e*x)*(a + x*(
b + c*x)) - (I*(d + e*x)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d -
b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[2 + (4*(c*d^2 + e*(-(b*d) +
 a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((2*c*d - b*e
 + Sqrt[(b^2 - 4*a*c)*e^2])*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d + 3*a*e))
*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e +
Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*
a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] - (-(b^3*e^3) + b^2*e^
2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + 4*b*(a*c*e^3 - 4*c*d*e*Sqrt[(b^2 - 4*
a*c)*e^2]) + 4*c*(4*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] + a*e^2*(-2*c*d + 3*Sqrt[
(b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*
e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d +
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))
/(c*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2]
)]))/(30*e^4*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{\sqrt{ex+d}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/sqrt(e*x + d), x)
```

maple [B] time = 0.09, size = 4356, normalized size = 8.94

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/15*(c*x^2+b*x+a)^(1/2)*(e*x+d)^(1/2)*(7*a*b*c*d*e^3+7*x*a*b*c*e^4-4*2^(1/
2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b
^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*a*b*e^4+
6*x^4*c^3*e^4-8*x*b*c^2*d^2*e^2+12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)
^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2
)*e))^(1/2))*a^2*c*e^4-8*a*c^2*d^2*e^2-2*x^3*c^3*d*e^3+6*x^2*a*c^2*e^4+7*x^
2*b^2*c*e^4-8*x^2*c^3*d^2*e^2+13*x^3*b*c^2*e^4+12*2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c
*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-
4*a*c+b^2)^(1/2)*e))^(1/2))*a*c^2*d^2*e^2-3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4
*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e))^(1/2))*b^2*c*d^2*e^2+32*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e))^(1/2))*b*c^2*d^3*e-28*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c
)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
))^(1/2))*a*c^2*d^2*e^2-17*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e
```

```
)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1
/2))*b^2*c*d^2*e^2+4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(
1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(
-4*a*c+b^2)^(1/2)*b^2*d*e^3+8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2
)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))
^(1/2))*(-4*a*c+b^2)^(1/2)*c^2*d^3*e-3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e))^(1/2))*a*b^2*e^4+3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)
*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(
1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^
(1/2))*b^3*d*e^3+2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)
*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*El
lipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^3*d
*e^3-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b
+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(
-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b^2*e^4-12*2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a^2*c*e^4+5*x^2*b*c^2*d*e^
3-2*x*a*c^2*d*e^3+7*x*b^2*c*d*e^3-16*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e))^(1/2))*c^3*d^4+28*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/
2))*a*b*c*d*e^3+8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*E
llipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*
a*c+b^2)^(1/2)*a*c*d*e^3-12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*
e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*
e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1
/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(
1/2))*a*b*c*d*e^3-12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(
1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(
-4*a*c+b^2)^(1/2)*b*c*d^2*e^2)/c/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)/
e^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,\sqrt{a+bx+cx^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/sqrt(d + e*x), x)
```

3.1630 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=469

$$\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\right|}{3ce^3\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] 2/3*(2*c*e*x-3*b*e+8*c*d)*(c*x^2+b*x+a)^(1/2)/e^2/(e*x+d)^(1/2)-8/3*(-b*e+2
*c*d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)
*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*
2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1
/2)/e^3/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1
/2)+2/3*(16*c^2*d^2+3*b^2*e^2-4*c*e*(-a*e+4*b*d))*EllipticF(1/2*((b+2*c*x+(
-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/
2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*
(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)
)))^(1/2)/c/e^3/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 469, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {812, 843, 718, 424, 419}

$$\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(-4ce(4bd-ae)+3b^2e^2+16c^2d^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\right|}{3ce^3\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*(8*c*d - 3*b*e + 2*c*e*x)*Sqrt[a + b*x + c*x^2])/(3*e^2*Sqrt[d + e*x]) -
 (8*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*
x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e)])/(3*e^3*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 -
4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(16*c^2*d
^2 + 3*b^2*e^2 - 4*c*e*(4*b*d - a*e))*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt
[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[A
rcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2
*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c*e^3*Sqrt[d
 + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{3/2}}\,dx = \frac{2(8cd-3be+2cex)\sqrt{a+bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}\left(8bcd-3b^2e-4ace\right)+4c(2cd-be)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{3e^2}$$

$$= \frac{2(8cd-3be+2cex)\sqrt{a+bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{(8c(2cd-be))\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{3e^3} + \frac{\left(16c^2d\right.}{}$$

$$= \frac{2(8cd-3be+2cex)\sqrt{a+bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{\left(8\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-}\right.}{3e^3\sqrt{\frac{-}{2}}}$$

$$= \frac{2(8cd-3be+2cex)\sqrt{a+bx+cx^2}}{3e^2\sqrt{d+ex}} - \frac{8\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-\frac{c}{}}}{3e^3\sqrt{\frac{}{2cd-(}}}$$

Mathematica [C] time = 4.20, size = 955, normalized size = 2.04

$$\sqrt{d+ex}\left(\frac{2(8cd-3be+2cex)(a+x(b+cx))}{e^2(d+ex)} - \frac{(d+ex)\left(-\frac{16(be-2cd)\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}}}\,(a+x(b+cx))e^2}{(d+ex)^2} - \frac{4i\sqrt{2}\,(2cd-be)\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)\sqrt{\frac{-2ae^2+2c}{}}}{}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*((2*(8*c*d - 3*b*e + 2*c*e*x)*(a + x*(b + c*x)))/(e^2*(d + e
*x)) - ((d + e*x)*((-16*e^2*(-2*c*d + b*e)*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c*x)))/(d + e*x)^2 -
((4*I)*Sqrt[2]*(2*c*d - b*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(
-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2
]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*S
qrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)
*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*
x))]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2
- 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] + (
I*Sqrt[2]*(b^2*e^2 - 4*a*c*e^2 + 8*c*d*Sqrt[(b^2 - 4*a*c)*e^2] - 4*b*e*Sqrt
[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x
```

```
 + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 -
 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d
*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[
(b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 -
b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -
((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)
*e^2]))])/Sqrt[d + e*x]))/(e^4*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])]))))/(3*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{e^2x^2+2\,dex+d^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(e^2*x^2 + 2*d*e*x
 + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/(e*x + d)^(3/2), x)
```

maple [B] time = 0.11, size = 2977, normalized size = 6.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] 1/3*(c*x^2+b*x+a)^(1/2)*(e*x+d)^(1/2)*(12*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b
*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*a*b*c*e^3*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-24*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+
(-4*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*a*c^2*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a
*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)-4*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e))^(1/2))*2^(1/2)*a*c*e^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2
)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*(-4*a*c+b^2)^(1/2)-3*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*b^3*e^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)+6*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e))^(1/2))*2^(1/2)*b^2*c*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)
*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)-3*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)
^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
)^(1/2))*2^(1/2)*b^2*e^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)
*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*(-
4*a*c+b^2)^(1/2)+16*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e))^(1/2))*2^(1/2)*b*c*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e
)^(1/2)*(-4*a*c+b^2)^(1/2)-16*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4
*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*c^2*d^2*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*(-4*a*c+b^2)^(1/2)-16*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*a*b*c*e^3*(-(e*x+d)/(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+
(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)*e)^(1/2)+32*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-
4*a*c+b^2)^(1/2)*e))^(1/2))*2^(1/2)*a*c^2*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c
+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)+16*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)
^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b
^2)^(1/2)*e))^(1/2))*2^(1/2)*b^2*c*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(
1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*e)^(1/2)-48*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/
2)*e))^(1/2))*2^(1/2)*b*c^2*d^2*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)+32*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(
1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^
(1/2))*2^(1/2)*c^3*d^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*
((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*(
(2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+4*x^
3*c^3*e^3-2*x^2*b*c^2*e^3+16*x^2*c^3*d*e^2+4*a*c^2*e^3*x-6*x*b^2*c*e^3+16*x
*b*c^2*d*e^2-6*a*b*c*e^3+16*c^2*a*d*e^2)/c/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b
*d*x+a*d)/e^4
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(2\,cx + b)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/(e*x + d)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{(d+e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**(3/2), x)
```

3.1631 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=548

$$\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(-4ce(4bd-3ae)+b^2e^2+16c^2d^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-}}{2cd-\left(b+\sqrt{}\right.}\right.}{3e^3\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}$$

```
[Out] -2/3*(8*c^2*d^3+a*b*e^3-c*d*e*(-4*a*e+7*b*d)+e*(10*c^2*d^2+b^2*e^2-2*c*e*(-
3*a*e+5*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)+
1/3*(16*c^2*d^2+b^2*e^2-4*c*e*(-3*a*e+4*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a
*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(
2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^
(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/e^3/(a*e^2-b*d*e+c*d^2)/(c*x^2+
b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-16/3*(-b*e+
2*c*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))
*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d
)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e^3/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(
1/2)
```

Rubi [A] time = 0.43, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {810, 843, 718, 424, 419}

$$-\frac{2\sqrt{a+bx+cx^2}\left(ex\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-cde(7bd-4ae)+abe^3+8c^2d^3\right)}{3e^2(d+ex)^{3/2}\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(8*c^2*d^3 + a*b*e^3 - c*d*e*(7*b*d - 4*a*e) + e*(10*c^2*d^2 + b^2*e^2
- 2*c*e*(5*b*d - 3*a*e))*x)*Sqrt[a + b*x + c*x^2])/(3*e^2*(c*d^2 - b*d*e +
a*e^2)*(d + e*x)^(3/2)) + (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(16*c^2*d^2 + b^2*e^2
- 4*c*e*(4*b*d - 3*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 -
4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4
*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*
e)])/(3*e^3*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b
^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (16*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*
c*d - b*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((
c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 -
4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*
d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*e^3*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]
)
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] && !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] && !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{5/2}}\,dx = -\frac{2\left(8c^2d^3+abe^3-cde(7bd-4ae)+e\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)x\right)\sqrt{a}}{3e^2\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}$$

$$= -\frac{2\left(8c^2d^3+abe^3-cde(7bd-4ae)+e\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)x\right)\sqrt{a}}{3e^2\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}$$

$$= -\frac{2\left(8c^2d^3+abe^3-cde(7bd-4ae)+e\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)x\right)\sqrt{a}}{3e^2\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}$$

$$= -\frac{2\left(8c^2d^3+abe^3-cde(7bd-4ae)+e\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)x\right)\sqrt{a}}{3e^2\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}}$$

Mathematica [C] time = 6.33, size = 1343, normalized size = 2.45

$$\sqrt{d+ex}\,\sqrt{a+x(b+cx)}\left(-\frac{2(be-2cd)}{3e^2(d+ex)^2}-\frac{2\left(10c^2d^2-10bced+b^2e^2+6ace^2\right)}{3e^2\left(cd^2-bed+ae^2\right)(d+ex)}\right)-\frac{(d+ex)^{3/2}\sqrt{a+x(b+cx)}\left(-4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] Sqrt[d + e*x]*Sqrt[a + x*(b + c*x)]*((-2*(-2*c*d + b*e))/(3*e^2*(d + e*x)^2
) - (2*(10*c^2*d^2 - 10*b*c*d*e + b^2*e^2 + 6*a*c*e^2))/(3*e^2*(c*d^2 - b*d
*e + a*e^2)*(d + e*x))) - ((d + e*x)^(3/2)*Sqrt[a + x*(b + c*x)]*(-4*Sqrt[(
c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(16*c^3
*d^2*(-1 + d/(d + e*x))^2 + (b^2*e^3*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)
))/(d + e*x) + 4*c^2*e*(a*e*(3 + (7*d^2)/(d + e*x)^2 - (6*d)/(d + e*x)) - 4
*b*d*(1 + (2*d^2)/(d + e*x)^2 - (3*d)/(d + e*x))) + c*e^2*((12*a^2*e^2)/(d
+ e*x)^2 + b^2*(1 + (17*d^2)/(d + e*x)^2 - (18*d)/(d + e*x)) - (4*a*b*e*(-3
 + (7*d)/(d + e*x)))/(d + e*x))) + (I*Sqrt[2]*(2*c*d - b*e + Sqrt[(b^2 - 4*
a*c)*e^2])*(16*c^2*d^2 + b^2*e^2 + 4*c*e*(-4*b*d + 3*a*e))*Sqrt[(Sqrt[(b^2
- 4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*c*d*(-1 + d/(d + e*x)) + b*e*(-1 +
(2*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2
- 4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*c*d*(-1 + d/(d + e*x)) + b*(e - (2*
d*e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*EllipticE[I*ArcS
inh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c
)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d
```

```
 - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] - (I*Sqrt[2]*(-(b^3*e^3)
 + b^2*e^2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + 4*b*(a*c*e^3 - 4*c*d*e*Sqrt[
(b^2 - 4*a*c)*e^2]) + 4*c*(4*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] + a*e^2*(-2*c*d
+ 3*Sqrt[(b^2 - 4*a*c)*e^2])))*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d
 + e*x) - 2*c*d*(-1 + d/(d + e*x)) + b*e*(-1 + (2*d)/(d + e*x)))/(2*c*d - b
*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d
 + e*x) + 2*c*d*(-1 + d/(d + e*x)) + b*(e - (2*d*e)/(d + e*x)))/(-2*c*d + b
*e + Sqrt[(b^2 - 4*a*c)*e^2])]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b
*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*
e^2]))])/Sqrt[d + e*x]))/(6*e^4*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*d^2 + e*(-(
b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[a + b*x + c*x^2
]*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*
e)/(d + e*x))))/(d + e*x)))/e^2])
```

fricas [F] time = 1.16, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(e^3*x^3 + 3*d*e^2
*x^2 + 3*d^2*e*x + d^3), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(d*exp(1)+x*exp(1
)^2)]integrate() Bad Argument Typeintegrate() Bad Argument TypeEvaluation
 time: 3.64Unable to transpose Error: Bad Argument Value
```

maple [B] time = 0.23, size = 8612, normalized size = 15.72

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{c\,x^2+b\,x+a}}{{(d+e\,x)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(5/2),x)
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**(5/2),x)
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**(5/2), x)
```

3.1632 $\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=691

$$\frac{4\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(bd-2ae)-b^2e^2+4c^2d^2\right)}{15e^2\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}+\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(-4ce(4bd-5ae)-b^2\right.}{15e^3\sqrt{d+}}$$

```
[Out] -2/15*(8*c^2*d^3-c*d*e*(-4*a*e+5*b*d)-b*e^2*(-3*a*e+2*b*d)+e*(14*c^2*d^2+b^
2*e^2-2*c*e*(-5*a*e+7*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^2/(a*e^2-b*d*e+c*d^2)/
(e*x+d)^(5/2)+4/15*(-b*e+2*c*d)*(4*c^2*d^2-b^2*e^2-4*c*e*(-2*a*e+b*d))*(c*x
^2+b*x+a)^(1/2)/e^2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)-2/15*(-b*e+2*c*d)*(
4*c^2*d^2-b^2*e^2-4*c*e*(-2*a*e+b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^
(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*
(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-
c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/e^3/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)
^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2/15*(16*c^2*d^2-
b^2*e^2-4*c*e*(-5*a*e+4*b*d))*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(
-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a
*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*
c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e^3/(a*e^2
-b*d*e+c*d^2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.75, antiderivative size = 691, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {810, 834, 843, 718, 424, 419}

$$\frac{4\sqrt{a+bx+cx^2}\,(2cd-be)\left(-4ce(bd-2ae)-b^2e^2+4c^2d^2\right)}{15e^2\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}-\frac{2\sqrt{a+bx+cx^2}\,\left(ex\left(-2ce(7bd-5ae)+b^2e^2+14c^2d\right.\right.}{15e^2(d+ex)^{5/2}\left(ae^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (4*(2*c*d - b*e)*(4*c^2*d^2 - b^2*e^2 - 4*c*e*(b*d - 2*a*e))*Sqrt[a + b*x +
 c*x^2])/(15*e^2*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - (2*(8*c^2*d^3 -
 c*d*e*(5*b*d - 4*a*e) - b*e^2*(2*b*d - 3*a*e) + e*(14*c^2*d^2 + b^2*e^2 -
2*c*e*(7*b*d - 5*a*e))*x)*Sqrt[a + b*x + c*x^2])/(15*e^2*(c*d^2 - b*d*e + a
*e^2)*(d + e*x)^(5/2)) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(4*c^2*
d^2 - b^2*e^2 - 4*c*e*(b*d - 2*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x
^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/
Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^
2 - 4*a*c])*e)])/(15*e^3*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*(d + e*x))/(2*c*
d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*Sqrt[b^
2 - 4*a*c]*(16*c^2*d^2 - b^2*e^2 - 4*c*e*(4*b*d - 5*a*e))*Sqrt[(c*(d + e*x)
)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 -
4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4
*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*
e)])/(15*e^3*(c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{a+bx+cx^2}}{(d+ex)^{7/2}}\,dx = -\frac{2\left(8c^2d^3-cde(5bd-4ae)-be^2(2bd-3ae)+e\left(14c^2d^2+b^2e^2-2ce(7bd-5ae\right.\right.}{15e^2\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}$$

$$= \frac{4(2cd-be)\left(4c^2d^2-b^2e^2-4ce(bd-2ae)\right)\sqrt{a+bx+cx^2}}{15e^2\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{2\left(8c^2d^3-cde(5bd\right.}{}$$

$$= \frac{4(2cd-be)\left(4c^2d^2-b^2e^2-4ce(bd-2ae)\right)\sqrt{a+bx+cx^2}}{15e^2\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{2\left(8c^2d^3-cde(5bd\right.}{}$$

$$= \frac{4(2cd-be)\left(4c^2d^2-b^2e^2-4ce(bd-2ae)\right)\sqrt{a+bx+cx^2}}{15e^2\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{2\left(8c^2d^3-cde(5bd\right.}{}$$

$$= \frac{4(2cd-be)\left(4c^2d^2-b^2e^2-4ce(bd-2ae)\right)\sqrt{a+bx+cx^2}}{15e^2\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}} - \frac{2\left(8c^2d^3-cde(5bd\right.}{}$$

Mathematica [C] time = 6.57, size = 5427, normalized size = 7.85

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[a + b*x + c*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 1.01, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(e^4*x^4 + 4*d*e^3
*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)}{(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/(e*x + d)^(7/2), x)
```

maple [B] time = 0.19, size = 19265, normalized size = 27.88

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{cx^2 + bx + a}\,(2\,cx + b)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] integrate(sqrt(c*x^2 + b*x + a)*(2*c*x + b)/(e*x + d)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\ \sqrt{c\,x^2 + b\,x + a}}{(d + e\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(7/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(1/2))/(d + e*x)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)\,\sqrt{a + bx + cx^2}}{(d + ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(a + b*x + c*x**2)/(d + e*x)**(7/2), x)
```

3.1633 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=688

$$\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(3c^2e^2\left(28a^2e^2-76abde+45b^2d^2\right)-b^2ce^3(7bd-15ae)-4c^3d^2e(64bd-5\right.}{315c^2e^5\sqrt{a+bx+cx^2}\,\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}$$

```
[Out] -2/63*(-14*c*e*x-15*b*e+16*c*d)*(c*x^2+b*x+a)^(3/2)*(e*x+d)^(1/2)/e^2-2/315
*(128*c^3*d^3-b^3*e^3+3*b*c*e^2*(-36*a*e+37*b*d)-12*c^2*d*e*(-11*a*e+20*b*d
)-3*c*e*(32*c^2*d^2+b^2*e^2-4*c*e*(-7*a*e+8*b*d))*x)*(e*x+d)^(1/2)*(c*x^2+b
*x+a)^(1/2)/c/e^4+2/315*(128*c^4*d^4-b^4*e^4-4*c^3*d^2*e*(-57*a*e+64*b*d)-b
^2*c*e^3*(-15*a*e+7*b*d)+3*c^2*e^2*(28*a^2*e^2-76*a*b*d*e+45*b^2*d^2))*Elli
pticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(
-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-
4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^2/e^
5/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/
315*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(128*c^2*d^2-b^2*e^2-4*c*e*(-33*a*e+32
*b*d))*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))
*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d
)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^2/e^5/(e*x+d)^(1/2)/(c*x^2+b*x+
a)^(1/2)
```

Rubi [A] time = 0.98, antiderivative size = 688, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {814, 843, 718, 424, 419}

$$\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(3c^2e^2\left(28a^2e^2-76abde+45b^2d^2\right)-b^2ce^3(7bd-15ae)-4c^3d^2e(64bd-5\right.}{315c^2e^5\sqrt{a+bx+cx^2}\,\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*Sqrt[d + e*x]*(128*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(37*b*d - 36*a*e) - 12
*c^2*d*e*(20*b*d - 11*a*e) - 3*c*e*(32*c^2*d^2 + b^2*e^2 - 4*c*e*(8*b*d - 7
*a*e))*x)*Sqrt[a + b*x + c*x^2])/(315*c*e^4) - (2*Sqrt[d + e*x]*(16*c*d - 1
5*b*e - 14*c*e*x)*(a + b*x + c*x^2)^(3/2))/(63*e^2) + (2*Sqrt[2]*Sqrt[b^2 -
 4*a*c]*(128*c^4*d^4 - b^4*e^4 - 4*c^3*d^2*e*(64*b*d - 57*a*e) - b^2*c*e^3*
(7*b*d - 15*a*e) + 3*c^2*e^2*(45*b^2*d^2 - 76*a*b*d*e + 28*a^2*e^2))*Sqrt[d
 + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[
(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 -
 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(315*c^2*e^5*Sqrt[(c*(d +
e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (2*Sqrt
[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(128*c^2*d^2 -
b^2*e^2 - 4*c*e*(32*b*d - 33*a*e))*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^
2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcS
in[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sq
rt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(315*c^2*e^5*Sqrt[
d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = -\frac{2\sqrt{d+ex}\,(16cd-15be-14cex)\left(a+bx+cx^2\right)^{3/2}}{63e^2} - \frac{2\int \frac{\left(\frac{1}{2}c\left(15b^2de+4acde-16b(c\right.\right.}{}}{}$$

$$= -\frac{2\sqrt{d+ex}\,\left(128c^3d^3-b^3e^3+3bce^2(37bd-36ae)-12c^2de(20bd-11ae)-3c\right.}{315ce^4}$$

$$= -\frac{2\sqrt{d+ex}\,\left(128c^3d^3-b^3e^3+3bce^2(37bd-36ae)-12c^2de(20bd-11ae)-3c\right.}{315ce^4}$$

$$= -\frac{2\sqrt{d+ex}\,\left(128c^3d^3-b^3e^3+3bce^2(37bd-36ae)-12c^2de(20bd-11ae)-3c\right.}{315ce^4}$$

$$= -\frac{2\sqrt{d+ex}\,\left(128c^3d^3-b^3e^3+3bce^2(37bd-36ae)-12c^2de(20bd-11ae)-3c\right.}{315ce^4}$$

Mathematica [C] time = 6.58, size = 7917, normalized size = 11.51

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,c^2x^3+3\,bcx^2+ab+\left(b^2+2\,ac\right)x\right)\sqrt{cx^2+bx+a}}{\sqrt{ex+d}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c^2*x^3 + 3*b*c*x^2 + a*b + (b^2 + 2*a*c)*x)*sqrt(c*x^2 + b*x +
 a)/sqrt(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}(2\,cx+b)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/sqrt(e*x + d), x)
```

maple [B] time = 0.13, size = 9176, normalized size = 13.34

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + bx + a\right)^{\frac{3}{2}}(2\,cx + b)}{\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/sqrt(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\,\left(c\,x^2 + b\,x + a\right)^{3/2}}{\sqrt{d + e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1634 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=592

$$\frac{4\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(ae^2-bde+cd^2\right)\left(-4ce(32bd-5ae)+27b^2e^2+128c^2d^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin\right.}{35ce^5\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

```
[Out] 2/7*(2*c*e*x-7*b*e+16*c*d)*(c*x^2+b*x+a)^(3/2)/e^2/(e*x+d)^(1/2)+2/35*(128*
c^2*d^2+51*b^2*e^2-4*c*e*(-5*a*e+44*b*d)-48*c*e*(-b*e+2*c*d)*x)*(e*x+d)^(1/
2)*(c*x^2+b*x+a)^(1/2)/e^4-1/35*(-b*e+2*c*d)*(128*c^2*d^2+3*b^2*e^2-4*c*e*(
-29*a*e+32*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(
1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)
)))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a
*c+b^2))^(1/2)/c/e^5/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2
)^(1/2))))^(1/2)+4/35*(a*e^2-b*d*e+c*d^2)*(128*c^2*d^2+27*b^2*e^2-4*c*e*(-5
*a*e+32*b*d))*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2
))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))
^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c
*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e^5/(e*x+d)^(1/2)/(c*x^2
+b*x+a)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 592, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {812, 814, 843, 718, 424, 419}

$$\frac{2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,\left(-4ce(44bd-5ae)+51b^2e^2-48cex(2cd-be)+128c^2d^2\right)}{35e^4}+\frac{4\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx\right.}{b^2-4ac}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(128*c^2*d^2 + 51*b^2*e^2 - 4*c*e*(44*b*d - 5*a*e) - 48*c*
e*(2*c*d - b*e)*x)*Sqrt[a + b*x + c*x^2])/(35*e^4) + (2*(16*c*d - 7*b*e + 2
*c*e*x)*(a + b*x + c*x^2)^(3/2))/(7*e^2*Sqrt[d + e*x]) - (Sqrt[2]*Sqrt[b^2
- 4*a*c]*(2*c*d - b*e)*(128*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(32*b*d - 29*a*e))*
Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin
[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt
[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(35*c*e^5*Sqrt[(c*(d
 + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (4*S
qrt[2]*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)*(128*c^2*d^2 + 27*b^2*e^2
- 4*c*e*(32*b*d - 5*a*e))*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(
b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 -
4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(35*c*e^5*Sqrt[d + e*x]*Sqr
t[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{2(16cd-7be+2cex)\left(a+bx+cx^2\right)^{3/2}}{7e^2\sqrt{d+ex}} - \frac{6\int \frac{\left(\frac{1}{2}\left(16bcd-7b^2e-4ace\right)+8c(2cd-be)x\right)\sqrt{a+b}}{\sqrt{d+ex}}}{7e^2}$$

$$= \frac{2\sqrt{d+ex}\left(128c^2d^2+51b^2e^2-4ce(44bd-5ae)-48ce(2cd-be)x\right)\sqrt{a+bx+}}{35e^4}$$

$$= \frac{2\sqrt{d+ex}\left(128c^2d^2+51b^2e^2-4ce(44bd-5ae)-48ce(2cd-be)x\right)\sqrt{a+bx+}}{35e^4}$$

$$= \frac{2\sqrt{d+ex}\left(128c^2d^2+51b^2e^2-4ce(44bd-5ae)-48ce(2cd-be)x\right)\sqrt{a+bx+}}{35e^4}$$

$$= \frac{2\sqrt{d+ex}\left(128c^2d^2+51b^2e^2-4ce(44bd-5ae)-48ce(2cd-be)x\right)\sqrt{a+bx+}}{35e^4}$$

Mathematica [C] time = 6.72, size = 5373, normalized size = 9.08

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,c^2x^3+3\,bcx^2+ab+\left(b^2+2\,ac\right)x\right)\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}{e^2x^2+2\,dex+d^2}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c^2*x^3 + 3*b*c*x^2 + a*b + (b^2 + 2*a*c)*x)*sqrt(c*x^2 + b*x +
 a)*sqrt(e*x + d)/(e^2*x^2 + 2*d*e*x + d^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}(2\,cx+b)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(3/2), x)
```

maple [B] time = 0.14, size = 6527, normalized size = 11.03

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + bx + a\right)^{\frac{3}{2}} (2\,cx + b)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\,\left(c\,x^2 + b\,x + a\right)^{3/2}}{(d + e\,x)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)\left(a + bx + cx^2\right)^{\frac{3}{2}}}{(d + ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**(3/2), x)
```

3.1635 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=573

$$-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\left(-4ce(32bd-17ae)+15b^2e^2+128c^2d^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\sqrt{\right.\right.}{15ce^5\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] 2/15*(6*c*e*x-5*b*e+16*c*d)*(c*x^2+b*x+a)^(3/2)/e^2/(e*x+d)^(3/2)-2/15*(128
*c^2*d^2+15*b^2*e^2-4*c*e*(-9*a*e+28*b*d)+16*c*e*(-b*e+2*c*d)*x)*(c*x^2+b*x
+a)^(1/2)/e^4/(e*x+d)^(1/2)+2/15*(128*c^2*d^2+23*b^2*e^2-4*c*e*(-9*a*e+32*b
*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*
2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2
^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/
2)/e^5/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/
2)-2/15*(-b*e+2*c*d)*(128*c^2*d^2+15*b^2*e^2-4*c*e*(-17*a*e+32*b*d))*Ellipt
icF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2
*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*
a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b
+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e^5/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.58, antiderivative size = 573, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {812, 843, 718, 424, 419}

$$-\frac{2\sqrt{a+bx+cx^2}\left(-4ce(28bd-9ae)+15b^2e^2+16cex(2cd-be)+128c^2d^2\right)}{15e^4\sqrt{d+ex}}-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(128*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(28*b*d - 9*a*e) + 16*c*e*(2*c*d - b*
e)*x)*Sqrt[a + b*x + c*x^2])/(15*e^4*Sqrt[d + e*x]) + (2*(16*c*d - 5*b*e +
6*c*e*x)*(a + b*x + c*x^2)^(3/2))/(15*e^2*(d + e*x)^(3/2)) + (2*Sqrt[2]*Sqr
t[b^2 - 4*a*c]*(128*c^2*d^2 + 23*b^2*e^2 - 4*c*e*(32*b*d - 9*a*e))*Sqrt[d +
 e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b
 + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4
*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(15*e^5*Sqrt[(c*(d + e*x))/(
2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2]*Sqr
t[b^2 - 4*a*c]*(2*c*d - b*e)*(128*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(32*b*d - 17
*a*e))*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a
 + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*
c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d -
(b + Sqrt[b^2 - 4*a*c])*e)])/(15*c*e^5*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = \frac{2(16cd-5be+6cex)\left(a+bx+cx^2\right)^{3/2}}{15e^2(d+ex)^{3/2}} - \frac{2\int \frac{\left(\frac{1}{2}\left(16bcd-5b^2e-12ace\right)+8c(2cd-be)x\right)\sqrt{a+}}{(d+ex)^{3/2}}}{5e^2}$$

$$= -\frac{2\left(128c^2d^2+15b^2e^2-4ce(28bd-9ae)+16ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2\left(128c^2d^2+15b^2e^2-4ce(28bd-9ae)+16ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2\left(128c^2d^2+15b^2e^2-4ce(28bd-9ae)+16ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

$$= -\frac{2\left(128c^2d^2+15b^2e^2-4ce(28bd-9ae)+16ce(2cd-be)x\right)\sqrt{a+bx+cx^2}}{15e^4\sqrt{d+ex}} +$$

Mathematica [C] time = 6.78, size = 8929, normalized size = 15.58

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,c^2x^3+3\,bcx^2+ab+\left(b^2+2\,ac\right)x\right)\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}{e^3x^3+3\,de^2x^2+3\,d^2ex+d^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c^2*x^3 + 3*b*c*x^2 + a*b + (b^2 + 2*a*c)*x)*sqrt(c*x^2 + b*x +
 a)*sqrt(e*x + d)/(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}(2\,cx+b)}{(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(5/2), x)
```

maple [B] time = 0.24, size = 9599, normalized size = 16.75

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + bx + a\right)^{\frac{3}{2}}(2\,cx + b)}{(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\,\left(c\,x^2 + b\,x + a\right)^{3/2}}{(d + e\,x)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)\left(a + bx + cx^2\right)^{\frac{3}{2}}}{(d + ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**(5/2), x)
```

3.1636 $\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=701

$$\frac{4\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(-4ce(32bd-5ae)+27b^2e^2+128c^2d^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\Bigg(\sin^{-1}\Bigg(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}}{15e^5\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] -2/15*(16*c^2*d^3+3*a*b*e^3-c*d*e*(-4*a*e+13*b*d)+e*(22*c^2*d^2+3*b^2*e^2-2
*c*e*(-5*a*e+11*b*d))*x)*(c*x^2+b*x+a)^(3/2)/e^2/(a*e^2-b*d*e+c*d^2)/(e*x+d
)^(5/2)+2/15*c*(128*c^2*d^3-4*c*d*e*(-29*a*e+44*b*d)+3*b*e^2*(-16*a*e+17*b*
d)+e*(32*c^2*d^2+3*b^2*e^2-4*c*e*(-5*a*e+8*b*d))*x)*(c*x^2+b*x+a)^(1/2)/e^4
/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)-1/15*(-b*e+2*c*d)*(128*c^2*d^2+3*b^2*e^2
-4*c*e*(-29*a*e+32*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^
2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+
a)/(-4*a*c+b^2))^(1/2)/e^5/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+
d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+4/15*(128*c^2*d^2+27*b^2*e^2-4*c
*e*(-5*a*e+32*b*d))*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2
)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1
/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1
/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e^5/(e*x+d)^(1/2)/(c
*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.75, antiderivative size = 701, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {810, 812, 843, 718, 424, 419}

$$-\frac{2\left(a+bx+cx^2\right)^{3/2}\left(ex\left(-2ce(11bd-5ae)+3b^2e^2+22c^2d^2\right)-cde(13bd-4ae)+3abe^3+16c^2d^3\right)}{15e^2(d+ex)^{5/2}\left(ae^2-bde+cd^2\right)}+2c\sqrt{a+bx+}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*c*(128*c^2*d^3 - 4*c*d*e*(44*b*d - 29*a*e) + 3*b*e^2*(17*b*d - 16*a*e) +
 e*(32*c^2*d^2 + 3*b^2*e^2 - 4*c*e*(8*b*d - 5*a*e))*x)*Sqrt[a + b*x + c*x^2
])/(15*e^4*(c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]) - (2*(16*c^2*d^3 + 3*a*b*
e^3 - c*d*e*(13*b*d - 4*a*e) + e*(22*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(11*b*d -
5*a*e))*x)*(a + b*x + c*x^2)^(3/2))/(15*e^2*(c*d^2 - b*d*e + a*e^2)*(d + e*
x)^(5/2)) - (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(128*c^2*d^2 + 3*b^2*e
^2 - 4*c*e*(32*b*d - 29*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b
^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^
2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a
*c])*e)])/(15*e^5*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (4*Sqrt[2]*Sqrt[b^2 - 4*a*c
]*(128*c^2*d^2 + 27*b^2*e^2 - 4*c*e*(32*b*d - 5*a*e))*Sqrt[(c*(d + e*x))/(2
*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*
c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c
]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])
/(15*e^5*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\left(a+bx+cx^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = -\frac{2\left(16c^2d^3+3abe^3-cde(13bd-4ae)+e\left(22c^2d^2+3b^2e^2-2ce(11bd-5ae)\right)\right.}{15e^2\left(cd^2-bde+ae^2\right)(d+ex)^{5/2}}$$

$$= \frac{2c\left(128c^2d^3-4cde(44bd-29ae)+3be^2(17bd-16ae)+e\left(32c^2d^2+3b^2e^2-4\right.\right.}{15e^4\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{2c\left(128c^2d^3-4cde(44bd-29ae)+3be^2(17bd-16ae)+e\left(32c^2d^2+3b^2e^2-4\right.\right.}{15e^4\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{2c\left(128c^2d^3-4cde(44bd-29ae)+3be^2(17bd-16ae)+e\left(32c^2d^2+3b^2e^2-4\right.\right.}{15e^4\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}$$

$$= \frac{2c\left(128c^2d^3-4cde(44bd-29ae)+3be^2(17bd-16ae)+e\left(32c^2d^2+3b^2e^2-4\right.\right.}{15e^4\left(cd^2-bde+ae^2\right)\sqrt{d+ex}}$$

Mathematica [C] time = 6.99, size = 5450, normalized size = 7.77

Result too large to show

Warning: Unable to verify antiderivative.

```
[In] Integrate[((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] Result too large to show
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,c^2x^3+3\,bcx^2+ab+\left(b^2+2\,ac\right)x\right)\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}{e^4x^4+4\,de^3x^3+6\,d^2e^2x^2+4\,d^3ex+d^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c^2*x^3 + 3*b*c*x^2 + a*b + (b^2 + 2*a*c)*x)*sqrt(c*x^2 + b*x +
 a)*sqrt(e*x + d)/(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)
, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2+bx+a\right)^{\frac{3}{2}}(2\,cx+b)}{(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(7/2), x)
```

maple [B] time = 0.19, size = 19270, normalized size = 27.49

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(cx^2 + bx + a\right)^{\frac{3}{2}}(2\,cx + b)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x^2+b*x+a)^(3/2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] integrate((c*x^2 + b*x + a)^(3/2)*(2*c*x + b)/(e*x + d)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\,\left(c\,x^2 + b\,x + a\right)^{3/2}}{(d + e\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(7/2),x)
```

```
[Out] int(((b + 2*c*x)*(a + b*x + c*x^2)^(3/2))/(d + e*x)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b + 2cx)\left(a + bx + cx^2\right)^{\frac{3}{2}}}{(d + ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(c*x**2+b*x+a)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral((b + 2*c*x)*(a + b*x + c*x**2)**(3/2)/(d + e*x)**(7/2), x)
```

3.1637 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=600

$$\frac{4\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,\left(-ce(5ae+3bd)+2b^2e^2+3c^2d^2\right)}{21c^2}-\frac{4\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(ae^2-bde+cd^2\right)\left(-ce\right.}{}$$

```
[Out] 2/7*(-b*e+2*c*d)*(e*x+d)^(3/2)*(c*x^2+b*x+a)^(1/2)/c+4/7*(e*x+d)^(5/2)*(c*x
^2+b*x+a)^(1/2)+4/21*(3*c^2*d^2+2*b^2*e^2-c*e*(5*a*e+3*b*d))*(e*x+d)^(1/2)*
(c*x^2+b*x+a)^(1/2)/c^2+1/21*(-b*e+2*c*d)*(3*c^2*d^2+8*b^2*e^2-c*e*(29*a*e+
3*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/
2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)
)*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^
(1/2)/c^3/e/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))
)^(1/2)-4/21*(a*e^2-b*d*e+c*d^2)*(3*c^2*d^2+2*b^2*e^2-c*e*(5*a*e+3*b*d))*El
lipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2)
,(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*
(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-
e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^3/e/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.89, antiderivative size = 600, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {832, 843, 718, 424, 419}

$$\frac{4\sqrt{d+ex}\,\sqrt{a+bx+cx^2}\,\left(-ce(5ae+3bd)+2b^2e^2+3c^2d^2\right)}{21c^2}-\frac{4\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(ae^2-bde+cd^2\right)\left(-ce\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (4*(3*c^2*d^2 + 2*b^2*e^2 - c*e*(3*b*d + 5*a*e))*Sqrt[d + e*x]*Sqrt[a + b*x
 + c*x^2])/(21*c^2) + (2*(2*c*d - b*e)*(d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2
])/(7*c) + (4*(d + e*x)^(5/2)*Sqrt[a + b*x + c*x^2])/7 + (Sqrt[2]*Sqrt[b^2
- 4*a*c]*(2*c*d - b*e)*(3*c^2*d^2 + 8*b^2*e^2 - c*e*(3*b*d + 29*a*e))*Sqrt[
d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt
[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2
- 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(21*c^3*e*Sqrt[(c*(d + e*
x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (4*Sqrt[2
]*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)*(3*c^2*d^2 + 2*b^2*e^2 - c*e*(3
*b*d + 5*a*e))*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt
[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^
2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(
2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(21*c^3*e*Sqrt[d + e*x]*Sqrt[a + b*x +
 c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}}\,dx = \frac{4}{7}(d+ex)^{5/2}\sqrt{a+bx+cx^2} + \frac{2\int \frac{(d+ex)^{3/2}\left(\frac{5}{2}c(bd-2ae)+\frac{5}{2}c(2cd-be)x\right)}{\sqrt{a+bx+cx^2}}dx}{7c}$$

$$= \frac{2(2cd-be)(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{7c} + \frac{4}{7}(d+ex)^{5/2}\sqrt{a+bx+cx^2} + \frac{4\int \frac{\sqrt{d+ex}\left(\frac{5}{4}c(b^2}{}}{}$$

$$= \frac{4\left(3c^2d^2+2b^2e^2-ce(3bd+5ae)\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}}{21c^2} + \frac{2(2cd-be)(d+ex)^{3/2}\sqrt{}}{7c}$$

$$= \frac{4\left(3c^2d^2+2b^2e^2-ce(3bd+5ae)\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}}{21c^2} + \frac{2(2cd-be)(d+ex)^{3/2}\sqrt{}}{7c}$$

$$= \frac{4\left(3c^2d^2+2b^2e^2-ce(3bd+5ae)\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}}{21c^2} + \frac{2(2cd-be)(d+ex)^{3/2}\sqrt{}}{7c}$$

$$= \frac{4\left(3c^2d^2+2b^2e^2-ce(3bd+5ae)\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}}{21c^2} + \frac{2(2cd-be)(d+ex)^{3/2}\sqrt{}}{7c}$$

Mathematica [C] time = 12.64, size = 834, normalized size = 1.39

$$\frac{4c\sqrt{d+ex}\left(6\left(3d^2+3exd+e^2x^2\right)c^2-e(9bd+10ae+3bex)c+4b^2e^2\right)(a+x(b+cx)) + \frac{4(2cd-be)\left(3c^2d^2+8b^2e^2-ce(3bd+\right.}{\sqrt{d+ex}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*(2*c*d - b*e)*(3*c^2*d^2 + 8*b^2*e^2 - c*e*(3*b*d + 29*a*e))*(a + x*(b
+ c*x)))/Sqrt[d + e*x] + 4*c*Sqrt[d + e*x]*(a + x*(b + c*x))*(4*b^2*e^2 - c
*e*(9*b*d + 10*a*e + 3*b*e*x) + 6*c^2*(3*d^2 + 3*d*e*x + e^2*x^2)) + (I*(d
+ e*x)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*(d + e*x))]*Sqrt[2 + (4*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d +
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((-2*c*d + b*e)*(2*c*d - b*e +
Sqrt[(b^2 - 4*a*c)*e^2])*(3*c^2*d^2 + 8*b^2*e^2 - c*e*(3*b*d + 29*a*e))*Ell
ipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt
[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)
*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (8*b^4*e^4 - b^3*e^3*(27
*c*d + 8*Sqrt[(b^2 - 4*a*c)*e^2]) + b^2*c*e^2*(27*c*d^2 - 37*a*e^2 + 19*d*S
qrt[(b^2 - 4*a*c)*e^2]) + 2*c^2*(10*a^2*e^4 + 3*c*d^3*Sqrt[(b^2 - 4*a*c)*e^
2] - a*d*e^2*(54*c*d + 29*Sqrt[(b^2 - 4*a*c)*e^2])) + b*c*e*(-9*c*d^2*Sqrt[
(b^2 - 4*a*c)*e^2] + a*e^2*(108*c*d + 29*Sqrt[(b^2 - 4*a*c)*e^2])))*Ellipti
cF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^
2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2
])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(e^2*Sqrt[(c*d^2 + e*(-(b*d)
 + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]))/(42*c^3*Sqrt[a + x*(b
+ c*x)])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,ce^2x^3 + bd^2 + \left(4\,cde + be^2\right)x^2 + 2\left(cd^2 + bde\right)x\right)\sqrt{ex + d}}{\sqrt{cx^2 + bx + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e^2*x^3 + b*d^2 + (4*c*d*e + b*e^2)*x^2 + 2*(c*d^2 + b*d*e)*x
)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{5}{2}}}{\sqrt{cx^2 + bx + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/sqrt(c*x^2 + b*x + a), x)
```

maple [B] time = 0.13, size = 6517, normalized size = 10.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{5}{2}}}{\sqrt{cx^2 + bx + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b + 2\,c\,x)\,\left(d + e\,x\right)^{5/2}}{\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^{\frac{5}{2}}}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**(5/2)/sqrt(a + b*x + c*x**2), x)
```

3.1638 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=507

$$-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{}{2cd-}\right.}{5c^2e\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

```
[Out] 4/5*(e*x+d)^(3/2)*(c*x^2+b*x+a)^(1/2)+2/5*(-b*e+2*c*d)*(e*x+d)^(1/2)*(c*x^2
+b*x+a)^(1/2)/c+2/5*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*EllipticE(1/2*((b+2*c
*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)
^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*
(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^2/e/(c*x^2+b*x+a)^(1/
2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/5*(-b*e+2*c*d)*(a*e
^2-b*d*e+c*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1
/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))
))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*
(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^2/e/(e*x+d)^(1/2)/(c*x
^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 507, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = $\{832, 843, 718, 424, 419\}$

$$-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{}{2cd-}\right.}{5c^2e\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])/(5*c) + (4*(d + e*x)^
(3/2)*Sqrt[a + b*x + c*x^2])/5 + (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(c^2*d^2 + b^
2*e^2 - c*e*(b*d + 3*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2
- 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 -
 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c]
)*e)])/(5*c^2*e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqr
t[a + b*x + c*x^2]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*(c*d^2 - b
*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[
-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2
 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2
*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(5*c^2*e*Sqrt[d + e*x]*Sqrt[a + b*x + c
*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx = \frac{4}{5}(d+ex)^{3/2}\sqrt{a+bx+cx^2} + \frac{2\int \frac{\sqrt{d+ex}\left(\frac{3}{2}c(bd-2ae)+\frac{3}{2}c(2cd-be)x\right)}{\sqrt{a+bx+cx^2}}dx}{5c}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{5c} + \frac{4}{5}(d+ex)^{3/2}\sqrt{a+bx+cx^2} + \frac{4\int \frac{\frac{3}{4}c\left(bcd^2+b^2\right.}{}}{}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{5c} + \frac{4}{5}(d+ex)^{3/2}\sqrt{a+bx+cx^2} - \frac{1}{5}\left(2\left(bd-\frac{cd}{e}\right.\right.$$

$$= \frac{2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{5c} + \frac{4}{5}(d+ex)^{3/2}\sqrt{a+bx+cx^2} - \frac{\left(2\sqrt{2}\,\sqrt{b^2-4\right.}{}$$

$$= \frac{2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{5c} + \frac{4}{5}(d+ex)^{3/2}\sqrt{a+bx+cx^2} - \frac{2\sqrt{2}\,\sqrt{b^2-4a}}{}$$

Mathematica [C] time = 10.27, size = 693, normalized size = 1.37

$$\frac{\frac{4(a+x(b+cx))\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)}{\sqrt{d+ex}} - \frac{i(d+ex)\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2(b^2-4ac)}-be+2cd\right)}}\sqrt{\frac{4\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2(b^2-4ac)}+be-2cd\right)}+2}\left(\left(\sqrt{e^2(b^2-4ac)}-be+2cd\right)\left(-ce\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((4*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*(a + x*(b + c*x)))/Sqrt[d + e*x
] + 2*c*Sqrt[d + e*x]*(4*c*d - b*e + 2*c*e*x)*(a + x*(b + c*x)) - (I*(d + e
*x)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a
*c)*e^2])*(d + e*x))]*Sqrt[2 + (4*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)
*e^2])*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*EllipticE[I*ArcSinh[(Sqrt[2]
*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sq
rt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqr
t[(b^2 - 4*a*c)*e^2]))] + (b^3*e^3 - b^2*e^2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^
2]) + b*c*e*(-4*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2]) + c*(-(c*d^2*Sqrt[(b^2 -
 4*a*c)*e^2]) + a*e^2*(8*c*d + 3*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*Arc
Sinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*
c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*
d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))
/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]))/(5*c^2*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(2\,cex^2+bd+(2\,cd+be)x\right)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e*x^2 + b*d + (2*c*d + b*e)*x)*sqrt(e*x + d)/sqrt(c*x^2 + b*x
 + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x + a), x)
```

maple [B] time = 0.12, size = 4356, normalized size = 8.59

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/5*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2*(2*a*b*c*d*e^3+2*x*a*b*c*e^4+2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*a*b*e^
4-4*x^4*c^3*e^4-8*x*b*c^2*d^2*e^2+12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e))^(1/2))*a^2*c*e^4-8*a*c^2*d^2*e^2-12*x^3*c^3*d*e^3-4*x^2*a*c^2*e^4+2
*x^2*b^2*c*e^4-8*x^2*c^3*d^2*e^2-2*x^3*b*c^2*e^4+12*2^(1/2)*(-(e*x+d)/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2
*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+
(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c^2*d^2*e^2-3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*
c+b^2)^(1/2)*e))^(1/2))*b^2*c*d^2*e^2-8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c
+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)
^(1/2)*e))^(1/2))*b*c^2*d^3*e-8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c
)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
))^(1/2))*a*c^2*d^2*e^2+8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/
2))*b^2*c*d^2*e^2-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*E
llipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*
a*c+b^2)^(1/2)*b^2*d*e^3-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e
)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1
/2))*(-4*a*c+b^2)^(1/2)*c^2*d^3*e-3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/
2)*e))^(1/2))*a*b^2*e^4+3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/
2))*b^3*d*e^3-4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)
*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Ell
ipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2
*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^3*d*
e^3+4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b^2*e^4-12*2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a^2*c*e^4-10*x^2*b*c^2*d*
e^3-12*x*a*c^2*d*e^3+2*x*b^2*c*d*e^3+4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e))^(1/2))*c^3*d^4+8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e
)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1
/2))*a*b*c*d*e^3-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1
/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/
2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*
EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4
*a*c+b^2)^(1/2)*a*c*d*e^3-12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)
*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(
1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^
(1/2))*a*b*c*d*e^3+3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
```

```
(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(
1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(
-4*a*c+b^2)^(1/2)*b*c*d^2*e^2)/e^2/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^{3/2}}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**(3/2)/sqrt(a + b*x + c*x**2), x)
```

3.1639 $\int \frac{(b+2cx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=441

$$-\frac{4\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac\right.}}\right.}{3ce\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] 4/3*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)+1/3*(-b*e+2*c*d)*EllipticE(1/2*((b+2*
c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2
)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)
*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c/e/(c*x^2+b*x+a)^(1/2
)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-4/3*(a*e^2-b*d*e+c*d^2
)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(
1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1
/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*
c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 441, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {832, 843, 718, 424, 419}

$$-\frac{4\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac\right.}}\right.}{3ce\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (4*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])/3 + (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c
*d - b*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Ellipt
icE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]]
, (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c*e*Sqr
t[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2])
 - (4*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/
(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*
a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a
*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)
])/(3*c*e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx = \frac{4}{3}\sqrt{d+ex}\,\sqrt{a+bx+cx^2} + \frac{2\int \frac{\frac{1}{2}c(bd-2ae)+\frac{1}{2}c(2cd-be)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{4}{3}\sqrt{d+ex}\,\sqrt{a+bx+cx^2} + \frac{(2cd-be)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{3e} - \frac{\left(2\left(cd^2-bde+ae^2\right)\right)\int \frac{}{\sqrt{d+ex}}}{3e}$$

$$= \frac{4}{3}\sqrt{d+ex}\,\sqrt{a+bx+cx^2} + \frac{\left(\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)\text{Subst}\left(\right.}{3ce\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-4ac}\,e}}\,\sqrt{a+}}$$

$$= \frac{4}{3}\sqrt{d+ex}\,\sqrt{a+bx+cx^2} + \frac{\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\right.\right.}{3ce\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\,\sqrt{a+bx}}$$

Mathematica [C] time = 7.73, size = 933, normalized size = 2.12

$$\frac{\sqrt{d+ex}\left(8(a+x(b+cx))+\frac{(d+ex)\left(-\frac{4(be-2cd)\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{(b^2-4ac)e^2}}}(a+x(b+cx))e^2}{(d+ex)^2}-\frac{i\sqrt{2}(2cd-be)\left(2cd-be+\sqrt{(b^2-4ac)e^2}\right)\sqrt{\frac{-2ae^2+2cdxe+\sqrt{(b^2-}}{(2cd-be+}}}{}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[d + e*x]*(8*(a + x*(b + c*x)) + ((d + e*x)*((-4*e^2*(-2*c*d + b*e)*Sq
rt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a
+ x*(b + c*x)))/(d + e*x)^2 - (I*Sqrt[2]*(2*c*d - b*e)*(2*c*d - b*e + Sqrt[
(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x
+ e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*
e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(
b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b
*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*
e^2]))])/Sqrt[d + e*x] + (I*Sqrt[2]*(b^2*e^2 - 4*a*c*e^2 + 2*c*d*Sqrt[(b^2
- 4*a*c)*e^2] - b*e*Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 -
 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2
*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b
^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x)
)/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticF[I*ArcSinh
[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e
^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d -
b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]))/(c*e^2*Sqrt[(c*d^2 + e*(-
(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])))/(6*Sqrt[a + x*(b
 + c*x)])
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(2\,cx+b)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*x + b)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

maple [B] time = 0.11, size = 1854, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 2/3*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c*(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*
c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2
)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*a*e^3-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4
*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*b*d*e^2+2^(1/2)*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4
*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*c*d^2*e+2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e^3-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a
*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e))^(1/2))*a*c*d*e^2-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2
)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))
^(1/2))*b^2*d*e^2+3*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(
1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1
/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)
*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b
*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*
c*d^2*e-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*
c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE
(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3+2*x^
3*c^2*e^3+2*b*c*e^3*x^2+2*x^2*c^2*d*e^2+2*a*c*e^3*x+2*x*b*c*d*e^2+2*a*c*d*e
^2)/e^2/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{d+e\,x}}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.1640 $\int \frac{b+2cx}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=391

$$\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\,\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+c\right.}{b^2-4ac}}$$

```
[Out] 2*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(
1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1
/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/
e/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2*
(-b*e+2*c*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^
(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*
(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e/(e*x+d)^(1/2)/(c*x^2+b*
x+a)^(1/2)
```

Rubi **[A]** time = 0.21, antiderivative size = 391, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.133$, Rules used = $\{843, 718, 424, 419\}$

$$\frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\,\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-2\sqrt{2}\,\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+c\right.}{b^2-4ac}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^
2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2
 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*
c])*e)])/(e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a
+ b*x + c*x^2]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*Sqrt[(c*(d + e
*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2
 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2
- 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e)])/(c*e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\sqrt{a+bx+cx^2}}\,dx=\frac{(2c)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{e}+\frac{(-2cd+be)\int \frac{1}{\sqrt{d+ex}\sqrt{a+bx+cx^2}}\,dx}{e}$$

$$=\frac{\left(2\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)\text{Subst}\Bigg(\int \frac{\sqrt{1+\frac{2\sqrt{b^2-4ac}\,ex^2}{2cd-be-\sqrt{b^2-4ac}\,e}}}{\sqrt{1-x^2}}\,dx,x,}{e\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-4ac}\,e}}\sqrt{a+bx+cx^2}}$$

$$=\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\Bigg(\sin^{-1}\Bigg(\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\Bigg)|-\frac{2\sqrt{b^2-4}}{2cd-\big(b+\sqrt{b^2}}}{e\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 1.98, size = 793, normalized size = 2.03

$$\frac{(d+ex)^{3/2}\Bigg(\frac{4e^2(a+x(b+cx))\sqrt{\frac{e(ae-bd)+cd^2}{\sqrt{e^2\left(b^2-4ac\right)}+be-2cd}}}{(d+ex)^2}+\frac{i\sqrt{2}\sqrt{e^2\left(b^2-4ac\right)}\sqrt{\frac{(d+ex)\sqrt{e^2\left(b^2-4ac\right)}-2ae^2+be(d-ex)+2cdex}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\sqrt{\frac{(d+ex)\sqrt{e^2\left(b^2-4ac\right)}+2ae^2+be(e}{(d+ex)\big(\sqrt{e^2\left(b^2-4ac\right)}+be-}}}{\sqrt{d+ex}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((d + e*x)^(3/2)*((4*e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sq
rt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c*x)))/(d + e*x)^2 - (I*Sqrt[2]*(2*c*d
- b*e + Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + 2*c*d*e*x + b*e*(d - e*x)
 + Sqrt[(b^2 - 4*a*c)*e^2]*(d + e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^
2])*(d + e*x))]*Sqrt[(2*a*e^2 - 2*c*d*e*x + b*e*(-d + e*x) + Sqrt[(b^2 - 4*
a*c)*e^2]*(d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*
EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + S
qrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a
*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] + (I*Sqr
t[2]*Sqrt[(b^2 - 4*a*c)*e^2]*Sqrt[(-2*a*e^2 + 2*c*d*e*x + b*e*(d - e*x) + S
qrt[(b^2 - 4*a*c)*e^2]*(d + e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*
(d + e*x))]*Sqrt[(2*a*e^2 - 2*c*d*e*x + b*e*(-d + e*x) + Sqrt[(b^2 - 4*a*c)
*e^2]*(d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Elli
pticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[
(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*
e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]))/(e^2*Sqrt[
(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[a
 + x*(b + c*x)])
```

fricas [F] time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{cex^3+(cd+be)x^2+ad+(bd+ae)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c*e*x^3 + (c*d +
b*e)*x^2 + a*d + (b*d + a*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

maple [B] time = 0.11, size = 837, normalized size = 2.14

$$\frac{\left(-4ac\,e^2\,\text{EllipticE}\left(\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\;e}},\sqrt{-\frac{be-2cd+\sqrt{-4ac+b^2}\;e}{-be+2cd+\sqrt{-4ac+b^2}\;e}}\right)+4ac\,e^2\,\text{EllipticF}\left(\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\;e}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] (4*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*
a*c*e^2-EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1
/2))*b^2*e^2-EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c
)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e
))^(1/2))*(-4*a*c+b^2)^(1/2)*b*e^2+2*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*
c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*c*d*e-4*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*e^2+4*Ellipti
cE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d*e-4*
EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2
*d^2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/
2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*(e*x+d)^(1/2)
*(c*x^2+b*x+a)^(1/2)/e^2/c/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{\sqrt{d+e\,x}\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(1/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/(sqrt(d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.1641 $\int \frac{b+2cx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=458

$$-\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}(2cd-be)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}+\frac{4\sqrt{2}\sqrt{b^2-4ac}}{\ }$$

```
[Out] 2*(-b*e+2*c*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)-(-b*e+
2*c*d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))
*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(
1/2)/e/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a
*c+b^2)^(1/2))))^(1/2)+4*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^
2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2
))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e/(e*x+d)^(1/2)
/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 458, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {834, 843, 718, 424, 419}

$$-\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}(2cd-be)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}+\frac{4\sqrt{2}\sqrt{b^2-4ac}}{\ }$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*(2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e
*x]) - (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[-((c*(a
+ b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c
] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (
b + Sqrt[b^2 - 4*a*c])*e)])/(e*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(
2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (4*Sqrt[2]*Sqr
t[b^2 - 4*a*c]*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt
[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^
2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(
2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]
)
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx = \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}c(bd-2ae)+\frac{1}{2}c(2cd-be)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{(2c)\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{e} - \frac{(c(2cd-be))\int \frac{}{\sqrt{a}}}{e\left(cd^2-bde+\right.}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{\left(\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx\right.}{b^2-4ac}}\right.}{e\left(cd^2-bde+ae^2\right)\sqrt{\frac{}{2}}}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{\sqrt{2}\,\sqrt{b^2-4ac}\,(2cd-be)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right.}{b^2-4ac}}}{e\left(cd^2-bde+ae^2\right)\sqrt{\frac{}{2cd-(}}}$$

Mathematica [C] time = 0.74, size = 625, normalized size = 1.36

$$i(d+ex)\sqrt{\frac{d\sqrt{e^2(b^2-4ac)}+ex\sqrt{e^2(b^2-4ac)}-2ae^2+be(d-ex)+2cdex}{(d+ex)\left(\sqrt{e^2(b^2-4ac)}-be+2cd\right)}}\sqrt{\frac{d\sqrt{e^2(b^2-4ac)}+ex\sqrt{e^2(b^2-4ac)}+2ae^2+be(ex-d)-2cdex}{(d+ex)\left(\sqrt{e^2(b^2-4ac)}+be-2cd\right)}}\left(\left(-2cd\sqrt{e^2\left(b\right.}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (I*(d + e*x)*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqr
t[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*
e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e
*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4
*a*c)*e^2])*(d + e*x))]*(-((-2*c*d + b*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)
*e^2])*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d +
b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^
2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]) + (-(b^2*e^2) +
 4*a*c*e^2 - 2*c*d*Sqrt[(b^2 - 4*a*c)*e^2] + b*e*Sqrt[(b^2 - 4*a*c)*e^2])*E
llipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sq
rt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*
c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(Sqrt[2]*e^2*(c*d^2 +
e*(-(b*d) + a*e))*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2
 - 4*a*c)*e^2])]*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{ce^2x^4+\left(2\,cde+be^2\right)x^3+ad^2+\left(cd^2+2\,bde+ae^2\right)x^2+\left(bd^2+2\,ade\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c*e^2*x^4 + (2*c*
d*e + b*e^2)*x^3 + a*d^2 + (c*d^2 + 2*b*d*e + a*e^2)*x^2 + (b*d^2 + 2*a*d*e
)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\sqrt{cx^2+bx+a}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

maple [B] time = 0.17, size = 1863, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -2*(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+
(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-
4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/
2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)
*a*e^3-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x
-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b
+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^
(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1
/2)*b*d*e^2+2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-
2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*
c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Ellipti
cF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^
2)^(1/2)*c*d^2*e+2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)
*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*El
lipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e
^3-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b
+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(
-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e^2-2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2
)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^
(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e^2+3*2^(1/2)*(-(e*x+d)
/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(
-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+
2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e-2*2^(1/2)*(-(e*x+d)/(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d
+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*
a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3+b*c*e^3*x^2-2*c^2*d*e^2*x^2+x*b^2*e^3-2*b
*c*d*e^2*x+a*b*e^3-2*a*c*d*e^2)*(c*x^2+b*x+a)^(1/2)*(e*x+d)^(1/2)/e^2/(a*e^
2-b*d*e+c*d^2)/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\sqrt{cx^2 + bx + a}\,(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b + 2\,c\,x}{{(d + e\,x)}^{3/2}\,\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^{\frac{3}{2}}\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**(3/2)*sqrt(a + b*x + c*x**2)), x)
```

3.1642 $\int \frac{b+2cx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=581

$$\frac{4\sqrt{a+bx+cx^2}\,\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)}{3\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\,(-ce(3ae+bd)+b^2e^2}{3e\sqrt{a+bx+cx^2}\,(ae^2-bde+c}$$

```
[Out] 2/3*(-b*e+2*c*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)+4/3*
(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^2
/(e*x+d)^(1/2)-2/3*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*EllipticE(1/2*((b+2*c*
x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^
(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(
e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/e/(a*e^2-b*d*e+c*d^2)^2/
(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2/3*
(-b*e+2*c*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^
(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*
(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e/(a*e^2-b*d*e+c*d^2)/(e*x+
d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 581, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {834, 843, 718, 424, 419}

$$\frac{4\sqrt{a+bx+cx^2}\,\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)}{3\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}\,(-ce(3ae+bd)+b^2e^2}{3e\sqrt{a+bx+cx^2}\,(ae^2-bde+c}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(5/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*(2*c*d - b*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x
)^(3/2)) + (4*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Sqrt[a + b*x + c*x^2]
)/(3*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c
]*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x
+ c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*
c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)])/(3*e*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*(d + e*x))/(2*
c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*Sqrt[
b^2 - 4*a*c]*(2*c*d - b*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*
c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[
(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 -
 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*e*(c*d^2 - b*d*e + a*e^
2)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}}\,dx = \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(-bcd+2b^2e-6ace\right)-\frac{1}{2}c(2cd-be)x}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{4\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)\sqrt{a+bx+c}}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{4\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)\sqrt{a+bx+c}}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{4\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)\sqrt{a+bx+c}}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(2cd-be)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{4\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)\sqrt{a+bx+c}}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

Mathematica [C] time = 5.51, size = 807, normalized size = 1.39

$$2(a+x(b+cx))\left((2cd-be)\left(cd^2+e(ae-bd)\right)+2\left(c^2d^2+b^2e^2-ce(bd+3ae)\right)(d+ex)\right) - \frac{(d+ex)\left(4e^2\sqrt{\frac{cd^2+e(ae}{-2cd+be+\sqrt{(b}}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(5/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*(a + x*(b + c*x))*((2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e)) + 2*(c^2*d^2
 + b^2*e^2 - c*e*(b*d + 3*a*e))*(d + e*x)) - ((d + e*x)*(4*e^2*Sqrt[(c*d^2
+ e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(c^2*d^2 + b^
2*e^2 - c*e*(b*d + 3*a*e))*(a + x*(b + c*x)) - I*(d + e*x)^(3/2)*Sqrt[1 - (
2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d +
 e*x))]*Sqrt[2 + (4*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2
- 4*a*c)*e^2])*(d + e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(c^2*d^
2 + b^2*e^2 - c*e*(b*d + 3*a*e))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 -
 b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]],
-((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c
)*e^2]))] + (b^3*e^3 - b^2*e^2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + b*c*e*(-
4*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2]) + c*(-(c*d^2*Sqrt[(b^2 - 4*a*c)*e^2])
+ a*e^2*(8*c*d + 3*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*
Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqr
t[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt
[(b^2 - 4*a*c)*e^2]))])))/(e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])]))/(3*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)^(
3/2)*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.80, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^{2}+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{ce^{3}x^{5}+\left(3\,cde^{2}+be^{3}\right)x^{4}+ad^{3}+\left(3\,cd^{2}e+3\,bde^{2}+ae^{3}\right)x^{3}+\left(cd^{3}+3\,bd^{2}e+3\,ade^{2}\right)x^{2}+\left(bd^{3}+3\,ad^{2}e\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c*e^3*x^5 + (3*c*
d*e^2 + b*e^3)*x^4 + a*d^3 + (3*c*d^2*e + 3*b*d*e^2 + a*e^3)*x^3 + (c*d^3 +
 3*b*d^2*e + 3*a*d*e^2)*x^2 + (b*d^3 + 3*a*d^2*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\sqrt{cx^{2}+bx+a}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

maple [B] time = 0.24, size = 8632, normalized size = 14.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\sqrt{cx^{2}+bx+a}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{{(d+e\,x)}^{5/2}\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{b+2cx}{(d+ex)^{\frac{5}{2}}\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(5/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((b + 2*c*x)/((d + e*x)**(5/2)*sqrt(a + b*x + c*x**2)), x)
```

3.1643 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=540

$$-\frac{56\sqrt{2}\,e\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2}{2cd-(}\right.}{15c^3\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

```
[Out] -2*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(1/2)+14/5*e^2*(e*x+d)^(3/2)*(c*x^2+b*x+a)^(
1/2)/c+56/15*e^2*(-b*e+2*c*d)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2+7/15*e*
(23*c^2*d^2+8*b^2*e^2-c*e*(9*a*e+23*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b
^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*
d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2
)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^3/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/
(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-56/15*e*(-b*e+2*c*d)*(a*e^2-b*d*e+c
*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)
*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*
2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)
/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^3/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1
/2)
```

Rubi [**A**] time = 0.63, antiderivative size = 540, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.233$, Rules used = {768, 742, 832, 843, 718, 424, 419}

$$-\frac{56\sqrt{2}\,e\sqrt{b^2-4ac}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2}{2cd-(}\right.}{15c^3\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^(7/2))/Sqrt[a + b*x + c*x^2] + (56*e^2*(2*c*d - b*e)*Sqrt[d +
 e*x]*Sqrt[a + b*x + c*x^2])/(15*c^2) + (14*e^2*(d + e*x)^(3/2)*Sqrt[a + b*
x + c*x^2])/(5*c) + (7*Sqrt[2]*Sqrt[b^2 - 4*a*c]*e*(23*c^2*d^2 + 8*b^2*e^2
- c*e*(23*b*d + 9*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4
*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*
a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e
)])/(15*c^3*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a
+ b*x + c*x^2]) - (56*Sqrt[2]*Sqrt[b^2 - 4*a*c]*e*(2*c*d - b*e)*(c*d^2 - b*
d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-
((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2
- 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*
c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(15*c^3*Sqrt[d + e*x]*Sqrt[a + b*x + c*x
^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + (7e)\int \frac{(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + \frac{14e^2(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} + \frac{(14e)\int \frac{\sqrt{d+ex}\left(\frac{1}{2}\left(5cd^2-e(bd+3ae)\right)+2e}{\sqrt{a+bx+cx^2}}}{5c}$$

$$= -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + \frac{56e^2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{14e^2(d+ex)^{3/2}\sqrt{a+bx}}{5c}$$

$$= -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + \frac{56e^2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{14e^2(d+ex)^{3/2}\sqrt{a+bx}}{5c}$$

$$= -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + \frac{56e^2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{14e^2(d+ex)^{3/2}\sqrt{a+bx}}{5c}$$

$$= -\frac{2(d+ex)^{7/2}}{\sqrt{a+bx+cx^2}} + \frac{56e^2(2cd-be)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{14e^2(d+ex)^{3/2}\sqrt{a+bx}}{5c}$$

Mathematica [C] time = 8.93, size = 943, normalized size = 1.75

$$\frac{\sqrt{d+ex}\left(\frac{4xe^3}{5c}+\frac{2(32cd-13be)e^2}{15c^2}-\frac{2\left(c^2d^3+3c^2exd^2-3ace^2d-3bce^2xd+abe^3+b^2e^3x-ace^3x\right)}{c^2\left(cx^2+bx+a\right)}\right)\left(cx^2+bx+a\right)^2}{(a+x(b+cx))^{3/2}} + \frac{14(d+ex)^{3/2}\left(\left(23c^2d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^2*((2*e^2*(32*c*d - 13*b*e))/(15*c^2) + (4
*e^3*x)/(5*c) - (2*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3 + 3*c^2*d^2*e*x - 3*b*c
*d*e^2*x + b^2*e^3*x - a*c*e^3*x))/(c^2*(a + b*x + c*x^2))))/(a + x*(b + c*
x))^(3/2) + (14*(d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)*((23*c^2*d^2 + 8*b^
2*e^2 - c*e*(23*b*d + 9*a*e))*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d +
e*x) + (a*e)/(d + e*x)))/(d + e*x)) - ((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d)
 + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*
(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d +
e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(23*c^2*d^2 + 8*b^2*e^2 - c
*e*(23*b*d + 9*a*e))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e
^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d +
b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] +
(-30*c^3*d^3 + 8*b^2*e^2*(b*e - Sqrt[(b^2 - 4*a*c)*e^2]) - c^2*d*(-45*b*d*e
 - 34*a*e^2 + 23*d*Sqrt[(b^2 - 4*a*c)*e^2]) + c*e*(-31*b^2*d*e - 17*a*b*e^2
 + 23*b*d*Sqrt[(b^2 - 4*a*c)*e^2] + 9*a*e*Sqrt[(b^2 - 4*a*c)*e^2]))*Ellipti
cF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^
2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2
])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])])/(Sqrt[2]*Sqrt[(c*d^2 + e*(-(
b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[d + e*x])))/(15
*c^3*(a + x*(b + c*x))^(3/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e
*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,ce^{3}x^{4} + bd^{3} + \left(6\,cde^{2} + be^{3}\right)x^{3} + 3\,\left(2\,cd^{2}e + bde^{2}\right)x^{2} + \left(2\,cd^{3} + 3\,bd^{2}e\right)x\right)\sqrt{cx^{2} + bx + a}\,\sqrt{ex + d}}{c^{2}x^{4} + 2\,bcx^{3} + 2\,abx + \left(b^{2} + 2\,ac\right)x^{2} + a^{2}},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e^3*x^4 + b*d^3 + (6*c*d*e^2 + b*e^3)*x^3 + 3*(2*c*d^2*e + b*
d*e^2)*x^2 + (2*c*d^3 + 3*b*d^2*e)*x)*sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)/(
c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{7}{2}}}{\left(cx^{2} + bx + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.31, size = 4802, normalized size = 8.89

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2/15*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)*(28*a*b*c*d*e^3+60*c^3*d^3*e*x+28*x
*a*b*c*e^4+14*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*(
(-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Ellip
ticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+
b^2)^(1/2)*a*b*e^4-6*x^4*c^3*e^4-77*x*b*c^2*d^2*e^2+15*c^3*d^4+63*2^(1/2)*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a^2*c*e^4-77*a*c^2*d^2*e^2-38*x
^3*c^3*d*e^3-21*x^2*a*c^2*e^4+28*x^2*b^2*c*e^4+13*x^2*c^3*d^2*e^2+7*x^3*b*c
^2*e^4-42*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*
c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF
```

```
(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c^2*d^2*e^
2-147*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*c*d^2*e^2-32
2*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-
4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*
a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c^2*d^3*e+98*2^(1/
2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b
^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c^2*d^2*e^2+217*2^(1/2)*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*c*d^2*e^2-14*2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b
*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*b^2*d*e^3-28*2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*c^2*d^3
*e-42*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b^2*e^4+42*2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^3*d*e^3-56*2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/
2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2)
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(
-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^3*d*e^3+56*2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b^2*e^4-63*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-
4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c
+b^2)^(1/2)*e))^(1/2))*a^2*c*e^4+210*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b
*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/
(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c^2*d^3*e*(-(e*x+d)/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*e)^(1/2)-70*x^2*b*c^2*d*e^3-98*x*a*c^2*d*e^3+28*x*b^2*c*d
*e^3+161*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c
*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(
2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^3*d^4-98*2^
(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*
c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+
b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(
e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*c*d*e^3-28*2^(1/2)*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*a*c*d*e^3+42
*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4
*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*
(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*c*d*e^3-105*2^(1/
2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*
c^3*d^4*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*
a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*
c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+42*2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/
(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b
*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*b*c*d^2*e^2)/c^3/(c
*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^{7/2}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(7/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1644 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=468

$$-\frac{10\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}}{2cd-\left(b+\sqrt{b^2-4\right.}}\right.}{3c^2\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] -2*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2)+10/3*e^2*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(
1/2)/c+10/3*e*(-b*e+2*c*d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*
a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+
b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*
x+a)/(-4*a*c+b^2))^(1/2)/c^2/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4
*a*c+b^2)^(1/2))))^(1/2)-10/3*e*(a*e^2-b*d*e+c*d^2)*EllipticF(1/2*((b+2*c*x
+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(
1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-
c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/
2))))^(1/2)/c^2/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 468, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {768, 742, 843, 718, 424, 419}

$$-\frac{10\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}}{2cd-\left(b+\sqrt{b^2-4\right.}}\right.}{3c^2\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^(5/2))/Sqrt[a + b*x + c*x^2] + (10*e^2*Sqrt[d + e*x]*Sqrt[a +
 b*x + c*x^2])/(3*c) + (10*Sqrt[2]*Sqrt[b^2 - 4*a*c]*e*(2*c*d - b*e)*Sqrt[d
 + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[
(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 -
 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c^2*Sqrt[(c*(d + e*x))/
(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (10*Sqrt[2]*S
qrt[b^2 - 4*a*c]*e*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b +
 Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Ellipt
icF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]]
, (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c^2*Sqr
t[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 742

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[1/(c*(m + 2*p + 1)), Int[(d + e*x)^(m - 2)*Simp[c*d^2*(m +
 2*p + 1) - e*(a*e*(m - 1) + b*d*(p + 1)) + e*(2*c*d - b*e)*(m + p)*x, x]*(
a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && If[Rat
ionalQ[m], GtQ[m, 1], SumSimplerQ[m, -2]] && NeQ[m + 2*p + 1, 0] && IntQuad
raticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} + (5e)\int \frac{(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} + \frac{10e^2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{(10e)\int \frac{\frac{1}{2}\left(3cd^2-e(bd+ae)\right)+e(2cd-be)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}}{3c}$$

$$= -\frac{2(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} + \frac{10e^2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{(10e(2cd-be))\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= -\frac{2(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} + \frac{10e^2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{\left(10\sqrt{2}\,\sqrt{b^2-4ac}\,e(2cd-be)\sqrt{}\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}}{\sqrt{a+bx+cx^2}} + \frac{10e^2\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{10\sqrt{2}\,\sqrt{b^2-4ac}\,e(2cd-be)\sqrt{d}}{3}$$

Mathematica [**C**] time = 4.22, size = 627, normalized size = 1.34

$$\frac{\sqrt{d+ex}\left(2\left(\frac{e^2(5a+x(5b+2cx))}{c}-3d^2-6dex\right)+\frac{10(d+ex)\left(\frac{2e^2(a+x(b+cx))(2cd-be)}{(d+ex)^2}+\frac{i\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\,\sqrt{\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+b\right.}}}{}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*(2*(-3*d^2 - 6*d*e*x + (e^2*(5*a + x*(5*b + 2*c*x)))/c) + (1
0*(d + e*x)*((2*e^2*(2*c*d - b*e)*(a + x*(b + c*x)))/(d + e*x)^2 + (I*Sqrt[
1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])
*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[
(b^2 - 4*a*c)*e^2])*(d + e*x))]*((-2*c*d + b*e)*(2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*
c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sq
rt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (3*c^2*d
^2 + b*e*(b*e - Sqrt[(b^2 - 4*a*c)*e^2]) + c*(-3*b*d*e - a*e^2 + 2*d*Sqrt[(
b^2 - 4*a*c)*e^2]))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^
2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b
*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(
Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*
e^2])]*Sqrt[d + e*x])))/c^2))/(3*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,ce^{2}x^{3}+bd^{2}+\left(4\,cde+be^{2}\right)x^{2}+2\left(cd^{2}+bde\right)x\right)\sqrt{cx^{2}+bx+a}\,\sqrt{ex+d}}{c^{2}x^{4}+2\,bcx^{3}+2\,abx+\left(b^{2}+2\,ac\right)x^{2}+a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e^2*x^3 + b*d^2 + (4*c*d*e + b*e^2)*x^2 + 2*(c*d^2 + b*d*e)*x
)*sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2
 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.15, size = 2942, normalized size = 6.29

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -1/3*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)*(15*2^(1/2)*EllipticF(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e^3*(-(e*x+d)/(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d
+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*e)^(1/2)-30*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)-5*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)
^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^
(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/
2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*
(-4*a*c+b^2)^(1/2)*a*e^3-15*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c
*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)
^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)*e)^(1/2)+45*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*
c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)+5*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c
*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(
2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^
(1/2)*b*d*e^2-30*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e))^(1/2))*c^2*d^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)
^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^
(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/
2)-5*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b
+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(
-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2
)*c*d^2*e-20*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((
-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2
*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Ellipt
icE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e^3+4
0*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-
4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*
a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e^2+20*2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2
)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^
(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e^2-60*2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/
(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b
*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e+40*2^(1/2)*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c
*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-
4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3-4*c^2*e^3*x^3-10*b*c*e^3*x^2+8*c^2*d*e^
2*x^2-10*a*c*e^3*x-10*b*c*d*e^2*x+18*x*c^2*d^2*e-10*a*c*d*e^2+6*c^2*d^3)/c^
2/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,{(d+e\,x)}^{5/2}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x)
[Out] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**(3/2),x)
[Out] Timed out
```

3.1645 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=216

$$\frac{3\sqrt{2}e\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{c\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-\frac{2(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}$$

```
[Out] -2*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2)+3*e*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d
-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)
*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*
c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = {768, 718, 424}

$$\frac{3\sqrt{2}e\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{c\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-\frac{2(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2))/Sqrt[a + b*x + c*x^2] + (3*Sqrt[2]*Sqrt[b^2 - 4*a*c]*e
*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSi
n[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqr
t[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c*Sqrt[(c*(d + e*x
))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}} + (3e)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}} + \frac{\left(3\sqrt{2}\sqrt{b^2-4ac}\,e\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2\sqrt{b^2-4ac}}{2cd-be-\sqrt{b^2}}}}{\sqrt{1-x^2}}\right.}{c\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-4ac}\,e}}\sqrt{a+bx+cx^2}}$$

$$= -\frac{2(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}} + \frac{3\sqrt{2}\sqrt{b^2-4ac}\,e\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\right.}{c\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 0.78, size = 378, normalized size = 1.75

$$\frac{-4(d+ex)^{3/2}+\frac{3i\sqrt{2}\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)\sqrt{\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{e\left(\sqrt{b^2-4ac}+b\right)-2cd}}\sqrt{1-\frac{2c(d+ex)}{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}\left(E\left(i\sinh^{-1}\left(\sqrt{2}\sqrt{\frac{c}{\left(b+\sqrt{b^2-4ac}\right)e-2cd}}\sqrt{d+ex}\right)\middle|\frac{2cd-\left(b+\sqrt{b^2-\right.}{2cd+\left(\sqrt{b^2-4a\right.}\right.\right.}{c\sqrt{\frac{c}{e\left(\sqrt{b^2-4ac}+b\right)-2cd}}}}{2\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-4*(d + e*x)^(3/2) + ((3*I)*Sqrt[2]*(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*S
qrt[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(-2*c*d + (b + Sqrt[b^2 - 4*a*c])*e
)]*Sqrt[1 - (2*c*(d + e*x))/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)]*(Elliptic
E[I*ArcSinh[Sqrt[2]*Sqrt[c/(-2*c*d + (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[d + e
*x]], (2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])
*e)] - EllipticF[I*ArcSinh[Sqrt[2]*Sqrt[c/(-2*c*d + (b + Sqrt[b^2 - 4*a*c])
*e)]*Sqrt[d + e*x]], (2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)/(2*c*d + (-b + Sqr
t[b^2 - 4*a*c])*e)]))/(c*Sqrt[c/(-2*c*d + (b + Sqrt[b^2 - 4*a*c])*e)]))/(2*
Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,cex^2+bd+(2\,cd+be)x\right)\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e*x^2 + b*d + (2*c*d + b*e)*x)*sqrt(c*x^2 + b*x + a)*sqrt(e*x
 + d)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.12, size = 1349, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)*(3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a
*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+
b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+
(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*d*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*
e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*
e)^(1/2)+3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(
1/2)*e))^(1/2))*c*d^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*(
(-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(
1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),
(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2)
)*a*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*
a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*
c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+3*2^(1/2)*EllipticE
(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*d*e*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*EllipticE(2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c*d^2*(-(e*x+d)/(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+
(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)*e)^(1/2)-c*e^2*x^2-2*c*d*e*x-c*d^2)/c/(c*e*x^3+b*e*x^2+c
*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^{3/2}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1646 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=216

$$\frac{2\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{c\sqrt{d+ex}\sqrt{a+bx+cx^2}}-\frac{2\sqrt{d+ex}}{\sqrt{a+bx+cx}}$$

```
[Out] -2*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)+2*e*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^
2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d
-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*
x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)
/c/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.100$, Rules used = $\{768, 718, 419\}$

$$\frac{2\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{c\sqrt{d+ex}\sqrt{a+bx+cx^2}}-\frac{2\sqrt{d+ex}}{\sqrt{a+bx+cx}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x])/Sqrt[a + b*x + c*x^2] + (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*e*S
qrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x +
 c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c
*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqr
t[b^2 - 4*a*c])*e)])/(c*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\sqrt{d+ex}}{\sqrt{a+bx+cx^2}} + e\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx$$

$$= -\frac{2\sqrt{d+ex}}{\sqrt{a+bx+cx^2}} + \frac{\left(2\sqrt{2}\,\sqrt{b^2-4ac}\,e\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-4ac}\,e}}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)\text{Subst}\left(\int \frac{}{\sqrt{1-x^2}}\right.}{c\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

$$= -\frac{2\sqrt{d+ex}}{\sqrt{a+bx+cx^2}} + \frac{2\sqrt{2}\,\sqrt{b^2-4ac}\,e\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+\sqrt{b^2}}{\sqrt{b}}}}{\sqrt{}}\right.\right.}{c\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 2.30, size = 318, normalized size = 1.47

$$\frac{-2\sqrt{d+ex}+\frac{i(d+ex)\sqrt{2-\frac{4\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\,\sqrt{\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+be-2cd\right)}+1}\,F\left(i\sinh^{-1}\left(\frac{\sqrt{2}\,\sqrt{\frac{cd^2-bed+ae^2}{-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}}}}{\sqrt{d+ex}}\right)|-\frac{-2cd+be+\sqrt{\left(b^2-4ac\right.}}{2cd-be+\sqrt{\left(b^2-4ac\right)}}\right.}{\sqrt{\frac{e(ae-bd)+cd^2}{\sqrt{e^2\left(b^2-4ac\right)}+be-2cd}}}}{\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x] + (I*(d + e*x)*Sqrt[2 - (4*(c*d^2 + e*(-(b*d) + a*e)))/((
2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(
-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Ellip
ticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(
b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e
^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[(c*d^2 + e*(-(b*d) + a
*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[a + x*(b + c*x)]
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x
^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.12, size = 705, normalized size = 3.26

$$\left(-\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\,e}}\,\sqrt{\frac{\left(-2cx-b+\sqrt{-4ac+b^2}\right)e}{-be+2cd+\sqrt{-4ac+b^2}\,e}}\,\sqrt{\frac{\left(2cx+b+\sqrt{-4ac+b^2}\right)e}{be-2cd+\sqrt{-4ac+b^2}\,e}}\,be\,\mathrm{EllipticF}\left(\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\,e}},\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] (-2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(
1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^
(1/2))*b*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(
-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4
*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+2*2^(1/2)*Ellipt
icF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c*d*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2
))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2^(1/2)*EllipticF(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*e*(-4*a*c+b^2)^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2*c*e*x-2*c*d)*(e*x+d)^(1/2)*(c*x
^2+b*x+a)^(1/2)/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)/c
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{d+e\,x}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\sqrt{d+ex}}{(a+bx+cx^2)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((b + 2*c*x)*sqrt(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.1647 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=290

$$-\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\,e\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2}}{\sqrt{b^2-4a}}}}{\sqrt{2}}\right.\right.}{\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(}{2cd-e(\sqrt{}}}}$$

```
[Out] -2*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/
(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)-e*EllipticE(1/2*((b+2*c*x+(-4*a*c+b
^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*
d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2
)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(
1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 290, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {822, 21, 718, 424}

$$-\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\,e\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2}}{\sqrt{b^2-4a}}}}{\sqrt{2}}\right.\right.}{\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(}{2cd-e(\sqrt{}}}}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2
- 4*a*c)*(c*d^2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) - (Sqrt[2]*Sqrt[b^2
 - 4*a*c]*e*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Elli
pticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2
]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((c*d^2
- b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sq
rt[a + b*x + c*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{3/2}}\,dx &= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}-\frac{2\int\frac{\frac{1}{2}c\left(b^2-4ac\right)de+\frac{1}{2}c\left(b^2-4ac\right)}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}}{\left(b^2-4ac\right)\left(cd^2-bde+\right.} \\
&= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}-\frac{(ce)\int\frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{cd^2-bde+ae^2} \\
&= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}-\frac{\left(\sqrt{2}\sqrt{b^2-4ac}\,e\sqrt{d+ex}\right.}{\left(cd^2\right.} \\
&= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}-\frac{\sqrt{2}\sqrt{b^2-4ac}\,e\sqrt{d+ex}}{\left(cd^2-b\right.}
\end{aligned}$$

Mathematica [C] time = 1.10, size = 405, normalized size = 1.40

$$\frac{4\sqrt{d+ex}\,(be-cd+cex)-\frac{i\sqrt{2}\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)\sqrt{\frac{e\left(\sqrt{b^2-4ac}+b+2cx\right)}{e\left(\sqrt{b^2-4ac}+b\right)-2cd}}\sqrt{1-\frac{2c(d+ex)}{e\left(\sqrt{b^2-4ac}-b\right)+2cd}}\left(E\left(i\sinh^{-1}\left(\sqrt{2}\sqrt{\frac{c}{\left(b+\sqrt{b^2-4ac}\right)e-2cd}}\sqrt{d+ex}\right.\right.\right.}{\sqrt{\frac{c}{e\left(\sqrt{b^2-4ac}+b\right)-2cd}}}}{2\sqrt{a+x(b+cx)}\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (4*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x) - (I*Sqrt[2]*(2*c*d + (-b + Sqrt[b^
2 - 4*a*c])*e)*Sqrt[(e*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/(-2*c*d + (b + Sqrt
[b^2 - 4*a*c])*e)]*Sqrt[1 - (2*c*(d + e*x))/(2*c*d + (-b + Sqrt[b^2 - 4*a*c
])*e)]*(EllipticE[I*ArcSinh[Sqrt[2]*Sqrt[c/(-2*c*d + (b + Sqrt[b^2 - 4*a*c]
)*e)]*Sqrt[d + e*x]], (2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)/(2*c*d + (-b + Sq
rt[b^2 - 4*a*c])*e)] - EllipticF[I*ArcSinh[Sqrt[2]*Sqrt[c/(-2*c*d + (b + Sq
rt[b^2 - 4*a*c])*e)]*Sqrt[d + e*x]], (2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)/(2
*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)]))/Sqrt[c/(-2*c*d + (b + Sqrt[b^2 - 4*a*
c])*e)])/(2*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.91, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2 + bx + a}\,(2\,cx + b)\sqrt{ex + d}}{c^2ex^5 + \left(c^2d + 2\,bce\right)x^4 + \left(2\,bcd + \left(b^2 + 2\,ac\right)e\right)x^3 + a^2d + \left(2\,abe + \left(b^2 + 2\,ac\right)d\right)x^2 + \left(2\,abd + a^2e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c^2*e*x^5 + (c^2*
d + 2*b*c*e)*x^4 + (2*b*c*d + (b^2 + 2*a*c)*e)*x^3 + a^2*d + (2*a*b*e + (b^
2 + 2*a*c)*d)*x^2 + (2*a*b*d + a^2*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\left(cx^2 + bx + a\right)^{\frac{3}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^(3/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.14, size = 1366, normalized size = 4.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2*(2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)
^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
)^(1/2))*a*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x
-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b
+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2^(1/2)*Elli
pticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*d*e*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+2^(1/2)*EllipticF(2^(1/2)*(-
(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)
^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c*d^2*(-(e*x+d)/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c
*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+
2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)
^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*e)^(1/2)+2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e))^(1/2))*b*d*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/
2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2
)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2
^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/
2))*c*d^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-
4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*
a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(c*e*x^
3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{{\left(cx^{2} + bx + a\right)}^{\frac{3}{2}} \sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(3/2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{\sqrt{d+e\,x}\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1648 $\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=559

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}+\frac{2\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\Bigg(\mathrm{si}}{\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2\right.}$$

```
[Out] -2*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c
*d^2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)+4*e^2*(-b*e+2*c*d)*(c*x^2+b*x+a)^(1
/2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(1/2)-2*e*(-b*e+2*c*d)*EllipticE(1/2*((b+
2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b
^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/
2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/(a*e^2-b*d*e+c*d^2)^
2/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2*
e*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(
1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1
/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*
c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)/(c*x
^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 559, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {822, 834, 843, 718, 424, 419}

$$-\frac{2\left(\left(b^2-4ac\right)(cd-be)-cex\left(b^2-4ac\right)\right)}{\left(b^2-4ac\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}+\frac{2\sqrt{2}\,e\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\Bigg(\mathrm{si}}{\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b^2 - 4*a*c)*(c*d^
2 - b*d*e + a*e^2)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]) + (4*e^2*(2*c*d - b
*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - (2*S
qrt[2]*Sqrt[b^2 - 4*a*c]*e*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x +
 c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c
*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqr
t[b^2 - 4*a*c])*e)])/((c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*(d + e*x))/(2*c*d -
 (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*Sqrt[b^2 -
 4*a*c]*e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c
*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4
*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d
 - (b + Sqrt[b^2 - 4*a*c])*e)])/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]*Sqrt
[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(3cd-}{(d+ex)^{3/}}}{\left(b^2-4ac\right)\left(c\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a}}{\left(cd^2-bde+ae^2\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a}}{\left(cd^2-bde+ae^2\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a}}{\left(cd^2-bde+ae^2\right.}$$

$$= -\frac{2\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\sqrt{a+bx+cx^2}} + \frac{4e^2(2cd-be)\sqrt{a}}{\left(cd^2-bde+ae^2\right.}$$

Mathematica [C] time = 4.60, size = 672, normalized size = 1.20

$$-\frac{i\sqrt{2}\,(d+ex)^{3/2}\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\sqrt{\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+be-2cd\right)}+1}\left(\left(c\left(2d\sqrt{e^2\left(b^2-4ac\right)}-ae^2-3bde\right)+be\left(be-\sqrt{e^2\left(b^2-4ac\right)}\right)+3c^2d^2\right)F\right.}{\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (-2*a*b*e^3 + 2*a*c*e^2*(3*d + e*x) - 2*b^2*e^2*(d + 2*e*x) + 2*b*c*e*(2*d^
2 + 3*d*e*x - 2*e^2*x^2) + 2*c^2*d*(-d^2 + d*e*x + 4*e^2*x^2) + 4*e^2*(-2*c
*d + b*e)*(a + x*(b + c*x)) - (I*Sqrt[2]*(d + e*x)^(3/2)*Sqrt[1 - (2*(c*d^2
 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*
Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)
*e^2])*(d + e*x))]*((-2*c*d + b*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*
EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + S
qrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a
*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (3*c^2*d^2 + b*e*(b*e
 - Sqrt[(b^2 - 4*a*c)*e^2]) + c*(-3*b*d*e - a*e^2 + 2*d*Sqrt[(b^2 - 4*a*c)*
e^2]))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d +
b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^
2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/Sqrt[(c*d^2 +
e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/((c*d^2 + e*(-
(b*d) + a*e))^2*Sqrt[d + e*x]*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{c^2e^2x^6+2\left(c^2de+bce^2\right)x^5+\left(c^2d^2+4\,bcde+\left(b^2+2\,ac\right)e^2\right)x^4+a^2d^2+2\left(bcd^2+abe^2+\left(b^2+2\,ac\right)de\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c^2*e^2*x^6 + 2*(
c^2*d*e + b*c*e^2)*x^5 + (c^2*d^2 + 4*b*c*d*e + (b^2 + 2*a*c)*e^2)*x^4 + a^
2*d^2 + 2*(b*c*d^2 + a*b*e^2 + (b^2 + 2*a*c)*d*e)*x^3 + (4*a*b*d*e + a^2*e^
2 + (b^2 + 2*a*c)*d^2)*x^2 + 2*(a*b*d^2 + a^2*d*e)*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 3.17Unable to transpose Error: Bad Argum
ent Value
```

maple [B] time = 0.17, size = 2977, normalized size = 5.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] (3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))
^(1/2))*a*b*e^3*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*
x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+
b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-6*2^(1/2)*E
llipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*
d*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*
c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+
b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*a*e^3-3*2^(1/2)*Elliptic
F(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e^2*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+9*2^(1/2)*EllipticF(2^(1/2)*
(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e*(-(e*x+d)/(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b
*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*b*d*e^2-6*2^(1/2)*EllipticF(2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2
)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))
^(1/2))*(-4*a*c+b^2)^(1/2)*c*d^2*e-4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^
2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1
/2)*e))^(1/2))*a*b*e^3+8*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)
*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*
e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^
(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)
,(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2
))*a*c*d*e^2+4*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*
((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*(
(2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Elli
pticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e
^2-12*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e+8*2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1
/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3-4*b*c*e^3*x^2+8*c^
2*d*e^2*x^2+2*a*c*e^3*x-4*b^2*e^3*x+6*b*c*d*e^2*x+2*x*c^2*d^2*e-2*a*b*e^3+6
*a*c*d*e^2-2*b^2*d*e^2+4*b*c*d^2*e-2*c^2*d^3)*(c*x^2+b*x+a)^(1/2)*(e*x+d)^(
1/2)/(a*e^2-b*d*e+c*d^2)^2/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx + b}{\left(cx^2 + bx + a\right)^{\frac{3}{2}} (ex + d)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b + 2\,c\,x}{(d + e\,x)^{3/2}\,\left(c\,x^2 + b\,x + a\right)^{3/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.1649 $\int \frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=573

$$-\frac{14\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4}\right.}\right.}{3c^2\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] -2/3*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(3/2)-14/3*e*(e*x+d)^(3/2)*(b*d-2*a*e+(-b*
e+2*c*d)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+14/3*e^2*(-b*e+2*c*d)*(e*x+d)^
(1/2)*(c*x^2+b*x+a)^(1/2)/c/(-4*a*c+b^2)+14/3*e*(c^2*d^2+b^2*e^2-c*e*(3*a*e
+b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2
)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))
*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^2/(-4*a*c+b^
2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(
1/2)-14/3*e*(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*
c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2
*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^
2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^2/(-4*a*c+b^
2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.61, antiderivative size = 573, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.233, Rules used = {768, 738, 832, 843, 718, 424, 419}

$$-\frac{14\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4}\right.}\right.}{3c^2\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(7/2))/(3*(a + b*x + c*x^2)^(3/2)) - (14*e*(d + e*x)^(3/2)*(b
*d - 2*a*e + (2*c*d - b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (1
4*e^2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])/(3*c*(b^2 - 4*a*c)
) + (14*Sqrt[2]*e*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Sqrt[d + e*x]*Sqr
t[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b
^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/
(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c^2*Sqrt[b^2 - 4*a*c]*Sqrt[(c*(d +
 e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (14*Sq
rt[2]*e*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (
b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Ell
ipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[
2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*c^2*
Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int\frac{(b+2cx)(d+ex)^{7/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}+\frac{1}{3}(7e)\int\frac{(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{14e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{(14e)\int\frac{\sqrt{d+ex}\left(-\frac{3}{2}\right.}{}}{3\left(b\right.}$$

$$=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{14e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{14e^2(2cd-be)\sqrt{}}{3c\left(b\right.}$$

$$=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{14e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{14e^2(2cd-be)\sqrt{}}{3c\left(b\right.}$$

$$=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{14e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{14e^2(2cd-be)\sqrt{}}{3c\left(b\right.}$$

$$=-\frac{2(d+ex)^{7/2}}{3\left(a+bx+cx^2\right)^{3/2}}-\frac{14e(d+ex)^{3/2}(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{14e^2(2cd-be)\sqrt{}}{3c\left(b\right.}$$

Mathematica [C] time = 13.43, size = 1454, normalized size = 2.54

$$\frac{\sqrt{d+ex}\left(cx^2+bx+a\right)^3\left(\frac{2\left(14d^2exc^3-40ade^2c^2+7bd^2ec^2-18ae^3xc^2-14bde^2xc^2+11abe^3c+3b^2de^2c+8b^2e^3xc-b^3e^3\right)}{3c^2\left(4ac-b^2\right)\left(cx^2+bx+a\right)}-\frac{2\left(c^2d^3+3c^2exd^2-3a\right.}{3}\right.}{(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^3*((-2*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3 +
3*c^2*d^2*e*x - 3*b*c*d*e^2*x + b^2*e^3*x - a*c*e^3*x))/(3*c^2*(a + b*x + c
*x^2)^2) + (2*(7*b*c^2*d^2*e + 3*b^2*c*d*e^2 - 40*a*c^2*d*e^2 - b^3*e^3 + 1
1*a*b*c*e^3 + 14*c^3*d^2*e*x - 14*b*c^2*d*e^2*x + 8*b^2*c*e^3*x - 18*a*c^2*
e^3*x))/(3*c^2*(-b^2 + 4*a*c)*(a + b*x + c*x^2))))/(a + x*(b + c*x))^(5/2)
- (7*(d + e*x)^(3/2)*(a + b*x + c*x^2)^(5/2)*(4*Sqrt[(c*d^2 + e*(-(b*d) + a
*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(c^3*d^2*(-1 + d/(d + e*x))^
2 + (b^2*e^3*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x) - c^2*e*(a*
e*(3 + (2*d^2)/(d + e*x)^2 - (6*d)/(d + e*x)) + b*d*(1 + (2*d^2)/(d + e*x)^
2 - (3*d)/(d + e*x))) + c*e^2*((-3*a^2*e^2)/(d + e*x)^2 + b^2*(1 + (2*d^2)/
(d + e*x)^2 - (3*d)/(d + e*x)) + (a*b*e*(-3 + (2*d)/(d + e*x)))/(d + e*x)))
 - (I*Sqrt[2]*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(c^2*d^2 + b^2*e^2 -
c*e*(b*d + 3*a*e))*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*
c*d*(-1 + d/(d + e*x)) + b*e*(-1 + (2*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b
^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*
c*d*(-1 + d/(d + e*x)) + b*(e - (2*d*e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b
^2 - 4*a*c)*e^2])]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2
)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqr
t[d + e*x] + (I*Sqrt[2]*(-(b^3*e^3) + b^2*e^2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e
^2]) + b*c*e*(4*a*e^2 - d*Sqrt[(b^2 - 4*a*c)*e^2]) + c*(c*d^2*Sqrt[(b^2 - 4
*a*c)*e^2] - a*e^2*(8*c*d + 3*Sqrt[(b^2 - 4*a*c)*e^2])))*Sqrt[(Sqrt[(b^2 -
4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*c*d*(-1 + d/(d + e*x)) + b*e*(-1 + (2
*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2 -
4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*c*d*(-1 + d/(d + e*x)) + b*(e - (2*d*
e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*EllipticF[I*ArcSin
h[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*
e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d -
 b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]))/(3*c^2*(-b^2 + 4*a*c)*Sq
rt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a
+ x*(b + c*x))^(5/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b
*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 1.06, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,ce^{3}x^{4} + bd^{3} + \left(6\,cde^{2} + be^{3}\right)x^{3} + 3\,\left(2\,cd^{2}e + bde^{2}\right)x^{2} + \left(2\,cd^{3} + 3\,bd^{2}e\right)x\right)\sqrt{cx^{2} + bx + a}\,\sqrt{ex + d}}{c^{3}x^{6} + 3\,bc^{2}x^{5} + 3\,\left(b^{2}c + ac^{2}\right)x^{4} + 3\,a^{2}bx + \left(b^{3} + 6\,abc\right)x^{3} + a^{3} + 3\,\left(ab^{2} + a^{2}c\right)x^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e^3*x^4 + b*d^3 + (6*c*d*e^2 + b*e^3)*x^3 + 3*(2*c*d^2*e + b*
d*e^2)*x^2 + (2*c*d^3 + 3*b*d^2*e)*x)*sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)/(
c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a*b*c)
*x^3 + a^3 + 3*(a*b^2 + a^2*c)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{7}{2}}}{\left(cx^{2} + bx + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^(5/2), x)
```

maple [B] time = 0.30, size = 12975, normalized size = 22.64

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{7}{2}}}{\left(cx^2+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(7/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(7/2)/(c*x^2 + b*x + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^{7/2}}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(7/2))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(7/2)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1650 $\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=494

$$-\frac{20\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3c\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}-\frac{10e\sqrt{}}{3}$$

```
[Out] -2/3*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2)-10/3*e*(b*d-2*a*e+(-b*e+2*c*d)*x)*(e
*x+d)^(1/2)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+5/3*e*(-b*e+2*c*d)*EllipticE(1
/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-
4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(
1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+
a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-20/3*e*(a*e^2-b
*d*e+c*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))
^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(
1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+
(-4*a*c+b^2)^(1/2))))^(1/2)/c/(-4*a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a
)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 494, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {768, 738, 843, 718, 424, 419}

$$-\frac{20\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3c\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}-\frac{10e\sqrt{}}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(5/2))/(3*(a + b*x + c*x^2)^(3/2)) - (10*e*Sqrt[d + e*x]*(b*d
 - 2*a*e + (2*c*d - b*e)*x))/(3*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (5*S
qrt[2]*e*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*
a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a
*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)
])/(3*c*Sqrt[b^2 - 4*a*c]*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e)]*Sqrt[a + b*x + c*x^2]) - (20*Sqrt[2]*e*(c*d^2 - b*d*e + a*e^2)*Sqrt[
(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x
^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/
Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^
2 - 4*a*c])*e)])/(3*c*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]
)
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 738

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*
c)), Int[(d + e*x)^(m - 2)*Simp[e*(2*a*e*(m - 1) + b*d*(2*p - m + 4)) - 2*c
*d^2*(2*p + 3) + e*(b*e - 2*d*c)*(m + 2*p + 2)*x, x]*(a + b*x + c*x^2)^(p +
 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^
2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 1] &&
IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^{5/2}}{3\left(a+bx+cx^2\right)^{3/2}} + \frac{1}{3}(5e)\int \frac{(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(d+ex)^{5/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{10e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{(10e)\int \frac{-\frac{1}{2}e(bd-2ae)-\frac{1}{2}e(2}{\sqrt{d+ex}\,\sqrt{a+bx}}}{3\left(b^2-4ac\right)}$$

$$= -\frac{2(d+ex)^{5/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{10e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(5e(2cd-be))\int \frac{\sqrt{d}}{\sqrt{a+b}}}{3\left(b^2-4ac\right)}$$

$$= -\frac{2(d+ex)^{5/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{10e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(5\sqrt{2}\,e(2cd-be)\sqrt{d+}\right.}{}$$

$$= -\frac{2(d+ex)^{5/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{10e\sqrt{d+ex}\,(bd-2ae+(2cd-be)x)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{5\sqrt{2}\,e(2cd-be)\sqrt{d+}}{3c}$$

Mathematica [C] time = 10.00, size = 1150, normalized size = 2.33

$$\frac{\sqrt{d+ex}\left(\frac{2\left(10dexc^2-14ae^2c+5bdec-5be^2xc+b^2e^2\right)}{3c\left(4ac-b^2\right)\left(cx^2+bx+a\right)}-\frac{2\left(cd^2+2cexd-ae^2-be^2x\right)}{3c\left(cx^2+bx+a\right)^2}\right)\left(cx^2+bx+a\right)^3}{(a+x(b+cx))^{5/2}}+\frac{5(d+ex)^{3/2}\left(-4(be-2cd)\sqrt{\frac{}{-2cd}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^3*((-2*(c*d^2 - a*e^2 + 2*c*d*e*x - b*e^2*
x))/(3*c*(a + b*x + c*x^2)^2) + (2*(5*b*c*d*e + b^2*e^2 - 14*a*c*e^2 + 10*c
^2*d*e*x - 5*b*c*e^2*x))/(3*c*(-b^2 + 4*a*c)*(a + b*x + c*x^2))))/(a + x*(b
 + c*x))^(5/2) + (5*(d + e*x)^(3/2)*(a + b*x + c*x^2)^(5/2)*(-4*(-2*c*d + b
*e)*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2]
)]*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d
 + e*x)) + (I*Sqrt[2]*(-2*c*d + b*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]
)*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*c*d*(-1 + d/(d +
e*x)) + b*e*(-1 + (2*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])
]*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*c*d*(-1 + d/(d +
e*x)) + b*(e - (2*d*e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])
]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e +
 Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4
*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] - (I*S
qrt[2]*(-(b^2*e^2) + 4*a*c*e^2 - 2*c*d*Sqrt[(b^2 - 4*a*c)*e^2] + b*e*Sqrt[(
b^2 - 4*a*c)*e^2])*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*
c*d*(-1 + d/(d + e*x)) + b*e*(-1 + (2*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b
^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*
c*d*(-1 + d/(d + e*x)) + b*(e - (2*d*e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b
^2 - 4*a*c)*e^2])]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2
)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqr
t[d + e*x]))/(6*c*(b^2 - 4*a*c)*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b
*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c*x))^(5/2)*Sqrt[((d + e*x)^2*(c
*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*
x)))/e^2])
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,ce^{2}x^{3}+bd^{2}+\left(4\,cde+be^{2}\right)x^{2}+2\,\left(cd^{2}+bde\right)x\right)\sqrt{cx^{2}+bx+a}\,\sqrt{ex+d}}{c^{3}x^{6}+3\,bc^{2}x^{5}+3\,\left(b^{2}c+ac^{2}\right)x^{4}+3\,a^{2}bx+\left(b^{3}+6\,abc\right)x^{3}+a^{3}+3\,\left(ab^{2}+a^{2}c\right)x^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e^2*x^3 + b*d^2 + (4*c*d*e + b*e^2)*x^2 + 2*(c*d^2 + b*d*e)*x
)*sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)/(c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + a
*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a*b*c)*x^3 + a^3 + 3*(a*b^2 + a^2*c)*x^2),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^{2}+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(5/2), x)
```

maple [B] time = 0.23, size = 5517, normalized size = 11.17

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{5}{2}}}{\left(cx^{2}+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^{5/2}}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1651 $\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=456

$$-\frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2}{2cd-}\right.}{c\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

```
[Out] -2/3*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2)-2*e*(2*c*x+b)*(e*x+d)^(1/2)/(-4*a*c+
b^2)/(c*x^2+b*x+a)^(1/2)+2*e*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-
4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*
c+b^2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2)
)^(1/2)/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a
*c+b^2)^(1/2))))^(1/2)-2*e*(-b*e+2*c*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2
)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-
e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(
1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/(-4*a*c+b^2)^(1/2
)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 456, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {768, 736, 843, 718, 424, 419}

$$-\frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}-\frac{2\sqrt{2}\,e\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2}{2cd-}\right.}{c\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(d + e*x)^(3/2))/(3*(a + b*x + c*x^2)^(3/2)) - (2*e*(b + 2*c*x)*Sqrt[d
 + e*x])/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*e*Sqrt[d + e*x]*
Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqr
t[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*
e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(Sqrt[b^2 - 4*a*c]*Sqrt[(c*(d + e*
x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2
]*e*(2*c*d - b*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*S
qrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt
[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e
)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*
Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 736

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^m*(b + 2*c*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)
*(b^2 - 4*a*c)), x] - Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)
*(b*e*m + 2*c*d*(2*p + 3) + 2*c*e*(m + 2*p + 3)*x)*(a + b*x + c*x^2)^(p + 1
), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p, -1] && GtQ[m, 0] && (L
tQ[m, 1] || (ILtQ[m + 2*p + 3, 0] && NeQ[m, 2])) && IntQuadraticQ[a, b, c,
d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2(d+ex)^{3/2}}{3\left(a+bx+cx^2\right)^{3/2}} + e\int \frac{\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2(d+ex)^{3/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(2e)\int \frac{\frac{be}{2}+cex}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{b^2-4ac}$$

$$= -\frac{2(d+ex)^{3/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(2ce)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{b^2-4ac} - \frac{(e(2cd}{}$$

$$= -\frac{2(d+ex)^{3/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{\left(2\sqrt{2}\,e\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right.}{\sqrt{b^2-4ac}}$$

$$= -\frac{2(d+ex)^{3/2}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e(b+2cx)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{2\sqrt{2}\,e\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}}{\sqrt{b^2-4ac}\,\sqrt{}}$$

Mathematica [C] time = 6.66, size = 928, normalized size = 2.04

$$\sqrt{d+ex}\left((a+x(b+cx))\left(-\frac{2e(b+2cx)}{\left(b^2-4ac\right)(a+x(b+cx))} - \frac{2(d+ex)}{3(a+x(b+cx))^2}\right) + \frac{(d+ex)\left(\frac{4\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}}}\,(a+x(b+cx))e^2}{(d+ex)^2} - \frac{i\sqrt{2}\left(2cd-be+\sqrt{\left(b^2\right.}\right.}{}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d + e*x]*((a + x*(b + c*x))*((-2*(d + e*x))/(3*(a + x*(b + c*x))^2) -
 (2*e*(b + 2*c*x))/((b^2 - 4*a*c)*(a + x*(b + c*x)))) + ((d + e*x)*((4*e^2*
Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(
a + x*(b + c*x)))/(d + e*x)^2 - (I*Sqrt[2]*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c
)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^
2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])
*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt
[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)
*e^2])*(d + e*x))]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2
)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqr
t[d + e*x] + (I*Sqrt[2]*Sqrt[(b^2 - 4*a*c)*e^2]*Sqrt[(-2*a*e^2 + d*Sqrt[(b^
2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/
((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt
[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e
*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticF[I*ArcS
inh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c
)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d
 - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]))/((b^2 - 4*a*c)*Sqrt[(c
*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])))/Sqrt[
a + x*(b + c*x)]
```

fricas [F] time = 0.89, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(2\,cex^{2} + bd + (2\,cd + be)x\right)\sqrt{cx^{2} + bx + a}\,\sqrt{ex + d}}{c^{3}x^{6} + 3\,bc^{2}x^{5} + 3\left(b^{2}c + ac^{2}\right)x^{4} + 3\,a^{2}bx + \left(b^{3} + 6\,abc\right)x^{3} + a^{3} + 3\left(ab^{2} + a^{2}c\right)x^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral((2*c*e*x^2 + b*d + (2*c*d + b*e)*x)*sqrt(c*x^2 + b*x + a)*sqrt(e*x
 + d)/(c^3*x^6 + 3*b*c^2*x^5 + 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6
*a*b*c)*x^3 + a^3 + 3*(a*b^2 + a^2*c)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx + b)(ex + d)^{\frac{3}{2}}}{\left(cx^{2} + bx + a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(5/2), x)
```

maple [B] time = 0.21, size = 4740, normalized size = 10.39

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -1/3*(-6*x*a*b*c*e^2+4*x*a*c^2*d*e-10*x*b^2*c*d*e+12*2^(1/2)*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*b^2*c*d*e*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2
))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+6*2^(1/2)*EllipticF(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e*(-4*a*c+b^2)^(1/2
)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^
2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+12*2^(1/2)*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*c*d*e*(-(e*x+
d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))
```

```
/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*b*c*e^2*(-4*a*c+b^2)^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-18*x^2*b*c^2*d*e-12*x^4
*c^3*e^2-4*x^2*a*c^2*e^2-8*x^2*b^2*c*e^2-18*x^3*b*c^2*e^2-12*2^(1/2)*Ellipt
icE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*c^3*d
^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b
^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+6*2^(1/2)*EllipticF(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*c^2*d*e*(-4*a
*c+b^2)^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+12*2^(1/2)*El
lipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*b
*c^2*d*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4
*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+12*2^(1/2)*Ellipti
cF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d
+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*a*b*c*e^
2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^
2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)
^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*2^(1/2)*EllipticE(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*a*b*c*e^2*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2
))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+6*2^(1/2)*EllipticF(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*b*c*d*e*(-4*a*c+b^2)^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+
b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^
2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+8*a*c^2*d^2-2*b^2*c*d^2
-3*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^
(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))
^(1/2))*x*b^3*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*
c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*
x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+12*2^(1/2
)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a
^2*c*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4
*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*Elliptic
F(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b^2*e^2*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*2^(1/2)*EllipticE(2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a^2*c*e^2*(-(e*x+d)/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-
b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c^2*d^2*(-(e*x+d)/(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d
+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*x^3*c^3*d*e-3*2^(1/2)*EllipticF(2^(1/2)*(-(
e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^
(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*b^2*e^2*(-4*a*c+b^2)^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*2^(1/2)*EllipticE(2
^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x*b*c^2*d^2*(-
(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(
1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/
2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*EllipticF(2^(1/2)*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e^2*(-4*a*c+b^2)^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c
+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b
^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+12*2^(1/2)*EllipticF(2
^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4
*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*a*c^2*e^2*
(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)
^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(
1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-3*2^(1/2)*EllipticF(2^(1/2)
*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*b^2*c*e^2*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2)
)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/
(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-12*2^(1/2)*EllipticE(2^(1/2)*(-(e
*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*x^2*a*c^2*e^2*(-(e*x+d)/(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b
*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-6*a*b*c*d*e)/(e*x+d)^(1/2)/(4*a*c-b^2)
/c/(c*x^2+b*x+a)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^{\frac{3}{2}}}{\left(cx^2+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\left(d+e\,x\right)^{3/2}}{\left(c\,x^2+b\,x+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.1652 $\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=517

$$-\frac{2e\sqrt{d+ex}\left(2ace+b^2(-e)+cx(2cd-be)+bcd\right)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{2}\,e\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right.\right.}{3\sqrt{b^2-4ac}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{}{2cd-}}}$$

```
[Out] -2/3*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2)-2/3*e*(b*c*d-b^2*e+2*a*c*e+c*(-b*e+2
*c*d)*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)
+1/3*e*(-b*e+2*c*d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2
)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1
/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/(
a*e^2-b*d*e+c*d^2)/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d
-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-4/3*e*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2
)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-
e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(
1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/(-4*a*c+b^2)^(1/2)/
(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 517, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {768, 740, 843, 718, 424, 419}

$$-\frac{2e\sqrt{d+ex}\left(2ace+b^2(-e)+cx(2cd-be)+bcd\right)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}+\frac{\sqrt{2}\,e\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(2cd-be)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right.\right.}{3\sqrt{b^2-4ac}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{}{2cd-}}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x])/(3*(a + b*x + c*x^2)^(3/2)) - (2*e*Sqrt[d + e*x]*(b*c*d
- b^2*e + 2*a*c*e + c*(2*c*d - b*e)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a
*e^2)*Sqrt[a + b*x + c*x^2]) + (Sqrt[2]*e*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[
-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2
 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2
*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a
*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x
+ c*x^2]) - (4*Sqrt[2]*e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c]
)*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b
 + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4
*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*Sqrt[b^2 - 4*a*c]*Sqrt[d
+ e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 740

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(b*c*d - b^2*e + 2*a*c*e + c*(2*c*d - b*e
)*x)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e
^2)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d +
 e*x)^m*Simp[b*c*d*e*(2*p - m + 2) + b^2*e^2*(m + p + 2) - 2*c^2*d^2*(2*p +
 3) - 2*a*c*e^2*(m + 2*p + 3) - c*e*(2*c*d - b*e)*(m + 2*p + 4)*x, x]*(a +
b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4
*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && LtQ[p,
-1] && IntQuadraticQ[a, b, c, d, e, m, p, x]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(b+2cx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2\sqrt{d+ex}}{3\left(a+bx+cx^2\right)^{3/2}} + \frac{1}{3}e\int \frac{1}{\sqrt{d+ex}\,\left(a+bx+cx^2\right)^{3/2}}\,dx$$

$$= -\frac{2\sqrt{d+ex}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\,\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{(2e)\int \frac{-\frac{1}{2}ce(bd-2}{\sqrt{d+e}}}{3\left(b^2-4ac\right)\left(\right.}$$

$$= -\frac{2\sqrt{d+ex}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\,\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} - \frac{(2ce)\int \frac{}{\sqrt{d+ex}\,\sqrt{}}}{3\left(b^2-\right.}$$

$$= -\frac{2\sqrt{d+ex}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\,\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} + \frac{\left(\sqrt{2}\,e(2cd-be\right.}{3}$$

$$= -\frac{2\sqrt{d+ex}}{3\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\,\left(bcd-b^2e+2ace+c(2cd-be)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} + \frac{\sqrt{2}\,e(2cd-be)}{3\sqrt{b}}$$

Mathematica [C] time = 7.38, size = 1016, normalized size = 1.97

$$\frac{\sqrt{d+ex}\left(-\frac{4e\left(eb^2+c(ex-d)b-2c(ae+cdx)\right)}{\left(b^2-4ac\right)\left(e(bd-ae)-cd^2\right)} + \frac{(d+ex)\left(-\frac{4(be-2cd)\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}}}\,(a+x(b+cx))e^2}{(d+ex)^2} - \frac{i\sqrt{2}\,(2cd-be)\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)\sqrt{\frac{-2ae^2+2cdxe-}{(}}}{}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (Sqrt[d + e*x]*(-4/(a + x*(b + c*x)) - (4*e*(b^2*e - 2*c*(a*e + c*d*x) + b*
c*(-d + e*x)))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))) + ((d + e*x)*((-4
*e^2*(-2*c*d + b*e)*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b
^2 - 4*a*c)*e^2])]*(a + x*(b + c*x)))/(d + e*x)^2 - (I*Sqrt[2]*(2*c*d - b*e
)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*
a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/((2*c*
d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2
- 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e*x))/(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticE[I*ArcSinh[(S
qrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2]
)])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e
 + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] + (I*Sqrt[2]*(b^2*e^2 - 4*a*c*
e^2 + 2*c*d*Sqrt[(b^2 - 4*a*c)*e^2] - b*e*Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2
*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*
x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqr
t[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e
^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x)
)]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e
+ Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 -
4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]))/((b
^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*
c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])))/(6*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.97, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex+d}}{c^3x^6+3\,bc^2x^5+3\left(b^2c+ac^2\right)x^4+3\,a^2bx+\left(b^3+6\,abc\right)x^3+a^3+3\left(ab^2+a^2c\right)x^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c^3*x^6 + 3*b*c^2
*x^5 + 3*(b^2*c + a*c^2)*x^4 + 3*a^2*b*x + (b^3 + 6*a*b*c)*x^3 + a^3 + 3*(a
*b^2 + a^2*c)*x^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(5/2), x)
```

maple [B] time = 0.20, size = 5571, normalized size = 10.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(5/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,\sqrt{d+e\,x}}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(5/2),x)
[Out] int(((b + 2*c*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**(5/2),x)
[Out] Timed out
```

3.1653 $\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=665

$$-\frac{2\sqrt{2}\,e\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3\sqrt{b^2-4ac}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-$$

```
[Out] -2/3*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)*(e*x+d)^(1/2)/(-4*a*c+b^2
)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(3/2)-2/3*e*(3*b^2*c*d*e-8*a*c^2*d*e-2*
b^3*e^2-b*c*(-7*a*e^2+c*d^2)-2*c*(c^2*d^2+b^2*e^2-c*e*(3*a*e+b*d))*x)*(e*x+
d)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)^(1/2)-2/3*e*(c^2*
d^2+b^2*e^2-c*e*(3*a*e+b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-
4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*
c+b^2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2)
)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*
x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2/3*e*(-b*e+2*c*d)*EllipticF(1
/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-
4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^
2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(
1/2)/(a*e^2-b*d*e+c*d^2)/(-4*a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/
2)
```

Rubi [A] time = 0.59, antiderivative size = 665, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 30, $\frac{\text{number of rules}}{\text{integrand size}} = 0.167$, Rules used = {822, 843, 718, 424, 419}

$$-\frac{2e\sqrt{d+ex}\left(-2cx\left(-ce(3ae+bd)+b^2e^2+c^2d^2\right)-bc\left(cd^2-7ae^2\right)-8ac^2de+3b^2cde-2b^3e^2\right)}{3\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (-2*Sqrt[d + e*x]*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/(3*(b^
2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2)^(3/2)) - (2*e*Sqrt[d +
 e*x]*(3*b^2*c*d*e - 8*a*c^2*d*e - 2*b^3*e^2 - b*c*(c*d^2 - 7*a*e^2) - 2*c*
(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e
 + a*e^2)^2*Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2]*e*(c^2*d^2 + b^2*e^2 - c*e*
(b*d + 3*a*e))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*E
llipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqr
t[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*Sq
rt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*(d + e*x))/(2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*e*(2*c*d - b*e)*
Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x
+ c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*
c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)])/(3*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)*Sqrt[d +
 e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{b+2cx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{5/2}}\,dx = -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2\int \frac{\frac{1}{2}\left(b^2-4ac\right)e(cd-2be)-\frac{3}{2}}{\sqrt{d+ex}\left(a+bx+c\right.}}{3\left(b^2-4ac\right)\left(cd^2-\right.}$$

$$= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\left(3b^2cde-\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\left(3b^2cde-\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\left(3b^2cde-\right.}{}$$

$$= -\frac{2\sqrt{d+ex}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}} - \frac{2e\sqrt{d+ex}\left(3b^2cde-\right.}{}$$

Mathematica [C] time = 12.19, size = 1450, normalized size = 2.18

$$\frac{\sqrt{d+ex}\left(cx^2+bx+a\right)^3\left(\frac{2(-cd+be+cex)}{3\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^2}+\frac{2\left(2d^2exc^3+8ade^2c^2+bd^2ec^2-6ae^3xc^2-2bde^2xc^2-7abe^3c-3b^2de^2c+2b^2e^3xc+2b^3\right.}{3\left(b^2-4ac\right)\left(-cd^2+bed-ae^2\right)^2\left(cx^2+bx+a\right)}\right.}{(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^3*((2*(-(c*d) + b*e + c*e*x))/(3*(c*d^2 -
b*d*e + a*e^2)*(a + b*x + c*x^2)^2) + (2*(b*c^2*d^2*e - 3*b^2*c*d*e^2 + 8*a
*c^2*d*e^2 + 2*b^3*e^3 - 7*a*b*c*e^3 + 2*c^3*d^2*e*x - 2*b*c^2*d*e^2*x + 2*
b^2*c*e^3*x - 6*a*c^2*e^3*x))/(3*(b^2 - 4*a*c)*(-(c*d^2) + b*d*e - a*e^2)^2
*(a + b*x + c*x^2))))/(a + x*(b + c*x))^(5/2) - ((d + e*x)^(3/2)*(a + b*x +
 c*x^2)^(5/2)*(4*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2
- 4*a*c)*e^2])]*(c^3*d^2*(-1 + d/(d + e*x))^2 + (b^2*e^3*(b - (b*d)/(d + e*
x) + (a*e)/(d + e*x)))/(d + e*x) - c^2*e*(a*e*(3 + (2*d^2)/(d + e*x)^2 - (6
*d)/(d + e*x)) + b*d*(1 + (2*d^2)/(d + e*x)^2 - (3*d)/(d + e*x))) + c*e^2*(
(-3*a^2*e^2)/(d + e*x)^2 + b^2*(1 + (2*d^2)/(d + e*x)^2 - (3*d)/(d + e*x))
+ (a*b*e*(-3 + (2*d)/(d + e*x)))/(d + e*x))) - (I*Sqrt[2]*(2*c*d - b*e + Sq
rt[(b^2 - 4*a*c)*e^2])*(c^2*d^2 + b^2*e^2 - c*e*(b*d + 3*a*e))*Sqrt[(Sqrt[(
b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d + e*x) - 2*c*d*(-1 + d/(d + e*x)) + b*e*(-
1 + (2*d)/(d + e*x)))/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(
b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d + e*x) + 2*c*d*(-1 + d/(d + e*x)) + b*(e -
 (2*d*e)/(d + e*x)))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*EllipticE[I*
ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4
*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2
*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] + (I*Sqrt[2]*(-(b^3*
e^3) + b^2*e^2*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + b*c*e*(4*a*e^2 - d*Sqrt[
(b^2 - 4*a*c)*e^2]) + c*(c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] - a*e^2*(8*c*d + 3*S
qrt[(b^2 - 4*a*c)*e^2])))*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] - (2*a*e^2)/(d + e*
x) - 2*c*d*(-1 + d/(d + e*x)) + b*e*(-1 + (2*d)/(d + e*x)))/(2*c*d - b*e +
Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[(Sqrt[(b^2 - 4*a*c)*e^2] + (2*a*e^2)/(d + e*
x) + 2*c*d*(-1 + d/(d + e*x)) + b*(e - (2*d*e)/(d + e*x)))/(-2*c*d + b*e +
Sqrt[(b^2 - 4*a*c)*e^2])]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e
+ a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c
*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])
)])/Sqrt[d + e*x]))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*d^2
+ e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c
*x))^(5/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e
*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.96, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{ex}}{c^3ex^7+\left(c^3d+3\,bc^2e\right)x^6+3\left(bc^2d+\left(b^2c+ac^2\right)e\right)x^5+\left(3\left(b^2c+ac^2\right)d+\left(b^3+6\,abc\right)e\right)x^4+a^3d+\left(\left(b^3\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(e*x + d)/(c^3*e*x^7 + (c^3*
d + 3*b*c^2*e)*x^6 + 3*(b*c^2*d + (b^2*c + a*c^2)*e)*x^5 + (3*(b^2*c + a*c^
2)*d + (b^3 + 6*a*b*c)*e)*x^4 + a^3*d + ((b^3 + 6*a*b*c)*d + 3*(a*b^2 + a^2
*c)*e)*x^3 + 3*(a^2*b*e + (a*b^2 + a^2*c)*d)*x^2 + (3*a^2*b*d + a^3*e)*x),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^(5/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.38, size = 13089, normalized size = 19.68

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)/(c*x^2+b*x+a)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{2\,cx+b}{\left(cx^2+bx+a\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x^2+b*x+a)^(5/2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] integrate((2*c*x + b)/((c*x^2 + b*x + a)^(5/2)*sqrt(e*x + d)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{b+2\,c\,x}{\sqrt{d+e\,x}\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((b + 2*c*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)/(c*x**2+b*x+a)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1654 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=449

$$\frac{(d+ex)^{m+4}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8(m+4)}+\frac{(d+ex}{}$$

```
[Out] -(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(1+m)/e^8/(1+m)+(a*e^2-b*d*e+c*
d^2)^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(2+m)/e^8/(2+m)-3*
(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*
x+d)^(3+m)/e^8/(3+m)+(70*c^4*d^4+b^4*e^4-4*b^2*c*e^3*(-3*a*e+5*b*d)-20*c^3*
d^2*e*(-3*a*e+7*b*d)+6*c^2*e^2*(a^2*e^2-10*a*b*d*e+15*b^2*d^2))*(e*x+d)^(4+
m)/e^8/(4+m)-5*c*(-b*e+2*c*d)*(7*c^2*d^2+b^2*e^2-c*e*(-3*a*e+7*b*d))*(e*x+d
)^(5+m)/e^8/(5+m)+3*c^2*(14*c^2*d^2+3*b^2*e^2-2*c*e*(-a*e+7*b*d))*(e*x+d)^(
6+m)/e^8/(6+m)-7*c^3*(-b*e+2*c*d)*(e*x+d)^(7+m)/e^8/(7+m)+2*c^4*(e*x+d)^(8+
m)/e^8/(8+m)
```

Rubi [A] time = 0.34, antiderivative size = 449, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {771}

$$\frac{(d+ex)^{m+4}\left(6c^2e^2\left(a^2e^2-10abde+15b^2d^2\right)-4b^2ce^3(5bd-3ae)-20c^3d^2e(7bd-3ae)+b^4e^4+70c^4d^4\right)}{e^8(m+4)}+\frac{(d+ex}{}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m))
) + ((c*d^2 - b*d*e + a*e^2)^2*(14*c^2*d^2 + 3*b^2*e^2 - 2*c*e*(7*b*d - a*e
))*(d + e*x)^(2 + m))/(e^8*(2 + m)) - (3*(2*c*d - b*e)*(c*d^2 - b*d*e + a*e
^2)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*b*d - 3*a*e))*(d + e*x)^(3 + m))/(e^8*(3
+ m)) + ((70*c^4*d^4 + b^4*e^4 - 4*b^2*c*e^3*(5*b*d - 3*a*e) - 20*c^3*d^2*e
*(7*b*d - 3*a*e) + 6*c^2*e^2*(15*b^2*d^2 - 10*a*b*d*e + a^2*e^2))*(d + e*x)
^(4 + m))/(e^8*(4 + m)) - (5*c*(2*c*d - b*e)*(7*c^2*d^2 + b^2*e^2 - c*e*(7*
b*d - 3*a*e))*(d + e*x)^(5 + m))/(e^8*(5 + m)) + (3*c^2*(14*c^2*d^2 + 3*b^2
*e^2 - 2*c*e*(7*b*d - a*e))*(d + e*x)^(6 + m))/(e^8*(6 + m)) - (7*c^3*(2*c*
d - b*e)*(d + e*x)^(7 + m))/(e^8*(7 + m)) + (2*c^4*(d + e*x)^(8 + m))/(e^8*
(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^3(d+ex)^m}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14\right.}{}\right.$$

$$= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^3(d+ex)^{1+m}}{e^8(1+m)}+\frac{\left(cd^2-bde+ae^2\right)^2\left(14c^2\right.}{}$$

Mathematica [**B**] time = 3.37, size = 1226, normalized size = 2.73

$$(d+ex)^{m+1}\left(\frac{3\left(ce^4(m+1)(m+2)(m+3)(m+4)(a+x(b+cx))^2\left(-28d^2(5d-e(m+5)x)c^3+2e\left(7bd(d(m+20)-2e(m+5)x)+2ae\left(d\left(m^2+m-35\right)+e\left(m^2+12\right.\right.\right.\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(c^2*(14*c*d - b*e*(14 + m) - 2*c*e*(7 + m)*x)*(a + x*
(b + c*x))^3) + (3*(-2*((2*c*d - b*e)*(2 + m)*(840*c^5*d^6 + b^4*e^5*(b*d -
 a*e)*m*(3 + 4*m + m^2) - b^2*c*e^4*m*(1 + m)*(b^2*d^2*(-17 + m) + 8*a*b*d*
e*(8 + m) - 4*a^2*e^2*(11 + 2*m)) - 40*c^4*d^4*e*(63*b*d + a*e*(-63 + 2*m +
 2*m^2)) + 4*c^3*d^2*e^2*(5*b^2*d^2*(126 + m + m^2) + 20*a*b*d*e*(-63 + 2*m
 + 2*m^2) - 2*a^2*e^2*(-315 + 26*m + 28*m^2 + 2*m^3)) - 8*c^2*e^3*(5*b^3*d^
3*(21 + m + m^2) + a*b^2*d^2*e*(-315 + 2*m + m^2 - m^3) + a^3*e^3*(-105 + 1
6*m + 18*m^2 + 2*m^3) - a^2*b*d*e^2*(-315 + 26*m + 28*m^2 + 2*m^3))) + (1 +
 m)*(-1680*c^6*d^6 + b^6*e^6*m*(6 + 5*m + m^2) - b^4*c*e^5*m*(2 + m)*(b*d*(
-11 + 3*m) + a*e*(47 + 9*m)) + 80*c^5*d^4*e*(63*b*d + a*e*(-63 - 5*m + 2*m^
2)) + b^2*c^2*e^4*m*(3*b^2*d^2*(26 - 15*m + m^2) + 12*a^2*e^2*(47 + 20*m +
2*m^2) + 8*a*b*d*e*(-47 + 5*m + 3*m^2)) - 4*c^4*d^2*e^2*(40*a*b*d*e*(-63 -
5*m + 2*m^2) + 5*b^2*d^2*(252 - 5*m + 2*m^2) - 12*a^2*e^2*(-105 - 24*m + 5*
m^2 + m^3)) - 8*c^3*e^3*(-5*b^3*d^3*(42 - 5*m + 2*m^2) + 3*a*b^2*d^2*e*(210
 + m - 5*m^2 + m^3) + 6*a^2*b*d*e^2*(-105 - 24*m + 5*m^2 + m^3) + 2*a^3*e^3
*(105 + 71*m + 15*m^2 + m^3)))*(d + e*x) + e^2*(1 + m)*(2 + m)*(c*e*(4 + m)
*(c*e*(b*d - 2*a*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(
14 + m)) - (b*d*(5*c*d - 2*b*e) + a*e*(2*c*d*m - b*e*(1 + m)))*(28*c^2*d^2
- b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m)))) - (3*c*d - b*e)*(c*e*(2*c*d -
b*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(14 + m)) - (10*
c^2*d^2 - b^2*e^2*(3 + m) + c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(28*c^2*d^2
 - b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m)))) + c*e*(3 + m)*(c*e*(2*c*d - b
*e)*(6 + m)*(14*b*(c*d^2 + a*e^2) + 4*a*c*d*e*m - b^2*d*e*(14 + m)) - (10*c
^2*d^2 - b^2*e^2*(3 + m) + c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(28*c^2*d^2
- b^2*e^2*m + 4*c*e*(-7*b*d + a*e*(7 + m))))*x)*(a + x*(b + c*x))) + c*e^4*
(1 + m)*(2 + m)*(3 + m)*(4 + m)*(a + x*(b + c*x))^2*(-2*b^3*e^3*m - 28*c^3*
d^2*(5*d - e*(5 + m)*x) - b*c*e^2*(-2*a*e*(70 + 11*m) + b*d*(140 + 15*m + m
^2) + b*e*m*(5 + m)*x) + 2*c^2*e*(7*b*d*(d*(20 + m) - 2*e*(5 + m)*x) + 2*a*
e*(d*(-35 + m + m^2) + e*(35 + 12*m + m^2)*x)))))/(e^6*(1 + m)*(2 + m)*(3 +
 m)*(4 + m)*(5 + m)*(6 + m))))/(c^2*e^2*(7 + m)*(8 + m))
```

fricas [**B**] time = 0.97, size = 4607, normalized size = 10.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] (a^3*b*d*e^7*m^7 - 10080*c^4*d^8 + 40320*b*c^3*d^7*e + 40320*a^3*b*d*e^7 -
20160*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 40320*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 1
0080*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 40320*(a*b^3 + 3*a^2*b*c)*d^3
*e^5 - 20160*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6 + 2*(c^4*e^8*m^7 + 28*c^4*e^8*m^
6 + 322*c^4*e^8*m^5 + 1960*c^4*e^8*m^4 + 6769*c^4*e^8*m^3 + 13132*c^4*e^8*m
^2 + 13068*c^4*e^8*m + 5040*c^4*e^8)*x^8 + (40320*b*c^3*e^8 + (2*c^4*d*e^7
+ 7*b*c^3*e^8)*m^7 + 7*(6*c^4*d*e^7 + 29*b*c^3*e^8)*m^6 + 7*(50*c^4*d*e^7 +
 343*b*c^3*e^8)*m^5 + 245*(6*c^4*d*e^7 + 61*b*c^3*e^8)*m^4 + 112*(29*c^4*d*
e^7 + 469*b*c^3*e^8)*m^3 + 196*(18*c^4*d*e^7 + 527*b*c^3*e^8)*m^2 + 144*(10
*c^4*d*e^7 + 721*b*c^3*e^8)*m)*x^7 + (35*a^3*b*d*e^7 - (3*a^2*b^2 + 2*a^3*c
)*d^2*e^6)*m^6 + (20160*(3*b^2*c^2 + 2*a*c^3)*e^8 + (7*b*c^3*d*e^7 + 3*(3*b
^2*c^2 + 2*a*c^3)*e^8)*m^7 - (14*c^4*d^2*e^6 - 161*b*c^3*d*e^7 - 90*(3*b^2*
c^2 + 2*a*c^3)*e^8)*m^6 - (210*c^4*d^2*e^6 - 1435*b*c^3*d*e^7 - 1098*(3*b^2
*c^2 + 2*a*c^3)*e^8)*m^5 - 5*(238*c^4*d^2*e^6 - 1267*b*c^3*d*e^7 - 1404*(3*
b^2*c^2 + 2*a*c^3)*e^8)*m^4 - (3150*c^4*d^2*e^6 - 14518*b*c^3*d*e^7 - 25227
*(3*b^2*c^2 + 2*a*c^3)*e^8)*m^3 - 2*(1918*c^4*d^2*e^6 - 8092*b*c^3*d*e^7 -
25245*(3*b^2*c^2 + 2*a*c^3)*e^8)*m^2 - 24*(70*c^4*d^2*e^6 - 280*b*c^3*d*e^7
 - 2143*(3*b^2*c^2 + 2*a*c^3)*e^8)*m)*x^6 + (511*a^3*b*d*e^7 + 6*(a*b^3 + 3
*a^2*b*c)*d^3*e^5 - 33*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m^5 + (40320*(b^3*c +
 3*a*b*c^2)*e^8 + (3*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 5*(b^3*c + 3*a*b*c^2)*e^
8)*m^7 - (42*b*c^3*d^2*e^6 - 75*(3*b^2*c^2 + 2*a*c^3)*d*e^7 - 155*(b^3*c +
3*a*b*c^2)*e^8)*m^6 + (84*c^4*d^3*e^5 - 756*b*c^3*d^2*e^6 + 723*(3*b^2*c^2
+ 2*a*c^3)*d*e^7 + 1955*(b^3*c + 3*a*b*c^2)*e^8)*m^5 + 5*(168*c^4*d^3*e^5 -
 966*b*c^3*d^2*e^6 + 681*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 2581*(b^3*c + 3*a*b*
c^2)*e^8)*m^4 + 2*(1470*c^4*d^3*e^5 - 6930*b*c^3*d^2*e^6 + 4101*(3*b^2*c^2
+ 2*a*c^3)*d*e^7 + 23860*(b^3*c + 3*a*b*c^2)*e^8)*m^3 + 4*(1050*c^4*d^3*e^5
 - 4452*b*c^3*d^2*e^6 + 2370*(3*b^2*c^2 + 2*a*c^3)*d*e^7 + 24455*(b^3*c + 3
*a*b*c^2)*e^8)*m^2 + 144*(14*c^4*d^3*e^5 - 56*b*c^3*d^2*e^6 + 28*(3*b^2*c^2
 + 2*a*c^3)*d*e^7 + 705*(b^3*c + 3*a*b*c^2)*e^8)*m)*x^5 + (4025*a^3*b*d*e^7
 - 6*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 180*(a*b^3 + 3*a^2*b*c)*d^3*e
^5 - 445*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m^4 + (10080*(b^4 + 12*a*b^2*c + 6*
a^2*c^2)*e^8 + (5*(b^3*c + 3*a*b*c^2)*d*e^7 + (b^4 + 12*a*b^2*c + 6*a^2*c^2
)*e^8)*m^7 - (15*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 135*(b^3*c + 3*a*b*c^2)*d*
e^7 - 32*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^6 + (210*b*c^3*d^3*e^5 - 315
*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 + 1415*(b^3*c + 3*a*b*c^2)*d*e^7 + 418*(b^4
+ 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^5 - (420*c^4*d^4*e^4 - 2940*b*c^3*d^3*e^5
+ 2355*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 7245*(b^3*c + 3*a*b*c^2)*d*e^7 - 286
4*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^4 - (2520*c^4*d^4*e^4 - 12390*b*c^3
*d^3*e^5 + 7605*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 18740*(b^3*c + 3*a*b*c^2)*d
*e^7 - 10993*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^3 - 2*(2310*c^4*d^4*e^4
- 9870*b*c^3*d^3*e^5 + 5295*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 11430*(b^3*c +
3*a*b*c^2)*d*e^7 - 11656*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m^2 - 36*(70*c
^4*d^4*e^4 - 280*b*c^3*d^3*e^5 + 140*(3*b^2*c^2 + 2*a*c^3)*d^2*e^6 - 280*(b
^3*c + 3*a*b*c^2)*d*e^7 - 691*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*e^8)*m)*x^4 +
(18424*a^3*b*d*e^7 + 120*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 156*(b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^4*e^4 + 2130*(a*b^3 + 3*a^2*b*c)*d^3*e^5 - 3135*(3*a^2*b^2
 + 2*a^3*c)*d^2*e^6)*m^3 + (40320*(a*b^3 + 3*a^2*b*c)*e^8 + ((b^4 + 12*a*b^
2*c + 6*a^2*c^2)*d*e^7 + 3*(a*b^3 + 3*a^2*b*c)*e^8)*m^7 - (20*(b^3*c + 3*a*
b*c^2)*d^2*e^6 - 29*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 - 99*(a*b^3 + 3*a^
2*b*c)*e^8)*m^6 + (60*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 480*(b^3*c + 3*a*b*c^
2)*d^2*e^6 + 331*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 1341*(a*b^3 + 3*a^2
*b*c)*e^8)*m^5 - (840*b*c^3*d^4*e^4 - 1080*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 +
4220*(b^3*c + 3*a*b*c^2)*d^2*e^6 - 1871*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^
7 - 9585*(a*b^3 + 3*a^2*b*c)*e^8)*m^4 + 4*(420*c^4*d^5*e^3 - 2310*b*c^3*d^4
*e^4 + 1545*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 4080*(b^3*c + 3*a*b*c^2)*d^2*e^
6 + 1345*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 9648*(a*b^3 + 3*a^2*b*c)*e^
8)*m^3 + 4*(1260*c^4*d^5*e^3 - 5460*b*c^3*d^4*e^4 + 2970*(3*b^2*c^2 + 2*a*c
^3)*d^3*e^5 - 6500*(b^3*c + 3*a*b*c^2)*d^2*e^6 + 1793*(b^4 + 12*a*b^2*c + 6
*a^2*c^2)*d*e^7 + 21519*(a*b^3 + 3*a^2*b*c)*e^8)*m^2 + 48*(70*c^4*d^5*e^3 -
 280*b*c^3*d^4*e^4 + 140*(3*b^2*c^2 + 2*a*c^3)*d^3*e^5 - 280*(b^3*c + 3*a*b
*c^2)*d^2*e^6 + 70*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d*e^7 + 2003*(a*b^3 + 3*a
^2*b*c)*e^8)*m)*x^3 + 2*(24430*a^3*b*d*e^7 - 180*(3*b^2*c^2 + 2*a*c^3)*d^6*
e^2 + 1260*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 753*(b^4 + 12*a*b^2*c + 6*a^2*c^2)
*d^4*e^4 + 6210*(a*b^3 + 3*a^2*b*c)*d^3*e^5 - 6077*(3*a^2*b^2 + 2*a^3*c)*d^
2*e^6)*m^2 + (20160*(3*a^2*b^2 + 2*a^3*c)*e^8 + (3*(a*b^3 + 3*a^2*b*c)*d*e^
7 + (3*a^2*b^2 + 2*a^3*c)*e^8)*m^7 - (3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*
e^6 - 93*(a*b^3 + 3*a^2*b*c)*d*e^7 - 34*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^6 + (6
0*(b^3*c + 3*a*b*c^2)*d^3*e^5 - 81*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 +
 1155*(a*b^3 + 3*a^2*b*c)*d*e^7 + 478*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^5 - (180
*(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 1320*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 831*(b^
4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 7275*(a*b^3 + 3*a^2*b*c)*d*e^7 - 3580
```

```
*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^4 + (2520*b*c^3*d^5*e^3 - 2880*(3*b^2*c^2 + 2
*a*c^3)*d^4*e^4 + 10020*(b^3*c + 3*a*b*c^2)*d^3*e^5 - 3951*(b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^2*e^6 + 24042*(a*b^3 + 3*a^2*b*c)*d*e^7 + 15289*(3*a^2*b^2
 + 2*a^3*c)*e^8)*m^3 - 2*(2520*c^4*d^6*e^2 - 11340*b*c^3*d^5*e^3 + 6390*(3*
b^2*c^2 + 2*a*c^3)*d^4*e^4 - 14460*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 4119*(b^4
+ 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 18996*(a*b^3 + 3*a^2*b*c)*d*e^7 - 18353
*(3*a^2*b^2 + 2*a^3*c)*e^8)*m^2 - 72*(70*c^4*d^6*e^2 - 280*b*c^3*d^5*e^3 +
140*(3*b^2*c^2 + 2*a*c^3)*d^4*e^4 - 280*(b^3*c + 3*a*b*c^2)*d^3*e^5 + 70*(b
^4 + 12*a*b^2*c + 6*a^2*c^2)*d^2*e^6 - 280*(a*b^3 + 3*a^2*b*c)*d*e^7 - 621*
(3*a^2*b^2 + 2*a^3*c)*e^8)*m)*x^2 + 12*(420*b*c^3*d^7*e + 5772*a^3*b*d*e^7
- 450*(3*b^2*c^2 + 2*a*c^3)*d^6*e^2 + 1460*(b^3*c + 3*a*b*c^2)*d^5*e^3 - 53
3*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^4 + 2972*(a*b^3 + 3*a^2*b*c)*d^3*e^5
 - 2046*(3*a^2*b^2 + 2*a^3*c)*d^2*e^6)*m + (40320*a^3*b*e^8 + (a^3*b*e^8 +
(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^7 + (35*a^3*b*e^8 - 6*(a*b^3 + 3*a^2*b*c)*d^
2*e^6 + 33*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^6 + (511*a^3*b*e^8 + 6*(b^4 + 12*
a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 180*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 445*(3*a^2
*b^2 + 2*a^3*c)*d*e^7)*m^5 + (4025*a^3*b*e^8 - 120*(b^3*c + 3*a*b*c^2)*d^4*
e^4 + 156*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 2130*(a*b^3 + 3*a^2*b*c)
*d^2*e^6 + 3135*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^4 + 2*(9212*a^3*b*e^8 + 180*
(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 - 1260*(b^3*c + 3*a*b*c^2)*d^4*e^4 + 753*(b^4
 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 6210*(a*b^3 + 3*a^2*b*c)*d^2*e^6 + 607
7*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^3 - 4*(1260*b*c^3*d^6*e^2 - 12215*a^3*b*e^
8 - 1350*(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 + 4380*(b^3*c + 3*a*b*c^2)*d^4*e^4 -
 1599*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 + 8916*(a*b^3 + 3*a^2*b*c)*d^2
*e^6 - 6138*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m^2 + 144*(70*c^4*d^7*e - 280*b*c^
3*d^6*e^2 + 481*a^3*b*e^8 + 140*(3*b^2*c^2 + 2*a*c^3)*d^5*e^3 - 280*(b^3*c
+ 3*a*b*c^2)*d^4*e^4 + 70*(b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^3*e^5 - 280*(a*b
^3 + 3*a^2*b*c)*d^2*e^6 + 140*(3*a^2*b^2 + 2*a^3*c)*d*e^7)*m)*x)*(e*x + d)^
m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*m^5 + 22449*e^8*m^4 + 6728
4*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320*e^8)
```

giac [B] time = 0.50, size = 9689, normalized size = 21.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (2*(x*e + d)^m*c^4*m^7*x^8*e^8 + 2*(x*e + d)^m*c^4*d*m^7*x^7*e^7 + 7*(x*e +
 d)^m*b*c^3*m^7*x^7*e^8 + 56*(x*e + d)^m*c^4*m^6*x^8*e^8 + 7*(x*e + d)^m*b*
c^3*d*m^7*x^6*e^7 + 42*(x*e + d)^m*c^4*d*m^6*x^7*e^7 - 14*(x*e + d)^m*c^4*d
^2*m^6*x^6*e^6 + 9*(x*e + d)^m*b^2*c^2*m^7*x^6*e^8 + 6*(x*e + d)^m*a*c^3*m^
7*x^6*e^8 + 203*(x*e + d)^m*b*c^3*m^6*x^7*e^8 + 644*(x*e + d)^m*c^4*m^5*x^8
*e^8 + 9*(x*e + d)^m*b^2*c^2*d*m^7*x^5*e^7 + 6*(x*e + d)^m*a*c^3*d*m^7*x^5*
e^7 + 161*(x*e + d)^m*b*c^3*d*m^6*x^6*e^7 + 350*(x*e + d)^m*c^4*d*m^5*x^7*e
^7 - 42*(x*e + d)^m*b*c^3*d^2*m^6*x^5*e^6 - 210*(x*e + d)^m*c^4*d^2*m^5*x^6
*e^6 + 84*(x*e + d)^m*c^4*d^3*m^5*x^5*e^5 + 5*(x*e + d)^m*b^3*c*m^7*x^5*e^8
 + 15*(x*e + d)^m*a*b*c^2*m^7*x^5*e^8 + 270*(x*e + d)^m*b^2*c^2*m^6*x^6*e^8
 + 180*(x*e + d)^m*a*c^3*m^6*x^6*e^8 + 2401*(x*e + d)^m*b*c^3*m^5*x^7*e^8 +
 3920*(x*e + d)^m*c^4*m^4*x^8*e^8 + 5*(x*e + d)^m*b^3*c*d*m^7*x^4*e^7 + 15*
(x*e + d)^m*a*b*c^2*d*m^7*x^4*e^7 + 225*(x*e + d)^m*b^2*c^2*d*m^6*x^5*e^7 +
 150*(x*e + d)^m*a*c^3*d*m^6*x^5*e^7 + 1435*(x*e + d)^m*b*c^3*d*m^5*x^6*e^7
 + 1470*(x*e + d)^m*c^4*d*m^4*x^7*e^7 - 45*(x*e + d)^m*b^2*c^2*d^2*m^6*x^4*
e^6 - 30*(x*e + d)^m*a*c^3*d^2*m^6*x^4*e^6 - 756*(x*e + d)^m*b*c^3*d^2*m^5*
x^5*e^6 - 1190*(x*e + d)^m*c^4*d^2*m^4*x^6*e^6 + 210*(x*e + d)^m*b*c^3*d^3*
m^5*x^4*e^5 + 840*(x*e + d)^m*c^4*d^3*m^4*x^5*e^5 - 420*(x*e + d)^m*c^4*d^4
*m^4*x^4*e^4 + (x*e + d)^m*b^4*m^7*x^4*e^8 + 12*(x*e + d)^m*a*b^2*c*m^7*x^4
*e^8 + 6*(x*e + d)^m*a^2*c^2*m^7*x^4*e^8 + 155*(x*e + d)^m*b^3*c*m^6*x^5*e^
8 + 465*(x*e + d)^m*a*b*c^2*m^6*x^5*e^8 + 3294*(x*e + d)^m*b^2*c^2*m^5*x^6*
e^8 + 2196*(x*e + d)^m*a*c^3*m^5*x^6*e^8 + 14945*(x*e + d)^m*b*c^3*m^4*x^7*
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e^8 + 13538*(x*e + d)^m*c^4*m^3*x^8*e^8 + (x*e + d)^m*b^4*d*m^7*x^3*e^7 + 1
2*(x*e + d)^m*a*b^2*c*d*m^7*x^3*e^7 + 6*(x*e + d)^m*a^2*c^2*d*m^7*x^3*e^7 +
 135*(x*e + d)^m*b^3*c*d*m^6*x^4*e^7 + 405*(x*e + d)^m*a*b*c^2*d*m^6*x^4*e^
7 + 2169*(x*e + d)^m*b^2*c^2*d*m^5*x^5*e^7 + 1446*(x*e + d)^m*a*c^3*d*m^5*x
^5*e^7 + 6335*(x*e + d)^m*b*c^3*d*m^4*x^6*e^7 + 3248*(x*e + d)^m*c^4*d*m^3*
x^7*e^7 - 20*(x*e + d)^m*b^3*c*d^2*m^6*x^3*e^6 - 60*(x*e + d)^m*a*b*c^2*d^2
*m^6*x^3*e^6 - 945*(x*e + d)^m*b^2*c^2*d^2*m^5*x^4*e^6 - 630*(x*e + d)^m*a*
c^3*d^2*m^5*x^4*e^6 - 4830*(x*e + d)^m*b*c^3*d^2*m^4*x^5*e^6 - 3150*(x*e +
d)^m*c^4*d^2*m^3*x^6*e^6 + 180*(x*e + d)^m*b^2*c^2*d^3*m^5*x^3*e^5 + 120*(x
*e + d)^m*a*c^3*d^3*m^5*x^3*e^5 + 2940*(x*e + d)^m*b*c^3*d^3*m^4*x^4*e^5 +
2940*(x*e + d)^m*c^4*d^3*m^3*x^5*e^5 - 840*(x*e + d)^m*b*c^3*d^4*m^4*x^3*e^
4 - 2520*(x*e + d)^m*c^4*d^4*m^3*x^4*e^4 + 1680*(x*e + d)^m*c^4*d^5*m^3*x^3
*e^3 + 3*(x*e + d)^m*a*b^3*m^7*x^3*e^8 + 9*(x*e + d)^m*a^2*b*c*m^7*x^3*e^8
+ 32*(x*e + d)^m*b^4*m^6*x^4*e^8 + 384*(x*e + d)^m*a*b^2*c*m^6*x^4*e^8 + 19
2*(x*e + d)^m*a^2*c^2*m^6*x^4*e^8 + 1955*(x*e + d)^m*b^3*c*m^5*x^5*e^8 + 58
65*(x*e + d)^m*a*b*c^2*m^5*x^5*e^8 + 21060*(x*e + d)^m*b^2*c^2*m^4*x^6*e^8
+ 14040*(x*e + d)^m*a*c^3*m^4*x^6*e^8 + 52528*(x*e + d)^m*b*c^3*m^3*x^7*e^8
 + 26264*(x*e + d)^m*c^4*m^2*x^8*e^8 + 3*(x*e + d)^m*a*b^3*d*m^7*x^2*e^7 +
9*(x*e + d)^m*a^2*b*c*d*m^7*x^2*e^7 + 29*(x*e + d)^m*b^4*d*m^6*x^3*e^7 + 34
8*(x*e + d)^m*a*b^2*c*d*m^6*x^3*e^7 + 174*(x*e + d)^m*a^2*c^2*d*m^6*x^3*e^7
 + 1415*(x*e + d)^m*b^3*c*d*m^5*x^4*e^7 + 4245*(x*e + d)^m*a*b*c^2*d*m^5*x^
4*e^7 + 10215*(x*e + d)^m*b^2*c^2*d*m^4*x^5*e^7 + 6810*(x*e + d)^m*a*c^3*d*
m^4*x^5*e^7 + 14518*(x*e + d)^m*b*c^3*d*m^3*x^6*e^7 + 3528*(x*e + d)^m*c^4*
d*m^2*x^7*e^7 - 3*(x*e + d)^m*b^4*d^2*m^6*x^2*e^6 - 36*(x*e + d)^m*a*b^2*c*
d^2*m^6*x^2*e^6 - 18*(x*e + d)^m*a^2*c^2*d^2*m^6*x^2*e^6 - 480*(x*e + d)^m*
b^3*c*d^2*m^5*x^3*e^6 - 1440*(x*e + d)^m*a*b*c^2*d^2*m^5*x^3*e^6 - 7065*(x*
e + d)^m*b^2*c^2*d^2*m^4*x^4*e^6 - 4710*(x*e + d)^m*a*c^3*d^2*m^4*x^4*e^6 -
 13860*(x*e + d)^m*b*c^3*d^2*m^3*x^5*e^6 - 3836*(x*e + d)^m*c^4*d^2*m^2*x^6
*e^6 + 60*(x*e + d)^m*b^3*c*d^3*m^5*x^2*e^5 + 180*(x*e + d)^m*a*b*c^2*d^3*m
^5*x^2*e^5 + 3240*(x*e + d)^m*b^2*c^2*d^3*m^4*x^3*e^5 + 2160*(x*e + d)^m*a*
c^3*d^3*m^4*x^3*e^5 + 12390*(x*e + d)^m*b*c^3*d^3*m^3*x^4*e^5 + 4200*(x*e +
 d)^m*c^4*d^3*m^2*x^5*e^5 - 540*(x*e + d)^m*b^2*c^2*d^4*m^4*x^2*e^4 - 360*(
x*e + d)^m*a*c^3*d^4*m^4*x^2*e^4 - 9240*(x*e + d)^m*b*c^3*d^4*m^3*x^3*e^4 -
 4620*(x*e + d)^m*c^4*d^4*m^2*x^4*e^4 + 2520*(x*e + d)^m*b*c^3*d^5*m^3*x^2*
e^3 + 5040*(x*e + d)^m*c^4*d^5*m^2*x^3*e^3 - 5040*(x*e + d)^m*c^4*d^6*m^2*x
^2*e^2 + 3*(x*e + d)^m*a^2*b^2*m^7*x^2*e^8 + 2*(x*e + d)^m*a^3*c*m^7*x^2*e^
8 + 99*(x*e + d)^m*a*b^3*m^6*x^3*e^8 + 297*(x*e + d)^m*a^2*b*c*m^6*x^3*e^8
+ 418*(x*e + d)^m*b^4*m^5*x^4*e^8 + 5016*(x*e + d)^m*a*b^2*c*m^5*x^4*e^8 +
2508*(x*e + d)^m*a^2*c^2*m^5*x^4*e^8 + 12905*(x*e + d)^m*b^3*c*m^4*x^5*e^8
+ 38715*(x*e + d)^m*a*b*c^2*m^4*x^5*e^8 + 75681*(x*e + d)^m*b^2*c^2*m^3*x^6
*e^8 + 50454*(x*e + d)^m*a*c^3*m^3*x^6*e^8 + 103292*(x*e + d)^m*b*c^3*m^2*x
^7*e^8 + 26136*(x*e + d)^m*c^4*m*x^8*e^8 + 3*(x*e + d)^m*a^2*b^2*d*m^7*x*e^
7 + 2*(x*e + d)^m*a^3*c*d*m^7*x*e^7 + 93*(x*e + d)^m*a*b^3*d*m^6*x^2*e^7 +
279*(x*e + d)^m*a^2*b*c*d*m^6*x^2*e^7 + 331*(x*e + d)^m*b^4*d*m^5*x^3*e^7 +
 3972*(x*e + d)^m*a*b^2*c*d*m^5*x^3*e^7 + 1986*(x*e + d)^m*a^2*c^2*d*m^5*x^
3*e^7 + 7245*(x*e + d)^m*b^3*c*d*m^4*x^4*e^7 + 21735*(x*e + d)^m*a*b*c^2*d*
m^4*x^4*e^7 + 24606*(x*e + d)^m*b^2*c^2*d*m^3*x^5*e^7 + 16404*(x*e + d)^m*a
*c^3*d*m^3*x^5*e^7 + 16184*(x*e + d)^m*b*c^3*d*m^2*x^6*e^7 + 1440*(x*e + d)
^m*c^4*d*m*x^7*e^7 - 6*(x*e + d)^m*a*b^3*d^2*m^6*x*e^6 - 18*(x*e + d)^m*a^2
*b*c*d^2*m^6*x*e^6 - 81*(x*e + d)^m*b^4*d^2*m^5*x^2*e^6 - 972*(x*e + d)^m*a
*b^2*c*d^2*m^5*x^2*e^6 - 486*(x*e + d)^m*a^2*c^2*d^2*m^5*x^2*e^6 - 4220*(x*
e + d)^m*b^3*c*d^2*m^4*x^3*e^6 - 12660*(x*e + d)^m*a*b*c^2*d^2*m^4*x^3*e^6
- 22815*(x*e + d)^m*b^2*c^2*d^2*m^3*x^4*e^6 - 15210*(x*e + d)^m*a*c^3*d^2*m
^3*x^4*e^6 - 17808*(x*e + d)^m*b*c^3*d^2*m^2*x^5*e^6 - 1680*(x*e + d)^m*c^4
*d^2*m*x^6*e^6 + 6*(x*e + d)^m*b^4*d^3*m^5*x*e^5 + 72*(x*e + d)^m*a*b^2*c*d
^3*m^5*x*e^5 + 36*(x*e + d)^m*a^2*c^2*d^3*m^5*x*e^5 + 1320*(x*e + d)^m*b^3*
c*d^3*m^4*x^2*e^5 + 3960*(x*e + d)^m*a*b*c^2*d^3*m^4*x^2*e^5 + 18540*(x*e +
 d)^m*b^2*c^2*d^3*m^3*x^3*e^5 + 12360*(x*e + d)^m*a*c^3*d^3*m^3*x^3*e^5 + 1
9740*(x*e + d)^m*b*c^3*d^3*m^2*x^4*e^5 + 2016*(x*e + d)^m*c^4*d^3*m*x^5*e^5
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 - 120*(x*e + d)^m*b^3*c*d^4*m^4*x*e^4 - 360*(x*e + d)^m*a*b*c^2*d^4*m^4*x*
e^4 - 8640*(x*e + d)^m*b^2*c^2*d^4*m^3*x^2*e^4 - 5760*(x*e + d)^m*a*c^3*d^4
*m^3*x^2*e^4 - 21840*(x*e + d)^m*b*c^3*d^4*m^2*x^3*e^4 - 2520*(x*e + d)^m*c
^4*d^4*m*x^4*e^4 + 1080*(x*e + d)^m*b^2*c^2*d^5*m^3*x*e^3 + 720*(x*e + d)^m
*a*c^3*d^5*m^3*x*e^3 + 22680*(x*e + d)^m*b*c^3*d^5*m^2*x^2*e^3 + 3360*(x*e
+ d)^m*c^4*d^5*m*x^3*e^3 - 5040*(x*e + d)^m*b*c^3*d^6*m^2*x*e^2 - 5040*(x*e
 + d)^m*c^4*d^6*m*x^2*e^2 + 10080*(x*e + d)^m*c^4*d^7*m*x*e + (x*e + d)^m*a
^3*b*m^7*x*e^8 + 102*(x*e + d)^m*a^2*b^2*m^6*x^2*e^8 + 68*(x*e + d)^m*a^3*c
*m^6*x^2*e^8 + 1341*(x*e + d)^m*a*b^3*m^5*x^3*e^8 + 4023*(x*e + d)^m*a^2*b*
c*m^5*x^3*e^8 + 2864*(x*e + d)^m*b^4*m^4*x^4*e^8 + 34368*(x*e + d)^m*a*b^2*
c*m^4*x^4*e^8 + 17184*(x*e + d)^m*a^2*c^2*m^4*x^4*e^8 + 47720*(x*e + d)^m*b
^3*c*m^3*x^5*e^8 + 143160*(x*e + d)^m*a*b*c^2*m^3*x^5*e^8 + 151470*(x*e + d
)^m*b^2*c^2*m^2*x^6*e^8 + 100980*(x*e + d)^m*a*c^3*m^2*x^6*e^8 + 103824*(x*
e + d)^m*b*c^3*m*x^7*e^8 + 10080*(x*e + d)^m*c^4*x^8*e^8 + (x*e + d)^m*a^3*
b*d*m^7*e^7 + 99*(x*e + d)^m*a^2*b^2*d*m^6*x*e^7 + 66*(x*e + d)^m*a^3*c*d*m
^6*x*e^7 + 1155*(x*e + d)^m*a*b^3*d*m^5*x^2*e^7 + 3465*(x*e + d)^m*a^2*b*c*
d*m^5*x^2*e^7 + 1871*(x*e + d)^m*b^4*d*m^4*x^3*e^7 + 22452*(x*e + d)^m*a*b^
2*c*d*m^4*x^3*e^7 + 11226*(x*e + d)^m*a^2*c^2*d*m^4*x^3*e^7 + 18740*(x*e +
d)^m*b^3*c*d*m^3*x^4*e^7 + 56220*(x*e + d)^m*a*b*c^2*d*m^3*x^4*e^7 + 28440*
(x*e + d)^m*b^2*c^2*d*m^2*x^5*e^7 + 18960*(x*e + d)^m*a*c^3*d*m^2*x^5*e^7 +
 6720*(x*e + d)^m*b*c^3*d*m*x^6*e^7 - 3*(x*e + d)^m*a^2*b^2*d^2*m^6*e^6 - 2
*(x*e + d)^m*a^3*c*d^2*m^6*e^6 - 180*(x*e + d)^m*a*b^3*d^2*m^5*x*e^6 - 540*
(x*e + d)^m*a^2*b*c*d^2*m^5*x*e^6 - 831*(x*e + d)^m*b^4*d^2*m^4*x^2*e^6 - 9
972*(x*e + d)^m*a*b^2*c*d^2*m^4*x^2*e^6 - 4986*(x*e + d)^m*a^2*c^2*d^2*m^4*
x^2*e^6 - 16320*(x*e + d)^m*b^3*c*d^2*m^3*x^3*e^6 - 48960*(x*e + d)^m*a*b*c
^2*d^2*m^3*x^3*e^6 - 31770*(x*e + d)^m*b^2*c^2*d^2*m^2*x^4*e^6 - 21180*(x*e
 + d)^m*a*c^3*d^2*m^2*x^4*e^6 - 8064*(x*e + d)^m*b*c^3*d^2*m*x^5*e^6 + 6*(x
*e + d)^m*a*b^3*d^3*m^5*e^5 + 18*(x*e + d)^m*a^2*b*c*d^3*m^5*e^5 + 156*(x*e
 + d)^m*b^4*d^3*m^4*x*e^5 + 1872*(x*e + d)^m*a*b^2*c*d^3*m^4*x*e^5 + 936*(x
*e + d)^m*a^2*c^2*d^3*m^4*x*e^5 + 10020*(x*e + d)^m*b^3*c*d^3*m^3*x^2*e^5 +
 30060*(x*e + d)^m*a*b*c^2*d^3*m^3*x^2*e^5 + 35640*(x*e + d)^m*b^2*c^2*d^3*
m^2*x^3*e^5 + 23760*(x*e + d)^m*a*c^3*d^3*m^2*x^3*e^5 + 10080*(x*e + d)^m*b
*c^3*d^3*m*x^4*e^5 - 6*(x*e + d)^m*b^4*d^4*m^4*e^4 - 72*(x*e + d)^m*a*b^2*c
*d^4*m^4*e^4 - 36*(x*e + d)^m*a^2*c^2*d^4*m^4*e^4 - 2520*(x*e + d)^m*b^3*c*
d^4*m^3*x*e^4 - 7560*(x*e + d)^m*a*b*c^2*d^4*m^3*x*e^4 - 38340*(x*e + d)^m*
b^2*c^2*d^4*m^2*x^2*e^4 - 25560*(x*e + d)^m*a*c^3*d^4*m^2*x^2*e^4 - 13440*(
x*e + d)^m*b*c^3*d^4*m*x^3*e^4 + 120*(x*e + d)^m*b^3*c*d^5*m^3*e^3 + 360*(x
*e + d)^m*a*b*c^2*d^5*m^3*e^3 + 16200*(x*e + d)^m*b^2*c^2*d^5*m^2*x*e^3 + 1
0800*(x*e + d)^m*a*c^3*d^5*m^2*x*e^3 + 20160*(x*e + d)^m*b*c^3*d^5*m*x^2*e^
3 - 1080*(x*e + d)^m*b^2*c^2*d^6*m^2*e^2 - 720*(x*e + d)^m*a*c^3*d^6*m^2*e^
2 - 40320*(x*e + d)^m*b*c^3*d^6*m*x*e^2 + 5040*(x*e + d)^m*b*c^3*d^7*m*e -
10080*(x*e + d)^m*c^4*d^8 + 35*(x*e + d)^m*a^3*b*m^6*x*e^8 + 1434*(x*e + d)
^m*a^2*b^2*m^5*x^2*e^8 + 956*(x*e + d)^m*a^3*c*m^5*x^2*e^8 + 9585*(x*e + d)
^m*a*b^3*m^4*x^3*e^8 + 28755*(x*e + d)^m*a^2*b*c*m^4*x^3*e^8 + 10993*(x*e +
 d)^m*b^4*m^3*x^4*e^8 + 131916*(x*e + d)^m*a*b^2*c*m^3*x^4*e^8 + 65958*(x*e
 + d)^m*a^2*c^2*m^3*x^4*e^8 + 97820*(x*e + d)^m*b^3*c*m^2*x^5*e^8 + 293460*
(x*e + d)^m*a*b*c^2*m^2*x^5*e^8 + 154296*(x*e + d)^m*b^2*c^2*m*x^6*e^8 + 10
2864*(x*e + d)^m*a*c^3*m*x^6*e^8 + 40320*(x*e + d)^m*b*c^3*x^7*e^8 + 35*(x*
e + d)^m*a^3*b*d*m^6*e^7 + 1335*(x*e + d)^m*a^2*b^2*d*m^5*x*e^7 + 890*(x*e
+ d)^m*a^3*c*d*m^5*x*e^7 + 7275*(x*e + d)^m*a*b^3*d*m^4*x^2*e^7 + 21825*(x*
e + d)^m*a^2*b*c*d*m^4*x^2*e^7 + 5380*(x*e + d)^m*b^4*d*m^3*x^3*e^7 + 64560
*(x*e + d)^m*a*b^2*c*d*m^3*x^3*e^7 + 32280*(x*e + d)^m*a^2*c^2*d*m^3*x^3*e^
7 + 22860*(x*e + d)^m*b^3*c*d*m^2*x^4*e^7 + 68580*(x*e + d)^m*a*b*c^2*d*m^2
*x^4*e^7 + 12096*(x*e + d)^m*b^2*c^2*d*m*x^5*e^7 + 8064*(x*e + d)^m*a*c^3*d
*m*x^5*e^7 - 99*(x*e + d)^m*a^2*b^2*d^2*m^5*e^6 - 66*(x*e + d)^m*a^3*c*d^2*
m^5*e^6 - 2130*(x*e + d)^m*a*b^3*d^2*m^4*x*e^6 - 6390*(x*e + d)^m*a^2*b*c*d
^2*m^4*x*e^6 - 3951*(x*e + d)^m*b^4*d^2*m^3*x^2*e^6 - 47412*(x*e + d)^m*a*b
^2*c*d^2*m^3*x^2*e^6 - 23706*(x*e + d)^m*a^2*c^2*d^2*m^3*x^2*e^6 - 26000*(x
*e + d)^m*b^3*c*d^2*m^2*x^3*e^6 - 78000*(x*e + d)^m*a*b*c^2*d^2*m^2*x^3*e^6
```

```
 - 15120*(x*e + d)^m*b^2*c^2*d^2*m*x^4*e^6 - 10080*(x*e + d)^m*a*c^3*d^2*m*
x^4*e^6 + 180*(x*e + d)^m*a*b^3*d^3*m^4*e^5 + 540*(x*e + d)^m*a^2*b*c*d^3*m
^4*e^5 + 1506*(x*e + d)^m*b^4*d^3*m^3*x*e^5 + 18072*(x*e + d)^m*a*b^2*c*d^3
*m^3*x*e^5 + 9036*(x*e + d)^m*a^2*c^2*d^3*m^3*x*e^5 + 28920*(x*e + d)^m*b^3
*c*d^3*m^2*x^2*e^5 + 86760*(x*e + d)^m*a*b*c^2*d^3*m^2*x^2*e^5 + 20160*(x*e
 + d)^m*b^2*c^2*d^3*m*x^3*e^5 + 13440*(x*e + d)^m*a*c^3*d^3*m*x^3*e^5 - 156
*(x*e + d)^m*b^4*d^4*m^3*e^4 - 1872*(x*e + d)^m*a*b^2*c*d^4*m^3*e^4 - 936*(
x*e + d)^m*a^2*c^2*d^4*m^3*e^4 - 17520*(x*e + d)^m*b^3*c*d^4*m^2*x*e^4 - 52
560*(x*e + d)^m*a*b*c^2*d^4*m^2*x*e^4 - 30240*(x*e + d)^m*b^2*c^2*d^4*m*x^2
*e^4 - 20160*(x*e + d)^m*a*c^3*d^4*m*x^2*e^4 + 2520*(x*e + d)^m*b^3*c*d^5*m
^2*e^3 + 7560*(x*e + d)^m*a*b*c^2*d^5*m^2*e^3 + 60480*(x*e + d)^m*b^2*c^2*d
^5*m*x*e^3 + 40320*(x*e + d)^m*a*c^3*d^5*m*x*e^3 - 16200*(x*e + d)^m*b^2*c^
2*d^6*m*e^2 - 10800*(x*e + d)^m*a*c^3*d^6*m*e^2 + 40320*(x*e + d)^m*b*c^3*d
^7*e + 511*(x*e + d)^m*a^3*b*m^5*x*e^8 + 10740*(x*e + d)^m*a^2*b^2*m^4*x^2*
e^8 + 7160*(x*e + d)^m*a^3*c*m^4*x^2*e^8 + 38592*(x*e + d)^m*a*b^3*m^3*x^3*
e^8 + 115776*(x*e + d)^m*a^2*b*c*m^3*x^3*e^8 + 23312*(x*e + d)^m*b^4*m^2*x^
4*e^8 + 279744*(x*e + d)^m*a*b^2*c*m^2*x^4*e^8 + 139872*(x*e + d)^m*a^2*c^2
*m^2*x^4*e^8 + 101520*(x*e + d)^m*b^3*c*m*x^5*e^8 + 304560*(x*e + d)^m*a*b*
c^2*m*x^5*e^8 + 60480*(x*e + d)^m*b^2*c^2*x^6*e^8 + 40320*(x*e + d)^m*a*c^3
*x^6*e^8 + 511*(x*e + d)^m*a^3*b*d*m^5*e^7 + 9405*(x*e + d)^m*a^2*b^2*d*m^4
*x*e^7 + 6270*(x*e + d)^m*a^3*c*d*m^4*x*e^7 + 24042*(x*e + d)^m*a*b^3*d*m^3
*x^2*e^7 + 72126*(x*e + d)^m*a^2*b*c*d*m^3*x^2*e^7 + 7172*(x*e + d)^m*b^4*d
*m^2*x^3*e^7 + 86064*(x*e + d)^m*a*b^2*c*d*m^2*x^3*e^7 + 43032*(x*e + d)^m*
a^2*c^2*d*m^2*x^3*e^7 + 10080*(x*e + d)^m*b^3*c*d*m*x^4*e^7 + 30240*(x*e +
d)^m*a*b*c^2*d*m*x^4*e^7 - 1335*(x*e + d)^m*a^2*b^2*d^2*m^4*e^6 - 890*(x*e
 + d)^m*a^3*c*d^2*m^4*e^6 - 12420*(x*e + d)^m*a*b^3*d^2*m^3*x*e^6 - 37260*(x
*e + d)^m*a^2*b*c*d^2*m^3*x*e^6 - 8238*(x*e + d)^m*b^4*d^2*m^2*x^2*e^6 - 98
856*(x*e + d)^m*a*b^2*c*d^2*m^2*x^2*e^6 - 49428*(x*e + d)^m*a^2*c^2*d^2*m^2
*x^2*e^6 - 13440*(x*e + d)^m*b^3*c*d^2*m*x^3*e^6 - 40320*(x*e + d)^m*a*b*c^
2*d^2*m*x^3*e^6 + 2130*(x*e + d)^m*a*b^3*d^3*m^3*e^5 + 6390*(x*e + d)^m*a^2
*b*c*d^3*m^3*e^5 + 6396*(x*e + d)^m*b^4*d^3*m^2*x*e^5 + 76752*(x*e + d)^m*a
*b^2*c*d^3*m^2*x*e^5 + 38376*(x*e + d)^m*a^2*c^2*d^3*m^2*x*e^5 + 20160*(x*e
 + d)^m*b^3*c*d^3*m*x^2*e^5 + 60480*(x*e + d)^m*a*b*c^2*d^3*m*x^2*e^5 - 150
6*(x*e + d)^m*b^4*d^4*m^2*e^4 - 18072*(x*e + d)^m*a*b^2*c*d^4*m^2*e^4 - 903
6*(x*e + d)^m*a^2*c^2*d^4*m^2*e^4 - 40320*(x*e + d)^m*b^3*c*d^4*m*x*e^4 - 1
20960*(x*e + d)^m*a*b*c^2*d^4*m*x*e^4 + 17520*(x*e + d)^m*b^3*c*d^5*m*e^3 +
 52560*(x*e + d)^m*a*b*c^2*d^5*m*e^3 - 60480*(x*e + d)^m*b^2*c^2*d^6*e^2 -
40320*(x*e + d)^m*a*c^3*d^6*e^2 + 4025*(x*e + d)^m*a^3*b*m^4*x*e^8 + 45867*
(x*e + d)^m*a^2*b^2*m^3*x^2*e^8 + 30578*(x*e + d)^m*a^3*c*m^3*x^2*e^8 + 860
76*(x*e + d)^m*a*b^3*m^2*x^3*e^8 + 258228*(x*e + d)^m*a^2*b*c*m^2*x^3*e^8 +
 24876*(x*e + d)^m*b^4*m*x^4*e^8 + 298512*(x*e + d)^m*a*b^2*c*m*x^4*e^8 + 1
49256*(x*e + d)^m*a^2*c^2*m*x^4*e^8 + 40320*(x*e + d)^m*b^3*c*x^5*e^8 + 120
960*(x*e + d)^m*a*b*c^2*x^5*e^8 + 4025*(x*e + d)^m*a^3*b*d*m^4*e^7 + 36462*
(x*e + d)^m*a^2*b^2*d*m^3*x*e^7 + 24308*(x*e + d)^m*a^3*c*d*m^3*x*e^7 + 379
92*(x*e + d)^m*a*b^3*d*m^2*x^2*e^7 + 113976*(x*e + d)^m*a^2*b*c*d*m^2*x^2*e
^7 + 3360*(x*e + d)^m*b^4*d*m*x^3*e^7 + 40320*(x*e + d)^m*a*b^2*c*d*m*x^3*e
^7 + 20160*(x*e + d)^m*a^2*c^2*d*m*x^3*e^7 - 9405*(x*e + d)^m*a^2*b^2*d^2*m
^3*e^6 - 6270*(x*e + d)^m*a^3*c*d^2*m^3*e^6 - 35664*(x*e + d)^m*a*b^3*d^2*m
^2*x*e^6 - 106992*(x*e + d)^m*a^2*b*c*d^2*m^2*x*e^6 - 5040*(x*e + d)^m*b^4*
d^2*m*x^2*e^6 - 60480*(x*e + d)^m*a*b^2*c*d^2*m*x^2*e^6 - 30240*(x*e + d)^m
*a^2*c^2*d^2*m*x^2*e^6 + 12420*(x*e + d)^m*a*b^3*d^3*m^2*e^5 + 37260*(x*e +
 d)^m*a^2*b*c*d^3*m^2*e^5 + 10080*(x*e + d)^m*b^4*d^3*m*x*e^5 + 120960*(x*e
 + d)^m*a*b^2*c*d^3*m*x*e^5 + 60480*(x*e + d)^m*a^2*c^2*d^3*m*x*e^5 - 6396*
(x*e + d)^m*b^4*d^4*m*e^4 - 76752*(x*e + d)^m*a*b^2*c*d^4*m*e^4 - 38376*(x*
e + d)^m*a^2*c^2*d^4*m*e^4 + 40320*(x*e + d)^m*b^3*c*d^5*e^3 + 120960*(x*e
+ d)^m*a*b*c^2*d^5*e^3 + 18424*(x*e + d)^m*a^3*b*m^3*x*e^8 + 110118*(x*e +
d)^m*a^2*b^2*m^2*x^2*e^8 + 73412*(x*e + d)^m*a^3*c*m^2*x^2*e^8 + 96144*(x*e
 + d)^m*a*b^3*m*x^3*e^8 + 288432*(x*e + d)^m*a^2*b*c*m*x^3*e^8 + 10080*(x*e
 + d)^m*b^4*x^4*e^8 + 120960*(x*e + d)^m*a*b^2*c*x^4*e^8 + 60480*(x*e + d)^
```

```
m*a^2*c^2*x^4*e^8 + 18424*(x*e + d)^m*a^3*b*d*m^3*e^7 + 73656*(x*e + d)^m*a
^2*b^2*d*m^2*x*e^7 + 49104*(x*e + d)^m*a^3*c*d*m^2*x*e^7 + 20160*(x*e + d)^
m*a*b^3*d*m*x^2*e^7 + 60480*(x*e + d)^m*a^2*b*c*d*m*x^2*e^7 - 36462*(x*e +
d)^m*a^2*b^2*d^2*m^2*e^6 - 24308*(x*e + d)^m*a^3*c*d^2*m^2*e^6 - 40320*(x*e
 + d)^m*a*b^3*d^2*m*x*e^6 - 120960*(x*e + d)^m*a^2*b*c*d^2*m*x*e^6 + 35664*
(x*e + d)^m*a*b^3*d^3*m*e^5 + 106992*(x*e + d)^m*a^2*b*c*d^3*m*e^5 - 10080*
(x*e + d)^m*b^4*d^4*e^4 - 120960*(x*e + d)^m*a*b^2*c*d^4*e^4 - 60480*(x*e +
 d)^m*a^2*c^2*d^4*e^4 + 48860*(x*e + d)^m*a^3*b*m^2*x*e^8 + 134136*(x*e + d
)^m*a^2*b^2*m*x^2*e^8 + 89424*(x*e + d)^m*a^3*c*m*x^2*e^8 + 40320*(x*e + d)
^m*a*b^3*x^3*e^8 + 120960*(x*e + d)^m*a^2*b*c*x^3*e^8 + 48860*(x*e + d)^m*a
^3*b*d*m^2*e^7 + 60480*(x*e + d)^m*a^2*b^2*d*m*x*e^7 + 40320*(x*e + d)^m*a^
3*c*d*m*x*e^7 - 73656*(x*e + d)^m*a^2*b^2*d^2*m*e^6 - 49104*(x*e + d)^m*a^3
*c*d^2*m*e^6 + 40320*(x*e + d)^m*a*b^3*d^3*e^5 + 120960*(x*e + d)^m*a^2*b*c
*d^3*e^5 + 69264*(x*e + d)^m*a^3*b*m*x*e^8 + 60480*(x*e + d)^m*a^2*b^2*x^2*
e^8 + 40320*(x*e + d)^m*a^3*c*x^2*e^8 + 69264*(x*e + d)^m*a^3*b*d*m*e^7 - 6
0480*(x*e + d)^m*a^2*b^2*d^2*e^6 - 40320*(x*e + d)^m*a^3*c*d^2*e^6 + 40320*
(x*e + d)^m*a^3*b*x*e^8 + 40320*(x*e + d)^m*a^3*b*d*e^7)/(m^8*e^8 + 36*m^7*
e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 22449*m^4*e^8 + 67284*m^3*e^8 + 118124*m
^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [**B**] time = 0.08, size = 5439, normalized size = 12.11

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [**B**] time = 1.03, size = 1772, normalized size = 3.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*b^2/((m^2 + 3*m + 2)*e^
2) + 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^3*c/((m^2 + 3*m + 2)
*e^2) + (e*x + d)^(m + 1)*a^3*b/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 +
(m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a*b^3/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 9*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*a^2*b*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3
+ 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d
^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^4/((m^4 + 10*m^3 + 35*m^2 +
 50*m + 24)*e^4) + 12*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*
m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a
*b^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 6*((m^3 + 6*m^2 + 11*m +
 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d
^3*e*m*x - 6*d^4)*(e*x + d)^m*a^2*c^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*
e^4) + 5*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m
^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*
e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*b^3*c/((m^5 + 15*m^4 + 85*m^3
+ 225*m^2 + 274*m + 120)*e^5) + 15*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5
*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e
^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*a*b*
c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 9*((m^5 + 15*m^
4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m
^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3
 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 12
0*d^6)*(e*x + d)^m*b^2*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 +
1764*m + 720)*e^6) + 6*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6
*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 +
 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 +
 m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*a*c^3/((m^6 + 21*m^5
 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 7*((m^6 + 21*m^5 + 1
75*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^
4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^
2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(
m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x
+ 720*d^7)*(e*x + d)^m*b*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3
 + 13132*m^2 + 13068*m + 5040)*e^7) + 2*((m^7 + 28*m^6 + 322*m^5 + 1960*m^4
 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5
 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*
m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 +
50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 +
 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^
7*e*m*x - 5040*d^8)*(e*x + d)^m*c^4/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 2
2449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 4.20, size = 4573, normalized size = 10.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x)
```

```
[Out] (x*(d + e*x)^m*(40320*a^3*b*e^8 + 48860*a^3*b*e^8*m^2 + 18424*a^3*b*e^8*m^3
 + 4025*a^3*b*e^8*m^4 + 511*a^3*b*e^8*m^5 + 35*a^3*b*e^8*m^6 + a^3*b*e^8*m^
7 + 10080*b^4*d^3*e^5*m + 6396*b^4*d^3*e^5*m^2 + 1506*b^4*d^3*e^5*m^3 + 156
*b^4*d^3*e^5*m^4 + 6*b^4*d^3*e^5*m^5 + 69264*a^3*b*e^8*m + 10080*c^4*d^7*e*
m + 40320*a^3*c*d*e^7*m + 38376*a^2*c^2*d^3*e^5*m^2 + 9036*a^2*c^2*d^3*e^5*
m^3 + 936*a^2*c^2*d^3*e^5*m^4 + 36*a^2*c^2*d^3*e^5*m^5 + 16200*b^2*c^2*d^5*
e^3*m^2 + 1080*b^2*c^2*d^5*e^3*m^3 - 40320*a*b^3*d^2*e^6*m + 60480*a^2*b^2*
d*e^7*m + 40320*a*c^3*d^5*e^3*m + 49104*a^3*c*d*e^7*m^2 + 24308*a^3*c*d*e^7
*m^3 + 6270*a^3*c*d*e^7*m^4 + 890*a^3*c*d*e^7*m^5 + 66*a^3*c*d*e^7*m^6 + 2*
a^3*c*d*e^7*m^7 - 40320*b*c^3*d^6*e^2*m - 40320*b^3*c*d^4*e^4*m - 35664*a*b
^3*d^2*e^6*m^2 + 73656*a^2*b^2*d*e^7*m^2 - 12420*a*b^3*d^2*e^6*m^3 + 36462*
a^2*b^2*d*e^7*m^3 - 2130*a*b^3*d^2*e^6*m^4 + 9405*a^2*b^2*d*e^7*m^4 - 180*a
*b^3*d^2*e^6*m^5 + 1335*a^2*b^2*d*e^7*m^5 - 6*a*b^3*d^2*e^6*m^6 + 99*a^2*b^
2*d*e^7*m^6 + 3*a^2*b^2*d*e^7*m^7 + 60480*a^2*c^2*d^3*e^5*m + 10800*a*c^3*d
^5*e^3*m^2 + 720*a*c^3*d^5*e^3*m^3 + 60480*b^2*c^2*d^5*e^3*m - 5040*b*c^3*d
^6*e^2*m^2 - 17520*b^3*c*d^4*e^4*m^2 - 2520*b^3*c*d^4*e^4*m^3 - 120*b^3*c*d
^4*e^4*m^4 - 52560*a*b*c^2*d^4*e^4*m^2 + 76752*a*b^2*c*d^3*e^5*m^2 - 106992
*a^2*b*c*d^2*e^6*m^2 - 7560*a*b*c^2*d^4*e^4*m^3 + 18072*a*b^2*c*d^3*e^5*m^3
 - 37260*a^2*b*c*d^2*e^6*m^3 - 360*a*b*c^2*d^4*e^4*m^4 + 1872*a*b^2*c*d^3*e
^5*m^4 - 6390*a^2*b*c*d^2*e^6*m^4 + 72*a*b^2*c*d^3*e^5*m^5 - 540*a^2*b*c*d^
2*e^6*m^5 - 18*a^2*b*c*d^2*e^6*m^6 - 120960*a*b*c^2*d^4*e^4*m + 120960*a*b^
2*c*d^3*e^5*m - 120960*a^2*b*c*d^2*e^6*m))/(e^8*(109584*m + 118124*m^2 + 67
284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) - ((d + e
*x)^m*(10080*c^4*d^8 + 10080*b^4*d^4*e^4 - 40320*a*b^3*d^3*e^5 + 40320*a*c^
3*d^6*e^2 + 40320*a^3*c*d^2*e^6 - 40320*b^3*c*d^5*e^3 + 6396*b^4*d^4*e^4*m
+ 60480*a^2*b^2*d^2*e^6 + 60480*a^2*c^2*d^4*e^4 + 60480*b^2*c^2*d^6*e^2 + 1
506*b^4*d^4*e^4*m^2 + 156*b^4*d^4*e^4*m^3 + 6*b^4*d^4*e^4*m^4 - 40320*a^3*b
*d*e^7 - 40320*b*c^3*d^7*e - 69264*a^3*b*d*e^7*m - 5040*b*c^3*d^7*e*m + 364
62*a^2*b^2*d^2*e^6*m^2 + 9405*a^2*b^2*d^2*e^6*m^3 + 1335*a^2*b^2*d^2*e^6*m^
4 + 99*a^2*b^2*d^2*e^6*m^5 + 3*a^2*b^2*d^2*e^6*m^6 + 9036*a^2*c^2*d^4*e^4*m
^2 + 936*a^2*c^2*d^4*e^4*m^3 + 36*a^2*c^2*d^4*e^4*m^4 + 1080*b^2*c^2*d^6*e^
2*m^2 - 120960*a*b*c^2*d^5*e^3 + 120960*a*b^2*c*d^4*e^4 - 120960*a^2*b*c*d^
3*e^5 - 35664*a*b^3*d^3*e^5*m - 48860*a^3*b*d*e^7*m^2 - 18424*a^3*b*d*e^7*m
^3 - 4025*a^3*b*d*e^7*m^4 - 511*a^3*b*d*e^7*m^5 - 35*a^3*b*d*e^7*m^6 - a^3*
```

```
b*d*e^7*m^7 + 10800*a*c^3*d^6*e^2*m + 49104*a^3*c*d^2*e^6*m - 17520*b^3*c*d
^5*e^3*m + 73656*a^2*b^2*d^2*e^6*m - 12420*a*b^3*d^3*e^5*m^2 - 2130*a*b^3*d
^3*e^5*m^3 - 180*a*b^3*d^3*e^5*m^4 - 6*a*b^3*d^3*e^5*m^5 + 38376*a^2*c^2*d^
4*e^4*m + 720*a*c^3*d^6*e^2*m^2 + 24308*a^3*c*d^2*e^6*m^2 + 6270*a^3*c*d^2*
e^6*m^3 + 890*a^3*c*d^2*e^6*m^4 + 66*a^3*c*d^2*e^6*m^5 + 2*a^3*c*d^2*e^6*m^
6 + 16200*b^2*c^2*d^6*e^2*m - 2520*b^3*c*d^5*e^3*m^2 - 120*b^3*c*d^5*e^3*m^
3 - 7560*a*b*c^2*d^5*e^3*m^2 + 18072*a*b^2*c*d^4*e^4*m^2 - 37260*a^2*b*c*d^
3*e^5*m^2 - 360*a*b*c^2*d^5*e^3*m^3 + 1872*a*b^2*c*d^4*e^4*m^3 - 6390*a^2*b
*c*d^3*e^5*m^3 + 72*a*b^2*c*d^4*e^4*m^4 - 540*a^2*b*c*d^3*e^5*m^4 - 18*a^2*
b*c*d^3*e^5*m^5 - 52560*a*b*c^2*d^5*e^3*m + 76752*a*b^2*c*d^4*e^4*m - 10699
2*a^2*b*c*d^3*e^5*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 +
 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (2*c^4*x^8*(d + e*x)^m*(1306
8*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*m^6 + m^7 + 5040))/(10
9584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 +
 m^8 + 40320) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(1680*b^4*e^4 + 1
066*b^4*e^4*m - 420*c^4*d^4*m + 10080*a^2*c^2*e^4 + 251*b^4*e^4*m^2 + 26*b^
4*e^4*m^3 + b^4*e^4*m^4 + 6396*a^2*c^2*e^4*m + 1506*a^2*c^2*e^4*m^2 + 156*a
^2*c^2*e^4*m^3 + 6*a^2*c^2*e^4*m^4 + 20160*a*b^2*c*e^4 + 12792*a*b^2*c*e^4*
m + 1680*b*c^3*d^3*e*m + 1680*b^3*c*d*e^3*m - 675*b^2*c^2*d^2*e^2*m^2 - 45*
b^2*c^2*d^2*e^2*m^3 + 3012*a*b^2*c*e^4*m^2 + 312*a*b^2*c*e^4*m^3 + 12*a*b^2
*c*e^4*m^4 - 1680*a*c^3*d^2*e^2*m + 210*b*c^3*d^3*e*m^2 + 730*b^3*c*d*e^3*m
^2 + 105*b^3*c*d*e^3*m^3 + 5*b^3*c*d*e^3*m^4 - 450*a*c^3*d^2*e^2*m^2 - 30*a
*c^3*d^2*e^2*m^3 - 2520*b^2*c^2*d^2*e^2*m + 5040*a*b*c^2*d*e^3*m + 2190*a*b
*c^2*d*e^3*m^2 + 315*a*b*c^2*d*e^3*m^3 + 15*a*b*c^2*d*e^3*m^4))/(e^4*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(20160*a*b^3*e^5 + 1680*c^4*
d^5*m + 6210*a*b^3*e^5*m^2 + 1065*a*b^3*e^5*m^3 + 90*a*b^3*e^5*m^4 + 3*a*b^
3*e^5*m^5 + 1066*b^4*d*e^4*m^2 + 251*b^4*d*e^4*m^3 + 26*b^4*d*e^4*m^4 + b^4
*d*e^4*m^5 + 60480*a^2*b*c*e^5 + 17832*a*b^3*e^5*m + 1680*b^4*d*e^4*m + 534
96*a^2*b*c*e^5*m - 6720*b*c^3*d^4*e*m + 2700*b^2*c^2*d^3*e^2*m^2 + 180*b^2*
c^2*d^3*e^2*m^3 + 18630*a^2*b*c*e^5*m^2 + 3195*a^2*b*c*e^5*m^3 + 270*a^2*b*
c*e^5*m^4 + 9*a^2*b*c*e^5*m^5 + 6720*a*c^3*d^3*e^2*m + 10080*a^2*c^2*d*e^4*
m - 6720*b^3*c*d^2*e^3*m - 840*b*c^3*d^4*e*m^2 + 1800*a*c^3*d^3*e^2*m^2 + 6
396*a^2*c^2*d*e^4*m^2 + 120*a*c^3*d^3*e^2*m^3 + 1506*a^2*c^2*d*e^4*m^3 + 15
6*a^2*c^2*d*e^4*m^4 + 6*a^2*c^2*d*e^4*m^5 + 10080*b^2*c^2*d^3*e^2*m - 2920*
b^3*c*d^2*e^3*m^2 - 420*b^3*c*d^2*e^3*m^3 - 20*b^3*c*d^2*e^3*m^4 - 8760*a*b
*c^2*d^2*e^3*m^2 - 1260*a*b*c^2*d^2*e^3*m^3 - 60*a*b*c^2*d^2*e^3*m^4 + 2016
0*a*b^2*c*d*e^4*m - 20160*a*b*c^2*d^2*e^3*m + 12792*a*b^2*c*d*e^4*m^2 + 301
2*a*b^2*c*d*e^4*m^3 + 312*a*b^2*c*d*e^4*m^4 + 12*a*b^2*c*d*e^4*m^5))/(e^5*(
109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7
 + m^8 + 40320)) + (x^2*(m + 1)*(d + e*x)^m*(40320*a^3*c*e^6 - 5040*c^4*d^6
*m + 60480*a^2*b^2*e^6 + 73656*a^2*b^2*e^6*m + 24308*a^3*c*e^6*m^2 + 6270*a
^3*c*e^6*m^3 + 890*a^3*c*e^6*m^4 + 66*a^3*c*e^6*m^5 + 2*a^3*c*e^6*m^6 - 504
0*b^4*d^2*e^4*m + 36462*a^2*b^2*e^6*m^2 + 9405*a^2*b^2*e^6*m^3 + 1335*a^2*b
^2*e^6*m^4 + 99*a^2*b^2*e^6*m^5 + 3*a^2*b^2*e^6*m^6 - 3198*b^4*d^2*e^4*m^2
 - 753*b^4*d^2*e^4*m^3 - 78*b^4*d^2*e^4*m^4 - 3*b^4*d^2*e^4*m^5 + 49104*a^3*
c*e^6*m + 20160*a*b^3*d*e^5*m + 20160*b*c^3*d^5*e*m - 19188*a^2*c^2*d^2*e^4
*m^2 - 4518*a^2*c^2*d^2*e^4*m^3 - 468*a^2*c^2*d^2*e^4*m^4 - 18*a^2*c^2*d^2*
e^4*m^5 - 8100*b^2*c^2*d^4*e^2*m^2 - 540*b^2*c^2*d^4*e^2*m^3 + 17832*a*b^3*
d*e^5*m^2 + 6210*a*b^3*d*e^5*m^3 + 1065*a*b^3*d*e^5*m^4 + 90*a*b^3*d*e^5*m^
5 + 3*a*b^3*d*e^5*m^6 - 20160*a*c^3*d^4*e^2*m + 20160*b^3*c*d^3*e^3*m + 252
0*b*c^3*d^5*e*m^2 - 30240*a^2*c^2*d^2*e^4*m - 5400*a*c^3*d^4*e^2*m^2 - 360*
a*c^3*d^4*e^2*m^3 - 30240*b^2*c^2*d^4*e^2*m + 8760*b^3*c*d^3*e^3*m^2 + 1260
*b^3*c*d^3*e^3*m^3 + 60*b^3*c*d^3*e^3*m^4 + 26280*a*b*c^2*d^3*e^3*m^2 - 383
76*a*b^2*c*d^2*e^4*m^2 + 3780*a*b*c^2*d^3*e^3*m^3 - 9036*a*b^2*c*d^2*e^4*m^
3 + 180*a*b*c^2*d^3*e^3*m^4 - 936*a*b^2*c*d^2*e^4*m^4 - 36*a*b^2*c*d^2*e^4*
m^5 + 60480*a^2*b*c*d*e^5*m + 60480*a*b*c^2*d^3*e^3*m - 60480*a*b^2*c*d^2*e
^4*m + 53496*a^2*b*c*d*e^5*m^2 + 18630*a^2*b*c*d*e^5*m^3 + 3195*a^2*b*c*d*e
^5*m^4 + 270*a^2*b*c*d*e^5*m^5 + 9*a^2*b*c*d*e^5*m^6))/(e^6*(109584*m + 118
```

```
124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320
)) + (c^2*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(
504*b^2*e^2 + 135*b^2*e^2*m - 14*c^2*d^2*m + 9*b^2*e^2*m^2 + 336*a*c*e^2 +
90*a*c*e^2*m + 6*a*c*e^2*m^2 + 56*b*c*d*e*m + 7*b*c*d*e*m^2))/(e^2*(109584*
m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8
+ 40320)) + (c^3*x^7*(d + e*x)^m*(56*b*e + 7*b*e*m + 2*c*d*m)*(1764*m + 162
4*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/(e*(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c*
x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(1680*b^3*e^3 + 730*b^3
*e^3*m + 84*c^3*d^3*m + 105*b^3*e^3*m^2 + 5*b^3*e^3*m^3 + 5040*a*b*c*e^3 +
315*a*b*c*e^3*m^2 + 15*a*b*c*e^3*m^3 + 336*a*c^2*d*e^2*m - 336*b*c^2*d^2*e*
m + 504*b^2*c*d*e^2*m + 90*a*c^2*d*e^2*m^2 + 6*a*c^2*d*e^2*m^3 - 42*b*c^2*d
^2*e*m^2 + 135*b^2*c*d*e^2*m^2 + 9*b^2*c*d*e^2*m^3 + 2190*a*b*c*e^3*m))/(e^
3*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*
m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.1655 $\int (b+2cx)(d+ex)^m\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=270

$$\frac{2(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(m+2)}-\frac{(2cd-be)(d+ex)^{m+3}\,(-2ce(5bd-3ae)+b^2e^2}{e^6(m+3)}$$

```
[Out] -(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(1+m)/e^6/(1+m)+2*(a*e^2-b*d*e+
c*d^2)*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(2+m)/e^6/(2+m)-(-b*e+2
*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))*(e*x+d)^(3+m)/e^6/(3+m)+4*c
*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))*(e*x+d)^(4+m)/e^6/(4+m)-5*c^2*(-b*e+2
*c*d)*(e*x+d)^(5+m)/e^6/(5+m)+2*c^3*(e*x+d)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.19, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {771}

$$\frac{2(d+ex)^{m+2}\left(ae^2-bde+cd^2\right)\left(-ce(5bd-ae)+b^2e^2+5c^2d^2\right)}{e^6(m+2)}-\frac{(2cd-be)(d+ex)^{m+3}\,(-2ce(5bd-3ae)+b^2e^2}{e^6(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m))
) + (2*(c*d^2 - b*d*e + a*e^2)*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))*(d
 + e*x)^(2 + m))/(e^6*(2 + m)) - ((2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c
*e*(5*b*d - 3*a*e))*(d + e*x)^(3 + m))/(e^6*(3 + m)) + (4*c*(5*c^2*d^2 + b^
2*e^2 - c*e*(5*b*d - a*e))*(d + e*x)^(4 + m))/(e^6*(4 + m)) - (5*c^2*(2*c*d
 - b*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (2*c^3*(d + e*x)^(6 + m))/(e^6*(
6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (b+2cx)(d+ex)^m\left(a+bx+cx^2\right)^2\,dx=\int \Bigg(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)^2(d+ex)^m}{e^5}+\frac{2\left(cd^2-bde+ae^2\right)}{}$$

$$=-\frac{(2cd-be)\left(cd^2-bde+ae^2\right)^2(d+ex)^{1+m}}{e^6(1+m)}+\frac{2\left(cd^2-bde+ae^2\right)(5}{}$$

Mathematica [A] time = 1.08, size = 408, normalized size = 1.51

$$\frac{(d+ex)^{m+1}\Bigg(\frac{2\Big(\frac{(d+ex)\left(2c^2e^2\left(4a^2e^2\left(m^2+8m+15\right)+4abde\left(m^2-4m-30\right)+b^2d^2\left(m^2-4m+60\right)\right)-2b^2ce^3m(3ae(m+4)+bd(m-4))-8c^3d^2e\left(ae\left(m^2-4m-30\right)+30bd\right)+b^4e^4m(m+\right.}{e^2(m+2)}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(c*(a + x*(b + c*x))^2*(b*e*(10 + m) + 2*c*(-5*d + e*(5
+ m)*x)) + (2*(-(((2*c*d - b*e)*(c*d^2 + e*(-(b*d) + a*e))*(60*c^2*d^2 + b^
2*e^2*m*(1 + m) - 4*c*e*(15*b*d + a*e*(-15 + m + m^2))))/(e^2*(1 + m))) + (
(120*c^4*d^4 + b^4*e^4*m*(2 + m) - 2*b^2*c*e^3*m*(b*d*(-4 + m) + 3*a*e*(4 +
 m)) - 8*c^3*d^2*e*(30*b*d + a*e*(-30 - 4*m + m^2)) + 2*c^2*e^2*(4*a*b*d*e*
(-30 - 4*m + m^2) + b^2*d^2*(60 - 4*m + m^2) + 4*a^2*e^2*(15 + 8*m + m^2)))
*(d + e*x))/(e^2*(2 + m)) - (a + x*(b + c*x))*(b^3*e^3*m + 20*c^3*d^2*(3*d
- e*(3 + m)*x) + b*c*e^2*(-2*a*e*(30 + 7*m) + b*d*(60 + 11*m + m^2) + b*e*m
*(3 + m)*x) - 2*c^2*e*(5*b*d*(d*(12 + m) - 2*e*(3 + m)*x) + 2*a*e*(d*(-15 +
 m + m^2) + e*(15 + 8*m + m^2)*x)))))/(e^2*(3 + m)*(4 + m))))/(c*e^2*(5 + m
)*(6 + m))
```

fricas [**B**]   time = 1.19, size = 1750, normalized size = 6.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] (a^2*b*d*e^5*m^5 - 240*c^3*d^6 + 720*b*c^2*d^5*e + 720*a^2*b*d*e^5 - 720*(b
^2*c + a*c^2)*d^4*e^2 + 240*(b^3 + 6*a*b*c)*d^3*e^3 - 720*(a*b^2 + a^2*c)*d
^2*e^4 + 2*(c^3*e^6*m^5 + 15*c^3*e^6*m^4 + 85*c^3*e^6*m^3 + 225*c^3*e^6*m^2
 + 274*c^3*e^6*m + 120*c^3*e^6)*x^6 + (720*b*c^2*e^6 + (2*c^3*d*e^5 + 5*b*c
^2*e^6)*m^5 + 20*(c^3*d*e^5 + 4*b*c^2*e^6)*m^4 + 5*(14*c^3*d*e^5 + 95*b*c^2
*e^6)*m^3 + 100*(c^3*d*e^5 + 13*b*c^2*e^6)*m^2 + 12*(4*c^3*d*e^5 + 135*b*c^
2*e^6)*m)*x^5 + 2*(10*a^2*b*d*e^5 - (a*b^2 + a^2*c)*d^2*e^4)*m^4 + (720*(b^
2*c + a*c^2)*e^6 + (5*b*c^2*d*e^5 + 4*(b^2*c + a*c^2)*e^6)*m^5 - 2*(5*c^3*d
^2*e^4 - 30*b*c^2*d*e^5 - 34*(b^2*c + a*c^2)*e^6)*m^4 - (60*c^3*d^2*e^4 - 2
35*b*c^2*d*e^5 - 428*(b^2*c + a*c^2)*e^6)*m^3 - 2*(55*c^3*d^2*e^4 - 180*b*c
^2*d*e^5 - 614*(b^2*c + a*c^2)*e^6)*m^2 - 12*(5*c^3*d^2*e^4 - 15*b*c^2*d*e^
5 - 132*(b^2*c + a*c^2)*e^6)*m)*x^4 + (155*a^2*b*d*e^5 + 2*(b^3 + 6*a*b*c)*
d^3*e^3 - 36*(a*b^2 + a^2*c)*d^2*e^4)*m^3 + (240*(b^3 + 6*a*b*c)*e^6 + (4*(
b^2*c + a*c^2)*d*e^5 + (b^3 + 6*a*b*c)*e^6)*m^5 - 2*(10*b*c^2*d^2*e^4 - 28*
(b^2*c + a*c^2)*d*e^5 - 9*(b^3 + 6*a*b*c)*e^6)*m^4 + (40*c^3*d^3*e^3 - 180*
b*c^2*d^2*e^4 + 260*(b^2*c + a*c^2)*d*e^5 + 121*(b^3 + 6*a*b*c)*e^6)*m^3 +
4*(30*c^3*d^3*e^3 - 100*b*c^2*d^2*e^4 + 112*(b^2*c + a*c^2)*d*e^5 + 93*(b^3
 + 6*a*b*c)*e^6)*m^2 + 4*(20*c^3*d^3*e^3 - 60*b*c^2*d^2*e^4 + 60*(b^2*c + a
*c^2)*d*e^5 + 127*(b^3 + 6*a*b*c)*e^6)*m)*x^3 + 2*(290*a^2*b*d*e^5 - 12*(b^
2*c + a*c^2)*d^4*e^2 + 15*(b^3 + 6*a*b*c)*d^3*e^3 - 119*(a*b^2 + a^2*c)*d^2
*e^4)*m^2 + (720*(a*b^2 + a^2*c)*e^6 + ((b^3 + 6*a*b*c)*d*e^5 + 2*(a*b^2 +
a^2*c)*e^6)*m^5 - 2*(6*(b^2*c + a*c^2)*d^2*e^4 - 8*(b^3 + 6*a*b*c)*d*e^5 -
19*(a*b^2 + a^2*c)*e^6)*m^4 + (60*b*c^2*d^3*e^3 - 144*(b^2*c + a*c^2)*d^2*e
^4 + 89*(b^3 + 6*a*b*c)*d*e^5 + 274*(a*b^2 + a^2*c)*e^6)*m^3 - 2*(60*c^3*d^
4*e^2 - 210*b*c^2*d^3*e^3 + 246*(b^2*c + a*c^2)*d^2*e^4 - 97*(b^3 + 6*a*b*c
)*d*e^5 - 461*(a*b^2 + a^2*c)*e^6)*m^2 - 12*(10*c^3*d^4*e^2 - 30*b*c^2*d^3*
e^3 + 30*(b^2*c + a*c^2)*d^2*e^4 - 10*(b^3 + 6*a*b*c)*d*e^5 - 117*(a*b^2 +
a^2*c)*e^6)*m)*x^2 + 4*(30*b*c^2*d^5*e + 261*a^2*b*d*e^5 - 66*(b^2*c + a*c^
2)*d^4*e^2 + 37*(b^3 + 6*a*b*c)*d^3*e^3 - 171*(a*b^2 + a^2*c)*d^2*e^4)*m +
(720*a^2*b*e^6 + (a^2*b*e^6 + 2*(a*b^2 + a^2*c)*d*e^5)*m^5 + 2*(10*a^2*b*e^
6 - (b^3 + 6*a*b*c)*d^2*e^4 + 18*(a*b^2 + a^2*c)*d*e^5)*m^4 + (155*a^2*b*e^
6 + 24*(b^2*c + a*c^2)*d^3*e^3 - 30*(b^3 + 6*a*b*c)*d^2*e^4 + 238*(a*b^2 +
a^2*c)*d*e^5)*m^3 - 4*(30*b*c^2*d^4*e^2 - 145*a^2*b*e^6 - 66*(b^2*c + a*c^2
)*d^3*e^3 + 37*(b^3 + 6*a*b*c)*d^2*e^4 - 171*(a*b^2 + a^2*c)*d*e^5)*m^2 + 1
2*(20*c^3*d^5*e - 60*b*c^2*d^4*e^2 + 87*a^2*b*e^6 + 60*(b^2*c + a*c^2)*d^3*
e^3 - 20*(b^3 + 6*a*b*c)*d^2*e^4 + 60*(a*b^2 + a^2*c)*d*e^5)*m)*x)*(e*x + d
)^m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764
*e^6*m + 720*e^6)
```

giac [B] time = 0.32, size = 3633, normalized size = 13.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] (2*(x*e + d)^m*c^3*m^5*x^6*e^6 + 2*(x*e + d)^m*c^3*d*m^5*x^5*e^5 + 5*(x*e +
 d)^m*b*c^2*m^5*x^5*e^6 + 30*(x*e + d)^m*c^3*m^4*x^6*e^6 + 5*(x*e + d)^m*b*
c^2*d*m^5*x^4*e^5 + 20*(x*e + d)^m*c^3*d*m^4*x^5*e^5 - 10*(x*e + d)^m*c^3*d
^2*m^4*x^4*e^4 + 4*(x*e + d)^m*b^2*c*m^5*x^4*e^6 + 4*(x*e + d)^m*a*c^2*m^5*
x^4*e^6 + 80*(x*e + d)^m*b*c^2*m^4*x^5*e^6 + 170*(x*e + d)^m*c^3*m^3*x^6*e^
6 + 4*(x*e + d)^m*b^2*c*d*m^5*x^3*e^5 + 4*(x*e + d)^m*a*c^2*d*m^5*x^3*e^5 +
 60*(x*e + d)^m*b*c^2*d*m^4*x^4*e^5 + 70*(x*e + d)^m*c^3*d*m^3*x^5*e^5 - 20
*(x*e + d)^m*b*c^2*d^2*m^4*x^3*e^4 - 60*(x*e + d)^m*c^3*d^2*m^3*x^4*e^4 + 4
0*(x*e + d)^m*c^3*d^3*m^3*x^3*e^3 + (x*e + d)^m*b^3*m^5*x^3*e^6 + 6*(x*e +
d)^m*a*b*c*m^5*x^3*e^6 + 68*(x*e + d)^m*b^2*c*m^4*x^4*e^6 + 68*(x*e + d)^m*
a*c^2*m^4*x^4*e^6 + 475*(x*e + d)^m*b*c^2*m^3*x^5*e^6 + 450*(x*e + d)^m*c^3
*m^2*x^6*e^6 + (x*e + d)^m*b^3*d*m^5*x^2*e^5 + 6*(x*e + d)^m*a*b*c*d*m^5*x^
2*e^5 + 56*(x*e + d)^m*b^2*c*d*m^4*x^3*e^5 + 56*(x*e + d)^m*a*c^2*d*m^4*x^3
*e^5 + 235*(x*e + d)^m*b*c^2*d*m^3*x^4*e^5 + 100*(x*e + d)^m*c^3*d*m^2*x^5*
e^5 - 12*(x*e + d)^m*b^2*c*d^2*m^4*x^2*e^4 - 12*(x*e + d)^m*a*c^2*d^2*m^4*x
^2*e^4 - 180*(x*e + d)^m*b*c^2*d^2*m^3*x^3*e^4 - 110*(x*e + d)^m*c^3*d^2*m^
2*x^4*e^4 + 60*(x*e + d)^m*b*c^2*d^3*m^3*x^2*e^3 + 120*(x*e + d)^m*c^3*d^3*
m^2*x^3*e^3 - 120*(x*e + d)^m*c^3*d^4*m^2*x^2*e^2 + 2*(x*e + d)^m*a*b^2*m^5
*x^2*e^6 + 2*(x*e + d)^m*a^2*c*m^5*x^2*e^6 + 18*(x*e + d)^m*b^3*m^4*x^3*e^6
 + 108*(x*e + d)^m*a*b*c*m^4*x^3*e^6 + 428*(x*e + d)^m*b^2*c*m^3*x^4*e^6 +
428*(x*e + d)^m*a*c^2*m^3*x^4*e^6 + 1300*(x*e + d)^m*b*c^2*m^2*x^5*e^6 + 54
8*(x*e + d)^m*c^3*m*x^6*e^6 + 2*(x*e + d)^m*a*b^2*d*m^5*x*e^5 + 2*(x*e + d)
^m*a^2*c*d*m^5*x*e^5 + 16*(x*e + d)^m*b^3*d*m^4*x^2*e^5 + 96*(x*e + d)^m*a*
b*c*d*m^4*x^2*e^5 + 260*(x*e + d)^m*b^2*c*d*m^3*x^3*e^5 + 260*(x*e + d)^m*a
*c^2*d*m^3*x^3*e^5 + 360*(x*e + d)^m*b*c^2*d*m^2*x^4*e^5 + 48*(x*e + d)^m*c
^3*d*m*x^5*e^5 - 2*(x*e + d)^m*b^3*d^2*m^4*x*e^4 - 12*(x*e + d)^m*a*b*c*d^2
*m^4*x*e^4 - 144*(x*e + d)^m*b^2*c*d^2*m^3*x^2*e^4 - 144*(x*e + d)^m*a*c^2*
d^2*m^3*x^2*e^4 - 400*(x*e + d)^m*b*c^2*d^2*m^2*x^3*e^4 - 60*(x*e + d)^m*c^
3*d^2*m*x^4*e^4 + 24*(x*e + d)^m*b^2*c*d^3*m^3*x*e^3 + 24*(x*e + d)^m*a*c^2
*d^3*m^3*x*e^3 + 420*(x*e + d)^m*b*c^2*d^3*m^2*x^2*e^3 + 80*(x*e + d)^m*c^3
*d^3*m*x^3*e^3 - 120*(x*e + d)^m*b*c^2*d^4*m^2*x*e^2 - 120*(x*e + d)^m*c^3*
d^4*m*x^2*e^2 + 240*(x*e + d)^m*c^3*d^5*m*x*e + (x*e + d)^m*a^2*b*m^5*x*e^6
 + 38*(x*e + d)^m*a*b^2*m^4*x^2*e^6 + 38*(x*e + d)^m*a^2*c*m^4*x^2*e^6 + 12
1*(x*e + d)^m*b^3*m^3*x^3*e^6 + 726*(x*e + d)^m*a*b*c*m^3*x^3*e^6 + 1228*(x
*e + d)^m*b^2*c*m^2*x^4*e^6 + 1228*(x*e + d)^m*a*c^2*m^2*x^4*e^6 + 1620*(x*
e + d)^m*b*c^2*m*x^5*e^6 + 240*(x*e + d)^m*c^3*x^6*e^6 + (x*e + d)^m*a^2*b*
d*m^5*e^5 + 36*(x*e + d)^m*a*b^2*d*m^4*x*e^5 + 36*(x*e + d)^m*a^2*c*d*m^4*x
*e^5 + 89*(x*e + d)^m*b^3*d*m^3*x^2*e^5 + 534*(x*e + d)^m*a*b*c*d*m^3*x^2*e
^5 + 448*(x*e + d)^m*b^2*c*d*m^2*x^3*e^5 + 448*(x*e + d)^m*a*c^2*d*m^2*x^3*
e^5 + 180*(x*e + d)^m*b*c^2*d*m*x^4*e^5 - 2*(x*e + d)^m*a*b^2*d^2*m^4*e^4 -
 2*(x*e + d)^m*a^2*c*d^2*m^4*e^4 - 30*(x*e + d)^m*b^3*d^2*m^3*x*e^4 - 180*(
x*e + d)^m*a*b*c*d^2*m^3*x*e^4 - 492*(x*e + d)^m*b^2*c*d^2*m^2*x^2*e^4 - 49
2*(x*e + d)^m*a*c^2*d^2*m^2*x^2*e^4 - 240*(x*e + d)^m*b*c^2*d^2*m*x^3*e^4 +
 2*(x*e + d)^m*b^3*d^3*m^3*e^3 + 12*(x*e + d)^m*a*b*c*d^3*m^3*e^3 + 264*(x*
e + d)^m*b^2*c*d^3*m^2*x*e^3 + 264*(x*e + d)^m*a*c^2*d^3*m^2*x*e^3 + 360*(x
*e + d)^m*b*c^2*d^3*m*x^2*e^3 - 24*(x*e + d)^m*b^2*c*d^4*m^2*e^2 - 24*(x*e
+ d)^m*a*c^2*d^4*m^2*e^2 - 720*(x*e + d)^m*b*c^2*d^4*m*x*e^2 + 120*(x*e + d
)^m*b*c^2*d^5*m*e - 240*(x*e + d)^m*c^3*d^6 + 20*(x*e + d)^m*a^2*b*m^4*x*e^
6 + 274*(x*e + d)^m*a*b^2*m^3*x^2*e^6 + 274*(x*e + d)^m*a^2*c*m^3*x^2*e^6 +
 372*(x*e + d)^m*b^3*m^2*x^3*e^6 + 2232*(x*e + d)^m*a*b*c*m^2*x^3*e^6 + 158
4*(x*e + d)^m*b^2*c*m*x^4*e^6 + 1584*(x*e + d)^m*a*c^2*m*x^4*e^6 + 720*(x*e
 + d)^m*b*c^2*x^5*e^6 + 20*(x*e + d)^m*a^2*b*d*m^4*e^5 + 238*(x*e + d)^m*a*
b^2*d*m^3*x*e^5 + 238*(x*e + d)^m*a^2*c*d*m^3*x*e^5 + 194*(x*e + d)^m*b^3*d
*m^2*x^2*e^5 + 1164*(x*e + d)^m*a*b*c*d*m^2*x^2*e^5 + 240*(x*e + d)^m*b^2*c
*d*m*x^3*e^5 + 240*(x*e + d)^m*a*c^2*d*m*x^3*e^5 - 36*(x*e + d)^m*a*b^2*d^2
*m^3*e^4 - 36*(x*e + d)^m*a^2*c*d^2*m^3*e^4 - 148*(x*e + d)^m*b^3*d^2*m^2*x
*e^4 - 888*(x*e + d)^m*a*b*c*d^2*m^2*x*e^4 - 360*(x*e + d)^m*b^2*c*d^2*m*x^
2*e^4 - 360*(x*e + d)^m*a*c^2*d^2*m*x^2*e^4 + 30*(x*e + d)^m*b^3*d^3*m^2*e^
3 + 180*(x*e + d)^m*a*b*c*d^3*m^2*e^3 + 720*(x*e + d)^m*b^2*c*d^3*m*x*e^3 +
 720*(x*e + d)^m*a*c^2*d^3*m*x*e^3 - 264*(x*e + d)^m*b^2*c*d^4*m*e^2 - 264*
(x*e + d)^m*a*c^2*d^4*m*e^2 + 720*(x*e + d)^m*b*c^2*d^5*e + 155*(x*e + d)^m
*a^2*b*m^3*x*e^6 + 922*(x*e + d)^m*a*b^2*m^2*x^2*e^6 + 922*(x*e + d)^m*a^2*
c*m^2*x^2*e^6 + 508*(x*e + d)^m*b^3*m*x^3*e^6 + 3048*(x*e + d)^m*a*b*c*m*x^
3*e^6 + 720*(x*e + d)^m*b^2*c*x^4*e^6 + 720*(x*e + d)^m*a*c^2*x^4*e^6 + 155
*(x*e + d)^m*a^2*b*d*m^3*e^5 + 684*(x*e + d)^m*a*b^2*d*m^2*x*e^5 + 684*(x*e
 + d)^m*a^2*c*d*m^2*x*e^5 + 120*(x*e + d)^m*b^3*d*m*x^2*e^5 + 720*(x*e + d)
^m*a*b*c*d*m*x^2*e^5 - 238*(x*e + d)^m*a*b^2*d^2*m^2*e^4 - 238*(x*e + d)^m*
a^2*c*d^2*m^2*e^4 - 240*(x*e + d)^m*b^3*d^2*m*x*e^4 - 1440*(x*e + d)^m*a*b*
c*d^2*m*x*e^4 + 148*(x*e + d)^m*b^3*d^3*m*e^3 + 888*(x*e + d)^m*a*b*c*d^3*m
*e^3 - 720*(x*e + d)^m*b^2*c*d^4*e^2 - 720*(x*e + d)^m*a*c^2*d^4*e^2 + 580*
(x*e + d)^m*a^2*b*m^2*x*e^6 + 1404*(x*e + d)^m*a*b^2*m*x^2*e^6 + 1404*(x*e
+ d)^m*a^2*c*m*x^2*e^6 + 240*(x*e + d)^m*b^3*x^3*e^6 + 1440*(x*e + d)^m*a*b
*c*x^3*e^6 + 580*(x*e + d)^m*a^2*b*d*m^2*e^5 + 720*(x*e + d)^m*a*b^2*d*m*x*
e^5 + 720*(x*e + d)^m*a^2*c*d*m*x*e^5 - 684*(x*e + d)^m*a*b^2*d^2*m*e^4 - 6
84*(x*e + d)^m*a^2*c*d^2*m*e^4 + 240*(x*e + d)^m*b^3*d^3*e^3 + 1440*(x*e +
d)^m*a*b*c*d^3*e^3 + 1044*(x*e + d)^m*a^2*b*m*x*e^6 + 720*(x*e + d)^m*a*b^2
*x^2*e^6 + 720*(x*e + d)^m*a^2*c*x^2*e^6 + 1044*(x*e + d)^m*a^2*b*d*m*e^5 -
 720*(x*e + d)^m*a*b^2*d^2*e^4 - 720*(x*e + d)^m*a^2*c*d^2*e^4 + 720*(x*e +
 d)^m*a^2*b*x*e^6 + 720*(x*e + d)^m*a^2*b*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 17
5*m^4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1852, normalized size = 6.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(2*c^3*e^5*m^5*x^5+5*b*c^2*e^5*m^5*x^4+30*c^3*e^5*m^4*x^5+4*a
*c^2*e^5*m^5*x^3+4*b^2*c*e^5*m^5*x^3+80*b*c^2*e^5*m^4*x^4-10*c^3*d*e^4*m^4*
x^4+170*c^3*e^5*m^3*x^5+6*a*b*c*e^5*m^5*x^2+68*a*c^2*e^5*m^4*x^3+b^3*e^5*m^
5*x^2+68*b^2*c*e^5*m^4*x^3-20*b*c^2*d*e^4*m^4*x^3+475*b*c^2*e^5*m^3*x^4-100
*c^3*d*e^4*m^3*x^4+450*c^3*e^5*m^2*x^5+2*a^2*c*e^5*m^5*x+2*a*b^2*e^5*m^5*x+
108*a*b*c*e^5*m^4*x^2-12*a*c^2*d*e^4*m^4*x^2+428*a*c^2*e^5*m^3*x^3+18*b^3*e
^5*m^4*x^2-12*b^2*c*d*e^4*m^4*x^2+428*b^2*c*e^5*m^3*x^3-240*b*c^2*d*e^4*m^3
*x^3+1300*b*c^2*e^5*m^2*x^4+40*c^3*d^2*e^3*m^3*x^3-350*c^3*d*e^4*m^2*x^4+54
8*c^3*e^5*m*x^5+a^2*b*e^5*m^5+38*a^2*c*e^5*m^4*x+38*a*b^2*e^5*m^4*x-12*a*b*
c*d*e^4*m^4*x+726*a*b*c*e^5*m^3*x^2-168*a*c^2*d*e^4*m^3*x^2+1228*a*c^2*e^5*
m^2*x^3-2*b^3*d*e^4*m^4*x+121*b^3*e^5*m^3*x^2-168*b^2*c*d*e^4*m^3*x^2+1228*
b^2*c*e^5*m^2*x^3+60*b*c^2*d^2*e^3*m^3*x^2-940*b*c^2*d*e^4*m^2*x^3+1620*b*c
^2*e^5*m*x^4+240*c^3*d^2*e^3*m^2*x^3-500*c^3*d*e^4*m*x^4+240*c^3*e^5*x^5+20
*a^2*b*e^5*m^4-2*a^2*c*d*e^4*m^4+274*a^2*c*e^5*m^3*x-2*a*b^2*d*e^4*m^4+274*
a*b^2*e^5*m^3*x-192*a*b*c*d*e^4*m^3*x+2232*a*b*c*e^5*m^2*x^2+24*a*c^2*d^2*e
^3*m^3*x-780*a*c^2*d*e^4*m^2*x^2+1584*a*c^2*e^5*m*x^3-32*b^3*d*e^4*m^3*x+37
2*b^3*e^5*m^2*x^2+24*b^2*c*d^2*e^3*m^3*x-780*b^2*c*d*e^4*m^2*x^2+1584*b^2*c
*e^5*m*x^3+540*b*c^2*d^2*e^3*m^2*x^2-1440*b*c^2*d*e^4*m*x^3+720*b*c^2*e^5*x
^4-120*c^3*d^3*e^2*m^2*x^2+440*c^3*d^2*e^3*m*x^3-240*c^3*d*e^4*x^4+155*a^2*
b*e^5*m^3-36*a^2*c*d*e^4*m^3+922*a^2*c*e^5*m^2*x-36*a*b^2*d*e^4*m^3+922*a*b
^2*e^5*m^2*x+12*a*b*c*d^2*e^3*m^3-1068*a*b*c*d*e^4*m^2*x+3048*a*b*c*e^5*m*x
^2+288*a*c^2*d^2*e^3*m^2*x-1344*a*c^2*d*e^4*m*x^2+720*a*c^2*e^5*x^3+2*b^3*d
^2*e^3*m^3-178*b^3*d*e^4*m^2*x+508*b^3*e^5*m*x^2+288*b^2*c*d^2*e^3*m^2*x-13
44*b^2*c*d*e^4*m*x^2+720*b^2*c*e^5*x^3-120*b*c^2*d^3*e^2*m^2*x+1200*b*c^2*d
^2*e^3*m*x^2-720*b*c^2*d*e^4*x^3-360*c^3*d^3*e^2*m*x^2+240*c^3*d^2*e^3*x^3+
580*a^2*b*e^5*m^2-238*a^2*c*d*e^4*m^2+1404*a^2*c*e^5*m*x-238*a*b^2*d*e^4*m^
2+1404*a*b^2*e^5*m*x+180*a*b*c*d^2*e^3*m^2-2328*a*b*c*d*e^4*m*x+1440*a*b*c*
e^5*x^2-24*a*c^2*d^3*e^2*m^2+984*a*c^2*d^2*e^3*m*x-720*a*c^2*d*e^4*x^2+30*b
^3*d^2*e^3*m^2-388*b^3*d*e^4*m*x+240*b^3*e^5*x^2-24*b^2*c*d^3*e^2*m^2+984*b
^2*c*d^2*e^3*m*x-720*b^2*c*d*e^4*x^2-840*b*c^2*d^3*e^2*m*x+720*b*c^2*d^2*e^
3*x^2+240*c^3*d^4*e*m*x-240*c^3*d^3*e^2*x^2+1044*a^2*b*e^5*m-684*a^2*c*d*e^
4*m+720*a^2*c*e^5*x-684*a*b^2*d*e^4*m+720*a*b^2*e^5*x+888*a*b*c*d^2*e^3*m-1
440*a*b*c*d*e^4*x-264*a*c^2*d^3*e^2*m+720*a*c^2*d^2*e^3*x+148*b^3*d^2*e^3*m
-240*b^3*d*e^4*x-264*b^2*c*d^3*e^2*m+720*b^2*c*d^2*e^3*x+120*b*c^2*d^4*e*m-
720*b*c^2*d^3*e^2*x+240*c^3*d^4*e*x+720*a^2*b*e^5-720*a^2*c*d*e^4-720*a*b^2
*d*e^4+1440*a*b*c*d^2*e^3-720*a*c^2*d^3*e^2+240*b^3*d^2*e^3-720*b^2*c*d^3*e
^2+720*b*c^2*d^4*e-240*c^3*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^3+1624*m^2+17
64*m+720)
```

maxima [**B**] time = 0.75, size = 802, normalized size = 2.97

$$\frac{2\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}ab^{2}}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{2\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}a^{2}c}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{(ex+d)^{m+1}a^{2}b}{e(m+1)}+\frac{\left(\left(m^{2}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a*b^2/((m^2 + 3*m + 2)*e^2)
 + 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*c/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*a^2*b/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*b^3/((m^3 + 6*m^2 + 11*m
 + 6)*e^3) + 6*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*a*b*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 4*((m^3 + 6*m^
2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2
*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^4) + 4*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*
e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a*c^2/
((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 5*((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 +
 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
+ d)^m*b*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 2*((m^
5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m
^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4
+ 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e
*m*x - 120*d^6)*(e*x + d)^m*c^3/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m
^2 + 1764*m + 720)*e^6)
```

mupad [**B**] time = 2.82, size = 1825, normalized size = 6.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x)
```

```
[Out] (2*c^3*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(17
64*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) - ((d + e*x)^m*(2
40*c^3*d^6 - 240*b^3*d^3*e^3 + 720*a*b^2*d^2*e^4 + 720*a*c^2*d^4*e^2 + 720*
a^2*c*d^2*e^4 + 720*b^2*c*d^4*e^2 - 148*b^3*d^3*e^3*m - 30*b^3*d^3*e^3*m^2
- 2*b^3*d^3*e^3*m^3 - 720*a^2*b*d*e^5 - 720*b*c^2*d^5*e - 1440*a*b*c*d^3*e^
3 - 1044*a^2*b*d*e^5*m - 120*b*c^2*d^5*e*m + 684*a*b^2*d^2*e^4*m - 580*a^2*
b*d*e^5*m^2 - 155*a^2*b*d*e^5*m^3 - 20*a^2*b*d*e^5*m^4 - a^2*b*d*e^5*m^5 +
264*a*c^2*d^4*e^2*m + 684*a^2*c*d^2*e^4*m + 264*b^2*c*d^4*e^2*m + 238*a*b^2
*d^2*e^4*m^2 + 36*a*b^2*d^2*e^4*m^3 + 2*a*b^2*d^2*e^4*m^4 + 24*a*c^2*d^4*e^
2*m^2 + 238*a^2*c*d^2*e^4*m^2 + 36*a^2*c*d^2*e^4*m^3 + 2*a^2*c*d^2*e^4*m^4
+ 24*b^2*c*d^4*e^2*m^2 - 888*a*b*c*d^3*e^3*m - 180*a*b*c*d^3*e^3*m^2 - 12*a
*b*c*d^3*e^3*m^3))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m
^6 + 720)) + (x*(d + e*x)^m*(720*a^2*b*e^6 + 580*a^2*b*e^6*m^2 + 155*a^2*b*
e^6*m^3 + 20*a^2*b*e^6*m^4 + a^2*b*e^6*m^5 - 240*b^3*d^2*e^4*m - 148*b^3*d^
2*e^4*m^2 - 30*b^3*d^2*e^4*m^3 - 2*b^3*d^2*e^4*m^4 + 1044*a^2*b*e^6*m + 240
*c^3*d^5*e*m + 720*a*b^2*d*e^5*m + 720*a^2*c*d*e^5*m + 684*a*b^2*d*e^5*m^2
+ 238*a*b^2*d*e^5*m^3 + 36*a*b^2*d*e^5*m^4 + 2*a*b^2*d*e^5*m^5 + 720*a*c^2*
d^3*e^3*m + 684*a^2*c*d*e^5*m^2 + 238*a^2*c*d*e^5*m^3 + 36*a^2*c*d*e^5*m^4
+ 2*a^2*c*d*e^5*m^5 - 720*b*c^2*d^4*e^2*m + 720*b^2*c*d^3*e^3*m + 264*a*c^2
*d^3*e^3*m^2 + 24*a*c^2*d^3*e^3*m^3 - 120*b*c^2*d^4*e^2*m^2 + 264*b^2*c*d^3
*e^3*m^2 + 24*b^2*c*d^3*e^3*m^3 - 1440*a*b*c*d^2*e^4*m - 888*a*b*c*d^2*e^4*
m^2 - 180*a*b*c*d^2*e^4*m^3 - 12*a*b*c*d^2*e^4*m^4))/(e^6*(1764*m + 1624*m^
2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m + 1)*(d + e*x)^m*(72
0*a*b^2*e^4 + 720*a^2*c*e^4 - 120*c^3*d^4*m + 238*a*b^2*e^4*m^2 + 36*a*b^2*
e^4*m^3 + 2*a*b^2*e^4*m^4 + 238*a^2*c*e^4*m^2 + 36*a^2*c*e^4*m^3 + 2*a^2*c*
e^4*m^4 + 74*b^3*d*e^3*m^2 + 15*b^3*d*e^3*m^3 + b^3*d*e^3*m^4 + 684*a*b^2*e
^4*m + 684*a^2*c*e^4*m + 120*b^3*d*e^3*m + 360*b*c^2*d^3*e*m - 360*a*c^2*d^
2*e^2*m - 360*b^2*c*d^2*e^2*m + 60*b*c^2*d^3*e*m^2 - 132*a*c^2*d^2*e^2*m^2
- 12*a*c^2*d^2*e^2*m^3 - 132*b^2*c*d^2*e^2*m^2 - 12*b^2*c*d^2*e^2*m^3 + 720
*a*b*c*d*e^3*m + 444*a*b*c*d*e^3*m^2 + 90*a*b*c*d*e^3*m^3 + 6*a*b*c*d*e^3*m
^4))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (
x^3*(d + e*x)^m*(3*m + m^2 + 2)*(120*b^3*e^3 + 74*b^3*e^3*m + 40*c^3*d^3*m
+ 15*b^3*e^3*m^2 + b^3*e^3*m^3 + 720*a*b*c*e^3 + 90*a*b*c*e^3*m^2 + 6*a*b*c
*e^3*m^3 + 120*a*c^2*d*e^2*m - 120*b*c^2*d^2*e*m + 120*b^2*c*d*e^2*m + 44*a
*c^2*d*e^2*m^2 + 4*a*c^2*d*e^2*m^3 - 20*b*c^2*d^2*e*m^2 + 44*b^2*c*d*e^2*m^
2 + 4*b^2*c*d*e^2*m^3 + 444*a*b*c*e^3*m))/(e^3*(1764*m + 1624*m^2 + 735*m^3
 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c^2*x^5*(d + e*x)^m*(30*b*e + 5*b*e*m
+ 2*c*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/(e*(1764*m + 1624*m^2 + 735
*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (c*x^4*(d + e*x)^m*(11*m + 6*m^2 +
m^3 + 6)*(120*b^2*e^2 + 44*b^2*e^2*m - 10*c^2*d^2*m + 4*b^2*e^2*m^2 + 120*a
*c*e^2 + 44*a*c*e^2*m + 4*a*c*e^2*m^2 + 30*b*c*d*e*m + 5*b*c*d*e*m^2))/(e^2
*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1656 $\int (b+2cx)(d+ex)^m \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=143

$$\frac{(d+ex)^{m+2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4(m+2)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{3c(2cd-be)(d+ex)^{m+}}{e^4(m+3)}$$

```
[Out] -(-b*e+2*c*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(1+m)/e^4/(1+m)+(6*c^2*d^2+b^2*e^
2-2*c*e*(-a*e+3*b*d))*(e*x+d)^(2+m)/e^4/(2+m)-3*c*(-b*e+2*c*d)*(e*x+d)^(3+m
)/e^4/(3+m)+2*c^2*(e*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.09, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.042, Rules used = {771}

$$\frac{(d+ex)^{m+2}\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^4(m+2)}-\frac{(2cd-be)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{3c(2cd-be)(d+ex)^{m+}}{e^4(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -(((2*c*d - b*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m)))
+ ((6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e))*(d + e*x)^(2 + m))/(e^4*(2 +
 m)) - (3*c*(2*c*d - b*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (2*c^2*(d + e*
x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (b+2cx)(d+ex)^m\left(a+bx+cx^2\right)dx &= \int \left(\frac{(-2cd+be)\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(6c^2d^2+b^2e^2-2ce(3\right.}{e}\right.\\ &= -\frac{(2cd-be)\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(6c^2d^2+b^2e^2-2ce(3b\right.}{e^4(2+}\end{aligned}$$

Mathematica [A] time = 0.20, size = 134, normalized size = 0.94

$$\frac{(d+ex)^{m+1}\left(\frac{(d+ex)\left(4ce(ae(m+3)-3bd)-b^2e^2m+12c^2d^2\right)}{e^2(m+2)}+\frac{6(be-2cd)\left(e(ae-bd)+cd^2\right)}{e^2(m+1)}+(a+x(b+cx))(be(m+6)-6cd+2ce(\right.}{e^2(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*((6*(-2*c*d + b*e)*(c*d^2 + e*(-(b*d) + a*e)))/(e^2*(1 +
 m)) + ((12*c^2*d^2 - b^2*e^2*m + 4*c*e*(-3*b*d + a*e*(3 + m)))*(d + e*x))/
(e^2*(2 + m)) + (-6*c*d + b*e*(6 + m) + 2*c*e*(3 + m)*x)*(a + x*(b + c*x)))
)/(e^2*(3 + m)*(4 + m))
```

fricas [B] time = 0.82, size = 511, normalized size = 3.57

$$\left(abde^3m^3 - 12\,c^2d^4 + 24\,bcd^3e + 24\,abde^3 - 12\left(b^2 + 2\,ac\right)d^2e^2 + 2\left(c^2e^4m^3 + 6\,c^2e^4m^2 + 11\,c^2e^4m + 6\,c^2e^4\right)x^4 + \left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] (a*b*d*e^3*m^3 - 12*c^2*d^4 + 24*b*c*d^3*e + 24*a*b*d*e^3 - 12*(b^2 + 2*a*c
)*d^2*e^2 + 2*(c^2*e^4*m^3 + 6*c^2*e^4*m^2 + 11*c^2*e^4*m + 6*c^2*e^4)*x^4
+ (24*b*c*e^4 + (2*c^2*d*e^3 + 3*b*c*e^4)*m^3 + 3*(2*c^2*d*e^3 + 7*b*c*e^4)
*m^2 + 2*(2*c^2*d*e^3 + 21*b*c*e^4)*m)*x^3 + (9*a*b*d*e^3 - (b^2 + 2*a*c)*d
^2*e^2)*m^2 + (12*(b^2 + 2*a*c)*e^4 + (3*b*c*d*e^3 + (b^2 + 2*a*c)*e^4)*m^3
 - (6*c^2*d^2*e^2 - 15*b*c*d*e^3 - 8*(b^2 + 2*a*c)*e^4)*m^2 - (6*c^2*d^2*e^
2 - 12*b*c*d*e^3 - 19*(b^2 + 2*a*c)*e^4)*m)*x^2 + (6*b*c*d^3*e + 26*a*b*d*e
^3 - 7*(b^2 + 2*a*c)*d^2*e^2)*m + (24*a*b*e^4 + (a*b*e^4 + (b^2 + 2*a*c)*d*
e^3)*m^3 - (6*b*c*d^2*e^2 - 9*a*b*e^4 - 7*(b^2 + 2*a*c)*d*e^3)*m^2 + 2*(6*c
^2*d^3*e - 12*b*c*d^2*e^2 + 13*a*b*e^4 + 6*(b^2 + 2*a*c)*d*e^3)*m)*x)*(e*x
+ d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.19, size = 980, normalized size = 6.85

$$2\,(xe+d)^m c^2m^3x^4e^4 + 2\,(xe+d)^m c^2dm^3x^3e^3 + 3\,(xe+d)^m bcm^3x^3e^4 + 12\,(xe+d)^m c^2m^2x^4e^4 + 3\,(xe+d)^m bcdm^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] (2*(x*e + d)^m*c^2*m^3*x^4*e^4 + 2*(x*e + d)^m*c^2*d*m^3*x^3*e^3 + 3*(x*e +
 d)^m*b*c*m^3*x^3*e^4 + 12*(x*e + d)^m*c^2*m^2*x^4*e^4 + 3*(x*e + d)^m*b*c*
d*m^3*x^2*e^3 + 6*(x*e + d)^m*c^2*d*m^2*x^3*e^3 - 6*(x*e + d)^m*c^2*d^2*m^2
*x^2*e^2 + (x*e + d)^m*b^2*m^3*x^2*e^4 + 2*(x*e + d)^m*a*c*m^3*x^2*e^4 + 21
*(x*e + d)^m*b*c*m^2*x^3*e^4 + 22*(x*e + d)^m*c^2*m*x^4*e^4 + (x*e + d)^m*b
^2*d*m^3*x*e^3 + 2*(x*e + d)^m*a*c*d*m^3*x*e^3 + 15*(x*e + d)^m*b*c*d*m^2*x
^2*e^3 + 4*(x*e + d)^m*c^2*d*m*x^3*e^3 - 6*(x*e + d)^m*b*c*d^2*m^2*x*e^2 -
6*(x*e + d)^m*c^2*d^2*m*x^2*e^2 + 12*(x*e + d)^m*c^2*d^3*m*x*e + (x*e + d)^
m*a*b*m^3*x*e^4 + 8*(x*e + d)^m*b^2*m^2*x^2*e^4 + 16*(x*e + d)^m*a*c*m^2*x^
2*e^4 + 42*(x*e + d)^m*b*c*m*x^3*e^4 + 12*(x*e + d)^m*c^2*x^4*e^4 + (x*e +
d)^m*a*b*d*m^3*e^3 + 7*(x*e + d)^m*b^2*d*m^2*x*e^3 + 14*(x*e + d)^m*a*c*d*m
^2*x*e^3 + 12*(x*e + d)^m*b*c*d*m*x^2*e^3 - (x*e + d)^m*b^2*d^2*m^2*e^2 - 2
*(x*e + d)^m*a*c*d^2*m^2*e^2 - 24*(x*e + d)^m*b*c*d^2*m*x*e^2 + 6*(x*e + d)
^m*b*c*d^3*m*e - 12*(x*e + d)^m*c^2*d^4 + 9*(x*e + d)^m*a*b*m^2*x*e^4 + 19*
(x*e + d)^m*b^2*m*x^2*e^4 + 38*(x*e + d)^m*a*c*m*x^2*e^4 + 24*(x*e + d)^m*b
*c*x^3*e^4 + 9*(x*e + d)^m*a*b*d*m^2*e^3 + 12*(x*e + d)^m*b^2*d*m*x*e^3 + 2
4*(x*e + d)^m*a*c*d*m*x*e^3 - 7*(x*e + d)^m*b^2*d^2*m*e^2 - 14*(x*e + d)^m*
a*c*d^2*m*e^2 + 24*(x*e + d)^m*b*c*d^3*e + 26*(x*e + d)^m*a*b*m*x*e^4 + 12*
(x*e + d)^m*b^2*x^2*e^4 + 24*(x*e + d)^m*a*c*x^2*e^4 + 26*(x*e + d)^m*a*b*d
*m*e^3 - 12*(x*e + d)^m*b^2*d^2*e^2 - 24*(x*e + d)^m*a*c*d^2*e^2 + 24*(x*e
+ d)^m*a*b*x*e^4 + 24*(x*e + d)^m*a*b*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2
*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 424, normalized size = 2.97

$$\left(2c^2e^3m^3x^3 + 3bc\,e^3m^3x^2 + 12c^2e^3m^2x^3 + 2ac\,e^3m^3x + b^2e^3m^3x + 21bc\,e^3m^2x^2 - 6c^2d\,e^2m^2x^2 + 22c^2e^3m\,x^3 + ab\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x)
```

```
[Out] (e*x+d)^(m+1)*(2*c^2*e^3*m^3*x^3+3*b*c*e^3*m^3*x^2+12*c^2*e^3*m^2*x^3+2*a*c
*e^3*m^3*x+b^2*e^3*m^3*x+21*b*c*e^3*m^2*x^2-6*c^2*d*e^2*m^2*x^2+22*c^2*e^3*
m*x^3+a*b*e^3*m^3+16*a*c*e^3*m^2*x+8*b^2*e^3*m^2*x-6*b*c*d*e^2*m^2*x+42*b*c
*e^3*m*x^2-18*c^2*d*e^2*m*x^2+12*c^2*e^3*x^3+9*a*b*e^3*m^2-2*a*c*d*e^2*m^2+
38*a*c*e^3*m*x-b^2*d*e^2*m^2+19*b^2*e^3*m*x-30*b*c*d*e^2*m*x+24*b*c*e^3*x^2
+12*c^2*d^2*e*m*x-12*c^2*d*e^2*x^2+26*a*b*e^3*m-14*a*c*d*e^2*m+24*a*c*e^3*x
-7*b^2*d*e^2*m+12*b^2*e^3*x+6*b*c*d^2*e*m-24*b*c*d*e^2*x+12*c^2*d^2*e*x+24*
a*b*e^3-24*a*c*d*e^2-12*b^2*d*e^2+24*b*c*d^2*e-12*c^2*d^3)/e^4/(m^4+10*m^3+
35*m^2+50*m+24)
```

maxima [**B**] time = 0.55, size = 287, normalized size = 2.01

$$\frac{\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m b^2}{\left(m^2+3\,m+2\right)e^2}+\frac{2\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m ac}{\left(m^2+3\,m+2\right)e^2}+\frac{(ex+d)^{m+1}ab}{e(m+1)}+\frac{3\left(\left(m^2+3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*b^2/((m^2 + 3*m + 2)*e^2) + 2
*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a*c/((m^2 + 3*m + 2)*e^2) +
(e*x + d)^(m + 1)*a*b/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*
d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*b*c/((m^3 + 6*m^2 + 11*m + 6)*
e^3) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3
- 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*c^2/((m^4 + 10
*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [**B**] time = 2.25, size = 554, normalized size = 3.87

$$\frac{x\,(d+e\,x)^m\,\left(b^2\,d\,e^3\,m^3+7\,b^2\,d\,e^3\,m^2+12\,b^2\,d\,e^3\,m-6\,b\,c\,d^2\,e^2\,m^2-24\,b\,c\,d^2\,e^2\,m+a\,b\,e^4\,m^3+9\,a\,b\,e^4\,m^2+2\right.}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b + 2*c*x)*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] (x*(d + e*x)^m*(24*a*b*e^4 + 7*b^2*d*e^3*m^2 + b^2*d*e^3*m^3 + 26*a*b*e^4*m
 + 9*a*b*e^4*m^2 + a*b*e^4*m^3 + 12*b^2*d*e^3*m + 12*c^2*d^3*e*m + 14*a*c*d
*e^3*m^2 + 2*a*c*d*e^3*m^3 - 24*b*c*d^2*e^2*m - 6*b*c*d^2*e^2*m^2 + 24*a*c*
d*e^3*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) - ((d + e*x)^m*(12*c^2*
d^4 + 12*b^2*d^2*e^2 + 7*b^2*d^2*e^2*m - 24*a*b*d*e^3 - 24*b*c*d^3*e + b^2*
d^2*e^2*m^2 + 24*a*c*d^2*e^2 - 9*a*b*d*e^3*m^2 - a*b*d*e^3*m^3 + 14*a*c*d^2
*e^2*m + 2*a*c*d^2*e^2*m^2 - 26*a*b*d*e^3*m - 6*b*c*d^3*e*m))/(e^4*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) + (2*c^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 +
 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) + (x^2*(m + 1)*(d + e*x)^m*(12*b^2
*e^2 + 7*b^2*e^2*m - 6*c^2*d^2*m + b^2*e^2*m^2 + 24*a*c*e^2 + 14*a*c*e^2*m
+ 2*a*c*e^2*m^2 + 12*b*c*d*e*m + 3*b*c*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m
^3 + m^4 + 24)) + (c*x^3*(d + e*x)^m*(12*b*e + 3*b*e*m + 2*c*d*m)*(3*m + m^
2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [**A**] time = 4.71, size = 4760, normalized size = 33.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(a*b*x + a*c*x**2 + b**2*x**2/2 + b*c*x**3 + c**2*x**4/2),
Eq(e, 0)), (-2*a*b*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*
e**7*x**3) - 2*a*c*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
6*e**7*x**3) - 6*a*c*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
+ 6*e**7*x**3) - b**2*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
 + 6*e**7*x**3) - 3*b**2*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x
**2 + 6*e**7*x**3) - 6*b*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6
*x**2 + 6*e**7*x**3) - 18*b*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - 18*b*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x
+ 18*d*e**6*x**2 + 6*e**7*x**3) + 12*c**2*d**3*log(d/e + x)/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 22*c**2*d**3/(6*d**3*e**4
+ 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 36*c**2*d**2*e*x*log(d/e
 + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 54*c*
*2*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 36*c**2*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6
*x**2 + 6*e**7*x**3) + 36*c**2*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*x +
18*d*e**6*x**2 + 6*e**7*x**3) + 12*c**2*e**3*x**3*log(d/e + x)/(6*d**3*e**4
 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a*b*e**3/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*a*c*d*e**2/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) - 4*a*c*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2
) - b**2*d*e**2/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*b**2*e**3*x/(2
*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*b*c*d**2*e*log(d/e + x)/(2*d**2*
e**4 + 4*d*e**5*x + 2*e**6*x**2) + 9*b*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 12*b*c*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 12*b*c*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*b
*c*e**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*c**
2*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 18*c**2*d**3
/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 24*c**2*d**2*e*x*log(d/e + x)/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 24*c**2*d**2*e*x/(2*d**2*e**4 + 4
*d*e**5*x + 2*e**6*x**2) - 12*c**2*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 +
4*d*e**5*x + 2*e**6*x**2) + 4*c**2*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2), Eq(m, -3)), (-a*b*e**3/(d*e**4 + e**5*x) + 2*a*c*d*e**2*log(d/e
 + x)/(d*e**4 + e**5*x) + 2*a*c*d*e**2/(d*e**4 + e**5*x) + 2*a*c*e**3*x*log
(d/e + x)/(d*e**4 + e**5*x) + b**2*d*e**2*log(d/e + x)/(d*e**4 + e**5*x) +
b**2*d*e**2/(d*e**4 + e**5*x) + b**2*e**3*x*log(d/e + x)/(d*e**4 + e**5*x)
- 6*b*c*d**2*e*log(d/e + x)/(d*e**4 + e**5*x) - 6*b*c*d**2*e/(d*e**4 + e**5
*x) - 6*b*c*d*e**2*x*log(d/e + x)/(d*e**4 + e**5*x) + 3*b*c*e**3*x**2/(d*e*
*4 + e**5*x) + 6*c**2*d**3*log(d/e + x)/(d*e**4 + e**5*x) + 6*c**2*d**3/(d*
e**4 + e**5*x) + 6*c**2*d**2*e*x*log(d/e + x)/(d*e**4 + e**5*x) - 3*c**2*d*
e**2*x**2/(d*e**4 + e**5*x) + c**2*e**3*x**3/(d*e**4 + e**5*x), Eq(m, -2)),
 (a*b*log(d/e + x)/e - 2*a*c*d*log(d/e + x)/e**2 + 2*a*c*x/e - b**2*d*log(d
/e + x)/e**2 + b**2*x/e + 3*b*c*d**2*log(d/e + x)/e**3 - 3*b*c*d*x/e**2 + 3
*b*c*x**2/(2*e) - 2*c**2*d**3*log(d/e + x)/e**4 + 2*c**2*d**2*x/e**3 - c**2
*d*x**2/e**2 + 2*c**2*x**3/(3*e), Eq(m, -1)), (a*b*d*e**3*m**3*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a*b*d*
e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
 + 24*e**4) + 26*a*b*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b*d*e**3*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*b*e**4*m**3*x*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a
*b*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 26*a*b*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b*e**4*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*a*c*d**2*e**2*m*
*2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) - 14*a*c*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) - 24*a*c*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*a*c*d*e**3*m**3*x*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
14*a*c*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 24*a*c*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*a*c*e**4*m**3*x**2*(d + e*
```

```
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 16*
a*c*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 38*a*c*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*c*e**4*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - b**2*d**
2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) - 7*b**2*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*b**2*d**2*e**2*(d + e*x)**m/(e**4
*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**2*d*e**3*m*
*3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 7*b**2*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 12*b**2*d*e**3*m*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**2*e**4*m**3*x**
2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) + 8*b**2*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) + 19*b**2*e**4*m*x**2*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*b**2*e**4*x**2*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + 6*b*c*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 24*b*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*b*c*d**2*e**2*m**2*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 24*b*c*d
**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 3*b*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 15*b*c*d*e**3*m**2*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*
b*c*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 3*b*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 21*b*c*e**4*m**2*x**3*(d + e
*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 42
*b*c*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 24*b*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*c**2*d**4*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*c**2*d**3*e*m
*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) - 6*c**2*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*c**2*d**2*e**2*m*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c**2*d*
e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 6*c**2*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*c**2*d*e**3*m*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c
**2*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 12*c**2*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 22*c**2*e**4*m*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 1
2*c**2*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4), True))
```

3.1657 $\int \frac{(b+2cx)(d+ex)^m}{a+bx+cx^2}\,dx$

Optimal. Leaf size=167

$$-\frac{2c(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{2c(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)}$$

```
[Out] -2*c*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b-(-4*a*c
+b^2)^(1/2))))/(1+m)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))-2*c*(e*x+d)^(1+m)*hyp
ergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))/(1+m)/(
2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))
```

Rubi [A] time = 0.30, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = $\{830, 68\}$

$$-\frac{2c(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{2c(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2),x]
```

```
[Out] (-2*c*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/
(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)])/((2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*
(1 + m)) - (2*c*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(
d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((2*c*d - (b + Sqrt[b^2 - 4
*a*c])*e)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !RationalQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{(b+2cx)(d+ex)^m}{a+bx+cx^2}\,dx &= \int \left(\frac{2c(d+ex)^m}{b-\sqrt{b^2-4ac}+2cx}+\frac{2c(d+ex)^m}{b+\sqrt{b^2-4ac}+2cx}\right)dx\\ &=(2c)\int \frac{(d+ex)^m}{b-\sqrt{b^2-4ac}+2cx}\,dx+(2c)\int \frac{(d+ex)^m}{b+\sqrt{b^2-4ac}+2cx}\,dx\\ &=-\frac{2c(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;2+m;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)(1+m)}-\frac{2c(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;\right.}{\left(2cd-\left(b+\sqrt{b^2-4}\right.\right.}\end{aligned}$$

Mathematica [A] time = 0.24, size = 152, normalized size = 0.91

$$\frac{2c(d+ex)^{m+1}\left(-\frac{{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd+\left(\sqrt{b^2-4ac}-b\right)e}\right)}{e\left(\sqrt{b^2-4ac}-b\right)+2cd}-\frac{{}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*(d + e*x)^(1 + m)*(-(Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x)
)/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)]/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e
)) - Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b + Sqrt[
b^2 - 4*a*c])*e)]/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)))/(1 + m)
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(2\,cx+b)(ex+d)^m}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral((2*c*x + b)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(2\,cx+b)(ex+d)^m}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

maple [F] time = 1.42, size = 0, normalized size = 0.00

$$\int\frac{(2cx+b)\,(ex+d)^m}{c\,x^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a),x)
```

```
[Out] int((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(2\,cx+b)(ex+d)^m}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(b+2\,c\,x)\,(d+e\,x)^m}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2),x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(b+2cx)\,(d+ex)^m}{a+bx+cx^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m/(c*x**2+b*x+a),x)
```

```
[Out] Integral((b + 2*c*x)*(d + e*x)**m/(a + b*x + c*x**2), x)
```

3.1658 $\int \frac{(b+2cx)(d+ex)^m}{\left(a+bx+cx^2\right)^2}\,dx$

Optimal. Leaf size=358

$$-\frac{cem(d+ex)^{m+1}\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\sqrt{b^2-4ac}\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)\left(ae^2-bde+cd^2\right)}+\frac{cem(d+ex)^{m+1}\left(2cd-e\left(\right.\right.}{(m+1)\sqrt{b^2-4a}}$$

```
[Out] -(e*x+d)^(1+m)*((-4*a*c+b^2)*(-b*e+c*d)-c*(-4*a*c+b^2)*e*x)/(-4*a*c+b^2)/(a
*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)+c*e*m*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m
],2*c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))*(2*c*d-e*(b-(-4*a*c+b^2)^(1
/2)))/(a*e^2-b*d*e+c*d^2)/(1+m)/(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)
^(1/2)))-c*e*m*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*
(b-(-4*a*c+b^2)^(1/2))))*(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))/(a*e^2-b*d*e+c*d^
2)/(1+m)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.57, antiderivative size = 358, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {822, 830, 68}

$$-\frac{cem(d+ex)^{m+1}\left(2cd-e\left(\sqrt{b^2-4ac}+b\right)\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\sqrt{b^2-4ac}\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)\left(ae^2-bde+cd^2\right)}+\frac{cem(d+ex)^{m+1}\left(2cd-e\left(\right.\right.}{(m+1)\sqrt{b^2-4a}}$$

Antiderivative was successfully verified.

```
[In] Int[((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((d + e*x)^(1 + m)*((b^2 - 4*a*c)*(c*d - b*e) - c*(b^2 - 4*a*c)*e*x))/((b
^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*x^2))) - (c*e*(2*c*d - (b
+ Sqrt[b^2 - 4*a*c])*e)*m*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 +
 m, (2*c*(d + e*x))/(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)])/(Sqrt[b^2 - 4*a*c
]*(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*(c*d^2 - b*d*e + a*e^2)*(1 + m)) + (c
*e*(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*m*(d + e*x)^(1 + m)*Hypergeometric2F
1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(S
qrt[b^2 - 4*a*c]*(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)*(c*d^2 - b*d*e + a*e^2
)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && !RationalQ[m]
```

Rubi steps

$$\int \frac{(b+2cx)(d+ex)^m}{\left(a+bx+cx^2\right)^2}\,dx = -\frac{(d+ex)^{1+m}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int \frac{(d+ex)^m\left(-\left(b^2-4ac\right)e(cd-be)m+c\left(b^2-\right.\right.}{a+bx+cx^2}}{\left(b^2-4ac\right)\left(cd^2-bde+\right.}$$

$$= -\frac{(d+ex)^{1+m}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\int\left(\frac{\left(c\left(b^2-4ac\right)e^2m+c\sqrt{b^2-4ac}\,e(-2cd+\right.}{b-\sqrt{b^2-4ac}+2cx}\right.}{(}$$

$$= -\frac{(d+ex)^{1+m}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{\left(ce\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)\right.}{\sqrt{b^2-4ac}\left(cd^2-\right.}$$

$$= -\frac{(d+ex)^{1+m}\left(\left(b^2-4ac\right)(cd-be)-c\left(b^2-4ac\right)ex\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)} - \frac{ce\left(2cd-\left(b+\sqrt{b^2-4ac}\right)e\right)r}{\sqrt{b^2-4ac}\left(2cd-\left(b\right.\right.}$$

Mathematica [A] time = 0.59, size = 287, normalized size = 0.80

$$\frac{(d+ex)^{m+1}\left(\frac{cem\sqrt{b^2-4ac}\left(e\left(\sqrt{b^2-4ac}+b\right)-2cd\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd+\left(\sqrt{b^2-4ac}-b\right)e}\right)}{(m+1)\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)} - \frac{cem\sqrt{b^2-4ac}\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right){}_2F_1\left(1,m+1;m+2;\frac{}{2cd-}\right.}{(m+1)\left(e\left(\sqrt{b^2-4ac}+b\right)-2cd\right)}\right.}{\left(b^2-4ac\right)\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(((b^2 - 4*a*c)*(-(c*d) + b*e + c*e*x))/(a + x*(b + c*x)
) + (c*Sqrt[b^2 - 4*a*c]*e*(-2*c*d + (b + Sqrt[b^2 - 4*a*c])*e)*m*Hypergeom
etric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])
*e)])/((2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*(1 + m)) - (c*Sqrt[b^2 - 4*a*c]
*e*(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*m*Hypergeometric2F1[1, 1 + m, 2 + m
, (2*c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((-2*c*d + (b + Sqr
t[b^2 - 4*a*c])*e)*(1 + m))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [F] time = 1.18, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(2\,cx+b)(ex+d)^m}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral((2*c*x + b)*(e*x + d)^m/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*
a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^m}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^m/(c*x^2 + b*x + a)^2, x)
```

maple [F] time = 1.66, size = 0, normalized size = 0.00

$$\int \frac{(2cx+b)\,(ex+d)^m}{\left(c\,x^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a)^2,x)
```

```
[Out] int((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(2\,cx+b)(ex+d)^m}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((2*c*x + b)*(e*x + d)^m/(c*x^2 + b*x + a)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(b+2\,c\,x)\,(d+e\,x)^m}{\left(c\,x^2+b\,x+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x)
```

```
[Out] int(((b + 2*c*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((2*c*x+b)*(e*x+d)**m/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.1659 $\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^8(-2aBe-Abe+3bBd)}{8e^4}+\frac{(d+ex)^7(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{(d+ex)^6(bd-ae)^2(Bd-Ae)}{6e^4}+b^2$$

```
[Out] -1/6*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^6/e^4+1/7*(-a*e+b*d)*(-2*A*b*e-B*a*e+3
*B*b*d)*(e*x+d)^7/e^4-1/8*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^8/e^4+1/9*b^2*
B*(e*x+d)^9/e^4
```

Rubi [A] time = 0.29, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{b(d+ex)^8(-2aBe-Abe+3bBd)}{8e^4}+\frac{(d+ex)^7(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{(d+ex)^6(bd-ae)^2(Bd-Ae)}{6e^4}+b^2$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^6)/(6*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^7)/(7*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^8)/(8*e^4) + (b^2*B*(d + e*x)^9)/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^5\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^5}{e^3}+\frac{(-bd+ae)(-3bBd+2Abe}{e^3}\right.\\ &= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^6}{6e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)(d}{7e^4}\end{aligned}$$

Mathematica [B] time = 0.11, size = 330, normalized size = 2.75

$$\frac{1}{6}e^2x^6\left(a^2e^2(Ae+5Bd)+10abde(Ae+2Bd)+10b^2d^2(Ae+Bd)\right)+dex^5\left(a^2e^2(Ae+2Bd)+4abde(Ae+Bd)+b^2d^2\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^5*x + (a*d^4*(2*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (d^3*(a*B*d*(2*b*
d + 5*a*e) + A*(b^2*d^2 + 10*a*b*d*e + 10*a^2*e^2))*x^3)/3 + (d^2*(10*a^2*e
^2*(B*d + A*e) + 10*a*b*d*e*(B*d + 2*A*e) + b^2*d^2*(B*d + 5*A*e))*x^4)/4 +
 d*e*(4*a*b*d*e*(B*d + A*e) + a^2*e^2*(2*B*d + A*e) + b^2*d^2*(B*d + 2*A*e)
)*x^5 + (e^2*(10*b^2*d^2*(B*d + A*e) + 10*a*b*d*e*(2*B*d + A*e) + a^2*e^2*(
5*B*d + A*e))*x^6)/6 + (e^3*(a^2*B*e^2 + 5*b^2*d*(2*B*d + A*e) + 2*a*b*e*(5
*B*d + A*e))*x^7)/7 + (b*e^4*(5*b*B*d + A*b*e + 2*a*B*e)*x^8)/8 + (b^2*B*e^
5*x^9)/9
```

fricas [B] time = 0.75, size = 463, normalized size = 3.86

$$\frac{1}{9}x^9e^5b^2B+\frac{5}{8}x^8e^4db^2B+\frac{1}{4}x^8e^5baB+\frac{1}{8}x^8e^5b^2A+\frac{10}{7}x^7e^3d^2b^2B+\frac{10}{7}x^7e^4dbaB+\frac{1}{7}x^7e^5a^2B+\frac{5}{7}x^7e^4db^2A+\frac{2}{7}x^7e^5baA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*b^2*B + 5/8*x^8*e^4*d*b^2*B + 1/4*x^8*e^5*b*a*B + 1/8*x^8*e^5*b
^2*A + 10/7*x^7*e^3*d^2*b^2*B + 10/7*x^7*e^4*d*b*a*B + 1/7*x^7*e^5*a^2*B +
5/7*x^7*e^4*d*b^2*A + 2/7*x^7*e^5*b*a*A + 5/3*x^6*e^2*d^3*b^2*B + 10/3*x^6*
e^3*d^2*b*a*B + 5/6*x^6*e^4*d*a^2*B + 5/3*x^6*e^3*d^2*b^2*A + 5/3*x^6*e^4*d
*b*a*A + 1/6*x^6*e^5*a^2*A + x^5*e*d^4*b^2*B + 4*x^5*e^2*d^3*b*a*B + 2*x^5*
e^3*d^2*a^2*B + 2*x^5*e^2*d^3*b^2*A + 4*x^5*e^3*d^2*b*a*A + x^5*e^4*d*a^2*A
 + 1/4*x^4*d^5*b^2*B + 5/2*x^4*e*d^4*b*a*B + 5/2*x^4*e^2*d^3*a^2*B + 5/4*x^
4*e*d^4*b^2*A + 5*x^4*e^2*d^3*b*a*A + 5/2*x^4*e^3*d^2*a^2*A + 2/3*x^3*d^5*b
*a*B + 5/3*x^3*e*d^4*a^2*B + 1/3*x^3*d^5*b^2*A + 10/3*x^3*e*d^4*b*a*A + 10/
3*x^3*e^2*d^3*a^2*A + 1/2*x^2*d^5*a^2*B + x^2*d^5*b*a*A + 5/2*x^2*e*d^4*a^2
*A + x*d^5*a^2*A
```

giac [B] time = 0.15, size = 445, normalized size = 3.71

$$\frac{1}{9}\,Bb^2x^9e^5+\frac{5}{8}\,Bb^2dx^8e^4+\frac{10}{7}\,Bb^2d^2x^7e^3+\frac{5}{3}\,Bb^2d^3x^6e^2+Bb^2d^4x^5e+\frac{1}{4}\,Bb^2d^5x^4+\frac{1}{4}\,Babx^8e^5+\frac{1}{8}\,Ab^2x^8e^5+\frac{10}{7}\,Babd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/9*B*b^2*x^9*e^5 + 5/8*B*b^2*d*x^8*e^4 + 10/7*B*b^2*d^2*x^7*e^3 + 5/3*B*b^
2*d^3*x^6*e^2 + B*b^2*d^4*x^5*e + 1/4*B*b^2*d^5*x^4 + 1/4*B*a*b*x^8*e^5 + 1
/8*A*b^2*x^8*e^5 + 10/7*B*a*b*d*x^7*e^4 + 5/7*A*b^2*d*x^7*e^4 + 10/3*B*a*b*
d^2*x^6*e^3 + 5/3*A*b^2*d^2*x^6*e^3 + 4*B*a*b*d^3*x^5*e^2 + 2*A*b^2*d^3*x^5
*e^2 + 5/2*B*a*b*d^4*x^4*e + 5/4*A*b^2*d^4*x^4*e + 2/3*B*a*b*d^5*x^3 + 1/3*
A*b^2*d^5*x^3 + 1/7*B*a^2*x^7*e^5 + 2/7*A*a*b*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4
 + 5/3*A*a*b*d*x^6*e^4 + 2*B*a^2*d^2*x^5*e^3 + 4*A*a*b*d^2*x^5*e^3 + 5/2*B*
a^2*d^3*x^4*e^2 + 5*A*a*b*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 10/3*A*a*b*d^
4*x^3*e + 1/2*B*a^2*d^5*x^2 + A*a*b*d^5*x^2 + 1/6*A*a^2*x^6*e^5 + A*a^2*d*x
^5*e^4 + 5/2*A*a^2*d^2*x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2 + 5/2*A*a^2*d^4*x^2
*e + A*a^2*d^5*x
```

maple [B] time = 0.05, size = 394, normalized size = 3.28

$$\frac{B\,b^2e^5x^9}{9}+A\,a^2d^5x+\frac{\left(2Bab\,e^5+\left(A\,e^5+5Bd\,e^4\right)b^2\right)x^8}{8}+\frac{\bigl(B\,a^2e^5+2\left(A\,e^5+5Bd\,e^4\right)ab+\left(5Ad\,e^4+10B\,d^2e^3\right)b}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/9*B*e^5*b^2*x^9+1/8*((A*e^5+5*B*d*e^4)*b^2+2*B*e^5*a*b)*x^8+1/7*((5*A*d*e
^4+10*B*d^2*e^3)*b^2+2*(A*e^5+5*B*d*e^4)*a*b+B*e^5*a^2)*x^7+1/6*((10*A*d^2*
e^3+10*B*d^3*e^2)*b^2+2*(5*A*d*e^4+10*B*d^2*e^3)*a*b+(A*e^5+5*B*d*e^4)*a^2)
*x^6+1/5*((10*A*d^3*e^2+5*B*d^4*e)*b^2+2*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b+(5
*A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*((5*A*d^4*e+B*d^5)*b^2+2*(10*A*d^3*e^2+
5*B*d^4*e)*a*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*(A*d^5*b^2+2*(5*A*d
^4*e+B*d^5)*a*b+(10*A*d^3*e^2+5*B*d^4*e)*a^2)*x^3+1/2*(2*A*d^5*a*b+(5*A*d^4
*e+B*d^5)*a^2)*x^2+A*d^5*a^2*x
```

maxima [**B**] time = 0.58, size = 369, normalized size = 3.08

$$\frac{1}{9}Bb^2e^5x^9+Aa^2d^5x+\frac{1}{8}\left(5Bb^2de^4+\left(2Bab+Ab^2\right)e^5\right)x^8+\frac{1}{7}\left(10Bb^2d^2e^3+5\left(2Bab+Ab^2\right)de^4+\left(Ba^2+2Aab\right)e^5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/9*B*b^2*e^5*x^9 + A*a^2*d^5*x + 1/8*(5*B*b^2*d*e^4 + (2*B*a*b + A*b^2)*e^
5)*x^8 + 1/7*(10*B*b^2*d^2*e^3 + 5*(2*B*a*b + A*b^2)*d*e^4 + (B*a^2 + 2*A*a
*b)*e^5)*x^7 + 1/6*(10*B*b^2*d^3*e^2 + A*a^2*e^5 + 10*(2*B*a*b + A*b^2)*d^2
*e^3 + 5*(B*a^2 + 2*A*a*b)*d*e^4)*x^6 + (B*b^2*d^4*e + A*a^2*d*e^4 + 2*(2*B
*a*b + A*b^2)*d^3*e^2 + 2*(B*a^2 + 2*A*a*b)*d^2*e^3)*x^5 + 1/4*(B*b^2*d^5 +
 10*A*a^2*d^2*e^3 + 5*(2*B*a*b + A*b^2)*d^4*e + 10*(B*a^2 + 2*A*a*b)*d^3*e^
2)*x^4 + 1/3*(10*A*a^2*d^3*e^2 + (2*B*a*b + A*b^2)*d^5 + 5*(B*a^2 + 2*A*a*b
)*d^4*e)*x^3 + 1/2*(5*A*a^2*d^4*e + (B*a^2 + 2*A*a*b)*d^5)*x^2
```

mupad [**B**] time = 0.17, size = 381, normalized size = 3.18

$$x^5\left(2Ba^2d^2e^3+Aa^2de^4+4Babd^3e^2+4Aabd^2e^3+Bb^2d^4e+2Ab^2d^3e^2\right)+x^4\left(\frac{5Ba^2d^3e^2}{2}+\frac{5Aa^2d^2e^3}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*(A*a^2*d*e^4 + B*b^2*d^4*e + 2*A*b^2*d^3*e^2 + 2*B*a^2*d^2*e^3 + 4*A*a*
b*d^2*e^3 + 4*B*a*b*d^3*e^2) + x^4*((B*b^2*d^5)/4 + (5*A*b^2*d^4*e)/4 + (5*
A*a^2*d^2*e^3)/2 + (5*B*a^2*d^3*e^2)/2 + (5*B*a*b*d^4*e)/2 + 5*A*a*b*d^3*e^
2) + x^6*((A*a^2*e^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*b^2*d^2*e^3)/3 + (5*B*b^
2*d^3*e^2)/3 + (5*A*a*b*d*e^4)/3 + (10*B*a*b*d^2*e^3)/3) + x^3*((A*b^2*d^5)
/3 + (2*B*a*b*d^5)/3 + (5*B*a^2*d^4*e)/3 + (10*A*a^2*d^3*e^2)/3 + (10*A*a*b
*d^4*e)/3) + x^7*((B*a^2*e^5)/7 + (2*A*a*b*e^5)/7 + (5*A*b^2*d*e^4)/7 + (10
*B*b^2*d^2*e^3)/7 + (10*B*a*b*d*e^4)/7) + A*a^2*d^5*x + (a*d^4*x^2*(5*A*a*e
 + 2*A*b*d + B*a*d))/2 + (b*e^4*x^8*(A*b*e + 2*B*a*e + 5*B*b*d))/8 + (B*b^2
*e^5*x^9)/9
```

sympy [**B**] time = 0.13, size = 481, normalized size = 4.01

$$Aa^2d^5x+\frac{Bb^2e^5x^9}{9}+x^8\left(\frac{Ab^2e^5}{8}+\frac{Babe^5}{4}+\frac{5Bb^2de^4}{8}\right)+x^7\left(\frac{2Aabe^5}{7}+\frac{5Ab^2de^4}{7}+\frac{Ba^2e^5}{7}+\frac{10Babde^4}{7}+\frac{10Bb^2d^2e^3}{7}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**5*x + B*b**2*e**5*x**9/9 + x**8*(A*b**2*e**5/8 + B*a*b*e**5/4 + 5
*B*b**2*d*e**4/8) + x**7*(2*A*a*b*e**5/7 + 5*A*b**2*d*e**4/7 + B*a**2*e**5/
7 + 10*B*a*b*d*e**4/7 + 10*B*b**2*d**2*e**3/7) + x**6*(A*a**2*e**5/6 + 5*A*
a*b*d*e**4/3 + 5*A*b**2*d**2*e**3/3 + 5*B*a**2*d*e**4/6 + 10*B*a*b*d**2*e**
3/3 + 5*B*b**2*d**3*e**2/3) + x**5*(A*a**2*d*e**4 + 4*A*a*b*d**2*e**3 + 2*A
*b**2*d**3*e**2 + 2*B*a**2*d**2*e**3 + 4*B*a*b*d**3*e**2 + B*b**2*d**4*e) +
 x**4*(5*A*a**2*d**2*e**3/2 + 5*A*a*b*d**3*e**2 + 5*A*b**2*d**4*e/4 + 5*B*a
**2*d**3*e**2/2 + 5*B*a*b*d**4*e/2 + B*b**2*d**5/4) + x**3*(10*A*a**2*d**3*
e**2/3 + 10*A*a*b*d**4*e/3 + A*b**2*d**5/3 + 5*B*a**2*d**4*e/3 + 2*B*a*b*d*
*5/3) + x**2*(5*A*a**2*d**4*e/2 + A*a*b*d**5 + B*a**2*d**5/2)
```

3.1660 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^7(-2aBe-Abe+3bBd)}{7e^4}+\frac{(d+ex)^6(bd-ae)(-aBe-2Abe+3bBd)}{6e^4}-\frac{(d+ex)^5(bd-ae)^2(Bd-Ae)}{5e^4}+$$

```
[Out] -1/5*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^5/e^4+1/6*(-a*e+b*d)*(-2*A*b*e-B*a*e+3
*B*b*d)*(e*x+d)^6/e^4-1/7*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^7/e^4+1/8*b^2*
B*(e*x+d)^8/e^4
```

Rubi [A] time = 0.21, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 77\}$

$$-\frac{b(d+ex)^7(-2aBe-Abe+3bBd)}{7e^4}+\frac{(d+ex)^6(bd-ae)(-aBe-2Abe+3bBd)}{6e^4}-\frac{(d+ex)^5(bd-ae)^2(Bd-Ae)}{5e^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^5)/(5*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^6)/(6*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^7)/(7*e^4) + (b^2*B*(d + e*x)^8)/(8*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^2(A+Bx)(d+ex)^4 \, dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^4}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\ &= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^5}{5e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)}{6e^4}\end{aligned}$$

Mathematica [B] time = 0.10, size = 283, normalized size = 2.36

$$\frac{1}{5}ex^5\left(a^2e^2(Ae+4Bd)+4abde(2Ae+3Bd)+2b^2d^2(3Ae+2Bd)\right)+\frac{1}{4}dx^4\left(2a^2e^2(2Ae+3Bd)+4abde(3Ae+2\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^4*x + (a*d^3*(2*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(2*a*B*d*(b*
d + 2*a*e) + A*(b^2*d^2 + 8*a*b*d*e + 6*a^2*e^2))*x^3)/3 + (d*(2*a^2*e^2*(3
*B*d + 2*A*e) + 4*a*b*d*e*(2*B*d + 3*A*e) + b^2*d^2*(B*d + 4*A*e))*x^4)/4 +
 (e*(a^2*e^2*(4*B*d + A*e) + 4*a*b*d*e*(3*B*d + 2*A*e) + 2*b^2*d^2*(2*B*d +
 3*A*e))*x^5)/5 + (e^2*(a^2*B*e^2 + 2*a*b*e*(4*B*d + A*e) + 2*b^2*d*(3*B*d
+ 2*A*e))*x^6)/6 + (b*e^3*(4*b*B*d + A*b*e + 2*a*B*e)*x^7)/7 + (b^2*B*e^4*x
^8)/8
```

fricas [B] time = 0.66, size = 374, normalized size = 3.12

$$\frac{1}{8}x^8e^4b^2B+\frac{4}{7}x^7e^3db^2B+\frac{2}{7}x^7e^4baB+\frac{1}{7}x^7e^4b^2A+x^6e^2d^2b^2B+\frac{4}{3}x^6e^3dbaB+\frac{1}{6}x^6e^4a^2B+\frac{2}{3}x^6e^3db^2A+\frac{1}{3}x^6e^4baA+\frac{4}{5}x^5e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*b^2*B + 4/7*x^7*e^3*d*b^2*B + 2/7*x^7*e^4*b*a*B + 1/7*x^7*e^4*b
^2*A + x^6*e^2*d^2*b^2*B + 4/3*x^6*e^3*d*b*a*B + 1/6*x^6*e^4*a^2*B + 2/3*x^
6*e^3*d*b^2*A + 1/3*x^6*e^4*b*a*A + 4/5*x^5*e*d^3*b^2*B + 12/5*x^5*e^2*d^2*
b*a*B + 4/5*x^5*e^3*d*a^2*B + 6/5*x^5*e^2*d^2*b^2*A + 8/5*x^5*e^3*d*b*a*A +
 1/5*x^5*e^4*a^2*A + 1/4*x^4*d^4*b^2*B + 2*x^4*e*d^3*b*a*B + 3/2*x^4*e^2*d^
2*a^2*B + x^4*e*d^3*b^2*A + 3*x^4*e^2*d^2*b*a*A + x^4*e^3*d*a^2*A + 2/3*x^3
*d^4*b*a*B + 4/3*x^3*e*d^3*a^2*B + 1/3*x^3*d^4*b^2*A + 8/3*x^3*e*d^3*b*a*A
+ 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d^4*a^2*B + x^2*d^4*b*a*A + 2*x^2*e*d^3*a^2
*A + x*d^4*a^2*A
```

giac [B] time = 0.16, size = 362, normalized size = 3.02

$$\frac{1}{8}\,Bb^2x^8e^4+\frac{4}{7}\,Bb^2dx^7e^3+Bb^2d^2x^6e^2+\frac{4}{5}\,Bb^2d^3x^5e+\frac{1}{4}\,Bb^2d^4x^4+\frac{2}{7}\,Babx^7e^4+\frac{1}{7}\,Ab^2x^7e^4+\frac{4}{3}\,Babdx^6e^3+\frac{2}{3}\,Ab^2dx^6e^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^2*x^8*e^4 + 4/7*B*b^2*d*x^7*e^3 + B*b^2*d^2*x^6*e^2 + 4/5*B*b^2*d^3
*x^5*e + 1/4*B*b^2*d^4*x^4 + 2/7*B*a*b*x^7*e^4 + 1/7*A*b^2*x^7*e^4 + 4/3*B*
a*b*d*x^6*e^3 + 2/3*A*b^2*d*x^6*e^3 + 12/5*B*a*b*d^2*x^5*e^2 + 6/5*A*b^2*d^
2*x^5*e^2 + 2*B*a*b*d^3*x^4*e + A*b^2*d^3*x^4*e + 2/3*B*a*b*d^4*x^3 + 1/3*A
*b^2*d^4*x^3 + 1/6*B*a^2*x^6*e^4 + 1/3*A*a*b*x^6*e^4 + 4/5*B*a^2*d*x^5*e^3
+ 8/5*A*a*b*d*x^5*e^3 + 3/2*B*a^2*d^2*x^4*e^2 + 3*A*a*b*d^2*x^4*e^2 + 4/3*B
*a^2*d^3*x^3*e + 8/3*A*a*b*d^3*x^3*e + 1/2*B*a^2*d^4*x^2 + A*a*b*d^4*x^2 +
1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e^3 + 2*A*a^2*d^2*x^3*e^2 + 2*A*a^2*d^3*x^2
*e + A*a^2*d^4*x
```

maple [B] time = 0.05, size = 319, normalized size = 2.66

$$\frac{B\,b^2e^4x^8}{8}+A\,a^2d^4x+\frac{\left(2Bab\,e^4+\left(A\,e^4+4Bd\,e^3\right)b^2\right)x^7}{7}+\frac{\left(B\,a^2e^4+2\left(A\,e^4+4Bd\,e^3\right)ab+\left(4Ad\,e^3+6B\,d^2e^2\right)b^2\right)x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*B*e^4*b^2*x^8+1/7*((A*e^4+4*B*d*e^3)*b^2+2*B*e^4*a*b)*x^7+1/6*((4*A*d*e
^3+6*B*d^2*e^2)*b^2+2*(A*e^4+4*B*d*e^3)*a*b+B*a^2*e^4)*x^6+1/5*((6*A*d^2*e^
2+4*B*d^3*e)*b^2+2*(4*A*d*e^3+6*B*d^2*e^2)*a*b+(A*e^4+4*B*d*e^3)*a^2)*x^5+1
/4*((4*A*d^3*e+B*d^4)*b^2+2*(6*A*d^2*e^2+4*B*d^3*e)*a*b+(4*A*d*e^3+6*B*d^2*
e^2)*a^2)*x^4+1/3*(A*d^4*b^2+2*(4*A*d^3*e+B*d^4)*a*b+(6*A*d^2*e^2+4*B*d^3*e
)*a^2)*x^3+1/2*(2*A*d^4*a*b+(4*A*d^3*e+B*d^4)*a^2)*x^2+A*d^4*a^2*x
```

maxima [B] time = 0.50, size = 304, normalized size = 2.53

$$\frac{1}{8}\,Bb^2e^4x^8+Aa^2d^4x+\frac{1}{7}\,(4\,Bb^2de^3+(2\,Bab+Ab^2)e^4)x^7+\frac{1}{6}\,(6\,Bb^2d^2e^2+4\,(2\,Bab+Ab^2)de^3+(Ba^2+2\,Aab)e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*B*b^2*e^4*x^8 + A*a^2*d^4*x + 1/7*(4*B*b^2*d*e^3 + (2*B*a*b + A*b^2)*e^
4)*x^7 + 1/6*(6*B*b^2*d^2*e^2 + 4*(2*B*a*b + A*b^2)*d*e^3 + (B*a^2 + 2*A*a*
b)*e^4)*x^6 + 1/5*(4*B*b^2*d^3*e + A*a^2*e^4 + 6*(2*B*a*b + A*b^2)*d^2*e^2
+ 4*(B*a^2 + 2*A*a*b)*d*e^3)*x^5 + 1/4*(B*b^2*d^4 + 4*A*a^2*d*e^3 + 4*(2*B*
a*b + A*b^2)*d^3*e + 6*(B*a^2 + 2*A*a*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^2*d^2*e^
2 + (2*B*a*b + A*b^2)*d^4 + 4*(B*a^2 + 2*A*a*b)*d^3*e)*x^3 + 1/2*(4*A*a^2*d
^3*e + (B*a^2 + 2*A*a*b)*d^4)*x^2
```

mupad [B] time = 2.05, size = 305, normalized size = 2.54

$$x^4\,\left(\frac{3\,B\,a^2\,d^2\,e^2}{2}+A\,a^2\,d\,e^3+2\,B\,a\,b\,d^3\,e+3\,A\,a\,b\,d^2\,e^2+\frac{B\,b^2\,d^4}{4}+A\,b^2\,d^3\,e\right)+x^5\,(\frac{4\,B\,a^2\,d\,e^3}{5}+\frac{A\,a^2\,e^4}{5}+\frac{12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((B*b^2*d^4)/4 + A*a^2*d*e^3 + A*b^2*d^3*e + (3*B*a^2*d^2*e^2)/2 + 2*B*
a*b*d^3*e + 3*A*a*b*d^2*e^2) + x^5*((A*a^2*e^4)/5 + (4*B*a^2*d*e^3)/5 + (4*
B*b^2*d^3*e)/5 + (6*A*b^2*d^2*e^2)/5 + (8*A*a*b*d*e^3)/5 + (12*B*a*b*d^2*e^
2)/5) + x^3*((A*b^2*d^4)/3 + (2*B*a*b*d^4)/3 + (4*B*a^2*d^3*e)/3 + 2*A*a^2*
d^2*e^2 + (8*A*a*b*d^3*e)/3) + x^6*((B*a^2*e^4)/6 + (A*a*b*e^4)/3 + (2*A*b^
2*d*e^3)/3 + B*b^2*d^2*e^2 + (4*B*a*b*d*e^3)/3) + A*a^2*d^4*x + (a*d^3*x^2*
(4*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e^3*x^7*(A*b*e + 2*B*a*e + 4*B*b*d))/7
+ (B*b^2*e^4*x^8)/8
```

sympy [B] time = 0.12, size = 384, normalized size = 3.20

$$Aa^2d^4x+\frac{Bb^2e^4x^8}{8}+x^7\left(\frac{Ab^2e^4}{7}+\frac{2Babe^4}{7}+\frac{4Bb^2de^3}{7}\right)+x^6\left(\frac{Aabe^4}{3}+\frac{2Ab^2de^3}{3}+\frac{Ba^2e^4}{6}+\frac{4Babde^3}{3}+Bb^2d^2e^2\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**4*x + B*b**2*e**4*x**8/8 + x**7*(A*b**2*e**4/7 + 2*B*a*b*e**4/7 +
 4*B*b**2*d*e**3/7) + x**6*(A*a*b*e**4/3 + 2*A*b**2*d*e**3/3 + B*a**2*e**4/
6 + 4*B*a*b*d*e**3/3 + B*b**2*d**2*e**2) + x**5*(A*a**2*e**4/5 + 8*A*a*b*d*
e**3/5 + 6*A*b**2*d**2*e**2/5 + 4*B*a**2*d*e**3/5 + 12*B*a*b*d**2*e**2/5 +
4*B*b**2*d**3*e/5) + x**4*(A*a**2*d*e**3 + 3*A*a*b*d**2*e**2 + A*b**2*d**3*
e + 3*B*a**2*d**2*e**2/2 + 2*B*a*b*d**3*e + B*b**2*d**4/4) + x**3*(2*A*a**2
*d**2*e**2 + 8*A*a*b*d**3*e/3 + A*b**2*d**4/3 + 4*B*a**2*d**3*e/3 + 2*B*a*b
*d**4/3) + x**2*(2*A*a**2*d**3*e + A*a*b*d**4 + B*a**2*d**4/2)
```

3.1661 $\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=120

$$-\frac{b(d+ex)^6(-2aBe-Abe+3bBd)}{6e^4}+\frac{(d+ex)^5(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{(d+ex)^4(bd-ae)^2(Bd-Ae)}{4e^4}+\frac{b^2}{}$$

```
[Out] -1/4*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^4/e^4+1/5*(-a*e+b*d)*(-2*A*b*e-B*a*e+3
*B*b*d)*(e*x+d)^5/e^4-1/6*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^6/e^4+1/7*b^2*
B*(e*x+d)^7/e^4
```

Rubi [A] time = 0.16, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{b(d+ex)^6(-2aBe-Abe+3bBd)}{6e^4}+\frac{(d+ex)^5(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{(d+ex)^4(bd-ae)^2(Bd-Ae)}{4e^4}+\frac{b^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^4)/(4*e^4) + ((b*d - a*e)*(3*b*B*d -
2*A*b*e - a*B*e)*(d + e*x)^5)/(5*e^4) - (b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
 e*x)^6)/(6*e^4) + (b^2*B*(d + e*x)^7)/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^3\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^3}{e^3}+\frac{(-bd+ae)(-3bBd+2Abe}{e^3}\right.\\ &= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^4}{4e^4}+\frac{(bd-ae)(3bBd-2Abe-aBe)(d}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 216, normalized size = 1.80

$$\frac{1}{4}x^4\left(a^2e^2(Ae+3Bd)+6abde(Ae+Bd)+b^2d^2(3Ae+Bd)\right)+\frac{1}{3}dx^3\left(A\left(3a^2e^2+6abde+b^2d^2\right)+aBd(3ae+2bd)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^3*x + (a*d^2*(2*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(a*B*d*(2*b*d
+ 3*a*e) + A*(b^2*d^2 + 6*a*b*d*e + 3*a^2*e^2))*x^3)/3 + ((6*a*b*d*e*(B*d +
 A*e) + a^2*e^2*(3*B*d + A*e) + b^2*d^2*(B*d + 3*A*e))*x^4)/4 + (e*(a^2*B*e
^2 + 3*b^2*d*(B*d + A*e) + 2*a*b*e*(3*B*d + A*e))*x^5)/5 + (b*e^2*(3*b*B*d
+ A*b*e + 2*a*B*e)*x^6)/6 + (b^2*B*e^3*x^7)/7
```

fricas [B] time = 0.70, size = 287, normalized size = 2.39

$$\frac{1}{7}x^7e^3b^2B+\frac{1}{2}x^6e^2db^2B+\frac{1}{3}x^6e^3baB+\frac{1}{6}x^6e^3b^2A+\frac{3}{5}x^5ed^2b^2B+\frac{6}{5}x^5e^2dbaB+\frac{1}{5}x^5e^3a^2B+\frac{3}{5}x^5e^2db^2A+\frac{2}{5}x^5e^3baA+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*b^2*B + 1/2*x^6*e^2*d*b^2*B + 1/3*x^6*e^3*b*a*B + 1/6*x^6*e^3*b
^2*A + 3/5*x^5*e*d^2*b^2*B + 6/5*x^5*e^2*d*b*a*B + 1/5*x^5*e^3*a^2*B + 3/5*
x^5*e^2*d*b^2*A + 2/5*x^5*e^3*b*a*A + 1/4*x^4*d^3*b^2*B + 3/2*x^4*e*d^2*b*a
*B + 3/4*x^4*e^2*d*a^2*B + 3/4*x^4*e*d^2*b^2*A + 3/2*x^4*e^2*d*b*a*A + 1/4*
x^4*e^3*a^2*A + 2/3*x^3*d^3*b*a*B + x^3*e*d^2*a^2*B + 1/3*x^3*d^3*b^2*A + 2
*x^3*e*d^2*b*a*A + x^3*e^2*d*a^2*A + 1/2*x^2*d^3*a^2*B + x^2*d^3*b*a*A + 3/
2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [B] time = 0.17, size = 281, normalized size = 2.34

$$\frac{1}{7}Bb^2x^7e^3+\frac{1}{2}Bb^2dx^6e^2+\frac{3}{5}Bb^2d^2x^5e+\frac{1}{4}Bb^2d^3x^4+\frac{1}{3}Babx^6e^3+\frac{1}{6}Ab^2x^6e^3+\frac{6}{5}Babdx^5e^2+\frac{3}{5}Ab^2dx^5e^2+\frac{3}{2}Babd^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^2*x^7*e^3 + 1/2*B*b^2*d*x^6*e^2 + 3/5*B*b^2*d^2*x^5*e + 1/4*B*b^2*d
^3*x^4 + 1/3*B*a*b*x^6*e^3 + 1/6*A*b^2*x^6*e^3 + 6/5*B*a*b*d*x^5*e^2 + 3/5*
A*b^2*d*x^5*e^2 + 3/2*B*a*b*d^2*x^4*e + 3/4*A*b^2*d^2*x^4*e + 2/3*B*a*b*d^3
*x^3 + 1/3*A*b^2*d^3*x^3 + 1/5*B*a^2*x^5*e^3 + 2/5*A*a*b*x^5*e^3 + 3/4*B*a^
2*d*x^4*e^2 + 3/2*A*a*b*d*x^4*e^2 + B*a^2*d^2*x^3*e + 2*A*a*b*d^2*x^3*e + 1
/2*B*a^2*d^3*x^2 + A*a*b*d^3*x^2 + 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 + 3/
2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [B] time = 0.05, size = 244, normalized size = 2.03

$$\frac{Bb^2e^3x^7}{7}+Aa^2d^3x+\frac{\left(2Babe^3+\left(Ae^3+3Bde^2\right)b^2\right)x^6}{6}+\frac{\left(Ba^2e^3+2\left(Ae^3+3Bde^2\right)ab+\left(3Ade^2+3Bd^2e\right)b^2\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*B*e^3*b^2*x^7+1/6*((A*e^3+3*B*d*e^2)*b^2+2*B*e^3*a*b)*x^6+1/5*((3*A*d*e
^2+3*B*d^2*e)*b^2+2*(A*e^3+3*B*d*e^2)*a*b+B*a^2*e^3)*x^5+1/4*((3*A*d^2*e+B*
d^3)*b^2+2*(3*A*d*e^2+3*B*d^2*e)*a*b+(A*e^3+3*B*d*e^2)*a^2)*x^4+1/3*(A*d^3*
b^2+2*(3*A*d^2*e+B*d^3)*a*b+(3*A*d*e^2+3*B*d^2*e)*a^2)*x^3+1/2*(2*A*d^3*a*b
+(3*A*d^2*e+B*d^3)*a^2)*x^2+A*d^3*a^2*x
```

maxima [B] time = 0.49, size = 236, normalized size = 1.97

$$\frac{1}{7}Bb^2e^3x^7+Aa^2d^3x+\frac{1}{6}\left(3Bb^2de^2+\left(2Bab+Ab^2\right)e^3\right)x^6+\frac{1}{5}\left(3Bb^2d^2e+3\left(2Bab+Ab^2\right)de^2+\left(Ba^2+2Aab\right)e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*B*b^2*e^3*x^7 + A*a^2*d^3*x + 1/6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^
3)*x^6 + 1/5*(3*B*b^2*d^2*e + 3*(2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)
*e^3)*x^5 + 1/4*(B*b^2*d^3 + A*a^2*e^3 + 3*(2*B*a*b + A*b^2)*d^2*e + 3*(B*a
^2 + 2*A*a*b)*d*e^2)*x^4 + 1/3*(3*A*a^2*d*e^2 + (2*B*a*b + A*b^2)*d^3 + 3*(
B*a^2 + 2*A*a*b)*d^2*e)*x^3 + 1/2*(3*A*a^2*d^2*e + (B*a^2 + 2*A*a*b)*d^3)*x
^2
```

mupad [B] time = 0.09, size = 231, normalized size = 1.92

$$x^4\left(\frac{3\,B\,a^2\,d\,e^2}{4}+\frac{A\,a^2\,e^3}{4}+\frac{3\,B\,a\,b\,d^2\,e}{2}+\frac{3\,A\,a\,b\,d\,e^2}{2}+\frac{B\,b^2\,d^3}{4}+\frac{3\,A\,b^2\,d^2\,e}{4}\right)+x^3\,\left(B\,a^2\,d^2\,e+A\,a^2\,d\,e^2+\frac{2\,B\,a\,b}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((A*a^2*e^3)/4 + (B*b^2*d^3)/4 + (3*A*b^2*d^2*e)/4 + (3*B*a^2*d*e^2)/4
+ (3*A*a*b*d*e^2)/2 + (3*B*a*b*d^2*e)/2) + x^3*((A*b^2*d^3)/3 + (2*B*a*b*d^
3)/3 + A*a^2*d*e^2 + B*a^2*d^2*e + 2*A*a*b*d^2*e) + x^5*((B*a^2*e^3)/5 + (2
*A*a*b*e^3)/5 + (3*A*b^2*d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*B*a*b*d*e^2)/5)
+ A*a^2*d^3*x + (a*d^2*x^2*(3*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e^2*x^6*(A*b
*e + 2*B*a*e + 3*B*b*d))/6 + (B*b^2*e^3*x^7)/7
```

sympy [B] time = 0.11, size = 296, normalized size = 2.47

$$Aa^2d^3x+\frac{Bb^2e^3x^7}{7}+x^6\left(\frac{Ab^2e^3}{6}+\frac{Babe^3}{3}+\frac{Bb^2de^2}{2}\right)+x^5\left(\frac{2Aabe^3}{5}+\frac{3Ab^2de^2}{5}+\frac{Ba^2e^3}{5}+\frac{6Babde^2}{5}+\frac{3Bb^2d^2e}{5}\right)+x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**3*x + B*b**2*e**3*x**7/7 + x**6*(A*b**2*e**3/6 + B*a*b*e**3/3 + B
*b**2*d*e**2/2) + x**5*(2*A*a*b*e**3/5 + 3*A*b**2*d*e**2/5 + B*a**2*e**3/5
+ 6*B*a*b*d*e**2/5 + 3*B*b**2*d**2*e/5) + x**4*(A*a**2*e**3/4 + 3*A*a*b*d*e
**2/2 + 3*A*b**2*d**2*e/4 + 3*B*a**2*d*e**2/4 + 3*B*a*b*d**2*e/2 + B*b**2*d
**3/4) + x**3*(A*a**2*d*e**2 + 2*A*a*b*d**2*e + A*b**2*d**3/3 + B*a**2*d**2
*e + 2*B*a*b*d**3/3) + x**2*(3*A*a**2*d**2*e/2 + A*a*b*d**3 + B*a**2*d**3/2
)
```

3.1662 $\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=118

$$\frac{e(a+bx)^5(-3aBe+Abe+2bBd)}{5b^4}+\frac{(a+bx)^4(bd-ae)(-3aBe+2Abe+bBd)}{4b^4}+\frac{(a+bx)^3(Ab-aB)(bd-ae)^2}{3b^4}+$$

```
[Out] 1/3*(A*b-B*a)*(-a*e+b*d)^2*(b*x+a)^3/b^4+1/4*(-a*e+b*d)*(2*A*b*e-3*B*a*e+B*
b*d)*(b*x+a)^4/b^4+1/5*e*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^5/b^4+1/6*B*e^2*(b
*x+a)^6/b^4
```

Rubi [A] time = 0.13, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$\frac{e(a+bx)^5(-3aBe+Abe+2bBd)}{5b^4}+\frac{(a+bx)^4(bd-ae)(-3aBe+2Abe+bBd)}{4b^4}+\frac{(a+bx)^3(Ab-aB)(bd-ae)^2}{3b^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^3)/(3*b^4) + ((b*d - a*e)*(b*B*d + 2*A
*b*e - 3*a*B*e)*(a + b*x)^4)/(4*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a +
b*x)^5)/(5*b^4) + (B*e^2*(a + b*x)^6)/(6*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^2\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^2(a+bx)^2}{b^3}+\frac{(bd-ae)(bBd+2Abe-3a}{b^3}\right.\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^3}{3b^4}+\frac{(bd-ae)(bBd+2Abe-3aBe)(}{4b^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 157, normalized size = 1.33

$$\frac{1}{3}x^3\left(A\left(a^2e^2+4abde+b^2d^2\right)+2aBd(ae+bd)\right)+\frac{1}{4}x^4\left(a^2Be^2+2abe(Ae+2Bd)+b^2d(2Ae+Bd)\right)+a^2Ad^2x+\frac{1}{5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d^2*x + (a*d*(a*B*d + 2*A*(b*d + a*e))*x^2)/2 + ((2*a*B*d*(b*d + a*e)
 + A*(b^2*d^2 + 4*a*b*d*e + a^2*e^2))*x^3)/3 + ((a^2*B*e^2 + 2*a*b*e*(2*B*d
 + A*e) + b^2*d*(B*d + 2*A*e))*x^4)/4 + (b*e*(2*b*B*d + A*b*e + 2*a*B*e)*x^
5)/5 + (b^2*B*e^2*x^6)/6
```

fricas [A] time = 0.41, size = 199, normalized size = 1.69

$$\frac{1}{6}x^6e^2b^2B+\frac{2}{5}x^5edb^2B+\frac{2}{5}x^5e^2baB+\frac{1}{5}x^5e^2b^2A+\frac{1}{4}x^4d^2b^2B+x^4edbaB+\frac{1}{4}x^4e^2a^2B+\frac{1}{2}x^4edb^2A+\frac{1}{2}x^4e^2baA+\frac{2}{3}x^3d^2baB$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*b^2*B + 2/5*x^5*e*d*b^2*B + 2/5*x^5*e^2*b*a*B + 1/5*x^5*e^2*b^2
*A + 1/4*x^4*d^2*b^2*B + x^4*e*d*b*a*B + 1/4*x^4*e^2*a^2*B + 1/2*x^4*e*d*b^
2*A + 1/2*x^4*e^2*b*a*A + 2/3*x^3*d^2*b*a*B + 2/3*x^3*e*d*a^2*B + 1/3*x^3*d
^2*b^2*A + 4/3*x^3*e*d*b*a*A + 1/3*x^3*e^2*a^2*A + 1/2*x^2*d^2*a^2*B + x^2*
d^2*b*a*A + x^2*e*d*a^2*A + x*d^2*a^2*A
```

giac [A] time = 0.16, size = 199, normalized size = 1.69

$$\frac{1}{6}\,Bb^2x^6e^2+\frac{2}{5}\,Bb^2dx^5e+\frac{1}{4}\,Bb^2d^2x^4+\frac{2}{5}\,Babx^5e^2+\frac{1}{5}\,Ab^2x^5e^2+Babdx^4e+\frac{1}{2}\,Ab^2dx^4e+\frac{2}{3}\,Babd^2x^3+\frac{1}{3}\,Ab^2d^2x^3+\frac{1}{4}\,Ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^2*x^6*e^2 + 2/5*B*b^2*d*x^5*e + 1/4*B*b^2*d^2*x^4 + 2/5*B*a*b*x^5*e
^2 + 1/5*A*b^2*x^5*e^2 + B*a*b*d*x^4*e + 1/2*A*b^2*d*x^4*e + 2/3*B*a*b*d^2*
x^3 + 1/3*A*b^2*d^2*x^3 + 1/4*B*a^2*x^4*e^2 + 1/2*A*a*b*x^4*e^2 + 2/3*B*a^2
*d*x^3*e + 4/3*A*a*b*d*x^3*e + 1/2*B*a^2*d^2*x^2 + A*a*b*d^2*x^2 + 1/3*A*a^
2*x^3*e^2 + A*a^2*d*x^2*e + A*a^2*d^2*x
```

maple [A] time = 0.05, size = 169, normalized size = 1.43

$$\frac{B\,b^2e^2x^6}{6}+A\,a^2d^2x+\frac{\left(2Bab\,e^2+\left(A\,e^2+2Bde\right)b^2\right)x^5}{5}+\frac{\left(B\,a^2e^2+2\left(A\,e^2+2Bde\right)ab+\left(2Ade+B\,d^2\right)b^2\right)x^4}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*B*e^2*b^2*x^6+1/5*((A*e^2+2*B*d*e)*b^2+2*B*e^2*a*b)*x^5+1/4*((2*A*d*e+B
*d^2)*b^2+2*(A*e^2+2*B*d*e)*a*b+B*a^2*e^2)*x^4+1/3*(A*d^2*b^2+2*(2*A*d*e+B*
d^2)*a*b+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d^2*a*b+(2*A*d*e+B*d^2)*a^2)*x^2
+A*d^2*a^2*x
```

maxima [A] time = 0.59, size = 168, normalized size = 1.42

$$\frac{1}{6}\,Bb^2e^2x^6+Aa^2d^2x+\frac{1}{5}\,\left(2\,Bb^2de+\left(2\,Bab+Ab^2\right)e^2\right)x^5+\frac{1}{4}\,\left(Bb^2d^2+2\,\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\,Aab\right)e^2\right)x^4+\frac{1}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*B*b^2*e^2*x^6 + A*a^2*d^2*x + 1/5*(2*B*b^2*d*e + (2*B*a*b + A*b^2)*e^2)
*x^5 + 1/4*(B*b^2*d^2 + 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x^
4 + 1/3*(A*a^2*e^2 + (2*B*a*b + A*b^2)*d^2 + 2*(B*a^2 + 2*A*a*b)*d*e)*x^3 +
 1/2*(2*A*a^2*d*e + (B*a^2 + 2*A*a*b)*d^2)*x^2
```

mupad [B] time = 0.07, size = 157, normalized size = 1.33

$$x^3\left(\frac{2\,B\,a^2\,d\,e}{3}+\frac{A\,a^2\,e^2}{3}+\frac{2\,B\,a\,b\,d^2}{3}+\frac{4\,A\,a\,b\,d\,e}{3}+\frac{A\,b^2\,d^2}{3}\right)+x^4\left(\frac{B\,a^2\,e^2}{4}+B\,a\,b\,d\,e+\frac{A\,a\,b\,e^2}{2}+\frac{B\,b^2\,d^2}{4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (A*b^2*d^2)/3 + (2*B*a*b*d^2)/3 + (2*B*a^2*d*e)/3 + (4
*A*a*b*d*e)/3) + x^4*((B*a^2*e^2)/4 + (B*b^2*d^2)/4 + (A*a*b*e^2)/2 + (A*b^
2*d*e)/2 + B*a*b*d*e) + (a*d*x^2*(2*A*a*e + 2*A*b*d + B*a*d))/2 + (b*e*x^5*
(A*b*e + 2*B*a*e + 2*B*b*d))/5 + A*a^2*d^2*x + (B*b^2*e^2*x^6)/6
```

sympy [A] time = 0.09, size = 202, normalized size = 1.71

$$Aa^2d^2x+\frac{Bb^2e^2x^6}{6}+x^5\left(\frac{Ab^2e^2}{5}+\frac{2Babe^2}{5}+\frac{2Bb^2de}{5}\right)+x^4\left(\frac{Aabe^2}{2}+\frac{Ab^2de}{2}+\frac{Ba^2e^2}{4}+Babde+\frac{Bb^2d^2}{4}\right)+x^3\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d**2*x + B*b**2*e**2*x**6/6 + x**5*(A*b**2*e**2/5 + 2*B*a*b*e**2/5 +
 2*B*b**2*d*e/5) + x**4*(A*a*b*e**2/2 + A*b**2*d*e/2 + B*a**2*e**2/4 + B*a*
b*d*e + B*b**2*d**2/4) + x**3*(A*a**2*e**2/3 + 4*A*a*b*d*e/3 + A*b**2*d**2/
3 + 2*B*a**2*d*e/3 + 2*B*a*b*d**2/3) + x**2*(A*a**2*d*e + A*a*b*d**2 + B*a*
*2*d**2/2)
```

3.1663 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^4(-2aBe+Abe+bBd)}{4b^3}+\frac{(a+bx)^3(Ab-aB)(bd-ae)}{3b^3}+\frac{Be(a+bx)^5}{5b^3}$$

```
[Out] 1/3*(A*b-B*a)*(-a*e+b*d)*(b*x+a)^3/b^3+1/4*(A*b*e-2*B*a*e+B*b*d)*(b*x+a)^4/
b^3+1/5*B*e*(b*x+a)^5/b^3
```

Rubi [A] time = 0.08, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{27, 77\}$

$$\frac{(a+bx)^4(-2aBe+Abe+bBd)}{4b^3}+\frac{(a+bx)^3(Ab-aB)(bd-ae)}{3b^3}+\frac{Be(a+bx)^5}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^3)/(3*b^3) + ((b*B*d + A*b*e - 2*a*B*e)*
(a + b*x)^4)/(4*b^3) + (B*e*(a + b*x)^5)/(5*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)dx = \int (a+bx)^2(A+Bx)(d+ex)\,dx$$

$$= \int \Bigg(\frac{(Ab-aB)(bd-ae)(a+bx)^2}{b^2}+\frac{(bBd+Abe-2aBe)(a+bx)^3}{b^2}+$$

$$= \frac{(Ab-aB)(bd-ae)(a+bx)^3}{3b^3}+\frac{(bBd+Abe-2aBe)(a+bx)^4}{4b^3}+$$

Mathematica [A] time = 0.03, size = 96, normalized size = 1.28

$$\frac{1}{3}x^3\left(a^2Be+2aAbe+2abBd+Ab^2d\right)+a^2Adx+\frac{1}{4}bx^4(2aBe+Abe+bBd)+\frac{1}{2}ax^2(aAe+aBd+2Abd)+\frac{1}{5}b^2Bex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((A*b^2*d + 2*a*b*B*d + 2
*a*A*b*e + a^2*B*e)*x^3)/3 + (b*(b*B*d + A*b*e + 2*a*B*e)*x^4)/4 + (b^2*B*e
*x^5)/5
```

fricas [**A**] time = 0.78, size = 113, normalized size = 1.51

$$\frac{1}{5}x^5eb^2B+\frac{1}{4}x^4db^2B+\frac{1}{2}x^4ebaB+\frac{1}{4}x^4eb^2A+\frac{2}{3}x^3dbaB+\frac{1}{3}x^3ea^2B+\frac{1}{3}x^3db^2A+\frac{2}{3}x^3ebaA+\frac{1}{2}x^2da^2B+x^2dbaA+\frac{1}{2}x^2e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*b^2*B + 1/4*x^4*d*b^2*B + 1/2*x^4*e*b*a*B + 1/4*x^4*e*b^2*A + 2/3
*x^3*d*b*a*B + 1/3*x^3*e*a^2*B + 1/3*x^3*d*b^2*A + 2/3*x^3*e*b*a*A + 1/2*x^
2*d*a^2*B + x^2*d*b*a*A + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [**A**] time = 0.17, size = 119, normalized size = 1.59

$$\frac{1}{5}Bb^2x^5e+\frac{1}{4}Bb^2dx^4+\frac{1}{2}Babx^4e+\frac{1}{4}Ab^2x^4e+\frac{2}{3}Babdx^3+\frac{1}{3}Ab^2dx^3+\frac{1}{3}Ba^2x^3e+\frac{2}{3}Aabx^3e+\frac{1}{2}Ba^2dx^2+Aabdx^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^2*x^5*e + 1/4*B*b^2*d*x^4 + 1/2*B*a*b*x^4*e + 1/4*A*b^2*x^4*e + 2/3
*B*a*b*d*x^3 + 1/3*A*b^2*d*x^3 + 1/3*B*a^2*x^3*e + 2/3*A*a*b*x^3*e + 1/2*B*
a^2*d*x^2 + A*a*b*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [**A**] time = 0.04, size = 94, normalized size = 1.25

$$\frac{B\,b^2e\,x^5}{5}+A\,a^2dx+\frac{\left(2Babe+(Ae+Bd)\,b^2\right)x^4}{4}+\frac{\left(A\,b^2d+B\,a^2e+2\,(Ae+Bd)\,ab\right)x^3}{3}+\frac{\left(2Aabd+(Ae+Bd)\,a^2\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*B*b^2*e*x^5+1/4*((A*e+B*d)*b^2+2*B*e*a*b)*x^4+1/3*(A*d*b^2+2*(A*e+B*d)*
a*b+B*e*a^2)*x^3+1/2*(2*A*d*a*b+(A*e+B*d)*a^2)*x^2+A*a^2*d*x
```

maxima [**A**] time = 0.52, size = 100, normalized size = 1.33

$$\frac{1}{5}Bb^2ex^5+Aa^2dx+\frac{1}{4}\left(Bb^2d+\left(2\,Bab+Ab^2\right)e\right)x^4+\frac{1}{3}\left(\left(2\,Bab+Ab^2\right)d+\left(Ba^2+2\,Aab\right)e\right)x^3+\frac{1}{2}\left(Aa^2e+\left(Ba^2+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*B*b^2*e*x^5 + A*a^2*d*x + 1/4*(B*b^2*d + (2*B*a*b + A*b^2)*e)*x^4 + 1/3
*((2*B*a*b + A*b^2)*d + (B*a^2 + 2*A*a*b)*e)*x^3 + 1/2*(A*a^2*e + (B*a^2 +
2*A*a*b)*d)*x^2
```

mupad [**B**] time = 0.04, size = 98, normalized size = 1.31

$$x^3\left(\frac{A\,b^2\,d}{3}+\frac{B\,a^2\,e}{3}+\frac{2\,A\,a\,b\,e}{3}+\frac{2\,B\,a\,b\,d}{3}\right)+x^2\left(\frac{A\,a^2\,e}{2}+\frac{B\,a^2\,d}{2}+A\,a\,b\,d\right)+x^4\left(\frac{A\,b^2\,e}{4}+\frac{B\,b^2\,d}{4}+\frac{B\,a\,b\,e}{2}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*b^2*d)/3 + (B*a^2*e)/3 + (2*A*a*b*e)/3 + (2*B*a*b*d)/3) + x^2*((A*a
^2*e)/2 + (B*a^2*d)/2 + A*a*b*d) + x^4*((A*b^2*e)/4 + (B*b^2*d)/4 + (B*a*b*
e)/2) + A*a^2*d*x + (B*b^2*e*x^5)/5
```

sympy [**A**] time = 0.08, size = 116, normalized size = 1.55

$$Aa^2dx+\frac{Bb^2ex^5}{5}+x^4\left(\frac{Ab^2e}{4}+\frac{Babe}{2}+\frac{Bb^2d}{4}\right)+x^3\left(\frac{2Aabe}{3}+\frac{Ab^2d}{3}+\frac{Ba^2e}{3}+\frac{2Babd}{3}\right)+x^2\left(\frac{Aa^2e}{2}+Aabd+\frac{Ba^2d}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d*x + B*b**2*e*x**5/5 + x**4*(A*b**2*e/4 + B*a*b*e/2 + B*b**2*d/4) +
 x**3*(2*A*a*b*e/3 + A*b**2*d/3 + B*a**2*e/3 + 2*B*a*b*d/3) + x**2*(A*a**2*
e/2 + A*a*b*d + B*a**2*d/2)
```

3.1664 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

```
[Out] 1/3*(A*b-B*a)*(b*x+a)^3/b^2+1/4*B*(b*x+a)^4/b^2
```

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^3(Ab-aB)}{3b^2}+\frac{B(a+bx)^4}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3)/(3*b^2) + (B*(a + b*x)^4)/(4*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)\,dx\\ &= \int \left(\frac{(Ab-aB)(a+bx)^2}{b}+\frac{B(a+bx)^3}{b}\right)dx\\ &= \frac{(Ab-aB)(a+bx)^3}{3b^2}+\frac{B(a+bx)^4}{4b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 46, normalized size = 1.21

$$\frac{1}{12}x\left(6a^2(2A+Bx)+4abx(3A+2Bx)+b^2x^2(4A+3Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (x*(6*a^2*(2*A + B*x) + 4*a*b*x*(3*A + 2*B*x) + b^2*x^2*(4*A + 3*B*x)))/12
```

fricas [A] time = 0.77, size = 49, normalized size = 1.29

$$\frac{1}{4}x^4b^2B+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b^2*B + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 1/2*x^2*a^2*B + x^2*b*a*A +
 x*a^2*A
```

giac [A] time = 0.15, size = 49, normalized size = 1.29

$$\frac{1}{4}Bb^2x^4 + \frac{2}{3}Babx^3 + \frac{1}{3}Ab^2x^3 + \frac{1}{2}Ba^2x^2 + Aabx^2 + Aa^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/4*B*b^2*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 1/2*B*a^2*x^2 + A*a*b*x^2 +
 A*a^2*x
```

maple [A] time = 0.04, size = 49, normalized size = 1.29

$$\frac{B\,b^2x^4}{4} + A\,a^2x + \frac{\left(A\,b^2 + 2Bab\right)x^3}{3} + \frac{\left(2Aab + B\,a^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*B*b^2*x^4+1/3*(A*b^2+2*B*a*b)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.56, size = 48, normalized size = 1.26

$$\frac{1}{4}Bb^2x^4 + Aa^2x + \frac{1}{3}\left(2\,Bab + Ab^2\right)x^3 + \frac{1}{2}\left(Ba^2 + 2\,Aab\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*B*b^2*x^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2)*x^3 + 1/2*(B*a^2 + 2*A*a*b)
*x^2
```

mupad [B] time = 1.95, size = 47, normalized size = 1.24

$$x^2\left(\frac{B\,a^2}{2} + A\,b\,a\right) + x^3\left(\frac{A\,b^2}{3} + \frac{2\,B\,a\,b}{3}\right) + \frac{B\,b^2\,x^4}{4} + A\,a^2\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^3*((A*b^2)/3 + (2*B*a*b)/3) + (B*b^2*x^4)/4 + A
*a^2*x
```

sympy [A] time = 0.07, size = 49, normalized size = 1.29

$$Aa^2x + \frac{Bb^2x^4}{4} + x^3\left(\frac{Ab^2}{3} + \frac{2Bab}{3}\right) + x^2\left(Aab + \frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*x + B*b**2*x**4/4 + x**3*(A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b + B*a*
*2/2)
```

3.1665 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$

Optimal. Leaf size=92

$$-\frac{(bd-ae)^2(Bd-Ae)\log(d+ex)}{e^4}+\frac{bx(bd-ae)(Bd-Ae)}{e^3}-\frac{(a+bx)^2(Bd-Ae)}{2e^2}+\frac{B(a+bx)^3}{3be}$$

```
[Out] b*(-a*e+b*d)*(-A*e+B*d)*x/e^3-1/2*(-A*e+B*d)*(b*x+a)^2/e^2+1/3*B*(b*x+a)^3/
b/e-(-a*e+b*d)^2*(-A*e+B*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 77}

$$-\frac{(a+bx)^2(Bd-Ae)}{2e^2}+\frac{bx(bd-ae)(Bd-Ae)}{e^3}-\frac{(bd-ae)^2(Bd-Ae)\log(d+ex)}{e^4}+\frac{B(a+bx)^3}{3be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)*(B*d - A*e)*x)/e^3 - ((B*d - A*e)*(a + b*x)^2)/(2*e^2) + (B*
(a + b*x)^3)/(3*b*e) - ((b*d - a*e)^2*(B*d - A*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{d+ex}\,dx\\ &= \int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^3}+\frac{b(-Bd+Ae)(a+bx)}{e^2}+\frac{B(a+bx)^2}{e}+(-b\right.\\ &= \frac{b(bd-ae)(Bd-Ae)x}{e^3}-\frac{(Bd-Ae)(a+bx)^2}{2e^2}+\frac{B(a+bx)^3}{3be}-(bd-ae)^2(\end{aligned}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 1.11

$$\frac{ex\left(6a^2Be^2+6abe(2Ae-2Bd+Bex)+b^2\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)\right)-6(bd-ae)^2(Bd-Ae)\,\mathrm{lo}}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(6*a^2*B*e^2 + 6*a*b*e*(-2*B*d + 2*A*e + B*e*x) + b^2*(3*A*e*(-2*d + e
*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2))) - 6*(b*d - a*e)^2*(B*d - A*e)*Log[d
 + e*x])/(6*e^4)
```

fricas [**A**] time = 0.63, size = 153, normalized size = 1.66

$$\frac{2\,Bb^2e^3x^3 - 3\left(Bb^2de^2 - \left(2\,Bab + Ab^2\right)e^3\right)x^2 + 6\left(Bb^2d^2e - \left(2\,Bab + Ab^2\right)de^2 + \left(Ba^2 + 2\,Aab\right)e^3\right)x - 6\left(Bb^2d^3 - \right.}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^2*e^3*x^3 - 3*(B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 6*(B*b
^2*d^2*e - (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x - 6*(B*b^2*d^
3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*log(e*x
+ d))/e^4
```

giac [**A**] time = 0.19, size = 162, normalized size = 1.76

$$-\left(Bb^2d^3 - 2\,Babd^2e - Ab^2d^2e + Ba^2de^2 + 2\,Aabde^2 - Aa^2e^3\right)e^{(-4)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,Bb^2x^3e^2 - 3\,Bb^2dx^2e + 6\,Bb\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*b^2*d^3 - 2*B*a*b*d^2*e - A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 - A
*a^2*e^3)*e^(-4)*log(abs(x*e + d)) + 1/6*(2*B*b^2*x^3*e^2 - 3*B*b^2*d*x^2*e
 + 6*B*b^2*d^2*x + 6*B*a*b*x^2*e^2 + 3*A*b^2*x^2*e^2 - 12*B*a*b*d*x*e - 6*A
*b^2*d*x*e + 6*B*a^2*x*e^2 + 12*A*a*b*x*e^2)*e^(-3)
```

maple [**B**] time = 0.05, size = 197, normalized size = 2.14

$$\frac{B\,b^2x^3}{3e} + \frac{A\,b^2x^2}{2e} + \frac{Bab\,x^2}{e} - \frac{B\,b^2d\,x^2}{2e^2} + \frac{A\,a^2\ln\left(ex + d\right)}{e} - \frac{2Aabd\ln\left(ex + d\right)}{e^2} + \frac{2Aabx}{e} + \frac{A\,b^2d^2\ln\left(ex + d\right)}{e^3} - \frac{A\,b^2dx}{e^2} - B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x)
```

```
[Out] 1/3/e*b^2*B*x^3+1/2/e*A*x^2*b^2+1/e*B*x^2*a*b-1/2/e^2*B*x^2*b^2*d+2/e*A*x*a
*b-1/e^2*A*x*b^2*d+B*a^2/e*x-2/e^2*B*x*a*b*d+1/e^3*B*x*b^2*d^2+A*a^2/e*ln(e
*x+d)-2/e^2*ln(e*x+d)*A*a*b*d+1/e^3*ln(e*x+d)*A*b^2*d^2-B*a^2*d/e^2*ln(e*x+
d)+2/e^3*ln(e*x+d)*B*a*b*d^2-1/e^4*ln(e*x+d)*B*b^2*d^3
```

maxima [**A**] time = 0.54, size = 152, normalized size = 1.65

$$\frac{2\,Bb^2e^2x^3 - 3\left(Bb^2de - \left(2\,Bab + Ab^2\right)e^2\right)x^2 + 6\left(Bb^2d^2 - \left(2\,Bab + Ab^2\right)de + \left(Ba^2 + 2\,Aab\right)e^2\right)x}{6\,e^3} - \left(Bb^2d^3 - Aa^2e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*b^2*e^2*x^3 - 3*(B*b^2*d*e - (2*B*a*b + A*b^2)*e^2)*x^2 + 6*(B*b^2
*d^2 - (2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x)/e^3 - (B*b^2*d^3 -
 A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*log(e*x + d
)/e^4
```

mupad [**B**] time = 1.97, size = 159, normalized size = 1.73

$$x\left(\frac{B\,a^2 + 2\,A\,b\,a}{e} - \frac{d\left(\frac{A\,b^2+2\,B\,a\,b}{e} - \frac{B\,b^2\,d}{e^2}\right)}{e}\right) + x^2\left(\frac{A\,b^2 + 2\,B\,a\,b}{2\,e} - \frac{B\,b^2\,d}{2\,e^2}\right) + \frac{\ln\left(d + e\,x\right)\left(-B\,a^2\,d\,e^2 + A\,a^2\,e^3 + 2\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x),x)
```

```
[Out] x*((B*a^2 + 2*A*a*b)/e - (d*((A*b^2 + 2*B*a*b)/e - (B*b^2*d)/e^2))/e) + x^2
*((A*b^2 + 2*B*a*b)/(2*e) - (B*b^2*d)/(2*e^2)) + (log(d + e*x)*(A*a^2*e^3 -
 B*b^2*d^3 + A*b^2*d^2*e - B*a^2*d*e^2 - 2*A*a*b*d*e^2 + 2*B*a*b*d^2*e))/e^
4 + (B*b^2*x^3)/(3*e)
```

sympy **[A]** time = 0.43, size = 117, normalized size = 1.27

$$\frac{Bb^2x^3}{3e}+x^2\left(\frac{Ab^2}{2e}+\frac{Bab}{e}-\frac{Bb^2d}{2e^2}\right)+x\left(\frac{2Aab}{e}-\frac{Ab^2d}{e^2}+\frac{Ba^2}{e}-\frac{2Babd}{e^2}+\frac{Bb^2d^2}{e^3}\right)-\frac{(-Ae+Bd)\,(ae-bd)^2\log{(d+}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d),x)
```

```
[Out] B*b**2*x**3/(3*e) + x**2*(A*b**2/(2*e) + B*a*b/e - B*b**2*d/(2*e**2)) + x*(
2*A*a*b/e - A*b**2*d/e**2 + B*a**2/e - 2*B*a*b*d/e**2 + B*b**2*d**2/e**3) -
 (-A*e + B*d)*(a*e - b*d)**2*log(d + e*x)/e**4
```

3.1666 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2} dx$

Optimal. Leaf size=101

$$\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}+\frac{(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)}{e^4}-\frac{bx(-2aBe-Abe+2bBd)}{e^3}+\frac{b^2Bx^2}{2e^2}$$

```
[Out] -b*(-A*b*e-2*B*a*e+2*B*b*d)*x/e^3+1/2*b^2*B*x^2/e^2+(-a*e+b*d)^2*(-A*e+B*d)
/e^4/(e*x+d)+(-a*e+b*d)*(-2*A*b*e-B*a*e+3*B*b*d)*ln(e*x+d)/e^4
```

Rubi [**A**] time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}-\frac{bx(-2aBe-Abe+2bBd)}{e^3}+\frac{(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)}{e^4}+\frac{b^2Bx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b*(2*b*B*d - A*b*e - 2*a*B*e)*x)/e^3) + (b^2*B*x^2)/(2*e^2) + ((b*d - a*
e)^2*(B*d - A*e))/(e^4*(d + e*x)) + ((b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e
)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^2}\,dx\\ &= \int \left(\frac{b(-2bBd+Abe+2aBe)}{e^3}+\frac{b^2Bx}{e^2}+\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^2}+(-bd+a\right.\\ &= -\frac{b(2bBd-Abe-2aBe)x}{e^3}+\frac{b^2Bx^2}{2e^2}+\frac{(bd-ae)^2(Bd-Ae)}{e^4(d+ex)}+(bd-ae)(3bB\end{aligned}$$

Mathematica [**A**] time = 0.10, size = 98, normalized size = 0.97

$$\frac{\frac{2(bd-ae)^2(Bd-Ae)}{d+ex}+2bex(2aBe+Abe-2bBd)+2(bd-ae)\log(d+ex)(-aBe-2Abe+3bBd)+b^2Be^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*b*e*(-2*b*B*d + A*b*e + 2*a*B*e)*x + b^2*B*e^2*x^2 + (2*(b*d - a*e)^2*(B
*d - A*e))/(d + e*x) + 2*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)*Log[d + e*
x])/(2*e^4)
```

fricas [B] time = 0.72, size = 238, normalized size = 2.36

$$\frac{Bb^2e^3x^3 + 2\,Bb^2d^3 - 2\,Aa^2e^3 - 2\left(2\,Bab + Ab^2\right)d^2e + 2\left(Ba^2 + 2\,Aab\right)de^2 - \left(3\,Bb^2de^2 - 2\left(2\,Bab + Ab^2\right)e^3\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*e^3*x^3 + 2*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e
+ 2*(B*a^2 + 2*A*a*b)*d*e^2 - (3*B*b^2*d*e^2 - 2*(2*B*a*b + A*b^2)*e^3)*x^2
 - 2*(2*B*b^2*d^2*e - (2*B*a*b + A*b^2)*d*e^2)*x + 2*(3*B*b^2*d^3 - 2*(2*B*
a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2 + (3*B*b^2*d^2*e - 2*(2*B*a*b
+ A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [B] time = 0.16, size = 227, normalized size = 2.25

$$\frac{1}{2}\left(Bb^2 - \frac{2\left(3\,Bb^2de - 2\,Babe^2 - Ab^2e^2\right)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - \left(3\,Bb^2d^2 - 4\,Babde - 2\,Ab^2de + Ba^2e^2 + 2\,Aabe^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*b^2 - 2*(3*B*b^2*d*e - 2*B*a*b*e^2 - A*b^2*e^2)*e^(-1)/(x*e + d))*(x
*e + d)^2*e^(-4) - (3*B*b^2*d^2 - 4*B*a*b*d*e - 2*A*b^2*d*e + B*a^2*e^2 + 2
*A*a*b*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*b^2*d^3*e^2/(x
*e + d) - 2*B*a*b*d^2*e^3/(x*e + d) - A*b^2*d^2*e^3/(x*e + d) + B*a^2*d*e^4
/(x*e + d) + 2*A*a*b*d*e^4/(x*e + d) - A*a^2*e^5/(x*e + d))*e^(-6)
```

maple [B] time = 0.05, size = 223, normalized size = 2.21

$$\frac{B\,b^2x^2}{2e^2} - \frac{A\,a^2}{(ex + d)\,e} + \frac{2Aabd}{(ex + d)\,e^2} + \frac{2Aab\ln(ex + d)}{e^2} - \frac{A\,b^2d^2}{(ex + d)\,e^3} - \frac{2A\,b^2d\ln(ex + d)}{e^3} + \frac{A\,b^2x}{e^2} + \frac{B\,a^2d}{(ex + d)\,e^2} + \frac{B\,a^2\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*b^2/e^2*x^2+b^2/e^2*A*x+2*b/e^2*a*B*x-2*b^2/e^3*B*d*x-1/e/(e*x+d)*A*a
^2+2/e^2/(e*x+d)*A*d*a*b-1/e^3/(e*x+d)*A*b^2*d^2+1/e^2/(e*x+d)*B*d*a^2-2/e^
3/(e*x+d)*B*a*b*d^2+1/e^4/(e*x+d)*B*b^2*d^3+2/e^2*ln(e*x+d)*A*a*b-2/e^3*ln(
e*x+d)*A*b^2*d+1/e^2*ln(e*x+d)*B*a^2-4/e^3*ln(e*x+d)*B*a*b*d+3/e^4*ln(e*x+d
)*B*b^2*d^2
```

maxima [A] time = 0.46, size = 156, normalized size = 1.54

$$\frac{Bb^2d^3 - Aa^2e^3 - \left(2\,Bab + Ab^2\right)d^2e + \left(Ba^2 + 2\,Aab\right)de^2}{e^5x + de^4} + \frac{Bb^2ex^2 - 2\left(2\,Bb^2d - \left(2\,Bab + Ab^2\right)e\right)x}{2\,e^3} + \frac{\left(3\,Bb^2d^2 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)
/(e^5*x + d*e^4) + 1/2*(B*b^2*e*x^2 - 2*(2*B*b^2*d - (2*B*a*b + A*b^2)*e)*x
)/e^3 + (3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e^2)*log
(e*x + d)/e^4
```

mupad [B] time = 0.10, size = 165, normalized size = 1.63

$$x\,\left(\frac{A\,b^2+2\,B\,a\,b}{e^2}-\frac{2\,B\,b^2\,d}{e^3}\right)+\frac{\ln\left(d+e\,x\right)\,\left(B\,a^2\,e^2-4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2-2\,A\,b^2\,d\,e\right)}{e^4}-\frac{-B\,a^2\,d\,e^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2 + 2*B*a*b)/e^2 - (2*B*b^2*d)/e^3) + (log(d + e*x)*(B*a^2*e^2 + 3*
B*b^2*d^2 + 2*A*a*b*e^2 - 2*A*b^2*d*e - 4*B*a*b*d*e))/e^4 - (A*a^2*e^3 - B*
b^2*d^3 + A*b^2*d^2*e - B*a^2*d*e^2 - 2*A*a*b*d*e^2 + 2*B*a*b*d^2*e)/(e*(d*
e^3 + e^4*x)) + (B*b^2*x^2)/(2*e^2)
```

sympy [A] time = 0.88, size = 151, normalized size = 1.50

$$\frac{Bb^2x^2}{2e^2}+x\left(\frac{Ab^2}{e^2}+\frac{2Bab}{e^2}-\frac{2Bb^2d}{e^3}\right)+\frac{-Aa^2e^3+2Aabde^2-Ab^2d^2e+Ba^2de^2-2Babd^2e+Bb^2d^3}{de^4+e^5x}+\frac{(ae-bd)\,(2Abe}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**2,x)
```

```
[Out] B*b**2*x**2/(2*e**2) + x*(A*b**2/e**2 + 2*B*a*b/e**2 - 2*B*b**2*d/e**3) + (
-A*a**2*e**3 + 2*A*a*b*d*e**2 - A*b**2*d**2*e + B*a**2*d*e**2 - 2*B*a*b*d**
2*e + B*b**2*d**3)/(d*e**4 + e**5*x) + (a*e - b*d)*(2*A*b*e + B*a*e - 3*B*b
*d)*log(d + e*x)/e**4
```

3.1667 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=106

$$-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{e^4(d+ex)}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{b\log(d+ex)(-2aBe-Abe+3bBd)}{e^4}+\frac{b^2Bx}{e^3}$$

```
[Out] b^2*B*x/e^3+1/2*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^2-(-a*e+b*d)*(-2*A*b*e-
B*a*e+3*B*b*d)/e^4/(e*x+d)-b*(-A*b*e-2*B*a*e+3*B*b*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.09, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{e^4(d+ex)}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{b\log(d+ex)(-2aBe-Abe+3bBd)}{e^4}+\frac{b^2Bx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (b^2*B*x)/e^3 + ((b*d - a*e)^2*(B*d - A*e))/(2*e^4*(d + e*x)^2) - ((b*d - a
*e)*(3*b*B*d - 2*A*b*e - a*B*e))/(e^4*(d + e*x)) - (b*(3*b*B*d - A*b*e - 2*
a*B*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^3}\,dx\\ &= \int \left(\frac{b^2B}{e^3}+\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^3}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^2}\right.\\ &= \frac{b^2Bx}{e^3}+\frac{(bd-ae)^2(Bd-Ae)}{2e^4(d+ex)^2}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{e^4(d+ex)}-\frac{b(3bBd}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 143, normalized size = 1.35

$$-\frac{a^2e^2(Ae+B(d+2ex))+2abe(Ae(d+2ex)-Bd(3d+4ex))+2b(d+ex)^2\log(d+ex)(-2aBe-Abe+3bBd)}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] -1/2*(a^2*e^2*(A*e + B*(d + 2*e*x)) + 2*a*b*e*(A*e*(d + 2*e*x) - B*d*(3*d +
 4*e*x)) - b^2*(A*d*e*(3*d + 4*e*x) + B*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 +
 2*e^3*x^3)) + 2*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2*Log[d + e*x])/(e
^4*(d + e*x)^2)
```

fricas [B] time = 0.88, size = 247, normalized size = 2.33

$$\frac{2\,Bb^2e^3x^3 + 4\,Bb^2de^2x^2 - 5\,Bb^2d^3 - Aa^2e^3 + 3\left(2\,Bab + Ab^2\right)d^2e - \left(Ba^2 + 2\,Aab\right)de^2 - 2\left(2\,Bb^2d^2e - 2\left(2\,Bab + \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*b^2*e^3*x^3 + 4*B*b^2*d*e^2*x^2 - 5*B*b^2*d^3 - A*a^2*e^3 + 3*(2*B
*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*a*b)*d*e^2 - 2*(2*B*b^2*d^2*e - 2*(2*B*a
*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x - 2*(3*B*b^2*d^3 - (2*B*a*b +
A*b^2)*d^2*e + (3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 2*(3*B*b^2*d^2
*e - (2*B*a*b + A*b^2)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e
^4)
```

giac [A] time = 0.15, size = 156, normalized size = 1.47

$$Bb^2xe^{(-3)} - \left(3\,Bb^2d - 2\,Babe - Ab^2e\right)e^{(-4)}\log\left(|xe + d|\right) - \frac{\left(5\,Bb^2d^3 - 6\,Babd^2e - 3\,Ab^2d^2e + Ba^2de^2 + 2\,Aabde^2 + A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*b^2*x*e^(-3) - (3*B*b^2*d - 2*B*a*b*e - A*b^2*e)*e^(-4)*log(abs(x*e + d))
 - 1/2*(5*B*b^2*d^3 - 6*B*a*b*d^2*e - 3*A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b
*d*e^2 + A*a^2*e^3 + 2*(3*B*b^2*d^2*e - 4*B*a*b*d*e^2 - 2*A*b^2*d*e^2 + B*a
^2*e^3 + 2*A*a*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [B] time = 0.05, size = 242, normalized size = 2.28

$$-\frac{A\,a^2}{2\left(ex + d\right)^2 e} + \frac{Aabd}{\left(ex + d\right)^2 e^2} - \frac{A\,b^2d^2}{2\left(ex + d\right)^2 e^3} + \frac{B\,a^2d}{2\left(ex + d\right)^2 e^2} - \frac{Bab\,d^2}{\left(ex + d\right)^2 e^3} + \frac{B\,b^2d^3}{2\left(ex + d\right)^2 e^4} - \frac{2Aab}{\left(ex + d\right)e^2} + \frac{2A\,b^2d}{\left(ex + d\right)e^3} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x)
```

```
[Out] B*b^2/e^3*x-2/e^2/(e*x+d)*A*a*b+2/e^3/(e*x+d)*A*b^2*d-1/e^2/(e*x+d)*B*a^2+4
/e^3/(e*x+d)*B*a*b*d-3/e^4/(e*x+d)*B*b^2*d^2-1/2/e/(e*x+d)^2*A*a^2+1/e^2/(e
*x+d)^2*A*d*a*b-1/2/e^3/(e*x+d)^2*A*d^2*b^2+1/2/e^2/(e*x+d)^2*B*d*a^2-1/e^3
/(e*x+d)^2*B*d^2*a*b+1/2/e^4/(e*x+d)^2*B*b^2*d^3+b^2/e^3*ln(e*x+d)*A+2*b/e^
3*ln(e*x+d)*a*B-3*b^2/e^4*ln(e*x+d)*B*d
```

maxima [A] time = 0.48, size = 166, normalized size = 1.57

$$\frac{Bb^2x}{e^3} - \frac{5\,Bb^2d^3 + Aa^2e^3 - 3\left(2\,Bab + Ab^2\right)d^2e + \left(Ba^2 + 2\,Aab\right)de^2 + 2\left(3\,Bb^2d^2e - 2\left(2\,Bab + Ab^2\right)de^2 + \left(Ba^2 + 2\right.\right.}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] B*b^2*x/e^3 - 1/2*(5*B*b^2*d^3 + A*a^2*e^3 - 3*(2*B*a*b + A*b^2)*d^2*e + (B
*a^2 + 2*A*a*b)*d*e^2 + 2*(3*B*b^2*d^2*e - 2*(2*B*a*b + A*b^2)*d*e^2 + (B*a
^2 + 2*A*a*b)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) - (3*B*b^2*d - (2*B*a
*b + A*b^2)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.14, size = 170, normalized size = 1.60

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,b^2\,e-3\,B\,b^2\,d+2\,B\,a\,b\,e\right)}{e^4}-\frac{x\,\left(B\,a^2\,e^2-4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2-2\,A\,b^2\,d\,e\right)+\frac{B\,a^2\,d\,e^2+}{}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*b^2*e - 3*B*b^2*d + 2*B*a*b*e))/e^4 - (x*(B*a^2*e^2 + 3*B*
b^2*d^2 + 2*A*a*b*e^2 - 2*A*b^2*d*e - 4*B*a*b*d*e) + (A*a^2*e^3 + 5*B*b^2*d
^3 - 3*A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 - 6*B*a*b*d^2*e)/(2*e))/(d
^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B*b^2*x)/e^3
```

sympy [A] time = 2.41, size = 187, normalized size = 1.76

$$\frac{Bb^2x}{e^3}+\frac{b\left(Abe+2Bae-3Bbd\right)\log\left(d+ex\right)}{e^4}+\frac{-Aa^2e^3-2Aabde^2+3Ab^2d^2e-Ba^2de^2+6Babd^2e-5Bb^2d^3+x}{2d^2e^4+4de^5x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**3,x)
```

```
[Out] B*b**2*x/e**3 + b*(A*b*e + 2*B*a*e - 3*B*b*d)*log(d + e*x)/e**4 + (-A*a**2*
e**3 - 2*A*a*b*d*e**2 + 3*A*b**2*d**2*e - B*a**2*d*e**2 + 6*B*a*b*d**2*e -
5*B*b**2*d**3 + x*(-4*A*a*b*e**3 + 4*A*b**2*d*e**2 - 2*B*a**2*e**3 + 8*B*a*
b*d*e**2 - 6*B*b**2*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1668 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=101

$$-\frac{(a+bx)^3(Bd-Ae)}{3e(d+ex)^3(bd-ae)}+\frac{2bB(bd-ae)}{e^4(d+ex)}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{b^2B\log(d+ex)}{e^4}$$

```
[Out] -1/3*(-A*e+B*d)*(b*x+a)^3/e/(-a*e+b*d)/(e*x+d)^3-1/2*B*(-a*e+b*d)^2/e^4/(e*
x+d)^2+2*b*B*(-a*e+b*d)/e^4/(e*x+d)+b^2*B*ln(e*x+d)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = $\{27, 78, 43\}$

$$-\frac{(a+bx)^3(Bd-Ae)}{3e(d+ex)^3(bd-ae)}+\frac{2bB(bd-ae)}{e^4(d+ex)}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{b^2B\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3)/(3*e*(b*d - a*e)*(d + e*x)^3) - (B*(b*d - a*e)^2
)/(2*e^4*(d + e*x)^2) + (2*b*B*(b*d - a*e))/(e^4*(d + e*x)) + (b^2*B*Log[d
+ e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx=\int \frac{(a+bx)^2(A+Bx)}{(d+ex)^4}\,dx$$
$$=-\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}+\frac{B\int \frac{(a+bx)^2}{(d+ex)^3}\,dx}{e}$$
$$=-\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}+\frac{B\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^3}-\frac{2b(bd-ae)}{e^2(d+ex)^2}+\frac{b^2}{e^2(d+ex)}\right)dx}{e}$$
$$=-\frac{(Bd-Ae)(a+bx)^3}{3e(bd-ae)(d+ex)^3}-\frac{B(bd-ae)^2}{2e^4(d+ex)^2}+\frac{2bB(bd-ae)}{e^4(d+ex)}+\frac{b^2B\log(d+ex)}{e^4}$$

Mathematica [**A**] time = 0.06, size = 138, normalized size = 1.37

$$\frac{-a^2e^2(2Ae+B(d+3ex))-2abe\big(Ae(d+3ex)+2B\big(d^2+3dex+3e^2x^2\big)\big)+b^2\big(Bd\big(11d^2+27dex+18e^2x^2\big)-}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(a^2*e^2*(2*A*e + B*(d + 3*e*x))) - 2*a*b*e*(A*e*(d + 3*e*x) + 2*B*(d^2 +
 3*d*e*x + 3*e^2*x^2)) + b^2*(-2*A*e*(d^2 + 3*d*e*x + 3*e^2*x^2) + B*d*(11*
d^2 + 27*d*e*x + 18*e^2*x^2)) + 6*b^2*B*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d
 + e*x)^3)
```

fricas [**B**] time = 0.88, size = 221, normalized size = 2.19

$$\frac{11\,Bb^2d^3-2\,Aa^2e^3-2\big(2\,Bab+Ab^2\big)d^2e-\big(Ba^2+2\,Aab\big)de^2+6\big(3\,Bb^2de^2-\big(2\,Bab+Ab^2\big)e^3\big)x^2+3\big(9\,Bb^2d}{6\big(e^7x^3+3\,de^6x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*
a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 3*(9*B*b^2*d^2
*e - 2*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*e^3)*x + 6*(B*b^2*e^3*x^
3 + 3*B*b^2*d*e^2*x^2 + 3*B*b^2*d^2*e*x + B*b^2*d^3)*log(e*x + d))/(e^7*x^3
 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [**A**] time = 0.16, size = 163, normalized size = 1.61

$$Bb^2e^{(-4)}\log\left(|xe+d|\right)+\frac{\big(6\big(3\,Bb^2de-2\,Babe^2-Ab^2e^2\big)x^2+3\big(9\,Bb^2d^2-4\,Babde-2\,Ab^2de-Ba^2e^2-2\,Aabe^2\big)}{6\,(xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*b^2*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*b^2*d*e - 2*B*a*b*e^2 - A*b^2*
e^2)*x^2 + 3*(9*B*b^2*d^2 - 4*B*a*b*d*e - 2*A*b^2*d*e - B*a^2*e^2 - 2*A*a*b
*e^2)*x + (11*B*b^2*d^3 - 4*B*a*b*d^2*e - 2*A*b^2*d^2*e - B*a^2*d*e^2 - 2*A
*a*b*d*e^2 - 2*A*a^2*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [**B**] time = 0.06, size = 251, normalized size = 2.49

$$-\frac{A\,a^2}{3\,(ex+d)^3\,e}+\frac{2Aabd}{3\,(ex+d)^3\,e^2}-\frac{A\,b^2d^2}{3\,(ex+d)^3\,e^3}+\frac{B\,a^2d}{3\,(ex+d)^3\,e^2}-\frac{2Bab\,d^2}{3\,(ex+d)^3\,e^3}+\frac{B\,b^2d^3}{3\,(ex+d)^3\,e^4}-\frac{Aab}{(ex+d)^2\,e^2}+\frac{A}{(ex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x)
```

```
[Out] -b^2/e^3/(e*x+d)*A-2*b/e^3/(e*x+d)*a*B+3*b^2/e^4/(e*x+d)*B*d-1/3/(e*x+d)^3*
A*a^2/e+2/3/e^2/(e*x+d)^3*A*a*b*d-1/3/e^3/(e*x+d)^3*A*b^2*d^2+1/3/(e*x+d)^3
*B*a^2*d/e^2-2/3/e^3/(e*x+d)^3*B*d^2*a*b+1/3/e^4/(e*x+d)^3*B*b^2*d^3-1/e^2/
(e*x+d)^2*A*a*b+1/e^3/(e*x+d)^2*A*b^2*d-1/2/(e*x+d)^2*B*a^2/e^2+2/e^3/(e*x+
d)^2*B*d*a*b-3/2/e^4/(e*x+d)^2*B*d^2*b^2+B*b^2/e^4*ln(e*x+d)
```

maxima [A] time = 0.53, size = 184, normalized size = 1.82

$$\frac{11\,Bb^2d^3 - 2\,Aa^2e^3 - 2\bigl(2\,Bab + Ab^2\bigr)d^2e - \bigl(Ba^2 + 2\,Aab\bigr)de^2 + 6\bigl(3\,Bb^2de^2 - \bigl(2\,Bab + Ab^2\bigr)e^3\bigr)x^2 + 3\bigl(9\,Bb^2d^2e -}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*b^2*d^3 - 2*A*a^2*e^3 - 2*(2*B*a*b + A*b^2)*d^2*e - (B*a^2 + 2*A*
a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2 + 3*(9*B*b^2*d^2
*e - 2*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*e^3)*x)/(e^7*x^3 + 3*d*e
^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*b^2*log(e*x + d)/e^4
```

mupad [B] time = 0.12, size = 178, normalized size = 1.76

$$\frac{B\,b^2\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{B\,a^2\,d\,e^2+2\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e+2\,A\,a\,b\,d\,e^2-11\,B\,b^2\,d^3+2\,A\,b^2\,d^2\,e}{6\,e^4}+\frac{x\,\left(B\,a^2\,e^2+4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2-9\,B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{2\,e^3}+}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^4,x)
```

```
[Out] (B*b^2*log(d + e*x))/e^4 - ((2*A*a^2*e^3 - 11*B*b^2*d^3 + 2*A*b^2*d^2*e + B
*a^2*d*e^2 + 2*A*a*b*d*e^2 + 4*B*a*b*d^2*e)/(6*e^4) + (x*(B*a^2*e^2 - 9*B*b
^2*d^2 + 2*A*a*b*e^2 + 2*A*b^2*d*e + 4*B*a*b*d*e))/(2*e^3) + (b*x^2*(A*b*e
+ 2*B*a*e - 3*B*b*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [B] time = 5.76, size = 211, normalized size = 2.09

$$\frac{Bb^2\log\left(d+ex\right)}{e^4}+\frac{-2Aa^2e^3-2Aabde^2-2Ab^2d^2e-Ba^2de^2-4Babd^2e+11Bb^2d^3+x^2\bigl(-6Ab^2e^3-12Babe^3+18}{6d^3e^4+18d^2e^5x+18de^6x^2+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**4,x)
```

```
[Out] B*b**2*log(d + e*x)/e**4 + (-2*A*a**2*e**3 - 2*A*a*b*d*e**2 - 2*A*b**2*d**2
*e - B*a**2*d*e**2 - 4*B*a*b*d**2*e + 11*B*b**2*d**3 + x**2*(-6*A*b**2*e**3
 - 12*B*a*b*e**3 + 18*B*b**2*d*e**2) + x*(-6*A*a*b*e**3 - 6*A*b**2*d*e**2 -
 3*B*a**2*e**3 - 12*B*a*b*d*e**2 + 27*B*b**2*d**2*e))/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.1669 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^5} dx$

Optimal. Leaf size=86

$$\frac{(a+bx)^3(-4aBe+Abe+3bBd)}{12e(d+ex)^3(bd-ae)^2}-\frac{(a+bx)^3(Bd-Ae)}{4e(d+ex)^4(bd-ae)}$$

```
[Out] -1/4*(-A*e+B*d)*(b*x+a)^3/e/(-a*e+b*d)/(e*x+d)^4+1/12*(A*b*e-4*B*a*e+3*B*b*
d)*(b*x+a)^3/e/(-a*e+b*d)^2/(e*x+d)^3
```

Rubi [A] time = 0.03, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.103, Rules used = $\{27, 78, 37\}$

$$\frac{(a+bx)^3(-4aBe+Abe+3bBd)}{12e(d+ex)^3(bd-ae)^2}-\frac{(a+bx)^3(Bd-Ae)}{4e(d+ex)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3)/(4*e*(b*d - a*e)*(d + e*x)^4) + ((3*b*B*d + A*b*
e - 4*a*B*e)*(a + b*x)^3)/(12*e*(b*d - a*e)^2*(d + e*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^5}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^5}\,dx\\
&= -\frac{(Bd-Ae)(a+bx)^3}{4e(bd-ae)(d+ex)^4}+\frac{(3bBd+Abe-4aBe)\int \frac{(a+bx)^2}{(d+ex)^4}\,dx}{4e(bd-ae)}\\
&= -\frac{(Bd-Ae)(a+bx)^3}{4e(bd-ae)(d+ex)^4}+\frac{(3bBd+Abe-4aBe)(a+bx)^3}{12e(bd-ae)^2(d+ex)^3}
\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 125, normalized size = 1.45

$$-\frac{a^2e^2(3Ae+B(d+4ex))+2abe\Big(Ae(d+4ex)+B\big(d^2+4dex+6e^2x^2\big)\Big)+b^2\Big(Ae\big(d^2+4dex+6e^2x^2\big)+3B\big(d^3+}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(a^2*e^2*(3*A*e + B*(d + 4*e*x)) + 2*a*b*e*(A*e*(d + 4*e*x) + B*(d^2
+ 4*d*e*x + 6*e^2*x^2)) + b^2*(A*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + 3*B*(d^3 +
 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)))/(e^4*(d + e*x)^4)
```

fricas [**B**] time = 0.89, size = 187, normalized size = 2.17

$$-\frac{12\,Bb^2e^3x^3+3\,Bb^2d^3+3\,Aa^2e^3+\big(2\,Bab+Ab^2\big)d^2e+\big(Ba^2+2\,Aab\big)de^2+6\,\big(3\,Bb^2de^2+\big(2\,Bab+Ab^2\big)e^3\big)x^2+}{12\,\big(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\big)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 3*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2
*e + (B*a^2 + 2*A*a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 4*(3*B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)/
(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [**B**] time = 0.20, size = 245, normalized size = 2.85

$$-\frac{1}{12}\left(\frac{12\,Bb^2e^{(-1)}}{xe+d}-\frac{18\,Bb^2de^{(-1)}}{(xe+d)^2}+\frac{12\,Bb^2d^2e^{(-1)}}{(xe+d)^3}-\frac{3\,Bb^2d^3e^{(-1)}}{(xe+d)^4}+\frac{12\,Bab}{(xe+d)^2}+\frac{6\,Ab^2}{(xe+d)^2}-\frac{16\,Babd}{(xe+d)^3}-\frac{8\,Ab^2d}{(xe+d)^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*b^2*e^(-1)/(x*e + d) - 18*B*b^2*d*e^(-1)/(x*e + d)^2 + 12*B*b^2
*d^2*e^(-1)/(x*e + d)^3 - 3*B*b^2*d^3*e^(-1)/(x*e + d)^4 + 12*B*a*b/(x*e +
d)^2 + 6*A*b^2/(x*e + d)^2 - 16*B*a*b*d/(x*e + d)^3 - 8*A*b^2*d/(x*e + d)^3
 + 6*B*a*b*d^2/(x*e + d)^4 + 3*A*b^2*d^2/(x*e + d)^4 + 4*B*a^2*e/(x*e + d)^
3 + 8*A*a*b*e/(x*e + d)^3 - 3*B*a^2*d*e/(x*e + d)^4 - 6*A*a*b*d*e/(x*e + d)
^4 + 3*A*a^2*e^2/(x*e + d)^4)*e^(-3)
```

maple [**B**] time = 0.06, size = 166, normalized size = 1.93

$$-\frac{B\,b^2}{(ex+d)\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{2\,(ex+d)^2\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{3\,(ex+d)^3\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+A\,b}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x)
```

```
[Out] -b^2*B/e^4/(e*x+d)-1/3*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b
^2*d^2)/e^4/(e*x+d)^3-1/2*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^2-1/4*(A*a^
2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/e^4/(e
*x+d)^4
```

maxima [**B**] time = 0.58, size = 187, normalized size = 2.17

$$-\frac{12\,Bb^2e^3x^3+3\,Bb^2d^3+3\,Aa^2e^3+\big(2\,Bab+Ab^2\big)d^2e+\big(Ba^2+2\,Aab\big)de^2+6\,\big(3\,Bb^2de^2+\big(2\,Bab+Ab^2\big)e^3\big)x^2+}{12\,\big(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\big)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 3*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2
*e + (B*a^2 + 2*A*a*b)*d*e^2 + 6*(3*B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 4*(3*B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)/
(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [**B**] time = 0.09, size = 184, normalized size = 2.14

$$-\frac{\frac{B\,a^2\,d\,e^2+3\,A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e+2\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+A\,b^2\,d^2\,e}{12\,e^4}+\frac{x\,\left(B\,a^2\,e^2+2\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+A\,b^2\,d\,e\right)}{3\,e^3}+\frac{b\,x^2\,(A\,b\,e+2\,B\,a\,e+3}{2\,e^2}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a^2*e^3 + 3*B*b^2*d^3 + A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 +
2*B*a*b*d^2*e)/(12*e^4) + (x*(B*a^2*e^2 + 3*B*b^2*d^2 + 2*A*a*b*e^2 + A*b^2
*d*e + 2*B*a*b*d*e))/(3*e^3) + (b*x^2*(A*b*e + 2*B*a*e + 3*B*b*d))/(2*e^2)
+ (B*b^2*x^3)/e)/(d^4 + e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [**B**] time = 11.67, size = 223, normalized size = 2.59

$$\frac{-3Aa^2e^3-2Aabde^2-Ab^2d^2e-Ba^2de^2-2Babd^2e-3Bb^2d^3-12Bb^2e^3x^3+x^2\left(-6Ab^2e^3-12Babe^3-18Bb^2d\right.}{12d^4e^4+48d^3e^5x+72d^2e^6x^2+48de^7x^3+12e^8x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a**2*e**3 - 2*A*a*b*d*e**2 - A*b**2*d**2*e - B*a**2*d*e**2 - 2*B*a*b*
d**2*e - 3*B*b**2*d**3 - 12*B*b**2*e**3*x**3 + x**2*(-6*A*b**2*e**3 - 12*B*
a*b*e**3 - 18*B*b**2*d*e**2) + x*(-8*A*a*b*e**3 - 4*A*b**2*d*e**2 - 4*B*a**
2*e**3 - 8*B*a*b*d*e**2 - 12*B*b**2*d**2*e))/(12*d**4*e**4 + 48*d**3*e**5*x
 + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.1670 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{3e^4(d+ex)^3}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{4e^4(d+ex)^4}+\frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{b^2B}{2e^4(d+ex)^2}$$

```
[Out] 1/5*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^5-1/4*(-a*e+b*d)*(-2*A*b*e-B*a*e+3*
B*b*d)/e^4/(e*x+d)^4+1/3*b*(-A*b*e-2*B*a*e+3*B*b*d)/e^4/(e*x+d)^3-1/2*b^2*B
/e^4/(e*x+d)^2
```

Rubi [A] time = 0.10, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{b(-2aBe-Abe+3bBd)}{3e^4(d+ex)^3}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{4e^4(d+ex)^4}+\frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{b^2B}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(5*e^4*(d + e*x)^5) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(4*e^4*(d + e*x)^4) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(3*e
^4*(d + e*x)^3) - (b^2*B)/(2*e^4*(d + e*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^6}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^6}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^6}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^5}+\frac{b(-3bB}{e}\right.\\ &= \frac{(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^5}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{4e^4(d+ex)^4}+\frac{b(3bBd-Abe-2a}{3e^4(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.06, size = 129, normalized size = 1.08

$$-\frac{3a^2e^2(4Ae+B(d+5ex))+2abe\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+b^2\left(2Ae\left(d^2+5dex+10e^2x^2\right)+3\right.}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(3*a^2*e^2*(4*A*e + B*(d + 5*e*x)) + 2*a*b*e*(3*A*e*(d + 5*e*x) + 2*B
*(d^2 + 5*d*e*x + 10*e^2*x^2)) + b^2*(2*A*e*(d^2 + 5*d*e*x + 10*e^2*x^2) +
3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)))/(e^4*(d + e*x)^5)
```

fricas [A] time = 0.68, size = 203, normalized size = 1.69

$$-\frac{30\,Bb^2e^3x^3 + 3\,Bb^2d^3 + 12\,Aa^2e^3 + 2\big(2\,Bab + Ab^2\big)d^2e + 3\big(Ba^2 + 2\,Aab\big)de^2 + 10\big(3\,Bb^2de^2 + 2\big(2\,Bab + A}{60\big(e^9x^5 + 5\,de^8x^4 + 10\,d^2e^7x^3 + 10\,d^3e^6x^2 + 5\,d^4e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 12*A*a^2*e^3 + 2*(2*B*a*b + A*b^2)*
d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 10*(3*B*b^2*d*e^2 + 2*(2*B*a*b + A*b^2)
*e^3)*x^2 + 5*(3*B*b^2*d^2*e + 2*(2*B*a*b + A*b^2)*d*e^2 + 3*(B*a^2 + 2*A*a
*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^
4*e^5*x + d^5*e^4)
```

giac [A] time = 0.15, size = 160, normalized size = 1.33

$$-\frac{\big(30\,Bb^2x^3e^3 + 30\,Bb^2dx^2e^2 + 15\,Bb^2d^2xe + 3\,Bb^2d^3 + 40\,Babx^2e^3 + 20\,Ab^2x^2e^3 + 20\,Babdxe^2 + 10\,Ab^2dxe^2 +}{60\,(xe + d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*b^2*x^3*e^3 + 30*B*b^2*d*x^2*e^2 + 15*B*b^2*d^2*x*e + 3*B*b^2*d
^3 + 40*B*a*b*x^2*e^3 + 20*A*b^2*x^2*e^3 + 20*B*a*b*d*x*e^2 + 10*A*b^2*d*x*
e^2 + 4*B*a*b*d^2*e + 2*A*b^2*d^2*e + 15*B*a^2*x*e^3 + 30*A*a*b*x*e^3 + 3*B
*a^2*d*e^2 + 6*A*a*b*d*e^2 + 12*A*a^2*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{2\,(ex + d)^2\,e^4} - \frac{(Abe + 2aBe - 3Bbd)\,b}{3\,(ex + d)^3\,e^4} - \frac{A\,a^2e^3 - 2Aabd\,e^2 + A\,b^2d^2e - Bd\,a^2e^2 + 2B\,d^2abe - b^2B\,d^3}{5\,(ex + d)^5\,e^4} - \frac{2Aab\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x)
```

```
[Out] -1/5*(A*a^2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d
^3)/e^4/(e*x+d)^5-1/3*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^3-1/2/(e*x+d)^2
*B*b^2/e^4-1/4*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/
e^4/(e*x+d)^4
```

maxima [A] time = 0.61, size = 203, normalized size = 1.69

$$-\frac{30\,Bb^2e^3x^3 + 3\,Bb^2d^3 + 12\,Aa^2e^3 + 2\big(2\,Bab + Ab^2\big)d^2e + 3\big(Ba^2 + 2\,Aab\big)de^2 + 10\big(3\,Bb^2de^2 + 2\big(2\,Bab + A}{60\big(e^9x^5 + 5\,de^8x^4 + 10\,d^2e^7x^3 + 10\,d^3e^6x^2 + 5\,d^4e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 12*A*a^2*e^3 + 2*(2*B*a*b + A*b^2)*
d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 10*(3*B*b^2*d*e^2 + 2*(2*B*a*b + A*b^2)
*e^3)*x^2 + 5*(3*B*b^2*d^2*e + 2*(2*B*a*b + A*b^2)*d*e^2 + 3*(B*a^2 + 2*A*a
*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^
4*e^5*x + d^5*e^4)
```

mupad [B] time = 2.23, size = 201, normalized size = 1.68

$$-\frac{\frac{3\,B\,a^2\,d\,e^2+12\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e+6\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+2\,A\,b^2\,d^2\,e}{60\,e^4}+\frac{x\,\left(3\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+6\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{12\,e^3}+\frac{b\,x^2\,(2\,A\,b\,e+4\,B\,a}{6\,e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a^2*e^3 + 3*B*b^2*d^3 + 2*A*b^2*d^2*e + 3*B*a^2*d*e^2 + 6*A*a*b*d*e
^2 + 4*B*a*b*d^2*e)/(60*e^4) + (x*(3*B*a^2*e^2 + 3*B*b^2*d^2 + 6*A*a*b*e^2
+ 2*A*b^2*d*e + 4*B*a*b*d*e))/(12*e^3) + (b*x^2*(2*A*b*e + 4*B*a*e + 3*B*b*
d))/(6*e^2) + (B*b^2*x^3)/(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*
x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [B] time = 21.11, size = 238, normalized size = 1.98

$$\frac{-12Aa^2e^3-6Aabde^2-2Ab^2d^2e-3Ba^2de^2-4Babd^2e-3Bb^2d^3-30Bb^2e^3x^3+x^2\,(-20Ab^2e^3-40Babe^3-30Bb}{60d^5e^4+300d^4e^5x+600d^3e^6x^2+600d^2e^7x^3+300de^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a**2*e**3 - 6*A*a*b*d*e**2 - 2*A*b**2*d**2*e - 3*B*a**2*d*e**2 - 4*B
*a*b*d**2*e - 3*B*b**2*d**3 - 30*B*b**2*e**3*x**3 + x**2*(-20*A*b**2*e**3 -
 40*B*a*b*e**3 - 30*B*b**2*d*e**2) + x*(-30*A*a*b*e**3 - 10*A*b**2*d*e**2 -
 15*B*a**2*e**3 - 20*B*a*b*d*e**2 - 15*B*b**2*d**2*e))/(60*d**5*e**4 + 300*
d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4 + 6
0*e**9*x**5)
```

3.1671 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^7}\,dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{4e^4(d+ex)^4}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{5e^4(d+ex)^5}+\frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{b^2B}{3e^4(d+ex)^3}$$

```
[Out] 1/6*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^6-1/5*(-a*e+b*d)*(-2*A*b*e-B*a*e+3*
B*b*d)/e^4/(e*x+d)^5+1/4*b*(-A*b*e-2*B*a*e+3*B*b*d)/e^4/(e*x+d)^4-1/3*b^2*B
/e^4/(e*x+d)^3
```

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{b(-2aBe-Abe+3bBd)}{4e^4(d+ex)^4}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{5e^4(d+ex)^5}+\frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{b^2B}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(6*e^4*(d + e*x)^6) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(5*e^4*(d + e*x)^5) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(4*e
^4*(d + e*x)^4) - (b^2*B)/(3*e^4*(d + e*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^7}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^7}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^7}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^6}+\frac{b(-3\right.\\ &= \frac{(bd-ae)^2(Bd-Ae)}{6e^4(d+ex)^6}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{5e^4(d+ex)^5}+\frac{b(3bBd-Abe-}{4e^4(d+ex}\end{aligned}$$

Mathematica [A] time = 0.06, size = 126, normalized size = 1.05

$$-\frac{2a^2e^2(5Ae+B(d+6ex))+2abe\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+b^2\left(Ae\left(d^2+6dex+15e^2x^2\right)+B\right.}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(2*a^2*e^2*(5*A*e + B*(d + 6*e*x)) + 2*a*b*e*(2*A*e*(d + 6*e*x) + B*(
d^2 + 6*d*e*x + 15*e^2*x^2)) + b^2*(A*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + B*(d
^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)))/(e^4*(d + e*x)^6)
```

fricas [A] time = 0.83, size = 208, normalized size = 1.73

$$-\frac{20\,Bb^2e^3x^3 + Bb^2d^3 + 10\,Aa^2e^3 + (2\,Bab + Ab^2)d^2e + 2\,(Ba^2 + 2\,Aab)de^2 + 15\,(Bb^2de^2 + (2\,Bab + Ab^2)e^3)x^2 +}{60\,(e^{10}x^6 + 6\,de^9x^5 + 15\,d^2e^8x^4 + 20\,d^3e^7x^3 + 15\,d^4e^6x^2 + 6\,d^5e^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b^2*e^3*x^3 + B*b^2*d^3 + 10*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2*
e + 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 6*(B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + 2*(B*a^2 + 2*A*a*b)*e^3)*x)/
(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2
+ 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.15, size = 158, normalized size = 1.32

$$-\frac{(20\,Bb^2x^3e^3 + 15\,Bb^2dx^2e^2 + 6\,Bb^2d^2xe + Bb^2d^3 + 30\,Babx^2e^3 + 15\,Ab^2x^2e^3 + 12\,Babdxe^2 + 6\,Ab^2dxe^2 + 2\,Bab}{60\,(xe + d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b^2*x^3*e^3 + 15*B*b^2*d*x^2*e^2 + 6*B*b^2*d^2*x*e + B*b^2*d^3
+ 30*B*a*b*x^2*e^3 + 15*A*b^2*x^2*e^3 + 12*B*a*b*d*x*e^2 + 6*A*b^2*d*x*e^2
+ 2*B*a*b*d^2*e + A*b^2*d^2*e + 12*B*a^2*x*e^3 + 24*A*a*b*x*e^3 + 2*B*a^2*d
*e^2 + 4*A*a*b*d*e^2 + 10*A*a^2*e^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{3\,(ex+d)^3\,e^4}-\frac{(Abe+2aBe-3Bbd)\,b}{4\,(ex+d)^4\,e^4}-\frac{2Aab\,e^2-2A\,b^2de+B\,a^2e^2-4Bdabe+3b^2B\,d^2}{5\,(ex+d)^5\,e^4}-\frac{A\,a^2e^3-2Aabd\,e^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x)
```

```
[Out] -1/5*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/e^4/(e*x+d
)^5-1/3*b^2*B/e^4/(e*x+d)^3-1/4*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^4-1/6
*(A*a^2*e^3-2*A*a*b*d*e^2+A*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/
e^4/(e*x+d)^6
```

maxima [A] time = 0.57, size = 208, normalized size = 1.73

$$-\frac{20\,Bb^2e^3x^3 + Bb^2d^3 + 10\,Aa^2e^3 + (2\,Bab + Ab^2)d^2e + 2\,(Ba^2 + 2\,Aab)de^2 + 15\,(Bb^2de^2 + (2\,Bab + Ab^2)e^3)x^2 +}{60\,(e^{10}x^6 + 6\,de^9x^5 + 15\,d^2e^8x^4 + 20\,d^3e^7x^3 + 15\,d^4e^6x^2 + 6\,d^5e^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*b^2*e^3*x^3 + B*b^2*d^3 + 10*A*a^2*e^3 + (2*B*a*b + A*b^2)*d^2*
e + 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(B*b^2*d*e^2 + (2*B*a*b + A*b^2)*e^3)*x^
2 + 6*(B*b^2*d^2*e + (2*B*a*b + A*b^2)*d*e^2 + 2*(B*a^2 + 2*A*a*b)*e^3)*x)/
```

```
(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2
+ 6*d^5*e^5*x + d^6*e^4)
```

mupad [B] time = 0.11, size = 206, normalized size = 1.72

$$-\frac{\frac{2\,B\,a^2\,d\,e^2+10\,A\,a^2\,e^3+2\,B\,a\,b\,d^2\,e+4\,A\,a\,b\,d\,e^2+B\,b^2\,d^3+A\,b^2\,d^2\,e}{60\,e^4}+\frac{x\left(2\,B\,a^2\,e^2+2\,B\,a\,b\,d\,e+4\,A\,a\,b\,e^2+B\,b^2\,d^2+A\,b^2\,d\,e\right)}{10\,e^3}+\frac{b\,x^2\,(A\,b\,e+2\,B\,a\,e+B}{4\,e^2}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a^2*e^3 + B*b^2*d^3 + A*b^2*d^2*e + 2*B*a^2*d*e^2 + 4*A*a*b*d*e^2 +
 2*B*a*b*d^2*e)/(60*e^4) + (x*(2*B*a^2*e^2 + B*b^2*d^2 + 4*A*a*b*e^2 + A*b^
2*d*e + 2*B*a*b*d*e))/(10*e^3) + (b*x^2*(A*b*e + 2*B*a*e + B*b*d))/(4*e^2)
+ (B*b^2*x^3)/(3*e))/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3
*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [B] time = 36.79, size = 246, normalized size = 2.05

$$\frac{-10Aa^2e^3-4Aabde^2-Ab^2d^2e-2Ba^2de^2-2Babd^2e-Bb^2d^3-20Bb^2e^3x^3+x^2\left(-15Ab^2e^3-30Babe^3-15Bb\right.}{60d^6e^4+360d^5e^5x+900d^4e^6x^2+1200d^3e^7x^3+900d^2e^8x^4+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a**2*e**3 - 4*A*a*b*d*e**2 - A*b**2*d**2*e - 2*B*a**2*d*e**2 - 2*B*a
*b*d**2*e - B*b**2*d**3 - 20*B*b**2*e**3*x**3 + x**2*(-15*A*b**2*e**3 - 30*
B*a*b*e**3 - 15*B*b**2*d*e**2) + x*(-24*A*a*b*e**3 - 6*A*b**2*d*e**2 - 12*B
*a**2*e**3 - 12*B*a*b*d*e**2 - 6*B*b**2*d**2*e))/(60*d**6*e**4 + 360*d**5*e
**5*x + 900*d**4*e**6*x**2 + 1200*d**3*e**7*x**3 + 900*d**2*e**8*x**4 + 360
*d*e**9*x**5 + 60*e**10*x**6)
```

3.1672 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^8}\,dx$

Optimal. Leaf size=120

$$\frac{b(-2aBe-Abe+3bBd)}{5e^4(d+ex)^5}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{6e^4(d+ex)^6}+\frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{b^2B}{4e^4(d+ex)^4}$$

```
[Out] 1/7*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^7-1/6*(-a*e+b*d)*(-2*A*b*e-B*a*e+3*
B*b*d)/e^4/(e*x+d)^6+1/5*b*(-A*b*e-2*B*a*e+3*B*b*d)/e^4/(e*x+d)^5-1/4*b^2*B
/e^4/(e*x+d)^4
```

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$\frac{b(-2aBe-Abe+3bBd)}{5e^4(d+ex)^5}-\frac{(bd-ae)(-aBe-2Abe+3bBd)}{6e^4(d+ex)^6}+\frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{b^2B}{4e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8,x]
```

```
[Out] ((b*d - a*e)^2*(B*d - A*e))/(7*e^4*(d + e*x)^7) - ((b*d - a*e)*(3*b*B*d - 2
*A*b*e - a*B*e))/(6*e^4*(d + e*x)^6) + (b*(3*b*B*d - A*b*e - 2*a*B*e))/(5*e
^4*(d + e*x)^5) - (b^2*B)/(4*e^4*(d + e*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^8}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^8}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^8}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^7}+\frac{b(-3bB}{e}\right.\\ &= \frac{(bd-ae)^2(Bd-Ae)}{7e^4(d+ex)^7}-\frac{(bd-ae)(3bBd-2Abe-aBe)}{6e^4(d+ex)^6}+\frac{b(3bBd-Abe-2a}{5e^4(d+ex)^5}\end{aligned}$$

Mathematica [A] time = 0.06, size = 129, normalized size = 1.08

$$-\frac{10a^2e^2(6Ae+B(d+7ex))+4abe\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+b^2\left(4Ae\left(d^2+7dex+21e^2x^2\right)+\right.}{420e^4(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^8,x]
```

```
[Out] -1/420*(10*a^2*e^2*(6*A*e + B*(d + 7*e*x)) + 4*a*b*e*(5*A*e*(d + 7*e*x) + 2
*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + b^2*(4*A*e*(d^2 + 7*d*e*x + 21*e^2*x^2)
+ 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3)))/(e^4*(d + e*x)^7)
```

fricas [B] time = 0.86, size = 225, normalized size = 1.88

$$-\frac{105\,Bb^2e^3x^3 + 3\,Bb^2d^3 + 60\,Aa^2e^3 + 4\left(2\,Bab + Ab^2\right)d^2e + 10\left(Ba^2 + 2\,Aab\right)de^2 + 21\left(3\,Bb^2de^2 + 4\left(2\,Bab + \right.\right.}{420\left(e^{11}x^7 + 7\,de^{10}x^6 + 21\,d^2e^9x^5 + 35\,d^3e^8x^4 + 35\,d^4e^7x^3 + 21\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(105*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 60*A*a^2*e^3 + 4*(2*B*a*b + A*b^2
)*d^2*e + 10*(B*a^2 + 2*A*a*b)*d*e^2 + 21*(3*B*b^2*d*e^2 + 4*(2*B*a*b + A*b
^2)*e^3)*x^2 + 7*(3*B*b^2*d^2*e + 4*(2*B*a*b + A*b^2)*d*e^2 + 10*(B*a^2 + 2
*A*a*b)*e^3)*x)/(e^11*x^7 + 7*d*e^10*x^6 + 21*d^2*e^9*x^5 + 35*d^3*e^8*x^4
+ 35*d^4*e^7*x^3 + 21*d^5*e^6*x^2 + 7*d^6*e^5*x + d^7*e^4)
```

giac [A] time = 0.15, size = 160, normalized size = 1.33

$$-\frac{\left(105\,Bb^2x^3e^3 + 63\,Bb^2dx^2e^2 + 21\,Bb^2d^2xe + 3\,Bb^2d^3 + 168\,Babx^2e^3 + 84\,Ab^2x^2e^3 + 56\,Babdxe^2 + 28\,Ab^2dxe\right.}{420\,(xe+d)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/420*(105*B*b^2*x^3*e^3 + 63*B*b^2*d*x^2*e^2 + 21*B*b^2*d^2*x*e + 3*B*b^2
*d^3 + 168*B*a*b*x^2*e^3 + 84*A*b^2*x^2*e^3 + 56*B*a*b*d*x*e^2 + 28*A*b^2*d
*x*e^2 + 8*B*a*b*d^2*e + 4*A*b^2*d^2*e + 70*B*a^2*x*e^3 + 140*A*a*b*x*e^3 +
 10*B*a^2*d*e^2 + 20*A*a*b*d*e^2 + 60*A*a^2*e^3)*e^(-4)/(x*e + d)^7
```

maple [A] time = 0.05, size = 166, normalized size = 1.38

$$-\frac{B\,b^2}{4\,(ex+d)^4\,e^4} - \frac{(Abe + 2aBe - 3Bbd)\,b}{5\,(ex+d)^5\,e^4} - \frac{A\,a^2e^3 - 2Aabd\,e^2 + A\,b^2d^2e - Bd\,a^2e^2 + 2B\,d^2abe - b^2B\,d^3}{7\,(ex+d)^7\,e^4} - \frac{2Aab\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x)
```

```
[Out] -1/5*b*(A*b*e+2*B*a*e-3*B*b*d)/e^4/(e*x+d)^5-1/7*(A*a^2*e^3-2*A*a*b*d*e^2+A
*b^2*d^2*e-B*a^2*d*e^2+2*B*a*b*d^2*e-B*b^2*d^3)/e^4/(e*x+d)^7-1/4*b^2*B/e^4
/(e*x+d)^4-1/6*(2*A*a*b*e^2-2*A*b^2*d*e+B*a^2*e^2-4*B*a*b*d*e+3*B*b^2*d^2)/
e^4/(e*x+d)^6
```

maxima [B] time = 0.60, size = 225, normalized size = 1.88

$$-\frac{105\,Bb^2e^3x^3 + 3\,Bb^2d^3 + 60\,Aa^2e^3 + 4\left(2\,Bab + Ab^2\right)d^2e + 10\left(Ba^2 + 2\,Aab\right)de^2 + 21\left(3\,Bb^2de^2 + 4\left(2\,Bab + \right.\right.}{420\left(e^{11}x^7 + 7\,de^{10}x^6 + 21\,d^2e^9x^5 + 35\,d^3e^8x^4 + 35\,d^4e^7x^3 + 21\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(105*B*b^2*e^3*x^3 + 3*B*b^2*d^3 + 60*A*a^2*e^3 + 4*(2*B*a*b + A*b^2
)*d^2*e + 10*(B*a^2 + 2*A*a*b)*d*e^2 + 21*(3*B*b^2*d*e^2 + 4*(2*B*a*b + A*b
^2)*e^3)*x^2 + 7*(3*B*b^2*d^2*e + 4*(2*B*a*b + A*b^2)*d*e^2 + 10*(B*a^2 + 2
*A*a*b)*e^3)*x)/(e^11*x^7 + 7*d*e^10*x^6 + 21*d^2*e^9*x^5 + 35*d^3*e^8*x^4
+ 35*d^4*e^7*x^3 + 21*d^5*e^6*x^2 + 7*d^6*e^5*x + d^7*e^4)
```

mupad [B] time = 0.10, size = 223, normalized size = 1.86

$$-\frac{\frac{10\,B\,a^2\,d\,e^2+60\,A\,a^2\,e^3+8\,B\,a\,b\,d^2\,e+20\,A\,a\,b\,d\,e^2+3\,B\,b^2\,d^3+4\,A\,b^2\,d^2\,e}{420\,e^4}+\frac{x\,\left(10\,B\,a^2\,e^2+8\,B\,a\,b\,d\,e+20\,A\,a\,b\,e^2+3\,B\,b^2\,d^2+4\,A\,b^2\,d\,e\right)}{60\,e^3}+\frac{b\,x^2\,(4\,A\,b\,e+}{2}}{d^7+7\,d^6\,e\,x+21\,d^5\,e^2\,x^2+35\,d^4\,e^3\,x^3+35\,d^3\,e^4\,x^4+21\,d^2\,e^5\,x^5+7\,d\,e^6\,x^6+e^7\,x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^8,x)
```

```
[Out] -((60*A*a^2*e^3 + 3*B*b^2*d^3 + 4*A*b^2*d^2*e + 10*B*a^2*d*e^2 + 20*A*a*b*d
*e^2 + 8*B*a*b*d^2*e)/(420*e^4) + (x*(10*B*a^2*e^2 + 3*B*b^2*d^2 + 20*A*a*b
*e^2 + 4*A*b^2*d*e + 8*B*a*b*d*e))/(60*e^3) + (b*x^2*(4*A*b*e + 8*B*a*e + 3
*B*b*d))/(20*e^2) + (B*b^2*x^3)/(4*e))/(d^7 + e^7*x^7 + 7*d*e^6*x^6 + 21*d^
5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [B] time = 60.72, size = 262, normalized size = 2.18

$$\frac{-60Aa^2e^3-20Aabde^2-4Ab^2d^2e-10Ba^2de^2-8Babd^2e-3Bb^2d^3-105Bb^2e^3x^3+x^2\left(-84Ab^2e^3-168Babe^3-\right.}{420d^7e^4+2940d^6e^5x+8820d^5e^6x^2+14700d^4e^7x^3+14700d^3e^8x^4+88}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**8,x)
```

```
[Out] (-60*A*a**2*e**3 - 20*A*a*b*d*e**2 - 4*A*b**2*d**2*e - 10*B*a**2*d*e**2 - 8
*B*a*b*d**2*e - 3*B*b**2*d**3 - 105*B*b**2*e**3*x**3 + x**2*(-84*A*b**2*e**
3 - 168*B*a*b*e**3 - 63*B*b**2*d*e**2) + x*(-140*A*a*b*e**3 - 28*A*b**2*d*e
**2 - 70*B*a**2*e**3 - 56*B*a*b*d*e**2 - 21*B*b**2*d**2*e))/(420*d**7*e**4
+ 2940*d**6*e**5*x + 8820*d**5*e**6*x**2 + 14700*d**4*e**7*x**3 + 14700*d**
3*e**8*x**4 + 8820*d**2*e**9*x**5 + 2940*d*e**10*x**6 + 420*e**11*x**7)
```

3.1673 $\int (A+Bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{12}(-4aBe-Abe+5bBd)}{12e^6}+\frac{2b^2(d+ex)^{11}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{b(d+ex)^{10}(bd-ae)^2(-}{5e}$$

```
[Out] -1/8*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^8/e^6+1/9*(-a*e+b*d)^3*(-4*A*b*e-B*a*e
+5*B*b*d)*(e*x+d)^9/e^6-1/5*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+
d)^10/e^6+2/11*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^11/e^6-1/1
2*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^12/e^6+1/13*b^4*B*(e*x+d)^13/e^6
```

Rubi [A] time = 0.80, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3(d+ex)^{12}(-4aBe-Abe+5bBd)}{12e^6}+\frac{2b^2(d+ex)^{11}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{b(d+ex)^{10}(bd-ae)^2(-}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^8)/(8*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^9)/(9*e^6) - (b*(b*d - a*e)^2*(5*b*B*d - 3*A*b
*e - 2*a*B*e)*(d + e*x)^10)/(5*e^6) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e)*(d + e*x)^11)/(11*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d +
e*x)^12)/(12*e^6) + (b^4*B*(d + e*x)^13)/(13*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^7\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^7}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\ &= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^8}{8e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aB}{9e^6}\end{aligned}$$

Mathematica [B] time = 0.28, size = 823, normalized size = 4.00

$$\frac{1}{13}b^4Be^7x^{13}+\frac{1}{12}b^3e^6(7bBd+Abe+4aBe)x^{12}+\frac{1}{11}b^2e^5\left(7d(3Bd+Ae)b^2+4ae(7Bd+Ae)b+6a^2Be^2\right)x^{11}+\frac{1}{10}be^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^7*x + (a^3*d^6*(4*A*b*d + a*B*d + 7*a*A*e)*x^2)/2 + (a^2*d^5*(a*B*d
*(4*b*d + 7*a*e) + A*(6*b^2*d^2 + 28*a*b*d*e + 21*a^2*e^2))*x^3)/3 + (a*d^4
*(a*B*d*(6*b^2*d^2 + 28*a*b*d*e + 21*a^2*e^2) + A*(4*b^3*d^3 + 42*a*b^2*d^2
*e + 84*a^2*b*d*e^2 + 35*a^3*e^3))*x^4)/4 + (d^3*(a*B*d*(4*b^3*d^3 + 42*a*b
^2*d^2*e + 84*a^2*b*d*e^2 + 35*a^3*e^3) + A*(b^4*d^4 + 28*a*b^3*d^3*e + 126
*a^2*b^2*d^2*e^2 + 140*a^3*b*d*e^3 + 35*a^4*e^4))*x^5)/5 + (d^2*(140*a^3*b*
d*e^3*(B*d + A*e) + 28*a*b^3*d^3*e*(B*d + 3*A*e) + 7*a^4*e^4*(5*B*d + 3*A*e
) + 42*a^2*b^2*d^2*e^2*(3*B*d + 5*A*e) + b^4*d^4*(B*d + 7*A*e))*x^6)/6 + d*
e*(30*a^2*b^2*d^2*e^2*(B*d + A*e) + a^4*e^4*(3*B*d + A*e) + b^4*d^4*(B*d +
3*A*e) + 4*a^3*b*d*e^3*(5*B*d + 3*A*e) + 4*a*b^3*d^3*e*(3*B*d + 5*A*e))*x^7
 + (e^2*(140*a*b^3*d^3*e*(B*d + A*e) + 28*a^3*b*d*e^3*(3*B*d + A*e) + a^4*e
^4*(7*B*d + A*e) + 42*a^2*b^2*d^2*e^2*(5*B*d + 3*A*e) + 7*b^4*d^4*(3*B*d +
5*A*e))*x^8)/8 + (e^3*(a^4*B*e^4 + 35*b^4*d^3*(B*d + A*e) + 42*a^2*b^2*d*e^
2*(3*B*d + A*e) + 4*a^3*b*e^3*(7*B*d + A*e) + 28*a*b^3*d^2*e*(5*B*d + 3*A*e
))*x^9)/9 + (b*e^4*(4*a^3*B*e^3 + 28*a*b^2*d*e*(3*B*d + A*e) + 6*a^2*b*e^2*
(7*B*d + A*e) + 7*b^3*d^2*(5*B*d + 3*A*e))*x^10)/10 + (b^2*e^5*(6*a^2*B*e^2
 + 7*b^2*d*(3*B*d + A*e) + 4*a*b*e*(7*B*d + A*e))*x^11)/11 + (b^3*e^6*(7*b*
B*d + A*b*e + 4*a*B*e)*x^12)/12 + (b^4*B*e^7*x^13)/13
```

fricas [B] time = 0.56, size = 1175, normalized size = 5.70

$$\frac{1}{13}x^{13}e^7b^4B+\frac{7}{12}x^{12}e^6db^4B+\frac{1}{3}x^{12}e^7b^3aB+\frac{1}{12}x^{12}e^7b^4A+\frac{21}{11}x^{11}e^5d^2b^4B+\frac{28}{11}x^{11}e^6db^3aB+\frac{6}{11}x^{11}e^7b^2a^2B+\frac{7}{11}x^{11}e^6db^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^7*b^4*B + 7/12*x^12*e^6*d*b^4*B + 1/3*x^12*e^7*b^3*a*B + 1/12*x
^12*e^7*b^4*A + 21/11*x^11*e^5*d^2*b^4*B + 28/11*x^11*e^6*d*b^3*a*B + 6/11*
x^11*e^7*b^2*a^2*B + 7/11*x^11*e^6*d*b^4*A + 4/11*x^11*e^7*b^3*a*A + 7/2*x^
10*e^4*d^3*b^4*B + 42/5*x^10*e^5*d^2*b^3*a*B + 21/5*x^10*e^6*d*b^2*a^2*B +
2/5*x^10*e^7*b*a^3*B + 21/10*x^10*e^5*d^2*b^4*A + 14/5*x^10*e^6*d*b^3*a*A +
 3/5*x^10*e^7*b^2*a^2*A + 35/9*x^9*e^3*d^4*b^4*B + 140/9*x^9*e^4*d^3*b^3*a*
B + 14*x^9*e^5*d^2*b^2*a^2*B + 28/9*x^9*e^6*d*b*a^3*B + 1/9*x^9*e^7*a^4*B +
 35/9*x^9*e^4*d^3*b^4*A + 28/3*x^9*e^5*d^2*b^3*a*A + 14/3*x^9*e^6*d*b^2*a^2
*A + 4/9*x^9*e^7*b*a^3*A + 21/8*x^8*e^2*d^5*b^4*B + 35/2*x^8*e^3*d^4*b^3*a*
B + 105/4*x^8*e^4*d^3*b^2*a^2*B + 21/2*x^8*e^5*d^2*b*a^3*B + 7/8*x^8*e^6*d*
a^4*B + 35/8*x^8*e^3*d^4*b^4*A + 35/2*x^8*e^4*d^3*b^3*a*A + 63/4*x^8*e^5*d^
2*b^2*a^2*A + 7/2*x^8*e^6*d*b*a^3*A + 1/8*x^8*e^7*a^4*A + x^7*e*d^6*b^4*B +
 12*x^7*e^2*d^5*b^3*a*B + 30*x^7*e^3*d^4*b^2*a^2*B + 20*x^7*e^4*d^3*b*a^3*B
 + 3*x^7*e^5*d^2*a^4*B + 3*x^7*e^2*d^5*b^4*A + 20*x^7*e^3*d^4*b^3*a*A + 30*
x^7*e^4*d^3*b^2*a^2*A + 12*x^7*e^5*d^2*b*a^3*A + x^7*e^6*d*a^4*A + 1/6*x^6*
d^7*b^4*B + 14/3*x^6*e*d^6*b^3*a*B + 21*x^6*e^2*d^5*b^2*a^2*B + 70/3*x^6*e^
3*d^4*b*a^3*B + 35/6*x^6*e^4*d^3*a^4*B + 7/6*x^6*e*d^6*b^4*A + 14*x^6*e^2*d
^5*b^3*a*A + 35*x^6*e^3*d^4*b^2*a^2*A + 70/3*x^6*e^4*d^3*b*a^3*A + 7/2*x^6*
e^5*d^2*a^4*A + 4/5*x^5*d^7*b^3*a*B + 42/5*x^5*e*d^6*b^2*a^2*B + 84/5*x^5*e
^2*d^5*b*a^3*B + 7*x^5*e^3*d^4*a^4*B + 1/5*x^5*d^7*b^4*A + 28/5*x^5*e*d^6*b
^3*a*A + 126/5*x^5*e^2*d^5*b^2*a^2*A + 28*x^5*e^3*d^4*b*a^3*A + 7*x^5*e^4*d
^3*a^4*A + 3/2*x^4*d^7*b^2*a^2*B + 7*x^4*e*d^6*b*a^3*B + 21/4*x^4*e^2*d^5*a
^4*B + x^4*d^7*b^3*a*A + 21/2*x^4*e*d^6*b^2*a^2*A + 21*x^4*e^2*d^5*b*a^3*A
+ 35/4*x^4*e^3*d^4*a^4*A + 4/3*x^3*d^7*b*a^3*B + 7/3*x^3*e*d^6*a^4*B + 2*x^
3*d^7*b^2*a^2*A + 28/3*x^3*e*d^6*b*a^3*A + 7*x^3*e^2*d^5*a^4*A + 1/2*x^2*d^
7*a^4*B + 2*x^2*d^7*b*a^3*A + 7/2*x^2*e*d^6*a^4*A + x*d^7*a^4*A
```

giac [B] time = 0.17, size = 1125, normalized size = 5.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/13*B*b^4*x^13*e^7 + 7/12*B*b^4*d*x^12*e^6 + 21/11*B*b^4*d^2*x^11*e^5 + 7/
2*B*b^4*d^3*x^10*e^4 + 35/9*B*b^4*d^4*x^9*e^3 + 21/8*B*b^4*d^5*x^8*e^2 + B*
b^4*d^6*x^7*e + 1/6*B*b^4*d^7*x^6 + 1/3*B*a*b^3*x^12*e^7 + 1/12*A*b^4*x^12*
e^7 + 28/11*B*a*b^3*d*x^11*e^6 + 7/11*A*b^4*d*x^11*e^6 + 42/5*B*a*b^3*d^2*x
^10*e^5 + 21/10*A*b^4*d^2*x^10*e^5 + 140/9*B*a*b^3*d^3*x^9*e^4 + 35/9*A*b^4
*d^3*x^9*e^4 + 35/2*B*a*b^3*d^4*x^8*e^3 + 35/8*A*b^4*d^4*x^8*e^3 + 12*B*a*b
^3*d^5*x^7*e^2 + 3*A*b^4*d^5*x^7*e^2 + 14/3*B*a*b^3*d^6*x^6*e + 7/6*A*b^4*d
^6*x^6*e + 4/5*B*a*b^3*d^7*x^5 + 1/5*A*b^4*d^7*x^5 + 6/11*B*a^2*b^2*x^11*e^
7 + 4/11*A*a*b^3*x^11*e^7 + 21/5*B*a^2*b^2*d*x^10*e^6 + 14/5*A*a*b^3*d*x^10
*e^6 + 14*B*a^2*b^2*d^2*x^9*e^5 + 28/3*A*a*b^3*d^2*x^9*e^5 + 105/4*B*a^2*b^
2*d^3*x^8*e^4 + 35/2*A*a*b^3*d^3*x^8*e^4 + 30*B*a^2*b^2*d^4*x^7*e^3 + 20*A*
a*b^3*d^4*x^7*e^3 + 21*B*a^2*b^2*d^5*x^6*e^2 + 14*A*a*b^3*d^5*x^6*e^2 + 42/
5*B*a^2*b^2*d^6*x^5*e + 28/5*A*a*b^3*d^6*x^5*e + 3/2*B*a^2*b^2*d^7*x^4 + A*
a*b^3*d^7*x^4 + 2/5*B*a^3*b*x^10*e^7 + 3/5*A*a^2*b^2*x^10*e^7 + 28/9*B*a^3*
b*d*x^9*e^6 + 14/3*A*a^2*b^2*d*x^9*e^6 + 21/2*B*a^3*b*d^2*x^8*e^5 + 63/4*A*
a^2*b^2*d^2*x^8*e^5 + 20*B*a^3*b*d^3*x^7*e^4 + 30*A*a^2*b^2*d^3*x^7*e^4 + 7
0/3*B*a^3*b*d^4*x^6*e^3 + 35*A*a^2*b^2*d^4*x^6*e^3 + 84/5*B*a^3*b*d^5*x^5*e
^2 + 126/5*A*a^2*b^2*d^5*x^5*e^2 + 7*B*a^3*b*d^6*x^4*e + 21/2*A*a^2*b^2*d^6
*x^4*e + 4/3*B*a^3*b*d^7*x^3 + 2*A*a^2*b^2*d^7*x^3 + 1/9*B*a^4*x^9*e^7 + 4/
9*A*a^3*b*x^9*e^7 + 7/8*B*a^4*d*x^8*e^6 + 7/2*A*a^3*b*d*x^8*e^6 + 3*B*a^4*d
^2*x^7*e^5 + 12*A*a^3*b*d^2*x^7*e^5 + 35/6*B*a^4*d^3*x^6*e^4 + 70/3*A*a^3*b
*d^3*x^6*e^4 + 7*B*a^4*d^4*x^5*e^3 + 28*A*a^3*b*d^4*x^5*e^3 + 21/4*B*a^4*d^
5*x^4*e^2 + 21*A*a^3*b*d^5*x^4*e^2 + 7/3*B*a^4*d^6*x^3*e + 28/3*A*a^3*b*d^6
*x^3*e + 1/2*B*a^4*d^7*x^2 + 2*A*a^3*b*d^7*x^2 + 1/8*A*a^4*x^8*e^7 + A*a^4*
d*x^7*e^6 + 7/2*A*a^4*d^2*x^6*e^5 + 7*A*a^4*d^3*x^5*e^4 + 35/4*A*a^4*d^4*x^
4*e^3 + 7*A*a^4*d^5*x^3*e^2 + 7/2*A*a^4*d^6*x^2*e + A*a^4*d^7*x
```

maple [B] time = 0.04, size = 950, normalized size = 4.61

$$\frac{B\,b^4e^7x^{13}}{13}+A\,a^4d^7x+\frac{(4Ba\,b^3e^7+(A\,e^7+7Bd\,e^6)\,b^4)\,x^{12}}{12}+\frac{(6B\,a^2b^2e^7+4\,(A\,e^7+7Bd\,e^6)\,a\,b^3+(7Ad\,e^6+21B}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/13*B*e^7*b^4*x^13+1/12*((A*e^7+7*B*d*e^6)*b^4+4*B*e^7*a*b^3)*x^12+1/11*((
7*A*d*e^6+21*B*d^2*e^5)*b^4+4*(A*e^7+7*B*d*e^6)*a*b^3+6*B*e^7*a^2*b^2)*x^11
+1/10*((21*A*d^2*e^5+35*B*d^3*e^4)*b^4+4*(7*A*d*e^6+21*B*d^2*e^5)*a*b^3+6*(
A*e^7+7*B*d*e^6)*a^2*b^2+4*B*e^7*a^3*b)*x^10+1/9*((35*A*d^3*e^4+35*B*d^4*e^
3)*b^4+4*(21*A*d^2*e^5+35*B*d^3*e^4)*a*b^3+6*(7*A*d*e^6+21*B*d^2*e^5)*a^2*b
^2+4*(A*e^7+7*B*d*e^6)*a^3*b+B*e^7*a^4)*x^9+1/8*((35*A*d^4*e^3+21*B*d^5*e^2
)*b^4+4*(35*A*d^3*e^4+35*B*d^4*e^3)*a*b^3+6*(21*A*d^2*e^5+35*B*d^3*e^4)*a^2
*b^2+4*(7*A*d*e^6+21*B*d^2*e^5)*a^3*b+(A*e^7+7*B*d*e^6)*a^4)*x^8+1/7*((21*A
*d^5*e^2+7*B*d^6*e)*b^4+4*(35*A*d^4*e^3+21*B*d^5*e^2)*a*b^3+6*(35*A*d^3*e^4
+35*B*d^4*e^3)*a^2*b^2+4*(21*A*d^2*e^5+35*B*d^3*e^4)*a^3*b+(7*A*d*e^6+21*B*
d^2*e^5)*a^4)*x^7+1/6*((7*A*d^6*e+B*d^7)*b^4+4*(21*A*d^5*e^2+7*B*d^6*e)*a*b
^3+6*(35*A*d^4*e^3+21*B*d^5*e^2)*a^2*b^2+4*(35*A*d^3*e^4+35*B*d^4*e^3)*a^3*
b+(21*A*d^2*e^5+35*B*d^3*e^4)*a^4)*x^6+1/5*(A*d^7*b^4+4*(7*A*d^6*e+B*d^7)*a
*b^3+6*(21*A*d^5*e^2+7*B*d^6*e)*a^2*b^2+4*(35*A*d^4*e^3+21*B*d^5*e^2)*a^3*b
+(35*A*d^3*e^4+35*B*d^4*e^3)*a^4)*x^5+1/4*(4*A*d^7*a*b^3+6*(7*A*d^6*e+B*d^7
)*a^2*b^2+4*(21*A*d^5*e^2+7*B*d^6*e)*a^3*b+(35*A*d^4*e^3+21*B*d^5*e^2)*a^4)
*x^4+1/3*(6*A*d^7*a^2*b^2+4*(7*A*d^6*e+B*d^7)*a^3*b+(21*A*d^5*e^2+7*B*d^6*e
)*a^4)*x^3+1/2*(4*A*d^7*a^3*b+(7*A*d^6*e+B*d^7)*a^4)*x^2+A*d^7*a^4*x
```

maxima [B] time = 0.65, size = 929, normalized size = 4.51

$$\frac{1}{13}\,Bb^4e^7x^{13}+Aa^4d^7x+\frac{1}{12}\,(7\,Bb^4de^6+(4\,Bab^3+Ab^4)e^7)x^{12}+\frac{1}{11}\,(21\,Bb^4d^2e^5+7\,(4\,Bab^3+Ab^4)de^6+2\,(3\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/13*B*b^4*e^7*x^13 + A*a^4*d^7*x + 1/12*(7*B*b^4*d*e^6 + (4*B*a*b^3 + A*b^
4)*e^7)*x^12 + 1/11*(21*B*b^4*d^2*e^5 + 7*(4*B*a*b^3 + A*b^4)*d*e^6 + 2*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^7)*x^11 + 1/10*(35*B*b^4*d^3*e^4 + 21*(4*B*a*b^3 +
 A*b^4)*d^2*e^5 + 14*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^6 + 2*(2*B*a^3*b + 3*A*a
^2*b^2)*e^7)*x^10 + 1/9*(35*B*b^4*d^4*e^3 + 35*(4*B*a*b^3 + A*b^4)*d^3*e^4
+ 42*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^5 + 14*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^6
 + (B*a^4 + 4*A*a^3*b)*e^7)*x^9 + 1/8*(21*B*b^4*d^5*e^2 + A*a^4*e^7 + 35*(4
*B*a*b^3 + A*b^4)*d^4*e^3 + 70*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^4 + 42*(2*B*
a^3*b + 3*A*a^2*b^2)*d^2*e^5 + 7*(B*a^4 + 4*A*a^3*b)*d*e^6)*x^8 + (B*b^4*d^
6*e + A*a^4*d*e^6 + 3*(4*B*a*b^3 + A*b^4)*d^5*e^2 + 10*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^4*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^4 + 3*(B*a^4 + 4*A*a^3*b
)*d^2*e^5)*x^7 + 1/6*(B*b^4*d^7 + 21*A*a^4*d^2*e^5 + 7*(4*B*a*b^3 + A*b^4)*
d^6*e + 42*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^2 + 70*(2*B*a^3*b + 3*A*a^2*b^2)
*d^4*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d^3*e^4)*x^6 + 1/5*(35*A*a^4*d^3*e^4 + (4
*B*a*b^3 + A*b^4)*d^7 + 14*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e + 42*(2*B*a^3*b
+ 3*A*a^2*b^2)*d^5*e^2 + 35*(B*a^4 + 4*A*a^3*b)*d^4*e^3)*x^5 + 1/4*(35*A*a^
4*d^4*e^3 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^7 + 14*(2*B*a^3*b + 3*A*a^2*b^2)*
d^6*e + 21*(B*a^4 + 4*A*a^3*b)*d^5*e^2)*x^4 + 1/3*(21*A*a^4*d^5*e^2 + 2*(2*
B*a^3*b + 3*A*a^2*b^2)*d^7 + 7*(B*a^4 + 4*A*a^3*b)*d^6*e)*x^3 + 1/2*(7*A*a^
4*d^6*e + (B*a^4 + 4*A*a^3*b)*d^7)*x^2
```

mupad [B] time = 2.30, size = 980, normalized size = 4.76

$$x^7\,\left(3\,B\,a^4\,d^2\,e^5+A\,a^4\,d\,e^6+20\,B\,a^3\,b\,d^3\,e^4+12\,A\,a^3\,b\,d^2\,e^5+30\,B\,a^2\,b^2\,d^4\,e^3+30\,A\,a^2\,b^2\,d^3\,e^4+12\,B\,a\,b^3\,d^5\,e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^7*(A*a^4*d*e^6 + B*b^4*d^6*e + 3*A*b^4*d^5*e^2 + 3*B*a^4*d^2*e^5 + 20*A*a
*b^3*d^4*e^3 + 12*A*a^3*b*d^2*e^5 + 12*B*a*b^3*d^5*e^2 + 20*B*a^3*b*d^3*e^4
 + 30*A*a^2*b^2*d^3*e^4 + 30*B*a^2*b^2*d^4*e^3) + x^6*((B*b^4*d^7)/6 + (7*A
*b^4*d^6*e)/6 + (7*A*a^4*d^2*e^5)/2 + (35*B*a^4*d^3*e^4)/6 + 14*A*a*b^3*d^5
*e^2 + (70*A*a^3*b*d^3*e^4)/3 + (70*B*a^3*b*d^4*e^3)/3 + 35*A*a^2*b^2*d^4*e
^3 + 21*B*a^2*b^2*d^5*e^2 + (14*B*a*b^3*d^6*e)/3) + x^8*((A*a^4*e^7)/8 + (7
*B*a^4*d*e^6)/8 + (35*A*b^4*d^4*e^3)/8 + (21*B*b^4*d^5*e^2)/8 + (35*A*a*b^3
*d^3*e^4)/2 + (35*B*a*b^3*d^4*e^3)/2 + (21*B*a^3*b*d^2*e^5)/2 + (63*A*a^2*b
^2*d^2*e^5)/4 + (105*B*a^2*b^2*d^3*e^4)/4 + (7*A*a^3*b*d*e^6)/2) + x^4*(A*a
*b^3*d^7 + (3*B*a^2*b^2*d^7)/2 + (35*A*a^4*d^4*e^3)/4 + (21*B*a^4*d^5*e^2)/
4 + (21*A*a^2*b^2*d^6*e)/2 + 21*A*a^3*b*d^5*e^2 + 7*B*a^3*b*d^6*e) + x^10*(
(2*B*a^3*b*e^7)/5 + (3*A*a^2*b^2*e^7)/5 + (21*A*b^4*d^2*e^5)/10 + (7*B*b^4*
d^3*e^4)/2 + (42*B*a*b^3*d^2*e^5)/5 + (21*B*a^2*b^2*d*e^6)/5 + (14*A*a*b^3*
d*e^6)/5) + x^3*((4*B*a^3*b*d^7)/3 + (7*B*a^4*d^6*e)/3 + 2*A*a^2*b^2*d^7 +
7*A*a^4*d^5*e^2 + (28*A*a^3*b*d^6*e)/3) + x^11*((4*A*a*b^3*e^7)/11 + (7*A*b
^4*d*e^6)/11 + (6*B*a^2*b^2*e^7)/11 + (21*B*b^4*d^2*e^5)/11 + (28*B*a*b^3*d
*e^6)/11) + x^5*((A*b^4*d^7)/5 + (4*B*a*b^3*d^7)/5 + 7*A*a^4*d^3*e^4 + 7*B*
a^4*d^4*e^3 + 28*A*a^3*b*d^4*e^3 + (42*B*a^2*b^2*d^6*e)/5 + (84*B*a^3*b*d^5
*e^2)/5 + (126*A*a^2*b^2*d^5*e^2)/5 + (28*A*a*b^3*d^6*e)/5) + x^9*((B*a^4*e
^7)/9 + (4*A*a^3*b*e^7)/9 + (35*A*b^4*d^3*e^4)/9 + (35*B*b^4*d^4*e^3)/9 + (
28*A*a*b^3*d^2*e^5)/3 + (14*A*a^2*b^2*d*e^6)/3 + (140*B*a*b^3*d^3*e^4)/9 +
14*B*a^2*b^2*d^2*e^5 + (28*B*a^3*b*d*e^6)/9) + (a^3*d^6*x^2*(7*A*a*e + 4*A*
b*d + B*a*d))/2 + (b^3*e^6*x^12*(A*b*e + 4*B*a*e + 7*B*b*d))/12 + A*a^4*d^7
*x + (B*b^4*e^7*x^13)/13
```

sympy [B] time = 0.22, size = 1210, normalized size = 5.87

$$Aa^4d^7x+\frac{Bb^4e^7x^{13}}{13}+x^{12}\left(\frac{Ab^4e^7}{12}+\frac{Bab^3e^7}{3}+\frac{7Bb^4de^6}{12}\right)+x^{11}\left(\frac{4Aab^3e^7}{11}+\frac{7Ab^4de^6}{11}+\frac{6Ba^2b^2e^7}{11}+\frac{28Bab^3de^6}{11}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**7*x + B*b**4*e**7*x**13/13 + x**12*(A*b**4*e**7/12 + B*a*b**3*e**
7/3 + 7*B*b**4*d*e**6/12) + x**11*(4*A*a*b**3*e**7/11 + 7*A*b**4*d*e**6/11
+ 6*B*a**2*b**2*e**7/11 + 28*B*a*b**3*d*e**6/11 + 21*B*b**4*d**2*e**5/11) +
 x**10*(3*A*a**2*b**2*e**7/5 + 14*A*a*b**3*d*e**6/5 + 21*A*b**4*d**2*e**5/1
0 + 2*B*a**3*b*e**7/5 + 21*B*a**2*b**2*d*e**6/5 + 42*B*a*b**3*d**2*e**5/5 +
 7*B*b**4*d**3*e**4/2) + x**9*(4*A*a**3*b*e**7/9 + 14*A*a**2*b**2*d*e**6/3
+ 28*A*a*b**3*d**2*e**5/3 + 35*A*b**4*d**3*e**4/9 + B*a**4*e**7/9 + 28*B*a*
*3*b*d*e**6/9 + 14*B*a**2*b**2*d**2*e**5 + 140*B*a*b**3*d**3*e**4/9 + 35*B*
b**4*d**4*e**3/9) + x**8*(A*a**4*e**7/8 + 7*A*a**3*b*d*e**6/2 + 63*A*a**2*b
**2*d**2*e**5/4 + 35*A*a*b**3*d**3*e**4/2 + 35*A*b**4*d**4*e**3/8 + 7*B*a**
4*d*e**6/8 + 21*B*a**3*b*d**2*e**5/2 + 105*B*a**2*b**2*d**3*e**4/4 + 35*B*a
*b**3*d**4*e**3/2 + 21*B*b**4*d**5*e**2/8) + x**7*(A*a**4*d*e**6 + 12*A*a**
3*b*d**2*e**5 + 30*A*a**2*b**2*d**3*e**4 + 20*A*a*b**3*d**4*e**3 + 3*A*b**4
*d**5*e**2 + 3*B*a**4*d**2*e**5 + 20*B*a**3*b*d**3*e**4 + 30*B*a**2*b**2*d*
*4*e**3 + 12*B*a*b**3*d**5*e**2 + B*b**4*d**6*e) + x**6*(7*A*a**4*d**2*e**5
/2 + 70*A*a**3*b*d**3*e**4/3 + 35*A*a**2*b**2*d**4*e**3 + 14*A*a*b**3*d**5*
e**2 + 7*A*b**4*d**6*e/6 + 35*B*a**4*d**3*e**4/6 + 70*B*a**3*b*d**4*e**3/3
+ 21*B*a**2*b**2*d**5*e**2 + 14*B*a*b**3*d**6*e/3 + B*b**4*d**7/6) + x**5*(
7*A*a**4*d**3*e**4 + 28*A*a**3*b*d**4*e**3 + 126*A*a**2*b**2*d**5*e**2/5 +
28*A*a*b**3*d**6*e/5 + A*b**4*d**7/5 + 7*B*a**4*d**4*e**3 + 84*B*a**3*b*d**
5*e**2/5 + 42*B*a**2*b**2*d**6*e/5 + 4*B*a*b**3*d**7/5) + x**4*(35*A*a**4*d
**4*e**3/4 + 21*A*a**3*b*d**5*e**2 + 21*A*a**2*b**2*d**6*e/2 + A*a*b**3*d**
7 + 21*B*a**4*d**5*e**2/4 + 7*B*a**3*b*d**6*e + 3*B*a**2*b**2*d**7/2) + x**
3*(7*A*a**4*d**5*e**2 + 28*A*a**3*b*d**6*e/3 + 2*A*a**2*b**2*d**7 + 7*B*a**
4*d**6*e/3 + 4*B*a**3*b*d**7/3) + x**2*(7*A*a**4*d**6*e/2 + 2*A*a**3*b*d**7
 + B*a**4*d**7/2)
```

3.1674 $\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{11}(-4aBe-Abe+5bBd)}{11e^6}+\frac{b^2(d+ex)^{10}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{2b(d+ex)^9(bd-ae)^2(-2aB}{9e^6}$$

```
[Out] -1/7*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^7/e^6+1/8*(-a*e+b*d)^3*(-4*A*b*e-B*a*e
+5*B*b*d)*(e*x+d)^8/e^6-2/9*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+
d)^9/e^6+1/5*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^10/e^6-1/11*
b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^11/e^6+1/12*b^4*B*(e*x+d)^12/e^6
```

Rubi [A] time = 0.66, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3(d+ex)^{11}(-4aBe-Abe+5bBd)}{11e^6}+\frac{b^2(d+ex)^{10}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{2b(d+ex)^9(bd-ae)^2(-2aB}{9e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^7)/(7*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^8)/(8*e^6) - (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A
*b*e - 2*a*B*e)*(d + e*x)^9)/(9*e^6) + (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^10)/(5*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*
x)^11)/(11*e^6) + (b^4*B*(d + e*x)^12)/(12*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^2\,dx&=\int (a+bx)^4(A+Bx)(d+ex)^6\,dx\\&=\int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^6}{e^5}+\frac{(-bd+ae)^3(-5bBd+4Ab}{e^5}\right.\\&=-\frac{(bd-ae)^4(Bd-Ae)(d+ex)^7}{7e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aBe)(}{8e^6}\end{aligned}$$

Mathematica [B] time = 0.25, size = 737, normalized size = 3.58

$$a^4Ad^6x+\frac{1}{2}a^3d^5x^2(6aAe+aBd+4Abd)+\frac{1}{3}a^2d^4x^3\left(3A\left(5a^2e^2+8abde+2b^2d^2\right)+2aBd(3ae+2bd)\right)+\frac{1}{10}b^2e^4x^{10}\left(6a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^6*x + (a^3*d^5*(4*A*b*d + a*B*d + 6*a*A*e)*x^2)/2 + (a^2*d^4*(2*a*B
*d*(2*b*d + 3*a*e) + 3*A*(2*b^2*d^2 + 8*a*b*d*e + 5*a^2*e^2))*x^3)/3 + (a*d
^3*(3*a*B*d*(2*b^2*d^2 + 8*a*b*d*e + 5*a^2*e^2) + 4*A*(b^3*d^3 + 9*a*b^2*d^
2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3))*x^4)/4 + (d^2*(4*a*B*d*(b^3*d^3 + 9*a*b^
2*d^2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3) + A*(b^4*d^4 + 24*a*b^3*d^3*e + 90*a^
2*b^2*d^2*e^2 + 80*a^3*b*d*e^3 + 15*a^4*e^4))*x^5)/5 + (d*(3*a^4*e^4*(5*B*d
 + 2*A*e) + 20*a^3*b*d*e^3*(4*B*d + 3*A*e) + 30*a^2*b^2*d^2*e^2*(3*B*d + 4*
A*e) + 12*a*b^3*d^3*e*(2*B*d + 5*A*e) + b^4*d^4*(B*d + 6*A*e))*x^6)/6 + (e*
(a^4*e^4*(6*B*d + A*e) + 12*a^3*b*d*e^3*(5*B*d + 2*A*e) + 30*a^2*b^2*d^2*e^
2*(4*B*d + 3*A*e) + 20*a*b^3*d^3*e*(3*B*d + 4*A*e) + 3*b^4*d^4*(2*B*d + 5*A
*e))*x^7)/7 + (e^2*(a^4*B*e^4 + 4*a^3*b*e^3*(6*B*d + A*e) + 18*a^2*b^2*d*e^
2*(5*B*d + 2*A*e) + 20*a*b^3*d^2*e*(4*B*d + 3*A*e) + 5*b^4*d^3*(3*B*d + 4*A
*e))*x^8)/8 + (b*e^3*(4*a^3*B*e^3 + 6*a^2*b*e^2*(6*B*d + A*e) + 12*a*b^2*d*
e*(5*B*d + 2*A*e) + 5*b^3*d^2*(4*B*d + 3*A*e))*x^9)/9 + (b^2*e^4*(6*a^2*B*e
^2 + 4*a*b*e*(6*B*d + A*e) + 3*b^2*d*(5*B*d + 2*A*e))*x^10)/10 + (b^3*e^5*(
6*b*B*d + A*b*e + 4*a*B*e)*x^11)/11 + (b^4*B*e^6*x^12)/12
```

fricas [B] time = 0.79, size = 1015, normalized size = 4.93

$$\frac{1}{12}x^{12}e^6b^4B+\frac{6}{11}x^{11}e^5db^4B+\frac{4}{11}x^{11}e^6b^3aB+\frac{1}{11}x^{11}e^6b^4A+\frac{3}{2}x^{10}e^4d^2b^4B+\frac{12}{5}x^{10}e^5db^3aB+\frac{3}{5}x^{10}e^6b^2a^2B+\frac{3}{5}x^{10}e^5db$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^6*b^4*B + 6/11*x^11*e^5*d*b^4*B + 4/11*x^11*e^6*b^3*a*B + 1/11*
x^11*e^6*b^4*A + 3/2*x^10*e^4*d^2*b^4*B + 12/5*x^10*e^5*d*b^3*a*B + 3/5*x^1
0*e^6*b^2*a^2*B + 3/5*x^10*e^5*d*b^4*A + 2/5*x^10*e^6*b^3*a*A + 20/9*x^9*e^
3*d^3*b^4*B + 20/3*x^9*e^4*d^2*b^3*a*B + 4*x^9*e^5*d*b^2*a^2*B + 4/9*x^9*e^
6*b*a^3*B + 5/3*x^9*e^4*d^2*b^4*A + 8/3*x^9*e^5*d*b^3*a*A + 2/3*x^9*e^6*b^2
*a^2*A + 15/8*x^8*e^2*d^4*b^4*B + 10*x^8*e^3*d^3*b^3*a*B + 45/4*x^8*e^4*d^2
*b^2*a^2*B + 3*x^8*e^5*d*b*a^3*B + 1/8*x^8*e^6*a^4*B + 5/2*x^8*e^3*d^3*b^4*
A + 15/2*x^8*e^4*d^2*b^3*a*A + 9/2*x^8*e^5*d*b^2*a^2*A + 1/2*x^8*e^6*b*a^3*
A + 6/7*x^7*e*d^5*b^4*B + 60/7*x^7*e^2*d^4*b^3*a*B + 120/7*x^7*e^3*d^3*b^2*
a^2*B + 60/7*x^7*e^4*d^2*b*a^3*B + 6/7*x^7*e^5*d*a^4*B + 15/7*x^7*e^2*d^4*b
^4*A + 80/7*x^7*e^3*d^3*b^3*a*A + 90/7*x^7*e^4*d^2*b^2*a^2*A + 24/7*x^7*e^5
*d*b*a^3*A + 1/7*x^7*e^6*a^4*A + 1/6*x^6*d^6*b^4*B + 4*x^6*e*d^5*b^3*a*B +
15*x^6*e^2*d^4*b^2*a^2*B + 40/3*x^6*e^3*d^3*b*a^3*B + 5/2*x^6*e^4*d^2*a^4*B
 + x^6*e*d^5*b^4*A + 10*x^6*e^2*d^4*b^3*a*A + 20*x^6*e^3*d^3*b^2*a^2*A + 10
*x^6*e^4*d^2*b*a^3*A + x^6*e^5*d*a^4*A + 4/5*x^5*d^6*b^3*a*B + 36/5*x^5*e*d
^5*b^2*a^2*B + 12*x^5*e^2*d^4*b*a^3*B + 4*x^5*e^3*d^3*a^4*B + 1/5*x^5*d^6*b
^4*A + 24/5*x^5*e*d^5*b^3*a*A + 18*x^5*e^2*d^4*b^2*a^2*A + 16*x^5*e^3*d^3*b
*a^3*A + 3*x^5*e^4*d^2*a^4*A + 3/2*x^4*d^6*b^2*a^2*B + 6*x^4*e*d^5*b*a^3*B
+ 15/4*x^4*e^2*d^4*a^4*B + x^4*d^6*b^3*a*A + 9*x^4*e*d^5*b^2*a^2*A + 15*x^4
*e^2*d^4*b*a^3*A + 5*x^4*e^3*d^3*a^4*A + 4/3*x^3*d^6*b*a^3*B + 2*x^3*e*d^5*
a^4*B + 2*x^3*d^6*b^2*a^2*A + 8*x^3*e*d^5*b*a^3*A + 5*x^3*e^2*d^4*a^4*A + 1
/2*x^2*d^6*a^4*B + 2*x^2*d^6*b*a^3*A + 3*x^2*e*d^5*a^4*A + x*d^6*a^4*A
```

giac [B] time = 0.16, size = 975, normalized size = 4.73

$$\frac{1}{12}Bb^4x^{12}e^6+\frac{6}{11}Bb^4dx^{11}e^5+\frac{3}{2}Bb^4d^2x^{10}e^4+\frac{20}{9}Bb^4d^3x^9e^3+\frac{15}{8}Bb^4d^4x^8e^2+\frac{6}{7}Bb^4d^5x^7e+\frac{1}{6}Bb^4d^6x^6+\frac{4}{11}Bab^3x^{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/12*B*b^4*x^12*e^6 + 6/11*B*b^4*d*x^11*e^5 + 3/2*B*b^4*d^2*x^10*e^4 + 20/9
*B*b^4*d^3*x^9*e^3 + 15/8*B*b^4*d^4*x^8*e^2 + 6/7*B*b^4*d^5*x^7*e + 1/6*B*b
^4*d^6*x^6 + 4/11*B*a*b^3*x^11*e^6 + 1/11*A*b^4*x^11*e^6 + 12/5*B*a*b^3*d*x
^10*e^5 + 3/5*A*b^4*d*x^10*e^5 + 20/3*B*a*b^3*d^2*x^9*e^4 + 5/3*A*b^4*d^2*x
^9*e^4 + 10*B*a*b^3*d^3*x^8*e^3 + 5/2*A*b^4*d^3*x^8*e^3 + 60/7*B*a*b^3*d^4*
x^7*e^2 + 15/7*A*b^4*d^4*x^7*e^2 + 4*B*a*b^3*d^5*x^6*e + A*b^4*d^5*x^6*e +
4/5*B*a*b^3*d^6*x^5 + 1/5*A*b^4*d^6*x^5 + 3/5*B*a^2*b^2*x^10*e^6 + 2/5*A*a*
b^3*x^10*e^6 + 4*B*a^2*b^2*d*x^9*e^5 + 8/3*A*a*b^3*d*x^9*e^5 + 45/4*B*a^2*b
^2*d^2*x^8*e^4 + 15/2*A*a*b^3*d^2*x^8*e^4 + 120/7*B*a^2*b^2*d^3*x^7*e^3 + 8
0/7*A*a*b^3*d^3*x^7*e^3 + 15*B*a^2*b^2*d^4*x^6*e^2 + 10*A*a*b^3*d^4*x^6*e^2
 + 36/5*B*a^2*b^2*d^5*x^5*e + 24/5*A*a*b^3*d^5*x^5*e + 3/2*B*a^2*b^2*d^6*x^
4 + A*a*b^3*d^6*x^4 + 4/9*B*a^3*b*x^9*e^6 + 2/3*A*a^2*b^2*x^9*e^6 + 3*B*a^3
*b*d*x^8*e^5 + 9/2*A*a^2*b^2*d*x^8*e^5 + 60/7*B*a^3*b*d^2*x^7*e^4 + 90/7*A*
a^2*b^2*d^2*x^7*e^4 + 40/3*B*a^3*b*d^3*x^6*e^3 + 20*A*a^2*b^2*d^3*x^6*e^3 +
 12*B*a^3*b*d^4*x^5*e^2 + 18*A*a^2*b^2*d^4*x^5*e^2 + 6*B*a^3*b*d^5*x^4*e +
9*A*a^2*b^2*d^5*x^4*e + 4/3*B*a^3*b*d^6*x^3 + 2*A*a^2*b^2*d^6*x^3 + 1/8*B*a
^4*x^8*e^6 + 1/2*A*a^3*b*x^8*e^6 + 6/7*B*a^4*d*x^7*e^5 + 24/7*A*a^3*b*d*x^7
*e^5 + 5/2*B*a^4*d^2*x^6*e^4 + 10*A*a^3*b*d^2*x^6*e^4 + 4*B*a^4*d^3*x^5*e^3
 + 16*A*a^3*b*d^3*x^5*e^3 + 15/4*B*a^4*d^4*x^4*e^2 + 15*A*a^3*b*d^4*x^4*e^2
 + 2*B*a^4*d^5*x^3*e + 8*A*a^3*b*d^5*x^3*e + 1/2*B*a^4*d^6*x^2 + 2*A*a^3*b*
d^6*x^2 + 1/7*A*a^4*x^7*e^6 + A*a^4*d*x^6*e^5 + 3*A*a^4*d^2*x^5*e^4 + 5*A*a
^4*d^3*x^4*e^3 + 5*A*a^4*d^4*x^3*e^2 + 3*A*a^4*d^5*x^2*e + A*a^4*d^6*x
```

maple [B]   time = 0.04, size = 821, normalized size = 3.99

$$\frac{B\,b^{4}e^{6}x^{12}}{12}+A\,a^{4}d^{6}x+\frac{(4Ba\,b^{3}e^{6}+(A\,e^{6}+6Bd\,e^{5})\,b^{4})\,x^{11}}{11}+\frac{(6B\,a^{2}b^{2}e^{6}+4\,(A\,e^{6}+6Bd\,e^{5})\,a\,b^{3}+(6Ad\,e^{5}+15B\,d^{2}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/12*B*e^6*b^4*x^12+1/11*((A*e^6+6*B*d*e^5)*b^4+4*B*e^6*a*b^3)*x^11+1/10*((
6*A*d*e^5+15*B*d^2*e^4)*b^4+4*(A*e^6+6*B*d*e^5)*a*b^3+6*B*e^6*a^2*b^2)*x^10
+1/9*((15*A*d^2*e^4+20*B*d^3*e^3)*b^4+4*(6*A*d*e^5+15*B*d^2*e^4)*a*b^3+6*(A
*e^6+6*B*d*e^5)*a^2*b^2+4*B*e^6*a^3*b)*x^9+1/8*((20*A*d^3*e^3+15*B*d^4*e^2)
*b^4+4*(15*A*d^2*e^4+20*B*d^3*e^3)*a*b^3+6*(6*A*d*e^5+15*B*d^2*e^4)*a^2*b^2
+4*(A*e^6+6*B*d*e^5)*a^3*b+B*e^6*a^4)*x^8+1/7*((15*A*d^4*e^2+6*B*d^5*e)*b^4
+4*(20*A*d^3*e^3+15*B*d^4*e^2)*a*b^3+6*(15*A*d^2*e^4+20*B*d^3*e^3)*a^2*b^2+
4*(6*A*d*e^5+15*B*d^2*e^4)*a^3*b+(A*e^6+6*B*d*e^5)*a^4)*x^7+1/6*((6*A*d^5*e
+B*d^6)*b^4+4*(15*A*d^4*e^2+6*B*d^5*e)*a*b^3+6*(20*A*d^3*e^3+15*B*d^4*e^2)*
a^2*b^2+4*(15*A*d^2*e^4+20*B*d^3*e^3)*a^3*b+(6*A*d*e^5+15*B*d^2*e^4)*a^4)*x
^6+1/5*(A*d^6*b^4+4*(6*A*d^5*e+B*d^6)*a*b^3+6*(15*A*d^4*e^2+6*B*d^5*e)*a^2*
b^2+4*(20*A*d^3*e^3+15*B*d^4*e^2)*a^3*b+(15*A*d^2*e^4+20*B*d^3*e^3)*a^4)*x^
5+1/4*(4*A*d^6*a*b^3+6*(6*A*d^5*e+B*d^6)*a^2*b^2+4*(15*A*d^4*e^2+6*B*d^5*e)
*a^3*b+(20*A*d^3*e^3+15*B*d^4*e^2)*a^4)*x^4+1/3*(6*A*d^6*a^2*b^2+4*(6*A*d^5
*e+B*d^6)*a^3*b+(15*A*d^4*e^2+6*B*d^5*e)*a^4)*x^3+1/2*(4*A*d^6*a^3*b+(6*A*d
^5*e+B*d^6)*a^4)*x^2+A*d^6*a^4*x
```

maxima [B]   time = 0.78, size = 810, normalized size = 3.93

$$\frac{1}{12}\,Bb^{4}e^{6}x^{12}+Aa^{4}d^{6}x+\frac{1}{11}\,(6\,Bb^{4}de^{5}+(4\,Bab^{3}+Ab^{4})e^{6})x^{11}+\frac{1}{10}\,(15\,Bb^{4}d^{2}e^{4}+6\,(4\,Bab^{3}+Ab^{4})de^{5}+2\,(3\,Ba^{2}b^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/12*B*b^4*e^6*x^12 + A*a^4*d^6*x + 1/11*(6*B*b^4*d*e^5 + (4*B*a*b^3 + A*b^
4)*e^6)*x^11 + 1/10*(15*B*b^4*d^2*e^4 + 6*(4*B*a*b^3 + A*b^4)*d*e^5 + 2*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^6)*x^10 + 1/9*(20*B*b^4*d^3*e^3 + 15*(4*B*a*b^3 +
A*b^4)*d^2*e^4 + 12*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 + 2*(2*B*a^3*b + 3*A*a^
2*b^2)*e^6)*x^9 + 1/8*(15*B*b^4*d^4*e^2 + 20*(4*B*a*b^3 + A*b^4)*d^3*e^3 +
30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 +
 (B*a^4 + 4*A*a^3*b)*e^6)*x^8 + 1/7*(6*B*b^4*d^5*e + A*a^4*e^6 + 15*(4*B*a*
b^3 + A*b^4)*d^4*e^2 + 40*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 + 30*(2*B*a^3*b
 + 3*A*a^2*b^2)*d^2*e^4 + 6*(B*a^4 + 4*A*a^3*b)*d*e^5)*x^7 + 1/6*(B*b^4*d^6
 + 6*A*a^4*d*e^5 + 6*(4*B*a*b^3 + A*b^4)*d^5*e + 30*(3*B*a^2*b^2 + 2*A*a*b^
3)*d^4*e^2 + 40*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 + 15*(B*a^4 + 4*A*a^3*b)*
d^2*e^4)*x^6 + 1/5*(15*A*a^4*d^2*e^4 + (4*B*a*b^3 + A*b^4)*d^6 + 12*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^5*e + 30*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^2 + 20*(B*a^4
 + 4*A*a^3*b)*d^3*e^3)*x^5 + 1/4*(20*A*a^4*d^3*e^3 + 2*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^6 + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e + 15*(B*a^4 + 4*A*a^3*b)*d^4
*e^2)*x^4 + 1/3*(15*A*a^4*d^4*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^6 + 6*(B*
a^4 + 4*A*a^3*b)*d^5*e)*x^3 + 1/2*(6*A*a^4*d^5*e + (B*a^4 + 4*A*a^3*b)*d^6)
*x^2
```

mupad [**B**] time = 2.22, size = 845, normalized size = 4.10

$$x^4\left(\frac{15\,B\,a^4\,d^4\,e^2}{4}+5\,A\,a^4\,d^3\,e^3+6\,B\,a^3\,b\,d^5\,e+15\,A\,a^3\,b\,d^4\,e^2+\frac{3\,B\,a^2\,b^2\,d^6}{2}+9\,A\,a^2\,b^2\,d^5\,e+A\,a\,b^3\,d^6\right)+x^9\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*(A*a*b^3*d^6 + (3*B*a^2*b^2*d^6)/2 + 5*A*a^4*d^3*e^3 + (15*B*a^4*d^4*e^
2)/4 + 9*A*a^2*b^2*d^5*e + 15*A*a^3*b*d^4*e^2 + 6*B*a^3*b*d^5*e) + x^9*((4*
B*a^3*b*e^6)/9 + (2*A*a^2*b^2*e^6)/3 + (5*A*b^4*d^2*e^4)/3 + (20*B*b^4*d^3*
e^3)/9 + (20*B*a*b^3*d^2*e^4)/3 + 4*B*a^2*b^2*d*e^5 + (8*A*a*b^3*d*e^5)/3)
+ x^3*((4*B*a^3*b*d^6)/3 + 2*B*a^4*d^5*e + 2*A*a^2*b^2*d^6 + 5*A*a^4*d^4*e^
2 + 8*A*a^3*b*d^5*e) + x^10*((2*A*a*b^3*e^6)/5 + (3*A*b^4*d*e^5)/5 + (3*B*a
^2*b^2*e^6)/5 + (3*B*b^4*d^2*e^4)/2 + (12*B*a*b^3*d*e^5)/5) + x^5*((A*b^4*d
^6)/5 + (4*B*a*b^3*d^6)/5 + 3*A*a^4*d^2*e^4 + 4*B*a^4*d^3*e^3 + 16*A*a^3*b*
d^3*e^3 + (36*B*a^2*b^2*d^5*e)/5 + 12*B*a^3*b*d^4*e^2 + 18*A*a^2*b^2*d^4*e^
2 + (24*A*a*b^3*d^5*e)/5) + x^8*((B*a^4*e^6)/8 + (A*a^3*b*e^6)/2 + (5*A*b^4
*d^3*e^3)/2 + (15*B*b^4*d^4*e^2)/8 + (15*A*a*b^3*d^2*e^4)/2 + (9*A*a^2*b^2*
d*e^5)/2 + 10*B*a*b^3*d^3*e^3 + (45*B*a^2*b^2*d^2*e^4)/4 + 3*B*a^3*b*d*e^5)
 + x^6*((B*b^4*d^6)/6 + A*a^4*d*e^5 + A*b^4*d^5*e + (5*B*a^4*d^2*e^4)/2 + 1
0*A*a*b^3*d^4*e^2 + 10*A*a^3*b*d^2*e^4 + (40*B*a^3*b*d^3*e^3)/3 + 20*A*a^2*
b^2*d^3*e^3 + 15*B*a^2*b^2*d^4*e^2 + 4*B*a*b^3*d^5*e) + x^7*((A*a^4*e^6)/7
+ (6*B*a^4*d*e^5)/7 + (6*B*b^4*d^5*e)/7 + (15*A*b^4*d^4*e^2)/7 + (80*A*a*b^
3*d^3*e^3)/7 + (60*B*a*b^3*d^4*e^2)/7 + (60*B*a^3*b*d^2*e^4)/7 + (90*A*a^2*
b^2*d^2*e^4)/7 + (120*B*a^2*b^2*d^3*e^3)/7 + (24*A*a^3*b*d*e^5)/7) + (a^3*d
^5*x^2*(6*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^5*x^11*(A*b*e + 4*B*a*e + 6*
B*b*d))/11 + A*a^4*d^6*x + (B*b^4*e^6*x^12)/12
```

sympy [**B**] time = 0.20, size = 1035, normalized size = 5.02

$$Aa^4d^6x+\frac{Bb^4e^6x^{12}}{12}+x^{11}\left(\frac{Ab^4e^6}{11}+\frac{4Bab^3e^6}{11}+\frac{6Bb^4de^5}{11}\right)+x^{10}\Bigg(\frac{2Aab^3e^6}{5}+\frac{3Ab^4de^5}{5}+\frac{3Ba^2b^2e^6}{5}+\frac{12Bab^3de^5}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**6*x + B*b**4*e**6*x**12/12 + x**11*(A*b**4*e**6/11 + 4*B*a*b**3*e
**6/11 + 6*B*b**4*d*e**5/11) + x**10*(2*A*a*b**3*e**6/5 + 3*A*b**4*d*e**5/5
 + 3*B*a**2*b**2*e**6/5 + 12*B*a*b**3*d*e**5/5 + 3*B*b**4*d**2*e**4/2) + x*
*9*(2*A*a**2*b**2*e**6/3 + 8*A*a*b**3*d*e**5/3 + 5*A*b**4*d**2*e**4/3 + 4*B
*a**3*b*e**6/9 + 4*B*a**2*b**2*d*e**5 + 20*B*a*b**3*d**2*e**4/3 + 20*B*b**4
*d**3*e**3/9) + x**8*(A*a**3*b*e**6/2 + 9*A*a**2*b**2*d*e**5/2 + 15*A*a*b**
3*d**2*e**4/2 + 5*A*b**4*d**3*e**3/2 + B*a**4*e**6/8 + 3*B*a**3*b*d*e**5 +
45*B*a**2*b**2*d**2*e**4/4 + 10*B*a*b**3*d**3*e**3 + 15*B*b**4*d**4*e**2/8)
 + x**7*(A*a**4*e**6/7 + 24*A*a**3*b*d*e**5/7 + 90*A*a**2*b**2*d**2*e**4/7
+ 80*A*a*b**3*d**3*e**3/7 + 15*A*b**4*d**4*e**2/7 + 6*B*a**4*d*e**5/7 + 60*
B*a**3*b*d**2*e**4/7 + 120*B*a**2*b**2*d**3*e**3/7 + 60*B*a*b**3*d**4*e**2/
7 + 6*B*b**4*d**5*e/7) + x**6*(A*a**4*d*e**5 + 10*A*a**3*b*d**2*e**4 + 20*A
*a**2*b**2*d**3*e**3 + 10*A*a*b**3*d**4*e**2 + A*b**4*d**5*e + 5*B*a**4*d**
2*e**4/2 + 40*B*a**3*b*d**3*e**3/3 + 15*B*a**2*b**2*d**4*e**2 + 4*B*a*b**3*
d**5*e + B*b**4*d**6/6) + x**5*(3*A*a**4*d**2*e**4 + 16*A*a**3*b*d**3*e**3
+ 18*A*a**2*b**2*d**4*e**2 + 24*A*a*b**3*d**5*e/5 + A*b**4*d**6/5 + 4*B*a**
4*d**3*e**3 + 12*B*a**3*b*d**4*e**2 + 36*B*a**2*b**2*d**5*e/5 + 4*B*a*b**3*
d**6/5) + x**4*(5*A*a**4*d**3*e**3 + 15*A*a**3*b*d**4*e**2 + 9*A*a**2*b**2*
d**5*e + A*a*b**3*d**6 + 15*B*a**4*d**4*e**2/4 + 6*B*a**3*b*d**5*e + 3*B*a*
*2*b**2*d**6/2) + x**3*(5*A*a**4*d**4*e**2 + 8*A*a**3*b*d**5*e + 2*A*a**2*b
**2*d**6 + 2*B*a**4*d**5*e + 4*B*a**3*b*d**6/3) + x**2*(3*A*a**4*d**5*e + 2
*A*a**3*b*d**6 + B*a**4*d**6/2)
```

3.1675 $\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=206

$$-\frac{b^3(d+ex)^{10}(-4aBe-Abe+5bBd)}{10e^6}+\frac{2b^2(d+ex)^9(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{b(d+ex)^8(bd-ae)^2(-2}{4e^6}$$

```
[Out] -1/6*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^6/e^6+1/7*(-a*e+b*d)^3*(-4*A*b*e-B*a*e
+5*B*b*d)*(e*x+d)^7/e^6-1/4*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+
d)^8/e^6+2/9*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^9/e^6-1/10*b
^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^10/e^6+1/11*b^4*B*(e*x+d)^11/e^6
```

Rubi [A] time = 0.54, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3(d+ex)^{10}(-4aBe-Abe+5bBd)}{10e^6}+\frac{2b^2(d+ex)^9(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{b(d+ex)^8(bd-ae)^2(-2}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^6)/(6*e^6) + ((b*d - a*e)^3*(5*b*B*d
- 4*A*b*e - a*B*e)*(d + e*x)^7)/(7*e^6) - (b*(b*d - a*e)^2*(5*b*B*d - 3*A*b
*e - 2*a*B*e)*(d + e*x)^8)/(4*e^6) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^9)/(9*e^6) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x
)^10)/(10*e^6) + (b^4*B*(d + e*x)^11)/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^5\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^5}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\ &= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^6}{6e^6}+\frac{(bd-ae)^3(5bBd-4Abe-aB}{7e^6}\end{aligned}$$

Mathematica [B] time = 0.20, size = 615, normalized size = 2.99

$$a^4Ad^5x+\frac{1}{2}a^3d^4x^2(5aAe+aBd+4Abd)+\frac{1}{3}a^2d^3x^3\left(2A\left(5a^2e^2+10abde+3b^2d^2\right)+aBd(5ae+4bd)\right)+\frac{1}{9}b^2e^3x^9\left(6\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^5*x + (a^3*d^4*(4*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (a^2*d^3*(a*B*d
*(4*b*d + 5*a*e) + 2*A*(3*b^2*d^2 + 10*a*b*d*e + 5*a^2*e^2))*x^3)/3 + (a*d^
2*(a*B*d*(3*b^2*d^2 + 10*a*b*d*e + 5*a^2*e^2) + A*(2*b^3*d^3 + 15*a*b^2*d^2
*e + 20*a^2*b*d*e^2 + 5*a^3*e^3))*x^4)/2 + (d*(2*a*B*d*(2*b^3*d^3 + 15*a*b^
2*d^2*e + 20*a^2*b*d*e^2 + 5*a^3*e^3) + A*(b^4*d^4 + 20*a*b^3*d^3*e + 60*a^
2*b^2*d^2*e^2 + 40*a^3*b*d*e^3 + 5*a^4*e^4))*x^5)/5 + ((60*a^2*b^2*d^2*e^2*
(B*d + A*e) + 20*a^3*b*d*e^3*(2*B*d + A*e) + a^4*e^4*(5*B*d + A*e) + 20*a*b
^3*d^3*e*(B*d + 2*A*e) + b^4*d^4*(B*d + 5*A*e))*x^6)/6 + (e*(a^4*B*e^4 + 40
*a*b^3*d^2*e*(B*d + A*e) + 30*a^2*b^2*d*e^2*(2*B*d + A*e) + 4*a^3*b*e^3*(5*
B*d + A*e) + 5*b^4*d^3*(B*d + 2*A*e))*x^7)/7 + (b*e^2*(2*a^3*B*e^3 + 5*b^3*
d^2*(B*d + A*e) + 10*a*b^2*d*e*(2*B*d + A*e) + 3*a^2*b*e^2*(5*B*d + A*e))*x
^8)/4 + (b^2*e^3*(6*a^2*B*e^2 + 5*b^2*d*(2*B*d + A*e) + 4*a*b*e*(5*B*d + A*
e))*x^9)/9 + (b^3*e^4*(5*b*B*d + A*b*e + 4*a*B*e)*x^10)/10 + (b^4*B*e^5*x^1
1)/11
```

fricas [B] time = 0.73, size = 856, normalized size = 4.16

$$\frac{1}{11}x^{11}e^5b^4B+\frac{1}{2}x^{10}e^4db^4B+\frac{2}{5}x^{10}e^5b^3aB+\frac{1}{10}x^{10}e^5b^4A+\frac{10}{9}x^9e^3d^2b^4B+\frac{20}{9}x^9e^4db^3aB+\frac{2}{3}x^9e^5b^2a^2B+\frac{5}{9}x^9e^4db^4A+\frac{4}{9}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*b^4*B + 1/2*x^10*e^4*d*b^4*B + 2/5*x^10*e^5*b^3*a*B + 1/10*x^
10*e^5*b^4*A + 10/9*x^9*e^3*d^2*b^4*B + 20/9*x^9*e^4*d*b^3*a*B + 2/3*x^9*e^
5*b^2*a^2*B + 5/9*x^9*e^4*d*b^4*A + 4/9*x^9*e^5*b^3*a*A + 5/4*x^8*e^2*d^3*b
^4*B + 5*x^8*e^3*d^2*b^3*a*B + 15/4*x^8*e^4*d*b^2*a^2*B + 1/2*x^8*e^5*b*a^3
*B + 5/4*x^8*e^3*d^2*b^4*A + 5/2*x^8*e^4*d*b^3*a*A + 3/4*x^8*e^5*b^2*a^2*A
+ 5/7*x^7*e*d^4*b^4*B + 40/7*x^7*e^2*d^3*b^3*a*B + 60/7*x^7*e^3*d^2*b^2*a^2
*B + 20/7*x^7*e^4*d*b*a^3*B + 1/7*x^7*e^5*a^4*B + 10/7*x^7*e^2*d^3*b^4*A +
40/7*x^7*e^3*d^2*b^3*a*A + 30/7*x^7*e^4*d*b^2*a^2*A + 4/7*x^7*e^5*b*a^3*A +
 1/6*x^6*d^5*b^4*B + 10/3*x^6*e*d^4*b^3*a*B + 10*x^6*e^2*d^3*b^2*a^2*B + 20
/3*x^6*e^3*d^2*b*a^3*B + 5/6*x^6*e^4*d*a^4*B + 5/6*x^6*e*d^4*b^4*A + 20/3*x
^6*e^2*d^3*b^3*a*A + 10*x^6*e^3*d^2*b^2*a^2*A + 10/3*x^6*e^4*d*b*a^3*A + 1/
6*x^6*e^5*a^4*A + 4/5*x^5*d^5*b^3*a*B + 6*x^5*e*d^4*b^2*a^2*B + 8*x^5*e^2*d
^3*b*a^3*B + 2*x^5*e^3*d^2*a^4*B + 1/5*x^5*d^5*b^4*A + 4*x^5*e*d^4*b^3*a*A
+ 12*x^5*e^2*d^3*b^2*a^2*A + 8*x^5*e^3*d^2*b*a^3*A + x^5*e^4*d*a^4*A + 3/2*
x^4*d^5*b^2*a^2*B + 5*x^4*e*d^4*b*a^3*B + 5/2*x^4*e^2*d^3*a^4*B + x^4*d^5*b
^3*a*A + 15/2*x^4*e*d^4*b^2*a^2*A + 10*x^4*e^2*d^3*b*a^3*A + 5/2*x^4*e^3*d^
2*a^4*A + 4/3*x^3*d^5*b*a^3*B + 5/3*x^3*e*d^4*a^4*B + 2*x^3*d^5*b^2*a^2*A +
 20/3*x^3*e*d^4*b*a^3*A + 10/3*x^3*e^2*d^3*a^4*A + 1/2*x^2*d^5*a^4*B + 2*x^
2*d^5*b*a^3*A + 5/2*x^2*e*d^4*a^4*A + x*d^5*a^4*A
```

giac [B] time = 0.20, size = 826, normalized size = 4.01

$$\frac{1}{11}Bb^4x^{11}e^5+\frac{1}{2}Bb^4dx^{10}e^4+\frac{10}{9}Bb^4d^2x^9e^3+\frac{5}{4}Bb^4d^3x^8e^2+\frac{5}{7}Bb^4d^4x^7e+\frac{1}{6}Bb^4d^5x^6+\frac{2}{5}Bab^3x^{10}e^5+\frac{1}{10}Ab^4x^{10}e^5+\frac{20}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/11*B*b^4*x^11*e^5 + 1/2*B*b^4*d*x^10*e^4 + 10/9*B*b^4*d^2*x^9*e^3 + 5/4*B
*b^4*d^3*x^8*e^2 + 5/7*B*b^4*d^4*x^7*e + 1/6*B*b^4*d^5*x^6 + 2/5*B*a*b^3*x^
10*e^5 + 1/10*A*b^4*x^10*e^5 + 20/9*B*a*b^3*d*x^9*e^4 + 5/9*A*b^4*d*x^9*e^4
 + 5*B*a*b^3*d^2*x^8*e^3 + 5/4*A*b^4*d^2*x^8*e^3 + 40/7*B*a*b^3*d^3*x^7*e^2
 + 10/7*A*b^4*d^3*x^7*e^2 + 10/3*B*a*b^3*d^4*x^6*e + 5/6*A*b^4*d^4*x^6*e +
4/5*B*a*b^3*d^5*x^5 + 1/5*A*b^4*d^5*x^5 + 2/3*B*a^2*b^2*x^9*e^5 + 4/9*A*a*b
^3*x^9*e^5 + 15/4*B*a^2*b^2*d*x^8*e^4 + 5/2*A*a*b^3*d*x^8*e^4 + 60/7*B*a^2*
b^2*d^2*x^7*e^3 + 40/7*A*a*b^3*d^2*x^7*e^3 + 10*B*a^2*b^2*d^3*x^6*e^2 + 20/
3*A*a*b^3*d^3*x^6*e^2 + 6*B*a^2*b^2*d^4*x^5*e + 4*A*a*b^3*d^4*x^5*e + 3/2*B
*a^2*b^2*d^5*x^4 + A*a*b^3*d^5*x^4 + 1/2*B*a^3*b*x^8*e^5 + 3/4*A*a^2*b^2*x^
8*e^5 + 20/7*B*a^3*b*d*x^7*e^4 + 30/7*A*a^2*b^2*d*x^7*e^4 + 20/3*B*a^3*b*d^
2*x^6*e^3 + 10*A*a^2*b^2*d^2*x^6*e^3 + 8*B*a^3*b*d^3*x^5*e^2 + 12*A*a^2*b^2
*d^3*x^5*e^2 + 5*B*a^3*b*d^4*x^4*e + 15/2*A*a^2*b^2*d^4*x^4*e + 4/3*B*a^3*b
*d^5*x^3 + 2*A*a^2*b^2*d^5*x^3 + 1/7*B*a^4*x^7*e^5 + 4/7*A*a^3*b*x^7*e^5 +
5/6*B*a^4*d*x^6*e^4 + 10/3*A*a^3*b*d*x^6*e^4 + 2*B*a^4*d^2*x^5*e^3 + 8*A*a^
3*b*d^2*x^5*e^3 + 5/2*B*a^4*d^3*x^4*e^2 + 10*A*a^3*b*d^3*x^4*e^2 + 5/3*B*a^
4*d^4*x^3*e + 20/3*A*a^3*b*d^4*x^3*e + 1/2*B*a^4*d^5*x^2 + 2*A*a^3*b*d^5*x^
2 + 1/6*A*a^4*x^6*e^5 + A*a^4*d*x^5*e^4 + 5/2*A*a^4*d^2*x^4*e^3 + 10/3*A*a^
4*d^3*x^3*e^2 + 5/2*A*a^4*d^4*x^2*e + A*a^4*d^5*x
```

maple [B] time = 0.04, size = 692, normalized size = 3.36

$$\frac{B\,b^4e^5x^{11}}{11}+A\,a^4d^5x+\frac{\left(4Ba\,b^3e^5+\left(A\,e^5+5Bd\,e^4\right)b^4\right)x^{10}}{10}+\frac{(6B\,a^2b^2e^5+4\left(A\,e^5+5Bd\,e^4\right)a\,b^3+(5Ad\,e^4+10}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/11*B*e^5*b^4*x^11+1/10*((A*e^5+5*B*d*e^4)*b^4+4*B*e^5*a*b^3)*x^10+1/9*((5
*A*d*e^4+10*B*d^2*e^3)*b^4+4*(A*e^5+5*B*d*e^4)*a*b^3+6*B*e^5*a^2*b^2)*x^9+1
/8*((10*A*d^2*e^3+10*B*d^3*e^2)*b^4+4*(5*A*d*e^4+10*B*d^2*e^3)*a*b^3+6*(A*e
^5+5*B*d*e^4)*a^2*b^2+4*B*e^5*a^3*b)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*b^4+
4*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b^3+6*(5*A*d*e^4+10*B*d^2*e^3)*a^2*b^2+4*(A
*e^5+5*B*d*e^4)*a^3*b+B*e^5*a^4)*x^7+1/6*((5*A*d^4*e+B*d^5)*b^4+4*(10*A*d^3
*e^2+5*B*d^4*e)*a*b^3+6*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*b^2+4*(5*A*d*e^4+10
*B*d^2*e^3)*a^3*b+(A*e^5+5*B*d*e^4)*a^4)*x^6+1/5*(A*d^5*b^4+4*(5*A*d^4*e+B*
d^5)*a*b^3+6*(10*A*d^3*e^2+5*B*d^4*e)*a^2*b^2+4*(10*A*d^2*e^3+10*B*d^3*e^2)
*a^3*b+(5*A*d*e^4+10*B*d^2*e^3)*a^4)*x^5+1/4*(4*A*d^5*a*b^3+6*(5*A*d^4*e+B*
d^5)*a^2*b^2+4*(10*A*d^3*e^2+5*B*d^4*e)*a^3*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a
^4)*x^4+1/3*(6*A*d^5*a^2*b^2+4*(5*A*d^4*e+B*d^5)*a^3*b+(10*A*d^3*e^2+5*B*d^
4*e)*a^4)*x^3+1/2*(4*A*d^5*a^3*b+(5*A*d^4*e+B*d^5)*a^4)*x^2+A*d^5*a^4*x
```

maxima [B] time = 0.66, size = 686, normalized size = 3.33

$$\frac{1}{11}\,Bb^4e^5x^{11}+Aa^4d^5x+\frac{1}{10}\left(5\,Bb^4de^4+\left(4\,Bab^3+Ab^4\right)e^5\right)x^{10}+\frac{1}{9}\,(10\,Bb^4d^2e^3+5\left(4\,Bab^3+Ab^4\right)de^4+2\,(3\,Ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*b^4*e^5*x^11 + A*a^4*d^5*x + 1/10*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^
4)*e^5)*x^10 + 1/9*(10*B*b^4*d^2*e^3 + 5*(4*B*a*b^3 + A*b^4)*d*e^4 + 2*(3*B
*a^2*b^2 + 2*A*a*b^3)*e^5)*x^9 + 1/4*(5*B*b^4*d^3*e^2 + 5*(4*B*a*b^3 + A*b^
4)*d^2*e^3 + 5*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*
e^5)*x^8 + 1/7*(5*B*b^4*d^4*e + 10*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 20*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 +
4*A*a^3*b)*e^5)*x^7 + 1/6*(B*b^4*d^5 + A*a^4*e^5 + 5*(4*B*a*b^3 + A*b^4)*d^
4*e + 20*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d
^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4)*x^6 + 1/5*(5*A*a^4*d*e^4 + (4*B*a*b^3
 + A*b^4)*d^5 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^3*e^2 + 10*(B*a^4 + 4*A*a^3*b)*d^2*e^3)*x^5 + 1/2*(5*A*a^4*d^2*e^3
 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^5 + 5*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e + 5*(B
*a^4 + 4*A*a^3*b)*d^3*e^2)*x^4 + 1/3*(10*A*a^4*d^3*e^2 + 2*(2*B*a^3*b + 3*A
*a^2*b^2)*d^5 + 5*(B*a^4 + 4*A*a^3*b)*d^4*e)*x^3 + 1/2*(5*A*a^4*d^4*e + (B*
a^4 + 4*A*a^3*b)*d^5)*x^2
```

mupad [B] time = 0.25, size = 711, normalized size = 3.45

$$x^5 \left(2\,B\,a^4\,d^2\,e^3 + A\,a^4\,d\,e^4 + 8\,B\,a^3\,b\,d^3\,e^2 + 8\,A\,a^3\,b\,d^2\,e^3 + 6\,B\,a^2\,b^2\,d^4\,e + 12\,A\,a^2\,b^2\,d^3\,e^2 + \frac{4\,B\,a\,b^3\,d^5}{5} + 4\,A\,a\,b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((A*b^4*d^5)/5 + (4*B*a*b^3*d^5)/5 + A*a^4*d*e^4 + 2*B*a^4*d^2*e^3 + 8*
A*a^3*b*d^2*e^3 + 6*B*a^2*b^2*d^4*e + 8*B*a^3*b*d^3*e^2 + 12*A*a^2*b^2*d^3*
e^2 + 4*A*a*b^3*d^4*e) + x^7*((B*a^4*e^5)/7 + (4*A*a^3*b*e^5)/7 + (5*B*b^4*
d^4*e)/7 + (10*A*b^4*d^3*e^2)/7 + (40*A*a*b^3*d^2*e^3)/7 + (30*A*a^2*b^2*d*
e^4)/7 + (40*B*a*b^3*d^3*e^2)/7 + (60*B*a^2*b^2*d^2*e^3)/7 + (20*B*a^3*b*d*
e^4)/7) + x^4*(A*a*b^3*d^5 + (3*B*a^2*b^2*d^5)/2 + (5*A*a^4*d^2*e^3)/2 + (5
*B*a^4*d^3*e^2)/2 + (15*A*a^2*b^2*d^4*e)/2 + 10*A*a^3*b*d^3*e^2 + 5*B*a^3*b
*d^4*e) + x^8*((B*a^3*b*e^5)/2 + (3*A*a^2*b^2*e^5)/4 + (5*A*b^4*d^2*e^3)/4
+ (5*B*b^4*d^3*e^2)/4 + 5*B*a*b^3*d^2*e^3 + (15*B*a^2*b^2*d*e^4)/4 + (5*A*a
*b^3*d*e^4)/2) + x^3*((4*B*a^3*b*d^5)/3 + (5*B*a^4*d^4*e)/3 + 2*A*a^2*b^2*d
^5 + (10*A*a^4*d^3*e^2)/3 + (20*A*a^3*b*d^4*e)/3) + x^9*((4*A*a*b^3*e^5)/9
+ (5*A*b^4*d*e^4)/9 + (2*B*a^2*b^2*e^5)/3 + (10*B*b^4*d^2*e^3)/9 + (20*B*a*
b^3*d*e^4)/9) + x^6*((A*a^4*e^5)/6 + (B*b^4*d^5)/6 + (5*A*b^4*d^4*e)/6 + (5
*B*a^4*d*e^4)/6 + (20*A*a*b^3*d^3*e^2)/3 + (20*B*a^3*b*d^2*e^3)/3 + 10*A*a^
2*b^2*d^2*e^3 + 10*B*a^2*b^2*d^3*e^2 + (10*A*a^3*b*d*e^4)/3 + (10*B*a*b^3*d
^4*e)/3) + (a^3*d^4*x^2*(5*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^4*x^10*(A*b
*e + 4*B*a*e + 5*B*b*d))/10 + A*a^4*d^5*x + (B*b^4*e^5*x^11)/11
```

sympy [B] time = 0.18, size = 884, normalized size = 4.29

$$Aa^4d^5x+\frac{Bb^4e^5x^{11}}{11}+x^{10}\left(\frac{Ab^4e^5}{10}+\frac{2Bab^3e^5}{5}+\frac{Bb^4de^4}{2}\right)+x^9\left(\frac{4Aab^3e^5}{9}+\frac{5Ab^4de^4}{9}+\frac{2Ba^2b^2e^5}{3}+\frac{20Bab^3de^4}{9}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**5*x + B*b**4*e**5*x**11/11 + x**10*(A*b**4*e**5/10 + 2*B*a*b**3*e
**5/5 + B*b**4*d*e**4/2) + x**9*(4*A*a*b**3*e**5/9 + 5*A*b**4*d*e**4/9 + 2*
B*a**2*b**2*e**5/3 + 20*B*a*b**3*d*e**4/9 + 10*B*b**4*d**2*e**3/9) + x**8*(
3*A*a**2*b**2*e**5/4 + 5*A*a*b**3*d*e**4/2 + 5*A*b**4*d**2*e**3/4 + B*a**3*
b*e**5/2 + 15*B*a**2*b**2*d*e**4/4 + 5*B*a*b**3*d**2*e**3 + 5*B*b**4*d**3*e
**2/4) + x**7*(4*A*a**3*b*e**5/7 + 30*A*a**2*b**2*d*e**4/7 + 40*A*a*b**3*d*
*2*e**3/7 + 10*A*b**4*d**3*e**2/7 + B*a**4*e**5/7 + 20*B*a**3*b*d*e**4/7 +
60*B*a**2*b**2*d**2*e**3/7 + 40*B*a*b**3*d**3*e**2/7 + 5*B*b**4*d**4*e/7) +
 x**6*(A*a**4*e**5/6 + 10*A*a**3*b*d*e**4/3 + 10*A*a**2*b**2*d**2*e**3 + 20
*A*a*b**3*d**3*e**2/3 + 5*A*b**4*d**4*e/6 + 5*B*a**4*d*e**4/6 + 20*B*a**3*b
*d**2*e**3/3 + 10*B*a**2*b**2*d**3*e**2 + 10*B*a*b**3*d**4*e/3 + B*b**4*d**
5/6) + x**5*(A*a**4*d*e**4 + 8*A*a**3*b*d**2*e**3 + 12*A*a**2*b**2*d**3*e**
2 + 4*A*a*b**3*d**4*e + A*b**4*d**5/5 + 2*B*a**4*d**2*e**3 + 8*B*a**3*b*d**
3*e**2 + 6*B*a**2*b**2*d**4*e + 4*B*a*b**3*d**5/5) + x**4*(5*A*a**4*d**2*e*
*3/2 + 10*A*a**3*b*d**3*e**2 + 15*A*a**2*b**2*d**4*e/2 + A*a*b**3*d**5 + 5*
B*a**4*d**3*e**2/2 + 5*B*a**3*b*d**4*e + 3*B*a**2*b**2*d**5/2) + x**3*(10*A
*a**4*d**3*e**2/3 + 20*A*a**3*b*d**4*e/3 + 2*A*a**2*b**2*d**5 + 5*B*a**4*d*
*4*e/3 + 4*B*a**3*b*d**5/3) + x**2*(5*A*a**4*d**4*e/2 + 2*A*a**3*b*d**5 + B
*a**4*d**5/2)
```

3.1676 $\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=204

$$\frac{e^3(a+bx)^9(-5aBe+Abe+4bBd)}{9b^6}+\frac{e^2(a+bx)^8(bd-ae)(-5aBe+2Abe+3bBd)}{4b^6}+\frac{2e(a+bx)^7(bd-ae)^2(-5aB}{7b^6}$$

```
[Out] 1/5*(A*b-B*a)*(-a*e+b*d)^4*(b*x+a)^5/b^6+1/6*(-a*e+b*d)^3*(4*A*b*e-5*B*a*e+
B*b*d)*(b*x+a)^6/b^6+2/7*e*(-a*e+b*d)^2*(3*A*b*e-5*B*a*e+2*B*b*d)*(b*x+a)^7
/b^6+1/4*e^2*(-a*e+b*d)*(2*A*b*e-5*B*a*e+3*B*b*d)*(b*x+a)^8/b^6+1/9*e^3*(A*
b*e-5*B*a*e+4*B*b*d)*(b*x+a)^9/b^6+1/10*B*e^4*(b*x+a)^10/b^6
```

Rubi [A] time = 0.46, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}=0.065$, Rules used = $\{27, 77\}$

$$\frac{e^3(a+bx)^9(-5aBe+Abe+4bBd)}{9b^6}+\frac{e^2(a+bx)^8(bd-ae)(-5aBe+2Abe+3bBd)}{4b^6}+\frac{2e(a+bx)^7(bd-ae)^2(-5aB}{7b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^4*(a + b*x)^5)/(5*b^6) + ((b*d - a*e)^3*(b*B*d + 4
*A*b*e - 5*a*B*e)*(a + b*x)^6)/(6*b^6) + (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*
b*e - 5*a*B*e)*(a + b*x)^7)/(7*b^6) + (e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e -
 5*a*B*e)*(a + b*x)^8)/(4*b^6) + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)
^9)/(9*b^6) + (B*e^4*(a + b*x)^10)/(10*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^4\,dx\\ &= \int \Bigg(\frac{(Ab-aB)(bd-ae)^4(a+bx)^4}{b^5}+\frac{(bd-ae)^3(bBd+4Abe-5}{b^5}\\ &= \frac{(Ab-aB)(bd-ae)^4(a+bx)^5}{5b^6}+\frac{(bd-ae)^3(bBd+4Abe-5aBe}{6b^6}\end{aligned}$$

Mathematica [B] time = 0.16, size = 512, normalized size = 2.51

$$a^4Ad^4x+\frac{1}{2}a^3d^3x^2(4A(ae+bd)+aBd)+\frac{2}{3}a^2d^2x^3\left(A\left(3a^2e^2+8abde+3b^2d^2\right)+2aBd(ae+bd)\right)+\frac{1}{4}b^2e^2x^8\big(3a^2Be^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^4*x + (a^3*d^3*(a*B*d + 4*A*(b*d + a*e))*x^2)/2 + (2*a^2*d^2*(2*a*B
*d*(b*d + a*e) + A*(3*b^2*d^2 + 8*a*b*d*e + 3*a^2*e^2))*x^3)/3 + (a*d*(a*B*
d*(3*b^2*d^2 + 8*a*b*d*e + 3*a^2*e^2) + 2*A*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^
2*b*d*e^2 + a^3*e^3))*x^4)/2 + ((4*a*B*d*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^2*b
*d*e^2 + a^3*e^3) + A*(b^4*d^4 + 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2 + 16*a
^3*b*d*e^3 + a^4*e^4))*x^5)/5 + ((a^4*B*e^4 + 4*a^3*b*e^3*(4*B*d + A*e) + 1
2*a^2*b^2*d*e^2*(3*B*d + 2*A*e) + 8*a*b^3*d^2*e*(2*B*d + 3*A*e) + b^4*d^3*(
B*d + 4*A*e))*x^6)/6 + (2*b*e*(2*a^3*B*e^3 + 3*a^2*b*e^2*(4*B*d + A*e) + 4*
a*b^2*d*e*(3*B*d + 2*A*e) + b^3*d^2*(2*B*d + 3*A*e))*x^7)/7 + (b^2*e^2*(3*a
^2*B*e^2 + 2*a*b*e*(4*B*d + A*e) + b^2*d*(3*B*d + 2*A*e))*x^8)/4 + (b^3*e^3
*(4*b*B*d + A*b*e + 4*a*B*e)*x^9)/9 + (b^4*B*e^4*x^10)/10
```

fricas [B] time = 0.65, size = 696, normalized size = 3.41

$$\frac{1}{10}x^{10}e^4b^4B+\frac{4}{9}x^9e^3db^4B+\frac{4}{9}x^9e^4b^3aB+\frac{1}{9}x^9e^4b^4A+\frac{3}{4}x^8e^2d^2b^4B+2x^8e^3db^3aB+\frac{3}{4}x^8e^4b^2a^2B+\frac{1}{2}x^8e^3db^4A+\frac{1}{2}x^8e^4b^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*b^4*B + 4/9*x^9*e^3*d*b^4*B + 4/9*x^9*e^4*b^3*a*B + 1/9*x^9*e
^4*b^4*A + 3/4*x^8*e^2*d^2*b^4*B + 2*x^8*e^3*d*b^3*a*B + 3/4*x^8*e^4*b^2*a^
2*B + 1/2*x^8*e^3*d*b^4*A + 1/2*x^8*e^4*b^3*a*A + 4/7*x^7*e*d^3*b^4*B + 24/
7*x^7*e^2*d^2*b^3*a*B + 24/7*x^7*e^3*d*b^2*a^2*B + 4/7*x^7*e^4*b*a^3*B + 6/
7*x^7*e^2*d^2*b^4*A + 16/7*x^7*e^3*d*b^3*a*A + 6/7*x^7*e^4*b^2*a^2*A + 1/6*
x^6*d^4*b^4*B + 8/3*x^6*e*d^3*b^3*a*B + 6*x^6*e^2*d^2*b^2*a^2*B + 8/3*x^6*e
^3*d*b*a^3*B + 1/6*x^6*e^4*a^4*B + 2/3*x^6*e*d^3*b^4*A + 4*x^6*e^2*d^2*b^3*
a*A + 4*x^6*e^3*d*b^2*a^2*A + 2/3*x^6*e^4*b*a^3*A + 4/5*x^5*d^4*b^3*a*B + 2
4/5*x^5*e*d^3*b^2*a^2*B + 24/5*x^5*e^2*d^2*b*a^3*B + 4/5*x^5*e^3*d*a^4*B +
1/5*x^5*d^4*b^4*A + 16/5*x^5*e*d^3*b^3*a*A + 36/5*x^5*e^2*d^2*b^2*a^2*A + 1
6/5*x^5*e^3*d*b*a^3*A + 1/5*x^5*e^4*a^4*A + 3/2*x^4*d^4*b^2*a^2*B + 4*x^4*e
*d^3*b*a^3*B + 3/2*x^4*e^2*d^2*a^4*B + x^4*d^4*b^3*a*A + 6*x^4*e*d^3*b^2*a^
2*A + 6*x^4*e^2*d^2*b*a^3*A + x^4*e^3*d*a^4*A + 4/3*x^3*d^4*b*a^3*B + 4/3*x
^3*e*d^3*a^4*B + 2*x^3*d^4*b^2*a^2*A + 16/3*x^3*e*d^3*b*a^3*A + 2*x^3*e^2*d
^2*a^4*A + 1/2*x^2*d^4*a^4*B + 2*x^2*d^4*b*a^3*A + 2*x^2*e*d^3*a^4*A + x*d^
4*a^4*A
```

giac [B] time = 0.16, size = 676, normalized size = 3.31

$$\frac{1}{10}Bb^4x^{10}e^4+\frac{4}{9}Bb^4dx^9e^3+\frac{3}{4}Bb^4d^2x^8e^2+\frac{4}{7}Bb^4d^3x^7e+\frac{1}{6}Bb^4d^4x^6+\frac{4}{9}Bab^3x^9e^4+\frac{1}{9}Ab^4x^9e^4+2Bab^3dx^8e^3+\frac{1}{2}Ab^4d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*b^4*x^10*e^4 + 4/9*B*b^4*d*x^9*e^3 + 3/4*B*b^4*d^2*x^8*e^2 + 4/7*B*b
^4*d^3*x^7*e + 1/6*B*b^4*d^4*x^6 + 4/9*B*a*b^3*x^9*e^4 + 1/9*A*b^4*x^9*e^4
+ 2*B*a*b^3*d*x^8*e^3 + 1/2*A*b^4*d*x^8*e^3 + 24/7*B*a*b^3*d^2*x^7*e^2 + 6/
7*A*b^4*d^2*x^7*e^2 + 8/3*B*a*b^3*d^3*x^6*e + 2/3*A*b^4*d^3*x^6*e + 4/5*B*a
*b^3*d^4*x^5 + 1/5*A*b^4*d^4*x^5 + 3/4*B*a^2*b^2*x^8*e^4 + 1/2*A*a*b^3*x^8*
e^4 + 24/7*B*a^2*b^2*d*x^7*e^3 + 16/7*A*a*b^3*d*x^7*e^3 + 6*B*a^2*b^2*d^2*x
^6*e^2 + 4*A*a*b^3*d^2*x^6*e^2 + 24/5*B*a^2*b^2*d^3*x^5*e + 16/5*A*a*b^3*d^
3*x^5*e + 3/2*B*a^2*b^2*d^4*x^4 + A*a*b^3*d^4*x^4 + 4/7*B*a^3*b*x^7*e^4 + 6
/7*A*a^2*b^2*x^7*e^4 + 8/3*B*a^3*b*d*x^6*e^3 + 4*A*a^2*b^2*d*x^6*e^3 + 24/5
*B*a^3*b*d^2*x^5*e^2 + 36/5*A*a^2*b^2*d^2*x^5*e^2 + 4*B*a^3*b*d^3*x^4*e + 6
*A*a^2*b^2*d^3*x^4*e + 4/3*B*a^3*b*d^4*x^3 + 2*A*a^2*b^2*d^4*x^3 + 1/6*B*a^
```

```
4*x^6*e^4 + 2/3*A*a^3*b*x^6*e^4 + 4/5*B*a^4*d*x^5*e^3 + 16/5*A*a^3*b*d*x^5*
e^3 + 3/2*B*a^4*d^2*x^4*e^2 + 6*A*a^3*b*d^2*x^4*e^2 + 4/3*B*a^4*d^3*x^3*e +
 16/3*A*a^3*b*d^3*x^3*e + 1/2*B*a^4*d^4*x^2 + 2*A*a^3*b*d^4*x^2 + 1/5*A*a^4
*x^5*e^4 + A*a^4*d*x^4*e^3 + 2*A*a^4*d^2*x^3*e^2 + 2*A*a^4*d^3*x^2*e + A*a^
4*d^4*x
```

maple [**B**] time = 0.05, size = 563, normalized size = 2.76

$$\frac{B\,b^4e^4x^{10}}{10}+A\,a^4d^4x+\frac{\left(4Ba\,b^3e^4+\left(A\,e^4+4Bd\,e^3\right)b^4\right)x^9}{9}+\frac{(6B\,a^2b^2e^4+4\left(A\,e^4+4Bd\,e^3\right)a\,b^3+(4Ad\,e^3+6B\,d}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*B*e^4*b^4*x^10+1/9*((A*e^4+4*B*d*e^3)*b^4+4*B*e^4*a*b^3)*x^9+1/8*((4*A
*d*e^3+6*B*d^2*e^2)*b^4+4*(A*e^4+4*B*d*e^3)*a*b^3+6*B*e^4*a^2*b^2)*x^8+1/7*
((6*A*d^2*e^2+4*B*d^3*e)*b^4+4*(4*A*d*e^3+6*B*d^2*e^2)*a*b^3+6*(A*e^4+4*B*d
*e^3)*a^2*b^2+4*B*e^4*a^3*b)*x^7+1/6*((4*A*d^3*e+B*d^4)*b^4+4*(6*A*d^2*e^2+
4*B*d^3*e)*a*b^3+6*(4*A*d*e^3+6*B*d^2*e^2)*a^2*b^2+4*(A*e^4+4*B*d*e^3)*a^3*
b+B*e^4*a^4)*x^6+1/5*(A*d^4*b^4+4*(4*A*d^3*e+B*d^4)*a*b^3+6*(6*A*d^2*e^2+4*
B*d^3*e)*a^2*b^2+4*(4*A*d*e^3+6*B*d^2*e^2)*a^3*b+(A*e^4+4*B*d*e^3)*a^4)*x^5
+1/4*(4*A*d^4*a*b^3+6*(4*A*d^3*e+B*d^4)*a^2*b^2+4*(6*A*d^2*e^2+4*B*d^3*e)*a
^3*b+(4*A*d*e^3+6*B*d^2*e^2)*a^4)*x^4+1/3*(6*A*d^4*a^2*b^2+4*(4*A*d^3*e+B*d
^4)*a^3*b+(6*A*d^2*e^2+4*B*d^3*e)*a^4)*x^3+1/2*(4*A*d^4*a^3*b+(4*A*d^3*e+B*
d^4)*a^4)*x^2+A*d^4*a^4*x
```

maxima [**B**] time = 0.56, size = 562, normalized size = 2.75

$$\frac{1}{10}\,Bb^4e^4x^{10}+Aa^4d^4x+\frac{1}{9}\left(4\,Bb^4de^3+\left(4\,Bab^3+Ab^4\right)e^4\right)x^9+\frac{1}{4}\,(3\,Bb^4d^2e^2+2\left(4\,Bab^3+Ab^4\right)de^3+(3\,Ba^2b^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*b^4*e^4*x^10 + A*a^4*d^4*x + 1/9*(4*B*b^4*d*e^3 + (4*B*a*b^3 + A*b^4
)*e^4)*x^9 + 1/4*(3*B*b^4*d^2*e^2 + 2*(4*B*a*b^3 + A*b^4)*d*e^3 + (3*B*a^2*
b^2 + 2*A*a*b^3)*e^4)*x^8 + 2/7*(2*B*b^4*d^3*e + 3*(4*B*a*b^3 + A*b^4)*d^2*
e^2 + 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^3 + (2*B*a^3*b + 3*A*a^2*b^2)*e^4)*x^
7 + 1/6*(B*b^4*d^4 + 4*(4*B*a*b^3 + A*b^4)*d^3*e + 12*(3*B*a^2*b^2 + 2*A*a*
b^3)*d^2*e^2 + 8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)
*x^6 + 1/5*(A*a^4*e^4 + (4*B*a*b^3 + A*b^4)*d^4 + 8*(3*B*a^2*b^2 + 2*A*a*b^
3)*d^3*e + 12*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^2 + 4*(B*a^4 + 4*A*a^3*b)*d*e
^3)*x^5 + 1/2*(2*A*a^4*d*e^3 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^4 + 4*(2*B*a^3*b
 + 3*A*a^2*b^2)*d^3*e + 3*(B*a^4 + 4*A*a^3*b)*d^2*e^2)*x^4 + 2/3*(3*A*a^4*d
^2*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^4 + 2*(B*a^4 + 4*A*a^3*b)*d^3*e)*x^3 +
 1/2*(4*A*a^4*d^3*e + (B*a^4 + 4*A*a^3*b)*d^4)*x^2
```

mupad [**B**] time = 2.17, size = 576, normalized size = 2.82

$$x^5\,\left(\frac{4\,B\,a^4\,d\,e^3}{5}+\frac{A\,a^4\,e^4}{5}+\frac{24\,B\,a^3\,b\,d^2\,e^2}{5}+\frac{16\,A\,a^3\,b\,d\,e^3}{5}+\frac{24\,B\,a^2\,b^2\,d^3\,e}{5}+\frac{36\,A\,a^2\,b^2\,d^2\,e^2}{5}+\frac{4\,B\,a\,b^3\,d^4}{5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*((A*a^4*e^4)/5 + (A*b^4*d^4)/5 + (4*B*a*b^3*d^4)/5 + (4*B*a^4*d*e^3)/5
+ (24*B*a^2*b^2*d^3*e)/5 + (24*B*a^3*b*d^2*e^2)/5 + (36*A*a^2*b^2*d^2*e^2)/
5 + (16*A*a*b^3*d^3*e)/5 + (16*A*a^3*b*d*e^3)/5) + x^6*((B*a^4*e^4)/6 + (B*
b^4*d^4)/6 + (2*A*a^3*b*e^4)/3 + (2*A*b^4*d^3*e)/3 + 4*A*a*b^3*d^2*e^2 + 4*
A*a^2*b^2*d*e^3 + 6*B*a^2*b^2*d^2*e^2 + (8*B*a*b^3*d^3*e)/3 + (8*B*a^3*b*d*
e^3)/3) + x^3*((4*B*a^3*b*d^4)/3 + (4*B*a^4*d^3*e)/3 + 2*A*a^2*b^2*d^4 + 2*
A*a^4*d^2*e^2 + (16*A*a^3*b*d^3*e)/3) + x^8*((A*a*b^3*e^4)/2 + (A*b^4*d*e^3
)/2 + (3*B*a^2*b^2*e^4)/4 + (3*B*b^4*d^2*e^2)/4 + 2*B*a*b^3*d*e^3) + x^4*(A
*a*b^3*d^4 + A*a^4*d*e^3 + (3*B*a^2*b^2*d^4)/2 + (3*B*a^4*d^2*e^2)/2 + 6*A*
a^2*b^2*d^3*e + 6*A*a^3*b*d^2*e^2 + 4*B*a^3*b*d^3*e) + x^7*((4*B*a^3*b*e^4)
/7 + (4*B*b^4*d^3*e)/7 + (6*A*a^2*b^2*e^4)/7 + (6*A*b^4*d^2*e^2)/7 + (24*B*
a*b^3*d^2*e^2)/7 + (24*B*a^2*b^2*d*e^3)/7 + (16*A*a*b^3*d*e^3)/7) + (a^3*d^
3*x^2*(4*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e^3*x^9*(A*b*e + 4*B*a*e + 4*B*
b*d))/9 + A*a^4*d^4*x + (B*b^4*e^4*x^10)/10
```

sympy [B] time = 0.16, size = 717, normalized size = 3.51

$$Aa^4d^4x+\frac{Bb^4e^4x^{10}}{10}+x^9\left(\frac{Ab^4e^4}{9}+\frac{4Bab^3e^4}{9}+\frac{4Bb^4de^3}{9}\right)+x^8\left(\frac{Aab^3e^4}{2}+\frac{Ab^4de^3}{2}+\frac{3Ba^2b^2e^4}{4}+2Bab^3de^3+\frac{3Bb^4d^2}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**4*x + B*b**4*e**4*x**10/10 + x**9*(A*b**4*e**4/9 + 4*B*a*b**3*e**
4/9 + 4*B*b**4*d*e**3/9) + x**8*(A*a*b**3*e**4/2 + A*b**4*d*e**3/2 + 3*B*a*
*2*b**2*e**4/4 + 2*B*a*b**3*d*e**3 + 3*B*b**4*d**2*e**2/4) + x**7*(6*A*a**2
*b**2*e**4/7 + 16*A*a*b**3*d*e**3/7 + 6*A*b**4*d**2*e**2/7 + 4*B*a**3*b*e**
4/7 + 24*B*a**2*b**2*d*e**3/7 + 24*B*a*b**3*d**2*e**2/7 + 4*B*b**4*d**3*e/7
) + x**6*(2*A*a**3*b*e**4/3 + 4*A*a**2*b**2*d*e**3 + 4*A*a*b**3*d**2*e**2 +
 2*A*b**4*d**3*e/3 + B*a**4*e**4/6 + 8*B*a**3*b*d*e**3/3 + 6*B*a**2*b**2*d*
*2*e**2 + 8*B*a*b**3*d**3*e/3 + B*b**4*d**4/6) + x**5*(A*a**4*e**4/5 + 16*A
*a**3*b*d*e**3/5 + 36*A*a**2*b**2*d**2*e**2/5 + 16*A*a*b**3*d**3*e/5 + A*b*
*4*d**4/5 + 4*B*a**4*d*e**3/5 + 24*B*a**3*b*d**2*e**2/5 + 24*B*a**2*b**2*d*
*3*e/5 + 4*B*a*b**3*d**4/5) + x**4*(A*a**4*d*e**3 + 6*A*a**3*b*d**2*e**2 +
6*A*a**2*b**2*d**3*e + A*a*b**3*d**4 + 3*B*a**4*d**2*e**2/2 + 4*B*a**3*b*d*
*3*e + 3*B*a**2*b**2*d**4/2) + x**3*(2*A*a**4*d**2*e**2 + 16*A*a**3*b*d**3*
e/3 + 2*A*a**2*b**2*d**4 + 4*B*a**4*d**3*e/3 + 4*B*a**3*b*d**4/3) + x**2*(2
*A*a**4*d**3*e + 2*A*a**3*b*d**4 + B*a**4*d**4/2)
```

3.1677 $\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=159

$$\frac{e^2(a+bx)^8(-4aBe+Abe+3bBd)}{8b^5}+\frac{3e(a+bx)^7(bd-ae)(-2aBe+Abe+bBd)}{7b^5}+\frac{(a+bx)^6(bd-ae)^2(-4aBe+3}{6b^5}$$

```
[Out] 1/5*(A*b-B*a)*(-a*e+b*d)^3*(b*x+a)^5/b^5+1/6*(-a*e+b*d)^2*(3*A*b*e-4*B*a*e+
B*b*d)*(b*x+a)^6/b^5+3/7*e*(-a*e+b*d)*(A*b*e-2*B*a*e+B*b*d)*(b*x+a)^7/b^5+1
/8*e^2*(A*b*e-4*B*a*e+3*B*b*d)*(b*x+a)^8/b^5+1/9*B*e^3*(b*x+a)^9/b^5
```

Rubi [A] time = 0.31, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2(a+bx)^8(-4aBe+Abe+3bBd)}{8b^5}+\frac{3e(a+bx)^7(bd-ae)(-2aBe+Abe+bBd)}{7b^5}+\frac{(a+bx)^6(bd-ae)^2(-4aBe+3}{6b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^5)/(5*b^5) + ((b*d - a*e)^2*(b*B*d + 3
*A*b*e - 4*a*B*e)*(a + b*x)^6)/(6*b^5) + (3*e*(b*d - a*e)*(b*B*d + A*b*e -
2*a*B*e)*(a + b*x)^7)/(7*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^
8)/(8*b^5) + (B*e^3*(a + b*x)^9)/(9*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^3\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^3(a+bx)^4}{b^4}+\frac{(bd-ae)^2(bBd+3Abe-4}{b^4}\right.\\ &= \frac{(Ab-aB)(bd-ae)^3(a+bx)^5}{5b^5}+\frac{(bd-ae)^2(bBd+3Abe-4aBe}{6b^5}\end{aligned}$$

Mathematica [B] time = 0.14, size = 402, normalized size = 2.53

$$a^4Ad^3x+\frac{1}{2}a^3d^2x^2(3aAe+aBd+4Abd)+\frac{1}{3}a^2dx^3\left(3A\left(a^2e^2+4abde+2b^2d^2\right)+aBd(3ae+4bd)\right)+\frac{1}{7}b^2ex^7\left(6a^2Be\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^3*x + (a^3*d^2*(4*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (a^2*d*(a*B*d*(
4*b*d + 3*a*e) + 3*A*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2))*x^3)/3 + (a*(3*a*B*
d*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2) + A*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^
2*b*d*e^2 + a^3*e^3))*x^4)/4 + ((a*B*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^2*b
*d*e^2 + a^3*e^3) + A*b*(b^3*d^3 + 12*a*b^2*d^2*e + 18*a^2*b*d*e^2 + 4*a^3*
e^3))*x^5)/5 + (b*(4*a^3*B*e^3 + 12*a*b^2*d*e*(B*d + A*e) + 6*a^2*b*e^2*(3*
B*d + A*e) + b^3*d^2*(B*d + 3*A*e))*x^6)/6 + (b^2*e*(6*a^2*B*e^2 + 3*b^2*d*
(B*d + A*e) + 4*a*b*e*(3*B*d + A*e))*x^7)/7 + (b^3*e^2*(3*b*B*d + A*b*e + 4
*a*B*e)*x^8)/8 + (b^4*B*e^3*x^9)/9
```

fricas [B] time = 0.48, size = 534, normalized size = 3.36

$$\frac{1}{9}x^{9}e^{3}b^{4}B+\frac{3}{8}x^{8}e^{2}db^{4}B+\frac{1}{2}x^{8}e^{3}b^{3}aB+\frac{1}{8}x^{8}e^{3}b^{4}A+\frac{3}{7}x^{7}ed^{2}b^{4}B+\frac{12}{7}x^{7}e^{2}db^{3}aB+\frac{6}{7}x^{7}e^{3}b^{2}a^{2}B+\frac{3}{7}x^{7}e^{2}db^{4}A+\frac{4}{7}x^{7}e^{3}b^{3}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*b^4*B + 3/8*x^8*e^2*d*b^4*B + 1/2*x^8*e^3*b^3*a*B + 1/8*x^8*e^3
*b^4*A + 3/7*x^7*e*d^2*b^4*B + 12/7*x^7*e^2*d*b^3*a*B + 6/7*x^7*e^3*b^2*a^2
*B + 3/7*x^7*e^2*d*b^4*A + 4/7*x^7*e^3*b^3*a*A + 1/6*x^6*d^3*b^4*B + 2*x^6*
e*d^2*b^3*a*B + 3*x^6*e^2*d*b^2*a^2*B + 2/3*x^6*e^3*b*a^3*B + 1/2*x^6*e*d^2
*b^4*A + 2*x^6*e^2*d*b^3*a*A + x^6*e^3*b^2*a^2*A + 4/5*x^5*d^3*b^3*a*B + 18
/5*x^5*e*d^2*b^2*a^2*B + 12/5*x^5*e^2*d*b*a^3*B + 1/5*x^5*e^3*a^4*B + 1/5*x
^5*d^3*b^4*A + 12/5*x^5*e*d^2*b^3*a*A + 18/5*x^5*e^2*d*b^2*a^2*A + 4/5*x^5*
e^3*b*a^3*A + 3/2*x^4*d^3*b^2*a^2*B + 3*x^4*e*d^2*b*a^3*B + 3/4*x^4*e^2*d*a
^4*B + x^4*d^3*b^3*a*A + 9/2*x^4*e*d^2*b^2*a^2*A + 3*x^4*e^2*d*b*a^3*A + 1/
4*x^4*e^3*a^4*A + 4/3*x^3*d^3*b*a^3*B + x^3*e*d^2*a^4*B + 2*x^3*d^3*b^2*a^2
*A + 4*x^3*e*d^2*b*a^3*A + x^3*e^2*d*a^4*A + 1/2*x^2*d^3*a^4*B + 2*x^2*d^3*
b*a^3*A + 3/2*x^2*e*d^2*a^4*A + x*d^3*a^4*A
```

giac [B] time = 0.17, size = 524, normalized size = 3.30

$$\frac{1}{9}\,Bb^{4}x^{9}e^{3}+\frac{3}{8}\,Bb^{4}dx^{8}e^{2}+\frac{3}{7}\,Bb^{4}d^{2}x^{7}e+\frac{1}{6}\,Bb^{4}d^{3}x^{6}+\frac{1}{2}\,Bab^{3}x^{8}e^{3}+\frac{1}{8}\,Ab^{4}x^{8}e^{3}+\frac{12}{7}\,Bab^{3}dx^{7}e^{2}+\frac{3}{7}\,Ab^{4}dx^{7}e^{2}+2\,Bab^{3}d^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*b^4*x^9*e^3 + 3/8*B*b^4*d*x^8*e^2 + 3/7*B*b^4*d^2*x^7*e + 1/6*B*b^4*d
^3*x^6 + 1/2*B*a*b^3*x^8*e^3 + 1/8*A*b^4*x^8*e^3 + 12/7*B*a*b^3*d*x^7*e^2 +
 3/7*A*b^4*d*x^7*e^2 + 2*B*a*b^3*d^2*x^6*e + 1/2*A*b^4*d^2*x^6*e + 4/5*B*a*
b^3*d^3*x^5 + 1/5*A*b^4*d^3*x^5 + 6/7*B*a^2*b^2*x^7*e^3 + 4/7*A*a*b^3*x^7*e
^3 + 3*B*a^2*b^2*d*x^6*e^2 + 2*A*a*b^3*d*x^6*e^2 + 18/5*B*a^2*b^2*d^2*x^5*e
 + 12/5*A*a*b^3*d^2*x^5*e + 3/2*B*a^2*b^2*d^3*x^4 + A*a*b^3*d^3*x^4 + 2/3*B
*a^3*b*x^6*e^3 + A*a^2*b^2*x^6*e^3 + 12/5*B*a^3*b*d*x^5*e^2 + 18/5*A*a^2*b^
2*d*x^5*e^2 + 3*B*a^3*b*d^2*x^4*e + 9/2*A*a^2*b^2*d^2*x^4*e + 4/3*B*a^3*b*d
^3*x^3 + 2*A*a^2*b^2*d^3*x^3 + 1/5*B*a^4*x^5*e^3 + 4/5*A*a^3*b*x^5*e^3 + 3/
4*B*a^4*d*x^4*e^2 + 3*A*a^3*b*d*x^4*e^2 + B*a^4*d^2*x^3*e + 4*A*a^3*b*d^2*x
^3*e + 1/2*B*a^4*d^3*x^2 + 2*A*a^3*b*d^3*x^2 + 1/4*A*a^4*x^4*e^3 + A*a^4*d*
x^3*e^2 + 3/2*A*a^4*d^2*x^2*e + A*a^4*d^3*x
```

maple [B] time = 0.04, size = 434, normalized size = 2.73

$$\frac{B\,b^{4}e^{3}x^{9}}{9}+A\,a^{4}d^{3}x+\frac{\left(4Ba\,b^{3}e^{3}+\left(A\,e^{3}+3Bd\,e^{2}\right)b^{4}\right)x^{8}}{8}+\frac{\bigl(6B\,a^{2}b^{2}e^{3}+4\left(A\,e^{3}+3Bd\,e^{2}\right)a\,b^{3}+\left(3Ad\,e^{2}+3B\,d^{2}e\right)}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^4*B*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*b^4+4*B*e^3*a*b^3)*x^8+1/7*((3*A*d
*e^2+3*B*d^2*e)*b^4+4*(A*e^3+3*B*d*e^2)*a*b^3+6*B*e^3*a^2*b^2)*x^7+1/6*((3*
A*d^2*e+B*d^3)*b^4+4*(3*A*d*e^2+3*B*d^2*e)*a*b^3+6*(A*e^3+3*B*d*e^2)*a^2*b^
2+4*B*e^3*a^3*b)*x^6+1/5*(A*d^3*b^4+4*(3*A*d^2*e+B*d^3)*a*b^3+6*(3*A*d*e^2+
3*B*d^2*e)*a^2*b^2+4*(A*e^3+3*B*d*e^2)*a^3*b+B*e^3*a^4)*x^5+1/4*(4*A*d^3*a*
b^3+6*(3*A*d^2*e+B*d^3)*a^2*b^2+4*(3*A*d*e^2+3*B*d^2*e)*a^3*b+(A*e^3+3*B*d*
e^2)*a^4)*x^4+1/3*(6*A*d^3*a^2*b^2+4*(3*A*d^2*e+B*d^3)*a^3*b+(3*A*d*e^2+3*B
*d^2*e)*a^4)*x^3+1/2*(4*A*d^3*a^3*b+(3*A*d^2*e+B*d^3)*a^4)*x^2+A*d^3*a^4*x
```

maxima [**B**] time = 0.50, size = 444, normalized size = 2.79

$$\frac{1}{9}\,Bb^4e^3x^9+Aa^4d^3x+\frac{1}{8}\left(3\,Bb^4de^2+\left(4\,Bab^3+Ab^4\right)e^3\right)x^8+\frac{1}{7}\,(3\,Bb^4d^2e+3\left(4\,Bab^3+Ab^4\right)de^2+2\,(3\,Ba^2b^2+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*b^4*e^3*x^9 + A*a^4*d^3*x + 1/8*(3*B*b^4*d*e^2 + (4*B*a*b^3 + A*b^4)*
e^3)*x^8 + 1/7*(3*B*b^4*d^2*e + 3*(4*B*a*b^3 + A*b^4)*d*e^2 + 2*(3*B*a^2*b^
2 + 2*A*a*b^3)*e^3)*x^7 + 1/6*(B*b^4*d^3 + 3*(4*B*a*b^3 + A*b^4)*d^2*e + 6*
(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^3)*x^6 + 1/
5*((4*B*a*b^3 + A*b^4)*d^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e + 6*(2*B*a^3
*b + 3*A*a^2*b^2)*d*e^2 + (B*a^4 + 4*A*a^3*b)*e^3)*x^5 + 1/4*(A*a^4*e^3 + 2
*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3 + 6*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e + 3*(B*a
^4 + 4*A*a^3*b)*d*e^2)*x^4 + 1/3*(3*A*a^4*d*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^
2)*d^3 + 3*(B*a^4 + 4*A*a^3*b)*d^2*e)*x^3 + 1/2*(3*A*a^4*d^2*e + (B*a^4 + 4
*A*a^3*b)*d^3)*x^2
```

mupad [**B**] time = 0.15, size = 439, normalized size = 2.76

$$x^3\,\left(B\,a^4\,d^2\,e+A\,a^4\,d\,e^2+\frac{4\,B\,a^3\,b\,d^3}{3}+4\,A\,a^3\,b\,d^2\,e+2\,A\,a^2\,b^2\,d^3\right)+x^7\,(\frac{6\,B\,a^2\,b^2\,e^3}{7}+\frac{12\,B\,a\,b^3\,d\,e^2}{7}+\frac{4\,A\,a\,b}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((4*B*a^3*b*d^3)/3 + A*a^4*d*e^2 + B*a^4*d^2*e + 2*A*a^2*b^2*d^3 + 4*A*
a^3*b*d^2*e) + x^7*((4*A*a*b^3*e^3)/7 + (3*A*b^4*d*e^2)/7 + (3*B*b^4*d^2*e)
/7 + (6*B*a^2*b^2*e^3)/7 + (12*B*a*b^3*d*e^2)/7) + x^5*((A*b^4*d^3)/5 + (B*
a^4*e^3)/5 + (4*A*a^3*b*e^3)/5 + (4*B*a*b^3*d^3)/5 + (18*A*a^2*b^2*d*e^2)/5
 + (18*B*a^2*b^2*d^2*e)/5 + (12*A*a*b^3*d^2*e)/5 + (12*B*a^3*b*d*e^2)/5) +
x^4*((A*a^4*e^3)/4 + A*a*b^3*d^3 + (3*B*a^4*d*e^2)/4 + (3*B*a^2*b^2*d^3)/2
+ (9*A*a^2*b^2*d^2*e)/2 + 3*A*a^3*b*d*e^2 + 3*B*a^3*b*d^2*e) + x^6*((B*b^4*
d^3)/6 + (2*B*a^3*b*e^3)/3 + (A*b^4*d^2*e)/2 + A*a^2*b^2*e^3 + 3*B*a^2*b^2*
d*e^2 + 2*A*a*b^3*d*e^2 + 2*B*a*b^3*d^2*e) + (a^3*d^2*x^2*(3*A*a*e + 4*A*b*
d + B*a*d))/2 + (b^3*e^2*x^8*(A*b*e + 4*B*a*e + 3*B*b*d))/8 + A*a^4*d^3*x +
 (B*b^4*e^3*x^9)/9
```

sympy [**B**] time = 0.14, size = 546, normalized size = 3.43

$$Aa^4d^3x+\frac{Bb^4e^3x^9}{9}+x^8\left(\frac{Ab^4e^3}{8}+\frac{Bab^3e^3}{2}+\frac{3Bb^4de^2}{8}\right)+x^7\,(\frac{4Aab^3e^3}{7}+\frac{3Ab^4de^2}{7}+\frac{6Ba^2b^2e^3}{7}+\frac{12Bab^3de^2}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**3*x + B*b**4*e**3*x**9/9 + x**8*(A*b**4*e**3/8 + B*a*b**3*e**3/2
+ 3*B*b**4*d*e**2/8) + x**7*(4*A*a*b**3*e**3/7 + 3*A*b**4*d*e**2/7 + 6*B*a*
*2*b**2*e**3/7 + 12*B*a*b**3*d*e**2/7 + 3*B*b**4*d**2*e/7) + x**6*(A*a**2*b
**2*e**3 + 2*A*a*b**3*d*e**2 + A*b**4*d**2*e/2 + 2*B*a**3*b*e**3/3 + 3*B*a*
*2*b**2*d*e**2 + 2*B*a*b**3*d**2*e + B*b**4*d**3/6) + x**5*(4*A*a**3*b*e**3
/5 + 18*A*a**2*b**2*d*e**2/5 + 12*A*a*b**3*d**2*e/5 + A*b**4*d**3/5 + B*a**
4*e**3/5 + 12*B*a**3*b*d*e**2/5 + 18*B*a**2*b**2*d**2*e/5 + 4*B*a*b**3*d**3
/5) + x**4*(A*a**4*e**3/4 + 3*A*a**3*b*d*e**2 + 9*A*a**2*b**2*d**2*e/2 + A*
a*b**3*d**3 + 3*B*a**4*d*e**2/4 + 3*B*a**3*b*d**2*e + 3*B*a**2*b**2*d**3/2)
 + x**3*(A*a**4*d*e**2 + 4*A*a**3*b*d**2*e + 2*A*a**2*b**2*d**3 + B*a**4*d*
*2*e + 4*B*a**3*b*d**3/3) + x**2*(3*A*a**4*d**2*e/2 + 2*A*a**3*b*d**3 + B*a
**4*d**3/2)
```

3.1678 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=118

$$\frac{e(a+bx)^7(-3aBe+Abe+2bBd)}{7b^4}+\frac{(a+bx)^6(bd-ae)(-3aBe+2Abe+bBd)}{6b^4}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^2}{5b^4}+$$

```
[Out] 1/5*(A*b-B*a)*(-a*e+b*d)^2*(b*x+a)^5/b^4+1/6*(-a*e+b*d)*(2*A*b*e-3*B*a*e+B*
b*d)*(b*x+a)^6/b^4+1/7*e*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^7/b^4+1/8*B*e^2*(b
*x+a)^8/b^4
```

Rubi [A] time = 0.22, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{e(a+bx)^7(-3aBe+Abe+2bBd)}{7b^4}+\frac{(a+bx)^6(bd-ae)(-3aBe+2Abe+bBd)}{6b^4}+\frac{(a+bx)^5(Ab-aB)(bd-ae)^2}{5b^4}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^5)/(5*b^4) + ((b*d - a*e)*(b*B*d + 2*A
*b*e - 3*a*B*e)*(a + b*x)^6)/(6*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a +
b*x)^7)/(7*b^4) + (B*e^2*(a + b*x)^8)/(8*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^4(A+Bx)(d+ex)^2 \, dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)^2(a+bx)^4}{b^3}+\frac{(bd-ae)(bBd+2Abe-3a}{b^3}\right.\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^5}{5b^4}+\frac{(bd-ae)(bBd+2Abe-3aBe)}{6b^4}\end{aligned}$$

Mathematica [B] time = 0.09, size = 288, normalized size = 2.44

$$a^4Ad^2x+\frac{1}{2}a^3dx^2(2aAe+aBd+4Abd)+\frac{1}{5}bx^5\left(Ab\left(6a^2e^2+8abde+b^2d^2\right)+4aB\left(a^2e^2+3abde+b^2d^2\right)\right)+\frac{1}{4}ax^4\left(\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d^2*x + (a^3*d*(4*A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + (a^2*(2*a*B*d*(2*
b*d + a*e) + A*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2))*x^3)/3 + (a*(4*A*b*(b^2*d
^2 + 3*a*b*d*e + a^2*e^2) + a*B*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2))*x^4)/4 +
 (b*(4*a*B*(b^2*d^2 + 3*a*b*d*e + a^2*e^2) + A*b*(b^2*d^2 + 8*a*b*d*e + 6*a
^2*e^2))*x^5)/5 + (b^2*(6*a^2*B*e^2 + 4*a*b*e*(2*B*d + A*e) + b^2*d*(B*d +
2*A*e))*x^6)/6 + (b^3*e*(2*b*B*d + A*b*e + 4*a*B*e)*x^7)/7 + (b^4*B*e^2*x^8
)/8
```

fricas [B] time = 0.68, size = 374, normalized size = 3.17

$$\frac{1}{8}x^8e^2b^4B+\frac{2}{7}x^7edb^4B+\frac{4}{7}x^7e^2b^3aB+\frac{1}{7}x^7e^2b^4A+\frac{1}{6}x^6d^2b^4B+\frac{4}{3}x^6edb^3aB+x^6e^2b^2a^2B+\frac{1}{3}x^6edb^4A+\frac{2}{3}x^6e^2b^3aA+\frac{4}{5}x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*b^4*B + 2/7*x^7*e*d*b^4*B + 4/7*x^7*e^2*b^3*a*B + 1/7*x^7*e^2*b
^4*A + 1/6*x^6*d^2*b^4*B + 4/3*x^6*e*d*b^3*a*B + x^6*e^2*b^2*a^2*B + 1/3*x^
6*e*d*b^4*A + 2/3*x^6*e^2*b^3*a*A + 4/5*x^5*d^2*b^3*a*B + 12/5*x^5*e*d*b^2*
a^2*B + 4/5*x^5*e^2*b*a^3*B + 1/5*x^5*d^2*b^4*A + 8/5*x^5*e*d*b^3*a*A + 6/5
*x^5*e^2*b^2*a^2*A + 3/2*x^4*d^2*b^2*a^2*B + 2*x^4*e*d*b*a^3*B + 1/4*x^4*e^
2*a^4*B + x^4*d^2*b^3*a*A + 3*x^4*e*d*b^2*a^2*A + x^4*e^2*b*a^3*A + 4/3*x^3
*d^2*b*a^3*B + 2/3*x^3*e*d*a^4*B + 2*x^3*d^2*b^2*a^2*A + 8/3*x^3*e*d*b*a^3*
A + 1/3*x^3*e^2*a^4*A + 1/2*x^2*d^2*a^4*B + 2*x^2*d^2*b*a^3*A + x^2*e*d*a^4
*A + x*d^2*a^4*A
```

giac [B] time = 0.17, size = 374, normalized size = 3.17

$$\frac{1}{8}\,Bb^4x^8e^2+\frac{2}{7}\,Bb^4dx^7e+\frac{1}{6}\,Bb^4d^2x^6+\frac{4}{7}\,Bab^3x^7e^2+\frac{1}{7}\,Ab^4x^7e^2+\frac{4}{3}\,Bab^3dx^6e+\frac{1}{3}\,Ab^4dx^6e+\frac{4}{5}\,Bab^3d^2x^5+\frac{1}{5}\,Ab^4d^2x^5+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*b^4*x^8*e^2 + 2/7*B*b^4*d*x^7*e + 1/6*B*b^4*d^2*x^6 + 4/7*B*a*b^3*x^7
*e^2 + 1/7*A*b^4*x^7*e^2 + 4/3*B*a*b^3*d*x^6*e + 1/3*A*b^4*d*x^6*e + 4/5*B*
a*b^3*d^2*x^5 + 1/5*A*b^4*d^2*x^5 + B*a^2*b^2*x^6*e^2 + 2/3*A*a*b^3*x^6*e^2
 + 12/5*B*a^2*b^2*d*x^5*e + 8/5*A*a*b^3*d*x^5*e + 3/2*B*a^2*b^2*d^2*x^4 + A
*a*b^3*d^2*x^4 + 4/5*B*a^3*b*x^5*e^2 + 6/5*A*a^2*b^2*x^5*e^2 + 2*B*a^3*b*d*
x^4*e + 3*A*a^2*b^2*d*x^4*e + 4/3*B*a^3*b*d^2*x^3 + 2*A*a^2*b^2*d^2*x^3 + 1
/4*B*a^4*x^4*e^2 + A*a^3*b*x^4*e^2 + 2/3*B*a^4*d*x^3*e + 8/3*A*a^3*b*d*x^3*
e + 1/2*B*a^4*d^2*x^2 + 2*A*a^3*b*d^2*x^2 + 1/3*A*a^4*x^3*e^2 + A*a^4*d*x^2
*e + A*a^4*d^2*x
```

maple [B] time = 0.05, size = 305, normalized size = 2.58

$$\frac{B\,b^4e^2x^8}{8}+A\,a^4d^2x+\frac{\left(4Ba\,b^3e^2+\left(A\,e^2+2Bde\right)b^4\right)x^7}{7}+\frac{\left(6B\,a^2b^2e^2+4\left(A\,e^2+2Bde\right)a\,b^3+\left(2Ade+B\,d^2\right)b^4\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*B*e^2*b^4*x^8+1/7*((A*e^2+2*B*d*e)*b^4+4*B*e^2*a*b^3)*x^7+1/6*((2*A*d*e
+B*d^2)*b^4+4*(A*e^2+2*B*d*e)*a*b^3+6*B*e^2*a^2*b^2)*x^6+1/5*(A*d^2*b^4+4*(
2*A*d*e+B*d^2)*a*b^3+6*(A*e^2+2*B*d*e)*a^2*b^2+4*B*e^2*a^3*b)*x^5+1/4*(4*A*
d^2*a*b^3+6*(2*A*d*e+B*d^2)*a^2*b^2+4*(A*e^2+2*B*d*e)*a^3*b+B*e^2*a^4)*x^4+
1/3*(6*A*d^2*a^2*b^2+4*(2*A*d*e+B*d^2)*a^3*b+(A*e^2+2*B*d*e)*a^4)*x^3+1/2*(
4*A*d^2*a^3*b+(2*A*d*e+B*d^2)*a^4)*x^2+A*d^2*a^4*x
```

maxima [B] time = 0.52, size = 322, normalized size = 2.73

$$\frac{1}{8}\,Bb^4e^2x^8+Aa^4d^2x+\frac{1}{7}\,\big(2\,Bb^4de+\big(4\,Bab^3+Ab^4\big)e^2\big)x^7+\frac{1}{6}\,\big(Bb^4d^2+2\,\big(4\,Bab^3+Ab^4\big)de+2\,\big(3\,Ba^2b^2+2\,Aab$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*b^4*e^2*x^8 + A*a^4*d^2*x + 1/7*(2*B*b^4*d*e + (4*B*a*b^3 + A*b^4)*e^
2)*x^7 + 1/6*(B*b^4*d^2 + 2*(4*B*a*b^3 + A*b^4)*d*e + 2*(3*B*a^2*b^2 + 2*A*
a*b^3)*e^2)*x^6 + 1/5*((4*B*a*b^3 + A*b^4)*d^2 + 4*(3*B*a^2*b^2 + 2*A*a*b^3
)*d*e + 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^2)*x^5 + 1/4*(2*(3*B*a^2*b^2 + 2*A*a*
b^3)*d^2 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e + (B*a^4 + 4*A*a^3*b)*e^2)*x^4 +
 1/3*(A*a^4*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2 + 2*(B*a^4 + 4*A*a^3*b)*d
*e)*x^3 + 1/2*(2*A*a^4*d*e + (B*a^4 + 4*A*a^3*b)*d^2)*x^2
```

mupad [B] time = 2.06, size = 305, normalized size = 2.58

$$x^4\left(\frac{B\,a^4\,e^2}{4}+2\,B\,a^3\,b\,d\,e+A\,a^3\,b\,e^2+\frac{3\,B\,a^2\,b^2\,d^2}{2}+3\,A\,a^2\,b^2\,d\,e+A\,a\,b^3\,d^2\right)+x^5\,\Big(\frac{4\,B\,a^3\,b\,e^2}{5}+\frac{12\,B\,a^2\,b^2\,d\,e}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*((B*a^4*e^2)/4 + A*a*b^3*d^2 + A*a^3*b*e^2 + (3*B*a^2*b^2*d^2)/2 + 2*B*
a^3*b*d*e + 3*A*a^2*b^2*d*e) + x^5*((A*b^4*d^2)/5 + (4*B*a*b^3*d^2)/5 + (4*
B*a^3*b*e^2)/5 + (6*A*a^2*b^2*e^2)/5 + (8*A*a*b^3*d*e)/5 + (12*B*a^2*b^2*d*
e)/5) + x^3*((A*a^4*e^2)/3 + (2*B*a^4*d*e)/3 + (4*B*a^3*b*d^2)/3 + 2*A*a^2*
b^2*d^2 + (8*A*a^3*b*d*e)/3) + x^6*((B*b^4*d^2)/6 + (A*b^4*d*e)/3 + (2*A*a*
b^3*e^2)/3 + B*a^2*b^2*e^2 + (4*B*a*b^3*d*e)/3) + A*a^4*d^2*x + (a^3*d*x^2*
(2*A*a*e + 4*A*b*d + B*a*d))/2 + (b^3*e*x^7*(A*b*e + 4*B*a*e + 2*B*b*d))/7
+ (B*b^4*e^2*x^8)/8
```

sympy [B] time = 0.12, size = 384, normalized size = 3.25

$$Aa^4d^2x+\frac{Bb^4e^2x^8}{8}+x^7\left(\frac{Ab^4e^2}{7}+\frac{4Bab^3e^2}{7}+\frac{2Bb^4de}{7}\right)+x^6\left(\frac{2Aab^3e^2}{3}+\frac{Ab^4de}{3}+Ba^2b^2e^2+\frac{4Bab^3de}{3}+\frac{Bb^4d^2}{6}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**2*x + B*b**4*e**2*x**8/8 + x**7*(A*b**4*e**2/7 + 4*B*a*b**3*e**2/
7 + 2*B*b**4*d*e/7) + x**6*(2*A*a*b**3*e**2/3 + A*b**4*d*e/3 + B*a**2*b**2*
e**2 + 4*B*a*b**3*d*e/3 + B*b**4*d**2/6) + x**5*(6*A*a**2*b**2*e**2/5 + 8*A
*a*b**3*d*e/5 + A*b**4*d**2/5 + 4*B*a**3*b*e**2/5 + 12*B*a**2*b**2*d*e/5 +
4*B*a*b**3*d**2/5) + x**4*(A*a**3*b*e**2 + 3*A*a**2*b**2*d*e + A*a*b**3*d**
2 + B*a**4*e**2/4 + 2*B*a**3*b*d*e + 3*B*a**2*b**2*d**2/2) + x**3*(A*a**4*e
**2/3 + 8*A*a**3*b*d*e/3 + 2*A*a**2*b**2*d**2 + 2*B*a**4*d*e/3 + 4*B*a**3*b
*d**2/3) + x**2*(A*a**4*d*e + 2*A*a**3*b*d**2 + B*a**4*d**2/2)
```

3.1679 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=75

$$\frac{(a+bx)^6(-2aBe+Abe+bBd)}{6b^3}+\frac{(a+bx)^5(Ab-aB)(bd-ae)}{5b^3}+\frac{Be(a+bx)^7}{7b^3}$$

```
[Out] 1/5*(A*b-B*a)*(-a*e+b*d)*(b*x+a)^5/b^3+1/6*(A*b*e-2*B*a*e+B*b*d)*(b*x+a)^6/
b^3+1/7*B*e*(b*x+a)^7/b^3
```

Rubi [A] time = 0.14, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 77\}$

$$\frac{(a+bx)^6(-2aBe+Abe+bBd)}{6b^3}+\frac{(a+bx)^5(Ab-aB)(bd-ae)}{5b^3}+\frac{Be(a+bx)^7}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^5)/(5*b^3) + ((b*B*d + A*b*e - 2*a*B*e)*
(a + b*x)^6)/(6*b^3) + (B*e*(a + b*x)^7)/(7*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)(a+bx)^4}{b^2}+\frac{(bBd+Abe-2aBe)(a+bx)^5}{b^2}+\right.\\ &= \frac{(Ab-aB)(bd-ae)(a+bx)^5}{5b^3}+\frac{(bBd+Abe-2aBe)(a+bx)^6}{6b^3}+\frac{Be(}{}\end{aligned}$$

Mathematica [B] time = 0.05, size = 172, normalized size = 2.29

$$a^4Adx+\frac{1}{2}a^3x^2(aAe+aBd+4Abd)+\frac{1}{3}a^2x^3(2Ab(2ae+3bd)+aB(ae+4bd))+\frac{1}{6}b^3x^6(4aBe+Abe+bBd)+\frac{1}{5}b^2x^5(Ab(4ae$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^4*A*d*x + (a^3*(4*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a^2*(a*B*(4*b*d + a*e)
 + 2*A*b*(3*b*d + 2*a*e))*x^3)/3 + (a*b*(a*B*(3*b*d + 2*a*e) + A*b*(2*b*d +
 3*a*e))*x^4)/2 + (b^2*(2*a*B*(2*b*d + 3*a*e) + A*b*(b*d + 4*a*e))*x^5)/5 +
 (b^3*(b*B*d + A*b*e + 4*a*B*e)*x^6)/6 + (b^4*B*e*x^7)/7
```

fricas [B] time = 0.49, size = 216, normalized size = 2.88

$$\frac{1}{7}x^7eb^4B+\frac{1}{6}x^6db^4B+\frac{2}{3}x^6eb^3aB+\frac{1}{6}x^6eb^4A+\frac{4}{5}x^5db^3aB+\frac{6}{5}x^5eb^2a^2B+\frac{1}{5}x^5db^4A+\frac{4}{5}x^5eb^3aA+\frac{3}{2}x^4db^2a^2B+x^4eba^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*b^4*B + 1/6*x^6*d*b^4*B + 2/3*x^6*e*b^3*a*B + 1/6*x^6*e*b^4*A + 4
/5*x^5*d*b^3*a*B + 6/5*x^5*e*b^2*a^2*B + 1/5*x^5*d*b^4*A + 4/5*x^5*e*b^3*a*
A + 3/2*x^4*d*b^2*a^2*B + x^4*e*b*a^3*B + x^4*d*b^3*a*A + 3/2*x^4*e*b^2*a^2
*A + 4/3*x^3*d*b*a^3*B + 1/3*x^3*e*a^4*B + 2*x^3*d*b^2*a^2*A + 4/3*x^3*e*b*
a^3*A + 1/2*x^2*d*a^4*B + 2*x^2*d*b*a^3*A + 1/2*x^2*e*a^4*A + x*d*a^4*A
```

giac [B] time = 0.19, size = 226, normalized size = 3.01

$$\frac{1}{7}Bb^4x^7e+\frac{1}{6}Bb^4dx^6+\frac{2}{3}Bab^3x^6e+\frac{1}{6}Ab^4x^6e+\frac{4}{5}Bab^3dx^5+\frac{1}{5}Ab^4dx^5+\frac{6}{5}Ba^2b^2x^5e+\frac{4}{5}Aab^3x^5e+\frac{3}{2}Ba^2b^2dx^4+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*b^4*x^7*e + 1/6*B*b^4*d*x^6 + 2/3*B*a*b^3*x^6*e + 1/6*A*b^4*x^6*e + 4
/5*B*a*b^3*d*x^5 + 1/5*A*b^4*d*x^5 + 6/5*B*a^2*b^2*x^5*e + 4/5*A*a*b^3*x^5*
e + 3/2*B*a^2*b^2*d*x^4 + A*a*b^3*d*x^4 + B*a^3*b*x^4*e + 3/2*A*a^2*b^2*x^4
*e + 4/3*B*a^3*b*d*x^3 + 2*A*a^2*b^2*d*x^3 + 1/3*B*a^4*x^3*e + 4/3*A*a^3*b*
x^3*e + 1/2*B*a^4*d*x^2 + 2*A*a^3*b*d*x^2 + 1/2*A*a^4*x^2*e + A*a^4*d*x
```

maple [B] time = 0.04, size = 176, normalized size = 2.35

$$\frac{B\,b^4e\,x^7}{7}+A\,a^4dx+\frac{\left(4Ba\,b^3e+(Ae+Bd)\,b^4\right)x^6}{6}+\frac{\left(A\,b^4d+6B\,a^2b^2e+4\,(Ae+Bd)\,a\,b^3\right)x^5}{5}+(4Aa\,b^3d+4B\,a^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*B*e*b^4*x^7+1/6*((A*e+B*d)*b^4+4*B*e*a*b^3)*x^6+1/5*(A*d*b^4+4*(A*e+B*d
)*a*b^3+6*B*e*a^2*b^2)*x^5+1/4*(4*A*d*a*b^3+6*(A*e+B*d)*a^2*b^2+4*B*e*a^3*b
)*x^4+1/3*(6*A*d*a^2*b^2+4*(A*e+B*d)*a^3*b+B*e*a^4)*x^3+1/2*(4*A*d*a^3*b+(A
*e+B*d)*a^4)*x^2+A*d*a^4*x
```

maxima [B] time = 0.52, size = 198, normalized size = 2.64

$$\frac{1}{7}Bb^4ex^7+Aa^4dx+\frac{1}{6}\left(Bb^4d+\left(4\,Bab^3+Ab^4\right)e\right)x^6+\frac{1}{5}\left(\left(4\,Bab^3+Ab^4\right)d+2\left(3\,Ba^2b^2+2\,Aab^3\right)e\right)x^5+\frac{1}{2}((3\,Ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*b^4*e*x^7 + A*a^4*d*x + 1/6*(B*b^4*d + (4*B*a*b^3 + A*b^4)*e)*x^6 + 1
/5*((4*B*a*b^3 + A*b^4)*d + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*e)*x^5 + 1/2*((3*B*
a^2*b^2 + 2*A*a*b^3)*d + (2*B*a^3*b + 3*A*a^2*b^2)*e)*x^4 + 1/3*(2*(2*B*a^3
*b + 3*A*a^2*b^2)*d + (B*a^4 + 4*A*a^3*b)*e)*x^3 + 1/2*(A*a^4*e + (B*a^4 +
4*A*a^3*b)*d)*x^2
```

mupad [B] time = 0.09, size = 182, normalized size = 2.43

$$x^3\left(\frac{B\,a^4\,e}{3}+\frac{4\,A\,a^3\,b\,e}{3}+\frac{4\,B\,a^3\,b\,d}{3}+2\,A\,a^2\,b^2\,d\right)+x^5\left(\frac{A\,b^4\,d}{5}+\frac{4\,A\,a\,b^3\,e}{5}+\frac{4\,B\,a\,b^3\,d}{5}+\frac{6\,B\,a^2\,b^2\,e}{5}\right)+x^2\left(\frac{A\,a^4\,e}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((B*a^4*e)/3 + (4*A*a^3*b*e)/3 + (4*B*a^3*b*d)/3 + 2*A*a^2*b^2*d) + x^5
*((A*b^4*d)/5 + (4*A*a*b^3*e)/5 + (4*B*a*b^3*d)/5 + (6*B*a^2*b^2*e)/5) + x^
2*((A*a^4*e)/2 + (B*a^4*d)/2 + 2*A*a^3*b*d) + x^6*((A*b^4*e)/6 + (B*b^4*d)/
6 + (2*B*a*b^3*e)/3) + A*a^4*d*x + (a*b*x^4*(2*A*b^2*d + 2*B*a^2*e + 3*A*a*
b*e + 3*B*a*b*d))/2 + (B*b^4*e*x^7)/7
```

sympy [B] time = 0.10, size = 226, normalized size = 3.01

$$Aa^4dx+\frac{Bb^4ex^7}{7}+x^6\left(\frac{Ab^4e}{6}+\frac{2Bab^3e}{3}+\frac{Bb^4d}{6}\right)+x^5\left(\frac{4Aab^3e}{5}+\frac{Ab^4d}{5}+\frac{6Ba^2b^2e}{5}+\frac{4Bab^3d}{5}\right)+x^4\left(\frac{3Aa^2b^2e}{2}+Aab\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d*x + B*b**4*e*x**7/7 + x**6*(A*b**4*e/6 + 2*B*a*b**3*e/3 + B*b**4*d
/6) + x**5*(4*A*a*b**3*e/5 + A*b**4*d/5 + 6*B*a**2*b**2*e/5 + 4*B*a*b**3*d/
5) + x**4*(3*A*a**2*b**2*e/2 + A*a*b**3*d + B*a**3*b*e + 3*B*a**2*b**2*d/2)
 + x**3*(4*A*a**3*b*e/3 + 2*A*a**2*b**2*d + B*a**4*e/3 + 4*B*a**3*b*d/3) +
x**2*(A*a**4*e/2 + 2*A*a**3*b*d + B*a**4*d/2)
```

3.1680 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

```
[Out] 1/5*(A*b-B*a)*(b*x+a)^5/b^2+1/6*B*(b*x+a)^6/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^5(Ab-aB)}{5b^2}+\frac{B(a+bx)^6}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5)/(5*b^2) + (B*(a + b*x)^6)/(6*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)\,dx\\ &= \int \left(\frac{(Ab-aB)(a+bx)^4}{b}+\frac{B(a+bx)^5}{b}\right)dx\\ &= \frac{(Ab-aB)(a+bx)^5}{5b^2}+\frac{B(a+bx)^6}{6b^2}\end{aligned}$$

Mathematica [B] time = 0.02, size = 84, normalized size = 2.21

$$\frac{1}{30}x\left(15a^4(2A+Bx)+20a^3bx(3A+2Bx)+15a^2b^2x^2(4A+3Bx)+6ab^3x^3(5A+4Bx)+b^4x^4(6A+5Bx)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(15*a^4*(2*A + B*x) + 20*a^3*b*x*(3*A + 2*B*x) + 15*a^2*b^2*x^2*(4*A + 3
*B*x) + 6*a*b^3*x^3*(5*A + 4*B*x) + b^4*x^4*(6*A + 5*B*x)))/30
```

fricas [B] time = 0.79, size = 97, normalized size = 2.55

$$\frac{1}{6}x^6b^4B+\frac{4}{5}x^5b^3aB+\frac{1}{5}x^5b^4A+\frac{3}{2}x^4b^2a^2B+x^4b^3aA+\frac{4}{3}x^3ba^3B+2x^3b^2a^2A+\frac{1}{2}x^2a^4B+2x^2ba^3A+xa^4A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^4*B + 4/5*x^5*b^3*a*B + 1/5*x^5*b^4*A + 3/2*x^4*b^2*a^2*B + x^4*b
^3*a*A + 4/3*x^3*b*a^3*B + 2*x^3*b^2*a^2*A + 1/2*x^2*a^4*B + 2*x^2*b*a^3*A
+ x*a^4*A
```

giac [**B**] time = 0.17, size = 97, normalized size = 2.55

$$\frac{1}{6}\,Bb^4x^6+\frac{4}{5}\,Bab^3x^5+\frac{1}{5}\,Ab^4x^5+\frac{3}{2}\,Ba^2b^2x^4+Aab^3x^4+\frac{4}{3}\,Ba^3bx^3+2\,Aa^2b^2x^3+\frac{1}{2}\,Ba^4x^2+2\,Aa^3bx^2+Aa^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*b^4*x^6 + 4/5*B*a*b^3*x^5 + 1/5*A*b^4*x^5 + 3/2*B*a^2*b^2*x^4 + A*a*b
^3*x^4 + 4/3*B*a^3*b*x^3 + 2*A*a^2*b^2*x^3 + 1/2*B*a^4*x^2 + 2*A*a^3*b*x^2
+ A*a^4*x
```

maple [**B**] time = 0.05, size = 97, normalized size = 2.55

$$\frac{B\,b^4x^6}{6}+A\,a^4x+\frac{\left(A\,b^4+4Ba\,b^3\right)x^5}{5}+\frac{\left(4Aa\,b^3+6b^2B\,a^2\right)x^4}{4}+\frac{\left(6A\,b^2a^2+4a^3bB\right)x^3}{3}+\frac{\left(4A\,a^3b+B\,a^4\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^4*B*x^6+1/5*(A*b^4+4*B*a*b^3)*x^5+1/4*(4*A*a*b^3+6*B*a^2*b^2)*x^4+1/3
*(6*A*a^2*b^2+4*B*a^3*b)*x^3+1/2*(4*A*a^3*b+B*a^4)*x^2+A*a^4*x
```

maxima [**B**] time = 0.62, size = 96, normalized size = 2.53

$$\frac{1}{6}\,Bb^4x^6+Aa^4x+\frac{1}{5}\,\left(4\,Bab^3+Ab^4\right)x^5+\frac{1}{2}\,\left(3\,Ba^2b^2+2\,Aab^3\right)x^4+\frac{2}{3}\,\left(2\,Ba^3b+3\,Aa^2b^2\right)x^3+\frac{1}{2}\,\left(Ba^4+4\,Aa^3b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*b^4*x^6 + A*a^4*x + 1/5*(4*B*a*b^3 + A*b^4)*x^5 + 1/2*(3*B*a^2*b^2 +
2*A*a*b^3)*x^4 + 2/3*(2*B*a^3*b + 3*A*a^2*b^2)*x^3 + 1/2*(B*a^4 + 4*A*a^3*b
)*x^2
```

mupad [**B**] time = 2.00, size = 88, normalized size = 2.32

$$x^2\,\left(\frac{B\,a^4}{2}+2\,A\,b\,a^3\right)+x^5\,\left(\frac{A\,b^4}{5}+\frac{4\,B\,a\,b^3}{5}\right)+\frac{B\,b^4\,x^6}{6}+A\,a^4\,x+\frac{2\,a^2\,b\,x^3\,\left(3\,A\,b+2\,B\,a\right)}{3}+\frac{a\,b^2\,x^4\,\left(2\,A\,b+3\,B\,a\right)}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((B*a^4)/2 + 2*A*a^3*b) + x^5*((A*b^4)/5 + (4*B*a*b^3)/5) + (B*b^4*x^6)
/6 + A*a^4*x + (2*a^2*b*x^3*(3*A*b + 2*B*a))/3 + (a*b^2*x^4*(2*A*b + 3*B*a)
)/2
```

sympy [**B**] time = 0.08, size = 100, normalized size = 2.63

$$Aa^4x+\frac{Bb^4x^6}{6}+x^5\left(\frac{Ab^4}{5}+\frac{4Bab^3}{5}\right)+x^4\left(Aab^3+\frac{3Ba^2b^2}{2}\right)+x^3\left(2Aa^2b^2+\frac{4Ba^3b}{3}\right)+x^2\left(2Aa^3b+\frac{Ba^4}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4/5 + 4*B*a*b**3/5) + x**4*(A*a*b**3
+ 3*B*a**2*b**2/2) + x**3*(2*A*a**2*b**2 + 4*B*a**3*b/3) + x**2*(2*A*a**3*b
 + B*a**4/2)
```

3.1681 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=156

$$-\frac{(bd-ae)^4(Bd-Ae)\log(d+ex)}{e^6}+\frac{bx(bd-ae)^3(Bd-Ae)}{e^5}-\frac{(a+bx)^2(bd-ae)^2(Bd-Ae)}{2e^4}+\frac{(a+bx)^3(bd-ae)(Bd}{3e^3}$$

```
[Out] b*(-a*e+b*d)^3*(-A*e+B*d)*x/e^5-1/2*(-a*e+b*d)^2*(-A*e+B*d)*(b*x+a)^2/e^4+1
/3*(-a*e+b*d)*(-A*e+B*d)*(b*x+a)^3/e^3-1/4*(-A*e+B*d)*(b*x+a)^4/e^2+1/5*B*(
b*x+a)^5/b/e-(-a*e+b*d)^4*(-A*e+B*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.12, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{(a+bx)^4(Bd-Ae)}{4e^2}+\frac{(a+bx)^3(bd-ae)(Bd-Ae)}{3e^3}-\frac{(a+bx)^2(bd-ae)^2(Bd-Ae)}{2e^4}+\frac{bx(bd-ae)^3(Bd-Ae)}{e^5}-\frac{(bd-}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^3*(B*d - A*e)*x)/e^5 - ((b*d - a*e)^2*(B*d - A*e)*(a + b*x)^
2)/(2*e^4) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)^3)/(3*e^3) - ((B*d - A*e)*(
a + b*x)^4)/(4*e^2) + (B*(a + b*x)^5)/(5*b*e) - ((b*d - a*e)^4*(B*d - A*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{d+ex}\,dx\\ &= \int \left(-\frac{b(bd-ae)^3(-Bd+Ae)}{e^5}+\frac{b(bd-ae)^2(-Bd+Ae)(a+bx)}{e^4}-\frac{b(bd-ae}{}\right.\\ &= \frac{b(bd-ae)^3(Bd-Ae)x}{e^5}-\frac{(bd-ae)^2(Bd-Ae)(a+bx)^2}{2e^4}+\frac{(bd-ae)(Bd-A}{3e^3}\end{aligned}$$

Mathematica [A] time = 0.13, size = 258, normalized size = 1.65

$$ex\left(60a^4Be^4+120a^3be^3(2Ae-2Bd+Bex)+60a^2b^2e^2\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)+20ab^3e\left(2Ae\left(6\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(60*a^4*B*e^4 + 120*a^3*b*e^3*(-2*B*d + 2*A*e + B*e*x) + 60*a^2*b^2*e^
2*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 20*a*b^3*e*(2*A*
e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*
e^3*x^3)) + b^4*(5*A*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + B*
(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4))) - 60*(
b*d - a*e)^4*(B*d - A*e)*Log[d + e*x])/(60*e^6)
```

fricas [B] time = 0.61, size = 404, normalized size = 2.59

$$\frac{12\,Bb^4e^5x^5 - 15\left(Bb^4de^4 - \left(4\,Bab^3 + Ab^4\right)e^5\right)x^4 + 20\left(Bb^4d^2e^3 - \left(4\,Bab^3 + Ab^4\right)de^4 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^5\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*b^4*e^5*x^5 - 15*(B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2
0*(B*b^4*d^2*e^3 - (4*B*a*b^3 + A*b^4)*d*e^4 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*
e^5)*x^3 - 30*(B*b^4*d^3*e^2 - (4*B*a*b^3 + A*b^4)*d^2*e^3 + 2*(3*B*a^2*b^2
 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 60*(B*b^4*d^4*
e - (4*B*a*b^3 + A*b^4)*d^3*e^2 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 2*(
2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x - 60*(B*b^4*d^5
 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*
e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*log(
e*x + d))/e^6
```

giac [B] time = 0.20, size = 442, normalized size = 2.83

$$-\Big(Bb^4d^5 - 4\,Bab^3d^4e - Ab^4d^4e + 6\,Ba^2b^2d^3e^2 + 4\,Aab^3d^3e^2 - 4\,Ba^3bd^2e^3 - 6\,Aa^2b^2d^2e^3 + Ba^4de^4 + 4\,Aa^3bde^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*b^4*d^5 - 4*B*a*b^3*d^4*e - A*b^4*d^4*e + 6*B*a^2*b^2*d^3*e^2 + 4*A*a*b
^3*d^3*e^2 - 4*B*a^3*b*d^2*e^3 - 6*A*a^2*b^2*d^2*e^3 + B*a^4*d*e^4 + 4*A*a^
3*b*d*e^4 - A*a^4*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*B*b^4*x^5*e^4 -
15*B*b^4*d*x^4*e^3 + 20*B*b^4*d^2*x^3*e^2 - 30*B*b^4*d^3*x^2*e + 60*B*b^4*d
^4*x + 60*B*a*b^3*x^4*e^4 + 15*A*b^4*x^4*e^4 - 80*B*a*b^3*d*x^3*e^3 - 20*A*
b^4*d*x^3*e^3 + 120*B*a*b^3*d^2*x^2*e^2 + 30*A*b^4*d^2*x^2*e^2 - 240*B*a*b^
3*d^3*x*e - 60*A*b^4*d^3*x*e + 120*B*a^2*b^2*x^3*e^4 + 80*A*a*b^3*x^3*e^4 -
 180*B*a^2*b^2*d*x^2*e^3 - 120*A*a*b^3*d*x^2*e^3 + 360*B*a^2*b^2*d^2*x*e^2
+ 240*A*a*b^3*d^2*x*e^2 + 120*B*a^3*b*x^2*e^4 + 180*A*a^2*b^2*x^2*e^4 - 240
*B*a^3*b*d*x*e^3 - 360*A*a^2*b^2*d*x*e^3 + 60*B*a^4*x*e^4 + 240*A*a^3*b*x*e
^4)*e^(-5)
```

maple [B] time = 0.05, size = 521, normalized size = 3.34

$$\frac{B\,b^4x^5}{5e}+\frac{A\,b^4x^4}{4e}+\frac{Ba\,b^3x^4}{e}-\frac{B\,b^4d\,x^4}{4e^2}+\frac{4Aa\,b^3x^3}{3e}-\frac{A\,b^4d\,x^3}{3e^2}+\frac{2B\,a^2b^2x^3}{e}-\frac{4Ba\,b^3d\,x^3}{3e^2}+\frac{B\,b^4d^2x^3}{3e^3}+\frac{3A\,a^2b^2x^2}{e}-2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x)
```

```
[Out] 1/2/e^3*A*x^2*b^4*d^2+2/e*B*x^2*a^3*b-4/3/e^2*B*x^3*a*b^3*d+4/e^3*A*x*a*b^3
*d^2-4/e^2*B*x*a^3*b*d-4/e^4*B*x*a*b^3*d^3-6/e^2*A*x*a^2*b^2*d-3/e^2*B*x^2*
a^2*b^2*d+2/e^3*B*x^2*a*b^3*d^2-2/e^2*A*x^2*a*b^3*d-4/e^2*ln(e*x+d)*A*a^3*b
```

```
*d+6/e^3*B*x*a^2*b^2*d^2-6/e^4*ln(e*x+d)*B*a^2*b^2*d^3+6/e^3*ln(e*x+d)*A*a^
2*b^2*d^2+4/e^5*ln(e*x+d)*B*a*b^3*d^4-4/e^4*ln(e*x+d)*A*a*b^3*d^3+4/e^3*ln(
e*x+d)*B*a^3*b*d^2+1/5/e*b^4*B*x^5+1/4/e*A*x^4*b^4+1/e*B*x*a^4+1/e*ln(e*x+d
)*A*a^4+1/e^5*ln(e*x+d)*A*b^4*d^4+2/e*B*x^3*a^2*b^2+4/e*A*x*a^3*b-1/e^2*ln(
e*x+d)*B*a^4*d-1/e^6*ln(e*x+d)*B*b^4*d^5-1/2/e^4*B*x^2*b^4*d^3+4/3/e*A*x^3*
a*b^3-1/4/e^2*B*x^4*b^4*d+1/e*B*x^4*a*b^3-1/e^4*A*x*b^4*d^3+1/e^5*B*x*b^4*d
^4+1/3/e^3*B*x^3*b^4*d^2+3/e*A*x^2*a^2*b^2-1/3/e^2*A*x^3*b^4*d
```

maxima [B] time = 0.72, size = 403, normalized size = 2.58

$$12\,Bb^4e^4x^5 - 15\left(Bb^4de^3 - \left(4\,Bab^3 + Ab^4\right)e^4\right)x^4 + 20\left(Bb^4d^2e^2 - \left(4\,Bab^3 + Ab^4\right)de^3 + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)e^4\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*b^4*e^4*x^5 - 15*(B*b^4*d*e^3 - (4*B*a*b^3 + A*b^4)*e^4)*x^4 + 2
0*(B*b^4*d^2*e^2 - (4*B*a*b^3 + A*b^4)*d*e^3 + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*
e^4)*x^3 - 30*(B*b^4*d^3*e - (4*B*a*b^3 + A*b^4)*d^2*e^2 + 2*(3*B*a^2*b^2 +
 2*A*a*b^3)*d*e^3 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^4)*x^2 + 60*(B*b^4*d^4 -
(4*B*a*b^3 + A*b^4)*d^3*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 2*(2*B*a^
3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*x)/e^5 - (B*b^4*d^5 - A
*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2
- 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*log(e*x
+ d)/e^6
```

mupad [B] time = 0.08, size = 411, normalized size = 2.63

$$x\left(\frac{B\,a^4+4\,A\,b\,a^3}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e}-\frac{B\,b^4\,d}{e^2}\right)}{e}-\frac{2\,a\,b^2\,(2\,A\,b+3\,B\,a)}{e}\right)}{e}+\frac{2\,a^2\,b\,(3\,A\,b+2\,B\,a)}{e}\right)}{e}\right)-x^3\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e}-\frac{B\,b^4\,d}{e^2}\right)}{3\,e}-2\,a\,b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x),x)
```

```
[Out] x*((B*a^4 + 4*A*a^3*b)/e - (d*((d*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^
2))/e - (2*a*b^2*(2*A*b + 3*B*a))/e))/e + (2*a^2*b*(3*A*b + 2*B*a))/e))/e)
- x^3*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^2))/(3*e) - (2*a*b^2*(2*A*b
+ 3*B*a))/(3*e)) + x^4*((A*b^4 + 4*B*a*b^3)/(4*e) - (B*b^4*d)/(4*e^2)) + x^
2*((d*((d*((A*b^4 + 4*B*a*b^3)/e - (B*b^4*d)/e^2))/e - (2*a*b^2*(2*A*b + 3*
B*a))/e))/(2*e) + (a^2*b*(3*A*b + 2*B*a))/e) + (log(d + e*x)*(A*a^4*e^5 - B
*b^4*d^5 + A*b^4*d^4*e - B*a^4*d*e^4 - 4*A*a*b^3*d^3*e^2 + 4*B*a^3*b*d^2*e^
3 + 6*A*a^2*b^2*d^2*e^3 - 6*B*a^2*b^2*d^3*e^2 - 4*A*a^3*b*d*e^4 + 4*B*a*b^3
*d^4*e))/e^6 + (B*b^4*x^5)/(5*e)
```

sympy [B] time = 0.92, size = 352, normalized size = 2.26

$$\frac{Bb^4x^5}{5e}+x^4\left(\frac{Ab^4}{4e}+\frac{Bab^3}{e}-\frac{Bb^4d}{4e^2}\right)+x^3\left(\frac{4Aab^3}{3e}-\frac{Ab^4d}{3e^2}+\frac{2Ba^2b^2}{e}-\frac{4Bab^3d}{3e^2}+\frac{Bb^4d^2}{3e^3}\right)+x^2\left(\frac{3Aa^2b^2}{e}-\frac{2Aab^3d}{e^2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d),x)
```

```
[Out] B*b**4*x**5/(5*e) + x**4*(A*b**4/(4*e) + B*a*b**3/e - B*b**4*d/(4*e**2)) +
x**3*(4*A*a*b**3/(3*e) - A*b**4*d/(3*e**2) + 2*B*a**2*b**2/e - 4*B*a*b**3*d
/(3*e**2) + B*b**4*d**2/(3*e**3)) + x**2*(3*A*a**2*b**2/e - 2*A*a*b**3*d/e*
*2 + A*b**4*d**2/(2*e**3) + 2*B*a**3*b/e - 3*B*a**2*b**2*d/e**2 + 2*B*a*b**
3*d**2/e**3 - B*b**4*d**3/(2*e**4)) + x*(4*A*a**3*b/e - 6*A*a**2*b**2*d/e**
2 + 4*A*a*b**3*d**2/e**3 - A*b**4*d**3/e**4 + B*a**4/e - 4*B*a**3*b*d/e**2
+ 6*B*a**2*b**2*d**2/e**3 - 4*B*a*b**3*d**3/e**4 + B*b**4*d**4/e**5) - (-A*
e + B*d)*(a*e - b*d)**4*log(d + e*x)/e**6
```

3.1682 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=188

$$-\frac{b^3(d+ex)^3(-4aBe-Abe+5bBd)}{3e^6}+\frac{b^2(d+ex)^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}+ (bd-a$$

```
[Out] -2*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*x/e^5+(-a*e+b*d)^4*(-A*e+B*d)/
e^6/(e*x+d)+b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^2/e^6-1/3*b^3
*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^3/e^6+1/4*b^4*B*(e*x+d)^4/e^6+(-a*e+b*d)^
3*(-4*A*b*e-B*a*e+5*B*b*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.32, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{b^2(d+ex)^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}-\frac{b^3(d+ex)^3(-4aBe-Abe+5bBd)}{3e^6}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}-2bx(bd-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (-2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*x)/e^5 + ((b*d - a*e)^4*(
B*d - A*e))/(e^6*(d + e*x)) + (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e
)*(d + e*x)^2)/e^6 - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^3)/(3*e^6)
+ (b^4*B*(d + e*x)^4)/(4*e^6) + ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^2}\,dx\\ &= \int \left(\frac{2b(bd-ae)^2(-5bBd+3Abe+2aBe)}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^2}+ (-b\right.\\ &= -\frac{2b(bd-ae)^2(5bBd-3Abe-2aBe)x}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{e^6(d+ex)}+ b^2(bd-ae\end{aligned}$$

Mathematica [A] time = 0.15, size = 354, normalized size = 1.88

$$\frac{12a^4e^4(Bd-Ae)+48a^3be^3\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+36a^2b^2e^2\left(2Ae\left(-d^2+dex+e^2x^2\right)+B\left(2d^3-4d^2ex-\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*a^4*e^4*(B*d - A*e) + 48*a^3*b*e^3*(A*d*e + B*(-d^2 + d*e*x + e^2*x^2))
 + 36*a^2*b^2*e^2*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*(2*d^3 - 4*d^2*e*x -
3*d*e^2*x^2 + e^3*x^3)) + 8*a*b^3*e*(3*A*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2
 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x
^4)) + b^4*(4*A*e*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x
^4) + B*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^
4 + 3*e^5*x^5)) + 12*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)*Lo
g[d + e*x])/(12*e^6*(d + e*x))
```

fricas [B] time = 0.87, size = 598, normalized size = 3.18

$$\frac{3 Bb^4e^5x^5 + 12 Bb^4d^5 - 12 Aa^4e^5 - 12 (4 Bab^3 + Ab^4)d^4e + 24 (3 Ba^2b^2 + 2 Aab^3)d^3e^2 - 24 (2 Ba^3b + 3 Aa^2b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*e^5*x^5 + 12*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4
)*d^4*e + 24*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 24*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 12*(B*a^4 + 4*A*a^3*b)*d*e^4 - (5*B*b^4*d*e^4 - 4*(4*B*a*b^3 +
 A*b^4)*e^5)*x^4 + 2*(5*B*b^4*d^2*e^3 - 4*(4*B*a*b^3 + A*b^4)*d*e^4 + 6*(3*
B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(5*B*b^4*d^3*e^2 - 4*(4*B*a*b^3 + A*b^4
)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 4*(2*B*a^3*b + 3*A*a^2*b^2)
*e^5)*x^2 - 12*(4*B*b^4*d^4*e - 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 4*(3*B*a^2*
b^2 + 2*A*a*b^3)*d^2*e^3 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4)*x + 12*(5*B*b
^4*d^5 - 4*(4*B*a*b^3 + A*b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2
- 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + (5*B*b^
4*d^4*e - 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e
^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)*log(e*
x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.19, size = 526, normalized size = 2.80

$$\frac{1}{12}\Bigg(3 Bb^4 - \frac{4 (5 Bb^4de - 4 Bab^3e^2 - Ab^4e^2)e^{(-1)}}{xe + d} + \frac{12 (5 Bb^4d^2e^2 - 8 Bab^3de^3 - 2 Ab^4de^3 + 3 Ba^2b^2e^4 + 2 Aab^3}{(xe + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*b^4 - 4*(5*B*b^4*d*e - 4*B*a*b^3*e^2 - A*b^4*e^2)*e^(-1)/(x*e + d
) + 12*(5*B*b^4*d^2*e^2 - 8*B*a*b^3*d*e^3 - 2*A*b^4*d*e^3 + 3*B*a^2*b^2*e^4
 + 2*A*a*b^3*e^4)*e^(-2)/(x*e + d)^2 - 24*(5*B*b^4*d^3*e^3 - 12*B*a*b^3*d^2
*e^4 - 3*A*b^4*d^2*e^4 + 9*B*a^2*b^2*d*e^5 + 6*A*a*b^3*d*e^5 - 2*B*a^3*b*e^
6 - 3*A*a^2*b^2*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6) - (5*B*b^4*d^4
- 16*B*a*b^3*d^3*e - 4*A*b^4*d^3*e + 18*B*a^2*b^2*d^2*e^2 + 12*A*a*b^3*d^2*
e^2 - 8*B*a^3*b*d*e^3 - 12*A*a^2*b^2*d*e^3 + B*a^4*e^4 + 4*A*a^3*b*e^4)*e^(
-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*b^4*d^5*e^4/(x*e + d) - 4*B*a
*b^3*d^4*e^5/(x*e + d) - A*b^4*d^4*e^5/(x*e + d) + 6*B*a^2*b^2*d^3*e^6/(x*e
 + d) + 4*A*a*b^3*d^3*e^6/(x*e + d) - 4*B*a^3*b*d^2*e^7/(x*e + d) - 6*A*a^2
*b^2*d^2*e^7/(x*e + d) + B*a^4*d*e^8/(x*e + d) + 4*A*a^3*b*d*e^8/(x*e + d)
- A*a^4*e^9/(x*e + d))*e^(-10)
```

maple [B] time = 0.06, size = 564, normalized size = 3.00

$$\frac{B b^4x^4}{4e^2}+\frac{A b^4x^3}{3e^2}+\frac{4Ba b^3x^3}{3e^2}-\frac{2B b^4d x^3}{3e^3}+\frac{2Aa b^3x^2}{e^2}-\frac{A b^4d x^2}{e^3}+\frac{3B a^2b^2x^2}{e^2}-\frac{4Ba b^3d x^2}{e^3}+\frac{3B b^4d^2x^2}{2e^4}-\frac{A a^4}{(ex+d) e}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x)
```

```
[Out] -1/e/(e*x+d)*A*a^4+1/4*b^4/e^2*B*x^4+1/3*b^4/e^2*A*x^3+1/e^2*ln(e*x+d)*B*a^
4-4*b^3/e^3*B*x^2*a*d+18/e^4*ln(e*x+d)*B*a^2*b^2*d^2-16/e^5*ln(e*x+d)*B*a*b
^3*d^3+4/e^2/(e*x+d)*A*d*a^3*b-6/e^3/(e*x+d)*A*a^2*b^2*d^2+4/e^4/(e*x+d)*A*
a*b^3*d^3-8/e^3*ln(e*x+d)*B*a^3*b*d-4/e^3/(e*x+d)*B*a^3*b*d^2+6/e^4/(e*x+d)
*B*a^2*b^2*d^3-4/e^5/(e*x+d)*B*a*b^3*d^4-12/e^3*ln(e*x+d)*A*a^2*b^2*d+12/e^
4*ln(e*x+d)*A*a*b^3*d^2+2*b^3/e^2*A*x^2*a-b^4/e^3*A*x^2*d+1/e^6/(e*x+d)*B*b
^4*d^5+4/3*b^3/e^2*B*x^3*a-2/3*b^4/e^3*B*x^3*d+4/e^2*ln(e*x+d)*A*a^3*b-4/e^
5*ln(e*x+d)*A*b^4*d^3+5/e^6*ln(e*x+d)*B*b^4*d^4-8*b^3/e^3*A*a*d*x-12*b^2/e^
3*B*a^2*d*x+12*b^3/e^4*B*a*d^2*x+6*b^2/e^2*A*a^2*x+3*b^4/e^4*A*d^2*x+4*b/e^
2*B*a^3*x-4*b^4/e^5*B*d^3*x-1/e^5/(e*x+d)*A*b^4*d^4+1/e^2/(e*x+d)*B*d*a^4+3
*b^2/e^2*B*x^2*a^2+3/2*b^4/e^4*B*x^2*d^2
```

maxima [**B**] time = 0.51, size = 410, normalized size = 2.18

$$\frac{Bb^4d^5 - Aa^4e^5 - \left(4\,Bab^3 + Ab^4\right)d^4e + 2\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 2\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 + \left(Ba^4 + 4\,Aa^3b\right)de^4}{e^7x + de^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*b^4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d
*e^4)/(e^7*x + d*e^6) + 1/12*(3*B*b^4*e^3*x^4 - 4*(2*B*b^4*d*e^2 - (4*B*a*b
^3 + A*b^4)*e^3)*x^3 + 6*(3*B*b^4*d^2*e - 2*(4*B*a*b^3 + A*b^4)*d*e^2 + 2*(
3*B*a^2*b^2 + 2*A*a*b^3)*e^3)*x^2 - 12*(4*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b^4)
*d^2*e + 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^
3)*x)/e^5 + (5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2
*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)
*e^4)*log(e*x + d)/e^6
```

mupad [**B**] time = 0.10, size = 486, normalized size = 2.59

$$x^3\left(\frac{A\,b^4+4\,B\,a\,b^3}{3\,e^2}-\frac{2\,B\,b^4\,d}{3\,e^3}\right)-x^2\left(\frac{d\left(\frac{A\,b^4+4\,B\,a\,b^3}{e^2}-\frac{2\,B\,b^4\,d}{e^3}\right)}{e}-\frac{a\,b^2\,\left(2\,A\,b+3\,B\,a\right)}{e^2}+\frac{B\,b^4\,d^2}{2\,e^4}\right)+x\left(\frac{2\,d\left(\frac{2\,d\left(\frac{A\,b^4+4\,B}{e^2}\right.}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((A*b^4 + 4*B*a*b^3)/(3*e^2) - (2*B*b^4*d)/(3*e^3)) - x^2*((d*((A*b^4 +
 4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3))/e - (a*b^2*(2*A*b + 3*B*a))/e^2 + (B*b^
4*d^2)/(2*e^4)) + x*((2*d*((2*d*((A*b^4 + 4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3)
)/e - (2*a*b^2*(2*A*b + 3*B*a))/e^2 + (B*b^4*d^2)/e^4))/e - (d^2*((A*b^4 +
4*B*a*b^3)/e^2 - (2*B*b^4*d)/e^3))/e^2 + (2*a^2*b*(3*A*b + 2*B*a))/e^2) + (
log(d + e*x)*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^3*b*e^4 - 4*A*b^4*d^3*e + 12*
A*a*b^3*d^2*e^2 - 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 16*B*a*b^3*d^
3*e - 8*B*a^3*b*d*e^3))/e^6 - (A*a^4*e^5 - B*b^4*d^5 + A*b^4*d^4*e - B*a^4*
d*e^4 - 4*A*a*b^3*d^3*e^2 + 4*B*a^3*b*d^2*e^3 + 6*A*a^2*b^2*d^2*e^3 - 6*B*a
^2*b^2*d^3*e^2 - 4*A*a^3*b*d*e^4 + 4*B*a*b^3*d^4*e)/(e*(d*e^5 + e^6*x)) + (
B*b^4*x^4)/(4*e^2)
```

sympy [B] time = 2.09, size = 396, normalized size = 2.11

$$\frac{Bb^4x^4}{4e^2}+x^3\left(\frac{Ab^4}{3e^2}+\frac{4Bab^3}{3e^2}-\frac{2Bb^4d}{3e^3}\right)+x^2\left(\frac{2Aab^3}{e^2}-\frac{Ab^4d}{e^3}+\frac{3Ba^2b^2}{e^2}-\frac{4Bab^3d}{e^3}+\frac{3Bb^4d^2}{2e^4}\right)+x\left(\frac{6Aa^2b^2}{e^2}-\frac{8Aa}{e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**2,x)
```

```
[Out] B*b**4*x**4/(4*e**2) + x**3*(A*b**4/(3*e**2) + 4*B*a*b**3/(3*e**2) - 2*B*b*
*4*d/(3*e**3)) + x**2*(2*A*a*b**3/e**2 - A*b**4*d/e**3 + 3*B*a**2*b**2/e**2
 - 4*B*a*b**3*d/e**3 + 3*B*b**4*d**2/(2*e**4)) + x*(6*A*a**2*b**2/e**2 - 8*
A*a*b**3*d/e**3 + 3*A*b**4*d**2/e**4 + 4*B*a**3*b/e**2 - 12*B*a**2*b**2*d/e
**3 + 12*B*a*b**3*d**2/e**4 - 4*B*b**4*d**3/e**5) + (-A*a**4*e**5 + 4*A*a**
3*b*d*e**4 - 6*A*a**2*b**2*d**2*e**3 + 4*A*a*b**3*d**3*e**2 - A*b**4*d**4*e
 + B*a**4*d*e**4 - 4*B*a**3*b*d**2*e**3 + 6*B*a**2*b**2*d**3*e**2 - 4*B*a*b
**3*d**4*e + B*b**4*d**5)/(d*e**6 + e**7*x) + (a*e - b*d)**3*(4*A*b*e + B*a
*e - 5*B*b*d)*log(d + e*x)/e**6
```

3.1683 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=193

$$-\frac{b^3(d+ex)^2(-4aBe-Abe+5bBd)}{2e^6}+\frac{2b^2x(bd-ae)(-3aBe-2Abe+5bBd)}{e^5}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6(d+ex)}+$$

```
[Out] 2*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*x/e^5+1/2*(-a*e+b*d)^4*(-A*e+B*
d)/e^6/(e*x+d)^2-(-a*e+b*d)^3*(-4*A*b*e-B*a*e+5*B*b*d)/e^6/(e*x+d)-1/2*b^3*
(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^2/e^6+1/3*b^4*B*(e*x+d)^3/e^6-2*b*(-a*e+b*
d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.25, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3(d+ex)^2(-4aBe-Abe+5bBd)}{2e^6}+\frac{2b^2x(bd-ae)(-3aBe-2Abe+5bBd)}{e^5}-\frac{(bd-ae)^3(-aBe-4Abe+5bBd)}{e^6(d+ex)}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*x)/e^5 + ((b*d - a*e)^4*(B
*d - A*e))/(2*e^6*(d + e*x)^2) - ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*e)
)/(e^6*(d + e*x)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^2)/(2*e^6) +
 (b^4*B*(d + e*x)^3)/(3*e^6) - (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*
B*e)*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^3}\,dx\\ &= \int \left(-\frac{2b^2(bd-ae)(-5bBd+2Abe+3aBe)}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^3}+\right.\\ &= \frac{2b^2(bd-ae)(5bBd-2Abe-3aBe)x}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{2e^6(d+ex)^2}-\end{aligned}$$

Mathematica [A] time = 0.10, size = 187, normalized size = 0.97

$$\frac{-6b^2ex\left(-6a^2Be^2-4abe(Ae-3Bd)+3b^2d(Ae-2Bd)\right)+3b^3e^2x^2(4aBe+Abe-3bBd)-\frac{6(bd-ae)^3(-aBe-4Abe+5bBd)}{d+ex}}{6e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (-6*b^2*e*(-6*a^2*B*e^2 - 4*a*b*e*(-3*B*d + A*e) + 3*b^2*d*(-2*B*d + A*e))*
x + 3*b^3*e^2*(-3*b*B*d + A*b*e + 4*a*B*e)*x^2 + 2*b^4*B*e^3*x^3 + (3*(b*d
- a*e)^4*(B*d - A*e))/(d + e*x)^2 - (6*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a
*B*e))/(d + e*x) - 12*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*Log[d +
 e*x])/(6*e^6)
```

fricas [B] time = 0.87, size = 652, normalized size = 3.38

$$\frac{2\,Bb^4e^5x^5 - 27\,Bb^4d^5 - 3\,Aa^4e^5 + 21\left(4\,Bab^3 + Ab^4\right)d^4e - 30\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 18\left(2\,Ba^3b + 3\,Aa^2b^2\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*e^5*x^5 - 27*B*b^4*d^5 - 3*A*a^4*e^5 + 21*(4*B*a*b^3 + A*b^4)*
d^4*e - 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 18*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 - 3*(B*a^4 + 4*A*a^3*b)*d*e^4 - (5*B*b^4*d*e^4 - 3*(4*B*a*b^3 + A*
b^4)*e^5)*x^4 + 4*(5*B*b^4*d^2*e^3 - 3*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 3*(21*B*b^4*d^3*e^2 - 11*(4*B*a*b^3 + A*b^4)
*d^2*e^3 + 8*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4)*x^2 + 6*(B*b^4*d^4*e + (4*B*a
*b^3 + A*b^4)*d^3*e^2 - 4*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b
+ 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*x - 12*(5*B*b^4*d^5 - 3*(4*
B*a*b^3 + A*b^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - (2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + (5*B*b^4*d^3*e^2 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^3 +
3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 2*
(5*B*b^4*d^4*e - 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*
d*e^7*x + d^2*e^6)
```

giac [B] time = 0.17, size = 418, normalized size = 2.17

$$-2\left(5\,Bb^4d^3 - 12\,Bab^3d^2e - 3\,Ab^4d^2e + 9\,Ba^2b^2de^2 + 6\,Aab^3de^2 - 2\,Ba^3be^3 - 3\,Aa^2b^2e^3\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -2*(5*B*b^4*d^3 - 12*B*a*b^3*d^2*e - 3*A*b^4*d^2*e + 9*B*a^2*b^2*d*e^2 + 6*
A*a*b^3*d*e^2 - 2*B*a^3*b*e^3 - 3*A*a^2*b^2*e^3)*e^(-6)*log(abs(x*e + d)) +
 1/6*(2*B*b^4*x^3*e^6 - 9*B*b^4*d*x^2*e^5 + 36*B*b^4*d^2*x*e^4 + 12*B*a*b^3
*x^2*e^6 + 3*A*b^4*x^2*e^6 - 72*B*a*b^3*d*x*e^5 - 18*A*b^4*d*x*e^5 + 36*B*a
^2*b^2*x*e^6 + 24*A*a*b^3*x*e^6)*e^(-9) - 1/2*(9*B*b^4*d^5 - 28*B*a*b^3*d^4
*e - 7*A*b^4*d^4*e + 30*B*a^2*b^2*d^3*e^2 + 20*A*a*b^3*d^3*e^2 - 12*B*a^3*b
*d^2*e^3 - 18*A*a^2*b^2*d^2*e^3 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 + A*a^4*e^5
 + 2*(5*B*b^4*d^4*e - 16*B*a*b^3*d^3*e^2 - 4*A*b^4*d^3*e^2 + 18*B*a^2*b^2*d
^2*e^3 + 12*A*a*b^3*d^2*e^3 - 8*B*a^3*b*d*e^4 - 12*A*a^2*b^2*d*e^4 + B*a^4*
e^5 + 4*A*a^3*b*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.06, size = 601, normalized size = 3.11

$$\frac{B\,b^4x^3}{3e^3}-\frac{A\,a^4}{2\left(ex+d\right)^2e}+\frac{2A\,a^3bd}{\left(ex+d\right)^2e^2}-\frac{3A\,a^2b^2d^2}{\left(ex+d\right)^2e^3}+\frac{2Aa\,b^3d^3}{\left(ex+d\right)^2e^4}-\frac{A\,b^4d^4}{2\left(ex+d\right)^2e^5}+\frac{A\,b^4x^2}{2e^3}+\frac{B\,a^4d}{2\left(ex+d\right)^2e^2}-\frac{2B\,a^3b}{\left(ex+d\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*b^4/e^3*B*x^3+1/2*b^4/e^3*A*x^2-1/e^2/(e*x+d)*B*a^4-1/2/e/(e*x+d)^2*A*a
^4-5/e^6/(e*x+d)*B*b^4*d^4-4/e^2/(e*x+d)*A*a^3*b+6*b^2/e^3*ln(e*x+d)*A*a^2-
12*b^3/e^4*B*x*a*d-3/e^3/(e*x+d)^2*A*d^2*a^2*b^2+2/e^4/(e*x+d)^2*A*a*b^3*d^
3-2/e^3/(e*x+d)^2*B*d^2*a^3*b+3/e^4/(e*x+d)^2*B*a^2*b^2*d^3-2/e^5/(e*x+d)^2
*B*a*b^3*d^4+24*b^3/e^5*ln(e*x+d)*B*a*d^2+12/e^3/(e*x+d)*A*a^2*b^2*d-12/e^4
/(e*x+d)*A*a*b^3*d^2+8/e^3/(e*x+d)*B*a^3*b*d-18/e^4/(e*x+d)*B*a^2*b^2*d^2+1
6/e^5/(e*x+d)*B*a*b^3*d^3+2/e^2/(e*x+d)^2*A*d*a^3*b-12*b^3/e^4*ln(e*x+d)*A*
a*d-18*b^2/e^4*ln(e*x+d)*B*a^2*d+1/2/e^6/(e*x+d)^2*B*b^4*d^5+4/e^5/(e*x+d)*
A*b^4*d^3+6*b^4/e^5*ln(e*x+d)*A*d^2+4*b/e^3*ln(e*x+d)*B*a^3-10*b^4/e^6*ln(e
*x+d)*B*d^3+4*b^3/e^3*A*x*a-3*b^4/e^4*A*x*d+6*b^2/e^3*B*x*a^2+6*b^4/e^5*B*x
*d^2+2*b^3/e^3*B*x^2*a-3/2*b^4/e^4*B*x^2*d-1/2/e^5/(e*x+d)^2*A*b^4*d^4+1/2/
e^2/(e*x+d)^2*B*d*a^4
```

maxima [B] time = 0.69, size = 419, normalized size = 2.17

$$-\frac{9\,Bb^{4}d^{5}+Aa^{4}e^{5}-7\left(4\,Bab^{3}+Ab^{4}\right)d^{4}e+10\left(3\,Ba^{2}b^{2}+2\,Aab^{3}\right)d^{3}e^{2}-6\left(2\,Ba^{3}b+3\,Aa^{2}b^{2}\right)d^{2}e^{3}+\left(Ba^{4}+4\,Aa\right.}{2\left(e^{8}x^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*b^4*d^5 + A*a^4*e^5 - 7*(4*B*a*b^3 + A*b^4)*d^4*e + 10*(3*B*a^2*b
^2 + 2*A*a*b^3)*d^3*e^2 - 6*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*
A*a^3*b)*d*e^4 + 2*(5*B*b^4*d^4*e - 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 +
 4*A*a^3*b)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*B*b^4*e^2*x^3
- 3*(3*B*b^4*d*e - (4*B*a*b^3 + A*b^4)*e^2)*x^2 + 6*(6*B*b^4*d^2 - 3*(4*B*a
*b^3 + A*b^4)*d*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*x)/e^5 - 2*(5*B*b^4*d^
3 - 3*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*
a^3*b + 3*A*a^2*b^2)*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 2.05, size = 451, normalized size = 2.34

$$x^2\,\left(\frac{A\,b^4+4\,B\,a\,b^3}{2\,e^3}-\frac{3\,B\,b^4\,d}{2\,e^4}\right)-\frac{\frac{B\,a^4\,d\,e^4+A\,a^4\,e^5-12\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4+30\,B\,a^2\,b^2\,d^3\,e^2-18\,A\,a^2\,b^2\,d^2\,e^3-28\,B\,a\,b^3\,d^4\,e+20\,A\,a\,b^3\,d^3\,e}{2\,e}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((A*b^4 + 4*B*a*b^3)/(2*e^3) - (3*B*b^4*d)/(2*e^4)) - ((A*a^4*e^5 + 9*B
*b^4*d^5 - 7*A*b^4*d^4*e + B*a^4*d*e^4 + 20*A*a*b^3*d^3*e^2 - 12*B*a^3*b*d^
2*e^3 - 18*A*a^2*b^2*d^2*e^3 + 30*B*a^2*b^2*d^3*e^2 + 4*A*a^3*b*d*e^4 - 28*
B*a*b^3*d^4*e)/(2*e) + x*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^3*b*e^4 - 4*A*b^4
*d^3*e + 12*A*a*b^3*d^2*e^2 - 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 1
6*B*a*b^3*d^3*e - 8*B*a^3*b*d*e^3))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3
*d*((A*b^4 + 4*B*a*b^3)/e^3 - (3*B*b^4*d)/e^4))/e - (2*a*b^2*(2*A*b + 3*B*a
))/e^3 + (3*B*b^4*d^2)/e^5) + (log(d + e*x)*(4*B*a^3*b*e^3 - 10*B*b^4*d^3 +
 6*A*b^4*d^2*e + 6*A*a^2*b^2*e^3 - 18*B*a^2*b^2*d*e^2 - 12*A*a*b^3*d*e^2 +
24*B*a*b^3*d^2*e))/e^6 + (B*b^4*x^3)/(3*e^3)
```

sympy [B] time = 7.27, size = 444, normalized size = 2.30

$$\frac{Bb^{4}x^{3}}{3e^{3}}+\frac{2b\left(ae-bd\right)^{2}\left(3Abe+2Bae-5Bbd\right)\log{\left(d+ex\right)}}{e^{6}}+x^{2}\left(\frac{Ab^{4}}{2e^{3}}+\frac{2Bab^{3}}{e^{3}}-\frac{3Bb^{4}d}{2e^{4}}\right)+x\left(\frac{4Aab^{3}}{e^{3}}-\frac{3Ab^{4}d}{e^{4}}+\frac{6B}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**3,x)
```

```
[Out] B*b**4*x**3/(3*e**3) + 2*b*(a*e - b*d)**2*(3*A*b*e + 2*B*a*e - 5*B*b*d)*log
(d + e*x)/e**6 + x**2*(A*b**4/(2*e**3) + 2*B*a*b**3/e**3 - 3*B*b**4*d/(2*e*
*4)) + x*(4*A*a*b**3/e**3 - 3*A*b**4*d/e**4 + 6*B*a**2*b**2/e**3 - 12*B*a*b
**3*d/e**4 + 6*B*b**4*d**2/e**5) + (-A*a**4*e**5 - 4*A*a**3*b*d*e**4 + 18*A
*a**2*b**2*d**2*e**3 - 20*A*a*b**3*d**3*e**2 + 7*A*b**4*d**4*e - B*a**4*d*e
**4 + 12*B*a**3*b*d**2*e**3 - 30*B*a**2*b**2*d**3*e**2 + 28*B*a*b**3*d**4*e
 - 9*B*b**4*d**5 + x*(-8*A*a**3*b*e**5 + 24*A*a**2*b**2*d*e**4 - 24*A*a*b**
3*d**2*e**3 + 8*A*b**4*d**3*e**2 - 2*B*a**4*e**5 + 16*B*a**3*b*d*e**4 - 36*
B*a**2*b**2*d**2*e**3 + 32*B*a*b**3*d**3*e**2 - 10*B*b**4*d**4*e))/(2*d**2*
e**6 + 4*d*e**7*x + 2*e**8*x**2)
```

3.1684 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4} \, dx$

Optimal. Leaf size=189

$$-\frac{b^3x(-4aBe-Abe+4bBd)}{e^5}+\frac{2b^2(bd-ae)\log(d+ex)(-3aBe-2Abe+5bBd)}{e^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5b}{e^6(d+ex)}$$

```
[Out] -b^3*(-A*b*e-4*B*a*e+4*B*b*d)*x/e^5+1/2*b^4*B*x^2/e^4+1/3*(-a*e+b*d)^4*(-A*
e+B*d)/e^6/(e*x+d)^3-1/2*(-a*e+b*d)^3*(-4*A*b*e-B*a*e+5*B*b*d)/e^6/(e*x+d)^
2+2*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)/e^6/(e*x+d)+2*b^2*(-a*e+b*d)*
(-2*A*b*e-3*B*a*e+5*B*b*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.22, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b^3x(-4aBe-Abe+4bBd)}{e^5}+\frac{2b^2(bd-ae)\log(d+ex)(-3aBe-2Abe+5bBd)}{e^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5b}{e^6(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((b^3*(4*b*B*d - A*b*e - 4*a*B*e)*x)/e^5) + (b^4*B*x^2)/(2*e^4) + ((b*d -
a*e)^4*(B*d - A*e))/(3*e^6*(d + e*x)^3) - ((b*d - a*e)^3*(5*b*B*d - 4*A*b*e
 - a*B*e))/(2*e^6*(d + e*x)^2) + (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*
a*B*e))/(e^6*(d + e*x)) + (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*
Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^4}\,dx\\ &= \int \left(\frac{b^3(-4bBd+Abe+4aBe)}{e^5}+\frac{b^4Bx}{e^4}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^4}+\frac{(-bd+}{}\right.\\ &= -\frac{b^3(4bBd-Abe-4aBe)x}{e^5}+\frac{b^4Bx^2}{2e^4}+\frac{(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^3}-\frac{(bd-ae)^3(5b}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.16, size = 351, normalized size = 1.86

$$\frac{-a^4e^4(2Ae+B(d+3ex))-4a^3be^3\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+6a^2b^2e^2\left(Bd\left(11d^2+27dex+18e^2x^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (-(a^4*e^4*(2*A*e + B*(d + 3*e*x))) - 4*a^3*b*e^3*(A*e*(d + 3*e*x) + 2*B*(d
^2 + 3*d*e*x + 3*e^2*x^2)) + 6*a^2*b^2*e^2*(-2*A*e*(d^2 + 3*d*e*x + 3*e^2*x
^2) + B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 4*a*b^3*e*(A*d*e*(11*d^2 + 27
*d*e*x + 18*e^2*x^2) - 2*B*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x
^3 - 3*e^4*x^4)) + b^4*(2*A*e*(-13*d^4 - 27*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e
^3*x^3 + 3*e^4*x^4) + B*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x
^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + 12*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3
*a*B*e)*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)^3)
```

fricas [B] time = 0.87, size = 650, normalized size = 3.44

$$\frac{3\,Bb^4e^5x^5 + 47\,Bb^4d^5 - 2\,Aa^4e^5 - 26\left(4\,Bab^3 + Ab^4\right)d^4e + 22\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 4\left(2\,Ba^3b + 3\,Aa^2b^2\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^4*e^5*x^5 + 47*B*b^4*d^5 - 2*A*a^4*e^5 - 26*(4*B*a*b^3 + A*b^4)*
d^4*e + 22*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*
d^2*e^3 - (B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(5*B*b^4*d*e^4 - 2*(4*B*a*b^3 + A*b
^4)*e^5)*x^4 - 9*(7*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4)*x^3 - 3*(3
*B*b^4*d^3*e^2 + 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 12*(3*B*a^2*b^2 + 2*A*a*b^
3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 3*(27*B*b^4*d^4*e - 18*(4
*B*a*b^3 + A*b^4)*d^3*e^2 + 18*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 4*(2*B*a
^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*x + 12*(5*B*b^4*d^5 -
2*(4*B*a*b^3 + A*b^4)*d^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (5*B*b^4*
d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3
+ 3*(5*B*b^4*d^3*e^2 - 2*(4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*B*a^2*b^2 + 2*A*a
*b^3)*d*e^4)*x^2 + 3*(5*B*b^4*d^4*e - 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3)*x)*log(e*x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d
^2*e^7*x + d^3*e^6)
```

giac [B] time = 0.16, size = 415, normalized size = 2.20

$$2\left(5\,Bb^4d^2 - 8\,Bab^3de - 2\,Ab^4de + 3\,Ba^2b^2e^2 + 2\,Aab^3e^2\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{2}\left(Bb^4x^2e^4 - 8\,Bb^4dxe^3 + 8\,Bab^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 2*(5*B*b^4*d^2 - 8*B*a*b^3*d*e - 2*A*b^4*d*e + 3*B*a^2*b^2*e^2 + 2*A*a*b^3*
e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B*b^4*x^2*e^4 - 8*B*b^4*d*x*e^3 + 8*B*
a*b^3*x*e^4 + 2*A*b^4*x*e^4)*e^(-8) + 1/6*(47*B*b^4*d^5 - 104*B*a*b^3*d^4*e
 - 26*A*b^4*d^4*e + 66*B*a^2*b^2*d^3*e^2 + 44*A*a*b^3*d^3*e^2 - 8*B*a^3*b*d
^2*e^3 - 12*A*a^2*b^2*d^2*e^3 - B*a^4*d*e^4 - 4*A*a^3*b*d*e^4 - 2*A*a^4*e^5
 + 12*(5*B*b^4*d^3*e^2 - 12*B*a*b^3*d^2*e^3 - 3*A*b^4*d^2*e^3 + 9*B*a^2*b^2
*d*e^4 + 6*A*a*b^3*d*e^4 - 2*B*a^3*b*e^5 - 3*A*a^2*b^2*e^5)*x^2 + 3*(35*B*b
^4*d^4*e - 80*B*a*b^3*d^3*e^2 - 20*A*b^4*d^3*e^2 + 54*B*a^2*b^2*d^2*e^3 + 3
6*A*a*b^3*d^2*e^3 - 8*B*a^3*b*d*e^4 - 12*A*a^2*b^2*d*e^4 - B*a^4*e^5 - 4*A*
a^3*b*e^5)*x)*e^(-6)/(x*e + d)^3
```

maple [B] time = 0.06, size = 626, normalized size = 3.31

$$-\frac{A\,a^4}{3\left(ex+d\right)^3 e}+\frac{4A\,a^3bd}{3\left(ex+d\right)^3 e^2}-\frac{2A\,a^2b^2d^2}{\left(ex+d\right)^3 e^3}+\frac{4Aa\,b^3d^3}{3\left(ex+d\right)^3 e^4}-\frac{A\,b^4d^4}{3\left(ex+d\right)^3 e^5}+\frac{B\,a^4d}{3\left(ex+d\right)^3 e^2}-\frac{4B\,a^3b\,d^2}{3\left(ex+d\right)^3 e^3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x)
```

```
[Out] -6/e^4/(e*x+d)^2*A*a*b^3*d^2+4/e^3/(e*x+d)^2*B*a^3*b*d-9/e^4/(e*x+d)^2*B*a^
2*b^2*d^2+6/e^3/(e*x+d)^2*A*a^2*b^2*d-16*b^3/e^5*ln(e*x+d)*B*d*a+b^4/e^4*A*
x-1/3/e/(e*x+d)^3*A*a^4-1/2/e^2/(e*x+d)^2*B*a^4+2/e^4/(e*x+d)^3*B*d^3*a^2*b
^2-2/e^3/(e*x+d)^3*A*d^2*a^2*b^2+6*b^2/e^4*ln(e*x+d)*B*a^2+4/3/e^4/(e*x+d)^
3*A*d^3*a*b^3-24*b^3/e^5/(e*x+d)*B*a*d^2+4/3/e^2/(e*x+d)^3*A*d*a^3*b+12*b^3
/e^4/(e*x+d)*A*a*d+18*b^2/e^4/(e*x+d)*B*a^2*d+8/e^5/(e*x+d)^2*B*a*b^3*d^3+1
/3/e^6/(e*x+d)^3*B*b^4*d^5-6*b^2/e^3/(e*x+d)*A*a^2-6*b^4/e^5/(e*x+d)*A*d^2-
4*b/e^3/(e*x+d)*B*a^3+10*b^4/e^6/(e*x+d)*B*d^3-1/3/e^5/(e*x+d)^3*A*b^4*d^4+
1/3/e^2/(e*x+d)^3*B*d*a^4-2/e^2/(e*x+d)^2*A*a^3*b+2/e^5/(e*x+d)^2*A*b^4*d^3
-5/2/e^6/(e*x+d)^2*B*b^4*d^4-4*b^4/e^5*B*d*x+10*b^4/e^6*ln(e*x+d)*B*d^2-4/3
/e^5/(e*x+d)^3*B*a*b^3*d^4-4/3/e^3/(e*x+d)^3*B*d^2*a^3*b-4*b^4/e^5*ln(e*x+d
)*A*d+4*b^3/e^4*a*B*x+4*b^3/e^4*ln(e*x+d)*A*a+1/2*b^4*B*x^2/e^4
```

maxima [**B**] time = 0.64, size = 431, normalized size = 2.28

$$\underline{47\,Bb^4d^5 - 2\,Aa^4e^5 - 26\left(4\,Bab^3 + Ab^4\right)d^4e + 22\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 4\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3 - \left(Ba^4 + 4\,A\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*b^4*d^5 - 2*A*a^4*e^5 - 26*(4*B*a*b^3 + A*b^4)*d^4*e + 22*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - (B*a^4 +
 4*A*a^3*b)*d*e^4 + 12*(5*B*b^4*d^3*e^2 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 3
*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 3*(
35*B*b^4*d^4*e - 20*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 18*(3*B*a^2*b^2 + 2*A*a*b
^3)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 + 4*A*a^3*b)*e^5)*
x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*b^4*e*x^2 - 2*(
4*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*x)/e^5 + 2*(5*B*b^4*d^2 - 2*(4*B*a*b^3 +
 A*b^4)*d*e + (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*log(e*x + d)/e^6
```

mupad [**B**] time = 0.17, size = 451, normalized size = 2.39

$$x\left(\frac{A\,b^4+4\,B\,a\,b^3}{e^4}-\frac{4\,B\,b^4\,d}{e^5}\right)-\frac{\frac{B\,a^4\,d\,e^4+2\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4-66\,B\,a^2\,b^2\,d^3\,e^2+12\,A\,a^2\,b^2\,d^2\,e^3+104\,B\,a\,b^3\,d^4\,e-44\,A\,a\,b^3\,d^3}{6\,e}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^4,x)
```

```
[Out] x*((A*b^4 + 4*B*a*b^3)/e^4 - (4*B*b^4*d)/e^5) - ((2*A*a^4*e^5 - 47*B*b^4*d^
5 + 26*A*b^4*d^4*e + B*a^4*d*e^4 - 44*A*a*b^3*d^3*e^2 + 8*B*a^3*b*d^2*e^3 +
 12*A*a^2*b^2*d^2*e^3 - 66*B*a^2*b^2*d^3*e^2 + 4*A*a^3*b*d*e^4 + 104*B*a*b^
3*d^4*e)/(6*e) + x*((B*a^4*e^4)/2 - (35*B*b^4*d^4)/2 + 2*A*a^3*b*e^4 + 10*A
*b^4*d^3*e - 18*A*a*b^3*d^2*e^2 + 6*A*a^2*b^2*d*e^3 - 27*B*a^2*b^2*d^2*e^2
+ 40*B*a*b^3*d^3*e + 4*B*a^3*b*d*e^3) + x^2*(4*B*a^3*b*e^4 - 10*B*b^4*d^3*e
 + 6*A*a^2*b^2*e^4 + 6*A*b^4*d^2*e^2 + 24*B*a*b^3*d^2*e^2 - 18*B*a^2*b^2*d*
e^3 - 12*A*a*b^3*d*e^3))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) +
(log(d + e*x)*(10*B*b^4*d^2 - 4*A*b^4*d*e + 4*A*a*b^3*e^2 + 6*B*a^2*b^2*e^2
 - 16*B*a*b^3*d*e))/e^6 + (B*b^4*x^2)/(2*e^4)
```

sympy [**B**] time = 21.58, size = 486, normalized size = 2.57

$$\frac{Bb^4x^2}{2e^4}+\frac{2b^2\left(ae-bd\right)\left(2Abe+3Bae-5Bbd\right)\log\left(d+ex\right)}{e^6}+x\left(\frac{Ab^4}{e^4}+\frac{4Bab^3}{e^4}-\frac{4Bb^4d}{e^5}\right)+\frac{-2Aa^4e^5-4Aa^3bde^4-12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**4,x)
```

```
[Out] B*b**4*x**2/(2*e**4) + 2*b**2*(a*e - b*d)*(2*A*b*e + 3*B*a*e - 5*B*b*d)*log
(d + e*x)/e**6 + x*(A*b**4/e**4 + 4*B*a*b**3/e**4 - 4*B*b**4*d/e**5) + (-2*
A*a**4*e**5 - 4*A*a**3*b*d*e**4 - 12*A*a**2*b**2*d**2*e**3 + 44*A*a*b**3*d*
*3*e**2 - 26*A*b**4*d**4*e - B*a**4*d*e**4 - 8*B*a**3*b*d**2*e**3 + 66*B*a*
*2*b**2*d**3*e**2 - 104*B*a*b**3*d**4*e + 47*B*b**4*d**5 + x**2*(-36*A*a**2
*b**2*e**5 + 72*A*a*b**3*d*e**4 - 36*A*b**4*d**2*e**3 - 24*B*a**3*b*e**5 +
108*B*a**2*b**2*d*e**4 - 144*B*a*b**3*d**2*e**3 + 60*B*b**4*d**3*e**2) + x*
(-12*A*a**3*b*e**5 - 36*A*a**2*b**2*d*e**4 + 108*A*a*b**3*d**2*e**3 - 60*A*
b**4*d**3*e**2 - 3*B*a**4*e**5 - 24*B*a**3*b*d*e**4 + 162*B*a**2*b**2*d**2*
e**3 - 240*B*a*b**3*d**3*e**2 + 105*B*b**4*d**4*e))/(6*d**3*e**6 + 18*d**2*
e**7*x + 18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1685 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=189

$$-\frac{b^3\log(d+ex)(-4aBe-Abe+5bBd)}{e^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6(d+ex)}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd}{e^6(d+ex)^2}$$

```
[Out] b^4*B*x/e^5+1/4*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^4-1/3*(-a*e+b*d)^3*(-4*
A*b*e-B*a*e+5*B*b*d)/e^6/(e*x+d)^3+b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d
)/e^6/(e*x+d)^2-2*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)/e^6/(e*x+d)-b^3
*(-A*b*e-4*B*a*e+5*B*b*d)*ln(e*x+d)/e^6
```

Rubi [A] time = 0.20, antiderivative size = 189, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{e^6(d+ex)}-\frac{b^3\log(d+ex)(-4aBe-Abe+5bBd)}{e^6}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd}{e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (b^4*B*x)/e^5 + ((b*d - a*e)^4*(B*d - A*e))/(4*e^6*(d + e*x)^4) - ((b*d - a
*e)^3*(5*b*B*d - 4*A*b*e - a*B*e))/(3*e^6*(d + e*x)^3) + (b*(b*d - a*e)^2*(
5*b*B*d - 3*A*b*e - 2*a*B*e))/(e^6*(d + e*x)^2) - (2*b^2*(b*d - a*e)*(5*b*B
*d - 2*A*b*e - 3*a*B*e))/(e^6*(d + e*x)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)
*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^5}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^5}\,dx\\ &= \int \left(\frac{b^4B}{e^5}+\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^5}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^4}+\right.\\ &= \frac{b^4Bx}{e^5}+\frac{(bd-ae)^4(Bd-Ae)}{4e^6(d+ex)^4}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{3e^6(d+ex)^3}+\frac{b(bd-a}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 338, normalized size = 1.79

$$-\frac{a^4e^4(3Ae+B(d+4ex))+4a^3be^3\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+6a^2b^2e^2\left(Ae\left(d^2+4dex+6e^2x^2\right)+3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(a^4*e^4*(3*A*e + B*(d + 4*e*x)) + 4*a^3*b*e^3*(A*e*(d + 4*e*x) + B*(
d^2 + 4*d*e*x + 6*e^2*x^2)) + 6*a^2*b^2*e^2*(A*e*(d^2 + 4*d*e*x + 6*e^2*x^2
) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) - 4*a*b^3*e*(-3*A*e*(d
^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + B*d*(25*d^3 + 88*d^2*e*x + 108*
d*e^2*x^2 + 48*e^3*x^3)) - b^4*(A*d*e*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2
+ 48*e^3*x^3) - B*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3
- 48*d*e^4*x^4 - 12*e^5*x^5)) + 12*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x
)^4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

fricas [B] time = 0.87, size = 602, normalized size = 3.19

$$12\,Bb^4e^5x^5 + 48\,Bb^4de^4x^4 - 77\,Bb^4d^5 - 3\,Aa^4e^5 + 25\,\left(4\,Bab^3 + Ab^4\right)d^4e - 6\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 - 2\,\bigl(2\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*b^4*e^5*x^5 + 48*B*b^4*d*e^4*x^4 - 77*B*b^4*d^5 - 3*A*a^4*e^5 +
25*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B
*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - (B*a^4 + 4*A*a^3*b)*d*e^4 - 24*(2*B*b^4*d^2
*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 1
2*(21*B*b^4*d^3*e^2 - 9*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*
a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 - 4*(62*B*b^4*d^4*e - 22*
(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 2*(2*B*
a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x - 12*(5*B*b^4*d^5 -
 (4*B*a*b^3 + A*b^4)*d^4*e + (5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4
+ 4*(5*B*b^4*d^2*e^3 - (4*B*a*b^3 + A*b^4)*d*e^4)*x^3 + 6*(5*B*b^4*d^3*e^2
- (4*B*a*b^3 + A*b^4)*d^2*e^3)*x^2 + 4*(5*B*b^4*d^4*e - (4*B*a*b^3 + A*b^4)
*d^3*e^2)*x)*log(e*x + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*
e^7*x + d^4*e^6)
```

giac [B] time = 0.18, size = 652, normalized size = 3.45

$$(xe + d)Bb^4e^{(-6)} + \left(5\,Bb^4d - 4\,Bab^3e - Ab^4e\right)e^{(-6)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) - \frac{1}{12}\,\biggl(\frac{120\,Bb^4d^2e^{22}}{xe + d} - \frac{60\,Bb^4d^3e^{22}}{(xe + d)^2} + \frac{20\,Bb^4}{(xe +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*b^4*e^(-6) + (5*B*b^4*d - 4*B*a*b^3*e - A*b^4*e)*e^(-6)*log(abs
(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*b^4*d^2*e^22/(x*e + d) - 60*B*b
^4*d^3*e^22/(x*e + d)^2 + 20*B*b^4*d^4*e^22/(x*e + d)^3 - 3*B*b^4*d^5*e^22/
(x*e + d)^4 - 192*B*a*b^3*d*e^23/(x*e + d) - 48*A*b^4*d*e^23/(x*e + d) + 14
4*B*a*b^3*d^2*e^23/(x*e + d)^2 + 36*A*b^4*d^2*e^23/(x*e + d)^2 - 64*B*a*b^3
*d^3*e^23/(x*e + d)^3 - 16*A*b^4*d^3*e^23/(x*e + d)^3 + 12*B*a*b^3*d^4*e^23
/(x*e + d)^4 + 3*A*b^4*d^4*e^23/(x*e + d)^4 + 72*B*a^2*b^2*e^24/(x*e + d) +
 48*A*a*b^3*e^24/(x*e + d) - 108*B*a^2*b^2*d*e^24/(x*e + d)^2 - 72*A*a*b^3*
d*e^24/(x*e + d)^2 + 72*B*a^2*b^2*d^2*e^24/(x*e + d)^3 + 48*A*a*b^3*d^2*e^2
4/(x*e + d)^3 - 18*B*a^2*b^2*d^3*e^24/(x*e + d)^4 - 12*A*a*b^3*d^3*e^24/(x*
e + d)^4 + 24*B*a^3*b*e^25/(x*e + d)^2 + 36*A*a^2*b^2*e^25/(x*e + d)^2 - 32
*B*a^3*b*d*e^25/(x*e + d)^3 - 48*A*a^2*b^2*d*e^25/(x*e + d)^3 + 12*B*a^3*b*
d^2*e^25/(x*e + d)^4 + 18*A*a^2*b^2*d^2*e^25/(x*e + d)^4 + 4*B*a^4*e^26/(x*
e + d)^3 + 16*A*a^3*b*e^26/(x*e + d)^3 - 3*B*a^4*d*e^26/(x*e + d)^4 - 12*A*
a^3*b*d*e^26/(x*e + d)^4 + 3*A*a^4*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.06, size = 641, normalized size = 3.39

$$-\frac{A\,a^4}{4\,(ex+d)^4\,e}+\frac{A\,a^3bd}{(ex+d)^4\,e^2}-\frac{3A\,a^2b^2d^2}{2\,(ex+d)^4\,e^3}+\frac{Aa\,b^3d^3}{(ex+d)^4\,e^4}-\frac{A\,b^4d^4}{4\,(ex+d)^4\,e^5}+\frac{B\,a^4d}{4\,(ex+d)^4\,e^2}-\frac{B\,a^3b\,d^2}{(ex+d)^4\,e^3}+\frac{3B\,a^2b^2d^3}{2\,(ex+d)^4\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x)
```

```
[Out] 8/3/e^3/(e*x+d)^3*B*a^3*b*d+9*b^2/e^4/(e*x+d)^2*B*a^2*d+6*b^3/e^4/(e*x+d)^2
*A*a*d-12*b^3/e^5/(e*x+d)^2*B*a*d^2+4*b^3/e^5*ln(e*x+d)*a*B-5*b^4/e^6*ln(e*
x+d)*B*d-3*b^2/e^3/(e*x+d)^2*A*a^2-3/2/e^3/(e*x+d)^4*A*d^2*a^2*b^2+1/e^4/(e
*x+d)^4*A*d^3*a*b^3-1/e^3/(e*x+d)^4*B*d^2*a^3*b+16*b^3/e^5/(e*x+d)*B*d*a+1/
e^2/(e*x+d)^4*A*d*a^3*b-1/4/e/(e*x+d)^4*A*a^4+b^4/e^5*ln(e*x+d)*A-1/3/e^2/(
e*x+d)^3*B*a^4+16/3/e^5/(e*x+d)^3*B*a*b^3*d^3+4/e^3/(e*x+d)^3*A*a^2*b^2*d-4
/e^4/(e*x+d)^3*A*a*b^3*d^2+3/2/e^4/(e*x+d)^4*B*d^3*a^2*b^2-1/e^5/(e*x+d)^4*
B*d^4*a*b^3+5*b^4/e^6/(e*x+d)^2*B*d^3-6/e^4/(e*x+d)^3*B*a^2*b^2*d^2-5/3/e^6
/(e*x+d)^3*B*b^4*d^4-3*b^4/e^5/(e*x+d)^2*A*d^2-2*b/e^3/(e*x+d)^2*B*a^3-1/4/
e^5/(e*x+d)^4*A*d^4*b^4+1/4/e^2/(e*x+d)^4*B*d*a^4+1/4/e^6/(e*x+d)^4*B*b^4*d
^5-4/3/e^2/(e*x+d)^3*A*a^3*b+4/3/e^5/(e*x+d)^3*A*b^4*d^3-6*b^2/e^4/(e*x+d)*
B*a^2-4*b^3/e^4/(e*x+d)*A*a+4*b^4/e^5/(e*x+d)*A*d-10*b^4/e^6/(e*x+d)*B*d^2+
b^4*B*x/e^5
```

maxima [B] time = 0.62, size = 440, normalized size = 2.33

$$\frac{Bb^4x}{e^5}-\frac{77\,Bb^4d^5+3\,Aa^4e^5-25\left(4\,Bab^3+Ab^4\right)d^4e+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+2\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+\left(Ba\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] B*b^4*x/e^5 - 1/12*(77*B*b^4*d^5 + 3*A*a^4*e^5 - 25*(4*B*a*b^3 + A*b^4)*d^4
*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*
e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 24*(5*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^
4)*d*e^4 + (3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 12*(25*B*b^4*d^3*e^2 - 9*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b
+ 3*A*a^2*b^2)*e^5)*x^2 + 4*(65*B*b^4*d^4*e - 22*(4*B*a*b^3 + A*b^4)*d^3*e^
2 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 2*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*
d^3*e^7*x + d^4*e^6) - (5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*log(e*x + d)/e^6
```

mupad [B] time = 2.40, size = 462, normalized size = 2.44

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,b^4\,e-5\,B\,b^4\,d+4\,B\,a\,b^3\,e\right)}{e^6}-\frac{x^3\,\left(6\,B\,a^2\,b^2\,e^4-16\,B\,a\,b^3\,d\,e^3+4\,A\,a\,b^3\,e^4+10\,B\,b^4\,d^2\,e^2-4\,A\,b^4\,d\,e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*b^4*e - 5*B*b^4*d + 4*B*a*b^3*e))/e^6 - (x^3*(4*A*a*b^3*e^
4 - 4*A*b^4*d*e^3 + 6*B*a^2*b^2*e^4 + 10*B*b^4*d^2*e^2 - 16*B*a*b^3*d*e^3)
+ (3*A*a^4*e^5 + 77*B*b^4*d^5 - 25*A*b^4*d^4*e + B*a^4*d*e^4 + 12*A*a*b^3*d
^3*e^2 + 4*B*a^3*b*d^2*e^3 + 6*A*a^2*b^2*d^2*e^3 + 18*B*a^2*b^2*d^3*e^2 + 4
*A*a^3*b*d*e^4 - 100*B*a*b^3*d^4*e)/(12*e) + x*((B*a^4*e^4)/3 + (65*B*b^4*d
^4)/3 + (4*A*a^3*b*e^4)/3 - (22*A*b^4*d^3*e)/3 + 4*A*a*b^3*d^2*e^2 + 2*A*a^
2*b^2*d*e^3 + 6*B*a^2*b^2*d^2*e^2 - (88*B*a*b^3*d^3*e)/3 + (4*B*a^3*b*d*e^3
)/3) + x^2*(2*B*a^3*b*e^4 + 25*B*b^4*d^3*e + 3*A*a^2*b^2*e^4 - 9*A*b^4*d^2*
e^2 - 36*B*a*b^3*d^2*e^2 + 9*B*a^2*b^2*d*e^3 + 6*A*a*b^3*d*e^3))/(d^4*e^5 +
 e^9*x^4 + 4*d^3*e^6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*b^4*x)/e^5
```

sympy [B] time = 62.24, size = 518, normalized size = 2.74

$$\frac{Bb^4x}{e^5}+\frac{b^3\left(Abe+4Bae-5Bbd\right)\log\left(d+ex\right)}{e^6}+\frac{-3Aa^4e^5-4Aa^3bde^4-6Aa^2b^2d^2e^3-12Aab^3d^3e^2+25Ab^4d^4e-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**5,x)
```

```
[Out] B*b**4*x/e**5 + b**3*(A*b*e + 4*B*a*e - 5*B*b*d)*log(d + e*x)/e**6 + (-3*A*
a**4*e**5 - 4*A*a**3*b*d*e**4 - 6*A*a**2*b**2*d**2*e**3 - 12*A*a*b**3*d**3*
e**2 + 25*A*b**4*d**4*e - B*a**4*d*e**4 - 4*B*a**3*b*d**2*e**3 - 18*B*a**2*
b**2*d**3*e**2 + 100*B*a*b**3*d**4*e - 77*B*b**4*d**5 + x**3*(-48*A*a*b**3*
e**5 + 48*A*b**4*d*e**4 - 72*B*a**2*b**2*e**5 + 192*B*a*b**3*d*e**4 - 120*B
*b**4*d**2*e**3) + x**2*(-36*A*a**2*b**2*e**5 - 72*A*a*b**3*d*e**4 + 108*A*
b**4*d**2*e**3 - 24*B*a**3*b*e**5 - 108*B*a**2*b**2*d*e**4 + 432*B*a*b**3*d
**2*e**3 - 300*B*b**4*d**3*e**2) + x*(-16*A*a**3*b*e**5 - 24*A*a**2*b**2*d*
e**4 - 48*A*a*b**3*d**2*e**3 + 88*A*b**4*d**3*e**2 - 4*B*a**4*e**5 - 16*B*a
**3*b*d*e**4 - 72*B*a**2*b**2*d**2*e**3 + 352*B*a*b**3*d**3*e**2 - 260*B*b*
*4*d**4*e))/(12*d**4*e**6 + 48*d**3*e**7*x + 72*d**2*e**8*x**2 + 48*d*e**9*
x**3 + 12*e**10*x**4)
```

3.1686 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^6}\,dx$

Optimal. Leaf size=155

$$-\frac{(a+bx)^5(Bd-Ae)}{5e(d+ex)^5(bd-ae)}+\frac{4b^3B(bd-ae)}{e^6(d+ex)}-\frac{3b^2B(bd-ae)^2}{e^6(d+ex)^2}+\frac{4bB(bd-ae)^3}{3e^6(d+ex)^3}-\frac{B(bd-ae)^4}{4e^6(d+ex)^4}+\frac{b^4B\log(d+ex)}{e^6}$$

```
[Out] -1/5*(-A*e+B*d)*(b*x+a)^5/e/(-a*e+b*d)/(e*x+d)^5-1/4*B*(-a*e+b*d)^4/e^6/(e*
x+d)^4+4/3*b*B*(-a*e+b*d)^3/e^6/(e*x+d)^3-3*b^2*B*(-a*e+b*d)^2/e^6/(e*x+d)^
2+4*b^3*B*(-a*e+b*d)/e^6/(e*x+d)+b^4*B*ln(e*x+d)/e^6
```

Rubi [A] time = 0.15, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{27, 78, 43\}$

$$-\frac{(a+bx)^5(Bd-Ae)}{5e(d+ex)^5(bd-ae)}+\frac{4b^3B(bd-ae)}{e^6(d+ex)}-\frac{3b^2B(bd-ae)^2}{e^6(d+ex)^2}+\frac{4bB(bd-ae)^3}{3e^6(d+ex)^3}-\frac{B(bd-ae)^4}{4e^6(d+ex)^4}+\frac{b^4B\log(d+ex)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(5*e*(b*d - a*e)*(d + e*x)^5) - (B*(b*d - a*e)^4
)/(4*e^6*(d + e*x)^4) + (4*b*B*(b*d - a*e)^3)/(3*e^6*(d + e*x)^3) - (3*b^2*
B*(b*d - a*e)^2)/(e^6*(d + e*x)^2) + (4*b^3*B*(b*d - a*e))/(e^6*(d + e*x))
+ (b^4*B*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^6}\,dx = \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^6}\,dx$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5} + \frac{B\int \frac{(a+bx)^4}{(d+ex)^5}\,dx}{e}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5} + \frac{B\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^5} - \frac{4b(bd-ae)^3}{e^4(d+ex)^4} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^3} - \frac{4b^3(bd-}{e^4(d+ex}\right.}{e}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{5e(bd-ae)(d+ex)^5} - \frac{B(bd-ae)^4}{4e^6(d+ex)^4} + \frac{4bB(bd-ae)^3}{3e^6(d+ex)^3} - \frac{3b^2B(bd-ae)}{e^6(d+ex)^2}$$

Mathematica [B] time = 0.15, size = 332, normalized size = 2.14

$$\frac{-3a^4e^4(4Ae+B(d+5ex))-4a^3be^3\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)-6a^2b^2e^2\left(2Ae\left(d^2+5dex+1\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-3*a^4*e^4*(4*A*e + B*(d + 5*e*x)) - 4*a^3*b*e^3*(3*A*e*(d + 5*e*x) + 2*B*
(d^2 + 5*d*e*x + 10*e^2*x^2)) - 6*a^2*b^2*e^2*(2*A*e*(d^2 + 5*d*e*x + 10*e^
2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)) - 12*a*b^3*e*(A
*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*B*(d^4 + 5*d^3*e*x + 1
0*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + b^4*(-12*A*e*(d^4 + 5*d^3*e*x
+ 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + B*d*(137*d^4 + 625*d^3*e*x +
 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4)) + 60*b^4*B*(d + e*x)^5*Lo
g[d + e*x])/(60*e^6*(d + e*x)^5)
```

fricas [B] time = 0.58, size = 526, normalized size = 3.39

$$\frac{137\,Bb^4d^5-12\,Aa^4e^5-12\left(4\,Bab^3+Ab^4\right)d^4e-6\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2-4\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3-3\left(Ba^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - 3*(B*a
^4 + 4*A*a^3*b)*d*e^4 + 60*(5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 +
60*(15*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 - (3*B*a^2*b^2 + 2*A*a*b
^3)*e^5)*x^3 + 20*(55*B*b^4*d^3*e^2 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 3*(3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 5*(12
5*B*b^4*d^4*e - 12*(4*B*a*b^3 + A*b^4)*d^3*e^2 - 6*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - 3*(B*a^4 + 4*A*a^3*b)*e^5)*
x + 60*(B*b^4*e^5*x^5 + 5*B*b^4*d*e^4*x^4 + 10*B*b^4*d^2*e^3*x^3 + 10*B*b^4
*d^3*e^2*x^2 + 5*B*b^4*d^4*e*x + B*b^4*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e
^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [B] time = 0.16, size = 415, normalized size = 2.68

$$Bb^4e^{(-6)}\log\left(|xe+d|\right)+\frac{\left(60\left(5\,Bb^4de^3-4\,Bab^3e^4-Ab^4e^4\right)x^4+60\left(15\,Bb^4d^2e^2-8\,Bab^3de^3-2\,Ab^4de^3-3\,Ba^2b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*b^4*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*b^4*d*e^3 - 4*B*a*b^3*e^4 -
A*b^4*e^4)*x^4 + 60*(15*B*b^4*d^2*e^2 - 8*B*a*b^3*d*e^3 - 2*A*b^4*d*e^3 - 3
*B*a^2*b^2*e^4 - 2*A*a*b^3*e^4)*x^3 + 20*(55*B*b^4*d^3*e - 24*B*a*b^3*d^2*e
^2 - 6*A*b^4*d^2*e^2 - 9*B*a^2*b^2*d*e^3 - 6*A*a*b^3*d*e^3 - 4*B*a^3*b*e^4
- 6*A*a^2*b^2*e^4)*x^2 + 5*(125*B*b^4*d^4 - 48*B*a*b^3*d^3*e - 12*A*b^4*d^3
*e - 18*B*a^2*b^2*d^2*e^2 - 12*A*a*b^3*d^2*e^2 - 8*B*a^3*b*d*e^3 - 12*A*a^2
*b^2*d*e^3 - 3*B*a^4*e^4 - 12*A*a^3*b*e^4)*x + (137*B*b^4*d^5 - 48*B*a*b^3*
d^4*e - 12*A*b^4*d^4*e - 18*B*a^2*b^2*d^3*e^2 - 12*A*a*b^3*d^3*e^2 - 8*B*a^
3*b*d^2*e^3 - 12*A*a^2*b^2*d^2*e^3 - 3*B*a^4*d*e^4 - 12*A*a^3*b*d*e^4 - 12*
A*a^4*e^5)*e^(-1))*e^(-5)/(x*e + d)^5
```

maple [B] time = 0.06, size = 651, normalized size = 4.20

$$-\frac{A a^{4}}{5 (ex+d)^{5} e}+\frac{4A a^{3}bd}{5 (ex+d)^{5} e^{2}}-\frac{6A a^{2}b^{2}d^{2}}{5 (ex+d)^{5} e^{3}}+\frac{4Aa b^{3}d^{3}}{5 (ex+d)^{5} e^{4}}-\frac{A b^{4}d^{4}}{5 (ex+d)^{5} e^{5}}+\frac{B a^{4}d}{5 (ex+d)^{5} e^{2}}-\frac{4B a^{3}b d^{2}}{5 (ex+d)^{5} e^{3}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x)
```

```
[Out] 10/3*b^4/e^6/(e*x+d)^3*B*d^3+1/e^5/(e*x+d)^4*A*b^4*d^3-5/4/e^6/(e*x+d)^4*B*
d^4*b^4-1/5/e^5/(e*x+d)^5*A*b^4*d^4+1/5/e^2/(e*x+d)^5*B*d*a^4+1/5/e^6/(e*x+
d)^5*B*b^4*d^5-b^4/e^5/(e*x+d)*A-1/4/e^2/(e*x+d)^4*B*a^4-1/5/e/(e*x+d)^5*A*
a^4-6/5/e^3/(e*x+d)^5*A*a^2*b^2*d^2+4/e^5/(e*x+d)^4*B*d^3*a*b^3+4*b^3/e^4/(
e*x+d)^3*A*a*d+6*b^2/e^4/(e*x+d)^3*B*a^2*d-8*b^3/e^5/(e*x+d)^3*B*a*d^2+8*b^
3/e^5/(e*x+d)^2*B*d*a-2*b^3/e^4/(e*x+d)^2*A*a+2*b^4/e^5/(e*x+d)^2*A*d-9/2/e
^4/(e*x+d)^4*B*d^2*a^2*b^2+2/e^3/(e*x+d)^4*B*d*a^3*b+3/e^3/(e*x+d)^4*A*a^2*
b^2*d-3/e^4/(e*x+d)^4*A*d^2*a*b^3+4/5/e^4/(e*x+d)^5*A*a*b^3*d^3-4/5/e^3/(e*
x+d)^5*B*d^2*a^3*b+6/5/e^4/(e*x+d)^5*B*d^3*a^2*b^2-4/5/e^5/(e*x+d)^5*B*d^4*
a*b^3+4/5/e^2/(e*x+d)^5*A*a^3*b*d-4*b^3/e^5/(e*x+d)*a*B-2*b^2/e^3/(e*x+d)^3
*A*a^2-2*b^4/e^5/(e*x+d)^3*A*d^2-4/3*b/e^3/(e*x+d)^3*B*a^3-3*b^2/e^4/(e*x+d
)^2*B*a^2-5*b^4/e^6/(e*x+d)^2*B*d^2+5*b^4/e^6/(e*x+d)*B*d-1/e^2/(e*x+d)^4*A
*a^3*b+b^4*B*ln(e*x+d)/e^6
```

maxima [B] time = 0.61, size = 459, normalized size = 2.96

$$137\, Bb^{4}d^{5} - 12\, Aa^{4}e^{5} - 12\left(4\, Bab^{3} + Ab^{4}\right)d^{4}e - 6\left(3\, Ba^{2}b^{2} + 2\, Aab^{3}\right)d^{3}e^{2} - 4\left(2\, Ba^{3}b + 3\, Aa^{2}b^{2}\right)d^{2}e^{3} - 3\left(Ba^{4} +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*b^4*d^5 - 12*A*a^4*e^5 - 12*(4*B*a*b^3 + A*b^4)*d^4*e - 6*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 - 3*(B*a
^4 + 4*A*a^3*b)*d*e^4 + 60*(5*B*b^4*d*e^4 - (4*B*a*b^3 + A*b^4)*e^5)*x^4 +
60*(15*B*b^4*d^2*e^3 - 2*(4*B*a*b^3 + A*b^4)*d*e^4 - (3*B*a^2*b^2 + 2*A*a*b
^3)*e^5)*x^3 + 20*(55*B*b^4*d^3*e^2 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^3 - 3*(3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 5*(12
5*B*b^4*d^4*e - 12*(4*B*a*b^3 + A*b^4)*d^3*e^2 - 6*(3*B*a^2*b^2 + 2*A*a*b^3
)*d^2*e^3 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - 3*(B*a^4 + 4*A*a^3*b)*e^5)*
x)/(e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x
 + d^5*e^6) + B*b^4*log(e*x + d)/e^6
```

mupad [B] time = 0.20, size = 465, normalized size = 3.00

$$\frac{B\,b^4\,\ln\left(d+e\,x\right)}{e^6}-\frac{\frac{3\,B\,a^4\,d\,e^4+12\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3+12\,A\,a^3\,b\,d\,e^4+18\,B\,a^2\,b^2\,d^3\,e^2+12\,A\,a^2\,b^2\,d^2\,e^3+48\,B\,a\,b^3\,d^4\,e+12\,A\,a\,b^3\,d^3\,e^2-137\,B\,b^4\,d^5+}{60\,e^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^6,x)
```

```
[Out] (B*b^4*log(d + e*x))/e^6 - ((12*A*a^4*e^5 - 137*B*b^4*d^5 + 12*A*b^4*d^4*e
+ 3*B*a^4*d*e^4 + 12*A*a*b^3*d^3*e^2 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2
*e^3 + 18*B*a^2*b^2*d^3*e^2 + 12*A*a^3*b*d*e^4 + 48*B*a*b^3*d^4*e)/(60*e^6)
 + (x*(3*B*a^4*e^4 - 125*B*b^4*d^4 + 12*A*a^3*b*e^4 + 12*A*b^4*d^3*e + 12*A
*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 + 48*B*a*b^3*d^3
*e + 8*B*a^3*b*d*e^3))/(12*e^5) + (x^2*(4*B*a^3*b*e^3 - 55*B*b^4*d^3 + 6*A*
b^4*d^2*e + 6*A*a^2*b^2*e^3 + 9*B*a^2*b^2*d*e^2 + 6*A*a*b^3*d*e^2 + 24*B*a*
b^3*d^2*e))/(3*e^4) + (x^3*(2*A*b^4*d*e - 15*B*b^4*d^2 + 2*A*a*b^3*e^2 + 3*
B*a^2*b^2*e^2 + 8*B*a*b^3*d*e))/e^3 + (b^3*x^4*(A*b*e + 4*B*a*e - 5*B*b*d))
/e^2)/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^
4*e*x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.1687 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^7} dx$

Optimal. Leaf size=86

$$\frac{(a+bx)^5(-6aBe+Abe+5bBd)}{30e(d+ex)^5(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{6e(d+ex)^6(bd-ae)}$$

```
[Out] -1/6*(-A*e+B*d)*(b*x+a)^5/e/(-a*e+b*d)/(e*x+d)^6+1/30*(A*b*e-6*B*a*e+5*B*b*
d)*(b*x+a)^5/e/(-a*e+b*d)^2/(e*x+d)^5
```

Rubi [A] time = 0.03, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = $\{27, 78, 37\}$

$$\frac{(a+bx)^5(-6aBe+Abe+5bBd)}{30e(d+ex)^5(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{6e(d+ex)^6(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(6*e*(b*d - a*e)*(d + e*x)^6) + ((5*b*B*d + A*b*
e - 6*a*B*e)*(a + b*x)^5)/(30*e*(b*d - a*e)^2*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^7}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^7}\,dx\\ &= -\frac{(Bd-Ae)(a+bx)^5}{6e(bd-ae)(d+ex)^6}+\frac{(5bBd+Abe-6aBe)\int \frac{(a+bx)^4}{(d+ex)^6}\,dx}{6e(bd-ae)}\\ &= -\frac{(Bd-Ae)(a+bx)^5}{6e(bd-ae)(d+ex)^6}+\frac{(5bBd+Abe-6aBe)(a+bx)^5}{30e(bd-ae)^2(d+ex)^5}\end{aligned}$$

Mathematica [**B**] time = 0.13, size = 317, normalized size = 3.69

$$-\frac{a^4e^4(5Ae+B(d+6ex))+2a^3be^3\big(2Ae(d+6ex)+B\big(d^2+6dex+15e^2x^2\big)\big)+3a^2b^2e^2\big(Ae\big(d^2+6dex+15e^2x}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/30*(a^4*e^4*(5*A*e + B*(d + 6*e*x)) + 2*a^3*b*e^3*(2*A*e*(d + 6*e*x) + B
*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 3*a^2*b^2*e^2*(A*e*(d^2 + 6*d*e*x + 15*e^2
*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)) + 2*a*b^3*e*(A*e*(
d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*B*(d^4 + 6*d^3*e*x + 15*d^
2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + b^4*(A*e*(d^4 + 6*d^3*e*x + 15*d^
2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) + 5*B*(d^5 + 6*d^4*e*x + 15*d^3*e^2*
x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)))/(e^6*(d + e*x)^6)
```

fricas [**B**] time = 0.91, size = 453, normalized size = 5.27

$$-\frac{30\,Bb^4e^5x^5+5\,Bb^4d^5+5\,Aa^4e^5+\left(4\,Bab^3+Ab^4\right)d^4e+\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/30*(30*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 5*A*a^4*e^5 + (4*B*a*b^3 + A*b^4)*d
^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^
3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 15*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^4)*e^5
)*x^4 + 20*(5*B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*
A*a*b^3)*e^5)*x^3 + 15*(5*B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 6*(5*B*
b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3
 + (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^12*x^6
+ 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*
e^7*x + d^6*e^6)
```

giac [**B**] time = 0.16, size = 438, normalized size = 5.09

$$-\frac{\big(30\,Bb^4x^5e^5+75\,Bb^4dx^4e^4+100\,Bb^4d^2x^3e^3+75\,Bb^4d^3x^2e^2+30\,Bb^4d^4xe+5\,Bb^4d^5+60\,Bab^3x^4e^5+15\,Ab^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/30*(30*B*b^4*x^5*e^5 + 75*B*b^4*d*x^4*e^4 + 100*B*b^4*d^2*x^3*e^3 + 75*B
*b^4*d^3*x^2*e^2 + 30*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 60*B*a*b^3*x^4*e^5 + 15
*A*b^4*x^4*e^5 + 80*B*a*b^3*d*x^3*e^4 + 20*A*b^4*d*x^3*e^4 + 60*B*a*b^3*d^2
*x^2*e^3 + 15*A*b^4*d^2*x^2*e^3 + 24*B*a*b^3*d^3*x*e^2 + 6*A*b^4*d^3*x*e^2
+ 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 60*B*a^2*b^2*x^3*e^5 + 40*A*a*b^3*x^3*e^5
 + 45*B*a^2*b^2*d*x^2*e^4 + 30*A*a*b^3*d*x^2*e^4 + 18*B*a^2*b^2*d^2*x*e^3 +
 12*A*a*b^3*d^2*x*e^3 + 3*B*a^2*b^2*d^3*e^2 + 2*A*a*b^3*d^3*e^2 + 30*B*a^3*
b*x^2*e^5 + 45*A*a^2*b^2*x^2*e^5 + 12*B*a^3*b*d*x*e^4 + 18*A*a^2*b^2*d*x*e^
4 + 2*B*a^3*b*d^2*e^3 + 3*A*a^2*b^2*d^2*e^3 + 6*B*a^4*x*e^5 + 24*A*a^3*b*x*
e^5 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 + 5*A*a^4*e^5)*e^(-6)/(x*e + d)^6
```

maple [**B**] time = 0.06, size = 430, normalized size = 5.00

$$-\frac{B\,b^4}{(ex+d)\,e^6}-\frac{(Abe+4aBe-5Bbd)\,b^3}{2\,(ex+d)^2\,e^6}-\frac{2\left(2Aab\,e^2-2A\,b^2de+3B\,a^2e^2-8Bdabe+5B\,b^2d^2\right)b^2}{3\,(ex+d)^3\,e^6}-\frac{\big(3A\,a^2b\,e^3-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x)
```

```
[Out] -1/5*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a
^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e
^6/(e*x+d)^5-b^4*B/e^6/(e*x+d)-1/2*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3
*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d
)^4-2/3*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e
^6/(e*x+d)^3-1/2*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^2-1/6*(A*a^4*e^5-4
*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^
4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x
+d)^6
```

maxima [**B**] time = 0.80, size = 453, normalized size = 5.27

$$-\frac{30\,Bb^4e^5x^5+5\,Bb^4d^5+5\,Aa^4e^5+\left(4\,Bab^3+Ab^4\right)d^4e+\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2e^3+(B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/30*(30*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 5*A*a^4*e^5 + (4*B*a*b^3 + A*b^4)*d
^4*e + (3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + (2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^
3 + (B*a^4 + 4*A*a^3*b)*d*e^4 + 15*(5*B*b^4*d*e^4 + (4*B*a*b^3 + A*b^4)*e^5
)*x^4 + 20*(5*B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + (3*B*a^2*b^2 + 2*
A*a*b^3)*e^5)*x^3 + 15*(5*B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e^3 + (3*
B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + (2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + 6*(5*B*
b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + (3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3
 + (2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + (B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^12*x^6
+ 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*
e^7*x + d^6*e^6)
```

mupad [**B**] time = 2.22, size = 460, normalized size = 5.35

$$-\frac{\frac{B\,a^4\,d\,e^4+5\,A\,a^4\,e^5+2\,B\,a^3\,b\,d^2\,e^3+4\,A\,a^3\,b\,d\,e^4+3\,B\,a^2\,b^2\,d^3\,e^2+3\,A\,a^2\,b^2\,d^2\,e^3+4\,B\,a\,b^3\,d^4\,e+2\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+A\,b^4\,d^4\,e}{30\,e^6}+\frac{x\,(B\,a^4\,e^4+2\,B\,a^3\,b}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^7,x)
```

```
[Out] -((5*A*a^4*e^5 + 5*B*b^4*d^5 + A*b^4*d^4*e + B*a^4*d*e^4 + 2*A*a*b^3*d^3*e^
2 + 2*B*a^3*b*d^2*e^3 + 3*A*a^2*b^2*d^2*e^3 + 3*B*a^2*b^2*d^3*e^2 + 4*A*a^3
*b*d*e^4 + 4*B*a*b^3*d^4*e)/(30*e^6) + (x*(B*a^4*e^4 + 5*B*b^4*d^4 + 4*A*a^
3*b*e^4 + A*b^4*d^3*e + 2*A*a*b^3*d^2*e^2 + 3*A*a^2*b^2*d*e^3 + 3*B*a^2*b^2
*d^2*e^2 + 4*B*a*b^3*d^3*e + 2*B*a^3*b*d*e^3))/(5*e^5) + (b^3*x^4*(A*b*e +
4*B*a*e + 5*B*b*d))/(2*e^2) + (b*x^2*(2*B*a^3*e^3 + 5*B*b^3*d^3 + 3*A*a^2*b
*e^3 + A*b^3*d^2*e + 2*A*a*b^2*d*e^2 + 4*B*a*b^2*d^2*e + 3*B*a^2*b*d*e^2))/
(2*e^4) + (2*b^2*x^3*(3*B*a^2*e^2 + 5*B*b^2*d^2 + 2*A*a*b*e^2 + A*b^2*d*e +
 4*B*a*b*d*e))/(3*e^3) + (B*b^4*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d
^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.1688 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^8} dx$

Optimal. Leaf size=135

$$\frac{b(a+bx)^5(-7aBe+2Abe+5bBd)}{210e(d+ex)^5(bd-ae)^3}+\frac{(a+bx)^5(-7aBe+2Abe+5bBd)}{42e(d+ex)^6(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{7e(d+ex)^7(bd-ae)}$$

```
[Out] -1/7*(-A*e+B*d)*(b*x+a)^5/e/(-a*e+b*d)/(e*x+d)^7+1/42*(2*A*b*e-7*B*a*e+5*B*
b*d)*(b*x+a)^5/e/(-a*e+b*d)^2/(e*x+d)^6+1/210*b*(2*A*b*e-7*B*a*e+5*B*b*d)*(
b*x+a)^5/e/(-a*e+b*d)^3/(e*x+d)^5
```

Rubi [A] time = 0.06, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.129, Rules used = $\{27, 78, 45, 37\}$

$$\frac{b(a+bx)^5(-7aBe+2Abe+5bBd)}{210e(d+ex)^5(bd-ae)^3}+\frac{(a+bx)^5(-7aBe+2Abe+5bBd)}{42e(d+ex)^6(bd-ae)^2}-\frac{(a+bx)^5(Bd-Ae)}{7e(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(7*e*(b*d - a*e)*(d + e*x)^7) + ((5*b*B*d + 2*A*
b*e - 7*a*B*e)*(a + b*x)^5)/(42*e*(b*d - a*e)^2*(d + e*x)^6) + (b*(5*b*B*d
+ 2*A*b*e - 7*a*B*e)*(a + b*x)^5)/(210*e*(b*d - a*e)^3*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^8}\,dx = \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^8}\,dx$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{7e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)(a+bx)^5}{42e(bd-ae)^2(d+ex)^6} + \frac{(b(5bBd+2A}{42}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{7e(bd-ae)(d+ex)^7} + \frac{(5bBd+2Abe-7aBe)(a+bx)^5}{42e(bd-ae)^2(d+ex)^6} + \frac{b(5bBd+2Ab}{210e(bd-}$$

Mathematica [B] time = 0.13, size = 323, normalized size = 2.39

$$-\frac{5a^4e^4(6Ae+B(d+7ex))+4a^3be^3\big(5Ae(d+7ex)+2B\big(d^2+7dex+21e^2x^2\big)\big)+3a^2b^2e^2\big(4Ae\big(d^2+7dex+21e^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/210*(5*a^4*e^4*(6*A*e + B*(d + 7*e*x)) + 4*a^3*b*e^3*(5*A*e*(d + 7*e*x)
+ 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + 3*a^2*b^2*e^2*(4*A*e*(d^2 + 7*d*e*x +
 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3)) + 2*a*b^3
*e*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B*(d^4 + 7*d^3*
e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + b^4*(2*A*e*(d^4 + 7*d^
3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*B*(d^5 + 7*d^4*e*x
+ 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5)))/(e^6*(d +
e*x)^7)
```

fricas [B] time = 0.83, size = 478, normalized size = 3.54

$$-\frac{105\,Bb^4e^5x^5+5\,Bb^4d^5+30\,Aa^4e^5+2\left(4\,Bab^3+Ab^4\right)d^4e+3\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+4\left(2\,Ba^3b+3\,Aa^2b^2\right)d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/210*(105*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 30*A*a^4*e^5 + 2*(4*B*a*b^3 + A*b
^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 4*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4 + 35*(5*B*b^4*d*e^4 + 2*(4*B*a*b^3
 + A*b^4)*e^5)*x^4 + 35*(5*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*
(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 21*(5*B*b^4*d^3*e^2 + 2*(4*B*a*b^3 + A
*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*
b^2)*e^5)*x^2 + 7*(5*B*b^4*d^4*e + 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 5*(B*a^4
+ 4*A*a^3*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^
10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [B] time = 0.16, size = 440, normalized size = 3.26

$$-\frac{(105\,Bb^4x^5e^5+175\,Bb^4dx^4e^4+175\,Bb^4d^2x^3e^3+105\,Bb^4d^3x^2e^2+35\,Bb^4d^4xe+5\,Bb^4d^5+280\,Bab^3x^4e^5+70\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/210*(105*B*b^4*x^5*e^5 + 175*B*b^4*d*x^4*e^4 + 175*B*b^4*d^2*x^3*e^3 + 1
05*B*b^4*d^3*x^2*e^2 + 35*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 280*B*a*b^3*x^4*e^5
 + 70*A*b^4*x^4*e^5 + 280*B*a*b^3*d*x^3*e^4 + 70*A*b^4*d*x^3*e^4 + 168*B*a*
b^3*d^2*x^2*e^3 + 42*A*b^4*d^2*x^2*e^3 + 56*B*a*b^3*d^3*x*e^2 + 14*A*b^4*d^
3*x*e^2 + 8*B*a*b^3*d^4*e + 2*A*b^4*d^4*e + 315*B*a^2*b^2*x^3*e^5 + 210*A*a
*b^3*x^3*e^5 + 189*B*a^2*b^2*d*x^2*e^4 + 126*A*a*b^3*d*x^2*e^4 + 63*B*a^2*b
^2*d^2*x*e^3 + 42*A*a*b^3*d^2*x*e^3 + 9*B*a^2*b^2*d^3*e^2 + 6*A*a*b^3*d^3*e
^2 + 168*B*a^3*b*x^2*e^5 + 252*A*a^2*b^2*x^2*e^5 + 56*B*a^3*b*d*x*e^4 + 84*
A*a^2*b^2*d*x*e^4 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 + 35*B*a^4*x*e
^5 + 140*A*a^3*b*x*e^5 + 5*B*a^4*d*e^4 + 20*A*a^3*b*d*e^4 + 30*A*a^4*e^5)*e
^(-6)/(x*e + d)^7
```

maple [B] time = 0.06, size = 430, normalized size = 3.19

$$-\frac{B b^4}{2 (ex+d)^2 e^6}-\frac{(Abe+4aBe-5Bbd)\, b^3}{3 (ex+d)^3 e^6}-\frac{\left(2Aab e^2-2A b^2 de+3B a^2 e^2-8Bdabe+5B b^2 d^2\right) b^2}{2 (ex+d)^4 e^6}-\frac{2 (3A a^2 b e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x)
```

```
[Out] -2/5*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d
*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^5-1/2*b^2*(2*A*a*b*e^2-2*A*b
^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/(e*x+d)^4-1/3*b^3*(A*b*e+4*
B*a*e-5*B*b*d)/e^6/(e*x+d)^3-1/2*b^4*B/e^6/(e*x+d)^2-1/7*(A*a^4*e^5-4*A*a^3
*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*
a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^7-
1/6*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^
4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^
6/(e*x+d)^6
```

maxima [B] time = 0.74, size = 478, normalized size = 3.54

$$-\frac{105\, Bb^4e^5x^5+5\, Bb^4d^5+30\, Aa^4e^5+2\left(4\, Bab^3+Ab^4\right)d^4e+3\left(3\, Ba^2b^2+2\, Aab^3\right)d^3e^2+4\,(2\, Ba^3b+3\, Aa^2b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/210*(105*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 30*A*a^4*e^5 + 2*(4*B*a*b^3 + A*b
^4)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 4*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^3 + 5*(B*a^4 + 4*A*a^3*b)*d*e^4 + 35*(5*B*b^4*d*e^4 + 2*(4*B*a*b^3
 + A*b^4)*e^5)*x^4 + 35*(5*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*
(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 21*(5*B*b^4*d^3*e^2 + 2*(4*B*a*b^3 + A
*b^4)*d^2*e^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 4*(2*B*a^3*b + 3*A*a^2*
b^2)*e^5)*x^2 + 7*(5*B*b^4*d^4*e + 2*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a
^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 5*(B*a^4
+ 4*A*a^3*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^
10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 2.36, size = 479, normalized size = 3.55

$$-\frac{\frac{5\,B\,a^4\,d\,e^4+30\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3+20\,A\,a^3\,b\,d\,e^4+9\,B\,a^2\,b^2\,d^3\,e^2+12\,A\,a^2\,b^2\,d^2\,e^3+8\,B\,a\,b^3\,d^4\,e+6\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+2\,A\,b^4\,d^4\,e}{210\,e^6}+\frac{x\,(5\,B\,a^4}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^8,x)
```

```
[Out] -((30*A*a^4*e^5 + 5*B*b^4*d^5 + 2*A*b^4*d^4*e + 5*B*a^4*d*e^4 + 6*A*a*b^3*d
^3*e^2 + 8*B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 + 9*B*a^2*b^2*d^3*e^2 + 2
0*A*a^3*b*d*e^4 + 8*B*a*b^3*d^4*e)/(210*e^6) + (x*(5*B*a^4*e^4 + 5*B*b^4*d^
4 + 20*A*a^3*b*e^4 + 2*A*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3
 + 9*B*a^2*b^2*d^2*e^2 + 8*B*a*b^3*d^3*e + 8*B*a^3*b*d*e^3))/(30*e^5) + (b^
3*x^4*(2*A*b*e + 8*B*a*e + 5*B*b*d))/(6*e^2) + (b*x^2*(8*B*a^3*e^3 + 5*B*b^
3*d^3 + 12*A*a^2*b*e^3 + 2*A*b^3*d^2*e + 6*A*a*b^2*d*e^2 + 8*B*a*b^2*d^2*e
+ 9*B*a^2*b*d*e^2))/(10*e^4) + (b^2*x^3*(9*B*a^2*e^2 + 5*B*b^2*d^2 + 6*A*a*
b*e^2 + 2*A*b^2*d*e + 8*B*a*b*d*e))/(6*e^3) + (B*b^4*x^5)/(2*e))/(d^7 + e^7
*x^7 + 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*
d^2*e^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1689 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=185

$$\frac{b^2(a+bx)^5(-8aBe+3Abe+5bBd)}{840e(d+ex)^5(bd-ae)^4}+\frac{b(a+bx)^5(-8aBe+3Abe+5bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{(a+bx)^5(-8aBe+3Abe+5bBd)}{56e(d+ex)^7(bd-ae)^2}-$$

```
[Out] -1/8*(-A*e+B*d)*(b*x+a)^5/e/(-a*e+b*d)/(e*x+d)^8+1/56*(3*A*b*e-8*B*a*e+5*B*
b*d)*(b*x+a)^5/e/(-a*e+b*d)^2/(e*x+d)^7+1/168*b*(3*A*b*e-8*B*a*e+5*B*b*d)*(
b*x+a)^5/e/(-a*e+b*d)^3/(e*x+d)^6+1/840*b^2*(3*A*b*e-8*B*a*e+5*B*b*d)*(b*x+
a)^5/e/(-a*e+b*d)^4/(e*x+d)^5
```

Rubi [A] time = 0.09, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.129$, Rules used = $\{27, 78, 45, 37\}$

$$\frac{b^2(a+bx)^5(-8aBe+3Abe+5bBd)}{840e(d+ex)^5(bd-ae)^4}+\frac{b(a+bx)^5(-8aBe+3Abe+5bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{(a+bx)^5(-8aBe+3Abe+5bBd)}{56e(d+ex)^7(bd-ae)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5)/(8*e*(b*d - a*e)*(d + e*x)^8) + ((5*b*B*d + 3*A*
b*e - 8*a*B*e)*(a + b*x)^5)/(56*e*(b*d - a*e)^2*(d + e*x)^7) + (b*(5*b*B*d
+ 3*A*b*e - 8*a*B*e)*(a + b*x)^5)/(168*e*(b*d - a*e)^3*(d + e*x)^6) + (b^2*
(5*b*B*d + 3*A*b*e - 8*a*B*e)*(a + b*x)^5)/(840*e*(b*d - a*e)^4*(d + e*x)^5
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^9}\,dx = \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^9}\,dx$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)\int \frac{(a+bx)^4}{(d+ex)^8}\,dx}{8e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{(b(5bBd+3A}{28}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{b(5bBd+3Ab}{168e(bd-}$$

$$= -\frac{(Bd-Ae)(a+bx)^5}{8e(bd-ae)(d+ex)^8} + \frac{(5bBd+3Abe-8aBe)(a+bx)^5}{56e(bd-ae)^2(d+ex)^7} + \frac{b(5bBd+3Ab}{168e(bd-}$$

Mathematica [A] time = 0.13, size = 320, normalized size = 1.73

$$-\frac{15a^4e^4(7Ae+B(d+8ex))+20a^3be^3\left(3Ae(d+8ex)+B\left(d^2+8dex+28e^2x^2\right)\right)+6a^2b^2e^2\left(5Ae\left(d^2+8dex+28e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(15*a^4*e^4*(7*A*e + B*(d + 8*e*x)) + 20*a^3*b*e^3*(3*A*e*(d + 8*e*x
) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + 6*a^2*b^2*e^2*(5*A*e*(d^2 + 8*d*e*x +
 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)) + 12*a*b^
3*e*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + B*(d^4 + 8*d^3*e*x
 + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + b^4*(3*A*e*(d^4 + 8*d^3*e
*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*B*(d^5 + 8*d^4*e*x + 2
8*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5)))/(e^6*(d + e*x
)^8)
```

fricas [B] time = 0.92, size = 489, normalized size = 2.64

$$-\frac{280\,Bb^4e^5x^5+5\,Bb^4d^5+105\,Aa^4e^5+3\left(4\,Bab^3+Ab^4\right)d^4e+6\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+10\left(2\,Ba^3b+3\,Aa^2b^2\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 105*A*a^4*e^5 + 3*(4*B*a*b^3 + A*
b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 10*(2*B*a^3*b + 3*A*a^2*
b^2)*d^2*e^3 + 15*(B*a^4 + 4*A*a^3*b)*d*e^4 + 70*(5*B*b^4*d*e^4 + 3*(4*B*a*
b^3 + A*b^4)*e^5)*x^4 + 56*(5*B*b^4*d^2*e^3 + 3*(4*B*a*b^3 + A*b^4)*d*e^4 +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 28*(5*B*b^4*d^3*e^2 + 3*(4*B*a*b^3
+ A*b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 10*(2*B*a^3*b + 3*A*
a^2*b^2)*e^5)*x^2 + 8*(5*B*b^4*d^4*e + 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 15*(
B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*
d^3*e^11*x^5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^
7*x + d^8*e^6)
```

giac [B] time = 0.16, size = 440, normalized size = 2.38

$$-\frac{\left(280\,Bb^4x^5e^5 + 350\,Bb^4dx^4e^4 + 280\,Bb^4d^2x^3e^3 + 140\,Bb^4d^3x^2e^2 + 40\,Bb^4d^4xe + 5\,Bb^4d^5 + 840\,Bab^3x^4e^5 + 2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*b^4*x^5*e^5 + 350*B*b^4*d*x^4*e^4 + 280*B*b^4*d^2*x^3*e^3 + 1
40*B*b^4*d^3*x^2*e^2 + 40*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 840*B*a*b^3*x^4*e^5
 + 210*A*b^4*x^4*e^5 + 672*B*a*b^3*d*x^3*e^4 + 168*A*b^4*d*x^3*e^4 + 336*B*
a*b^3*d^2*x^2*e^3 + 84*A*b^4*d^2*x^2*e^3 + 96*B*a*b^3*d^3*x*e^2 + 24*A*b^4*
d^3*x*e^2 + 12*B*a*b^3*d^4*e + 3*A*b^4*d^4*e + 1008*B*a^2*b^2*x^3*e^5 + 672
*A*a*b^3*x^3*e^5 + 504*B*a^2*b^2*d*x^2*e^4 + 336*A*a*b^3*d*x^2*e^4 + 144*B*
a^2*b^2*d^2*x*e^3 + 96*A*a*b^3*d^2*x*e^3 + 18*B*a^2*b^2*d^3*e^2 + 12*A*a*b^
3*d^3*e^2 + 560*B*a^3*b*x^2*e^5 + 840*A*a^2*b^2*x^2*e^5 + 160*B*a^3*b*d*x*e
^4 + 240*A*a^2*b^2*d*x*e^4 + 20*B*a^3*b*d^2*e^3 + 30*A*a^2*b^2*d^2*e^3 + 12
0*B*a^4*x*e^5 + 480*A*a^3*b*x*e^5 + 15*B*a^4*d*e^4 + 60*A*a^3*b*d*e^4 + 105
*A*a^4*e^5)*e^(-6)/(x*e + d)^8
```

maple [B] time = 0.05, size = 430, normalized size = 2.32

$$-\frac{B\,b^4}{3\,(ex+d)^3\,e^6}-\frac{(Abe+4aBe-5Bbd)\,b^3}{4\,(ex+d)^4\,e^6}-\frac{2\left(2Aab\,e^2-2A\,b^2de+3B\,a^2e^2-8Bdabe+5B\,b^2d^2\right)b^2}{5\,(ex+d)^5\,e^6}-\frac{\left(3A\,a^2b\,e^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x)
```

```
[Out] -2/5*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/
(e*x+d)^5-1/4*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^4-1/3*b^4*B/e^6/(e*x+
d)^3-1/7*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e
+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^
4)/e^6/(e*x+d)^7-1/8*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b
^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*
B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^8-1/3*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2
+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^
6/(e*x+d)^6
```

maxima [B] time = 0.77, size = 489, normalized size = 2.64

$$-\frac{280\,Bb^4e^5x^5 + 5\,Bb^4d^5 + 105\,Aa^4e^5 + 3\left(4\,Bab^3 + Ab^4\right)d^4e + 6\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 10\left(2\,Ba^3b + 3\,Aa^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 105*A*a^4*e^5 + 3*(4*B*a*b^3 + A*
b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 10*(2*B*a^3*b + 3*A*a^2*
b^2)*d^2*e^3 + 15*(B*a^4 + 4*A*a^3*b)*d*e^4 + 70*(5*B*b^4*d*e^4 + 3*(4*B*a*
b^3 + A*b^4)*e^5)*x^4 + 56*(5*B*b^4*d^2*e^3 + 3*(4*B*a*b^3 + A*b^4)*d*e^4 +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 28*(5*B*b^4*d^3*e^2 + 3*(4*B*a*b^3
+ A*b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 10*(2*B*a^3*b + 3*A*
a^2*b^2)*e^5)*x^2 + 8*(5*B*b^4*d^4*e + 3*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 6*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 10*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 15*(
B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*
d^3*e^11*x^5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^
7*x + d^8*e^6)
```

mupad [B] time = 2.26, size = 490, normalized size = 2.65

$$-\frac{15\,B\,a^4\,d\,e^4+105\,A\,a^4\,e^5+20\,B\,a^3\,b\,d^2\,e^3+60\,A\,a^3\,b\,d\,e^4+18\,B\,a^2\,b^2\,d^3\,e^2+30\,A\,a^2\,b^2\,d^2\,e^3+12\,B\,a\,b^3\,d^4\,e+12\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+3\,A\,b^4\,d^4\,e}{840\,e^6}+\frac{x\,(15}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^9,x)
```

```
[Out] -((105*A*a^4*e^5 + 5*B*b^4*d^5 + 3*A*b^4*d^4*e + 15*B*a^4*d*e^4 + 12*A*a*b^
3*d^3*e^2 + 20*B*a^3*b*d^2*e^3 + 30*A*a^2*b^2*d^2*e^3 + 18*B*a^2*b^2*d^3*e^
2 + 60*A*a^3*b*d*e^4 + 12*B*a*b^3*d^4*e)/(840*e^6) + (x*(15*B*a^4*e^4 + 5*B
*b^4*d^4 + 60*A*a^3*b*e^4 + 3*A*b^4*d^3*e + 12*A*a*b^3*d^2*e^2 + 30*A*a^2*b
^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 + 12*B*a*b^3*d^3*e + 20*B*a^3*b*d*e^3))/(10
5*e^5) + (b^3*x^4*(3*A*b*e + 12*B*a*e + 5*B*b*d))/(12*e^2) + (b*x^2*(20*B*a
^3*e^3 + 5*B*b^3*d^3 + 30*A*a^2*b*e^3 + 3*A*b^3*d^2*e + 12*A*a*b^2*d*e^2 +
12*B*a*b^2*d^2*e + 18*B*a^2*b*d*e^2))/(30*e^4) + (b^2*x^3*(18*B*a^2*e^2 + 5
*B*b^2*d^2 + 12*A*a*b*e^2 + 3*A*b^2*d*e + 12*B*a*b*d*e))/(15*e^3) + (B*b^4*
x^5)/(3*e))/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3
+ 70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1690 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{5e^6(d+ex)^5}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6(d+ex)^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{7e^6(d+ex)^7}-\frac{(bd-a}{}$$

```
[Out] 1/9*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^9-1/8*(-a*e+b*d)^3*(-4*A*b*e-B*a*e+
5*B*b*d)/e^6/(e*x+d)^8+2/7*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)/e^6/(e
*x+d)^7-1/3*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)/e^6/(e*x+d)^6+1/5*b^3
*(-A*b*e-4*B*a*e+5*B*b*d)/e^6/(e*x+d)^5-1/4*b^4*B/e^6/(e*x+d)^4
```

Rubi [A] time = 0.20, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{b^3(-4aBe-Abe+5bBd)}{5e^6(d+ex)^5}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6(d+ex)^6}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{7e^6(d+ex)^7}-\frac{(bd-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(9*e^6*(d + e*x)^9) - ((b*d - a*e)^3*(5*b*B*d -
 4*A*b*e - a*B*e))/(8*e^6*(d + e*x)^8) + (2*b*(b*d - a*e)^2*(5*b*B*d - 3*A*
b*e - 2*a*B*e))/(7*e^6*(d + e*x)^7) - (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e -
 3*a*B*e))/(3*e^6*(d + e*x)^6) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(5*e^6*(
d + e*x)^5) - (b^4*B)/(4*e^6*(d + e*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{10}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{10}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{10}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^9}+\frac{2b}{}\right.\\ &= \frac{(bd-ae)^4(Bd-Ae)}{9e^6(d+ex)^9}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{8e^6(d+ex)^8}+\frac{2b(bd-ae)^2(5}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.14, size = 322, normalized size = 1.56

$$-\frac{35a^4e^4(8Ae+B(d+9ex))+20a^3be^3\left(7Ae(d+9ex)+2B\left(d^2+9dex+36e^2x^2\right)\right)+30a^2b^2e^2\left(2Ae\left(d^2+9dex\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(35*a^4*e^4*(8*A*e + B*(d + 9*e*x)) + 20*a^3*b*e^3*(7*A*e*(d + 9*e*
x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 30*a^2*b^2*e^2*(2*A*e*(d^2 + 9*d*e
*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)) + 4*a*b
^3*e*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*B*(d^4 + 9*d^
3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + b^4*(4*A*e*(d^4 + 9
*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*B*(d^5 + 9*d^4*
e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)))/(e^6
*(d + e*x)^9)
```

fricas [B] time = 0.97, size = 500, normalized size = 2.43

$$-\frac{630\,Bb^{4}e^{5}x^{5} + 5\,Bb^{4}d^{5} + 280\,Aa^{4}e^{5} + 4\,(4\,Bab^{3} + Ab^{4})d^{4}e + 10\,(3\,Ba^{2}b^{2} + 2\,Aab^{3})d^{3}e^{2} + 20\,(2\,Ba^{3}b + 3\,Aa^{2}b^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(630*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 280*A*a^4*e^5 + 4*(4*B*a*b^3 + A
*b^4)*d^4*e + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^2*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d*e^4 + 126*(5*B*b^4*d*e^4 + 4*(4*B
*a*b^3 + A*b^4)*e^5)*x^4 + 84*(5*B*b^4*d^2*e^3 + 4*(4*B*a*b^3 + A*b^4)*d*e^
4 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 36*(5*B*b^4*d^3*e^2 + 4*(4*B*a*
b^3 + A*b^4)*d^2*e^3 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 20*(2*B*a^3*b +
 3*A*a^2*b^2)*e^5)*x^2 + 9*(5*B*b^4*d^4*e + 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 +
 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
+ 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7
 + 84*d^3*e^12*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 +
 36*d^7*e^8*x^2 + 9*d^8*e^7*x + d^9*e^6)
```

giac [B] time = 0.16, size = 440, normalized size = 2.14

$$-\frac{(630\,Bb^{4}x^{5}e^{5} + 630\,Bb^{4}dx^{4}e^{4} + 420\,Bb^{4}d^{2}x^{3}e^{3} + 180\,Bb^{4}d^{3}x^{2}e^{2} + 45\,Bb^{4}d^{4}xe + 5\,Bb^{4}d^{5} + 2016\,Bab^{3}x^{4}e^{5} + 504}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(630*B*b^4*x^5*e^5 + 630*B*b^4*d*x^4*e^4 + 420*B*b^4*d^2*x^3*e^3 +
180*B*b^4*d^3*x^2*e^2 + 45*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 2016*B*a*b^3*x^4*e
^5 + 504*A*b^4*x^4*e^5 + 1344*B*a*b^3*d*x^3*e^4 + 336*A*b^4*d*x^3*e^4 + 576
*B*a*b^3*d^2*x^2*e^3 + 144*A*b^4*d^2*x^2*e^3 + 144*B*a*b^3*d^3*x*e^2 + 36*A
*b^4*d^3*x*e^2 + 16*B*a*b^3*d^4*e + 4*A*b^4*d^4*e + 2520*B*a^2*b^2*x^3*e^5
+ 1680*A*a*b^3*x^3*e^5 + 1080*B*a^2*b^2*d*x^2*e^4 + 720*A*a*b^3*d*x^2*e^4 +
 270*B*a^2*b^2*d^2*x*e^3 + 180*A*a*b^3*d^2*x*e^3 + 30*B*a^2*b^2*d^3*e^2 + 2
0*A*a*b^3*d^3*e^2 + 1440*B*a^3*b*x^2*e^5 + 2160*A*a^2*b^2*x^2*e^5 + 360*B*a
^3*b*d*x*e^4 + 540*A*a^2*b^2*d*x*e^4 + 40*B*a^3*b*d^2*e^3 + 60*A*a^2*b^2*d^
2*e^3 + 315*B*a^4*x*e^5 + 1260*A*a^3*b*x*e^5 + 35*B*a^4*d*e^4 + 140*A*a^3*b
*d*e^4 + 280*A*a^4*e^5)*e^(-6)/(x*e + d)^9
```

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B\,b^{4}}{4\,(ex+d)^{4}\,e^{6}}-\frac{(Abe+4aBe-5Bbd)\,b^{3}}{5\,(ex+d)^{5}\,e^{6}}-\frac{(2Aab\,e^{2}-2A\,b^{2}de+3B\,a^{2}e^{2}-8Bdabe+5B\,b^{2}d^{2})\,b^{2}}{3\,(ex+d)^{6}\,e^{6}}-\frac{2\,(3A\,a^{2}b\,e^{3}-(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x)
```

```
[Out] -1/5*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/(e*x+d)^5-1/4*b^4*B/e^6/(e*x+d)^4-2/7*
b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+
12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^7-1/8*(4*A*a^3*b*e^4-12*A*a^2*b^2
*d*e^3+12*A*a*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*
b^2*d^2*e^2-16*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^8-1/9*(A*a^4*e^5-4*A*
a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4
*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)
^9-1/3*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^
6/(e*x+d)^6
```

maxima [B] time = 0.69, size = 500, normalized size = 2.43

$$-\frac{630\,Bb^{4}e^{5}x^{5}+5\,Bb^{4}d^{5}+280\,Aa^{4}e^{5}+4\left(4\,Bab^{3}+Ab^{4}\right)d^{4}e+10\left(3\,Ba^{2}b^{2}+2\,Aab^{3}\right)d^{3}e^{2}+20\left(2\,Ba^{3}b+3\,Aa\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(630*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 280*A*a^4*e^5 + 4*(4*B*a*b^3 + A
*b^4)*d^4*e + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 20*(2*B*a^3*b + 3*A*a^
2*b^2)*d^2*e^3 + 35*(B*a^4 + 4*A*a^3*b)*d*e^4 + 126*(5*B*b^4*d*e^4 + 4*(4*B
*a*b^3 + A*b^4)*e^5)*x^4 + 84*(5*B*b^4*d^2*e^3 + 4*(4*B*a*b^3 + A*b^4)*d*e^
4 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 36*(5*B*b^4*d^3*e^2 + 4*(4*B*a*
b^3 + A*b^4)*d^2*e^3 + 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 20*(2*B*a^3*b +
 3*A*a^2*b^2)*e^5)*x^2 + 9*(5*B*b^4*d^4*e + 4*(4*B*a*b^3 + A*b^4)*d^3*e^2 +
 10*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 20*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4
+ 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^15*x^9 + 9*d*e^14*x^8 + 36*d^2*e^13*x^7
 + 84*d^3*e^12*x^6 + 126*d^4*e^11*x^5 + 126*d^5*e^10*x^4 + 84*d^6*e^9*x^3 +
 36*d^7*e^8*x^2 + 9*d^8*e^7*x + d^9*e^6)
```

mupad [B] time = 0.19, size = 501, normalized size = 2.43

$$-\frac{\frac{35\,B\,a^4\,d\,e^4+280\,A\,a^4\,e^5+40\,B\,a^3\,b\,d^2\,e^3+140\,A\,a^3\,b\,d\,e^4+30\,B\,a^2\,b^2\,d^3\,e^2+60\,A\,a^2\,b^2\,d^2\,e^3+16\,B\,a\,b^3\,d^4\,e+20\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+4\,A\,b^4\,d^4\,e}{2520\,e^6}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^4*e^5 + 5*B*b^4*d^5 + 4*A*b^4*d^4*e + 35*B*a^4*d*e^4 + 20*A*a*b^
3*d^3*e^2 + 40*B*a^3*b*d^2*e^3 + 60*A*a^2*b^2*d^2*e^3 + 30*B*a^2*b^2*d^3*e^
2 + 140*A*a^3*b*d*e^4 + 16*B*a*b^3*d^4*e)/(2520*e^6) + (x*(35*B*a^4*e^4 + 5
*B*b^4*d^4 + 140*A*a^3*b*e^4 + 4*A*b^4*d^3*e + 20*A*a*b^3*d^2*e^2 + 60*A*a^
2*b^2*d*e^3 + 30*B*a^2*b^2*d^2*e^2 + 16*B*a*b^3*d^3*e + 40*B*a^3*b*d*e^3))/
(280*e^5) + (b^3*x^4*(4*A*b*e + 16*B*a*e + 5*B*b*d))/(20*e^2) + (b*x^2*(40*
B*a^3*e^3 + 5*B*b^3*d^3 + 60*A*a^2*b*e^3 + 4*A*b^3*d^2*e + 20*A*a*b^2*d*e^2
 + 16*B*a*b^2*d^2*e + 30*B*a^2*b*d*e^2))/(70*e^4) + (b^2*x^3*(30*B*a^2*e^2
+ 5*B*b^2*d^2 + 20*A*a*b*e^2 + 4*A*b^2*d*e + 16*B*a*b*d*e))/(30*e^3) + (B*b
^4*x^5)/(4*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e^2*x^2 + 84*d^6*e^3*x
^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^6 + 36*d^2*e^7*x^7 +
9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1691 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{6e^6(d+ex)^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6(d+ex)^7}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd)}{4e^6(d+ex)^8}-\frac{(bd-ae)^3(}{9}$$

```
[Out] 1/10*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^10-1/9*(-a*e+b*d)^3*(-4*A*b*e-B*a*
e+5*B*b*d)/e^6/(e*x+d)^9+1/4*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)/e^6/
(e*x+d)^8-2/7*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)/e^6/(e*x+d)^7+1/6*b
^3*(-A*b*e-4*B*a*e+5*B*b*d)/e^6/(e*x+d)^6-1/5*b^4*B/e^6/(e*x+d)^5
```

Rubi [A] time = 0.16, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{b^3(-4aBe-Abe+5bBd)}{6e^6(d+ex)^6}-\frac{2b^2(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6(d+ex)^7}+\frac{b(bd-ae)^2(-2aBe-3Abe+5bBd)}{4e^6(d+ex)^8}-\frac{(bd-ae)^3(}{9}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(10*e^6*(d + e*x)^10) - ((b*d - a*e)^3*(5*b*B*d
 - 4*A*b*e - a*B*e))/(9*e^6*(d + e*x)^9) + (b*(b*d - a*e)^2*(5*b*B*d - 3*A*
b*e - 2*a*B*e))/(4*e^6*(d + e*x)^8) - (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e))/(7*e^6*(d + e*x)^7) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(6*e^6
*(d + e*x)^6) - (b^4*B)/(5*e^6*(d + e*x)^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{11}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{11}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{11}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{10}}+\frac{2b(bd}{}\right.\\ &= \frac{(bd-ae)^4(Bd-Ae)}{10e^6(d+ex)^{10}}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{9e^6(d+ex)^9}+\frac{b(bd-ae)^2(5bBd}{4e^6(d}\end{aligned}$$

Mathematica [A] time = 0.15, size = 320, normalized size = 1.55

$$-\frac{14a^4e^4(9Ae+B(d+10ex))+14a^3be^3\left(4Ae(d+10ex)+B\left(d^2+10dex+45e^2x^2\right)\right)+3a^2b^2e^2\left(7Ae\left(d^2+10dex+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^11,x]
```

```
[Out] -1/1260*(14*a^4*e^4*(9*A*e + B*(d + 10*e*x)) + 14*a^3*b*e^3*(4*A*e*(d + 10*
e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 3*a^2*b^2*e^2*(7*A*e*(d^2 + 10*d*
e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3)) +
2*a*b^3*e*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2*B*(d^4
 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + b^4*(A*e*(
d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + B*(d^5 +
 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^
5)))/(e^6*(d + e*x)^10)
```

fricas [B] time = 0.95, size = 501, normalized size = 2.43

$$-\frac{252\,Bb^4e^5x^5 + Bb^4d^5 + 126\,Aa^4e^5 + \left(4\,Bab^3 + Ab^4\right)d^4e + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 7\left(2\,Ba^3b + 3\,Aa^2b^2\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/1260*(252*B*b^4*e^5*x^5 + B*b^4*d^5 + 126*A*a^4*e^5 + (4*B*a*b^3 + A*b^4
)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 7*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 + 14*(B*a^4 + 4*A*a^3*b)*d*e^4 + 210*(B*b^4*d*e^4 + (4*B*a*b^3 + A
*b^4)*e^5)*x^4 + 120*(B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a^
2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 45*(B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e
^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x
^2 + 10*(B*b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^2*e^3 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 14*(B*a^4 + 4*A*a^3*b)*
e^5)*x)/(e^16*x^10 + 10*d*e^15*x^9 + 45*d^2*e^14*x^8 + 120*d^3*e^13*x^7 + 2
10*d^4*e^12*x^6 + 252*d^5*e^11*x^5 + 210*d^6*e^10*x^4 + 120*d^7*e^9*x^3 + 4
5*d^8*e^8*x^2 + 10*d^9*e^7*x + d^10*e^6)
```

giac [B] time = 0.17, size = 438, normalized size = 2.13

$$-\frac{\left(252\,Bb^4x^5e^5 + 210\,Bb^4dx^4e^4 + 120\,Bb^4d^2x^3e^3 + 45\,Bb^4d^3x^2e^2 + 10\,Bb^4d^4xe + Bb^4d^5 + 840\,Bab^3x^4e^5 + 210}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/1260*(252*B*b^4*x^5*e^5 + 210*B*b^4*d*x^4*e^4 + 120*B*b^4*d^2*x^3*e^3 +
45*B*b^4*d^3*x^2*e^2 + 10*B*b^4*d^4*x*e + B*b^4*d^5 + 840*B*a*b^3*x^4*e^5 +
 210*A*b^4*x^4*e^5 + 480*B*a*b^3*d*x^3*e^4 + 120*A*b^4*d*x^3*e^4 + 180*B*a*
b^3*d^2*x^2*e^3 + 45*A*b^4*d^2*x^2*e^3 + 40*B*a*b^3*d^3*x*e^2 + 10*A*b^4*d^
3*x*e^2 + 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 1080*B*a^2*b^2*x^3*e^5 + 720*A*a*
b^3*x^3*e^5 + 405*B*a^2*b^2*d*x^2*e^4 + 270*A*a*b^3*d*x^2*e^4 + 90*B*a^2*b^
2*d^2*x*e^3 + 60*A*a*b^3*d^2*x*e^3 + 9*B*a^2*b^2*d^3*e^2 + 6*A*a*b^3*d^3*e^
2 + 630*B*a^3*b*x^2*e^5 + 945*A*a^2*b^2*x^2*e^5 + 140*B*a^3*b*d*x*e^4 + 210
*A*a^2*b^2*d*x*e^4 + 14*B*a^3*b*d^2*e^3 + 21*A*a^2*b^2*d^2*e^3 + 140*B*a^4*
x*e^5 + 560*A*a^3*b*x*e^5 + 14*B*a^4*d*e^4 + 56*A*a^3*b*d*e^4 + 126*A*a^4*e
^5)*e^(-6)/(x*e + d)^10
```

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B\,b^4}{5\left(ex+d\right)^5e^6}-\frac{\left(Abe+4aBe-5Bbd\right)b^3}{6\left(ex+d\right)^6e^6}-\frac{2\left(2Aab\,e^2-2A\,b^2de+3B\,a^2e^2-8Bdabe+5B\,b^2d^2\right)b^2}{7\left(ex+d\right)^7e^6}-\frac{\left(3A\,a^2b\,e^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x)
```

```
[Out] -1/5*b^4*B/e^6/(e*x+d)^5-1/10*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^
3-4*A*a*b^3*d^3*e^2+A*b^4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d
^3*e^2+4*B*a*b^3*d^4*e-B*b^4*d^5)/e^6/(e*x+d)^10-2/7*b^2*(2*A*a*b*e^2-2*A*b
^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*d^2)/e^6/(e*x+d)^7-1/4*b*(3*A*a^2*b*
e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^
2*e-5*B*b^3*d^3)/e^6/(e*x+d)^8-1/9*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a
*b^3*d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-1
6*B*a*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^9-1/6*b^3*(A*b*e+4*B*a*e-5*B*b*d)/
e^6/(e*x+d)^6
```

maxima [B] time = 0.64, size = 501, normalized size = 2.43

$$-\frac{252\,Bb^4e^5x^5 + Bb^4d^5 + 126\,Aa^4e^5 + \left(4\,Bab^3 + Ab^4\right)d^4e + 3\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 7\left(2\,Ba^3b + 3\,Aa^2b^2\right)d^2e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/1260*(252*B*b^4*e^5*x^5 + B*b^4*d^5 + 126*A*a^4*e^5 + (4*B*a*b^3 + A*b^4
)*d^4*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 7*(2*B*a^3*b + 3*A*a^2*b^2)
*d^2*e^3 + 14*(B*a^4 + 4*A*a^3*b)*d*e^4 + 210*(B*b^4*d*e^4 + (4*B*a*b^3 + A
*b^4)*e^5)*x^4 + 120*(B*b^4*d^2*e^3 + (4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3*B*a^
2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 45*(B*b^4*d^3*e^2 + (4*B*a*b^3 + A*b^4)*d^2*e
^3 + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x
^2 + 10*(B*b^4*d^4*e + (4*B*a*b^3 + A*b^4)*d^3*e^2 + 3*(3*B*a^2*b^2 + 2*A*a
*b^3)*d^2*e^3 + 7*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 + 14*(B*a^4 + 4*A*a^3*b)*
e^5)*x)/(e^16*x^10 + 10*d*e^15*x^9 + 45*d^2*e^14*x^8 + 120*d^3*e^13*x^7 + 2
10*d^4*e^12*x^6 + 252*d^5*e^11*x^5 + 210*d^6*e^10*x^4 + 120*d^7*e^9*x^3 + 4
5*d^8*e^8*x^2 + 10*d^9*e^7*x + d^10*e^6)
```

mupad [B] time = 0.31, size = 502, normalized size = 2.44

$$-\frac{\frac{14\,B\,a^4\,d\,e^4+126\,A\,a^4\,e^5+14\,B\,a^3\,b\,d^2\,e^3+56\,A\,a^3\,b\,d\,e^4+9\,B\,a^2\,b^2\,d^3\,e^2+21\,A\,a^2\,b^2\,d^2\,e^3+4\,B\,a\,b^3\,d^4\,e+6\,A\,a\,b^3\,d^3\,e^2+B\,b^4\,d^5+A\,b^4\,d^4\,e}{1260\,e^6}+\frac{x\,(14\,B\,a^4\,e^4}{}}{d^{10}+10\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^11,x)
```

```
[Out] -((126*A*a^4*e^5 + B*b^4*d^5 + A*b^4*d^4*e + 14*B*a^4*d*e^4 + 6*A*a*b^3*d^3
*e^2 + 14*B*a^3*b*d^2*e^3 + 21*A*a^2*b^2*d^2*e^3 + 9*B*a^2*b^2*d^3*e^2 + 56
*A*a^3*b*d*e^4 + 4*B*a*b^3*d^4*e)/(1260*e^6) + (x*(14*B*a^4*e^4 + B*b^4*d^4
 + 56*A*a^3*b*e^4 + A*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 + 21*A*a^2*b^2*d*e^3 +
9*B*a^2*b^2*d^2*e^2 + 4*B*a*b^3*d^3*e + 14*B*a^3*b*d*e^3))/(126*e^5) + (b^3
*x^4*(A*b*e + 4*B*a*e + B*b*d))/(6*e^2) + (b*x^2*(14*B*a^3*e^3 + B*b^3*d^3
+ 21*A*a^2*b*e^3 + A*b^3*d^2*e + 6*A*a*b^2*d*e^2 + 4*B*a*b^2*d^2*e + 9*B*a^
2*b*d*e^2))/(28*e^4) + (2*b^2*x^3*(9*B*a^2*e^2 + B*b^2*d^2 + 6*A*a*b*e^2 +
A*b^2*d*e + 4*B*a*b*d*e))/(21*e^3) + (B*b^4*x^5)/(5*e))/(d^10 + e^10*x^10 +
 10*d*e^9*x^9 + 45*d^8*e^2*x^2 + 120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 + 252*d^
5*e^5*x^5 + 210*d^4*e^6*x^6 + 120*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*d^9*e*x
)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1692 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=206

$$\frac{b^3(-4aBe-Abe+5bBd)}{7e^6(d+ex)^7}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{4e^6(d+ex)^8}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6(d+ex)^9}-\frac{(bd-a}{}$$

```
[Out] 1/11*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^11-1/10*(-a*e+b*d)^3*(-4*A*b*e-B*a
*e+5*B*b*d)/e^6/(e*x+d)^10+2/9*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)/e^
6/(e*x+d)^9-1/4*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)/e^6/(e*x+d)^8+1/7
*b^3*(-A*b*e-4*B*a*e+5*B*b*d)/e^6/(e*x+d)^7-1/6*b^4*B/e^6/(e*x+d)^6
```

Rubi [A] time = 0.17, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$\frac{b^3(-4aBe-Abe+5bBd)}{7e^6(d+ex)^7}-\frac{b^2(bd-ae)(-3aBe-2Abe+5bBd)}{4e^6(d+ex)^8}+\frac{2b(bd-ae)^2(-2aBe-3Abe+5bBd)}{9e^6(d+ex)^9}-\frac{(bd-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12,x]
```

```
[Out] ((b*d - a*e)^4*(B*d - A*e))/(11*e^6*(d + e*x)^11) - ((b*d - a*e)^3*(5*b*B*d
 - 4*A*b*e - a*B*e))/(10*e^6*(d + e*x)^10) + (2*b*(b*d - a*e)^2*(5*b*B*d -
3*A*b*e - 2*a*B*e))/(9*e^6*(d + e*x)^9) - (b^2*(b*d - a*e)*(5*b*B*d - 2*A*b
*e - 3*a*B*e))/(4*e^6*(d + e*x)^8) + (b^3*(5*b*B*d - A*b*e - 4*a*B*e))/(7*e
^6*(d + e*x)^7) - (b^4*B)/(6*e^6*(d + e*x)^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{12}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{12}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{12}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{11}}+\frac{2b}{}\right.\\ &= \frac{(bd-ae)^4(Bd-Ae)}{11e^6(d+ex)^{11}}-\frac{(bd-ae)^3(5bBd-4Abe-aBe)}{10e^6(d+ex)^{10}}+\frac{2b(bd-ae)^2(5}{9e}\end{aligned}$$

Mathematica [A] time = 0.14, size = 323, normalized size = 1.57

$$-\frac{126a^4e^4(10Ae+B(d+11ex))+56a^3be^3\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+21a^2b^2e^2\left(8Ae\left(d^2+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^12,x]
```

```
[Out] -1/13860*(126*a^4*e^4*(10*A*e + B*(d + 11*e*x)) + 56*a^3*b*e^3*(9*A*e*(d +
11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 21*a^2*b^2*e^2*(8*A*e*(d^2 +
 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^
3)) + 6*a*b^3*e*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^3) + 4*
B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4)) + b^4*
(6*A*e*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4) +
5*B*(d^5 + 11*d^4*e*x + 55*d^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 +
462*e^5*x^5)))/(e^6*(d + e*x)^11)
```

fricas [B] time = 1.34, size = 522, normalized size = 2.53

$$-\frac{2310\,Bb^{4}e^{5}x^{5}+5\,Bb^{4}d^{5}+1260\,Aa^{4}e^{5}+6\left(4\,Bab^{3}+Ab^{4}\right)d^{4}e+21\left(3\,Ba^{2}b^{2}+2\,Aab^{3}\right)d^{3}e^{2}+56\left(2\,Ba^{3}b+3\,Aa^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="fricas")
```

```
[Out] -1/13860*(2310*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 1260*A*a^4*e^5 + 6*(4*B*a*b^3
+ A*b^4)*d^4*e + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 56*(2*B*a^3*b + 3*A
*a^2*b^2)*d^2*e^3 + 126*(B*a^4 + 4*A*a^3*b)*d*e^4 + 330*(5*B*b^4*d*e^4 + 6*
(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 165*(5*B*b^4*d^2*e^3 + 6*(4*B*a*b^3 + A*b^4)
*d*e^4 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 55*(5*B*b^4*d^3*e^2 + 6*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 56*(2*B*a^
3*b + 3*A*a^2*b^2)*e^5)*x^2 + 11*(5*B*b^4*d^4*e + 6*(4*B*a*b^3 + A*b^4)*d^3
*e^2 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*
d*e^4 + 126*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^17*x^11 + 11*d*e^16*x^10 + 55*d^
2*e^15*x^9 + 165*d^3*e^14*x^8 + 330*d^4*e^13*x^7 + 462*d^5*e^12*x^6 + 462*d
^6*e^11*x^5 + 330*d^7*e^10*x^4 + 165*d^8*e^9*x^3 + 55*d^9*e^8*x^2 + 11*d^10
*e^7*x + d^11*e^6)
```

giac [B] time = 0.16, size = 440, normalized size = 2.14

$$-\frac{\left(2310\,Bb^{4}x^{5}e^{5}+1650\,Bb^{4}dx^{4}e^{4}+825\,Bb^{4}d^{2}x^{3}e^{3}+275\,Bb^{4}d^{3}x^{2}e^{2}+55\,Bb^{4}d^{4}xe+5\,Bb^{4}d^{5}+7920\,Bab^{3}x^{4}e^{5}+1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="giac")
```

```
[Out] -1/13860*(2310*B*b^4*x^5*e^5 + 1650*B*b^4*d*x^4*e^4 + 825*B*b^4*d^2*x^3*e^3
 + 275*B*b^4*d^3*x^2*e^2 + 55*B*b^4*d^4*x*e + 5*B*b^4*d^5 + 7920*B*a*b^3*x^
4*e^5 + 1980*A*b^4*x^4*e^5 + 3960*B*a*b^3*d*x^3*e^4 + 990*A*b^4*d*x^3*e^4 +
 1320*B*a*b^3*d^2*x^2*e^3 + 330*A*b^4*d^2*x^2*e^3 + 264*B*a*b^3*d^3*x*e^2 +
 66*A*b^4*d^3*x*e^2 + 24*B*a*b^3*d^4*e + 6*A*b^4*d^4*e + 10395*B*a^2*b^2*x^
3*e^5 + 6930*A*a*b^3*x^3*e^5 + 3465*B*a^2*b^2*d*x^2*e^4 + 2310*A*a*b^3*d*x^
2*e^4 + 693*B*a^2*b^2*d^2*x*e^3 + 462*A*a*b^3*d^2*x*e^3 + 63*B*a^2*b^2*d^3*
e^2 + 42*A*a*b^3*d^3*e^2 + 6160*B*a^3*b*x^2*e^5 + 9240*A*a^2*b^2*x^2*e^5 +
1232*B*a^3*b*d*x*e^4 + 1848*A*a^2*b^2*d*x*e^4 + 112*B*a^3*b*d^2*e^3 + 168*A
*a^2*b^2*d^2*e^3 + 1386*B*a^4*x*e^5 + 5544*A*a^3*b*x*e^5 + 126*B*a^4*d*e^4
+ 504*A*a^3*b*d*e^4 + 1260*A*a^4*e^5)*e^(-6)/(x*e + d)^11
```

maple [B] time = 0.05, size = 430, normalized size = 2.09

$$-\frac{B\,b^{4}}{6\left(ex+d\right)^{6}e^{6}}-\frac{\left(Abe+4aBe-5Bbd\right)b^{3}}{7\left(ex+d\right)^{7}e^{6}}-\frac{\left(2Aab\,e^{2}-2A\,b^{2}de+3B\,a^{2}e^{2}-8Bdabe+5B\,b^{2}d^{2}\right)b^{2}}{4\left(ex+d\right)^{8}e^{6}}-\frac{2\left(3A\,a^{2}b\,e^{3}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x)
```

```
[Out] -1/11*(A*a^4*e^5-4*A*a^3*b*d*e^4+6*A*a^2*b^2*d^2*e^3-4*A*a*b^3*d^3*e^2+A*b^
4*d^4*e-B*a^4*d*e^4+4*B*a^3*b*d^2*e^3-6*B*a^2*b^2*d^3*e^2+4*B*a*b^3*d^4*e-B
*b^4*d^5)/e^6/(e*x+d)^11-1/10*(4*A*a^3*b*e^4-12*A*a^2*b^2*d*e^3+12*A*a*b^3*
d^2*e^2-4*A*b^4*d^3*e+B*a^4*e^4-8*B*a^3*b*d*e^3+18*B*a^2*b^2*d^2*e^2-16*B*a
*b^3*d^3*e+5*B*b^4*d^4)/e^6/(e*x+d)^10-1/7*b^3*(A*b*e+4*B*a*e-5*B*b*d)/e^6/
(e*x+d)^7-1/4*b^2*(2*A*a*b*e^2-2*A*b^2*d*e+3*B*a^2*e^2-8*B*a*b*d*e+5*B*b^2*
d^2)/e^6/(e*x+d)^8-2/9*b*(3*A*a^2*b*e^3-6*A*a*b^2*d*e^2+3*A*b^3*d^2*e+2*B*a
^3*e^3-9*B*a^2*b*d*e^2+12*B*a*b^2*d^2*e-5*B*b^3*d^3)/e^6/(e*x+d)^9-1/6*b^4*
B/e^6/(e*x+d)^6
```

maxima [B] time = 0.70, size = 522, normalized size = 2.53

$$-\frac{2310\,Bb^4e^5x^5 + 5\,Bb^4d^5 + 1260\,Aa^4e^5 + 6\left(4\,Bab^3 + Ab^4\right)d^4e + 21\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^3e^2 + 56\left(2\,Ba^3b + 3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^12,x, algorithm="maxima")
```

```
[Out] -1/13860*(2310*B*b^4*e^5*x^5 + 5*B*b^4*d^5 + 1260*A*a^4*e^5 + 6*(4*B*a*b^3
+ A*b^4)*d^4*e + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 56*(2*B*a^3*b + 3*A
*a^2*b^2)*d^2*e^3 + 126*(B*a^4 + 4*A*a^3*b)*d*e^4 + 330*(5*B*b^4*d*e^4 + 6*
(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 165*(5*B*b^4*d^2*e^3 + 6*(4*B*a*b^3 + A*b^4)
*d*e^4 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 55*(5*B*b^4*d^3*e^2 + 6*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 + 56*(2*B*a^
3*b + 3*A*a^2*b^2)*e^5)*x^2 + 11*(5*B*b^4*d^4*e + 6*(4*B*a*b^3 + A*b^4)*d^3
*e^2 + 21*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 + 56*(2*B*a^3*b + 3*A*a^2*b^2)*
d*e^4 + 126*(B*a^4 + 4*A*a^3*b)*e^5)*x)/(e^17*x^11 + 11*d*e^16*x^10 + 55*d^
2*e^15*x^9 + 165*d^3*e^14*x^8 + 330*d^4*e^13*x^7 + 462*d^5*e^12*x^6 + 462*d
^6*e^11*x^5 + 330*d^7*e^10*x^4 + 165*d^8*e^9*x^3 + 55*d^9*e^8*x^2 + 11*d^10
*e^7*x + d^11*e^6)
```

mupad [B] time = 0.27, size = 523, normalized size = 2.54

$$-\frac{\frac{126\,B\,a^4\,d\,e^4+1260\,A\,a^4\,e^5+112\,B\,a^3\,b\,d^2\,e^3+504\,A\,a^3\,b\,d\,e^4+63\,B\,a^2\,b^2\,d^3\,e^2+168\,A\,a^2\,b^2\,d^2\,e^3+24\,B\,a\,b^3\,d^4\,e+42\,A\,a\,b^3\,d^3\,e^2+5\,B\,b^4\,d^5+6\,A\,b^4\,d^4}{13860\,e^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^12,x)
```

```
[Out] -((1260*A*a^4*e^5 + 5*B*b^4*d^5 + 6*A*b^4*d^4*e + 126*B*a^4*d*e^4 + 42*A*a*
b^3*d^3*e^2 + 112*B*a^3*b*d^2*e^3 + 168*A*a^2*b^2*d^2*e^3 + 63*B*a^2*b^2*d^
3*e^2 + 504*A*a^3*b*d*e^4 + 24*B*a*b^3*d^4*e)/(13860*e^6) + (x*(126*B*a^4*e
^4 + 5*B*b^4*d^4 + 504*A*a^3*b*e^4 + 6*A*b^4*d^3*e + 42*A*a*b^3*d^2*e^2 + 1
68*A*a^2*b^2*d*e^3 + 63*B*a^2*b^2*d^2*e^2 + 24*B*a*b^3*d^3*e + 112*B*a^3*b*
d*e^3))/(1260*e^5) + (b^3*x^4*(6*A*b*e + 24*B*a*e + 5*B*b*d))/(42*e^2) + (b
*x^2*(112*B*a^3*e^3 + 5*B*b^3*d^3 + 168*A*a^2*b*e^3 + 6*A*b^3*d^2*e + 42*A*
a*b^2*d*e^2 + 24*B*a*b^2*d^2*e + 63*B*a^2*b*d*e^2))/(252*e^4) + (b^2*x^3*(6
3*B*a^2*e^2 + 5*B*b^2*d^2 + 42*A*a*b*e^2 + 6*A*b^2*d*e + 24*B*a*b*d*e))/(84
*e^3) + (B*b^4*x^5)/(6*e))/(d^11 + e^11*x^11 + 11*d*e^10*x^10 + 55*d^9*e^2*
x^2 + 165*d^8*e^3*x^3 + 330*d^7*e^4*x^4 + 462*d^6*e^5*x^5 + 462*d^5*e^6*x^6
 + 330*d^4*e^7*x^7 + 165*d^3*e^8*x^8 + 55*d^2*e^9*x^9 + 11*d^10*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**12,x)
```

```
[Out] Timed out
```

3.1693 $\int \frac{(A+Bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=187

$$\frac{e^3(a+bx)^3(-5aBe+Abe+4bBd)}{3b^6}+\frac{e^2(a+bx)^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{(bd-}{}$$

```
[Out] 2*e*(-a*e+b*d)^2*(3*A*b*e-5*B*a*e+2*B*b*d)*x/b^5-(A*b-B*a)*(-a*e+b*d)^4/b^6
/(b*x+a)+e^2*(-a*e+b*d)*(2*A*b*e-5*B*a*e+3*B*b*d)*(b*x+a)^2/b^6+1/3*e^3*(A*
b*e-5*B*a*e+4*B*b*d)*(b*x+a)^3/b^6+1/4*B*e^4*(b*x+a)^4/b^6+(-a*e+b*d)^3*(4*
A*b*e-5*B*a*e+B*b*d)*ln(b*x+a)/b^6
```

Rubi [A] time = 0.27, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2(a+bx)^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6}+\frac{e^3(a+bx)^3(-5aBe+Abe+4bBd)}{3b^6}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{2ex(b}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*x)/b^5 - ((A*b - a*B)*(b*d
 - a*e)^4)/(b^6*(a + b*x)) + (e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e)
*(a + b*x)^2)/b^6 + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^3)/(3*b^6) +
 (B*e^4*(a + b*x)^4)/(4*b^6) + ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e)*L
og[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^4}{(a+bx)^2}\,dx\\ &= \int \left(\frac{2e(bd-ae)^2(2bBd+3Abe-5aBe)}{b^5}+\frac{(Ab-aB)(bd-ae)^4}{b^5(a+bx)^2}+\frac{(bd-ae)^3(bBd+}{b^5(a+}\right.\\ &= \frac{2e(bd-ae)^2(2bBd+3Abe-5aBe)x}{b^5}-\frac{(Ab-aB)(bd-ae)^4}{b^6(a+bx)}+\frac{e^2(bd-ae)(3bBd+2}{}\end{aligned}$$

Mathematica [A] time = 0.17, size = 365, normalized size = 1.95

$$\frac{-4Ab\left(3a^4e^4-3a^3be^3(4d+3ex)+6a^2b^2e^2\left(3d^2+4dex-e^2x^2\right)+2ab^3e\left(-6d^3-9d^2ex+9de^2x^2+e^3x^3\right)+b^4\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*(12*a^5*e^4 - 48*a^4*b*e^3*(d + e*x) + 6*a^3*b^2*e^2*(12*d^2 + 24*d*e*x
- 5*e^2*x^2) + b^5*e*x^2*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3) +
 2*a^2*b^3*e*(-24*d^3 - 72*d^2*e*x + 48*d*e^2*x^2 + 5*e^3*x^3) + a*b^4*(12*
d^4 + 48*d^3*e*x - 108*d^2*e^2*x^2 - 32*d*e^3*x^3 - 5*e^4*x^4)) - 4*A*b*(3*
a^4*e^4 - 3*a^3*b*e^3*(4*d + 3*e*x) + 6*a^2*b^2*e^2*(3*d^2 + 4*d*e*x - e^2*
x^2) + 2*a*b^3*e*(-6*d^3 - 9*d^2*e*x + 9*d*e^2*x^2 + e^3*x^3) + b^4*(3*d^4
- 18*d^2*e^2*x^2 - 6*d*e^3*x^3 - e^4*x^4)) + 12*(b*d - a*e)^3*(b*B*d + 4*A*
b*e - 5*a*B*e)*(a + b*x)*Log[a + b*x])/(12*b^6*(a + b*x))
```

fricas [B] time = 1.21, size = 610, normalized size = 3.26

$$\frac{3\,Bb^5e^4x^5 + 12\,(Bab^4 - Ab^5)d^4 - 48\,(Ba^2b^3 - Aab^4)d^3e + 72\,(Ba^3b^2 - Aa^2b^3)d^2e^2 - 48\,(Ba^4b - Aa^3b^2)de^3 + 12\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^5*e^4*x^5 + 12*(B*a*b^4 - A*b^5)*d^4 - 48*(B*a^2*b^3 - A*a*b^4)
*d^3*e + 72*(B*a^3*b^2 - A*a^2*b^3)*d^2*e^2 - 48*(B*a^4*b - A*a^3*b^2)*d*e^
3 + 12*(B*a^5 - A*a^4*b)*e^4 + (16*B*b^5*d*e^3 - (5*B*a*b^4 - 4*A*b^5)*e^4)
*x^4 + 2*(18*B*b^5*d^2*e^2 - 4*(4*B*a*b^4 - 3*A*b^5)*d*e^3 + (5*B*a^2*b^3 -
 4*A*a*b^4)*e^4)*x^3 + 6*(8*B*b^5*d^3*e - 6*(3*B*a*b^4 - 2*A*b^5)*d^2*e^2 +
 4*(4*B*a^2*b^3 - 3*A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 4*A*a^2*b^3)*e^4)*x^2 +
 12*(4*B*a*b^4*d^3*e - 6*(2*B*a^2*b^3 - A*a*b^4)*d^2*e^2 + 4*(3*B*a^3*b^2 -
 2*A*a^2*b^3)*d*e^3 - (4*B*a^4*b - 3*A*a^3*b^2)*e^4)*x + 12*(B*a*b^4*d^4 -
4*(2*B*a^2*b^3 - A*a*b^4)*d^3*e + 6*(3*B*a^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 - 4
*(4*B*a^4*b - 3*A*a^3*b^2)*d*e^3 + (5*B*a^5 - 4*A*a^4*b)*e^4 + (B*b^5*d^4 -
 4*(2*B*a*b^4 - A*b^5)*d^3*e + 6*(3*B*a^2*b^3 - 2*A*a*b^4)*d^2*e^2 - 4*(4*B
*a^3*b^2 - 3*A*a^2*b^3)*d*e^3 + (5*B*a^4*b - 4*A*a^3*b^2)*e^4)*x)*log(b*x +
 a))/(b^7*x + a*b^6)
```

giac [B] time = 0.17, size = 433, normalized size = 2.32

$$\frac{\left(Bb^4d^4 - 8\,Bab^3d^3e + 4\,Ab^4d^3e + 18\,Ba^2b^2d^2e^2 - 12\,Aab^3d^2e^2 - 16\,Ba^3bde^3 + 12\,Aa^2b^2de^3 + 5\,Ba^4e^4 - 4\,Aa^3be^4\right)}{b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^4*d^4 - 8*B*a*b^3*d^3*e + 4*A*b^4*d^3*e + 18*B*a^2*b^2*d^2*e^2 - 12*A*
a*b^3*d^2*e^2 - 16*B*a^3*b*d*e^3 + 12*A*a^2*b^2*d*e^3 + 5*B*a^4*e^4 - 4*A*a
^3*b*e^4)*log(abs(b*x + a))/b^6 + (B*a*b^4*d^4 - A*b^5*d^4 - 4*B*a^2*b^3*d^
3*e + 4*A*a*b^4*d^3*e + 6*B*a^3*b^2*d^2*e^2 - 6*A*a^2*b^3*d^2*e^2 - 4*B*a^4
*b*d*e^3 + 4*A*a^3*b^2*d*e^3 + B*a^5*e^4 - A*a^4*b*e^4)/((b*x + a)*b^6) + 1
/12*(3*B*b^6*x^4*e^4 + 16*B*b^6*d*x^3*e^3 + 36*B*b^6*d^2*x^2*e^2 + 48*B*b^6
*d^3*x*e - 8*B*a*b^5*x^3*e^4 + 4*A*b^6*x^3*e^4 - 48*B*a*b^5*d*x^2*e^3 + 24*
A*b^6*d*x^2*e^3 - 144*B*a*b^5*d^2*x*e^2 + 72*A*b^6*d^2*x*e^2 + 18*B*a^2*b^4
*x^2*e^4 - 12*A*a*b^5*x^2*e^4 + 144*B*a^2*b^4*d*x*e^3 - 96*A*a*b^5*d*x*e^3
- 48*B*a^3*b^3*x*e^4 + 36*A*a^2*b^4*x*e^4)/b^8
```

maple [B] time = 0.06, size = 564, normalized size = 3.02

$$\frac{B\,e^4x^4}{4b^2} + \frac{A\,e^4x^3}{3b^2} - \frac{2Ba\,e^4x^3}{3b^3} + \frac{4Bd\,e^3x^3}{3b^2} - \frac{Aa\,e^4x^2}{b^3} + \frac{2Ad\,e^3x^2}{b^2} + \frac{3B\,a^2e^4x^2}{2b^4} - \frac{4Bad\,e^3x^2}{b^3} + \frac{3B\,d^2e^2x^2}{b^2} - \frac{A\,a^4e^4}{(bx+a)\,b^5} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 4/3*e^3/b^2*B*x^3*d-4/b^5*ln(b*x+a)*A*a^3*e^4+4/b^2*ln(b*x+a)*A*d^3*e+5/b^6
*ln(b*x+a)*B*a^4*e^4-1/b^5/(b*x+a)*A*a^4*e^4+1/b^6/(b*x+a)*B*a^5*e^4-4*e^4/
b^5*B*a^3*x-e^4/b^3*A*x^2*a+2*e^3/b^2*A*x^2*d+6/b^4/(b*x+a)*B*a^3*d^2*e^2-4
/b^3/(b*x+a)*B*a^2*d^3*e-12*e^2/b^3*B*a*d^2*x-4*e^3/b^3*B*x^2*a*d-8*e^3/b^3
*A*a*d*x-4/b^5/(b*x+a)*B*a^4*d*e^3+12*e^3/b^4*B*a^2*d*x-8/b^3*ln(b*x+a)*B*d
^3*a*e+4/b^4/(b*x+a)*A*a^3*d*e^3+3/2*e^4/b^4*B*x^2*a^2+1/b^2*ln(b*x+a)*B*d^
4-1/b/(b*x+a)*A*d^4+1/4*e^4/b^2*B*x^4+1/3*e^4/b^2*A*x^3+3*e^2/b^2*B*x^2*d^2
+3*e^4/b^4*A*a^2*x+6*e^2/b^2*A*d^2*x+1/b^2/(b*x+a)*B*a*d^4-2/3*e^4/b^3*B*x^
3*a-6/b^3/(b*x+a)*A*a^2*d^2*e^2+4/b^2/(b*x+a)*A*a*d^3*e+12/b^4*ln(b*x+a)*A*
a^2*d*e^3-12/b^3*ln(b*x+a)*A*d^2*a*e^2-16/b^5*ln(b*x+a)*B*d*a^3*e^3+18/b^4*
ln(b*x+a)*B*d^2*a^2*e^2+4*e/b^2*B*d^3*x
```

maxima [B]   time = 0.60, size = 411, normalized size = 2.20

$$\frac{\left(Bab^4 - Ab^5\right)d^4 - 4\left(Ba^2b^3 - Aab^4\right)d^3e + 6\left(Ba^3b^2 - Aa^2b^3\right)d^2e^2 - 4\left(Ba^4b - Aa^3b^2\right)de^3 + \left(Ba^5 - Aa^4b\right)e^4}{b^7x + ab^6} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^4 - A*b^5)*d^4 - 4*(B*a^2*b^3 - A*a*b^4)*d^3*e + 6*(B*a^3*b^2 - A*a
^2*b^3)*d^2*e^2 - 4*(B*a^4*b - A*a^3*b^2)*d*e^3 + (B*a^5 - A*a^4*b)*e^4)/(b
^7*x + a*b^6) + 1/12*(3*B*b^3*e^4*x^4 + 4*(4*B*b^3*d*e^3 - (2*B*a*b^2 - A*b
^3)*e^4)*x^3 + 6*(6*B*b^3*d^2*e^2 - 4*(2*B*a*b^2 - A*b^3)*d*e^3 + (3*B*a^2*
b - 2*A*a*b^2)*e^4)*x^2 + 12*(4*B*b^3*d^3*e - 6*(2*B*a*b^2 - A*b^3)*d^2*e^2
 + 4*(3*B*a^2*b - 2*A*a*b^2)*d*e^3 - (4*B*a^3 - 3*A*a^2*b)*e^4)*x)/b^5 + (B
*b^4*d^4 - 4*(2*B*a*b^3 - A*b^4)*d^3*e + 6*(3*B*a^2*b^2 - 2*A*a*b^3)*d^2*e^
2 - 4*(4*B*a^3*b - 3*A*a^2*b^2)*d*e^3 + (5*B*a^4 - 4*A*a^3*b)*e^4)*log(b*x
+ a)/b^6
```

mupad [B]   time = 2.15, size = 486, normalized size = 2.60

$$x^3\left(\frac{A\,e^4+4\,B\,d\,e^3}{3\,b^2}-\frac{2\,B\,a\,e^4}{3\,b^3}\right)-x^2\left(\frac{a\left(\frac{A\,e^4+4\,B\,d\,e^3}{b^2}-\frac{2\,B\,a\,e^4}{b^3}\right)}{b}-\frac{d\,e^2\,\left(2\,A\,e+3\,B\,d\right)}{b^2}+\frac{B\,a^2\,e^4}{2\,b^4}\right)+x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((A*e^4 + 4*B*d*e^3)/(3*b^2) - (2*B*a*e^4)/(3*b^3)) - x^2*((a*((A*e^4 +
 4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3))/b - (d*e^2*(2*A*e + 3*B*d))/b^2 + (B*a^
2*e^4)/(2*b^4)) + x*((2*a*((2*a*((A*e^4 + 4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3)
)/b - (2*d*e^2*(2*A*e + 3*B*d))/b^2 + (B*a^2*e^4)/b^4))/b - (a^2*((A*e^4 +
4*B*d*e^3)/b^2 - (2*B*a*e^4)/b^3))/b^2 + (2*d^2*e*(3*A*e + 2*B*d))/b^2) + (
log(a + b*x)*(5*B*a^4*e^4 + B*b^4*d^4 - 4*A*a^3*b*e^4 + 4*A*b^4*d^3*e - 12*
A*a*b^3*d^2*e^2 + 12*A*a^2*b^2*d*e^3 + 18*B*a^2*b^2*d^2*e^2 - 8*B*a*b^3*d^3
*e - 16*B*a^3*b*d*e^3))/b^6 - (A*b^5*d^4 - B*a^5*e^4 + A*a^4*b*e^4 - B*a*b^
4*d^4 - 4*A*a^3*b^2*d*e^3 + 4*B*a^2*b^3*d^3*e + 6*A*a^2*b^3*d^2*e^2 - 6*B*a
^3*b^2*d^2*e^2 - 4*A*a*b^4*d^3*e + 4*B*a^4*b*d*e^3)/(b*(a*b^5 + b^6*x)) + (
B*e^4*x^4)/(4*b^2)
```

sympy [B]   time = 2.08, size = 396, normalized size = 2.12

$$\frac{Be^4x^4}{4b^2}+x^3\left(\frac{Ae^4}{3b^2}-\frac{2Bae^4}{3b^3}+\frac{4Bde^3}{3b^2}\right)+x^2\left(-\frac{Aae^4}{b^3}+\frac{2Ade^3}{b^2}+\frac{3Ba^2e^4}{2b^4}-\frac{4Bade^3}{b^3}+\frac{3Bd^2e^2}{b^2}\right)+x\left(\frac{3Aa^2e^4}{b^4}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**4*x**4/(4*b**2) + x**3*(A*e**4/(3*b**2) - 2*B*a*e**4/(3*b**3) + 4*B*d*
e**3/(3*b**2)) + x**2*(-A*a*e**4/b**3 + 2*A*d*e**3/b**2 + 3*B*a**2*e**4/(2*
b**4) - 4*B*a*d*e**3/b**3 + 3*B*d**2*e**2/b**2) + x*(3*A*a**2*e**4/b**4 - 8
*A*a*d*e**3/b**3 + 6*A*d**2*e**2/b**2 - 4*B*a**3*e**4/b**5 + 12*B*a**2*d*e*
*3/b**4 - 12*B*a*d**2*e**2/b**3 + 4*B*d**3*e/b**2) + (-A*a**4*b*e**4 + 4*A*
a**3*b**2*d*e**3 - 6*A*a**2*b**3*d**2*e**2 + 4*A*a*b**4*d**3*e - A*b**5*d**
4 + B*a**5*e**4 - 4*B*a**4*b*d*e**3 + 6*B*a**3*b**2*d**2*e**2 - 4*B*a**2*b*
*3*d**3*e + B*a*b**4*d**4)/(a*b**6 + b**7*x) + (a*e - b*d)**3*(-4*A*b*e + 5
*B*a*e - B*b*d)*log(a + b*x)/b**6
```

3.1694 $\int \frac{(A+Bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=145

$$\frac{e^2(a+bx)^2(-4aBe+Abe+3bBd)}{2b^5}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{(bd-ae)^2\log(a+bx)(-4aBe+3Abe+bBd)}{b^5}+\frac{3ex(b}{}$$

```
[Out] 3*e*(-a*e+b*d)*(A*b*e-2*B*a*e+B*b*d)*x/b^4-(A*b-B*a)*(-a*e+b*d)^3/b^5/(b*x+
a)+1/2*e^2*(A*b*e-4*B*a*e+3*B*b*d)*(b*x+a)^2/b^5+1/3*B*e^3*(b*x+a)^3/b^5+(-
a*e+b*d)^2*(3*A*b*e-4*B*a*e+B*b*d)*ln(b*x+a)/b^5
```

Rubi [A] time = 0.18, antiderivative size = 145, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2(a+bx)^2(-4aBe+Abe+3bBd)}{2b^5}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{3ex(bd-ae)(-2aBe+Abe+bBd)}{b^4}+\frac{(bd-ae)^2\log(a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*x)/b^4 - ((A*b - a*B)*(b*d - a*e
)^3)/(b^5*(a + b*x)) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^2)/(2*b^5
) + (B*e^3*(a + b*x)^3)/(3*b^5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e
)*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^3}{(a+bx)^2}\,dx\\ &= \int \left(\frac{3e(bd-ae)(bBd+Abe-2aBe)}{b^4}+\frac{(Ab-aB)(bd-ae)^3}{b^4(a+bx)^2}+\frac{(bd-ae)^2(bBd+3A}{b^4(a+bx)}\right.\\ &= \frac{3e(bd-ae)(bBd+Abe-2aBe)x}{b^4}-\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{e^2(3bBd+Abe-4aBe)(}{2b^5}\end{aligned}$$

Mathematica [A] time = 0.12, size = 250, normalized size = 1.72

$$\frac{-3Ab\left(-2a^3e^3+2a^2be^2(3d+2ex)+3ab^2e\left(-2d^2-2dex+e^2x^2\right)+b^3\left(2d^3-6de^2x^2-e^3x^3\right)\right)+B\left(-6a^4e^3+18\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*(-6*a^4*e^3 + 18*a^3*b*e^2*(d + e*x) + 6*a^2*b^2*e*(-3*d^2 - 6*d*e*x + 2
*e^2*x^2) + b^4*e*x^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2) + a*b^3*(6*d^3 + 18*d^
2*e*x - 27*d*e^2*x^2 - 4*e^3*x^3)) - 3*A*b*(-2*a^3*e^3 + 2*a^2*b*e^2*(3*d +
 2*e*x) + 3*a*b^2*e*(-2*d^2 - 2*d*e*x + e^2*x^2) + b^3*(2*d^3 - 6*d*e^2*x^2
 - e^3*x^3)) + 6*(b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)*Log[a
+ b*x])/(6*b^5*(a + b*x))
```

fricas [B] time = 0.84, size = 417, normalized size = 2.88

$$\frac{2\,Bb^4e^3x^4 + 6\left(Bab^3 - Ab^4\right)d^3 - 18\left(Ba^2b^2 - Aab^3\right)d^2e + 18\left(Ba^3b - Aa^2b^2\right)de^2 - 6\left(Ba^4 - Aa^3b\right)e^3 + \left(9\,Bb^4de^2 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^4*e^3*x^4 + 6*(B*a*b^3 - A*b^4)*d^3 - 18*(B*a^2*b^2 - A*a*b^3)*d
^2*e + 18*(B*a^3*b - A*a^2*b^2)*d*e^2 - 6*(B*a^4 - A*a^3*b)*e^3 + (9*B*b^4*
d*e^2 - (4*B*a*b^3 - 3*A*b^4)*e^3)*x^3 + 3*(6*B*b^4*d^2*e - 3*(3*B*a*b^3 -
2*A*b^4)*d*e^2 + (4*B*a^2*b^2 - 3*A*a*b^3)*e^3)*x^2 + 6*(3*B*a*b^3*d^2*e -
3*(2*B*a^2*b^2 - A*a*b^3)*d*e^2 + (3*B*a^3*b - 2*A*a^2*b^2)*e^3)*x + 6*(B*a
*b^3*d^3 - 3*(2*B*a^2*b^2 - A*a*b^3)*d^2*e + 3*(3*B*a^3*b - 2*A*a^2*b^2)*d*
e^2 - (4*B*a^4 - 3*A*a^3*b)*e^3 + (B*b^4*d^3 - 3*(2*B*a*b^3 - A*b^4)*d^2*e
+ 3*(3*B*a^2*b^2 - 2*A*a*b^3)*d*e^2 - (4*B*a^3*b - 3*A*a^2*b^2)*e^3)*x)*log
(b*x + a))/(b^6*x + a*b^5)
```

giac [B] time = 0.16, size = 282, normalized size = 1.94

$$\frac{\left(Bb^3d^3 - 6\,Bab^2d^2e + 3\,Ab^3d^2e + 9\,Ba^2bde^2 - 6\,Aab^2de^2 - 4\,Ba^3e^3 + 3\,Aa^2be^3\right)\log\left(|bx + a|\right)}{b^5} + \frac{2\,Bb^4x^3e^3 + 9\,Bb^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^3*d^3 - 6*B*a*b^2*d^2*e + 3*A*b^3*d^2*e + 9*B*a^2*b*d*e^2 - 6*A*a*b^2*
d*e^2 - 4*B*a^3*e^3 + 3*A*a^2*b*e^3)*log(abs(b*x + a))/b^5 + 1/6*(2*B*b^4*x
^3*e^3 + 9*B*b^4*d*x^2*e^2 + 18*B*b^4*d^2*x*e - 6*B*a*b^3*x^2*e^3 + 3*A*b^4
*x^2*e^3 - 36*B*a*b^3*d*x*e^2 + 18*A*b^4*d*x*e^2 + 18*B*a^2*b^2*x*e^3 - 12*
A*a*b^3*x*e^3)/b^6 + (B*a*b^3*d^3 - A*b^4*d^3 - 3*B*a^2*b^2*d^2*e + 3*A*a*b
^3*d^2*e + 3*B*a^3*b*d*e^2 - 3*A*a^2*b^2*d*e^2 - B*a^4*e^3 + A*a^3*b*e^3)/(
(b*x + a)*b^5)
```

maple [B] time = 0.06, size = 376, normalized size = 2.59

$$\frac{B\,e^3x^3}{3b^2} + \frac{A\,e^3x^2}{2b^2} - \frac{Ba\,e^3x^2}{b^3} + \frac{3Bd\,e^2x^2}{2b^2} + \frac{A\,a^3e^3}{(bx + a)\,b^4} - \frac{3A\,a^2d\,e^2}{(bx + a)\,b^3} + \frac{3A\,a^2e^3\ln(bx + a)}{b^4} + \frac{3Aa\,d^2e}{(bx + a)\,b^2} - \frac{6Aad\,e^2\ln(bx +}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*e^3/b^2*B*x^3+1/2*e^3/b^2*A*x^2-e^3/b^3*B*x^2*a+3/2*e^2/b^2*B*x^2*d-2*e
^3/b^3*A*x*a+3*e^2/b^2*A*x*d+3*e^3/b^4*B*x*a^2-6*e^2/b^3*B*x*a*d+3*e/b^2*B*
x*d^2+3/b^4*ln(b*x+a)*A*a^2*e^3-6/b^3*ln(b*x+a)*A*a*d*e^2+3/b^2*ln(b*x+a)*A
*d^2*e-4/b^5*ln(b*x+a)*B*a^3*e^3+9/b^4*ln(b*x+a)*B*a^2*d*e^2-6/b^3*ln(b*x+a
)*B*a*d^2*e+1/b^2*ln(b*x+a)*B*d^3+1/b^4/(b*x+a)*A*a^3*e^3-3/b^3/(b*x+a)*A*a
```

```
^2*d*e^2+3/b^2/(b*x+a)*A*a*d^2*e-1/b/(b*x+a)*A*d^3-1/b^5/(b*x+a)*B*a^4*e^3+
3/b^4/(b*x+a)*B*a^3*d*e^2-3/b^3/(b*x+a)*B*a^2*d^2*e+1/b^2/(b*x+a)*B*a*d^3
```

maxima [**A**] time = 0.53, size = 273, normalized size = 1.88

$$\frac{\left(Bab^3 - Ab^4\right)d^3 - 3\left(Ba^2b^2 - Aab^3\right)d^2e + 3\left(Ba^3b - Aa^2b^2\right)de^2 - \left(Ba^4 - Aa^3b\right)e^3}{b^6x + ab^5} + \frac{2\,Bb^2e^3x^3 + 3\left(3\,Bb^2de^2 - \left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^3 - A*b^4)*d^3 - 3*(B*a^2*b^2 - A*a*b^3)*d^2*e + 3*(B*a^3*b - A*a^2
*b^2)*d*e^2 - (B*a^4 - A*a^3*b)*e^3)/(b^6*x + a*b^5) + 1/6*(2*B*b^2*e^3*x^3
 + 3*(3*B*b^2*d*e^2 - (2*B*a*b - A*b^2)*e^3)*x^2 + 6*(3*B*b^2*d^2*e - 3*(2*
B*a*b - A*b^2)*d*e^2 + (3*B*a^2 - 2*A*a*b)*e^3)*x)/b^4 + (B*b^3*d^3 - 3*(2*
B*a*b^2 - A*b^3)*d^2*e + 3*(3*B*a^2*b - 2*A*a*b^2)*d*e^2 - (4*B*a^3 - 3*A*a
^2*b)*e^3)*log(b*x + a)/b^5
```

mupad [**B**] time = 0.10, size = 293, normalized size = 2.02

$$x^2\left(\frac{A\,e^3 + 3\,B\,d\,e^2}{2\,b^2} - \frac{B\,a\,e^3}{b^3}\right) - x\left(\frac{2\,a\,\left(\frac{A\,e^3+3\,B\,d\,e^2}{b^2} - \frac{2\,B\,a\,e^3}{b^3}\right)}{b} - \frac{3\,d\,e\,\left(A\,e + B\,d\right)}{b^2} + \frac{B\,a^2\,e^3}{b^4}\right) + \frac{\ln\left(a + b\,x\right)\,\left(-4\,B\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*b^2) - (B*a*e^3)/b^3) - x*((2*a*((A*e^3 + 3*B*d
*e^2)/b^2 - (2*B*a*e^3)/b^3))/b - (3*d*e*(A*e + B*d))/b^2 + (B*a^2*e^3)/b^4
) + (log(a + b*x)*(B*b^3*d^3 - 4*B*a^3*e^3 + 3*A*a^2*b*e^3 + 3*A*b^3*d^2*e
- 6*A*a*b^2*d*e^2 - 6*B*a*b^2*d^2*e + 9*B*a^2*b*d*e^2))/b^5 - (A*b^4*d^3 +
B*a^4*e^3 - A*a^3*b*e^3 - B*a*b^3*d^3 + 3*A*a^2*b^2*d*e^2 + 3*B*a^2*b^2*d^2
*e - 3*A*a*b^3*d^2*e - 3*B*a^3*b*d*e^2)/(b*(a*b^4 + b^5*x)) + (B*e^3*x^3)/(
3*b^2)
```

sympy [**A**] time = 1.43, size = 257, normalized size = 1.77

$$\frac{Be^3x^3}{3b^2} + x^2\left(\frac{Ae^3}{2b^2} - \frac{Bae^3}{b^3} + \frac{3Bde^2}{2b^2}\right) + x\left(-\frac{2Aae^3}{b^3} + \frac{3Ade^2}{b^2} + \frac{3Ba^2e^3}{b^4} - \frac{6Bade^2}{b^3} + \frac{3Bd^2e}{b^2}\right) + \frac{Aa^3be^3 - 3Aa^2b^2de^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**3*x**3/(3*b**2) + x**2*(A*e**3/(2*b**2) - B*a*e**3/b**3 + 3*B*d*e**2/(
2*b**2)) + x*(-2*A*a*e**3/b**3 + 3*A*d*e**2/b**2 + 3*B*a**2*e**3/b**4 - 6*B
*a*d*e**2/b**3 + 3*B*d**2*e/b**2) + (A*a**3*b*e**3 - 3*A*a**2*b**2*d*e**2 +
 3*A*a*b**3*d**2*e - A*b**4*d**3 - B*a**4*e**3 + 3*B*a**3*b*d*e**2 - 3*B*a*
*2*b**2*d**2*e + B*a*b**3*d**3)/(a*b**5 + b**6*x) - (a*e - b*d)**2*(-3*A*b*
e + 4*B*a*e - B*b*d)*log(a + b*x)/b**5
```

3.1695 $\int \frac{(A+Bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=99

$$-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(bd-ae)\log(a+bx)(-3aBe+2Abe+bBd)}{b^4}+\frac{ex(-2aBe+Abe+2bBd)}{b^3}+\frac{Be^2x^2}{2b^2}$$

```
[Out] e*(A*b*e-2*B*a*e+2*B*b*d)*x/b^3+1/2*B*e^2*x^2/b^2-(A*b-B*a)*(-a*e+b*d)^2/b^
4/(b*x+a)+(-a*e+b*d)*(2*A*b*e-3*B*a*e+B*b*d)*ln(b*x+a)/b^4
```

Rubi [A] time = 0.10, antiderivative size = 99, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 77\}$

$$-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{ex(-2aBe+Abe+2bBd)}{b^3}+\frac{(bd-ae)\log(a+bx)(-3aBe+2Abe+bBd)}{b^4}+\frac{Be^2x^2}{2b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(2*b*B*d + A*b*e - 2*a*B*e)*x)/b^3 + (B*e^2*x^2)/(2*b^2) - ((A*b - a*B)*
(b*d - a*e)^2)/(b^4*(a + b*x)) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*L
og[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^2}{(a+bx)^2}\,dx\\ &= \int \left(\frac{e(2bBd+Abe-2aBe)}{b^3}+\frac{Be^2x}{b^2}+\frac{(Ab-aB)(bd-ae)^2}{b^3(a+bx)^2}+\frac{(bd-ae)(bBd+2Abe-}{b^3(a+bx)}\right.\\ &= \frac{e(2bBd+Abe-2aBe)x}{b^3}+\frac{Be^2x^2}{2b^2}-\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(bd-ae)(bBd+2Abe-3a}{b^4}\end{aligned}$$

Mathematica [A] time = 0.07, size = 153, normalized size = 1.55

$$\frac{\log(a+bx)\left(3a^2Be^2-2aAbe^2-4abBde+2Ab^2de+b^2Bd^2\right)}{b^4}+\frac{a^3Be^2-a^2Abe^2-2a^2bBde+2aAb^2de+ab^2Bd^2-}{b^4(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(2*b*B*d + A*b*e - 2*a*B*e)*x)/b^3 + (B*e^2*x^2)/(2*b^2) + (-(A*b^3*d^2)
 + a*b^2*B*d^2 + 2*a*A*b^2*d*e - 2*a^2*b*B*d*e - a^2*A*b*e^2 + a^3*B*e^2)/(
b^4*(a + b*x)) + ((b^2*B*d^2 + 2*A*b^2*d*e - 4*a*b*B*d*e - 2*a*A*b*e^2 + 3*
a^2*B*e^2)*Log[a + b*x])/b^4
```

fricas [B] time = 0.78, size = 249, normalized size = 2.52

$$\frac{Bb^3e^2x^3 + 2\left(Bab^2 - Ab^3\right)d^2 - 4\left(Ba^2b - Aab^2\right)de + 2\left(Ba^3 - Aa^2b\right)e^2 + \left(4\,Bb^3de - \left(3\,Bab^2 - 2\,Ab^3\right)e^2\right)x^2 + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^3*e^2*x^3 + 2*(B*a*b^2 - A*b^3)*d^2 - 4*(B*a^2*b - A*a*b^2)*d*e +
2*(B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*e - (3*B*a*b^2 - 2*A*b^3)*e^2)*x^2 + 2
*(2*B*a*b^2*d*e - (2*B*a^2*b - A*a*b^2)*e^2)*x + 2*(B*a*b^2*d^2 - 2*(2*B*a^
2*b - A*a*b^2)*d*e + (3*B*a^3 - 2*A*a^2*b)*e^2 + (B*b^3*d^2 - 2*(2*B*a*b^2
- A*b^3)*d*e + (3*B*a^2*b - 2*A*a*b^2)*e^2)*x)*log(b*x + a))/(b^5*x + a*b^4
)
```

giac [A] time = 0.15, size = 162, normalized size = 1.64

$$\frac{\left(Bb^2d^2 - 4\,Babde + 2\,Ab^2de + 3\,Ba^2e^2 - 2\,Aabe^2\right)\log\left(|bx + a|\right)}{b^4} + \frac{Bb^2x^2e^2 + 4\,Bb^2dxe - 4\,Babxe^2 + 2\,Ab^2xe^2}{2\,b^4} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^2*d^2 - 4*B*a*b*d*e + 2*A*b^2*d*e + 3*B*a^2*e^2 - 2*A*a*b*e^2)*log(abs
(b*x + a))/b^4 + 1/2*(B*b^2*x^2*e^2 + 4*B*b^2*d*x*e - 4*B*a*b*x*e^2 + 2*A*b
^2*x*e^2)/b^4 + (B*a*b^2*d^2 - A*b^3*d^2 - 2*B*a^2*b*d*e + 2*A*a*b^2*d*e +
B*a^3*e^2 - A*a^2*b*e^2)/((b*x + a)*b^4)
```

maple [B] time = 0.06, size = 223, normalized size = 2.25

$$\frac{B\,e^2x^2}{2b^2} - \frac{A\,a^2e^2}{(bx + a)\,b^3} + \frac{2Aade}{(bx + a)\,b^2} - \frac{2Aa\,e^2\ln(bx + a)}{b^3} - \frac{A\,d^2}{(bx + a)\,b} + \frac{2Ade\ln(bx + a)}{b^2} + \frac{A\,e^2x}{b^2} + \frac{B\,a^3e^2}{(bx + a)\,b^4} - \frac{2B\,a}{(bx +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/2*B*e^2*x^2/b^2+e^2/b^2*A*x-2*e^2/b^3*a*B*x+2*e/b^2*B*d*x-2/b^3*ln(b*x+a)
*A*a*e^2+2/b^2*ln(b*x+a)*A*d*e+3/b^4*ln(b*x+a)*B*a^2*e^2-4/b^3*ln(b*x+a)*B*
d*a*e+1/b^2*ln(b*x+a)*B*d^2-1/b^3/(b*x+a)*A*a^2*e^2+2/b^2/(b*x+a)*A*a*d*e-1
/b/(b*x+a)*A*d^2+1/b^4/(b*x+a)*B*a^3*e^2-2/b^3/(b*x+a)*B*a^2*d*e+1/b^2/(b*x
+a)*B*a*d^2
```

maxima [A] time = 0.46, size = 158, normalized size = 1.60

$$\frac{\left(Bab^2 - Ab^3\right)d^2 - 2\left(Ba^2b - Aab^2\right)de + \left(Ba^3 - Aa^2b\right)e^2}{b^5x + ab^4} + \frac{Bbe^2x^2 + 2\left(2\,Bbde - (2\,Ba - Ab)e^2\right)x}{2\,b^3} + \frac{\left(Bb^2d^2 - 2\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] ((B*a*b^2 - A*b^3)*d^2 - 2*(B*a^2*b - A*a*b^2)*d*e + (B*a^3 - A*a^2*b)*e^2)
/(b^5*x + a*b^4) + 1/2*(B*b*e^2*x^2 + 2*(2*B*b*d*e - (2*B*a - A*b)*e^2)*x)/
```

```
b^3 + (B*b^2*d^2 - 2*(2*B*a*b - A*b^2)*d*e + (3*B*a^2 - 2*A*a*b)*e^2)*log(b
*x + a)/b^4
```

mupad [B] time = 2.11, size = 165, normalized size = 1.67

$$x\left(\frac{A\,e^2+2\,B\,d\,e}{b^2}-\frac{2\,B\,a\,e^2}{b^3}\right)+\frac{\ln\left(a+b\,x\right)\,\left(3\,B\,a^2\,e^2-4\,B\,a\,b\,d\,e-2\,A\,a\,b\,e^2+B\,b^2\,d^2+2\,A\,b^2\,d\,e\right)}{b^4}-\frac{-B\,a^3\,e^2+2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/b^2 - (2*B*a*e^2)/b^3) + (log(a + b*x)*(3*B*a^2*e^2 +
B*b^2*d^2 - 2*A*a*b*e^2 + 2*A*b^2*d*e - 4*B*a*b*d*e))/b^4 - (A*b^3*d^2 - B*
a^3*e^2 + A*a^2*b*e^2 - B*a*b^2*d^2 - 2*A*a*b^2*d*e + 2*B*a^2*b*d*e)/(b*(a*
b^3 + b^4*x)) + (B*e^2*x^2)/(2*b^2)
```

sympy [A] time = 0.88, size = 151, normalized size = 1.53

$$\frac{Be^2x^2}{2b^2}+x\left(\frac{Ae^2}{b^2}-\frac{2Bae^2}{b^3}+\frac{2Bde}{b^2}\right)+\frac{-Aa^2be^2+2Aab^2de-Ab^3d^2+Ba^3e^2-2Ba^2bde+Bab^2d^2}{ab^4+b^5x}+\frac{(ae-bd)\,(-2Abe}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e**2*x**2/(2*b**2) + x*(A*e**2/b**2 - 2*B*a*e**2/b**3 + 2*B*d*e/b**2) + (
-A*a**2*b*e**2 + 2*A*a*b**2*d*e - A*b**3*d**2 + B*a**3*e**2 - 2*B*a**2*b*d*
e + B*a*b**2*d**2)/(a*b**4 + b**5*x) + (a*e - b*d)*(-2*A*b*e + 3*B*a*e - B*
b*d)*log(a + b*x)/b**4
```

3.1696 $\int \frac{(A+Bx)(d+ex)}{a^2+2abx+b^2x^2} \, dx$

Optimal. Leaf size=60

$$-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{\log(a+bx)(-2aBe+Abe+bBd)}{b^3}+\frac{Bex}{b^2}$$

```
[Out] B*e*x/b^2-(A*b-B*a)*(-a*e+b*d)/b^3/(b*x+a)+(A*b*e-2*B*a*e+B*b*d)*ln(b*x+a)/
b^3
```

Rubi [A] time = 0.06, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{\log(a+bx)(-2aBe+Abe+bBd)}{b^3}+\frac{Bex}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (B*e*x)/b^2 - ((A*b - a*B)*(b*d - a*e))/(b^3*(a + b*x)) + ((b*B*d + A*b*e -
 2*a*B*e)*Log[a + b*x])/b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{a^2+2abx+b^2x^2} \, dx &= \int \frac{(A+Bx)(d+ex)}{(a+bx)^2} \, dx\\ &= \int \left(\frac{Be}{b^2}+\frac{(Ab-aB)(bd-ae)}{b^2(a+bx)^2}+\frac{bBd+Abe-2aBe}{b^2(a+bx)}\right) \, dx\\ &= \frac{Bex}{b^2}-\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{(bBd+Abe-2aBe)\log(a+bx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 56, normalized size = 0.93

$$\frac{-\frac{(Ab-aB)(bd-ae)}{a+bx}+\log(a+bx)(-2aBe+Abe+bBd)+bBex}{b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*B*e*x - ((A*b - a*B)*(b*d - a*e))/(a + b*x) + (b*B*d + A*b*e - 2*a*B*e)*
Log[a + b*x])/b^3
```

fricas [A] time = 0.81, size = 109, normalized size = 1.82

$$\frac{Bb^2ex^2 + Babex + \left(Bab - Ab^2\right)d - \left(Ba^2 - Aab\right)e + \left(Babd - \left(2\,Ba^2 - Aab\right)e + \left(Bb^2d - \left(2\,Bab - Ab^2\right)e\right)x\right)\log\left(bx\right.}{b^4x + ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (B*b^2*e*x^2 + B*a*b*e*x + (B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e + (B*a*b*d
 - (2*B*a^2 - A*a*b)*e + (B*b^2*d - (2*B*a*b - A*b^2)*e)*x)*log(b*x + a))/(
b^4*x + a*b^3)
```

giac [A] time = 0.16, size = 74, normalized size = 1.23

$$\frac{Bxe}{b^2} + \frac{(Bbd - 2\,Bae + Abe)\log\left(|bx + a|\right)}{b^3} + \frac{Babd - Ab^2d - Ba^2e + Aabe}{(bx + a)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] B*x*e/b^2 + (B*b*d - 2*B*a*e + A*b*e)*log(abs(b*x + a))/b^3 + (B*a*b*d - A*
b^2*d - B*a^2*e + A*a*b*e)/((b*x + a)*b^3)
```

maple [A] time = 0.05, size = 106, normalized size = 1.77

$$\frac{Aae}{(bx+a)\,b^2} - \frac{Ad}{(bx+a)\,b} + \frac{Ae\ln(bx+a)}{b^2} - \frac{B\,a^2e}{(bx+a)\,b^3} + \frac{Bad}{(bx+a)\,b^2} - \frac{2Bae\ln(bx+a)}{b^3} + \frac{Bd\ln(bx+a)}{b^2} + \frac{Bex}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] B*e*x/b^2+1/b^2*ln(b*x+a)*A*e-2/b^3*ln(b*x+a)*a*B*e+1/b^2*ln(b*x+a)*B*d+1/b
^2/(b*x+a)*A*a*e-1/b/(b*x+a)*A*d-1/b^3/(b*x+a)*B*a^2*e+1/b^2/(b*x+a)*B*a*d
```

maxima [A] time = 0.56, size = 77, normalized size = 1.28

$$\frac{Bex}{b^2} + \frac{\left(Bab - Ab^2\right)d - \left(Ba^2 - Aab\right)e}{b^4x + ab^3} + \frac{(Bbd - (2\,Ba - Ab)e)\log(bx + a)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] B*e*x/b^2 + ((B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e)/(b^4*x + a*b^3) + (B*b*
d - (2*B*a - A*b)*e)*log(b*x + a)/b^3
```

mupad [B] time = 0.10, size = 75, normalized size = 1.25

$$\frac{\ln(a + b\,x)\,\left(A\,b\,e - 2\,B\,a\,e + B\,b\,d\right)}{b^3} - \frac{A\,b^2\,d + B\,a^2\,e - A\,a\,b\,e - B\,a\,b\,d}{b\,\left(x\,b^3 + a\,b^2\right)} + \frac{B\,e\,x}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (log(a + b*x)*(A*b*e - 2*B*a*e + B*b*d))/b^3 - (A*b^2*d + B*a^2*e - A*a*b*e
 - B*a*b*d)/(b*(a*b^2 + b^3*x)) + (B*e*x)/b^2
```

sympy [A] time = 0.43, size = 71, normalized size = 1.18

$$\frac{Bex}{b^2}+\frac{Aabe-Ab^2d-Ba^2e+Babd}{ab^3+b^4x}-\frac{(-Abe+2Bae-Bbd)\log{(a+bx)}}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] B*e*x/b**2 + (A*a*b*e - A*b**2*d - B*a**2*e + B*a*b*d)/(a*b**3 + b**4*x) -
(-A*b*e + 2*B*a*e - B*b*d)*log(a + b*x)/b**3
```

3.1697 $\int \frac{A+Bx}{a^2+2abx+b^2x^2} \, dx$

Optimal. Leaf size=32

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

```
[Out] (-A*b+B*a)/b^2/(b*x+a)+B*ln(b*x+a)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 43\}$

$$\frac{B\log(a+bx)}{b^2}-\frac{Ab-aB}{b^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((A*b - a*B)/(b^2*(a + b*x))) + (B*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a^2+2abx+b^2x^2}\,dx&=\int \frac{A+Bx}{(a+bx)^2}\,dx\\&=\int \left(\frac{Ab-aB}{b(a+bx)^2}+\frac{B}{b(a+bx)}\right)dx\\&=-\frac{Ab-aB}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 31, normalized size = 0.97

$$\frac{aB-Ab}{b^2(a+bx)}+\frac{B\log(a+bx)}{b^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-(A*b) + a*B)/(b^2*(a + b*x)) + (B*Log[a + b*x])/b^2
```

fricas [A] time = 0.90, size = 37, normalized size = 1.16

$$\frac{Ba-Ab+(Bbx+Ba)\log(bx+a)}{b^3x+ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
[Out] (B*a - A*b + (B*b*x + B*a)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [A] time = 0.15, size = 32, normalized size = 1.00

$$\frac{B\log\left(|bx+a|\right)}{b^2}+\frac{Ba-Ab}{(bx+a)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
[Out] B*log(abs(b*x + a))/b^2 + (B*a - A*b)/((b*x + a)*b^2)
```

maple [A] time = 0.05, size = 39, normalized size = 1.22

$$-\frac{A}{(bx+a)\,b}+\frac{Ba}{(bx+a)\,b^2}+\frac{B\ln\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x)
[Out] B/b^2*ln(b*x+a)-1/b/(b*x+a)*A+1/b^2/(b*x+a)*B*a
```

maxima [A] time = 0.52, size = 34, normalized size = 1.06

$$\frac{Ba-Ab}{b^3x+ab^2}+\frac{B\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
[Out] (B*a - A*b)/(b^3*x + a*b^2) + B*log(b*x + a)/b^2
```

mupad [B] time = 2.05, size = 32, normalized size = 1.00

$$\frac{B\,\ln\left(a+b\,x\right)}{b^2}-\frac{A\,b-B\,a}{b^2\,\left(a+b\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
[Out] (B*log(a + b*x))/b^2 - (A*b - B*a)/(b^2*(a + b*x))
```

sympy [A] time = 0.18, size = 27, normalized size = 0.84

$$\frac{B\log\left(a+bx\right)}{b^2}+\frac{-Ab+Ba}{ab^2+b^3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2),x)
[Out] B*log(a + b*x)/b**2 + (-A*b + B*a)/(a*b**2 + b**3*x)
```

3.1698 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=82

$$-\frac{Ab-aB}{b(a+bx)(bd-ae)}+\frac{\log(a+bx)(Bd-Ae)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}$$

```
[Out] (-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)+(-A*e+B*d)*ln(b*x+a)/(-a*e+b*d)^2-(-A*e+B*d
)*ln(e*x+d)/(-a*e+b*d)^2
```

Rubi [A] time = 0.06, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 77\}$

$$-\frac{Ab-aB}{b(a+bx)(bd-ae)}+\frac{\log(a+bx)(Bd-Ae)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((A*b - a*B)/(b*(b*d - a*e)*(a + b*x))) + ((B*d - A*e)*Log[a + b*x])/(b*d
- a*e)^2 - ((B*d - A*e)*Log[d + e*x])/(b*d - a*e)^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)}\,dx\\
&= \int \left(\frac{Ab-aB}{(bd-ae)(a+bx)^2}+\frac{b(Bd-Ae)}{(bd-ae)^2(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)}\right)dx\\
&= -\frac{Ab-aB}{b(bd-ae)(a+bx)}+\frac{(Bd-Ae)\log(a+bx)}{(bd-ae)^2}-\frac{(Bd-Ae)\log(d+ex)}{(bd-ae)^2}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 69, normalized size = 0.84

$$\frac{\frac{(aB-Ab)(bd-ae)}{b(a+bx)}+\log(a+bx)(Bd-Ae)+(Ae-Bd)\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((-(A*b) + a*B)*(b*d - a*e))/(b*(a + b*x)) + (B*d - A*e)*Log[a + b*x] + (-
(B*d) + A*e)*Log[d + e*x])/(b*d - a*e)^2
```

fricas [A] time = 0.93, size = 157, normalized size = 1.91

$$\frac{\left(Bab - Ab^2\right)d - \left(Ba^2 - Aab\right)e + \left(Babd - Aabe + \left(Bb^2d - Ab^2e\right)x\right)\log\left(bx + a\right) - \big(Babd - Aabe + \big(Bb^2d - Ab}{ab^3d^2 - 2\,a^2b^2de + a^3be^2 + \left(b^4d^2 - 2\,ab^3de + a^2b^2e^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] ((B*a*b - A*b^2)*d - (B*a^2 - A*a*b)*e + (B*a*b*d - A*a*b*e + (B*b^2*d - A*
b^2*e)*x)*log(b*x + a) - (B*a*b*d - A*a*b*e + (B*b^2*d - A*b^2*e)*x)*log(e*
x + d))/(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a
^2*b^2*e^2)*x)
```

giac [A] time = 0.16, size = 141, normalized size = 1.72

$$\frac{(Bbd - Abe)\log\left(|bx + a|\right)}{b^3d^2 - 2\,ab^2de + a^2be^2} - \frac{\left(Bde - Ae^2\right)\log\left(|xe + d|\right)}{b^2d^2e - 2\,abde^2 + a^2e^3} + \frac{Babd - Ab^2d - Ba^2e + Aabe}{(bd - ae)^2(bx + a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b*d - A*b*e)*log(abs(b*x + a))/(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2) - (B*
d*e - A*e^2)*log(abs(x*e + d))/(b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3) + (B*a*b
*d - A*b^2*d - B*a^2*e + A*a*b*e)/((b*d - a*e)^2*(b*x + a)*b)
```

maple [A] time = 0.05, size = 123, normalized size = 1.50

$$-\frac{Ae\ln(bx + a)}{(ae - bd)^2} + \frac{Ae\ln(ex + d)}{(ae - bd)^2} + \frac{Bd\ln(bx + a)}{(ae - bd)^2} - \frac{Bd\ln(ex + d)}{(ae - bd)^2} + \frac{A}{(ae - bd)(bx + a)} - \frac{Ba}{(ae - bd)(bx + a)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)/(b*x+a)*A-1/(a*e-b*d)/b/(b*x+a)*B*a-1/(a*e-b*d)^2*ln(b*x+a)*A*e
+1/(a*e-b*d)^2*ln(b*x+a)*B*d+1/(a*e-b*d)^2*ln(e*x+d)*A*e-1/(a*e-b*d)^2*ln(e
*x+d)*B*d
```

maxima [A] time = 0.49, size = 118, normalized size = 1.44

$$\frac{(Bd - Ae)\log(bx + a)}{b^2d^2 - 2\,abde + a^2e^2} - \frac{(Bd - Ae)\log(ex + d)}{b^2d^2 - 2\,abde + a^2e^2} + \frac{Ba - Ab}{ab^2d - a^2be + \left(b^3d - ab^2e\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*d - A*e)*log(b*x + a)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) - (B*d - A*e)*log(
e*x + d)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) + (B*a - A*b)/(a*b^2*d - a^2*b*e +
 (b^3*d - a*b^2*e)*x)
```

mupad [B] time = 2.14, size = 94, normalized size = 1.15

$$\frac{A\,b - B\,a}{b\,\left(a\,e - b\,d\right)\,\left(a + b\,x\right)} - \frac{2\,\mathrm{atanh}\left(\frac{a^2\,e^2 - b^2\,d^2}{{\left(a\,e - b\,d\right)}^2} + \frac{2\,b\,e\,x}{a\,e - b\,d}\right)\,\left(A\,e - B\,d\right)}{{\left(a\,e - b\,d\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (A*b - B*a)/(b*(a*e - b*d)*(a + b*x)) - (2*atanh((a^2*e^2 - b^2*d^2)/(a*e -
 b*d)^2 + (2*b*e*x)/(a*e - b*d))*(A*e - B*d))/(a*e - b*d)^2
```

sympy [B] time = 1.19, size = 355, normalized size = 4.33

$$\frac{Ab-Ba}{a^{2}be-ab^{2}d+x\left(ab^{2}e-b^{3}d\right)}-\frac{(-Ae+Bd)\log\left(x+\frac{-Aae^{2}-Abde+Bade+Bbd^{2}-\frac{a^{3}e^{3}(-Ae+Bd)}{(ae-bd)^{2}}+\frac{3a^{2}bde^{2}(-Ae+Bd)}{(ae-bd)^{2}}-\frac{3ab^{2}d^{2}e(-Ae+Bd)}{(ae-bd)^{2}}+\frac{b^{3}d^{3}}{(a}}{-2Abe^{2}+2Bbde}\right.}{(ae-bd)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (A*b - B*a)/(a**2*b*e - a*b**2*d + x*(a*b**2*e - b**3*d)) - (-A*e + B*d)*lo
g(x + (-A*a*e**2 - A*b*d*e + B*a*d*e + B*b*d**2 - a**3*e**3*(-A*e + B*d)/(a
*e - b*d)**2 + 3*a**2*b*d*e**2*(-A*e + B*d)/(a*e - b*d)**2 - 3*a*b**2*d**2*
e*(-A*e + B*d)/(a*e - b*d)**2 + b**3*d**3*(-A*e + B*d)/(a*e - b*d)**2)/(-2*
A*b*e**2 + 2*B*b*d*e))/(a*e - b*d)**2 + (-A*e + B*d)*log(x + (-A*a*e**2 - A
*b*d*e + B*a*d*e + B*b*d**2 + a**3*e**3*(-A*e + B*d)/(a*e - b*d)**2 - 3*a**
2*b*d*e**2*(-A*e + B*d)/(a*e - b*d)**2 + 3*a*b**2*d**2*e*(-A*e + B*d)/(a*e
- b*d)**2 - b**3*d**3*(-A*e + B*d)/(a*e - b*d)**2)/(-2*A*b*e**2 + 2*B*b*d*e
))/(a*e - b*d)**2
```

3.1699 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=117

$$-\frac{Ab-aB}{(a+bx)(bd-ae)^2}+\frac{Bd-Ae}{(d+ex)(bd-ae)^2}+\frac{\log(a+bx)(aBe-2Abe+bBd)}{(bd-ae)^3}-\frac{\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

```
[Out] (-A*b+B*a)/(-a*e+b*d)^2/(b*x+a)+(-A*e+B*d)/(-a*e+b*d)^2/(e*x+d)+(-2*A*b*e+B
*a*e+B*b*d)*ln(b*x+a)/(-a*e+b*d)^3-(-2*A*b*e+B*a*e+B*b*d)*ln(e*x+d)/(-a*e+b
*d)^3
```

Rubi [A] time = 0.10, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{Ab-aB}{(a+bx)(bd-ae)^2}+\frac{Bd-Ae}{(d+ex)(bd-ae)^2}+\frac{\log(a+bx)(aBe-2Abe+bBd)}{(bd-ae)^3}-\frac{\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((A*b - a*B)/((b*d - a*e)^2*(a + b*x))) + (B*d - A*e)/((b*d - a*e)^2*(d +
e*x)) + ((b*B*d - 2*A*b*e + a*B*e)*Log[a + b*x])/(b*d - a*e)^3 - ((b*B*d -
2*A*b*e + a*B*e)*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)^2}\,dx\\ &= \int \Bigg(\frac{b(Ab-aB)}{(bd-ae)^2(a+bx)^2}+\frac{b(bBd-2Abe+aBe)}{(bd-ae)^3(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)^2}+\\ &= -\frac{Ab-aB}{(bd-ae)^2(a+bx)}+\frac{Bd-Ae}{(bd-ae)^2(d+ex)}+\frac{(bBd-2Abe+aBe)\log(a+}{(bd-ae)^3}\end{aligned}$$

Mathematica [A] time = 0.11, size = 103, normalized size = 0.88

$$\frac{\frac{(aB-Ab)(bd-ae)}{a+bx}+\frac{(bd-ae)(Bd-Ae)}{d+ex}+\log(a+bx)(aBe-2Abe+bBd)-\log(d+ex)(aBe-2Abe+bBd)}{(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((-(A*b) + a*B)*(b*d - a*e))/(a + b*x) + ((b*d - a*e)*(B*d - A*e))/(d + e*
x) + (b*B*d - 2*A*b*e + a*B*e)*Log[a + b*x] - (b*B*d - 2*A*b*e + a*B*e)*Log
[d + e*x])/(b*d - a*e)^3
```

fricas [B] time = 0.78, size = 396, normalized size = 3.38

$$-\frac{2\,Ba^2de - Aa^2e^2 - \left(2\,Bab - Ab^2\right)d^2 - \left(Bb^2d^2 - 2\,Ab^2de - \left(Ba^2 - 2\,Aab\right)e^2\right)x - \left(Babd^2 + \left(Ba^2 - 2\,Aab\right)de + \left(B\right.\right.}{ab^3d^4 - 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -(2*B*a^2*d*e - A*a^2*e^2 - (2*B*a*b - A*b^2)*d^2 - (B*b^2*d^2 - 2*A*b^2*d*
e - (B*a^2 - 2*A*a*b)*e^2)*x - (B*a*b*d^2 + (B*a^2 - 2*A*a*b)*d*e + (B*b^2*
d*e + (B*a*b - 2*A*b^2)*e^2)*x^2 + (B*b^2*d^2 + 2*(B*a*b - A*b^2)*d*e + (B*
a^2 - 2*A*a*b)*e^2)*x)*log(b*x + a) + (B*a*b*d^2 + (B*a^2 - 2*A*a*b)*d*e +
(B*b^2*d*e + (B*a*b - 2*A*b^2)*e^2)*x^2 + (B*b^2*d^2 + 2*(B*a*b - A*b^2)*d*
e + (B*a^2 - 2*A*a*b)*e^2)*x)*log(e*x + d))/(a*b^3*d^4 - 3*a^2*b^2*d^3*e +
3*a^3*b*d^2*e^2 - a^4*d*e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^
3 - a^3*b*e^4)*x^2 + (b^4*d^4 - 2*a*b^3*d^3*e + 2*a^3*b*d*e^3 - a^4*e^4)*x)
```

giac [A] time = 0.22, size = 195, normalized size = 1.67

$$\frac{\left(Bbde + Bae^2 - 2\,Abe^2\right)\log\left(\left|b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right|\right)}{b^3d^3e - 3\,ab^2d^2e^2 + 3\,a^2bde^3 - a^3e^4} + \frac{\frac{Bde^2}{xe+d} - \frac{Ae^3}{xe+d}}{b^2d^2e^2 - 2\,abde^3 + a^2e^4} + \frac{Babe - Ab^2e}{(bd - ae)^3\left(b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b*d*e + B*a*e^2 - 2*A*b*e^2)*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))
/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 - a^3*e^4) + (B*d*e^2/(x*e +
d) - A*e^3/(x*e + d))/(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4) + (B*a*b*e - A*
b^2*e)/((b*d - a*e)^3*(b - b*d/(x*e + d) + a*e/(x*e + d)))
```

maple [A] time = 0.06, size = 208, normalized size = 1.78

$$\frac{2Abe\ln\left(bx+a\right)}{\left(ae-bd\right)^3} - \frac{2Abe\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{Bae\ln\left(bx+a\right)}{\left(ae-bd\right)^3} + \frac{Bae\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{Bbd\ln\left(bx+a\right)}{\left(ae-bd\right)^3} + \frac{Bbd\ln\left(ex+d\right)}{\left(ae-bd\right)^3} - \frac{A}{(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^2/(b*x+a)*A*b+1/(a*e-b*d)^2/(b*x+a)*B*a+2/(a*e-b*d)^3*ln(b*x+a
)*A*b*e-1/(a*e-b*d)^3*ln(b*x+a)*a*B*e-1/(a*e-b*d)^3*ln(b*x+a)*B*b*d-1/(a*e-
b*d)^2/(e*x+d)*A*e+1/(a*e-b*d)^2/(e*x+d)*B*d-2/(a*e-b*d)^3*ln(e*x+d)*A*b*e+
1/(a*e-b*d)^3*ln(e*x+d)*a*B*e+1/(a*e-b*d)^3*ln(e*x+d)*B*b*d
```

maxima [B] time = 0.54, size = 256, normalized size = 2.19

$$\frac{\left(Bbd + \left(Ba - 2\,Ab\right)e\right)\log\left(bx+a\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{\left(Bbd + \left(Ba - 2\,Ab\right)e\right)\log\left(ex+d\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{Aae - \left(2\,Ba - Ab\right)}{ab^2d^3 - 2\,a^2bd^2e + a^3de^2 + \left(b^3d^2e - 2\,ab^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*b*d + (B*a - 2*A*b)*e)*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d
*e^2 - a^3*e^3) - (B*b*d + (B*a - 2*A*b)*e)*log(e*x + d)/(b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - (A*a*e - (2*B*a - A*b)*d - (B*b*d + (B*
a - 2*A*b)*e)*x)/(a*b^2*d^3 - 2*a^2*b*d^2*e + a^3*d*e^2 + (b^3*d^2*e - 2*a*
b^2*d*e^2 + a^2*b*e^3)*x^2 + (b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2 + a^3*e^3
)*x)
```

mupad [B] time = 2.24, size = 263, normalized size = 2.25

$$-\frac{\frac{A\,a\,e+A\,b\,d-2\,B\,a\,d}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}-\frac{x\,(B\,a\,e-2\,A\,b\,e+B\,b\,d)}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{b\,e\,x^2+(a\,e+b\,d)\,x+a\,d}-\frac{2\,\mathrm{atanh}\left(\frac{\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}+2\,b\,e\,x\right)\,(e\,(2\,A\,b-B\,a)-B\,b\,d)\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{(a\,e-b\,d)}^3\,(B\,a\,e-2\,A\,b\,e+B\,b\,d)}\right)}{{(a\,e-b\,d)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((A*a*e + A*b*d - 2*B*a*d)/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e) - (x*(B*a*e -
2*A*b*e + B*b*d))/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(a*d + x*(a*e + b*d) + b
*e*x^2) - (2*atanh((((a^3*e^3 + b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a^2*e
^2 + b^2*d^2 - 2*a*b*d*e) + 2*b*e*x)*(e*(2*A*b - B*a) - B*b*d)*(a^2*e^2 + b
^2*d^2 - 2*a*b*d*e))/((a*e - b*d)^3*(B*a*e - 2*A*b*e + B*b*d)))*(e*(2*A*b -
 B*a) - B*b*d))/(a*e - b*d)^3
```

sympy [B] time = 2.29, size = 706, normalized size = 6.03

$$\frac{-Aae-Abd+2Bad+x\,(-2Abe+Bae+Bbd)}{a^3de^2-2a^2bd^2e+ab^2d^3+x^2\left(a^2be^3-2ab^2de^2+b^3d^2e\right)+x\left(a^3e^3-a^2bde^2-ab^2d^2e+b^3d^3\right)}+\frac{(-2Abe+Bae+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] (-A*a*e - A*b*d + 2*B*a*d + x*(-2*A*b*e + B*a*e + B*b*d))/(a**3*d*e**2 - 2*
a**2*b*d**2*e + a*b**2*d**3 + x**2*(a**2*b*e**3 - 2*a*b**2*d*e**2 + b**3*d*
*2*e) + x*(a**3*e**3 - a**2*b*d*e**2 - a*b**2*d**2*e + b**3*d**3)) + (-2*A*
b*e + B*a*e + B*b*d)*log(x + (-2*A*a*b*e**2 - 2*A*b**2*d*e + B*a**2*e**2 +
2*B*a*b*d*e + B*b**2*d**2 - a**4*e**4*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d
)**3 + 4*a**3*b*d*e**3*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 - 6*a**2*b
**2*d**2*e**2*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 + 4*a*b**3*d**3*e*(
-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 - b**4*d**4*(-2*A*b*e + B*a*e + B*
b*d)/(a*e - b*d)**3)/(-4*A*b**2*e**2 + 2*B*a*b*e**2 + 2*B*b**2*d*e))/(a*e -
 b*d)**3 - (-2*A*b*e + B*a*e + B*b*d)*log(x + (-2*A*a*b*e**2 - 2*A*b**2*d*e
 + B*a**2*e**2 + 2*B*a*b*d*e + B*b**2*d**2 + a**4*e**4*(-2*A*b*e + B*a*e +
B*b*d)/(a*e - b*d)**3 - 4*a**3*b*d*e**3*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b
*d)**3 + 6*a**2*b**2*d**2*e**2*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 -
4*a*b**3*d**3*e*(-2*A*b*e + B*a*e + B*b*d)/(a*e - b*d)**3 + b**4*d**4*(-2*A
*b*e + B*a*e + B*b*d)/(a*e - b*d)**3)/(-4*A*b**2*e**2 + 2*B*a*b*e**2 + 2*B*
b**2*d*e))/(a*e - b*d)**3
```

3.1700 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=157

$$-\frac{b(Ab-aB)}{(a+bx)(bd-ae)^3}+\frac{aBe-2Abe+bBd}{(d+ex)(bd-ae)^3}+\frac{Bd-Ae}{2(d+ex)^2(bd-ae)^2}+\frac{b\log(a+bx)(2aBe-3Abe+bBd)}{(bd-ae)^4}-\frac{b\log(d+ex}{}$$

```
[Out] -b*(A*b-B*a)/(-a*e+b*d)^3/(b*x+a)+1/2*(-A*e+B*d)/(-a*e+b*d)^2/(e*x+d)^2+(-2
*A*b*e+B*a*e+B*b*d)/(-a*e+b*d)^3/(e*x+d)+b*(-3*A*b*e+2*B*a*e+B*b*d)*ln(b*x+
a)/(-a*e+b*d)^4-b*(-3*A*b*e+2*B*a*e+B*b*d)*ln(e*x+d)/(-a*e+b*d)^4
```

Rubi [A] time = 0.15, antiderivative size = 157, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{b(Ab-aB)}{(a+bx)(bd-ae)^3}+\frac{aBe-2Abe+bBd}{(d+ex)(bd-ae)^3}+\frac{Bd-Ae}{2(d+ex)^2(bd-ae)^2}+\frac{b\log(a+bx)(2aBe-3Abe+bBd)}{(bd-ae)^4}-\frac{b\log(d+ex}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -((b*(A*b - a*B))/((b*d - a*e)^3*(a + b*x))) + (B*d - A*e)/(2*(b*d - a*e)^2
*(d + e*x)^2) + (b*B*d - 2*A*b*e + a*B*e)/((b*d - a*e)^3*(d + e*x)) + (b*(b
*B*d - 3*A*b*e + 2*a*B*e)*Log[a + b*x])/(b*d - a*e)^4 - (b*(b*B*d - 3*A*b*e
 + 2*a*B*e)*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{A+Bx}{(a+bx)^2(d+ex)^3}\,dx\\
&= \int \left(\frac{b^2(Ab-aB)}{(bd-ae)^3(a+bx)^2}+\frac{b^2(bBd-3Abe+2aBe)}{(bd-ae)^4(a+bx)}+\frac{e(-Bd+Ae)}{(bd-ae)^2(d+ex)^3}+\right.\\
&= -\frac{b(Ab-aB)}{(bd-ae)^3(a+bx)}+\frac{Bd-Ae}{2(bd-ae)^2(d+ex)^2}+\frac{bBd-2Abe+aBe}{(bd-ae)^3(d+ex)}+\frac{b(bBd-}{}
\end{aligned}$$

Mathematica [A] time = 0.12, size = 146, normalized size = 0.93

$$\frac{\frac{(bd-ae)^2(Bd-Ae)}{(d+ex)^2}-\frac{2b(Ab-aB)(bd-ae)}{a+bx}+\frac{2(bd-ae)(aBe-2Abe+bBd)}{d+ex}+2b\log(a+bx)(2aBe-3Abe+bBd)-2b\log(d+ex)(2a}{2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-2*b*(A*b - a*B)*(b*d - a*e))/(a + b*x) + ((b*d - a*e)^2*(B*d - A*e))/(d
+ e*x)^2 + (2*(b*d - a*e)*(b*B*d - 2*A*b*e + a*B*e))/(d + e*x) + 2*b*(b*B*d
 - 3*A*b*e + 2*a*B*e)*Log[a + b*x] - 2*b*(b*B*d - 3*A*b*e + 2*a*B*e)*Log[d
+ e*x])/(2*(b*d - a*e)^4)
```

fricas [B] time = 0.82, size = 801, normalized size = 5.10

$$-\frac{Aa^3e^3 - \left(5\,Bab^2 - 2\,Ab^3\right)d^3 + \left(4\,Ba^2b + 3\,Aab^2\right)d^2e + \left(Ba^3 - 6\,Aa^2b\right)de^2 - 2\left(Bb^3d^2e + \left(Bab^2 - 3\,Ab^3\right)de^2 -\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] -1/2*(A*a^3*e^3 - (5*B*a*b^2 - 2*A*b^3)*d^3 + (4*B*a^2*b + 3*A*a*b^2)*d^2*e
 + (B*a^3 - 6*A*a^2*b)*d*e^2 - 2*(B*b^3*d^2*e + (B*a*b^2 - 3*A*b^3)*d*e^2 -
 (2*B*a^2*b - 3*A*a*b^2)*e^3)*x^2 - (3*B*b^3*d^3 + (4*B*a*b^2 - 9*A*b^3)*d^
2*e - (5*B*a^2*b - 6*A*a*b^2)*d*e^2 - (2*B*a^3 - 3*A*a^2*b)*e^3)*x - 2*(B*a
*b^2*d^3 + (2*B*a^2*b - 3*A*a*b^2)*d^2*e + (B*b^3*d*e^2 + (2*B*a*b^2 - 3*A*
b^3)*e^3)*x^3 + (2*B*b^3*d^2*e + (5*B*a*b^2 - 6*A*b^3)*d*e^2 + (2*B*a^2*b -
 3*A*a*b^2)*e^3)*x^2 + (B*b^3*d^3 + (4*B*a*b^2 - 3*A*b^3)*d^2*e + 2*(2*B*a^
2*b - 3*A*a*b^2)*d*e^2)*x)*log(b*x + a) + 2*(B*a*b^2*d^3 + (2*B*a^2*b - 3*A
*a*b^2)*d^2*e + (B*b^3*d*e^2 + (2*B*a*b^2 - 3*A*b^3)*e^3)*x^3 + (2*B*b^3*d^
2*e + (5*B*a*b^2 - 6*A*b^3)*d*e^2 + (2*B*a^2*b - 3*A*a*b^2)*e^3)*x^2 + (B*b
^3*d^3 + (4*B*a*b^2 - 3*A*b^3)*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e^2)*x)*
log(e*x + d))/(a*b^4*d^6 - 4*a^2*b^3*d^5*e + 6*a^3*b^2*d^4*e^2 - 4*a^4*b*d^
3*e^3 + a^5*d^2*e^4 + (b^5*d^4*e^2 - 4*a*b^4*d^3*e^3 + 6*a^2*b^3*d^2*e^4 -
4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^3 + (2*b^5*d^5*e - 7*a*b^4*d^4*e^2 + 8*a^2*b
^3*d^3*e^3 - 2*a^3*b^2*d^2*e^4 - 2*a^4*b*d*e^5 + a^5*e^6)*x^2 + (b^5*d^6 -
2*a*b^4*d^5*e - 2*a^2*b^3*d^4*e^2 + 8*a^3*b^2*d^3*e^3 - 7*a^4*b*d^2*e^4 + 2
*a^5*d*e^5)*x)
```

giac [B] time = 0.16, size = 393, normalized size = 2.50

$$\frac{\left(Bb^3d + 2\,Bab^2e - 3\,Ab^3e\right)\log\left(|bx + a|\right)}{b^5d^4 - 4\,ab^4d^3e + 6\,a^2b^3d^2e^2 - 4\,a^3b^2de^3 + a^4be^4} - \frac{\left(Bb^2de + 2\,Babe^2 - 3\,Ab^2e^2\right)\log\left(|xe + d|\right)}{b^4d^4e - 4\,ab^3d^3e^2 + 6\,a^2b^2d^2e^3 - 4\,a^3bde^4 + a^4e^5} + \frac{5\,Bab^2d^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (B*b^3*d + 2*B*a*b^2*e - 3*A*b^3*e)*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^
3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) - (B*b^2*d*e + 2*B*a
*b*e^2 - 3*A*b^2*e^2)*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b^3*d^3*e^2 + 6*a^
2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + 1/2*(5*B*a*b^2*d^3 - 2*A*b^3*d^3
 - 4*B*a^2*b*d^2*e - 3*A*a*b^2*d^2*e - B*a^3*d*e^2 + 6*A*a^2*b*d*e^2 - A*a^
3*e^3 + 2*(B*b^3*d^2*e + B*a*b^2*d*e^2 - 3*A*b^3*d*e^2 - 2*B*a^2*b*e^3 + 3*
A*a*b^2*e^3)*x^2 + (3*B*b^3*d^3 + 4*B*a*b^2*d^2*e - 9*A*b^3*d^2*e - 5*B*a^2
*b*d*e^2 + 6*A*a*b^2*d*e^2 - 2*B*a^3*e^3 + 3*A*a^2*b*e^3)*x)/((b*d - a*e)^4
*(b*x + a)*(x*e + d)^2)
```

maple [A] time = 0.06, size = 289, normalized size = 1.84

$$-\frac{3A\,b^2e\ln\left(bx + a\right)}{\left(ae - bd\right)^4} + \frac{3A\,b^2e\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{2Babe\ln\left(bx + a\right)}{\left(ae - bd\right)^4} - \frac{2Babe\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{B\,b^2d\ln\left(bx + a\right)}{\left(ae - bd\right)^4} - \frac{B\,b^2d\ln(ex}{(ae - bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] b^2/(a*e-b*d)^3/(b*x+a)*A-b/(a*e-b*d)^3/(b*x+a)*B*a-3*b^2/(a*e-b*d)^4*ln(b*
x+a)*A*e+2*b/(a*e-b*d)^4*ln(b*x+a)*a*B*e+b^2/(a*e-b*d)^4*ln(b*x+a)*B*d-1/2/
(a*e-b*d)^2/(e*x+d)^2*A*e+1/2/(a*e-b*d)^2/(e*x+d)^2*B*d+3*b^2/(a*e-b*d)^4*l
n(e*x+d)*A*e-2*b/(a*e-b*d)^4*ln(e*x+d)*a*B*e-b^2/(a*e-b*d)^4*ln(e*x+d)*B*d+
2/(a*e-b*d)^3/(e*x+d)*A*b*e-1/(a*e-b*d)^3/(e*x+d)*a*B*e-1/(a*e-b*d)^3/(e*x+
d)*B*b*d
```

maxima [**B**] time = 0.80, size = 479, normalized size = 3.05

$$\frac{\left(Bb^2d+\left(2\,Bab-3\,Ab^2\right)e\right)\log\left(bx+a\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}-\frac{\left(Bb^2d+\left(2\,Bab-3\,Ab^2\right)e\right)\log\left(ex+d\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}+\frac{}{2\left(ab^3d^5-3\,a^2b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (B*b^2*d + (2*B*a*b - 3*A*b^2)*e)*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6
*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) - (B*b^2*d + (2*B*a*b - 3*A*b^2
)*e)*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*
e^3 + a^4*e^4) + 1/2*(A*a^2*e^2 + (5*B*a*b - 2*A*b^2)*d^2 + (B*a^2 - 5*A*a*
b)*d*e + 2*(B*b^2*d*e + (2*B*a*b - 3*A*b^2)*e^2)*x^2 + (3*B*b^2*d^2 + (7*B*
a*b - 9*A*b^2)*d*e + (2*B*a^2 - 3*A*a*b)*e^2)*x)/(a*b^3*d^5 - 3*a^2*b^2*d^4
*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2
*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^
2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^2*b^2*d^3
*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)
```

mupad [**B**] time = 2.66, size = 454, normalized size = 2.89

$$\frac{2\,\mathrm{atanh}\left(\frac{\left(b^2\,\left(3\,A\,e-B\,d\right)-2\,B\,a\,b\,e\right)\,\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}+2\,b\,e\,x\right)\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{{\left(a\,e-b\,d\right)}^4\,\left(B\,b^2\,d-3\,A\,b^2\,e+2\,B\,a\,b\,e\right)}\right)\,\left(b^2\,\left(3\,A\,e-B\,d\right)-2\,B\,a\,b\,e\right.}{{\left(a\,e-b\,d\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*atanh(((b^2*(3*A*e - B*d) - 2*B*a*b*e)*((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3
*e - 2*a^3*b*d*e^3)/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + 2
*b*e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/((a*e - b*d)^4
*(B*b^2*d - 3*A*b^2*e + 2*B*a*b*e)))*(b^2*(3*A*e - B*d) - 2*B*a*b*e))/(a*e
- b*d)^4 - ((A*a^2*e^2 - 2*A*b^2*d^2 + 5*B*a*b*d^2 + B*a^2*d*e - 5*A*a*b*d*
e)/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (x*(a*e + 3*b*
d)*(2*B*a*e - 3*A*b*e + B*b*d))/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a
^2*b*d*e^2)) + (b*e*x^2*(2*B*a*e - 3*A*b*e + B*b*d))/(a^3*e^3 - b^3*d^3 + 3
*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(x*(b*d^2 + 2*a*d*e) + a*d^2 + x^2*(a*e^2 +
2*b*d*e) + b*e^2*x^3)
```

sympy [**B**] time = 3.58, size = 1066, normalized size = 6.79

$$-\frac{b\left(-3Abe+2Bae+Bbd\right)\log\left(x+\frac{-3Aab^2e^2-3Ab^3de+2Ba^2be^2+3Bab^2de+Bb^3d^2-\frac{a^5be^5\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}+\frac{5a^4b^2de^4\left(-3Abe+2Bae+Bbd\right)}{\left(ae-bd\right)^4}-\frac{10a^3b}{}}{-6Ab^3e^2+4Bab}\right.}{\left(ae-bd\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -b*(-3*A*b*e + 2*B*a*e + B*b*d)*log(x + (-3*A*a*b**2*e**2 - 3*A*b**3*d*e +
2*B*a**2*b*e**2 + 3*B*a*b**2*d*e + B*b**3*d**2 - a**5*b*e**5*(-3*A*b*e + 2*
B*a*e + B*b*d)/(a*e - b*d)**4 + 5*a**4*b**2*d*e**4*(-3*A*b*e + 2*B*a*e + B*
b*d)/(a*e - b*d)**4 - 10*a**3*b**3*d**2*e**3*(-3*A*b*e + 2*B*a*e + B*b*d)/(
a*e - b*d)**4 + 10*a**2*b**4*d**3*e**2*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e -
b*d)**4 - 5*a*b**5*d**4*e*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + b**
6*d**5*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4)/(-6*A*b**3*e**2 + 4*B*a
*b**2*e**2 + 2*B*b**3*d*e))/(a*e - b*d)**4 + b*(-3*A*b*e + 2*B*a*e + B*b*d)
*log(x + (-3*A*a*b**2*e**2 - 3*A*b**3*d*e + 2*B*a**2*b*e**2 + 3*B*a*b**2*d*
e + B*b**3*d**2 + a**5*b*e**5*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 -
 5*a**4*b**2*d*e**4*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 10*a**3*b
**3*d**2*e**3*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - 10*a**2*b**4*d*
*3*e**2*(-3*A*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 + 5*a*b**5*d**4*e*(-3*A
*b*e + 2*B*a*e + B*b*d)/(a*e - b*d)**4 - b**6*d**5*(-3*A*b*e + 2*B*a*e + B*
b*d)/(a*e - b*d)**4)/(-6*A*b**3*e**2 + 4*B*a*b**2*e**2 + 2*B*b**3*d*e))/(a*
e - b*d)**4 + (-A*a**2*e**2 + 5*A*a*b*d*e + 2*A*b**2*d**2 - B*a**2*d*e - 5*
B*a*b*d**2 + x**2*(6*A*b**2*e**2 - 4*B*a*b*e**2 - 2*B*b**2*d*e) + x*(3*A*a*
b*e**2 + 9*A*b**2*d*e - 2*B*a**2*e**2 - 7*B*a*b*d*e - 3*B*b**2*d**2))/(2*a*
*4*d**2*e**3 - 6*a**3*b*d**3*e**2 + 6*a**2*b**2*d**4*e - 2*a*b**3*d**5 + x*
*3*(2*a**3*b*e**5 - 6*a**2*b**2*d*e**4 + 6*a*b**3*d**2*e**3 - 2*b**4*d**3*e
**2) + x**2*(2*a**4*e**5 - 2*a**3*b*d*e**4 - 6*a**2*b**2*d**2*e**3 + 10*a*b
**3*d**3*e**2 - 4*b**4*d**4*e) + x*(4*a**4*d*e**4 - 10*a**3*b*d**2*e**3 + 6
*a**2*b**2*d**3*e**2 + 2*a*b**3*d**4*e - 2*b**4*d**5))
```

3.1701 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=186

$$\frac{2e^2(bd-ae)\log(a+bx)(-5aBe+2Abe+3bBd)}{b^6}-\frac{2e(bd-ae)^2(-5aBe+3Abe+2bBd)}{b^6(a+bx)}-\frac{(bd-ae)^3(-5aBe+4Ab}{2b^6(a+bx)^2}$$

```
[Out] e^3*(A*b*e-4*B*a*e+4*B*b*d)*x/b^5+1/2*B*e^4*x^2/b^4-1/3*(A*b-B*a)*(-a*e+b*d
)^4/b^6/(b*x+a)^3-1/2*(-a*e+b*d)^3*(4*A*b*e-5*B*a*e+B*b*d)/b^6/(b*x+a)^2-2*
e*(-a*e+b*d)^2*(3*A*b*e-5*B*a*e+2*B*b*d)/b^6/(b*x+a)+2*e^2*(-a*e+b*d)*(2*A*
b*e-5*B*a*e+3*B*b*d)*ln(b*x+a)/b^6
```

Rubi [A] time = 0.23, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^3x(-4aBe+Abe+4bBd)}{b^5}+\frac{2e^2(bd-ae)\log(a+bx)(-5aBe+2Abe+3bBd)}{b^6}-\frac{2e(bd-ae)^2(-5aBe+3Abe+2bB}{b^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*(4*b*B*d + A*b*e - 4*a*B*e)*x)/b^5 + (B*e^4*x^2)/(2*b^4) - ((A*b - a*B
)*(b*d - a*e)^4)/(3*b^6*(a + b*x)^3) - ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*
a*B*e))/(2*b^6*(a + b*x)^2) - (2*e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B
*e))/(b^6*(a + b*x)) + (2*e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e)*Log
[a + b*x])/b^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{(A+Bx)(d+ex)^4}{(a+bx)^4}\,dx$$

$$=\int \left(\frac{e^3(4bBd+Abe-4aBe)}{b^5}+\frac{Be^4x}{b^4}+\frac{(Ab-aB)(bd-ae)^4}{b^5(a+bx)^4}+\frac{(bd-ae)^3(bBd+4Ab}{b^5(a+bx)^3}\right.$$

$$=\frac{e^3(4bBd+Abe-4aBe)x}{b^5}+\frac{Be^4x^2}{2b^4}-\frac{(Ab-aB)(bd-ae)^4}{3b^6(a+bx)^3}-\frac{(bd-ae)^3(bBd+4Abe-}{2b^6(a+bx)^2}$$

Mathematica [A] time = 0.19, size = 362, normalized size = 1.95

$$\frac{-2Ab\left(13a^4e^4+a^3be^3(27ex-22d)+3a^2b^2e^2\left(2d^2-18dex+3e^2x^2\right)+ab^3e\left(2d^3+18d^2ex-36de^2x^2-9e^3x^3\right)+b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*A*b*(13*a^4*e^4 + a^3*b*e^3*(-22*d + 27*e*x) + 3*a^2*b^2*e^2*(2*d^2 - 1
8*d*e*x + 3*e^2*x^2) + a*b^3*e*(2*d^3 + 18*d^2*e*x - 36*d*e^2*x^2 - 9*e^3*x
^3) + b^4*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4)) + B*(47*a^5*e^4 +
 a^4*b*e^3*(-104*d + 81*e*x) - 3*a^3*b^2*e^2*(-22*d^2 + 72*d*e*x + 3*e^2*x^
2) - a^2*b^3*e*(8*d^3 - 162*d^2*e*x + 72*d*e^2*x^2 + 63*e^3*x^3) + 3*b^5*x*
(-d^4 - 8*d^3*e*x + 8*d*e^3*x^3 + e^4*x^4) - a*b^4*(d^4 + 24*d^3*e*x - 108*
d^2*e^2*x^2 - 72*d*e^3*x^3 + 15*e^4*x^4)) + 12*e^2*(b*d - a*e)*(3*b*B*d + 2
*A*b*e - 5*a*B*e)*(a + b*x)^3*Log[a + b*x])/(6*b^6*(a + b*x)^3)
```

fricas [B] time = 1.23, size = 671, normalized size = 3.61

$$\frac{3\,Bb^{5}e^{4}x^{5} - \left(Bab^{4} + 2\,Ab^{5}\right)d^{4} - 4\left(2\,Ba^{2}b^{3} + Aab^{4}\right)d^{3}e + 6\left(11\,Ba^{3}b^{2} - 2\,Aa^{2}b^{3}\right)d^{2}e^{2} - 4\left(26\,Ba^{4}b - 11\,Aa^{3}b^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*b^5*e^4*x^5 - (B*a*b^4 + 2*A*b^5)*d^4 - 4*(2*B*a^2*b^3 + A*a*b^4)*
d^3*e + 6*(11*B*a^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 - 4*(26*B*a^4*b - 11*A*a^3*b
^2)*d*e^3 + (47*B*a^5 - 26*A*a^4*b)*e^4 + 3*(8*B*b^5*d*e^3 - (5*B*a*b^4 - 2
*A*b^5)*e^4)*x^4 + 9*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 - 2*A*a*b^4)*e^4)*x^3
- 3*(8*B*b^5*d^3*e - 12*(3*B*a*b^4 - A*b^5)*d^2*e^2 + 24*(B*a^2*b^3 - A*a*b
^4)*d*e^3 + 3*(B*a^3*b^2 + 2*A*a^2*b^3)*e^4)*x^2 - 3*(B*b^5*d^4 + 4*(2*B*a*
b^4 + A*b^5)*d^3*e - 6*(9*B*a^2*b^3 - 2*A*a*b^4)*d^2*e^2 + 36*(2*B*a^3*b^2
- A*a^2*b^3)*d*e^3 - 9*(3*B*a^4*b - 2*A*a^3*b^2)*e^4)*x + 12*(3*B*a^3*b^2*d
^2*e^2 - 2*(4*B*a^4*b - A*a^3*b^2)*d*e^3 + (5*B*a^5 - 2*A*a^4*b)*e^4 + (3*B
*b^5*d^2*e^2 - 2*(4*B*a*b^4 - A*b^5)*d*e^3 + (5*B*a^2*b^3 - 2*A*a*b^4)*e^4)
*x^3 + 3*(3*B*a*b^4*d^2*e^2 - 2*(4*B*a^2*b^3 - A*a*b^4)*d*e^3 + (5*B*a^3*b^
2 - 2*A*a^2*b^3)*e^4)*x^2 + 3*(3*B*a^2*b^3*d^2*e^2 - 2*(4*B*a^3*b^2 - A*a^2
*b^3)*d*e^3 + (5*B*a^4*b - 2*A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^9*x^3 + 3*
a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)
```

giac [B] time = 0.18, size = 415, normalized size = 2.23

$$\frac{2\left(3\,Bb^{2}d^{2}e^{2} - 8\,Babde^{3} + 2\,Ab^{2}de^{3} + 5\,Ba^{2}e^{4} - 2\,Aabe^{4}\right)\log\left(|bx + a|\right)}{b^{6}} + \frac{Bb^{4}x^{2}e^{4} + 8\,Bb^{4}dxe^{3} - 8\,Bab^{3}xe^{4} + 2}{2\,b^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 2*(3*B*b^2*d^2*e^2 - 8*B*a*b*d*e^3 + 2*A*b^2*d*e^3 + 5*B*a^2*e^4 - 2*A*a*b*
e^4)*log(abs(b*x + a))/b^6 + 1/2*(B*b^4*x^2*e^4 + 8*B*b^4*d*x*e^3 - 8*B*a*b
^3*x*e^4 + 2*A*b^4*x*e^4)/b^8 - 1/6*(B*a*b^4*d^4 + 2*A*b^5*d^4 + 8*B*a^2*b^
3*d^3*e + 4*A*a*b^4*d^3*e - 66*B*a^3*b^2*d^2*e^2 + 12*A*a^2*b^3*d^2*e^2 + 1
04*B*a^4*b*d*e^3 - 44*A*a^3*b^2*d*e^3 - 47*B*a^5*e^4 + 26*A*a^4*b*e^4 + 12*
(2*B*b^5*d^3*e - 9*B*a*b^4*d^2*e^2 + 3*A*b^5*d^2*e^2 + 12*B*a^2*b^3*d*e^3 -
 6*A*a*b^4*d*e^3 - 5*B*a^3*b^2*e^4 + 3*A*a^2*b^3*e^4)*x^2 + 3*(B*b^5*d^4 +
8*B*a*b^4*d^3*e + 4*A*b^5*d^3*e - 54*B*a^2*b^3*d^2*e^2 + 12*A*a*b^4*d^2*e^2
 + 80*B*a^3*b^2*d*e^3 - 36*A*a^2*b^3*d*e^3 - 35*B*a^4*b*e^4 + 20*A*a^3*b^2*
e^4)*x)/((b*x + a)^3*b^6)
```

maple [B] time = 0.06, size = 626, normalized size = 3.37

$$-\frac{A\,a^{4}e^{4}}{3\left(bx + a\right)^{3}b^{5}} + \frac{4A\,a^{3}d\,e^{3}}{3\left(bx + a\right)^{3}b^{4}} - \frac{2A\,a^{2}d^{2}e^{2}}{\left(bx + a\right)^{3}b^{3}} + \frac{4Aa\,d^{3}e}{3\left(bx + a\right)^{3}b^{2}} - \frac{A\,d^{4}}{3\left(bx + a\right)^{3}b} + \frac{B\,a^{5}e^{4}}{3\left(bx + a\right)^{3}b^{6}} - \frac{4B\,a^{4}d\,e^{3}}{3\left(bx + a\right)^{3}b^{5}} + \frac{2}{(bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 6/b^3/(b*x+a)^2*A*d^2*a*e^2+8/b^5/(b*x+a)^2*B*d*a^3*e^3-4/3/b^3/(b*x+a)^3*B
*a^2*d^3*e-6/b^4/(b*x+a)^2*A*a^2*d*e^3+2/b^4/(b*x+a)^3*B*a^3*d^2*e^2-9/b^4/
(b*x+a)^2*B*a^2*d^2*e^2+4/b^3/(b*x+a)^2*B*d^3*a*e+12*e^3/b^4/(b*x+a)*A*a*d-
16/b^5*e^3*ln(b*x+a)*B*d*a-24*e^3/b^5/(b*x+a)*B*a^2*d+18*e^2/b^4/(b*x+a)*B*
a*d^2-4/3/b^5/(b*x+a)^3*B*a^4*d*e^3+4/3/b^4/(b*x+a)^3*A*a^3*d*e^3-1/2/b^2/(
b*x+a)^2*B*d^4-1/3/b/(b*x+a)^3*A*d^4+e^4/b^4*A*x+4/3/b^2/(b*x+a)^3*A*a*d^3*
e-2/b^3/(b*x+a)^3*A*a^2*d^2*e^2+10*e^4/b^6/(b*x+a)*B*a^3-4*e/b^3/(b*x+a)*B*
d^3+1/3/b^2/(b*x+a)^3*B*a*d^4+2/b^5/(b*x+a)^2*A*a^3*e^4-2/b^2/(b*x+a)^2*A*d
^3*e-5/2/b^6/(b*x+a)^2*B*a^4*e^4-4*e^4/b^5*a*B*x+4*e^3/b^4*B*d*x-1/3/b^5/(b
*x+a)^3*A*a^4*e^4+1/3/b^6/(b*x+a)^3*B*a^5*e^4+10/b^6*e^4*ln(b*x+a)*B*a^2+6/
b^4*e^2*ln(b*x+a)*B*d^2-6*e^4/b^5/(b*x+a)*A*a^2-6*e^2/b^3/(b*x+a)*A*d^2-4/b
^5*e^4*ln(b*x+a)*A*a+4/b^4*e^3*ln(b*x+a)*A*d+1/2*B*e^4*x^2/b^4
```

maxima [B] time = 0.61, size = 434, normalized size = 2.33

$$-\frac{\left(Bab^4 + 2\,Ab^5\right)d^4 + 4\left(2\,Ba^2b^3 + Aab^4\right)d^3e - 6\left(11\,Ba^3b^2 - 2\,Aa^2b^3\right)d^2e^2 + 4\left(26\,Ba^4b - 11\,Aa^3b^2\right)de^3 - \left(47\,Ba^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*((B*a*b^4 + 2*A*b^5)*d^4 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e - 6*(11*B*a
^3*b^2 - 2*A*a^2*b^3)*d^2*e^2 + 4*(26*B*a^4*b - 11*A*a^3*b^2)*d*e^3 - (47*B
*a^5 - 26*A*a^4*b)*e^4 + 12*(2*B*b^5*d^3*e - 3*(3*B*a*b^4 - A*b^5)*d^2*e^2
+ 6*(2*B*a^2*b^3 - A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 +
3*(B*b^5*d^4 + 4*(2*B*a*b^4 + A*b^5)*d^3*e - 6*(9*B*a^2*b^3 - 2*A*a*b^4)*d^
2*e^2 + 4*(20*B*a^3*b^2 - 9*A*a^2*b^3)*d*e^3 - 5*(7*B*a^4*b - 4*A*a^3*b^2)*
e^4)*x)/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6) + 1/2*(B*b*e^4*x^2
+ 2*(4*B*b*d*e^3 - (4*B*a - A*b)*e^4)*x)/b^5 + 2*(3*B*b^2*d^2*e^2 - 2*(4*B*
a*b - A*b^2)*d*e^3 + (5*B*a^2 - 2*A*a*b)*e^4)*log(b*x + a)/b^6
```

mupad [B] time = 0.19, size = 451, normalized size = 2.42

$$x\left(\frac{A\,e^4+4\,B\,d\,e^3}{b^4}-\frac{4\,B\,a\,e^4}{b^5}\right)-\frac{\frac{-47\,B\,a^5\,e^4+104\,B\,a^4\,b\,d\,e^3+26\,A\,a^4\,b\,e^4-66\,B\,a^3\,b^2\,d^2\,e^2-44\,A\,a^3\,b^2\,d\,e^3+8\,B\,a^2\,b^3\,d^3\,e+12\,A\,a^2\,b^3\,d^2\,e^2+B\,a\,b^4}{6\,b}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x*((A*e^4 + 4*B*d*e^3)/b^4 - (4*B*a*e^4)/b^5) - ((2*A*b^5*d^4 - 47*B*a^5*e^
4 + 26*A*a^4*b*e^4 + B*a*b^4*d^4 - 44*A*a^3*b^2*d*e^3 + 8*B*a^2*b^3*d^3*e +
 12*A*a^2*b^3*d^2*e^2 - 66*B*a^3*b^2*d^2*e^2 + 4*A*a*b^4*d^3*e + 104*B*a^4*
b*d*e^3)/(6*b) + x*((B*b^4*d^4)/2 - (35*B*a^4*e^4)/2 + 10*A*a^3*b*e^4 + 2*A
*b^4*d^3*e + 6*A*a*b^3*d^2*e^2 - 18*A*a^2*b^2*d*e^3 - 27*B*a^2*b^2*d^2*e^2
+ 4*B*a*b^3*d^3*e + 40*B*a^3*b*d*e^3) + x^2*(4*B*b^4*d^3*e - 10*B*a^3*b*e^4
 + 6*A*a^2*b^2*e^4 + 6*A*b^4*d^2*e^2 - 18*B*a*b^3*d^2*e^2 + 24*B*a^2*b^2*d*
e^3 - 12*A*a*b^3*d*e^3))/(a^3*b^5 + b^8*x^3 + 3*a^2*b^6*x + 3*a*b^7*x^2) +
(log(a + b*x)*(10*B*a^2*e^4 - 4*A*a*b*e^4 + 4*A*b^2*d*e^3 + 6*B*b^2*d^2*e^2
 - 16*B*a*b*d*e^3))/b^6 + (B*e^4*x^2)/(2*b^4)
```

sympy [B] time = 21.38, size = 486, normalized size = 2.61

$$\frac{Be^4x^2}{2b^4}+x\left(\frac{Ae^4}{b^4}-\frac{4Bae^4}{b^5}+\frac{4Bde^3}{b^4}\right)+\frac{-26Aa^4be^4+44Aa^3b^2de^3-12Aa^2b^3d^2e^2-4Aab^4d^3e-2Ab^5d^4+47Ba^5e^4-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**4*x**2/(2*b**4) + x*(A*e**4/b**4 - 4*B*a*e**4/b**5 + 4*B*d*e**3/b**4)
+ (-26*A*a**4*b*e**4 + 44*A*a**3*b**2*d*e**3 - 12*A*a**2*b**3*d**2*e**2 - 4
*A*a*b**4*d**3*e - 2*A*b**5*d**4 + 47*B*a**5*e**4 - 104*B*a**4*b*d*e**3 + 6
6*B*a**3*b**2*d**2*e**2 - 8*B*a**2*b**3*d**3*e - B*a*b**4*d**4 + x**2*(-36*
A*a**2*b**3*e**4 + 72*A*a*b**4*d*e**3 - 36*A*b**5*d**2*e**2 + 60*B*a**3*b**
2*e**4 - 144*B*a**2*b**3*d*e**3 + 108*B*a*b**4*d**2*e**2 - 24*B*b**5*d**3*e
) + x*(-60*A*a**3*b**2*e**4 + 108*A*a**2*b**3*d*e**3 - 36*A*a*b**4*d**2*e**
2 - 12*A*b**5*d**3*e + 105*B*a**4*b*e**4 - 240*B*a**3*b**2*d*e**3 + 162*B*a
**2*b**3*d**2*e**2 - 24*B*a*b**4*d**3*e - 3*B*b**5*d**4))/(6*a**3*b**6 + 18
*a**2*b**7*x + 18*a*b**8*x**2 + 6*b**9*x**3) + 2*e**2*(a*e - b*d)*(-2*A*b*e
 + 5*B*a*e - 3*B*b*d)*log(a + b*x)/b**6
```

3.1702 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=144

$$\frac{e^2\log(a+bx)(-4aBe+Abe+3bBd)}{b^5}-\frac{3e(bd-ae)(-2aBe+Abe+bBd)}{b^5(a+bx)}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{2b^5(a+bx)^2}-\frac{(Ab}{3}$$

```
[Out] B*e^3*x/b^4-1/3*(A*b-B*a)*(-a*e+b*d)^3/b^5/(b*x+a)^3-1/2*(-a*e+b*d)^2*(3*A*
b*e-4*B*a*e+B*b*d)/b^5/(b*x+a)^2-3*e*(-a*e+b*d)*(A*b*e-2*B*a*e+B*b*d)/b^5/(
b*x+a)+e^2*(A*b*e-4*B*a*e+3*B*b*d)*ln(b*x+a)/b^5
```

Rubi [A] time = 0.15, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{e^2\log(a+bx)(-4aBe+Abe+3bBd)}{b^5}-\frac{3e(bd-ae)(-2aBe+Abe+bBd)}{b^5(a+bx)}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{2b^5(a+bx)^2}-\frac{(Ab}{3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*e^3*x)/b^4 - ((A*b - a*B)*(b*d - a*e)^3)/(3*b^5*(a + b*x)^3) - ((b*d - a
*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e))/(2*b^5*(a + b*x)^2) - (3*e*(b*d - a*e)*(
b*B*d + A*b*e - 2*a*B*e))/(b^5*(a + b*x)) + (e^2*(3*b*B*d + A*b*e - 4*a*B*e
)*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^3}{(a+bx)^4}\,dx\\ &= \int \left(\frac{Be^3}{b^4}+\frac{(Ab-aB)(bd-ae)^3}{b^4(a+bx)^4}+\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{b^4(a+bx)^3}+\frac{3e(bd-ae)(bB}{b^4(a}\right.\\ &= \frac{Be^3x}{b^4}-\frac{(Ab-aB)(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{2b^5(a+bx)^2}-\frac{3e(bd-ae)(bBd+}{b^5(a+b}\end{aligned}$$

Mathematica [A] time = 0.12, size = 217, normalized size = 1.51

$$-\frac{Ab(bd-ae)\left(11a^2e^2+abe(5d+27ex)+b^2\left(2d^2+9dex+18e^2x^2\right)\right)+B\left(26a^4e^3+3a^3be^2(18ex-11d)+3a^2b^2e\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(A*b*(b*d - a*e)*(11*a^2*e^2 + a*b*e*(5*d + 27*e*x) + b^2*(2*d^2 + 9*d
*e*x + 18*e^2*x^2)) + B*(26*a^4*e^3 + 3*a^3*b*e^2*(-11*d + 18*e*x) + 3*a^2*
b^2*e*(2*d^2 - 27*d*e*x + 6*e^2*x^2) + a*b^3*(d^3 + 18*d^2*e*x - 54*d*e^2*x
^2 - 18*e^3*x^3) + 3*b^4*x*(d^3 + 6*d^2*e*x - 2*e^3*x^3)) - 6*e^2*(3*b*B*d
+ A*b*e - 4*a*B*e)*(a + b*x)^3*Log[a + b*x])/(b^5*(a + b*x)^3)
```

fricas [B] time = 0.82, size = 427, normalized size = 2.97

$$\frac{6\,Bb^4e^3x^4 + 18\,Bab^3e^3x^3 - \left(Bab^3 + 2\,Ab^4\right)d^3 - 3\left(2\,Ba^2b^2 + Aab^3\right)d^2e + 3\left(11\,Ba^3b - 2\,Aa^2b^2\right)de^2 - (26\,Ba^4 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(6*B*b^4*e^3*x^4 + 18*B*a*b^3*e^3*x^3 - (B*a*b^3 + 2*A*b^4)*d^3 - 3*(2*
B*a^2*b^2 + A*a*b^3)*d^2*e + 3*(11*B*a^3*b - 2*A*a^2*b^2)*d*e^2 - (26*B*a^4
 - 11*A*a^3*b)*e^3 - 18*(B*b^4*d^2*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (B*a^2*b
^2 - A*a*b^3)*e^3)*x^2 - 3*(B*b^4*d^3 + 3*(2*B*a*b^3 + A*b^4)*d^2*e - 3*(9*
B*a^2*b^2 - 2*A*a*b^3)*d*e^2 + 9*(2*B*a^3*b - A*a^2*b^2)*e^3)*x + 6*(3*B*a^
3*b*d*e^2 - (4*B*a^4 - A*a^3*b)*e^3 + (3*B*b^4*d*e^2 - (4*B*a*b^3 - A*b^4)*
e^3)*x^3 + 3*(3*B*a*b^3*d*e^2 - (4*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 3*(3*B*a
^2*b^2*d*e^2 - (4*B*a^3*b - A*a^2*b^2)*e^3)*x)*log(b*x + a))/(b^8*x^3 + 3*a
*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

giac [A] time = 0.19, size = 266, normalized size = 1.85

$$\frac{Bxe^3}{b^4} + \frac{\left(3\,Bbde^2 - 4\,Bae^3 + Abe^3\right)\log\left(|bx + a|\right)}{b^5} - \frac{Bab^3d^3 + 2\,Ab^4d^3 + 6\,Ba^2b^2d^2e + 3\,Aab^3d^2e - 33\,Ba^3bde^2 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*x*e^3/b^4 + (3*B*b*d*e^2 - 4*B*a*e^3 + A*b*e^3)*log(abs(b*x + a))/b^5 - 1
/6*(B*a*b^3*d^3 + 2*A*b^4*d^3 + 6*B*a^2*b^2*d^2*e + 3*A*a*b^3*d^2*e - 33*B*
a^3*b*d*e^2 + 6*A*a^2*b^2*d*e^2 + 26*B*a^4*e^3 - 11*A*a^3*b*e^3 + 18*(B*b^4
*d^2*e - 3*B*a*b^3*d*e^2 + A*b^4*d*e^2 + 2*B*a^2*b^2*e^3 - A*a*b^3*e^3)*x^2
 + 3*(B*b^4*d^3 + 6*B*a*b^3*d^2*e + 3*A*b^4*d^2*e - 27*B*a^2*b^2*d*e^2 + 6*
A*a*b^3*d*e^2 + 20*B*a^3*b*e^3 - 9*A*a^2*b^2*e^3)*x)/((b*x + a)^3*b^5)
```

maple [B] time = 0.06, size = 419, normalized size = 2.91

$$\frac{A\,a^3e^3}{3\left(bx + a\right)^3 b^4} - \frac{A\,a^2d\,e^2}{\left(bx + a\right)^3 b^3} + \frac{Aa\,d^2e}{\left(bx + a\right)^3 b^2} - \frac{A\,d^3}{3\left(bx + a\right)^3 b} - \frac{B\,a^4e^3}{3\left(bx + a\right)^3 b^5} + \frac{B\,a^3d\,e^2}{\left(bx + a\right)^3 b^4} - \frac{B\,a^2d^2e}{\left(bx + a\right)^3 b^3} + \frac{Ba\,d^3}{3\left(bx + a\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] B*e^3*x/b^4+1/3/b^4/(b*x+a)^3*A*a^3*e^3-1/b^3/(b*x+a)^3*A*a^2*d*e^2+1/b^2/(
b*x+a)^3*A*a*d^2*e-1/3/b/(b*x+a)^3*A*d^3-1/3/b^5/(b*x+a)^3*B*a^4*e^3+1/b^4/
(b*x+a)^3*a^3*B*d*e^2-1/b^3/(b*x+a)^3*B*a^2*d^2*e+1/3/b^2/(b*x+a)^3*B*a*d^3
-3/2/b^4/(b*x+a)^2*A*a^2*e^3+3/b^3/(b*x+a)^2*A*a*d*e^2-3/2/b^2/(b*x+a)^2*A*
d^2*e+2/b^5/(b*x+a)^2*B*a^3*e^3-9/2/b^4/(b*x+a)^2*B*a^2*d*e^2+3/b^3/(b*x+a)
^2*B*a*d^2*e-1/2/b^2/(b*x+a)^2*B*d^3+1/b^4*e^3*ln(b*x+a)*A-4/b^5*e^3*ln(b*x
+a)*a*B+3/b^4*e^2*ln(b*x+a)*B*d+3*e^3/b^4/(b*x+a)*A*a-3*e^2/b^3/(b*x+a)*A*d
-6*e^3/b^5/(b*x+a)*B*a^2+9*e^2/b^4/(b*x+a)*B*d*a-3*e/b^3/(b*x+a)*B*d^2
```

maxima [**B**] time = 0.64, size = 292, normalized size = 2.03

$$\frac{Be^3x}{b^4} - \frac{(Bab^3 + 2\,Ab^4)d^3 + 3\,(2\,Ba^2b^2 + Aab^3)d^2e - 3\,(11\,Ba^3b - 2\,Aa^2b^2)de^2 + (26\,Ba^4 - 11\,Aa^3b)e^3 + 18\,(Bb^4d}{6\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] B*e^3*x/b^4 - 1/6*((B*a*b^3 + 2*A*b^4)*d^3 + 3*(2*B*a^2*b^2 + A*a*b^3)*d^2*
e - 3*(11*B*a^3*b - 2*A*a^2*b^2)*d*e^2 + (26*B*a^4 - 11*A*a^3*b)*e^3 + 18*(
B*b^4*d^2*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (2*B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 3*(B*b^4*d^3 + 3*(2*B*a*b^3 + A*b^4)*d^2*e - 3*(9*B*a^2*b^2 - 2*A*a*b^3)*
d*e^2 + (20*B*a^3*b - 9*A*a^2*b^2)*e^3)*x)/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b
^6*x + a^3*b^5) + (3*B*b*d*e^2 - (4*B*a - A*b)*e^3)*log(b*x + a)/b^5
```

mupad [**B**] time = 2.34, size = 301, normalized size = 2.09

$$\frac{\ln(a + b\,x)\,(A\,b\,e^3 - 4\,B\,a\,e^3 + 3\,B\,b\,d\,e^2)}{b^5} - \frac{\frac{26\,B\,a^4\,e^3 - 33\,B\,a^3\,b\,d\,e^2 - 11\,A\,a^3\,b\,e^3 + 6\,B\,a^2\,b^2\,d^2\,e + 6\,A\,a^2\,b^2\,d\,e^2 + B\,a\,b^3\,d^3 + 3\,A\,a\,b^3\,d^2\,e + 2}{6\,b}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (log(a + b*x)*(A*b*e^3 - 4*B*a*e^3 + 3*B*b*d*e^2))/b^5 - ((2*A*b^4*d^3 + 26
*B*a^4*e^3 - 11*A*a^3*b*e^3 + B*a*b^3*d^3 + 6*A*a^2*b^2*d*e^2 + 6*B*a^2*b^2
*d^2*e + 3*A*a*b^3*d^2*e - 33*B*a^3*b*d*e^2)/(6*b) + x*(10*B*a^3*e^3 + (B*b
^3*d^3)/2 - (9*A*a^2*b*e^3)/2 + (3*A*b^3*d^2*e)/2 + 3*A*a*b^2*d*e^2 + 3*B*a
*b^2*d^2*e - (27*B*a^2*b*d*e^2)/2) + x^2*(6*B*a^2*b*e^3 - 3*A*a*b^2*e^3 + 3
*A*b^3*d*e^2 + 3*B*b^3*d^2*e - 9*B*a*b^2*d*e^2))/(a^3*b^4 + b^7*x^3 + 3*a^2
*b^5*x + 3*a*b^6*x^2) + (B*e^3*x)/b^4
```

sympy [**B**] time = 12.68, size = 337, normalized size = 2.34

$$\frac{Be^3x}{b^4} + \frac{11Aa^3be^3 - 6Aa^2b^2de^2 - 3Aab^3d^2e - 2Ab^4d^3 - 26Ba^4e^3 + 33Ba^3bde^2 - 6Ba^2b^2d^2e - Bab^3d^3 + x^2\,(18Aab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**3*x/b**4 + (11*A*a**3*b*e**3 - 6*A*a**2*b**2*d*e**2 - 3*A*a*b**3*d**2*
e - 2*A*b**4*d**3 - 26*B*a**4*e**3 + 33*B*a**3*b*d*e**2 - 6*B*a**2*b**2*d**
2*e - B*a*b**3*d**3 + x**2*(18*A*a*b**3*e**3 - 18*A*b**4*d*e**2 - 36*B*a**2
*b**2*e**3 + 54*B*a*b**3*d*e**2 - 18*B*b**4*d**2*e) + x*(27*A*a**2*b**2*e**
3 - 18*A*a*b**3*d*e**2 - 9*A*b**4*d**2*e - 60*B*a**3*b*e**3 + 81*B*a**2*b**
2*d*e**2 - 18*B*a*b**3*d**2*e - 3*B*b**4*d**3))/(6*a**3*b**5 + 18*a**2*b**6
*x + 18*a*b**7*x**2 + 6*b**8*x**3) - e**2*(-A*b*e + 4*B*a*e - 3*B*b*d)*log(
a + b*x)/b**5
```

3.1703 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=101

$$-\frac{(d+ex)^3(Ab-aB)}{3b(a+bx)^3(bd-ae)}-\frac{2Be(bd-ae)}{b^4(a+bx)}-\frac{B(bd-ae)^2}{2b^4(a+bx)^2}+\frac{Be^2\log(a+bx)}{b^4}$$

```
[Out] -1/2*B*(-a*e+b*d)^2/b^4/(b*x+a)^2-2*B*e*(-a*e+b*d)/b^4/(b*x+a)-1/3*(A*b-B*a
)*(e*x+d)^3/b/(-a*e+b*d)/(b*x+a)^3+B*e^2*ln(b*x+a)/b^4
```

Rubi [A] time = 0.08, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {27, 78, 43}

$$-\frac{(d+ex)^3(Ab-aB)}{3b(a+bx)^3(bd-ae)}-\frac{2Be(bd-ae)}{b^4(a+bx)}-\frac{B(bd-ae)^2}{2b^4(a+bx)^2}+\frac{Be^2\log(a+bx)}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(B*(b*d - a*e)^2)/(2*b^4*(a + b*x)^2) - (2*B*e*(b*d - a*e))/(b^4*(a + b*x)
) - ((A*b - a*B)*(d + e*x)^3)/(3*b*(b*d - a*e)*(a + b*x)^3) + (B*e^2*Log[a
+ b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^2}{(a+bx)^4}\,dx \\
&= -\frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3} + \frac{B\int \frac{(d+ex)^2}{(a+bx)^3}\,dx}{b} \\
&= -\frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3} + \frac{B\int \left(\frac{(bd-ae)^2}{b^2(a+bx)^3}+\frac{2e(bd-ae)}{b^2(a+bx)^2}+\frac{e^2}{b^2(a+bx)}\right)dx}{b} \\
&= -\frac{B(bd-ae)^2}{2b^4(a+bx)^2} - \frac{2Be(bd-ae)}{b^4(a+bx)} - \frac{(Ab-aB)(d+ex)^3}{3b(bd-ae)(a+bx)^3} + \frac{Be^2\log(a+bx)}{b^4}
\end{aligned}$$

Mathematica [**A**] time = 0.07, size = 138, normalized size = 1.37

$$\frac{-2Ab\left(a^2e^2+abe(d+3ex)+b^2\left(d^2+3dex+3e^2x^2\right)\right)+B\left(11a^3e^2+a^2be(27ex-4d)-ab^2\left(d^2+12dex-18e^2x^2\right)\right.}{6b^4(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (B*(11*a^3*e^2 - 3*b^3*d*x*(d + 4*e*x) + a^2*b*e*(-4*d + 27*e*x) - a*b^2*(d
^2 + 12*d*e*x - 18*e^2*x^2)) - 2*A*b*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^
2 + 3*d*e*x + 3*e^2*x^2)) + 6*B*e^2*(a + b*x)^3*Log[a + b*x])/(6*b^4*(a + b
*x)^3)
```

fricas [**B**] time = 0.52, size = 226, normalized size = 2.24

$$-\frac{\left(Bab^2+2\,Ab^3\right)d^2+2\left(2\,Ba^2b+Aab^2\right)de-\left(11\,Ba^3-2\,Aa^2b\right)e^2+6\left(2\,Bb^3de-\left(3\,Bab^2-Ab^3\right)e^2\right)x^2+3\,\big(Bb^3d^2}{6\,\big(b^7x^3+3\,ab^6x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*((B*a*b^2 + 2*A*b^3)*d^2 + 2*(2*B*a^2*b + A*a*b^2)*d*e - (11*B*a^3 - 2
*A*a^2*b)*e^2 + 6*(2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 3*(B*b^3*d^
2 + 2*(2*B*a*b^2 + A*b^3)*d*e - (9*B*a^2*b - 2*A*a*b^2)*e^2)*x - 6*(B*b^3*e
^2*x^3 + 3*B*a*b^2*e^2*x^2 + 3*B*a^2*b*e^2*x + B*a^3*e^2)*log(b*x + a))/(b^
7*x^3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [**A**] time = 0.16, size = 161, normalized size = 1.59

$$\frac{Be^2\log\left(|bx+a|\right)}{b^4}-\frac{6\left(2\,Bb^2de-3\,Babe^2+Ab^2e^2\right)x^2+3\left(Bb^2d^2+4\,Babde+2\,Ab^2de-9\,Ba^2e^2+2\,Aabe^2\right)x+\frac{Bab}{}}{6\left(bx+a\right)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] B*e^2*log(abs(b*x + a))/b^4 - 1/6*(6*(2*B*b^2*d*e - 3*B*a*b*e^2 + A*b^2*e^2
)*x^2 + 3*(B*b^2*d^2 + 4*B*a*b*d*e + 2*A*b^2*d*e - 9*B*a^2*e^2 + 2*A*a*b*e^
2)*x + (B*a*b^2*d^2 + 2*A*b^3*d^2 + 4*B*a^2*b*d*e + 2*A*a*b^2*d*e - 11*B*a^
3*e^2 + 2*A*a^2*b*e^2)/b)/((b*x + a)^3*b^3)
```

maple [**B**] time = 0.05, size = 251, normalized size = 2.49

$$-\frac{A\,a^2e^2}{3\left(bx+a\right)^3b^3}+\frac{2Aade}{3\left(bx+a\right)^3b^2}-\frac{A\,d^2}{3\left(bx+a\right)^3b}+\frac{B\,a^3e^2}{3\left(bx+a\right)^3b^4}-\frac{2B\,a^2de}{3\left(bx+a\right)^3b^3}+\frac{Ba\,d^2}{3\left(bx+a\right)^3b^2}+\frac{Aa\,e^2}{\left(bx+a\right)^2b^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3/b^3/(b*x+a)^3*A*a^2*e^2+2/3/b^2/(b*x+a)^3*A*a*d*e-1/3/b/(b*x+a)^3*A*d^
2+1/3/b^4/(b*x+a)^3*B*a^3*e^2-2/3/b^3/(b*x+a)^3*B*a^2*d*e+1/3/b^2/(b*x+a)^3
*B*a*d^2+B*e^2*ln(b*x+a)/b^4+1/b^3/(b*x+a)^2*A*a*e^2-1/b^2/(b*x+a)^2*A*d*e-
3/2/b^4/(b*x+a)^2*B*a^2*e^2+2/b^3/(b*x+a)^2*B*d*a*e-1/2/b^2/(b*x+a)^2*B*d^2
-e^2/b^3/(b*x+a)*A+3*e^2/b^4/(b*x+a)*a*B-2*e/b^3/(b*x+a)*B*d
```

maxima [A] time = 0.64, size = 189, normalized size = 1.87

$$-\frac{\left(Bab^2+2\,Ab^3\right)d^2+2\left(2\,Ba^2b+Aab^2\right)de-\left(11\,Ba^3-2\,Aa^2b\right)e^2+6\left(2\,Bb^3de-\left(3\,Bab^2-Ab^3\right)e^2\right)x^2+3\,(Bb^3}{6\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*((B*a*b^2 + 2*A*b^3)*d^2 + 2*(2*B*a^2*b + A*a*b^2)*d*e - (11*B*a^3 - 2
*A*a^2*b)*e^2 + 6*(2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 3*(B*b^3*d^
2 + 2*(2*B*a*b^2 + A*b^3)*d*e - (9*B*a^2*b - 2*A*a*b^2)*e^2)*x)/(b^7*x^3 +
3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4) + B*e^2*log(b*x + a)/b^4
```

mupad [B] time = 2.25, size = 178, normalized size = 1.76

$$\frac{B\,e^2\,\ln\left(a+b\,x\right)}{b^4}-\frac{\frac{-11\,B\,a^3\,e^2+4\,B\,a^2\,b\,d\,e+2\,A\,a^2\,b\,e^2+B\,a\,b^2\,d^2+2\,A\,a\,b^2\,d\,e+2\,A\,b^3\,d^2}{6\,b^4}+\frac{x\,(-9\,B\,a^2\,e^2+4\,B\,a\,b\,d\,e+2\,A\,a\,b\,e^2+B\,b^2\,d^2+2\,A\,b^2}{2\,b^3}}{a^3+3\,a^2\,b\,x+3\,a\,b^2\,x^2+b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (B*e^2*log(a + b*x))/b^4 - ((2*A*b^3*d^2 - 11*B*a^3*e^2 + 2*A*a^2*b*e^2 + B
*a*b^2*d^2 + 2*A*a*b^2*d*e + 4*B*a^2*b*d*e)/(6*b^4) + (x*(B*b^2*d^2 - 9*B*a
^2*e^2 + 2*A*a*b*e^2 + 2*A*b^2*d*e + 4*B*a*b*d*e))/(2*b^3) + (e*x^2*(A*b*e
- 3*B*a*e + 2*B*b*d))/b^2)/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [B] time = 5.77, size = 211, normalized size = 2.09

$$\frac{Be^2\log\left(a+bx\right)}{b^4}+\frac{-2Aa^2be^2-2Aab^2de-2Ab^3d^2+11Ba^3e^2-4Ba^2bde-Bab^2d^2+x^2\,(-6Ab^3e^2+18Bab^2e^2-}{6a^3b^4+18a^2b^5x+18ab^6x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] B*e**2*log(a + b*x)/b**4 + (-2*A*a**2*b*e**2 - 2*A*a*b**2*d*e - 2*A*b**3*d*
*2 + 11*B*a**3*e**2 - 4*B*a**2*b*d*e - B*a*b**2*d**2 + x**2*(-6*A*b**3*e**2
 + 18*B*a*b**2*e**2 - 12*B*b**3*d*e) + x*(-6*A*a*b**2*e**2 - 6*A*b**3*d*e +
 27*B*a**2*b*e**2 - 12*B*a*b**2*d*e - 3*B*b**3*d**2))/(6*a**3*b**4 + 18*a**
2*b**5*x + 18*a*b**6*x**2 + 6*b**7*x**3)
```

3.1704 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=73

$$-\frac{-2aBe+Abe+bBd}{2b^3(a+bx)^2}-\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{Be}{b^3(a+bx)}$$

```
[Out] -1/3*(A*b-B*a)*(-a*e+b*d)/b^3/(b*x+a)^3+1/2*(-A*b*e+2*B*a*e-B*b*d)/b^3/(b*x
+a)^2-B*e/b^3/(b*x+a)
```

Rubi [A] time = 0.06, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 77\}$

$$-\frac{-2aBe+Abe+bBd}{2b^3(a+bx)^2}-\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{Be}{b^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((A*b - a*B)*(b*d - a*e))/(3*b^3*(a + b*x)^3) - (b*B*d + A*b*e - 2*a*B*e)/
(2*b^3*(a + b*x)^2) - (B*e)/(b^3*(a + b*x))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)}{(a+bx)^4}\,dx\\ &= \int \left(\frac{(Ab-aB)(bd-ae)}{b^2(a+bx)^4}+\frac{bBd+Abe-2aBe}{b^2(a+bx)^3}+\frac{Be}{b^2(a+bx)^2}\right)dx\\ &= -\frac{(Ab-aB)(bd-ae)}{3b^3(a+bx)^3}-\frac{bBd+Abe-2aBe}{2b^3(a+bx)^2}-\frac{Be}{b^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 61, normalized size = 0.84

$$-\frac{B\left(2a^2e+ab(d+6ex)+3b^2x(d+2ex)\right)+Ab(ae+2bd+3bex)}{6b^3(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(A*b*(2*b*d + a*e + 3*b*e*x) + B*(2*a^2*e + 3*b^2*x*(d + 2*e*x) + a*b*
(d + 6*e*x)))/(b^3*(a + b*x)^3)
```

fricas [**A**] time = 1.01, size = 97, normalized size = 1.33

$$-\frac{6\,Bb^2ex^2 + \left(Bab + 2\,Ab^2\right)d + \left(2\,Ba^2 + Aab\right)e + 3\left(Bb^2d + \left(2\,Bab + Ab^2\right)e\right)x}{6\left(b^6x^3 + 3\,ab^5x^2 + 3\,a^2b^4x + a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b^2*e*x^2 + (B*a*b + 2*A*b^2)*d + (2*B*a^2 + A*a*b)*e + 3*(B*b^2*
d + (2*B*a*b + A*b^2)*e)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [**A**] time = 0.16, size = 75, normalized size = 1.03

$$-\frac{6\,Bb^2x^2e + 3\,Bb^2dx + 6\,Babxe + 3\,Ab^2xe + Babd + 2\,Ab^2d + 2\,Ba^2e + Aabe}{6\,(bx + a)^3b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*b^2*x^2*e + 3*B*b^2*d*x + 6*B*a*b*x*e + 3*A*b^2*x*e + B*a*b*d + 2
*A*b^2*d + 2*B*a^2*e + A*a*b*e)/((b*x + a)^3*b^3)
```

maple [**A**] time = 0.05, size = 79, normalized size = 1.08

$$-\frac{Be}{(bx + a)\,b^3} - \frac{-aAeb + Ad\,b^2 + Be\,a^2 - aBdb}{3\,(bx + a)^3\,b^3} - \frac{Abe - 2aBe + Bbd}{2\,(bx + a)^2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*(-A*a*b*e+A*b^2*d+B*a^2*e-B*a*b*d)/b^3/(b*x+a)^3-1/2*(A*b*e-2*B*a*e+B*
b*d)/b^3/(b*x+a)^2-B*e/b^3/(b*x+a)
```

maxima [**A**] time = 0.56, size = 97, normalized size = 1.33

$$-\frac{6\,Bb^2ex^2 + \left(Bab + 2\,Ab^2\right)d + \left(2\,Ba^2 + Aab\right)e + 3\left(Bb^2d + \left(2\,Bab + Ab^2\right)e\right)x}{6\left(b^6x^3 + 3\,ab^5x^2 + 3\,a^2b^4x + a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(6*B*b^2*e*x^2 + (B*a*b + 2*A*b^2)*d + (2*B*a^2 + A*a*b)*e + 3*(B*b^2*
d + (2*B*a*b + A*b^2)*e)*x)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

mupad [**B**] time = 0.05, size = 91, normalized size = 1.25

$$-\frac{\frac{2\,A\,b^2\,d+2\,B\,a^2\,e+A\,a\,b\,e+B\,a\,b\,d}{6\,b^3} + \frac{x\,(A\,b\,e+2\,B\,a\,e+B\,b\,d)}{2\,b^2} + \frac{B\,e\,x^2}{b}}{a^3 + 3\,a^2\,b\,x + 3\,a\,b^2\,x^2 + b^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((2*A*b^2*d + 2*B*a^2*e + A*a*b*e + B*a*b*d)/(6*b^3) + (x*(A*b*e + 2*B*a*e
 + B*b*d))/(2*b^2) + (B*e*x^2)/b)/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x)
```

sympy [A] time = 1.49, size = 107, normalized size = 1.47

$$\frac{-Aabe-2Ab^2d-2Ba^2e-Babd-6Bb^2ex^2+x\left(-3Ab^2e-6Babe-3Bb^2d\right)}{6a^3b^3+18a^2b^4x+18ab^5x^2+6b^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-A*a*b*e - 2*A*b**2*d - 2*B*a**2*e - B*a*b*d - 6*B*b**2*e*x**2 + x*(-3*A*b
**2*e - 6*B*a*b*e - 3*B*b**2*d))/(6*a**3*b**3 + 18*a**2*b**4*x + 18*a*b**5*
x**2 + 6*b**6*x**3)
```

3.1705 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=38

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

```
[Out] 1/3*(-A*b+B*a)/b^2/(b*x+a)^3-1/2*B/b^2/(b*x+a)^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 43}

$$-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(A*b - a*B)/(3*b^2*(a + b*x)^3) - B/(2*b^2*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx&=\int \frac{A+Bx}{(a+bx)^4}\,dx\\&=\int \left(\frac{Ab-aB}{b(a+bx)^4}+\frac{B}{b(a+bx)^3}\right)dx\\&=-\frac{Ab-aB}{3b^2(a+bx)^3}-\frac{B}{2b^2(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{B(a+3bx)+2Ab}{6b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/6*(2*A*b + B*(a + 3*b*x))/(b^2*(a + b*x)^3)
```

fricas [A] time = 0.85, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx+Ba+2\,Ab}{6\left(b^5x^3+3\,ab^4x^2+3\,a^2b^3x+a^3b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [A] time = 0.15, size = 25, normalized size = 0.66

$$-\frac{3\,Bbx+Ba+2\,Ab}{6\,(bx+a)^{3}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/((b*x + a)^3*b^2)
```

maple [A] time = 0.06, size = 35, normalized size = 0.92

$$-\frac{B}{2\,(bx+a)^{2}\,b^{2}}-\frac{Ab-Ba}{3\,(bx+a)^{3}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3*(A*b-B*a)/b^2/(b*x+a)^3-1/2/(b*x+a)^2*B/b^2
```

maxima [A] time = 0.52, size = 50, normalized size = 1.32

$$-\frac{3\,Bbx+Ba+2\,Ab}{6\left(b^{5}x^{3}+3\,ab^{4}x^{2}+3\,a^{2}b^{3}x+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/6*(3*B*b*x + B*a + 2*A*b)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

mupad [B] time = 0.03, size = 52, normalized size = 1.37

$$-\frac{\frac{2\,A\,b+B\,a}{6\,b^{2}}+\frac{B\,x}{2\,b}}{a^{3}+3\,a^{2}\,b\,x+3\,a\,b^{2}\,x^{2}+b^{3}\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((2*A*b + B*a)/(6*b^2) + (B*x)/(2*b))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2
*b*x)
```

sympy [A] time = 0.33, size = 53, normalized size = 1.39

$$\frac{-2Ab-Ba-3Bbx}{6a^{3}b^{2}+18a^{2}b^{3}x+18ab^{4}x^{2}+6b^{5}x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-2*A*b - B*a - 3*B*b*x)/(6*a**3*b**2 + 18*a**2*b**3*x + 18*a*b**4*x**2 + 6
*b**5*x**3)
```

3.1706 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=146

$$\frac{e^2\log(a+bx)(Bd-Ae)}{(bd-ae)^4}-\frac{e^2(Bd-Ae)\log(d+ex)}{(bd-ae)^4}+\frac{e(Bd-Ae)}{(a+bx)(bd-ae)^3}-\frac{Bd-Ae}{2(a+bx)^2(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(bd-}$$

```
[Out] 1/3*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^3+1/2*(A*e-B*d)/(-a*e+b*d)^2/(b*x+a)^2+
e*(-A*e+B*d)/(-a*e+b*d)^3/(b*x+a)+e^2*(-A*e+B*d)*ln(b*x+a)/(-a*e+b*d)^4-e^2
*(-A*e+B*d)*ln(e*x+d)/(-a*e+b*d)^4
```

Rubi [A] time = 0.13, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{e^2\log(a+bx)(Bd-Ae)}{(bd-ae)^4}-\frac{e^2(Bd-Ae)\log(d+ex)}{(bd-ae)^4}+\frac{e(Bd-Ae)}{(a+bx)(bd-ae)^3}-\frac{Bd-Ae}{2(a+bx)^2(bd-ae)^2}-\frac{Ab-aB}{3b(a+bx)^3(bd-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3) - (B*d - A*e)/(2*(b*d - a*e)^2*(
a + b*x)^2) + (e*(B*d - A*e))/((b*d - a*e)^3*(a + b*x)) + (e^2*(B*d - A*e)*
Log[a + b*x])/(b*d - a*e)^4 - (e^2*(B*d - A*e)*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4(d+ex)}\,dx\\ &= \int \left(\frac{Ab-aB}{(bd-ae)(a+bx)^4}+\frac{b(Bd-Ae)}{(bd-ae)^2(a+bx)^3}+\frac{be(-Bd+Ae)}{(bd-ae)^3(a+bx)^2}-\frac{b}{(bc}\right.\\ &= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3}-\frac{Bd-Ae}{2(bd-ae)^2(a+bx)^2}+\frac{e(Bd-Ae)}{(bd-ae)^3(a+bx)}+\frac{e^2(}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 136, normalized size = 0.93

$$\frac{6e^2\log(a+bx)(Bd-Ae)+\frac{2(aB-Ab)(bd-ae)^3}{b(a+bx)^3}+\frac{3(bd-ae)^2(Ae-Bd)}{(a+bx)^2}+\frac{6e(ae-bd)(Ae-Bd)}{a+bx}+6e^2(Ae-Bd)\log(d+ex)}{6(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((2*(-(A*b) + a*B)*(b*d - a*e)^3)/(b*(a + b*x)^3) + (3*(b*d - a*e)^2*(-(B*d
) + A*e))/(a + b*x)^2 + (6*e*(-(b*d) + a*e)*(-(B*d) + A*e))/(a + b*x) + 6*e
^2*(B*d - A*e)*Log[a + b*x] + 6*e^2*(-(B*d) + A*e)*Log[d + e*x])/(6*(b*d -
a*e)^4)
```

fricas [B] time = 0.89, size = 643, normalized size = 4.40

$$-\frac{\left(Bab^3 + 2\,Ab^4\right)d^3 - 3\left(2\,Ba^2b^2 + 3\,Aab^3\right)d^2e + 3\left(Ba^3b + 6\,Aa^2b^2\right)de^2 + \left(2\,Ba^4 - 11\,Aa^3b\right)e^3 - 6\left(Bb^4d^2e + Aab\right.}{6\left(a^3b^5d^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*((B*a*b^3 + 2*A*b^4)*d^3 - 3*(2*B*a^2*b^2 + 3*A*a*b^3)*d^2*e + 3*(B*a^
3*b + 6*A*a^2*b^2)*d*e^2 + (2*B*a^4 - 11*A*a^3*b)*e^3 - 6*(B*b^4*d^2*e + A*
a*b^3*e^3 - (B*a*b^3 + A*b^4)*d*e^2)*x^2 + 3*(B*b^4*d^3 - 5*A*a^2*b^2*e^3 -
 (6*B*a*b^3 + A*b^4)*d^2*e + (5*B*a^2*b^2 + 6*A*a*b^3)*d*e^2)*x - 6*(B*a^3*
b*d*e^2 - A*a^3*b*e^3 + (B*b^4*d*e^2 - A*b^4*e^3)*x^3 + 3*(B*a*b^3*d*e^2 -
A*a*b^3*e^3)*x^2 + 3*(B*a^2*b^2*d*e^2 - A*a^2*b^2*e^3)*x)*log(b*x + a) + 6*
(B*a^3*b*d*e^2 - A*a^3*b*e^3 + (B*b^4*d*e^2 - A*b^4*e^3)*x^3 + 3*(B*a*b^3*d
*e^2 - A*a*b^3*e^3)*x^2 + 3*(B*a^2*b^2*d*e^2 - A*a^2*b^2*e^3)*x)*log(e*x +
d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*d*e^3 +
a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^5*d*e^3
+ a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2*e^2 - 4
*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*e + 6*a^
4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)
```

giac [B] time = 0.19, size = 364, normalized size = 2.49

$$\frac{\left(Bbde^2 - Abe^3\right)\log\left(|bx + a|\right)}{b^5d^4 - 4\,ab^4d^3e + 6\,a^2b^3d^2e^2 - 4\,a^3b^2de^3 + a^4be^4} - \frac{\left(Bde^3 - Ae^4\right)\log\left(|xe + d|\right)}{b^4d^4e - 4\,ab^3d^3e^2 + 6\,a^2b^2d^2e^3 - 4\,a^3bde^4 + a^4e^5} - \frac{Bab^3d^3 + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (B*b*d*e^2 - A*b*e^3)*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^
3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) - (B*d*e^3 - A*e^4)*log(abs(x*e +
d))/(b^4*d^4*e - 4*a*b^3*d^3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*
e^5) - 1/6*(B*a*b^3*d^3 + 2*A*b^4*d^3 - 6*B*a^2*b^2*d^2*e - 9*A*a*b^3*d^2*e
 + 3*B*a^3*b*d*e^2 + 18*A*a^2*b^2*d*e^2 + 2*B*a^4*e^3 - 11*A*a^3*b*e^3 - 6*
(B*b^4*d^2*e - B*a*b^3*d*e^2 - A*b^4*d*e^2 + A*a*b^3*e^3)*x^2 + 3*(B*b^4*d^
3 - 6*B*a*b^3*d^2*e - A*b^4*d^2*e + 5*B*a^2*b^2*d*e^2 + 6*A*a*b^3*d*e^2 - 5
*A*a^2*b^2*e^3)*x)/((b*d - a*e)^4*(b*x + a)^3*b)
```

maple [A] time = 0.06, size = 220, normalized size = 1.51

$$-\frac{A\,e^3\ln\left(bx + a\right)}{\left(ae - bd\right)^4} + \frac{A\,e^3\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{Bd\,e^2\ln\left(bx + a\right)}{\left(ae - bd\right)^4} - \frac{Bd\,e^2\ln\left(ex + d\right)}{\left(ae - bd\right)^4} + \frac{A\,e^2}{\left(ae - bd\right)^3\left(bx + a\right)} - \frac{Bde}{\left(ae - bd\right)^3\left(bx + a\right)} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/3/(a*e-b*d)/(b*x+a)^3*A-1/3/(a*e-b*d)/b/(b*x+a)^3*B*a+1/2/(a*e-b*d)^2/(b*
x+a)^2*A*e-1/2/(a*e-b*d)^2/(b*x+a)^2*B*d+e^2/(a*e-b*d)^3/(b*x+a)*A-e/(a*e-b
*d)^3/(b*x+a)*B*d-e^3/(a*e-b*d)^4*ln(b*x+a)*A+e^2/(a*e-b*d)^4*ln(b*x+a)*B*d
+e^3/(a*e-b*d)^4*ln(e*x+d)*A-e^2/(a*e-b*d)^4*ln(e*x+d)*B*d
```

maxima [B] time = 0.71, size = 452, normalized size = 3.10

$$\frac{\left(Bde^{2}-Ae^{3}\right)\log\left(bx+a\right)}{b^{4}d^{4}-4\,ab^{3}d^{3}e+6\,a^{2}b^{2}d^{2}e^{2}-4\,a^{3}bde^{3}+a^{4}e^{4}}-\frac{\left(Bde^{2}-Ae^{3}\right)\log\left(ex+d\right)}{b^{4}d^{4}-4\,ab^{3}d^{3}e+6\,a^{2}b^{2}d^{2}e^{2}-4\,a^{3}bde^{3}+a^{4}e^{4}}-\frac{}{6\left(a^{3}b^{4}d^{3}-3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (B*d*e^2 - A*e^3)*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2
 - 4*a^3*b*d*e^3 + a^4*e^4) - (B*d*e^2 - A*e^3)*log(e*x + d)/(b^4*d^4 - 4*a
*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) - 1/6*((B*a*b^2 +
 2*A*b^3)*d^2 - (5*B*a^2*b + 7*A*a*b^2)*d*e - (2*B*a^3 - 11*A*a^2*b)*e^2 -
6*(B*b^3*d*e - A*b^3*e^2)*x^2 + 3*(B*b^3*d^2 + 5*A*a*b^2*e^2 - (5*B*a*b^2 +
 A*b^3)*d*e)*x)/(a^3*b^4*d^3 - 3*a^4*b^3*d^2*e + 3*a^5*b^2*d*e^2 - a^6*b*e^
3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*x^3 + 3*(a*b^
6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 - a^4*b^3*e^3)*x^2 + 3*(a^2*b^5*d
^3 - 3*a^3*b^4*d^2*e + 3*a^4*b^3*d*e^2 - a^5*b^2*e^3)*x)
```

mupad [B] time = 2.54, size = 398, normalized size = 2.73

$$\frac{\frac{-2\,B\,a^{3}\,e^{2}-5\,B\,a^{2}\,b\,d\,e+11\,A\,a^{2}\,b\,e^{2}+B\,a\,b^{2}\,d^{2}-7\,A\,a\,b^{2}\,d\,e+2\,A\,b^{3}\,d^{2}}{6\,b\,\left(a^{3}\,e^{3}-3\,a^{2}\,b\,d\,e^{2}+3\,a\,b^{2}\,d^{2}\,e-b^{3}\,d^{3}\right)}-\frac{x\,\left(A\,e-B\,d\right)\,\left(b^{2}\,d-5\,a\,b\,e\right)}{2\,\left(a^{3}\,e^{3}-3\,a^{2}\,b\,d\,e^{2}+3\,a\,b^{2}\,d^{2}\,e-b^{3}\,d^{3}\right)}+\frac{b^{2}\,e\,x^{2}\,\left(A\,e-B\,d\right)}{a^{3}\,e^{3}-3\,a^{2}\,b\,d\,e^{2}+3\,a\,b^{2}\,d^{2}\,e-b^{3}\,d^{3}}}{a^{3}+3\,a^{2}\,b\,x+3\,a\,b^{2}\,x^{2}+b^{3}\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((2*A*b^3*d^2 - 2*B*a^3*e^2 + 11*A*a^2*b*e^2 + B*a*b^2*d^2 - 7*A*a*b^2*d*e
- 5*B*a^2*b*d*e)/(6*b*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))
- (x*(A*e - B*d)*(b^2*d - 5*a*b*e))/(2*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e -
 3*a^2*b*d*e^2)) + (b^2*e*x^2*(A*e - B*d))/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2
*e - 3*a^2*b*d*e^2))/(a^3 + b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x) - (2*e^2*ata
nh((((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a^3*e^3 - b^3*d^3
 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + 2*b*e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d
^2*e - 3*a^2*b*d*e^2))/(a*e - b*d)^4)*(A*e - B*d))/(a*e - b*d)^4
```

sympy [B] time = 2.81, size = 818, normalized size = 5.60

$$-\frac{e^{2}\left(-Ae+Bd\right)\log\left(x+\frac{-Aae^{4}-Abde^{3}+Bade^{3}+Bbd^{2}e^{2}-\frac{a^{5}e^{7}(-Ae+Bd)}{(ae-bd)^{4}}+\frac{5a^{4}bde^{6}(-Ae+Bd)}{(ae-bd)^{4}}-\frac{10a^{3}b^{2}d^{2}e^{5}(-Ae+Bd)}{(ae-bd)^{4}}+\frac{10a^{2}b^{3}d^{3}e^{4}(-Ae+Bd)}{(ae-bd)^{4}}-\frac{5ab^{4}d^{4}e^{3}}{(ae-}}{-2Abe^{4}+2Bbde^{3}}\right.}{\left(ae-bd\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -e**2*(-A*e + B*d)*log(x + (-A*a*e**4 - A*b*d*e**3 + B*a*d*e**3 + B*b*d**2*
e**2 - a**5*e**7*(-A*e + B*d)/(a*e - b*d)**4 + 5*a**4*b*d*e**6*(-A*e + B*d)
/(a*e - b*d)**4 - 10*a**3*b**2*d**2*e**5*(-A*e + B*d)/(a*e - b*d)**4 + 10*a
**2*b**3*d**3*e**4*(-A*e + B*d)/(a*e - b*d)**4 - 5*a*b**4*d**4*e**3*(-A*e +
 B*d)/(a*e - b*d)**4 + b**5*d**5*e**2*(-A*e + B*d)/(a*e - b*d)**4)/(-2*A*b*
e**4 + 2*B*b*d*e**3))/(a*e - b*d)**4 + e**2*(-A*e + B*d)*log(x + (-A*a*e**4
 - A*b*d*e**3 + B*a*d*e**3 + B*b*d**2*e**2 + a**5*e**7*(-A*e + B*d)/(a*e -
b*d)**4 - 5*a**4*b*d*e**6*(-A*e + B*d)/(a*e - b*d)**4 + 10*a**3*b**2*d**2*e
**5*(-A*e + B*d)/(a*e - b*d)**4 - 10*a**2*b**3*d**3*e**4*(-A*e + B*d)/(a*e
- b*d)**4 + 5*a*b**4*d**4*e**3*(-A*e + B*d)/(a*e - b*d)**4 - b**5*d**5*e**2
*(-A*e + B*d)/(a*e - b*d)**4)/(-2*A*b*e**4 + 2*B*b*d*e**3))/(a*e - b*d)**4
+ (11*A*a**2*b*e**2 - 7*A*a*b**2*d*e + 2*A*b**3*d**2 - 2*B*a**3*e**2 - 5*B*
a**2*b*d*e + B*a*b**2*d**2 + x**2*(6*A*b**3*e**2 - 6*B*b**3*d*e) + x*(15*A*
a*b**2*e**2 - 3*A*b**3*d*e - 15*B*a*b**2*d*e + 3*B*b**3*d**2))/(6*a**6*b*e*
*3 - 18*a**5*b**2*d*e**2 + 18*a**4*b**3*d**2*e - 6*a**3*b**4*d**3 + x**3*(6
*a**3*b**4*e**3 - 18*a**2*b**5*d*e**2 + 18*a*b**6*d**2*e - 6*b**7*d**3) + x
**2*(18*a**4*b**3*e**3 - 54*a**3*b**4*d*e**2 + 54*a**2*b**5*d**2*e - 18*a*b
**6*d**3) + x*(18*a**5*b**2*e**3 - 54*a**4*b**3*d*e**2 + 54*a**3*b**4*d**2*
e - 18*a**2*b**5*d**3))
```

3.1707 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=199

$$\frac{e^2(Bd-Ae)}{(d+ex)(bd-ae)^4}+\frac{e^2\log(a+bx)(aBe-4Abe+3bBd)}{(bd-ae)^5}-\frac{e^2\log(d+ex)(aBe-4Abe+3bBd)}{(bd-ae)^5}+\frac{e(aBe-3Abe+}{(a+bx)(bd-}$$

```
[Out] 1/3*(-A*b+B*a)/(-a*e+b*d)^2/(b*x+a)^3+1/2*(2*A*b*e-B*a*e-B*b*d)/(-a*e+b*d)^
3/(b*x+a)^2+e*(-3*A*b*e+B*a*e+2*B*b*d)/(-a*e+b*d)^4/(b*x+a)+e^2*(-A*e+B*d)/
(-a*e+b*d)^4/(e*x+d)+e^2*(-4*A*b*e+B*a*e+3*B*b*d)*ln(b*x+a)/(-a*e+b*d)^5-e^
2*(-4*A*b*e+B*a*e+3*B*b*d)*ln(e*x+d)/(-a*e+b*d)^5
```

Rubi [A] time = 0.25, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{e^2(Bd-Ae)}{(d+ex)(bd-ae)^4}+\frac{e^2\log(a+bx)(aBe-4Abe+3bBd)}{(bd-ae)^5}-\frac{e^2\log(d+ex)(aBe-4Abe+3bBd)}{(bd-ae)^5}+\frac{e(aBe-3Abe+}{(a+bx)(bd-}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -(A*b - a*B)/(3*(b*d - a*e)^2*(a + b*x)^3) - (b*B*d - 2*A*b*e + a*B*e)/(2*(
b*d - a*e)^3*(a + b*x)^2) + (e*(2*b*B*d - 3*A*b*e + a*B*e))/((b*d - a*e)^4*
(a + b*x)) + (e^2*(B*d - A*e))/((b*d - a*e)^4*(d + e*x)) + (e^2*(3*b*B*d -
4*A*b*e + a*B*e)*Log[a + b*x])/(b*d - a*e)^5 - (e^2*(3*b*B*d - 4*A*b*e + a*
B*e)*Log[d + e*x])/(b*d - a*e)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx&=\int \frac{A+Bx}{(a+bx)^4(d+ex)^2}\,dx\\&=\int \left(\frac{b(Ab-aB)}{(bd-ae)^2(a+bx)^4}+\frac{b(bBd-2Abe+aBe)}{(bd-ae)^3(a+bx)^3}+\frac{be(-2bBd+3Abe-}{(bd-ae)^4(a+bx}\right.\\&=-\frac{Ab-aB}{3(bd-ae)^2(a+bx)^3}-\frac{bBd-2Abe+aBe}{2(bd-ae)^3(a+bx)^2}+\frac{e(2bBd-3Abe+aBe)}{(bd-ae)^4(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.13, size = 189, normalized size = 0.95

$$\frac{\frac{6e^2(ae-bd)(Ae-Bd)}{d+ex}+6e^2\log(a+bx)(aBe-4Abe+3bBd)-6e^2\log(d+ex)(aBe-4Abe+3bBd)+\frac{2(aB-Ab)(bd-ae)^3}{(a+bx)^3}}{6(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((2*(-(A*b) + a*B)*(b*d - a*e)^3)/(a + b*x)^3 - (3*(b*d - a*e)^2*(b*B*d - 2
*A*b*e + a*B*e))/(a + b*x)^2 + (6*e*(-(b*d) + a*e)*(-2*b*B*d + 3*A*b*e - a*
B*e))/(a + b*x) + (6*e^2*(-(b*d) + a*e)*(-(B*d) + A*e))/(d + e*x) + 6*e^2*(
3*b*B*d - 4*A*b*e + a*B*e)*Log[a + b*x] - 6*e^2*(3*b*B*d - 4*A*b*e + a*B*e)
*Log[d + e*x])/(6*(b*d - a*e)^5)
```

fricas [B] time = 1.06, size = 1228, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*(6*A*a^4*e^4 - (B*a*b^3 + 2*A*b^4)*d^4 + 3*(3*B*a^2*b^2 + 4*A*a*b^3)*d^
3*e + 9*(B*a^3*b - 4*A*a^2*b^2)*d^2*e^2 - (17*B*a^4 - 20*A*a^3*b)*d*e^3 + 6
*(3*B*b^4*d^2*e^2 - 2*(B*a*b^3 + 2*A*b^4)*d*e^3 - (B*a^2*b^2 - 4*A*a*b^3)*e
^4)*x^3 + 3*(3*B*b^4*d^3*e + (13*B*a*b^3 - 4*A*b^4)*d^2*e^2 - (11*B*a^2*b^2
 + 16*A*a*b^3)*d*e^3 - 5*(B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 - (3*B*b^4*d^4 -
2*(13*B*a*b^3 + 2*A*b^4)*d^3*e - 18*(B*a^2*b^2 - 2*A*a*b^3)*d^2*e^2 + 6*(5*
B*a^3*b + 2*A*a^2*b^2)*d*e^3 + 11*(B*a^4 - 4*A*a^3*b)*e^4)*x + 6*(3*B*a^3*b
*d^2*e^2 + (B*a^4 - 4*A*a^3*b)*d*e^3 + (3*B*b^4*d*e^3 + (B*a*b^3 - 4*A*b^4)
*e^4)*x^4 + (3*B*b^4*d^2*e^2 + 2*(5*B*a*b^3 - 2*A*b^4)*d*e^3 + 3*(B*a^2*b^2
 - 4*A*a*b^3)*e^4)*x^3 + 3*(3*B*a*b^3*d^2*e^2 + 4*(B*a^2*b^2 - A*a*b^3)*d*e
^3 + (B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 + (9*B*a^2*b^2*d^2*e^2 + 6*(B*a^3*b -
 2*A*a^2*b^2)*d*e^3 + (B*a^4 - 4*A*a^3*b)*e^4)*x)*log(b*x + a) - 6*(3*B*a^3
*b*d^2*e^2 + (B*a^4 - 4*A*a^3*b)*d*e^3 + (3*B*b^4*d*e^3 + (B*a*b^3 - 4*A*b^
4)*e^4)*x^4 + (3*B*b^4*d^2*e^2 + 2*(5*B*a*b^3 - 2*A*b^4)*d*e^3 + 3*(B*a^2*b
^2 - 4*A*a*b^3)*e^4)*x^3 + 3*(3*B*a*b^3*d^2*e^2 + 4*(B*a^2*b^2 - A*a*b^3)*d
*e^3 + (B*a^3*b - 4*A*a^2*b^2)*e^4)*x^2 + (9*B*a^2*b^2*d^2*e^2 + 6*(B*a^3*b
 - 2*A*a^2*b^2)*d*e^3 + (B*a^4 - 4*A*a^3*b)*e^4)*x)*log(e*x + d))/(a^3*b^5*
d^6 - 5*a^4*b^4*d^5*e + 10*a^5*b^3*d^4*e^2 - 10*a^6*b^2*d^3*e^3 + 5*a^7*b*d
^2*e^4 - a^8*d*e^5 + (b^8*d^5*e - 5*a*b^7*d^4*e^2 + 10*a^2*b^6*d^3*e^3 - 10
*a^3*b^5*d^2*e^4 + 5*a^4*b^4*d*e^5 - a^5*b^3*e^6)*x^4 + (b^8*d^6 - 2*a*b^7*
d^5*e - 5*a^2*b^6*d^4*e^2 + 20*a^3*b^5*d^3*e^3 - 25*a^4*b^4*d^2*e^4 + 14*a^
5*b^3*d*e^5 - 3*a^6*b^2*e^6)*x^3 + 3*(a*b^7*d^6 - 4*a^2*b^6*d^5*e + 5*a^3*b
^5*d^4*e^2 - 5*a^5*b^3*d^2*e^4 + 4*a^6*b^2*d*e^5 - a^7*b*e^6)*x^2 + (3*a^2*
b^6*d^6 - 14*a^3*b^5*d^5*e + 25*a^4*b^4*d^4*e^2 - 20*a^5*b^3*d^3*e^3 + 5*a^
6*b^2*d^2*e^4 + 2*a^7*b*d*e^5 - a^8*e^6)*x)
```

giac [B] time = 0.22, size = 411, normalized size = 2.07

$$\frac{\left(3\,Bbde^{3}+Bae^{4}-4\,Abe^{4}\right)\log\left(\left|b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right|\right)}{b^{5}d^{5}e-5\,ab^{4}d^{4}e^{2}+10\,a^{2}b^{3}d^{3}e^{3}-10\,a^{3}b^{2}d^{2}e^{4}+5\,a^{4}bde^{5}-a^{5}e^{6}}+\frac{\frac{Bde^{6}}{xe+d}-\frac{Ae^{7}}{xe+d}}{b^{4}d^{4}e^{4}-4\,ab^{3}d^{3}e^{5}+6\,a^{2}b^{2}d^{2}e^{6}-4\,a^{3}bde^{7}+a^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] (3*B*b*d*e^3 + B*a*e^4 - 4*A*b*e^4)*log(abs(b - b*d/(x*e + d) + a*e/(x*e +
d)))/(b^5*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^4
 + 5*a^4*b*d*e^5 - a^5*e^6) + (B*d*e^6/(x*e + d) - A*e^7/(x*e + d))/(b^4*d^
4*e^4 - 4*a*b^3*d^3*e^5 + 6*a^2*b^2*d^2*e^6 - 4*a^3*b*d*e^7 + a^4*e^8) + 1/
6*(15*B*b^4*d*e^2 + 11*B*a*b^3*e^3 - 26*A*b^4*e^3 - 3*(11*B*b^4*d^2*e^3 - 2
*B*a*b^3*d*e^4 - 20*A*b^4*d*e^4 - 9*B*a^2*b^2*e^5 + 20*A*a*b^3*e^5)*e^(-1)/
(x*e + d) + 18*(B*b^4*d^3*e^4 - B*a*b^3*d^2*e^5 - 2*A*b^4*d^2*e^5 - B*a^2*b
^2*d*e^6 + 4*A*a*b^3*d*e^6 + B*a^3*b*e^7 - 2*A*a^2*b^2*e^7)*e^(-2)/(x*e + d
)^2)/((b*d - a*e)^5*(b - b*d/(x*e + d) + a*e/(x*e + d))^3)
```

maple [A] time = 0.06, size = 365, normalized size = 1.83

$$\frac{4Ab\,e^3\ln(bx+a)}{(ae-bd)^5}-\frac{4Ab\,e^3\ln(ex+d)}{(ae-bd)^5}-\frac{Ba\,e^3\ln(bx+a)}{(ae-bd)^5}+\frac{Ba\,e^3\ln(ex+d)}{(ae-bd)^5}-\frac{3Bbd\,e^2\ln(bx+a)}{(ae-bd)^5}+\frac{3Bbd\,e^2\ln(ex}{(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/3/(a*e-b*d)^2/(b*x+a)^3*A*b+1/3/(a*e-b*d)^2/(b*x+a)^3*B*a-1/(a*e-b*d)^3/
(b*x+a)^2*A*b*e+1/2/(a*e-b*d)^3/(b*x+a)^2*a*B*e+1/2/(a*e-b*d)^3/(b*x+a)^2*B
*b*d-3*e^2/(a*e-b*d)^4/(b*x+a)*A*b+e^2/(a*e-b*d)^4/(b*x+a)*a*B+2*e/(a*e-b*d
)^4/(b*x+a)*B*b*d+4*e^3/(a*e-b*d)^5*ln(b*x+a)*A*b-e^3/(a*e-b*d)^5*ln(b*x+a)
*a*B-3*e^2/(a*e-b*d)^5*ln(b*x+a)*B*b*d-e^3/(a*e-b*d)^4/(e*x+d)*A+e^2/(a*e-b
*d)^4/(e*x+d)*B*d-4*e^3/(a*e-b*d)^5*ln(e*x+d)*A*b+e^3/(a*e-b*d)^5*ln(e*x+d)
*a*B+3*e^2/(a*e-b*d)^5*ln(e*x+d)*B*b*d
```

maxima [B] time = 0.76, size = 757, normalized size = 3.80

$$\frac{\left(3\,Bbde^2+(Ba-4\,Ab)e^3\right)\log(bx+a)}{b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5}-\frac{\left(3\,Bbde^2+(Ba-4\,Ab)e^3\right)\log(ex}{b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (3*B*b*d*e^2 + (B*a - 4*A*b)*e^3)*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 1
0*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - (3*B*b*
d*e^2 + (B*a - 4*A*b)*e^3)*log(e*x + d)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b
^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - 1/6*(6*A*a^3*e
^3 + (B*a*b^2 + 2*A*b^3)*d^3 - 2*(4*B*a^2*b + 5*A*a*b^2)*d^2*e - (17*B*a^3
- 26*A*a^2*b)*d*e^2 - 6*(3*B*b^3*d*e^2 + (B*a*b^2 - 4*A*b^3)*e^3)*x^3 - 3*(
3*B*b^3*d^2*e + 4*(4*B*a*b^2 - A*b^3)*d*e^2 + 5*(B*a^2*b - 4*A*a*b^2)*e^3)*
x^2 + (3*B*b^3*d^3 - (23*B*a*b^2 + 4*A*b^3)*d^2*e - (41*B*a^2*b - 32*A*a*b^
2)*d*e^2 - 11*(B*a^3 - 4*A*a^2*b)*e^3)*x)/(a^3*b^4*d^5 - 4*a^4*b^3*d^4*e +
6*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*
e^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d^5 - a
*b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^4 + 3*
a^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2 + 2*a
^4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 - 11*a^3
*b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a^7*e^5
)*x)
```

mupad [B] time = 2.81, size = 711, normalized size = 3.57

$$\frac{\frac{x\left(11\,a^2\,e^2+8\,a\,b\,d\,e-b^2\,d^2\right)\left(B\,a\,e-4\,A\,b\,e+3\,B\,b\,d\right)}{6\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}-\frac{-17\,B\,a^3\,d\,e^2+6\,A\,a^3\,e^3-8\,B\,a^2\,b\,d^2\,e+26\,A\,a^2\,b\,d\,e^2+B\,a\,b^2\,d^3-10\,A\,a\,b^2\,d^2\,e+2\,A\,b^3\,d^3}{6\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+}{x^3\,\left(d\,b^3+3\,a\,e\,b^2\right)+x^2\,\left(3\,e\,a^2\,b+3\,d\,a\,b^2\right)+a^3\,d+x\,}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((x*(11*a^2*e^2 - b^2*d^2 + 8*a*b*d*e)*(B*a*e - 4*A*b*e + 3*B*b*d))/(6*(a^4
*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) - (6*A
*a^3*e^3 + 2*A*b^3*d^3 + B*a*b^2*d^3 - 17*B*a^3*d*e^2 - 10*A*a*b^2*d^2*e +
26*A*a^2*b*d*e^2 - 8*B*a^2*b*d^2*e)/(6*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (b^2*e^2*x^3*(B*a*e - 4*A*b*e + 3*B*
b*d))/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^
3) + (e*x^2*(b^2*d + 5*a*b*e)*(B*a*e - 4*A*b*e + 3*B*b*d))/(2*(a^4*e^4 + b^
4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)))/(x^3*(b^3*d +
3*a*b^2*e) + x^2*(3*a*b^2*d + 3*a^2*b*e) + a^3*d + x*(a^3*e + 3*a^2*b*d) +
b^3*e*x^4) - (2*atanh(((e^3*(4*A*b - B*a) - 3*B*b*d*e^2)*((a^5*e^5 + b^5*d^
5 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d^4*e - 3*a^4*b*d*e^4)/
(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + 2
*b*e*x)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*
e^3))/((a*e - b*d)^5*(B*a*e^3 - 4*A*b*e^3 + 3*B*b*d*e^2)))*(e^3*(4*A*b - B*
a) - 3*B*b*d*e^2))/(a*e - b*d)^5
```

sympy [B] time = 5.35, size = 1445, normalized size = 7.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] e**2*(-4*A*b*e + B*a*e + 3*B*b*d)*log(x + (-4*A*a*b*e**4 - 4*A*b**2*d*e**3
+ B*a**2*e**4 + 4*B*a*b*d*e**3 + 3*B*b**2*d**2*e**2 - a**6*e**8*(-4*A*b*e +
 B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 6*a**5*b*d*e**7*(-4*A*b*e + B*a*e + 3*B*
b*d)/(a*e - b*d)**5 - 15*a**4*b**2*d**2*e**6*(-4*A*b*e + B*a*e + 3*B*b*d)/(
a*e - b*d)**5 + 20*a**3*b**3*d**3*e**5*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e -
b*d)**5 - 15*a**2*b**4*d**4*e**4*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**
5 + 6*a*b**5*d**5*e**3*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - b**6*d
**6*e**2*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5)/(-8*A*b**2*e**4 + 2*B
*a*b*e**4 + 6*B*b**2*d*e**3))/(a*e - b*d)**5 - e**2*(-4*A*b*e + B*a*e + 3*B
*b*d)*log(x + (-4*A*a*b*e**4 - 4*A*b**2*d*e**3 + B*a**2*e**4 + 4*B*a*b*d*e*
*3 + 3*B*b**2*d**2*e**2 + a**6*e**8*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d
)**5 - 6*a**5*b*d*e**7*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 15*a**
4*b**2*d**2*e**6*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - 20*a**3*b**3
*d**3*e**5*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + 15*a**2*b**4*d**4*
e**4*(-4*A*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 - 6*a*b**5*d**5*e**3*(-4*A
*b*e + B*a*e + 3*B*b*d)/(a*e - b*d)**5 + b**6*d**6*e**2*(-4*A*b*e + B*a*e +
 3*B*b*d)/(a*e - b*d)**5)/(-8*A*b**2*e**4 + 2*B*a*b*e**4 + 6*B*b**2*d*e**3)
)/(a*e - b*d)**5 + (-6*A*a**3*e**3 - 26*A*a**2*b*d*e**2 + 10*A*a*b**2*d**2*
e - 2*A*b**3*d**3 + 17*B*a**3*d*e**2 + 8*B*a**2*b*d**2*e - B*a*b**2*d**3 +
x**3*(-24*A*b**3*e**3 + 6*B*a*b**2*e**3 + 18*B*b**3*d*e**2) + x**2*(-60*A*a
*b**2*e**3 - 12*A*b**3*d*e**2 + 15*B*a**2*b*e**3 + 48*B*a*b**2*d*e**2 + 9*B
*b**3*d**2*e) + x*(-44*A*a**2*b*e**3 - 32*A*a*b**2*d*e**2 + 4*A*b**3*d**2*e
 + 11*B*a**3*e**3 + 41*B*a**2*b*d*e**2 + 23*B*a*b**2*d**2*e - 3*B*b**3*d**3
))/(6*a**7*d*e**4 - 24*a**6*b*d**2*e**3 + 36*a**5*b**2*d**3*e**2 - 24*a**4*
b**3*d**4*e + 6*a**3*b**4*d**5 + x**4*(6*a**4*b**3*e**5 - 24*a**3*b**4*d*e*
*4 + 36*a**2*b**5*d**2*e**3 - 24*a*b**6*d**3*e**2 + 6*b**7*d**4*e) + x**3*(
18*a**5*b**2*e**5 - 66*a**4*b**3*d*e**4 + 84*a**3*b**4*d**2*e**3 - 36*a**2*
b**5*d**3*e**2 - 6*a*b**6*d**4*e + 6*b**7*d**5) + x**2*(18*a**6*b*e**5 - 54
*a**5*b**2*d*e**4 + 36*a**4*b**3*d**2*e**3 + 36*a**3*b**4*d**3*e**2 - 54*a*
*2*b**5*d**4*e + 18*a*b**6*d**5) + x*(6*a**7*e**5 - 6*a**6*b*d*e**4 - 36*a*
*5*b**2*d**2*e**3 + 84*a**4*b**3*d**3*e**2 - 66*a**3*b**4*d**4*e + 18*a**2*
b**5*d**5))
```

3.1708 $\int (A+Bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(-aBe-Abe+2bBd)}{6e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{bB\sqrt{a^2}}{}$$

```
[Out] 1/5*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^5*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-1/6*(-A*b
*e-B*a*e+2*B*b*d)*(e*x+d)^6*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/7*b*B*(e*x+d)^7
*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.19, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(-aBe-Abe+2bBd)}{6e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{bB\sqrt{a^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(6*e^3*(a + b*x)) + (b*B*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^4\,dx}{ab+b^2x}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^4}{e^2}+\frac{b(-2bBd+Abe+aBe)(}{e^2}\right.}{ab+b^2x}\\&=\frac{(bd-ae)(Bd-Ae)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{(2bBd-Abe}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 208, normalized size = 1.32

$$\frac{x\sqrt{(a+bx)^2}\,\left(7a\left(6A\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+Bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(7*a*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e
^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^
3 + 5*e^4*x^4)) + b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3
*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^
3*x^3 + 15*e^4*x^4))))/(210*(a + b*x))
```

fricas [A] time = 0.88, size = 175, normalized size = 1.11

$$\frac{1}{7}\,Bbe^4x^7+Aad^4x+\frac{1}{6}\,(4\,Bbde^3+(Ba+Ab)e^4)x^6+\frac{1}{5}\,(6\,Bbd^2e^2+Aae^4+4\,(Ba+Ab)de^3)x^5+\frac{1}{2}\,(2\,Bbd^3e+2\,Aade$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b*e^4*x^7 + A*a*d^4*x + 1/6*(4*B*b*d*e^3 + (B*a + A*b)*e^4)*x^6 + 1/5
*(6*B*b*d^2*e^2 + A*a*e^4 + 4*(B*a + A*b)*d*e^3)*x^5 + 1/2*(2*B*b*d^3*e + 2
*A*a*d*e^3 + 3*(B*a + A*b)*d^2*e^2)*x^4 + 1/3*(B*b*d^4 + 6*A*a*d^2*e^2 + 4*
(B*a + A*b)*d^3*e)*x^3 + 1/2*(4*A*a*d^3*e + (B*a + A*b)*d^4)*x^2
```

giac [B] time = 0.17, size = 328, normalized size = 2.08

$$\frac{1}{7}\,Bbx^7e^4\mathrm{sgn}\,(bx+a)+\frac{2}{3}\,Bbdx^6e^3\mathrm{sgn}\,(bx+a)+\frac{6}{5}\,Bbd^2x^5e^2\mathrm{sgn}\,(bx+a)+Bbd^3x^4e\mathrm{sgn}\,(bx+a)+\frac{1}{3}\,Bbd^4x^3\mathrm{sgn}\,(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b*x^7*e^4*sgn(b*x + a) + 2/3*B*b*d*x^6*e^3*sgn(b*x + a) + 6/5*B*b*d^2
*x^5*e^2*sgn(b*x + a) + B*b*d^3*x^4*e*sgn(b*x + a) + 1/3*B*b*d^4*x^3*sgn(b*
x + a) + 1/6*B*a*x^6*e^4*sgn(b*x + a) + 1/6*A*b*x^6*e^4*sgn(b*x + a) + 4/5*
B*a*d*x^5*e^3*sgn(b*x + a) + 4/5*A*b*d*x^5*e^3*sgn(b*x + a) + 3/2*B*a*d^2*x
^4*e^2*sgn(b*x + a) + 3/2*A*b*d^2*x^4*e^2*sgn(b*x + a) + 4/3*B*a*d^3*x^3*e*
sgn(b*x + a) + 4/3*A*b*d^3*x^3*e*sgn(b*x + a) + 1/2*B*a*d^4*x^2*sgn(b*x + a
) + 1/2*A*b*d^4*x^2*sgn(b*x + a) + 1/5*A*a*x^5*e^4*sgn(b*x + a) + A*a*d*x^4
*e^3*sgn(b*x + a) + 2*A*a*d^2*x^3*e^2*sgn(b*x + a) + 2*A*a*d^3*x^2*e*sgn(b*
x + a) + A*a*d^4*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 232, normalized size = 1.47

$$(30bB\,e^4x^6+35x^5Ab\,e^4+35x^5Ba\,e^4+140x^5bBd\,e^3+42x^4Aa\,e^4+168x^4Abd\,e^3+168x^4Bad\,e^3+252x^4bB\,d^2e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/210*x*(30*B*b*e^4*x^6+35*A*b*e^4*x^5+35*B*a*e^4*x^5+140*B*b*d*e^3*x^5+42*
A*a*e^4*x^4+168*A*b*d*e^3*x^4+168*B*a*d*e^3*x^4+252*B*b*d^2*e^2*x^4+210*A*a
*d*e^3*x^3+315*A*b*d^2*e^2*x^3+315*B*a*d^2*e^2*x^3+210*B*b*d^3*e*x^3+420*A*
a*d^2*e^2*x^2+280*A*b*d^3*e*x^2+280*B*a*d^3*e*x^2+70*B*b*d^4*x^2+420*A*a*d^
3*e*x+105*A*b*d^4*x+105*B*a*d^4*x+210*A*a*d^4)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.59, size = 1002, normalized size = 6.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^4*x^4/b^2 - 11/42*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*a*e^4*x^3/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d^4*x
- 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*e^4*x/b^5 + 5/14*(b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*B*a^2*e^4*x^2/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d
^4/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^6*e^4/b^6 - 3/7*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*B*a^3*e^4*x/b^5 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B
*a^4*e^4/b^6 + 1/6*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/
b^2 + 1/2*(4*B*d*e^3 + A*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*x/b^4 - (3*
B*d^2*e^2 + 2*A*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*x/b^3 + (2*B*d^3*e
 + 3*A*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1/2*(B*d^4 + 4*A*
d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b - 3/10*(4*B*d*e^3 + A*e^4)*(b^2*
x^2 + 2*a*b*x + a^2)^(3/2)*a*x^2/b^3 + 2/5*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 + 1/2*(4*B*d*e^3 + A*e^4)*sqrt(b^2*x^2 +
2*a*b*x + a^2)*a^5/b^5 - (3*B*d^2*e^2 + 2*A*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*a^4/b^4 + (2*B*d^3*e + 3*A*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3
/b^3 - 1/2*(B*d^4 + 4*A*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^2 + 2/5*
(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4 - 7/10*(3*B*d
^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 1/2*(2*B*d^3*
e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 - 7/15*(4*B*d*e^3 +
A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/10*(3*B*d^2*e^2 + 2*A*d*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/6*(2*B*d^3*e + 3*A*d^2*e^2
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(B*d^4 + 4*A*d^3*e)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 4.25, size = 1400, normalized size = 8.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^4,x)
```

```
[Out] A*d^4*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (A*e^4*x^3*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2) + (B*e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(7*b^2) + (B*d^4*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*d^3*e*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^4) + (B*d^3*e*x
*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/b^2 - (B*a^2*e^4*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*
b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(35*b^6) - (A*a^2*e^4*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) -
 4*a^2*b*x))/(24*b^5) + (3*A*d^2*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*
b^2) + (4*A*d*e^3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (2*B*d*e^3
*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b^2) - (3*A*a*e^4*(a^2 + b^2*x^2 +
 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2
+ 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(40*b^5) - (11*B*a*e^4*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) -
14*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^
2*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(210*b^6) + (6*B*d^2*e^2*x^2*(a^2 + b^2*x
^2 + 2*a*b*x)^(3/2))/(5*b^2) - (B*a^2*d^3*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2))/b^2 - (3*B*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2
*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*
(a^2 + b^2*x^2 + 2*a*b*x)))/(10*b^5) - (B*a^2*d^2*e^2*(8*b^2*(a^2 + b^2*x^2
) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(10*b^6) - (7*
A*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 +
 b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(15*b^4) - (5*B*a*d^3*e*(8*b^2*(a^2 + b^2
*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^5) -
 (3*A*a^2*d^2*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b^2)
- (7*B*a*d^2*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x
*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(10*b^4) - (B*a^2*d*e^3*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x)
- 4*a^2*b*x))/(6*b^5) - (5*A*a*d^2*e^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2
+ 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(16*b^5) - (A*a^2*d*e^3*(8*b^
2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(15*b^6)
```

sympy [A] time = 0.15, size = 226, normalized size = 1.43

$$Aad^4x+\frac{Bbe^4x^7}{7}+x^6\left(\frac{Abe^4}{6}+\frac{Bae^4}{6}+\frac{2Bbde^3}{3}\right)+x^5\left(\frac{Aae^4}{5}+\frac{4Abde^3}{5}+\frac{4Bade^3}{5}+\frac{6Bbd^2e^2}{5}\right)+x^4\left(Aade^3+\frac{3Abd^2}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**4*x + B*b*e**4*x**7/7 + x**6*(A*b*e**4/6 + B*a*e**4/6 + 2*B*b*d*e**3
/3) + x**5*(A*a*e**4/5 + 4*A*b*d*e**3/5 + 4*B*a*d*e**3/5 + 6*B*b*d**2*e**2/
5) + x**4*(A*a*d*e**3 + 3*A*b*d**2*e**2/2 + 3*B*a*d**2*e**2/2 + B*b*d**3*e)
 + x**3*(2*A*a*d**2*e**2 + 4*A*b*d**3*e/3 + 4*B*a*d**3*e/3 + B*b*d**4/3) +
x**2*(2*A*a*d**3*e + A*b*d**4/2 + B*a*d**4/2)
```

3.1709 $\int (A+Bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)(Bd-Ae)}{4e^3(a+bx)}+\frac{bB\sqrt{a^2}}{}$$

```
[Out] 1/4*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-1/5*(-A*b
*e-B*a*e+2*B*b*d)*(e*x+d)^5*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/6*b*B*(e*x+d)^6
*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)(Bd-Ae)}{4e^3(a+bx)}+\frac{bB\sqrt{a^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(5*e^3*(a + b*x)) + (b*B*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(6*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^3\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^3}{e^2}+\frac{b(-2bBd+Abe+aBe)(}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)(Bd-Ae)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)}-\frac{(2bBd-Abe-}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 163, normalized size = 1.03

$$\frac{x\sqrt{(a+bx)^2}\,\left(3a\left(5A\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+Bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)\right)+bx\left(3A\left(10d^3\right.\right.\right.}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3)
+ B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + b*x*(3*A*(10*d^3
+ 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2*e*x + 36*d*
e^2*x^2 + 10*e^3*x^3))))/(60*(a + b*x))
```

fricas [A] time = 0.86, size = 134, normalized size = 0.85

$$\frac{1}{6}\,Bbe^3x^6+Aad^3x+\frac{1}{5}\,\left(3\,Bbde^2+(Ba+Ab)e^3\right)x^5+\frac{1}{4}\,\left(3\,Bbd^2e+Aae^3+3\,(Ba+Ab)de^2\right)x^4+\frac{1}{3}\,\left(Bbd^3+3\,Aade^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*B*b*e^3*x^6 + A*a*d^3*x + 1/5*(3*B*b*d*e^2 + (B*a + A*b)*e^3)*x^5 + 1/4
*(3*B*b*d^2*e + A*a*e^3 + 3*(B*a + A*b)*d*e^2)*x^4 + 1/3*(B*b*d^3 + 3*A*a*d
*e^2 + 3*(B*a + A*b)*d^2*e)*x^3 + 1/2*(3*A*a*d^2*e + (B*a + A*b)*d^3)*x^2
```

giac [B] time = 0.18, size = 255, normalized size = 1.61

$$\frac{1}{6}\,Bbx^6e^3\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}\,Bbdx^5e^2\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,Bbd^2x^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Bbd^3x^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Bax^5e^3\mathrm{sgn}\left(bx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b*x^6*e^3*sgn(b*x + a) + 3/5*B*b*d*x^5*e^2*sgn(b*x + a) + 3/4*B*b*d^2
*x^4*e*sgn(b*x + a) + 1/3*B*b*d^3*x^3*sgn(b*x + a) + 1/5*B*a*x^5*e^3*sgn(b*
x + a) + 1/5*A*b*x^5*e^3*sgn(b*x + a) + 3/4*B*a*d*x^4*e^2*sgn(b*x + a) + 3/
4*A*b*d*x^4*e^2*sgn(b*x + a) + B*a*d^2*x^3*e*sgn(b*x + a) + A*b*d^2*x^3*e*s
gn(b*x + a) + 1/2*B*a*d^3*x^2*sgn(b*x + a) + 1/2*A*b*d^3*x^2*sgn(b*x + a) +
 1/4*A*a*x^4*e^3*sgn(b*x + a) + A*a*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a*d^2*x^
2*e*sgn(b*x + a) + A*a*d^3*x*sgn(b*x + a)
```

maple [A] time = 0.04, size = 180, normalized size = 1.14

$$\frac{\left(10bB\,e^3x^5+12x^4Ab\,e^3+12x^4Ba\,e^3+36x^4bBd\,e^2+15x^3aA\,e^3+45x^3Abd\,e^2+45x^3aBd\,e^2+45x^3bB\,d^2e+60x^2\right.}{60bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(10*B*b*e^3*x^5+12*A*b*e^3*x^4+12*B*a*e^3*x^4+36*B*b*d*e^2*x^4+15*A*
a*e^3*x^3+45*A*b*d*e^2*x^3+45*B*a*d*e^2*x^3+45*B*b*d^2*e*x^3+60*A*a*d*e^2*x
^2+60*A*b*d^2*e*x^2+60*B*a*d^2*e*x^2+20*B*b*d^3*x^2+90*A*a*d^2*e*x+30*A*b*d
^3*x+30*B*a*d^3*x+60*A*a*d^3)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.62, size = 698, normalized size = 4.42

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Be^3x^3}{6\,b^2}+\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,Ad^3x+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Ba^4e^3x}{2\,b^4}-\frac{3\,\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Bae}{10\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^3*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*
b*x + a^2)*A*d^3*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^4*e^3*x/b^4 - 3/
10*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*e^3*x^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*A*a*d^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^5*e^3/b^5 + 2
/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*e^3*x/b^4 - 7/15*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*B*a^3*e^3/b^5 - 1/2*(3*B*d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*a^3*x/b^3 + 3/2*(B*d^2*e + A*d*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^2*x/b^2 - 1/2*(B*d^3 + 3*A*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b +
1/5*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(3*B*
d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 3/2*(B*d^2*e + A*d*e
^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(B*d^3 + 3*A*d^2*e)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^2/b^2 - 7/20*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(3/2)*a*x/b^3 + 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*x/b^2 + 9/20*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/
b^4 - 5/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(
B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 3.32, size = 935, normalized size = 5.92

$$A\,d^3\,\left(\frac{x}{2}+\frac{a}{2\,b}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{A\,e^3\,x^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{5\,b^2}+\frac{B\,e^3\,x^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{6\,b^2}+\frac{B\,d^3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^3,x)
```

```
[Out] A*d^3*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (A*e^3*x^2*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(6*b^2) + (B*d^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*d^2*e*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(8*b^4) + (3*A*d*e^2
*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) + (3*B*d^2*e*x*(a^2 + b^2*x^2 +
 2*a*b*x)^(3/2))/(4*b^2) - (B*a^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3
- 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) - (A
*a^2*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/(60*b^6) + (3*B*d*e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/
(5*b^2) - (3*B*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*
x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 +
 2*a*b*x)))/(40*b^5) - (7*A*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*
a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (3*A*a
^2*d*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (3*B*a^
2*d^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (7*B*a*d
*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*
x^2 + 2*a*b*x) - 4*a^2*b*x))/(20*b^4) - (5*A*a*d*e^2*(8*b^2*(a^2 + b^2*x^2)
 - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(32*b^5) - (5*B
*a*d^2*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/(32*b^5) - (B*a^2*d*e^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2
 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(20*b^6)
```

sympy [A] time = 0.14, size = 168, normalized size = 1.06

$$Aad^3x+\frac{Bbe^3x^6}{6}+x^5\left(\frac{Abe^3}{5}+\frac{Bae^3}{5}+\frac{3Bbde^2}{5}\right)+x^4\left(\frac{Aae^3}{4}+\frac{3Abde^2}{4}+\frac{3Bade^2}{4}+\frac{3Bbd^2e}{4}\right)+x^3\left(Aade^2+Abd^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**3*x + B*b*e**3*x**6/6 + x**5*(A*b*e**3/5 + B*a*e**3/5 + 3*B*b*d*e**2
/5) + x**4*(A*a*e**3/4 + 3*A*b*d*e**2/4 + 3*B*a*d*e**2/4 + 3*B*b*d**2*e/4)
+ x**3*(A*a*d*e**2 + A*b*d**2*e + B*a*d**2*e + B*b*d**3/3) + x**2*(3*A*a*d*
*2*e/2 + A*b*d**3/2 + B*a*d**3/2)
```

3.1710 $\int (A+Bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=158

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(-aBe-Abe+2bBd)}{4e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{bB\sqrt{a^2+2}{5}$$

```
[Out] 1/3*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-1/4*(-A*b
*e-B*a*e+2*B*b*d)*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/5*b*B*(e*x+d)^5
*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(-aBe-Abe+2bBd)}{4e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+\frac{bB\sqrt{a^2+2}{5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*
(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(4*e^3*(a + b*x)) + (b*B*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^2\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^2}{e^2}+\frac{b(-2bBd+Abe+aBe)(d+ex}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)(Bd-Ae)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{(2bBd-Abe-a}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 120, normalized size = 0.76

$$\frac{x\sqrt{(a+bx)^2}\,\left(5a\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+2Bx\left(10d\right.\right.\right.}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(5*a*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2 + 8
*d*e*x + 3*e^2*x^2)) + b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2*B*x*(10*d
^2 + 15*d*e*x + 6*e^2*x^2))))/(60*(a + b*x))
```

fricas [A] time = 0.72, size = 93, normalized size = 0.59

$$\frac{1}{5}Bbe^2x^5+Aad^2x+\frac{1}{4}\left(2Bbde+(Ba+Ab)e^2\right)x^4+\frac{1}{3}\left(Bbd^2+Aae^2+2(Ba+Ab)de\right)x^3+\frac{1}{2}\left(2Aade+(Ba+Ab)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b*e^2*x^5 + A*a*d^2*x + 1/4*(2*B*b*d*e + (B*a + A*b)*e^2)*x^4 + 1/3*(
B*b*d^2 + A*a*e^2 + 2*(B*a + A*b)*d*e)*x^3 + 1/2*(2*A*a*d*e + (B*a + A*b)*d
^2)*x^2
```

giac [A] time = 0.16, size = 185, normalized size = 1.17

$$\frac{1}{5}Bbx^5e^2\mathrm{sgn}(bx+a)+\frac{1}{2}Bbdx^4e\mathrm{sgn}(bx+a)+\frac{1}{3}Bbd^2x^3\mathrm{sgn}(bx+a)+\frac{1}{4}Bax^4e^2\mathrm{sgn}(bx+a)+\frac{1}{4}Abx^4e^2\mathrm{sgn}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b*x^5*e^2*sgn(b*x + a) + 1/2*B*b*d*x^4*e*sgn(b*x + a) + 1/3*B*b*d^2*x
^3*sgn(b*x + a) + 1/4*B*a*x^4*e^2*sgn(b*x + a) + 1/4*A*b*x^4*e^2*sgn(b*x +
a) + 2/3*B*a*d*x^3*e*sgn(b*x + a) + 2/3*A*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a*
d^2*x^2*sgn(b*x + a) + 1/2*A*b*d^2*x^2*sgn(b*x + a) + 1/3*A*a*x^3*e^2*sgn(b
*x + a) + A*a*d*x^2*e*sgn(b*x + a) + A*a*d^2*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 128, normalized size = 0.81

$$\frac{\left(12bBe^2x^4+15x^3Abe^2+15x^3Bae^2+30x^3bBde+20x^2Aae^2+40x^2Abde+40x^2aBde+20x^2bBd^2+60xAa\right.}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(12*B*b*e^2*x^4+15*A*b*e^2*x^3+15*B*a*e^2*x^3+30*B*b*d*e*x^3+20*A*a*
e^2*x^2+40*A*b*d*e*x^2+40*B*a*d*e*x^2+20*B*b*d^2*x^2+60*A*a*d*e*x+30*A*b*d^
2*x+30*B*a*d^2*x+60*A*a*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.60, size = 456, normalized size = 2.89

$$\frac{1}{2}\sqrt{b^2x^2+2abx+a^2}\,Ad^2x-\frac{\sqrt{b^2x^2+2abx+a^2}\,Ba^3e^2x}{2b^3}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Be^2x^2}{5b^2}+\frac{\sqrt{b^2x^2+2abx+a^2}\,Aa}{2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d^2*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*B*a^3*e^2*x/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e^2*x^2/b^2 + 1/
2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d^2/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*B*a^4*e^2/b^4 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a*e^2*x/b^3 + 9/2
0*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2*e^2/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*
x + a^2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B
*d^2 + 2*A*d*e)*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*B*d*e + A*e^2)
*a^3/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d^2 + 2*A*d*e)*a^2/b^2 + 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*x/b^2 - 5/12*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad [B] time = 3.02, size = 564, normalized size = 3.57

$$A\,d^2\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{B\,e^2\,x^2\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{5\,b^2}+\frac{B\,d^2\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\right.}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^2,x)
```

```
[Out] A*d^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (B*e^2*x^2*(a^2 + b
^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (B*d^2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b
^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4) + (A*e^2*x*(a^2 +
 b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (5*A*a*e^2*(8*b^2*(a^2 + b^2*x^2) - 12
*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b^5) - (B*a^2*e^
2*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/(60*b^6) + (A*d*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(12*b^4) - (A*a^2*e^2*(x/2 + a/(2*b))*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) + (B*d*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^
(3/2))/(2*b^2) - (7*B*a*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*
x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(60*b^4) - (5*B*a*d*e*(
8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/(48*b^5) - (B*a^2*d*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(2*b^2)
```

sympy [A] time = 0.12, size = 116, normalized size = 0.73

$$Aad^2x+\frac{Bbe^2x^5}{5}+x^4\left(\frac{Abe^2}{4}+\frac{Bae^2}{4}+\frac{Bbde}{2}\right)+x^3\left(\frac{Aae^2}{3}+\frac{2Abde}{3}+\frac{2Bade}{3}+\frac{Bbd^2}{3}\right)+x^2\left(Aade+\frac{Abd^2}{2}+\frac{Bad^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d**2*x + B*b*e**2*x**5/5 + x**4*(A*b*e**2/4 + B*a*e**2/4 + B*b*d*e/2) +
 x**3*(A*a*e**2/3 + 2*A*b*d*e/3 + 2*B*a*d*e/3 + B*b*d**2/3) + x**2*(A*a*d*e
 + A*b*d**2/2 + B*a*d**2/2)
```

3.1711 $\int (A+Bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$\frac{x^2\sqrt{a^2+2abx+b^2x^2}\,(aAe+aBd+Abd)}{2(a+bx)}+\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aBe+Abe+bBd)}{3(a+bx)}+\frac{aAdx\sqrt{a^2+2abx+b^2x}}{a+bx}$$

```
[Out] a*A*d*x*((b*x+a)^2)^(1/2)/(b*x+a)+1/2*(A*a*e+A*b*d+B*a*d)*x^2*((b*x+a)^2)^(
1/2)/(b*x+a)+1/3*(A*b*e+B*a*e+B*b*d)*x^3*((b*x+a)^2)^(1/2)/(b*x+a)+1/4*b*B*
e*x^4*((b*x+a)^2)^(1/2)/(b*x+a)
```

Rubi [**A**] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$\frac{x^3\sqrt{a^2+2abx+b^2x^2}\,(aBe+Abe+bBd)}{3(a+bx)}+\frac{x^2\sqrt{a^2+2abx+b^2x^2}\,(aAe+aBd+Abd)}{2(a+bx)}+\frac{aAdx\sqrt{a^2+2abx+b^2x}}{a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a*A*d*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(a + b*x) + ((A*b*d + a*B*d + a*A*e
)*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(a + b*x)) + ((b*B*d + A*b*e + a*B*
e)*x^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*(a + b*x)) + (b*B*e*x^4*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(4*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(aAbd+b(Abd+aBd+aAe)x+b(bBd+\right.}{ab+b^2x}\\ &= \frac{aAdx\sqrt{a^2+2abx+b^2x^2}}{a+bx}+\frac{(Abd+aBd+aAe)x^2\sqrt{a^2+2abx+}}{2(a+bx)}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 74, normalized size = 0.45

$$\frac{x\sqrt{(a+bx)^2}\,(2a(3A(2d+ex)+Bx(3d+2ex))+bx(A(6d+4ex)+Bx(4d+3ex)))}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(2*a*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + b*x*(B*x*
(4*d + 3*e*x) + A*(6*d + 4*e*x))))/(12*(a + b*x))
```

fricas [A] time = 0.63, size = 52, normalized size = 0.32

$$\frac{1}{4}\,Bbex^{4} + Aadx + \frac{1}{3}\,(Bbd + (Ba + Ab)e)x^{3} + \frac{1}{2}\,(Aae + (Ba + Ab)d)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*B*b*e*x^4 + A*a*d*x + 1/3*(B*b*d + (B*a + A*b)*e)*x^3 + 1/2*(A*a*e + (B
*a + A*b)*d)*x^2
```

giac [A] time = 0.16, size = 114, normalized size = 0.70

$$\frac{1}{4}\,Bbx^{4}e\operatorname{sgn}(bx + a)+\frac{1}{3}\,Bbdx^{3}\operatorname{sgn}(bx + a)+\frac{1}{3}\,Bax^{3}e\operatorname{sgn}(bx + a)+\frac{1}{3}\,Abx^{3}e\operatorname{sgn}(bx + a)+\frac{1}{2}\,Badx^{2}\operatorname{sgn}(bx + a)+\frac{1}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*B*b*x^4*e*sgn(b*x + a) + 1/3*B*b*d*x^3*sgn(b*x + a) + 1/3*B*a*x^3*e*sgn
(b*x + a) + 1/3*A*b*x^3*e*sgn(b*x + a) + 1/2*B*a*d*x^2*sgn(b*x + a) + 1/2*A
*b*d*x^2*sgn(b*x + a) + 1/2*A*a*x^2*e*sgn(b*x + a) + A*a*d*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 76, normalized size = 0.46

$$\frac{\left(3Bbe\,x^{3} + 4x^{2}Abe + 4x^{2}aBe + 4bBd\,x^{2} + 6xaAe + 6xAbd + 6xaBd + 12Aad\right)\sqrt{(bx + a)^{2}}\;x}{12bx + 12a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/12*x*(3*B*b*e*x^3+4*A*b*e*x^2+4*B*a*e*x^2+4*B*b*d*x^2+6*A*a*e*x+6*A*b*d*x
+6*B*a*d*x+12*A*a*d)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.64, size = 254, normalized size = 1.55

$$\frac{1}{2}\,\sqrt{b^{2}x^{2} + 2\,abx + a^{2}}\;Adx+\frac{\sqrt{b^{2}x^{2} + 2\,abx + a^{2}}\;Ba^{2}ex}{2\,b^{2}}+\frac{\sqrt{b^{2}x^{2} + 2\,abx + a^{2}}\;Aad}{2\,b}+\frac{\sqrt{b^{2}x^{2} + 2\,abx + a^{2}}\;Ba^{3}e}{2\,b^{3}}-\sqrt{b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*d*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*B*a^2*e*x/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*a*d/b + 1/2*sqrt(b^2*x
^2 + 2*a*b*x + a^2)*B*a^3*e/b^3 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d +
A*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*e*x/b^2 - 1/2*sqrt(b^2*x
^2 + 2*a*b*x + a^2)*(B*d + A*e)*a^2/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*B*a*e/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d + A*e)/b^2
```

mupad [B] time = 2.92, size = 223, normalized size = 1.36

$$\frac{B\,d\,\left(8\,b^{2}\,\left(a^{2}+b^{2}\,x^{2}\right)-12\,a^{2}\,b^{2}+4\,a\,b^{3}\,x\right)\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}}{24\,b^{4}}+\frac{B\,e\,x\,{\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)}^{3/2}}{4\,b^{2}}+A\,\left(a+b\,x\right)\,(3\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x),x)
```

```
[Out] (B*d*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/(24*b^4) + (B*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) + (A
*(a + b*x)*(3*b*d - a*e + 2*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^2)
 - (B*a^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2) - (5*B
*a*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/(96*b^5)
```

sympy [A] time = 0.10, size = 63, normalized size = 0.38

$$Aadx + \frac{Bbex^4}{4} + x^3\left(\frac{Abe}{3} + \frac{Bae}{3} + \frac{Bbd}{3}\right) + x^2\left(\frac{Aae}{2} + \frac{Abd}{2} + \frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*d*x + B*b*e*x**4/4 + x**3*(A*b*e/3 + B*a*e/3 + B*b*d/3) + x**2*(A*a*e/2
 + A*b*d/2 + B*a*d/2)
```

3.1712 $\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

```
[Out] 1/3*B*(b^2*x^2+2*a*b*x+a^2)^(3/2)/b^2+1/2*(A*b-B*a)*(b*x+a)*((b*x+a)^2)^(1/
2)/b^2
```

Rubi [**A**] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^2) + (B*(a^2 + 2
*a*b*x + b^2*x^2)^(3/2))/(3*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{a^2+2abx+b^2x^2}\,dx&=\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}+\frac{\left(2Ab^2-2abB\right)\int \sqrt{a^2+2abx+b^2x^2}\,dx}{2b^2}\\&=\frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b^2}\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 45, normalized size = 0.65

$$\frac{x\sqrt{(a+bx)^2}\,(3a(2A+Bx)+bx(3A+2Bx))}{6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3*a*(2*A + B*x) + b*x*(3*A + 2*B*x)))/(6*(a + b*x))
```

fricas [**A**] time = 0.80, size = 24, normalized size = 0.35

$$\frac{1}{3}\,Bbx^{3}+Aax+\frac{1}{2}\,(Ba+Ab)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*B*b*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

giac [**A**] time = 0.21, size = 74, normalized size = 1.07

$$\frac{1}{3}\,Bbx^{3}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Bax^{2}\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Abx^{2}\mathrm{sgn}\left(bx+a\right)+Aax\mathrm{sgn}\left(bx+a\right)-\frac{\left(Ba^{3}-3\,Aa^{2}b\right)\mathrm{sgn}\left(bx+a\right)}{6\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*B*b*x^3*sgn(b*x + a) + 1/2*B*a*x^2*sgn(b*x + a) + 1/2*A*b*x^2*sgn(b*x +
 a) + A*a*x*sgn(b*x + a) - 1/6*(B*a^3 - 3*A*a^2*b)*sgn(b*x + a)/b^2
```

maple [**A**] time = 0.04, size = 42, normalized size = 0.61

$$\frac{\left(2Bb\,x^{2}+3Abx+3Bax+6Aa\right)\sqrt{\left(bx+a\right)^{2}}\;x}{6bx+6a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*x*(2*B*b*x^2+3*A*b*x+3*B*a*x+6*A*a)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [**B**] time = 0.56, size = 125, normalized size = 1.81

$$\frac{1}{2}\,\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\;Ax-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\;Bax}{2\,b}-\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\;Ba^{2}}{2\,b^{2}}+\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\;Aa}{2\,b}+\frac{\left(b^{2}x^{2}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*A*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B
*a*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2/b^2 + 1/2*sqrt(b^2*x^2 + 2
*a*b*x + a^2)*A*a/b + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B/b^2
```

mupad [**B**] time = 2.42, size = 77, normalized size = 1.12

$$\frac{A\,\sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)}{2\,b}+\frac{B\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x),x)
```

```
[Out] (A*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b) + (B*(8*b^2*(a^2 + b^2*x^2) - 12*a^
2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^4)
```

sympy [**A**] time = 0.09, size = 26, normalized size = 0.38

$$Aax+\frac{Bbx^{3}}{3}+x^{2}\left(\frac{Ab}{2}+\frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2),x)
```

```
[Out] A*a*x + B*b*x**3/3 + x**2*(A*b/2 + B*a/2)
```

3.1713 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=132

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)\log(d+ex)}{e^3(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{e^2(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx+}}{2be}$$

```
[Out] -b*(-A*e+B*d)*x*((b*x+a)^2)^(1/2)/e^2/(b*x+a)+1/2*B*(b*x+a)*((b*x+a)^2)^(1/
2)/b/e+(-a*e+b*d)*(-A*e+B*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{e^2(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)\log(d+ex)}{e^3(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx}}{2be}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] -((b*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x))) + (B*(a
+ b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b*e) + ((b*d - a*e)*(B*d - A*e)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^2(-Bd+Ae)}{e^2}+\frac{B(ab+b^2x)}{e}-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{b(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}+\frac{B(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2be}+\frac{(bd}{}\end{aligned}$$

Mathematica [A] time = 0.04, size = 74, normalized size = 0.56

$$\frac{\sqrt{(a+bx)^2}\,(ex(2aBe+b(2Ae-2Bd+Bex))+2(bd-ae)(Bd-Ae)\log(d+ex))}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(2*a*B*e + b*(-2*B*d + 2*A*e + B*e*x)) + 2*(b*d - a
*e)*(B*d - A*e)*Log[d + e*x]))/(2*e^3*(a + b*x))
```

fricas [A] time = 0.66, size = 68, normalized size = 0.52

$$\frac{Bbe^2x^2 - 2\left(Bbde - (Ba + Ab)e^2\right)x + 2\left(Bbd^2 + Aae^2 - (Ba + Ab)de\right)\log(ex + d)}{2\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b*e^2*x^2 - 2*(B*b*d*e - (B*a + A*b)*e^2)*x + 2*(B*b*d^2 + A*a*e^2 -
 (B*a + A*b)*d*e)*log(e*x + d))/e^3
```

giac [A] time = 0.16, size = 119, normalized size = 0.90

$$\left(Bbd^2\mathrm{sgn}\,(bx + a) - Bade\mathrm{sgn}\,(bx + a) - Abde\mathrm{sgn}\,(bx + a) + Aae^2\mathrm{sgn}\,(bx + a)\right)e^{(-3)}\log(|xe + d|) + \frac{1}{2}\,(Bbx^2e\mathrm{sgn}\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b*d^2*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e
^2*sgn(b*x + a))*e^(-3)*log(abs(x*e + d)) + 1/2*(B*b*x^2*e*sgn(b*x + a) - 2
*B*b*d*x*sgn(b*x + a) + 2*B*a*x*e*sgn(b*x + a) + 2*A*b*x*e*sgn(b*x + a))*e^
(-2)
```

maple [C] time = 0.07, size = 146, normalized size = 1.11

$$\frac{(B\,b^2e^2x^2 + 2Aab\,e^2\ln(bex + bd) - 2A\,b^2de\ln(bex + bd) + 2A\,b^2e^2x - 2Babde\ln(bex + bd) + 2Bab\,e^2x + 2B\,b^2d}{2b\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*csgn(b*x+a)*(B*x^2*b^2*e^2+2*A*ln(b*e*x+b*d)*a*b*e^2-2*A*ln(b*e*x+b*d)*
b^2*d*e+2*A*x*b^2*e^2-2*B*ln(b*e*x+b*d)*a*b*d*e+2*B*ln(b*e*x+b*d)*b^2*d^2+2
*B*x*a*b*e^2-2*B*x*b^2*d*e+2*A*a*b*e^2+B*a^2*e^2-2*B*d*a*b*e)/b/e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a + b\,x)^2}\,\,(A + B\,x)}{d + e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x),x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x), x)
```

sympy [A] time = 0.28, size = 53, normalized size = 0.40

$$\frac{Bbx^2}{2e}+x\left(\frac{Ab}{e}+\frac{Ba}{e}-\frac{Bbd}{e^2}\right)-\frac{(-Ae+Bd)\,(ae-bd)\log{(d+ex)}}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d),x)
```

```
[Out] B*b*x**2/(2*e) + x*(A*b/e + B*a/e - B*b*d/e**2) - (-A*e + B*d)*(a*e - b*d)*
log(d + e*x)/e**3
```

3.1714 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=144

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)(-aBe-Abe+2bBd)}{e^3(a+bx)}+\frac{bBx\sqrt{a^2+2abx}}{e^2(a+bx}$$

```
[Out] b*B*x*((b*x+a)^2)^(1/2)/e^2/(b*x+a)-(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)
/e^3/(b*x+a)/(e*x+d)-(-A*b*e-B*a*e+2*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^3
/(b*x+a)
```

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)(-aBe-Abe+2bBd)}{e^3(a+bx)}+\frac{bBx\sqrt{a^2+2abx}}{e^2(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (b*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x)) - ((b*d - a*e)*(B*d -
 A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x)) - ((2*b*B*d
- A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x)
)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^2}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^2B}{e^2}-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^2}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= \frac{bBx\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}-\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}-(2bBd-\end{aligned}$$

Mathematica [A] time = 0.05, size = 96, normalized size = 0.67

$$\frac{\sqrt{(a+bx)^2}\left(-(d+ex)\log(d+ex)(-aBe-Abe+2bBd)+ae(Bd-Ae)+b\left(Ade-Bd^2+Bdex+Be^2x^2\right)\right)}{e^3(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(a*e*(B*d - A*e) + b*(-(B*d^2) + A*d*e + B*d*e*x + B*e^2
*x^2) - (2*b*B*d - A*b*e - a*B*e)*(d + e*x)*Log[d + e*x]))/(e^3*(a + b*x)*(
d + e*x))
```

fricas [A] time = 0.77, size = 102, normalized size = 0.71

$$\frac{Bbe^{2}x^{2} + Bbdex - Bbd^{2} - Aae^{2} + (Ba + Ab)de - \Big(2\,Bbd^{2} - (Ba + Ab)de + \big(2\,Bbde - (Ba + Ab)e^{2}\big)x\Big)\log(ex +}{e^{4}x + de^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (B*b*e^2*x^2 + B*b*d*e*x - B*b*d^2 - A*a*e^2 + (B*a + A*b)*d*e - (2*B*b*d^2
 - (B*a + A*b)*d*e + (2*B*b*d*e - (B*a + A*b)*e^2)*x)*log(e*x + d))/(e^4*x
+ d*e^3)
```

giac [A] time = 0.18, size = 123, normalized size = 0.85

$$Bbxe^{(-2)}\mathrm{sgn}(bx + a) - \big(2\,Bbd\mathrm{sgn}(bx + a) - Bae\mathrm{sgn}(bx + a) - Abe\mathrm{sgn}(bx + a)\big)e^{(-3)}\log(|xe + d|) - \frac{\big(Bbd^{2}\mathrm{sgn}(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] B*b*x*e^(-2)*sgn(b*x + a) - (2*B*b*d*sgn(b*x + a) - B*a*e*sgn(b*x + a) - A*
b*e*sgn(b*x + a))*e^(-3)*log(abs(x*e + d)) - (B*b*d^2*sgn(b*x + a) - B*a*d*
e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e +
 d)
```

maple [C] time = 0.07, size = 158, normalized size = 1.10

$$\frac{\big(Ab\,e^{2}x\ln(bex + bd) + Ba\,e^{2}x\ln(bex + bd) - 2Bbdex\ln(bex + bd) + Bb\,e^{2}x^{2} + Abde\ln(bex + bd) + Bade\ln(}{(ex + d)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] csgn(b*x+a)*(A*ln(b*e*x+b*d)*x*b*e^2+B*ln(b*e*x+b*d)*x*a*e^2-2*B*ln(b*e*x+b
*d)*x*b*d*e+B*x^2*b*e^2+A*ln(b*e*x+b*d)*b*d*e+B*ln(b*e*x+b*d)*a*d*e-2*B*ln(
b*e*x+b*d)*b*d^2+B*x*a*e^2+B*x*b*d*e-A*a*e^2+A*b*d*e+2*a*B*d*e-b*B*d^2)/e^3
/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,\,(A+B\,x)}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^2,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^2, x)
```

sympy [**A**] time = 0.46, size = 71, normalized size = 0.49

$$\frac{Bbx}{e^2} + \frac{-Aae^2 + Abde + Bade - Bbd^2}{de^3 + e^4x} + \frac{(Abe + Bae - 2Bbd)\log(d + ex)}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**2,x)
```

```
[Out] B*b*x/e**2 + (-A*a*e**2 + A*b*d*e + B*a*d*e - B*b*d**2)/(d*e**3 + e**4*x) +
 (A*b*e + B*a*e - 2*B*b*d)*log(d + e*x)/e**3
```

3.1715 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=151

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3(a+bx)(d+ex)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)(d+ex)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\ \text{lo}}{e^3(a+bx)}$$

```
[Out] -1/2*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^2+(-A*b*e-
B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)+b*B*ln(e*x+d)*((b*x+a)
^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3(a+bx)(d+ex)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)(d+ex)}+\frac{bB\sqrt{a^2+2abx+b^2x^2}\ \text{lo}}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(
d + e*x)^2) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
3*(a + b*x)*(d + e*x)) + (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(
e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^3}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^3}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^2}+\frac{b^2B}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2a}}{e^3(a+bx)(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 89, normalized size = 0.59

$$-\frac{\sqrt{(a+bx)^2}\,\left(ae(Ae+B(d+2ex))+b(Ae(d+2ex)-Bd(3d+4ex))-2bB(d+ex)^2\log(d+ex)\right)}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -1/2*(Sqrt[(a + b*x)^2]*(a*e*(A*e + B*(d + 2*e*x)) + b*(A*e*(d + 2*e*x) - B
*d*(3*d + 4*e*x)) - 2*b*B*(d + e*x)^2*Log[d + e*x]))/(e^3*(a + b*x)*(d + e*
x)^2)
```

fricas [A] time = 0.56, size = 105, normalized size = 0.70

$$\frac{3\,Bbd^2 - Aae^2 - (Ba + Ab)de + 2\left(2\,Bbde - (Ba + Ab)e^2\right)x + 2\left(Bbe^2x^2 + 2\,Bbdex + Bbd^2\right)\log\left(ex + d\right)}{2\left(e^5x^2 + 2\,de^4x + d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(3*B*b*d^2 - A*a*e^2 - (B*a + A*b)*d*e + 2*(2*B*b*d*e - (B*a + A*b)*e^2
)*x + 2*(B*b*e^2*x^2 + 2*B*b*d*e*x + B*b*d^2)*log(e*x + d))/(e^5*x^2 + 2*d*
e^4*x + d^2*e^3)
```

giac [A] time = 0.18, size = 127, normalized size = 0.84

$$Bbe^{(-3)}\log\left(|xe+d|\right)\operatorname{sgn}\left(bx+a\right)+\frac{\left(2\left(2\,Bbd\operatorname{sgn}\left(bx+a\right)-Bae\operatorname{sgn}\left(bx+a\right)-Abe\operatorname{sgn}\left(bx+a\right)\right)x+\left(3\,Bbd^2\operatorname{sgn}\left(b\right.\right.}{2\left(xe\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*b*e^(-3)*log(abs(x*e + d))*sgn(b*x + a) + 1/2*(2*(2*B*b*d*sgn(b*x + a) -
B*a*e*sgn(b*x + a) - A*b*e*sgn(b*x + a))*x + (3*B*b*d^2*sgn(b*x + a) - B*a*
d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) - A*a*e^2*sgn(b*x + a))*e^(-1))*e^(
-2)/(x*e + d)^2
```

maple [C] time = 0.09, size = 117, normalized size = 0.77

$$-\frac{\left(-2Bb\,e^2x^2\ln\left(bex+bd\right)-4Bbdex\ln\left(bex+bd\right)+2Ab\,e^2x+2Ba\,e^2x-2Bb\,d^2\ln\left(bex+bd\right)-4Bbdex+Aa\,e^2+\right.}{2\left(ex+d\right)^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -1/2*csgn(b*x+a)*(-2*B*ln(b*e*x+b*d)*x^2*b*e^2-4*B*b*d*e*x*ln(b*e*x+b*d)+2*
A*x*b*e^2-2*B*b*d^2*ln(b*e*x+b*d)+2*B*a*e^2*x-4*B*b*d*e*x+A*a*e^2+A*b*d*e+B
*a*d*e-3*B*b*d^2)/e^3/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\ (A+B\,x)}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^3,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^3, x)
```

sympy [A] time = 0.84, size = 94, normalized size = 0.62

$$\frac{Bb\log{(d+ex)}}{e^3}+\frac{-Aae^2-Abde-Bade+3Bbd^2+x\left(-2Abe^2-2Bae^2+4Bbde\right)}{2d^2e^3+4de^4x+2e^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] B*b*log(d + e*x)/e**3 + (-A*a*e**2 - A*b*d*e - B*a*d*e + 3*B*b*d**2 + x*(-2
*A*b*e**2 - 2*B*a*e**2 + 4*B*b*d*e))/(2*d**2*e**3 + 4*d*e**4*x + 2*e**5*x**
2)
```

3.1716 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=104

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}(Bd-Ae)}{3(d+ex)^3(bd-ae)^2}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2(d+ex)^2(bd-ae)^2}$$

```
[Out] 1/3*(-A*e+B*d)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(-a*e+b*d)^2/(e*x+d)^3+1/2*(A*b-
B*a)*(b*x+a)*((b*x+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^2
```

Rubi **[A]** time = 0.06, antiderivative size = 104, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}(Bd-Ae)}{3(d+ex)^3(bd-ae)^2}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)}{2(d+ex)^2(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*(b*d - a*e)^2*(d +
 e*x)^2) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(3*(b*d - a*e)^2*(
d + e*x)^3)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)^2(d+ex)^3}+\frac{(Ab-aB)\int\frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx}{bd-ae}\\ &= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)^2(d+ex)^3}+\frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int\frac{ab-}{(d+}}{(bd-ae)\left(ab+b^2x\right)}\\ &= \frac{(Ab-aB)(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2(bd-ae)^2(d+ex)^2}+\frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{3/}}{3(bd-ae)^2(d+ex)^3}\end{aligned}$$

Mathematica [**A**]   time = 0.04, size = 81, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(ae(2Ae+B(d+3ex))+b\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)\right)}{6e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a*e*(2*A*e + B*(d + 3*e*x)) + b*(A*e*(d + 3*e*x) +
 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^3)
```

fricas [**A**]   time = 0.69, size = 93, normalized size = 0.89

$$-\frac{6\,Bbe^2x^2+2\,Bbd^2+2\,Aae^2+(Ba+Ab)de+3\left(2\,Bbde+(Ba+Ab)e^2\right)x}{6\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] -1/6*(6*B*b*e^2*x^2 + 2*B*b*d^2 + 2*A*a*e^2 + (B*a + A*b)*d*e + 3*(2*B*b*d*
e + (B*a + A*b)*e^2)*x)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [**A**]   time = 0.16, size = 117, normalized size = 1.12

$$-\frac{\left(6\,Bbx^2e^2\mathrm{sgn}\left(bx+a\right)+6\,Bbdxe\mathrm{sgn}\left(bx+a\right)+2\,Bbd^2\mathrm{sgn}\left(bx+a\right)+3\,Baxe^2\mathrm{sgn}\left(bx+a\right)+3\,Abxe^2\mathrm{sgn}\left(bx\right.\right.}{6\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] -1/6*(6*B*b*x^2*e^2*sgn(b*x + a) + 6*B*b*d*x*e*sgn(b*x + a) + 2*B*b*d^2*sgn
(b*x + a) + 3*B*a*x*e^2*sgn(b*x + a) + 3*A*b*x*e^2*sgn(b*x + a) + B*a*d*e*s
gn(b*x + a) + A*b*d*e*sgn(b*x + a) + 2*A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e +
d)^3
```

maple [**A**]   time = 0.05, size = 87, normalized size = 0.84

$$-\frac{\left(6Bb\,e^2x^2+3Ab\,e^2x+3Ba\,e^2x+6Bbdex+2Aa\,e^2+Abde+Bade+2Bb\,d^2\right)\sqrt{(bx+a)^2}}{6\,(ex+d)^3\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -1/6*(6*B*b*e^2*x^2+3*A*b*e^2*x+3*B*a*e^2*x+6*B*b*d*e*x+2*A*a*e^2+A*b*d*e+B
*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^3/e^3/(b*x+a)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.13, size = 86, normalized size = 0.83

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(2\,A\,a\,e^2+2\,B\,b\,d^2+3\,A\,b\,e^2\,x+3\,B\,a\,e^2\,x+6\,B\,b\,e^2\,x^2+A\,b\,d\,e+B\,a\,d\,e+6\,B\,b\,d\,e\,x\right)}{6\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^4,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(2*A*a*e^2 + 2*B*b*d^2 + 3*A*b*e^2*x + 3*B*a*e^2*x +
6*B*b*e^2*x^2 + A*b*d*e + B*a*d*e + 6*B*b*d*e*x))/(6*e^3*(a + b*x)*(d + e*x
)^3)
```

sympy [**A**] time = 1.51, size = 107, normalized size = 1.03

$$\frac{-2Aae^2 - Abde - Bade - 2Bbd^2 - 6Bbe^2x^2 + x\left(-3Abe^2 - 3Bae^2 - 6Bbde\right)}{6d^3e^3 + 18d^2e^4x + 18de^5x^2 + 6e^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] (-2*A*a*e**2 - A*b*d*e - B*a*d*e - 2*B*b*d**2 - 6*B*b*e**2*x**2 + x*(-3*A*b
*e**2 - 3*B*a*e**2 - 6*B*b*d*e))/(6*d**3*e**3 + 18*d**2*e**4*x + 18*d*e**5*
x**2 + 6*e**6*x**3)
```

3.1717 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{4e^3(a+bx)(d+ex)^4}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}$$

```
[Out] -1/4*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^4+1/3*(-A*
b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^3-1/2*b*B*((b*x+a)
^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^2
```

Rubi [A] time = 0.10, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{4e^3(a+bx)(d+ex)^4}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(
d + e*x)^4) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*
e^3*(a + b*x)*(d + e*x)^3) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a
+ b*x)*(d + e*x)^2)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^5}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^5}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^4}+\frac{b^2B}{e^2(d+ex)^3}\right)\,d}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2a}}{3e^3(a+bx)(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 80, normalized size = 0.51

$$-\frac{\sqrt{(a+bx)^2}\,\left(ae(3Ae+B(d+4ex))+b\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)\right)}{12e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a*e*(3*A*e + B*(d + 4*e*x)) + b*(A*e*(d + 4*e*x)
+ B*(d^2 + 4*d*e*x + 6*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^4)
```

fricas [A] time = 0.94, size = 102, normalized size = 0.65

$$-\frac{6\,Bbe^{2}x^{2}+Bbd^{2}+3\,Aae^{2}+(Ba+Ab)de+4\left(Bbde+(Ba+Ab)e^{2}\right)x}{12\left(e^{7}x^{4}+4\,de^{6}x^{3}+6\,d^{2}e^{5}x^{2}+4\,d^{3}e^{4}x+d^{4}e^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*B*b*e^2*x^2 + B*b*d^2 + 3*A*a*e^2 + (B*a + A*b)*d*e + 4*(B*b*d*e +
 (B*a + A*b)*e^2)*x)/(e^7*x^4 + 4*d*e^6*x^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x +
 d^4*e^3)
```

giac [A] time = 0.20, size = 116, normalized size = 0.73

$$-\frac{\left(6\,Bbx^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+4\,Bbdxe\mathrm{sgn}\left(bx+a\right)+Bbd^{2}\mathrm{sgn}\left(bx+a\right)+4\,Baxe^{2}\mathrm{sgn}\left(bx+a\right)+4\,Abxe^{2}\mathrm{sgn}\left(bx+a\right)}{12\left(xe+d\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(6*B*b*x^2*e^2*sgn(b*x + a) + 4*B*b*d*x*e*sgn(b*x + a) + B*b*d^2*sgn(
b*x + a) + 4*B*a*x*e^2*sgn(b*x + a) + 4*A*b*x*e^2*sgn(b*x + a) + B*a*d*e*sg
n(b*x + a) + A*b*d*e*sgn(b*x + a) + 3*A*a*e^2*sgn(b*x + a))*e^(-3)/(x*e + d
)^4
```

maple [A] time = 0.05, size = 86, normalized size = 0.54

$$-\frac{\left(6Bb\,e^{2}x^{2}+4Ab\,e^{2}x+4Ba\,e^{2}x+4Bbdex+3Aa\,e^{2}+Abde+Bade+Bb\,d^{2}\right)\sqrt{\left(bx+a\right)^{2}}}{12\left(ex+d\right)^{4}\left(bx+a\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -1/12/e^3*(6*B*b*e^2*x^2+4*A*b*e^2*x+4*B*a*e^2*x+4*B*b*d*e*x+3*A*a*e^2+A*b*
d*e+B*a*d*e+B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^4/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.15, size = 85, normalized size = 0.54

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(3\,A\,a\,e^2+B\,b\,d^2+4\,A\,b\,e^2\,x+4\,B\,a\,e^2\,x+6\,B\,b\,e^2\,x^2+A\,b\,d\,e+B\,a\,d\,e+4\,B\,b\,d\,e\,x\right)}{12\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*A*a*e^2 + B*b*d^2 + 4*A*b*e^2*x + 4*B*a*e^2*x + 6*
B*b*e^2*x^2 + A*b*d*e + B*a*d*e + 4*B*b*d*e*x))/(12*e^3*(a + b*x)*(d + e*x)
^4)
```

sympy [A] time = 2.62, size = 117, normalized size = 0.74

$$\frac{-3Aae^2 - Abde - Bade - Bbd^2 - 6Bbe^2x^2 + x\left(-4Abe^2 - 4Bae^2 - 4Bbde\right)}{12d^4e^3 + 48d^3e^4x + 72d^2e^5x^2 + 48de^6x^3 + 12e^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**2 - A*b*d*e - B*a*d*e - B*b*d**2 - 6*B*b*e**2*x**2 + x*(-4*A*b*e
**2 - 4*B*a*e**2 - 4*B*b*d*e))/(12*d**4*e**3 + 48*d**3*e**4*x + 72*d**2*e**
5*x**2 + 48*d*e**6*x**3 + 12*e**7*x**4)
```

3.1718 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{4e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^5}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}$$

```
[Out] -1/5*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^5+1/4*(-A*
b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^4-1/3*b*B*((b*x+a)
^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^3
```

Rubi [A] time = 0.09, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{4e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^5}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(
d + e*x)^5) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
e^3*(a + b*x)*(d + e*x)^4) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a
+ b*x)*(d + e*x)^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^6}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^6}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^5}+\frac{b^2B}{e^2(d+ex)^4}\right)dx}{ab+b^2x}\\
&= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2abx}}{4e^3(a+bx)(d+ex)^4}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 83, normalized size = 0.53

$$-\frac{\sqrt{(a+bx)^2}\left(3ae(4Ae+B(d+5ex))+b\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)\right)}{60e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*a*e*(4*A*e + B*(d + 5*e*x)) + b*(3*A*e*(d + 5*e
*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^5)
```

fricas [**A**] time = 0.87, size = 117, normalized size = 0.74

$$-\frac{20\,Bbe^{2}x^{2}+2\,Bbd^{2}+12\,Aae^{2}+3\,(Ba+Ab)de+5\left(2\,Bbde+3\,(Ba+Ab)e^{2}\right)x}{60\left(e^{8}x^{5}+5\,de^{7}x^{4}+10\,d^{2}e^{6}x^{3}+10\,d^{3}e^{5}x^{2}+5\,d^{4}e^{4}x+d^{5}e^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*b*e^2*x^2 + 2*B*b*d^2 + 12*A*a*e^2 + 3*(B*a + A*b)*d*e + 5*(2*B
*b*d*e + 3*(B*a + A*b)*e^2)*x)/(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10
*d^3*e^5*x^2 + 5*d^4*e^4*x + d^5*e^3)
```

giac [**A**] time = 0.16, size = 119, normalized size = 0.75

$$-\frac{\left(20\,Bbx^{2}e^{2}\mathrm{sgn}\left(bx+a\right)+10\,Bbdxe\mathrm{sgn}\left(bx+a\right)+2\,Bbd^{2}\mathrm{sgn}\left(bx+a\right)+15\,Baxe^{2}\mathrm{sgn}\left(bx+a\right)+15\,Abxe^{2}\mathrm{sgr}\right.}{60\left(xe+d\right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*b*x^2*e^2*sgn(b*x + a) + 10*B*b*d*x*e*sgn(b*x + a) + 2*B*b*d^2*
sgn(b*x + a) + 15*B*a*x*e^2*sgn(b*x + a) + 15*A*b*x*e^2*sgn(b*x + a) + 3*B*
a*d*e*sgn(b*x + a) + 3*A*b*d*e*sgn(b*x + a) + 12*A*a*e^2*sgn(b*x + a))*e^(-
3)/(x*e + d)^5
```

maple [**A**] time = 0.05, size = 89, normalized size = 0.56

$$-\frac{\left(20Bb\,e^{2}x^{2}+15Ab\,e^{2}x+15Ba\,e^{2}x+10Bbdex+12Aa\,e^{2}+3Abde+3Bade+2Bb\,d^{2}\right)\sqrt{\left(bx+a\right)^{2}}}{60\left(ex+d\right)^{5}\left(bx+a\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -1/60/e^3*(20*B*b*e^2*x^2+15*A*b*e^2*x+15*B*a*e^2*x+10*B*b*d*e*x+12*A*a*e^2
+3*A*b*d*e+3*B*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^5/(b*x+a)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.17, size = 88, normalized size = 0.56

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(12\,A\,a\,e^2+2\,B\,b\,d^2+15\,A\,b\,e^2\,x+15\,B\,a\,e^2\,x+20\,B\,b\,e^2\,x^2+3\,A\,b\,d\,e+3\,B\,a\,d\,e+10\,B\,b\,d\,e\,x\right)}{60\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(12*A*a*e^2 + 2*B*b*d^2 + 15*A*b*e^2*x + 15*B*a*e^2*x
 + 20*B*b*e^2*x^2 + 3*A*b*d*e + 3*B*a*d*e + 10*B*b*d*e*x))/(60*e^3*(a + b*x
)*(d + e*x)^5)
```

sympy [A] time = 4.36, size = 134, normalized size = 0.85

$$\frac{-12Aae^2 - 3Abde - 3Bade - 2Bbd^2 - 20Bbe^2x^2 + x\left(-15Abe^2 - 15Bae^2 - 10Bbde\right)}{60d^5e^3 + 300d^4e^4x + 600d^3e^5x^2 + 600d^2e^6x^3 + 300de^7x^4 + 60e^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**2 - 3*A*b*d*e - 3*B*a*d*e - 2*B*b*d**2 - 20*B*b*e**2*x**2 + x*(
-15*A*b*e**2 - 15*B*a*e**2 - 10*B*b*d*e))/(60*d**5*e**3 + 300*d**4*e**4*x +
 600*d**3*e**5*x**2 + 600*d**2*e**6*x**3 + 300*d*e**7*x**4 + 60*e**8*x**5)
```

3.1719 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7} \, dx$

Optimal. Leaf size=158

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{6e^3(a+bx)(d+ex)^6}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}$$

```
[Out] -1/6*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^6+1/5*(-A*
b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^5-1/4*b*B*((b*x+a)
^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^4
```

Rubi [A] time = 0.10, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{6e^3(a+bx)(d+ex)^6}-\frac{bB\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x)*(
d + e*x)^6) + ((2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*
e^3*(a + b*x)*(d + e*x)^5) - (b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a
+ b*x)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^7}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^7}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^6}+\frac{b^2B}{e^2(d+ex)^5}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)(d+ex)^6}+\frac{(2bBd-Abe-aBe)\sqrt{a^2+2a}}{5e^3(a+bx)(d+ex)^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 82, normalized size = 0.52

$$-\frac{\sqrt{(a+bx)^2}\left(2ae(5Ae+B(d+6ex))+b\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)\right)}{60e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a*e*(5*A*e + B*(d + 6*e*x)) + b*(2*A*e*(d + 6*e
*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2))))/(e^3*(a + b*x)*(d + e*x)^6)
```

fricas [A] time = 0.79, size = 126, normalized size = 0.80

$$-\frac{15\,Bbe^{2}x^{2} + Bbd^{2} + 10\,Aae^{2} + 2\,(Ba + Ab)de + 6\,\left(Bbde + 2\,(Ba + Ab)e^{2}\right)x}{60\,\left(e^{9}x^{6} + 6\,de^{8}x^{5} + 15\,d^{2}e^{7}x^{4} + 20\,d^{3}e^{6}x^{3} + 15\,d^{4}e^{5}x^{2} + 6\,d^{5}e^{4}x + d^{6}e^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*B*b*e^2*x^2 + B*b*d^2 + 10*A*a*e^2 + 2*(B*a + A*b)*d*e + 6*(B*b*d
*e + 2*(B*a + A*b)*e^2)*x)/(e^9*x^6 + 6*d*e^8*x^5 + 15*d^2*e^7*x^4 + 20*d^3
*e^6*x^3 + 15*d^4*e^5*x^2 + 6*d^5*e^4*x + d^6*e^3)
```

giac [A] time = 0.16, size = 118, normalized size = 0.75

$$-\frac{\left(15\,Bbx^{2}e^{2}\mathrm{sgn}\left(bx + a\right) + 6\,Bbdxe\mathrm{sgn}\left(bx + a\right) + Bbd^{2}\mathrm{sgn}\left(bx + a\right) + 12\,Baxe^{2}\mathrm{sgn}\left(bx + a\right) + 12\,Abxe^{2}\mathrm{sgn}\,(bx +\right.}{60\,(xe + d)^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*B*b*x^2*e^2*sgn(b*x + a) + 6*B*b*d*x*e*sgn(b*x + a) + B*b*d^2*sgn
(b*x + a) + 12*B*a*x*e^2*sgn(b*x + a) + 12*A*b*x*e^2*sgn(b*x + a) + 2*B*a*d
*e*sgn(b*x + a) + 2*A*b*d*e*sgn(b*x + a) + 10*A*a*e^2*sgn(b*x + a))*e^(-3)/
(x*e + d)^6
```

maple [A] time = 0.05, size = 88, normalized size = 0.56

$$-\frac{\left(15Bb\,e^{2}x^{2} + 12Ab\,e^{2}x + 12Ba\,e^{2}x + 6Bbdex + 10Aa\,e^{2} + 2Abde + 2Bade + Bb\,d^{2}\right)\sqrt{(bx + a)^{2}}}{60\,(ex + d)^{6}\,(bx + a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^3*(15*B*b*e^2*x^2+12*A*b*e^2*x+12*B*a*e^2*x+6*B*b*d*e*x+10*A*a*e^2+
2*A*b*d*e+2*B*a*d*e+B*b*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^6/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.16, size = 87, normalized size = 0.55

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(10\,A\,a\,e^2+B\,b\,d^2+12\,A\,b\,e^2\,x+12\,B\,a\,e^2\,x+15\,B\,b\,e^2\,x^2+2\,A\,b\,d\,e+2\,B\,a\,d\,e+6\,B\,b\,d\,e\,x\right)}{60\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*A*a*e^2 + B*b*d^2 + 12*A*b*e^2*x + 12*B*a*e^2*x +
 15*B*b*e^2*x^2 + 2*A*b*d*e + 2*B*a*d*e + 6*B*b*d*e*x))/(60*e^3*(a + b*x)*(
d + e*x)^6)
```

sympy **[A]** time = 6.57, size = 144, normalized size = 0.91

$$\frac{-10Aae^2 - 2Abde - 2Bade - Bbd^2 - 15Bbe^2x^2 + x\left(-12Abe^2 - 12Bae^2 - 6Bbde\right)}{60d^6e^3 + 360d^5e^4x + 900d^4e^5x^2 + 1200d^3e^6x^3 + 900d^2e^7x^4 + 360de^8x^5 + 60e^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] (-10*A*a*e**2 - 2*A*b*d*e - 2*B*a*d*e - B*b*d**2 - 15*B*b*e**2*x**2 + x*(-1
2*A*b*e**2 - 12*B*a*e**2 - 6*B*b*d*e))/(60*d**6*e**3 + 360*d**5*e**4*x + 90
0*d**4*e**5*x**2 + 1200*d**3*e**6*x**3 + 900*d**2*e**7*x**4 + 360*d*e**8*x*
*5 + 60*e**9*x**6)
```

3.1720 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=298

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)(-aBe-Abe+2}{8e^5(a+bx)}$$

```
[Out] 1/6*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^6*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-1/7*(-a
*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^7*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+
3/8*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^5/(b*
x+a)-1/9*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^5/(b*x+
a)+1/10*b^3*B*(e*x+d)^10*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.51, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{770, 77\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)(-aBe-Abe+2}{8e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^
5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^7*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A
*b*e - a*B*e)*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x))
- (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^5*(a + b*x)) + (b^3*B*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
10*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(ab+b^2x\right)^3(A+Bx)(d+ex)^5\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^5}{e^4}+\frac{b^3(bd-ae)^2(-4bBd+}{e}\right.}{}$$

$$=\frac{(bd-ae)^3(Bd-Ae)(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)}-\frac{(bd-ae)^2(4b}{}$$

Mathematica [A] time = 0.20, size = 496, normalized size = 1.66

$$x\sqrt{(a+bx)^2}\,\left(60a^3\left(7A\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+Bx\left(21d^5+70d^4ex+105d^3e\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(60*a^3*(7*A*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15
*d^2*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + B*x*(21*d^5 + 70*d^4*e*x + 105*d^3*
e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5)) + 45*a^2*b*x*(4*A*(21
*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5
*x^5) + B*x*(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120
*d*e^4*x^4 + 21*e^5*x^5)) + 15*a*b^2*x^2*(3*A*(56*d^5 + 210*d^4*e*x + 336*d
^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) + B*x*(126*d^5 +
 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x
^5)) + b^3*x^3*(5*A*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*
x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 2*B*x*(252*d^5 + 1050*d^4*e*x + 1800*d^
3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5))))/(2520*(a + b
*x))
```

fricas [B] time = 0.87, size = 518, normalized size = 1.74

$$\frac{1}{10}Bb^3e^5x^{10}+Aa^3d^5x+\frac{1}{9}\left(5Bb^3de^4+\left(3Bab^2+Ab^3\right)e^5\right)x^9+\frac{1}{8}\left(10Bb^3d^2e^3+5\left(3Bab^2+Ab^3\right)de^4+3\left(Ba^2b+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/10*B*b^3*e^5*x^10 + A*a^3*d^5*x + 1/9*(5*B*b^3*d*e^4 + (3*B*a*b^2 + A*b^3
)*e^5)*x^9 + 1/8*(10*B*b^3*d^2*e^3 + 5*(3*B*a*b^2 + A*b^3)*d*e^4 + 3*(B*a^2
*b + A*a*b^2)*e^5)*x^8 + 1/7*(10*B*b^3*d^3*e^2 + 10*(3*B*a*b^2 + A*b^3)*d^2
*e^3 + 15*(B*a^2*b + A*a*b^2)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5)*x^7 + 1/6*(5
*B*b^3*d^4*e + A*a^3*e^5 + 10*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 30*(B*a^2*b + A
*a*b^2)*d^2*e^3 + 5*(B*a^3 + 3*A*a^2*b)*d*e^4)*x^6 + 1/5*(B*b^3*d^5 + 5*A*a
^3*d*e^4 + 5*(3*B*a*b^2 + A*b^3)*d^4*e + 30*(B*a^2*b + A*a*b^2)*d^3*e^2 + 1
0*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*x^5 + 1/4*(10*A*a^3*d^2*e^3 + (3*B*a*b^2 + A
*b^3)*d^5 + 15*(B*a^2*b + A*a*b^2)*d^4*e + 10*(B*a^3 + 3*A*a^2*b)*d^3*e^2)*
x^4 + 1/3*(10*A*a^3*d^3*e^2 + 3*(B*a^2*b + A*a*b^2)*d^5 + 5*(B*a^3 + 3*A*a^
2*b)*d^4*e)*x^3 + 1/2*(5*A*a^3*d^4*e + (B*a^3 + 3*A*a^2*b)*d^5)*x^2
```

giac [B] time = 0.22, size = 922, normalized size = 3.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/10*B*b^3*x^10*e^5*sgn(b*x + a) + 5/9*B*b^3*d*x^9*e^4*sgn(b*x + a) + 5/4*B
*b^3*d^2*x^8*e^3*sgn(b*x + a) + 10/7*B*b^3*d^3*x^7*e^2*sgn(b*x + a) + 5/6*B
*b^3*d^4*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d^5*x^5*sgn(b*x + a) + 1/3*B*a*b^2*
x^9*e^5*sgn(b*x + a) + 1/9*A*b^3*x^9*e^5*sgn(b*x + a) + 15/8*B*a*b^2*d*x^8*
e^4*sgn(b*x + a) + 5/8*A*b^3*d*x^8*e^4*sgn(b*x + a) + 30/7*B*a*b^2*d^2*x^7*
e^3*sgn(b*x + a) + 10/7*A*b^3*d^2*x^7*e^3*sgn(b*x + a) + 5*B*a*b^2*d^3*x^6*
e^2*sgn(b*x + a) + 5/3*A*b^3*d^3*x^6*e^2*sgn(b*x + a) + 3*B*a*b^2*d^4*x^5*e
*sgn(b*x + a) + A*b^3*d^4*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d^5*x^4*sgn(b*x
+ a) + 1/4*A*b^3*d^5*x^4*sgn(b*x + a) + 3/8*B*a^2*b*x^8*e^5*sgn(b*x + a) +
3/8*A*a*b^2*x^8*e^5*sgn(b*x + a) + 15/7*B*a^2*b*d*x^7*e^4*sgn(b*x + a) + 15
/7*A*a*b^2*d*x^7*e^4*sgn(b*x + a) + 5*B*a^2*b*d^2*x^6*e^3*sgn(b*x + a) + 5*
A*a*b^2*d^2*x^6*e^3*sgn(b*x + a) + 6*B*a^2*b*d^3*x^5*e^2*sgn(b*x + a) + 6*A
*a*b^2*d^3*x^5*e^2*sgn(b*x + a) + 15/4*B*a^2*b*d^4*x^4*e*sgn(b*x + a) + 15/
4*A*a*b^2*d^4*x^4*e*sgn(b*x + a) + B*a^2*b*d^5*x^3*sgn(b*x + a) + A*a*b^2*d
^5*x^3*sgn(b*x + a) + 1/7*B*a^3*x^7*e^5*sgn(b*x + a) + 3/7*A*a^2*b*x^7*e^5*
sgn(b*x + a) + 5/6*B*a^3*d*x^6*e^4*sgn(b*x + a) + 5/2*A*a^2*b*d*x^6*e^4*sgn
(b*x + a) + 2*B*a^3*d^2*x^5*e^3*sgn(b*x + a) + 6*A*a^2*b*d^2*x^5*e^3*sgn(b*
x + a) + 5/2*B*a^3*d^3*x^4*e^2*sgn(b*x + a) + 15/2*A*a^2*b*d^3*x^4*e^2*sgn(
b*x + a) + 5/3*B*a^3*d^4*x^3*e*sgn(b*x + a) + 5*A*a^2*b*d^4*x^3*e*sgn(b*x +
 a) + 1/2*B*a^3*d^5*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d^5*x^2*sgn(b*x + a) + 1
/6*A*a^3*x^6*e^5*sgn(b*x + a) + A*a^3*d*x^5*e^4*sgn(b*x + a) + 5/2*A*a^3*d^
2*x^4*e^3*sgn(b*x + a) + 10/3*A*a^3*d^3*x^3*e^2*sgn(b*x + a) + 5/2*A*a^3*d^
4*x^2*e*sgn(b*x + a) + A*a^3*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 676, normalized size = 2.27

$$\Big(252b^{3}Be^{5}x^{9}+280x^{8}Ab^{3}e^{5}+840x^{8}Bab^{2}e^{5}+1400x^{8}b^{3}Bde^{4}+945x^{7}Aab^{2}e^{5}+1575x^{7}Ab^{3}de^{4}+945x^{7}Ba^{2}be^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x*(252*B*b^3*e^5*x^9+280*A*b^3*e^5*x^8+840*B*a*b^2*e^5*x^8+1400*B*b^
3*d*e^4*x^8+945*A*a*b^2*e^5*x^7+1575*A*b^3*d*e^4*x^7+945*B*a^2*b*e^5*x^7+47
25*B*a*b^2*d*e^4*x^7+3150*B*b^3*d^2*e^3*x^7+1080*A*a^2*b*e^5*x^6+5400*A*a*b
^2*d*e^4*x^6+3600*A*b^3*d^2*e^3*x^6+360*B*a^3*e^5*x^6+5400*B*a^2*b*d*e^4*x^
6+10800*B*a*b^2*d^2*e^3*x^6+3600*B*b^3*d^3*e^2*x^6+420*A*a^3*e^5*x^5+6300*A
*a^2*b*d*e^4*x^5+12600*A*a*b^2*d^2*e^3*x^5+4200*A*b^3*d^3*e^2*x^5+2100*B*a^
3*d*e^4*x^5+12600*B*a^2*b*d^2*e^3*x^5+12600*B*a*b^2*d^3*e^2*x^5+2100*B*b^3*
d^4*e*x^5+2520*A*a^3*d*e^4*x^4+15120*A*a^2*b*d^2*e^3*x^4+15120*A*a*b^2*d^3*
e^2*x^4+2520*A*b^3*d^4*e*x^4+5040*B*a^3*d^2*e^3*x^4+15120*B*a^2*b*d^3*e^2*x
^4+7560*B*a*b^2*d^4*e*x^4+504*B*b^3*d^5*x^4+6300*A*a^3*d^2*e^3*x^3+18900*A*
a^2*b*d^3*e^2*x^3+9450*A*a*b^2*d^4*e*x^3+630*A*b^3*d^5*x^3+6300*B*a^3*d^3*e
^2*x^3+9450*B*a^2*b*d^4*e*x^3+1890*B*a*b^2*d^5*x^3+8400*A*a^3*d^3*e^2*x^2+1
2600*A*a^2*b*d^4*e*x^2+2520*A*a*b^2*d^5*x^2+4200*B*a^3*d^4*e*x^2+2520*B*a^2
*b*d^5*x^2+6300*A*a^3*d^4*e*x+3780*A*a^2*b*d^5*x+1260*B*a^3*d^5*x+2520*A*a^
3*d^5)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.63, size = 1330, normalized size = 4.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^5*x^5/b^2 - 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*B*a*e^5*x^4/b^3 + 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*
e^5*x^3/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^5*x + 1/4*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*B*a^6*e^5*x/b^6 - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*B*a^3*e^5*x^2/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d^5/b + 1/4*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^7*e^5/b^7 + 41/168*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a^4*e^5*x/b^6 - 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*
e^5/b^7 + 1/9*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 -
 13/72*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*
(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/b^2 - 1/4*(5*B*
d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 + 5/4*(2*B*d^2*e^3
 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 5/2*(B*d^3*e^2 + A*
d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 5/4*(B*d^4*e + 2*A*d^3
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(B*d^5 + 5*A*d^4*e)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b + 37/168*(5*B*d*e^4 + A*e^5)*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*a^2*x^2/b^4 - 55/56*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 10/7*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6/b^6 + 5/4*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*a^5/b^5 - 5/2*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^4/b^4 + 5/4*(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^
3/b^3 - 1/4*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 1
21/504*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/5
6*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/7*
(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 5/6*(B*d^
4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 125/504*(5*B*d*e
^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(2*B*d^2*e^3 +
A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/7*(B*d^3*e^2 + A*d^2*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/6*(B*d^4*e + 2*A*d^3*e^2)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1/5*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^5\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + B x\right) \left(d + e x\right)^{5} \left(\left(a + b x\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**5*((a + b*x)**2)**(3/2), x)
```

3.1721 $\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=298

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(-3aBe-Abe+4bBd)}{8e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)(-aBe-Abe+2}{7e^5(a+bx)}$$

```
[Out] 1/5*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^5*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-1/6*(-a
*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^6*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+
3/7*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^7*((b*x+a)^2)^(1/2)/e^5/(b*
x+a)-1/8*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^5/(b*x+
a)+1/9*b^3*B*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.40, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(-3aBe-Abe+4bBd)}{8e^5(a+bx)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)(-aBe-Abe+2}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^
5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^6*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a + b*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A
*b*e - a*B*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x))
- (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(8*e^5*(a + b*x)) + (b^3*B*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9
*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(ab+b^2x\right)^3(A+Bx)(d+ex)^4\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^4}{e^4}+\frac{b^3(bd-ae)^2(-4bBd+}{e}\right.}{}$$

$$=\frac{(bd-ae)^3(Bd-Ae)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)}-\frac{(bd-ae)^2(4b}{}$$

Mathematica [A] time = 0.16, size = 410, normalized size = 1.38

$$x\sqrt{(a+bx)^2}\,\Big(84a^3\Big(6A\Big(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\Big)+Bx\Big(15d^4+40d^3ex+45d^2e^2x^2+24de^3x$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(84*a^3*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*
d*e^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3
*x^3 + 5*e^4*x^4)) + 36*a^2*b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2
+ 24*d*e^3*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2
 + 70*d*e^3*x^3 + 15*e^4*x^4)) + 9*a*b^2*x^2*(8*A*(35*d^4 + 105*d^3*e*x + 1
26*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 3*B*x*(70*d^4 + 224*d^3*e*x +
 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4)) + b^3*x^3*(9*A*(70*d^4 + 22
4*d^3*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 4*B*x*(126*d^4
+ 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4))))/(2520*(a +
 b*x))
```

fricas [A] time = 1.05, size = 425, normalized size = 1.43

$$\frac{1}{9}\,Bb^3e^4x^9+Aa^3d^4x+\frac{1}{8}\,\Big(4\,Bb^3de^3+\Big(3\,Bab^2+Ab^3\Big)e^4\Big)x^8+\frac{1}{7}\,\Big(6\,Bb^3d^2e^2+4\,\Big(3\,Bab^2+Ab^3\Big)de^3+3\,\Big(Ba^2b+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/9*B*b^3*e^4*x^9 + A*a^3*d^4*x + 1/8*(4*B*b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*
e^4)*x^8 + 1/7*(6*B*b^3*d^2*e^2 + 4*(3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b
+ A*a*b^2)*e^4)*x^7 + 1/6*(4*B*b^3*d^3*e + 6*(3*B*a*b^2 + A*b^3)*d^2*e^2 +
12*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x^6 + 1/5*(B*b^3*d^
4 + A*a^3*e^4 + 4*(3*B*a*b^2 + A*b^3)*d^3*e + 18*(B*a^2*b + A*a*b^2)*d^2*e^
2 + 4*(B*a^3 + 3*A*a^2*b)*d*e^3)*x^5 + 1/4*(4*A*a^3*d*e^3 + (3*B*a*b^2 + A*
b^3)*d^4 + 12*(B*a^2*b + A*a*b^2)*d^3*e + 6*(B*a^3 + 3*A*a^2*b)*d^2*e^2)*x^
4 + 1/3*(6*A*a^3*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d^4 + 4*(B*a^3 + 3*A*a^2*b
)*d^3*e)*x^3 + 1/2*(4*A*a^3*d^3*e + (B*a^3 + 3*A*a^2*b)*d^4)*x^2
```

giac [B] time = 0.20, size = 758, normalized size = 2.54

$$\frac{1}{9}\,Bb^3x^9e^4\mathrm{sgn}\,(bx+a)+\frac{1}{2}\,Bb^3dx^8e^3\mathrm{sgn}\,(bx+a)+\frac{6}{7}\,Bb^3d^2x^7e^2\mathrm{sgn}\,(bx+a)+\frac{2}{3}\,Bb^3d^3x^6e\mathrm{sgn}\,(bx+a)+\frac{1}{5}\,Bb^3d^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/9*B*b^3*x^9*e^4*sgn(b*x + a) + 1/2*B*b^3*d*x^8*e^3*sgn(b*x + a) + 6/7*B*b
^3*d^2*x^7*e^2*sgn(b*x + a) + 2/3*B*b^3*d^3*x^6*e*sgn(b*x + a) + 1/5*B*b^3*
d^4*x^5*sgn(b*x + a) + 3/8*B*a*b^2*x^8*e^4*sgn(b*x + a) + 1/8*A*b^3*x^8*e^4
*sgn(b*x + a) + 12/7*B*a*b^2*d*x^7*e^3*sgn(b*x + a) + 4/7*A*b^3*d*x^7*e^3*s
gn(b*x + a) + 3*B*a*b^2*d^2*x^6*e^2*sgn(b*x + a) + A*b^3*d^2*x^6*e^2*sgn(b*
x + a) + 12/5*B*a*b^2*d^3*x^5*e*sgn(b*x + a) + 4/5*A*b^3*d^3*x^5*e*sgn(b*x
+ a) + 3/4*B*a*b^2*d^4*x^4*sgn(b*x + a) + 1/4*A*b^3*d^4*x^4*sgn(b*x + a) +
3/7*B*a^2*b*x^7*e^4*sgn(b*x + a) + 3/7*A*a*b^2*x^7*e^4*sgn(b*x + a) + 2*B*a
^2*b*d*x^6*e^3*sgn(b*x + a) + 2*A*a*b^2*d*x^6*e^3*sgn(b*x + a) + 18/5*B*a^2
*b*d^2*x^5*e^2*sgn(b*x + a) + 18/5*A*a*b^2*d^2*x^5*e^2*sgn(b*x + a) + 3*B*a
^2*b*d^3*x^4*e*sgn(b*x + a) + 3*A*a*b^2*d^3*x^4*e*sgn(b*x + a) + B*a^2*b*d^
4*x^3*sgn(b*x + a) + A*a*b^2*d^4*x^3*sgn(b*x + a) + 1/6*B*a^3*x^6*e^4*sgn(b
*x + a) + 1/2*A*a^2*b*x^6*e^4*sgn(b*x + a) + 4/5*B*a^3*d*x^5*e^3*sgn(b*x +
a) + 12/5*A*a^2*b*d*x^5*e^3*sgn(b*x + a) + 3/2*B*a^3*d^2*x^4*e^2*sgn(b*x +
a) + 9/2*A*a^2*b*d^2*x^4*e^2*sgn(b*x + a) + 4/3*B*a^3*d^3*x^3*e*sgn(b*x + a
) + 4*A*a^2*b*d^3*x^3*e*sgn(b*x + a) + 1/2*B*a^3*d^4*x^2*sgn(b*x + a) + 3/2
*A*a^2*b*d^4*x^2*sgn(b*x + a) + 1/5*A*a^3*x^5*e^4*sgn(b*x + a) + A*a^3*d*x^
4*e^3*sgn(b*x + a) + 2*A*a^3*d^2*x^3*e^2*sgn(b*x + a) + 2*A*a^3*d^3*x^2*e*s
gn(b*x + a) + A*a^3*d^4*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 552, normalized size = 1.85

$$\frac{\left(280b^{3}B\,e^{4}x^{8}+315x^{7}A\,b^{3}e^{4}+945x^{7}Ba\,b^{2}e^{4}+1260x^{7}b^{3}Bd\,e^{3}+1080x^{6}Aa\,b^{2}e^{4}+1440x^{6}A\,b^{3}d\,e^{3}+1080x^{6}B\,a^{2}b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2520*x*(280*B*b^3*e^4*x^8+315*A*b^3*e^4*x^7+945*B*a*b^2*e^4*x^7+1260*B*b^
3*d*e^3*x^7+1080*A*a*b^2*e^4*x^6+1440*A*b^3*d*e^3*x^6+1080*B*a^2*b*e^4*x^6+
4320*B*a*b^2*d*e^3*x^6+2160*B*b^3*d^2*e^2*x^6+1260*A*a^2*b*e^4*x^5+5040*A*a
*b^2*d*e^3*x^5+2520*A*b^3*d^2*e^2*x^5+420*B*a^3*e^4*x^5+5040*B*a^2*b*d*e^3*
x^5+7560*B*a*b^2*d^2*e^2*x^5+1680*B*b^3*d^3*e*x^5+504*A*a^3*e^4*x^4+6048*A*
a^2*b*d*e^3*x^4+9072*A*a*b^2*d^2*e^2*x^4+2016*A*b^3*d^3*e*x^4+2016*B*a^3*d*
e^3*x^4+9072*B*a^2*b*d^2*e^2*x^4+6048*B*a*b^2*d^3*e*x^4+504*B*b^3*d^4*x^4+2
520*A*a^3*d*e^3*x^3+11340*A*a^2*b*d^2*e^2*x^3+7560*A*a*b^2*d^3*e*x^3+630*A*
b^3*d^4*x^3+3780*B*a^3*d^2*e^2*x^3+7560*B*a^2*b*d^3*e*x^3+1890*B*a*b^2*d^4*
x^3+5040*A*a^3*d^2*e^2*x^2+10080*A*a^2*b*d^3*e*x^2+2520*A*a*b^2*d^4*x^2+336
0*B*a^3*d^3*e*x^2+2520*B*a^2*b*d^4*x^2+5040*A*a^3*d^3*e*x+3780*A*a^2*b*d^4*
x+1260*B*a^3*d^4*x+2520*A*a^3*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.79, size = 1004, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^4*x^4/b^2 - 13/72*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a*e^4*x^3/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^4*
x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*e^4*x/b^5 + 37/168*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*B*a^2*e^4*x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*A*a*d^4/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^6*e^4/b^6 - 121/504*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e^4*x/b^5 + 125/504*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*B*a^4*e^4/b^6 + 1/8*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*x^3/b^2 + 1/4*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^4*x/b^4 - 1/2*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2
)*a^3*x/b^3 + 1/2*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
*a^2*x/b^2 - 1/4*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b
- 11/56*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 2/7
*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 + 1/4*(4
*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 1/2*(3*B*d^2*e^
2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 1/2*(2*B*d^3*e + 3
*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(B*d^4 + 4*A*d^3*
e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 + 13/56*(4*B*d*e^3 + A*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 3/7*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/3*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*x/b^2 - 69/280*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*a^3/b^5 + 17/35*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^2/b^4 - 7/15*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a/b^3 + 1/5*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,(d + e\,x)^4\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^4\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4*((a + b*x)**2)**(3/2), x)
```

3.1722 $\int (A+Bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=259

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-4aBe+Abe+3bBd)}{7b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)(-2aBe+Abe+b}{2b^5}$$

```
[Out] 1/4*(A*b-B*a)*(-a*e+b*d)^3*(b*x+a)^3*((b*x+a)^2)^(1/2)/b^5+1/5*(-a*e+b*d)^2
*(3*A*b*e-4*B*a*e+B*b*d)*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^5+1/2*e*(-a*e+b*d)*(
A*b*e-2*B*a*e+B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^5+1/7*e^2*(A*b*e-4*B*a*e
+3*B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^5+1/8*B*e^3*(b*x+a)^7*((b*x+a)^2)^(
1/2)/b^5
```

Rubi [A] time = 0.32, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-4aBe+Abe+3bBd)}{7b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)(-2aBe+Abe+b}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^
5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(5*b^5) + (e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x
)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*B*
e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (B*e^3*(a + b*x)^7*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(ab+b^2x\right)^3(A+Bx)(d+ex)^3\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(\frac{(Ab-aB)(bd-ae)^3\left(ab+b^2x\right)^3}{b^4}+\frac{(bd-ae)^2(bBd+3Abe-}{b^5}\right.}{}$$

$$=\frac{(Ab-aB)(bd-ae)^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^5}+\frac{(bd-ae)^2(b}{}$$

Mathematica [A] time = 0.14, size = 320, normalized size = 1.24

$$x\sqrt{(a+bx)^2}\,(14a^3(5A(4d^3+6d^2ex+4de^2x^2+e^3x^3)+Bx(10d^3+20d^2ex+15de^2x^2+4e^3x^3))+14a^2bx(3$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(14*a^3*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^
3) + B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + 14*a^2*b*x*(3*
A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2*e
*x + 36*d*e^2*x^2 + 10*e^3*x^3)) + 2*a*b^2*x^2*(7*A*(20*d^3 + 45*d^2*e*x +
36*d*e^2*x^2 + 10*e^3*x^3) + 3*B*x*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20
*e^3*x^3)) + b^3*x^3*(2*A*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3)
 + B*x*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3))))/(280*(a + b*x
))
```

fricas [A] time = 0.52, size = 325, normalized size = 1.25

$$\frac{1}{8}Bb^3e^3x^8+Aa^3d^3x+\frac{1}{7}\left(3Bb^3de^2+\left(3Bab^2+Ab^3\right)e^3\right)x^7+\frac{1}{2}\left(Bb^3d^2e+\left(3Bab^2+Ab^3\right)de^2+\left(Ba^2b+Aab^2\right)e^3\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/8*B*b^3*e^3*x^8 + A*a^3*d^3*x + 1/7*(3*B*b^3*d*e^2 + (3*B*a*b^2 + A*b^3)*
e^3)*x^7 + 1/2*(B*b^3*d^2*e + (3*B*a*b^2 + A*b^3)*d*e^2 + (B*a^2*b + A*a*b^
2)*e^3)*x^6 + 1/5*(B*b^3*d^3 + 3*(3*B*a*b^2 + A*b^3)*d^2*e + 9*(B*a^2*b + A
*a*b^2)*d*e^2 + (B*a^3 + 3*A*a^2*b)*e^3)*x^5 + 1/4*(A*a^3*e^3 + (3*B*a*b^2
+ A*b^3)*d^3 + 9*(B*a^2*b + A*a*b^2)*d^2*e + 3*(B*a^3 + 3*A*a^2*b)*d*e^2)*x
^4 + (A*a^3*d*e^2 + (B*a^2*b + A*a*b^2)*d^3 + (B*a^3 + 3*A*a^2*b)*d^2*e)*x^
3 + 1/2*(3*A*a^3*d^2*e + (B*a^3 + 3*A*a^2*b)*d^3)*x^2
```

giac [B] time = 0.21, size = 594, normalized size = 2.29

$$\frac{1}{8}Bb^3x^8e^3\operatorname{sgn}(bx+a)+\frac{3}{7}Bb^3dx^7e^2\operatorname{sgn}(bx+a)+\frac{1}{2}Bb^3d^2x^6e\operatorname{sgn}(bx+a)+\frac{1}{5}Bb^3d^3x^5\operatorname{sgn}(bx+a)+\frac{3}{7}Bab^2x^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/8*B*b^3*x^8*e^3*sgn(b*x + a) + 3/7*B*b^3*d*x^7*e^2*sgn(b*x + a) + 1/2*B*b
^3*d^2*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d^3*x^5*sgn(b*x + a) + 3/7*B*a*b^2*x^
7*e^3*sgn(b*x + a) + 1/7*A*b^3*x^7*e^3*sgn(b*x + a) + 3/2*B*a*b^2*d*x^6*e^2
*sgn(b*x + a) + 1/2*A*b^3*d*x^6*e^2*sgn(b*x + a) + 9/5*B*a*b^2*d^2*x^5*e*sg
n(b*x + a) + 3/5*A*b^3*d^2*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d^3*x^4*sgn(b*x
 + a) + 1/4*A*b^3*d^3*x^4*sgn(b*x + a) + 1/2*B*a^2*b*x^6*e^3*sgn(b*x + a) +
 1/2*A*a*b^2*x^6*e^3*sgn(b*x + a) + 9/5*B*a^2*b*d*x^5*e^2*sgn(b*x + a) + 9/
5*A*a*b^2*d*x^5*e^2*sgn(b*x + a) + 9/4*B*a^2*b*d^2*x^4*e*sgn(b*x + a) + 9/4
*A*a*b^2*d^2*x^4*e*sgn(b*x + a) + B*a^2*b*d^3*x^3*sgn(b*x + a) + A*a*b^2*d^
3*x^3*sgn(b*x + a) + 1/5*B*a^3*x^5*e^3*sgn(b*x + a) + 3/5*A*a^2*b*x^5*e^3*s
gn(b*x + a) + 3/4*B*a^3*d*x^4*e^2*sgn(b*x + a) + 9/4*A*a^2*b*d*x^4*e^2*sgn(
b*x + a) + B*a^3*d^2*x^3*e*sgn(b*x + a) + 3*A*a^2*b*d^2*x^3*e*sgn(b*x + a)
+ 1/2*B*a^3*d^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d^3*x^2*sgn(b*x + a) + 1/4*A
*a^3*x^4*e^3*sgn(b*x + a) + A*a^3*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a^3*d^2*x^
2*e*sgn(b*x + a) + A*a^3*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 428, normalized size = 1.65

$$\frac{\big(35B\,e^3b^3x^7 + 40x^6A\,b^3e^3 + 120x^6B\,e^3a\,b^2 + 120x^6B\,b^3d\,e^2 + 140x^5Aa\,b^2e^3 + 140x^5A\,b^3d\,e^2 + 140x^5B\,e^3a^2b + 42}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x*(35*B*b^3*e^3*x^7+40*A*b^3*e^3*x^6+120*B*a*b^2*e^3*x^6+120*B*b^3*d*
e^2*x^6+140*A*a*b^2*e^3*x^5+140*A*b^3*d*e^2*x^5+140*B*a^2*b*e^3*x^5+420*B*a
*b^2*d*e^2*x^5+140*B*b^3*d^2*e*x^5+168*A*a^2*b*e^3*x^4+504*A*a*b^2*d*e^2*x^
4+168*A*b^3*d^2*e*x^4+56*B*a^3*e^3*x^4+504*B*a^2*b*d*e^2*x^4+504*B*a*b^2*d^
2*e*x^4+56*B*b^3*d^3*x^4+70*A*a^3*e^3*x^3+630*A*a^2*b*d*e^2*x^3+630*A*a*b^2
*d^2*e*x^3+70*A*b^3*d^3*x^3+210*B*a^3*d*e^2*x^3+630*B*a^2*b*d^2*e*x^3+210*B
*a*b^2*d^3*x^3+280*A*a^3*d*e^2*x^2+840*A*a^2*b*d^2*e*x^2+280*A*a*b^2*d^3*x^
2+280*B*a^3*d^2*e*x^2+280*B*a^2*b*d^3*x^2+420*A*a^3*d^2*e*x+420*A*a^2*b*d^3
*x+140*B*a^3*d^3*x+280*A*a^3*d^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.56, size = 698, normalized size = 2.69

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}Be^3x^3}{8\,b^2} + \frac{1}{4}\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Ad^3x + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}Ba^4e^3x}{4\,b^4} - \frac{11\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}{56\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^3*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*A*d^3*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^4*e^3*x/b^4
- 11/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*e^3*x^2/b^3 + 1/4*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*A*a*d^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^5*e^
3/b^5 + 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*e^3*x/b^4 - 69/280*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e^3/b^5 - 1/4*(3*B*d*e^2 + A*e^3)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*x/b + 1/7*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
x^2/b^2 - 1/4*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 +
 3/4*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(B*d
^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 3/14*(3*B*d*e^2 +
 A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(B*d^2*e + A*d*e^2)*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 17/70*(3*B*d*e^2 + A*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/10*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a/b^3 + 1/5*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A + B\,x)\,(d + e\,x)^3\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A + Bx)\,(d + ex)^3\,\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3*((a + b*x)**2)**(3/2), x)
```

3.1723 $\int (A+Bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=198

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{6b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)(-3aBe+2Abe+bB}{5b^4}$$

```
[Out] 1/4*(A*b-B*a)*(-a*e+b*d)^2*(b*x+a)^3*((b*x+a)^2)^(1/2)/b^4+1/5*(-a*e+b*d)*(
2*A*b*e-3*B*a*e+B*b*d)*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^4+1/6*e*(A*b*e-3*B*a*e
+2*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^4+1/7*B*e^2*(b*x+a)^6*((b*x+a)^2)^(
1/2)/b^4
```

Rubi [A] time = 0.24, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{6b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)(-3aBe+2Abe+bB}{5b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^
4) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(5*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(6*b^4) + (B*e^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(7*b^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^2\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{(Ab-aB)(bd-ae)^2\left(ab+b^2x\right)^3}{b^3}+\frac{(bd-ae)(bBd+2Abe-3}{b^4}\right.}{b^2\left(ab+b^2\right.}\\
&= \frac{(Ab-aB)(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^4}+(bd-ae)(bB
\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 233, normalized size = 1.18

$$\frac{x\sqrt{(a+bx)^2}\left(35a^3\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+21a^2bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(35*a^3*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2
+ 8*d*e*x + 3*e^2*x^2)) + 21*a^2*b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2
*B*x*(10*d^2 + 15*d*e*x + 6*e^2*x^2)) + 21*a*b^2*x^2*(2*A*(10*d^2 + 15*d*e*
x + 6*e^2*x^2) + B*x*(15*d^2 + 24*d*e*x + 10*e^2*x^2)) + b^3*x^3*(7*A*(15*d
^2 + 24*d*e*x + 10*e^2*x^2) + 4*B*x*(21*d^2 + 35*d*e*x + 15*e^2*x^2))))/(42
0*(a + b*x))
```

fricas [**A**] time = 0.95, size = 239, normalized size = 1.21

$$\frac{1}{7}\,Bb^3e^2x^7+Aa^3d^2x+\frac{1}{6}\left(2\,Bb^3de+\left(3\,Bab^2+Ab^3\right)e^2\right)x^6+\frac{1}{5}\left(Bb^3d^2+2\left(3\,Bab^2+Ab^3\right)de+3\left(Ba^2b+Aab^2\right)e^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/7*B*b^3*e^2*x^7 + A*a^3*d^2*x + 1/6*(2*B*b^3*d*e + (3*B*a*b^2 + A*b^3)*e^
2)*x^6 + 1/5*(B*b^3*d^2 + 2*(3*B*a*b^2 + A*b^3)*d*e + 3*(B*a^2*b + A*a*b^2)
*e^2)*x^5 + 1/4*((3*B*a*b^2 + A*b^3)*d^2 + 6*(B*a^2*b + A*a*b^2)*d*e + (B*a
^3 + 3*A*a^2*b)*e^2)*x^4 + 1/3*(A*a^3*e^2 + 3*(B*a^2*b + A*a*b^2)*d^2 + 2*(
B*a^3 + 3*A*a^2*b)*d*e)*x^3 + 1/2*(2*A*a^3*d*e + (B*a^3 + 3*A*a^2*b)*d^2)*x
^2
```

giac [**B**] time = 0.18, size = 431, normalized size = 2.18

$$\frac{1}{7}\,Bb^3x^7e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,Bb^3dx^6e\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,Bb^3d^2x^5\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,Bab^2x^6e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{6}\,Ab^3x^6e^2\mathrm{s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/7*B*b^3*x^7*e^2*sgn(b*x + a) + 1/3*B*b^3*d*x^6*e*sgn(b*x + a) + 1/5*B*b^3
*d^2*x^5*sgn(b*x + a) + 1/2*B*a*b^2*x^6*e^2*sgn(b*x + a) + 1/6*A*b^3*x^6*e^
2*sgn(b*x + a) + 6/5*B*a*b^2*d*x^5*e*sgn(b*x + a) + 2/5*A*b^3*d*x^5*e*sgn(b
*x + a) + 3/4*B*a*b^2*d^2*x^4*sgn(b*x + a) + 1/4*A*b^3*d^2*x^4*sgn(b*x + a)
 + 3/5*B*a^2*b*x^5*e^2*sgn(b*x + a) + 3/5*A*a*b^2*x^5*e^2*sgn(b*x + a) + 3/
2*B*a^2*b*d*x^4*e*sgn(b*x + a) + 3/2*A*a*b^2*d*x^4*e*sgn(b*x + a) + B*a^2*b
*d^2*x^3*sgn(b*x + a) + A*a*b^2*d^2*x^3*sgn(b*x + a) + 1/4*B*a^3*x^4*e^2*sg
n(b*x + a) + 3/4*A*a^2*b*x^4*e^2*sgn(b*x + a) + 2/3*B*a^3*d*x^3*e*sgn(b*x +
 a) + 2*A*a^2*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a^3*d^2*x^2*sgn(b*x + a) + 3/2
*A*a^2*b*d^2*x^2*sgn(b*x + a) + 1/3*A*a^3*x^3*e^2*sgn(b*x + a) + A*a^3*d*x^
2*e*sgn(b*x + a) + A*a^3*d^2*x*sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 304, normalized size = 1.54

$$\frac{\left(60B\,b^3e^2x^6+70x^5A\,b^3e^2+210x^5B\,e^2a\,b^2+140x^5B\,b^3de+252x^4Aa\,b^2e^2+168x^4A\,b^3de+252x^4B\,e^2a^2b+5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/420*x*(60*B*b^3*e^2*x^6+70*A*b^3*e^2*x^5+210*B*a*b^2*e^2*x^5+140*B*b^3*d*
e*x^5+252*A*a*b^2*e^2*x^4+168*A*b^3*d*e*x^4+252*B*a^2*b*e^2*x^4+504*B*a*b^2
*d*e*x^4+84*B*b^3*d^2*x^4+315*A*a^2*b*e^2*x^3+630*A*a*b^2*d*e*x^3+105*A*b^3
*d^2*x^3+105*B*a^3*e^2*x^3+630*B*a^2*b*d*e*x^3+315*B*a*b^2*d^2*x^3+140*A*a^
3*e^2*x^2+840*A*a^2*b*d*e*x^2+420*A*a*b^2*d^2*x^2+280*B*a^3*d*e*x^2+420*B*a
^2*b*d^2*x^2+420*A*a^3*d*e*x+630*A*a^2*b*d^2*x+210*B*a^3*d^2*x+420*A*a^3*d^
2)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima **[B]** time = 0.57, size = 456, normalized size = 2.30

$$\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Ba^3e^2x}{4\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Be^2x^2}{7\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}Aa}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d^2*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)*B*a^3*e^2*x/b^3 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e^2*x^2/b^2
+ 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d^2/b - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*B*a^4*e^2/b^4 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a*e^2*x/b
^3 + 17/70*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2*e^2/b^4 + 1/4*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*(B*d^2 + 2*A*d*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2
*B*d*e + A*e^2)*a^3/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d^2 + 2*A*
d*e)*a^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*x/b^2
- 7/30*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/5*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,{(d+e\,x)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2*((a + b*x)**2)**(3/2), x)
```

3.1724 $\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=135

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(-2aBe+Abe+bBd)}{5b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)}{4b^3}+\frac{Be\sqrt{a^2+}}{}$$

```
[Out] 1/4*(A*b-B*a)*(-a*e+b*d)*(b*x+a)^3*((b*x+a)^2)^(1/2)/b^3+1/5*(A*b*e-2*B*a*e
+B*b*d)*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^3+1/6*B*e*(b*x+a)^5*((b*x+a)^2)^(1/2)
/b^3
```

Rubi [A] time = 0.14, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(-2aBe+Abe+bBd)}{5b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)(bd-ae)}{4b^3}+\frac{Be\sqrt{a^2+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3)
 + ((b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5
*b^3) + (B*e*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{(Ab-aB)(bd-ae)\left(ab+b^2x\right)^3}{b^2}+\frac{(bBd+Abe-2aBe)\left(ab\right.}{b^3}\right.}{b^2\left(ab+b^2x\right)}\\
&= \frac{(Ab-aB)(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^3}+\frac{(bBd+Abe}{}
\end{aligned}$$

Mathematica [A] time = 0.09, size = 144, normalized size = 1.07

$$\frac{x\sqrt{(a+bx)^2}\,\left(10a^3(3A(2d+ex)+Bx(3d+2ex))+15a^2bx(A(6d+4ex)+Bx(4d+3ex))+3ab^2x^2(5A(4d+3e\right.}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 3*a*b^
2*x^2*(5*A*(4*d + 3*e*x) + 3*B*x*(5*d + 4*e*x)) + 15*a^2*b*x*(B*x*(4*d + 3*
e*x) + A*(6*d + 4*e*x)) + b^3*x^3*(3*A*(5*d + 4*e*x) + 2*B*x*(6*d + 5*e*x))
))/(60*(a + b*x))
```

fricas [A] time = 0.93, size = 146, normalized size = 1.08

$$\frac{1}{6}Bb^3ex^6+Aa^3dx+\frac{1}{5}\left(Bb^3d+\left(3Bab^2+Ab^3\right)e\right)x^5+\frac{1}{4}\left(\left(3Bab^2+Ab^3\right)d+3\left(Ba^2b+Aab^2\right)e\right)x^4+\frac{1}{3}(3(Ba^2b+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/6*B*b^3*e*x^6 + A*a^3*d*x + 1/5*(B*b^3*d + (3*B*a*b^2 + A*b^3)*e)*x^5 + 1
/4*((3*B*a*b^2 + A*b^3)*d + 3*(B*a^2*b + A*a*b^2)*e)*x^4 + 1/3*(3*(B*a^2*b
+ A*a*b^2)*d + (B*a^3 + 3*A*a^2*b)*e)*x^3 + 1/2*(A*a^3*e + (B*a^3 + 3*A*a^2
*b)*d)*x^2
```

giac [B] time = 0.17, size = 267, normalized size = 1.98

$$\frac{1}{6}Bb^3x^6e\,\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}Bb^3dx^5\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}Bab^2x^5e\,\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}Ab^3x^5e\,\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}Bab^2dx^4\mathrm{sgn}(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*B*b^3*x^6*e*sgn(b*x + a) + 1/5*B*b^3*d*x^5*sgn(b*x + a) + 3/5*B*a*b^2*x
^5*e*sgn(b*x + a) + 1/5*A*b^3*x^5*e*sgn(b*x + a) + 3/4*B*a*b^2*d*x^4*sgn(b*
x + a) + 1/4*A*b^3*d*x^4*sgn(b*x + a) + 3/4*B*a^2*b*x^4*e*sgn(b*x + a) + 3/
4*A*a*b^2*x^4*e*sgn(b*x + a) + B*a^2*b*d*x^3*sgn(b*x + a) + A*a*b^2*d*x^3*s
gn(b*x + a) + 1/3*B*a^3*x^3*e*sgn(b*x + a) + A*a^2*b*x^3*e*sgn(b*x + a) + 1
/2*B*a^3*d*x^2*sgn(b*x + a) + 3/2*A*a^2*b*d*x^2*sgn(b*x + a) + 1/2*A*a^3*x^
2*e*sgn(b*x + a) + A*a^3*d*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 180, normalized size = 1.33

$$\frac{(10Bb^3ex^5+12x^4Ab^3e+36x^4Beab^2+12x^4Bb^3d+45x^3Aab^2e+15x^3Adb^3+45x^3Bea^2b+45x^3Bab^2d+60x^2}{60\,(bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*x*(10*B*b^3*e*x^5+12*A*b^3*e*x^4+36*B*a*b^2*e*x^4+12*B*b^3*d*x^4+45*A*
a*b^2*e*x^3+15*A*b^3*d*x^3+45*B*a^2*b*e*x^3+45*B*a*b^2*d*x^3+60*A*a^2*b*e*x
^2+60*A*a*b^2*d*x^2+20*B*a^3*e*x^2+60*B*a^2*b*d*x^2+30*A*a^3*e*x+90*A*a^2*b
*d*x+30*B*a^3*d*x+60*A*a^3*d)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.54, size = 254, normalized size = 1.88

$$\frac{1}{4}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Adx+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^2ex}{4b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Aad}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}Ba^3e}{4b^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*d*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*B*a^2*e*x/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*a*d/b + 1/4*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^3*e/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*(B*d + A*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*e*x/b^2 - 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(B*d + A*e)*a^2/b^2 - 7/30*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*B*a*e/b^3 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d + A*e)
/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,(d+e\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1725 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

```
[Out] 1/4*(A*b-B*a)*(b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/b^2+1/5*B*(b^2*x^2+2*a*b*
x+a^2)^(5/2)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}(Ab-aB)}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(4*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(5/2))/(5*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}+\frac{\left(2Ab^2-2abB\right)\int \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 83, normalized size = 1.20

$$\frac{x\sqrt{(a+bx)^2}\left(10a^3(2A+Bx)+10a^2bx(3A+2Bx)+5ab^2x^2(4A+3Bx)+b^3x^3(5A+4Bx)\right)}{20(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^3*(2*A + B*x) + 10*a^2*b*x*(3*A + 2*B*x) + 5*a*b
^2*x^2*(4*A + 3*B*x) + b^3*x^3*(5*A + 4*B*x)))/(20*(a + b*x))
```

fricas [A] time = 0.69, size = 69, normalized size = 1.00

$$\frac{1}{5}Bb^3x^5 + Aa^3x + \frac{1}{4}\left(3Bab^2 + Ab^3\right)x^4 + \left(Ba^2b + Aab^2\right)x^3 + \frac{1}{2}\left(Ba^3 + 3Aa^2b\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*B*b^3*x^5 + A*a^3*x + 1/4*(3*B*a*b^2 + A*b^3)*x^4 + (B*a^2*b + A*a*b^2)
*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

giac [B] time = 0.19, size = 144, normalized size = 2.09

$$\frac{1}{5}Bb^3x^5\operatorname{sgn}(bx+a)+\frac{3}{4}Bab^2x^4\operatorname{sgn}(bx+a)+\frac{1}{4}Ab^3x^4\operatorname{sgn}(bx+a)+Ba^2bx^3\operatorname{sgn}(bx+a)+Aab^2x^3\operatorname{sgn}(bx+a)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*B*b^3*x^5*sgn(b*x + a) + 3/4*B*a*b^2*x^4*sgn(b*x + a) + 1/4*A*b^3*x^4*s
gn(b*x + a) + B*a^2*b*x^3*sgn(b*x + a) + A*a*b^2*x^3*sgn(b*x + a) + 1/2*B*a
^3*x^2*sgn(b*x + a) + 3/2*A*a^2*b*x^2*sgn(b*x + a) + A*a^3*x*sgn(b*x + a) -
 1/20*(B*a^5 - 5*A*a^4*b)*sgn(b*x + a)/b^2
```

maple [A] time = 0.04, size = 90, normalized size = 1.30

$$\frac{\left(4b^3Bx^4 + 5Ab^3x^3 + 15x^3Bab^2 + 20Aab^2x^2 + 20Ba^2bx^2 + 30xAa^2b + 10Ba^3x + 20Aa^3\right)\left((bx+a)^2\right)^{\frac{3}{2}}x}{20\,(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/20*x*(4*B*b^3*x^4+5*A*b^3*x^3+15*B*a*b^2*x^3+20*A*a*b^2*x^2+20*B*a^2*b*x^
2+30*A*a^2*b*x+10*B*a^3*x+20*A*a^3)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.53, size = 125, normalized size = 1.81

$$\frac{1}{4}\left(b^2x^2 + 2abx + a^2\right)^{\frac{3}{2}}Ax - \frac{\left(b^2x^2 + 2abx + a^2\right)^{\frac{3}{2}}Bax}{4b} - \frac{\left(b^2x^2 + 2abx + a^2\right)^{\frac{3}{2}}Ba^2}{4b^2} + \frac{\left(b^2x^2 + 2abx + a^2\right)^{\frac{3}{2}}Aa}{4b} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*A*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*B*a*x/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*B*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*A*a/b + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B/b^2
```

mupad [B] time = 2.21, size = 42, normalized size = 0.61

$$\frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,\left(5\,A\,b-B\,a+4\,B\,b\,x\right)}{20\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)*(5*A*b - B*a + 4*B*b*x))/(20*b^2
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.1726 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=236

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)\log(d+ex)}{e^5(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(Bd-Ae)}{e^4(a+bx)}+$$

```
[Out] -b*(-a*e+b*d)^2*(-A*e+B*d)*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)+1/2*(-a*e+b*d)*(
-A*e+B*d)*(b*x+a)*((b*x+a)^2)^(1/2)/e^3-1/3*(-A*e+B*d)*(b*x+a)^2*((b*x+a)^2
)^(1/2)/e^2+1/4*B*(b*x+a)^3*((b*x+a)^2)^(1/2)/b/e+(-a*e+b*d)^3*(-A*e+B*d)*l
n(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.17, antiderivative size = 236, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(Bd-Ae)}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{2e^3}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^2*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b
*x))) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
2*e^3) - ((B*d - A*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^2) +
(B*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b*e) + ((b*d - a*e)^3*(B*d
 - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^4(bd-ae)^2(-Bd+Ae)}{e^4}-\frac{b^4(bd-ae)(-Bd+Ae)(a+bx)}{e^3}+\right.}{b^2\left(ab+b^2x\right)}$$

$$=-\frac{b(bd-ae)^2(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+$$

Mathematica [A] time = 0.12, size = 187, normalized size = 0.79

$$\frac{\sqrt{(a+bx)^2}\,(ex(12a^3Be^3+18a^2be^2(2Ae-2Bd+Bex)+6ab^2e(3Ae(ex-2d)+B(6d^2-3dex+2e^2x^2))+b^3(2A}{12e^5(a+bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(12*a^3*B*e^3 + 18*a^2*b*e^2*(-2*B*d + 2*A*e + B*e*
x) + 6*a*b^2*e*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + b^3
*(2*A*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^
2 + 3*e^3*x^3))) + 12*(b*d - a*e)^3*(B*d - A*e)*Log[d + e*x]))/(12*e^5*(a +
 b*x))
```

fricas [A] time = 0.65, size = 260, normalized size = 1.10

$$\frac{3Bb^3e^4x^4-4(Bb^3de^3-(3Bab^2+Ab^3)e^4)x^3+6(Bb^3d^2e^2-(3Bab^2+Ab^3)de^3+3(Ba^2b+Aab^2)e^4)x^2-12(Bb}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/12*(3*B*b^3*e^4*x^4 - 4*(B*b^3*d*e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 6*(
B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2
- 12*(B*b^3*d^3*e - (3*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e
^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 12*(B*b^3*d^4 + A*a^3*e^4 - (3*B*a*b^2 +
A*b^3)*d^3*e + 3*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3)*l
og(e*x + d))/e^5
```

giac [B] time = 0.18, size = 428, normalized size = 1.81

$$(Bb^3d^4\mathrm{sgn}(bx+a)-3Bab^2d^3e\mathrm{sgn}(bx+a)-Ab^3d^3e\mathrm{sgn}(bx+a)+3Ba^2bd^2e^2\mathrm{sgn}(bx+a)+3Aab^2d^2e^2\mathrm{sgn}(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a) - A*b^3*d^3*e*sgn(b*
x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2*e^2*sgn(b*x + a) -
B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) + A*a^3*e^4*sgn(b*x
 + a))*e^(-5)*log(abs(x*e + d)) + 1/12*(3*B*b^3*x^4*e^3*sgn(b*x + a) - 4*B*
b^3*d*x^3*e^2*sgn(b*x + a) + 6*B*b^3*d^2*x^2*e*sgn(b*x + a) - 12*B*b^3*d^3*
x*sgn(b*x + a) + 12*B*a*b^2*x^3*e^3*sgn(b*x + a) + 4*A*b^3*x^3*e^3*sgn(b*x
+ a) - 18*B*a*b^2*d*x^2*e^2*sgn(b*x + a) - 6*A*b^3*d*x^2*e^2*sgn(b*x + a) +
 36*B*a*b^2*d^2*x*e*sgn(b*x + a) + 12*A*b^3*d^2*x*e*sgn(b*x + a) + 18*B*a^2
*b*x^2*e^3*sgn(b*x + a) + 18*A*a*b^2*x^2*e^3*sgn(b*x + a) - 36*B*a^2*b*d*x*
e^2*sgn(b*x + a) - 36*A*a*b^2*d*x*e^2*sgn(b*x + a) + 12*B*a^3*x*e^3*sgn(b*x
 + a) + 36*A*a^2*b*x*e^3*sgn(b*x + a))*e^(-4)
```

maple [B] time = 0.06, size = 358, normalized size = 1.52

$$\frac{((bx+a)^2)^{\frac{3}{2}}(3Bb^3e^4x^4+4Ab^3e^4x^3+12Bab^2e^4x^3-4Bb^3de^3x^3+18Aab^2e^4x^2-6Ab^3de^3x^2+18Ba^2be^4x^2-1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*B*x^4*b^3*e^4+4*A*x^3*b^3*e^4+12*B*x^3*a*b^2*e^4-
4*B*x^3*b^3*d*e^3+18*A*x^2*a*b^2*e^4-6*A*x^2*b^3*d*e^3+18*B*x^2*a^2*b*e^4-1
8*B*x^2*a*b^2*d*e^3+6*B*x^2*b^3*d^2*e^2+12*A*ln(e*x+d)*a^3*e^4-36*A*ln(e*x+
d)*a^2*b*d*e^3+36*A*ln(e*x+d)*a*b^2*d^2*e^2-12*A*ln(e*x+d)*b^3*d^3*e+36*A*x
*a^2*b*e^4-36*A*x*a*b^2*d*e^3+12*A*x*b^3*d^2*e^2-12*B*ln(e*x+d)*a^3*d*e^3+3
6*B*ln(e*x+d)*a^2*b*d^2*e^2-36*B*ln(e*x+d)*a*b^2*d^3*e+12*B*ln(e*x+d)*b^3*d
^4+12*B*x*a^3*e^4-36*B*x*a^2*b*d*e^3+36*B*x*a*b^2*d^2*e^2-12*B*x*b^3*d^3*e)
/(b*x+a)^3/e^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x), x)
```

3.1727 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=285

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)(d+ex)}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(-3aBe-Abe+4bBd)}{2e^5(a+bx)}-\sqrt{a^2+2abx+$$

```
[Out] 3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)-(-a*e
+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)-1/2*b^2*(-A*b*e-3*
B*a*e+4*B*b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+1/3*b^3*B*(e*x+d)^3*
((b*x+a)^2)^(1/2)/e^5/(b*x+a)-(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*ln(e*x+
d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [**A**] time = 0.27, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{e^5(a+bx)(d+ex)}+\frac{3bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^4(a+bx)}-b^2\sqrt{a^2+2abx$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (3*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^4*(a + b*x)) - ((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(e^5*(a + b*x)*(d + e*x)) - (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) + (b^3*B*(d + e*x)^3*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A
*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{3b^4(bd-ae)(-2bBd+Abe+aBe)}{e^4}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^2}+\right.}{b^2\left(ab+\right.}$$

$$= \frac{3b(bd-ae)(2bBd-Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^3(Bd}{e^5(a}$$

Mathematica [**A**] time = 0.14, size = 262, normalized size = 0.92

$$\frac{\sqrt{(a+bx)^2}\left(6a^3e^3(Bd-Ae)+18a^2be^2\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+9ab^2e\left(2Ae\left(-d^2+dex+e^2x^2\right)+B\left(2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(6*a^3*e^3*(B*d - A*e) + 18*a^2*b*e^2*(A*d*e + B*(-d^2 +
 d*e*x + e^2*x^2)) + 9*a*b^2*e*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*(2*d^3 -
 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + b^3*(3*A*e*(2*d^3 - 4*d^2*e*x - 3*d*
e^2*x^2 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3
+ e^4*x^4)) - 6*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)*Log[d +
 e*x]))/(6*e^5*(a + b*x)*(d + e*x))
```

fricas [**A**] time = 0.57, size = 396, normalized size = 1.39

$$\frac{2\,Bb^3e^4x^4-6\,Bb^3d^4-6\,Aa^3e^4+6\left(3\,Bab^2+Ab^3\right)d^3e-18\left(Ba^2b+Aab^2\right)d^2e^2+6\left(Ba^3+3\,Aa^2b\right)de^3-\left(4\,Bb^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^3*e^4*x^4 - 6*B*b^3*d^4 - 6*A*a^3*e^4 + 6*(3*B*a*b^2 + A*b^3)*d^
3*e - 18*(B*a^2*b + A*a*b^2)*d^2*e^2 + 6*(B*a^3 + 3*A*a^2*b)*d*e^3 - (4*B*b
^3*d*e^3 - 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(4*B*b^3*d^2*e^2 - 3*(3*B*a*b
^2 + A*b^3)*d*e^3 + 6*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 6*(3*B*b^3*d^3*e - 2*(
3*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e^3)*x - 6*(4*B*b^3*d^
4 - 3*(3*B*a*b^2 + A*b^3)*d^3*e + 6*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 +
3*A*a^2*b)*d*e^3 + (4*B*b^3*d^3*e - 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*a^
2*b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x)*log(e*x + d))/(e^6*x + d
*e^5)
```

giac [**A**] time = 0.19, size = 425, normalized size = 1.49

$$-\left(4\,Bb^3d^3\mathrm{sgn}\left(bx+a\right)-9\,Bab^2d^2e\mathrm{sgn}\left(bx+a\right)-3\,Ab^3d^2e\mathrm{sgn}\left(bx+a\right)+6\,Ba^2bde^2\mathrm{sgn}\left(bx+a\right)+6\,Aab^2de^2\mathrm{s}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(4*B*b^3*d^3*sgn(b*x + a) - 9*B*a*b^2*d^2*e*sgn(b*x + a) - 3*A*b^3*d^2*e*s
gn(b*x + a) + 6*B*a^2*b*d*e^2*sgn(b*x + a) + 6*A*a*b^2*d*e^2*sgn(b*x + a) -
```

```
 B*a^3*e^3*sgn(b*x + a) - 3*A*a^2*b*e^3*sgn(b*x + a))*e^(-5)*log(abs(x*e +
d)) + 1/6*(2*B*b^3*x^3*e^4*sgn(b*x + a) - 6*B*b^3*d*x^2*e^3*sgn(b*x + a) +
18*B*b^3*d^2*x*e^2*sgn(b*x + a) + 9*B*a*b^2*x^2*e^4*sgn(b*x + a) + 3*A*b^3*
x^2*e^4*sgn(b*x + a) - 36*B*a*b^2*d*x*e^3*sgn(b*x + a) - 12*A*b^3*d*x*e^3*s
gn(b*x + a) + 18*B*a^2*b*x*e^4*sgn(b*x + a) + 18*A*a*b^2*x*e^4*sgn(b*x + a)
)*e^(-6) - (B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a) - A*b^3*d
^3*e*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2*e^2*sgn(
b*x + a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) + A*a^3*
e^4*sgn(b*x + a))*e^(-5)/(x*e + d)
```

maple [B] time = 0.07, size = 540, normalized size = 1.89

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}} (2B\,b^3e^4x^4+3A\,b^3e^4x^3+9Ba\,b^2e^4x^3-4B\,b^3d\,e^3x^3+18A\,a^2b\,e^4x\ln (ex+d)-36Aa\,b^2d\,e^3x\ln (ex+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(18*B*a^2*b*d*e^3*x-36*B*a*b^2*d^2*e^2*x+54*B*a*b^2*d
^3*e*ln(e*x+d)+18*A*a^2*b*d*e^3*ln(e*x+d)-36*A*a*b^2*d^2*e^2*ln(e*x+d)+18*A
*a*b^2*d*e^3*x-36*B*a^2*b*d^2*e^2*ln(e*x+d)-27*B*a*b^2*d*e^3*x^2+6*A*b^3*d^
3*e-6*A*a^3*e^4-6*B*b^3*d^4+9*B*a*b^2*e^4*x^3-4*B*b^3*d*e^3*x^3+18*A*a*b^2*
e^4*x^2-9*A*b^3*d*e^3*x^2+18*B*a^2*b*e^4*x^2+12*B*b^3*d^2*e^2*x^2+18*A*b^3*
d^3*e*ln(e*x+d)+6*B*d*e^3*a^3+2*B*b^3*e^4*x^4+3*A*b^3*e^4*x^3+18*B*a*b^2*d^
3*e-36*A*ln(e*x+d)*x*a*b^2*d*e^3-36*B*ln(e*x+d)*x*a^2*b*d*e^3+54*B*ln(e*x+d
)*x*a*b^2*d^2*e^2-18*B*a^2*b*d^2*e^2-18*A*a*b^2*d^2*e^2+18*A*d*e^3*a^2*b+18
*A*ln(e*x+d)*x*a^2*b*e^4+18*A*ln(e*x+d)*x*b^3*d^2*e^2-24*B*ln(e*x+d)*x*b^3*
d^3*e-12*A*b^3*d^2*e^2*x+6*B*a^3*d*e^3*ln(e*x+d)+18*B*b^3*d^3*e*x+6*B*ln(e*
x+d)*x*a^3*e^4-24*B*b^3*d^4*ln(e*x+d))/(b*x+a)^3/e^5/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**2, x)
```

3.1728 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=280

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{2e^5(a+bx)(d+ex)^2}+3b\sqrt{a^2+2abx+b$$

```
[Out] -b^2*(-A*b*e-3*B*a*e+3*B*b*d)*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)+1/2*b^3*B*x^2
*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-1/2*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2
)/e^5/(b*x+a)/(e*x+d)^2+(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(
1/2)/e^5/(b*x+a)/(e*x+d)+3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*ln(e*x+d)*((
b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.23, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b^2x\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+3bBd)}{e^4(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{e^5(a+bx)(d+ex)}-\sqrt{a^2+2a$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] -((b^2*(3*b*B*d - A*b*e - 3*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a
 + b*x))) + (b^3*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)) - (
(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(
d + e*x)^2) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) + (3*b*(b*d - a*e)*(2*b*B*d - A*b*e
- a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^3}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{b^5(-3bBd+Abe+3aBe)}{e^4}+\frac{b^6Bx}{e^3}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^3}+\right.}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{b^2(3bBd-Abe-3aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{b^3Bx^2\sqrt{a^2+2abx+}}{2e^3(a+bx)}$$

Mathematica [**A**] time = 0.15, size = 256, normalized size = 0.91

$$\frac{\sqrt{(a+bx)^2}\,\left(-a^3e^3(Ae+B(d+2ex))-3a^2be^2(Ae(d+2ex)-Bd(3d+4ex))+3ab^2e\left(Ade(3d+4ex)+B\left(-5d\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a^3*e^3*(A*e + B*(d + 2*e*x))) - 3*a^2*b*e^2*(A*e*(d
+ 2*e*x) - B*d*(3*d + 4*e*x)) + 3*a*b^2*e*(A*d*e*(3*d + 4*e*x) + B*(-5*d^3
- 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3)) + b^3*(A*e*(-5*d^3 - 4*d^2*e*x + 4*
d*e^2*x^2 + 2*e^3*x^3) + B*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^
3 + e^4*x^4)) + 6*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2*Log[d
 + e*x]))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

fricas [**A**] time = 0.92, size = 420, normalized size = 1.50

$$\frac{Bb^3e^4x^4+7\,Bb^3d^4-Aa^3e^4-5\left(3\,Bab^2+Ab^3\right)d^3e+9\left(Ba^2b+Aab^2\right)d^2e^2-\left(Ba^3+3\,Aa^2b\right)de^3-2\left(2\,Bb^3de^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/2*(B*b^3*e^4*x^4 + 7*B*b^3*d^4 - A*a^3*e^4 - 5*(3*B*a*b^2 + A*b^3)*d^3*e
+ 9*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3 - 2*(2*B*b^3*d*
e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 - (11*B*b^3*d^2*e^2 - 4*(3*B*a*b^2 + A*b
^3)*d*e^3)*x^2 + 2*(B*b^3*d^3*e - 2*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*a^2*
b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 6*(2*B*b^3*d^4 - (3*B*a*b
^2 + A*b^3)*d^3*e + (B*a^2*b + A*a*b^2)*d^2*e^2 + (2*B*b^3*d^2*e^2 - (3*B*a
*b^2 + A*b^3)*d*e^3 + (B*a^2*b + A*a*b^2)*e^4)*x^2 + 2*(2*B*b^3*d^3*e - (3*
B*a*b^2 + A*b^3)*d^2*e^2 + (B*a^2*b + A*a*b^2)*d*e^3)*x)*log(e*x + d))/(e^7
*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [**A**] time = 0.24, size = 417, normalized size = 1.49

$$3\left(2\,Bb^3d^2\operatorname{sgn}(bx+a)-3\,Bab^2de\operatorname{sgn}(bx+a)-Ab^3de\operatorname{sgn}(bx+a)+Ba^2be^2\operatorname{sgn}(bx+a)+Aab^2e^2\operatorname{sgn}(bx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 3*(2*B*b^3*d^2*sgn(b*x + a) - 3*B*a*b^2*d*e*sgn(b*x + a) - A*b^3*d*e*sgn(b*
x + a) + B*a^2*b*e^2*sgn(b*x + a) + A*a*b^2*e^2*sgn(b*x + a))*e^(-5)*log(ab
s(x*e + d)) + 1/2*(B*b^3*x^2*e^3*sgn(b*x + a) - 6*B*b^3*d*x*e^2*sgn(b*x + a
) + 6*B*a*b^2*x*e^3*sgn(b*x + a) + 2*A*b^3*x*e^3*sgn(b*x + a))*e^(-6) + 1/2
*(7*B*b^3*d^4*sgn(b*x + a) - 15*B*a*b^2*d^3*e*sgn(b*x + a) - 5*A*b^3*d^3*e*
sgn(b*x + a) + 9*B*a^2*b*d^2*e^2*sgn(b*x + a) + 9*A*a*b^2*d^2*e^2*sgn(b*x +
 a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) - A*a^3*e^4*s
gn(b*x + a) + 2*(4*B*b^3*d^3*e*sgn(b*x + a) - 9*B*a*b^2*d^2*e^2*sgn(b*x + a
) - 3*A*b^3*d^2*e^2*sgn(b*x + a) + 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*a*b^2
*d*e^3*sgn(b*x + a) - B*a^3*e^4*sgn(b*x + a) - 3*A*a^2*b*e^4*sgn(b*x + a))*
x)*e^(-5)/(x*e + d)^2
```

maple [B] time = 0.07, size = 566, normalized size = 2.02

$$\left((bx+a)^{2}\right)^{\frac{3}{2}}\left(B\,b^{3}e^{4}x^{4}+6Aa\,b^{2}e^{4}x^{2}\ln\left(ex+d\right)-6A\,b^{3}d\,e^{3}x^{2}\ln\left(ex+d\right)+2A\,b^{3}e^{4}x^{3}+6B\,a^{2}b\,e^{4}x^{2}\ln\left(ex+d\right)-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(12*B*a^2*b*d*e^3*x-12*B*a*b^2*d^2*e^2*x-18*B*a*b^2*d
^3*e*ln(e*x+d)+6*A*a*b^2*d^2*e^2*ln(e*x+d)+12*A*a*b^2*d*e^3*x+6*B*a^2*b*d^2
*e^2*ln(e*x+d)-18*B*ln(e*x+d)*x^2*a*b^2*d*e^3+12*B*a*b^2*d*e^3*x^2-5*A*b^3*
d^3*e-A*a^3*e^4+7*B*b^3*d^4+6*B*a*b^2*e^4*x^3-4*B*b^3*d*e^3*x^3+4*A*b^3*d*e
^3*x^2-11*B*b^3*d^2*e^2*x^2-6*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^3+B*b^3*e^4*x
^4+2*A*b^3*e^4*x^3-15*B*a*b^2*d^3*e+12*A*a*b^2*d*e^3*x*ln(e*x+d)+12*B*a^2*b
*d*e^3*x*ln(e*x+d)-36*B*a*b^2*d^2*e^2*x*ln(e*x+d)+9*B*a^2*b*d^2*e^2+9*A*a*b
^2*d^2*e^2-3*A*a^2*b*d*e^3-12*A*b^3*d^2*e^2*x*ln(e*x+d)+24*B*b^3*d^3*e*x*ln
(e*x+d)-6*A*a^2*b*e^4*x-4*A*b^3*d^2*e^2*x+2*B*b^3*d^3*e*x-6*A*ln(e*x+d)*x^2
*b^3*d*e^3+12*B*b^3*d^4*ln(e*x+d)-2*B*a^3*e^4*x+6*B*ln(e*x+d)*x^2*a^2*b*e^4
+12*B*ln(e*x+d)*x^2*b^3*d^2*e^2+6*A*ln(e*x+d)*x^2*a*b^2*e^4)/(b*x+a)^3/e^5/
(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{(d+e\,x)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**3,x)
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**3, x)
```

3.1729 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=284

$$-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{2e^5(a+bx)(d+ex)^2}-\sqrt{a}$$

```
[Out] b^3*B*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)-1/3*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^
2)^(1/2)/e^5/(b*x+a)/(e*x+d)^3+1/2*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((
b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^2-3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)
*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)-b^2*(-A*b*e-3*B*a*e+4*B*b*d)*ln(e*x+
d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.21, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-3Abe+4bBd)}{2e^5(a+bx)(d+ex)^2}-\sqrt{a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (b^3*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b*d - a*e)^3*(B
*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^3) + ((
b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*
e^5*(a + b*x)*(d + e*x)^2) - (3*b*(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (b^2*(4*b*B*d - A*b
*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^4}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^6B}{e^4}-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^4}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+a}{e^4(d+ex)^3}\right.}{b^2\left(ab+b^2x\right)}$$

$$= \frac{b^3Bx\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}+$$

Mathematica [**A**] time = 0.15, size = 251, normalized size = 0.88

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(2Ae+B(d+3ex))+3a^2be^2\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+3ab^2e\left(2Ae\left(d^2+3\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a^3*e^3*(2*A*e + B*(d + 3*e*x)) + 3*a^2*b*e^2*(A*e
*(d + 3*e*x) + 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 3*a*b^2*e*(2*A*e*(d^2 + 3
*d*e*x + 3*e^2*x^2) - B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + b^3*(-(A*d*e*
(11*d^2 + 27*d*e*x + 18*e^2*x^2)) + 2*B*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^
2 - 9*d*e^3*x^3 - 3*e^4*x^4)) + 6*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)
^3*Log[d + e*x]))/(e^5*(a + b*x)*(d + e*x)^3)
```

fricas [**A**] time = 1.03, size = 406, normalized size = 1.43

$$\frac{6\,Bb^3e^4x^4+18\,Bb^3de^3x^3-26\,Bb^3d^4-2\,Aa^3e^4+11\left(3\,Bab^2+Ab^3\right)d^3e-6\left(Ba^2b+Aab^2\right)d^2e^2-\left(Ba^3+3\,Aa^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/6*(6*B*b^3*e^4*x^4 + 18*B*b^3*d*e^3*x^3 - 26*B*b^3*d^4 - 2*A*a^3*e^4 + 11
*(3*B*a*b^2 + A*b^3)*d^3*e - 6*(B*a^2*b + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a
^2*b)*d*e^3 - 18*(B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 + (B*a^2*b + A*
a*b^2)*e^4)*x^2 - 3*(18*B*b^3*d^3*e - 9*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 6*(B*
a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x - 6*(4*B*b^3*d^4 - (3*B
*a*b^2 + A*b^3)*d^3*e + (4*B*b^3*d*e^3 - (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(
4*B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3)*x^2 + 3*(4*B*b^3*d^3*e - (3*B*
a*b^2 + A*b^3)*d^2*e^2)*x)*log(e*x + d))/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6
*x + d^3*e^5)
```

giac [**A**] time = 0.19, size = 411, normalized size = 1.45

$$Bb^3xe^{(-4)}\mathrm{sgn}\,(bx+a)-\left(4\,Bb^3d\mathrm{sgn}\,(bx+a)-3\,Bab^2e\mathrm{sgn}\,(bx+a)-Ab^3e\mathrm{sgn}\,(bx+a)\right)e^{(-5)}\log\left(|xe+d|\right)-\frac{(26}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] B*b^3*x*e^(-4)*sgn(b*x + a) - (4*B*b^3*d*sgn(b*x + a) - 3*B*a*b^2*e*sgn(b*x
 + a) - A*b^3*e*sgn(b*x + a))*e^(-5)*log(abs(x*e + d)) - 1/6*(26*B*b^3*d^4*
sgn(b*x + a) - 33*B*a*b^2*d^3*e*sgn(b*x + a) - 11*A*b^3*d^3*e*sgn(b*x + a)
+ 6*B*a^2*b*d^2*e^2*sgn(b*x + a) + 6*A*a*b^2*d^2*e^2*sgn(b*x + a) + B*a^3*d
*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e^3*sgn(b*x + a) + 2*A*a^3*e^4*sgn(b*x + a)
 + 18*(2*B*b^3*d^2*e^2*sgn(b*x + a) - 3*B*a*b^2*d*e^3*sgn(b*x + a) - A*b^3*
d*e^3*sgn(b*x + a) + B*a^2*b*e^4*sgn(b*x + a) + A*a*b^2*e^4*sgn(b*x + a))*x
^2 + 3*(20*B*b^3*d^3*e*sgn(b*x + a) - 27*B*a*b^2*d^2*e^2*sgn(b*x + a) - 9*A
*b^3*d^2*e^2*sgn(b*x + a) + 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*a*b^2*d*e^3*
sgn(b*x + a) + B*a^3*e^4*sgn(b*x + a) + 3*A*a^2*b*e^4*sgn(b*x + a))*x)*e^(-
5)/(x*e + d)^3
```

maple [B] time = 0.06, size = 512, normalized size = 1.80

$$\left((bx+a)^2\right)^{\frac{3}{2}}\left(6A\,b^3e^4x^3\ln(ex+d)+18Ba\,b^2e^4x^3\ln(ex+d)-24B\,b^3d\,e^3x^3\ln(ex+d)+6B\,b^3e^4x^4+18A\,b^3d\,e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(3/2)*(-18*B*a^2*b*d*e^3*x+81*B*a*b^2*d^2*e^2*x+18*B*a*b^2*
d^3*e*ln(e*x+d)-18*A*a*b^2*d*e^3*x+54*B*a*b^2*d*e^3*x^2*ln(e*x+d)+54*B*a*b^
2*d*e^3*x^2+11*A*b^3*d^3*e-2*A*a^3*e^4-26*B*b^3*d^4+18*B*b^3*d*e^3*x^3-18*A
*a*b^2*e^4*x^2+18*A*b^3*d*e^3*x^2-18*B*a^2*b*e^4*x^2-18*B*b^3*d^2*e^2*x^2+6
*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^3+6*B*b^3*e^4*x^4+33*B*a*b^2*d^3*e+54*B*a*
b^2*d^2*e^2*x*ln(e*x+d)-6*B*a^2*b*d^2*e^2-6*A*a*b^2*d^2*e^2-3*A*a^2*b*d*e^3
+18*A*b^3*d^2*e^2*x*ln(e*x+d)-72*B*b^3*d^3*e*x*ln(e*x+d)-9*A*a^2*b*e^4*x+27
*A*b^3*d^2*e^2*x-54*B*b^3*d^3*e*x+18*A*b^3*d*e^3*x^2*ln(e*x+d)-24*B*b^3*d^4
*ln(e*x+d)-3*B*a^3*e^4*x+18*B*ln(e*x+d)*x^3*a*b^2*e^4-24*B*ln(e*x+d)*x^3*b^
3*d*e^3-72*B*b^3*d^2*e^2*x^2*ln(e*x+d)+6*A*ln(e*x+d)*x^3*b^3*e^4)/(b*x+a)^3
/e^5/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{(d+e\,x)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^4}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**4, x)
```

3.1730 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=257

$$-\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{4e(d+ex)^4(bd-ae)}+\frac{3b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^5(a+bx)(d+ex)^2}+$$

```
[Out] -1/4*(-A*e+B*d)*(b*x+a)^3*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)/(e*x+d)^4+1/3*B*(-
a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^3-3/2*b*B*(-a*e+b*d)^2*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^2+3*b^2*B*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e
^5/(b*x+a)/(e*x+d)+b^3*B*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.18, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 78, 43\}$

$$-\frac{(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{4e(d+ex)^4(bd-ae)}+\frac{3b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^5(a+bx)(d+ex)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e*(b*d - a*e)*(
d + e*x)^4) + (B*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b
*x)*(d + e*x)^3) - (3*b*B*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e
^5*(a + b*x)*(d + e*x)^2) + (3*b^2*B*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^5*(a + b*x)*(d + e*x)) + (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d
 + e*x])/(e^5*(a + b*x))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^5}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^2e\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4e(bd-ae)(d+ex)^4} + \frac{B(bd-ae)^3\sqrt{a^2+2abx+}}{3e^5(a+bx)(d+ex)^3}$$

Mathematica [**A**] time = 0.14, size = 240, normalized size = 0.93

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(3Ae+B(d+4ex))+3a^2be^2\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+3ab^2e\left(Ae\left(d^2+4dex\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a^3*e^3*(3*A*e + B*(d + 4*e*x)) + 3*a^2*b*e^2*(A*
e*(d + 4*e*x) + B*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 3*a*b^2*e*(A*e*(d^2 + 4*d*
e*x + 6*e^2*x^2) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) + b^3*(
3*A*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - B*d*(25*d^3 + 88*d^2*e*
x + 108*d*e^2*x^2 + 48*e^3*x^3)) - 12*b^3*B*(d + e*x)^4*Log[d + e*x]))/(e^5
*(a + b*x)*(d + e*x)^4)
```

fricas [**A**] time = 0.89, size = 354, normalized size = 1.38

$$\frac{25\,Bb^3d^4-3\,Aa^3e^4-3\left(3\,Bab^2+Ab^3\right)d^3e-3\left(Ba^2b+Aab^2\right)d^2e^2-\left(Ba^3+3\,Aa^2b\right)de^3+12\left(4\,Bb^3de^3-\left(3\,Ba\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(25*B*b^3*d^4 - 3*A*a^3*e^4 - 3*(3*B*a*b^2 + A*b^3)*d^3*e - 3*(B*a^2*b
 + A*a*b^2)*d^2*e^2 - (B*a^3 + 3*A*a^2*b)*d*e^3 + 12*(4*B*b^3*d*e^3 - (3*B*
a*b^2 + A*b^3)*e^4)*x^3 + 18*(6*B*b^3*d^2*e^2 - (3*B*a*b^2 + A*b^3)*d*e^3 -
 (B*a^2*b + A*a*b^2)*e^4)*x^2 + 4*(22*B*b^3*d^3*e - 3*(3*B*a*b^2 + A*b^3)*d
^2*e^2 - 3*(B*a^2*b + A*a*b^2)*d*e^3 - (B*a^3 + 3*A*a^2*b)*e^4)*x + 12*(B*b
^3*e^4*x^4 + 4*B*b^3*d*e^3*x^3 + 6*B*b^3*d^2*e^2*x^2 + 4*B*b^3*d^3*e*x + B*
b^3*d^4)*log(e*x + d))/(e^9*x^4 + 4*d*e^8*x^3 + 6*d^2*e^7*x^2 + 4*d^3*e^6*x
 + d^4*e^5)
```

giac [**B**] time = 0.23, size = 419, normalized size = 1.63

$$Bb^3e^{(-5)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(12\left(4\,Bb^3de^2\mathrm{sgn}\left(bx+a\right)-3\,Bab^2e^3\mathrm{sgn}\left(bx+a\right)-Ab^3e^3\mathrm{sgn}\left(bx+a\right)\right)x^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] B*b^3*e^(-5)*log(abs(x*e + d))*sgn(b*x + a) + 1/12*(12*(4*B*b^3*d*e^2*sgn(b
*x + a) - 3*B*a*b^2*e^3*sgn(b*x + a) - A*b^3*e^3*sgn(b*x + a))*x^3 + 18*(6*
B*b^3*d^2*e*sgn(b*x + a) - 3*B*a*b^2*d*e^2*sgn(b*x + a) - A*b^3*d*e^2*sgn(b
*x + a) - B*a^2*b*e^3*sgn(b*x + a) - A*a*b^2*e^3*sgn(b*x + a))*x^2 + 4*(22*
B*b^3*d^3*sgn(b*x + a) - 9*B*a*b^2*d^2*e*sgn(b*x + a) - 3*A*b^3*d^2*e*sgn(b
*x + a) - 3*B*a^2*b*d*e^2*sgn(b*x + a) - 3*A*a*b^2*d*e^2*sgn(b*x + a) - B*a
^3*e^3*sgn(b*x + a) - 3*A*a^2*b*e^3*sgn(b*x + a))*x + (25*B*b^3*d^4*sgn(b*x
 + a) - 9*B*a*b^2*d^3*e*sgn(b*x + a) - 3*A*b^3*d^3*e*sgn(b*x + a) - 3*B*a^2
*b*d^2*e^2*sgn(b*x + a) - 3*A*a*b^2*d^2*e^2*sgn(b*x + a) - B*a^3*d*e^3*sgn(
b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a) - 3*A*a^3*e^4*sgn(b*x + a))*e^(-1))
*e^(-4)/(x*e + d)^4
```

maple [**B**] time = 0.06, size = 394, normalized size = 1.53

$$-\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}\left(-12B\,b^{3}e^{4}x^{4}\ln\left(ex+d\right)-48B\,b^{3}d\,e^{3}x^{3}\ln\left(ex+d\right)+12A\,b^{3}e^{4}x^{3}+36Ba\,b^{2}e^{4}x^{3}-72B\,b^{3}d^{2}e^{2}x^{2}\ln\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] -1/12*((b*x+a)^2)^(3/2)*(12*B*a^2*b*d*e^3*x+36*B*a*b^2*d^2*e^2*x+12*A*a*b^2
*d*e^3*x+54*B*a*b^2*d*e^3*x^2+3*A*b^3*d^3*e+3*A*a^3*e^4-25*B*b^3*d^4+36*B*a
*b^2*e^4*x^3-48*B*b^3*d*e^3*x^3+18*A*a*b^2*e^4*x^2+18*A*b^3*d*e^3*x^2+18*B*
a^2*b*e^4*x^2-108*B*b^3*d^2*e^2*x^2+B*a^3*d*e^3+12*A*b^3*e^4*x^3+9*B*a*b^2*
d^3*e+3*B*a^2*b*d^2*e^2+3*A*a*b^2*d^2*e^2-12*B*ln(e*x+d)*x^4*b^3*e^4+3*A*a^
2*b*d*e^3-48*B*b^3*d^3*e*x*ln(e*x+d)+12*A*a^2*b*e^4*x+12*A*b^3*d^2*e^2*x-88
*B*b^3*d^3*e*x-12*B*b^3*d^4*ln(e*x+d)+4*B*a^3*e^4*x-48*B*b^3*d*e^3*x^3*ln(e
*x+d)-72*B*b^3*d^2*e^2*x^2*ln(e*x+d))/(b*x+a)^3/e^5/(e*x+d)^4
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{(d+e\,x)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + Bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}{\left(d + ex\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**5, x)
```

3.1731 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6} dx$

Optimal. Leaf size=106

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4(d+ex)^4(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}(Bd-Ae)}{5(d+ex)^5(bd-ae)^2}$$

```
[Out] 1/5*(-A*e+B*d)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(-a*e+b*d)^2/(e*x+d)^5+1/4*(A*b-
B*a)*(b*x+a)^3*((b*x+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^4
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(Ab-aB)}{4(d+ex)^4(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}(Bd-Ae)}{5(d+ex)^5(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*(b*d - a*e)^2*(d
 + e*x)^4) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(5*(b*d - a*e)^2
*(d + e*x)^5)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx = \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)^2(d+ex)^5} + \frac{(Ab-aB)\int \frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx}{bd-ae}$$

$$= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)^2(d+ex)^5} + \frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^2(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(Ab-aB)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4(bd-ae)^2(d+ex)^4} + \frac{(Bd-Ae)\left(a^2+2abx+b^2x\right.}{5(bd-ae)^2(d+ex)^5}$$

Mathematica [**B**]   time = 0.10, size = 229, normalized size = 2.16

$$-\frac{\sqrt{(a+bx)^2}\left(a^3e^3(4Ae+B(d+5ex))+a^2be^2\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+ab^2e\left(2Ae\left(d^2+5\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] -1/20*(Sqrt[(a + b*x)^2]*(a^3*e^3*(4*A*e + B*(d + 5*e*x)) + a^2*b*e^2*(3*A*
e*(d + 5*e*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2)) + a*b^2*e*(2*A*e*(d^2 + 5
*d*e*x + 10*e^2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3)) +
 b^3*(A*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*B*(d^4 + 5*d^3*
e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4))))/(e^5*(a + b*x)*(d + e*x
)^5)
```

fricas [**B**]   time = 0.82, size = 304, normalized size = 2.87

$$-\frac{20\,Bb^3e^4x^4+4\,Bb^3d^4+4\,Aa^3e^4+\left(3\,Bab^2+Ab^3\right)d^3e+2\left(Ba^2b+Aab^2\right)d^2e^2+\left(Ba^3+3\,Aa^2b\right)de^3+10\left(4\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] -1/20*(20*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 4*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*d
^3*e + 2*(B*a^2*b + A*a*b^2)*d^2*e^2 + (B*a^3 + 3*A*a^2*b)*d*e^3 + 10*(4*B*
b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 10*(4*B*b^3*d^2*e^2 + (3*B*a*b^2
 + A*b^3)*d*e^3 + 2*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 5*(4*B*b^3*d^3*e + (3*B*
a*b^2 + A*b^3)*d^2*e^2 + 2*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^3 + 3*A*a^2*b)*
e^4)*x)/(e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e
^6*x + d^5*e^5)
```

giac [**B**]   time = 0.19, size = 425, normalized size = 4.01

$$-\frac{\left(20\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+40\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+40\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+20\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] -1/20*(20*B*b^3*x^4*e^4*sgn(b*x + a) + 40*B*b^3*d*x^3*e^3*sgn(b*x + a) + 40
*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 20*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*b^3*d
^4*sgn(b*x + a) + 30*B*a*b^2*x^3*e^4*sgn(b*x + a) + 10*A*b^3*x^3*e^4*sgn(b*
x + a) + 30*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 10*A*b^3*d*x^2*e^3*sgn(b*x + a
) + 15*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 5*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*
B*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 20*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 20*A*a*b^2*x^2*e^4*sgn(b*x + a) + 10*B*a^2*b*d*x*e^3*sgn(b*x
 + a) + 10*A*a*b^2*d*x*e^3*sgn(b*x + a) + 2*B*a^2*b*d^2*e^2*sgn(b*x + a) +
2*A*a*b^2*d^2*e^2*sgn(b*x + a) + 5*B*a^3*x*e^4*sgn(b*x + a) + 15*A*a^2*b*x*
e^4*sgn(b*x + a) + B*a^3*d*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e^3*sgn(b*x + a)
+ 4*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^5
```

maple [**B**] time = 0.06, size = 315, normalized size = 2.97

$$-\frac{\left(20 B\, b^{3} e^{4} x^{4}+10 A\, b^{3} e^{4} x^{3}+30 B a\, b^{2} e^{4} x^{3}+40 B\, b^{3} d\, e^{3} x^{3}+20 A a\, b^{2} e^{4} x^{2}+10 A\, b^{3} d\, e^{3} x^{2}+20 B\, a^{2} b\, e^{4} x^{2}+30 B a\, b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -1/20*(20*B*b^3*e^4*x^4+10*A*b^3*e^4*x^3+30*B*a*b^2*e^4*x^3+40*B*b^3*d*e^3*
x^3+20*A*a*b^2*e^4*x^2+10*A*b^3*d*e^3*x^2+20*B*a^2*b*e^4*x^2+30*B*a*b^2*d*e
^3*x^2+40*B*b^3*d^2*e^2*x^2+15*A*a^2*b*e^4*x+10*A*a*b^2*d*e^3*x+5*A*b^3*d^2
*e^2*x+5*B*a^3*e^4*x+10*B*a^2*b*d*e^3*x+15*B*a*b^2*d^2*e^2*x+20*B*b^3*d^3*e
*x+4*A*a^3*e^4+3*A*a^2*b*d*e^3+2*A*a*b^2*d^2*e^2+A*b^3*d^3*e+B*a^3*d*e^3+2*
B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+4*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^5/e^
5/(b*x+a)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.20, size = 577, normalized size = 5.44

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{2\,e^5}-\frac{B\,b^3\,d}{2\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^2}-\frac{\left(\frac{A\,a^3}{5\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{5\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{5\,e}-\frac{B\,b^3\,d}{5\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{5\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(2*e^5) - (B*b^3*d)/(2*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2) - (((A*a^3)/(5*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(5*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(5*e) - (B*b^3*d)/(
5*e^2)))/e - (3*a*b*(A*b + B*a))/(5*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^5) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(4*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(4*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(4*e^3) - (B*b^3*d)/
(4*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(3*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(3*e^4) - (B*b^3*d)/(3*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^5*(a + b*x)*(d + e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{3}{2}}}{(d + ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**6, x)
```

3.1732 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=193

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{60e(d+ex)^4(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{15e(d+ex)^5(bd-ae)^2}-\sqrt{a^2}$$

```
[Out] -1/6*(-A*e+B*d)*(b*x+a)^3*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)/(e*x+d)^6+1/15*(A*
b*e-3*B*a*e+2*B*b*d)*(b*x+a)^3*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^2/(e*x+d)^5+1
/60*b*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^3*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^3/(e
*x+d)^4
```

Rubi [A] time = 0.15, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{770, 78, 45, 37\}$

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{60e(d+ex)^4(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(-3aBe+Abe+2bBd)}{15e(d+ex)^5(bd-ae)^2}-\sqrt{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e*(b*d - a*e)*(
d + e*x)^6) + ((2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(15*e*(b*d - a*e)^2*(d + e*x)^5) + (b*(2*b*B*d + A*b*e - 3*a*B*e
)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(60*e*(b*d - a*e)^3*(d + e*x)^
4)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^7}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\Big((2bBd+Abe-3aBe)\sqrt{a^2}}{3b^2e(bd-}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{(2bBd+Abe-3aBe)(a+}{15e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{(2bBd+Abe-3aBe)(a+}{15e(bd-ae)}$$

Mathematica [A] time = 0.10, size = 229, normalized size = 1.19

$$-\frac{\sqrt{(a+bx)^2}\,\left(2a^3e^3(5Ae+B(d+6ex))+3a^2be^2\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+3ab^2e\left(Ae\left(d^2+6\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a^3*e^3*(5*A*e + B*(d + 6*e*x)) + 3*a^2*b*e^2*(
2*A*e*(d + 6*e*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 3*a*b^2*e*(A*e*(d^2 +
 6*d*e*x + 15*e^2*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3)) +
 b^3*(A*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*B*(d^4 + 6*d^3*
e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4))))/(e^5*(a + b*x)*(d + e*
x)^6)
```

fricas [B] time = 0.98, size = 317, normalized size = 1.64

$$-\frac{30\,Bb^3e^4x^4+2\,Bb^3d^4+10\,Aa^3e^4+\left(3\,Bab^2+Ab^3\right)d^3e+3\,\left(Ba^2b+Aab^2\right)d^2e^2+2\,\left(Ba^3+3\,Aa^2b\right)de^3+20\,\left(2\right.}{60}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] -1/60*(30*B*b^3*e^4*x^4 + 2*B*b^3*d^4 + 10*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*
d^3*e + 3*(B*a^2*b + A*a*b^2)*d^2*e^2 + 2*(B*a^3 + 3*A*a^2*b)*d*e^3 + 20*(2
*B*b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 15*(2*B*b^3*d^2*e^2 + (3*B*a*
b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 6*(2*B*b^3*d^3*e + (3
*B*a*b^2 + A*b^3)*d^2*e^2 + 3*(B*a^2*b + A*a*b^2)*d*e^3 + 2*(B*a^3 + 3*A*a^
2*b)*e^4)*x)/(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 20*d^3*e^8*x^3 + 1
5*d^4*e^7*x^2 + 6*d^5*e^6*x + d^6*e^5)
```

giac [B] time = 0.18, size = 426, normalized size = 2.21

$$-\frac{\left(30\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+40\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+30\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+12\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] -1/60*(30*B*b^3*x^4*e^4*sgn(b*x + a) + 40*B*b^3*d*x^3*e^3*sgn(b*x + a) + 30
*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 12*B*b^3*d^3*x*e*sgn(b*x + a) + 2*B*b^3*d
^4*sgn(b*x + a) + 60*B*a*b^2*x^3*e^4*sgn(b*x + a) + 20*A*b^3*x^3*e^4*sgn(b*
x + a) + 45*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 15*A*b^3*d*x^2*e^3*sgn(b*x + a
) + 18*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 6*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*
B*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 45*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 45*A*a*b^2*x^2*e^4*sgn(b*x + a) + 18*B*a^2*b*d*x*e^3*sgn(b*x
 + a) + 18*A*a*b^2*d*x*e^3*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) +
3*A*a*b^2*d^2*e^2*sgn(b*x + a) + 12*B*a^3*x*e^4*sgn(b*x + a) + 36*A*a^2*b*x
*e^4*sgn(b*x + a) + 2*B*a^3*d*e^3*sgn(b*x + a) + 6*A*a^2*b*d*e^3*sgn(b*x +
a) + 10*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^6
```

maple [B] time = 0.05, size = 316, normalized size = 1.64

$$-\frac{\left(30B\,b^3e^4x^4+20A\,b^3e^4x^3+60Ba\,b^2e^4x^3+40B\,b^3d\,e^3x^3+45Aa\,b^2e^4x^2+15A\,b^3d\,e^3x^2+45B\,a^2b\,e^4x^2+45Ba\,b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^5*(30*B*b^3*e^4*x^4+20*A*b^3*e^4*x^3+60*B*a*b^2*e^4*x^3+40*B*b^3*d*
e^3*x^3+45*A*a*b^2*e^4*x^2+15*A*b^3*d*e^3*x^2+45*B*a^2*b*e^4*x^2+45*B*a*b^2
*d*e^3*x^2+30*B*b^3*d^2*e^2*x^2+36*A*a^2*b*e^4*x+18*A*a*b^2*d*e^3*x+6*A*b^3
*d^2*e^2*x+12*B*a^3*e^4*x+18*B*a^2*b*d*e^3*x+18*B*a*b^2*d^2*e^2*x+12*B*b^3*
d^3*e*x+10*A*a^3*e^4+6*A*a^2*b*d*e^3+3*A*a*b^2*d^2*e^2+A*b^3*d^3*e+2*B*a^3*
d*e^3+3*B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+2*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x
+d)^6/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 577, normalized size = 2.99

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{3\,e^5}-\frac{B\,b^3\,d}{3\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}-\frac{\left(\frac{A\,a^3}{6\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{6\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{6\,e}-\frac{B\,b^3\,d}{6\,e^2}\right)}{e}-\frac{a\,b\,\left(A\,b+B\,a\right)}{2\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(3*e^5) - (B*b^3*d)/(3*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (((A*a^3)/(6*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(6*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(6*e) - (B*b^3*d)/(
6*e^2)))/e - (a*b*(A*b + B*a))/(2*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/((a + b*x)*(d + e*x)^6) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 + A*
b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(5*e^5) -
(d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^2*
d*e^2)/(5*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(5*e^3) - (B*b^3*d)/(5
*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (
((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d*e
)/(4*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(4*e^4) - (B*b^3*d)/(4*e^
4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (B*b^3*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^2\right)^{\frac{3}{2}}}{(d + ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(3/2)/(d + e*x)**7, x)
```

3.1733 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{4e^5(a+bx)(d+ex)^4}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{5e^5(a+bx)(d+ex)^5}+\frac{\sqrt{a^2+2abx}}{}$$

```
[Out] -1/7*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^7+1/6*(-
a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^6
-3/5*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x
+d)^5+1/4*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d
)^4-1/3*b^3*B*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^3
```

Rubi **[A]** time = 0.22, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{4e^5(a+bx)(d+ex)^4}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{5e^5(a+bx)(d+ex)^5}+\frac{\sqrt{a^2+2abx}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)
*(d + e*x)^7) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(6*e^5*(a + b*x)*(d + e*x)^6) - (3*b*(b*d - a*e)*(2*b*B*d -
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)^5)
 + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(
a + b*x)*(d + e*x)^4) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b
*x)*(d + e*x)^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^8}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^8}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^7} -}{b^2\big(ab+b^2x}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}+\frac{(bd-ae)^2(4bBd-3Abe-}{6e^5(a+bx}$$

Mathematica [**A**] time = 0.10, size = 233, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\,\Big(10a^3e^3(6Ae+B(d+7ex))+6a^2be^2\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+3ab^2e\big(4Ae\big(d^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -1/420*(Sqrt[(a + b*x)^2]*(10*a^3*e^3*(6*A*e + B*(d + 7*e*x)) + 6*a^2*b*e^2
*(5*A*e*(d + 7*e*x) + 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + 3*a*b^2*e*(4*A*e*
(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3
*x^3)) + b^3*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B*(d^
4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4))))/(e^5*(a + b*
x)*(d + e*x)^7)
```

fricas [**A**] time = 0.95, size = 332, normalized size = 1.11

$$-\frac{140\,Bb^3e^4x^4+4\,Bb^3d^4+60\,Aa^3e^4+3\left(3\,Bab^2+Ab^3\right)d^3e+12\left(Ba^2b+Aab^2\right)d^2e^2+10\left(Ba^3+3\,Aa^2b\right)de^3+}{420}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/420*(140*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 60*A*a^3*e^4 + 3*(3*B*a*b^2 + A*b
^3)*d^3*e + 12*(B*a^2*b + A*a*b^2)*d^2*e^2 + 10*(B*a^3 + 3*A*a^2*b)*d*e^3 +
 35*(4*B*b^3*d*e^3 + 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 21*(4*B*b^3*d^2*e^2 +
 3*(3*B*a*b^2 + A*b^3)*d*e^3 + 12*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 7*(4*B*b^3
*d^3*e + 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 12*(B*a^2*b + A*a*b^2)*d*e^3 + 10*
(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^12*x^7 + 7*d*e^11*x^6 + 21*d^2*e^10*x^5 + 35
*d^3*e^9*x^4 + 35*d^4*e^8*x^3 + 21*d^5*e^7*x^2 + 7*d^6*e^6*x + d^7*e^5)
```

giac [**A**] time = 0.23, size = 427, normalized size = 1.43

$$-\frac{\big(140\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+140\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+84\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+28\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/420*(140*B*b^3*x^4*e^4*sgn(b*x + a) + 140*B*b^3*d*x^3*e^3*sgn(b*x + a) +
 84*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 28*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*b^
3*d^4*sgn(b*x + a) + 315*B*a*b^2*x^3*e^4*sgn(b*x + a) + 105*A*b^3*x^3*e^4*s
gn(b*x + a) + 189*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 63*A*b^3*d*x^2*e^3*sgn(b
*x + a) + 63*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 21*A*b^3*d^2*x*e^2*sgn(b*x +
a) + 9*B*a*b^2*d^3*e*sgn(b*x + a) + 3*A*b^3*d^3*e*sgn(b*x + a) + 252*B*a^2*
b*x^2*e^4*sgn(b*x + a) + 252*A*a*b^2*x^2*e^4*sgn(b*x + a) + 84*B*a^2*b*d*x*
e^3*sgn(b*x + a) + 84*A*a*b^2*d*x*e^3*sgn(b*x + a) + 12*B*a^2*b*d^2*e^2*sgn
(b*x + a) + 12*A*a*b^2*d^2*e^2*sgn(b*x + a) + 70*B*a^3*x*e^4*sgn(b*x + a) +
 210*A*a^2*b*x*e^4*sgn(b*x + a) + 10*B*a^3*d*e^3*sgn(b*x + a) + 30*A*a^2*b*
d*e^3*sgn(b*x + a) + 60*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^7
```

maple [A] time = 0.07, size = 317, normalized size = 1.06

$$-\frac{\left(140B\,b^3e^4x^4+105A\,b^3e^4x^3+315Ba\,b^2e^4x^3+140B\,b^3d\,e^3x^3+252Aa\,b^2e^4x^2+63A\,b^3d\,e^3x^2+252B\,a^2b\,e^4x^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -1/420/e^5*(140*B*b^3*e^4*x^4+105*A*b^3*e^4*x^3+315*B*a*b^2*e^4*x^3+140*B*b
^3*d*e^3*x^3+252*A*a*b^2*e^4*x^2+63*A*b^3*d*e^3*x^2+252*B*a^2*b*e^4*x^2+189
*B*a*b^2*d*e^3*x^2+84*B*b^3*d^2*e^2*x^2+210*A*a^2*b*e^4*x+84*A*a*b^2*d*e^3*
x+21*A*b^3*d^2*e^2*x+70*B*a^3*e^4*x+84*B*a^2*b*d*e^3*x+63*B*a*b^2*d^2*e^2*x
+28*B*b^3*d^3*e*x+60*A*a^3*e^4+30*A*a^2*b*d*e^3+12*A*a*b^2*d^2*e^2+3*A*b^3*
d^3*e+10*B*a^3*d*e^3+12*B*a^2*b*d^2*e^2+9*B*a*b^2*d^3*e+4*B*b^3*d^4)*((b*x+
a)^2)^(3/2)/(e*x+d)^7/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.22, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{4\,e^5}-\frac{B\,b^3\,d}{4\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}-\frac{\left(\frac{A\,a^3}{7\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{7\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{7\,e}-\frac{B\,b^3\,d}{7\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{7\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(4*e^5) - (B*b^3*d)/(4*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((A*a^3)/(7*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(7*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(7*e) - (B*b^3*d)/(
7*e^2)))/e - (3*a*b*(A*b + B*a))/(7*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^7) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(6*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(6*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(6*e^3) - (B*b^3*d)/
(6*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(5*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(5*e^4) - (B*b^3*d)/(5*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^5*(a + b*x)*(d + e*x)^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1734 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{5e^5(a+bx)(d+ex)^5}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{2e^5(a+bx)(d+ex)^6}+\sqrt{a^2+2abx+}$$

```
[Out] -1/8*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^8+1/7*(-
a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^7
-1/2*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x
+d)^6+1/5*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d
)^5-1/4*b^3*B*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^4
```

Rubi [**A**] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{5e^5(a+bx)(d+ex)^5}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{2e^5(a+bx)(d+ex)^6}+\sqrt{a^2+2abx+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)
*(d + e*x)^8) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)^7) - (b*(b*d - a*e)*(2*b*B*d - A*
b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e*x)^6) +
 (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a
+ b*x)*(d + e*x)^5) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x
)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^9}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^9}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^8}-\right.}{b^2\left(ab+b^2x\right.}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)(d+ex)^8}+\frac{(bd-ae)^2(4bBd-3Abe-}{7e^5(a+bx}$$

Mathematica [A] time = 0.11, size = 229, normalized size = 0.77

$$-\frac{\sqrt{(a+bx)^2}\left(5a^3e^3(7Ae+B(d+8ex))+5a^2be^2\left(3Ae(d+8ex)+B\left(d^2+8dex+28e^2x^2\right)\right)+ab^2e\left(5Ae\left(d^2+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(5*a^3*e^3*(7*A*e + B*(d + 8*e*x)) + 5*a^2*b*e^2*
(3*A*e*(d + 8*e*x) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + a*b^2*e*(5*A*e*(d^2
+ 8*d*e*x + 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
) + b^3*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + B*(d^4 + 8*d^3
*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4))))/(e^5*(a + b*x)*(d + e
*x)^8)
```

fricas [A] time = 0.69, size = 335, normalized size = 1.12

$$-\frac{70\,Bb^3e^4x^4+Bb^3d^4+35\,Aa^3e^4+\left(3\,Bab^2+Ab^3\right)d^3e+5\left(Ba^2b+Aab^2\right)d^2e^2+5\left(Ba^3+3\,Aa^2b\right)de^3+56\left(B\right.}{280\left(e^{13}x^8+8\,de^{12}x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/280*(70*B*b^3*e^4*x^4 + B*b^3*d^4 + 35*A*a^3*e^4 + (3*B*a*b^2 + A*b^3)*d
^3*e + 5*(B*a^2*b + A*a*b^2)*d^2*e^2 + 5*(B*a^3 + 3*A*a^2*b)*d*e^3 + 56*(B*
b^3*d*e^3 + (3*B*a*b^2 + A*b^3)*e^4)*x^3 + 28*(B*b^3*d^2*e^2 + (3*B*a*b^2 +
 A*b^3)*d*e^3 + 5*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 8*(B*b^3*d^3*e + (3*B*a*b^
2 + A*b^3)*d^2*e^2 + 5*(B*a^2*b + A*a*b^2)*d*e^3 + 5*(B*a^3 + 3*A*a^2*b)*e^
4)*x)/(e^13*x^8 + 8*d*e^12*x^7 + 28*d^2*e^11*x^6 + 56*d^3*e^10*x^5 + 70*d^4
*e^9*x^4 + 56*d^5*e^8*x^3 + 28*d^6*e^7*x^2 + 8*d^7*e^6*x + d^8*e^5)
```

giac [A] time = 0.19, size = 425, normalized size = 1.43

$$-\frac{\left(70\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+56\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+28\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+8\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)+B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/280*(70*B*b^3*x^4*e^4*sgn(b*x + a) + 56*B*b^3*d*x^3*e^3*sgn(b*x + a) + 2
8*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 8*B*b^3*d^3*x*e*sgn(b*x + a) + B*b^3*d^4
*sgn(b*x + a) + 168*B*a*b^2*x^3*e^4*sgn(b*x + a) + 56*A*b^3*x^3*e^4*sgn(b*x
 + a) + 84*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 28*A*b^3*d*x^2*e^3*sgn(b*x + a)
 + 24*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 8*A*b^3*d^2*x*e^2*sgn(b*x + a) + 3*B
*a*b^2*d^3*e*sgn(b*x + a) + A*b^3*d^3*e*sgn(b*x + a) + 140*B*a^2*b*x^2*e^4*
sgn(b*x + a) + 140*A*a*b^2*x^2*e^4*sgn(b*x + a) + 40*B*a^2*b*d*x*e^3*sgn(b*
x + a) + 40*A*a*b^2*d*x*e^3*sgn(b*x + a) + 5*B*a^2*b*d^2*e^2*sgn(b*x + a) +
 5*A*a*b^2*d^2*e^2*sgn(b*x + a) + 40*B*a^3*x*e^4*sgn(b*x + a) + 120*A*a^2*b
*x*e^4*sgn(b*x + a) + 5*B*a^3*d*e^3*sgn(b*x + a) + 15*A*a^2*b*d*e^3*sgn(b*x
 + a) + 35*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^8
```

maple [A] time = 0.06, size = 315, normalized size = 1.06

$$-\frac{\left(70B\,b^3e^4x^4+56A\,b^3e^4x^3+168Ba\,b^2e^4x^3+56B\,b^3d\,e^3x^3+140Aa\,b^2e^4x^2+28A\,b^3d\,e^3x^2+140B\,a^2b\,e^4x^2+84\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -1/280/e^5*(70*B*b^3*e^4*x^4+56*A*b^3*e^4*x^3+168*B*a*b^2*e^4*x^3+56*B*b^3*
d*e^3*x^3+140*A*a*b^2*e^4*x^2+28*A*b^3*d*e^3*x^2+140*B*a^2*b*e^4*x^2+84*B*a
*b^2*d*e^3*x^2+28*B*b^3*d^2*e^2*x^2+120*A*a^2*b*e^4*x+40*A*a*b^2*d*e^3*x+8*
A*b^3*d^2*e^2*x+40*B*a^3*e^4*x+40*B*a^2*b*d*e^3*x+24*B*a*b^2*d^2*e^2*x+8*B*
b^3*d^3*e*x+35*A*a^3*e^4+15*A*a^2*b*d*e^3+5*A*a*b^2*d^2*e^2+A*b^3*d^3*e+5*B
*a^3*d*e^3+5*B*a^2*b*d^2*e^2+3*B*a*b^2*d^3*e+B*b^3*d^4)*((b*x+a)^2)^(3/2)/(
e*x+d)^8/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.27, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{5\,e^5}-\frac{B\,b^3\,d}{5\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^5}-\frac{\left(\frac{A\,a^3}{8\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{8\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{8\,e}-\frac{B\,b^3\,d}{8\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{8\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(5*e^5) - (B*b^3*d)/(5*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((A*a^3)/(8*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(8*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(8*e) - (B*b^3*d)/(
8*e^2)))/e - (3*a*b*(A*b + B*a))/(8*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(
1/2))/((a + b*x)*(d + e*x)^8) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 +
A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(7*e^5)
- (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^
2*d*e^2)/(7*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(7*e^3) - (B*b^3*d)/
(7*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) -
 (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d
*e)/(6*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(6*e^4) - (B*b^3*d)/(6*
e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (B*b^3
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^5*(a + b*x)*(d + e*x)^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1735 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{6e^5(a+bx)(d+ex)^6}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)(d+ex)^7}+\sqrt{a^2+2abx}$$

```
[Out] -1/9*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^9+1/8*(-
a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^8
-3/7*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x
+d)^7+1/6*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d
)^6-1/5*b^3*B*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^5
```

Rubi **[A]** time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{6e^5(a+bx)(d+ex)^6}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{7e^5(a+bx)(d+ex)^7}+\sqrt{a^2+2abx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)
*(d + e*x)^9) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^8) - (3*b*(b*d - a*e)*(2*b*B*d -
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)^7)
 + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(
a + b*x)*(d + e*x)^6) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b
*x)*(d + e*x)^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{10}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{10}} + \frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^9} - \right.}{b^2\left(ab+b^2x\right.}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9} + \frac{(bd-ae)^2(4bBd-3Abe-}{8e^5(a+bx}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(35a^3e^3(8Ae+B(d+9ex))+15a^2be^2\left(7Ae(d+9ex)+2B\left(d^2+9dex+36e^2x^2\right)\right)+15ab^2e\left(2Ae\left(\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(35*a^3*e^3*(8*A*e + B*(d + 9*e*x)) + 15*a^2*b*e
^2*(7*A*e*(d + 9*e*x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 15*a*b^2*e*(2*A
*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^
3*x^3)) + b^3*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*B*(d
^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4))))/(e^5*(a +
b*x)*(d + e*x)^9)
```

fricas [A] time = 0.84, size = 354, normalized size = 1.19

$$-\frac{504\,Bb^3e^4x^4+4\,Bb^3d^4+280\,Aa^3e^4+5\left(3\,Bab^2+Ab^3\right)d^3e+30\left(Ba^2b+Aab^2\right)d^2e^2+35\left(Ba^3+3\,Aa^2b\right)de^3}{2520\left(e^{14}x^9+9\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/2520*(504*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 280*A*a^3*e^4 + 5*(3*B*a*b^2 + A
*b^3)*d^3*e + 30*(B*a^2*b + A*a*b^2)*d^2*e^2 + 35*(B*a^3 + 3*A*a^2*b)*d*e^3
 + 84*(4*B*b^3*d*e^3 + 5*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 36*(4*B*b^3*d^2*e^2
 + 5*(3*B*a*b^2 + A*b^3)*d*e^3 + 30*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 9*(4*B*b
^3*d^3*e + 5*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 30*(B*a^2*b + A*a*b^2)*d*e^3 + 3
5*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^14*x^9 + 9*d*e^13*x^8 + 36*d^2*e^12*x^7 +
84*d^3*e^11*x^6 + 126*d^4*e^10*x^5 + 126*d^5*e^9*x^4 + 84*d^6*e^8*x^3 + 36*
d^7*e^7*x^2 + 9*d^8*e^6*x + d^9*e^5)
```

giac [A] time = 0.19, size = 427, normalized size = 1.43

$$-\frac{\left(504\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+336\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+144\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+36\,Bb^3d^3xe\mathrm{sgn}\left(bx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/2520*(504*B*b^3*x^4*e^4*sgn(b*x + a) + 336*B*b^3*d*x^3*e^3*sgn(b*x + a)
+ 144*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 36*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B*
b^3*d^4*sgn(b*x + a) + 1260*B*a*b^2*x^3*e^4*sgn(b*x + a) + 420*A*b^3*x^3*e^
4*sgn(b*x + a) + 540*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 180*A*b^3*d*x^2*e^3*s
gn(b*x + a) + 135*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 45*A*b^3*d^2*x*e^2*sgn(b
*x + a) + 15*B*a*b^2*d^3*e*sgn(b*x + a) + 5*A*b^3*d^3*e*sgn(b*x + a) + 1080
*B*a^2*b*x^2*e^4*sgn(b*x + a) + 1080*A*a*b^2*x^2*e^4*sgn(b*x + a) + 270*B*a
^2*b*d*x*e^3*sgn(b*x + a) + 270*A*a*b^2*d*x*e^3*sgn(b*x + a) + 30*B*a^2*b*d
^2*e^2*sgn(b*x + a) + 30*A*a*b^2*d^2*e^2*sgn(b*x + a) + 315*B*a^3*x*e^4*sgn
(b*x + a) + 945*A*a^2*b*x*e^4*sgn(b*x + a) + 35*B*a^3*d*e^3*sgn(b*x + a) +
105*A*a^2*b*d*e^3*sgn(b*x + a) + 280*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e +
d)^9
```

maple [A] time = 0.06, size = 317, normalized size = 1.06

$$-\frac{\left(504B\,b^3e^4x^4+420A\,b^3e^4x^3+1260Ba\,b^2e^4x^3+336B\,b^3d\,e^3x^3+1080Aa\,b^2e^4x^2+180A\,b^3d\,e^3x^2+1080B\,a^2b\,e^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x)
```

```
[Out] -1/2520/e^5*(504*B*b^3*e^4*x^4+420*A*b^3*e^4*x^3+1260*B*a*b^2*e^4*x^3+336*B
*b^3*d*e^3*x^3+1080*A*a*b^2*e^4*x^2+180*A*b^3*d*e^3*x^2+1080*B*a^2*b*e^4*x^
2+540*B*a*b^2*d*e^3*x^2+144*B*b^3*d^2*e^2*x^2+945*A*a^2*b*e^4*x+270*A*a*b^2
*d*e^3*x+45*A*b^3*d^2*e^2*x+315*B*a^3*e^4*x+270*B*a^2*b*d*e^3*x+135*B*a*b^2
*d^2*e^2*x+36*B*b^3*d^3*e*x+280*A*a^3*e^4+105*A*a^2*b*d*e^3+30*A*a*b^2*d^2*
e^2+5*A*b^3*d^3*e+35*B*a^3*d*e^3+30*B*a^2*b*d^2*e^2+15*B*a*b^2*d^3*e+4*B*b^
3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^9/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.58, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{6\,e^5}-\frac{B\,b^3\,d}{6\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}-\frac{\left(\frac{A\,a^3}{9\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{9\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{9\,e}-\frac{B\,b^3\,d}{9\,e^2}\right)}{e}-\frac{a\,b\,\left(A\,b+B\,a\right)}{3\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^10,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(6*e^5) - (B*b^3*d)/(6*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((A*a^3)/(9*e) - (d*(
(B*a^3 + 3*A*a^2*b)/(9*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(9*e) - (B*b^3*d)/(
9*e^2)))/e - (a*b*(A*b + B*a))/(3*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/
2))/((a + b*x)*(d + e*x)^9) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*e^3 + A*
b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(8*e^5) -
(d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*B*a*b^2*
d*e^2)/(8*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(8*e^3) - (B*b^3*d)/(8
*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (
((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a*b^2*d*e
)/(7*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(7*e^4) - (B*b^3*d)/(7*e^
4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (B*b^3*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*e^5*(a + b*x)*(d + e*x)^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1736 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{7e^5(a+bx)(d+ex)^7}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{8e^5(a+bx)(d+ex)^8}+\frac{\sqrt{a^2+2abx}}{}$$

```
[Out] -1/10*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^10+1/9*
(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)
^9-3/8*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e
*x+d)^8+1/7*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x
+d)^7-1/6*b^3*B*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^6
```

Rubi [**A**] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{7e^5(a+bx)(d+ex)^7}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{8e^5(a+bx)(d+ex)^8}+\frac{\sqrt{a^2+2abx}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^5*(a + b*x
)*(d + e*x)^10) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)^9) - (3*b*(b*d - a*e)*(2*b*B*d
 - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^
8) + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5
*(a + b*x)*(d + e*x)^7) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a +
 b*x)*(d + e*x)^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{11}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{11}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{10}}-}{b^2\big(ab+b^2x}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{10e^5(a+bx)(d+ex)^{10}}+\frac{(bd-ae)^2(4bBd-3Abe-}{9e^5(a+bx}$$

Mathematica [A] time = 0.10, size = 232, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\,\big(28a^3e^3(9Ae+B(d+10ex))+21a^2be^2\big(4Ae(d+10ex)+B\left(d^2+10dex+45e^2x^2\right)\big)+3ab^2e\big(7Ae}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(28*a^3*e^3*(9*A*e + B*(d + 10*e*x)) + 21*a^2*b*
e^2*(4*A*e*(d + 10*e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 3*a*b^2*e*(7*A
*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 1
20*e^3*x^3)) + b^3*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) +
 2*B*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4))))/(
e^5*(a + b*x)*(d + e*x)^10)
```

fricas [A] time = 0.69, size = 365, normalized size = 1.22

$$-\frac{420\,Bb^3e^4x^4+2\,Bb^3d^4+252\,Aa^3e^4+3\left(3\,Bab^2+Ab^3\right)d^3e+21\left(Ba^2b+Aab^2\right)d^2e^2+28\left(Ba^3+3\,Aa^2b\right)de^3}{2520\,\big(e^{15}x^{10}+10\,de^{14}x^9+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/2520*(420*B*b^3*e^4*x^4 + 2*B*b^3*d^4 + 252*A*a^3*e^4 + 3*(3*B*a*b^2 + A
*b^3)*d^3*e + 21*(B*a^2*b + A*a*b^2)*d^2*e^2 + 28*(B*a^3 + 3*A*a^2*b)*d*e^3
 + 120*(2*B*b^3*d*e^3 + 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 45*(2*B*b^3*d^2*e^
2 + 3*(3*B*a*b^2 + A*b^3)*d*e^3 + 21*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 10*(2*B
*b^3*d^3*e + 3*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 21*(B*a^2*b + A*a*b^2)*d*e^3 +
 28*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^15*x^10 + 10*d*e^14*x^9 + 45*d^2*e^13*x^
8 + 120*d^3*e^12*x^7 + 210*d^4*e^11*x^6 + 252*d^5*e^10*x^5 + 210*d^6*e^9*x^
4 + 120*d^7*e^8*x^3 + 45*d^8*e^7*x^2 + 10*d^9*e^6*x + d^10*e^5)
```

giac [A] time = 0.24, size = 427, normalized size = 1.43

$$-\frac{\big(420\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+240\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+90\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+20\,Bb^3d^3xe\mathrm{sgn}\left(bx+a\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/2520*(420*B*b^3*x^4*e^4*sgn(b*x + a) + 240*B*b^3*d*x^3*e^3*sgn(b*x + a)
+ 90*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 20*B*b^3*d^3*x*e*sgn(b*x + a) + 2*B*b
^3*d^4*sgn(b*x + a) + 1080*B*a*b^2*x^3*e^4*sgn(b*x + a) + 360*A*b^3*x^3*e^4
*sgn(b*x + a) + 405*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 135*A*b^3*d*x^2*e^3*sg
n(b*x + a) + 90*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 30*A*b^3*d^2*x*e^2*sgn(b*x
 + a) + 9*B*a*b^2*d^3*e*sgn(b*x + a) + 3*A*b^3*d^3*e*sgn(b*x + a) + 945*B*a
^2*b*x^2*e^4*sgn(b*x + a) + 945*A*a*b^2*x^2*e^4*sgn(b*x + a) + 210*B*a^2*b*
d*x*e^3*sgn(b*x + a) + 210*A*a*b^2*d*x*e^3*sgn(b*x + a) + 21*B*a^2*b*d^2*e^
2*sgn(b*x + a) + 21*A*a*b^2*d^2*e^2*sgn(b*x + a) + 280*B*a^3*x*e^4*sgn(b*x
+ a) + 840*A*a^2*b*x*e^4*sgn(b*x + a) + 28*B*a^3*d*e^3*sgn(b*x + a) + 84*A*
a^2*b*d*e^3*sgn(b*x + a) + 252*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^10
```

maple [A] time = 0.05, size = 317, normalized size = 1.06

$$-\frac{\left(420 B\, b^{3} e^{4} x^{4}+360 A\, b^{3} e^{4} x^{3}+1080 B a\, b^{2} e^{4} x^{3}+240 B\, b^{3} d\, e^{3} x^{3}+945 A a\, b^{2} e^{4} x^{2}+135 A\, b^{3} d\, e^{3} x^{2}+945 B\, a^{2} b\, e^{4} x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x)
```

```
[Out] -1/2520/e^5*(420*B*b^3*e^4*x^4+360*A*b^3*e^4*x^3+1080*B*a*b^2*e^4*x^3+240*B
*b^3*d*e^3*x^3+945*A*a*b^2*e^4*x^2+135*A*b^3*d*e^3*x^2+945*B*a^2*b*e^4*x^2+
405*B*a*b^2*d*e^3*x^2+90*B*b^3*d^2*e^2*x^2+840*A*a^2*b*e^4*x+210*A*a*b^2*d*
e^3*x+30*A*b^3*d^2*e^2*x+280*B*a^3*e^4*x+210*B*a^2*b*d*e^3*x+90*B*a*b^2*d^2
*e^2*x+20*B*b^3*d^3*e*x+252*A*a^3*e^4+84*A*a^2*b*d*e^3+21*A*a*b^2*d^2*e^2+3
*A*b^3*d^3*e+28*B*a^3*d*e^3+21*B*a^2*b*d^2*e^2+9*B*a*b^2*d^3*e+2*B*b^3*d^4)
*((b*x+a)^2)^(3/2)/(e*x+d)^10/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.39, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A\,b^3\,e-3\,B\,b^3\,d+3\,B\,a\,b^2\,e}{7\,e^5}-\frac{B\,b^3\,d}{7\,e^5}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}-\frac{\left(\frac{A\,a^3}{10\,e}-\frac{d\,\left(\frac{B\,a^3+3\,A\,b\,a^2}{10\,e}+\frac{d\,\left(\frac{d\,\left(\frac{A\,b^3+3\,B\,a\,b^2}{10\,e}-\frac{B\,b^3\,d}{10\,e^2}\right)}{e}-\frac{3\,a\,b\,\left(A\,b+B\,a\right)}{10\,e}\right)}{e}\right)}{e}\right)\,\sqrt{a^2+}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^11,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(7*e^5) - (B*b^3*d)/(7*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((A*a^3)/(10*e) - (d*
((B*a^3 + 3*A*a^2*b)/(10*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(10*e) - (B*b^3*d
)/(10*e^2)))/e - (3*a*b*(A*b + B*a))/(10*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*
e^3 + A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(9
*e^5) - (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3*
B*a*b^2*d*e^2)/(9*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(9*e^3) - (B*b
^3*d)/(9*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x
)^9) - (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 - 6*B*a
*b^2*d*e)/(8*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(8*e^4) - (B*b^3*
d)/(8*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) -
(B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e^5*(a + b*x)*(d + e*x)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1737 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=298

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{8e^5(a+bx)(d+ex)^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{3e^5(a+bx)(d+ex)^9}+\frac{\sqrt{a^2+2abx+}}{}$$

```
[Out] -1/11*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^11+1/10
*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d
)^10-1/3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/
(e*x+d)^9+1/8*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e
*x+d)^8-1/7*b^3*B*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^7
```

Rubi [**A**] time = 0.18, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(-3aBe-Abe+4bBd)}{8e^5(a+bx)(d+ex)^8}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{3e^5(a+bx)(d+ex)^9}+\frac{\sqrt{a^2+2abx+}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x
)*(d + e*x)^11) + ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(10*e^5*(a + b*x)*(d + e*x)^10) - (b*(b*d - a*e)*(2*b*B*d
- A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^
9) + (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5
*(a + b*x)*(d + e*x)^8) - (b^3*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)*(d + e*x)^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{12}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{12}} + \frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{11}} -\right.}{b^2\left(ab+b^2x\right.}$$

$$= -\frac{(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11}} + \frac{(bd-ae)^2(4bBd-3Abe-}{10e^5(a+bx}$$

Mathematica [**A**] time = 0.11, size = 233, normalized size = 0.78

$$-\frac{\sqrt{(a+bx)^2}\left(84a^3e^3(10Ae+B(d+11ex))+28a^2be^2\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+7ab^2e\left(8\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -1/9240*(Sqrt[(a + b*x)^2]*(84*a^3*e^3*(10*A*e + B*(d + 11*e*x)) + 28*a^2*b
*e^2*(9*A*e*(d + 11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 7*a*b^2*e*(
8*A*e*(d^2 + 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2
+ 165*e^3*x^3)) + b^3*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2*x^2 + 165*e^3*x^3
) + 4*B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4)))
)/(e^5*(a + b*x)*(d + e*x)^11)
```

fricas [**A**] time = 0.94, size = 376, normalized size = 1.26

$$-\frac{1320\,Bb^3e^4x^4+4\,Bb^3d^4+840\,Aa^3e^4+7\left(3\,Bab^2+Ab^3\right)d^3e+56\left(Ba^2b+Aab^2\right)d^2e^2+84\left(Ba^3+3\,Aa^2b\right)de^3}{9240\left(e^{16}x^{11}+11\,de^{15}x^{10}+55\,d^2e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/9240*(1320*B*b^3*e^4*x^4 + 4*B*b^3*d^4 + 840*A*a^3*e^4 + 7*(3*B*a*b^2 +
A*b^3)*d^3*e + 56*(B*a^2*b + A*a*b^2)*d^2*e^2 + 84*(B*a^3 + 3*A*a^2*b)*d*e^
3 + 165*(4*B*b^3*d*e^3 + 7*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 55*(4*B*b^3*d^2*e
^2 + 7*(3*B*a*b^2 + A*b^3)*d*e^3 + 56*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 11*(4*
B*b^3*d^3*e + 7*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 56*(B*a^2*b + A*a*b^2)*d*e^3
+ 84*(B*a^3 + 3*A*a^2*b)*e^4)*x)/(e^16*x^11 + 11*d*e^15*x^10 + 55*d^2*e^14*
x^9 + 165*d^3*e^13*x^8 + 330*d^4*e^12*x^7 + 462*d^5*e^11*x^6 + 462*d^6*e^10
*x^5 + 330*d^7*e^9*x^4 + 165*d^8*e^8*x^3 + 55*d^9*e^7*x^2 + 11*d^10*e^6*x +
 d^11*e^5)
```

giac [**A**] time = 0.20, size = 427, normalized size = 1.43

$$-\frac{\left(1320\,Bb^3x^4e^4\mathrm{sgn}\left(bx+a\right)+660\,Bb^3dx^3e^3\mathrm{sgn}\left(bx+a\right)+220\,Bb^3d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+44\,Bb^3d^3xe\mathrm{sgn}\left(bx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/9240*(1320*B*b^3*x^4*e^4*sgn(b*x + a) + 660*B*b^3*d*x^3*e^3*sgn(b*x + a)
 + 220*B*b^3*d^2*x^2*e^2*sgn(b*x + a) + 44*B*b^3*d^3*x*e*sgn(b*x + a) + 4*B
*b^3*d^4*sgn(b*x + a) + 3465*B*a*b^2*x^3*e^4*sgn(b*x + a) + 1155*A*b^3*x^3*
e^4*sgn(b*x + a) + 1155*B*a*b^2*d*x^2*e^3*sgn(b*x + a) + 385*A*b^3*d*x^2*e^
3*sgn(b*x + a) + 231*B*a*b^2*d^2*x*e^2*sgn(b*x + a) + 77*A*b^3*d^2*x*e^2*sg
n(b*x + a) + 21*B*a*b^2*d^3*e*sgn(b*x + a) + 7*A*b^3*d^3*e*sgn(b*x + a) + 3
080*B*a^2*b*x^2*e^4*sgn(b*x + a) + 3080*A*a*b^2*x^2*e^4*sgn(b*x + a) + 616*
B*a^2*b*d*x*e^3*sgn(b*x + a) + 616*A*a*b^2*d*x*e^3*sgn(b*x + a) + 56*B*a^2*
b*d^2*e^2*sgn(b*x + a) + 56*A*a*b^2*d^2*e^2*sgn(b*x + a) + 924*B*a^3*x*e^4*
sgn(b*x + a) + 2772*A*a^2*b*x*e^4*sgn(b*x + a) + 84*B*a^3*d*e^3*sgn(b*x + a
) + 252*A*a^2*b*d*e^3*sgn(b*x + a) + 840*A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*
e + d)^11
```

maple [A] time = 0.06, size = 317, normalized size = 1.06

$$-\frac{\left(1320 B\, b^{3} e^{4} x^{4}+1155 A\, b^{3} e^{4} x^{3}+3465 B a\, b^{2} e^{4} x^{3}+660 B\, b^{3} d\, e^{3} x^{3}+3080 A a\, b^{2} e^{4} x^{2}+385 A\, b^{3} d\, e^{3} x^{2}+3080 B\, a^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x)
```

```
[Out] -1/9240/e^5*(1320*B*b^3*e^4*x^4+1155*A*b^3*e^4*x^3+3465*B*a*b^2*e^4*x^3+660
*B*b^3*d*e^3*x^3+3080*A*a*b^2*e^4*x^2+385*A*b^3*d*e^3*x^2+3080*B*a^2*b*e^4*
x^2+1155*B*a*b^2*d*e^3*x^2+220*B*b^3*d^2*e^2*x^2+2772*A*a^2*b*e^4*x+616*A*a
*b^2*d*e^3*x+77*A*b^3*d^2*e^2*x+924*B*a^3*e^4*x+616*B*a^2*b*d*e^3*x+231*B*a
*b^2*d^2*e^2*x+44*B*b^3*d^3*e*x+840*A*a^3*e^4+252*A*a^2*b*d*e^3+56*A*a*b^2*
d^2*e^2+7*A*b^3*d^3*e+84*B*a^3*d*e^3+56*B*a^2*b*d^2*e^2+21*B*a*b^2*d^3*e+4*
B*b^3*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^11/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.36, size = 577, normalized size = 1.94

$$-\frac{\left(\frac{A b^3 e-3 B b^3 d+3 B a b^2 e}{8 e^5}-\frac{B b^3 d}{8 e^5}\right)\sqrt{a^2+2 a b x+b^2 x^2}}{(a+b x)\,(d+e x)^8}-\frac{\left(\frac{A a^3}{11 e}-\frac{d\left(\frac{B a^3+3 A b a^2}{11 e}+\frac{d\left(\frac{d\left(\frac{A b^3+3 B a b^2}{11 e}-\frac{B b^3 d}{11 e^2}\right)}{e}-\frac{3 a b (A b+B a)}{11 e}\right)}{e}\right)}{e}\right)\sqrt{a^2+}}{(a+b x)\,(d+e x)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^12,x)
```

```
[Out] - (((A*b^3*e - 3*B*b^3*d + 3*B*a*b^2*e)/(8*e^5) - (B*b^3*d)/(8*e^5))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((A*a^3)/(11*e) - (d*
((B*a^3 + 3*A*a^2*b)/(11*e) + (d*((d*((A*b^3 + 3*B*a*b^2)/(11*e) - (B*b^3*d
)/(11*e^2)))/e - (3*a*b*(A*b + B*a))/(11*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((B*a^3*e^3 - B*b^3*d^3 + 3*A*a^2*b*
e^3 + A*b^3*d^2*e - 3*A*a*b^2*d*e^2 + 3*B*a*b^2*d^2*e - 3*B*a^2*b*d*e^2)/(1
0*e^5) - (d*((3*A*a*b^2*e^3 + 3*B*a^2*b*e^3 - A*b^3*d*e^2 + B*b^3*d^2*e - 3
*B*a*b^2*d*e^2)/(10*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - B*b*d))/(10*e^3) - (
B*b^3*d)/(10*e^3)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d +
 e*x)^10) - (((3*B*b^3*d^2 - 2*A*b^3*d*e + 3*A*a*b^2*e^2 + 3*B*a^2*b*e^2 -
6*B*a*b^2*d*e)/(9*e^5) - (d*((b^2*(A*b*e + 3*B*a*e - 2*B*b*d))/(9*e^4) - (B
*b^3*d)/(9*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^
9) - (B*b^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*e^5*(a + b*x)*(d + e*x)^7)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1738 $\int (A+Bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=436

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3(-aBe}{9e^7(a+bx)}$$

```
[Out] 1/7*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^7*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-1/8*(-a
*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+
5/9*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^7
/(b*x+a)-b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^10*((b*x+a)^2)^(1/
2)/e^7/(b*x+a)+5/11*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^11*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)-1/12*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^12*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)+1/13*b^5*B*(e*x+d)^13*((b*x+a)^2)^(1/2)/e^7/(b*x+
a)
```

Rubi [A] time = 1.01, antiderivative size = 436, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(-5aBe-Abe+6bBd)}{12e^7(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)(-2aBe-Abe}{11e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(B*d - A*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^
7*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)^8*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)) + (5*b*(b*d - a*e)^3*(3*b*B*d -
 2*A*b*e - a*B*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*
x)) - (b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^10*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) -
(b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(12*e^7*(a + b*x)) + (b^5*B*(d + e*x)^13*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
13*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(ab+b^2x\right)^5(A+Bx)(d+ex)^6\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^6}{e^6}+\frac{b^5(bd-ae)^4(-6b}{}}{}$$

$$=\frac{(bd-ae)^5(Bd-Ae)(d+ex)^7\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)}-\frac{(bd-ae)^4}{}$$

Mathematica [**B**] time = 0.37, size = 876, normalized size = 2.01

$$\frac{x\sqrt{(a+bx)^2}\,\Big(1287\Big(8A\left(7d^6+21exd^5+35e^2x^2d^4+35e^3x^3d^3+21e^4x^4d^2+7e^5x^5d+e^6x^6\right)+Bx\Big(28d^6+112e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(1287*a^5*(8*A*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 +
35*d^3*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + B*x*(28*d^6 + 11
2*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*
x^5 + 7*e^6*x^6)) + 715*a^4*b*x*(9*A*(28*d^6 + 112*d^5*e*x + 210*d^4*e^2*x^
2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*x^5 + 7*e^6*x^6) + 2*B*x*(
84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4
+ 189*d*e^5*x^5 + 28*e^6*x^6)) + 286*a^3*b^2*x^2*(10*A*(84*d^6 + 378*d^5*e*
x + 756*d^4*e^2*x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 2
8*e^6*x^6) + 3*B*x*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^
3*x^3 + 1575*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6)) + 78*a^2*b^3*x^3*(1
1*A*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575*d^
2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 4*B*x*(462*d^6 + 2310*d^5*e*x + 4
950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 + 21
0*e^6*x^6)) + 13*a*b^4*x^4*(12*A*(462*d^6 + 2310*d^5*e*x + 4950*d^4*e^2*x^2
 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 + 210*e^6*x^6) + 5*
B*x*(924*d^6 + 4752*d^5*e*x + 10395*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*
d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*e^6*x^6)) + b^5*x^5*(13*A*(924*d^6 + 475
2*d^5*e*x + 10395*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024
*d*e^5*x^5 + 462*e^6*x^6) + 6*B*x*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*
x^2 + 24024*d^3*e^3*x^3 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6)
)))/(72072*(a + b*x))
```

fricas [**B**] time = 0.74, size = 964, normalized size = 2.21

$$\frac{1}{13}Bb^5e^6x^{13}+Aa^5d^6x+\frac{1}{12}\left(6Bb^5de^5+\left(5Bab^4+Ab^5\right)e^6\right)x^{12}+\frac{1}{11}\Big(15Bb^5d^2e^4+6\left(5Bab^4+Ab^5\right)de^5+5\Big(2Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/13*B*b^5*e^6*x^13 + A*a^5*d^6*x + 1/12*(6*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^
5)*e^6)*x^12 + 1/11*(15*B*b^5*d^2*e^4 + 6*(5*B*a*b^4 + A*b^5)*d*e^5 + 5*(2*
B*a^2*b^3 + A*a*b^4)*e^6)*x^11 + 1/2*(4*B*b^5*d^3*e^3 + 3*(5*B*a*b^4 + A*b^
5)*d^2*e^4 + 6*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^10 + 5/9*(3*B*b^5*d^4*e^2 + 4*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 15*(2*B*a^
2*b^3 + A*a*b^4)*d^2*e^4 + 12*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*
A*a^3*b^2)*e^6)*x^9 + 1/8*(6*B*b^5*d^5*e + 15*(5*B*a*b^4 + A*b^5)*d^4*e^2 +
 100*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 150*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4
+ 30*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x^8 + 1/7*(B*
b^5*d^6 + A*a^5*e^6 + 6*(5*B*a*b^4 + A*b^5)*d^5*e + 75*(2*B*a^2*b^3 + A*a*b
^4)*d^4*e^2 + 200*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 + 75*(B*a^4*b + 2*A*a^3*b
^2)*d^2*e^4 + 6*(B*a^5 + 5*A*a^4*b)*d*e^5)*x^7 + 1/6*(6*A*a^5*d*e^5 + (5*B*
a*b^4 + A*b^5)*d^6 + 30*(2*B*a^2*b^3 + A*a*b^4)*d^5*e + 150*(B*a^3*b^2 + A*
a^2*b^3)*d^4*e^2 + 100*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^3 + 15*(B*a^5 + 5*A*a^
4*b)*d^2*e^4)*x^6 + (3*A*a^5*d^2*e^4 + (2*B*a^2*b^3 + A*a*b^4)*d^6 + 12*(B*
a^3*b^2 + A*a^2*b^3)*d^5*e + 15*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^2 + 4*(B*a^5
+ 5*A*a^4*b)*d^3*e^3)*x^5 + 5/4*(4*A*a^5*d^3*e^3 + 2*(B*a^3*b^2 + A*a^2*b^3
)*d^6 + 6*(B*a^4*b + 2*A*a^3*b^2)*d^5*e + 3*(B*a^5 + 5*A*a^4*b)*d^4*e^2)*x^
4 + 1/3*(15*A*a^5*d^4*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^6 + 6*(B*a^5 + 5*A*
a^4*b)*d^5*e)*x^3 + 1/2*(6*A*a^5*d^5*e + (B*a^5 + 5*A*a^4*b)*d^6)*x^2
```

giac [B] time = 0.27, size = 1702, normalized size = 3.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/13*B*b^5*x^13*e^6*sgn(b*x + a) + 1/2*B*b^5*d*x^12*e^5*sgn(b*x + a) + 15/1
1*B*b^5*d^2*x^11*e^4*sgn(b*x + a) + 2*B*b^5*d^3*x^10*e^3*sgn(b*x + a) + 5/3
*B*b^5*d^4*x^9*e^2*sgn(b*x + a) + 3/4*B*b^5*d^5*x^8*e*sgn(b*x + a) + 1/7*B*
b^5*d^6*x^7*sgn(b*x + a) + 5/12*B*a*b^4*x^12*e^6*sgn(b*x + a) + 1/12*A*b^5*
x^12*e^6*sgn(b*x + a) + 30/11*B*a*b^4*d*x^11*e^5*sgn(b*x + a) + 6/11*A*b^5*
d*x^11*e^5*sgn(b*x + a) + 15/2*B*a*b^4*d^2*x^10*e^4*sgn(b*x + a) + 3/2*A*b^
5*d^2*x^10*e^4*sgn(b*x + a) + 100/9*B*a*b^4*d^3*x^9*e^3*sgn(b*x + a) + 20/9
*A*b^5*d^3*x^9*e^3*sgn(b*x + a) + 75/8*B*a*b^4*d^4*x^8*e^2*sgn(b*x + a) + 1
5/8*A*b^5*d^4*x^8*e^2*sgn(b*x + a) + 30/7*B*a*b^4*d^5*x^7*e*sgn(b*x + a) +
6/7*A*b^5*d^5*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^6*x^6*sgn(b*x + a) + 1/6*A
*b^5*d^6*x^6*sgn(b*x + a) + 10/11*B*a^2*b^3*x^11*e^6*sgn(b*x + a) + 5/11*A*
a*b^4*x^11*e^6*sgn(b*x + a) + 6*B*a^2*b^3*d*x^10*e^5*sgn(b*x + a) + 3*A*a*b
^4*d*x^10*e^5*sgn(b*x + a) + 50/3*B*a^2*b^3*d^2*x^9*e^4*sgn(b*x + a) + 25/3
*A*a*b^4*d^2*x^9*e^4*sgn(b*x + a) + 25*B*a^2*b^3*d^3*x^8*e^3*sgn(b*x + a) +
 25/2*A*a*b^4*d^3*x^8*e^3*sgn(b*x + a) + 150/7*B*a^2*b^3*d^4*x^7*e^2*sgn(b*
x + a) + 75/7*A*a*b^4*d^4*x^7*e^2*sgn(b*x + a) + 10*B*a^2*b^3*d^5*x^6*e*sgn
(b*x + a) + 5*A*a*b^4*d^5*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^6*x^5*sgn(b*x
+ a) + A*a*b^4*d^6*x^5*sgn(b*x + a) + B*a^3*b^2*x^10*e^6*sgn(b*x + a) + A*a
^2*b^3*x^10*e^6*sgn(b*x + a) + 20/3*B*a^3*b^2*d*x^9*e^5*sgn(b*x + a) + 20/3
*A*a^2*b^3*d*x^9*e^5*sgn(b*x + a) + 75/4*B*a^3*b^2*d^2*x^8*e^4*sgn(b*x + a)
 + 75/4*A*a^2*b^3*d^2*x^8*e^4*sgn(b*x + a) + 200/7*B*a^3*b^2*d^3*x^7*e^3*sg
n(b*x + a) + 200/7*A*a^2*b^3*d^3*x^7*e^3*sgn(b*x + a) + 25*B*a^3*b^2*d^4*x^
6*e^2*sgn(b*x + a) + 25*A*a^2*b^3*d^4*x^6*e^2*sgn(b*x + a) + 12*B*a^3*b^2*d
^5*x^5*e*sgn(b*x + a) + 12*A*a^2*b^3*d^5*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2
*d^6*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^6*x^4*sgn(b*x + a) + 5/9*B*a^4*b*x^
9*e^6*sgn(b*x + a) + 10/9*A*a^3*b^2*x^9*e^6*sgn(b*x + a) + 15/4*B*a^4*b*d*x
^8*e^5*sgn(b*x + a) + 15/2*A*a^3*b^2*d*x^8*e^5*sgn(b*x + a) + 75/7*B*a^4*b*
d^2*x^7*e^4*sgn(b*x + a) + 150/7*A*a^3*b^2*d^2*x^7*e^4*sgn(b*x + a) + 50/3*
B*a^4*b*d^3*x^6*e^3*sgn(b*x + a) + 100/3*A*a^3*b^2*d^3*x^6*e^3*sgn(b*x + a)
 + 15*B*a^4*b*d^4*x^5*e^2*sgn(b*x + a) + 30*A*a^3*b^2*d^4*x^5*e^2*sgn(b*x +
 a) + 15/2*B*a^4*b*d^5*x^4*e*sgn(b*x + a) + 15*A*a^3*b^2*d^5*x^4*e*sgn(b*x
+ a) + 5/3*B*a^4*b*d^6*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d^6*x^3*sgn(b*x +
a) + 1/8*B*a^5*x^8*e^6*sgn(b*x + a) + 5/8*A*a^4*b*x^8*e^6*sgn(b*x + a) + 6/
7*B*a^5*d*x^7*e^5*sgn(b*x + a) + 30/7*A*a^4*b*d*x^7*e^5*sgn(b*x + a) + 5/2*
B*a^5*d^2*x^6*e^4*sgn(b*x + a) + 25/2*A*a^4*b*d^2*x^6*e^4*sgn(b*x + a) + 4*
B*a^5*d^3*x^5*e^3*sgn(b*x + a) + 20*A*a^4*b*d^3*x^5*e^3*sgn(b*x + a) + 15/4
*B*a^5*d^4*x^4*e^2*sgn(b*x + a) + 75/4*A*a^4*b*d^4*x^4*e^2*sgn(b*x + a) + 2
*B*a^5*d^5*x^3*e*sgn(b*x + a) + 10*A*a^4*b*d^5*x^3*e*sgn(b*x + a) + 1/2*B*a
```

```
^5*d^6*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^6*x^2*sgn(b*x + a) + 1/7*A*a^5*x^7*
e^6*sgn(b*x + a) + A*a^5*d*x^6*e^5*sgn(b*x + a) + 3*A*a^5*d^2*x^5*e^4*sgn(b
*x + a) + 5*A*a^5*d^3*x^4*e^3*sgn(b*x + a) + 5*A*a^5*d^4*x^3*e^2*sgn(b*x +
a) + 3*A*a^5*d^5*x^2*e*sgn(b*x + a) + A*a^5*d^6*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 1264, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/72072*x*(5544*B*b^5*e^6*x^12+6006*A*b^5*e^6*x^11+30030*B*a*b^4*e^6*x^11+3
6036*B*b^5*d*e^5*x^11+32760*A*a*b^4*e^6*x^10+39312*A*b^5*d*e^5*x^10+65520*B
*a^2*b^3*e^6*x^10+196560*B*a*b^4*d*e^5*x^10+98280*B*b^5*d^2*e^4*x^10+72072*
A*a^2*b^3*e^6*x^9+216216*A*a*b^4*d*e^5*x^9+108108*A*b^5*d^2*e^4*x^9+72072*B
*a^3*b^2*e^6*x^9+432432*B*a^2*b^3*d*e^5*x^9+540540*B*a*b^4*d^2*e^4*x^9+1441
44*B*b^5*d^3*e^3*x^9+80080*A*a^3*b^2*e^6*x^8+480480*A*a^2*b^3*d*e^5*x^8+600
600*A*a*b^4*d^2*e^4*x^8+160160*A*b^5*d^3*e^3*x^8+40040*B*a^4*b*e^6*x^8+4804
80*B*a^3*b^2*d*e^5*x^8+1201200*B*a^2*b^3*d^2*e^4*x^8+800800*B*a*b^4*d^3*e^3
*x^8+120120*B*b^5*d^4*e^2*x^8+45045*A*a^4*b*e^6*x^7+540540*A*a^3*b^2*d*e^5*
x^7+1351350*A*a^2*b^3*d^2*e^4*x^7+900900*A*a*b^4*d^3*e^3*x^7+135135*A*b^5*d
^4*e^2*x^7+9009*B*a^5*e^6*x^7+270270*B*a^4*b*d*e^5*x^7+1351350*B*a^3*b^2*d^
2*e^4*x^7+1801800*B*a^2*b^3*d^3*e^3*x^7+675675*B*a*b^4*d^4*e^2*x^7+54054*B*
b^5*d^5*e*x^7+10296*A*a^5*e^6*x^6+308880*A*a^4*b*d*e^5*x^6+1544400*A*a^3*b^
2*d^2*e^4*x^6+2059200*A*a^2*b^3*d^3*e^3*x^6+772200*A*a*b^4*d^4*e^2*x^6+6177
6*A*b^5*d^5*e*x^6+61776*B*a^5*d*e^5*x^6+772200*B*a^4*b*d^2*e^4*x^6+2059200*
B*a^3*b^2*d^3*e^3*x^6+1544400*B*a^2*b^3*d^4*e^2*x^6+308880*B*a*b^4*d^5*e*x^
6+10296*B*b^5*d^6*x^6+72072*A*a^5*d*e^5*x^5+900900*A*a^4*b*d^2*e^4*x^5+2402
400*A*a^3*b^2*d^3*e^3*x^5+1801800*A*a^2*b^3*d^4*e^2*x^5+360360*A*a*b^4*d^5*
e*x^5+12012*A*b^5*d^6*x^5+180180*B*a^5*d^2*e^4*x^5+1201200*B*a^4*b*d^3*e^3*
x^5+1801800*B*a^3*b^2*d^4*e^2*x^5+720720*B*a^2*b^3*d^5*e*x^5+60060*B*a*b^4*
d^6*x^5+216216*A*a^5*d^2*e^4*x^4+1441440*A*a^4*b*d^3*e^3*x^4+2162160*A*a^3*
b^2*d^4*e^2*x^4+864864*A*a^2*b^3*d^5*e*x^4+72072*A*a*b^4*d^6*x^4+288288*B*a
^5*d^3*e^3*x^4+1081080*B*a^4*b*d^4*e^2*x^4+864864*B*a^3*b^2*d^5*e*x^4+14414
4*B*a^2*b^3*d^6*x^4+360360*A*a^5*d^3*e^3*x^3+1351350*A*a^4*b*d^4*e^2*x^3+10
81080*A*a^3*b^2*d^5*e*x^3+180180*A*a^2*b^3*d^6*x^3+270270*B*a^5*d^4*e^2*x^3
+540540*B*a^4*b*d^5*e*x^3+180180*B*a^3*b^2*d^6*x^3+360360*A*a^5*d^4*e^2*x^2
+720720*A*a^4*b*d^5*e*x^2+240240*A*a^3*b^2*d^6*x^2+144144*B*a^5*d^5*e*x^2+1
20120*B*a^4*b*d^6*x^2+216216*A*a^5*d^5*e*x+180180*A*a^4*b*d^6*x+36036*B*a^5
*d^6*x+72072*A*a^5*d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.70, size = 1744, normalized size = 4.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^6*x^6/b^2 - 19/156*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*a*e^6*x^5/b^3 + 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*B*a^2*e^6*x^4/b^4 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^6*x^3/b
^5 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^6*x - 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*B*a^7*e^6*x/b^7 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^
4*e^6*x^2/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^6/b - 1/6*(b^2*x^
2 + 2*a*b*x + a^2)^(5/2)*B*a^8*e^6/b^8 - 1709/10296*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*B*a^5*e^6*x/b^7 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^6
*e^6/b^8 + 1/12*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2
 - 17/132*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4/b^3 + 3
```

```
/11*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 + 5/3
3*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^3/b^4 - 9/22*(5
*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(4*
B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 + 1/6*(6*B
*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*x/b^6 - 1/2*(5*B*d^2*e^
4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(4*B*d^3*e^3
 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/6*(3*B*d^4*e^
2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(2*B*d^5*e
 + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^6 + 6*
A*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b - 16/99*(6*B*d*e^5 + A*e^6)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^5 + 31/66*(5*B*d^2*e^4 + 2*A*d*e^
5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(4*B*d^3*e^3 + 3*A*d
^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 5/9*(3*B*d^4*e^2 + 4*A*
d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(6*B*d*e^5 + A*e^6)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 1/2*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 5/6*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 5/6*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/2*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(B*d^6 + 6*A*d^5*e)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^2/b^2 + 131/792*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^4*x/b^6 - 65/132*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^3*x/b^5 + 29/36*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a^2*x/b^4 - 55/72*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*x/b^2 - 923/5544*(6*B*d*e^5 + A*e^6)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*a^5/b^7 + 461/924*(5*B*d^2*e^4 + 2*A*d*e^5)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^4/b^6 - 209/252*(4*B*d^3*e^3 + 3*A*d^2*e^4)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^3/b^5 + 415/504*(3*B*d^4*e^2 + 4*A*d^3*e^3)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*a^2/b^4 - 27/56*(2*B*d^5*e + 5*A*d^4*e^2)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^6 + 6*A*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^6\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \left(d + ex\right)^{6} \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**6*((a + b*x)**2)**(5/2), x)
```

3.1739 $\int (A+Bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=383

$$\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(-6aBe+Abe+5bBd)}{11b^7}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)(-3aBe+Abe}{2b^7}$$

```
[Out] 1/6*(A*b-B*a)*(-a*e+b*d)^5*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^7+1/7*(-a*e+b*d)^4
*(5*A*b*e-6*B*a*e+B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^7+5/8*e*(-a*e+b*d)^3
*(2*A*b*e-3*B*a*e+B*b*d)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^7+10/9*e^2*(-a*e+b*d
)^2*(A*b*e-2*B*a*e+B*b*d)*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^7+1/2*e^3*(-a*e+b*d
)*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^7+1/11*e^4*(A*b*e-6
*B*a*e+5*B*b*d)*(b*x+a)^10*((b*x+a)^2)^(1/2)/b^7+1/12*B*e^5*(b*x+a)^11*((b*
x+a)^2)^(1/2)/b^7
```

Rubi [A] time = 0.79, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(-6aBe+Abe+5bBd)}{11b^7}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)(-3aBe+Abe}{2b^7}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^5*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
7) + ((b*d - a*e)^4*(b*B*d + 5*A*b*e - 6*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^7) + (5*e*(b*d - a*e)^3*(b*B*d + 2*A*b*e - 3*a*B*e)*(a
 + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^7) + (10*e^2*(b*d - a*e)^2*(b
*B*d + A*b*e - 2*a*B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^7)
+ (e^3*(b*d - a*e)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(2*b^7) + (e^4*(5*b*B*d + A*b*e - 6*a*B*e)*(a + b*x)^10*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*b^7) + (B*e^5*(a + b*x)^11*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(12*b^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\ \int\left(ab+b^2x\right)^5(A+Bx)(d+ex)^5\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\ \int\left(\frac{(Ab-aB)(bd-ae)^5\left(ab+b^2x\right)^5}{b^6}+\frac{(bd-ae)^4(bBd+5Abe-6}{b^7}\right.}{}$$

$$=\frac{(Ab-aB)(bd-ae)^5(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^7}+\frac{(bd-ae)^4(b}{}$$

Mathematica [**A**] time = 0.31, size = 740, normalized size = 1.93

$$\frac{x\sqrt{(a+bx)^2}\left(132a^5\left(7A\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+Bx\left(21d^5+70d^4ex+105d^3e^2x\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(132*a^5*(7*A*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 1
5*d^2*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + B*x*(21*d^5 + 70*d^4*e*x + 105*d^3
*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5)) + 165*a^4*b*x*(4*A*(
21*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e
^5*x^5) + B*x*(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 1
20*d*e^4*x^4 + 21*e^5*x^5)) + 110*a^3*b^2*x^2*(3*A*(56*d^5 + 210*d^4*e*x +
336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) + B*x*(126*
d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*
e^5*x^5)) + 22*a^2*b^3*x^3*(5*A*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 +
720*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 2*B*x*(252*d^5 + 1050*d^4*e
*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5)) +
2*a*b^4*x^4*(11*A*(252*d^5 + 1050*d^4*e*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3
*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5) + 5*B*x*(462*d^5 + 1980*d^4*e*x + 3465*
d^3*e^2*x^2 + 3080*d^2*e^3*x^3 + 1386*d*e^4*x^4 + 252*e^5*x^5)) + b^5*x^5*(
B*x*(792*d^5 + 3465*d^4*e*x + 6160*d^3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*
e^4*x^4 + 462*e^5*x^5) + A*(924*d^5 + 3960*d^4*e*x + 6930*d^3*e^2*x^2 + 616
0*d^2*e^3*x^3 + 2772*d*e^4*x^4 + 504*e^5*x^5))))/(5544*(a + b*x))
```

fricas [**B**] time = 0.88, size = 813, normalized size = 2.12

$$\frac{1}{12}\,Bb^5e^5x^{12}+Aa^5d^5x+\frac{1}{11}\left(5\,Bb^5de^4+\left(5\,Bab^4+Ab^5\right)e^5\right)x^{11}+\frac{1}{2}\left(2\,Bb^5d^2e^3+\left(5\,Bab^4+Ab^5\right)de^4+\left(2\,Ba^2b^3+Aa\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*B*b^5*e^5*x^12 + A*a^5*d^5*x + 1/11*(5*B*b^5*d*e^4 + (5*B*a*b^4 + A*b^
5)*e^5)*x^11 + 1/2*(2*B*b^5*d^2*e^3 + (5*B*a*b^4 + A*b^5)*d*e^4 + (2*B*a^2*
b^3 + A*a*b^4)*e^5)*x^10 + 5/9*(2*B*b^5*d^3*e^2 + 2*(5*B*a*b^4 + A*b^5)*d^2
*e^3 + 5*(2*B*a^2*b^3 + A*a*b^4)*d*e^4 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^5)*x^9
 + 5/8*(B*b^5*d^4*e + 2*(5*B*a*b^4 + A*b^5)*d^3*e^2 + 10*(2*B*a^2*b^3 + A*a
*b^4)*d^2*e^3 + 10*(B*a^3*b^2 + A*a^2*b^3)*d*e^4 + (B*a^4*b + 2*A*a^3*b^2)*
e^5)*x^8 + 1/7*(B*b^5*d^5 + 5*(5*B*a*b^4 + A*b^5)*d^4*e + 50*(2*B*a^2*b^3 +
 A*a*b^4)*d^3*e^2 + 100*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^3 + 25*(B*a^4*b + 2*A
*a^3*b^2)*d*e^4 + (B*a^5 + 5*A*a^4*b)*e^5)*x^7 + 1/6*(A*a^5*e^5 + (5*B*a*b^
4 + A*b^5)*d^5 + 25*(2*B*a^2*b^3 + A*a*b^4)*d^4*e + 100*(B*a^3*b^2 + A*a^2*
b^3)*d^3*e^2 + 50*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^3 + 5*(B*a^5 + 5*A*a^4*b)*d
*e^4)*x^6 + (A*a^5*d*e^4 + (2*B*a^2*b^3 + A*a*b^4)*d^5 + 10*(B*a^3*b^2 + A*
a^2*b^3)*d^4*e + 10*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^2 + 2*(B*a^5 + 5*A*a^4*b)
*d^2*e^3)*x^5 + 5/4*(2*A*a^5*d^2*e^3 + 2*(B*a^3*b^2 + A*a^2*b^3)*d^5 + 5*(B
*a^4*b + 2*A*a^3*b^2)*d^4*e + 2*(B*a^5 + 5*A*a^4*b)*d^3*e^2)*x^4 + 5/3*(2*A
*a^5*d^3*e^2 + (B*a^4*b + 2*A*a^3*b^2)*d^5 + (B*a^5 + 5*A*a^4*b)*d^4*e)*x^3
 + 1/2*(5*A*a^5*d^4*e + (B*a^5 + 5*A*a^4*b)*d^5)*x^2
```

giac [B] time = 0.28, size = 1446, normalized size = 3.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/12*B*b^5*x^12*e^5*sgn(b*x + a) + 5/11*B*b^5*d*x^11*e^4*sgn(b*x + a) + B*b
^5*d^2*x^10*e^3*sgn(b*x + a) + 10/9*B*b^5*d^3*x^9*e^2*sgn(b*x + a) + 5/8*B*
b^5*d^4*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d^5*x^7*sgn(b*x + a) + 5/11*B*a*b^4*
x^11*e^5*sgn(b*x + a) + 1/11*A*b^5*x^11*e^5*sgn(b*x + a) + 5/2*B*a*b^4*d*x^
10*e^4*sgn(b*x + a) + 1/2*A*b^5*d*x^10*e^4*sgn(b*x + a) + 50/9*B*a*b^4*d^2*
x^9*e^3*sgn(b*x + a) + 10/9*A*b^5*d^2*x^9*e^3*sgn(b*x + a) + 25/4*B*a*b^4*d
^3*x^8*e^2*sgn(b*x + a) + 5/4*A*b^5*d^3*x^8*e^2*sgn(b*x + a) + 25/7*B*a*b^4
*d^4*x^7*e*sgn(b*x + a) + 5/7*A*b^5*d^4*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^
5*x^6*sgn(b*x + a) + 1/6*A*b^5*d^5*x^6*sgn(b*x + a) + B*a^2*b^3*x^10*e^5*sg
n(b*x + a) + 1/2*A*a*b^4*x^10*e^5*sgn(b*x + a) + 50/9*B*a^2*b^3*d*x^9*e^4*s
gn(b*x + a) + 25/9*A*a*b^4*d*x^9*e^4*sgn(b*x + a) + 25/2*B*a^2*b^3*d^2*x^8*
e^3*sgn(b*x + a) + 25/4*A*a*b^4*d^2*x^8*e^3*sgn(b*x + a) + 100/7*B*a^2*b^3*
d^3*x^7*e^2*sgn(b*x + a) + 50/7*A*a*b^4*d^3*x^7*e^2*sgn(b*x + a) + 25/3*B*a
^2*b^3*d^4*x^6*e*sgn(b*x + a) + 25/6*A*a*b^4*d^4*x^6*e*sgn(b*x + a) + 2*B*a
^2*b^3*d^5*x^5*sgn(b*x + a) + A*a*b^4*d^5*x^5*sgn(b*x + a) + 10/9*B*a^3*b^2
*x^9*e^5*sgn(b*x + a) + 10/9*A*a^2*b^3*x^9*e^5*sgn(b*x + a) + 25/4*B*a^3*b^
2*d*x^8*e^4*sgn(b*x + a) + 25/4*A*a^2*b^3*d*x^8*e^4*sgn(b*x + a) + 100/7*B*
a^3*b^2*d^2*x^7*e^3*sgn(b*x + a) + 100/7*A*a^2*b^3*d^2*x^7*e^3*sgn(b*x + a)
 + 50/3*B*a^3*b^2*d^3*x^6*e^2*sgn(b*x + a) + 50/3*A*a^2*b^3*d^3*x^6*e^2*sgn
(b*x + a) + 10*B*a^3*b^2*d^4*x^5*e*sgn(b*x + a) + 10*A*a^2*b^3*d^4*x^5*e*sg
n(b*x + a) + 5/2*B*a^3*b^2*d^5*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^5*x^4*sgn
(b*x + a) + 5/8*B*a^4*b*x^8*e^5*sgn(b*x + a) + 5/4*A*a^3*b^2*x^8*e^5*sgn(b*
x + a) + 25/7*B*a^4*b*d*x^7*e^4*sgn(b*x + a) + 50/7*A*a^3*b^2*d*x^7*e^4*sgn
(b*x + a) + 25/3*B*a^4*b*d^2*x^6*e^3*sgn(b*x + a) + 50/3*A*a^3*b^2*d^2*x^6*
e^3*sgn(b*x + a) + 10*B*a^4*b*d^3*x^5*e^2*sgn(b*x + a) + 20*A*a^3*b^2*d^3*x
^5*e^2*sgn(b*x + a) + 25/4*B*a^4*b*d^4*x^4*e*sgn(b*x + a) + 25/2*A*a^3*b^2*
d^4*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^5*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*
d^5*x^3*sgn(b*x + a) + 1/7*B*a^5*x^7*e^5*sgn(b*x + a) + 5/7*A*a^4*b*x^7*e^5
*sgn(b*x + a) + 5/6*B*a^5*d*x^6*e^4*sgn(b*x + a) + 25/6*A*a^4*b*d*x^6*e^4*s
gn(b*x + a) + 2*B*a^5*d^2*x^5*e^3*sgn(b*x + a) + 10*A*a^4*b*d^2*x^5*e^3*sgn
(b*x + a) + 5/2*B*a^5*d^3*x^4*e^2*sgn(b*x + a) + 25/2*A*a^4*b*d^3*x^4*e^2*s
gn(b*x + a) + 5/3*B*a^5*d^4*x^3*e*sgn(b*x + a) + 25/3*A*a^4*b*d^4*x^3*e*sgn
(b*x + a) + 1/2*B*a^5*d^5*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^5*x^2*sgn(b*x +
a) + 1/6*A*a^5*x^6*e^5*sgn(b*x + a) + A*a^5*d*x^5*e^4*sgn(b*x + a) + 5/2*A*
a^5*d^2*x^4*e^3*sgn(b*x + a) + 10/3*A*a^5*d^3*x^3*e^2*sgn(b*x + a) + 5/2*A*
a^5*d^4*x^2*e*sgn(b*x + a) + A*a^5*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 1068, normalized size = 2.79

$$\frac{\left(462B\,e^5b^5x^{11} + 504x^{10}A\,b^5e^5 + 2520x^{10}B\,e^5a\,b^4 + 2520x^{10}B\,b^5d\,e^4 + 2772x^9Aa\,b^4e^5 + 2772x^9A\,b^5d\,e^4 + 554}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/5544*x*(462*B*b^5*e^5*x^11+504*A*b^5*e^5*x^10+2520*B*a*b^4*e^5*x^10+2520*
B*b^5*d*e^4*x^10+2772*A*a*b^4*e^5*x^9+2772*A*b^5*d*e^4*x^9+5544*B*a^2*b^3*e
^5*x^9+13860*B*a*b^4*d*e^4*x^9+5544*B*b^5*d^2*e^3*x^9+6160*A*a^2*b^3*e^5*x^
8+15400*A*a*b^4*d*e^4*x^8+6160*A*b^5*d^2*e^3*x^8+6160*B*a^3*b^2*e^5*x^8+308
00*B*a^2*b^3*d*e^4*x^8+30800*B*a*b^4*d^2*e^3*x^8+6160*B*b^5*d^3*e^2*x^8+693
0*A*a^3*b^2*e^5*x^7+34650*A*a^2*b^3*d*e^4*x^7+34650*A*a*b^4*d^2*e^3*x^7+693
0*A*b^5*d^3*e^2*x^7+3465*B*a^4*b*e^5*x^7+34650*B*a^3*b^2*d*e^4*x^7+69300*B*
a^2*b^3*d^2*e^3*x^7+34650*B*a*b^4*d^3*e^2*x^7+3465*B*b^5*d^4*e*x^7+3960*A*a
^4*b*e^5*x^6+39600*A*a^3*b^2*d*e^4*x^6+79200*A*a^2*b^3*d^2*e^3*x^6+39600*A*
a*b^4*d^3*e^2*x^6+3960*A*b^5*d^4*e*x^6+792*B*a^5*e^5*x^6+19800*B*a^4*b*d*e^
4*x^6+79200*B*a^3*b^2*d^2*e^3*x^6+79200*B*a^2*b^3*d^3*e^2*x^6+19800*B*a*b^4
*d^4*e*x^6+792*B*b^5*d^5*x^6+924*A*a^5*e^5*x^5+23100*A*a^4*b*d*e^4*x^5+9240
0*A*a^3*b^2*d^2*e^3*x^5+92400*A*a^2*b^3*d^3*e^2*x^5+23100*A*a*b^4*d^4*e*x^5
+924*A*b^5*d^5*x^5+4620*B*a^5*d*e^4*x^5+46200*B*a^4*b*d^2*e^3*x^5+92400*B*a
^3*b^2*d^3*e^2*x^5+46200*B*a^2*b^3*d^4*e*x^5+4620*B*a*b^4*d^5*x^5+5544*A*a^
5*d*e^4*x^4+55440*A*a^4*b*d^2*e^3*x^4+110880*A*a^3*b^2*d^3*e^2*x^4+55440*A*
a^2*b^3*d^4*e*x^4+5544*A*a*b^4*d^5*x^4+11088*B*a^5*d^2*e^3*x^4+55440*B*a^4*
b*d^3*e^2*x^4+55440*B*a^3*b^2*d^4*e*x^4+11088*B*a^2*b^3*d^5*x^4+13860*A*a^5
*d^2*e^3*x^3+69300*A*a^4*b*d^3*e^2*x^3+69300*A*a^3*b^2*d^4*e*x^3+13860*A*a^
2*b^3*d^5*x^3+13860*B*a^5*d^3*e^2*x^3+34650*B*a^4*b*d^4*e*x^3+13860*B*a^3*b
^2*d^5*x^3+18480*A*a^5*d^3*e^2*x^2+46200*A*a^4*b*d^4*e*x^2+18480*A*a^3*b^2*
d^5*x^2+9240*B*a^5*d^4*e*x^2+9240*B*a^4*b*d^5*x^2+13860*A*a^5*d^4*e*x+13860
*A*a^4*b*d^5*x+2772*B*a^5*d^5*x+5544*A*a^5*d^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.81, size = 1330, normalized size = 3.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^5*x^5/b^2 - 17/132*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*B*a*e^5*x^4/b^3 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a
^2*e^5*x^3/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^5*x + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*B*a^6*e^5*x/b^6 - 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(
7/2)*B*a^3*e^5*x^2/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^5/b + 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^7*e^5/b^7 + 131/792*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a^4*e^5*x/b^6 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B
*a^5*e^5/b^7 + 1/11*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4
/b^2 - 3/22*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 +
 1/2*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 - 1/6*
(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(2*B*d^
2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/3*(B*d^3*e^2
 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 5/6*(B*d^4*e + 2*
A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^5 + 5*A*d^4
*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b + 31/198*(5*B*d*e^4 + A*e^5)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(2*B*d^2*e^3 + A*d*e^4)*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 10/9*(B*d^3*e^2 + A*d^2*e^3)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 - 1/6*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a^6/b^6 + 5/6*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a^5/b^5 - 5/3*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^4/b^4 + 5/6*(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^3/b^3 - 1/6*(B*d^5 + 5*A*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^
2 - 65/396*(5*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 +
29/36*(2*B*d^2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 5
5/36*(B*d^3*e^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 5/8*
(B*d^4*e + 2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 461/2772*(5
*B*d*e^4 + A*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/252*(2*B*d^
2*e^3 + A*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 415/252*(B*d^3*e
^2 + A*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 45/56*(B*d^4*e +
2*A*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^5 + 5*A*d^4*e
)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^5\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + B x\right) \left(d + e x\right)^{5} \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**5*((a + b*x)**2)**(5/2), x)
```

3.1740 $\int (A+Bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=324

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(-5aBe+Abe+4bBd)}{10b^6}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)(-5aBe+2Abe+}{9b^6}$$

```
[Out] 1/6*(A*b-B*a)*(-a*e+b*d)^4*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^6+1/7*(-a*e+b*d)^3
*(4*A*b*e-5*B*a*e+B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^6+1/4*e*(-a*e+b*d)^2
*(3*A*b*e-5*B*a*e+2*B*b*d)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^6+2/9*e^2*(-a*e+b*
d)*(2*A*b*e-5*B*a*e+3*B*b*d)*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^6+1/10*e^3*(A*b*
e-5*B*a*e+4*B*b*d)*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^6+1/11*B*e^4*(b*x+a)^10*((
b*x+a)^2)^(1/2)/b^6
```

Rubi [A] time = 0.62, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(-5aBe+Abe+4bBd)}{10b^6}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)(-5aBe+2Abe+}{9b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^4*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
6) + ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^6) + (e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*(a
 + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^6) + (2*e^2*(b*d - a*e)*(3*b*
B*d + 2*A*b*e - 5*a*B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^6)
 + (e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(10*b^6) + (B*e^4*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^4 dx}{b^4 \left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2} \int \Bigg(\frac{(Ab-aB)(bd-ae)^4\left(ab+b^2x\right)^5}{b^5} + \frac{(bd-ae)^3(bBd+4A}{b}}{}$$

$$= \frac{(Ab-aB)(bd-ae)^4(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^6} + \frac{(bd-ae)^3}{}$$

Mathematica [**A**]   time = 0.24, size = 611, normalized size = 1.89

$$\frac{x\sqrt{(a+bx)^2} \Big(462a^5 \Big(6A \left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+Bx \Big(15d^4+40d^3ex+45d^2e^2x^2+24de^3}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(462*a^5*(6*A*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5
*d*e^3*x^3 + e^4*x^4) + B*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^
3*x^3 + 5*e^4*x^4)) + 330*a^4*b*x*(7*A*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^
2 + 24*d*e^3*x^3 + 5*e^4*x^4) + 2*B*x*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x
^2 + 70*d*e^3*x^3 + 15*e^4*x^4)) + 165*a^3*b^2*x^2*(8*A*(35*d^4 + 105*d^3*e
*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 3*B*x*(70*d^4 + 224*d^3
*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4)) + 55*a^2*b^3*x^3*(9*A
*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 4*
B*x*(126*d^4 + 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4))
 + 55*a*b^4*x^4*(2*A*(126*d^4 + 420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x
^3 + 70*e^4*x^4) + B*x*(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3
*x^3 + 126*e^4*x^4)) + b^5*x^5*(11*A*(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x
^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + 6*B*x*(330*d^4 + 1155*d^3*e*x + 1540*d^
2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4*x^4))))/(13860*(a + b*x))
```

fricas [**B**]   time = 0.83, size = 677, normalized size = 2.09

$$\frac{1}{11}Bb^5e^4x^{11}+Aa^5d^4x+\frac{1}{10}\left(4Bb^5de^3+\left(5Bab^4+Ab^5\right)e^4\right)x^{10}+\frac{1}{9}\Big(6Bb^5d^2e^2+4\left(5Bab^4+Ab^5\right)de^3+5\Big(2Ba^2b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/11*B*b^5*e^4*x^11 + A*a^5*d^4*x + 1/10*(4*B*b^5*d*e^3 + (5*B*a*b^4 + A*b^
5)*e^4)*x^10 + 1/9*(6*B*b^5*d^2*e^2 + 4*(5*B*a*b^4 + A*b^5)*d*e^3 + 5*(2*B*
a^2*b^3 + A*a*b^4)*e^4)*x^9 + 1/4*(2*B*b^5*d^3*e + 3*(5*B*a*b^4 + A*b^5)*d^
2*e^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d*e^3 + 5*(B*a^3*b^2 + A*a^2*b^3)*e^4)*x
^8 + 1/7*(B*b^5*d^4 + 4*(5*B*a*b^4 + A*b^5)*d^3*e + 30*(2*B*a^2*b^3 + A*a*b
^4)*d^2*e^2 + 40*(B*a^3*b^2 + A*a^2*b^3)*d*e^3 + 5*(B*a^4*b + 2*A*a^3*b^2)*
e^4)*x^7 + 1/6*((5*B*a*b^4 + A*b^5)*d^4 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^3*e
+ 60*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 20*(B*a^4*b + 2*A*a^3*b^2)*d*e^3 + (
B*a^5 + 5*A*a^4*b)*e^4)*x^6 + 1/5*(A*a^5*e^4 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^
4 + 40*(B*a^3*b^2 + A*a^2*b^3)*d^3*e + 30*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^2 +
 4*(B*a^5 + 5*A*a^4*b)*d*e^3)*x^5 + 1/2*(2*A*a^5*d*e^3 + 5*(B*a^3*b^2 + A*a
^2*b^3)*d^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d^3*e + 3*(B*a^5 + 5*A*a^4*b)*d^2*
e^2)*x^4 + 1/3*(6*A*a^5*d^2*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^4 + 4*(B*a^5
+ 5*A*a^4*b)*d^3*e)*x^3 + 1/2*(4*A*a^5*d^3*e + (B*a^5 + 5*A*a^4*b)*d^4)*x^2
```

giac [B] time = 0.25, size = 1192, normalized size = 3.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/11*B*b^5*x^11*e^4*sgn(b*x + a) + 2/5*B*b^5*d*x^10*e^3*sgn(b*x + a) + 2/3*
B*b^5*d^2*x^9*e^2*sgn(b*x + a) + 1/2*B*b^5*d^3*x^8*e*sgn(b*x + a) + 1/7*B*b
^5*d^4*x^7*sgn(b*x + a) + 1/2*B*a*b^4*x^10*e^4*sgn(b*x + a) + 1/10*A*b^5*x^
10*e^4*sgn(b*x + a) + 20/9*B*a*b^4*d*x^9*e^3*sgn(b*x + a) + 4/9*A*b^5*d*x^9
*e^3*sgn(b*x + a) + 15/4*B*a*b^4*d^2*x^8*e^2*sgn(b*x + a) + 3/4*A*b^5*d^2*x
^8*e^2*sgn(b*x + a) + 20/7*B*a*b^4*d^3*x^7*e*sgn(b*x + a) + 4/7*A*b^5*d^3*x
^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^4*x^6*sgn(b*x + a) + 1/6*A*b^5*d^4*x^6*sg
n(b*x + a) + 10/9*B*a^2*b^3*x^9*e^4*sgn(b*x + a) + 5/9*A*a*b^4*x^9*e^4*sgn(
b*x + a) + 5*B*a^2*b^3*d*x^8*e^3*sgn(b*x + a) + 5/2*A*a*b^4*d*x^8*e^3*sgn(b
*x + a) + 60/7*B*a^2*b^3*d^2*x^7*e^2*sgn(b*x + a) + 30/7*A*a*b^4*d^2*x^7*e^
2*sgn(b*x + a) + 20/3*B*a^2*b^3*d^3*x^6*e*sgn(b*x + a) + 10/3*A*a*b^4*d^3*x
^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^4*x^5*sgn(b*x + a) + A*a*b^4*d^4*x^5*sgn(
b*x + a) + 5/4*B*a^3*b^2*x^8*e^4*sgn(b*x + a) + 5/4*A*a^2*b^3*x^8*e^4*sgn(b
*x + a) + 40/7*B*a^3*b^2*d*x^7*e^3*sgn(b*x + a) + 40/7*A*a^2*b^3*d*x^7*e^3*
sgn(b*x + a) + 10*B*a^3*b^2*d^2*x^6*e^2*sgn(b*x + a) + 10*A*a^2*b^3*d^2*x^6
*e^2*sgn(b*x + a) + 8*B*a^3*b^2*d^3*x^5*e*sgn(b*x + a) + 8*A*a^2*b^3*d^3*x^
5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d^4*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^4*x
^4*sgn(b*x + a) + 5/7*B*a^4*b*x^7*e^4*sgn(b*x + a) + 10/7*A*a^3*b^2*x^7*e^4
*sgn(b*x + a) + 10/3*B*a^4*b*d*x^6*e^3*sgn(b*x + a) + 20/3*A*a^3*b^2*d*x^6*
e^3*sgn(b*x + a) + 6*B*a^4*b*d^2*x^5*e^2*sgn(b*x + a) + 12*A*a^3*b^2*d^2*x^
5*e^2*sgn(b*x + a) + 5*B*a^4*b*d^3*x^4*e*sgn(b*x + a) + 10*A*a^3*b^2*d^3*x^
4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^4*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d^4*x^
3*sgn(b*x + a) + 1/6*B*a^5*x^6*e^4*sgn(b*x + a) + 5/6*A*a^4*b*x^6*e^4*sgn(b
*x + a) + 4/5*B*a^5*d*x^5*e^3*sgn(b*x + a) + 4*A*a^4*b*d*x^5*e^3*sgn(b*x +
a) + 3/2*B*a^5*d^2*x^4*e^2*sgn(b*x + a) + 15/2*A*a^4*b*d^2*x^4*e^2*sgn(b*x
+ a) + 4/3*B*a^5*d^3*x^3*e*sgn(b*x + a) + 20/3*A*a^4*b*d^3*x^3*e*sgn(b*x +
a) + 1/2*B*a^5*d^4*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^4*x^2*sgn(b*x + a) + 1/
5*A*a^5*x^5*e^4*sgn(b*x + a) + A*a^5*d*x^4*e^3*sgn(b*x + a) + 2*A*a^5*d^2*x
^3*e^2*sgn(b*x + a) + 2*A*a^5*d^3*x^2*e*sgn(b*x + a) + A*a^5*d^4*x*sgn(b*x
+ a)
```

maple [B] time = 0.05, size = 872, normalized size = 2.69

$$\frac{\left(1260B\,b^5e^4x^{10}+1386x^9A\,b^5e^4+6930x^9B\,e^4a\,b^4+5544x^9B\,b^5d\,e^3+7700x^8Aa\,b^4e^4+6160x^8A\,b^5d\,e^3+15400x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/13860*x*(1260*B*b^5*e^4*x^10+1386*A*b^5*e^4*x^9+6930*B*a*b^4*e^4*x^9+5544
*B*b^5*d*e^3*x^9+7700*A*a*b^4*e^4*x^8+6160*A*b^5*d*e^3*x^8+15400*B*a^2*b^3*
e^4*x^8+30800*B*a*b^4*d*e^3*x^8+9240*B*b^5*d^2*e^2*x^8+17325*A*a^2*b^3*e^4*
x^7+34650*A*a*b^4*d*e^3*x^7+10395*A*b^5*d^2*e^2*x^7+17325*B*a^3*b^2*e^4*x^7
+69300*B*a^2*b^3*d*e^3*x^7+51975*B*a*b^4*d^2*e^2*x^7+6930*B*b^5*d^3*e*x^7+1
9800*A*a^3*b^2*e^4*x^6+79200*A*a^2*b^3*d*e^3*x^6+59400*A*a*b^4*d^2*e^2*x^6+
7920*A*b^5*d^3*e*x^6+9900*B*a^4*b*e^4*x^6+79200*B*a^3*b^2*d*e^3*x^6+118800*
B*a^2*b^3*d^2*e^2*x^6+39600*B*a*b^4*d^3*e*x^6+1980*B*b^5*d^4*x^6+11550*A*a^
4*b*e^4*x^5+92400*A*a^3*b^2*d*e^3*x^5+138600*A*a^2*b^3*d^2*e^2*x^5+46200*A*
a*b^4*d^3*e*x^5+2310*A*b^5*d^4*x^5+2310*B*a^5*e^4*x^5+46200*B*a^4*b*d*e^3*x
^5+138600*B*a^3*b^2*d^2*e^2*x^5+92400*B*a^2*b^3*d^3*e*x^5+11550*B*a*b^4*d^4
*x^5+2772*A*a^5*e^4*x^4+55440*A*a^4*b*d*e^3*x^4+166320*A*a^3*b^2*d^2*e^2*x^
4+110880*A*a^2*b^3*d^3*e*x^4+13860*A*a*b^4*d^4*x^4+11088*B*a^5*d*e^3*x^4+83
160*B*a^4*b*d^2*e^2*x^4+110880*B*a^3*b^2*d^3*e*x^4+27720*B*a^2*b^3*d^4*x^4+
13860*A*a^5*d*e^3*x^3+103950*A*a^4*b*d^2*e^2*x^3+138600*A*a^3*b^2*d^3*e*x^3
+34650*A*a^2*b^3*d^4*x^3+20790*B*a^5*d^2*e^2*x^3+69300*B*a^4*b*d^3*e*x^3+34
650*B*a^3*b^2*d^4*x^3+27720*A*a^5*d^2*e^2*x^2+92400*A*a^4*b*d^3*e*x^2+46200
*A*a^3*b^2*d^4*x^2+18480*B*a^5*d^3*e*x^2+23100*B*a^4*b*d^4*x^2+27720*A*a^5*
d^3*e*x+34650*A*a^4*b*d^4*x+6930*B*a^5*d^4*x+13860*A*a^5*d^4)*((b*x+a)^2)^(
5/2)/(b*x+a)^5
```

maxima [B] time = 0.65, size = 1004, normalized size = 3.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^4*x^4/b^2 - 3/22*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a*e^4*x^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^4*
x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*e^4*x/b^5 + 31/198*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*B*a^2*e^4*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*A*a*d^4/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^6*e^4/b^6 - 65/396*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^4*x/b^5 + 461/2772*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*B*a^4*e^4/b^6 + 1/10*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*x^3/b^2 + 1/6*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^4*x/b^4 - 1/3*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^3*x/b^3 + 1/3*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^2*x/b^2 - 1/6*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b
 - 13/90*(4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 2/
9*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(
4*B*d*e^3 + A*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 1/3*(3*B*d^2*e
^2 + 2*A*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/3*(2*B*d^3*e +
3*A*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(B*d^4 + 4*A*d^3
*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 + 29/180*(4*B*d*e^3 + A*e^4)*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 11/36*(3*B*d^2*e^2 + 2*A*d*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 1/4*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 - 209/1260*(4*B*d*e^3 + A*e^4)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/252*(3*B*d^2*e^2 + 2*A*d*e^3)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 9/28*(2*B*d^3*e + 3*A*d^2*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^4 + 4*A*d^3*e)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^4\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)(d+ex)^4\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4*((a + b*x)**2)**(5/2), x)
```

3.1741 $\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=259

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(-4aBe+Abe+3bBd)}{9b^5}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)(-2aBe+Abe+b}{8b^5}$$

```
[Out] 1/6*(A*b-B*a)*(-a*e+b*d)^3*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^5+1/7*(-a*e+b*d)^2
*(3*A*b*e-4*B*a*e+B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^5+3/8*e*(-a*e+b*d)*(
A*b*e-2*B*a*e+B*b*d)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^5+1/9*e^2*(A*b*e-4*B*a*e
+3*B*b*d)*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^5+1/10*B*e^3*(b*x+a)^9*((b*x+a)^2)^
(1/2)/b^5
```

Rubi [A] time = 0.46, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}=0.061$, Rules used = {770, 77}

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(-4aBe+Abe+3bBd)}{9b^5}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)(-2aBe+Abe+b}{8b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
5) + ((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(7*b^5) + (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b
*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^5) + (e^2*(3*b*B*d + A*b*e - 4*a*
B*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5) + (B*e^3*(a + b*x)^
9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^3\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{(Ab-aB)(bd-ae)^3\left(ab+b^2x\right)^5}{b^4}+\frac{(bd-ae)^2(bBd+3Abe-}{b^5}\right.}{}\\ &= \frac{(Ab-aB)(bd-ae)^3(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^5}+\frac{(bd-ae)^2(b}{}\end{aligned}$$

Mathematica [A] time = 0.20, size = 478, normalized size = 1.85

$$\frac{x\sqrt{(a+bx)^2}\left(126a^5\left(5A\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+Bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)\right)+210a^4bx\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(126*a^5*(5*A*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x
^3) + B*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3)) + 210*a^4*b*x*(
3*A*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + B*x*(20*d^3 + 45*d^2
*e*x + 36*d*e^2*x^2 + 10*e^3*x^3)) + 60*a^3*b^2*x^2*(7*A*(20*d^3 + 45*d^2*e
*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 3*B*x*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2
 + 20*e^3*x^3)) + 90*a^2*b^3*x^3*(2*A*(35*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 +
 20*e^3*x^3) + B*x*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3)) + 5
*a*b^4*x^4*(9*A*(56*d^3 + 140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3) + 5*B*x
*(84*d^3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3*x^3)) + b^5*x^5*(5*A*(84*d^
3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3*x^3) + 3*B*x*(120*d^3 + 315*d^2*e*
x + 280*d*e^2*x^2 + 84*e^3*x^3))))/(2520*(a + b*x))
```

fricas [B] time = 0.78, size = 532, normalized size = 2.05

$$\frac{1}{10}Bb^5e^3x^{10}+Aa^5d^3x+\frac{1}{9}\left(3Bb^5de^2+\left(5Bab^4+Ab^5\right)e^3\right)x^9+\frac{1}{8}\left(3Bb^5d^2e+3\left(5Bab^4+Ab^5\right)de^2+5\left(2Ba^2b^3+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/10*B*b^5*e^3*x^10 + A*a^5*d^3*x + 1/9*(3*B*b^5*d*e^2 + (5*B*a*b^4 + A*b^5
)*e^3)*x^9 + 1/8*(3*B*b^5*d^2*e + 3*(5*B*a*b^4 + A*b^5)*d*e^2 + 5*(2*B*a^2*
b^3 + A*a*b^4)*e^3)*x^8 + 1/7*(B*b^5*d^3 + 3*(5*B*a*b^4 + A*b^5)*d^2*e + 15
*(2*B*a^2*b^3 + A*a*b^4)*d*e^2 + 10*(B*a^3*b^2 + A*a^2*b^3)*e^3)*x^7 + 1/6*
((5*B*a*b^4 + A*b^5)*d^3 + 15*(2*B*a^2*b^3 + A*a*b^4)*d^2*e + 30*(B*a^3*b^2
 + A*a^2*b^3)*d*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^3)*x^6 + 1/5*(5*(2*B*a^2*
b^3 + A*a*b^4)*d^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e + 15*(B*a^4*b + 2*A*a
^3*b^2)*d*e^2 + (B*a^5 + 5*A*a^4*b)*e^3)*x^5 + 1/4*(A*a^5*e^3 + 10*(B*a^3*b
^2 + A*a^2*b^3)*d^3 + 15*(B*a^4*b + 2*A*a^3*b^2)*d^2*e + 3*(B*a^5 + 5*A*a^4
*b)*d*e^2)*x^4 + 1/3*(3*A*a^5*d*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^3 + 3*(B*
a^5 + 5*A*a^4*b)*d^2*e)*x^3 + 1/2*(3*A*a^5*d^2*e + (B*a^5 + 5*A*a^4*b)*d^3)
*x^2
```

giac [B] time = 0.22, size = 934, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/10*B*b^5*x^10*e^3*sgn(b*x + a) + 1/3*B*b^5*d*x^9*e^2*sgn(b*x + a) + 3/8*B
*b^5*d^2*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d^3*x^7*sgn(b*x + a) + 5/9*B*a*b^4*
x^9*e^3*sgn(b*x + a) + 1/9*A*b^5*x^9*e^3*sgn(b*x + a) + 15/8*B*a*b^4*d*x^8*
e^2*sgn(b*x + a) + 3/8*A*b^5*d*x^8*e^2*sgn(b*x + a) + 15/7*B*a*b^4*d^2*x^7*
e*sgn(b*x + a) + 3/7*A*b^5*d^2*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d^3*x^6*sgn
(b*x + a) + 1/6*A*b^5*d^3*x^6*sgn(b*x + a) + 5/4*B*a^2*b^3*x^8*e^3*sgn(b*x
+ a) + 5/8*A*a*b^4*x^8*e^3*sgn(b*x + a) + 30/7*B*a^2*b^3*d*x^7*e^2*sgn(b*x
+ a) + 15/7*A*a*b^4*d*x^7*e^2*sgn(b*x + a) + 5*B*a^2*b^3*d^2*x^6*e*sgn(b*x
+ a) + 5/2*A*a*b^4*d^2*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d^3*x^5*sgn(b*x + a
) + A*a*b^4*d^3*x^5*sgn(b*x + a) + 10/7*B*a^3*b^2*x^7*e^3*sgn(b*x + a) + 10
/7*A*a^2*b^3*x^7*e^3*sgn(b*x + a) + 5*B*a^3*b^2*d*x^6*e^2*sgn(b*x + a) + 5*
A*a^2*b^3*d*x^6*e^2*sgn(b*x + a) + 6*B*a^3*b^2*d^2*x^5*e*sgn(b*x + a) + 6*A
*a^2*b^3*d^2*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d^3*x^4*sgn(b*x + a) + 5/2*
A*a^2*b^3*d^3*x^4*sgn(b*x + a) + 5/6*B*a^4*b*x^6*e^3*sgn(b*x + a) + 5/3*A*a
^3*b^2*x^6*e^3*sgn(b*x + a) + 3*B*a^4*b*d*x^5*e^2*sgn(b*x + a) + 6*A*a^3*b^
2*d*x^5*e^2*sgn(b*x + a) + 15/4*B*a^4*b*d^2*x^4*e*sgn(b*x + a) + 15/2*A*a^3
*b^2*d^2*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^3*x^3*sgn(b*x + a) + 10/3*A*a^3
*b^2*d^3*x^3*sgn(b*x + a) + 1/5*B*a^5*x^5*e^3*sgn(b*x + a) + A*a^4*b*x^5*e^
3*sgn(b*x + a) + 3/4*B*a^5*d*x^4*e^2*sgn(b*x + a) + 15/4*A*a^4*b*d*x^4*e^2*
sgn(b*x + a) + B*a^5*d^2*x^3*e*sgn(b*x + a) + 5*A*a^4*b*d^2*x^3*e*sgn(b*x +
 a) + 1/2*B*a^5*d^3*x^2*sgn(b*x + a) + 5/2*A*a^4*b*d^3*x^2*sgn(b*x + a) + 1
/4*A*a^5*x^4*e^3*sgn(b*x + a) + A*a^5*d*x^3*e^2*sgn(b*x + a) + 3/2*A*a^5*d^
2*x^2*e*sgn(b*x + a) + A*a^5*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 676, normalized size = 2.61

$$\frac{\left(252B\,e^{3}b^{5}x^{9}+280x^{8}A\,b^{5}e^{3}+1400x^{8}B\,e^{3}a\,b^{4}+840x^{8}B\,b^{5}d\,e^{2}+1575x^{7}Aa\,b^{4}e^{3}+945x^{7}A\,b^{5}d\,e^{2}+3150x^{7}B\,e^{3}a^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2520*x*(252*B*b^5*e^3*x^9+280*A*b^5*e^3*x^8+1400*B*a*b^4*e^3*x^8+840*B*b^
5*d*e^2*x^8+1575*A*a*b^4*e^3*x^7+945*A*b^5*d*e^2*x^7+3150*B*a^2*b^3*e^3*x^7
+4725*B*a*b^4*d*e^2*x^7+945*B*b^5*d^2*e*x^7+3600*A*a^2*b^3*e^3*x^6+5400*A*a
*b^4*d*e^2*x^6+1080*A*b^5*d^2*e*x^6+3600*B*a^3*b^2*e^3*x^6+10800*B*a^2*b^3*
d*e^2*x^6+5400*B*a*b^4*d^2*e*x^6+360*B*b^5*d^3*x^6+4200*A*a^3*b^2*e^3*x^5+1
2600*A*a^2*b^3*d*e^2*x^5+6300*A*a*b^4*d^2*e*x^5+420*A*b^5*d^3*x^5+2100*B*a^
4*b*e^3*x^5+12600*B*a^3*b^2*d*e^2*x^5+12600*B*a^2*b^3*d^2*e*x^5+2100*B*a*b^
4*d^3*x^5+2520*A*a^4*b*e^3*x^4+15120*A*a^3*b^2*d*e^2*x^4+15120*A*a^2*b^3*d^
2*e*x^4+2520*A*a*b^4*d^3*x^4+504*B*a^5*e^3*x^4+7560*B*a^4*b*d*e^2*x^4+15120
*B*a^3*b^2*d^2*e*x^4+5040*B*a^2*b^3*d^3*x^4+630*A*a^5*e^3*x^3+9450*A*a^4*b*
d*e^2*x^3+18900*A*a^3*b^2*d^2*e*x^3+6300*A*a^2*b^3*d^3*x^3+1890*B*a^5*d*e^2
*x^3+9450*B*a^4*b*d^2*e*x^3+6300*B*a^3*b^2*d^3*x^3+2520*A*a^5*d*e^2*x^2+126
00*A*a^4*b*d^2*e*x^2+8400*A*a^3*b^2*d^3*x^2+2520*B*a^5*d^2*e*x^2+4200*B*a^4
*b*d^3*x^2+3780*A*a^5*d^2*e*x+6300*A*a^4*b*d^3*x+1260*B*a^5*d^3*x+2520*A*a^
5*d^3)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.54, size = 698, normalized size = 2.69

$$\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}Be^{3}x^{3}}{10\,b^{2}}+\frac{1}{6}\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Ad^{3}x+\frac{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}Ba^{4}e^{3}x}{6\,b^{4}}-\frac{13\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{7}{2}}}{90\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^3*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*A*d^3*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^4*e^3*x/b^4
 - 13/90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*e^3*x^2/b^3 + 1/6*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*A*a*d^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^5*e
^3/b^5 + 29/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*e^3*x/b^4 - 209/1260*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^3*e^3/b^5 - 1/6*(3*B*d*e^2 + A*e^3)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(B*d^2*e + A*d*e^2)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a*x/b + 1/9*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*x^2/b^2 - 1/6*(3*B*d*e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b
```

```
^4 + 1/2*(B*d^2*e + A*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*
(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 11/72*(3*B*d*
e^2 + A*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(B*d^2*e + A*d*e
^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 83/504*(3*B*d*e^2 + A*e^3)*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 27/56*(B*d^2*e + A*d*e^2)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(B*d^3 + 3*A*d^2*e)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \left(d + ex\right)^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3*((a + b*x)**2)**(5/2), x)
```

3.1742 $\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=198

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(-3aBe+Abe+2bBd)}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)(-3aBe+2Abe+bB}{7b^4}$$

```
[Out] 1/6*(A*b-B*a)*(-a*e+b*d)^2*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^4+1/7*(-a*e+b*d)*(
2*A*b*e-3*B*a*e+B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^4+1/8*e*(A*b*e-3*B*a*e
+2*B*b*d)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^4+1/9*B*e^2*(b*x+a)^8*((b*x+a)^2)^(
1/2)/b^4
```

Rubi [A] time = 0.34, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(-3aBe+Abe+2bBd)}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)(-3aBe+2Abe+bB}{7b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)^2*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^
4) + ((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*b^4) + (e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^7*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(8*b^4) + (B*e^2*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(9*b^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^2\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{(Ab-aB)(bd-ae)^2\left(ab+b^2x\right)^5}{b^3}+\frac{(bd-ae)(bBd+2Abe-3}{b^4}\right.}{b^4\left(ab+b^2\right.}\\ &= \frac{(Ab-aB)(bd-ae)^2(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^4}+\frac{(bd-ae)(bB}{}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 347, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\left(42a^5\left(4A\left(3d^2+3dex+e^2x^2\right)+Bx\left(6d^2+8dex+3e^2x^2\right)\right)+42a^4bx\left(5A\left(6d^2+8dex+3e^2x^2\right)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(42*a^5*(4*A*(3*d^2 + 3*d*e*x + e^2*x^2) + B*x*(6*d^2
+ 8*d*e*x + 3*e^2*x^2)) + 42*a^4*b*x*(5*A*(6*d^2 + 8*d*e*x + 3*e^2*x^2) + 2
*B*x*(10*d^2 + 15*d*e*x + 6*e^2*x^2)) + 84*a^3*b^2*x^2*(2*A*(10*d^2 + 15*d*
e*x + 6*e^2*x^2) + B*x*(15*d^2 + 24*d*e*x + 10*e^2*x^2)) + 12*a^2*b^3*x^3*(
7*A*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 4*B*x*(21*d^2 + 35*d*e*x + 15*e^2*x^
2)) + 3*a*b^4*x^4*(8*A*(21*d^2 + 35*d*e*x + 15*e^2*x^2) + 5*B*x*(28*d^2 + 4
8*d*e*x + 21*e^2*x^2)) + b^5*x^5*(3*A*(28*d^2 + 48*d*e*x + 21*e^2*x^2) + 2*
B*x*(36*d^2 + 63*d*e*x + 28*e^2*x^2))))/(504*(a + b*x))
```

fricas [**B**] time = 0.90, size = 384, normalized size = 1.94

$$\frac{1}{9}Bb^5e^2x^9+Aa^5d^2x+\frac{1}{8}\left(2Bb^5de+\left(5Bab^4+Ab^5\right)e^2\right)x^8+\frac{1}{7}\left(Bb^5d^2+2\left(5Bab^4+Ab^5\right)de+5\left(2Ba^2b^3+Aab^4\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/9*B*b^5*e^2*x^9 + A*a^5*d^2*x + 1/8*(2*B*b^5*d*e + (5*B*a*b^4 + A*b^5)*e^
2)*x^8 + 1/7*(B*b^5*d^2 + 2*(5*B*a*b^4 + A*b^5)*d*e + 5*(2*B*a^2*b^3 + A*a*
b^4)*e^2)*x^7 + 1/6*((5*B*a*b^4 + A*b^5)*d^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d
*e + 10*(B*a^3*b^2 + A*a^2*b^3)*e^2)*x^6 + ((2*B*a^2*b^3 + A*a*b^4)*d^2 + 4
*(B*a^3*b^2 + A*a^2*b^3)*d*e + (B*a^4*b + 2*A*a^3*b^2)*e^2)*x^5 + 1/4*(10*(
B*a^3*b^2 + A*a^2*b^3)*d^2 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e + (B*a^5 + 5*A*
a^4*b)*e^2)*x^4 + 1/3*(A*a^5*e^2 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^2 + 2*(B*a^5
 + 5*A*a^4*b)*d*e)*x^3 + 1/2*(2*A*a^5*d*e + (B*a^5 + 5*A*a^4*b)*d^2)*x^2
```

giac [**B**] time = 0.20, size = 679, normalized size = 3.43

$$\frac{1}{9}Bb^5x^9e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}Bb^5dx^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}Bb^5d^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}Bab^4x^8e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{8}Ab^5x^8e^2\mathrm{s}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/9*B*b^5*x^9*e^2*sgn(b*x + a) + 1/4*B*b^5*d*x^8*e*sgn(b*x + a) + 1/7*B*b^5
*d^2*x^7*sgn(b*x + a) + 5/8*B*a*b^4*x^8*e^2*sgn(b*x + a) + 1/8*A*b^5*x^8*e^
2*sgn(b*x + a) + 10/7*B*a*b^4*d*x^7*e*sgn(b*x + a) + 2/7*A*b^5*d*x^7*e*sgn(
b*x + a) + 5/6*B*a*b^4*d^2*x^6*sgn(b*x + a) + 1/6*A*b^5*d^2*x^6*sgn(b*x + a
) + 10/7*B*a^2*b^3*x^7*e^2*sgn(b*x + a) + 5/7*A*a*b^4*x^7*e^2*sgn(b*x + a)
+ 10/3*B*a^2*b^3*d*x^6*e*sgn(b*x + a) + 5/3*A*a*b^4*d*x^6*e*sgn(b*x + a) +
2*B*a^2*b^3*d^2*x^5*sgn(b*x + a) + A*a*b^4*d^2*x^5*sgn(b*x + a) + 5/3*B*a^3
*b^2*x^6*e^2*sgn(b*x + a) + 5/3*A*a^2*b^3*x^6*e^2*sgn(b*x + a) + 4*B*a^3*b^
2*d*x^5*e*sgn(b*x + a) + 4*A*a^2*b^3*d*x^5*e*sgn(b*x + a) + 5/2*B*a^3*b^2*d
^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d^2*x^4*sgn(b*x + a) + B*a^4*b*x^5*e^2*
sgn(b*x + a) + 2*A*a^3*b^2*x^5*e^2*sgn(b*x + a) + 5/2*B*a^4*b*d*x^4*e*sgn(b
*x + a) + 5*A*a^3*b^2*d*x^4*e*sgn(b*x + a) + 5/3*B*a^4*b*d^2*x^3*sgn(b*x +
a) + 10/3*A*a^3*b^2*d^2*x^3*sgn(b*x + a) + 1/4*B*a^5*x^4*e^2*sgn(b*x + a) +
 5/4*A*a^4*b*x^4*e^2*sgn(b*x + a) + 2/3*B*a^5*d*x^3*e*sgn(b*x + a) + 10/3*A
*a^4*b*d*x^3*e*sgn(b*x + a) + 1/2*B*a^5*d^2*x^2*sgn(b*x + a) + 5/2*A*a^4*b*
```

```
d^2*x^2*sgn(b*x + a) + 1/3*A*a^5*x^3*e^2*sgn(b*x + a) + A*a^5*d*x^2*e*sgn(b
*x + a) + A*a^5*d^2*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 480, normalized size = 2.42

$$\frac{\left(56Be^2b^5x^8+63x^7Ab^5e^2+315x^7Be^2ab^4+126x^7Bb^5de+360x^6Aab^4e^2+144x^6Ab^5de+720x^6Be^2a^2b^3+720\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/504*x*(56*B*b^5*e^2*x^8+63*A*b^5*e^2*x^7+315*B*a*b^4*e^2*x^7+126*B*b^5*d*
e*x^7+360*A*a*b^4*e^2*x^6+144*A*b^5*d*e*x^6+720*B*a^2*b^3*e^2*x^6+720*B*a*b
^4*d*e*x^6+72*B*b^5*d^2*x^6+840*A*a^2*b^3*e^2*x^5+840*A*a*b^4*d*e*x^5+84*A*
b^5*d^2*x^5+840*B*a^3*b^2*e^2*x^5+1680*B*a^2*b^3*d*e*x^5+420*B*a*b^4*d^2*x^
5+1008*A*a^3*b^2*e^2*x^4+2016*A*a^2*b^3*d*e*x^4+504*A*a*b^4*d^2*x^4+504*B*a
^4*b*e^2*x^4+2016*B*a^3*b^2*d*e*x^4+1008*B*a^2*b^3*d^2*x^4+630*A*a^4*b*e^2*
x^3+2520*A*a^3*b^2*d*e*x^3+1260*A*a^2*b^3*d^2*x^3+126*B*a^5*e^2*x^3+1260*B*
a^4*b*d*e*x^3+1260*B*a^3*b^2*d^2*x^3+168*A*a^5*e^2*x^2+1680*A*a^4*b*d*e*x^2
+1680*A*a^3*b^2*d^2*x^2+336*B*a^5*d*e*x^2+840*B*a^4*b*d^2*x^2+504*A*a^5*d*e
*x+1260*A*a^4*b*d^2*x+252*B*a^5*d^2*x+504*A*a^5*d^2)*((b*x+a)^2)^(5/2)/(b*x
+a)^5
```

maxima [B] time = 0.61, size = 456, normalized size = 2.30

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3e^2x}{6\,b^3}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}Be^2x^2}{9\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aa}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d^2*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*B*a^3*e^2*x/b^3 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e^2*x^2/b^2
+ 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d^2/b - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*B*a^4*e^2/b^4 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a*e^2*x/
b^3 + 83/504*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*a^2*e^2/b^4 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*(2*B*d*e + A*e^2)*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*(B*d^2 + 2*A*d*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
(2*B*d*e + A*e^2)*a^3/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d^2 + 2*
A*d*e)*a^2/b^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*B*d*e + A*e^2)*x/b^
2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*B*d*e + A*e^2)*a/b^3 + 1/7*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*(B*d^2 + 2*A*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(d+e\,x\right)^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A+Bx\right)\left(d+ex\right)^{2}\left(\left(a+bx\right)^{2}\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2*((a + b*x)**2)**(5/2), x)
```

3.1743 $\int(A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=135

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-2aBe+Abe+bBd)}{7b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)}{6b^3}+\frac{Be\sqrt{a^2+2a}}{}$$

```
[Out] 1/6*(A*b-B*a)*(-a*e+b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/b^3+1/7*(A*b*e-2*B*a*e
+B*b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^3+1/8*B*e*(b*x+a)^7*((b*x+a)^2)^(1/2)
/b^3
```

Rubi [A] time = 0.20, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 77\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(-2aBe+Abe+bBd)}{7b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)(bd-ae)}{6b^3}+\frac{Be\sqrt{a^2+2a}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(b*d - a*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^3)
 + ((b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*b^3) + (B*e*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^3)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int(A+Bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(ab+b^2x\right)^5(A+Bx)(d+ex)\,dx}{b^4\left(ab+b^2x\right)}\\&=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(\frac{(Ab-aB)(bd-ae)\left(ab+b^2x\right)^5}{b^2}+\frac{(bBd+Abe-2aBe)\left(ab+b^2.\right.}{b^3}\right.}{b^4\left(ab+b^2x\right)}\\&=\frac{(Ab-aB)(bd-ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6b^3}+\frac{(bBd+Abe-}{}\end{aligned}$$

Mathematica [A] time = 0.10, size = 214, normalized size = 1.59

$$\frac{x\sqrt{(a+bx)^2}\left(28a^5(3A(2d+ex)+Bx(3d+2ex))+70a^4bx(A(6d+4ex)+Bx(4d+3ex))+28a^3b^2x^2(5A(4d+3e\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(28*a^5*(3*A*(2*d + e*x) + B*x*(3*d + 2*e*x)) + 28*a^3
*b^2*x^2*(5*A*(4*d + 3*e*x) + 3*B*x*(5*d + 4*e*x)) + 70*a^4*b*x*(B*x*(4*d +
 3*e*x) + A*(6*d + 4*e*x)) + 28*a^2*b^3*x^3*(3*A*(5*d + 4*e*x) + 2*B*x*(6*d
 + 5*e*x)) + 4*a*b^4*x^4*(7*A*(6*d + 5*e*x) + 5*B*x*(7*d + 6*e*x)) + b^5*x^
5*(4*A*(7*d + 6*e*x) + 3*B*x*(8*d + 7*e*x))))/(168*(a + b*x))
```

fricas [B] time = 0.65, size = 239, normalized size = 1.77

$$\frac{1}{8}Bb^5ex^8+Aa^5dx+\frac{1}{7}\left(Bb^5d+\left(5Bab^4+Ab^5\right)e\right)x^7+\frac{1}{6}\left(\left(5Bab^4+Ab^5\right)d+5\left(2Ba^2b^3+Aab^4\right)e\right)x^6+\left(\left(2Ba^2b^3+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 1/8*B*b^5*e*x^8 + A*a^5*d*x + 1/7*(B*b^5*d + (5*B*a*b^4 + A*b^5)*e)*x^7 + 1
/6*((5*B*a*b^4 + A*b^5)*d + 5*(2*B*a^2*b^3 + A*a*b^4)*e)*x^6 + ((2*B*a^2*b^
3 + A*a*b^4)*d + 2*(B*a^3*b^2 + A*a^2*b^3)*e)*x^5 + 5/4*(2*(B*a^3*b^2 + A*a
^2*b^3)*d + (B*a^4*b + 2*A*a^3*b^2)*e)*x^4 + 1/3*(5*(B*a^4*b + 2*A*a^3*b^2)
*d + (B*a^5 + 5*A*a^4*b)*e)*x^3 + 1/2*(A*a^5*e + (B*a^5 + 5*A*a^4*b)*d)*x^2
```

giac [B] time = 0.18, size = 425, normalized size = 3.15

$$\frac{1}{8}Bb^5x^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}Bb^5dx^7\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}Bab^4x^7e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}Ab^5x^7e\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}Bab^4dx^6\mathrm{sgn}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/8*B*b^5*x^8*e*sgn(b*x + a) + 1/7*B*b^5*d*x^7*sgn(b*x + a) + 5/7*B*a*b^4*x
^7*e*sgn(b*x + a) + 1/7*A*b^5*x^7*e*sgn(b*x + a) + 5/6*B*a*b^4*d*x^6*sgn(b*
x + a) + 1/6*A*b^5*d*x^6*sgn(b*x + a) + 5/3*B*a^2*b^3*x^6*e*sgn(b*x + a) +
5/6*A*a*b^4*x^6*e*sgn(b*x + a) + 2*B*a^2*b^3*d*x^5*sgn(b*x + a) + A*a*b^4*d
*x^5*sgn(b*x + a) + 2*B*a^3*b^2*x^5*e*sgn(b*x + a) + 2*A*a^2*b^3*x^5*e*sgn(
b*x + a) + 5/2*B*a^3*b^2*d*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*d*x^4*sgn(b*x +
 a) + 5/4*B*a^4*b*x^4*e*sgn(b*x + a) + 5/2*A*a^3*b^2*x^4*e*sgn(b*x + a) + 5
/3*B*a^4*b*d*x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*d*x^3*sgn(b*x + a) + 1/3*B*a
^5*x^3*e*sgn(b*x + a) + 5/3*A*a^4*b*x^3*e*sgn(b*x + a) + 1/2*B*a^5*d*x^2*sg
n(b*x + a) + 5/2*A*a^4*b*d*x^2*sgn(b*x + a) + 1/2*A*a^5*x^2*e*sgn(b*x + a)
+ A*a^5*d*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 284, normalized size = 2.10

$$\frac{\left(21Be\,b^5x^7+24x^6A\,b^5e+120x^6Bea\,b^4+24x^6B\,b^5d+140x^5Aa\,b^4e+28x^5Ad\,b^5+280x^5Be\,a^2b^3+140x^5Ba\,b^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/168*x*(21*B*b^5*e*x^7+24*A*b^5*e*x^6+120*B*a*b^4*e*x^6+24*B*b^5*d*x^6+140
*A*a*b^4*e*x^5+28*A*b^5*d*x^5+280*B*a^2*b^3*e*x^5+140*B*a*b^4*d*x^5+336*A*a
^2*b^3*e*x^4+168*A*a*b^4*d*x^4+336*B*a^3*b^2*e*x^4+336*B*a^2*b^3*d*x^4+420*
A*a^3*b^2*e*x^3+420*A*a^2*b^3*d*x^3+210*B*a^4*b*e*x^3+420*B*a^3*b^2*d*x^3+2
80*A*a^4*b*e*x^2+560*A*a^3*b^2*d*x^2+56*B*a^5*e*x^2+280*B*a^4*b*d*x^2+84*A*
a^5*e*x+420*A*a^4*b*d*x+84*B*a^5*d*x+168*A*a^5*d)*((b*x+a)^2)^(5/2)/(b*x+a)
^5
```

maxima [B] time = 0.57, size = 254, normalized size = 1.88

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Adx+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^2ex}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Aad}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}Ba^3e}{6\,b^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*d*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*B*a^2*e*x/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*a*d/b + 1/6*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^3*e/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*(B*d + A*e)*a*x/b + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B*e*x/b^2 - 1/6*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(B*d + A*e)*a^2/b^2 - 9/56*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*B*a*e/b^3 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(B*d + A*e)
/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)\,\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1744 $\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

```
[Out] 1/6*(A*b-B*a)*(b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/b^2+1/7*B*(b^2*x^2+2*a*b*
x+a^2)^(7/2)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 609}

$$\frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}(Ab-aB)}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(6*b^2) + (B*(a^2 +
 2*a*b*x + b^2*x^2)^(7/2))/(7*b^2)
```

Rule 609

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x)
*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] /; FreeQ[{a, b, c, p}, x] && EqQ[
b^2 - 4*a*c, 0] && NeQ[p, -2^(-1)]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}+\frac{\left(2Ab^2-2abB\right)\int \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx}{2b^2}\\ &= \frac{(Ab-aB)(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{6b^2}+\frac{B\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b^2}\end{aligned}$$

Mathematica [A] time = 0.04, size = 121, normalized size = 1.75

$$\frac{x\sqrt{(a+bx)^2}\,\bigl(21a^5(2A+Bx)+35a^4bx(3A+2Bx)+35a^3b^2x^2(4A+3Bx)+21a^2b^3x^3(5A+4Bx)+7ab^4x^4(6}{42(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^5*(2*A + B*x) + 35*a^4*b*x*(3*A + 2*B*x) + 35*a^
3*b^2*x^2*(4*A + 3*B*x) + 21*a^2*b^3*x^3*(5*A + 4*B*x) + 7*a*b^4*x^4*(6*A +
 5*B*x) + b^5*x^5*(7*A + 6*B*x)))/(42*(a + b*x))
```

fricas [A] time = 0.68, size = 115, normalized size = 1.67

$$\frac{1}{7}Bb^5x^7+Aa^5x+\frac{1}{6}\big(5Bab^4+Ab^5\big)x^6+\big(2Ba^2b^3+Aab^4\big)x^5+\frac{5}{2}\big(Ba^3b^2+Aa^2b^3\big)x^4+\frac{5}{3}\big(Ba^4b+2Aa^3b^2\big)x^3+\frac{1}{2}\big(Ba^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*B*b^5*x^7 + A*a^5*x + 1/6*(5*B*a*b^4 + A*b^5)*x^6 + (2*B*a^2*b^3 + A*a*
b^4)*x^5 + 5/2*(B*a^3*b^2 + A*a^2*b^3)*x^4 + 5/3*(B*a^4*b + 2*A*a^3*b^2)*x^
3 + 1/2*(B*a^5 + 5*A*a^4*b)*x^2
```

giac [B] time = 0.21, size = 217, normalized size = 3.14

$$\frac{1}{7}Bb^5x^7\operatorname{sgn}(bx+a)+\frac{5}{6}Bab^4x^6\operatorname{sgn}(bx+a)+\frac{1}{6}Ab^5x^6\operatorname{sgn}(bx+a)+2Ba^2b^3x^5\operatorname{sgn}(bx+a)+Aab^4x^5\operatorname{sgn}(bx+a)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*B*b^5*x^7*sgn(b*x + a) + 5/6*B*a*b^4*x^6*sgn(b*x + a) + 1/6*A*b^5*x^6*s
gn(b*x + a) + 2*B*a^2*b^3*x^5*sgn(b*x + a) + A*a*b^4*x^5*sgn(b*x + a) + 5/2
*B*a^3*b^2*x^4*sgn(b*x + a) + 5/2*A*a^2*b^3*x^4*sgn(b*x + a) + 5/3*B*a^4*b*
x^3*sgn(b*x + a) + 10/3*A*a^3*b^2*x^3*sgn(b*x + a) + 1/2*B*a^5*x^2*sgn(b*x
+ a) + 5/2*A*a^4*b*x^2*sgn(b*x + a) + A*a^5*x*sgn(b*x + a) - 1/42*(B*a^7 -
7*A*a^6*b)*sgn(b*x + a)/b^2
```

maple [B] time = 0.06, size = 138, normalized size = 2.00

$$\frac{\big(6Bb^5x^6+7Ab^5x^5+35Bab^4x^5+42Aab^4x^4+84Ba^2b^3x^4+105Aa^2b^3x^3+105Ba^3b^2x^3+140Aa^3b^2x^2+70Ba}{42\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/42*x*(6*B*b^5*x^6+7*A*b^5*x^5+35*B*a*b^4*x^5+42*A*a*b^4*x^4+84*B*a^2*b^3*
x^4+105*A*a^2*b^3*x^3+105*B*a^3*b^2*x^3+140*A*a^3*b^2*x^2+70*B*a^4*b*x^2+10
5*A*a^4*b*x+21*B*a^5*x+42*A*a^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.57, size = 125, normalized size = 1.81

$$\frac{1}{6}\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ax-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Bax}{6b}-\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Ba^2}{6b^2}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}Aa}{6b}+\big(b^2x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*A*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*B*a*x/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*B*a^2/b^2 + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*A*a/b + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*B/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2), x)
```

3.1745 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=340

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)\log(d+ex)}{e^7(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(Bd-Ae)}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2}}{}$$

```
[Out] -b*(-a*e+b*d)^4*(-A*e+B*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)+1/2*(-a*e+b*d)^3
*(-A*e+B*d)*(b*x+a)*((b*x+a)^2)^(1/2)/e^5-1/3*(-a*e+b*d)^2*(-A*e+B*d)*(b*x+
a)^2*((b*x+a)^2)^(1/2)/e^4+1/4*(-a*e+b*d)*(-A*e+B*d)*(b*x+a)^3*((b*x+a)^2)^
(1/2)/e^3-1/5*(-A*e+B*d)*(b*x+a)^4*((b*x+a)^2)^(1/2)/e^2+1/6*B*(b*x+a)^5*((
b*x+a)^2)^(1/2)/b/e+(-a*e+b*d)^5*(-A*e+B*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7
/(b*x+a)
```

Rubi [A] time = 0.25, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(Bd-Ae)}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)}{2e^5}-\frac{(a+bx)^2\sqrt{a^2+2a}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^4*(B*d - A*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b
*x))) + ((b*d - a*e)^3*(B*d - A*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(2*e^5) - ((b*d - a*e)^2*(B*d - A*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(3*e^4) + ((b*d - a*e)*(B*d - A*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(4*e^3) - ((B*d - A*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^2) + (B*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b*e) + ((b*d - a
*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x
))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^6(bd-ae)^4(-Bd+Ae)}{e^6} - \frac{b^6(bd-ae)^3(-Bd+Ae)(a+bx)}{e^5} + \frac{b^6(b}{}\right.}{}$$

$$= -\frac{b(bd-ae)^4(Bd-Ae)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)} + \frac{(bd-ae)^3(Bd-Ae)(a}{2}$$

Mathematica [**A**] time = 0.24, size = 386, normalized size = 1.14

$$\frac{\sqrt{(a+bx)^2}\left(ex\left(60a^5Be^5+150a^4be^4(2Ae-2Bd+Bex)+100a^3b^2e^3\left(3Ae(ex-2d)+B\left(6d^2-3dex+2e^2x^2\right)\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(e*x*(60*a^5*B*e^5 + 150*a^4*b*e^4*(-2*B*d + 2*A*e + B*e
*x) + 100*a^3*b^2*e^3*(3*A*e*(-2*d + e*x) + B*(6*d^2 - 3*d*e*x + 2*e^2*x^2)
) + 50*a^2*b^3*e^2*(2*A*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + B*(-12*d^3 + 6*d^
2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)) + 5*a*b^4*e*(5*A*e*(-12*d^3 + 6*d^2*e*x -
 4*d*e^2*x^2 + 3*e^3*x^3) + B*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*
e^3*x^3 + 12*e^4*x^4)) + b^5*(A*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 1
5*d*e^3*x^3 + 12*e^4*x^4) + B*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d
^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5))) + 60*(b*d - a*e)^5*(B*d - A*e)*Lo
g[d + e*x]))/(60*e^7*(a + b*x))
```

fricas [**B**] time = 0.63, size = 555, normalized size = 1.63

$$\frac{10\,Bb^5e^6x^6-12\left(Bb^5de^5-\left(5\,Bab^4+Ab^5\right)e^6\right)x^5+15\left(Bb^5d^2e^4-\left(5\,Bab^4+Ab^5\right)de^5+5\left(2\,Ba^2b^3+Aab^4\right)e^6\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/60*(10*B*b^5*e^6*x^6 - 12*(B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 1
5*(B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 + 5*(2*B*a^2*b^3 + A*a*b^4)*e^
6)*x^4 - 20*(B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 + 5*(2*B*a^2*b^3 +
 A*a*b^4)*d*e^5 - 10*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 30*(B*b^5*d^4*e^2 -
 (5*B*a*b^4 + A*b^5)*d^3*e^3 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 10*(B*a^
3*b^2 + A*a^2*b^3)*d*e^5 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 - 60*(B*b^5*d
^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2 + 5*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 10
*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5
 + 5*A*a^4*b)*e^6)*x + 60*(B*b^5*d^6 + A*a^5*e^6 - (5*B*a*b^4 + A*b^5)*d^5*
e + 5*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3
+ 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5)*log(e*x +
d))/e^7
```

giac [**B**] time = 0.24, size = 920, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^4*d^5*e*sgn(b*x + a) - A*b^5*d^5*e*sgn(b*
x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 5*A*a*b^4*d^4*e^2*sgn(b*x + a)
 - 10*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) +
5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*
d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) + A*a^5*e^6*sgn(b*x + a))
*e^(-7)*log(abs(x*e + d)) + 1/60*(10*B*b^5*x^6*e^5*sgn(b*x + a) - 12*B*b^5*
d*x^5*e^4*sgn(b*x + a) + 15*B*b^5*d^2*x^4*e^3*sgn(b*x + a) - 20*B*b^5*d^3*x
^3*e^2*sgn(b*x + a) + 30*B*b^5*d^4*x^2*e*sgn(b*x + a) - 60*B*b^5*d^5*x*sgn(
b*x + a) + 60*B*a*b^4*x^5*e^5*sgn(b*x + a) + 12*A*b^5*x^5*e^5*sgn(b*x + a)
- 75*B*a*b^4*d*x^4*e^4*sgn(b*x + a) - 15*A*b^5*d*x^4*e^4*sgn(b*x + a) + 100
*B*a*b^4*d^2*x^3*e^3*sgn(b*x + a) + 20*A*b^5*d^2*x^3*e^3*sgn(b*x + a) - 150
*B*a*b^4*d^3*x^2*e^2*sgn(b*x + a) - 30*A*b^5*d^3*x^2*e^2*sgn(b*x + a) + 300
*B*a*b^4*d^4*x*e*sgn(b*x + a) + 60*A*b^5*d^4*x*e*sgn(b*x + a) + 150*B*a^2*b
^3*x^4*e^5*sgn(b*x + a) + 75*A*a*b^4*x^4*e^5*sgn(b*x + a) - 200*B*a^2*b^3*d
*x^3*e^4*sgn(b*x + a) - 100*A*a*b^4*d*x^3*e^4*sgn(b*x + a) + 300*B*a^2*b^3*
d^2*x^2*e^3*sgn(b*x + a) + 150*A*a*b^4*d^2*x^2*e^3*sgn(b*x + a) - 600*B*a^2
*b^3*d^3*x*e^2*sgn(b*x + a) - 300*A*a*b^4*d^3*x*e^2*sgn(b*x + a) + 200*B*a^
3*b^2*x^3*e^5*sgn(b*x + a) + 200*A*a^2*b^3*x^3*e^5*sgn(b*x + a) - 300*B*a^3
*b^2*d*x^2*e^4*sgn(b*x + a) - 300*A*a^2*b^3*d*x^2*e^4*sgn(b*x + a) + 600*B*
a^3*b^2*d^2*x*e^3*sgn(b*x + a) + 600*A*a^2*b^3*d^2*x*e^3*sgn(b*x + a) + 150
*B*a^4*b*x^2*e^5*sgn(b*x + a) + 300*A*a^3*b^2*x^2*e^5*sgn(b*x + a) - 300*B*
a^4*b*d*x*e^4*sgn(b*x + a) - 600*A*a^3*b^2*d*x*e^4*sgn(b*x + a) + 60*B*a^5*
x*e^5*sgn(b*x + a) + 300*A*a^4*b*x*e^5*sgn(b*x + a))*e^(-6)
```

maple [B] time = 0.07, size = 754, normalized size = 2.22

$$\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}} \left(10B\, b^{5} e^{6} x^{6}+12A\, b^{5} e^{6} x^{5}+60Ba\, b^{4} e^{6} x^{5}-12B\, b^{5} d\, e^{5} x^{5}+75Aa\, b^{4} e^{6} x^{4}-15A\, b^{5} d\, e^{5} x^{4}+150B\, a^{2} b^{3} e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(300*A*ln(e*x+d)*a*b^4*d^4*e^2-300*B*x*a^4*b*d*e^5+6
00*B*x*a^3*b^2*d^2*e^4-600*B*x*a^2*b^3*d^3*e^3+300*B*x*a*b^4*d^4*e^2+600*B*
ln(e*x+d)*a^2*b^3*d^4*e^2-300*B*ln(e*x+d)*a*b^4*d^5*e-300*A*ln(e*x+d)*a^4*b
*d*e^5-300*A*x^2*a^2*b^3*d*e^5+150*A*x^2*a*b^4*d^2*e^4-60*A*ln(e*x+d)*b^5*d
^5*e-60*B*ln(e*x+d)*a^5*d*e^5+300*A*x*a^4*b*e^6+60*A*x*b^5*d^4*e^2+200*A*x^
3*a^2*b^3*e^6+300*B*ln(e*x+d)*a^4*b*d^2*e^4-600*B*ln(e*x+d)*a^3*b^2*d^3*e^3
+600*A*ln(e*x+d)*a^3*b^2*d^2*e^4-600*A*ln(e*x+d)*a^2*b^3*d^3*e^3-75*B*x^4*a
*b^4*d*e^5-200*B*x^3*a^2*b^3*d*e^5+100*B*x^3*a*b^4*d^2*e^4-600*A*x*a^3*b^2*
d*e^5+600*A*x*a^2*b^3*d^2*e^4-300*A*x*a*b^4*d^3*e^3-300*B*x^2*a^3*b^2*d*e^5
+20*A*x^3*b^5*d^2*e^4+200*B*x^3*a^3*b^2*e^6-20*B*x^3*b^5*d^3*e^3+300*A*x^2*
a^3*b^2*e^6-30*A*x^2*b^5*d^3*e^3+150*B*x^2*a^4*b*e^6+30*B*x^2*b^5*d^4*e^2+6
0*B*x^5*a*b^4*e^6+10*B*x^6*b^5*e^6+12*A*x^5*b^5*e^6+60*B*x*a^5*e^6+60*A*ln(
e*x+d)*a^5*e^6+60*B*ln(e*x+d)*b^5*d^6-100*A*x^3*a*b^4*d*e^5-150*B*x^2*a*b^4
*d^3*e^3+300*B*x^2*a^2*b^3*d^2*e^4-60*B*x*b^5*d^5*e-12*B*x^5*b^5*d*e^5+75*A
*x^4*a*b^4*e^6-15*A*x^4*b^5*d*e^5+150*B*x^4*a^2*b^3*e^6+15*B*x^4*b^5*d^2*e^
4)/(b*x+a)^5/e^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x),x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x), x)
```

3.1746 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=423

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)(d+ex)}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}-\sqrt{a^2}$$

```
[Out] 5*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-(
-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)-5*b^2*(-a*e+b*
d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+5/3*b^3
*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)-1/4*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+
1/5*b^5*B*(e*x+d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-(-a*e+b*d)^4*(-5*A*b*e-B*
a*e+6*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.56, antiderivative size = 423, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{e^7(a+bx)(d+ex)}+\frac{5bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^6(a+bx)}-5b^2\sqrt{a^2+2a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (5*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^7*(a + b*x)*(d + e*x)) - (5*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a
*B*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (5*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(3*e^7*(a + b*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^4*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) + (b^5*B*(d + e*x)^5*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*
e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{5b^6(bd-ae)^3(-3bBd+2Abe+aBe)}{e^6} - \frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^2} -\right.}{}$$

$$= \frac{5b(bd-ae)^3(3bBd-2Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)} - \frac{(bd-ae)^5(B}{e^7}$$

Mathematica [**A**] time = 0.31, size = 506, normalized size = 1.20

$$\frac{\sqrt{(a+bx)^2}\left(60a^5e^5(Bd-Ae)+300a^4be^4\left(Ade+B\left(-d^2+dex+e^2x^2\right)\right)+300a^3b^2e^3\left(2Ae\left(-d^2+dex+e^2x^2\right)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(60*a^5*e^5*(B*d - A*e) + 300*a^4*b*e^4*(A*d*e + B*(-d^2
 + d*e*x + e^2*x^2)) + 300*a^3*b^2*e^3*(2*A*e*(-d^2 + d*e*x + e^2*x^2) + B*
(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + 100*a^2*b^3*e^2*(3*A*e*(2*d^
3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 2*B*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^
2*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 25*a*b^4*e*(4*A*e*(-3*d^4 + 9*d^3*e*x + 6
*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + B*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2
*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5)) + b^5*(5*A*e*(12*d^5 - 48
*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) - 6*B
*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^3*e^3*x^3 - 5*d^2*e^4*x^4 + 3
*d*e^5*x^5 - 2*e^6*x^6)) - 60*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d
+ e*x)*Log[d + e*x]))/(60*e^7*(a + b*x)*(d + e*x))
```

fricas [**B**] time = 0.62, size = 797, normalized size = 1.88

$$\frac{12\,Bb^5e^6x^6-60\,Bb^5d^6-60\,Aa^5e^6+60\left(5\,Bab^4+Ab^5\right)d^5e-300\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+600\left(Ba^3b^2+Aa^2b^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/60*(12*B*b^5*e^6*x^6 - 60*B*b^5*d^6 - 60*A*a^5*e^6 + 60*(5*B*a*b^4 + A*b^
5)*d^5*e - 300*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 600*(B*a^3*b^2 + A*a^2*b^3
)*d^3*e^3 - 300*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 60*(B*a^5 + 5*A*a^4*b)*d*
e^5 - 3*(6*B*b^5*d*e^5 - 5*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(6*B*b^5*d^2*e^
4 - 5*(5*B*a*b^4 + A*b^5)*d*e^5 + 20*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 10*
(6*B*b^5*d^3*e^3 - 5*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 20*(2*B*a^2*b^3 + A*a*b^
4)*d*e^5 - 30*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 30*(6*B*b^5*d^4*e^2 - 5*(5
*B*a*b^4 + A*b^5)*d^3*e^3 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 30*(B*a^3*
b^2 + A*a^2*b^3)*d*e^5 + 10*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 60*(5*B*b^5*
d^5*e - 4*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 15*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3
- 20*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5)*x -
 60*(6*B*b^5*d^6 - 5*(5*B*a*b^4 + A*b^5)*d^5*e + 20*(2*B*a^2*b^3 + A*a*b^4)
*d^4*e^2 - 30*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 + 10*(B*a^4*b + 2*A*a^3*b^2)*
d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 + (6*B*b^5*d^5*e - 5*(5*B*a*b^4 + A*b^5
)*d^4*e^2 + 20*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 30*(B*a^3*b^2 + A*a^2*b^3)
*d^2*e^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5 + 5*A*a^4*b)*e^6)*x)*l
og(e*x + d))/(e^8*x + d*e^7)
```

giac [B] time = 0.22, size = 905, normalized size = 2.14

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -(6*B*b^5*d^5*sgn(b*x + a) - 25*B*a*b^4*d^4*e*sgn(b*x + a) - 5*A*b^5*d^4*e*
sgn(b*x + a) + 40*B*a^2*b^3*d^3*e^2*sgn(b*x + a) + 20*A*a*b^4*d^3*e^2*sgn(b
*x + a) - 30*B*a^3*b^2*d^2*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^2*e^3*sgn(b*x
+ a) + 10*B*a^4*b*d*e^4*sgn(b*x + a) + 20*A*a^3*b^2*d*e^4*sgn(b*x + a) - B*
a^5*e^5*sgn(b*x + a) - 5*A*a^4*b*e^5*sgn(b*x + a))*e^(-7)*log(abs(x*e + d))
 + 1/60*(12*B*b^5*x^5*e^8*sgn(b*x + a) - 30*B*b^5*d*x^4*e^7*sgn(b*x + a) +
60*B*b^5*d^2*x^3*e^6*sgn(b*x + a) - 120*B*b^5*d^3*x^2*e^5*sgn(b*x + a) + 30
0*B*b^5*d^4*x*e^4*sgn(b*x + a) + 75*B*a*b^4*x^4*e^8*sgn(b*x + a) + 15*A*b^5
*x^4*e^8*sgn(b*x + a) - 200*B*a*b^4*d*x^3*e^7*sgn(b*x + a) - 40*A*b^5*d*x^3
*e^7*sgn(b*x + a) + 450*B*a*b^4*d^2*x^2*e^6*sgn(b*x + a) + 90*A*b^5*d^2*x^2
*e^6*sgn(b*x + a) - 1200*B*a*b^4*d^3*x*e^5*sgn(b*x + a) - 240*A*b^5*d^3*x*e
^5*sgn(b*x + a) + 200*B*a^2*b^3*x^3*e^8*sgn(b*x + a) + 100*A*a*b^4*x^3*e^8*
sgn(b*x + a) - 600*B*a^2*b^3*d*x^2*e^7*sgn(b*x + a) - 300*A*a*b^4*d*x^2*e^7
*sgn(b*x + a) + 1800*B*a^2*b^3*d^2*x*e^6*sgn(b*x + a) + 900*A*a*b^4*d^2*x*e
^6*sgn(b*x + a) + 300*B*a^3*b^2*x^2*e^8*sgn(b*x + a) + 300*A*a^2*b^3*x^2*e^
8*sgn(b*x + a) - 1200*B*a^3*b^2*d*x*e^7*sgn(b*x + a) - 1200*A*a^2*b^3*d*x*e
^7*sgn(b*x + a) + 300*B*a^4*b*x*e^8*sgn(b*x + a) + 600*A*a^3*b^2*x*e^8*sgn(
b*x + a))*e^(-10) - (B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^4*d^5*e*sgn(b*x + a)
- A*b^5*d^5*e*sgn(b*x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 5*A*a*b^4*
d^4*e^2*sgn(b*x + a) - 10*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3
*e^3*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 10*A*a^3*b^2*d^2*e^4*s
gn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) + A*a
^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)
```

maple [B] time = 0.07, size = 1084, normalized size = 2.56

$$\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}} \left(12B\,b^{5}e^{6}x^{6}+15A\,b^{5}e^{6}x^{5}+75Ba\,b^{4}e^{6}x^{5}-18B\,b^{5}d\,e^{5}x^{5}+100Aa\,b^{4}e^{6}x^{4}-25A\,b^{5}d\,e^{5}x^{4}+200B\,a^{2}b^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(-1200*A*a*b^4*d^4*e^2*ln(e*x+d)+300*B*a^4*b*d*e^5*x
-1200*B*a^3*b^2*d^2*e^4*x+1800*B*a^2*b^3*d^3*e^3*x-1200*B*a*b^4*d^4*e^2*x+6
0*A*b^5*d^5*e-2400*B*a^2*b^3*d^4*e^2*ln(e*x+d)+1500*B*a*b^4*d^5*e*ln(e*x+d)
+300*A*a^4*b*d*e^5*ln(e*x+d)-300*A*a*b^4*d^4*e^2-300*B*a^4*b*d^2*e^4-600*A*
a^3*b^2*d^2*e^4+600*A*a^2*b^3*d^3*e^3+60*B*d*e^5*a^5+600*B*a^3*b^2*d^3*e^3-
600*B*a^2*b^3*d^4*e^2+300*B*a*b^4*d^5*e-600*B*ln(e*x+d)*x*a^4*b*d*e^5+1800*
B*ln(e*x+d)*x*a^3*b^2*d^2*e^4-2400*B*ln(e*x+d)*x*a^2*b^3*d^3*e^3+1500*B*ln(
e*x+d)*x*a*b^4*d^4*e^2-900*A*a^2*b^3*d*e^5*x^2+600*A*a*b^4*d^2*e^4*x^2+300*
A*b^5*d^5*e*ln(e*x+d)+60*B*a^5*d*e^5*ln(e*x+d)-240*A*b^5*d^4*e^2*x+300*A*a^
2*b^3*e^6*x^3-1200*A*ln(e*x+d)*x*a^3*b^2*d*e^5+1800*A*ln(e*x+d)*x*a^2*b^3*d
^2*e^4-1200*A*ln(e*x+d)*x*a*b^4*d^3*e^3-600*B*a^4*b*d^2*e^4*ln(e*x+d)+1800*
B*a^3*b^2*d^3*e^3*ln(e*x+d)+300*A*ln(e*x+d)*x*a^4*b*e^6+300*A*ln(e*x+d)*x*b
^5*d^4*e^2-360*B*ln(e*x+d)*x*b^5*d^5*e-60*A*a^5*e^6-60*B*b^5*d^6-1200*A*a^3
*b^2*d^2*e^4*ln(e*x+d)+1800*A*a^2*b^3*d^3*e^3*ln(e*x+d)-125*B*a*b^4*d*e^5*x
^4+300*A*d*e^5*a^4*b-400*B*a^2*b^3*d*e^5*x^3+250*B*a*b^4*d^2*e^4*x^3+600*A*
a^3*b^2*d*e^5*x-1200*A*a^2*b^3*d^2*e^4*x+900*A*a*b^4*d^3*e^3*x-900*B*a^3*b^
2*d*e^5*x^2+50*A*b^5*d^2*e^4*x^3+300*B*a^3*b^2*e^6*x^3-60*B*b^5*d^3*e^3*x^3
+600*A*a^3*b^2*e^6*x^2-150*A*b^5*d^3*e^3*x^2+300*B*a^4*b*e^6*x^2+180*B*b^5*
d^4*e^2*x^2+75*B*a*b^4*e^6*x^5+12*B*b^5*e^6*x^6+15*A*b^5*e^6*x^5-360*B*b^5*
d^6*ln(e*x+d)-200*A*a*b^4*d*e^5*x^3-750*B*a*b^4*d^3*e^3*x^2+1200*B*a^2*b^3*
d^2*e^4*x^2+300*B*b^5*d^5*e*x-18*B*b^5*d*e^5*x^5+100*A*a*b^4*e^6*x^4-25*A*b
^5*d*e^5*x^4+200*B*a^2*b^3*e^6*x^4+30*B*b^5*d^2*e^4*x^4+60*B*ln(e*x+d)*x*a^
5*e^6)/(b*x+a)^5/e^7/(e*x+d)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^{2}\right)^{\frac{5}{2}}}{(d + ex)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**2, x)
```

3.1747 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=424

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)}{2e^7(a+bx)(d+ex)^2}+\frac{5b\sqrt{a^2+2abx+b}}{}$$

```
[Out] -10*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)
-1/2*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2+(-a*e+
b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)+5/2*b
^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)-1/3*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)+1/4*b^5*B*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+5*b*(-a*e+b*d)^3*(-2*A*
b*e-B*a*e+3*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.48, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(-5aBe-Abe+6bBd)}{3e^7(a+bx)}+\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)(-2aBe-Abe+}{2e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e -
 a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (5*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(2*e^7*(a + b*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (b^5*B*(d + e*x)^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) + (5*b*(b*d - a*e)^3*(3*b*B*d - 2*
A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(\frac{10b^7(bd-ae)^2(-2bBd+Abe+aBe)}{e^6} - \frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^3} +\right.}{}$$

$$= -\frac{10b^2(bd-ae)^2(2bBd-Abe-aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)} - \frac{(bd-ae)^5}{2}$$

Mathematica [A] time = 0.29, size = 501, normalized size = 1.18

$$\frac{\sqrt{(a+bx)^2}\left(-6a^5e^5(Ae+B(d+2ex)) - 30a^4be^4(Ae(d+2ex)-Bd(3d+4ex)) + 60a^3b^2e^3\left(Ade(3d+4ex)+B\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-6*a^5*e^5*(A*e + B*(d + 2*e*x)) - 30*a^4*b*e^4*(A*e*(d
 + 2*e*x) - B*d*(3*d + 4*e*x)) + 60*a^3*b^2*e^3*(A*d*e*(3*d + 4*e*x) + B*(-
5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3)) + 60*a^2*b^3*e^2*(A*e*(-5*d^3
 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + B*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2
*x^2 - 4*d*e^3*x^3 + e^4*x^4)) + 10*a*b^4*e*(3*A*e*(7*d^4 + 2*d^3*e*x - 11*
d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + B*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*
x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5)) + b^5*(2*A*e*(-27*d^5 + 6*
d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) + 3*B*
(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*
d*e^5*x^5 + e^6*x^6)) + 60*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d +
 e*x)^2*Log[d + e*x]))/(12*e^7*(a + b*x)*(d + e*x)^2)
```

fricas [B] time = 0.66, size = 871, normalized size = 2.05

$$\frac{3\,Bb^5e^6x^6 + 66\,Bb^5d^6 - 6\,Aa^5e^6 - 54\left(5\,Bab^4 + Ab^5\right)d^5e + 210\left(2\,Ba^2b^3 + Aab^4\right)d^4e^2 - 300\left(Ba^3b^2 + Aa^2b^3\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/12*(3*B*b^5*e^6*x^6 + 66*B*b^5*d^6 - 6*A*a^5*e^6 - 54*(5*B*a*b^4 + A*b^5)
*d^5*e + 210*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 300*(B*a^3*b^2 + A*a^2*b^3)*
d^3*e^3 + 90*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 6*(B*a^5 + 5*A*a^4*b)*d*e^5
- 2*(3*B*b^5*d*e^5 - 2*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(3*B*b^5*d^2*e^4 -
2*(5*B*a*b^4 + A*b^5)*d*e^5 + 6*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 20*(3*B*
b^5*d^3*e^3 - 2*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 6*(2*B*a^2*b^3 + A*a*b^4)*d*e
^5 - 6*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 - 6*(34*B*b^5*d^4*e^2 - 21*(5*B*a*b
^4 + A*b^5)*d^3*e^3 + 55*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 40*(B*a^3*b^2 +
A*a^2*b^3)*d*e^5)*x^2 - 12*(4*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2 - 5
*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 20*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 - 10*
(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(3*B*b^5*d^
6 - 2*(5*B*a*b^4 + A*b^5)*d^5*e + 6*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 6*(B*
a^3*b^2 + A*a^2*b^3)*d^3*e^3 + (B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + (3*B*b^5*d
^4*e^2 - 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 6*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4
- 6*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 2*(3
*B*b^5*d^5*e - 2*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 6*(2*B*a^2*b^3 + A*a*b^4)*d^
3*e^3 - 6*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + (B*a^4*b + 2*A*a^3*b^2)*d*e^5)*
x)*log(e*x + d))/(e^9*x^2 + 2*d*e^8*x + d^2*e^7)
```

giac [B] time = 0.26, size = 887, normalized size = 2.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 5*(3*B*b^5*d^4*sgn(b*x + a) - 10*B*a*b^4*d^3*e*sgn(b*x + a) - 2*A*b^5*d^3*e
*sgn(b*x + a) + 12*B*a^2*b^3*d^2*e^2*sgn(b*x + a) + 6*A*a*b^4*d^2*e^2*sgn(b
*x + a) - 6*B*a^3*b^2*d*e^3*sgn(b*x + a) - 6*A*a^2*b^3*d*e^3*sgn(b*x + a) +
 B*a^4*b*e^4*sgn(b*x + a) + 2*A*a^3*b^2*e^4*sgn(b*x + a))*e^(-7)*log(abs(x*
e + d)) + 1/12*(3*B*b^5*x^4*e^9*sgn(b*x + a) - 12*B*b^5*d*x^3*e^8*sgn(b*x +
 a) + 36*B*b^5*d^2*x^2*e^7*sgn(b*x + a) - 120*B*b^5*d^3*x*e^6*sgn(b*x + a)
+ 20*B*a*b^4*x^3*e^9*sgn(b*x + a) + 4*A*b^5*x^3*e^9*sgn(b*x + a) - 90*B*a*b
^4*d*x^2*e^8*sgn(b*x + a) - 18*A*b^5*d*x^2*e^8*sgn(b*x + a) + 360*B*a*b^4*d
^2*x*e^7*sgn(b*x + a) + 72*A*b^5*d^2*x*e^7*sgn(b*x + a) + 60*B*a^2*b^3*x^2*
e^9*sgn(b*x + a) + 30*A*a*b^4*x^2*e^9*sgn(b*x + a) - 360*B*a^2*b^3*d*x*e^8*
sgn(b*x + a) - 180*A*a*b^4*d*x*e^8*sgn(b*x + a) + 120*B*a^3*b^2*x*e^9*sgn(b
*x + a) + 120*A*a^2*b^3*x*e^9*sgn(b*x + a))*e^(-12) + 1/2*(11*B*b^5*d^6*sgn
(b*x + a) - 45*B*a*b^4*d^5*e*sgn(b*x + a) - 9*A*b^5*d^5*e*sgn(b*x + a) + 70
*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 35*A*a*b^4*d^4*e^2*sgn(b*x + a) - 50*B*a^
3*b^2*d^3*e^3*sgn(b*x + a) - 50*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 15*B*a^4*b
*d^2*e^4*sgn(b*x + a) + 30*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*d*e^5*sgn
(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) - A*a^5*e^6*sgn(b*x + a) + 2*(6*B*
b^5*d^5*e*sgn(b*x + a) - 25*B*a*b^4*d^4*e^2*sgn(b*x + a) - 5*A*b^5*d^4*e^2*
sgn(b*x + a) + 40*B*a^2*b^3*d^3*e^3*sgn(b*x + a) + 20*A*a*b^4*d^3*e^3*sgn(b
*x + a) - 30*B*a^3*b^2*d^2*e^4*sgn(b*x + a) - 30*A*a^2*b^3*d^2*e^4*sgn(b*x
+ a) + 10*B*a^4*b*d*e^5*sgn(b*x + a) + 20*A*a^3*b^2*d*e^5*sgn(b*x + a) - B*
a^5*e^6*sgn(b*x + a) - 5*A*a^4*b*e^6*sgn(b*x + a))*x)*e^(-7)/(x*e + d)^2
```

maple [B] time = 0.07, size = 1205, normalized size = 2.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(360*A*a*b^4*d^4*e^2*ln(e*x+d)+120*B*a^4*b*d*e^5*x-2
40*B*a^3*b^2*d^2*e^4*x+120*B*a^2*b^3*d^3*e^3*x+60*B*a*b^4*d^4*e^2*x-54*A*b^
5*d^5*e+720*B*a^2*b^3*d^4*e^2*ln(e*x+d)-600*B*a*b^4*d^5*e*ln(e*x+d)+210*A*a
*b^4*d^4*e^2+90*B*a^4*b*d^2*e^4+180*A*a^3*b^2*d^2*e^4-300*A*a^2*b^3*d^3*e^3
-6*B*a^5*d*e^5-300*B*a^3*b^2*d^3*e^3+420*B*a^2*b^3*d^4*e^2-270*B*a*b^4*d^5*
e+120*B*a^4*b*d*e^5*x*ln(e*x+d)-720*B*a^3*b^2*d^2*e^4*x*ln(e*x+d)+1440*B*a^
2*b^3*d^3*e^3*x*ln(e*x+d)-1200*B*a*b^4*d^4*e^2*x*ln(e*x+d)+240*A*a^2*b^3*d*
e^5*x^2-330*A*a*b^4*d^2*e^4*x^2-120*A*b^5*d^5*e*ln(e*x+d)-60*A*a^4*b*e^6*x+
12*A*b^5*d^4*e^2*x+120*A*a^2*b^3*e^6*x^3+240*A*a^3*b^2*d*e^5*x*ln(e*x+d)-72
0*A*a^2*b^3*d^2*e^4*x*ln(e*x+d)+720*A*a*b^4*d^3*e^3*x*ln(e*x+d)+60*B*a^4*b*
d^2*e^4*ln(e*x+d)-360*B*a^3*b^2*d^3*e^3*ln(e*x+d)-240*A*b^5*d^4*e^2*x*ln(e*
x+d)+360*B*b^5*d^5*e*x*ln(e*x+d)-6*A*a^5*e^6+66*B*b^5*d^6+120*A*a^3*b^2*d^2
*e^4*ln(e*x+d)-360*A*a^2*b^3*d^3*e^3*ln(e*x+d)-50*B*a*b^4*d*e^5*x^4-360*A*l
n(e*x+d)*x^2*a^2*b^3*d*e^5+360*A*ln(e*x+d)*x^2*a*b^4*d^2*e^4-360*B*ln(e*x+d
)*x^2*a^3*b^2*d*e^5-30*A*a^4*b*d*e^5-240*B*a^2*b^3*d*e^5*x^3+200*B*a*b^4*d^
2*e^4*x^3+240*A*a^3*b^2*d*e^5*x-240*A*a^2*b^3*d^2*e^4*x+60*A*a*b^4*d^3*e^3*
x+240*B*a^3*b^2*d*e^5*x^2+40*A*b^5*d^2*e^4*x^3+120*B*a^3*b^2*e^6*x^3-60*B*b
^5*d^3*e^3*x^3+126*A*b^5*d^3*e^3*x^2-204*B*b^5*d^4*e^2*x^2+20*B*a*b^4*e^6*x
^5+3*B*b^5*e^6*x^6+4*A*b^5*e^6*x^5-12*B*a^5*e^6*x+180*B*b^5*d^6*ln(e*x+d)-1
20*A*a*b^4*d*e^5*x^3+120*A*ln(e*x+d)*x^2*a^3*b^2*e^6-120*A*ln(e*x+d)*x^2*b^
5*d^3*e^3+60*B*ln(e*x+d)*x^2*a^4*b*e^6+180*B*ln(e*x+d)*x^2*b^5*d^4*e^2+630*
B*a*b^4*d^3*e^3*x^2-660*B*a^2*b^3*d^2*e^4*x^2+720*B*ln(e*x+d)*x^2*a^2*b^3*d
^2*e^4-600*B*ln(e*x+d)*x^2*a*b^4*d^3*e^3-48*B*b^5*d^5*e*x-6*B*b^5*d*e^5*x^5
+30*A*a*b^4*e^6*x^4-10*A*b^5*d*e^5*x^4+60*B*a^2*b^3*e^6*x^4+15*B*b^5*d^2*e^
4*x^4)/(b*x+a)^5/e^7/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**3, x)
```

3.1748 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=425

$$-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{e^7(a+bx)(d+ex)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(-aBe-5Abe+6bBd)}{2e^7(a+bx)(d+ex)^2}-$$

```
[Out] 5*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-1
/3*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3+1/2*(-a*
e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2-5
*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x
+d)-1/2*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)+1/3*b^5*B*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-10*b^2*(-a*e+b*d)^2*(-A
*b*e-B*a*e+2*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.43, antiderivative size = 425, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(-5aBe-Abe+6bBd)}{2e^7(a+bx)}+\frac{5b^3x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{e^6(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a
*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) - (5*b*(
b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
7*(a + b*x)*(d + e*x)) - (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)) + (b^5*B*(d + e*x)^3*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) - (10*b^2*(b*d - a*e)^2*(2*b*B*d - A
*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^4}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{5b^8(bd-ae)(-3bBd+Abe+2aBe)}{e^6}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^4}+\right.}{}$$

$$= \frac{5b^3(bd-ae)(3bBd-Abe-2aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^5(B}{3e^7}$$

Mathematica [**A**] time = 0.32, size = 504, normalized size = 1.19

$$-\frac{\sqrt{(a+bx)^2}\,\left(a^5e^5(2Ae+B(d+3ex))+5a^4be^4\left(Ae(d+3ex)+2B\left(d^2+3dex+3e^2x^2\right)\right)+10a^3b^2e^3\left(2Ae\left(d^2+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] -1/6*(Sqrt[(a + b*x)^2]*(a^5*e^5*(2*A*e + B*(d + 3*e*x)) + 5*a^4*b*e^4*(A*e
*(d + 3*e*x) + 2*B*(d^2 + 3*d*e*x + 3*e^2*x^2)) + 10*a^3*b^2*e^3*(2*A*e*(d^
2 + 3*d*e*x + 3*e^2*x^2) - B*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2)) - 10*a^2*b
^3*e^2*(A*d*e*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - 2*B*(13*d^4 + 27*d^3*e*x +
 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4)) - 5*a*b^4*e*(2*A*e*(-13*d^4 - 27
*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e^3*x^3 + 3*e^4*x^4) + B*(47*d^5 + 81*d^4*e*
x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)) + b^5*(A*e*
(-47*d^5 - 81*d^4*e*x + 9*d^3*e^2*x^2 + 63*d^2*e^3*x^3 + 15*d*e^4*x^4 - 3*e
^5*x^5) + 2*B*(37*d^6 + 51*d^5*e*x - 39*d^4*e^2*x^2 - 73*d^3*e^3*x^3 - 15*d
^2*e^4*x^4 + 3*d*e^5*x^5 - e^6*x^6)) + 60*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*
e - a*B*e)*(d + e*x)^3*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^3)
```

fricas [**B**] time = 0.82, size = 899, normalized size = 2.12

$$\frac{2\,Bb^5e^6x^6-74\,Bb^5d^6-2\,Aa^5e^6+47\left(5\,Bab^4+Ab^5\right)d^5e-130\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+110\left(Ba^3b^2+Aa^2b^3\right)d^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^5*e^6*x^6 - 74*B*b^5*d^6 - 2*A*a^5*e^6 + 47*(5*B*a*b^4 + A*b^5)*
d^5*e - 130*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 110*(B*a^3*b^2 + A*a^2*b^3)*d
^3*e^3 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 - 3
*(2*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 15*(2*B*b^5*d^2*e^4 - (5*B
*a*b^4 + A*b^5)*d*e^5 + 2*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + (146*B*b^5*d^3
*e^3 - 63*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 90*(2*B*a^2*b^3 + A*a*b^4)*d*e^5)*x
^3 + 3*(26*B*b^5*d^4*e^2 - 3*(5*B*a*b^4 + A*b^5)*d^3*e^3 - 30*(2*B*a^2*b^3
+ A*a*b^4)*d^2*e^4 + 60*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - 10*(B*a^4*b + 2*A*a
^3*b^2)*e^6)*x^2 - 3*(34*B*b^5*d^5*e - 27*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 90*
(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 90*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 10*(
B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x - 60*(2*B*b^5*d^6
 - (5*B*a*b^4 + A*b^5)*d^5*e + 2*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - (B*a^3*b
^2 + A*a^2*b^3)*d^3*e^3 + (2*B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 +
2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 - (B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 3*(2*B
*b^5*d^4*e^2 - (5*B*a*b^4 + A*b^5)*d^3*e^3 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^2*
e^4 - (B*a^3*b^2 + A*a^2*b^3)*d*e^5)*x^2 + 3*(2*B*b^5*d^5*e - (5*B*a*b^4 +
A*b^5)*d^4*e^2 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - (B*a^3*b^2 + A*a^2*b^3
)*d^2*e^4)*x)*log(e*x + d))/(e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7
)
```

giac [**B**]   time = 0.22, size = 874, normalized size = 2.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] -10*(2*B*b^5*d^3*sgn(b*x + a) - 5*B*a*b^4*d^2*e*sgn(b*x + a) - A*b^5*d^2*e*
sgn(b*x + a) + 4*B*a^2*b^3*d*e^2*sgn(b*x + a) + 2*A*a*b^4*d*e^2*sgn(b*x + a
) - B*a^3*b^2*e^3*sgn(b*x + a) - A*a^2*b^3*e^3*sgn(b*x + a))*e^(-7)*log(abs
(x*e + d)) + 1/6*(2*B*b^5*x^3*e^8*sgn(b*x + a) - 12*B*b^5*d*x^2*e^7*sgn(b*x
 + a) + 60*B*b^5*d^2*x*e^6*sgn(b*x + a) + 15*B*a*b^4*x^2*e^8*sgn(b*x + a) +
 3*A*b^5*x^2*e^8*sgn(b*x + a) - 120*B*a*b^4*d*x*e^7*sgn(b*x + a) - 24*A*b^5
*d*x*e^7*sgn(b*x + a) + 60*B*a^2*b^3*x*e^8*sgn(b*x + a) + 30*A*a*b^4*x*e^8*
sgn(b*x + a))*e^(-12) - 1/6*(74*B*b^5*d^6*sgn(b*x + a) - 235*B*a*b^4*d^5*e*
sgn(b*x + a) - 47*A*b^5*d^5*e*sgn(b*x + a) + 260*B*a^2*b^3*d^4*e^2*sgn(b*x
+ a) + 130*A*a*b^4*d^4*e^2*sgn(b*x + a) - 110*B*a^3*b^2*d^3*e^3*sgn(b*x + a
) - 110*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 10*B*a^4*b*d^2*e^4*sgn(b*x + a) +
20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + B*a^5*d*e^5*sgn(b*x + a) + 5*A*a^4*b*d*
e^5*sgn(b*x + a) + 2*A*a^5*e^6*sgn(b*x + a) + 30*(3*B*b^5*d^4*e^2*sgn(b*x +
 a) - 10*B*a*b^4*d^3*e^3*sgn(b*x + a) - 2*A*b^5*d^3*e^3*sgn(b*x + a) + 12*B
*a^2*b^3*d^2*e^4*sgn(b*x + a) + 6*A*a*b^4*d^2*e^4*sgn(b*x + a) - 6*B*a^3*b^
2*d*e^5*sgn(b*x + a) - 6*A*a^2*b^3*d*e^5*sgn(b*x + a) + B*a^4*b*e^6*sgn(b*x
 + a) + 2*A*a^3*b^2*e^6*sgn(b*x + a))*x^2 + 3*(54*B*b^5*d^5*e*sgn(b*x + a)
- 175*B*a*b^4*d^4*e^2*sgn(b*x + a) - 35*A*b^5*d^4*e^2*sgn(b*x + a) + 200*B*
a^2*b^3*d^3*e^3*sgn(b*x + a) + 100*A*a*b^4*d^3*e^3*sgn(b*x + a) - 90*B*a^3*
b^2*d^2*e^4*sgn(b*x + a) - 90*A*a^2*b^3*d^2*e^4*sgn(b*x + a) + 10*B*a^4*b*d
*e^5*sgn(b*x + a) + 20*A*a^3*b^2*d*e^5*sgn(b*x + a) + B*a^5*e^6*sgn(b*x + a
) + 5*A*a^4*b*e^6*sgn(b*x + a))*x)*e^(-7)/(x*e + d)^3
```

maple [**B**]   time = 0.07, size = 1233, normalized size = 2.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x)
```

```
[Out] 1/6*((b*x+a)^2)^(5/2)*(-120*A*a*b^4*d^4*e^2*ln(e*x+d)-30*B*a^4*b*d*e^5*x+27
0*B*a^3*b^2*d^2*e^4*x-540*B*a^2*b^3*d^3*e^3*x+405*B*a*b^4*d^4*e^2*x+47*A*b^
5*d^5*e-240*B*a^2*b^3*d^4*e^2*ln(e*x+d)+300*B*a*b^4*d^5*e*ln(e*x+d)-130*A*a
*b^4*d^4*e^2-10*B*a^4*b*d^2*e^4-20*A*a^3*b^2*d^2*e^4+110*A*a^2*b^3*d^3*e^3-
B*a^5*d*e^5+110*B*a^3*b^2*d^3*e^3-260*B*a^2*b^3*d^4*e^2+235*B*a*b^4*d^5*e+1
80*B*a^3*b^2*d^2*e^4*x*ln(e*x+d)-720*B*a^2*b^3*d^3*e^3*x*ln(e*x+d)+900*B*a*
b^4*d^4*e^2*x*ln(e*x+d)+180*A*a^2*b^3*d*e^5*x^2-90*A*a*b^4*d^2*e^4*x^2+60*A
*b^5*d^5*e*ln(e*x+d)-15*A*a^4*b*e^6*x+81*A*b^5*d^4*e^2*x+180*A*a^2*b^3*d^2*
e^4*x*ln(e*x+d)-360*A*a*b^4*d^3*e^3*x*ln(e*x+d)+60*B*a^3*b^2*d^3*e^3*ln(e*x
+d)+60*B*ln(e*x+d)*x^3*a^3*b^2*e^6-120*B*ln(e*x+d)*x^3*b^5*d^3*e^3+180*A*b^
5*d^4*e^2*x*ln(e*x+d)-360*B*b^5*d^5*e*x*ln(e*x+d)-2*A*a^5*e^6-74*B*b^5*d^6+
60*A*a^2*b^3*d^3*e^3*ln(e*x+d)-75*B*a*b^4*d*e^5*x^4+180*A*a^2*b^3*d*e^5*x^2
*ln(e*x+d)-360*A*a*b^4*d^2*e^4*x^2*ln(e*x+d)+180*B*a^3*b^2*d*e^5*x^2*ln(e*x
+d)-5*A*a^4*b*d*e^5+180*B*a^2*b^3*d*e^5*x^3-315*B*a*b^4*d^2*e^4*x^3-60*A*a^
3*b^2*d*e^5*x+270*A*a^2*b^3*d^2*e^4*x-270*A*a*b^4*d^3*e^3*x+180*B*a^3*b^2*d
*e^5*x^2-63*A*b^5*d^2*e^4*x^3+146*B*b^5*d^3*e^3*x^3-60*A*a^3*b^2*e^6*x^2-9*
A*b^5*d^3*e^3*x^2-30*B*a^4*b*e^6*x^2+78*B*b^5*d^4*e^2*x^2+15*B*a*b^4*e^6*x^
5+2*B*b^5*e^6*x^6+3*A*b^5*e^6*x^5-3*B*a^5*e^6*x-120*B*b^5*d^6*ln(e*x+d)+90*
A*a*b^4*d*e^5*x^3-120*A*ln(e*x+d)*x^3*a*b^4*d*e^5-240*B*ln(e*x+d)*x^3*a^2*b
^3*d*e^5+300*B*ln(e*x+d)*x^3*a*b^4*d^2*e^4+180*A*b^5*d^3*e^3*x^2*ln(e*x+d)-
360*B*b^5*d^4*e^2*x^2*ln(e*x+d)+60*A*ln(e*x+d)*x^3*a^2*b^3*e^6+60*A*ln(e*x+
d)*x^3*b^5*d^2*e^4-45*B*a*b^4*d^3*e^3*x^2-180*B*a^2*b^3*d^2*e^4*x^2-720*B*a
^2*b^3*d^2*e^4*x^2*ln(e*x+d)+900*B*a*b^4*d^3*e^3*x^2*ln(e*x+d)-102*B*b^5*d^
5*e*x-6*B*b^5*d*e^5*x^5+30*A*a*b^4*e^6*x^4-15*A*b^5*d*e^5*x^4+60*B*a^2*b^3*
e^6*x^4+30*B*b^5*d^2*e^4*x^4)/(b*x+a)^5/e^7/(e*x+d)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(A + B x\right) \left(\left(a + b x\right)^{2}\right)^{\frac{5}{2}}}{\left(d + e x\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**4, x)
```

3.1749 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=421

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^2}+$$

```
[Out] -b^4*(-A*b*e-5*B*a*e+5*B*b*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)+1/2*b^5*B*x^2
*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-1/4*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2
)/e^7/(b*x+a)/(e*x+d)^4+1/3*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3-5/2*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*
((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2+10*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2
*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)+5*b^3*(-a*e+b*d)*(-A*b*e-2*B*
a*e+3*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.39, antiderivative size = 421, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{b^4x\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+5bBd)}{e^6(a+bx)}+\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)}-5b\sqrt{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -((b^4*(5*b*B*d - A*b*e - 5*a*B*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a
 + b*x))) + (b^5*B*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) - (
(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)*(
d + e*x)^4) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) - (5*b*(b*d - a*e)^3*(3*b*B*d -
2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^
2) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^5}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(\frac{b^9(-5bBd+Abe+5aBe)}{e^6}+\frac{b^{10}Bx}{e^5}-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^5}+\right.}{}$$

$$= -\frac{b^4(5bBd-Abe-5aBe)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{b^5Bx^2\sqrt{a^2+2abx+}}{2e^5(a+bx)}$$

Mathematica [**A**] time = 0.30, size = 497, normalized size = 1.18

$$-\frac{\sqrt{(a+bx)^2}\left(a^5e^5(3Ae+B(d+4ex))+5a^4be^4\left(Ae(d+4ex)+B\left(d^2+4dex+6e^2x^2\right)\right)+10a^3b^2e^3\left(Ae\left(d^2+4\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(a^5*e^5*(3*A*e + B*(d + 4*e*x)) + 5*a^4*b*e^4*(A*
e*(d + 4*e*x) + B*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 10*a^3*b^2*e^3*(A*e*(d^2 +
 4*d*e*x + 6*e^2*x^2) + 3*B*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)) +
10*a^2*b^3*e^2*(3*A*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - B*d*(25
*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) - 5*a*b^4*e*(A*d*e*(25*d^3
 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3) - B*(77*d^5 + 248*d^4*e*x + 252
*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5)) + b^5*(A*e*(77*
d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^3 - 48*d*e^4*x^4 - 12*e^
5*x^5) - 3*B*(57*d^6 + 168*d^5*e*x + 132*d^4*e^2*x^2 - 32*d^3*e^3*x^3 - 68*
d^2*e^4*x^4 - 12*d*e^5*x^5 + 2*e^6*x^6)) - 60*b^3*(b*d - a*e)*(3*b*B*d - A*
b*e - 2*a*B*e)*(d + e*x)^4*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^4)
```

fricas [**B**] time = 0.88, size = 871, normalized size = 2.07

$$\frac{6\,Bb^5e^6x^6+171\,Bb^5d^6-3\,Aa^5e^6-77\left(5\,Bab^4+Ab^5\right)d^5e+125\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-30\left(Ba^3b^2+Aa^2b^3\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(6*B*b^5*e^6*x^6 + 171*B*b^5*d^6 - 3*A*a^5*e^6 - 77*(5*B*a*b^4 + A*b^5
)*d^5*e + 125*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 30*(B*a^3*b^2 + A*a^2*b^3)*
d^3*e^3 - 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - (B*a^5 + 5*A*a^4*b)*d*e^5 - 1
2*(3*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 - 12*(17*B*b^5*d^2*e^4 - 4*
(5*B*a*b^4 + A*b^5)*d*e^5)*x^4 - 24*(4*B*b^5*d^3*e^3 + 2*(5*B*a*b^4 + A*b^5
)*d^2*e^4 - 10*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 5*(B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^3 + 6*(66*B*b^5*d^4*e^2 - 42*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 90*(2*B*a^2
*b^3 + A*a*b^4)*d^2*e^4 - 30*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - 5*(B*a^4*b + 2
*A*a^3*b^2)*e^6)*x^2 + 4*(126*B*b^5*d^5*e - 62*(5*B*a*b^4 + A*b^5)*d^4*e^2
+ 110*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4
- 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - (B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(3*B*b^
5*d^6 - (5*B*a*b^4 + A*b^5)*d^5*e + (2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + (3*B*
b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 + (2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4
+ 4*(3*B*b^5*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4 + (2*B*a^2*b^3 + A*a*b^4
)*d*e^5)*x^3 + 6*(3*B*b^5*d^4*e^2 - (5*B*a*b^4 + A*b^5)*d^3*e^3 + (2*B*a^2*
b^3 + A*a*b^4)*d^2*e^4)*x^2 + 4*(3*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^
2 + (2*B*a^2*b^3 + A*a*b^4)*d^3*e^3)*x)*log(e*x + d))/(e^11*x^4 + 4*d*e^10*
x^3 + 6*d^2*e^9*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [B] time = 0.23, size = 870, normalized size = 2.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] 5*(3*B*b^5*d^2*sgn(b*x + a) - 5*B*a*b^4*d*e*sgn(b*x + a) - A*b^5*d*e*sgn(b*
x + a) + 2*B*a^2*b^3*e^2*sgn(b*x + a) + A*a*b^4*e^2*sgn(b*x + a))*e^(-7)*lo
g(abs(x*e + d)) + 1/2*(B*b^5*x^2*e^5*sgn(b*x + a) - 10*B*b^5*d*x*e^4*sgn(b*
x + a) + 10*B*a*b^4*x*e^5*sgn(b*x + a) + 2*A*b^5*x*e^5*sgn(b*x + a))*e^(-10
) + 1/12*(171*B*b^5*d^6*sgn(b*x + a) - 385*B*a*b^4*d^5*e*sgn(b*x + a) - 77*
A*b^5*d^5*e*sgn(b*x + a) + 250*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 125*A*a*b^4
*d^4*e^2*sgn(b*x + a) - 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^
3*e^3*sgn(b*x + a) - 5*B*a^4*b*d^2*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*
sgn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e^5*sgn(b*x + a) - 3*
A*a^5*e^6*sgn(b*x + a) + 120*(2*B*b^5*d^3*e^3*sgn(b*x + a) - 5*B*a*b^4*d^2*
e^4*sgn(b*x + a) - A*b^5*d^2*e^4*sgn(b*x + a) + 4*B*a^2*b^3*d*e^5*sgn(b*x +
 a) + 2*A*a*b^4*d*e^5*sgn(b*x + a) - B*a^3*b^2*e^6*sgn(b*x + a) - A*a^2*b^3
*e^6*sgn(b*x + a))*x^3 + 30*(21*B*b^5*d^4*e^2*sgn(b*x + a) - 50*B*a*b^4*d^3
*e^3*sgn(b*x + a) - 10*A*b^5*d^3*e^3*sgn(b*x + a) + 36*B*a^2*b^3*d^2*e^4*sg
n(b*x + a) + 18*A*a*b^4*d^2*e^4*sgn(b*x + a) - 6*B*a^3*b^2*d*e^5*sgn(b*x +
a) - 6*A*a^2*b^3*d*e^5*sgn(b*x + a) - B*a^4*b*e^6*sgn(b*x + a) - 2*A*a^3*b^
2*e^6*sgn(b*x + a))*x^2 + 4*(141*B*b^5*d^5*e*sgn(b*x + a) - 325*B*a*b^4*d^4
*e^2*sgn(b*x + a) - 65*A*b^5*d^4*e^2*sgn(b*x + a) + 220*B*a^2*b^3*d^3*e^3*s
gn(b*x + a) + 110*A*a*b^4*d^3*e^3*sgn(b*x + a) - 30*B*a^3*b^2*d^2*e^4*sgn(b
*x + a) - 30*A*a^2*b^3*d^2*e^4*sgn(b*x + a) - 5*B*a^4*b*d*e^5*sgn(b*x + a)
- 10*A*a^3*b^2*d*e^5*sgn(b*x + a) - B*a^5*e^6*sgn(b*x + a) - 5*A*a^4*b*e^6*
sgn(b*x + a))*x)*e^(-7)/(x*e + d)^4
```

maple [B] time = 0.07, size = 1163, normalized size = 2.76

$$\left((bx+a)^2\right)^{\frac{5}{2}} \left(6B\,b^5e^6x^6 + 60Aa\,b^4e^6x^4 \ln(ex+d) - 60A\,b^5d\,e^5x^4 \ln(ex+d) + 12A\,b^5e^6x^5 + 120B\,a^2b^3e^6x^4 \ln(ex$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(5/2)*(60*A*a*b^4*d^4*e^2*ln(e*x+d)-300*B*ln(e*x+d)*x^4*a*
b^4*d*e^5-20*B*a^4*b*d*e^5*x-120*B*a^3*b^2*d^2*e^4*x+880*B*a^2*b^3*d^3*e^3*
x-1240*B*a*b^4*d^4*e^2*x-77*A*b^5*d^5*e+120*B*a^2*b^3*d^4*e^2*ln(e*x+d)-300
*B*a*b^4*d^5*e*ln(e*x+d)+125*A*a*b^4*d^4*e^2-5*B*a^4*b*d^2*e^4-10*A*a^3*b^2
*d^2*e^4-30*A*a^2*b^3*d^3*e^3-B*a^5*d*e^5-30*B*a^3*b^2*d^3*e^3+250*B*a^2*b^
3*d^4*e^2-385*B*a*b^4*d^5*e+480*B*a^2*b^3*d^3*e^3*x*ln(e*x+d)-1200*B*a*b^4*
d^4*e^2*x*ln(e*x+d)-180*A*a^2*b^3*d*e^5*x^2+540*A*a*b^4*d^2*e^4*x^2-60*A*b^
5*d^5*e*ln(e*x+d)-20*A*a^4*b*e^6*x-248*A*b^5*d^4*e^2*x-120*A*a^2*b^3*e^6*x^
3+240*A*a*b^4*d^3*e^3*x*ln(e*x+d)+720*B*b^5*d^3*e^3*x^3*ln(e*x+d)-240*A*b^5
*d^4*e^2*x*ln(e*x+d)+720*B*b^5*d^5*e*x*ln(e*x+d)+60*A*ln(e*x+d)*x^4*a*b^4*e
^6-60*A*ln(e*x+d)*x^4*b^5*d*e^5+120*B*ln(e*x+d)*x^4*a^2*b^3*e^6+180*B*ln(e*
x+d)*x^4*b^5*d^2*e^4-3*A*a^5*e^6+171*B*b^5*d^6+240*B*a*b^4*d*e^5*x^4+360*A*
a*b^4*d^2*e^4*x^2*ln(e*x+d)-5*A*a^4*b*d*e^5+480*B*a^2*b^3*d*e^5*x^3-240*B*a
*b^4*d^2*e^4*x^3-40*A*a^3*b^2*d*e^5*x-120*A*a^2*b^3*d^2*e^4*x+440*A*a*b^4*d
^3*e^3*x-180*B*a^3*b^2*d*e^5*x^2-48*A*b^5*d^2*e^4*x^3-120*B*a^3*b^2*e^6*x^3
-96*B*b^5*d^3*e^3*x^3-60*A*a^3*b^2*e^6*x^2-252*A*b^5*d^3*e^3*x^2-30*B*a^4*b
*e^6*x^2+396*B*b^5*d^4*e^2*x^2+60*B*a*b^4*e^6*x^5+6*B*b^5*e^6*x^6+12*A*b^5*
e^6*x^5-4*B*a^5*e^6*x+180*B*b^5*d^6*ln(e*x+d)+240*A*a*b^4*d*e^5*x^3+240*A*a
*b^4*d*e^5*x^3*ln(e*x+d)+480*B*a^2*b^3*d*e^5*x^3*ln(e*x+d)-1200*B*a*b^4*d^2
*e^4*x^3*ln(e*x+d)-360*A*b^5*d^3*e^3*x^2*ln(e*x+d)+1080*B*b^5*d^4*e^2*x^2*l
n(e*x+d)-240*A*b^5*d^2*e^4*x^3*ln(e*x+d)-1260*B*a*b^4*d^3*e^3*x^2+1080*B*a^
2*b^3*d^2*e^4*x^2+720*B*a^2*b^3*d^2*e^4*x^2*ln(e*x+d)-1800*B*a*b^4*d^3*e^3*
x^2*ln(e*x+d)+504*B*b^5*d^5*e*x-36*B*b^5*d*e^5*x^5+48*A*b^5*d*e^5*x^4-204*B
*b^5*d^2*e^4*x^4)/(b*x+a)^5/e^7/(e*x+d)^4
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\left((a + bx)^{2}\right)^{\frac{5}{2}}}{(d + ex)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**5, x)
```

3.1750 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=422

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^2}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{3e^7(a+bx)(d+ex)^3}+$$

```
[Out] b^5*B*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-1/5*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)^5+1/4*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((
b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^4-5/3*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*
B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3+5*b^2*(-a*e+b*d)^2*(-A*b*e-B
*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2-5*b^3*(-a*e+b*d)*(-A*
b*e-2*B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)-b^4*(-A*b*e-5*B*
a*e+6*B*b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.36, antiderivative size = 422, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{e^7(a+bx)(d+ex)}+\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] (b^5*B*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^5*(B
*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^5) + ((
b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*
e^7*(a + b*x)*(d + e*x)^4) - (5*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) + (5*b^2*(b*d
 - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a
+ b*x)*(d + e*x)^2) - (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) - (b^4*(6*b*B*d - A*b*e
- 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Bigg(\frac{b^{10}B}{e^6} - \frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^6} + \frac{b^5(bd-ae)^4(-6bBd+5Abe+a}{e^6(d+ex)^5}}{}$$

$$= \frac{b^5Bx\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)} - \frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5} +$$

Mathematica [**A**]   time = 0.29, size = 490, normalized size = 1.16

$$-\frac{\sqrt{(a+bx)^2}\,\left(3a^5e^5(4Ae+B(d+5ex))+5a^4be^4\left(3Ae(d+5ex)+2B\left(d^2+5dex+10e^2x^2\right)\right)+10a^3b^2e^3\left(2Ae\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(3*a^5*e^5*(4*A*e + B*(d + 5*e*x)) + 5*a^4*b*e^4*(
3*A*e*(d + 5*e*x) + 2*B*(d^2 + 5*d*e*x + 10*e^2*x^2)) + 10*a^3*b^2*e^3*(2*A
*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*B*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*
e^3*x^3)) + 30*a^2*b^3*e^2*(A*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^
3) + 4*B*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + 5
*a*b^4*e*(12*A*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x
^4) - B*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e
^4*x^4)) + b^5*(-(A*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e
^3*x^3 + 300*e^4*x^4)) + 6*B*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*
d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6)) + 60*b^4*(6*b*B*
d - A*b*e - 5*a*B*e)*(d + e*x)^5*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^5)
```

fricas [**B**]   time = 0.56, size = 802, normalized size = 1.90

$$\frac{60\,Bb^5e^6x^6+300\,Bb^5de^5x^5-522\,Bb^5d^6-12\,Aa^5e^6+137\left(5\,Bab^4+Ab^5\right)d^5e-60\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-30}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] 1/60*(60*B*b^5*e^6*x^6 + 300*B*b^5*d*e^5*x^5 - 522*B*b^5*d^6 - 12*A*a^5*e^6
 + 137*(5*B*a*b^4 + A*b^5)*d^5*e - 60*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 30*
(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 3*(B
*a^5 + 5*A*a^4*b)*d*e^5 - 300*(B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5 +
(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 - 300*(8*B*b^5*d^3*e^3 - 3*(5*B*a*b^4 + A*
b^5)*d^2*e^4 + 2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + (B*a^3*b^2 + A*a^2*b^3)*e^
6)*x^3 - 100*(36*B*b^5*d^4*e^2 - 11*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 6*(2*B*a^
2*b^3 + A*a*b^4)*d^2*e^4 + 3*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + (B*a^4*b + 2*A
*a^3*b^2)*e^6)*x^2 - 5*(450*B*b^5*d^5*e - 125*(5*B*a*b^4 + A*b^5)*d^4*e^2 +
 60*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 +
10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 3*(B*a^5 + 5*A*a^4*b)*e^6)*x - 60*(6*B*b
^5*d^6 - (5*B*a*b^4 + A*b^5)*d^5*e + (6*B*b^5*d*e^5 - (5*B*a*b^4 + A*b^5)*e
^6)*x^5 + 5*(6*B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5)*d*e^5)*x^4 + 10*(6*B*b^5
*d^3*e^3 - (5*B*a*b^4 + A*b^5)*d^2*e^4)*x^3 + 10*(6*B*b^5*d^4*e^2 - (5*B*a*
b^4 + A*b^5)*d^3*e^3)*x^2 + 5*(6*B*b^5*d^5*e - (5*B*a*b^4 + A*b^5)*d^4*e^2)
*x)*log(e*x + d))/(e^12*x^5 + 5*d*e^11*x^4 + 10*d^2*e^10*x^3 + 10*d^3*e^9*x
^2 + 5*d^4*e^8*x + d^5*e^7)
```

giac [B] time = 0.27, size = 863, normalized size = 2.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] B*b^5*x*e^(-6)*sgn(b*x + a) - (6*B*b^5*d*sgn(b*x + a) - 5*B*a*b^4*e*sgn(b*x
 + a) - A*b^5*e*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) - 1/60*(522*B*b^5*d^
6*sgn(b*x + a) - 685*B*a*b^4*d^5*e*sgn(b*x + a) - 137*A*b^5*d^5*e*sgn(b*x +
 a) + 120*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 60*A*a*b^4*d^4*e^2*sgn(b*x + a)
+ 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 30*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 1
0*B*a^4*b*d^2*e^4*sgn(b*x + a) + 20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 3*B*a^
5*d*e^5*sgn(b*x + a) + 15*A*a^4*b*d*e^5*sgn(b*x + a) + 12*A*a^5*e^6*sgn(b*x
 + a) + 300*(3*B*b^5*d^2*e^4*sgn(b*x + a) - 5*B*a*b^4*d*e^5*sgn(b*x + a) -
A*b^5*d*e^5*sgn(b*x + a) + 2*B*a^2*b^3*e^6*sgn(b*x + a) + A*a*b^4*e^6*sgn(b
*x + a))*x^4 + 300*(10*B*b^5*d^3*e^3*sgn(b*x + a) - 15*B*a*b^4*d^2*e^4*sgn(
b*x + a) - 3*A*b^5*d^2*e^4*sgn(b*x + a) + 4*B*a^2*b^3*d*e^5*sgn(b*x + a) +
2*A*a*b^4*d*e^5*sgn(b*x + a) + B*a^3*b^2*e^6*sgn(b*x + a) + A*a^2*b^3*e^6*s
gn(b*x + a))*x^3 + 100*(39*B*b^5*d^4*e^2*sgn(b*x + a) - 55*B*a*b^4*d^3*e^3*
sgn(b*x + a) - 11*A*b^5*d^3*e^3*sgn(b*x + a) + 12*B*a^2*b^3*d^2*e^4*sgn(b*x
 + a) + 6*A*a*b^4*d^2*e^4*sgn(b*x + a) + 3*B*a^3*b^2*d*e^5*sgn(b*x + a) + 3
*A*a^2*b^3*d*e^5*sgn(b*x + a) + B*a^4*b*e^6*sgn(b*x + a) + 2*A*a^3*b^2*e^6*
sgn(b*x + a))*x^2 + 5*(462*B*b^5*d^5*e*sgn(b*x + a) - 625*B*a*b^4*d^4*e^2*s
gn(b*x + a) - 125*A*b^5*d^4*e^2*sgn(b*x + a) + 120*B*a^2*b^3*d^3*e^3*sgn(b*
x + a) + 60*A*a*b^4*d^3*e^3*sgn(b*x + a) + 30*B*a^3*b^2*d^2*e^4*sgn(b*x + a
) + 30*A*a^2*b^3*d^2*e^4*sgn(b*x + a) + 10*B*a^4*b*d*e^5*sgn(b*x + a) + 20*
A*a^3*b^2*d*e^5*sgn(b*x + a) + 3*B*a^5*e^6*sgn(b*x + a) + 15*A*a^4*b*e^6*sg
n(b*x + a))*x)*e^(-7)/(x*e + d)^5
```

maple [B] time = 0.07, size = 1012, normalized size = 2.40

$$\frac{\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}\left(60A\,b^{5}e^{6}x^{5}\ln\left(ex+d\right)+300Ba\,b^{4}e^{6}x^{5}\ln\left(ex+d\right)-360B\,b^{5}d\,e^{5}x^{5}\ln\left(ex+d\right)+60B\,b^{5}e^{6}x^{6}+300A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(1500*B*a*b^4*d*e^5*x^4*ln(e*x+d)-50*B*a^4*b*d*e^5*x
-150*B*a^3*b^2*d^2*e^4*x-600*B*a^2*b^3*d^3*e^3*x+3125*B*a*b^4*d^4*e^2*x+300
*B*ln(e*x+d)*x^5*a*b^4*e^6+137*A*b^5*d^5*e+300*B*a*b^4*d^5*e*ln(e*x+d)-60*A
*a*b^4*d^4*e^2-10*B*a^4*b*d^2*e^4-20*A*a^3*b^2*d^2*e^4-30*A*a^2*b^3*d^3*e^3
-3*B*a^5*d*e^5-30*B*a^3*b^2*d^3*e^3-120*B*a^2*b^3*d^4*e^2+685*B*a*b^4*d^5*e
+1500*B*a*b^4*d^4*e^2*x*ln(e*x+d)-300*A*a^2*b^3*d*e^5*x^2-600*A*a*b^4*d^2*e
^4*x^2+60*A*b^5*d^5*e*ln(e*x+d)-75*A*a^4*b*e^6*x+625*A*b^5*d^4*e^2*x-300*A*
a^2*b^3*e^6*x^3-360*B*ln(e*x+d)*x^5*b^5*d*e^5-3600*B*b^5*d^3*e^3*x^3*ln(e*x
+d)+300*A*b^5*d^4*e^2*x*ln(e*x+d)-1800*B*b^5*d^5*e*x*ln(e*x+d)+300*A*b^5*d*
e^5*x^4*ln(e*x+d)-1800*B*b^5*d^2*e^4*x^4*ln(e*x+d)-12*A*a^5*e^6-522*B*b^5*d
^6+1500*B*a*b^4*d*e^5*x^4-15*A*a^4*b*d*e^5-1200*B*a^2*b^3*d*e^5*x^3+4500*B*
a*b^4*d^2*e^4*x^3-100*A*a^3*b^2*d*e^5*x-150*A*a^2*b^3*d^2*e^4*x-300*A*a*b^4
*d^3*e^3*x-300*B*a^3*b^2*d*e^5*x^2+900*A*b^5*d^2*e^4*x^3-300*B*a^3*b^2*e^6*
x^3-2400*B*b^5*d^3*e^3*x^3-200*A*a^3*b^2*e^6*x^2+1100*A*b^5*d^3*e^3*x^2-100
*B*a^4*b*e^6*x^2-3600*B*b^5*d^4*e^2*x^2+60*B*b^5*e^6*x^6-15*B*a^5*e^6*x-360
*B*b^5*d^6*ln(e*x+d)-600*A*a*b^4*d*e^5*x^3+3000*B*a*b^4*d^2*e^4*x^3*ln(e*x+
d)+600*A*b^5*d^3*e^3*x^2*ln(e*x+d)-3600*B*b^5*d^4*e^2*x^2*ln(e*x+d)+600*A*b
^5*d^2*e^4*x^3*ln(e*x+d)+5500*B*a*b^4*d^3*e^3*x^2-1200*B*a^2*b^3*d^2*e^4*x^
2+3000*B*a*b^4*d^3*e^3*x^2*ln(e*x+d)-2250*B*b^5*d^5*e*x+300*B*b^5*d*e^5*x^5
-300*A*a*b^4*e^6*x^4+300*A*b^5*d*e^5*x^4-600*B*a^2*b^3*e^6*x^4-300*B*b^5*d^
2*e^4*x^4+60*A*ln(e*x+d)*x^5*b^5*e^6)/(b*x+a)^5/e^7/(e*x+d)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\left((a+bx)^{2}\right)^{\frac{5}{2}}}{(d+ex)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**6,x)
```

```
[Out] Integral((A + B*x)*((a + b*x)**2)**(5/2)/(d + e*x)**6, x)
```

3.1751 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7} dx$

Optimal. Leaf size=365

$$-\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{6e(d+ex)^6(bd-ae)}+\frac{10b^2B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^3}-\frac{5bB\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}$$

```
[Out] -1/6*(-A*e+B*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)/(e*x+d)^6+1/5*B*(-
a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^5-5/4*b*B*(-a*e+b*d)^4*((b
*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^4+10/3*b^2*B*(-a*e+b*d)^3*((b*x+a)^2)^(1
/2)/e^7/(b*x+a)/(e*x+d)^3-5*b^3*B*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)/(e*x+d)^2+5*b^4*B*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)+b^5*B*
ln(e*x+d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.29, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 78, 43}

$$-\frac{(a+bx)^5\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{6e(d+ex)^6(bd-ae)}+\frac{5b^4B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)}-\frac{5b^3B\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e*(b*d - a*e)*(
d + e*x)^6) + (B*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b
*x)*(d + e*x)^5) - (5*b*B*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e
^7*(a + b*x)*(d + e*x)^4) + (10*b^2*B*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) - (5*b^3*B*(b*d - a*e)^2*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^2) + (5*b^4*B*(b*d - a*e)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (b^5*B*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^7}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^4e\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{\left(B\sqrt{a^2+2abx+b^2x^2}\right)\int}{}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6e(bd-ae)(d+ex)^6} + \frac{B(bd-ae)^5\sqrt{a^2+2abx+}}{5e^7(a+bx)(d+ex)^5}$$

Mathematica [A] time = 0.29, size = 477, normalized size = 1.31

$$-\frac{\sqrt{(a+bx)^2}\left(2a^5e^5(5Ae+B(d+6ex))+5a^4be^4\left(2Ae(d+6ex)+B\left(d^2+6dex+15e^2x^2\right)\right)+10a^3b^2e^3\left(Ae\left(d^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(2*a^5*e^5*(5*A*e + B*(d + 6*e*x)) + 5*a^4*b*e^4*(
2*A*e*(d + 6*e*x) + B*(d^2 + 6*d*e*x + 15*e^2*x^2)) + 10*a^3*b^2*e^3*(A*e*(
d^2 + 6*d*e*x + 15*e^2*x^2) + B*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^
3)) + 10*a^2*b^3*e^2*(A*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2
*B*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 10*a*b
^4*e*(A*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) +
5*B*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e
^5*x^5)) + b^5*(10*A*e*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 +
 15*d*e^4*x^4 + 6*e^5*x^5) - B*d*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2
+ 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) - 60*b^5*B*(d + e*x)^6*
Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^6)
```

fricas [B] time = 0.89, size = 703, normalized size = 1.93

$$\frac{147\,Bb^5d^6-10\,Aa^5e^6-10\left(5\,Bab^4+Ab^5\right)d^5e-10\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-10\left(Ba^3b^2+Aa^2b^3\right)d^3e^3-5\left(Ba^4b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] 1/60*(147*B*b^5*d^6 - 10*A*a^5*e^6 - 10*(5*B*a*b^4 + A*b^5)*d^5*e - 10*(2*B
*a^2*b^3 + A*a*b^4)*d^4*e^2 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^3 - 5*(B*a^4
*b + 2*A*a^3*b^2)*d^2*e^4 - 2*(B*a^5 + 5*A*a^4*b)*d*e^5 + 60*(6*B*b^5*d*e^5
 - (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 150*(9*B*b^5*d^2*e^4 - (5*B*a*b^4 + A*b^5
)*d*e^5 - (2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 200*(11*B*b^5*d^3*e^3 - (5*B*a
*b^4 + A*b^5)*d^2*e^4 - (2*B*a^2*b^3 + A*a*b^4)*d*e^5 - (B*a^3*b^2 + A*a^2*
b^3)*e^6)*x^3 + 75*(25*B*b^5*d^4*e^2 - 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 - 2*(2
*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 2*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 - (B*a^4*b
+ 2*A*a^3*b^2)*e^6)*x^2 + 6*(137*B*b^5*d^5*e - 10*(5*B*a*b^4 + A*b^5)*d^4*e
^2 - 10*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 10*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^
4 - 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 2*(B*a^5 + 5*A*a^4*b)*e^6)*x + 60*(B*
b^5*e^6*x^6 + 6*B*b^5*d*e^5*x^5 + 15*B*b^5*d^2*e^4*x^4 + 20*B*b^5*d^3*e^3*x
^3 + 15*B*b^5*d^4*e^2*x^2 + 6*B*b^5*d^5*e*x + B*b^5*d^6)*log(e*x + d))/(e^1
3*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 +
 6*d^5*e^8*x + d^6*e^7)
```

giac [**B**]   time = 0.30, size = 871, normalized size = 2.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] B*b^5*e^(-7)*log(abs(x*e + d))*sgn(b*x + a) + 1/60*(60*(6*B*b^5*d*e^4*sgn(b
*x + a) - 5*B*a*b^4*e^5*sgn(b*x + a) - A*b^5*e^5*sgn(b*x + a))*x^5 + 150*(9
*B*b^5*d^2*e^3*sgn(b*x + a) - 5*B*a*b^4*d*e^4*sgn(b*x + a) - A*b^5*d*e^4*sg
n(b*x + a) - 2*B*a^2*b^3*e^5*sgn(b*x + a) - A*a*b^4*e^5*sgn(b*x + a))*x^4 +
 200*(11*B*b^5*d^3*e^2*sgn(b*x + a) - 5*B*a*b^4*d^2*e^3*sgn(b*x + a) - A*b^
5*d^2*e^3*sgn(b*x + a) - 2*B*a^2*b^3*d*e^4*sgn(b*x + a) - A*a*b^4*d*e^4*sgn
(b*x + a) - B*a^3*b^2*e^5*sgn(b*x + a) - A*a^2*b^3*e^5*sgn(b*x + a))*x^3 +
75*(25*B*b^5*d^4*e*sgn(b*x + a) - 10*B*a*b^4*d^3*e^2*sgn(b*x + a) - 2*A*b^5
*d^3*e^2*sgn(b*x + a) - 4*B*a^2*b^3*d^2*e^3*sgn(b*x + a) - 2*A*a*b^4*d^2*e^
3*sgn(b*x + a) - 2*B*a^3*b^2*d*e^4*sgn(b*x + a) - 2*A*a^2*b^3*d*e^4*sgn(b*x
 + a) - B*a^4*b*e^5*sgn(b*x + a) - 2*A*a^3*b^2*e^5*sgn(b*x + a))*x^2 + 6*(1
37*B*b^5*d^5*sgn(b*x + a) - 50*B*a*b^4*d^4*e*sgn(b*x + a) - 10*A*b^5*d^4*e*
sgn(b*x + a) - 20*B*a^2*b^3*d^3*e^2*sgn(b*x + a) - 10*A*a*b^4*d^3*e^2*sgn(b
*x + a) - 10*B*a^3*b^2*d^2*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^2*e^3*sgn(b*x
+ a) - 5*B*a^4*b*d*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d*e^4*sgn(b*x + a) - 2*B
*a^5*e^5*sgn(b*x + a) - 10*A*a^4*b*e^5*sgn(b*x + a))*x + (147*B*b^5*d^6*sgn
(b*x + a) - 50*B*a*b^4*d^5*e*sgn(b*x + a) - 10*A*b^5*d^5*e*sgn(b*x + a) - 2
0*B*a^2*b^3*d^4*e^2*sgn(b*x + a) - 10*A*a*b^4*d^4*e^2*sgn(b*x + a) - 10*B*a
^3*b^2*d^3*e^3*sgn(b*x + a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) - 5*B*a^4*b
*d^2*e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - 2*B*a^5*d*e^5*s
gn(b*x + a) - 10*A*a^4*b*d*e^5*sgn(b*x + a) - 10*A*a^5*e^6*sgn(b*x + a))*e^
(-1))*e^(-6)/(x*e + d)^6
```

maple [**B**]   time = 0.07, size = 809, normalized size = 2.22

$$-\frac{\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}}\left(-60B\,b^{5}e^{6}x^{6}\ln\left(ex+d\right)-360B\,b^{5}d\,e^{5}x^{5}\ln\left(ex+d\right)+60A\,b^{5}e^{6}x^{5}+300Ba\,b^{4}e^{6}x^{5}-900B\,b^{5}d^{2}e^{4}x^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] -1/60*((b*x+a)^2)^(5/2)*(30*B*a^4*b*d*e^5*x+60*B*a^3*b^2*d^2*e^4*x+120*B*a^
2*b^3*d^3*e^3*x+300*B*a*b^4*d^4*e^2*x+10*A*b^5*d^5*e+10*A*a*b^4*d^4*e^2+5*B
*a^4*b*d^2*e^4+10*A*a^3*b^2*d^2*e^4+10*A*a^2*b^3*d^3*e^3+2*B*a^5*d*e^5+10*B
*a^3*b^2*d^3*e^3+20*B*a^2*b^3*d^4*e^2+50*B*a*b^4*d^5*e+150*A*a^2*b^3*d*e^5*
x^2+150*A*a*b^4*d^2*e^4*x^2+60*A*a^4*b*e^6*x+60*A*b^5*d^4*e^2*x+200*A*a^2*b
^3*e^6*x^3-360*B*b^5*d*e^5*x^5*ln(e*x+d)-1200*B*b^5*d^3*e^3*x^3*ln(e*x+d)-3
60*B*b^5*d^5*e*x*ln(e*x+d)-900*B*b^5*d^2*e^4*x^4*ln(e*x+d)+10*A*a^5*e^6-147
*B*b^5*d^6+750*B*a*b^4*d*e^5*x^4+10*A*a^4*b*d*e^5+400*B*a^2*b^3*d*e^5*x^3+1
000*B*a*b^4*d^2*e^4*x^3+60*A*a^3*b^2*d*e^5*x+60*A*a^2*b^3*d^2*e^4*x+60*A*a*
b^4*d^3*e^3*x+150*B*a^3*b^2*d*e^5*x^2+200*A*b^5*d^2*e^4*x^3+200*B*a^3*b^2*e
^6*x^3-2200*B*b^5*d^3*e^3*x^3+150*A*a^3*b^2*e^6*x^2+150*A*b^5*d^3*e^3*x^2+7
5*B*a^4*b*e^6*x^2-1875*B*b^5*d^4*e^2*x^2+300*B*a*b^4*e^6*x^5-60*B*ln(e*x+d)
*x^6*b^5*e^6+60*A*b^5*e^6*x^5+12*B*a^5*e^6*x-60*B*b^5*d^6*ln(e*x+d)+200*A*a
*b^4*d*e^5*x^3-900*B*b^5*d^4*e^2*x^2*ln(e*x+d)+750*B*a*b^4*d^3*e^3*x^2+300*
B*a^2*b^3*d^2*e^4*x^2-822*B*b^5*d^5*e*x-360*B*b^5*d*e^5*x^5+150*A*a*b^4*e^6
*x^4+150*A*b^5*d*e^5*x^4+300*B*a^2*b^3*e^6*x^4-1350*B*b^5*d^2*e^4*x^4)/(b*x
+a)^5/e^7/(e*x+d)^6
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{(d+e\,x)}^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7, x)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1752 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=106

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6(d+ex)^6(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}(Bd-Ae)}{7(d+ex)^7(bd-ae)^2}$$

```
[Out] 1/7*(-A*e+B*d)*(b^2*x^2+2*a*b*x+a^2)^(7/2)/(-a*e+b*d)^2/(e*x+d)^7+1/6*(A*b-
B*a)*(b*x+a)^5*((b*x+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^6
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(Ab-aB)}{6(d+ex)^6(bd-ae)^2}+\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}(Bd-Ae)}{7(d+ex)^7(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] ((A*b - a*B)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(b*d - a*e)^2*(d
 + e*x)^6) + ((B*d - A*e)*(a^2 + 2*a*b*x + b^2*x^2)^(7/2))/(7*(b*d - a*e)^2
*(d + e*x)^7)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}dx = \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)^2(d+ex)^7} + \frac{(Ab-aB)\int \frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}dx}{bd-ae}$$

$$= \frac{(Bd-Ae)\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)^2(d+ex)^7} + \frac{\left((Ab-aB)\sqrt{a^2+2abx+b^2x^2}\right)\int}{b^4(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(Ab-aB)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)^2(d+ex)^6} + \frac{(Bd-Ae)\left(a^2+2abx+b^2x\right.}{7(bd-ae)^2(d+ex)^7}$$

Mathematica [B] time = 0.20, size = 465, normalized size = 4.39

$$-\frac{\sqrt{(a+bx)^2}\left(a^5e^5(6Ae+B(d+7ex))+a^4be^4\left(5Ae(d+7ex)+2B\left(d^2+7dex+21e^2x^2\right)\right)+a^3b^2e^3\left(4Ae\left(d^2+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] -1/42*(Sqrt[(a + b*x)^2]*(a^5*e^5*(6*A*e + B*(d + 7*e*x)) + a^4*b*e^4*(5*A*
e*(d + 7*e*x) + 2*B*(d^2 + 7*d*e*x + 21*e^2*x^2)) + a^3*b^2*e^3*(4*A*e*(d^2
 + 7*d*e*x + 21*e^2*x^2) + 3*B*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3
)) + a^2*b^3*e^2*(3*A*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*B
*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + a*b^4*e*
(2*A*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*B
*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5
*x^5)) + b^5*(A*e*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d
*e^4*x^4 + 21*e^5*x^5) + 6*B*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3
*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6))))/(e^7*(a + b*x)*(d + e*
x)^7)
```

fricas [B] time = 0.71, size = 621, normalized size = 5.86

$$-\frac{42\,Bb^5e^6x^6+6\,Bb^5d^6+6\,Aa^5e^6+\left(5\,Bab^4+Ab^5\right)d^5e+2\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+3\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/42*(42*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 6*A*a^5*e^6 + (5*B*a*b^4 + A*b^5)*d
^5*e + 2*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 3*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^
3 + 2*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + (B*a^5 + 5*A*a^4*b)*d*e^5 + 21*(6*B
*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 35*(6*B*b^5*d^2*e^4 + (5*B*a*b^
4 + A*b^5)*d*e^5 + 2*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 35*(6*B*b^5*d^3*e^3
 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 2*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 3*(B*a^3
*b^2 + A*a^2*b^3)*e^6)*x^3 + 21*(6*B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*d^3*
e^3 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 3*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 +
 2*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 7*(6*B*b^5*d^5*e + (5*B*a*b^4 + A*b^5
)*d^4*e^2 + 2*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 3*(B*a^3*b^2 + A*a^2*b^3)*d
^2*e^4 + 2*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + (B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^1
4*x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3
+ 21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)
```

giac [B] time = 0.22, size = 917, normalized size = 8.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/42*(42*B*b^5*x^6*e^6*sgn(b*x + a) + 126*B*b^5*d*x^5*e^5*sgn(b*x + a) + 2
10*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 210*B*b^5*d^3*x^3*e^3*sgn(b*x + a) + 12
6*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 42*B*b^5*d^5*x*e*sgn(b*x + a) + 6*B*b^5*
d^6*sgn(b*x + a) + 105*B*a*b^4*x^5*e^6*sgn(b*x + a) + 21*A*b^5*x^5*e^6*sgn(
b*x + a) + 175*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 35*A*b^5*d*x^4*e^5*sgn(b*x
+ a) + 175*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 35*A*b^5*d^2*x^3*e^4*sgn(b*x
+ a) + 105*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 21*A*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 35*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 7*A*b^5*d^4*x*e^2*sgn(b*x + a) +
 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 140*B*a^2*b^3*x^
4*e^6*sgn(b*x + a) + 70*A*a*b^4*x^4*e^6*sgn(b*x + a) + 140*B*a^2*b^3*d*x^3*
e^5*sgn(b*x + a) + 70*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 84*B*a^2*b^3*d^2*x^2
*e^4*sgn(b*x + a) + 42*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 28*B*a^2*b^3*d^3*
x*e^3*sgn(b*x + a) + 14*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 4*B*a^2*b^3*d^4*e^
2*sgn(b*x + a) + 2*A*a*b^4*d^4*e^2*sgn(b*x + a) + 105*B*a^3*b^2*x^3*e^6*sgn
(b*x + a) + 105*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 63*B*a^3*b^2*d*x^2*e^5*sgn
(b*x + a) + 63*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 21*B*a^3*b^2*d^2*x*e^4*sg
n(b*x + a) + 21*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 3*B*a^3*b^2*d^3*e^3*sgn(
b*x + a) + 3*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 42*B*a^4*b*x^2*e^6*sgn(b*x +
a) + 84*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 14*B*a^4*b*d*x*e^5*sgn(b*x + a) +
28*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 2*B*a^4*b*d^2*e^4*sgn(b*x + a) + 4*A*a^
3*b^2*d^2*e^4*sgn(b*x + a) + 7*B*a^5*x*e^6*sgn(b*x + a) + 35*A*a^4*b*x*e^6*
sgn(b*x + a) + B*a^5*d*e^5*sgn(b*x + a) + 5*A*a^4*b*d*e^5*sgn(b*x + a) + 6*
A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.06, size = 687, normalized size = 6.48

$$-(42B\,b^5e^6x^6+21A\,b^5e^6x^5+105Ba\,b^4e^6x^5+126B\,b^5d\,e^5x^5+70Aa\,b^4e^6x^4+35A\,b^5d\,e^5x^4+140B\,a^2b^3e^6x^4+17$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x)
```

```
[Out] -1/42*(42*B*b^5*e^6*x^6+21*A*b^5*e^6*x^5+105*B*a*b^4*e^6*x^5+126*B*b^5*d*e^
5*x^5+70*A*a*b^4*e^6*x^4+35*A*b^5*d*e^5*x^4+140*B*a^2*b^3*e^6*x^4+175*B*a*b
^4*d*e^5*x^4+210*B*b^5*d^2*e^4*x^4+105*A*a^2*b^3*e^6*x^3+70*A*a*b^4*d*e^5*x
^3+35*A*b^5*d^2*e^4*x^3+105*B*a^3*b^2*e^6*x^3+140*B*a^2*b^3*d*e^5*x^3+175*B
*a*b^4*d^2*e^4*x^3+210*B*b^5*d^3*e^3*x^3+84*A*a^3*b^2*e^6*x^2+63*A*a^2*b^3*
d*e^5*x^2+42*A*a*b^4*d^2*e^4*x^2+21*A*b^5*d^3*e^3*x^2+42*B*a^4*b*e^6*x^2+63
*B*a^3*b^2*d*e^5*x^2+84*B*a^2*b^3*d^2*e^4*x^2+105*B*a*b^4*d^3*e^3*x^2+126*B
*b^5*d^4*e^2*x^2+35*A*a^4*b*e^6*x+28*A*a^3*b^2*d*e^5*x+21*A*a^2*b^3*d^2*e^4
*x+14*A*a*b^4*d^3*e^3*x+7*A*b^5*d^4*e^2*x+7*B*a^5*e^6*x+14*B*a^4*b*d*e^5*x+
21*B*a^3*b^2*d^2*e^4*x+28*B*a^2*b^3*d^3*e^3*x+35*B*a*b^4*d^4*e^2*x+42*B*b^5
*d^5*e*x+6*A*a^5*e^6+5*A*a^4*b*d*e^5+4*A*a^3*b^2*d^2*e^4+3*A*a^2*b^3*d^3*e^
3+2*A*a*b^4*d^4*e^2+A*b^5*d^5*e+B*a^5*d*e^5+2*B*a^4*b*d^2*e^4+3*B*a^3*b^2*d
^3*e^3+4*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+6*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(
e*x+d)^7/e^7/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.59, size = 1489, normalized size = 14.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^8,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(3*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(3*e^6) - (B*b^5*
d)/(3*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(2*e^7) - (B*b^5*d)/(2*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2) - (((A*a^5)/(7*e) - (d*((B
*a^5 + 5*A*a^4*b)/(7*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(7*e) - (B*b^
5*d)/(7*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(7*e)))/e + (10*a^2*b^2*(A*b + B
*a))/(7*e)))/e - (5*a^3*b*(2*A*b + B*a))/(7*e)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 1
0*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2
+ 30*B*a*b^4*d^2*e)/(4*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*
d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(4*e^7) - (d*((b^4*(A*b*e + 5*
B*a*e - 3*B*b*d))/(4*e^5) - (B*b^5*d)/(4*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b
*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*
d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5
*B*a^4*b*d*e^4)/(6*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e
^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3
*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(6*e^7) - (d*((10*A*a^2*b
^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e
^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(6*e^7) - (d*((5*A*a*b^4*e^5 - A
*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(6*e^7) -
(d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(6*e^3) - (B*b^5*d)/(6*e^3)))/e))/e))/e
))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((5*B*b^5
*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^
2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a
*b^4*d^3*e)/(5*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*
e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^
4*d*e^3)/(5*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 +
3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(5*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2
*B*b*d))/(5*e^4) - (B*b^5*d)/(5*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/((a + b*x)*(d + e*x)^5) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
e^7*(a + b*x)*(d + e*x))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.1753 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=193

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{28e(d+ex)^7(bd-ae)^2}-\sqrt{a^2}$$

```
[Out] -1/8*(-A*e+B*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)/(e*x+d)^8+1/28*(A*
b*e-4*B*a*e+3*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^2/(e*x+d)^7+1
/168*b*(A*b*e-4*B*a*e+3*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^3/(
e*x+d)^6
```

Rubi [A] time = 0.14, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{770, 78, 45, 37\}$

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{168e(d+ex)^6(bd-ae)^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-4aBe+Abe+3bBd)}{28e(d+ex)^7(bd-ae)^2}-\sqrt{a^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e*(b*d - a*e)*(
d + e*x)^8) + ((3*b*B*d + A*b*e - 4*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(28*e*(b*d - a*e)^2*(d + e*x)^7) + (b*(3*b*B*d + A*b*e - 4*a*B*e
)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(168*e*(b*d - a*e)^3*(d + e*x)
^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^9}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{\Big((3bBd+Abe-4aBe)\sqrt{a^2}}{4b^4e(bd-}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{(3bBd+Abe-4aBe)(a+}{28e(bd-ae)}$$

$$= -\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{8e(bd-ae)(d+ex)^8} + \frac{(3bBd+Abe-4aBe)(a+}{28e(bd-ae)}$$

Mathematica [B] time = 0.21, size = 466, normalized size = 2.41

$$-\frac{\sqrt{(a+bx)^2}\left(3a^5e^5(7Ae+B(d+8ex))+5a^4be^4\left(3Ae(d+8ex)+B\left(d^2+8dex+28e^2x^2\right)\right)+2a^3b^2e^3\left(5Ae\left(d^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -1/168*(Sqrt[(a + b*x)^2]*(3*a^5*e^5*(7*A*e + B*(d + 8*e*x)) + 5*a^4*b*e^4*
(3*A*e*(d + 8*e*x) + B*(d^2 + 8*d*e*x + 28*e^2*x^2)) + 2*a^3*b^2*e^3*(5*A*e
*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*B*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^
3*x^3)) + 6*a^2*b^3*e^2*(A*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3)
+ B*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + a*b^4
*e*(3*A*e*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) +
5*B*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*
e^5*x^5)) + b^5*(A*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 7
0*d*e^4*x^4 + 56*e^5*x^5) + 3*B*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*
e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6))))/(e^7*(a + b*x)*(d
+ e*x)^8)
```

fricas [B] time = 0.54, size = 634, normalized size = 3.28

$$-\frac{84\,Bb^5e^6x^6+3\,Bb^5d^6+21\,Aa^5e^6+\left(5\,Bab^4+Ab^5\right)d^5e+3\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+6\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/168*(84*B*b^5*e^6*x^6 + 3*B*b^5*d^6 + 21*A*a^5*e^6 + (5*B*a*b^4 + A*b^5)
*d^5*e + 3*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 6*(B*a^3*b^2 + A*a^2*b^3)*d^3*
e^3 + 5*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 3*(B*a^5 + 5*A*a^4*b)*d*e^5 + 56*
(3*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 70*(3*B*b^5*d^2*e^4 + (5*B*
a*b^4 + A*b^5)*d*e^5 + 3*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 56*(3*B*b^5*d^3
*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 3*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 6*(B
*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 28*(3*B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*
d^3*e^3 + 3*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 6*(B*a^3*b^2 + A*a^2*b^3)*d*e
^5 + 5*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 8*(3*B*b^5*d^5*e + (5*B*a*b^4 + A
*b^5)*d^4*e^2 + 3*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 6*(B*a^3*b^2 + A*a^2*b^
3)*d^2*e^4 + 5*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 3*(B*a^5 + 5*A*a^4*b)*e^6)*x
)/(e^15*x^8 + 8*d*e^14*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^1
1*x^4 + 56*d^5*e^10*x^3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [B] time = 0.22, size = 918, normalized size = 4.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/168*(84*B*b^5*x^6*e^6*sgn(b*x + a) + 168*B*b^5*d*x^5*e^5*sgn(b*x + a) +
210*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 168*B*b^5*d^3*x^3*e^3*sgn(b*x + a) + 8
4*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 24*B*b^5*d^5*x*e*sgn(b*x + a) + 3*B*b^5*
d^6*sgn(b*x + a) + 280*B*a*b^4*x^5*e^6*sgn(b*x + a) + 56*A*b^5*x^5*e^6*sgn(
b*x + a) + 350*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 70*A*b^5*d*x^4*e^5*sgn(b*x
+ a) + 280*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 56*A*b^5*d^2*x^3*e^4*sgn(b*x
+ a) + 140*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 28*A*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 40*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 8*A*b^5*d^4*x*e^2*sgn(b*x + a) +
 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 420*B*a^2*b^3*x^
4*e^6*sgn(b*x + a) + 210*A*a*b^4*x^4*e^6*sgn(b*x + a) + 336*B*a^2*b^3*d*x^3
*e^5*sgn(b*x + a) + 168*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 168*B*a^2*b^3*d^2*
x^2*e^4*sgn(b*x + a) + 84*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 48*B*a^2*b^3*d
^3*x*e^3*sgn(b*x + a) + 24*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 6*B*a^2*b^3*d^4
*e^2*sgn(b*x + a) + 3*A*a*b^4*d^4*e^2*sgn(b*x + a) + 336*B*a^3*b^2*x^3*e^6*
sgn(b*x + a) + 336*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 168*B*a^3*b^2*d*x^2*e^5
*sgn(b*x + a) + 168*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 48*B*a^3*b^2*d^2*x*e
^4*sgn(b*x + a) + 48*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 6*B*a^3*b^2*d^3*e^3
*sgn(b*x + a) + 6*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 140*B*a^4*b*x^2*e^6*sgn(
b*x + a) + 280*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 40*B*a^4*b*d*x*e^5*sgn(b*x
+ a) + 80*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) +
 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 24*B*a^5*x*e^6*sgn(b*x + a) + 120*A*a^
4*b*x*e^6*sgn(b*x + a) + 3*B*a^5*d*e^5*sgn(b*x + a) + 15*A*a^4*b*d*e^5*sgn(
b*x + a) + 21*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^8
```

maple [B] time = 0.05, size = 688, normalized size = 3.56

$$-\frac{\left(84 B\, b^{5} e^{6} x^{6}+56 A\, b^{5} e^{6} x^{5}+280 B a\, b^{4} e^{6} x^{5}+168 B\, b^{5} d\, e^{5} x^{5}+210 A a\, b^{4} e^{6} x^{4}+70 A\, b^{5} d\, e^{5} x^{4}+420 B\, a^{2} b^{3} e^{6} x^{4}+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -1/168/e^7*(84*B*b^5*e^6*x^6+56*A*b^5*e^6*x^5+280*B*a*b^4*e^6*x^5+168*B*b^5
*d*e^5*x^5+210*A*a*b^4*e^6*x^4+70*A*b^5*d*e^5*x^4+420*B*a^2*b^3*e^6*x^4+350
*B*a*b^4*d*e^5*x^4+210*B*b^5*d^2*e^4*x^4+336*A*a^2*b^3*e^6*x^3+168*A*a*b^4*
d*e^5*x^3+56*A*b^5*d^2*e^4*x^3+336*B*a^3*b^2*e^6*x^3+336*B*a^2*b^3*d*e^5*x^
3+280*B*a*b^4*d^2*e^4*x^3+168*B*b^5*d^3*e^3*x^3+280*A*a^3*b^2*e^6*x^2+168*A
*a^2*b^3*d*e^5*x^2+84*A*a*b^4*d^2*e^4*x^2+28*A*b^5*d^3*e^3*x^2+140*B*a^4*b*
e^6*x^2+168*B*a^3*b^2*d*e^5*x^2+168*B*a^2*b^3*d^2*e^4*x^2+140*B*a*b^4*d^3*e
^3*x^2+84*B*b^5*d^4*e^2*x^2+120*A*a^4*b*e^6*x+80*A*a^3*b^2*d*e^5*x+48*A*a^2
*b^3*d^2*e^4*x+24*A*a*b^4*d^3*e^3*x+8*A*b^5*d^4*e^2*x+24*B*a^5*e^6*x+40*B*a
^4*b*d*e^5*x+48*B*a^3*b^2*d^2*e^4*x+48*B*a^2*b^3*d^3*e^3*x+40*B*a*b^4*d^4*e
^2*x+24*B*b^5*d^5*e*x+21*A*a^5*e^6+15*A*a^4*b*d*e^5+10*A*a^3*b^2*d^2*e^4+6*
A*a^2*b^3*d^3*e^3+3*A*a*b^4*d^4*e^2+A*b^5*d^5*e+3*B*a^5*d*e^5+5*B*a^4*b*d^2
*e^4+6*B*a^3*b^2*d^3*e^3+6*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+3*B*b^5*d^6)*(
(b*x+a)^2)^(5/2)/(e*x+d)^8/(b*x+a)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.54, size = 1489, normalized size = 7.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(4*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(4*e^6) - (B*b^5*
d)/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(3*e^7) - (B*b^5*d)/(3*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - (((A*a^5)/(8*e) - (d*((B
*a^5 + 5*A*a^4*b)/(8*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(8*e) - (B*b^
5*d)/(8*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(8*e)))/e + (5*a^2*b^2*(A*b + B*
a))/(4*e)))/e - (5*a^3*b*(2*A*b + B*a))/(8*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 10
*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2 +
 30*B*a*b^4*d^2*e)/(5*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*d
^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(5*e^7) - (d*((b^4*(A*b*e + 5*B
*a*e - 3*B*b*d))/(5*e^5) - (B*b^5*d)/(5*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*
b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b*
e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*d
^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5*
B*a^4*b*d*e^4)/(7*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e^
5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3*
e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(7*e^7) - (d*((10*A*a^2*b^
3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e^
3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(7*e^7) - (d*((5*A*a*b^4*e^5 - A*
b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(7*e^7) - (
d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(7*e^3) - (B*b^5*d)/(7*e^3)))/e))/e))/e)
)/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((5*B*b^5*
d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^2
 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a*
b^4*d^3*e)/(6*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*e
^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^4
*d*e^3)/(6*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 + 3
*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(6*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2*
B*b*d))/(6*e^4) - (B*b^5*d)/(6*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^6) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2
*e^7*(a + b*x)*(d + e*x)^2)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1754 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=262

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{504e(d+ex)^6(bd-ae)^4}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{84e(d+ex)^7(bd-ae)^3}+$$

```
[Out] -1/9*(-A*e+B*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)/(e*x+d)^9+1/24*(A*
b*e-3*B*a*e+2*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^2/(e*x+d)^8+1
/84*b*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a*e+b*d)^3/(e
*x+d)^7+1/504*b^2*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)^5*((b*x+a)^2)^(1/2)/e/(-a
*e+b*d)^4/(e*x+d)^6
```

Rubi [A] time = 0.19, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 78, 45, 37}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{504e(d+ex)^6(bd-ae)^4}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(-3aBe+Abe+2bBd)}{84e(d+ex)^7(bd-ae)^3}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -((B*d - A*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e*(b*d - a*e)*(
d + e*x)^9) + ((2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(24*e*(b*d - a*e)^2*(d + e*x)^8) + (b*(2*b*B*d + A*b*e - 3*a*B*e
)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(84*e*(b*d - a*e)^3*(d + e*x)^
7) + (b^2*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(504*e*(b*d - a*e)^4*(d + e*x)^6)
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{10}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=-\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9}+\frac{((2bBd+Abe-3aBe)\sqrt{a^2+}{3b^4e(bd-ae)}$$

$$=-\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9}+\frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

$$=-\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9}+\frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

$$=-\frac{(Bd-Ae)(a+bx)^5\sqrt{a^2+2abx+b^2x^2}}{9e(bd-ae)(d+ex)^9}+\frac{(2bBd+Abe-3aBe)(a+bx)}{24e(bd-ae)^2(d}$$

Mathematica [A] time = 0.21, size = 468, normalized size = 1.79

$$-\frac{\sqrt{(a+bx)^2}\,(7a^5e^5(8Ae+B(d+9ex))+5a^4be^4(7Ae(d+9ex)+2B(d^2+9dex+36e^2x^2))+10a^3b^2e^3(2Ae(d^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -1/504*(Sqrt[(a + b*x)^2]*(7*a^5*e^5*(8*A*e + B*(d + 9*e*x)) + 5*a^4*b*e^4*
(7*A*e*(d + 9*e*x) + 2*B*(d^2 + 9*d*e*x + 36*e^2*x^2)) + 10*a^3*b^2*e^3*(2*
A*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + B*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e
^3*x^3)) + 2*a^2*b^3*e^2*(5*A*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^
3) + 4*B*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) +
 a*b^4*e*(4*A*e*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*
x^4) + 5*B*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x
^4 + 126*e^5*x^5)) + b^5*(A*e*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^
3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + 2*B*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^
2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^6))))/(e^7*
(a + b*x)*(d + e*x)^9)
```

fricas [B] time = 0.59, size = 645, normalized size = 2.46

$$-\frac{168\,Bb^5e^6x^6+2\,Bb^5d^6+56\,Aa^5e^6+\left(5\,Bab^4+Ab^5\right)d^5e+4\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+10\left(Ba^3b^2+Aa^2b^3\right)d^3e^3+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/504*(168*B*b^5*e^6*x^6 + 2*B*b^5*d^6 + 56*A*a^5*e^6 + (5*B*a*b^4 + A*b^5
)*d^5*e + 4*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 10*(B*a^3*b^2 + A*a^2*b^3)*d^
3*e^3 + 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 7*(B*a^5 + 5*A*a^4*b)*d*e^5 +
126*(2*B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 126*(2*B*b^5*d^2*e^4 +
(5*B*a*b^4 + A*b^5)*d*e^5 + 4*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 84*(2*B*b^
5*d^3*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 4*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 +
 10*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 36*(2*B*b^5*d^4*e^2 + (5*B*a*b^4 + A
*b^5)*d^3*e^3 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 10*(B*a^3*b^2 + A*a^2*b
^3)*d*e^5 + 10*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 9*(2*B*b^5*d^5*e + (5*B*a
*b^4 + A*b^5)*d^4*e^2 + 4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 10*(B*a^3*b^2 +
 A*a^2*b^3)*d^2*e^4 + 10*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 7*(B*a^5 + 5*A*a^4
*b)*e^6)*x)/(e^16*x^9 + 9*d*e^15*x^8 + 36*d^2*e^14*x^7 + 84*d^3*e^13*x^6 +
126*d^4*e^12*x^5 + 126*d^5*e^11*x^4 + 84*d^6*e^10*x^3 + 36*d^7*e^9*x^2 + 9*
d^8*e^8*x + d^9*e^7)
```

giac [B] time = 0.24, size = 918, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/504*(168*B*b^5*x^6*e^6*sgn(b*x + a) + 252*B*b^5*d*x^5*e^5*sgn(b*x + a) +
 252*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 168*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
72*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 18*B*b^5*d^5*x*e*sgn(b*x + a) + 2*B*b^5
*d^6*sgn(b*x + a) + 630*B*a*b^4*x^5*e^6*sgn(b*x + a) + 126*A*b^5*x^5*e^6*sg
n(b*x + a) + 630*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 126*A*b^5*d*x^4*e^5*sgn(b
*x + a) + 420*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 84*A*b^5*d^2*x^3*e^4*sgn(b
*x + a) + 180*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 36*A*b^5*d^3*x^2*e^3*sgn(b
*x + a) + 45*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 9*A*b^5*d^4*x*e^2*sgn(b*x + a
) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 1008*B*a^2*b^
3*x^4*e^6*sgn(b*x + a) + 504*A*a*b^4*x^4*e^6*sgn(b*x + a) + 672*B*a^2*b^3*d
*x^3*e^5*sgn(b*x + a) + 336*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 288*B*a^2*b^3*
d^2*x^2*e^4*sgn(b*x + a) + 144*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 72*B*a^2*
b^3*d^3*x*e^3*sgn(b*x + a) + 36*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 8*B*a^2*b^
3*d^4*e^2*sgn(b*x + a) + 4*A*a*b^4*d^4*e^2*sgn(b*x + a) + 840*B*a^3*b^2*x^3
*e^6*sgn(b*x + a) + 840*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 360*B*a^3*b^2*d*x^
2*e^5*sgn(b*x + a) + 360*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 90*B*a^3*b^2*d^
2*x*e^4*sgn(b*x + a) + 90*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 10*B*a^3*b^2*d
^3*e^3*sgn(b*x + a) + 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 360*B*a^4*b*x^2*e
^6*sgn(b*x + a) + 720*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 90*B*a^4*b*d*x*e^5*s
gn(b*x + a) + 180*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 10*B*a^4*b*d^2*e^4*sgn(b
*x + a) + 20*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 63*B*a^5*x*e^6*sgn(b*x + a) +
 315*A*a^4*b*x*e^6*sgn(b*x + a) + 7*B*a^5*d*e^5*sgn(b*x + a) + 35*A*a^4*b*d
*e^5*sgn(b*x + a) + 56*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^9
```

maple [B] time = 0.05, size = 688, normalized size = 2.63

$$-\frac{\left(168 B\, b^{5} e^{6} x^{6}+126 A\, b^{5} e^{6} x^{5}+630 B a\, b^{4} e^{6} x^{5}+252 B\, b^{5} d\, e^{5} x^{5}+504 A a\, b^{4} e^{6} x^{4}+126 A\, b^{5} d\, e^{5} x^{4}+1008 B\, a^{2} b^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -1/504/e^7*(168*B*b^5*e^6*x^6+126*A*b^5*e^6*x^5+630*B*a*b^4*e^6*x^5+252*B*b
^5*d*e^5*x^5+504*A*a*b^4*e^6*x^4+126*A*b^5*d*e^5*x^4+1008*B*a^2*b^3*e^6*x^4
+630*B*a*b^4*d*e^5*x^4+252*B*b^5*d^2*e^4*x^4+840*A*a^2*b^3*e^6*x^3+336*A*a*
b^4*d*e^5*x^3+84*A*b^5*d^2*e^4*x^3+840*B*a^3*b^2*e^6*x^3+672*B*a^2*b^3*d*e^
5*x^3+420*B*a*b^4*d^2*e^4*x^3+168*B*b^5*d^3*e^3*x^3+720*A*a^3*b^2*e^6*x^2+3
60*A*a^2*b^3*d*e^5*x^2+144*A*a*b^4*d^2*e^4*x^2+36*A*b^5*d^3*e^3*x^2+360*B*a
^4*b*e^6*x^2+360*B*a^3*b^2*d*e^5*x^2+288*B*a^2*b^3*d^2*e^4*x^2+180*B*a*b^4*
d^3*e^3*x^2+72*B*b^5*d^4*e^2*x^2+315*A*a^4*b*e^6*x+180*A*a^3*b^2*d*e^5*x+90
*A*a^2*b^3*d^2*e^4*x+36*A*a*b^4*d^3*e^3*x+9*A*b^5*d^4*e^2*x+63*B*a^5*e^6*x+
90*B*a^4*b*d*e^5*x+90*B*a^3*b^2*d^2*e^4*x+72*B*a^2*b^3*d^3*e^3*x+45*B*a*b^4
*d^4*e^2*x+18*B*b^5*d^5*e*x+56*A*a^5*e^6+35*A*a^4*b*d*e^5+20*A*a^3*b^2*d^2*
e^4+10*A*a^2*b^3*d^3*e^3+4*A*a*b^4*d^4*e^2+A*b^5*d^5*e+7*B*a^5*d*e^5+10*B*a
^4*b*d^2*e^4+10*B*a^3*b^2*d^3*e^3+8*B*a^2*b^3*d^4*e^2+5*B*a*b^4*d^5*e+2*B*b
^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^9/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.64, size = 1489, normalized size = 5.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(5*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(5*e^6) - (B*b^5*
d)/(5*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(4*e^7) - (B*b^5*d)/(4*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - (((A*a^5)/(9*e) - (d*((B
*a^5 + 5*A*a^4*b)/(9*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(9*e) - (B*b^
5*d)/(9*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(9*e)))/e + (10*a^2*b^2*(A*b + B
*a))/(9*e)))/e - (5*a^3*b*(2*A*b + B*a))/(9*e)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 1
0*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2
+ 30*B*a*b^4*d^2*e)/(6*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*
d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(6*e^7) - (d*((b^4*(A*b*e + 5*
B*a*e - 3*B*b*d))/(6*e^5) - (B*b^5*d)/(6*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b
*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*
d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5
*B*a^4*b*d*e^4)/(8*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e
^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3
*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(8*e^7) - (d*((10*A*a^2*b
^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e
^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(8*e^7) - (d*((5*A*a*b^4*e^5 - A
*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(8*e^7) -
(d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(8*e^3) - (B*b^5*d)/(8*e^3)))/e))/e))/e
))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((5*B*b^5
*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^
2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a
*b^4*d^3*e)/(7*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*
e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^
4*d*e^3)/(7*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 +
3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2
*B*b*d))/(7*e^4) - (B*b^5*d)/(7*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/((a + b*x)*(d + e*x)^7) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
3*e^7*(a + b*x)*(d + e*x)^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1755 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=438

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)(d+ex)^7}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{8e^7(a+bx)(d+ex)^8}+$$

```
[Out] -1/10*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^10+1/9*
(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)
^9-5/8*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)/(e*x+d)^8+10/7*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/
e^7/(b*x+a)/(e*x+d)^7-5/6*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)^6+1/5*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*((b*x+a)^2)
^(1/2)/e^7/(b*x+a)/(e*x+d)^5-1/4*b^5*B*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^4
```

Rubi [**A**] time = 0.39, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{5e^7(a+bx)(d+ex)^5}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{6e^7(a+bx)(d+ex)^6}+\frac{10b^2\sqrt{a^2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^7*(a + b*x
)*(d + e*x)^10) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9) - (5*b*(b*d - a*e)^3*(3*b*B*
d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e
*x)^8) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) - (5*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^
6) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7
*(a + b*x)*(d + e*x)^5) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a +
 b*x)*(d + e*x)^4)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{11}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{11}} + \frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{10}} - \right.}{}$$

$$= -\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)(d+ex)^{10}} + \frac{(bd-ae)^4(6bBd-5Abe-}{9e^7(a+bx}$$

Mathematica [A] time = 0.21, size = 468, normalized size = 1.07

$$-\frac{\sqrt{(a+bx)^2}\left(28a^5e^5(9Ae+B(d+10ex))+35a^4be^4\left(4Ae(d+10ex)+B\left(d^2+10dex+45e^2x^2\right)\right)+10a^3b^2e^3(7\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -1/2520*(Sqrt[(a + b*x)^2]*(28*a^5*e^5*(9*A*e + B*(d + 10*e*x)) + 35*a^4*b*
e^4*(4*A*e*(d + 10*e*x) + B*(d^2 + 10*d*e*x + 45*e^2*x^2)) + 10*a^3*b^2*e^3
*(7*A*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + 3*B*(d^3 + 10*d^2*e*x + 45*d*e^2*x^
2 + 120*e^3*x^3)) + 10*a^2*b^3*e^2*(3*A*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2
+ 120*e^3*x^3) + 2*B*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 2
10*e^4*x^4)) + 10*a*b^4*e*(A*e*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e
^3*x^3 + 210*e^4*x^4) + B*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*
x^3 + 210*d*e^4*x^4 + 252*e^5*x^5)) + b^5*(2*A*e*(d^5 + 10*d^4*e*x + 45*d^3
*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) + 3*B*(d^6 + 10*d
^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5
 + 210*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^10)
```

fricas [A] time = 0.61, size = 662, normalized size = 1.51

$$-\frac{630\,Bb^5e^6x^6+3\,Bb^5d^6+252\,Aa^5e^6+2\left(5\,Bab^4+Ab^5\right)d^5e+10\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+30\left(Ba^3b^2+Aa^2b^3\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/2520*(630*B*b^5*e^6*x^6 + 3*B*b^5*d^6 + 252*A*a^5*e^6 + 2*(5*B*a*b^4 + A
*b^5)*d^5*e + 10*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 30*(B*a^3*b^2 + A*a^2*b^
3)*d^3*e^3 + 35*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 28*(B*a^5 + 5*A*a^4*b)*d*
e^5 + 252*(3*B*b^5*d*e^5 + 2*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 210*(3*B*b^5*d^
2*e^4 + 2*(5*B*a*b^4 + A*b^5)*d*e^5 + 10*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 +
 120*(3*B*b^5*d^3*e^3 + 2*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 10*(2*B*a^2*b^3 + A
*a*b^4)*d*e^5 + 30*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 45*(3*B*b^5*d^4*e^2 +
 2*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 10*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 30*(B
*a^3*b^2 + A*a^2*b^3)*d*e^5 + 35*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 10*(3*B
*b^5*d^5*e + 2*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 10*(2*B*a^2*b^3 + A*a*b^4)*d^3
*e^3 + 30*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 35*(B*a^4*b + 2*A*a^3*b^2)*d*e^
5 + 28*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^17*x^10 + 10*d*e^16*x^9 + 45*d^2*e^15
*x^8 + 120*d^3*e^14*x^7 + 210*d^4*e^13*x^6 + 252*d^5*e^12*x^5 + 210*d^6*e^1
1*x^4 + 120*d^7*e^10*x^3 + 45*d^8*e^9*x^2 + 10*d^9*e^8*x + d^10*e^7)
```

giac [B] time = 0.22, size = 919, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/2520*(630*B*b^5*x^6*e^6*sgn(b*x + a) + 756*B*b^5*d*x^5*e^5*sgn(b*x + a)
+ 630*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 360*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
 135*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 30*B*b^5*d^5*x*e*sgn(b*x + a) + 3*B*b
^5*d^6*sgn(b*x + a) + 2520*B*a*b^4*x^5*e^6*sgn(b*x + a) + 504*A*b^5*x^5*e^6
*sgn(b*x + a) + 2100*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 420*A*b^5*d*x^4*e^5*s
gn(b*x + a) + 1200*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 240*A*b^5*d^2*x^3*e^4
*sgn(b*x + a) + 450*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 90*A*b^5*d^3*x^2*e^3
*sgn(b*x + a) + 100*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 20*A*b^5*d^4*x*e^2*sgn
(b*x + a) + 10*B*a*b^4*d^5*e*sgn(b*x + a) + 2*A*b^5*d^5*e*sgn(b*x + a) + 42
00*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 2100*A*a*b^4*x^4*e^6*sgn(b*x + a) + 240
0*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 1200*A*a*b^4*d*x^3*e^5*sgn(b*x + a) +
900*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 450*A*a*b^4*d^2*x^2*e^4*sgn(b*x +
a) + 200*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 100*A*a*b^4*d^3*x*e^3*sgn(b*x +
 a) + 20*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 10*A*a*b^4*d^4*e^2*sgn(b*x + a) +
 3600*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 3600*A*a^2*b^3*x^3*e^6*sgn(b*x + a)
+ 1350*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 1350*A*a^2*b^3*d*x^2*e^5*sgn(b*x
+ a) + 300*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 300*A*a^2*b^3*d^2*x*e^4*sgn(b
*x + a) + 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 30*A*a^2*b^3*d^3*e^3*sgn(b*x
+ a) + 1575*B*a^4*b*x^2*e^6*sgn(b*x + a) + 3150*A*a^3*b^2*x^2*e^6*sgn(b*x +
 a) + 350*B*a^4*b*d*x*e^5*sgn(b*x + a) + 700*A*a^3*b^2*d*x*e^5*sgn(b*x + a)
 + 35*B*a^4*b*d^2*e^4*sgn(b*x + a) + 70*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 28
0*B*a^5*x*e^6*sgn(b*x + a) + 1400*A*a^4*b*x*e^6*sgn(b*x + a) + 28*B*a^5*d*e
^5*sgn(b*x + a) + 140*A*a^4*b*d*e^5*sgn(b*x + a) + 252*A*a^5*e^6*sgn(b*x +
a))*e^(-7)/(x*e + d)^10
```

maple [**A**] time = 0.06, size = 689, normalized size = 1.57

$$-\frac{(630B\,b^5e^6x^6+504A\,b^5e^6x^5+2520Ba\,b^4e^6x^5+756B\,b^5d\,e^5x^5+2100Aa\,b^4e^6x^4+420A\,b^5d\,e^5x^4+4200B\,a^2b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -1/2520/e^7*(630*B*b^5*e^6*x^6+504*A*b^5*e^6*x^5+2520*B*a*b^4*e^6*x^5+756*B
*b^5*d*e^5*x^5+2100*A*a*b^4*e^6*x^4+420*A*b^5*d*e^5*x^4+4200*B*a^2*b^3*e^6*
x^4+2100*B*a*b^4*d*e^5*x^4+630*B*b^5*d^2*e^4*x^4+3600*A*a^2*b^3*e^6*x^3+120
0*A*a*b^4*d*e^5*x^3+240*A*b^5*d^2*e^4*x^3+3600*B*a^3*b^2*e^6*x^3+2400*B*a^2
*b^3*d*e^5*x^3+1200*B*a*b^4*d^2*e^4*x^3+360*B*b^5*d^3*e^3*x^3+3150*A*a^3*b^
2*e^6*x^2+1350*A*a^2*b^3*d*e^5*x^2+450*A*a*b^4*d^2*e^4*x^2+90*A*b^5*d^3*e^3
*x^2+1575*B*a^4*b*e^6*x^2+1350*B*a^3*b^2*d*e^5*x^2+900*B*a^2*b^3*d^2*e^4*x^
2+450*B*a*b^4*d^3*e^3*x^2+135*B*b^5*d^4*e^2*x^2+1400*A*a^4*b*e^6*x+700*A*a^
3*b^2*d*e^5*x+300*A*a^2*b^3*d^2*e^4*x+100*A*a*b^4*d^3*e^3*x+20*A*b^5*d^4*e^
2*x+280*B*a^5*e^6*x+350*B*a^4*b*d*e^5*x+300*B*a^3*b^2*d^2*e^4*x+200*B*a^2*b
^3*d^3*e^3*x+100*B*a*b^4*d^4*e^2*x+30*B*b^5*d^5*e*x+252*A*a^5*e^6+140*A*a^4
*b*d*e^5+70*A*a^3*b^2*d^2*e^4+30*A*a^2*b^3*d^3*e^3+10*A*a*b^4*d^4*e^2+2*A*b
^5*d^5*e+28*B*a^5*d*e^5+35*B*a^4*b*d^2*e^4+30*B*a^3*b^2*d^3*e^3+20*B*a^2*b^
3*d^4*e^2+10*B*a*b^4*d^5*e+3*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^10/(b*x+a
)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[B]** time = 2.57, size = 1488, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(6*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(6*e^6) - (B*b^5*
d)/(6*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(5*e^7) - (B*b^5*d)/(5*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((A*a^5)/(10*e) - (d*((
B*a^5 + 5*A*a^4*b)/(10*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(10*e) - (B
*b^5*d)/(10*e^2)))/e - (a*b^3*(A*b + 2*B*a))/(2*e)))/e + (a^2*b^2*(A*b + B*
a))/e))/e - (a^3*b*(2*A*b + B*a))/(2*e)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^10) - (((6*A*b^5*d^2*e - 10*B*b^5*d^3 + 10*A*a^
2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*d*e^2 + 30*B
*a*b^4*d^2*e)/(7*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*B*b^5*d^2*e
+ 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e
- 3*B*b*d))/(7*e^5) - (B*b^5*d)/(7*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^7) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A*a^4*b*e^5 +
 A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^2*b^3*d^2*e^
3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4*e - 5*B*a^4
*b*d*e^4)/(9*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^3*b^2*e^5 - A
*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*b^4*d^3*e^2 -
 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(9*e^7) - (d*((10*A*a^2*b^3*e^5
 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b^4*d^2*e^3 - 1
0*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(9*e^7) - (d*((5*A*a*b^4*e^5 - A*b^5*d
*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(9*e^7) - (d*((b
^4*(A*b*e + 5*B*a*e - B*b*d))/(9*e^3) - (B*b^5*d)/(9*e^3)))/e))/e))/e))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((5*B*b^5*d^4 +
 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A*a*b^4*d^2*e^2 - 20
*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2*e^2 - 20*B*a*b^4*d
^3*e)/(8*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e + 10*B*a^3*b^2*e^4 +
3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e^3 - 10*A*a*b^4*d*e^
3)/(8*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B*a^2*b^3*e^4 + 3*B*b^
5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(8*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 2*B*b*d
))/(8*e^4) - (B*b^5*d)/(8*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/((a + b*x)*(d + e*x)^8) - (B*b^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^7*
(a + b*x)*(d + e*x)^4)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1756 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=438

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{4e^7(a+bx)(d+ex)^8}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{9e^7(a+bx)(d+ex)^9}+$$

```
[Out] -1/11*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^11+1/10
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^10-5/9*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)/(e*x+d)^9+5/4*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)
/e^7/(b*x+a)/(e*x+d)^8-5/7*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^7+1/6*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*((b*x+a)^2
)^(1/2)/e^7/(b*x+a)/(e*x+d)^6-1/5*b^5*B*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+
d)^5
```

Rubi [A] time = 0.32, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{6e^7(a+bx)(d+ex)^6}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{7e^7(a+bx)(d+ex)^7}+5b^2\sqrt{a^2+}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x
)*(d + e*x)^11) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(10*e^7*(a + b*x)*(d + e*x)^10) - (5*b*(b*d - a*e)^3*(3*b*
B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d +
 e*x)^9) + (5*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^8) - (5*b^3*(b*d - a*e)*(3*b*B*d -
 A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)
^7) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^
7*(a + b*x)*(d + e*x)^6) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a
+ b*x)*(d + e*x)^5)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{12}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{12}} + \frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{11}} -\right.}{}$$

$$= -\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}} + \frac{(bd-ae)^4(6bBd-5Abe-}{10e^7(a+bx}$$

Mathematica [A] time = 0.23, size = 471, normalized size = 1.08

$$-\frac{\sqrt{(a+bx)^2}\left(126a^5e^5(10Ae+B(d+11ex))+70a^4be^4\left(9Ae(d+11ex)+2B\left(d^2+11dex+55e^2x^2\right)\right)+35a^3b^2e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -1/13860*(Sqrt[(a + b*x)^2]*(126*a^5*e^5*(10*A*e + B*(d + 11*e*x)) + 70*a^4
*b*e^4*(9*A*e*(d + 11*e*x) + 2*B*(d^2 + 11*d*e*x + 55*e^2*x^2)) + 35*a^3*b^
2*e^3*(8*A*e*(d^2 + 11*d*e*x + 55*e^2*x^2) + 3*B*(d^3 + 11*d^2*e*x + 55*d*e
^2*x^2 + 165*e^3*x^3)) + 15*a^2*b^3*e^2*(7*A*e*(d^3 + 11*d^2*e*x + 55*d*e^2
*x^2 + 165*e^3*x^3) + 4*B*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e^3*x^
3 + 330*e^4*x^4)) + 5*a*b^4*e*(6*A*e*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 1
65*d*e^3*x^3 + 330*e^4*x^4) + 5*B*(d^5 + 11*d^4*e*x + 55*d^3*e^2*x^2 + 165*
d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5)) + b^5*(5*A*e*(d^5 + 11*d^4*e*x
+ 55*d^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5) + 6*B*(d^
6 + 11*d^5*e*x + 55*d^4*e^2*x^2 + 165*d^3*e^3*x^3 + 330*d^2*e^4*x^4 + 462*d
*e^5*x^5 + 462*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^11)
```

fricas [A] time = 0.88, size = 673, normalized size = 1.54

$$-\frac{2772\,Bb^5e^6x^6+6\,Bb^5d^6+1260\,Aa^5e^6+5\left(5\,Bab^4+Ab^5\right)d^5e+30\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+105\left(Ba^3b^2+Aa}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/13860*(2772*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 1260*A*a^5*e^6 + 5*(5*B*a*b^4
+ A*b^5)*d^5*e + 30*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 105*(B*a^3*b^2 + A*a^
2*b^3)*d^3*e^3 + 140*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 126*(B*a^5 + 5*A*a^4
*b)*d*e^5 + 462*(6*B*b^5*d*e^5 + 5*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 330*(6*B*
b^5*d^2*e^4 + 5*(5*B*a*b^4 + A*b^5)*d*e^5 + 30*(2*B*a^2*b^3 + A*a*b^4)*e^6)
*x^4 + 165*(6*B*b^5*d^3*e^3 + 5*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 30*(2*B*a^2*b
^3 + A*a*b^4)*d*e^5 + 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 55*(6*B*b^5*d^
4*e^2 + 5*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 30*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4
+ 105*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 140*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2
+ 11*(6*B*b^5*d^5*e + 5*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 30*(2*B*a^2*b^3 + A*a
*b^4)*d^3*e^3 + 105*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 140*(B*a^4*b + 2*A*a^
3*b^2)*d*e^5 + 126*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^18*x^11 + 11*d*e^17*x^10
+ 55*d^2*e^16*x^9 + 165*d^3*e^15*x^8 + 330*d^4*e^14*x^7 + 462*d^5*e^13*x^6
+ 462*d^6*e^12*x^5 + 330*d^7*e^11*x^4 + 165*d^8*e^10*x^3 + 55*d^9*e^9*x^2 +
 11*d^10*e^8*x + d^11*e^7)
```

giac [B] time = 0.36, size = 919, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/13860*(2772*B*b^5*x^6*e^6*sgn(b*x + a) + 2772*B*b^5*d*x^5*e^5*sgn(b*x +
a) + 1980*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 990*B*b^5*d^3*x^3*e^3*sgn(b*x +
a) + 330*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 66*B*b^5*d^5*x*e*sgn(b*x + a) + 6
*B*b^5*d^6*sgn(b*x + a) + 11550*B*a*b^4*x^5*e^6*sgn(b*x + a) + 2310*A*b^5*x
^5*e^6*sgn(b*x + a) + 8250*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 1650*A*b^5*d*x^
4*e^5*sgn(b*x + a) + 4125*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 825*A*b^5*d^2*
x^3*e^4*sgn(b*x + a) + 1375*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 275*A*b^5*d^
3*x^2*e^3*sgn(b*x + a) + 275*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 55*A*b^5*d^4*
x*e^2*sgn(b*x + a) + 25*B*a*b^4*d^5*e*sgn(b*x + a) + 5*A*b^5*d^5*e*sgn(b*x
+ a) + 19800*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 9900*A*a*b^4*x^4*e^6*sgn(b*x
+ a) + 9900*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 4950*A*a*b^4*d*x^3*e^5*sgn(b
*x + a) + 3300*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 1650*A*a*b^4*d^2*x^2*e^
4*sgn(b*x + a) + 660*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 330*A*a*b^4*d^3*x*e
^3*sgn(b*x + a) + 60*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 30*A*a*b^4*d^4*e^2*sg
n(b*x + a) + 17325*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 17325*A*a^2*b^3*x^3*e^6
*sgn(b*x + a) + 5775*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 5775*A*a^2*b^3*d*x^
2*e^5*sgn(b*x + a) + 1155*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 1155*A*a^2*b^3
*d^2*x*e^4*sgn(b*x + a) + 105*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 105*A*a^2*b^
3*d^3*e^3*sgn(b*x + a) + 7700*B*a^4*b*x^2*e^6*sgn(b*x + a) + 15400*A*a^3*b^
2*x^2*e^6*sgn(b*x + a) + 1540*B*a^4*b*d*x*e^5*sgn(b*x + a) + 3080*A*a^3*b^2
*d*x*e^5*sgn(b*x + a) + 140*B*a^4*b*d^2*e^4*sgn(b*x + a) + 280*A*a^3*b^2*d^
2*e^4*sgn(b*x + a) + 1386*B*a^5*x*e^6*sgn(b*x + a) + 6930*A*a^4*b*x*e^6*sgn
(b*x + a) + 126*B*a^5*d*e^5*sgn(b*x + a) + 630*A*a^4*b*d*e^5*sgn(b*x + a) +
 1260*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^11
```

maple [A] time = 0.05, size = 689, normalized size = 1.57

$$-\frac{\left(2772B\,b^{5}e^{6}x^{6}+2310A\,b^{5}e^{6}x^{5}+11550Ba\,b^{4}e^{6}x^{5}+2772B\,b^{5}d\,e^{5}x^{5}+9900Aa\,b^{4}e^{6}x^{4}+1650A\,b^{5}d\,e^{5}x^{4}+19800\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x)
```

```
[Out] -1/13860/e^7*(2772*B*b^5*e^6*x^6+2310*A*b^5*e^6*x^5+11550*B*a*b^4*e^6*x^5+2
772*B*b^5*d*e^5*x^5+9900*A*a*b^4*e^6*x^4+1650*A*b^5*d*e^5*x^4+19800*B*a^2*b
^3*e^6*x^4+8250*B*a*b^4*d*e^5*x^4+1980*B*b^5*d^2*e^4*x^4+17325*A*a^2*b^3*e^
6*x^3+4950*A*a*b^4*d*e^5*x^3+825*A*b^5*d^2*e^4*x^3+17325*B*a^3*b^2*e^6*x^3+
9900*B*a^2*b^3*d*e^5*x^3+4125*B*a*b^4*d^2*e^4*x^3+990*B*b^5*d^3*e^3*x^3+154
00*A*a^3*b^2*e^6*x^2+5775*A*a^2*b^3*d*e^5*x^2+1650*A*a*b^4*d^2*e^4*x^2+275*
A*b^5*d^3*e^3*x^2+7700*B*a^4*b*e^6*x^2+5775*B*a^3*b^2*d*e^5*x^2+3300*B*a^2*
b^3*d^2*e^4*x^2+1375*B*a*b^4*d^3*e^3*x^2+330*B*b^5*d^4*e^2*x^2+6930*A*a^4*b
*e^6*x+3080*A*a^3*b^2*d*e^5*x+1155*A*a^2*b^3*d^2*e^4*x+330*A*a*b^4*d^3*e^3*
x+55*A*b^5*d^4*e^2*x+1386*B*a^5*e^6*x+1540*B*a^4*b*d*e^5*x+1155*B*a^3*b^2*d
^2*e^4*x+660*B*a^2*b^3*d^3*e^3*x+275*B*a*b^4*d^4*e^2*x+66*B*b^5*d^5*e*x+126
0*A*a^5*e^6+630*A*a^4*b*d*e^5+280*A*a^3*b^2*d^2*e^4+105*A*a^2*b^3*d^3*e^3+3
0*A*a*b^4*d^4*e^2+5*A*b^5*d^5*e+126*B*a^5*d*e^5+140*B*a^4*b*d^2*e^4+105*B*a
^3*b^2*d^3*e^3+60*B*a^2*b^3*d^4*e^2+25*B*a*b^4*d^5*e+6*B*b^5*d^6)*((b*x+a)^
2)^(5/2)/(e*x+d)^11/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.60, size = 1489, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^12,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(7*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(7*e^6) - (B*b^5*
d)/(7*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(6*e^7) - (B*b^5*d)/(6*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - (((A*a^5)/(11*e) - (d*((
B*a^5 + 5*A*a^4*b)/(11*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(11*e) - (B
*b^5*d)/(11*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(11*e)))/e + (10*a^2*b^2*(A*
b + B*a))/(11*e)))/e - (5*a^3*b*(2*A*b + B*a))/(11*e)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((6*A*b^5*d^2*e - 10*B*b^5
*d^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^
4*d*e^2 + 30*B*a*b^4*d^2*e)/(8*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 +
6*B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(8*e^7) - (d*((b^4*(A*
b*e + 5*B*a*e - 3*B*b*d))/(8*e^5) - (B*b^5*d)/(8*e^5)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((B*a^5*e^5 - B*b^5*d^5 + 5
*A*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*
a^2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d
^4*e - 5*B*a^4*b*d*e^4)/(10*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*
a^3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*
a*b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(10*e^7) - (d*((
10*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a
*b^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(10*e^7) - (d*((5*A*a*
b^4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)
/(10*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(10*e^3) - (B*b^5*d)/(10*e^
3)))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^1
0) - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15
*A*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d
^2*e^2 - 20*B*a*b^4*d^3*e)/(9*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e
+ 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*
e^3 - 10*A*a*b^4*d*e^3)/(9*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B
*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(9*e^7) - (d*((b^4*(A*b*
e + 5*B*a*e - 2*B*b*d))/(9*e^4) - (B*b^5*d)/(9*e^4)))/e))/e))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (B*b^5*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/(5*e^7*(a + b*x)*(d + e*x)^5)
```

sympy [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1757 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx$

Optimal. Leaf size=438

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)(d+ex)^9}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{2e^7(a+bx)(d+ex)^{10}}+$$

```
[Out] -1/12*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^12+1/11
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^11-1/2*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)/(e*x+d)^10+10/9*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/
2)/e^7/(b*x+a)/(e*x+d)^9-5/8*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*((b*x+
a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^8+1/7*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^7-1/6*b^5*B*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*
x+d)^6
```

Rubi [**A**] time = 0.30, antiderivative size = 438, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{7e^7(a+bx)(d+ex)^7}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{8e^7(a+bx)(d+ex)^8}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*e^7*(a + b*x
)*(d + e*x)^12) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) - (b*(b*d - a*e)^3*(3*b*B*
d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e
*x)^10) + (10*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9) - (5*b^3*(b*d - a*e)*(3*b*B*d -
 A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)
^8) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^
7*(a + b*x)*(d + e*x)^7) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a
+ b*x)*(d + e*x)^6)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{13}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{13}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{12}}-\right.}{}$$

$$= -\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{12e^7(a+bx)(d+ex)^{12}}+\frac{(bd-ae)^4(6bBd-5Abe-}{11e^7(a+bx}$$

Mathematica [A] time = 0.21, size = 465, normalized size = 1.06

$$-\frac{\sqrt{(a+bx)^2}\left(42a^5e^5(11Ae+B(d+12ex))+42a^4be^4\left(5Ae(d+12ex)+B\left(d^2+12dex+66e^2x^2\right)\right)+28a^3b^2e^3\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(42*a^5*e^5*(11*A*e + B*(d + 12*e*x)) + 42*a^4*b
*e^4*(5*A*e*(d + 12*e*x) + B*(d^2 + 12*d*e*x + 66*e^2*x^2)) + 28*a^3*b^2*e^
3*(3*A*e*(d^2 + 12*d*e*x + 66*e^2*x^2) + B*(d^3 + 12*d^2*e*x + 66*d*e^2*x^2
 + 220*e^3*x^3)) + 14*a^2*b^3*e^2*(2*A*e*(d^3 + 12*d^2*e*x + 66*d*e^2*x^2 +
 220*e^3*x^3) + B*(d^4 + 12*d^3*e*x + 66*d^2*e^2*x^2 + 220*d*e^3*x^3 + 495*
e^4*x^4)) + a*b^4*e*(7*A*e*(d^4 + 12*d^3*e*x + 66*d^2*e^2*x^2 + 220*d*e^3*x
^3 + 495*e^4*x^4) + 5*B*(d^5 + 12*d^4*e*x + 66*d^3*e^2*x^2 + 220*d^2*e^3*x^
3 + 495*d*e^4*x^4 + 792*e^5*x^5)) + b^5*(A*e*(d^5 + 12*d^4*e*x + 66*d^3*e^2
*x^2 + 220*d^2*e^3*x^3 + 495*d*e^4*x^4 + 792*e^5*x^5) + B*(d^6 + 12*d^5*e*x
 + 66*d^4*e^2*x^2 + 220*d^3*e^3*x^3 + 495*d^2*e^4*x^4 + 792*d*e^5*x^5 + 924
*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^12)
```

fricas [A] time = 0.74, size = 672, normalized size = 1.53

$$-\frac{924\,Bb^5e^6x^6+Bb^5d^6+462\,Aa^5e^6+\left(5\,Bab^4+Ab^5\right)d^5e+7\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+28\left(Ba^3b^2+Aa^2b^3\right)d^3e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="fric
as")
```

```
[Out] -1/5544*(924*B*b^5*e^6*x^6 + B*b^5*d^6 + 462*A*a^5*e^6 + (5*B*a*b^4 + A*b^5
)*d^5*e + 7*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 28*(B*a^3*b^2 + A*a^2*b^3)*d^
3*e^3 + 42*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 42*(B*a^5 + 5*A*a^4*b)*d*e^5 +
 792*(B*b^5*d*e^5 + (5*B*a*b^4 + A*b^5)*e^6)*x^5 + 495*(B*b^5*d^2*e^4 + (5*
B*a*b^4 + A*b^5)*d*e^5 + 7*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 + 220*(B*b^5*d^
3*e^3 + (5*B*a*b^4 + A*b^5)*d^2*e^4 + 7*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 + 28*
(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 66*(B*b^5*d^4*e^2 + (5*B*a*b^4 + A*b^5)*
d^3*e^3 + 7*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 + 28*(B*a^3*b^2 + A*a^2*b^3)*d*
e^5 + 42*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 12*(B*b^5*d^5*e + (5*B*a*b^4 +
A*b^5)*d^4*e^2 + 7*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 + 28*(B*a^3*b^2 + A*a^2*
b^3)*d^2*e^4 + 42*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 + 42*(B*a^5 + 5*A*a^4*b)*e^
6)*x)/(e^19*x^12 + 12*d*e^18*x^11 + 66*d^2*e^17*x^10 + 220*d^3*e^16*x^9 + 4
95*d^4*e^15*x^8 + 792*d^5*e^14*x^7 + 924*d^6*e^13*x^6 + 792*d^7*e^12*x^5 +
495*d^8*e^11*x^4 + 220*d^9*e^10*x^3 + 66*d^10*e^9*x^2 + 12*d^11*e^8*x + d^1
2*e^7)
```

giac [B] time = 0.22, size = 917, normalized size = 2.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="giac
")
```

```
[Out] -1/5544*(924*B*b^5*x^6*e^6*sgn(b*x + a) + 792*B*b^5*d*x^5*e^5*sgn(b*x + a)
+ 495*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 220*B*b^5*d^3*x^3*e^3*sgn(b*x + a) +
 66*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 12*B*b^5*d^5*x*e*sgn(b*x + a) + B*b^5*
d^6*sgn(b*x + a) + 3960*B*a*b^4*x^5*e^6*sgn(b*x + a) + 792*A*b^5*x^5*e^6*sg
n(b*x + a) + 2475*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 495*A*b^5*d*x^4*e^5*sgn(
b*x + a) + 1100*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 220*A*b^5*d^2*x^3*e^4*sg
n(b*x + a) + 330*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 66*A*b^5*d^3*x^2*e^3*sg
n(b*x + a) + 60*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 12*A*b^5*d^4*x*e^2*sgn(b*x
 + a) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A*b^5*d^5*e*sgn(b*x + a) + 6930*B*a^
2*b^3*x^4*e^6*sgn(b*x + a) + 3465*A*a*b^4*x^4*e^6*sgn(b*x + a) + 3080*B*a^2
*b^3*d*x^3*e^5*sgn(b*x + a) + 1540*A*a*b^4*d*x^3*e^5*sgn(b*x + a) + 924*B*a
^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 462*A*a*b^4*d^2*x^2*e^4*sgn(b*x + a) + 16
8*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 84*A*a*b^4*d^3*x*e^3*sgn(b*x + a) + 14
*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 7*A*a*b^4*d^4*e^2*sgn(b*x + a) + 6160*B*a
^3*b^2*x^3*e^6*sgn(b*x + a) + 6160*A*a^2*b^3*x^3*e^6*sgn(b*x + a) + 1848*B*
a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 1848*A*a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 33
6*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 336*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) +
 28*B*a^3*b^2*d^3*e^3*sgn(b*x + a) + 28*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 27
72*B*a^4*b*x^2*e^6*sgn(b*x + a) + 5544*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 504
*B*a^4*b*d*x*e^5*sgn(b*x + a) + 1008*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 42*B*
a^4*b*d^2*e^4*sgn(b*x + a) + 84*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 504*B*a^5*
x*e^6*sgn(b*x + a) + 2520*A*a^4*b*x*e^6*sgn(b*x + a) + 42*B*a^5*d*e^5*sgn(b
*x + a) + 210*A*a^4*b*d*e^5*sgn(b*x + a) + 462*A*a^5*e^6*sgn(b*x + a))*e^(-
7)/(x*e + d)^12
```

maple [A] time = 0.06, size = 687, normalized size = 1.57

$$-\frac{\left(924B\,b^5e^6x^6+792A\,b^5e^6x^5+3960Ba\,b^4e^6x^5+792B\,b^5d\,e^5x^5+3465Aa\,b^4e^6x^4+495A\,b^5d\,e^5x^4+6930B\,a^2b^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x)
```

```
[Out] -1/5544/e^7*(924*B*b^5*e^6*x^6+792*A*b^5*e^6*x^5+3960*B*a*b^4*e^6*x^5+792*B
*b^5*d*e^5*x^5+3465*A*a*b^4*e^6*x^4+495*A*b^5*d*e^5*x^4+6930*B*a^2*b^3*e^6*
x^4+2475*B*a*b^4*d*e^5*x^4+495*B*b^5*d^2*e^4*x^4+6160*A*a^2*b^3*e^6*x^3+154
0*A*a*b^4*d*e^5*x^3+220*A*b^5*d^2*e^4*x^3+6160*B*a^3*b^2*e^6*x^3+3080*B*a^2
*b^3*d*e^5*x^3+1100*B*a*b^4*d^2*e^4*x^3+220*B*b^5*d^3*e^3*x^3+5544*A*a^3*b^
2*e^6*x^2+1848*A*a^2*b^3*d*e^5*x^2+462*A*a*b^4*d^2*e^4*x^2+66*A*b^5*d^3*e^3
*x^2+2772*B*a^4*b*e^6*x^2+1848*B*a^3*b^2*d*e^5*x^2+924*B*a^2*b^3*d^2*e^4*x^
2+330*B*a*b^4*d^3*e^3*x^2+66*B*b^5*d^4*e^2*x^2+2520*A*a^4*b*e^6*x+1008*A*a^
3*b^2*d*e^5*x+336*A*a^2*b^3*d^2*e^4*x+84*A*a*b^4*d^3*e^3*x+12*A*b^5*d^4*e^2
*x+504*B*a^5*e^6*x+504*B*a^4*b*d*e^5*x+336*B*a^3*b^2*d^2*e^4*x+168*B*a^2*b^
3*d^3*e^3*x+60*B*a*b^4*d^4*e^2*x+12*B*b^5*d^5*e*x+462*A*a^5*e^6+210*A*a^4*b
*d*e^5+84*A*a^3*b^2*d^2*e^4+28*A*a^2*b^3*d^3*e^3+7*A*a*b^4*d^4*e^2+A*b^5*d^
5*e+42*B*a^5*d*e^5+42*B*a^4*b*d^2*e^4+28*B*a^3*b^2*d^3*e^3+14*B*a^2*b^3*d^4
*e^2+5*B*a*b^4*d^5*e+B*b^5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^12/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[B]** time = 2.63, size = 1489, normalized size = 3.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^13,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(8*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(8*e^6) - (B*b^5*
d)/(8*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(7*e^7) - (B*b^5*d)/(7*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((A*a^5)/(12*e) - (d*((
B*a^5 + 5*A*a^4*b)/(12*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(12*e) - (B
*b^5*d)/(12*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(12*e)))/e + (5*a^2*b^2*(A*b
 + B*a))/(6*e)))/e - (5*a^3*b*(2*A*b + B*a))/(12*e)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (((6*A*b^5*d^2*e - 10*B*b^5*d
^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^4*
d*e^2 + 30*B*a*b^4*d^2*e)/(9*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 + 6*
B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(9*e^7) - (d*((b^4*(A*b*
e + 5*B*a*e - 3*B*b*d))/(9*e^5) - (B*b^5*d)/(9*e^5)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((B*a^5*e^5 - B*b^5*d^5 + 5*A
*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 + 10*A*a^
2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*b^4*d^4
*e - 5*B*a^4*b*d*e^4)/(11*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e + 10*A*a^
3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 - 5*B*a*
b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(11*e^7) - (d*((10
*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 + 5*B*a*b
^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(11*e^7) - (d*((5*A*a*b^
4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d*e^4)/(
11*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(11*e^3) - (B*b^5*d)/(11*e^3)
))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11)
 - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4 + 15*A
*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*b^3*d^2
*e^2 - 20*B*a*b^4*d^3*e)/(10*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*d^3*e +
 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*b^3*d*e
^3 - 10*A*a*b^4*d*e^3)/(10*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3 + 10*B
*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(10*e^7) - (d*((b^4*(A*b
*e + 5*B*a*e - 2*B*b*d))/(10*e^4) - (B*b^5*d)/(10*e^4)))/e))/e))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (B*b^5*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2))/(6*e^7*(a + b*x)*(d + e*x)^6)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**13,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1758 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx$

Optimal. Leaf size=435

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)(d+ex)^{10}}-\frac{5b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2Abe+3bBd)}{11e^7(a+bx)(d+ex)^{11}}+$$

```
[Out] -1/13*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^13+1/12
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^12-5/11*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*
x+a)/(e*x+d)^11+b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e
^7/(b*x+a)/(e*x+d)^10-5/9*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)^9+1/8*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*((b*x+a)^2)
^(1/2)/e^7/(b*x+a)/(e*x+d)^8-1/7*b^5*B*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^7
```

Rubi [A] time = 0.29, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(-5aBe-Abe+6bBd)}{8e^7(a+bx)(d+ex)^8}-\frac{5b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-2aBe-Abe+3bBd)}{9e^7(a+bx)(d+ex)^9}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -((b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x
)*(d + e*x)^13) + ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(12*e^7*(a + b*x)*(d + e*x)^12) - (5*b*(b*d - a*e)^3*(3*b*
B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d
+ e*x)^11) + (b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^10) - (5*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^
9) + (b^4*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7
*(a + b*x)*(d + e*x)^8) - (b^5*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a +
 b*x)*(d + e*x)^7)
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{14}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{14}} + \frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{13}} -\right.}{}$$

$$= -\frac{(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}} + \frac{(bd-ae)^4(6bBd-5Abe-}{12e^7(a+bx}$$

Mathematica [**A**] time = 0.21, size = 471, normalized size = 1.08

$$-\frac{\sqrt{(a+bx)^2}\left(462a^5e^5(12Ae+B(d+13ex))+210a^4be^4\left(11Ae(d+13ex)+2B\left(d^2+13dex+78e^2x^2\right)\right)+84a^3b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -1/72072*(Sqrt[(a + b*x)^2]*(462*a^5*e^5*(12*A*e + B*(d + 13*e*x)) + 210*a^
4*b*e^4*(11*A*e*(d + 13*e*x) + 2*B*(d^2 + 13*d*e*x + 78*e^2*x^2)) + 84*a^3*
b^2*e^3*(10*A*e*(d^2 + 13*d*e*x + 78*e^2*x^2) + 3*B*(d^3 + 13*d^2*e*x + 78*
d*e^2*x^2 + 286*e^3*x^3)) + 28*a^2*b^3*e^2*(9*A*e*(d^3 + 13*d^2*e*x + 78*d*
e^2*x^2 + 286*e^3*x^3) + 4*B*(d^4 + 13*d^3*e*x + 78*d^2*e^2*x^2 + 286*d*e^3
*x^3 + 715*e^4*x^4)) + 7*a*b^4*e*(8*A*e*(d^4 + 13*d^3*e*x + 78*d^2*e^2*x^2
+ 286*d*e^3*x^3 + 715*e^4*x^4) + 5*B*(d^5 + 13*d^4*e*x + 78*d^3*e^2*x^2 + 2
86*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5)) + b^5*(7*A*e*(d^5 + 13*d^4*
e*x + 78*d^3*e^2*x^2 + 286*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5) + 6*
B*(d^6 + 13*d^5*e*x + 78*d^4*e^2*x^2 + 286*d^3*e^3*x^3 + 715*d^2*e^4*x^4 +
1287*d*e^5*x^5 + 1716*e^6*x^6))))/(e^7*(a + b*x)*(d + e*x)^13)
```

fricas [**B**] time = 0.84, size = 695, normalized size = 1.60

$$-\frac{10296\,Bb^5e^6x^6 + 6\,Bb^5d^6 + 5544\,Aa^5e^6 + 7\left(5\,Bab^4 + Ab^5\right)d^5e + 56\left(2\,Ba^2b^3 + Aab^4\right)d^4e^2 + 252\left(Ba^3b^2 + A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="fric
as")
```

```
[Out] -1/72072*(10296*B*b^5*e^6*x^6 + 6*B*b^5*d^6 + 5544*A*a^5*e^6 + 7*(5*B*a*b^4
 + A*b^5)*d^5*e + 56*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 252*(B*a^3*b^2 + A*a
^2*b^3)*d^3*e^3 + 420*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 462*(B*a^5 + 5*A*a^
4*b)*d*e^5 + 1287*(6*B*b^5*d*e^5 + 7*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 715*(6*
B*b^5*d^2*e^4 + 7*(5*B*a*b^4 + A*b^5)*d*e^5 + 56*(2*B*a^2*b^3 + A*a*b^4)*e^
6)*x^4 + 286*(6*B*b^5*d^3*e^3 + 7*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 56*(2*B*a^2
*b^3 + A*a*b^4)*d*e^5 + 252*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 78*(6*B*b^5*
d^4*e^2 + 7*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 56*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^
4 + 252*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 420*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^
2 + 13*(6*B*b^5*d^5*e + 7*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 56*(2*B*a^2*b^3 + A
*a*b^4)*d^3*e^3 + 252*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 420*(B*a^4*b + 2*A*
a^3*b^2)*d*e^5 + 462*(B*a^5 + 5*A*a^4*b)*e^6)*x)/(e^20*x^13 + 13*d*e^19*x^1
2 + 78*d^2*e^18*x^11 + 286*d^3*e^17*x^10 + 715*d^4*e^16*x^9 + 1287*d^5*e^15
*x^8 + 1716*d^6*e^14*x^7 + 1716*d^7*e^13*x^6 + 1287*d^8*e^12*x^5 + 715*d^9*
e^11*x^4 + 286*d^10*e^10*x^3 + 78*d^11*e^9*x^2 + 13*d^12*e^8*x + d^13*e^7)
```

giac [B] time = 0.22, size = 919, normalized size = 2.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="giac
")
```

```
[Out] -1/72072*(10296*B*b^5*x^6*e^6*sgn(b*x + a) + 7722*B*b^5*d*x^5*e^5*sgn(b*x +
 a) + 4290*B*b^5*d^2*x^4*e^4*sgn(b*x + a) + 1716*B*b^5*d^3*x^3*e^3*sgn(b*x
+ a) + 468*B*b^5*d^4*x^2*e^2*sgn(b*x + a) + 78*B*b^5*d^5*x*e*sgn(b*x + a) +
 6*B*b^5*d^6*sgn(b*x + a) + 45045*B*a*b^4*x^5*e^6*sgn(b*x + a) + 9009*A*b^5
*x^5*e^6*sgn(b*x + a) + 25025*B*a*b^4*d*x^4*e^5*sgn(b*x + a) + 5005*A*b^5*d
*x^4*e^5*sgn(b*x + a) + 10010*B*a*b^4*d^2*x^3*e^4*sgn(b*x + a) + 2002*A*b^5
*d^2*x^3*e^4*sgn(b*x + a) + 2730*B*a*b^4*d^3*x^2*e^3*sgn(b*x + a) + 546*A*b
^5*d^3*x^2*e^3*sgn(b*x + a) + 455*B*a*b^4*d^4*x*e^2*sgn(b*x + a) + 91*A*b^5
*d^4*x*e^2*sgn(b*x + a) + 35*B*a*b^4*d^5*e*sgn(b*x + a) + 7*A*b^5*d^5*e*sgn
(b*x + a) + 80080*B*a^2*b^3*x^4*e^6*sgn(b*x + a) + 40040*A*a*b^4*x^4*e^6*sg
n(b*x + a) + 32032*B*a^2*b^3*d*x^3*e^5*sgn(b*x + a) + 16016*A*a*b^4*d*x^3*e
^5*sgn(b*x + a) + 8736*B*a^2*b^3*d^2*x^2*e^4*sgn(b*x + a) + 4368*A*a*b^4*d^
2*x^2*e^4*sgn(b*x + a) + 1456*B*a^2*b^3*d^3*x*e^3*sgn(b*x + a) + 728*A*a*b^
4*d^3*x*e^3*sgn(b*x + a) + 112*B*a^2*b^3*d^4*e^2*sgn(b*x + a) + 56*A*a*b^4*
d^4*e^2*sgn(b*x + a) + 72072*B*a^3*b^2*x^3*e^6*sgn(b*x + a) + 72072*A*a^2*b
^3*x^3*e^6*sgn(b*x + a) + 19656*B*a^3*b^2*d*x^2*e^5*sgn(b*x + a) + 19656*A*
a^2*b^3*d*x^2*e^5*sgn(b*x + a) + 3276*B*a^3*b^2*d^2*x*e^4*sgn(b*x + a) + 32
76*A*a^2*b^3*d^2*x*e^4*sgn(b*x + a) + 252*B*a^3*b^2*d^3*e^3*sgn(b*x + a) +
252*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 32760*B*a^4*b*x^2*e^6*sgn(b*x + a) + 6
5520*A*a^3*b^2*x^2*e^6*sgn(b*x + a) + 5460*B*a^4*b*d*x*e^5*sgn(b*x + a) + 1
0920*A*a^3*b^2*d*x*e^5*sgn(b*x + a) + 420*B*a^4*b*d^2*e^4*sgn(b*x + a) + 84
0*A*a^3*b^2*d^2*e^4*sgn(b*x + a) + 6006*B*a^5*x*e^6*sgn(b*x + a) + 30030*A*
a^4*b*x*e^6*sgn(b*x + a) + 462*B*a^5*d*e^5*sgn(b*x + a) + 2310*A*a^4*b*d*e^
5*sgn(b*x + a) + 5544*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^13
```

maple [A] time = 0.06, size = 689, normalized size = 1.58

$$-\frac{\left(10296B\,b^5e^6x^6+9009A\,b^5e^6x^5+45045Ba\,b^4e^6x^5+7722B\,b^5d\,e^5x^5+40040Aa\,b^4e^6x^4+5005A\,b^5d\,e^5x^4+80\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x)
```

```
[Out] -1/72072/e^7*(10296*B*b^5*e^6*x^6+9009*A*b^5*e^6*x^5+45045*B*a*b^4*e^6*x^5+
7722*B*b^5*d*e^5*x^5+40040*A*a*b^4*e^6*x^4+5005*A*b^5*d*e^5*x^4+80080*B*a^2
*b^3*e^6*x^4+25025*B*a*b^4*d*e^5*x^4+4290*B*b^5*d^2*e^4*x^4+72072*A*a^2*b^3
*e^6*x^3+16016*A*a*b^4*d*e^5*x^3+2002*A*b^5*d^2*e^4*x^3+72072*B*a^3*b^2*e^6
*x^3+32032*B*a^2*b^3*d*e^5*x^3+10010*B*a*b^4*d^2*e^4*x^3+1716*B*b^5*d^3*e^3
*x^3+65520*A*a^3*b^2*e^6*x^2+19656*A*a^2*b^3*d*e^5*x^2+4368*A*a*b^4*d^2*e^4
*x^2+546*A*b^5*d^3*e^3*x^2+32760*B*a^4*b*e^6*x^2+19656*B*a^3*b^2*d*e^5*x^2+
8736*B*a^2*b^3*d^2*e^4*x^2+2730*B*a*b^4*d^3*e^3*x^2+468*B*b^5*d^4*e^2*x^2+3
0030*A*a^4*b*e^6*x+10920*A*a^3*b^2*d*e^5*x+3276*A*a^2*b^3*d^2*e^4*x+728*A*a
*b^4*d^3*e^3*x+91*A*b^5*d^4*e^2*x+6006*B*a^5*e^6*x+5460*B*a^4*b*d*e^5*x+327
6*B*a^3*b^2*d^2*e^4*x+1456*B*a^2*b^3*d^3*e^3*x+455*B*a*b^4*d^4*e^2*x+78*B*b
^5*d^5*e*x+5544*A*a^5*e^6+2310*A*a^4*b*d*e^5+840*A*a^3*b^2*d^2*e^4+252*A*a^
2*b^3*d^3*e^3+56*A*a*b^4*d^4*e^2+7*A*b^5*d^5*e+462*B*a^5*d*e^5+420*B*a^4*b*
d^2*e^4+252*B*a^3*b^2*d^3*e^3+112*B*a^2*b^3*d^4*e^2+35*B*a*b^4*d^5*e+6*B*b^
5*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^13/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.62, size = 1489, normalized size = 3.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^14,x)
```

```
[Out] - (((10*B*b^5*d^2 - 4*A*b^5*d*e + 5*A*a*b^4*e^2 + 10*B*a^2*b^3*e^2 - 20*B*a
*b^4*d*e)/(9*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - 4*B*b*d))/(9*e^6) - (B*b^5*
d)/(9*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) -
(((A*b^5*e - 5*B*b^5*d + 5*B*a*b^4*e)/(8*e^7) - (B*b^5*d)/(8*e^7))*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((A*a^5)/(13*e) - (d*((
B*a^5 + 5*A*a^4*b)/(13*e) + (d*((d*((d*((d*((A*b^5 + 5*B*a*b^4)/(13*e) - (B
*b^5*d)/(13*e^2)))/e - (5*a*b^3*(A*b + 2*B*a))/(13*e)))/e + (10*a^2*b^2*(A*
b + B*a))/(13*e)))/e - (5*a^3*b*(2*A*b + B*a))/(13*e)))/e))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (((6*A*b^5*d^2*e - 10*B*b^5
*d^3 + 10*A*a^2*b^3*e^3 + 10*B*a^3*b^2*e^3 - 30*B*a^2*b^3*d*e^2 - 15*A*a*b^
4*d*e^2 + 30*B*a*b^4*d^2*e)/(10*e^7) - (d*((5*A*a*b^4*e^3 - 3*A*b^5*d*e^2 +
 6*B*b^5*d^2*e + 10*B*a^2*b^3*e^3 - 15*B*a*b^4*d*e^2)/(10*e^7) - (d*((b^4*(
A*b*e + 5*B*a*e - 3*B*b*d))/(10*e^5) - (B*b^5*d)/(10*e^5)))/e))/e)*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((B*a^5*e^5 - B*b^5*d^
5 + 5*A*a^4*b*e^5 + A*b^5*d^4*e - 5*A*a*b^4*d^3*e^2 - 10*A*a^3*b^2*d*e^4 +
10*A*a^2*b^3*d^2*e^3 - 10*B*a^2*b^3*d^3*e^2 + 10*B*a^3*b^2*d^2*e^3 + 5*B*a*
b^4*d^4*e - 5*B*a^4*b*d*e^4)/(12*e^7) - (d*((5*B*a^4*b*e^5 + B*b^5*d^4*e +
10*A*a^3*b^2*e^5 - A*b^5*d^3*e^2 + 5*A*a*b^4*d^2*e^3 - 10*A*a^2*b^3*d*e^4 -
 5*B*a*b^4*d^3*e^2 - 10*B*a^3*b^2*d*e^4 + 10*B*a^2*b^3*d^2*e^3)/(12*e^7) -
(d*((10*A*a^2*b^3*e^5 + 10*B*a^3*b^2*e^5 + A*b^5*d^2*e^3 - B*b^5*d^3*e^2 +
5*B*a*b^4*d^2*e^3 - 10*B*a^2*b^3*d*e^4 - 5*A*a*b^4*d*e^4)/(12*e^7) - (d*((5
*A*a*b^4*e^5 - A*b^5*d*e^4 + 10*B*a^2*b^3*e^5 + B*b^5*d^2*e^3 - 5*B*a*b^4*d
*e^4)/(12*e^7) - (d*((b^4*(A*b*e + 5*B*a*e - B*b*d))/(12*e^3) - (B*b^5*d)/(
12*e^3)))/e))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^12) - (((5*B*b^5*d^4 + 5*B*a^4*b*e^4 - 4*A*b^5*d^3*e + 10*A*a^3*b^2*e^4
 + 15*A*a*b^4*d^2*e^2 - 20*A*a^2*b^3*d*e^3 - 20*B*a^3*b^2*d*e^3 + 30*B*a^2*
b^3*d^2*e^2 - 20*B*a*b^4*d^3*e)/(11*e^7) - (d*((10*A*a^2*b^3*e^4 - 4*B*b^5*
d^3*e + 10*B*a^3*b^2*e^4 + 3*A*b^5*d^2*e^2 + 15*B*a*b^4*d^2*e^2 - 20*B*a^2*
b^3*d*e^3 - 10*A*a*b^4*d*e^3)/(11*e^7) - (d*((5*A*a*b^4*e^4 - 2*A*b^5*d*e^3
 + 10*B*a^2*b^3*e^4 + 3*B*b^5*d^2*e^2 - 10*B*a*b^4*d*e^3)/(11*e^7) - (d*((b
^4*(A*b*e + 5*B*a*e - 2*B*b*d))/(11*e^4) - (B*b^5*d)/(11*e^4)))/e))/e))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (B*b^5*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/(7*e^7*(a + b*x)*(d + e*x)^7)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**14,x)
```

```
[Out] Timed out
```

3.1759 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=248

$$\frac{(a+bx)(d+ex)^3(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(}{2b}$$

```
[Out] (A*b-B*a)*e*(-a*e+b*d)^2*x*(b*x+a)/b^4/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*(-a*
e+b*d)*(b*x+a)*(e*x+d)^2/b^3/((b*x+a)^2)^(1/2)+1/3*(A*b-B*a)*(b*x+a)*(e*x+d
)^3/b^2/((b*x+a)^2)^(1/2)+1/4*B*(b*x+a)*(e*x+d)^4/b/e/((b*x+a)^2)^(1/2)+(A*
b-B*a)*(-a*e+b*d)^3*(b*x+a)*ln(b*x+a)/b^5/((b*x+a)^2)^(1/2)
```

Rubi **[A]** time = 0.14, antiderivative size = 248, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{(a+bx)(d+ex)^3(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(d+ex)^2(Ab-aB)(bd-ae)}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-}{b^5\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*e*(b*d - a*e)^2*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + ((A*b - a*B)*(b*d - a*e)*(a + b*x)*(d + e*x)^2)/(2*b^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + ((A*b - a*B)*(a + b*x)*(d + e*x)^3)/(3*b^2*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) + (B*(a + b*x)*(d + e*x)^4)/(4*b*e*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]) + ((A*b - a*B)*(b*d - a*e)^3*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^3}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{(Ab-aB)e(bd-ae)^2}{b^5}+\frac{(Ab-aB)(bd-ae)^3}{b^5(a+bx)}+\frac{(Ab-aB)e(bd-ae)(d+ex)}{b^4}+\frac{(Ab-aB)e(d+ex)^2}{b^3}+\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(Ab-aB)e(bd-ae)^2x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(bd-ae)(a+bx)(d+ex)^2}{2b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(}{3b^2\sqrt{a^2+}}\end{aligned}$$

Mathematica [**A**] time = 0.13, size = 185, normalized size = 0.75

$$\frac{(a+bx)\Big(bx\Big(-12a^3Be^3+6a^2be^2(2Ae+6Bd+Bex)-2ab^2e\Big(3Ae(6d+ex)+B\Big(18d^2+9dex+2e^2x^2\Big)\Big)+b^3\Big(2}{12b^5\sqrt{(a+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(-12*a^3*B*e^3 + 6*a^2*b*e^2*(6*B*d + 2*A*e + B*e*x) - 2*a*
b^2*e*(3*A*e*(6*d + e*x) + B*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + b^3*(2*A*e*(
18*d^2 + 9*d*e*x + 2*e^2*x^2) + 3*B*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*
x^3))) + 12*(A*b - a*B)*(b*d - a*e)^3*Log[a + b*x]))/(12*b^5*Sqrt[(a + b*x)
^2])
```

fricas [**A**] time = 0.77, size = 269, normalized size = 1.08

$$\frac{3\,Bb^4e^3x^4+4\Big(3\,Bb^4de^2-\Big(Bab^3-Ab^4\Big)e^3\Big)x^3+6\Big(3\,Bb^4d^2e-3\Big(Bab^3-Ab^4\Big)de^2+\Big(Ba^2b^2-Aab^3\Big)e^3\Big)x^2+12}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*b^4*e^3*x^4 + 4*(3*B*b^4*d*e^2 - (B*a*b^3 - A*b^4)*e^3)*x^3 + 6*(
3*B*b^4*d^2*e - 3*(B*a*b^3 - A*b^4)*d*e^2 + (B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 12*(B*b^4*d^3 - 3*(B*a*b^3 - A*b^4)*d^2*e + 3*(B*a^2*b^2 - A*a*b^3)*d*e^2
 - (B*a^3*b - A*a^2*b^2)*e^3)*x - 12*((B*a*b^3 - A*b^4)*d^3 - 3*(B*a^2*b^2
- A*a*b^3)*d^2*e + 3*(B*a^3*b - A*a^2*b^2)*d*e^2 - (B*a^4 - A*a^3*b)*e^3)*l
og(b*x + a))/b^5
```

giac [**B**] time = 0.19, size = 431, normalized size = 1.74

$$\frac{3\,Bb^3x^4e^3\mathrm{sgn}\,(bx+a)+12\,Bb^3dx^3e^2\mathrm{sgn}\,(bx+a)+18\,Bb^3d^2x^2e\mathrm{sgn}\,(bx+a)+12\,Bb^3d^3x\mathrm{sgn}\,(bx+a)-4\,Bab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/12*(3*B*b^3*x^4*e^3*sgn(b*x + a) + 12*B*b^3*d*x^3*e^2*sgn(b*x + a) + 18*B
*b^3*d^2*x^2*e*sgn(b*x + a) + 12*B*b^3*d^3*x*sgn(b*x + a) - 4*B*a*b^2*x^3*e
^3*sgn(b*x + a) + 4*A*b^3*x^3*e^3*sgn(b*x + a) - 18*B*a*b^2*d*x^2*e^2*sgn(b
*x + a) + 18*A*b^3*d*x^2*e^2*sgn(b*x + a) - 36*B*a*b^2*d^2*x*e*sgn(b*x + a)
 + 36*A*b^3*d^2*x*e*sgn(b*x + a) + 6*B*a^2*b*x^2*e^3*sgn(b*x + a) - 6*A*a*b
^2*x^2*e^3*sgn(b*x + a) + 36*B*a^2*b*d*x*e^2*sgn(b*x + a) - 36*A*a*b^2*d*x*
e^2*sgn(b*x + a) - 12*B*a^3*x*e^3*sgn(b*x + a) + 12*A*a^2*b*x*e^3*sgn(b*x +
 a))/b^4 - (B*a*b^3*d^3*sgn(b*x + a) - A*b^4*d^3*sgn(b*x + a) - 3*B*a^2*b^2
*d^2*e*sgn(b*x + a) + 3*A*a*b^3*d^2*e*sgn(b*x + a) + 3*B*a^3*b*d*e^2*sgn(b*
x + a) - 3*A*a^2*b^2*d*e^2*sgn(b*x + a) - B*a^4*e^3*sgn(b*x + a) + A*a^3*b*
e^3*sgn(b*x + a))*log(abs(b*x + a))/b^5
```

maple [**A**] time = 0.06, size = 356, normalized size = 1.44

$$-\frac{(bx+a)\Big(-3B\,b^4e^3x^4-4A\,b^4e^3x^3+4Ba\,b^3e^3x^3-12B\,b^4d\,e^2x^3+6Aa\,b^3e^3x^2-18A\,b^4d\,e^2x^2-6B\,a^2b^2e^3x^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/12*(b*x+a)*(-3*B*x^4*b^4*e^3-4*A*x^3*b^4*e^3+4*B*x^3*a*b^3*e^3-12*B*x^3*
b^4*d*e^2+6*A*x^2*a*b^3*e^3-18*A*x^2*b^4*d*e^2-6*B*x^2*a^2*b^2*e^3+18*B*x^2
*a*b^3*d*e^2-18*B*x^2*b^4*d^2*e+12*A*ln(b*x+a)*a^3*b*e^3-36*A*ln(b*x+a)*a^2
*b^2*d*e^2+36*A*ln(b*x+a)*a*b^3*d^2*e-12*A*ln(b*x+a)*b^4*d^3-12*A*x*a^2*b^2
*e^3+36*A*x*a*b^3*d*e^2-36*A*x*b^4*d^2*e-12*B*ln(b*x+a)*a^4*e^3+36*B*ln(b*x
+a)*a^3*b*d*e^2-36*B*ln(b*x+a)*a^2*b^2*d^2*e+12*B*ln(b*x+a)*a*b^3*d^3+12*B*
x*a^3*b*e^3-36*B*x*a^2*b^2*d*e^2+36*B*x*a*b^3*d^2*e-12*B*x*b^4*d^3)/((b*x+a
)^2)^(1/2)/b^5
```

maxima [B] time = 0.58, size = 438, normalized size = 1.77

$$\frac{\sqrt{b^{2} x^{2} + 2 \, a b x + a^{2}} B e^{3} x^{3}}{4 \, b^{2}} + \frac{13 \, B a^{2} e^{3} x^{2}}{12 \, b^{3}} - \frac{7 \, \sqrt{b^{2} x^{2} + 2 \, a b x + a^{2}} B a e^{3} x^{2}}{12 \, b^{3}} - \frac{13 \, B a^{3} e^{3} x}{6 \, b^{4}} + \frac{A d^{3} \log \left(x + \frac{a}{b}\right)}{b} + \frac{B a^{4} e^{3} \log \left(x\right.}{b^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*e^3*x^3/b^2 + 13/12*B*a^2*e^3*x^2/b^3 -
 7/12*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a*e^3*x^2/b^3 - 13/6*B*a^3*e^3*x/b^4
+ A*d^3*log(x + a/b)/b + B*a^4*e^3*log(x + a/b)/b^5 + 7/6*sqrt(b^2*x^2 + 2*
a*b*x + a^2)*B*a^3*e^3/b^5 - 5/6*(3*B*d*e^2 + A*e^3)*a*x^2/b^2 + 3/2*(B*d^2
*e + A*d*e^2)*x^2/b + 1/3*(3*B*d*e^2 + A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*x^2/b^2 + 5/3*(3*B*d*e^2 + A*e^3)*a^2*x/b^3 - 3*(B*d^2*e + A*d*e^2)*a*x/b^
2 - (3*B*d*e^2 + A*e^3)*a^3*log(x + a/b)/b^4 + 3*(B*d^2*e + A*d*e^2)*a^2*lo
g(x + a/b)/b^3 - (B*d^3 + 3*A*d^2*e)*a*log(x + a/b)/b^2 - 2/3*(3*B*d*e^2 +
A*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^4 + (B*d^3 + 3*A*d^2*e)*sqrt(b^2
*x^2 + 2*a*b*x + a^2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{\sqrt{{(a+b\,x)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.71, size = 221, normalized size = 0.89

$$\frac{B e^{3} x^{4}}{4 b} + x^{3} \left(\frac{A e^{3}}{3 b} - \frac{B a e^{3}}{3 b^{2}} + \frac{B d e^{2}}{b}\right) + x^{2} \left(- \frac{A a e^{3}}{2 b^{2}} + \frac{3 A d e^{2}}{2 b} + \frac{B a^{2} e^{3}}{2 b^{3}} - \frac{3 B a d e^{2}}{2 b^{2}} + \frac{3 B d^{2} e}{2 b}\right) + x \left(\frac{A a^{2} e^{3}}{b^{3}} - \frac{3 A a d e^{2}}{b^{2}} + \frac{3 A}{b}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e**3*x**4/(4*b) + x**3*(A*e**3/(3*b) - B*a*e**3/(3*b**2) + B*d*e**2/b) +
x**2*(-A*a*e**3/(2*b**2) + 3*A*d*e**2/(2*b) + B*a**2*e**3/(2*b**3) - 3*B*a*
d*e**2/(2*b**2) + 3*B*d**2*e/(2*b)) + x*(A*a**2*e**3/b**3 - 3*A*a*d*e**2/b*
*2 + 3*A*d**2*e/b - B*a**3*e**3/b**4 + 3*B*a**2*d*e**2/b**3 - 3*B*a*d**2*e/
b**2 + B*d**3/b) + (-A*b + B*a)*(a*e - b*d)**3*log(a + b*x)/b**5
```

3.1760 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=191

$$\frac{(a+bx)(d+ex)^2(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+}{3be\sqrt{a^2}}$$

```
[Out] (A*b-B*a)*e*(-a*e+b*d)*x*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+1/2*(A*b-B*a)*(b*x+a
)*(e*x+d)^2/b^2/((b*x+a)^2)^(1/2)+1/3*B*(b*x+a)*(e*x+d)^3/b/e/((b*x+a)^2)^(
1/2)+(A*b-B*a)*(-a*e+b*d)^2*(b*x+a)*ln(b*x+a)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{(a+bx)(d+ex)^2(Ab-aB)}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{ex(a+bx)(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+}{3be\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((A*b - a*B)*e*(b*d - a*e)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + ((A*b - a*B)*(a + b*x)*(d + e*x)^2)/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (B*(a + b*x)*(d + e*x)^3)/(3*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b
 - a*B)*(b*d - a*e)^2*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^2}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{(Ab-aB)e(bd-ae)}{b^4}+\frac{(Ab-aB)(bd-ae)^2}{b^4(a+bx)}+\frac{(Ab-aB)e(d+ex)}{b^3}+\frac{B(d+ex)^2}{b^2}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)e(bd-ae)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B(a+bx)(d+ex}{3be\sqrt{a^2+2abx+b}}
\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 118, normalized size = 0.62

$$\frac{(a+bx)\left(bx\left(6a^2Be^2-3abe(2Ae+4Bd+Bex)+b^2\left(3Ae(4d+ex)+2B\left(3d^2+3dex+e^2x^2\right)\right)\right)+6(Ab-aB)(bd-}{6b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(6*a^2*B*e^2 - 3*a*b*e*(4*B*d + 2*A*e + B*e*x) + b^2*(3*A*e
*(4*d + e*x) + 2*B*(3*d^2 + 3*d*e*x + e^2*x^2))) + 6*(A*b - a*B)*(b*d - a*e
)^2*Log[a + b*x]))/(6*b^4*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.48, size = 158, normalized size = 0.83

$$\frac{2\,Bb^3e^2x^3+3\left(2\,Bb^3de-\left(Bab^2-Ab^3\right)e^2\right)x^2+6\left(Bb^3d^2-2\left(Bab^2-Ab^3\right)de+\left(Ba^2b-Aab^2\right)e^2\right)x-6\left(\left(Bab^2-A\right.\right.}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*b^3*e^2*x^3 + 3*(2*B*b^3*d*e - (B*a*b^2 - A*b^3)*e^2)*x^2 + 6*(B*b
^3*d^2 - 2*(B*a*b^2 - A*b^3)*d*e + (B*a^2*b - A*a*b^2)*e^2)*x - 6*((B*a*b^2
 - A*b^3)*d^2 - 2*(B*a^2*b - A*a*b^2)*d*e + (B*a^3 - A*a^2*b)*e^2)*log(b*x
+ a))/b^4
```

giac [**A**] time = 0.22, size = 254, normalized size = 1.33

$$\frac{2\,Bb^2x^3e^2\mathrm{sgn}\left(bx+a\right)+6\,Bb^2dx^2e\mathrm{sgn}\left(bx+a\right)+6\,Bb^2d^2x\mathrm{sgn}\left(bx+a\right)-3\,Babx^2e^2\mathrm{sgn}\left(bx+a\right)+3\,Ab^2x^2e^2\mathrm{sgn}}{6\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*(2*B*b^2*x^3*e^2*sgn(b*x + a) + 6*B*b^2*d*x^2*e*sgn(b*x + a) + 6*B*b^2*
d^2*x*sgn(b*x + a) - 3*B*a*b*x^2*e^2*sgn(b*x + a) + 3*A*b^2*x^2*e^2*sgn(b*x
 + a) - 12*B*a*b*d*x*e*sgn(b*x + a) + 12*A*b^2*d*x*e*sgn(b*x + a) + 6*B*a^2
*x*e^2*sgn(b*x + a) - 6*A*a*b*x*e^2*sgn(b*x + a))/b^3 - (B*a*b^2*d^2*sgn(b*
x + a) - A*b^3*d^2*sgn(b*x + a) - 2*B*a^2*b*d*e*sgn(b*x + a) + 2*A*a*b^2*d*
e*sgn(b*x + a) + B*a^3*e^2*sgn(b*x + a) - A*a^2*b*e^2*sgn(b*x + a))*log(abs
(b*x + a))/b^4
```

maple [**A**] time = 0.06, size = 212, normalized size = 1.11

$$\frac{(bx+a)\left(2B\,b^3e^2x^3+3A\,b^3e^2x^2-3Ba\,b^2e^2x^2+6B\,b^3de\,x^2+6A\,a^2b\,e^2\ln\left(bx+a\right)-12Aa\,b^2de\ln\left(bx+a\right)-6Aa\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(2*B*x^3*b^3*e^2+3*A*x^2*b^3*e^2-3*B*x^2*a*b^2*e^2+6*B*x^2*b^3*
d*e+6*A*ln(b*x+a)*a^2*b*e^2-12*A*ln(b*x+a)*a*b^2*d*e+6*A*ln(b*x+a)*b^3*d^2-
6*A*x*a*b^2*e^2+12*A*x*b^3*d*e-6*B*ln(b*x+a)*a^3*e^2+12*B*ln(b*x+a)*a^2*b*d
*e-6*B*ln(b*x+a)*a*b^2*d^2+6*B*x*a^2*b*e^2-12*B*x*a*b^2*d*e+6*B*x*b^3*d^2)/
((b*x+a)^2)^(1/2)/b^4
```

maxima [**A**] time = 0.62, size = 244, normalized size = 1.28

$$-\frac{5\,Bae^2x^2}{6\,b^2}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,Be^2x^2}{3\,b^2}+\frac{5\,Ba^2e^2x}{3\,b^3}+\frac{Ad^2\log\left(x+\frac{a}{b}\right)}{b}-\frac{Ba^3e^2\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{\left(2\,Bde+Ae^2\right)x^2}{2\,b}-\frac{2\,\sqrt{b^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*B*a*e^2*x^2/b^2 + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*e^2*x^2/b^2 + 5/
3*B*a^2*e^2*x/b^3 + A*d^2*log(x + a/b)/b - B*a^3*e^2*log(x + a/b)/b^4 + 1/2
*(2*B*d*e + A*e^2)*x^2/b - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*B*a^2*e^2/b^4
- (2*B*d*e + A*e^2)*a*x/b^2 + (2*B*d*e + A*e^2)*a^2*log(x + a/b)/b^3 - (B*d
^2 + 2*A*d*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d^2 + 2
*A*d*e)/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^2}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2), x)
```

sympy **[A]** time = 0.49, size = 117, normalized size = 0.61

$$\frac{Be^2x^3}{3b}+x^2\left(\frac{Ae^2}{2b}-\frac{Bae^2}{2b^2}+\frac{Bde}{b}\right)+x\left(-\frac{Aae^2}{b^2}+\frac{2Ade}{b}+\frac{Ba^2e^2}{b^3}-\frac{2Bade}{b^2}+\frac{Bd^2}{b}\right)-\frac{(-Ab+Ba)\,(ae-bd)^2\log{(a}}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e**2*x**3/(3*b) + x**2*(A*e**2/(2*b) - B*a*e**2/(2*b**2) + B*d*e/b) + x*(
-A*a*e**2/b**2 + 2*A*d*e/b + B*a**2*e**2/b**3 - 2*B*a*d*e/b**2 + B*d**2/b)
- (-A*b + B*a)*(a*e - b*d)**2*log(a + b*x)/b**4
```

3.1761 $\int \frac{(A+Bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=134

$$\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{(a+bx)(Ab-aB)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)(bd-ae)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] B*(-a*e+b*d)*x*(b*x+a)/b^2/((b*x+a)^2)^(1/2)+1/2*e*(b*x+a)*(B*x+A)^2/b/B/((
b*x+a)^2)^(1/2)+(A*b-B*a)*(-a*e+b*d)*(b*x+a)*ln(b*x+a)/b^3/((b*x+a)^2)^(1/2
)
```

Rubi [A] time = 0.08, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {770, 77}

$$\frac{(a+bx)(Ab-aB)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{Bx(a+bx)(bd-ae)}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*(b*d - a*e)*x*(a + b*x))/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(a + b
*x)*(A + B*x)^2)/(2*b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + ((A*b - a*B)*(b*d
- a*e)*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{B(bd-ae)}{b^3}+\frac{(Ab-aB)(bd-ae)}{b^3(a+bx)}+\frac{e(A+Bx)}{b^2}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B(bd-ae)x(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)(A+Bx)^2}{2bB\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(bd-ae)(a+bx)\log(a}{b^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.54

$$\frac{(a+bx)(bx(b(2Ae+2Bd+Bex)-2aBe)+2(Ab-aB)(bd-ae)\log(a+bx))}{2b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*x*(-2*a*B*e + b*(2*B*d + 2*A*e + B*e*x)) + 2*(A*b - a*B)*(b*d
 - a*e)*Log[a + b*x]))/(2*b^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.58, size = 75, normalized size = 0.56

$$\frac{Bb^2ex^2 + 2\left(Bb^2d - \left(Bab - Ab^2\right)e\right)x - 2\left(\left(Bab - Ab^2\right)d - \left(Ba^2 - Aab\right)e\right)\log\left(bx + a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*(B*b^2*e*x^2 + 2*(B*b^2*d - (B*a*b - A*b^2)*e)*x - 2*((B*a*b - A*b^2)*d
 - (B*a^2 - A*a*b)*e)*log(b*x + a))/b^3
```

giac [A] time = 0.17, size = 122, normalized size = 0.91

$$\frac{Bbx^2e\operatorname{sgn}\left(bx + a\right) + 2\,Bbdx\operatorname{sgn}\left(bx + a\right) - 2\,Baxe\operatorname{sgn}\left(bx + a\right) + 2\,Abxe\operatorname{sgn}\left(bx + a\right)}{2\,b^2} - \left(Babd\operatorname{sgn}\left(bx + a\right) - A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(B*b*x^2*e*sgn(b*x + a) + 2*B*b*d*x*sgn(b*x + a) - 2*B*a*x*e*sgn(b*x +
a) + 2*A*b*x*e*sgn(b*x + a))/b^2 - (B*a*b*d*sgn(b*x + a) - A*b^2*d*sgn(b*x
+ a) - B*a^2*e*sgn(b*x + a) + A*a*b*e*sgn(b*x + a))*log(abs(b*x + a))/b^3
```

maple [A] time = 0.06, size = 104, normalized size = 0.78

$$-\frac{\left(bx + a\right)\left(-B\,b^2e\,x^2 + 2Aabe\ln\left(bx + a\right) - 2A\,b^2d\ln\left(bx + a\right) - 2A\,b^2ex - 2B\,a^2e\ln\left(bx + a\right) + 2Babd\ln\left(bx + \right.\right.}{2\sqrt{\left(bx + a\right)^2}\;b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(-B*x^2*b^2*e+2*A*ln(b*x+a)*a*b*e-2*A*ln(b*x+a)*b^2*d-2*A*x*b^
2*e-2*B*ln(b*x+a)*a^2*e+2*B*ln(b*x+a)*a*b*d+2*B*x*a*b*e-2*B*x*b^2*d)/((b*x+
a)^2)^(1/2)/b^3
```

maxima [A] time = 0.49, size = 101, normalized size = 0.75

$$\frac{Bex^2}{2\,b} - \frac{Baex}{b^2} + \frac{Ad\log\left(x + \frac{a}{b}\right)}{b} + \frac{Ba^2e\log\left(x + \frac{a}{b}\right)}{b^3} - \frac{(Bd + Ae)a\log\left(x + \frac{a}{b}\right)}{b^2} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,(Bd + Ae)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*B*e*x^2/b - B*a*e*x/b^2 + A*d*log(x + a/b)/b + B*a^2*e*log(x + a/b)/b^3
 - (B*d + A*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*d + A*
e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A + B\,x)\,(d + e\,x)}{\sqrt{(a + b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.29, size = 53, normalized size = 0.40

$$\frac{Bex^{2}}{2b} + x\left(\frac{Ae}{b} - \frac{Bae}{b^{2}} + \frac{Bd}{b}\right) + \frac{(-Ab + Ba)(ae - bd)\log(a + bx)}{b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*e*x**2/(2*b) + x*(A*e/b - B*a*e/b**2 + B*d/b) + (-A*b + B*a)*(a*e - b*d)*
log(a + b*x)/b**3
```

3.1762 $\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=69

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

```
[Out] (A*b-B*a)*(b*x+a)*ln(b*x+a)/b^2/((b*x+a)^2)^(1/2)+B*((b*x+a)^2)^(1/2)/b^2
```

Rubi [A] time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.115, Rules used = {640, 608, 31}

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^2 + ((A*b - a*B)*(a + b*x)*Log[a + b*x]
)/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b^2}\\ &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{\left(\left(2Ab^2-2abB\right)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{2b^2\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B\sqrt{a^2+2abx+b^2x^2}}{b^2}+\frac{(Ab-aB)(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 40, normalized size = 0.58

$$\frac{(a+bx)((Ab-aB)\log(a+bx)+bBx)}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(b*B*x + (A*b - a*B)*Log[a + b*x]))/(b^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.53, size = 25, normalized size = 0.36

$$\frac{Bbx-(Ba-Ab)\log(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] (B*b*x - (B*a - A*b)*log(b*x + a))/b^2
```

giac [A] time = 0.15, size = 45, normalized size = 0.65

$$\frac{Bx\operatorname{sgn}(bx+a)}{b}-\frac{\left(Ba\operatorname{sgn}(bx+a)-Ab\operatorname{sgn}(bx+a)\right)\log(|bx+a|)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] B*x*sgn(b*x + a)/b - (B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a)
)/b^2
```

maple [A] time = 0.05, size = 43, normalized size = 0.62

$$\frac{(bx+a)(Ab\ln(bx+a)-Ba\ln(bx+a)+Bbx)}{\sqrt{(bx+a)^2}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*b-B*ln(b*x+a)*a+B*b*x)/((b*x+a)^2)^(1/2)/b^2
```

maxima [A] time = 0.56, size = 52, normalized size = 0.75

$$-\frac{Ba\log\left(x+\frac{a}{b}\right)}{b^2}+\frac{A\log\left(x+\frac{a}{b}\right)}{b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,B}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -B*a*log(x + a/b)/b^2 + A*log(x + a/b)/b + sqrt(b^2*x^2 + 2*a*b*x + a^2)*B/
b^2
```

mupad [B] time = 2.47, size = 79, normalized size = 1.14

$$\frac{B\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b^2}+\frac{A\,\ln\left(a+b\,x+\sqrt{(a+b\,x)^2}\right)}{b}-\frac{B\,a\,b\,\ln\left(a\,b+\sqrt{(a+b\,x)^2}\,\sqrt{b^2}+b^2\,x\right)}{\left(b^2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (B*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b^2 + (A*log(a + b*x + ((a + b*x)^2)^(1
/2)))/b - (B*a*b*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^
(3/2)
```

sympy [A] time = 0.17, size = 20, normalized size = 0.29

$$\frac{Bx}{b}-\frac{(-Ab+Ba)\log{(a+bx)}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/((b*x+a)**2)**(1/2),x)
```

```
[Out] B*x/b - (-A*b + B*a)*log(a + b*x)/b**2
```

3.1763 $\int \frac{A+Bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=107

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{(a+bx)(Bd-Ae)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

```
[Out] (A*b-B*a)*(b*x+a)*ln(b*x+a)/b/(-a*e+b*d)/((b*x+a)^2)^(1/2)+(-A*e+B*d)*(b*x+
a)*ln(e*x+d)/e/(-a*e+b*d)/((b*x+a)^2)^(1/2)
```

Rubi **[A]** time = 0.08, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{770, 72\}$

$$\frac{(a+bx)(Ab-aB)\log(a+bx)}{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{(a+bx)(Bd-Ae)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((A*b - a*B)*(a + b*x)*Log[a + b*x])/(b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2]) + ((B*d - A*e)*(a + b*x)*Log[d + e*x])/(e*(b*d - a*e)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 72

```
Int[((e_.) + (f_.)*(x_))^(p_.)/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))),
 x_Symbol] :> Int[ExpandIntegrand[(e + f*x)^p/((a + b*x)*(c + d*x)), x], x]
 /; FreeQ[{a, b, c, d, e, f}, x] && IntegerQ[p]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \left(\frac{Ab-aB}{b(bd-ae)(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(Ab-aB)(a+bx)\log(a+bx)}{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}+\frac{(Bd-Ae)(a+bx)\log(d+ex)}{e(bd-ae)\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica **[A]** time = 0.04, size = 66, normalized size = 0.62

$$\frac{(a+bx)(e(Ab-aB)\log(a+bx)+b(Bd-Ae)\log(d+ex))}{be\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((A*b - a*B)*e*Log[a + b*x] + b*(B*d - A*e)*Log[d + e*x]))/(b*e*
(b*d - a*e)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.63, size = 53, normalized size = 0.50

$$-\frac{(Ba - Ab)e\log(bx + a) - (Bbd - Abe)\log(ex + d)}{b^2de - abe^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -((B*a - A*b)*e*log(b*x + a) - (B*b*d - A*b*e)*log(e*x + d))/(b^2*d*e - a*b
*e^2)
```

giac [A] time = 0.17, size = 87, normalized size = 0.81

$$-\frac{\left(Ba\operatorname{sgn}(bx + a) - Ab\operatorname{sgn}(bx + a)\right)\log(|bx + a|)}{b^2d - abe} + \frac{\left(Bd\operatorname{sgn}(bx + a) - Ae\operatorname{sgn}(bx + a)\right)\log(|xe + d|)}{bde - ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*log(abs(b*x + a))/(b^2*d - a*b*e) +
(B*d*sgn(b*x + a) - A*e*sgn(b*x + a))*log(abs(x*e + d))/(b*d*e - a*e^2)
```

maple [A] time = 0.06, size = 76, normalized size = 0.71

$$-\frac{(bx + a)(Abe\ln(bx + a) - Abe\ln(ex + d) - Bae\ln(bx + a) + Bbd\ln(ex + d))}{\sqrt{(bx + a)^2}\,(ae - bd)be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -(b*x+a)*(A*ln(b*x+a)*b*e-A*ln(e*x+d)*b*e-B*ln(b*x+a)*a*e+B*ln(e*x+d)*b*d)/
((b*x+a)^2)^(1/2)/(a*e-b*d)/b/e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A + B\,x}{\sqrt{(a + b\,x)^2}\,(d + e\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)), x)
```

sympy [**B**] time = 1.45, size = 226, normalized size = 2.11

$$-\frac{(-Ae+Bd)\log\left(x+\frac{-Aae-Abd+2Bad-\frac{a^2e(-Ae+Bd)}{ae-bd}+\frac{2abd(-Ae+Bd)}{ae-bd}-\frac{b^2d^2(-Ae+Bd)}{e(ae-bd)}}{-2Abe+Bae+Bbd}\right)}{e\,(ae-bd)}+\frac{(-Ab+Ba)\log\left(x+\frac{-Aae-Abd+2Bad+\frac{a^2e^2(-A}{b(ae-}}{-2Al}\right.}{b\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] -(-A*e + B*d)*log(x + (-A*a*e - A*b*d + 2*B*a*d - a**2*e*(-A*e + B*d)/(a*e
- b*d) + 2*a*b*d*(-A*e + B*d)/(a*e - b*d) - b**2*d**2*(-A*e + B*d)/(e*(a*e
- b*d)))/(-2*A*b*e + B*a*e + B*b*d))/(e*(a*e - b*d)) + (-A*b + B*a)*log(x +
 (-A*a*e - A*b*d + 2*B*a*d + a**2*e**2*(-A*b + B*a)/(b*(a*e - b*d)) - 2*a*d
*e*(-A*b + B*a)/(a*e - b*d) + b*d**2*(-A*b + B*a)/(a*e - b*d))/(-2*A*b*e +
B*a*e + B*b*d))/(b*(a*e - b*d))
```

3.1764 $\int \frac{A+Bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=148

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{(d+ex)(bd-ae)^2}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

```
[Out] (A*b-B*a)*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)-(A*b-B*a)*(b*x+a
)*ln(e*x+d)/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)+(-A*e+B*d)*((b*x+a)^2)^(1/2)/(-a
*e+b*d)^2/(e*x+d)
```

Rubi [A] time = 0.08, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {769, 646, 36, 31}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Bd-Ae)}{(d+ex)(bd-ae)^2}+\frac{(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(a+bx)(Ab-aB)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/((b*d - a*e)^2*(d + e*x)) + ((A
*b - a*B)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - ((A*b - a*B)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{(Ab-aB)\int \frac{1}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx}{bd-ae}$$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)(d+ex)}\,dx}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{\left(b(Ab-aB)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{\left((A}{b(}$$

$$= \frac{(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)^2(d+ex)} + \frac{(Ab-aB)(a+bx)\log(a+bx)}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB}{(bd-ae)}$$

Mathematica [**A**]   time = 0.12, size = 97, normalized size = 0.66

$$\frac{(a+bx)\left(\frac{Bd-Ae}{e(d+ex)(ae-bd)}+\frac{(Ab-aB)\log(a+bx)}{(bd-ae)^2}+\frac{(aB-Ab)\log(d+ex)}{(bd-ae)^2}\right)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((B*d - A*e)/(e*(-(b*d) + a*e)*(d + e*x)) + ((A*b - a*B)*Log[a +
 b*x])/(b*d - a*e)^2 + ((-(A*b) + a*B)*Log[d + e*x])/(b*d - a*e)^2))/Sqrt[(
a + b*x)^2]
```

fricas [**A**]   time = 1.51, size = 148, normalized size = 1.00

$$-\frac{Bbd^2+Aae^2-(Ba+Ab)de+\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\log(bx+a)-\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\log(}{b^2d^3e-2\,abd^2e^2+a^2de^3+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -(B*b*d^2 + A*a*e^2 - (B*a + A*b)*d*e + ((B*a - A*b)*e^2*x + (B*a - A*b)*d*
e)*log(b*x + a) - ((B*a - A*b)*e^2*x + (B*a - A*b)*d*e)*log(e*x + d))/(b^2*
d^3*e - 2*a*b*d^2*e^2 + a^2*d*e^3 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x
)
```

giac [**A**]   time = 0.17, size = 190, normalized size = 1.28

$$-\frac{\left(Bab\operatorname{sgn}(bx+a)-Ab^2\operatorname{sgn}(bx+a)\right)\log(|bx+a|)}{b^3d^2-2\,ab^2de+a^2be^2}+\frac{\left(Bae\operatorname{sgn}(bx+a)-Abe\operatorname{sgn}(bx+a)\right)\log(|xe+d|)}{b^2d^2e-2\,abde^2+a^2e^3}-\frac{\left(Bbd^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*log(abs(b*x + a))/(b^3*d^2 - 2*a
*b^2*d*e + a^2*b*e^2) + (B*a*e*sgn(b*x + a) - A*b*e*sgn(b*x + a))*log(abs(x
*e + d))/(b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3) - (B*b*d^2*sgn(b*x + a) - B*a*
d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-1)/((b*
d - a*e)^2*(x*e + d))
```

maple [**A**]   time = 0.06, size = 161, normalized size = 1.09

$$\frac{(bx+a)\left(Ab\,e^2x\ln(bx+a)-Ab\,e^2x\ln(ex+d)-Ba\,e^2x\ln(bx+a)+Ba\,e^2x\ln(ex+d)+Abde\ln(bx+a)-Ab\right.}{\sqrt{(bx+a)^2}\;(ae-bd)^2\,(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*(A*ln(b*x+a)*x*b*e^2-A*ln(e*x+d)*x*b*e^2-B*ln(b*x+a)*x*a*e^2+B*ln(e
*x+d)*x*a*e^2+A*ln(b*x+a)*b*d*e-A*ln(e*x+d)*b*d*e-B*ln(b*x+a)*a*d*e+B*ln(e*
x+d)*a*d*e-A*a*e^2+A*b*d*e+B*a*d*e-B*b*d^2)/((b*x+a)^2)^(1/2)/(a*e-b*d)^2/e
/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2), x)
```

sympy [B] time = 1.22, size = 355, normalized size = 2.40

$$\frac{(-Ab+Ba)\log\left(x+\frac{-Aabe-Ab^2d+Ba^2e+Babd-\frac{a^3e^3(-Ab+Ba)}{(ae-bd)^2}+\frac{3a^2bde^2(-Ab+Ba)}{(ae-bd)^2}-\frac{3ab^2d^2e(-Ab+Ba)}{(ae-bd)^2}+\frac{b^3d^3(-Ab+Ba)}{(ae-bd)^2}}{-2Ab^2e+2Babe}\right)}{(ae-bd)^2}-\frac{(-Ab+Ba)\log\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] (-A*b + B*a)*log(x + (-A*a*b*e - A*b**2*d + B*a**2*e + B*a*b*d - a**3*e**3*
(-A*b + B*a)/(a*e - b*d)**2 + 3*a**2*b*d*e**2*(-A*b + B*a)/(a*e - b*d)**2 -
 3*a*b**2*d**2*e*(-A*b + B*a)/(a*e - b*d)**2 + b**3*d**3*(-A*b + B*a)/(a*e
- b*d)**2)/(-2*A*b**2*e + 2*B*a*b*e))/(a*e - b*d)**2 - (-A*b + B*a)*log(x +
 (-A*a*b*e - A*b**2*d + B*a**2*e + B*a*b*d + a**3*e**3*(-A*b + B*a)/(a*e -
b*d)**2 - 3*a**2*b*d*e**2*(-A*b + B*a)/(a*e - b*d)**2 + 3*a*b**2*d**2*e*(-A
*b + B*a)/(a*e - b*d)**2 - b**3*d**3*(-A*b + B*a)/(a*e - b*d)**2)/(-2*A*b**
2*e + 2*B*a*b*e))/(a*e - b*d)**2 + (-A*e + B*d)/(a*d*e**2 - b*d**2*e + x*(a
*e**3 - b*d*e**2))
```

3.1765 $\int \frac{A+Bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=212

$$\frac{(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}+\frac{b(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-$$

```
[Out] -1/2*(-A*e+B*d)*(b*x+a)/e/(-a*e+b*d)/(e*x+d)^2/((b*x+a)^2)^(1/2)+(A*b-B*a)*
(b*x+a)/(-a*e+b*d)^2/(e*x+d)/((b*x+a)^2)^(1/2)+b*(A*b-B*a)*(b*x+a)*ln(b*x+a
)/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)-b*(A*b-B*a)*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^3
/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}+\frac{b(a+bx)(Ab-aB)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((B*d - A*e)*(a + b*x))/(2*e*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + ((A*b - a*B)*(a + b*x))/((b*d - a*e)^2*(d + e*x)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^3*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (b*(A*b - a*B)*(a + b*x)*Log[d + e*x])/((b*d
 - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b(Ab-aB)}{(bd-ae)^3(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)^3}+\frac{(-Ab+aB)e}{b(bd-ae)^2(d+ex)^2}+\frac{(-Ab+aB)e}{(bd-ae)^3(d+ex)}\right)}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Bd-Ae)(a+bx)}{2e(bd-ae)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx)}{(bd-ae)^2(d+ex)\sqrt{a^2+2abx+}}\end{aligned}$$

Mathematica [**A**] time = 0.15, size = 131, normalized size = 0.62

$$\frac{(a+bx)\left(\frac{2(Ab-aB)}{(d+ex)(bd-ae)^2}+\frac{Bd-Ae}{e(d+ex)^2(ae-bd)}+\frac{2b(Ab-aB)\log(a+bx)}{(bd-ae)^3}-\frac{2b(Ab-aB)\log(d+ex)}{(bd-ae)^3}\right)}{2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*((B*d - A*e)/(e*(-(b*d) + a*e)*(d + e*x)^2) + (2*(A*b - a*B))/((
b*d - a*e)^2*(d + e*x)) + (2*b*(A*b - a*B)*Log[a + b*x])/(b*d - a*e)^3 - (2
*b*(A*b - a*B)*Log[d + e*x])/(b*d - a*e)^3))/(2*Sqrt[(a + b*x)^2])
```

fricas [**B**] time = 0.77, size = 343, normalized size = 1.62

$$-\frac{Bb^2d^3-3\,Ab^2d^2e-Aa^2e^3-\left(Ba^2-4\,Aab\right)de^2+2\left(\left(Bab-Ab^2\right)de^2-\left(Ba^2-Aab\right)e^3\right)x+2\left(\left(Bab-Ab^2\right)e^3x\right.}{2\left(b^3d^5e-3\,ab^2d^4e^2+3\,a^2bd^3e^3-a^3d^2e^4+\left(b^3d^3e^3-3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2*(B*b^2*d^3 - 3*A*b^2*d^2*e - A*a^2*e^3 - (B*a^2 - 4*A*a*b)*d*e^2 + 2*(
(B*a*b - A*b^2)*d*e^2 - (B*a^2 - A*a*b)*e^3)*x + 2*((B*a*b - A*b^2)*e^3*x^2
 + 2*(B*a*b - A*b^2)*d*e^2*x + (B*a*b - A*b^2)*d^2*e)*log(b*x + a) - 2*((B*
a*b - A*b^2)*e^3*x^2 + 2*(B*a*b - A*b^2)*d*e^2*x + (B*a*b - A*b^2)*d^2*e)*l
og(e*x + d))/(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*e^4 +
 (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 - a^3*e^6)*x^2 + 2*(b^3*d^4
*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a^3*d*e^5)*x)
```

giac [**A**] time = 0.18, size = 306, normalized size = 1.44

$$-\frac{\left(Bab^2\mathrm{sgn}\left(bx+a\right)-Ab^3\mathrm{sgn}\left(bx+a\right)\right)\log\left(|bx+a|\right)}{b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3}+\frac{\left(Babe\mathrm{sgn}\left(bx+a\right)-Ab^2e\mathrm{sgn}\left(bx+a\right)\right)\log\left(|xe+d|\right)}{b^3d^3e-3\,ab^2d^2e^2+3\,a^2bde^3-a^3e^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*log(abs(b*x + a))/(b^4*d^3 - 3
*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3) + (B*a*b*e*sgn(b*x + a) - A*b^2
*e*sgn(b*x + a))*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d
*e^3 - a^3*e^4) - 1/2*(B*b^2*d^3*sgn(b*x + a) - 3*A*b^2*d^2*e*sgn(b*x + a)
- B*a^2*d*e^2*sgn(b*x + a) + 4*A*a*b*d*e^2*sgn(b*x + a) - A*a^2*e^3*sgn(b*x
 + a) + 2*(B*a*b*d*e^2*sgn(b*x + a) - A*b^2*d*e^2*sgn(b*x + a) - B*a^2*e^3*
sgn(b*x + a) + A*a*b*e^3*sgn(b*x + a))*x)*e^(-1)/((b*d - a*e)^3*(x*e + d)^2
)
```

maple [**A**] time = 0.07, size = 321, normalized size = 1.51

$$-\frac{(bx+a)\left(2A\,b^2e^3x^2\ln\left(bx+a\right)-2A\,b^2e^3x^2\ln\left(ex+d\right)-2Bab\,e^3x^2\ln\left(bx+a\right)+2Bab\,e^3x^2\ln\left(ex+d\right)+4A\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*A*ln(b*x+a)*x^2*b^2*e^3-2*A*ln(e*x+d)*x^2*b^2*e^3-2*B*ln(b*
x+a)*x^2*a*b*e^3+2*B*ln(e*x+d)*x^2*a*b*e^3+4*A*ln(b*x+a)*x*b^2*d*e^2-4*A*ln
(e*x+d)*x*b^2*d*e^2-4*B*ln(b*x+a)*x*a*b*d*e^2+4*B*ln(e*x+d)*x*a*b*d*e^2+2*A
*ln(b*x+a)*b^2*d^2*e-2*A*ln(e*x+d)*b^2*d^2*e-2*A*x*a*b*e^3+2*A*x*b^2*d*e^2-
2*B*ln(b*x+a)*a*b*d^2*e+2*B*ln(e*x+d)*a*b*d^2*e+2*B*x*a^2*e^3-2*B*x*a*b*d*e
^2+A*a^2*e^3-4*A*a*b*d*e^2+3*A*b^2*d^2*e+B*d*a^2*e^2-B*b^2*d^3)/((b*x+a)^2)
^(1/2)/(a*e-b*d)^3/e/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3), x)
```

sympy [B] time = 1.99, size = 558, normalized size = 2.63

$$-\frac{b\left(-Ab+Ba\right)\log{\left(x+\frac{-Aab^{2}e-Ab^{3}d+Ba^{2}be+Bab^{2}d-\frac{a^{4}be^{4}\left(-Ab+Ba\right)}{\left(ae-bd\right)^{3}}+\frac{4a^{3}b^{2}de^{3}\left(-Ab+Ba\right)}{\left(ae-bd\right)^{3}}-\frac{6a^{2}b^{3}d^{2}e^{2}\left(-Ab+Ba\right)}{\left(ae-bd\right)^{3}}+\frac{4ab^{4}d^{3}e\left(-Ab+Ba\right)}{\left(ae-bd\right)^{3}}-\frac{b^{5}d^{4}\left(-Ab+Ba\right)}{\left(ae-bd\right)^{3}}}{-2Ab^{3}e+2Bab^{2}e} \right)}}{\left(ae-bd\right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] -b*(-A*b + B*a)*log(x + (-A*a*b**2*e - A*b**3*d + B*a**2*b*e + B*a*b**2*d -
 a**4*b*e**4*(-A*b + B*a)/(a*e - b*d)**3 + 4*a**3*b**2*d*e**3*(-A*b + B*a)/
(a*e - b*d)**3 - 6*a**2*b**3*d**2*e**2*(-A*b + B*a)/(a*e - b*d)**3 + 4*a*b*
*4*d**3*e*(-A*b + B*a)/(a*e - b*d)**3 - b**5*d**4*(-A*b + B*a)/(a*e - b*d)*
*3)/(-2*A*b**3*e + 2*B*a*b**2*e))/(a*e - b*d)**3 + b*(-A*b + B*a)*log(x + (
-A*a*b**2*e - A*b**3*d + B*a**2*b*e + B*a*b**2*d + a**4*b*e**4*(-A*b + B*a)
/(a*e - b*d)**3 - 4*a**3*b**2*d*e**3*(-A*b + B*a)/(a*e - b*d)**3 + 6*a**2*b
**3*d**2*e**2*(-A*b + B*a)/(a*e - b*d)**3 - 4*a*b**4*d**3*e*(-A*b + B*a)/(a
*e - b*d)**3 + b**5*d**4*(-A*b + B*a)/(a*e - b*d)**3)/(-2*A*b**3*e + 2*B*a*
b**2*e))/(a*e - b*d)**3 + (-A*a*e**2 + 3*A*b*d*e - B*a*d*e - B*b*d**2 + x*(
2*A*b*e**2 - 2*B*a*e**2))/(2*a**2*d**2*e**3 - 4*a*b*d**3*e**2 + 2*b**2*d**4
*e + x**2*(2*a**2*e**5 - 4*a*b*d*e**4 + 2*b**2*d**2*e**3) + x*(4*a**2*d*e**
4 - 8*a*b*d**2*e**3 + 4*b**2*d**3*e**2))
```

3.1766 $\int \frac{A+Bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=271

$$\frac{b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}+\frac{(a+bx)(Ab-aB)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex}$$

```
[Out] -1/3*(-A*e+B*d)*(b*x+a)/e/(-a*e+b*d)/(e*x+d)^3/((b*x+a)^2)^(1/2)+1/2*(A*b-B
*a)*(b*x+a)/(-a*e+b*d)^2/(e*x+d)^2/((b*x+a)^2)^(1/2)+b*(A*b-B*a)*(b*x+a)/(-
a*e+b*d)^3/(e*x+d)/((b*x+a)^2)^(1/2)+b^2*(A*b-B*a)*(b*x+a)*ln(b*x+a)/(-a*e+
b*d)^4/((b*x+a)^2)^(1/2)-b^2*(A*b-B*a)*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^4/((b*x
+a)^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}+\frac{(a+bx)(Ab-aB)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^2}-\frac{(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((B*d - A*e)*(a + b*x))/(3*e*(b*d - a*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + ((A*b - a*B)*(a + b*x))/(2*(b*d - a*e)^2*(d + e*x)^2*Sqrt[a^2 +
 2*a*b*x + b^2*x^2]) + (b*(A*b - a*B)*(a + b*x))/((b*d - a*e)^3*(d + e*x)*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + (b^2*(A*b - a*B)*(a + b*x)*Log[a + b*x])/((
b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (b^2*(A*b - a*B)*(a + b*x)*Lo
g[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b^2(Ab-aB)}{(bd-ae)^4(a+bx)}+\frac{Bd-Ae}{b(bd-ae)(d+ex)^4}+\frac{(-Ab+aB)e}{b(bd-ae)^2(d+ex)^3}+\frac{(-Ab+aB)e}{(bd-ae)^3(d+ex}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}+\frac{(Ab-aB)(a+bx}{2(bd-ae)^2(d+ex)^2\sqrt{a^2+2}}\end{aligned}$$

Mathematica [A] time = 0.16, size = 168, normalized size = 0.62

$$\frac{(a+bx)\left(6b^2e(d+ex)^3(Ab-aB)\log(a+bx)-6b^2e(d+ex)^3(Ab-aB)\log(d+ex)+3e(d+ex)(Ab-aB)(bd-\right.}{6e\sqrt{(a+bx)^2}\,(d+ex)^3(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*(-2*(b*d - a*e)^3*(B*d - A*e) + 3*(A*b - a*B)*e*(b*d - a*e)^2*(d
 + e*x) + 6*b*(A*b - a*B)*e*(b*d - a*e)*(d + e*x)^2 + 6*b^2*(A*b - a*B)*e*(
d + e*x)^3*Log[a + b*x] - 6*b^2*(A*b - a*B)*e*(d + e*x)^3*Log[d + e*x]))/(6
*e*(b*d - a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^3)
```

fricas [B] time = 0.61, size = 608, normalized size = 2.24

$$-\frac{2\,Bb^3d^4+2\,Aa^3e^4+\left(3\,Bab^2-11\,Ab^3\right)d^3e-6\left(Ba^2b-3\,Aab^2\right)d^2e^2+\left(Ba^3-9\,Aa^2b\right)de^3+6\left(\left(Bab^2-Ab^3\right)de^3\right.}{6\left(b^4d^7e-4\,ab^3d^6e^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*(2*B*b^3*d^4 + 2*A*a^3*e^4 + (3*B*a*b^2 - 11*A*b^3)*d^3*e - 6*(B*a^2*b
 - 3*A*a*b^2)*d^2*e^2 + (B*a^3 - 9*A*a^2*b)*d*e^3 + 6*((B*a*b^2 - A*b^3)*d*
e^3 - (B*a^2*b - A*a*b^2)*e^4)*x^2 + 3*(5*(B*a*b^2 - A*b^3)*d^2*e^2 - 6*(B*
a^2*b - A*a*b^2)*d*e^3 + (B*a^3 - A*a^2*b)*e^4)*x + 6*((B*a*b^2 - A*b^3)*e^
4*x^3 + 3*(B*a*b^2 - A*b^3)*d*e^3*x^2 + 3*(B*a*b^2 - A*b^3)*d^2*e^2*x + (B*
a*b^2 - A*b^3)*d^3*e)*log(b*x + a) - 6*((B*a*b^2 - A*b^3)*e^4*x^3 + 3*(B*a*
b^2 - A*b^3)*d*e^3*x^2 + 3*(B*a*b^2 - A*b^3)*d^2*e^2*x + (B*a*b^2 - A*b^3)*
d^3*e)*log(e*x + d))/(b^4*d^7*e - 4*a*b^3*d^6*e^2 + 6*a^2*b^2*d^5*e^3 - 4*a
^3*b*d^4*e^4 + a^4*d^3*e^5 + (b^4*d^4*e^4 - 4*a*b^3*d^3*e^5 + 6*a^2*b^2*d^2
*e^6 - 4*a^3*b*d*e^7 + a^4*e^8)*x^3 + 3*(b^4*d^5*e^3 - 4*a*b^3*d^4*e^4 + 6*
a^2*b^2*d^3*e^5 - 4*a^3*b*d^2*e^6 + a^4*d*e^7)*x^2 + 3*(b^4*d^6*e^2 - 4*a*b
^3*d^5*e^3 + 6*a^2*b^2*d^4*e^4 - 4*a^3*b*d^3*e^5 + a^4*d^2*e^6)*x)
```

giac [B] time = 0.23, size = 494, normalized size = 1.82

$$-\frac{\left(Bab^3\mathrm{sgn}\,(bx+a)-Ab^4\mathrm{sgn}\,(bx+a)\right)\log\left(|bx+a|\right)}{b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4}+\frac{\left(Bab^2e\mathrm{sgn}\,(bx+a)-Ab^3e\mathrm{sgn}\,(bx+a)\right)\log\left(|xe+d|\right)}{b^4d^4e-4\,ab^3d^3e^2+6\,a^2b^2d^2e^3-4\,a^3bde^4+a^4e^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -(B*a*b^3*sgn(b*x + a) - A*b^4*sgn(b*x + a))*log(abs(b*x + a))/(b^5*d^4 - 4
*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4) + (B*a*b^2*
e*sgn(b*x + a) - A*b^3*e*sgn(b*x + a))*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b
^3*d^3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) - 1/6*(2*B*b^3*d^
4*sgn(b*x + a) + 3*B*a*b^2*d^3*e*sgn(b*x + a) - 11*A*b^3*d^3*e*sgn(b*x + a)
 - 6*B*a^2*b*d^2*e^2*sgn(b*x + a) + 18*A*a*b^2*d^2*e^2*sgn(b*x + a) + B*a^3
*d*e^3*sgn(b*x + a) - 9*A*a^2*b*d*e^3*sgn(b*x + a) + 2*A*a^3*e^4*sgn(b*x +
a) + 6*(B*a*b^2*d*e^3*sgn(b*x + a) - A*b^3*d*e^3*sgn(b*x + a) - B*a^2*b*e^4
*sgn(b*x + a) + A*a*b^2*e^4*sgn(b*x + a))*x^2 + 3*(5*B*a*b^2*d^2*e^2*sgn(b*
x + a) - 5*A*b^3*d^2*e^2*sgn(b*x + a) - 6*B*a^2*b*d*e^3*sgn(b*x + a) + 6*A*
a*b^2*d*e^3*sgn(b*x + a) + B*a^3*e^4*sgn(b*x + a) - A*a^2*b*e^4*sgn(b*x + a
))*x)*e^(-1)/((b*d - a*e)^4*(x*e + d)^3)
```

maple [B] time = 0.06, size = 545, normalized size = 2.01

$$\frac{(bx+a)\left(6A\,b^3e^4x^3\ln(bx+a)-6A\,b^3e^4x^3\ln(ex+d)-6Ba\,b^2e^4x^3\ln(bx+a)+6Ba\,b^2e^4x^3\ln(ex+d)+18A\,b^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/6*(b*x+a)*(18*B*a^2*b*d*e^3*x-15*B*a*b^2*d^2*e^2*x+6*B*a*b^2*d^3*e*ln(e*x
+d)-18*A*a*b^2*d*e^3*x+18*B*a*b^2*d*e^3*x^2*ln(e*x+d)+18*A*ln(b*x+a)*x*b^3*
d^2*e^2-6*B*ln(b*x+a)*a*b^2*d^3*e-6*B*a*b^2*d*e^3*x^2-18*B*ln(b*x+a)*x^2*a*
b^2*d*e^3-18*B*ln(b*x+a)*x*a*b^2*d^2*e^2+18*A*ln(b*x+a)*x^2*b^3*d*e^3-6*B*l
n(b*x+a)*x^3*a*b^2*e^4+11*A*b^3*d^3*e-2*A*a^3*e^4-2*B*b^3*d^4-6*A*a*b^2*e^4
*x^2+6*A*b^3*d*e^3*x^2+6*B*a^2*b*e^4*x^2-6*A*b^3*d^3*e*ln(e*x+d)-B*a^3*d*e^
3-3*B*a*b^2*d^3*e+18*B*a*b^2*d^2*e^2*x*ln(e*x+d)+6*B*a^2*b*d^2*e^2-18*A*a*b
^2*d^2*e^2+6*A*ln(b*x+a)*x^3*b^3*e^4+9*A*a^2*b*d*e^3-18*A*b^3*d^2*e^2*x*ln(
e*x+d)+3*A*a^2*b*e^4*x+15*A*b^3*d^2*e^2*x-18*A*b^3*d*e^3*x^2*ln(e*x+d)-3*B*
a^3*e^4*x+6*B*a*b^2*e^4*x^3*ln(e*x+d)-6*A*b^3*e^4*x^3*ln(e*x+d)+6*A*ln(b*x+
a)*b^3*d^3*e)/((b*x+a)^2)^(1/2)/(a*e-b*d)^4/e/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4), x)
```

sympy [B] time = 2.86, size = 818, normalized size = 3.02

$$\frac{b^{2} \left(- A b + B a\right) \log{\left(x + \frac{- A a b^{3} e - A b^{4} d + B a^{2} b^{2} e + B a b^{3} d - \frac{a^{5} b^{2} e^{5} \left(- A b + B a\right)}{\left(a e - b d\right)^{4}} + \frac{5 a^{4} b^{3} d e^{4} \left(- A b + B a\right)}{\left(a e - b d\right)^{4}} - \frac{10 a^{3} b^{4} d^{2} e^{3} \left(- A b + B a\right)}{\left(a e - b d\right)^{4}} + \frac{10 a^{2} b^{5} d^{3} e^{2} \left(- A b + B a\right)}{\left(a e - b d\right)^{4}} -}{- 2 A b^{4} e + 2 B a b^{3} e} \right)}}{\left(a e - b d\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] b**2*(-A*b + B*a)*log(x + (-A*a*b**3*e - A*b**4*d + B*a**2*b**2*e + B*a*b**
3*d - a**5*b**2*e**5*(-A*b + B*a)/(a*e - b*d)**4 + 5*a**4*b**3*d*e**4*(-A*b
 + B*a)/(a*e - b*d)**4 - 10*a**3*b**4*d**2*e**3*(-A*b + B*a)/(a*e - b*d)**4
 + 10*a**2*b**5*d**3*e**2*(-A*b + B*a)/(a*e - b*d)**4 - 5*a*b**6*d**4*e*(-A
*b + B*a)/(a*e - b*d)**4 + b**7*d**5*(-A*b + B*a)/(a*e - b*d)**4)/(-2*A*b**
4*e + 2*B*a*b**3*e))/(a*e - b*d)**4 - b**2*(-A*b + B*a)*log(x + (-A*a*b**3*
e - A*b**4*d + B*a**2*b**2*e + B*a*b**3*d + a**5*b**2*e**5*(-A*b + B*a)/(a*
e - b*d)**4 - 5*a**4*b**3*d*e**4*(-A*b + B*a)/(a*e - b*d)**4 + 10*a**3*b**4
*d**2*e**3*(-A*b + B*a)/(a*e - b*d)**4 - 10*a**2*b**5*d**3*e**2*(-A*b + B*a
)/(a*e - b*d)**4 + 5*a*b**6*d**4*e*(-A*b + B*a)/(a*e - b*d)**4 - b**7*d**5*
(-A*b + B*a)/(a*e - b*d)**4)/(-2*A*b**4*e + 2*B*a*b**3*e))/(a*e - b*d)**4 +
 (-2*A*a**2*e**3 + 7*A*a*b*d*e**2 - 11*A*b**2*d**2*e - B*a**2*d*e**2 + 5*B*
a*b*d**2*e + 2*B*b**2*d**3 + x**2*(-6*A*b**2*e**3 + 6*B*a*b*e**3) + x*(3*A*
a*b*e**3 - 15*A*b**2*d*e**2 - 3*B*a**2*e**3 + 15*B*a*b*d*e**2))/(6*a**3*d**
3*e**4 - 18*a**2*b*d**4*e**3 + 18*a*b**2*d**5*e**2 - 6*b**3*d**6*e + x**3*(
6*a**3*e**7 - 18*a**2*b*d*e**6 + 18*a*b**2*d**2*e**5 - 6*b**3*d**3*e**4) +
x**2*(18*a**3*d*e**6 - 54*a**2*b*d**2*e**5 + 54*a*b**2*d**3*e**4 - 18*b**3*
d**4*e**3) + x*(18*a**3*d**2*e**5 - 54*a**2*b*d**3*e**4 + 54*a*b**2*d**4*e*
*3 - 18*b**3*d**5*e**2))
```

3.1767 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=329

$$-\frac{(bd-ae)^3(-5aBe+4Abe+bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^4}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)^2\log(a+bx)(-5aBe}{b^6\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -(-a*e+b*d)^3*(4*A*b*e-5*B*a*e+B*b*d)/b^6/((b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(
-a*e+b*d)^4/b^6/(b*x+a)/((b*x+a)^2)^(1/2)+e^2*(6*a^2*B*e^2-3*a*b*e*(A*e+4*B
*d)+2*b^2*d*(2*A*e+3*B*d))*x*(b*x+a)/b^5/((b*x+a)^2)^(1/2)+1/2*e^3*(A*b*e-3
*B*a*e+4*B*b*d)*x^2*(b*x+a)/b^4/((b*x+a)^2)^(1/2)+1/3*B*e^4*x^3*(b*x+a)/b^3
/((b*x+a)^2)^(1/2)+2*e*(-a*e+b*d)^2*(3*A*b*e-5*B*a*e+2*B*b*d)*(b*x+a)*ln(b*
x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 329, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e^3x^2(a+bx)(-3aBe+Abe+4bBd)}{2b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{e^2x(a+bx)\left(6a^2Be^2-3abe(Ae+4Bd)+2b^2d(2Ae+3Bd)\right)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^3(}{b^6\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - ((A*b - a*B)*(b*d - a*e)^4)/(2*b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) + (e^2*(6*a^2*B*e^2 - 3*a*b*e*(4*B*d + A*e) + 2*b^2*d*(3*B*d + 2
*A*e))*x*(a + b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(4*b*B*d + A
*b*e - 3*a*B*e)*x^2*(a + b*x))/(2*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e
^4*x^3*(a + b*x))/(3*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*e*(b*d - a*e)^
2*(2*b*B*d + 3*A*b*e - 5*a*B*e)*(a + b*x)*Log[a + b*x])/(b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^4}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{e^2\left(6a^2Be^2-3abe(4Bd+Ae)+2b^2d(3Bd+2Ae)\right)}{b^8} + \frac{e^3(4bBd+Abe-3aBe)x}{b^7} + \frac{Be^4x^2}{b^6} + \right.}{\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(bd-ae)^3(bBd+4Abe-5aBe)}{b^6\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(bd-ae)^4}{2b^6(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{e^2\left(6a^2Be^2-\right.}{}$$

Mathematica [A] time = 0.23, size = 373, normalized size = 1.13

$$\frac{-3Ab\left(-7a^4e^4-2a^3be^3(ex-10d)+a^2b^2e^2\left(-18d^2+16dex+11e^2x^2\right)+4ab^3e\left(d^3-6d^2ex-4de^2x^2+e^3x^3\right)+b^4\left(\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-3*A*b*(-7*a^4*e^4 - 2*a^3*b*e^3*(-10*d + e*x) + a^2*b^2*e^2*(-18*d^2 + 16
*d*e*x + 11*e^2*x^2) + 4*a*b^3*e*(d^3 - 6*d^2*e*x - 4*d*e^2*x^2 + e^3*x^3)
+ b^4*(d^4 + 8*d^3*e*x - 8*d*e^3*x^3 - e^4*x^4)) + B*(-27*a^5*e^4 + 6*a^4*b
*e^3*(14*d + e*x) + 3*a^3*b^2*e^2*(-30*d^2 + 8*d*e*x + 21*e^2*x^2) + 4*a^2*
b^3*e*(9*d^3 - 18*d^2*e*x - 33*d*e^2*x^2 + 5*e^3*x^3) + a*b^4*(-3*d^4 + 48*
d^3*e*x + 72*d^2*e^2*x^2 - 48*d*e^3*x^3 - 5*e^4*x^4) + 2*b^5*x*(-3*d^4 + 18
*d^2*e^2*x^2 + 6*d*e^3*x^3 + e^4*x^4)) + 12*e*(b*d - a*e)^2*(2*b*B*d + 3*A*
b*e - 5*a*B*e)*(a + b*x)^2*Log[a + b*x])/(6*b^6*(a + b*x)*Sqrt[(a + b*x)^2]
)
```

fricas [B] time = 0.82, size = 668, normalized size = 2.03

$$\frac{2\,Bb^5e^4x^5-3\left(Bab^4+Ab^5\right)d^4+12\left(3\,Ba^2b^3-Aab^4\right)d^3e-18\left(5\,Ba^3b^2-3\,Aa^2b^3\right)d^2e^2+12\left(7\,Ba^4b-5\,Aa^3b^2\right)de}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/6*(2*B*b^5*e^4*x^5 - 3*(B*a*b^4 + A*b^5)*d^4 + 12*(3*B*a^2*b^3 - A*a*b^4)
*d^3*e - 18*(5*B*a^3*b^2 - 3*A*a^2*b^3)*d^2*e^2 + 12*(7*B*a^4*b - 5*A*a^3*b
^2)*d*e^3 - 3*(9*B*a^5 - 7*A*a^4*b)*e^4 + (12*B*b^5*d*e^3 - (5*B*a*b^4 - 3*
A*b^5)*e^4)*x^4 + 4*(9*B*b^5*d^2*e^2 - 6*(2*B*a*b^4 - A*b^5)*d*e^3 + (5*B*a
^2*b^3 - 3*A*a*b^4)*e^4)*x^3 + 3*(24*B*a*b^4*d^2*e^2 - 4*(11*B*a^2*b^3 - 4*
A*a*b^4)*d*e^3 + (21*B*a^3*b^2 - 11*A*a^2*b^3)*e^4)*x^2 - 6*(B*b^5*d^4 - 4*
(2*B*a*b^4 - A*b^5)*d^3*e + 12*(B*a^2*b^3 - A*a*b^4)*d^2*e^2 - 4*(B*a^3*b^2
 - 2*A*a^2*b^3)*d*e^3 - (B*a^4*b + A*a^3*b^2)*e^4)*x + 12*(2*B*a^2*b^3*d^3*
e - 3*(3*B*a^3*b^2 - A*a^2*b^3)*d^2*e^2 + 6*(2*B*a^4*b - A*a^3*b^2)*d*e^3 -
 (5*B*a^5 - 3*A*a^4*b)*e^4 + (2*B*b^5*d^3*e - 3*(3*B*a*b^4 - A*b^5)*d^2*e^2
 + 6*(2*B*a^2*b^3 - A*a*b^4)*d*e^3 - (5*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 +
 2*(2*B*a*b^4*d^3*e - 3*(3*B*a^2*b^3 - A*a*b^4)*d^2*e^2 + 6*(2*B*a^3*b^2 -
A*a^2*b^3)*d*e^3 - (5*B*a^4*b - 3*A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^8*x^2
 + 2*a*b^7*x + a^2*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 858, normalized size = 2.61

$$\left(2B\,b^5e^4x^5 + 3A\,b^5e^4x^4 - 5Ba\,b^4e^4x^4 + 12B\,b^5d\,e^3x^4 + 36A\,a^2b^3e^4x^2\ln(bx+a) - 72Aa\,b^4d\,e^3x^2\ln(bx+a) -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/6*(-12*A*a*b^4*d^3*e-48*B*x^3*a*b^4*d*e^3+84*B*a^4*b*d*e^3-90*B*a^3*b^2*d
^2*e^2+36*b^3*B*a^2*d^3*e-60*B*ln(b*x+a)*a^5*e^4-6*B*x*b^5*d^4+2*B*x^5*b^5*
e^4+3*A*x^4*b^5*e^4-12*A*x^3*a*b^4*e^4+24*A*x^3*b^5*d*e^3+20*B*x^3*a^2*b^3*
e^4-60*A*a^3*b^2*d*e^3-108*B*ln(b*x+a)*a^3*b^2*d^2*e^2+24*B*ln(b*x+a)*a^2*b
^3*d^3*e-72*B*x*a^2*b^3*d^2*e^2-48*A*x*a^2*b^3*d*e^3+24*B*x*a^3*b^2*d*e^3+2
1*A*a^4*b*e^4-3*B*a*b^4*d^4-3*A*b^5*d^4-27*B*a^5*e^4+48*A*x^2*a*b^4*d*e^3+1
44*B*ln(b*x+a)*a^4*b*d*e^3+36*A*ln(b*x+a)*a^2*b^3*d^2*e^2-72*A*ln(b*x+a)*a^
3*b^2*d*e^3+24*B*ln(b*x+a)*x^2*b^5*d^3*e+72*A*ln(b*x+a)*x*a^3*b^2*e^4-120*B
*ln(b*x+a)*x*a^4*b*e^4+36*A*ln(b*x+a)*x^2*a^2*b^3*e^4+36*A*ln(b*x+a)*x^2*b^
5*d^2*e^2-60*B*ln(b*x+a)*x^2*a^3*b^2*e^4+72*A*x*a*b^4*d^2*e^2+48*B*x*a*b^4*
d^3*e+54*A*a^2*b^3*d^2*e^2-108*B*ln(b*x+a)*x^2*a*b^4*d^2*e^2-144*A*ln(b*x+a
)*x*a^2*b^3*d*e^3-72*A*ln(b*x+a)*x^2*a*b^4*d*e^3+288*B*ln(b*x+a)*x*a^3*b^2*
d*e^3-216*B*ln(b*x+a)*x*a^2*b^3*d^2*e^2+72*A*ln(b*x+a)*x*a*b^4*d^2*e^2+48*B
*ln(b*x+a)*x*a*b^4*d^3*e+144*B*ln(b*x+a)*x^2*a^2*b^3*d*e^3+72*B*x^2*a*b^4*d
^2*e^2-132*B*x^2*a^2*b^3*d*e^3-5*B*x^4*a*b^4*e^4+36*B*x^3*b^5*d^2*e^2+36*A*
ln(b*x+a)*a^4*b*e^4+12*B*x^4*b^5*d*e^3+6*B*x*a^4*b*e^4-33*A*x^2*a^2*b^3*e^4
+63*B*x^2*a^3*b^2*e^4+6*A*x*a^3*b^2*e^4-24*A*x*b^5*d^3*e)*(b*x+a)/b^6/((b*x
+a)^2)^(3/2)
```

maxima [B] time = 0.53, size = 761, normalized size = 2.31

$$\frac{Be^4x^4}{3\sqrt{b^2x^2+2\,abx+a^2}\,b^2} - \frac{7\,Bae^4x^3}{6\sqrt{b^2x^2+2\,abx+a^2}\,b^3} + \frac{9\,Ba^2e^4x^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^4} - \frac{10\,Ba^3e^4\log\left(x+\frac{a}{b}\right)}{b^6} + \frac{9\,B}{\sqrt{b^2x^2+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/3*B*e^4*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 7/6*B*a*e^4*x^3/(sqrt(b
^2*x^2 + 2*a*b*x + a^2)*b^3) + 9/2*B*a^2*e^4*x^2/(sqrt(b^2*x^2 + 2*a*b*x +
a^2)*b^4) - 10*B*a^3*e^4*log(x + a/b)/b^6 + 9*B*a^4*e^4/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^6) + 1/2*(4*B*d*e^3 + A*e^4)*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^
2)*b^2) - 20*B*a^4*e^4*x/(b^7*(x + a/b)^2) - 5/2*(4*B*d*e^3 + A*e^4)*a*x^2/
(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3) + 2*(3*B*d^2*e^2 + 2*A*d*e^3)*x^2/(sqrt
(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 1/2*A*d^4/(b^3*(x + a/b)^2) - 39/2*B*a^5*e
^4/(b^8*(x + a/b)^2) + 6*(4*B*d*e^3 + A*e^4)*a^2*log(x + a/b)/b^5 - 6*(3*B*
d^2*e^2 + 2*A*d*e^3)*a*log(x + a/b)/b^4 + 2*(2*B*d^3*e + 3*A*d^2*e^2)*log(x
 + a/b)/b^3 - 5*(4*B*d*e^3 + A*e^4)*a^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5)
 + 4*(3*B*d^2*e^2 + 2*A*d*e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (B
*d^4 + 4*A*d^3*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 12*(4*B*d*e^3 + A*e
^4)*a^3*x/(b^6*(x + a/b)^2) - 12*(3*B*d^2*e^2 + 2*A*d*e^3)*a^2*x/(b^5*(x +
a/b)^2) + 4*(2*B*d^3*e + 3*A*d^2*e^2)*a*x/(b^4*(x + a/b)^2) + 23/2*(4*B*d*e
^3 + A*e^4)*a^4/(b^7*(x + a/b)^2) - 11*(3*B*d^2*e^2 + 2*A*d*e^3)*a^3/(b^6*(
x + a/b)^2) + 3*(2*B*d^3*e + 3*A*d^2*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(B*d^
4 + 4*A*d^3*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^4}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^4}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4/((a + b*x)**2)**(3/2), x)
```

3.1768 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=249

$$-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)\log(a+bx)(-2aBe+}{b^5\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -(-a*e+b*d)^2*(3*A*b*e-4*B*a*e+B*b*d)/b^5/((b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(
-a*e+b*d)^3/b^5/(b*x+a)/((b*x+a)^2)^(1/2)+e^2*(A*b*e-3*B*a*e+3*B*b*d)*x*(b*
x+a)/b^4/((b*x+a)^2)^(1/2)+1/2*B*e^3*x^2*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+3*e*
(-a*e+b*d)*(A*b*e-2*B*a*e+B*b*d)*(b*x+a)*ln(b*x+a)/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 249, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$\frac{e^2x(a+bx)(-3aBe+Abe+3bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae)^2(-4aBe+3Abe+bBd)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)^2*(b*B*d + 3*A*b*e - 4*a*B*e))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - ((A*b - a*B)*(b*d - a*e)^3)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) + (e^2*(3*b*B*d + A*b*e - 3*a*B*e)*x*(a + b*x))/(b^4*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (B*e^3*x^2*(a + b*x))/(2*b^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) + (3*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x)*Log[a + b*x])
/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^3}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{e^2(3bBd+Abe-3aBe)}{b^7}+\frac{Be^3x}{b^6}+\frac{(Ab-aB)(bd-ae)^3}{b^7(a+bx)^3}+\frac{(bd-ae)^2(bBd+3Abe-4a}{b^7(a+bx)^2}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(bd-ae)^2(bBd+3Abe-4aBe)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^3}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e^2(3bBd}{b^4}\end{aligned}$$

Mathematica [A] time = 0.16, size = 256, normalized size = 1.03

$$\frac{-Ab\left(5a^3e^3+a^2be^2(4ex-9d)+ab^2e\left(3d^2-12dex-4e^2x^2\right)+b^3\left(d^3+6d^2ex-2e^3x^3\right)\right)+B\left(7a^4e^3+a^3be^2(2ex-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(5*a^3*e^3 + a^2*b*e^2*(-9*d + 4*e*x) + a*b^2*e*(3*d^2 - 12*d*e*x -
4*e^2*x^2) + b^3*(d^3 + 6*d^2*e*x - 2*e^3*x^3))) + B*(7*a^4*e^3 + a^3*b*e^2
*(-15*d + 2*e*x) + a^2*b^2*e*(9*d^2 - 12*d*e*x - 11*e^2*x^2) + b^4*x*(-2*d^
3 + 6*d*e^2*x^2 + e^3*x^3) - a*b^3*(d^3 - 12*d^2*e*x - 12*d*e^2*x^2 + 4*e^3
*x^3)) + 6*e*(b*d - a*e)*(b*B*d + A*b*e - 2*a*B*e)*(a + b*x)^2*Log[a + b*x]
)/(2*b^5*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [B] time = 0.69, size = 442, normalized size = 1.78

$$\frac{Bb^4e^3x^4-\left(Bab^3+Ab^4\right)d^3+3\left(3\,Ba^2b^2-Aab^3\right)d^2e-3\left(5\,Ba^3b-3\,Aa^2b^2\right)de^2+\left(7\,Ba^4-5\,Aa^3b\right)e^3+2\left(3\,Bb^4de\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(B*b^4*e^3*x^4 - (B*a*b^3 + A*b^4)*d^3 + 3*(3*B*a^2*b^2 - A*a*b^3)*d^2*
e - 3*(5*B*a^3*b - 3*A*a^2*b^2)*d*e^2 + (7*B*a^4 - 5*A*a^3*b)*e^3 + 2*(3*B*
b^4*d*e^2 - (2*B*a*b^3 - A*b^4)*e^3)*x^3 + (12*B*a*b^3*d*e^2 - (11*B*a^2*b^
2 - 4*A*a*b^3)*e^3)*x^2 - 2*(B*b^4*d^3 - 3*(2*B*a*b^3 - A*b^4)*d^2*e + 6*(B
*a^2*b^2 - A*a*b^3)*d*e^2 - (B*a^3*b - 2*A*a^2*b^2)*e^3)*x + 6*(B*a^2*b^2*d
^2*e - (3*B*a^3*b - A*a^2*b^2)*d*e^2 + (2*B*a^4 - A*a^3*b)*e^3 + (B*b^4*d^2
*e - (3*B*a*b^3 - A*b^4)*d*e^2 + (2*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 2*(B*a*
b^3*d^2*e - (3*B*a^2*b^2 - A*a*b^3)*d*e^2 + (2*B*a^3*b - A*a^2*b^2)*e^3)*x)
*log(b*x + a))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.14, size = 556, normalized size = 2.23

$$-\frac{\left(-B\,b^4e^3x^4+6Aa\,b^3e^3x^2\ln\left(bx+a\right)-6A\,b^4d\,e^2x^2\ln\left(bx+a\right)-2A\,b^4e^3x^3-12B\,a^2b^2e^3x^2\ln\left(bx+a\right)+18Ba\,b^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(12*A*ln(b*x+a)*x*a^2*b^2*e^3-24*B*ln(b*x+a)*x*a^3*b*e^3+6*A*ln(b*x+a)
*x^2*a*b^3*e^3-6*A*ln(b*x+a)*x^2*b^4*d*e^2-12*B*ln(b*x+a)*x^2*a^2*b^2*e^3-6
*B*ln(b*x+a)*x^2*b^4*d^2*e+18*B*ln(b*x+a)*x^2*a*b^3*d*e^2-12*A*ln(b*x+a)*x*
a*b^3*d*e^2+36*B*ln(b*x+a)*x*a^2*b^2*d*e^2-12*B*ln(b*x+a)*x*a*b^3*d^2*e-12*
B*a*b^3*d^2*e*x+5*A*a^3*b*e^3+12*B*a^2*b^2*d*e^2*x+18*B*a^3*b*d*e^2*ln(b*x+
a)-6*B*a^2*b^2*d^2*e*ln(b*x+a)-12*A*a*b^3*d*e^2*x-6*A*a^2*b^2*d*e^2*ln(b*x+
a)-12*B*a*b^3*d*e^2*x^2+A*b^4*d^3-7*B*a^4*e^3+15*B*a^3*b*d*e^2+B*a*b^3*d^3-
2*A*b^4*e^3*x^3-12*B*a^4*e^3*ln(b*x+a)+2*B*b^4*d^3*x-B*b^4*e^3*x^4+6*A*a^3*
b*e^3*ln(b*x+a)+4*A*a^2*b^2*e^3*x-9*b^2*B*a^2*d^2*e+3*A*a*b^3*d^2*e-2*B*a^3
*b*e^3*x+11*B*a^2*b^2*e^3*x^2+4*B*a*b^3*e^3*x^3-6*B*b^4*d*e^2*x^3-4*A*a*b^3
*e^3*x^2-9*A*b^2*a^2*d*e^2+6*A*b^4*d^2*e*x)*(b*x+a)/b^5/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.51, size = 487, normalized size = 1.96

$$\frac{Be^3x^3}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{5\,Bae^3x^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}+\frac{6\,Ba^2e^3\log\left(x+\frac{a}{b}\right)}{b^5}-\frac{5\,Ba^3e^3}{\sqrt{b^2x^2+2\,abx+a^2}\,b^5}+\frac{\left(3\,Bde^2+\right.}{\sqrt{b^2x^2+2\,ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*B*e^3*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 5/2*B*a*e^3*x^2/(sqrt(b
^2*x^2 + 2*a*b*x + a^2)*b^3) + 6*B*a^2*e^3*log(x + a/b)/b^5 - 5*B*a^3*e^3/(
sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5) + (3*B*d*e^2 + A*e^3)*x^2/(sqrt(b^2*x^2
+ 2*a*b*x + a^2)*b^2) + 12*B*a^3*e^3*x/(b^6*(x + a/b)^2) - 1/2*A*d^3/(b^3*(
x + a/b)^2) + 23/2*B*a^4*e^3/(b^7*(x + a/b)^2) - 3*(3*B*d*e^2 + A*e^3)*a*lo
g(x + a/b)/b^4 + 3*(B*d^2*e + A*d*e^2)*log(x + a/b)/b^3 + 2*(3*B*d*e^2 + A*
e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (B*d^3 + 3*A*d^2*e)/(sqrt(b^
2*x^2 + 2*a*b*x + a^2)*b^2) - 6*(3*B*d*e^2 + A*e^3)*a^2*x/(b^5*(x + a/b)^2)
 + 6*(B*d^2*e + A*d*e^2)*a*x/(b^4*(x + a/b)^2) - 11/2*(3*B*d*e^2 + A*e^3)*a
^3/(b^6*(x + a/b)^2) + 9/2*(B*d^2*e + A*d*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*
(B*d^3 + 3*A*d^2*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/((a + b*x)**2)**(3/2), x)
```

3.1769 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=186

$$-\frac{(bd-ae)(-3aBe+2Abe+bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)(-3aBe+Abe+2bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -(-a*e+b*d)*(2*A*b*e-3*B*a*e+B*b*d)/b^4/((b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(-a
*e+b*d)^2/b^4/(b*x+a)/((b*x+a)^2)^(1/2)+B*e^2*x*(b*x+a)/b^3/((b*x+a)^2)^(1/
2)+e*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)*ln(b*x+a)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{(bd-ae)(-3aBe+2Abe+bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)(-3aBe+Abe+2bBd)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((b*d - a*e)*(b*B*d + 2*A*b*e - 3*a*B*e))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])) - ((A*b - a*B)*(b*d - a*e)^2)/(2*b^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) + (B*e^2*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(2*
b*B*d + A*b*e - 3*a*B*e)*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^2}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Be^2}{b^6}+\frac{(Ab-aB)(bd-ae)^2}{b^6(a+bx)^3}+\frac{(bd-ae)(bBd+2Abe-3aBe)}{b^6(a+bx)^2}+\frac{e(2bBd+Abe-3aBe)}{b^6(a+bx)}\right)\,d}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(bd-ae)(bBd+2Abe-3aBe)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Be^2x(a+}{b^3\sqrt{a^2+2ab}}\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 151, normalized size = 0.81

$$\frac{B\left(-5a^3e^2+2a^2be(3d-2ex)+ab^2\left(-d^2+8dex+4e^2x^2\right)+2b^3x\left(e^2x^2-d^2\right)\right)+2e(a+bx)^2\log(a+bx)(-3aBe}{2b^4(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(b*d - a*e)*(3*a*e + b*(d + 4*e*x))) + B*(-5*a^3*e^2 + 2*a^2*b*e*(3*
d - 2*e*x) + 2*b^3*x*(-d^2 + e^2*x^2) + a*b^2*(-d^2 + 8*d*e*x + 4*e^2*x^2))
 + 2*e*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^2*Log[a + b*x])/(2*b^4*(a + b*
x)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.86, size = 258, normalized size = 1.39

$$\frac{2\,Bb^3e^2x^3+4\,Bab^2e^2x^2-\left(Bab^2+Ab^3\right)d^2+2\left(3\,Ba^2b-Aab^2\right)de-\left(5\,Ba^3-3\,Aa^2b\right)e^2-2\,(Bb^3d^2-2\,(2\,Bab^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(2*B*b^3*e^2*x^3 + 4*B*a*b^2*e^2*x^2 - (B*a*b^2 + A*b^3)*d^2 + 2*(3*B*a
^2*b - A*a*b^2)*d*e - (5*B*a^3 - 3*A*a^2*b)*e^2 - 2*(B*b^3*d^2 - 2*(2*B*a*b
^2 - A*b^3)*d*e + 2*(B*a^2*b - A*a*b^2)*e^2)*x + 2*(2*B*a^2*b*d*e - (3*B*a^
3 - A*a^2*b)*e^2 + (2*B*b^3*d*e - (3*B*a*b^2 - A*b^3)*e^2)*x^2 + 2*(2*B*a*b
^2*d*e - (3*B*a^2*b - A*a*b^2)*e^2)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x +
 a^2*b^4)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [**B**] time = 0.07, size = 303, normalized size = 1.63

$$\frac{(2A\,b^3e^2x^2\ln(bx+a)-6Ba\,b^2e^2x^2\ln(bx+a)+4B\,b^3de\,x^2\ln(bx+a)+2B\,b^3e^2x^3+4Aa\,b^2e^2x\ln(bx+a)-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(2*A*ln(b*x+a)*x^2*b^3*e^2-6*B*ln(b*x+a)*x^2*a*b^2*e^2+4*B*ln(b*x+a)*x^
2*b^3*d*e+2*B*b^3*e^2*x^3+4*A*ln(b*x+a)*x*a*b^2*e^2-12*B*ln(b*x+a)*x*a^2*b*
e^2+8*B*ln(b*x+a)*x*a*b^2*d*e+4*B*a*b^2*e^2*x^2+2*A*a^2*b*e^2*ln(b*x+a)+4*A
*a*b^2*e^2*x-4*A*b^3*d*e*x-6*B*a^3*e^2*ln(b*x+a)+4*B*a^2*b*d*e*ln(b*x+a)-4*
B*a^2*b*e^2*x+8*B*a*b^2*d*e*x-2*B*b^3*d^2*x+3*A*a^2*b*e^2-2*A*a*b^2*d*e-A*b
^3*d^2-5*B*a^3*e^2+6*B*a^2*b*d*e-B*a*b^2*d^2)*(b*x+a)/b^4/((b*x+a)^2)^(3/2)
```

maxima [**A**] time = 0.60, size = 277, normalized size = 1.49

$$\frac{Be^2x^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}-\frac{3\,Bae^2\log\left(x+\frac{a}{b}\right)}{b^4}+\frac{2\,Ba^2e^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^4}-\frac{6\,Ba^2e^2x}{b^5\left(x+\frac{a}{b}\right)^2}+\frac{\left(2\,Bde+Ae^2\right)\log\left(x+\frac{a}{b}\right)}{b^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] B*e^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 3*B*a*e^2*log(x + a/b)/b^4
+ 2*B*a^2*e^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - 6*B*a^2*e^2*x/(b^5*(x +
 a/b)^2) + (2*B*d*e + A*e^2)*log(x + a/b)/b^3 - (B*d^2 + 2*A*d*e)/(sqrt(b^2
*x^2 + 2*a*b*x + a^2)*b^2) - 1/2*A*d^2/(b^3*(x + a/b)^2) - 11/2*B*a^3*e^2/(
b^6*(x + a/b)^2) + 2*(2*B*d*e + A*e^2)*a*x/(b^4*(x + a/b)^2) + 3/2*(2*B*d*e
 + A*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(B*d^2 + 2*A*d*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^2}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/((a + b*x)**2)**(3/2), x)
```

3.1770 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=127

$$-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{-2aBe+Abe+bBd}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (-A*b*e+2*B*a*e-B*b*d)/b^3/((b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(-a*e+b*d)/b^3/(
b*x+a)/((b*x+a)^2)^(1/2)+B*e*(b*x+a)*ln(b*x+a)/b^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 127, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{770, 77\}$

$$-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{-2aBe+Abe+bBd}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((b*B*d + A*b*e - 2*a*B*e)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - ((A*b -
a*B)*(b*d - a*e))/(2*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e*(a
 + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(bd-ae)}{b^5(a+bx)^3}+\frac{bBd+Abe-2aBe}{b^5(a+bx)^2}+\frac{Be}{b^5(a+bx)}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{bBd+Abe-2aBe}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{Be(a+bx)\log(a+}{b^3\sqrt{a^2+2abx+b}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.68

$$\frac{B\left(3a^2e-abd+4abex-2b^2dx\right)-Ab(ae+bd+2bex)+2Be(a+bx)^2\log(a+bx)}{2b^3(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b*(b*d + a*e + 2*b*e*x)) + B*(-(a*b*d) + 3*a^2*e - 2*b^2*d*x + 4*a*b*e
*x) + 2*B*e*(a + b*x)^2*Log[a + b*x])/(2*b^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.78, size = 110, normalized size = 0.87

$$-\frac{\left(Bab + Ab^{2}\right)d - \left(3\,Ba^{2} - Aab\right)e + 2\,\left(Bb^{2}d - \left(2\,Bab - Ab^{2}\right)e\right)x - 2\,\left(Bb^{2}ex^{2} + 2\,Babex + Ba^{2}e\right)\log\left(bx + a\right)}{2\,\left(b^{5}x^{2} + 2\,ab^{4}x + a^{2}b^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -1/2*((B*a*b + A*b^2)*d - (3*B*a^2 - A*a*b)*e + 2*(B*b^2*d - (2*B*a*b - A*b
^2)*e)*x - 2*(B*b^2*e*x^2 + 2*B*a*b*e*x + B*a^2*e)*log(b*x + a))/(b^5*x^2 +
 2*a*b^4*x + a^2*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.06, size = 109, normalized size = 0.86

$$-\frac{(-2B\,b^{2}e\,x^{2}\ln\left(bx + a\right) - 4Babex\ln\left(bx + a\right) + 2A\,b^{2}ex - 2B\,a^{2}e\ln\left(bx + a\right) - 4Babex + 2B\,b^{2}dx + Aabe + A\,b^{2}d}{2\left(\left(bx + a\right)^{2}\right)^{\frac{3}{2}}\,b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-2*B*ln(b*x+a)*x^2*b^2*e-4*B*ln(b*x+a)*x*a*b*e+2*A*b^2*e*x-2*B*a^2*e*
ln(b*x+a)-4*B*a*b*e*x+2*B*b^2*d*x+a*A*e*b+A*b^2*d-3*B*e*a^2+a*B*d*b)*(b*x+a
)/b^3/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.57, size = 120, normalized size = 0.94

$$\frac{Be\log\left(x + \frac{a}{b}\right)}{b^{3}} - \frac{Bd + Ae}{\sqrt{b^{2}x^{2} + 2\,abx + a^{2}}\,b^{2}} + \frac{2\,Baex}{b^{4}\left(x + \frac{a}{b}\right)^{2}} - \frac{Ad}{2\,b^{3}\left(x + \frac{a}{b}\right)^{2}} + \frac{3\,Ba^{2}e}{2\,b^{5}\left(x + \frac{a}{b}\right)^{2}} + \frac{(Bd + Ae)a}{2\,b^{4}\left(x + \frac{a}{b}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] B*e*log(x + a/b)/b^3 - (B*d + A*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*
B*a*e*x/(b^4*(x + a/b)^2) - 1/2*A*d/(b^3*(x + a/b)^2) + 3/2*B*a^2*e/(b^5*(x
 + a/b)^2) + 1/2*(B*d + A*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(A + B\,x\right)\,\left(d + e\,x\right)}{{\left(a^{2} + 2\,a\,b\,x + b^{2}\,x^{2}\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)(d + ex)}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1771 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=69

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -B/b^2/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/b^2/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.077, Rules used = {640, 607}

$$-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(B/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/(2*b^2*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx&=-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b^2}\\&=-\frac{B}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.57

$$\frac{-B(a+2bx)-Ab}{2b^2(a+bx)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(A*b) - B*(a + 2*b*x))/(2*b^2*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.71, size = 38, normalized size = 0.55

$$-\frac{2\,Bbx+Ba+Ab}{2\,\left(b^4x^2+2\,ab^3x+a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/2*(2*B*b*x + B*a + A*b)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.04, size = 32, normalized size = 0.46

$$-\frac{(bx+a)\,(2Bbx+Ab+Ba)}{2\,\left((bx+a)^2\right)^{\frac{3}{2}}\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(b*x+a)*(2*B*b*x+A*b+B*a)/b^2/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.59, size = 56, normalized size = 0.81

$$-\frac{B}{\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{Ba}{2\,b^4\left(x+\frac{a}{b}\right)^2}-\frac{A}{2\,b^3\left(x+\frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -B/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 1/2*B*a/(b^4*(x + a/b)^2) - 1/2*A/
(b^3*(x + a/b)^2)
```

mupad [B] time = 2.05, size = 42, normalized size = 0.61

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\,\left(A\,b+B\,a+2\,B\,b\,x\right)}{2\,b^2\,{\left(a+b\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(A*b + B*a + 2*B*b*x))/(2*b^2*(a + b*x)^3
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{A+Bx}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.1772 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=196

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{Bd-Ae}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{e(a+b}{\sqrt{a^2+}}$$

```
[Out] (A*e-B*d)/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a
)/((b*x+a)^2)^(1/2)-e*(-A*e+B*d)*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^3/((b*x+a)^2)
^(1/2)+e*(-A*e+B*d)*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{Bd-Ae}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{e(a+b}{\sqrt{a^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((B*d - A*e)/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b - a*B)/
(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(B*d - A*e)*
(a + b*x)*Log[a + b*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*
(B*d - A*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^3(bd-ae)(a+bx)^3}+\frac{Bd-Ae}{b^2(bd-ae)^2(a+bx)^2}+\frac{e(-Bd+Ae)}{b^2(bd-ae)^3(a+bx)}-\frac{e^2(-}{b^3(bd-}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{Bd-Ae}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.11, size = 132, normalized size = 0.67

$$\frac{-(bd-ae)\left(B\left(a^2e+abd+2b^2dx\right)+Ab(b(d-2ex)-3ae)\right)+2be(a+bx)^2\log(a+bx)(Ae-Bd)+2be(a+bx)}{2b(a+bx)\sqrt{(a+bx)^2}\,(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(B*(a*b*d + a^2*e + 2*b^2*d*x) + A*b*(-3*a*e + b*(d - 2*e*x)
))) + 2*b*e*(-(B*d) + A*e)*(a + b*x)^2*Log[a + b*x] + 2*b*e*(B*d - A*e)*(a
+ b*x)^2*Log[d + e*x])/(2*b*(b*d - a*e)^3*(a + b*x)*Sqrt[(a + b*x)^2])
```

fricas [B] time = 1.12, size = 361, normalized size = 1.84

$$\frac{4\,Aab^2de-\left(Bab^2+Ab^3\right)d^2+\left(Ba^3-3\,Aa^2b\right)e^2-2\left(Bb^3d^2+Aab^2e^2-\left(Bab^2+Ab^3\right)de\right)x-2\left(Ba^2bde-Aa^2b\right.}{2\left(a^2b^4d^3-3\,a^3b^3d^2e+3\,a^4b^2de^2-a^5be^3+\left(b^6d^3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/2*(4*A*a*b^2*d*e - (B*a*b^2 + A*b^3)*d^2 + (B*a^3 - 3*A*a^2*b)*e^2 - 2*(B
*b^3*d^2 + A*a*b^2*e^2 - (B*a*b^2 + A*b^3)*d*e)*x - 2*(B*a^2*b*d*e - A*a^2*
b*e^2 + (B*b^3*d*e - A*b^3*e^2)*x^2 + 2*(B*a*b^2*d*e - A*a*b^2*e^2)*x)*log(
b*x + a) + 2*(B*a^2*b*d*e - A*a^2*b*e^2 + (B*b^3*d*e - A*b^3*e^2)*x^2 + 2*(
B*a*b^2*d*e - A*a*b^2*e^2)*x)*log(e*x + d))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e
+ 3*a^4*b^2*d*e^2 - a^5*b*e^3 + (b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2
- a^3*b^3*e^3)*x^2 + 2*(a*b^5*d^3 - 3*a^2*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4
*b^2*e^3)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.07, size = 315, normalized size = 1.61

$$-\frac{\left(2A\,b^3e^2x^2\ln(bx+a)-2A\,b^3e^2x^2\ln(ex+d)-2B\,b^3de\,x^2\ln(bx+a)+2B\,b^3de\,x^2\ln(ex+d)+4Aa\,b^2e^2x\ln\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(2*A*b^3*e^2*x^2*ln(b*x+a)-2*A*ln(e*x+d)*x^2*b^3*e^2-2*B*b^3*d*e*x^2*l
n(b*x+a)+2*B*ln(e*x+d)*x^2*b^3*d*e+4*A*a*b^2*e^2*x*ln(b*x+a)-4*A*ln(e*x+d)*
x*a*b^2*e^2-4*B*a*b^2*d*e*x*ln(b*x+a)+4*B*ln(e*x+d)*x*a*b^2*d*e+2*A*a^2*b*e
^2*ln(b*x+a)-2*A*ln(e*x+d)*a^2*b*e^2-2*A*a*b^2*e^2*x+2*A*b^3*d*e*x-2*B*a^2*
b*d*e*ln(b*x+a)+2*B*ln(e*x+d)*a^2*b*d*e+2*B*a*b^2*d*e*x-2*B*b^3*d^2*x-3*A*a
^2*b*e^2+4*A*a*b^2*d*e-A*b^3*d^2+B*a^3*e^2-B*a*b^2*d^2)*(b*x+a)/b/(a*e-b*d)
^3/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.1773 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=266

$$-\frac{Ab-aB}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{aBe-2Abe+bBd}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)}$$

```
[Out] (2*A*b*e-B*a*e-B*b*d)/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/(-a*e+b
*d)^2/(b*x+a)/((b*x+a)^2)^(1/2)-e*(-A*e+B*d)*(b*x+a)/(-a*e+b*d)^3/(e*x+d)/(
(b*x+a)^2)^(1/2)-e*(-3*A*b*e+B*a*e+2*B*b*d)*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^4/
((b*x+a)^2)^(1/2)+e*(-3*A*b*e+B*a*e+2*B*b*d)*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^4
/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 266, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{Ab-aB}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{aBe-2Abe+bBd}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((b*B*d - 2*A*b*e + a*B*e)/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
- (A*b - a*B)/(2*(b*d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
e*(B*d - A*e)*(a + b*x))/((b*d - a*e)^3*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x
)*Log[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^2(bd-ae)^2(a+bx)^3}+\frac{bBd-2Abe+aBe}{b^2(bd-ae)^3(a+bx)^2}+\frac{e(-2bBd+3Abe-aBe)}{b^2(bd-ae)^4(a+bx)}\right.}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{bBd-2Abe+aBe}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{2(bd-ae)^2(a+bx)\sqrt{a^2+2abx+b^2}}
\end{aligned}$$

Mathematica [**A**] time = 0.18, size = 174, normalized size = 0.65

$$\frac{(a+bx)\left(-2(a+bx)(bd-ae)(aBe-2Abe+bBd)+\frac{2e(a+bx)^2(bd-ae)(Ae-Bd)}{d+ex}-2e(a+bx)^2\log(a+bx)(aBe-3Abe+\right.}{2\left((a+bx)^2\right)^{3/2}(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*((-(A*b) + a*B)*(b*d - a*e)^2 - 2*(b*d - a*e)*(b*B*d - 2*A*b*e +
 a*B*e)*(a + b*x) + (2*e*(b*d - a*e)*(-(B*d) + A*e)*(a + b*x)^2)/(d + e*x)
- 2*e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)^2*Log[a + b*x] + 2*e*(2*b*B*d -
 3*A*b*e + a*B*e)*(a + b*x)^2*Log[d + e*x]))/(2*(b*d - a*e)^4*((a + b*x)^2)
^(3/2))
```

fricas [**B**] time = 0.76, size = 803, normalized size = 3.02

$$-\frac{2\,Aa^3e^3+\left(Bab^2+Ab^3\right)d^3+2\left(2\,Ba^2b-3\,Aab^2\right)d^2e-\left(5\,Ba^3-3\,Aa^2b\right)de^2+2\left(2\,Bb^3d^2e-\left(Bab^2+3\,Ab^3\right)de^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -1/2*(2*A*a^3*e^3 + (B*a*b^2 + A*b^3)*d^3 + 2*(2*B*a^2*b - 3*A*a*b^2)*d^2*e
 - (5*B*a^3 - 3*A*a^2*b)*d*e^2 + 2*(2*B*b^3*d^2*e - (B*a*b^2 + 3*A*b^3)*d*e
^2 - (B*a^2*b - 3*A*a*b^2)*e^3)*x^2 + (2*B*b^3*d^3 + (5*B*a*b^2 - 3*A*b^3)*
d^2*e - 2*(2*B*a^2*b + 3*A*a*b^2)*d*e^2 - 3*(B*a^3 - 3*A*a^2*b)*e^3)*x + 2*
(2*B*a^2*b*d^2*e + (B*a^3 - 3*A*a^2*b)*d*e^2 + (2*B*b^3*d*e^2 + (B*a*b^2 -
3*A*b^3)*e^3)*x^3 + (2*B*b^3*d^2*e + (5*B*a*b^2 - 3*A*b^3)*d*e^2 + 2*(B*a^2
*b - 3*A*a*b^2)*e^3)*x^2 + (4*B*a*b^2*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e
^2 + (B*a^3 - 3*A*a^2*b)*e^3)*x)*log(b*x + a) - 2*(2*B*a^2*b*d^2*e + (B*a^3
 - 3*A*a^2*b)*d*e^2 + (2*B*b^3*d*e^2 + (B*a*b^2 - 3*A*b^3)*e^3)*x^3 + (2*B*
b^3*d^2*e + (5*B*a*b^2 - 3*A*b^3)*d*e^2 + 2*(B*a^2*b - 3*A*a*b^2)*e^3)*x^2
+ (4*B*a*b^2*d^2*e + 2*(2*B*a^2*b - 3*A*a*b^2)*d*e^2 + (B*a^3 - 3*A*a^2*b)*
e^3)*x)*log(e*x + d))/(a^2*b^4*d^5 - 4*a^3*b^3*d^4*e + 6*a^4*b^2*d^3*e^2 -
4*a^5*b*d^2*e^3 + a^6*d*e^4 + (b^6*d^4*e - 4*a*b^5*d^3*e^2 + 6*a^2*b^4*d^2*
e^3 - 4*a^3*b^3*d*e^4 + a^4*b^2*e^5)*x^3 + (b^6*d^5 - 2*a*b^5*d^4*e - 2*a^2
*b^4*d^3*e^2 + 8*a^3*b^3*d^2*e^3 - 7*a^4*b^2*d*e^4 + 2*a^5*b*e^5)*x^2 + (2*
a*b^5*d^5 - 7*a^2*b^4*d^4*e + 8*a^3*b^3*d^3*e^2 - 2*a^4*b^2*d^2*e^3 - 2*a^5
*b*d*e^4 + a^6*e^5)*x)
```

giac [**B**] time = 0.53, size = 708, normalized size = 2.66

$$\frac{\left(2\,Bbde^2+Bae^3-3\,Abe^3\right)\log\left(\left|-b+\right.\right.}{b^4d^4e\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)-4\,ab^3d^3e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\frac{ae^2}{(xe+d)^2}\right)+6\,a^2b^2d^2e^3\,\mathrm{sgn}\left(-\frac{be}{xe+d}+\frac{bde}{(xe+d)^2}-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] (2*B*b*d*e^2 + B*a*e^3 - 3*A*b*e^3)*log(abs(-b + b*d/(x*e + d) - a*e/(x*e +
 d)))/(b^4*d^4*e*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2
) - 4*a*b^3*d^3*e^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d
)^2) + 6*a^2*b^2*d^2*e^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*
e + d)^2) - 4*a^3*b*d*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x
*e + d)^2) + a^4*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e +
d)^2)) + (B*d*e^4/(x*e + d) - A*e^5/(x*e + d))/(b^3*d^3*e^3*sgn(-b*e/(x*e +
 d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 3*a*b^2*d^2*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 3*a^2*b*d*e^5*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^3*e^6*sgn(-b*e/(x*e +
d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + 1/2*(2*B*b^3*d*e + 3*B*a*b^2
*e^2 - 5*A*b^3*e^2 - 2*(B*b^3*d^2*e^2 + B*a*b^2*d*e^3 - 3*A*b^3*d*e^3 - 2*B
*a^2*b*e^4 + 3*A*a*b^2*e^4)*e^(-1)/(x*e + d))/((b*d - a*e)^4*(b - b*d/(x*e
+ d) + a*e/(x*e + d))^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e
 + d)^2))
```

maple [B] time = 0.07, size = 828, normalized size = 3.11

$$\left(6A\,b^{3}e^{3}x^{3}\ln\left(bx+a\right)-6A\,b^{3}e^{3}x^{3}\ln\left(ex+d\right)-2Ba\,b^{2}e^{3}x^{3}\ln\left(bx+a\right)+2Ba\,b^{2}e^{3}x^{3}\ln\left(ex+d\right)-4B\,b^{3}d\,e^{2}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(-A*b^3*d^3-2*A*a^3*e^3-3*A*a^2*b*d*e^2+6*A*a*b^2*d^2*e+4*B*ln(e*x+d)*x
^3*b^3*d*e^2+12*A*ln(b*x+a)*x^2*a*b^2*e^3+6*A*ln(b*x+a)*x^2*b^3*d*e^2-4*B*a
^2*b*d^2*e+3*B*a^3*e^3*x-2*B*b^3*d^3*x+5*B*a^3*d*e^2-B*a*b^2*d^3-12*A*ln(e*
x+d)*x^2*a*b^2*e^3-6*A*ln(e*x+d)*x^2*b^3*d*e^2-4*B*ln(b*x+a)*x^2*a^2*b*e^3-
4*B*ln(b*x+a)*x^2*b^3*d^2*e+4*B*ln(e*x+d)*a^2*b*d^2*e-2*B*ln(b*x+a)*x^3*a*b
^2*e^3+4*B*ln(e*x+d)*x^2*a^2*b*e^3+4*B*ln(e*x+d)*x^2*b^3*d^2*e-6*A*ln(e*x+d
)*x^3*b^3*e^3-2*B*ln(b*x+a)*x*a^3*e^3+2*B*ln(e*x+d)*x*a^3*e^3-2*B*ln(b*x+a)
*a^3*d*e^2+3*A*b^3*d^2*e*x+6*A*x^2*b^3*d*e^2+2*B*x^2*a^2*b*e^3-4*B*x^2*b^3*
d^2*e-9*A*a^2*b*e^3*x-6*A*x^2*a*b^2*e^3+2*B*ln(e*x+d)*a^3*d*e^2+6*A*ln(b*x+
a)*x^3*b^3*e^3-5*B*a*b^2*d^2*e*x+4*B*a^2*b*d*e^2*x+6*A*a*b^2*d*e^2*x+2*B*x^
2*a*b^2*d*e^2-4*B*ln(b*x+a)*x^3*b^3*d*e^2+2*B*ln(e*x+d)*x^3*a*b^2*e^3-8*B*l
n(b*x+a)*x*a*b^2*d^2*e+8*B*ln(e*x+d)*x*a^2*b*d*e^2+8*B*ln(e*x+d)*x*a*b^2*d^
2*e+12*A*ln(b*x+a)*x*a*b^2*d*e^2-12*A*ln(e*x+d)*x*a*b^2*d*e^2-8*B*ln(b*x+a)
*x*a^2*b*d*e^2-10*B*ln(b*x+a)*x^2*a*b^2*d*e^2+10*B*ln(e*x+d)*x^2*a*b^2*d*e^
2+6*A*ln(b*x+a)*x*a^2*b*e^3-6*A*ln(e*x+d)*x*a^2*b*e^3+6*A*ln(b*x+a)*a^2*b*d
*e^2-6*A*ln(e*x+d)*a^2*b*d*e^2-4*B*ln(b*x+a)*a^2*b*d^2*e)*(b*x+a)/(e*x+d)/(
a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^2 \left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**2*((a + b*x)**2)**(3/2)), x)
```

3.1774 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=332

$$-\frac{b(Ab-aB)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b(2aBe-3Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)}$$

```
[Out] -b*(-3*A*b*e+2*B*a*e+B*b*d)/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)-1/2*b*(A*b-B*a)/
(-a*e+b*d)^3/(b*x+a)/((b*x+a)^2)^(1/2)-1/2*e*(-A*e+B*d)*(b*x+a)/(-a*e+b*d)^
3/(e*x+d)^2/((b*x+a)^2)^(1/2)-e*(-3*A*b*e+B*a*e+2*B*b*d)*(b*x+a)/(-a*e+b*d)
^4/(e*x+d)/((b*x+a)^2)^(1/2)-3*b*e*(-2*A*b*e+B*a*e+B*b*d)*(b*x+a)*ln(b*x+a)
/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)+3*b*e*(-2*A*b*e+B*a*e+B*b*d)*(b*x+a)*ln(e*x
+d)/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{770, 77\}$

$$-\frac{b(Ab-aB)}{2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{b(2aBe-3Abe+bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e(a+bx)(aBe-3Abe+2bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((b*(b*B*d - 3*A*b*e + 2*a*B*e))/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])) - (b*(A*b - a*B))/(2*(b*d - a*e)^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) - (e*(B*d - A*e)*(a + b*x))/(2*(b*d - a*e)^3*(d + e*x)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (e*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x))/((b*d - a*e
)^4*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*b*e*(b*B*d - 2*A*b*e + a*
B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
+ (3*b*e*(b*B*d - 2*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^5*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b(bd-ae)^3(a+bx)^3}+\frac{bBd-3Abe+2aBe}{b(bd-ae)^4(a+bx)^2}+\frac{3e(-bBd+2Abe-aBe)}{b(bd-ae)^5(a+bx)}-\frac{}{b^3}\right.}{\sqrt{a^2+2abx+b^2x}}$$

$$= -\frac{b(bBd-3Abe+2aBe)}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}-\frac{b(Ab-aB)}{2(bd-ae)^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.27, size = 220, normalized size = 0.66

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(bd-ae)^2(Ae-Bd)}{(d+ex)^2}-2b(a+bx)(bd-ae)(2aBe-3Abe+bBd)+\frac{2e(a+bx)^2(bd-ae)(-aBe+3Abe-2bBd)}{d+ex}-6be(a\right.}{2\left((a+bx)^2\right)^{3/}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-(b*(A*b - a*B)*(b*d - a*e)^2) - 2*b*(b*d - a*e)*(b*B*d - 3*A*b
*e + 2*a*B*e)*(a + b*x) + (e*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x)^2)/(d +
 e*x)^2 + (2*e*(b*d - a*e)*(-2*b*B*d + 3*A*b*e - a*B*e)*(a + b*x)^2)/(d + e
*x) - 6*b*e*(b*B*d - 2*A*b*e + a*B*e)*(a + b*x)^2*Log[a + b*x] + 6*b*e*(b*B
*d - 2*A*b*e + a*B*e)*(a + b*x)^2*Log[d + e*x]))/(2*(b*d - a*e)^5*((a + b*x
)^2)^(3/2))
```

fricas [B] time = 0.75, size = 1215, normalized size = 3.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(9*B*a^3*b*d^2*e^2 + A*a^4*e^4 - (B*a*b^3 + A*b^4)*d^4 - (9*B*a^2*b^2 -
 8*A*a*b^3)*d^3*e + (B*a^4 - 8*A*a^3*b)*d*e^3 - 6*(B*b^4*d^2*e^2 - 2*A*b^4*
d*e^3 - (B*a^2*b^2 - 2*A*a*b^3)*e^4)*x^3 - 9*(B*b^4*d^3*e - B*a^2*b^2*d*e^3
 + (B*a*b^3 - 2*A*b^4)*d^2*e^2 - (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 - 2*(B*b^
4*d^4 - 12*A*a*b^3*d^2*e^2 + (7*B*a*b^3 - 2*A*b^4)*d^3*e - (7*B*a^3*b - 12*
A*a^2*b^2)*d*e^3 - (B*a^4 - 2*A*a^3*b)*e^4)*x - 6*(B*a^2*b^2*d^3*e + (B*a^3
*b - 2*A*a^2*b^2)*d^2*e^2 + (B*b^4*d*e^3 + (B*a*b^3 - 2*A*b^4)*e^4)*x^4 + 2
*(B*b^4*d^2*e^2 + 2*(B*a*b^3 - A*b^4)*d*e^3 + (B*a^2*b^2 - 2*A*a*b^3)*e^4)*
x^3 + (B*b^4*d^3*e + (5*B*a*b^3 - 2*A*b^4)*d^2*e^2 + (5*B*a^2*b^2 - 8*A*a*b
^3)*d*e^3 + (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 + 2*(B*a*b^3*d^3*e + 2*(B*a^2*
b^2 - A*a*b^3)*d^2*e^2 + (B*a^3*b - 2*A*a^2*b^2)*d*e^3)*x)*log(b*x + a) + 6
*(B*a^2*b^2*d^3*e + (B*a^3*b - 2*A*a^2*b^2)*d^2*e^2 + (B*b^4*d*e^3 + (B*a*b
^3 - 2*A*b^4)*e^4)*x^4 + 2*(B*b^4*d^2*e^2 + 2*(B*a*b^3 - A*b^4)*d*e^3 + (B*
a^2*b^2 - 2*A*a*b^3)*e^4)*x^3 + (B*b^4*d^3*e + (5*B*a*b^3 - 2*A*b^4)*d^2*e^
2 + (5*B*a^2*b^2 - 8*A*a*b^3)*d*e^3 + (B*a^3*b - 2*A*a^2*b^2)*e^4)*x^2 + 2*
(B*a*b^3*d^3*e + 2*(B*a^2*b^2 - A*a*b^3)*d^2*e^2 + (B*a^3*b - 2*A*a^2*b^2)*
d*e^3)*x)*log(e*x + d))/(a^2*b^5*d^7 - 5*a^3*b^4*d^6*e + 10*a^4*b^3*d^5*e^2
 - 10*a^5*b^2*d^4*e^3 + 5*a^6*b*d^3*e^4 - a^7*d^2*e^5 + (b^7*d^5*e^2 - 5*a*
b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a
^5*b^2*e^7)*x^4 + 2*(b^7*d^6*e - 4*a*b^6*d^5*e^2 + 5*a^2*b^5*d^4*e^3 - 5*a^
4*b^3*d^2*e^5 + 4*a^5*b^2*d*e^6 - a^6*b*e^7)*x^3 + (b^7*d^7 - a*b^6*d^6*e -
```

```
 9*a^2*b^5*d^5*e^2 + 25*a^3*b^4*d^4*e^3 - 25*a^4*b^3*d^3*e^4 + 9*a^5*b^2*d^
2*e^5 + a^6*b*d*e^6 - a^7*e^7)*x^2 + 2*(a*b^6*d^7 - 4*a^2*b^5*d^6*e + 5*a^3
*b^4*d^5*e^2 - 5*a^5*b^2*d^3*e^4 + 4*a^6*b*d^2*e^5 - a^7*d*e^6)*x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [**B**] time = 0.07, size = 1271, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(-2*B*x*b^4*d^4+2*B*x*a^4*e^4-A*b^4*d^4+A*a^4*e^4-B*a*b^3*d^4+B*a^4*d*
e^3+8*A*a*b^3*d^3*e+9*B*a^3*b*d^2*e^2-9*B*a^2*b^2*d^3*e-8*A*a^3*b*d*e^3+12*
B*ln(e*x+d)*x^3*a^2*b^2*e^4+12*B*ln(e*x+d)*x^3*b^4*d^2*e^2+12*A*ln(b*x+a)*x
^2*a^2*b^2*e^4+12*A*ln(b*x+a)*x^2*b^4*d^2*e^2-12*A*ln(e*x+d)*x^2*a^2*b^2*e^
4-12*A*ln(e*x+d)*x^2*b^4*d^2*e^2-6*B*ln(b*x+a)*x^2*a^3*b*e^4-6*B*ln(b*x+a)*
x^2*b^4*d^3*e+6*B*ln(e*x+d)*x^2*a^3*b*e^4+6*B*ln(e*x+d)*x^2*b^4*d^3*e-12*B*
ln(b*x+a)*x^3*b^4*d^2*e^2+12*A*ln(b*x+a)*a^2*b^2*d^2*e^2-12*A*ln(e*x+d)*a^2
*b^2*d^2*e^2-6*B*ln(b*x+a)*a^3*b*d^2*e^2-6*B*ln(b*x+a)*a^2*b^2*d^3*e+6*B*ln
(e*x+d)*a^3*b*d^2*e^2+6*B*ln(e*x+d)*a^2*b^2*d^3*e+9*B*x^2*a^2*b^2*d*e^3-9*B
*x^2*a*b^3*d^2*e^2-24*A*x*a^2*b^2*d*e^3+24*A*x*a*b^3*d^2*e^2+14*B*x*a^3*b*d
*e^3-14*B*x*a*b^3*d^3*e-6*B*ln(b*x+a)*x^4*a*b^3*e^4-6*B*ln(b*x+a)*x^4*b^4*d
*e^3+6*B*ln(e*x+d)*x^4*a*b^3*e^4+6*B*ln(e*x+d)*x^4*b^4*d*e^3+24*A*ln(b*x+a)
*x^3*a*b^3*e^4+24*A*ln(b*x+a)*x^3*b^4*d*e^3-24*A*ln(e*x+d)*x^3*a*b^3*e^4-24
*A*ln(e*x+d)*x^3*b^4*d*e^3-12*B*ln(b*x+a)*x^3*a^2*b^2*e^4-12*A*x^3*a*b^3*e^
4+12*A*x^3*b^4*d*e^3+6*B*x^3*a^2*b^2*e^4-6*B*x^3*b^4*d^2*e^2-18*A*x^2*a^2*b
^2*e^4+18*A*x^2*b^4*d^2*e^2+9*B*x^2*a^3*b*e^4-9*B*x^2*b^4*d^3*e+4*A*x*b^4*d
^3*e-4*A*x*a^3*b*e^4+12*A*ln(b*x+a)*x^4*b^4*e^4-12*A*ln(e*x+d)*x^4*b^4*e^4-
12*B*ln(b*x+a)*x*a*b^3*d^3*e+12*B*ln(e*x+d)*x*a^3*b*d*e^3+24*B*ln(e*x+d)*x*
a^2*b^2*d^2*e^2+12*B*ln(e*x+d)*x*a*b^3*d^3*e+30*B*ln(e*x+d)*x^2*a^2*b^2*d*e
^3+30*B*ln(e*x+d)*x^2*a*b^3*d^2*e^2+24*A*ln(b*x+a)*x*a^2*b^2*d*e^3+24*A*ln(
b*x+a)*x*a*b^3*d^2*e^2-24*A*ln(e*x+d)*x*a^2*b^2*d*e^3-24*A*ln(e*x+d)*x*a*b^
3*d^2*e^2-12*B*ln(b*x+a)*x*a^3*b*d*e^3-24*B*ln(b*x+a)*x^3*a*b^3*d*e^3+24*B*
ln(e*x+d)*x^3*a*b^3*d*e^3-24*B*ln(b*x+a)*x*a^2*b^2*d^2*e^2-48*A*ln(e*x+d)*x
^2*a*b^3*d*e^3-30*B*ln(b*x+a)*x^2*a^2*b^2*d*e^3-30*B*ln(b*x+a)*x^2*a*b^3*d^
2*e^2+48*A*ln(b*x+a)*x^2*a*b^3*d*e^3)*(b*x+a)/(e*x+d)^2/(a*e-b*d)^5/((b*x+a
)^2)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(d + ex\right)^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**3*((a + b*x)**2)**(3/2)), x)
```

3.1775 $\int \frac{(A+Bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=373

$$\frac{5e^3(a+bx)(bd-ae)\log(a+bx)(-3aBe+Abe+2bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{10e^2(bd-ae)^2(-2aBe+Abe+bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^3(-3}{2b^7(a+bx)\sqrt{}}$$

```
[Out] -10*e^2*(-a*e+b*d)^2*(A*b*e-2*B*a*e+B*b*d)/b^7/((b*x+a)^2)^(1/2)-1/4*(A*b-B
*a)*(-a*e+b*d)^5/b^7/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/3*(-a*e+b*d)^4*(5*A*b*e-
6*B*a*e+B*b*d)/b^7/(b*x+a)^2/((b*x+a)^2)^(1/2)-5/2*e*(-a*e+b*d)^3*(2*A*b*e-
3*B*a*e+B*b*d)/b^7/(b*x+a)/((b*x+a)^2)^(1/2)+e^4*(A*b*e-5*B*a*e+5*B*b*d)*x*
(b*x+a)/b^6/((b*x+a)^2)^(1/2)+1/2*B*e^5*x^2*(b*x+a)/b^5/((b*x+a)^2)^(1/2)+5
*e^3*(-a*e+b*d)*(A*b*e-3*B*a*e+2*B*b*d)*(b*x+a)*ln(b*x+a)/b^7/((b*x+a)^2)^(
1/2)
```

Rubi [A] time = 0.43, antiderivative size = 373, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{e^4x(a+bx)(-5aBe+Abe+5bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{10e^2(bd-ae)^2(-2aBe+Abe+bBd)}{b^7\sqrt{a^2+2abx+b^2x^2}}+\frac{5e^3(a+bx)(bd-ae)\log(a+bx)(-3}{b^7\sqrt{a^2+2abx+b^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-10*e^2*(b*d - a*e)^2*(b*B*d + A*b*e - 2*a*B*e))/(b^7*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - ((A*b - a*B)*(b*d - a*e)^5)/(4*b^7*(a + b*x)^3*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) - ((b*d - a*e)^4*(b*B*d + 5*A*b*e - 6*a*B*e))/(3*b^7*(a + b
*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^3*(b*B*d + 2*A*b*e
- 3*a*B*e))/(2*b^7*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^4*(5*b*B*d
 + A*b*e - 5*a*B*e)*x*(a + b*x))/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e
^5*x^2*(a + b*x))/(2*b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^3*(b*d - a*e
)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)*Log[a + b*x])/(b^7*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^5}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{e^4(5bBd+Abe-5aBe)}{b^{11}}+\frac{Be^5x}{b^{10}}+\frac{(Ab-aB)(bd-ae)^5}{b^{11}(a+bx)^5}+\frac{(bd-ae)^4(bBd+5Abe-6aBe)}{b^{11}(a+bx)^4}\right.}{\sqrt{a^2+2ab}}$$

$$= -\frac{10e^2(bd-ae)^2(bBd+Abe-2aBe)}{b^7\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)^5}{4b^7(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(bd-ae}{3b^7(a+}$$

Mathematica **[A]** time = 0.32, size = 513, normalized size = 1.38

$$\frac{-Ab\left(77a^5e^5+a^4be^4(248ex-125d)+2a^3b^2e^3\left(15d^2-220dex+126e^2x^2\right)+2a^2b^3e^2\left(5d^3+60d^2ex-270de^2x^2+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(77*a^5*e^5 + a^4*b*e^4*(-125*d + 248*e*x) + 2*a^3*b^2*e^3*(15*d^2 -
 220*d*e*x + 126*e^2*x^2) + 2*a^2*b^3*e^2*(5*d^3 + 60*d^2*e*x - 270*d*e^2*x
^2 + 24*e^3*x^3) + a*b^4*e*(5*d^4 + 40*d^3*e*x + 180*d^2*e^2*x^2 - 240*d*e^
3*x^3 - 48*e^4*x^4) + b^5*(3*d^5 + 20*d^4*e*x + 60*d^3*e^2*x^2 + 120*d^2*e^
3*x^3 - 12*e^5*x^5))) + B*(171*a^6*e^5 + 7*a^5*b*e^4*(-55*d + 72*e*x) + 2*a
^4*b^2*e^3*(125*d^2 - 620*d*e*x + 198*e^2*x^2) - 2*a^3*b^3*e^2*(15*d^3 - 44
0*d^2*e*x + 630*d*e^2*x^2 + 48*e^3*x^3) - a^2*b^4*e*(5*d^4 + 120*d^3*e*x -
1080*d^2*e^2*x^2 + 240*d*e^3*x^3 + 204*e^4*x^4) + 2*b^6*x*(-2*d^5 - 15*d^4*
e*x - 60*d^3*e^2*x^2 + 30*d*e^4*x^4 + 3*e^5*x^5) - a*b^5*(d^5 + 20*d^4*e*x
+ 180*d^3*e^2*x^2 - 480*d^2*e^3*x^3 - 240*d*e^4*x^4 + 36*e^5*x^5)) + 60*e^3
*(b*d - a*e)*(2*b*B*d + A*b*e - 3*a*B*e)*(a + b*x)^4*Log[a + b*x])/(12*b^7*
(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas **[B]** time = 0.61, size = 914, normalized size = 2.45

$$\frac{6\,Bb^6e^5x^6-\left(Bab^5+3\,Ab^6\right)d^5-5\left(Ba^2b^4+Aab^5\right)d^4e-10\left(3\,Ba^3b^3+Aa^2b^4\right)d^3e^2+10\left(25\,Ba^4b^2-3\,Aa^3b^3\right)d^2e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(6*B*b^6*e^5*x^6 - (B*a*b^5 + 3*A*b^6)*d^5 - 5*(B*a^2*b^4 + A*a*b^5)*d
^4*e - 10*(3*B*a^3*b^3 + A*a^2*b^4)*d^3*e^2 + 10*(25*B*a^4*b^2 - 3*A*a^3*b^
3)*d^2*e^3 - 5*(77*B*a^5*b - 25*A*a^4*b^2)*d*e^4 + (171*B*a^6 - 77*A*a^5*b)
*e^5 + 12*(5*B*b^6*d*e^4 - (3*B*a*b^5 - A*b^6)*e^5)*x^5 + 12*(20*B*a*b^5*d*
e^4 - (17*B*a^2*b^4 - 4*A*a*b^5)*e^5)*x^4 - 24*(5*B*b^6*d^3*e^2 - 5*(4*B*a*
b^5 - A*b^6)*d^2*e^3 + 10*(B*a^2*b^4 - A*a*b^5)*d*e^4 + 2*(2*B*a^3*b^3 + A*
a^2*b^4)*e^5)*x^3 - 6*(5*B*b^6*d^4*e + 10*(3*B*a*b^5 + A*b^6)*d^3*e^2 - 30*
(6*B*a^2*b^4 - A*a*b^5)*d^2*e^3 + 30*(7*B*a^3*b^3 - 3*A*a^2*b^4)*d*e^4 - 6*
(11*B*a^4*b^2 - 7*A*a^3*b^3)*e^5)*x^2 - 4*(B*b^6*d^5 + 5*(B*a*b^5 + A*b^6)*
d^4*e + 10*(3*B*a^2*b^4 + A*a*b^5)*d^3*e^2 - 10*(22*B*a^3*b^3 - 3*A*a^2*b^4
)*d^2*e^3 + 10*(31*B*a^4*b^2 - 11*A*a^3*b^3)*d*e^4 - 2*(63*B*a^5*b - 31*A*a
^4*b^2)*e^5)*x + 60*(2*B*a^4*b^2*d^2*e^3 - (5*B*a^5*b - A*a^4*b^2)*d*e^4 +
(3*B*a^6 - A*a^5*b)*e^5 + (2*B*b^6*d^2*e^3 - (5*B*a*b^5 - A*b^6)*d*e^4 + (3
*B*a^2*b^4 - A*a*b^5)*e^5)*x^4 + 4*(2*B*a*b^5*d^2*e^3 - (5*B*a^2*b^4 - A*a*
b^5)*d*e^4 + (3*B*a^3*b^3 - A*a^2*b^4)*e^5)*x^3 + 6*(2*B*a^2*b^4*d^2*e^3 -
(5*B*a^3*b^3 - A*a^2*b^4)*d*e^4 + (3*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 4*(2
*B*a^3*b^3*d^2*e^3 - (5*B*a^4*b^2 - A*a^3*b^3)*d*e^4 + (3*B*a^5*b - A*a^4*b
^2)*e^5)*x)*log(b*x + a))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x^2 + 4*a^3*
b^8*x + a^4*b^7)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.07, size = 1153, normalized size = 3.09

$$-\frac{\left(-6B\,b^6e^5x^6+60Aa\,b^5e^5x^4\ln\left(bx+a\right)-60A\,b^6d\,e^4x^4\ln\left(bx+a\right)-12A\,b^6e^5x^5-180B\,a^2b^4e^5x^4\ln\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(77*A*a^5*b*e^5-250*B*a^4*b^2*d^2*e^3+120*B*x*a^2*b^4*d^3*e^2+385*B*a
^5*b*d*e^4+3*A*b^6*d^5-171*B*a^6*e^5-12*A*x^5*b^6*e^5-180*B*ln(b*x+a)*a^6*e
^5-125*A*a^4*b^2*d*e^4+30*B*a^3*b^3*d^3*e^2+5*a^2*B*b^4*d^4*e+B*a*b^5*d^5+3
0*A*a^3*b^3*d^2*e^3-480*B*ln(b*x+a)*x^3*a*b^5*d^2*e^3-240*A*ln(b*x+a)*x^3*a
*b^5*d*e^4-240*A*ln(b*x+a)*x*a^3*b^3*d*e^4+300*B*ln(b*x+a)*x^4*a*b^5*d*e^4+
1200*B*ln(b*x+a)*x*a^4*b^2*d*e^4-480*B*ln(b*x+a)*x*a^3*b^3*d^2*e^3+4*B*x*b^
6*d^5-6*B*x^6*b^6*e^5+10*A*a^2*b^4*d^3*e^2-360*A*ln(b*x+a)*x^2*a^2*b^4*d*e^
4+1800*B*ln(b*x+a)*x^2*a^3*b^3*d*e^4-720*B*ln(b*x+a)*x^2*a^2*b^4*d^2*e^3+12
00*B*ln(b*x+a)*x^3*a^2*b^4*d*e^4+5*A*a*b^5*d^4*e-120*B*ln(b*x+a)*x^4*b^6*d^
2*e^3+240*A*ln(b*x+a)*x^3*a^2*b^4*e^5-60*A*ln(b*x+a)*a^4*b^2*d*e^4+300*B*ln
(b*x+a)*a^5*b*d*e^4-120*B*ln(b*x+a)*a^4*b^2*d^2*e^3+60*A*ln(b*x+a)*x^4*a*b^
5*e^5-60*A*ln(b*x+a)*x^4*b^6*d*e^4-180*B*ln(b*x+a)*x^4*a^2*b^4*e^5+1240*B*x
*a^4*b^2*d*e^4-240*B*x^4*a*b^5*d*e^4+240*B*x^3*a^2*b^4*d*e^4+1260*B*x^2*a^3
*b^3*d*e^4+120*A*x*a^2*b^4*d^2*e^3+40*A*x*a*b^5*d^3*e^2-880*B*x*a^3*b^3*d^2
*e^3-48*A*x^4*a*b^5*e^5+60*A*ln(b*x+a)*a^5*b*e^5+36*B*x^5*a*b^5*e^5-60*B*x^
5*b^6*d*e^4-504*B*x*a^5*b*e^5+20*A*x*b^6*d^4*e+60*A*x^2*b^6*d^3*e^2-396*B*x
^2*a^4*b^2*e^5+30*B*x^2*b^6*d^4*e+248*A*x*a^4*b^2*e^5+96*B*x^3*a^3*b^3*e^5+
120*B*x^3*b^6*d^3*e^2+252*A*x^2*a^3*b^3*e^5+120*A*x^3*b^6*d^2*e^3+204*B*x^4
*a^2*b^4*e^5+48*A*x^3*a^2*b^4*e^5-540*A*x^2*a^2*b^4*d*e^4+180*A*x^2*a*b^5*d
^2*e^3-240*A*x^3*a*b^5*d*e^4-1080*B*x^2*a^2*b^4*d^2*e^3+180*B*x^2*a*b^5*d^3
*e^2-480*B*x^3*a*b^5*d^2*e^3-440*A*x*a^3*b^3*d*e^4-720*B*ln(b*x+a)*x^3*a^3*
b^3*e^5+360*A*ln(b*x+a)*x^2*a^3*b^3*e^5-1080*B*ln(b*x+a)*x^2*a^4*b^2*e^5+24
0*A*ln(b*x+a)*x*a^4*b^2*e^5-720*B*ln(b*x+a)*x*a^5*b*e^5+20*B*x*a*b^5*d^4*e)
*(b*x+a)/b^7/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.19, size = 1010, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*B*e^5*((2*b^6*x^6 - 12*a*b^5*x^5 - 68*a^2*b^4*x^4 - 32*a^3*b^3*x^3 + 13
2*a^4*b^2*x^2 + 168*a^5*b*x + 57*a^6)/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*
x^2 + 4*a^3*b^8*x + a^4*b^7) + 60*a^2*log(b*x + a)/b^7) + 5/12*B*d*e^4*((12
*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x -
77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) -
60*a*log(b*x + a)/b^6) + 1/12*A*e^5*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^
3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6
*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 5/6*B*d^2*
e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*
b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 5
/12*A*d*e^4*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^
4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/
b^5) - 5/6*B*d^3*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*
(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 5/6*A*d^2*e^3*(12*x^2/((b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) +
6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4))
- 1/12*B*d^5*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^
4)) - 5/12*A*d^4*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x +
 a/b)^4)) - 5/12*B*d^4*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a
^2/(b^7*(x + a/b)^4)) - 5/6*A*d^3*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x +
a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/4*A*d^5/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^5}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^5}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**5/((a + b*x)**2)**(5/2), x)
```

3.1776 $\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=310

$$\frac{e^3(a+bx)\log(a+bx)(-5aBe+Abe+4bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{2e^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2(-5aBe+3Ab}{b^6(a+bx)\sqrt{a^2+2abx}}$$

```
[Out] -2*e^2*(-a*e+b*d)*(2*A*b*e-5*B*a*e+3*B*b*d)/b^6/((b*x+a)^2)^(1/2)-1/4*(A*b-
B*a)*(-a*e+b*d)^4/b^6/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/3*(-a*e+b*d)^3*(4*A*b*e
-5*B*a*e+B*b*d)/b^6/(b*x+a)^2/((b*x+a)^2)^(1/2)-e*(-a*e+b*d)^2*(3*A*b*e-5*B
*a*e+2*B*b*d)/b^6/(b*x+a)/((b*x+a)^2)^(1/2)+B*e^4*x*(b*x+a)/b^5/((b*x+a)^2)
^(1/2)+e^3*(A*b*e-5*B*a*e+4*B*b*d)*(b*x+a)*ln(b*x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {770, 77}

$$-\frac{2e^2(bd-ae)(-5aBe+2Abe+3bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{e^3(a+bx)\log(a+bx)(-5aBe+Abe+4bBd)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2(-5aBe+3A}{b^6(a+bx)\sqrt{a^2+2ab}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*e^2*(b*d - a*e)*(3*b*B*d + 2*A*b*e - 5*a*B*e))/(b^6*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - ((A*b - a*B)*(b*d - a*e)^4)/(4*b^6*(a + b*x)^3*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - ((b*d - a*e)^3*(b*B*d + 4*A*b*e - 5*a*B*e))/(3*b^6*(a +
b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(b*d - a*e)^2*(2*b*B*d + 3*A*b*e
 - 5*a*B*e))/(b^6*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e^4*x*(a +
b*x))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(4*b*B*d + A*b*e - 5*a*B*e
)*(a + b*x)*Log[a + b*x])/(b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^4}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Be^4}{b^{10}}+\frac{(Ab-aB)(bd-ae)^4}{b^{10}(a+bx)^5}+\frac{(bd-ae)^3(bBd+4Abe-5aBe)}{b^{10}(a+bx)^4}+\frac{2e(bd-ae)^2(2bBd+3Ab}{b^{10}(a+bx)^3}\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2e^2(bd-ae)(3bBd+2Abe-5aBe)}{b^6\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(bd-ae)^4}{4b^6(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(bd-a}{3b^6(a+}$$

Mathematica [**A**] time = 0.22, size = 331, normalized size = 1.07

$$\frac{-Ab(bd-ae)\left(25a^3e^3+a^2be^2(13d+88ex)+ab^2e\left(7d^2+40dex+108e^2x^2\right)+b^3\left(3d^3+16d^2ex+36de^2x^2+48e^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(b*d - a*e)*(25*a^3*e^3 + a^2*b*e^2*(13*d + 88*e*x) + a*b^2*e*(7*d^2
 + 40*d*e*x + 108*e^2*x^2) + b^3*(3*d^3 + 16*d^2*e*x + 36*d*e^2*x^2 + 48*e^
3*x^3))) - B*(77*a^5*e^4 + 4*a^4*b*e^3*(-25*d + 62*e*x) + 2*a^3*b^2*e^2*(9*
d^2 - 176*d*e*x + 126*e^2*x^2) + 4*a^2*b^3*e*(d^3 + 18*d^2*e*x - 108*d*e^2*
x^2 + 12*e^3*x^3) + a*b^4*(d^4 + 16*d^3*e*x + 108*d^2*e^2*x^2 - 192*d*e^3*x
^3 - 48*e^4*x^4) + 4*b^5*x*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4))
+ 12*e^3*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)^4*Log[a + b*x])/(12*b^6*(a +
 b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [**B**] time = 0.54, size = 619, normalized size = 2.00

$$\frac{12\,Bb^5e^4x^5+48\,Bab^4e^4x^4-\left(Bab^4+3\,Ab^5\right)d^4-4\left(Ba^2b^3+Aab^4\right)d^3e-6\left(3\,Ba^3b^2+Aa^2b^3\right)d^2e^2+4\left(25\,Ba^4b-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(12*B*b^5*e^4*x^5 + 48*B*a*b^4*e^4*x^4 - (B*a*b^4 + 3*A*b^5)*d^4 - 4*(
B*a^2*b^3 + A*a*b^4)*d^3*e - 6*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 4*(25*B*
a^4*b - 3*A*a^3*b^2)*d*e^3 - (77*B*a^5 - 25*A*a^4*b)*e^4 - 24*(3*B*b^5*d^2*
e^2 - 2*(4*B*a*b^4 - A*b^5)*d*e^3 + 2*(B*a^2*b^3 - A*a*b^4)*e^4)*x^3 - 12*(
2*B*b^5*d^3*e + 3*(3*B*a*b^4 + A*b^5)*d^2*e^2 - 6*(6*B*a^2*b^3 - A*a*b^4)*d
*e^3 + 3*(7*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - 4*(B*b^5*d^4 + 4*(B*a*b^4 +
 A*b^5)*d^3*e + 6*(3*B*a^2*b^3 + A*a*b^4)*d^2*e^2 - 4*(22*B*a^3*b^2 - 3*A*a
^2*b^3)*d*e^3 + 2*(31*B*a^4*b - 11*A*a^3*b^2)*e^4)*x + 12*(4*B*a^4*b*d*e^3
- (5*B*a^5 - A*a^4*b)*e^4 + (4*B*b^5*d*e^3 - (5*B*a*b^4 - A*b^5)*e^4)*x^4 +
 4*(4*B*a*b^4*d*e^3 - (5*B*a^2*b^3 - A*a*b^4)*e^4)*x^3 + 6*(4*B*a^2*b^3*d*e
^3 - (5*B*a^3*b^2 - A*a^2*b^3)*e^4)*x^2 + 4*(4*B*a^3*b^2*d*e^3 - (5*B*a^4*b
 - A*a^3*b^2)*e^4)*x)*log(b*x + a))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2
 + 4*a^3*b^7*x + a^4*b^6)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 735, normalized size = 2.37

$$\Big(12A\,b^5e^4x^4\ln(bx+a) - 60Ba\,b^4e^4x^4\ln(bx+a) + 48B\,b^5d\,e^3x^4\ln(bx+a) + 12B\,b^5e^4x^5 + 48Aa\,b^4e^4x^3\ln(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(-4*A*a*b^4*d^3*e+192*B*a*b^4*d*e^3*x^3+100*B*a^4*b*d*e^3-18*B*a^3*b^2
*d^2*e^2+192*B*ln(b*x+a)*x^3*a*b^4*d*e^3-4*B*a^2*b^3*d^3*e-60*B*a^5*e^4*ln(
b*x+a)-4*B*b*b^5*d^4*x+12*B*b^5*e^4*x^5+48*A*a*b^4*e^4*x^3-48*A*b^5*d*e^3*x^3
-48*B*a^2*b^3*e^4*x^3-12*A*a^3*b^2*d*e^3-72*B*a^2*b^3*d^2*e^2*x-48*A*a^2*b^
3*d*e^3*x+352*B*a^3*b^2*d*e^3*x+25*A*a^4*b*e^4-B*a*b^4*d^4-3*A*b^5*d^4-77*B
*a^5*e^4-72*A*a*b^4*d*e^3*x^2+48*B*a^4*b*d*e^3*ln(b*x+a)+48*A*a^3*b^2*e^4*x
*ln(b*x+a)-240*B*a^4*b*e^4*x*ln(b*x+a)+72*A*a^2*b^3*e^4*x^2*ln(b*x+a)-360*B
*a^3*b^2*e^4*x^2*ln(b*x+a)-24*A*a*b^4*d^2*e^2*x-16*B*a*b^4*d^3*e*x-6*A*a^2*
b^3*d^2*e^2-24*B*x^2*b^5*d^3*e+12*A*ln(b*x+a)*x^4*b^5*e^4+192*B*a^3*b^2*d*e
^3*x*ln(b*x+a)+288*B*a^2*b^3*d*e^3*x^2*ln(b*x+a)-36*A*x^2*b^5*d^2*e^2-108*B
*a*b^4*d^2*e^2*x^2+432*B*a^2*b^3*d*e^3*x^2-240*B*ln(b*x+a)*x^3*a^2*b^3*e^4-
60*B*ln(b*x+a)*x^4*a*b^4*e^4+48*B*ln(b*x+a)*x^4*b^5*d*e^3+48*A*ln(b*x+a)*x^
3*a*b^4*e^4+48*B*a*b^4*e^4*x^4-72*B*b^5*d^2*e^2*x^3+12*A*a^4*b*e^4*ln(b*x+a
)-248*B*a^4*b*e^4*x+108*A*a^2*b^3*e^4*x^2-252*B*a^3*b^2*e^4*x^2+88*A*a^3*b^
2*e^4*x-16*A*b^5*d^3*e*x)*(b*x+a)/b^6/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.95, size = 755, normalized size = 2.44

$$\frac{1}{12}\,Be^4\left(\frac{12\,b^5x^5 + 48\,ab^4x^4 - 48\,a^2b^3x^3 - 252\,a^3b^2x^2 - 248\,a^4bx - 77\,a^5}{b^{10}x^4 + 4\,ab^9x^3 + 6\,a^2b^8x^2 + 4\,a^3b^7x + a^4b^6} - \frac{60\,a\log(bx+a)}{b^6}\right) + \frac{1}{3}\,Bde^3\left(\frac{48\,ab^3}{b^9x^4 + 4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*B*e^4*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 -
 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/3*B*d*e^3*((48*a*b^3*x^3 + 108*a^
2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 1/12*A*e^4*((48*a*b^3*x^3 +
108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) - 1/2*B*d^2*e^2*(12*x^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x
+ a/b)^4)) - 1/3*A*d*e^3*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*
a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(
b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*B*d^4*(4/((b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*A*d^3*e*(4/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*B*d^3*e*(6/(b^5*
(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/2*A*d^2
*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)
) - 1/4*A*d^4/(b^5*(x + a/b)^4)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(d+e\,x\right)}^4}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^4}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**4/((a + b*x)**2)**(5/2), x)
```

3.1777 $\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=227

$$-\frac{(d+ex)^4(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Be(bd-ae)^2}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{3b^5(a+bx}$$

```
[Out] -3*B*e^2*(-a*e+b*d)/b^5/((b*x+a)^2)^(1/2)-1/3*B*(-a*e+b*d)^3/b^5/(b*x+a)^2/
((b*x+a)^2)^(1/2)-3/2*B*e*(-a*e+b*d)^2/b^5/(b*x+a)/((b*x+a)^2)^(1/2)-1/4*(A
*b-B*a)*(e*x+d)^4/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^2)^(1/2)+B*e^3*(b*x+a)*ln
(b*x+a)/b^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 227, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 78, 43\}$

$$-\frac{(d+ex)^4(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{3Be(bd-ae)^2}{2b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{3b^5(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*B*e^2*(b*d - a*e))/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (B*(b*d - a*e)
^3)/(3*b^5*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*B*e*(b*d - a*e)^
2)/(2*b^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)
^4)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (B*e^3*(a
 + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^3}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^4}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^4}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2B\left(ab+b^2x\right)\right)\int \left(\frac{(bd-ae)^3}{b^7(a+bx)^4} + \frac{3e(bd-a}{b^7(a+bx}\right.}{\sqrt{a^2+2abx+}}$$

$$= -\frac{3Be^2(bd-ae)}{b^5\sqrt{a^2+2abx+b^2x^2}} - \frac{B(bd-ae)^3}{3b^5(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{3Be(bd-ae}{2b^5(a+bx)\sqrt{a^2+2a}}$$

Mathematica [**A**] time = 0.13, size = 239, normalized size = 1.05

$$\frac{-3Ab\left(a^3e^3+a^2be^2(d+4ex)+ab^2e\left(d^2+4dex+6e^2x^2\right)+b^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)\right)+B\left(25a^4e^3+a^3be\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (B*(25*a^4*e^3 + a^3*b*e^2*(-9*d + 88*e*x) - 3*a^2*b^2*e*(d^2 + 12*d*e*x -
36*e^2*x^2) - 2*b^4*d*x*(2*d^2 + 9*d*e*x + 18*e^2*x^2) - a*b^3*(d^3 + 12*d^
2*e*x + 54*d*e^2*x^2 - 48*e^3*x^3)) - 3*A*b*(a^3*e^3 + a^2*b*e^2*(d + 4*e*x
) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + b^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^
2 + 4*e^3*x^3)) + 12*B*e^3*(a + b*x)^4*Log[a + b*x])/(12*b^5*(a + b*x)^3*Sq
rt[(a + b*x)^2])
```

fricas [**B**] time = 1.68, size = 359, normalized size = 1.58

$$-\frac{\left(Bab^3+3\,Ab^4\right)d^3+3\left(Ba^2b^2+Aab^3\right)d^2e+3\left(3\,Ba^3b+Aa^2b^2\right)de^2-\left(25\,Ba^4-3\,Aa^3b\right)e^3+12\left(3\,Bb^4de^2-\left(4\,B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*((B*a*b^3 + 3*A*b^4)*d^3 + 3*(B*a^2*b^2 + A*a*b^3)*d^2*e + 3*(3*B*a^3
*b + A*a^2*b^2)*d*e^2 - (25*B*a^4 - 3*A*a^3*b)*e^3 + 12*(3*B*b^4*d*e^2 - (4
*B*a*b^3 - A*b^4)*e^3)*x^3 + 18*(B*b^4*d^2*e + (3*B*a*b^3 + A*b^4)*d*e^2 -
(6*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 4*(B*b^4*d^3 + 3*(B*a*b^3 + A*b^4)*d^2*e
 + 3*(3*B*a^2*b^2 + A*a*b^3)*d*e^2 - (22*B*a^3*b - 3*A*a^2*b^2)*e^3)*x - 12
*(B*b^4*e^3*x^4 + 4*B*a*b^3*e^3*x^3 + 6*B*a^2*b^2*e^3*x^2 + 4*B*a^3*b*e^3*x
 + B*a^4*e^3)*log(b*x + a))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*
b^6*x + a^4*b^5)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.06, size = 385, normalized size = 1.70

$$-\frac{\left(-12B\,b^4e^3x^4\ln(bx+a)-48Ba\,b^3e^3x^3\ln(bx+a)+12A\,b^4e^3x^3-72B\,a^2b^2e^3x^2\ln(bx+a)-48Ba\,b^3e^3x^3+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-48*B*a^3*b*e^3*x*ln(b*x+a)-72*B*a^2*b^2*e^3*x^2*ln(b*x+a)-48*B*ln(b
*x+a)*x^3*a*b^3*e^3+12*B*a*b^3*d^2*e*x+3*A*a^3*b*e^3+36*B*a^2*b^2*d*e^2*x+1
2*A*a*b^3*d*e^2*x+54*B*a*b^3*d*e^2*x^2+3*A*b^4*d^3-25*B*a^4*e^3+9*B*a^3*b*d
*e^2+B*a*b^3*d^3+12*A*b^4*e^3*x^3-12*B*a^4*e^3*ln(b*x+a)+4*B*b^4*d^3*x+18*A
*b^4*d*e^2*x^2+12*A*a^2*b^2*e^3*x+3*B*a^2*b^2*d^2*e+3*A*a*b^3*d^2*e-88*B*a^
3*b*e^3*x-108*B*a^2*b^2*e^3*x^2+18*B*b^4*d^2*e*x^2-48*B*a*b^3*e^3*x^3+36*B*
b^4*d*e^2*x^3+18*A*a*b^3*e^3*x^2+3*A*a^2*b^2*d*e^2+12*A*b^4*d^2*e*x-12*B*ln
(b*x+a)*x^4*b^4*e^3)*(b*x+a)/b^5/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.67, size = 533, normalized size = 2.35

$$\frac{1}{12}\,Be^3\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log(bx+a)}{b^5}\right)-\frac{1}{4}\,Bde^2\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*B*e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4
 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b
^5) - 1/4*B*d*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x
+ a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*A*e^3*(12*x^2/((b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b
^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12
*B*d^3*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) -
1/4*A*d^2*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4
)) - 1/4*B*d^2*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*
(x + a/b)^4)) - 1/4*A*d*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) +
3*a^2/(b^7*(x + a/b)^4)) - 1/4*A*d^3/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^3}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x)
```

3.1778 $\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{(d+ex)^4(Ab-aB)}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^3(Bd-Ae)}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)^2}$$

```
[Out] -1/3*(-A*e+B*d)*(e*x+d)^3/(-a*e+b*d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2)-1/4*(A*b
-B*a)*(e*x+d)^4/(-a*e+b*d)^2/(b*x+a)^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {769, 646, 37}

$$-\frac{(d+ex)^4(Ab-aB)}{4(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^3(Bd-Ae)}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -((B*d - A*e)*(d + e*x)^3)/(3*(b*d - a*e)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)
) - ((A*b - a*B)*(d + e*x)^4)/(4*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{(Ab-aB)\int \frac{(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{bd-ae}\\ &= -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(b^4(Ab-aB)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^5}\,dx}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Bd-Ae)(d+ex)^3}{3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{(Ab-aB)(d+ex)^4}{4(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 142, normalized size = 1.34

$$\frac{-Ab\left(a^2e^2+2abe(d+2ex)+b^2\left(3d^2+8dex+6e^2x^2\right)\right)-B\left(3a^3e^2+2a^2be(d+6ex)+ab^2\left(d^2+8dex+18e^2x^2\right)+\right.}{12b^4(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(a^2*e^2 + 2*a*b*e*(d + 2*e*x) + b^2*(3*d^2 + 8*d*e*x + 6*e^2*x^2)))
 - B*(3*a^3*e^2 + 2*a^2*b*e*(d + 6*e*x) + 4*b^3*x*(d^2 + 3*d*e*x + 3*e^2*x^
2) + a*b^2*(d^2 + 8*d*e*x + 18*e^2*x^2)))/(12*b^4*(a + b*x)^3*Sqrt[(a + b*x
)^2])
```

fricas [**B**] time = 0.65, size = 189, normalized size = 1.78

$$-\frac{12\,Bb^3e^2x^3+\left(Bab^2+3\,Ab^3\right)d^2+2\left(Ba^2b+Aab^2\right)de+\left(3\,Ba^3+Aa^2b\right)e^2+6\left(2\,Bb^3de+\left(3\,Bab^2+Ab^3\right)e^2\right)x^2+}{12\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*(12*B*b^3*e^2*x^3 + (B*a*b^2 + 3*A*b^3)*d^2 + 2*(B*a^2*b + A*a*b^2)*d
*e + (3*B*a^3 + A*a^2*b)*e^2 + 6*(2*B*b^3*d*e + (3*B*a*b^2 + A*b^3)*e^2)*x^
2 + 4*(B*b^3*d^2 + 2*(B*a*b^2 + A*b^3)*d*e + (3*B*a^2*b + A*a*b^2)*e^2)*x)/
(b^8*x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [**A**] time = 0.05, size = 174, normalized size = 1.64

$$-\frac{(bx+a)\left(12B\,b^3e^2x^3+6A\,b^3e^2x^2+18Ba\,b^2e^2x^2+12B\,b^3de\,x^2+4Aa\,b^2e^2x+8A\,b^3dex+12B\,a^2b\,e^2x+8Ba\,b^2d\right.}{12\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)*(12*B*b^3*e^2*x^3+6*A*b^3*e^2*x^2+18*B*a*b^2*e^2*x^2+12*B*b^3
*d*e*x^2+4*A*a*b^2*e^2*x+8*A*b^3*d*e*x+12*B*a^2*b*e^2*x+8*B*a*b^2*d*e*x+4*B
*b^3*d^2*x+A*a^2*b*e^2+2*A*a*b^2*d*e+3*A*b^3*d^2+3*B*a^3*e^2+2*B*a^2*b*d*e+
B*a*b^2*d^2)/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.63, size = 279, normalized size = 2.63

$$-\frac{Be^2x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{2\,Ba^2e^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^4}-\frac{Bd^2+2\,Ade}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{Bae^2}{2\,b^6\left(x+\frac{a}{b}\right)^2}+\frac{2\,Ba^2e^2}{3\,b^7\left(x+\frac{a}{b}\right)^3}-\ 4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] -B*e^2*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 2/3*B*a^2*e^2/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^4) - 1/3*(B*d^2 + 2*A*d*e)/((b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*b^2) - 1/2*B*a*e^2/(b^6*(x + a/b)^2) + 2/3*B*a^2*e^2/(b^7*(x + a/
b)^3) - 1/4*A*d^2/(b^5*(x + a/b)^4) + 1/4*B*a^3*e^2/(b^8*(x + a/b)^4) - 1/2
*(2*B*d*e + A*e^2)/(b^5*(x + a/b)^2) + 2/3*(2*B*d*e + A*e^2)*a/(b^6*(x + a/
b)^3) - 1/4*(2*B*d*e + A*e^2)*a^2/(b^7*(x + a/b)^4) + 1/4*(B*d^2 + 2*A*d*e)
*a/(b^6*(x + a/b)^4)
```

mupad [B] time = 2.36, size = 302, normalized size = 2.85

$$-\frac{\left(\frac{A\,d^2}{4\,b}-\frac{a\left(\frac{B\,d^2+2\,A\,e\,d}{4\,b}-\frac{a\left(\frac{A\,e^2+2\,B\,d\,e}{4\,b}-\frac{B\,a\,e^2}{4\,b^2}\right)}{b}\right)}{b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{{\left(a+b\,x\right)}^5}-\frac{\left(\frac{A\,b\,e^2-2\,B\,a\,e^2+2\,B\,b\,d\,e}{2\,b^4}-\frac{B\,a\,e^2}{2\,b^4}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x}}{{\left(a+b\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] - (((A*d^2)/(4*b) - (a*((B*d^2 + 2*A*d*e)/(4*b) - (a*((A*e^2 + 2*B*d*e)/(4*
b) - (B*a*e^2)/(4*b^2)))/b))/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^
5 - (((A*b*e^2 - 2*B*a*e^2 + 2*B*b*d*e)/(2*b^4) - (B*a*e^2)/(2*b^4))*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x)^3 - (((B*a^2*e^2 + B*b^2*d^2 - A*a*b*e
^2 + 2*A*b^2*d*e - 2*B*a*b*d*e)/(3*b^4) - (a*((e*(A*b*e - B*a*e + 2*B*b*d))
/(3*b^3) - (B*a*e^2)/(3*b^3)))/b)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(a + b*x
)^4 - (B*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(b^4*(a + b*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^2}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/((a + b*x)**2)**(5/2), x)
```

3.1779 $\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=135

$$-\frac{-2aBe+Abe+bBd}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Be}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/4*(A*b-B*a)*(-a*e+b*d)/b^3/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/3*(-A*b*e+2*B*a
*e-B*b*d)/b^3/(b*x+a)^2/((b*x+a)^2)^(1/2)-1/2*B*e/b^3/(b*x+a)/((b*x+a)^2)^(
1/2)
```

Rubi **[A]** time = 0.10, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 77\}$

$$-\frac{-2aBe+Abe+bBd}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{Be}{2b^3(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -((A*b - a*B)*(b*d - a*e))/(4*b^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) - (b*B*d + A*b*e - 2*a*B*e)/(3*b^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (B*e)/(2*b^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(bd-ae)}{b^7(a+bx)^5}+\frac{bBd+Abe-2aBe}{b^7(a+bx)^4}+\frac{Be}{b^7(a+bx)^3}\right)dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Ab-aB)(bd-ae)}{4b^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{bBd+Abe-2aBe}{3b^3(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b^3(a+bx}\end{aligned}$$

Mathematica **[A]** time = 0.04, size = 75, normalized size = 0.56

$$\frac{-B\left(a^2e+ab(d+4ex)+2b^2x(2d+3ex)\right)-Ab(ae+3bd+4bex)}{12b^3(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(A*b*(3*b*d + a*e + 4*b*e*x)) - B*(a^2*e + 2*b^2*x*(2*d + 3*e*x) + a*b*(d
 + 4*e*x)))/(12*b^3*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 1.35, size = 106, normalized size = 0.79

$$-\frac{6\,Bb^{2}ex^{2} + \left(Bab + 3\,Ab^{2}\right)d + \left(Ba^{2} + Aab\right)e + 4\left(Bb^{2}d + \left(Bab + Ab^{2}\right)e\right)x}{12\left(b^{7}x^{4} + 4\,ab^{6}x^{3} + 6\,a^{2}b^{5}x^{2} + 4\,a^{3}b^{4}x + a^{4}b^{3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/12*(6*B*b^2*e*x^2 + (B*a*b + 3*A*b^2)*d + (B*a^2 + A*a*b)*e + 4*(B*b^2*d
 + (B*a*b + A*b^2)*e)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4
*x + a^4*b^3)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [**A**] time = 0.05, size = 77, normalized size = 0.57

$$-\frac{(bx+a)\left(6B\,b^{2}e\,x^{2} + 4A\,b^{2}ex + 4Babex + 4B\,b^{2}dx + Aabe + 3A\,b^{2}d + B\,a^{2}e + Babd\right)}{12\left((bx+a)^{2}\right)^{\frac{5}{2}}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^3*(6*B*b^2*e*x^2+4*A*b^2*e*x+4*B*a*b*e*x+4*B*b^2*d*x+A*a*b*
e+3*A*b^2*d+B*a^2*e+B*a*b*d)/((b*x+a)^2)^(5/2)
```

maxima [**A**] time = 0.68, size = 121, normalized size = 0.90

$$-\frac{Bd + Ae}{3\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}b^{2}} - \frac{Be}{2\,b^{5}\left(x + \frac{a}{b}\right)^{2}} + \frac{2\,Bae}{3\,b^{6}\left(x + \frac{a}{b}\right)^{3}} - \frac{Ad}{4\,b^{5}\left(x + \frac{a}{b}\right)^{4}} - \frac{Ba^{2}e}{4\,b^{7}\left(x + \frac{a}{b}\right)^{4}} + \frac{(Bd + Ae)a}{4\,b^{6}\left(x + \frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/3*(B*d + A*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*B*e/(b^5*(x +
a/b)^2) + 2/3*B*a*e/(b^6*(x + a/b)^3) - 1/4*A*d/(b^5*(x + a/b)^4) - 1/4*B*a
^2*e/(b^7*(x + a/b)^4) + 1/4*(B*d + A*e)*a/(b^6*(x + a/b)^4)
```

mupad [**B**] time = 2.24, size = 87, normalized size = 0.64

$$-\frac{\sqrt{a^{2} + 2\,a\,b\,x + b^{2}\,x^{2}}\,\left(3\,A\,b^{2}\,d + B\,a^{2}\,e + 4\,A\,b^{2}\,e\,x + 4\,B\,b^{2}\,d\,x + 6\,B\,b^{2}\,e\,x^{2} + A\,a\,b\,e + B\,a\,b\,d + 4\,B\,a\,b\,e\,x\right)}{12\,b^{3}\,(a + b\,x)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b^2*d + B*a^2*e + 4*A*b^2*e*x + 4*B*
b^2*d*x + 6*B*b^2*e*x^2 + A*a*b*e + B*a*b*d + 4*B*a*b*e*x))/(12*b^3*(a + b*
x)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/((a + b*x)**2)**(5/2), x)
```

3.1780 $\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=71

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

```
[Out] -1/3*B/b^2/(b^2*x^2+2*a*b*x+a^2)^(3/2)+1/4*(-A*b+B*a)/b^2/(b*x+a)/(b^2*x^2+
2*a*b*x+a^2)^(3/2)
```

Rubi [A] time = 0.02, antiderivative size = 71, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.077$, Rules used = {640, 607}

$$-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -B/(3*b^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (A*b - a*B)/(4*b^2*(a + b*x)*(
a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(2Ab^2-2abB\right)\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx}{2b^2}\\ &= -\frac{B}{3b^2\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{Ab-aB}{4b^2(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 39, normalized size = 0.55

$$\frac{-B(a+4bx)-3Ab}{12b^2(a+bx)^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-3*A*b - B*(a + 4*b*x))/(12*b^2*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.58, size = 61, normalized size = 0.86

$$-\frac{4\,Bbx + Ba + 3\,Ab}{12\,\left(b^{6}x^{4} + 4\,ab^{5}x^{3} + 6\,a^{2}b^{4}x^{2} + 4\,a^{3}b^{3}x + a^{4}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/12*(4*B*b*x + B*a + 3*A*b)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_{0}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 33, normalized size = 0.46

$$-\frac{(bx+a)\,(4Bbx+3Ab+Ba)}{12\left((bx+a)^{2}\right)^{\frac{5}{2}}b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(b*x+a)/b^2*(4*B*b*x+3*A*b+B*a)/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.56, size = 56, normalized size = 0.79

$$-\frac{B}{3\left(b^{2}x^{2} + 2\,abx + a^{2}\right)^{\frac{3}{2}}b^{2}} + \frac{Ba}{4\,b^{6}\left(x + \frac{a}{b}\right)^{4}} - \frac{A}{4\,b^{5}\left(x + \frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3*B/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 1/4*B*a/(b^6*(x + a/b)^4) -
1/4*A/(b^5*(x + a/b)^4)
```

mupad [B] time = 2.12, size = 43, normalized size = 0.61

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(3\,A\,b+B\,a+4\,B\,b\,x\right)}{12\,b^2\,{\left(a+b\,x\right)}^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(3*A*b + B*a + 4*B*b*x))/(12*b^2*(a + b*x
)^5)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((a + b*x)**2)**(5/2), x)
```

3.1781 $\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{e^3(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{e^3(a+bx)(Bd-Ae)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{e^2(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{}{2(a+bx)\sqrt{a}}$$

```
[Out] -e^2*(-A*e+B*d)/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)+1/4*(-A*b+B*a)/b/(-a*e+b*d)/
(b*x+a)^3/((b*x+a)^2)^(1/2)+1/3*(A*e-B*d)/(-a*e+b*d)^2/(b*x+a)^2/((b*x+a)^2
)^(1/2)+1/2*e*(-A*e+B*d)/(-a*e+b*d)^3/(b*x+a)/((b*x+a)^2)^(1/2)-e^3*(-A*e+B
*d)*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)+e^3*(-A*e+B*d)*(b*x+a)
*ln(e*x+d)/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{e^2(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e^3(a+bx)\log(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{e^3(a+bx)(Bd-Ae)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{}{2(a+bx)\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((e^2*(B*d - A*e))/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (A*b -
 a*B)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (B*d -
A*e)/(3*(b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(B*d
- A*e))/(2*(b*d - a*e)^3*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B
*d - A*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + (e^3*(B*d - A*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^5*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^4\left(ab+b^2x\right)\right)\int\left(\frac{Ab-aB}{b^5(bd-ae)(a+bx)^5}+\frac{Bd-Ae}{b^4(bd-ae)^2(a+bx)^4}+\frac{e(-Bd+Ae)}{b^4(bd-ae)^3(a+bx)^3}-\right.}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{e^2(Bd-Ae)}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}-\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2}}$$

Mathematica [A] time = 0.15, size = 182, normalized size = 0.60

$$\frac{12e^3(a+bx)^3\log(a+bx)(Ae-Bd)+12e^3(a+bx)^3(Bd-Ae)\log(d+ex)+12e^2(a+bx)^2(bd-ae)(Ae-Bd)+}{12\left((a+bx)^2\right)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (4*(b*d - a*e)^3*(-(B*d) + A*e) + (3*(-(A*b) + a*B)*(b*d - a*e)^4)/(b*(a +
b*x)) - 6*e*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x) + 12*e^2*(b*d - a*e)*(-(
B*d) + A*e)*(a + b*x)^2 + 12*e^3*(-(B*d) + A*e)*(a + b*x)^3*Log[a + b*x] +
12*e^3*(B*d - A*e)*(a + b*x)^3*Log[d + e*x])/(12*(b*d - a*e)^5*((a + b*x)^2
)^(3/2))
```

fricas [B] time = 0.71, size = 969, normalized size = 3.21

$$-\frac{\left(Bab^4+3\,Ab^5\right)d^4-2\left(3\,Ba^2b^3+8\,Aab^4\right)d^3e+18\left(Ba^3b^2+2\,Aa^2b^3\right)d^2e^2-2\left(5\,Ba^4b+24\,Aa^3b^2\right)de^3-\left(3\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/12*((B*a*b^4 + 3*A*b^5)*d^4 - 2*(3*B*a^2*b^3 + 8*A*a*b^4)*d^3*e + 18*(B*
a^3*b^2 + 2*A*a^2*b^3)*d^2*e^2 - 2*(5*B*a^4*b + 24*A*a^3*b^2)*d*e^3 - (3*B*
a^5 - 25*A*a^4*b)*e^4 + 12*(B*b^5*d^2*e^2 + A*a*b^4*e^4 - (B*a*b^4 + A*b^5)
*d*e^3)*x^3 - 6*(B*b^5*d^3*e - 7*A*a^2*b^3*e^4 - (8*B*a*b^4 + A*b^5)*d^2*e^
2 + (7*B*a^2*b^3 + 8*A*a*b^4)*d*e^3)*x^2 + 4*(B*b^5*d^4 + 13*A*a^3*b^2*e^4
- (6*B*a*b^4 + A*b^5)*d^3*e + 6*(3*B*a^2*b^3 + A*a*b^4)*d^2*e^2 - (13*B*a^3
*b^2 + 18*A*a^2*b^3)*d*e^3)*x + 12*(B*a^4*b*d*e^3 - A*a^4*b*e^4 + (B*b^5*d*
e^3 - A*b^5*e^4)*x^4 + 4*(B*a*b^4*d*e^3 - A*a*b^4*e^4)*x^3 + 6*(B*a^2*b^3*d
*e^3 - A*a^2*b^3*e^4)*x^2 + 4*(B*a^3*b^2*d*e^3 - A*a^3*b^2*e^4)*x)*log(b*x
+ a) - 12*(B*a^4*b*d*e^3 - A*a^4*b*e^4 + (B*b^5*d*e^3 - A*b^5*e^4)*x^4 + 4*
(B*a*b^4*d*e^3 - A*a*b^4*e^4)*x^3 + 6*(B*a^2*b^3*d*e^3 - A*a^2*b^3*e^4)*x^2
 + 4*(B*a^3*b^2*d*e^3 - A*a^3*b^2*e^4)*x)*log(e*x + d))/(a^4*b^6*d^5 - 5*a^
5*b^5*d^4*e + 10*a^6*b^4*d^3*e^2 - 10*a^7*b^3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a
^9*b*e^5 + (b^10*d^5 - 5*a*b^9*d^4*e + 10*a^2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*
e^3 + 5*a^4*b^6*d*e^4 - a^5*b^5*e^5)*x^4 + 4*(a*b^9*d^5 - 5*a^2*b^8*d^4*e +
 10*a^3*b^7*d^3*e^2 - 10*a^4*b^6*d^2*e^3 + 5*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x
^3 + 6*(a^2*b^8*d^5 - 5*a^3*b^7*d^4*e + 10*a^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2
*e^3 + 5*a^6*b^4*d*e^4 - a^7*b^3*e^5)*x^2 + 4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*
e + 10*a^5*b^5*d^3*e^2 - 10*a^6*b^4*d^2*e^3 + 5*a^7*b^3*d*e^4 - a^8*b^2*e^5
)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 777, normalized size = 2.57

$$-\frac{\left(12A\,b^5e^4x^4\ln(bx+a)-12A\,b^5e^4x^4\ln(ex+d)-12B\,b^5d\,e^3x^4\ln(bx+a)+12B\,b^5d\,e^3x^4\ln(ex+d)+48Aa\,b^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(16*A*a*b^4*d^3*e+12*B*a*b^4*d*e^3*x^3+10*B*a^4*b*d*e^3-18*B*a^3*b^2*
d^2*e^2-48*B*a*b^4*d*e^3*x^3*ln(b*x+a)+6*B*a^2*b^3*d^3*e-4*B*b^5*d^4*x-12*A
*a*b^4*e^4*x^3+12*A*b^5*d*e^3*x^3+48*A*a^3*b^2*d*e^3-72*B*a^2*b^3*d^2*e^2*x
+72*A*a^2*b^3*d*e^3*x+52*B*a^3*b^2*d*e^3*x-25*A*a^4*b*e^4-B*a*b^4*d^4-3*A*b
^5*d^4+3*B*a^5*e^4+48*A*a*b^4*d*e^3*x^2-12*B*a^4*b*d*e^3*ln(b*x+a)+48*A*a^3
*b^2*e^4*x*ln(b*x+a)+72*A*a^2*b^3*e^4*x^2*ln(b*x+a)-24*A*a*b^4*d^2*e^2*x+24
*B*a*b^4*d^3*e*x-36*A*a^2*b^3*d^2*e^2+6*B*b^5*d^3*e*x^2+12*A*b^5*e^4*x^4*ln
(b*x+a)-48*B*a^3*b^2*d*e^3*x*ln(b*x+a)-72*B*a^2*b^3*d*e^3*x^2*ln(b*x+a)-12*
A*ln(e*x+d)*x^4*b^5*e^4-12*A*ln(e*x+d)*a^4*b*e^4-6*A*b^5*d^2*e^2*x^2-48*B*a
*b^4*d^2*e^2*x^2+42*B*a^2*b^3*d*e^3*x^2-12*B*b^5*d*e^3*x^4*ln(b*x+a)+48*A*a
*b^4*e^4*x^3*ln(b*x+a)-12*B*b^5*d^2*e^2*x^3+12*A*a^4*b*e^4*ln(b*x+a)-42*A*a
^2*b^3*e^4*x^2-52*A*a^3*b^2*e^4*x+4*A*b^5*d^3*e*x+72*B*ln(e*x+d)*x^2*a^2*b^
3*d*e^3+48*B*ln(e*x+d)*x*a^3*b^2*d*e^3+48*B*ln(e*x+d)*x^3*a*b^4*d*e^3+12*B*
ln(e*x+d)*x^4*b^5*d*e^3-48*A*ln(e*x+d)*x^3*a*b^4*e^4-72*A*ln(e*x+d)*x^2*a^2
*b^3*e^4-48*A*ln(e*x+d)*x*a^3*b^2*e^4+12*B*ln(e*x+d)*a^4*b*d*e^3)*(b*x+a)/b
/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)\left((a + bx)^2\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*((a + b*x)**2)**(5/2)), x)
```

3.1782 $\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=388

$$-\frac{e^3(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)\log(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+\frac{e^3(a+bx)\log(d+ex)(aBe}{\sqrt{a^2+2abx+b^2x^2}\,(}$$

```
[Out] -e^2*(-4*A*b*e+B*a*e+3*B*b*d)/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)+1/4*(-A*b+B*a)
/(-a*e+b*d)^2/(b*x+a)^3/((b*x+a)^2)^(1/2)+1/3*(2*A*b*e-B*a*e-B*b*d)/(-a*e+b
*d)^3/(b*x+a)^2/((b*x+a)^2)^(1/2)+1/2*e*(-3*A*b*e+B*a*e+2*B*b*d)/(-a*e+b*d)
^4/(b*x+a)/((b*x+a)^2)^(1/2)-e^3*(-A*e+B*d)*(b*x+a)/(-a*e+b*d)^5/(e*x+d)/((
b*x+a)^2)^(1/2)-e^3*(-5*A*b*e+B*a*e+4*B*b*d)*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^6
/((b*x+a)^2)^(1/2)+e^3*(-5*A*b*e+B*a*e+4*B*b*d)*(b*x+a)*ln(e*x+d)/(-a*e+b*d
)^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.46, antiderivative size = 388, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$-\frac{e^3(a+bx)(Bd-Ae)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^2(aBe-4Abe+3bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{e^3(a+bx)\log(a+bx)(aBe-5Abe+4bB}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -((e^2*(3*b*B*d - 4*A*b*e + a*B*e))/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])) - (A*b - a*B)/(4*(b*d - a*e)^2*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2
*x^2]) - (b*B*d - 2*A*b*e + a*B*e)/(3*(b*d - a*e)^3*(a + b*x)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (e*(2*b*B*d - 3*A*b*e + a*B*e))/(2*(b*d - a*e)^4*(a +
 b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B*d - A*e)*(a + b*x))/((b*d -
a*e)^5*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(4*b*B*d - 5*A*b*e +
 a*B*e)*(a + b*x)*Log[a + b*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (e^3*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^
6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^4(bd-ae)^2(a+bx)^5}+\frac{bBd-2Abe+aBe}{b^4(bd-ae)^3(a+bx)^4}+\frac{e(-2bBd+3Abe-aBe)}{b^4(bd-ae)^4(a+bx)^3}\right.}{\sqrt{a^2}}$$

$$= -\frac{e^2(3bBd-4Abe+aBe)}{(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-aB}{4(bd-ae)^2(a+bx)^3\sqrt{a^2+2abx+b}}$$

Mathematica [A] time = 0.27, size = 250, normalized size = 0.64

$$\frac{\frac{12e^3(a+bx)^3(bd-ae)(Ae-Bd)}{d+ex} - 12e^3(a+bx)^3\log(a+bx)(aBe-5Abe+4bBd) + 12e^3(a+bx)^3\log(d+ex)(aBe-5Ab}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-4*(b*d - a*e)^3*(b*B*d - 2*A*b*e + a*B*e) + (3*(-(A*b) + a*B)*(b*d - a*e)
^4)/(a + b*x) - 6*e*(b*d - a*e)^2*(-2*b*B*d + 3*A*b*e - a*B*e)*(a + b*x) +
12*e^2*(b*d - a*e)*(-3*b*B*d + 4*A*b*e - a*B*e)*(a + b*x)^2 + (12*e^3*(b*d
- a*e)*(-(B*d) + A*e)*(a + b*x)^3)/(d + e*x) - 12*e^3*(4*b*B*d - 5*A*b*e +
a*B*e)*(a + b*x)^3*Log[a + b*x] + 12*e^3*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b
*x)^3*Log[d + e*x])/(12*(b*d - a*e)^6*((a + b*x)^2)^(3/2))
```

fricas [B] time = 0.92, size = 1724, normalized size = 4.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/12*(12*A*a^5*e^5 + (B*a*b^4 + 3*A*b^5)*d^5 - 4*(2*B*a^2*b^3 + 5*A*a*b^4)
*d^4*e + 12*(3*B*a^3*b^2 + 5*A*a^2*b^3)*d^3*e^2 + 8*(B*a^4*b - 15*A*a^3*b^2
)*d^2*e^3 - (37*B*a^5 - 65*A*a^4*b)*d*e^4 + 12*(4*B*b^5*d^2*e^3 - (3*B*a*b^
4 + 5*A*b^5)*d*e^4 - (B*a^2*b^3 - 5*A*a*b^4)*e^5)*x^4 + 6*(4*B*b^5*d^3*e^2
+ 5*(5*B*a*b^4 - A*b^5)*d^2*e^3 - 2*(11*B*a^2*b^3 + 15*A*a*b^4)*d*e^4 - 7*(
B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*x^3 - 2*(4*B*b^5*d^4*e - (47*B*a*b^4 + 5*A*b^
5)*d^3*e^2 - 12*(6*B*a^2*b^3 - 5*A*a*b^4)*d^2*e^3 + (89*B*a^3*b^2 + 75*A*a^
2*b^3)*d*e^4 + 26*(B*a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (4*B*b^5*d^5 - (31*B*a
*b^4 + 5*A*b^5)*d^4*e + 8*(17*B*a^2*b^3 + 5*A*a*b^4)*d^3*e^2 + 20*(B*a^3*b^
2 - 9*A*a^2*b^3)*d^2*e^3 - 4*(26*B*a^4*b - 5*A*a^3*b^2)*d*e^4 - 25*(B*a^5 -
 5*A*a^4*b)*e^5)*x + 12*(4*B*a^4*b*d^2*e^3 + (B*a^5 - 5*A*a^4*b)*d*e^4 + (4
*B*b^5*d*e^4 + (B*a*b^4 - 5*A*b^5)*e^5)*x^5 + (4*B*b^5*d^2*e^3 + (17*B*a*b^
4 - 5*A*b^5)*d*e^4 + 4*(B*a^2*b^3 - 5*A*a*b^4)*e^5)*x^4 + 2*(8*B*a*b^4*d^2*
e^3 + 2*(7*B*a^2*b^3 - 5*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*
x^3 + 2*(12*B*a^2*b^3*d^2*e^3 + (11*B*a^3*b^2 - 15*A*a^2*b^3)*d*e^4 + 2*(B*
a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (16*B*a^3*b^2*d^2*e^3 + 4*(2*B*a^4*b - 5*A*
a^3*b^2)*d*e^4 + (B*a^5 - 5*A*a^4*b)*e^5)*x)*log(b*x + a) - 12*(4*B*a^4*b*d
^2*e^3 + (B*a^5 - 5*A*a^4*b)*d*e^4 + (4*B*b^5*d*e^4 + (B*a*b^4 - 5*A*b^5)*e
^5)*x^5 + (4*B*b^5*d^2*e^3 + (17*B*a*b^4 - 5*A*b^5)*d*e^4 + 4*(B*a^2*b^3 -
5*A*a*b^4)*e^5)*x^4 + 2*(8*B*a*b^4*d^2*e^3 + 2*(7*B*a^2*b^3 - 5*A*a*b^4)*d*
e^4 + 3*(B*a^3*b^2 - 5*A*a^2*b^3)*e^5)*x^3 + 2*(12*B*a^2*b^3*d^2*e^3 + (11*
B*a^3*b^2 - 15*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b - 5*A*a^3*b^2)*e^5)*x^2 + (16*
B*a^3*b^2*d^2*e^3 + 4*(2*B*a^4*b - 5*A*a^3*b^2)*d*e^4 + (B*a^5 - 5*A*a^4*b)
*e^5)*x)*log(e*x + d))/(a^4*b^6*d^7 - 6*a^5*b^5*d^6*e + 15*a^6*b^4*d^5*e^2
- 20*a^7*b^3*d^4*e^3 + 15*a^8*b^2*d^3*e^4 - 6*a^9*b*d^2*e^5 + a^10*d*e^6 +
(b^10*d^6*e - 6*a*b^9*d^5*e^2 + 15*a^2*b^8*d^4*e^3 - 20*a^3*b^7*d^3*e^4 + 1
5*a^4*b^6*d^2*e^5 - 6*a^5*b^5*d*e^6 + a^6*b^4*e^7)*x^5 + (b^10*d^7 - 2*a*b^
9*d^6*e - 9*a^2*b^8*d^5*e^2 + 40*a^3*b^7*d^4*e^3 - 65*a^4*b^6*d^3*e^4 + 54*
a^5*b^5*d^2*e^5 - 23*a^6*b^4*d*e^6 + 4*a^7*b^3*e^7)*x^4 + 2*(2*a*b^9*d^7 -
9*a^2*b^8*d^6*e + 12*a^3*b^7*d^5*e^2 + 5*a^4*b^6*d^4*e^3 - 30*a^5*b^5*d^3*e
^4 + 33*a^6*b^4*d^2*e^5 - 16*a^7*b^3*d*e^6 + 3*a^8*b^2*e^7)*x^3 + 2*(3*a^2*
b^8*d^7 - 16*a^3*b^7*d^6*e + 33*a^4*b^6*d^5*e^2 - 30*a^5*b^5*d^4*e^3 + 5*a^
6*b^4*d^3*e^4 + 12*a^7*b^3*d^2*e^5 - 9*a^8*b^2*d*e^6 + 2*a^9*b*e^7)*x^2 + (
4*a^3*b^7*d^7 - 23*a^4*b^6*d^6*e + 54*a^5*b^5*d^5*e^2 - 65*a^6*b^4*d^4*e^3
+ 40*a^7*b^3*d^3*e^4 - 9*a^8*b^2*d^2*e^5 - 2*a^9*b*d*e^6 + a^10*e^7)*x)
```

giac [B] time = 0.60, size = 1136, normalized size = 2.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] (4*B*b*d*e^4 + B*a*e^5 - 5*A*b*e^5)*log(abs(-b + b*d/(x*e + d) - a*e/(x*e +
 d)))/(b^6*d^6*e*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2
) - 6*a*b^5*d^5*e^2*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d
)^2) + 15*a^2*b^4*d^4*e^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x
*e + d)^2) - 20*a^3*b^3*d^3*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*
e^2/(x*e + d)^2) + 15*a^4*b^2*d^2*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^
2 - a*e^2/(x*e + d)^2) - 6*a^5*b*d*e^6*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)
^2 - a*e^2/(x*e + d)^2) + a^6*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 -
a*e^2/(x*e + d)^2)) + (B*d*e^8/(x*e + d) - A*e^9/(x*e + d))/(b^5*d^5*e^5*sg
n(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 5*a*b^4*d^4*e^6
*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 10*a^2*b^3*d
^3*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 10*a^3
*b^2*d^2*e^8*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) +
5*a^4*b*d*e^9*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) -
 a^5*e^10*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + 1/
12*(52*B*b^5*d*e^3 + 25*B*a*b^4*e^4 - 77*A*b^5*e^4 - 4*(43*B*b^5*d^2*e^4 -
21*B*a*b^4*d*e^5 - 65*A*b^5*d*e^5 - 22*B*a^2*b^3*e^6 + 65*A*a*b^4*e^6)*e^(-
1)/(x*e + d) + 12*(16*B*b^5*d^3*e^5 - 23*B*a*b^4*d^2*e^6 - 25*A*b^5*d^2*e^6
 - 2*B*a^2*b^3*d*e^7 + 50*A*a*b^4*d*e^7 + 9*B*a^3*b^2*e^8 - 25*A*a^2*b^3*e^
8)*e^(-2)/(x*e + d)^2 - 24*(3*B*b^5*d^4*e^6 - 7*B*a*b^4*d^3*e^7 - 5*A*b^5*d
^3*e^7 + 3*B*a^2*b^3*d^2*e^8 + 15*A*a*b^4*d^2*e^8 + 3*B*a^3*b^2*d*e^9 - 15*
A*a^2*b^3*d*e^9 - 2*B*a^4*b*e^10 + 5*A*a^3*b^2*e^10)*e^(-3)/(x*e + d)^3)/((
b*d - a*e)^6*(b - b*d/(x*e + d) + a*e/(x*e + d))^4*sgn(-b*e/(x*e + d) + b*d
*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))
```

maple [B] time = 0.08, size = 1652, normalized size = 4.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12*(37*B*a^5*d*e^4-B*a*b^4*d^5+25*B*x*a^5*e^5-4*B*x*b^5*d^5-3*A*b^5*d^5-1
2*A*a^5*e^5-48*B*x^4*b^5*d^2*e^3-210*A*x^3*a^2*b^3*e^5+60*A*ln(b*x+a)*x^5*b
^5*e^5-60*A*ln(e*x+d)*x^5*b^5*e^5-12*B*ln(b*x+a)*x*a^5*e^5+12*B*ln(e*x+d)*x
*a^5*e^5+42*B*x^3*a^3*b^2*e^5-65*A*a^4*b*d*e^4+120*A*a^3*b^2*d^2*e^3-60*A*a
^2*b^3*d^3*e^2+20*A*a*b^4*d^4*e-8*B*a^4*b*d^2*e^3+8*B*a^2*b^3*d^4*e-36*B*a^
3*b^2*d^3*e^2-12*B*ln(b*x+a)*a^5*d*e^4+12*B*ln(e*x+d)*a^5*d*e^4-24*B*x^3*b^
5*d^3*e^2-260*A*x^2*a^3*b^2*e^5-10*A*x^2*b^5*d^3*e^2+52*B*x^2*a^4*b*e^5+8*B
*x^2*b^5*d^4*e-125*A*x*a^4*b*e^5+5*A*x*b^5*d^4*e+30*A*x^3*b^5*d^2*e^3+12*B*
x^4*a^2*b^3*e^5-60*A*x^4*a*b^4*e^5+60*A*x^4*b^5*d*e^4-288*B*ln(b*x+a)*x^2*a
^2*b^3*d^2*e^3+264*B*ln(e*x+d)*x^2*a^3*b^2*d*e^4-264*B*ln(b*x+a)*x^2*a^3*b^
2*d*e^4-240*A*ln(e*x+d)*x^3*a*b^4*d*e^4-336*B*ln(b*x+a)*x^3*a^2*b^3*d*e^4-1
92*B*ln(b*x+a)*x^3*a*b^4*d^2*e^3+336*B*ln(e*x+d)*x^3*a^2*b^3*d*e^4+192*B*ln
(e*x+d)*x^3*a*b^4*d^2*e^3+360*A*ln(b*x+a)*x^2*a^2*b^3*d*e^4-360*A*ln(e*x+d)
*x^2*a^2*b^3*d*e^4-240*A*ln(e*x+d)*x*a^3*b^2*d*e^4-96*B*ln(b*x+a)*x*a^4*b*d
*e^4-192*B*ln(b*x+a)*x*a^3*b^2*d^2*e^3+96*B*ln(e*x+d)*x*a^4*b*d*e^4+192*B*l
n(e*x+d)*x*a^3*b^2*d^2*e^3-204*B*ln(b*x+a)*x^4*a*b^4*d*e^4+204*B*ln(e*x+d)*
x^4*a*b^4*d*e^4+240*A*ln(b*x+a)*x^3*a*b^4*d*e^4+288*B*ln(e*x+d)*x^2*a^2*b^3
*d^2*e^3+240*A*ln(b*x+a)*x*a^3*b^2*d*e^4+60*A*ln(b*x+a)*a^4*b*d*e^4-60*A*ln
(e*x+d)*a^4*b*d*e^4-48*B*ln(b*x+a)*a^4*b*d^2*e^3+48*B*ln(e*x+d)*a^4*b*d^2*e
^3-12*B*ln(b*x+a)*x^5*a*b^4*e^5-48*B*ln(b*x+a)*x^5*b^5*d*e^4+12*B*ln(e*x+d)
*x^5*a*b^4*e^5+48*B*ln(e*x+d)*x^5*b^5*d*e^4+240*A*ln(b*x+a)*x^4*a*b^4*e^5+6
0*A*ln(b*x+a)*x^4*b^5*d*e^4-240*A*ln(e*x+d)*x^4*a*b^4*e^5-60*A*ln(e*x+d)*x^
4*b^5*d*e^4-48*B*ln(b*x+a)*x^4*a^2*b^3*e^5-48*B*ln(b*x+a)*x^4*b^5*d^2*e^3+4
8*B*ln(e*x+d)*x^4*a^2*b^3*e^5+48*B*ln(e*x+d)*x^4*b^5*d^2*e^3+360*A*ln(b*x+a
)*x^3*a^2*b^3*e^5-360*A*ln(e*x+d)*x^3*a^2*b^3*e^5-72*B*ln(b*x+a)*x^3*a^3*b^
2*e^5+72*B*ln(e*x+d)*x^3*a^3*b^2*e^5-150*B*x^3*a*b^4*d^2*e^3+180*A*x^3*a*b^
4*d*e^4-136*B*x*a^2*b^3*d^3*e^2+31*B*x*a*b^4*d^4*e-40*A*x*a*b^4*d^3*e^2+104
*B*x*a^4*b*d*e^4-20*B*x*a^3*b^2*d^2*e^3+180*A*x*a^2*b^3*d^2*e^3-20*A*x*a^3*
b^2*d*e^4+36*B*x^4*a*b^4*d*e^4+150*A*x^2*a^2*b^3*d*e^4+120*A*x^2*a*b^4*d^2*
e^3+178*B*x^2*a^3*b^2*d*e^4-144*B*x^2*a^2*b^3*d^2*e^3-94*B*x^2*a*b^4*d^3*e^
2+240*A*ln(b*x+a)*x^2*a^3*b^2*e^5-240*A*ln(e*x+d)*x^2*a^3*b^2*e^5-48*B*ln(b
*x+a)*x^2*a^4*b*e^5+48*B*ln(e*x+d)*x^2*a^4*b*e^5+60*A*ln(b*x+a)*x*a^4*b*e^5
-60*A*ln(e*x+d)*x*a^4*b*e^5+132*B*x^3*a^2*b^3*d*e^4)*(b*x+a)/(e*x+d)/(a*e-b
*d)^6/((b*x+a)^2)^(5/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1783 $\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=460

$$-\frac{e^3(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^6}-\frac{e^3(a+bx)(Bd-Ae)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^5}-\frac{5be^3(a+bx)\log(a+bx)(aB}{\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -2*b*e^2*(-5*A*b*e+2*B*a*e+3*B*b*d)/(-a*e+b*d)^6/((b*x+a)^2)^(1/2)-1/4*b*(A
*b-B*a)/(-a*e+b*d)^3/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/3*b*(-3*A*b*e+2*B*a*e+B*
b*d)/(-a*e+b*d)^4/(b*x+a)^2/((b*x+a)^2)^(1/2)+3/2*b*e*(-2*A*b*e+B*a*e+B*b*d
)/(-a*e+b*d)^5/(b*x+a)/((b*x+a)^2)^(1/2)-1/2*e^3*(-A*e+B*d)*(b*x+a)/(-a*e+b
*d)^5/(e*x+d)^2/((b*x+a)^2)^(1/2)-e^3*(-5*A*b*e+B*a*e+4*B*b*d)*(b*x+a)/(-a*
e+b*d)^6/(e*x+d)/((b*x+a)^2)^(1/2)-5*b*e^3*(-3*A*b*e+B*a*e+2*B*b*d)*(b*x+a)
*ln(b*x+a)/(-a*e+b*d)^7/((b*x+a)^2)^(1/2)+5*b*e^3*(-3*A*b*e+B*a*e+2*B*b*d)*
(b*x+a)*ln(e*x+d)/(-a*e+b*d)^7/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.56, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$-\frac{e^3(a+bx)(aBe-5Abe+4bBd)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^6}-\frac{e^3(a+bx)(Bd-Ae)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^5}-\frac{2be^2(2aBe-5Abe+3bBd}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*b*e^2*(3*b*B*d - 5*A*b*e + 2*a*B*e))/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (b*(A*b - a*B))/(4*(b*d - a*e)^3*(a + b*x)^3*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) - (b*(b*B*d - 3*A*b*e + 2*a*B*e))/(3*(b*d - a*e)^4*(a + b*x)
^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b*e*(b*B*d - 2*A*b*e + a*B*e))/(2*(b
*d - a*e)^5*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(B*d - A*e)*(a
+ b*x))/(2*(b*d - a*e)^5*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*
(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x))/((b*d - a*e)^6*(d + e*x)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (5*b*e^3*(2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Log[a
+ b*x])/((b*d - a*e)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*b*e^3*(2*b*B*d -
 3*A*b*e + a*B*e)*(a + b*x)*Log[d + e*x])/((b*d - a*e)^7*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \left(\frac{Ab-aB}{b^3(bd-ae)^3(a+bx)^5}+\frac{bBd-3Abe+2aBe}{b^3(bd-ae)^4(a+bx)^4}+\frac{3e(-bBd+2Abe-aBe)}{b^3(bd-ae)^5(a+bx)^3}-\right.}{}$$

$$= -\frac{2be^2(3bBd-5Abe+2aBe)}{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}} - \frac{b(Ab-aB)}{4(bd-ae)^3(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [**A**] time = 0.39, size = 302, normalized size = 0.66

$$\frac{\frac{6e^3(a+bx)^3(bd-ae)^2(Ae-Bd)}{(d+ex)^2}+\frac{12e^3(a+bx)^3(bd-ae)(-aBe+5Abe-4bBd)}{d+ex}-60be^3(a+bx)^3\log(a+bx)(aBe-3Abe+2bBd)+60be}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-4*b*(b*d - a*e)^3*(b*B*d - 3*A*b*e + 2*a*B*e) - (3*b*(A*b - a*B)*(b*d - a
*e)^4)/(a + b*x) - 18*b*e*(b*d - a*e)^2*(-(b*B*d) + 2*A*b*e - a*B*e)*(a + b
*x) + 24*b*e^2*(b*d - a*e)*(-3*b*B*d + 5*A*b*e - 2*a*B*e)*(a + b*x)^2 + (6*
e^3*(b*d - a*e)^2*(-(B*d) + A*e)*(a + b*x)^3)/(d + e*x)^2 + (12*e^3*(b*d -
a*e)*(-4*b*B*d + 5*A*b*e - a*B*e)*(a + b*x)^3)/(d + e*x) - 60*b*e^3*(2*b*B*
d - 3*A*b*e + a*B*e)*(a + b*x)^3*Log[a + b*x] + 60*b*e^3*(2*b*B*d - 3*A*b*e
 + a*B*e)*(a + b*x)^3*Log[d + e*x])/(12*(b*d - a*e)^7*((a + b*x)^2)^(3/2))
```

fricas [**B**] time = 1.50, size = 2466, normalized size = 5.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*(6*A*a^6*e^6 - (B*a*b^5 + 3*A*b^6)*d^6 + 2*(5*B*a^2*b^4 + 12*A*a*b^5)*
d^5*e - 30*(2*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^2 - 80*(B*a^4*b^2 - 3*A*a^3*b^
3)*d^3*e^3 + 5*(25*B*a^5*b - 21*A*a^4*b^2)*d^2*e^4 + 6*(B*a^6 - 12*A*a^5*b)
*d*e^5 - 60*(2*B*b^6*d^2*e^4 - (B*a*b^5 + 3*A*b^6)*d*e^5 - (B*a^2*b^4 - 3*A
*a*b^5)*e^6)*x^5 - 30*(6*B*b^6*d^3*e^3 + (11*B*a*b^5 - 9*A*b^6)*d^2*e^4 - 2
*(5*B*a^2*b^4 + 6*A*a*b^5)*d*e^5 - 7*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 - 2
0*(2*B*b^6*d^4*e^2 + (31*B*a*b^5 - 3*A*b^6)*d^3*e^3 + 9*(B*a^2*b^4 - 5*A*a*
b^5)*d^2*e^4 - (29*B*a^3*b^3 - 9*A*a^2*b^4)*d*e^5 - 13*(B*a^4*b^2 - 3*A*a^3
*b^3)*e^6)*x^3 + 5*(2*B*b^6*d^5*e - (31*B*a*b^5 + 3*A*b^6)*d^4*e^2 - 4*(37*
B*a^2*b^4 - 12*A*a*b^5)*d^3*e^3 + 2*(23*B*a^3*b^3 + 99*A*a^2*b^4)*d^2*e^4 +
 2*(53*B*a^4*b^2 - 84*A*a^3*b^3)*d*e^5 + 25*(B*a^5*b - 3*A*a^4*b^2)*e^6)*x^
2 - 2*(2*B*b^6*d^6 - (19*B*a*b^5 + 3*A*b^6)*d^5*e + 10*(11*B*a^2*b^4 + 3*A*
a*b^5)*d^4*e^2 + 20*(8*B*a^3*b^3 - 9*A*a^2*b^4)*d^3*e^3 - 10*(14*B*a^4*b^2
+ 15*A*a^3*b^3)*d^2*e^4 - (107*B*a^5*b - 285*A*a^4*b^2)*d*e^5 - 6*(B*a^6 -
3*A*a^5*b)*e^6)*x - 60*(2*B*a^4*b^2*d^3*e^3 + (B*a^5*b - 3*A*a^4*b^2)*d^2*e
^4 + (2*B*b^6*d*e^5 + (B*a*b^5 - 3*A*b^6)*e^6)*x^6 + 2*(2*B*b^6*d^2*e^4 + (
5*B*a*b^5 - 3*A*b^6)*d*e^5 + 2*(B*a^2*b^4 - 3*A*a*b^5)*e^6)*x^5 + (2*B*b^6*
d^3*e^3 + (17*B*a*b^5 - 3*A*b^6)*d^2*e^4 + 4*(5*B*a^2*b^4 - 6*A*a*b^5)*d*e^
5 + 6*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 + 4*(2*B*a*b^5*d^3*e^3 + (7*B*a^2*
b^4 - 3*A*a*b^5)*d^2*e^4 + (5*B*a^3*b^3 - 9*A*a^2*b^4)*d*e^5 + (B*a^4*b^2 -
```

```
 3*A*a^3*b^3)*e^6)*x^3 + (12*B*a^2*b^4*d^3*e^3 + 2*(11*B*a^3*b^3 - 9*A*a^2*
b^4)*d^2*e^4 + 2*(5*B*a^4*b^2 - 12*A*a^3*b^3)*d*e^5 + (B*a^5*b - 3*A*a^4*b^
2)*e^6)*x^2 + 2*(4*B*a^3*b^3*d^3*e^3 + 2*(2*B*a^4*b^2 - 3*A*a^3*b^3)*d^2*e^
4 + (B*a^5*b - 3*A*a^4*b^2)*d*e^5)*x)*log(b*x + a) + 60*(2*B*a^4*b^2*d^3*e^
3 + (B*a^5*b - 3*A*a^4*b^2)*d^2*e^4 + (2*B*b^6*d*e^5 + (B*a*b^5 - 3*A*b^6)*
e^6)*x^6 + 2*(2*B*b^6*d^2*e^4 + (5*B*a*b^5 - 3*A*b^6)*d*e^5 + 2*(B*a^2*b^4
- 3*A*a*b^5)*e^6)*x^5 + (2*B*b^6*d^3*e^3 + (17*B*a*b^5 - 3*A*b^6)*d^2*e^4 +
 4*(5*B*a^2*b^4 - 6*A*a*b^5)*d*e^5 + 6*(B*a^3*b^3 - 3*A*a^2*b^4)*e^6)*x^4 +
 4*(2*B*a*b^5*d^3*e^3 + (7*B*a^2*b^4 - 3*A*a*b^5)*d^2*e^4 + (5*B*a^3*b^3 -
9*A*a^2*b^4)*d*e^5 + (B*a^4*b^2 - 3*A*a^3*b^3)*e^6)*x^3 + (12*B*a^2*b^4*d^3
*e^3 + 2*(11*B*a^3*b^3 - 9*A*a^2*b^4)*d^2*e^4 + 2*(5*B*a^4*b^2 - 12*A*a^3*b
^3)*d*e^5 + (B*a^5*b - 3*A*a^4*b^2)*e^6)*x^2 + 2*(4*B*a^3*b^3*d^3*e^3 + 2*(
2*B*a^4*b^2 - 3*A*a^3*b^3)*d^2*e^4 + (B*a^5*b - 3*A*a^4*b^2)*d*e^5)*x)*log(
e*x + d))/(a^4*b^7*d^9 - 7*a^5*b^6*d^8*e + 21*a^6*b^5*d^7*e^2 - 35*a^7*b^4*
d^6*e^3 + 35*a^8*b^3*d^5*e^4 - 21*a^9*b^2*d^4*e^5 + 7*a^10*b*d^3*e^6 - a^11
*d^2*e^7 + (b^11*d^7*e^2 - 7*a*b^10*d^6*e^3 + 21*a^2*b^9*d^5*e^4 - 35*a^3*b
^8*d^4*e^5 + 35*a^4*b^7*d^3*e^6 - 21*a^5*b^6*d^2*e^7 + 7*a^6*b^5*d*e^8 - a^
7*b^4*e^9)*x^6 + 2*(b^11*d^8*e - 5*a*b^10*d^7*e^2 + 7*a^2*b^9*d^6*e^3 + 7*a
^3*b^8*d^5*e^4 - 35*a^4*b^7*d^4*e^5 + 49*a^5*b^6*d^3*e^6 - 35*a^6*b^5*d^2*e
^7 + 13*a^7*b^4*d*e^8 - 2*a^8*b^3*e^9)*x^5 + (b^11*d^9 + a*b^10*d^8*e - 29*
a^2*b^9*d^7*e^2 + 91*a^3*b^8*d^6*e^3 - 119*a^4*b^7*d^5*e^4 + 49*a^5*b^6*d^4
*e^5 + 49*a^6*b^5*d^3*e^6 - 71*a^7*b^4*d^2*e^7 + 34*a^8*b^3*d*e^8 - 6*a^9*b
^2*e^9)*x^4 + 4*(a*b^10*d^9 - 4*a^2*b^9*d^8*e + a^3*b^8*d^7*e^2 + 21*a^4*b^
7*d^6*e^3 - 49*a^5*b^6*d^5*e^4 + 49*a^6*b^5*d^4*e^5 - 21*a^7*b^4*d^3*e^6 -
a^8*b^3*d^2*e^7 + 4*a^9*b^2*d*e^8 - a^10*b*e^9)*x^3 + (6*a^2*b^9*d^9 - 34*a
^3*b^8*d^8*e + 71*a^4*b^7*d^7*e^2 - 49*a^5*b^6*d^6*e^3 - 49*a^6*b^5*d^5*e^4
 + 119*a^7*b^4*d^4*e^5 - 91*a^8*b^3*d^3*e^6 + 29*a^9*b^2*d^2*e^7 - a^10*b*d
*e^8 - a^11*e^9)*x^2 + 2*(2*a^3*b^8*d^9 - 13*a^4*b^7*d^8*e + 35*a^5*b^6*d^7
*e^2 - 49*a^6*b^5*d^6*e^3 + 35*a^7*b^4*d^5*e^4 - 7*a^8*b^3*d^4*e^5 - 7*a^9*
b^2*d^3*e^6 + 5*a^10*b*d^2*e^7 - a^11*d*e^8)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] sage0*x
```

maple [B] time = 0.08, size = 2420, normalized size = 5.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/12*(-3*A*b^6*d^6+6*A*a^6*e^6-B*a*b^5*d^6+6*B*a^6*d*e^5-4*B*x*b^6*d^6+12*
B*x*a^6*e^6+180*A*ln(b*x+a)*x^6*b^6*e^6-180*A*ln(e*x+d)*x^6*b^6*e^6-780*A*x
^3*a^3*b^3*e^6+60*A*x^3*b^6*d^3*e^3-105*A*a^4*b^2*d^2*e^4+240*A*a^3*b^3*d^3
*e^3-90*A*a^2*b^4*d^4*e^2+24*A*a*b^5*d^5*e+125*B*a^5*b*d^2*e^4-80*B*a^4*b^2
*d^3*e^3-60*B*a^3*b^3*d^4*e^2+10*B*a^2*b^4*d^5*e-72*A*a^5*b*d*e^5+260*B*x^3
*a^4*b^2*e^6-40*B*x^3*b^6*d^4*e^2-375*A*x^2*a^4*b^2*e^6-15*A*x^2*b^6*d^4*e^
2+125*B*x^2*a^5*b*e^6+10*B*x^2*b^6*d^5*e+6*A*x*b^6*d^5*e-630*A*x^4*a^2*b^4*
e^6+270*A*x^4*b^6*d^2*e^4+210*B*x^4*a^3*b^3*e^6-180*B*x^4*b^6*d^3*e^3-180*A
*x^5*a*b^5*e^6+180*A*x^5*b^6*d*e^5+60*B*x^5*a^2*b^4*e^6-120*B*x^5*b^6*d^2*e
^4-36*A*x*a^5*b*e^6-600*B*ln(b*x+a)*x^5*a*b^5*d*e^5+600*B*ln(e*x+d)*x^5*a*b
^5*d*e^5+1200*B*ln(e*x+d)*x^3*a^3*b^3*d*e^5+1680*B*ln(e*x+d)*x^3*a^2*b^4*d^
2*e^4+480*B*ln(e*x+d)*x^3*a*b^5*d^3*e^3+1440*A*ln(b*x+a)*x^2*a^3*b^3*d*e^5+
1080*A*ln(b*x+a)*x^2*a^2*b^4*d^2*e^4-1440*A*ln(e*x+d)*x^2*a^3*b^3*d*e^5-108
0*A*ln(e*x+d)*x^2*a^2*b^4*d^2*e^4-600*B*ln(b*x+a)*x^2*a^4*b^2*d*e^5-1320*B*
ln(b*x+a)*x^2*a^3*b^3*d^2*e^4-720*B*ln(b*x+a)*x^2*a^2*b^4*d^3*e^3+600*B*ln(
e*x+d)*x^2*a^4*b^2*d*e^5+1440*A*ln(b*x+a)*x^4*a*b^5*d*e^5+480*B*ln(e*x+d)*x
*a^4*b^2*d^2*e^4+480*B*ln(e*x+d)*x*a^3*b^3*d^3*e^3-1440*A*ln(e*x+d)*x^4*a*b
^5*d*e^5-1200*B*ln(b*x+a)*x^4*a^2*b^4*d*e^5-1020*B*ln(b*x+a)*x^4*a*b^5*d^2*
e^4+1200*B*ln(e*x+d)*x^4*a^2*b^4*d*e^5+1020*B*ln(e*x+d)*x^4*a*b^5*d^2*e^4+2
160*A*ln(b*x+a)*x^3*a^2*b^4*d*e^5+720*A*ln(b*x+a)*x^3*a*b^5*d^2*e^4-2160*A*
ln(e*x+d)*x^3*a^2*b^4*d*e^5-720*A*ln(e*x+d)*x^3*a*b^5*d^2*e^4-1200*B*ln(b*x
+a)*x^3*a^3*b^3*d*e^5-1680*B*ln(b*x+a)*x^3*a^2*b^4*d^2*e^4-480*B*ln(b*x+a)*
x^3*a*b^5*d^3*e^3+1320*B*ln(e*x+d)*x^2*a^3*b^3*d^2*e^4+720*B*ln(e*x+d)*x^2*
a^2*b^4*d^3*e^3+360*A*ln(b*x+a)*x*a^4*b^2*d*e^5+720*A*ln(b*x+a)*x*a^3*b^3*d
^2*e^4-360*A*ln(e*x+d)*x*a^4*b^2*d*e^5-720*A*ln(e*x+d)*x*a^3*b^3*d^2*e^4-12
0*B*ln(b*x+a)*x*a^5*b*d*e^5-480*B*ln(b*x+a)*x*a^4*b^2*d^2*e^4-480*B*ln(b*x+
a)*x*a^3*b^3*d^3*e^3+120*B*ln(e*x+d)*x*a^5*b*d*e^5-180*A*x^3*a^2*b^4*d*e^5+
900*A*x^3*a*b^5*d^2*e^4+580*B*x^3*a^3*b^3*d*e^5-180*B*x^3*a^2*b^4*d^2*e^4-6
20*B*x^3*a*b^5*d^3*e^3-840*A*x^2*a^3*b^3*d*e^5+990*A*x^2*a^2*b^4*d^2*e^4+24
0*A*x^2*a*b^5*d^3*e^3+530*B*x^2*a^4*b^2*d*e^5+230*B*x^2*a^3*b^3*d^2*e^4-740
*B*x^2*a^2*b^4*d^3*e^3-155*B*x^2*a*b^5*d^4*e^2-570*A*x*a^4*b^2*d*e^5+300*A*
x*a^3*b^3*d^2*e^4+360*A*x*a^2*b^4*d^3*e^3-60*A*x*a*b^5*d^4*e^2+214*B*x*a^5*
b*d*e^5+280*B*x*a^4*b^2*d^2*e^4-320*B*x*a^3*b^3*d^3*e^3-220*B*x*a^2*b^4*d^4
*e^2+38*B*x*a*b^5*d^5*e+360*A*x^4*a*b^5*d*e^5+300*B*x^4*a^2*b^4*d*e^5-330*B
*x^4*a*b^5*d^2*e^4+60*B*x^5*a*b^5*d*e^5+180*A*ln(b*x+a)*a^4*b^2*d^2*e^4-180
*A*ln(e*x+d)*a^4*b^2*d^2*e^4-60*B*ln(b*x+a)*a^5*b*d^2*e^4-120*B*ln(b*x+a)*a
^4*b^2*d^3*e^3+60*B*ln(e*x+d)*a^5*b*d^2*e^4+120*B*ln(e*x+d)*a^4*b^2*d^3*e^3
-720*A*ln(e*x+d)*x^5*a*b^5*e^6-360*A*ln(e*x+d)*x^5*b^6*d*e^5-240*B*ln(b*x+a
)*x^5*a^2*b^4*e^6-240*B*ln(b*x+a)*x^5*b^6*d^2*e^4+240*B*ln(e*x+d)*x^5*a^2*b
^4*e^6+240*B*ln(e*x+d)*x^5*b^6*d^2*e^4+1080*A*ln(b*x+a)*x^4*a^2*b^4*e^6+180
*A*ln(b*x+a)*x^4*b^6*d^2*e^4-1080*A*ln(e*x+d)*x^4*a^2*b^4*e^6-180*A*ln(e*x+
d)*x^4*b^6*d^2*e^4-360*B*ln(b*x+a)*x^4*a^3*b^3*e^6-120*B*ln(b*x+a)*x^4*b^6*
d^3*e^3+360*B*ln(e*x+d)*x^4*a^3*b^3*e^6+120*B*ln(e*x+d)*x^4*b^6*d^3*e^3+720
*A*ln(b*x+a)*x^3*a^3*b^3*e^6-720*A*ln(e*x+d)*x^3*a^3*b^3*e^6-240*B*ln(b*x+a
)*x^3*a^4*b^2*e^6+240*B*ln(e*x+d)*x^3*a^4*b^2*e^6-60*B*ln(b*x+a)*x^6*a*b^5*
e^6-120*B*ln(b*x+a)*x^6*b^6*d*e^5+60*B*ln(e*x+d)*x^6*a*b^5*e^6+120*B*ln(e*x
+d)*x^6*b^6*d*e^5+720*A*ln(b*x+a)*x^5*a*b^5*e^6+360*A*ln(b*x+a)*x^5*b^6*d*e
^5+180*A*ln(b*x+a)*x^2*a^4*b^2*e^6-180*A*ln(e*x+d)*x^2*a^4*b^2*e^6-60*B*ln(
b*x+a)*x^2*a^5*b*e^6+60*B*ln(e*x+d)*x^2*a^5*b*e^6)*(b*x+a)/(e*x+d)^2/(a*e-b
*d)^7/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1784 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{13/2}(-2aBe-Abe+3bBd)}{13e^4}+\frac{2(d+ex)^{11/2}(bd-ae)(-aBe-2Abe+3bBd)}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^2(Bd-}{9e^4}$$

```
[Out] -2/9*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^(9/2)/e^4+2/11*(-a*e+b*d)*(-2*A*b*e-B*
a*e+3*B*b*d)*(e*x+d)^(11/2)/e^4-2/13*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(13
/2)/e^4+2/15*b^2*B*(e*x+d)^(15/2)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 77\}$

$$-\frac{2b(d+ex)^{13/2}(-2aBe-Abe+3bBd)}{13e^4}+\frac{2(d+ex)^{11/2}(bd-ae)(-aBe-2Abe+3bBd)}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^2(Bd-}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^4) - (2*b*(3*b*B*d - A*b*e
 - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^4) + (2*b^2*B*(d + e*x)^(15/2))/(15*e^4
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f])))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{7/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{9/2}}{9e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{11e^4}\end{aligned}$$

Mathematica [A] time = 0.15, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{9/2}\left(-495b(d+ex)^2(-2aBe-Abe+3bBd)+585(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-715(bd-ae)^2\right.}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*(b*d - a*e)^2*(B*d - A*e) + 585*(b*d - a*e)*(3*b*B
*d - 2*A*b*e - a*B*e)*(d + e*x) - 495*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*
x)^2 + 429*b^2*B*(d + e*x)^3))/(6435*e^4)
```

fricas [B] time = 0.50, size = 424, normalized size = 3.31

$$2\left(429\,Bb^2e^7x^7 - 16\,Bb^2d^7 + 715\,Aa^2d^4e^3 + 40\left(2\,Bab + Ab^2\right)d^6e - 130\left(Ba^2 + 2\,Aab\right)d^5e^2 + 33\left(46\,Bb^2de^6 + 1\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/6435*(429*B*b^2*e^7*x^7 - 16*B*b^2*d^7 + 715*A*a^2*d^4*e^3 + 40*(2*B*a*b
+ A*b^2)*d^6*e - 130*(B*a^2 + 2*A*a*b)*d^5*e^2 + 33*(46*B*b^2*d*e^6 + 15*(2
*B*a*b + A*b^2)*e^7)*x^6 + 9*(206*B*b^2*d^2*e^5 + 200*(2*B*a*b + A*b^2)*d*e
^6 + 65*(B*a^2 + 2*A*a*b)*e^7)*x^5 + 5*(160*B*b^2*d^3*e^4 + 143*A*a^2*e^7 +
 458*(2*B*a*b + A*b^2)*d^2*e^5 + 442*(B*a^2 + 2*A*a*b)*d*e^6)*x^4 + 5*(B*b^
2*d^4*e^3 + 572*A*a^2*d*e^6 + 212*(2*B*a*b + A*b^2)*d^3*e^4 + 598*(B*a^2 +
2*A*a*b)*d^2*e^5)*x^3 - 3*(2*B*b^2*d^5*e^2 - 1430*A*a^2*d^2*e^5 - 5*(2*B*a*
b + A*b^2)*d^4*e^3 - 520*(B*a^2 + 2*A*a*b)*d^3*e^4)*x^2 + (8*B*b^2*d^6*e +
2860*A*a^2*d^3*e^4 - 20*(2*B*a*b + A*b^2)*d^5*e^2 + 65*(B*a^2 + 2*A*a*b)*d^
4*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.29, size = 1913, normalized size = 14.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^4*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^4*e^(-1) + 6006*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^4*e^(-2) +
3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^
2*d^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^4*e^(-3) + 12012*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d^3*e^(-1) + 2402
4*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d
^3*e^(-1) + 10296*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*d^3*e^(-2) + 5148*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^2*d^3*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d
^3*e^(-3) + 45045*sqrt(x*e + d)*A*a^2*d^4 + 60060*((x*e + d)^(3/2) - 3*sqrt
(x*e + d)*d)*A*a^2*d^3 + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*d^2*e^(-1) + 15444*(5*(
x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*
e + d)*d^3)*A*a*b*d^2*e^(-1) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a*b*d^2*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*A*b^2*d^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*B*b^2*d^2*e^(-3) + 18018*(3*(x*e + d)^(5/2) - 10*(x
*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*d^2 + 572*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*B*a^2*d*e^(-1) + 1144*(35*(x*e + d)^(9/2) - 180*
(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315
*sqrt(x*e + d)*d^4)*A*a*b*d*e^(-1) + 520*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b*d*e^(-2) + 260*(63*(x*e + d)
^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^
(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*d*e^(-2
) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/
2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^2*d*e^(-3) + 5148*(5*(x*e + d)^(
7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3
)*A*a^2*d + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*B*a^2*e^(-1) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2
)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(
3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b*e^(-1) + 30*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*B*a*b*e^(-2) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d
+ 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2
)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^2*e^(-2) + 7
*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d
^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d
)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^2*e^(
-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2)*e^(-1)
```

maple [A] time = 0.06, size = 169, normalized size = 1.32

$$\frac{2\,(ex+d)^{\frac{9}{2}}\left(429B\,b^2x^3e^3+495A\,b^2e^3x^2+990Bab\,e^3x^2-198B\,b^2d\,e^2x^2+1170Aab\,e^3x-180A\,b^2d\,e^2x+585B\,a^2}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*(e*x+d)^(9/2)*(429*B*b^2*e^3*x^3+495*A*b^2*e^3*x^2+990*B*a*b*e^3*x^2
-198*B*b^2*d*e^2*x^2+1170*A*a*b*e^3*x-180*A*b^2*d*e^2*x+585*B*a^2*e^3*x-360
*B*a*b*d*e^2*x+72*B*b^2*d^2*e*x+715*A*a^2*e^3-260*A*a*b*d*e^2+40*A*b^2*d^2*
e-130*B*a^2*d*e^2+80*B*a*b*d^2*e-16*B*b^2*d^3)/e^4
```

maxima [A] time = 0.54, size = 159, normalized size = 1.24

$$\frac{2\left(429\,(ex+d)^{\frac{15}{2}}Bb^2-495\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)(ex+d)^{\frac{13}{2}}+585\left(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+\left(Ba^2+2\right.\right.\right.}{6435\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*B*b^2 - 495*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(13/2) + 585*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*
A*a*b)*e^2)*(e*x + d)^(11/2) - 715*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^
2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 2.04, size = 115, normalized size = 0.90

$$\frac{{\left(d+e\,x\right)}^{13/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{13\,e^4}+\frac{2\,B\,b^2\,{\left(d+e\,x\right)}^{15/2}}{15\,e^4}+\frac{2\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{11/2}\,\left(2\,A\,b\,e+B\,a\,e-3\,B\,b}{11\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(13*e^4) + (2*B*b^2*
(d + e*x)^(15/2))/(15*e^4) + (2*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + B*a
*e - 3*B*b*d))/(11*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(9/2))/(9*
e^4)
```

sympy [**A**] time = 9.10, size = 1020, normalized size = 7.97

$$\begin{cases} \frac{2Aa^2d^4\sqrt{d+ex}}{9e} + \frac{8Aa^2d^3x\sqrt{d+ex}}{9} + \frac{4Aa^2d^2ex^2\sqrt{d+ex}}{3} + \frac{8Aa^2de^2x^3\sqrt{d+ex}}{9} + \frac{2Aa^2e^3x^4\sqrt{d+ex}}{9} - \frac{8Aabd^5\sqrt{d+ex}}{99e^2} + \frac{4Aabd^4x\sqrt{d+ex}}{99e} \\ d^{\frac{7}{2}}\left(Aa^2x + Aabx^2 + \frac{Ab^2x^3}{3} + \frac{Ba^2x^2}{2} + \frac{2Babx^3}{3} + \frac{Bb^2x^4}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*A*a**2*d**4*sqrt(d + e*x)/(9*e) + 8*A*a**2*d**3*x*sqrt(d + e*x
)/9 + 4*A*a**2*d**2*e*x**2*sqrt(d + e*x)/3 + 8*A*a**2*d*e**2*x**3*sqrt(d +
e*x)/9 + 2*A*a**2*e**3*x**4*sqrt(d + e*x)/9 - 8*A*a*b*d**5*sqrt(d + e*x)/(9
9*e**2) + 4*A*a*b*d**4*x*sqrt(d + e*x)/(99*e) + 32*A*a*b*d**3*x**2*sqrt(d +
 e*x)/33 + 184*A*a*b*d**2*e*x**3*sqrt(d + e*x)/99 + 136*A*a*b*d*e**2*x**4*s
qrt(d + e*x)/99 + 4*A*a*b*e**3*x**5*sqrt(d + e*x)/11 + 16*A*b**2*d**6*sqrt(
d + e*x)/(1287*e**3) - 8*A*b**2*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2*A*b**2
*d**4*x**2*sqrt(d + e*x)/(429*e) + 424*A*b**2*d**3*x**3*sqrt(d + e*x)/1287
+ 916*A*b**2*d**2*e*x**4*sqrt(d + e*x)/1287 + 80*A*b**2*d*e**2*x**5*sqrt(d
+ e*x)/143 + 2*A*b**2*e**3*x**6*sqrt(d + e*x)/13 - 4*B*a**2*d**5*sqrt(d + e
*x)/(99*e**2) + 2*B*a**2*d**4*x*sqrt(d + e*x)/(99*e) + 16*B*a**2*d**3*x**2*
sqrt(d + e*x)/33 + 92*B*a**2*d**2*e*x**3*sqrt(d + e*x)/99 + 68*B*a**2*d*e**
2*x**4*sqrt(d + e*x)/99 + 2*B*a**2*e**3*x**5*sqrt(d + e*x)/11 + 32*B*a*b*d*
*6*sqrt(d + e*x)/(1287*e**3) - 16*B*a*b*d**5*x*sqrt(d + e*x)/(1287*e**2) +
4*B*a*b*d**4*x**2*sqrt(d + e*x)/(429*e) + 848*B*a*b*d**3*x**3*sqrt(d + e*x)
/1287 + 1832*B*a*b*d**2*e*x**4*sqrt(d + e*x)/1287 + 160*B*a*b*d*e**2*x**5*s
qrt(d + e*x)/143 + 4*B*a*b*e**3*x**6*sqrt(d + e*x)/13 - 32*B*b**2*d**7*sqrt
(d + e*x)/(6435*e**4) + 16*B*b**2*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*B*b*
*2*d**5*x**2*sqrt(d + e*x)/(2145*e**2) + 2*B*b**2*d**4*x**3*sqrt(d + e*x)/(
1287*e) + 320*B*b**2*d**3*x**4*sqrt(d + e*x)/1287 + 412*B*b**2*d**2*e*x**5*
sqrt(d + e*x)/715 + 92*B*b**2*d*e**2*x**6*sqrt(d + e*x)/195 + 2*B*b**2*e**3
*x**7*sqrt(d + e*x)/15, Ne(e, 0)), (d**(7/2)*(A*a**2*x + A*a*b*x**2 + A*b**
2*x**3/3 + B*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4), True))
```

3.1785 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{11/2}(-2aBe-Abe+3bBd)}{11e^4}+\frac{2(d+ex)^{9/2}(bd-ae)(-aBe-2Abe+3bBd)}{9e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^2(Bd-$$

```
[Out] -2/7*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^(7/2)/e^4+2/9*(-a*e+b*d)*(-2*A*b*e-B*a
*e+3*B*b*d)*(e*x+d)^(9/2)/e^4-2/11*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(11/2
)/e^4+2/13*b^2*B*(e*x+d)^(13/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b(d+ex)^{11/2}(-2aBe-Abe+3bBd)}{11e^4}+\frac{2(d+ex)^{9/2}(bd-ae)(-aBe-2Abe+3bBd)}{9e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^2(Bd-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(11/2))/(11*e^4) + (2*b^2*B*(d + e*x)^(13/2))/(13*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{5/2}\,dx\\ &= \int\left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{5/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{7/2}}{7e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{9e^4}\end{aligned}$$

Mathematica [A] time = 0.12, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(-819b(d+ex)^2(-2aBe-Abe+3bBd)+1001(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-1287(bd-a\right.}{9009e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-1287*(b*d - a*e)^2*(B*d - A*e) + 1001*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e)*(d + e*x) - 819*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d +
e*x)^2 + 693*b^2*B*(d + e*x)^3))/(9009*e^4)
```

fricas [B] time = 0.53, size = 356, normalized size = 2.78

$$\frac{2\left(693\,Bb^{2}e^{6}x^{6} - 48\,Bb^{2}d^{6} + 1287\,Aa^{2}d^{3}e^{3} + 104\left(2\,Bab + Ab^{2}\right)d^{5}e - 286\left(Ba^{2} + 2\,Aab\right)d^{4}e^{2} + 63\left(27\,Bb^{2}de^{5}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/9009*(693*B*b^2*e^6*x^6 - 48*B*b^2*d^6 + 1287*A*a^2*d^3*e^3 + 104*(2*B*a*
b + A*b^2)*d^5*e - 286*(B*a^2 + 2*A*a*b)*d^4*e^2 + 63*(27*B*b^2*d*e^5 + 13*
(2*B*a*b + A*b^2)*e^6)*x^5 + 7*(159*B*b^2*d^2*e^4 + 299*(2*B*a*b + A*b^2)*d
*e^5 + 143*(B*a^2 + 2*A*a*b)*e^6)*x^4 + (15*B*b^2*d^3*e^3 + 1287*A*a^2*e^6
+ 1469*(2*B*a*b + A*b^2)*d^2*e^4 + 2717*(B*a^2 + 2*A*a*b)*d*e^5)*x^3 - 3*(6
*B*b^2*d^4*e^2 - 1287*A*a^2*d*e^5 - 13*(2*B*a*b + A*b^2)*d^3*e^3 - 715*(B*a
^2 + 2*A*a*b)*d^2*e^4)*x^2 + (24*B*b^2*d^5*e + 3861*A*a^2*d^2*e^4 - 52*(2*B
*a*b + A*b^2)*d^4*e^2 + 143*(B*a^2 + 2*A*a*b)*d^3*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.26, size = 1368, normalized size = 10.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^3*e^(-1) + 300
30*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^3*e^(-1) + 6006*(3*(x*e +
d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^3*e^(-2) +
3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^
2*d^3*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d
)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^3*e^(-3) + 9009*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d^2*e^(-1) + 18018
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d^
2*e^(-1) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*d^2*e^(-2) + 3861*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b
^2*d^2*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d^2
*e^(-3) + 45045*sqrt(x*e + d)*A*a^2*d^3 + 45045*((x*e + d)^(3/2) - 3*sqrt(x
*e + d)*d)*A*a^2*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*d*e^(-1) + 7722*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*A*a*b*d*e^(-1) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B
*a*b*d*e^(-2) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*d*e
^(-2) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*b^2*d*e^(-3) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*A*a^2*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*B*a^2*e^(-1) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*
A*a*b*e^(-1) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*B*a*b*e^(-2) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^2*e^(-2) + 15*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*B*b^2*e^(-3) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.32

$$\frac{2\,(ex+d)^{\frac{7}{2}}\,(693B\,b^{2}x^{3}e^{3}+819A\,b^{2}e^{3}x^{2}+1638Bab\,e^{3}x^{2}-378B\,b^{2}d\,e^{2}x^{2}+2002Aab\,e^{3}x-364A\,b^{2}d\,e^{2}x+1001B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/9009*(e*x+d)^(7/2)*(693*B*b^2*e^3*x^3+819*A*b^2*e^3*x^2+1638*B*a*b*e^3*x^
2-378*B*b^2*d*e^2*x^2+2002*A*a*b*e^3*x-364*A*b^2*d*e^2*x+1001*B*a^2*e^3*x-7
28*B*a*b*d*e^2*x+168*B*b^2*d^2*e*x+1287*A*a^2*e^3-572*A*a*b*d*e^2+104*A*b^2
*d^2*e-286*B*a^2*d*e^2+208*B*a*b*d^2*e-48*B*b^2*d^3)/e^4
```

maxima [A] time = 0.55, size = 159, normalized size = 1.24

$$\frac{2\,(693\,(ex+d)^{\frac{13}{2}}\,Bb^{2}-819\,(3\,Bb^{2}d-(2\,Bab+Ab^{2})e)(ex+d)^{\frac{11}{2}}+1001\,(3\,Bb^{2}d^{2}-2\,(2\,Bab+Ab^{2})de+(Ba^{2}+2}{9009\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*B*b^2 - 819*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(11/2) + 1001*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2
*A*a*b)*e^2)*(e*x + d)^(9/2) - 1287*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b
^2)*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 2.11, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{11\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{13/2}}{13\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{9/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d}{9\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(11*e^4) + (2*B*b^2*
(d + e*x)^(13/2))/(13*e^4) + (2*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + B*a*
e - 3*B*b*d))/(9*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(7/2))/(7*e^
4)
```

sympy [A] time = 4.63, size = 857, normalized size = 6.70

$$\begin{cases} \frac{2Aa^{2}d^{3}\sqrt{d+ex}}{7e}+\frac{6Aa^{2}d^{2}x\sqrt{d+ex}}{7}+\frac{6Aa^{2}dex^{2}\sqrt{d+ex}}{7}+\frac{2Aa^{2}e^{2}x^{3}\sqrt{d+ex}}{7}-\frac{8Aabd^{4}\sqrt{d+ex}}{63e^{2}}+\frac{4Aabd^{3}x\sqrt{d+ex}}{63e}+\frac{20Aabd^{2}x^{2}\sqrt{d+ex}}{21}+\frac{76}{} \\ d^{\frac{5}{2}}\left(Aa^{2}x+Aabx^{2}+\frac{Ab^{2}x^{3}}{3}+\frac{Ba^{2}x^{2}}{2}+\frac{2Babx^{3}}{3}+\frac{Bb^{2}x^{4}}{4}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*A*a**2*d**3*sqrt(d + e*x)/(7*e) + 6*A*a**2*d**2*x*sqrt(d + e*x
)/7 + 6*A*a**2*d*e*x**2*sqrt(d + e*x)/7 + 2*A*a**2*e**2*x**3*sqrt(d + e*x)/
7 - 8*A*a*b*d**4*sqrt(d + e*x)/(63*e**2) + 4*A*a*b*d**3*x*sqrt(d + e*x)/(63
*e) + 20*A*a*b*d**2*x**2*sqrt(d + e*x)/21 + 76*A*a*b*d*e*x**3*sqrt(d + e*x)
/63 + 4*A*a*b*e**2*x**4*sqrt(d + e*x)/9 + 16*A*b**2*d**5*sqrt(d + e*x)/(693
*e**3) - 8*A*b**2*d**4*x*sqrt(d + e*x)/(693*e**2) + 2*A*b**2*d**3*x**2*sqrt
(d + e*x)/(231*e) + 226*A*b**2*d**2*x**3*sqrt(d + e*x)/693 + 46*A*b**2*d*e*
x**4*sqrt(d + e*x)/99 + 2*A*b**2*e**2*x**5*sqrt(d + e*x)/11 - 4*B*a**2*d**4
*sqrt(d + e*x)/(63*e**2) + 2*B*a**2*d**3*x*sqrt(d + e*x)/(63*e) + 10*B*a**2
*d**2*x**2*sqrt(d + e*x)/21 + 38*B*a**2*d*e*x**3*sqrt(d + e*x)/63 + 2*B*a**
2*e**2*x**4*sqrt(d + e*x)/9 + 32*B*a*b*d**5*sqrt(d + e*x)/(693*e**3) - 16*B
*a*b*d**4*x*sqrt(d + e*x)/(693*e**2) + 4*B*a*b*d**3*x**2*sqrt(d + e*x)/(231
*e) + 452*B*a*b*d**2*x**3*sqrt(d + e*x)/693 + 92*B*a*b*d*e*x**4*sqrt(d + e*
x)/99 + 4*B*a*b*e**2*x**5*sqrt(d + e*x)/11 - 32*B*b**2*d**6*sqrt(d + e*x)/(
3003*e**4) + 16*B*b**2*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*B*b**2*d**4*x**
2*sqrt(d + e*x)/(1001*e**2) + 10*B*b**2*d**3*x**3*sqrt(d + e*x)/(3003*e) +
106*B*b**2*d**2*x**4*sqrt(d + e*x)/429 + 54*B*b**2*d*e*x**5*sqrt(d + e*x)/1
43 + 2*B*b**2*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(A*a**2*x +
A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4
), True))
```

3.1786 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{9/2}(-2aBe-Abe+3bBd)}{9e^4}+\frac{2(d+ex)^{7/2}(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^2(Bd-}{5e^4}$$

```
[Out] -2/5*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^(5/2)/e^4+2/7*(-a*e+b*d)*(-2*A*b*e-B*a
*e+3*B*b*d)*(e*x+d)^(7/2)/e^4-2/9*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(9/2)/
e^4+2/11*b^2*B*(e*x+d)^(11/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b(d+ex)^{9/2}(-2aBe-Abe+3bBd)}{9e^4}+\frac{2(d+ex)^{7/2}(bd-ae)(-aBe-2Abe+3bBd)}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^2(Bd-}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(9/2))/(9*e^4) + (2*b^2*B*(d + e*x)^(11/2))/(11*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)(d+ex)^{3/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^{3/2}}{e^3}+\frac{(-bd+ae)(-3bBd+2A}{e^3}\right.\\
&= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{5/2}}{5e^4}+\frac{2(bd-ae)(3bBd-2Abe-aB}{7e^4}
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\left(-385b(d+ex)^2(-2aBe-Abe+3bBd)+495(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-693(bd-ae)^2\right.}{3465e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-693*(b*d - a*e)^2*(B*d - A*e) + 495*(b*d - a*e)*(3*b*B
*d - 2*A*b*e - a*B*e)*(d + e*x) - 385*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*
x)^2 + 315*b^2*B*(d + e*x)^3))/(3465*e^4)
```

fricas [B] time = 0.78, size = 289, normalized size = 2.26

$$\frac{2\left(315\,Bb^{2}e^{5}x^{5}-48\,Bb^{2}d^{5}+693\,Aa^{2}d^{2}e^{3}+88\left(2\,Bab+Ab^{2}\right)d^{4}e-198\left(Ba^{2}+2\,Aab\right)d^{3}e^{2}+35\left(12\,Bb^{2}de^{4}+1\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/3465*(315*B*b^2*e^5*x^5 - 48*B*b^2*d^5 + 693*A*a^2*d^2*e^3 + 88*(2*B*a*b
+ A*b^2)*d^4*e - 198*(B*a^2 + 2*A*a*b)*d^3*e^2 + 35*(12*B*b^2*d*e^4 + 11*(2
*B*a*b + A*b^2)*e^5)*x^4 + 5*(3*B*b^2*d^2*e^3 + 110*(2*B*a*b + A*b^2)*d*e^4
 + 99*(B*a^2 + 2*A*a*b)*e^5)*x^3 - 3*(6*B*b^2*d^3*e^2 - 231*A*a^2*e^5 - 11*
(2*B*a*b + A*b^2)*d^2*e^3 - 264*(B*a^2 + 2*A*a*b)*d*e^4)*x^2 + (24*B*b^2*d^
4*e + 1386*A*a^2*d*e^4 - 44*(2*B*a*b + A*b^2)*d^3*e^2 + 99*(B*a^2 + 2*A*a*b
)*d^2*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.23, size = 901, normalized size = 7.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d^2*e^(-1) + 2310*
((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d^2*e^(-1) + 462*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d^2*e^(-2) + 231*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*d^2
*e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*b^2*d^2*e^(-3) + 462*(3*(x*e + d)^(5/2) - 10
*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*d*e^(-1) + 924*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*d*e^(-1) + 396
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*B*a*b*d*e^(-2) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*d*e^(-2) + 22*(
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^2*d*e^(-3) + 3465*sqrt(x*e
 + d)*A*a^2*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*d + 99*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*a^2*e^(-1) + 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b*e^(-1) + 22*(35*(x*
e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
 d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b*e^(-2) + 11*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*A*b^2*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^2*e^(-3) + 231*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.32

$$\frac{2\left(ex+d\right)^{\frac{5}{2}}\left(315B\,b^{2}x^{3}e^{3}+385A\,b^{2}e^{3}x^{2}+770Bab\,e^{3}x^{2}-210B\,b^{2}d\,e^{2}x^{2}+990Aab\,e^{3}x-220A\,b^{2}d\,e^{2}x+495B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3465*(e*x+d)^(5/2)*(315*B*b^2*e^3*x^3+385*A*b^2*e^3*x^2+770*B*a*b*e^3*x^2
-210*B*b^2*d*e^2*x^2+990*A*a*b*e^3*x-220*A*b^2*d*e^2*x+495*B*a^2*e^3*x-440*
B*a*b*d*e^2*x+120*B*b^2*d^2*e*x+693*A*a^2*e^3-396*A*a*b*d*e^2+88*A*b^2*d^2*
e-198*B*a^2*d*e^2+176*B*a*b*d^2*e-48*B*b^2*d^3)/e^4
```

maxima [**A**] time = 0.56, size = 159, normalized size = 1.24

$$\frac{2(315\,(ex+d)^{\frac{11}{2}}Bb^2 - 385\,(3\,Bb^2d - (2\,Bab + Ab^2)e)(ex+d)^{\frac{9}{2}} + 495\,(3\,Bb^2d^2 - 2\,(2\,Bab + Ab^2)de + (Ba^2 + 2\,A}{3465\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*b^2 - 385*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*
(e*x + d)^(9/2) + 495*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A
*a*b)*e^2)*(e*x + d)^(7/2) - 693*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)
*d^2*e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(5/2))/e^4
```

mupad [**B**] time = 0.07, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{9\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{7/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(9*e^4) + (2*B*b^2*(d
 + e*x)^(11/2))/(11*e^4) + (2*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + B*a*e
- 3*B*b*d))/(7*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(5/2))/(5*e^4)
```

sympy [**A**] time = 22.38, size = 586, normalized size = 4.58

$$Aa^2d\left(\begin{cases}\sqrt{d}\,x & \text{for}\ e=0\\ \frac{2(d+ex)^{\frac{3}{2}}}{3e} & \text{otherwise}\end{cases}\right)+\frac{2Aa^2\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e}+\frac{4Aabd\left(-\frac{d(d+ex)^{\frac{3}{2}}}{3}+\frac{(d+ex)^{\frac{5}{2}}}{5}\right)}{e^2}+\frac{4Aab\left(\frac{d^2(d+ex)^{\frac{3}{2}}}{3}-2d(}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] A*a**2*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 4*A*a*b*d*(-d*
(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*A*a*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*A*b**2*d*(d**
2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 +
2*A*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e
*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*B*a**2*d*(-d*(d + e*x)**(3/2)/3
 + (d + e*x)**(5/2)/5)/e**2 + 2*B*a**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d +
e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 4*B*a*b*d*(d**2*(d + e*x)**(3/2)
/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 4*B*a*b*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**3 + 2*B*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e
*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 2*B*b**2
*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(
7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.1787 $\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=128

$$-\frac{2b(d+ex)^{7/2}(-2aBe-Abe+3bBd)}{7e^4}+\frac{2(d+ex)^{5/2}(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^2(Bd}{3e^4}$$

```
[Out] -2/3*(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^(3/2)/e^4+2/5*(-a*e+b*d)*(-2*A*b*e-B*a
*e+3*B*b*d)*(e*x+d)^(5/2)/e^4-2/7*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(7/2)/
e^4+2/9*b^2*B*(e*x+d)^(9/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b(d+ex)^{7/2}(-2aBe-Abe+3bBd)}{7e^4}+\frac{2(d+ex)^{5/2}(bd-ae)(-aBe-2Abe+3bBd)}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^2(Bd}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^4) + (2*(b*d - a*e)*(3*
b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^4) - (2*b*(3*b*B*d - A*b*e -
 2*a*B*e)*(d + e*x)^(7/2))/(7*e^4) + (2*b^2*B*(d + e*x)^(9/2))/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^2(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)\sqrt{d+ex}}{e^3}+\frac{(-bd+ae)(-3bBd+2Ab}{e^3}\right.\\ &= -\frac{2(bd-ae)^2(Bd-Ae)(d+ex)^{3/2}}{3e^4}+\frac{2(bd-ae)(3bBd-2Abe-a}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.10, size = 107, normalized size = 0.84

$$\frac{2(d+ex)^{3/2}\left(-45b(d+ex)^2(-2aBe-Abe+3bBd)+63(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-105(bd-ae)\right.}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*(b*d - a*e)^2*(B*d - A*e) + 63*(b*d - a*e)*(3*b*B*
d - 2*A*b*e - a*B*e)*(d + e*x) - 45*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)
^2 + 35*b^2*B*(d + e*x)^3))/(315*e^4)
```

fricas [A] time = 1.03, size = 220, normalized size = 1.72

$$2\left(35\,Bb^2e^4x^4 - 16\,Bb^2d^4 + 105\,Aa^2de^3 + 24\left(2\,Bab + Ab^2\right)d^3e - 42\left(Ba^2 + 2\,Aab\right)d^2e^2 + 5\left(Bb^2de^3 + 9\left(2\,Bab + \right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*B*b^2*e^4*x^4 - 16*B*b^2*d^4 + 105*A*a^2*d*e^3 + 24*(2*B*a*b + A*
b^2)*d^3*e - 42*(B*a^2 + 2*A*a*b)*d^2*e^2 + 5*(B*b^2*d*e^3 + 9*(2*B*a*b + A
*b^2)*e^4)*x^3 - 3*(2*B*b^2*d^2*e^2 - 3*(2*B*a*b + A*b^2)*d*e^3 - 21*(B*a^2
 + 2*A*a*b)*e^4)*x^2 + (8*B*b^2*d^3*e + 105*A*a^2*e^4 - 12*(2*B*a*b + A*b^2
)*d^2*e^2 + 21*(B*a^2 + 2*A*a*b)*d*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.18, size = 511, normalized size = 3.99

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\right)Ba^2de^{(-1)} + 210\left((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\right)Aabde^{(-1)} + 42\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*d*e^(-1) + 210*((x*e
 + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*d*e^(-1) + 42*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*d*e^(-2) + 21*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*d*e^(-2) + 9*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*b^2*d*e^(-3) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*B*a^2*e^(-1) + 42*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b*e^(-1) + 18*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b*
e^(-2) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*A*b^2*e^(-2) + (35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*B*b^2*e^(-3) + 315*sqrt(x*e + d)*A*a^2*d + 105*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*A*a^2)*e^(-1)
```

maple [A] time = 0.06, size = 169, normalized size = 1.32

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(35B\,b^2x^3e^3 + 45A\,b^2e^3x^2 + 90Bab\,e^3x^2 - 30B\,b^2d\,e^2x^2 + 126Aab\,e^3x - 36A\,b^2d\,e^2x + 63B\,a^2e^3x - 72\right.}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*B*b^2*e^3*x^3+45*A*b^2*e^3*x^2+90*B*a*b*e^3*x^2-30*
B*b^2*d*e^2*x^2+126*A*a*b*e^3*x-36*A*b^2*d*e^2*x+63*B*a^2*e^3*x-72*B*a*b*d*
e^2*x+24*B*b^2*d^2*e*x+105*A*a^2*e^3-84*A*a*b*d*e^2+24*A*b^2*d^2*e-42*B*a^2
*d*e^2+48*B*a*b*d^2*e-16*B*b^2*d^3)/e^4
```

maxima [A] time = 0.47, size = 159, normalized size = 1.24

$$\frac{2\left(35\,(ex+d)^{\frac{9}{2}}Bb^2 - 45\left(3\,Bb^2d - \left(2\,Bab + Ab^2\right)e\right)(ex+d)^{\frac{7}{2}} + 63\left(3\,Bb^2d^2 - 2\left(2\,Bab + Ab^2\right)de + \left(Ba^2 + 2\,Aab\right)\right.\right.}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*B*b^2 - 45*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x
 + d)^(7/2) + 63*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)
*e^2)*(e*x + d)^(5/2) - 105*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)*(e*x + d)^(3/2))/e^4
```

mupad **[B]** time = 0.07, size = 115, normalized size = 0.90

$$\frac{(d+e\,x)^{7/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{7\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{9/2}}{9\,e^4}+\frac{2\,\left(a\,e-b\,d\right)\,(d+e\,x)^{5/2}\,\left(2\,A\,b\,e+B\,a\,e-3\,B\,b\right.}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(7*e^4) + (2*B*b^2*(d
 + e*x)^(9/2))/(9*e^4) + (2*(a*e - b*d)*(d + e*x)^(5/2)*(2*A*b*e + B*a*e -
3*B*b*d))/(5*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*e^4)
```

sympy **[A]** time = 4.91, size = 201, normalized size = 1.57

$$\frac{2\left(\frac{Bb^2(d+ex)^{\frac{9}{2}}}{9e^3}+\frac{(d+ex)^{\frac{7}{2}}\left(Ab^2e+2Babe-3Bb^2d\right)}{7e^3}+\frac{(d+ex)^{\frac{5}{2}}\left(2Aabe^2-2Ab^2de+Ba^2e^2-4Babde+3Bb^2d^2\right)}{5e^3}+\frac{(d+ex)^{\frac{3}{2}}\left(Aa^2e^3-2Aabde^2+Ab^2d^2e-\right.}{3e^3}\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**2*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(A*b**2*e + 2*B*a*b*
e - 3*B*b**2*d)/(7*e**3) + (d + e*x)**(5/2)*(2*A*a*b*e**2 - 2*A*b**2*d*e +
B*a**2*e**2 - 4*B*a*b*d*e + 3*B*b**2*d**2)/(5*e**3) + (d + e*x)**(3/2)*(A*a
**2*e**3 - 2*A*a*b*d*e**2 + A*b**2*d**2*e - B*a**2*d*e**2 + 2*B*a*b*d**2*e
- B*b**2*d**3)/(3*e**3))/e
```

3.1788 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=126

$$-\frac{2b(d+ex)^{5/2}(-2aBe-Abe+3bBd)}{5e^4}+\frac{2(d+ex)^{3/2}(bd-ae)(-aBe-2Abe+3bBd)}{3e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^2(Bd-A}{e^4}$$

```
[Out] 2/3*(-a*e+b*d)*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(3/2)/e^4-2/5*b*(-A*b*e-2*B
*a*e+3*B*b*d)*(e*x+d)^(5/2)/e^4+2/7*b^2*B*(e*x+d)^(7/2)/e^4-2*(-a*e+b*d)^2*
(-A*e+B*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b(d+ex)^{5/2}(-2aBe-Abe+3bBd)}{5e^4}+\frac{2(d+ex)^{3/2}(bd-ae)(-aBe-2Abe+3bBd)}{3e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^2(Bd-A}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^2*(B*d - A*e)*Sqrt[d + e*x])/e^4 + (2*(b*d - a*e)*(3*b*B*d
- 2*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^4) - (2*b*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^(5/2))/(5*e^4) + (2*b^2*B*(d + e*x)^(7/2))/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{\sqrt{d+ex}}\,dx\\ &= \int \Bigg(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3\sqrt{d+ex}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)\sqrt{d+ex}}{e^3}+\\ &= -\frac{2(bd-ae)^2(Bd-Ae)\sqrt{d+ex}}{e^4}+\frac{2(bd-ae)(3bBd-2Abe-aBe)(d+ex)^{3/}}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.08, size = 107, normalized size = 0.85

$$\frac{2\sqrt{d+ex}\,\Big(-21b(d+ex)^2(-2aBe-Abe+3bBd)+35(d+ex)(bd-ae)(-aBe-2Abe+3bBd)-105(bd-ae)^2(Bd}{105e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-105*(b*d - a*e)^2*(B*d - A*e) + 35*(b*d - a*e)*(3*b*B*d
- 2*A*b*e - a*B*e)*(d + e*x) - 21*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2
 + 15*b^2*B*(d + e*x)^3))/(105*e^4)
```

fricas [A] time = 0.50, size = 155, normalized size = 1.23

$$\frac{2\,(15\,Bb^2e^3x^3 - 48\,Bb^2d^3 + 105\,Aa^2e^3 + 56\,(2\,Bab + Ab^2)d^2e - 70\,(Ba^2 + 2\,Aab)de^2 - 3\,(6\,Bb^2de^2 - 7\,(2\,Bab}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/105*(15*B*b^2*e^3*x^3 - 48*B*b^2*d^3 + 105*A*a^2*e^3 + 56*(2*B*a*b + A*b^
2)*d^2*e - 70*(B*a^2 + 2*A*a*b)*d*e^2 - 3*(6*B*b^2*d*e^2 - 7*(2*B*a*b + A*b
^2)*e^3)*x^2 + (24*B*b^2*d^2*e - 28*(2*B*a*b + A*b^2)*d*e^2 + 35*(B*a^2 + 2
*A*a*b)*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.17, size = 215, normalized size = 1.71

$$\frac{2}{105}\,(35\,((xe + d)^{\frac{3}{2}} - 3\,\sqrt{xe + d}\,d)Ba^2e^{(-1)} + 70\,((xe + d)^{\frac{3}{2}} - 3\,\sqrt{xe + d}\,d)Aabe^{(-1)} + 14\,(3\,(xe + d)^{\frac{5}{2}} - 10\,(xe +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^2*e^(-1) + 70*((x*e + d
)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*b*e^(-1) + 14*(3*(x*e + d)^(5/2) - 10*(x*e
 + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*b*e^(-2) + 7*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b^2*e^(-2) + 3*(5*(x*e + d)
^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d
^3)*B*b^2*e^(-3) + 105*sqrt(x*e + d)*A*a^2)*e^(-1)
```

maple [A] time = 0.05, size = 169, normalized size = 1.34

$$\frac{2\,(15B\,b^2x^3e^3 + 21A\,b^2e^3x^2 + 42Bab\,e^3x^2 - 18B\,b^2d\,e^2x^2 + 70Aab\,e^3x - 28A\,b^2d\,e^2x + 35B\,a^2e^3x - 56Babd\,e^2}{105e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/105*(15*B*b^2*e^3*x^3+21*A*b^2*e^3*x^2+42*B*a*b*e^3*x^2-18*B*b^2*d*e^2*x^
2+70*A*a*b*e^3*x-28*A*b^2*d*e^2*x+35*B*a^2*e^3*x-56*B*a*b*d*e^2*x+24*B*b^2*
d^2*e*x+105*A*a^2*e^3-140*A*a*b*d*e^2+56*A*b^2*d^2*e-70*B*a^2*d*e^2+112*B*a
*b*d^2*e-48*B*b^2*d^3)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.54, size = 159, normalized size = 1.26

$$\frac{2\,(15\,(ex + d)^{\frac{7}{2}}Bb^2 - 21\,(3\,Bb^2d - (2\,Bab + Ab^2)e)(ex + d)^{\frac{5}{2}} + 35\,(3\,Bb^2d^2 - 2\,(2\,Bab + Ab^2)de + (Ba^2 + 2\,Aa}{105\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/105*(15*(e*x + d)^(7/2)*B*b^2 - 21*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x
 + d)^(5/2) + 35*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)
*e^2)*(e*x + d)^(3/2) - 105*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.07, size = 115, normalized size = 0.91

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{5\,e^4}+\frac{2\,B\,b^2\,(d+e\,x)^{7/2}}{7\,e^4}+\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{3/2}\,(2\,A\,b\,e+B\,a\,e-3\,B\,b\,d)}{3\,e^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(5*e^4) + (2*B*b^2*(d
 + e*x)^(7/2))/(7*e^4) + (2*(a*e - b*d)*(d + e*x)^(3/2)*(2*A*b*e + B*a*e -
3*B*b*d))/(3*e^4) + (2*(A*e - B*d)*(a*e - b*d)^2*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 53.77, size = 583, normalized size = 4.63

$$\begin{cases} \frac{-\frac{2Aa^2d}{\sqrt{d+ex}}-2Aa^2\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)-\frac{4Aabd\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{4Aab\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{2Ab^2d\left(\frac{d^2}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2}-\frac{2Ab^2\left(-\frac{d^3}{\sqrt{d+ex}}-3d^2\right.}{}}{} \\ \frac{Aa^2x+\frac{Bb^2x^4}{4}+\frac{x^3\left(Ab^2+2Bab\right)}{3}+\frac{x^2\left(2Aab+Ba^2\right)}{2}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**2*d/sqrt(d + e*x) - 2*A*a**2*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 4*A*a*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 4*A*a*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 2*A*b**2*d*(d**2
/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 2*A*b**2*(-
d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)*
*(5/2)/5)/e**2 - 2*B*a**2*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 2*B*a**2
*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 4*B*a*b*
d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 4*B*
a*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d +
 e*x)**(5/2)/5)/e**2 - 2*B*b**2*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*
x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*B*b**2*(d**4/sqrt(d
+ e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5
/2)/5 - (d + e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), ((A*a**2*x + B*b**2*x**4/4
+ x**3*(A*b**2 + 2*B*a*b)/3 + x**2*(2*A*a*b + B*a**2)/2)/sqrt(d), True))
```

3.1789 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=124

$$-\frac{2b(d+ex)^{3/2}(-2aBe-Abe+3bBd)}{3e^4}+\frac{2\sqrt{d+ex}\,(bd-ae)(-aBe-2Abe+3bBd)}{e^4}+\frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+2b^2$$

```
[Out] -2/3*b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(3/2)/e^4+2/5*b^2*B*(e*x+d)^(5/2)/e
^4+2*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^(1/2)+2*(-a*e+b*d)*(-2*A*b*e-B*a*e
+3*B*b*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 77}

$$-\frac{2b(d+ex)^{3/2}(-2aBe-Abe+3bBd)}{3e^4}+\frac{2\sqrt{d+ex}\,(bd-ae)(-aBe-2Abe+3bBd)}{e^4}+\frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+2b^2$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(e^4*Sqrt[d + e*x]) + (2*(b*d - a*e)*(3*b*B*d
 - 2*A*b*e - a*B*e)*Sqrt[d + e*x])/e^4 - (2*b*(3*b*B*d - A*b*e - 2*a*B*e)*(
d + e*x)^(3/2))/(3*e^4) + (2*b^2*B*(d + e*x)^(5/2))/(5*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{3/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3\sqrt{d+ex}}+b(-3\right.\\ &= \frac{2(bd-ae)^2(Bd-Ae)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)(3bBd-2Abe-aBe)\sqrt{d+ex}}{e^4}-2b(3\end{aligned}$$

Mathematica [A] time = 0.09, size = 107, normalized size = 0.86

$$\frac{2\left(-5b(d+ex)^2(-2aBe-Abe+3bBd)+15(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+15(bd-ae)^2(Bd-Ae)+\right.}{15e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(15*(b*d - a*e)^2*(B*d - A*e) + 15*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*
e)*(d + e*x) - 5*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + 3*b^2*B*(d + e
*x)^3))/(15*e^4*Sqrt[d + e*x])
```

fricas [A] time = 0.74, size = 165, normalized size = 1.33

$$\frac{2\,(3\,Bb^2e^3x^3 + 48\,Bb^2d^3 - 15\,Aa^2e^3 - 40\,(2\,Bab + Ab^2)d^2e + 30\,(Ba^2 + 2\,Aab)de^2 - (6\,Bb^2de^2 - 5\,(2\,Bab + Ab^2)}{15\,(e^5x + de^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(3*B*b^2*e^3*x^3 + 48*B*b^2*d^3 - 15*A*a^2*e^3 - 40*(2*B*a*b + A*b^2)*
d^2*e + 30*(B*a^2 + 2*A*a*b)*d*e^2 - (6*B*b^2*d*e^2 - 5*(2*B*a*b + A*b^2)*e
^3)*x^2 + (24*B*b^2*d^2*e - 20*(2*B*a*b + A*b^2)*d*e^2 + 15*(B*a^2 + 2*A*a*
b)*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A] time = 0.21, size = 219, normalized size = 1.77

$$\frac{2}{15}\,(3\,(xe + d)^{\frac{5}{2}}Bb^2e^{16} - 15\,(xe + d)^{\frac{3}{2}}Bb^2de^{16} + 45\,\sqrt{xe + d}\,Bb^2d^2e^{16} + 10\,(xe + d)^{\frac{3}{2}}Babe^{17} + 5\,(xe + d)^{\frac{3}{2}}Ab^2e^{17} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^2*e^16 - 15*(x*e + d)^(3/2)*B*b^2*d*e^16 + 45*s
qrt(x*e + d)*B*b^2*d^2*e^16 + 10*(x*e + d)^(3/2)*B*a*b*e^17 + 5*(x*e + d)^(
3/2)*A*b^2*e^17 - 60*sqrt(x*e + d)*B*a*b*d*e^17 - 30*sqrt(x*e + d)*A*b^2*d*
e^17 + 15*sqrt(x*e + d)*B*a^2*e^18 + 30*sqrt(x*e + d)*A*a*b*e^18)*e^(-20) +
 2*(B*b^2*d^3 - 2*B*a*b*d^2*e - A*b^2*d^2*e + B*a^2*d*e^2 + 2*A*a*b*d*e^2 -
 A*a^2*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 169, normalized size = 1.36

$$-\frac{2\,(-3B\,b^2x^3e^3 - 5A\,b^2e^3x^2 - 10Bab\,e^3x^2 + 6B\,b^2d\,e^2x^2 - 30Aab\,e^3x + 20A\,b^2d\,e^2x - 15B\,a^2e^3x + 40Babd\,e^2x -}{15\sqrt{ex + d}\;e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/15*(-3*B*b^2*e^3*x^3-5*A*b^2*e^3*x^2-10*B*a*b*e^3*x^2+6*B*b^2*d*e^2*x^2-
30*A*a*b*e^3*x+20*A*b^2*d*e^2*x-15*B*a^2*e^3*x+40*B*a*b*d*e^2*x-24*B*b^2*d^
2*e*x+15*A*a^2*e^3-60*A*a*b*d*e^2+40*A*b^2*d^2*e-30*B*a^2*d*e^2+80*B*a*b*d^
2*e-48*B*b^2*d^3)/(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.53, size = 167, normalized size = 1.35

$$\frac{2\,(\frac{3\,(ex+d)^{\frac{5}{2}}Bb^2-5\,(3\,Bb^2d-(2\,Bab+Ab^2)e)(ex+d)^{\frac{3}{2}}+15\,(3\,Bb^2d^2-2\,(2\,Bab+Ab^2)de+(Ba^2+2\,Aab)e^2)\sqrt{ex+d}}{e^3}+\frac{15\,(Bb^2d^3-Aa^2e^3-(2\,Bab+Ab^2)d^2e+}{\sqrt{ex+d}\,e^3}}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*b^2 - 5*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*(e*x +
 d)^(3/2) + 15*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*e
^2)*sqrt(e*x + d))/e^3 + 15*(B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*
e + (B*a^2 + 2*A*a*b)*d*e^2)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 0.08, size = 154, normalized size = 1.24

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,b^2\,e-6\,B\,b^2\,d+4\,B\,a\,b\,e\right)}{3\,e^4}-\frac{-2\,B\,a^2\,d\,e^2+2\,A\,a^2\,e^3+4\,B\,a\,b\,d^2\,e-4\,A\,a\,b\,d\,e^2-2\,B\,b^2\,d^3+2}{e^4\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b^2*e - 6*B*b^2*d + 4*B*a*b*e))/(3*e^4) - (2*A*a^2*e^
3 - 2*B*b^2*d^3 + 2*A*b^2*d^2*e - 2*B*a^2*d*e^2 - 4*A*a*b*d*e^2 + 4*B*a*b*d
^2*e)/(e^4*(d + e*x)^(1/2)) + (2*B*b^2*(d + e*x)^(5/2))/(5*e^4) + (2*(a*e -
 b*d)*(d + e*x)^(1/2)*(2*A*b*e + B*a*e - 3*B*b*d))/e^4
```

sympy [A] time = 33.87, size = 150, normalized size = 1.21

$$\frac{2Bb^2\left(d+ex\right)^{\frac{5}{2}}}{5e^4}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(2Ab^2e+4Babe-6Bb^2d\right)}{3e^4}+\frac{\sqrt{d+ex}\left(4Aabe^2-4Ab^2de+2Ba^2e^2-8Babde+6Bb^2\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*b**2*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(2*A*b**2*e + 4*B*a*b
*e - 6*B*b**2*d)/(3*e**4) + sqrt(d + e*x)*(4*A*a*b*e**2 - 4*A*b**2*d*e + 2*
B*a**2*e**2 - 8*B*a*b*d*e + 6*B*b**2*d**2)/e**4 + 2*(-A*e + B*d)*(a*e - b*d
)**2/(e**4*sqrt(d + e*x))
```

3.1790 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=124

$$-\frac{2b\sqrt{d+ex}\,(-2aBe-Abe+3bBd)}{e^4}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}+\frac{2b^2B(d+ex)^{3/2}}{3e^4}$$

```
[Out] 2/3*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^(3/2)+2/3*b^2*B*(e*x+d)^(3/2)/e^4-2
*(-a*e+b*d)*(-2*A*b*e-B*a*e+3*B*b*d)/e^4/(e*x+d)^(1/2)-2*b*(-A*b*e-2*B*a*e+
3*B*b*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$-\frac{2b\sqrt{d+ex}\,(-2aBe-Abe+3bBd)}{e^4}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}+\frac{2b^2B(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(3*e^4*(d + e*x)^(3/2)) - (2*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e))/(e^4*Sqrt[d + e*x]) - (2*b*(3*b*B*d - A*b*e - 2*a*
B*e)*Sqrt[d + e*x])/e^4 + (2*b^2*B*(d + e*x)^(3/2))/(3*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{5/2}}\,dx\\ &= \int \bigg(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{5/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^{3/2}}+\frac{b(-3bB}{e}\\ &= \frac{2(bd-ae)^2(Bd-Ae)}{3e^4(d+ex)^{3/2}}-\frac{2(bd-ae)(3bBd-2Abe-aBe)}{e^4\sqrt{d+ex}}-\frac{2b(3bBd-Abe-}{e^4}\end{aligned}$$

Mathematica [A] time = 0.09, size = 105, normalized size = 0.85

$$\frac{2\big(-3b(d+ex)^2(-2aBe-Abe+3bBd)-3(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+(bd-ae)^2(Bd-Ae)+b^2B(d}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*((b*d - a*e)^2*(B*d - A*e) - 3*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)*(
d + e*x) - 3*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + b^2*B*(d + e*x)^3)
)/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.53, size = 175, normalized size = 1.41

$$\frac{2 (Bb^2e^3x^3 - 16\,Bb^2d^3 - Aa^2e^3 + 8\left(2\,Bab + Ab^2\right)d^2e - 2\left(Ba^2 + 2\,Aab\right)de^2 - 3\,(2\,Bb^2de^2 - \left(2\,Bab + Ab^2\right)e^3)x}{3\left(e^6x^2 + 2\,de^5x + d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/3*(B*b^2*e^3*x^3 - 16*B*b^2*d^3 - A*a^2*e^3 + 8*(2*B*a*b + A*b^2)*d^2*e -
 2*(B*a^2 + 2*A*a*b)*d*e^2 - 3*(2*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^3)*x^2
- 3*(8*B*b^2*d^2*e - 4*(2*B*a*b + A*b^2)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x)*
sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.21, size = 206, normalized size = 1.66

$$\frac{2}{3}\left((xe + d)^{\frac{3}{2}}Bb^2e^8 - 9\,\sqrt{xe + d}\,Bb^2de^8 + 6\,\sqrt{xe + d}\,Babe^9 + 3\,\sqrt{xe + d}\,Ab^2e^9\right)e^{(-12)} - \frac{2\,(9\,(xe + d)Bb^2d^2 - Bb^2d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b^2*e^8 - 9*sqrt(x*e + d)*B*b^2*d*e^8 + 6*sqrt(x*e +
 d)*B*a*b*e^9 + 3*sqrt(x*e + d)*A*b^2*e^9)*e^(-12) - 2/3*(9*(x*e + d)*B*b^2
*d^2 - B*b^2*d^3 - 12*(x*e + d)*B*a*b*d*e - 6*(x*e + d)*A*b^2*d*e + 2*B*a*b
*d^2*e + A*b^2*d^2*e + 3*(x*e + d)*B*a^2*e^2 + 6*(x*e + d)*A*a*b*e^2 - B*a^
2*d*e^2 - 2*A*a*b*d*e^2 + A*a^2*e^3)*e^(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 168, normalized size = 1.35

$$-\frac{2\,(-B\,b^2x^3e^3 - 3A\,b^2e^3x^2 - 6Bab\,e^3x^2 + 6B\,b^2d\,e^2x^2 + 6Aab\,e^3x - 12A\,b^2d\,e^2x + 3B\,a^2e^3x - 24Babd\,e^2x + 24}{3\,(ex + d)^{\frac{3}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-B*b^2*e^3*x^3-3*A*b^2*e^3*x^2-6*B*a*b*e^3*x^2+6*B*b^2*d*e^2*x^2+6*A*
a*b*e^3*x-12*A*b^2*d*e^2*x+3*B*a^2*e^3*x-24*B*a*b*d*e^2*x+24*B*b^2*d^2*e*x+
A*a^2*e^3+4*A*a*b*d*e^2-8*A*b^2*d^2*e+2*B*a^2*d*e^2-16*B*a*b*d^2*e+16*B*b^2
*d^3)/(e*x+d)^(3/2)/e^4
```

maxima [A] time = 0.57, size = 163, normalized size = 1.31

$$\frac{2\,(\frac{(ex+d)^{\frac{3}{2}}Bb^2-3\left(3\,Bb^2d-\left(2\,Bab+Ab^2\right)e\right)\sqrt{ex+d}}{e^3} + \frac{Bb^2d^3-Aa^2e^3-\left(2\,Bab+Ab^2\right)d^2e+\left(Ba^2+2\,Aab\right)de^2-3\,(3\,Bb^2d^2-2\left(2\,Bab+Ab^2\right)de+(Ba^2+2\,Aa}{(ex+d)^{\frac{3}{2}}e^3}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*(((e*x + d)^(3/2)*B*b^2 - 3*(3*B*b^2*d - (2*B*a*b + A*b^2)*e)*sqrt(e*x
+ d))/e^3 + (B*b^2*d^3 - A*a^2*e^3 - (2*B*a*b + A*b^2)*d^2*e + (B*a^2 + 2*A
*a*b)*d*e^2 - 3*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*A*a*b)*
e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [**B**] time = 1.99, size = 189, normalized size = 1.52

$$\frac{2\,B\,b^2\,d^3-2\,A\,a^2\,e^3+2\,B\,b^2\,(d+e\,x)^3+6\,A\,b^2\,e\,(d+e\,x)^2-6\,B\,a^2\,e^2\,(d+e\,x)-18\,B\,b^2\,d\,(d+e\,x)^2-18\,B\,b^2\,d^2\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*B*b^2*d^3 - 2*A*a^2*e^3 + 2*B*b^2*(d + e*x)^3 + 6*A*b^2*e*(d + e*x)^2 -
6*B*a^2*e^2*(d + e*x) - 18*B*b^2*d*(d + e*x)^2 - 18*B*b^2*d^2*(d + e*x) - 2
*A*b^2*d^2*e + 2*B*a^2*d*e^2 - 12*A*a*b*e^2*(d + e*x) + 12*B*a*b*e*(d + e*x
)^2 + 12*A*b^2*d*e*(d + e*x) + 4*A*a*b*d*e^2 - 4*B*a*b*d^2*e + 24*B*a*b*d*e
*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [**A**] time = 1.71, size = 709, normalized size = 5.72

$$\begin{cases} -\frac{2Aa^2e^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}-\frac{8Aabde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}-\frac{12Aabe^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}+\frac{16Ab^2d^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}+\frac{24Ab^2de^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}+ \\ \frac{Aa^2x+Aabx^2+\frac{Ab^2x^3}{3}+\frac{Ba^2x^2}{2}+\frac{2Babx^3}{3}+\frac{Bb^2x^4}{4}}{d^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*A*a**2*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x))
 - 8*A*a*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*A*
a*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 16*A*b**2*d*
*2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 24*A*b**2*d*e**2*x
/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 6*A*b**2*e**3*x**2/(3*
d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 4*B*a**2*d*e**2/(3*d*e**4*
sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 6*B*a**2*e**3*x/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) + 32*B*a*b*d**2*e/(3*d*e**4*sqrt(d + e*x)
+ 3*e**5*x*sqrt(d + e*x)) + 48*B*a*b*d*e**2*x/(3*d*e**4*sqrt(d + e*x) + 3*e
**5*x*sqrt(d + e*x)) + 12*B*a*b*e**3*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*
x*sqrt(d + e*x)) - 32*B*b**2*d**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d
 + e*x)) - 48*B*b**2*d**2*e*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e
*x)) - 12*B*b**2*d*e**2*x**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*
x)) + 2*B*b**2*e**3*x**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)),
 Ne(e, 0)), ((A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*B*a
*b*x**3/3 + B*b**2*x**4/4)/d**(5/2), True))
```

3.1791 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=124

$$\frac{2b(-2aBe-Abe+3bBd)}{e^4\sqrt{d+ex}}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{3e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2b^2B\sqrt{d+ex}}{e^4}$$

```
[Out] 2/5*(-a*e+b*d)^2*(-A*e+B*d)/e^4/(e*x+d)^(5/2)-2/3*(-a*e+b*d)*(-2*A*b*e-B*a*
e+3*B*b*d)/e^4/(e*x+d)^(3/2)+2*b*(-A*b*e-2*B*a*e+3*B*b*d)/e^4/(e*x+d)^(1/2)
+2*b^2*B*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 77}

$$\frac{2b(-2aBe-Abe+3bBd)}{e^4\sqrt{d+ex}}-\frac{2(bd-ae)(-aBe-2Abe+3bBd)}{3e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}+\frac{2b^2B\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^2*(B*d - A*e))/(5*e^4*(d + e*x)^(5/2)) - (2*(b*d - a*e)*(3*b
*B*d - 2*A*b*e - a*B*e))/(3*e^4*(d + e*x)^(3/2)) + (2*b*(3*b*B*d - A*b*e -
2*a*B*e))/(e^4*Sqrt[d + e*x]) + (2*b^2*B*Sqrt[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^2(A+Bx)}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)}{e^3(d+ex)^{7/2}}+\frac{(-bd+ae)(-3bBd+2Abe+aBe)}{e^3(d+ex)^{5/2}}+\frac{b(-3\end{aligned}$$

$$= \frac{2(bd-ae)^2(Bd-Ae)}{5e^4(d+ex)^{5/2}}-\frac{2(bd-ae)(3bBd-2Abe-aBe)}{3e^4(d+ex)^{3/2}}+\frac{2b(3bBd-A}{e^4\sqrt{d+}}$$

Mathematica [A] time = 0.09, size = 107, normalized size = 0.86

$$\frac{2\left(15b(d+ex)^2(-2aBe-Abe+3bBd)-5(d+ex)(bd-ae)(-aBe-2Abe+3bBd)+3(bd-ae)^2(Bd-Ae)+15\right.}{15e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^2*(B*d - A*e) - 5*(b*d - a*e)*(3*b*B*d - 2*A*b*e - a*B*e)
*(d + e*x) + 15*b*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^2 + 15*b^2*B*(d + e
*x)^3))/(15*e^4*(d + e*x)^(5/2))
```

fricas [A] time = 0.68, size = 188, normalized size = 1.52

$$\frac{2 (15 Bb^2e^3x^3 + 48 Bb^2d^3 - 3 Aa^2e^3 - 8 (2 Bab + Ab^2)d^2e - 2 (Ba^2 + 2 Aab)de^2 + 15 (6 Bb^2de^2 - (2 Bab + Ab^2)e^{}}{15 (e^7x^3 + 3 de^6x^2 + 3 d^2e^5x + d^3e^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/15*(15*B*b^2*e^3*x^3 + 48*B*b^2*d^3 - 3*A*a^2*e^3 - 8*(2*B*a*b + A*b^2)*d
^2*e - 2*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(6*B*b^2*d*e^2 - (2*B*a*b + A*b^2)*e^
3)*x^2 + 5*(24*B*b^2*d^2*e - 4*(2*B*a*b + A*b^2)*d*e^2 - (B*a^2 + 2*A*a*b)*
e^3)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.21, size = 202, normalized size = 1.63

$$2 \sqrt{xe + d} Bb^2e^{(-4)} + \frac{2 (45 (xe + d)^2Bb^2d - 15 (xe + d)Bb^2d^2 + 3 Bb^2d^3 - 30 (xe + d)^2Babe - 15 (xe + d)^2 Ab^2e + 20}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*b^2*e^(-4) + 2/15*(45*(x*e + d)^2*B*b^2*d - 15*(x*e + d)*
B*b^2*d^2 + 3*B*b^2*d^3 - 30*(x*e + d)^2*B*a*b*e - 15*(x*e + d)^2*A*b^2*e +
 20*(x*e + d)*B*a*b*d*e + 10*(x*e + d)*A*b^2*d*e - 6*B*a*b*d^2*e - 3*A*b^2*
d^2*e - 5*(x*e + d)*B*a^2*e^2 - 10*(x*e + d)*A*a*b*e^2 + 3*B*a^2*d*e^2 + 6*
A*a*b*d*e^2 - 3*A*a^2*e^3)*e^(-4)/(x*e + d)^(5/2)
```

maple [A] time = 0.06, size = 169, normalized size = 1.36

$$-\frac{2 (-15B b^2x^3e^3 + 15A b^2e^3x^2 + 30Bab e^3x^2 - 90B b^2d e^2x^2 + 10Aab e^3x + 20A b^2d e^2x + 5B a^2e^3x + 40Babd e^2x}{15 (ex + d)^{\frac{5}{2}} e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-15*B*b^2*e^3*x^3+15*A*b^2*e^3*x^2+30*B*a*b*e^3*x^2-90*B*b^2*d*e^2*x
^2+10*A*a*b*e^3*x+20*A*b^2*d*e^2*x+5*B*a^2*e^3*x+40*B*a*b*d*e^2*x-120*B*b^2
*d^2*e*x+3*A*a^2*e^3+4*A*a*b*d*e^2+8*A*b^2*d^2*e+2*B*a^2*d*e^2+16*B*a*b*d^2
*e-48*B*b^2*d^3)/(e*x+d)^(5/2)/e^4
```

maxima [A] time = 0.64, size = 164, normalized size = 1.32

$$\frac{2 \left(\frac{15 \sqrt{ex+d} Bb^2}{e^3} + \frac{3 Bb^2d^3 - 3 Aa^2e^3 - 3 (2 Bab + Ab^2)d^2e + 3 (Ba^2 + 2 Aab)de^2 + 15 (3 Bb^2d - (2 Bab + Ab^2)e)(ex+d)^2 - 5 (3 Bb^2d^2 - 2 (2 Bab + Ab^2)de + (Ba^2}{(ex+d)^{\frac{5}{2}} e^3} \right.}{15 e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/15*(15*sqrt(e*x + d)*B*b^2/e^3 + (3*B*b^2*d^3 - 3*A*a^2*e^3 - 3*(2*B*a*b
+ A*b^2)*d^2*e + 3*(B*a^2 + 2*A*a*b)*d*e^2 + 15*(3*B*b^2*d - (2*B*a*b + A*b
^2)*e)*(e*x + d)^2 - 5*(3*B*b^2*d^2 - 2*(2*B*a*b + A*b^2)*d*e + (B*a^2 + 2*
A*a*b)*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [**B**] time = 0.10, size = 168, normalized size = 1.35

$$-\frac{2\left(2\,B\,a^2\,d\,e^2+5\,B\,a^2\,e^3\,x+3\,A\,a^2\,e^3+16\,B\,a\,b\,d^2\,e+40\,B\,a\,b\,d\,e^2\,x+4\,A\,a\,b\,d\,e^2+30\,B\,a\,b\,e^3\,x^2+10\,A\,a\,b\,e\right.}{15\,e^4\,(d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(3*A*a^2*e^3 - 48*B*b^2*d^3 + 8*A*b^2*d^2*e + 2*B*a^2*d*e^2 + 5*B*a^2*e
^3*x + 15*A*b^2*e^3*x^2 - 15*B*b^2*e^3*x^3 + 30*B*a*b*e^3*x^2 + 20*A*b^2*d*
e^2*x - 120*B*b^2*d^2*e*x - 90*B*b^2*d*e^2*x^2 + 4*A*a*b*d*e^2 + 16*B*a*b*d
^2*e + 10*A*a*b*e^3*x + 40*B*a*b*d*e^2*x))/(15*e^4*(d + e*x)^(5/2))
```

sympy [**A**] time = 3.64, size = 1015, normalized size = 8.19

$$\begin{cases} -\frac{6Aa^2e^3}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{8Aabde^2}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d+ex}} - \frac{20Aabe^3x}{15d^2e^4\sqrt{d+ex}+30de^5x\sqrt{d+ex}+15e^6x^2\sqrt{d}} \\ \frac{Aa^2x+Aabx^2+\frac{Ab^2x^3}{3}+\frac{Ba^2x^2}{2}+\frac{2Babx^3}{3}+\frac{Bb^2x^4}{4}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a**2*e**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d
+ e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 8*A*a*b*d*e**2/(15*d**2*e**4*sqrt(d
+ e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 20*A*a*b
*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x
**2*sqrt(d + e*x)) - 16*A*b**2*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e*
*5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 40*A*b**2*d*e**2*x/(15*d
**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d +
e*x)) - 30*A*b**2*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(
d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 4*B*a**2*d*e**2/(15*d**2*e**4*sqrt
(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 10*B*
a**2*e**3*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e*
*6*x**2*sqrt(d + e*x)) - 32*B*a*b*d**2*e/(15*d**2*e**4*sqrt(d + e*x) + 30*d
*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) - 80*B*a*b*d*e**2*x/(15
*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d
+ e*x)) - 60*B*a*b*e**3*x**2/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt
(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 96*B*b**2*d**3/(15*d**2*e**4*sqrt
(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 240*B
*b**2*d**2*e*x/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15
*e**6*x**2*sqrt(d + e*x)) + 180*B*b**2*d*e**2*x**2/(15*d**2*e**4*sqrt(d + e
*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*x**2*sqrt(d + e*x)) + 30*B*b**2*e
**3*x**3/(15*d**2*e**4*sqrt(d + e*x) + 30*d*e**5*x*sqrt(d + e*x) + 15*e**6*
x**2*sqrt(d + e*x)), Ne(e, 0)), ((A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B
*a**2*x**2/2 + 2*B*a*b*x**3/3 + B*b**2*x**4/4)/d**(7/2), True))
```

3.1792 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{17/2}(-4aBe-Abe+5bBd)}{17e^6}+\frac{4b^2(d+ex)^{15/2}(bd-ae)(-3aBe-2Abe+5bBd)}{15e^6}-\frac{4b(d+ex)^{13/2}(bd-ae}{1}$$

```
[Out] -2/9*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^(9/2)/e^6+2/11*(-a*e+b*d)^3*(-4*A*b*e-
B*a*e+5*B*b*d)*(e*x+d)^(11/2)/e^6-4/13*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B
*b*d)*(e*x+d)^(13/2)/e^6+4/15*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*
x+d)^(15/2)/e^6-2/17*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(17/2)/e^6+2/19*b
^4*B*(e*x+d)^(19/2)/e^6
```

Rubi [**A**] time = 0.14, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{17/2}(-4aBe-Abe+5bBd)}{17e^6}+\frac{4b^2(d+ex)^{15/2}(bd-ae)(-3aBe-2Abe+5bBd)}{15e^6}-\frac{4b(d+ex)^{13/2}(bd-ae}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^6) - (4*b*(b*d - a*e)^2*
(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^6) + (4*b^2*(b*d - a*
e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(15/2))/(15*e^6) - (2*b^3*(5*b*B
*d - A*b*e - 4*a*B*e)*(d + e*x)^(17/2))/(17*e^6) + (2*b^4*B*(d + e*x)^(19/2
))/(19*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^{7/2}\,dx\\ &= \int \Bigg(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{7/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\\ &= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{9/2}}{9e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{11e^6}\end{aligned}$$

Mathematica [**A**] time = 0.20, size = 183, normalized size = 0.84

$$2(d+ex)^{9/2}\left(-122265b^3(d+ex)^4(-4aBe-Abe+5bBd)+277134b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-230945*(b*d - a*e)^4*(B*d - A*e) + 188955*(b*d - a*e)^
3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 319770*b*(b*d - a*e)^2*(5*b*B*d -
 3*A*b*e - 2*a*B*e)*(d + e*x)^2 + 277134*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
 - 3*a*B*e)*(d + e*x)^3 - 122265*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^
4 + 109395*b^4*B*(d + e*x)^5))/(2078505*e^6)
```

fricas [B] time = 0.68, size = 894, normalized size = 4.10

$$\frac{2\left(109395\,Bb^4e^9x^9 - 1280\,Bb^4d^9 + 230945\,Aa^4d^4e^5 + 2432\,\left(4\,Bab^3 + Ab^4\right)d^8e - 10336\,\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^7e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/2078505*(109395*B*b^4*e^9*x^9 - 1280*B*b^4*d^9 + 230945*A*a^4*d^4*e^5 + 2
432*(4*B*a*b^3 + A*b^4)*d^8*e - 10336*(3*B*a^2*b^2 + 2*A*a*b^3)*d^7*e^2 + 2
5840*(2*B*a^3*b + 3*A*a^2*b^2)*d^6*e^3 - 41990*(B*a^4 + 4*A*a^3*b)*d^5*e^4
+ 6435*(58*B*b^4*d*e^8 + 19*(4*B*a*b^3 + A*b^4)*e^9)*x^8 + 858*(505*B*b^4*d
^2*e^7 + 494*(4*B*a*b^3 + A*b^4)*d*e^8 + 323*(3*B*a^2*b^2 + 2*A*a*b^3)*e^9)
*x^7 + 66*(2620*B*b^4*d^3*e^6 + 7619*(4*B*a*b^3 + A*b^4)*d^2*e^7 + 14858*(3
*B*a^2*b^2 + 2*A*a*b^3)*d*e^8 + 4845*(2*B*a^3*b + 3*A*a^2*b^2)*e^9)*x^6 + 9
*(35*B*b^4*d^4*e^5 + 23028*(4*B*a*b^3 + A*b^4)*d^3*e^6 + 133076*(3*B*a^2*b^
2 + 2*A*a*b^3)*d^2*e^7 + 129200*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^8 + 20995*(B*
a^4 + 4*A*a^3*b)*e^9)*x^5 - 5*(70*B*b^4*d^5*e^4 - 46189*A*a^4*e^9 - 133*(4*
B*a*b^3 + A*b^4)*d^4*e^5 - 103360*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^6 - 29586
8*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^7 - 142766*(B*a^4 + 4*A*a^3*b)*d*e^8)*x^4
 + 10*(40*B*b^4*d^6*e^3 + 92378*A*a^4*d*e^8 - 76*(4*B*a*b^3 + A*b^4)*d^5*e^
4 + 323*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^5 + 68476*(2*B*a^3*b + 3*A*a^2*b^2)
*d^3*e^6 + 96577*(B*a^4 + 4*A*a^3*b)*d^2*e^7)*x^3 - 6*(80*B*b^4*d^7*e^2 - 2
30945*A*a^4*d^2*e^7 - 152*(4*B*a*b^3 + A*b^4)*d^6*e^3 + 646*(3*B*a^2*b^2 +
2*A*a*b^3)*d^5*e^4 - 1615*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^5 - 83980*(B*a^4
+ 4*A*a^3*b)*d^3*e^6)*x^2 + (640*B*b^4*d^8*e + 923780*A*a^4*d^3*e^6 - 1216*
(4*B*a*b^3 + A*b^4)*d^7*e^2 + 5168*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e^3 - 1292
0*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e^4 + 20995*(B*a^4 + 4*A*a^3*b)*d^4*e^5)*x)
*sqrt(e*x + d)/e^6
```

giac [B] time = 0.46, size = 3913, normalized size = 17.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^4*e^(-1)
+ 19399380*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^4*e^(-1) + 38798
76*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*
b*d^4*e^(-2) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*A*a^2*b^2*d^4*e^(-2) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^4*
e^(-3) + 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^3*d^4*e^(-3) + 184756*(35*(x*e + d)^
(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/
2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^3*d^4*e^(-4) + 46189*(35*(x*e + d)^(9
/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)
```

```
*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*d^4*e^(-4) + 20995*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^4*e^(-5) + 3
879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*
a^4*d^3*e^(-1) + 15519504*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*A*a^3*b*d^3*e^(-1) + 6651216*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b*d^3*e
^(-2) + 9976824*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*d^3*e^(-2) + 1108536*(35*(x*e + d
)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(
3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*d^3*e^(-3) + 739024*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*d^3*e^(-3) + 335920*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*d^3*
e^(-4) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*A*b^4*d^3*e^(-4) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b
^4*d^3*e^(-5) + 14549535*sqrt(x*e + d)*A*a^4*d^4 + 19399380*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*A*a^4*d^3 + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*d^2*e^(-1)
 + 9976824*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b*d^2*e^(-1) + 1108536*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b*d^2*e^(-2) + 1662804*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^2*d^2*e^(-2) + 755820*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^2*d^2*e^(-
3) + 503880*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*a*b^3*d^2*e^(-3) + 116280*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a
*b^3*d^2*e^(-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5
005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d
^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^4*d^2*e^(-4) +
13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11
/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*
e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^
4*d^2*e^(-5) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*A*a^4*d^2 + 184756*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*B*a^4*d*e^(-1) + 739024*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A
*a^3*b*d*e^(-1) + 335920*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*B*a^3*b*d*e^(-2) + 503880*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^2*d*e^(-2) + 116
280*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^2*d*e^(-3) + 77520*(231*(x*e +
d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
+ d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003
*sqrt(x*e + d)*d^6)*A*a*b^3*d*e^(-3) + 36176*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
```

```
+ 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^3*d*e^(-4) + 9044*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^4*d*e^(-4) + 532*(6435
*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2
- 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e +
d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10
9395*sqrt(x*e + d)*d^8)*B*b^4*d*e^(-5) + 1662804*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*d +
20995*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*B*a^4*e^(-1) + 83980*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 9
90*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^
4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b*e^(-1) + 19380*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*B*a^3*b*e^(-2) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^2*e^(
-2) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*a^2*b^2*e^(-3) + 9044*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*A*a*b^3*e^(-3) + 532*(6435*(x*e + d)^(17/2) - 58344*(x*e +
d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 8
50850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(
5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^3*e
^(-4) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e
 + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4
 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e +
d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^4*e^(-4) + 63*(12155*(x*e + d)
^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260
*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9
/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 69283
5*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^4*e^(-5) + 46189*(35*
(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*
e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2 \left(e x + d\right)^{\frac{9}{2}} \left(109395 b^{4} B \,x^{5} e^{5}+122265 A \,b^{4} e^{5} x^{4}+489060 B a \,b^{3} e^{5} x^{4}-64350 B \,b^{4} d \,e^{4} x^{4}+554268 A a \,b^{3} e^{5} x^{3}-6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/2078505*(e*x+d)^(9/2)*(109395*B*b^4*e^5*x^5+122265*A*b^4*e^5*x^4+489060*B
*a*b^3*e^5*x^4-64350*B*b^4*d*e^4*x^4+554268*A*a*b^3*e^5*x^3-65208*A*b^4*d*e
^4*x^3+831402*B*a^2*b^2*e^5*x^3-260832*B*a*b^3*d*e^4*x^3+34320*B*b^4*d^2*e^
3*x^3+959310*A*a^2*b^2*e^5*x^2-255816*A*a*b^3*d*e^4*x^2+30096*A*b^4*d^2*e^3
*x^2+639540*B*a^3*b*e^5*x^2-383724*B*a^2*b^2*d*e^4*x^2+120384*B*a*b^3*d^2*e
^3*x^2-15840*B*b^4*d^3*e^2*x^2+755820*A*a^3*b*e^5*x-348840*A*a^2*b^2*d*e^4*
x+93024*A*a*b^3*d^2*e^3*x-10944*A*b^4*d^3*e^2*x+188955*B*a^4*e^5*x-232560*B
*a^3*b*d*e^4*x+139536*B*a^2*b^2*d^2*e^3*x-43776*B*a*b^3*d^3*e^2*x+5760*B*b^
4*d^4*e*x+230945*A*a^4*e^5-167960*A*a^3*b*d*e^4+77520*A*a^2*b^2*d^2*e^3-206
72*A*a*b^3*d^3*e^2+2432*A*b^4*d^4*e-41990*B*a^4*d*e^4+51680*B*a^3*b*d^2*e^3
-31008*B*a^2*b^2*d^3*e^2+9728*B*a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [B] time = 0.74, size = 409, normalized size = 1.88

$$\frac{2\left(109395\,(ex+d)^{\frac{19}{2}}Bb^4-122265\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{17}{2}}+277134\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/2078505*(109395*(e*x + d)^(19/2)*B*b^4 - 122265*(5*B*b^4*d - (4*B*a*b^3 +
 A*b^4)*e)*(e*x + d)^(17/2) + 277134*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d
*e + (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(15/2) - 319770*(5*B*b^4*d^3
- 3*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^
3*b + 3*A*a^2*b^2)*e^3)*(e*x + d)^(13/2) + 188955*(5*B*b^4*d^4 - 4*(4*B*a*b
^3 + A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*
A*a^2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(11/2) - 230945*(B*b^
4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)
*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)
*(e*x + d)^(9/2))/e^6
```

mupad [B] time = 1.98, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{17/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{17\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{11/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{11\,e^6}+\frac{2\,B\,b^4\,(d+e\,x}{19\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(17*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(11/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(11*e^6) + (2*B*b^
4*(d + e*x)^(19/2))/(19*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(9/2)
)/(9*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(13/2)*(3*A*b*e + 2*B*a*e - 5*B*b*
d))/(13*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(15/2)*(2*A*b*e + 3*B*a*e - 5*B
*b*d))/(15*e^6)
```

sympy [A] time = 16.31, size = 2091, normalized size = 9.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((2*A*a**4*d**4*sqrt(d + e*x)/(9*e) + 8*A*a**4*d**3*x*sqrt(d + e*x
)/9 + 4*A*a**4*d**2*e*x**2*sqrt(d + e*x)/3 + 8*A*a**4*d*e**2*x**3*sqrt(d +
e*x)/9 + 2*A*a**4*e**3*x**4*sqrt(d + e*x)/9 - 16*A*a**3*b*d**5*sqrt(d + e*x
)/(99*e**2) + 8*A*a**3*b*d**4*x*sqrt(d + e*x)/(99*e) + 64*A*a**3*b*d**3*x**
2*sqrt(d + e*x)/33 + 368*A*a**3*b*d**2*e*x**3*sqrt(d + e*x)/99 + 272*A*a**3
*b*d*e**2*x**4*sqrt(d + e*x)/99 + 8*A*a**3*b*e**3*x**5*sqrt(d + e*x)/11 + 3
2*A*a**2*b**2*d**6*sqrt(d + e*x)/(429*e**3) - 16*A*a**2*b**2*d**5*x*sqrt(d
+ e*x)/(429*e**2) + 4*A*a**2*b**2*d**4*x**2*sqrt(d + e*x)/(143*e) + 848*A*a
**2*b**2*d**3*x**3*sqrt(d + e*x)/429 + 1832*A*a**2*b**2*d**2*e*x**4*sqrt(d
+ e*x)/429 + 480*A*a**2*b**2*d*e**2*x**5*sqrt(d + e*x)/143 + 12*A*a**2*b**2
*e**3*x**6*sqrt(d + e*x)/13 - 128*A*a*b**3*d**7*sqrt(d + e*x)/(6435*e**4) +
 64*A*a*b**3*d**6*x*sqrt(d + e*x)/(6435*e**3) - 16*A*a*b**3*d**5*x**2*sqrt(
d + e*x)/(2145*e**2) + 8*A*a*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 1280*A
*a*b**3*d**3*x**4*sqrt(d + e*x)/1287 + 1648*A*a*b**3*d**2*e*x**5*sqrt(d + e
*x)/715 + 368*A*a*b**3*d*e**2*x**6*sqrt(d + e*x)/195 + 8*A*a*b**3*e**3*x**7
*sqrt(d + e*x)/15 + 256*A*b**4*d**8*sqrt(d + e*x)/(109395*e**5) - 128*A*b**
4*d**7*x*sqrt(d + e*x)/(109395*e**4) + 32*A*b**4*d**6*x**2*sqrt(d + e*x)/(3
6465*e**3) - 16*A*b**4*d**5*x**3*sqrt(d + e*x)/(21879*e**2) + 14*A*b**4*d**
4*x**4*sqrt(d + e*x)/(21879*e) + 2424*A*b**4*d**3*x**5*sqrt(d + e*x)/12155
+ 1604*A*b**4*d**2*e*x**6*sqrt(d + e*x)/3315 + 104*A*b**4*d*e**2*x**7*sqrt(
d + e*x)/255 + 2*A*b**4*e**3*x**8*sqrt(d + e*x)/17 - 4*B*a**4*d**5*sqrt(d +
 e*x)/(99*e**2) + 2*B*a**4*d**4*x*sqrt(d + e*x)/(99*e) + 16*B*a**4*d**3*x**
2*sqrt(d + e*x)/33 + 92*B*a**4*d**2*e*x**3*sqrt(d + e*x)/99 + 68*B*a**4*d*e
**2*x**4*sqrt(d + e*x)/99 + 2*B*a**4*e**3*x**5*sqrt(d + e*x)/11 + 64*B*a**3
*b*d**6*sqrt(d + e*x)/(1287*e**3) - 32*B*a**3*b*d**5*x*sqrt(d + e*x)/(1287*
e**2) + 8*B*a**3*b*d**4*x**2*sqrt(d + e*x)/(429*e) + 1696*B*a**3*b*d**3*x**
3*sqrt(d + e*x)/1287 + 3664*B*a**3*b*d**2*e*x**4*sqrt(d + e*x)/1287 + 320*B
*a**3*b*d*e**2*x**5*sqrt(d + e*x)/143 + 8*B*a**3*b*e**3*x**6*sqrt(d + e*x)/
13 - 64*B*a**2*b**2*d**7*sqrt(d + e*x)/(2145*e**4) + 32*B*a**2*b**2*d**6*x*
sqrt(d + e*x)/(2145*e**3) - 8*B*a**2*b**2*d**5*x**2*sqrt(d + e*x)/(715*e**2
) + 4*B*a**2*b**2*d**4*x**3*sqrt(d + e*x)/(429*e) + 640*B*a**2*b**2*d**3*x*
*4*sqrt(d + e*x)/429 + 2472*B*a**2*b**2*d**2*e*x**5*sqrt(d + e*x)/715 + 184
*B*a**2*b**2*d*e**2*x**6*sqrt(d + e*x)/65 + 4*B*a**2*b**2*e**3*x**7*sqrt(d
+ e*x)/5 + 1024*B*a*b**3*d**8*sqrt(d + e*x)/(109395*e**5) - 512*B*a*b**3*d*
*7*x*sqrt(d + e*x)/(109395*e**4) + 128*B*a*b**3*d**6*x**2*sqrt(d + e*x)/(36
465*e**3) - 64*B*a*b**3*d**5*x**3*sqrt(d + e*x)/(21879*e**2) + 56*B*a*b**3*
d**4*x**4*sqrt(d + e*x)/(21879*e) + 9696*B*a*b**3*d**3*x**5*sqrt(d + e*x)/1
2155 + 6416*B*a*b**3*d**2*e*x**6*sqrt(d + e*x)/3315 + 416*B*a*b**3*d*e**2*x
**7*sqrt(d + e*x)/255 + 8*B*a*b**3*e**3*x**8*sqrt(d + e*x)/17 - 512*B*b**4*
d**9*sqrt(d + e*x)/(415701*e**6) + 256*B*b**4*d**8*x*sqrt(d + e*x)/(415701*
e**5) - 64*B*b**4*d**7*x**2*sqrt(d + e*x)/(138567*e**4) + 160*B*b**4*d**6*x
**3*sqrt(d + e*x)/(415701*e**3) - 140*B*b**4*d**5*x**4*sqrt(d + e*x)/(41570
1*e**2) + 14*B*b**4*d**4*x**5*sqrt(d + e*x)/(46189*e) + 2096*B*b**4*d**3*x*
*6*sqrt(d + e*x)/12597 + 404*B*b**4*d**2*e*x**7*sqrt(d + e*x)/969 + 116*B*b
**4*d*e**2*x**8*sqrt(d + e*x)/323 + 2*B*b**4*e**3*x**9*sqrt(d + e*x)/19, Ne
(e, 0)), (d**(7/2)*(A*a**4*x + 2*A*a**3*b*x**2 + 2*A*a**2*b**2*x**3 + A*a*b
**3*x**4 + A*b**4*x**5/5 + B*a**4*x**2/2 + 4*B*a**3*b*x**3/3 + 3*B*a**2*b**
2*x**4/2 + 4*B*a*b**3*x**5/5 + B*b**4*x**6/6), True))
```

3.1793 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{15/2}(-4aBe-Abe+5bBd)}{15e^6}+\frac{4b^2(d+ex)^{13/2}(bd-ae)(-3aBe-2Abe+5bBd)}{13e^6}-\frac{4b(d+ex)^{11/2}(bd-ae)}{1}$$

```
[Out] -2/7*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^(7/2)/e^6+2/9*(-a*e+b*d)^3*(-4*A*b*e-B
*a*e+5*B*b*d)*(e*x+d)^(9/2)/e^6-4/11*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b
*d)*(e*x+d)^(11/2)/e^6+4/13*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+
d)^(13/2)/e^6-2/15*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(15/2)/e^6+2/17*b^4
*B*(e*x+d)^(17/2)/e^6
```

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{15/2}(-4aBe-Abe+5bBd)}{15e^6}+\frac{4b^2(d+ex)^{13/2}(bd-ae)(-3aBe-2Abe+5bBd)}{13e^6}-\frac{4b(d+ex)^{11/2}(bd-ae)}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(11/2))/(11*e^6) + (4*b^2*(b*d - a*e)
*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(13/2))/(13*e^6) - (2*b^3*(5*b*B*d
 - A*b*e - 4*a*B*e)*(d + e*x)^(15/2))/(15*e^6) + (2*b^4*B*(d + e*x)^(17/2))
/(17*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx=\int (a+bx)^4(A+Bx)(d+ex)^{5/2}\,dx$$

$$=\int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{5/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.$$

$$=-\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{7/2}}{7e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{9e^6}$$

Mathematica [A] time = 0.17, size = 183, normalized size = 0.84

$$2(d+ex)^{7/2}\left(-51051b^3(d+ex)^4(-4aBe-Abe+5bBd)+117810b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-13\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-109395*(b*d - a*e)^4*(B*d - A*e) + 85085*(b*d - a*e)^3
*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 139230*b*(b*d - a*e)^2*(5*b*B*d -
3*A*b*e - 2*a*B*e)*(d + e*x)^2 + 117810*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e
- 3*a*B*e)*(d + e*x)^3 - 51051*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4
+ 45045*b^4*B*(d + e*x)^5))/(765765*e^6)
```

fricas [**B**]   time = 1.05, size = 772, normalized size = 3.54

$$\frac{2\left(45045\,Bb^4e^8x^8 - 1280\,Bb^4d^8 + 109395\,Aa^4d^3e^5 + 2176\left(4\,Bab^3 + Ab^4\right)d^7e - 8160\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^6e^2 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/765765*(45045*B*b^4*e^8*x^8 - 1280*B*b^4*d^8 + 109395*A*a^4*d^3*e^5 + 217
6*(4*B*a*b^3 + A*b^4)*d^7*e - 8160*(3*B*a^2*b^2 + 2*A*a*b^3)*d^6*e^2 + 1768
0*(2*B*a^3*b + 3*A*a^2*b^2)*d^5*e^3 - 24310*(B*a^4 + 4*A*a^3*b)*d^4*e^4 + 3
003*(35*B*b^4*d*e^7 + 17*(4*B*a*b^3 + A*b^4)*e^8)*x^7 + 231*(275*B*b^4*d^2*
e^6 + 527*(4*B*a*b^3 + A*b^4)*d*e^7 + 510*(3*B*a^2*b^2 + 2*A*a*b^3)*e^8)*x^
6 + 63*(5*B*b^4*d^3*e^5 + 1207*(4*B*a*b^3 + A*b^4)*d^2*e^6 + 4590*(3*B*a^2*
b^2 + 2*A*a*b^3)*d*e^7 + 2210*(2*B*a^3*b + 3*A*a^2*b^2)*e^8)*x^5 - 35*(10*B
*b^4*d^4*e^4 - 17*(4*B*a*b^3 + A*b^4)*d^3*e^5 - 5406*(3*B*a^2*b^2 + 2*A*a*b
^3)*d^2*e^6 - 10166*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^7 - 2431*(B*a^4 + 4*A*a^3
*b)*e^8)*x^4 + 5*(80*B*b^4*d^5*e^3 + 21879*A*a^4*e^8 - 136*(4*B*a*b^3 + A*b
^4)*d^4*e^4 + 510*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^5 + 49946*(2*B*a^3*b + 3*
A*a^2*b^2)*d^2*e^6 + 46189*(B*a^4 + 4*A*a^3*b)*d*e^7)*x^3 - 3*(160*B*b^4*d^
6*e^2 - 109395*A*a^4*d*e^7 - 272*(4*B*a*b^3 + A*b^4)*d^5*e^3 + 1020*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^4*e^4 - 2210*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^5 - 60775
*(B*a^4 + 4*A*a^3*b)*d^2*e^6)*x^2 + (640*B*b^4*d^7*e + 328185*A*a^4*d^2*e^6
 - 1088*(4*B*a*b^3 + A*b^4)*d^6*e^2 + 4080*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^
3 - 8840*(2*B*a^3*b + 3*A*a^2*b^2)*d^4*e^4 + 12155*(B*a^4 + 4*A*a^3*b)*d^3*
e^5)*x)*sqrt(e*x + d)/e^6
```

giac [**B**]   time = 0.52, size = 2860, normalized size = 13.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^3*e^(-1) + 1
021020*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^3*e^(-1) + 204204*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d^3
*e^(-2) + 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*A*a^2*b^2*d^3*e^(-2) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^3*e^(-3)
+ 87516*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*A*a*b^3*d^3*e^(-3) + 9724*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a*b^3*d^3*e^(-4) + 2431*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*A*b^4*d^3*e^(-4) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e +
 d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^3*e^(-5) + 153153*(3*(x*e
```

```
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^4*d^2*e^(-1)
 + 612612*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*A*a^3*b*d^2*e^(-1) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b*d^2*e^(-2) + 393822*(5
*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(
x*e + d)*d^3)*A*a^2*b^2*d^2*e^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*B*a^2*b^2*d^2*e^(-3) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*A*a*b^3*d^2*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e +
d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
 + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*d^2*e^(-4) + 3315*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*d^
2*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
+ d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006
*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^4*d^2*e^(-5) + 765765*sq
rt(x*e + d)*A*a^4*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*
d^2 + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*d*e^(-1) + 262548*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b
*d*e^(-1) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b*d*e
^(-2) + 43758*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^2*d*e^(
-2) + 19890*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*a^2*b^2*d*e^(-3) + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^3*d*e^(-3) + 3060*(231*(x*e +
d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
+ d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003
*sqrt(x*e + d)*d^6)*B*a*b^3*d*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*
e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 900
9*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*
A*b^4*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1228
5*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*
d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e
 + d)*d^7)*B*b^4*d*e^(-5) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*A*a^4*d + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*B*a^4*e^(-1) + 9724*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
 + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^
4)*A*a^3*b*e^(-1) + 4420*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*B*a^3*b*e^(-2) + 6630*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^2*e^(-2) + 1530*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^2*e^(-3) + 1020*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*A*a*b^3*e^(-3) + 476*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)
*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435
*sqrt(x*e + d)*d^7)*B*a*b^3*e^(-4) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e
+ d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32
175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)
```

```
*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^4*e^(-4) + 7*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*B*b^4*e^(-5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2\left(ex+d\right)^{\frac{7}{2}}\left(45045b^{4}B\,x^{5}e^{5}+51051A\,b^{4}e^{5}x^{4}+204204Ba\,b^{3}e^{5}x^{4}-30030B\,b^{4}d\,e^{4}x^{4}+235620Aa\,b^{3}e^{5}x^{3}-314}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/765765*(e*x+d)^(7/2)*(45045*B*b^4*e^5*x^5+51051*A*b^4*e^5*x^4+204204*B*a*
b^3*e^5*x^4-30030*B*b^4*d*e^4*x^4+235620*A*a*b^3*e^5*x^3-31416*A*b^4*d*e^4*
x^3+353430*B*a^2*b^2*e^5*x^3-125664*B*a*b^3*d*e^4*x^3+18480*B*b^4*d^2*e^3*x
^3+417690*A*a^2*b^2*e^5*x^2-128520*A*a*b^3*d*e^4*x^2+17136*A*b^4*d^2*e^3*x^
2+278460*B*a^3*b*e^5*x^2-192780*B*a^2*b^2*d*e^4*x^2+68544*B*a*b^3*d^2*e^3*x
^2-10080*B*b^4*d^3*e^2*x^2+340340*A*a^3*b*e^5*x-185640*A*a^2*b^2*d*e^4*x+57
120*A*a*b^3*d^2*e^3*x-7616*A*b^4*d^3*e^2*x+85085*B*a^4*e^5*x-123760*B*a^3*b
*d*e^4*x+85680*B*a^2*b^2*d^2*e^3*x-30464*B*a*b^3*d^3*e^2*x+4480*B*b^4*d^4*e
*x+109395*A*a^4*e^5-97240*A*a^3*b*d*e^4+53040*A*a^2*b^2*d^2*e^3-16320*A*a*b
^3*d^3*e^2+2176*A*b^4*d^4*e-24310*B*a^4*d*e^4+35360*B*a^3*b*d^2*e^3-24480*B
*a^2*b^2*d^3*e^2+8704*B*a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [B] time = 0.60, size = 409, normalized size = 1.88

$$\frac{2\left(45045\left(ex+d\right)^{\frac{17}{2}}Bb^{4}-51051\left(5\,Bb^{4}d-\left(4\,Bab^{3}+Ab^{4}\right)e\right)\left(ex+d\right)^{\frac{15}{2}}+117810\left(5\,Bb^{4}d^{2}-2\left(4\,Bab^{3}+Ab^{4}\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*b^4 - 51051*(5*B*b^4*d - (4*B*a*b^3 + A*
b^4)*e)*(e*x + d)^(15/2) + 117810*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e
+ (3*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(13/2) - 139230*(5*B*b^4*d^3 - 3
*(4*B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b
 + 3*A*a^2*b^2)*e^3)*(e*x + d)^(11/2) + 85085*(5*B*b^4*d^4 - 4*(4*B*a*b^3 +
 A*b^4)*d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^
2*b^2)*d*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(9/2) - 109395*(B*b^4*d^5
 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*
e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x
 + d)^(7/2))/e^6
```

mupad [B] time = 1.92, size = 197, normalized size = 0.90

$$\frac{{\left(d+e\,x\right)}^{15/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{15\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{9/2}\,\left(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d\right)}{9\,e^6}+\frac{2\,B\,b^4\,\left(d+e}{17\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(15*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(9/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(9*e^6) + (2*B*b^4*
(d + e*x)^(17/2))/(17*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(7/2))/
```

```
(7*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(11/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d)
)/(11*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(13/2)*(2*A*b*e + 3*B*a*e - 5*B*b
*d))/(13*e^6)
```

sympy [A] time = 74.12, size = 2193, normalized size = 10.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*A*a**4*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*a**4*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 8*A*a**3*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 16*A*a
**3*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**2 + 8*A*a**3*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/
5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 12*A*a**2*b**2*d**2
*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e*
*3 + 24*A*a**2*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*A*a**2*b**2*(d**4
*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 8*A*a*b**3*d**2*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**4 + 16*A*a*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d
**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
 + (d + e*x)**(11/2)/11)/e**4 + 8*A*a*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4
*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9
 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 2*A*b**4*d**2*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 4*A*b**4*d*(-d*
*5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)
/13)/e**5 + 2*A*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 +
 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x
)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*
a**4*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 4*B*a**4*d*(d
**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
 + 2*B*a**4*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d +
 e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 8*B*a**3*b*d**2*(d**2*(d + e*x)
**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 16*B*a**3*b
*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(
7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*B*a**3*b*(d**4*(d + e*x)**(3/2)/3 - 4
*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)
/9 + (d + e*x)**(11/2)/11)/e**3 + 12*B*a**2*b**2*d**2*(-d**3*(d + e*x)**(3/
2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2
)/9)/e**4 + 24*B*a**2*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**4 + 12*B*a**2*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**
(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 8*B*a*b**3*d**2*(d**4*(d + e
*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*
(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 16*B*a*b**3*d*(-d**5*(d +
 e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d*
*2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e*
*5 + 8*B*a*b**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d
**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(1
1/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*B*b**4*
d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)*
*(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x
)**(13/2)/13)/e**6 + 4*B*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 2*B*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d
**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/
2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)
**(17/2)/17)/e**6
```

3.1794 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{13/2}(-4aBe-Abe+5bBd)}{13e^6}+\frac{4b^2(d+ex)^{11/2}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{4b(d+ex)^{9/2}(bd-ae)^2}{}$$

```
[Out] -2/5*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^(5/2)/e^6+2/7*(-a*e+b*d)^3*(-4*A*b*e-B
*a*e+5*B*b*d)*(e*x+d)^(7/2)/e^6-4/9*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*
d)*(e*x+d)^(9/2)/e^6+4/11*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)
^(11/2)/e^6-2/13*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(13/2)/e^6+2/15*b^4*B
*(e*x+d)^(15/2)/e^6
```

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{13/2}(-4aBe-Abe+5bBd)}{13e^6}+\frac{4b^2(d+ex)^{11/2}(bd-ae)(-3aBe-2Abe+5bBd)}{11e^6}-\frac{4b(d+ex)^{9/2}(bd-ae)^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(9/2))/(9*e^6) + (4*b^2*(b*d - a*e)*(
5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(11/2))/(11*e^6) - (2*b^3*(5*b*B*d -
 A*b*e - 4*a*B*e)*(d + e*x)^(13/2))/(13*e^6) + (2*b^4*B*(d + e*x)^(15/2))/(
15*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^{3/2}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4}{e^5}\right.\\ &= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{5/2}}{5e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.16, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\left(-3465b^3(d+ex)^4(-4aBe-Abe+5bBd)+8190b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-1001\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*(b*d - a*e)^4*(B*d - A*e) + 6435*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 10010*b*(b*d - a*e)^2*(5*b*B*d - 3*A*
b*e - 2*a*B*e)*(d + e*x)^2 + 8190*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*
B*e)*(d + e*x)^3 - 3465*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 3003*
b^4*B*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 1.10, size = 649, normalized size = 2.98

$$\frac{2\left(3003\,Bb^4e^7x^7 - 256\,Bb^4d^7 + 9009\,Aa^4d^2e^5 + 384\left(4\,Bab^3 + Ab^4\right)d^6e - 1248\left(3\,Ba^2b^2 + 2\,Aab^3\right)d^5e^2 + 2288}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*B*b^4*e^7*x^7 - 256*B*b^4*d^7 + 9009*A*a^4*d^2*e^5 + 384*(4*B
*a*b^3 + A*b^4)*d^6*e - 1248*(3*B*a^2*b^2 + 2*A*a*b^3)*d^5*e^2 + 2288*(2*B*
a^3*b + 3*A*a^2*b^2)*d^4*e^3 - 2574*(B*a^4 + 4*A*a^3*b)*d^3*e^4 + 231*(16*B
*b^4*d*e^6 + 15*(4*B*a*b^3 + A*b^4)*e^7)*x^6 + 63*(B*b^4*d^2*e^5 + 70*(4*B*
a*b^3 + A*b^4)*d*e^6 + 130*(3*B*a^2*b^2 + 2*A*a*b^3)*e^7)*x^5 - 35*(2*B*b^4
*d^3*e^4 - 3*(4*B*a*b^3 + A*b^4)*d^2*e^5 - 312*(3*B*a^2*b^2 + 2*A*a*b^3)*d*
e^6 - 286*(2*B*a^3*b + 3*A*a^2*b^2)*e^7)*x^4 + 5*(16*B*b^4*d^4*e^3 - 24*(4*
B*a*b^3 + A*b^4)*d^3*e^4 + 78*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^5 + 2860*(2*B
*a^3*b + 3*A*a^2*b^2)*d*e^6 + 1287*(B*a^4 + 4*A*a^3*b)*e^7)*x^3 - 3*(32*B*b
^4*d^5*e^2 - 3003*A*a^4*e^7 - 48*(4*B*a*b^3 + A*b^4)*d^4*e^3 + 156*(3*B*a^2
*b^2 + 2*A*a*b^3)*d^3*e^4 - 286*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^5 - 3432*(B
*a^4 + 4*A*a^3*b)*d*e^6)*x^2 + (128*B*b^4*d^6*e + 18018*A*a^4*d*e^6 - 192*(
4*B*a*b^3 + A*b^4)*d^5*e^2 + 624*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^3 - 1144*(
2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^4 + 1287*(B*a^4 + 4*A*a^3*b)*d^2*e^5)*x)*sqr
t(e*x + d)/e^6
```

giac [B] time = 0.31, size = 1937, normalized size = 8.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d^2*e^(-1) + 600
60*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d^2*e^(-1) + 12012*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d^2*e^(-
2) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*A*a^2*b^2*d^2*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d^2*e^(-3) + 5148*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a*b^3*d^2*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*B*a*b^3*d^2*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*A*b^4*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*d^2*e^(-5) + 6006*(3*(x*e + d)^(5/2) - 1
0*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^4*d*e^(-1) + 24024*(3*(x*e
+ d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b*d*e^(-1)
+ 10296*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*a^3*b*d*e^(-2) + 15444*(5*(x*e + d)^(7/2) - 21*(x
*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*
d*e^(-2) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*d*e
^(-3) + 1144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5
/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*d*e^(-3)
 + 520*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*B*a*b^3*d*e^(-4) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*d*e^(-4) + 30*(231*(x*e + d)^(13/2) - 1
638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^
3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d
)*d^6)*B*b^4*d*e^(-5) + 45045*sqrt(x*e + d)*A*a^4*d^2 + 30030*((x*e + d)^(3
/2) - 3*sqrt(x*e + d)*d)*A*a^4*d + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*e^(-1) + 5148
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*A*a^3*b*e^(-1) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*B*a^3*b*e^(-2) + 858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*A*a^2*b^2*e^(-2) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*
(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
 693*sqrt(x*e + d)*d^5)*B*a^2*b^2*e^(-3) + 260*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^3*e^(-3) + 60*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*B*a*b^3*e^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*A*b^4*e^(-4) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(
x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
d)*d^7)*B*b^4*e^(-5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.15

$$\frac{2\left(ex+d\right)^{\frac{5}{2}}\left(3003b^{4}B\,x^{5}e^{5}+3465A\,b^{4}e^{5}x^{4}+13860Ba\,b^{3}e^{5}x^{4}-2310B\,b^{4}d\,e^{4}x^{4}+16380Aa\,b^{3}e^{5}x^{3}-2520A\,b^{4}d\,e^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*B*b^4*e^5*x^5+3465*A*b^4*e^5*x^4+13860*B*a*b^3*
e^5*x^4-2310*B*b^4*d*e^4*x^4+16380*A*a*b^3*e^5*x^3-2520*A*b^4*d*e^4*x^3+245
70*B*a^2*b^2*e^5*x^3-10080*B*a*b^3*d*e^4*x^3+1680*B*b^4*d^2*e^3*x^3+30030*A
*a^2*b^2*e^5*x^2-10920*A*a*b^3*d*e^4*x^2+1680*A*b^4*d^2*e^3*x^2+20020*B*a^3
*b*e^5*x^2-16380*B*a^2*b^2*d*e^4*x^2+6720*B*a*b^3*d^2*e^3*x^2-1120*B*b^4*d^
3*e^2*x^2+25740*A*a^3*b*e^5*x-17160*A*a^2*b^2*d*e^4*x+6240*A*a*b^3*d^2*e^3*
x-960*A*b^4*d^3*e^2*x+6435*B*a^4*e^5*x-11440*B*a^3*b*d*e^4*x+9360*B*a^2*b^2
*d^2*e^3*x-3840*B*a*b^3*d^3*e^2*x+640*B*b^4*d^4*e*x+9009*A*a^4*e^5-10296*A*
a^3*b*d*e^4+6864*A*a^2*b^2*d^2*e^3-2496*A*a*b^3*d^3*e^2+384*A*b^4*d^4*e-257
4*B*a^4*d*e^4+4576*B*a^3*b*d^2*e^3-3744*B*a^2*b^2*d^3*e^2+1536*B*a*b^3*d^4*
e-256*B*b^4*d^5)/e^6
```

maxima [B] time = 0.50, size = 409, normalized size = 1.88

$$2\Big(3003\,(ex+d)^{\frac{15}{2}}Bb^4 - 3465\Big(5\,Bb^4d - \Big(4\,Bab^3 + Ab^4\Big)e\Big)(ex+d)^{\frac{13}{2}} + 8190\Big(5\,Bb^4d^2 - 2\Big(4\,Bab^3 + Ab^4\Big)de + \Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*b^4 - 3465*(5*B*b^4*d - (4*B*a*b^3 + A*b^4
)*e)*(e*x + d)^(13/2) + 8190*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*
B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(11/2) - 10010*(5*B*b^4*d^3 - 3*(4*B*
a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A
*a^2*b^2)*e^3)*(e*x + d)^(9/2) + 6435*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*
d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d
*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(7/2) - 9009*(B*b^4*d^5 - A*a^4*e
^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2
*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x + d)^(5/2
))/e^6
```

mupad [B] time = 0.06, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{13\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{7/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{7\,e^6}+\frac{2\,B\,b^4\,(d+e}{15\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(13*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(7/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(7*e^6) + (2*B*b^4*
(d + e*x)^(15/2))/(15*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(5/2))/
(5*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(9/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))
/(9*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d
))/(11*e^6)
```

sympy [A] time = 45.22, size = 1297, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] A*a**4*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**4*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 8*A*a**3*b*d*(
-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 8*A*a**3*b*(d**2*(d + e*
x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 12*A*a**2
*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2
)/7)/e**3 + 12*A*a**2*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5
/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 8*A*a*b**3*d*(-
d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/
7 + (d + e*x)**(9/2)/9)/e**4 + 8*A*a*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3
*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 +
(d + e*x)**(11/2)/11)/e**4 + 2*A*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(
d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
 + e*x)**(11/2)/11)/e**5 + 2*A*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e
*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*
(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*a**4*d*(-d*(d + e*x
)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 2*B*a**4*(d**2*(d + e*x)**(3/2)/3 -
```

```
 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 8*B*a**3*b*d*(d**2*(d
+ e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 8*B*a
**3*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)
**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 12*B*a**2*b**2*d*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**4 + 12*B*a**2*b**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**4 + 8*B*a*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(
5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(1
1/2)/11)/e**5 + 8*B*a*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2
) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)
**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*B*b**4*d*(-d**5*(d + e*x)**(3/
2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*
x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*B*b
**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x
)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*
d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.1795 $\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=218

$$-\frac{2b^3(d+ex)^{11/2}(-4aBe-Abe+5bBd)}{11e^6}+\frac{4b^2(d+ex)^{9/2}(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{4b(d+ex)^{7/2}(bd-a$$

```
[Out] -2/3*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^(3/2)/e^6+2/5*(-a*e+b*d)^3*(-4*A*b*e-B
*a*e+5*B*b*d)*(e*x+d)^(5/2)/e^6-4/7*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*
d)*(e*x+d)^(7/2)/e^6+4/9*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^
(9/2)/e^6-2/11*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(11/2)/e^6+2/13*b^4*B*(
e*x+d)^(13/2)/e^6
```

Rubi [A] time = 0.10, antiderivative size = 218, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{11/2}(-4aBe-Abe+5bBd)}{11e^6}+\frac{4b^2(d+ex)^{9/2}(bd-ae)(-3aBe-2Abe+5bBd)}{9e^6}-\frac{4b(d+ex)^{7/2}(bd-a$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^6) + (2*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^6) - (4*b*(b*d - a*e)^2*(5
*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(7/2))/(7*e^6) + (4*b^2*(b*d - a*e)*(
5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(9/2))/(9*e^6) - (2*b^3*(5*b*B*d - A
*b*e - 4*a*B*e)*(d + e*x)^(11/2))/(11*e^6) + (2*b^4*B*(d + e*x)^(13/2))/(13
*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^4(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)\sqrt{d+ex}}{e^5}+\frac{(-bd+ae)^3(-5bBd+4A}{e^5}\right.\\ &= -\frac{2(bd-ae)^4(Bd-Ae)(d+ex)^{3/2}}{3e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-}{5e^6}\end{aligned}$$

Mathematica [A] time = 0.14, size = 183, normalized size = 0.84

$$\frac{2(d+ex)^{3/2}\left(-4095b^3(d+ex)^4(-4aBe-Abe+5bBd)+10010b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-1\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-15015*(b*d - a*e)^4*(B*d - A*e) + 9009*(b*d - a*e)^3*(
5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 12870*b*(b*d - a*e)^2*(5*b*B*d - 3*A
*b*e - 2*a*B*e)*(d + e*x)^2 + 10010*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*
a*B*e)*(d + e*x)^3 - 4095*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 346
5*b^4*B*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 0.71, size = 527, normalized size = 2.42

$$2\big(3465\,Bb^4e^6x^6 - 1280\,Bb^4d^6 + 15015\,Aa^4de^5 + 1664\big(4\,Bab^3 + Ab^4\big)d^5e - 4576\big(3\,Ba^2b^2 + 2\,Aab^3\big)d^4e^2 + 6864$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/45045*(3465*B*b^4*e^6*x^6 - 1280*B*b^4*d^6 + 15015*A*a^4*d*e^5 + 1664*(4*
B*a*b^3 + A*b^4)*d^5*e - 4576*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 6864*(2*B
*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 6006*(B*a^4 + 4*A*a^3*b)*d^2*e^4 + 315*(B*b
^4*d*e^5 + 13*(4*B*a*b^3 + A*b^4)*e^6)*x^5 - 35*(10*B*b^4*d^2*e^4 - 13*(4*B
*a*b^3 + A*b^4)*d*e^5 - 286*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*x^4 + 10*(40*B*b
^4*d^3*e^3 - 52*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 143*(3*B*a^2*b^2 + 2*A*a*b^3)
*d*e^5 + 1287*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*x^3 - 3*(160*B*b^4*d^4*e^2 - 2
08*(4*B*a*b^3 + A*b^4)*d^3*e^3 + 572*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 - 85
8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 3003*(B*a^4 + 4*A*a^3*b)*e^6)*x^2 + (64
0*B*b^4*d^5*e + 15015*A*a^4*e^6 - 832*(4*B*a*b^3 + A*b^4)*d^4*e^2 + 2288*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 3432*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 +
3003*(B*a^4 + 4*A*a^3*b)*d*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.23, size = 1144, normalized size = 5.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*d*e^(-1) + 60060
*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*d*e^(-1) + 12012*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*d*e^(-2) + 1
8018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^
2*b^2*d*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
 d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*d*e^(-3) + 5148*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*A*a*b^3*d*e^(-3) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B
*a*b^3*d*e^(-4) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*d
*e^(-4) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*B*b^4*d*e^(-5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*
d + 15*sqrt(x*e + d)*d^2)*B*a^4*e^(-1) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e
 + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b*e^(-1) + 5148*(5*(x*e + d)^(7
/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)
*B*a^3*b*e^(-2) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^2*e^(-2) + 858*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^2*e^(-3) + 572*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*A*a*b^3*e^(-3) + 260*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^3*e^(-4) + 65*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^4*e
^(-4) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)
^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*
e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^4*e^(-5) + 45045*sqrt(x*e +
d)*A*a^4*d + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4)*e^(-1)
```

maple [**B**] time = 0.07, size = 469, normalized size = 2.15

$$2\,(ex+d)^{\frac{3}{2}}\left(3465b^4B\,x^5e^5+4095A\,b^4e^5x^4+16380Ba\,b^3e^5x^4-3150B\,b^4d\,e^4x^4+20020Aa\,b^3e^5x^3-3640A\,b^4d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3465*B*b^4*e^5*x^5+4095*A*b^4*e^5*x^4+16380*B*a*b^3*
e^5*x^4-3150*B*b^4*d*e^4*x^4+20020*A*a*b^3*e^5*x^3-3640*A*b^4*d*e^4*x^3+300
30*B*a^2*b^2*e^5*x^3-14560*B*a*b^3*d*e^4*x^3+2800*B*b^4*d^2*e^3*x^3+38610*A
*a^2*b^2*e^5*x^2-17160*A*a*b^3*d*e^4*x^2+3120*A*b^4*d^2*e^3*x^2+25740*B*a^3
*b*e^5*x^2-25740*B*a^2*b^2*d*e^4*x^2+12480*B*a*b^3*d^2*e^3*x^2-2400*B*b^4*d
^3*e^2*x^2+36036*A*a^3*b*e^5*x-30888*A*a^2*b^2*d*e^4*x+13728*A*a*b^3*d^2*e^
3*x-2496*A*b^4*d^3*e^2*x+9009*B*a^4*e^5*x-20592*B*a^3*b*d*e^4*x+20592*B*a^2
*b^2*d^2*e^3*x-9984*B*a*b^3*d^3*e^2*x+1920*B*b^4*d^4*e*x+15015*A*a^4*e^5-24
024*A*a^3*b*d*e^4+20592*A*a^2*b^2*d^2*e^3-9152*A*a*b^3*d^3*e^2+1664*A*b^4*d
^4*e-6006*B*a^4*d*e^4+13728*B*a^3*b*d^2*e^3-13728*B*a^2*b^2*d^3*e^2+6656*B*
a*b^3*d^4*e-1280*B*b^4*d^5)/e^6
```

maxima [**B**] time = 0.53, size = 409, normalized size = 1.88

$$2\left(3465\,(ex+d)^{\frac{13}{2}}Bb^4-4095\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{11}{2}}+10010\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3465*(e*x + d)^(13/2)*B*b^4 - 4095*(5*B*b^4*d - (4*B*a*b^3 + A*b^4
)*e)*(e*x + d)^(11/2) + 10010*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3
*B*a^2*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(9/2) - 12870*(5*B*b^4*d^3 - 3*(4*B*
a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A
*a^2*b^2)*e^3)*(e*x + d)^(7/2) + 9009*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*
d^3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d
*e^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(5/2) - 15015*(B*b^4*d^5 - A*a^4*
e^5 - (4*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(
2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*(e*x + d)^(3/
2))/e^6
```

mupad [**B**] time = 1.93, size = 197, normalized size = 0.90

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{11\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{5/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{5\,e^6}+\frac{2\,B\,b^4\,(d+e}{13\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(11*e^6) + (2*(a*
e - b*d)^3*(d + e*x)^(5/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(5*e^6) + (2*B*b^4*
(d + e*x)^(13/2))/(13*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(3/2))/
(3*e^6) + (4*b*(a*e - b*d)^2*(d + e*x)^(7/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))
/(7*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d)
)/(9*e^6)
```

sympy [B] time = 9.12, size = 517, normalized size = 2.37

$$2\left(\frac{Bb^4(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(Ab^4e+4Bab^3e-5Bb^4d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(4Aab^3e^2-4Ab^4de+6Ba^2b^2e^2-16Bab^3de+10Bb^4d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(6Aa^2b^2e^3-12Aab^3\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**4*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(A*b**4*e + 4*B*a
*b**3*e - 5*B*b**4*d)/(11*e**5) + (d + e*x)**(9/2)*(4*A*a*b**3*e**2 - 4*A*b
**4*d*e + 6*B*a**2*b**2*e**2 - 16*B*a*b**3*d*e + 10*B*b**4*d**2)/(9*e**5) +
 (d + e*x)**(7/2)*(6*A*a**2*b**2*e**3 - 12*A*a*b**3*d*e**2 + 6*A*b**4*d**2*
e + 4*B*a**3*b*e**3 - 18*B*a**2*b**2*d*e**2 + 24*B*a*b**3*d**2*e - 10*B*b**
4*d**3)/(7*e**5) + (d + e*x)**(5/2)*(4*A*a**3*b*e**4 - 12*A*a**2*b**2*d*e**
3 + 12*A*a*b**3*d**2*e**2 - 4*A*b**4*d**3*e + B*a**4*e**4 - 8*B*a**3*b*d*e*
*3 + 18*B*a**2*b**2*d**2*e**2 - 16*B*a*b**3*d**3*e + 5*B*b**4*d**4)/(5*e**5
) + (d + e*x)**(3/2)*(A*a**4*e**5 - 4*A*a**3*b*d*e**4 + 6*A*a**2*b**2*d**2*
e**3 - 4*A*a*b**3*d**3*e**2 + A*b**4*d**4*e - B*a**4*d*e**4 + 4*B*a**3*b*d*
*2*e**3 - 6*B*a**2*b**2*d**3*e**2 + 4*B*a*b**3*d**4*e - B*b**4*d**5)/(3*e**
5))/e
```

3.1796 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=216

$$-\frac{2b^3(d+ex)^{9/2}(-4aBe-Abe+5bBd)}{9e^6}+\frac{4b^2(d+ex)^{7/2}(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6}-\frac{4b(d+ex)^{5/2}(bd-ae}{}$$

```
[Out] 2/3*(-a*e+b*d)^3*(-4*A*b*e-B*a*e+5*B*b*d)*(e*x+d)^(3/2)/e^6-4/5*b*(-a*e+b*d
)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+d)^(5/2)/e^6+4/7*b^2*(-a*e+b*d)*(-2*A*b
*e-3*B*a*e+5*B*b*d)*(e*x+d)^(7/2)/e^6-2/9*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x
+d)^(9/2)/e^6+2/11*b^4*B*(e*x+d)^(11/2)/e^6-2*(-a*e+b*d)^4*(-A*e+B*d)*(e*x+
d)^(1/2)/e^6
```

Rubi [A] time = 0.09, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{9/2}(-4aBe-Abe+5bBd)}{9e^6}+\frac{4b^2(d+ex)^{7/2}(bd-ae)(-3aBe-2Abe+5bBd)}{7e^6}-\frac{4b(d+ex)^{5/2}(bd-ae}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^4*(B*d - A*e)*Sqrt[d + e*x])/e^6 + (2*(b*d - a*e)^3*(5*b*B*
d - 4*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^6) - (4*b*(b*d - a*e)^2*(5*b*B*d
 - 3*A*b*e - 2*a*B*e)*(d + e*x)^(5/2))/(5*e^6) + (4*b^2*(b*d - a*e)*(5*b*B*
d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(7*e^6) - (2*b^3*(5*b*B*d - A*b*e -
 4*a*B*e)*(d + e*x)^(9/2))/(9*e^6) + (2*b^4*B*(d + e*x)^(11/2))/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5\sqrt{d+ex}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)\sqrt{d+}}{e^5}\right.\\ &= -\frac{2(bd-ae)^4(Bd-Ae)\sqrt{d+ex}}{e^6}+\frac{2(bd-ae)^3(5bBd-4Abe-aBe)(d+}{3e^6}\end{aligned}$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.85

$$\frac{2\sqrt{d+ex}\,\left(-385b^3(d+ex)^4(-4aBe-Abe+5bBd)+990b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-1386b(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-3465*(b*d - a*e)^4*(B*d - A*e) + 1155*(b*d - a*e)^3*(5*b
*B*d - 4*A*b*e - a*B*e)*(d + e*x) - 1386*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e
 - 2*a*B*e)*(d + e*x)^2 + 990*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)
*(d + e*x)^3 - 385*b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 315*b^4*B*
(d + e*x)^5))/(3465*e^6)
```

fricas [B] time = 0.92, size = 408, normalized size = 1.89

$$\frac{2\left(315\,Bb^4e^5x^5-1280\,Bb^4d^5+3465\,Aa^4e^5+1408\left(4\,Bab^3+Ab^4\right)d^4e-3168\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+3696\left(2\,B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/3465*(315*B*b^4*e^5*x^5 - 1280*B*b^4*d^5 + 3465*A*a^4*e^5 + 1408*(4*B*a*b
^3 + A*b^4)*d^4*e - 3168*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 3696*(2*B*a^3*
b + 3*A*a^2*b^2)*d^2*e^3 - 2310*(B*a^4 + 4*A*a^3*b)*d*e^4 - 35*(10*B*b^4*d*
e^4 - 11*(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 10*(40*B*b^4*d^2*e^3 - 44*(4*B*a*b^
3 + A*b^4)*d*e^4 + 99*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(80*B*b^4*d^3*
e^2 - 88*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 198*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4
- 231*(2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + (640*B*b^4*d^4*e - 704*(4*B*a*b^
3 + A*b^4)*d^3*e^2 + 1584*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 1848*(2*B*a^3
*b + 3*A*a^2*b^2)*d*e^4 + 1155*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/e^
6
```

giac [B] time = 0.20, size = 503, normalized size = 2.33

$$\frac{2}{3465}\left(1155\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)Ba^4e^{(-1)}+4620\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)Aa^3be^{(-1)}+924\left(3\,(xe+d)^{\frac{5}{2}}-10\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^4*e^(-1) + 4620*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*b*e^(-1) + 924*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*b*e^(-2) + 1386*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b^2*e^(-2)
 + 594*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*B*a^2*b^2*e^(-3) + 396*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^3*e^(-3
) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^3*e^(-4) + 11*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^4*e^(-4) + 5*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^4*e^(-5) +
 3465*sqrt(x*e + d)*A*a^4)*e^(-1)
```

maple [B] time = 0.05, size = 469, normalized size = 2.17

$$2\Big(315b^4Bx^5e^5+385Ab^4e^5x^4+1540Bab^3e^5x^4-350Bb^4de^4x^4+1980Aab^3e^5x^3-440Ab^4de^4x^3+2970Ba^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(315*B*b^4*e^5*x^5+385*A*b^4*e^5*x^4+1540*B*a*b^3*e^5*x^4-350*B*b^4*
d*e^4*x^4+1980*A*a*b^3*e^5*x^3-440*A*b^4*d*e^4*x^3+2970*B*a^2*b^2*e^5*x^3-1
760*B*a*b^3*d*e^4*x^3+400*B*b^4*d^2*e^3*x^3+4158*A*a^2*b^2*e^5*x^2-2376*A*a
*b^3*d*e^4*x^2+528*A*b^4*d^2*e^3*x^2+2772*B*a^3*b*e^5*x^2-3564*B*a^2*b^2*d*
e^4*x^2+2112*B*a*b^3*d^2*e^3*x^2-480*B*b^4*d^3*e^2*x^2+4620*A*a^3*b*e^5*x-5
544*A*a^2*b^2*d*e^4*x+3168*A*a*b^3*d^2*e^3*x-704*A*b^4*d^3*e^2*x+1155*B*a^4
*e^5*x-3696*B*a^3*b*d*e^4*x+4752*B*a^2*b^2*d^2*e^3*x-2816*B*a*b^3*d^3*e^2*x
+640*B*b^4*d^4*e*x+3465*A*a^4*e^5-9240*A*a^3*b*d*e^4+11088*A*a^2*b^2*d^2*e^
3-6336*A*a*b^3*d^3*e^2+1408*A*b^4*d^4*e-2310*B*a^4*d*e^4+7392*B*a^3*b*d^2*e
^3-9504*B*a^2*b^2*d^3*e^2+5632*B*a*b^3*d^4*e-1280*B*b^4*d^5)*(e*x+d)^(1/2)/
e^6
```

maxima [B] time = 0.60, size = 409, normalized size = 1.89

$$2\Big(315\,(ex+d)^{\frac{11}{2}}Bb^4-385\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{9}{2}}+990\Big(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\Big(3\,Ba$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/3465*(315*(e*x + d)^(11/2)*B*b^4 - 385*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e
)*(e*x + d)^(9/2) + 990*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2
*b^2 + 2*A*a*b^3)*e^2)*(e*x + d)^(7/2) - 1386*(5*B*b^4*d^3 - 3*(4*B*a*b^3 +
 A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^
2)*e^3)*(e*x + d)^(5/2) + 1155*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e +
 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 +
(B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d)^(3/2) - 3465*(B*b^4*d^5 - A*a^4*e^5 - (4
*B*a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*
b + 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)*sqrt(e*x + d))/e^6
```

mupad [B] time = 0.06, size = 197, normalized size = 0.91

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{9\,e^6}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{3/2}\,(4\,A\,b\,e+B\,a\,e-5\,B\,b\,d)}{3\,e^6}+\frac{2\,B\,b^4\,(d+e}{11\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(9*e^6) + (2*(a*e
- b*d)^3*(d + e*x)^(3/2)*(4*A*b*e + B*a*e - 5*B*b*d))/(3*e^6) + (2*B*b^4*(d
 + e*x)^(11/2))/(11*e^6) + (2*(A*e - B*d)*(a*e - b*d)^4*(d + e*x)^(1/2))/e^
6 + (4*b*(a*e - b*d)^2*(d + e*x)^(5/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/(5*e^
6) + (4*b^2*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(7*e
^6)
```

sympy [A] time = 127.18, size = 1311, normalized size = 6.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*A*a**4*d/sqrt(d + e*x) - 2*A*a**4*(-d/sqrt(d + e*x) - sqrt(d
 + e*x)) - 8*A*a**3*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 8*A*a**3*b*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 12*A*a**2*
b**2*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 -
 12*A*a**2*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**
(3/2) - (d + e*x)**(5/2)/5)/e**2 - 8*A*a*b**3*d*(-d**3/sqrt(d + e*x) - 3*d*
*2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 8*A*a*b*
*3*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4
*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 2*A*b**4*d*(d**4/sqrt(d
+ e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5
/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 2*A*b**4*(-d**5/sqrt(d + e*x) - 5*d**4*s
qrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(
d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*B*a**4*d*(-d/sqrt(d + e*x)
 - sqrt(d + e*x))/e - 2*B*a**4*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d
 + e*x)**(3/2)/3)/e - 8*B*a**3*b*d*(d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x)
- (d + e*x)**(3/2)/3)/e**2 - 8*B*a**3*b*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**2 - 12*B*a**2*b**2*d
*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*
x)**(5/2)/5)/e**3 - 12*B*a**2*b**2*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*
x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)
/e**3 - 8*B*a*b**3*d*(d**4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d
 + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**4 - 8*B*a*
b**3*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)
/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)
/e**4 - 2*B*b**4*d*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d
 + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d +
e*x)**(9/2)/9)/e**5 - 2*B*b**4*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) -
 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/
2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**5)/e, Ne(e, 0)), (
(A*a**4*x + B*b**4*x**6/6 + x**5*(A*b**4 + 4*B*a*b**3)/5 + x**4*(4*A*a*b**3
 + 6*B*a**2*b**2)/4 + x**3*(6*A*a**2*b**2 + 4*B*a**3*b)/3 + x**2*(4*A*a**3*
b + B*a**4)/2)/sqrt(d), True))
```

3.1797 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{7/2}(-4aBe-Abe+5bBd)}{7e^6}+\frac{4b^2(d+ex)^{5/2}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{4b(d+ex)^{3/2}(bd-ae}{}$$

```
[Out] -4/3*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+d)^(3/2)/e^6+4/5*b^2*(-
a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^(5/2)/e^6-2/7*b^3*(-A*b*e-4*B*a
*e+5*B*b*d)*(e*x+d)^(7/2)/e^6+2/9*b^4*B*(e*x+d)^(9/2)/e^6+2*(-a*e+b*d)^4*(-
A*e+B*d)/e^6/(e*x+d)^(1/2)+2*(-a*e+b*d)^3*(-4*A*b*e-B*a*e+5*B*b*d)*(e*x+d)^
(1/2)/e^6
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{7/2}(-4aBe-Abe+5bBd)}{7e^6}+\frac{4b^2(d+ex)^{5/2}(bd-ae)(-3aBe-2Abe+5bBd)}{5e^6}-\frac{4b(d+ex)^{3/2}(bd-ae}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(e^6*Sqrt[d + e*x]) + (2*(b*d - a*e)^3*(5*b*B
*d - 4*A*b*e - a*B*e)*Sqrt[d + e*x])/e^6 - (4*b*(b*d - a*e)^2*(5*b*B*d - 3*
A*b*e - 2*a*B*e)*(d + e*x)^(3/2))/(3*e^6) + (4*b^2*(b*d - a*e)*(5*b*B*d - 2
*A*b*e - 3*a*B*e)*(d + e*x)^(5/2))/(5*e^6) - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(7/2))/(7*e^6) + (2*b^4*B*(d + e*x)^(9/2))/(9*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{3/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5\sqrt{d+ex}}+2b\right.\\ &= \frac{2(bd-ae)^4(Bd-Ae)}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^3(5bBd-4Abe-aBe)\sqrt{d+ex}}{e^6}-4b\end{aligned}$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.86

$$\frac{2\Big(-45b^3(d+ex)^4(-4aBe-Abe+5bBd)+126b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-210b(d+ex)^2(bd-}{315}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(315*(b*d - a*e)^4*(B*d - A*e) + 315*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e -
a*B*e)*(d + e*x) - 210*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e
*x)^2 + 126*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 45*
b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 35*b^4*B*(d + e*x)^5))/(315*e
^6*Sqrt[d + e*x])
```

fricas [B] time = 0.88, size = 418, normalized size = 1.95

$$\frac{2\Big(35\,Bb^4e^5x^5+1280\,Bb^4d^5-315\,Aa^4e^5-1152\left(4\,Bab^3+Ab^4\right)d^4e+2016\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2-1680\big(2\,Ba^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/315*(35*B*b^4*e^5*x^5 + 1280*B*b^4*d^5 - 315*A*a^4*e^5 - 1152*(4*B*a*b^3
+ A*b^4)*d^4*e + 2016*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 1680*(2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + 630*(B*a^4 + 4*A*a^3*b)*d*e^4 - 5*(10*B*b^4*d*e^4 -
 9*(4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2*(40*B*b^4*d^2*e^3 - 36*(4*B*a*b^3 + A*b
^4)*d*e^4 + 63*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 2*(80*B*b^4*d^3*e^2 - 7
2*(4*B*a*b^3 + A*b^4)*d^2*e^3 + 126*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 105*(
2*B*a^3*b + 3*A*a^2*b^2)*e^5)*x^2 + (640*B*b^4*d^4*e - 576*(4*B*a*b^3 + A*b
^4)*d^3*e^2 + 1008*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 840*(2*B*a^3*b + 3*A
*a^2*b^2)*d*e^4 + 315*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*
e^6)
```

giac [B] time = 0.25, size = 587, normalized size = 2.74

$$\frac{2}{315}\Big(35\,(xe+d)^{\frac{9}{2}}Bb^4e^{48}-225\,(xe+d)^{\frac{7}{2}}Bb^4de^{48}+630\,(xe+d)^{\frac{5}{2}}Bb^4d^2e^{48}-1050\,(xe+d)^{\frac{3}{2}}Bb^4d^3e^{48}+1575\,\sqrt{xe+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*b^4*e^48 - 225*(x*e + d)^(7/2)*B*b^4*d*e^48 + 6
30*(x*e + d)^(5/2)*B*b^4*d^2*e^48 - 1050*(x*e + d)^(3/2)*B*b^4*d^3*e^48 + 1
575*sqrt(x*e + d)*B*b^4*d^4*e^48 + 180*(x*e + d)^(7/2)*B*a*b^3*e^49 + 45*(x
*e + d)^(7/2)*A*b^4*e^49 - 1008*(x*e + d)^(5/2)*B*a*b^3*d*e^49 - 252*(x*e +
 d)^(5/2)*A*b^4*d*e^49 + 2520*(x*e + d)^(3/2)*B*a*b^3*d^2*e^49 + 630*(x*e +
 d)^(3/2)*A*b^4*d^2*e^49 - 5040*sqrt(x*e + d)*B*a*b^3*d^3*e^49 - 1260*sqrt(
x*e + d)*A*b^4*d^3*e^49 + 378*(x*e + d)^(5/2)*B*a^2*b^2*e^50 + 252*(x*e + d
)^(5/2)*A*a*b^3*e^50 - 1890*(x*e + d)^(3/2)*B*a^2*b^2*d*e^50 - 1260*(x*e +
d)^(3/2)*A*a*b^3*d*e^50 + 5670*sqrt(x*e + d)*B*a^2*b^2*d^2*e^50 + 3780*sqrt
(x*e + d)*A*a*b^3*d^2*e^50 + 420*(x*e + d)^(3/2)*B*a^3*b*e^51 + 630*(x*e +
d)^(3/2)*A*a^2*b^2*e^51 - 2520*sqrt(x*e + d)*B*a^3*b*d*e^51 - 3780*sqrt(x*e
 + d)*A*a^2*b^2*d*e^51 + 315*sqrt(x*e + d)*B*a^4*e^52 + 1260*sqrt(x*e + d)*
A*a^3*b*e^52)*e^(-54) + 2*(B*b^4*d^5 - 4*B*a*b^3*d^4*e - A*b^4*d^4*e + 6*B*
a^2*b^2*d^3*e^2 + 4*A*a*b^3*d^3*e^2 - 4*B*a^3*b*d^2*e^3 - 6*A*a^2*b^2*d^2*e
^3 + B*a^4*d*e^4 + 4*A*a^3*b*d*e^4 - A*a^4*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [B] time = 0.07, size = 469, normalized size = 2.19

$$-\frac{2(-35b^4Bx^5e^5-45Ab^4e^5x^4-180Bab^3e^5x^4+50Bb^4de^4x^4-252Aab^3e^5x^3+72Ab^4de^4x^3-378Ba^2b^2e^5x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/315*(-35*B*b^4*e^5*x^5-45*A*b^4*e^5*x^4-180*B*a*b^3*e^5*x^4+50*B*b^4*d*e
^4*x^4-252*A*a*b^3*e^5*x^3+72*A*b^4*d*e^4*x^3-378*B*a^2*b^2*e^5*x^3+288*B*a
*b^3*d*e^4*x^3-80*B*b^4*d^2*e^3*x^3-630*A*a^2*b^2*e^5*x^2+504*A*a*b^3*d*e^4
*x^2-144*A*b^4*d^2*e^3*x^2-420*B*a^3*b*e^5*x^2+756*B*a^2*b^2*d*e^4*x^2-576*
B*a*b^3*d^2*e^3*x^2+160*B*b^4*d^3*e^2*x^2-1260*A*a^3*b*e^5*x+2520*A*a^2*b^2
*d*e^4*x-2016*A*a*b^3*d^2*e^3*x+576*A*b^4*d^3*e^2*x-315*B*a^4*e^5*x+1680*B*
a^3*b*d*e^4*x-3024*B*a^2*b^2*d^2*e^3*x+2304*B*a*b^3*d^3*e^2*x-640*B*b^4*d^4
*e*x+315*A*a^4*e^5-2520*A*a^3*b*d*e^4+5040*A*a^2*b^2*d^2*e^3-4032*A*a*b^3*d
^3*e^2+1152*A*b^4*d^4*e-630*B*a^4*d*e^4+3360*B*a^3*b*d^2*e^3-6048*B*a^2*b^2
*d^3*e^2+4608*B*a*b^3*d^4*e-1280*B*b^4*d^5)/(e*x+d)^(1/2)/e^6
```

maxima [B] time = 0.62, size = 417, normalized size = 1.95

$$\frac{2\left(\frac{35(ex+d)^{\frac{9}{2}}Bb^4-45(5Bb^4d-(4Bab^3+Ab^4)e)(ex+d)^{\frac{7}{2}}+126(5Bb^4d^2-2(4Bab^3+Ab^4)de+(3Ba^2b^2+2Aab^3)e^2)(ex+d)^{\frac{5}{2}}-210(5Bb^4d^3-3(4Bab^3}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*b^4 - 45*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(
e*x + d)^(7/2) + 126*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^
2 + 2*A*a*b^3)*e^2)*(e*x + d)^(5/2) - 210*(5*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b
^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^2)*e
^3)*(e*x + d)^(3/2) + 315*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e + 6*(3
*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3 + (B*a^
4 + 4*A*a^3*b)*e^4)*sqrt(e*x + d))/e^5 + 315*(B*b^4*d^5 - A*a^4*e^5 - (4*B*
a*b^3 + A*b^4)*d^4*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*b +
 3*A*a^2*b^2)*d^2*e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4)/(sqrt(e*x + d)*e^5))/e
```

mupad [B] time = 1.95, size = 296, normalized size = 1.38

$$\frac{(d+e\,x)^{7/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{7\,e^6}-\frac{-2\,B\,a^4\,d\,e^4+2\,A\,a^4\,e^5+8\,B\,a^3\,b\,d^2\,e^3-8\,A\,a^3\,b\,d\,e^4-12\,B\,a^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(7*e^6) - (2*A*a^4
*e^5 - 2*B*b^4*d^5 + 2*A*b^4*d^4*e - 2*B*a^4*d*e^4 - 8*A*a*b^3*d^3*e^2 + 8*
B*a^3*b*d^2*e^3 + 12*A*a^2*b^2*d^2*e^3 - 12*B*a^2*b^2*d^3*e^2 - 8*A*a^3*b*d
*e^4 + 8*B*a*b^3*d^4*e)/(e^6*(d + e*x)^(1/2)) + (2*(a*e - b*d)^3*(d + e*x)^
(1/2)*(4*A*b*e + B*a*e - 5*B*b*d))/e^6 + (2*B*b^4*(d + e*x)^(9/2))/(9*e^6)
+ (4*b*(a*e - b*d)^2*(d + e*x)^(3/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/(3*e^6)
 + (4*b^2*(a*e - b*d)*(d + e*x)^(5/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(5*e^6
)
```

sympy [**A**]   time = 120.61, size = 394, normalized size = 1.84

$$\frac{2Bb^4\left(d+ex\right)^{\frac{9}{2}}}{9e^6}+\frac{\left(d+ex\right)^{\frac{7}{2}}\left(2Ab^4e+8Bab^3e-10Bb^4d\right)}{7e^6}+\frac{\left(d+ex\right)^{\frac{5}{2}}\left(8Aab^3e^2-8Ab^4de+12Ba^2b^2e^2-32Bab^3de+\right.}{5e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*B*b**4*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(2*A*b**4*e + 8*B*a*b
**3*e - 10*B*b**4*d)/(7*e**6) + (d + e*x)**(5/2)*(8*A*a*b**3*e**2 - 8*A*b**
4*d*e + 12*B*a**2*b**2*e**2 - 32*B*a*b**3*d*e + 20*B*b**4*d**2)/(5*e**6) +
(d + e*x)**(3/2)*(12*A*a**2*b**2*e**3 - 24*A*a*b**3*d*e**2 + 12*A*b**4*d**2
*e + 8*B*a**3*b*e**3 - 36*B*a**2*b**2*d*e**2 + 48*B*a*b**3*d**2*e - 20*B*b*
*4*d**3)/(3*e**6) + sqrt(d + e*x)*(8*A*a**3*b*e**4 - 24*A*a**2*b**2*d*e**3
+ 24*A*a*b**3*d**2*e**2 - 8*A*b**4*d**3*e + 2*B*a**4*e**4 - 16*B*a**3*b*d*e
**3 + 36*B*a**2*b**2*d**2*e**2 - 32*B*a*b**3*d**3*e + 10*B*b**4*d**4)/e**6
+ 2*(-A*e + B*d)*(a*e - b*d)**4/(e**6*sqrt(d + e*x))
```

3.1798 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{5/2}(-4aBe-Abe+5bBd)}{5e^6}+\frac{4b^2(d+ex)^{3/2}(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6}-\frac{4b\sqrt{d+ex}\,(bd-ae)^2}{}$$

```
[Out] 2/3*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^(3/2)+4/3*b^2*(-a*e+b*d)*(-2*A*b*e-
3*B*a*e+5*B*b*d)*(e*x+d)^(3/2)/e^6-2/5*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)
^(5/2)/e^6+2/7*b^4*B*(e*x+d)^(7/2)/e^6-2*(-a*e+b*d)^3*(-4*A*b*e-B*a*e+5*B*b
*d)/e^6/(e*x+d)^(1/2)-4*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b*d)*(e*x+d)^(
1/2)/e^6
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{5/2}(-4aBe-Abe+5bBd)}{5e^6}+\frac{4b^2(d+ex)^{3/2}(bd-ae)(-3aBe-2Abe+5bBd)}{3e^6}-\frac{4b\sqrt{d+ex}\,(bd-ae)^2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(3*e^6*(d + e*x)^(3/2)) - (2*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e))/(e^6*Sqrt[d + e*x]) - (4*b*(b*d - a*e)^2*(5*b*B*
d - 3*A*b*e - 2*a*B*e)*Sqrt[d + e*x])/e^6 + (4*b^2*(b*d - a*e)*(5*b*B*d - 2
*A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(3*e^6) - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(5/2))/(5*e^6) + (2*b^4*B*(d + e*x)^(7/2))/(7*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{5/2}}\,dx\\
&= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{5/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{3/2}}+2b\right.\\
&= \frac{2(bd-ae)^4(Bd-Ae)}{3e^6(d+ex)^{3/2}}-\frac{2(bd-ae)^3(5bBd-4Abe-aBe)}{e^6\sqrt{d+ex}}-4b(bd-ae)
\end{aligned}$$

Mathematica [A] time = 0.11, size = 183, normalized size = 0.86

$$\frac{2\left(-21b^3(d+ex)^4(-4aBe-Abe+5bBd)+70b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)-210b(d+ex)^2(bd-a}{105e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(35*(b*d - a*e)^4*(B*d - A*e) - 105*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a
*B*e)*(d + e*x) - 210*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*
x)^2 + 70*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 21*b^
3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 15*b^4*B*(d + e*x)^5))/(105*e^6
*(d + e*x)^(3/2))
```

fricas [B] time = 1.00, size = 430, normalized size = 2.01

$$\frac{2\left(15\,Bb^4e^5x^5-1280\,Bb^4d^5-35\,Aa^4e^5+896\left(4\,Bab^3+Ab^4\right)d^4e-1120\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2+560\left(2\,Ba^3b+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/105*(15*B*b^4*e^5*x^5 - 1280*B*b^4*d^5 - 35*A*a^4*e^5 + 896*(4*B*a*b^3 +
A*b^4)*d^4*e - 1120*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 + 560*(2*B*a^3*b + 3*
A*a^2*b^2)*d^2*e^3 - 70*(B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(10*B*b^4*d*e^4 - 7*(
4*B*a*b^3 + A*b^4)*e^5)*x^4 + 2*(40*B*b^4*d^2*e^3 - 28*(4*B*a*b^3 + A*b^4)*
d*e^4 + 35*(3*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 - 6*(80*B*b^4*d^3*e^2 - 56*(4
*B*a*b^3 + A*b^4)*d^2*e^3 + 70*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - 35*(2*B*a^
3*b + 3*A*a^2*b^2)*e^5)*x^2 - 3*(640*B*b^4*d^4*e - 448*(4*B*a*b^3 + A*b^4)*
d^3*e^2 + 560*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 280*(2*B*a^3*b + 3*A*a^2*
b^2)*d*e^4 + 35*(B*a^4 + 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^
7*x + d^2*e^6)
```

giac [B] time = 0.24, size = 567, normalized size = 2.65

$$\frac{2}{105}\Big(15\,(xe+d)^{\frac{7}{2}}Bb^4e^{36}-105\,(xe+d)^{\frac{5}{2}}Bb^4de^{36}+350\,(xe+d)^{\frac{3}{2}}Bb^4d^2e^{36}-1050\,\sqrt{xe+d}\,Bb^4d^3e^{36}+84\,(xe+d)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*b^4*e^36 - 105*(x*e + d)^(5/2)*B*b^4*d*e^36 + 3
50*(x*e + d)^(3/2)*B*b^4*d^2*e^36 - 1050*sqrt(x*e + d)*B*b^4*d^3*e^36 + 84*
(x*e + d)^(5/2)*B*a*b^3*e^37 + 21*(x*e + d)^(5/2)*A*b^4*e^37 - 560*(x*e + d
)^(3/2)*B*a*b^3*d*e^37 - 140*(x*e + d)^(3/2)*A*b^4*d*e^37 + 2520*sqrt(x*e +
 d)*B*a*b^3*d^2*e^37 + 630*sqrt(x*e + d)*A*b^4*d^2*e^37 + 210*(x*e + d)^(3/
2)*B*a^2*b^2*e^38 + 140*(x*e + d)^(3/2)*A*a*b^3*e^38 - 1890*sqrt(x*e + d)*B
*a^2*b^2*d*e^38 - 1260*sqrt(x*e + d)*A*a*b^3*d*e^38 + 420*sqrt(x*e + d)*B*a
^3*b*e^39 + 630*sqrt(x*e + d)*A*a^2*b^2*e^39)*e^(-42) - 2/3*(15*(x*e + d)*B
*b^4*d^4 - B*b^4*d^5 - 48*(x*e + d)*B*a*b^3*d^3*e - 12*(x*e + d)*A*b^4*d^3*
e + 4*B*a*b^3*d^4*e + A*b^4*d^4*e + 54*(x*e + d)*B*a^2*b^2*d^2*e^2 + 36*(x*
e + d)*A*a*b^3*d^2*e^2 - 6*B*a^2*b^2*d^3*e^2 - 4*A*a*b^3*d^3*e^2 - 24*(x*e
+ d)*B*a^3*b*d*e^3 - 36*(x*e + d)*A*a^2*b^2*d*e^3 + 4*B*a^3*b*d^2*e^3 + 6*A
*a^2*b^2*d^2*e^3 + 3*(x*e + d)*B*a^4*e^4 + 12*(x*e + d)*A*a^3*b*e^4 - B*a^4
*d*e^4 - 4*A*a^3*b*d*e^4 + A*a^4*e^5)*e^(-6)/(x*e + d)^(3/2)
```

maple [B] time = 0.05, size = 469, normalized size = 2.19

$$-\frac{2\big(-15b^4Bx^5e^5 - 21Ab^4e^5x^4 - 84Bab^3e^5x^4 + 30Bb^4de^4x^4 - 140Aab^3e^5x^3 + 56Ab^4de^4x^3 - 210Ba^2b^2e^5x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/105*(-15*B*b^4*e^5*x^5-21*A*b^4*e^5*x^4-84*B*a*b^3*e^5*x^4+30*B*b^4*d*e^
4*x^4-140*A*a*b^3*e^5*x^3+56*A*b^4*d*e^4*x^3-210*B*a^2*b^2*e^5*x^3+224*B*a*
b^3*d*e^4*x^3-80*B*b^4*d^2*e^3*x^3-630*A*a^2*b^2*e^5*x^2+840*A*a*b^3*d*e^4*
x^2-336*A*b^4*d^2*e^3*x^2-420*B*a^3*b*e^5*x^2+1260*B*a^2*b^2*d*e^4*x^2-1344
*B*a*b^3*d^2*e^3*x^2+480*B*b^4*d^3*e^2*x^2+420*A*a^3*b*e^5*x-2520*A*a^2*b^2
*d*e^4*x+3360*A*a*b^3*d^2*e^3*x-1344*A*b^4*d^3*e^2*x+105*B*a^4*e^5*x-1680*B
*a^3*b*d*e^4*x+5040*B*a^2*b^2*d^2*e^3*x-5376*B*a*b^3*d^3*e^2*x+1920*B*b^4*d
^4*e*x+35*A*a^4*e^5+280*A*a^3*b*d*e^4-1680*A*a^2*b^2*d^2*e^3+2240*A*a*b^3*d
^3*e^2-896*A*b^4*d^4*e+70*B*a^4*d*e^4-1120*B*a^3*b*d^2*e^3+3360*B*a^2*b^2*d
^3*e^2-3584*B*a*b^3*d^4*e+1280*B*b^4*d^5)/(e*x+d)^(3/2)/e^6
```

maxima [B] time = 0.61, size = 415, normalized size = 1.94

$$2\Bigg(\frac{15\,(ex+d)^{\frac{7}{2}}Bb^4-21\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{5}{2}}+70\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\left(3\,Ba^2b^2+2\,Aab^3\right)e^2\right)(ex+d)^{\frac{3}{2}}-210\big(5\,Bb^4d^3-3\big(4\,Bab^3+}{e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/105*((15*(e*x + d)^(7/2)*B*b^4 - 21*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(
e*x + d)^(5/2) + 70*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^2
 + 2*A*a*b^3)*e^2)*(e*x + d)^(3/2) - 210*(5*B*b^4*d^3 - 3*(4*B*a*b^3 + A*b^
4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3*A*a^2*b^2)*e^
3)*sqrt(e*x + d))/e^5 + 35*(B*b^4*d^5 - A*a^4*e^5 - (4*B*a*b^3 + A*b^4)*d^4
*e + 2*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 2*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*
e^3 + (B*a^4 + 4*A*a^3*b)*d*e^4 - 3*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^
3*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e
^3 + (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 1.94, size = 367, normalized size = 1.71

$$\frac{(d+e\,x)^{5/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{5\,e^6}-\frac{(d+e\,x)\,\big(2\,B\,a^4\,e^4-16\,B\,a^3\,b\,d\,e^3+8\,A\,a^3\,b\,e^4+36\,B\,a^2\,b^2\,d^2\,e^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(5/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(5*e^6) - ((d + e*
x)*(2*B*a^4*e^4 + 10*B*b^4*d^4 + 8*A*a^3*b*e^4 - 8*A*b^4*d^3*e + 24*A*a*b^3
*d^2*e^2 - 24*A*a^2*b^2*d*e^3 + 36*B*a^2*b^2*d^2*e^2 - 32*B*a*b^3*d^3*e - 1
6*B*a^3*b*d*e^3) + (2*A*a^4*e^5)/3 - (2*B*b^4*d^5)/3 + (2*A*b^4*d^4*e)/3 -
(2*B*a^4*d*e^4)/3 - (8*A*a*b^3*d^3*e^2)/3 + (8*B*a^3*b*d^2*e^3)/3 + 4*A*a^2
*b^2*d^2*e^3 - 4*B*a^2*b^2*d^3*e^2 - (8*A*a^3*b*d*e^4)/3 + (8*B*a*b^3*d^4*e
)/3)/(e^6*(d + e*x)^(3/2)) + (2*B*b^4*(d + e*x)^(7/2))/(7*e^6) + (4*b*(a*e
- b*d)^2*(d + e*x)^(1/2)*(3*A*b*e + 2*B*a*e - 5*B*b*d))/e^6 + (4*b^2*(a*e -
 b*d)*(d + e*x)^(3/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d))/(3*e^6)
```

sympy [**A**] time = 139.12, size = 304, normalized size = 1.42

$$\frac{2Bb^4\,(d+ex)^{\frac{7}{2}}}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\,\big(2Ab^4e+8Bab^3e-10Bb^4d\big)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\,\big(8Aab^3e^2-8Ab^4de+12Ba^2b^2e^2-32Bab^3de+}{3e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*B*b**4*(d + e*x)**(7/2)/(7*e**6) + (d + e*x)**(5/2)*(2*A*b**4*e + 8*B*a*b
**3*e - 10*B*b**4*d)/(5*e**6) + (d + e*x)**(3/2)*(8*A*a*b**3*e**2 - 8*A*b**
4*d*e + 12*B*a**2*b**2*e**2 - 32*B*a*b**3*d*e + 20*B*b**4*d**2)/(3*e**6) +
sqrt(d + e*x)*(12*A*a**2*b**2*e**3 - 24*A*a*b**3*d*e**2 + 12*A*b**4*d**2*e
+ 8*B*a**3*b*e**3 - 36*B*a**2*b**2*d*e**2 + 48*B*a*b**3*d**2*e - 20*B*b**4*
d**3)/e**6 - 2*(a*e - b*d)**3*(4*A*b*e + B*a*e - 5*B*b*d)/(e**6*sqrt(d + e*
x)) + 2*(-A*e + B*d)*(a*e - b*d)**4/(3*e**6*(d + e*x)**(3/2))
```

3.1799 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=214

$$-\frac{2b^3(d+ex)^{3/2}(-4aBe-Abe+5bBd)}{3e^6}+\frac{4b^2\sqrt{d+ex}\,(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{4b(bd-ae)^2(-2aBe-}{e^6\sqrt{d+ex}}$$

```
[Out] 2/5*(-a*e+b*d)^4*(-A*e+B*d)/e^6/(e*x+d)^(5/2)-2/3*(-a*e+b*d)^3*(-4*A*b*e-B*
a*e+5*B*b*d)/e^6/(e*x+d)^(3/2)-2/3*b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(3/
2)/e^6+2/5*b^4*B*(e*x+d)^(5/2)/e^6+4*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*b
*d)/e^6/(e*x+d)^(1/2)+4*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e*x+d)^(
1/2)/e^6
```

Rubi [A] time = 0.09, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^3(d+ex)^{3/2}(-4aBe-Abe+5bBd)}{3e^6}+\frac{4b^2\sqrt{d+ex}\,(bd-ae)(-3aBe-2Abe+5bBd)}{e^6}+\frac{4b(bd-ae)^2(-2aBe-}{e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(B*d - A*e))/(5*e^6*(d + e*x)^(5/2)) - (2*(b*d - a*e)^3*(5
*b*B*d - 4*A*b*e - a*B*e))/(3*e^6*(d + e*x)^(3/2)) + (4*b*(b*d - a*e)^2*(5*
b*B*d - 3*A*b*e - 2*a*B*e))/(e^6*Sqrt[d + e*x]) + (4*b^2*(b*d - a*e)*(5*b*B
*d - 2*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/e^6 - (2*b^3*(5*b*B*d - A*b*e - 4*a*
B*e)*(d + e*x)^(3/2))/(3*e^6) + (2*b^4*B*(d + e*x)^(5/2))/(5*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^4(A+Bx)}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)}{e^5(d+ex)^{7/2}}+\frac{(-bd+ae)^3(-5bBd+4Abe+aBe)}{e^5(d+ex)^{5/2}}+2b\right.\\ &= \frac{2(bd-ae)^4(Bd-Ae)}{5e^6(d+ex)^{5/2}}-\frac{2(bd-ae)^3(5bBd-4Abe-aBe)}{3e^6(d+ex)^{3/2}}+\frac{4b(bd-ae)}{}\end{aligned}$$

Mathematica [A] time = 0.11, size = 183, normalized size = 0.86

$$2\Big(-5b^3(d+ex)^4(-4aBe-Abe+5bBd)+30b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)+30b(d+ex)^2(bd-ae)$$

$$15e^6(d+$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^4*(B*d - A*e) - 5*(b*d - a*e)^3*(5*b*B*d - 4*A*b*e - a*B*
e)*(d + e*x) + 30*b*(b*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^2
 + 30*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^3 - 5*b^3*(5*
b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^4 + 3*b^4*B*(d + e*x)^5))/(15*e^6*(d + e
*x)^(5/2))
```

fricas [B] time = 0.93, size = 441, normalized size = 2.06

$$2\Big(3\,Bb^4e^5x^5+256\,Bb^4d^5-3\,Aa^4e^5-128\left(4\,Bab^3+Ab^4\right)d^4e+96\left(3\,Ba^2b^2+2\,Aab^3\right)d^3e^2-16\Big(2\,Ba^3b+3\,Aa^2b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/15*(3*B*b^4*e^5*x^5 + 256*B*b^4*d^5 - 3*A*a^4*e^5 - 128*(4*B*a*b^3 + A*b^
4)*d^4*e + 96*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 16*(2*B*a^3*b + 3*A*a^2*b
^2)*d^2*e^3 - 2*(B*a^4 + 4*A*a^3*b)*d*e^4 - 5*(2*B*b^4*d*e^4 - (4*B*a*b^3 +
 A*b^4)*e^5)*x^4 + 10*(8*B*b^4*d^2*e^3 - 4*(4*B*a*b^3 + A*b^4)*d*e^4 + 3*(3
*B*a^2*b^2 + 2*A*a*b^3)*e^5)*x^3 + 30*(16*B*b^4*d^3*e^2 - 8*(4*B*a*b^3 + A*
b^4)*d^2*e^3 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^4 - (2*B*a^3*b + 3*A*a^2*b^2
)*e^5)*x^2 + 5*(128*B*b^4*d^4*e - 64*(4*B*a*b^3 + A*b^4)*d^3*e^2 + 48*(3*B*
a^2*b^2 + 2*A*a*b^3)*d^2*e^3 - 8*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^4 - (B*a^4 +
 4*A*a^3*b)*e^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^
3*e^6)
```

giac [B] time = 0.25, size = 567, normalized size = 2.65

$$\frac{2}{15}\Big(3\,(xe+d)^{\frac{5}{2}}Bb^4e^{24}-25\,(xe+d)^{\frac{3}{2}}Bb^4de^{24}+150\,\sqrt{xe+d}\,Bb^4d^2e^{24}+20\,(xe+d)^{\frac{3}{2}}Bab^3e^{25}+5\,(xe+d)^{\frac{3}{2}}Ab^4e^{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^4*e^24 - 25*(x*e + d)^(3/2)*B*b^4*d*e^24 + 150*
sqrt(x*e + d)*B*b^4*d^2*e^24 + 20*(x*e + d)^(3/2)*B*a*b^3*e^25 + 5*(x*e + d
)^(3/2)*A*b^4*e^25 - 240*sqrt(x*e + d)*B*a*b^3*d*e^25 - 60*sqrt(x*e + d)*A*
b^4*d*e^25 + 90*sqrt(x*e + d)*B*a^2*b^2*e^26 + 60*sqrt(x*e + d)*A*a*b^3*e^2
6)*e^(-30) + 2/15*(150*(x*e + d)^2*B*b^4*d^3 - 25*(x*e + d)*B*b^4*d^4 + 3*B
*b^4*d^5 - 360*(x*e + d)^2*B*a*b^3*d^2*e - 90*(x*e + d)^2*A*b^4*d^2*e + 80*
(x*e + d)*B*a*b^3*d^3*e + 20*(x*e + d)*A*b^4*d^3*e - 12*B*a*b^3*d^4*e - 3*A
*b^4*d^4*e + 270*(x*e + d)^2*B*a^2*b^2*d*e^2 + 180*(x*e + d)^2*A*a*b^3*d*e^
2 - 90*(x*e + d)*B*a^2*b^2*d^2*e^2 - 60*(x*e + d)*A*a*b^3*d^2*e^2 + 18*B*a^
2*b^2*d^3*e^2 + 12*A*a*b^3*d^3*e^2 - 60*(x*e + d)^2*B*a^3*b*e^3 - 90*(x*e +
 d)^2*A*a^2*b^2*e^3 + 40*(x*e + d)*B*a^3*b*d*e^3 + 60*(x*e + d)*A*a^2*b^2*d
*e^3 - 12*B*a^3*b*d^2*e^3 - 18*A*a^2*b^2*d^2*e^3 - 5*(x*e + d)*B*a^4*e^4 -
20*(x*e + d)*A*a^3*b*e^4 + 3*B*a^4*d*e^4 + 12*A*a^3*b*d*e^4 - 3*A*a^4*e^5)*
e^(-6)/(x*e + d)^(5/2)
```

maple [**B**] time = 0.05, size = 469, normalized size = 2.19

$$-\frac{2\left(-3b^4B\,x^5e^5-5A\,b^4e^5x^4-20Ba\,b^3e^5x^4+10B\,b^4d\,e^4x^4-60Aa\,b^3e^5x^3+40A\,b^4d\,e^4x^3-90B\,a^2b^2e^5x^3+16}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*B*b^4*e^5*x^5-5*A*b^4*e^5*x^4-20*B*a*b^3*e^5*x^4+10*B*b^4*d*e^4*x
^4-60*A*a*b^3*e^5*x^3+40*A*b^4*d*e^4*x^3-90*B*a^2*b^2*e^5*x^3+160*B*a*b^3*d
*e^4*x^3-80*B*b^4*d^2*e^3*x^3+90*A*a^2*b^2*e^5*x^2-360*A*a*b^3*d*e^4*x^2+24
0*A*b^4*d^2*e^3*x^2+60*B*a^3*b*e^5*x^2-540*B*a^2*b^2*d*e^4*x^2+960*B*a*b^3*
d^2*e^3*x^2-480*B*b^4*d^3*e^2*x^2+20*A*a^3*b*e^5*x+120*A*a^2*b^2*d*e^4*x-48
0*A*a*b^3*d^2*e^3*x+320*A*b^4*d^3*e^2*x+5*B*a^4*e^5*x+80*B*a^3*b*d*e^4*x-72
0*B*a^2*b^2*d^2*e^3*x+1280*B*a*b^3*d^3*e^2*x-640*B*b^4*d^4*e*x+3*A*a^4*e^5+
8*A*a^3*b*d*e^4+48*A*a^2*b^2*d^2*e^3-192*A*a*b^3*d^3*e^2+128*A*b^4*d^4*e+2*
B*a^4*d*e^4+32*B*a^3*b*d^2*e^3-288*B*a^2*b^2*d^3*e^2+512*B*a*b^3*d^4*e-256*
B*b^4*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [**B**] time = 0.65, size = 416, normalized size = 1.94

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}Bb^4-5\left(5\,Bb^4d-\left(4\,Bab^3+Ab^4\right)e\right)(ex+d)^{\frac{3}{2}}+30\left(5\,Bb^4d^2-2\left(4\,Bab^3+Ab^4\right)de+\left(3\,Ba^2b^2+2\,Aab^3\right)e^2\right)\sqrt{ex+d}}{e^5}+\frac{3\,Bb^4d^5-3\,Aa^4e^5-3\left(4\,Ba}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*B*b^4 - 5*(5*B*b^4*d - (4*B*a*b^3 + A*b^4)*e)*(e*x
 + d)^(3/2) + 30*(5*B*b^4*d^2 - 2*(4*B*a*b^3 + A*b^4)*d*e + (3*B*a^2*b^2 +
2*A*a*b^3)*e^2)*sqrt(e*x + d))/e^5 + (3*B*b^4*d^5 - 3*A*a^4*e^5 - 3*(4*B*a*
b^3 + A*b^4)*d^4*e + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^2 - 6*(2*B*a^3*b + 3
*A*a^2*b^2)*d^2*e^3 + 3*(B*a^4 + 4*A*a^3*b)*d*e^4 + 30*(5*B*b^4*d^3 - 3*(4*
B*a*b^3 + A*b^4)*d^2*e + 3*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^2 - (2*B*a^3*b + 3
*A*a^2*b^2)*e^3)*(e*x + d)^2 - 5*(5*B*b^4*d^4 - 4*(4*B*a*b^3 + A*b^4)*d^3*e
 + 6*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^2 - 4*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^3
+ (B*a^4 + 4*A*a^3*b)*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [**B**] time = 2.00, size = 413, normalized size = 1.93

$$\frac{(d+e\,x)^{3/2}\,\left(2\,A\,b^4\,e-10\,B\,b^4\,d+8\,B\,a\,b^3\,e\right)}{3\,e^6}-\frac{(d+e\,x)\,\left(\frac{2\,B\,a^4\,e^4}{3}-\frac{16\,B\,a^3\,b\,d\,e^3}{3}+\frac{8\,A\,a^3\,b\,e^4}{3}+12\,B\,a^2\,b^2\,d^2\,e^2-8\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(3/2)*(2*A*b^4*e - 10*B*b^4*d + 8*B*a*b^3*e))/(3*e^6) - ((d + e*
x)*((2*B*a^4*e^4)/3 + (10*B*b^4*d^4)/3 + (8*A*a^3*b*e^4)/3 - (8*A*b^4*d^3*e
)/3 + 8*A*a*b^3*d^2*e^2 - 8*A*a^2*b^2*d*e^3 + 12*B*a^2*b^2*d^2*e^2 - (32*B*
a*b^3*d^3*e)/3 - (16*B*a^3*b*d*e^3)/3) + (d + e*x)^2*(8*B*a^3*b*e^3 - 20*B*
b^4*d^3 + 12*A*b^4*d^2*e + 12*A*a^2*b^2*e^3 - 36*B*a^2*b^2*d*e^2 - 24*A*a*b
^3*d*e^2 + 48*B*a*b^3*d^2*e) + (2*A*a^4*e^5)/5 - (2*B*b^4*d^5)/5 + (2*A*b^4
*d^4*e)/5 - (2*B*a^4*d*e^4)/5 - (8*A*a*b^3*d^3*e^2)/5 + (8*B*a^3*b*d^2*e^3)
/5 + (12*A*a^2*b^2*d^2*e^3)/5 - (12*B*a^2*b^2*d^3*e^2)/5 - (8*A*a^3*b*d*e^4
)/5 + (8*B*a*b^3*d^4*e)/5)/(e^6*(d + e*x)^(5/2)) + (2*B*b^4*(d + e*x)^(5/2)
)/(5*e^6) + (4*b^2*(a*e - b*d)*(d + e*x)^(1/2)*(2*A*b*e + 3*B*a*e - 5*B*b*d
))/e^6
```

sympy [A]   time = 5.28, size = 2440, normalized size = 11.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*A*a**4*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
+ e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 16*A*a**3*b*d*e**4/(15*d**2*e**6*sqr
t(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 40*A
*a**3*b*e**5*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15
*e**8*x**2*sqrt(d + e*x)) - 96*A*a**2*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d +
 e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 240*A*a**
2*b**2*d*e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 1
5*e**8*x**2*sqrt(d + e*x)) - 180*A*a**2*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 384*A*a
*b**3*d**3*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 1
5*e**8*x**2*sqrt(d + e*x)) + 960*A*a*b**3*d**2*e**3*x/(15*d**2*e**6*sqrt(d
+ e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 720*A*a*
b**3*d*e**4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 120*A*a*b**3*e**5*x**3/(15*d**2*e**6*sqrt(d +
 e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 256*A*b**
4*d**4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 640*A*b**4*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) +
30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 480*A*b**4*d**2*e
**3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 80*A*b**4*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 3
0*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 10*A*b**4*e**5*x**
4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sq
rt(d + e*x)) - 4*B*a**4*d*e**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sq
rt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 10*B*a**4*e**5*x/(15*d**2*e**6*
sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 6
4*B*a**3*b*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x
) + 15*e**8*x**2*sqrt(d + e*x)) - 160*B*a**3*b*d*e**4*x/(15*d**2*e**6*sqrt(
d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 120*B*
a**3*b*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 576*B*a**2*b**2*d**3*e**2/(15*d**2*e**6*sqrt(
d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1440*B
*a**2*b**2*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e
*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1080*B*a**2*b**2*d*e**4*x**2/(15*d**2*e
**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x))
 + 180*B*a**2*b**2*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt
(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1024*B*a*b**3*d**4*e/(15*d**2*e**
6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) -
 2560*B*a*b**3*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d
 + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1920*B*a*b**3*d**2*e**3*x**2/(15*d*
*2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e
*x)) - 320*B*a*b**3*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*s
qrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 40*B*a*b**3*e**5*x**4/(15*d**2
*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x
)) + 512*B*b**4*d**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x
) + 15*e**8*x**2*sqrt(d + e*x)) + 1280*B*b**4*d**4*e*x/(15*d**2*e**6*sqrt(d
 + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*B*b
**4*d**3*e**2*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x)
+ 15*e**8*x**2*sqrt(d + e*x)) + 160*B*b**4*d**2*e**3*x**3/(15*d**2*e**6*sqr
t(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*B
*b**4*d*e**4*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
 15*e**8*x**2*sqrt(d + e*x)) + 6*B*b**4*e**5*x**5/(15*d**2*e**6*sqrt(d + e*
x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((
A*a**4*x + 2*A*a**3*b*x**2 + 2*A*a**2*b**2*x**3 + A*a*b**3*x**4 + A*b**4*x*
*5/5 + B*a**4*x**2/2 + 4*B*a**3*b*x**3/3 + 3*B*a**2*b**2*x**4/2 + 4*B*a*b**
3*x**5/5 + B*b**4*x**6/6)/d**(7/2), True))
```

3.1800 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{21/2}(-6aBe-Abe+7bBd)}{21e^8}+\frac{6b^4(d+ex)^{19/2}(bd-ae)(-5aBe-2Abe+7bBd)}{19e^8}-\frac{10b^3(d+ex)^{17/2}(bd-}{}$$

```
[Out] -2/9*(-a*e+b*d)^6*(-A*e+B*d)*(e*x+d)^(9/2)/e^8+2/11*(-a*e+b*d)^5*(-6*A*b*e-
B*a*e+7*B*b*d)*(e*x+d)^(11/2)/e^8-6/13*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B
*b*d)*(e*x+d)^(13/2)/e^8+2/3*b^2*(-a*e+b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e
*x+d)^(15/2)/e^8-10/17*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+7*B*b*d)*(e*x+d)^
(17/2)/e^8+6/19*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e*x+d)^(19/2)/e^
8-2/21*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(21/2)/e^8+2/23*b^6*B*(e*x+d)^(
23/2)/e^8
```

Rubi **[A]** time = 0.21, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{21/2}(-6aBe-Abe+7bBd)}{21e^8}+\frac{6b^4(d+ex)^{19/2}(bd-ae)(-5aBe-2Abe+7bBd)}{19e^8}-\frac{10b^3(d+ex)^{17/2}(bd-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(9/2))/(9*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (6*b*(b*d - a*e)^4*
(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^2*(b*d - a*
e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(15/2))/(3*e^8) - (10*b^3*(b*d
 - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(17/2))/(17*e^8) + (6*b^4
*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(19/2))/(19*e^8) - (2*
b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(21/2))/(21*e^8) + (2*b^6*B*(d +
e*x)^(23/2))/(23*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{7/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6}{e^7}\right.\\ &= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{9/2}}{9e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{11e^8}\end{aligned}$$

Mathematica [A] time = 0.35, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{9/2}\left(-3187041b^5(d+ex)^6(-6aBe-Abe+7bBd)+10567557b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-7436429*(b*d - a*e)^6*(B*d - A*e) + 6084351*(b*d - a*e
)^5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 15444891*b*(b*d - a*e)^4*(7*b*B
*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 22309287*b^2*(b*d - a*e)^3*(7*b*B*d -
 4*A*b*e - 3*a*B*e)*(d + e*x)^3 - 19684665*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A
*b*e - 4*a*B*e)*(d + e*x)^4 + 10567557*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e -
 5*a*B*e)*(d + e*x)^5 - 3187041*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6
 + 2909907*b^6*B*(d + e*x)^7))/(66927861*e^8)
```

fricas [B] time = 0.76, size = 1470, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/66927861*(2909907*B*b^6*e^11*x^11 - 14336*B*b^6*d^11 + 7436429*A*a^6*d^4*
e^7 + 23552*(6*B*a*b^5 + A*b^6)*d^10*e - 123648*(5*B*a^2*b^4 + 2*A*a*b^5)*d
^9*e^2 + 391552*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^8*e^3 - 832048*(3*B*a^4*b^2 +
 4*A*a^3*b^3)*d^7*e^4 + 1248072*(2*B*a^5*b + 5*A*a^4*b^2)*d^6*e^5 - 1352078
*(B*a^6 + 6*A*a^5*b)*d^5*e^6 + 138567*(70*B*b^6*d*e^10 + 23*(6*B*a*b^5 + A*
b^6)*e^11)*x^10 + 7293*(1498*B*b^6*d^2*e^9 + 1472*(6*B*a*b^5 + A*b^6)*d*e^1
0 + 1449*(5*B*a^2*b^4 + 2*A*a*b^5)*e^11)*x^9 + 1287*(3248*B*b^6*d^3*e^8 + 9
522*(6*B*a*b^5 + A*b^6)*d^2*e^9 + 28014*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^10 +
15295*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^11)*x^8 + 429*(7*B*b^6*d^4*e^7 + 11132*
(6*B*a*b^5 + A*b^6)*d^3*e^8 + 97566*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^9 + 159
068*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^10 + 52003*(3*B*a^4*b^2 + 4*A*a^3*b^3)*
e^11)*x^7 - 231*(14*B*b^6*d^5*e^6 - 23*(6*B*a*b^5 + A*b^6)*d^4*e^7 - 72312*
(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^8 - 350474*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*
e^9 - 341734*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^10 - 66861*(2*B*a^5*b + 5*A*a^
4*b^2)*e^11)*x^6 + 63*(56*B*b^6*d^6*e^5 - 92*(6*B*a*b^5 + A*b^6)*d^5*e^6 +
483*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^7 + 529644*(4*B*a^3*b^3 + 3*A*a^2*b^4)*
d^3*e^8 + 1530374*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^9 + 891480*(2*B*a^5*b +
 5*A*a^4*b^2)*d*e^10 + 96577*(B*a^6 + 6*A*a^5*b)*e^11)*x^5 - 7*(560*B*b^6*d
^7*e^4 - 1062347*A*a^6*e^11 - 920*(6*B*a*b^5 + A*b^6)*d^6*e^5 + 4830*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^5*e^6 - 15295*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^7 - 5
943200*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^8 - 10207446*(2*B*a^5*b + 5*A*a^4*
b^2)*d^2*e^9 - 3283618*(B*a^6 + 6*A*a^5*b)*d*e^10)*x^4 + (4480*B*b^6*d^8*e^
3 + 29745716*A*a^6*d*e^10 - 7360*(6*B*a*b^5 + A*b^6)*d^7*e^4 + 38640*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^6*e^5 - 122360*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^5*e^6 +
260015*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^7 + 33073908*(2*B*a^5*b + 5*A*a^4*
b^2)*d^3*e^8 + 31097794*(B*a^6 + 6*A*a^5*b)*d^2*e^9)*x^3 - 3*(1792*B*b^6*d^
9*e^2 - 14872858*A*a^6*d^2*e^9 - 2944*(6*B*a*b^5 + A*b^6)*d^8*e^3 + 15456*(
5*B*a^2*b^4 + 2*A*a*b^5)*d^7*e^4 - 48944*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^
5 + 104006*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^5*e^6 - 156009*(2*B*a^5*b + 5*A*a^
4*b^2)*d^4*e^7 - 5408312*(B*a^6 + 6*A*a^5*b)*d^3*e^8)*x^2 + (7168*B*b^6*d^1
0*e + 29745716*A*a^6*d^3*e^8 - 11776*(6*B*a*b^5 + A*b^6)*d^9*e^2 + 61824*(5
*B*a^2*b^4 + 2*A*a*b^5)*d^8*e^3 - 195776*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^7*e^
4 + 416024*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^6*e^5 - 624036*(2*B*a^5*b + 5*A*a^
4*b^2)*d^5*e^6 + 676039*(B*a^6 + 6*A*a^5*b)*d^4*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.74, size = 6433, normalized size = 20.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)

[Out] 2/334639305*(111546435*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^4*e^(-
1) + 669278610*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^4*e^(-1) + 1
33855722*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
B*a^5*b*d^4*e^(-2) + 334639305*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*A*a^4*b^2*d^4*e^(-2) + 143416845*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^
4*b^2*d^4*e^(-3) + 191222460*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^4*e^(-3) + 2124694
0*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^4*e^(-4) + 1593
5205*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^4*e^(-4) + 7
243275*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*B*a^2*b^4*d^4*e^(-5) + 2897310*(63*(x*e + d)^(11/2) - 385*(x*e + d)^
(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*d^4*e^(-5) + 668610*(231*(x*e
 + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x
*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3
003*sqrt(x*e + d)*d^6)*B*a*b^5*d^4*e^(-6) + 111435*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*A*b^6*d^4*e^(-6) + 52003*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13
/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e
 + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6
435*sqrt(x*e + d)*d^7)*B*b^6*d^4*e^(-7) + 89237148*(3*(x*e + d)^(5/2) - 10*
(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^6*d^3*e^(-1) + 535422888*(3*(
x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d^3*e
^(-1) + 229466952*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*b*d^3*e^(-2) + 573667380*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^4*b^2*d^3*e^(-2) + 63740820*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*B*a^4*b^2*d^3*e^(-3) + 84987760*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*A*a^3*b^3*d^3*e^(-3) + 38630800*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^3*d^3*e^(-4) + 28973100
*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1
386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)
*A*a^2*b^4*d^3*e^(-4) + 6686100*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/
2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)
^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^4*d
^3*e^(-5) + 2674440*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*
(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^5*d^3*e^(-5) + 12
48072*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11
/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*
e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*
b^5*d^3*e^(-6) + 208012*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1
2285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/
2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(
x*e + d)*d^7)*A*b^6*d^3*e^(-6) + 12236*(6435*(x*e + d)^(17/2) - 58344*(x*e
+ d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 +
 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)
^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^6*d
^3*e^(-7) + 334639305*sqrt(x*e + d)*A*a^6*d^4 + 446185740*((x*e + d)^(3/2)
- 3*sqrt(x*e + d)*d)*A*a^6*d^3 + 57366738*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^6*d^2*e^(-1)
+ 344200428*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*b*d^2*e^(-1) + 38244492*(35*(x*e + d)^(9/
2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*
d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*b*d^2*e^(-2) + 95611230*(35*(x*e + d)^(9
/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)
*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b^2*d^2*e^(-2) + 43459650*(63*(x*e + d)
^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^
(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b^2*d^2
*e^(-3) + 57946200*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*A*a^3*b^3*d^2*e^(-3) + 13372200*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*B*a^3*b^3*d^2*e^(-4) + 10029150*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a
^2*b^4*d^2*e^(-4) + 4680270*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
 + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)
^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*s
qrt(x*e + d)*d^7)*B*a^2*b^4*d^2*e^(-5) + 1872108*(429*(x*e + d)^(15/2) - 34
65*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*
d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e +
d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*d^2*e^(-5) + 110124*(6435*(x
*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5
56920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^
(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10939
5*sqrt(x*e + d)*d^8)*B*a*b^5*d^2*e^(-6) + 18354*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*A*b^6*d^2*e^(-6) + 8694*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)
*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(
x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)
*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sq
rt(x*e + d)*d^9)*B*b^6*d^2*e^(-7) + 133855722*(3*(x*e + d)^(5/2) - 10*(x*e
+ d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^6*d^2 + 4249388*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*B*a^6*d*e^(-1) + 25496328*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*A*a^5*b*d*e^(-1) + 11589240*(63*(x*e + d)^(11/2) -
 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^5*b*d*e^(-2) + 289
73100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*A*a^4*b^2*d*e^(-2) + 6686100*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^4*b^
2*d*e^(-3) + 8914800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005
*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
- 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^3*b^3*d*e^(-3) + 4
160240*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(1
1/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x
*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a
^3*b^3*d*e^(-4) + 3120180*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*A*a^2*b^4*d*e^(-4) + 183540*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
 + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*
a^2*b^4*d*e^(-5) + 73416*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
+ 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e +
 d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 2
91720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*a*b^5*d*e^(-5) + 34
776*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^
(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 -
3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e +
d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a*b
^5*d*e^(-6) + 5796*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 55
4268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d
)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 -
1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e
+ d)*d^9)*A*b^6*d*e^(-6) + 1380*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^
(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15
668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e
 + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^
8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b^6*d*e^(-7)
 + 38244492*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*A*a^6*d + 482885*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^6*e^(-1) + 2897310*(63*(x*
e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
 + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^5*b
*e^(-1) + 668610*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*
e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 60
06*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^5*b*e^(-2) + 1671525*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^4*b^2*e^(-2) + 780045*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^4*b^2*e^(-3) + 1040060*(
429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2
 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^
(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^3*b^3*e
^(-3) + 61180*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x
*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d
^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e
+ d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a^3*b^3*e^(-4) + 45885*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*A*a^2*b^4*e^(-4) + 21735*(12155*(x*e + d)^(19/2) - 12
2265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(
13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 27
71340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^
(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a^2*b^4*e^(-5) + 8694*(12155*(x*e +
 d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492
260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)
^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 69
```

```
2835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*A*a*b^5*e^(-5) + 2070*
(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17
/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22
221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e
+ d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9
+ 969969*sqrt(x*e + d)*d^10)*B*a*b^5*e^(-6) + 345*(46189*(x*e + d)^(21/2) -
 510510*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e +
d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d
^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*
(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^
10)*A*b^6*e^(-6) + 165*(88179*(x*e + d)^(23/2) - 1062347*(x*e + d)^(21/2)*d
 + 5870865*(x*e + d)^(19/2)*d^2 - 19684665*(x*e + d)^(17/2)*d^3 + 44618574*
(x*e + d)^(15/2)*d^4 - 72076158*(x*e + d)^(13/2)*d^5 + 85180914*(x*e + d)^(
11/2)*d^6 - 74364290*(x*e + d)^(9/2)*d^7 + 47805615*(x*e + d)^(7/2)*d^8 - 2
2309287*(x*e + d)^(5/2)*d^9 + 7436429*(x*e + d)^(3/2)*d^10 - 2028117*sqrt(x
*e + d)*d^11)*B*b^6*e^(-7) + 1062347*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*a^6)*e^(-1)
```

maple [B] time = 0.05, size = 913, normalized size = 2.96

$$2\,(ex+d)^{\frac{9}{2}}\,(2909907 B\,b^{6} x^{7} e^{7}+3187041 A\,b^{6} e^{7} x^{6}+19122246 B a\,b^{5} e^{7} x^{6}-1939938 B\,b^{6} d\,e^{6} x^{6}+21135114 A a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/66927861*(e*x+d)^(9/2)*(2909907*B*b^6*e^7*x^7+3187041*A*b^6*e^7*x^6+19122
246*B*a*b^5*e^7*x^6-1939938*B*b^6*d*e^6*x^6+21135114*A*a*b^5*e^7*x^5-201286
8*A*b^6*d*e^6*x^5+52837785*B*a^2*b^4*e^7*x^5-12077208*B*a*b^5*d*e^6*x^5+122
5224*B*b^6*d^2*e^5*x^5+59053995*A*a^2*b^4*e^7*x^4-12432420*A*a*b^5*d*e^6*x^
4+1184040*A*b^6*d^2*e^5*x^4+78738660*B*a^3*b^3*e^7*x^4-31081050*B*a^2*b^4*d
*e^6*x^4+7104240*B*a*b^5*d^2*e^5*x^4-720720*B*b^6*d^3*e^4*x^4+89237148*A*a^
3*b^3*e^7*x^3-31495464*A*a^2*b^4*d*e^6*x^3+6630624*A*a*b^5*d^2*e^5*x^3-6314
88*A*b^6*d^3*e^4*x^3+66927861*B*a^4*b^2*e^7*x^3-41993952*B*a^3*b^3*d*e^6*x^
3+16576560*B*a^2*b^4*d^2*e^5*x^3-3788928*B*a*b^5*d^3*e^4*x^3+384384*B*b^6*d
^4*e^3*x^3+77224455*A*a^4*b^2*e^7*x^2-41186376*A*a^3*b^3*d*e^6*x^2+14536368
*A*a^2*b^4*d^2*e^5*x^2-3060288*A*a*b^5*d^3*e^4*x^2+291456*A*b^6*d^4*e^3*x^2
+30889782*B*a^5*b*e^7*x^2-30889782*B*a^4*b^2*d*e^6*x^2+19381824*B*a^3*b^3*d
^2*e^5*x^2-7650720*B*a^2*b^4*d^3*e^4*x^2+1748736*B*a*b^5*d^4*e^3*x^2-177408
*B*b^6*d^5*e^2*x^2+36506106*A*a^5*b*e^7*x-28081620*A*a^4*b^2*d*e^6*x+149768
64*A*a^3*b^3*d^2*e^5*x-5285952*A*a^2*b^4*d^3*e^4*x+1112832*A*a*b^5*d^4*e^3*
x-105984*A*b^6*d^5*e^2*x+6084351*B*a^6*e^7*x-11232648*B*a^5*b*d*e^6*x+11232
648*B*a^4*b^2*d^2*e^5*x-7047936*B*a^3*b^3*d^3*e^4*x+2782080*B*a^2*b^4*d^4*e
^3*x-635904*B*a*b^5*d^5*e^2*x+64512*B*b^6*d^6*e*x+7436429*A*a^6*e^7-8112468
*A*a^5*b*d*e^6+6240360*A*a^4*b^2*d^2*e^5-3328192*A*a^3*b^3*d^3*e^4+1174656*
A*a^2*b^4*d^4*e^3-247296*A*a*b^5*d^5*e^2+23552*A*b^6*d^6*e-1352078*B*a^6*d*
e^6+2496144*B*a^5*b*d^2*e^5-2496144*B*a^4*b^2*d^3*e^4+1566208*B*a^3*b^3*d^4
*e^3-618240*B*a^2*b^4*d^5*e^2+141312*B*a*b^5*d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B] time = 0.64, size = 767, normalized size = 2.49

$$2\,\Big(2909907\,(ex+d)^{\frac{23}{2}}\,Bb^{6}-3187041\,\big(7\,Bb^{6}d-\big(6\,Bab^{5}+Ab^{6}\big)e\big)(ex+d)^{\frac{21}{2}}+10567557\,\big(7\,Bb^{6}d^{2}-2\,\big(6\,Bab^{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/66927861*(2909907*(e*x + d)^(23/2)*B*b^6 - 3187041*(7*B*b^6*d - (6*B*a*b^
5 + A*b^6)*e)*(e*x + d)^(21/2) + 10567557*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b
^6)*d*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(19/2) - 19684665*(7*B*b
^6*d^3 - 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 -
(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(17/2) + 22309287*(7*B*b^6*d^4 -
 4*(6*B*a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B
*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^
(15/2) - 15444891*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*
b^4 + 2*A*a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*
a^4*b^2 + 4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(13
/2) + 6084351*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4
+ 2*A*a*b^5)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4
*b^2 + 4*A*a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 +
6*A*a^5*b)*e^6)*(e*x + d)^(11/2) - 7436429*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*
b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*
b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(9/2))/e^8
```

mupad **[B]** time = 2.02, size = 279, normalized size = 0.91

$$\frac{(d+e\,x)^{21/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{21\,e^8}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{11/2}\,(6\,A\,b\,e+B\,a\,e-7\,B\,b\,d)}{11\,e^8}+\frac{2\,B\,b^6\,(d+e}{23\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(21/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(21*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(11/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(11*e^8) + (2*B*b
^6*(d + e*x)^(23/2))/(23*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(9/2
))/(9*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(13/2)*(5*A*b*e + 2*B*a*e - 7*B*b
*d))/(13*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(19/2)*(2*A*b*e + 5*B*a*e - 7*
B*b*d))/(19*e^8) + (2*b^2*(a*e - b*d)^3*(d + e*x)^(15/2)*(4*A*b*e + 3*B*a*e
 - 7*B*b*d))/(3*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(17/2)*(3*A*b*e + 4*
B*a*e - 7*B*b*d))/(17*e^8)
```

sympy **[A]** time = 163.18, size = 5414, normalized size = 17.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d**3*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 6*A*a**6*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*A*a*
*6*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7
)/e + 2*A*a**6*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*
(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e + 12*A*a**5*b*d**3*(-d*(d + e*x)
**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 36*A*a**5*b*d**2*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 36*A*a**5*b*d*(
-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)
/7 + (d + e*x)**(9/2)/9)/e**2 + 12*A*a**5*b*(d**4*(d + e*x)**(3/2)/3 - 4*d*
*3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9
+ (d + e*x)**(11/2)/11)/e**2 + 30*A*a**4*b**2*d**3*(d**2*(d + e*x)**(3/2)/3
 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 90*A*a**4*b**2*d**2*
(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2
)/7 + (d + e*x)**(9/2)/9)/e**3 + 90*A*a**4*b**2*d*(d**4*(d + e*x)**(3/2)/3
- 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9
/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 30*A*a**4*b**2*(-d**5*(d + e*x)**(3/2)
/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)
```

```
**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 40*A*a*
*3*b**3*d**3*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 120*A*a**3*b**3*d**2*(d**4*(d
 + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 -
4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 120*A*a**3*b**3*d*(-d
**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2
)/13)/e**4 + 40*A*a**3*b**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5
/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(
d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4
 + 30*A*a**2*b**4*d**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5
 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/1
1)/e**5 + 90*A*a**2*b**4*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(
5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e
*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 90*A*a**2*b**4*d*(d**6*(d + e
*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*
d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13
/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 30*A*a**2*b**4*(-d**7*(d + e*x)**(3/2
)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*
x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 -
 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**5 + 12*A*a*b**5*d**3*(
-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)
/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13
/2)/13)/e**6 + 36*A*a*b**5*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)
**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d*
*2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/
e**6 + 36*A*a*b**5*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5
- 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)*
*(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d +
 e*x)**(17/2)/17)/e**6 + 12*A*a*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d +
 e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*
d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x
)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 2*A*
b**6*d**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 6*A*b**6*d**2*(
-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7
/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(
d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7
 + 6*A*b**6*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6
*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/
11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d +
 e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*A*b**6*(-d**9*(d + e*x)**
(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*
(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(1
3/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*
(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**7 + 2*B*a**6*d**3*(-d*(d +
e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*B*a**6*d**2*(d**2*(d + e*x)**(
3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*B*a**6*d*(-d
**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
 + (d + e*x)**(9/2)/9)/e**2 + 2*B*a**6*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
 + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d
+ e*x)**(11/2)/11)/e**2 + 12*B*a**5*b*d**3*(d**2*(d + e*x)**(3/2)/3 - 2*d*(
d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 36*B*a**5*b*d**2*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**3 + 36*B*a**5*b*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**3 + 12*B*a**5*b*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*
x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(
d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 30*B*a**4*b**2*d**3*(-d*
*3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7
+ (d + e*x)**(9/2)/9)/e**4 + 90*B*a**4*b**2*d**2*(d**4*(d + e*x)**(3/2)/3 -
 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/
2)/9 + (d + e*x)**(11/2)/11)/e**4 + 90*B*a**4*b**2*d*(-d**5*(d + e*x)**(3/2
)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x
)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 30*B*a
**4*b**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
+ e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4 + 40*B*a**3*b**3*d
**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)
**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 120*B*a**
3*b**3*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
+ e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (
d + e*x)**(13/2)/13)/e**5 + 120*B*a**3*b**3*d*(d**6*(d + e*x)**(3/2)/3 - 6*
d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(
9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x
)**(15/2)/15)/e**5 + 40*B*a**3*b**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d +
 e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*
d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(
15/2)/15 + (d + e*x)**(17/2)/17)/e**5 + 30*B*a**2*b**4*d**3*(-d**5*(d + e*x
)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(
d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 +
 90*B*a**2*b**4*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 +
 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x
)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 90*B
*a**2*b**4*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5
*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/
11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(
17/2)/17)/e**6 + 30*B*a**2*b**4*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)
**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*
(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(1
5/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 12*B*a*b*
*5*d**3*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d +
 e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11
- 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 36*B*a*b**5*d**2*
(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(
7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*
(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**
7 + 36*B*a*b**5*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*
d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11
/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*
(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 12*B*a*b**5*(-d**9*(d +
 e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 2
8*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e
*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17
 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**7 + 2*B*b**6*d**3*(-
d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/
2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d
 + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8
+ 6*B*b**6*d**2*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d*
*6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2
)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d
 + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 6*B*b**6*d*(-d**9*(d + e*
x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d
**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)
**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 -
9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8 + 2*B*b**6*(d**10*(d
+ e*x)**(3/2)/3 - 2*d**9*(d + e*x)**(5/2) + 45*d**8*(d + e*x)**(7/2)/7 - 40
```

```
*d**7*(d + e*x)**(9/2)/3 + 210*d**6*(d + e*x)**(11/2)/11 - 252*d**5*(d + e*
x)**(13/2)/13 + 14*d**4*(d + e*x)**(15/2) - 120*d**3*(d + e*x)**(17/2)/17 +
 45*d**2*(d + e*x)**(19/2)/19 - 10*d*(d + e*x)**(21/2)/21 + (d + e*x)**(23/
2)/23)/e**8
```

3.1801 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{19/2}(-6aBe-Abe+7bBd)}{19e^8}+\frac{6b^4(d+ex)^{17/2}(bd-ae)(-5aBe-2Abe+7bBd)}{17e^8}-\frac{2b^3(d+ex)^{15/2}(bd-ae}{}$$

```
[Out] -2/7*(-a*e+b*d)^6*(-A*e+B*d)*(e*x+d)^(7/2)/e^8+2/9*(-a*e+b*d)^5*(-6*A*b*e-B
*a*e+7*B*b*d)*(e*x+d)^(9/2)/e^8-6/11*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b
*d)*(e*x+d)^(11/2)/e^8+10/13*b^2*(-a*e+b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e
*x+d)^(13/2)/e^8-2/3*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+7*B*b*d)*(e*x+d)^(1
5/2)/e^8+6/17*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e*x+d)^(17/2)/e^8-
2/19*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(19/2)/e^8+2/21*b^6*B*(e*x+d)^(21
/2)/e^8
```

Rubi [A] time = 0.15, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{19/2}(-6aBe-Abe+7bBd)}{19e^8}+\frac{6b^4(d+ex)^{17/2}(bd-ae)(-5aBe-2Abe+7bBd)}{17e^8}-\frac{2b^3(d+ex)^{15/2}(bd-ae}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(7/2))/(7*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(9/2))/(9*e^8) - (6*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(11/2))/(11*e^8) + (10*b^2*(b*d - a*e
)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(13/2))/(13*e^8) - (2*b^3*(b*d
- a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(15/2))/(3*e^8) + (6*b^4*(
b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(17/2))/(17*e^8) - (2*b^
5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(19/2))/(19*e^8) + (2*b^6*B*(d + e*
x)^(21/2))/(21*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{5/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6}{e^7}\right.\\ &= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{7/2}}{7e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{9e^8}\end{aligned}$$

Mathematica [A] time = 0.26, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{7/2}\left(-153153b^5(d+ex)^6(-6aBe-Abe+7bBd)+513513b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*(b*d - a*e)^6*(B*d - A*e) + 323323*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 793611*b*(b*d - a*e)^4*(7*b*B*d -
 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 1119195*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*
b*e - 3*a*B*e)*(d + e*x)^3 - 969969*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e -
4*a*B*e)*(d + e*x)^4 + 513513*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)
*(d + e*x)^5 - 153153*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 138567*
b^6*B*(d + e*x)^7))/(2909907*e^8)
```

fricas [B] time = 0.71, size = 1293, normalized size = 4.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/2909907*(138567*B*b^6*e^10*x^10 - 2048*B*b^6*d^10 + 415701*A*a^6*d^3*e^7
+ 3072*(6*B*a*b^5 + A*b^6)*d^9*e - 14592*(5*B*a^2*b^4 + 2*A*a*b^5)*d^8*e^2
+ 41344*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^7*e^3 - 77520*(3*B*a^4*b^2 + 4*A*a^3*
b^3)*d^6*e^4 + 100776*(2*B*a^5*b + 5*A*a^4*b^2)*d^5*e^5 - 92378*(B*a^6 + 6*
A*a^5*b)*d^4*e^6 + 7293*(43*B*b^6*d*e^9 + 21*(6*B*a*b^5 + A*b^6)*e^10)*x^9
+ 3861*(47*B*b^6*d^2*e^8 + 91*(6*B*a*b^5 + A*b^6)*d*e^9 + 133*(5*B*a^2*b^4
+ 2*A*a*b^5)*e^10)*x^8 + 429*(B*b^6*d^3*e^7 + 483*(6*B*a*b^5 + A*b^6)*d^2*e
^8 + 2793*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^9 + 2261*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*e^10)*x^7 - 231*(2*B*b^6*d^4*e^6 - 3*(6*B*a*b^5 + A*b^6)*d^3*e^7 - 3135*(
5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^8 - 10013*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^9
- 4845*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^10)*x^6 + 63*(8*B*b^6*d^5*e^5 - 12*(6*
B*a*b^5 + A*b^6)*d^4*e^6 + 57*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^7 + 22933*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^8 + 43605*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^9
+ 12597*(2*B*a^5*b + 5*A*a^4*b^2)*e^10)*x^5 - 7*(80*B*b^6*d^6*e^4 - 120*(6*
B*a*b^5 + A*b^6)*d^5*e^5 + 570*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^6 - 1615*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^7 - 256785*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e
^8 - 289731*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^9 - 46189*(B*a^6 + 6*A*a^5*b)*e^1
0)*x^4 + (640*B*b^6*d^7*e^3 + 415701*A*a^6*e^10 - 960*(6*B*a*b^5 + A*b^6)*d
^6*e^4 + 4560*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^5 - 12920*(4*B*a^3*b^3 + 3*A*
a^2*b^4)*d^4*e^6 + 24225*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^7 + 1423461*(2*B
*a^5*b + 5*A*a^4*b^2)*d^2*e^8 + 877591*(B*a^6 + 6*A*a^5*b)*d*e^9)*x^3 - 3*(
256*B*b^6*d^8*e^2 - 415701*A*a^6*d*e^9 - 384*(6*B*a*b^5 + A*b^6)*d^7*e^3 +
1824*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^4 - 5168*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d
^5*e^5 + 9690*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^6 - 12597*(2*B*a^5*b + 5*A*
a^4*b^2)*d^3*e^7 - 230945*(B*a^6 + 6*A*a^5*b)*d^2*e^8)*x^2 + (1024*B*b^6*d^
9*e + 1247103*A*a^6*d^2*e^8 - 1536*(6*B*a*b^5 + A*b^6)*d^8*e^2 + 7296*(5*B*
a^2*b^4 + 2*A*a*b^5)*d^7*e^3 - 20672*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^4 +
38760*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^5*e^5 - 50388*(2*B*a^5*b + 5*A*a^4*b^2)
*d^4*e^6 + 46189*(B*a^6 + 6*A*a^5*b)*d^3*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.51, size = 4768, normalized size = 15.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)

[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^3*e^(-1)
+ 29099070*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^3*e^(-1) + 58198
14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*
b*d^3*e^(-2) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*A*a^4*b^2*d^3*e^(-2) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d^3
*e^(-3) + 8314020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^3*e^(-3) + 923780*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^3*e^(-4) + 692835*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^3*e^(-4) + 314925*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4
*d^3*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*A*a*b^5*d^3*e^(-5) + 29070*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*a*b^5*d^3*e^(-6) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*d^3*e^
(-6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*b^6*d^3*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^6*d^2*e^(-1) + 17459442*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d^2*e^(-1) + 7482618*(5*(x*e
 + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
 d)*d^3)*B*a^5*b*d^2*e^(-2) + 18706545*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b^2*d^2*e^(-2)
 + 2078505*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*d^2*e^(-
3) + 2771340*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5
/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*d^2*e^
(-3) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*B*a^3*b^3*d^2*e^(-4) + 944775*(63*(x*e + d)^(11/2) - 385*(x*
e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*
(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*d^2*e^(-4) + 218025*
(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2
- 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2
)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^4*d^2*e^(-5) + 87210*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*A*a*b^5*d^2*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
+ 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^5*d^2*e^(-6) + 6783*(429*(x*e + d)
^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e
 + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 1
5015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^6*d^2*e^(-6) + 399*(
6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*
d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*
e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7
+ 109395*sqrt(x*e + d)*d^8)*B*b^6*d^2*e^(-7) + 14549535*sqrt(x*e + d)*A*a^6
*d^3 + 14549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^6*d^2 + 1247103*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*B*a^6*d*e^(-1) + 7482618*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*b*d*e^(-1) +
831402*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*b*d*e^(-2) + 207
8505*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b^2*d*e^(-2) + 944
775*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
- 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^4*b^2*d*e^(-3) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^3*d*e^(-3) + 290700*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*a^3*b^3*d*e^(-4) + 218025*(231*(x*e + d)^(13/2) - 1638*
(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^
6)*A*a^2*b^4*d*e^(-4) + 101745*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
 d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*B*a^2*b^4*d*e^(-5) + 40698*(429*(x*e + d)^(15/2) - 346
5*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d
^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d
)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*d*e^(-5) + 2394*(6435*(x*e +
d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920
*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)
*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqr
t(x*e + d)*d^8)*B*a*b^5*d*e^(-6) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e
+ d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 +
 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)
^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^6*d
*e^(-6) + 189*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*
(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11
/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16628
04*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*
d^9)*B*b^6*d*e^(-7) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*A*a^6*d + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*B*a^6*e^(-1) + 277134*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*A*a^5*b*e^(-1) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*B*a^5*b*e^(-2) + 314925*(63*(x*e + d)^(11/2) - 385
*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1
155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^4*b^2*e^(-2) + 72675*(
231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 -
 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)
*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^4*b^2*e^(-3) + 96900*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a^3*b^3*e^(-3) + 45220*(429*(x*e + d)^(15/2) - 3465*(x*e + d
)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175
*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^
6 - 6435*sqrt(x*e + d)*d^7)*B*a^3*b^3*e^(-4) + 33915*(429*(x*e + d)^(15/2)
- 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9
/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*
e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^2*b^4*e^(-4) + 1995*(6435*(x
*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5
56920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^
```

```
(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 10939
5*sqrt(x*e + d)*d^8)*B*a^2*b^4*e^(-5) + 798*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
 + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*
a*b^5*e^(-5) + 378*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 55
4268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d
)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 -
1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e
+ d)*d^9)*B*a*b^5*e^(-6) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(1
7/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 26453
70*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(
7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 23094
5*sqrt(x*e + d)*d^9)*A*b^6*e^(-6) + 15*(46189*(x*e + d)^(21/2) - 510510*(x*
e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d
^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 226326
10*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(
5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b^6*e
^(-7) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

$$\underline{2\,(ex+d)^{\frac{7}{2}}\,(138567B\,b^{6}x^{7}e^{7}+153153A\,b^{6}e^{7}x^{6}+918918Ba\,b^{5}e^{7}x^{6}-102102B\,b^{6}d\,e^{6}x^{6}+1027026Aa\,b^{5}e^{7}x^{5}-10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(138567*B*b^6*e^7*x^7+153153*A*b^6*e^7*x^6+918918*B
*a*b^5*e^7*x^6-102102*B*b^6*d*e^6*x^6+1027026*A*a*b^5*e^7*x^5-108108*A*b^6*
d*e^6*x^5+2567565*B*a^2*b^4*e^7*x^5-648648*B*a*b^5*d*e^6*x^5+72072*B*b^6*d^
2*e^5*x^5+2909907*A*a^2*b^4*e^7*x^4-684684*A*a*b^5*d*e^6*x^4+72072*A*b^6*d^
2*e^5*x^4+3879876*B*a^3*b^3*e^7*x^4-1711710*B*a^2*b^4*d*e^6*x^4+432432*B*a*
b^5*d^2*e^5*x^4-48048*B*b^6*d^3*e^4*x^4+4476780*A*a^3*b^3*e^7*x^3-1790712*A
*a^2*b^4*d*e^6*x^3+421344*A*a*b^5*d^2*e^5*x^3-44352*A*b^6*d^3*e^4*x^3+33575
85*B*a^4*b^2*e^7*x^3-2387616*B*a^3*b^3*d*e^6*x^3+1053360*B*a^2*b^4*d^2*e^5*
x^3-266112*B*a*b^5*d^3*e^4*x^3+29568*B*b^6*d^4*e^3*x^3+3968055*A*a^4*b^2*e^
7*x^2-2441880*A*a^3*b^3*d*e^6*x^2+976752*A*a^2*b^4*d^2*e^5*x^2-229824*A*a*b
^5*d^3*e^4*x^2+24192*A*b^6*d^4*e^3*x^2+1587222*B*a^5*b*e^7*x^2-1831410*B*a^
4*b^2*d*e^6*x^2+1302336*B*a^3*b^3*d^2*e^5*x^2-574560*B*a^2*b^4*d^3*e^4*x^2+
145152*B*a*b^5*d^4*e^3*x^2-16128*B*b^6*d^5*e^2*x^2+1939938*A*a^5*b*e^7*x-17
63580*A*a^4*b^2*d*e^6*x+1085280*A*a^3*b^3*d^2*e^5*x-434112*A*a^2*b^4*d^3*e^
4*x+102144*A*a*b^5*d^4*e^3*x-10752*A*b^6*d^5*e^2*x+323323*B*a^6*e^7*x-70543
2*B*a^5*b*d*e^6*x+813960*B*a^4*b^2*d^2*e^5*x-578816*B*a^3*b^3*d^3*e^4*x+255
360*B*a^2*b^4*d^4*e^3*x-64512*B*a*b^5*d^5*e^2*x+7168*B*b^6*d^6*e*x+415701*A
*a^6*e^7-554268*A*a^5*b*d*e^6+503880*A*a^4*b^2*d^2*e^5-310080*A*a^3*b^3*d^3
*e^4+124032*A*a^2*b^4*d^4*e^3-29184*A*a*b^5*d^5*e^2+3072*A*b^6*d^6*e-92378*
B*a^6*d*e^6+201552*B*a^5*b*d^2*e^5-232560*B*a^4*b^2*d^3*e^4+165376*B*a^3*b^
3*d^4*e^3-72960*B*a^2*b^4*d^5*e^2+18432*B*a*b^5*d^6*e-2048*B*b^6*d^7)/e^8
```

maxima [B] time = 0.55, size = 767, normalized size = 2.49

$$\underline{2\,(138567\,(ex+d)^{\frac{21}{2}}\,Bb^{6}-153153\,(7\,Bb^{6}d-(6\,Bab^{5}+Ab^{6})e)(ex+d)^{\frac{19}{2}}+513513\,(7\,Bb^{6}d^{2}-2\,(6\,Bab^{5}+Ab^{6})de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/2909907*(138567*(e*x + d)^(21/2)*B*b^6 - 153153*(7*B*b^6*d - (6*B*a*b^5 +
 A*b^6)*e)*(e*x + d)^(19/2) + 513513*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d
*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(17/2) - 969969*(7*B*b^6*d^3
- 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^
3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(15/2) + 1119195*(7*B*b^6*d^4 - 4*(6*B*
a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3
 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(13/2) -
 793611*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*
a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 +
4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(11/2) + 3233
23*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5
)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*
a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*
e^6)*(e*x + d)^(9/2) - 415701*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*
d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b
^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(7/2))/e^8
```

mupad **[B]** time = 1.93, size = 279, normalized size = 0.91

$$\frac{(d+e\,x)^{19/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{19\,e^8}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{9/2}\,(6\,A\,b\,e+B\,a\,e-7\,B\,b\,d)}{9\,e^8}+\frac{2\,B\,b^6\,(d+}{21\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(19/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(19*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(9/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(9*e^8) + (2*B*b^6
*(d + e*x)^(21/2))/(21*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(7/2))
/(7*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(11/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d
))/(11*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(17/2)*(2*A*b*e + 5*B*a*e - 7*B*
b*d))/(17*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(13/2)*(4*A*b*e + 3*B*a*e
- 7*B*b*d))/(13*e^8) + (2*b^3*(a*e - b*d)^2*(d + e*x)^(15/2)*(3*A*b*e + 4*B
*a*e - 7*B*b*d))/(3*e^8)
```

sympy **[A]** time = 113.73, size = 3728, normalized size = 12.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), Tru
e)) + 4*A*a**6*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*A*a**6*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
 12*A*a**5*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 24*A*
a**5*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/
2)/7)/e**2 + 12*A*a**5*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2
)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 30*A*a**4*b**2*d*
*2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/
e**3 + 60*A*a**4*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)
/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 30*A*a**4*b**2*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 40*A*a**3*b**3*d
**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**
(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 80*A*a**3*b**3*d*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 40*A*a**3*b**3*(-d**5*(d + e*x)**(
3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d +
e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 30*
A*a**2*b**4*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d
**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**
5 + 60*A*a**2*b**4*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10
*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/
2)/11 + (d + e*x)**(13/2)/13)/e**5 + 30*A*a**2*b**4*(d**6*(d + e*x)**(3/2)/
3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e
*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d
 + e*x)**(15/2)/15)/e**5 + 12*A*a*b**5*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**
4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/
9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 24*A*a*b**5*d*(
d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7
/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d
+ e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*A*a*b**5*(-d**7*(d + e*
x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4
*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13
/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 2*A*b**6*d
**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x
)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*
d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 4*A*b**6*d*(-d**7*(d
+ e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*
d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)*
*(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2*A*b*
*6*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)*
*(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**
3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/
2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*B*a**6*d**2*(-d*(d + e*x)**(3/2)/3 +
 (d + e*x)**(5/2)/5)/e**2 + 4*B*a**6*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d +
e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 2*B*a**6*(-d**3*(d + e*x)**(3/2)
/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/
9)/e**2 + 12*B*a**5*b*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/
5 + (d + e*x)**(7/2)/7)/e**3 + 24*B*a**5*b*d*(-d**3*(d + e*x)**(3/2)/3 + 3*
d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3
 + 12*B*a**5*b*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**
2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3
+ 30*B*a**4*b**2*d**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 60*B*a**4*b**2*d*(d*
*4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)
/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*B*a**4*b**2*(
-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)
/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13
/2)/13)/e**4 + 40*B*a**3*b**3*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e
*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*
x)**(11/2)/11)/e**5 + 80*B*a**3*b**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
+ e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5
*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 40*B*a**3*b**3*(d**6
*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/
7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*
x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 30*B*a**2*b**4*d**2*(-d**5*(d
+ e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d
**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e
**6 + 60*B*a**2*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5
 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e
*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 30
*B*a**2*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5
*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/
11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(
17/2)/17)/e**6 + 12*B*a*b**5*d**2*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*
x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*
```

```
d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15
)/e**7 + 24*B*a*b**5*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/
5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x
)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d
 + e*x)**(17/2)/17)/e**7 + 12*B*a*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d
 + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 7
0*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e
*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**7 + 2*
B*b**6*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*
(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/1
1 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(1
7/2)/17)/e**8 + 4*B*b**6*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/
2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d +
e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/
15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 2*B*b**6*(-d**
9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)
/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11 + 126*d**4*
(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d + e*x)**(17
/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.1802 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{17/2}(-6aBe-Abe+7bBd)}{17e^8}+\frac{2b^4(d+ex)^{15/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{13/2}(bd-}{}$$

```
[Out] -2/5*(-a*e+b*d)^6*(-A*e+B*d)*(e*x+d)^(5/2)/e^8+2/7*(-a*e+b*d)^5*(-6*A*b*e-B
*a*e+7*B*b*d)*(e*x+d)^(7/2)/e^8-2/3*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b*
d)*(e*x+d)^(9/2)/e^8+10/11*b^2*(-a*e+b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e*x
+d)^(11/2)/e^8-10/13*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+7*B*b*d)*(e*x+d)^(1
3/2)/e^8+2/5*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e*x+d)^(15/2)/e^8-2
/17*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(17/2)/e^8+2/19*b^6*B*(e*x+d)^(19/
2)/e^8
```

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{17/2}(-6aBe-Abe+7bBd)}{17e^8}+\frac{2b^4(d+ex)^{15/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{13/2}(bd-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(5/2))/(5*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (2*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(9/2))/(3*e^8) + (10*b^2*(b*d - a*e)^
3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (10*b^3*(b*d -
 a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^4*(
b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(15/2))/(5*e^8) - (2*b^5
*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(17/2))/(17*e^8) + (2*b^6*B*(d + e*x
)^(19/2))/(19*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)(d+ex)^{3/2}\,dx\\
&= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)(d+ex)^{3/2}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6}{e^7}\right.\\
&= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{5/2}}{5e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-}{7e^8}
\end{aligned}$$

Mathematica [A] time = 0.24, size = 259, normalized size = 0.84

$$\frac{2(d+ex)^{5/2}\Big(-285285b^5(d+ex)^6(-6aBe-Abe+7bBd)+969969b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-969969*(b*d - a*e)^6*(B*d - A*e) + 692835*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 1616615*b*(b*d - a*e)^4*(7*b*B*d
- 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 2204475*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A
*b*e - 3*a*B*e)*(d + e*x)^3 - 1865325*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e
- 4*a*B*e)*(d + e*x)^4 + 969969*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*
e)*(d + e*x)^5 - 285285*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 25525
5*b^6*B*(d + e*x)^7))/(4849845*e^8)
```

fricas [B] time = 0.70, size = 1118, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/4849845*(255255*B*b^6*e^9*x^9 - 14336*B*b^6*d^9 + 969969*A*a^6*d^2*e^7 +
19456*(6*B*a*b^5 + A*b^6)*d^8*e - 82688*(5*B*a^2*b^4 + 2*A*a*b^5)*d^7*e^2 +
 206720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^6*e^3 - 335920*(3*B*a^4*b^2 + 4*A*a^3
*b^3)*d^5*e^4 + 369512*(2*B*a^5*b + 5*A*a^4*b^2)*d^4*e^5 - 277134*(B*a^6 +
6*A*a^5*b)*d^3*e^6 + 15015*(20*B*b^6*d*e^8 + 19*(6*B*a*b^5 + A*b^6)*e^9)*x^
8 + 3003*(B*b^6*d^2*e^7 + 114*(6*B*a*b^5 + A*b^6)*d*e^8 + 323*(5*B*a^2*b^4
+ 2*A*a*b^5)*e^9)*x^7 - 231*(14*B*b^6*d^3*e^6 - 19*(6*B*a*b^5 + A*b^6)*d^2*
e^7 - 5168*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^8 - 8075*(4*B*a^3*b^3 + 3*A*a^2*b^
4)*e^9)*x^6 + 21*(168*B*b^6*d^4*e^5 - 228*(6*B*a*b^5 + A*b^6)*d^3*e^6 + 969
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^7 + 113050*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e
^8 + 104975*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^9)*x^5 - 35*(112*B*b^6*d^5*e^4 -
152*(6*B*a*b^5 + A*b^6)*d^4*e^5 + 646*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^6 - 1
615*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^7 - 83980*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*d*e^8 - 46189*(2*B*a^5*b + 5*A*a^4*b^2)*e^9)*x^4 + 5*(896*B*b^6*d^6*e^3 -
1216*(6*B*a*b^5 + A*b^6)*d^5*e^4 + 5168*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^5 -
 12920*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^6 + 20995*(3*B*a^4*b^2 + 4*A*a^3*b
^3)*d^2*e^7 + 461890*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^8 + 138567*(B*a^6 + 6*A*
a^5*b)*e^9)*x^3 - 3*(1792*B*b^6*d^7*e^2 - 323323*A*a^6*e^9 - 2432*(6*B*a*b^
5 + A*b^6)*d^6*e^3 + 10336*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^4 - 25840*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^4*e^5 + 41990*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^6 -
 46189*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^7 - 369512*(B*a^6 + 6*A*a^5*b)*d*e^8
)*x^2 + (7168*B*b^6*d^8*e + 1939938*A*a^6*d*e^8 - 9728*(6*B*a*b^5 + A*b^6)*
d^7*e^2 + 41344*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^3 - 103360*(4*B*a^3*b^3 + 3
*A*a^2*b^4)*d^5*e^4 + 167960*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^4*e^5 - 184756*(
2*B*a^5*b + 5*A*a^4*b^2)*d^3*e^6 + 138567*(B*a^6 + 6*A*a^5*b)*d^2*e^7)*x)*s
qrt(e*x + d)/e^8
```

giac [B] time = 0.41, size = 3285, normalized size = 10.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d^2*e^(-1)
+ 29099070*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d^2*e^(-1) + 58198
14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*
b*d^2*e^(-2) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*A*a^4*b^2*d^2*e^(-2) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d^2
*e^(-3) + 8314020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^3*d^2*e^(-3) + 923780*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^3*d^2*e^(-4) + 692835*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*d^2*e^(-4) + 314925*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4
*d^2*e^(-5) + 125970*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*A*a*b^5*d^2*e^(-5) + 29070*(231*(x*e + d)^(13/2) - 163
8*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3
+ 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*
d^6)*B*a*b^5*d^2*e^(-6) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2
)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^
(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*d^2*e^
(-6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*B*b^6*d^2*e^(-7) + 1939938*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^6*d*e^(-1) + 11639628*(3*(x*e + d)^(5/2) - 10*(x*e
+ d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*d*e^(-1) + 4988412*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*B*a^5*b*d*e^(-2) + 12471030*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b^2*d*e^(-2) + 13856
70*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*d*e^(-3) + 18475
60*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*d*e^(-3) + 83980
0*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5
)*B*a^3*b^3*d*e^(-4) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*d*e^(-4) + 145350*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*B*a^2*b^4*d*e^(-5) + 58140*(231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A
*a*b^5*d*e^(-5) + 27132*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1
2285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/
2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(
x*e + d)*d^7)*B*a*b^5*d*e^(-6) + 4522*(429*(x*e + d)^(15/2) - 3465*(x*e + d
)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175
*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^
6 - 6435*sqrt(x*e + d)*d^7)*A*b^6*d*e^(-6) + 266*(6435*(x*e + d)^(17/2) - 5
8344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(1
1/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612
*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^
8)*B*b^6*d*e^(-7) + 14549535*sqrt(x*e + d)*A*a^6*d^2 + 9699690*((x*e + d)^(
3/2) - 3*sqrt(x*e + d)*d)*A*a^6*d + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^6*e^(-1) + 2
494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*A*a^5*b*e^(-1) + 277134*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*B*a^5*b*e^(-2) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*A*a^4*b^2*e^(-2) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b^2*e^(-3) + 419900*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^3*
e^(-3) + 96900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
+ d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006
*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^3*b^3*e^(-4) + 72675*(23
1*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8
580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d
^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^4*e^(-4) + 33915*(429*(x*e + d)^(15/2)
 - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(
9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x
*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^4*e^(-5) + 13566*(429*(
x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25
025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)
*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^5*e^(-5) +
 798*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(
13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 8751
60*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2
)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^5*e^(-6) + 133*(6435*(x*e + d)^(17/
2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
 d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 +
612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
 d)*d^8)*A*b^6*e^(-6) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2
)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*
(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2
)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*s
qrt(x*e + d)*d^9)*B*b^6*e^(-7) + 969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

$$2\,(ex+d)^{\frac{5}{2}}\left(255255B\,b^6x^7e^7+285285A\,b^6e^7x^6+1711710Ba\,b^5e^7x^6-210210B\,b^6d\,e^6x^6+1939938Aa\,b^5e^7x^5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/4849845*(e*x+d)^(5/2)*(255255*B*b^6*e^7*x^7+285285*A*b^6*e^7*x^6+1711710*
B*a*b^5*e^7*x^6-210210*B*b^6*d*e^6*x^6+1939938*A*a*b^5*e^7*x^5-228228*A*b^6
*d*e^6*x^5+4849845*B*a^2*b^4*e^7*x^5-1369368*B*a*b^5*d*e^6*x^5+168168*B*b^6
*d^2*e^5*x^5+5595975*A*a^2*b^4*e^7*x^4-1492260*A*a*b^5*d*e^6*x^4+175560*A*b
^6*d^2*e^5*x^4+7461300*B*a^3*b^3*e^7*x^4-3730650*B*a^2*b^4*d*e^6*x^4+105336
0*B*a*b^5*d^2*e^5*x^4-129360*B*b^6*d^3*e^4*x^4+8817900*A*a^3*b^3*e^7*x^3-40
69800*A*a^2*b^4*d*e^6*x^3+1085280*A*a*b^5*d^2*e^5*x^3-127680*A*b^6*d^3*e^4*
x^3+6613425*B*a^4*b^2*e^7*x^3-5426400*B*a^3*b^3*d*e^6*x^3+2713200*B*a^2*b^4
*d^2*e^5*x^3-766080*B*a*b^5*d^3*e^4*x^3+94080*B*b^6*d^4*e^3*x^3+8083075*A*a
^4*b^2*e^7*x^2-5878600*A*a^3*b^3*d*e^6*x^2+2713200*A*a^2*b^4*d^2*e^5*x^2-72
3520*A*a*b^5*d^3*e^4*x^2+85120*A*b^6*d^4*e^3*x^2+3233230*B*a^5*b*e^7*x^2-44
08950*B*a^4*b^2*d*e^6*x^2+3617600*B*a^3*b^3*d^2*e^5*x^2-1808800*B*a^2*b^4*d
^3*e^4*x^2+510720*B*a*b^5*d^4*e^3*x^2-62720*B*b^6*d^5*e^2*x^2+4157010*A*a^5
*b*e^7*x-4618900*A*a^4*b^2*d*e^6*x+3359200*A*a^3*b^3*d^2*e^5*x-1550400*A*a^
2*b^4*d^3*e^4*x+413440*A*a*b^5*d^4*e^3*x-48640*A*b^6*d^5*e^2*x+692835*B*a^6
*e^7*x-1847560*B*a^5*b*d*e^6*x+2519400*B*a^4*b^2*d^2*e^5*x-2067200*B*a^3*b^
3*d^3*e^4*x+1033600*B*a^2*b^4*d^4*e^3*x-291840*B*a*b^5*d^5*e^2*x+35840*B*b^
6*d^6*e*x+969969*A*a^6*e^7-1662804*A*a^5*b*d*e^6+1847560*A*a^4*b^2*d^2*e^5-
1343680*A*a^3*b^3*d^3*e^4+620160*A*a^2*b^4*d^4*e^3-165376*A*a*b^5*d^5*e^2+1
9456*A*b^6*d^6*e-277134*B*a^6*d*e^6+739024*B*a^5*b*d^2*e^5-1007760*B*a^4*b^
2*d^3*e^4+826880*B*a^3*b^3*d^4*e^3-413440*B*a^2*b^4*d^5*e^2+116736*B*a*b^5*
d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B]   time = 0.53, size = 767, normalized size = 2.49

$$\frac{2\,(255255\,(ex+d)^{\frac{19}{2}}Bb^6 - 285285\,(7\,Bb^6d - (6\,Bab^5 + Ab^6)e)(ex+d)^{\frac{17}{2}} + 969969\,(7\,Bb^6d^2 - 2\,(6\,Bab^5 + Ab^6)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/4849845*(255255*(e*x + d)^(19/2)*B*b^6 - 285285*(7*B*b^6*d - (6*B*a*b^5 +
 A*b^6)*e)*(e*x + d)^(17/2) + 969969*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d
*e + (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(15/2) - 1865325*(7*B*b^6*d^3
 - 3*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a
^3*b^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(13/2) + 2204475*(7*B*b^6*d^4 - 4*(6*B
*a*b^5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^
3 + 3*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(11/2)
- 1616615*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*
A*a*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2
+ 4*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(9/2) + 692
835*(7*B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^
5)*d^4*e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A
*a^3*b^3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)
*e^6)*(e*x + d)^(7/2) - 969969*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)
*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4
)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*
b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(5/2))/e^8
```

mupad [B]   time = 1.93, size = 279, normalized size = 0.91

$$\frac{(d+e\,x)^{17/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{17\,e^8}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{7/2}\,(6\,A\,b\,e+B\,a\,e-7\,B\,b\,d)}{7\,e^8}+\frac{2\,B\,b^6\,(d+e\,x}{19\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(17/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(17*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(7/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(7*e^8) + (2*B*b^6
*(d + e*x)^(19/2))/(19*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(5/2))
/(5*e^8) + (2*b*(a*e - b*d)^4*(d + e*x)^(9/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d)
)/(3*e^8) + (2*b^4*(a*e - b*d)*(d + e*x)^(15/2)*(2*A*b*e + 5*B*a*e - 7*B*b*
d))/(5*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(11/2)*(4*A*b*e + 3*B*a*e - 7
*B*b*d))/(11*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(13/2)*(3*A*b*e + 4*B*a
*e - 7*B*b*d))/(13*e^8)
```

sympy [A]   time = 69.78, size = 2252, normalized size = 7.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] A*a**6*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True))
 + 2*A*a**6*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 12*A*a**5*b*d*
(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 12*A*a**5*b*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 30*A*a*
*4*b**2*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7
/2)/7)/e**3 + 30*A*a**4*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**
(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 40*A*a**3*b**
3*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**
(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 40*A*a**3*b**3*(d**4*(d + e*x)**(3/2)/
3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**
(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 30*A*a**2*b**4*d*(d**4*(d + e*x)**(3
/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*
x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 30*A*a**2*b**4*(-d**5*(d + e*x)*
*(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d
 + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 1
2*A*a*b**5*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d
 + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 +
(d + e*x)**(13/2)/13)/e**6 + 12*A*a*b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*
(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/
9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(1
5/2)/15)/e**6 + 2*A*b**6*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/
2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d
 + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7
 + 2*A*b**6*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(
d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11
 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17
/2)/17)/e**7 + 2*B*a**6*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2
 + 2*B*a**6*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**
(7/2)/7)/e**2 + 12*B*a**5*b*d*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/
2)/5 + (d + e*x)**(7/2)/7)/e**3 + 12*B*a**5*b*(-d**3*(d + e*x)**(3/2)/3 + 3
*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**
3 + 30*B*a**4*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5
- 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**4 + 30*B*a**4*b**2*(d**4*
(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7
- 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4 + 40*B*a**3*b**3*d*(d
**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2
)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 40*B*a**3*b**3*
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**5 + 30*B*a**2*b**4*d*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 30*B*a**2*b**4*(d**6*(d +
e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20
*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(1
3/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 12*B*a*b**5*d*(d**6*(d + e*x)**(3/2)
/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d +
e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (
d + e*x)**(15/2)/15)/e**7 + 12*B*a*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*
(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 -
 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x
)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2*B*b**6*d*(-d**7*(d + e*x)**(3
/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d +
e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13
 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 2*B*b**6*(d**8*(
d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 5
6*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x
)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d
 + e*x)**(19/2)/19)/e**8
```

3.1803 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=308

$$-\frac{2b^5(d+ex)^{15/2}(-6aBe-Abe+7bBd)}{15e^8}+\frac{6b^4(d+ex)^{13/2}(bd-ae)(-5aBe-2Abe+7bBd)}{13e^8}-\frac{10b^3(d+ex)^{11/2}(bd-}{}$$

```
[Out] -2/3*(-a*e+b*d)^6*(-A*e+B*d)*(e*x+d)^(3/2)/e^8+2/5*(-a*e+b*d)^5*(-6*A*b*e-B
*a*e+7*B*b*d)*(e*x+d)^(5/2)/e^8-6/7*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b*
d)*(e*x+d)^(7/2)/e^8+10/9*b^2*(-a*e+b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e*x+
d)^(9/2)/e^8-10/11*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+7*B*b*d)*(e*x+d)^(11/
2)/e^8+6/13*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e*x+d)^(13/2)/e^8-2/
15*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(15/2)/e^8+2/17*b^6*B*(e*x+d)^(17/2
)/e^8
```

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{15/2}(-6aBe-Abe+7bBd)}{15e^8}+\frac{6b^4(d+ex)^{13/2}(bd-ae)(-5aBe-2Abe+7bBd)}{13e^8}-\frac{10b^3(d+ex)^{11/2}(bd-}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*(d + e*x)^(3/2))/(3*e^8) + (2*(b*d - a*e)^5*(
7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x)^(5/2))/(5*e^8) - (6*b*(b*d - a*e)^4*(7
*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (10*b^2*(b*d - a*e)^
3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(9/2))/(9*e^8) - (10*b^3*(b*d - a
*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(11/2))/(11*e^8) + (6*b^4*(b*
d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(13/2))/(13*e^8) - (2*b^5*
(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^(15/2))/(15*e^8) + (2*b^6*B*(d + e*x)
^(17/2))/(17*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^6(A+Bx)\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)\sqrt{d+ex}}{e^7}+\frac{(-bd+ae)^5(-7bBd+6Abe}{e^7}\right.\\ &= -\frac{2(bd-ae)^6(Bd-Ae)(d+ex)^{3/2}}{3e^8}+\frac{2(bd-ae)^5(7bBd-6Abe-a}{5e^8}\end{aligned}$$

Mathematica [A] time = 0.24, size = 259, normalized size = 0.84

$$2(d+ex)^{3/2}\left(-51051b^5(d+ex)^6(-6aBe-Abe+7bBd)+176715b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-255255*(b*d - a*e)^6*(B*d - A*e) + 153153*(b*d - a*e)^
5*(7*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 328185*b*(b*d - a*e)^4*(7*b*B*d -
 5*A*b*e - 2*a*B*e)*(d + e*x)^2 + 425425*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b
*e - 3*a*B*e)*(d + e*x)^3 - 348075*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4
*a*B*e)*(d + e*x)^4 + 176715*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*
(d + e*x)^5 - 51051*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 45045*b^6
*B*(d + e*x)^7))/(765765*e^8)
```

fricas [B] time = 0.77, size = 942, normalized size = 3.06

$$2\left(45045\,Bb^6e^8x^8-14336\,Bb^6d^8+255255\,Aa^6de^7+17408\left(6\,Bab^5+Ab^6\right)d^7e-65280\left(5\,Ba^2b^4+2\,Aab^5\right)d^6e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/765765*(45045*B*b^6*e^8*x^8 - 14336*B*b^6*d^8 + 255255*A*a^6*d*e^7 + 1740
8*(6*B*a*b^5 + A*b^6)*d^7*e - 65280*(5*B*a^2*b^4 + 2*A*a*b^5)*d^6*e^2 + 141
440*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^5*e^3 - 194480*(3*B*a^4*b^2 + 4*A*a^3*b^3
)*d^4*e^4 + 175032*(2*B*a^5*b + 5*A*a^4*b^2)*d^3*e^5 - 102102*(B*a^6 + 6*A*
a^5*b)*d^2*e^6 + 3003*(B*b^6*d*e^7 + 17*(6*B*a*b^5 + A*b^6)*e^8)*x^7 - 231*
(14*B*b^6*d^2*e^6 - 17*(6*B*a*b^5 + A*b^6)*d*e^7 - 765*(5*B*a^2*b^4 + 2*A*a
*b^5)*e^8)*x^6 + 63*(56*B*b^6*d^3*e^5 - 68*(6*B*a*b^5 + A*b^6)*d^2*e^6 + 25
5*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^7 + 5525*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^8)*x
^5 - 35*(112*B*b^6*d^4*e^4 - 136*(6*B*a*b^5 + A*b^6)*d^3*e^5 + 510*(5*B*a^2
*b^4 + 2*A*a*b^5)*d^2*e^6 - 1105*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^7 - 12155*
(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^8)*x^4 + 5*(896*B*b^6*d^5*e^3 - 1088*(6*B*a*b
^5 + A*b^6)*d^4*e^4 + 4080*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^5 - 8840*(4*B*a^
3*b^3 + 3*A*a^2*b^4)*d^2*e^6 + 12155*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^7 + 65
637*(2*B*a^5*b + 5*A*a^4*b^2)*e^8)*x^3 - 3*(1792*B*b^6*d^6*e^2 - 2176*(6*B*
a*b^5 + A*b^6)*d^5*e^3 + 8160*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^4 - 17680*(4*
B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^5 + 24310*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^
6 - 21879*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^7 - 51051*(B*a^6 + 6*A*a^5*b)*e^8)*
x^2 + (7168*B*b^6*d^7*e + 255255*A*a^6*e^8 - 8704*(6*B*a*b^5 + A*b^6)*d^6*e
^2 + 32640*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^3 - 70720*(4*B*a^3*b^3 + 3*A*a^2
*b^4)*d^4*e^4 + 97240*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^5 - 87516*(2*B*a^5*
b + 5*A*a^4*b^2)*d^2*e^6 + 51051*(B*a^6 + 6*A*a^5*b)*d*e^7)*x)*sqrt(e*x + d
)/e^8
```

giac [B] time = 0.29, size = 1984, normalized size = 6.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*d*e^(-1) + 153
1530*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*d*e^(-1) + 306306*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*b*d*e^(-2
) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*A*a^4*b^2*d*e^(-2) + 328185*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*d*e^(-3) + 437580*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a^3*b^3*d*e^(-3) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*B*a^3*b^3*d*e^(-4) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)
^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
 + d)*d^4)*A*a^2*b^4*d*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^
(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^4*d*e^(-5) + 6630*(63*(x*e +
d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d
)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*d*e
^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(
x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^5*d*e^(-6) + 255*(231*(x
*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*
(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
 3003*sqrt(x*e + d)*d^6)*A*b^6*d*e^(-6) + 119*(429*(x*e + d)^(15/2) - 3465*
(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^
(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^6*d*e^(-7) + 51051*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^6*e^(-1) + 306306*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*b*e^(-
1) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*b*e^(-2) + 328185*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^4*b
^2*e^(-2) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^4*b^2*e
^(-3) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^3*e^(-3
) + 22100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*a^3*b^3*e^(-4) + 16575*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/
2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^
(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^4*e^(-4) + 3825*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*B*a^2*b^4*e^(-5) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a
*b^5*e^(-5) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(
x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4
 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
d)*d^7)*B*a*b^5*e^(-6) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*
d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d
)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*
sqrt(x*e + d)*d^7)*A*b^6*e^(-6) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d
)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 85
0850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5
/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^6*e^(-
7) + 765765*sqrt(x*e + d)*A*a^6*d + 255255*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.96

$$2\,(ex+d)^{\frac{3}{2}}\,\Big(45045B\,b^{6}x^{7}e^{7}+51051A\,b^{6}e^{7}x^{6}+306306Ba\,b^{5}e^{7}x^{6}-42042B\,b^{6}d\,e^{6}x^{6}+353430Aa\,b^{5}e^{7}x^{5}-47124$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/765765*(e*x+d)^(3/2)*(45045*B*b^6*e^7*x^7+51051*A*b^6*e^7*x^6+306306*B*a*
b^5*e^7*x^6-42042*B*b^6*d*e^6*x^6+353430*A*a*b^5*e^7*x^5-47124*A*b^6*d*e^6*
x^5+883575*B*a^2*b^4*e^7*x^5-282744*B*a*b^5*d*e^6*x^5+38808*B*b^6*d^2*e^5*x
^5+1044225*A*a^2*b^4*e^7*x^4-321300*A*a*b^5*d*e^6*x^4+42840*A*b^6*d^2*e^5*x
^4+1392300*B*a^3*b^3*e^7*x^4-803250*B*a^2*b^4*d*e^6*x^4+257040*B*a*b^5*d^2*
e^5*x^4-35280*B*b^6*d^3*e^4*x^4+1701700*A*a^3*b^3*e^7*x^3-928200*A*a^2*b^4*
d*e^6*x^3+285600*A*a*b^5*d^2*e^5*x^3-38080*A*b^6*d^3*e^4*x^3+1276275*B*a^4*
b^2*e^7*x^3-1237600*B*a^3*b^3*d*e^6*x^3+714000*B*a^2*b^4*d^2*e^5*x^3-228480
*B*a*b^5*d^3*e^4*x^3+31360*B*b^6*d^4*e^3*x^3+1640925*A*a^4*b^2*e^7*x^2-1458
600*A*a^3*b^3*d*e^6*x^2+795600*A*a^2*b^4*d^2*e^5*x^2-244800*A*a*b^5*d^3*e^4
*x^2+32640*A*b^6*d^4*e^3*x^2+656370*B*a^5*b*e^7*x^2-1093950*B*a^4*b^2*d*e^6
*x^2+1060800*B*a^3*b^3*d^2*e^5*x^2-612000*B*a^2*b^4*d^3*e^4*x^2+195840*B*a*
b^5*d^4*e^3*x^2-26880*B*b^6*d^5*e^2*x^2+918918*A*a^5*b*e^7*x-1312740*A*a^4*
b^2*d*e^6*x+1166880*A*a^3*b^3*d^2*e^5*x-636480*A*a^2*b^4*d^3*e^4*x+195840*A
*a*b^5*d^4*e^3*x-26112*A*b^6*d^5*e^2*x+153153*B*a^6*e^7*x-525096*B*a^5*b*d*
e^6*x+875160*B*a^4*b^2*d^2*e^5*x-848640*B*a^3*b^3*d^3*e^4*x+489600*B*a^2*b^
4*d^4*e^3*x-156672*B*a*b^5*d^5*e^2*x+21504*B*b^6*d^6*e*x+255255*A*a^6*e^7-6
12612*A*a^5*b*d*e^6+875160*A*a^4*b^2*d^2*e^5-777920*A*a^3*b^3*d^3*e^4+42432
0*A*a^2*b^4*d^4*e^3-130560*A*a*b^5*d^5*e^2+17408*A*b^6*d^6*e-102102*B*a^6*d
*e^6+350064*B*a^5*b*d^2*e^5-583440*B*a^4*b^2*d^3*e^4+565760*B*a^3*b^3*d^4*e
^3-326400*B*a^2*b^4*d^5*e^2+104448*B*a*b^5*d^6*e-14336*B*b^6*d^7)/e^8
```

maxima [B] time = 0.65, size = 767, normalized size = 2.49

$$2\Big(45045\,(ex+d)^{\frac{17}{2}}Bb^6-51051\,\big(7\,Bb^6d-\big(6\,Bab^5+Ab^6\big)e\big)(ex+d)^{\frac{15}{2}}+176715\,\big(7\,Bb^6d^2-2\,\big(6\,Bab^5+Ab^6\big)d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/765765*(45045*(e*x + d)^(17/2)*B*b^6 - 51051*(7*B*b^6*d - (6*B*a*b^5 + A*
b^6)*e)*(e*x + d)^(15/2) + 176715*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e
+ (5*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(13/2) - 348075*(7*B*b^6*d^3 - 3
*(6*B*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b
^3 + 3*A*a^2*b^4)*e^3)*(e*x + d)^(11/2) + 425425*(7*B*b^6*d^4 - 4*(6*B*a*b^
5 + A*b^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3
*A*a^2*b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(9/2) - 3281
85*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5
)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a
^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(7/2) + 153153*(7*
B*b^6*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*
e^2 - 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^
3)*d^2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(
e*x + d)^(5/2) - 255255*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e
+ 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e
^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^
2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6)*(e*x + d)^(3/2))/e^8
```

mupad [B] time = 1.93, size = 279, normalized size = 0.91

$$\frac{(d+e\,x)^{15/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{15\,e^8}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{5/2}\,(6\,A\,b\,e+B\,a\,e-7\,B\,b\,d)}{5\,e^8}+\frac{2\,B\,b^6\,(d+}{17\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(15/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(15*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(5/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(5*e^8) + (2*B*b^6
*(d + e*x)^(17/2))/(17*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(3/2))
/(3*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(7/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d)
)/(7*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(13/2)*(2*A*b*e + 5*B*a*e - 7*B*b*
d))/(13*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(9/2)*(4*A*b*e + 3*B*a*e - 7
*B*b*d))/(9*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(11/2)*(3*A*b*e + 4*B*a*
e - 7*B*b*d))/(11*e^8)
```

sympy [B] time = 13.35, size = 969, normalized size = 3.15

$$2\left(\frac{Bb^6(d+ex)^{\frac{17}{2}}}{17e^7}+\frac{(d+ex)^{\frac{15}{2}}\left(Ab^6e+6Bab^5e-7Bb^6d\right)}{15e^7}+\frac{(d+ex)^{\frac{13}{2}}\left(6Aab^5e^2-6Ab^6de+15Ba^2b^4e^2-36Bab^5de+21Bb^6d^2\right)}{13e^7}+\frac{(d+ex)^{\frac{11}{2}}\left(15Aa^2b^4e^3-30\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(B*b**6*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(A*b**6*e + 6*B*a
*b**5*e - 7*B*b**6*d)/(15*e**7) + (d + e*x)**(13/2)*(6*A*a*b**5*e**2 - 6*A*
b**6*d*e + 15*B*a**2*b**4*e**2 - 36*B*a*b**5*d*e + 21*B*b**6*d**2)/(13*e**7
) + (d + e*x)**(11/2)*(15*A*a**2*b**4*e**3 - 30*A*a*b**5*d*e**2 + 15*A*b**6
*d**2*e + 20*B*a**3*b**3*e**3 - 75*B*a**2*b**4*d*e**2 + 90*B*a*b**5*d**2*e
- 35*B*b**6*d**3)/(11*e**7) + (d + e*x)**(9/2)*(20*A*a**3*b**3*e**4 - 60*A*
a**2*b**4*d*e**3 + 60*A*a*b**5*d**2*e**2 - 20*A*b**6*d**3*e + 15*B*a**4*b**
2*e**4 - 80*B*a**3*b**3*d*e**3 + 150*B*a**2*b**4*d**2*e**2 - 120*B*a*b**5*d
**3*e + 35*B*b**6*d**4)/(9*e**7) + (d + e*x)**(7/2)*(15*A*a**4*b**2*e**5 -
60*A*a**3*b**3*d*e**4 + 90*A*a**2*b**4*d**2*e**3 - 60*A*a*b**5*d**3*e**2 +
15*A*b**6*d**4*e + 6*B*a**5*b*e**5 - 45*B*a**4*b**2*d*e**4 + 120*B*a**3*b**
3*d**2*e**3 - 150*B*a**2*b**4*d**3*e**2 + 90*B*a*b**5*d**4*e - 21*B*b**6*d*
*5)/(7*e**7) + (d + e*x)**(5/2)*(6*A*a**5*b*e**6 - 30*A*a**4*b**2*d*e**5 +
60*A*a**3*b**3*d**2*e**4 - 60*A*a**2*b**4*d**3*e**3 + 30*A*a*b**5*d**4*e**2
 - 6*A*b**6*d**5*e + B*a**6*e**6 - 12*B*a**5*b*d*e**5 + 45*B*a**4*b**2*d**2
*e**4 - 80*B*a**3*b**3*d**3*e**3 + 75*B*a**2*b**4*d**4*e**2 - 36*B*a*b**5*d
**5*e + 7*B*b**6*d**6)/(5*e**7) + (d + e*x)**(3/2)*(A*a**6*e**7 - 6*A*a**5*
b*d*e**6 + 15*A*a**4*b**2*d**2*e**5 - 20*A*a**3*b**3*d**3*e**4 + 15*A*a**2*
b**4*d**4*e**3 - 6*A*a*b**5*d**5*e**2 + A*b**6*d**6*e - B*a**6*d*e**6 + 6*B
*a**5*b*d**2*e**5 - 15*B*a**4*b**2*d**3*e**4 + 20*B*a**3*b**3*d**4*e**3 - 1
5*B*a**2*b**4*d**5*e**2 + 6*B*a*b**5*d**6*e - B*b**6*d**7)/(3*e**7))/e
```

3.1804 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=306

$$-\frac{2b^5(d+ex)^{13/2}(-6aBe-Abe+7bBd)}{13e^8}+\frac{6b^4(d+ex)^{11/2}(bd-ae)(-5aBe-2Abe+7bBd)}{11e^8}-\frac{10b^3(d+ex)^{9/2}(bd}{}$$

```
[Out] 2/3*(-a*e+b*d)^5*(-6*A*b*e-B*a*e+7*B*b*d)*(e*x+d)^(3/2)/e^8-6/5*b*(-a*e+b*d
)^4*(-5*A*b*e-2*B*a*e+7*B*b*d)*(e*x+d)^(5/2)/e^8+10/7*b^2*(-a*e+b*d)^3*(-4*
A*b*e-3*B*a*e+7*B*b*d)*(e*x+d)^(7/2)/e^8-10/9*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*
B*a*e+7*B*b*d)*(e*x+d)^(9/2)/e^8+6/11*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*
b*d)*(e*x+d)^(11/2)/e^8-2/13*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(13/2)/e^
8+2/15*b^6*B*(e*x+d)^(15/2)/e^8-2*(-a*e+b*d)^6*(-A*e+B*d)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{13/2}(-6aBe-Abe+7bBd)}{13e^8}+\frac{6b^4(d+ex)^{11/2}(bd-ae)(-5aBe-2Abe+7bBd)}{11e^8}-\frac{10b^3(d+ex)^{9/2}(bd}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^6*(B*d - A*e)*Sqrt[d + e*x])/e^8 + (2*(b*d - a*e)^5*(7*b*B*
d - 6*A*b*e - a*B*e)*(d + e*x)^(3/2))/(3*e^8) - (6*b*(b*d - a*e)^4*(7*b*B*d
 - 5*A*b*e - 2*a*B*e)*(d + e*x)^(5/2))/(5*e^8) + (10*b^2*(b*d - a*e)^3*(7*b
*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (10*b^3*(b*d - a*e)^2*
(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(9/2))/(9*e^8) + (6*b^4*(b*d - a*e)
*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(11/2))/(11*e^8) - (2*b^5*(7*b*B*d
 - A*b*e - 6*a*B*e)*(d + e*x)^(13/2))/(13*e^8) + (2*b^6*B*(d + e*x)^(15/2))
/(15*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx = \int \frac{(a+bx)^6(A+Bx)}{\sqrt{d+ex}}\,dx$$

$$= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7\sqrt{d+ex}} + \frac{(-bd+ae)^5(-7bBd+6Abe+aBe)\sqrt{d+ex}}{e^7}\right.$$

$$= -\frac{2(bd-ae)^6(Bd-Ae)\sqrt{d+ex}}{e^8} + \frac{2(bd-ae)^5(7bBd-6Abe-aBe)(d+ex}{3e^8}$$

Mathematica [**A**] time = 0.20, size = 259, normalized size = 0.85

$$\overline{2\sqrt{d+ex}\left(-3465b^5(d+ex)^6(-6aBe-Abe+7bBd)+12285b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-25025\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-45045*(b*d - a*e)^6*(B*d - A*e) + 15015*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e)*(d + e*x) - 27027*b*(b*d - a*e)^4*(7*b*B*d - 5*A*
b*e - 2*a*B*e)*(d + e*x)^2 + 32175*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3
*a*B*e)*(d + e*x)^3 - 25025*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)
*(d + e*x)^4 + 12285*b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x
)^5 - 3465*b^5*(7*b*B*d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 3003*b^6*B*(d + e*
x)^7))/(45045*e^8)
```

fricas [**B**] time = 0.68, size = 769, normalized size = 2.51

$$\overline{2\left(3003\,Bb^6e^7x^7-14336\,Bb^6d^7+45045\,Aa^6e^7+15360\left(6\,Bab^5+Ab^6\right)d^6e-49920\left(5\,Ba^2b^4+2\,Aab^5\right)d^5e^2+91\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*B*b^6*e^7*x^7 - 14336*B*b^6*d^7 + 45045*A*a^6*e^7 + 15360*(6*
B*a*b^5 + A*b^6)*d^6*e - 49920*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 + 91520*(4
*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 - 102960*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*
e^4 + 72072*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 30030*(B*a^6 + 6*A*a^5*b)*d
*e^6 - 231*(14*B*b^6*d*e^6 - 15*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 63*(56*B*b^6
*d^2*e^5 - 60*(6*B*a*b^5 + A*b^6)*d*e^6 + 195*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7
)*x^5 - 35*(112*B*b^6*d^3*e^4 - 120*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 390*(5*B*
a^2*b^4 + 2*A*a*b^5)*d*e^6 - 715*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + 5*(
896*B*b^6*d^4*e^3 - 960*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 3120*(5*B*a^2*b^4 + 2
*A*a*b^5)*d^2*e^5 - 5720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 6435*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*e^7)*x^3 - 3*(1792*B*b^6*d^5*e^2 - 1920*(6*B*a*b^5 + A*b
^6)*d^4*e^3 + 6240*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 11440*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^2*e^5 + 12870*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 9009*(2*B
*a^5*b + 5*A*a^4*b^2)*e^7)*x^2 + (7168*B*b^6*d^6*e - 7680*(6*B*a*b^5 + A*b^
6)*d^5*e^2 + 24960*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 45760*(4*B*a^3*b^3 +
 3*A*a^2*b^4)*d^3*e^4 + 51480*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 36036*(
2*B*a^5*b + 5*A*a^4*b^2)*d*e^6 + 15015*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x
 + d)/e^8
```

giac [**B**] time = 0.24, size = 895, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^6*e^(-1) + 90090*(
(x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*b*e^(-1) + 18018*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*b*e^(-2) + 45045*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b^2*
e^(-2) + 19305*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b^2*e^(-3) + 25740*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a
^3*b^3*e^(-3) + 2860*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^
3*e^(-4) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^4*e^(
-4) + 975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*a^2*b^4*e^(-5) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^5*e^(-5) + 90*(231*(x*e + d)^(13/2)
- 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)
*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e
+ d)*d^6)*B*a*b^5*e^(-6) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)
*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(
5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^6*e^(-6)
+ 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2
)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
+ d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^6*
e^(-7) + 45045*sqrt(x*e + d)*A*a^6)*e^(-1)
```

maple [B] time = 0.06, size = 913, normalized size = 2.98

$$2\bigl(3003B\,b^{6}x^{7}e^{7}+3465A\,b^{6}e^{7}x^{6}+20790Ba\,b^{5}e^{7}x^{6}-3234B\,b^{6}d\,e^{6}x^{6}+24570Aa\,b^{5}e^{7}x^{5}-3780A\,b^{6}d\,e^{6}x^{5}+6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(3003*B*b^6*e^7*x^7+3465*A*b^6*e^7*x^6+20790*B*a*b^5*e^7*x^6-3234*B
*b^6*d*e^6*x^6+24570*A*a*b^5*e^7*x^5-3780*A*b^6*d*e^6*x^5+61425*B*a^2*b^4*e
^7*x^5-22680*B*a*b^5*d*e^6*x^5+3528*B*b^6*d^2*e^5*x^5+75075*A*a^2*b^4*e^7*x
^4-27300*A*a*b^5*d*e^6*x^4+4200*A*b^6*d^2*e^5*x^4+100100*B*a^3*b^3*e^7*x^4-
68250*B*a^2*b^4*d*e^6*x^4+25200*B*a*b^5*d^2*e^5*x^4-3920*B*b^6*d^3*e^4*x^4+
128700*A*a^3*b^3*e^7*x^3-85800*A*a^2*b^4*d*e^6*x^3+31200*A*a*b^5*d^2*e^5*x^
3-4800*A*b^6*d^3*e^4*x^3+96525*B*a^4*b^2*e^7*x^3-114400*B*a^3*b^3*d*e^6*x^3
+78000*B*a^2*b^4*d^2*e^5*x^3-28800*B*a*b^5*d^3*e^4*x^3+4480*B*b^6*d^4*e^3*x
^3+135135*A*a^4*b^2*e^7*x^2-154440*A*a^3*b^3*d*e^6*x^2+102960*A*a^2*b^4*d^2
*e^5*x^2-37440*A*a*b^5*d^3*e^4*x^2+5760*A*b^6*d^4*e^3*x^2+54054*B*a^5*b*e^7
*x^2-115830*B*a^4*b^2*d*e^6*x^2+137280*B*a^3*b^3*d^2*e^5*x^2-93600*B*a^2*b^
4*d^3*e^4*x^2+34560*B*a*b^5*d^4*e^3*x^2-5376*B*b^6*d^5*e^2*x^2+90090*A*a^5*
b*e^7*x-180180*A*a^4*b^2*d*e^6*x+205920*A*a^3*b^3*d^2*e^5*x-137280*A*a^2*b^
4*d^3*e^4*x+49920*A*a*b^5*d^4*e^3*x-7680*A*b^6*d^5*e^2*x+15015*B*a^6*e^7*x-
72072*B*a^5*b*d*e^6*x+154440*B*a^4*b^2*d^2*e^5*x-183040*B*a^3*b^3*d^3*e^4*x
+124800*B*a^2*b^4*d^4*e^3*x-46080*B*a*b^5*d^5*e^2*x+7168*B*b^6*d^6*e*x+4504
5*A*a^6*e^7-180180*A*a^5*b*d*e^6+360360*A*a^4*b^2*d^2*e^5-411840*A*a^3*b^3*
d^3*e^4+274560*A*a^2*b^4*d^4*e^3-99840*A*a*b^5*d^5*e^2+15360*A*b^6*d^6*e-30
030*B*a^6*d*e^6+144144*B*a^5*b*d^2*e^5-308880*B*a^4*b^2*d^3*e^4+366080*B*a^
3*b^3*d^4*e^3-249600*B*a^2*b^4*d^5*e^2+92160*B*a*b^5*d^6*e-14336*B*b^6*d^7)
*(e*x+d)^(1/2)/e^8
```

maxima [**B**] time = 0.61, size = 767, normalized size = 2.51

$$\frac{2(3003 (ex+d)^{\frac{15}{2}} Bb^6 - 3465 (7 Bb^6 d - (6 Bab^5 + Ab^6)e)(ex+d)^{\frac{13}{2}} + 12285 (7 Bb^6 d^2 - 2 (6 Bab^5 + Ab^6)de + (5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*B*b^6 - 3465*(7*B*b^6*d - (6*B*a*b^5 + A*b^6
)*e)*(e*x + d)^(13/2) + 12285*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5
*B*a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(11/2) - 25025*(7*B*b^6*d^3 - 3*(6*B
*a*b^5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 +
3*A*a^2*b^4)*e^3)*(e*x + d)^(9/2) + 32175*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b
^6)*d^3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*
b^4)*d*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(7/2) - 27027*(7*B*
b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^
2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*
d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(5/2) + 15015*(7*B*b^6*d^6
 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 20*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^
4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x + d)^
(3/2) - 45045*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a
^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*
B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B
*a^6 + 6*A*a^5*b)*d*e^6)*sqrt(e*x + d))/e^8
```

mupad [**B**] time = 0.08, size = 279, normalized size = 0.91

$$\frac{(d+e\,x)^{13/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{13\,e^8}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{3/2}\,(6\,A\,b\,e+B\,a\,e-7\,B\,b\,d)}{3\,e^8}+\frac{2\,B\,b^6\,(d+e\,x}{15\,e^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(1/2),x)
```

```
[Out] ((d + e*x)^(13/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(13*e^8) + (2*(a
*e - b*d)^5*(d + e*x)^(3/2)*(6*A*b*e + B*a*e - 7*B*b*d))/(3*e^8) + (2*B*b^6
*(d + e*x)^(15/2))/(15*e^8) + (2*(A*e - B*d)*(a*e - b*d)^6*(d + e*x)^(1/2))
/e^8 + (6*b*(a*e - b*d)^4*(d + e*x)^(5/2)*(5*A*b*e + 2*B*a*e - 7*B*b*d))/(5
*e^8) + (6*b^4*(a*e - b*d)*(d + e*x)^(11/2)*(2*A*b*e + 5*B*a*e - 7*B*b*d))/
(11*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(7/2)*(4*A*b*e + 3*B*a*e - 7*B*b
*d))/(7*e^8) + (10*b^3*(a*e - b*d)^2*(d + e*x)^(9/2)*(3*A*b*e + 4*B*a*e - 7
*B*b*d))/(9*e^8)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1805 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=300

$$-\frac{2b^5(d+ex)^{11/2}(-6aBe-Abe+7bBd)}{11e^8}+\frac{2b^4(d+ex)^{9/2}(bd-ae)(-5aBe-2Abe+7bBd)}{3e^8}-10b^3(d+ex)^{7/2}(bd-$$

```
[Out] -2*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b*d)*(e*x+d)^(3/2)/e^8+2*b^2*(-a*e+
b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e*x+d)^(5/2)/e^8-10/7*b^3*(-a*e+b*d)^2*(
-3*A*b*e-4*B*a*e+7*B*b*d)*(e*x+d)^(7/2)/e^8+2/3*b^4*(-a*e+b*d)*(-2*A*b*e-5*
B*a*e+7*B*b*d)*(e*x+d)^(9/2)/e^8-2/11*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^
(11/2)/e^8+2/13*b^6*B*(e*x+d)^(13/2)/e^8+2*(-a*e+b*d)^6*(-A*e+B*d)/e^8/(e*x
+d)^(1/2)+2*(-a*e+b*d)^5*(-6*A*b*e-B*a*e+7*B*b*d)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.15, antiderivative size = 300, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{11/2}(-6aBe-Abe+7bBd)}{11e^8}+\frac{2b^4(d+ex)^{9/2}(bd-ae)(-5aBe-2Abe+7bBd)}{3e^8}-10b^3(d+ex)^{7/2}(bd-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(e^8*Sqrt[d + e*x]) + (2*(b*d - a*e)^5*(7*b*B
*d - 6*A*b*e - a*B*e)*Sqrt[d + e*x])/e^8 - (2*b*(b*d - a*e)^4*(7*b*B*d - 5*
A*b*e - 2*a*B*e)*(d + e*x)^(3/2))/e^8 + (2*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A
*b*e - 3*a*B*e)*(d + e*x)^(5/2))/e^8 - (10*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A
*b*e - 4*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (2*b^4*(b*d - a*e)*(7*b*B*d - 2*
A*b*e - 5*a*B*e)*(d + e*x)^(9/2))/(3*e^8) - (2*b^5*(7*b*B*d - A*b*e - 6*a*B
*e)*(d + e*x)^(11/2))/(11*e^8) + (2*b^6*B*(d + e*x)^(13/2))/(13*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{3/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7\sqrt{d+ex}}+3b\right.\\ &= \frac{2(bd-ae)^6(Bd-Ae)}{e^8\sqrt{d+ex}}+\frac{2(bd-ae)^5(7bBd-6Abe-aBe)\sqrt{d+ex}}{e^8}-2b\end{aligned}$$

Mathematica [A] time = 0.20, size = 259, normalized size = 0.86

$$2\left(-273b^5(d+ex)^6(-6aBe-Abe+7bBd)+1001b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-2145b^3(d+ex)^4(\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(3003*(b*d - a*e)^6*(B*d - A*e) + 3003*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e
- a*B*e)*(d + e*x) - 3003*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d
+ e*x)^2 + 3003*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3
 - 2145*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 1001*
b^4*(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 273*b^5*(7*b*B*
d - A*b*e - 6*a*B*e)*(d + e*x)^6 + 231*b^6*B*(d + e*x)^7))/(3003*e^8*Sqrt[d
 + e*x])
```

fricas [B] time = 0.69, size = 778, normalized size = 2.59

$$2\left(231\,Bb^6e^7x^7+14336\,Bb^6d^7-3003\,Aa^6e^7-13312\left(6\,Bab^5+Ab^6\right)d^6e+36608\left(5\,Ba^2b^4+2\,Aab^5\right)d^5e^2-54912\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/3003*(231*B*b^6*e^7*x^7 + 14336*B*b^6*d^7 - 3003*A*a^6*e^7 - 13312*(6*B*a
*b^5 + A*b^6)*d^6*e + 36608*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 54912*(4*B*
a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 48048*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4
- 24024*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + 6006*(B*a^6 + 6*A*a^5*b)*d*e^6
- 21*(14*B*b^6*d*e^6 - 13*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 7*(56*B*b^6*d^2*e^
5 - 52*(6*B*a*b^5 + A*b^6)*d*e^6 + 143*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 -
 5*(112*B*b^6*d^3*e^4 - 104*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 286*(5*B*a^2*b^4
+ 2*A*a*b^5)*d*e^6 - 429*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + (896*B*b^6*
d^4*e^3 - 832*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 2288*(5*B*a^2*b^4 + 2*A*a*b^5)*
d^2*e^5 - 3432*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 3003*(3*B*a^4*b^2 + 4*A*
a^3*b^3)*e^7)*x^3 - (1792*B*b^6*d^5*e^2 - 1664*(6*B*a*b^5 + A*b^6)*d^4*e^3
+ 4576*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 6864*(4*B*a^3*b^3 + 3*A*a^2*b^4)
*d^2*e^5 + 6006*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 3003*(2*B*a^5*b + 5*A*a
^4*b^2)*e^7)*x^2 + (7168*B*b^6*d^6*e - 6656*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 1
8304*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 27456*(4*B*a^3*b^3 + 3*A*a^2*b^4)*
d^3*e^4 + 24024*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 12012*(2*B*a^5*b + 5*
A*a^4*b^2)*d*e^6 + 3003*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^9*x +
d*e^8)
```

giac [B] time = 0.32, size = 1131, normalized size = 3.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/3003*(231*(x*e + d)^(13/2)*B*b^6*e^96 - 1911*(x*e + d)^(11/2)*B*b^6*d*e^9
6 + 7007*(x*e + d)^(9/2)*B*b^6*d^2*e^96 - 15015*(x*e + d)^(7/2)*B*b^6*d^3*e
^96 + 21021*(x*e + d)^(5/2)*B*b^6*d^4*e^96 - 21021*(x*e + d)^(3/2)*B*b^6*d^
5*e^96 + 21021*sqrt(x*e + d)*B*b^6*d^6*e^96 + 1638*(x*e + d)^(11/2)*B*a*b^5
*e^97 + 273*(x*e + d)^(11/2)*A*b^6*e^97 - 12012*(x*e + d)^(9/2)*B*a*b^5*d*e
^97 - 2002*(x*e + d)^(9/2)*A*b^6*d*e^97 + 38610*(x*e + d)^(7/2)*B*a*b^5*d^2
*e^97 + 6435*(x*e + d)^(7/2)*A*b^6*d^2*e^97 - 72072*(x*e + d)^(5/2)*B*a*b^5
*d^3*e^97 - 12012*(x*e + d)^(5/2)*A*b^6*d^3*e^97 + 90090*(x*e + d)^(3/2)*B*
a*b^5*d^4*e^97 + 15015*(x*e + d)^(3/2)*A*b^6*d^4*e^97 - 108108*sqrt(x*e + d
)*B*a*b^5*d^5*e^97 - 18018*sqrt(x*e + d)*A*b^6*d^5*e^97 + 5005*(x*e + d)^(9
/2)*B*a^2*b^4*e^98 + 2002*(x*e + d)^(9/2)*A*a*b^5*e^98 - 32175*(x*e + d)^(7
/2)*B*a^2*b^4*d*e^98 - 12870*(x*e + d)^(7/2)*A*a*b^5*d*e^98 + 90090*(x*e +
d)^(5/2)*B*a^2*b^4*d^2*e^98 + 36036*(x*e + d)^(5/2)*A*a*b^5*d^2*e^98 - 1501
50*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^98 - 60060*(x*e + d)^(3/2)*A*a*b^5*d^3*e
^98 + 225225*sqrt(x*e + d)*B*a^2*b^4*d^4*e^98 + 90090*sqrt(x*e + d)*A*a*b^5
*d^4*e^98 + 8580*(x*e + d)^(7/2)*B*a^3*b^3*e^99 + 6435*(x*e + d)^(7/2)*A*a^
2*b^4*e^99 - 48048*(x*e + d)^(5/2)*B*a^3*b^3*d*e^99 - 36036*(x*e + d)^(5/2)
*A*a^2*b^4*d*e^99 + 120120*(x*e + d)^(3/2)*B*a^3*b^3*d^2*e^99 + 90090*(x*e
+ d)^(3/2)*A*a^2*b^4*d^2*e^99 - 240240*sqrt(x*e + d)*B*a^3*b^3*d^3*e^99 - 1
80180*sqrt(x*e + d)*A*a^2*b^4*d^3*e^99 + 9009*(x*e + d)^(5/2)*B*a^4*b^2*e^1
00 + 12012*(x*e + d)^(5/2)*A*a^3*b^3*e^100 - 45045*(x*e + d)^(3/2)*B*a^4*b^
2*d*e^100 - 60060*(x*e + d)^(3/2)*A*a^3*b^3*d*e^100 + 135135*sqrt(x*e + d)*
B*a^4*b^2*d^2*e^100 + 180180*sqrt(x*e + d)*A*a^3*b^3*d^2*e^100 + 6006*(x*e
+ d)^(3/2)*B*a^5*b*e^101 + 15015*(x*e + d)^(3/2)*A*a^4*b^2*e^101 - 36036*sq
rt(x*e + d)*B*a^5*b*d*e^101 - 90090*sqrt(x*e + d)*A*a^4*b^2*d*e^101 + 3003*
sqrt(x*e + d)*B*a^6*e^102 + 18018*sqrt(x*e + d)*A*a^5*b*e^102)*e^(-104) + 2
*(B*b^6*d^7 - 6*B*a*b^5*d^6*e - A*b^6*d^6*e + 15*B*a^2*b^4*d^5*e^2 + 6*A*a*
b^5*d^5*e^2 - 20*B*a^3*b^3*d^4*e^3 - 15*A*a^2*b^4*d^4*e^3 + 15*B*a^4*b^2*d^
3*e^4 + 20*A*a^3*b^3*d^3*e^4 - 6*B*a^5*b*d^2*e^5 - 15*A*a^4*b^2*d^2*e^5 + B
*a^6*d*e^6 + 6*A*a^5*b*d*e^6 - A*a^6*e^7)*e^(-8)/sqrt(x*e + d)
```

maple [B] time = 0.06, size = 913, normalized size = 3.04

$$-\frac{2\left(-231B\,b^{6}x^{7}e^{7}-273A\,b^{6}e^{7}x^{6}-1638Ba\,b^{5}e^{7}x^{6}+294B\,b^{6}d\,e^{6}x^{6}-2002Aa\,b^{5}e^{7}x^{5}+364A\,b^{6}d\,e^{6}x^{5}-5005B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/3003*(-231*B*b^6*e^7*x^7-273*A*b^6*e^7*x^6-1638*B*a*b^5*e^7*x^6+294*B*b^
6*d*e^6*x^6-2002*A*a*b^5*e^7*x^5+364*A*b^6*d*e^6*x^5-5005*B*a^2*b^4*e^7*x^5
+2184*B*a*b^5*d*e^6*x^5-392*B*b^6*d^2*e^5*x^5-6435*A*a^2*b^4*e^7*x^4+2860*A
*a*b^5*d*e^6*x^4-520*A*b^6*d^2*e^5*x^4-8580*B*a^3*b^3*e^7*x^4+7150*B*a^2*b^
4*d*e^6*x^4-3120*B*a*b^5*d^2*e^5*x^4+560*B*b^6*d^3*e^4*x^4-12012*A*a^3*b^3*
e^7*x^3+10296*A*a^2*b^4*d*e^6*x^3-4576*A*a*b^5*d^2*e^5*x^3+832*A*b^6*d^3*e^
4*x^3-9009*B*a^4*b^2*e^7*x^3+13728*B*a^3*b^3*d*e^6*x^3-11440*B*a^2*b^4*d^2*
e^5*x^3+4992*B*a*b^5*d^3*e^4*x^3-896*B*b^6*d^4*e^3*x^3-15015*A*a^4*b^2*e^7*
x^2+24024*A*a^3*b^3*d*e^6*x^2-20592*A*a^2*b^4*d^2*e^5*x^2+9152*A*a*b^5*d^3*
e^4*x^2-1664*A*b^6*d^4*e^3*x^2-6006*B*a^5*b*e^7*x^2+18018*B*a^4*b^2*d*e^6*x
^2-27456*B*a^3*b^3*d^2*e^5*x^2+22880*B*a^2*b^4*d^3*e^4*x^2-9984*B*a*b^5*d^4
*e^3*x^2+1792*B*b^6*d^5*e^2*x^2-18018*A*a^5*b*e^7*x+60060*A*a^4*b^2*d*e^6*x
-96096*A*a^3*b^3*d^2*e^5*x+82368*A*a^2*b^4*d^3*e^4*x-36608*A*a*b^5*d^4*e^3*
x+6656*A*b^6*d^5*e^2*x-3003*B*a^6*e^7*x+24024*B*a^5*b*d*e^6*x-72072*B*a^4*b
^2*d^2*e^5*x+109824*B*a^3*b^3*d^3*e^4*x-91520*B*a^2*b^4*d^4*e^3*x+39936*B*a
*b^5*d^5*e^2*x-7168*B*b^6*d^6*e*x+3003*A*a^6*e^7-36036*A*a^5*b*d*e^6+120120
*A*a^4*b^2*d^2*e^5-192192*A*a^3*b^3*d^3*e^4+164736*A*a^2*b^4*d^4*e^3-73216*
A*a*b^5*d^5*e^2+13312*A*b^6*d^6*e-6006*B*a^6*d*e^6+48048*B*a^5*b*d^2*e^5-14
4144*B*a^4*b^2*d^3*e^4+219648*B*a^3*b^3*d^4*e^3-183040*B*a^2*b^4*d^5*e^2+79
872*B*a*b^5*d^6*e-14336*B*b^6*d^7)/(e*x+d)^(1/2)/e^8
```

maxima [B] time = 0.77, size = 775, normalized size = 2.58

$$\frac{2\left(\frac{231\,(ex+d)^{\frac{13}{2}}Bb^{6}-273\left(7\,Bb^{6}d-\left(6\,Bab^{5}+Ab^{6}\right)e\right)(ex+d)^{\frac{11}{2}}+1001\left(7\,Bb^{6}d^{2}-2\left(6\,Bab^{5}+Ab^{6}\right)de+\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)e^{2}\right)(ex+d)^{\frac{9}{2}}-2145\left(7\,Bb^{6}d^{3}-3\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/3003*((231*(e*x + d)^(13/2)*B*b^6 - 273*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*
e)*(e*x + d)^(11/2) + 1001*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*
a^2*b^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(9/2) - 2145*(7*B*b^6*d^3 - 3*(6*B*a*b^
5 + A*b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a
^2*b^4)*e^3)*(e*x + d)^(7/2) + 3003*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^
3*e + 6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d
*e^3 + (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(5/2) - 3003*(7*B*b^6*d^5
 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^2 - 10*
(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^4 -
 (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^(3/2) + 3003*(7*B*b^6*d^6 - 6*(6*
B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 20*(4*B*a^3
*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^4 - 6*(2
*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*sqrt(e*x + d))/e^7
 + 3003*(B*b^6*d^7 - A*a^6*e^7 - (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4
 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*
b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 +
 6*A*a^5*b)*d*e^6)/(sqrt(e*x + d)*e^7))/e
```

mupad [B] time = 1.94, size = 438, normalized size = 1.46

$$\frac{(d+e\,x)^{11/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{11\,e^8}-\frac{-2\,B\,a^6\,d\,e^6+2\,A\,a^6\,e^7+12\,B\,a^5\,b\,d^2\,e^5-12\,A\,a^5\,b\,d\,e^6-30\,B\,a^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(3/2),x)
```

```
[Out] ((d + e*x)^(11/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(11*e^8) - (2*A*
a^6*e^7 - 2*B*b^6*d^7 + 2*A*b^6*d^6*e - 2*B*a^6*d*e^6 - 12*A*a*b^5*d^5*e^2
+ 12*B*a^5*b*d^2*e^5 + 30*A*a^2*b^4*d^4*e^3 - 40*A*a^3*b^3*d^3*e^4 + 30*A*a
^4*b^2*d^2*e^5 - 30*B*a^2*b^4*d^5*e^2 + 40*B*a^3*b^3*d^4*e^3 - 30*B*a^4*b^2
*d^3*e^4 - 12*A*a^5*b*d*e^6 + 12*B*a*b^5*d^6*e)/(e^8*(d + e*x)^(1/2)) + (2*
(a*e - b*d)^5*(d + e*x)^(1/2)*(6*A*b*e + B*a*e - 7*B*b*d))/e^8 + (2*B*b^6*(
d + e*x)^(13/2))/(13*e^8) + (2*b*(a*e - b*d)^4*(d + e*x)^(3/2)*(5*A*b*e + 2
*B*a*e - 7*B*b*d))/e^8 + (2*b^4*(a*e - b*d)*(d + e*x)^(9/2)*(2*A*b*e + 5*B*
a*e - 7*B*b*d))/(3*e^8) + (2*b^2*(a*e - b*d)^3*(d + e*x)^(5/2)*(4*A*b*e + 3
*B*a*e - 7*B*b*d))/e^8 + (10*b^3*(a*e - b*d)^2*(d + e*x)^(7/2)*(3*A*b*e + 4
*B*a*e - 7*B*b*d))/(7*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1806 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{2b^5(d+ex)^{9/2}(-6aBe-Abe+7bBd)}{9e^8}+\frac{6b^4(d+ex)^{7/2}(bd-ae)(-5aBe-2Abe+7bBd)}{7e^8}-\frac{2b^3(d+ex)^{5/2}(bd-a}{}$$

```
[Out] 2/3*(-a*e+b*d)^6*(-A*e+B*d)/e^8/(e*x+d)^(3/2)+10/3*b^2*(-a*e+b*d)^3*(-4*A*b
*e-3*B*a*e+7*B*b*d)*(e*x+d)^(3/2)/e^8-2*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+
7*B*b*d)*(e*x+d)^(5/2)/e^8+6/7*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e
*x+d)^(7/2)/e^8-2/9*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(9/2)/e^8+2/11*b^6
*B*(e*x+d)^(11/2)/e^8-2*(-a*e+b*d)^5*(-6*A*b*e-B*a*e+7*B*b*d)/e^8/(e*x+d)^(
1/2)-6*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b*d)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.15, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 77}

$$-\frac{2b^5(d+ex)^{9/2}(-6aBe-Abe+7bBd)}{9e^8}+\frac{6b^4(d+ex)^{7/2}(bd-ae)(-5aBe-2Abe+7bBd)}{7e^8}-\frac{2b^3(d+ex)^{5/2}(bd-a}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(3*e^8*(d + e*x)^(3/2)) - (2*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e))/(e^8*Sqrt[d + e*x]) - (6*b*(b*d - a*e)^4*(7*b*B*
d - 5*A*b*e - 2*a*B*e)*Sqrt[d + e*x])/e^8 + (10*b^2*(b*d - a*e)^3*(7*b*B*d
- 4*A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(3*e^8) - (2*b^3*(b*d - a*e)^2*(7*b*B
*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(5/2))/e^8 + (6*b^4*(b*d - a*e)*(7*b*B*d
- 2*A*b*e - 5*a*B*e)*(d + e*x)^(7/2))/(7*e^8) - (2*b^5*(7*b*B*d - A*b*e - 6
*a*B*e)*(d + e*x)^(9/2))/(9*e^8) + (2*b^6*B*(d + e*x)^(11/2))/(11*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{5/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7(d+ex)^{3/2}}+3b\right.\\ &= \frac{2(bd-ae)^6(Bd-Ae)}{3e^8(d+ex)^{3/2}}-\frac{2(bd-ae)^5(7bBd-6Abe-aBe)}{e^8\sqrt{d+ex}}-6b(bd-ae)\end{aligned}$$

Mathematica [A] time = 0.19, size = 259, normalized size = 0.86

$$2\Big(-77b^5(d+ex)^6(-6aBe-Abe+7bBd)+297b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-693b^3(d+ex)^4(bd-$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(231*(b*d - a*e)^6*(B*d - A*e) - 693*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e -
a*B*e)*(d + e*x) - 2079*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d +
e*x)^2 + 1155*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3 -
 693*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 297*b^4*
(b*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 77*b^5*(7*b*B*d - A
*b*e - 6*a*B*e)*(d + e*x)^6 + 63*b^6*B*(d + e*x)^7))/(693*e^8*(d + e*x)^(3/
2))
```

fricas [B] time = 1.10, size = 790, normalized size = 2.62

$$2\Big(63\,Bb^6e^7x^7-14336\,Bb^6d^7-231\,Aa^6e^7+11264\,\big(6\,Bab^5+Ab^6\big)d^6e-25344\,\big(5\,Ba^2b^4+2\,Aab^5\big)d^5e^2+29568\,\big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/693*(63*B*b^6*e^7*x^7 - 14336*B*b^6*d^7 - 231*A*a^6*e^7 + 11264*(6*B*a*b^
5 + A*b^6)*d^6*e - 25344*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 + 29568*(4*B*a^3
*b^3 + 3*A*a^2*b^4)*d^4*e^3 - 18480*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 + 5
544*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 462*(B*a^6 + 6*A*a^5*b)*d*e^6 - 7*(
14*B*b^6*d*e^6 - 11*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 3*(56*B*b^6*d^2*e^5 - 44
*(6*B*a*b^5 + A*b^6)*d*e^6 + 99*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 - 3*(112
*B*b^6*d^3*e^4 - 88*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 198*(5*B*a^2*b^4 + 2*A*a*
b^5)*d*e^6 - 231*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + (896*B*b^6*d^4*e^3
- 704*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 1584*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^5
- 1848*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 1155*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*e^7)*x^3 - 3*(1792*B*b^6*d^5*e^2 - 1408*(6*B*a*b^5 + A*b^6)*d^4*e^3 + 3168
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 3696*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e
^5 + 2310*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 693*(2*B*a^5*b + 5*A*a^4*b^2)
*e^7)*x^2 - 3*(7168*B*b^6*d^6*e - 5632*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 12672*
(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^3 - 14784*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e
^4 + 9240*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 2772*(2*B*a^5*b + 5*A*a^4*b
^2)*d*e^6 + 231*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^10*x^2 + 2*d*e
^9*x + d^2*e^8)
```

giac [B] time = 0.31, size = 1103, normalized size = 3.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/693*(63*(x*e + d)^(11/2)*B*b^6*e^80 - 539*(x*e + d)^(9/2)*B*b^6*d*e^80 +
2079*(x*e + d)^(7/2)*B*b^6*d^2*e^80 - 4851*(x*e + d)^(5/2)*B*b^6*d^3*e^80 +
 8085*(x*e + d)^(3/2)*B*b^6*d^4*e^80 - 14553*sqrt(x*e + d)*B*b^6*d^5*e^80 +
 462*(x*e + d)^(9/2)*B*a*b^5*e^81 + 77*(x*e + d)^(9/2)*A*b^6*e^81 - 3564*(x
*e + d)^(7/2)*B*a*b^5*d*e^81 - 594*(x*e + d)^(7/2)*A*b^6*d*e^81 + 12474*(x*
e + d)^(5/2)*B*a*b^5*d^2*e^81 + 2079*(x*e + d)^(5/2)*A*b^6*d^2*e^81 - 27720
*(x*e + d)^(3/2)*B*a*b^5*d^3*e^81 - 4620*(x*e + d)^(3/2)*A*b^6*d^3*e^81 + 6
2370*sqrt(x*e + d)*B*a*b^5*d^4*e^81 + 10395*sqrt(x*e + d)*A*b^6*d^4*e^81 +
1485*(x*e + d)^(7/2)*B*a^2*b^4*e^82 + 594*(x*e + d)^(7/2)*A*a*b^5*e^82 - 10
395*(x*e + d)^(5/2)*B*a^2*b^4*d*e^82 - 4158*(x*e + d)^(5/2)*A*a*b^5*d*e^82
+ 34650*(x*e + d)^(3/2)*B*a^2*b^4*d^2*e^82 + 13860*(x*e + d)^(3/2)*A*a*b^5*
d^2*e^82 - 103950*sqrt(x*e + d)*B*a^2*b^4*d^3*e^82 - 41580*sqrt(x*e + d)*A*
a*b^5*d^3*e^82 + 2772*(x*e + d)^(5/2)*B*a^3*b^3*e^83 + 2079*(x*e + d)^(5/2)
*A*a^2*b^4*e^83 - 18480*(x*e + d)^(3/2)*B*a^3*b^3*d*e^83 - 13860*(x*e + d)^
(3/2)*A*a^2*b^4*d*e^83 + 83160*sqrt(x*e + d)*B*a^3*b^3*d^2*e^83 + 62370*sqr
t(x*e + d)*A*a^2*b^4*d^2*e^83 + 3465*(x*e + d)^(3/2)*B*a^4*b^2*e^84 + 4620*
(x*e + d)^(3/2)*A*a^3*b^3*e^84 - 31185*sqrt(x*e + d)*B*a^4*b^2*d*e^84 - 415
80*sqrt(x*e + d)*A*a^3*b^3*d*e^84 + 4158*sqrt(x*e + d)*B*a^5*b*e^85 + 10395
*sqrt(x*e + d)*A*a^4*b^2*e^85)*e^(-88) - 2/3*(21*(x*e + d)*B*b^6*d^6 - B*b^
6*d^7 - 108*(x*e + d)*B*a*b^5*d^5*e - 18*(x*e + d)*A*b^6*d^5*e + 6*B*a*b^5*
d^6*e + A*b^6*d^6*e + 225*(x*e + d)*B*a^2*b^4*d^4*e^2 + 90*(x*e + d)*A*a*b^
5*d^4*e^2 - 15*B*a^2*b^4*d^5*e^2 - 6*A*a*b^5*d^5*e^2 - 240*(x*e + d)*B*a^3*
b^3*d^3*e^3 - 180*(x*e + d)*A*a^2*b^4*d^3*e^3 + 20*B*a^3*b^3*d^4*e^3 + 15*A
*a^2*b^4*d^4*e^3 + 135*(x*e + d)*B*a^4*b^2*d^2*e^4 + 180*(x*e + d)*A*a^3*b^
3*d^2*e^4 - 15*B*a^4*b^2*d^3*e^4 - 20*A*a^3*b^3*d^3*e^4 - 36*(x*e + d)*B*a^
5*b*d*e^5 - 90*(x*e + d)*A*a^4*b^2*d*e^5 + 6*B*a^5*b*d^2*e^5 + 15*A*a^4*b^2
*d^2*e^5 + 3*(x*e + d)*B*a^6*e^6 + 18*(x*e + d)*A*a^5*b*e^6 - B*a^6*d*e^6 -
 6*A*a^5*b*d*e^6 + A*a^6*e^7)*e^(-8)/(x*e + d)^(3/2)
```

maple [**B**] time = 0.06, size = 913, normalized size = 3.02

$$-\frac{2\left(-63B\,b^6x^7e^7-77A\,b^6e^7x^6-462Ba\,b^5e^7x^6+98B\,b^6d\,e^6x^6-594Aa\,b^5e^7x^5+132A\,b^6d\,e^6x^5-1485B\,a^2b^4e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/693*(-63*B*b^6*e^7*x^7-77*A*b^6*e^7*x^6-462*B*a*b^5*e^7*x^6+98*B*b^6*d*e
^6*x^6-594*A*a*b^5*e^7*x^5+132*A*b^6*d*e^6*x^5-1485*B*a^2*b^4*e^7*x^5+792*B
*a*b^5*d*e^6*x^5-168*B*b^6*d^2*e^5*x^5-2079*A*a^2*b^4*e^7*x^4+1188*A*a*b^5*
d*e^6*x^4-264*A*b^6*d^2*e^5*x^4-2772*B*a^3*b^3*e^7*x^4+2970*B*a^2*b^4*d*e^6
*x^4-1584*B*a*b^5*d^2*e^5*x^4+336*B*b^6*d^3*e^4*x^4-4620*A*a^3*b^3*e^7*x^3+
5544*A*a^2*b^4*d*e^6*x^3-3168*A*a*b^5*d^2*e^5*x^3+704*A*b^6*d^3*e^4*x^3-346
5*B*a^4*b^2*e^7*x^3+7392*B*a^3*b^3*d*e^6*x^3-7920*B*a^2*b^4*d^2*e^5*x^3+422
4*B*a*b^5*d^3*e^4*x^3-896*B*b^6*d^4*e^3*x^3-10395*A*a^4*b^2*e^7*x^2+27720*A
*a^3*b^3*d*e^6*x^2-33264*A*a^2*b^4*d^2*e^5*x^2+19008*A*a*b^5*d^3*e^4*x^2-42
24*A*b^6*d^4*e^3*x^2-4158*B*a^5*b*e^7*x^2+20790*B*a^4*b^2*d*e^6*x^2-44352*B
*a^3*b^3*d^2*e^5*x^2+47520*B*a^2*b^4*d^3*e^4*x^2-25344*B*a*b^5*d^4*e^3*x^2+
5376*B*b^6*d^5*e^2*x^2+4158*A*a^5*b*e^7*x-41580*A*a^4*b^2*d*e^6*x+110880*A*
a^3*b^3*d^2*e^5*x-133056*A*a^2*b^4*d^3*e^4*x+76032*A*a*b^5*d^4*e^3*x-16896*
A*b^6*d^5*e^2*x+693*B*a^6*e^7*x-16632*B*a^5*b*d*e^6*x+83160*B*a^4*b^2*d^2*e
^5*x-177408*B*a^3*b^3*d^3*e^4*x+190080*B*a^2*b^4*d^4*e^3*x-101376*B*a*b^5*d
^5*e^2*x+21504*B*b^6*d^6*e*x+231*A*a^6*e^7+2772*A*a^5*b*d*e^6-27720*A*a^4*b
^2*d^2*e^5+73920*A*a^3*b^3*d^3*e^4-88704*A*a^2*b^4*d^4*e^3+50688*A*a*b^5*d^
5*e^2-11264*A*b^6*d^6*e+462*B*a^6*d*e^6-11088*B*a^5*b*d^2*e^5+55440*B*a^4*b
^2*d^3*e^4-118272*B*a^3*b^3*d^4*e^3+126720*B*a^2*b^4*d^5*e^2-67584*B*a*b^5*
d^6*e+14336*B*b^6*d^7)/(e*x+d)^(3/2)/e^8
```

maxima [**B**] time = 0.53, size = 773, normalized size = 2.56

$$\frac{2\left(\frac{63\,(ex+d)^{\frac{11}{2}}Bb^6-77\left(7\,Bb^6d-\left(6\,Bab^5+Ab^6\right)e\right)(ex+d)^{\frac{9}{2}}+297\left(7\,Bb^6d^2-2\left(6\,Bab^5+Ab^6\right)de+\left(5\,Ba^2b^4+2\,Aab^5\right)e^2\right)(ex+d)^{\frac{7}{2}}-693\left(7\,Bb^6d^3-3\left(6\,B\right.\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/693*((63*(e*x + d)^(11/2)*B*b^6 - 77*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*e)*
(e*x + d)^(9/2) + 297*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*a^2*b
^4 + 2*A*a*b^5)*e^2)*(e*x + d)^(7/2) - 693*(7*B*b^6*d^3 - 3*(6*B*a*b^5 + A*
b^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a^2*b^4
)*e^3)*(e*x + d)^(5/2) + 1155*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^3*e +
6*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 +
 (3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*(e*x + d)^(3/2) - 2079*(7*B*b^6*d^5 - 5*(
6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a*b^5)*d^3*e^2 - 10*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^4 - (2*B*
a^5*b + 5*A*a^4*b^2)*e^5)*sqrt(e*x + d))/e^7 + 231*(B*b^6*d^7 - A*a^6*e^7 -
 (6*B*a*b^5 + A*b^6)*d^6*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 5*(4*B*a
^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 5*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 3*(
2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + (B*a^6 + 6*A*a^5*b)*d*e^6 - 3*(7*B*b^6*d
^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 - 2
0*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*
e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x + d
))/((e*x + d)^(3/2)*e^7))/e
```

mupad [**B**] time = 1.97, size = 569, normalized size = 1.88

$$\frac{(d+e\,x)^{9/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{9\,e^8}-\frac{(d+e\,x)\,\left(2\,B\,a^6\,e^6-24\,B\,a^5\,b\,d\,e^5+12\,A\,a^5\,b\,e^6+90\,B\,a^4\,b^2\,d^2\,e^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(5/2),x)
```

```
[Out] ((d + e*x)^(9/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(9*e^8) - ((d + e
*x)*(2*B*a^6*e^6 + 14*B*b^6*d^6 + 12*A*a^5*b*e^6 - 12*A*b^6*d^5*e + 60*A*a*
b^5*d^4*e^2 - 60*A*a^4*b^2*d*e^5 - 120*A*a^2*b^4*d^3*e^3 + 120*A*a^3*b^3*d^
2*e^4 + 150*B*a^2*b^4*d^4*e^2 - 160*B*a^3*b^3*d^3*e^3 + 90*B*a^4*b^2*d^2*e^
4 - 72*B*a*b^5*d^5*e - 24*B*a^5*b*d*e^5) + (2*A*a^6*e^7)/3 - (2*B*b^6*d^7)/
3 + (2*A*b^6*d^6*e)/3 - (2*B*a^6*d*e^6)/3 - 4*A*a*b^5*d^5*e^2 + 4*B*a^5*b*d
^2*e^5 + 10*A*a^2*b^4*d^4*e^3 - (40*A*a^3*b^3*d^3*e^4)/3 + 10*A*a^4*b^2*d^2
*e^5 - 10*B*a^2*b^4*d^5*e^2 + (40*B*a^3*b^3*d^4*e^3)/3 - 10*B*a^4*b^2*d^3*e
^4 - 4*A*a^5*b*d*e^6 + 4*B*a*b^5*d^6*e)/(e^8*(d + e*x)^(3/2)) + (2*B*b^6*(d
 + e*x)^(11/2))/(11*e^8) + (6*b*(a*e - b*d)^4*(d + e*x)^(1/2)*(5*A*b*e + 2*
B*a*e - 7*B*b*d))/e^8 + (6*b^4*(a*e - b*d)*(d + e*x)^(7/2)*(2*A*b*e + 5*B*a
*e - 7*B*b*d))/(7*e^8) + (10*b^2*(a*e - b*d)^3*(d + e*x)^(3/2)*(4*A*b*e + 3
*B*a*e - 7*B*b*d))/(3*e^8) + (2*b^3*(a*e - b*d)^2*(d + e*x)^(5/2)*(3*A*b*e
+ 4*B*a*e - 7*B*b*d))/e^8
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1807 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^5(d+ex)^{7/2}(-6aBe-Abe+7bBd)}{7e^8}+\frac{6b^4(d+ex)^{5/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{3/2}(bd-}{}$$

```
[Out] 2/5*(-a*e+b*d)^6*(-A*e+B*d)/e^8/(e*x+d)^(5/2)-2/3*(-a*e+b*d)^5*(-6*A*b*e-B*
a*e+7*B*b*d)/e^8/(e*x+d)^(3/2)-10/3*b^3*(-a*e+b*d)^2*(-3*A*b*e-4*B*a*e+7*B*
b*d)*(e*x+d)^(3/2)/e^8+6/5*b^4*(-a*e+b*d)*(-2*A*b*e-5*B*a*e+7*B*b*d)*(e*x+d
)^(5/2)/e^8-2/7*b^5*(-A*b*e-6*B*a*e+7*B*b*d)*(e*x+d)^(7/2)/e^8+2/9*b^6*B*(e
*x+d)^(9/2)/e^8+6*b*(-a*e+b*d)^4*(-5*A*b*e-2*B*a*e+7*B*b*d)/e^8/(e*x+d)^(1/
2)+10*b^2*(-a*e+b*d)^3*(-4*A*b*e-3*B*a*e+7*B*b*d)*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.15, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 77\}$

$$-\frac{2b^5(d+ex)^{7/2}(-6aBe-Abe+7bBd)}{7e^8}+\frac{6b^4(d+ex)^{5/2}(bd-ae)(-5aBe-2Abe+7bBd)}{5e^8}-\frac{10b^3(d+ex)^{3/2}(bd-}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(B*d - A*e))/(5*e^8*(d + e*x)^(5/2)) - (2*(b*d - a*e)^5*(7
*b*B*d - 6*A*b*e - a*B*e))/(3*e^8*(d + e*x)^(3/2)) + (6*b*(b*d - a*e)^4*(7*
b*B*d - 5*A*b*e - 2*a*B*e))/(e^8*Sqrt[d + e*x]) + (10*b^2*(b*d - a*e)^3*(7*
b*B*d - 4*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/e^8 - (10*b^3*(b*d - a*e)^2*(7*b*
B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^(3/2))/(3*e^8) + (6*b^4*(b*d - a*e)*(7*b
*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^(5/2))/(5*e^8) - (2*b^5*(7*b*B*d - A*b*
e - 6*a*B*e)*(d + e*x)^(7/2))/(7*e^8) + (2*b^6*B*(d + e*x)^(9/2))/(9*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^6(A+Bx)}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^6(-Bd+Ae)}{e^7(d+ex)^{7/2}}+\frac{(-bd+ae)^5(-7bBd+6Abe+aBe)}{e^7(d+ex)^{5/2}}+3b\right.\\ &= \frac{2(bd-ae)^6(Bd-Ae)}{5e^8(d+ex)^{5/2}}-\frac{2(bd-ae)^5(7bBd-6Abe-aBe)}{3e^8(d+ex)^{3/2}}+6b(bd-ae)\end{aligned}$$

Mathematica [A] time = 0.19, size = 259, normalized size = 0.85

$$2\left(-45b^5(d+ex)^6(-6aBe-Abe+7bBd)+189b^4(d+ex)^5(bd-ae)(-5aBe-2Abe+7bBd)-525b^3(d+ex)^4(bd-$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(63*(b*d - a*e)^6*(B*d - A*e) - 105*(b*d - a*e)^5*(7*b*B*d - 6*A*b*e - a
*B*e)*(d + e*x) + 945*b*(b*d - a*e)^4*(7*b*B*d - 5*A*b*e - 2*a*B*e)*(d + e*
x)^2 + 1575*b^2*(b*d - a*e)^3*(7*b*B*d - 4*A*b*e - 3*a*B*e)*(d + e*x)^3 - 5
25*b^3*(b*d - a*e)^2*(7*b*B*d - 3*A*b*e - 4*a*B*e)*(d + e*x)^4 + 189*b^4*(b
*d - a*e)*(7*b*B*d - 2*A*b*e - 5*a*B*e)*(d + e*x)^5 - 45*b^5*(7*b*B*d - A*b
*e - 6*a*B*e)*(d + e*x)^6 + 35*b^6*B*(d + e*x)^7))/(315*e^8*(d + e*x)^(5/2)
)
```

fricas [B] time = 0.70, size = 802, normalized size = 2.64

$$2\left(35\,Bb^6e^7x^7+14336\,Bb^6d^7-63\,Aa^6e^7-9216\left(6\,Bab^5+Ab^6\right)d^6e+16128\left(5\,Ba^2b^4+2\,Aab^5\right)d^5e^2-13440\left(4\,B\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/315*(35*B*b^6*e^7*x^7 + 14336*B*b^6*d^7 - 63*A*a^6*e^7 - 9216*(6*B*a*b^5
+ A*b^6)*d^6*e + 16128*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^2 - 13440*(4*B*a^3*b
^3 + 3*A*a^2*b^4)*d^4*e^3 + 5040*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^3*e^4 - 504*
(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 - 42*(B*a^6 + 6*A*a^5*b)*d*e^6 - 5*(14*B*
b^6*d*e^6 - 9*(6*B*a*b^5 + A*b^6)*e^7)*x^6 + 3*(56*B*b^6*d^2*e^5 - 36*(6*B*
a*b^5 + A*b^6)*d*e^6 + 63*(5*B*a^2*b^4 + 2*A*a*b^5)*e^7)*x^5 - 5*(112*B*b^6
*d^3*e^4 - 72*(6*B*a*b^5 + A*b^6)*d^2*e^5 + 126*(5*B*a^2*b^4 + 2*A*a*b^5)*d
*e^6 - 105*(4*B*a^3*b^3 + 3*A*a^2*b^4)*e^7)*x^4 + 5*(896*B*b^6*d^4*e^3 - 57
6*(6*B*a*b^5 + A*b^6)*d^3*e^4 + 1008*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^5 - 84
0*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^6 + 315*(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^7)*
x^3 + 15*(1792*B*b^6*d^5*e^2 - 1152*(6*B*a*b^5 + A*b^6)*d^4*e^3 + 2016*(5*B
*a^2*b^4 + 2*A*a*b^5)*d^3*e^4 - 1680*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^5 +
630*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d*e^6 - 63*(2*B*a^5*b + 5*A*a^4*b^2)*e^7)*x
^2 + 5*(7168*B*b^6*d^6*e - 4608*(6*B*a*b^5 + A*b^6)*d^5*e^2 + 8064*(5*B*a^2
*b^4 + 2*A*a*b^5)*d^4*e^3 - 6720*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^4 + 2520
*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^2*e^5 - 252*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^6
- 21*(B*a^6 + 6*A*a^5*b)*e^7)*x)*sqrt(e*x + d)/(e^11*x^3 + 3*d*e^10*x^2 + 3
*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.33, size = 1103, normalized size = 3.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/315*(35*(x*e + d)^(9/2)*B*b^6*e^64 - 315*(x*e + d)^(7/2)*B*b^6*d*e^64 + 1
323*(x*e + d)^(5/2)*B*b^6*d^2*e^64 - 3675*(x*e + d)^(3/2)*B*b^6*d^3*e^64 +
11025*sqrt(x*e + d)*B*b^6*d^4*e^64 + 270*(x*e + d)^(7/2)*B*a*b^5*e^65 + 45*
(x*e + d)^(7/2)*A*b^6*e^65 - 2268*(x*e + d)^(5/2)*B*a*b^5*d*e^65 - 378*(x*e
 + d)^(5/2)*A*b^6*d*e^65 + 9450*(x*e + d)^(3/2)*B*a*b^5*d^2*e^65 + 1575*(x*
e + d)^(3/2)*A*b^6*d^2*e^65 - 37800*sqrt(x*e + d)*B*a*b^5*d^3*e^65 - 6300*s
qrt(x*e + d)*A*b^6*d^3*e^65 + 945*(x*e + d)^(5/2)*B*a^2*b^4*e^66 + 378*(x*e
 + d)^(5/2)*A*a*b^5*e^66 - 7875*(x*e + d)^(3/2)*B*a^2*b^4*d*e^66 - 3150*(x*
e + d)^(3/2)*A*a*b^5*d*e^66 + 47250*sqrt(x*e + d)*B*a^2*b^4*d^2*e^66 + 1890
0*sqrt(x*e + d)*A*a*b^5*d^2*e^66 + 2100*(x*e + d)^(3/2)*B*a^3*b^3*e^67 + 15
75*(x*e + d)^(3/2)*A*a^2*b^4*e^67 - 25200*sqrt(x*e + d)*B*a^3*b^3*d*e^67 -
18900*sqrt(x*e + d)*A*a^2*b^4*d*e^67 + 4725*sqrt(x*e + d)*B*a^4*b^2*e^68 +
6300*sqrt(x*e + d)*A*a^3*b^3*e^68)*e^(-72) + 2/15*(315*(x*e + d)^2*B*b^6*d^
5 - 35*(x*e + d)*B*b^6*d^6 + 3*B*b^6*d^7 - 1350*(x*e + d)^2*B*a*b^5*d^4*e -
 225*(x*e + d)^2*A*b^6*d^4*e + 180*(x*e + d)*B*a*b^5*d^5*e + 30*(x*e + d)*A
*b^6*d^5*e - 18*B*a*b^5*d^6*e - 3*A*b^6*d^6*e + 2250*(x*e + d)^2*B*a^2*b^4*
d^3*e^2 + 900*(x*e + d)^2*A*a*b^5*d^3*e^2 - 375*(x*e + d)*B*a^2*b^4*d^4*e^2
 - 150*(x*e + d)*A*a*b^5*d^4*e^2 + 45*B*a^2*b^4*d^5*e^2 + 18*A*a*b^5*d^5*e^
2 - 1800*(x*e + d)^2*B*a^3*b^3*d^2*e^3 - 1350*(x*e + d)^2*A*a^2*b^4*d^2*e^3
 + 400*(x*e + d)*B*a^3*b^3*d^3*e^3 + 300*(x*e + d)*A*a^2*b^4*d^3*e^3 - 60*B
*a^3*b^3*d^4*e^3 - 45*A*a^2*b^4*d^4*e^3 + 675*(x*e + d)^2*B*a^4*b^2*d*e^4 +
 900*(x*e + d)^2*A*a^3*b^3*d*e^4 - 225*(x*e + d)*B*a^4*b^2*d^2*e^4 - 300*(x
*e + d)*A*a^3*b^3*d^2*e^4 + 45*B*a^4*b^2*d^3*e^4 + 60*A*a^3*b^3*d^3*e^4 - 9
0*(x*e + d)^2*B*a^5*b*e^5 - 225*(x*e + d)^2*A*a^4*b^2*e^5 + 60*(x*e + d)*B*
a^5*b*d*e^5 + 150*(x*e + d)*A*a^4*b^2*d*e^5 - 18*B*a^5*b*d^2*e^5 - 45*A*a^4
*b^2*d^2*e^5 - 5*(x*e + d)*B*a^6*e^6 - 30*(x*e + d)*A*a^5*b*e^6 + 3*B*a^6*d
*e^6 + 18*A*a^5*b*d*e^6 - 3*A*a^6*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [B] time = 0.05, size = 913, normalized size = 3.00

$$-\frac{2\left(-35B\,b^{6}x^{7}e^{7}-45A\,b^{6}e^{7}x^{6}-270Ba\,b^{5}e^{7}x^{6}+70B\,b^{6}d\,e^{6}x^{6}-378Aa\,b^{5}e^{7}x^{5}+108A\,b^{6}d\,e^{6}x^{5}-945B\,a^{2}b^{4}e^{7}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/315*(-35*B*b^6*e^7*x^7-45*A*b^6*e^7*x^6-270*B*a*b^5*e^7*x^6+70*B*b^6*d*e
^6*x^6-378*A*a*b^5*e^7*x^5+108*A*b^6*d*e^6*x^5-945*B*a^2*b^4*e^7*x^5+648*B*
a*b^5*d*e^6*x^5-168*B*b^6*d^2*e^5*x^5-1575*A*a^2*b^4*e^7*x^4+1260*A*a*b^5*d
*e^6*x^4-360*A*b^6*d^2*e^5*x^4-2100*B*a^3*b^3*e^7*x^4+3150*B*a^2*b^4*d*e^6*
x^4-2160*B*a*b^5*d^2*e^5*x^4+560*B*b^6*d^3*e^4*x^4-6300*A*a^3*b^3*e^7*x^3+1
2600*A*a^2*b^4*d*e^6*x^3-10080*A*a*b^5*d^2*e^5*x^3+2880*A*b^6*d^3*e^4*x^3-4
725*B*a^4*b^2*e^7*x^3+16800*B*a^3*b^3*d*e^6*x^3-25200*B*a^2*b^4*d^2*e^5*x^3
+17280*B*a*b^5*d^3*e^4*x^3-4480*B*b^6*d^4*e^3*x^3+4725*A*a^4*b^2*e^7*x^2-37
800*A*a^3*b^3*d*e^6*x^2+75600*A*a^2*b^4*d^2*e^5*x^2-60480*A*a*b^5*d^3*e^4*x
^2+17280*A*b^6*d^4*e^3*x^2+1890*B*a^5*b*e^7*x^2-28350*B*a^4*b^2*d*e^6*x^2+1
00800*B*a^3*b^3*d^2*e^5*x^2-151200*B*a^2*b^4*d^3*e^4*x^2+103680*B*a*b^5*d^4
*e^3*x^2-26880*B*b^6*d^5*e^2*x^2+630*A*a^5*b*e^7*x+6300*A*a^4*b^2*d*e^6*x-5
0400*A*a^3*b^3*d^2*e^5*x+100800*A*a^2*b^4*d^3*e^4*x-80640*A*a*b^5*d^4*e^3*x
+23040*A*b^6*d^5*e^2*x+105*B*a^6*e^7*x+2520*B*a^5*b*d*e^6*x-37800*B*a^4*b^2
*d^2*e^5*x+134400*B*a^3*b^3*d^3*e^4*x-201600*B*a^2*b^4*d^4*e^3*x+138240*B*a
*b^5*d^5*e^2*x-35840*B*b^6*d^6*e*x+63*A*a^6*e^7+252*A*a^5*b*d*e^6+2520*A*a^
4*b^2*d^2*e^5-20160*A*a^3*b^3*d^3*e^4+40320*A*a^2*b^4*d^4*e^3-32256*A*a*b^5
*d^5*e^2+9216*A*b^6*d^6*e+42*B*a^6*d*e^6+1008*B*a^5*b*d^2*e^5-15120*B*a^4*b
^2*d^3*e^4+53760*B*a^3*b^3*d^4*e^3-80640*B*a^2*b^4*d^5*e^2+55296*B*a*b^5*d^
6*e-14336*B*b^6*d^7)/(e*x+d)^(5/2)/e^8
```

maxima [B] time = 0.63, size = 775, normalized size = 2.55

$$2\left(\frac{35\,(ex+d)^{\frac{9}{2}}Bb^{6}-45\left(7\,Bb^{6}d-\left(6\,Bab^{5}+Ab^{6}\right)e\right)(ex+d)^{\frac{7}{2}}+189\left(7\,Bb^{6}d^{2}-2\left(6\,Bab^{5}+Ab^{6}\right)de+\left(5\,Ba^{2}b^{4}+2\,Aab^{5}\right)e^{2}\right)(ex+d)^{\frac{5}{2}}-525\left(7\,Bb^{6}d^{3}-3\left(6\,Bab^{5}\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/315*((35*(e*x + d)^(9/2)*B*b^6 - 45*(7*B*b^6*d - (6*B*a*b^5 + A*b^6)*e)*(
e*x + d)^(7/2) + 189*(7*B*b^6*d^2 - 2*(6*B*a*b^5 + A*b^6)*d*e + (5*B*a^2*b^
4 + 2*A*a*b^5)*e^2)*(e*x + d)^(5/2) - 525*(7*B*b^6*d^3 - 3*(6*B*a*b^5 + A*b
^6)*d^2*e + 3*(5*B*a^2*b^4 + 2*A*a*b^5)*d*e^2 - (4*B*a^3*b^3 + 3*A*a^2*b^4)
*e^3)*(e*x + d)^(3/2) + 1575*(7*B*b^6*d^4 - 4*(6*B*a*b^5 + A*b^6)*d^3*e + 6
*(5*B*a^2*b^4 + 2*A*a*b^5)*d^2*e^2 - 4*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d*e^3 +
(3*B*a^4*b^2 + 4*A*a^3*b^3)*e^4)*sqrt(e*x + d))/e^7 + 21*(3*B*b^6*d^7 - 3*A
*a^6*e^7 - 3*(6*B*a*b^5 + A*b^6)*d^6*e + 9*(5*B*a^2*b^4 + 2*A*a*b^5)*d^5*e^
2 - 15*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^4*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)
*d^3*e^4 - 9*(2*B*a^5*b + 5*A*a^4*b^2)*d^2*e^5 + 3*(B*a^6 + 6*A*a^5*b)*d*e^
6 + 45*(7*B*b^6*d^5 - 5*(6*B*a*b^5 + A*b^6)*d^4*e + 10*(5*B*a^2*b^4 + 2*A*a
*b^5)*d^3*e^2 - 10*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^2*e^3 + 5*(3*B*a^4*b^2 + 4
*A*a^3*b^3)*d*e^4 - (2*B*a^5*b + 5*A*a^4*b^2)*e^5)*(e*x + d)^2 - 5*(7*B*b^6
*d^6 - 6*(6*B*a*b^5 + A*b^6)*d^5*e + 15*(5*B*a^2*b^4 + 2*A*a*b^5)*d^4*e^2 -
 20*(4*B*a^3*b^3 + 3*A*a^2*b^4)*d^3*e^3 + 15*(3*B*a^4*b^2 + 4*A*a^3*b^3)*d^
2*e^4 - 6*(2*B*a^5*b + 5*A*a^4*b^2)*d*e^5 + (B*a^6 + 6*A*a^5*b)*e^6)*(e*x +
 d))/((e*x + d)^(5/2)*e^7))/e
```

mupad [B] time = 1.96, size = 675, normalized size = 2.22

$$\frac{(d+e\,x)^{7/2}\,\left(2\,A\,b^6\,e-14\,B\,b^6\,d+12\,B\,a\,b^5\,e\right)}{7\,e^8}-\frac{(d+e\,x)^2\,\left(12\,B\,a^5\,b\,e^5-90\,B\,a^4\,b^2\,d\,e^4+30\,A\,a^4\,b^2\,e^5+240\,B\,a^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(7/2),x)
```

```
[Out] ((d + e*x)^(7/2)*(2*A*b^6*e - 14*B*b^6*d + 12*B*a*b^5*e))/(7*e^8) - ((d + e
*x)^2*(12*B*a^5*b*e^5 - 42*B*b^6*d^5 + 30*A*b^6*d^4*e + 30*A*a^4*b^2*e^5 -
120*A*a*b^5*d^3*e^2 - 120*A*a^3*b^3*d*e^4 - 90*B*a^4*b^2*d*e^4 + 180*A*a^2*
b^4*d^2*e^3 - 300*B*a^2*b^4*d^3*e^2 + 240*B*a^3*b^3*d^2*e^3 + 180*B*a*b^5*d
^4*e) + (d + e*x)*((2*B*a^6*e^6)/3 + (14*B*b^6*d^6)/3 + 4*A*a^5*b*e^6 - 4*A
*b^6*d^5*e + 20*A*a*b^5*d^4*e^2 - 20*A*a^4*b^2*d*e^5 - 40*A*a^2*b^4*d^3*e^3
 + 40*A*a^3*b^3*d^2*e^4 + 50*B*a^2*b^4*d^4*e^2 - (160*B*a^3*b^3*d^3*e^3)/3
+ 30*B*a^4*b^2*d^2*e^4 - 24*B*a*b^5*d^5*e - 8*B*a^5*b*d*e^5) + (2*A*a^6*e^7
)/5 - (2*B*b^6*d^7)/5 + (2*A*b^6*d^6*e)/5 - (2*B*a^6*d*e^6)/5 - (12*A*a*b^5
*d^5*e^2)/5 + (12*B*a^5*b*d^2*e^5)/5 + 6*A*a^2*b^4*d^4*e^3 - 8*A*a^3*b^3*d^
3*e^4 + 6*A*a^4*b^2*d^2*e^5 - 6*B*a^2*b^4*d^5*e^2 + 8*B*a^3*b^3*d^4*e^3 - 6
*B*a^4*b^2*d^3*e^4 - (12*A*a^5*b*d*e^6)/5 + (12*B*a*b^5*d^6*e)/5)/(e^8*(d +
 e*x)^(5/2)) + (2*B*b^6*(d + e*x)^(9/2))/(9*e^8) + (6*b^4*(a*e - b*d)*(d +
e*x)^(5/2)*(2*A*b*e + 5*B*a*e - 7*B*b*d))/(5*e^8) + (10*b^2*(a*e - b*d)^3*(
d + e*x)^(1/2)*(4*A*b*e + 3*B*a*e - 7*B*b*d))/e^8 + (10*b^3*(a*e - b*d)^2*(
d + e*x)^(3/2)*(3*A*b*e + 4*B*a*e - 7*B*b*d))/(3*e^8)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1808 $\int \frac{(A+Bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=256

$$-\frac{(bd-ae)^{5/2}(-9aBe+7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{11/2}}+\frac{\sqrt{d+ex}\,(bd-ae)^2(-9aBe+7Abe+2bBd)}{b^5}+(d+ex$$

```
[Out] 1/3*(-a*e+b*d)*(7*A*b*e-9*B*a*e+2*B*b*d)*(e*x+d)^(3/2)/b^4+1/5*(7*A*b*e-9*B
*a*e+2*B*b*d)*(e*x+d)^(5/2)/b^3+1/7*(7*A*b*e-9*B*a*e+2*B*b*d)*(e*x+d)^(7/2)
/b^2/(-a*e+b*d)-(A*b-B*a)*(e*x+d)^(9/2)/b/(-a*e+b*d)/(b*x+a)-(-a*e+b*d)^(5/
2)*(7*A*b*e-9*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2)
)/b^(11/2)+(-a*e+b*d)^2*(7*A*b*e-9*B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^5
```

Rubi [A] time = 0.32, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 50, 63, 208\}$

$$\frac{(d+ex)^{7/2}(-9aBe+7Abe+2bBd)}{7b^2(bd-ae)}+\frac{(d+ex)^{5/2}(-9aBe+7Abe+2bBd)}{5b^3}+\frac{(d+ex)^{3/2}(bd-ae)(-9aBe+7Abe+}{3b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^2*(2*b*B*d + 7*A*b*e - 9*a*B*e)*Sqrt[d + e*x])/b^5 + ((b*d - a
*e)*(2*b*B*d + 7*A*b*e - 9*a*B*e)*(d + e*x)^(3/2))/(3*b^4) + ((2*b*B*d + 7*
A*b*e - 9*a*B*e)*(d + e*x)^(5/2))/(5*b^3) + ((2*b*B*d + 7*A*b*e - 9*a*B*e)*
(d + e*x)^(7/2))/(7*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(9/2))/(b*(b*
d - a*e)*(a + b*x)) - ((b*d - a*e)^(5/2)*(2*b*B*d + 7*A*b*e - 9*a*B*e)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(11/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^2}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+7Abe-9aBe)\int \frac{(d+ex)^{7/2}}{a+bx}\,dx}{2b(bd-ae)}$$

$$= \frac{(2bBd+7Abe-9aBe)(d+ex)^{7/2}}{7b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{9/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+7Abe-9aBe)\int}{2b^2}$$

$$= \frac{(2bBd+7Abe-9aBe)(d+ex)^{5/2}}{5b^3} + \frac{(2bBd+7Abe-9aBe)(d+ex)^{7/2}}{7b^2(bd-ae)} - \frac{(Ab-aB)(d}{b(bd-ae)(}$$

$$= \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+ex)^{3/2}}{3b^4} + \frac{(2bBd+7Abe-9aBe)(d+ex)^{5/2}}{5b^3} + \frac{(2b}{}$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+ex)^{3}}{3b^4}$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+ex)^{3}}{3b^4}$$

$$= \frac{(bd-ae)^2(2bBd+7Abe-9aBe)\sqrt{d+ex}}{b^5} + \frac{(bd-ae)(2bBd+7Abe-9aBe)(d+ex)^{3}}{3b^4}$$

Mathematica [A] time = 0.64, size = 193, normalized size = 0.75

$$\frac{\frac{2\left(-\frac{9aBe}{2}+\frac{7Abe}{2}+bBd\right)\left(7(bd-ae)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)+15b^{7/2}(d+ex)^{7/2}\right)}{105b^{9/2}} + \frac{(d+ex)^{9}}{a}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(9/2))/(a + b*x) + (2*(b*B*d + (7*A*b*e)/2 - (9*
a*B*e)/2)*(15*b^(7/2)*(d + e*x)^(7/2) + 7*(b*d - a*e)*(3*b^(5/2)*(d + e*x)^
(5/2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b
*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))))/(105*b
^(9/2)))/(b*(b*d - a*e))
```

fricas [B] time = 1.07, size = 1006, normalized size = 3.93

$$\left[\frac{105\left(2\,Bab^3d^3-\left(13\,Ba^2b^2-7\,Aab^3\right)d^2e+2\left(10\,Ba^3b-7\,Aa^2b^2\right)de^2-\left(9\,Ba^4-7\,Aa^3b\right)e^3+\left(2\,Bb^4d^3-\left(13\,B\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/210*(105*(2*B*a*b^3*d^3 - (13*B*a^2*b^2 - 7*A*a*b^3)*d^2*e + 2*(10*B*a^3
*b - 7*A*a^2*b^2)*d*e^2 - (9*B*a^4 - 7*A*a^3*b)*e^3 + (2*B*b^4*d^3 - (13*B*
a*b^3 - 7*A*b^4)*d^2*e + 2*(10*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 - (9*B*a^3*b -
7*A*a^2*b^2)*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(
e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(30*B*b^4*e^3*x^4 + (457*B*a
*b^3 - 105*A*b^4)*d^3 - 7*(277*B*a^2*b^2 - 161*A*a*b^3)*d^2*e + 35*(69*B*a^
3*b - 49*A*a^2*b^2)*d*e^2 - 105*(9*B*a^4 - 7*A*a^3*b)*e^3 + 6*(22*B*b^4*d*e
^2 - (9*B*a*b^3 - 7*A*b^4)*e^3)*x^3 + 2*(122*B*b^4*d^2*e - 2*(79*B*a*b^3 -
56*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 7*A*a*b^3)*e^3)*x^2 + 2*(176*B*b^4*d^3 -
 2*(345*B*a*b^3 - 203*A*b^4)*d^2*e + 14*(59*B*a^2*b^2 - 42*A*a*b^3)*d*e^2 -
 35*(9*B*a^3*b - 7*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^6*x + a*b^5), -1/10
5*(105*(2*B*a*b^3*d^3 - (13*B*a^2*b^2 - 7*A*a*b^3)*d^2*e + 2*(10*B*a^3*b -
7*A*a^2*b^2)*d*e^2 - (9*B*a^4 - 7*A*a^3*b)*e^3 + (2*B*b^4*d^3 - (13*B*a*b^3
 - 7*A*b^4)*d^2*e + 2*(10*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 - (9*B*a^3*b - 7*A*a
^2*b^2)*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a
*e)/b)/(b*d - a*e)) - (30*B*b^4*e^3*x^4 + (457*B*a*b^3 - 105*A*b^4)*d^3 - 7
*(277*B*a^2*b^2 - 161*A*a*b^3)*d^2*e + 35*(69*B*a^3*b - 49*A*a^2*b^2)*d*e^2
 - 105*(9*B*a^4 - 7*A*a^3*b)*e^3 + 6*(22*B*b^4*d*e^2 - (9*B*a*b^3 - 7*A*b^4
)*e^3)*x^3 + 2*(122*B*b^4*d^2*e - 2*(79*B*a*b^3 - 56*A*b^4)*d*e^2 + 7*(9*B*
a^2*b^2 - 7*A*a*b^3)*e^3)*x^2 + 2*(176*B*b^4*d^3 - 2*(345*B*a*b^3 - 203*A*b
^4)*d^2*e + 14*(59*B*a^2*b^2 - 42*A*a*b^3)*d*e^2 - 35*(9*B*a^3*b - 7*A*a^2*
b^2)*e^3)*x)*sqrt(e*x + d))/(b^6*x + a*b^5)]
```

giac [B] time = 0.25, size = 604, normalized size = 2.36

$$\frac{\left(2\,Bb^4d^4-15\,Bab^3d^3e+7\,Ab^4d^3e+33\,Ba^2b^2d^2e^2-21\,Aab^3d^2e^2-29\,Ba^3bde^3+21\,Aa^2b^2de^3+9\,Ba^4e^4-7\,A\right.}{\sqrt{-b^2d+abe}\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^4*d^4 - 15*B*a*b^3*d^3*e + 7*A*b^4*d^3*e + 33*B*a^2*b^2*d^2*e^2 - 21
*A*a*b^3*d^2*e^2 - 29*B*a^3*b*d*e^3 + 21*A*a^2*b^2*d*e^3 + 9*B*a^4*e^4 - 7*
A*a^3*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*
b*e)*b^5) + (sqrt(x*e + d)*B*a*b^3*d^3*e - sqrt(x*e + d)*A*b^4*d^3*e - 3*sq
rt(x*e + d)*B*a^2*b^2*d^2*e^2 + 3*sqrt(x*e + d)*A*a*b^3*d^2*e^2 + 3*sqrt(x*
e + d)*B*a^3*b*d*e^3 - 3*sqrt(x*e + d)*A*a^2*b^2*d*e^3 - sqrt(x*e + d)*B*a^
4*e^4 + sqrt(x*e + d)*A*a^3*b*e^4)/(((x*e + d)*b - b*d + a*e)*b^5) + 2/105*
(15*(x*e + d)^(7/2)*B*b^12 + 21*(x*e + d)^(5/2)*B*b^12*d + 35*(x*e + d)^(3/
2)*B*b^12*d^2 + 105*sqrt(x*e + d)*B*b^12*d^3 - 42*(x*e + d)^(5/2)*B*a*b^11*
e + 21*(x*e + d)^(5/2)*A*b^12*e - 140*(x*e + d)^(3/2)*B*a*b^11*d*e + 70*(x*
e + d)^(3/2)*A*b^12*d*e - 630*sqrt(x*e + d)*B*a*b^11*d^2*e + 315*sqrt(x*e +
 d)*A*b^12*d^2*e + 105*(x*e + d)^(3/2)*B*a^2*b^10*e^2 - 70*(x*e + d)^(3/2)*
A*a*b^11*e^2 + 945*sqrt(x*e + d)*B*a^2*b^10*d*e^2 - 630*sqrt(x*e + d)*A*a*b
^11*d*e^2 - 420*sqrt(x*e + d)*B*a^3*b^9*e^3 + 315*sqrt(x*e + d)*A*a^2*b^10*
e^3)/b^14
```

maple [B] time = 0.08, size = 915, normalized size = 3.57

$$-\frac{7Aa^3e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^4}+\frac{21Aa^2d\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^3}-\frac{21Aad^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2}+\frac{7Ad^3e\arctan\left(\frac{\sqrt{ex+}}{\sqrt{(ae-}}\right.}{\sqrt{(ae-bd)\,b}\;b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 6/b^4*A*a^2*e^3*(e*x+d)^(1/2)+2/5/b^2*A*(e*x+d)^(5/2)*e-8/3/b^3*B*(e*x+d)^(
3/2)*a*d*e-12/b^3*A*a*d*e^2*(e*x+d)^(1/2)+18/b^4*B*a^2*d*e^2*(e*x+d)^(1/2)-
12/b^3*B*a*d^2*e*(e*x+d)^(1/2)-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*d^3*e-1/b^5*
(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^4*e^4-7/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^3*e^4+2/7/b^2*B*(e*x+d)^(7/2)+2/5/b^2*B*
(e*x+d)^(5/2)*d+2/3/b^2*B*(e*x+d)^(3/2)*d^2+2/b^2*B*d^3*(e*x+d)^(1/2)+2/b/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^4+6/b^2*
A*d^2*e*(e*x+d)^(1/2)-8/b^5*B*a^3*e^3*(e*x+d)^(1/2)-4/5/b^3*B*(e*x+d)^(5/2)
*a*e-4/3/b^3*A*(e*x+d)^(3/2)*a*e^2+4/3/b^2*A*(e*x+d)^(3/2)*d*e+2/b^4*B*(e*x
+d)^(3/2)*a^2*e^2+7/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*A*d^3*e+9/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*B*a^4*e^4+1/b^4*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^3*e^4-15/b^2/((
a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^3*e-3/b
^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^2*d*e^3+3/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*
d^2*a*e^2+3/b^4*(e*x+d)^(1/2)/(b*e*x+a*e)*B*d*a^3*e^3-3/b^3*(e*x+d)^(1/2)/(
b*e*x+a*e)*B*a^2*d^2*e^2+1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a*d^3*e+21/b^3/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2*d*e^3-
21/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^
2*a*e^2-29/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)*B*d*a^3*e^3+33/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*a^2*d^2*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.16, size = 562, normalized size = 2.20

$$\left(\frac{2\,A\,e-2\,B\,d}{5\,b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{5\,b^4}\right)\,{\left(d+e\,x\right)}^{5/2}+\left(\frac{\left(\frac{\left(2\,b^2\,d-2\,a\,b\,e\right)\,\left(\frac{2\,A\,e-2\,B\,d}{b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{b^4}\right)}{b^2}-\frac{2\,B\,{\left(a\,e-b\,d\right)}^2}{b^4}\right)\,\left(2\,b^2\,d-2\right.}{b^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/(5*b^2) + (2*B*(2*b^2*d - 2*a*b*e))/(5*b^4))*(d + e*x)^(5/
2) + ((((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e
))/b^4))/b^2 - (2*B*(a*e - b*d)^2)/b^4)*(2*b^2*d - 2*a*b*e))/b^2 - ((a*e -
b*d)^2*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))/b^4))/b^2)*(d + e*x
)^(1/2) + (((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*
b*e))/b^4))/(3*b^2) - (2*B*(a*e - b*d)^2)/(3*b^4))*(d + e*x)^(3/2) - ((d +
e*x)^(1/2)*(B*a^4*e^4 - A*a^3*b*e^4 + A*b^4*d^3*e - 3*A*a*b^3*d^2*e^2 + 3*A
*a^2*b^2*d*e^3 + 3*B*a^2*b^2*d^2*e^2 - B*a*b^3*d^3*e - 3*B*a^3*b*d*e^3))/(b
^6*(d + e*x) - b^6*d + a*b^5*e) + (2*B*(d + e*x)^(7/2))/(7*b^2) + (atan((b^
(1/2)*(a*e - b*d)^(5/2)*(d + e*x)^(1/2)*(7*A*b*e - 9*B*a*e + 2*B*b*d))/(9*B
*a^4*e^4 + 2*B*b^4*d^4 - 7*A*a^3*b*e^4 + 7*A*b^4*d^3*e - 21*A*a*b^3*d^2*e^2
 + 21*A*a^2*b^2*d*e^3 + 33*B*a^2*b^2*d^2*e^2 - 15*B*a*b^3*d^3*e - 29*B*a^3*
b*d*e^3))*(a*e - b*d)^(5/2)*(7*A*b*e - 9*B*a*e + 2*B*b*d))/b^(11/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1809 $\int \frac{(A+Bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=214

$$-\frac{(bd-ae)^{3/2}(-7aBe+5Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{\sqrt{d+ex}\,(bd-ae)(-7aBe+5Abe+2bBd)}{b^4}+\frac{(d+ex)^{3/2}(}{}$$

```
[Out] 1/3*(5*A*b*e-7*B*a*e+2*B*b*d)*(e*x+d)^(3/2)/b^3+1/5*(5*A*b*e-7*B*a*e+2*B*b*
d)*(e*x+d)^(5/2)/b^2/(-a*e+b*d)-(A*b-B*a)*(e*x+d)^(7/2)/b/(-a*e+b*d)/(b*x+a
)-(-a*e+b*d)^(3/2)*(5*A*b*e-7*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/
(-a*e+b*d)^(1/2))/b^(9/2)+(-a*e+b*d)*(5*A*b*e-7*B*a*e+2*B*b*d)*(e*x+d)^(1/2
)/b^4
```

Rubi [A] time = 0.20, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 50, 63, 208}

$$\frac{(d+ex)^{5/2}(-7aBe+5Abe+2bBd)}{5b^2(bd-ae)}+\frac{(d+ex)^{3/2}(-7aBe+5Abe+2bBd)}{3b^3}+\frac{\sqrt{d+ex}\,(bd-ae)(-7aBe+5Abe+2bB}{b^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)*(2*b*B*d + 5*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/b^4 + ((2*b*B*d +
 5*A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/(3*b^3) + ((2*b*B*d + 5*A*b*e - 7*a*B*
e)*(d + e*x)^(5/2))/(5*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(7/2))/(b*
(b*d - a*e)*(a + b*x)) - ((b*d - a*e)^(3/2)*(2*b*B*d + 5*A*b*e - 7*a*B*e)*A
rcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^2}\,dx \\
&= -\frac{(Ab-aB)(d+ex)^{7/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+5Abe-7aBe)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{2b(bd-ae)} \\
&= \frac{(2bBd+5Abe-7aBe)(d+ex)^{5/2}}{5b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{7/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+5Abe-7aBe}{2b^2} \\
&= \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{5/2}}{5b^2(bd-ae)} - \frac{(Ab-aB}{b(bd-a} \\
&= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2}{} \\
&= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2}{} \\
&= \frac{(bd-ae)(2bBd+5Abe-7aBe)\sqrt{d+ex}}{b^4} + \frac{(2bBd+5Abe-7aBe)(d+ex)^{3/2}}{3b^3} + \frac{(2}{}
\end{aligned}
$$

Mathematica [A] time = 0.36, size = 166, normalized size = 0.78

$$
\frac{\frac{2\left(-\frac{7aBe}{2}+\frac{5Abe}{2}+bBd\right)\left(5(bd-ae)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{7/2}}+\frac{(d+ex)^{7/2}(aB-Ab)}{a+bx}}{b(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(7/2))/(a + b*x) + (2*(b*B*d + (5*A*b*e)/2 - (7*
a*B*e)/2)*(3*b^(5/2)*(d + e*x)^(5/2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]
*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*
x])/Sqrt[b*d - a*e]])))/(15*b^(7/2)))/(b*(b*d - a*e))
```

fricas [A] time = 0.76, size = 666, normalized size = 3.11

$$
\left[-\frac{15\left(2\,Bab^2d^2-\left(9\,Ba^2b-5\,Aab^2\right)de+\left(7\,Ba^3-5\,Aa^2b\right)e^2+\left(2\,Bb^3d^2-\left(9\,Bab^2-5\,Ab^3\right)de+\left(7\,Ba^2b-5\,A\right.\right.\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/30*(15*(2*B*a*b^2*d^2 - (9*B*a^2*b - 5*A*a*b^2)*d*e + (7*B*a^3 - 5*A*a^
2*b)*e^2 + (2*B*b^3*d^2 - (9*B*a*b^2 - 5*A*b^3)*d*e + (7*B*a^2*b - 5*A*a*b^
2)*e^2)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b
*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(6*B*b^3*e^2*x^3 + (61*B*a*b^2 - 15*A*
b^3)*d^2 - 10*(17*B*a^2*b - 10*A*a*b^2)*d*e + 15*(7*B*a^3 - 5*A*a^2*b)*e^2
+ 2*(11*B*b^3*d*e - (7*B*a*b^2 - 5*A*b^3)*e^2)*x^2 + 2*(23*B*b^3*d^2 - (59*
B*a*b^2 - 35*A*b^3)*d*e + 5*(7*B*a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/
(b^5*x + a*b^4), -1/15*(15*(2*B*a*b^2*d^2 - (9*B*a^2*b - 5*A*a*b^2)*d*e + (
7*B*a^3 - 5*A*a^2*b)*e^2 + (2*B*b^3*d^2 - (9*B*a*b^2 - 5*A*b^3)*d*e + (7*B*
a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqr
t(-(b*d - a*e)/b)/(b*d - a*e)) - (6*B*b^3*e^2*x^3 + (61*B*a*b^2 - 15*A*b^3)
*d^2 - 10*(17*B*a^2*b - 10*A*a*b^2)*d*e + 15*(7*B*a^3 - 5*A*a^2*b)*e^2 + 2*
(11*B*b^3*d*e - (7*B*a*b^2 - 5*A*b^3)*e^2)*x^2 + 2*(23*B*b^3*d^2 - (59*B*a*
b^2 - 35*A*b^3)*d*e + 5*(7*B*a^2*b - 5*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^5
*x + a*b^4)]
```

giac [B] time = 0.20, size = 400, normalized size = 1.87

$$\frac{\left(2\,Bb^3d^3 - 11\,Bab^2d^2e + 5\,Ab^3d^2e + 16\,Ba^2bde^2 - 10\,Aab^2de^2 - 7\,Ba^3e^3 + 5\,Aa^2be^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^4} + \frac{\sqrt{xe +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^3*d^3 - 11*B*a*b^2*d^2*e + 5*A*b^3*d^2*e + 16*B*a^2*b*d*e^2 - 10*A*a
*b^2*d*e^2 - 7*B*a^3*e^3 + 5*A*a^2*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*
d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) + (sqrt(x*e + d)*B*a*b^2*d^2*e - sqr
t(x*e + d)*A*b^3*d^2*e - 2*sqrt(x*e + d)*B*a^2*b*d*e^2 + 2*sqrt(x*e + d)*A*
a*b^2*d*e^2 + sqrt(x*e + d)*B*a^3*e^3 - sqrt(x*e + d)*A*a^2*b*e^3)/(((x*e +
 d)*b - b*d + a*e)*b^4) + 2/15*(3*(x*e + d)^(5/2)*B*b^8 + 5*(x*e + d)^(3/2)
*B*b^8*d + 15*sqrt(x*e + d)*B*b^8*d^2 - 10*(x*e + d)^(3/2)*B*a*b^7*e + 5*(x
*e + d)^(3/2)*A*b^8*e - 60*sqrt(x*e + d)*B*a*b^7*d*e + 30*sqrt(x*e + d)*A*b
^8*d*e + 45*sqrt(x*e + d)*B*a^2*b^6*e^2 - 30*sqrt(x*e + d)*A*a*b^7*e^2)/b^1
0
```

maple [B] time = 0.07, size = 626, normalized size = 2.93

$$\frac{5A\,a^2e^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^3} - \frac{10Aad\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2} + \frac{5A\,d^2e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b} - \frac{7B\,a^3e^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^4} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5/b^2*B*(e*x+d)^(5/2)+2/3/b^2*A*(e*x+d)^(3/2)*e-4/3/b^3*B*(e*x+d)^(3/2)*a
*e+2/3/b^2*B*(e*x+d)^(3/2)*d-4/b^3*A*(e*x+d)^(1/2)*a*e^2+4/b^2*A*(e*x+d)^(1
/2)*d*e+6/b^4*B*(e*x+d)^(1/2)*a^2*e^2-8/b^3*B*(e*x+d)^(1/2)*a*d*e+2/b^2*B*(
e*x+d)^(1/2)*d^2-1/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a^2*e^3+2/b^2*(e*x+d)^(1
/2)/(b*e*x+a*e)*A*a*d*e^2-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*d^2*e+1/b^4*(e*x+
d)^(1/2)/(b*e*x+a*e)*B*a^3*e^3-2/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^2*d*e^2+
1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a*d^2*e+5/b^3/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2*e^3-10/b^2/((a*e-b*d)*b)^(1/2)*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a*d*e^2+5/b/((a*e-b*d)*b)^(1/2
)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^2*e-7/b^4/((a*e-b*d)*b)^(
1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^3*e^3+16/b^3/((a*e-b*d
)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2*d*e^2-11/b^2/(
(a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^2*e+2/
b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.13, size = 363, normalized size = 1.70

$$\left(\frac{2\,A\,e-2\,B\,d}{3\,b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{3\,b^4}\right)\,{\left(d+e\,x\right)}^{3/2}+\left(\frac{\left(2\,b^2\,d-2\,a\,b\,e\right)\,\left(\frac{2\,A\,e-2\,B\,d}{b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{b^4}\right)}{b^2}-\frac{2\,B\,(a\,e-}{b^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/(3*b^2) + (2*B*(2*b^2*d - 2*a*b*e))/(3*b^4))*(d + e*x)^(3/
2) + (((2*b^2*d - 2*a*b*e)*((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))
/b^4))/b^2 - (2*B*(a*e - b*d)^2)/b^4)*(d + e*x)^(1/2) + ((d + e*x)^(1/2)*(B
*a^3*e^3 - A*a^2*b*e^3 - A*b^3*d^2*e + 2*A*a*b^2*d*e^2 + B*a*b^2*d^2*e - 2*
B*a^2*b*d*e^2))/(b^5*(d + e*x) - b^5*d + a*b^4*e) + (2*B*(d + e*x)^(5/2))/(
5*b^2) + (atan((b^(1/2)*(a*e - b*d)^(3/2)*(d + e*x)^(1/2)*(5*A*b*e - 7*B*a*
e + 2*B*b*d))/(2*B*b^3*d^3 - 7*B*a^3*e^3 + 5*A*a^2*b*e^3 + 5*A*b^3*d^2*e -
10*A*a*b^2*d*e^2 - 11*B*a*b^2*d^2*e + 16*B*a^2*b*d*e^2))*(a*e - b*d)^(3/2)*
(5*A*b*e - 7*B*a*e + 2*B*b*d))/b^(9/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1810 $\int \frac{(A+Bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=174

$$-\frac{\sqrt{bd-ae}\,(-5aBe+3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{\sqrt{d+ex}\,(-5aBe+3Abe+2bBd)}{b^3}+\frac{(d+ex)^{3/2}(-5aBe+3}{3b^2(bd-a}$$

```
[Out] 1/3*(3*A*b*e-5*B*a*e+2*B*b*d)*(e*x+d)^(3/2)/b^2/(-a*e+b*d)-(A*b-B*a)*(e*x+d
)^(5/2)/b/(-a*e+b*d)/(b*x+a)-(3*A*b*e-5*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x
+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(7/2)+(3*A*b*e-5*B*a*e+2*B*b
*d)*(e*x+d)^(1/2)/b^3
```

Rubi [A] time = 0.15, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 50, 63, 208\}$

$$\frac{(d+ex)^{3/2}(-5aBe+3Abe+2bBd)}{3b^2(bd-ae)}+\frac{\sqrt{d+ex}\,(-5aBe+3Abe+2bBd)}{b^3}-\frac{\sqrt{bd-ae}\,(-5aBe+3Abe+2bBd)\tanh^{-1}}{b^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((2*b*B*d + 3*A*b*e - 5*a*B*e)*Sqrt[d + e*x])/b^3 + ((2*b*B*d + 3*A*b*e - 5
*a*B*e)*(d + e*x)^(3/2))/(3*b^2*(b*d - a*e)) - ((A*b - a*B)*(d + e*x)^(5/2)
)/(b*(b*d - a*e)*(a + b*x)) - (Sqrt[b*d - a*e]*(2*b*B*d + 3*A*b*e - 5*a*B*e
)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx = \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^2}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+3Abe-5aBe)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{2b(bd-ae)}$$

$$= \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(d+ex)^{5/2}}{b(bd-ae)(a+bx)} + \frac{(2bBd+3Abe-5aBe}{2b^2}$$

$$= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(}{b(bd-ae}$$

$$= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(}{b(bd-ae}$$

$$= \frac{(2bBd+3Abe-5aBe)\sqrt{d+ex}}{b^3} + \frac{(2bBd+3Abe-5aBe)(d+ex)^{3/2}}{3b^2(bd-ae)} - \frac{(Ab-aB)(}{b(bd-ae}$$

Mathematica [A] time = 0.23, size = 136, normalized size = 0.78

$$\frac{\frac{(-5aBe+3Abe+2bBd)\left(\sqrt{b}\sqrt{d+ex}(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}}+\frac{(d+ex)^{5/2}(aB-Ab)}{a+bx}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(5/2))/(a + b*x) + ((2*b*B*d + 3*A*b*e - 5*a*B*e
)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(3*b^(5/2)))/(b*(b*d - a*e))
```

fricas [A] time = 0.61, size = 392, normalized size = 2.25

$$\left[\frac{3\left(2\,Babd-\left(5\,Ba^2-3\,Aab\right)e+\left(2\,Bb^2d-\left(5\,Bab-3\,Ab^2\right)e\right)x\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(2\,B\right.}{6\left(b^4x+ab^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/6*(3*(2*B*a*b*d - (5*B*a^2 - 3*A*a*b)*e + (2*B*b^2*d - (5*B*a*b - 3*A*b^
2)*e)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*s
qrt((b*d - a*e)/b))/(b*x + a)) + 2*(2*B*b^2*e*x^2 + (11*B*a*b - 3*A*b^2)*d
- 3*(5*B*a^2 - 3*A*a*b)*e + 2*(4*B*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*sqrt(e
*x + d))/(b^4*x + a*b^3), -1/3*(3*(2*B*a*b*d - (5*B*a^2 - 3*A*a*b)*e + (2*B
*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (2*B*b^2*e*x^2 + (11*B*a*b - 3*A*b
^2)*d - 3*(5*B*a^2 - 3*A*a*b)*e + 2*(4*B*b^2*d - (5*B*a*b - 3*A*b^2)*e)*x)*
sqrt(e*x + d))/(b^4*x + a*b^3)]
```

giac [**A**] time = 0.19, size = 239, normalized size = 1.37

$$\frac{\left(2\,Bb^2d^2-7\,Babde+3\,Ab^2de+5\,Ba^2e^2-3\,Aabe^2\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^3}+\frac{\sqrt{xe+d}\,Babde-\sqrt{xe+d}\,Ab^2de-\sqrt{xe}}{((xe+d)b-bd+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^2*d^2 - 7*B*a*b*d*e + 3*A*b^2*d*e + 5*B*a^2*e^2 - 3*A*a*b*e^2)*arcta
n(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^3) + (sqrt(
x*e + d)*B*a*b*d*e - sqrt(x*e + d)*A*b^2*d*e - sqrt(x*e + d)*B*a^2*e^2 + sq
rt(x*e + d)*A*a*b*e^2)/(((x*e + d)*b - b*d + a*e)*b^3) + 2/3*((x*e + d)^(3/
2)*B*b^4 + 3*sqrt(x*e + d)*B*b^4*d - 6*sqrt(x*e + d)*B*a*b^3*e + 3*sqrt(x*e
 + d)*A*b^4*e)/b^6
```

maple [**B**] time = 0.07, size = 381, normalized size = 2.19

$$-\frac{3Aa\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2}+\frac{3Ade\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b}+\frac{5B\,a^2e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^3}-\frac{7Bade\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2}+\frac{2B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3/b^2*B*(e*x+d)^(3/2)+2/b^2*A*e*(e*x+d)^(1/2)-4/b^3*a*B*e*(e*x+d)^(1/2)+2
/b^2*B*d*(e*x+d)^(1/2)+1/b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*a*e^2-1/b*(e*x+d)^
(1/2)/(b*e*x+a*e)*A*d*e-1/b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*B*a^2*e^2+1/b^2*(e*
x+d)^(1/2)/(b*e*x+a*e)*B*a*d*e-3/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*A*a*e^2+3/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*A*d*e+5/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2*e^2-7/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d*e+2/b/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.19, size = 174, normalized size = 1.00

$$\left(\frac{2\,A\,e-2\,B\,d}{b^2}+\frac{2\,B\,\left(2\,b^2\,d-2\,a\,b\,e\right)}{b^4}\right)\,\sqrt{d+e\,x}-\frac{\sqrt{d+e\,x}\,\left(B\,a^2\,e^2-A\,a\,b\,e^2-B\,d\,a\,b\,e+A\,d\,b^2\,e\right)}{b^4\,\left(d+e\,x\right)-b^4\,d+a\,b^3\,e}+\frac{2\,B\,(d+e\,x)}{3\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((2*A*e - 2*B*d)/b^2 + (2*B*(2*b^2*d - 2*a*b*e))/b^4)*(d + e*x)^(1/2) - ((d
 + e*x)^(1/2)*(B*a^2*e^2 - A*a*b*e^2 + A*b^2*d*e - B*a*b*d*e))/(b^4*(d + e*
x) - b^4*d + a*b^3*e) + (2*B*(d + e*x)^(3/2))/(3*b^2) + (atan((b^(1/2)*(d +
 e*x)^(1/2)*1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)*(3*A*b*e - 5*B*a*e + 2
*B*b*d)*1i)/b^(7/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1811 $\int \frac{(A+Bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=140

$$-\frac{(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{bd-ae}}+\frac{\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{b^2(bd-ae)}-\frac{(d+ex)^{3/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

```
[Out] -(A*b-B*a)*(e*x+d)^(3/2)/b/(-a*e+b*d)/(b*x+a)-(A*b*e-3*B*a*e+2*B*b*d)*arcta
nh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^(1/2)+(A*b*e-
3*B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)
```

Rubi **[A]** time = 0.12, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 50, 63, 208}

$$\frac{\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{b^2(bd-ae)}-\frac{(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{bd-ae}}-\frac{(d+ex)^{3/2}(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((2*b*B*d + A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(b^2*(b*d - a*e)) - ((A*b - a*B
)*(d + e*x)^(3/2))/(b*(b*d - a*e)*(a + b*x)) - ((2*b*B*d + A*b*e - 3*a*B*e)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(5/2)*Sqrt[b*d - a*e]
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^2}\,dx\\
&= -\frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)}+\frac{(2bBd+Abe-3aBe)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{2b(bd-ae)}\\
&= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)}-\frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)}+\frac{(2bBd+Abe-3aBe)\int \frac{}{(a+}}{2b^2}\\
&= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)}-\frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)}+\frac{(2bBd+Abe-3aBe)\,\mathrm{Subs}}{}\\
&= \frac{(2bBd+Abe-3aBe)\sqrt{d+ex}}{b^2(bd-ae)}-\frac{(Ab-aB)(d+ex)^{3/2}}{b(bd-ae)(a+bx)}-\frac{(2bBd+Abe-3aBe)\tanh}{b^{5/2}\sqrt{bd-ae}}
\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 119, normalized size = 0.85

$$\frac{\frac{(-3aBe+Abe+2bBd)\left(\sqrt{b}\sqrt{d+ex}-\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{b^{3/2}}+\frac{(d+ex)^{3/2}(aB-Ab)}{a+bx}}{b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (((-(A*b) + a*B)*(d + e*x)^(3/2))/(a + b*x) + ((2*b*B*d + A*b*e - 3*a*B*e)*
(Sqrt[b]*Sqrt[d + e*x] - Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]]))/b^(3/2))/(b*(b*d - a*e))
```

fricas [**A**] time = 0.52, size = 393, normalized size = 2.81

$$\left[\frac{\left(2\,Babd-\left(3\,Ba^2-Aab\right)e+\left(2\,Bb^2d-\left(3\,Bab-Ab^2\right)e\right)x\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(\left(3\right.\right.}{2\left(ab^4d-a^2b^3e+\left(b^5d-ab^4e\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/2*((2*B*a*b*d - (3*B*a^2 - A*a*b)*e + (2*B*b^2*d - (3*B*a*b - A*b^2)*e)*
x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqr
t(e*x + d))/(b*x + a)) + 2*((3*B*a*b^2 - A*b^3)*d - (3*B*a^2*b - A*a*b^2)*e
 + 2*(B*b^3*d - B*a*b^2*e)*x)*sqrt(e*x + d))/(a*b^4*d - a^2*b^3*e + (b^5*d
- a*b^4*e)*x), ((2*B*a*b*d - (3*B*a^2 - A*a*b)*e + (2*B*b^2*d - (3*B*a*b -
A*b^2)*e)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + ((3*B*a*b^2 - A*b^3)*d - (3*B*a^2*b - A*a*b^2)*e + 2*(B*b
^3*d - B*a*b^2*e)*x)*sqrt(e*x + d))/(a*b^4*d - a^2*b^3*e + (b^5*d - a*b^4*e
)*x)]
```

giac [A] time = 0.22, size = 126, normalized size = 0.90

$$\frac{2\sqrt{xe+d}\,B}{b^2}+\frac{(2\,Bbd-3\,Bae+Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^2}+\frac{\sqrt{xe+d}\,Bae-\sqrt{xe+d}\,Abe}{((xe+d)b-bd+ae)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B/b^2 + (2*B*b*d - 3*B*a*e + A*b*e)*arctan(sqrt(x*e + d)*b/
sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^2) + (sqrt(x*e + d)*B*a*e - s
qrt(x*e + d)*A*b*e)/(((x*e + d)*b - b*d + a*e)*b^2)
```

maple [A] time = 0.07, size = 186, normalized size = 1.33

$$\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b}-\frac{3Bae\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2}+\frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b}-\frac{\sqrt{ex+d}\;Ae}{(bex+ae)\,b}+\frac{\sqrt{ex+d}\;Bae}{(bex+ae)\,b^2}+\frac{2\sqrt{ex+d}}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*B/b^2*(e*x+d)^(1/2)-1/b*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e+1/b^2*(e*x+d)^(1/2)
/(b*e*x+a*e)*a*B*e+1/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*A*e-3/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*a*B*e+2/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.01, size = 108, normalized size = 0.77

$$\frac{2\,B\,\sqrt{d+e\,x}}{b^2}-\frac{(A\,b\,e-B\,a\,e)\,\sqrt{d+e\,x}}{b^3\,(d+e\,x)-b^3\,d+a\,b^2\,e}+\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)(A\,b\,e-3\,B\,a\,e+2\,B\,b\,d)}{b^{5/2}\,\sqrt{a\,e-b\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*B*(d + e*x)^(1/2))/b^2 - ((A*b*e - B*a*e)*(d + e*x)^(1/2))/(b^3*(d + e*x
) - b^3*d + a*b^2*e) + (atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2))*(
A*b*e - 3*B*a*e + 2*B*b*d))/(b^(5/2)*(a*e - b*d)^(1/2))
```

sympy [B] time = 107.95, size = 1251, normalized size = 8.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2*A*a*e**2*sqrt(d + e*x)/(2*a**2*b*e**2 - 2*a*b**2*d*e + 2*a*b**2*e**2*x -
 2*b**3*d*e*x) + A*a*e**2*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-
1/(b*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*s
qrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b) - A*a*e**2*sqrt(-1/(b*(a*
e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(-1
/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x
))/(2*b) - A*d*e*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-1/(b*(a*e
 - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*sqrt(-1/(b
*(a*e - b*d)**3)) + sqrt(d + e*x))/2 + A*d*e*sqrt(-1/(b*(a*e - b*d)**3))*lo
g(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)*
*3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/2 + 2*A*d*e*s
qrt(d + e*x)/(2*a**2*e**2 - 2*a*b*d*e + 2*a*b*e**2*x - 2*b**2*d*e*x) + 2*A*
e*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**2*sqrt(a*e/b - d)) + 2*B*a**2*e**
2*sqrt(d + e*x)/(2*a**2*b**2*e**2 - 2*a*b**3*d*e + 2*a*b**3*e**2*x - 2*b**4
*d*e*x) - B*a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**2*e**2*sqrt(-1/(b
*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3)) - b**2*d**2*sqrt(
-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b**2) + B*a**2*e**2*sqrt(-1/(b*(
a*e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b*d*e*sqrt(
-1/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e
*x))/(2*b**2) - 2*B*a*d*e*sqrt(d + e*x)/(2*a**2*b*e**2 - 2*a*b**2*d*e + 2*a
*b**2*e**2*x - 2*b**3*d*e*x) + B*a*d*e*sqrt(-1/(b*(a*e - b*d)**3))*log(-a**
2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) + 2*a*b*d*e*sqrt(-1/(b*(a*e - b*d)**3))
- b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) + sqrt(d + e*x))/(2*b) - B*a*d*e*sq
rt(-1/(b*(a*e - b*d)**3))*log(a**2*e**2*sqrt(-1/(b*(a*e - b*d)**3)) - 2*a*b
*d*e*sqrt(-1/(b*(a*e - b*d)**3)) + b**2*d**2*sqrt(-1/(b*(a*e - b*d)**3)) +
sqrt(d + e*x))/(2*b) - 4*B*a*e*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**3*sq
rt(a*e/b - d)) + 2*B*d*atan(sqrt(d + e*x)/sqrt(a*e/b - d))/(b**2*sqrt(a*e/b
 - d)) + 2*B*sqrt(d + e*x)/b**2
```

3.1812 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=103

$$-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}\,(Ab-aB)}{b(a+bx)(bd-ae)}$$

```
[Out] -(-A*b*e-B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(
3/2)/(-a*e+b*d)^(3/2)-(A*b-B*a)*(e*x+d)^(1/2)/b/(-a*e+b*d)/(b*x+a)
```

Rubi **[A]** time = 0.10, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 78, 63, 208\}$

$$-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}\,(Ab-aB)}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -(((A*b - a*B)*Sqrt[d + e*x])/(b*(b*d - a*e)*(a + b*x))) - ((2*b*B*d - A*b*
e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*(b*d
- a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx=\int \frac{A+Bx}{(a+bx)^2\sqrt{d+ex}}\,dx$$

$$=-\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}+\frac{(2bBd-Abe-aBe)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{2b(bd-ae)}$$

$$=-\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}+\frac{(2bBd-Abe-aBe)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d}\right.}{be(bd-ae)}$$

$$=-\frac{(Ab-aB)\sqrt{d+ex}}{b(bd-ae)(a+bx)}-\frac{(2bBd-Abe-aBe)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}$$

Mathematica [A] time = 0.08, size = 102, normalized size = 0.99

$$\frac{\sqrt{d+ex}\,(aB-Ab)}{b(a+bx)(bd-ae)}-\frac{(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-(A*b) + a*B)*Sqrt[d + e*x])/(b*(b*d - a*e)*(a + b*x)) - ((2*b*B*d - A*b*
e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*(b*d
- a*e)^(3/2))
```

fricas [B] time = 0.99, size = 397, normalized size = 3.85

$$\left[\frac{\left(2\,Babd-\left(Ba^2+Aab\right)e+\left(2\,Bb^2d-\left(Bab+Ab^2\right)e\right)x\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(\left(Bab^2\right.\right.}{2\left(ab^4d^2-2\,a^2b^3de+a^3b^2e^2+\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)x\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] [1/2*((2*B*a*b*d - (B*a^2 + A*a*b)*e + (2*B*b^2*d - (B*a*b + A*b^2)*e)*x)*s
qrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*
x + d))/(b*x + a)) + 2*((B*a*b^2 - A*b^3)*d - (B*a^2*b - A*a*b^2)*e)*sqrt(e
*x + d))/(a*b^4*d^2 - 2*a^2*b^3*d*e + a^3*b^2*e^2 + (b^5*d^2 - 2*a*b^4*d*e
+ a^2*b^3*e^2)*x), ((2*B*a*b*d - (B*a^2 + A*a*b)*e + (2*B*b^2*d - (B*a*b +
A*b^2)*e)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + ((B*a*b^2 - A*b^3)*d - (B*a^2*b - A*a*b^2)*e)*sqrt(e*x +
d))/(a*b^4*d^2 - 2*a^2*b^3*d*e + a^3*b^2*e^2 + (b^5*d^2 - 2*a*b^4*d*e + a^2
*b^3*e^2)*x)]
```

giac [A] time = 0.17, size = 135, normalized size = 1.31

$$\frac{(2\,Bbd-Bae-Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d-abe\right)\sqrt{-b^2d+abe}}+\frac{\sqrt{xe+d}\,Bae-\sqrt{xe+d}\,Abe}{\left(b^2d-abe\right)\left((xe+d)b-bd+ae\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] (2*B*b*d - B*a*e - A*b*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^
2*d - a*b*e)*sqrt(-b^2*d + a*b*e)) + (sqrt(x*e + d)*B*a*e - sqrt(x*e + d)*A
*b*e)/((b^2*d - a*b*e)*((x*e + d)*b - b*d + a*e))
```

maple [**B**] time = 0.06, size = 195, normalized size = 1.89

$$\frac{Ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}}+\frac{Bae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}\;b}-\frac{2Bd\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}}+\frac{(Ab-Ba)\sqrt{ex+d}\;e}{(ae-bd)\,(ae-bd+(ex+d)\,b)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] (A*b-B*a)*e/(a*e-b*d)/b*(e*x+d)^(1/2)/((e*x+d)*b+a*e-b*d)+1/(a*e-b*d)/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e+1/(a*e-b*d)/
b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e-2/(
a*e-b*d)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*
d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.15, size = 99, normalized size = 0.96

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)\,\left(A\,b\,e+B\,a\,e-2\,B\,b\,d\right)}{b^{3/2}\,{\left(a\,e-b\,d\right)}^{3/2}}+\frac{\left(A\,b\,e-B\,a\,e\right)\,\sqrt{d+e\,x}}{b\,\left(a\,e-b\,d\right)\,\left(a\,e-b\,d+b\,\left(d+e\,x\right)\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2))*(A*b*e + B*a*e - 2*B*b*d
))/(b^(3/2)*(a*e - b*d)^(3/2)) + ((A*b*e - B*a*e)*(d + e*x)^(1/2))/(b*(a*e
- b*d)*(a*e - b*d + b*(d + e*x)))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1813 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=140

$$-\frac{Ab-aB}{b(a+bx)\sqrt{d+ex}\,(bd-ae)}+\frac{aBe-3Abe+2bBd}{b\sqrt{d+ex}\,(bd-ae)^2}-\frac{(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{5/2}}$$

```
[Out] -(-3*A*b*e+B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(
-a*e+b*d)^(5/2)/b^(1/2)+(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(1/
2)+(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$-\frac{Ab-aB}{b(a+bx)\sqrt{d+ex}\,(bd-ae)}+\frac{aBe-3Abe+2bBd}{b\sqrt{d+ex}\,(bd-ae)^2}-\frac{(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 3*A*b*e + a*B*e)/(b*(b*d - a*e)^2*Sqrt[d + e*x]) - (A*b - a*B)/(
b*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x]) - ((2*b*B*d - 3*A*b*e + a*B*e)*ArcTa
nh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx=\int \frac{A+Bx}{(a+bx)^2(d+ex)^{3/2}}\,dx$$

$$=-\frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}}+\frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{2b(bd-ae)}$$

$$=\frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}}-\frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}}+\frac{(2bBd-3Abe+aBe)}{2(bd-}$$

$$=\frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}}-\frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}}+\frac{(2bBd-3Abe+aBe)}{}$$

$$=\frac{2bBd-3Abe+aBe}{b(bd-ae)^2\sqrt{d+ex}}-\frac{Ab-aB}{b(bd-ae)(a+bx)\sqrt{d+ex}}-\frac{(2bBd-3Abe+aBe)}{\sqrt{b}\,(bd-}$$

Mathematica [C] time = 0.04, size = 95, normalized size = 0.68

$$\frac{(a+bx)(aBe-3Abe+2bBd)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-(Ab-aB)(bd-ae)}{b(a+bx)\sqrt{d+ex}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-((A*b - a*B)*(b*d - a*e)) + (2*b*B*d - 3*A*b*e + a*B*e)*(a + b*x)*Hyperge
ometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*(b*d - a*e)^2*(a +
b*x)*Sqrt[d + e*x])
```

fricas [B] time = 0.95, size = 775, normalized size = 5.54

$$\left[-\frac{\left(2\,Babd^2+\left(Ba^2-3\,Aab\right)de+\left(2\,Bb^2de+\left(Bab-3\,Ab^2\right)e^2\right)x^2+\left(2\,Bb^2d^2+3\left(Bab-Ab^2\right)de+\left(Ba^2-3\,Aab\right)e\right.\right.}{2\left(ab^4d^4-3\,a^2b^3d^3e+3\,a^3b^2d^2e^2-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/2*((2*B*a*b*d^2 + (B*a^2 - 3*A*a*b)*d*e + (2*B*b^2*d*e + (B*a*b - 3*A*b
^2)*e^2)*x^2 + (2*B*b^2*d^2 + 3*(B*a*b - A*b^2)*d*e + (B*a^2 - 3*A*a*b)*e^2
)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*s
qrt(e*x + d))/(b*x + a)) - 2*(2*A*a^2*b*e^2 + (3*B*a*b^2 - A*b^3)*d^2 - (3*
B*a^2*b + A*a*b^2)*d*e + (2*B*b^3*d^2 - (B*a*b^2 + 3*A*b^3)*d*e - (B*a^2*b
- 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(a*b^4*d^4 - 3*a^2*b^3*d^3*e + 3*a^3*b^
2*d^2*e^2 - a^4*b*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 -
a^3*b^2*e^4)*x^2 + (b^5*d^4 - 2*a*b^4*d^3*e + 2*a^3*b^2*d*e^3 - a^4*b*e^4)*
x), ((2*B*a*b*d^2 + (B*a^2 - 3*A*a*b)*d*e + (2*B*b^2*d*e + (B*a*b - 3*A*b^2
)*e^2)*x^2 + (2*B*b^2*d^2 + 3*(B*a*b - A*b^2)*d*e + (B*a^2 - 3*A*a*b)*e^2)*
x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x +
b*d)) + (2*A*a^2*b*e^2 + (3*B*a*b^2 - A*b^3)*d^2 - (3*B*a^2*b + A*a*b^2)*d*
e + (2*B*b^3*d^2 - (B*a*b^2 + 3*A*b^3)*d*e - (B*a^2*b - 3*A*a*b^2)*e^2)*x)*
sqrt(e*x + d))/(a*b^4*d^4 - 3*a^2*b^3*d^3*e + 3*a^3*b^2*d^2*e^2 - a^4*b*d*e
^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 - a^3*b^2*e^4)*x^2 + (b
^5*d^4 - 2*a*b^4*d^3*e + 2*a^3*b^2*d*e^3 - a^4*b*e^4)*x)]
```

giac [A] time = 0.19, size = 204, normalized size = 1.46

$$\frac{(2\,Bbd+Bae-3\,Abe)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}}+\frac{2\,(xe+d)Bbd-2\,Bbd^2+(xe+d)Bae-3\,(xe+d)Abe+2\,Bade+2}{\left(b^2d^2-2\,abde+a^2e^2\right)\left((xe+d)^{\frac{3}{2}}b-\sqrt{xe+d}\,bd+\sqrt{xe+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b*d + B*a*e - 3*A*b*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((
b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-b^2*d + a*b*e)) + (2*(x*e + d)*B*b*d -
 2*B*b*d^2 + (x*e + d)*B*a*e - 3*(x*e + d)*A*b*e + 2*B*a*d*e + 2*A*b*d*e -
2*A*a*e^2)/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*((x*e + d)^(3/2)*b - sqrt(x*e +
 d)*b*d + sqrt(x*e + d)*a*e))
```

maple [B] time = 0.07, size = 253, normalized size = 1.81

$$-\frac{3Abe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}}+\frac{Bae\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}}+\frac{2Bbd\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^2\sqrt{(ae-bd)\,b}}-\frac{\sqrt{ex+d}\;Abe}{(ae-bd)^2\,(bex+ae)}+\frac{\sqrt{ex}}{(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*b*e+1/(a*e-b*d)^2*(e*x+d)^(1/2)/
(b*e*x+a*e)*a*B*e-3/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A*b*e+1/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e+2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*b*d-2/(a*e-b*d)^2/(e*x+d)^(1/2)*A*
e+2/(a*e-b*d)^2/(e*x+d)^(1/2)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.09, size = 156, normalized size = 1.11

$$\frac{\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^{5/2}}\right)\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)}{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{2\,\left(A\,e-B\,d\right)}{a\,e-b\,d}-\frac{\left(d+e\,x\right)\,\left(B\,a\,e-3\,A\,b\,e+2\,B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^2}}{b\,{\left(d+e\,x\right)}^{3/2}+\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b^(1/2)*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(a*e - b*d)
^(5/2))*(B*a*e - 3*A*b*e + 2*B*b*d))/(b^(1/2)*(a*e - b*d)^(5/2)) - ((2*(A*e
 - B*d))/(a*e - b*d) - ((d + e*x)*(B*a*e - 3*A*b*e + 2*B*b*d))/(a*e - b*d)^
2)/(b*(d + e*x)^(3/2) + (a*e - b*d)*(d + e*x)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1814 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=181

$$-\frac{Ab-aB}{b(a+bx)(d+ex)^{3/2}(bd-ae)}+\frac{3aBe-5Abe+2bBd}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{3aBe-5Abe+2bBd}{3b(d+ex)^{3/2}(bd-ae)^2}-\frac{\sqrt{b}\,(3aBe-5Abe+2bBd)\,\mathrm{tan}}{(bd-ae)^{7/2}}$$

```
[Out] 1/3*(-5*A*b*e+3*B*a*e+2*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(3/2)+(-A*b+B*a)/b/(-
a*e+b*d)/(b*x+a)/(e*x+d)^(3/2)-(-5*A*b*e+3*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(
e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(7/2)+(-5*A*b*e+3*B*a*e+2
*B*b*d)/(-a*e+b*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{Ab-aB}{b(a+bx)(d+ex)^{3/2}(bd-ae)}+\frac{3aBe-5Abe+2bBd}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{3aBe-5Abe+2bBd}{3b(d+ex)^{3/2}(bd-ae)^2}-\frac{\sqrt{b}\,(3aBe-5Abe+2bBd)\,\mathrm{tan}}{(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 5*A*b*e + 3*a*B*e)/(3*b*(b*d - a*e)^2*(d + e*x)^(3/2)) - (A*b -
a*B)/(b*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2)) + (2*b*B*d - 5*A*b*e + 3*a*B
*e)/((b*d - a*e)^3*Sqrt[d + e*x]) - (Sqrt[b]*(2*b*B*d - 5*A*b*e + 3*a*B*e)*
ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{(a+bx)^2(d+ex)^{5/2}}\,dx$$

$$= -\frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{(2bBd-5Abe+3aBe)\int \frac{1}{(a+bx)(d+ex)^{5/2}}\,dx}{2b(bd-ae)}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{(2bBd-5Abe+}{2}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe+}{(bd-ae)^3\sqrt{d+}}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe+}{(bd-ae)^3\sqrt{d+}}$$

$$= \frac{2bBd-5Abe+3aBe}{3b(bd-ae)^2(d+ex)^{3/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{3/2}} + \frac{2bBd-5Abe+}{(bd-ae)^3\sqrt{d+}}$$

Mathematica [C] time = 0.04, size = 94, normalized size = 0.52

$$\frac{(3aBe-5Abe+2bBd)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-\frac{3(Ab-aB)(bd-ae)}{a+bx}}{3b(d+ex)^{3/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-3*(A*b - a*B)*(b*d - a*e))/(a + b*x) + (2*b*B*d - 5*A*b*e + 3*a*B*e)*Hyp
ergeometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)])/(3*b*(b*d - a*e)^
2*(d + e*x)^(3/2))
```

fricas [B] time = 0.68, size = 1106, normalized size = 6.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/6*(3*(2*B*a*b*d^3 + (3*B*a^2 - 5*A*a*b)*d^2*e + (2*B*b^2*d*e^2 + (3*B*a*
b - 5*A*b^2)*e^3)*x^3 + (4*B*b^2*d^2*e + 2*(4*B*a*b - 5*A*b^2)*d*e^2 + (3*B
*a^2 - 5*A*a*b)*e^3)*x^2 + (2*B*b^2*d^3 + (7*B*a*b - 5*A*b^2)*d^2*e + 2*(3*
B*a^2 - 5*A*a*b)*d*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2
*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(2*A*a^2*e^2
 + (11*B*a*b - 3*A*b^2)*d^2 + 2*(2*B*a^2 - 7*A*a*b)*d*e + 3*(2*B*b^2*d*e +
(3*B*a*b - 5*A*b^2)*e^2)*x^2 + 2*(4*B*b^2*d^2 + 2*(4*B*a*b - 5*A*b^2)*d*e +
(3*B*a^2 - 5*A*a*b)*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 - 3*a^2*b^2*d^4*e +
3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2*b^2*
d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3
 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^2*b^2*d^3*e^2
+ 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x), -1/3*(3*(2*B*a*b*d^3 + (3*B*a^2 - 5*A*
a*b)*d^2*e + (2*B*b^2*d*e^2 + (3*B*a*b - 5*A*b^2)*e^3)*x^3 + (4*B*b^2*d^2*e
 + 2*(4*B*a*b - 5*A*b^2)*d*e^2 + (3*B*a^2 - 5*A*a*b)*e^3)*x^2 + (2*B*b^2*d^
3 + (7*B*a*b - 5*A*b^2)*d^2*e + 2*(3*B*a^2 - 5*A*a*b)*d*e^2)*x)*sqrt(-b/(b*
d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b
*d)) - (2*A*a^2*e^2 + (11*B*a*b - 3*A*b^2)*d^2 + 2*(2*B*a^2 - 7*A*a*b)*d*e
+ 3*(2*B*b^2*d*e + (3*B*a*b - 5*A*b^2)*e^2)*x^2 + 2*(4*B*b^2*d^2 + 2*(4*B*a
*b - 5*A*b^2)*d*e + (3*B*a^2 - 5*A*a*b)*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 -
 3*a^2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d
^2*e^3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2
+ 3*a^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e -
 3*a^2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)]
```

giac [A] time = 0.22, size = 297, normalized size = 1.64

$$\frac{\left(2\,Bb^{2}d+3\,Babe-5\,Ab^{2}e\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\sqrt{-b^{2}d+abe}}+\frac{\sqrt{xe+d}\,Babe-\sqrt{xe+d}\,Ab^{2}e}{\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\left((xe+d)b-bd+ae\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^2*d + 3*B*a*b*e - 5*A*b^2*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*
b*e))/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*
b*e)) + (sqrt(x*e + d)*B*a*b*e - sqrt(x*e + d)*A*b^2*e)/((b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*((x*e + d)*b - b*d + a*e)) + 2/3*(3*(x*e
+ d)*B*b*d + B*b*d^2 + 3*(x*e + d)*B*a*e - 6*(x*e + d)*A*b*e - B*a*d*e - A*
b*d*e + A*a*e^2)/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(x*e
+ d)^(3/2))
```

maple [B] time = 0.07, size = 328, normalized size = 1.81

$$\frac{5A\,b^{2}e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^{3}\sqrt{(ae-bd)\,b}}-\frac{3Babe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^{3}\sqrt{(ae-bd)\,b}}-\frac{2B\,b^{2}d\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^{3}\sqrt{(ae-bd)\,b}}+\frac{\sqrt{ex+d}\;A\,b^{2}e}{(ae-bd)^{3}\,(bex+ae)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)^3*b^2*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e-1/(a*e-b*d)^3*b*(e*x+d)^(1/
2)/(b*e*x+a*e)*a*B*e+5/(a*e-b*d)^3*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e-3/(a*e-b*d)^3*b/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e-2/(a*e-b*d)^3*b^2/((a*e-b*d)*b)^
(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-2/3/(a*e-b*d)^2/(e*x+
d)^(3/2)*A*e+2/3/(a*e-b*d)^2/(e*x+d)^(3/2)*B*d+4/(a*e-b*d)^3/(e*x+d)^(1/2)*
A*b*e-2/(a*e-b*d)^3/(e*x+d)^(1/2)*a*B*e-2/(a*e-b*d)^3/(e*x+d)^(1/2)*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.10, size = 210, normalized size = 1.16

$$-\frac{\frac{2\,(A\,e-B\,d)}{3\,(a\,e-b\,d)}+\frac{2\,(d+e\,x)\,(3\,B\,a\,e-5\,A\,b\,e+2\,B\,b\,d)}{3\,{(a\,e-b\,d)}^2}+\frac{b\,{(d+e\,x)}^2\,(3\,B\,a\,e-5\,A\,b\,e+2\,B\,b\,d)}{{(a\,e-b\,d)}^3}}{b\,{(d+e\,x)}^{5/2}+(a\,e-b\,d)\,{(d+e\,x)}^{3/2}}-\frac{\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d}{{(a\,e-b\,d)}^{7/2}}\right.}{{(a\,e-b\,d)}^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((2*(A*e - B*d))/(3*(a*e - b*d)) + (2*(d + e*x)*(3*B*a*e - 5*A*b*e + 2*B*
b*d))/(3*(a*e - b*d)^2) + (b*(d + e*x)^2*(3*B*a*e - 5*A*b*e + 2*B*b*d))/(a*
e - b*d)^3)/(b*(d + e*x)^(5/2) + (a*e - b*d)*(d + e*x)^(3/2)) - (b^(1/2)*at
an((b^(1/2)*(d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*
e^2))/(a*e - b*d)^(7/2))*(3*B*a*e - 5*A*b*e + 2*B*b*d))/(a*e - b*d)^(7/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1815 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=221

$$-\frac{b^{3/2}(5aBe-7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{9/2}}+\frac{b(5aBe-7Abe+2bBd)}{\sqrt{d+ex}\,(bd-ae)^4}+\frac{5aBe-7Abe+2bBd}{3(d+ex)^{3/2}(bd-ae)^3}+\frac{5aBe-7A}{5b(d+ex)^{5/}}$$

```
[Out] 1/5*(-7*A*b*e+5*B*a*e+2*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(5/2)+(-A*b+B*a)/b/(-
a*e+b*d)/(b*x+a)/(e*x+d)^(5/2)+1/3*(-7*A*b*e+5*B*a*e+2*B*b*d)/(-a*e+b*d)^3/
(e*x+d)^(3/2)-b^(3/2)*(-7*A*b*e+5*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1
/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(9/2)+b*(-7*A*b*e+5*B*a*e+2*B*b*d)/(-a*e+b
*d)^4/(e*x+d)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$-\frac{b^{3/2}(5aBe-7Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{9/2}}+\frac{b(5aBe-7Abe+2bBd)}{\sqrt{d+ex}\,(bd-ae)^4}+\frac{5aBe-7Abe+2bBd}{3(d+ex)^{3/2}(bd-ae)^3}+\frac{5aBe-7A}{5b(d+ex)^{5/}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*b*B*d - 7*A*b*e + 5*a*B*e)/(5*b*(b*d - a*e)^2*(d + e*x)^(5/2)) - (A*b -
a*B)/(b*(b*d - a*e)*(a + b*x)*(d + e*x)^(5/2)) + (2*b*B*d - 7*A*b*e + 5*a*B
*e)/(3*(b*d - a*e)^3*(d + e*x)^(3/2)) + (b*(2*b*B*d - 7*A*b*e + 5*a*B*e))/(
(b*d - a*e)^4*Sqrt[d + e*x]) - (b^(3/2)*(2*b*B*d - 7*A*b*e + 5*a*B*e)*ArcTa
nh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{A+Bx}{(a+bx)^2(d+ex)^{7/2}}\,dx$$

$$= -\frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{(2bBd-7Abe+5aBe)\int \frac{1}{(a+bx)(d+ex)^{7/2}}\,dx}{2b(bd-ae)}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{(2bBd-7Abe+}{2}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe+}{3(bd-ae)^3(d+}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe+}{3(bd-ae)^3(d+}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe+}{3(bd-ae)^3(d+}$$

$$= \frac{2bBd-7Abe+5aBe}{5b(bd-ae)^2(d+ex)^{5/2}} - \frac{Ab-aB}{b(bd-ae)(a+bx)(d+ex)^{5/2}} + \frac{2bBd-7Abe+}{3(bd-ae)^3(d+}$$

Mathematica [C] time = 0.04, size = 94, normalized size = 0.43

$$\frac{(5aBe-7Abe+2bBd)\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)-\frac{5(Ab-aB)(bd-ae)}{a+bx}}{5b(d+ex)^{5/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] ((-5*(A*b - a*B)*(b*d - a*e))/(a + b*x) + (2*b*B*d - 7*A*b*e + 5*a*B*e)*Hyp
ergeometric2F1[-5/2, 1, -3/2, (b*(d + e*x))/(b*d - a*e)])/(5*b*(b*d - a*e)^
2*(d + e*x)^(5/2))
```

fricas [B] time = 0.85, size = 1749, normalized size = 7.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/30*(15*(2*B*a*b^2*d^4 + (5*B*a^2*b - 7*A*a*b^2)*d^3*e + (2*B*b^3*d*e^3
+ (5*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + (6*B*b^3*d^2*e^2 + (17*B*a*b^2 - 21*A*b^
3)*d*e^3 + (5*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + 3*(2*B*b^3*d^3*e + 7*(B*a*b^2
 - A*b^3)*d^2*e^2 + (5*B*a^2*b - 7*A*a*b^2)*d*e^3)*x^2 + (2*B*b^3*d^4 + (11
*B*a*b^2 - 7*A*b^3)*d^3*e + 3*(5*B*a^2*b - 7*A*a*b^2)*d^2*e^2)*x)*sqrt(b/(b
*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b
*d - a*e)))/(b*x + a)) + 2*(6*A*a^3*e^3 - (61*B*a*b^2 - 15*A*b^3)*d^3 - 4*(
12*B*a^2*b - 29*A*a*b^2)*d^2*e + 4*(B*a^3 - 8*A*a^2*b)*d*e^2 - 15*(2*B*b^3*
d*e^2 + (5*B*a*b^2 - 7*A*b^3)*e^3)*x^3 - 5*(14*B*b^3*d^2*e + (39*B*a*b^2 -
49*A*b^3)*d*e^2 + 2*(5*B*a^2*b - 7*A*a*b^2)*e^3)*x^2 - (46*B*b^3*d^3 + (163
*B*a*b^2 - 161*A*b^3)*d^2*e + 4*(29*B*a^2*b - 42*A*a*b^2)*d*e^2 - 2*(5*B*a^
3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a^2*b^3*d^6*e + 6*a^3*
b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4*e^3 - 4*a*b^4*d^3*e^
4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x^4 + (3*b^5*d^5*e^2 -
 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2*e^5 - a^4*b*d*e^6 +
a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*b^3*d^4*e^3 + 2*a^3*b
^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d^7 - a*b^4*d^6*e - 6*
a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^4 + 3*a^5*d^2*e^5)*x)
, -1/15*(15*(2*B*a*b^2*d^4 + (5*B*a^2*b - 7*A*a*b^2)*d^3*e + (2*B*b^3*d*e^3
 + (5*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + (6*B*b^3*d^2*e^2 + (17*B*a*b^2 - 21*A*b
^3)*d*e^3 + (5*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + 3*(2*B*b^3*d^3*e + 7*(B*a*b^
2 - A*b^3)*d^2*e^2 + (5*B*a^2*b - 7*A*a*b^2)*d*e^3)*x^2 + (2*B*b^3*d^4 + (1
1*B*a*b^2 - 7*A*b^3)*d^3*e + 3*(5*B*a^2*b - 7*A*a*b^2)*d^2*e^2)*x)*sqrt(-b/
(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x
+ b*d)) + (6*A*a^3*e^3 - (61*B*a*b^2 - 15*A*b^3)*d^3 - 4*(12*B*a^2*b - 29*A
*a*b^2)*d^2*e + 4*(B*a^3 - 8*A*a^2*b)*d*e^2 - 15*(2*B*b^3*d*e^2 + (5*B*a*b^
2 - 7*A*b^3)*e^3)*x^3 - 5*(14*B*b^3*d^2*e + (39*B*a*b^2 - 49*A*b^3)*d*e^2 +
 2*(5*B*a^2*b - 7*A*a*b^2)*e^3)*x^2 - (46*B*b^3*d^3 + (163*B*a*b^2 - 161*A*
b^3)*d^2*e + 4*(29*B*a^2*b - 42*A*a*b^2)*d*e^2 - 2*(5*B*a^3 - 7*A*a^2*b)*e^
3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a
^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2
*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3
 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*
(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^
4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 +
 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^4 + 3*a^5*d^2*e^5)*x)]
```

giac [B] time = 0.23, size = 435, normalized size = 1.97

$$\frac{\left(2\,Bb^3d+5\,Bab^2e-7\,Ab^3e\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{\sqrt{xe+d}\,Bab^2e-\sqrt{xe+d}\,A}{(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] (2*B*b^3*d + 5*B*a*b^2*e - 7*A*b^3*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d +
a*b*e))/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4
*e^4)*sqrt(-b^2*d + a*b*e)) + (sqrt(x*e + d)*B*a*b^2*e - sqrt(x*e + d)*A*b^
3*e)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^
4)*((x*e + d)*b - b*d + a*e)) + 2/15*(15*(x*e + d)^2*B*b^2*d + 5*(x*e + d)*
B*b^2*d^2 + 3*B*b^2*d^3 + 30*(x*e + d)^2*B*a*b*e - 45*(x*e + d)^2*A*b^2*e -
 10*(x*e + d)*A*b^2*d*e - 6*B*a*b*d^2*e - 3*A*b^2*d^2*e - 5*(x*e + d)*B*a^2
*e^2 + 10*(x*e + d)*A*a*b*e^2 + 3*B*a^2*d*e^2 + 6*A*a*b*d*e^2 - 3*A*a^2*e^3
)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*
(x*e + d)^(5/2))
```

maple [B] time = 0.07, size = 403, normalized size = 1.82

$$-\frac{7A\,b^3e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)\,b}}+\frac{5Ba\,b^2e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)\,b}}+\frac{2B\,b^3d\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^4\sqrt{(ae-bd)\,b}}-\frac{\sqrt{ex+d}\;\,A\,b^3e}{(ae-bd)^4\,(bex+ae)}+\frac{}{(ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^4*b^3*(e*x+d)^(1/2)/(b*e*x+a*e)*A*e+1/(a*e-b*d)^4*b^2*(e*x+d)^
(1/2)/(b*e*x+a*e)*a*B*e-7/(a*e-b*d)^4*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*e+5/(a*e-b*d)^4*b^2/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B*e+2/(a*e-b*d)^4*b^3/((a*e-b*d
)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-2/5/(a*e-b*d)^2/
(e*x+d)^(5/2)*A*e+2/5/(a*e-b*d)^2/(e*x+d)^(5/2)*B*d+4/3/(a*e-b*d)^3/(e*x+d)
^(3/2)*A*b*e-2/3/(a*e-b*d)^3/(e*x+d)^(3/2)*a*B*e-2/3/(a*e-b*d)^3/(e*x+d)^(3
/2)*B*b*d-6*b^2/(a*e-b*d)^4/(e*x+d)^(1/2)*A*e+4*b/(a*e-b*d)^4/(e*x+d)^(1/2)
*a*B*e+2*b^2/(a*e-b*d)^4/(e*x+d)^(1/2)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.16, size = 261, normalized size = 1.18

$$\frac{b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}{{\left(a\,e-b\,d\right)}^{9/2}}\right)\,\left(5\,B\,a\,e-7\,A\,b\,e+2\,B\,b\,d\right)}{{\left(a\,e-b\,d\right)}^{9/2}}-\frac{\frac{2\,\left(A\,e-B\,d\right)}{5\,\left(a\,e-b\,d\right)}+\frac{2\,\left(d+e\,x\right)\,\left(5\,B\,a\,e-7}{15\,\left(a\,e-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (b^(3/2)*atan((b^(1/2)*(d + e*x)^(1/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^(9/2))*(5*B*a*e - 7*A*b*e
+ 2*B*b*d))/(a*e - b*d)^(9/2) - ((2*(A*e - B*d))/(5*(a*e - b*d)) + (2*(d +
e*x)*(5*B*a*e - 7*A*b*e + 2*B*b*d))/(15*(a*e - b*d)^2) - (b^2*(d + e*x)^3*(
5*B*a*e - 7*A*b*e + 2*B*b*d))/(a*e - b*d)^4 - (2*b*(d + e*x)^2*(5*B*a*e - 7
*A*b*e + 2*B*b*d))/(3*(a*e - b*d)^3))/(b*(d + e*x)^(7/2) + (a*e - b*d)*(d +
 e*x)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.1816 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=332

$$-\frac{21e^2(bd-ae)^{3/2}(-11aBe+5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{13/2}}+\frac{21e^2\sqrt{d+ex}\,(bd-ae)(-11aBe+5Abe+6bBd)}{8b^6}$$

```
[Out] 7/8*e^2*(5*A*b*e-11*B*a*e+6*B*b*d)*(e*x+d)^(3/2)/b^5+21/40*e^2*(5*A*b*e-11*
B*a*e+6*B*b*d)*(e*x+d)^(5/2)/b^4/(-a*e+b*d)-3/8*e*(5*A*b*e-11*B*a*e+6*B*b*d
)*(e*x+d)^(7/2)/b^3/(-a*e+b*d)/(b*x+a)-1/12*(5*A*b*e-11*B*a*e+6*B*b*d)*(e*x
+d)^(9/2)/b^2/(-a*e+b*d)/(b*x+a)^2-1/3*(A*b-B*a)*(e*x+d)^(11/2)/b/(-a*e+b*d
)/(b*x+a)^3-21/8*e^2*(-a*e+b*d)^(3/2)*(5*A*b*e-11*B*a*e+6*B*b*d)*arctanh(b^
(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(13/2)+21/8*e^2*(-a*e+b*d)*(5*A*b*e
-11*B*a*e+6*B*b*d)*(e*x+d)^(1/2)/b^6
```

Rubi [**A**] time = 0.33, antiderivative size = 332, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$\frac{21e^2(d+ex)^{5/2}(-11aBe+5Abe+6bBd)}{40b^4(bd-ae)}+\frac{7e^2(d+ex)^{3/2}(-11aBe+5Abe+6bBd)}{8b^5}+\frac{21e^2\sqrt{d+ex}\,(bd-ae)(-11}{8b^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (21*e^2*(b*d - a*e)*(6*b*B*d + 5*A*b*e - 11*a*B*e)*Sqrt[d + e*x])/(8*b^6) +
 (7*e^2*(6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(3/2))/(8*b^5) + (21*e^2*(
6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(40*b^4*(b*d - a*e)) - (3*e*
(6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(7/2))/(8*b^3*(b*d - a*e)*(a + b*x
)) - ((6*b*B*d + 5*A*b*e - 11*a*B*e)*(d + e*x)^(9/2))/(12*b^2*(b*d - a*e)*(
a + b*x)^2) - ((A*b - a*B)*(d + e*x)^(11/2))/(3*b*(b*d - a*e)*(a + b*x)^3)
- (21*e^2*(b*d - a*e)^(3/2)*(6*b*B*d + 5*A*b*e - 11*a*B*e)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{9/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd+5Abe-11aBe)\int \frac{(d+ex)^{9/2}}{(a+bx)^3}\,dx}{6b(bd-ae)}$$

$$= -\frac{(6bBd+5Abe-11aBe)(d+ex)^{9/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{11/2}}{3b(bd-ae)(a+bx)^3} + \frac{(3e(6bBd+5Abe-1}{8b^2(b}$$

$$= -\frac{3e(6bBd+5Abe-11aBe)(d+ex)^{7/2}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd+5Abe-11aBe)(d+ex)^{9/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-}{3b(b}$$

$$= \frac{21e^2(6bBd+5Abe-11aBe)(d+ex)^{5/2}}{40b^4(bd-ae)} - \frac{3e(6bBd+5Abe-11aBe)(d+ex)^{7/2}}{8b^3(bd-ae)(a+bx)} - \frac{(6b}{}$$

$$= \frac{7e^2(6bBd+5Abe-11aBe)(d+ex)^{3/2}}{8b^5} + \frac{21e^2(6bBd+5Abe-11aBe)(d+ex)^{5/2}}{40b^4(bd-ae)} - \frac{3e}{}$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+ex)}{8b^5}$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+ex)}{8b^5}$$

$$= \frac{21e^2(bd-ae)(6bBd+5Abe-11aBe)\sqrt{d+ex}}{8b^6} + \frac{7e^2(6bBd+5Abe-11aBe)(d+ex)}{8b^5}$$

Mathematica [C] time = 0.11, size = 100, normalized size = 0.30

$$\frac{(d+ex)^{11/2}\left(\frac{11(aB-Ab)}{(a+bx)^3}-\frac{e^2(-11aBe+5Abe+6bBd)\,{}_2F_1\left(3,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{33b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(11/2)*((11*(-(A*b) + a*B))/(a + b*x)^3 - (e^2*(6*b*B*d + 5*A*b*
e - 11*a*B*e)*Hypergeometric2F1[3, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/
(b*d - a*e)^3))/(33*b*(b*d - a*e))
```

fricas [B] time = 0.99, size = 1514, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/240*(315*(6*B*a^3*b^2*d^2*e^2 - (17*B*a^4*b - 5*A*a^3*b^2)*d*e^3 + (11*B
*a^5 - 5*A*a^4*b)*e^4 + (6*B*b^5*d^2*e^2 - (17*B*a*b^4 - 5*A*b^5)*d*e^3 + (
11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^3 + 3*(6*B*a*b^4*d^2*e^2 - (17*B*a^2*b^3 -
 5*A*a*b^4)*d*e^3 + (11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 + 3*(6*B*a^2*b^3*
d^2*e^2 - (17*B*a^3*b^2 - 5*A*a^2*b^3)*d*e^3 + (11*B*a^4*b - 5*A*a^3*b^2)*e
^4)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqr
t((b*d - a*e)/b))/(b*x + a)) + 2*(48*B*b^5*e^4*x^5 - 20*(B*a*b^4 + 2*A*b^5)
*d^4 - 90*(2*B*a^2*b^3 + A*a*b^4)*d^3*e + 63*(51*B*a^3*b^2 - 5*A*a^2*b^3)*d
^2*e^2 - 210*(31*B*a^4*b - 10*A*a^3*b^2)*d*e^3 + 315*(11*B*a^5 - 5*A*a^4*b)
*e^4 + 16*(21*B*b^5*d*e^3 - (11*B*a*b^4 - 5*A*b^5)*e^4)*x^4 + 16*(108*B*b^5
*d^2*e^2 - (197*B*a*b^4 - 65*A*b^5)*d*e^3 + 9*(11*B*a^2*b^3 - 5*A*a*b^4)*e^
4)*x^3 - 3*(170*B*b^5*d^3*e - (2513*B*a*b^4 - 275*A*b^5)*d^2*e^2 + 6*(814*B
*a^2*b^3 - 265*A*a*b^4)*d*e^3 - 231*(11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 -
 2*(30*B*b^5*d^4 + 5*(53*B*a*b^4 + 25*A*b^5)*d^3*e - 18*(244*B*a^2*b^3 - 25
*A*a*b^4)*d^2*e^2 + 63*(139*B*a^3*b^2 - 45*A*a^2*b^3)*d*e^3 - 420*(11*B*a^4
*b - 5*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7
*x + a^3*b^6), -1/120*(315*(6*B*a^3*b^2*d^2*e^2 - (17*B*a^4*b - 5*A*a^3*b^2
)*d*e^3 + (11*B*a^5 - 5*A*a^4*b)*e^4 + (6*B*b^5*d^2*e^2 - (17*B*a*b^4 - 5*A
*b^5)*d*e^3 + (11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^3 + 3*(6*B*a*b^4*d^2*e^2 -
(17*B*a^2*b^3 - 5*A*a*b^4)*d*e^3 + (11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 +
3*(6*B*a^2*b^3*d^2*e^2 - (17*B*a^3*b^2 - 5*A*a^2*b^3)*d*e^3 + (11*B*a^4*b -
 5*A*a^3*b^2)*e^4)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b
*d - a*e)/b)/(b*d - a*e)) - (48*B*b^5*e^4*x^5 - 20*(B*a*b^4 + 2*A*b^5)*d^4
- 90*(2*B*a^2*b^3 + A*a*b^4)*d^3*e + 63*(51*B*a^3*b^2 - 5*A*a^2*b^3)*d^2*e^
2 - 210*(31*B*a^4*b - 10*A*a^3*b^2)*d*e^3 + 315*(11*B*a^5 - 5*A*a^4*b)*e^4
+ 16*(21*B*b^5*d*e^3 - (11*B*a*b^4 - 5*A*b^5)*e^4)*x^4 + 16*(108*B*b^5*d^2*
e^2 - (197*B*a*b^4 - 65*A*b^5)*d*e^3 + 9*(11*B*a^2*b^3 - 5*A*a*b^4)*e^4)*x^
3 - 3*(170*B*b^5*d^3*e - (2513*B*a*b^4 - 275*A*b^5)*d^2*e^2 + 6*(814*B*a^2*
b^3 - 265*A*a*b^4)*d*e^3 - 231*(11*B*a^3*b^2 - 5*A*a^2*b^3)*e^4)*x^2 - 2*(3
0*B*b^5*d^4 + 5*(53*B*a*b^4 + 25*A*b^5)*d^3*e - 18*(244*B*a^2*b^3 - 25*A*a*
b^4)*d^2*e^2 + 63*(139*B*a^3*b^2 - 45*A*a^2*b^3)*d*e^3 - 420*(11*B*a^4*b -
5*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(b^9*x^3 + 3*a*b^8*x^2 + 3*a^2*b^7*x +
a^3*b^6)]
```

giac [B] time = 0.30, size = 829, normalized size = 2.50

$$\frac{21\left(6\,Bb^3d^3e^2-23\,Bab^2d^2e^3+5\,Ab^3d^2e^3+28\,Ba^2bde^4-10\,Aab^2de^4-11\,Ba^3e^5+5\,Aa^2be^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right.}{8\sqrt{-b^2d+abe}\,b^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 21/8*(6*B*b^3*d^3*e^2 - 23*B*a*b^2*d^2*e^3 + 5*A*b^3*d^2*e^3 + 28*B*a^2*b*d
*e^4 - 10*A*a*b^2*d*e^4 - 11*B*a^3*e^5 + 5*A*a^2*b*e^5)*arctan(sqrt(x*e + d
)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/24*(102*(x*e + d)^
(5/2)*B*b^5*d^3*e^2 - 192*(x*e + d)^(3/2)*B*b^5*d^4*e^2 + 90*sqrt(x*e + d)*
B*b^5*d^5*e^2 - 471*(x*e + d)^(5/2)*B*a*b^4*d^2*e^3 + 165*(x*e + d)^(5/2)*A
*b^5*d^2*e^3 + 1048*(x*e + d)^(3/2)*B*a*b^4*d^3*e^3 - 280*(x*e + d)^(3/2)*A
*b^5*d^3*e^3 - 573*sqrt(x*e + d)*B*a*b^4*d^4*e^3 + 123*sqrt(x*e + d)*A*b^5*
d^4*e^3 + 636*(x*e + d)^(5/2)*B*a^2*b^3*d*e^4 - 330*(x*e + d)^(5/2)*A*a*b^4
*d*e^4 - 1992*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^4 + 840*(x*e + d)^(3/2)*A*a*b
^4*d^2*e^4 + 1392*sqrt(x*e + d)*B*a^2*b^3*d^3*e^4 - 492*sqrt(x*e + d)*A*a*b
^4*d^3*e^4 - 267*(x*e + d)^(5/2)*B*a^3*b^2*e^5 + 165*(x*e + d)^(5/2)*A*a^2*
b^3*e^5 + 1608*(x*e + d)^(3/2)*B*a^3*b^2*d*e^5 - 840*(x*e + d)^(3/2)*A*a^2*
b^3*d*e^5 - 1638*sqrt(x*e + d)*B*a^3*b^2*d^2*e^5 + 738*sqrt(x*e + d)*A*a^2*
b^3*d^2*e^5 - 472*(x*e + d)^(3/2)*B*a^4*b*e^6 + 280*(x*e + d)^(3/2)*A*a^3*b
^2*e^6 + 942*sqrt(x*e + d)*B*a^4*b*d*e^6 - 492*sqrt(x*e + d)*A*a^3*b^2*d*e^
6 - 213*sqrt(x*e + d)*B*a^5*e^7 + 123*sqrt(x*e + d)*A*a^4*b*e^7)/(((x*e + d
)*b - b*d + a*e)^3*b^6) + 2/15*(3*(x*e + d)^(5/2)*B*b^16*e^2 + 15*(x*e + d)
^(3/2)*B*b^16*d*e^2 + 90*sqrt(x*e + d)*B*b^16*d^2*e^2 - 20*(x*e + d)^(3/2)*
B*a*b^15*e^3 + 5*(x*e + d)^(3/2)*A*b^16*e^3 - 240*sqrt(x*e + d)*B*a*b^15*d*
e^3 + 60*sqrt(x*e + d)*A*b^16*d*e^3 + 150*sqrt(x*e + d)*B*a^2*b^14*e^4 - 60
*sqrt(x*e + d)*A*a*b^15*e^4)/b^20
```

maple [B] time = 0.09, size = 1285, normalized size = 3.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/5*e^2/b^4*B*(e*x+d)^(5/2)+2/3*e^3/b^4*A*(e*x+d)^(3/2)-8/3*e^3/b^5*B*(e*x+
d)^(3/2)*a-8*e^4/b^5*A*(e*x+d)^(1/2)*a+8*e^3/b^4*A*(e*x+d)^(1/2)*d+20*e^4/b
^6*B*(e*x+d)^(1/2)*a^2+2*e^2/b^4*B*(e*x+d)^(3/2)*d+12*e^2/b^4*B*(e*x+d)^(1/
2)*d^2-157/4*e^6/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^4*d-483/8*e^3/b^4/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d^2+273/4*e
^5/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3*d^2-58*e^4/b^3/(b*e*x+a*e)^3*(e*x+
d)^(1/2)*B*a^2*d^3+191/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^4+35*e^5
/b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a^2*d-123/4*e^5/b^3/(b*e*x+a*e)^3*(e*x+d
)^(1/2)*A*a^2*d^2+41/2*e^4/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*d^3+157/8*e^
3/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a*d^2+41/2*e^6/b^4/(b*e*x+a*e)^3*(e*x+d
)^(1/2)*A*a^3*d-35*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a*d^2-105/4*e^4/b^
4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a*d-131
/3*e^3/b^2/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d^3+55/4*e^4/b^2/(b*e*x+a*e)^3*(
e*x+d)^(5/2)*A*a*d-53/2*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^2*d+147/2*e
^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^
2*d-67*e^5/b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^3*d+83*e^4/b^3/(b*e*x+a*e)^3
*B*(e*x+d)^(3/2)*a^2*d^2-41/8*e^7/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^4-41/
8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^4-35/3*e^6/b^4/(b*e*x+a*e)^3*A*(e*x
+d)^(3/2)*a^3+35/3*e^3/b/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d^3+59/3*e^6/b^5/(b*
e*x+a*e)^3*B*(e*x+d)^(3/2)*a^4+105/8*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a^2+105/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d^2-32*e^3/b^5*B*(e*x+d)^(1/2)
*a*d+63/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*B*d^3+8*e^2/b/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^4-17/4*e^2/b/(b*e*x+a*
e)^3*(e*x+d)^(5/2)*B*d^3-15/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^5-231/8
*e^5/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*
```

```
a^3+71/8*e^7/b^6/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^5-55/8*e^5/b^3/(b*e*x+a*e)
^3*(e*x+d)^(5/2)*A*a^2-55/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*d^2+89/8*e^
5/b^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.12, size = 790, normalized size = 2.38

$$\left(\frac{\left(\frac{2\,A\,e^3-2\,B\,d\,e^2}{b^4}+\frac{2\,B\,e^2\,\left(4\,b^4\,d-4\,a\,b^3\,e\right)}{b^8}\right)\,\left(4\,b^4\,d-4\,a\,b^3\,e\right)}{b^4}-\frac{12\,B\,e^2\,{\left(a\,e-b\,d\right)}^2}{b^6}\right)\,\sqrt{d+e\,x}-\frac{{\left(d+e\,x\right)}^{5/2}\,(-\frac{89\,B\,a^3\,b^2\,e^5}{8}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((((2*A*e^3 - 2*B*d*e^2)/b^4 + (2*B*e^2*(4*b^4*d - 4*a*b^3*e))/b^8)*(4*b^4*
d - 4*a*b^3*e))/b^4 - (12*B*e^2*(a*e - b*d)^2)/b^6)*(d + e*x)^(1/2) - ((d +
 e*x)^(5/2)*((55*A*a^2*b^3*e^5)/8 - (89*B*a^3*b^2*e^5)/8 + (55*A*b^5*d^2*e^
3)/8 + (17*B*b^5*d^3*e^2)/4 - (157*B*a*b^4*d^2*e^3)/8 + (53*B*a^2*b^3*d*e^4
)/2 - (55*A*a*b^4*d*e^4)/4) - (d + e*x)^(3/2)*((59*B*a^4*b*e^6)/3 - (35*A*a
^3*b^2*e^6)/3 + (35*A*b^5*d^3*e^3)/3 + 8*B*b^5*d^4*e^2 - 35*A*a*b^4*d^2*e^4
 + 35*A*a^2*b^3*d*e^5 - (131*B*a*b^4*d^3*e^3)/3 - 67*B*a^3*b^2*d*e^5 + 83*B
*a^2*b^3*d^2*e^4) + (d + e*x)^(1/2)*((41*A*a^4*b*e^7)/8 - (71*B*a^5*e^7)/8
+ (41*A*b^5*d^4*e^3)/8 + (15*B*b^5*d^5*e^2)/4 - (41*A*a*b^4*d^3*e^4)/2 - (4
1*A*a^3*b^2*d*e^6)/2 - (191*B*a*b^4*d^4*e^3)/8 + (123*A*a^2*b^3*d^2*e^5)/4
+ 58*B*a^2*b^3*d^3*e^4 - (273*B*a^3*b^2*d^2*e^5)/4 + (157*B*a^4*b*d*e^6)/4)
)/(b^9*(d + e*x)^3 - (3*b^9*d - 3*a*b^8*e)*(d + e*x)^2 + (d + e*x)*(3*b^9*d
^2 + 3*a^2*b^7*e^2 - 6*a*b^8*d*e) - b^9*d^3 + a^3*b^6*e^3 - 3*a^2*b^7*d*e^2
 + 3*a*b^8*d^2*e) + ((2*A*e^3 - 2*B*d*e^2)/(3*b^4) + (2*B*e^2*(4*b^4*d - 4*
a*b^3*e))/(3*b^8))*(d + e*x)^(3/2) + (2*B*e^2*(d + e*x)^(5/2))/(5*b^4) + (2
1*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^(3/2)*(d + e*x)^(1/2)*(5*A*b*e - 11*B*a
*e + 6*B*b*d))/(5*A*a^2*b*e^5 - 11*B*a^3*e^5 + 5*A*b^3*d^2*e^3 + 6*B*b^3*d^
3*e^2 - 23*B*a*b^2*d^2*e^3 - 10*A*a*b^2*d*e^4 + 28*B*a^2*b*d*e^4))*(a*e - b
*d)^(3/2)*(5*A*b*e - 11*B*a*e + 6*B*b*d))/(8*b^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1817 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=284

$$-\frac{35e^2\sqrt{bd-ae}\,(-3aBe+Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{11/2}}+\frac{35e^2\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{8b^5}+\frac{35e^2(d+ex)^{3/2}(}{24b}$$

```
[Out] 35/24*e^2*(A*b*e-3*B*a*e+2*B*b*d)*(e*x+d)^(3/2)/b^4/(-a*e+b*d)-7/8*e*(A*b*e
-3*B*a*e+2*B*b*d)*(e*x+d)^(5/2)/b^3/(-a*e+b*d)/(b*x+a)-1/4*(A*b*e-3*B*a*e+2
*B*b*d)*(e*x+d)^(7/2)/b^2/(-a*e+b*d)/(b*x+a)^2-1/3*(A*b-B*a)*(e*x+d)^(9/2)/
b/(-a*e+b*d)/(b*x+a)^3-35/8*e^2*(A*b*e-3*B*a*e+2*B*b*d)*arctanh(b^(1/2)*(e*
x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(11/2)+35/8*e^2*(A*b*e-3*B*
a*e+2*B*b*d)*(e*x+d)^(1/2)/b^5
```

Rubi [A] time = 0.24, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 50, 63, 208\}$

$$\frac{35e^2(d+ex)^{3/2}(-3aBe+Abe+2bBd)}{24b^4(bd-ae)}+\frac{35e^2\sqrt{d+ex}\,(-3aBe+Abe+2bBd)}{8b^5}-\frac{35e^2\sqrt{bd-ae}\,(-3aBe+Abe+2bB}{8b^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*e^2*(2*b*B*d + A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(8*b^5) + (35*e^2*(2*b*B
*d + A*b*e - 3*a*B*e)*(d + e*x)^(3/2))/(24*b^4*(b*d - a*e)) - (7*e*(2*b*B*d
 + A*b*e - 3*a*B*e)*(d + e*x)^(5/2))/(8*b^3*(b*d - a*e)*(a + b*x)) - ((2*b*
B*d + A*b*e - 3*a*B*e)*(d + e*x)^(7/2))/(4*b^2*(b*d - a*e)*(a + b*x)^2) - (
(A*b - a*B)*(d + e*x)^(9/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (35*e^2*Sqrt[b
*d - a*e]*(2*b*B*d + A*b*e - 3*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]])/(8*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{3b(bd-ae)(a+bx)^3} + \frac{(2bBd+Abe-3aBe)\int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd+Abe-3aBe)(d+ex)^{7/2}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{9/2}}{3b(bd-ae)(a+bx)^3} + \frac{(7e(2bBd+Abe-3a}{8b^2(bd}$$

$$= -\frac{7e(2bBd+Abe-3aBe)(d+ex)^{5/2}}{8b^3(bd-ae)(a+bx)} - \frac{(2bBd+Abe-3aBe)(d+ex)^{7/2}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-a}{3b(bd-}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(2bBd+Abe-3aBe)(d+ex)^{5/2}}{8b^3(bd-ae)(a+bx)} - \frac{(2bE}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(}{}$$

$$= \frac{35e^2(2bBd+Abe-3aBe)\sqrt{d+ex}}{8b^5} + \frac{35e^2(2bBd+Abe-3aBe)(d+ex)^{3/2}}{24b^4(bd-ae)} - \frac{7e(}{}$$

Mathematica [C] time = 0.09, size = 99, normalized size = 0.35

$$\frac{(d+ex)^{9/2}\left(\frac{9aB-9Ab}{(a+bx)^3} - \frac{3e^2(-3aBe+Abe+2bBd)\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{27b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(9/2)*((-9*A*b + 9*a*B)/(a + b*x)^3 - (3*e^2*(2*b*B*d + A*b*e -
3*a*B*e)*Hypergeometric2F1[3, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/(b*d -
 a*e)^3))/(27*b*(b*d - a*e))
```

fricas [B] time = 1.18, size = 1026, normalized size = 3.61

$$\left[-\frac{105\left(2\,Ba^{3}bde^{2} - \left(3\,Ba^{4} - Aa^{3}b\right)e^{3} + \left(2\,Bb^{4}de^{2} - \left(3\,Bab^{3} - Ab^{4}\right)e^{3}\right)x^{3} + 3\left(2\,Bab^{3}de^{2} - \left(3\,Ba^{2}b^{2} - Aab^{3}\right)e^{3}\right)x^{2}}{} \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(105*(2*B*a^3*b*d*e^2 - (3*B*a^4 - A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (
3*B*a*b^3 - A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (3*B*a^2*b^2 - A*a*b^3)*
e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^2 - (3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt((b*d
 - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b)
)/(b*x + a)) - 2*(16*B*b^4*e^3*x^4 - 4*(B*a*b^3 + 2*A*b^4)*d^3 - 14*(2*B*a^
2*b^2 + A*a*b^3)*d^2*e + 35*(9*B*a^3*b - A*a^2*b^2)*d*e^2 - 105*(3*B*a^4 -
A*a^3*b)*e^3 + 16*(10*B*b^4*d*e^2 - 3*(3*B*a*b^3 - A*b^4)*e^3)*x^3 - 3*(26*
B*b^4*d^2*e - (241*B*a*b^3 - 29*A*b^4)*d*e^2 + 77*(3*B*a^2*b^2 - A*a*b^3)*e
^3)*x^2 - 2*(6*B*b^4*d^3 + (41*B*a*b^3 + 19*A*b^4)*d^2*e - 7*(61*B*a^2*b^2
- 7*A*a*b^3)*d*e^2 + 140*(3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^
8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5), -1/24*(105*(2*B*a^3*b*d*e^2 -
 (3*B*a^4 - A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (3*B*a*b^3 - A*b^4)*e^3)*x^3 +
3*(2*B*a*b^3*d*e^2 - (3*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^
2 - (3*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (16*B*b^4*e^3*x^4 - 4*(B*a*b^3 +
2*A*b^4)*d^3 - 14*(2*B*a^2*b^2 + A*a*b^3)*d^2*e + 35*(9*B*a^3*b - A*a^2*b^2
)*d*e^2 - 105*(3*B*a^4 - A*a^3*b)*e^3 + 16*(10*B*b^4*d*e^2 - 3*(3*B*a*b^3 -
 A*b^4)*e^3)*x^3 - 3*(26*B*b^4*d^2*e - (241*B*a*b^3 - 29*A*b^4)*d*e^2 + 77*
(3*B*a^2*b^2 - A*a*b^3)*e^3)*x^2 - 2*(6*B*b^4*d^3 + (41*B*a*b^3 + 19*A*b^4)
*d^2*e - 7*(61*B*a^2*b^2 - 7*A*a*b^3)*d*e^2 + 140*(3*B*a^3*b - A*a^2*b^2)*e
^3)*x)*sqrt(e*x + d))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)]
```

giac [B] time = 0.25, size = 577, normalized size = 2.03

$$\frac{35\left(2\,Bb^{2}d^{2}e^{2} - 5\,Babde^{3} + Ab^{2}de^{3} + 3\,Ba^{2}e^{4} - Aabe^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{8\,\sqrt{-b^{2}d+abe}\,b^{5}} - \frac{78\,(xe+d)^{\frac{5}{2}}Bb^{4}d^{2}e^{2} - 144\,(xe+d)^{\frac{3}{2}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/8*(2*B*b^2*d^2*e^2 - 5*B*a*b*d*e^3 + A*b^2*d*e^3 + 3*B*a^2*e^4 - A*a*b*e
^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^5)
 - 1/24*(78*(x*e + d)^(5/2)*B*b^4*d^2*e^2 - 144*(x*e + d)^(3/2)*B*b^4*d^3*e
^2 + 66*sqrt(x*e + d)*B*b^4*d^4*e^2 - 243*(x*e + d)^(5/2)*B*a*b^3*d*e^3 + 8
7*(x*e + d)^(5/2)*A*b^4*d*e^3 + 568*(x*e + d)^(3/2)*B*a*b^3*d^2*e^3 - 136*(
x*e + d)^(3/2)*A*b^4*d^2*e^3 - 321*sqrt(x*e + d)*B*a*b^3*d^3*e^3 + 57*sqrt(
x*e + d)*A*b^4*d^3*e^3 + 165*(x*e + d)^(5/2)*B*a^2*b^2*e^4 - 87*(x*e + d)^(
5/2)*A*a*b^3*e^4 - 704*(x*e + d)^(3/2)*B*a^2*b^2*d*e^4 + 272*(x*e + d)^(3/2
)*A*a*b^3*d*e^4 + 567*sqrt(x*e + d)*B*a^2*b^2*d^2*e^4 - 171*sqrt(x*e + d)*A
*a*b^3*d^2*e^4 + 280*(x*e + d)^(3/2)*B*a^3*b*e^5 - 136*(x*e + d)^(3/2)*A*a^
2*b^2*e^5 - 435*sqrt(x*e + d)*B*a^3*b*d*e^5 + 171*sqrt(x*e + d)*A*a^2*b^2*d
*e^5 + 123*sqrt(x*e + d)*B*a^4*e^6 - 57*sqrt(x*e + d)*A*a^3*b*e^6)/(((x*e +
 d)*b - b*d + a*e)^3*b^5) + 2/3*((x*e + d)^(3/2)*B*b^8*e^2 + 9*sqrt(x*e + d
)*B*b^8*d*e^2 - 12*sqrt(x*e + d)*B*a*b^7*e^3 + 3*sqrt(x*e + d)*A*b^8*e^3)/b
^12
```

maple [**B**]   time = 0.08, size = 905, normalized size = 3.19

$$\frac{19\sqrt{ex+d}\;A\,a^{3}e^{6}}{8\,(bex+ae)^{3}\,b^{4}}-\frac{57\sqrt{ex+d}\;A\,a^{2}d\,e^{5}}{8\,(bex+ae)^{3}\,b^{3}}+\frac{57\sqrt{ex+d}\;Aa\,d^{2}e^{4}}{8\,(bex+ae)^{3}\,b^{2}}-\frac{19\sqrt{ex+d}\;A\,d^{3}e^{3}}{8\,(bex+ae)^{3}\,b}-\frac{41\sqrt{ex+d}\;B\,a^{4}e^{6}}{8\,(bex+ae)^{3}\,b^{5}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/3*e^2/b^4*B*(e*x+d)^(3/2)+2*e^3/b^4*A*(e*x+d)^(1/2)-8*e^3/b^5*a*B*(e*x+d)
^(1/2)+6*e^2/b^4*B*d*(e*x+d)^(1/2)-34/3*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/
2)*a*d+88/3*e^4/b^3/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2*d-71/3*e^3/b^2/(b*e*x
+a*e)^3*B*(e*x+d)^(3/2)*a*d^2+145/8*e^5/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d
*a^3-57/8*e^5/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2*d+57/8*e^4/b^2/(b*e*x+a
*e)^3*(e*x+d)^(1/2)*A*d^2*a+81/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a*d-
175/8*e^3/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*B*a*d+107/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^3-189/8*e^4/b^3/(b
*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*d^2-41/8*e^6/b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2
)*B*a^4+35/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*A*d+105/8*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*B*a^2-13/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*d^2+6*e^2/b
/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^3-11/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B
*d^4+35/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*B*d^2+29/8*e^4/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*a-29/8*e^3/b/(b*e*x
+a*e)^3*(e*x+d)^(5/2)*A*d-55/8*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a^2+17
/3*e^5/b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a^2-35/8*e^4/b^4/((a*e-b*d)*b)^(1/
2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*a+17/3*e^3/b/(b*e*x+a*e)^3
*A*(e*x+d)^(3/2)*d^2-35/3*e^5/b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^3+19/8*e^
6/b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^3-19/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1
/2)*A*d^3
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**]   time = 2.16, size = 513, normalized size = 1.81

$$\left(\frac{2\,A\,e^3-2\,B\,d\,e^2}{b^4}+\frac{2\,B\,e^2\,\left(4\,b^4\,d-4\,a\,b^3\,e\right)}{b^8}\right)\,\sqrt{d+e\,x}-\frac{\sqrt{d+e\,x}\,\left(\frac{41\,B\,a^4\,e^6}{8}-\frac{145\,B\,a^3\,b\,d\,e^5}{8}-\frac{19\,A\,a^3\,b\,e^6}{8}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((2*A*e^3 - 2*B*d*e^2)/b^4 + (2*B*e^2*(4*b^4*d - 4*a*b^3*e))/b^8)*(d + e*x)
^(1/2) - ((d + e*x)^(1/2)*((41*B*a^4*e^6)/8 - (19*A*a^3*b*e^6)/8 + (19*A*b^
4*d^3*e^3)/8 + (11*B*b^4*d^4*e^2)/4 - (57*A*a*b^3*d^2*e^4)/8 + (57*A*a^2*b^
2*d*e^5)/8 - (107*B*a*b^3*d^3*e^3)/8 + (189*B*a^2*b^2*d^2*e^4)/8 - (145*B*a
^3*b*d*e^5)/8) - (d + e*x)^(3/2)*((17*A*a^2*b^2*e^5)/3 - (35*B*a^3*b*e^5)/3
 + (17*A*b^4*d^2*e^3)/3 + 6*B*b^4*d^3*e^2 - (71*B*a*b^3*d^2*e^3)/3 + (88*B*
a^2*b^2*d*e^4)/3 - (34*A*a*b^3*d*e^4)/3) + (d + e*x)^(5/2)*((29*A*b^4*d*e^3
)/8 - (29*A*a*b^3*e^4)/8 + (55*B*a^2*b^2*e^4)/8 + (13*B*b^4*d^2*e^2)/4 - (8
1*B*a*b^3*d*e^3)/8))/(b^8*(d + e*x)^3 - (3*b^8*d - 3*a*b^7*e)*(d + e*x)^2 +
 (d + e*x)*(3*b^8*d^2 + 3*a^2*b^6*e^2 - 6*a*b^7*d*e) - b^8*d^3 + a^3*b^5*e^
3 - 3*a^2*b^6*d*e^2 + 3*a*b^7*d^2*e) + (2*B*e^2*(d + e*x)^(3/2))/(3*b^4) +
(e^2*atan((b^(1/2)*(d + e*x)^(1/2)*1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)
*(A*b*e - 3*B*a*e + 2*B*b*d)*35i)/(8*b^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1818 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=250

$$-\frac{5e^2(-7aBe+Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{bd-ae}}+\frac{5e^2\sqrt{d+ex}\,(-7aBe+Abe+6bBd)}{8b^4(bd-ae)}-\frac{5e(d+ex)^{3/2}(-7aBe+A}{24b^3(a+bx)(bd-}$$

```
[Out] -5/24*e*(A*b*e-7*B*a*e+6*B*b*d)*(e*x+d)^(3/2)/b^3/(-a*e+b*d)/(b*x+a)-1/12*(
A*b*e-7*B*a*e+6*B*b*d)*(e*x+d)^(5/2)/b^2/(-a*e+b*d)/(b*x+a)^2-1/3*(A*b-B*a)
*(e*x+d)^(7/2)/b/(-a*e+b*d)/(b*x+a)^3-5/8*e^2*(A*b*e-7*B*a*e+6*B*b*d)*arcta
nh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(9/2)/(-a*e+b*d)^(1/2)+5/8*e^2
*(A*b*e-7*B*a*e+6*B*b*d)*(e*x+d)^(1/2)/b^4/(-a*e+b*d)
```

Rubi **[A]** time = 0.20, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = {27, 78, 47, 50, 63, 208}

$$\frac{5e^2\sqrt{d+ex}\,(-7aBe+Abe+6bBd)}{8b^4(bd-ae)}-\frac{5e^2(-7aBe+Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{bd-ae}}-\frac{(d+ex)^{5/2}(-7aBe+Abe+}{12b^2(a+bx)^2(bd-a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (5*e^2*(6*b*B*d + A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(8*b^4*(b*d - a*e)) - (5*
e*(6*b*B*d + A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/(24*b^3*(b*d - a*e)*(a + b*x
)) - ((6*b*B*d + A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(12*b^2*(b*d - a*e)*(a +
 b*x)^2) - ((A*b - a*B)*(d + e*x)^(7/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (5
*e^2*(6*b*B*d + A*b*e - 7*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
 a*e]])/(8*b^(9/2)*Sqrt[b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^4}\,dx\\
&= -\frac{(Ab-aB)(d+ex)^{7/2}}{3b(bd-ae)(a+bx)^3}+\frac{(6bBd+Abe-7aBe)\int\frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx}{6b(bd-ae)}\\
&= -\frac{(6bBd+Abe-7aBe)(d+ex)^{5/2}}{12b^2(bd-ae)(a+bx)^2}-\frac{(Ab-aB)(d+ex)^{7/2}}{3b(bd-ae)(a+bx)^3}+\frac{(5e(6bBd+Abe-7aBe}{24b^2(bd-a}\\
&= -\frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)}-\frac{(6bBd+Abe-7aBe)(d+ex)^{5/2}}{12b^2(bd-ae)(a+bx)^2}-\frac{(Ab-aB)}{3b(bd-ae}\\
&= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)}-\frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)}-\frac{(6bBd+A}{12b^2(}\\
&= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)}-\frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)}-\frac{(6bBd+A}{12b^2(}\\
&= \frac{5e^2(6bBd+Abe-7aBe)\sqrt{d+ex}}{8b^4(bd-ae)}-\frac{5e(6bBd+Abe-7aBe)(d+ex)^{3/2}}{24b^3(bd-ae)(a+bx)}-\frac{(6bBd+A}{12b^2(}
\end{aligned}
$$

Mathematica [C] time = 0.08, size = 99, normalized size = 0.40

$$
\frac{(d+ex)^{7/2}\left(\frac{7aB-7Ab}{(a+bx)^3}-\frac{e^2(-7aBe+Abe+6bBd)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}\right)}{21b(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(7/2)*((-7*A*b + 7*a*B)/(a + b*x)^3 - (e^2*(6*b*B*d + A*b*e - 7*
a*B*e)*Hypergeometric2F1[3, 7/2, 9/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*
e)^3))/(21*b*(b*d - a*e))
```

fricas [**B**] time = 1.08, size = 1075, normalized size = 4.30

$$\left[\frac{15\left(6\,Ba^{3}bde^{2}-\left(7\,Ba^{4}-Aa^{3}b\right)e^{3}+\left(6\,Bb^{4}de^{2}-\left(7\,Bab^{3}-Ab^{4}\right)e^{3}\right)x^{3}+3\left(6\,Bab^{3}de^{2}-\left(7\,Ba^{2}b^{2}-Aab^{3}\right)e^{3}\right)x^{2}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/48*(15*(6*B*a^3*b*d*e^2 - (7*B*a^4 - A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (7*
B*a*b^3 - A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (7*B*a^2*b^2 - A*a*b^3)*e^
3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (7*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(b^2*d
- a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b
*x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(8*B*a^2*b^3 + A*a*b^4)*d^2*e -
 5*(25*B*a^3*b^2 - A*a^2*b^3)*d*e^2 + 15*(7*B*a^4*b - A*a^3*b^2)*e^3 - 48*(
B*b^5*d*e^2 - B*a*b^4*e^3)*x^3 + 3*(18*B*b^5*d^2*e - (95*B*a*b^4 - 11*A*b^5
)*d*e^2 + 11*(7*B*a^2*b^3 - A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 + (23*B*a*b^
4 + 13*A*b^5)*d^2*e - (169*B*a^2*b^3 - 7*A*a*b^4)*d*e^2 + 20*(7*B*a^3*b^2 -
 A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d - a^4*b^5*e + (b^9*d - a*b^8*
e)*x^3 + 3*(a*b^8*d - a^2*b^7*e)*x^2 + 3*(a^2*b^7*d - a^3*b^6*e)*x), 1/24*(
15*(6*B*a^3*b*d*e^2 - (7*B*a^4 - A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (7*B*a*b^3
 - A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (7*B*a^2*b^2 - A*a*b^3)*e^3)*x^2
+ 3*(6*B*a^2*b^2*d*e^2 - (7*B*a^3*b - A*a^2*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*
e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (4*(B*a*b^4 +
 2*A*b^5)*d^3 + 2*(8*B*a^2*b^3 + A*a*b^4)*d^2*e - 5*(25*B*a^3*b^2 - A*a^2*b
^3)*d*e^2 + 15*(7*B*a^4*b - A*a^3*b^2)*e^3 - 48*(B*b^5*d*e^2 - B*a*b^4*e^3)
*x^3 + 3*(18*B*b^5*d^2*e - (95*B*a*b^4 - 11*A*b^5)*d*e^2 + 11*(7*B*a^2*b^3
- A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 + (23*B*a*b^4 + 13*A*b^5)*d^2*e - (169
*B*a^2*b^3 - 7*A*a*b^4)*d*e^2 + 20*(7*B*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e
*x + d))/(a^3*b^6*d - a^4*b^5*e + (b^9*d - a*b^8*e)*x^3 + 3*(a*b^8*d - a^2*
b^7*e)*x^2 + 3*(a^2*b^7*d - a^3*b^6*e)*x)]
```

giac [**A**] time = 0.27, size = 370, normalized size = 1.48

$$\frac{2\sqrt{xe+d}\,Be^{2}}{b^{4}}+\frac{5\left(6\,Bbde^{2}-7\,Bae^{3}+Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{8\sqrt{-b^{2}d+abe}\,b^{4}}-\frac{54\,(xe+d)^{\frac{5}{2}}Bb^{3}de^{2}-96\,(xe+d)^{\frac{3}{2}}Bb^{3}d^{2}e^{2}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2*sqrt(x*e + d)*B*e^2/b^4 + 5/8*(6*B*b*d*e^2 - 7*B*a*e^3 + A*b*e^3)*arctan(
sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) - 1/24*(54
*(x*e + d)^(5/2)*B*b^3*d*e^2 - 96*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 42*sqrt(x
*e + d)*B*b^3*d^3*e^2 - 87*(x*e + d)^(5/2)*B*a*b^2*e^3 + 33*(x*e + d)^(5/2)
*A*b^3*e^3 + 232*(x*e + d)^(3/2)*B*a*b^2*d*e^3 - 40*(x*e + d)^(3/2)*A*b^3*d
*e^3 - 141*sqrt(x*e + d)*B*a*b^2*d^2*e^3 + 15*sqrt(x*e + d)*A*b^3*d^2*e^3 -
 136*(x*e + d)^(3/2)*B*a^2*b*e^4 + 40*(x*e + d)^(3/2)*A*a*b^2*e^4 + 156*sqr
t(x*e + d)*B*a^2*b*d*e^4 - 30*sqrt(x*e + d)*A*a*b^2*d*e^4 - 57*sqrt(x*e + d
)*B*a^3*e^5 + 15*sqrt(x*e + d)*A*a^2*b*e^5)/(((x*e + d)*b - b*d + a*e)^3*b^
4)
```

maple [**B**] time = 0.08, size = 573, normalized size = 2.29

$$-\frac{5\sqrt{ex+d}\;A\,a^{2}e^{5}}{8\left(bex+ae\right)^{3}b^{3}}+\frac{5\sqrt{ex+d}\;Aad\,e^{4}}{4\left(bex+ae\right)^{3}b^{2}}-\frac{5\sqrt{ex+d}\;A\,d^{2}e^{3}}{8\left(bex+ae\right)^{3}b}+\frac{19\sqrt{ex+d}\;B\,a^{3}e^{5}}{8\left(bex+ae\right)^{3}b^{4}}-\frac{13\sqrt{ex+d}\;B\,a^{2}d\,e^{4}}{2\left(bex+ae\right)^{3}b^{3}}+\frac{47\sqrt{ex+d}}{8\,(bex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*e^2*B/b^4*(e*x+d)^(1/2)-11/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A+29/8*e^3
/b^2/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a-9/4*e^2/b/(b*e*x+a*e)^3*(e*x+d)^(5/2)*
B*d-5/3*e^4/b^2/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a+5/3*e^3/b/(b*e*x+a*e)^3*A*(
e*x+d)^(3/2)*d+17/3*e^4/b^3/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2-29/3*e^3/b^2/
(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d+4*e^2/b/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*d^2
-5/8*e^5/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2+5/4*e^4/b^2/(b*e*x+a*e)^3*(e
*x+d)^(1/2)*A*a*d-5/8*e^3/b/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2+19/8*e^5/b^4/
(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3-13/2*e^4/b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*
B*a^2*d+47/8*e^3/b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2-7/4*e^2/b/(b*e*x+a
*e)^3*(e*x+d)^(1/2)*B*d^3+5/8*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*A-35/8*e^3/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+15/4*e^2/b^3/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.23, size = 416, normalized size = 1.66

$$\frac{2\,B\,e^2\,\sqrt{d+e\,x}}{b^4}-\frac{{\left(d+e\,x\right)}^{5/2}\,\left(\frac{11\,A\,b^3\,e^3}{8}+\frac{9\,B\,d\,b^3\,e^2}{4}-\frac{29\,B\,a\,b^2\,e^3}{8}\right)-{\left(d+e\,x\right)}^{3/2}\,\left(\frac{17\,B\,a^2\,b\,e^4}{3}-\frac{29\,B\,a\,b^2\,d\,e^3}{3}-\frac{5\,A\,a\,b^2\,e^4}{3}+4}{b^7\,{\left(d+e\,x\right)}^3-\left(3\,b^7\,d-3\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^2+\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*B*e^2*(d + e*x)^(1/2))/b^4 - ((d + e*x)^(5/2)*((11*A*b^3*e^3)/8 - (29*B*
a*b^2*e^3)/8 + (9*B*b^3*d*e^2)/4) - (d + e*x)^(3/2)*((17*B*a^2*b*e^4)/3 - (
5*A*a*b^2*e^4)/3 + (5*A*b^3*d*e^3)/3 + 4*B*b^3*d^2*e^2 - (29*B*a*b^2*d*e^3)
/3) + (d + e*x)^(1/2)*((5*A*a^2*b*e^5)/8 - (19*B*a^3*e^5)/8 + (5*A*b^3*d^2*
e^3)/8 + (7*B*b^3*d^3*e^2)/4 - (47*B*a*b^2*d^2*e^3)/8 - (5*A*a*b^2*d*e^4)/4
 + (13*B*a^2*b*d*e^4)/2))/(b^7*(d + e*x)^3 - (3*b^7*d - 3*a*b^6*e)*(d + e*x
)^2 + (d + e*x)*(3*b^7*d^2 + 3*a^2*b^5*e^2 - 6*a*b^6*d*e) - b^7*d^3 + a^3*b
^4*e^3 - 3*a^2*b^5*d*e^2 + 3*a*b^6*d^2*e) + (5*e^2*atan((b^(1/2)*e^2*(d + e
*x)^(1/2)*(A*b*e - 7*B*a*e + 6*B*b*d))/((a*e - b*d)^(1/2)*(A*b*e^3 - 7*B*a*
e^3 + 6*B*b*d*e^2)))*(A*b*e - 7*B*a*e + 6*B*b*d))/(8*b^(9/2)*(a*e - b*d)^(1
/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1819 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=209

$$-\frac{e^2(-5aBe-Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}\,(-5aBe-Abe+6bBd)}{8b^3(a+bx)(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe-Abe+6}{12b^2(a+bx)^2(bd-ae)}$$

```
[Out] -1/12*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^(3/2)/b^2/(-a*e+b*d)/(b*x+a)^2-1/3*(
A*b-B*a)*(e*x+d)^(5/2)/b/(-a*e+b*d)/(b*x+a)^3-1/8*e^2*(-A*b*e-5*B*a*e+6*B*b
*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)/(-a*e+b*d)^(3/2
)-1/8*e*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)/(b*x+a)
```

Rubi [A] time = 0.18, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 47, 63, 208}

$$-\frac{e^2(-5aBe-Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}(bd-ae)^{3/2}}-\frac{(d+ex)^{3/2}(-5aBe-Abe+6bBd)}{12b^2(a+bx)^2(bd-ae)}-\frac{e\sqrt{d+ex}\,(-5aBe-Abe+6}{8b^3(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(e*(6*b*B*d - A*b*e - 5*a*B*e)*Sqrt[d + e*x])/(8*b^3*(b*d - a*e)*(a + b*x)
) - ((6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(3/2))/(12*b^2*(b*d - a*e)*(a +
b*x)^2) - ((A*b - a*B)*(d + e*x)^(5/2))/(3*b*(b*d - a*e)*(a + b*x)^3) - (e^
2*(6*b*B*d - A*b*e - 5*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*
e]])/(8*b^(7/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^4}\,dx \\
&= -\frac{(Ab-aB)(d+ex)^{5/2}}{3b(bd-ae)(a+bx)^3} + \frac{(6bBd-Abe-5aBe)\int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx}{6b(bd-ae)} \\
&= -\frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{5/2}}{3b(bd-ae)(a+bx)^3} + \frac{(e(6bBd-Abe-5aBe))}{8b^2(bd-ae} \\
&= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a} \\
&= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a} \\
&= -\frac{e(6bBd-Abe-5aBe)\sqrt{d+ex}}{8b^3(bd-ae)(a+bx)} - \frac{(6bBd-Abe-5aBe)(d+ex)^{3/2}}{12b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+}{3b(bd-ae)(a}
\end{aligned}
$$

Mathematica [A] time = 0.45, size = 177, normalized size = 0.85

$$
\frac{\frac{(a+bx)(-5aBe-Abe+6bBd)\left(3\sqrt{b}\,e^2(a+bx)^2\sqrt{d+ex}\,\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{ae-bd}}\right)-b(d+ex)\sqrt{ae-bd}\,(3ae+2bd+5bex)\right)}{\sqrt{ae-bd}}-8b^3(d+ex)^3(Ab-aB)}{24b^4(a+bx)^3\sqrt{d+ex}\,(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-8*b^3*(A*b - a*B)*(d + e*x)^3 + ((6*b*B*d - A*b*e - 5*a*B*e)*(a + b*x)*(-
(b*Sqrt[-(b*d) + a*e]*(d + e*x)*(2*b*d + 3*a*e + 5*b*e*x)) + 3*Sqrt[b]*e^2*
(a + b*x)^2*Sqrt[d + e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]
]))/Sqrt[-(b*d) + a*e])/(24*b^4*(b*d - a*e)*(a + b*x)^3*Sqrt[d + e*x])
```

fricas [B] time = 1.14, size = 1115, normalized size = 5.33

$$
\left[\frac{3\left(6\,Ba^3bde^2-\left(5\,Ba^4+Aa^3b\right)e^3+\left(6\,Bb^4de^2-\left(5\,Bab^3+Ab^4\right)e^3\right)x^3+3\left(6\,Bab^3de^2-\left(5\,Ba^2b^2+Aab^3\right)e^3\right)x^2+}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/48*(3*(6*B*a^3*b*d*e^2 - (5*B*a^4 + A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (5*B
*a*b^3 + A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (5*B*a^2*b^2 + A*a*b^3)*e^3
)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (5*B*a^3*b + A*a^2*b^2)*e^3)*x)*sqrt(b^2*d -
 a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*
x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(2*B*a^2*b^3 - 5*A*a*b^4)*d^2*e
- (23*B*a^3*b^2 + A*a^2*b^3)*d*e^2 + 3*(5*B*a^4*b + A*a^3*b^2)*e^3 + 3*(10*
B*b^5*d^2*e - (21*B*a*b^4 - A*b^5)*d*e^2 + (11*B*a^2*b^3 - A*a*b^4)*e^3)*x^
2 + 2*(6*B*b^5*d^3 + (5*B*a*b^4 + 7*A*b^5)*d^2*e - (31*B*a^2*b^3 + 11*A*a*b
^4)*d*e^2 + 4*(5*B*a^3*b^2 + A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^2
 - 2*a^4*b^5*d*e + a^5*b^4*e^2 + (b^9*d^2 - 2*a*b^8*d*e + a^2*b^7*e^2)*x^3
+ 3*(a*b^8*d^2 - 2*a^2*b^7*d*e + a^3*b^6*e^2)*x^2 + 3*(a^2*b^7*d^2 - 2*a^3*
b^6*d*e + a^4*b^5*e^2)*x), 1/24*(3*(6*B*a^3*b*d*e^2 - (5*B*a^4 + A*a^3*b)*e
^3 + (6*B*b^4*d*e^2 - (5*B*a*b^3 + A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (
5*B*a^2*b^2 + A*a*b^3)*e^3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (5*B*a^3*b + A*a^2
*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d
)/(b*e*x + b*d)) - (4*(B*a*b^4 + 2*A*b^5)*d^3 + 2*(2*B*a^2*b^3 - 5*A*a*b^4)
*d^2*e - (23*B*a^3*b^2 + A*a^2*b^3)*d*e^2 + 3*(5*B*a^4*b + A*a^3*b^2)*e^3 +
 3*(10*B*b^5*d^2*e - (21*B*a*b^4 - A*b^5)*d*e^2 + (11*B*a^2*b^3 - A*a*b^4)*
e^3)*x^2 + 2*(6*B*b^5*d^3 + (5*B*a*b^4 + 7*A*b^5)*d^2*e - (31*B*a^2*b^3 + 1
1*A*a*b^4)*d*e^2 + 4*(5*B*a^3*b^2 + A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*
b^6*d^2 - 2*a^4*b^5*d*e + a^5*b^4*e^2 + (b^9*d^2 - 2*a*b^8*d*e + a^2*b^7*e^
2)*x^3 + 3*(a*b^8*d^2 - 2*a^2*b^7*d*e + a^3*b^6*e^2)*x^2 + 3*(a^2*b^7*d^2 -
 2*a^3*b^6*d*e + a^4*b^5*e^2)*x)]
```

giac [B] time = 0.23, size = 381, normalized size = 1.82

$$\frac{\left(6\,Bbde^2-5\,Bae^3-Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d-ab^3e\right)\sqrt{-b^2d+abe}}-\frac{30\,(xe+d)^{\frac{5}{2}}Bb^3de^2-48\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2+18\,\sqrt{xe+d}\,Bb^3d^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 1/8*(6*B*b*d*e^2 - 5*B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d - a*b^3*e)*sqrt(-b^2*d + a*b*e)) - 1/24*(30*(x*e + d)^(5/
2)*B*b^3*d*e^2 - 48*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 18*sqrt(x*e + d)*B*b^3*
d^3*e^2 - 33*(x*e + d)^(5/2)*B*a*b^2*e^3 + 3*(x*e + d)^(5/2)*A*b^3*e^3 + 88
*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 8*(x*e + d)^(3/2)*A*b^3*d*e^3 - 51*sqrt(x*
e + d)*B*a*b^2*d^2*e^3 - 3*sqrt(x*e + d)*A*b^3*d^2*e^3 - 40*(x*e + d)^(3/2)
*B*a^2*b*e^4 - 8*(x*e + d)^(3/2)*A*a*b^2*e^4 + 48*sqrt(x*e + d)*B*a^2*b*d*e
^4 + 6*sqrt(x*e + d)*A*a*b^2*d*e^4 - 15*sqrt(x*e + d)*B*a^3*e^5 - 3*sqrt(x*
e + d)*A*a^2*b*e^5)/((b^4*d - a*b^3*e)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.10, size = 487, normalized size = 2.33

$$-\frac{\sqrt{ex+d}\;Aa\,e^4}{8\,(bex+ae)^3\,b^2}+\frac{\sqrt{ex+d}\;Ad\,e^3}{8\,(bex+ae)^3\,b}+\frac{(ex+d)^{\frac{5}{2}}\;A\,e^3}{8\,(bex+ae)^3\,(ae-bd)}-\frac{5\sqrt{ex+d}\;B\,a^2e^4}{8\,(bex+ae)^3\,b^3}-\frac{11\,(ex+d)^{\frac{5}{2}}\;Ba\,e^3}{8\,(bex+ae)^3\,(ae-bd)\,b}+\frac{11\sqrt{ex}}{8\,(be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*e^3/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(5/2)*A-11/8*e^3/(b*e*x+a*e)^3/(a*e
-b*d)/b*(e*x+d)^(5/2)*a*B+5/4*e^2/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(5/2)*B*d
-1/3*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(3/2)*A-5/3*e^3/(b*e*x+a*e)^3/b^2*(e*x+d)^
(3/2)*a*B+2*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(3/2)*B*d-1/8*e^4/(b*e*x+a*e)^3/b^2
*(e*x+d)^(1/2)*A*a+1/8*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*A*d-5/8*e^4/(b*e*x
+a*e)^3/b^3*(e*x+d)^(1/2)*B*a^2+11/8*e^3/(b*e*x+a*e)^3/b^2*(e*x+d)^(1/2)*B*
```

```
a*d-3/4*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*B*d^2+1/8*e^3/(a*e-b*d)/b^2/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+5/8*e^3/(a*e-b
*d)/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B
-3/4*e^2/(a*e-b*d)/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.12, size = 325, normalized size = 1.56

$$\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^2\,\sqrt{d+e\,x}\,\left(A\,b\,e+5\,B\,a\,e-6\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^3+5\,B\,a\,e^3-6\,B\,b\,d\,e^2\right)}\right)\,\left(A\,b\,e+5\,B\,a\,e-6\,B\,b\,d\right)}{8\,b^{7/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{{\left(d+e\,x\right)}^{3/2}\,\left(A\,b\,e^3+5\,B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{3\,b^2}+\frac{(a\,e-}{}}{\left(d+e\,x\right)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,(d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(A*b*e + 5*B*a*e - 6*B*b*d))/((a*e -
 b*d)^(1/2)*(A*b*e^3 + 5*B*a*e^3 - 6*B*b*d*e^2)))*(A*b*e + 5*B*a*e - 6*B*b*
d))/(8*b^(7/2)*(a*e - b*d)^(3/2)) - (((d + e*x)^(3/2)*(A*b*e^3 + 5*B*a*e^3
- 6*B*b*d*e^2))/(3*b^2) + ((a*e - b*d)*(d + e*x)^(1/2)*(A*b*e^3 + 5*B*a*e^3
 - 6*B*b*d*e^2))/(8*b^3) - ((d + e*x)^(5/2)*(A*b*e^3 - 11*B*a*e^3 + 10*B*b*
d*e^2))/(8*b*(a*e - b*d)))/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*
e) + b^3*(d + e*x)^3 - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a^3*e^3 - b^3*d^
3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1820 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=209

$$\frac{e^2(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{8b^2(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{4b^2(a+bx)^2(bd-ae)}-$$

```
[Out] -1/3*(A*b-B*a)*(e*x+d)^(3/2)/b/(-a*e+b*d)/(b*x+a)^3+1/8*e^2*(-A*b*e-B*a*e+2
*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^
(5/2)-1/4*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/(b*x+a)^2-1/8
*e*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)^2/(b*x+a)
```

Rubi [A] time = 0.18, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 51, 63, 208\}$

$$\frac{e^2(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{8b^2(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{4b^2(a+bx)^2(bd-ae)}-$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(4*b^2*(b*d - a*e)*(a + b*x)^2)
 - (e*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(8*b^2*(b*d - a*e)^2*(a + b*x
)) - ((A*b - a*B)*(d + e*x)^(3/2))/(3*b*(b*d - a*e)*(a + b*x)^3) + (e^2*(2*
b*B*d - A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8
*b^(5/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^4}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{3b(bd-ae)(a+bx)^3} + \frac{(2bBd-Abe-aBe)\int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{(Ab-aB)(d+ex)^{3/2}}{3b(bd-ae)(a+bx)^3} + \frac{(e(2bBd-Abe-aBe))\int}{8b^2(bd-ae)}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+ex)}{3b(bd-ae)(a+b}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+ex)}{3b(bd-ae)(a+b}$$

$$= -\frac{(2bBd-Abe-aBe)\sqrt{d+ex}}{4b^2(bd-ae)(a+bx)^2} - \frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{8b^2(bd-ae)^2(a+bx)} - \frac{(Ab-aB)(d+ex)}{3b(bd-ae)(a+b}$$

Mathematica [**C**] time = 0.06, size = 98, normalized size = 0.47

$$\frac{(d+ex)^{3/2}\left(\frac{3e^2(aBe+Abe-2bBd)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}+\frac{3aB-3Ab}{(a+bx)^3}\right)}{9b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(3/2)*((-3*A*b + 3*a*B)/(a + b*x)^3 + (3*e^2*(-2*b*B*d + A*b*e +
 a*B*e)*Hypergeometric2F1[3/2, 3, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^3))/(9*b*(b*d - a*e))
```

fricas [**B**] time = 0.74, size = 1218, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(3*(2*B*a^3*b*d*e^2 - (B*a^4 + A*a^3*b)*e^3 + (2*B*b^4*d*e^2 - (B*a*
b^3 + A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (B*a^2*b^2 + A*a*b^3)*e^3)*x^2
 + 3*(2*B*a^2*b^2*d*e^2 - (B*a^3*b + A*a^2*b^2)*e^3)*x)*sqrt(b^2*d - a*b*e)
*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a))
 + 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(4*B*a^2*b^3 + 11*A*a*b^4)*d^2*e + (7*B
*a^3*b^2 + 17*A*a^2*b^3)*d*e^2 - 3*(B*a^4*b + A*a^3*b^2)*e^3 + 3*(2*B*b^5*d
^2*e - (3*B*a*b^4 + A*b^5)*d*e^2 + (B*a^2*b^3 + A*a*b^4)*e^3)*x^2 + 2*(6*B*
b^5*d^3 - (13*B*a*b^4 - A*b^5)*d^2*e + (11*B*a^2*b^3 - 5*A*a*b^4)*d*e^2 - 4
*(B*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^3 - 3*a^4*b^5*d^
2*e + 3*a^5*b^4*d*e^2 - a^6*b^3*e^3 + (b^9*d^3 - 3*a*b^8*d^2*e + 3*a^2*b^7*
d*e^2 - a^3*b^6*e^3)*x^3 + 3*(a*b^8*d^3 - 3*a^2*b^7*d^2*e + 3*a^3*b^6*d*e^2
 - a^4*b^5*e^3)*x^2 + 3*(a^2*b^7*d^3 - 3*a^3*b^6*d^2*e + 3*a^4*b^5*d*e^2 -
a^5*b^4*e^3)*x), -1/24*(3*(2*B*a^3*b*d*e^2 - (B*a^4 + A*a^3*b)*e^3 + (2*B*b
^4*d*e^2 - (B*a*b^3 + A*b^4)*e^3)*x^3 + 3*(2*B*a*b^3*d*e^2 - (B*a^2*b^2 + A
*a*b^3)*e^3)*x^2 + 3*(2*B*a^2*b^2*d*e^2 - (B*a^3*b + A*a^2*b^2)*e^3)*x)*sqr
t(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d))
+ (4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(4*B*a^2*b^3 + 11*A*a*b^4)*d^2*e + (7*B*a^
3*b^2 + 17*A*a^2*b^3)*d*e^2 - 3*(B*a^4*b + A*a^3*b^2)*e^3 + 3*(2*B*b^5*d^2*
e - (3*B*a*b^4 + A*b^5)*d*e^2 + (B*a^2*b^3 + A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5
*d^3 - (13*B*a*b^4 - A*b^5)*d^2*e + (11*B*a^2*b^3 - 5*A*a*b^4)*d*e^2 - 4*(B
*a^3*b^2 - A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b^6*d^3 - 3*a^4*b^5*d^2*e
 + 3*a^5*b^4*d*e^2 - a^6*b^3*e^3 + (b^9*d^3 - 3*a*b^8*d^2*e + 3*a^2*b^7*d*e
^2 - a^3*b^6*e^3)*x^3 + 3*(a*b^8*d^3 - 3*a^2*b^7*d^2*e + 3*a^3*b^6*d*e^2 -
a^4*b^5*e^3)*x^2 + 3*(a^2*b^7*d^3 - 3*a^3*b^6*d^2*e + 3*a^4*b^5*d*e^2 - a^5
*b^4*e^3)*x)]
```

giac [B] time = 0.25, size = 386, normalized size = 1.85

$$-\frac{\left(2\,Bbde^{2}-Bae^{3}-Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{8\left(b^{4}d^{2}-2\,ab^{3}de+a^{2}b^{2}e^{2}\right)\sqrt{-b^{2}d+abe}}-\frac{6\,(xe+d)^{\frac{5}{2}}Bb^{3}de^{2}-6\,\sqrt{xe+d}\,Bb^{3}d^{3}e^{2}-3\,(xe+d)^{\frac{5}{2}}Bab^{2}e^{3}-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] -1/8*(2*B*b*d*e^2 - B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d +
 a*b*e))/((b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*sqrt(-b^2*d + a*b*e)) - 1/2
4*(6*(x*e + d)^(5/2)*B*b^3*d*e^2 - 6*sqrt(x*e + d)*B*b^3*d^3*e^2 - 3*(x*e +
 d)^(5/2)*B*a*b^2*e^3 - 3*(x*e + d)^(5/2)*A*b^3*e^3 - 8*(x*e + d)^(3/2)*B*a
*b^2*d*e^3 + 8*(x*e + d)^(3/2)*A*b^3*d*e^3 + 15*sqrt(x*e + d)*B*a*b^2*d^2*e
^3 + 3*sqrt(x*e + d)*A*b^3*d^2*e^3 + 8*(x*e + d)^(3/2)*B*a^2*b*e^4 - 8*(x*e
 + d)^(3/2)*A*a*b^2*e^4 - 12*sqrt(x*e + d)*B*a^2*b*d*e^4 - 6*sqrt(x*e + d)*
A*a*b^2*d*e^4 + 3*sqrt(x*e + d)*B*a^3*e^5 + 3*sqrt(x*e + d)*A*a^2*b*e^5)/((
b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 494, normalized size = 2.36

$$\frac{(ex+d)^{\frac{5}{2}}\,Ab\,e^{3}}{8\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}+\frac{(ex+d)^{\frac{5}{2}}\,Ba\,e^{3}}{8\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}-\frac{(ex+d)^{\frac{5}{2}}\,Bbd\,e^{2}}{4\,(bex+ae)^{3}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*A*b+1/8*e^3
/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*a*B-1/4*e^2/(b*e*x
+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*B*b*d+1/3*e^3/(b*e*x+a*e)
^3/(a*e-b*d)*(e*x+d)^(3/2)*A-1/3*e^3/(b*e*x+a*e)^3/(a*e-b*d)/b*(e*x+d)^(3/2
)*B*a-1/8*e^3/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*A-1/8*e^3/(b*e*x+a*e)^3/b^2*(e*
x+d)^(1/2)*a*B+1/4*e^2/(b*e*x+a*e)^3/b*(e*x+d)^(1/2)*B*d+1/8*e^3/b/(a^2*e^2
-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)*A+1/8*e^3/b^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-1/4*e^2/b/(a^2*e^2-2*a*b*d*e+b^
2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.13, size = 310, normalized size = 1.48

$$\frac{\frac{(d+e\,x)^{5/2}\,\left(A\,b\,e^3+B\,a\,e^3-2\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^2}-\frac{\sqrt{d+e\,x}\,\left(A\,b\,e^3+B\,a\,e^3-2\,B\,b\,d\,e^2\right)}{8\,b^2}+\frac{\left(A\,b\,e^3-B\,a\,e^3\right)\,(d+e\,x)^{3/2}}{3\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,(d+e\,x)^3-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,(d+e\,x)^2+a^3\,e^3-b^3\,d^3+3\,a\,b^2\,d^2\,e-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (((d + e*x)^(5/2)*(A*b*e^3 + B*a*e^3 - 2*B*b*d*e^2))/(8*(a*e - b*d)^2) - ((
d + e*x)^(1/2)*(A*b*e^3 + B*a*e^3 - 2*B*b*d*e^2))/(8*b^2) + ((A*b*e^3 - B*a
*e^3)*(d + e*x)^(3/2))/(3*b*(a*e - b*d)))/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e
^2 - 6*a*b^2*d*e) + b^3*(d + e*x)^3 - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a
^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + (e^2*atan((b^(1/2)*e^2*
(d + e*x)^(1/2)*(A*b*e + B*a*e - 2*B*b*d))/((a*e - b*d)^(1/2)*(A*b*e^3 + B*
a*e^3 - 2*B*b*d*e^2)))*(A*b*e + B*a*e - 2*B*b*d))/(8*b^(5/2)*(a*e - b*d)^(5
/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1821 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=209

$$-\frac{e^2(-aBe-5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}(bd-ae)^{7/2}}+\frac{e\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{8b(a+bx)(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-5Abe+6b}{12b(a+bx)^2(bd-ae)^2}$$

```
[Out] -1/8*e^2*(-5*A*b*e-B*a*e+6*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^
(1/2))/b^(3/2)/(-a*e+b*d)^(7/2)-1/3*(A*b-B*a)*(e*x+d)^(1/2)/b/(-a*e+b*d)/(b
*x+a)^3-1/12*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/(b*x+a)^
2+1/8*e*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^3/(b*x+a)
```

Rubi [A] time = 0.20, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{e^2(-aBe-5Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}(bd-ae)^{7/2}}+\frac{e\sqrt{d+ex}\,(-aBe-5Abe+6bBd)}{8b(a+bx)(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-5Abe+6b}{12b(a+bx)^2(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -((A*b - a*B)*Sqrt[d + e*x])/(3*b*(b*d - a*e)*(a + b*x)^3) - ((6*b*B*d - 5*
A*b*e - a*B*e)*Sqrt[d + e*x])/(12*b*(b*d - a*e)^2*(a + b*x)^2) + (e*(6*b*B*
d - 5*A*b*e - a*B*e)*Sqrt[d + e*x])/(8*b*(b*d - a*e)^3*(a + b*x)) - (e^2*(6
*b*B*d - 5*A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])
/(8*b^(3/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4\sqrt{d+ex}}\,dx \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3}+\frac{(6bBd-5Abe-aBe)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{6b(bd-ae)} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3}-\frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2}-\frac{(e(6bBd-5Abe}{8b} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3}-\frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2}+\frac{e(6bBd-5Abe-}{8b(bd-ae)} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3}-\frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2}+\frac{e(6bBd-5Abe-}{8b(bd-ae)} \\
&= -\frac{(Ab-aB)\sqrt{d+ex}}{3b(bd-ae)(a+bx)^3}-\frac{(6bBd-5Abe-aBe)\sqrt{d+ex}}{12b(bd-ae)^2(a+bx)^2}+\frac{e(6bBd-5Abe-}{8b(bd-ae)}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 97, normalized size = 0.46

$$
\frac{\sqrt{d+ex}\left(\frac{e^2(aBe+5Abe-6bBd)\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}+\frac{aB-Ab}{(a+bx)^3}\right)}{3b(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (Sqrt[d + e*x]*((-(A*b) + a*B)/(a + b*x)^3 + (e^2*(-6*b*B*d + 5*A*b*e + a*B
*e)*Hypergeometric2F1[1/2, 3, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^
3))/(3*b*(b*d - a*e))
```

fricas [B] time = 0.67, size = 1337, normalized size = 6.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/48*(3*(6*B*a^3*b*d*e^2 - (B*a^4 + 5*A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (B*a
*b^3 + 5*A*b^4)*e^3)*x^3 + 3*(6*B*a*b^3*d*e^2 - (B*a^2*b^2 + 5*A*a*b^3)*e^3
)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (B*a^3*b + 5*A*a^2*b^2)*e^3)*x)*sqrt(b^2*d -
 a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*
x + a)) - 2*(4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(10*B*a^2*b^3 + 17*A*a*b^4)*d^2*
e + (13*B*a^3*b^2 + 59*A*a^2*b^3)*d*e^2 + 3*(B*a^4*b - 11*A*a^3*b^2)*e^3 -
3*(6*B*b^5*d^2*e - (7*B*a*b^4 + 5*A*b^5)*d*e^2 + (B*a^2*b^3 + 5*A*a*b^4)*e^
3)*x^2 + 2*(6*B*b^5*d^3 - (31*B*a*b^4 + 5*A*b^5)*d^2*e + (29*B*a^2*b^3 + 25
*A*a*b^4)*d*e^2 - 4*(B*a^3*b^2 + 5*A*a^2*b^3)*e^3)*x)*sqrt(e*x + d))/(a^3*b
^6*d^4 - 4*a^4*b^5*d^3*e + 6*a^5*b^4*d^2*e^2 - 4*a^6*b^3*d*e^3 + a^7*b^2*e^
4 + (b^9*d^4 - 4*a*b^8*d^3*e + 6*a^2*b^7*d^2*e^2 - 4*a^3*b^6*d*e^3 + a^4*b^
5*e^4)*x^3 + 3*(a*b^8*d^4 - 4*a^2*b^7*d^3*e + 6*a^3*b^6*d^2*e^2 - 4*a^4*b^5
*d*e^3 + a^5*b^4*e^4)*x^2 + 3*(a^2*b^7*d^4 - 4*a^3*b^6*d^3*e + 6*a^4*b^5*d^
2*e^2 - 4*a^5*b^4*d*e^3 + a^6*b^3*e^4)*x), 1/24*(3*(6*B*a^3*b*d*e^2 - (B*a^
4 + 5*A*a^3*b)*e^3 + (6*B*b^4*d*e^2 - (B*a*b^3 + 5*A*b^4)*e^3)*x^3 + 3*(6*B
*a*b^3*d*e^2 - (B*a^2*b^2 + 5*A*a*b^3)*e^3)*x^2 + 3*(6*B*a^2*b^2*d*e^2 - (B
*a^3*b + 5*A*a^2*b^2)*e^3)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b
*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (4*(B*a*b^4 + 2*A*b^5)*d^3 - 2*(10*B*a^2
*b^3 + 17*A*a*b^4)*d^2*e + (13*B*a^3*b^2 + 59*A*a^2*b^3)*d*e^2 + 3*(B*a^4*b
 - 11*A*a^3*b^2)*e^3 - 3*(6*B*b^5*d^2*e - (7*B*a*b^4 + 5*A*b^5)*d*e^2 + (B*
a^2*b^3 + 5*A*a*b^4)*e^3)*x^2 + 2*(6*B*b^5*d^3 - (31*B*a*b^4 + 5*A*b^5)*d^2
*e + (29*B*a^2*b^3 + 25*A*a*b^4)*d*e^2 - 4*(B*a^3*b^2 + 5*A*a^2*b^3)*e^3)*x
)*sqrt(e*x + d))/(a^3*b^6*d^4 - 4*a^4*b^5*d^3*e + 6*a^5*b^4*d^2*e^2 - 4*a^6
*b^3*d*e^3 + a^7*b^2*e^4 + (b^9*d^4 - 4*a*b^8*d^3*e + 6*a^2*b^7*d^2*e^2 - 4
*a^3*b^6*d*e^3 + a^4*b^5*e^4)*x^3 + 3*(a*b^8*d^4 - 4*a^2*b^7*d^3*e + 6*a^3*
b^6*d^2*e^2 - 4*a^4*b^5*d*e^3 + a^5*b^4*e^4)*x^2 + 3*(a^2*b^7*d^4 - 4*a^3*b
^6*d^3*e + 6*a^4*b^5*d^2*e^2 - 4*a^5*b^4*d*e^3 + a^6*b^3*e^4)*x)]
```

giac [B] time = 0.21, size = 429, normalized size = 2.05

$$\frac{\left(6\,Bbde^2-Bae^3-5\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)\sqrt{-b^2d+abe}}+\frac{18\,(xe+d)^{\frac{5}{2}}Bb^3de^2-48\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^2+30\,\sqrt{xe+}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 1/8*(6*B*b*d*e^2 - B*a*e^3 - 5*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*sqrt(-b^
2*d + a*b*e)) + 1/24*(18*(x*e + d)^(5/2)*B*b^3*d*e^2 - 48*(x*e + d)^(3/2)*B
*b^3*d^2*e^2 + 30*sqrt(x*e + d)*B*b^3*d^3*e^2 - 3*(x*e + d)^(5/2)*B*a*b^2*e
^3 - 15*(x*e + d)^(5/2)*A*b^3*e^3 + 56*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 40*(
x*e + d)^(3/2)*A*b^3*d*e^3 - 57*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 33*sqrt(x*e
 + d)*A*b^3*d^2*e^3 - 8*(x*e + d)^(3/2)*B*a^2*b*e^4 - 40*(x*e + d)^(3/2)*A*
a*b^2*e^4 + 24*sqrt(x*e + d)*B*a^2*b*d*e^4 + 66*sqrt(x*e + d)*A*a*b^2*d*e^4
 + 3*sqrt(x*e + d)*B*a^3*e^5 - 33*sqrt(x*e + d)*A*a^2*b*e^5)/((b^4*d^3 - 3*
a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 679, normalized size = 3.25

$$\frac{5\,(ex+d)^{\frac{5}{2}}\,A\,b^2e^3}{8\,(bex+ae)^3\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{(ex+d)^{\frac{5}{2}}\,Bab\,e^3}{8\,(bex+ae)^3\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}-\frac{}{4\,(bex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 5/8*e^3/(b*e*x+a*e)^3*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*
x+d)^(5/2)*A+1/8*e^3/(b*e*x+a*e)^3*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b
^3*d^3)*(e*x+d)^(5/2)*a*B-3/4*e^2/(b*e*x+a*e)^3*b^2/(a^3*e^3-3*a^2*b*d*e^2+
3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*B*d+5/3*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a
*b*d*e+b^2*d^2)*(e*x+d)^(3/2)*A*b+1/3*e^3/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+
b^2*d^2)*(e*x+d)^(3/2)*a*B-2*e^2/(b*e*x+a*e)^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)*
```

```
(e*x+d)^(3/2)*B*b*d+11/8*e^3/(b*e*x+a*e)^3/(a*e-b*d)*(e*x+d)^(1/2)*A-1/8*e^
3/(b*e*x+a*e)^3/b/(a*e-b*d)*(e*x+d)^(1/2)*a*B-5/4*e^2/(b*e*x+a*e)^3/(a*e-b*
d)*(e*x+d)^(1/2)*B*d+5/8*e^3/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+1/8*e^3/b
/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-3/4*e^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*
b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*B*d
```

<u>**maxima**</u> **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

<u>**mupad**</u> **[B]** time = 2.13, size = 331, normalized size = 1.58

$$\frac{\frac{(d+e\,x)^{3/2}\,\left(5\,A\,b\,e^3+B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{3\,(a\,e-b\,d)^2}+\frac{b\,(d+e\,x)^{5/2}\,\left(5\,A\,b\,e^3+B\,a\,e^3-6\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^3}-\frac{\sqrt{d+e\,x}\,\left(B\,a\,e^3-11\,A\,b\,e^3+10\,B\,b\,d\,e^2\right)}{8\,b\,(a\,e-b\,d)}}{(d+e\,x)\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)+b^3\,(d+e\,x)^3-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,(d+e\,x)^2+a^3\,e^3-b^3\,d^3+3\,a\,b^2\,d^2\,e-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (((d + e*x)^(3/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2))/(3*(a*e - b*d)^2) +
(b*(d + e*x)^(5/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2))/(8*(a*e - b*d)^3) -
 ((d + e*x)^(1/2)*(B*a*e^3 - 11*A*b*e^3 + 10*B*b*d*e^2))/(8*b*(a*e - b*d)))
/((d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*e) + b^3*(d + e*x)^3 - (3*
b^3*d - 3*a*b^2*e)*(d + e*x)^2 + a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*
b*d*e^2) + (e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(5*A*b*e + B*a*e - 6*B*b*
d))/((a*e - b*d)^(1/2)*(5*A*b*e^3 + B*a*e^3 - 6*B*b*d*e^2)))*(5*A*b*e + B*a
*e - 6*B*b*d))/(8*b^(3/2)*(a*e - b*d)^(7/2))
```

<u>**sympy**</u> **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1822 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=250

$$\frac{5e^2(aBe-7Abe+6bBd)}{8b\sqrt{d+ex}\,(bd-ae)^4}-\frac{5e^2(aBe-7Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\,(bd-ae)^{9/2}}+\frac{5e(aBe-7Abe+6bBd)}{24b(a+bx)\sqrt{d+ex}\,(bd-ae)^3}-\frac{}{12b(a}$$

```
[Out] -5/8*e^2*(-7*A*b*e+B*a*e+6*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^
(1/2))/(-a*e+b*d)^(9/2)/b^(1/2)+5/8*e^2*(-7*A*b*e+B*a*e+6*B*b*d)/b/(-a*e+b*
d)^4/(e*x+d)^(1/2)+1/3*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(1/2)+1/12
*(7*A*b*e-B*a*e-6*B*b*d)/b/(-a*e+b*d)^2/(b*x+a)^2/(e*x+d)^(1/2)+5/24*e*(-7*
A*b*e+B*a*e+6*B*b*d)/b/(-a*e+b*d)^3/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$\frac{5e^2(aBe-7Abe+6bBd)}{8b\sqrt{d+ex}\,(bd-ae)^4}-\frac{5e^2(aBe-7Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\,(bd-ae)^{9/2}}+\frac{5e(aBe-7Abe+6bBd)}{24b(a+bx)\sqrt{d+ex}\,(bd-ae)^3}-\frac{}{12b(a}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (5*e^2*(6*b*B*d - 7*A*b*e + a*B*e))/(8*b*(b*d - a*e)^4*Sqrt[d + e*x]) - (A*
b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*Sqrt[d + e*x]) - (6*b*B*d - 7*A*b*e +
 a*B*e)/(12*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[d + e*x]) + (5*e*(6*b*B*d - 7*
A*b*e + a*B*e))/(24*b*(b*d - a*e)^3*(a + b*x)*Sqrt[d + e*x]) - (5*e^2*(6*b*
B*d - 7*A*b*e + a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8
*Sqrt[b]*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{A+Bx}{(a+bx)^4(d+ex)^{3/2}}\,dx$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} + \frac{(6bBd-7Abe+aBe)\int \frac{1}{(a+bx)^3(d+ex)^{3/2}}\,d}{6b(bd-ae)}$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} - \frac{6bBd-7Abe+aBe}{12b(bd-ae)^2(a+bx)^2\sqrt{d+ex}} - \frac{(5e(6}{}$$

$$= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} - \frac{6bBd-7Abe+aBe}{12b(bd-ae)^2(a+bx)^2\sqrt{d+ex}} + \frac{5}{24b(}$$

$$= \frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} - \frac{6bBd-}{12b(bd-ae)^2}$$

$$= \frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} - \frac{6bBd-}{12b(bd-ae)^2}$$

$$= \frac{5e^2(6bBd-7Abe+aBe)}{8b(bd-ae)^4\sqrt{d+ex}} - \frac{Ab-aB}{3b(bd-ae)(a+bx)^3\sqrt{d+ex}} - \frac{6bBd-}{12b(bd-ae)^2}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.40

$$\frac{\frac{aB-Ab}{(a+bx)^3}-\frac{e^2(-aBe+7Abe-6bBd)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{3b\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-(A*b) + a*B)/(a + b*x)^3 - (e^2*(-6*b*B*d + 7*A*b*e - a*B*e)*Hypergeomet
ric2F1[-1/2, 3, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(3*b*(b*d -
 a*e)*Sqrt[d + e*x])
```

fricas [B] time = 1.57, size = 2114, normalized size = 8.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/48*(15*(6*B*a^3*b*d^2*e^2 + (B*a^4 - 7*A*a^3*b)*d*e^3 + (6*B*b^4*d*e^3
+ (B*a*b^3 - 7*A*b^4)*e^4)*x^4 + (6*B*b^4*d^2*e^2 + (19*B*a*b^3 - 7*A*b^4)*
d*e^3 + 3*(B*a^2*b^2 - 7*A*a*b^3)*e^4)*x^3 + 3*(6*B*a*b^3*d^2*e^2 + 7*(B*a^
2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b - 7*A*a^2*b^2)*e^4)*x^2 + (18*B*a^2*b^2*d
^2*e^2 + 3*(3*B*a^3*b - 7*A*a^2*b^2)*d*e^3 + (B*a^4 - 7*A*a^3*b)*e^4)*x)*sq
rt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x
 + d))/(b*x + a)) - 2*(48*A*a^4*b*e^4 - 4*(B*a*b^4 + 2*A*b^5)*d^4 + 2*(16*B
*a^2*b^3 + 23*A*a*b^4)*d^3*e + (53*B*a^3*b^2 - 125*A*a^2*b^3)*d^2*e^2 - 3*(
27*B*a^4*b - 13*A*a^3*b^2)*d*e^3 + 15*(6*B*b^5*d^2*e^2 - (5*B*a*b^4 + 7*A*b
^5)*d*e^3 - (B*a^2*b^3 - 7*A*a*b^4)*e^4)*x^3 + 5*(6*B*b^5*d^3*e + (43*B*a*b
^4 - 7*A*b^5)*d^2*e^2 - (41*B*a^2*b^3 + 49*A*a*b^4)*d*e^3 - 8*(B*a^3*b^2 -
7*A*a^2*b^3)*e^4)*x^2 - (12*B*b^5*d^4 - 2*(47*B*a*b^4 + 7*A*b^5)*d^3*e - 2*
(65*B*a^2*b^3 - 56*A*a*b^4)*d^2*e^2 + (179*B*a^3*b^2 + 133*A*a^2*b^3)*d*e^3
 + 33*(B*a^4*b - 7*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(a^3*b^6*d^6 - 5*a^4*b
^5*d^5*e + 10*a^5*b^4*d^4*e^2 - 10*a^6*b^3*d^3*e^3 + 5*a^7*b^2*d^2*e^4 - a^
8*b*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*
d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^4 + (b^9*d^6 - 2*a*b^8*d^5*e - 5
*a^2*b^7*d^4*e^2 + 20*a^3*b^6*d^3*e^3 - 25*a^4*b^5*d^2*e^4 + 14*a^5*b^4*d*e
^5 - 3*a^6*b^3*e^6)*x^3 + 3*(a*b^8*d^6 - 4*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^
2 - 5*a^5*b^4*d^2*e^4 + 4*a^6*b^3*d*e^5 - a^7*b^2*e^6)*x^2 + (3*a^2*b^7*d^6
 - 14*a^3*b^6*d^5*e + 25*a^4*b^5*d^4*e^2 - 20*a^5*b^4*d^3*e^3 + 5*a^6*b^3*d
^2*e^4 + 2*a^7*b^2*d*e^5 - a^8*b*e^6)*x), 1/24*(15*(6*B*a^3*b*d^2*e^2 + (B*
a^4 - 7*A*a^3*b)*d*e^3 + (6*B*b^4*d*e^3 + (B*a*b^3 - 7*A*b^4)*e^4)*x^4 + (6
*B*b^4*d^2*e^2 + (19*B*a*b^3 - 7*A*b^4)*d*e^3 + 3*(B*a^2*b^2 - 7*A*a*b^3)*e
^4)*x^3 + 3*(6*B*a*b^3*d^2*e^2 + 7*(B*a^2*b^2 - A*a*b^3)*d*e^3 + (B*a^3*b -
 7*A*a^2*b^2)*e^4)*x^2 + (18*B*a^2*b^2*d^2*e^2 + 3*(3*B*a^3*b - 7*A*a^2*b^2
)*d*e^3 + (B*a^4 - 7*A*a^3*b)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2
*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (48*A*a^4*b*e^4 - 4*(B*a*b^4 + 2
*A*b^5)*d^4 + 2*(16*B*a^2*b^3 + 23*A*a*b^4)*d^3*e + (53*B*a^3*b^2 - 125*A*a
^2*b^3)*d^2*e^2 - 3*(27*B*a^4*b - 13*A*a^3*b^2)*d*e^3 + 15*(6*B*b^5*d^2*e^2
 - (5*B*a*b^4 + 7*A*b^5)*d*e^3 - (B*a^2*b^3 - 7*A*a*b^4)*e^4)*x^3 + 5*(6*B*
b^5*d^3*e + (43*B*a*b^4 - 7*A*b^5)*d^2*e^2 - (41*B*a^2*b^3 + 49*A*a*b^4)*d*
e^3 - 8*(B*a^3*b^2 - 7*A*a^2*b^3)*e^4)*x^2 - (12*B*b^5*d^4 - 2*(47*B*a*b^4
+ 7*A*b^5)*d^3*e - 2*(65*B*a^2*b^3 - 56*A*a*b^4)*d^2*e^2 + (179*B*a^3*b^2 +
 133*A*a^2*b^3)*d*e^3 + 33*(B*a^4*b - 7*A*a^3*b^2)*e^4)*x)*sqrt(e*x + d))/(
a^3*b^6*d^6 - 5*a^4*b^5*d^5*e + 10*a^5*b^4*d^4*e^2 - 10*a^6*b^3*d^3*e^3 + 5
*a^7*b^2*d^2*e^4 - a^8*b*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*
d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^4 + (b^9*d^
6 - 2*a*b^8*d^5*e - 5*a^2*b^7*d^4*e^2 + 20*a^3*b^6*d^3*e^3 - 25*a^4*b^5*d^2
*e^4 + 14*a^5*b^4*d*e^5 - 3*a^6*b^3*e^6)*x^3 + 3*(a*b^8*d^6 - 4*a^2*b^7*d^5
*e + 5*a^3*b^6*d^4*e^2 - 5*a^5*b^4*d^2*e^4 + 4*a^6*b^3*d*e^5 - a^7*b^2*e^6)
*x^2 + (3*a^2*b^7*d^6 - 14*a^3*b^6*d^5*e + 25*a^4*b^5*d^4*e^2 - 20*a^5*b^4*
d^3*e^3 + 5*a^6*b^3*d^2*e^4 + 2*a^7*b^2*d*e^5 - a^8*b*e^6)*x)]
```

giac [B] time = 0.26, size = 516, normalized size = 2.06

$$\frac{5\left(6\,Bbde^2+Bae^3-7\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{2\left(Bde^2-Ae^3\right)}{\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 5/8*(6*B*b*d*e^2 + B*a*e^3 - 7*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a
^4*e^4)*sqrt(-b^2*d + a*b*e)) + 2*(B*d*e^2 - A*e^3)/((b^4*d^4 - 4*a*b^3*d^3
*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(x*e + d)) + 1/24*(42
*(x*e + d)^(5/2)*B*b^3*d*e^2 - 96*(x*e + d)^(3/2)*B*b^3*d^2*e^2 + 54*sqrt(x
*e + d)*B*b^3*d^3*e^2 + 15*(x*e + d)^(5/2)*B*a*b^2*e^3 - 57*(x*e + d)^(5/2)
*A*b^3*e^3 + 56*(x*e + d)^(3/2)*B*a*b^2*d*e^3 + 136*(x*e + d)^(3/2)*A*b^3*d
*e^3 - 75*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 87*sqrt(x*e + d)*A*b^3*d^2*e^3 +
40*(x*e + d)^(3/2)*B*a^2*b*e^4 - 136*(x*e + d)^(3/2)*A*a*b^2*e^4 - 12*sqrt(
x*e + d)*B*a^2*b*d*e^4 + 174*sqrt(x*e + d)*A*a*b^2*d*e^4 + 33*sqrt(x*e + d)
*B*a^3*e^5 - 87*sqrt(x*e + d)*A*a^2*b*e^5)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^
2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*((x*e + d)*b - b*d + a*e)^3)
```

maple [**B**] time = 0.08, size = 768, normalized size = 3.07

$$-\frac{29\sqrt{ex+d}\;A\,a^2 b\,e^5}{8\,(ae-bd)^4\,(bex+ae)^3}+\frac{29\sqrt{ex+d}\;Aa\,b^2 d\,e^4}{4\,(ae-bd)^4\,(bex+ae)^3}-\frac{29\sqrt{ex+d}\;A\,b^3 d^2 e^3}{8\,(ae-bd)^4\,(bex+ae)^3}+\frac{11\sqrt{ex+d}\;B\,a^3 e^5}{8\,(ae-bd)^4\,(bex+ae)^3}-\frac{\sqrt{ex+d}}{2\,(ae-bd)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -19/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A*b^3+7/4*e^2/(a*e-b*d)^4
/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*b^3*d+5/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x
+d)^(5/2)*B*a*b^2-17/3*e^4/(a*e-b*d)^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a*b^2+
17/3*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*b^3*d+5/3*e^4/(a*e-b*d)^
4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2*b+7/3*e^3/(a*e-b*d)^4/(b*e*x+a*e)^3*B*(
e*x+d)^(3/2)*a*b^2*d-4*e^2/(a*e-b*d)^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*b^3*d^
2-29/8*e^5/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2*b+29/4*e^4/(a*e-b*
d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*b^2*d-29/8*e^3/(a*e-b*d)^4/(b*e*x+a*e)
^3*(e*x+d)^(1/2)*A*b^3*d^2+11/8*e^5/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)
*B*a^3-1/2*e^4/(a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*b*d-25/8*e^3/(
a*e-b*d)^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*b^2*d^2+9/4*e^2/(a*e-b*d)^4/(b*e
*x+a*e)^3*(e*x+d)^(1/2)*B*b^3*d^3-35/8*e^3/(a*e-b*d)^4/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*b+5/8*e^3/(a*e-b*d)^4/((a*e-b
*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+15/4*e^2/(a*e-
b*d)^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*b*
d-2*e^3/(a*e-b*d)^4/(e*x+d)^(1/2)*A+2*e^2/(a*e-b*d)^4/(e*x+d)^(1/2)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.34, size = 420, normalized size = 1.68

$$\frac{\frac{5\,(d+e\,x)^2\,\left(-7\,A\,b^2\,e^3+6\,B\,d\,b^2\,e^2+B\,a\,b\,e^3\right)}{3\,(a\,e-b\,d)^3}-\frac{2\,\left(A\,e^3-B\,d\,e^2\right)}{a\,e-b\,d}+\frac{11\,(d+e\,x)\,\left(B\,a\,e^3-7\,A\,b\,e^3+6\,B\,b\,d\,e^2\right)}{8\,(a\,e-b\,d)^2}+\frac{5\,b^2\,(d+e\,x)^3\,\left(B\,a\,e^3-7\right.}{8\,(a\,e-b\,d}}{\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)+b^3\,(d+e\,x)^{7/2}-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,(d+e\,x)^{5/2}+(d+e\,x)^{3/2}\,\left(3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((5*(d + e*x)^2*(B*a*b*e^3 - 7*A*b^2*e^3 + 6*B*b^2*d*e^2))/(3*(a*e - b*d)^3
) - (2*(A*e^3 - B*d*e^2))/(a*e - b*d) + (11*(d + e*x)*(B*a*e^3 - 7*A*b*e^3
+ 6*B*b*d*e^2))/(8*(a*e - b*d)^2) + (5*b^2*(d + e*x)^3*(B*a*e^3 - 7*A*b*e^3
 + 6*B*b*d*e^2))/(8*(a*e - b*d)^4))/((d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3
*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(7/2) - (3*b^3*d - 3*a*b^2*e)
*(d + e*x)^(5/2) + (d + e*x)^(3/2)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*b^2*d*e))
 + (5*e^2*atan((5*b^(1/2)*e^2*(d + e*x)^(1/2)*(B*a*e - 7*A*b*e + 6*B*b*d)*(
a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/((a
*e - b*d)^(9/2)*(5*B*a*e^3 - 35*A*b*e^3 + 30*B*b*d*e^2)))*(B*a*e - 7*A*b*e
+ 6*B*b*d))/(8*b^(1/2)*(a*e - b*d)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1823 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=291

$$\frac{35e^2(aBe-3Abe+2bBd)}{8\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^2(aBe-3Abe+2bBd)}{24b(d+ex)^{3/2}(bd-ae)^4}-\frac{35\sqrt{b}\,e^2(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{11/2}}+\frac{7e(}{8b(a+}$$

```
[Out] 35/24*e^2*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a*e+b*d)^4/(e*x+d)^(3/2)+1/3*(-A*b+B
*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(3/2)+1/4*(3*A*b*e-B*a*e-2*B*b*d)/b/(-a*
e+b*d)^2/(b*x+a)^2/(e*x+d)^(3/2)+7/8*e*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a*e+b*d
)^3/(b*x+a)/(e*x+d)^(3/2)-35/8*e^2*(-3*A*b*e+B*a*e+2*B*b*d)*arctanh(b^(1/2)
*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(11/2)+35/8*e^2*(-3*A*b
*e+B*a*e+2*B*b*d)/(-a*e+b*d)^5/(e*x+d)^(1/2)
```

Rubi [**A**] time = 0.30, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$\frac{35e^2(aBe-3Abe+2bBd)}{8\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^2(aBe-3Abe+2bBd)}{24b(d+ex)^{3/2}(bd-ae)^4}-\frac{35\sqrt{b}\,e^2(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{11/2}}+\frac{7e(}{8b(a+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (35*e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(24*b*(b*d - a*e)^4*(d + e*x)^(3/2)) -
 (A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*(d + e*x)^(3/2)) - (2*b*B*d - 3*A
*b*e + a*B*e)/(4*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(3/2)) + (7*e*(2*b*B
*d - 3*A*b*e + a*B*e))/(8*b*(b*d - a*e)^3*(a + b*x)*(d + e*x)^(3/2)) + (35*
e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(8*(b*d - a*e)^5*Sqrt[d + e*x]) - (35*Sqrt
[b]*e^2*(2*b*B*d - 3*A*b*e + a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*
d - a*e]])/(8*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{A+Bx}{(a+bx)^4(d+ex)^{5/2}}\,dx \\
&= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}+\frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)^3(d+ex}}{2b(bd-ae)} \\
&= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bBd-3Abe+aBe}{4b(bd-ae)^2(a+bx)^2(d+ex)^{3/2}}- \\
&= -\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2bBd-3Abe+aBe}{4b(bd-ae)^2(a+bx)^2(d+ex)^{3/2}}+ \\
&= \frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2}{4b(bd-} \\
&= \frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2}{4b(bd-} \\
&= \frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2}{4b(bd-} \\
&= \frac{35e^2(2bBd-3Abe+aBe)}{24b(bd-ae)^4(d+ex)^{3/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{3/2}}-\frac{2}{4b(bd-}
\end{aligned}$$

Mathematica [C] time = 0.06, size = 100, normalized size = 0.34

$$\frac{\frac{3aB-3Ab}{(a+bx)^3}-\frac{3e^2(-aBe+3Abe-2bBd)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{9b(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-3*A*b + 3*a*B)/(a + b*x)^3 - (3*e^2*(-2*b*B*d + 3*A*b*e - a*B*e)*Hyperge
ometric2F1[-3/2, 3, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(9*b*(
b*d - a*e)*(d + e*x)^(3/2))
```

fricas [B] time = 0.86, size = 2648, normalized size = 9.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/48*(105*(2*B*a^3*b*d^3*e^2 + (B*a^4 - 3*A*a^3*b)*d^2*e^3 + (2*B*b^4*d*e^
4 + (B*a*b^3 - 3*A*b^4)*e^5)*x^5 + (4*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 - 3*A*b^
4)*d*e^4 + 3*(B*a^2*b^2 - 3*A*a*b^3)*e^5)*x^4 + (2*B*b^4*d^3*e^2 + (13*B*a*
b^3 - 3*A*b^4)*d^2*e^3 + 6*(2*B*a^2*b^2 - 3*A*a*b^3)*d*e^4 + 3*(B*a^3*b - 3
*A*a^2*b^2)*e^5)*x^3 + (6*B*a*b^3*d^3*e^2 + 3*(5*B*a^2*b^2 - 3*A*a*b^3)*d^2
*e^3 + 2*(4*B*a^3*b - 9*A*a^2*b^2)*d*e^4 + (B*a^4 - 3*A*a^3*b)*e^5)*x^2 + (
6*B*a^2*b^2*d^3*e^2 + (7*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3 + 2*(B*a^4 - 3*A*a^
3*b)*d*e^4)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)
*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(16*A*a^4*e^4 - 4*(B*a*b
^3 + 2*A*b^4)*d^4 + 10*(4*B*a^2*b^2 + 5*A*a*b^3)*d^3*e + (247*B*a^3*b - 165
*A*a^2*b^2)*d^2*e^2 + 16*(2*B*a^4 - 13*A*a^3*b)*d*e^3 + 105*(2*B*b^4*d*e^3
+ (B*a*b^3 - 3*A*b^4)*e^4)*x^4 + 140*(2*B*b^4*d^2*e^2 + (5*B*a*b^3 - 3*A*b^
4)*d*e^3 + 2*(B*a^2*b^2 - 3*A*a*b^3)*e^4)*x^3 + 21*(2*B*b^4*d^3*e + (37*B*a
*b^3 - 3*A*b^4)*d^2*e^2 + 2*(20*B*a^2*b^2 - 27*A*a*b^3)*d*e^3 + 11*(B*a^3*b
 - 3*A*a^2*b^2)*e^4)*x^2 - 6*(2*B*b^4*d^4 - (19*B*a*b^3 + 3*A*b^4)*d^3*e -
2*(58*B*a^2*b^2 - 15*A*a*b^3)*d^2*e^2 - 3*(23*B*a^3*b - 53*A*a^2*b^2)*d*e^3
 - 8*(B*a^4 - 3*A*a^3*b)*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^
6*e + 10*a^5*b^3*d^5*e^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e
^5 + (b^8*d^5*e^2 - 5*a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e
^5 + 5*a^4*b^4*d*e^6 - a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 +
5*a^2*b^6*d^4*e^3 + 10*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*
e^6 - 3*a^6*b^2*e^7)*x^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35
*a^3*b^5*d^4*e^3 - 25*a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 -
 3*a^7*b*e^7)*x^3 + (3*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a
^4*b^4*d^4*e^3 - 35*a^5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^
8*e^7)*x^2 + (3*a^2*b^6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^
5*b^3*d^4*e^3 - 5*a^6*b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x), -1/2
4*(105*(2*B*a^3*b*d^3*e^2 + (B*a^4 - 3*A*a^3*b)*d^2*e^3 + (2*B*b^4*d*e^4 +
(B*a*b^3 - 3*A*b^4)*e^5)*x^5 + (4*B*b^4*d^2*e^3 + 2*(4*B*a*b^3 - 3*A*b^4)*d
*e^4 + 3*(B*a^2*b^2 - 3*A*a*b^3)*e^5)*x^4 + (2*B*b^4*d^3*e^2 + (13*B*a*b^3
- 3*A*b^4)*d^2*e^3 + 6*(2*B*a^2*b^2 - 3*A*a*b^3)*d*e^4 + 3*(B*a^3*b - 3*A*a
^2*b^2)*e^5)*x^3 + (6*B*a*b^3*d^3*e^2 + 3*(5*B*a^2*b^2 - 3*A*a*b^3)*d^2*e^3
 + 2*(4*B*a^3*b - 9*A*a^2*b^2)*d*e^4 + (B*a^4 - 3*A*a^3*b)*e^5)*x^2 + (6*B*
a^2*b^2*d^3*e^2 + (7*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3 + 2*(B*a^4 - 3*A*a^3*b)
*d*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(
b*d - a*e))/(b*e*x + b*d)) - (16*A*a^4*e^4 - 4*(B*a*b^3 + 2*A*b^4)*d^4 + 10
*(4*B*a^2*b^2 + 5*A*a*b^3)*d^3*e + (247*B*a^3*b - 165*A*a^2*b^2)*d^2*e^2 +
16*(2*B*a^4 - 13*A*a^3*b)*d*e^3 + 105*(2*B*b^4*d*e^3 + (B*a*b^3 - 3*A*b^4)*
e^4)*x^4 + 140*(2*B*b^4*d^2*e^2 + (5*B*a*b^3 - 3*A*b^4)*d*e^3 + 2*(B*a^2*b^
2 - 3*A*a*b^3)*e^4)*x^3 + 21*(2*B*b^4*d^3*e + (37*B*a*b^3 - 3*A*b^4)*d^2*e^
2 + 2*(20*B*a^2*b^2 - 27*A*a*b^3)*d*e^3 + 11*(B*a^3*b - 3*A*a^2*b^2)*e^4)*x
^2 - 6*(2*B*b^4*d^4 - (19*B*a*b^3 + 3*A*b^4)*d^3*e - 2*(58*B*a^2*b^2 - 15*A
*a*b^3)*d^2*e^2 - 3*(23*B*a^3*b - 53*A*a^2*b^2)*d*e^3 - 8*(B*a^4 - 3*A*a^3*
b)*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*e
^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5*
a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6 -
 a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 10
*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*x
^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25*
a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (3
*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a^
5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b^
6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6*
b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x)]
```

giac [B] time = 0.29, size = 750, normalized size = 2.58

$$\frac{35\left(2\,Bb^2de^2+Babe^3-3\,Ab^2e^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\sqrt{-b^2d+abe}}+\frac{210\,(xe+d)^4Bb^4de^2-560\,(x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/8*(2*B*b^2*d*e^2 + B*a*b*e^3 - 3*A*b^2*e^3)*arctan(sqrt(x*e + d)*b/sqrt(
-b^2*d + a*b*e))/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^
2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(-b^2*d + a*b*e)) + 1/24*(210*(x*e
 + d)^4*B*b^4*d*e^2 - 560*(x*e + d)^3*B*b^4*d^2*e^2 + 462*(x*e + d)^2*B*b^4
*d^3*e^2 - 96*(x*e + d)*B*b^4*d^4*e^2 - 16*B*b^4*d^5*e^2 + 105*(x*e + d)^4*
B*a*b^3*e^3 - 315*(x*e + d)^4*A*b^4*e^3 + 280*(x*e + d)^3*B*a*b^3*d*e^3 + 8
40*(x*e + d)^3*A*b^4*d*e^3 - 693*(x*e + d)^2*B*a*b^3*d^2*e^3 - 693*(x*e + d
)^2*A*b^4*d^2*e^3 + 240*(x*e + d)*B*a*b^3*d^3*e^3 + 144*(x*e + d)*A*b^4*d^3
*e^3 + 64*B*a*b^3*d^4*e^3 + 16*A*b^4*d^4*e^3 + 280*(x*e + d)^3*B*a^2*b^2*e^
4 - 840*(x*e + d)^3*A*a*b^3*e^4 + 1386*(x*e + d)^2*A*a*b^3*d*e^4 - 144*(x*e
 + d)*B*a^2*b^2*d^2*e^4 - 432*(x*e + d)*A*a*b^3*d^2*e^4 - 96*B*a^2*b^2*d^3*
e^4 - 64*A*a*b^3*d^3*e^4 + 231*(x*e + d)^2*B*a^3*b*e^5 - 693*(x*e + d)^2*A*
a^2*b^2*e^5 - 48*(x*e + d)*B*a^3*b*d*e^5 + 432*(x*e + d)*A*a^2*b^2*d*e^5 +
64*B*a^3*b*d^2*e^5 + 96*A*a^2*b^2*d^2*e^5 + 48*(x*e + d)*B*a^4*e^6 - 144*(x
*e + d)*A*a^3*b*e^6 - 16*B*a^4*d*e^6 - 64*A*a^3*b*d*e^6 + 16*A*a^4*e^7)/((b
^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*
d*e^4 - a^5*e^5)*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e + d)*a*e
)^3)
```

maple [B] time = 0.08, size = 853, normalized size = 2.93

$$\frac{55\sqrt{ex+d}\;A\,a^2b^2e^5}{8\,(ae-bd)^5\,(bex+ae)^3}-\frac{55\sqrt{ex+d}\;Aa\,b^3d\,e^4}{4\,(ae-bd)^5\,(bex+ae)^3}+\frac{55\sqrt{ex+d}\;A\,b^4d^2e^3}{8\,(ae-bd)^5\,(bex+ae)^3}-\frac{29\sqrt{ex+d}\;B\,a^3b\,e^5}{8\,(ae-bd)^5\,(bex+ae)^3}+\frac{4\sqrt{ex+d}}{(ae-bd)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 41/8*e^3/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*(e*x+d)^(5/2)*A-19/8*e^3/(a*e-b*d)^5
*b^3/(b*e*x+a*e)^3*(e*x+d)^(5/2)*B*a-11/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3
*(e*x+d)^(5/2)*B*d+35/3*e^4/(a*e-b*d)^5*b^3/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a
-35/3*e^3/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d-17/3*e^4/(a*e-b*d
)^5*b^2/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2-1/3*e^3/(a*e-b*d)^5*b^3/(b*e*x+a*
e)^3*B*(e*x+d)^(3/2)*a*d+6*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2
)*d^2+55/8*e^5/(a*e-b*d)^5*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2-55/4*e^4/(
a*e-b*d)^5*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a*d+55/8*e^3/(a*e-b*d)^5*b^4/(
b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2-29/8*e^5/(a*e-b*d)^5*b/(b*e*x+a*e)^3*(e*x+
d)^(1/2)*B*a^3+23/8*e^3/(a*e-b*d)^5*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2
-13/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^3+4*e^4/(a*e-b*d)
^5*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^2*d+105/8*e^3/(a*e-b*d)^5*b^2/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-35/8*e^3/(a*e-b
*d)^5*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B
-35/4*e^2/(a*e-b*d)^5*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*B*d-2/3*e^3/(a*e-b*d)^4/(e*x+d)^(3/2)*A+2/3*e^2/(a*e-b*d)^4/
(e*x+d)^(3/2)*B*d+8*e^3/(a*e-b*d)^5/(e*x+d)^(1/2)*A*b-2*e^3/(a*e-b*d)^5/(e*
x+d)^(1/2)*a*B-6*e^2/(a*e-b*d)^5/(e*x+d)^(1/2)*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.51, size = 483, normalized size = 1.66

$$-\frac{\frac{2\left(A\,e^3-B\,d\,e^2\right)}{3\,\left(a\,e-b\,d\right)}+\frac{77\,{\left(d+e\,x\right)}^2\,\left(-3\,A\,b^2\,e^3+2\,B\,d\,b^2\,e^2+B\,a\,b\,e^3\right)}{8\,{\left(a\,e-b\,d\right)}^3}+\frac{35\,{\left(d+e\,x\right)}^3\,\left(-3\,A\,b^3\,e^3+2\,B\,d\,b^3\,e^2+B\,a\,b^2\,e^3\right)}{3\,{\left(a\,e-b\,d\right)}^4}+\frac{2\,\left(d+e\,x\right)\,\left(B\,a\,e^3-3\,A\,b\,e^3+2\,B\,b\,d\right.}{{\left(a\,e-b\,d\right)}^2}}{{\left(d+e\,x\right)}^{3/2}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)+b^3\,{\left(d+e\,x\right)}^{9/2}-\left(3\,b^3\,d-3\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{7/2}+\left(d+e\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*(A*e^3 - B*d*e^2))/(3*(a*e - b*d)) + (77*(d + e*x)^2*(B*a*b*e^3 - 3*A
*b^2*e^3 + 2*B*b^2*d*e^2))/(8*(a*e - b*d)^3) + (35*(d + e*x)^3*(B*a*b^2*e^3
 - 3*A*b^3*e^3 + 2*B*b^3*d*e^2))/(3*(a*e - b*d)^4) + (2*(d + e*x)*(B*a*e^3
- 3*A*b*e^3 + 2*B*b*d*e^2))/(a*e - b*d)^2 + (35*b^3*(d + e*x)^4*(B*a*e^3 -
3*A*b*e^3 + 2*B*b*d*e^2))/(8*(a*e - b*d)^5))/((d + e*x)^(3/2)*(a^3*e^3 - b^
3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(9/2) - (3*b^3*d - 3
*a*b^2*e)*(d + e*x)^(7/2) + (d + e*x)^(5/2)*(3*b^3*d^2 + 3*a^2*b*e^2 - 6*a*
b^2*d*e)) - (35*b^(1/2)*e^2*atan((b^(1/2)*e^2*(d + e*x)^(1/2)*(B*a*e - 3*A*
b*e + 2*B*b*d)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3
 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/((a*e - b*d)^(11/2)*(B*a*e^3 - 3*A*b*e^3
 + 2*B*b*d*e^2)))*(B*a*e - 3*A*b*e + 2*B*b*d))/(8*(a*e - b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1824 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=339

$$-\frac{21b^{3/2}e^2(5aBe-11Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{13/2}}+\frac{21be^2(5aBe-11Abe+6bBd)}{8\sqrt{d+ex}\,(bd-ae)^6}+\frac{7e^2(5aBe-11Abe+6bB}{8(d+ex)^{3/2}(bd-ae)^5}$$

```
[Out] 21/40*e^2*(-11*A*b*e+5*B*a*e+6*B*b*d)/b/(-a*e+b*d)^4/(e*x+d)^(5/2)+1/3*(-A*
b+B*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(5/2)+1/12*(11*A*b*e-5*B*a*e-6*B*b*d)
/b/(-a*e+b*d)^2/(b*x+a)^2/(e*x+d)^(5/2)+3/8*e*(-11*A*b*e+5*B*a*e+6*B*b*d)/b
/(-a*e+b*d)^3/(b*x+a)/(e*x+d)^(5/2)+7/8*e^2*(-11*A*b*e+5*B*a*e+6*B*b*d)/(-a
*e+b*d)^5/(e*x+d)^(3/2)-21/8*b^(3/2)*e^2*(-11*A*b*e+5*B*a*e+6*B*b*d)*arctan
h(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(13/2)+21/8*b*e^2*(-11
*A*b*e+5*B*a*e+6*B*b*d)/(-a*e+b*d)^6/(e*x+d)^(1/2)
```

Rubi [**A**] time = 0.38, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 78, 51, 63, 208}

$$-\frac{21b^{3/2}e^2(5aBe-11Abe+6bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8(bd-ae)^{13/2}}+\frac{21be^2(5aBe-11Abe+6bBd)}{8\sqrt{d+ex}\,(bd-ae)^6}+\frac{7e^2(5aBe-11Abe+6bB}{8(d+ex)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (21*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(40*b*(b*d - a*e)^4*(d + e*x)^(5/2)
) - (A*b - a*B)/(3*b*(b*d - a*e)*(a + b*x)^3*(d + e*x)^(5/2)) - (6*b*B*d -
11*A*b*e + 5*a*B*e)/(12*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(5/2)) + (3*e
*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*b*(b*d - a*e)^3*(a + b*x)*(d + e*x)^(5/
2)) + (7*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*(b*d - a*e)^5*(d + e*x)^(3/
2)) + (21*b*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e))/(8*(b*d - a*e)^6*Sqrt[d + e
*x]) - (21*b^(3/2)*e^2*(6*b*B*d - 11*A*b*e + 5*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{A+Bx}{(a+bx)^4(d+ex)^{7/2}}\,dx$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}+\frac{(6bBd-11Abe+5aBe)\int \frac{1}{(a+bx)^3(d+ex)}}{6b(bd-ae)}$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-\frac{6bBd-11Abe+5aBe}{12b(bd-ae)^2(a+bx)^2(d+ex)^{5/2}}-$$

$$=-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-\frac{6bBd-11Abe+5aBe}{12b(bd-ae)^2(a+bx)^2(d+ex)^{5/2}}+$$

$$=\frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-$$

$$=\frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-$$

$$=\frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-$$

$$=\frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-$$

$$=\frac{21e^2(6bBd-11Abe+5aBe)}{40b(bd-ae)^4(d+ex)^{5/2}}-\frac{Ab-aB}{3b(bd-ae)(a+bx)^3(d+ex)^{5/2}}-$$

Mathematica [C] time = 0.07, size = 100, normalized size = 0.29

$$\frac{\frac{5aB-5Ab}{(a+bx)^3}-\frac{e^2(-5aBe+11Abe-6bBd)\,{}_2F_1\left(-\frac{5}{2},3;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3}}{15b(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-5*A*b + 5*a*B)/(a + b*x)^3 - (e^2*(-6*b*B*d + 11*A*b*e - 5*a*B*e)*Hyperg
eometric2F1[-5/2, 3, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^3)/(15*b
*(b*d - a*e)*(d + e*x)^(5/2))
```

fricas [B] time = 1.46, size = 3685, normalized size = 10.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/240*(315*(6*B*a^3*b^2*d^4*e^2 + (5*B*a^4*b - 11*A*a^3*b^2)*d^3*e^3 + (6
*B*b^5*d*e^5 + (5*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 3*(6*B*b^5*d^2*e^4 + 11*(B
*a*b^4 - A*b^5)*d*e^5 + (5*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + 3*(6*B*b^5*d^
3*e^3 + (23*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 3*(7*B*a^2*b^3 - 11*A*a*b^4)*d*e^
5 + (5*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + (6*B*b^5*d^4*e^2 + (59*B*a*b^4
- 11*A*b^5)*d^3*e^3 + 99*(B*a^2*b^3 - A*a*b^4)*d^2*e^4 + 3*(17*B*a^3*b^2 -
33*A*a^2*b^3)*d*e^5 + (5*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 + 3*(6*B*a*b^4*d^
4*e^2 + (23*B*a^2*b^3 - 11*A*a*b^4)*d^3*e^3 + 3*(7*B*a^3*b^2 - 11*A*a^2*b^3
)*d^2*e^4 + (5*B*a^4*b - 11*A*a^3*b^2)*d*e^5)*x^2 + 3*(6*B*a^2*b^3*d^4*e^2
+ 11*(B*a^3*b^2 - A*a^2*b^3)*d^3*e^3 + (5*B*a^4*b - 11*A*a^3*b^2)*d^2*e^4)*
x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x +
d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(48*A*a^5*e^5 + 20*(B*a*b^4 + 2*A*b^
5)*d^5 - 10*(26*B*a^2*b^3 + 31*A*a*b^4)*d^4*e - 3*(851*B*a^3*b^2 - 445*A*a^
2*b^3)*d^3*e^2 - 16*(44*B*a^4*b - 173*A*a^3*b^2)*d^2*e^3 + 32*(B*a^5 - 13*A
*a^4*b)*d*e^4 - 315*(6*B*b^5*d*e^4 + (5*B*a*b^4 - 11*A*b^5)*e^5)*x^5 - 105*
(42*B*b^5*d^2*e^3 + (83*B*a*b^4 - 77*A*b^5)*d*e^4 + 8*(5*B*a^2*b^3 - 11*A*a
*b^4)*e^5)*x^4 - 21*(138*B*b^5*d^3*e^2 + (679*B*a*b^4 - 253*A*b^5)*d^2*e^3
+ 2*(334*B*a^2*b^3 - 517*A*a*b^4)*d*e^4 + 33*(5*B*a^3*b^2 - 11*A*a^2*b^3)*e
^5)*x^3 - 9*(30*B*b^5*d^4*e + (901*B*a*b^4 - 55*A*b^5)*d^3*e^2 + 2*(914*B*a
^2*b^3 - 803*A*a*b^4)*d^2*e^3 + 3*(337*B*a^3*b^2 - 671*A*a^2*b^3)*d*e^4 + 1
6*(5*B*a^4*b - 11*A*a^3*b^2)*e^5)*x^2 + (60*B*b^5*d^5 - 10*(73*B*a*b^4 + 11
*A*b^5)*d^4*e - 2*(3682*B*a^2*b^3 - 715*A*a*b^4)*d^3*e^2 - 3*(2569*B*a^3*b^
2 - 4103*A*a^2*b^3)*d^2*e^3 - 32*(52*B*a^4*b - 121*A*a^3*b^2)*d*e^4 + 16*(5
*B*a^5 - 11*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e
+ 15*a^5*b^4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^
4*e^5 + a^9*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 -
 20*a^3*b^6*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x
^6 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e
^5 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)
*x^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*
e^4 - 30*a^4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b
^2*d*e^8 + a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 +
 62*a^3*b^6*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*
d^3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9
- 3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5
*e^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8
)*x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^
6*e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e
^7)*x), -1/120*(315*(6*B*a^3*b^2*d^4*e^2 + (5*B*a^4*b - 11*A*a^3*b^2)*d^3*e
^3 + (6*B*b^5*d*e^5 + (5*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 3*(6*B*b^5*d^2*e^4
+ 11*(B*a*b^4 - A*b^5)*d*e^5 + (5*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + 3*(6*B
*b^5*d^3*e^3 + (23*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 3*(7*B*a^2*b^3 - 11*A*a*b^
4)*d*e^5 + (5*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + (6*B*b^5*d^4*e^2 + (59*B
*a*b^4 - 11*A*b^5)*d^3*e^3 + 99*(B*a^2*b^3 - A*a*b^4)*d^2*e^4 + 3*(17*B*a^3
*b^2 - 33*A*a^2*b^3)*d*e^5 + (5*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 + 3*(6*B*a
*b^4*d^4*e^2 + (23*B*a^2*b^3 - 11*A*a*b^4)*d^3*e^3 + 3*(7*B*a^3*b^2 - 11*A*
a^2*b^3)*d^2*e^4 + (5*B*a^4*b - 11*A*a^3*b^2)*d*e^5)*x^2 + 3*(6*B*a^2*b^3*d
^4*e^2 + 11*(B*a^3*b^2 - A*a^2*b^3)*d^3*e^3 + (5*B*a^4*b - 11*A*a^3*b^2)*d^
2*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b
*d - a*e))/(b*e*x + b*d)) + (48*A*a^5*e^5 + 20*(B*a*b^4 + 2*A*b^5)*d^5 - 10
*(26*B*a^2*b^3 + 31*A*a*b^4)*d^4*e - 3*(851*B*a^3*b^2 - 445*A*a^2*b^3)*d^3*
e^2 - 16*(44*B*a^4*b - 173*A*a^3*b^2)*d^2*e^3 + 32*(B*a^5 - 13*A*a^4*b)*d*e
^4 - 315*(6*B*b^5*d*e^4 + (5*B*a*b^4 - 11*A*b^5)*e^5)*x^5 - 105*(42*B*b^5*d
^2*e^3 + (83*B*a*b^4 - 77*A*b^5)*d*e^4 + 8*(5*B*a^2*b^3 - 11*A*a*b^4)*e^5)*
x^4 - 21*(138*B*b^5*d^3*e^2 + (679*B*a*b^4 - 253*A*b^5)*d^2*e^3 + 2*(334*B*
a^2*b^3 - 517*A*a*b^4)*d*e^4 + 33*(5*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 - 9
*(30*B*b^5*d^4*e + (901*B*a*b^4 - 55*A*b^5)*d^3*e^2 + 2*(914*B*a^2*b^3 - 80
3*A*a*b^4)*d^2*e^3 + 3*(337*B*a^3*b^2 - 671*A*a^2*b^3)*d*e^4 + 16*(5*B*a^4*
b - 11*A*a^3*b^2)*e^5)*x^2 + (60*B*b^5*d^5 - 10*(73*B*a*b^4 + 11*A*b^5)*d^4
*e - 2*(3682*B*a^2*b^3 - 715*A*a*b^4)*d^3*e^2 - 3*(2569*B*a^3*b^2 - 4103*A*
a^2*b^3)*d^2*e^3 - 32*(52*B*a^4*b - 121*A*a^3*b^2)*d*e^4 + 16*(5*B*a^5 - 11
*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e + 15*a^5*b^
4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*e^5 + a^9
*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 20*a^3*b^6
*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6 + 3*(b^9
*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5 - 5*a^4*
b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x^5 + 3*(b
^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^4 - 30*a^
4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2*d*e^8 +
a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 62*a^3*b^6
*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^3*e^6 - 3
0*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 - 3*a^2*b^7
*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e^4 + 19*a
^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*x^2 + 3*(
a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*e^3 - 5*a
^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7)*x)]
```

giac [B] time = 0.34, size = 779, normalized size = 2.30

$$\frac{21\left(6\,Bb^3de^2+5\,Bab^2e^3-11\,Ab^3e^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{8\left(b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6\right)\sqrt{-b^2d+abe}}+\frac{2\left(90\,(xe+d)^2Bb^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 21/8*(6*B*b^3*d*e^2 + 5*B*a*b^2*e^3 - 11*A*b^3*e^3)*arctan(sqrt(x*e + d)*b/
sqrt(-b^2*d + a*b*e))/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a
^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d
+ a*b*e)) + 2/15*(90*(x*e + d)^2*B*b^2*d*e^2 + 15*(x*e + d)*B*b^2*d^2*e^2 +
 3*B*b^2*d^3*e^2 + 60*(x*e + d)^2*B*a*b*e^3 - 150*(x*e + d)^2*A*b^2*e^3 - 1
0*(x*e + d)*B*a*b*d*e^3 - 20*(x*e + d)*A*b^2*d*e^3 - 6*B*a*b*d^2*e^3 - 3*A*
b^2*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4 + 20*(x*e + d)*A*a*b*e^4 + 3*B*a^2*d*e^
4 + 6*A*a*b*d*e^4 - 3*A*a^2*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4
*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*(
x*e + d)^(5/2)) + 1/24*(90*(x*e + d)^(5/2)*B*b^5*d*e^2 - 192*(x*e + d)^(3/2
)*B*b^5*d^2*e^2 + 102*sqrt(x*e + d)*B*b^5*d^3*e^2 + 123*(x*e + d)^(5/2)*B*a
*b^4*e^3 - 213*(x*e + d)^(5/2)*A*b^5*e^3 - 88*(x*e + d)^(3/2)*B*a*b^4*d*e^3
 + 472*(x*e + d)^(3/2)*A*b^5*d*e^3 - 39*sqrt(x*e + d)*B*a*b^4*d^2*e^3 - 267
*sqrt(x*e + d)*A*b^5*d^2*e^3 + 280*(x*e + d)^(3/2)*B*a^2*b^3*e^4 - 472*(x*e
 + d)^(3/2)*A*a*b^4*e^4 - 228*sqrt(x*e + d)*B*a^2*b^3*d*e^4 + 534*sqrt(x*e
+ d)*A*a*b^4*d*e^4 + 165*sqrt(x*e + d)*B*a^3*b^2*e^5 - 267*sqrt(x*e + d)*A*
a^2*b^3*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^
3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*((x*e + d)*b - b*d +
a*e)^3)
```

maple [B] time = 0.08, size = 935, normalized size = 2.76

$$-\frac{89\sqrt{ex+d}\ A\,a^{2}b^{3}e^{5}}{8\,(ae-bd)^{6}\,(bex+ae)^{3}}+\frac{89\sqrt{ex+d}\ Aa\,b^{4}d\,e^{4}}{4\,(ae-bd)^{6}\,(bex+ae)^{3}}-\frac{89\sqrt{ex+d}\ A\,b^{5}d^{2}e^{3}}{8\,(ae-bd)^{6}\,(bex+ae)^{3}}+\frac{55\sqrt{ex+d}\ B\,a^{3}b^{2}e^{5}}{8\,(ae-bd)^{6}\,(bex+ae)^{3}}-\frac{19\sqrt{ex}}{2\,(ae-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -2/5*e^3/(a*e-b*d)^4/(e*x+d)^(5/2)*A+2/5*e^2/(a*e-b*d)^4/(e*x+d)^(5/2)*B*d-
13/8*e^3/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a*d^2-11/3*e^3/(a*e-
b*d)^6*b^4/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a*d+89/4*e^4/(a*e-b*d)^6*b^4/(b*e*
x+a*e)^3*(e*x+d)^(1/2)*A*a*d-19/2*e^4/(a*e-b*d)^6*b^3/(b*e*x+a*e)^3*(e*x+d)
^(1/2)*B*a^2*d-2/3*e^3/(a*e-b*d)^5/(e*x+d)^(3/2)*a*B-20*e^3*b^2/(a*e-b*d)^6
/(e*x+d)^(1/2)*A-89/8*e^5/(a*e-b*d)^6*b^3/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*a^2
-89/8*e^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*A*d^2+55/8*e^5/(a*e-b
*d)^6*b^2/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*a^3+63/4*e^2/(a*e-b*d)^6*b^3/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d+17/4*e^2/(a*e
-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(1/2)*B*d^3-8*e^2/(a*e-b*d)^6*b^5/(b*e*x+
a*e)^3*B*(e*x+d)^(3/2)*d^2+15/4*e^2/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+d)^(
5/2)*B*d+8/3*e^3/(a*e-b*d)^5/(e*x+d)^(3/2)*A*b-2*e^2/(a*e-b*d)^5/(e*x+d)^(3
/2)*B*b*d+12*e^2*b^2/(a*e-b*d)^6/(e*x+d)^(1/2)*B*d+8*e^3*b/(a*e-b*d)^6/(e*x
+d)^(1/2)*a*B-231/8*e^3/(a*e-b*d)^6*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-71/8*e^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*(e*x+
d)^(5/2)*A+105/8*e^3/(a*e-b*d)^6*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*a*B+41/8*e^3/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*(e*x+d
)^(5/2)*B*a-59/3*e^4/(a*e-b*d)^6*b^4/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*a+59/3*e
^3/(a*e-b*d)^6*b^5/(b*e*x+a*e)^3*A*(e*x+d)^(3/2)*d+35/3*e^4/(a*e-b*d)^6*b^3
/(b*e*x+a*e)^3*B*(e*x+d)^(3/2)*a^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.65, size = 547, normalized size = 1.61

$$\frac{\frac{231\,(d+e\,x)^3\,\left(-11\,A\,b^3\,e^3+6\,B\,d\,b^3\,e^2+5\,B\,a\,b^2\,e^3\right)}{40\,(a\,e-b\,d)^4}-\frac{2\,\left(A\,e^3-B\,d\,e^2\right)}{5\,(a\,e-b\,d)}+\frac{7\,(d+e\,x)^4\,\left(-11\,A\,b^4\,e^3+6\,B\,d\,b^4\,e^2+5\,B\,a\,b^3\,e^3\right)}{(a\,e-b\,d)^5}-\frac{2\,(d+e\,x)\,\left(5\,B\,a\,e^3-11\,A\right.}{15\,(a\,e-b\,d}}{(d+e\,x)^{5/2}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)+b^3\,(d+e\,x)^{11/2}-\left(3\,b^3\,d-3\,a\,b^2\,e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((231*(d + e*x)^3*(5*B*a*b^2*e^3 - 11*A*b^3*e^3 + 6*B*b^3*d*e^2))/(40*(a*e
- b*d)^4) - (2*(A*e^3 - B*d*e^2))/(5*(a*e - b*d)) + (7*(d + e*x)^4*(5*B*a*b
^3*e^3 - 11*A*b^4*e^3 + 6*B*b^4*d*e^2))/(a*e - b*d)^5 - (2*(d + e*x)*(5*B*a
*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(15*(a*e - b*d)^2) + (6*b*(d + e*x)^2*(5*
B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(5*(a*e - b*d)^3) + (21*b^4*(d + e*x)^
5*(5*B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2))/(8*(a*e - b*d)^6))/((d + e*x)^(5/
2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2) + b^3*(d + e*x)^(11/
2) - (3*b^3*d - 3*a*b^2*e)*(d + e*x)^(9/2) + (d + e*x)^(7/2)*(3*b^3*d^2 + 3
*a^2*b*e^2 - 6*a*b^2*d*e)) + (21*b^(3/2)*e^2*atan((b^(1/2)*e^2*(d + e*x)^(1
/2)*(5*B*a*e - 11*A*b*e + 6*B*b*d)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2
- 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))
/((a*e - b*d)^(13/2)*(5*B*a*e^3 - 11*A*b*e^3 + 6*B*b*d*e^2)))*(5*B*a*e - 11
*A*b*e + 6*B*b*d))/(8*(a*e - b*d)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1825 $\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=393

$$-\frac{231e^4\sqrt{bd-ae}\,(-13aBe+3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{15/2}}+\frac{231e^4\sqrt{d+ex}\,(-13aBe+3Abe+10bBd)}{128b^7}+77e$$

```
[Out] 77/128*e^4*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(3/2)/b^6/(-a*e+b*d)-231/640
*e^3*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(5/2)/b^5/(-a*e+b*d)/(b*x+a)-33/32
0*e^2*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(7/2)/b^4/(-a*e+b*d)/(b*x+a)^2-11
/240*e*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(9/2)/b^3/(-a*e+b*d)/(b*x+a)^3-1
/40*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(11/2)/b^2/(-a*e+b*d)/(b*x+a)^4-1/5
*(A*b-B*a)*(e*x+d)^(13/2)/b/(-a*e+b*d)/(b*x+a)^5-231/128*e^4*(3*A*b*e-13*B*
a*e+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1
/2)/b^(15/2)+231/128*e^4*(3*A*b*e-13*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^7
```

Rubi [A] time = 0.36, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 50, 63, 208\}$

$$-\frac{33e^2(d+ex)^{7/2}(-13aBe+3Abe+10bBd)}{320b^4(a+bx)^2(bd-ae)}-\frac{231e^3(d+ex)^{5/2}(-13aBe+3Abe+10bBd)}{640b^5(a+bx)(bd-ae)}+\frac{77e^4(d+ex)^{3/2}(-13a}{128b^6(b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (231*e^4*(10*b*B*d + 3*A*b*e - 13*a*B*e)*Sqrt[d + e*x])/(128*b^7) + (77*e^4
*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(3/2))/(128*b^6*(b*d - a*e)) - (
231*e^3*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(5/2))/(640*b^5*(b*d - a*
e)*(a + b*x)) - (33*e^2*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d + e*x)^(7/2))/(3
20*b^4*(b*d - a*e)*(a + b*x)^2) - (11*e*(10*b*B*d + 3*A*b*e - 13*a*B*e)*(d
+ e*x)^(9/2))/(240*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d + 3*A*b*e - 13
*a*B*e)*(d + e*x)^(11/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(
d + e*x)^(13/2))/(5*b*(b*d - a*e)*(a + b*x)^5) - (231*e^4*Sqrt[b*d - a*e]*(
10*b*B*d + 3*A*b*e - 13*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e]])/(128*b^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{11/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{13/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd+3Abe-13aBe)\int \frac{(d+ex)^{11/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd+3Abe-13aBe)(d+ex)^{11/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{13/2}}{5b(bd-ae)(a+bx)^5} + \frac{(11e(10bBd+3}{8}$$

$$= -\frac{11e(10bBd+3Abe-13aBe)(d+ex)^{9/2}}{240b^3(bd-ae)(a+bx)^3} - \frac{(10bBd+3Abe-13aBe)(d+ex)^{11/2}}{40b^2(bd-ae)(a+bx)^4}$$

$$= -\frac{33e^2(10bBd+3Abe-13aBe)(d+ex)^{7/2}}{320b^4(bd-ae)(a+bx)^2} - \frac{11e(10bBd+3Abe-13aBe)(d+ex)}{240b^3(bd-ae)(a+bx)^3}$$

$$= -\frac{231e^3(10bBd+3Abe-13aBe)(d+ex)^{5/2}}{640b^5(bd-ae)(a+bx)} - \frac{33e^2(10bBd+3Abe-13aBe)(d+e}{320b^4(bd-ae)(a+bx)^2}$$

$$= \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^{3/2}}{128b^6(bd-ae)} - \frac{231e^3(10bBd+3Abe-13aBe)(d+ex}{640b^5(bd-ae)(a+bx)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3}{128b^6(bd-ae)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3}{128b^6(bd-ae)}$$

$$= \frac{231e^4(10bBd+3Abe-13aBe)\sqrt{d+ex}}{128b^7} + \frac{77e^4(10bBd+3Abe-13aBe)(d+ex)^3}{128b^6(bd-ae)}$$

Mathematica [**C**] time = 0.08, size = 100, normalized size = 0.25

$$\frac{(d+ex)^{13/2}\left(\frac{13(aB-Ab)}{(a+bx)^5} - \frac{e^4(-13aBe+3Abe+10bBd)\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}\right)}{65b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(13/2)*((13*(-(A*b) + a*B))/(a + b*x)^5 - (e^4*(10*b*B*d + 3*A*b
*e - 13*a*B*e)*Hypergeometric2F1[5, 13/2, 15/2, (b*(d + e*x))/(b*d - a*e)])
/(b*d - a*e)^5))/(65*b*(b*d - a*e))
```

fricas [**B**] time = 0.80, size = 1862, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fric
as")
```

```
[Out] [-1/3840*(3465*(10*B*a^5*b*d*e^4 - (13*B*a^6 - 3*A*a^5*b)*e^5 + (10*B*b^6*d
*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (13*B*a^2*b^
4 - 3*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (13*B*a^3*b^3 - 3*A*a^2*
b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*
x^2 + 5*(10*B*a^4*b^2*d*e^4 - (13*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt((b*d
 - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))
/(b*x + a)) - 2*(1280*B*b^6*e^5*x^6 - 96*(B*a*b^5 + 4*A*b^6)*d^5 - 176*(2*B
*a^2*b^4 + 3*A*a*b^5)*d^4*e - 396*(3*B*a^3*b^3 + 2*A*a^2*b^4)*d^3*e^2 - 138
6*(4*B*a^4*b^2 + A*a^3*b^3)*d^2*e^3 + 1155*(43*B*a^5*b - 3*A*a^4*b^2)*d*e^4
 - 3465*(13*B*a^6 - 3*A*a^5*b)*e^5 + 1280*(16*B*b^6*d*e^4 - (13*B*a*b^5 - 3
*A*b^6)*e^5)*x^5 - 5*(4590*B*b^6*d^2*e^3 - (32189*B*a*b^5 - 2529*A*b^6)*d*e
^4 + 2123*(13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 - 10*(1030*B*b^6*d^3*e^2 + 3*
(1671*B*a*b^5 + 359*A*b^6)*d^2*e^3 - 22*(1757*B*a^2*b^4 - 132*A*a*b^5)*d*e^
4 + 2607*(13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 - 2*(1640*B*b^6*d^4*e + 2*(2
759*B*a*b^5 + 1686*A*b^6)*d^3*e^2 + 33*(797*B*a^2*b^4 + 183*A*a*b^5)*d^2*e^
3 - 33*(6547*B*a^3*b^3 - 477*A*a^2*b^4)*d*e^4 + 14784*(13*B*a^4*b^2 - 3*A*a
^3*b^3)*e^5)*x^2 - 2*(240*B*b^6*d^5 + 8*(107*B*a*b^5 + 153*A*b^6)*d^4*e + 2
2*(131*B*a^2*b^4 + 84*A*a*b^5)*d^3*e^2 + 99*(137*B*a^3*b^3 + 33*A*a^2*b^4)*
d^2*e^3 - 462*(253*B*a^4*b^2 - 18*A*a^3*b^3)*d*e^4 + 8085*(13*B*a^5*b - 3*A
*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^12*x^5 + 5*a*b^11*x^4 + 10*a^2*b^10*x^3
 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7), -1/1920*(3465*(10*B*a^5*b*d*e^4
 - (13*B*a^6 - 3*A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^
5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 + 10*(10
*B*a^2*b^4*d*e^4 - (13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3
*d*e^4 - (13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (1
3*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)
*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (1280*B*b^6*e^5*x^6 - 96*(B*a*b^5 +
4*A*b^6)*d^5 - 176*(2*B*a^2*b^4 + 3*A*a*b^5)*d^4*e - 396*(3*B*a^3*b^3 + 2*A
*a^2*b^4)*d^3*e^2 - 1386*(4*B*a^4*b^2 + A*a^3*b^3)*d^2*e^3 + 1155*(43*B*a^5
*b - 3*A*a^4*b^2)*d*e^4 - 3465*(13*B*a^6 - 3*A*a^5*b)*e^5 + 1280*(16*B*b^6*
d*e^4 - (13*B*a*b^5 - 3*A*b^6)*e^5)*x^5 - 5*(4590*B*b^6*d^2*e^3 - (32189*B*
a*b^5 - 2529*A*b^6)*d*e^4 + 2123*(13*B*a^2*b^4 - 3*A*a*b^5)*e^5)*x^4 - 10*(
1030*B*b^6*d^3*e^2 + 3*(1671*B*a*b^5 + 359*A*b^6)*d^2*e^3 - 22*(1757*B*a^2*
b^4 - 132*A*a*b^5)*d*e^4 + 2607*(13*B*a^3*b^3 - 3*A*a^2*b^4)*e^5)*x^3 - 2*(
1640*B*b^6*d^4*e + 2*(2759*B*a*b^5 + 1686*A*b^6)*d^3*e^2 + 33*(797*B*a^2*b^
4 + 183*A*a*b^5)*d^2*e^3 - 33*(6547*B*a^3*b^3 - 477*A*a^2*b^4)*d*e^4 + 1478
4*(13*B*a^4*b^2 - 3*A*a^3*b^3)*e^5)*x^2 - 2*(240*B*b^6*d^5 + 8*(107*B*a*b^5
 + 153*A*b^6)*d^4*e + 22*(131*B*a^2*b^4 + 84*A*a*b^5)*d^3*e^2 + 99*(137*B*a
^3*b^3 + 33*A*a^2*b^4)*d^2*e^3 - 462*(253*B*a^4*b^2 - 18*A*a^3*b^3)*d*e^4 +
 8085*(13*B*a^5*b - 3*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^12*x^5 + 5*a*b^1
1*x^4 + 10*a^2*b^10*x^3 + 10*a^3*b^9*x^2 + 5*a^4*b^8*x + a^5*b^7)]
```

giac [B] time = 0.36, size = 1066, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac
")
```

```
[Out] 231/128*(10*B*b^2*d^2*e^4 - 23*B*a*b*d*e^5 + 3*A*b^2*d*e^5 + 13*B*a^2*e^6 -
 3*A*a*b*e^6)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a
*b*e)*b^7) - 1/1920*(22950*(x*e + d)^(9/2)*B*b^6*d^2*e^4 - 81500*(x*e + d)^
(7/2)*B*b^6*d^3*e^4 + 110080*(x*e + d)^(5/2)*B*b^6*d^4*e^4 - 66980*(x*e + d
)^(3/2)*B*b^6*d^5*e^4 + 15450*sqrt(x*e + d)*B*b^6*d^6*e^4 - 58545*(x*e + d)
^(9/2)*B*a*b^5*d*e^5 + 12645*(x*e + d)^(9/2)*A*b^6*d*e^5 + 284310*(x*e + d)
^(7/2)*B*a*b^5*d^2*e^5 - 39810*(x*e + d)^(7/2)*A*b^6*d^2*e^5 - 490624*(x*e
+ d)^(5/2)*B*a*b^5*d^3*e^5 + 50304*(x*e + d)^(5/2)*A*b^6*d^3*e^5 + 364210*(
x*e + d)^(3/2)*B*a*b^5*d^4*e^5 - 29310*(x*e + d)^(3/2)*A*b^6*d^4*e^5 - 9925
5*sqrt(x*e + d)*B*a*b^5*d^5*e^5 + 6555*sqrt(x*e + d)*A*b^6*d^5*e^5 + 35595*
(x*e + d)^(9/2)*B*a^2*b^4*e^6 - 12645*(x*e + d)^(9/2)*A*a*b^5*e^6 - 324120*
(x*e + d)^(7/2)*B*a^2*b^4*d*e^6 + 79620*(x*e + d)^(7/2)*A*a*b^5*d*e^6 + 811
392*(x*e + d)^(5/2)*B*a^2*b^4*d^2*e^6 - 150912*(x*e + d)^(5/2)*A*a*b^5*d^2*
e^6 - 787040*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^6 + 117240*(x*e + d)^(3/2)*A*a
*b^5*d^3*e^6 + 264525*sqrt(x*e + d)*B*a^2*b^4*d^4*e^6 - 32775*sqrt(x*e + d)
*A*a*b^5*d^4*e^6 + 121310*(x*e + d)^(7/2)*B*a^3*b^3*e^7 - 39810*(x*e + d)^(
7/2)*A*a^2*b^4*e^7 - 591232*(x*e + d)^(5/2)*B*a^3*b^3*d*e^7 + 150912*(x*e +
 d)^(5/2)*A*a^2*b^4*d*e^7 + 845660*(x*e + d)^(3/2)*B*a^3*b^3*d^2*e^7 - 1758
60*(x*e + d)^(3/2)*A*a^2*b^4*d^2*e^7 - 374550*sqrt(x*e + d)*B*a^3*b^3*d^3*e
^7 + 65550*sqrt(x*e + d)*A*a^2*b^4*d^3*e^7 + 160384*(x*e + d)^(5/2)*B*a^4*b
^2*e^8 - 50304*(x*e + d)^(5/2)*A*a^3*b^3*e^8 - 452140*(x*e + d)^(3/2)*B*a^4
*b^2*d*e^8 + 117240*(x*e + d)^(3/2)*A*a^3*b^3*d*e^8 + 297300*sqrt(x*e + d)*
B*a^4*b^2*d^2*e^8 - 65550*sqrt(x*e + d)*A*a^3*b^3*d^2*e^8 + 96290*(x*e + d)
^(3/2)*B*a^5*b*e^9 - 29310*(x*e + d)^(3/2)*A*a^4*b^2*e^9 - 125475*sqrt(x*e
+ d)*B*a^5*b*d*e^9 + 32775*sqrt(x*e + d)*A*a^4*b^2*d*e^9 + 22005*sqrt(x*e +
 d)*B*a^6*e^10 - 6555*sqrt(x*e + d)*A*a^5*b*e^10)/(((x*e + d)*b - b*d + a*e
)^5*b^7) + 2/3*((x*e + d)^(3/2)*B*b^12*e^4 + 15*sqrt(x*e + d)*B*b^12*d*e^4
- 18*sqrt(x*e + d)*B*a*b^11*e^5 + 3*sqrt(x*e + d)*A*b^12*e^5)/b^18
```

maple [B] time = 0.09, size = 1633, normalized size = 4.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3*e^4/b^6*B*(e*x+d)^(3/2)+2*e^5/b^6*A*(e*x+d)^(1/2)-12*e^5/b^7*a*B*(e*x+d
)^(1/2)+10*e^4/b^6*B*d*(e*x+d)^(1/2)+977/64*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(3/
2)*A*d^4-9629/192*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^5-437/128*e^5/b/(
b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^5+437/128*e^10/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/
2)*A*a^5+1327/64*e^7/b^3/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a^2-131/5*e^5/b/(b*e
*x+a*e)^5*(e*x+d)^(5/2)*A*d^3-1253/15*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B
*a^4+977/64*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^4+3003/128*e^6/b^7/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a^2-1467/128*
e^10/b^7/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^6+131/5*e^8/b^4/(b*e*x+a*e)^5*(e*x
+d)^(5/2)*A*a^3-693/128*e^6/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A*a+693/128*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A*d-172/3*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B
*d^4+3349/96*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*d^5-515/64*e^4/b/(b*e*x+a*
e)^5*(e*x+d)^(1/2)*B*d^6+4075/96*e^4/b/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^3+13
27/64*e^5/b/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*d^2+843/128*e^6/b^2/(b*e*x+a*e)^5
*(e*x+d)^(9/2)*A*a-843/128*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A*d-2373/128*e
^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*a^2-12131/192*e^7/b^4/(b*e*x+a*e)^5*B*
(e*x+d)^(7/2)*a^3+1155/64*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*B*d^2-765/64*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*d^2
-977/16*e^6/b^2/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*d^3+22607/96*e^8/b^5/(b*e*x
+a*e)^5*(e*x+d)^(3/2)*B*a^4*d-42283/96*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*
B*a^3*d^2+4919/12*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^2*d^3-36421/192*e
^5/b^2/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^4+2185/128*e^6/b^2/(b*e*x+a*e)^5*(
e*x+d)^(1/2)*A*a*d^4+12485/64*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^3
-17635/128*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^4+6617/128*e^5/b^2/(
b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^5-5313/128*e^5/b^6/((a*e-b*d)*b)^(1/2)*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*a*d+3903/128*e^5/b^2/(b*e*x+a*e)
^5*(e*x+d)^(9/2)*B*a*d-2185/64*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^
3-2185/128*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4*d+2185/64*e^8/b^4/(b*e
*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d^2-4955/32*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/
2)*B*a^4*d^2+8365/128*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5*d-1327/32*e
^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a*d+2701/16*e^6/b^3/(b*e*x+a*e)^5*B*(e
*x+d)^(7/2)*a^2*d-9477/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d^2-393/5
*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2*d+393/5*e^6/b^2/(b*e*x+a*e)^5*(e
*x+d)^(5/2)*A*a*d^2+4619/15*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^3*d-211
3/5*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d^2+3833/15*e^5/b^2/(b*e*x+a*
e)^5*(e*x+d)^(5/2)*B*a*d^3-977/16*e^8/b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^3
*d+2931/32*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^2*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.48, size = 996, normalized size = 2.53

$$\left(\frac{2\,A\,e^5-2\,B\,d\,e^4}{b^6}+\frac{2\,B\,e^4\,\left(6\,b^6\,d-6\,a\,b^5\,e\right)}{b^{12}}\right)\,\sqrt{d+e\,x}-\frac{{\left(d+e\,x\right)}^{5/2}\,\left(\frac{1253\,B\,a^4\,b^2\,e^8}{15}-\frac{4619\,B\,a^3\,b^3\,d\,e^7}{15}-\frac{131\,A\,a^3\,b^3\,e^8}{5}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((2*A*e^5 - 2*B*d*e^4)/b^6 + (2*B*e^4*(6*b^6*d - 6*a*b^5*e))/b^12)*(d + e*x
)^(1/2) - ((d + e*x)^(5/2)*((1253*B*a^4*b^2*e^8)/15 - (131*A*a^3*b^3*e^8)/5
 + (131*A*b^6*d^3*e^5)/5 + (172*B*b^6*d^4*e^4)/3 - (393*A*a*b^5*d^2*e^6)/5
+ (393*A*a^2*b^4*d*e^7)/5 - (3833*B*a*b^5*d^3*e^5)/15 - (4619*B*a^3*b^3*d*e
^7)/15 + (2113*B*a^2*b^4*d^2*e^6)/5) - (d + e*x)^(3/2)*((977*A*a^4*b^2*e^9)
/64 - (9629*B*a^5*b*e^9)/192 + (977*A*b^6*d^4*e^5)/64 + (3349*B*b^6*d^5*e^4
)/96 - (977*A*a*b^5*d^3*e^6)/16 - (977*A*a^3*b^3*d*e^8)/16 - (36421*B*a*b^5
*d^4*e^5)/192 + (22607*B*a^4*b^2*d*e^8)/96 + (2931*A*a^2*b^4*d^2*e^7)/32 +
(4919*B*a^2*b^4*d^3*e^6)/12 - (42283*B*a^3*b^3*d^2*e^7)/96) - (d + e*x)^(7/
2)*((1327*A*a^2*b^4*e^7)/64 - (12131*B*a^3*b^3*e^7)/192 + (1327*A*b^6*d^2*e
^5)/64 + (4075*B*b^6*d^3*e^4)/96 - (9477*B*a*b^5*d^2*e^5)/64 + (2701*B*a^2*
b^4*d*e^6)/16 - (1327*A*a*b^5*d*e^6)/32) + (d + e*x)^(1/2)*((1467*B*a^6*e^1
0)/128 - (437*A*a^5*b*e^10)/128 + (437*A*b^6*d^5*e^5)/128 + (515*B*b^6*d^6*
e^4)/64 - (2185*A*a*b^5*d^4*e^6)/128 + (2185*A*a^4*b^2*d*e^9)/128 - (6617*B
*a*b^5*d^5*e^5)/128 + (2185*A*a^2*b^4*d^3*e^7)/64 - (2185*A*a^3*b^3*d^2*e^8
)/64 + (17635*B*a^2*b^4*d^4*e^6)/128 - (12485*B*a^3*b^3*d^3*e^7)/64 + (4955
*B*a^4*b^2*d^2*e^8)/32 - (8365*B*a^5*b*d*e^9)/128) + (d + e*x)^(9/2)*((843*
A*b^6*d*e^5)/128 - (843*A*a*b^5*e^6)/128 + (2373*B*a^2*b^4*e^6)/128 + (765*
B*b^6*d^2*e^4)/64 - (3903*B*a*b^5*d*e^5)/128))/((d + e*x)*(5*b^12*d^4 + 5*a
^4*b^8*e^4 - 20*a^3*b^9*d*e^3 + 30*a^2*b^10*d^2*e^2 - 20*a*b^11*d^3*e) - (d
 + e*x)^2*(10*b^12*d^3 - 10*a^3*b^9*e^3 + 30*a^2*b^10*d*e^2 - 30*a*b^11*d^2
*e) + b^12*(d + e*x)^5 - (5*b^12*d - 5*a*b^11*e)*(d + e*x)^4 - b^12*d^5 + (
d + e*x)^3*(10*b^12*d^2 + 10*a^2*b^10*e^2 - 20*a*b^11*d*e) + a^5*b^7*e^5 -
5*a^4*b^8*d*e^4 - 10*a^2*b^10*d^3*e^2 + 10*a^3*b^9*d^2*e^3 + 5*a*b^11*d^4*e
) + (2*B*e^4*(d + e*x)^(3/2))/(3*b^6) + (e^4*atan((b^(1/2)*(d + e*x)^(1/2)*
1i)/(b*d - a*e)^(1/2))*(b*d - a*e)^(1/2)*(3*A*b*e - 13*B*a*e + 10*B*b*d)*23
1i)/(128*b^(15/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1826 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=352

$$-\frac{63e^4(-11aBe+Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{13/2}\sqrt{bd-ae}}+\frac{63e^4\sqrt{d+ex}\,(-11aBe+Abe+10bBd)}{128b^6(bd-ae)}-\frac{21e^3(d+ex)^{3/2}(-1}{128b^5(a+}$$

```
[Out] -21/128*e^3*(A*b*e-11*B*a*e+10*B*b*d)*(e*x+d)^(3/2)/b^5/(-a*e+b*d)/(b*x+a)-
21/320*e^2*(A*b*e-11*B*a*e+10*B*b*d)*(e*x+d)^(5/2)/b^4/(-a*e+b*d)/(b*x+a)^2
-3/80*e*(A*b*e-11*B*a*e+10*B*b*d)*(e*x+d)^(7/2)/b^3/(-a*e+b*d)/(b*x+a)^3-1/
40*(A*b*e-11*B*a*e+10*B*b*d)*(e*x+d)^(9/2)/b^2/(-a*e+b*d)/(b*x+a)^4-1/5*(A*
b-B*a)*(e*x+d)^(11/2)/b/(-a*e+b*d)/(b*x+a)^5-63/128*e^4*(A*b*e-11*B*a*e+10*
B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(13/2)/(-a*e+b*d)^
(1/2)+63/128*e^4*(A*b*e-11*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^6/(-a*e+b*d)
```

Rubi [A] time = 0.30, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = {27, 78, 47, 50, 63, 208}

$$-\frac{21e^2(d+ex)^{5/2}(-11aBe+Abe+10bBd)}{320b^4(a+bx)^2(bd-ae)}-\frac{21e^3(d+ex)^{3/2}(-11aBe+Abe+10bBd)}{128b^5(a+bx)(bd-ae)}+\frac{63e^4\sqrt{d+ex}\,(-11aBe+}{128b^6(bd-a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (63*e^4*(10*b*B*d + A*b*e - 11*a*B*e)*Sqrt[d + e*x])/(128*b^6*(b*d - a*e))
- (21*e^3*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x)^(3/2))/(128*b^5*(b*d - a*
e)*(a + b*x)) - (21*e^2*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(320
*b^4*(b*d - a*e)*(a + b*x)^2) - (3*e*(10*b*B*d + A*b*e - 11*a*B*e)*(d + e*x
)^(7/2))/(80*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d + A*b*e - 11*a*B*e)*
(d + e*x)^(9/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^
(11/2))/(5*b*(b*d - a*e)*(a + b*x)^5) - (63*e^4*(10*b*B*d + A*b*e - 11*a*B*
e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(13/2)*Sqrt[b*d
 - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{9/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd+Abe-11aBe)\int \frac{(d+ex)^{9/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd+Abe-11aBe)(d+ex)^{9/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{11/2}}{5b(bd-ae)(a+bx)^5} + \frac{(9e(10bBd+Abe-1}{80b^2(b}$$

$$= -\frac{3e(10bBd+Abe-11aBe)(d+ex)^{7/2}}{80b^3(bd-ae)(a+bx)^3} - \frac{(10bBd+Abe-11aBe)(d+ex)^{9/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-}{5b(bd}$$

$$= -\frac{21e^2(10bBd+Abe-11aBe)(d+ex)^{5/2}}{320b^4(bd-ae)(a+bx)^2} - \frac{3e(10bBd+Abe-11aBe)(d+ex)^{7/2}}{80b^3(bd-ae)(a+bx)^3} - \frac{(1}{}$$

$$= -\frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} - \frac{21e^2(10bBd+Abe-11aBe)(d+ex)^{5/2}}{320b^4(bd-ae)(a+bx)^2} -$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} - 21e$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} - 21e$$

$$= \frac{63e^4(10bBd+Abe-11aBe)\sqrt{d+ex}}{128b^6(bd-ae)} - \frac{21e^3(10bBd+Abe-11aBe)(d+ex)^{3/2}}{128b^5(bd-ae)(a+bx)} - 21e$$

Mathematica [C] time = 0.07, size = 99, normalized size = 0.28

$$\frac{(d+ex)^{11/2}\left(\frac{11(aB-Ab)}{(a+bx)^5}-\frac{e^4(-11aBe+Abe+10bBd)\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}\right)}{55b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(11/2)*((11*(-(A*b) + a*B))/(a + b*x)^5 - (e^4*(10*b*B*d + A*b*e
 - 11*a*B*e)*Hypergeometric2F1[5, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/(
b*d - a*e)^5))/(55*b*(b*d - a*e))
```

fricas [B] time = 0.64, size = 1955, normalized size = 5.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/1280*(315*(10*B*a^5*b*d*e^4 - (11*B*a^6 - A*a^5*b)*e^5 + (10*B*b^6*d*e^4
 - (11*B*a*b^5 - A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (11*B*a^2*b^4 - A*
a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (11*B*a^3*b^3 - A*a^2*b^4)*e^5)*
x^3 + 10*(10*B*a^3*b^3*d*e^4 - (11*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 5*(10*
B*a^4*b^2*d*e^4 - (11*B*a^5*b - A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*
(32*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(4*B*a^2*b^5 + A*a*b^6)*d^4*e + 12*(13*B*a
^3*b^4 + 2*A*a^2*b^5)*d^3*e^2 + 42*(14*B*a^4*b^3 + A*a^3*b^4)*d^2*e^3 - 105
*(41*B*a^5*b^2 - A*a^4*b^3)*d*e^4 + 315*(11*B*a^6*b - A*a^5*b^2)*e^5 - 1280
*(B*b^7*d*e^4 - B*a*b^6*e^5)*x^5 + 5*(650*B*b^7*d^2*e^3 - (2773*B*a*b^6 - 1
93*A*b^7)*d*e^4 + 193*(11*B*a^2*b^5 - A*a*b^6)*e^5)*x^4 + 10*(210*B*b^7*d^3
*e^2 + (521*B*a*b^6 + 149*A*b^7)*d^2*e^3 - 2*(1669*B*a^2*b^5 - 44*A*a*b^6)*
d*e^4 + 237*(11*B*a^3*b^4 - A*a^2*b^5)*e^5)*x^3 + 2*(440*B*b^7*d^4*e + 2*(3
53*B*a*b^6 + 342*A*b^7)*d^3*e^2 + 3*(919*B*a^2*b^5 + 61*A*a*b^6)*d^2*e^3 -
3*(6229*B*a^3*b^4 - 159*A*a^2*b^5)*d*e^4 + 1344*(11*B*a^4*b^3 - A*a^3*b^4)*
e^5)*x^2 + 2*(80*B*b^7*d^5 + 8*(19*B*a*b^6 + 41*A*b^7)*d^4*e + 2*(187*B*a^2
*b^5 + 28*A*a*b^6)*d^3*e^2 + 9*(159*B*a^3*b^4 + 11*A*a^2*b^5)*d^2*e^3 - 42*
(241*B*a^4*b^3 - 6*A*a^3*b^4)*d*e^4 + 735*(11*B*a^5*b^2 - A*a^4*b^3)*e^5)*x
)*sqrt(e*x + d))/(a^5*b^8*d - a^6*b^7*e + (b^13*d - a*b^12*e)*x^5 + 5*(a*b^
12*d - a^2*b^11*e)*x^4 + 10*(a^2*b^11*d - a^3*b^10*e)*x^3 + 10*(a^3*b^10*d
- a^4*b^9*e)*x^2 + 5*(a^4*b^9*d - a^5*b^8*e)*x), 1/640*(315*(10*B*a^5*b*d*e
^4 - (11*B*a^6 - A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (11*B*a*b^5 - A*b^6)*e^5)
*x^5 + 5*(10*B*a*b^5*d*e^4 - (11*B*a^2*b^4 - A*a*b^5)*e^5)*x^4 + 10*(10*B*a
^2*b^4*d*e^4 - (11*B*a^3*b^3 - A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4
 - (11*B*a^4*b^2 - A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (11*B*a^5*
b - A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqr
t(e*x + d)/(b*e*x + b*d)) - (32*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(4*B*a^2*b^5 +
 A*a*b^6)*d^4*e + 12*(13*B*a^3*b^4 + 2*A*a^2*b^5)*d^3*e^2 + 42*(14*B*a^4*b^
3 + A*a^3*b^4)*d^2*e^3 - 105*(41*B*a^5*b^2 - A*a^4*b^3)*d*e^4 + 315*(11*B*a
^6*b - A*a^5*b^2)*e^5 - 1280*(B*b^7*d*e^4 - B*a*b^6*e^5)*x^5 + 5*(650*B*b^7
*d^2*e^3 - (2773*B*a*b^6 - 193*A*b^7)*d*e^4 + 193*(11*B*a^2*b^5 - A*a*b^6)*
e^5)*x^4 + 10*(210*B*b^7*d^3*e^2 + (521*B*a*b^6 + 149*A*b^7)*d^2*e^3 - 2*(1
669*B*a^2*b^5 - 44*A*a*b^6)*d*e^4 + 237*(11*B*a^3*b^4 - A*a^2*b^5)*e^5)*x^3
 + 2*(440*B*b^7*d^4*e + 2*(353*B*a*b^6 + 342*A*b^7)*d^3*e^2 + 3*(919*B*a^2*
b^5 + 61*A*a*b^6)*d^2*e^3 - 3*(6229*B*a^3*b^4 - 159*A*a^2*b^5)*d*e^4 + 1344
*(11*B*a^4*b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 + 8*(19*B*a*b^6 + 41
*A*b^7)*d^4*e + 2*(187*B*a^2*b^5 + 28*A*a*b^6)*d^3*e^2 + 9*(159*B*a^3*b^4 +
 11*A*a^2*b^5)*d^2*e^3 - 42*(241*B*a^4*b^3 - 6*A*a^3*b^4)*d*e^4 + 735*(11*B
*a^5*b^2 - A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d - a^6*b^7*e + (b^13
*d - a*b^12*e)*x^5 + 5*(a*b^12*d - a^2*b^11*e)*x^4 + 10*(a^2*b^11*d - a^3*b
^10*e)*x^3 + 10*(a^3*b^10*d - a^4*b^9*e)*x^2 + 5*(a^4*b^9*d - a^5*b^8*e)*x)
]
```

giac [B] time = 0.30, size = 770, normalized size = 2.19

$$\frac{2\sqrt{xe+d}\,Be^4}{b^6}+\frac{63\left(10\,Bbde^4-11\,Bae^5+Abe^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{128\sqrt{-b^2d+abe}\,b^6}-\frac{3250\,(xe+d)^{\frac{9}{2}}Bb^5de^4-10900\,(xe+d)^{\frac{7}{2}}Bb^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2*sqrt(x*e + d)*B*e^4/b^6 + 63/128*(10*B*b*d*e^4 - 11*B*a*e^5 + A*b*e^5)*ar
ctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/6
40*(3250*(x*e + d)^(9/2)*B*b^5*d*e^4 - 10900*(x*e + d)^(7/2)*B*b^5*d^2*e^4
+ 14080*(x*e + d)^(5/2)*B*b^5*d^3*e^4 - 8300*(x*e + d)^(3/2)*B*b^5*d^4*e^4
+ 1870*sqrt(x*e + d)*B*b^5*d^5*e^4 - 4215*(x*e + d)^(9/2)*B*a*b^4*e^5 + 965
*(x*e + d)^(9/2)*A*b^5*e^5 + 24170*(x*e + d)^(7/2)*B*a*b^4*d*e^5 - 2370*(x*
e + d)^(7/2)*A*b^5*d*e^5 - 44928*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 + 2688*(x*
e + d)^(5/2)*A*b^5*d^2*e^5 + 34670*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 1470*(
x*e + d)^(3/2)*A*b^5*d^3*e^5 - 9665*sqrt(x*e + d)*B*a*b^4*d^4*e^5 + 315*sqr
t(x*e + d)*A*b^5*d^4*e^5 - 13270*(x*e + d)^(7/2)*B*a^2*b^3*e^6 + 2370*(x*e
+ d)^(7/2)*A*a*b^4*e^6 + 47616*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 - 5376*(x*e
+ d)^(5/2)*A*a*b^4*d*e^6 - 54210*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 + 4410*(
x*e + d)^(3/2)*A*a*b^4*d^2*e^6 + 19960*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 - 12
60*sqrt(x*e + d)*A*a*b^4*d^3*e^6 - 16768*(x*e + d)^(5/2)*B*a^3*b^2*e^7 + 26
88*(x*e + d)^(5/2)*A*a^2*b^3*e^7 + 37610*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 -
4410*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 - 20590*sqrt(x*e + d)*B*a^3*b^2*d^2*e^
7 + 1890*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 - 9770*(x*e + d)^(3/2)*B*a^4*b*e^8
 + 1470*(x*e + d)^(3/2)*A*a^3*b^2*e^8 + 10610*sqrt(x*e + d)*B*a^4*b*d*e^8 -
 1260*sqrt(x*e + d)*A*a^3*b^2*d*e^8 - 2185*sqrt(x*e + d)*B*a^5*e^9 + 315*sq
rt(x*e + d)*A*a^4*b*e^9)/(((x*e + d)*b - b*d + a*e)^5*b^6)
```

maple [B] time = 0.08, size = 1173, normalized size = 3.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*e^4*B/b^6*(e*x+d)^(1/2)+63/32*e^8/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d
+42/5*e^6/b^2/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*d+351/5*e^5/b^2/(b*e*x+a*e)^5
*(e*x+d)^(5/2)*B*a*d^2+2059/64*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^
2-189/64*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^2+63/32*e^6/b^2/(b*e*x
+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-1061/64*e^8/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B
*a^4*d-499/16*e^6/b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^3+1933/128*e^5/b^
2/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^4-2417/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x+
d)^(7/2)*a*d+441/64*e^7/b^3/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*a^2*d-372/5*e^6/b
^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d-3467/64*e^5/b^2/(b*e*x+a*e)^5*B*(e*x
+d)^(3/2)*a*d^3-441/64*e^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*a*d^2-3761/64*
e^7/b^4/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a^3*d+5421/64*e^6/b^3/(b*e*x+a*e)^5*B
*(e*x+d)^(3/2)*a^2*d^2+63/128*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*A-193/128*e^5/b/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A-23
7/64*e^6/b^2/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a+237/64*e^5/b/(b*e*x+a*e)^5*A*(
e*x+d)^(7/2)*d+437/128*e^9/b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5-693/128*e^
5/b^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+1
```

```
327/64*e^6/b^3/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2-147/64*e^8/b^4/(b*e*x+a*e)
^5*A*(e*x+d)^(3/2)*a^3+147/64*e^5/b/(b*e*x+a*e)^5*A*(e*x+d)^(3/2)*d^3+977/6
4*e^8/b^5/(b*e*x+a*e)^5*B*(e*x+d)^(3/2)*a^4+843/128*e^5/b^2/(b*e*x+a*e)^5*(
e*x+d)^(9/2)*B*a-21/5*e^7/b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2-21/5*e^5/b/
(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^2+131/5*e^7/b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)
*B*a^3-63/128*e^9/b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4+415/32*e^4/b/(b*e*x
+a*e)^5*B*(e*x+d)^(3/2)*d^4+315/64*e^4/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d-325/64*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(9/2
)*B*d-22*e^4/b/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*d^3-187/64*e^4/b/(b*e*x+a*e)^5
*(e*x+d)^(1/2)*B*d^5+545/32*e^4/b/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-63/128*
e^5/b/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^4
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.28, size = 838, normalized size = 2.38

$$\frac{2\,B\,e^4\,\sqrt{d+e\,x}}{b^6}-\frac{{\left(d+e\,x\right)}^{5/2}\,\Big(-\frac{131\,B\,a^3\,b^2\,e^7}{5}+\frac{372\,B\,a^2\,b^3\,d\,e^6}{5}+\frac{21\,A\,a^2\,b^3\,e^7}{5}-\frac{351\,B\,a\,b^4\,d^2\,e^5}{5}-\frac{42\,A\,a\,b^4\,d\,e^6}{5}+22\,B\,b^5\,d^3\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*B*e^4*(d + e*x)^(1/2))/b^6 - ((d + e*x)^(5/2)*((21*A*a^2*b^3*e^7)/5 - (1
31*B*a^3*b^2*e^7)/5 + (21*A*b^5*d^2*e^5)/5 + 22*B*b^5*d^3*e^4 - (351*B*a*b^
4*d^2*e^5)/5 + (372*B*a^2*b^3*d*e^6)/5 - (42*A*a*b^4*d*e^6)/5) - (d + e*x)^
(3/2)*((977*B*a^4*b*e^8)/64 - (147*A*a^3*b^2*e^8)/64 + (147*A*b^5*d^3*e^5)/
64 + (415*B*b^5*d^4*e^4)/32 - (441*A*a*b^4*d^2*e^6)/64 + (441*A*a^2*b^3*d*e
^7)/64 - (3467*B*a*b^4*d^3*e^5)/64 - (3761*B*a^3*b^2*d*e^7)/64 + (5421*B*a^
2*b^3*d^2*e^6)/64) + (d + e*x)^(9/2)*((193*A*b^5*e^5)/128 - (843*B*a*b^4*e^
5)/128 + (325*B*b^5*d*e^4)/64) + (d + e*x)^(1/2)*((63*A*a^4*b*e^9)/128 - (4
37*B*a^5*e^9)/128 + (63*A*b^5*d^4*e^5)/128 + (187*B*b^5*d^5*e^4)/64 - (63*A
*a*b^4*d^3*e^6)/32 - (63*A*a^3*b^2*d*e^8)/32 - (1933*B*a*b^4*d^4*e^5)/128 +
 (189*A*a^2*b^3*d^2*e^7)/64 + (499*B*a^2*b^3*d^3*e^6)/16 - (2059*B*a^3*b^2*
d^2*e^7)/64 + (1061*B*a^4*b*d*e^8)/64) - (d + e*x)^(7/2)*((237*A*b^5*d*e^5)
/64 - (237*A*a*b^4*e^6)/64 + (1327*B*a^2*b^3*e^6)/64 + (545*B*b^5*d^2*e^4)/
32 - (2417*B*a*b^4*d*e^5)/64))/((d + e*x)*(5*b^11*d^4 + 5*a^4*b^7*e^4 - 20*
a^3*b^8*d*e^3 + 30*a^2*b^9*d^2*e^2 - 20*a*b^10*d^3*e) - (d + e*x)^2*(10*b^1
1*d^3 - 10*a^3*b^8*e^3 + 30*a^2*b^9*d*e^2 - 30*a*b^10*d^2*e) + b^11*(d + e*
x)^5 - (5*b^11*d - 5*a*b^10*e)*(d + e*x)^4 - b^11*d^5 + (d + e*x)^3*(10*b^1
1*d^2 + 10*a^2*b^9*e^2 - 20*a*b^10*d*e) + a^5*b^6*e^5 - 5*a^4*b^7*d*e^4 - 1
0*a^2*b^9*d^3*e^2 + 10*a^3*b^8*d^2*e^3 + 5*a*b^10*d^4*e) + (63*e^4*atan((b^
(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e - 11*B*a*e + 10*B*b*d))/((a*e - b*d)^(1/2)
*(A*b*e^5 - 11*B*a*e^5 + 10*B*b*d*e^4)))*(A*b*e - 11*B*a*e + 10*B*b*d))/(12
8*b^(13/2)*(a*e - b*d)^(1/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1827 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$-\frac{7e^4(-9aBe-Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{11/2}(bd-ae)^{3/2}}-\frac{7e^3\sqrt{d+ex}\,(-9aBe-Abe+10bBd)}{128b^5(a+bx)(bd-ae)}-\frac{7e^2(d+ex)^{3/2}(-9aBe-}{192b^4(a+bx)^2(}$$

```
[Out] -7/192*e^2*(-A*b*e-9*B*a*e+10*B*b*d)*(e*x+d)^(3/2)/b^4/(-a*e+b*d)/(b*x+a)^2
-7/240*e*(-A*b*e-9*B*a*e+10*B*b*d)*(e*x+d)^(5/2)/b^3/(-a*e+b*d)/(b*x+a)^3-1
/40*(-A*b*e-9*B*a*e+10*B*b*d)*(e*x+d)^(7/2)/b^2/(-a*e+b*d)/(b*x+a)^4-1/5*(A
*b-B*a)*(e*x+d)^(9/2)/b/(-a*e+b*d)/(b*x+a)^5-7/128*e^4*(-A*b*e-9*B*a*e+10*B
*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(11/2)/(-a*e+b*d)^(
3/2)-7/128*e^3*(-A*b*e-9*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^5/(-a*e+b*d)/(b*x+
a)
```

Rubi [A] time = 0.26, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 78, 47, 63, 208}

$$-\frac{7e^2(d+ex)^{3/2}(-9aBe-Abe+10bBd)}{192b^4(a+bx)^2(bd-ae)}-\frac{7e^3\sqrt{d+ex}\,(-9aBe-Abe+10bBd)}{128b^5(a+bx)(bd-ae)}-\frac{7e^4(-9aBe-Abe+10bBd)\tan}{128b^{11/2}(bd-ae)^{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-7*e^3*(10*b*B*d - A*b*e - 9*a*B*e)*Sqrt[d + e*x])/(128*b^5*(b*d - a*e)*(a
 + b*x)) - (7*e^2*(10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x)^(3/2))/(192*b^4*(b
*d - a*e)*(a + b*x)^2) - (7*e*(10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x)^(5/2))
/(240*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d - A*b*e - 9*a*B*e)*(d + e*x
)^(7/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(9/2))/(
5*b*(b*d - a*e)*(a + b*x)^5) - (7*e^4*(10*b*B*d - A*b*e - 9*a*B*e)*ArcTanh[
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(11/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(A+Bx)(d+ex)^{7/2}}{(a+bx)^6}\,dx$$

$$=-\frac{(Ab-aB)(d+ex)^{9/2}}{5b(bd-ae)(a+bx)^5}+\frac{(10bBd-Abe-9aBe)\int \frac{(d+ex)^{7/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$=-\frac{(10bBd-Abe-9aBe)(d+ex)^{7/2}}{40b^2(bd-ae)(a+bx)^4}-\frac{(Ab-aB)(d+ex)^{9/2}}{5b(bd-ae)(a+bx)^5}+\frac{(7e(10bBd-Abe-9a}{80b^2(bd-}$$

$$=-\frac{7e(10bBd-Abe-9aBe)(d+ex)^{5/2}}{240b^3(bd-ae)(a+bx)^3}-\frac{(10bBd-Abe-9aBe)(d+ex)^{7/2}}{40b^2(bd-ae)(a+bx)^4}-\frac{(Ab-a}{5b(bd-}$$

$$=-\frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2}-\frac{7e(10bBd-Abe-9aBe)(d+ex)^{5/2}}{240b^3(bd-ae)(a+bx)^3}-\frac{(10b}{4}$$

$$=-\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)}-\frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2}-\frac{7e(10}{2}$$

$$=-\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)}-\frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2}-\frac{7e(10}{2}$$

$$=-\frac{7e^3(10bBd-Abe-9aBe)\sqrt{d+ex}}{128b^5(bd-ae)(a+bx)}-\frac{7e^2(10bBd-Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)(a+bx)^2}-\frac{7e(10}{2}$$

Mathematica [A] time = 0.95, size = 260, normalized size = 0.83

$$\frac{\frac{(a+bx)(9aBe+Abe-10bBd)\left(48b^4(d+ex)^4\sqrt{ae-bd}+56b^3e(a+bx)(d+ex)^3\sqrt{ae-bd}+70b^2e^2(a+bx)^2(d+ex)^2\sqrt{ae-bd}-105\sqrt{b}\,e^4(a+bx)^4\sqrt{d+ex}\,\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d}}{\sqrt{ae-}}\right.\right.}{\sqrt{ae-bd}}}{1920b^6(a+bx)^5\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-384*b^5*(A*b - a*B)*(d + e*x)^5 + ((-10*b*B*d + A*b*e + 9*a*B*e)*(a + b*x
)*(105*b*e^3*Sqrt[-(b*d) + a*e]*(a + b*x)^3*(d + e*x) + 70*b^2*e^2*Sqrt[-(b
*d) + a*e]*(a + b*x)^2*(d + e*x)^2 + 56*b^3*e*Sqrt[-(b*d) + a*e]*(a + b*x)*
(d + e*x)^3 + 48*b^4*Sqrt[-(b*d) + a*e]*(d + e*x)^4 - 105*Sqrt[b]*e^4*(a +
b*x)^4*Sqrt[d + e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/S
qrt[-(b*d) + a*e])/(1920*b^6*(b*d - a*e)*(a + b*x)^5*Sqrt[d + e*x])
```

fricas [B] time = 0.72, size = 2041, normalized size = 6.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/3840*(105*(10*B*a^5*b*d*e^4 - (9*B*a^6 + A*a^5*b)*e^5 + (10*B*b^6*d*e^4
- (9*B*a*b^5 + A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (9*B*a^2*b^4 + A*a*b
^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (9*B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3
+ 10*(10*B*a^3*b^3*d*e^4 - (9*B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4
*b^2*d*e^4 - (9*B*a^5*b + A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(96*(B
*a*b^6 + 4*A*b^7)*d^5 + 16*(2*B*a^2*b^5 - 27*A*a*b^6)*d^4*e + 4*(17*B*a^3*b
^4 - 2*A*a^2*b^5)*d^3*e^2 + 14*(16*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3 - 35*(39*
B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 105*(9*B*a^6*b + A*a^5*b^2)*e^5 + 15*(186*B*
b^7*d^2*e^3 - (379*B*a*b^6 - 7*A*b^7)*d*e^4 + (193*B*a^2*b^5 - 7*A*a*b^6)*e
^5)*x^4 + 10*(326*B*b^7*d^3*e^2 + (17*B*a*b^6 + 121*A*b^7)*d^2*e^3 - 2*(527
*B*a^2*b^5 + 100*A*a*b^6)*d*e^4 + 79*(9*B*a^3*b^4 + A*a^2*b^5)*e^5)*x^3 + 2
*(1000*B*b^7*d^4*e - 2*(81*B*a*b^6 - 526*A*b^7)*d^3*e^2 + 3*(347*B*a^2*b^5
- 447*A*a*b^6)*d^2*e^3 - (5911*B*a^3*b^4 + 159*A*a^2*b^5)*d*e^4 + 448*(9*B*
a^4*b^3 + A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 + 8*(7*B*a*b^6 + 93*A*b^7)
*d^4*e + 2*(81*B*a^2*b^5 - 436*A*a*b^6)*d^3*e^2 + 3*(181*B*a^3*b^4 - 11*A*a
^2*b^5)*d^2*e^3 - 14*(229*B*a^4*b^3 + 6*A*a^3*b^4)*d*e^4 + 245*(9*B*a^5*b^2
 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^2 - 2*a^6*b^7*d*e + a^7*b^6
*e^2 + (b^13*d^2 - 2*a*b^12*d*e + a^2*b^11*e^2)*x^5 + 5*(a*b^12*d^2 - 2*a^2
*b^11*d*e + a^3*b^10*e^2)*x^4 + 10*(a^2*b^11*d^2 - 2*a^3*b^10*d*e + a^4*b^9
*e^2)*x^3 + 10*(a^3*b^10*d^2 - 2*a^4*b^9*d*e + a^5*b^8*e^2)*x^2 + 5*(a^4*b^
9*d^2 - 2*a^5*b^8*d*e + a^6*b^7*e^2)*x), 1/1920*(105*(10*B*a^5*b*d*e^4 - (9
*B*a^6 + A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (9*B*a*b^5 + A*b^6)*e^5)*x^5 + 5*
(10*B*a*b^5*d*e^4 - (9*B*a^2*b^4 + A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e
^4 - (9*B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (9*B*a^4
*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (9*B*a^5*b + A*a^4*b^2
)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b
*e*x + b*d)) - (96*(B*a*b^6 + 4*A*b^7)*d^5 + 16*(2*B*a^2*b^5 - 27*A*a*b^6)*
d^4*e + 4*(17*B*a^3*b^4 - 2*A*a^2*b^5)*d^3*e^2 + 14*(16*B*a^4*b^3 - A*a^3*b
^4)*d^2*e^3 - 35*(39*B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 105*(9*B*a^6*b + A*a^5*
b^2)*e^5 + 15*(186*B*b^7*d^2*e^3 - (379*B*a*b^6 - 7*A*b^7)*d*e^4 + (193*B*a
^2*b^5 - 7*A*a*b^6)*e^5)*x^4 + 10*(326*B*b^7*d^3*e^2 + (17*B*a*b^6 + 121*A*
b^7)*d^2*e^3 - 2*(527*B*a^2*b^5 + 100*A*a*b^6)*d*e^4 + 79*(9*B*a^3*b^4 + A*
a^2*b^5)*e^5)*x^3 + 2*(1000*B*b^7*d^4*e - 2*(81*B*a*b^6 - 526*A*b^7)*d^3*e^
2 + 3*(347*B*a^2*b^5 - 447*A*a*b^6)*d^2*e^3 - (5911*B*a^3*b^4 + 159*A*a^2*b
^5)*d*e^4 + 448*(9*B*a^4*b^3 + A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 + 8*(
7*B*a*b^6 + 93*A*b^7)*d^4*e + 2*(81*B*a^2*b^5 - 436*A*a*b^6)*d^3*e^2 + 3*(1
81*B*a^3*b^4 - 11*A*a^2*b^5)*d^2*e^3 - 14*(229*B*a^4*b^3 + 6*A*a^3*b^4)*d*e
^4 + 245*(9*B*a^5*b^2 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^2 - 2*
a^6*b^7*d*e + a^7*b^6*e^2 + (b^13*d^2 - 2*a*b^12*d*e + a^2*b^11*e^2)*x^5 +
5*(a*b^12*d^2 - 2*a^2*b^11*d*e + a^3*b^10*e^2)*x^4 + 10*(a^2*b^11*d^2 - 2*a
^3*b^10*d*e + a^4*b^9*e^2)*x^3 + 10*(a^3*b^10*d^2 - 2*a^4*b^9*d*e + a^5*b^8
*e^2)*x^2 + 5*(a^4*b^9*d^2 - 2*a^5*b^8*d*e + a^6*b^7*e^2)*x)]
```

giac [B] time = 0.30, size = 781, normalized size = 2.50

$$\frac{7\left(10\,Bbde^{4}-9\,Bae^{5}-Abe^{5}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{128\left(b^{6}d-ab^{5}e\right)\sqrt{-b^{2}d+abe}}-\frac{2790\,(xe+d)^{\frac{9}{2}}Bb^{5}de^{4}-7900\,(xe+d)^{\frac{7}{2}}Bb^{5}d^{2}e^{4}+8960\,(xe}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 7/128*(10*B*b*d*e^4 - 9*B*a*e^5 - A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^6*d - a*b^5*e)*sqrt(-b^2*d + a*b*e)) - 1/1920*(2790*(x*e +
 d)^(9/2)*B*b^5*d*e^4 - 7900*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 8960*(x*e + d)
^(5/2)*B*b^5*d^3*e^4 - 4900*(x*e + d)^(3/2)*B*b^5*d^4*e^4 + 1050*sqrt(x*e +
 d)*B*b^5*d^5*e^4 - 2895*(x*e + d)^(9/2)*B*a*b^4*e^5 + 105*(x*e + d)^(9/2)*
A*b^5*e^5 + 15010*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 790*(x*e + d)^(7/2)*A*b^5
*d*e^5 - 25984*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 896*(x*e + d)^(5/2)*A*b^5*
d^2*e^5 + 19110*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 + 490*(x*e + d)^(3/2)*A*b^5
*d^3*e^5 - 5145*sqrt(x*e + d)*B*a*b^4*d^4*e^5 - 105*sqrt(x*e + d)*A*b^5*d^4
*e^5 - 7110*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 790*(x*e + d)^(7/2)*A*a*b^4*e^6
 + 25088*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 + 1792*(x*e + d)^(5/2)*A*a*b^4*d*e
^6 - 27930*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 - 1470*(x*e + d)^(3/2)*A*a*b^4
*d^2*e^6 + 10080*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 + 420*sqrt(x*e + d)*A*a*b^
4*d^3*e^6 - 8064*(x*e + d)^(5/2)*B*a^3*b^2*e^7 - 896*(x*e + d)^(5/2)*A*a^2*
b^3*e^7 + 18130*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 + 1470*(x*e + d)^(3/2)*A*a^
2*b^3*d*e^7 - 9870*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 - 630*sqrt(x*e + d)*A*a^
2*b^3*d^2*e^7 - 4410*(x*e + d)^(3/2)*B*a^4*b*e^8 - 490*(x*e + d)^(3/2)*A*a^
3*b^2*e^8 + 4830*sqrt(x*e + d)*B*a^4*b*d*e^8 + 420*sqrt(x*e + d)*A*a^3*b^2*
d*e^8 - 945*sqrt(x*e + d)*B*a^5*e^9 - 105*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*
d - a*b^5*e)*((x*e + d)*b - b*d + a*e)^5)
```

maple [**B**] time = 0.07, size = 959, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -79/192*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(7/2)*A+7/128*e^5/(b*e*x+a*e)^5/(a*e-b*
d)*(e*x+d)^(9/2)*A+21/128*e^7/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*A*a^2*d-35/64
*e^4/(a*e-b*d)/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*B*d+49/96*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*A*a*d+343/48*e^6/(b*e
*x+a*e)^5/b^3*(e*x+d)^(3/2)*B*a^2*d-1421/192*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^
(3/2)*B*a*d^2+259/128*e^7/(b*e*x+a*e)^5/b^4*(e*x+d)^(1/2)*B*d*a^3-399/128*e
^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*B*a^2*d^2-21/128*e^6/(b*e*x+a*e)^5/b^2*(
e*x+d)^(1/2)*A*d^2*a-193/128*e^5/(b*e*x+a*e)^5/(a*e-b*d)/b*(e*x+d)^(9/2)*a*
B+63/128*e^5/(a*e-b*d)/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*a*B+273/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d^3+133
/15*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*B*a*d-63/128*e^8/(b*e*x+a*e)^5/b^5*
(e*x+d)^(1/2)*B*a^4-7/15*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*A*a+7/128*e^5/
(a*e-b*d)/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*A+7/15*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*A*d-14/3*e^4/(b*e*x+a*e)^5/b*(e
*x+d)^(5/2)*B*d^2+245/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d^3-35/64*e^4/
(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d^4+93/64*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+
d)^(9/2)*B*d+395/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(7/2)*B*d-237/64*e^5/(b*e*x
+a*e)^5/b^2*(e*x+d)^(7/2)*a*B-21/5*e^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(5/2)*B*a^
2-49/192*e^7/(b*e*x+a*e)^5/b^3*(e*x+d)^(3/2)*A*a^2-147/64*e^7/(b*e*x+a*e)^5
/b^4*(e*x+d)^(3/2)*B*a^3-49/192*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*A*d^2-7/1
28*e^8/(b*e*x+a*e)^5/b^4*(e*x+d)^(1/2)*A*a^3+7/128*e^5/(b*e*x+a*e)^5/b*(e*x
+d)^(1/2)*A*d^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.44, size = 594, normalized size = 1.90

$$\frac{7\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(A\,b\,e+9\,B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(A\,b\,e^5+9\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(A\,b\,e+9\,B\,a\,e-10\,B\,b\,d\right)}{128\,b^{11/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (7*e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e + 9*B*a*e - 10*B*b*d))/((a*
e - b*d)^(1/2)*(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e^4)))*(A*b*e + 9*B*a*e - 10
*B*b*d))/(128*b^(11/2)*(a*e - b*d)^(3/2)) - ((79*(d + e*x)^(7/2)*(A*b*e^5 +
 9*B*a*e^5 - 10*B*b*d*e^4))/(192*b^2) + (7*(d + e*x)^(1/2)*(A*b*e^5 + 9*B*a
*e^5 - 10*B*b*d*e^4)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(
128*b^5) + (7*(a*e - b*d)*(d + e*x)^(5/2)*(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e
^4))/(15*b^3) - ((d + e*x)^(9/2)*(7*A*b*e^5 - 193*B*a*e^5 + 186*B*b*d*e^4))
/(128*b*(a*e - b*d)) + (49*(d + e*x)^(3/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)*
(A*b*e^5 + 9*B*a*e^5 - 10*B*b*d*e^4))/(192*b^4))/((d + e*x)*(5*b^5*d^4 + 5*
a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d +
e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) +
b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (
d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^
2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1828 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$\frac{e^4(-7aBe-3Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{9/2}(bd-ae)^{5/2}}-\frac{e^3\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{128b^4(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}\,(-7aBe-3Abe+}{64b^4(a+bx)^2(bd-a}$$

```
[Out] -1/48*e*(-3*A*b*e-7*B*a*e+10*B*b*d)*(e*x+d)^(3/2)/b^3/(-a*e+b*d)/(b*x+a)^3-
1/40*(-3*A*b*e-7*B*a*e+10*B*b*d)*(e*x+d)^(5/2)/b^2/(-a*e+b*d)/(b*x+a)^4-1/5
*(A*b-B*a)*(e*x+d)^(7/2)/b/(-a*e+b*d)/(b*x+a)^5+1/128*e^4*(-3*A*b*e-7*B*a*e
+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(9/2)/(-a*e+b*
d)^(5/2)-1/64*e^2*(-3*A*b*e-7*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^4/(-a*e+b*d)/
(b*x+a)^2-1/128*e^3*(-3*A*b*e-7*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^4/(-a*e+b*d
)^2/(b*x+a)
```

Rubi [A] time = 0.27, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = $\{27, 78, 47, 51, 63, 208\}$

$$-\frac{e^3\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{128b^4(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}\,(-7aBe-3Abe+10bBd)}{64b^4(a+bx)^2(bd-ae)}+\frac{e^4(-7aBe-3Abe+10bBd)\tanh^{-1}(}{128b^{9/2}(bd-ae)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e^2*(10*b*B*d - 3*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(64*b^4*(b*d - a*e)*(a
+ b*x)^2) - (e^3*(10*b*B*d - 3*A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(128*b^4*(b*
d - a*e)^2*(a + b*x)) - (e*(10*b*B*d - 3*A*b*e - 7*a*B*e)*(d + e*x)^(3/2))/
(48*b^3*(b*d - a*e)*(a + b*x)^3) - ((10*b*B*d - 3*A*b*e - 7*a*B*e)*(d + e*x
)^(5/2))/(40*b^2*(b*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(7/2))/(
5*b*(b*d - a*e)*(a + b*x)^5) + (e^4*(10*b*B*d - 3*A*b*e - 7*a*B*e)*ArcTanh[
(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(9/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{5/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-3Abe-7aBe)\int \frac{(d+ex)^{5/2}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd-3Abe-7aBe)(d+ex)^{5/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{7/2}}{5b(bd-ae)(a+bx)^5} + \frac{(e(10bBd-3Abe-}{16b^2(}$$

$$= -\frac{e(10bBd-3Abe-7aBe)(d+ex)^{3/2}}{48b^3(bd-ae)(a+bx)^3} - \frac{(10bBd-3Abe-7aBe)(d+ex)^{5/2}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab}{5b(b}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e(10bBd-3Abe-7aBe)(d+ex)^{3/2}}{48b^3(bd-ae)(a+bx)^3} - \frac{(10b}{}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10b}{}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10b}{}$$

$$= -\frac{e^2(10bBd-3Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)(a+bx)^2} - \frac{e^3(10bBd-3Abe-7aBe)\sqrt{d+ex}}{128b^4(bd-ae)^2(a+bx)} - \frac{e(10b}{}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.32

$$\frac{(d+ex)^{7/2}\left(\frac{e^4(7aBe+3Abe-10bBd)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{7aB-7Ab}{(a+bx)^5}\right)}{35b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(7/2)*((-7*A*b + 7*a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 3*A*b*e
+ 7*a*B*e)*Hypergeometric2F1[7/2, 5, 9/2, (b*(d + e*x))/(b*d - a*e)])/(b*d
- a*e)^5))/(35*b*(b*d - a*e))
```

fricas [**B**] time = 1.00, size = 2238, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(15*(10*B*a^5*b*d*e^4 - (7*B*a^6 + 3*A*a^5*b)*e^5 + (10*B*b^6*d*e^
4 - (7*B*a*b^5 + 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (7*B*a^2*b^4 + 3
*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (7*B*a^3*b^3 + 3*A*a^2*b^4)*e
^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (7*B*a^4*b^2 + 3*A*a^3*b^3)*e^5)*x^2 + 5
*(10*B*a^4*b^2*d*e^4 - (7*B*a^5*b + 3*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e
)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)
) + 2*(96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(8*B*a^2*b^5 + 57*A*a*b^6)*d^4*e - 1
2*(B*a^3*b^4 - 46*A*a^2*b^5)*d^3*e^2 - 6*(6*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3
+ 5*(37*B*a^5*b^2 + 3*A*a^4*b^3)*d*e^4 - 15*(7*B*a^6*b + 3*A*a^5*b^2)*e^5 +
 15*(10*B*b^7*d^2*e^3 - (17*B*a*b^6 + 3*A*b^7)*d*e^4 + (7*B*a^2*b^5 + 3*A*a
*b^6)*e^5)*x^4 + 10*(118*B*b^7*d^3*e^2 - 3*(99*B*a*b^6 - A*b^7)*d^2*e^3 + 6
*(43*B*a^2*b^5 - 4*A*a*b^6)*d*e^4 - (79*B*a^3*b^4 - 21*A*a^2*b^5)*e^5)*x^3
+ 2*(680*B*b^7*d^4*e - 2*(661*B*a*b^6 - 186*A*b^7)*d^3*e^2 + 3*(97*B*a^2*b^
5 - 357*A*a*b^6)*d^2*e^3 + (799*B*a^3*b^4 + 891*A*a^2*b^5)*d*e^4 - 64*(7*B*
a^4*b^3 + 3*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(43*B*a*b^6 - 63*A*b
^7)*d^4*e + 2*(B*a^2*b^5 - 636*A*a*b^6)*d^3*e^2 - 3*(29*B*a^3*b^4 - 279*A*a
^2*b^5)*d^2*e^3 + 2*(217*B*a^4*b^3 + 18*A*a^3*b^4)*d*e^4 - 35*(7*B*a^5*b^2
+ 3*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^3 - 3*a^6*b^7*d^2*e + 3*a^
7*b^6*d*e^2 - a^8*b^5*e^3 + (b^13*d^3 - 3*a*b^12*d^2*e + 3*a^2*b^11*d*e^2 -
 a^3*b^10*e^3)*x^5 + 5*(a*b^12*d^3 - 3*a^2*b^11*d^2*e + 3*a^3*b^10*d*e^2 -
a^4*b^9*e^3)*x^4 + 10*(a^2*b^11*d^3 - 3*a^3*b^10*d^2*e + 3*a^4*b^9*d*e^2 -
a^5*b^8*e^3)*x^3 + 10*(a^3*b^10*d^3 - 3*a^4*b^9*d^2*e + 3*a^5*b^8*d*e^2 - a
^6*b^7*e^3)*x^2 + 5*(a^4*b^9*d^3 - 3*a^5*b^8*d^2*e + 3*a^6*b^7*d*e^2 - a^7*
b^6*e^3)*x), -1/1920*(15*(10*B*a^5*b*d*e^4 - (7*B*a^6 + 3*A*a^5*b)*e^5 + (1
0*B*b^6*d*e^4 - (7*B*a*b^5 + 3*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (7*B
*a^2*b^4 + 3*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (7*B*a^3*b^3 + 3*
A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (7*B*a^4*b^2 + 3*A*a^3*b^3)*
e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (7*B*a^5*b + 3*A*a^4*b^2)*e^5)*x)*sqrt(-
b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (
96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(8*B*a^2*b^5 + 57*A*a*b^6)*d^4*e - 12*(B*a^
3*b^4 - 46*A*a^2*b^5)*d^3*e^2 - 6*(6*B*a^4*b^3 - A*a^3*b^4)*d^2*e^3 + 5*(37
*B*a^5*b^2 + 3*A*a^4*b^3)*d*e^4 - 15*(7*B*a^6*b + 3*A*a^5*b^2)*e^5 + 15*(10
*B*b^7*d^2*e^3 - (17*B*a*b^6 + 3*A*b^7)*d*e^4 + (7*B*a^2*b^5 + 3*A*a*b^6)*e
^5)*x^4 + 10*(118*B*b^7*d^3*e^2 - 3*(99*B*a*b^6 - A*b^7)*d^2*e^3 + 6*(43*B*
a^2*b^5 - 4*A*a*b^6)*d*e^4 - (79*B*a^3*b^4 - 21*A*a^2*b^5)*e^5)*x^3 + 2*(68
0*B*b^7*d^4*e - 2*(661*B*a*b^6 - 186*A*b^7)*d^3*e^2 + 3*(97*B*a^2*b^5 - 357
*A*a*b^6)*d^2*e^3 + (799*B*a^3*b^4 + 891*A*a^2*b^5)*d*e^4 - 64*(7*B*a^4*b^3
 + 3*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(43*B*a*b^6 - 63*A*b^7)*d^4
*e + 2*(B*a^2*b^5 - 636*A*a*b^6)*d^3*e^2 - 3*(29*B*a^3*b^4 - 279*A*a^2*b^5)
*d^2*e^3 + 2*(217*B*a^4*b^3 + 18*A*a^3*b^4)*d*e^4 - 35*(7*B*a^5*b^2 + 3*A*a
^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^3 - 3*a^6*b^7*d^2*e + 3*a^7*b^6*d
*e^2 - a^8*b^5*e^3 + (b^13*d^3 - 3*a*b^12*d^2*e + 3*a^2*b^11*d*e^2 - a^3*b^
10*e^3)*x^5 + 5*(a*b^12*d^3 - 3*a^2*b^11*d^2*e + 3*a^3*b^10*d*e^2 - a^4*b^9
*e^3)*x^4 + 10*(a^2*b^11*d^3 - 3*a^3*b^10*d^2*e + 3*a^4*b^9*d*e^2 - a^5*b^8
*e^3)*x^3 + 10*(a^3*b^10*d^3 - 3*a^4*b^9*d^2*e + 3*a^5*b^8*d*e^2 - a^6*b^7*
e^3)*x^2 + 5*(a^4*b^9*d^3 - 3*a^5*b^8*d^2*e + 3*a^6*b^7*d*e^2 - a^7*b^6*e^3
)*x)]
```

giac [B] time = 0.30, size = 805, normalized size = 2.57

$$-\frac{\left(10\,Bbde^{4}-7\,Bae^{5}-3\,Abe^{5}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{128\left(b^{6}d^{2}-2\,ab^{5}de+a^{2}b^{4}e^{2}\right)\sqrt{-b^{2}d+abe}}-\frac{150\,(xe+d)^{\frac{9}{2}}Bb^{5}de^{4}+580\,(xe+d)^{\frac{7}{2}}Bb^{5}d^{2}e^{4}-1280\,(xe+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -1/128*(10*B*b*d*e^4 - 7*B*a*e^5 - 3*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/((b^6*d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*sqrt(-b^2*d + a*b*e)
) - 1/1920*(150*(x*e + d)^(9/2)*B*b^5*d*e^4 + 580*(x*e + d)^(7/2)*B*b^5*d^2
*e^4 - 1280*(x*e + d)^(5/2)*B*b^5*d^3*e^4 + 700*(x*e + d)^(3/2)*B*b^5*d^4*e
^4 - 150*sqrt(x*e + d)*B*b^5*d^5*e^4 - 105*(x*e + d)^(9/2)*B*a*b^4*e^5 - 45
*(x*e + d)^(9/2)*A*b^5*e^5 - 1370*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 210*(x*e
+ d)^(7/2)*A*b^5*d*e^5 + 3456*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 + 384*(x*e +
d)^(5/2)*A*b^5*d^2*e^5 - 2590*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 210*(x*e +
d)^(3/2)*A*b^5*d^3*e^5 + 705*sqrt(x*e + d)*B*a*b^4*d^4*e^5 + 45*sqrt(x*e +
d)*A*b^5*d^4*e^5 + 790*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 210*(x*e + d)^(7/2)*
A*a*b^4*e^6 - 3072*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 - 768*(x*e + d)^(5/2)*A*
a*b^4*d*e^6 + 3570*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 + 630*(x*e + d)^(3/2)*
A*a*b^4*d^2*e^6 - 1320*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 - 180*sqrt(x*e + d)*
A*a*b^4*d^3*e^6 + 896*(x*e + d)^(5/2)*B*a^3*b^2*e^7 + 384*(x*e + d)^(5/2)*A
*a^2*b^3*e^7 - 2170*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 - 630*(x*e + d)^(3/2)*A
*a^2*b^3*d*e^7 + 1230*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 + 270*sqrt(x*e + d)*A
*a^2*b^3*d^2*e^7 + 490*(x*e + d)^(3/2)*B*a^4*b*e^8 + 210*(x*e + d)^(3/2)*A*
a^3*b^2*e^8 - 570*sqrt(x*e + d)*B*a^4*b*d*e^8 - 180*sqrt(x*e + d)*A*a^3*b^2
*d*e^8 + 105*sqrt(x*e + d)*B*a^5*e^9 + 45*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*
d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.08, size = 872, normalized size = 2.79

$$-\frac{3\sqrt{ex+d}\;A\,a^{2}e^{7}}{128\,(bex+ae)^{5}\,b^{3}}+\frac{3\sqrt{ex+d}\;Aad\,e^{6}}{64\,(bex+ae)^{5}\,b^{2}}+\frac{3\,(ex+d)^{\frac{9}{2}}\;Ab\,e^{5}}{128\,(bex+ae)^{5}\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)}-\frac{3\sqrt{ex+d}\;A\,d^{2}e^{5}}{128\,(bex+ae)^{5}\,b}-\frac{7\sqrt{ex+d}}{128\,(bex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/128*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*A*b+7/128
*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*a*B-5/64*e^4/(
b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(9/2)*B*b*d+7/64*e^5/(b*e*
x+a*e)^5/(a*e-b*d)*(e*x+d)^(7/2)*A-79/192*e^5/(b*e*x+a*e)^5/b/(a*e-b*d)*(e*
x+d)^(7/2)*a*B+29/96*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(7/2)*B*d-1/5*e^5/
(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*A-7/15*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(5/2)*a*
B+2/3*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(5/2)*B*d-7/64*e^6/(b*e*x+a*e)^5/b^2*(e*x
+d)^(3/2)*A*a+7/64*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*A*d-49/192*e^6/(b*e*x+
a*e)^5/b^3*(e*x+d)^(3/2)*B*a^2+119/192*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*
B*a*d-35/96*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d^2-3/128*e^7/(b*e*x+a*e)^5
/b^3*(e*x+d)^(1/2)*A*a^2+3/64*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*A*a*d-3/1
28*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*A*d^2-7/128*e^7/(b*e*x+a*e)^5/b^4*(e*x
+d)^(1/2)*B*a^3+3/16*e^6/(b*e*x+a*e)^5/b^3*(e*x+d)^(1/2)*B*a^2*d-27/128*e^5
/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d^2+5/64*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(
1/2)*B*d^3+3/128*e^5/b^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+7/128*e^5/b^4/(a^2*e^2-2*a*b*d*
e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a*B-5/64*e^4/b^3/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.35, size = 572, normalized size = 1.83

$$\frac{e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^4\,\sqrt{d+e\,x}\,\left(3\,A\,b\,e+7\,B\,a\,e-10\,B\,b\,d\right)}{\sqrt{a\,e-b\,d}\,\left(3\,A\,b\,e^5+7\,B\,a\,e^5-10\,B\,b\,d\,e^4\right)}\right)\,\left(3\,A\,b\,e+7\,B\,a\,e-10\,B\,b\,d\right)}{128\,b^{9/2}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{}{\left(d+e\,x\right)\,\Big(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(3*A*b*e + 7*B*a*e - 10*B*b*d))/((a*
e - b*d)^(1/2)*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4)))*(3*A*b*e + 7*B*a*e
- 10*B*b*d))/(128*b^(9/2)*(a*e - b*d)^(5/2)) - (((d + e*x)^(5/2)*(3*A*b*e^5
 + 7*B*a*e^5 - 10*B*b*d*e^4))/(15*b^2) - ((d + e*x)^(9/2)*(3*A*b*e^5 + 7*B*
a*e^5 - 10*B*b*d*e^4))/(128*(a*e - b*d)^2) + (7*(a*e - b*d)*(d + e*x)^(3/2)
*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4))/(192*b^3) - ((d + e*x)^(7/2)*(21*A
*b*e^5 - 79*B*a*e^5 + 58*B*b*d*e^4))/(192*b*(a*e - b*d)) + ((d + e*x)^(1/2)
*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)*(3*A*b*e^5 + 7*B*a*e^5 - 10*B*b*d*e^4))/(1
28*b^4))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^
3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30
*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*
(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2
- 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e -
 5*a^4*b*d*e^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1829 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$-\frac{3e^4(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{7/2}(bd-ae)^{7/2}}+\frac{3e^3\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{128b^3(a+bx)(bd-ae)^3}-\frac{e^2\sqrt{d+ex}\,(-aBe-Abe+2}{64b^3(a+bx)^2(bd-ae)^2}$$

```
[Out] -1/8*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(3/2)/b^2/(-a*e+b*d)/(b*x+a)^4-1/5*(A*b
-B*a)*(e*x+d)^(5/2)/b/(-a*e+b*d)/(b*x+a)^5-3/128*e^4*(-A*b*e-B*a*e+2*B*b*d)
*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)/(-a*e+b*d)^(7/2)-1
/16*e*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)/(b*x+a)^3-1/64*e^
2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)^2/(b*x+a)^2+3/128*e^3
*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)^3/(b*x+a)
```

Rubi [A] time = 0.27, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.182$, Rules used = $\{27, 78, 47, 51, 63, 208\}$

$$\frac{3e^3\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{128b^3(a+bx)(bd-ae)^3}-\frac{e^2\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{64b^3(a+bx)^2(bd-ae)^2}-\frac{3e^4(-aBe-Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+}}{\sqrt{bd-a}}\right.}{128b^{7/2}(bd-ae)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(16*b^3*(b*d - a*e)*(a + b*x)^
3) - (e^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(64*b^3*(b*d - a*e)^2*(a
 + b*x)^2) + (3*e^3*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x])/(128*b^3*(b*d
- a*e)^3*(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3/2))/(8*b^2*(b
*d - a*e)*(a + b*x)^4) - ((A*b - a*B)*(d + e*x)^(5/2))/(5*b*(b*d - a*e)*(a
+ b*x)^5) - (3*e^4*(2*b*B*d - A*b*e - a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x]
)/Sqrt[b*d - a*e]])/(128*b^(7/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)(d+ex)^{3/2}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{5b(bd-ae)(a+bx)^5} + \frac{(2bBd-Abe-aBe)\int \frac{(d+ex)^{3/2}}{(a+bx)^5}\,dx}{2b(bd-ae)}$$

$$= -\frac{(2bBd-Abe-aBe)(d+ex)^{3/2}}{8b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{5/2}}{5b(bd-ae)(a+bx)^5} + \frac{(3e(2bBd-Abe-aBe))}{16b^2(bd-ae)}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{(2bBd-Abe-aBe)(d+ex)^{3/2}}{8b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+e}{5b(bd-ae)(a+}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} - \frac{(2bBd-Abe-}{8b^2(bd-ae}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-Abe}{128b^3(bd-}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-Abe}{128b^3(bd-}$$

$$= -\frac{e(2bBd-Abe-aBe)\sqrt{d+ex}}{16b^3(bd-ae)(a+bx)^3} - \frac{e^2(2bBd-Abe-aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2(a+bx)^2} + \frac{3e^3(2bBd-Abe}{128b^3(bd-}$$

Mathematica [C] time = 0.06, size = 98, normalized size = 0.31

$$\frac{(d+ex)^{5/2}\left(\frac{5e^4(aBe+Abe-2bBd)\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{5aB-5Ab}{(a+bx)^5}\right)}{25b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(5/2)*((-5*A*b + 5*a*B)/(a + b*x)^5 + (5*e^4*(-2*b*B*d + A*b*e +
 a*B*e)*Hypergeometric2F1[5/2, 5, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^5))/(25*b*(b*d - a*e))
```

fricas [B] time = 1.14, size = 2349, normalized size = 7.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/1280*(15*(2*B*a^5*b*d*e^4 - (B*a^6 + A*a^5*b)*e^5 + (2*B*b^6*d*e^4 - (B*
a*b^5 + A*b^6)*e^5)*x^5 + 5*(2*B*a*b^5*d*e^4 - (B*a^2*b^4 + A*a*b^5)*e^5)*x
^4 + 10*(2*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(2*B*a^3
*b^3*d*e^4 - (B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(2*B*a^4*b^2*d*e^4 - (B*a
^5*b + A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*
sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(32*(B*a*b^6 + 4*A*b^7)*d
^5 - 16*(6*B*a^2*b^5 + 29*A*a*b^6)*d^4*e + 4*(19*B*a^3*b^4 + 146*A*a^2*b^5)
*d^3*e^2 + 2*(4*B*a^4*b^3 - 129*A*a^3*b^4)*d^2*e^3 - 5*(7*B*a^5*b^2 + A*a^4
*b^3)*d*e^4 + 15*(B*a^6*b + A*a^5*b^2)*e^5 - 15*(2*B*b^7*d^2*e^3 - (3*B*a*b
^6 + A*b^7)*d*e^4 + (B*a^2*b^5 + A*a*b^6)*e^5)*x^4 + 10*(2*B*b^7*d^3*e^2 -
(17*B*a*b^6 + A*b^7)*d^2*e^3 + 2*(11*B*a^2*b^5 + 4*A*a*b^6)*d*e^4 - 7*(B*a^
3*b^4 + A*a^2*b^5)*e^5)*x^3 + 2*(120*B*b^7*d^4*e - 2*(227*B*a*b^6 - 2*A*b^7
)*d^3*e^2 + 27*(21*B*a^2*b^5 - A*a*b^6)*d^2*e^3 - 3*(99*B*a^3*b^4 - 29*A*a^
2*b^5)*d*e^4 + 64*(B*a^4*b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 - 8*(3
1*B*a*b^6 - 11*A*b^7)*d^4*e + 2*(107*B*a^2*b^5 - 172*A*a*b^6)*d^3*e^2 + (B*
a^3*b^4 + 489*A*a^2*b^5)*d^2*e^3 - 2*(41*B*a^4*b^3 + 134*A*a^3*b^4)*d*e^4 +
 35*(B*a^5*b^2 + A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^4 - 4*a^6*b^7
*d^3*e + 6*a^7*b^6*d^2*e^2 - 4*a^8*b^5*d*e^3 + a^9*b^4*e^4 + (b^13*d^4 - 4*
a*b^12*d^3*e + 6*a^2*b^11*d^2*e^2 - 4*a^3*b^10*d*e^3 + a^4*b^9*e^4)*x^5 + 5
*(a*b^12*d^4 - 4*a^2*b^11*d^3*e + 6*a^3*b^10*d^2*e^2 - 4*a^4*b^9*d*e^3 + a^
5*b^8*e^4)*x^4 + 10*(a^2*b^11*d^4 - 4*a^3*b^10*d^3*e + 6*a^4*b^9*d^2*e^2 -
4*a^5*b^8*d*e^3 + a^6*b^7*e^4)*x^3 + 10*(a^3*b^10*d^4 - 4*a^4*b^9*d^3*e + 6
*a^5*b^8*d^2*e^2 - 4*a^6*b^7*d*e^3 + a^7*b^6*e^4)*x^2 + 5*(a^4*b^9*d^4 - 4*
a^5*b^8*d^3*e + 6*a^6*b^7*d^2*e^2 - 4*a^7*b^6*d*e^3 + a^8*b^5*e^4)*x), 1/64
0*(15*(2*B*a^5*b*d*e^4 - (B*a^6 + A*a^5*b)*e^5 + (2*B*b^6*d*e^4 - (B*a*b^5
+ A*b^6)*e^5)*x^5 + 5*(2*B*a*b^5*d*e^4 - (B*a^2*b^4 + A*a*b^5)*e^5)*x^4 + 1
0*(2*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + A*a^2*b^4)*e^5)*x^3 + 10*(2*B*a^3*b^3*d
*e^4 - (B*a^4*b^2 + A*a^3*b^3)*e^5)*x^2 + 5*(2*B*a^4*b^2*d*e^4 - (B*a^5*b +
 A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e
*x + d)/(b*e*x + b*d)) - (32*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(6*B*a^2*b^5 + 29
*A*a*b^6)*d^4*e + 4*(19*B*a^3*b^4 + 146*A*a^2*b^5)*d^3*e^2 + 2*(4*B*a^4*b^3
 - 129*A*a^3*b^4)*d^2*e^3 - 5*(7*B*a^5*b^2 + A*a^4*b^3)*d*e^4 + 15*(B*a^6*b
 + A*a^5*b^2)*e^5 - 15*(2*B*b^7*d^2*e^3 - (3*B*a*b^6 + A*b^7)*d*e^4 + (B*a^
2*b^5 + A*a*b^6)*e^5)*x^4 + 10*(2*B*b^7*d^3*e^2 - (17*B*a*b^6 + A*b^7)*d^2*
e^3 + 2*(11*B*a^2*b^5 + 4*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + A*a^2*b^5)*e^5)*x
^3 + 2*(120*B*b^7*d^4*e - 2*(227*B*a*b^6 - 2*A*b^7)*d^3*e^2 + 27*(21*B*a^2*
b^5 - A*a*b^6)*d^2*e^3 - 3*(99*B*a^3*b^4 - 29*A*a^2*b^5)*d*e^4 + 64*(B*a^4*
b^3 - A*a^3*b^4)*e^5)*x^2 + 2*(80*B*b^7*d^5 - 8*(31*B*a*b^6 - 11*A*b^7)*d^4
*e + 2*(107*B*a^2*b^5 - 172*A*a*b^6)*d^3*e^2 + (B*a^3*b^4 + 489*A*a^2*b^5)*
d^2*e^3 - 2*(41*B*a^4*b^3 + 134*A*a^3*b^4)*d*e^4 + 35*(B*a^5*b^2 + A*a^4*b^
3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^4 - 4*a^6*b^7*d^3*e + 6*a^7*b^6*d^2*e^
2 - 4*a^8*b^5*d*e^3 + a^9*b^4*e^4 + (b^13*d^4 - 4*a*b^12*d^3*e + 6*a^2*b^11
*d^2*e^2 - 4*a^3*b^10*d*e^3 + a^4*b^9*e^4)*x^5 + 5*(a*b^12*d^4 - 4*a^2*b^11
*d^3*e + 6*a^3*b^10*d^2*e^2 - 4*a^4*b^9*d*e^3 + a^5*b^8*e^4)*x^4 + 10*(a^2*
b^11*d^4 - 4*a^3*b^10*d^3*e + 6*a^4*b^9*d^2*e^2 - 4*a^5*b^8*d*e^3 + a^6*b^7
*e^4)*x^3 + 10*(a^3*b^10*d^4 - 4*a^4*b^9*d^3*e + 6*a^5*b^8*d^2*e^2 - 4*a^6*
b^7*d*e^3 + a^7*b^6*e^4)*x^2 + 5*(a^4*b^9*d^4 - 4*a^5*b^8*d^3*e + 6*a^6*b^7
*d^2*e^2 - 4*a^7*b^6*d*e^3 + a^8*b^5*e^4)*x)]
```

giac [B] time = 0.27, size = 814, normalized size = 2.60

$$\frac{3\left(2\,Bbde^4-Bae^5-Abe^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{128\left(b^6d^3-3\,ab^5d^2e+3\,a^2b^4de^2-a^3b^3e^3\right)\sqrt{-b^2d+abe}}+\frac{30\,(xe+d)^{\frac{9}{2}}Bb^5de^4-140\,(xe+d)^{\frac{7}{2}}Bb^5d^2e^4+140\,(xe+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3/128*(2*B*b*d*e^4 - B*a*e^5 - A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3)*sqrt(-
b^2*d + a*b*e)) + 1/640*(30*(x*e + d)^(9/2)*B*b^5*d*e^4 - 140*(x*e + d)^(7/
2)*B*b^5*d^2*e^4 + 140*(x*e + d)^(3/2)*B*b^5*d^4*e^4 - 30*sqrt(x*e + d)*B*b
^5*d^5*e^4 - 15*(x*e + d)^(9/2)*B*a*b^4*e^5 - 15*(x*e + d)^(9/2)*A*b^5*e^5
+ 210*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 70*(x*e + d)^(7/2)*A*b^5*d*e^5 + 128*
(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 128*(x*e + d)^(5/2)*A*b^5*d^2*e^5 - 490*(
x*e + d)^(3/2)*B*a*b^4*d^3*e^5 - 70*(x*e + d)^(3/2)*A*b^5*d^3*e^5 + 135*sqr
t(x*e + d)*B*a*b^4*d^4*e^5 + 15*sqrt(x*e + d)*A*b^5*d^4*e^5 - 70*(x*e + d)^
(7/2)*B*a^2*b^3*e^6 - 70*(x*e + d)^(7/2)*A*a*b^4*e^6 - 256*(x*e + d)^(5/2)*
B*a^2*b^3*d*e^6 + 256*(x*e + d)^(5/2)*A*a*b^4*d*e^6 + 630*(x*e + d)^(3/2)*B
*a^2*b^3*d^2*e^6 + 210*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 - 240*sqrt(x*e + d)*
B*a^2*b^3*d^3*e^6 - 60*sqrt(x*e + d)*A*a*b^4*d^3*e^6 + 128*(x*e + d)^(5/2)*
B*a^3*b^2*e^7 - 128*(x*e + d)^(5/2)*A*a^2*b^3*e^7 - 350*(x*e + d)^(3/2)*B*a
^3*b^2*d*e^7 - 210*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 + 210*sqrt(x*e + d)*B*a^
3*b^2*d^2*e^7 + 90*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 70*(x*e + d)^(3/2)*B*a
^4*b*e^8 + 70*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 90*sqrt(x*e + d)*B*a^4*b*d*e^
8 - 60*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 15*sqrt(x*e + d)*B*a^5*e^9 + 15*sqrt
(x*e + d)*A*a^4*b*e^9)/((b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^
3*e^3)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 871, normalized size = 2.78

$$\frac{3\,(ex+d)^{\frac{9}{2}}\,A\,b^2e^5}{128\,(bex+ae)^5\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{3\,(ex+d)^{\frac{9}{2}}\,Bab\,e^5}{128\,(bex+ae)^5\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}-\frac{}{64\,(bex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/128*e^5/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(
e*x+d)^(9/2)*A+3/128*e^5/(b*e*x+a*e)^5*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2
*e-b^3*d^3)*(e*x+d)^(9/2)*a*B-3/64*e^4/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d
*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(9/2)*B*d+7/64*e^5/(b*e*x+a*e)^5/(a^2*e
^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(7/2)*A*b+7/64*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a
*b*d*e+b^2*d^2)*(e*x+d)^(7/2)*a*B-7/32*e^4/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e
+b^2*d^2)*(e*x+d)^(7/2)*B*b*d+1/5*e^5/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(5/2)
*A-1/5*e^5/(b*e*x+a*e)^5/(a*e-b*d)/b*(e*x+d)^(5/2)*B*a-7/64*e^5/(b*e*x+a*e)
^5/b*(e*x+d)^(3/2)*A-7/64*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(3/2)*a*B+7/32*e^4/
(b*e*x+a*e)^5/b*(e*x+d)^(3/2)*B*d-3/128*e^6/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)
*A*a+3/128*e^5/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*A*d-3/128*e^6/(b*e*x+a*e)^5/b^
3*(e*x+d)^(1/2)*B*a^2+9/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*B*a*d-3/64*
e^4/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d^2+3/128*e^5/b^2/(a^3*e^3-3*a^2*b*d*e^
2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*A+3/128*e^5/b^3/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)
/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-3/64*e
```

```
^4/b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.23, size = 535, normalized size = 1.71

$$\frac{\frac{7\,{\left(d+e\,x\right)}^{7/2}\,\left(A\,b\,e^5+B\,a\,e^5-2\,B\,b\,d\,e^4\right)}{64\,{\left(a\,e-b\,d\right)}^2}-\frac{7\,(d+}{}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*(d + e*x)^(7/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(64*(a*e - b*d)^2) -
 (7*(d + e*x)^(3/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(64*b^2) - (3*(a*e -
 b*d)*(d + e*x)^(1/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(128*b^3) + (3*b*(
d + e*x)^(9/2)*(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4))/(128*(a*e - b*d)^3) + ((A
*b*e^5 - B*a*e^5)*(d + e*x)^(5/2))/(5*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4
 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) -
(d + e*x)^2*(10*b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*
e) + b^5*(d + e*x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^
5 + (d + e*x)^3*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d
^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (3*e^4*atan(
(b^(1/2)*e^4*(d + e*x)^(1/2)*(A*b*e + B*a*e - 2*B*b*d))/((a*e - b*d)^(1/2)*
(A*b*e^5 + B*a*e^5 - 2*B*b*d*e^4)))*(A*b*e + B*a*e - 2*B*b*d))/(128*b^(7/2)
*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1830 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$\frac{e^4(-3aBe-7Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{5/2}(bd-ae)^{9/2}}-\frac{e^3\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{128b^2(a+bx)(bd-ae)^4}+\frac{e^2\sqrt{d+ex}\,(-3aBe-7Abe+}{192b^2(a+bx)^2(bd-a}$$

```
[Out] -1/5*(A*b-B*a)*(e*x+d)^(3/2)/b/(-a*e+b*d)/(b*x+a)^5+1/128*e^4*(-7*A*b*e-3*B
*a*e+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(5/2)/(-a*
e+b*d)^(9/2)-1/40*(-7*A*b*e-3*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/
(b*x+a)^4-1/240*e*(-7*A*b*e-3*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)^
2/(b*x+a)^3+1/192*e^2*(-7*A*b*e-3*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b
*d)^3/(b*x+a)^2-1/128*e^3*(-7*A*b*e-3*B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b^2/(-a
*e+b*d)^4/(b*x+a)
```

Rubi **[A]** time = 0.29, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.182, Rules used = $\{27, 78, 47, 51, 63, 208\}$

$$-\frac{e^3\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{128b^2(a+bx)(bd-ae)^4}+\frac{e^2\sqrt{d+ex}\,(-3aBe-7Abe+10bBd)}{192b^2(a+bx)^2(bd-ae)^3}+\frac{e^4(-3aBe-7Abe+10bBd)\tanh^{-1}\Big(}{128b^{5/2}(bd-ae)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -((10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(40*b^2*(b*d - a*e)*(a + b*
x)^4) - (e*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(240*b^2*(b*d - a*
e)^2*(a + b*x)^3) + (e^2*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(192
*b^2*(b*d - a*e)^3*(a + b*x)^2) - (e^3*(10*b*B*d - 7*A*b*e - 3*a*B*e)*Sqrt[
d + e*x])/(128*b^2*(b*d - a*e)^4*(a + b*x)) - ((A*b - a*B)*(d + e*x)^(3/2))
/(5*b*(b*d - a*e)*(a + b*x)^5) + (e^4*(10*b*B*d - 7*A*b*e - 3*a*B*e)*ArcTan
h[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(5/2)*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(A+Bx)\sqrt{d+ex}}{(a+bx)^6}\,dx$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-7Abe-3aBe)\int \frac{\sqrt{d+ex}}{(a+bx)^5}\,dx}{10b(bd-ae)}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{(Ab-aB)(d+ex)^{3/2}}{5b(bd-ae)(a+bx)^5} + \frac{(e(10bBd-7Abe-3}{80b^2(}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} - \frac{(Ab-a}{5b(bd-}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bB}{192}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bB}{192}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bB}{192}$$

$$= -\frac{(10bBd-7Abe-3aBe)\sqrt{d+ex}}{40b^2(bd-ae)(a+bx)^4} - \frac{e(10bBd-7Abe-3aBe)\sqrt{d+ex}}{240b^2(bd-ae)^2(a+bx)^3} + \frac{e^2(10bB}{192}$$

Mathematica [C] time = 0.06, size = 99, normalized size = 0.32

$$\frac{(d+ex)^{3/2}\left(\frac{e^4(3aBe+7Abe-10bBd)\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{3aB-3Ab}{(a+bx)^5}\right)}{15b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(3/2)*((-3*A*b + 3*a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 7*A*b*e
+ 3*a*B*e)*Hypergeometric2F1[3/2, 5, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d
- a*e)^5))/(15*b*(b*d - a*e))
```

fricas **[B]** time = 0.78, size = 2580, normalized size = 8.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(15*(10*B*a^5*b*d*e^4 - (3*B*a^6 + 7*A*a^5*b)*e^5 + (10*B*b^6*d*e^
4 - (3*B*a*b^5 + 7*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (3*B*a^2*b^4 + 7
*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (3*B*a^3*b^3 + 7*A*a^2*b^4)*e
^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (3*B*a^4*b^2 + 7*A*a^3*b^3)*e^5)*x^2 + 5
*(10*B*a^4*b^2*d*e^4 - (3*B*a^5*b + 7*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e
)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)
) + 2*(96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(28*B*a^2*b^5 + 117*A*a*b^6)*d^4*e +
 4*(197*B*a^3*b^4 + 898*A*a^2*b^5)*d^3*e^2 - 2*(278*B*a^4*b^3 + 1657*A*a^3*
b^4)*d^2*e^3 + 5*(33*B*a^5*b^2 + 263*A*a^4*b^3)*d*e^4 - 15*(3*B*a^6*b + 7*A
*a^5*b^2)*e^5 + 15*(10*B*b^7*d^2*e^3 - (13*B*a*b^6 + 7*A*b^7)*d*e^4 + (3*B*
a^2*b^5 + 7*A*a*b^6)*e^5)*x^4 - 10*(10*B*b^7*d^3*e^2 - (83*B*a*b^6 + 7*A*b^
7)*d^2*e^3 + 2*(47*B*a^2*b^5 + 28*A*a*b^6)*d*e^4 - 7*(3*B*a^3*b^4 + 7*A*a^2
*b^5)*e^5)*x^3 + 2*(40*B*b^7*d^4*e - 2*(141*B*a*b^6 + 14*A*b^7)*d^3*e^2 + 3
*(317*B*a^2*b^5 + 63*A*a*b^6)*d^2*e^3 - (901*B*a^3*b^4 + 609*A*a^2*b^5)*d*e
^4 + 64*(3*B*a^4*b^3 + 7*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(143*B*
a*b^6 - 3*A*b^7)*d^4*e + 2*(1041*B*a^2*b^5 - 76*A*a*b^6)*d^3*e^2 - 3*(529*B
*a^3*b^4 - 139*A*a^2*b^5)*d^2*e^3 + 2*(257*B*a^4*b^3 - 342*A*a^3*b^4)*d*e^4
 - 5*(21*B*a^5*b^2 - 79*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^5 - 5*
a^6*b^7*d^4*e + 10*a^7*b^6*d^3*e^2 - 10*a^8*b^5*d^2*e^3 + 5*a^9*b^4*d*e^4 -
 a^10*b^3*e^5 + (b^13*d^5 - 5*a*b^12*d^4*e + 10*a^2*b^11*d^3*e^2 - 10*a^3*b
^10*d^2*e^3 + 5*a^4*b^9*d*e^4 - a^5*b^8*e^5)*x^5 + 5*(a*b^12*d^5 - 5*a^2*b^
11*d^4*e + 10*a^3*b^10*d^3*e^2 - 10*a^4*b^9*d^2*e^3 + 5*a^5*b^8*d*e^4 - a^6
*b^7*e^5)*x^4 + 10*(a^2*b^11*d^5 - 5*a^3*b^10*d^4*e + 10*a^4*b^9*d^3*e^2 -
10*a^5*b^8*d^2*e^3 + 5*a^6*b^7*d*e^4 - a^7*b^6*e^5)*x^3 + 10*(a^3*b^10*d^5
- 5*a^4*b^9*d^4*e + 10*a^5*b^8*d^3*e^2 - 10*a^6*b^7*d^2*e^3 + 5*a^7*b^6*d*e
^4 - a^8*b^5*e^5)*x^2 + 5*(a^4*b^9*d^5 - 5*a^5*b^8*d^4*e + 10*a^6*b^7*d^3*e
^2 - 10*a^7*b^6*d^2*e^3 + 5*a^8*b^5*d*e^4 - a^9*b^4*e^5)*x), -1/1920*(15*(1
0*B*a^5*b*d*e^4 - (3*B*a^6 + 7*A*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (3*B*a*b^5
+ 7*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (3*B*a^2*b^4 + 7*A*a*b^5)*e^5)*
x^4 + 10*(10*B*a^2*b^4*d*e^4 - (3*B*a^3*b^3 + 7*A*a^2*b^4)*e^5)*x^3 + 10*(1
0*B*a^3*b^3*d*e^4 - (3*B*a^4*b^2 + 7*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*
d*e^4 - (3*B*a^5*b + 7*A*a^4*b^2)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(
-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (96*(B*a*b^6 + 4*A*b^7)*d^5
- 16*(28*B*a^2*b^5 + 117*A*a*b^6)*d^4*e + 4*(197*B*a^3*b^4 + 898*A*a^2*b^5)
*d^3*e^2 - 2*(278*B*a^4*b^3 + 1657*A*a^3*b^4)*d^2*e^3 + 5*(33*B*a^5*b^2 + 2
63*A*a^4*b^3)*d*e^4 - 15*(3*B*a^6*b + 7*A*a^5*b^2)*e^5 + 15*(10*B*b^7*d^2*e
^3 - (13*B*a*b^6 + 7*A*b^7)*d*e^4 + (3*B*a^2*b^5 + 7*A*a*b^6)*e^5)*x^4 - 10
*(10*B*b^7*d^3*e^2 - (83*B*a*b^6 + 7*A*b^7)*d^2*e^3 + 2*(47*B*a^2*b^5 + 28*
A*a*b^6)*d*e^4 - 7*(3*B*a^3*b^4 + 7*A*a^2*b^5)*e^5)*x^3 + 2*(40*B*b^7*d^4*e
 - 2*(141*B*a*b^6 + 14*A*b^7)*d^3*e^2 + 3*(317*B*a^2*b^5 + 63*A*a*b^6)*d^2*
e^3 - (901*B*a^3*b^4 + 609*A*a^2*b^5)*d*e^4 + 64*(3*B*a^4*b^3 + 7*A*a^3*b^4
)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(143*B*a*b^6 - 3*A*b^7)*d^4*e + 2*(1041*B
*a^2*b^5 - 76*A*a*b^6)*d^3*e^2 - 3*(529*B*a^3*b^4 - 139*A*a^2*b^5)*d^2*e^3
+ 2*(257*B*a^4*b^3 - 342*A*a^3*b^4)*d*e^4 - 5*(21*B*a^5*b^2 - 79*A*a^4*b^3)
*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^5 - 5*a^6*b^7*d^4*e + 10*a^7*b^6*d^3*e^2
 - 10*a^8*b^5*d^2*e^3 + 5*a^9*b^4*d*e^4 - a^10*b^3*e^5 + (b^13*d^5 - 5*a*b^
12*d^4*e + 10*a^2*b^11*d^3*e^2 - 10*a^3*b^10*d^2*e^3 + 5*a^4*b^9*d*e^4 - a^
5*b^8*e^5)*x^5 + 5*(a*b^12*d^5 - 5*a^2*b^11*d^4*e + 10*a^3*b^10*d^3*e^2 - 1
0*a^4*b^9*d^2*e^3 + 5*a^5*b^8*d*e^4 - a^6*b^7*e^5)*x^4 + 10*(a^2*b^11*d^5 -
 5*a^3*b^10*d^4*e + 10*a^4*b^9*d^3*e^2 - 10*a^5*b^8*d^2*e^3 + 5*a^6*b^7*d*e
^4 - a^7*b^6*e^5)*x^3 + 10*(a^3*b^10*d^5 - 5*a^4*b^9*d^4*e + 10*a^5*b^8*d^3
*e^2 - 10*a^6*b^7*d^2*e^3 + 5*a^7*b^6*d*e^4 - a^8*b^5*e^5)*x^2 + 5*(a^4*b^9
*d^5 - 5*a^5*b^8*d^4*e + 10*a^6*b^7*d^3*e^2 - 10*a^7*b^6*d^2*e^3 + 5*a^8*b^
5*d*e^4 - a^9*b^4*e^5)*x)]
```

giac [B] time = 0.27, size = 857, normalized size = 2.74

$$-\frac{\left(10\,Bbde^4 - 3\,Bae^5 - 7\,Abe^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{128\left(b^6d^4 - 4\,ab^5d^3e + 6\,a^2b^4d^2e^2 - 4\,a^3b^3de^3 + a^4b^2e^4\right)\sqrt{-b^2d+abe}} - \frac{150\,(xe+d)^{\frac{9}{2}}Bb^5de^4 - 700\,(xe+d)^{\frac{7}{2}}B}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -1/128*(10*B*b*d*e^4 - 3*B*a*e^5 - 7*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/((b^6*d^4 - 4*a*b^5*d^3*e + 6*a^2*b^4*d^2*e^2 - 4*a^3*b^3*d
*e^3 + a^4*b^2*e^4)*sqrt(-b^2*d + a*b*e)) - 1/1920*(150*(x*e + d)^(9/2)*B*b
^5*d*e^4 - 700*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 1280*(x*e + d)^(5/2)*B*b^5*d
^3*e^4 - 580*(x*e + d)^(3/2)*B*b^5*d^4*e^4 - 150*sqrt(x*e + d)*B*b^5*d^5*e^
4 - 45*(x*e + d)^(9/2)*B*a*b^4*e^5 - 105*(x*e + d)^(9/2)*A*b^5*e^5 + 910*(x
*e + d)^(7/2)*B*a*b^4*d*e^5 + 490*(x*e + d)^(7/2)*A*b^5*d*e^5 - 2944*(x*e +
 d)^(5/2)*B*a*b^4*d^2*e^5 - 896*(x*e + d)^(5/2)*A*b^5*d^2*e^5 + 1530*(x*e +
 d)^(3/2)*B*a*b^4*d^3*e^5 + 790*(x*e + d)^(3/2)*A*b^5*d^3*e^5 + 645*sqrt(x*
e + d)*B*a*b^4*d^4*e^5 + 105*sqrt(x*e + d)*A*b^5*d^4*e^5 - 210*(x*e + d)^(7
/2)*B*a^2*b^3*e^6 - 490*(x*e + d)^(7/2)*A*a*b^4*e^6 + 2048*(x*e + d)^(5/2)*
B*a^2*b^3*d*e^6 + 1792*(x*e + d)^(5/2)*A*a*b^4*d*e^6 - 1110*(x*e + d)^(3/2)
*B*a^2*b^3*d^2*e^6 - 2370*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 - 1080*sqrt(x*e +
 d)*B*a^2*b^3*d^3*e^6 - 420*sqrt(x*e + d)*A*a*b^4*d^3*e^6 - 384*(x*e + d)^(
5/2)*B*a^3*b^2*e^7 - 896*(x*e + d)^(5/2)*A*a^2*b^3*e^7 - 50*(x*e + d)^(3/2)
*B*a^3*b^2*d*e^7 + 2370*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 + 870*sqrt(x*e + d)
*B*a^3*b^2*d^2*e^7 + 630*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 210*(x*e + d)^(3
/2)*B*a^4*b*e^8 - 790*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 330*sqrt(x*e + d)*B*a
^4*b*d*e^8 - 420*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 45*sqrt(x*e + d)*B*a^5*e^9
 + 105*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*d^4 - 4*a*b^5*d^3*e + 6*a^2*b^4*d^2
*e^2 - 4*a^3*b^3*d*e^3 + a^4*b^2*e^4)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1037, normalized size = 3.31

$$\frac{7\,(ex+d)^{\frac{9}{2}}\,A\,b^3e^5}{128\,(bex+ae)^5\left(a^4e^4 - 4a^3bd\,e^3 + 6a^2b^2d^2e^2 - 4a\,b^3d^3e + b^4d^4\right)} + \frac{3\,(ex+d)^{\frac{9}{2}}\,Ba\,b^2e^5}{128\,(bex+ae)^5\left(a^4e^4 - 4a^3bd\,e^3 + 6a^2b^2d^2e^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 7/128*e^5/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^
3*d^3*e+b^4*d^4)*(e*x+d)^(9/2)*A+3/128*e^5/(b*e*x+a*e)^5*b^2/(a^4*e^4-4*a^3
*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(9/2)*a*B-5/64*e^
4/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+
b^4*d^4)*(e*x+d)^(9/2)*B*d+49/192*e^5/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*
e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*A+7/64*e^5/(b*e*x+a*e)^5*b/(a^3*e^
3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*a*B-35/96*e^4/(b*e*x+a
*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(7/2)*B*d+7
/15*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*A*b+1/5*e^5
```

```
/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*a*B-2/3*e^4/(b*e*x
+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(5/2)*B*b*d+79/192*e^5/(b*e*x+a
*e)^5/(a*e-b*d)*(e*x+d)^(3/2)*A-7/64*e^5/(b*e*x+a*e)^5/b/(a*e-b*d)*(e*x+d)^
(3/2)*a*B-29/96*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(3/2)*B*d-7/128*e^5/(b*
e*x+a*e)^5/b*(e*x+d)^(1/2)*A-3/128*e^5/(b*e*x+a*e)^5/b^2*(e*x+d)^(1/2)*a*B+
5/64*e^4/(b*e*x+a*e)^5/b*(e*x+d)^(1/2)*B*d+7/128*e^5/b/(a^4*e^4-4*a^3*b*d*e
^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+3/128*e^5/b^2/(a^4*e^4-4*a^3*b*d*e^3+6*a
^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-5/64*e^4/b/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*
d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.24, size = 564, normalized size = 1.80

$$\frac{\frac{7\,{\left(d+e\,x\right)}^{7/2}\,\left(7\,A\,b^2\,e^5-10\,B\,d\,b^2\,e^4+3\,B\,a\,b\,e^5\right)}{192\,{\left(a\,e-b\,d\right)}^3}-\frac{\sqrt{d+e\,x}\,(7\,A\,b}{}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\,e^2-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((7*(d + e*x)^(7/2)*(7*A*b^2*e^5 + 3*B*a*b*e^5 - 10*B*b^2*d*e^4))/(192*(a*e
 - b*d)^3) - ((d + e*x)^(1/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(128*
b^2) + ((d + e*x)^(5/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(15*(a*e -
b*d)^2) + (b^2*(d + e*x)^(9/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*B*b*d*e^4))/(128
*(a*e - b*d)^4) - ((d + e*x)^(3/2)*(21*B*a*e^5 - 79*A*b*e^5 + 58*B*b*d*e^4)
)/(192*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e
^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*b^5*d^3 - 10*a^
3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*x)^5 - (5*b^5*d
 - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*(10*b^5*d^2 + 1
0*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5
*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(7*A
*b*e + 3*B*a*e - 10*B*b*d))/((a*e - b*d)^(1/2)*(7*A*b*e^5 + 3*B*a*e^5 - 10*
B*b*d*e^4)))*(7*A*b*e + 3*B*a*e - 10*B*b*d))/(128*b^(5/2)*(a*e - b*d)^(9/2)
)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1831 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=313

$$-\frac{7e^4(-aBe-9Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{3/2}(bd-ae)^{11/2}}+\frac{7e^3\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{128b(a+bx)(bd-ae)^5}-\frac{7e^2\sqrt{d+ex}\,(-aBe-9A}{192b(a+bx)^2(ba}$$

```
[Out] -7/128*e^4*(-9*A*b*e-B*a*e+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*
d)^(1/2))/b^(3/2)/(-a*e+b*d)^(11/2)-1/5*(A*b-B*a)*(e*x+d)^(1/2)/b/(-a*e+b*d
)/(b*x+a)^5-1/40*(-9*A*b*e-B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/(b*
x+a)^4+7/240*e*(-9*A*b*e-B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^3/(b*x+
a)^3-7/192*e^2*(-9*A*b*e-B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^4/(b*x+
a)^2+7/128*e^3*(-9*A*b*e-B*a*e+10*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^5/(b*x+
a)
```

Rubi [A] time = 0.31, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$-\frac{7e^4(-aBe-9Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128b^{3/2}(bd-ae)^{11/2}}+\frac{7e^3\sqrt{d+ex}\,(-aBe-9Abe+10bBd)}{128b(a+bx)(bd-ae)^5}-\frac{7e^2\sqrt{d+ex}\,(-aBe-9A}{192b(a+bx)^2(ba}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -((A*b - a*B)*Sqrt[d + e*x])/(5*b*(b*d - a*e)*(a + b*x)^5) - ((10*b*B*d - 9
*A*b*e - a*B*e)*Sqrt[d + e*x])/(40*b*(b*d - a*e)^2*(a + b*x)^4) + (7*e*(10*
b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(240*b*(b*d - a*e)^3*(a + b*x)^3) -
 (7*e^2*(10*b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(192*b*(b*d - a*e)^4*(a
 + b*x)^2) + (7*e^3*(10*b*B*d - 9*A*b*e - a*B*e)*Sqrt[d + e*x])/(128*b*(b*d
 - a*e)^5*(a + b*x)) - (7*e^4*(10*b*B*d - 9*A*b*e - a*B*e)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*b^(3/2)*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{(a+bx)^6\sqrt{d+ex}}\,dx$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} + \frac{(10bBd-9Abe-aBe)\int \frac{1}{(a+bx)^5\sqrt{d+ex}}\,dx}{10b(bd-ae)}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} - \frac{(7e(10bBd-9A}{8}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A}{240b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A}{240b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A}{240b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A}{240b(bd-}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{5b(bd-ae)(a+bx)^5} - \frac{(10bBd-9Abe-aBe)\sqrt{d+ex}}{40b(bd-ae)^2(a+bx)^4} + \frac{7e(10bBd-9A}{240b(bd-}$$

Mathematica [C] time = 0.05, size = 97, normalized size = 0.31

$$\frac{\sqrt{d+ex}\left(\frac{e^4(aBe+9Abe-10bBd)\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{aB-Ab}{(a+bx)^5}\right)}{5b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (Sqrt[d + e*x]*((-(A*b) + a*B)/(a + b*x)^5 + (e^4*(-10*b*B*d + 9*A*b*e + a*
B*e)*Hypergeometric2F1[1/2, 5, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)
^5))/(5*b*(b*d - a*e))
```

fricas [B] time = 0.65, size = 2715, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/3840*(105*(10*B*a^5*b*d*e^4 - (B*a^6 + 9*A*a^5*b)*e^5 + (10*B*b^6*d*e^4
- (B*a*b^5 + 9*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^5*d*e^4 - (B*a^2*b^4 + 9*A*a*b
^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (B*a^3*b^3 + 9*A*a^2*b^4)*e^5)*x^3
+ 10*(10*B*a^3*b^3*d*e^4 - (B*a^4*b^2 + 9*A*a^3*b^3)*e^5)*x^2 + 5*(10*B*a^4
*b^2*d*e^4 - (B*a^5*b + 9*A*a^4*b^2)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(96*(B
*a*b^6 + 4*A*b^7)*d^5 - 16*(38*B*a^2*b^5 + 147*A*a*b^6)*d^4*e + 12*(139*B*a
^3*b^4 + 506*A*a^2*b^5)*d^3*e^2 - 6*(456*B*a^4*b^3 + 1429*A*a^3*b^4)*d^2*e^
3 + 5*(295*B*a^5*b^2 + 1473*A*a^4*b^3)*d*e^4 + 15*(7*B*a^6*b - 193*A*a^5*b^
2)*e^5 - 105*(10*B*b^7*d^2*e^3 - (11*B*a*b^6 + 9*A*b^7)*d*e^4 + (B*a^2*b^5
+ 9*A*a*b^6)*e^5)*x^4 + 70*(10*B*b^7*d^3*e^2 - 9*(9*B*a*b^6 + A*b^7)*d^2*e^
3 + 6*(13*B*a^2*b^5 + 12*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + 9*A*a^2*b^5)*e^5)*
x^3 - 14*(40*B*b^7*d^4*e - 2*(137*B*a*b^6 + 18*A*b^7)*d^3*e^2 + 3*(299*B*a^
2*b^5 + 81*A*a*b^6)*d^2*e^3 - (727*B*a^3*b^4 + 783*A*a^2*b^5)*d*e^4 + 64*(B
*a^4*b^3 + 9*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(193*B*a*b^6 + 27*A
*b^7)*d^4*e + 2*(2161*B*a^2*b^5 + 684*A*a*b^6)*d^3*e^2 - 3*(2419*B*a^3*b^4
+ 1251*A*a^2*b^5)*d^2*e^3 + 2*(2317*B*a^4*b^3 + 3078*A*a^3*b^4)*d*e^4 - 395
*(B*a^5*b^2 + 9*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^6 - 6*a^6*b^7*
d^5*e + 15*a^7*b^6*d^4*e^2 - 20*a^8*b^5*d^3*e^3 + 15*a^9*b^4*d^2*e^4 - 6*a^
10*b^3*d*e^5 + a^11*b^2*e^6 + (b^13*d^6 - 6*a*b^12*d^5*e + 15*a^2*b^11*d^4*
e^2 - 20*a^3*b^10*d^3*e^3 + 15*a^4*b^9*d^2*e^4 - 6*a^5*b^8*d*e^5 + a^6*b^7*
e^6)*x^5 + 5*(a*b^12*d^6 - 6*a^2*b^11*d^5*e + 15*a^3*b^10*d^4*e^2 - 20*a^4*
b^9*d^3*e^3 + 15*a^5*b^8*d^2*e^4 - 6*a^6*b^7*d*e^5 + a^7*b^6*e^6)*x^4 + 10*
(a^2*b^11*d^6 - 6*a^3*b^10*d^5*e + 15*a^4*b^9*d^4*e^2 - 20*a^5*b^8*d^3*e^3
+ 15*a^6*b^7*d^2*e^4 - 6*a^7*b^6*d*e^5 + a^8*b^5*e^6)*x^3 + 10*(a^3*b^10*d^
6 - 6*a^4*b^9*d^5*e + 15*a^5*b^8*d^4*e^2 - 20*a^6*b^7*d^3*e^3 + 15*a^7*b^6*
d^2*e^4 - 6*a^8*b^5*d*e^5 + a^9*b^4*e^6)*x^2 + 5*(a^4*b^9*d^6 - 6*a^5*b^8*d
^5*e + 15*a^6*b^7*d^4*e^2 - 20*a^7*b^6*d^3*e^3 + 15*a^8*b^5*d^2*e^4 - 6*a^9
*b^4*d*e^5 + a^10*b^3*e^6)*x), 1/1920*(105*(10*B*a^5*b*d*e^4 - (B*a^6 + 9*A
*a^5*b)*e^5 + (10*B*b^6*d*e^4 - (B*a*b^5 + 9*A*b^6)*e^5)*x^5 + 5*(10*B*a*b^
5*d*e^4 - (B*a^2*b^4 + 9*A*a*b^5)*e^5)*x^4 + 10*(10*B*a^2*b^4*d*e^4 - (B*a^
3*b^3 + 9*A*a^2*b^4)*e^5)*x^3 + 10*(10*B*a^3*b^3*d*e^4 - (B*a^4*b^2 + 9*A*a
^3*b^3)*e^5)*x^2 + 5*(10*B*a^4*b^2*d*e^4 - (B*a^5*b + 9*A*a^4*b^2)*e^5)*x)*
sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d
)) - (96*(B*a*b^6 + 4*A*b^7)*d^5 - 16*(38*B*a^2*b^5 + 147*A*a*b^6)*d^4*e +
12*(139*B*a^3*b^4 + 506*A*a^2*b^5)*d^3*e^2 - 6*(456*B*a^4*b^3 + 1429*A*a^3*
b^4)*d^2*e^3 + 5*(295*B*a^5*b^2 + 1473*A*a^4*b^3)*d*e^4 + 15*(7*B*a^6*b - 1
93*A*a^5*b^2)*e^5 - 105*(10*B*b^7*d^2*e^3 - (11*B*a*b^6 + 9*A*b^7)*d*e^4 +
(B*a^2*b^5 + 9*A*a*b^6)*e^5)*x^4 + 70*(10*B*b^7*d^3*e^2 - 9*(9*B*a*b^6 + A*
b^7)*d^2*e^3 + 6*(13*B*a^2*b^5 + 12*A*a*b^6)*d*e^4 - 7*(B*a^3*b^4 + 9*A*a^2
*b^5)*e^5)*x^3 - 14*(40*B*b^7*d^4*e - 2*(137*B*a*b^6 + 18*A*b^7)*d^3*e^2 +
3*(299*B*a^2*b^5 + 81*A*a*b^6)*d^2*e^3 - (727*B*a^3*b^4 + 783*A*a^2*b^5)*d*
e^4 + 64*(B*a^4*b^3 + 9*A*a^3*b^4)*e^5)*x^2 + 2*(240*B*b^7*d^5 - 8*(193*B*a
*b^6 + 27*A*b^7)*d^4*e + 2*(2161*B*a^2*b^5 + 684*A*a*b^6)*d^3*e^2 - 3*(2419
*B*a^3*b^4 + 1251*A*a^2*b^5)*d^2*e^3 + 2*(2317*B*a^4*b^3 + 3078*A*a^3*b^4)*
d*e^4 - 395*(B*a^5*b^2 + 9*A*a^4*b^3)*e^5)*x)*sqrt(e*x + d))/(a^5*b^8*d^6 -
 6*a^6*b^7*d^5*e + 15*a^7*b^6*d^4*e^2 - 20*a^8*b^5*d^3*e^3 + 15*a^9*b^4*d^2
*e^4 - 6*a^10*b^3*d*e^5 + a^11*b^2*e^6 + (b^13*d^6 - 6*a*b^12*d^5*e + 15*a^
2*b^11*d^4*e^2 - 20*a^3*b^10*d^3*e^3 + 15*a^4*b^9*d^2*e^4 - 6*a^5*b^8*d*e^5
 + a^6*b^7*e^6)*x^5 + 5*(a*b^12*d^6 - 6*a^2*b^11*d^5*e + 15*a^3*b^10*d^4*e^
2 - 20*a^4*b^9*d^3*e^3 + 15*a^5*b^8*d^2*e^4 - 6*a^6*b^7*d*e^5 + a^7*b^6*e^6
)*x^4 + 10*(a^2*b^11*d^6 - 6*a^3*b^10*d^5*e + 15*a^4*b^9*d^4*e^2 - 20*a^5*b
^8*d^3*e^3 + 15*a^6*b^7*d^2*e^4 - 6*a^7*b^6*d*e^5 + a^8*b^5*e^6)*x^3 + 10*(
a^3*b^10*d^6 - 6*a^4*b^9*d^5*e + 15*a^5*b^8*d^4*e^2 - 20*a^6*b^7*d^3*e^3 +
15*a^7*b^6*d^2*e^4 - 6*a^8*b^5*d*e^5 + a^9*b^4*e^6)*x^2 + 5*(a^4*b^9*d^6 -
6*a^5*b^8*d^5*e + 15*a^6*b^7*d^4*e^2 - 20*a^7*b^6*d^3*e^3 + 15*a^8*b^5*d^2*
e^4 - 6*a^9*b^4*d*e^5 + a^10*b^3*e^6)*x)]
```

giac [B] time = 0.30, size = 881, normalized size = 2.81

$$\frac{7\left(10\,Bbde^{4}-Bae^{5}-9\,Abe^{5}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{128\left(b^{6}d^{5}-5\,ab^{5}d^{4}e+10\,a^{2}b^{4}d^{3}e^{2}-10\,a^{3}b^{3}d^{2}e^{3}+5\,a^{4}b^{2}de^{4}-a^{5}be^{5}\right)\sqrt{-b^{2}d+abe}}+1050\,(xe+d)^{\frac{9}{2}}Bb^{5}de^{4}-490$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 7/128*(10*B*b*d*e^4 - B*a*e^5 - 9*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*a^3*b^3*d^
2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5)*sqrt(-b^2*d + a*b*e)) + 1/1920*(1050*(
x*e + d)^(9/2)*B*b^5*d*e^4 - 4900*(x*e + d)^(7/2)*B*b^5*d^2*e^4 + 8960*(x*e
 + d)^(5/2)*B*b^5*d^3*e^4 - 7900*(x*e + d)^(3/2)*B*b^5*d^4*e^4 + 2790*sqrt(
x*e + d)*B*b^5*d^5*e^4 - 105*(x*e + d)^(9/2)*B*a*b^4*e^5 - 945*(x*e + d)^(9
/2)*A*b^5*e^5 + 5390*(x*e + d)^(7/2)*B*a*b^4*d*e^5 + 4410*(x*e + d)^(7/2)*A
*b^5*d*e^5 - 18816*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5 - 8064*(x*e + d)^(5/2)*A
*b^5*d^2*e^5 + 24490*(x*e + d)^(3/2)*B*a*b^4*d^3*e^5 + 7110*(x*e + d)^(3/2)
*A*b^5*d^3*e^5 - 11055*sqrt(x*e + d)*B*a*b^4*d^4*e^5 - 2895*sqrt(x*e + d)*A
*b^5*d^4*e^5 - 490*(x*e + d)^(7/2)*B*a^2*b^3*e^6 - 4410*(x*e + d)^(7/2)*A*a
*b^4*e^6 + 10752*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6 + 16128*(x*e + d)^(5/2)*A*
a*b^4*d*e^6 - 26070*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^6 - 21330*(x*e + d)^(3/
2)*A*a*b^4*d^2*e^6 + 16320*sqrt(x*e + d)*B*a^2*b^3*d^3*e^6 + 11580*sqrt(x*e
 + d)*A*a*b^4*d^3*e^6 - 896*(x*e + d)^(5/2)*B*a^3*b^2*e^7 - 8064*(x*e + d)^
(5/2)*A*a^2*b^3*e^7 + 10270*(x*e + d)^(3/2)*B*a^3*b^2*d*e^7 + 21330*(x*e +
d)^(3/2)*A*a^2*b^3*d*e^7 - 10530*sqrt(x*e + d)*B*a^3*b^2*d^2*e^7 - 17370*sq
rt(x*e + d)*A*a^2*b^3*d^2*e^7 - 790*(x*e + d)^(3/2)*B*a^4*b*e^8 - 7110*(x*e
 + d)^(3/2)*A*a^3*b^2*e^8 + 2370*sqrt(x*e + d)*B*a^4*b*d*e^8 + 11580*sqrt(x
*e + d)*A*a^3*b^2*d*e^8 + 105*sqrt(x*e + d)*B*a^5*e^9 - 2895*sqrt(x*e + d)*
A*a^4*b*e^9)/((b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*a^3*b^3*d^
2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.08, size = 1274, normalized size = 4.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 63/128*e^5/(b*e*x+a*e)^5*b^4/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a
^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)*(e*x+d)^(9/2)*A+7/128*e^5/(b*e*x+a*e)
^5*b^3/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4
*d^4*e-b^5*d^5)*(e*x+d)^(9/2)*a*B-35/64*e^4/(b*e*x+a*e)^5*b^4/(a^5*e^5-5*a^
4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)*(e*x
+d)^(9/2)*B*d+147/64*e^5/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2
*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(7/2)*A+49/192*e^5/(b*e*x+a*e)^5*b^
2/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(
7/2)*a*B-245/96*e^4/(b*e*x+a*e)^5*b^3/(a^4*e^4-4*a^3*b*d*e^3+6*a^2*b^2*d^2*
e^2-4*a*b^3*d^3*e+b^4*d^4)*(e*x+d)^(7/2)*B*d+21/5*e^5/(b*e*x+a*e)^5*b^2/(a^
3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*A+7/15*e^5/(b*e*x+
a*e)^5*b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x+d)^(5/2)*a*B-14
/3*e^4/(b*e*x+a*e)^5*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e*x
+d)^(5/2)*B*d+237/64*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^
(3/2)*A*b+79/192*e^5/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(3/2
)*a*B-395/96*e^4/(b*e*x+a*e)^5/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(3/2)*B*
```

```
b*d+193/128*e^5/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d)^(1/2)*A-7/128*e^5/(b*e*x+a*
e)^5/b/(a*e-b*d)*(e*x+d)^(1/2)*a*B-93/64*e^4/(b*e*x+a*e)^5/(a*e-b*d)*(e*x+d
)^(1/2)*B*d+63/128*e^5/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^3-10*a^2*b^3
*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*A+7/128*e^5/b/(a^5*e^5-5*a^4*b*d*e^4+10*a^3*b^2*d^2*e^
3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-35/64*e^4/(a^5*e^5-5*a^4*b*d*e^4+10*a^
3*b^2*d^2*e^3-10*a^2*b^3*d^3*e^2+5*a*b^4*d^4*e-b^5*d^5)/((a*e-b*d)*b)^(1/2)
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*B*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.29, size = 567, normalized size = 1.81

$$\frac{\frac{49\,{\left(d+e\,x\right)}^{7/2}\,\left(9\,A\,b^3\,e^5-10\,B\,d\,b^3\,e^4+B\,a\,b^2\,e^5\right)}{192\,{\left(a\,e-b\,d\right)}^4}+\frac{79\,{\left(d+e\,x\right)}^{3/}}{}}{\left(d+e\,x\right)\,\left(5\,a^4\,b\,e^4-20\,a^3\,b^2\,d\,e^3+30\,a^2\,b^3\,d^2\,e^2-20\,a\,b^4\,d^3\,e+5\,b^5\,d^4\right)-{\left(d+e\,x\right)}^2\,\left(-10\,a^3\,b^2\,e^3+30\,a^2\,b^3\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((49*(d + e*x)^(7/2)*(9*A*b^3*e^5 + B*a*b^2*e^5 - 10*B*b^3*d*e^4))/(192*(a*
e - b*d)^4) + (79*(d + e*x)^(3/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*b*d*e^4))/(19
2*(a*e - b*d)^2) + (7*b*(d + e*x)^(5/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*b*d*e^4
))/(15*(a*e - b*d)^3) + (7*b^3*(d + e*x)^(9/2)*(9*A*b*e^5 + B*a*e^5 - 10*B*
b*d*e^4))/(128*(a*e - b*d)^5) - ((d + e*x)^(1/2)*(7*B*a*e^5 - 193*A*b*e^5 +
 186*B*b*d*e^4))/(128*b*(a*e - b*d)))/((d + e*x)*(5*b^5*d^4 + 5*a^4*b*e^4 -
 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) - (d + e*x)^2*(10*
b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + b^5*(d + e*
x)^5 - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^4 + a^5*e^5 - b^5*d^5 + (d + e*x)^3*
(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e) - 10*a^2*b^3*d^3*e^2 + 10*a^3*
b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (7*e^4*atan((b^(1/2)*e^4*(d
+ e*x)^(1/2)*(9*A*b*e + B*a*e - 10*B*b*d))/((a*e - b*d)^(1/2)*(9*A*b*e^5 +
B*a*e^5 - 10*B*b*d*e^4)))*(9*A*b*e + B*a*e - 10*B*b*d))/(128*b^(3/2)*(a*e -
 b*d)^(11/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1832 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=352

$$\frac{63e^4(aBe-11Abe+10bBd)}{128b\sqrt{d+ex}\,(bd-ae)^6}-\frac{63e^4(aBe-11Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128\sqrt{b}\,(bd-ae)^{13/2}}+\frac{21e^3(aBe-11Abe+10bBd)}{128b(a+bx)\sqrt{d+ex}\,(bd-ae)^5}-$$

```
[Out] -63/128*e^4*(-11*A*b*e+B*a*e+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/(-a*e+b*d)^(13/2)/b^(1/2)+63/128*e^4*(-11*A*b*e+B*a*e+10*B*b*d)
/b/(-a*e+b*d)^6/(e*x+d)^(1/2)+1/5*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^5/(e*x+d)
^(1/2)+1/40*(11*A*b*e-B*a*e-10*B*b*d)/b/(-a*e+b*d)^2/(b*x+a)^4/(e*x+d)^(1/2
)+3/80*e*(-11*A*b*e+B*a*e+10*B*b*d)/b/(-a*e+b*d)^3/(b*x+a)^3/(e*x+d)^(1/2)-
21/320*e^2*(-11*A*b*e+B*a*e+10*B*b*d)/b/(-a*e+b*d)^4/(b*x+a)^2/(e*x+d)^(1/2
)+21/128*e^3*(-11*A*b*e+B*a*e+10*B*b*d)/b/(-a*e+b*d)^5/(b*x+a)/(e*x+d)^(1/2
)
```

Rubi [A] time = 0.38, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$\frac{63e^4(aBe-11Abe+10bBd)}{128b\sqrt{d+ex}\,(bd-ae)^6}+\frac{21e^3(aBe-11Abe+10bBd)}{128b(a+bx)\sqrt{d+ex}\,(bd-ae)^5}-\frac{21e^2(aBe-11Abe+10bBd)}{320b(a+bx)^2\sqrt{d+ex}\,(bd-ae)^4}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (63*e^4*(10*b*B*d - 11*A*b*e + a*B*e))/(128*b*(b*d - a*e)^6*Sqrt[d + e*x])
 - (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*Sqrt[d + e*x]) - (10*b*B*d - 11*
A*b*e + a*B*e)/(40*b*(b*d - a*e)^2*(a + b*x)^4*Sqrt[d + e*x]) + (3*e*(10*b*
B*d - 11*A*b*e + a*B*e))/(80*b*(b*d - a*e)^3*(a + b*x)^3*Sqrt[d + e*x]) - (
21*e^2*(10*b*B*d - 11*A*b*e + a*B*e))/(320*b*(b*d - a*e)^4*(a + b*x)^2*Sqrt
[d + e*x]) + (21*e^3*(10*b*B*d - 11*A*b*e + a*B*e))/(128*b*(b*d - a*e)^5*(a
 + b*x)*Sqrt[d + e*x]) - (63*e^4*(10*b*B*d - 11*A*b*e + a*B*e)*ArcTanh[(Sqr
t[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*Sqrt[b]*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{(a+bx)^6(d+ex)^{3/2}}\,dx$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} + \frac{(10bBd-11Abe+aBe)\int \frac{1}{(a+bx)^5(d+e}}{10b(bd-ae)}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} -$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} +$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} +$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} - \frac{10bBd-11Abe+aBe}{40b(bd-ae)^2(a+bx)^4\sqrt{d+ex}} +$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} -$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} -$$

$$= \frac{63e^4(10bBd-11Abe+aBe)}{128b(bd-ae)^6\sqrt{d+ex}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5\sqrt{d+ex}} -$$

Mathematica [C] time = 0.07, size = 97, normalized size = 0.28

$$\frac{\frac{e^4(aBe-11Abe+10bBd)\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{aB-Ab}{(a+bx)^5}}{5b\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-(A*b) + a*B)/(a + b*x)^5 + (e^4*(10*b*B*d - 11*A*b*e + a*B*e)*Hypergeome
tric2F1[-1/2, 5, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(5*b*(b*d
- a*e)*Sqrt[d + e*x])
```

fricas [**B**] time = 0.99, size = 3876, normalized size = 11.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/1280*(315*(10*B*a^5*b*d^2*e^4 + (B*a^6 - 11*A*a^5*b)*d*e^5 + (10*B*b^6*
d*e^5 + (B*a*b^5 - 11*A*b^6)*e^6)*x^6 + (10*B*b^6*d^2*e^4 + (51*B*a*b^5 - 1
1*A*b^6)*d*e^5 + 5*(B*a^2*b^4 - 11*A*a*b^5)*e^6)*x^5 + 5*(10*B*a*b^5*d^2*e^
4 + (21*B*a^2*b^4 - 11*A*a*b^5)*d*e^5 + 2*(B*a^3*b^3 - 11*A*a^2*b^4)*e^6)*x
^4 + 10*(10*B*a^2*b^4*d^2*e^4 + 11*(B*a^3*b^3 - A*a^2*b^4)*d*e^5 + (B*a^4*b
^2 - 11*A*a^3*b^3)*e^6)*x^3 + 5*(20*B*a^3*b^3*d^2*e^4 + 2*(6*B*a^4*b^2 - 11
*A*a^3*b^3)*d*e^5 + (B*a^5*b - 11*A*a^4*b^2)*e^6)*x^2 + (50*B*a^4*b^2*d^2*e
^4 + 5*(3*B*a^5*b - 11*A*a^4*b^2)*d*e^5 + (B*a^6 - 11*A*a^5*b)*e^6)*x)*sqrt
(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
 d))/(b*x + a)) - 2*(1280*A*a^6*b*e^6 - 32*(B*a*b^6 + 4*A*b^7)*d^6 + 16*(16
*B*a^2*b^5 + 59*A*a*b^6)*d^5*e - 4*(239*B*a^3*b^4 + 766*A*a^2*b^5)*d^4*e^2
+ 14*(178*B*a^4*b^3 + 417*A*a^3*b^4)*d^3*e^3 + 5*(97*B*a^5*b^2 - 1561*A*a^4
*b^3)*d^2*e^4 - 5*(449*B*a^6*b - 587*A*a^5*b^2)*d*e^5 + 315*(10*B*b^7*d^2*e
^4 - (9*B*a*b^6 + 11*A*b^7)*d*e^5 - (B*a^2*b^5 - 11*A*a*b^6)*e^6)*x^5 + 105
*(10*B*b^7*d^3*e^3 + (131*B*a*b^6 - 11*A*b^7)*d^2*e^4 - (127*B*a^2*b^5 + 14
3*A*a*b^6)*d*e^5 - 14*(B*a^3*b^4 - 11*A*a^2*b^5)*e^6)*x^4 - 42*(10*B*b^7*d^
4*e^2 - (129*B*a*b^6 + 11*A*b^7)*d^3*e^3 - 13*(41*B*a^2*b^5 - 11*A*a*b^6)*d
^2*e^4 + 4*(147*B*a^3*b^4 + 143*A*a^2*b^5)*d*e^5 + 64*(B*a^4*b^3 - 11*A*a^3
*b^4)*e^6)*x^3 + 6*(40*B*b^7*d^5*e - 2*(183*B*a*b^6 + 22*A*b^7)*d^4*e^2 + (
1883*B*a^2*b^5 + 407*A*a*b^6)*d^3*e^3 + 88*(29*B*a^3*b^4 - 24*A*a^2*b^5)*d^
2*e^4 - 2*(1857*B*a^4*b^3 + 1298*A*a^3*b^4)*d*e^5 - 395*(B*a^5*b^2 - 11*A*a
^4*b^3)*e^6)*x^2 - (160*B*b^7*d^6 - 16*(79*B*a*b^6 + 11*A*b^7)*d^5*e + 4*(1
163*B*a^2*b^5 + 352*A*a*b^6)*d^4*e^2 - 2*(5991*B*a^3*b^4 + 2629*A*a^2*b^5)*
d^3*e^3 - 2*(1048*B*a^4*b^3 - 6853*A*a^3*b^4)*d^2*e^4 + 5*(1913*B*a^5*b^2 +
 187*A*a^4*b^3)*d*e^5 + 965*(B*a^6*b - 11*A*a^5*b^2)*e^6)*x)*sqrt(e*x + d))
/(a^5*b^8*d^8 - 7*a^6*b^7*d^7*e + 21*a^7*b^6*d^6*e^2 - 35*a^8*b^5*d^5*e^3 +
 35*a^9*b^4*d^4*e^4 - 21*a^10*b^3*d^3*e^5 + 7*a^11*b^2*d^2*e^6 - a^12*b*d*e
^7 + (b^13*d^7*e - 7*a*b^12*d^6*e^2 + 21*a^2*b^11*d^5*e^3 - 35*a^3*b^10*d^4
*e^4 + 35*a^4*b^9*d^3*e^5 - 21*a^5*b^8*d^2*e^6 + 7*a^6*b^7*d*e^7 - a^7*b^6*
e^8)*x^6 + (b^13*d^8 - 2*a*b^12*d^7*e - 14*a^2*b^11*d^6*e^2 + 70*a^3*b^10*d
^5*e^3 - 140*a^4*b^9*d^4*e^4 + 154*a^5*b^8*d^3*e^5 - 98*a^6*b^7*d^2*e^6 + 3
4*a^7*b^6*d*e^7 - 5*a^8*b^5*e^8)*x^5 + 5*(a*b^12*d^8 - 5*a^2*b^11*d^7*e + 7
*a^3*b^10*d^6*e^2 + 7*a^4*b^9*d^5*e^3 - 35*a^5*b^8*d^4*e^4 + 49*a^6*b^7*d^3
*e^5 - 35*a^7*b^6*d^2*e^6 + 13*a^8*b^5*d*e^7 - 2*a^9*b^4*e^8)*x^4 + 10*(a^2
*b^11*d^8 - 6*a^3*b^10*d^7*e + 14*a^4*b^9*d^6*e^2 - 14*a^5*b^8*d^5*e^3 + 14
*a^7*b^6*d^3*e^5 - 14*a^8*b^5*d^2*e^6 + 6*a^9*b^4*d*e^7 - a^10*b^3*e^8)*x^3
 + 5*(2*a^3*b^10*d^8 - 13*a^4*b^9*d^7*e + 35*a^5*b^8*d^6*e^2 - 49*a^6*b^7*d
^5*e^3 + 35*a^7*b^6*d^4*e^4 - 7*a^8*b^5*d^3*e^5 - 7*a^9*b^4*d^2*e^6 + 5*a^1
0*b^3*d*e^7 - a^11*b^2*e^8)*x^2 + (5*a^4*b^9*d^8 - 34*a^5*b^8*d^7*e + 98*a^
6*b^7*d^6*e^2 - 154*a^7*b^6*d^5*e^3 + 140*a^8*b^5*d^4*e^4 - 70*a^9*b^4*d^3*
e^5 + 14*a^10*b^3*d^2*e^6 + 2*a^11*b^2*d*e^7 - a^12*b*e^8)*x), 1/640*(315*(
10*B*a^5*b*d^2*e^4 + (B*a^6 - 11*A*a^5*b)*d*e^5 + (10*B*b^6*d*e^5 + (B*a*b^
5 - 11*A*b^6)*e^6)*x^6 + (10*B*b^6*d^2*e^4 + (51*B*a*b^5 - 11*A*b^6)*d*e^5
+ 5*(B*a^2*b^4 - 11*A*a*b^5)*e^6)*x^5 + 5*(10*B*a*b^5*d^2*e^4 + (21*B*a^2*b
^4 - 11*A*a*b^5)*d*e^5 + 2*(B*a^3*b^3 - 11*A*a^2*b^4)*e^6)*x^4 + 10*(10*B*a
^2*b^4*d^2*e^4 + 11*(B*a^3*b^3 - A*a^2*b^4)*d*e^5 + (B*a^4*b^2 - 11*A*a^3*b
^3)*e^6)*x^3 + 5*(20*B*a^3*b^3*d^2*e^4 + 2*(6*B*a^4*b^2 - 11*A*a^3*b^3)*d*e
^5 + (B*a^5*b - 11*A*a^4*b^2)*e^6)*x^2 + (50*B*a^4*b^2*d^2*e^4 + 5*(3*B*a^5
*b - 11*A*a^4*b^2)*d*e^5 + (B*a^6 - 11*A*a^5*b)*e^6)*x)*sqrt(-b^2*d + a*b*e
)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (1280*A*a^6*b*
e^6 - 32*(B*a*b^6 + 4*A*b^7)*d^6 + 16*(16*B*a^2*b^5 + 59*A*a*b^6)*d^5*e - 4
*(239*B*a^3*b^4 + 766*A*a^2*b^5)*d^4*e^2 + 14*(178*B*a^4*b^3 + 417*A*a^3*b^
4)*d^3*e^3 + 5*(97*B*a^5*b^2 - 1561*A*a^4*b^3)*d^2*e^4 - 5*(449*B*a^6*b - 5
87*A*a^5*b^2)*d*e^5 + 315*(10*B*b^7*d^2*e^4 - (9*B*a*b^6 + 11*A*b^7)*d*e^5
- (B*a^2*b^5 - 11*A*a*b^6)*e^6)*x^5 + 105*(10*B*b^7*d^3*e^3 + (131*B*a*b^6
- 11*A*b^7)*d^2*e^4 - (127*B*a^2*b^5 + 143*A*a*b^6)*d*e^5 - 14*(B*a^3*b^4 -
 11*A*a^2*b^5)*e^6)*x^4 - 42*(10*B*b^7*d^4*e^2 - (129*B*a*b^6 + 11*A*b^7)*d
^3*e^3 - 13*(41*B*a^2*b^5 - 11*A*a*b^6)*d^2*e^4 + 4*(147*B*a^3*b^4 + 143*A*
a^2*b^5)*d*e^5 + 64*(B*a^4*b^3 - 11*A*a^3*b^4)*e^6)*x^3 + 6*(40*B*b^7*d^5*e
 - 2*(183*B*a*b^6 + 22*A*b^7)*d^4*e^2 + (1883*B*a^2*b^5 + 407*A*a*b^6)*d^3*
e^3 + 88*(29*B*a^3*b^4 - 24*A*a^2*b^5)*d^2*e^4 - 2*(1857*B*a^4*b^3 + 1298*A
*a^3*b^4)*d*e^5 - 395*(B*a^5*b^2 - 11*A*a^4*b^3)*e^6)*x^2 - (160*B*b^7*d^6
- 16*(79*B*a*b^6 + 11*A*b^7)*d^5*e + 4*(1163*B*a^2*b^5 + 352*A*a*b^6)*d^4*e
^2 - 2*(5991*B*a^3*b^4 + 2629*A*a^2*b^5)*d^3*e^3 - 2*(1048*B*a^4*b^3 - 6853
*A*a^3*b^4)*d^2*e^4 + 5*(1913*B*a^5*b^2 + 187*A*a^4*b^3)*d*e^5 + 965*(B*a^6
*b - 11*A*a^5*b^2)*e^6)*x)*sqrt(e*x + d))/(a^5*b^8*d^8 - 7*a^6*b^7*d^7*e +
21*a^7*b^6*d^6*e^2 - 35*a^8*b^5*d^5*e^3 + 35*a^9*b^4*d^4*e^4 - 21*a^10*b^3*
d^3*e^5 + 7*a^11*b^2*d^2*e^6 - a^12*b*d*e^7 + (b^13*d^7*e - 7*a*b^12*d^6*e^
2 + 21*a^2*b^11*d^5*e^3 - 35*a^3*b^10*d^4*e^4 + 35*a^4*b^9*d^3*e^5 - 21*a^5
*b^8*d^2*e^6 + 7*a^6*b^7*d*e^7 - a^7*b^6*e^8)*x^6 + (b^13*d^8 - 2*a*b^12*d^
7*e - 14*a^2*b^11*d^6*e^2 + 70*a^3*b^10*d^5*e^3 - 140*a^4*b^9*d^4*e^4 + 154
*a^5*b^8*d^3*e^5 - 98*a^6*b^7*d^2*e^6 + 34*a^7*b^6*d*e^7 - 5*a^8*b^5*e^8)*x
^5 + 5*(a*b^12*d^8 - 5*a^2*b^11*d^7*e + 7*a^3*b^10*d^6*e^2 + 7*a^4*b^9*d^5*
e^3 - 35*a^5*b^8*d^4*e^4 + 49*a^6*b^7*d^3*e^5 - 35*a^7*b^6*d^2*e^6 + 13*a^8
*b^5*d*e^7 - 2*a^9*b^4*e^8)*x^4 + 10*(a^2*b^11*d^8 - 6*a^3*b^10*d^7*e + 14*
a^4*b^9*d^6*e^2 - 14*a^5*b^8*d^5*e^3 + 14*a^7*b^6*d^3*e^5 - 14*a^8*b^5*d^2*
e^6 + 6*a^9*b^4*d*e^7 - a^10*b^3*e^8)*x^3 + 5*(2*a^3*b^10*d^8 - 13*a^4*b^9*
d^7*e + 35*a^5*b^8*d^6*e^2 - 49*a^6*b^7*d^5*e^3 + 35*a^7*b^6*d^4*e^4 - 7*a^
8*b^5*d^3*e^5 - 7*a^9*b^4*d^2*e^6 + 5*a^10*b^3*d*e^7 - a^11*b^2*e^8)*x^2 +
(5*a^4*b^9*d^8 - 34*a^5*b^8*d^7*e + 98*a^6*b^7*d^6*e^2 - 154*a^7*b^6*d^5*e^
3 + 140*a^8*b^5*d^4*e^4 - 70*a^9*b^4*d^3*e^5 + 14*a^10*b^3*d^2*e^6 + 2*a^11
*b^2*d*e^7 - a^12*b*e^8)*x)]
```

giac [B] time = 0.37, size = 994, normalized size = 2.82

$$\frac{63\left(10\,Bbde^{4}+Bae^{5}-11\,Abe^{5}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{128\left(b^{6}d^{6}-6\,ab^{5}d^{5}e+15\,a^{2}b^{4}d^{4}e^{2}-20\,a^{3}b^{3}d^{3}e^{3}+15\,a^{4}b^{2}d^{2}e^{4}-6\,a^{5}bde^{5}+a^{6}e^{6}\right)\sqrt{-b^{2}d+abe}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 63/128*(10*B*b*d*e^4 + B*a*e^5 - 11*A*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b
^2*d + a*b*e))/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*
d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d + a*b*e
)) + 2*(B*d*e^4 - A*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 2
0*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(x*e
+ d)) + 1/640*(1870*(x*e + d)^(9/2)*B*b^5*d*e^4 - 8300*(x*e + d)^(7/2)*B*b^
5*d^2*e^4 + 14080*(x*e + d)^(5/2)*B*b^5*d^3*e^4 - 10900*(x*e + d)^(3/2)*B*b
^5*d^4*e^4 + 3250*sqrt(x*e + d)*B*b^5*d^5*e^4 + 315*(x*e + d)^(9/2)*B*a*b^4
*e^5 - 2185*(x*e + d)^(9/2)*A*b^5*e^5 + 6830*(x*e + d)^(7/2)*B*a*b^4*d*e^5
+ 9770*(x*e + d)^(7/2)*A*b^5*d*e^5 - 25472*(x*e + d)^(5/2)*B*a*b^4*d^2*e^5
- 16768*(x*e + d)^(5/2)*A*b^5*d^2*e^5 + 30330*(x*e + d)^(3/2)*B*a*b^4*d^3*e
^5 + 13270*(x*e + d)^(3/2)*A*b^5*d^3*e^5 - 12035*sqrt(x*e + d)*B*a*b^4*d^4*
e^5 - 4215*sqrt(x*e + d)*A*b^5*d^4*e^5 + 1470*(x*e + d)^(7/2)*B*a^2*b^3*e^6
 - 9770*(x*e + d)^(7/2)*A*a*b^4*e^6 + 8704*(x*e + d)^(5/2)*B*a^2*b^3*d*e^6
+ 33536*(x*e + d)^(5/2)*A*a*b^4*d*e^6 - 25590*(x*e + d)^(3/2)*B*a^2*b^3*d^2
*e^6 - 39810*(x*e + d)^(3/2)*A*a*b^4*d^2*e^6 + 15640*sqrt(x*e + d)*B*a^2*b^
3*d^3*e^6 + 16860*sqrt(x*e + d)*A*a*b^4*d^3*e^6 + 2688*(x*e + d)^(5/2)*B*a^
3*b^2*e^7 - 16768*(x*e + d)^(5/2)*A*a^2*b^3*e^7 + 3790*(x*e + d)^(3/2)*B*a^
3*b^2*d*e^7 + 39810*(x*e + d)^(3/2)*A*a^2*b^3*d*e^7 - 7210*sqrt(x*e + d)*B*
a^3*b^2*d^2*e^7 - 25290*sqrt(x*e + d)*A*a^2*b^3*d^2*e^7 + 2370*(x*e + d)^(3
/2)*B*a^4*b*e^8 - 13270*(x*e + d)^(3/2)*A*a^3*b^2*e^8 - 610*sqrt(x*e + d)*B
*a^4*b*d*e^8 + 16860*sqrt(x*e + d)*A*a^3*b^2*d*e^8 + 965*sqrt(x*e + d)*B*a^
5*e^9 - 4215*sqrt(x*e + d)*A*a^4*b*e^9)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*
b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6
*e^6)*((x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1568, normalized size = 4.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 843/32*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*b^4*d^3+843/32*e^8/(
a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*b^2*d+379/64*e^7/(a*e-b*d)^6/(
b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*b^2*d-2559/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^
5*(e*x+d)^(3/2)*B*a^2*b^3*d^2+3033/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)
^(3/2)*B*a*b^4*d^3+3981/64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a^
2*b^3*d-3981/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*b^4*d^2-199
/5*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a*b^4*d^2+262/5*e^6/(a*e-b
*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*b^4*d+683/64*e^5/(a*e-b*d)^6/(b*e*x+a
*e)^5*B*(e*x+d)^(7/2)*a*b^4*d-61/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(
1/2)*B*a^4*b*d-721/64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*b^2
*d^2+391/16*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*b^3*d^3-2529/
64*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*b^3*d^2+68/5*e^6/(a*e-
b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*b^3*d-2407/128*e^5/(a*e-b*d)^6/(b*
e*x+a*e)^5*(e*x+d)^(1/2)*B*a*b^4*d^4-2*e^5/(a*e-b*d)^6/(e*x+d)^(1/2)*A+2*e^
4/(a*e-b*d)^6/(e*x+d)^(1/2)*B*d-437/128*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+
d)^(9/2)*A*b^5-693/128*e^5/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*A*b+63/128*e^5/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+193/128*e^9/(a*e-b*d)^6/(b*
e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5+1327/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d
)^(3/2)*A*b^5*d^3+237/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4*
b-843/128*e^9/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4*b-843/128*e^5/(
a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*b^5*d^4-977/64*e^6/(a*e-b*d)^6/(b*
e*x+a*e)^5*A*(e*x+d)^(7/2)*a*b^4+977/64*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*A*(e*
x+d)^(7/2)*b^5*d+147/64*e^6/(a*e-b*d)^6/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2*b
^3+22*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*b^5*d^3-545/32*e^4/(a*e
-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*b^5*d^4+325/64*e^4/(a*e-b*d)^6/(b*e*x
+a*e)^5*(e*x+d)^(1/2)*B*b^5*d^5-415/32*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*B*(e*x
+d)^(7/2)*b^5*d^2+63/128*e^5/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*a*b^
4-131/5*e^7/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2*b^3-131/5*e^5/(a*
e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*b^5*d^2+21/5*e^7/(a*e-b*d)^6/(b*e*x+
a*e)^5*(e*x+d)^(5/2)*B*a^3*b^2-1327/64*e^8/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d
)^(3/2)*A*a^3*b^2+187/64*e^4/(a*e-b*d)^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*b^5*
d+315/64*e^4/(a*e-b*d)^6/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad **[B]** time = 2.84, size = 683, normalized size = 1.94

$$\frac{\frac{237\,(d+e\,x)^2\,(-11\,A\,b^2\,e^5+10\,B\,d\,b^2\,e^4+B\,a\,b\,e^5)}{64\,(a\,e-b\,d)^3}-\frac{2\,(A\,e^5-B\,d}{a\,e-b\,d}}{\sqrt{d+e\,x}\,\,(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5)-(d+e\,x)^{5/2}\,(-10\,a^3\,b^2\,e^3+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((237*(d + e*x)^2*(B*a*b*e^5 - 11*A*b^2*e^5 + 10*B*b^2*d*e^4))/(64*(a*e - b
*d)^3) - (2*(A*e^5 - B*d*e^4))/(a*e - b*d) + (147*(d + e*x)^4*(B*a*b^3*e^5
- 11*A*b^4*e^5 + 10*B*b^4*d*e^4))/(64*(a*e - b*d)^5) + (193*(d + e*x)*(B*a*
e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(128*(a*e - b*d)^2) + (21*b^2*(d + e*x)^3
*(B*a*e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(5*(a*e - b*d)^4) + (63*b^4*(d + e*
x)^5*(B*a*e^5 - 11*A*b*e^5 + 10*B*b*d*e^4))/(128*(a*e - b*d)^6))/((d + e*x)
^(1/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b
^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(5/2)*(10*b^5*d^3 - 10*a^3*b^2*e^3 +
30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(3/2)*(5*b^5*d^4 + 5*a^4*b*e
^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) + b^5*(d + e*x
)^(11/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(9/2) + (d + e*x)^(7/2)*(10*b^5*
d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) + (63*e^4*atan((63*b^(1/2)*e^4*(d + e
*x)^(1/2)*(B*a*e - 11*A*b*e + 10*B*b*d)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4
*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*
e^5))/((a*e - b*d)^(13/2)*(63*B*a*e^5 - 693*A*b*e^5 + 630*B*b*d*e^4)))*(B*a
*e - 11*A*b*e + 10*B*b*d))/(128*b^(1/2)*(a*e - b*d)^(13/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1833 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=400

$$\frac{231e^4(3aBe-13Abe+10bBd)}{128\sqrt{d+ex}\,(bd-ae)^7}+\frac{77e^4(3aBe-13Abe+10bBd)}{128b(d+ex)^{3/2}(bd-ae)^6}-\frac{231\sqrt{b}\,e^4(3aBe-13Abe+10bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+}}{\sqrt{bd-a}}\right.}{128(bd-ae)^{15/2}}$$

```
[Out] 77/128*e^4*(-13*A*b*e+3*B*a*e+10*B*b*d)/b/(-a*e+b*d)^6/(e*x+d)^(3/2)+1/5*(-
A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^5/(e*x+d)^(3/2)+1/40*(13*A*b*e-3*B*a*e-10*B*b
*d)/b/(-a*e+b*d)^2/(b*x+a)^4/(e*x+d)^(3/2)+11/240*e*(-13*A*b*e+3*B*a*e+10*B
*b*d)/b/(-a*e+b*d)^3/(b*x+a)^3/(e*x+d)^(3/2)-33/320*e^2*(-13*A*b*e+3*B*a*e+
10*B*b*d)/b/(-a*e+b*d)^4/(b*x+a)^2/(e*x+d)^(3/2)+231/640*e^3*(-13*A*b*e+3*B
*a*e+10*B*b*d)/b/(-a*e+b*d)^5/(b*x+a)/(e*x+d)^(3/2)-231/128*e^4*(-13*A*b*e+
3*B*a*e+10*B*b*d)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(
-a*e+b*d)^(15/2)+231/128*e^4*(-13*A*b*e+3*B*a*e+10*B*b*d)/(-a*e+b*d)^7/(e*x
+d)^(1/2)
```

Rubi **[A]** time = 0.45, antiderivative size = 400, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$\frac{231e^4(3aBe-13Abe+10bBd)}{128\sqrt{d+ex}\,(bd-ae)^7}+\frac{77e^4(3aBe-13Abe+10bBd)}{128b(d+ex)^{3/2}(bd-ae)^6}+\frac{231e^3(3aBe-13Abe+10bBd)}{640b(a+bx)(d+ex)^{3/2}(bd-ae)^5}-\frac{33e^2(3aBe}{320b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (77*e^4*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(128*b*(b*d - a*e)^6*(d + e*x)^(3/
2)) - (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*(d + e*x)^(3/2)) - (10*b*B*d
 - 13*A*b*e + 3*a*B*e)/(40*b*(b*d - a*e)^2*(a + b*x)^4*(d + e*x)^(3/2)) + (
11*e*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(240*b*(b*d - a*e)^3*(a + b*x)^3*(d +
 e*x)^(3/2)) - (33*e^2*(10*b*B*d - 13*A*b*e + 3*a*B*e))/(320*b*(b*d - a*e)^
4*(a + b*x)^2*(d + e*x)^(3/2)) + (231*e^3*(10*b*B*d - 13*A*b*e + 3*a*B*e))/
(640*b*(b*d - a*e)^5*(a + b*x)*(d + e*x)^(3/2)) + (231*e^4*(10*b*B*d - 13*A
*b*e + 3*a*B*e))/(128*(b*d - a*e)^7*Sqrt[d + e*x]) - (231*Sqrt[b]*e^4*(10*b
*B*d - 13*A*b*e + 3*a*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/(128*(b*d - a*e)^(15/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{A+Bx}{(a+bx)^6(d+ex)^{5/2}}\,dx$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}+\frac{(10bBd-13Abe+3aBe)\int}{10b(bd-ae)}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}$$

$$=-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-\frac{10bBd-13Abe+3aBe}{40b(bd-ae)^2(a+bx)^4(d+ex)^{3/2}}$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-$$

$$=\frac{77e^4(10bBd-13Abe+3aBe)}{128b(bd-ae)^6(d+ex)^{3/2}}-\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{3/2}}-$$

Mathematica [C] time = 0.08, size = 99, normalized size = 0.25

$$\frac{\frac{e^4(3aBe-13Abe+10bBd)\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}+\frac{3aB-3Ab}{(a+bx)^5}}{15b(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*A*b + 3*a*B)/(a + b*x)^5 + (e^4*(10*b*B*d - 13*A*b*e + 3*a*B*e)*Hyperg
eometric2F1[-3/2, 5, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(15*b
*(b*d - a*e)*(d + e*x)^(3/2))
```

fricas [B] time = 1.07, size = 4664, normalized size = 11.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/3840*(3465*(10*B*a^5*b*d^3*e^4 + (3*B*a^6 - 13*A*a^5*b)*d^2*e^5 + (10*B*
b^6*d*e^6 + (3*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (20*B*b^6*d^2*e^5 + 2*(28*B*a
*b^5 - 13*A*b^6)*d*e^6 + 5*(3*B*a^2*b^4 - 13*A*a*b^5)*e^7)*x^6 + (10*B*b^6*
d^3*e^4 + (103*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 130*(B*a^2*b^4 - A*a*b^5)*d*e^
6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 + 5*(10*B*a*b^5*d^3*e^4 + (43*
B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 4*(8*B*a^3*b^3 - 13*A*a^2*b^4)*d*e^6 + 2*
(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^4 + 5*(20*B*a^2*b^4*d^3*e^4 + 2*(23*B*a
^3*b^3 - 13*A*a^2*b^4)*d^2*e^5 + 2*(11*B*a^4*b^2 - 26*A*a^3*b^3)*d*e^6 + (3
*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + (100*B*a^3*b^3*d^3*e^4 + 130*(B*a^4*b^2
 - A*a^3*b^3)*d^2*e^5 + 10*(4*B*a^5*b - 13*A*a^4*b^2)*d*e^6 + (3*B*a^6 - 13
*A*a^5*b)*e^7)*x^2 + (50*B*a^4*b^2*d^3*e^4 + 5*(7*B*a^5*b - 13*A*a^4*b^2)*d
^2*e^5 + 2*(3*B*a^6 - 13*A*a^5*b)*d*e^6)*x)*sqrt(b/(b*d - a*e))*log((b*e*x
+ 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a))
 + 2*(1280*A*a^6*e^6 - 96*(B*a*b^5 + 4*A*b^6)*d^6 + 16*(52*B*a^2*b^4 + 183*
A*a*b^5)*d^5*e - 28*(127*B*a^3*b^3 + 358*A*a^2*b^4)*d^4*e^2 + 70*(174*B*a^4
*b^2 + 301*A*a^3*b^3)*d^3*e^3 + 5*(6625*B*a^5*b - 7119*A*a^4*b^2)*d^2*e^4 +
 1280*(2*B*a^6 - 19*A*a^5*b)*d*e^5 + 3465*(10*B*b^6*d*e^5 + (3*B*a*b^5 - 13
*A*b^6)*e^6)*x^6 + 2310*(20*B*b^6*d^2*e^4 + 2*(38*B*a*b^5 - 13*A*b^6)*d*e^5
 + 7*(3*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 + 231*(30*B*b^6*d^3*e^3 + 13*(73*B
*a*b^5 - 3*A*b^6)*d^2*e^4 + 2*(781*B*a^2*b^4 - 611*A*a*b^5)*d*e^5 + 128*(3*
B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 66*(30*B*b^6*d^4*e^2 - 3*(167*B*a*b^5
+ 13*A*b^6)*d^3*e^3 - (6223*B*a^2*b^4 - 663*A*a*b^5)*d^2*e^4 - (5771*B*a^3*
b^3 - 7891*A*a^2*b^4)*d*e^5 - 395*(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^6)*x^3 + 1
1*(80*B*b^6*d^5*e - 4*(209*B*a*b^5 + 26*A*b^6)*d^4*e^2 + 2*(2811*B*a^2*b^4
+ 559*A*a*b^5)*d^3*e^3 + 4*(8566*B*a^3*b^3 - 1911*A*a^2*b^4)*d^2*e^4 + 50*(
388*B*a^4*b^2 - 845*A*a^3*b^3)*d*e^5 + 965*(3*B*a^5*b - 13*A*a^4*b^2)*e^6)*
x^2 - 2*(240*B*b^6*d^6 - 8*(251*B*a*b^5 + 39*A*b^6)*d^5*e + 2*(4133*B*a^2*b
^4 + 1352*A*a*b^5)*d^4*e^2 - 7*(3969*B*a^3*b^3 + 1651*A*a^2*b^4)*d^3*e^3 -
5*(16657*B*a^4*b^2 - 7917*A*a^3*b^3)*d^2*e^4 - 5*(5729*B*a^5*b - 19279*A*a^
4*b^2)*d*e^5 - 640*(3*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt(e*x + d))/(a^5*b^7*d
^9 - 7*a^6*b^6*d^8*e + 21*a^7*b^5*d^7*e^2 - 35*a^8*b^4*d^6*e^3 + 35*a^9*b^3
*d^5*e^4 - 21*a^10*b^2*d^4*e^5 + 7*a^11*b*d^3*e^6 - a^12*d^2*e^7 + (b^12*d^
7*e^2 - 7*a*b^11*d^6*e^3 + 21*a^2*b^10*d^5*e^4 - 35*a^3*b^9*d^4*e^5 + 35*a^
4*b^8*d^3*e^6 - 21*a^5*b^7*d^2*e^7 + 7*a^6*b^6*d*e^8 - a^7*b^5*e^9)*x^7 + (
2*b^12*d^8*e - 9*a*b^11*d^7*e^2 + 7*a^2*b^10*d^6*e^3 + 35*a^3*b^9*d^5*e^4 -
 105*a^4*b^8*d^4*e^5 + 133*a^5*b^7*d^3*e^6 - 91*a^6*b^6*d^2*e^7 + 33*a^7*b^
5*d*e^8 - 5*a^8*b^4*e^9)*x^6 + (b^12*d^9 + 3*a*b^11*d^8*e - 39*a^2*b^10*d^7
*e^2 + 105*a^3*b^9*d^6*e^3 - 105*a^4*b^8*d^5*e^4 - 21*a^5*b^7*d^4*e^5 + 147
*a^6*b^6*d^3*e^6 - 141*a^7*b^5*d^2*e^7 + 60*a^8*b^4*d*e^8 - 10*a^9*b^3*e^9)
*x^5 + 5*(a*b^11*d^9 - 3*a^2*b^10*d^8*e - 5*a^3*b^9*d^7*e^2 + 35*a^4*b^8*d^
6*e^3 - 63*a^5*b^7*d^5*e^4 + 49*a^6*b^6*d^4*e^5 - 7*a^7*b^5*d^3*e^6 - 15*a^
8*b^4*d^2*e^7 + 10*a^9*b^3*d*e^8 - 2*a^10*b^2*e^9)*x^4 + 5*(2*a^2*b^10*d^9
- 10*a^3*b^9*d^8*e + 15*a^4*b^8*d^7*e^2 + 7*a^5*b^7*d^6*e^3 - 49*a^6*b^6*d^
5*e^4 + 63*a^7*b^5*d^4*e^5 - 35*a^8*b^4*d^3*e^6 + 5*a^9*b^3*d^2*e^7 + 3*a^1
0*b^2*d*e^8 - a^11*b*e^9)*x^3 + (10*a^3*b^9*d^9 - 60*a^4*b^8*d^8*e + 141*a^
5*b^7*d^7*e^2 - 147*a^6*b^6*d^6*e^3 + 21*a^7*b^5*d^5*e^4 + 105*a^8*b^4*d^4*
e^5 - 105*a^9*b^3*d^3*e^6 + 39*a^10*b^2*d^2*e^7 - 3*a^11*b*d*e^8 - a^12*e^9
)*x^2 + (5*a^4*b^8*d^9 - 33*a^5*b^7*d^8*e + 91*a^6*b^6*d^7*e^2 - 133*a^7*b^
5*d^6*e^3 + 105*a^8*b^4*d^5*e^4 - 35*a^9*b^3*d^4*e^5 - 7*a^10*b^2*d^3*e^6 +
 9*a^11*b*d^2*e^7 - 2*a^12*d*e^8)*x), -1/1920*(3465*(10*B*a^5*b*d^3*e^4 + (
3*B*a^6 - 13*A*a^5*b)*d^2*e^5 + (10*B*b^6*d*e^6 + (3*B*a*b^5 - 13*A*b^6)*e^
7)*x^7 + (20*B*b^6*d^2*e^5 + 2*(28*B*a*b^5 - 13*A*b^6)*d*e^6 + 5*(3*B*a^2*b
^4 - 13*A*a*b^5)*e^7)*x^6 + (10*B*b^6*d^3*e^4 + (103*B*a*b^5 - 13*A*b^6)*d^
2*e^5 + 130*(B*a^2*b^4 - A*a*b^5)*d*e^6 + 10*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e
^7)*x^5 + 5*(10*B*a*b^5*d^3*e^4 + (43*B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 4*(
8*B*a^3*b^3 - 13*A*a^2*b^4)*d*e^6 + 2*(3*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^4
 + 5*(20*B*a^2*b^4*d^3*e^4 + 2*(23*B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^5 + 2*(1
1*B*a^4*b^2 - 26*A*a^3*b^3)*d*e^6 + (3*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + (
100*B*a^3*b^3*d^3*e^4 + 130*(B*a^4*b^2 - A*a^3*b^3)*d^2*e^5 + 10*(4*B*a^5*b
 - 13*A*a^4*b^2)*d*e^6 + (3*B*a^6 - 13*A*a^5*b)*e^7)*x^2 + (50*B*a^4*b^2*d^
3*e^4 + 5*(7*B*a^5*b - 13*A*a^4*b^2)*d^2*e^5 + 2*(3*B*a^6 - 13*A*a^5*b)*d*e
^6)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d
- a*e))/(b*e*x + b*d)) - (1280*A*a^6*e^6 - 96*(B*a*b^5 + 4*A*b^6)*d^6 + 16*
(52*B*a^2*b^4 + 183*A*a*b^5)*d^5*e - 28*(127*B*a^3*b^3 + 358*A*a^2*b^4)*d^4
*e^2 + 70*(174*B*a^4*b^2 + 301*A*a^3*b^3)*d^3*e^3 + 5*(6625*B*a^5*b - 7119*
A*a^4*b^2)*d^2*e^4 + 1280*(2*B*a^6 - 19*A*a^5*b)*d*e^5 + 3465*(10*B*b^6*d*e
^5 + (3*B*a*b^5 - 13*A*b^6)*e^6)*x^6 + 2310*(20*B*b^6*d^2*e^4 + 2*(38*B*a*b
^5 - 13*A*b^6)*d*e^5 + 7*(3*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 + 231*(30*B*b^
6*d^3*e^3 + 13*(73*B*a*b^5 - 3*A*b^6)*d^2*e^4 + 2*(781*B*a^2*b^4 - 611*A*a*
b^5)*d*e^5 + 128*(3*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 66*(30*B*b^6*d^4*e
^2 - 3*(167*B*a*b^5 + 13*A*b^6)*d^3*e^3 - (6223*B*a^2*b^4 - 663*A*a*b^5)*d^
2*e^4 - (5771*B*a^3*b^3 - 7891*A*a^2*b^4)*d*e^5 - 395*(3*B*a^4*b^2 - 13*A*a
^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 4*(209*B*a*b^5 + 26*A*b^6)*d^4*e^2
+ 2*(2811*B*a^2*b^4 + 559*A*a*b^5)*d^3*e^3 + 4*(8566*B*a^3*b^3 - 1911*A*a^2
*b^4)*d^2*e^4 + 50*(388*B*a^4*b^2 - 845*A*a^3*b^3)*d*e^5 + 965*(3*B*a^5*b -
 13*A*a^4*b^2)*e^6)*x^2 - 2*(240*B*b^6*d^6 - 8*(251*B*a*b^5 + 39*A*b^6)*d^5
*e + 2*(4133*B*a^2*b^4 + 1352*A*a*b^5)*d^4*e^2 - 7*(3969*B*a^3*b^3 + 1651*A
*a^2*b^4)*d^3*e^3 - 5*(16657*B*a^4*b^2 - 7917*A*a^3*b^3)*d^2*e^4 - 5*(5729*
B*a^5*b - 19279*A*a^4*b^2)*d*e^5 - 640*(3*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt(
e*x + d))/(a^5*b^7*d^9 - 7*a^6*b^6*d^8*e + 21*a^7*b^5*d^7*e^2 - 35*a^8*b^4*
d^6*e^3 + 35*a^9*b^3*d^5*e^4 - 21*a^10*b^2*d^4*e^5 + 7*a^11*b*d^3*e^6 - a^1
2*d^2*e^7 + (b^12*d^7*e^2 - 7*a*b^11*d^6*e^3 + 21*a^2*b^10*d^5*e^4 - 35*a^3
*b^9*d^4*e^5 + 35*a^4*b^8*d^3*e^6 - 21*a^5*b^7*d^2*e^7 + 7*a^6*b^6*d*e^8 -
a^7*b^5*e^9)*x^7 + (2*b^12*d^8*e - 9*a*b^11*d^7*e^2 + 7*a^2*b^10*d^6*e^3 +
35*a^3*b^9*d^5*e^4 - 105*a^4*b^8*d^4*e^5 + 133*a^5*b^7*d^3*e^6 - 91*a^6*b^6
*d^2*e^7 + 33*a^7*b^5*d*e^8 - 5*a^8*b^4*e^9)*x^6 + (b^12*d^9 + 3*a*b^11*d^8
*e - 39*a^2*b^10*d^7*e^2 + 105*a^3*b^9*d^6*e^3 - 105*a^4*b^8*d^5*e^4 - 21*a
^5*b^7*d^4*e^5 + 147*a^6*b^6*d^3*e^6 - 141*a^7*b^5*d^2*e^7 + 60*a^8*b^4*d*e
^8 - 10*a^9*b^3*e^9)*x^5 + 5*(a*b^11*d^9 - 3*a^2*b^10*d^8*e - 5*a^3*b^9*d^7
*e^2 + 35*a^4*b^8*d^6*e^3 - 63*a^5*b^7*d^5*e^4 + 49*a^6*b^6*d^4*e^5 - 7*a^7
*b^5*d^3*e^6 - 15*a^8*b^4*d^2*e^7 + 10*a^9*b^3*d*e^8 - 2*a^10*b^2*e^9)*x^4
+ 5*(2*a^2*b^10*d^9 - 10*a^3*b^9*d^8*e + 15*a^4*b^8*d^7*e^2 + 7*a^5*b^7*d^6
*e^3 - 49*a^6*b^6*d^5*e^4 + 63*a^7*b^5*d^4*e^5 - 35*a^8*b^4*d^3*e^6 + 5*a^9
*b^3*d^2*e^7 + 3*a^10*b^2*d*e^8 - a^11*b*e^9)*x^3 + (10*a^3*b^9*d^9 - 60*a^
4*b^8*d^8*e + 141*a^5*b^7*d^7*e^2 - 147*a^6*b^6*d^6*e^3 + 21*a^7*b^5*d^5*e^
4 + 105*a^8*b^4*d^4*e^5 - 105*a^9*b^3*d^3*e^6 + 39*a^10*b^2*d^2*e^7 - 3*a^1
1*b*d*e^8 - a^12*e^9)*x^2 + (5*a^4*b^8*d^9 - 33*a^5*b^7*d^8*e + 91*a^6*b^6*
d^7*e^2 - 133*a^7*b^5*d^6*e^3 + 105*a^8*b^4*d^5*e^4 - 35*a^9*b^3*d^4*e^5 -
7*a^10*b^2*d^3*e^6 + 9*a^11*b*d^2*e^7 - 2*a^12*d*e^8)*x)]
```

giac [B] time = 0.42, size = 1103, normalized size = 2.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 231/128*(10*B*b^2*d*e^4 + 3*B*a*b*e^5 - 13*A*b^2*e^5)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35
*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
- a^7*e^7)*sqrt(-b^2*d + a*b*e)) + 2/3*(15*(x*e + d)*B*b*d*e^4 + B*b*d^2*e^
4 + 3*(x*e + d)*B*a*e^5 - 18*(x*e + d)*A*b*e^5 - B*a*d*e^5 - A*b*d*e^5 + A*
a*e^6)/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3
+ 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(x*e +
 d)^(3/2)) + 1/1920*(15450*(x*e + d)^(9/2)*B*b^6*d*e^4 - 66980*(x*e + d)^(7
/2)*B*b^6*d^2*e^4 + 110080*(x*e + d)^(5/2)*B*b^6*d^3*e^4 - 81500*(x*e + d)^
(3/2)*B*b^6*d^4*e^4 + 22950*sqrt(x*e + d)*B*b^6*d^5*e^4 + 6555*(x*e + d)^(9
/2)*B*a*b^5*e^5 - 22005*(x*e + d)^(9/2)*A*b^6*e^5 + 37670*(x*e + d)^(7/2)*B
*a*b^5*d*e^5 + 96290*(x*e + d)^(7/2)*A*b^6*d*e^5 - 169856*(x*e + d)^(5/2)*B
*a*b^5*d^2*e^5 - 160384*(x*e + d)^(5/2)*A*b^6*d^2*e^5 + 204690*(x*e + d)^(3
/2)*B*a*b^5*d^3*e^5 + 121310*(x*e + d)^(3/2)*A*b^6*d^3*e^5 - 79155*sqrt(x*e
 + d)*B*a*b^5*d^4*e^5 - 35595*sqrt(x*e + d)*A*b^6*d^4*e^5 + 29310*(x*e + d)
^(7/2)*B*a^2*b^4*e^6 - 96290*(x*e + d)^(7/2)*A*a*b^5*e^6 + 9472*(x*e + d)^(
5/2)*B*a^2*b^4*d*e^6 + 320768*(x*e + d)^(5/2)*A*a*b^5*d*e^6 - 125070*(x*e +
 d)^(3/2)*B*a^2*b^4*d^2*e^6 - 363930*(x*e + d)^(3/2)*A*a*b^5*d^2*e^6 + 8712
0*sqrt(x*e + d)*B*a^2*b^4*d^3*e^6 + 142380*sqrt(x*e + d)*A*a*b^5*d^3*e^6 +
50304*(x*e + d)^(5/2)*B*a^3*b^3*e^7 - 160384*(x*e + d)^(5/2)*A*a^2*b^4*e^7
- 37930*(x*e + d)^(3/2)*B*a^3*b^3*d*e^7 + 363930*(x*e + d)^(3/2)*A*a^2*b^4*
d*e^7 - 15930*sqrt(x*e + d)*B*a^3*b^3*d^2*e^7 - 213570*sqrt(x*e + d)*A*a^2*
b^4*d^2*e^7 + 39810*(x*e + d)^(3/2)*B*a^4*b^2*e^8 - 121310*(x*e + d)^(3/2)*
A*a^3*b^3*e^8 - 27630*sqrt(x*e + d)*B*a^4*b^2*d*e^8 + 142380*sqrt(x*e + d)*
A*a^3*b^3*d*e^8 + 12645*sqrt(x*e + d)*B*a^5*b*e^9 - 35595*sqrt(x*e + d)*A*a
^4*b^2*e^9)/((b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4
*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(
(x*e + d)*b - b*d + a*e)^5)
```

maple [B] time = 0.09, size = 1653, normalized size = 4.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3793/192*e^7/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*d+531/64*e^7
/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^2+4169/64*e^6/(a*e-b*d
)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^2*d^2-6823/64*e^5/(a*e-b*d)^7*b^5/(
b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^3-363/8*e^6/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*
(e*x+d)^(1/2)*B*a^2*d^3+5277/128*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^
(1/2)*B*a*d^4+7119/64*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2
*d^2-2373/32*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-2506/1
5*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a*d-74/15*e^6/(a*e-b*d)
^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d+921/64*e^8/(a*e-b*d)^7*b^2/(b*e*
x+a*e)^5*(e*x+d)^(1/2)*B*a^4*d-12131/64*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(
e*x+d)^(3/2)*A*a^2*d+12131/64*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(3/
2)*A*a*d^2-2373/32*e^8/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d-
3767/192*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d+1327/15*e^5/
(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a*d^2-2/3*e^5/(a*e-b*d)^6/(e*
x+d)^(3/2)*A+2/3*e^4/(a*e-b*d)^6/(e*x+d)^(3/2)*B*d+12*e^5/(a*e-b*d)^7/(e*x+
d)^(1/2)*A*b-2*e^5/(a*e-b*d)^7/(e*x+d)^(1/2)*a*B-10*e^4/(a*e-b*d)^7/(e*x+d)
^(1/2)*B*b*d+3003/128*e^5/(a*e-b*d)^7*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A+1467/128*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5
*(e*x+d)^(9/2)*A+12131/192*e^8/(a*e-b*d)^7*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*
A*a^3-12131/192*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*d^3-1155/
64*e^4/(a*e-b*d)^7*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*B*d-515/64*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(9/2)*B*d-
765/64*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*d^5+3349/96*e^4/(a
*e-b*d)^7*b^6/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-1327/64*e^8/(a*e-b*d)^7*b^2
/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4+2373/128*e^9/(a*e-b*d)^7*b^2/(b*e*x+a*e)
^5*(e*x+d)^(1/2)*A*a^4+2373/128*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(
1/2)*A*d^4+9629/192*e^6/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*a-962
9/192*e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*A*(e*x+d)^(7/2)*d-977/64*e^6/(a*e-b
*d)^7*b^4/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2-172/3*e^4/(a*e-b*d)^7*b^6/(b*e*
x+a*e)^5*(e*x+d)^(5/2)*B*d^3+4075/96*e^4/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x
+d)^(3/2)*B*d^4-693/128*e^5/(a*e-b*d)^7*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*B-843/128*e^9/(a*e-b*d)^7*b/(b*e*x+a*e)^5*
(e*x+d)^(1/2)*B*a^5-437/128*e^5/(a*e-b*d)^7*b^5/(b*e*x+a*e)^5*(e*x+d)^(9/2)
*B*a+1253/15*e^7/(a*e-b*d)^7*b^4/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*a^2+1253/15*
e^5/(a*e-b*d)^7*b^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^2-131/5*e^7/(a*e-b*d)^7
*b^3/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 3.15, size = 755, normalized size = 1.89

$$-\frac{\frac{2\,\left(A\,e^5-B\,d\,e^4\right)}{3\,\left(a\,e-b\,d\right)}+\frac{2123\,{\left(d+e\,x\right)}^2\,\left(-13\,A\,b^2\,e^5+10\,B\,d\,b^2\,e^4+3\,B\,a\,b\,e^5\right)}{384\,{\left(a\,e-b\,d\right)}^3}+\frac{869\,{\left(d+e\,x\right)}^3\,\big(-1}{}}{{\left(d+e\,x\right)}^{3/2}\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5\right)-{\left(d+e\,x\right)}^{7/2}\,\big(-10\,a^3\,b^2\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*(A*e^5 - B*d*e^4))/(3*(a*e - b*d)) + (2123*(d + e*x)^2*(3*B*a*b*e^5 -
 13*A*b^2*e^5 + 10*B*b^2*d*e^4))/(384*(a*e - b*d)^3) + (869*(d + e*x)^3*(3*
B*a*b^2*e^5 - 13*A*b^3*e^5 + 10*B*b^3*d*e^4))/(64*(a*e - b*d)^4) + (539*(d
+ e*x)^5*(3*B*a*b^4*e^5 - 13*A*b^5*e^5 + 10*B*b^5*d*e^4))/(64*(a*e - b*d)^6
) + (2*(d + e*x)*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(3*(a*e - b*d)^2)
 + (77*b^3*(d + e*x)^4*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(5*(a*e - b
*d)^5) + (231*b^5*(d + e*x)^6*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4))/(128
*(a*e - b*d)^7))/((d + e*x)^(3/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 +
 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(7/2)*(10*
b^5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(
5/2)*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*
a*b^4*d^3*e) + b^5*(d + e*x)^(13/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(11/2
) + (d + e*x)^(9/2)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) - (231*b^
(1/2)*e^4*atan((b^(1/2)*e^4*(d + e*x)^(1/2)*(3*B*a*e - 13*A*b*e + 10*B*b*d)
*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*
d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6))/((a*e - b*d)
^(15/2)*(3*B*a*e^5 - 13*A*b*e^5 + 10*B*b*d*e^4)))*(3*B*a*e - 13*A*b*e + 10*
B*b*d))/(128*(a*e - b*d)^(15/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1834 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=435

$$-\frac{3003b^{3/2}e^4(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128(bd-ae)^{17/2}}+\frac{3003be^4(aBe-3Abe+2bBd)}{128\sqrt{d+ex}\,(bd-ae)^8}+\frac{1001e^4(aBe-3Abe+2b}{128(d+ex)^{3/2}(bd-ae}$$

```
[Out] 3003/640*e^4*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a*e+b*d)^6/(e*x+d)^(5/2)+1/5*(-A*
b+B*a)/b/(-a*e+b*d)/(b*x+a)^5/(e*x+d)^(5/2)+1/8*(3*A*b*e-B*a*e-2*B*b*d)/b/(
-a*e+b*d)^2/(b*x+a)^4/(e*x+d)^(5/2)+13/48*e*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a*
e+b*d)^3/(b*x+a)^3/(e*x+d)^(5/2)-143/192*e^2*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-a
*e+b*d)^4/(b*x+a)^2/(e*x+d)^(5/2)+429/128*e^3*(-3*A*b*e+B*a*e+2*B*b*d)/b/(-
a*e+b*d)^5/(b*x+a)/(e*x+d)^(5/2)+1001/128*e^4*(-3*A*b*e+B*a*e+2*B*b*d)/(-a*
e+b*d)^7/(e*x+d)^(3/2)-3003/128*b^(3/2)*e^4*(-3*A*b*e+B*a*e+2*B*b*d)*arctan
h(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(17/2)+3003/128*b*e^4*
(-3*A*b*e+B*a*e+2*B*b*d)/(-a*e+b*d)^8/(e*x+d)^(1/2)
```

Rubi [A] time = 0.49, antiderivative size = 435, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 78, 51, 63, 208\}$

$$-\frac{3003b^{3/2}e^4(aBe-3Abe+2bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{128(bd-ae)^{17/2}}+\frac{3003be^4(aBe-3Abe+2bBd)}{128\sqrt{d+ex}\,(bd-ae)^8}+\frac{1001e^4(aBe-3Abe+2b}{128(d+ex)^{3/2}(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (3003*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(640*b*(b*d - a*e)^6*(d + e*x)^(5/2)
) - (A*b - a*B)/(5*b*(b*d - a*e)*(a + b*x)^5*(d + e*x)^(5/2)) - (2*b*B*d -
3*A*b*e + a*B*e)/(8*b*(b*d - a*e)^2*(a + b*x)^4*(d + e*x)^(5/2)) + (13*e*(2
*b*B*d - 3*A*b*e + a*B*e))/(48*b*(b*d - a*e)^3*(a + b*x)^3*(d + e*x)^(5/2))
 - (143*e^2*(2*b*B*d - 3*A*b*e + a*B*e))/(192*b*(b*d - a*e)^4*(a + b*x)^2*(
d + e*x)^(5/2)) + (429*e^3*(2*b*B*d - 3*A*b*e + a*B*e))/(128*b*(b*d - a*e)^
5*(a + b*x)*(d + e*x)^(5/2)) + (1001*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(128*
(b*d - a*e)^7*(d + e*x)^(3/2)) + (3003*b*e^4*(2*b*B*d - 3*A*b*e + a*B*e))/(
128*(b*d - a*e)^8*Sqrt[d + e*x]) - (3003*b^(3/2)*e^4*(2*b*B*d - 3*A*b*e + a
*B*e)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(128*(b*d - a*e)^(1
7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{A+Bx}{(a+bx)^6(d+ex)^{7/2}}\,dx$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} + \frac{(2bBd-3Abe+aBe)\int \frac{1}{(a+bx)^5(d+ex)^{7/2}}}{2b(bd-ae)}$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} - \frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}} -$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} - \frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}} +$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} - \frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}} +$$

$$= -\frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} - \frac{2bBd-3Abe+aBe}{8b(bd-ae)^2(a+bx)^4(d+ex)^{5/2}} +$$

$$= \frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} -$$

$$= \frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} -$$

$$= \frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} -$$

$$= \frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} -$$

$$= \frac{3003e^4(2bBd-3Abe+aBe)}{640b(bd-ae)^6(d+ex)^{5/2}} - \frac{Ab-aB}{5b(bd-ae)(a+bx)^5(d+ex)^{5/2}} -$$

Mathematica [**C**] time = 0.07, size = 100, normalized size = 0.23

$$\frac{\frac{5aB-5Ab}{(a+bx)^5}-\frac{5e^4(-aBe+3Abe-2bBd)\,{}_2F_1\left(-\frac{5}{2},5;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^5}}{25b(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-5*A*b + 5*a*B)/(a + b*x)^5 - (5*e^4*(-2*b*B*d + 3*A*b*e - a*B*e)*Hyperge
ometric2F1[-5/2, 5, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^5)/(25*b*
(b*d - a*e)*(d + e*x)^(5/2))
```

fricas [**B**] time = 1.20, size = 6033, normalized size = 13.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/3840*(45045*(2*B*a^5*b^2*d^4*e^4 + (B*a^6*b - 3*A*a^5*b^2)*d^3*e^5 + (2
*B*b^7*d*e^7 + (B*a*b^6 - 3*A*b^7)*e^8)*x^8 + (6*B*b^7*d^2*e^6 + (13*B*a*b^
6 - 9*A*b^7)*d*e^7 + 5*(B*a^2*b^5 - 3*A*a*b^6)*e^8)*x^7 + (6*B*b^7*d^3*e^5
+ 3*(11*B*a*b^6 - 3*A*b^7)*d^2*e^6 + 5*(7*B*a^2*b^5 - 9*A*a*b^6)*d*e^7 + 10
*(B*a^3*b^4 - 3*A*a^2*b^5)*e^8)*x^6 + (2*B*b^7*d^4*e^4 + (31*B*a*b^6 - 3*A*
b^7)*d^3*e^5 + 15*(5*B*a^2*b^5 - 3*A*a*b^6)*d^2*e^6 + 10*(5*B*a^3*b^4 - 9*A
*a^2*b^5)*d*e^7 + 10*(B*a^4*b^3 - 3*A*a^3*b^4)*e^8)*x^5 + 5*(2*B*a*b^6*d^4*
e^4 + (13*B*a^2*b^5 - 3*A*a*b^6)*d^3*e^5 + 18*(B*a^3*b^4 - A*a^2*b^5)*d^2*e
^6 + 2*(4*B*a^4*b^3 - 9*A*a^3*b^4)*d*e^7 + (B*a^5*b^2 - 3*A*a^4*b^3)*e^8)*x
^4 + (20*B*a^2*b^5*d^4*e^4 + 10*(7*B*a^3*b^4 - 3*A*a^2*b^5)*d^3*e^5 + 30*(2
*B*a^4*b^3 - 3*A*a^3*b^4)*d^2*e^6 + (17*B*a^5*b^2 - 45*A*a^4*b^3)*d*e^7 + (
B*a^6*b - 3*A*a^5*b^2)*e^8)*x^3 + (20*B*a^3*b^4*d^4*e^4 + 10*(4*B*a^4*b^3 -
 3*A*a^3*b^4)*d^3*e^5 + 3*(7*B*a^5*b^2 - 15*A*a^4*b^3)*d^2*e^6 + 3*(B*a^6*b
 - 3*A*a^5*b^2)*d*e^7)*x^2 + (10*B*a^4*b^3*d^4*e^4 + (11*B*a^5*b^2 - 15*A*a
^4*b^3)*d^3*e^5 + 3*(B*a^6*b - 3*A*a^5*b^2)*d^2*e^6)*x)*sqrt(b/(b*d - a*e))
*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e))
)/(b*x + a)) + 2*(768*A*a^7*e^7 + 96*(B*a*b^6 + 4*A*b^7)*d^7 - 16*(62*B*a^2
*b^5 + 213*A*a*b^6)*d^6*e + 28*(187*B*a^3*b^4 + 498*A*a^2*b^5)*d^5*e^2 - 70
*(332*B*a^4*b^3 + 519*A*a^3*b^4)*d^4*e^3 - (100363*B*a^5*b^2 - 79905*A*a^4*
b^3)*d^3*e^4 - 1024*(16*B*a^6*b - 87*A*a^5*b^2)*d^2*e^5 + 512*(B*a^7 - 18*A
*a^6*b)*d*e^6 - 45045*(2*B*b^7*d*e^6 + (B*a*b^6 - 3*A*b^7)*e^7)*x^7 - 10510
5*(2*B*b^7*d^2*e^5 + (5*B*a*b^6 - 3*A*b^7)*d*e^6 + 2*(B*a^2*b^5 - 3*A*a*b^6
)*e^7)*x^6 - 3003*(46*B*b^7*d^3*e^4 + 3*(117*B*a*b^6 - 23*A*b^7)*d^2*e^5 +
12*(35*B*a^2*b^5 - 41*A*a*b^6)*d*e^6 + 128*(B*a^3*b^4 - 3*A*a^2*b^5)*e^7)*x
^5 - 2145*(6*B*b^7*d^4*e^3 + (307*B*a*b^6 - 9*A*b^7)*d^3*e^4 + 12*(83*B*a^2
*b^5 - 38*A*a*b^6)*d^2*e^5 + 6*(123*B*a^3*b^4 - 211*A*a^2*b^5)*d*e^6 + 158*
(B*a^4*b^3 - 3*A*a^3*b^4)*e^7)*x^4 + 715*(4*B*b^7*d^5*e^2 - 2*(43*B*a*b^6 +
 3*A*b^7)*d^4*e^3 - 4*(434*B*a^2*b^5 - 33*A*a*b^6)*d^3*e^4 - 2*(1547*B*a^3*
b^4 - 1269*A*a^2*b^5)*d^2*e^5 - 2*(755*B*a^4*b^3 - 1686*A*a^3*b^4)*d*e^6 -
193*(B*a^5*b^2 - 3*A*a^4*b^3)*e^7)*x^3 - 65*(16*B*b^7*d^6*e - 12*(17*B*a*b^
6 + 2*A*b^7)*d^5*e^2 + 6*(295*B*a^2*b^5 + 53*A*a*b^6)*d^4*e^3 + 2*(8837*B*a
^3*b^4 - 1407*A*a^2*b^5)*d^3*e^4 + 6*(3091*B*a^4*b^3 - 4184*A*a^3*b^4)*d^2*
e^5 + 3*(1867*B*a^5*b^2 - 5089*A*a^4*b^3)*d*e^6 + 256*(B*a^6*b - 3*A*a^5*b^
2)*e^7)*x^2 + 5*(96*B*b^7*d^7 - 16*(59*B*a*b^6 + 9*A*b^7)*d^6*e + 12*(395*B
*a^2*b^5 + 124*A*a*b^6)*d^5*e^2 - 42*(491*B*a^3*b^4 + 187*A*a^2*b^5)*d^4*e^
3 - 2*(51487*B*a^4*b^3 - 17430*A*a^3*b^4)*d^3*e^4 - 3*(20687*B*a^5*b^2 - 45
677*A*a^4*b^3)*d^2*e^5 - 1536*(5*B*a^6*b - 16*A*a^5*b^2)*d*e^6 + 256*(B*a^7
 - 3*A*a^6*b)*e^7)*x)*sqrt(e*x + d))/(a^5*b^8*d^11 - 8*a^6*b^7*d^10*e + 28*
```

```
a^7*b^6*d^9*e^2 - 56*a^8*b^5*d^8*e^3 + 70*a^9*b^4*d^7*e^4 - 56*a^10*b^3*d^6
*e^5 + 28*a^11*b^2*d^5*e^6 - 8*a^12*b*d^4*e^7 + a^13*d^3*e^8 + (b^13*d^8*e^
3 - 8*a*b^12*d^7*e^4 + 28*a^2*b^11*d^6*e^5 - 56*a^3*b^10*d^5*e^6 + 70*a^4*b
^9*d^4*e^7 - 56*a^5*b^8*d^3*e^8 + 28*a^6*b^7*d^2*e^9 - 8*a^7*b^6*d*e^10 + a
^8*b^5*e^11)*x^8 + (3*b^13*d^9*e^2 - 19*a*b^12*d^8*e^3 + 44*a^2*b^11*d^7*e^
4 - 28*a^3*b^10*d^6*e^5 - 70*a^4*b^9*d^5*e^6 + 182*a^5*b^8*d^4*e^7 - 196*a^
6*b^7*d^3*e^8 + 116*a^7*b^6*d^2*e^9 - 37*a^8*b^5*d*e^10 + 5*a^9*b^4*e^11)*x
^7 + (3*b^13*d^10*e - 9*a*b^12*d^9*e^2 - 26*a^2*b^11*d^8*e^3 + 172*a^3*b^10
*d^7*e^4 - 350*a^4*b^9*d^6*e^5 + 322*a^5*b^8*d^5*e^6 - 56*a^6*b^7*d^4*e^7 -
 164*a^7*b^6*d^3*e^8 + 163*a^8*b^5*d^2*e^9 - 65*a^9*b^4*d*e^10 + 10*a^10*b^
3*e^11)*x^6 + (b^13*d^11 + 7*a*b^12*d^10*e - 62*a^2*b^11*d^9*e^2 + 134*a^3*
b^10*d^8*e^3 - 10*a^4*b^9*d^7*e^4 - 406*a^5*b^8*d^6*e^5 + 728*a^6*b^7*d^5*e
^6 - 568*a^7*b^6*d^4*e^7 + 161*a^8*b^5*d^3*e^8 + 55*a^9*b^4*d^2*e^9 - 50*a^
10*b^3*d*e^10 + 10*a^11*b^2*e^11)*x^5 + 5*(a*b^12*d^11 - 2*a^2*b^11*d^10*e
- 14*a^3*b^10*d^9*e^2 + 65*a^4*b^9*d^8*e^3 - 106*a^5*b^8*d^7*e^4 + 56*a^6*b
^7*d^6*e^5 + 56*a^7*b^6*d^5*e^6 - 106*a^8*b^5*d^4*e^7 + 65*a^9*b^4*d^3*e^8
- 14*a^10*b^3*d^2*e^9 - 2*a^11*b^2*d*e^10 + a^12*b*e^11)*x^4 + (10*a^2*b^11
*d^11 - 50*a^3*b^10*d^10*e + 55*a^4*b^9*d^9*e^2 + 161*a^5*b^8*d^8*e^3 - 568
*a^6*b^7*d^7*e^4 + 728*a^7*b^6*d^6*e^5 - 406*a^8*b^5*d^5*e^6 - 10*a^9*b^4*d
^4*e^7 + 134*a^10*b^3*d^3*e^8 - 62*a^11*b^2*d^2*e^9 + 7*a^12*b*d*e^10 + a^1
3*e^11)*x^3 + (10*a^3*b^10*d^11 - 65*a^4*b^9*d^10*e + 163*a^5*b^8*d^9*e^2 -
 164*a^6*b^7*d^8*e^3 - 56*a^7*b^6*d^7*e^4 + 322*a^8*b^5*d^6*e^5 - 350*a^9*b
^4*d^5*e^6 + 172*a^10*b^3*d^4*e^7 - 26*a^11*b^2*d^3*e^8 - 9*a^12*b*d^2*e^9
+ 3*a^13*d*e^10)*x^2 + (5*a^4*b^9*d^11 - 37*a^5*b^8*d^10*e + 116*a^6*b^7*d^
9*e^2 - 196*a^7*b^6*d^8*e^3 + 182*a^8*b^5*d^7*e^4 - 70*a^9*b^4*d^6*e^5 - 28
*a^10*b^3*d^5*e^6 + 44*a^11*b^2*d^4*e^7 - 19*a^12*b*d^3*e^8 + 3*a^13*d^2*e^
9)*x), -1/1920*(45045*(2*B*a^5*b^2*d^4*e^4 + (B*a^6*b - 3*A*a^5*b^2)*d^3*e^
5 + (2*B*b^7*d*e^7 + (B*a*b^6 - 3*A*b^7)*e^8)*x^8 + (6*B*b^7*d^2*e^6 + (13*
B*a*b^6 - 9*A*b^7)*d*e^7 + 5*(B*a^2*b^5 - 3*A*a*b^6)*e^8)*x^7 + (6*B*b^7*d^
3*e^5 + 3*(11*B*a*b^6 - 3*A*b^7)*d^2*e^6 + 5*(7*B*a^2*b^5 - 9*A*a*b^6)*d*e^
7 + 10*(B*a^3*b^4 - 3*A*a^2*b^5)*e^8)*x^6 + (2*B*b^7*d^4*e^4 + (31*B*a*b^6
- 3*A*b^7)*d^3*e^5 + 15*(5*B*a^2*b^5 - 3*A*a*b^6)*d^2*e^6 + 10*(5*B*a^3*b^4
 - 9*A*a^2*b^5)*d*e^7 + 10*(B*a^4*b^3 - 3*A*a^3*b^4)*e^8)*x^5 + 5*(2*B*a*b^
6*d^4*e^4 + (13*B*a^2*b^5 - 3*A*a*b^6)*d^3*e^5 + 18*(B*a^3*b^4 - A*a^2*b^5)
*d^2*e^6 + 2*(4*B*a^4*b^3 - 9*A*a^3*b^4)*d*e^7 + (B*a^5*b^2 - 3*A*a^4*b^3)*
e^8)*x^4 + (20*B*a^2*b^5*d^4*e^4 + 10*(7*B*a^3*b^4 - 3*A*a^2*b^5)*d^3*e^5 +
 30*(2*B*a^4*b^3 - 3*A*a^3*b^4)*d^2*e^6 + (17*B*a^5*b^2 - 45*A*a^4*b^3)*d*e
^7 + (B*a^6*b - 3*A*a^5*b^2)*e^8)*x^3 + (20*B*a^3*b^4*d^4*e^4 + 10*(4*B*a^4
*b^3 - 3*A*a^3*b^4)*d^3*e^5 + 3*(7*B*a^5*b^2 - 15*A*a^4*b^3)*d^2*e^6 + 3*(B
*a^6*b - 3*A*a^5*b^2)*d*e^7)*x^2 + (10*B*a^4*b^3*d^4*e^4 + (11*B*a^5*b^2 -
15*A*a^4*b^3)*d^3*e^5 + 3*(B*a^6*b - 3*A*a^5*b^2)*d^2*e^6)*x)*sqrt(-b/(b*d
- a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d
)) + (768*A*a^7*e^7 + 96*(B*a*b^6 + 4*A*b^7)*d^7 - 16*(62*B*a^2*b^5 + 213*A
*a*b^6)*d^6*e + 28*(187*B*a^3*b^4 + 498*A*a^2*b^5)*d^5*e^2 - 70*(332*B*a^4*
b^3 + 519*A*a^3*b^4)*d^4*e^3 - (100363*B*a^5*b^2 - 79905*A*a^4*b^3)*d^3*e^4
 - 1024*(16*B*a^6*b - 87*A*a^5*b^2)*d^2*e^5 + 512*(B*a^7 - 18*A*a^6*b)*d*e^
6 - 45045*(2*B*b^7*d*e^6 + (B*a*b^6 - 3*A*b^7)*e^7)*x^7 - 105105*(2*B*b^7*d
^2*e^5 + (5*B*a*b^6 - 3*A*b^7)*d*e^6 + 2*(B*a^2*b^5 - 3*A*a*b^6)*e^7)*x^6 -
 3003*(46*B*b^7*d^3*e^4 + 3*(117*B*a*b^6 - 23*A*b^7)*d^2*e^5 + 12*(35*B*a^2
*b^5 - 41*A*a*b^6)*d*e^6 + 128*(B*a^3*b^4 - 3*A*a^2*b^5)*e^7)*x^5 - 2145*(6
*B*b^7*d^4*e^3 + (307*B*a*b^6 - 9*A*b^7)*d^3*e^4 + 12*(83*B*a^2*b^5 - 38*A*
a*b^6)*d^2*e^5 + 6*(123*B*a^3*b^4 - 211*A*a^2*b^5)*d*e^6 + 158*(B*a^4*b^3 -
 3*A*a^3*b^4)*e^7)*x^4 + 715*(4*B*b^7*d^5*e^2 - 2*(43*B*a*b^6 + 3*A*b^7)*d^
4*e^3 - 4*(434*B*a^2*b^5 - 33*A*a*b^6)*d^3*e^4 - 2*(1547*B*a^3*b^4 - 1269*A
*a^2*b^5)*d^2*e^5 - 2*(755*B*a^4*b^3 - 1686*A*a^3*b^4)*d*e^6 - 193*(B*a^5*b
^2 - 3*A*a^4*b^3)*e^7)*x^3 - 65*(16*B*b^7*d^6*e - 12*(17*B*a*b^6 + 2*A*b^7)
*d^5*e^2 + 6*(295*B*a^2*b^5 + 53*A*a*b^6)*d^4*e^3 + 2*(8837*B*a^3*b^4 - 140
7*A*a^2*b^5)*d^3*e^4 + 6*(3091*B*a^4*b^3 - 4184*A*a^3*b^4)*d^2*e^5 + 3*(186
7*B*a^5*b^2 - 5089*A*a^4*b^3)*d*e^6 + 256*(B*a^6*b - 3*A*a^5*b^2)*e^7)*x^2
+ 5*(96*B*b^7*d^7 - 16*(59*B*a*b^6 + 9*A*b^7)*d^6*e + 12*(395*B*a^2*b^5 + 1
24*A*a*b^6)*d^5*e^2 - 42*(491*B*a^3*b^4 + 187*A*a^2*b^5)*d^4*e^3 - 2*(51487
*B*a^4*b^3 - 17430*A*a^3*b^4)*d^3*e^4 - 3*(20687*B*a^5*b^2 - 45677*A*a^4*b^
3)*d^2*e^5 - 1536*(5*B*a^6*b - 16*A*a^5*b^2)*d*e^6 + 256*(B*a^7 - 3*A*a^6*b
)*e^7)*x)*sqrt(e*x + d))/(a^5*b^8*d^11 - 8*a^6*b^7*d^10*e + 28*a^7*b^6*d^9*
e^2 - 56*a^8*b^5*d^8*e^3 + 70*a^9*b^4*d^7*e^4 - 56*a^10*b^3*d^6*e^5 + 28*a^
11*b^2*d^5*e^6 - 8*a^12*b*d^4*e^7 + a^13*d^3*e^8 + (b^13*d^8*e^3 - 8*a*b^12
*d^7*e^4 + 28*a^2*b^11*d^6*e^5 - 56*a^3*b^10*d^5*e^6 + 70*a^4*b^9*d^4*e^7 -
 56*a^5*b^8*d^3*e^8 + 28*a^6*b^7*d^2*e^9 - 8*a^7*b^6*d*e^10 + a^8*b^5*e^11)
*x^8 + (3*b^13*d^9*e^2 - 19*a*b^12*d^8*e^3 + 44*a^2*b^11*d^7*e^4 - 28*a^3*b
^10*d^6*e^5 - 70*a^4*b^9*d^5*e^6 + 182*a^5*b^8*d^4*e^7 - 196*a^6*b^7*d^3*e^
8 + 116*a^7*b^6*d^2*e^9 - 37*a^8*b^5*d*e^10 + 5*a^9*b^4*e^11)*x^7 + (3*b^13
*d^10*e - 9*a*b^12*d^9*e^2 - 26*a^2*b^11*d^8*e^3 + 172*a^3*b^10*d^7*e^4 - 3
50*a^4*b^9*d^6*e^5 + 322*a^5*b^8*d^5*e^6 - 56*a^6*b^7*d^4*e^7 - 164*a^7*b^6
*d^3*e^8 + 163*a^8*b^5*d^2*e^9 - 65*a^9*b^4*d*e^10 + 10*a^10*b^3*e^11)*x^6
+ (b^13*d^11 + 7*a*b^12*d^10*e - 62*a^2*b^11*d^9*e^2 + 134*a^3*b^10*d^8*e^3
 - 10*a^4*b^9*d^7*e^4 - 406*a^5*b^8*d^6*e^5 + 728*a^6*b^7*d^5*e^6 - 568*a^7
*b^6*d^4*e^7 + 161*a^8*b^5*d^3*e^8 + 55*a^9*b^4*d^2*e^9 - 50*a^10*b^3*d*e^1
0 + 10*a^11*b^2*e^11)*x^5 + 5*(a*b^12*d^11 - 2*a^2*b^11*d^10*e - 14*a^3*b^1
0*d^9*e^2 + 65*a^4*b^9*d^8*e^3 - 106*a^5*b^8*d^7*e^4 + 56*a^6*b^7*d^6*e^5 +
 56*a^7*b^6*d^5*e^6 - 106*a^8*b^5*d^4*e^7 + 65*a^9*b^4*d^3*e^8 - 14*a^10*b^
3*d^2*e^9 - 2*a^11*b^2*d*e^10 + a^12*b*e^11)*x^4 + (10*a^2*b^11*d^11 - 50*a
^3*b^10*d^10*e + 55*a^4*b^9*d^9*e^2 + 161*a^5*b^8*d^8*e^3 - 568*a^6*b^7*d^7
*e^4 + 728*a^7*b^6*d^6*e^5 - 406*a^8*b^5*d^5*e^6 - 10*a^9*b^4*d^4*e^7 + 134
*a^10*b^3*d^3*e^8 - 62*a^11*b^2*d^2*e^9 + 7*a^12*b*d*e^10 + a^13*e^11)*x^3
+ (10*a^3*b^10*d^11 - 65*a^4*b^9*d^10*e + 163*a^5*b^8*d^9*e^2 - 164*a^6*b^7
*d^8*e^3 - 56*a^7*b^6*d^7*e^4 + 322*a^8*b^5*d^6*e^5 - 350*a^9*b^4*d^5*e^6 +
 172*a^10*b^3*d^4*e^7 - 26*a^11*b^2*d^3*e^8 - 9*a^12*b*d^2*e^9 + 3*a^13*d*e
^10)*x^2 + (5*a^4*b^9*d^11 - 37*a^5*b^8*d^10*e + 116*a^6*b^7*d^9*e^2 - 196*
a^7*b^6*d^8*e^3 + 182*a^8*b^5*d^7*e^4 - 70*a^9*b^4*d^6*e^5 - 28*a^10*b^3*d^
5*e^6 + 44*a^11*b^2*d^4*e^7 - 19*a^12*b*d^3*e^8 + 3*a^13*d^2*e^9)*x)]
```

giac [B] time = 0.44, size = 1676, normalized size = 3.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3003/128*(2*B*b^3*d*e^4 + B*a*b^2*e^5 - 3*A*b^3*e^5)*arctan(sqrt(x*e + d)*b
/sqrt(-b^2*d + a*b*e))/((b^8*d^8 - 8*a*b^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*
a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*
e^6 - 8*a^7*b*d*e^7 + a^8*e^8)*sqrt(-b^2*d + a*b*e)) + 1/1920*(90090*(x*e +
 d)^7*B*b^7*d*e^4 - 420420*(x*e + d)^6*B*b^7*d^2*e^4 + 768768*(x*e + d)^5*B
*b^7*d^3*e^4 - 677820*(x*e + d)^4*B*b^7*d^4*e^4 + 275990*(x*e + d)^3*B*b^7*
d^5*e^4 - 33280*(x*e + d)^2*B*b^7*d^6*e^4 - 2560*(x*e + d)*B*b^7*d^7*e^4 -
768*B*b^7*d^8*e^4 + 45045*(x*e + d)^7*B*a*b^6*e^5 - 135135*(x*e + d)^7*A*b^
7*e^5 + 210210*(x*e + d)^6*B*a*b^6*d*e^5 + 630630*(x*e + d)^6*A*b^7*d*e^5 -
 1153152*(x*e + d)^5*B*a*b^6*d^2*e^5 - 1153152*(x*e + d)^5*A*b^7*d^2*e^5 +
1694550*(x*e + d)^4*B*a*b^6*d^3*e^5 + 1016730*(x*e + d)^4*A*b^7*d^3*e^5 - 9
65965*(x*e + d)^3*B*a*b^6*d^4*e^5 - 413985*(x*e + d)^3*A*b^7*d^4*e^5 + 1497
60*(x*e + d)^2*B*a*b^6*d^5*e^5 + 49920*(x*e + d)^2*A*b^7*d^5*e^5 + 14080*(x
*e + d)*B*a*b^6*d^6*e^5 + 3840*(x*e + d)*A*b^7*d^6*e^5 + 5376*B*a*b^6*d^7*e
^5 + 768*A*b^7*d^7*e^5 + 210210*(x*e + d)^6*B*a^2*b^5*e^6 - 630630*(x*e + d
)^6*A*a*b^6*e^6 + 2306304*(x*e + d)^5*A*a*b^6*d*e^6 - 1016730*(x*e + d)^4*B
*a^2*b^5*d^2*e^6 - 3050190*(x*e + d)^4*A*a*b^6*d^2*e^6 + 1103960*(x*e + d)^
3*B*a^2*b^5*d^3*e^6 + 1655940*(x*e + d)^3*A*a*b^6*d^3*e^6 - 249600*(x*e + d
)^2*B*a^2*b^5*d^4*e^6 - 249600*(x*e + d)^2*A*a*b^6*d^4*e^6 - 30720*(x*e + d
)*B*a^2*b^5*d^5*e^6 - 23040*(x*e + d)*A*a*b^6*d^5*e^6 - 16128*B*a^2*b^5*d^6
*e^6 - 5376*A*a*b^6*d^6*e^6 + 384384*(x*e + d)^5*B*a^3*b^4*e^7 - 1153152*(x
*e + d)^5*A*a^2*b^5*e^7 - 338910*(x*e + d)^4*B*a^3*b^4*d*e^7 + 3050190*(x*e
 + d)^4*A*a^2*b^5*d*e^7 - 275990*(x*e + d)^3*B*a^3*b^4*d^2*e^7 - 2483910*(x
*e + d)^3*A*a^2*b^5*d^2*e^7 + 166400*(x*e + d)^2*B*a^3*b^4*d^3*e^7 + 499200
*(x*e + d)^2*A*a^2*b^5*d^3*e^7 + 32000*(x*e + d)*B*a^3*b^4*d^4*e^7 + 57600*
(x*e + d)*A*a^2*b^5*d^4*e^7 + 26880*B*a^3*b^4*d^5*e^7 + 16128*A*a^2*b^5*d^5
*e^7 + 338910*(x*e + d)^4*B*a^4*b^3*e^8 - 1016730*(x*e + d)^4*A*a^3*b^4*e^8
 - 275990*(x*e + d)^3*B*a^4*b^3*d*e^8 + 1655940*(x*e + d)^3*A*a^3*b^4*d*e^8
 - 499200*(x*e + d)^2*A*a^3*b^4*d^2*e^8 - 12800*(x*e + d)*B*a^4*b^3*d^3*e^8
 - 76800*(x*e + d)*A*a^3*b^4*d^3*e^8 - 26880*B*a^4*b^3*d^4*e^8 - 26880*A*a^
3*b^4*d^4*e^8 + 137995*(x*e + d)^3*B*a^5*b^2*e^9 - 413985*(x*e + d)^3*A*a^4
*b^3*e^9 - 49920*(x*e + d)^2*B*a^5*b^2*d*e^9 + 249600*(x*e + d)^2*A*a^4*b^3
*d*e^9 - 3840*(x*e + d)*B*a^5*b^2*d^2*e^9 + 57600*(x*e + d)*A*a^4*b^3*d^2*e
^9 + 16128*B*a^5*b^2*d^3*e^9 + 26880*A*a^4*b^3*d^3*e^9 + 16640*(x*e + d)^2*
B*a^6*b*e^10 - 49920*(x*e + d)^2*A*a^5*b^2*e^10 + 5120*(x*e + d)*B*a^6*b*d*
e^10 - 23040*(x*e + d)*A*a^5*b^2*d*e^10 - 5376*B*a^6*b*d^2*e^10 - 16128*A*a
^5*b^2*d^2*e^10 - 1280*(x*e + d)*B*a^7*e^11 + 3840*(x*e + d)*A*a^6*b*e^11 +
 768*B*a^7*d*e^11 + 5376*A*a^6*b*d*e^11 - 768*A*a^7*e^12)/((b^8*d^8 - 8*a*b
^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 5
6*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a^7*b*d*e^7 + a^8*e^8)*((x*e + d
)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e + d)*a*e)^5)
```

maple [**B**] time = 0.10, size = 1735, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -20195/192*e^7/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^3*d+5327/32*
e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a*d^3-9443/128*e^5/(a*e-b
*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a*d^4+4253/192*e^5/(a*e-b*d)^8*b^6/
(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a*d-749/5*e^5/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(
e*x+d)^(5/2)*B*a*d^2-3269/64*e^8/(a*e-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2
)*B*a^4*d+36463/192*e^5/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a*d^3
+5327/32*e^8/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^3*d-15981/64*e
^7/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^2*d^2+1029/16*e^6/(a*e-b
*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^2*d^3+1211/64*e^7/(a*e-b*d)^8*b^4
/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^3*d^2+28329/64*e^7/(a*e-b*d)^8*b^5/(b*e*x+
a*e)^5*(e*x+d)^(3/2)*A*a^2*d-4067/64*e^6/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x
+d)^(3/2)*B*a^2*d^2+2002/5*e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(5/2)*
A*a*d-28329/64*e^6/(a*e-b*d)^8*b^6/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*a*d^2-252/
5*e^6/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*a^2*d-2/3*e^5/(a*e-b*d)
^7/(e*x+d)^(3/2)*a*B-2/5*e^5/(a*e-b*d)^6/(e*x+d)^(5/2)*A+4*e^5/(a*e-b*d)^7/
(e*x+d)^(3/2)*A*b-42*e^5*b^2/(a*e-b*d)^8/(e*x+d)^(1/2)*A+2/5*e^4/(a*e-b*d)^
6/(e*x+d)^(5/2)*B*d+7837/64*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*A*(e*x+d)^(7/
2)*d+3003/64*e^4/(a*e-b*d)^8*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*B*d+1083/64*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)
^(9/2)*B*d+350/3*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(5/2)*B*d^3-8099
/96*e^4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*d^4-5327/128*e^9/(a*e
-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*a^4-5327/128*e^5/(a*e-b*d)^8*b^7/
(b*e*x+a*e)^5*(e*x+d)^(1/2)*A*d^4-9009/128*e^5/(a*e-b*d)^8*b^3/((a*e-b*d)*b
)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*A-3633/128*e^5/(a*e-b*d
)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(9/2)*A-10/3*e^4/(a*e-b*d)^7/(e*x+d)^(3/2)*B*
b*d+30*e^4*b^2/(a*e-b*d)^8/(e*x+d)^(1/2)*B*d+12*e^5*b/(a*e-b*d)^8/(e*x+d)^(
1/2)*a*B+3003/128*e^5/(a*e-b*d)^8*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)*a*B+1253/15*e^7/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e
*x+d)^(5/2)*B*a^3-9443/64*e^8/(a*e-b*d)^8*b^4/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A
*a^3+9443/64*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(3/2)*A*d^3+12131/19
2*e^8/(a*e-b*d)^8*b^3/(b*e*x+a*e)^5*(e*x+d)^(3/2)*B*a^4+9629/192*e^6/(a*e-b
*d)^8*b^5/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*a^2+1467/128*e^5/(a*e-b*d)^8*b^6/(b
*e*x+a*e)^5*(e*x+d)^(9/2)*B*a-1001/5*e^7/(a*e-b*d)^8*b^5/(b*e*x+a*e)^5*(e*x
+d)^(5/2)*A*a^2-1001/5*e^5/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(5/2)*A*d^
2+2373/128*e^9/(a*e-b*d)^8*b^2/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*a^5+1477/64*e^
4/(a*e-b*d)^8*b^7/(b*e*x+a*e)^5*(e*x+d)^(1/2)*B*d^5-6941/96*e^4/(a*e-b*d)^8
*b^7/(b*e*x+a*e)^5*B*(e*x+d)^(7/2)*d^2-7837/64*e^6/(a*e-b*d)^8*b^6/(b*e*x+a
*e)^5*A*(e*x+d)^(7/2)*a
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 3.50, size = 802, normalized size = 1.84

$$\frac{\frac{27599\,(d+e\,x)^3\,(-3\,A\,b^3\,e^5+2\,B\,d\,b^3\,e^4+B\,a\,b^2\,e^5)}{384\,(a\,e-b\,d)^4}-\frac{2\,(A\,e^5-B\,d\,e^4)}{5\,(a\,e-b\,d)}+\frac{11297\,(d+e\,x)^4\,(-3\,A\,b^4\,e^5+2\,B\,d\,b}{64\,(a\,e-b\,d)^5}}{(d+e\,x)^{5/2}\,(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5\,d^5)-(d+e\,x)^{9/2}\,(-10\,a^3\,b^2\,e^3+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((27599*(d + e*x)^3*(B*a*b^2*e^5 - 3*A*b^3*e^5 + 2*B*b^3*d*e^4))/(384*(a*e
- b*d)^4) - (2*(A*e^5 - B*d*e^4))/(5*(a*e - b*d)) + (11297*(d + e*x)^4*(B*a
*b^3*e^5 - 3*A*b^4*e^5 + 2*B*b^4*d*e^4))/(64*(a*e - b*d)^5) + (7007*(d + e*
x)^6*(B*a*b^5*e^5 - 3*A*b^6*e^5 + 2*B*b^6*d*e^4))/(64*(a*e - b*d)^7) - (2*(
d + e*x)*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(3*(a*e - b*d)^2) + (26*b*(d
+ e*x)^2*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(3*(a*e - b*d)^3) + (1001*b^4
*(d + e*x)^5*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(5*(a*e - b*d)^6) + (3003
*b^6*(d + e*x)^7*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4))/(128*(a*e - b*d)^8))/
((d + e*x)^(5/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e
^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) - (d + e*x)^(9/2)*(10*b^5*d^3 - 10*a^3*
b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e) + (d + e*x)^(7/2)*(5*b^5*d^4 +
 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d^3*e) + b^
5*(d + e*x)^(15/2) - (5*b^5*d - 5*a*b^4*e)*(d + e*x)^(13/2) + (d + e*x)^(11
/2)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e)) + (3003*b^(3/2)*e^4*atan(
(b^(1/2)*e^4*(d + e*x)^(1/2)*(B*a*e - 3*A*b*e + 2*B*b*d)*(a^8*e^8 + b^8*d^8
 + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^
3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a*b^7*d^7*e - 8*a^7*b*d*e^7))/((a*e - b*
d)^(17/2)*(B*a*e^5 - 3*A*b*e^5 + 2*B*b*d*e^4)))*(B*a*e - 3*A*b*e + 2*B*b*d)
)/(128*(a*e - b*d)^(17/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.1835 $\int (A+Bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-aBe-Abe+2bBd)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(Bd-Ae)}{9e^3(a+bx)}+\frac{2bB}{}$$

```
[Out] 2/9*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/11*
(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/13*b*
B*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-aBe-Abe+2bBd)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(Bd-Ae)}{9e^3(a+bx)}+\frac{2bB}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
9*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(11*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(13/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(13*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{7/2}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Big(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{7/2}}{e^2}+\frac{b(-2bBd+Abe+aBe)(a}{e^2}}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^3(a+bx)}-\frac{2(2bBd-Ab}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(13ae(11Ae-2Bd+9Bex)+13Abe(9ex-2d)+bB\left(8d^2-36dex+99e^2x^2\right)\right)}{1287e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(13*A*b*e*(-2*d + 9*e*x) + 13*a*e*(-2*
B*d + 11*A*e + 9*B*e*x) + b*B*(8*d^2 - 36*d*e*x + 99*e^2*x^2)))/(1287*e^3*(
a + b*x))
```

fricas [A] time = 0.51, size = 230, normalized size = 1.40

$$\frac{2\left(99\,Bbe^6x^6 + 8\,Bbd^6 + 143\,Aad^4e^2 - 26\,(Ba + Ab)d^5e + 9\left(40\,Bbde^5 + 13\,(Ba + Ab)e^6\right)x^5 + \left(458\,Bbd^2e^4 + 14\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*B*b*e^6*x^6 + 8*B*b*d^6 + 143*A*a*d^4*e^2 - 26*(B*a + A*b)*d^5*e
 + 9*(40*B*b*d*e^5 + 13*(B*a + A*b)*e^6)*x^5 + (458*B*b*d^2*e^4 + 143*A*a*e
^6 + 442*(B*a + A*b)*d*e^5)*x^4 + 2*(106*B*b*d^3*e^3 + 286*A*a*d*e^5 + 299*
(B*a + A*b)*d^2*e^4)*x^3 + 3*(B*b*d^4*e^2 + 286*A*a*d^2*e^4 + 104*(B*a + A*
b)*d^3*e^3)*x^2 - (4*B*b*d^5*e - 572*A*a*d^3*e^3 - 13*(B*a + A*b)*d^4*e^2)*
x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.29, size = 1228, normalized size = 7.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^4*e^(-1)*sgn(b*x
 + a) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^4*e^(-1)*sgn(b*x
+ a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^
2)*B*b*d^4*e^(-2)*sgn(b*x + a) + 12012*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3
/2)*d + 15*sqrt(x*e + d)*d^2)*B*a*d^3*e^(-1)*sgn(b*x + a) + 12012*(3*(x*e +
 d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^3*e^(-1)*sgn
(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b*d^3*e^(-2)*sgn(b*x + a) + 45045*sqrt(x
*e + d)*A*a*d^4*sgn(b*x + a) + 60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*
A*a*d^3*sgn(b*x + a) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*d^2*e^(-1)*sgn(b*x + a) + 7
722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*A*b*d^2*e^(-1)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*B*b*d^2*e^(-2)*sgn(b*x + a) + 18018*(3*(x*e + d)^(
5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*d^2*sgn(b*x + a) +
572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*d*e^(-1)*sgn(b*x + a)
 + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^
2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b*d*e^(-1)*sgn(b*x +
 a) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*B*b*d*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*d*sgn(b*x +
a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*B*a*e^(-1)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b*e^(-1)*sgn(b*x + a) + 15*(231*(x*e
 + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x
*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3
003*sqrt(x*e + d)*d^6)*B*b*e^(-2)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{9}{2}}\left(99Bb\,x^{2}e^{2}+117Ab\,e^{2}x+117Ba\,e^{2}x-36Bbdex+143Aa\,e^{2}-26Abde-26Bade+8Bb\,d^{2}\right)\sqrt{(bx+a)}}{1287\,(bx+a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*(e*x+d)^(9/2)*(99*B*b*e^2*x^2+117*A*b*e^2*x+117*B*a*e^2*x-36*B*b*d*e
*x+143*A*a*e^2-26*A*b*d*e-26*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)
```

maxima [B] time = 0.56, size = 263, normalized size = 1.60

$$\frac{2\,(9\,be^{5}x^{5}-2\,bd^{5}+11\,ad^{4}e+(34\,bde^{4}+11\,ae^{5})x^{4}+2\,(23\,bd^{2}e^{3}+22\,ade^{4})x^{3}+6\,(4\,bd^{3}e^{2}+11\,ad^{2}e^{3})x^{2}+(bd^{4}e}{99\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*e^5*x^5 - 2*b*d^5 + 11*a*d^4*e + (34*b*d*e^4 + 11*a*e^5)*x^4 + 2*
(23*b*d^2*e^3 + 22*a*d*e^4)*x^3 + 6*(4*b*d^3*e^2 + 11*a*d^2*e^3)*x^2 + (b*d
^4*e + 44*a*d^3*e^2)*x)*sqrt(e*x + d)*A/e^2 + 2/1287*(99*b*e^6*x^6 + 8*b*d^
6 - 26*a*d^5*e + 9*(40*b*d*e^5 + 13*a*e^6)*x^5 + 2*(229*b*d^2*e^4 + 221*a*d
*e^5)*x^4 + 2*(106*b*d^3*e^3 + 299*a*d^2*e^4)*x^3 + 3*(b*d^4*e^2 + 104*a*d^
3*e^3)*x^2 - (4*b*d^5*e - 13*a*d^4*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{{(a+b\,x)}^2}\,\left(A+B\,x\right)\,{\left(d+e\,x\right)}^{7/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(7/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1836 $\int (A+Bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-aBe-Abe+2bBd)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(Bd-Ae)}{7e^3(a+bx)}+$$

```
[Out] 2/7*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/9*(
-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/11*b*B*
(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-aBe-Abe+2bBd)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(Bd-Ae)}{7e^3(a+bx)}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
7*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(11/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(11*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{5/2}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{5/2}}{e^2}+\frac{b(-2bBd+Abe+a}{e^2}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)}-\frac{2(2bBd-}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(11ae(9Ae-2Bd+7Bex)+11Abe(7ex-2d)+bB\left(8d^2-28dex+63e^2x^2\right)\right)}{693e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(11*A*b*e*(-2*d + 7*e*x) + 11*a*e*(-2*
B*d + 9*A*e + 7*B*e*x) + b*B*(8*d^2 - 28*d*e*x + 63*e^2*x^2)))/(693*e^3*(a
+ b*x))
```

fricas [A] time = 0.77, size = 189, normalized size = 1.15

$$2\Big(63\,Bbe^5x^5 + 8\,Bbd^5 + 99\,Aad^3e^2 - 22\,(Ba + Ab)d^4e + 7\,\Big(23\,Bbde^4 + 11\,(Ba + Ab)e^5\Big)x^4 + \Big(113\,Bbd^2e^3 + 99\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*B*b*e^5*x^5 + 8*B*b*d^5 + 99*A*a*d^3*e^2 - 22*(B*a + A*b)*d^4*e +
 7*(23*B*b*d*e^4 + 11*(B*a + A*b)*e^5)*x^4 + (113*B*b*d^2*e^3 + 99*A*a*e^5
+ 209*(B*a + A*b)*d*e^4)*x^3 + 3*(B*b*d^3*e^2 + 99*A*a*d*e^4 + 55*(B*a + A*
b)*d^2*e^3)*x^2 - (4*B*b*d^4*e - 297*A*a*d^2*e^3 - 11*(B*a + A*b)*d^3*e^2)*
x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.25, size = 874, normalized size = 5.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^3*e^(-1)*sgn(b*x +
 a) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^3*e^(-1)*sgn(b*x + a
) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B
*b*d^3*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
+ 15*sqrt(x*e + d)*d^2)*B*a*d^2*e^(-1)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2
) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d^2*e^(-1)*sgn(b*x + a
) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
- 35*sqrt(x*e + d)*d^3)*B*b*d^2*e^(-2)*sgn(b*x + a) + 3465*sqrt(x*e + d)*A*
a*d^3*sgn(b*x + a) + 3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*d^2*sgn
(b*x + a) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*d*e^(-1)*sgn(b*x + a) + 297*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*A*b*d*e^(-1)*sgn(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*b*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3
/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*d*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*B*a*e^(-1)*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) -
 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
+ 315*sqrt(x*e + d)*d^4)*A*b*e^(-1)*sgn(b*x + a) + 5*(63*(x*e + d)^(11/2) -
 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b*e^(-2)*sgn(b*x + a
) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.04, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(63Bb\,x^2e^2+77Ab\,e^2x+77Ba\,e^2x-28Bbdex+99Aa\,e^2-22Abde-22Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{693\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*(e*x+d)^(7/2)*(63*B*b*e^2*x^2+77*A*b*e^2*x+77*B*a*e^2*x-28*B*b*d*e*x+
99*A*a*e^2-22*A*b*d*e-22*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.58, size = 214, normalized size = 1.30

$$\frac{2\left(7\,be^{4}x^{4}-2\,bd^{4}+9\,ad^{3}e+\left(19\,bde^{3}+9\,ae^{4}\right)x^{3}+3\left(5\,bd^{2}e^{2}+9\,ade^{3}\right)x^{2}+\left(bd^{3}e+27\,ad^{2}e^{2}\right)x\right)\sqrt{ex+d}\,A}{63\,e^{2}}+\frac{2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*e^4*x^4 - 2*b*d^4 + 9*a*d^3*e + (19*b*d*e^3 + 9*a*e^4)*x^3 + 3*(5
*b*d^2*e^2 + 9*a*d*e^3)*x^2 + (b*d^3*e + 27*a*d^2*e^2)*x)*sqrt(e*x + d)*A/e
^2 + 2/693*(63*b*e^5*x^5 + 8*b*d^5 - 22*a*d^4*e + 7*(23*b*d*e^4 + 11*a*e^5)
*x^4 + (113*b*d^2*e^3 + 209*a*d*e^4)*x^3 + 3*(b*d^3*e^2 + 55*a*d^2*e^3)*x^2
 - (4*b*d^4*e - 11*a*d^3*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\,\left(A+B\,x\right)\,\left(d+e\,x\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(5/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1837 $\int (A+Bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-aBe-Abe+2bBd)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{2bB}{}$$

```
[Out] 2/5*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/7*(
-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/9*b*B*(
e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-aBe-Abe+2bBd)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(Bd-Ae)}{5e^3(a+bx)}+\frac{2bB}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
5*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(9/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(9*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^{3/2}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^{3/2}}{e^2}+\frac{b(-2bBd+Abe+aBe)(d}{e^2}\right.}{ab+b^2x}\\
&= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{2(2bBd-Ab}{}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(9ae(7Ae-2Bd+5Bex)+9Abe(5ex-2d)+bB\left(8d^2-20dex+35e^2x^2\right)\right)}{315e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(9*A*b*e*(-2*d + 5*e*x) + 9*a*e*(-2*B*
d + 7*A*e + 5*B*e*x) + b*B*(8*d^2 - 20*d*e*x + 35*e^2*x^2)))/(315*e^3*(a +
b*x))
```

fricas [A] time = 0.74, size = 149, normalized size = 0.91

$$\frac{2\left(35\,Bbe^4x^4+8\,Bbd^4+63\,Aad^2e^2-18\,(Ba+Ab)d^3e+5\left(10\,Bbde^3+9\,(Ba+Ab)e^4\right)x^3+3\left(Bbd^2e^2+21\,Aae\right.}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*B*b*e^4*x^4 + 8*B*b*d^4 + 63*A*a*d^2*e^2 - 18*(B*a + A*b)*d^3*e +
 5*(10*B*b*d*e^3 + 9*(B*a + A*b)*e^4)*x^3 + 3*(B*b*d^2*e^2 + 21*A*a*e^4 + 2
4*(B*a + A*b)*d*e^3)*x^2 - (4*B*b*d^3*e - 126*A*a*d*e^3 - 9*(B*a + A*b)*d^2
*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.27, size = 571, normalized size = 3.48

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Bad^2e^{(-1)}\mathrm{sgn}\,(bx+a)+105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Abd^2e^{(-1)}\mathrm{sgn}\,(bx+a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d^2*e^(-1)*sgn(b*x + a
) + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d^2*e^(-1)*sgn(b*x + a) +
 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d
^2*e^(-2)*sgn(b*x + a) + 42*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*B*a*d*e^(-1)*sgn(b*x + a) + 42*(3*(x*e + d)^(5/2) - 10*(
x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*b*d*e^(-1)*sgn(b*x + a) + 18*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*B*b*d*e^(-2)*sgn(b*x + a) + 315*sqrt(x*e + d)*A*a*d^2*sgn(b*x
+ a) + 210*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a*d*sgn(b*x + a) + 9*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*B*a*e^(-1)*sgn(b*x + a) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b*e^(-1)*sgn(b*x
 + a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d
^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b*e^(-2)*sgn(b*x +
a) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A
*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(35Bb\,x^2e^2+45Ab\,e^2x+45Ba\,e^2x-20Bbdex+63Aa\,e^2-18Abde-18Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{315\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(5/2)*(35*B*b*e^2*x^2+45*A*b*e^2*x+45*B*a*e^2*x-20*B*b*d*e*x+
63*A*a*e^2-18*A*b*d*e-18*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.61, size = 167, normalized size = 1.02

$$\frac{2\left(5\,be^3x^3-2\,bd^3+7\,ad^2e+\left(8\,bde^2+7\,ae^3\right)x^2+\left(bd^2e+14\,ade^2\right)x\right)\sqrt{ex+d}\,A}{35\,e^2}+\frac{2\left(35\,be^4x^4+8\,bd^4-18\,ad^3e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*e^3*x^3 - 2*b*d^3 + 7*a*d^2*e + (8*b*d*e^2 + 7*a*e^3)*x^2 + (b*d^
2*e + 14*a*d*e^2)*x)*sqrt(e*x + d)*A/e^2 + 2/315*(35*b*e^4*x^4 + 8*b*d^4 -
18*a*d^3*e + 5*(10*b*d*e^3 + 9*a*e^4)*x^3 + 3*(b*d^2*e^2 + 24*a*d*e^3)*x^2
- (4*b*d^3*e - 9*a*d^2*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\,\,(A+B\,x)\,\,(d+e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(3/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1838 $\int (A+Bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=164

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+$$

```
[Out] 2/3*(-a*e+b*d)*(-A*e+B*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/5*(
-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/7*b*B*(
e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-aBe-Abe+2bBd)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(Bd-Ae)}{3e^3(a+bx)}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
3*e^3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(7*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)\sqrt{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)\sqrt{d+ex}}{e^2}+\frac{b(-2bBd+Abe+aBe)(d}{e^2}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{2(2bBd-A}{}\end{aligned}$$

Mathematica [A] time = 0.06, size = 88, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(7ae(5Ae-2Bd+3Bex)+7Abe(3ex-2d)+bB\left(8d^2-12dex+15e^2x^2\right)\right)}{105e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(7*A*b*e*(-2*d + 3*e*x) + 7*a*e*(-2*B*
d + 5*A*e + 3*B*e*x) + b*B*(8*d^2 - 12*d*e*x + 15*e^2*x^2)))/(105*e^3*(a +
b*x))
```

fricas [A] time = 0.73, size = 108, normalized size = 0.66

$$\frac{2\bigl(15\,Bbe^3x^3 + 8\,Bbd^3 + 35\,Aade^2 - 14\,(Ba + Ab)d^2e + 3\,\bigl(Bbde^2 + 7\,(Ba + Ab)e^3\bigr)x^2 - \bigl(4\,Bbd^2e - 35\,Aae^3 - 7\,(Ba}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*B*b*e^3*x^3 + 8*B*b*d^3 + 35*A*a*d*e^2 - 14*(B*a + A*b)*d^2*e + 3
*(B*b*d*e^2 + 7*(B*a + A*b)*e^3)*x^2 - (4*B*b*d^2*e - 35*A*a*e^3 - 7*(B*a +
 A*b)*d*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.24, size = 322, normalized size = 1.96

$$\frac{2}{105}\Bigl(35\Bigl((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\Bigr)Bade^{(-1)}\mathrm{sgn}\,(bx+a) + 35\Bigl((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\Bigr)Abde^{(-1)}\mathrm{sgn}\,(bx+a) + 7\Bigl($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*d*e^(-1)*sgn(b*x + a) +
 35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*d*e^(-1)*sgn(b*x + a) + 7*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*d*e^(-2)
*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a*e^(-1)*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*b*e^(-1)*sgn(b*x + a) + 3*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*b
*e^(-2)*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a*d*sgn(b*x + a) + 35*((x*e + d)
^(3/2) - 3*sqrt(x*e + d)*d)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.54

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(15Bb\,x^2e^2 + 21Ab\,e^2x + 21Ba\,e^2x - 12Bbdex + 35Aa\,e^2 - 14Abde - 14Bade + 8Bb\,d^2\right)\sqrt{(bx+a)^2}}{105\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(3/2)*(15*B*b*e^2*x^2+21*A*b*e^2*x+21*B*a*e^2*x-12*B*b*d*e*x+
35*A*a*e^2-14*A*b*d*e-14*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.60, size = 120, normalized size = 0.73

$$\frac{2\left(3\,be^2x^2 - 2\,bd^2 + 5\,ade + \left(bde + 5\,ae^2\right)x\right)\sqrt{ex+d}\,A}{15\,e^2} + \frac{2\bigl(15\,be^3x^3 + 8\,bd^3 - 14\,ad^2e + 3\,\bigl(bde^2 + 7\,ae^3\bigr)x^2 - \bigl(4\,bd}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*e^2*x^2 - 2*b*d^2 + 5*a*d*e + (b*d*e + 5*a*e^2)*x)*sqrt(e*x + d)*
A/e^2 + 2/105*(15*b*e^3*x^3 + 8*b*d^3 - 14*a*d^2*e + 3*(b*d*e^2 + 7*a*e^3)*
x^2 - (4*b*d^2*e - 7*a*d*e^2)*x)*sqrt(e*x + d)*B/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{{\left(a+b\,x\right)}^2}\,\left(A+B\,x\right)\,\sqrt{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(A + B*x)*(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \sqrt{d + ex} \sqrt{\left(a + bx\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)*sqrt((a + b*x)**2), x)
```

3.1839 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=162

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-aBe-Abe+2bBd)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)}+\frac{2bB\sqrt{a}}{}$$

```
[Out] -2/3*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/5
*b*B*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2*(-a*e+b*d)*(-A*e+B*d)*(e
*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-aBe-Abe+2bBd)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)}+\frac{2bB\sqrt{a}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
3*(a + b*x)) - (2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(3*e^3*(a + b*x)) + (2*b*B*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(5*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2\sqrt{d+ex}}+\frac{b(-2bBd+Abe+aBe)\sqrt{d+ex}}{e^2}+\frac{b^2B(d+ex)^{3/}}{e^2}\right.}{ab+b^2x}\\ &= \frac{2(bd-ae)(Bd-Ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)}-\frac{2(2bBd-Abe-aBe)(d}{3e^3(}\end{aligned}$$

Mathematica [A] time = 0.07, size = 86, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,\left(5ae(3Ae-2Bd+Bex)+5Abe(ex-2d)+bB\left(8d^2-4dex+3e^2x^2\right)\right)}{15e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(5*A*b*e*(-2*d + e*x) + 5*a*e*(-2*B*d +
3*A*e + B*e*x) + b*B*(8*d^2 - 4*d*e*x + 3*e^2*x^2)))/(15*e^3*(a + b*x))
```

fricas [A] time = 1.01, size = 70, normalized size = 0.43

$$\frac{2\left(3\,Bbe^{2}x^{2}+8\,Bbd^{2}+15\,Aae^{2}-10\,(Ba+Ab)de-\left(4\,Bbde-5\,(Ba+Ab)e^{2}\right)x\right)\sqrt{ex+d}}{15\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*B*b*e^2*x^2 + 8*B*b*d^2 + 15*A*a*e^2 - 10*(B*a + A*b)*d*e - (4*B*b*
d*e - 5*(B*a + A*b)*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [A] time = 0.17, size = 133, normalized size = 0.82

$$\frac{2}{15}\left(5\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)Bae^{(-1)}\mathrm{sgn}\,(bx+a)+5\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)Abe^{(-1)}\mathrm{sgn}\,(bx+a)+\left(3\,(xe\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(5*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a*e^(-1)*sgn(b*x + a) + 5*(
(x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*b*e^(-1)*sgn(b*x + a) + (3*(x*e + d)
^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*b*e^(-2)*sgn(b*x +
a) + 15*sqrt(x*e + d)*A*a*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 89, normalized size = 0.55

$$\frac{2\sqrt{ex+d}\,\left(3Bb\,x^{2}e^{2}+5Ab\,e^{2}x+5Ba\,e^{2}x-4Bbdex+15Aa\,e^{2}-10Abde-10Bade+8Bb\,d^{2}\right)\sqrt{(bx+a)^{2}}}{15\,(bx+a)\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/15*(e*x+d)^(1/2)*(3*B*b*e^2*x^2+5*A*b*e^2*x+5*B*a*e^2*x-4*B*b*d*e*x+15*A*
a*e^2-10*A*b*d*e-10*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.71, size = 119, normalized size = 0.73

$$\frac{2\left(be^{2}x^{2}-2\,bd^{2}+3\,ade-\left(bde-3\,ae^{2}\right)x\right)A}{3\,\sqrt{ex+d}\,e^{2}}+\frac{2\left(3\,be^{3}x^{3}+8\,bd^{3}-10\,ad^{2}e-\left(bde^{2}-5\,ae^{3}\right)x^{2}+\left(4\,bd^{2}e-5\,ade^{2}\right.\right.}{15\,\sqrt{ex+d}\,e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*e^2*x^2 - 2*b*d^2 + 3*a*d*e - (b*d*e - 3*a*e^2)*x)*A/(sqrt(e*x + d)*
e^2) + 2/15*(3*b*e^3*x^3 + 8*b*d^3 - 10*a*d^2*e - (b*d*e^2 - 5*a*e^3)*x^2 +
 (4*b*d^2*e - 5*a*d*e^2)*x)*B/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.27, size = 156, normalized size = 0.96

$$\frac{\sqrt{(a+b\,x)^{2}}\,\left(\frac{2\,B\,x^{3}}{5}+\frac{16\,B\,b\,d^{3}+30\,A\,a\,d\,e^{2}-20\,A\,b\,d^{2}\,e-20\,B\,a\,d^{2}\,e}{15\,b\,e^{3}}+\frac{x\left(30\,A\,a\,e^{3}-10\,A\,b\,d\,e^{2}-10\,B\,a\,d\,e^{2}+8\,B\,b\,d^{2}\,e\right)}{15\,b\,e^{3}}+\frac{x^{2}\left(10\,A\,b\,e^{3}+10\,B\right.}{15\,b\,e}\right.}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^3)/5 + (16*B*b*d^3 + 30*A*a*d*e^2 - 20*A*b*d^2
*e - 20*B*a*d^2*e)/(15*b*e^3) + (x*(30*A*a*e^3 - 10*A*b*d*e^2 - 10*B*a*d*e^
2 + 8*B*b*d^2*e))/(15*b*e^3) + (x^2*(10*A*b*e^3 + 10*B*a*e^3 - 2*B*b*d*e^2)
)/(15*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/sqrt(d + e*x), x)
```

3.1840 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=160

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)\sqrt{d+ex}}+\frac{2bB\sqrt{a^2+2ab}}{3e^3}$$

```
[Out] 2/3*b*B*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2*(-a*e+b*d)*(-A*e+B*d)
*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(1/2)-2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+
d)^(1/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-aBe-Abe+2bBd)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{e^3(a+bx)\sqrt{d+ex}}+\frac{2bB\sqrt{a^2+2ab}}{3e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*S
qrt[d + e*x]) - (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(e^3*(a + b*x)) + (2*b*B*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(3*e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(ab+b^2x)(A+Bx)}{(d+ex)^{3/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{3/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2\sqrt{d+ex}}+\frac{b^2B\sqrt{d+ex}}{e^2}\right)\,d}{ab+b^2x}\\ &= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}-\frac{2(2bBd-Abe-aBe)\sqrt{d+e}}{e^3(a+b}\end{aligned}$$

Mathematica [A]   time = 0.06, size = 85, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(3ae(-Ae+2Bd+Bex)+3Abe(2d+ex)+bB\left(-8d^2-4dex+e^2x^2\right)\right)}{3e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(3*A*b*e*(2*d + e*x) + 3*a*e*(2*B*d - A*e + B*e*x) + b
*B*(-8*d^2 - 4*d*e*x + e^2*x^2)))/(3*e^3*(a + b*x)*Sqrt[d + e*x])
```

fricas [A]   time = 0.63, size = 79, normalized size = 0.49

$$\frac{2\left(Bbe^2x^2-8\,Bbd^2-3\,Aae^2+6\,(Ba+Ab)de-\left(4\,Bbde-3\,(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{3\left(e^4x+de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(B*b*e^2*x^2 - 8*B*b*d^2 - 3*A*a*e^2 + 6*(B*a + A*b)*d*e - (4*B*b*d*e -
 3*(B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^4*x + d*e^3)
```

giac [A]   time = 0.18, size = 148, normalized size = 0.92

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bbe^6\operatorname{sgn}(bx+a)-6\sqrt{xe+d}\,Bbde^6\operatorname{sgn}(bx+a)+3\sqrt{xe+d}\,Bae^7\operatorname{sgn}(bx+a)+3\sqrt{xe+d}\,Abe^7\operatorname{sgn}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b*e^6*sgn(b*x + a) - 6*sqrt(x*e + d)*B*b*d*e^6*sgn(b
*x + a) + 3*sqrt(x*e + d)*B*a*e^7*sgn(b*x + a) + 3*sqrt(x*e + d)*A*b*e^7*sg
n(b*x + a))*e^(-9) - 2*(B*b*d^2*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d
*e*sgn(b*x + a) + A*a*e^2*sgn(b*x + a))*e^(-3)/sqrt(x*e + d)
```

maple [A]   time = 0.04, size = 89, normalized size = 0.56

$$-\frac{2\left(-Bb\,x^2e^2-3Ab\,e^2x-3Ba\,e^2x+4Bbdex+3Aa\,e^2-6Abde-6Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{3\sqrt{ex+d}\;(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/3/(e*x+d)^(1/2)*(-B*b*e^2*x^2-3*A*b*e^2*x-3*B*a*e^2*x+4*B*b*d*e*x+3*A*a*
e^2-6*A*b*d*e-6*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A]   time = 0.77, size = 75, normalized size = 0.47

$$\frac{2\,(bex+2\,bd-ae)A}{\sqrt{ex+d}\,e^2}+\frac{2\left(be^2x^2-8\,bd^2+6\,ade-\left(4\,bde-3\,ae^2\right)x\right)B}{3\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(b*e*x + 2*b*d - a*e)*A/(sqrt(e*x + d)*e^2) + 2/3*(b*e^2*x^2 - 8*b*d^2 +
6*a*d*e - (4*b*d*e - 3*a*e^2)*x)*B/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.41, size = 109, normalized size = 0.68

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{3\,e}-\frac{6\,A\,a\,e^2+16\,B\,b\,d^2-12\,A\,b\,d\,e-12\,B\,a\,d\,e}{3\,b\,e^3}+\frac{x\,\left(6\,A\,b\,e^2+6\,B\,a\,e^2-8\,B\,b\,d\,e\right)}{3\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*B*x^2)/(3*e) - (6*A*a*e^2 + 16*B*b*d^2 - 12*A*b*d*
e - 12*B*a*d*e)/(3*b*e^3) + (x*(6*A*b*e^2 + 6*B*a*e^2 - 8*B*b*d*e))/(3*b*e^
3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{(a+bx)^2}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt((a + b*x)**2)/(d + e*x)**(3/2), x)
```

3.1841 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=160

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d}}{e^3(a+bx)}$$

```
[Out] -2/3*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(3/2)+2*(-
A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(1/2)+2*b*B*(e*x
+d)^(1/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2bB\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d}}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)
*(d + e*x)^(3/2)) + (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(e^3*(a + b*x)*Sqrt[d + e*x]) + (2*b*B*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^3*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\ &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{5/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^{3/2}}+\frac{b^2B}{e^2\sqrt{d+ex}}\right)dx}{ab+b^2x}\\ &= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{2(2bBd-Abe-aBe)\sqrt{a^2+2a}}{e^3(a+bx)\sqrt{d+ex}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 86, normalized size = 0.54

$$-\frac{2\sqrt{(a+bx)^2}\left(ae(Ae+2Bd+3Bex)+Abe(2d+3ex)-bB\left(8d^2+12dex+3e^2x^2\right)\right)}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(A*b*e*(2*d + 3*e*x) + a*e*(2*B*d + A*e + 3*B*e*x) -
b*B*(8*d^2 + 12*d*e*x + 3*e^2*x^2)))/(3*e^3*(a + b*x)*(d + e*x)^(3/2))
```

fricas [**A**] time = 0.49, size = 91, normalized size = 0.57

$$\frac{2\left(3\,Bbe^2x^2+8\,Bbd^2-Aae^2-2\,(Ba+Ab)de+3\left(4\,Bbde-(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{3\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*B*b*e^2*x^2 + 8*B*b*d^2 - A*a*e^2 - 2*(B*a + A*b)*d*e + 3*(4*B*b*d*e
 - (B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [**A**] time = 0.22, size = 136, normalized size = 0.85

$$2\sqrt{xe+d}\,Bbe^{(-3)}\mathrm{sgn}\left(bx+a\right)+\frac{2\left(6\,(xe+d)Bbd\mathrm{sgn}\left(bx+a\right)-Bbd^2\mathrm{sgn}\left(bx+a\right)-3\,(xe+d)Bae\mathrm{sgn}\left(bx+a\right)-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*b*e^(-3)*sgn(b*x + a) + 2/3*(6*(x*e + d)*B*b*d*sgn(b*x +
a) - B*b*d^2*sgn(b*x + a) - 3*(x*e + d)*B*a*e*sgn(b*x + a) - 3*(x*e + d)*A*
b*e*sgn(b*x + a) + B*a*d*e*sgn(b*x + a) + A*b*d*e*sgn(b*x + a) - A*a*e^2*sg
n(b*x + a))*e^(-3)/(x*e + d)^(3/2)
```

maple [**A**] time = 0.04, size = 88, normalized size = 0.55

$$-\frac{2\left(-3Bb\,x^2e^2+3Ab\,e^2x+3Ba\,e^2x-12Bbdex+Aa\,e^2+2Abde+2Bade-8Bb\,d^2\right)\sqrt{(bx+a)^2}}{3\,(ex+d)^{\frac{3}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-3*B*b*e^2*x^2+3*A*b*e^2*x+3*B*a*e^2*x-12*B*b*d*e*x+A*a
*e^2+2*A*b*d*e+2*B*a*d*e-8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [**A**] time = 0.61, size = 96, normalized size = 0.60

$$-\frac{2\,(3\,bex+2\,bd+ae)A}{3\left(e^3x+de^2\right)\sqrt{ex+d}}+\frac{2\left(3\,be^2x^2+8\,bd^2-2\,ade+3\left(4\,bde-ae^2\right)x\right)B}{3\left(e^4x+de^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*e*x + 2*b*d + a*e)*A/((e^3*x + d*e^2)*sqrt(e*x + d)) + 2/3*(3*b*e
^2*x^2 + 8*b*d^2 - 2*a*d*e + 3*(4*b*d*e - a*e^2)*x)*B/((e^4*x + d*e^3)*sqrt
(e*x + d))
```

mupad [B] time = 2.48, size = 146, normalized size = 0.91

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,A\,a\,e^2-16\,B\,b\,d^2+4\,A\,b\,d\,e+4\,B\,a\,d\,e}{3\,b\,e^4}-\frac{2\,B\,x^2}{e^2}+\frac{x\,\left(6\,A\,b\,e^2+6\,B\,a\,e^2-24\,B\,b\,d\,e\right)}{3\,b\,e^4}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(3\,a\,e^4+3\,b\,d\,e^3\right)\,\sqrt{d+e\,x}}{3\,b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*A*a*e^2 - 16*B*b*d^2 + 4*A*b*d*e + 4*B*a*d*e)/(3*
b*e^4) - (2*B*x^2)/e^2 + (x*(6*A*b*e^2 + 6*B*a*e^2 - 24*B*b*d*e))/(3*b*e^4)
))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(3*a*e^4 + 3*b*d
*e^3)*(d + e*x)^(1/2))/(3*b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1842 $\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=162

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^{5/2}}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}$$

```
[Out] -2/5*(-a*e+b*d)*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(5/2)+2/3*
(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(3/2)-2*b*B*((
b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$\frac{2\sqrt{a^2+2abx+b^2x^2}\,(-aBe-Abe+2bBd)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)}{5e^3(a+bx)(d+ex)^{5/2}}-\frac{2bB\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)
*(d + e*x)^(5/2)) + (2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(3*e^3*(a + b*x)*(d + e*x)^(3/2)) - (2*b*B*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(e^3*(a + b*x)*Sqrt[d + e*x])
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(A+Bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{\left(ab+b^2x\right)(A+Bx)}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\
&= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b(bd-ae)(-Bd+Ae)}{e^2(d+ex)^{7/2}}+\frac{b(-2bBd+Abe+aBe)}{e^2(d+ex)^{5/2}}+\frac{b^2B}{e^2(d+ex)^{3/2}}\right)}{ab+b^2x}\\
&= -\frac{2(bd-ae)(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^{5/2}}+\frac{2(2bBd-Abe-aBe)\sqrt{a^2+}}{3e^3(a+bx)(d+ex}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 86, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\,\left(ae(3Ae+2Bd+5Bex)+Abe(2d+5ex)+bB\left(8d^2+20dex+15e^2x^2\right)\right)}{15e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(A*b*e*(2*d + 5*e*x) + a*e*(2*B*d + 3*A*e + 5*B*e*x)
+ b*B*(8*d^2 + 20*d*e*x + 15*e^2*x^2)))/(15*e^3*(a + b*x)*(d + e*x)^(5/2))
```

fricas [A] time = 0.50, size = 101, normalized size = 0.62

$$-\frac{2\left(15\,Bbe^2x^2+8\,Bbd^2+3\,Aae^2+2\,(Ba+Ab)de+5\left(4\,Bbde+(Ba+Ab)e^2\right)x\right)\sqrt{ex+d}}{15\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*B*b*e^2*x^2 + 8*B*b*d^2 + 3*A*a*e^2 + 2*(B*a + A*b)*d*e + 5*(4*B*
b*d*e + (B*a + A*b)*e^2)*x)*sqrt(e*x + d)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^
4*x + d^3*e^3)
```

giac [A] time = 0.29, size = 135, normalized size = 0.83

$$-\frac{2\left(15\,(xe+d)^2Bb\mathrm{sgn}\,(bx+a)-10\,(xe+d)Bbd\mathrm{sgn}\,(bx+a)+3\,Bbd^2\mathrm{sgn}\,(bx+a)+5\,(xe+d)Bae\mathrm{sgn}\,(bx+a)+\right.}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*(x*e + d)^2*B*b*sgn(b*x + a) - 10*(x*e + d)*B*b*d*sgn(b*x + a) +
3*B*b*d^2*sgn(b*x + a) + 5*(x*e + d)*B*a*e*sgn(b*x + a) + 5*(x*e + d)*A*b*e
*sgn(b*x + a) - 3*B*a*d*e*sgn(b*x + a) - 3*A*b*d*e*sgn(b*x + a) + 3*A*a*e^2
*sgn(b*x + a))*e^(-3)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 89, normalized size = 0.55

$$-\frac{2\left(15Bb\,x^2e^2+5Ab\,e^2x+5Ba\,e^2x+20Bbdex+3Aa\,e^2+2Abde+2Bade+8Bb\,d^2\right)\sqrt{(bx+a)^2}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(15*B*b*e^2*x^2+5*A*b*e^2*x+5*B*a*e^2*x+20*B*b*d*e*x+3*
A*a*e^2+2*A*b*d*e+2*B*a*d*e+8*B*b*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.58, size = 118, normalized size = 0.73

$$-\frac{2\,(5\,bex+2\,bd+3\,ae)A}{15\left(e^4x^2+2\,de^3x+d^2e^2\right)\sqrt{ex+d}}-\frac{2\left(15\,be^2x^2+8\,bd^2+2\,ade+5\left(4\,bde+ae^2\right)x\right)B}{15\left(e^5x^2+2\,de^4x+d^2e^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*b*e*x + 2*b*d + 3*a*e)*A/((e^4*x^2 + 2*d*e^3*x + d^2*e^2)*sqrt(e*x
 + d)) - 2/15*(15*b*e^2*x^2 + 8*b*d^2 + 2*a*d*e + 5*(4*b*d*e + a*e^2)*x)*B/
((e^5*x^2 + 2*d*e^4*x + d^2*e^3)*sqrt(e*x + d))
```

mupad [B] time = 2.52, size = 174, normalized size = 1.07

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{2\,B\,x^2}{e^3}+\frac{6\,A\,a\,e^2+16\,B\,b\,d^2+4\,A\,b\,d\,e+4\,B\,a\,d\,e}{15\,b\,e^5}+\frac{x\,\left(10\,A\,b\,e^2+10\,B\,a\,e^2+40\,B\,b\,d\,e\right)}{15\,b\,e^5}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(15\,a\,e^5+30\,b\,d\,e^4\right)\,\sqrt{d+e\,x}}{15\,b\,e^5}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(A + B*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((2*B*x^2)/e^3 + (6*A*a*e^2 + 16*B*b*d^2 + 4*A*b*d*e
+ 4*B*a*d*e)/(15*b*e^5) + (x*(10*A*b*e^2 + 10*B*a*e^2 + 40*B*b*d*e))/(15*b*
e^5)))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(15*a*
e^5 + 30*b*d*e^4)*(d + e*x)^(1/2))/(15*b*e^5) + (d*x*(2*a*e + b*d)*(d + e*x
)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*((b*x+a)**2)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1843 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-3aBe-Abe+4bBd)}{15e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-aBe-A}{13e^5(a+bx)}$$

```
[Out] 2/9*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-2/1
1*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^
5/(b*x+a)+6/13*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(13/2)*((b*x+a)^
2)^(1/2)/e^5/(b*x+a)-2/15*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(15/2)*((b*x
+a)^2)^(1/2)/e^5/(b*x+a)+2/17*b^3*B*(e*x+d)^(17/2)*((b*x+a)^2)^(1/2)/e^5/(b
*x+a)
```

Rubi [A] time = 0.19, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-3aBe-Abe+4bBd)}{15e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-aBe-A}{13e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (6*b*(b*d - a*e
)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(13*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(15/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(17/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{7/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{7/2}}{e^4}+\frac{b^3(bd-ae)^2(}{}}{}$$

$$= \frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)} - \frac{2(bd}{}$$

Mathematica [A] time = 0.25, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{9/2}\left(-7293b^2(d+ex)^3(-3aBe-Abe+4bBd)+25245b(d+ex)^2(bd-ae)(-aBe-Abe+\right.}{109395e^5(a}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(9/2)*(12155*(b*d - a*e)^3*(B*d - A*e) - 9
945*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 25245*b*(b*d - a*
e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 7293*b^2*(4*b*B*d - A*b*e - 3*a*
B*e)*(d + e*x)^3 + 6435*b^3*B*(d + e*x)^4))/(109395*e^5*(a + b*x)^3)
```

fricas [B] time = 0.62, size = 633, normalized size = 2.06

$$\frac{2\left(6435\,Bb^3e^8x^8+128\,Bb^3d^8+12155\,Aa^3d^4e^4-272\left(3\,Bab^2+Ab^3\right)d^7e+2040\left(Ba^2b+Aab^2\right)d^6e^2-2210\left(B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/109395*(6435*B*b^3*e^8*x^8 + 128*B*b^3*d^8 + 12155*A*a^3*d^4*e^4 - 272*(3
*B*a*b^2 + A*b^3)*d^7*e + 2040*(B*a^2*b + A*a*b^2)*d^6*e^2 - 2210*(B*a^3 +
3*A*a^2*b)*d^5*e^3 + 429*(52*B*b^3*d*e^7 + 17*(3*B*a*b^2 + A*b^3)*e^8)*x^7
+ 33*(802*B*b^3*d^2*e^6 + 782*(3*B*a*b^2 + A*b^3)*d*e^7 + 765*(B*a^2*b + A*
a*b^2)*e^8)*x^6 + 9*(1212*B*b^3*d^3*e^5 + 3502*(3*B*a*b^2 + A*b^3)*d^2*e^6
+ 10200*(B*a^2*b + A*a*b^2)*d*e^7 + 1105*(B*a^3 + 3*A*a^2*b)*e^8)*x^5 + 5*(
7*B*b^3*d^4*e^4 + 2431*A*a^3*e^8 + 2720*(3*B*a*b^2 + A*b^3)*d^3*e^5 + 23358
*(B*a^2*b + A*a*b^2)*d^2*e^6 + 7514*(B*a^3 + 3*A*a^2*b)*d*e^7)*x^4 - 5*(8*B
*b^3*d^5*e^3 - 9724*A*a^3*d*e^7 - 17*(3*B*a*b^2 + A*b^3)*d^4*e^4 - 10812*(B
*a^2*b + A*a*b^2)*d^3*e^5 - 10166*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*x^3 + 3*(16*
B*b^3*d^6*e^2 + 24310*A*a^3*d^2*e^6 - 34*(3*B*a*b^2 + A*b^3)*d^5*e^3 + 255*
(B*a^2*b + A*a*b^2)*d^4*e^4 + 8840*(B*a^3 + 3*A*a^2*b)*d^3*e^5)*x^2 - (64*B
*b^3*d^7*e - 48620*A*a^3*d^3*e^5 - 136*(3*B*a*b^2 + A*b^3)*d^6*e^2 + 1020*(
B*a^2*b + A*a*b^2)*d^5*e^3 - 1105*(B*a^3 + 3*A*a^2*b)*d^4*e^4)*x)*sqrt(e*x
+ d)/e^5
```

giac [B] time = 0.54, size = 3088, normalized size = 10.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^4*e^(-1)*sgn
(b*x + a) + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^4*e^(-1)
*sgn(b*x + a) + 153153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(
x*e + d)*d^2)*B*a^2*b*d^4*e^(-2)*sgn(b*x + a) + 153153*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^4*e^(-2)*sgn(b*x +
a) + 65637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*B*a*b^2*d^4*e^(-3)*sgn(b*x + a) + 21879*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*A*b^3*d^4*e^(-3)*sgn(b*x + a) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*B*b^3*d^4*e^(-4)*sgn(b*x + a) + 204204*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d^3*e^(-1)*sgn(b*x + a)
 + 612612*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*A*a^2*b*d^3*e^(-1)*sgn(b*x + a) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d^3*e^(-2
)*sgn(b*x + a) + 262548*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
 + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*d^3*e^(-2)*sgn(b*x + a) + 2
9172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*d^3*e^(-3)*sgn(b
*x + a) + 9724*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d^3*e^(-
3)*sgn(b*x + a) + 4420*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*B*b^3*d^3*e^(-4)*sgn(b*x + a) + 765765*sqrt(x*e + d)
*A*a^3*d^4*sgn(b*x + a) + 1021020*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a
^3*d^3*sgn(b*x + a) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*d^2*e^(-1)*sgn(b*x + a)
+ 393822*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*A*a^2*b*d^2*e^(-1)*sgn(b*x + a) + 43758*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a) + 43758
*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 42
0*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^2*d^2*e^(-2)*sgn(b*x +
 a) + 19890*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 6630*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^3*d^2*e^(-3)*sgn(b*x
 + a) + 1530*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e +
d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(
x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^3*d^2*e^(-4)*sgn(b*x + a)
+ 306306*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
A*a^3*d^2*sgn(b*x + a) + 9724*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d +
 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)
*B*a^3*d*e^(-1)*sgn(b*x + a) + 29172*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*A*a^2*b*d*e^(-1)*sgn(b*x + a) + 13260*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b*d*e^(-2)*sgn(b*x + a)
 + 13260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 3060*(231*(x*e + d)^(13/2) - 1638*
(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 +
9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^
6)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 1020*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b
^3*d*e^(-3)*sgn(b*x + a) + 476*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*B*b^3*d*e^(-4)*sgn(b*x + a) + 87516*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*
a^3*d*sgn(b*x + a) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*B*a^3*e^(-1)*sgn(b*x + a) + 3315*(63*(x*e + d)^(1
1/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/
2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b*e^(-1)*s
gn(b*x + a) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x
*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6
006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b*e^(-2)*sgn(b*x +
a) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(
9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
+ d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^2*e^(-2)*sgn(b*x + a) + 357*
(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^
2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)
^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^2*e^
(-3)*sgn(b*x + a) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1
2285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/
2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(
x*e + d)*d^7)*A*b^3*e^(-3)*sgn(b*x + a) + 7*(6435*(x*e + d)^(17/2) - 58344*
(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*
d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e
 + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*
b^3*e^(-4)*sgn(b*x + a) + 2431*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^3*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 317, normalized size = 1.03

$$\frac{2\,(ex+d)^{\frac{9}{2}}\,\Big(6435b^3B\,x^4e^4+7293A\,b^3e^4x^3+21879Ba\,b^2e^4x^3-3432B\,b^3d\,e^3x^3+25245Aa\,b^2e^4x^2-3366A\,b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/109395*(e*x+d)^(9/2)*(6435*B*b^3*e^4*x^4+7293*A*b^3*e^4*x^3+21879*B*a*b^2
*e^4*x^3-3432*B*b^3*d*e^3*x^3+25245*A*a*b^2*e^4*x^2-3366*A*b^3*d*e^3*x^2+25
245*B*a^2*b*e^4*x^2-10098*B*a*b^2*d*e^3*x^2+1584*B*b^3*d^2*e^2*x^2+29835*A*
a^2*b*e^4*x-9180*A*a*b^2*d*e^3*x+1224*A*b^3*d^2*e^2*x+9945*B*a^3*e^4*x-9180
*B*a^2*b*d*e^3*x+3672*B*a*b^2*d^2*e^2*x-576*B*b^3*d^3*e*x+12155*A*a^3*e^4-6
630*A*a^2*b*d*e^3+2040*A*a*b^2*d^2*e^2-272*A*b^3*d^3*e-2210*B*a^3*d*e^3+204
0*B*a^2*b*d^2*e^2-816*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b
*x+a)^3
```

maxima [B] time = 0.75, size = 697, normalized size = 2.26

$$\frac{2\,\Big(429\,b^3e^7x^7-16\,b^3d^7+120\,ab^2d^6e-390\,a^2bd^5e^2+715\,a^3d^4e^3+33\,\big(46\,b^3de^6+45\,ab^2e^7\big)x^6+9\,\big(206\,b^3d^2e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/6435*(429*b^3*e^7*x^7 - 16*b^3*d^7 + 120*a*b^2*d^6*e - 390*a^2*b*d^5*e^2
+ 715*a^3*d^4*e^3 + 33*(46*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 9*(206*b^3*d^2*e
^5 + 600*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 5*(160*b^3*d^3*e^4 + 1374*a*b^2
*d^2*e^5 + 1326*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 + 5*(b^3*d^4*e^3 + 636*a*b^2
*d^3*e^4 + 1794*a^2*b*d^2*e^5 + 572*a^3*d*e^6)*x^3 - 3*(2*b^3*d^5*e^2 - 15*
a*b^2*d^4*e^3 - 1560*a^2*b*d^3*e^4 - 1430*a^3*d^2*e^5)*x^2 + (8*b^3*d^6*e -
 60*a*b^2*d^5*e^2 + 195*a^2*b*d^4*e^3 + 2860*a^3*d^3*e^4)*x)*sqrt(e*x + d)*
A/e^4 + 2/109395*(6435*b^3*e^8*x^8 + 128*b^3*d^8 - 816*a*b^2*d^7*e + 2040*a
^2*b*d^6*e^2 - 2210*a^3*d^5*e^3 + 429*(52*b^3*d*e^7 + 51*a*b^2*e^8)*x^7 + 3
3*(802*b^3*d^2*e^6 + 2346*a*b^2*d*e^7 + 765*a^2*b*e^8)*x^6 + 9*(1212*b^3*d^
3*e^5 + 10506*a*b^2*d^2*e^6 + 10200*a^2*b*d*e^7 + 1105*a^3*e^8)*x^5 + 5*(7*
b^3*d^4*e^4 + 8160*a*b^2*d^3*e^5 + 23358*a^2*b*d^2*e^6 + 7514*a^3*d*e^7)*x^
4 - 5*(8*b^3*d^5*e^3 - 51*a*b^2*d^4*e^4 - 10812*a^2*b*d^3*e^5 - 10166*a^3*d
^2*e^6)*x^3 + 3*(16*b^3*d^6*e^2 - 102*a*b^2*d^5*e^3 + 255*a^2*b*d^4*e^4 + 8
840*a^3*d^3*e^5)*x^2 - (64*b^3*d^7*e - 408*a*b^2*d^6*e^2 + 1020*a^2*b*d^5*e
^3 - 1105*a^3*d^4*e^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+Bx)\,(d+ex)^{7/2}\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1844 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-3aBe-Abe+4bBd)}{13e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-aBe-}{11e^5(a+bx)}$$

```
[Out] 2/7*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-2/9
*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^5/
(b*x+a)+6/11*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)
^(1/2)/e^5/(b*x+a)-2/13*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(13/2)*((b*x+a
)^2)^(1/2)/e^5/(b*x+a)+2/15*b^3*B*(e*x+d)^(15/2)*((b*x+a)^2)^(1/2)/e^5/(b*x
+a)
```

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-3aBe-Abe+4bBd)}{13e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-aBe-}{11e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (6*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(13/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(15/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{5/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{5/2}}{e^4}+\frac{b^3(bd-ae)^2(-4b}{}\right.}{}$$

$$= \frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)} - \frac{2(bd-a}{}$$

Mathematica [A] time = 0.20, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{7/2}\left(-3465b^2(d+ex)^3(-3aBe-Abe+4bBd)+12285b(d+ex)^2(bd-ae)(-aBe-Abe+2b\right.}{45045e^5(a+b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(7/2)*(6435*(b*d - a*e)^3*(B*d - A*e) - 50
05*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 12285*b*(b*d - a*e
)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 3465*b^2*(4*b*B*d - A*b*e - 3*a*B
*e)*(d + e*x)^3 + 3003*b^3*B*(d + e*x)^4))/(45045*e^5*(a + b*x)^3)
```

fricas [B] time = 0.90, size = 539, normalized size = 1.75

$$\frac{2\left(3003\,Bb^3e^7x^7+128\,Bb^3d^7+6435\,Aa^3d^3e^4-240\left(3\,Bab^2+Ab^3\right)d^6e+1560\left(Ba^2b+Aab^2\right)d^5e^2-1430\left(Ba^3+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*B*b^3*e^7*x^7 + 128*B*b^3*d^7 + 6435*A*a^3*d^3*e^4 - 240*(3*B
*a*b^2 + A*b^3)*d^6*e + 1560*(B*a^2*b + A*a*b^2)*d^5*e^2 - 1430*(B*a^3 + 3*
A*a^2*b)*d^4*e^3 + 231*(31*B*b^3*d*e^6 + 15*(3*B*a*b^2 + A*b^3)*e^7)*x^6 +
63*(71*B*b^3*d^2*e^5 + 135*(3*B*a*b^2 + A*b^3)*d*e^6 + 195*(B*a^2*b + A*a*b
^2)*e^7)*x^5 + 35*(B*b^3*d^3*e^4 + 159*(3*B*a*b^2 + A*b^3)*d^2*e^5 + 897*(B
*a^2*b + A*a*b^2)*d*e^6 + 143*(B*a^3 + 3*A*a^2*b)*e^7)*x^4 - 5*(8*B*b^3*d^4
*e^3 - 1287*A*a^3*e^7 - 15*(3*B*a*b^2 + A*b^3)*d^3*e^4 - 4407*(B*a^2*b + A*
a*b^2)*d^2*e^5 - 2717*(B*a^3 + 3*A*a^2*b)*d*e^6)*x^3 + 3*(16*B*b^3*d^5*e^2
+ 6435*A*a^3*d*e^6 - 30*(3*B*a*b^2 + A*b^3)*d^4*e^3 + 195*(B*a^2*b + A*a*b^
2)*d^3*e^4 + 3575*(B*a^3 + 3*A*a^2*b)*d^2*e^5)*x^2 - (64*B*b^3*d^6*e - 1930
5*A*a^3*d^2*e^5 - 120*(3*B*a*b^2 + A*b^3)*d^5*e^2 + 780*(B*a^2*b + A*a*b^2)
*d^4*e^3 - 715*(B*a^3 + 3*A*a^2*b)*d^3*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.42, size = 2254, normalized size = 7.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^3*e^(-1)*sgn(b
*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^3*e^(-1)*sg
```

```
n(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a^2*b*d^3*e^(-2)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^3*e^(-2)*sgn(b*x + a) + 38
61*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a*b^2*d^3*e^(-3)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^3*d^3*e^(-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*B*b^3*d^3*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d^2*e^(-1)*sgn(b*x + a) + 27027*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*d^2*
e^(-1)*sgn(b*x + a) + 11583*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*
(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a)
 + 11583*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2
 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*d^2*e^(-2)*sgn(b*x + a) + 1287*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 429*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d^2*e^(-3)*sgn(b*x + a) +
 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*
d^5)*B*b^3*d^2*e^(-4)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^3*d^3*sgn(b*x
+ a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*d^2*sgn(b*x + a) +
 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^3*d*e^(-1)*sgn(b*x + a) + 11583*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*a^2*b*d*e^(-1)*sgn(b*x + a) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 1287*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 585*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^2*d*e^(-3)*sgn(b*x
 + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*b^3*d*e^(-3)*sgn(b*x + a) + 45*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*B*b^3*d*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*d*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2)
- 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3
 + 315*sqrt(x*e + d)*d^4)*B*a^3*e^(-1)*sgn(b*x + a) + 429*(35*(x*e + d)^(9/
2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*
d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b*e^(-1)*sgn(b*x + a) + 195*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b*e^(-
2)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x
*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 6
93*sqrt(x*e + d)*d^5)*A*a*b^2*e^(-2)*sgn(b*x + a) + 45*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*B*a*b^2*e^(-3)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*A*b^3*e^(-3)*sgn(b*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/
2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e
+ d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 64
35*sqrt(x*e + d)*d^7)*B*b^3*e^(-4)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^
```

```
3*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 317, normalized size = 1.03

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(3003b^{3}B\,x^{4}e^{4}+3465A\,b^{3}e^{4}x^{3}+10395Ba\,b^{2}e^{4}x^{3}-1848B\,b^{3}d\,e^{3}x^{3}+12285Aa\,b^{2}e^{4}x^{2}-1890A\,b^{3}d\,e^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*(e*x+d)^(7/2)*(3003*B*b^3*e^4*x^4+3465*A*b^3*e^4*x^3+10395*B*a*b^2*
e^4*x^3-1848*B*b^3*d*e^3*x^3+12285*A*a*b^2*e^4*x^2-1890*A*b^3*d*e^3*x^2+122
85*B*a^2*b*e^4*x^2-5670*B*a*b^2*d*e^3*x^2+1008*B*b^3*d^2*e^2*x^2+15015*A*a^
2*b*e^4*x-5460*A*a*b^2*d*e^3*x+840*A*b^3*d^2*e^2*x+5005*B*a^3*e^4*x-5460*B*
a^2*b*d*e^3*x+2520*B*a*b^2*d^2*e^2*x-448*B*b^3*d^3*e*x+6435*A*a^3*e^4-4290*
A*a^2*b*d*e^3+1560*A*a*b^2*d^2*e^2-240*A*b^3*d^3*e-1430*B*a^3*d*e^3+1560*B*
a^2*b*d^2*e^2-720*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [B] time = 0.73, size = 592, normalized size = 1.92

$$\frac{2\left(231\,b^{3}e^{6}x^{6}-16\,b^{3}d^{6}+104\,ab^{2}d^{5}e-286\,a^{2}bd^{4}e^{2}+429\,a^{3}d^{3}e^{3}+63\left(9\,b^{3}de^{5}+13\,ab^{2}e^{6}\right)x^{5}+7\left(53\,b^{3}d^{2}e^{4}+29}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/4504
5*(3003*b^3*e^7*x^7 + 128*b^3*d^7 - 720*a*b^2*d^6*e + 1560*a^2*b*d^5*e^2 -
1430*a^3*d^4*e^3 + 231*(31*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 63*(71*b^3*d^2*e
^5 + 405*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 35*(b^3*d^3*e^4 + 477*a*b^2*d^2
*e^5 + 897*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 - 5*(8*b^3*d^4*e^3 - 45*a*b^2*d^3
*e^4 - 4407*a^2*b*d^2*e^5 - 2717*a^3*d*e^6)*x^3 + 3*(16*b^3*d^5*e^2 - 90*a*
b^2*d^4*e^3 + 195*a^2*b*d^3*e^4 + 3575*a^3*d^2*e^5)*x^2 - (64*b^3*d^6*e - 3
60*a*b^2*d^5*e^2 + 780*a^2*b*d^4*e^3 - 715*a^3*d^3*e^4)*x)*sqrt(e*x + d)*B/
e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1845 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-3aBe-Abe+4bBd)}{11e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-aBe-}{3e^5(a+bx)}$$

```
[Out] 2/5*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-2/7
*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/
(b*x+a)+2/3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(
1/2)/e^5/(b*x+a)-2/11*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^
2)^(1/2)/e^5/(b*x+a)+2/13*b^3*B*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)
```

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-3aBe-Abe+4bBd)}{11e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-aBe-}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3
*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(11/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(13/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^{3/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^{3/2}}{e^4} + \frac{b^3(bd-ae)^2(-4b}{}\right.}{}$$

$$= \frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)} - \frac{2(bd-a}{}$$

Mathematica [A] time = 0.18, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}(d+ex)^{5/2}\left(-1365b^2(d+ex)^3(-3aBe-Abe+4bBd)+5005b(d+ex)^2(bd-ae)(-aBe-Abe+2b\right.}{15015e^5(a+bx}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(5/2)*(3003*(b*d - a*e)^3*(B*d - A*e) - 21
45*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 5005*b*(b*d - a*e)
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 1365*b^2*(4*b*B*d - A*b*e - 3*a*B*
e)*(d + e*x)^3 + 1155*b^3*B*(d + e*x)^4))/(15015*e^5*(a + b*x)^3)
```

fricas [A] time = 0.88, size = 446, normalized size = 1.45

$$\frac{2\left(1155\,Bb^3e^6x^6+128\,Bb^3d^6+3003\,Aa^3d^2e^4-208\left(3\,Bab^2+Ab^3\right)d^5e+1144\left(Ba^2b+Aab^2\right)d^4e^2-858\left(Ba^3+3\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/15015*(1155*B*b^3*e^6*x^6 + 128*B*b^3*d^6 + 3003*A*a^3*d^2*e^4 - 208*(3*B
*a*b^2 + A*b^3)*d^5*e + 1144*(B*a^2*b + A*a*b^2)*d^4*e^2 - 858*(B*a^3 + 3*A
*a^2*b)*d^3*e^3 + 105*(14*B*b^3*d*e^5 + 13*(3*B*a*b^2 + A*b^3)*e^6)*x^5 + 3
5*(B*b^3*d^2*e^4 + 52*(3*B*a*b^2 + A*b^3)*d*e^5 + 143*(B*a^2*b + A*a*b^2)*e
^6)*x^4 - 5*(8*B*b^3*d^3*e^3 - 13*(3*B*a*b^2 + A*b^3)*d^2*e^4 - 1430*(B*a^2
*b + A*a*b^2)*d*e^5 - 429*(B*a^3 + 3*A*a^2*b)*e^6)*x^3 + 3*(16*B*b^3*d^4*e^
2 + 1001*A*a^3*e^6 - 26*(3*B*a*b^2 + A*b^3)*d^3*e^3 + 143*(B*a^2*b + A*a*b^
2)*d^2*e^4 + 1144*(B*a^3 + 3*A*a^2*b)*d*e^5)*x^2 - (64*B*b^3*d^5*e - 6006*A
*a^3*d*e^5 - 104*(3*B*a*b^2 + A*b^3)*d^4*e^2 + 572*(B*a^2*b + A*a*b^2)*d^3*
e^3 - 429*(B*a^3 + 3*A*a^2*b)*d^2*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.34, size = 1524, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d^2*e^(-1)*sgn(b
*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d^2*e^(-1)*sg
n(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
 d)*d^2)*B*a^2*b*d^2*e^(-2)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d^2*e^(-2)*sgn(b*x + a) + 38
61*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a*b^2*d^2*e^(-3)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A
*b^3*d^2*e^(-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*B*b^3*d^2*e^(-4)*sgn(b*x + a) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d
)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^3*d*e^(-1)*sgn(b*x + a) + 18018*(3*(x
*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*d*e^(-
1)*sgn(b*x + a) + 7722*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 7722
*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sq
rt(x*e + d)*d^3)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 286*(35*(x*e + d)^(
9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2
)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*d*e^(-3)*sgn(b*x + a) + 130*(63*(x*e +
 d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*b^3*d*e^
(-4)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^3*d^2*sgn(b*x + a) + 30030*((x*
e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*d*sgn(b*x + a) + 1287*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*B*a^3*e^(-1)*sgn(b*x + a) + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b*e^(-1)*sgn(b*x
+ a) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b*e^(-2)*sgn
(b*x + a) + 429*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^2*e^(-2
)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*B*a*b^2*e^(-3)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2)
- 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^
3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^3*e^(-3)*sgn(b*x
+ a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^3*e^(-4)*sgn(b*x + a) + 3003*
(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*sgn
(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 317, normalized size = 1.03

$$2\left(ex+d\right)^{\frac{5}{2}}\left(1155b^{3}B\,x^{4}e^{4}+1365A\,b^{3}e^{4}x^{3}+4095Ba\,b^{2}e^{4}x^{3}-840B\,b^{3}d\,e^{3}x^{3}+5005Aa\,b^{2}e^{4}x^{2}-910A\,b^{3}d\,e^{3}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*(e*x+d)^(5/2)*(1155*B*b^3*e^4*x^4+1365*A*b^3*e^4*x^3+4095*B*a*b^2*e
^4*x^3-840*B*b^3*d*e^3*x^3+5005*A*a*b^2*e^4*x^2-910*A*b^3*d*e^3*x^2+5005*B*
a^2*b*e^4*x^2-2730*B*a*b^2*d*e^3*x^2+560*B*b^3*d^2*e^2*x^2+6435*A*a^2*b*e^4
*x-2860*A*a*b^2*d*e^3*x+520*A*b^3*d^2*e^2*x+2145*B*a^3*e^4*x-2860*B*a^2*b*d
*e^3*x+1560*B*a*b^2*d^2*e^2*x-320*B*b^3*d^3*e*x+3003*A*a^3*e^4-2574*A*a^2*b
*d*e^3+1144*A*a*b^2*d^2*e^2-208*A*b^3*d^3*e-858*B*a^3*d*e^3+1144*B*a^2*b*d^
2*e^2-624*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.63, size = 488, normalized size = 1.58

$$2\left(105\,b^{3}e^{5}x^{5}-16\,b^{3}d^{5}+88\,ab^{2}d^{4}e-198\,a^{2}bd^{3}e^{2}+231\,a^{3}d^{2}e^{3}+35\left(4\,b^{3}de^{4}+11\,ab^{2}e^{5}\right)x^{4}+5\left(b^{3}d^{2}e^{3}+110\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/15015*(1155*b^3*e^6
*x^6 + 128*b^3*d^6 - 624*a*b^2*d^5*e + 1144*a^2*b*d^4*e^2 - 858*a^3*d^3*e^3
 + 105*(14*b^3*d*e^5 + 39*a*b^2*e^6)*x^5 + 35*(b^3*d^2*e^4 + 156*a*b^2*d*e^
5 + 143*a^2*b*e^6)*x^4 - 5*(8*b^3*d^3*e^3 - 39*a*b^2*d^2*e^4 - 1430*a^2*b*d
*e^5 - 429*a^3*e^6)*x^3 + 3*(16*b^3*d^4*e^2 - 78*a*b^2*d^3*e^3 + 143*a^2*b*
d^2*e^4 + 1144*a^3*d*e^5)*x^2 - (64*b^3*d^5*e - 312*a*b^2*d^4*e^2 + 572*a^2
*b*d^3*e^3 - 429*a^3*d^2*e^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1846 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=308

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-aBe-}{7e^5(a+bx)}$$

```
[Out] 2/3*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-2/5
*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/
(b*x+a)+6/7*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(
1/2)/e^5/(b*x+a)-2/9*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)
^(1/2)/e^5/(b*x+a)+2/11*b^3*B*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-3aBe-Abe+4bBd)}{9e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-aBe-}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)
^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)) + (6*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^5*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(11/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^3(A+Bx)\sqrt{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)\sqrt{d+ex}}{e^4}+\frac{b^3(bd-ae)^2(-4b}{}\right.}{}$$

$$=\frac{2(bd-ae)^3(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)}-\frac{2(bd-}{}$$

Mathematica [A] time = 0.17, size = 163, normalized size = 0.53

$$\frac{2\big((a+bx)^2\big)^{3/2}(d+ex)^{3/2}\big(-385b^2(d+ex)^3(-3aBe-Abe+4bBd)+1485b(d+ex)^2(bd-ae)(-aBe-Abe+2bB}{3465e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*(d + e*x)^(3/2)*(1155*(b*d - a*e)^3*(B*d - A*e) - 69
3*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 1485*b*(b*d - a*e)*
(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 385*b^2*(4*b*B*d - A*b*e - 3*a*B*e)
*(d + e*x)^3 + 315*b^3*B*(d + e*x)^4))/(3465*e^5*(a + b*x)^3)
```

fricas [A] time = 0.76, size = 353, normalized size = 1.15

$$2\big(315\,Bb^3e^5x^5+128\,Bb^3d^5+1155\,Aa^3de^4-176\big(3\,Bab^2+Ab^3\big)d^4e+792\big(Ba^2b+Aab^2\big)d^3e^2-462\big(Ba^3+3\,Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3465*(315*B*b^3*e^5*x^5 + 128*B*b^3*d^5 + 1155*A*a^3*d*e^4 - 176*(3*B*a*b
^2 + A*b^3)*d^4*e + 792*(B*a^2*b + A*a*b^2)*d^3*e^2 - 462*(B*a^3 + 3*A*a^2*
b)*d^2*e^3 + 35*(B*b^3*d*e^4 + 11*(3*B*a*b^2 + A*b^3)*e^5)*x^4 - 5*(8*B*b^3
*d^2*e^3 - 11*(3*B*a*b^2 + A*b^3)*d*e^4 - 297*(B*a^2*b + A*a*b^2)*e^5)*x^3
+ 3*(16*B*b^3*d^3*e^2 - 22*(3*B*a*b^2 + A*b^3)*d^2*e^3 + 99*(B*a^2*b + A*a*
b^2)*d*e^4 + 231*(B*a^3 + 3*A*a^2*b)*e^5)*x^2 - (64*B*b^3*d^4*e - 1155*A*a^
3*e^5 - 88*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 396*(B*a^2*b + A*a*b^2)*d^2*e^3 -
231*(B*a^3 + 3*A*a^2*b)*d*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.27, size = 898, normalized size = 2.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3465*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*d*e^(-1)*sgn(b*x +
 a) + 3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*d*e^(-1)*sgn(b*x +
 a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*B*a^2*b*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*A*a*b^2*d*e^(-2)*sgn(b*x + a) + 297*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*B*a*b^2*d*e^(-3)*sgn(b*x + a) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^3*d*e^(-3)*sgn(
b*x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(
5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^3*d*e^(-4)*
sgn(b*x + a) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
+ d)*d^2)*B*a^3*e^(-1)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e + d)
^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^2*b*e^(-1)*sgn(b*x + a) + 297*(5*(x*e
+ d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e +
d)*d^3)*B*a^2*b*e^(-2)*sgn(b*x + a) + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a*b^2*e^(-2)*sg
n(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a*b^2*e^(-3
)*sgn(b*x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*b^3*e^(
-3)*sgn(b*x + a) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*B*b^3*e^(-4)*sgn(b*x + a) + 3465*sqrt(x*e + d)*A*a^3*d
*sgn(b*x + a) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^3*sgn(b*x +
a))*e^(-1)
```

maple [A] time = 0.06, size = 317, normalized size = 1.03

$$\frac{2 (ex+d)^{\frac{3}{2}} \left(315b^3B x^4e^4 + 385A b^3e^4x^3 + 1155Ba b^2e^4x^3 - 280B b^3d e^3x^3 + 1485Aa b^2e^4x^2 - 330A b^3d e^3x^2 + \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(3/2)*(315*B*b^3*e^4*x^4+385*A*b^3*e^4*x^3+1155*B*a*b^2*e^4*
x^3-280*B*b^3*d*e^3*x^3+1485*A*a*b^2*e^4*x^2-330*A*b^3*d*e^3*x^2+1485*B*a^2
*b*e^4*x^2-990*B*a*b^2*d*e^3*x^2+240*B*b^3*d^2*e^2*x^2+2079*A*a^2*b*e^4*x-1
188*A*a*b^2*d*e^3*x+264*A*b^3*d^2*e^2*x+693*B*a^3*e^4*x-1188*B*a^2*b*d*e^3*
x+792*B*a*b^2*d^2*e^2*x-192*B*b^3*d^3*e*x+1155*A*a^3*e^4-1386*A*a^2*b*d*e^3
+792*A*a*b^2*d^2*e^2-176*A*b^3*d^3*e-462*B*a^3*d*e^3+792*B*a^2*b*d^2*e^2-52
8*B*a*b^2*d^3*e+128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.61, size = 384, normalized size = 1.25

$$\frac{2 \left(35 \, b^3e^4x^4 - 16 \, b^3d^4 + 72 \, ab^2d^3e - 126 \, a^2bd^2e^2 + 105 \, a^3de^3 + 5 \left(b^3de^3 + 27 \, ab^2e^4\right)x^3 - 3 \left(2 \, b^3d^2e^2 - 9 \, ab^2de^3\right.\right.}{315 \, e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)*A/e^4 + 2/3465*(315*b^3*e^5*x^5 + 128*b
^3*d^5 - 528*a*b^2*d^4*e + 792*a^2*b*d^3*e^2 - 462*a^3*d^2*e^3 + 35*(b^3*d*
e^4 + 33*a*b^2*e^5)*x^4 - 5*(8*b^3*d^2*e^3 - 33*a*b^2*d*e^4 - 297*a^2*b*e^5
)*x^3 + 3*(16*b^3*d^3*e^2 - 66*a*b^2*d^2*e^3 + 99*a^2*b*d*e^4 + 231*a^3*e^5
)*x^2 - (64*b^3*d^4*e - 264*a*b^2*d^3*e^2 + 396*a^2*b*d^2*e^3 - 231*a^3*d*e
^4)*x)*sqrt(e*x + d)*B/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \sqrt{d + ex} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1847 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=306

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-3aBe-Abe+4bBd)}{7e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-aBe-Ab}{5e^5(a+bx)}$$

```
[Out] -2/3*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/
e^5/(b*x+a)+6/5*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(5/2)*((b*x+a)^
2)^(1/2)/e^5/(b*x+a)-2/7*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(7/2)*((b*x+a
)^2)^(1/2)/e^5/(b*x+a)+2/9*b^3*B*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)+2*(-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.15, antiderivative size = 306, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-3aBe-Abe+4bBd)}{7e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-aBe-Ab}{5e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^5*(a + b*x)) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (6*b*(b*d - a*e)*(2*b
*B*d - A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5
*(a + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(9/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{\sqrt{d+ex}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4\sqrt{d+ex}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)\sqrt{d}}{e^4}\right.}{b}$$

$$= \frac{2(bd-ae)^3(Bd-Ae)\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)} - \frac{2(bd-ae)^2(4bBd}{}$$

Mathematica [**A**] time = 0.10, size = 163, normalized size = 0.53

$$\frac{2\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\left(-45b^2(d+ex)^3(-3aBe-Abe+4bBd)+189b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd\right.}{315e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*((a + b*x)^2)^(3/2)*Sqrt[d + e*x]*(315*(b*d - a*e)^3*(B*d - A*e) - 105*(
b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x) + 189*b*(b*d - a*e)*(2*b
*B*d - A*b*e - a*B*e)*(d + e*x)^2 - 45*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d +
 e*x)^3 + 35*b^3*B*(d + e*x)^4))/(315*e^5*(a + b*x)^3)
```

fricas [**A**] time = 0.85, size = 263, normalized size = 0.86

$$\frac{2\left(35\,Bb^3e^4x^4+128\,Bb^3d^4+315\,Aa^3e^4-144\left(3\,Bab^2+Ab^3\right)d^3e+504\left(Ba^2b+Aab^2\right)d^2e^2-210\left(Ba^3+3\,Aa\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/315*(35*B*b^3*e^4*x^4 + 128*B*b^3*d^4 + 315*A*a^3*e^4 - 144*(3*B*a*b^2 +
A*b^3)*d^3*e + 504*(B*a^2*b + A*a*b^2)*d^2*e^2 - 210*(B*a^3 + 3*A*a^2*b)*d*
e^3 - 5*(8*B*b^3*d*e^3 - 9*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(16*B*b^3*d^2*e
^2 - 18*(3*B*a*b^2 + A*b^3)*d*e^3 + 63*(B*a^2*b + A*a*b^2)*e^4)*x^2 - (64*B
*b^3*d^3*e - 72*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 252*(B*a^2*b + A*a*b^2)*d*e^3
 - 105*(B*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [**A**] time = 0.23, size = 393, normalized size = 1.28

$$\frac{2}{315}\left(105\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Ba^3e^{(-1)}\mathrm{sgn}\left(bx+a\right)+315\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)Aa^2be^{(-1)}\mathrm{sgn}\left(bx+a\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/315*(105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^3*e^(-1)*sgn(b*x + a)
+ 315*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^2*b*e^(-1)*sgn(b*x + a) + 6
3*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^2*b
*e^(-2)*sgn(b*x + a) + 63*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*A*a*b^2*e^(-2)*sgn(b*x + a) + 27*(5*(x*e + d)^(7/2) - 21*(
x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a*b^2*e
^(-3)*sgn(b*x + a) + 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e
+ d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*b^3*e^(-3)*sgn(b*x + a) + (35*(x*e
 + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e +
d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*b^3*e^(-4)*sgn(b*x + a) + 315*sqrt(
x*e + d)*A*a^3*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 317, normalized size = 1.04

$$2\sqrt{ex+d}\,\left(35b^3B\,x^4e^4+45A\,b^3e^4x^3+135Ba\,b^2e^4x^3-40B\,b^3d\,e^3x^3+189Aa\,b^2e^4x^2-54A\,b^3d\,e^3x^2+189B\,a^2b\,e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(1/2)*(35*B*b^3*e^4*x^4+45*A*b^3*e^4*x^3+135*B*a*b^2*e^4*x^3-
40*B*b^3*d*e^3*x^3+189*A*a*b^2*e^4*x^2-54*A*b^3*d*e^3*x^2+189*B*a^2*b*e^4*x
^2-162*B*a*b^2*d*e^3*x^2+48*B*b^3*d^2*e^2*x^2+315*A*a^2*b*e^4*x-252*A*a*b^2
*d*e^3*x+72*A*b^3*d^2*e^2*x+105*B*a^3*e^4*x-252*B*a^2*b*d*e^3*x+216*B*a*b^2
*d^2*e^2*x-64*B*b^3*d^3*e*x+315*A*a^3*e^4-630*A*a^2*b*d*e^3+504*A*a*b^2*d^2
*e^2-144*A*b^3*d^3*e-210*B*a^3*d*e^3+504*B*a^2*b*d^2*e^2-432*B*a*b^2*d^3*e+
128*B*b^3*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.63, size = 382, normalized size = 1.25

$$\frac{2\left(5\,b^3e^4x^4-16\,b^3d^4+56\,ab^2d^3e-70\,a^2bd^2e^2+35\,a^3de^3-\left(b^3de^3-21\,ab^2e^4\right)x^3+\left(2\,b^3d^2e^2-7\,ab^2de^3+35\,a^2be\right.\right.}{35\,\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/35*(5*b^3*e^4*x^4 - 16*b^3*d^4 + 56*a*b^2*d^3*e - 70*a^2*b*d^2*e^2 + 35*a
^3*d*e^3 - (b^3*d*e^3 - 21*a*b^2*e^4)*x^3 + (2*b^3*d^2*e^2 - 7*a*b^2*d*e^3
+ 35*a^2*b*e^4)*x^2 - (8*b^3*d^3*e - 28*a*b^2*d^2*e^2 + 35*a^2*b*d*e^3 - 35
*a^3*e^4)*x)*A/(sqrt(e*x + d)*e^4) + 2/315*(35*b^3*e^5*x^5 + 128*b^3*d^5 -
432*a*b^2*d^4*e + 504*a^2*b*d^3*e^2 - 210*a^3*d^2*e^3 - 5*(b^3*d*e^4 - 27*a
*b^2*e^5)*x^4 + (8*b^3*d^2*e^3 - 27*a*b^2*d*e^4 + 189*a^2*b*e^5)*x^3 - (16*
b^3*d^3*e^2 - 54*a*b^2*d^2*e^3 + 63*a^2*b*d*e^4 - 105*a^3*e^5)*x^2 + (64*b^
3*d^4*e - 216*a*b^2*d^3*e^2 + 252*a^2*b*d^2*e^3 - 105*a^3*d*e^4)*x)*B/(sqrt
(e*x + d)*e^5)
```

mupad [B] time = 2.74, size = 434, normalized size = 1.42

$$\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{-420\,B\,a^3\,d^2\,e^3+630\,A\,a^3\,d\,e^4+1008\,B\,a^2\,b\,d^3\,e^2-1260\,A\,a^2\,b\,d^2\,e^3-864\,B\,a\,b^2\,d^4\,e+1008\,A\,a\,b^2\,d^3\,e^2+256\,B\,b^3\,d^5-288\,A\,b}{315\,b\,e^5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((256*B*b^3*d^5 + 630*A*a^3*d*e^4 - 288*A*
b^3*d^4*e - 420*B*a^3*d^2*e^3 + 1008*A*a*b^2*d^3*e^2 - 1260*A*a^2*b*d^2*e^3
 + 1008*B*a^2*b*d^3*e^2 - 864*B*a*b^2*d^4*e)/(315*b*e^5) + (2*B*b^2*x^5)/9
+ (x^3*(378*A*a*b^2*e^5 + 378*B*a^2*b*e^5 - 18*A*b^3*d*e^4 + 16*B*b^3*d^2*e
^3 - 54*B*a*b^2*d*e^4))/(315*b*e^5) + (x*(630*A*a^3*e^5 - 210*B*a^3*d*e^4 +
 128*B*b^3*d^4*e - 144*A*b^3*d^3*e^2 + 504*A*a*b^2*d^2*e^3 - 432*B*a*b^2*d^
3*e^2 + 504*B*a^2*b*d^2*e^3 - 630*A*a^2*b*d*e^4))/(315*b*e^5) + (x^2*(210*B
*a^3*e^5 + 630*A*a^2*b*e^5 + 36*A*b^3*d^2*e^3 - 32*B*b^3*d^3*e^2 + 108*B*a*
b^2*d^2*e^3 - 126*A*a*b^2*d*e^4 - 126*B*a^2*b*d*e^4))/(315*b*e^5) + (2*b*x^
4*(9*A*b*e + 27*B*a*e - B*b*d))/(63*e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^
(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1848 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=302

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-3aBe-Abe+4bBd)}{5e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-aBe-Abe}{e^5(a+bx)}$$

```
[Out] 2*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(
b*x+a)-2/5*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5
/(b*x+a)+2/7*b^3*B*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-2*(-a*e+b*d)
^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(1/2)-2*(-a*e+b*d)^2*(-
3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.14, antiderivative size = 302, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-3aBe-Abe+4bBd)}{5e^5(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-aBe-Abe}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)
*Sqrt[d + e*x]) - (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b*(b*d - a*e)*(2*b*B*
d - A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a +
 b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(5*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(7*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Bigl(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{3/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4\sqrt{d+ex}}-}{b^2\bigl(a}$$

$$= -\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}} - \frac{2(bd-ae)^2(4bBd-3Ab}{}$$

Mathematica [**A**]   time = 0.14, size = 240, normalized size = 0.79

$$\frac{2\sqrt{(a+bx)^2}\,\Bigl(35a^3e^3(-Ae+2Bd+Bex)+35a^2be^2\bigl(3Ae(2d+ex)+B\bigl(-8d^2-4dex+e^2x^2\bigr)\bigr)+7ab^2e\bigl(5Ae\bigl(-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(35*a^3*e^3*(2*B*d - A*e + B*e*x) + 35*a^2*b*e^2*(3*A*
e*(2*d + e*x) + B*(-8*d^2 - 4*d*e*x + e^2*x^2)) + 7*a*b^2*e*(5*A*e*(-8*d^2
- 4*d*e*x + e^2*x^2) + 3*B*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3)) +
b^3*(7*A*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2*x^2 + e^3*x^3) + B*(-128*d^4 - 64*
d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e^3*x^3 + 5*e^4*x^4))))/(35*e^5*(a + b*x)*Sq
rt[d + e*x])
```

fricas [**A**]   time = 0.69, size = 272, normalized size = 0.90

$$\frac{2\,\bigl(5\,Bb^3e^4x^4-128\,Bb^3d^4-35\,Aa^3e^4+112\,\bigl(3\,Bab^2+Ab^3\bigr)d^3e-280\,\bigl(Ba^2b+Aab^2\bigr)d^2e^2+70\,\bigl(Ba^3+3\,Aa^2b\bigr)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*B*b^3*e^4*x^4 - 128*B*b^3*d^4 - 35*A*a^3*e^4 + 112*(3*B*a*b^2 + A*b
^3)*d^3*e - 280*(B*a^2*b + A*a*b^2)*d^2*e^2 + 70*(B*a^3 + 3*A*a^2*b)*d*e^3
- (8*B*b^3*d*e^3 - 7*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + (16*B*b^3*d^2*e^2 - 14*
(3*B*a*b^2 + A*b^3)*d*e^3 + 35*(B*a^2*b + A*a*b^2)*e^4)*x^2 - (64*B*b^3*d^3
*e - 56*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 140*(B*a^2*b + A*a*b^2)*d*e^3 - 35*(B
*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^6*x + d*e^5)
```

giac [**B**]   time = 0.31, size = 525, normalized size = 1.74

$$\frac{2}{35}\,\Bigl(5\,(xe+d)^{\frac{7}{2}}Bb^3e^{30}\mathrm{sgn}\,(bx+a)-28\,(xe+d)^{\frac{5}{2}}Bb^3de^{30}\mathrm{sgn}\,(bx+a)+70\,(xe+d)^{\frac{3}{2}}Bb^3d^2e^{30}\mathrm{sgn}\,(bx+a)-14$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*B*b^3*e^30*sgn(b*x + a) - 28*(x*e + d)^(5/2)*B*b^3*
d*e^30*sgn(b*x + a) + 70*(x*e + d)^(3/2)*B*b^3*d^2*e^30*sgn(b*x + a) - 140*
sqrt(x*e + d)*B*b^3*d^3*e^30*sgn(b*x + a) + 21*(x*e + d)^(5/2)*B*a*b^2*e^31
*sgn(b*x + a) + 7*(x*e + d)^(5/2)*A*b^3*e^31*sgn(b*x + a) - 105*(x*e + d)^(
3/2)*B*a*b^2*d*e^31*sgn(b*x + a) - 35*(x*e + d)^(3/2)*A*b^3*d*e^31*sgn(b*x
+ a) + 315*sqrt(x*e + d)*B*a*b^2*d^2*e^31*sgn(b*x + a) + 105*sqrt(x*e + d)*
A*b^3*d^2*e^31*sgn(b*x + a) + 35*(x*e + d)^(3/2)*B*a^2*b*e^32*sgn(b*x + a)
+ 35*(x*e + d)^(3/2)*A*a*b^2*e^32*sgn(b*x + a) - 210*sqrt(x*e + d)*B*a^2*b*
d*e^32*sgn(b*x + a) - 210*sqrt(x*e + d)*A*a*b^2*d*e^32*sgn(b*x + a) + 35*sq
rt(x*e + d)*B*a^3*e^33*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a^2*b*e^33*sgn(b*
x + a))*e^(-35) - 2*(B*b^3*d^4*sgn(b*x + a) - 3*B*a*b^2*d^3*e*sgn(b*x + a)
- A*b^3*d^3*e*sgn(b*x + a) + 3*B*a^2*b*d^2*e^2*sgn(b*x + a) + 3*A*a*b^2*d^2
*e^2*sgn(b*x + a) - B*a^3*d*e^3*sgn(b*x + a) - 3*A*a^2*b*d*e^3*sgn(b*x + a)
 + A*a^3*e^4*sgn(b*x + a))*e^(-5)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 317, normalized size = 1.05

$$-\frac{2\left(-5b^3B\,x^4e^4-7A\,b^3e^4x^3-21Ba\,b^2e^4x^3+8B\,b^3d\,e^3x^3-35Aa\,b^2e^4x^2+14A\,b^3d\,e^3x^2-35B\,a^2b\,e^4x^2+42Ba\,b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35/(e*x+d)^(1/2)*(-5*B*b^3*e^4*x^4-7*A*b^3*e^4*x^3-21*B*a*b^2*e^4*x^3+8*
B*b^3*d*e^3*x^3-35*A*a*b^2*e^4*x^2+14*A*b^3*d*e^3*x^2-35*B*a^2*b*e^4*x^2+42
*B*a*b^2*d*e^3*x^2-16*B*b^3*d^2*e^2*x^2-105*A*a^2*b*e^4*x+140*A*a*b^2*d*e^3
*x-56*A*b^3*d^2*e^2*x-35*B*a^3*e^4*x+140*B*a^2*b*d*e^3*x-168*B*a*b^2*d^2*e^
2*x+64*B*b^3*d^3*e*x+35*A*a^3*e^4-210*A*a^2*b*d*e^3+280*A*a*b^2*d^2*e^2-112
*A*b^3*d^3*e-70*B*a^3*d*e^3+280*B*a^2*b*d^2*e^2-336*B*a*b^2*d^3*e+128*B*b^3
*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.77, size = 282, normalized size = 0.93

$$\frac{2\left(b^3e^3x^3+16\,b^3d^3-40\,ab^2d^2e+30\,a^2bde^2-5\,a^3e^3-\left(2\,b^3de^2-5\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-20\,ab^2de^2+15\,a^2be^3\right)x\right)}{5\,\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*A/(sqrt(e*x + d)*e^4) + 2/35*(5*b^3*e^4*x^4 - 128*b^3*d^4 + 336*
a*b^2*d^3*e - 280*a^2*b*d^2*e^2 + 70*a^3*d*e^3 - (8*b^3*d*e^3 - 21*a*b^2*e^
4)*x^3 + (16*b^3*d^2*e^2 - 42*a*b^2*d*e^3 + 35*a^2*b*e^4)*x^2 - (64*b^3*d^3
*e - 168*a*b^2*d^2*e^2 + 140*a^2*b*d*e^3 - 35*a^3*e^4)*x)*B/(sqrt(e*x + d)*
e^5)
```

mupad [B] time = 2.97, size = 327, normalized size = 1.08

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x\,\left(70\,B\,a^3\,e^4-280\,B\,a^2\,b\,d\,e^3+210\,A\,a^2\,b\,e^4+336\,B\,a\,b^2\,d^2\,e^2-280\,A\,a\,b^2\,d\,e^3-128\,B\,b^3\,d^3\,e+112\,A\,b^3\,d^2\,e^2\right)}{35\,b\,e^5}-\frac{-140\,B\,a^3\,d}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x*(70*B*a^3*e^4 + 210*A*a^2*b*e^4 - 128*
B*b^3*d^3*e + 112*A*b^3*d^2*e^2 + 336*B*a*b^2*d^2*e^2 - 280*A*a*b^2*d*e^3 -
 280*B*a^2*b*d*e^3))/(35*b*e^5) - (70*A*a^3*e^4 + 256*B*b^3*d^4 - 224*A*b^3
*d^3*e - 140*B*a^3*d*e^3 + 560*A*a*b^2*d^2*e^2 + 560*B*a^2*b*d^2*e^2 - 420*
A*a^2*b*d*e^3 - 672*B*a*b^2*d^3*e)/(35*b*e^5) + (x^2*(70*A*a*b^2*e^4 + 70*B
*a^2*b*e^4 - 28*A*b^3*d*e^3 + 32*B*b^3*d^2*e^2 - 84*B*a*b^2*d*e^3))/(35*b*e
^5) + (2*b*x^3*(7*A*b*e + 21*B*a*e - 8*B*b*d))/(35*e^2) + (2*B*b^2*x^4)/(7*
e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1849 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-3aBe-Abe+4bBd)}{3e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(-aBe-Abe+}{e^5(a+bx)}$$

```
[Out] -2/3*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(3/2)-2/
3*b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+
2/5*b^3*B*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2*(-a*e+b*d)^2*(-3*A*
b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(1/2)+6*b*(-a*e+b*
d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.14, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(-3aBe-Abe+4bBd)}{3e^5(a+bx)}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)(-aBe-Abe+}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*
x)*(d + e*x)^(3/2)) + (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x]) + (6*b*(b*d - a*e)*(2*
b*B*d - A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a
 + b*x)) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(5/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(5*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rule steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{5/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{5/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{3/2}}-}{b^2\big(ab+}$$

$$= -\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}}+\frac{2(bd-ae)^2(4bBd-3Ab}{e^5(a+b}$$

Mathematica [A] time = 0.18, size = 241, normalized size = 0.79

$$2\sqrt{(a+bx)^2}\,\Big(-5a^3e^3(Ae+2Bd+3Bex)+15a^2be^2\left(B\left(8d^2+12dex+3e^2x^2\right)-Ae(2d+3ex)\right)+15ab^2e\Big(Ae\Big(8$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^3*e^3*(2*B*d + A*e + 3*B*e*x) + 15*a^2*b*e^2*(-(
A*e*(2*d + 3*e*x)) + B*(8*d^2 + 12*d*e*x + 3*e^2*x^2)) + 15*a*b^2*e*(A*e*(8
*d^2 + 12*d*e*x + 3*e^2*x^2) + B*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*
x^3)) + b^3*(5*A*e*(-16*d^3 - 24*d^2*e*x - 6*d*e^2*x^2 + e^3*x^3) + B*(128*
d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3*x^3 + 3*e^4*x^4))))/(15*e^5*(a
 + b*x)*(d + e*x)^(3/2))
```

fricas [A] time = 0.62, size = 284, normalized size = 0.93

$$2\Big(3\,Bb^3e^4x^4+128\,Bb^3d^4-5\,Aa^3e^4-80\left(3\,Bab^2+Ab^3\right)d^3e+120\left(Ba^2b+Aab^2\right)d^2e^2-10\left(Ba^3+3\,Aa^2b\right)de^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(3*B*b^3*e^4*x^4 + 128*B*b^3*d^4 - 5*A*a^3*e^4 - 80*(3*B*a*b^2 + A*b^3
)*d^3*e + 120*(B*a^2*b + A*a*b^2)*d^2*e^2 - 10*(B*a^3 + 3*A*a^2*b)*d*e^3 -
(8*B*b^3*d*e^3 - 5*(3*B*a*b^2 + A*b^3)*e^4)*x^3 + 3*(16*B*b^3*d^2*e^2 - 10*
(3*B*a*b^2 + A*b^3)*d*e^3 + 15*(B*a^2*b + A*a*b^2)*e^4)*x^2 + 3*(64*B*b^3*d
^3*e - 40*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 60*(B*a^2*b + A*a*b^2)*d*e^3 - 5*(B
*a^3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^7*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [B] time = 0.25, size = 509, normalized size = 1.67

$$\frac{2}{15}\Big(3\,(xe+d)^{\frac{5}{2}}Bb^3e^{20}\mathrm{sgn}\left(bx+a\right)-20\,(xe+d)^{\frac{3}{2}}Bb^3de^{20}\mathrm{sgn}\left(bx+a\right)+90\,\sqrt{xe+d}\,Bb^3d^2e^{20}\mathrm{sgn}\left(bx+a\right)+15$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*B*b^3*e^20*sgn(b*x + a) - 20*(x*e + d)^(3/2)*B*b^3*
d*e^20*sgn(b*x + a) + 90*sqrt(x*e + d)*B*b^3*d^2*e^20*sgn(b*x + a) + 15*(x*
e + d)^(3/2)*B*a*b^2*e^21*sgn(b*x + a) + 5*(x*e + d)^(3/2)*A*b^3*e^21*sgn(b
*x + a) - 135*sqrt(x*e + d)*B*a*b^2*d*e^21*sgn(b*x + a) - 45*sqrt(x*e + d)*
A*b^3*d*e^21*sgn(b*x + a) + 45*sqrt(x*e + d)*B*a^2*b*e^22*sgn(b*x + a) + 45
*sqrt(x*e + d)*A*a*b^2*e^22*sgn(b*x + a))*e^(-25) + 2/3*(12*(x*e + d)*B*b^3
*d^3*sgn(b*x + a) - B*b^3*d^4*sgn(b*x + a) - 27*(x*e + d)*B*a*b^2*d^2*e*sgn
(b*x + a) - 9*(x*e + d)*A*b^3*d^2*e*sgn(b*x + a) + 3*B*a*b^2*d^3*e*sgn(b*x
+ a) + A*b^3*d^3*e*sgn(b*x + a) + 18*(x*e + d)*B*a^2*b*d*e^2*sgn(b*x + a) +
 18*(x*e + d)*A*a*b^2*d*e^2*sgn(b*x + a) - 3*B*a^2*b*d^2*e^2*sgn(b*x + a) -
 3*A*a*b^2*d^2*e^2*sgn(b*x + a) - 3*(x*e + d)*B*a^3*e^3*sgn(b*x + a) - 9*(x
*e + d)*A*a^2*b*e^3*sgn(b*x + a) + B*a^3*d*e^3*sgn(b*x + a) + 3*A*a^2*b*d*e
^3*sgn(b*x + a) - A*a^3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 317, normalized size = 1.04

$$-\frac{2\left(-3b^{3}Bx^{4}e^{4}-5Ab^{3}e^{4}x^{3}-15Bab^{2}e^{4}x^{3}+8Bb^{3}de^{3}x^{3}-45Aab^{2}e^{4}x^{2}+30Ab^{3}de^{3}x^{2}-45Ba^{2}be^{4}x^{2}+90Bab^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15/(e*x+d)^(3/2)*(-3*B*b^3*e^4*x^4-5*A*b^3*e^4*x^3-15*B*a*b^2*e^4*x^3+8*
B*b^3*d*e^3*x^3-45*A*a*b^2*e^4*x^2+30*A*b^3*d*e^3*x^2-45*B*a^2*b*e^4*x^2+90
*B*a*b^2*d*e^3*x^2-48*B*b^3*d^2*e^2*x^2+45*A*a^2*b*e^4*x-180*A*a*b^2*d*e^3*
x+120*A*b^3*d^2*e^2*x+15*B*a^3*e^4*x-180*B*a^2*b*d*e^3*x+360*B*a*b^2*d^2*e^
2*x-192*B*b^3*d^3*e*x+5*A*a^3*e^4+30*A*a^2*b*d*e^3-120*A*a*b^2*d^2*e^2+80*A
*b^3*d^3*e+10*B*a^3*d*e^3-120*B*a^2*b*d^2*e^2+240*B*a*b^2*d^3*e-128*B*b^3*d
^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.65, size = 304, normalized size = 1.00

$$\frac{2\left(b^{3}e^{3}x^{3}-16\,b^{3}d^{3}+24\,ab^{2}d^{2}e-6\,a^{2}bde^{2}-a^{3}e^{3}-3\left(2\,b^{3}de^{2}-3\,ab^{2}e^{3}\right)x^{2}-3\left(8\,b^{3}d^{2}e-12\,ab^{2}de^{2}+3\,a^{2}be^{3}\right)x\right)A}{3\left(e^{5}x+de^{4}\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*A/((e^5*x + d*e^4)*sqrt(e*x + d)) + 2/15*(3*b^3*e^4*x^4 + 128*b^
3*d^4 - 240*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 - 10*a^3*d*e^3 - (8*b^3*d*e^3 -
 15*a*b^2*e^4)*x^3 + 3*(16*b^3*d^2*e^2 - 30*a*b^2*d*e^3 + 15*a^2*b*e^4)*x^2
 + 3*(64*b^3*d^3*e - 120*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 - 5*a^3*e^4)*x)*B/(
(e^6*x + d*e^5)*sqrt(e*x + d))
```

mupad [B] time = 3.09, size = 362, normalized size = 1.19

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x^2\,\left(6\,B\,a^2\,b\,e^4-12\,B\,a\,b^2\,d\,e^3+6\,A\,a\,b^2\,e^4+\frac{32\,B\,b^3\,d^2\,e^2}{5}-4\,A\,b^3\,d\,e^3\right)}{b\,e^6}-\frac{x\,\left(30\,B\,a^3\,e^4-360\,B\,a^2\,b\,d\,e^3+90\,A\,a^2\,b\,e^4+720\,B\,a\,b\right.}{15}\right.}{x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(6*A*a*b^2*e^4 + 6*B*a^2*b*e^4 - 4*A
*b^3*d*e^3 + (32*B*b^3*d^2*e^2)/5 - 12*B*a*b^2*d*e^3))/(b*e^6) - (x*(30*B*a
^3*e^4 + 90*A*a^2*b*e^4 - 384*B*b^3*d^3*e + 240*A*b^3*d^2*e^2 + 720*B*a*b^2
*d^2*e^2 - 360*A*a*b^2*d*e^3 - 360*B*a^2*b*d*e^3))/(15*b*e^6) - ((2*A*a^3*e
^4)/3 - (256*B*b^3*d^4)/15 + (32*A*b^3*d^3*e)/3 + (4*B*a^3*d*e^3)/3 - 16*A*
a*b^2*d^2*e^2 - 16*B*a^2*b*d^2*e^2 + 4*A*a^2*b*d*e^3 + 32*B*a*b^2*d^3*e)/(b
*e^6) + (2*b*x^3*(5*A*b*e + 15*B*a*e - 8*B*b*d))/(15*e^3) + (2*B*b^2*x^4)/(
5*e^2)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(15*a*e^6
+ 15*b*d*e^5)*(d + e*x)^(1/2))/(15*b*e^6))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1850 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=304

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{e^5(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)\sqrt{d+ex}}+$$

```
[Out] -2/5*(-a*e+b*d)^3*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(5/2)+2/
3*(-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+
d)^(3/2)+2/3*b^3*B*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-6*b*(-a*e+b*
d)*(-A*b*e-B*a*e+2*B*b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(1/2)-2*b^2
*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.14, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{e^5(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(-aBe-Abe+2bBd)}{e^5(a+bx)\sqrt{d+ex}}+$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*
x)*(d + e*x)^(5/2)) + (2*(b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2)) - (6*b*(b*d - a*e)
*(2*b*B*d - A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sq
rt[d + e*x]) - (2*b^2*(4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b^3*B*(d + e*x)^(3/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(3*e^5*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^3(A+Bx)}{(d+ex)^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\left(-\frac{b^3(bd-ae)^3(-Bd+Ae)}{e^4(d+ex)^{7/2}}+\frac{b^3(bd-ae)^2(-4bBd+3Abe+aBe)}{e^4(d+ex)^{5/2}}-\right.}{b^2\left(ab+b^2\right.}$$

$$= -\frac{2(bd-ae)^3(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{2(bd-ae)^2(4bBd-3Ab}{3e^5(a+b}$$

Mathematica [A] time = 0.15, size = 244, normalized size = 0.80

$$-\frac{2\sqrt{(a+bx)^2}\left(a^3e^3(3Ae+2Bd+5Bex)+3a^2be^2\left(Ae(2d+5ex)+B\left(8d^2+20dex+15e^2x^2\right)\right)-3ab^2e\left(3B\left(16\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(a^3*e^3*(2*B*d + 3*A*e + 5*B*e*x) + 3*a^2*b*e^2*(A*e
*(2*d + 5*e*x) + B*(8*d^2 + 20*d*e*x + 15*e^2*x^2)) - 3*a*b^2*e*(-(A*e*(8*d
^2 + 20*d*e*x + 15*e^2*x^2)) + 3*B*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*
e^3*x^3)) + b^3*(-3*A*e*(16*d^3 + 40*d^2*e*x + 30*d*e^2*x^2 + 5*e^3*x^3) +
B*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*e^3*x^3 - 5*e^4*x^4))))/(
15*e^5*(a + b*x)*(d + e*x)^(5/2))
```

fricas [A] time = 0.72, size = 294, normalized size = 0.97

$$\frac{2\left(5\,Bb^3e^4x^4-128\,Bb^3d^4-3\,Aa^3e^4+48\left(3\,Bab^2+Ab^3\right)d^3e-24\left(Ba^2b+Aab^2\right)d^2e^2-2\left(Ba^3+3\,Aa^2b\right)de^3-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(5*B*b^3*e^4*x^4 - 128*B*b^3*d^4 - 3*A*a^3*e^4 + 48*(3*B*a*b^2 + A*b^3
)*d^3*e - 24*(B*a^2*b + A*a*b^2)*d^2*e^2 - 2*(B*a^3 + 3*A*a^2*b)*d*e^3 - 5*
(8*B*b^3*d*e^3 - 3*(3*B*a*b^2 + A*b^3)*e^4)*x^3 - 15*(16*B*b^3*d^2*e^2 - 6*
(3*B*a*b^2 + A*b^3)*d*e^3 + 3*(B*a^2*b + A*a*b^2)*e^4)*x^2 - 5*(64*B*b^3*d^
3*e - 24*(3*B*a*b^2 + A*b^3)*d^2*e^2 + 12*(B*a^2*b + A*a*b^2)*d*e^3 + (B*a^
3 + 3*A*a^2*b)*e^4)*x)*sqrt(e*x + d)/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x +
 d^3*e^5)
```

giac [B] time = 0.26, size = 508, normalized size = 1.67

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}Bb^3e^{10}\mathrm{sgn}\left(bx+a\right)-12\sqrt{xe+d}\,Bb^3de^{10}\mathrm{sgn}\left(bx+a\right)+9\sqrt{xe+d}\,Bab^2e^{11}\mathrm{sgn}\left(bx+a\right)+3\sqrt{xe+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*B*b^3*e^10*sgn(b*x + a) - 12*sqrt(x*e + d)*B*b^3*d*e^1
0*sgn(b*x + a) + 9*sqrt(x*e + d)*B*a*b^2*e^11*sgn(b*x + a) + 3*sqrt(x*e + d
)*A*b^3*e^11*sgn(b*x + a))*e^(-15) - 2/15*(90*(x*e + d)^2*B*b^3*d^2*sgn(b*x
 + a) - 20*(x*e + d)*B*b^3*d^3*sgn(b*x + a) + 3*B*b^3*d^4*sgn(b*x + a) - 13
5*(x*e + d)^2*B*a*b^2*d*e*sgn(b*x + a) - 45*(x*e + d)^2*A*b^3*d*e*sgn(b*x +
 a) + 45*(x*e + d)*B*a*b^2*d^2*e*sgn(b*x + a) + 15*(x*e + d)*A*b^3*d^2*e*sg
n(b*x + a) - 9*B*a*b^2*d^3*e*sgn(b*x + a) - 3*A*b^3*d^3*e*sgn(b*x + a) + 45
*(x*e + d)^2*B*a^2*b*e^2*sgn(b*x + a) + 45*(x*e + d)^2*A*a*b^2*e^2*sgn(b*x
+ a) - 30*(x*e + d)*B*a^2*b*d*e^2*sgn(b*x + a) - 30*(x*e + d)*A*a*b^2*d*e^2
*sgn(b*x + a) + 9*B*a^2*b*d^2*e^2*sgn(b*x + a) + 9*A*a*b^2*d^2*e^2*sgn(b*x
+ a) + 5*(x*e + d)*B*a^3*e^3*sgn(b*x + a) + 15*(x*e + d)*A*a^2*b*e^3*sgn(b*
x + a) - 3*B*a^3*d*e^3*sgn(b*x + a) - 9*A*a^2*b*d*e^3*sgn(b*x + a) + 3*A*a^
3*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 317, normalized size = 1.04

$$-\frac{2\left(-5b^{3}B\,x^{4}e^{4}-15A\,b^{3}e^{4}x^{3}-45Ba\,b^{2}e^{4}x^{3}+40B\,b^{3}d\,e^{3}x^{3}+45Aa\,b^{2}e^{4}x^{2}-90A\,b^{3}d\,e^{3}x^{2}+45B\,a^{2}b\,e^{4}x^{2}-270B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-5*B*b^3*e^4*x^4-15*A*b^3*e^4*x^3-45*B*a*b^2*e^4*x^3+4
0*B*b^3*d*e^3*x^3+45*A*a*b^2*e^4*x^2-90*A*b^3*d*e^3*x^2+45*B*a^2*b*e^4*x^2-
270*B*a*b^2*d*e^3*x^2+240*B*b^3*d^2*e^2*x^2+15*A*a^2*b*e^4*x+60*A*a*b^2*d*e
^3*x-120*A*b^3*d^2*e^2*x+5*B*a^3*e^4*x+60*B*a^2*b*d*e^3*x-360*B*a*b^2*d^2*e
^2*x+320*B*b^3*d^3*e*x+3*A*a^3*e^4+6*A*a^2*b*d*e^3+24*A*a*b^2*d^2*e^2-48*A*
b^3*d^3*e+2*B*a^3*d*e^3+24*B*a^2*b*d^2*e^2-144*B*a*b^2*d^3*e+128*B*b^3*d^4)
*((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [A] time = 0.74, size = 326, normalized size = 1.07

$$\frac{2\left(5\,b^{3}e^{3}x^{3}+16\,b^{3}d^{3}-8\,ab^{2}d^{2}e-2\,a^{2}bde^{2}-a^{3}e^{3}+15\left(2\,b^{3}de^{2}-ab^{2}e^{3}\right)x^{2}+5\left(8\,b^{3}d^{2}e-4\,ab^{2}de^{2}-a^{2}be^{3}\right)x\right)A}{5\left(e^{6}x^{2}+2\,de^{5}x+d^{2}e^{4}\right)\sqrt{ex+d}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*A/((e^6*x^2 + 2*d*e^5*x + d^2*e^4)*sqrt(e*x + d)) + 2/15*(5*b^3*e^4
*x^4 - 128*b^3*d^4 + 144*a*b^2*d^3*e - 24*a^2*b*d^2*e^2 - 2*a^3*d*e^3 - 5*(
8*b^3*d*e^3 - 9*a*b^2*e^4)*x^3 - 15*(16*b^3*d^2*e^2 - 18*a*b^2*d*e^3 + 3*a^
2*b*e^4)*x^2 - 5*(64*b^3*d^3*e - 72*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^
4)*x)*B/((e^7*x^2 + 2*d*e^6*x + d^2*e^5)*sqrt(e*x + d))
```

mupad [B] time = 3.08, size = 377, normalized size = 1.24

$$-\frac{\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}\,\left(\frac{4\,B\,a^{3}\,d\,e^{3}+6\,A\,a^{3}\,e^{4}+48\,B\,a^{2}\,b\,d^{2}\,e^{2}+12\,A\,a^{2}\,b\,d\,e^{3}-288\,B\,a\,b^{2}\,d^{3}\,e+48\,A\,a\,b^{2}\,d^{2}\,e^{2}+256\,B\,b^{3}\,d^{4}-96\,A\,b^{3}\,d^{3}\,e}{15\,b\,e^{7}}+\frac{2\,x^{2}\,(3}{}\right.}{x^{3}\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(7/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6*A*a^3*e^4 + 256*B*b^3*d^4 - 96*A*b^3*
d^3*e + 4*B*a^3*d*e^3 + 48*A*a*b^2*d^2*e^2 + 48*B*a^2*b*d^2*e^2 + 12*A*a^2*
b*d*e^3 - 288*B*a*b^2*d^3*e)/(15*b*e^7) + (2*x^2*(3*B*a^2*e^2 + 16*B*b^2*d^
2 + 3*A*a*b*e^2 - 6*A*b^2*d*e - 18*B*a*b*d*e))/e^5 + (x*(10*B*a^3*e^4 + 30*
A*a^2*b*e^4 + 640*B*b^3*d^3*e - 240*A*b^3*d^2*e^2 - 720*B*a*b^2*d^2*e^2 + 1
20*A*a*b^2*d*e^3 + 120*B*a^2*b*d*e^3))/(15*b*e^7) - (2*b*x^3*(3*A*b*e + 9*B
*a*e - 8*B*b*d))/(3*e^4) - (2*B*b^2*x^4)/(3*e^3)))/(x^3*(d + e*x)^(1/2) + (
a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(15*a*e^7 + 30*b*d*e^6)*(d + e*x)^(1/
2))/(15*b*e^7) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1851 $\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^3}{13e^7(a+bx)}$$

```
[Out] 2/9*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/1
1*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^
7/(b*x+a)+10/13*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(13/2)*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)-4/3*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+
d)^(15/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/17*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*
e+3*B*b*d)*(e*x+d)^(17/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/19*b^4*(-A*b*e-5*
B*a*e+6*B*b*d)*(e*x+d)^(19/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/21*b^5*B*(e*x
+d)^(21/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.28, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{19/2}(-5aBe-Abe+6bBd)}{19e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(bd-ae)(-2aBe}{17e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (10*b*(b*d - a*
e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(13*e^7*(a + b*x)) - (4*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(
d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (10*b^3*
(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(17*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e
*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x)) + (2*b^5*B*(d
+ e*x)^(21/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^{7/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{7/2}}{e^6} + \frac{b^5(bd-ae)^4(}{}}{}$$

$$= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)} - \frac{2(bd}{}$$

Mathematica [A] time = 0.31, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(-153153b^4(d+ex)^5(-5aBe-Abe+6bBd)+855855b^3(d+ex)^4(bd-ae)(-2aBe-Ab\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(323323*(b*d - a*e)^5*(B*d - A*e) - 26
4537*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1119195*b*(b*d -
 a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 1939938*b^2*(b*d - a*e)^2
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 855855*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*(d + e*x)^4 - 153153*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d +
e*x)^5 + 138567*b^5*B*(d + e*x)^6))/(2909907*e^7*(a + b*x))
```

fricas [B] time = 0.72, size = 1137, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/2909907*(138567*B*b^5*e^10*x^10 + 1024*B*b^5*d^10 + 323323*A*a^5*d^4*e^6
- 1792*(5*B*a*b^4 + A*b^5)*d^9*e + 17024*(2*B*a^2*b^3 + A*a*b^4)*d^8*e^2 -
72352*(B*a^3*b^2 + A*a^2*b^3)*d^7*e^3 + 90440*(B*a^4*b + 2*A*a^3*b^2)*d^6*e
^4 - 58786*(B*a^5 + 5*A*a^4*b)*d^5*e^5 + 7293*(64*B*b^5*d*e^9 + 21*(5*B*a*b
^4 + A*b^5)*e^10)*x^9 + 1287*(414*B*b^5*d^2*e^8 + 406*(5*B*a*b^4 + A*b^5)*d
*e^9 + 665*(2*B*a^2*b^3 + A*a*b^4)*e^10)*x^8 + 858*(242*B*b^5*d^3*e^7 + 707
*(5*B*a*b^4 + A*b^5)*d^2*e^8 + 3458*(2*B*a^2*b^3 + A*a*b^4)*d*e^9 + 2261*(B
*a^3*b^2 + A*a^2*b^3)*e^10)*x^7 + 231*(B*b^5*d^4*e^6 + 1048*(5*B*a*b^4 + A*
b^5)*d^3*e^7 + 15238*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^8 + 29716*(B*a^3*b^2 + A
*a^2*b^3)*d*e^9 + 4845*(B*a^4*b + 2*A*a^3*b^2)*e^10)*x^6 - 63*(4*B*b^5*d^5*
e^5 - 7*(5*B*a*b^4 + A*b^5)*d^4*e^6 - 23028*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^7
 - 133076*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^8 - 64600*(B*a^4*b + 2*A*a^3*b^2)*d
*e^9 - 4199*(B*a^5 + 5*A*a^4*b)*e^10)*x^5 + 7*(40*B*b^5*d^6*e^4 + 46189*A*a
^5*e^10 - 70*(5*B*a*b^4 + A*b^5)*d^5*e^5 + 665*(2*B*a^2*b^3 + A*a*b^4)*d^4*
e^6 + 516800*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^7 + 739670*(B*a^4*b + 2*A*a^3*b^
2)*d^2*e^8 + 142766*(B*a^5 + 5*A*a^4*b)*d*e^9)*x^4 - 2*(160*B*b^5*d^7*e^3 -
 646646*A*a^5*d*e^9 - 280*(5*B*a*b^4 + A*b^5)*d^6*e^4 + 2660*(2*B*a^2*b^3 +
 A*a*b^4)*d^5*e^5 - 11305*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^6 - 1198330*(B*a^4*
b + 2*A*a^3*b^2)*d^3*e^7 - 676039*(B*a^5 + 5*A*a^4*b)*d^2*e^8)*x^3 + 3*(128
*B*b^5*d^8*e^2 + 646646*A*a^5*d^2*e^8 - 224*(5*B*a*b^4 + A*b^5)*d^7*e^3 + 2
128*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^4 - 9044*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^5
+ 11305*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^6 + 235144*(B*a^5 + 5*A*a^4*b)*d^3*e^
7)*x^2 - (512*B*b^5*d^9*e - 1293292*A*a^5*d^3*e^7 - 896*(5*B*a*b^4 + A*b^5)
*d^8*e^2 + 8512*(2*B*a^2*b^3 + A*a*b^4)*d^7*e^3 - 36176*(B*a^3*b^2 + A*a^2*
b^3)*d^6*e^4 + 45220*(B*a^4*b + 2*A*a^3*b^2)*d^5*e^5 - 29393*(B*a^5 + 5*A*a
^4*b)*d^4*e^6)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.78, size = 5468, normalized size = 12.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^4*e^(-1)*
sgn(b*x + a) + 24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^4*e
^(-1)*sgn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^4*b*d^4*e^(-2)*sgn(b*x + a) + 9699690*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^4*e^(-2)*s
gn(b*x + a) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
 d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^4*e^(-3)*sgn(b*x + a) + 4
157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*d^4*e^(-3)*sgn(b*x + a) + 461890*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^4*e^(-4)*sgn(b*x + a) + 23
0945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^4*e^(-4)*sgn(b
*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*a*b^4*d^4*e^(-5)*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^4*e^(-5)*s
gn(b*x + a) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^4*e^(-6)*sgn(b*x
 + a) + 3879876*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*B*a^5*d^3*e^(-1)*sgn(b*x + a) + 19399380*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*d^3*e^(-1)*sgn(b*x + a) + 83
14020*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^4*b*d^3*e^(-2)*sgn(b*x + a) + 16628040*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*d^3*e^(-2)*sgn(b*x + a) + 1847560*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a^3*b^2*d^3*e^(-3)*sgn(b*x + a) + 1847560*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^3*d^3*e^(-3)*sgn(b*x + a) + 839
800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
- 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^2*b^3*d^3*e^(-4)*sgn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^4*d^3*e^(-4)*sgn(b*x +
 a) + 96900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d
)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x
*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^4*d^3*e^(-5)*sgn(b*x + a)
 + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(
9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
+ d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*d^3*e^(-5)*sgn(b*x + a) + 90
44*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^5*d
^3*e^(-6)*sgn(b*x + a) + 14549535*sqrt(x*e + d)*A*a^5*d^4*sgn(b*x + a) + 19
399380*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d^3*sgn(b*x + a) + 24942
```

```
06*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a^5*d^2*e^(-1)*sgn(b*x + a) + 12471030*(5*(x*e + d)^(7
/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)
*A*a^4*b*d^2*e^(-1)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 2771340*(35*(x*e + d)^(9/2)
 - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^
3 + 315*sqrt(x*e + d)*d^4)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x + a) + 1259700*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^
3*b^2*d^2*e^(-3)*sgn(b*x + a) + 1259700*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) +
 290700*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9
/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
 d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) +
 145350*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9
/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
 d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a*b^4*d^2*e^(-4)*sgn(b*x + a) + 6
7830*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/
2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
 + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b
^4*d^2*e^(-5)*sgn(b*x + a) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(
13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x
*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
 6435*sqrt(x*e + d)*d^7)*A*b^5*d^2*e^(-5)*sgn(b*x + a) + 798*(6435*(x*e + d
)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*
(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*
d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt
(x*e + d)*d^8)*B*b^5*d^2*e^(-6)*sgn(b*x + a) + 5819814*(3*(x*e + d)^(5/2) -
 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5*d^2*sgn(b*x + a) + 1847
56*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^5*d*e^(-1)*sgn(b*x + a
) + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^4*b*d*e^(-1)*s
gn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 839800*(63*(x*e + d)^(
11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5
/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a^3*b^2*d*e^(
-2)*sgn(b*x + a) + 193800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d +
 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)
*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a^3*b^2*d*e^(-3
)*sgn(b*x + a) + 193800*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5
005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d
^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*a^2*b^3*d*e^(-3)*
sgn(b*x + a) + 90440*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 1228
5*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*
d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e
 + d)*d^7)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 45220*(429*(x*e + d)^(15/2) -
3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2
)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e
+ d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 26
60*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13
/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160
*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*
d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^4*d*e^(-5)*sgn(b*x + a) + 532*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*A*b^5*d*e^(-5)*sgn(b*x + a) + 252*(12155*(x*e + d)^(1
9/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x
*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)
*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(
x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^5*d*e^(-6)*sgn(b*x + a)
+ 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^
2 - 35*sqrt(x*e + d)*d^3)*A*a^5*d*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^5*e^(-1)*sgn(b*x
 + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*A*a^4*b*e^(-1)*sgn(b*x + a) + 24225*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*B*a^4*b*e^(-2)*sgn(b*x + a) + 48450*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 22610*(429*(x*e + d)^(15/2) - 3465*(x*e +
d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3217
5*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d
^6 - 6435*sqrt(x*e + d)*d^7)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 22610*(429*(x*
e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 2502
5*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d
^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a^2*b^3*e^(-3)*s
gn(b*x + a) + 1330*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 2356
20*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9
/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*
(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a^2*b^3*e^(-4)*sgn(b*x +
a) + 665*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e +
d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 -
875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^
(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*a*b^4*e^(-4)*sgn(b*x + a) + 315*(12
155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*
d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230
*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2
)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*a*b^4*e^(-
5)*sgn(b*x + a) + 63*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d +
554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e +
 d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6
- 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*
e + d)*d^9)*A*b^5*e^(-5)*sgn(b*x + a) + 15*(46189*(x*e + d)^(21/2) - 510510
*(x*e + d)^(19/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/
2)*d^3 + 15668730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22
632610*(x*e + d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e +
d)^(5/2)*d^8 - 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*B*b
^5*e^(-6)*sgn(b*x + a) + 46189*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

$$2\left(e x + d\right)^{\frac{9}{2}} \left(138567 B\, b^{5} e^{6} x^{6} + 153153 A\, b^{5} e^{6} x^{5} + 765765 B a\, b^{4} e^{6} x^{5} - 87516 B\, b^{5} d\, e^{5} x^{5} + 855855 A a\, b^{4} e^{6} x^{4} - 900$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*(e*x+d)^(9/2)*(138567*B*b^5*e^6*x^6+153153*A*b^5*e^6*x^5+765765*B
*a*b^4*e^6*x^5-87516*B*b^5*d*e^5*x^5+855855*A*a*b^4*e^6*x^4-90090*A*b^5*d*e
^5*x^4+1711710*B*a^2*b^3*e^6*x^4-450450*B*a*b^4*d*e^5*x^4+51480*B*b^5*d^2*e
^4*x^4+1939938*A*a^2*b^3*e^6*x^3-456456*A*a*b^4*d*e^5*x^3+48048*A*b^5*d^2*e
^4*x^3+1939938*B*a^3*b^2*e^6*x^3-912912*B*a^2*b^3*d*e^5*x^3+240240*B*a*b^4*
d^2*e^4*x^3-27456*B*b^5*d^3*e^3*x^3+2238390*A*a^3*b^2*e^6*x^2-895356*A*a^2*
b^3*d*e^5*x^2+210672*A*a*b^4*d^2*e^4*x^2-22176*A*b^5*d^3*e^3*x^2+1119195*B*
a^4*b*e^6*x^2-895356*B*a^3*b^2*d*e^5*x^2+421344*B*a^2*b^3*d^2*e^4*x^2-11088
0*B*a*b^4*d^3*e^3*x^2+12672*B*b^5*d^4*e^2*x^2+1322685*A*a^4*b*e^6*x-813960*
A*a^3*b^2*d*e^5*x+325584*A*a^2*b^3*d^2*e^4*x-76608*A*a*b^4*d^3*e^3*x+8064*A
*b^5*d^4*e^2*x+264537*B*a^5*e^6*x-406980*B*a^4*b*d*e^5*x+325584*B*a^3*b^2*d
^2*e^4*x-153216*B*a^2*b^3*d^3*e^3*x+40320*B*a*b^4*d^4*e^2*x-4608*B*b^5*d^5*
e*x+323323*A*a^5*e^6-293930*A*a^4*b*d*e^5+180880*A*a^3*b^2*d^2*e^4-72352*A*
a^2*b^3*d^3*e^3+17024*A*a*b^4*d^4*e^2-1792*A*b^5*d^5*e-58786*B*a^5*d*e^5+90
440*B*a^4*b*d^2*e^4-72352*B*a^3*b^2*d^3*e^3+34048*B*a^2*b^3*d^4*e^2-8960*B*
a*b^4*d^5*e+1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**B**] time = 0.69, size = 1241, normalized size = 2.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/415701*(21879*b^5*e^9*x^9 - 256*b^5*d^9 + 2432*a*b^4*d^8*e - 10336*a^2*b^
3*d^7*e^2 + 25840*a^3*b^2*d^6*e^3 - 41990*a^4*b*d^5*e^4 + 46189*a^5*d^4*e^5
 + 1287*(58*b^5*d*e^8 + 95*a*b^4*e^9)*x^8 + 858*(101*b^5*d^2*e^7 + 494*a*b^
4*d*e^8 + 323*a^2*b^3*e^9)*x^7 + 66*(524*b^5*d^3*e^6 + 7619*a*b^4*d^2*e^7 +
 14858*a^2*b^3*d*e^8 + 4845*a^3*b^2*e^9)*x^6 + 9*(7*b^5*d^4*e^5 + 23028*a*b
^4*d^3*e^6 + 133076*a^2*b^3*d^2*e^7 + 129200*a^3*b^2*d*e^8 + 20995*a^4*b*e^
9)*x^5 - (70*b^5*d^5*e^4 - 665*a*b^4*d^4*e^5 - 516800*a^2*b^3*d^3*e^6 - 147
9340*a^3*b^2*d^2*e^7 - 713830*a^4*b*d*e^8 - 46189*a^5*e^9)*x^4 + 2*(40*b^5*
d^6*e^3 - 380*a*b^4*d^5*e^4 + 1615*a^2*b^3*d^4*e^5 + 342380*a^3*b^2*d^3*e^6
 + 482885*a^4*b*d^2*e^7 + 92378*a^5*d*e^8)*x^3 - 6*(16*b^5*d^7*e^2 - 152*a*
b^4*d^6*e^3 + 646*a^2*b^3*d^5*e^4 - 1615*a^3*b^2*d^4*e^5 - 83980*a^4*b*d^3*
e^6 - 46189*a^5*d^2*e^7)*x^2 + (128*b^5*d^8*e - 1216*a*b^4*d^7*e^2 + 5168*a
^2*b^3*d^6*e^3 - 12920*a^3*b^2*d^5*e^4 + 20995*a^4*b*d^4*e^5 + 184756*a^5*d
^3*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/2909907*(138567*b^5*e^10*x^10 + 1024*b^5
*d^10 - 8960*a*b^4*d^9*e + 34048*a^2*b^3*d^8*e^2 - 72352*a^3*b^2*d^7*e^3 +
90440*a^4*b*d^6*e^4 - 58786*a^5*d^5*e^5 + 7293*(64*b^5*d*e^9 + 105*a*b^4*e^
10)*x^9 + 2574*(207*b^5*d^2*e^8 + 1015*a*b^4*d*e^9 + 665*a^2*b^3*e^10)*x^8
+ 858*(242*b^5*d^3*e^7 + 3535*a*b^4*d^2*e^8 + 6916*a^2*b^3*d*e^9 + 2261*a^3
*b^2*e^10)*x^7 + 231*(b^5*d^4*e^6 + 5240*a*b^4*d^3*e^7 + 30476*a^2*b^3*d^2*
e^8 + 29716*a^3*b^2*d*e^9 + 4845*a^4*b*e^10)*x^6 - 63*(4*b^5*d^5*e^5 - 35*a
*b^4*d^4*e^6 - 46056*a^2*b^3*d^3*e^7 - 133076*a^3*b^2*d^2*e^8 - 64600*a^4*b
*d*e^9 - 4199*a^5*e^10)*x^5 + 14*(20*b^5*d^6*e^4 - 175*a*b^4*d^5*e^5 + 665*
a^2*b^3*d^4*e^6 + 258400*a^3*b^2*d^3*e^7 + 369835*a^4*b*d^2*e^8 + 71383*a^5
*d*e^9)*x^4 - 2*(160*b^5*d^7*e^3 - 1400*a*b^4*d^6*e^4 + 5320*a^2*b^3*d^5*e^
5 - 11305*a^3*b^2*d^4*e^6 - 1198330*a^4*b*d^3*e^7 - 676039*a^5*d^2*e^8)*x^3
 + 3*(128*b^5*d^8*e^2 - 1120*a*b^4*d^7*e^3 + 4256*a^2*b^3*d^6*e^4 - 9044*a^
3*b^2*d^5*e^5 + 11305*a^4*b*d^4*e^6 + 235144*a^5*d^3*e^7)*x^2 - (512*b^5*d^
9*e - 4480*a*b^4*d^8*e^2 + 17024*a^2*b^3*d^7*e^3 - 36176*a^3*b^2*d^6*e^4 +
45220*a^4*b*d^5*e^5 - 29393*a^5*d^4*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,(d+e\,x)^{7/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1852 $\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)^2(-aBe-Abe+2bBd)}{13e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-}{11e^7(a+bx)}$$

```
[Out] 2/7*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/9
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/
(b*x+a)+10/11*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(11/2)*((b*x+
a)^2)^(1/2)/e^7/(b*x+a)-20/13*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+
d)^(13/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/3*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+
3*B*b*d)*(e*x+d)^(15/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/17*b^4*(-A*b*e-5*B*
a*e+6*B*b*d)*(e*x+d)^(17/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/19*b^5*B*(e*x+d
)^(19/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.22, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(-5aBe-Abe+6bBd)}{17e^7(a+bx)}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)(-2aB}{3e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(11*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d
 + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^3*(
b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(3*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x)) + (2*b^5*B*(d +
e*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5(A+Bx)(d+ex)^{5/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{5/2}}{e^6} + \frac{b^5(bd-ae)^4(-6b}{}}{}$$

$$= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)} - \frac{2(bd-a}{}$$

Mathematica [A] time = 0.24, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\Big(-171171b^4(d+ex)^5(-5aBe-Abe+6bBd)+969969b^3(d+ex)^4(bd-ae)(-2aBe-Abe+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(415701*(b*d - a*e)^5*(B*d - A*e) - 32
3323*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1322685*b*(b*d -
 a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 2238390*b^2*(b*d - a*e)^2
*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 969969*b^3*(b*d - a*e)*(3*b*B*d -
A*b*e - 2*a*B*e)*(d + e*x)^4 - 171171*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d +
e*x)^5 + 153153*b^5*B*(d + e*x)^6))/(2909907*e^7*(a + b*x))
```

fricas [B] time = 0.52, size = 993, normalized size = 2.20

$$\frac{2\Big(153153\,Bb^5e^9x^9+3072\,Bb^5d^9+415701\,Aa^5d^3e^6-4864\left(5\,Bab^4+Ab^5\right)d^8e+41344\left(2\,Ba^2b^3+Aab^4\right)d^7e^2-1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/2909907*(153153*B*b^5*e^9*x^9 + 3072*B*b^5*d^9 + 415701*A*a^5*d^3*e^6 - 4
864*(5*B*a*b^4 + A*b^5)*d^8*e + 41344*(2*B*a^2*b^3 + A*a*b^4)*d^7*e^2 - 155
040*(B*a^3*b^2 + A*a^2*b^3)*d^6*e^3 + 167960*(B*a^4*b + 2*A*a^3*b^2)*d^5*e^
4 - 92378*(B*a^5 + 5*A*a^4*b)*d^4*e^5 + 9009*(39*B*b^5*d*e^8 + 19*(5*B*a*b^
4 + A*b^5)*e^9)*x^8 + 3003*(69*B*b^5*d^2*e^7 + 133*(5*B*a*b^4 + A*b^5)*d*e^
8 + 323*(2*B*a^2*b^3 + A*a*b^4)*e^9)*x^7 + 231*(3*B*b^5*d^3*e^6 + 1045*(5*B
*a*b^4 + A*b^5)*d^2*e^7 + 10013*(2*B*a^2*b^3 + A*a*b^4)*d*e^8 + 9690*(B*a^3
*b^2 + A*a^2*b^3)*e^9)*x^6 - 63*(12*B*b^5*d^4*e^5 - 19*(5*B*a*b^4 + A*b^5)*
d^3*e^6 - 22933*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^7 - 87210*(B*a^3*b^2 + A*a^2*
b^3)*d*e^8 - 20995*(B*a^4*b + 2*A*a^3*b^2)*e^9)*x^5 + 7*(120*B*b^5*d^5*e^4
- 190*(5*B*a*b^4 + A*b^5)*d^4*e^5 + 1615*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^6 +
513570*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^7 + 482885*(B*a^4*b + 2*A*a^3*b^2)*d*e
^8 + 46189*(B*a^5 + 5*A*a^4*b)*e^9)*x^4 - (960*B*b^5*d^6*e^3 - 415701*A*a^5
*e^9 - 1520*(5*B*a*b^4 + A*b^5)*d^5*e^4 + 12920*(2*B*a^2*b^3 + A*a*b^4)*d^4
*e^5 - 48450*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^6 - 2372435*(B*a^4*b + 2*A*a^3*b
^2)*d^2*e^7 - 877591*(B*a^5 + 5*A*a^4*b)*d*e^8)*x^3 + 3*(384*B*b^5*d^7*e^2
+ 415701*A*a^5*d*e^8 - 608*(5*B*a*b^4 + A*b^5)*d^6*e^3 + 5168*(2*B*a^2*b^3
+ A*a*b^4)*d^5*e^4 - 19380*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^5 + 20995*(B*a^4*b
 + 2*A*a^3*b^2)*d^3*e^6 + 230945*(B*a^5 + 5*A*a^4*b)*d^2*e^7)*x^2 - (1536*B
*b^5*d^8*e - 1247103*A*a^5*d^2*e^7 - 2432*(5*B*a*b^4 + A*b^5)*d^7*e^2 + 206
72*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^3 - 77520*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^4
+ 83980*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^5 - 46189*(B*a^5 + 5*A*a^4*b)*d^3*e^6
)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.62, size = 4050, normalized size = 8.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/14549535*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^3*e^(-1)*
sgn(b*x + a) + 24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^3*e
^(-1)*sgn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*B*a^4*b*d^3*e^(-2)*sgn(b*x + a) + 9699690*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^3*e^(-2)*s
gn(b*x + a) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
 d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^3*e^(-3)*sgn(b*x + a) + 4
157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*d^3*e^(-3)*sgn(b*x + a) + 461890*(35*(x*e
+ d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d
)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^3*e^(-4)*sgn(b*x + a) + 23
0945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^3*e^(-4)*sgn(b
*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e +
d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sq
rt(x*e + d)*d^5)*B*a*b^4*d^3*e^(-5)*sgn(b*x + a) + 20995*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^3*e^(-5)*s
gn(b*x + a) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^3*e^(-6)*sgn(b*x
 + a) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*B*a^5*d^2*e^(-1)*sgn(b*x + a) + 14549535*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*d^2*e^(-1)*sgn(b*x + a) + 62
35515*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 12471030*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*B*a^3*b^2*d^2*e^(-3)*sgn(b*x + a) + 1385670*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) + 629
850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
- 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d
^5)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) + 314925*(63*(x*e + d)^(11/2) - 385*(
x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 115
5*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*a*b^4*d^2*e^(-4)*sgn(b*x +
 a) + 72675*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d
)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x
*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*a*b^4*d^2*e^(-5)*sgn(b*x + a)
 + 14535*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(
9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
+ d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*d^2*e^(-5)*sgn(b*x + a) + 67
83*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*b^5*d
^2*e^(-6)*sgn(b*x + a) + 14549535*sqrt(x*e + d)*A*a^5*d^3*sgn(b*x + a) + 14
549535*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d^2*sgn(b*x + a) + 12471
03*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*B*a^5*d*e^(-1)*sgn(b*x + a) + 6235515*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*
a^4*b*d*e^(-1)*sgn(b*x + a) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 1385670*(35*(x*e + d)^(9/2) - 180*(
x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*
sqrt(x*e + d)*d^4)*A*a^3*b^2*d*e^(-2)*sgn(b*x + a) + 629850*(63*(x*e + d)^(
11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5
/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^2*d*e^(
-3)*sgn(b*x + a) + 629850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 99
0*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
 - 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*d*e^(-3)*sgn(b*x + a) + 145350*(231*(x*
e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(
x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 +
3003*sqrt(x*e + d)*d^6)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 72675*(231*(x*e +
 d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e
 + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 300
3*sqrt(x*e + d)*d^6)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 33915*(429*(x*e + d)^(
15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e +
 d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 150
15*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^4*d*e^(-5)*sgn(b*x +
 a) + 6783*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d
)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 2702
7*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)
*A*b^5*d*e^(-5)*sgn(b*x + a) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)
^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850
850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/
2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^5*d*e^(
-6)*sgn(b*x + a) + 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*s
qrt(x*e + d)*d^2)*A*a^5*d*sgn(b*x + a) + 46189*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*B*a^5*e^(-1)*sgn(b*x + a) + 230945*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a^4*b*e^(-1)*sgn(b*x + a) + 104975*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^4*b*e^(-2)
*sgn(b*x + a) + 209950*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(
x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 -
693*sqrt(x*e + d)*d^5)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 48450*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 48450*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 22610*(429*(x*e + d)^(15/2) -
3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2
)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e
+ d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a^2*b^3*e^(-4)*sgn(b*x + a) + 11
305*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2
)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e
+ d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*a*b^
4*e^(-4)*sgn(b*x + a) + 665*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)
*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*
e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6
 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*a*b^4*e^(-5)*sgn
(b*x + a) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*
(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)
*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*
e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*A*b^5*e^(-5)*sgn(b*x + a) + 63
```

```
*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15
/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 323
3230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^
(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*B*b^5*e^
(-6)*sgn(b*x + a) + 415701*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

$$2\,(ex+d)^{\frac{7}{2}}\big(153153B\,b^5e^6x^6+171171A\,b^5e^6x^5+855855Ba\,b^4e^6x^5-108108B\,b^5d\,e^5x^5+969969Aa\,b^4e^6x^4-1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(153153*B*b^5*e^6*x^6+171171*A*b^5*e^6*x^5+855855*B
*a*b^4*e^6*x^5-108108*B*b^5*d*e^5*x^5+969969*A*a*b^4*e^6*x^4-114114*A*b^5*d
*e^5*x^4+1939938*B*a^2*b^3*e^6*x^4-570570*B*a*b^4*d*e^5*x^4+72072*B*b^5*d^2
*e^4*x^4+2238390*A*a^2*b^3*e^6*x^3-596904*A*a*b^4*d*e^5*x^3+70224*A*b^5*d^2
*e^4*x^3+2238390*B*a^3*b^2*e^6*x^3-1193808*B*a^2*b^3*d*e^5*x^3+351120*B*a*b
^4*d^2*e^4*x^3-44352*B*b^5*d^3*e^3*x^3+2645370*A*a^3*b^2*e^6*x^2-1220940*A*
a^2*b^3*d*e^5*x^2+325584*A*a*b^4*d^2*e^4*x^2-38304*A*b^5*d^3*e^3*x^2+132268
5*B*a^4*b*e^6*x^2-1220940*B*a^3*b^2*d*e^5*x^2+651168*B*a^2*b^3*d^2*e^4*x^2-
191520*B*a*b^4*d^3*e^3*x^2+24192*B*b^5*d^4*e^2*x^2+1616615*A*a^4*b*e^6*x-11
75720*A*a^3*b^2*d*e^5*x+542640*A*a^2*b^3*d^2*e^4*x-144704*A*a*b^4*d^3*e^3*x
+17024*A*b^5*d^4*e^2*x+323323*B*a^5*e^6*x-587860*B*a^4*b*d*e^5*x+542640*B*a
^3*b^2*d^2*e^4*x-289408*B*a^2*b^3*d^3*e^3*x+85120*B*a*b^4*d^4*e^2*x-10752*B
*b^5*d^5*e*x+415701*A*a^5*e^6-461890*A*a^4*b*d*e^5+335920*A*a^3*b^2*d^2*e^4
-155040*A*a^2*b^3*d^3*e^3+41344*A*a*b^4*d^4*e^2-4864*A*b^5*d^5*e-92378*B*a^
5*d*e^5+167960*B*a^4*b*d^2*e^4-155040*B*a^3*b^2*d^3*e^3+82688*B*a^2*b^3*d^4
*e^2-24320*B*a*b^4*d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.85, size = 1080, normalized size = 2.39

$$2\big(9009\,b^5e^8x^8-256\,b^5d^8+2176\,ab^4d^7e-8160\,a^2b^3d^6e^2+17680\,a^3b^2d^5e^3-24310\,a^4bd^4e^4+21879\,a^5d^3e^5+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)*A/e^6 + 2/2909907*(153153*b^5*e^9*x^9 + 3072*b^5*d^9 -
24320*a*b^4*d^8*e + 82688*a^2*b^3*d^7*e^2 - 155040*a^3*b^2*d^6*e^3 + 167960
*a^4*b*d^5*e^4 - 92378*a^5*d^4*e^5 + 9009*(39*b^5*d*e^8 + 95*a*b^4*e^9)*x^8
 + 3003*(69*b^5*d^2*e^7 + 665*a*b^4*d*e^8 + 646*a^2*b^3*e^9)*x^7 + 231*(3*b
^5*d^3*e^6 + 5225*a*b^4*d^2*e^7 + 20026*a^2*b^3*d*e^8 + 9690*a^3*b^2*e^9)*x
^6 - 63*(12*b^5*d^4*e^5 - 95*a*b^4*d^3*e^6 - 45866*a^2*b^3*d^2*e^7 - 87210*
a^3*b^2*d*e^8 - 20995*a^4*b*e^9)*x^5 + 7*(120*b^5*d^5*e^4 - 950*a*b^4*d^4*e
^5 + 3230*a^2*b^3*d^3*e^6 + 513570*a^3*b^2*d^2*e^7 + 482885*a^4*b*d*e^8 + 4
6189*a^5*e^9)*x^4 - (960*b^5*d^6*e^3 - 7600*a*b^4*d^5*e^4 + 25840*a^2*b^3*d
^4*e^5 - 48450*a^3*b^2*d^3*e^6 - 2372435*a^4*b*d^2*e^7 - 877591*a^5*d*e^8)*
x^3 + 3*(384*b^5*d^7*e^2 - 3040*a*b^4*d^6*e^3 + 10336*a^2*b^3*d^5*e^4 - 193
80*a^3*b^2*d^4*e^5 + 20995*a^4*b*d^3*e^6 + 230945*a^5*d^2*e^7)*x^2 - (1536*
b^5*d^8*e - 12160*a*b^4*d^7*e^2 + 41344*a^2*b^3*d^6*e^3 - 77520*a^3*b^2*d^5
*e^4 + 83980*a^4*b*d^4*e^5 - 46189*a^5*d^3*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1853 $\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2(-aBe-Abe+2bBd)}{11e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-}{9e^7(a+bx)}$$

```
[Out] 2/5*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/7
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/
(b*x+a)+10/9*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(9/2)*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)-20/11*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)
^(11/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/13*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+
3*B*b*d)*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/15*b^4*(-A*b*e-5*B*
a*e+6*B*b*d)*(e*x+d)^(15/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/17*b^5*B*(e*x+d
)^(17/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.22, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(-5aBe-Abe+6bBd)}{15e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)(-2a}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (10*b^3*(b
*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(13*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)) + (2*b^5*B*(d +
e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(ab+b^2x\right)^5(A+Bx)(d+ex)^{3/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int\left(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^{3/2}}{e^6}+\frac{b^5(bd-ae)^4(-6b}{}\right.}{}$$

$$= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)} - \frac{2(bd-a}{}$$

Mathematica [**A**] time = 0.22, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(-51051b^4(d+ex)^5(-5aBe-Abe+6bBd)+294525b^3(d+ex)^4(bd-ae)(-2aBe-Abe+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(153153*(b*d - a*e)^5*(B*d - A*e) - 10
9395*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 425425*b*(b*d -
a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 696150*b^2*(b*d - a*e)^2*(
2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3 + 294525*b^3*(b*d - a*e)*(3*b*B*d - A*
b*e - 2*a*B*e)*(d + e*x)^4 - 51051*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x
)^5 + 45045*b^5*B*(d + e*x)^6))/(765765*e^7*(a + b*x))
```

fricas [**B**] time = 0.88, size = 848, normalized size = 1.88

$$\frac{2\left(45045\,Bb^5e^8x^8+3072\,Bb^5d^8+153153\,Aa^5d^2e^6-4352\left(5\,Bab^4+Ab^5\right)d^7e+32640\left(2\,Ba^2b^3+Aab^4\right)d^6e^2-10\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/765765*(45045*B*b^5*e^8*x^8 + 3072*B*b^5*d^8 + 153153*A*a^5*d^2*e^6 - 435
2*(5*B*a*b^4 + A*b^5)*d^7*e + 32640*(2*B*a^2*b^3 + A*a*b^4)*d^6*e^2 - 10608
0*(B*a^3*b^2 + A*a^2*b^3)*d^5*e^3 + 97240*(B*a^4*b + 2*A*a^3*b^2)*d^4*e^4 -
 43758*(B*a^5 + 5*A*a^4*b)*d^3*e^5 + 3003*(18*B*b^5*d*e^7 + 17*(5*B*a*b^4 +
 A*b^5)*e^8)*x^7 + 231*(3*B*b^5*d^2*e^6 + 272*(5*B*a*b^4 + A*b^5)*d*e^7 + 1
275*(2*B*a^2*b^3 + A*a*b^4)*e^8)*x^6 - 63*(12*B*b^5*d^3*e^5 - 17*(5*B*a*b^4
 + A*b^5)*d^2*e^6 - 5950*(2*B*a^2*b^3 + A*a*b^4)*d*e^7 - 11050*(B*a^3*b^2 +
 A*a^2*b^3)*e^8)*x^5 + 35*(24*B*b^5*d^4*e^4 - 34*(5*B*a*b^4 + A*b^5)*d^3*e^
5 + 255*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^6 + 26520*(B*a^3*b^2 + A*a^2*b^3)*d*e
^7 + 12155*(B*a^4*b + 2*A*a^3*b^2)*e^8)*x^4 - 5*(192*B*b^5*d^5*e^3 - 272*(5
*B*a*b^4 + A*b^5)*d^4*e^4 + 2040*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^5 - 6630*(B*
a^3*b^2 + A*a^2*b^3)*d^2*e^6 - 121550*(B*a^4*b + 2*A*a^3*b^2)*d*e^7 - 21879
*(B*a^5 + 5*A*a^4*b)*e^8)*x^3 + 3*(384*B*b^5*d^6*e^2 + 51051*A*a^5*e^8 - 54
4*(5*B*a*b^4 + A*b^5)*d^5*e^3 + 4080*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^4 - 1326
0*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^5 + 12155*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^6 +
 58344*(B*a^5 + 5*A*a^4*b)*d*e^7)*x^2 - (1536*B*b^5*d^7*e - 306306*A*a^5*d*
e^7 - 2176*(5*B*a*b^4 + A*b^5)*d^6*e^2 + 16320*(2*B*a^2*b^3 + A*a*b^4)*d^5*
e^3 - 53040*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^4 + 48620*(B*a^4*b + 2*A*a^3*b^2)
*d^3*e^5 - 21879*(B*a^5 + 5*A*a^4*b)*d^2*e^6)*x)*sqrt(e*x + d)/e^7
```

giac [**B**] time = 0.48, size = 2788, normalized size = 6.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/765765*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d^2*e^(-1)*sgn
(b*x + a) + 1276275*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d^2*e^(-1
)*sgn(b*x + a) + 255255*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt
(x*e + d)*d^2)*B*a^4*b*d^2*e^(-2)*sgn(b*x + a) + 510510*(3*(x*e + d)^(5/2)
- 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d^2*e^(-2)*sgn(b*x
 + a) + 218790*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/
2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^3*b^2*d^2*e^(-3)*sgn(b*x + a) + 218790*(
5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt
(x*e + d)*d^3)*A*a^2*b^3*d^2*e^(-3)*sgn(b*x + a) + 24310*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*d^2*e^(-4)*sgn(b*x + a) + 12155*(35*(
x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
 + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b^4*d^2*e^(-4)*sgn(b*x + a) +
5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2
 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*
d^5)*B*a*b^4*d^2*e^(-5)*sgn(b*x + a) + 1105*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*d^2*e^(-5)*sgn(b*x + a) +
 255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)
*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)
^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*d^2*e^(-6)*sgn(b*x + a) + 102102
*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*d*
e^(-1)*sgn(b*x + a) + 510510*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*A*a^4*b*d*e^(-1)*sgn(b*x + a) + 218790*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
B*a^4*b*d*e^(-2)*sgn(b*x + a) + 437580*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^3*b^2*d*e^(-2)*s
gn(b*x + a) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
+ d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^3*b^2
*d*e^(-3)*sgn(b*x + a) + 48620*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d
+ 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4
)*A*a^2*b^3*d*e^(-3)*sgn(b*x + a) + 22100*(63*(x*e + d)^(11/2) - 385*(x*e +
 d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*
e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) +
 11050*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 2550*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*B*a*b^4*d*e^(-5)*sgn(b*x + a) + 510*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A*b^5*
d*e^(-5)*sgn(b*x + a) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
 + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)
^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*s
qrt(x*e + d)*d^7)*B*b^5*d*e^(-6)*sgn(b*x + a) + 765765*sqrt(x*e + d)*A*a^5*
d^2*sgn(b*x + a) + 510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*d*sgn
(b*x + a) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^5*e^(-1)*sgn(b*x + a) + 109395*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*A*a^4*b*e^(-1)*sgn(b*x + a) + 12155*(35*(x*e + d)^(9/2) - 180*(x*
e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sq
rt(x*e + d)*d^4)*B*a^4*b*e^(-2)*sgn(b*x + a) + 24310*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 11050*(63*(x*e + d)
^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^
(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^3*b^2*e^(
-3)*sgn(b*x + a) + 11050*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 2550*(231*(x*e + d
)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
 d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*
sqrt(x*e + d)*d^6)*B*a^2*b^3*e^(-4)*sgn(b*x + a) + 1275*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*A*a*b^4*e^(-4)*sgn(b*x + a) + 595*(429*(x*e + d)^(15/2) - 3465
*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^
3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)
^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*B*a*b^4*e^(-5)*sgn(b*x + a) + 119*(429
*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 -
25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/
2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*A*b^5*e^(-5)*s
gn(b*x + a) + 7*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*
(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)
*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*
e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*B*b^5*e^(-6)*sgn(b*x + a) + 51
051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^5
*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 689, normalized size = 1.52

$$2\,(ex+d)^{\frac{5}{2}}\,\bigl(45045B\,b^5e^6x^6+51051A\,b^5e^6x^5+255255Ba\,b^4e^6x^5-36036B\,b^5d\,e^5x^5+294525Aa\,b^4e^6x^4-39270$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/765765*(e*x+d)^(5/2)*(45045*B*b^5*e^6*x^6+51051*A*b^5*e^6*x^5+255255*B*a*
b^4*e^6*x^5-36036*B*b^5*d*e^5*x^5+294525*A*a*b^4*e^6*x^4-39270*A*b^5*d*e^5*
x^4+589050*B*a^2*b^3*e^6*x^4-196350*B*a*b^4*d*e^5*x^4+27720*B*b^5*d^2*e^4*x
^4+696150*A*a^2*b^3*e^6*x^3-214200*A*a*b^4*d*e^5*x^3+28560*A*b^5*d^2*e^4*x^
3+696150*B*a^3*b^2*e^6*x^3-428400*B*a^2*b^3*d*e^5*x^3+142800*B*a*b^4*d^2*e^
4*x^3-20160*B*b^5*d^3*e^3*x^3+850850*A*a^3*b^2*e^6*x^2-464100*A*a^2*b^3*d*e
^5*x^2+142800*A*a*b^4*d^2*e^4*x^2-19040*A*b^5*d^3*e^3*x^2+425425*B*a^4*b*e^
6*x^2-464100*B*a^3*b^2*d*e^5*x^2+285600*B*a^2*b^3*d^2*e^4*x^2-95200*B*a*b^4
*d^3*e^3*x^2+13440*B*b^5*d^4*e^2*x^2+546975*A*a^4*b*e^6*x-486200*A*a^3*b^2*
d*e^5*x+265200*A*a^2*b^3*d^2*e^4*x-81600*A*a*b^4*d^3*e^3*x+10880*A*b^5*d^4*
e^2*x+109395*B*a^5*e^6*x-243100*B*a^4*b*d*e^5*x+265200*B*a^3*b^2*d^2*e^4*x-
163200*B*a^2*b^3*d^3*e^3*x+54400*B*a*b^4*d^4*e^2*x-7680*B*b^5*d^5*e*x+15315
3*A*a^5*e^6-218790*A*a^4*b*d*e^5+194480*A*a^3*b^2*d^2*e^4-106080*A*a^2*b^3*
d^3*e^3+32640*A*a*b^4*d^4*e^2-4352*A*b^5*d^5*e-43758*B*a^5*d*e^5+97240*B*a^
4*b*d^2*e^4-106080*B*a^3*b^2*d^3*e^3+65280*B*a^2*b^3*d^4*e^2-21760*B*a*b^4*
d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.77, size = 921, normalized size = 2.04

$$2\,\bigl(3003\,b^5e^7x^7-256\,b^5d^7+1920\,ab^4d^6e-6240\,a^2b^3d^5e^2+11440\,a^3b^2d^4e^3-12870\,a^4bd^3e^4+9009\,a^5d^2e^5+231$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/765765*(45045*b^5*e^8*x^8 + 3072*b^5*d^
8 - 21760*a*b^4*d^7*e + 65280*a^2*b^3*d^6*e^2 - 106080*a^3*b^2*d^5*e^3 + 97
240*a^4*b*d^4*e^4 - 43758*a^5*d^3*e^5 + 3003*(18*b^5*d*e^7 + 85*a*b^4*e^8)*
x^7 + 231*(3*b^5*d^2*e^6 + 1360*a*b^4*d*e^7 + 2550*a^2*b^3*e^8)*x^6 - 63*(1
2*b^5*d^3*e^5 - 85*a*b^4*d^2*e^6 - 11900*a^2*b^3*d*e^7 - 11050*a^3*b^2*e^8)
*x^5 + 35*(24*b^5*d^4*e^4 - 170*a*b^4*d^3*e^5 + 510*a^2*b^3*d^2*e^6 + 26520
*a^3*b^2*d*e^7 + 12155*a^4*b*e^8)*x^4 - 5*(192*b^5*d^5*e^3 - 1360*a*b^4*d^4
*e^4 + 4080*a^2*b^3*d^3*e^5 - 6630*a^3*b^2*d^2*e^6 - 121550*a^4*b*d*e^7 - 2
1879*a^5*e^8)*x^3 + 3*(384*b^5*d^6*e^2 - 2720*a*b^4*d^5*e^3 + 8160*a^2*b^3*
d^4*e^4 - 13260*a^3*b^2*d^3*e^5 + 12155*a^4*b*d^2*e^6 + 58344*a^5*d*e^7)*x^
2 - (1536*b^5*d^7*e - 10880*a*b^4*d^6*e^2 + 32640*a^2*b^3*d^5*e^3 - 53040*a
^3*b^2*d^4*e^4 + 48620*a^4*b*d^3*e^5 - 21879*a^5*d^2*e^6)*x)*sqrt(e*x + d)*
B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+Bx)\,(d+e\,x)^{3/2}\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1854 $\int (A+Bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=452

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2(-aBe-Abe+2bBd)}{9e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3}{7e^7(a+bx)}$$

```
[Out] 2/3*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/5
*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/
(b*x+a)+10/7*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(7/2)*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)-20/9*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^
(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/11*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*
B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/13*b^4*(-A*b*e-5*B*a*
e+6*B*b*d)*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/15*b^5*B*(e*x+d)^
(15/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.21, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(-5aBe-Abe+6bBd)}{13e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)(-2aBe}{11e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)
^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (10*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(7*e^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (10*b^3*(b*d
 - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(11*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^
(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^5*B*(d + e*
x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5 (A+Bx)\sqrt{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)\sqrt{d+ex}}{e^6} + \frac{b^5(bd-ae)^4(-6b}{}\right.}{}$$

$$= \frac{2(bd-ae)^5(Bd-Ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)} - \frac{2(bd-}{}$$

Mathematica [**A**] time = 0.20, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(-3465b^4(d+ex)^5(-5aBe-Abe+6bBd)+20475b^3(d+ex)^4(bd-ae)(-2aBe-Abe+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(15015*(b*d - a*e)^5*(B*d - A*e) - 900
9*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 32175*b*(b*d - a*e)
^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 50050*b^2*(b*d - a*e)^2*(2*b*B
*d - A*b*e - a*B*e)*(d + e*x)^3 + 20475*b^3*(b*d - a*e)*(3*b*B*d - A*b*e -
2*a*B*e)*(d + e*x)^4 - 3465*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 3
003*b^5*B*(d + e*x)^6))/(45045*e^7*(a + b*x))
```

fricas [**B**] time = 0.78, size = 702, normalized size = 1.55

$$\frac{2\left(3003\,Bb^5e^7x^7+1024\,Bb^5d^7+15015\,Aa^5de^6-1280\left(5\,Bab^4+Ab^5\right)d^6e+8320\left(2\,Ba^2b^3+Aab^4\right)d^5e^2-228\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*B*b^5*e^7*x^7 + 1024*B*b^5*d^7 + 15015*A*a^5*d*e^6 - 1280*(5*
B*a*b^4 + A*b^5)*d^6*e + 8320*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 22880*(B*a^
3*b^2 + A*a^2*b^3)*d^4*e^3 + 17160*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 6006*(
B*a^5 + 5*A*a^4*b)*d^2*e^5 + 231*(B*b^5*d*e^6 + 15*(5*B*a*b^4 + A*b^5)*e^7)
*x^6 - 63*(4*B*b^5*d^2*e^5 - 5*(5*B*a*b^4 + A*b^5)*d*e^6 - 325*(2*B*a^2*b^3
 + A*a*b^4)*e^7)*x^5 + 35*(8*B*b^5*d^3*e^4 - 10*(5*B*a*b^4 + A*b^5)*d^2*e^5
 + 65*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 1430*(B*a^3*b^2 + A*a^2*b^3)*e^7)*x^4
 - 5*(64*B*b^5*d^4*e^3 - 80*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 520*(2*B*a^2*b^3
+ A*a*b^4)*d^2*e^5 - 1430*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 6435*(B*a^4*b + 2
*A*a^3*b^2)*e^7)*x^3 + 3*(128*B*b^5*d^5*e^2 - 160*(5*B*a*b^4 + A*b^5)*d^4*e
^3 + 1040*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 2860*(B*a^3*b^2 + A*a^2*b^3)*d^
2*e^5 + 2145*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 3003*(B*a^5 + 5*A*a^4*b)*e^7)*
x^2 - (512*B*b^5*d^6*e - 15015*A*a^5*e^7 - 640*(5*B*a*b^4 + A*b^5)*d^5*e^2
+ 4160*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^3 - 11440*(B*a^3*b^2 + A*a^2*b^3)*d^3*
e^4 + 8580*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 - 3003*(B*a^5 + 5*A*a^4*b)*d*e^6
)*x)*sqrt(e*x + d)/e^7
```

giac [**B**] time = 0.39, size = 1682, normalized size = 3.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*d*e^(-1)*sgn(b*x
 + a) + 75075*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*d*e^(-1)*sgn(b*
x + a) + 15015*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*B*a^4*b*d*e^(-2)*sgn(b*x + a) + 30030*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*d*e^(-2)*sgn(b*x + a) + 12870*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*B*a^3*b^2*d*e^(-3)*sgn(b*x + a) + 12870*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a
^2*b^3*d*e^(-3)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*B*a^2*b^3*d*e^(-4)*sgn(b*x + a) + 715*(35*(x*e + d)^(9/2) - 180*(x*e
 + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqr
t(x*e + d)*d^4)*A*a*b^4*d*e^(-4)*sgn(b*x + a) + 325*(63*(x*e + d)^(11/2) -
385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3
+ 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^4*d*e^(-5)*sgn(b*
x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7
/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*
e + d)*d^5)*A*b^5*d*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*B*b^5*d*e^(-6)*sgn(b*x + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2
)*d + 15*sqrt(x*e + d)*d^2)*B*a^5*e^(-1)*sgn(b*x + a) + 15015*(3*(x*e + d)^
(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*A*a^4*b*e^(-1)*sgn(b*x
 + a) + 6435*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)
*d^2 - 35*sqrt(x*e + d)*d^3)*B*a^4*b*e^(-2)*sgn(b*x + a) + 12870*(5*(x*e +
d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)
*d^3)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 1430*(35*(x*e + d)^(9/2) - 18
0*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 3
15*sqrt(x*e + d)*d^4)*A*a^2*b^3*e^(-3)*sgn(b*x + a) + 650*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*B*a^2*b^3*e^(-4)*
sgn(b*x + a) + 325*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*A*a*b^4*e^(-4)*sgn(b*x + a) + 75*(231*(x*e + d)^(13/2) -
 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*
d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
 d)*d^6)*B*a*b^4*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*A
*b^5*e^(-5)*sgn(b*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*
d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d
)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*
sqrt(x*e + d)*d^7)*B*b^5*e^(-6)*sgn(b*x + a) + 45045*sqrt(x*e + d)*A*a^5*d*
sgn(b*x + a) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^5*sgn(b*x +
a))*e^(-1)
```

maple [A] time = 0.05, size = 689, normalized size = 1.52

$$\frac{2 \left(e x + d\right)^{\frac{3}{2}} \left(3003 B \,b^{5} e^{6} x^{6} + 3465 A \,b^{5} e^{6} x^{5} + 17325 B a \,b^{4} e^{6} x^{5} - 2772 B \,b^{5} d \,e^{5} x^{5} + 20475 A a \,b^{4} e^{6} x^{4} - 3150 A \,b^{5} d \,e^{5}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3003*B*b^5*e^6*x^6+3465*A*b^5*e^6*x^5+17325*B*a*b^4*
e^6*x^5-2772*B*b^5*d*e^5*x^5+20475*A*a*b^4*e^6*x^4-3150*A*b^5*d*e^5*x^4+409
50*B*a^2*b^3*e^6*x^4-15750*B*a*b^4*d*e^5*x^4+2520*B*b^5*d^2*e^4*x^4+50050*A
*a^2*b^3*e^6*x^3-18200*A*a*b^4*d*e^5*x^3+2800*A*b^5*d^2*e^4*x^3+50050*B*a^3
*b^2*e^6*x^3-36400*B*a^2*b^3*d*e^5*x^3+14000*B*a*b^4*d^2*e^4*x^3-2240*B*b^5
*d^3*e^3*x^3+64350*A*a^3*b^2*e^6*x^2-42900*A*a^2*b^3*d*e^5*x^2+15600*A*a*b^
4*d^2*e^4*x^2-2400*A*b^5*d^3*e^3*x^2+32175*B*a^4*b*e^6*x^2-42900*B*a^3*b^2*
d*e^5*x^2+31200*B*a^2*b^3*d^2*e^4*x^2-12000*B*a*b^4*d^3*e^3*x^2+1920*B*b^5*
d^4*e^2*x^2+45045*A*a^4*b*e^6*x-51480*A*a^3*b^2*d*e^5*x+34320*A*a^2*b^3*d^2
*e^4*x-12480*A*a*b^4*d^3*e^3*x+1920*A*b^5*d^4*e^2*x+9009*B*a^5*e^6*x-25740*
B*a^4*b*d*e^5*x+34320*B*a^3*b^2*d^2*e^4*x-24960*B*a^2*b^3*d^3*e^3*x+9600*B*
a*b^4*d^4*e^2*x-1536*B*b^5*d^5*e*x+15015*A*a^5*e^6-30030*A*a^4*b*d*e^5+3432
0*A*a^3*b^2*d^2*e^4-22880*A*a^2*b^3*d^3*e^3+8320*A*a*b^4*d^4*e^2-1280*A*b^5
*d^5*e-6006*B*a^5*d*e^5+17160*B*a^4*b*d^2*e^4-22880*B*a^3*b^2*d^3*e^3+16640
*B*a^2*b^3*d^4*e^2-6400*B*a*b^4*d^5*e+1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7
/(b*x+a)^5
```

maxima [B] time = 0.81, size = 760, normalized size = 1.68

$$2\Big(693\,b^5e^6x^6-256\,b^5d^6+1664\,ab^4d^5e-4576\,a^2b^3d^4e^2+6864\,a^3b^2d^3e^3-6006\,a^4bd^2e^4+3003\,a^5de^5+63\,\Big(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)*A/e^6 + 2/45045*(3003*b^5*e^7*x^7 + 1024*
b^5*d^7 - 6400*a*b^4*d^6*e + 16640*a^2*b^3*d^5*e^2 - 22880*a^3*b^2*d^4*e^3
+ 17160*a^4*b*d^3*e^4 - 6006*a^5*d^2*e^5 + 231*(b^5*d*e^6 + 75*a*b^4*e^7)*x
^6 - 63*(4*b^5*d^2*e^5 - 25*a*b^4*d*e^6 - 650*a^2*b^3*e^7)*x^5 + 70*(4*b^5*
d^3*e^4 - 25*a*b^4*d^2*e^5 + 65*a^2*b^3*d*e^6 + 715*a^3*b^2*e^7)*x^4 - 5*(6
4*b^5*d^4*e^3 - 400*a*b^4*d^3*e^4 + 1040*a^2*b^3*d^2*e^5 - 1430*a^3*b^2*d*e
^6 - 6435*a^4*b*e^7)*x^3 + 3*(128*b^5*d^5*e^2 - 800*a*b^4*d^4*e^3 + 2080*a^
2*b^3*d^3*e^4 - 2860*a^3*b^2*d^2*e^5 + 2145*a^4*b*d*e^6 + 3003*a^5*e^7)*x^2
 - (512*b^5*d^6*e - 3200*a*b^4*d^5*e^2 + 8320*a^2*b^3*d^4*e^3 - 11440*a^3*b
^2*d^3*e^4 + 8580*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*sqrt(e*x + d)*B/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\sqrt{d+ex}\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*(e*x+d)**(1/2),x)
[Out] Integral((A + B*x)*sqrt(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1855 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=448

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2(-aBe-Abe+2bBd)}{7e^7(a+bx)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae}{e^7(a+bx)}$$

```
[Out] -2/3*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/
e^7/(b*x+a)+2*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(5/2)*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)-20/7*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)
^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/9*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*
B*b*d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/11*b^4*(-A*b*e-5*B*a*e
+6*B*b*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/13*b^5*B*(e*x+d)^(
13/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2*(-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(1/2)
*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.22, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(-5aBe-Abe+6bBd)}{11e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)(-2aB}{9e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b*(b*d - a*e)^3*(3
*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(
7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b^3*(b*d - a*e)
*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(9*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(11/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(13/2)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{\sqrt{d+ex}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6\sqrt{d+ex}} + \frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)\sqrt{d+ex}}{e^6}\right.}{}$$

$$= \frac{2(bd-ae)^5(Bd-Ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)} - \frac{2(bd-ae)^4(6bBd-}{}$$

Mathematica [**A**] time = 0.19, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,\left(-819b^4(d+ex)^5(-5aBe-Abe+6bBd)+5005b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(9009*(b*d - a*e)^5*(B*d - A*e) - 3003*(
b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 9009*b*(b*d - a*e)^3*(
3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2 - 12870*b^2*(b*d - a*e)^2*(2*b*B*d -
 A*b*e - a*B*e)*(d + e*x)^3 + 5005*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^4 - 819*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 693*b^5
*B*(d + e*x)^6))/(9009*e^7*(a + b*x))
```

fricas [**A**] time = 0.66, size = 560, normalized size = 1.25

$$\frac{2\left(693\,Bb^5e^6x^6+3072\,Bb^5d^6+9009\,Aa^5e^6-3328\left(5\,Bab^4+Ab^5\right)d^5e+18304\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-41184\left(B\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/9009*(693*B*b^5*e^6*x^6 + 3072*B*b^5*d^6 + 9009*A*a^5*e^6 - 3328*(5*B*a*b
^4 + A*b^5)*d^5*e + 18304*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 41184*(B*a^3*b^
2 + A*a^2*b^3)*d^3*e^3 + 24024*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 6006*(B*a^
5 + 5*A*a^4*b)*d*e^5 - 63*(12*B*b^5*d*e^5 - 13*(5*B*a*b^4 + A*b^5)*e^6)*x^5
 + 35*(24*B*b^5*d^2*e^4 - 26*(5*B*a*b^4 + A*b^5)*d*e^5 + 143*(2*B*a^2*b^3 +
 A*a*b^4)*e^6)*x^4 - 10*(96*B*b^5*d^3*e^3 - 104*(5*B*a*b^4 + A*b^5)*d^2*e^4
 + 572*(2*B*a^2*b^3 + A*a*b^4)*d*e^5 - 1287*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^
3 + 3*(384*B*b^5*d^4*e^2 - 416*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 2288*(2*B*a^2*
b^3 + A*a*b^4)*d^2*e^4 - 5148*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 3003*(B*a^4*b
 + 2*A*a^3*b^2)*e^6)*x^2 - (1536*B*b^5*d^5*e - 1664*(5*B*a*b^4 + A*b^5)*d^4
*e^2 + 9152*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 20592*(B*a^3*b^2 + A*a^2*b^3)
*d^2*e^4 + 12012*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 3003*(B*a^5 + 5*A*a^4*b)*e
^6)*x)*sqrt(e*x + d)/e^7
```

giac [**B**] time = 0.25, size = 758, normalized size = 1.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/9009*(3003*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*B*a^5*e^(-1)*sgn(b*x + a
) + 15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*A*a^4*b*e^(-1)*sgn(b*x + a)
 + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*B
*a^4*b*e^(-2)*sgn(b*x + a) + 6006*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*A*a^3*b^2*e^(-2)*sgn(b*x + a) + 2574*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*B*a^3*b^2*e^(-3)*sgn(b*x + a) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*A*a^2*b^3*e^(-3)*sg
n(b*x + a) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d
)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*B*a^2*b^3*e^
(-4)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(
x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*A*a*b
^4*e^(-4)*sgn(b*x + a) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*B*a*b^4*e^(-5)*sgn(b*x + a) + 13*(63*(x*e + d)^
(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(
5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*A*b^5*e^(-5)*s
gn(b*x + a) + 3*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*B*b^5*e^(-6)*sgn(b*x + a) +
 9009*sqrt(x*e + d)*A*a^5*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.06, size = 689, normalized size = 1.54

$$2\sqrt{ex+d}\,\left(693B\,b^5e^6x^6+819A\,b^5e^6x^5+4095Ba\,b^4e^6x^5-756B\,b^5d\,e^5x^5+5005Aa\,b^4e^6x^4-910A\,b^5d\,e^5x^4+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/9009*(e*x+d)^(1/2)*(693*B*b^5*e^6*x^6+819*A*b^5*e^6*x^5+4095*B*a*b^4*e^6*
x^5-756*B*b^5*d*e^5*x^5+5005*A*a*b^4*e^6*x^4-910*A*b^5*d*e^5*x^4+10010*B*a^
2*b^3*e^6*x^4-4550*B*a*b^4*d*e^5*x^4+840*B*b^5*d^2*e^4*x^4+12870*A*a^2*b^3*
e^6*x^3-5720*A*a*b^4*d*e^5*x^3+1040*A*b^5*d^2*e^4*x^3+12870*B*a^3*b^2*e^6*x
^3-11440*B*a^2*b^3*d*e^5*x^3+5200*B*a*b^4*d^2*e^4*x^3-960*B*b^5*d^3*e^3*x^3
+18018*A*a^3*b^2*e^6*x^2-15444*A*a^2*b^3*d*e^5*x^2+6864*A*a*b^4*d^2*e^4*x^2
-1248*A*b^5*d^3*e^3*x^2+9009*B*a^4*b*e^6*x^2-15444*B*a^3*b^2*d*e^5*x^2+1372
8*B*a^2*b^3*d^2*e^4*x^2-6240*B*a*b^4*d^3*e^3*x^2+1152*B*b^5*d^4*e^2*x^2+150
15*A*a^4*b*e^6*x-24024*A*a^3*b^2*d*e^5*x+20592*A*a^2*b^3*d^2*e^4*x-9152*A*a
*b^4*d^3*e^3*x+1664*A*b^5*d^4*e^2*x+3003*B*a^5*e^6*x-12012*B*a^4*b*d*e^5*x+
20592*B*a^3*b^2*d^2*e^4*x-18304*B*a^2*b^3*d^3*e^3*x+8320*B*a*b^4*d^4*e^2*x-
1536*B*b^5*d^5*e*x+9009*A*a^5*e^6-30030*A*a^4*b*d*e^5+48048*A*a^3*b^2*d^2*e
^4-41184*A*a^2*b^3*d^3*e^3+18304*A*a*b^4*d^4*e^2-3328*A*b^5*d^5*e-6006*B*a^
5*d*e^5+24024*B*a^4*b*d^2*e^4-41184*B*a^3*b^2*d^3*e^3+36608*B*a^2*b^3*d^4*e
^2-16640*B*a*b^4*d^5*e+3072*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.74, size = 758, normalized size = 1.69

$$2\left(63\,b^5e^6x^6-256\,b^5d^6+1408\,ab^4d^5e-3168\,a^2b^3d^4e^2+3696\,a^3b^2d^3e^3-2310\,a^4bd^2e^4+693\,a^5de^5-7\left(b^5de^5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/693*(63*b^5*e^6*x^6 - 256*b^5*d^6 + 1408*a*b^4*d^5*e - 3168*a^2*b^3*d^4*e
^2 + 3696*a^3*b^2*d^3*e^3 - 2310*a^4*b*d^2*e^4 + 693*a^5*d*e^5 - 7*(b^5*d*e
^5 - 55*a*b^4*e^6)*x^5 + 5*(2*b^5*d^2*e^4 - 11*a*b^4*d*e^5 + 198*a^2*b^3*e^
6)*x^4 - 2*(8*b^5*d^3*e^3 - 44*a*b^4*d^2*e^4 + 99*a^2*b^3*d*e^5 - 693*a^3*b
^2*e^6)*x^3 + (32*b^5*d^4*e^2 - 176*a*b^4*d^3*e^3 + 396*a^2*b^3*d^2*e^4 - 4
62*a^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (128*b^5*d^5*e - 704*a*b^4*d^4*e^2
 + 1584*a^2*b^3*d^3*e^3 - 1848*a^3*b^2*d^2*e^4 + 1155*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*A/(sqrt(e*x + d)*e^6) + 2/9009*(693*b^5*e^7*x^7 + 3072*b^5*d^7 - 1
6640*a*b^4*d^6*e + 36608*a^2*b^3*d^5*e^2 - 41184*a^3*b^2*d^4*e^3 + 24024*a^
4*b*d^3*e^4 - 6006*a^5*d^2*e^5 - 63*(b^5*d*e^6 - 65*a*b^4*e^7)*x^6 + 7*(12*
b^5*d^2*e^5 - 65*a*b^4*d*e^6 + 1430*a^2*b^3*e^7)*x^5 - 10*(12*b^5*d^3*e^4 -
 65*a*b^4*d^2*e^5 + 143*a^2*b^3*d*e^6 - 1287*a^3*b^2*e^7)*x^4 + (192*b^5*d^
4*e^3 - 1040*a*b^4*d^3*e^4 + 2288*a^2*b^3*d^2*e^5 - 2574*a^3*b^2*d*e^6 + 90
09*a^4*b*e^7)*x^3 - (384*b^5*d^5*e^2 - 2080*a*b^4*d^4*e^3 + 4576*a^2*b^3*d^
3*e^4 - 5148*a^3*b^2*d^2*e^5 + 3003*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (1536
*b^5*d^6*e - 8320*a*b^4*d^5*e^2 + 18304*a^2*b^3*d^4*e^3 - 20592*a^3*b^2*d^3
*e^4 + 12012*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*B/(sqrt(e*x + d)*e^7)
```

mupad [B] time = 3.26, size = 826, normalized size = 1.84

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,B\,b^4\,x^7}{13}+\frac{-12012\,B\,a^5\,d^2\,e^5+18018\,A\,a^5\,d\,e^6+48048\,B\,a^4\,b\,d^3\,e^4-60060\,A\,a^4\,b\,d^2\,e^5-82368\,B\,a^3\,b^2\,d^4\,e^3+96096\,A\,a^3\,b}{90}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*B*b^4*x^7)/13 + (6144*B*b^5*d^7 + 1801
8*A*a^5*d*e^6 - 6656*A*b^5*d^6*e - 12012*B*a^5*d^2*e^5 + 36608*A*a*b^4*d^5*
e^2 - 60060*A*a^4*b*d^2*e^5 + 48048*B*a^4*b*d^3*e^4 - 82368*A*a^2*b^3*d^4*e
^3 + 96096*A*a^3*b^2*d^3*e^4 + 73216*B*a^2*b^3*d^5*e^2 - 82368*B*a^3*b^2*d^
4*e^3 - 33280*B*a*b^4*d^6*e)/(9009*b*e^7) + (x^3*(18018*B*a^4*b*e^7 + 36036
*A*a^3*b^2*e^7 - 416*A*b^5*d^3*e^4 + 384*B*b^5*d^4*e^3 + 2288*A*a*b^4*d^2*e
^5 - 5148*A*a^2*b^3*d*e^6 - 2080*B*a*b^4*d^3*e^4 - 5148*B*a^3*b^2*d*e^6 + 4
576*B*a^2*b^3*d^2*e^5))/(9009*b*e^7) + (x^4*(25740*A*a^2*b^3*e^7 + 25740*B*
a^3*b^2*e^7 + 260*A*b^5*d^2*e^5 - 240*B*b^5*d^3*e^4 + 1300*B*a*b^4*d^2*e^5
- 2860*B*a^2*b^3*d*e^6 - 1430*A*a*b^4*d*e^6))/(9009*b*e^7) + (2*b^3*x^6*(13
*A*b*e + 65*B*a*e - B*b*d))/(143*e) + (x*(18018*A*a^5*e^7 - 6006*B*a^5*d*e^
6 + 3072*B*b^5*d^6*e - 3328*A*b^5*d^5*e^2 + 18304*A*a*b^4*d^4*e^3 - 16640*B
*a*b^4*d^5*e^2 + 24024*B*a^4*b*d^2*e^5 - 41184*A*a^2*b^3*d^3*e^4 + 48048*A*
a^3*b^2*d^2*e^5 + 36608*B*a^2*b^3*d^4*e^3 - 41184*B*a^3*b^2*d^3*e^4 - 30030
*A*a^4*b*d*e^6))/(9009*b*e^7) + (x^2*(6006*B*a^5*e^7 + 30030*A*a^4*b*e^7 +
832*A*b^5*d^4*e^3 - 768*B*b^5*d^5*e^2 - 4576*A*a*b^4*d^3*e^4 - 12012*A*a^3*
b^2*d*e^6 + 4160*B*a*b^4*d^4*e^3 + 10296*A*a^2*b^3*d^2*e^5 - 9152*B*a^2*b^3
*d^3*e^4 + 10296*B*a^3*b^2*d^2*e^5 - 6006*B*a^4*b*d*e^6))/(9009*b*e^7) + (2
*b^2*x^5*(1430*B*a^2*e^2 + 12*B*b^2*d^2 + 715*A*a*b*e^2 - 13*A*b^2*d*e - 65
*B*a*b*d*e))/(1287*e^2)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1856 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=446

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae}{3e^7(a+bx)}$$

```
[Out] 10/3*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2
)/e^7/(b*x+a)-4*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(5/2)*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)+10/7*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+
d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/9*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*
x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/11*b^5*B*(e*x+d)^(11/2)*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)-2*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+
a)/(e*x+d)^(1/2)-2*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(1/2)*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [**A**] time = 0.22, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.057$, Rules used = $\{770, 77\}$

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(-5aBe-Abe+6bBd)}{9e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)(-2aBe}{7e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)
*Sqrt[d + e*x]) - (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b*(b*d - a*e)^3*(3*b
*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e
^7*(a + b*x)) - (4*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^3*(b*d - a*e)*(3
*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(11/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{3/2}}dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int\Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{3/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6\sqrt{d+ex}}-5b}{}$$

$$= -\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}}-\frac{2(bd-ae)^4(6bBd-5Abe-}{e^7(}$$

Mathematica [**A**] time = 0.20, size = 239, normalized size = 0.54

$$\frac{2\sqrt{(a+bx)^2}\Big(-77b^4(d+ex)^5(-5aBe-Abe+6bBd)+495b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-1386b^2(d}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-693*(b*d - a*e)^5*(B*d - A*e) - 693*(b*d - a*e)^4*(6
*b*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 1155*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b
*e - a*B*e)*(d + e*x)^2 - 1386*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*
(d + e*x)^3 + 495*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 -
 77*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 63*b^5*B*(d + e*x)^6))/(6
93*e^7*(a + b*x)*Sqrt[d + e*x])
```

fricas [**A**] time = 0.88, size = 569, normalized size = 1.28

$$\frac{2\left(63\,Bb^5e^6x^6-3072\,Bb^5d^6-693\,Aa^5e^6+2816\left(5\,Bab^4+Ab^5\right)d^5e-12672\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+22176\left(Ba^3b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/693*(63*B*b^5*e^6*x^6 - 3072*B*b^5*d^6 - 693*A*a^5*e^6 + 2816*(5*B*a*b^4
+ A*b^5)*d^5*e - 12672*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 22176*(B*a^3*b^2 +
 A*a^2*b^3)*d^3*e^3 - 9240*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 + 1386*(B*a^5 +
5*A*a^4*b)*d*e^5 - 7*(12*B*b^5*d*e^5 - 11*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*
(24*B*b^5*d^2*e^4 - 22*(5*B*a*b^4 + A*b^5)*d*e^5 + 99*(2*B*a^2*b^3 + A*a*b^
4)*e^6)*x^4 - 2*(96*B*b^5*d^3*e^3 - 88*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 396*(2
*B*a^2*b^3 + A*a*b^4)*d*e^5 - 693*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + (384*B
*b^5*d^4*e^2 - 352*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 1584*(2*B*a^2*b^3 + A*a*b^
4)*d^2*e^4 - 2772*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 1155*(B*a^4*b + 2*A*a^3*b
^2)*e^6)*x^2 - (1536*B*b^5*d^5*e - 1408*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 6336*
(2*B*a^2*b^3 + A*a*b^4)*d^3*e^3 - 11088*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 4
620*(B*a^4*b + 2*A*a^3*b^2)*d*e^5 - 693*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*
x + d)/(e^8*x + d*e^7)
```

giac [**B**] time = 0.33, size = 1125, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/693*(63*(x*e + d)^(11/2)*B*b^5*e^70*sgn(b*x + a) - 462*(x*e + d)^(9/2)*B*
b^5*d*e^70*sgn(b*x + a) + 1485*(x*e + d)^(7/2)*B*b^5*d^2*e^70*sgn(b*x + a)
- 2772*(x*e + d)^(5/2)*B*b^5*d^3*e^70*sgn(b*x + a) + 3465*(x*e + d)^(3/2)*B
*b^5*d^4*e^70*sgn(b*x + a) - 4158*sqrt(x*e + d)*B*b^5*d^5*e^70*sgn(b*x + a)
 + 385*(x*e + d)^(9/2)*B*a*b^4*e^71*sgn(b*x + a) + 77*(x*e + d)^(9/2)*A*b^5
*e^71*sgn(b*x + a) - 2475*(x*e + d)^(7/2)*B*a*b^4*d*e^71*sgn(b*x + a) - 495
*(x*e + d)^(7/2)*A*b^5*d*e^71*sgn(b*x + a) + 6930*(x*e + d)^(5/2)*B*a*b^4*d
^2*e^71*sgn(b*x + a) + 1386*(x*e + d)^(5/2)*A*b^5*d^2*e^71*sgn(b*x + a) - 1
1550*(x*e + d)^(3/2)*B*a*b^4*d^3*e^71*sgn(b*x + a) - 2310*(x*e + d)^(3/2)*A
*b^5*d^3*e^71*sgn(b*x + a) + 17325*sqrt(x*e + d)*B*a*b^4*d^4*e^71*sgn(b*x +
 a) + 3465*sqrt(x*e + d)*A*b^5*d^4*e^71*sgn(b*x + a) + 990*(x*e + d)^(7/2)*
B*a^2*b^3*e^72*sgn(b*x + a) + 495*(x*e + d)^(7/2)*A*a*b^4*e^72*sgn(b*x + a)
 - 5544*(x*e + d)^(5/2)*B*a^2*b^3*d*e^72*sgn(b*x + a) - 2772*(x*e + d)^(5/2
)*A*a*b^4*d*e^72*sgn(b*x + a) + 13860*(x*e + d)^(3/2)*B*a^2*b^3*d^2*e^72*sg
n(b*x + a) + 6930*(x*e + d)^(3/2)*A*a*b^4*d^2*e^72*sgn(b*x + a) - 27720*sqr
t(x*e + d)*B*a^2*b^3*d^3*e^72*sgn(b*x + a) - 13860*sqrt(x*e + d)*A*a*b^4*d^
3*e^72*sgn(b*x + a) + 1386*(x*e + d)^(5/2)*B*a^3*b^2*e^73*sgn(b*x + a) + 13
86*(x*e + d)^(5/2)*A*a^2*b^3*e^73*sgn(b*x + a) - 6930*(x*e + d)^(3/2)*B*a^3
*b^2*d*e^73*sgn(b*x + a) - 6930*(x*e + d)^(3/2)*A*a^2*b^3*d*e^73*sgn(b*x +
a) + 20790*sqrt(x*e + d)*B*a^3*b^2*d^2*e^73*sgn(b*x + a) + 20790*sqrt(x*e +
 d)*A*a^2*b^3*d^2*e^73*sgn(b*x + a) + 1155*(x*e + d)^(3/2)*B*a^4*b*e^74*sgn
(b*x + a) + 2310*(x*e + d)^(3/2)*A*a^3*b^2*e^74*sgn(b*x + a) - 6930*sqrt(x*
e + d)*B*a^4*b*d*e^74*sgn(b*x + a) - 13860*sqrt(x*e + d)*A*a^3*b^2*d*e^74*s
gn(b*x + a) + 693*sqrt(x*e + d)*B*a^5*e^75*sgn(b*x + a) + 3465*sqrt(x*e + d
)*A*a^4*b*e^75*sgn(b*x + a))*e^(-77) - 2*(B*b^5*d^6*sgn(b*x + a) - 5*B*a*b^
4*d^5*e*sgn(b*x + a) - A*b^5*d^5*e*sgn(b*x + a) + 10*B*a^2*b^3*d^4*e^2*sgn(
b*x + a) + 5*A*a*b^4*d^4*e^2*sgn(b*x + a) - 10*B*a^3*b^2*d^3*e^3*sgn(b*x +
a) - 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 5*B*a^4*b*d^2*e^4*sgn(b*x + a) + 1
0*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - B*a^5*d*e^5*sgn(b*x + a) - 5*A*a^4*b*d*e
^5*sgn(b*x + a) + A*a^5*e^6*sgn(b*x + a))*e^(-7)/sqrt(x*e + d)
```

maple [A] time = 0.06, size = 689, normalized size = 1.54

$$-\frac{2\left(-63B\,b^5e^6x^6-77A\,b^5e^6x^5-385Ba\,b^4e^6x^5+84B\,b^5d\,e^5x^5-495Aa\,b^4e^6x^4+110A\,b^5d\,e^5x^4-990B\,a^2b^3e^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/693/(e*x+d)^(1/2)*(-63*B*b^5*e^6*x^6-77*A*b^5*e^6*x^5-385*B*a*b^4*e^6*x^
5+84*B*b^5*d*e^5*x^5-495*A*a*b^4*e^6*x^4+110*A*b^5*d*e^5*x^4-990*B*a^2*b^3*
e^6*x^4+550*B*a*b^4*d*e^5*x^4-120*B*b^5*d^2*e^4*x^4-1386*A*a^2*b^3*e^6*x^3+
792*A*a*b^4*d*e^5*x^3-176*A*b^5*d^2*e^4*x^3-1386*B*a^3*b^2*e^6*x^3+1584*B*a
^2*b^3*d*e^5*x^3-880*B*a*b^4*d^2*e^4*x^3+192*B*b^5*d^3*e^3*x^3-2310*A*a^3*b
^2*e^6*x^2+2772*A*a^2*b^3*d*e^5*x^2-1584*A*a*b^4*d^2*e^4*x^2+352*A*b^5*d^3*
e^3*x^2-1155*B*a^4*b*e^6*x^2+2772*B*a^3*b^2*d*e^5*x^2-3168*B*a^2*b^3*d^2*e^
4*x^2+1760*B*a*b^4*d^3*e^3*x^2-384*B*b^5*d^4*e^2*x^2-3465*A*a^4*b*e^6*x+924
0*A*a^3*b^2*d*e^5*x-11088*A*a^2*b^3*d^2*e^4*x+6336*A*a*b^4*d^3*e^3*x-1408*A
*b^5*d^4*e^2*x-693*B*a^5*e^6*x+4620*B*a^4*b*d*e^5*x-11088*B*a^3*b^2*d^2*e^4
*x+12672*B*a^2*b^3*d^3*e^3*x-7040*B*a*b^4*d^4*e^2*x+1536*B*b^5*d^5*e*x+693*
A*a^5*e^6-6930*A*a^4*b*d*e^5+18480*A*a^3*b^2*d^2*e^4-22176*A*a^2*b^3*d^3*e^
3+12672*A*a*b^4*d^4*e^2-2816*A*b^5*d^5*e-1386*B*a^5*d*e^5+9240*B*a^4*b*d^2*
e^4-22176*B*a^3*b^2*d^3*e^3+25344*B*a^2*b^3*d^4*e^2-14080*B*a*b^4*d^5*e+307
2*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**A**] time = 0.66, size = 603, normalized size = 1.35

$$\frac{2\left(7\,b^{5}e^{5}x^{5}+256\,b^{5}d^{5}-1152\,ab^{4}d^{4}e+2016\,a^{2}b^{3}d^{3}e^{2}-1680\,a^{3}b^{2}d^{2}e^{3}+630\,a^{4}bde^{4}-63\,a^{5}e^{5}-5\left(2\,b^{5}de^{4}-9\,ab^{4}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2
 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9
*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 -
 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5
)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3
*b^2*d*e^4 + 315*a^4*b*e^5)*x)*A/(sqrt(e*x + d)*e^6) + 2/693*(63*b^5*e^6*x^
6 - 3072*b^5*d^6 + 14080*a*b^4*d^5*e - 25344*a^2*b^3*d^4*e^2 + 22176*a^3*b^
2*d^3*e^3 - 9240*a^4*b*d^2*e^4 + 1386*a^5*d*e^5 - 7*(12*b^5*d*e^5 - 55*a*b^
4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 55*a*b^4*d*e^5 + 99*a^2*b^3*e^6)*x^4 - 2*
(96*b^5*d^3*e^3 - 440*a*b^4*d^2*e^4 + 792*a^2*b^3*d*e^5 - 693*a^3*b^2*e^6)*
x^3 + (384*b^5*d^4*e^2 - 1760*a*b^4*d^3*e^3 + 3168*a^2*b^3*d^2*e^4 - 2772*a
^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (1536*b^5*d^5*e - 7040*a*b^4*d^4*e^2 +
 12672*a^2*b^3*d^3*e^3 - 11088*a^3*b^2*d^2*e^4 + 4620*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*B/(sqrt(e*x + d)*e^7)
```

mupad [**B**] time = 3.74, size = 659, normalized size = 1.48

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x^2\,\left(2310\,B\,a^4\,b\,e^6-5544\,B\,a^3\,b^2\,d\,e^5+4620\,A\,a^3\,b^2\,e^6+6336\,B\,a^2\,b^3\,d^2\,e^4-5544\,A\,a^2\,b^3\,d\,e^5-3520\,B\,a\,b^4\,d^3\,e^3+3168\,A\,a\,b^4\right.}{693\,b\,e^7}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(2310*B*a^4*b*e^6 + 4620*A*a^3*b^2*e
^6 - 704*A*b^5*d^3*e^3 + 768*B*b^5*d^4*e^2 + 3168*A*a*b^4*d^2*e^4 - 5544*A*
a^2*b^3*d*e^5 - 3520*B*a*b^4*d^3*e^3 - 5544*B*a^3*b^2*d*e^5 + 6336*B*a^2*b^
3*d^2*e^4))/(693*b*e^7) - (1386*A*a^5*e^6 + 6144*B*b^5*d^6 - 5632*A*b^5*d^5
*e - 2772*B*a^5*d*e^5 + 25344*A*a*b^4*d^4*e^2 + 18480*B*a^4*b*d^2*e^4 - 443
52*A*a^2*b^3*d^3*e^3 + 36960*A*a^3*b^2*d^2*e^4 + 50688*B*a^2*b^3*d^4*e^2 -
44352*B*a^3*b^2*d^3*e^3 - 13860*A*a^4*b*d*e^5 - 28160*B*a*b^4*d^5*e)/(693*b
*e^7) + (x^3*(2772*A*a^2*b^3*e^6 + 2772*B*a^3*b^2*e^6 + 352*A*b^5*d^2*e^4 -
 384*B*b^5*d^3*e^3 + 1760*B*a*b^4*d^2*e^4 - 3168*B*a^2*b^3*d*e^5 - 1584*A*a
*b^4*d*e^5))/(693*b*e^7) + (2*b^3*x^5*(11*A*b*e + 55*B*a*e - 12*B*b*d))/(99
*e^2) + (x*(1386*B*a^5*e^6 + 6930*A*a^4*b*e^6 - 3072*B*b^5*d^5*e + 2816*A*b
^5*d^4*e^2 - 12672*A*a*b^4*d^3*e^3 - 18480*A*a^3*b^2*d*e^5 + 14080*B*a*b^4*
d^4*e^2 + 22176*A*a^2*b^3*d^2*e^4 - 25344*B*a^2*b^3*d^3*e^3 + 22176*B*a^3*b
^2*d^2*e^4 - 9240*B*a^4*b*d*e^5))/(693*b*e^7) + (10*b^2*x^4*(198*B*a^2*e^2
+ 24*B*b^2*d^2 + 99*A*a*b*e^2 - 22*A*b^2*d*e - 110*B*a*b*d*e))/(693*e^3) +
(2*B*b^4*x^6)/(11*e)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.1857 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=446

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2(-aBe-Abe+2bBd)}{3e^7(a+bx)}+\frac{10b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^7(a+bx)}$$

```
[Out] -2/3*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(3/2)-20
/3*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/
e^7/(b*x+a)+2*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(5/2)*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)-2/7*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^(7/2)*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)+2/9*b^5*B*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)+2*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(
e*x+d)^(1/2)+10*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(1/2)*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.20, antiderivative size = 446, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(-5aBe-Abe+6bBd)}{7e^7(a+bx)}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)(-2aBe}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*
x)*(d + e*x)^(3/2)) + (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (10*b*(b*d - a*e)^3*
(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^7*(a + b*x)) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(
3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b^3*(b*d - a*e)*
(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(7/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(9/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{5/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{3/2}}-5b^6}{}$$

$$= -\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{2(bd-ae)^4(6bBd-5Abe-}{e^7(a+bx)}$$

Mathematica [**A**] time = 0.29, size = 239, normalized size = 0.54

$$2\sqrt{(a+bx)^2}\left(-9b^4(d+ex)^5(-5aBe-Abe+6bBd)+63b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-210b^2(d+e\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^5*(B*d - A*e) + 63*(b*d - a*e)^4*(6*b
*B*d - 5*A*b*e - a*B*e)*(d + e*x) + 315*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e
- a*B*e)*(d + e*x)^2 - 210*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d +
 e*x)^3 + 63*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 - 9*b^
4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 7*b^5*B*(d + e*x)^6))/(63*e^7*(
a + b*x)*(d + e*x)^(3/2))
```

fricas [**A**] time = 0.79, size = 581, normalized size = 1.30

$$2\left(7\,Bb^5e^6x^6+1024\,Bb^5d^6-21\,Aa^5e^6-768\left(5\,Bab^4+Ab^5\right)d^5e+2688\left(2\,Ba^2b^3+Aab^4\right)d^4e^2-3360\left(Ba^3b^2+A\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/63*(7*B*b^5*e^6*x^6 + 1024*B*b^5*d^6 - 21*A*a^5*e^6 - 768*(5*B*a*b^4 + A*
b^5)*d^5*e + 2688*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 - 3360*(B*a^3*b^2 + A*a^2
*b^3)*d^3*e^3 + 840*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 42*(B*a^5 + 5*A*a^4*b
)*d*e^5 - 3*(4*B*b^5*d*e^5 - 3*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 3*(8*B*b^5*d^
2*e^4 - 6*(5*B*a*b^4 + A*b^5)*d*e^5 + 21*(2*B*a^2*b^3 + A*a*b^4)*e^6)*x^4 -
 2*(32*B*b^5*d^3*e^3 - 24*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 84*(2*B*a^2*b^3 + A
*a*b^4)*d*e^5 - 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 + 3*(128*B*b^5*d^4*e^2
 - 96*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 336*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^4 - 4
20*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 105*(B*a^4*b + 2*A*a^3*b^2)*e^6)*x^2 + 3
*(512*B*b^5*d^5*e - 384*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 1344*(2*B*a^2*b^3 + A
*a*b^4)*d^3*e^3 - 1680*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 420*(B*a^4*b + 2*A
*a^3*b^2)*d*e^5 - 21*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*x + d)/(e^9*x^2 + 2
*d*e^8*x + d^2*e^7)
```

giac [**B**] time = 0.40, size = 1101, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*B*b^5*e^56*sgn(b*x + a) - 54*(x*e + d)^(7/2)*B*b^5*
d*e^56*sgn(b*x + a) + 189*(x*e + d)^(5/2)*B*b^5*d^2*e^56*sgn(b*x + a) - 420
*(x*e + d)^(3/2)*B*b^5*d^3*e^56*sgn(b*x + a) + 945*sqrt(x*e + d)*B*b^5*d^4*
e^56*sgn(b*x + a) + 45*(x*e + d)^(7/2)*B*a*b^4*e^57*sgn(b*x + a) + 9*(x*e +
 d)^(7/2)*A*b^5*e^57*sgn(b*x + a) - 315*(x*e + d)^(5/2)*B*a*b^4*d*e^57*sgn(
b*x + a) - 63*(x*e + d)^(5/2)*A*b^5*d*e^57*sgn(b*x + a) + 1050*(x*e + d)^(3
/2)*B*a*b^4*d^2*e^57*sgn(b*x + a) + 210*(x*e + d)^(3/2)*A*b^5*d^2*e^57*sgn(
b*x + a) - 3150*sqrt(x*e + d)*B*a*b^4*d^3*e^57*sgn(b*x + a) - 630*sqrt(x*e
+ d)*A*b^5*d^3*e^57*sgn(b*x + a) + 126*(x*e + d)^(5/2)*B*a^2*b^3*e^58*sgn(b
*x + a) + 63*(x*e + d)^(5/2)*A*a*b^4*e^58*sgn(b*x + a) - 840*(x*e + d)^(3/2
)*B*a^2*b^3*d*e^58*sgn(b*x + a) - 420*(x*e + d)^(3/2)*A*a*b^4*d*e^58*sgn(b*
x + a) + 3780*sqrt(x*e + d)*B*a^2*b^3*d^2*e^58*sgn(b*x + a) + 1890*sqrt(x*e
 + d)*A*a*b^4*d^2*e^58*sgn(b*x + a) + 210*(x*e + d)^(3/2)*B*a^3*b^2*e^59*sg
n(b*x + a) + 210*(x*e + d)^(3/2)*A*a^2*b^3*e^59*sgn(b*x + a) - 1890*sqrt(x*
e + d)*B*a^3*b^2*d*e^59*sgn(b*x + a) - 1890*sqrt(x*e + d)*A*a^2*b^3*d*e^59*
sgn(b*x + a) + 315*sqrt(x*e + d)*B*a^4*b*e^60*sgn(b*x + a) + 630*sqrt(x*e +
 d)*A*a^3*b^2*e^60*sgn(b*x + a))*e^(-63) + 2/3*(18*(x*e + d)*B*b^5*d^5*sgn(
b*x + a) - B*b^5*d^6*sgn(b*x + a) - 75*(x*e + d)*B*a*b^4*d^4*e*sgn(b*x + a)
 - 15*(x*e + d)*A*b^5*d^4*e*sgn(b*x + a) + 5*B*a*b^4*d^5*e*sgn(b*x + a) + A
*b^5*d^5*e*sgn(b*x + a) + 120*(x*e + d)*B*a^2*b^3*d^3*e^2*sgn(b*x + a) + 60
*(x*e + d)*A*a*b^4*d^3*e^2*sgn(b*x + a) - 10*B*a^2*b^3*d^4*e^2*sgn(b*x + a)
 - 5*A*a*b^4*d^4*e^2*sgn(b*x + a) - 90*(x*e + d)*B*a^3*b^2*d^2*e^3*sgn(b*x
+ a) - 90*(x*e + d)*A*a^2*b^3*d^2*e^3*sgn(b*x + a) + 10*B*a^3*b^2*d^3*e^3*s
gn(b*x + a) + 10*A*a^2*b^3*d^3*e^3*sgn(b*x + a) + 30*(x*e + d)*B*a^4*b*d*e^
4*sgn(b*x + a) + 60*(x*e + d)*A*a^3*b^2*d*e^4*sgn(b*x + a) - 5*B*a^4*b*d^2*
e^4*sgn(b*x + a) - 10*A*a^3*b^2*d^2*e^4*sgn(b*x + a) - 3*(x*e + d)*B*a^5*e^
5*sgn(b*x + a) - 15*(x*e + d)*A*a^4*b*e^5*sgn(b*x + a) + B*a^5*d*e^5*sgn(b*
x + a) + 5*A*a^4*b*d*e^5*sgn(b*x + a) - A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e
 + d)^(3/2)
```

maple [A] time = 0.05, size = 689, normalized size = 1.54

$$-\frac{2\left(-7B\,b^{5}e^{6}x^{6}-9A\,b^{5}e^{6}x^{5}-45Ba\,b^{4}e^{6}x^{5}+12B\,b^{5}d\,e^{5}x^{5}-63Aa\,b^{4}e^{6}x^{4}+18A\,b^{5}d\,e^{5}x^{4}-126B\,a^{2}b^{3}e^{6}x^{4}+9\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63/(e*x+d)^(3/2)*(-7*B*b^5*e^6*x^6-9*A*b^5*e^6*x^5-45*B*a*b^4*e^6*x^5+12
*B*b^5*d*e^5*x^5-63*A*a*b^4*e^6*x^4+18*A*b^5*d*e^5*x^4-126*B*a^2*b^3*e^6*x^
4+90*B*a*b^4*d*e^5*x^4-24*B*b^5*d^2*e^4*x^4-210*A*a^2*b^3*e^6*x^3+168*A*a*b
^4*d*e^5*x^3-48*A*b^5*d^2*e^4*x^3-210*B*a^3*b^2*e^6*x^3+336*B*a^2*b^3*d*e^5
*x^3-240*B*a*b^4*d^2*e^4*x^3+64*B*b^5*d^3*e^3*x^3-630*A*a^3*b^2*e^6*x^2+126
0*A*a^2*b^3*d*e^5*x^2-1008*A*a*b^4*d^2*e^4*x^2+288*A*b^5*d^3*e^3*x^2-315*B*
a^4*b*e^6*x^2+1260*B*a^3*b^2*d*e^5*x^2-2016*B*a^2*b^3*d^2*e^4*x^2+1440*B*a*
b^4*d^3*e^3*x^2-384*B*b^5*d^4*e^2*x^2+315*A*a^4*b*e^6*x-2520*A*a^3*b^2*d*e^
5*x+5040*A*a^2*b^3*d^2*e^4*x-4032*A*a*b^4*d^3*e^3*x+1152*A*b^5*d^4*e^2*x+63
*B*a^5*e^6*x-1260*B*a^4*b*d*e^5*x+5040*B*a^3*b^2*d^2*e^4*x-8064*B*a^2*b^3*d
^3*e^3*x+5760*B*a*b^4*d^4*e^2*x-1536*B*b^5*d^5*e*x+21*A*a^5*e^6+210*A*a^4*b
*d*e^5-1680*A*a^3*b^2*d^2*e^4+3360*A*a^2*b^3*d^3*e^3-2688*A*a*b^4*d^4*e^2+7
68*A*b^5*d^5*e+42*B*a^5*d*e^5-840*B*a^4*b*d^2*e^4+3360*B*a^3*b^2*d^3*e^3-53
76*B*a^2*b^3*d^4*e^2+3840*B*a*b^4*d^5*e-1024*B*b^5*d^6)*((b*x+a)^2)^(5/2)/e
^7/(b*x+a)^5
```

maxima [A] time = 0.87, size = 625, normalized size = 1.40

$$\frac{2\left(3\,b^{5}e^{5}x^{5}-256\,b^{5}d^{5}+896\,ab^{4}d^{4}e-1120\,a^{2}b^{3}d^{3}e^{2}+560\,a^{3}b^{2}d^{2}e^{3}-70\,a^{4}bde^{4}-7\,a^{5}e^{5}-3\left(2\,b^{5}de^{4}-7\,ab^{4}e^{5}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*A/((e^7*x + d*e^6)*sqrt(e*x + d)) + 2/63*(7*b^5*e^
6*x^6 + 1024*b^5*d^6 - 3840*a*b^4*d^5*e + 5376*a^2*b^3*d^4*e^2 - 3360*a^3*b
^2*d^3*e^3 + 840*a^4*b*d^2*e^4 - 42*a^5*d*e^5 - 3*(4*b^5*d*e^5 - 15*a*b^4*e
^6)*x^5 + 6*(4*b^5*d^2*e^4 - 15*a*b^4*d*e^5 + 21*a^2*b^3*e^6)*x^4 - 2*(32*b
^5*d^3*e^3 - 120*a*b^4*d^2*e^4 + 168*a^2*b^3*d*e^5 - 105*a^3*b^2*e^6)*x^3 +
 3*(128*b^5*d^4*e^2 - 480*a*b^4*d^3*e^3 + 672*a^2*b^3*d^2*e^4 - 420*a^3*b^2
*d*e^5 + 105*a^4*b*e^6)*x^2 + 3*(512*b^5*d^5*e - 1920*a*b^4*d^4*e^2 + 2688*
a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 - 21*a^5*e^6)*x)*B
/((e^8*x + d*e^7)*sqrt(e*x + d))
```

mupad [B]   time = 3.89, size = 695, normalized size = 1.56

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x^2\,\left(630\,B\,a^4\,b\,e^6-2520\,B\,a^3\,b^2\,d\,e^5+1260\,A\,a^3\,b^2\,e^6+4032\,B\,a^2\,b^3\,d^2\,e^4-2520\,A\,a^2\,b^3\,d\,e^5-2880\,B\,a\,b^4\,d^3\,e^3+2016\,A\,a\,b^4\,d\right.}{63\,b\,e^8}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^2*(630*B*a^4*b*e^6 + 1260*A*a^3*b^2*e^
6 - 576*A*b^5*d^3*e^3 + 768*B*b^5*d^4*e^2 + 2016*A*a*b^4*d^2*e^4 - 2520*A*a
^2*b^3*d*e^5 - 2880*B*a*b^4*d^3*e^3 - 2520*B*a^3*b^2*d*e^5 + 4032*B*a^2*b^3
*d^2*e^4))/(63*b*e^8) - (42*A*a^5*e^6 - 2048*B*b^5*d^6 + 1536*A*b^5*d^5*e +
 84*B*a^5*d*e^5 - 5376*A*a*b^4*d^4*e^2 - 1680*B*a^4*b*d^2*e^4 + 6720*A*a^2*
b^3*d^3*e^3 - 3360*A*a^3*b^2*d^2*e^4 - 10752*B*a^2*b^3*d^4*e^2 + 6720*B*a^3
*b^2*d^3*e^3 + 420*A*a^4*b*d*e^5 + 7680*B*a*b^4*d^5*e)/(63*b*e^8) + (x^3*(4
20*A*a^2*b^3*e^6 + 420*B*a^3*b^2*e^6 + 96*A*b^5*d^2*e^4 - 128*B*b^5*d^3*e^3
 + 480*B*a*b^4*d^2*e^4 - 672*B*a^2*b^3*d*e^5 - 336*A*a*b^4*d*e^5))/(63*b*e^
8) + (2*b^3*x^5*(3*A*b*e + 15*B*a*e - 4*B*b*d))/(21*e^3) - (x*(126*B*a^5*e^
6 + 630*A*a^4*b*e^6 - 3072*B*b^5*d^5*e + 2304*A*b^5*d^4*e^2 - 8064*A*a*b^4*
d^3*e^3 - 5040*A*a^3*b^2*d*e^5 + 11520*B*a*b^4*d^4*e^2 + 10080*A*a^2*b^3*d^
2*e^4 - 16128*B*a^2*b^3*d^3*e^3 + 10080*B*a^3*b^2*d^2*e^4 - 2520*B*a^4*b*d*
e^5))/(63*b*e^8) + (2*b^2*x^4*(42*B*a^2*e^2 + 8*B*b^2*d^2 + 21*A*a*b*e^2 -
6*A*b^2*d*e - 30*B*a*b*d*e))/(21*e^4) + (2*B*b^4*x^6)/(9*e^2)))/(x^2*(d + e
*x)^(1/2) + (a*d*(d + e*x)^(1/2))/(b*e) + (x*(63*a*e^8 + 63*b*d*e^7)*(d + e
*x)^(1/2))/(63*b*e^8))
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.1858 $\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=448

$$-\frac{20b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2(-aBe-Abe+2bBd)}{e^7(a+bx)}-\frac{10b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(-aBe-2}{e^7(a+bx)\sqrt{d+ex}}$$

```
[Out] -2/5*(-a*e+b*d)^5*(-A*e+B*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(5/2)+2/
3*(-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+
d)^(3/2)+10/3*b^3*(-a*e+b*d)*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(3/2)*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)-2/5*b^4*(-A*b*e-5*B*a*e+6*B*b*d)*(e*x+d)^(5/2)*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)+2/7*b^5*B*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)-10*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)/(e*x+d)^(1/2)-20*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(1/2)*((
b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.20, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.057, Rules used = {770, 77}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(-5aBe-Abe+6bBd)}{5e^7(a+bx)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)(-2aBe}{3e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^5*(B*d - A*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*
x)*(d + e*x)^(5/2)) + (2*(b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/2)) - (10*b*(b*d - a*e
)^3*(3*b*B*d - 2*A*b*e - a*B*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*
x)*Sqrt[d + e*x]) - (20*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*Sqrt[d
+ e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^3*(b*d - a*e)
*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(3*e^7*(a + b*x)) - (2*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^(5/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (2*b^5*B*(d + e*x)^(7/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{\left(ab+b^2x\right)^5(A+Bx)}{(d+ex)^{7/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^5(bd-ae)^5(-Bd+Ae)}{e^6(d+ex)^{7/2}}+\frac{b^5(bd-ae)^4(-6bBd+5Abe+aBe)}{e^6(d+ex)^{5/2}}-\frac{5b^6}{}\right.}{}$$

$$=-\frac{2(bd-ae)^5(Bd-Ae)\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}}+\frac{2(bd-ae)^4(6bBd-5Abe-}{3e^7(a+bx)(}$$

Mathematica [**A**] time = 0.31, size = 239, normalized size = 0.53

$$\frac{2\sqrt{(a+bx)^2}\left(-21b^4(d+ex)^5(-5aBe-Abe+6bBd)+175b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)-1050b^2(d\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^5*(B*d - A*e) + 35*(b*d - a*e)^4*(6*b
*B*d - 5*A*b*e - a*B*e)*(d + e*x) - 525*b*(b*d - a*e)^3*(3*b*B*d - 2*A*b*e
- a*B*e)*(d + e*x)^2 - 1050*b^2*(b*d - a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d
+ e*x)^3 + 175*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4 - 21
*b^4*(6*b*B*d - A*b*e - 5*a*B*e)*(d + e*x)^5 + 15*b^5*B*(d + e*x)^6))/(105*
e^7*(a + b*x)*(d + e*x)^(5/2))
```

fricas [**A**] time = 0.67, size = 592, normalized size = 1.32

$$\frac{2\left(15\,Bb^5e^6x^6-3072\,Bb^5d^6-21\,Aa^5e^6+1792\left(5\,Bab^4+Ab^5\right)d^5e-4480\left(2\,Ba^2b^3+Aab^4\right)d^4e^2+3360\left(Ba^3b^2+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/105*(15*B*b^5*e^6*x^6 - 3072*B*b^5*d^6 - 21*A*a^5*e^6 + 1792*(5*B*a*b^4 +
 A*b^5)*d^5*e - 4480*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^2 + 3360*(B*a^3*b^2 + A*
a^2*b^3)*d^3*e^3 - 280*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^4 - 14*(B*a^5 + 5*A*a^
4*b)*d*e^5 - 3*(12*B*b^5*d*e^5 - 7*(5*B*a*b^4 + A*b^5)*e^6)*x^5 + 5*(24*B*b
^5*d^2*e^4 - 14*(5*B*a*b^4 + A*b^5)*d*e^5 + 35*(2*B*a^2*b^3 + A*a*b^4)*e^6)
*x^4 - 10*(96*B*b^5*d^3*e^3 - 56*(5*B*a*b^4 + A*b^5)*d^2*e^4 + 140*(2*B*a^2
*b^3 + A*a*b^4)*d*e^5 - 105*(B*a^3*b^2 + A*a^2*b^3)*e^6)*x^3 - 15*(384*B*b^
5*d^4*e^2 - 224*(5*B*a*b^4 + A*b^5)*d^3*e^3 + 560*(2*B*a^2*b^3 + A*a*b^4)*d
^2*e^4 - 420*(B*a^3*b^2 + A*a^2*b^3)*d*e^5 + 35*(B*a^4*b + 2*A*a^3*b^2)*e^6
)*x^2 - 5*(1536*B*b^5*d^5*e - 896*(5*B*a*b^4 + A*b^5)*d^4*e^2 + 2240*(2*B*a
^2*b^3 + A*a*b^4)*d^3*e^3 - 1680*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^4 + 140*(B*a
^4*b + 2*A*a^3*b^2)*d*e^5 + 7*(B*a^5 + 5*A*a^4*b)*e^6)*x)*sqrt(e*x + d)/(e^
10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)
```

giac [**B**] time = 0.35, size = 1101, normalized size = 2.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/105*(15*(x*e + d)^(7/2)*B*b^5*e^42*sgn(b*x + a) - 126*(x*e + d)^(5/2)*B*b
^5*d*e^42*sgn(b*x + a) + 525*(x*e + d)^(3/2)*B*b^5*d^2*e^42*sgn(b*x + a) -
2100*sqrt(x*e + d)*B*b^5*d^3*e^42*sgn(b*x + a) + 105*(x*e + d)^(5/2)*B*a*b^
4*e^43*sgn(b*x + a) + 21*(x*e + d)^(5/2)*A*b^5*e^43*sgn(b*x + a) - 875*(x*e
 + d)^(3/2)*B*a*b^4*d*e^43*sgn(b*x + a) - 175*(x*e + d)^(3/2)*A*b^5*d*e^43*
sgn(b*x + a) + 5250*sqrt(x*e + d)*B*a*b^4*d^2*e^43*sgn(b*x + a) + 1050*sqrt
(x*e + d)*A*b^5*d^2*e^43*sgn(b*x + a) + 350*(x*e + d)^(3/2)*B*a^2*b^3*e^44*
sgn(b*x + a) + 175*(x*e + d)^(3/2)*A*a*b^4*e^44*sgn(b*x + a) - 4200*sqrt(x*
e + d)*B*a^2*b^3*d*e^44*sgn(b*x + a) - 2100*sqrt(x*e + d)*A*a*b^4*d*e^44*sg
n(b*x + a) + 1050*sqrt(x*e + d)*B*a^3*b^2*e^45*sgn(b*x + a) + 1050*sqrt(x*e
 + d)*A*a^2*b^3*e^45*sgn(b*x + a))*e^(-49) - 2/15*(225*(x*e + d)^2*B*b^5*d^
4*sgn(b*x + a) - 30*(x*e + d)*B*b^5*d^5*sgn(b*x + a) + 3*B*b^5*d^6*sgn(b*x
+ a) - 750*(x*e + d)^2*B*a*b^4*d^3*e*sgn(b*x + a) - 150*(x*e + d)^2*A*b^5*d
^3*e*sgn(b*x + a) + 125*(x*e + d)*B*a*b^4*d^4*e*sgn(b*x + a) + 25*(x*e + d)
*A*b^5*d^4*e*sgn(b*x + a) - 15*B*a*b^4*d^5*e*sgn(b*x + a) - 3*A*b^5*d^5*e*s
gn(b*x + a) + 900*(x*e + d)^2*B*a^2*b^3*d^2*e^2*sgn(b*x + a) + 450*(x*e + d
)^2*A*a*b^4*d^2*e^2*sgn(b*x + a) - 200*(x*e + d)*B*a^2*b^3*d^3*e^2*sgn(b*x
+ a) - 100*(x*e + d)*A*a*b^4*d^3*e^2*sgn(b*x + a) + 30*B*a^2*b^3*d^4*e^2*sg
n(b*x + a) + 15*A*a*b^4*d^4*e^2*sgn(b*x + a) - 450*(x*e + d)^2*B*a^3*b^2*d*
e^3*sgn(b*x + a) - 450*(x*e + d)^2*A*a^2*b^3*d*e^3*sgn(b*x + a) + 150*(x*e
+ d)*B*a^3*b^2*d^2*e^3*sgn(b*x + a) + 150*(x*e + d)*A*a^2*b^3*d^2*e^3*sgn(b
*x + a) - 30*B*a^3*b^2*d^3*e^3*sgn(b*x + a) - 30*A*a^2*b^3*d^3*e^3*sgn(b*x
+ a) + 75*(x*e + d)^2*B*a^4*b*e^4*sgn(b*x + a) + 150*(x*e + d)^2*A*a^3*b^2*
e^4*sgn(b*x + a) - 50*(x*e + d)*B*a^4*b*d*e^4*sgn(b*x + a) - 100*(x*e + d)*
A*a^3*b^2*d*e^4*sgn(b*x + a) + 15*B*a^4*b*d^2*e^4*sgn(b*x + a) + 30*A*a^3*b
^2*d^2*e^4*sgn(b*x + a) + 5*(x*e + d)*B*a^5*e^5*sgn(b*x + a) + 25*(x*e + d)
*A*a^4*b*e^5*sgn(b*x + a) - 3*B*a^5*d*e^5*sgn(b*x + a) - 15*A*a^4*b*d*e^5*s
gn(b*x + a) + 3*A*a^5*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(5/2)
```

maple [**A**] time = 0.06, size = 689, normalized size = 1.54

$$-\frac{2\bigl(-15B\,b^5e^6x^6-21A\,b^5e^6x^5-105Ba\,b^4e^6x^5+36B\,b^5d\,e^5x^5-175Aa\,b^4e^6x^4+70A\,b^5d\,e^5x^4-350B\,a^2b^3e^6x^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/105/(e*x+d)^(5/2)*(-15*B*b^5*e^6*x^6-21*A*b^5*e^6*x^5-105*B*a*b^4*e^6*x^
5+36*B*b^5*d*e^5*x^5-175*A*a*b^4*e^6*x^4+70*A*b^5*d*e^5*x^4-350*B*a^2*b^3*e
^6*x^4+350*B*a*b^4*d*e^5*x^4-120*B*b^5*d^2*e^4*x^4-1050*A*a^2*b^3*e^6*x^3+1
400*A*a*b^4*d*e^5*x^3-560*A*b^5*d^2*e^4*x^3-1050*B*a^3*b^2*e^6*x^3+2800*B*a
^2*b^3*d*e^5*x^3-2800*B*a*b^4*d^2*e^4*x^3+960*B*b^5*d^3*e^3*x^3+1050*A*a^3*
b^2*e^6*x^2-6300*A*a^2*b^3*d*e^5*x^2+8400*A*a*b^4*d^2*e^4*x^2-3360*A*b^5*d^
3*e^3*x^2+525*B*a^4*b*e^6*x^2-6300*B*a^3*b^2*d*e^5*x^2+16800*B*a^2*b^3*d^2*
e^4*x^2-16800*B*a*b^4*d^3*e^3*x^2+5760*B*b^5*d^4*e^2*x^2+175*A*a^4*b*e^6*x+
1400*A*a^3*b^2*d*e^5*x-8400*A*a^2*b^3*d^2*e^4*x+11200*A*a*b^4*d^3*e^3*x-448
0*A*b^5*d^4*e^2*x+35*B*a^5*e^6*x+700*B*a^4*b*d*e^5*x-8400*B*a^3*b^2*d^2*e^4
*x+22400*B*a^2*b^3*d^3*e^3*x-22400*B*a*b^4*d^4*e^2*x+7680*B*b^5*d^5*e*x+21*
A*a^5*e^6+70*A*a^4*b*d*e^5+560*A*a^3*b^2*d^2*e^4-3360*A*a^2*b^3*d^3*e^3+448
0*A*a*b^4*d^4*e^2-1792*A*b^5*d^5*e+14*B*a^5*d*e^5+280*B*a^4*b*d^2*e^4-3360*
B*a^3*b^2*d^3*e^3+8960*B*a^2*b^3*d^4*e^2-8960*B*a*b^4*d^5*e+3072*B*b^5*d^6)
*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**A**] time = 0.78, size = 647, normalized size = 1.44

$$\frac{2\bigl(3\,b^5e^5x^5+256\,b^5d^5-640\,ab^4d^4e+480\,a^2b^3d^3e^2-80\,a^3b^2d^2e^3-10\,a^4bde^4-3\,a^5e^5-5\left(2\,b^5de^4-5\,ab^4e^5\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*A/((e^8*x^2 + 2*d*e^7*x + d^2*e^6)*sqrt(e*x + d)) + 2
/105*(15*b^5*e^6*x^6 - 3072*b^5*d^6 + 8960*a*b^4*d^5*e - 8960*a^2*b^3*d^4*e
^2 + 3360*a^3*b^2*d^3*e^3 - 280*a^4*b*d^2*e^4 - 14*a^5*d*e^5 - 3*(12*b^5*d*
e^5 - 35*a*b^4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 35*a*b^4*d*e^5 + 35*a^2*b^3*
e^6)*x^4 - 10*(96*b^5*d^3*e^3 - 280*a*b^4*d^2*e^4 + 280*a^2*b^3*d*e^5 - 105
*a^3*b^2*e^6)*x^3 - 15*(384*b^5*d^4*e^2 - 1120*a*b^4*d^3*e^3 + 1120*a^2*b^3
*d^2*e^4 - 420*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 - 5*(1536*b^5*d^5*e - 4480
*a*b^4*d^4*e^2 + 4480*a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 140*a^4*b*d*
e^5 + 7*a^5*e^6)*x)*B/((e^9*x^2 + 2*d*e^8*x + d^2*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.95, size = 718, normalized size = 1.60

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{x^3\,\left(20\,B\,a^3\,b^2\,e^6-\frac{160\,B\,a^2\,b^3\,d\,e^5}{3}+20\,A\,a^2\,b^3\,e^6+\frac{160\,B\,a\,b^4\,d^2\,e^4}{3}-\frac{80\,A\,a\,b^4\,d\,e^5}{3}-\frac{128\,B\,b^5\,d^3\,e^3}{7}+\frac{32\,A\,b^5\,d^2\,e^4}{3}\right)}{b\,e^9}-\frac{x^2\,\left(10\,B\,a^4\,b\,e^6\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(7/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((x^3*(20*A*a^2*b^3*e^6 + 20*B*a^3*b^2*e^6
 + (32*A*b^5*d^2*e^4)/3 - (128*B*b^5*d^3*e^3)/7 + (160*B*a*b^4*d^2*e^4)/3 -
 (160*B*a^2*b^3*d*e^5)/3 - (80*A*a*b^4*d*e^5)/3))/(b*e^9) - (x^2*(10*B*a^4*
b*e^6 + 20*A*a^3*b^2*e^6 - 64*A*b^5*d^3*e^3 + (768*B*b^5*d^4*e^2)/7 + 160*A
*a*b^4*d^2*e^4 - 120*A*a^2*b^3*d*e^5 - 320*B*a*b^4*d^3*e^3 - 120*B*a^3*b^2*
d*e^5 + 320*B*a^2*b^3*d^2*e^4))/(b*e^9) - ((2*A*a^5*e^6)/5 + (2048*B*b^5*d^
6)/35 - (512*A*b^5*d^5*e)/15 + (4*B*a^5*d*e^5)/15 + (256*A*a*b^4*d^4*e^2)/3
 + (16*B*a^4*b*d^2*e^4)/3 - 64*A*a^2*b^3*d^3*e^3 + (32*A*a^3*b^2*d^2*e^4)/3
 + (512*B*a^2*b^3*d^4*e^2)/3 - 64*B*a^3*b^2*d^3*e^3 + (4*A*a^4*b*d*e^5)/3 -
 (512*B*a*b^4*d^5*e)/3)/(b*e^9) + (b^3*x^5*((2*A*b*e)/5 + 2*B*a*e - (24*B*b
*d)/35))/e^4 - (x*(70*B*a^5*e^6 + 350*A*a^4*b*e^6 + 15360*B*b^5*d^5*e - 896
0*A*b^5*d^4*e^2 + 22400*A*a*b^4*d^3*e^3 + 2800*A*a^3*b^2*d*e^5 - 44800*B*a*
b^4*d^4*e^2 - 16800*A*a^2*b^3*d^2*e^4 + 44800*B*a^2*b^3*d^3*e^3 - 16800*B*a
^3*b^2*d^2*e^4 + 1400*B*a^4*b*d*e^5))/(105*b*e^9) + (b^2*x^4*((20*B*a^2*e^2
)/3 + (16*B*b^2*d^2)/7 + (10*A*a*b*e^2)/3 - (4*A*b^2*d*e)/3 - (20*B*a*b*d*e
)/3))/e^5 + (2*B*b^4*x^6)/(7*e^3)))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)
^(1/2))/(b*e^2) + (x^2*(a*e^9 + 2*b*d*e^8)*(d + e*x)^(1/2))/(b*e^9) + (d*x*
(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.1859 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=289

$$\frac{2(a+bx)(d+ex)^{5/2}(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-a}{b^4\sqrt{a^2+2abx+b}}$$

```
[Out] 2/3*(A*b-B*a)*(-a*e+b*d)*(b*x+a)*(e*x+d)^(3/2)/b^3/((b*x+a)^2)^(1/2)+2/5*(A
*b-B*a)*(b*x+a)*(e*x+d)^(5/2)/b^2/((b*x+a)^2)^(1/2)+2/7*B*(b*x+a)*(e*x+d)^(
7/2)/b/e/((b*x+a)^2)^(1/2)-2*(A*b-B*a)*(-a*e+b*d)^(5/2)*(b*x+a)*arctanh(b^(
1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(9/2)/((b*x+a)^2)^(1/2)+2*(A*b-B*a)*
(-a*e+b*d)^2*(b*x+a)*(e*x+d)^(1/2)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 289, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)(d+ex)^{5/2}(Ab-aB)}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)(bd-ae)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x])/(b^4*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]) + (2*(A*b - a*B)*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2))/(3*b
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x)*(d + e*x)^(5/2
))/(5*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*B*(a + b*x)*(d + e*x)^(7/2))/
(7*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b - a*B)*(b*d - a*e)^(5/2)*(a
 + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(9/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{7/2}}{7be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{7}{2}Ab^2e-\frac{7}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{ab+b^2x}\,dx}{7b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{7/2}}{7be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{7}{2}Ab^2e-\right.\right.}{7b^4e\sqrt{a^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+b}{7be\sqrt{a^2+}}$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + 2$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + 2$$

$$= \frac{2(Ab-aB)(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}} + 2$$

Mathematica [**A**] time = 0.30, size = 154, normalized size = 0.53

$$\frac{2(a+bx)\left(\frac{7e(Ab-aB)\left(5(bd-ae)\left(\sqrt{b}\,\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{7/2}}+B(d+ex)^{7/2}\right)}{7be\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(B*(d + e*x)^(7/2) + (7*(A*b - a*B)*e*(3*b^(5/2)*(d + e*x)^(5/
2) + 5*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d
- a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])))/(15*b^(7/2
))))/(7*b*e*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.58, size = 591, normalized size = 2.04

$$\left[\frac{105\left(\left(Bab^2-Ab^3\right)d^2e-2\left(Ba^2b-Aab^2\right)de^2+\left(Ba^3-Aa^2b\right)e^3\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\,(15\,B}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/105*(105*((B*a*b^2 - A*b^3)*d^2*e - 2*(B*a^2*b - A*a*b^2)*d*e^2 + (B*a^3
 - A*a^2*b)*e^3)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x
+ d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(15*B*b^3*e^3*x^3 + 15*B*b^3*d^3
 - 161*(B*a*b^2 - A*b^3)*d^2*e + 245*(B*a^2*b - A*a*b^2)*d*e^2 - 105*(B*a^3
 - A*a^2*b)*e^3 + 3*(15*B*b^3*d*e^2 - 7*(B*a*b^2 - A*b^3)*e^3)*x^2 + (45*B*
b^3*d^2*e - 77*(B*a*b^2 - A*b^3)*d*e^2 + 35*(B*a^2*b - A*a*b^2)*e^3)*x)*sqr
t(e*x + d))/(b^4*e), 2/105*(105*((B*a*b^2 - A*b^3)*d^2*e - 2*(B*a^2*b - A*a
*b^2)*d*e^2 + (B*a^3 - A*a^2*b)*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x
+ d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (15*B*b^3*e^3*x^3 + 15*B*b^3*d^3
 - 161*(B*a*b^2 - A*b^3)*d^2*e + 245*(B*a^2*b - A*a*b^2)*d*e^2 - 105*(B*a^3
 - A*a^2*b)*e^3 + 3*(15*B*b^3*d*e^2 - 7*(B*a*b^2 - A*b^3)*e^3)*x^2 + (45*B*
b^3*d^2*e - 77*(B*a*b^2 - A*b^3)*d*e^2 + 35*(B*a^2*b - A*a*b^2)*e^3)*x)*sqr
t(e*x + d))/(b^4*e)]
```

giac [B] time = 0.23, size = 497, normalized size = 1.72

$$-\frac{2\left(Bab^3d^3\mathrm{sgn}\left(bx+a\right)-Ab^4d^3\mathrm{sgn}\left(bx+a\right)-3\,Ba^2b^2d^2e\mathrm{sgn}\left(bx+a\right)+3\,Aab^3d^2e\mathrm{sgn}\left(bx+a\right)+3\,Ba^3bde^2\mathrm{s}\right.}{\sqrt{-b^2d+ab}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^3*d^3*sgn(b*x + a) - A*b^4*d^3*sgn(b*x + a) - 3*B*a^2*b^2*d^2*e*s
gn(b*x + a) + 3*A*a*b^3*d^2*e*sgn(b*x + a) + 3*B*a^3*b*d*e^2*sgn(b*x + a) -
 3*A*a^2*b^2*d*e^2*sgn(b*x + a) - B*a^4*e^3*sgn(b*x + a) + A*a^3*b*e^3*sgn(
b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e
)*b^4) + 2/105*(15*(x*e + d)^(7/2)*B*b^6*e^6*sgn(b*x + a) - 21*(x*e + d)^(5
/2)*B*a*b^5*e^7*sgn(b*x + a) + 21*(x*e + d)^(5/2)*A*b^6*e^7*sgn(b*x + a) -
35*(x*e + d)^(3/2)*B*a*b^5*d*e^7*sgn(b*x + a) + 35*(x*e + d)^(3/2)*A*b^6*d*
e^7*sgn(b*x + a) - 105*sqrt(x*e + d)*B*a*b^5*d^2*e^7*sgn(b*x + a) + 105*sqr
t(x*e + d)*A*b^6*d^2*e^7*sgn(b*x + a) + 35*(x*e + d)^(3/2)*B*a^2*b^4*e^8*sg
n(b*x + a) - 35*(x*e + d)^(3/2)*A*a*b^5*e^8*sgn(b*x + a) + 210*sqrt(x*e + d
)*B*a^2*b^4*d*e^8*sgn(b*x + a) - 210*sqrt(x*e + d)*A*a*b^5*d*e^8*sgn(b*x +
a) - 105*sqrt(x*e + d)*B*a^3*b^3*e^9*sgn(b*x + a) + 105*sqrt(x*e + d)*A*a^2
*b^4*e^9*sgn(b*x + a))*e^(-7)/b^7
```

maple [B] time = 0.06, size = 671, normalized size = 2.32

$$\frac{2\left(bx+a\right)\left(-105A\,a^3b\,e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)+315A\,a^2b^2d\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{\left(ae-bd\right)b}}\right)-315Aa\,b^3d^2e^2\arctan\left(\frac{\sqrt{ex+d}}{\sqrt{\left(ae-bd\right.}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(b*x+a)*(15*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^3+21*A*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(5/2)*b^3*e-21*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^2*e-
35*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^2*e^2+35*A*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(3/2)*b^3*d*e-105*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*
b*e^4+315*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b^2*d*e^3-315*A
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^3*d^2*e^2+105*A*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^4*d^3*e+35*B*((a*e-b*d)*b)^(1/2)*(e*x+d
)^(3/2)*a^2*b*e^2-35*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^2*d*e+105*B*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*e^4-315*B*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)*a^3*b*d*e^3+315*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^2*b^2*d^2*e^2-105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*a*b^3*d^3*e+105*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b*e^3-210*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^2*d*e^2+105*A*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*b^3*d^2*e-105*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*e^3+210*B*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b*d*e^2-105*B*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*a*b^2*d^2*e)/((b*x+a)^2)^(1/2)/e/b^4/((a*e-b*d)*b)^(1/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{5}{2}}}{\sqrt{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/sqrt((b*x + a)^2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{5/2}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1860 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=230

$$\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-a}{b^3\sqrt{a^2+2abx+b^2}}$$

```
[Out] 2/3*(A*b-B*a)*(b*x+a)*(e*x+d)^(3/2)/b^2/((b*x+a)^2)^(1/2)+2/5*B*(b*x+a)*(e*
x+d)^(5/2)/b/e/((b*x+a)^2)^(1/2)-2*(A*b-B*a)*(-a*e+b*d)^(3/2)*(b*x+a)*arcta
nh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)/((b*x+a)^2)^(1/2)+2*(A*b
-B*a)*(-a*e+b*d)*(b*x+a)*(e*x+d)^(1/2)/b^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 230, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)(d+ex)^{3/2}(Ab-aB)}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)(bd-ae)^{3/2}\tanh^{-1}\left(\right.}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x])/(b^3*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x)*(d + e*x)^(3/2))/(3*b^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) + (2*B*(a + b*x)*(d + e*x)^(5/2))/(5*b*e*Sqrt[a^2 + 2*a
*b*x + b^2*x^2]) - (2*(A*b - a*B)*(b*d - a*e)^(3/2)*(a + b*x)*ArcTanh[(Sqrt
[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{5/2}}{5be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{5}{2}Ab^2e-\frac{5}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{3/2}}{ab+b^2x}\,dx}{5b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{5/2}}{5be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{5}{2}Ab^2e-\right.\right.}{5b^4e\sqrt{a^2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx}{5be\sqrt{a^2+2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx}{5be\sqrt{a^2+2}}$$

$$= \frac{2(Ab-aB)(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx}{5be\sqrt{a^2+2}}$$

Mathematica [A] time = 0.17, size = 127, normalized size = 0.55

$$\frac{2(a+bx)\left(\frac{5e(Ab-aB)\left(\sqrt{b}\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}}+B(d+ex)^{5/2}\right)}{5be\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(B*(d + e*x)^(5/2) + (5*(A*b - a*B)*e*(Sqrt[b]*Sqrt[d + e*x]*(
4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x]
)/Sqrt[b*d - a*e]]))/(3*b^(5/2))))/(5*b*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.67, size = 373, normalized size = 1.62

$$\left[-\frac{15\left(\left(Bab-Ab^2\right)de-\left(Ba^2-Aab\right)e^2\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(3\,Bb^2e^2x^2+3\,Bb^2d^2-20\left(Ba\right.\right.}{15\,b^3e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/15*(15*((B*a*b - A*b^2)*d*e - (B*a^2 - A*a*b)*e^2)*sqrt((b*d - a*e)/b)*
log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)
) - 2*(3*B*b^2*e^2*x^2 + 3*B*b^2*d^2 - 20*(B*a*b - A*b^2)*d*e + 15*(B*a^2 -
 A*a*b)*e^2 + (6*B*b^2*d*e - 5*(B*a*b - A*b^2)*e^2)*x)*sqrt(e*x + d))/(b^3*
e), 2/15*(15*((B*a*b - A*b^2)*d*e - (B*a^2 - A*a*b)*e^2)*sqrt(-(b*d - a*e)/
b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (3*B*b^2*e^2
*x^2 + 3*B*b^2*d^2 - 20*(B*a*b - A*b^2)*d*e + 15*(B*a^2 - A*a*b)*e^2 + (6*B
*b^2*d*e - 5*(B*a*b - A*b^2)*e^2)*x)*sqrt(e*x + d))/(b^3*e)]
```

giac [**A**] time = 0.22, size = 306, normalized size = 1.33

$$-\frac{2\left(Bab^2d^2\mathrm{sgn}\left(bx+a\right)-Ab^3d^2\mathrm{sgn}\left(bx+a\right)-2\,Ba^2bde\mathrm{sgn}\left(bx+a\right)+2\,Aab^2de\mathrm{sgn}\left(bx+a\right)+Ba^3e^2\mathrm{sgn}\left(bx\right.\right.}{\sqrt{-b^2d+abe}\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^2*d^2*sgn(b*x + a) - A*b^3*d^2*sgn(b*x + a) - 2*B*a^2*b*d*e*sgn(b
*x + a) + 2*A*a*b^2*d*e*sgn(b*x + a) + B*a^3*e^2*sgn(b*x + a) - A*a^2*b*e^2
*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d +
a*b*e)*b^3) + 2/15*(3*(x*e + d)^(5/2)*B*b^4*e^4*sgn(b*x + a) - 5*(x*e + d)^
(3/2)*B*a*b^3*e^5*sgn(b*x + a) + 5*(x*e + d)^(3/2)*A*b^4*e^5*sgn(b*x + a) -
 15*sqrt(x*e + d)*B*a*b^3*d*e^5*sgn(b*x + a) + 15*sqrt(x*e + d)*A*b^4*d*e^5
*sgn(b*x + a) + 15*sqrt(x*e + d)*B*a^2*b^2*e^6*sgn(b*x + a) - 15*sqrt(x*e +
 d)*A*a*b^3*e^6*sgn(b*x + a))*e^(-5)/b^5
```

maple [**B**] time = 0.06, size = 414, normalized size = 1.80

$$\frac{2\left(bx+a\right)\left(15A\,a^2b\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-30Aa\,b^2d\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15A\,b^3d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-15\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/15*(b*x+a)*(3*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^2+5*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(3/2)*b^2*e+15*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a
^2*b*e^3-30*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^2*d*e^2+15*A*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^3*d^2*e-5*B*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(3/2)*a*b*e-15*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3
*e^3+30*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b*d*e^2-15*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b^2*d^2*e-15*A*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*a*b*e^2+15*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d*e+15*B
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-15*B*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*a*b*d*e)/((b*x+a)^2)^(1/2)/e/b^3/((a*e-b*d)*b)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\sqrt{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt((b*x + a)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^{3/2}}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**(3/2)/sqrt((a + b*x)**2), x)
```

3.1861 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

<u>**Optimal**</u>. Leaf size=173

$$\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/3*B*(b*x+a)*(e*x+d)^(3/2)/b/e/((b*x+a)^2)^(1/2)-2*(A*b-B*a)*(b*x+a)*arcta
nh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(5/2)/((b*x+a
)^2)^(1/2)+2*(A*b-B*a)*(b*x+a)*(e*x+d)^(1/2)/b^2/((b*x+a)^2)^(1/2)
```

<u>**Rubi**</u> **[A]** time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 80, 50, 63, 208}

$$\frac{2(a+bx)\sqrt{d+ex}\,(Ab-aB)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(A*b - a*B)*(a + b*x)*Sqrt[d + e*x])/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (2*B*(a + b*x)*(d + e*x)^(3/2))/(3*b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
(2*(A*b - a*B)*Sqrt[b*d - a*e]*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(b^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

<u>Rule 50</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

<u>Rule 63</u>

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

<u>Rule 80</u>

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

<u>Rule 208</u>

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)\sqrt{d+ex}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{3}{2}Ab^2e-\frac{3}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{ab+b^2x}\,dx}{3b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(b^2d-abe\right)\left(\frac{3}{2}Ab^2e-\frac{3}{2}a\right.\right.}{3b^4e\sqrt{a}}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(b^2d-abe\right)\left(\frac{3}{2}Ab^2e-\frac{3}{2}\right.\right.}{}$$

$$= \frac{2(Ab-aB)(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}} + \frac{2B(a+bx)(d+ex)^{3/2}}{3be\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)\sqrt{bd-ae}\,(a+b}{b^{5/2}\sqrt{a^2+2ab}}$$

Mathematica [A] time = 0.09, size = 114, normalized size = 0.66

$$\frac{2(a+bx)\left(\sqrt{b}\sqrt{d+ex}\,(-3aBe+3Abe+bB(d+ex))+3e(aB-Ab)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{5/2}e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*Sqrt[d + e*x]*(3*A*b*e - 3*a*B*e + b*B*(d + e*x)) + 3
*(-(A*b) + a*B)*e*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
- a*e]]))/(3*b^(5/2)*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.57, size = 211, normalized size = 1.22

$$\left[-\frac{3\,(Ba-Ab)e\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\,(Bbex+Bbd-3\,(Ba-Ab)e)\sqrt{ex+d}}{3\,b^2e},\ \frac{2\left(3\,(Ba-Ab)e\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*(B*a - A*b)*e*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqr
t(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(B*b*e*x + B*b*d - 3*(B*a
- A*b)*e)*sqrt(e*x + d))/(b^2*e), 2/3*(3*(B*a - A*b)*e*sqrt(-(b*d - a*e)/b)
*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) + (B*b*e*x + B*b
*d - 3*(B*a - A*b)*e)*sqrt(e*x + d))/(b^2*e)]
```

giac [A] time = 0.24, size = 168, normalized size = 0.97

$$-\frac{2\left(Babd\text{sgn}\left(bx+a\right)-Ab^2d\text{sgn}\left(bx+a\right)-Ba^2e\text{sgn}\left(bx+a\right)+Aabe\text{sgn}\left(bx+a\right)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^2}+\frac{2\left((x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*d*sgn(b*x + a) - A*b^2*d*sgn(b*x + a) - B*a^2*e*sgn(b*x + a) + A*
a*b*e*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2
*d + a*b*e)*b^2) + 2/3*((x*e + d)^(3/2)*B*b^2*e^2*sgn(b*x + a) - 3*sqrt(x*e
 + d)*B*a*b*e^3*sgn(b*x + a) + 3*sqrt(x*e + d)*A*b^2*e^3*sgn(b*x + a))*e^(-
3)/b^3
```

maple [A] time = 0.06, size = 226, normalized size = 1.31

$$\frac{2\left(bx+a\right)\left(-3Aab\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3A\,b^2de\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3B\,a^2e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-3Babde\,\text{ar}\right.}{3\sqrt{\left(bx+a\right)^2}\;\sqrt{(a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(-3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*e^2+3*A*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b^2*d*e+B*(e*x+d)^(3/2)*((a*e-b*
d)*b)^(1/2)*b+3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*e^2-3*B*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*d*e+3*A*(e*x+d)^(1/2)*((a*e-
b*d)*b)^(1/2)*b*e-3*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a*e)/((b*x+a)^2)^(1
/2)/e/b^2/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\sqrt{(bx+a)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt((b*x + a)^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,\sqrt{d+ex}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/sqrt((a + b*x)**2), x)
```

3.1862 $\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=124

$$\frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}$$

```
[Out] -2*(A*b-B*a)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(3/2
)/(-a*e+b*d)^(1/2)/((b*x+a)^2)^(1/2)+2*B*(b*x+a)*(e*x+d)^(1/2)/b/e/((b*x+a)
^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {770, 80, 63, 208}

$$\frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*B*(a + b*x)*Sqrt[d + e*x])/(b*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*(A*b
 - a*B)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2
)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2\left(\frac{1}{2}Ab^2e-\frac{1}{2}abBe\right)\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{b^2e\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4\left(\frac{1}{2}Ab^2e-\frac{1}{2}abBe\right)\left(ab+b^2x\right)\right)\text{Subst}\left(\int \frac{1}{ab-\frac{b^2d}{e}+}\right.}{b^2e^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{2B(a+bx)\sqrt{d+ex}}{be\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{bd-ae}\,\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.07, size = 111, normalized size = 0.90

$$\frac{2(a+bx)\left(e(aB-Ab)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)+\sqrt{b}\,B\sqrt{d+ex}\,(bd-ae)\right)}{b^{3/2}e\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(Sqrt[b]*B*(b*d - a*e)*Sqrt[d + e*x] + (-(A*b) + a*B)*e*Sqrt[b
*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(b^(3/2)*e*(b*
d - a*e)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.57, size = 209, normalized size = 1.69

$$\left[-\frac{\sqrt{b^2d-abe}\,(Ba-Ab)e\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(Bb^2d-Babe\right)\sqrt{ex+d}}{b^3de-ab^2e^2},\ -\frac{2\left(\sqrt{-b^2d+abe}\,(Ba-Ab\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-(sqrt(b^2*d - a*b*e)*(B*a - A*b)*e*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*
d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(B*b^2*d - B*a*b*e)*sqrt(e*x + d))
/(b^3*d*e - a*b^2*e^2), -2*(sqrt(-b^2*d + a*b*e)*(B*a - A*b)*e*arctan(sqrt(
-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (B*b^2*d - B*a*b*e)*sqrt(e*x
 + d))/(b^3*d*e - a*b^2*e^2)]
```

giac [A] time = 0.17, size = 87, normalized size = 0.70

$$\frac{2\,\sqrt{xe+d}\,Be^{(-1)}\text{sgn}\,(bx+a)}{b} - \frac{2\left(Ba\text{sgn}\,(bx+a)-Ab\text{sgn}\,(bx+a)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^(-1)*sgn(b*x + a)/b - 2*(B*a*sgn(b*x + a) - A*b*sgn(b*x
 + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b
)
```

maple [A] time = 0.06, size = 110, normalized size = 0.89

$$\frac{2\left(bx+a\right)\left(Abe\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-Bae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\,\sqrt{\left(ae-bd\right)b}\,B\right)}{\sqrt{\left(bx+a\right)^{2}}\,\sqrt{\left(ae-bd\right)b}\,be}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*b*e-B*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*e+B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))/((
b*x+a)^2)^(1/2)/e/b/((a*e-b*d)*b)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{\left(bx+a\right)^{2}}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,\sqrt{d+e\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{\left(a+bx\right)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(d + e*x)*sqrt((a + b*x)**2)), x)
```

3.1863 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=138

$$-\frac{2(a+bx)(Bd-Ae)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}$$

```
[Out] -2*(A*b-B*a)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+
b*d)^(3/2)/b^(1/2)/((b*x+a)^2)^(1/2)-2*(-A*e+B*d)*(b*x+a)/e/(-a*e+b*d)/(e*x
+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {770, 78, 63, 208}

$$-\frac{2(a+bx)(Bd-Ae)}{e\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{2(a+bx)(Ab-aB)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(e*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2]) - (2*(A*b - a*B)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\ &= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{}{\left(ab\right.}}{(bd-ae)\sqrt{a^2+2abx}} \\ &= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(2(Ab-aB)\left(ab+b^2x\right)\right)\mathrm{Sub}}{e(bd-ae)\sqrt{}} \\ &= -\frac{2(Bd-Ae)(a+bx)}{e(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{2(Ab-aB)(a+bx)\tanh^{-1}\left(\right.}{\sqrt{b}\,(bd-ae)^{3/2}\sqrt{a^2+2abx}}\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 128, normalized size = 0.93

$$\frac{2(a+bx)\left(e\sqrt{d+ex}\,(aB-Ab)\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)-\sqrt{b}\,(bd-ae)(Bd-Ae)\right)}{\sqrt{b}\,e\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-(Sqrt[b]*(b*d - a*e)*(B*d - A*e)) + (-(A*b) + a*B)*e*Sqrt[b*
d - a*e]*Sqrt[d + e*x]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]))/(
Sqrt[b]*e*(b*d - a*e)^2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [**A**] time = 0.55, size = 363, normalized size = 2.63

$$\left[\frac{\left((Ba-Ab)e^2x+(Ba-Ab)de\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(Bb^2d^2+Aabe^2-\left(Bab+Ab^2\right.\right.}{b^3d^3e-2\,ab^2d^2e^2+a^2bde^3+\left(b^3d^2e^2-2\,ab^2de^3+a^2be^4\right)x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [(((B*a - A*b)*e^2*x + (B*a - A*b)*d*e)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*
b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(B*b^2*d^2
+ A*a*b*e^2 - (B*a*b + A*b^2)*d*e)*sqrt(e*x + d))/(b^3*d^3*e - 2*a*b^2*d^2*
e^2 + a^2*b*d*e^3 + (b^3*d^2*e^2 - 2*a*b^2*d*e^3 + a^2*b*e^4)*x), -2*(((B*a
 - A*b)*e^2*x + (B*a - A*b)*d*e)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d +
a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (B*b^2*d^2 + A*a*b*e^2 - (B*a*b + A*b
^2)*d*e)*sqrt(e*x + d))/(b^3*d^3*e - 2*a*b^2*d^2*e^2 + a^2*b*d*e^3 + (b^3*d
^2*e^2 - 2*a*b^2*d*e^3 + a^2*b*e^4)*x)]
```

giac [**A**] time = 0.29, size = 117, normalized size = 0.85

$$-\frac{2\left(Ba\mathrm{sgn}\left(bx+a\right)-Ab\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,(bd-ae)}-\frac{2\left(Bd\mathrm{sgn}\left(bx+a\right)-Ae\mathrm{sgn}\left(bx+a\right)\right)}{\left(bde-ae^2\right)\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*sgn(b*x + a) - A*b*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/(sqrt(-b^2*d + a*b*e)*(b*d - a*e)) - 2*(B*d*sgn(b*x + a) - A*e*s
gn(b*x + a))/((b*d*e - a*e^2)*sqrt(x*e + d))
```

maple [A]   time = 0.06, size = 148, normalized size = 1.07

$$-\frac{2\,(bx+a)\Bigg(\sqrt{ex+d}\;Abe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-\sqrt{ex+d}\;Bae\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+\sqrt{(ae-bd)\,b}\;Ae-\sqrt{(ae-bd)\,b}}{\sqrt{(bx+a)^{2}}\;\,(ae-bd)\,\sqrt{(ae-bd)\,b}\;\sqrt{ex+d}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2*(b*x+a)*(A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*b*e
-B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a*e+A*((a*e-b*
d)*b)^(1/2)*e-B*((a*e-b*d)*b)^(1/2)*d)/((b*x+a)^2)^(1/2)/e/(a*e-b*d)/((a*e-
b*d)*b)^(1/2)/(e*x+d)^(1/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{(bx+a)^{2}}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(3/2)), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{\left(a+b\,x\right)}^2}\,{\left(d+e\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^{\frac{3}{2}}\,\sqrt{(a+bx)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**(3/2)*sqrt((a + b*x)**2)), x)
```

3.1864 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=194

$$\frac{2(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{2(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan}{\sqrt{a^2+2abx+b^2x^2}\,(b}$$

```
[Out] -2/3*(-A*e+B*d)*(b*x+a)/e/(-a*e+b*d)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-2*(A*b
-B*a)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e
+b*d)^(5/2)/((b*x+a)^2)^(1/2)+2*(A*b-B*a)*(b*x+a)/(-a*e+b*d)^2/(e*x+d)^(1/2
)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 194, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 78, 51, 63, 208}

$$\frac{2(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{2(a+bx)(Bd-Ae)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{2\sqrt{b}\,(a+bx)(Ab-aB)\tan}{\sqrt{a^2+2abx+b^2x^2}\,(b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(3*e*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x))/((b*d - a*e)^2*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (2*Sqrt[b]*(A*b - a*B)*(a + b*x)*ArcTanh[(Sq
rt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a*e)^(5/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int}{(bd-ae)\sqrt{a^2+2abx}}\\
&= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a}}\\
&= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a}}\\
&= -\frac{2(Bd-Ae)(a+bx)}{3e(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+bx}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2a}}
\end{aligned}
$$

Mathematica [C] time = 0.05, size = 102, normalized size = 0.53

$$
\frac{2(a+bx)\left(3e(d+ex)(Ab-aB)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-(bd-ae)(Bd-Ae)\right)}{3e\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(bd-ae)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-((b*d - a*e)*(B*d - A*e)) + 3*(A*b - a*B)*e*(d + e*x)*Hyperg
eometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)]))/(3*e*(b*d - a*e)^2*S
qrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

fricas [A] time = 0.63, size = 506, normalized size = 2.61

$$
\left[-\frac{3\left((Ba-Ab)e^3x^2+2\,(Ba-Ab)de^2x+(Ba-Ab)d^2e\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)+2\left(Bbd^2+\right.}{3\left(b^2d^4e-2\,abd^3e^2+a^2d^2e^3+\left(b^2d^2e^3-2\,abde^4+a^2e^5\right)x^2+2\left(b^2d^3e^2-2\,ab\right.\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/3*(3*((B*a - A*b)*e^3*x^2 + 2*(B*a - A*b)*d*e^2*x + (B*a - A*b)*d^2*e)*
sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*
sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(B*b*d^2 + A*a*e^2 + 3*(B*a - A*b)*e^2*
x + 2*(B*a - 2*A*b)*d*e)*sqrt(e*x + d))/(b^2*d^4*e - 2*a*b*d^3*e^2 + a^2*d^
2*e^3 + (b^2*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*x^2 + 2*(b^2*d^3*e^2 - 2*a*b*
d^2*e^3 + a^2*d*e^4)*x), 2/3*(3*((B*a - A*b)*e^3*x^2 + 2*(B*a - A*b)*d*e^2*
x + (B*a - A*b)*d^2*e)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x +
d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (B*b*d^2 + A*a*e^2 + 3*(B*a - A*b)
*e^2*x + 2*(B*a - 2*A*b)*d*e)*sqrt(e*x + d))/(b^2*d^4*e - 2*a*b*d^3*e^2 + a
^2*d^2*e^3 + (b^2*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*x^2 + 2*(b^2*d^3*e^2 - 2
*a*b*d^2*e^3 + a^2*d*e^4)*x)]
```

giac [A] time = 0.21, size = 209, normalized size = 1.08

$$-\frac{2\left(Bab\operatorname{sgn}(bx+a)-Ab^{2}\operatorname{sgn}(bx+a)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{\left(b^{2}d^{2}-2\,abde+a^{2}e^{2}\right)\sqrt{-b^{2}d+abe}}-\frac{2\left(Bbd^{2}\operatorname{sgn}(bx+a)+3\,(xe+d)Bae\operatorname{sgn}(bx+a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b*sgn(b*x + a) - A*b^2*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(-b
^2*d + a*b*e))/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-b^2*d + a*b*e)) - 2/3
*(B*b*d^2*sgn(b*x + a) + 3*(x*e + d)*B*a*e*sgn(b*x + a) - 3*(x*e + d)*A*b*e
*sgn(b*x + a) - B*a*d*e*sgn(b*x + a) - A*b*d*e*sgn(b*x + a) + A*a*e^2*sgn(b
*x + a))/((b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*(x*e + d)^(3/2))
```

maple [A] time = 0.07, size = 235, normalized size = 1.21

$$\frac{2\,(bx+a)\left(3\,(ex+d)^{\frac{3}{2}}\,A\,b^{2}e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3\sqrt{(ae-bd)\,b}\;Ab\,e^{2}x-3\,(ex+d)^{\frac{3}{2}}\,Babe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-\right.}{3\sqrt{(bx+a)^{2}}\;\left(ae-bd\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*
b^2*e-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a*b*e+3
*A*((a*e-b*d)*b)^(1/2)*x*b*e^2-3*B*((a*e-b*d)*b)^(1/2)*x*a*e^2-A*((a*e-b*d)
*b)^(1/2)*a*e^2+4*A*((a*e-b*d)*b)^(1/2)*b*d*e-2*B*((a*e-b*d)*b)^(1/2)*a*d*e
-B*((a*e-b*d)*b)^(1/2)*b*d^2)/((b*x+a)^2)^(1/2)/e/(a*e-b*d)^2/((a*e-b*d)*b)
^(1/2)/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{(bx+a)^{2}}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\sqrt{{(a+b\,x)}^2}\,{(d+e\,x)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1865 $\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=251

$$\frac{2b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{2(a+bx)(Ab-aB)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{2(a+bx)(Bd-}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

```
[Out] -2/5*(-A*e+B*d)*(b*x+a)/e/(-a*e+b*d)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)+2/3*(A
*b-B*a)*(b*x+a)/(-a*e+b*d)^2/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-2*b^(3/2)*(A*b
-B*a)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(7
/2)/((b*x+a)^2)^(1/2)+2*b*(A*b-B*a)*(b*x+a)/(-a*e+b*d)^3/(e*x+d)^(1/2)/((b*
x+a)^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 251, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$\frac{2b(a+bx)(Ab-aB)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{2(a+bx)(Ab-aB)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{2(a+bx)(Bd-}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(B*d - A*e)*(a + b*x))/(5*e*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (2*(A*b - a*B)*(a + b*x))/(3*(b*d - a*e)^2*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b*(A*b - a*B)*(a + b*x))/((b*d - a*e)
^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b^(3/2)*(A*b - a*B)*(a
 + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a*e)^(7/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\left(ab+b^2x\right)\int \frac{A+Bx}{\left(ab+b^2x\right)(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((Ab-aB)\left(ab+b^2x\right)\right)\int \frac{}{(ab}}{(bd-ae)\sqrt{a^2+2abx}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{2(Bd-Ae)(a+bx)}{5e(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{2(Ab-aB)(a+b}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.05, size = 102, normalized size = 0.41

$$\frac{2(a+bx)\left(5e(d+ex)(Ab-aB)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)-3(bd-ae)(Bd-Ae)\right)}{15e\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*(-3*(b*d - a*e)*(B*d - A*e) + 5*(A*b - a*B)*e*(d + e*x)*Hyperg
eometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)]))/(15*e*(b*d - a*e)^2
*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

fricas [B] time = 0.75, size = 902, normalized size = 3.59

$$\left[\frac{15\left(\left(Bab-Ab^2\right)e^4x^3+3\left(Bab-Ab^2\right)de^3x^2+3\left(Bab-Ab^2\right)d^2e^2x+\left(Bab-Ab^2\right)d^3e\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae+2\,(b}{b}\right.}{15\left(b^3d^6e-3\,ab^2d^5e^2+3\,a^2bd^4e^3-a^3d^3e^4+\left(b^3d^3e^4-3\,ab^2d^2e^5\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/15*(15*((B*a*b - A*b^2)*e^4*x^3 + 3*(B*a*b - A*b^2)*d*e^3*x^2 + 3*(B*a*b
 - A*b^2)*d^2*e^2*x + (B*a*b - A*b^2)*d^3*e)*sqrt(b/(b*d - a*e))*log((b*e*x
 + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)
) - 2*(3*B*b^2*d^3 - 3*A*a^2*e^3 + 15*(B*a*b - A*b^2)*e^3*x^2 + (14*B*a*b -
 23*A*b^2)*d^2*e - (2*B*a^2 - 11*A*a*b)*d*e^2 + 5*(7*(B*a*b - A*b^2)*d*e^2
- (B*a^2 - A*a*b)*e^3)*x)*sqrt(e*x + d))/(b^3*d^6*e - 3*a*b^2*d^5*e^2 + 3*a
^2*b*d^4*e^3 - a^3*d^3*e^4 + (b^3*d^3*e^4 - 3*a*b^2*d^2*e^5 + 3*a^2*b*d*e^6
 - a^3*e^7)*x^3 + 3*(b^3*d^4*e^3 - 3*a*b^2*d^3*e^4 + 3*a^2*b*d^2*e^5 - a^3*
d*e^6)*x^2 + 3*(b^3*d^5*e^2 - 3*a*b^2*d^4*e^3 + 3*a^2*b*d^3*e^4 - a^3*d^2*e
^5)*x), 2/15*(15*((B*a*b - A*b^2)*e^4*x^3 + 3*(B*a*b - A*b^2)*d*e^3*x^2 + 3
*(B*a*b - A*b^2)*d^2*e^2*x + (B*a*b - A*b^2)*d^3*e)*sqrt(-b/(b*d - a*e))*ar
ctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (3*B*
b^2*d^3 - 3*A*a^2*e^3 + 15*(B*a*b - A*b^2)*e^3*x^2 + (14*B*a*b - 23*A*b^2)*
d^2*e - (2*B*a^2 - 11*A*a*b)*d*e^2 + 5*(7*(B*a*b - A*b^2)*d*e^2 - (B*a^2 -
A*a*b)*e^3)*x)*sqrt(e*x + d))/(b^3*d^6*e - 3*a*b^2*d^5*e^2 + 3*a^2*b*d^4*e^
3 - a^3*d^3*e^4 + (b^3*d^3*e^4 - 3*a*b^2*d^2*e^5 + 3*a^2*b*d*e^6 - a^3*e^7)
*x^3 + 3*(b^3*d^4*e^3 - 3*a*b^2*d^3*e^4 + 3*a^2*b*d^2*e^5 - a^3*d*e^6)*x^2
+ 3*(b^3*d^5*e^2 - 3*a*b^2*d^4*e^3 + 3*a^2*b*d^3*e^4 - a^3*d^2*e^5)*x)]
```

giac [A] time = 0.27, size = 368, normalized size = 1.47

$$-\frac{2\left(Bab^2\mathrm{sgn}\left(bx+a\right)-Ab^3\mathrm{sgn}\left(bx+a\right)\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{-b^2d+abe}}-\frac{2\left(3\,Bb^2d^3\mathrm{sgn}\left(bx+a\right)+15\left(xe+d\right)^2Babe\mathrm{sgn}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2*(B*a*b^2*sgn(b*x + a) - A*b^3*sgn(b*x + a))*arctan(sqrt(x*e + d)*b/sqrt(
-b^2*d + a*b*e))/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(
-b^2*d + a*b*e)) - 2/15*(3*B*b^2*d^3*sgn(b*x + a) + 15*(x*e + d)^2*B*a*b*e*
sgn(b*x + a) - 15*(x*e + d)^2*A*b^2*e*sgn(b*x + a) + 5*(x*e + d)*B*a*b*d*e*
sgn(b*x + a) - 5*(x*e + d)*A*b^2*d*e*sgn(b*x + a) - 6*B*a*b*d^2*e*sgn(b*x +
 a) - 3*A*b^2*d^2*e*sgn(b*x + a) - 5*(x*e + d)*B*a^2*e^2*sgn(b*x + a) + 5*(
x*e + d)*A*a*b*e^2*sgn(b*x + a) + 3*B*a^2*d*e^2*sgn(b*x + a) + 6*A*a*b*d*e^
2*sgn(b*x + a) - 3*A*a^2*e^3*sgn(b*x + a))/((b^3*d^3*e - 3*a*b^2*d^2*e^2 +
3*a^2*b*d*e^3 - a^3*e^4)*(x*e + d)^(5/2))
```

maple [B] time = 0.08, size = 386, normalized size = 1.54

$$-\frac{2\left(bx+a\right)\left(15\sqrt{\left(ae-bd\right)b}\;A\,b^2e^3x^2-15\sqrt{\left(ae-bd\right)b}\;Bab\,e^3x^2-5\sqrt{\left(ae-bd\right)b}\;Aab\,e^3x+35\sqrt{\left(ae-bd\right)b}\;A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/15*(b*x+a)*(15*A*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*b^3*e-15*B*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b
^2*e+15*A*((a*e-b*d)*b)^(1/2)*x^2*b^2*e^3-15*B*((a*e-b*d)*b)^(1/2)*x^2*a*b*
e^3-5*A*((a*e-b*d)*b)^(1/2)*x*a*b*e^3+35*A*((a*e-b*d)*b)^(1/2)*x*b^2*d*e^2+
5*B*((a*e-b*d)*b)^(1/2)*x*a^2*e^3-35*B*((a*e-b*d)*b)^(1/2)*x*a*b*d*e^2+3*A*
((a*e-b*d)*b)^(1/2)*a^2*e^3-11*A*((a*e-b*d)*b)^(1/2)*a*b*d*e^2+23*A*((a*e-b
*d)*b)^(1/2)*b^2*d^2*e+2*B*((a*e-b*d)*b)^(1/2)*a^2*d*e^2-14*B*((a*e-b*d)*b)
^(1/2)*a*b*d^2*e-3*B*((a*e-b*d)*b)^(1/2)*b^2*d^3)/((b*x+a)^2)^(1/2)/e/(a*e-
b*d)^3/((a*e-b*d)*b)^(1/2)/(e*x+d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{(bx + a)^2}\,(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt((b*x + a)^2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{(a + b\,x)^2}\,(d + e\,x)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)),x)
```

```
[Out] int((A + B*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.1866 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=407

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+5Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{7e(a+bx)(bd-ae)^{3/2}(-9aBe+}{4b^{11/2}\sqrt{a^2+}}$$

```
[Out] 7/12*e*(5*A*b*e-9*B*a*e+4*B*b*d)*(b*x+a)*(e*x+d)^(3/2)/b^4/((b*x+a)^2)^(1/2
)+7/20*e*(5*A*b*e-9*B*a*e+4*B*b*d)*(b*x+a)*(e*x+d)^(5/2)/b^3/(-a*e+b*d)/((b
*x+a)^2)^(1/2)-1/4*(5*A*b*e-9*B*a*e+4*B*b*d)*(e*x+d)^(7/2)/b^2/(-a*e+b*d)/(
(b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(e*x+d)^(9/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^
2)^(1/2)-7/4*e*(-a*e+b*d)^(3/2)*(5*A*b*e-9*B*a*e+4*B*b*d)*(b*x+a)*arctanh(b
^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(11/2)/((b*x+a)^2)^(1/2)+7/4*e*(-a
*e+b*d)*(5*A*b*e-9*B*a*e+4*B*b*d)*(b*x+a)*(e*x+d)^(1/2)/b^5/((b*x+a)^2)^(1/
2)
```

Rubi [A] time = 0.38, antiderivative size = 407, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+5Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{7e(a+bx)(d+ex)^{5/2}(-9aBe+}{20b^3\sqrt{a^2+2abx+b^2x^2}\,(}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*e*(b*d - a*e)*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*
b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*e*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a
+ b*x)*(d + e*x)^(3/2))/(12*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (7*e*(4*b*
B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*(d + e*x)^(5/2))/(20*b^3*(b*d - a*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d + 5*A*b*e - 9*a*B*e)*(d + e*x)^(7/2
))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*
x)^(9/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*
(b*d - a*e)^(3/2)*(4*b*B*d + 5*A*b*e - 9*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*
Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} +$$

$$= -\frac{(4bBd+5Abe-9aBe)(d+ex)^{7/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{9/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{7e(4bBd+5Abe-9aBe)(a+bx)(d+ex)^{5/2}}{20b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+5Abe-9aBe)(d+ex)^{7/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= \frac{7e(4bBd+5Abe-9aBe)(a+bx)(d+ex)^{3/2}}{12b^4\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{7e(bd-ae)(4bBd+5Abe-9aBe)(a+bx)\sqrt{d+ex}}{4b^5\sqrt{a^2+2abx+b^2x^2}} +$$

Mathematica [C] time = 0.12, size = 111, normalized size = 0.27

$$\frac{(a+bx)(d+ex)^{9/2}\left(\frac{e(a+bx)^2(-9aBe+5Abe+4bBd)\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+9aB-9Ab\right)}{18b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(9/2)*(-9*A*b + 9*a*B + (e*(4*b*B*d + 5*A*b*e - 9*a*B*
e)*(a + b*x)^2*Hypergeometric2F1[2, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/
(b*d - a*e)^2))/(18*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

fricas [A] time = 0.78, size = 1060, normalized size = 2.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/120*(105*(4*B*a^2*b^2*d^2*e - (13*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + (9*B*a^
4 - 5*A*a^3*b)*e^3 + (4*B*b^4*d^2*e - (13*B*a*b^3 - 5*A*b^4)*d*e^2 + (9*B*a
^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + 2*(4*B*a*b^3*d^2*e - (13*B*a^2*b^2 - 5*A*a*b
^3)*d*e^2 + (9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*
x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(24
*B*b^4*e^3*x^4 - 30*(B*a*b^3 + A*b^4)*d^3 + 7*(107*B*a^2*b^2 - 15*A*a*b^3)*
d^2*e - 140*(12*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + 105*(9*B*a^4 - 5*A*a^3*b)*e^
3 + 8*(16*B*b^4*d*e^2 - (9*B*a*b^3 - 5*A*b^4)*e^3)*x^3 + 8*(58*B*b^4*d^2*e
- 2*(59*B*a*b^3 - 25*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 -
(60*B*b^4*d^3 - (1303*B*a*b^3 - 195*A*b^4)*d^2*e + 14*(203*B*a^2*b^2 - 85*A
*a*b^3)*d*e^2 - 175*(9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/(b^7*x
^2 + 2*a*b^6*x + a^2*b^5), -1/60*(105*(4*B*a^2*b^2*d^2*e - (13*B*a^3*b - 5*
A*a^2*b^2)*d*e^2 + (9*B*a^4 - 5*A*a^3*b)*e^3 + (4*B*b^4*d^2*e - (13*B*a*b^3
 - 5*A*b^4)*d*e^2 + (9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + 2*(4*B*a*b^3*d^2*e
 - (13*B*a^2*b^2 - 5*A*a*b^3)*d*e^2 + (9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqr
t(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e))
 - (24*B*b^4*e^3*x^4 - 30*(B*a*b^3 + A*b^4)*d^3 + 7*(107*B*a^2*b^2 - 15*A*a
*b^3)*d^2*e - 140*(12*B*a^3*b - 5*A*a^2*b^2)*d*e^2 + 105*(9*B*a^4 - 5*A*a^3
*b)*e^3 + 8*(16*B*b^4*d*e^2 - (9*B*a*b^3 - 5*A*b^4)*e^3)*x^3 + 8*(58*B*b^4*
d^2*e - 2*(59*B*a*b^3 - 25*A*b^4)*d*e^2 + 7*(9*B*a^2*b^2 - 5*A*a*b^3)*e^3)*
x^2 - (60*B*b^4*d^3 - (1303*B*a*b^3 - 195*A*b^4)*d^2*e + 14*(203*B*a^2*b^2
- 85*A*a*b^3)*d*e^2 - 175*(9*B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*sqrt(e*x + d))/
(b^7*x^2 + 2*a*b^6*x + a^2*b^5)]
```

giac [B] time = 0.44, size = 685, normalized size = 1.68

$$\frac{7\left(4\,Bb^3d^3e^2-17\,Bab^2d^2e^3+5\,Ab^3d^2e^3+22\,Ba^2bde^4-10\,Aab^2de^4-9\,Ba^3e^5+5\,Aa^2be^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\sqrt{-b^2d+abe}\,b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 7/4*(4*B*b^3*d^3*e^2 - 17*B*a*b^2*d^2*e^3 + 5*A*b^3*d^2*e^3 + 22*B*a^2*b*d*
e^4 - 10*A*a*b^2*d*e^4 - 9*B*a^3*e^5 + 5*A*a^2*b*e^5)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^5*sgn((x*e + d)*b*e
- b*d*e + a*e^2)) - 1/4*(4*(x*e + d)^(3/2)*B*b^4*d^3*e^2 - 4*sqrt(x*e + d)*
B*b^4*d^4*e^2 - 25*(x*e + d)^(3/2)*B*a*b^3*d^2*e^3 + 13*(x*e + d)^(3/2)*A*b
^4*d^2*e^3 + 27*sqrt(x*e + d)*B*a*b^3*d^3*e^3 - 11*sqrt(x*e + d)*A*b^4*d^3*
e^3 + 38*(x*e + d)^(3/2)*B*a^2*b^2*d*e^4 - 26*(x*e + d)^(3/2)*A*a*b^3*d*e^4
 - 57*sqrt(x*e + d)*B*a^2*b^2*d^2*e^4 + 33*sqrt(x*e + d)*A*a*b^3*d^2*e^4 -
17*(x*e + d)^(3/2)*B*a^3*b*e^5 + 13*(x*e + d)^(3/2)*A*a^2*b^2*e^5 + 49*sqrt
(x*e + d)*B*a^3*b*d*e^5 - 33*sqrt(x*e + d)*A*a^2*b^2*d*e^5 - 15*sqrt(x*e +
d)*B*a^4*e^6 + 11*sqrt(x*e + d)*A*a^3*b*e^6)*e^(-1)/(((x*e + d)*b - b*d + a
*e)^2*b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(x*e + d)^(5/2)*B*b
^12*e^6 + 10*(x*e + d)^(3/2)*B*b^12*d*e^6 + 45*sqrt(x*e + d)*B*b^12*d^2*e^6
 - 15*(x*e + d)^(3/2)*B*a*b^11*e^7 + 5*(x*e + d)^(3/2)*A*b^12*e^7 - 135*sqr
t(x*e + d)*B*a*b^11*d*e^7 + 45*sqrt(x*e + d)*A*b^12*d*e^7 + 90*sqrt(x*e + d
)*B*a^2*b^10*e^8 - 45*sqrt(x*e + d)*A*a*b^11*e^8)*e^(-5)/(b^15*sgn((x*e + d
)*b*e - b*d*e + a*e^2))
```

maple [**B**]   time = 0.11, size = 1873, normalized size = 4.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/60*(-155*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^2*e^3+720*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(1/2)*x*a*b^3*d^2*e^2+720*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x*a*b^3*d*e^3-2160*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b^2*d*e^3
+160*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^3*d*e^2-1080*B*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*x^2*a*b^3*d*e^3-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^5*e^5+60*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^4*d^4+525*A*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b*e^5-60*B*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*b^4*d^3+945*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*e^4+855
*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^2*d*e^3+360*A*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*x^2*b^4*d*e^3+80*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*b^
4*d*e^2-1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^4*d*e^4+
48*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*a*b^3*e^2-120*B*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*x^2*a*b^3*e^3-495*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^3
*d^2*e^2-1815*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b*d*e^3+1215*B*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^2*d^2*e^2-405*B*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(1/2)*a*b^3*d^3*e-3570*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a
^2*b^3*d^2*e^3+840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^4*d^
3*e^2+390*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^3*d*e^2-720*A*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b^2*e^4-490*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2
)*a^2*b^2*d*e^2+375*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^3*d^2*e+1440*B*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b*e^4+720*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*x^2*a^2*b^2*e^4+360*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*b^4*
d^2*e^2+4620*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^2*d*e^4+
1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^4*d^2*e^3-240*B*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^2*b^2*e^3-2100*A*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*x*a^2*b^3*d*e^4+2310*B*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*x^2*a^2*b^3*d*e^4-1785*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*x^2*a*b^4*d^2*e^3+80*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^3*e^
3-360*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a*b^3*e^4-525*A*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*a^3*b*e^4+165*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^4*
d^3*e+1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^2*e^5+24*B
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^2*e^2-1890*B*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*x*a^4*b*e^5+24*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x
^2*b^4*e^2+40*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*b^4*e^3+525*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^3*e^5+525*A*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^5*d^2*e^3-945*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*x^2*a^3*b^2*e^5+420*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^2*b^5*d^3*e^2-1050*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*a^3*b^2*d*e^4+525*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*b^3*d
^2*e^3+135*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b*e^3+2310*B*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b*d*e^4-1785*B*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*a^3*b^2*d^2*e^3+420*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*a^2*b^3*d^3*e^2-195*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^4*d^2
*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^5/((b*x+a)^2)^(3/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{7}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{7/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1867 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=341

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe+3Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e(a+bx)\sqrt{bd-ae}\,(-7aBe+3Ab}{4b^{9/2}\sqrt{a^2+2a}$$

```
[Out] 5/12*e*(3*A*b*e-7*B*a*e+4*B*b*d)*(b*x+a)*(e*x+d)^(3/2)/b^3/(-a*e+b*d)/((b*x
+a)^2)^(1/2)-1/4*(3*A*b*e-7*B*a*e+4*B*b*d)*(e*x+d)^(5/2)/b^2/(-a*e+b*d)/((b
*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(e*x+d)^(7/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)
^(1/2)-5/4*e*(3*A*b*e-7*B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2
)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(9/2)/((b*x+a)^2)^(1/2)+5/4*e*(3*A*b
*e-7*B*a*e+4*B*b*d)*(b*x+a)*(e*x+d)^(1/2)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 341, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe+3Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{5e(a+bx)(d+ex)^{3/2}(-7aBe+3A}{12b^3\sqrt{a^2+2abx+b^2x^2}\,(bd}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (5*e*(4*b*B*d + 3*A*b*e - 7*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*b^4*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) + (5*e*(4*b*B*d + 3*A*b*e - 7*a*B*e)*(a + b*x)*(d +
e*x)^(3/2))/(12*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d
+ 3*A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(7/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*Sqrt[b*d - a*e]*(4*b*B*d + 3*A*b*e - 7*a
*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(9/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd+3Abe-7aBe)\left(ab+b^2x\right)\right)}{4(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{(4bBd+3Abe-7aBe)(d+ex)^{5/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{7/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} +$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)(d+ex)^{3/2}}{12b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(4bBd+3Abe-7aBe)(d+ex)^{5/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= \frac{5e(4bBd+3Abe-7aBe)(a+bx)\sqrt{d+ex}}{4b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{5e(4bBd+3Abe-7aBe)(a+bx)(}{12b^3(bd-ae)\sqrt{a^2+2abx+b}}$$

Mathematica [C] time = 0.10, size = 111, normalized size = 0.33

$$\frac{(a+bx)(d+ex)^{7/2}\left(\frac{e(a+bx)^2(-7aBe+3Abe+4bBd)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+7aB-7Ab\right)}{14b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(7/2)*(-7*A*b + 7*a*B + (e*(4*b*B*d + 3*A*b*e - 7*a*B*
e)*(a + b*x)^2*Hypergeometric2F1[2, 7/2, 9/2, (b*(d + e*x))/(b*d - a*e)])/(
b*d - a*e)^2))/(14*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

fricas [A] time = 0.70, size = 680, normalized size = 1.99

$$\left[-\frac{15\left(4Ba^2bde-\left(7Ba^3-3Aa^2b\right)e^2+\left(4Bb^3de-\left(7Bab^2-3Ab^3\right)e^2\right)x^2+2\left(4Bab^2de-\left(7Ba^2b-3Aab^2\right)e^2\right)x\right)}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/24*(15*(4*B*a^2*b*d*e - (7*B*a^3 - 3*A*a^2*b)*e^2 + (4*B*b^3*d*e - (7*B
*a*b^2 - 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (7*B*a^2*b - 3*A*a*b^2)*e^2
)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt(
(b*d - a*e)/b))/(b*x + a)) - 2*(8*B*b^3*e^2*x^3 - 6*(B*a*b^2 + A*b^3)*d^2 +
 5*(19*B*a^2*b - 3*A*a*b^2)*d*e - 15*(7*B*a^3 - 3*A*a^2*b)*e^2 + 8*(7*B*b^3
*d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 - (12*B*b^3*d^2 - (163*B*a*b^2 - 27*A
*b^3)*d*e + 25*(7*B*a^2*b - 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*
a*b^5*x + a^2*b^4), -1/12*(15*(4*B*a^2*b*d*e - (7*B*a^3 - 3*A*a^2*b)*e^2 +
(4*B*b^3*d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (7*B*a^2
*b - 3*A*a*b^2)*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-
(b*d - a*e)/b)/(b*d - a*e)) - (8*B*b^3*e^2*x^3 - 6*(B*a*b^2 + A*b^3)*d^2 +
5*(19*B*a^2*b - 3*A*a*b^2)*d*e - 15*(7*B*a^3 - 3*A*a^2*b)*e^2 + 8*(7*B*b^3*
d*e - (7*B*a*b^2 - 3*A*b^3)*e^2)*x^2 - (12*B*b^3*d^2 - (163*B*a*b^2 - 27*A*
b^3)*d*e + 25*(7*B*a^2*b - 3*A*a*b^2)*e^2)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*a
*b^5*x + a^2*b^4)]
```

giac [A] time = 0.37, size = 478, normalized size = 1.40

$$\frac{5\left(4Bb^2d^2e^2-11Babde^3+3Ab^2de^3+7Ba^2e^4-3Aabe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{4\sqrt{-b^2d+abe}\,b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\left(4(xe+d)^{\frac{3}{2}}Bb^3d^2e^2-4\sqrt{xe}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 5/4*(4*B*b^2*d^2*e^2 - 11*B*a*b*d*e^3 + 3*A*b^2*d*e^3 + 7*B*a^2*e^4 - 3*A*a
*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d +
a*b*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/4*(4*(x*e + d)^(3/2)*B*b
^3*d^2*e^2 - 4*sqrt(x*e + d)*B*b^3*d^3*e^2 - 17*(x*e + d)^(3/2)*B*a*b^2*d*e
^3 + 9*(x*e + d)^(3/2)*A*b^3*d*e^3 + 19*sqrt(x*e + d)*B*a*b^2*d^2*e^3 - 7*s
qrt(x*e + d)*A*b^3*d^2*e^3 + 13*(x*e + d)^(3/2)*B*a^2*b*e^4 - 9*(x*e + d)^(
3/2)*A*a*b^2*e^4 - 26*sqrt(x*e + d)*B*a^2*b*d*e^4 + 14*sqrt(x*e + d)*A*a*b^
2*d*e^4 + 11*sqrt(x*e + d)*B*a^3*e^5 - 7*sqrt(x*e + d)*A*a^2*b*e^5)*e^(-1)/
(((x*e + d)*b - b*d + a*e)^2*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/3*
((x*e + d)^(3/2)*B*b^6*e^4 + 6*sqrt(x*e + d)*B*b^6*d*e^4 - 9*sqrt(x*e + d)*
B*a*b^5*e^5 + 3*sqrt(x*e + d)*A*b^6*e^5)*e^(-3)/(b^9*sgn((x*e + d)*b*e - b*
d*e + a*e^2))
```

maple [B] time = 0.08, size = 1150, normalized size = 3.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(51*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b^2*d*e-42*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(1/2)*A*a*b^2*d*e^2+126*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*
b*d*e^2-57*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b^2*d^2*e+60*B*a^2*b^2*d^2
*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+21*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*A*b^3*d^2*e+45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^2*b*e^3+96*
B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2+27*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(3/2)*A*a*b^2*e^2-27*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^3*d*e+45*A
*a^2*b^2*d*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-31*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(3/2)*B*a^2*b*e^2-165*B*a^3*b*d*e^3*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)+105*B*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)-45*A*a^3*b*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-105*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*e^3-12*B*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*b
^3*d^2+12*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b^3*d^3+48*B*(e*x+d)^(1/2)*((
a*e-b*d)*b)^(1/2)*x^2*b^3*d*e^2-330*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*x*a^2*b^2*d*e^3+120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*
a*b^3*d^2*e^2+48*A*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*e^3+16*B*(e*x+
d)^(3/2)*((a*e-b*d)*b)^(1/2)*x*a*b^2*e^2-72*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(
1/2)*x^2*a*b^2*e^3-144*B*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x*a^2*b*e^3-165*
B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^3*d*e^3+90*A*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^3*d*e^3-90*A*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*x*a^2*b^2*e^4+210*B*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*x*a^3*b*e^4+8*B*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*x^2*b^3*e^2+
105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^2*e^4+60*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^4*d^2*e^2-45*A*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^3*e^4+45*A*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*x^2*b^4*d*e^3+24*A*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*x^2*
b^3*e^3)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{5/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1868 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=280

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe+Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{3e(a+bx)(-5aBe+Abe+4bBd}{4b^{7/2}\sqrt{a^2+2abx+b^2x}}$$

```
[Out] -1/4*(A*b*e-5*B*a*e+4*B*b*d)*(e*x+d)^(3/2)/b^2/(-a*e+b*d)/((b*x+a)^2)^(1/2)
-1/2*(A*b-B*a)*(e*x+d)^(5/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)-3/4*e*(
A*b*e-5*B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/
2))/b^(7/2)/(-a*e+b*d)^(1/2)/((b*x+a)^2)^(1/2)+3/4*e*(A*b*e-5*B*a*e+4*B*b*d
)*(b*x+a)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.23, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe+Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{3e(a+bx)\sqrt{d+ex}\,(-5aBe+Ab}{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(4*b^3*(b*d - a*e
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((4*b*B*d + A*b*e - 5*a*B*e)*(d + e*x)^(
3/2))/(4*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d +
 e*x)^(5/2))/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3
*e*(4*b*B*d + A*b*e - 5*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(4*b^(7/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(Ab-aB)(d+ex)^{5/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left((4bBd+Abe-5aBe)\left(ab+b^2x\right)\right)\int}{4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{(Ab-aB)(d+ex)^{5/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{(3e}{}\\
&= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b(b}\\
&= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b(b}\\
&= \frac{3e(4bBd+Abe-5aBe)(a+bx)\sqrt{d+ex}}{4b^3(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{(4bBd+Abe-5aBe)(d+ex)^{3/2}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{2b(b}
\end{aligned}
$$

Mathematica [C]   time = 0.09, size = 110, normalized size = 0.39

$$
\frac{(a+bx)(d+ex)^{5/2}\left(\frac{e(a+bx)^2(-5aBe+Abe+4bBd)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+5aB-5Ab\right)}{10b\left((a+bx)^2\right)^{3/2}(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(5/2)*(-5*A*b + 5*a*B + (e*(4*b*B*d + A*b*e - 5*a*B*e)
*(a + b*x)^2*Hypergeometric2F1[2, 5/2, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*
d - a*e)^2))/(10*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

fricas [A]   time = 0.86, size = 703, normalized size = 2.51

$$\left[\frac{3\left(4\,Ba^2bde-\left(5\,Ba^3-Aa^2b\right)e^2+\left(4\,Bb^3de-\left(5\,Bab^2-Ab^3\right)e^2\right)x^2+2\left(4\,Bab^2de-\left(5\,Ba^2b-Aab^2\right)e^2\right)x\right)\sqrt{b^2}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*(3*(4*B*a^2*b*d*e - (5*B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*e - (5*B*a*b^
2 - A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (5*B*a^2*b - A*a*b^2)*e^2)*x)*sqrt
(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
 d))/(b*x + a)) - 2*(2*(B*a*b^3 + A*b^4)*d^2 - (17*B*a^2*b^2 - A*a*b^3)*d*e
 + 3*(5*B*a^3*b - A*a^2*b^2)*e^2 - 8*(B*b^4*d*e - B*a*b^3*e^2)*x^2 + (4*B*b
^4*d^2 - (29*B*a*b^3 - 5*A*b^4)*d*e + 5*(5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqr
t(e*x + d))/(a^2*b^5*d - a^3*b^4*e + (b^7*d - a*b^6*e)*x^2 + 2*(a*b^6*d - a
^2*b^5*e)*x), 1/4*(3*(4*B*a^2*b*d*e - (5*B*a^3 - A*a^2*b)*e^2 + (4*B*b^3*d*
e - (5*B*a*b^2 - A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (5*B*a^2*b - A*a*b^2)
*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*
e*x + b*d)) - (2*(B*a*b^3 + A*b^4)*d^2 - (17*B*a^2*b^2 - A*a*b^3)*d*e + 3*(
5*B*a^3*b - A*a^2*b^2)*e^2 - 8*(B*b^4*d*e - B*a*b^3*e^2)*x^2 + (4*B*b^4*d^2
 - (29*B*a*b^3 - 5*A*b^4)*d*e + 5*(5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x
+ d))/(a^2*b^5*d - a^3*b^4*e + (b^7*d - a*b^6*e)*x^2 + 2*(a*b^6*d - a^2*b^5
*e)*x)]
```

giac [A]   time = 0.30, size = 312, normalized size = 1.11

$$\frac{2\sqrt{xe+d}\,Be}{b^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{3\left(4\,Bbde^2-5\,Bae^3+Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{4\sqrt{-b^2d+abe}\,b^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\left(4\,(xe+d)^{\frac{3}{2}}Bb^2de^2-4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*B*e/(b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 3/4*(4*B*b*d
*e^2 - 5*B*a*e^3 + A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^
(-1)/(sqrt(-b^2*d + a*b*e)*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/4*(4
*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*d^2*e^2 - 9*(x*e + d)^
(3/2)*B*a*b*e^3 + 5*(x*e + d)^(3/2)*A*b^2*e^3 + 11*sqrt(x*e + d)*B*a*b*d*e^
3 - 3*sqrt(x*e + d)*A*b^2*d*e^3 - 7*sqrt(x*e + d)*B*a^2*e^4 + 3*sqrt(x*e +
d)*A*a*b*e^4)*e^(-1)/(((x*e + d)*b - b*d + a*e)^2*b^3*sgn((x*e + d)*b*e - b
*d*e + a*e^2))
```

maple [B]   time = 0.07, size = 608, normalized size = 2.17

$$-\frac{\left(-3A\,b^3e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+15Ba\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-12B\,b^3d\,e^2x^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-6Aa\,b^2e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(-3*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^3*e^3+15*B*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^2*e^3-12*B*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*b^3*d*e^2-6*A*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*x*a*b^2*e^3-8*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*b^2*e
^2+30*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^2*b*e^3-24*B*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^2*d*e^2+5*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(3/2)*A*b^2*e-3*A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)-9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e+4*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(3/2)*b^2*d-16*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a*b*e^2+15*B*a^3*
e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-12*B*a^2*b*d*e^2*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b
*e^2-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^2*d*e-15*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*B*a^2*e^2+11*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b*d*e-4*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^3
/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{3/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1869 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=215

$$-\frac{(d+ex)^{3/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)(-3aBe-Abe+4bBd)\,\mathrm{ta}}{4b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(b}$$

```
[Out] -1/2*(A*b-B*a)*(e*x+d)^(3/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)-1/4*e*(
-A*b*e-3*B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1
/2))/b^(5/2)/(-a*e+b*d)^(3/2)/((b*x+a)^2)^(1/2)-1/4*(-A*b*e-3*B*a*e+4*B*b*d
)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 78, 47, 63, 208\}$

$$-\frac{(d+ex)^{3/2}(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-3aBe-Abe+4bBd)}{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)(-3aBe-Abe+4bBd)\,\mathrm{ta}}{4b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(b}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((4*b*B*d - A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(4*b^2*(b*d - a*e)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(3/2))/(2*b*(b*d - a*e)*(a + b
*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(4*b*B*d - A*b*e - 3*a*B*e)*(a + b*
x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(5/2)*(b*d - a*e)
^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)\sqrt{d+ex}}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-Abe-3aBe)\left(ab+b^2x\right)\right)\int}{4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{(e(4}{}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{((4b}{}$$

$$= -\frac{(4bBd-Abe-3aBe)\sqrt{d+ex}}{4b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{e(4b}{}$$

Mathematica [A] time = 0.33, size = 167, normalized size = 0.78

$$\frac{(a+bx)\left(\frac{(a+bx)(-3aBe-Abe+4bBd)\left(\sqrt{b}\,e(a+bx)\sqrt{d+ex}\,\tan^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{ae-bd}}\right)-b(d+ex)\sqrt{ae-bd}\right)}{\sqrt{ae-bd}}-2b^2(d+ex)^2(Ab-aB)\right)}{4b^3\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(-2*b^2*(A*b - a*B)*(d + e*x)^2 + ((4*b*B*d - A*b*e - 3*a*B*e)*(
a + b*x)*(-(b*Sqrt[-(b*d) + a*e]*(d + e*x)) + Sqrt[b]*e*(a + b*x)*Sqrt[d +
e*x]*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/Sqrt[-(b*d) + a*e
]))/(4*b^3*(b*d - a*e)*((a + b*x)^2)^(3/2)*Sqrt[d + e*x])
```

fricas [B] time = 0.67, size = 721, normalized size = 3.35

$$\left[\frac{\left(4\,Ba^2bde-\left(3\,Ba^3+Aa^2b\right)e^2+\left(4\,Bb^3de-\left(3\,Bab^2+Ab^3\right)e^2\right)x^2+2\left(4\,Bab^2de-\left(3\,Ba^2b+Aab^2\right)e^2\right)x\right)\sqrt{b^2d-a}}{8\left(a^2b^5d^2-2\,a^3b^4\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*((4*B*a^2*b*d*e - (3*B*a^3 + A*a^2*b)*e^2 + (4*B*b^3*d*e - (3*B*a*b^2
+ A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (3*B*a^2*b + A*a*b^2)*e^2)*x)*sqrt(b
^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d
))/(b*x + a)) - 2*(2*(B*a*b^3 + A*b^4)*d^2 - (5*B*a^2*b^2 + 3*A*a*b^3)*d*e
+ (3*B*a^3*b + A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (9*B*a*b^3 - A*b^4)*d*e + (5
*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^2 - 2*a^3*b^4*d*e +
 a^4*b^3*e^2 + (b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*x^2 + 2*(a*b^6*d^2 - 2
*a^2*b^5*d*e + a^3*b^4*e^2)*x), 1/4*((4*B*a^2*b*d*e - (3*B*a^3 + A*a^2*b)*e
^2 + (4*B*b^3*d*e - (3*B*a*b^2 + A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (3*B*
a^2*b + A*a*b^2)*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*s
qrt(e*x + d)/(b*e*x + b*d)) - (2*(B*a*b^3 + A*b^4)*d^2 - (5*B*a^2*b^2 + 3*A
*a*b^3)*d*e + (3*B*a^3*b + A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (9*B*a*b^3 - A*b
^4)*d*e + (5*B*a^2*b^2 - A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^2 - 2*a
^3*b^4*d*e + a^4*b^3*e^2 + (b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*x^2 + 2*(a
*b^6*d^2 - 2*a^2*b^5*d*e + a^3*b^4*e^2)*x)]
```

giac [B] time = 0.36, size = 337, normalized size = 1.57

$$\frac{\left(4\,Bbde^{2}-3\,Bae^{3}-Abe^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\left(b^{3}de\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-ab^{2}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{4\,(xe+d)^{\frac{3}{2}}Bb^{2}de^{2}-4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 1/4*(4*B*b*d*e^2 - 3*B*a*e^3 - A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))/((b^3*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^2*e^2*sgn((x*e
 + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2)*
B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*d^2*e^2 - 5*(x*e + d)^(3/2)*B*a*b*e^3 +
 (x*e + d)^(3/2)*A*b^2*e^3 + 7*sqrt(x*e + d)*B*a*b*d*e^3 + sqrt(x*e + d)*A*
b^2*d*e^3 - 3*sqrt(x*e + d)*B*a^2*e^4 - sqrt(x*e + d)*A*a*b*e^4)/((b^3*d*e*
sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^2*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.07, size = 555, normalized size = 2.58

$$\frac{\left(A\,b^{3}e^{3}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3Ba\,b^{2}e^{3}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-4B\,b^{3}d\,e^{2}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+2Aa\,b^{2}e^{3}x\,\mathrm{arc}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/4*(A*b^3*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*B*a*b^2*e^
3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-4*B*b^3*d*e^2*x^2*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+2*A*a*b^2*e^3*x*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+6*B*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)-8*B*a*b^2*d*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+((a*e-
b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^2*e+A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-5*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e+4*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(3/2)*B*b^2*d+3*B*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)-4*B*a^2*b*d*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b*e^2+((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*b^2*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*e^2+7*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(1/2)*B*a*b*d*e-4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^2*d^2)/e*
(b*x+a)/((a*e-b*d)*b)^(1/2)/b^2/(a*e-b*d)/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)\sqrt{ex + d}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\sqrt{d + e\,x}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,\sqrt{d + ex}}{\left((a + bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.1870 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=215

$$-\frac{\sqrt{d+ex}\,(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-aBe-3Abe+4bBd)}{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)(-aBe-3Abe+4bBd)\,\mathrm{ta}}{4b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(b}$$

```
[Out] 1/4*e*(-3*A*b*e-B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/b^(3/2)/(-a*e+b*d)^(5/2)/((b*x+a)^2)^(1/2)-1/4*(-3*A*b*e-B*a*e+
4*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)-1/2*(A*b-B*a)*(e*x+
d)^(1/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 215, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{\sqrt{d+ex}\,(Ab-aB)}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}\,(-aBe-3Abe+4bBd)}{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)(-aBe-3Abe+4bBd)\,\mathrm{ta}}{4b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -((4*b*B*d - 3*A*b*e - a*B*e)*Sqrt[d + e*x])/(4*b*(b*d - a*e)^2*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - ((A*b - a*B)*Sqrt[d + e*x])/(2*b*(b*d - a*e)*(a + b*x
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(4*b*B*d - 3*A*b*e - a*B*e)*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(3/2)*(b*d - a*e)^(
5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{((4bBd-3Abe-aBe)\,(ab+b}{4(bd-ae)\sqrt{a^2+2}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(4bBd-3Abe-aBe)\sqrt{d+ex}}{4b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2}}$$

Mathematica [A] time = 0.26, size = 170, normalized size = 0.79

$$\frac{(a+bx)\sqrt{d+ex}\left(\frac{(a+bx)(-aBe-3Abe+4bBd)\left(\sqrt{b}\sqrt{d+ex}(ae-bd)+e(a+bx)\sqrt{ae-bd}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)\right)}{2\sqrt{b}\sqrt{d+ex}(bd-ae)^2}+aB-Ab\right)}{2b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*Sqrt[d + e*x]*(-(A*b) + a*B + ((4*b*B*d - 3*A*b*e - a*B*e)*(a +
b*x)*(Sqrt[b]*(-(b*d) + a*e)*Sqrt[d + e*x] + e*Sqrt[-(b*d) + a*e]*(a + b*x)
*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/(2*Sqrt[b]*(b*d - a*e
)^2*Sqrt[d + e*x])))/(2*b*(b*d - a*e)*((a + b*x)^2)^(3/2))
```

fricas [B] time = 0.96, size = 808, normalized size = 3.76

$$\left[-\frac{\left(4\,Ba^2bde-\left(Ba^3+3\,Aa^2b\right)e^2+\left(4\,Bb^3de-\left(Bab^2+3\,Ab^3\right)e^2\right)x^2+2\left(4\,Bab^2de-\left(Ba^2b+3\,Aab^2\right)e^2\right)x\right)\sqrt{b^2d-}}{8\left(a^2b^5d^3-3\,a^3b^4d^2e+3\,a^4b^3de^2-\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/8*((4*B*a^2*b*d*e - (B*a^3 + 3*A*a^2*b)*e^2 + (4*B*b^3*d*e - (B*a*b^2 +
 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (B*a^2*b + 3*A*a*b^2)*e^2)*x)*sqrt(
b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x +
d))/(b*x + a)) + 2*(2*(B*a*b^3 + A*b^4)*d^2 - (B*a^2*b^2 + 7*A*a*b^3)*d*e -
 (B*a^3*b - 5*A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (5*B*a*b^3 + 3*A*b^4)*d*e + (
B*a^2*b^2 + 3*A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^3 - 3*a^3*b^4*d^2*
e + 3*a^4*b^3*d*e^2 - a^5*b^2*e^3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*
e^2 - a^3*b^4*e^3)*x^2 + 2*(a*b^6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 -
 a^4*b^3*e^3)*x), -1/4*((4*B*a^2*b*d*e - (B*a^3 + 3*A*a^2*b)*e^2 + (4*B*b^3
*d*e - (B*a*b^2 + 3*A*b^3)*e^2)*x^2 + 2*(4*B*a*b^2*d*e - (B*a^2*b + 3*A*a*b
^2)*e^2)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/
(b*e*x + b*d)) + (2*(B*a*b^3 + A*b^4)*d^2 - (B*a^2*b^2 + 7*A*a*b^3)*d*e - (
B*a^3*b - 5*A*a^2*b^2)*e^2 + (4*B*b^4*d^2 - (5*B*a*b^3 + 3*A*b^4)*d*e + (B*
a^2*b^2 + 3*A*a*b^3)*e^2)*x)*sqrt(e*x + d))/(a^2*b^5*d^3 - 3*a^3*b^4*d^2*e
+ 3*a^4*b^3*d*e^2 - a^5*b^2*e^3 + (b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^
2 - a^3*b^4*e^3)*x^2 + 2*(a*b^6*d^3 - 3*a^2*b^5*d^2*e + 3*a^3*b^4*d*e^2 - a
^4*b^3*e^3)*x)]
```

giac [B] time = 0.30, size = 402, normalized size = 1.87

$$-\frac{\left(4\,Bbde^2-Bae^3-3\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\left(b^3d^2e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-2\,ab^2de^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^2be^3\mathrm{sgn}\left((xe+d)be-bde+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -1/4*(4*B*b*d*e^2 - B*a*e^3 - 3*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^3*d^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^2*d*e^2*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b*e^3*sgn((x*e + d)*b*e - b*d*e + a
*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(
x*e + d)*B*b^2*d^2*e^2 - (x*e + d)^(3/2)*B*a*b*e^3 - 3*(x*e + d)^(3/2)*A*b^
2*e^3 + 3*sqrt(x*e + d)*B*a*b*d*e^3 + 5*sqrt(x*e + d)*A*b^2*d*e^3 + sqrt(x*
e + d)*B*a^2*e^4 - 5*sqrt(x*e + d)*A*a*b*e^4)/((b^3*d^2*e*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - 2*a*b^2*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*
b*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.07, size = 556, normalized size = 2.59

$$\frac{(bx+a)\left(3A\,b^3e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+Ba\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-4B\,b^3d\,e^2x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+6Aa\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/4*(b*x+a)/e*(3*A*b^3*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+
B*a*b^2*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-4*B*b^3*d*e^2*x
^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+6*A*a*b^2*e^3*x*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+2*B*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-8*B*a*b^2*d*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)+3*A*a^2*b*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(3/2)*A*b^2*e+B*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)-4*B*a^2*b*d*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b*e-4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*
b^2*d+5*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a*b*e^2-5*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*A*b^2*d*e-((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*e^2-3*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a*b*d*e+4*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B
*b^2*d^2)/((a*e-b*d)*b)^(1/2)/b/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{d + e\,x}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1871 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=281

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}+\frac{-aBe+5Abe-4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{3e(a+bx)(a}{4b\sqrt{a^2+2abx+}}$$

```
[Out] 3/4*e*(-5*A*b*e+B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/(-a*e+b*d)^(7/2)/b^(1/2)/((b*x+a)^2)^(1/2)+1/4*(5*A*b*e-B*a*e-4
*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)+1/2*(-A*b+B*a)/b/(-a
*e+b*d)/(b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)-3/4*e*(-5*A*b*e+B*a*e+4*B*b
*d)*(b*x+a)/b/(-a*e+b*d)^3/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.26, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}-\frac{aBe-5Abe+4bBd}{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}-\frac{3e(a+bx)(a}{4b\sqrt{a^2+2abx+}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 5*A*b*e + a*B*e)/(4*b*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*
a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*(4*b*B*d - 5*A*b*e + a*B*e)*(a + b*x))/
(4*b*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*(4*b
*B*d - 5*A*b*e + a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
- a*e]])/(4*Sqrt[b]*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} + \frac{((4bBd-5Abe+a}{4(bd-}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a}{2b(bd-ae)(a+bx)\sqrt{d+e}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a}{2b(bd-ae)(a+bx)\sqrt{d+e}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a}{2b(bd-ae)(a+bx)\sqrt{d+e}}$$

$$= -\frac{4bBd-5Abe+aBe}{4b(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-a}{2b(bd-ae)(a+bx)\sqrt{d+e}}$$

Mathematica [C] time = 0.07, size = 110, normalized size = 0.39

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-aBe+5Abe-4bBd)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+aB-Ab\right)}{2b\left((a+bx)^2\right)^{3/2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-(A*b) + a*B + (e*(-4*b*B*d + 5*A*b*e - a*B*e)*(a + b*x)^2*Hype
rgeometric2F1[-1/2, 2, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2))/(2*
b*(b*d - a*e)*((a + b*x)^2)^(3/2)*Sqrt[d + e*x])
```

fricas [B] time = 1.35, size = 1410, normalized size = 5.02

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/8*(3*(4*B*a^2*b*d^2*e + (B*a^3 - 5*A*a^2*b)*d*e^2 + (4*B*b^3*d*e^2 + (B*
a*b^2 - 5*A*b^3)*e^3)*x^3 + (4*B*b^3*d^2*e + (9*B*a*b^2 - 5*A*b^3)*d*e^2 +
2*(B*a^2*b - 5*A*a*b^2)*e^3)*x^2 + (8*B*a*b^2*d^2*e + 2*(3*B*a^2*b - 5*A*a*
b^2)*d*e^2 + (B*a^3 - 5*A*a^2*b)*e^3)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2
*b*d - a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(8*A*a^3*b
*e^3 + 2*(B*a*b^3 + A*b^4)*d^3 + 11*(B*a^2*b^2 - A*a*b^3)*d^2*e - (13*B*a^3
*b - A*a^2*b^2)*d*e^2 + 3*(4*B*b^4*d^2*e - (3*B*a*b^3 + 5*A*b^4)*d*e^2 - (B
*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + (4*B*b^4*d^3 + (17*B*a*b^3 - 5*A*b^4)*d^2*
e - 4*(4*B*a^2*b^2 + 5*A*a*b^3)*d*e^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*e^3)*x)*s
qrt(e*x + d))/(a^2*b^5*d^5 - 4*a^3*b^4*d^4*e + 6*a^4*b^3*d^3*e^2 - 4*a^5*b^
2*d^2*e^3 + a^6*b*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e^2 + 6*a^2*b^5*d^2*e^3
- 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^3 + (b^7*d^5 - 2*a*b^6*d^4*e - 2*a^2*b^5
*d^3*e^2 + 8*a^3*b^4*d^2*e^3 - 7*a^4*b^3*d*e^4 + 2*a^5*b^2*e^5)*x^2 + (2*a*
b^6*d^5 - 7*a^2*b^5*d^4*e + 8*a^3*b^4*d^3*e^2 - 2*a^4*b^3*d^2*e^3 - 2*a^5*b
^2*d*e^4 + a^6*b*e^5)*x), -1/4*(3*(4*B*a^2*b*d^2*e + (B*a^3 - 5*A*a^2*b)*d*
e^2 + (4*B*b^3*d*e^2 + (B*a*b^2 - 5*A*b^3)*e^3)*x^3 + (4*B*b^3*d^2*e + (9*B
*a*b^2 - 5*A*b^3)*d*e^2 + 2*(B*a^2*b - 5*A*a*b^2)*e^3)*x^2 + (8*B*a*b^2*d^2
*e + 2*(3*B*a^2*b - 5*A*a*b^2)*d*e^2 + (B*a^3 - 5*A*a^2*b)*e^3)*x)*sqrt(-b^
2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (8*
A*a^3*b*e^3 + 2*(B*a*b^3 + A*b^4)*d^3 + 11*(B*a^2*b^2 - A*a*b^3)*d^2*e - (1
3*B*a^3*b - A*a^2*b^2)*d*e^2 + 3*(4*B*b^4*d^2*e - (3*B*a*b^3 + 5*A*b^4)*d*e
^2 - (B*a^2*b^2 - 5*A*a*b^3)*e^3)*x^2 + (4*B*b^4*d^3 + (17*B*a*b^3 - 5*A*b^
4)*d^2*e - 4*(4*B*a^2*b^2 + 5*A*a*b^3)*d*e^2 - 5*(B*a^3*b - 5*A*a^2*b^2)*e^
3)*x)*sqrt(e*x + d))/(a^2*b^5*d^5 - 4*a^3*b^4*d^4*e + 6*a^4*b^3*d^3*e^2 - 4
*a^5*b^2*d^2*e^3 + a^6*b*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e^2 + 6*a^2*b^5*d
^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^3 + (b^7*d^5 - 2*a*b^6*d^4*e - 2*
a^2*b^5*d^3*e^2 + 8*a^3*b^4*d^2*e^3 - 7*a^4*b^3*d*e^4 + 2*a^5*b^2*e^5)*x^2
+ (2*a*b^6*d^5 - 7*a^2*b^5*d^4*e + 8*a^3*b^4*d^3*e^2 - 2*a^4*b^3*d^2*e^3 -
2*a^5*b^2*d*e^4 + a^6*b*e^5)*x)]
```

giac [B] time = 0.40, size = 616, normalized size = 2.19

$$-\frac{3\left(4\,Bbde^2+Bae^3-5\,Abe^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\left(b^3d^3e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-3\,ab^2d^2e^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+3\,a^2bde^3\mathrm{sgn}\left((xe+d)be-bd\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -3/4*(4*B*b*d*e^2 + B*a*e^3 - 5*A*b*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2
*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b
*e)) - 2*(B*d*e^2 - A*e^3)/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) -
 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*s
qrt(x*e + d)) - 1/4*(4*(x*e + d)^(3/2)*B*b^2*d*e^2 - 4*sqrt(x*e + d)*B*b^2*
d^2*e^2 + 3*(x*e + d)^(3/2)*B*a*b*e^3 - 7*(x*e + d)^(3/2)*A*b^2*e^3 - sqrt(
x*e + d)*B*a*b*d*e^3 + 9*sqrt(x*e + d)*A*b^2*d*e^3 + 5*sqrt(x*e + d)*B*a^2*
e^4 - 9*sqrt(x*e + d)*A*a*b*e^4)/((b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*s
gn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*((x*e + d)*b - b*d + a*e)^2)
```

maple [B] time = 0.08, size = 681, normalized size = 2.42

$$-\frac{\left(15\sqrt{ex+d}\;A\,b^{3}e^{2}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-3\sqrt{ex+d}\;Ba\,b^{2}e^{2}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-12\sqrt{ex+d}\;B\,b^{3}de\,x^{2}\arctan}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/4*(15*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*b^
3*e^2-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a*b
^2*e^2-12*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*b
^3*d*e+30*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a*b
^2*e^2-6*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^2*
b*e^2-24*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a*b^
2*d*e+15*A*((a*e-b*d)*b)^(1/2)*x^2*b^2*e^2+15*A*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^2*b*e^2-3*B*((a*e-b*d)*b)^(1/2)*x^2*a*b*e^
2-12*B*((a*e-b*d)*b)^(1/2)*x^2*b^2*d*e-3*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*(e*x+d)^(1/2)*a^3*e^2-12*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*(e*x+d)^(1/2)*a^2*b*d*e+25*A*((a*e-b*d)*b)^(1/2)*x*a*b*e^2+5*A*((a*
e-b*d)*b)^(1/2)*x*b^2*d*e-5*B*((a*e-b*d)*b)^(1/2)*x*a^2*e^2-21*B*((a*e-b*d)
*b)^(1/2)*x*a*b*d*e-4*B*((a*e-b*d)*b)^(1/2)*x*b^2*d^2+8*A*((a*e-b*d)*b)^(1/
2)*a^2*e^2+9*A*((a*e-b*d)*b)^(1/2)*a*b*d*e-2*A*((a*e-b*d)*b)^(1/2)*b^2*d^2-
13*B*((a*e-b*d)*b)^(1/2)*a^2*d*e-2*B*((a*e-b*d)*b)^(1/2)*a*b*d^2)*(b*x+a)/(
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1872 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=348

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{5e(a+bx)(3aBe-7Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}+\frac{-3aBe}{4b\sqrt{a^2+2abx+}}$$

```
[Out] 1/4*(7*A*b*e-3*B*a*e-4*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2
)+1/2*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-5/12*
e*(-7*A*b*e+3*B*a*e+4*B*b*d)*(b*x+a)/b/(-a*e+b*d)^3/(e*x+d)^(3/2)/((b*x+a)^
2)^(1/2)+5/4*e*(-7*A*b*e+3*B*a*e+4*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(
1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(9/2)/((b*x+a)^2)^(1/2)-5/4*e*(-7
*A*b*e+3*B*a*e+4*B*b*d)*(b*x+a)/(-a*e+b*d)^4/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2
)
```

Rubi [A] time = 0.32, antiderivative size = 348, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 78, 51, 63, 208\}$

$$-\frac{Ab-aB}{2b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}-\frac{5e(a+bx)(3aBe-7Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{3aBe}{4b\sqrt{a^2+2abx+}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 7*A*b*e + 3*a*B*e)/(4*b*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*(d + e*x)^(3
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(4*b*B*d - 7*A*b*e + 3*a*B*e)*(a
 + b*x))/(12*b*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - (5*e*(4*b*B*d - 7*A*b*e + 3*a*B*e)*(a + b*x))/(4*(b*d - a*e)^4*Sqrt[d + e
*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*Sqrt[b]*e*(4*b*B*d - 7*A*b*e + 3*a*
B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d -
a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{((4bBd-7Abe+}{4(bc}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

$$= -\frac{4bBd-7Abe+3aBe}{4b(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{Ab-}{2b(bd-ae)(a+bx)(d+}$$

Mathematica [C]   time = 0.07, size = 111, normalized size = 0.32

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-3aBe+7Abe-4bBd)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+3aB-3Ab\right)}{6b\left((a+bx)^2\right)^{3/2}(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-3*A*b + 3*a*B + (e*(-4*b*B*d + 7*A*b*e - 3*a*B*e)*(a + b*x)^2*
Hypergeometric2F1[-3/2, 2, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2)
)/(6*b*(b*d - a*e)*((a + b*x)^2)^(3/2)*(d + e*x)^(3/2))
```

fricas [B] time = 1.27, size = 1776, normalized size = 5.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/24*(15*(4*B*a^2*b*d^3*e + (3*B*a^3 - 7*A*a^2*b)*d^2*e^2 + (4*B*b^3*d*e^
3 + (3*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + 2*(4*B*b^3*d^2*e^2 + 7*(B*a*b^2 - A*b^
3)*d*e^3 + (3*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + (4*B*b^3*d^3*e + (19*B*a*b^2
- 7*A*b^3)*d^2*e^2 + 4*(4*B*a^2*b - 7*A*a*b^2)*d*e^3 + (3*B*a^3 - 7*A*a^2*b
)*e^4)*x^2 + 2*(4*B*a*b^2*d^3*e + 7*(B*a^2*b - A*a*b^2)*d^2*e^2 + (3*B*a^3
- 7*A*a^2*b)*d*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*
d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(8*A*a^3*e^3 + 6
*(B*a*b^2 + A*b^3)*d^3 + (83*B*a^2*b - 39*A*a*b^2)*d^2*e + 16*(B*a^3 - 5*A*
a^2*b)*d*e^2 + 15*(4*B*b^3*d*e^2 + (3*B*a*b^2 - 7*A*b^3)*e^3)*x^3 + 5*(16*B
*b^3*d^2*e + 4*(8*B*a*b^2 - 7*A*b^3)*d*e^2 + 5*(3*B*a^2*b - 7*A*a*b^2)*e^3)
*x^2 + (12*B*b^3*d^3 + (145*B*a*b^2 - 21*A*b^3)*d^2*e + 2*(67*B*a^2*b - 119
*A*a*b^2)*d*e^2 + 8*(3*B*a^3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a^2*b^4*d
^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2*e^4 +
(b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*
b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 + 2*a^3*b
^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4*d^4*e^
2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5*d^6 -
3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^2*e^4 +
 a^6*d*e^5)*x), 1/12*(15*(4*B*a^2*b*d^3*e + (3*B*a^3 - 7*A*a^2*b)*d^2*e^2 +
 (4*B*b^3*d*e^3 + (3*B*a*b^2 - 7*A*b^3)*e^4)*x^4 + 2*(4*B*b^3*d^2*e^2 + 7*(
B*a*b^2 - A*b^3)*d*e^3 + (3*B*a^2*b - 7*A*a*b^2)*e^4)*x^3 + (4*B*b^3*d^3*e
+ (19*B*a*b^2 - 7*A*b^3)*d^2*e^2 + 4*(4*B*a^2*b - 7*A*a*b^2)*d*e^3 + (3*B*a
^3 - 7*A*a^2*b)*e^4)*x^2 + 2*(4*B*a*b^2*d^3*e + 7*(B*a^2*b - A*a*b^2)*d^2*e
^2 + (3*B*a^3 - 7*A*a^2*b)*d*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*
e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (8*A*a^3*e^3 + 6*(B*
a*b^2 + A*b^3)*d^3 + (83*B*a^2*b - 39*A*a*b^2)*d^2*e + 16*(B*a^3 - 5*A*a^2*
b)*d*e^2 + 15*(4*B*b^3*d*e^2 + (3*B*a*b^2 - 7*A*b^3)*e^3)*x^3 + 5*(16*B*b^3
*d^2*e + 4*(8*B*a*b^2 - 7*A*b^3)*d*e^2 + 5*(3*B*a^2*b - 7*A*a*b^2)*e^3)*x^2
 + (12*B*b^3*d^3 + (145*B*a*b^2 - 21*A*b^3)*d^2*e + 2*(67*B*a^2*b - 119*A*a
*b^2)*d*e^2 + 8*(3*B*a^3 - 7*A*a^2*b)*e^3)*x)*sqrt(e*x + d))/(a^2*b^4*d^6 -
 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2*e^4 + (b^6
*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*b^2*
e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 + 2*a^3*b^3*d
^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4*d^4*e^2 +
16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5*d^6 - 3*a^
2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^2*e^4 + a^6
*d*e^5)*x)]
```

giac [B] time = 0.49, size = 785, normalized size = 2.26

$$-\frac{5\left(4\,Bb^{2}de^{2}+3\,Babe^{3}-7\,Ab^{2}e}{4\left(b^{4}d^{4}e\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-4\,ab^{3}d^{3}e^{2}\,\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+6\,a^{2}b^{2}d^{2}e^{3}\,\mathrm{sgn}\left((xe+d)be-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -5/4*(4*B*b^2*d*e^2 + 3*B*a*b*e^3 - 7*A*b^2*e^3)*arctan(sqrt(x*e + d)*b/sqr
t(-b^2*d + a*b*e))/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3
*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/3*(
6*(x*e + d)*B*b*d*e^2 + B*b*d^2*e^2 + 3*(x*e + d)*B*a*e^3 - 9*(x*e + d)*A*b
*e^3 - B*a*d*e^3 - A*b*d*e^3 + A*a*e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^
2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*
b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d
)^(3/2)) - 1/4*(4*(x*e + d)^(3/2)*B*b^3*d*e^2 - 4*sqrt(x*e + d)*B*b^3*d^2*e
^2 + 7*(x*e + d)^(3/2)*B*a*b^2*e^3 - 11*(x*e + d)^(3/2)*A*b^3*e^3 - 5*sqrt(
x*e + d)*B*a*b^2*d*e^3 + 13*sqrt(x*e + d)*A*b^3*d*e^3 + 9*sqrt(x*e + d)*B*a
^2*b*e^4 - 13*sqrt(x*e + d)*A*a*b^2*e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b
^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)
*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e +
 d)*b - b*d + a*e)^2)
```

maple [B] time = 0.13, size = 928, normalized size = 2.67

$$\left(105\,(ex+d)^{\frac{3}{2}}\,A\,b^4e^2x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+105\sqrt{(ae-bd)\,b}\;A\,b^3e^3x^3-45\,(ex+d)^{\frac{3}{2}}\,Ba\,b^3e^2x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/12*(105*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^2*b
^2*e^2-120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a*
b^3*d*e-8*A*((a*e-b*d)*b)^(1/2)*a^3*e^3-6*A*((a*e-b*d)*b)^(1/2)*b^3*d^3-16*
B*((a*e-b*d)*b)^(1/2)*a^3*d*e^2-6*B*((a*e-b*d)*b)^(1/2)*a*b^2*d^3+80*A*((a*
e-b*d)*b)^(1/2)*a^2*b*d*e^2+39*A*((a*e-b*d)*b)^(1/2)*a*b^2*d^2*e-83*B*((a*e
-b*d)*b)^(1/2)*a^2*b*d^2*e+105*A*((a*e-b*d)*b)^(1/2)*x^3*b^3*e^3-24*B*((a*e
-b*d)*b)^(1/2)*x*a^3*e^3-12*B*((a*e-b*d)*b)^(1/2)*x*b^3*d^3-45*B*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a*b^3*e^2-60*B*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*b^4*d*e+210*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a*b^3*e^2-90*B*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^2*b^2*e^2-60*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^2*b^2*d*e-160*B*((a*
e-b*d)*b)^(1/2)*x^2*a*b^2*d*e^2+238*A*((a*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2-134
*B*((a*e-b*d)*b)^(1/2)*x*a^2*b*d*e^2-145*B*((a*e-b*d)*b)^(1/2)*x*a*b^2*d^2*
e+21*A*((a*e-b*d)*b)^(1/2)*x*b^3*d^2*e+105*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*b^4*e^2-75*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b*
e^3-80*B*((a*e-b*d)*b)^(1/2)*x^2*b^3*d^2*e+56*A*((a*e-b*d)*b)^(1/2)*x*a^2*b
*e^3-45*B*((a*e-b*d)*b)^(1/2)*x^3*a*b^2*e^3-60*B*((a*e-b*d)*b)^(1/2)*x^3*b^
3*d*e^2-45*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^3*
b*e^2+175*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^2*e^3+140*A*((a*e-b*d)*b)^(1/2)*x^2
*b^3*d*e^2)*(b*x+a)/(e*x+d)^(3/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^
2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\left(d + e\,x\right)^{5/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
[Out] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Timed out
```

3.1873 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=414

$$-\frac{7be(a+bx)(5aBe-9Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{7e(a+bx)(5aBe-9Abe+4bBd)}{12\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}+\frac{-5aBe+9Abe-}{4b\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

```
[Out] 1/4*(9*A*b*e-5*B*a*e-4*B*b*d)/b/(-a*e+b*d)^2/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2
)+1/2*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)-7/20*
e*(-9*A*b*e+5*B*a*e+4*B*b*d)*(b*x+a)/b/(-a*e+b*d)^3/(e*x+d)^(5/2)/((b*x+a)^
2)^(1/2)-7/12*e*(-9*A*b*e+5*B*a*e+4*B*b*d)*(b*x+a)/(-a*e+b*d)^4/(e*x+d)^(3/
2)/((b*x+a)^2)^(1/2)+7/4*b^(3/2)*e*(-9*A*b*e+5*B*a*e+4*B*b*d)*(b*x+a)*arcta
nh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(11/2)/((b*x+a)^2)^(1
/2)-7/4*b*e*(-9*A*b*e+5*B*a*e+4*B*b*d)*(b*x+a)/(-a*e+b*d)^5/(e*x+d)^(1/2)/(
(b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 78, 51, 63, 208\}$

$$-\frac{7be(a+bx)(5aBe-9Abe+4bBd)}{4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{7e(a+bx)(5aBe-9Abe+4bBd)}{12\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{5aBe-9Abe+}{4b\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(4*b*B*d - 9*A*b*e + 5*a*B*e)/(4*b*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(2*b*(b*d - a*e)*(a + b*x)*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a
 + b*x))/(20*b*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - (7*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a + b*x))/(12*(b*d - a*e)^4*(d + e*x)
^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*b*e*(4*b*B*d - 9*A*b*e + 5*a*B*e
)*(a + b*x))/(4*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (7*b^(3/2)*e*(4*b*B*d - 9*A*b*e + 5*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqr
t[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^3(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{2b(bd-ae)(a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left((4bBd-9Ab}{4}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

$$= -\frac{4bBd-9Abe+5aBe}{4b(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{2b(bd-ae)(a+bx)(d}$$

Mathematica [C] time = 0.07, size = 111, normalized size = 0.27

$$\frac{(a+bx)\left(\frac{e(a+bx)^2(-5aBe+9Abe-4bBd)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2}+5aB-5Ab\right)}{10b\left((a+bx)^2\right)^{3/2}(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] ((a + b*x)*(-5*A*b + 5*a*B + (e*(-4*b*B*d + 9*A*b*e - 5*a*B*e)*(a + b*x)^2*
Hypergeometric2F1[-5/2, 2, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^2)
)/(10*b*(b*d - a*e)*((a + b*x)^2)^(3/2)*(d + e*x)^(5/2))
```

fricas [B] time = 0.82, size = 2675, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/120*(105*(4*B*a^2*b^2*d^4*e + (5*B*a^3*b - 9*A*a^2*b^2)*d^3*e^2 + (4*B*b
^4*d*e^4 + (5*B*a*b^3 - 9*A*b^4)*e^5)*x^5 + (12*B*b^4*d^2*e^3 + (23*B*a*b^3
 - 27*A*b^4)*d*e^4 + 2*(5*B*a^2*b^2 - 9*A*a*b^3)*e^5)*x^4 + (12*B*b^4*d^3*e
^2 + 3*(13*B*a*b^3 - 9*A*b^4)*d^2*e^3 + 2*(17*B*a^2*b^2 - 27*A*a*b^3)*d*e^4
 + (5*B*a^3*b - 9*A*a^2*b^2)*e^5)*x^3 + (4*B*b^4*d^4*e + (29*B*a*b^3 - 9*A*
b^4)*d^3*e^2 + 6*(7*B*a^2*b^2 - 9*A*a*b^3)*d^2*e^3 + 3*(5*B*a^3*b - 9*A*a^2
*b^2)*d*e^4)*x^2 + (8*B*a*b^3*d^4*e + 2*(11*B*a^2*b^2 - 9*A*a*b^3)*d^3*e^2
+ 3*(5*B*a^3*b - 9*A*a^2*b^2)*d^2*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x +
2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) +
 2*(24*A*a^4*e^4 - 30*(B*a*b^3 + A*b^4)*d^4 - (659*B*a^2*b^2 - 255*A*a*b^3)
*d^3*e - 16*(17*B*a^3*b - 54*A*a^2*b^2)*d^2*e^2 + 8*(2*B*a^4 - 21*A*a^3*b)*
d*e^3 - 105*(4*B*b^4*d*e^3 + (5*B*a*b^3 - 9*A*b^4)*e^4)*x^4 - 35*(28*B*b^4*
d^2*e^2 + (55*B*a*b^3 - 63*A*b^4)*d*e^3 + 5*(5*B*a^2*b^2 - 9*A*a*b^3)*e^4)*
x^3 - 7*(92*B*b^4*d^3*e + 9*(39*B*a*b^3 - 23*A*b^4)*d^2*e^2 + 3*(109*B*a^2*
b^2 - 177*A*a*b^3)*d*e^3 + 8*(5*B*a^3*b - 9*A*a^2*b^2)*e^4)*x^2 - (60*B*b^4
*d^4 + (1183*B*a*b^3 - 135*A*b^4)*d^3*e + 3*(643*B*a^2*b^2 - 831*A*a*b^3)*d
^2*e^2 + 72*(9*B*a^3*b - 17*A*a^2*b^2)*d*e^3 - 8*(5*B*a^4 - 9*A*a^3*b)*e^4)
*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^2 - 10
*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b^6*d
^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^5*b^
2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 - 10*a^
3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4 + (3
*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 - 35*a^
4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^7*d^8
+ a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^4*e^
4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8 - 7
*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^4*e^
4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x), 1/60*(105*(4*B*a^2*b^2*d^4*e + (5
*B*a^3*b - 9*A*a^2*b^2)*d^3*e^2 + (4*B*b^4*d*e^4 + (5*B*a*b^3 - 9*A*b^4)*e^
5)*x^5 + (12*B*b^4*d^2*e^3 + (23*B*a*b^3 - 27*A*b^4)*d*e^4 + 2*(5*B*a^2*b^2
 - 9*A*a*b^3)*e^5)*x^4 + (12*B*b^4*d^3*e^2 + 3*(13*B*a*b^3 - 9*A*b^4)*d^2*e
^3 + 2*(17*B*a^2*b^2 - 27*A*a*b^3)*d*e^4 + (5*B*a^3*b - 9*A*a^2*b^2)*e^5)*x
^3 + (4*B*b^4*d^4*e + (29*B*a*b^3 - 9*A*b^4)*d^3*e^2 + 6*(7*B*a^2*b^2 - 9*A
*a*b^3)*d^2*e^3 + 3*(5*B*a^3*b - 9*A*a^2*b^2)*d*e^4)*x^2 + (8*B*a*b^3*d^4*e
 + 2*(11*B*a^2*b^2 - 9*A*a*b^3)*d^3*e^2 + 3*(5*B*a^3*b - 9*A*a^2*b^2)*d^2*e
^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d
- a*e))/(b*e*x + b*d)) + (24*A*a^4*e^4 - 30*(B*a*b^3 + A*b^4)*d^4 - (659*B*
a^2*b^2 - 255*A*a*b^3)*d^3*e - 16*(17*B*a^3*b - 54*A*a^2*b^2)*d^2*e^2 + 8*(
2*B*a^4 - 21*A*a^3*b)*d*e^3 - 105*(4*B*b^4*d*e^3 + (5*B*a*b^3 - 9*A*b^4)*e^
4)*x^4 - 35*(28*B*b^4*d^2*e^2 + (55*B*a*b^3 - 63*A*b^4)*d*e^3 + 5*(5*B*a^2*
b^2 - 9*A*a*b^3)*e^4)*x^3 - 7*(92*B*b^4*d^3*e + 9*(39*B*a*b^3 - 23*A*b^4)*d
^2*e^2 + 3*(109*B*a^2*b^2 - 177*A*a*b^3)*d*e^3 + 8*(5*B*a^3*b - 9*A*a^2*b^2
)*e^4)*x^2 - (60*B*b^4*d^4 + (1183*B*a*b^3 - 135*A*b^4)*d^3*e + 3*(643*B*a^
2*b^2 - 831*A*a*b^3)*d^2*e^2 + 72*(9*B*a^3*b - 17*A*a^2*b^2)*d*e^3 - 8*(5*B
*a^4 - 9*A*a^3*b)*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 1
0*a^4*b^3*d^6*e^2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b
^7*d^5*e^3 - 5*a*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*
a^4*b^3*d*e^7 - a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a
^2*b^5*d^4*e^4 - 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 -
 2*a^6*b*e^8)*x^4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a
^3*b^4*d^4*e^4 - 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^
7*e^8)*x^3 + (b^7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e
^3 - 25*a^4*b^3*d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*
x^2 + (2*a*b^6*d^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e
^3 - 20*a^5*b^2*d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)]
```

giac [B] time = 0.57, size = 1011, normalized size = 2.44

$$-\frac{7\left(4\,Bb^{3}d\right.}{4\left(b^{5}d^{5}e\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-5\,ab^{4}d^{4}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+10\,a^{2}b^{3}d^{3}e^{3}\mathrm{sgn}\left((xe+d)be-\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -7/4*(4*B*b^3*d*e^2 + 5*B*a*b^2*e^3 - 9*A*b^3*e^3)*arctan(sqrt(x*e + d)*b/s
qrt(-b^2*d + a*b*e))/((b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b
^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 5*a^4*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x
*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/4*(4*(x*e + d)^(3/2
)*B*b^4*d*e^2 - 4*sqrt(x*e + d)*B*b^4*d^2*e^2 + 11*(x*e + d)^(3/2)*B*a*b^3*
e^3 - 15*(x*e + d)^(3/2)*A*b^4*e^3 - 9*sqrt(x*e + d)*B*a*b^3*d*e^3 + 17*sqr
t(x*e + d)*A*b^4*d*e^3 + 13*sqrt(x*e + d)*B*a^2*b^2*e^4 - 17*sqrt(x*e + d)*
A*a*b^3*e^4)/((b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e
^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e + d)*b*
e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ 5*a^4*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x*e + d)*
b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^2) - 2/15*(45*(x*e + d)^2*B
*b^2*d*e^2 + 10*(x*e + d)*B*b^2*d^2*e^2 + 3*B*b^2*d^3*e^2 + 45*(x*e + d)^2*
B*a*b*e^3 - 90*(x*e + d)^2*A*b^2*e^3 - 5*(x*e + d)*B*a*b*d*e^3 - 15*(x*e +
d)*A*b^2*d*e^3 - 6*B*a*b*d^2*e^3 - 3*A*b^2*d^2*e^3 - 5*(x*e + d)*B*a^2*e^4
+ 15*(x*e + d)*A*a*b*e^4 + 3*B*a^2*d*e^4 + 6*A*a*b*d*e^4 - 3*A*a^2*e^5)/((b
^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e^2*sgn((x*e + d)
*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^
2) - 10*a^3*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^5*
sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^6*sgn((x*e + d)*b*e - b*d*e + a*
e^2))*(x*e + d)^(5/2))
```

maple [B] time = 0.08, size = 1230, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/60*(945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*
b^5*e^2-30*A*((a*e-b*d)*b)^(1/2)*b^4*d^4+16*B*((a*e-b*d)*b)^(1/2)*a^4*d*e^3
-840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a*b^4*d*
e+24*A*((a*e-b*d)*b)^(1/2)*a^4*e^4+945*A*((a*e-b*d)*b)^(1/2)*x^4*b^4*e^4+40
*B*((a*e-b*d)*b)^(1/2)*x*a^4*e^4-60*B*((a*e-b*d)*b)^(1/2)*x*b^4*d^4-30*B*((
a*e-b*d)*b)^(1/2)*a*b^3*d^4-525*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*(e*x+d)^(5/2)*a^3*b^2*e^2+1575*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^3*e^4+2205*
A*((a*e-b*d)*b)^(1/2)*x^3*b^4*d*e^3-875*B*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^2*e
^4-980*B*((a*e-b*d)*b)^(1/2)*x^3*b^4*d^2*e^2+504*A*((a*e-b*d)*b)^(1/2)*x^2*
a^2*b^2*e^4+1449*A*((a*e-b*d)*b)^(1/2)*x^2*b^4*d^2*e^2-280*B*((a*e-b*d)*b)^
(1/2)*x^2*a^3*b*e^4-644*B*((a*e-b*d)*b)^(1/2)*x^2*b^4*d^3*e-72*A*((a*e-b*d)
*b)^(1/2)*x*a^3*b*e^4+135*A*((a*e-b*d)*b)^(1/2)*x*b^4*d^3*e+945*A*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^2*b^3*e^2-525*B*((a*e-b*
d)*b)^(1/2)*x^4*a*b^3*e^4-420*B*((a*e-b*d)*b)^(1/2)*x^4*b^4*d*e^3-168*A*((a
*e-b*d)*b)^(1/2)*a^3*b*d*e^3+864*A*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^2*e^2+255*
A*((a*e-b*d)*b)^(1/2)*a*b^3*d^3*e-272*B*((a*e-b*d)*b)^(1/2)*a^3*b*d^2*e^2-6
59*B*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^3*e-2289*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b
^2*d*e^3-2457*B*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d^2*e^2+1224*A*((a*e-b*d)*b)^
(1/2)*x*a^2*b^2*d*e^3+2493*A*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^2*e^2-648*B*((a*
e-b*d)*b)^(1/2)*x*a^3*b*d*e^3-1929*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^2*d^2*e^2-
1183*B*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^3*e-525*B*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a*b^4*e^2-420*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*b^5*d*e+1890*A*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a*b^4*e^2-1050*B*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^2*b^3*e^2-420*B*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^2*b^3*d*e-1925*B*((a*e-b*d)*b)^(1
/2)*x^3*a*b^3*d*e^3+3717*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d*e^3)*(b*x+a)/(e*
x+d)^(5/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^5/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{3}{2}}(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{{\left(d + e\,x\right)}^{7/2}\,{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.1874 $\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=557

$$-\frac{(d+ex)^{13/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{11/2}(-13aBe+5Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{231e^3(a+bx)(bd-ae)}{6}$$

```
[Out] 77/64*e^3*(5*A*b*e-13*B*a*e+8*B*b*d)*(b*x+a)*(e*x+d)^(3/2)/b^6/((b*x+a)^2)^
(1/2)+231/320*e^3*(5*A*b*e-13*B*a*e+8*B*b*d)*(b*x+a)*(e*x+d)^(5/2)/b^5/(-a*
e+b*d)/((b*x+a)^2)^(1/2)-33/64*e^2*(5*A*b*e-13*B*a*e+8*B*b*d)*(e*x+d)^(7/2)
/b^4/(-a*e+b*d)/((b*x+a)^2)^(1/2)-11/96*e*(5*A*b*e-13*B*a*e+8*B*b*d)*(e*x+d
)^(9/2)/b^3/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)-1/24*(5*A*b*e-13*B*a*e+8*B
*b*d)*(e*x+d)^(11/2)/b^2/(-a*e+b*d)/(b*x+a)^2/((b*x+a)^2)^(1/2)-1/4*(A*b-B*
a)*(e*x+d)^(13/2)/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^2)^(1/2)-231/64*e^3*(-a*e
+b*d)^(3/2)*(5*A*b*e-13*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2
)/(-a*e+b*d)^(1/2))/b^(15/2)/((b*x+a)^2)^(1/2)+231/64*e^3*(-a*e+b*d)*(5*A*b
*e-13*B*a*e+8*B*b*d)*(b*x+a)*(e*x+d)^(1/2)/b^7/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.52, antiderivative size = 557, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = $\{770, 78, 47, 50, 63, 208\}$

$$-\frac{33e^2(d+ex)^{7/2}(-13aBe+5Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{231e^3(a+bx)(d+ex)^{5/2}(-13aBe+5Abe+8bBd)}{320b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{77e^3(a+bx)(d}{64}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (231*e^3*(b*d - a*e)*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(a + b*x)*Sqrt[d + e*x]
)/(64*b^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (77*e^3*(8*b*B*d + 5*A*b*e - 13*
a*B*e)*(a + b*x)*(d + e*x)^(3/2))/(64*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(231*e^3*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(a + b*x)*(d + e*x)^(5/2))/(320*b^5
*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (33*e^2*(8*b*B*d + 5*A*b*e -
13*a*B*e)*(d + e*x)^(7/2))/(64*b^4*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) - (11*e*(8*b*B*d + 5*A*b*e - 13*a*B*e)*(d + e*x)^(9/2))/(96*b^3*(b*d - a
*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d + 5*A*b*e - 13*a*B
*e)*(d + e*x)^(11/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(13/2))/(4*b*(b*d - a*e)*(a + b*x)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - (231*e^3*(b*d - a*e)^(3/2)*(8*b*B*d + 5*A*b*e
 - 13*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(6
4*b^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] || !(IntegerQ[n] || !(EqQ[e, 0] || !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{11/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{13/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+5Abe-13aBe)\left(ab+b\right.\right.}{8(bd-ae)\sqrt{a^2+2abx}}$$

$$= -\frac{(8bBd+5Abe-13aBe)(d+ex)^{11/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{13/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{11e(8bBd+5Abe-13aBe)(d+ex)^{9/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+5Abe-13aBe)(d+e}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2ab}}$$

$$= -\frac{33e^2(8bBd+5Abe-13aBe)(d+ex)^{7/2}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{11e(8bBd+5Abe-13aBe)(d+ex}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+}}$$

$$= \frac{231e^3(8bBd+5Abe-13aBe)(a+bx)(d+ex)^{5/2}}{320b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{33e^2(8bBd+5Abe-13aBe)}{64b^4(bd-ae)\sqrt{a^2+2abx}}$$

$$= \frac{77e^3(8bBd+5Abe-13aBe)(a+bx)(d+ex)^{3/2}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{231e^3(8bBd+5Abe-13aBe)}{320b^5(bd-ae)\sqrt{a^2+2}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-}{64b^6\sqrt{a^2}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-}{64b^6\sqrt{a^2}}$$

$$= \frac{231e^3(bd-ae)(8bBd+5Abe-13aBe)(a+bx)\sqrt{d+ex}}{64b^7\sqrt{a^2+2abx+b^2x^2}} + \frac{77e^3(8bBd+5Abe-}{64b^6\sqrt{a^2}}$$

Mathematica [C] time = 0.21, size = 117, normalized size = 0.21

$$\frac{(d+ex)^{13/2}\left(\frac{e^3(a+bx)^4(-13aBe+5Abe+8bBd)\,{}_2F_1\left(4,\frac{13}{2};\frac{15}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+13(aB-Ab)\right)}{52b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(13/2)*(13*(-(A*b) + a*B) + (e^3*(8*b*B*d + 5*A*b*e - 13*a*B*e)*
(a + b*x)^4*Hypergeometric2F1[4, 13/2, 15/2, (b*(d + e*x))/(b*d - a*e)])/(b
*d - a*e)^4))/(52*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [B] time = 0.76, size = 2006, normalized size = 3.60

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
fricas")
```

```
[Out] [1/1920*(3465*(8*B*a^4*b^2*d^2*e^3 - (21*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + (13
*B*a^6 - 5*A*a^5*b)*e^5 + (8*B*b^6*d^2*e^3 - (21*B*a*b^5 - 5*A*b^6)*d*e^4 +
 (13*B*a^2*b^4 - 5*A*a*b^5)*e^5)*x^4 + 4*(8*B*a*b^5*d^2*e^3 - (21*B*a^2*b^4
 - 5*A*a*b^5)*d*e^4 + (13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 + 6*(8*B*a^2*b^
4*d^2*e^3 - (21*B*a^3*b^3 - 5*A*a^2*b^4)*d*e^4 + (13*B*a^4*b^2 - 5*A*a^3*b^
3)*e^5)*x^2 + 4*(8*B*a^3*b^3*d^2*e^3 - (21*B*a^4*b^2 - 5*A*a^3*b^3)*d*e^4 +
 (13*B*a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d
- a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(384*B*b^6*e^
5*x^6 - 80*(B*a*b^5 + 3*A*b^6)*d^5 - 440*(B*a^2*b^4 + A*a*b^5)*d^4*e - 990*
(3*B*a^3*b^3 + A*a^2*b^4)*d^3*e^2 + 231*(199*B*a^4*b^2 - 15*A*a^3*b^3)*d^2*
e^3 - 4620*(19*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + 3465*(13*B*a^6 - 5*A*a^5*b)*e
^5 + 128*(26*B*b^6*d*e^4 - (13*B*a*b^5 - 5*A*b^6)*e^5)*x^5 + 128*(173*B*b^6
*d^2*e^3 - 8*(37*B*a*b^5 - 10*A*b^6)*d*e^4 + 11*(13*B*a^2*b^4 - 5*A*a*b^5)*
e^5)*x^4 - (10680*B*b^6*d^3*e^2 - (132091*B*a*b^5 - 11475*A*b^6)*d^2*e^3 +
22*(10901*B*a^2*b^4 - 2905*A*a*b^5)*d*e^4 - 9207*(13*B*a^3*b^3 - 5*A*a^2*b^
4)*e^5)*x^3 - (2480*B*b^6*d^4*e + 10*(1697*B*a*b^5 + 515*A*b^6)*d^3*e^2 - 3
3*(7063*B*a^2*b^4 - 575*A*a*b^5)*d^2*e^3 + 264*(1642*B*a^3*b^3 - 435*A*a^2*
b^4)*d*e^4 - 16863*(13*B*a^4*b^2 - 5*A*a^3*b^3)*e^5)*x^2 - (320*B*b^6*d^5 +
 40*(43*B*a*b^5 + 41*A*b^6)*d^4*e + 220*(53*B*a^2*b^4 + 17*A*a*b^5)*d^3*e^2
 - 33*(5197*B*a^3*b^3 - 405*A*a^2*b^4)*d^2*e^3 + 462*(701*B*a^4*b^2 - 185*A
*a^3*b^3)*d*e^4 - 12705*(13*B*a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(
b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*x^2 + 4*a^3*b^8*x + a^4*b^7), -1/960*(3
465*(8*B*a^4*b^2*d^2*e^3 - (21*B*a^5*b - 5*A*a^4*b^2)*d*e^4 + (13*B*a^6 - 5
*A*a^5*b)*e^5 + (8*B*b^6*d^2*e^3 - (21*B*a*b^5 - 5*A*b^6)*d*e^4 + (13*B*a^2
*b^4 - 5*A*a*b^5)*e^5)*x^4 + 4*(8*B*a*b^5*d^2*e^3 - (21*B*a^2*b^4 - 5*A*a*b
^5)*d*e^4 + (13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 + 6*(8*B*a^2*b^4*d^2*e^3
- (21*B*a^3*b^3 - 5*A*a^2*b^4)*d*e^4 + (13*B*a^4*b^2 - 5*A*a^3*b^3)*e^5)*x^
2 + 4*(8*B*a^3*b^3*d^2*e^3 - (21*B*a^4*b^2 - 5*A*a^3*b^3)*d*e^4 + (13*B*a^5
*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt
(-(b*d - a*e)/b)/(b*d - a*e)) - (384*B*b^6*e^5*x^6 - 80*(B*a*b^5 + 3*A*b^6)
*d^5 - 440*(B*a^2*b^4 + A*a*b^5)*d^4*e - 990*(3*B*a^3*b^3 + A*a^2*b^4)*d^3*
e^2 + 231*(199*B*a^4*b^2 - 15*A*a^3*b^3)*d^2*e^3 - 4620*(19*B*a^5*b - 5*A*a
^4*b^2)*d*e^4 + 3465*(13*B*a^6 - 5*A*a^5*b)*e^5 + 128*(26*B*b^6*d*e^4 - (13
*B*a*b^5 - 5*A*b^6)*e^5)*x^5 + 128*(173*B*b^6*d^2*e^3 - 8*(37*B*a*b^5 - 10*
A*b^6)*d*e^4 + 11*(13*B*a^2*b^4 - 5*A*a*b^5)*e^5)*x^4 - (10680*B*b^6*d^3*e^
2 - (132091*B*a*b^5 - 11475*A*b^6)*d^2*e^3 + 22*(10901*B*a^2*b^4 - 2905*A*a
*b^5)*d*e^4 - 9207*(13*B*a^3*b^3 - 5*A*a^2*b^4)*e^5)*x^3 - (2480*B*b^6*d^4*
e + 10*(1697*B*a*b^5 + 515*A*b^6)*d^3*e^2 - 33*(7063*B*a^2*b^4 - 575*A*a*b^
5)*d^2*e^3 + 264*(1642*B*a^3*b^3 - 435*A*a^2*b^4)*d*e^4 - 16863*(13*B*a^4*b
^2 - 5*A*a^3*b^3)*e^5)*x^2 - (320*B*b^6*d^5 + 40*(43*B*a*b^5 + 41*A*b^6)*d^
4*e + 220*(53*B*a^2*b^4 + 17*A*a*b^5)*d^3*e^2 - 33*(5197*B*a^3*b^3 - 405*A*
a^2*b^4)*d^2*e^3 + 462*(701*B*a^4*b^2 - 185*A*a^3*b^3)*d*e^4 - 12705*(13*B*
a^5*b - 5*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^
2*b^9*x^2 + 4*a^3*b^8*x + a^4*b^7)]
```

giac [B] time = 0.61, size = 1167, normalized size = 2.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
giac")
```

```
[Out] 231/64*(8*B*b^3*d^3*e^3 - 29*B*a*b^2*d^2*e^4 + 5*A*b^3*d^2*e^4 + 34*B*a^2*b
*d*e^5 - 10*A*a*b^2*d*e^5 - 13*B*a^3*e^6 + 5*A*a^2*b*e^6)*arctan(sqrt(x*e +
 d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^7*sgn((x*e + d)*b*e - b
*d*e + a*e^2)) - 1/192*(2136*(x*e + d)^(7/2)*B*b^6*d^3*e^3 - 5912*(x*e + d)
^(5/2)*B*b^6*d^4*e^3 + 5480*(x*e + d)^(3/2)*B*b^6*d^5*e^3 - 1704*sqrt(x*e +
 d)*B*b^6*d^6*e^3 - 8703*(x*e + d)^(7/2)*B*a*b^5*d^2*e^4 + 2295*(x*e + d)^(
7/2)*A*b^6*d^2*e^4 + 29503*(x*e + d)^(5/2)*B*a*b^5*d^3*e^4 - 5855*(x*e + d)
^(5/2)*A*b^6*d^3*e^4 - 32553*(x*e + d)^(3/2)*B*a*b^5*d^4*e^4 + 5153*(x*e +
d)^(3/2)*A*b^6*d^4*e^4 + 11769*sqrt(x*e + d)*B*a*b^5*d^5*e^4 - 1545*sqrt(x*
e + d)*A*b^6*d^5*e^4 + 10998*(x*e + d)^(7/2)*B*a^2*b^4*d*e^5 - 4590*(x*e +
d)^(7/2)*A*a*b^5*d*e^5 - 53037*(x*e + d)^(5/2)*B*a^2*b^4*d^2*e^5 + 17565*(x
*e + d)^(5/2)*A*a*b^5*d^2*e^5 + 75412*(x*e + d)^(3/2)*B*a^2*b^4*d^3*e^5 - 2
0612*(x*e + d)^(3/2)*A*a*b^5*d^3*e^5 - 33285*sqrt(x*e + d)*B*a^2*b^4*d^4*e^
5 + 7725*sqrt(x*e + d)*A*a*b^5*d^4*e^5 - 4431*(x*e + d)^(7/2)*B*a^3*b^3*e^6
 + 2295*(x*e + d)^(7/2)*A*a^2*b^4*e^6 + 41213*(x*e + d)^(5/2)*B*a^3*b^3*d*e
^6 - 17565*(x*e + d)^(5/2)*A*a^2*b^4*d*e^6 - 85718*(x*e + d)^(3/2)*B*a^3*b^
3*d^2*e^6 + 30918*(x*e + d)^(3/2)*A*a^2*b^4*d^2*e^6 + 49530*sqrt(x*e + d)*B
*a^3*b^3*d^3*e^6 - 15450*sqrt(x*e + d)*A*a^2*b^4*d^3*e^6 - 11767*(x*e + d)^
(5/2)*B*a^4*b^2*e^7 + 5855*(x*e + d)^(5/2)*A*a^3*b^3*e^7 + 48012*(x*e + d)^
(3/2)*B*a^4*b^2*d*e^7 - 20612*(x*e + d)^(3/2)*A*a^3*b^3*d*e^7 - 41010*sqrt(
x*e + d)*B*a^4*b^2*d^2*e^7 + 15450*sqrt(x*e + d)*A*a^3*b^3*d^2*e^7 - 10633*
(x*e + d)^(3/2)*B*a^5*b*e^8 + 5153*(x*e + d)^(3/2)*A*a^4*b^2*e^8 + 17949*sq
rt(x*e + d)*B*a^5*b*d*e^8 - 7725*sqrt(x*e + d)*A*a^4*b^2*d*e^8 - 3249*sqrt(
x*e + d)*B*a^6*e^9 + 1545*sqrt(x*e + d)*A*a^5*b*e^9)/(((x*e + d)*b - b*d +
a*e)^4*b^7*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(x*e + d)^(5/2)*B*
b^20*e^3 + 20*(x*e + d)^(3/2)*B*b^20*d*e^3 + 150*sqrt(x*e + d)*B*b^20*d^2*e
^3 - 25*(x*e + d)^(3/2)*B*a*b^19*e^4 + 5*(x*e + d)^(3/2)*A*b^20*e^4 - 375*s
qrt(x*e + d)*B*a*b^19*d*e^4 + 75*sqrt(x*e + d)*A*b^20*d*e^4 + 225*sqrt(x*e
+ d)*B*a^2*b^18*e^5 - 75*sqrt(x*e + d)*A*a*b^19*e^5)/(b^25*sgn((x*e + d)*b*
e - b*d*e + a*e^2))
```

maple [B] time = 0.16, size = 3768, normalized size = 6.76

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(-10240*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^3*b^3*d*e^4-76800*B*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^5*d^2*e^4-57600*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*x^2*a^2*b^4*d*e^5-117810*B*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*a^6*b*d*e^6+288000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a
^3*b^3*d*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^2*b^4*d^2*e^4
-38400*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^3*d*e^5-76800*B*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^3*d^2*e^4+192000*B*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(1/2)*x*a^4*b^2*d*e^5-10240*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a
*b^5*d*e^4+48000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^5*d*e^5-38400*
A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^5*d*e^5-15360*B*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(3/2)*x^2*a^2*b^4*d*e^4+192000*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x^3*a^2*b^4*d*e^5+45045*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a^7*e^7+10680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^6*d^3-29560*B*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(5/2)*b^6*d^4-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a^6*b*e^7+27400*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^6*d^5-45045
*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^6*e^6-8520*B*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*b^6*d^6-27720*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*
b^7*d^3*e^4-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^4
*e^7+180180*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^4*b^3*e^7+1
1475*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a^2*b^4*e^3+11475*A*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(7/2)*b^6*d^2*e-103950*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*x^2*a^4*b^3*e^7-22155*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a^3*b^3*e
^3+270270*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^5*b^2*e^7+292
75*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^3*e^4-29275*A*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(5/2)*b^6*d^3*e-69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2
)*b)*x*a^5*b^2*e^7-59219*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^4*b^2*e^4+18
```

```
0180*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^6*b*e^7+25125*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^4*b^2*e^5+25765*A*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(3/2)*b^6*d^4*e+34650*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*
b^2*d*e^6-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^3*d^2*e
^5-49965*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^5*b*e^5+100485*B*arctan((e*x
+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*b^2*d^2*e^5-27720*B*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^3*d^3*e^4+17325*A*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(1/2)*a^5*b*e^6-7725*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^6*d^5*e-384*B
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x^4*b^6*e^4-640*A*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(3/2)*x^4*b^6*e^5-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
*x^4*a^2*b^5*e^7-17325*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^
7*d^2*e^5+45045*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a^3*b^4*e
^7+34650*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^6*d*e^6-1536
*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x^3*a*b^5*e^4+3200*B*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(3/2)*x^4*a*b^5*e^5-2560*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^4
*b^6*d*e^4-117810*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a^2*b^5
*d*e^6+100485*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^6*d^2*e
^5-2560*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a*b^5*e^5+9600*A*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^5*e^6-9600*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1
/2)*x^4*b^6*d*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^5*b*e^6-48
225*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*b^2*d*e^5+77250*A*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*a^3*b^3*d^2*e^4-77250*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1
/2)*a^2*b^4*d^3*e^3+38625*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^5*d^4*e^2
+137745*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^5*b*d*e^5-224250*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(1/2)*a^4*b^2*d^2*e^4+247650*B*((a*e-b*d)*b)^(1/2)*(e*x+d
)^(1/2)*a^3*b^3*d^3*e^3-166425*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^4*
d^4*e^2+377060*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^4*d^3*e^2-162765*B
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^5*d^4*e-265185*B*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(5/2)*a^2*b^4*d^2*e^2+147515*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a
*b^5*d^3*e+12800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^4*b^2*e^5-1536*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*a^3*b^3*e^4+19200*B*((a*e-b*d)*b)^(1/2)*
(e*x+d)^(3/2)*x^2*a^3*b^3*e^5-115200*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^
3*a^3*b^3*e^6-706860*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^4*
b^3*d*e^6+602910*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^4*
d^2*e^5-166320*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^5*d^
3*e^4-87825*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^4*d*e^3+87825*A*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^5*d^2*e^2-2560*A*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(3/2)*x*a^3*b^3*e^5+57600*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^3*b^
3*e^6+138600*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^4*b^3*d*e^6-
69300*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^4*d^2*e^5+20606
5*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^3*d*e^3-172800*B*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(1/2)*x^2*a^4*b^2*e^6-471240*B*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*x*a^5*b^2*d*e^6+401940*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)*x*a^4*b^3*d^2*e^5-110880*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)*x*a^3*b^4*d^3*e^4-103060*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^3*d*
e^4+154590*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^4*d^2*e^3-103060*A*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^5*d^3*e^2+38400*A*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(1/2)*x*a^4*b^2*e^6+237500*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^4*b^
2*d*e^4-428590*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^3*d^2*e^3+58845*B*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^5*d^5*e+138600*A*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^5*d*e^6-69300*A*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*x^3*a*b^6*d^2*e^5-2304*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/
2)*x^2*a^2*b^4*e^4+12800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a^2*b^4*e^
5-28800*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a^2*b^4*e^6-19200*B*((a*e-b
*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^6*d^2*e^4-471240*B*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^4*d*e^6+401940*B*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*x^3*a^2*b^5*d^2*e^5-110880*B*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*x^3*a*b^6*d^3*e^4-22950*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*
a*b^5*d*e^2-3840*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^2*a^2*b^4*e^5+38400*
```

```
A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a^2*b^4*e^6+207900*A*arctan((e*x+d)
^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^4*d*e^6-103950*A*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^5*d^2*e^5+54990*B*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(7/2)*a^2*b^4*d*e^2-43515*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*a*b^5*
d^2*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^7/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{11}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="
maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(11/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^{11/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1875 $\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=489

$$-\frac{(d+ex)^{11/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{9/2}(-11aBe+3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{105e^3(a+bx)\sqrt{bd-ae}\,(-}{64b^{13}}$$

```
[Out] 35/64*e^3*(3*A*b*e-11*B*a*e+8*B*b*d)*(b*x+a)*(e*x+d)^(3/2)/b^5/(-a*e+b*d)/(
(b*x+a)^2)^(1/2)-21/64*e^2*(3*A*b*e-11*B*a*e+8*B*b*d)*(e*x+d)^(5/2)/b^4/(-a
*e+b*d)/((b*x+a)^2)^(1/2)-3/32*e*(3*A*b*e-11*B*a*e+8*B*b*d)*(e*x+d)^(7/2)/b
^3/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)-1/24*(3*A*b*e-11*B*a*e+8*B*b*d)*(e*
x+d)^(9/2)/b^2/(-a*e+b*d)/(b*x+a)^2/((b*x+a)^2)^(1/2)-1/4*(A*b-B*a)*(e*x+d)
^(11/2)/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^2)^(1/2)-105/64*e^3*(3*A*b*e-11*B*a
*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b
*d)^(1/2)/b^(13/2)/((b*x+a)^2)^(1/2)+105/64*e^3*(3*A*b*e-11*B*a*e+8*B*b*d)*
(b*x+a)*(e*x+d)^(1/2)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.42, antiderivative size = 489, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{21e^2(d+ex)^{5/2}(-11aBe+3Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{35e^3(a+bx)(d+ex)^{3/2}(-11aBe+3Abe+8bBd)}{64b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{105e^3(a+bx)\sqrt{d+}}{64b^6\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (105*e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(64*b^6*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) + (35*e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a +
b*x)*(d + e*x)^(3/2))/(64*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
(21*e^2*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(d + e*x)^(5/2))/(64*b^4*(b*d - a*e)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(d +
e*x)^(7/2))/(32*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
((8*b*B*d + 3*A*b*e - 11*a*B*e)*(d + e*x)^(9/2))/(24*b^2*(b*d - a*e)*(a + b
*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(11/2))/(4*b*
(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (105*e^3*Sqrt[b*d
- a*e]*(8*b*B*d + 3*A*b*e - 11*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e
*x])/Sqrt[b*d - a*e]])/(64*b^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{9/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{11/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+3Abe-11aBe)\left(ab+b^2x\right)}{8(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{(8bBd+3Abe-11aBe)(d+ex)^{9/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{11/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b}}$$

$$= -\frac{3e(8bBd+3Abe-11aBe)(d+ex)^{7/2}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+3Abe-11aBe)(d+ex)^{9}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+}}$$

$$= -\frac{21e^2(8bBd+3Abe-11aBe)(d+ex)^{5/2}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(8bBd+3Abe-11aBe)(d+ex)^{7/2}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x}}$$

$$= \frac{35e^3(8bBd+3Abe-11aBe)(a+bx)(d+ex)^{3/2}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{21e^2(8bBd+3Abe-11aBe)(d+}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a+}{64b^5(bd-ae)\sqrt{a^2+2abx}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a+}{64b^5(bd-ae)\sqrt{a^2+2abx}}$$

$$= \frac{105e^3(8bBd+3Abe-11aBe)(a+bx)\sqrt{d+ex}}{64b^6\sqrt{a^2+2abx+b^2x^2}} + \frac{35e^3(8bBd+3Abe-11aBe)(a+}{64b^5(bd-ae)\sqrt{a^2+2abx}}$$

Mathematica [C] time = 0.18, size = 117, normalized size = 0.24

$$\frac{(d+ex)^{11/2}\left(\frac{e^3(a+bx)^4(-11aBe+3Abe+8bBd)\,{}_2F_1\left(4,\frac{11}{2};\frac{13}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+11(aB-Ab)\right)}{44b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(11/2)*(11*(-(A*b) + a*B) + (e^3*(8*b*B*d + 3*A*b*e - 11*a*B*e)*
(a + b*x)^4*Hypergeometric2F1[4, 11/2, 13/2, (b*(d + e*x))/(b*d - a*e)])/(b
*d - a*e)^4))/(44*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.74, size = 1414, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(315*(8*B*a^4*b*d*e^3 - (11*B*a^5 - 3*A*a^4*b)*e^4 + (8*B*b^5*d*e^3
 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (11*B*a^2*b^3 - 3
*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (11*B*a^3*b^2 - 3*A*a^2*b^3)*e^
4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (11*B*a^4*b - 3*A*a^3*b^2)*e^4)*x)*sqrt((b*
d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b
))/(b*x + a)) - 2*(128*B*b^5*e^4*x^5 - 16*(B*a*b^4 + 3*A*b^5)*d^4 - 72*(B*a
^2*b^3 + A*a*b^4)*d^3*e - 126*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 105*(35*B
*a^4*b - 3*A*a^3*b^2)*d*e^3 - 315*(11*B*a^5 - 3*A*a^4*b)*e^4 + 128*(13*B*b^
5*d*e^3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 - (1320*B*b^5*d^2*e^2 - (10271*B*
a*b^4 - 975*A*b^5)*d*e^3 + 837*(11*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 - (400*B
*b^5*d^3*e + 30*(71*B*a*b^4 + 21*A*b^5)*d^2*e^2 - 9*(2041*B*a^2*b^3 - 185*A
*a*b^4)*d*e^3 + 1533*(11*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - (64*B*b^5*d^4
+ 8*(35*B*a*b^4 + 33*A*b^5)*d^3*e + 36*(41*B*a^2*b^3 + 13*A*a*b^4)*d^2*e^2
- 21*(649*B*a^3*b^2 - 57*A*a^2*b^3)*d*e^3 + 1155*(11*B*a^4*b - 3*A*a^3*b^2)
*e^4)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7
*x + a^4*b^6), -1/192*(315*(8*B*a^4*b*d*e^3 - (11*B*a^5 - 3*A*a^4*b)*e^4 +
(8*B*b^5*d*e^3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (11
*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (11*B*a^3*b^2 - 3
*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (11*B*a^4*b - 3*A*a^3*b^2)*e^
4)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*
d - a*e)) - (128*B*b^5*e^4*x^5 - 16*(B*a*b^4 + 3*A*b^5)*d^4 - 72*(B*a^2*b^3
 + A*a*b^4)*d^3*e - 126*(3*B*a^3*b^2 + A*a^2*b^3)*d^2*e^2 + 105*(35*B*a^4*b
 - 3*A*a^3*b^2)*d*e^3 - 315*(11*B*a^5 - 3*A*a^4*b)*e^4 + 128*(13*B*b^5*d*e^
3 - (11*B*a*b^4 - 3*A*b^5)*e^4)*x^4 - (1320*B*b^5*d^2*e^2 - (10271*B*a*b^4
- 975*A*b^5)*d*e^3 + 837*(11*B*a^2*b^3 - 3*A*a*b^4)*e^4)*x^3 - (400*B*b^5*d
^3*e + 30*(71*B*a*b^4 + 21*A*b^5)*d^2*e^2 - 9*(2041*B*a^2*b^3 - 185*A*a*b^4
)*d*e^3 + 1533*(11*B*a^3*b^2 - 3*A*a^2*b^3)*e^4)*x^2 - (64*B*b^5*d^4 + 8*(3
5*B*a*b^4 + 33*A*b^5)*d^3*e + 36*(41*B*a^2*b^3 + 13*A*a*b^4)*d^2*e^2 - 21*(
649*B*a^3*b^2 - 57*A*a^2*b^3)*d*e^3 + 1155*(11*B*a^4*b - 3*A*a^3*b^2)*e^4)*
x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a
^4*b^6)]
```

giac [B] time = 0.52, size = 872, normalized size = 1.78

$$\frac{105\left(8\,Bb^2d^2e^3-19\,Babde^4+3\,Ab^2de^4+11\,Ba^2e^5-3\,Aabe^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\,\sqrt{-b^2d+abe}\,b^6\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-1320\,(xe+d)^{\frac{7}{2}}Bb^5d^2e^3-3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 105/64*(8*B*b^2*d^2*e^3 - 19*B*a*b*d*e^4 + 3*A*b^2*d*e^4 + 11*B*a^2*e^5 - 3
*A*a*b*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b
*e)*b^6*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/192*(1320*(x*e + d)^(7/2)*B
*b^5*d^2*e^3 - 3560*(x*e + d)^(5/2)*B*b^5*d^3*e^3 + 3224*(x*e + d)^(3/2)*B*
b^5*d^4*e^3 - 984*sqrt(x*e + d)*B*b^5*d^5*e^3 - 3615*(x*e + d)^(7/2)*B*a*b^
4*d*e^4 + 975*(x*e + d)^(7/2)*A*b^5*d*e^4 + 12975*(x*e + d)^(5/2)*B*a*b^4*d
^2*e^4 - 2295*(x*e + d)^(5/2)*A*b^5*d^2*e^4 - 14825*(x*e + d)^(3/2)*B*a*b^4
*d^3*e^4 + 1929*(x*e + d)^(3/2)*A*b^5*d^3*e^4 + 5481*sqrt(x*e + d)*B*a*b^4*
d^4*e^4 - 561*sqrt(x*e + d)*A*b^5*d^4*e^4 + 2295*(x*e + d)^(7/2)*B*a^2*b^3*
e^5 - 975*(x*e + d)^(7/2)*A*a*b^4*e^5 - 15270*(x*e + d)^(5/2)*B*a^2*b^3*d*e
^5 + 4590*(x*e + d)^(5/2)*A*a*b^4*d*e^5 + 25131*(x*e + d)^(3/2)*B*a^2*b^3*d
^2*e^5 - 5787*(x*e + d)^(3/2)*A*a*b^4*d^2*e^5 - 12084*sqrt(x*e + d)*B*a^2*b
^3*d^3*e^5 + 2244*sqrt(x*e + d)*A*a*b^4*d^3*e^5 + 5855*(x*e + d)^(5/2)*B*a^
3*b^2*e^6 - 2295*(x*e + d)^(5/2)*A*a^2*b^3*e^6 - 18683*(x*e + d)^(3/2)*B*a^
3*b^2*d*e^6 + 5787*(x*e + d)^(3/2)*A*a^2*b^3*d*e^6 + 13206*sqrt(x*e + d)*B*
a^3*b^2*d^2*e^6 - 3366*sqrt(x*e + d)*A*a^2*b^3*d^2*e^6 + 5153*(x*e + d)^(3/
2)*B*a^4*b*e^7 - 1929*(x*e + d)^(3/2)*A*a^3*b^2*e^7 - 7164*sqrt(x*e + d)*B*
a^4*b*d*e^7 + 2244*sqrt(x*e + d)*A*a^3*b^2*d*e^7 + 1545*sqrt(x*e + d)*B*a^5
*e^8 - 561*sqrt(x*e + d)*A*a^4*b*e^8)/(((x*e + d)*b - b*d + a*e)^4*b^6*sgn(
(x*e + d)*b*e - b*d*e + a*e^2)) + 2/3*((x*e + d)^(3/2)*B*b^10*e^3 + 12*sqrt
(x*e + d)*B*b^10*d*e^3 - 15*sqrt(x*e + d)*B*a*b^9*e^4 + 3*sqrt(x*e + d)*A*b
^10*e^4)/(b^15*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.14, size = 2430, normalized size = 4.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^4*b^2*e^6+61
44*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^4*d*e^4+3465*B*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^6*e^6+9216*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
1/2)*x^2*a^2*b^3*d*e^4+6144*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^2*d
*e^4+3560*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^5*d^3-945*A*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^5*b*e^6-3224*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
3/2)*b^5*d^4-3465*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^5*e^5+984*B*((a*e-b
*d)*b)^(1/2)*(e*x+d)^(1/2)*b^5*d^5-1320*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)
*b^5*d^2+1536*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a*b^4*e^5+5670*A*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^4*d*e^5+3615*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(7/2)*a*b^4*d*e+768*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x
^2*a^2*b^3*e^4-7680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^3*a^2*b^3*e^5-359
10*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^3*d*e^5+15120*B*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^2*b^4*d^2*e^4-4590*A*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^4*d*e^2-5985*B*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*x^4*a*b^5*d*e^5+3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^3*a*b^5*d*e^5+512*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x^3*a*b^4
*e^4-1920*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*a*b^4*e^5+1536*B*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^5*d*e^4-23940*B*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*x^3*a^2*b^4*d*e^5+10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*x^3*a*b^5*d^2*e^4+8700*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*
b*d*e^4-13206*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^3*b^2*d^2*e^3+12084*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*b^3*d^3*e^2-5481*B*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(1/2)*a*b^4*d^4*e+2304*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^2
*b^3*e^5+3780*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^3*b^3*d*e^5
+15270*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^3*d*e^2+18683*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(3/2)*a^3*b^2*d*e^3-25131*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
3/2)*a^2*b^3*d^2*e^2+14825*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^4*d^3*e-
7680*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^4*b*e^5-2244*A*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*a^3*b^2*d*e^4-23940*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x*a^4*b^2*d*e^5+10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)*x*a^3*b^3*d^2*e^4-5787*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a^2*b^3*d*e^3
+5787*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b^4*d^2*e^2+1536*A*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*x*a^3*b^2*e^5+3366*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2
)*a^2*b^3*d^2*e^3-2244*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b^4*d^3*e^2-58
55*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^3*b^2*e^3+13860*B*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a^5*b*e^6+1929*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^
(3/2)*a^3*b^2*e^4-1929*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*b^5*d^3*e+945*A*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*b^2*d*e^5-5025*B*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(3/2)*a^4*b*e^4-5985*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a^5*b*d*e^5+2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^
4*b^2*d^2*e^4+945*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^4*b*e^5+561*A*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^5*d^4*e-2295*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(
7/2)*a^2*b^3*e^2+20790*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^
4*b^2*e^6+2295*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a^2*b^3*e^3+2295*A*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(5/2)*b^5*d^2*e-975*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7
/2)*b^5*d*e-5670*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a^3*b^3*
e^6-945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^5*e^6+945*A*a
rctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^6*d*e^5+128*B*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(3/2)*x^4*b^5*e^4+3465*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*x^4*a^2*b^4*e^6+2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*x^4*b^6*d^2*e^4+384*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^5*e^5-3780*
A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^4*e^6+13860*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a^3*b^3*e^6+975*A*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(7/2)*a*b^4*e^2-12975*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b
^4*d^2*e+512*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a^3*b^2*e^4-11520*B*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a^3*b^2*e^5)/e*(b*x+a)/((a*e-b*d)*b)^(1/2
)/b^6/((b*x+a)^2)^(5/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{9}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(9/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(d + e\,x\right)^{9/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1876 $\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=424

$$-\frac{(d+ex)^{9/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{7/2}(-9aBe+Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{35e^3(a+bx)(-9aBe+Ab}{64b^{11/2}\sqrt{a^2+2a}$$

```
[Out] -35/192*e^2*(A*b*e-9*B*a*e+8*B*b*d)*(e*x+d)^(3/2)/b^4/(-a*e+b*d)/((b*x+a)^2
)^(1/2)-7/96*e*(A*b*e-9*B*a*e+8*B*b*d)*(e*x+d)^(5/2)/b^3/(-a*e+b*d)/(b*x+a)
/((b*x+a)^2)^(1/2)-1/24*(A*b*e-9*B*a*e+8*B*b*d)*(e*x+d)^(7/2)/b^2/(-a*e+b*d
)/(b*x+a)^2/((b*x+a)^2)^(1/2)-1/4*(A*b-B*a)*(e*x+d)^(9/2)/b/(-a*e+b*d)/(b*x
+a)^3/((b*x+a)^2)^(1/2)-35/64*e^3*(A*b*e-9*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b
^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(11/2)/(-a*e+b*d)^(1/2)/((b*x+a)^2
)^(1/2)+35/64*e^3*(A*b*e-9*B*a*e+8*B*b*d)*(b*x+a)*(e*x+d)^(1/2)/b^5/(-a*e+b
*d)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 50, 63, 208}

$$-\frac{35e^2(d+ex)^{3/2}(-9aBe+Abe+8bBd)}{192b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{35e^3(a+bx)\sqrt{d+ex}\,(-9aBe+Abe+8bBd)}{64b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{35e^3(a+bx)(-9aBe+Ab}{64b^{11/2}\sqrt{a^2+2a}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (35*e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*x)*Sqrt[d + e*x])/(64*b^5*(b*d -
 a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^2*(8*b*B*d + A*b*e - 9*a*B*e)*
(d + e*x)^(3/2))/(192*b^4*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e
*(8*b*B*d + A*b*e - 9*a*B*e)*(d + e*x)^(5/2))/(96*b^3*(b*d - a*e)*(a + b*x)
*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d + A*b*e - 9*a*B*e)*(d + e*x)^(7
/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b
 - a*B)*(d + e*x)^(9/2))/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) - (35*e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*
Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(11/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{7/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{9/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd+Abe-9aBe)\left(ab+b^2x\right)\right)}{8(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(8bBd+Abe-9aBe)(d+ex)^{7/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{9/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{7e(8bBd+Abe-9aBe)(d+ex)^{5/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd+Abe-9aBe)(d+ex)^{7/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+}}$$

$$= -\frac{35e^2(8bBd+Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(8bBd+Abe-9aBe)(d+ex)^{5/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{35e^3(8bBd+Abe-9aBe)(a+bx)\sqrt{d+ex}}{64b^5(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{35e^2(8bBd+Abe-9aBe)(d+ex)^{3/2}}{192b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.16, size = 114, normalized size = 0.27

$$\frac{(d+ex)^{9/2}\left(\frac{e^3(a+bx)^4(-9aBe+Abe+8bBd)\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+9aB-9Ab\right)}{36b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(9/2)*(-9*A*b + 9*a*B + (e^3*(8*b*B*d + A*b*e - 9*a*B*e)*(a + b*
x)^4*Hypergeometric2F1[4, 9/2, 11/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e
)^4))/(36*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [B] time = 0.79, size = 1485, normalized size = 3.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(105*(8*B*a^4*b*d*e^3 - (9*B*a^5 - A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
9*B*a*b^4 - A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (9*B*a^2*b^3 - A*a*b^4)*
e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (9*B*a^3*b^2 - A*a^2*b^3)*e^4)*x^2 + 4*(8
*B*a^3*b^2*d*e^3 - (9*B*a^4*b - A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*
(16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(5*B*a^2*b^4 + A*a*b^5)*d^3*e + 14*(11*B*a^
3*b^3 + A*a^2*b^4)*d^2*e^2 - 35*(33*B*a^4*b^2 - A*a^3*b^3)*d*e^3 + 105*(9*B
*a^5*b - A*a^4*b^2)*e^4 - 384*(B*b^6*d*e^3 - B*a*b^5*e^4)*x^4 + 3*(232*B*b^
6*d^2*e^2 - (1069*B*a*b^5 - 93*A*b^6)*d*e^3 + 93*(9*B*a^2*b^4 - A*a*b^5)*e^
4)*x^3 + (304*B*b^6*d^3*e + 2*(425*B*a*b^5 + 163*A*b^6)*d^2*e^2 - (5753*B*a
^2*b^4 - 185*A*a*b^5)*d*e^3 + 511*(9*B*a^3*b^3 - A*a^2*b^4)*e^4)*x^2 + (64*
B*b^6*d^4 + 8*(19*B*a*b^5 + 25*A*b^6)*d^3*e + 4*(149*B*a^2*b^4 + 13*A*a*b^5
)*d^2*e^2 - 7*(611*B*a^3*b^3 - 19*A*a^2*b^4)*d*e^3 + 385*(9*B*a^4*b^2 - A*a
^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d - a^5*b^6*e + (b^11*d - a*b^10*e)
*x^4 + 4*(a*b^10*d - a^2*b^9*e)*x^3 + 6*(a^2*b^9*d - a^3*b^8*e)*x^2 + 4*(a^
3*b^8*d - a^4*b^7*e)*x), 1/192*(105*(8*B*a^4*b*d*e^3 - (9*B*a^5 - A*a^4*b)*
e^4 + (8*B*b^5*d*e^3 - (9*B*a*b^4 - A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 -
(9*B*a^2*b^3 - A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (9*B*a^3*b^2 - A*
a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (9*B*a^4*b - A*a^3*b^2)*e^4)*x)*
sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d
)) - (16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(5*B*a^2*b^4 + A*a*b^5)*d^3*e + 14*(11
*B*a^3*b^3 + A*a^2*b^4)*d^2*e^2 - 35*(33*B*a^4*b^2 - A*a^3*b^3)*d*e^3 + 105
*(9*B*a^5*b - A*a^4*b^2)*e^4 - 384*(B*b^6*d*e^3 - B*a*b^5*e^4)*x^4 + 3*(232
*B*b^6*d^2*e^2 - (1069*B*a*b^5 - 93*A*b^6)*d*e^3 + 93*(9*B*a^2*b^4 - A*a*b^
5)*e^4)*x^3 + (304*B*b^6*d^3*e + 2*(425*B*a*b^5 + 163*A*b^6)*d^2*e^2 - (575
3*B*a^2*b^4 - 185*A*a*b^5)*d*e^3 + 511*(9*B*a^3*b^3 - A*a^2*b^4)*e^4)*x^2 +
 (64*B*b^6*d^4 + 8*(19*B*a*b^5 + 25*A*b^6)*d^3*e + 4*(149*B*a^2*b^4 + 13*A*
a*b^5)*d^2*e^2 - 7*(611*B*a^3*b^3 - 19*A*a^2*b^4)*d*e^3 + 385*(9*B*a^4*b^2
- A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d - a^5*b^6*e + (b^11*d - a*b^
10*e)*x^4 + 4*(a*b^10*d - a^2*b^9*e)*x^3 + 6*(a^2*b^9*d - a^3*b^8*e)*x^2 +
4*(a^3*b^8*d - a^4*b^7*e)*x)]
```

giac [A] time = 0.49, size = 620, normalized size = 1.46

$$\frac{2\sqrt{xe+d}\,Be^3}{b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}+\frac{35\left(8\,Bbde^3-9\,Bae^4+Abe^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\sqrt{-b^2d+abe}\,b^5\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{696\,(xe+d)^{\frac{7}{2}}Bb^4de^3-178}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*B*e^3/(b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 35/64*(8*B
*b*d*e^3 - 9*B*a*e^4 + A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e)
)/(sqrt(-b^2*d + a*b*e)*b^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/192*(69
6*(x*e + d)^(7/2)*B*b^4*d*e^3 - 1784*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 1544*(
x*e + d)^(3/2)*B*b^4*d^3*e^3 - 456*sqrt(x*e + d)*B*b^4*d^4*e^3 - 975*(x*e +
 d)^(7/2)*B*a*b^3*e^4 + 279*(x*e + d)^(7/2)*A*b^4*e^4 + 4079*(x*e + d)^(5/2
)*B*a*b^3*d*e^4 - 511*(x*e + d)^(5/2)*A*b^4*d*e^4 - 5017*(x*e + d)^(3/2)*B*
a*b^3*d^2*e^4 + 385*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 1929*sqrt(x*e + d)*B*a*
b^3*d^3*e^4 - 105*sqrt(x*e + d)*A*b^4*d^3*e^4 - 2295*(x*e + d)^(5/2)*B*a^2*
b^2*e^5 + 511*(x*e + d)^(5/2)*A*a*b^3*e^5 + 5402*(x*e + d)^(3/2)*B*a^2*b^2*
d*e^5 - 770*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 3051*sqrt(x*e + d)*B*a^2*b^2*d^
2*e^5 + 315*sqrt(x*e + d)*A*a*b^3*d^2*e^5 - 1929*(x*e + d)^(3/2)*B*a^3*b*e^
6 + 385*(x*e + d)^(3/2)*A*a^2*b^2*e^6 + 2139*sqrt(x*e + d)*B*a^3*b*d*e^6 -
315*sqrt(x*e + d)*A*a^2*b^2*d*e^6 - 561*sqrt(x*e + d)*B*a^4*e^7 + 105*sqrt(
x*e + d)*A*a^3*b*e^7)/(((x*e + d)*b - b*d + a*e)^4*b^5*sgn((x*e + d)*b*e -
b*d*e + a*e^2))
```

maple [B] time = 0.08, size = 1390, normalized size = 3.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+945*B*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*a*b^4*e^5+945*B*a^5*e^5*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-456*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4
*d^4-105*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+1544*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3-105*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*x^4*b^5*e^5+279*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^4*e+696
*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*b^4*d-1784*B*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(5/2)*b^4*d^2-945*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4-315*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3+315*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*A*a*b^3*d^2*e^2+2139*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3
-3051*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+1929*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*B*a*b^3*d^3*e-770*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A
*a*b^3*d*e^2+5402*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-5017*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-1536*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(1/2)*B*a^3*b*e^4*x-2304*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*e^
4*x^2-3360*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-50
40*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+4079*B*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^3*d*e-3360*B*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*x^3*a*b^4*d*e^4-1536*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*x^3*a*b^3*e^4+105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4-105*((a*e-
b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e-420*A*a^3*b^2*e^5*x*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)-2295*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b
^2*e^2+3780*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-630*A
*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+5670*B*a^3*b^2
*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-1929*((a*e-b*d)*b)^(1/
2)*(e*x+d)^(3/2)*B*a^3*b*e^3-840*B*a^4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)+385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*b^4*d^2*e+511*A*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*a*b^3*e^2-511*A*((a*e-b*d)*b)^(1/2)*(e*x+d)^
(5/2)*b^4*d*e-840*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^4*b^5*d*e
^4-420*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*a*b^4*e^5-384*B*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^4*b^4*e^4+3780*B*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*x^3*a^2*b^3*e^5-975*B*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)
*a*b^3*e)/e*(b*x+a)/((a*e-b*d)*b)^(1/2)/b^5/((b*x+a)^2)^(5/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{7}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,(d + e\,x)^{7/2}}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1877 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{(d+ex)^{7/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{5/2}(-7aBe-Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e^3(a+bx)(-7aBe-Abe}{64b^{9/2}\sqrt{a^2+2abx}}$$

```
[Out] -5/96*e*(-A*b*e-7*B*a*e+8*B*b*d)*(e*x+d)^(3/2)/b^3/(-a*e+b*d)/(b*x+a)/((b*x
+a)^2)^(1/2)-1/24*(-A*b*e-7*B*a*e+8*B*b*d)*(e*x+d)^(5/2)/b^2/(-a*e+b*d)/(b*
x+a)^2/((b*x+a)^2)^(1/2)-1/4*(A*b-B*a)*(e*x+d)^(7/2)/b/(-a*e+b*d)/(b*x+a)^3
/((b*x+a)^2)^(1/2)-5/64*e^3*(-A*b*e-7*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2
)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(9/2)/(-a*e+b*d)^(3/2)/((b*x+a)^2)^(1/2
)-5/64*e^2*(-A*b*e-7*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^4/(-a*e+b*d)/((b*x+a)^2
)^(1/2)
```

Rubi [**A**] time = 0.32, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 78, 47, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}\,(-7aBe-Abe+8bBd)}{64b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{5e^3(a+bx)(-7aBe-Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{(d+ex)^{7/2}}{4b(a+bx)^3\sqrt{a^2+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-5*e^2*(8*b*B*d - A*b*e - 7*a*B*e)*Sqrt[d + e*x])/(64*b^4*(b*d - a*e)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(8*b*B*d - A*b*e - 7*a*B*e)*(d + e*x)^(3/
2))/(96*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*
d - A*b*e - 7*a*B*e)*(d + e*x)^(5/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(7/2))/(4*b*(b*d - a*e)*
(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e^3*(8*b*B*d - A*b*e - 7*a*
B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(9/2
)*(b*d - a*e)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{7/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-Abe-7aBe)\left(ab+b^2x\right.\right.}{8(bd-ae)\sqrt{a^2+2abx+}}$$

$$= -\frac{(8bBd-Abe-7aBe)(d+ex)^{5/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{7/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-Abe-7aBe)(d+ex}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2ab}}$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{5e^2(8bBd-Abe-7aBe)\sqrt{d+ex}}{64b^4(bd-ae)\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(8bBd-Abe-7aBe)(d+ex)^{3/2}}{96b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 1.00, size = 219, normalized size = 0.61

$$\frac{-\frac{(a+bx)(-7aBe-Abe+8bBd)\left(b(d+ex)\sqrt{ae-bd}\left(15a^2e^2+10abe(d+4ex)+b^2\left(8d^2+26dex+33e^2x^2\right)\right)-15\sqrt{b}\,e^3(a+bx)^3\sqrt{d+ex}\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)\right)}{3\sqrt{ae-bd}}-16}{64b^5(a+bx)^3\sqrt{(a+bx)^2}\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-16*b^4*(A*b - a*B)*(d + e*x)^4 - ((8*b*B*d - A*b*e - 7*a*B*e)*(a + b*x)*(
b*Sqrt[-(b*d) + a*e]*(d + e*x)*(15*a^2*e^2 + 10*a*b*e*(d + 4*e*x) + b^2*(8*
d^2 + 26*d*e*x + 33*e^2*x^2)) - 15*Sqrt[b]*e^3*(a + b*x)^3*Sqrt[d + e*x]*Ar
cTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]]))/(3*Sqrt[-(b*d) + a*e]))/
(64*b^5*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [B]   time = 0.70, size = 1547, normalized size = 4.31

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(15*(8*B*a^4*b*d*e^3 - (7*B*a^5 + A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (7
*B*a*b^4 + A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 + A*a*b^4)*e
^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (7*B*a^3*b^2 + A*a^2*b^3)*e^4)*x^2 + 4*(8*
B*a^3*b^2*d*e^3 - (7*B*a^4*b + A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log((
b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(
16*(B*a*b^5 + 3*A*b^6)*d^4 + 8*(B*a^2*b^4 - 7*A*a*b^5)*d^3*e + 2*(13*B*a^3*
b^3 - A*a^2*b^4)*d^2*e^2 - 5*(31*B*a^4*b^2 + A*a^3*b^3)*d*e^3 + 15*(7*B*a^5
*b + A*a^4*b^2)*e^4 + 3*(88*B*b^6*d^2*e^2 - (181*B*a*b^5 - 5*A*b^6)*d*e^3 +
 (93*B*a^2*b^4 - 5*A*a*b^5)*e^4)*x^3 + (208*B*b^6*d^3*e + 2*(25*B*a*b^5 + 5
9*A*b^6)*d^2*e^2 - (769*B*a^2*b^4 + 191*A*a*b^5)*d*e^3 + 73*(7*B*a^3*b^3 +
A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 + 8*(3*B*a*b^5 + 17*A*b^6)*d^3*e + 4*(2
5*B*a^2*b^4 - 43*A*a*b^5)*d^2*e^2 - (573*B*a^3*b^3 + 19*A*a^2*b^4)*d*e^3 +
55*(7*B*a^4*b^2 + A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^2 - 2*a^5*b^
6*d*e + a^6*b^5*e^2 + (b^11*d^2 - 2*a*b^10*d*e + a^2*b^9*e^2)*x^4 + 4*(a*b^
10*d^2 - 2*a^2*b^9*d*e + a^3*b^8*e^2)*x^3 + 6*(a^2*b^9*d^2 - 2*a^3*b^8*d*e
+ a^4*b^7*e^2)*x^2 + 4*(a^3*b^8*d^2 - 2*a^4*b^7*d*e + a^5*b^6*e^2)*x), 1/19
2*(15*(8*B*a^4*b*d*e^3 - (7*B*a^5 + A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (7*B*a*
b^4 + A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (7*B*a^2*b^3 + A*a*b^4)*e^4)*x
^3 + 6*(8*B*a^2*b^3*d*e^3 - (7*B*a^3*b^2 + A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3
*b^2*d*e^3 - (7*B*a^4*b + A*a^3*b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sq
rt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*(B*a*b^5 + 3*A*b^6)*d
^4 + 8*(B*a^2*b^4 - 7*A*a*b^5)*d^3*e + 2*(13*B*a^3*b^3 - A*a^2*b^4)*d^2*e^2
 - 5*(31*B*a^4*b^2 + A*a^3*b^3)*d*e^3 + 15*(7*B*a^5*b + A*a^4*b^2)*e^4 + 3*
(88*B*b^6*d^2*e^2 - (181*B*a*b^5 - 5*A*b^6)*d*e^3 + (93*B*a^2*b^4 - 5*A*a*b
^5)*e^4)*x^3 + (208*B*b^6*d^3*e + 2*(25*B*a*b^5 + 59*A*b^6)*d^2*e^2 - (769*
B*a^2*b^4 + 191*A*a*b^5)*d*e^3 + 73*(7*B*a^3*b^3 + A*a^2*b^4)*e^4)*x^2 + (6
4*B*b^6*d^4 + 8*(3*B*a*b^5 + 17*A*b^6)*d^3*e + 4*(25*B*a^2*b^4 - 43*A*a*b^5
)*d^2*e^2 - (573*B*a^3*b^3 + 19*A*a^2*b^4)*d*e^3 + 55*(7*B*a^4*b^2 + A*a^3*
b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^2 - 2*a^5*b^6*d*e + a^6*b^5*e^2 + (b
^11*d^2 - 2*a*b^10*d*e + a^2*b^9*e^2)*x^4 + 4*(a*b^10*d^2 - 2*a^2*b^9*d*e +
 a^3*b^8*e^2)*x^3 + 6*(a^2*b^9*d^2 - 2*a^3*b^8*d*e + a^4*b^7*e^2)*x^2 + 4*(
a^3*b^8*d^2 - 2*a^4*b^7*d*e + a^5*b^6*e^2)*x)]
```

giac [B]   time = 0.48, size = 647, normalized size = 1.80

$$\frac{5\left(8\,Bbde^{3}-7\,Bae^{4}-Abe^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{64\left(b^{5}d\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-ab^{4}e\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)\right)\sqrt{-b^{2}d+abe}}-\frac{264\,(xe+d)^{\frac{7}{2}}Bb^{4}de^{3}-58}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 5/64*(8*B*b*d*e^3 - 7*B*a*e^4 - A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
 + a*b*e))/((b^5*d*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a*b^4*e*sgn((x*e +
d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(264*(x*e + d)^(7/2)
*B*b^4*d*e^3 - 584*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 440*(x*e + d)^(3/2)*B*b^
4*d^3*e^3 - 120*sqrt(x*e + d)*B*b^4*d^4*e^3 - 279*(x*e + d)^(7/2)*B*a*b^3*e
^4 + 15*(x*e + d)^(7/2)*A*b^4*e^4 + 1095*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 73
*(x*e + d)^(5/2)*A*b^4*d*e^4 - 1265*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 - 55*(x
*e + d)^(3/2)*A*b^4*d^2*e^4 + 465*sqrt(x*e + d)*B*a*b^3*d^3*e^4 + 15*sqrt(x
*e + d)*A*b^4*d^3*e^4 - 511*(x*e + d)^(5/2)*B*a^2*b^2*e^5 - 73*(x*e + d)^(5
/2)*A*a*b^3*e^5 + 1210*(x*e + d)^(3/2)*B*a^2*b^2*d*e^5 + 110*(x*e + d)^(3/2
)*A*a*b^3*d*e^5 - 675*sqrt(x*e + d)*B*a^2*b^2*d^2*e^5 - 45*sqrt(x*e + d)*A*
a*b^3*d^2*e^5 - 385*(x*e + d)^(3/2)*B*a^3*b*e^6 - 55*(x*e + d)^(3/2)*A*a^2*
b^2*e^6 + 435*sqrt(x*e + d)*B*a^3*b*d*e^6 + 45*sqrt(x*e + d)*A*a^2*b^2*d*e^
6 - 105*sqrt(x*e + d)*B*a^4*e^7 - 15*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d*sgn
((x*e + d)*b*e - b*d*e + a*e^2) - a*b^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2
))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.07, size = 1273, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+105*B*a*b^4*e^5*
x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*B*a^5*e^5*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-120*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4*
d^4+15*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+440*((a*e-b*
d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+15*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e+264*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d-584*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)
*B*b^4*d^2-105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+45*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*a*b^3*d^2*e^2+435*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-675*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+465*((a*e-b*d)*b)^(1/2)*(e*
x+d)^(1/2)*B*a*b^3*d^3*e+110*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^
2+1210*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-1265*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-480*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)-720*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+1095*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-480*B
*a*b^4*d*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-15*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b
^4*d^3*e+60*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-511
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+420*B*a^4*b*e^5*x*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+90*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+630*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-120*B*a^
4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-55*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*A*b^4*d^2*e-73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^
2+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-120*B*b^5*d*e^4*x^4*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+60*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+420*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-279*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/e*(b*x+a)
/((a*e-b*d)*b)^(1/2)/b^4/(a*e-b*d)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{5/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.1878 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{(d+ex)^{5/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{(d+ex)^{3/2}(-5aBe-3Abe+8bBd)}{24b^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{e^3(a+bx)(-5aBe-3A}{64b^{7/2}\sqrt{a^2+2}}$$

```
[Out] -1/24*(-3*A*b*e-5*B*a*e+8*B*b*d)*(e*x+d)^(3/2)/b^2/(-a*e+b*d)/(b*x+a)^2/((b
*x+a)^2)^(1/2)-1/4*(A*b-B*a)*(e*x+d)^(5/2)/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^
2)^(1/2)+1/64*e^3*(-3*A*b*e-5*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d
)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)/(-a*e+b*d)^(5/2)/((b*x+a)^2)^(1/2)-1/64*e
^2*(-3*A*b*e-5*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)^2/((b*x+a)^2)^(1
/2)-1/32*e*(-3*A*b*e-5*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^3/(-a*e+b*d)/(b*x+a)/
((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.32, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = $\{770, 78, 47, 51, 63, 208\}$

$$-\frac{e^2\sqrt{d+ex}\,(-5aBe-3Abe+8bBd)}{64b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e^3(a+bx)(-5aBe-3Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}\,(-5}{32b^3(a+bx)\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(e^2*(8*b*B*d - 3*A*b*e - 5*a*B*e)*Sqrt[d + e*x])/(64*b^3*(b*d - a*e)^2*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(8*b*B*d - 3*A*b*e - 5*a*B*e)*Sqrt[d + e*
x])/(32*b^3*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*
d - 3*A*b*e - 5*a*B*e)*(d + e*x)^(3/2))/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(5/2))/(4*b*(b*d - a*e
)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(8*b*B*d - 3*A*b*e - 5*
a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(7
/2)*(b*d - a*e)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{5/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-3Abe-5aBe)\left(ab+b^2x\right)\right)}{8(bd-ae)\sqrt{a^2+2abx+b^2}}$$

$$= -\frac{(8bBd-3Abe-5aBe)(d+ex)^{3/2}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{5/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b}}$$

$$= -\frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-3Abe-5aBe)(d+ex)^{3/}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+}}$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

$$= -\frac{e^2(8bBd-3Abe-5aBe)\sqrt{d+ex}}{64b^3(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-3Abe-5aBe)\sqrt{d+ex}}{32b^3(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} -$$

Mathematica [**C**] time = 0.12, size = 116, normalized size = 0.32

$$\frac{(d+ex)^{5/2}\left(-\frac{e^3(a+bx)^4(5aBe+3Abe-8bBd)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+5aB-5Ab\right)}{20b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(5/2)*(-5*A*b + 5*a*B - (e^3*(-8*b*B*d + 3*A*b*e + 5*a*B*e)*(a +
 b*x)^4*Hypergeometric2F1[5/2, 4, 7/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^4))/(20*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [**B**] time = 1.25, size = 1706, normalized size = 4.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(3*(8*B*a^4*b*d*e^3 - (5*B*a^5 + 3*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 -
(5*B*a*b^4 + 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (5*B*a^2*b^3 + 3*A*a*
b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (5*B*a^3*b^2 + 3*A*a^2*b^3)*e^4)*x^2
 + 4*(8*B*a^3*b^2*d*e^3 - (5*B*a^4*b + 3*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*
b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x +
 a)) + 2*(16*(B*a*b^5 + 3*A*b^6)*d^4 - 24*(B*a^2*b^4 + 5*A*a*b^5)*d^3*e - 6
*(B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^2 + (29*B*a^4*b^2 + 3*A*a^3*b^3)*d*e^3 -
3*(5*B*a^5*b + 3*A*a^4*b^2)*e^4 + 3*(8*B*b^6*d^2*e^2 - (13*B*a*b^5 + 3*A*b^
6)*d*e^3 + (5*B*a^2*b^4 + 3*A*a*b^5)*e^4)*x^3 + (112*B*b^6*d^3*e - 6*(45*B*
a*b^5 - A*b^6)*d^2*e^2 + 3*(77*B*a^2*b^4 - 13*A*a*b^5)*d*e^3 - (73*B*a^3*b^
3 - 33*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(13*B*a*b^5 - 9*A*b^6)*d^3*e
 - 12*(B*a^2*b^4 + 17*A*a*b^5)*d^2*e^2 + (107*B*a^3*b^3 + 165*A*a^2*b^4)*d*
e^3 - 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^3 -
3*a^5*b^6*d^2*e + 3*a^6*b^5*d*e^2 - a^7*b^4*e^3 + (b^11*d^3 - 3*a*b^10*d^2*
e + 3*a^2*b^9*d*e^2 - a^3*b^8*e^3)*x^4 + 4*(a*b^10*d^3 - 3*a^2*b^9*d^2*e +
3*a^3*b^8*d*e^2 - a^4*b^7*e^3)*x^3 + 6*(a^2*b^9*d^3 - 3*a^3*b^8*d^2*e + 3*a
^4*b^7*d*e^2 - a^5*b^6*e^3)*x^2 + 4*(a^3*b^8*d^3 - 3*a^4*b^7*d^2*e + 3*a^5*
b^6*d*e^2 - a^6*b^5*e^3)*x), -1/192*(3*(8*B*a^4*b*d*e^3 - (5*B*a^5 + 3*A*a^
4*b)*e^4 + (8*B*b^5*d*e^3 - (5*B*a*b^4 + 3*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d
*e^3 - (5*B*a^2*b^3 + 3*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (5*B*a^3
*b^2 + 3*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (5*B*a^4*b + 3*A*a^3*
b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + (16*(B*a*b^5 + 3*A*b^6)*d^4 - 24*(B*a^2*b^4 + 5*A*a*b^5)*
d^3*e - 6*(B*a^3*b^3 - 13*A*a^2*b^4)*d^2*e^2 + (29*B*a^4*b^2 + 3*A*a^3*b^3)
*d*e^3 - 3*(5*B*a^5*b + 3*A*a^4*b^2)*e^4 + 3*(8*B*b^6*d^2*e^2 - (13*B*a*b^5
 + 3*A*b^6)*d*e^3 + (5*B*a^2*b^4 + 3*A*a*b^5)*e^4)*x^3 + (112*B*b^6*d^3*e -
 6*(45*B*a*b^5 - A*b^6)*d^2*e^2 + 3*(77*B*a^2*b^4 - 13*A*a*b^5)*d*e^3 - (73
*B*a^3*b^3 - 33*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(13*B*a*b^5 - 9*A*b
^6)*d^3*e - 12*(B*a^2*b^4 + 17*A*a*b^5)*d^2*e^2 + (107*B*a^3*b^3 + 165*A*a^
2*b^4)*d*e^3 - 11*(5*B*a^4*b^2 + 3*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b
^7*d^3 - 3*a^5*b^6*d^2*e + 3*a^6*b^5*d*e^2 - a^7*b^4*e^3 + (b^11*d^3 - 3*a*
b^10*d^2*e + 3*a^2*b^9*d*e^2 - a^3*b^8*e^3)*x^4 + 4*(a*b^10*d^3 - 3*a^2*b^9
*d^2*e + 3*a^3*b^8*d*e^2 - a^4*b^7*e^3)*x^3 + 6*(a^2*b^9*d^3 - 3*a^3*b^8*d^
2*e + 3*a^4*b^7*d*e^2 - a^5*b^6*e^3)*x^2 + 4*(a^3*b^8*d^3 - 3*a^4*b^7*d^2*e
 + 3*a^5*b^6*d*e^2 - a^6*b^5*e^3)*x)]
```

giac [B] time = 0.45, size = 715, normalized size = 1.99

$$-\frac{\left(8\,Bbde^{3}-5\,Bae^{4}-3\,Abe^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{64\left(b^{5}d^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-2\,ab^{4}de\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+a^{2}b^{3}e^{2}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -1/64*(8*B*b*d*e^3 - 5*B*a*e^4 - 3*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^
2*d + a*b*e))/((b^5*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^4*d*e*sg
n((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b^3*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(24*(x*e + d)^(7/2)*B*b^4*d*e^3 + 40*
(x*e + d)^(5/2)*B*b^4*d^2*e^3 - 88*(x*e + d)^(3/2)*B*b^4*d^3*e^3 + 24*sqrt(
x*e + d)*B*b^4*d^4*e^3 - 15*(x*e + d)^(7/2)*B*a*b^3*e^4 - 9*(x*e + d)^(7/2)
*A*b^4*e^4 - 113*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 33*(x*e + d)^(5/2)*A*b^4*d
*e^4 + 231*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 + 33*(x*e + d)^(3/2)*A*b^4*d^2*e
^4 - 87*sqrt(x*e + d)*B*a*b^3*d^3*e^4 - 9*sqrt(x*e + d)*A*b^4*d^3*e^4 + 73*
(x*e + d)^(5/2)*B*a^2*b^2*e^5 - 33*(x*e + d)^(5/2)*A*a*b^3*e^5 - 198*(x*e +
 d)^(3/2)*B*a^2*b^2*d*e^5 - 66*(x*e + d)^(3/2)*A*a*b^3*d*e^5 + 117*sqrt(x*e
 + d)*B*a^2*b^2*d^2*e^5 + 27*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 55*(x*e + d)^(
3/2)*B*a^3*b*e^6 + 33*(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 69*sqrt(x*e + d)*B*a^
3*b*d*e^6 - 27*sqrt(x*e + d)*A*a^2*b^2*d*e^6 + 15*sqrt(x*e + d)*B*a^4*e^7 +
 9*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)
- 2*a*b^4*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b^3*e^2*sgn((x*e + d
)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 1273, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(b*x+a)/e*(-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+15*B*a
*b^4*e^5*x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*B*a^5*e^5*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-24*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*B*b^4*d^4+9*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+88*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+9*A*b^5*e^5*x^4*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)+9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-24*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d-40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+27*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-27*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A
*a*b^3*d^2*e^2+69*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-117*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+87*((a*e-b*d)*b)^(1/2)*(e*x+
d)^(1/2)*B*a*b^3*d^3*e+66*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^2+1
98*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2-231*((a*e-b*d)*b)^(1/2
)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-96*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)-144*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)+113*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-96*B*a*b^4*d
*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-9*((a*e-b*d)*b)^(1/2)*
(e*x+d)^(1/2)*A*a^3*b*e^4+9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e+3
6*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-73*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+60*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)+54*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)+90*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)-55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-24*B*a^4*b*d*e^4*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)
*A*b^4*d^2*e+33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^2-33*((a*e-b*d)
*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-24*B*b^5*d*e^4*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+36*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)+60*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+
15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/((a*e-b*d)*b)^(1/2)/b^3/(a*
e-b*d)^2/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^{3/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1879 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$\frac{e^2\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{64b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{96b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{(d+ex)^{3/2}(Ab-aB)}{4b(a+bx)^3\sqrt{a^2+2abx+b^2x^2}\,(b}$$

```
[Out] -1/4*(A*b-B*a)*(e*x+d)^(3/2)/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/64*
e^3*(-5*A*b*e-3*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^(7/2)/((b*x+a)^2)^(1/2)+1/64*e^2*(-5*A*b*e-3
*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)-1/24*(-5*A
*b*e-3*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/(b*x+a)^2/((b*x+a)^2)^(1
/2)-1/96*e*(-5*A*b*e-3*B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b^2/(-a*e+b*d)^2/(b*x+a
)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = {770, 78, 47, 51, 63, 208}

$$\frac{e^2\sqrt{d+ex}\,(-3aBe-5Abe+8bBd)}{64b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e^3(a+bx)(-3aBe-5Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}-\frac{e\sqrt{d+ex}\,(-3aBe}{96b^2(a+bx)\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (e^2*(8*b*B*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(64*b^2*(b*d - a*e)^3*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])
/(24*b^2*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(8*b*B
*d - 5*A*b*e - 3*a*B*e)*Sqrt[d + e*x])/(96*b^2*(b*d - a*e)^2*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*(d + e*x)^(3/2))/(4*b*(b*d - a*e)
*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(8*b*B*d - 5*A*b*e - 3*a
*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(5/
2)*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(A+Bx)\sqrt{d+ex}}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{3/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\big(b^2(8bBd-5Abe-3aBe)\big(ab+b^2}{8(bd-ae)\sqrt{a^2+2abx+}}$$

$$= -\frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(d+ex)^{3/2}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx}}$$

$$= -\frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(8bBd-5Abe-3aBe)\sqrt{d}}{96b^2(bd-ae)^2(a+bx)\sqrt{a^2+2a}}$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{e^2(8bBd-5Abe-3aBe)\sqrt{d+ex}}{64b^2(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-5Abe-3aBe)\sqrt{d+ex}}{24b^2(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.10, size = 116, normalized size = 0.32

$$\frac{(d+ex)^{3/2}\left(-\frac{e^3(a+bx)^4(3aBe+5Abe-8bBd)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+3aB-3Ab\right)}{12b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((d + e*x)^(3/2)*(-3*A*b + 3*a*B - (e^3*(-8*b*B*d + 5*A*b*e + 3*a*B*e)*(a +
 b*x)^4*Hypergeometric2F1[3/2, 4, 5/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a
*e)^4))/(12*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [B] time = 0.72, size = 1841, normalized size = 5.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(3*(8*B*a^4*b*d*e^3 - (3*B*a^5 + 5*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
3*B*a*b^4 + 5*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (3*B*a^2*b^3 + 5*A*a*b
^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (3*B*a^3*b^2 + 5*A*a^2*b^3)*e^4)*x^2
+ 4*(8*B*a^3*b^2*d*e^3 - (3*B*a^4*b + 5*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b
*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x +
a)) - 2*(16*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(7*B*a^2*b^4 + 23*A*a*b^5)*d^3*e +
2*(29*B*a^3*b^3 + 127*A*a^2*b^4)*d^2*e^2 - (27*B*a^4*b^2 + 133*A*a^3*b^3)*d
*e^3 + 3*(3*B*a^5*b + 5*A*a^4*b^2)*e^4 - 3*(8*B*b^6*d^2*e^2 - (11*B*a*b^5 +
 5*A*b^6)*d*e^3 + (3*B*a^2*b^4 + 5*A*a*b^5)*e^4)*x^3 + (16*B*b^6*d^3*e - 10
*(11*B*a*b^5 + A*b^6)*d^2*e^2 + (127*B*a^2*b^4 + 65*A*a*b^5)*d*e^3 - 11*(3*
B*a^3*b^3 + 5*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(29*B*a*b^5 - A*b^6)*
d^3*e + 4*(65*B*a^2*b^4 - 11*A*a*b^5)*d^2*e^2 - (125*B*a^3*b^3 - 109*A*a^2*
b^4)*d*e^3 + (33*B*a^4*b^2 - 73*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*
d^4 - 4*a^5*b^6*d^3*e + 6*a^6*b^5*d^2*e^2 - 4*a^7*b^4*d*e^3 + a^8*b^3*e^4 +
 (b^11*d^4 - 4*a*b^10*d^3*e + 6*a^2*b^9*d^2*e^2 - 4*a^3*b^8*d*e^3 + a^4*b^7
*e^4)*x^4 + 4*(a*b^10*d^4 - 4*a^2*b^9*d^3*e + 6*a^3*b^8*d^2*e^2 - 4*a^4*b^7
*d*e^3 + a^5*b^6*e^4)*x^3 + 6*(a^2*b^9*d^4 - 4*a^3*b^8*d^3*e + 6*a^4*b^7*d^
2*e^2 - 4*a^5*b^6*d*e^3 + a^6*b^5*e^4)*x^2 + 4*(a^3*b^8*d^4 - 4*a^4*b^7*d^3
*e + 6*a^5*b^6*d^2*e^2 - 4*a^6*b^5*d*e^3 + a^7*b^4*e^4)*x), 1/192*(3*(8*B*a
^4*b*d*e^3 - (3*B*a^5 + 5*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (3*B*a*b^4 + 5*A*
b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (3*B*a^2*b^3 + 5*A*a*b^4)*e^4)*x^3 + 6
*(8*B*a^2*b^3*d*e^3 - (3*B*a^3*b^2 + 5*A*a^2*b^3)*e^4)*x^2 + 4*(8*B*a^3*b^2
*d*e^3 - (3*B*a^4*b + 5*A*a^3*b^2)*e^4)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt
(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*(B*a*b^5 + 3*A*b^6)*d^4
 - 8*(7*B*a^2*b^4 + 23*A*a*b^5)*d^3*e + 2*(29*B*a^3*b^3 + 127*A*a^2*b^4)*d^
2*e^2 - (27*B*a^4*b^2 + 133*A*a^3*b^3)*d*e^3 + 3*(3*B*a^5*b + 5*A*a^4*b^2)*
e^4 - 3*(8*B*b^6*d^2*e^2 - (11*B*a*b^5 + 5*A*b^6)*d*e^3 + (3*B*a^2*b^4 + 5*
A*a*b^5)*e^4)*x^3 + (16*B*b^6*d^3*e - 10*(11*B*a*b^5 + A*b^6)*d^2*e^2 + (12
7*B*a^2*b^4 + 65*A*a*b^5)*d*e^3 - 11*(3*B*a^3*b^3 + 5*A*a^2*b^4)*e^4)*x^2 +
 (64*B*b^6*d^4 - 8*(29*B*a*b^5 - A*b^6)*d^3*e + 4*(65*B*a^2*b^4 - 11*A*a*b^
5)*d^2*e^2 - (125*B*a^3*b^3 - 109*A*a^2*b^4)*d*e^3 + (33*B*a^4*b^2 - 73*A*a
^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^4 - 4*a^5*b^6*d^3*e + 6*a^6*b^5*d
^2*e^2 - 4*a^7*b^4*d*e^3 + a^8*b^3*e^4 + (b^11*d^4 - 4*a*b^10*d^3*e + 6*a^2
*b^9*d^2*e^2 - 4*a^3*b^8*d*e^3 + a^4*b^7*e^4)*x^4 + 4*(a*b^10*d^4 - 4*a^2*b
^9*d^3*e + 6*a^3*b^8*d^2*e^2 - 4*a^4*b^7*d*e^3 + a^5*b^6*e^4)*x^3 + 6*(a^2*
b^9*d^4 - 4*a^3*b^8*d^3*e + 6*a^4*b^7*d^2*e^2 - 4*a^5*b^6*d*e^3 + a^6*b^5*e
^4)*x^2 + 4*(a^3*b^8*d^4 - 4*a^4*b^7*d^3*e + 6*a^5*b^6*d^2*e^2 - 4*a^6*b^5*
d*e^3 + a^7*b^4*e^4)*x)]
```

giac [B] time = 0.44, size = 787, normalized size = 2.19

$$\frac{\left(8\,Bbde^{3}-3\,Bae^{4}-5\,Abe^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{64\,\bigl(b^{5}d^{3}\mathrm{sgn}\bigl((xe+d)be-bde+ae^{2}\bigr)-3\,ab^{4}d^{2}e\mathrm{sgn}\bigl((xe+d)be-bde+ae^{2}\bigr)+3\,a^{2}b^{3}de^{2}\mathrm{sgn}\bigl((xe+d)be-bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 1/64*(8*B*b*d*e^3 - 3*B*a*e^4 - 5*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^5*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^4*d^2*e*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b^3*d*e^2*sgn((x*e + d)*b*e - b*d
*e + a*e^2) - a^3*b^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d +
 a*b*e)) + 1/192*(24*(x*e + d)^(7/2)*B*b^4*d*e^3 - 88*(x*e + d)^(5/2)*B*b^4
*d^2*e^3 + 40*(x*e + d)^(3/2)*B*b^4*d^3*e^3 + 24*sqrt(x*e + d)*B*b^4*d^4*e^
3 - 9*(x*e + d)^(7/2)*B*a*b^3*e^4 - 15*(x*e + d)^(7/2)*A*b^4*e^4 + 121*(x*e
 + d)^(5/2)*B*a*b^3*d*e^4 + 55*(x*e + d)^(5/2)*A*b^4*d*e^4 - 47*(x*e + d)^(
3/2)*B*a*b^3*d^2*e^4 - 73*(x*e + d)^(3/2)*A*b^4*d^2*e^4 - 81*sqrt(x*e + d)*
B*a*b^3*d^3*e^4 - 15*sqrt(x*e + d)*A*b^4*d^3*e^4 - 33*(x*e + d)^(5/2)*B*a^2
*b^2*e^5 - 55*(x*e + d)^(5/2)*A*a*b^3*e^5 - 26*(x*e + d)^(3/2)*B*a^2*b^2*d*
e^5 + 146*(x*e + d)^(3/2)*A*a*b^3*d*e^5 + 99*sqrt(x*e + d)*B*a^2*b^2*d^2*e^
5 + 45*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 33*(x*e + d)^(3/2)*B*a^3*b*e^6 - 73*
(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 51*sqrt(x*e + d)*B*a^3*b*d*e^6 - 45*sqrt(x*
e + d)*A*a^2*b^2*d*e^6 + 9*sqrt(x*e + d)*B*a^4*e^7 + 15*sqrt(x*e + d)*A*a^3
*b*e^7)/((b^5*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^4*d^2*e*sgn((x
*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*b^3*d*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2) - a^3*b^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d
 + a*e)^4)
```

maple [B] time = 0.08, size = 1296, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(b*x+a)/e*(73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+9*B*a*b
^4*e^5*x^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9*B*a^5*e^5*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-24*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*
b^4*d^4+15*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-40*((a*e
-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+15*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-24*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d+88*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-9*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4+45*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3-45*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*
a*b^3*d^2*e^2+51*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3-99*((a*e-b
*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2+81*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*B*a*b^3*d^3*e-146*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d*e^2+26
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2+47*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(3/2)*B*a*b^3*d^2*e-96*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)-144*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)-121*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-96*B*a*b^4*d*e^
4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-15*((a*e-b*d)*b)^(1/2)*(e
*x+d)^(1/2)*A*a^3*b*e^4+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*A*b^4*d^3*e+60
*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+33*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+36*B*a^4*b*e^5*x*arctan((e*x+d)^(1/2)/
((a*e-b*d)*b)^(1/2)*b)+90*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)+54*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)-33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-24*B*a^4*b*d*e^4*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*
A*b^4*d^2*e+55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3*e^2-55*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-24*B*b^5*d*e^4*x^4*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)+60*A*a*b^4*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)+36*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9
*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/((a*e-b*d)*b)^(1/2)/b^2/(a*e-
b*d)/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1880 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=359

$$-\frac{5e^2\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{5e\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{96b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{\sqrt{d+ex}\,(-aBe-7Abe}{24b(a+bx)^2\sqrt{a^2+2abx+b}}$$

```
[Out] 5/64*e^3*(-7*A*b*e-B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a
*e+b*d)^(1/2))/b^(3/2)/(-a*e+b*d)^(9/2)/((b*x+a)^2)^(1/2)-5/64*e^2*(-7*A*b*
e-B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)-1/4*(A*b-B*
a)*(e*x+d)^(1/2)/b/(-a*e+b*d)/(b*x+a)^3/((b*x+a)^2)^(1/2)-1/24*(-7*A*b*e-B*
a*e+8*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/(b*x+a)^2/((b*x+a)^2)^(1/2)+5/96*
e*(-7*A*b*e-B*a*e+8*B*b*d)*(e*x+d)^(1/2)/b/(-a*e+b*d)^3/(b*x+a)/((b*x+a)^2)
^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}\,(-aBe-7Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{5e^3(a+bx)(-aBe-7Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}+\frac{5e\sqrt{d+ex}\,(-}{96b(a+bx)\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*e^2*(8*b*B*d - 7*A*b*e - a*B*e)*Sqrt[d + e*x])/(64*b*(b*d - a*e)^4*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - ((A*b - a*B)*Sqrt[d + e*x])/(4*b*(b*d - a*e)*(
a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - ((8*b*B*d - 7*A*b*e - a*B*e)*Sq
rt[d + e*x])/(24*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (5*e*(8*b*B*d - 7*A*b*e - a*B*e)*Sqrt[d + e*x])/(96*b*(b*d - a*e)^3*(a +
 b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^3*(8*b*B*d - 7*A*b*e - a*B*e)*(
a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(3/2)*(b*d
 - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-7Abe-aBe)\left(ab\right.\right.}{8(bd-ae)\sqrt{a^2}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-7Abe-aBe)}{24b(bd-ae)^2(a+bx)^2\sqrt{a^2+}}$$

$$= -\frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{(8bBd-7Abe-aBe)}{24b(bd-ae)^2(a+bx)^2\sqrt{a^2+}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

$$= -\frac{5e^2(8bBd-7Abe-aBe)\sqrt{d+ex}}{64b(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)\sqrt{d+ex}}{4b(bd-ae)(a+bx)^3\sqrt{a^2+2abx+}}$$

Mathematica [C] time = 0.08, size = 114, normalized size = 0.32

$$\frac{\sqrt{d+ex}\left(-\frac{e^3(a+bx)^4(aBe+7Abe-8bBd)\,{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+aB-Ab\right)}{4b(a+bx)^3\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (Sqrt[d + e*x]*(-(A*b) + a*B - (e^3*(-8*b*B*d + 7*A*b*e + a*B*e)*(a + b*x)^
4*Hypergeometric2F1[1/2, 4, 3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)
)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2])
```

fricas [B] time = 1.35, size = 1980, normalized size = 5.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(15*(8*B*a^4*b*d*e^3 - (B*a^5 + 7*A*a^4*b)*e^4 + (8*B*b^5*d*e^3 - (
B*a*b^4 + 7*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (B*a^2*b^3 + 7*A*a*b^4)*
e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (B*a^3*b^2 + 7*A*a^2*b^3)*e^4)*x^2 + 4*(8
*B*a^3*b^2*d*e^3 - (B*a^4*b + 7*A*a^3*b^2)*e^4)*x)*sqrt(b^2*d - a*b*e)*log(
(b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*
(16*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(11*B*a^2*b^4 + 31*A*a*b^5)*d^3*e + 2*(109*
B*a^3*b^3 + 263*A*a^2*b^4)*d^2*e^2 - (131*B*a^4*b^2 + 605*A*a^3*b^3)*d*e^3
- 3*(5*B*a^5*b - 93*A*a^4*b^2)*e^4 + 15*(8*B*b^6*d^2*e^2 - (9*B*a*b^5 + 7*A
*b^6)*d*e^3 + (B*a^2*b^4 + 7*A*a*b^5)*e^4)*x^3 - 5*(16*B*b^6*d^3*e - 2*(53*
B*a*b^5 + 7*A*b^6)*d^2*e^2 + (101*B*a^2*b^4 + 91*A*a*b^5)*d*e^3 - 11*(B*a^3
*b^3 + 7*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(45*B*a*b^5 + 7*A*b^6)*d^3
*e + 4*(229*B*a^2*b^4 + 77*A*a*b^5)*d^2*e^2 - 7*(99*B*a^3*b^3 + 109*A*a^2*b
^4)*d*e^3 + 73*(B*a^4*b^2 + 7*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^
5 - 5*a^5*b^6*d^4*e + 10*a^6*b^5*d^3*e^2 - 10*a^7*b^4*d^2*e^3 + 5*a^8*b^3*d
*e^4 - a^9*b^2*e^5 + (b^11*d^5 - 5*a*b^10*d^4*e + 10*a^2*b^9*d^3*e^2 - 10*a
^3*b^8*d^2*e^3 + 5*a^4*b^7*d*e^4 - a^5*b^6*e^5)*x^4 + 4*(a*b^10*d^5 - 5*a^2
*b^9*d^4*e + 10*a^3*b^8*d^3*e^2 - 10*a^4*b^7*d^2*e^3 + 5*a^5*b^6*d*e^4 - a^
6*b^5*e^5)*x^3 + 6*(a^2*b^9*d^5 - 5*a^3*b^8*d^4*e + 10*a^4*b^7*d^3*e^2 - 10
*a^5*b^6*d^2*e^3 + 5*a^6*b^5*d*e^4 - a^7*b^4*e^5)*x^2 + 4*(a^3*b^8*d^5 - 5*
a^4*b^7*d^4*e + 10*a^5*b^6*d^3*e^2 - 10*a^6*b^5*d^2*e^3 + 5*a^7*b^4*d*e^4 -
 a^8*b^3*e^5)*x), -1/192*(15*(8*B*a^4*b*d*e^3 - (B*a^5 + 7*A*a^4*b)*e^4 + (
8*B*b^5*d*e^3 - (B*a*b^4 + 7*A*b^5)*e^4)*x^4 + 4*(8*B*a*b^4*d*e^3 - (B*a^2*
b^3 + 7*A*a*b^4)*e^4)*x^3 + 6*(8*B*a^2*b^3*d*e^3 - (B*a^3*b^2 + 7*A*a^2*b^3
)*e^4)*x^2 + 4*(8*B*a^3*b^2*d*e^3 - (B*a^4*b + 7*A*a^3*b^2)*e^4)*x)*sqrt(-b
^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (1
6*(B*a*b^5 + 3*A*b^6)*d^4 - 8*(11*B*a^2*b^4 + 31*A*a*b^5)*d^3*e + 2*(109*B*
a^3*b^3 + 263*A*a^2*b^4)*d^2*e^2 - (131*B*a^4*b^2 + 605*A*a^3*b^3)*d*e^3 -
3*(5*B*a^5*b - 93*A*a^4*b^2)*e^4 + 15*(8*B*b^6*d^2*e^2 - (9*B*a*b^5 + 7*A*b
^6)*d*e^3 + (B*a^2*b^4 + 7*A*a*b^5)*e^4)*x^3 - 5*(16*B*b^6*d^3*e - 2*(53*B*
a*b^5 + 7*A*b^6)*d^2*e^2 + (101*B*a^2*b^4 + 91*A*a*b^5)*d*e^3 - 11*(B*a^3*b
^3 + 7*A*a^2*b^4)*e^4)*x^2 + (64*B*b^6*d^4 - 8*(45*B*a*b^5 + 7*A*b^6)*d^3*e
 + 4*(229*B*a^2*b^4 + 77*A*a*b^5)*d^2*e^2 - 7*(99*B*a^3*b^3 + 109*A*a^2*b^4
)*d*e^3 + 73*(B*a^4*b^2 + 7*A*a^3*b^3)*e^4)*x)*sqrt(e*x + d))/(a^4*b^7*d^5
- 5*a^5*b^6*d^4*e + 10*a^6*b^5*d^3*e^2 - 10*a^7*b^4*d^2*e^3 + 5*a^8*b^3*d*e
^4 - a^9*b^2*e^5 + (b^11*d^5 - 5*a*b^10*d^4*e + 10*a^2*b^9*d^3*e^2 - 10*a^3
*b^8*d^2*e^3 + 5*a^4*b^7*d*e^4 - a^5*b^6*e^5)*x^4 + 4*(a*b^10*d^5 - 5*a^2*b
^9*d^4*e + 10*a^3*b^8*d^3*e^2 - 10*a^4*b^7*d^2*e^3 + 5*a^5*b^6*d*e^4 - a^6*
b^5*e^5)*x^3 + 6*(a^2*b^9*d^5 - 5*a^3*b^8*d^4*e + 10*a^4*b^7*d^3*e^2 - 10*a
^5*b^6*d^2*e^3 + 5*a^6*b^5*d*e^4 - a^7*b^4*e^5)*x^2 + 4*(a^3*b^8*d^5 - 5*a^
4*b^7*d^4*e + 10*a^5*b^6*d^3*e^2 - 10*a^6*b^5*d^2*e^3 + 5*a^7*b^4*d*e^4 - a
^8*b^3*e^5)*x)]
```

giac [B] time = 0.41, size = 851, normalized size = 2.37

$$-\frac{5\left(8\,Bbde^{3}-Bae^{4}-7\,Abe^{4}\right)}{64\left(b^{5}d^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-4\,ab^{4}d^{3}e\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+6\,a^{2}b^{3}d^{2}e^{2}\mathrm{sgn}\bigl((xe+d)be-b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -5/64*(8*B*b*d*e^3 - B*a*e^4 - 7*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*
d + a*b*e))/((b^5*d^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^4*d^3*e*sg
n((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^3*d^2*e^2*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 4*a^3*b^2*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*b*e
^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/192*(120*(
x*e + d)^(7/2)*B*b^4*d*e^3 - 440*(x*e + d)^(5/2)*B*b^4*d^2*e^3 + 584*(x*e +
 d)^(3/2)*B*b^4*d^3*e^3 - 264*sqrt(x*e + d)*B*b^4*d^4*e^3 - 15*(x*e + d)^(7
/2)*B*a*b^3*e^4 - 105*(x*e + d)^(7/2)*A*b^4*e^4 + 495*(x*e + d)^(5/2)*B*a*b
^3*d*e^4 + 385*(x*e + d)^(5/2)*A*b^4*d*e^4 - 1241*(x*e + d)^(3/2)*B*a*b^3*d
^2*e^4 - 511*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 777*sqrt(x*e + d)*B*a*b^3*d^3*
e^4 + 279*sqrt(x*e + d)*A*b^4*d^3*e^4 - 55*(x*e + d)^(5/2)*B*a^2*b^2*e^5 -
385*(x*e + d)^(5/2)*A*a*b^3*e^5 + 730*(x*e + d)^(3/2)*B*a^2*b^2*d*e^5 + 102
2*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 747*sqrt(x*e + d)*B*a^2*b^2*d^2*e^5 - 837
*sqrt(x*e + d)*A*a*b^3*d^2*e^5 - 73*(x*e + d)^(3/2)*B*a^3*b*e^6 - 511*(x*e
+ d)^(3/2)*A*a^2*b^2*e^6 + 219*sqrt(x*e + d)*B*a^3*b*d*e^6 + 837*sqrt(x*e +
 d)*A*a^2*b^2*d*e^6 + 15*sqrt(x*e + d)*B*a^4*e^7 - 279*sqrt(x*e + d)*A*a^3*
b*e^7)/((b^5*d^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^4*d^3*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^3*d^2*e^2*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) - 4*a^3*b^2*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*b*e^4*sg
n((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 1296, normalized size = 3.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/192*(511*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a^2*b^2*e^3+15*B*a*b^4*e^5*x
^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*B*a^5*e^5*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)+264*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*b^4*d^
4+105*A*a^4*b*e^5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-584*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(3/2)*B*b^4*d^3+105*A*b^5*e^5*x^4*arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)+105*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*A*b^4*e-120*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*b^4*d+440*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2
)*B*b^4*d^2-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^4*e^4-837*((a*e-b*d)*b
)^(1/2)*(e*x+d)^(1/2)*A*a^2*b^2*d*e^3+837*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*A*a*b^3*d^2*e^2-219*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^3*b*d*e^3+747*((
a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*B*a^2*b^2*d^2*e^2-777*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*B*a*b^3*d^3*e-1022*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*A*a*b^3*d
*e^2-730*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^2*b^2*d*e^2+1241*((a*e-b*d)*
b)^(1/2)*(e*x+d)^(3/2)*B*a*b^3*d^2*e-480*B*a^3*b^2*d*e^4*x*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)-720*B*a^2*b^3*d*e^4*x^2*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)-495*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a*b^3*d*e-480*
B*a*b^4*d*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+279*((a*e-b*d
)*b)^(1/2)*(e*x+d)^(1/2)*A*a^3*b*e^4-279*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*
A*b^4*d^3*e+420*A*a^3*b^2*e^5*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
+55*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*B*a^2*b^2*e^2+60*B*a^4*b*e^5*x*arctan
((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+630*A*a^2*b^3*e^5*x^2*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)+90*B*a^3*b^2*e^5*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+73*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*B*a^3*b*e^3-120*B*a
^4*b*d*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+511*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(3/2)*A*b^4*d^2*e+385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*a*b^3
*e^2-385*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*A*b^4*d*e-120*B*b^5*d*e^4*x^4*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+420*A*a*b^4*e^5*x^3*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+60*B*a^2*b^3*e^5*x^3*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(7/2)*B*a*b^3*e)/e*(b*x
+a)/((a*e-b*d)*b)^(1/2)/b/(a*e-b*d)^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((b*x+a)^
2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.1881 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=424

$$-\frac{35e^3(a+bx)(aBe-9Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}+\frac{35e^3(a+bx)(aBe-9Abe+8bBd)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{11/2}}-\frac{35e^2}{192b\sqrt{a^2+2}}$$

```
[Out] 35/64*e^3*(-9*A*b*e+B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-
a*e+b*d)^(1/2))/(-a*e+b*d)^(11/2)/b^(1/2)/((b*x+a)^2)^(1/2)-35/192*e^2*(-9*
A*b*e+B*a*e+8*B*b*d)/b/(-a*e+b*d)^4/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)+1/4*(-A
*b+B*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)+1/24*(9*A*b*
e-B*a*e-8*B*b*d)/b/(-a*e+b*d)^2/(b*x+a)^2/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)+7
/96*e*(-9*A*b*e+B*a*e+8*B*b*d)/b/(-a*e+b*d)^3/(b*x+a)/(e*x+d)^(1/2)/((b*x+a
)^2)^(1/2)-35/64*e^3*(-9*A*b*e+B*a*e+8*B*b*d)*(b*x+a)/b/(-a*e+b*d)^5/(e*x+d
)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 78, 51, 63, 208\}$

$$-\frac{35e^3(a+bx)(aBe-9Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^2(aBe-9Abe+8bBd)}{192b\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^3(a+bx)(aBe-9A}{64\sqrt{b}\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-35*e^2*(8*b*B*d - 9*A*b*e + a*B*e))/(192*b*(b*d - a*e)^4*Sqrt[d + e*x]*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3*Sqr
t[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 9*A*b*e + a*B*e)/(24
*b*(b*d - a*e)^2*(a + b*x)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (7*e*(8*b*B*d - 9*A*b*e + a*B*e))/(96*b*(b*d - a*e)^3*(a + b*x)*Sqrt[d + e
*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*(8*b*B*d - 9*A*b*e + a*B*e)*(a
 + b*x))/(64*b*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (35*e^3*(8*b*B*d - 9*A*b*e + a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*
x])/Sqrt[b*d - a*e]])/(64*Sqrt[b]*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}+\frac{\big(b^2(8bBd-9A}{8}\\
&= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{}{24b(bd-ae)^2(a}\\
&= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{}{24b(bd-ae)^2(a}\\
&= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{A}{4b(bd-ae)(a+bx)^3}\\
&= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{A}{4b(bd-ae)(a+bx)^3}\\
&= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{A}{4b(bd-ae)(a+bx)^3}\\
&= -\frac{35e^2(8bBd-9Abe+aBe)}{192b(bd-ae)^4\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}-\frac{A}{4b(bd-ae)(a+bx)^3}
\end{aligned}
$$

Mathematica [C] time = 0.09, size = 114, normalized size = 0.27

$$
\frac{\frac{e^3(a+bx)^4(-aBe+9Abe-8bBd)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+aB-Ab}{4b(a+bx)^3\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,(bd-ae)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-(A*b) + a*B + (e^3*(-8*b*B*d + 9*A*b*e - a*B*e)*(a + b*x)^4*Hypergeometri
c2F1[-1/2, 4, 1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(4*b*(b*d - a
*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [B] time = 0.77, size = 2968, normalized size = 7.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/384*(105*(8*B*a^4*b*d^2*e^3 + (B*a^5 - 9*A*a^4*b)*d*e^4 + (8*B*b^5*d*e^4
 + (B*a*b^4 - 9*A*b^5)*e^5)*x^5 + (8*B*b^5*d^2*e^3 + 3*(11*B*a*b^4 - 3*A*b^
5)*d*e^4 + 4*(B*a^2*b^3 - 9*A*a*b^4)*e^5)*x^4 + 2*(16*B*a*b^4*d^2*e^3 + 2*(
13*B*a^2*b^3 - 9*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 9*A*a^2*b^3)*e^5)*x^3 + 2*
(24*B*a^2*b^3*d^2*e^3 + (19*B*a^3*b^2 - 27*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b -
9*A*a^3*b^2)*e^5)*x^2 + (32*B*a^3*b^2*d^2*e^3 + 12*(B*a^4*b - 3*A*a^3*b^2)*
d*e^4 + (B*a^5 - 9*A*a^4*b)*e^5)*x)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d
- a*e + 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(384*A*a^5*b*e^
5 + 16*(B*a*b^5 + 3*A*b^6)*d^5 - 24*(5*B*a^2*b^4 + 13*A*a*b^5)*d^4*e + 6*(7
9*B*a^3*b^3 + 149*A*a^2*b^4)*d^3*e^2 + (293*B*a^4*b^2 - 1605*A*a^3*b^3)*d^2
*e^3 - 3*(221*B*a^5*b - 197*A*a^4*b^2)*d*e^4 + 105*(8*B*b^6*d^2*e^3 - (7*B*
a*b^5 + 9*A*b^6)*d*e^4 - (B*a^2*b^4 - 9*A*a*b^5)*e^5)*x^4 + 35*(8*B*b^6*d^3
*e^2 + 9*(9*B*a*b^5 - A*b^6)*d^2*e^3 - 6*(13*B*a^2*b^4 + 15*A*a*b^5)*d*e^4
- 11*(B*a^3*b^3 - 9*A*a^2*b^4)*e^5)*x^3 - 7*(16*B*b^6*d^4*e - 2*(83*B*a*b^5
 + 9*A*b^6)*d^3*e^2 - 3*(151*B*a^2*b^4 - 63*A*a*b^5)*d^2*e^3 + 2*(265*B*a^3
*b^3 + 243*A*a^2*b^4)*d*e^4 + 73*(B*a^4*b^2 - 9*A*a^3*b^3)*e^5)*x^2 + (64*B
*b^6*d^5 - 8*(59*B*a*b^5 + 9*A*b^6)*d^4*e + 108*(17*B*a^2*b^4 + 5*A*a*b^5)*
d^3*e^2 + (989*B*a^3*b^3 - 2133*A*a^2*b^4)*d^2*e^3 - 2*(1069*B*a^4*b^2 + 42
3*A*a^3*b^3)*d*e^4 - 279*(B*a^5*b - 9*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(a^
4*b^7*d^7 - 6*a^5*b^6*d^6*e + 15*a^6*b^5*d^5*e^2 - 20*a^7*b^4*d^4*e^3 + 15*
a^8*b^3*d^3*e^4 - 6*a^9*b^2*d^2*e^5 + a^10*b*d*e^6 + (b^11*d^6*e - 6*a*b^10
*d^5*e^2 + 15*a^2*b^9*d^4*e^3 - 20*a^3*b^8*d^3*e^4 + 15*a^4*b^7*d^2*e^5 - 6
*a^5*b^6*d*e^6 + a^6*b^5*e^7)*x^5 + (b^11*d^7 - 2*a*b^10*d^6*e - 9*a^2*b^9*
d^5*e^2 + 40*a^3*b^8*d^4*e^3 - 65*a^4*b^7*d^3*e^4 + 54*a^5*b^6*d^2*e^5 - 23
*a^6*b^5*d*e^6 + 4*a^7*b^4*e^7)*x^4 + 2*(2*a*b^10*d^7 - 9*a^2*b^9*d^6*e + 1
2*a^3*b^8*d^5*e^2 + 5*a^4*b^7*d^4*e^3 - 30*a^5*b^6*d^3*e^4 + 33*a^6*b^5*d^2
*e^5 - 16*a^7*b^4*d*e^6 + 3*a^8*b^3*e^7)*x^3 + 2*(3*a^2*b^9*d^7 - 16*a^3*b^
8*d^6*e + 33*a^4*b^7*d^5*e^2 - 30*a^5*b^6*d^4*e^3 + 5*a^6*b^5*d^3*e^4 + 12*
a^7*b^4*d^2*e^5 - 9*a^8*b^3*d*e^6 + 2*a^9*b^2*e^7)*x^2 + (4*a^3*b^8*d^7 - 2
3*a^4*b^7*d^6*e + 54*a^5*b^6*d^5*e^2 - 65*a^6*b^5*d^4*e^3 + 40*a^7*b^4*d^3*
e^4 - 9*a^8*b^3*d^2*e^5 - 2*a^9*b^2*d*e^6 + a^10*b*e^7)*x), -1/192*(105*(8*
B*a^4*b*d^2*e^3 + (B*a^5 - 9*A*a^4*b)*d*e^4 + (8*B*b^5*d*e^4 + (B*a*b^4 - 9
*A*b^5)*e^5)*x^5 + (8*B*b^5*d^2*e^3 + 3*(11*B*a*b^4 - 3*A*b^5)*d*e^4 + 4*(B
*a^2*b^3 - 9*A*a*b^4)*e^5)*x^4 + 2*(16*B*a*b^4*d^2*e^3 + 2*(13*B*a^2*b^3 -
9*A*a*b^4)*d*e^4 + 3*(B*a^3*b^2 - 9*A*a^2*b^3)*e^5)*x^3 + 2*(24*B*a^2*b^3*d
^2*e^3 + (19*B*a^3*b^2 - 27*A*a^2*b^3)*d*e^4 + 2*(B*a^4*b - 9*A*a^3*b^2)*e^
5)*x^2 + (32*B*a^3*b^2*d^2*e^3 + 12*(B*a^4*b - 3*A*a^3*b^2)*d*e^4 + (B*a^5
- 9*A*a^4*b)*e^5)*x)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(
e*x + d)/(b*e*x + b*d)) + (384*A*a^5*b*e^5 + 16*(B*a*b^5 + 3*A*b^6)*d^5 - 2
4*(5*B*a^2*b^4 + 13*A*a*b^5)*d^4*e + 6*(79*B*a^3*b^3 + 149*A*a^2*b^4)*d^3*e
^2 + (293*B*a^4*b^2 - 1605*A*a^3*b^3)*d^2*e^3 - 3*(221*B*a^5*b - 197*A*a^4*
b^2)*d*e^4 + 105*(8*B*b^6*d^2*e^3 - (7*B*a*b^5 + 9*A*b^6)*d*e^4 - (B*a^2*b^
4 - 9*A*a*b^5)*e^5)*x^4 + 35*(8*B*b^6*d^3*e^2 + 9*(9*B*a*b^5 - A*b^6)*d^2*e
^3 - 6*(13*B*a^2*b^4 + 15*A*a*b^5)*d*e^4 - 11*(B*a^3*b^3 - 9*A*a^2*b^4)*e^5
)*x^3 - 7*(16*B*b^6*d^4*e - 2*(83*B*a*b^5 + 9*A*b^6)*d^3*e^2 - 3*(151*B*a^2
*b^4 - 63*A*a*b^5)*d^2*e^3 + 2*(265*B*a^3*b^3 + 243*A*a^2*b^4)*d*e^4 + 73*(
B*a^4*b^2 - 9*A*a^3*b^3)*e^5)*x^2 + (64*B*b^6*d^5 - 8*(59*B*a*b^5 + 9*A*b^6
)*d^4*e + 108*(17*B*a^2*b^4 + 5*A*a*b^5)*d^3*e^2 + (989*B*a^3*b^3 - 2133*A*
a^2*b^4)*d^2*e^3 - 2*(1069*B*a^4*b^2 + 423*A*a^3*b^3)*d*e^4 - 279*(B*a^5*b
- 9*A*a^4*b^2)*e^5)*x)*sqrt(e*x + d))/(a^4*b^7*d^7 - 6*a^5*b^6*d^6*e + 15*a
^6*b^5*d^5*e^2 - 20*a^7*b^4*d^4*e^3 + 15*a^8*b^3*d^3*e^4 - 6*a^9*b^2*d^2*e^
5 + a^10*b*d*e^6 + (b^11*d^6*e - 6*a*b^10*d^5*e^2 + 15*a^2*b^9*d^4*e^3 - 20
*a^3*b^8*d^3*e^4 + 15*a^4*b^7*d^2*e^5 - 6*a^5*b^6*d*e^6 + a^6*b^5*e^7)*x^5
+ (b^11*d^7 - 2*a*b^10*d^6*e - 9*a^2*b^9*d^5*e^2 + 40*a^3*b^8*d^4*e^3 - 65*
a^4*b^7*d^3*e^4 + 54*a^5*b^6*d^2*e^5 - 23*a^6*b^5*d*e^6 + 4*a^7*b^4*e^7)*x^
4 + 2*(2*a*b^10*d^7 - 9*a^2*b^9*d^6*e + 12*a^3*b^8*d^5*e^2 + 5*a^4*b^7*d^4*
e^3 - 30*a^5*b^6*d^3*e^4 + 33*a^6*b^5*d^2*e^5 - 16*a^7*b^4*d*e^6 + 3*a^8*b^
3*e^7)*x^3 + 2*(3*a^2*b^9*d^7 - 16*a^3*b^8*d^6*e + 33*a^4*b^7*d^5*e^2 - 30*
a^5*b^6*d^4*e^3 + 5*a^6*b^5*d^3*e^4 + 12*a^7*b^4*d^2*e^5 - 9*a^8*b^3*d*e^6
+ 2*a^9*b^2*e^7)*x^2 + (4*a^3*b^8*d^7 - 23*a^4*b^7*d^6*e + 54*a^5*b^6*d^5*e
^2 - 65*a^6*b^5*d^4*e^3 + 40*a^7*b^4*d^3*e^4 - 9*a^8*b^3*d^2*e^5 - 2*a^9*b^
2*d*e^6 + a^10*b*e^7)*x)]
```

giac [B] time = 0.63, size = 1132, normalized size = 2.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -35/64*(8*B*b*d*e^3 + B*a*e^4 - 9*A*b*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/((b^5*d^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e -
b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*
a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e
- b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2*(B*d*e^3 - A*e^4)/((b^5*d^5*sgn
((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^
2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*
b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(x*e
 + d)) - 1/192*(456*(x*e + d)^(7/2)*B*b^4*d*e^3 - 1544*(x*e + d)^(5/2)*B*b^
4*d^2*e^3 + 1784*(x*e + d)^(3/2)*B*b^4*d^3*e^3 - 696*sqrt(x*e + d)*B*b^4*d^
4*e^3 + 105*(x*e + d)^(7/2)*B*a*b^3*e^4 - 561*(x*e + d)^(7/2)*A*b^4*e^4 + 1
159*(x*e + d)^(5/2)*B*a*b^3*d*e^4 + 1929*(x*e + d)^(5/2)*A*b^4*d*e^4 - 3057
*(x*e + d)^(3/2)*B*a*b^3*d^2*e^4 - 2295*(x*e + d)^(3/2)*A*b^4*d^2*e^4 + 180
9*sqrt(x*e + d)*B*a*b^3*d^3*e^4 + 975*sqrt(x*e + d)*A*b^4*d^3*e^4 + 385*(x*
e + d)^(5/2)*B*a^2*b^2*e^5 - 1929*(x*e + d)^(5/2)*A*a*b^3*e^5 + 762*(x*e +
d)^(3/2)*B*a^2*b^2*d*e^5 + 4590*(x*e + d)^(3/2)*A*a*b^3*d*e^5 - 1251*sqrt(x
*e + d)*B*a^2*b^2*d^2*e^5 - 2925*sqrt(x*e + d)*A*a*b^3*d^2*e^5 + 511*(x*e +
 d)^(3/2)*B*a^3*b*e^6 - 2295*(x*e + d)^(3/2)*A*a^2*b^2*e^6 - 141*sqrt(x*e +
 d)*B*a^3*b*d*e^6 + 2925*sqrt(x*e + d)*A*a^2*b^2*d*e^6 + 279*sqrt(x*e + d)*
B*a^4*e^7 - 975*sqrt(x*e + d)*A*a^3*b*e^7)/((b^5*d^5*sgn((x*e + d)*b*e - b*
d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^
3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2
) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4
)
```

maple [B] time = 0.12, size = 1493, normalized size = 3.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/192*(945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^4
*b*e^4-48*((a*e-b*d)*b)^(1/2)*A*b^4*d^4-663*((a*e-b*d)*b)^(1/2)*B*a^4*d*e^3
-3360*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a*b^4
*d*e^3-5040*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2
*a^2*b^3*d*e^3-3360*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(
1/2)*x*a^3*b^2*d*e^3+384*((a*e-b*d)*b)^(1/2)*A*a^4*e^4+945*((a*e-b*d)*b)^(1
/2)*A*b^4*e^4*x^4-279*((a*e-b*d)*b)^(1/2)*B*a^4*e^4*x-64*((a*e-b*d)*b)^(1/2
)*B*b^4*d^4*x-16*((a*e-b*d)*b)^(1/2)*B*a*b^3*d^4-105*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^5*e^4-840*B*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*b^5*d*e^3+3780*A*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a*b^4*e^4-420*B*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*a^2*b^3*e^4+5670*A*arctan((e*
x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a^2*b^3*e^4-630*B*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a^3*b^2*e^4+3780*A
*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^3*b^2*e^4-42
0*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^4*b*e^4-8
40*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^4*b*d*e^3-
105*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*a*b^4*e
^4+945*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^4*b^5*
e^4+3465*((a*e-b*d)*b)^(1/2)*A*a*b^3*e^4*x^3+315*((a*e-b*d)*b)^(1/2)*A*b^4*
d*e^3*x^3-385*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*e^4*x^3-280*((a*e-b*d)*b)^(1/2)
*B*b^4*d^2*e^2*x^3+4599*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*e^4*x^2-126*((a*e-b*d
)*b)^(1/2)*A*b^4*d^2*e^2*x^2-511*((a*e-b*d)*b)^(1/2)*B*a^3*b*e^4*x^2+112*((
a*e-b*d)*b)^(1/2)*B*b^4*d^3*e*x^2+2511*((a*e-b*d)*b)^(1/2)*A*a^3*b*e^4*x+72
*((a*e-b*d)*b)^(1/2)*A*b^4*d^3*e*x-105*((a*e-b*d)*b)^(1/2)*B*a*b^3*e^4*x^4-
840*((a*e-b*d)*b)^(1/2)*B*b^4*d*e^3*x^4+975*((a*e-b*d)*b)^(1/2)*A*a^3*b*d*e
^3-630*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*d^2*e^2+264*((a*e-b*d)*b)^(1/2)*A*a*b^
3*d^3*e-370*((a*e-b*d)*b)^(1/2)*B*a^3*b*d^2*e^2+104*((a*e-b*d)*b)^(1/2)*B*a
^2*b^2*d^3*e-4221*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*d*e^3*x^2-1050*((a*e-b*d)*b
)^(1/2)*B*a*b^3*d^2*e^2*x^2+1665*((a*e-b*d)*b)^(1/2)*A*a^2*b^2*d*e^3*x-468*
((a*e-b*d)*b)^(1/2)*A*a*b^3*d^2*e^2*x-2417*((a*e-b*d)*b)^(1/2)*B*a^3*b*d*e^
3*x-1428*((a*e-b*d)*b)^(1/2)*B*a^2*b^2*d^2*e^2*x+408*((a*e-b*d)*b)^(1/2)*B*
a*b^3*d^3*e*x-3115*((a*e-b*d)*b)^(1/2)*B*a*b^3*d*e^3*x^3+1197*((a*e-b*d)*b)
^(1/2)*A*a*b^3*d*e^3*x^2)*(b*x+a)/(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*
d)^5/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{3/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1882 $\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=496

$$-\frac{105e^3(a+bx)(3aBe-11Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(bd-ae)^6}-\frac{35e^3(a+bx)(3aBe-11Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}(bd-ae)^5}+\frac{105\sqrt{b}e^3(a+bx)(3aBe}{64\sqrt{a^2+2a}}$$

```
[Out] -21/64*e^2*(-11*A*b*e+3*B*a*e+8*B*b*d)/b/(-a*e+b*d)^4/(e*x+d)^(3/2)/((b*x+a
)^2)^(1/2)+1/4*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(3/2)/((b*x+a)^2)^
(1/2)+1/24*(11*A*b*e-3*B*a*e-8*B*b*d)/b/(-a*e+b*d)^2/(b*x+a)^2/(e*x+d)^(3/2
)/((b*x+a)^2)^(1/2)+3/32*e*(-11*A*b*e+3*B*a*e+8*B*b*d)/b/(-a*e+b*d)^3/(b*x+
a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-35/64*e^3*(-11*A*b*e+3*B*a*e+8*B*b*d)*(b
*x+a)/b/(-a*e+b*d)^5/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)+105/64*e^3*(-11*A*b*e+
3*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^
(1/2)/(-a*e+b*d)^(13/2)/((b*x+a)^2)^(1/2)-105/64*e^3*(-11*A*b*e+3*B*a*e+8*B
*b*d)*(b*x+a)/(-a*e+b*d)^6/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 496, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 78, 51, 63, 208}

$$-\frac{105e^3(a+bx)(3aBe-11Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}(bd-ae)^6}-\frac{35e^3(a+bx)(3aBe-11Abe+8bBd)}{64b\sqrt{a^2+2abx+b^2x^2}(d+ex)^{3/2}(bd-ae)^5}-\frac{21e^2(3aBe-11}{64b\sqrt{a^2+2abx+b^2x^2}(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-21*e^2*(8*b*B*d - 11*A*b*e + 3*a*B*e))/(64*b*(b*d - a*e)^4*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3
*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 11*A*b*e + 3*a
*B*e)/(24*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (3*e*(8*b*B*d - 11*A*b*e + 3*a*B*e))/(32*b*(b*d - a*e)^3*(a + b
*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*(8*b*B*d - 11*
A*b*e + 3*a*B*e)*(a + b*x))/(64*b*(b*d - a*e)^5*(d + e*x)^(3/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2]) - (105*e^3*(8*b*B*d - 11*A*b*e + 3*a*B*e)*(a + b*x))/(6
4*(b*d - a*e)^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (105*Sqrt[b]
*e^3*(8*b*B*d - 11*A*b*e + 3*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*(b*d - a*e)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-1\right.}{}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{24b(bd-ae)^2}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{24b(bd-ae)^2}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{4b(bd-ae)(a+bx)^3}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{4b(bd-ae)(a+bx)^3}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{4b(bd-ae)(a+bx)^3}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{4b(bd-ae)(a+bx)^3}$$

$$= -\frac{21e^2(8bBd-11Abe+3aBe)}{64b(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{4b(bd-ae)(a+bx)^3}$$

Mathematica [**C**]   time = 0.09, size = 115, normalized size = 0.23

$$\frac{\frac{e^3(a+bx)^4(-3aBe+11Abe-8bBd)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+3aB-3Ab}{12b(a+bx)^3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-3*A*b + 3*a*B + (e^3*(-8*b*B*d + 11*A*b*e - 3*a*B*e)*(a + b*x)^4*Hypergeo
metric2F1[-3/2, 4, -1/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(12*b*(
b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

fricas [**B**]   time = 1.42, size = 3596, normalized size = 7.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/384*(315*(8*B*a^4*b*d^3*e^3 + (3*B*a^5 - 11*A*a^4*b)*d^2*e^4 + (8*B*b^5
*d*e^5 + (3*B*a*b^4 - 11*A*b^5)*e^6)*x^6 + 2*(8*B*b^5*d^2*e^4 + (19*B*a*b^4
 - 11*A*b^5)*d*e^5 + 2*(3*B*a^2*b^3 - 11*A*a*b^4)*e^6)*x^5 + (8*B*b^5*d^3*e
^3 + (67*B*a*b^4 - 11*A*b^5)*d^2*e^4 + 8*(9*B*a^2*b^3 - 11*A*a*b^4)*d*e^5 +
 6*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^6)*x^4 + 4*(8*B*a*b^4*d^3*e^3 + (27*B*a^2
*b^3 - 11*A*a*b^4)*d^2*e^4 + (17*B*a^3*b^2 - 33*A*a^2*b^3)*d*e^5 + (3*B*a^4
*b - 11*A*a^3*b^2)*e^6)*x^3 + (48*B*a^2*b^3*d^3*e^3 + 2*(41*B*a^3*b^2 - 33*
A*a^2*b^3)*d^2*e^4 + 8*(4*B*a^4*b - 11*A*a^3*b^2)*d*e^5 + (3*B*a^5 - 11*A*a
^4*b)*e^6)*x^2 + 2*(16*B*a^3*b^2*d^3*e^3 + 2*(7*B*a^4*b - 11*A*a^3*b^2)*d^2
*e^4 + (3*B*a^5 - 11*A*a^4*b)*d*e^5)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*
b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2
*(128*A*a^5*e^5 + 16*(B*a*b^4 + 3*A*b^5)*d^5 - 8*(17*B*a^2*b^3 + 41*A*a*b^4
)*d^4*e + 10*(69*B*a^3*b^2 + 103*A*a^2*b^3)*d^3*e^2 + (2639*B*a^4*b - 2295*
A*a^3*b^2)*d^2*e^3 + 256*(B*a^5 - 8*A*a^4*b)*d*e^4 + 315*(8*B*b^5*d*e^4 + (
3*B*a*b^4 - 11*A*b^5)*e^5)*x^5 + 105*(32*B*b^5*d^2*e^3 + 4*(25*B*a*b^4 - 11
*A*b^5)*d*e^4 + 11*(3*B*a^2*b^3 - 11*A*a*b^4)*e^5)*x^4 + 21*(24*B*b^5*d^3*e
^2 + (601*B*a*b^4 - 33*A*b^5)*d^2*e^3 + 2*(403*B*a^2*b^3 - 407*A*a*b^4)*d*e
^4 + 73*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 - 9*(16*B*b^5*d^4*e - 2*(105*
B*a*b^4 + 11*A*b^5)*d^3*e^2 - (1937*B*a^2*b^3 - 297*A*a*b^4)*d^2*e^3 - 8*(1
80*B*a^3*b^2 - 319*A*a^2*b^3)*d*e^4 - 93*(3*B*a^4*b - 11*A*a^3*b^2)*e^5)*x^
2 + (64*B*b^5*d^5 - 8*(65*B*a*b^4 + 11*A*b^5)*d^4*e + 4*(639*B*a^2*b^3 + 18
7*A*a*b^4)*d^3*e^2 + (10331*B*a^3*b^2 - 3795*A*a^2*b^3)*d^2*e^3 + 22*(205*B
*a^4*b - 581*A*a^3*b^2)*d*e^4 + 128*(3*B*a^5 - 11*A*a^4*b)*e^5)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5
*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2
- 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^
2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^
2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^
5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7
*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b
^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4
*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30
*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7
 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2
- 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*
d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7
*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b
^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x), 1/192*(315*(8*B*a^4*b*d^3*e^
3 + (3*B*a^5 - 11*A*a^4*b)*d^2*e^4 + (8*B*b^5*d*e^5 + (3*B*a*b^4 - 11*A*b^5
)*e^6)*x^6 + 2*(8*B*b^5*d^2*e^4 + (19*B*a*b^4 - 11*A*b^5)*d*e^5 + 2*(3*B*a^
2*b^3 - 11*A*a*b^4)*e^6)*x^5 + (8*B*b^5*d^3*e^3 + (67*B*a*b^4 - 11*A*b^5)*d
^2*e^4 + 8*(9*B*a^2*b^3 - 11*A*a*b^4)*d*e^5 + 6*(3*B*a^3*b^2 - 11*A*a^2*b^3
)*e^6)*x^4 + 4*(8*B*a*b^4*d^3*e^3 + (27*B*a^2*b^3 - 11*A*a*b^4)*d^2*e^4 + (
17*B*a^3*b^2 - 33*A*a^2*b^3)*d*e^5 + (3*B*a^4*b - 11*A*a^3*b^2)*e^6)*x^3 +
(48*B*a^2*b^3*d^3*e^3 + 2*(41*B*a^3*b^2 - 33*A*a^2*b^3)*d^2*e^4 + 8*(4*B*a^
4*b - 11*A*a^3*b^2)*d*e^5 + (3*B*a^5 - 11*A*a^4*b)*e^6)*x^2 + 2*(16*B*a^3*b
^2*d^3*e^3 + 2*(7*B*a^4*b - 11*A*a^3*b^2)*d^2*e^4 + (3*B*a^5 - 11*A*a^4*b)*
d*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b
*d - a*e))/(b*e*x + b*d)) - (128*A*a^5*e^5 + 16*(B*a*b^4 + 3*A*b^5)*d^5 - 8
*(17*B*a^2*b^3 + 41*A*a*b^4)*d^4*e + 10*(69*B*a^3*b^2 + 103*A*a^2*b^3)*d^3*
e^2 + (2639*B*a^4*b - 2295*A*a^3*b^2)*d^2*e^3 + 256*(B*a^5 - 8*A*a^4*b)*d*e
^4 + 315*(8*B*b^5*d*e^4 + (3*B*a*b^4 - 11*A*b^5)*e^5)*x^5 + 105*(32*B*b^5*d
^2*e^3 + 4*(25*B*a*b^4 - 11*A*b^5)*d*e^4 + 11*(3*B*a^2*b^3 - 11*A*a*b^4)*e^
5)*x^4 + 21*(24*B*b^5*d^3*e^2 + (601*B*a*b^4 - 33*A*b^5)*d^2*e^3 + 2*(403*B
*a^2*b^3 - 407*A*a*b^4)*d*e^4 + 73*(3*B*a^3*b^2 - 11*A*a^2*b^3)*e^5)*x^3 -
9*(16*B*b^5*d^4*e - 2*(105*B*a*b^4 + 11*A*b^5)*d^3*e^2 - (1937*B*a^2*b^3 -
297*A*a*b^4)*d^2*e^3 - 8*(180*B*a^3*b^2 - 319*A*a^2*b^3)*d*e^4 - 93*(3*B*a^
4*b - 11*A*a^3*b^2)*e^5)*x^2 + (64*B*b^5*d^5 - 8*(65*B*a*b^4 + 11*A*b^5)*d^
4*e + 4*(639*B*a^2*b^3 + 187*A*a*b^4)*d^3*e^2 + (10331*B*a^3*b^2 - 3795*A*a
^2*b^3)*d^2*e^3 + 22*(205*B*a^4*b - 581*A*a^3*b^2)*d*e^4 + 128*(3*B*a^5 - 1
1*A*a^4*b)*e^5)*x)*sqrt(e*x + d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b
^4*d^6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^
10*d^2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*
b^7*d^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(
b^10*d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*
a^4*b^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^
5 + (b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 5
5*a^4*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e
^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^
2 + 19*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^
3*d^2*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*
d^7*e + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^
7*b^3*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a
^3*b^7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 1
0*a^7*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)]
```

giac [B] time = 0.71, size = 1301, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -105/64*(8*B*b^2*d*e^3 + 3*B*a*b*e^4 - 11*A*b^2*e^4)*arctan(sqrt(x*e + d)*b
/sqrt(-b^2*d + a*b*e))/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b
^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e +
 d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e
^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e +
 a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/3*(12*(x*e + d)*B*b*d*e^3 + B*b*d^2*e^3
+ 3*(x*e + d)*B*a*e^4 - 15*(x*e + d)*A*b*e^4 - B*a*d*e^4 - A*b*d*e^4 + A*a*
e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e +
a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2
*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b
*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d)
^(3/2)) - 1/192*(984*(x*e + d)^(7/2)*B*b^5*d*e^3 - 3224*(x*e + d)^(5/2)*B*b
^5*d^2*e^3 + 3560*(x*e + d)^(3/2)*B*b^5*d^3*e^3 - 1320*sqrt(x*e + d)*B*b^5*
d^4*e^3 + 561*(x*e + d)^(7/2)*B*a*b^4*e^4 - 1545*(x*e + d)^(7/2)*A*b^5*e^4
+ 1295*(x*e + d)^(5/2)*B*a*b^4*d*e^4 + 5153*(x*e + d)^(5/2)*A*b^5*d*e^4 - 4
825*(x*e + d)^(3/2)*B*a*b^4*d^2*e^4 - 5855*(x*e + d)^(3/2)*A*b^5*d^2*e^4 +
2985*sqrt(x*e + d)*B*a*b^4*d^3*e^4 + 2295*sqrt(x*e + d)*A*b^5*d^3*e^4 + 192
9*(x*e + d)^(5/2)*B*a^2*b^3*e^5 - 5153*(x*e + d)^(5/2)*A*a*b^4*e^5 - 1030*(
x*e + d)^(3/2)*B*a^2*b^3*d*e^5 + 11710*(x*e + d)^(3/2)*A*a*b^4*d*e^5 - 1035
*sqrt(x*e + d)*B*a^2*b^3*d^2*e^5 - 6885*sqrt(x*e + d)*A*a*b^4*d^2*e^5 + 229
5*(x*e + d)^(3/2)*B*a^3*b^2*e^6 - 5855*(x*e + d)^(3/2)*A*a^2*b^3*e^6 - 1605
*sqrt(x*e + d)*B*a^3*b^2*d*e^6 + 6885*sqrt(x*e + d)*A*a^2*b^3*d*e^6 + 975*s
qrt(x*e + d)*B*a^4*b*e^7 - 2295*sqrt(x*e + d)*A*a^3*b^2*e^7)/((b^6*d^6*sgn(
(x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e +
a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3
*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e +
 d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)
 + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^4)
```

maple [**B**] time = 0.13, size = 1860, normalized size = 3.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/192*(-3360*B*((a*e-b*d)*b)^(1/2)*x^4*b^5*d^2*e^3-128*A*((a*e-b*d)*b)^(1/2
)*a^5*e^5-48*A*((a*e-b*d)*b)^(1/2)*b^5*d^5+3465*A*((a*e-b*d)*b)^(1/2)*x^5*b
^5*e^5-384*B*((a*e-b*d)*b)^(1/2)*x*a^5*e^5-64*B*((a*e-b*d)*b)^(1/2)*x*b^5*d
^5-15120*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^
2*b^4*d*e^3-10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/
2)*x*a^3*b^3*d*e^3-10080*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x
+d)^(3/2)*x^3*a*b^5*d*e^3-256*B*((a*e-b*d)*b)^(1/2)*a^5*d*e^4-16*B*((a*e-b*
d)*b)^(1/2)*a*b^4*d^5-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*
x+d)^(3/2)*a^5*b*e^4+9207*A*((a*e-b*d)*b)^(1/2)*x^2*a^3*b^2*e^5-198*A*((a*e
-b*d)*b)^(1/2)*x^2*b^5*d^3*e^2-2511*B*((a*e-b*d)*b)^(1/2)*x^2*a^4*b*e^5+144
*B*((a*e-b*d)*b)^(1/2)*x^2*b^5*d^4*e+1408*A*((a*e-b*d)*b)^(1/2)*x*a^4*b*e^5
+88*A*((a*e-b*d)*b)^(1/2)*x*b^5*d^4*e+3465*A*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^4*b^6*e^4-945*B*((a*e-b*d)*b)^(1/2)*x^5*a*b^4
*e^5-2520*B*((a*e-b*d)*b)^(1/2)*x^5*b^5*d*e^4+12705*A*((a*e-b*d)*b)^(1/2)*x
^4*a*b^4*e^5+4620*A*((a*e-b*d)*b)^(1/2)*x^4*b^5*d*e^4-3465*B*((a*e-b*d)*b)^
(1/2)*x^4*a^2*b^3*e^5+693*A*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^2*e^3+3465*A*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^4*b^2*e^4-4599*B*((
a*e-b*d)*b)^(1/2)*x^3*a^3*b^2*e^5-504*B*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^3*e^2
+16863*A*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^3*e^5+2048*A*((a*e-b*d)*b)^(1/2)*a^4
*b*d*e^4+2295*A*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^2*e^3-1030*A*((a*e-b*d)*b)^(1
/2)*a^2*b^3*d^3*e^2+328*A*((a*e-b*d)*b)^(1/2)*a*b^4*d^4*e-2639*B*((a*e-b*d)
*b)^(1/2)*a^4*b*d^2*e^3-690*B*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^3*e^2+136*B*((a
*e-b*d)*b)^(1/2)*a^2*b^3*d^4*e-2556*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^3*e^2
+520*B*((a*e-b*d)*b)^(1/2)*x*a*b^4*d^4*e-12960*B*((a*e-b*d)*b)^(1/2)*x^2*a^
3*b^2*d*e^4-17433*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^3*d^2*e^3-1890*B*((a*e-b*
d)*b)^(1/2)*x^2*a*b^4*d^3*e^2+12782*A*((a*e-b*d)*b)^(1/2)*x*a^3*b^2*d*e^4+3
795*A*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^2*e^3-748*A*((a*e-b*d)*b)^(1/2)*x*a*b
^4*d^3*e^2-4510*B*((a*e-b*d)*b)^(1/2)*x*a^4*b*d*e^4-10331*B*((a*e-b*d)*b)^(
1/2)*x*a^3*b^2*d^2*e^3-945*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e
*x+d)^(3/2)*x^4*a*b^5*e^4-2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b
)*(e*x+d)^(3/2)*x^4*b^6*d*e^3+13860*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*(e*x+d)^(3/2)*x^3*a*b^5*e^4-3780*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*(e*x+d)^(3/2)*x^3*a^2*b^4*e^4+20790*A*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^2*b^4*e^4-5670*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a^3*b^3*e^4+13860*A*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^3*b^3*e^4-10500*B*((a*e-b*
d)*b)^(1/2)*x^4*a*b^4*d*e^4-3780*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)*(e*x+d)^(3/2)*x*a^4*b^2*e^4+17094*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^4*d*e^4
-16926*B*((a*e-b*d)*b)^(1/2)*x^3*a^2*b^3*d*e^4-12621*B*((a*e-b*d)*b)^(1/2)*
x^3*a*b^4*d^2*e^3-2520*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d
)^(3/2)*a^4*b^2*d*e^3+22968*A*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^3*d*e^4+2673*A*
((a*e-b*d)*b)^(1/2)*x^2*a*b^4*d^2*e^3)*(b*x+a)/(e*x+d)^(3/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^6/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{5/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1883 $\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=564

$$-\frac{231be^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^7}-\frac{77e^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^6}-\frac{231e^3(a+bx)(5aBe-}{320b\sqrt{a^2+2abx+b^2x^2}\,(}$$

```
[Out] -33/64*e^2*(-13*A*b*e+5*B*a*e+8*B*b*d)/b/(-a*e+b*d)^4/(e*x+d)^(5/2)/((b*x+a
)^2)^(1/2)+1/4*(-A*b+B*a)/b/(-a*e+b*d)/(b*x+a)^3/(e*x+d)^(5/2)/((b*x+a)^2)^
(1/2)+1/24*(13*A*b*e-5*B*a*e-8*B*b*d)/b/(-a*e+b*d)^2/(b*x+a)^2/(e*x+d)^(5/2
)/((b*x+a)^2)^(1/2)+11/96*e*(-13*A*b*e+5*B*a*e+8*B*b*d)/b/(-a*e+b*d)^3/(b*x
+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)-231/320*e^3*(-13*A*b*e+5*B*a*e+8*B*b*d)
*(b*x+a)/b/(-a*e+b*d)^5/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)-77/64*e^3*(-13*A*b*
e+5*B*a*e+8*B*b*d)*(b*x+a)/(-a*e+b*d)^6/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)+231
/64*b^(3/2)*e^3*(-13*A*b*e+5*B*a*e+8*B*b*d)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)
^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(15/2)/((b*x+a)^2)^(1/2)-231/64*b*e^3*(
-13*A*b*e+5*B*a*e+8*B*b*d)*(b*x+a)/(-a*e+b*d)^7/(e*x+d)^(1/2)/((b*x+a)^2)^(
1/2)
```

Rubi [A] time = 0.57, antiderivative size = 564, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 78, 51, 63, 208\}$

$$-\frac{231be^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^7}-\frac{77e^3(a+bx)(5aBe-13Abe+8bBd)}{64\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^6}-\frac{231e^3(a+bx)(5aBe-}{320b\sqrt{a^2+2abx+b^2x^2}\,(}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-33*e^2*(8*b*B*d - 13*A*b*e + 5*a*B*e))/(64*b*(b*d - a*e)^4*(d + e*x)^(5/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (A*b - a*B)/(4*b*(b*d - a*e)*(a + b*x)^3
*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (8*b*B*d - 13*A*b*e + 5*a
*B*e)/(24*b*(b*d - a*e)^2*(a + b*x)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2]) + (11*e*(8*b*B*d - 13*A*b*e + 5*a*B*e))/(96*b*(b*d - a*e)^3*(a +
b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*e^3*(8*b*B*d - 1
3*A*b*e + 5*a*B*e)*(a + b*x))/(320*b*(b*d - a*e)^5*(d + e*x)^(5/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (77*e^3*(8*b*B*d - 13*A*b*e + 5*a*B*e)*(a + b*x))/
(64*(b*d - a*e)^6*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b*e
^3*(8*b*B*d - 13*A*b*e + 5*a*B*e)*(a + b*x))/(64*(b*d - a*e)^7*Sqrt[d + e*x
]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*b^(3/2)*e^3*(8*b*B*d - 13*A*b*e + 5
*a*B*e)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*(b*
d - a*e)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{A+Bx}{\left(ab+b^2x\right)^5(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(b^2(8bBd-13A}{8}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{Ab-aB}{4b(bd-ae)(a+bx)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{8}{24b(bd-ae)^2(a}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

$$= -\frac{33e^2(8bBd-13Abe+5aBe)}{64b(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{A}{4b(bd-ae)(a+bx)^3(d}$$

Mathematica [**C**] time = 0.10, size = 115, normalized size = 0.20

$$\frac{\frac{e^3(a+bx)^4(-5aBe+13Abe-8bBd)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4}+5aB-5Ab}{20b(a+bx)^3\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*A*b + 5*a*B + (e^3*(-8*b*B*d + 13*A*b*e - 5*a*B*e)*(a + b*x)^4*Hypergeo
metric2F1[-5/2, 4, -3/2, (b*(d + e*x))/(b*d - a*e)])/(b*d - a*e)^4)/(20*b*(
b*d - a*e)*(a + b*x)^3*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

fricas [**B**] time = 1.27, size = 4833, normalized size = 8.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/1920*(3465*(8*B*a^4*b^2*d^4*e^3 + (5*B*a^5*b - 13*A*a^4*b^2)*d^3*e^4 + (
8*B*b^6*d*e^6 + (5*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (24*B*b^6*d^2*e^5 + (47*B
*a*b^5 - 39*A*b^6)*d*e^6 + 4*(5*B*a^2*b^4 - 13*A*a*b^5)*e^7)*x^6 + 3*(8*B*b
^6*d^3*e^4 + (37*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 4*(9*B*a^2*b^4 - 13*A*a*b^5)
*d*e^6 + 2*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 + (8*B*b^6*d^4*e^3 + (101*
B*a*b^5 - 13*A*b^6)*d^3*e^4 + 12*(17*B*a^2*b^4 - 13*A*a*b^5)*d^2*e^5 + 2*(6
1*B*a^3*b^3 - 117*A*a^2*b^4)*d*e^6 + 4*(5*B*a^4*b^2 - 13*A*a^3*b^3)*e^7)*x^
4 + (32*B*a*b^5*d^4*e^3 + 4*(41*B*a^2*b^4 - 13*A*a*b^5)*d^3*e^4 + 6*(31*B*a
^3*b^3 - 39*A*a^2*b^4)*d^2*e^5 + 4*(17*B*a^4*b^2 - 39*A*a^3*b^3)*d*e^6 + (5
*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + 3*(16*B*a^2*b^4*d^4*e^3 + 2*(21*B*a^3*b
^3 - 13*A*a^2*b^4)*d^3*e^4 + 4*(7*B*a^4*b^2 - 13*A*a^3*b^3)*d^2*e^5 + (5*B*
a^5*b - 13*A*a^4*b^2)*d*e^6)*x^2 + (32*B*a^3*b^3*d^4*e^3 + 4*(11*B*a^4*b^2
- 13*A*a^3*b^3)*d^3*e^4 + 3*(5*B*a^5*b - 13*A*a^4*b^2)*d^2*e^5)*x)*sqrt(b/(
b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(
b*d - a*e)))/(b*x + a)) + 2*(384*A*a^6*e^6 - 80*(B*a*b^5 + 3*A*b^6)*d^6 + 2
80*(3*B*a^2*b^4 + 7*A*a*b^5)*d^5*e - 70*(79*B*a^3*b^3 + 109*A*a^2*b^4)*d^4*
e^2 - (33619*B*a^4*b^2 - 22155*A*a^3*b^3)*d^3*e^3 - 128*(54*B*a^5*b - 253*A
*a^4*b^2)*d^2*e^4 + 128*(2*B*a^6 - 31*A*a^5*b)*d*e^5 - 3465*(8*B*b^6*d*e^5
+ (5*B*a*b^5 - 13*A*b^6)*e^6)*x^6 - 1155*(56*B*b^6*d^2*e^4 + (123*B*a*b^5 -
 91*A*b^6)*d*e^5 + 11*(5*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 - 231*(184*B*b^6*
d^3*e^3 + (1147*B*a*b^5 - 299*A*b^6)*d^2*e^4 + (1229*B*a^2*b^4 - 1677*A*a*b
^5)*d*e^5 + 73*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 33*(120*B*b^6*d^4*e^
2 + (4867*B*a*b^5 - 195*A*b^6)*d^3*e^3 + (12651*B*a^2*b^4 - 7787*A*a*b^5)*d
^2*e^4 + (8267*B*a^3*b^3 - 15691*A*a^2*b^4)*d*e^5 + 279*(5*B*a^4*b^2 - 13*A
*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 10*(135*B*a*b^5 + 13*A*b^6)*d^4*e
^2 - (20339*B*a^2*b^4 - 2275*A*a*b^5)*d^3*e^3 - (28157*B*a^3*b^3 - 31629*A*
a^2*b^4)*d^2*e^4 - (11019*B*a^4*b^2 - 25987*A*a^3*b^3)*d*e^5 - 128*(5*B*a^5
*b - 13*A*a^4*b^2)*e^6)*x^2 - (320*B*b^6*d^6 - 40*(79*B*a*b^5 + 13*A*b^6)*d
^5*e + 1820*(11*B*a^2*b^4 + 3*A*a*b^5)*d^4*e^2 + (134441*B*a^3*b^3 - 35945*
A*a^2*b^4)*d^3*e^3 + (103033*B*a^4*b^2 - 196001*A*a^3*b^3)*d^2*e^4 + 128*(1
27*B*a^5*b - 351*A*a^4*b^2)*d*e^5 - 128*(5*B*a^6 - 13*A*a^5*b)*e^6)*x)*sqrt
(e*x + d))/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*a^7*b^
4*d^7*e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^6 - a^
11*d^3*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 - 35*a^3
*b^8*d^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*e^9 -
a^7*b^4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*d^6*e^
4 - 21*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63*a^6*b
^5*d^2*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e - 3*a*b
^10*d^8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5*e^5 +
 49*a^5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8*b^3*d
*e^9 - 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9*d^8*e
^2 + 95*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 + 245*a^
6*b^5*d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2*d*e^9
 - 4*a^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^8*d^8*
e^2 + 155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5 + 35*
a^7*b^4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*d*e^9
- a^11*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*d^8*e^
2 + 7*a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*a^8*b^
3*d^4*e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 + (4*a^3
*b^8*d^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^3 + 35
*a^7*b^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*b*d^3*
e^7 - 3*a^11*d^2*e^8)*x), 1/960*(3465*(8*B*a^4*b^2*d^4*e^3 + (5*B*a^5*b - 1
3*A*a^4*b^2)*d^3*e^4 + (8*B*b^6*d*e^6 + (5*B*a*b^5 - 13*A*b^6)*e^7)*x^7 + (
24*B*b^6*d^2*e^5 + (47*B*a*b^5 - 39*A*b^6)*d*e^6 + 4*(5*B*a^2*b^4 - 13*A*a*
b^5)*e^7)*x^6 + 3*(8*B*b^6*d^3*e^4 + (37*B*a*b^5 - 13*A*b^6)*d^2*e^5 + 4*(9
*B*a^2*b^4 - 13*A*a*b^5)*d*e^6 + 2*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^7)*x^5 +
(8*B*b^6*d^4*e^3 + (101*B*a*b^5 - 13*A*b^6)*d^3*e^4 + 12*(17*B*a^2*b^4 - 13
*A*a*b^5)*d^2*e^5 + 2*(61*B*a^3*b^3 - 117*A*a^2*b^4)*d*e^6 + 4*(5*B*a^4*b^2
 - 13*A*a^3*b^3)*e^7)*x^4 + (32*B*a*b^5*d^4*e^3 + 4*(41*B*a^2*b^4 - 13*A*a*
b^5)*d^3*e^4 + 6*(31*B*a^3*b^3 - 39*A*a^2*b^4)*d^2*e^5 + 4*(17*B*a^4*b^2 -
39*A*a^3*b^3)*d*e^6 + (5*B*a^5*b - 13*A*a^4*b^2)*e^7)*x^3 + 3*(16*B*a^2*b^4
*d^4*e^3 + 2*(21*B*a^3*b^3 - 13*A*a^2*b^4)*d^3*e^4 + 4*(7*B*a^4*b^2 - 13*A*
a^3*b^3)*d^2*e^5 + (5*B*a^5*b - 13*A*a^4*b^2)*d*e^6)*x^2 + (32*B*a^3*b^3*d^
4*e^3 + 4*(11*B*a^4*b^2 - 13*A*a^3*b^3)*d^3*e^4 + 3*(5*B*a^5*b - 13*A*a^4*b
^2)*d^2*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt
(-b/(b*d - a*e))/(b*e*x + b*d)) + (384*A*a^6*e^6 - 80*(B*a*b^5 + 3*A*b^6)*d
^6 + 280*(3*B*a^2*b^4 + 7*A*a*b^5)*d^5*e - 70*(79*B*a^3*b^3 + 109*A*a^2*b^4
)*d^4*e^2 - (33619*B*a^4*b^2 - 22155*A*a^3*b^3)*d^3*e^3 - 128*(54*B*a^5*b -
 253*A*a^4*b^2)*d^2*e^4 + 128*(2*B*a^6 - 31*A*a^5*b)*d*e^5 - 3465*(8*B*b^6*
d*e^5 + (5*B*a*b^5 - 13*A*b^6)*e^6)*x^6 - 1155*(56*B*b^6*d^2*e^4 + (123*B*a
*b^5 - 91*A*b^6)*d*e^5 + 11*(5*B*a^2*b^4 - 13*A*a*b^5)*e^6)*x^5 - 231*(184*
B*b^6*d^3*e^3 + (1147*B*a*b^5 - 299*A*b^6)*d^2*e^4 + (1229*B*a^2*b^4 - 1677
*A*a*b^5)*d*e^5 + 73*(5*B*a^3*b^3 - 13*A*a^2*b^4)*e^6)*x^4 - 33*(120*B*b^6*
d^4*e^2 + (4867*B*a*b^5 - 195*A*b^6)*d^3*e^3 + (12651*B*a^2*b^4 - 7787*A*a*
b^5)*d^2*e^4 + (8267*B*a^3*b^3 - 15691*A*a^2*b^4)*d*e^5 + 279*(5*B*a^4*b^2
- 13*A*a^3*b^3)*e^6)*x^3 + 11*(80*B*b^6*d^5*e - 10*(135*B*a*b^5 + 13*A*b^6)
*d^4*e^2 - (20339*B*a^2*b^4 - 2275*A*a*b^5)*d^3*e^3 - (28157*B*a^3*b^3 - 31
629*A*a^2*b^4)*d^2*e^4 - (11019*B*a^4*b^2 - 25987*A*a^3*b^3)*d*e^5 - 128*(5
*B*a^5*b - 13*A*a^4*b^2)*e^6)*x^2 - (320*B*b^6*d^6 - 40*(79*B*a*b^5 + 13*A*
b^6)*d^5*e + 1820*(11*B*a^2*b^4 + 3*A*a*b^5)*d^4*e^2 + (134441*B*a^3*b^3 -
35945*A*a^2*b^4)*d^3*e^3 + (103033*B*a^4*b^2 - 196001*A*a^3*b^3)*d^2*e^4 +
128*(127*B*a^5*b - 351*A*a^4*b^2)*d*e^5 - 128*(5*B*a^6 - 13*A*a^5*b)*e^6)*x
)*sqrt(e*x + d))/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*
a^7*b^4*d^7*e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^
6 - a^11*d^3*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 -
35*a^3*b^8*d^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*
e^9 - a^7*b^4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*
d^6*e^4 - 21*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63
*a^6*b^5*d^2*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e -
 3*a*b^10*d^8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5
*e^5 + 49*a^5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8
*b^3*d*e^9 - 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9
*d^8*e^2 + 95*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 +
245*a^6*b^5*d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2
*d*e^9 - 4*a^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^
8*d^8*e^2 + 155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5
 + 35*a^7*b^4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*
d*e^9 - a^11*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*
d^8*e^2 + 7*a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*
a^8*b^3*d^4*e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 +
(4*a^3*b^8*d^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^
3 + 35*a^7*b^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*
b*d^3*e^7 - 3*a^11*d^2*e^8)*x)]
```

giac [B] time = 0.85, size = 1527, normalized size = 2.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -231/64*(8*B*b^3*d*e^3 + 5*B*a*b^2*e^4 - 13*A*b^3*e^4)*arctan(sqrt(x*e + d)
*b/sqrt(-b^2*d + a*b*e))/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 7*a
*b^6*d^6*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5*e^2*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) + 35*a^4*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 21*a^5*b^
2*d^2*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*sgn((x*e + d)*
b*e - b*d*e + a*e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^
2*d + a*b*e)) - 2/15*(150*(x*e + d)^2*B*b^2*d*e^3 + 20*(x*e + d)*B*b^2*d^2*
e^3 + 3*B*b^2*d^3*e^3 + 75*(x*e + d)^2*B*a*b*e^4 - 225*(x*e + d)^2*A*b^2*e^
4 - 15*(x*e + d)*B*a*b*d*e^4 - 25*(x*e + d)*A*b^2*d*e^4 - 6*B*a*b*d^2*e^4 -
 3*A*b^2*d^2*e^4 - 5*(x*e + d)*B*a^2*e^5 + 25*(x*e + d)*A*a*b*e^5 + 3*B*a^2
*d*e^5 + 6*A*a*b*d*e^5 - 3*A*a^2*e^6)/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e +
 a*e^2) - 7*a*b^6*d^6*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5
*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*
b*e - b*d*e + a*e^2) + 35*a^4*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2
) - 21*a^5*b^2*d^2*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*s
gn((x*e + d)*b*e - b*d*e + a*e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*(x*e + d)^(5/2)) - 1/192*(1704*(x*e + d)^(7/2)*B*b^6*d*e^3 - 5480*(x*e
 + d)^(5/2)*B*b^6*d^2*e^3 + 5912*(x*e + d)^(3/2)*B*b^6*d^3*e^3 - 2136*sqrt(
x*e + d)*B*b^6*d^4*e^3 + 1545*(x*e + d)^(7/2)*B*a*b^5*e^4 - 3249*(x*e + d)^
(7/2)*A*b^6*e^4 + 327*(x*e + d)^(5/2)*B*a*b^5*d*e^4 + 10633*(x*e + d)^(5/2)
*A*b^6*d*e^4 - 5969*(x*e + d)^(3/2)*B*a*b^5*d^2*e^4 - 11767*(x*e + d)^(3/2)
*A*b^6*d^2*e^4 + 4113*sqrt(x*e + d)*B*a*b^5*d^3*e^4 + 4431*sqrt(x*e + d)*A*
b^6*d^3*e^4 + 5153*(x*e + d)^(5/2)*B*a^2*b^4*e^5 - 10633*(x*e + d)^(5/2)*A*
a*b^5*e^5 - 5798*(x*e + d)^(3/2)*B*a^2*b^4*d*e^5 + 23534*(x*e + d)^(3/2)*A*
a*b^5*d*e^5 + 477*sqrt(x*e + d)*B*a^2*b^4*d^2*e^5 - 13293*sqrt(x*e + d)*A*a
*b^5*d^2*e^5 + 5855*(x*e + d)^(3/2)*B*a^3*b^3*e^6 - 11767*(x*e + d)^(3/2)*A
*a^2*b^4*e^6 - 4749*sqrt(x*e + d)*B*a^3*b^3*d*e^6 + 13293*sqrt(x*e + d)*A*a
^2*b^4*d*e^6 + 2295*sqrt(x*e + d)*B*a^4*b^2*e^7 - 4431*sqrt(x*e + d)*A*a^3*
b^3*e^7)/((b^7*d^7*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 7*a*b^6*d^6*e*sgn((
x*e + d)*b*e - b*d*e + a*e^2) + 21*a^2*b^5*d^5*e^2*sgn((x*e + d)*b*e - b*d*
e + a*e^2) - 35*a^3*b^4*d^4*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 35*a^4
*b^3*d^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 21*a^5*b^2*d^2*e^5*sgn((x
*e + d)*b*e - b*d*e + a*e^2) + 7*a^6*b*d*e^6*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - a^7*e^7*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e
)^4)
```

maple [B] time = 0.14, size = 2282, normalized size = 4.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/960*(520*A*((a*e-b*d)*b)^(1/2)*x*b^6*d^5*e-110880*B*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^3*b^4*d*e^3-110880*B*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a*b^6*d*e^3-166320*B*arct
an((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a^2*b^5*d*e^3+256
*B*((a*e-b*d)*b)^(1/2)*a^6*d*e^5-80*B*((a*e-b*d)*b)^(1/2)*a*b^5*d^6+384*A*(
(a*e-b*d)*b)^(1/2)*a^6*e^6-240*A*((a*e-b*d)*b)^(1/2)*b^6*d^6+45045*A*((a*e-
b*d)*b)^(1/2)*x^6*b^6*e^6+640*B*((a*e-b*d)*b)^(1/2)*x*a^6*e^6-320*B*((a*e-b
*d)*b)^(1/2)*x*b^6*d^6+256971*A*((a*e-b*d)*b)^(1/2)*x^3*a*b^5*d^2*e^4-27281
1*B*((a*e-b*d)*b)^(1/2)*x^3*a^3*b^3*d*e^5-417483*B*((a*e-b*d)*b)^(1/2)*x^3*
a^2*b^4*d^2*e^4-160611*B*((a*e-b*d)*b)^(1/2)*x^3*a*b^5*d^3*e^3+285857*A*((a
*e-b*d)*b)^(1/2)*x^2*a^3*b^3*d*e^5+347919*A*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^4
*d^2*e^4+25025*A*((a*e-b*d)*b)^(1/2)*x^2*a*b^5*d^3*e^3-121209*B*((a*e-b*d)*
b)^(1/2)*x^2*a^4*b^2*d*e^5-309727*B*((a*e-b*d)*b)^(1/2)*x^2*a^3*b^3*d^2*e^4
-223729*B*((a*e-b*d)*b)^(1/2)*x^2*a^2*b^4*d^3*e^3-14850*B*((a*e-b*d)*b)^(1/
2)*x^2*a*b^5*d^4*e^2+44928*A*((a*e-b*d)*b)^(1/2)*x*a^4*b^2*d*e^5+196001*A*(
(a*e-b*d)*b)^(1/2)*x*a^3*b^3*d^2*e^4+35945*A*((a*e-b*d)*b)^(1/2)*x*a^2*b^4*
d^3*e^3-5460*A*((a*e-b*d)*b)^(1/2)*x*a*b^5*d^4*e^2-16256*B*((a*e-b*d)*b)^(1
/2)*x*a^5*b*d*e^5-103033*B*((a*e-b*d)*b)^(1/2)*x*a^4*b^2*d^2*e^4-134441*B*(
(a*e-b*d)*b)^(1/2)*x*a^3*b^3*d^3*e^3-20020*B*((a*e-b*d)*b)^(1/2)*x*a^2*b^4*
d^4*e^2+3160*B*((a*e-b*d)*b)^(1/2)*x*a*b^5*d^5*e-17325*B*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*a*b^6*e^4-27720*B*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*b^7*d*e^3+180180*A*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a*b^6*e^4-69300*B*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^3*a^2*b^5*e^4+270
270*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2*a^2*b^5
*e^4-103950*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^2
*a^3*b^4*e^4+180180*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(
5/2)*x*a^3*b^4*e^4-142065*B*((a*e-b*d)*b)^(1/2)*x^5*a*b^5*d*e^5-69300*B*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*a^4*b^3*e^4+387387
*A*((a*e-b*d)*b)^(1/2)*x^4*a*b^5*d*e^5-283899*B*((a*e-b*d)*b)^(1/2)*x^4*a^2
*b^4*d*e^5-264957*B*((a*e-b*d)*b)^(1/2)*x^4*a*b^5*d^2*e^4-27720*B*arctan((e
*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a^4*b^3*d*e^3+517803*A*((a
*e-b*d)*b)^(1/2)*x^3*a^2*b^4*d*e^5+119691*A*((a*e-b*d)*b)^(1/2)*x^3*a^3*b^3
*e^6+6435*A*((a*e-b*d)*b)^(1/2)*x^3*b^6*d^3*e^3-46035*B*((a*e-b*d)*b)^(1/2)
*x^3*a^4*b^2*e^6-3960*B*((a*e-b*d)*b)^(1/2)*x^3*b^6*d^4*e^2+18304*A*((a*e-b
*d)*b)^(1/2)*x^2*a^4*b^2*e^6-1430*A*((a*e-b*d)*b)^(1/2)*x^2*b^6*d^4*e^2-704
0*B*((a*e-b*d)*b)^(1/2)*x^2*a^5*b*e^6+880*B*((a*e-b*d)*b)^(1/2)*x^2*b^6*d^5
*e-1664*A*((a*e-b*d)*b)^(1/2)*x*a^5*b*e^6+45045*A*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x^4*b^7*e^4-17325*B*((a*e-b*d)*b)^(1/2)*x^
6*a*b^5*e^6-27720*B*((a*e-b*d)*b)^(1/2)*x^6*b^6*d*e^5+165165*A*((a*e-b*d)*b
)^(1/2)*x^5*a*b^5*e^6+105105*A*((a*e-b*d)*b)^(1/2)*x^5*b^6*d*e^5-63525*B*((
a*e-b*d)*b)^(1/2)*x^5*a^2*b^4*e^6-64680*B*((a*e-b*d)*b)^(1/2)*x^5*b^6*d^2*e
^4+219219*A*((a*e-b*d)*b)^(1/2)*x^4*a^2*b^4*e^6+69069*A*((a*e-b*d)*b)^(1/2)
*x^4*b^6*d^2*e^4+45045*A*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d
)^(5/2)*a^4*b^3*e^4-84315*B*((a*e-b*d)*b)^(1/2)*x^4*a^3*b^3*e^6-42504*B*((a
*e-b*d)*b)^(1/2)*x^4*b^6*d^3*e^3-17325*B*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*(e*x+d)^(5/2)*a^5*b^2*e^4+22155*A*((a*e-b*d)*b)^(1/2)*a^3*b^3*d^3
*e^3-7630*A*((a*e-b*d)*b)^(1/2)*a^2*b^4*d^4*e^2+1960*A*((a*e-b*d)*b)^(1/2)*
a*b^5*d^5*e-6912*B*((a*e-b*d)*b)^(1/2)*a^5*b*d^2*e^4-33619*B*((a*e-b*d)*b)^
(1/2)*a^4*b^2*d^3*e^3-5530*B*((a*e-b*d)*b)^(1/2)*a^3*b^3*d^4*e^2+840*B*((a*
e-b*d)*b)^(1/2)*a^2*b^4*d^5*e+32384*A*((a*e-b*d)*b)^(1/2)*a^4*b^2*d^2*e^4-3
968*A*((a*e-b*d)*b)^(1/2)*a^5*b*d*e^5)*(b*x+a)/(e*x+d)^(5/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^7/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((B*x + A)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{7/2}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.1884 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=234

$$-\frac{b^3(d+ex)^{m+5}(-4aBe-Abe+5bBd)}{e^6(m+5)}+\frac{2b^2(bd-ae)(d+ex)^{m+4}(-3aBe-2Abe+5bBd)}{e^6(m+4)}-\frac{(bd-ae)^4(Bd-Ae)}{e^6(m+1}$$

```
[Out] -(-a*e+b*d)^4*(-A*e+B*d)*(e*x+d)^(1+m)/e^6/(1+m)+(-a*e+b*d)^3*(-4*A*b*e-B*a
*e+5*B*b*d)*(e*x+d)^(2+m)/e^6/(2+m)-2*b*(-a*e+b*d)^2*(-3*A*b*e-2*B*a*e+5*B*
b*d)*(e*x+d)^(3+m)/e^6/(3+m)+2*b^2*(-a*e+b*d)*(-2*A*b*e-3*B*a*e+5*B*b*d)*(e
*x+d)^(4+m)/e^6/(4+m)-b^3*(-A*b*e-4*B*a*e+5*B*b*d)*(e*x+d)^(5+m)/e^6/(5+m)+
b^4*B*(e*x+d)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.17, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 77\}$

$$\frac{2b^2(bd-ae)(d+ex)^{m+4}(-3aBe-2Abe+5bBd)}{e^6(m+4)}-\frac{b^3(d+ex)^{m+5}(-4aBe-Abe+5bBd)}{e^6(m+5)}-\frac{(bd-ae)^4(Bd-Ae)(d}{e^6(m+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(((b*d - a*e)^4*(B*d - A*e)*(d + e*x)^(1 + m))/(e^6*(1 + m))) + ((b*d - a*
e)^3*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x)^(2 + m))/(e^6*(2 + m)) - (2*b*(b
*d - a*e)^2*(5*b*B*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^(3 + m))/(e^6*(3 + m))
+ (2*b^2*(b*d - a*e)*(5*b*B*d - 2*A*b*e - 3*a*B*e)*(d + e*x)^(4 + m))/(e^6*
(4 + m)) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)
) + (b^4*B*(d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^2 \, dx &= \int (a+bx)^4(A+Bx)(d+ex)^m \, dx\\ &= \int \left(\frac{(-bd+ae)^4(-Bd+Ae)(d+ex)^m}{e^5}+\frac{(-bd+ae)^3(-5bBd+}{}\right.\\ &= -\frac{(bd-ae)^4(Bd-Ae)(d+ex)^{1+m}}{e^6(1+m)}+\frac{(bd-ae)^3(5bBd-4Abe-}{e^6(2+m)}\end{aligned}$$

Mathematica [A] time = 0.22, size = 208, normalized size = 0.89

$$\frac{(d+ex)^{m+1}\left(-\frac{b^3(d+ex)^4(-4aBe-Abe+5bBd)}{m+5}+\frac{2b^2(d+ex)^3(bd-ae)(-3aBe-2Abe+5bBd)}{m+4}-\frac{2b(d+ex)^2(bd-ae)^2(-2aBe-3Abe+5bBd)}{m+3}+\frac{(d+}{}\right.}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((b*d - a*e)^4*(B*d - A*e))/(1 + m)) + ((b*d - a*e)^3
*(5*b*B*d - 4*A*b*e - a*B*e)*(d + e*x))/(2 + m) - (2*b*(b*d - a*e)^2*(5*b*B
*d - 3*A*b*e - 2*a*B*e)*(d + e*x)^2)/(3 + m) + (2*b^2*(b*d - a*e)*(5*b*B*d
- 2*A*b*e - 3*a*B*e)*(d + e*x)^3)/(4 + m) - (b^3*(5*b*B*d - A*b*e - 4*a*B*e
)*(d + e*x)^4)/(5 + m) + (b^4*B*(d + e*x)^5)/(6 + m)))/e^6
```

fricas [B] time = 0.90, size = 2274, normalized size = 9.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] (A*a^4*d*e^5*m^5 - 120*B*b^4*d^6 + 720*A*a^4*d*e^5 + 144*(4*B*a*b^3 + A*b^4
)*d^5*e - 360*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 480*(2*B*a^3*b + 3*A*a^2*
b^2)*d^3*e^3 - 360*(B*a^4 + 4*A*a^3*b)*d^2*e^4 + (B*b^4*e^6*m^5 + 15*B*b^4*
e^6*m^4 + 85*B*b^4*e^6*m^3 + 225*B*b^4*e^6*m^2 + 274*B*b^4*e^6*m + 120*B*b^
4*e^6)*x^6 + (144*(4*B*a*b^3 + A*b^4)*e^6 + (B*b^4*d*e^5 + (4*B*a*b^3 + A*b
^4)*e^6)*m^5 + 2*(5*B*b^4*d*e^5 + 8*(4*B*a*b^3 + A*b^4)*e^6)*m^4 + 5*(7*B*b
^4*d*e^5 + 19*(4*B*a*b^3 + A*b^4)*e^6)*m^3 + 10*(5*B*b^4*d*e^5 + 26*(4*B*a*
b^3 + A*b^4)*e^6)*m^2 + 12*(2*B*b^4*d*e^5 + 27*(4*B*a*b^3 + A*b^4)*e^6)*m)*
x^5 + (20*A*a^4*d*e^5 - (B*a^4 + 4*A*a^3*b)*d^2*e^4)*m^4 + (360*(3*B*a^2*b^
2 + 2*A*a*b^3)*e^6 + ((4*B*a*b^3 + A*b^4)*d*e^5 + 2*(3*B*a^2*b^2 + 2*A*a*b^
3)*e^6)*m^5 - (5*B*b^4*d^2*e^4 - 12*(4*B*a*b^3 + A*b^4)*d*e^5 - 34*(3*B*a^2
*b^2 + 2*A*a*b^3)*e^6)*m^4 - (30*B*b^4*d^2*e^4 - 47*(4*B*a*b^3 + A*b^4)*d*e
^5 - 214*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m^3 - (55*B*b^4*d^2*e^4 - 72*(4*B*a
*b^3 + A*b^4)*d*e^5 - 614*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m^2 - 6*(5*B*b^4*d
^2*e^4 - 6*(4*B*a*b^3 + A*b^4)*d*e^5 - 132*(3*B*a^2*b^2 + 2*A*a*b^3)*e^6)*m
)*x^4 + (155*A*a^4*d*e^5 + 4*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 18*(B*a^4
+ 4*A*a^3*b)*d^2*e^4)*m^3 + 2*(240*(2*B*a^3*b + 3*A*a^2*b^2)*e^6 + ((3*B*a^
2*b^2 + 2*A*a*b^3)*d*e^5 + (2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^5 - 2*((4*B*a*b
^3 + A*b^4)*d^2*e^4 - 7*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 - 9*(2*B*a^3*b + 3*
A*a^2*b^2)*e^6)*m^4 + (10*B*b^4*d^3*e^3 - 18*(4*B*a*b^3 + A*b^4)*d^2*e^4 +
65*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 + 121*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^3
 + 2*(15*B*b^4*d^3*e^3 - 20*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 56*(3*B*a^2*b^2 +
 2*A*a*b^3)*d*e^5 + 186*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m^2 + 4*(5*B*b^4*d^3
*e^3 - 6*(4*B*a*b^3 + A*b^4)*d^2*e^4 + 15*(3*B*a^2*b^2 + 2*A*a*b^3)*d*e^5 +
 127*(2*B*a^3*b + 3*A*a^2*b^2)*e^6)*m)*x^3 + (580*A*a^4*d*e^5 - 12*(3*B*a^2
*b^2 + 2*A*a*b^3)*d^4*e^2 + 60*(2*B*a^3*b + 3*A*a^2*b^2)*d^3*e^3 - 119*(B*a
^4 + 4*A*a^3*b)*d^2*e^4)*m^2 + (360*(B*a^4 + 4*A*a^3*b)*e^6 + (2*(2*B*a^3*b
 + 3*A*a^2*b^2)*d*e^5 + (B*a^4 + 4*A*a^3*b)*e^6)*m^5 - (6*(3*B*a^2*b^2 + 2*
A*a*b^3)*d^2*e^4 - 32*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 19*(B*a^4 + 4*A*a^3
*b)*e^6)*m^4 + (12*(4*B*a*b^3 + A*b^4)*d^3*e^3 - 72*(3*B*a^2*b^2 + 2*A*a*b^
3)*d^2*e^4 + 178*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 + 137*(B*a^4 + 4*A*a^3*b)*
e^6)*m^3 - (60*B*b^4*d^4*e^2 - 84*(4*B*a*b^3 + A*b^4)*d^3*e^3 + 246*(3*B*a^
2*b^2 + 2*A*a*b^3)*d^2*e^4 - 388*(2*B*a^3*b + 3*A*a^2*b^2)*d*e^5 - 461*(B*a
^4 + 4*A*a^3*b)*e^6)*m^2 - 6*(10*B*b^4*d^4*e^2 - 12*(4*B*a*b^3 + A*b^4)*d^3
*e^3 + 30*(3*B*a^2*b^2 + 2*A*a*b^3)*d^2*e^4 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*
d*e^5 - 117*(B*a^4 + 4*A*a^3*b)*e^6)*m)*x^2 + 2*(522*A*a^4*d*e^5 + 12*(4*B*
a*b^3 + A*b^4)*d^5*e - 66*(3*B*a^2*b^2 + 2*A*a*b^3)*d^4*e^2 + 148*(2*B*a^3*
b + 3*A*a^2*b^2)*d^3*e^3 - 171*(B*a^4 + 4*A*a^3*b)*d^2*e^4)*m + (720*A*a^4*
e^6 + (A*a^4*e^6 + (B*a^4 + 4*A*a^3*b)*d*e^5)*m^5 + 2*(10*A*a^4*e^6 - 2*(2*
B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 9*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^4 + (155*A*
a^4*e^6 + 12*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 60*(2*B*a^3*b + 3*A*a^2*b^
2)*d^2*e^4 + 119*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^3 + 2*(290*A*a^4*e^6 - 12*(4*
B*a*b^3 + A*b^4)*d^4*e^2 + 66*(3*B*a^2*b^2 + 2*A*a*b^3)*d^3*e^3 - 148*(2*B*
a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 171*(B*a^4 + 4*A*a^3*b)*d*e^5)*m^2 + 12*(10*
B*b^4*d^5*e + 87*A*a^4*e^6 - 12*(4*B*a*b^3 + A*b^4)*d^4*e^2 + 30*(3*B*a^2*b
^2 + 2*A*a*b^3)*d^3*e^3 - 40*(2*B*a^3*b + 3*A*a^2*b^2)*d^2*e^4 + 30*(B*a^4
+ 4*A*a^3*b)*d*e^5)*m)*x)*(e*x + d)^m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 +
 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^6)
```

giac [B] time = 0.32, size = 4381, normalized size = 18.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*b^4*m^5*x^6*e^6 + (x*e + d)^m*B*b^4*d*m^5*x^5*e^5 + 4*(x*e +
 d)^m*B*a*b^3*m^5*x^5*e^6 + (x*e + d)^m*A*b^4*m^5*x^5*e^6 + 15*(x*e + d)^m*
B*b^4*m^4*x^6*e^6 + 4*(x*e + d)^m*B*a*b^3*d*m^5*x^4*e^5 + (x*e + d)^m*A*b^4
*d*m^5*x^4*e^5 + 10*(x*e + d)^m*B*b^4*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*b^4*d
^2*m^4*x^4*e^4 + 6*(x*e + d)^m*B*a^2*b^2*m^5*x^4*e^6 + 4*(x*e + d)^m*A*a*b^
3*m^5*x^4*e^6 + 64*(x*e + d)^m*B*a*b^3*m^4*x^5*e^6 + 16*(x*e + d)^m*A*b^4*m
^4*x^5*e^6 + 85*(x*e + d)^m*B*b^4*m^3*x^6*e^6 + 6*(x*e + d)^m*B*a^2*b^2*d*m
^5*x^3*e^5 + 4*(x*e + d)^m*A*a*b^3*d*m^5*x^3*e^5 + 48*(x*e + d)^m*B*a*b^3*d
*m^4*x^4*e^5 + 12*(x*e + d)^m*A*b^4*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*b^4*d*
m^3*x^5*e^5 - 16*(x*e + d)^m*B*a*b^3*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*b^4*
d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*B*b^4*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*b
^4*d^3*m^3*x^3*e^3 + 4*(x*e + d)^m*B*a^3*b*m^5*x^3*e^6 + 6*(x*e + d)^m*A*a^
2*b^2*m^5*x^3*e^6 + 102*(x*e + d)^m*B*a^2*b^2*m^4*x^4*e^6 + 68*(x*e + d)^m*
A*a*b^3*m^4*x^4*e^6 + 380*(x*e + d)^m*B*a*b^3*m^3*x^5*e^6 + 95*(x*e + d)^m*
A*b^4*m^3*x^5*e^6 + 225*(x*e + d)^m*B*b^4*m^2*x^6*e^6 + 4*(x*e + d)^m*B*a^3
*b*d*m^5*x^2*e^5 + 6*(x*e + d)^m*A*a^2*b^2*d*m^5*x^2*e^5 + 84*(x*e + d)^m*B
*a^2*b^2*d*m^4*x^3*e^5 + 56*(x*e + d)^m*A*a*b^3*d*m^4*x^3*e^5 + 188*(x*e +
d)^m*B*a*b^3*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*b^4*d*m^3*x^4*e^5 + 50*(x*e +
 d)^m*B*b^4*d*m^2*x^5*e^5 - 18*(x*e + d)^m*B*a^2*b^2*d^2*m^4*x^2*e^4 - 12*(
x*e + d)^m*A*a*b^3*d^2*m^4*x^2*e^4 - 144*(x*e + d)^m*B*a*b^3*d^2*m^3*x^3*e^
4 - 36*(x*e + d)^m*A*b^4*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*B*b^4*d^2*m^2*x^4
*e^4 + 48*(x*e + d)^m*B*a*b^3*d^3*m^3*x^2*e^3 + 12*(x*e + d)^m*A*b^4*d^3*m^
3*x^2*e^3 + 60*(x*e + d)^m*B*b^4*d^3*m^2*x^3*e^3 - 60*(x*e + d)^m*B*b^4*d^4
*m^2*x^2*e^2 + (x*e + d)^m*B*a^4*m^5*x^2*e^6 + 4*(x*e + d)^m*A*a^3*b*m^5*x^
2*e^6 + 72*(x*e + d)^m*B*a^3*b*m^4*x^3*e^6 + 108*(x*e + d)^m*A*a^2*b^2*m^4*
x^3*e^6 + 642*(x*e + d)^m*B*a^2*b^2*m^3*x^4*e^6 + 428*(x*e + d)^m*A*a*b^3*m
^3*x^4*e^6 + 1040*(x*e + d)^m*B*a*b^3*m^2*x^5*e^6 + 260*(x*e + d)^m*A*b^4*m
^2*x^5*e^6 + 274*(x*e + d)^m*B*b^4*m*x^6*e^6 + (x*e + d)^m*B*a^4*d*m^5*x*e^
5 + 4*(x*e + d)^m*A*a^3*b*d*m^5*x*e^5 + 64*(x*e + d)^m*B*a^3*b*d*m^4*x^2*e^
5 + 96*(x*e + d)^m*A*a^2*b^2*d*m^4*x^2*e^5 + 390*(x*e + d)^m*B*a^2*b^2*d*m^
3*x^3*e^5 + 260*(x*e + d)^m*A*a*b^3*d*m^3*x^3*e^5 + 288*(x*e + d)^m*B*a*b^3
*d*m^2*x^4*e^5 + 72*(x*e + d)^m*A*b^4*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*b^4*
d*m*x^5*e^5 - 8*(x*e + d)^m*B*a^3*b*d^2*m^4*x*e^4 - 12*(x*e + d)^m*A*a^2*b^
2*d^2*m^4*x*e^4 - 216*(x*e + d)^m*B*a^2*b^2*d^2*m^3*x^2*e^4 - 144*(x*e + d)
^m*A*a*b^3*d^2*m^3*x^2*e^4 - 320*(x*e + d)^m*B*a*b^3*d^2*m^2*x^3*e^4 - 80*(
x*e + d)^m*A*b^4*d^2*m^2*x^3*e^4 - 30*(x*e + d)^m*B*b^4*d^2*m*x^4*e^4 + 36*
(x*e + d)^m*B*a^2*b^2*d^3*m^3*x*e^3 + 24*(x*e + d)^m*A*a*b^3*d^3*m^3*x*e^3
+ 336*(x*e + d)^m*B*a*b^3*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*b^4*d^3*m^2*x^
2*e^3 + 40*(x*e + d)^m*B*b^4*d^3*m*x^3*e^3 - 96*(x*e + d)^m*B*a*b^3*d^4*m^2
*x*e^2 - 24*(x*e + d)^m*A*b^4*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*b^4*d^4*m*x^
2*e^2 + 120*(x*e + d)^m*B*b^4*d^5*m*x*e + (x*e + d)^m*A*a^4*m^5*x*e^6 + 19*
(x*e + d)^m*B*a^4*m^4*x^2*e^6 + 76*(x*e + d)^m*A*a^3*b*m^4*x^2*e^6 + 484*(x
*e + d)^m*B*a^3*b*m^3*x^3*e^6 + 726*(x*e + d)^m*A*a^2*b^2*m^3*x^3*e^6 + 184
2*(x*e + d)^m*B*a^2*b^2*m^2*x^4*e^6 + 1228*(x*e + d)^m*A*a*b^3*m^2*x^4*e^6
+ 1296*(x*e + d)^m*B*a*b^3*m*x^5*e^6 + 324*(x*e + d)^m*A*b^4*m*x^5*e^6 + 12
0*(x*e + d)^m*B*b^4*x^6*e^6 + (x*e + d)^m*A*a^4*d*m^5*e^5 + 18*(x*e + d)^m*
B*a^4*d*m^4*x*e^5 + 72*(x*e + d)^m*A*a^3*b*d*m^4*x*e^5 + 356*(x*e + d)^m*B*
a^3*b*d*m^3*x^2*e^5 + 534*(x*e + d)^m*A*a^2*b^2*d*m^3*x^2*e^5 + 672*(x*e +
d)^m*B*a^2*b^2*d*m^2*x^3*e^5 + 448*(x*e + d)^m*A*a*b^3*d*m^2*x^3*e^5 + 144*
(x*e + d)^m*B*a*b^3*d*m*x^4*e^5 + 36*(x*e + d)^m*A*b^4*d*m*x^4*e^5 - (x*e +
 d)^m*B*a^4*d^2*m^4*e^4 - 4*(x*e + d)^m*A*a^3*b*d^2*m^4*e^4 - 120*(x*e + d)
^m*B*a^3*b*d^2*m^3*x*e^4 - 180*(x*e + d)^m*A*a^2*b^2*d^2*m^3*x*e^4 - 738*(x
*e + d)^m*B*a^2*b^2*d^2*m^2*x^2*e^4 - 492*(x*e + d)^m*A*a*b^3*d^2*m^2*x^2*e
^4 - 192*(x*e + d)^m*B*a*b^3*d^2*m*x^3*e^4 - 48*(x*e + d)^m*A*b^4*d^2*m*x^3
*e^4 + 8*(x*e + d)^m*B*a^3*b*d^3*m^3*e^3 + 12*(x*e + d)^m*A*a^2*b^2*d^3*m^3
*e^3 + 396*(x*e + d)^m*B*a^2*b^2*d^3*m^2*x*e^3 + 264*(x*e + d)^m*A*a*b^3*d^
3*m^2*x*e^3 + 288*(x*e + d)^m*B*a*b^3*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*b^4*
d^3*m*x^2*e^3 - 36*(x*e + d)^m*B*a^2*b^2*d^4*m^2*e^2 - 24*(x*e + d)^m*A*a*b
^3*d^4*m^2*e^2 - 576*(x*e + d)^m*B*a*b^3*d^4*m*x*e^2 - 144*(x*e + d)^m*A*b^
4*d^4*m*x*e^2 + 96*(x*e + d)^m*B*a*b^3*d^5*m*e + 24*(x*e + d)^m*A*b^4*d^5*m
*e - 120*(x*e + d)^m*B*b^4*d^6 + 20*(x*e + d)^m*A*a^4*m^4*x*e^6 + 137*(x*e
+ d)^m*B*a^4*m^3*x^2*e^6 + 548*(x*e + d)^m*A*a^3*b*m^3*x^2*e^6 + 1488*(x*e
+ d)^m*B*a^3*b*m^2*x^3*e^6 + 2232*(x*e + d)^m*A*a^2*b^2*m^2*x^3*e^6 + 2376*
(x*e + d)^m*B*a^2*b^2*m*x^4*e^6 + 1584*(x*e + d)^m*A*a*b^3*m*x^4*e^6 + 576*
(x*e + d)^m*B*a*b^3*x^5*e^6 + 144*(x*e + d)^m*A*b^4*x^5*e^6 + 20*(x*e + d)^
m*A*a^4*d*m^4*e^5 + 119*(x*e + d)^m*B*a^4*d*m^3*x*e^5 + 476*(x*e + d)^m*A*a
^3*b*d*m^3*x*e^5 + 776*(x*e + d)^m*B*a^3*b*d*m^2*x^2*e^5 + 1164*(x*e + d)^m
*A*a^2*b^2*d*m^2*x^2*e^5 + 360*(x*e + d)^m*B*a^2*b^2*d*m*x^3*e^5 + 240*(x*e
 + d)^m*A*a*b^3*d*m*x^3*e^5 - 18*(x*e + d)^m*B*a^4*d^2*m^3*e^4 - 72*(x*e +
d)^m*A*a^3*b*d^2*m^3*e^4 - 592*(x*e + d)^m*B*a^3*b*d^2*m^2*x*e^4 - 888*(x*e
 + d)^m*A*a^2*b^2*d^2*m^2*x*e^4 - 540*(x*e + d)^m*B*a^2*b^2*d^2*m*x^2*e^4 -
 360*(x*e + d)^m*A*a*b^3*d^2*m*x^2*e^4 + 120*(x*e + d)^m*B*a^3*b*d^3*m^2*e^
3 + 180*(x*e + d)^m*A*a^2*b^2*d^3*m^2*e^3 + 1080*(x*e + d)^m*B*a^2*b^2*d^3*
m*x*e^3 + 720*(x*e + d)^m*A*a*b^3*d^3*m*x*e^3 - 396*(x*e + d)^m*B*a^2*b^2*d
^4*m*e^2 - 264*(x*e + d)^m*A*a*b^3*d^4*m*e^2 + 576*(x*e + d)^m*B*a*b^3*d^5*
e + 144*(x*e + d)^m*A*b^4*d^5*e + 155*(x*e + d)^m*A*a^4*m^3*x*e^6 + 461*(x*
e + d)^m*B*a^4*m^2*x^2*e^6 + 1844*(x*e + d)^m*A*a^3*b*m^2*x^2*e^6 + 2032*(x
*e + d)^m*B*a^3*b*m*x^3*e^6 + 3048*(x*e + d)^m*A*a^2*b^2*m*x^3*e^6 + 1080*(
x*e + d)^m*B*a^2*b^2*x^4*e^6 + 720*(x*e + d)^m*A*a*b^3*x^4*e^6 + 155*(x*e +
 d)^m*A*a^4*d*m^3*e^5 + 342*(x*e + d)^m*B*a^4*d*m^2*x*e^5 + 1368*(x*e + d)^
m*A*a^3*b*d*m^2*x*e^5 + 480*(x*e + d)^m*B*a^3*b*d*m*x^2*e^5 + 720*(x*e + d)
^m*A*a^2*b^2*d*m*x^2*e^5 - 119*(x*e + d)^m*B*a^4*d^2*m^2*e^4 - 476*(x*e + d
)^m*A*a^3*b*d^2*m^2*e^4 - 960*(x*e + d)^m*B*a^3*b*d^2*m*x*e^4 - 1440*(x*e +
 d)^m*A*a^2*b^2*d^2*m*x*e^4 + 592*(x*e + d)^m*B*a^3*b*d^3*m*e^3 + 888*(x*e
+ d)^m*A*a^2*b^2*d^3*m*e^3 - 1080*(x*e + d)^m*B*a^2*b^2*d^4*e^2 - 720*(x*e
+ d)^m*A*a*b^3*d^4*e^2 + 580*(x*e + d)^m*A*a^4*m^2*x*e^6 + 702*(x*e + d)^m*
B*a^4*m*x^2*e^6 + 2808*(x*e + d)^m*A*a^3*b*m*x^2*e^6 + 960*(x*e + d)^m*B*a^
3*b*x^3*e^6 + 1440*(x*e + d)^m*A*a^2*b^2*x^3*e^6 + 580*(x*e + d)^m*A*a^4*d*
m^2*e^5 + 360*(x*e + d)^m*B*a^4*d*m*x*e^5 + 1440*(x*e + d)^m*A*a^3*b*d*m*x*
e^5 - 342*(x*e + d)^m*B*a^4*d^2*m*e^4 - 1368*(x*e + d)^m*A*a^3*b*d^2*m*e^4
+ 960*(x*e + d)^m*B*a^3*b*d^3*e^3 + 1440*(x*e + d)^m*A*a^2*b^2*d^3*e^3 + 10
44*(x*e + d)^m*A*a^4*m*x*e^6 + 360*(x*e + d)^m*B*a^4*x^2*e^6 + 1440*(x*e +
d)^m*A*a^3*b*x^2*e^6 + 1044*(x*e + d)^m*A*a^4*d*m*e^5 - 360*(x*e + d)^m*B*a
^4*d^2*e^4 - 1440*(x*e + d)^m*A*a^3*b*d^2*e^4 + 720*(x*e + d)^m*A*a^4*x*e^6
 + 720*(x*e + d)^m*A*a^4*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^4*e^6 + 735*m
^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [**B**] time = 0.14, size = 2355, normalized size = 10.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^4*e^5*m^5*x^5+A*b^4*e^5*m^5*x^4+4*B*a*b^3*e^5*m^5*x^4+15
*B*b^4*e^5*m^4*x^5+4*A*a*b^3*e^5*m^5*x^3+16*A*b^4*e^5*m^4*x^4+6*B*a^2*b^2*e
^5*m^5*x^3+64*B*a*b^3*e^5*m^4*x^4-5*B*b^4*d*e^4*m^4*x^4+85*B*b^4*e^5*m^3*x^
5+6*A*a^2*b^2*e^5*m^5*x^2+68*A*a*b^3*e^5*m^4*x^3-4*A*b^4*d*e^4*m^4*x^3+95*A
*b^4*e^5*m^3*x^4+4*B*a^3*b*e^5*m^5*x^2+102*B*a^2*b^2*e^5*m^4*x^3-16*B*a*b^3
*d*e^4*m^4*x^3+380*B*a*b^3*e^5*m^3*x^4-50*B*b^4*d*e^4*m^3*x^4+225*B*b^4*e^5
*m^2*x^5+4*A*a^3*b*e^5*m^5*x+108*A*a^2*b^2*e^5*m^4*x^2-12*A*a*b^3*d*e^4*m^4
*x^2+428*A*a*b^3*e^5*m^3*x^3-48*A*b^4*d*e^4*m^3*x^3+260*A*b^4*e^5*m^2*x^4+B
*a^4*e^5*m^5*x+72*B*a^3*b*e^5*m^4*x^2-18*B*a^2*b^2*d*e^4*m^4*x^2+642*B*a^2*
b^2*e^5*m^3*x^3-192*B*a*b^3*d*e^4*m^3*x^3+1040*B*a*b^3*e^5*m^2*x^4+20*B*b^4
*d^2*e^3*m^3*x^3-175*B*b^4*d*e^4*m^2*x^4+274*B*b^4*e^5*m*x^5+A*a^4*e^5*m^5+
76*A*a^3*b*e^5*m^4*x-12*A*a^2*b^2*d*e^4*m^4*x+726*A*a^2*b^2*e^5*m^3*x^2-168
*A*a*b^3*d*e^4*m^3*x^2+1228*A*a*b^3*e^5*m^2*x^3+12*A*b^4*d^2*e^3*m^3*x^2-18
8*A*b^4*d*e^4*m^2*x^3+324*A*b^4*e^5*m*x^4+19*B*a^4*e^5*m^4*x-8*B*a^3*b*d*e^
4*m^4*x+484*B*a^3*b*e^5*m^3*x^2-252*B*a^2*b^2*d*e^4*m^3*x^2+1842*B*a^2*b^2*
e^5*m^2*x^3+48*B*a*b^3*d^2*e^3*m^3*x^2-752*B*a*b^3*d*e^4*m^2*x^3+1296*B*a*b
^3*e^5*m*x^4+120*B*b^4*d^2*e^3*m^2*x^3-250*B*b^4*d*e^4*m*x^4+120*B*b^4*e^5*
x^5+20*A*a^4*e^5*m^4-4*A*a^3*b*d*e^4*m^4+548*A*a^3*b*e^5*m^3*x-192*A*a^2*b^
2*d*e^4*m^3*x+2232*A*a^2*b^2*e^5*m^2*x^2+24*A*a*b^3*d^2*e^3*m^3*x-780*A*a*b
^3*d*e^4*m^2*x^2+1584*A*a*b^3*e^5*m*x^3+108*A*b^4*d^2*e^3*m^2*x^2-288*A*b^4
*d*e^4*m*x^3+144*A*b^4*e^5*x^4-B*a^4*d*e^4*m^4+137*B*a^4*e^5*m^3*x-128*B*a^
3*b*d*e^4*m^3*x+1488*B*a^3*b*e^5*m^2*x^2+36*B*a^2*b^2*d^2*e^3*m^3*x-1170*B*
a^2*b^2*d*e^4*m^2*x^2+2376*B*a^2*b^2*e^5*m*x^3+432*B*a*b^3*d^2*e^3*m^2*x^2-
1152*B*a*b^3*d*e^4*m*x^3+576*B*a*b^3*e^5*x^4-60*B*b^4*d^3*e^2*m^2*x^2+220*B
*b^4*d^2*e^3*m*x^3-120*B*b^4*d*e^4*x^4+155*A*a^4*e^5*m^3-72*A*a^3*b*d*e^4*m
^3+1844*A*a^3*b*e^5*m^2*x+12*A*a^2*b^2*d^2*e^3*m^3-1068*A*a^2*b^2*d*e^4*m^2
*x+3048*A*a^2*b^2*e^5*m*x^2+288*A*a*b^3*d^2*e^3*m^2*x-1344*A*a*b^3*d*e^4*m*
x^2+720*A*a*b^3*e^5*x^3-24*A*b^4*d^3*e^2*m^2*x+240*A*b^4*d^2*e^3*m*x^2-144*
A*b^4*d*e^4*x^3-18*B*a^4*d*e^4*m^3+461*B*a^4*e^5*m^2*x+8*B*a^3*b*d^2*e^3*m^
3-712*B*a^3*b*d*e^4*m^2*x+2032*B*a^3*b*e^5*m*x^2+432*B*a^2*b^2*d^2*e^3*m^2*
x-2016*B*a^2*b^2*d*e^4*m*x^2+1080*B*a^2*b^2*e^5*x^3-96*B*a*b^3*d^3*e^2*m^2*
x+960*B*a*b^3*d^2*e^3*m*x^2-576*B*a*b^3*d*e^4*x^3-180*B*b^4*d^3*e^2*m*x^2+1
20*B*b^4*d^2*e^3*x^3+580*A*a^4*e^5*m^2-476*A*a^3*b*d*e^4*m^2+2808*A*a^3*b*e
^5*m*x+180*A*a^2*b^2*d^2*e^3*m^2-2328*A*a^2*b^2*d*e^4*m*x+1440*A*a^2*b^2*e^
5*x^2-24*A*a*b^3*d^3*e^2*m^2+984*A*a*b^3*d^2*e^3*m*x-720*A*a*b^3*d*e^4*x^2-
168*A*b^4*d^3*e^2*m*x+144*A*b^4*d^2*e^3*x^2-119*B*a^4*d*e^4*m^2+702*B*a^4*e
^5*m*x+120*B*a^3*b*d^2*e^3*m^2-1552*B*a^3*b*d*e^4*m*x+960*B*a^3*b*e^5*x^2-3
6*B*a^2*b^2*d^3*e^2*m^2+1476*B*a^2*b^2*d^2*e^3*m*x-1080*B*a^2*b^2*d*e^4*x^2
-672*B*a*b^3*d^3*e^2*m*x+576*B*a*b^3*d^2*e^3*x^2+120*B*b^4*d^4*e*m*x-120*B*
b^4*d^3*e^2*x^2+1044*A*a^4*e^5*m-1368*A*a^3*b*d*e^4*m+1440*A*a^3*b*e^5*x+88
8*A*a^2*b^2*d^2*e^3*m-1440*A*a^2*b^2*d*e^4*x-264*A*a*b^3*d^3*e^2*m+720*A*a*
b^3*d^2*e^3*x+24*A*b^4*d^4*e*m-144*A*b^4*d^3*e^2*x-342*B*a^4*d*e^4*m+360*B*
a^4*e^5*x+592*B*a^3*b*d^2*e^3*m-960*B*a^3*b*d*e^4*x-396*B*a^2*b^2*d^3*e^2*m
+1080*B*a^2*b^2*d^2*e^3*x+96*B*a*b^3*d^4*e*m-576*B*a*b^3*d^3*e^2*x+120*B*b^
4*d^4*e*x+720*A*a^4*e^5-1440*A*a^3*b*d*e^4+1440*A*a^2*b^2*d^2*e^3-720*A*a*b
^3*d^3*e^2+144*A*b^4*d^4*e-360*B*a^4*d*e^4+960*B*a^3*b*d^2*e^3-1080*B*a^2*b
^2*d^3*e^2+576*B*a*b^3*d^4*e-120*B*b^4*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^3
+1624*m^2+1764*m+720)
```

maxima [B] time = 0.91, size = 957, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^4/((m^2 + 3*m + 2)*e^2) +
 4*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a^3*b/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*A*a^4/(e*(m + 1)) + 4*((m^2 + 3*m + 2)*e^3*x^3 + (m
^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a^3*b/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 6*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*A*a^2*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 6*((
m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 +
m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a^2*b^2/((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*e^4) + 4*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3
*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x
 + d)^m*A*a*b^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 4*((m^4 + 10*m^
3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 -
4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x
 + 24*d^5)*(e*x + d)^m*B*a*b^3/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m +
120)*e^5) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 1
1*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d
^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*A*b^4/((m^5 + 15*m^4 + 85*m
^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*
m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m
^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3
 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*b^4/((
m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 3.10, size = 2117, normalized size = 9.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^4*d*e^5 - 120*B*b^4*d^6 + 144*A*b^4*d^5*e - 360*B*a^4
*d^2*e^4 - 720*A*a*b^3*d^4*e^2 - 1440*A*a^3*b*d^2*e^4 + 960*B*a^3*b*d^3*e^3
 + 580*A*a^4*d*e^5*m^2 + 155*A*a^4*d*e^5*m^3 + 20*A*a^4*d*e^5*m^4 + A*a^4*d
*e^5*m^5 - 342*B*a^4*d^2*e^4*m + 1440*A*a^2*b^2*d^3*e^3 - 1080*B*a^2*b^2*d^
4*e^2 - 119*B*a^4*d^2*e^4*m^2 - 18*B*a^4*d^2*e^4*m^3 - B*a^4*d^2*e^4*m^4 +
576*B*a*b^3*d^5*e + 1044*A*a^4*d*e^5*m + 24*A*b^4*d^5*e*m + 888*A*a^2*b^2*d
^3*e^3*m - 24*A*a*b^3*d^4*e^2*m^2 - 476*A*a^3*b*d^2*e^4*m^2 - 72*A*a^3*b*d^
2*e^4*m^3 - 4*A*a^3*b*d^2*e^4*m^4 - 396*B*a^2*b^2*d^4*e^2*m + 120*B*a^3*b*d
^3*e^3*m^2 + 8*B*a^3*b*d^3*e^3*m^3 + 96*B*a*b^3*d^5*e*m + 180*A*a^2*b^2*d^3
*e^3*m^2 + 12*A*a^2*b^2*d^3*e^3*m^3 - 36*B*a^2*b^2*d^4*e^2*m^2 - 264*A*a*b^
3*d^4*e^2*m - 1368*A*a^3*b*d^2*e^4*m + 592*B*a^3*b*d^3*e^3*m))/(e^6*(1764*m
 + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d + e*x)^m*(72
0*A*a^4*e^6 + 1044*A*a^4*e^6*m + 580*A*a^4*e^6*m^2 + 155*A*a^4*e^6*m^3 + 20
*A*a^4*e^6*m^4 + A*a^4*e^6*m^5 - 144*A*b^4*d^4*e^2*m + 342*B*a^4*d*e^5*m^2
+ 119*B*a^4*d*e^5*m^3 + 18*B*a^4*d*e^5*m^4 + B*a^4*d*e^5*m^5 - 24*A*b^4*d^4
*e^2*m^2 + 360*B*a^4*d*e^5*m + 120*B*b^4*d^5*e*m - 1440*A*a^2*b^2*d^2*e^4*m
 + 264*A*a*b^3*d^3*e^3*m^2 + 24*A*a*b^3*d^3*e^3*m^3 + 1080*B*a^2*b^2*d^3*e^
3*m - 96*B*a*b^3*d^4*e^2*m^2 - 592*B*a^3*b*d^2*e^4*m^2 - 120*B*a^3*b*d^2*e^
4*m^3 - 8*B*a^3*b*d^2*e^4*m^4 + 1440*A*a^3*b*d*e^5*m - 888*A*a^2*b^2*d^2*e^
4*m^2 - 180*A*a^2*b^2*d^2*e^4*m^3 - 12*A*a^2*b^2*d^2*e^4*m^4 + 396*B*a^2*b^
2*d^3*e^3*m^2 + 36*B*a^2*b^2*d^3*e^3*m^3 + 720*A*a*b^3*d^3*e^3*m + 1368*A*a
^3*b*d*e^5*m^2 + 476*A*a^3*b*d*e^5*m^3 + 72*A*a^3*b*d*e^5*m^4 + 4*A*a^3*b*d
*e^5*m^5 - 576*B*a*b^3*d^4*e^2*m - 960*B*a^3*b*d^2*e^4*m))/(e^6*(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^2*(m + 1)*(d + e*x)
^m*(360*B*a^4*e^4 + 1440*A*a^3*b*e^4 + 342*B*a^4*e^4*m - 60*B*b^4*d^4*m + 1
19*B*a^4*e^4*m^2 + 18*B*a^4*e^4*m^3 + B*a^4*e^4*m^4 + 476*A*a^3*b*e^4*m^2 +
 72*A*a^3*b*e^4*m^3 + 4*A*a^3*b*e^4*m^4 + 12*A*b^4*d^3*e*m^2 + 1368*A*a^3*b
*e^4*m + 72*A*b^4*d^3*e*m - 132*A*a*b^3*d^2*e^2*m^2 + 444*A*a^2*b^2*d*e^3*m
^2 - 12*A*a*b^3*d^2*e^2*m^3 + 90*A*a^2*b^2*d*e^3*m^3 + 6*A*a^2*b^2*d*e^3*m^
4 - 540*B*a^2*b^2*d^2*e^2*m + 288*B*a*b^3*d^3*e*m + 480*B*a^3*b*d*e^3*m - 1
98*B*a^2*b^2*d^2*e^2*m^2 - 18*B*a^2*b^2*d^2*e^2*m^3 - 360*A*a*b^3*d^2*e^2*m
 + 720*A*a^2*b^2*d*e^3*m + 48*B*a*b^3*d^3*e*m^2 + 296*B*a^3*b*d*e^3*m^2 + 6
0*B*a^3*b*d*e^3*m^3 + 4*B*a^3*b*d*e^3*m^4))/(e^4*(1764*m + 1624*m^2 + 735*m
^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (B*b^4*x^6*(d + e*x)^m*(274*m + 225*m
^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 +
 21*m^5 + m^6 + 720) + (b^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(180*B
*a^2*e^2 + 120*A*a*b*e^2 + 66*B*a^2*e^2*m - 5*B*b^2*d^2*m + 6*B*a^2*e^2*m^2
```

```
 + 44*A*a*b*e^2*m + 6*A*b^2*d*e*m + 4*A*a*b*e^2*m^2 + A*b^2*d*e*m^2 + 24*B*
a*b*d*e*m + 4*B*a*b*d*e*m^2))/(e^2*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 +
 21*m^5 + m^6 + 720)) + (b^3*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4
+ 24)*(6*A*b*e + 24*B*a*e + A*b*e*m + 4*B*a*e*m + B*b*d*m))/(e*(1764*m + 16
24*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (2*b*x^3*(d + e*x)^m*(3
*m + m^2 + 2)*(240*B*a^3*e^3 + 360*A*a^2*b*e^3 + 148*B*a^3*e^3*m + 10*B*b^3
*d^3*m + 30*B*a^3*e^3*m^2 + 2*B*a^3*e^3*m^3 + 45*A*a^2*b*e^3*m^2 + 3*A*a^2*
b*e^3*m^3 - 2*A*b^3*d^2*e*m^2 + 222*A*a^2*b*e^3*m - 12*A*b^3*d^2*e*m + 60*A
*a*b^2*d*e^2*m - 48*B*a*b^2*d^2*e*m + 90*B*a^2*b*d*e^2*m + 22*A*a*b^2*d*e^2
*m^2 + 2*A*a*b^2*d*e^2*m^3 - 8*B*a*b^2*d^2*e*m^2 + 33*B*a^2*b*d*e^2*m^2 + 3
*B*a^2*b*d*e^2*m^3))/(e^3*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 +
 m^6 + 720))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.1885 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=138

$$-\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(bd-ae)(d+ex)^{m+2}(-aBe-2Abe+3bBd)}{e^4(m+2)}-\frac{b(d+ex)^{m+3}(-2aBe-Abe+3b}{e^4(m+3)}$$

```
[Out] -(-a*e+b*d)^2*(-A*e+B*d)*(e*x+d)^(1+m)/e^4/(1+m)+(-a*e+b*d)*(-2*A*b*e-B*a*e
+3*B*b*d)*(e*x+d)^(2+m)/e^4/(2+m)-b*(-A*b*e-2*B*a*e+3*B*b*d)*(e*x+d)^(3+m)/
e^4/(3+m)+b^2*B*(e*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.08, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 77\}$

$$-\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{m+1}}{e^4(m+1)}+\frac{(bd-ae)(d+ex)^{m+2}(-aBe-2Abe+3bBd)}{e^4(m+2)}-\frac{b(d+ex)^{m+3}(-2aBe-Abe+3b}{e^4(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((b*d - a*e)^2*(B*d - A*e)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((b*d - a*
e)*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(2 + m))/(e^4*(2 + m)) - (b*(3*b*B
*d - A*b*e - 2*a*B*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) + (b^2*B*(d + e*x)^(
4 + m))/(e^4*(4 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^2(A+Bx)(d+ex)^m\, dx\\ &= \int \left(\frac{(-bd+ae)^2(-Bd+Ae)(d+ex)^m}{e^3}+\frac{(-bd+ae)(-3bBd+2Abe}{e^3}\right.\\ &= -\frac{(bd-ae)^2(Bd-Ae)(d+ex)^{1+m}}{e^4(1+m)}+\frac{(bd-ae)(3bBd-2Abe-aBe)}{e^4(2+m)}\end{aligned}$$

Mathematica [A] time = 0.10, size = 122, normalized size = 0.88

$$\frac{(d+ex)^{m+1}\left(-\frac{b(d+ex)^2(-2aBe-Abe+3bBd)}{m+3}+\frac{(d+ex)(bd-ae)(-aBe-2Abe+3bBd)}{m+2}-\frac{(bd-ae)^2(Bd-Ae)}{m+1}+\frac{b^2B(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((b*d - a*e)^2*(B*d - A*e))/(1 + m)) + ((b*d - a*e)*(
3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x))/(2 + m) - (b*(3*b*B*d - A*b*e - 2*a*B
*e)*(d + e*x)^2)/(3 + m) + (b^2*B*(d + e*x)^3)/(4 + m)))/e^4
```

fricas [B] time = 1.31, size = 660, normalized size = 4.78

$$\left(Aa^2de^3m^3 - 6\,Bb^2d^4 + 24\,Aa^2de^3 + 8\left(2\,Bab + Ab^2\right)d^3e - 12\left(Ba^2 + 2\,Aab\right)d^2e^2 + \left(Bb^2e^4m^3 + 6\,Bb^2e^4m^2 + 1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^3*m^3 - 6*B*b^2*d^4 + 24*A*a^2*d*e^3 + 8*(2*B*a*b + A*b^2)*d^3*e
 - 12*(B*a^2 + 2*A*a*b)*d^2*e^2 + (B*b^2*e^4*m^3 + 6*B*b^2*e^4*m^2 + 11*B*b
^2*e^4*m + 6*B*b^2*e^4)*x^4 + (8*(2*B*a*b + A*b^2)*e^4 + (B*b^2*d*e^3 + (2*
B*a*b + A*b^2)*e^4)*m^3 + (3*B*b^2*d*e^3 + 7*(2*B*a*b + A*b^2)*e^4)*m^2 + 2
*(B*b^2*d*e^3 + 7*(2*B*a*b + A*b^2)*e^4)*m)*x^3 + (9*A*a^2*d*e^3 - (B*a^2 +
 2*A*a*b)*d^2*e^2)*m^2 + (12*(B*a^2 + 2*A*a*b)*e^4 + ((2*B*a*b + A*b^2)*d*e
^3 + (B*a^2 + 2*A*a*b)*e^4)*m^3 - (3*B*b^2*d^2*e^2 - 5*(2*B*a*b + A*b^2)*d*
e^3 - 8*(B*a^2 + 2*A*a*b)*e^4)*m^2 - (3*B*b^2*d^2*e^2 - 4*(2*B*a*b + A*b^2)
*d*e^3 - 19*(B*a^2 + 2*A*a*b)*e^4)*m)*x^2 + (26*A*a^2*d*e^3 + 2*(2*B*a*b +
A*b^2)*d^3*e - 7*(B*a^2 + 2*A*a*b)*d^2*e^2)*m + (24*A*a^2*e^4 + (A*a^2*e^4
+ (B*a^2 + 2*A*a*b)*d*e^3)*m^3 + (9*A*a^2*e^4 - 2*(2*B*a*b + A*b^2)*d^2*e^2
 + 7*(B*a^2 + 2*A*a*b)*d*e^3)*m^2 + 2*(3*B*b^2*d^3*e + 13*A*a^2*e^4 - 4*(2*
B*a*b + A*b^2)*d^2*e^2 + 6*(B*a^2 + 2*A*a*b)*d*e^3)*m)*x)*(e*x + d)^m/(e^4*
m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.26, size = 1267, normalized size = 9.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*b^2*m^3*x^4*e^4 + (x*e + d)^m*B*b^2*d*m^3*x^3*e^3 + 2*(x*e +
 d)^m*B*a*b*m^3*x^3*e^4 + (x*e + d)^m*A*b^2*m^3*x^3*e^4 + 6*(x*e + d)^m*B*b
^2*m^2*x^4*e^4 + 2*(x*e + d)^m*B*a*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*b^2*d*m^
3*x^2*e^3 + 3*(x*e + d)^m*B*b^2*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*b^2*d^2*m^2
*x^2*e^2 + (x*e + d)^m*B*a^2*m^3*x^2*e^4 + 2*(x*e + d)^m*A*a*b*m^3*x^2*e^4
+ 14*(x*e + d)^m*B*a*b*m^2*x^3*e^4 + 7*(x*e + d)^m*A*b^2*m^2*x^3*e^4 + 11*(
x*e + d)^m*B*b^2*m*x^4*e^4 + (x*e + d)^m*B*a^2*d*m^3*x*e^3 + 2*(x*e + d)^m*
A*a*b*d*m^3*x*e^3 + 10*(x*e + d)^m*B*a*b*d*m^2*x^2*e^3 + 5*(x*e + d)^m*A*b^
2*d*m^2*x^2*e^3 + 2*(x*e + d)^m*B*b^2*d*m*x^3*e^3 - 4*(x*e + d)^m*B*a*b*d^2
*m^2*x*e^2 - 2*(x*e + d)^m*A*b^2*d^2*m^2*x*e^2 - 3*(x*e + d)^m*B*b^2*d^2*m*
x^2*e^2 + 6*(x*e + d)^m*B*b^2*d^3*m*x*e + (x*e + d)^m*A*a^2*m^3*x*e^4 + 8*(
x*e + d)^m*B*a^2*m^2*x^2*e^4 + 16*(x*e + d)^m*A*a*b*m^2*x^2*e^4 + 28*(x*e +
 d)^m*B*a*b*m*x^3*e^4 + 14*(x*e + d)^m*A*b^2*m*x^3*e^4 + 6*(x*e + d)^m*B*b^
2*x^4*e^4 + (x*e + d)^m*A*a^2*d*m^3*e^3 + 7*(x*e + d)^m*B*a^2*d*m^2*x*e^3 +
 14*(x*e + d)^m*A*a*b*d*m^2*x*e^3 + 8*(x*e + d)^m*B*a*b*d*m*x^2*e^3 + 4*(x*
e + d)^m*A*b^2*d*m*x^2*e^3 - (x*e + d)^m*B*a^2*d^2*m^2*e^2 - 2*(x*e + d)^m*
A*a*b*d^2*m^2*e^2 - 16*(x*e + d)^m*B*a*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*b^2*
d^2*m*x*e^2 + 4*(x*e + d)^m*B*a*b*d^3*m*e + 2*(x*e + d)^m*A*b^2*d^3*m*e - 6
*(x*e + d)^m*B*b^2*d^4 + 9*(x*e + d)^m*A*a^2*m^2*x*e^4 + 19*(x*e + d)^m*B*a
^2*m*x^2*e^4 + 38*(x*e + d)^m*A*a*b*m*x^2*e^4 + 16*(x*e + d)^m*B*a*b*x^3*e^
4 + 8*(x*e + d)^m*A*b^2*x^3*e^4 + 9*(x*e + d)^m*A*a^2*d*m^2*e^3 + 12*(x*e +
 d)^m*B*a^2*d*m*x*e^3 + 24*(x*e + d)^m*A*a*b*d*m*x*e^3 - 7*(x*e + d)^m*B*a^
2*d^2*m*e^2 - 14*(x*e + d)^m*A*a*b*d^2*m*e^2 + 16*(x*e + d)^m*B*a*b*d^3*e +
 8*(x*e + d)^m*A*b^2*d^3*e + 26*(x*e + d)^m*A*a^2*m*x*e^4 + 12*(x*e + d)^m*
B*a^2*x^2*e^4 + 24*(x*e + d)^m*A*a*b*x^2*e^4 + 26*(x*e + d)^m*A*a^2*d*m*e^3
 - 12*(x*e + d)^m*B*a^2*d^2*e^2 - 24*(x*e + d)^m*A*a*b*d^2*e^2 + 24*(x*e +
d)^m*A*a^2*x*e^4 + 24*(x*e + d)^m*A*a^2*d*e^3)/(m^4*e^4 + 10*m^3*e^4 + 35*m
^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.06, size = 576, normalized size = 4.17

$$\frac{\left(B b^2 e^3 m^3 x^3 + A b^2 e^3 m^3 x^2 + 2Bab e^3 m^3 x^2 + 6B b^2 e^3 m^2 x^3 + 2Aab e^3 m^3 x + 7A b^2 e^3 m^2 x^2 + B a^2 e^3 m^3 x + 14Bab e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^2*e^3*m^3*x^3+A*b^2*e^3*m^3*x^2+2*B*a*b*e^3*m^3*x^2+6*B*
b^2*e^3*m^2*x^3+2*A*a*b*e^3*m^3*x+7*A*b^2*e^3*m^2*x^2+B*a^2*e^3*m^3*x+14*B*
a*b*e^3*m^2*x^2-3*B*b^2*d*e^2*m^2*x^2+11*B*b^2*e^3*m*x^3+A*a^2*e^3*m^3+16*A
*a*b*e^3*m^2*x-2*A*b^2*d*e^2*m^2*x+14*A*b^2*e^3*m*x^2+8*B*a^2*e^3*m^2*x-4*B
*a*b*d*e^2*m^2*x+28*B*a*b*e^3*m*x^2-9*B*b^2*d*e^2*m*x^2+6*B*b^2*e^3*x^3+9*A
*a^2*e^3*m^2-2*A*a*b*d*e^2*m^2+38*A*a*b*e^3*m*x-10*A*b^2*d*e^2*m*x+8*A*b^2*
e^3*x^2-B*a^2*d*e^2*m^2+19*B*a^2*e^3*m*x-20*B*a*b*d*e^2*m*x+16*B*a*b*e^3*x^
2+6*B*b^2*d^2*e*m*x-6*B*b^2*d*e^2*x^2+26*A*a^2*e^3*m-14*A*a*b*d*e^2*m+24*A*
a*b*e^3*x+2*A*b^2*d^2*e*m-8*A*b^2*d*e^2*x-7*B*a^2*d*e^2*m+12*B*a^2*e^3*x+4*
B*a*b*d^2*e*m-16*B*a*b*d*e^2*x+6*B*b^2*d^2*e*x+24*A*a^2*e^3-24*A*a*b*d*e^2+
8*A*b^2*d^2*e-12*B*a^2*d*e^2+16*B*a*b*d^2*e-6*B*b^2*d^3)/e^4/(m^4+10*m^3+35
*m^2+50*m+24)
```

maxima [B] time = 0.76, size = 364, normalized size = 2.64

$$\frac{\left(e^2(m+1)x^2 + demx - d^2\right)(ex+d)^m Ba^2}{\left(m^2+3m+2\right)e^2} + \frac{2\left(e^2(m+1)x^2 + demx - d^2\right)(ex+d)^m Aab}{\left(m^2+3m+2\right)e^2} + \frac{(ex+d)^{m+1} Aa^2}{e(m+1)} + \frac{2\left(\left(m^2 +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a*b/((m^2 + 3*m + 2)*e^2
) + (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a*b/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2
+ 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x
^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m
+ 24)*e^4)
```

mupad [B] time = 2.40, size = 676, normalized size = 4.90

$$\frac{(d+e\,x)^m\,\left(-B\,a^2\,d^2\,e^2\,m^2 - 7\,B\,a^2\,d^2\,e^2\,m - 12\,B\,a^2\,d^2\,e^2 + A\,a^2\,d\,e^3\,m^3 + 9\,A\,a^2\,d\,e^3\,m^2 + 26\,A\,a^2\,d\,e^3\,m + 24\,A\,a\right.}{e^4\,\left(m^4 + 10\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] ((d + e*x)^m*(24*A*a^2*d*e^3 - 6*B*b^2*d^4 + 8*A*b^2*d^3*e - 12*B*a^2*d^2*e
^2 + 9*A*a^2*d*e^3*m^2 + A*a^2*d*e^3*m^3 - 7*B*a^2*d^2*e^2*m + 16*B*a*b*d^3
*e - B*a^2*d^2*e^2*m^2 - 24*A*a*b*d^2*e^2 + 26*A*a^2*d*e^3*m + 2*A*b^2*d^3*
e*m - 14*A*a*b*d^2*e^2*m - 2*A*a*b*d^2*e^2*m^2 + 4*B*a*b*d^3*e*m))/(e^4*(50
*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x*(d + e*x)^m*(24*A*a^2*e^4 + 26*A*a^2
*e^4*m + 9*A*a^2*e^4*m^2 + A*a^2*e^4*m^3 - 8*A*b^2*d^2*e^2*m + 7*B*a^2*d*e^
3*m^2 + B*a^2*d*e^3*m^3 - 2*A*b^2*d^2*e^2*m^2 + 12*B*a^2*d*e^3*m + 6*B*b^2*
d^3*e*m + 14*A*a*b*d*e^3*m^2 + 2*A*a*b*d*e^3*m^3 - 16*B*a*b*d^2*e^2*m - 4*B
*a*b*d^2*e^2*m^2 + 24*A*a*b*d*e^3*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 +
24)) + (x^2*(m + 1)*(d + e*x)^m*(12*B*a^2*e^2 + 24*A*a*b*e^2 + 7*B*a^2*e^2*
m - 3*B*b^2*d^2*m + B*a^2*e^2*m^2 + 14*A*a*b*e^2*m + 4*A*b^2*d*e*m + 2*A*a*
b*e^2*m^2 + A*b^2*d*e*m^2 + 8*B*a*b*d*e*m + 2*B*a*b*d*e*m^2))/(e^2*(50*m +
35*m^2 + 10*m^3 + m^4 + 24)) + (B*b^2*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 +
 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) + (b*x^3*(d + e*x)^m*(3*m + m^2 +
2)*(4*A*b*e + 8*B*a*e + A*b*e*m + 2*B*a*e*m + B*b*d*m))/(e*(50*m + 35*m^2 +
 10*m^3 + m^4 + 24))
```

sympy [**A**] time = 6.65, size = 6186, normalized size = 44.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((d**m*(A*a**2*x + A*a*b*x**2 + A*b**2*x**3/3 + B*a**2*x**2/2 + 2*
B*a*b*x**3/3 + B*b**2*x**4/4), Eq(e, 0)), (-2*A*a**2*e**3/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*A*a*b*d*e**2/(6*d**3*e**4
+ 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*a*b*e**3*x/(6*d**3*e
**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*A*b**2*d**2*e/(6*d
**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*b**2*d*e**2
*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*b**2
*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) -
B*a**2*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
 - 3*B*a**2*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*
x**3) - 4*B*a*b*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e
**7*x**3) - 12*B*a*b*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**
2 + 6*e**7*x**3) - 12*B*a*b*e**3*x**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*
e**6*x**2 + 6*e**7*x**3) + 6*B*b**2*d**3*log(d/e + x)/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*b**2*d**3/(6*d**3*e**4 + 18
*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*b**2*d**2*e*x*log(d/e +
 x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 27*B*b*
*2*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 18*B*b**2*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e*
*6*x**2 + 6*e**7*x**3) + 18*B*b**2*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e**5*
x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*b**2*e**3*x**3*log(d/e + x)/(6*d**3
*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-A*a**
2*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*a*b*d*e**2/(2*d**2*e*
*4 + 4*d*e**5*x + 2*e**6*x**2) - 4*A*a*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x +
 2*e**6*x**2) + 2*A*b**2*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 3*A*b**2*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A
*b**2*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*
b**2*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*b**2*e**3*x**2
*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a**2*d*e**2/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*B*a**2*e**3*x/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) + 4*B*a*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*
x + 2*e**6*x**2) + 6*B*a*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
+ 8*B*a*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) +
8*B*a*b*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*a*b*e**3*x*
*2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*b**2*d**3*lo
g(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*B*b**2*d**3/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*b**2*d**2*e*x*log(d/e + x)/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*b**2*d**2*e*x/(2*d**2*e**4 + 4*d*e
**5*x + 2*e**6*x**2) - 6*B*b**2*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d
*e**5*x + 2*e**6*x**2) + 2*B*b**2*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e
**6*x**2), Eq(m, -3)), (-2*A*a**2*e**3/(2*d*e**4 + 2*e**5*x) + 4*A*a*b*d*e*
```

```
*2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 4*A*a*b*d*e**2/(2*d*e**4 + 2*e**5*x
) + 4*A*a*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*b**2*d**2*e*log
(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*b**2*d**2*e/(2*d*e**4 + 2*e**5*x) - 4
*A*b**2*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b**2*e**3*x**2/(2
*d*e**4 + 2*e**5*x) + 2*B*a**2*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) +
2*B*a**2*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*B*a**2*e**3*x*log(d/e + x)/(2*d*e
**4 + 2*e**5*x) - 8*B*a*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 8*B*a
*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 8*B*a*b*d*e**2*x*log(d/e + x)/(2*d*e**4 +
 2*e**5*x) + 4*B*a*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*b**2*d**3*log(d/
e + x)/(2*d*e**4 + 2*e**5*x) + 6*B*b**2*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*b*
*2*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*B*b**2*d*e**2*x**2/(2*d*
e**4 + 2*e**5*x) + B*b**2*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (A*a
**2*log(d/e + x)/e - 2*A*a*b*d*log(d/e + x)/e**2 + 2*A*a*b*x/e + A*b**2*d**
2*log(d/e + x)/e**3 - A*b**2*d*x/e**2 + A*b**2*x**2/(2*e) - B*a**2*d*log(d/
e + x)/e**2 + B*a**2*x/e + 2*B*a*b*d**2*log(d/e + x)/e**3 - 2*B*a*b*d*x/e**
2 + B*a*b*x**2/e - B*b**2*d**3*log(d/e + x)/e**4 + B*b**2*d**2*x/e**3 - B*b
**2*d*x**2/(2*e**2) + B*b**2*x**3/(3*e), Eq(m, -1)), (A*a**2*d*e**3*m**3*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 9*A*a**2*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 26*A*a**2*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a**2*d*e**3*(d + e*x
)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a*
*2*e**4*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e
**4*m + 24*e**4) + 9*A*a**2*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m
**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 26*A*a**2*e**4*m*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a**
2*e**4*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 2*A*a*b*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 14*A*a*b*d**2*e**2*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 24*A*a*b*d
**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) + 2*A*a*b*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*a*b*d*e**3*m**2*x*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*b*
d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) + 2*A*a*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 16*A*a*b*e**4*m**2*x**2*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 38*A*
a*b*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 24*A*a*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*A*b**2*d**3*e*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A*b**2*d
**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) - 2*A*b**2*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*b**2*d**2*e**2*m*x*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b**2*d
*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 5*A*b**2*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*b**2*d*e**3*m*x**2*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ A*b**2*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 7*A*b**2*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*b**2*e**4*m*x*
*3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 8*A*b**2*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) - B*a**2*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a**2*d**2*e**2*
m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e*
*4) - 12*B*a**2*d**2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + B*a**2*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a**2*d*e**3*m**2
*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 12*B*a**2*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**
4*m**2 + 50*e**4*m + 24*e**4) + B*a**2*e**4*m**3*x**2*(d + e*x)**m/(e**4*m*
*4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a**2*e**4*m**
2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + 19*B*a**2*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a**2*e**4*x**2*(d + e*x)**m/(e**4
*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*B*a*b*d**3*e
*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 16*B*a*b*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) - 4*B*a*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 16*B*a*b*d**2*e**2*
m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 2*B*a*b*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 10*B*a*b*d*e**3*m**2*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*a*b*
d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 2*B*a*b*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*B*a*b*e**4*m**2*x**3*(d + e
*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 28
*B*a*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 16*B*a*b*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*B*b**2*d**4*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*b**2*d*
*3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 3*B*b**2*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*b**2*d**2*e**2*m*x**2*(d
+ e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
 B*b**2*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m
**2 + 50*e**4*m + 24*e**4) + 3*B*b**2*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*b**2*d*e**3*
m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + B*b**2*e**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*b**2*e**4*m**2*x**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*b**2*
e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4
*m + 24*e**4) + 6*B*b**2*e**4*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.1886 $\int \frac{(A+Bx)(d+ex)^m}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=112

$$\frac{(d+ex)^{m+1}(aBe(m+1)-b(Aem+Bd))\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{b(m+1)(bd-ae)^2}-\frac{(Ab-aB)(d+ex)^{m+1}}{b(a+bx)(bd-ae)}$$

```
[Out] -(A*b-B*a)*(e*x+d)^(1+m)/b/(-a*e+b*d)/(b*x+a)+(a*B*e*(1+m)-b*(A*e*m+B*d))*(
e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/b/(-a*e+b*d)^2/
(1+m)
```

Rubi **[A]** time = 0.07, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{27, 78, 68\}$

$$\frac{(d+ex)^{m+1}(aBe(m+1)-b(Aem+Bd))\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{b(m+1)(bd-ae)^2}-\frac{(Ab-aB)(d+ex)^{m+1}}{b(a+bx)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((A*b - a*B)*(d + e*x)^(1 + m))/(b*(b*d - a*e)*(a + b*x))) + ((a*B*e*(1 +
 m) - b*(B*d + A*e*m))*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m,
 (b*(d + e*x))/(b*d - a*e)])/(b*(b*d - a*e)^2*(1 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^m}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(A+Bx)(d+ex)^m}{(a+bx)^2}\,dx\\ &= -\frac{(Ab-aB)(d+ex)^{1+m}}{b(bd-ae)(a+bx)}-\frac{(aBe(1+m)-b(Bd+Aem))\int \frac{(d+ex)^m}{a+bx}\,dx}{b(bd-ae)}\\ &= -\frac{(Ab-aB)(d+ex)^{1+m}}{b(bd-ae)(a+bx)}+\frac{(aBe(1+m)-b(Bd+Aem))(d+ex)^{1+m}\,{}_2F_1\Big(1,1+m;2+}{b(bd-ae)^2(1+m)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 99, normalized size = 0.88

$$\frac{(d+ex)^{m+1}\left(\frac{(aBe(m+1)-b(Aem+Bd))\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{m+1}-\frac{(Ab-aB)(bd-ae)}{a+bx}\right)}{b(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((A*b - a*B)*(b*d - a*e))/(a + b*x)) + ((a*B*e*(1 + m
) - b*(B*d + A*e*m))*Hypergeometric2F1[1, 1 + m, 2 + m, (b*(d + e*x))/(b*d
- a*e)])/(1 + m)))/(b*(b*d - a*e)^2)
```

fricas [F] time = 0.93, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{b^2x^2+2\,abx+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [F] time = 1.29, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{b^2x^2+2abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{a^2+2\,a\,b\,x+b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^m}{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m/(a + b*x)**2, x)
```

3.1887 $\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=126

$$-\frac{e^2(d+ex)^{m+1}(b(3Bd-Ae(2-m))-aBe(m+1))\,{}_2F_1\left(3,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{3b(m+1)(bd-ae)^4}-\frac{(Ab-aB)(d+ex)^{m+1}}{3b(a+bx)^3(bd-ae)}$$

```
[Out] -1/3*(A*b-B*a)*(e*x+d)^(1+m)/b/(-a*e+b*d)/(b*x+a)^3-1/3*e^2*(b*(3*B*d-A*e*(
2-m))-a*B*e*(1+m))*(e*x+d)^(1+m)*hypergeom([3, 1+m],[2+m],b*(e*x+d)/(-a*e+b
*d))/b/(-a*e+b*d)^4/(1+m)
```

Rubi [A] time = 0.07, antiderivative size = 125, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{27, 78, 68\}$

$$-\frac{e^2(d+ex)^{m+1}(-aBe(m+1)-Abe(2-m)+3bBd)\,{}_2F_1\left(3,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{3b(m+1)(bd-ae)^4}-\frac{(Ab-aB)(d+ex)^{m+1}}{3b(a+bx)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(((A*b - a*B)*(d + e*x)^(1 + m))/(3*b*(b*d - a*e)*(a + b*x)^3) - (e^2*(3*b*
B*d - A*b*e*(2 - m) - a*B*e*(1 + m))*(d + e*x)^(1 + m)*Hypergeometric2F1[3,
 1 + m, 2 + m, (b*(d + e*x))/(b*d - a*e)])/(3*b*(b*d - a*e)^4*(1 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{(A+Bx)(d+ex)^m}{(a+bx)^4}\,dx$$

$$=-\frac{(Ab-aB)(d+ex)^{1+m}}{3b(bd-ae)(a+bx)^3}+\frac{(3bBd-Abe(2-m)-aBe(1+m))\int \frac{(d+ex)^m}{(a+bx)^3}\,dx}{3b(bd-ae)}$$

$$=-\frac{(Ab-aB)(d+ex)^{1+m}}{3b(bd-ae)(a+bx)^3}-\frac{e^2(3bBd-Abe(2-m)-aBe(1+m))(d+ex)^{1+m}\,{}_2F_1\Big(3,1}{3b(bd-ae)^4(1+m)}$$

Mathematica [**A**] time = 0.08, size = 109, normalized size = 0.87

$$\frac{(d+ex)^{m+1}\left(\frac{aB-Ab}{(a+bx)^3}-\frac{e^2(-aBe(m+1)+Abe(m-2)+3bBd)\,{}_2F_1\left(3,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)^3}\right)}{3b(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*((-(A*b) + a*B)/(a + b*x)^3 - (e^2*(3*b*B*d + A*b*e*(-2
+ m) - a*B*e*(1 + m))*Hypergeometric2F1[3, 1 + m, 2 + m, (b*(d + e*x))/(b*d
 - a*e)])/((b*d - a*e)^3*(1 + m))))/(3*b*(b*d - a*e))
```

fricas [**F**] time = 1.17, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a
^3*b*x + a^4), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

maple [**F**] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{\left(b^2x^2+2abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^m}{(a+bx)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m/(a + b*x)**4, x)
```

3.1888 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=471

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+2}(-aBe-5Abe+6b}{e^7(m+2)(a+bx)}$$

```
[Out] (-a*e+b*d)^5*(-A*e+B*d)*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^7/(1+m)/(b*x+a)-(
-a*e+b*d)^4*(-5*A*b*e-B*a*e+6*B*b*d)*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^7/(2
+m)/(b*x+a)+5*b*(-a*e+b*d)^3*(-2*A*b*e-B*a*e+3*B*b*d)*(e*x+d)^(3+m)*((b*x+a
)^2)^(1/2)/e^7/(3+m)/(b*x+a)-10*b^2*(-a*e+b*d)^2*(-A*b*e-B*a*e+2*B*b*d)*(e*
x+d)^(4+m)*((b*x+a)^2)^(1/2)/e^7/(4+m)/(b*x+a)+5*b^3*(-a*e+b*d)*(-A*b*e-2*B
*a*e+3*B*b*d)*(e*x+d)^(5+m)*((b*x+a)^2)^(1/2)/e^7/(5+m)/(b*x+a)-b^4*(-A*b*e
-5*B*a*e+6*B*b*d)*(e*x+d)^(6+m)*((b*x+a)^2)^(1/2)/e^7/(6+m)/(b*x+a)+b^5*B*(
e*x+d)^(7+m)*((b*x+a)^2)^(1/2)/e^7/(7+m)/(b*x+a)
```

Rubi [A] time = 0.33, antiderivative size = 471, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(Bd-Ae)(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+2}(-aBe-5Abe+6b}{e^7(m+2)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(1 + m)*(a + b*x)) - ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d +
e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(2 + m)*(a + b*x)) + (5*b*
(b*d - a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^7*(3 + m)*(a + b*x)) - (10*b^2*(b*d - a*e)^2*(2*b*B*d -
A*b*e - a*B*e)*(d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(4 + m
)*(a + b*x)) + (5*b^3*(b*d - a*e)*(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^(5
+ m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(5 + m)*(a + b*x)) - (b^4*(6*b*B*d
 - A*b*e - 5*a*B*e)*(d + e*x)^(6 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(
6 + m)*(a + b*x)) + (b^5*B*(d + e*x)^(7 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(7 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)^5 (A+Bx)(d+ex)^m\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Big(-\frac{b^5(bd-ae)^5(-Bd+Ae)(d+ex)^m}{e^6} + \frac{b^5(bd-ae)^4(-}{}}{}$$

$$= \frac{(bd-ae)^5(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^7(1+m)(a+bx)} - \frac{(bd-a}{}$$

Mathematica [**A**] time = 0.31, size = 269, normalized size = 0.57

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\Big(-\frac{b^4(d+ex)^5(-5aBe-Abe+6bBd)}{m+6} + \frac{5b^3(d+ex)^4(bd-ae)(-2aBe-Abe+3bBd)}{m+5} - \frac{10b^2(d+ex)^3(bd-ae)^2(-aBe-Abe+}{m+4}}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(((b*d - a*e)^5*(B*d - A*e))/(1 + m) -
 ((b*d - a*e)^4*(6*b*B*d - 5*A*b*e - a*B*e)*(d + e*x))/(2 + m) + (5*b*(b*d
- a*e)^3*(3*b*B*d - 2*A*b*e - a*B*e)*(d + e*x)^2)/(3 + m) - (10*b^2*(b*d -
a*e)^2*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^3)/(4 + m) + (5*b^3*(b*d - a*e)*
(3*b*B*d - A*b*e - 2*a*B*e)*(d + e*x)^4)/(5 + m) - (b^4*(6*b*B*d - A*b*e -
5*a*B*e)*(d + e*x)^5)/(6 + m) + (b^5*B*(d + e*x)^6)/(7 + m)))/(e^7*(a + b*x
))
```

fricas [**B**] time = 1.48, size = 3485, normalized size = 7.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] (A*a^5*d*e^6*m^6 + 720*B*b^5*d^7 + 5040*A*a^5*d*e^6 - 840*(5*B*a*b^4 + A*b^
5)*d^6*e + 5040*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 12600*(B*a^3*b^2 + A*a^2*
b^3)*d^4*e^3 + 8400*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 2520*(B*a^5 + 5*A*a^4
*b)*d^2*e^5 + (B*b^5*e^7*m^6 + 21*B*b^5*e^7*m^5 + 175*B*b^5*e^7*m^4 + 735*B
*b^5*e^7*m^3 + 1624*B*b^5*e^7*m^2 + 1764*B*b^5*e^7*m + 720*B*b^5*e^7)*x^7 +
 (840*(5*B*a*b^4 + A*b^5)*e^7 + (B*b^5*d*e^6 + (5*B*a*b^4 + A*b^5)*e^7)*m^6
 + (15*B*b^5*d*e^6 + 22*(5*B*a*b^4 + A*b^5)*e^7)*m^5 + 5*(17*B*b^5*d*e^6 +
38*(5*B*a*b^4 + A*b^5)*e^7)*m^4 + 5*(45*B*b^5*d*e^6 + 164*(5*B*a*b^4 + A*b^
5)*e^7)*m^3 + (274*B*b^5*d*e^6 + 1849*(5*B*a*b^4 + A*b^5)*e^7)*m^2 + 2*(60*
B*b^5*d*e^6 + 1019*(5*B*a*b^4 + A*b^5)*e^7)*m)*x^6 + (27*A*a^5*d*e^6 - (B*a
^5 + 5*A*a^4*b)*d^2*e^5)*m^5 + (5040*(2*B*a^2*b^3 + A*a*b^4)*e^7 + ((5*B*a*
b^4 + A*b^5)*d*e^6 + 5*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^6 - (6*B*b^5*d^2*e^5
- 17*(5*B*a*b^4 + A*b^5)*d*e^6 - 115*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^5 - 15*
(4*B*b^5*d^2*e^5 - 7*(5*B*a*b^4 + A*b^5)*d*e^6 - 69*(2*B*a^2*b^3 + A*a*b^4)
*e^7)*m^4 - 5*(42*B*b^5*d^2*e^5 - 59*(5*B*a*b^4 + A*b^5)*d*e^6 - 925*(2*B*a
^2*b^3 + A*a*b^4)*e^7)*m^3 - 2*(150*B*b^5*d^2*e^5 - 187*(5*B*a*b^4 + A*b^5)
*d*e^6 - 5360*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m^2 - 12*(12*B*b^5*d^2*e^5 - 14*
(5*B*a*b^4 + A*b^5)*d*e^6 - 1005*(2*B*a^2*b^3 + A*a*b^4)*e^7)*m)*x^5 + 5*(5
9*A*a^5*d*e^6 + 2*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 5*(B*a^5 + 5*A*a^4*b)*d
^2*e^5)*m^4 + 5*(2520*(B*a^3*b^2 + A*a^2*b^3)*e^7 + ((2*B*a^2*b^3 + A*a*b^4
)*d*e^6 + 2*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^6 - ((5*B*a*b^4 + A*b^5)*d^2*e^5
```

```
 - 19*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 - 48*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^5 +
 (6*B*b^5*d^3*e^4 - 13*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 131*(2*B*a^2*b^3 + A*a
*b^4)*d*e^6 + 452*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m^4 + (36*B*b^5*d^3*e^4 - 53
*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 401*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 2112*(B*
a^3*b^2 + A*a^2*b^3)*e^7)*m^3 + (66*B*b^5*d^3*e^4 - 83*(5*B*a*b^4 + A*b^5)*
d^2*e^5 + 540*(2*B*a^2*b^3 + A*a*b^4)*d*e^6 + 5090*(B*a^3*b^2 + A*a^2*b^3)*
e^7)*m^2 + 6*(6*B*b^5*d^3*e^4 - 7*(5*B*a*b^4 + A*b^5)*d^2*e^5 + 42*(2*B*a^2
*b^3 + A*a*b^4)*d*e^6 + 984*(B*a^3*b^2 + A*a^2*b^3)*e^7)*m)*x^4 + 5*(333*A*
a^5*d*e^6 - 12*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 44*(B*a^4*b + 2*A*a^3*b^2)
*d^3*e^4 - 49*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m^3 + 5*(1680*(B*a^4*b + 2*A*a^3
*b^2)*e^7 + (2*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 + (B*a^4*b + 2*A*a^3*b^2)*e^7)
*m^6 - (4*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 42*(B*a^3*b^2 + A*a^2*b^3)*d*e^
6 - 25*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^5 + (4*(5*B*a*b^4 + A*b^5)*d^3*e^4 -
64*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 + 326*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 + 24
7*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^4 - (24*B*b^5*d^4*e^3 - 40*(5*B*a*b^4 + A*
b^5)*d^3*e^4 + 332*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 1134*(B*a^3*b^2 + A*a^
2*b^3)*d*e^6 - 1219*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^3 - 4*(18*B*b^5*d^4*e^3
 - 23*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 152*(2*B*a^2*b^3 + A*a*b^4)*d^2*e^5 - 42
2*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 778*(B*a^4*b + 2*A*a^3*b^2)*e^7)*m^2 - 4*
(12*B*b^5*d^4*e^3 - 14*(5*B*a*b^4 + A*b^5)*d^3*e^4 + 84*(2*B*a^2*b^3 + A*a*
b^4)*d^2*e^5 - 210*(B*a^3*b^2 + A*a^2*b^3)*d*e^6 - 949*(B*a^4*b + 2*A*a^3*b
^2)*e^7)*m)*x^3 + (5104*A*a^5*d*e^6 + 120*(2*B*a^2*b^3 + A*a*b^4)*d^5*e^2 -
 1080*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 1790*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^
4 - 1175*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m^2 + (2520*(B*a^5 + 5*A*a^4*b)*e^7 +
 (5*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + (B*a^5 + 5*A*a^4*b)*e^7)*m^6 - (30*(B*a
^3*b^2 + A*a^2*b^3)*d^2*e^5 - 115*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 - 26*(B*a^5
 + 5*A*a^4*b)*e^7)*m^5 + 15*(4*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 38*(B*a^3*
b^2 + A*a^2*b^3)*d^2*e^5 + 67*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 18*(B*a^5 + 5
*A*a^4*b)*e^7)*m^4 - 5*(12*(5*B*a*b^4 + A*b^5)*d^4*e^3 - 168*(2*B*a^2*b^3 +
 A*a*b^4)*d^3*e^4 + 750*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^5 - 817*(B*a^4*b + 2*
A*a^3*b^2)*d*e^6 - 284*(B*a^5 + 5*A*a^4*b)*e^7)*m^3 + (360*B*b^5*d^5*e^2 -
480*(5*B*a*b^4 + A*b^5)*d^4*e^3 + 3300*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 95
10*(B*a^3*b^2 + A*a^2*b^3)*d^2*e^5 + 7390*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 3
929*(B*a^5 + 5*A*a^4*b)*e^7)*m^2 + 6*(60*B*b^5*d^5*e^2 - 70*(5*B*a*b^4 + A*
b^5)*d^4*e^3 + 420*(2*B*a^2*b^3 + A*a*b^4)*d^3*e^4 - 1050*(B*a^3*b^2 + A*a^
2*b^3)*d^2*e^5 + 700*(B*a^4*b + 2*A*a^3*b^2)*d*e^6 + 879*(B*a^5 + 5*A*a^4*b
)*e^7)*m)*x^2 + 2*(4014*A*a^5*d*e^6 - 60*(5*B*a*b^4 + A*b^5)*d^6*e + 780*(2
*B*a^2*b^3 + A*a*b^4)*d^5*e^2 - 3210*(B*a^3*b^2 + A*a^2*b^3)*d^4*e^3 + 3190
*(B*a^4*b + 2*A*a^3*b^2)*d^3*e^4 - 1377*(B*a^5 + 5*A*a^4*b)*d^2*e^5)*m + (5
040*A*a^5*e^7 + (A*a^5*e^7 + (B*a^5 + 5*A*a^4*b)*d*e^6)*m^6 + (27*A*a^5*e^7
 - 10*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 + 25*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^5 +
 5*(59*A*a^5*e^7 + 12*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 44*(B*a^4*b + 2*A*a
^3*b^2)*d^2*e^5 + 49*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^4 + 5*(333*A*a^5*e^7 - 24
*(2*B*a^2*b^3 + A*a*b^4)*d^4*e^3 + 216*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 35
8*(B*a^4*b + 2*A*a^3*b^2)*d^2*e^5 + 235*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^3 + 2*
(2552*A*a^5*e^7 + 60*(5*B*a*b^4 + A*b^5)*d^5*e^2 - 780*(2*B*a^2*b^3 + A*a*b
^4)*d^4*e^3 + 3210*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 - 3190*(B*a^4*b + 2*A*a^
3*b^2)*d^2*e^5 + 1377*(B*a^5 + 5*A*a^4*b)*d*e^6)*m^2 - 12*(60*B*b^5*d^6*e -
 669*A*a^5*e^7 - 70*(5*B*a*b^4 + A*b^5)*d^5*e^2 + 420*(2*B*a^2*b^3 + A*a*b^
4)*d^4*e^3 - 1050*(B*a^3*b^2 + A*a^2*b^3)*d^3*e^4 + 700*(B*a^4*b + 2*A*a^3*
b^2)*d^2*e^5 - 210*(B*a^5 + 5*A*a^4*b)*d*e^6)*m)*x)*(e*x + d)^m/(e^7*m^7 +
28*e^7*m^6 + 322*e^7*m^5 + 1960*e^7*m^4 + 6769*e^7*m^3 + 13132*e^7*m^2 + 13
068*e^7*m + 5040*e^7)
```

giac [B] time = 0.84, size = 8708, normalized size = 18.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)

[Out] ((x*e + d)^m*B*b^5*m^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*B*b^5*d*m^6*x^6*e
^6*sgn(b*x + a) + 5*(x*e + d)^m*B*a*b^4*m^6*x^6*e^7*sgn(b*x + a) + (x*e + d
)^m*A*b^5*m^6*x^6*e^7*sgn(b*x + a) + 21*(x*e + d)^m*B*b^5*m^5*x^7*e^7*sgn(b
*x + a) + 5*(x*e + d)^m*B*a*b^4*d*m^6*x^5*e^6*sgn(b*x + a) + (x*e + d)^m*A*
b^5*d*m^6*x^5*e^6*sgn(b*x + a) + 15*(x*e + d)^m*B*b^5*d*m^5*x^6*e^6*sgn(b*x
 + a) - 6*(x*e + d)^m*B*b^5*d^2*m^5*x^5*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B
*a^2*b^3*m^6*x^5*e^7*sgn(b*x + a) + 5*(x*e + d)^m*A*a*b^4*m^6*x^5*e^7*sgn(b
*x + a) + 110*(x*e + d)^m*B*a*b^4*m^5*x^6*e^7*sgn(b*x + a) + 22*(x*e + d)^m
*A*b^5*m^5*x^6*e^7*sgn(b*x + a) + 175*(x*e + d)^m*B*b^5*m^4*x^7*e^7*sgn(b*x
 + a) + 10*(x*e + d)^m*B*a^2*b^3*d*m^6*x^4*e^6*sgn(b*x + a) + 5*(x*e + d)^m
*A*a*b^4*d*m^6*x^4*e^6*sgn(b*x + a) + 85*(x*e + d)^m*B*a*b^4*d*m^5*x^5*e^6*
sgn(b*x + a) + 17*(x*e + d)^m*A*b^5*d*m^5*x^5*e^6*sgn(b*x + a) + 85*(x*e +
d)^m*B*b^5*d*m^4*x^6*e^6*sgn(b*x + a) - 25*(x*e + d)^m*B*a*b^4*d^2*m^5*x^4*
e^5*sgn(b*x + a) - 5*(x*e + d)^m*A*b^5*d^2*m^5*x^4*e^5*sgn(b*x + a) - 60*(x
*e + d)^m*B*b^5*d^2*m^4*x^5*e^5*sgn(b*x + a) + 30*(x*e + d)^m*B*b^5*d^3*m^4
*x^4*e^4*sgn(b*x + a) + 10*(x*e + d)^m*B*a^3*b^2*m^6*x^4*e^7*sgn(b*x + a) +
 10*(x*e + d)^m*A*a^2*b^3*m^6*x^4*e^7*sgn(b*x + a) + 230*(x*e + d)^m*B*a^2*
b^3*m^5*x^5*e^7*sgn(b*x + a) + 115*(x*e + d)^m*A*a*b^4*m^5*x^5*e^7*sgn(b*x
+ a) + 950*(x*e + d)^m*B*a*b^4*m^4*x^6*e^7*sgn(b*x + a) + 190*(x*e + d)^m*A
*b^5*m^4*x^6*e^7*sgn(b*x + a) + 735*(x*e + d)^m*B*b^5*m^3*x^7*e^7*sgn(b*x +
 a) + 10*(x*e + d)^m*B*a^3*b^2*d*m^6*x^3*e^6*sgn(b*x + a) + 10*(x*e + d)^m*
A*a^2*b^3*d*m^6*x^3*e^6*sgn(b*x + a) + 190*(x*e + d)^m*B*a^2*b^3*d*m^5*x^4*
e^6*sgn(b*x + a) + 95*(x*e + d)^m*A*a*b^4*d*m^5*x^4*e^6*sgn(b*x + a) + 525*
(x*e + d)^m*B*a*b^4*d*m^4*x^5*e^6*sgn(b*x + a) + 105*(x*e + d)^m*A*b^5*d*m^
4*x^5*e^6*sgn(b*x + a) + 225*(x*e + d)^m*B*b^5*d*m^3*x^6*e^6*sgn(b*x + a) -
 40*(x*e + d)^m*B*a^2*b^3*d^2*m^5*x^3*e^5*sgn(b*x + a) - 20*(x*e + d)^m*A*a
*b^4*d^2*m^5*x^3*e^5*sgn(b*x + a) - 325*(x*e + d)^m*B*a*b^4*d^2*m^4*x^4*e^5
*sgn(b*x + a) - 65*(x*e + d)^m*A*b^5*d^2*m^4*x^4*e^5*sgn(b*x + a) - 210*(x*
e + d)^m*B*b^5*d^2*m^3*x^5*e^5*sgn(b*x + a) + 100*(x*e + d)^m*B*a*b^4*d^3*m
^4*x^3*e^4*sgn(b*x + a) + 20*(x*e + d)^m*A*b^5*d^3*m^4*x^3*e^4*sgn(b*x + a)
 + 180*(x*e + d)^m*B*b^5*d^3*m^3*x^4*e^4*sgn(b*x + a) - 120*(x*e + d)^m*B*b
^5*d^4*m^3*x^3*e^3*sgn(b*x + a) + 5*(x*e + d)^m*B*a^4*b*m^6*x^3*e^7*sgn(b*x
 + a) + 10*(x*e + d)^m*A*a^3*b^2*m^6*x^3*e^7*sgn(b*x + a) + 240*(x*e + d)^m
*B*a^3*b^2*m^5*x^4*e^7*sgn(b*x + a) + 240*(x*e + d)^m*A*a^2*b^3*m^5*x^4*e^7
*sgn(b*x + a) + 2070*(x*e + d)^m*B*a^2*b^3*m^4*x^5*e^7*sgn(b*x + a) + 1035*
(x*e + d)^m*A*a*b^4*m^4*x^5*e^7*sgn(b*x + a) + 4100*(x*e + d)^m*B*a*b^4*m^3
*x^6*e^7*sgn(b*x + a) + 820*(x*e + d)^m*A*b^5*m^3*x^6*e^7*sgn(b*x + a) + 16
24*(x*e + d)^m*B*b^5*m^2*x^7*e^7*sgn(b*x + a) + 5*(x*e + d)^m*B*a^4*b*d*m^6
*x^2*e^6*sgn(b*x + a) + 10*(x*e + d)^m*A*a^3*b^2*d*m^6*x^2*e^6*sgn(b*x + a)
 + 210*(x*e + d)^m*B*a^3*b^2*d*m^5*x^3*e^6*sgn(b*x + a) + 210*(x*e + d)^m*A
*a^2*b^3*d*m^5*x^3*e^6*sgn(b*x + a) + 1310*(x*e + d)^m*B*a^2*b^3*d*m^4*x^4*
e^6*sgn(b*x + a) + 655*(x*e + d)^m*A*a*b^4*d*m^4*x^4*e^6*sgn(b*x + a) + 147
5*(x*e + d)^m*B*a*b^4*d*m^3*x^5*e^6*sgn(b*x + a) + 295*(x*e + d)^m*A*b^5*d*
m^3*x^5*e^6*sgn(b*x + a) + 274*(x*e + d)^m*B*b^5*d*m^2*x^6*e^6*sgn(b*x + a)
 - 30*(x*e + d)^m*B*a^3*b^2*d^2*m^5*x^2*e^5*sgn(b*x + a) - 30*(x*e + d)^m*A
*a^2*b^3*d^2*m^5*x^2*e^5*sgn(b*x + a) - 640*(x*e + d)^m*B*a^2*b^3*d^2*m^4*x
^3*e^5*sgn(b*x + a) - 320*(x*e + d)^m*A*a*b^4*d^2*m^4*x^3*e^5*sgn(b*x + a)
- 1325*(x*e + d)^m*B*a*b^4*d^2*m^3*x^4*e^5*sgn(b*x + a) - 265*(x*e + d)^m*A
*b^5*d^2*m^3*x^4*e^5*sgn(b*x + a) - 300*(x*e + d)^m*B*b^5*d^2*m^2*x^5*e^5*s
gn(b*x + a) + 120*(x*e + d)^m*B*a^2*b^3*d^3*m^4*x^2*e^4*sgn(b*x + a) + 60*(
x*e + d)^m*A*a*b^4*d^3*m^4*x^2*e^4*sgn(b*x + a) + 1000*(x*e + d)^m*B*a*b^4*
d^3*m^3*x^3*e^4*sgn(b*x + a) + 200*(x*e + d)^m*A*b^5*d^3*m^3*x^3*e^4*sgn(b*
x + a) + 330*(x*e + d)^m*B*b^5*d^3*m^2*x^4*e^4*sgn(b*x + a) - 300*(x*e + d)
^m*B*a*b^4*d^4*m^3*x^2*e^3*sgn(b*x + a) - 60*(x*e + d)^m*A*b^5*d^4*m^3*x^2*
e^3*sgn(b*x + a) - 360*(x*e + d)^m*B*b^5*d^4*m^2*x^3*e^3*sgn(b*x + a) + 360
*(x*e + d)^m*B*b^5*d^5*m^2*x^2*e^2*sgn(b*x + a) + (x*e + d)^m*B*a^5*m^6*x^2
*e^7*sgn(b*x + a) + 5*(x*e + d)^m*A*a^4*b*m^6*x^2*e^7*sgn(b*x + a) + 125*(x
*e + d)^m*B*a^4*b*m^5*x^3*e^7*sgn(b*x + a) + 250*(x*e + d)^m*A*a^3*b^2*m^5*
```

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x^3*e^7*sgn(b*x + a) + 2260*(x*e + d)^m*B*a^3*b^2*m^4*x^4*e^7*sgn(b*x + a)
+ 2260*(x*e + d)^m*A*a^2*b^3*m^4*x^4*e^7*sgn(b*x + a) + 9250*(x*e + d)^m*B*
a^2*b^3*m^3*x^5*e^7*sgn(b*x + a) + 4625*(x*e + d)^m*A*a*b^4*m^3*x^5*e^7*sgn
(b*x + a) + 9245*(x*e + d)^m*B*a*b^4*m^2*x^6*e^7*sgn(b*x + a) + 1849*(x*e +
 d)^m*A*b^5*m^2*x^6*e^7*sgn(b*x + a) + 1764*(x*e + d)^m*B*b^5*m*x^7*e^7*sgn
(b*x + a) + (x*e + d)^m*B*a^5*d*m^6*x*e^6*sgn(b*x + a) + 5*(x*e + d)^m*A*a^
4*b*d*m^6*x*e^6*sgn(b*x + a) + 115*(x*e + d)^m*B*a^4*b*d*m^5*x^2*e^6*sgn(b*
x + a) + 230*(x*e + d)^m*A*a^3*b^2*d*m^5*x^2*e^6*sgn(b*x + a) + 1630*(x*e +
 d)^m*B*a^3*b^2*d*m^4*x^3*e^6*sgn(b*x + a) + 1630*(x*e + d)^m*A*a^2*b^3*d*m
^4*x^3*e^6*sgn(b*x + a) + 4010*(x*e + d)^m*B*a^2*b^3*d*m^3*x^4*e^6*sgn(b*x
+ a) + 2005*(x*e + d)^m*A*a*b^4*d*m^3*x^4*e^6*sgn(b*x + a) + 1870*(x*e + d)
^m*B*a*b^4*d*m^2*x^5*e^6*sgn(b*x + a) + 374*(x*e + d)^m*A*b^5*d*m^2*x^5*e^6
*sgn(b*x + a) + 120*(x*e + d)^m*B*b^5*d*m*x^6*e^6*sgn(b*x + a) - 10*(x*e +
d)^m*B*a^4*b*d^2*m^5*x*e^5*sgn(b*x + a) - 20*(x*e + d)^m*A*a^3*b^2*d^2*m^5*
x*e^5*sgn(b*x + a) - 570*(x*e + d)^m*B*a^3*b^2*d^2*m^4*x^2*e^5*sgn(b*x + a)
 - 570*(x*e + d)^m*A*a^2*b^3*d^2*m^4*x^2*e^5*sgn(b*x + a) - 3320*(x*e + d)^
m*B*a^2*b^3*d^2*m^3*x^3*e^5*sgn(b*x + a) - 1660*(x*e + d)^m*A*a*b^4*d^2*m^3
*x^3*e^5*sgn(b*x + a) - 2075*(x*e + d)^m*B*a*b^4*d^2*m^2*x^4*e^5*sgn(b*x +
a) - 415*(x*e + d)^m*A*b^5*d^2*m^2*x^4*e^5*sgn(b*x + a) - 144*(x*e + d)^m*B
*b^5*d^2*m*x^5*e^5*sgn(b*x + a) + 60*(x*e + d)^m*B*a^3*b^2*d^3*m^4*x*e^4*sg
n(b*x + a) + 60*(x*e + d)^m*A*a^2*b^3*d^3*m^4*x*e^4*sgn(b*x + a) + 1680*(x*
e + d)^m*B*a^2*b^3*d^3*m^3*x^2*e^4*sgn(b*x + a) + 840*(x*e + d)^m*A*a*b^4*d
^3*m^3*x^2*e^4*sgn(b*x + a) + 2300*(x*e + d)^m*B*a*b^4*d^3*m^2*x^3*e^4*sgn(
b*x + a) + 460*(x*e + d)^m*A*b^5*d^3*m^2*x^3*e^4*sgn(b*x + a) + 180*(x*e +
d)^m*B*b^5*d^3*m*x^4*e^4*sgn(b*x + a) - 240*(x*e + d)^m*B*a^2*b^3*d^4*m^3*x
*e^3*sgn(b*x + a) - 120*(x*e + d)^m*A*a*b^4*d^4*m^3*x*e^3*sgn(b*x + a) - 24
00*(x*e + d)^m*B*a*b^4*d^4*m^2*x^2*e^3*sgn(b*x + a) - 480*(x*e + d)^m*A*b^5
*d^4*m^2*x^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*B*b^5*d^4*m*x^3*e^3*sgn(b*x
 + a) + 600*(x*e + d)^m*B*a*b^4*d^5*m^2*x*e^2*sgn(b*x + a) + 120*(x*e + d)^
m*A*b^5*d^5*m^2*x*e^2*sgn(b*x + a) + 360*(x*e + d)^m*B*b^5*d^5*m*x^2*e^2*sg
n(b*x + a) - 720*(x*e + d)^m*B*b^5*d^6*m*x*e*sgn(b*x + a) + (x*e + d)^m*A*a
^5*m^6*x*e^7*sgn(b*x + a) + 26*(x*e + d)^m*B*a^5*m^5*x^2*e^7*sgn(b*x + a) +
 130*(x*e + d)^m*A*a^4*b*m^5*x^2*e^7*sgn(b*x + a) + 1235*(x*e + d)^m*B*a^4*
b*m^4*x^3*e^7*sgn(b*x + a) + 2470*(x*e + d)^m*A*a^3*b^2*m^4*x^3*e^7*sgn(b*x
 + a) + 10560*(x*e + d)^m*B*a^3*b^2*m^3*x^4*e^7*sgn(b*x + a) + 10560*(x*e +
 d)^m*A*a^2*b^3*m^3*x^4*e^7*sgn(b*x + a) + 21440*(x*e + d)^m*B*a^2*b^3*m^2*
x^5*e^7*sgn(b*x + a) + 10720*(x*e + d)^m*A*a*b^4*m^2*x^5*e^7*sgn(b*x + a) +
 10190*(x*e + d)^m*B*a*b^4*m*x^6*e^7*sgn(b*x + a) + 2038*(x*e + d)^m*A*b^5*
m*x^6*e^7*sgn(b*x + a) + 720*(x*e + d)^m*B*b^5*x^7*e^7*sgn(b*x + a) + (x*e
+ d)^m*A*a^5*d*m^6*e^6*sgn(b*x + a) + 25*(x*e + d)^m*B*a^5*d*m^5*x*e^6*sgn(
b*x + a) + 125*(x*e + d)^m*A*a^4*b*d*m^5*x*e^6*sgn(b*x + a) + 1005*(x*e + d
)^m*B*a^4*b*d*m^4*x^2*e^6*sgn(b*x + a) + 2010*(x*e + d)^m*A*a^3*b^2*d*m^4*x
^2*e^6*sgn(b*x + a) + 5670*(x*e + d)^m*B*a^3*b^2*d*m^3*x^3*e^6*sgn(b*x + a)
 + 5670*(x*e + d)^m*A*a^2*b^3*d*m^3*x^3*e^6*sgn(b*x + a) + 5400*(x*e + d)^m
*B*a^2*b^3*d*m^2*x^4*e^6*sgn(b*x + a) + 2700*(x*e + d)^m*A*a*b^4*d*m^2*x^4*
e^6*sgn(b*x + a) + 840*(x*e + d)^m*B*a*b^4*d*m*x^5*e^6*sgn(b*x + a) + 168*(
x*e + d)^m*A*b^5*d*m*x^5*e^6*sgn(b*x + a) - (x*e + d)^m*B*a^5*d^2*m^5*e^5*s
gn(b*x + a) - 5*(x*e + d)^m*A*a^4*b*d^2*m^5*e^5*sgn(b*x + a) - 220*(x*e + d
)^m*B*a^4*b*d^2*m^4*x*e^5*sgn(b*x + a) - 440*(x*e + d)^m*A*a^3*b^2*d^2*m^4*
x*e^5*sgn(b*x + a) - 3750*(x*e + d)^m*B*a^3*b^2*d^2*m^3*x^2*e^5*sgn(b*x + a
) - 3750*(x*e + d)^m*A*a^2*b^3*d^2*m^3*x^2*e^5*sgn(b*x + a) - 6080*(x*e + d
)^m*B*a^2*b^3*d^2*m^2*x^3*e^5*sgn(b*x + a) - 3040*(x*e + d)^m*A*a*b^4*d^2*m
^2*x^3*e^5*sgn(b*x + a) - 1050*(x*e + d)^m*B*a*b^4*d^2*m*x^4*e^5*sgn(b*x +
a) - 210*(x*e + d)^m*A*b^5*d^2*m*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B*a^
4*b*d^3*m^4*e^4*sgn(b*x + a) + 20*(x*e + d)^m*A*a^3*b^2*d^3*m^4*e^4*sgn(b*x
 + a) + 1080*(x*e + d)^m*B*a^3*b^2*d^3*m^3*x*e^4*sgn(b*x + a) + 1080*(x*e +
 d)^m*A*a^2*b^3*d^3*m^3*x*e^4*sgn(b*x + a) + 6600*(x*e + d)^m*B*a^2*b^3*d^3
*m^2*x^2*e^4*sgn(b*x + a) + 3300*(x*e + d)^m*A*a*b^4*d^3*m^2*x^2*e^4*sgn(b*
x + a) + 1400*(x*e + d)^m*B*a*b^4*d^3*m*x^3*e^4*sgn(b*x + a) + 280*(x*e + d
)^m*A*b^5*d^3*m*x^3*e^4*sgn(b*x + a) - 60*(x*e + d)^m*B*a^3*b^2*d^4*m^3*e^3
*sgn(b*x + a) - 60*(x*e + d)^m*A*a^2*b^3*d^4*m^3*e^3*sgn(b*x + a) - 3120*(x
*e + d)^m*B*a^2*b^3*d^4*m^2*x*e^3*sgn(b*x + a) - 1560*(x*e + d)^m*A*a*b^4*d
^4*m^2*x*e^3*sgn(b*x + a) - 2100*(x*e + d)^m*B*a*b^4*d^4*m*x^2*e^3*sgn(b*x
+ a) - 420*(x*e + d)^m*A*b^5*d^4*m*x^2*e^3*sgn(b*x + a) + 240*(x*e + d)^m*B
*a^2*b^3*d^5*m^2*e^2*sgn(b*x + a) + 120*(x*e + d)^m*A*a*b^4*d^5*m^2*e^2*sgn
(b*x + a) + 4200*(x*e + d)^m*B*a*b^4*d^5*m*x*e^2*sgn(b*x + a) + 840*(x*e +
d)^m*A*b^5*d^5*m*x*e^2*sgn(b*x + a) - 600*(x*e + d)^m*B*a*b^4*d^6*m*e*sgn(b
*x + a) - 120*(x*e + d)^m*A*b^5*d^6*m*e*sgn(b*x + a) + 720*(x*e + d)^m*B*b^
5*d^7*sgn(b*x + a) + 27*(x*e + d)^m*A*a^5*m^5*x*e^7*sgn(b*x + a) + 270*(x*e
 + d)^m*B*a^5*m^4*x^2*e^7*sgn(b*x + a) + 1350*(x*e + d)^m*A*a^4*b*m^4*x^2*e
^7*sgn(b*x + a) + 6095*(x*e + d)^m*B*a^4*b*m^3*x^3*e^7*sgn(b*x + a) + 12190
*(x*e + d)^m*A*a^3*b^2*m^3*x^3*e^7*sgn(b*x + a) + 25450*(x*e + d)^m*B*a^3*b
^2*m^2*x^4*e^7*sgn(b*x + a) + 25450*(x*e + d)^m*A*a^2*b^3*m^2*x^4*e^7*sgn(b
*x + a) + 24120*(x*e + d)^m*B*a^2*b^3*m*x^5*e^7*sgn(b*x + a) + 12060*(x*e +
 d)^m*A*a*b^4*m*x^5*e^7*sgn(b*x + a) + 4200*(x*e + d)^m*B*a*b^4*x^6*e^7*sgn
(b*x + a) + 840*(x*e + d)^m*A*b^5*x^6*e^7*sgn(b*x + a) + 27*(x*e + d)^m*A*a
^5*d*m^5*e^6*sgn(b*x + a) + 245*(x*e + d)^m*B*a^5*d*m^4*x*e^6*sgn(b*x + a)
+ 1225*(x*e + d)^m*A*a^4*b*d*m^4*x*e^6*sgn(b*x + a) + 4085*(x*e + d)^m*B*a^
4*b*d*m^3*x^2*e^6*sgn(b*x + a) + 8170*(x*e + d)^m*A*a^3*b^2*d*m^3*x^2*e^6*s
gn(b*x + a) + 8440*(x*e + d)^m*B*a^3*b^2*d*m^2*x^3*e^6*sgn(b*x + a) + 8440*
(x*e + d)^m*A*a^2*b^3*d*m^2*x^3*e^6*sgn(b*x + a) + 2520*(x*e + d)^m*B*a^2*b
^3*d*m*x^4*e^6*sgn(b*x + a) + 1260*(x*e + d)^m*A*a*b^4*d*m*x^4*e^6*sgn(b*x
+ a) - 25*(x*e + d)^m*B*a^5*d^2*m^4*e^5*sgn(b*x + a) - 125*(x*e + d)^m*A*a^
4*b*d^2*m^4*e^5*sgn(b*x + a) - 1790*(x*e + d)^m*B*a^4*b*d^2*m^3*x*e^5*sgn(b
*x + a) - 3580*(x*e + d)^m*A*a^3*b^2*d^2*m^3*x*e^5*sgn(b*x + a) - 9510*(x*e
 + d)^m*B*a^3*b^2*d^2*m^2*x^2*e^5*sgn(b*x + a) - 9510*(x*e + d)^m*A*a^2*b^3
*d^2*m^2*x^2*e^5*sgn(b*x + a) - 3360*(x*e + d)^m*B*a^2*b^3*d^2*m*x^3*e^5*sg
n(b*x + a) - 1680*(x*e + d)^m*A*a*b^4*d^2*m*x^3*e^5*sgn(b*x + a) + 220*(x*e
 + d)^m*B*a^4*b*d^3*m^3*e^4*sgn(b*x + a) + 440*(x*e + d)^m*A*a^3*b^2*d^3*m^
3*e^4*sgn(b*x + a) + 6420*(x*e + d)^m*B*a^3*b^2*d^3*m^2*x*e^4*sgn(b*x + a)
+ 6420*(x*e + d)^m*A*a^2*b^3*d^3*m^2*x*e^4*sgn(b*x + a) + 5040*(x*e + d)^m*
B*a^2*b^3*d^3*m*x^2*e^4*sgn(b*x + a) + 2520*(x*e + d)^m*A*a*b^4*d^3*m*x^2*e
^4*sgn(b*x + a) - 1080*(x*e + d)^m*B*a^3*b^2*d^4*m^2*e^3*sgn(b*x + a) - 108
0*(x*e + d)^m*A*a^2*b^3*d^4*m^2*e^3*sgn(b*x + a) - 10080*(x*e + d)^m*B*a^2*
b^3*d^4*m*x*e^3*sgn(b*x + a) - 5040*(x*e + d)^m*A*a*b^4*d^4*m*x*e^3*sgn(b*x
 + a) + 3120*(x*e + d)^m*B*a^2*b^3*d^5*m*e^2*sgn(b*x + a) + 1560*(x*e + d)^
m*A*a*b^4*d^5*m*e^2*sgn(b*x + a) - 4200*(x*e + d)^m*B*a*b^4*d^6*e*sgn(b*x +
 a) - 840*(x*e + d)^m*A*b^5*d^6*e*sgn(b*x + a) + 295*(x*e + d)^m*A*a^5*m^4*
x*e^7*sgn(b*x + a) + 1420*(x*e + d)^m*B*a^5*m^3*x^2*e^7*sgn(b*x + a) + 7100
*(x*e + d)^m*A*a^4*b*m^3*x^2*e^7*sgn(b*x + a) + 15560*(x*e + d)^m*B*a^4*b*m
^2*x^3*e^7*sgn(b*x + a) + 31120*(x*e + d)^m*A*a^3*b^2*m^2*x^3*e^7*sgn(b*x +
 a) + 29520*(x*e + d)^m*B*a^3*b^2*m*x^4*e^7*sgn(b*x + a) + 29520*(x*e + d)^
m*A*a^2*b^3*m*x^4*e^7*sgn(b*x + a) + 10080*(x*e + d)^m*B*a^2*b^3*x^5*e^7*sg
n(b*x + a) + 5040*(x*e + d)^m*A*a*b^4*x^5*e^7*sgn(b*x + a) + 295*(x*e + d)^
m*A*a^5*d*m^4*e^6*sgn(b*x + a) + 1175*(x*e + d)^m*B*a^5*d*m^3*x*e^6*sgn(b*x
 + a) + 5875*(x*e + d)^m*A*a^4*b*d*m^3*x*e^6*sgn(b*x + a) + 7390*(x*e + d)^
m*B*a^4*b*d*m^2*x^2*e^6*sgn(b*x + a) + 14780*(x*e + d)^m*A*a^3*b^2*d*m^2*x^
2*e^6*sgn(b*x + a) + 4200*(x*e + d)^m*B*a^3*b^2*d*m*x^3*e^6*sgn(b*x + a) +
4200*(x*e + d)^m*A*a^2*b^3*d*m*x^3*e^6*sgn(b*x + a) - 245*(x*e + d)^m*B*a^5
*d^2*m^3*e^5*sgn(b*x + a) - 1225*(x*e + d)^m*A*a^4*b*d^2*m^3*e^5*sgn(b*x +
a) - 6380*(x*e + d)^m*B*a^4*b*d^2*m^2*x*e^5*sgn(b*x + a) - 12760*(x*e + d)^
m*A*a^3*b^2*d^2*m^2*x*e^5*sgn(b*x + a) - 6300*(x*e + d)^m*B*a^3*b^2*d^2*m*x
^2*e^5*sgn(b*x + a) - 6300*(x*e + d)^m*A*a^2*b^3*d^2*m*x^2*e^5*sgn(b*x + a)
 + 1790*(x*e + d)^m*B*a^4*b*d^3*m^2*e^4*sgn(b*x + a) + 3580*(x*e + d)^m*A*a
^3*b^2*d^3*m^2*e^4*sgn(b*x + a) + 12600*(x*e + d)^m*B*a^3*b^2*d^3*m*x*e^4*s
gn(b*x + a) + 12600*(x*e + d)^m*A*a^2*b^3*d^3*m*x*e^4*sgn(b*x + a) - 6420*(
x*e + d)^m*B*a^3*b^2*d^4*m*e^3*sgn(b*x + a) - 6420*(x*e + d)^m*A*a^2*b^3*d^
4*m*e^3*sgn(b*x + a) + 10080*(x*e + d)^m*B*a^2*b^3*d^5*e^2*sgn(b*x + a) + 5
```

```
040*(x*e + d)^m*A*a*b^4*d^5*e^2*sgn(b*x + a) + 1665*(x*e + d)^m*A*a^5*m^3*x
*e^7*sgn(b*x + a) + 3929*(x*e + d)^m*B*a^5*m^2*x^2*e^7*sgn(b*x + a) + 19645
*(x*e + d)^m*A*a^4*b*m^2*x^2*e^7*sgn(b*x + a) + 18980*(x*e + d)^m*B*a^4*b*m
*x^3*e^7*sgn(b*x + a) + 37960*(x*e + d)^m*A*a^3*b^2*m*x^3*e^7*sgn(b*x + a)
+ 12600*(x*e + d)^m*B*a^3*b^2*x^4*e^7*sgn(b*x + a) + 12600*(x*e + d)^m*A*a^
2*b^3*x^4*e^7*sgn(b*x + a) + 1665*(x*e + d)^m*A*a^5*d*m^3*e^6*sgn(b*x + a)
+ 2754*(x*e + d)^m*B*a^5*d*m^2*x*e^6*sgn(b*x + a) + 13770*(x*e + d)^m*A*a^4
*b*d*m^2*x*e^6*sgn(b*x + a) + 4200*(x*e + d)^m*B*a^4*b*d*m*x^2*e^6*sgn(b*x
+ a) + 8400*(x*e + d)^m*A*a^3*b^2*d*m*x^2*e^6*sgn(b*x + a) - 1175*(x*e + d)
^m*B*a^5*d^2*m^2*e^5*sgn(b*x + a) - 5875*(x*e + d)^m*A*a^4*b*d^2*m^2*e^5*sg
n(b*x + a) - 8400*(x*e + d)^m*B*a^4*b*d^2*m*x*e^5*sgn(b*x + a) - 16800*(x*e
 + d)^m*A*a^3*b^2*d^2*m*x*e^5*sgn(b*x + a) + 6380*(x*e + d)^m*B*a^4*b*d^3*m
*e^4*sgn(b*x + a) + 12760*(x*e + d)^m*A*a^3*b^2*d^3*m*e^4*sgn(b*x + a) - 12
600*(x*e + d)^m*B*a^3*b^2*d^4*e^3*sgn(b*x + a) - 12600*(x*e + d)^m*A*a^2*b^
3*d^4*e^3*sgn(b*x + a) + 5104*(x*e + d)^m*A*a^5*m^2*x*e^7*sgn(b*x + a) + 52
74*(x*e + d)^m*B*a^5*m*x^2*e^7*sgn(b*x + a) + 26370*(x*e + d)^m*A*a^4*b*m*x
^2*e^7*sgn(b*x + a) + 8400*(x*e + d)^m*B*a^4*b*x^3*e^7*sgn(b*x + a) + 16800
*(x*e + d)^m*A*a^3*b^2*x^3*e^7*sgn(b*x + a) + 5104*(x*e + d)^m*A*a^5*d*m^2*
e^6*sgn(b*x + a) + 2520*(x*e + d)^m*B*a^5*d*m*x*e^6*sgn(b*x + a) + 12600*(x
*e + d)^m*A*a^4*b*d*m*x*e^6*sgn(b*x + a) - 2754*(x*e + d)^m*B*a^5*d^2*m*e^5
*sgn(b*x + a) - 13770*(x*e + d)^m*A*a^4*b*d^2*m*e^5*sgn(b*x + a) + 8400*(x*
e + d)^m*B*a^4*b*d^3*e^4*sgn(b*x + a) + 16800*(x*e + d)^m*A*a^3*b^2*d^3*e^4
*sgn(b*x + a) + 8028*(x*e + d)^m*A*a^5*m*x*e^7*sgn(b*x + a) + 2520*(x*e + d
)^m*B*a^5*x^2*e^7*sgn(b*x + a) + 12600*(x*e + d)^m*A*a^4*b*x^2*e^7*sgn(b*x
+ a) + 8028*(x*e + d)^m*A*a^5*d*m*e^6*sgn(b*x + a) - 2520*(x*e + d)^m*B*a^5
*d^2*e^5*sgn(b*x + a) - 12600*(x*e + d)^m*A*a^4*b*d^2*e^5*sgn(b*x + a) + 50
40*(x*e + d)^m*A*a^5*x*e^7*sgn(b*x + a) + 5040*(x*e + d)^m*A*a^5*d*e^6*sgn(
b*x + a))/(m^7*e^7 + 28*m^6*e^7 + 322*m^5*e^7 + 1960*m^4*e^7 + 6769*m^3*e^7
 + 13132*m^2*e^7 + 13068*m*e^7 + 5040*e^7)
```

maple [B] time = 0.07, size = 3931, normalized size = 8.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^5*e^6*m^6*x^6+A*b^5*e^6*m^6*x^5+5*B*a*b^4*e^6*m^6*x^5+21
*B*b^5*e^6*m^5*x^6+5*A*a*b^4*e^6*m^6*x^4+22*A*b^5*e^6*m^5*x^5+10*B*a^2*b^3*
e^6*m^6*x^4+110*B*a*b^4*e^6*m^5*x^5-6*B*b^5*d*e^5*m^5*x^5+175*B*b^5*e^6*m^4
*x^6+10*A*a^2*b^3*e^6*m^6*x^3+115*A*a*b^4*e^6*m^5*x^4-5*A*b^5*d*e^5*m^5*x^4
+190*A*b^5*e^6*m^4*x^5+10*B*a^3*b^2*e^6*m^6*x^3+230*B*a^2*b^3*e^6*m^5*x^4-2
5*B*a*b^4*d*e^5*m^5*x^4+950*B*a*b^4*e^6*m^4*x^5-90*B*b^5*d*e^5*m^4*x^5+735*
B*b^5*e^6*m^3*x^6+10*A*a^3*b^2*e^6*m^6*x^2+240*A*a^2*b^3*e^6*m^5*x^3-20*A*a
*b^4*d*e^5*m^5*x^3+1035*A*a*b^4*e^6*m^4*x^4-85*A*b^5*d*e^5*m^4*x^4+820*A*b^
5*e^6*m^3*x^5+5*B*a^4*b*e^6*m^6*x^2+240*B*a^3*b^2*e^6*m^5*x^3-40*B*a^2*b^3*
d*e^5*m^5*x^3+2070*B*a^2*b^3*e^6*m^4*x^4-425*B*a*b^4*d*e^5*m^4*x^4+4100*B*a
*b^4*e^6*m^3*x^5+30*B*b^5*d^2*e^4*m^4*x^4-510*B*b^5*d*e^5*m^3*x^5+1624*B*b^
5*e^6*m^2*x^6+5*A*a^4*b*e^6*m^6*x+250*A*a^3*b^2*e^6*m^5*x^2-30*A*a^2*b^3*d*
e^5*m^5*x^2+2260*A*a^2*b^3*e^6*m^4*x^3-380*A*a*b^4*d*e^5*m^4*x^3+4625*A*a*b
^4*e^6*m^3*x^4+20*A*b^5*d^2*e^4*m^4*x^3-525*A*b^5*d*e^5*m^3*x^4+1849*A*b^5*
e^6*m^2*x^5+B*a^5*e^6*m^6*x+125*B*a^4*b*e^6*m^5*x^2-30*B*a^3*b^2*d*e^5*m^5*
x^2+2260*B*a^3*b^2*e^6*m^4*x^3-760*B*a^2*b^3*d*e^5*m^4*x^3+9250*B*a^2*b^3*e
^6*m^3*x^4+100*B*a*b^4*d^2*e^4*m^4*x^3-2625*B*a*b^4*d*e^5*m^3*x^4+9245*B*a*
b^4*e^6*m^2*x^5+300*B*b^5*d^2*e^4*m^3*x^4-1350*B*b^5*d*e^5*m^2*x^5+1764*B*b
^5*e^6*m*x^6+A*a^5*e^6*m^6+130*A*a^4*b*e^6*m^5*x-20*A*a^3*b^2*d*e^5*m^5*x+2
470*A*a^3*b^2*e^6*m^4*x^2-630*A*a^2*b^3*d*e^5*m^4*x^2+10560*A*a^2*b^3*e^6*m
^3*x^3+60*A*a*b^4*d^2*e^4*m^4*x^2-2620*A*a*b^4*d*e^5*m^3*x^3+10720*A*a*b^4*
e^6*m^2*x^4+260*A*b^5*d^2*e^4*m^3*x^3-1475*A*b^5*d*e^5*m^2*x^4+2038*A*b^5*e
^6*m*x^5+26*B*a^5*e^6*m^5*x-10*B*a^4*b*d*e^5*m^5*x+1235*B*a^4*b*e^6*m^4*x^2
-630*B*a^3*b^2*d*e^5*m^4*x^2+10560*B*a^3*b^2*e^6*m^3*x^3+120*B*a^2*b^3*d^2*
e^4*m^4*x^2-5240*B*a^2*b^3*d*e^5*m^3*x^3+21440*B*a^2*b^3*e^6*m^2*x^4+1300*B
*a*b^4*d^2*e^4*m^3*x^3-7375*B*a*b^4*d*e^5*m^2*x^4+10190*B*a*b^4*e^6*m*x^5-1
20*B*b^5*d^3*e^3*m^3*x^3+1050*B*b^5*d^2*e^4*m^2*x^4-1644*B*b^5*d*e^5*m*x^5+
720*B*b^5*e^6*x^6+27*A*a^5*e^6*m^5-5*A*a^4*b*d*e^5*m^5+1350*A*a^4*b*e^6*m^4
*x-460*A*a^3*b^2*d*e^5*m^4*x+12190*A*a^3*b^2*e^6*m^3*x^2+60*A*a^2*b^3*d^2*e
^4*m^4*x-4890*A*a^2*b^3*d*e^5*m^3*x^2+25450*A*a^2*b^3*e^6*m^2*x^3+960*A*a*b
^4*d^2*e^4*m^3*x^2-8020*A*a*b^4*d*e^5*m^2*x^3+12060*A*a*b^4*e^6*m*x^4-60*A*
b^5*d^3*e^3*m^3*x^2+1060*A*b^5*d^2*e^4*m^2*x^3-1870*A*b^5*d*e^5*m*x^4+840*A
*b^5*e^6*x^5-B*a^5*d*e^5*m^5+270*B*a^5*e^6*m^4*x-230*B*a^4*b*d*e^5*m^4*x+60
95*B*a^4*b*e^6*m^3*x^2+60*B*a^3*b^2*d^2*e^4*m^4*x-4890*B*a^3*b^2*d*e^5*m^3*
x^2+25450*B*a^3*b^2*e^6*m^2*x^3+1920*B*a^2*b^3*d^2*e^4*m^3*x^2-16040*B*a^2*
b^3*d*e^5*m^2*x^3+24120*B*a^2*b^3*e^6*m*x^4-300*B*a*b^4*d^3*e^3*m^3*x^2+530
0*B*a*b^4*d^2*e^4*m^2*x^3-9350*B*a*b^4*d*e^5*m*x^4+4200*B*a*b^4*e^6*x^5-720
*B*b^5*d^3*e^3*m^2*x^3+1500*B*b^5*d^2*e^4*m*x^4-720*B*b^5*d*e^5*x^5+295*A*a
^5*e^6*m^4-125*A*a^4*b*d*e^5*m^4+7100*A*a^4*b*e^6*m^3*x+20*A*a^3*b^2*d^2*e^
4*m^4-4020*A*a^3*b^2*d*e^5*m^3*x+31120*A*a^3*b^2*e^6*m^2*x^2+1140*A*a^2*b^3
*d^2*e^4*m^3*x-17010*A*a^2*b^3*d*e^5*m^2*x^2+29520*A*a^2*b^3*e^6*m*x^3-120*
A*a*b^4*d^3*e^3*m^3*x+4980*A*a*b^4*d^2*e^4*m^2*x^2-10800*A*a*b^4*d*e^5*m*x^
3+5040*A*a*b^4*e^6*x^4-600*A*b^5*d^3*e^3*m^2*x^2+1660*A*b^5*d^2*e^4*m*x^3-8
40*A*b^5*d*e^5*x^4-25*B*a^5*d*e^5*m^4+1420*B*a^5*e^6*m^3*x+10*B*a^4*b*d^2*e
^4*m^4-2010*B*a^4*b*d*e^5*m^3*x+15560*B*a^4*b*e^6*m^2*x^2+1140*B*a^3*b^2*d^
2*e^4*m^3*x-17010*B*a^3*b^2*d*e^5*m^2*x^2+29520*B*a^3*b^2*e^6*m*x^3-240*B*a
^2*b^3*d^3*e^3*m^3*x+9960*B*a^2*b^3*d^2*e^4*m^2*x^2-21600*B*a^2*b^3*d*e^5*m
*x^3+10080*B*a^2*b^3*e^6*x^4-3000*B*a*b^4*d^3*e^3*m^2*x^2+8300*B*a*b^4*d^2*
e^4*m*x^3-4200*B*a*b^4*d*e^5*x^4+360*B*b^5*d^4*e^2*m^2*x^2-1320*B*b^5*d^3*e
^3*m*x^3+720*B*b^5*d^2*e^4*x^4+1665*A*a^5*e^6*m^3-1225*A*a^4*b*d*e^5*m^3+19
645*A*a^4*b*e^6*m^2*x+440*A*a^3*b^2*d^2*e^4*m^3-16340*A*a^3*b^2*d*e^5*m^2*x
+37960*A*a^3*b^2*e^6*m*x^2-60*A*a^2*b^3*d^3*e^3*m^3+7500*A*a^2*b^3*d^2*e^4*
m^2*x-25320*A*a^2*b^3*d*e^5*m*x^2+12600*A*a^2*b^3*e^6*x^3-1680*A*a*b^4*d^3*
e^3*m^2*x+9120*A*a*b^4*d^2*e^4*m*x^2-5040*A*a*b^4*d*e^5*x^3+120*A*b^5*d^4*e
^2*m^2*x-1380*A*b^5*d^3*e^3*m*x^2+840*A*b^5*d^2*e^4*x^3-245*B*a^5*d*e^5*m^3
+3929*B*a^5*e^6*m^2*x+220*B*a^4*b*d^2*e^4*m^3-8170*B*a^4*b*d*e^5*m^2*x+1898
0*B*a^4*b*e^6*m*x^2-60*B*a^3*b^2*d^3*e^3*m^3+7500*B*a^3*b^2*d^2*e^4*m^2*x-2
5320*B*a^3*b^2*d*e^5*m*x^2+12600*B*a^3*b^2*e^6*x^3-3360*B*a^2*b^3*d^3*e^3*m
^2*x+18240*B*a^2*b^3*d^2*e^4*m*x^2-10080*B*a^2*b^3*d*e^5*x^3+600*B*a*b^4*d^
4*e^2*m^2*x-6900*B*a*b^4*d^3*e^3*m*x^2+4200*B*a*b^4*d^2*e^4*x^3+1080*B*b^5*
d^4*e^2*m*x^2-720*B*b^5*d^3*e^3*x^3+5104*A*a^5*e^6*m^2-5875*A*a^4*b*d*e^5*m
^2+26370*A*a^4*b*e^6*m*x+3580*A*a^3*b^2*d^2*e^4*m^2-29560*A*a^3*b^2*d*e^5*m
*x+16800*A*a^3*b^2*e^6*x^2-1080*A*a^2*b^3*d^3*e^3*m^2+19020*A*a^2*b^3*d^2*e
^4*m*x-12600*A*a^2*b^3*d*e^5*x^2+120*A*a*b^4*d^4*e^2*m^2-6600*A*a*b^4*d^3*e
^3*m*x+5040*A*a*b^4*d^2*e^4*x^2+960*A*b^5*d^4*e^2*m*x-840*A*b^5*d^3*e^3*x^2
-1175*B*a^5*d*e^5*m^2+5274*B*a^5*e^6*m*x+1790*B*a^4*b*d^2*e^4*m^2-14780*B*a
^4*b*d*e^5*m*x+8400*B*a^4*b*e^6*x^2-1080*B*a^3*b^2*d^3*e^3*m^2+19020*B*a^3*
b^2*d^2*e^4*m*x-12600*B*a^3*b^2*d*e^5*x^2+240*B*a^2*b^3*d^4*e^2*m^2-13200*B
*a^2*b^3*d^3*e^3*m*x+10080*B*a^2*b^3*d^2*e^4*x^2+4800*B*a*b^4*d^4*e^2*m*x-4
200*B*a*b^4*d^3*e^3*x^2-720*B*b^5*d^5*e*m*x+720*B*b^5*d^4*e^2*x^2+8028*A*a^
5*e^6*m-13770*A*a^4*b*d*e^5*m+12600*A*a^4*b*e^6*x+12760*A*a^3*b^2*d^2*e^4*m
-16800*A*a^3*b^2*d*e^5*x-6420*A*a^2*b^3*d^3*e^3*m+12600*A*a^2*b^3*d^2*e^4*x
+1560*A*a*b^4*d^4*e^2*m-5040*A*a*b^4*d^3*e^3*x-120*A*b^5*d^5*e*m+840*A*b^5*
d^4*e^2*x-2754*B*a^5*d*e^5*m+2520*B*a^5*e^6*x+6380*B*a^4*b*d^2*e^4*m-8400*B
*a^4*b*d*e^5*x-6420*B*a^3*b^2*d^3*e^3*m+12600*B*a^3*b^2*d^2*e^4*x+3120*B*a^
2*b^3*d^4*e^2*m-10080*B*a^2*b^3*d^3*e^3*x-600*B*a*b^4*d^5*e*m+4200*B*a*b^4*
d^4*e^2*x-720*B*b^5*d^5*e*x+5040*A*a^5*e^6-12600*A*a^4*b*d*e^5+16800*A*a^3*
b^2*d^2*e^4-12600*A*a^2*b^3*d^3*e^3+5040*A*a*b^4*d^4*e^2-840*A*b^5*d^5*e-25
20*B*a^5*d*e^5+8400*B*a^4*b*d^2*e^4-12600*B*a^3*b^2*d^3*e^3+10080*B*a^2*b^3
*d^4*e^2-4200*B*a*b^4*d^5*e+720*B*b^5*d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5/e^7/
(m^7+28*m^6+322*m^5+1960*m^4+6769*m^3+13132*m^2+13068*m+5040)
```

maxima [B] time = 0.82, size = 1864, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^5*e^6*x^6 - 60*(m^2 + 11
*m + 30)*a^2*b^3*d^4*e^2 + 20*(m^3 + 15*m^2 + 74*m + 120)*a^3*b^2*d^3*e^3 -
 5*(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)*a^4*b*d^2*e^4 + (m^5 + 20*m^4 + 1
55*m^3 + 580*m^2 + 1044*m + 720)*a^5*d*e^5 + 120*a*b^4*d^5*e*(m + 6) - 120*
b^5*d^6 + ((m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d*e^5 + 5*(m^5 + 16*
m^4 + 95*m^3 + 260*m^2 + 324*m + 144)*a*b^4*e^6)*x^5 - 5*((m^4 + 6*m^3 + 11
*m^2 + 6*m)*b^5*d^2*e^4 - (m^5 + 12*m^4 + 47*m^3 + 72*m^2 + 36*m)*a*b^4*d*e
^5 - 2*(m^5 + 17*m^4 + 107*m^3 + 307*m^2 + 396*m + 180)*a^2*b^3*e^6)*x^4 +
10*(2*(m^3 + 3*m^2 + 2*m)*b^5*d^3*e^3 - 2*(m^4 + 9*m^3 + 20*m^2 + 12*m)*a*b
^4*d^2*e^4 + (m^5 + 14*m^4 + 65*m^3 + 112*m^2 + 60*m)*a^2*b^3*d*e^5 + (m^5
+ 18*m^4 + 121*m^3 + 372*m^2 + 508*m + 240)*a^3*b^2*e^6)*x^3 - 5*(12*(m^2 +
 m)*b^5*d^4*e^2 - 12*(m^3 + 7*m^2 + 6*m)*a*b^4*d^3*e^3 + 6*(m^4 + 12*m^3 +
41*m^2 + 30*m)*a^2*b^3*d^2*e^4 - 2*(m^5 + 16*m^4 + 89*m^3 + 194*m^2 + 120*m
)*a^3*b^2*d*e^5 - (m^5 + 19*m^4 + 137*m^3 + 461*m^2 + 702*m + 360)*a^4*b*e^
6)*x^2 - (120*(m^2 + 6*m)*a*b^4*d^4*e^2 - 60*(m^3 + 11*m^2 + 30*m)*a^2*b^3*
d^3*e^3 + 20*(m^4 + 15*m^3 + 74*m^2 + 120*m)*a^3*b^2*d^2*e^4 - 5*(m^5 + 18*
m^4 + 119*m^3 + 342*m^2 + 360*m)*a^4*b*d*e^5 - (m^5 + 20*m^4 + 155*m^3 + 58
0*m^2 + 1044*m + 720)*a^5*e^6 - 120*b^5*d^5*e*m)*x)*(e*x + d)^m*A/((m^6 + 2
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5
+ 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^5*e^7*x^7 + 240*(m^2 + 13*
m + 42)*a^2*b^3*d^5*e^2 - 60*(m^3 + 18*m^2 + 107*m + 210)*a^3*b^2*d^4*e^3 +
 10*(m^4 + 22*m^3 + 179*m^2 + 638*m + 840)*a^4*b*d^3*e^4 - (m^5 + 25*m^4 +
245*m^3 + 1175*m^2 + 2754*m + 2520)*a^5*d^2*e^5 - 600*a*b^4*d^6*e*(m + 7) +
 720*b^5*d^7 + ((m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*b^5*d*e
^6 + 5*(m^6 + 22*m^5 + 190*m^4 + 820*m^3 + 1849*m^2 + 2038*m + 840)*a*b^4*e
^7)*x^6 - (6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d^2*e^5 - 5*(m^6 +
 17*m^5 + 105*m^4 + 295*m^3 + 374*m^2 + 168*m)*a*b^4*d*e^6 - 10*(m^6 + 23*m
^5 + 207*m^4 + 925*m^3 + 2144*m^2 + 2412*m + 1008)*a^2*b^3*e^7)*x^5 + 5*(6*
(m^4 + 6*m^3 + 11*m^2 + 6*m)*b^5*d^3*e^4 - 5*(m^5 + 13*m^4 + 53*m^3 + 83*m^
2 + 42*m)*a*b^4*d^2*e^5 + 2*(m^6 + 19*m^5 + 131*m^4 + 401*m^3 + 540*m^2 + 2
52*m)*a^2*b^3*d*e^6 + 2*(m^6 + 24*m^5 + 226*m^4 + 1056*m^3 + 2545*m^2 + 295
2*m + 1260)*a^3*b^2*e^7)*x^4 - 5*(24*(m^3 + 3*m^2 + 2*m)*b^5*d^4*e^3 - 20*(
m^4 + 10*m^3 + 23*m^2 + 14*m)*a*b^4*d^3*e^4 + 8*(m^5 + 16*m^4 + 83*m^3 + 15
2*m^2 + 84*m)*a^2*b^3*d^2*e^5 - 2*(m^6 + 21*m^5 + 163*m^4 + 567*m^3 + 844*m
^2 + 420*m)*a^3*b^2*d*e^6 - (m^6 + 25*m^5 + 247*m^4 + 1219*m^3 + 3112*m^2 +
 3796*m + 1680)*a^4*b*e^7)*x^3 + (360*(m^2 + m)*b^5*d^5*e^2 - 300*(m^3 + 8*
m^2 + 7*m)*a*b^4*d^4*e^3 + 120*(m^4 + 14*m^3 + 55*m^2 + 42*m)*a^2*b^3*d^3*e
^4 - 30*(m^5 + 19*m^4 + 125*m^3 + 317*m^2 + 210*m)*a^3*b^2*d^2*e^5 + 5*(m^6
 + 23*m^5 + 201*m^4 + 817*m^3 + 1478*m^2 + 840*m)*a^4*b*d*e^6 + (m^6 + 26*m
^5 + 270*m^4 + 1420*m^3 + 3929*m^2 + 5274*m + 2520)*a^5*e^7)*x^2 + (600*(m^
2 + 7*m)*a*b^4*d^5*e^2 - 240*(m^3 + 13*m^2 + 42*m)*a^2*b^3*d^4*e^3 + 60*(m^
4 + 18*m^3 + 107*m^2 + 210*m)*a^3*b^2*d^3*e^4 - 10*(m^5 + 22*m^4 + 179*m^3
+ 638*m^2 + 840*m)*a^4*b*d^2*e^5 + (m^6 + 25*m^5 + 245*m^4 + 1175*m^3 + 275
4*m^2 + 2520*m)*a^5*d*e^6 - 720*b^5*d^6*e*m)*x)*(e*x + d)^m*B/((m^7 + 28*m^
6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^m\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1889 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=321

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+2}(-aBe-3Abe+4b}{e^5(m+2)(a+bx)}$$

```
[Out] (-a*e+b*d)^3*(-A*e+B*d)*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^5/(1+m)/(b*x+a)-(
-a*e+b*d)^2*(-3*A*b*e-B*a*e+4*B*b*d)*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^5/(2
+m)/(b*x+a)+3*b*(-a*e+b*d)*(-A*b*e-B*a*e+2*B*b*d)*(e*x+d)^(3+m)*((b*x+a)^2)
^(1/2)/e^5/(3+m)/(b*x+a)-b^2*(-A*b*e-3*B*a*e+4*B*b*d)*(e*x+d)^(4+m)*((b*x+a
)^2)^(1/2)/e^5/(4+m)/(b*x+a)+b^3*B*(e*x+d)^(5+m)*((b*x+a)^2)^(1/2)/e^5/(5+m
)/(b*x+a)
```

Rubi [A] time = 0.21, antiderivative size = 321, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{770, 77\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(Bd-Ae)(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+2}(-aBe-3Abe+4b}{e^5(m+2)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^5*(1 + m)*(a + b*x)) - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d +
e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(2 + m)*(a + b*x)) + (3*b*
(b*d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(e^5*(3 + m)*(a + b*x)) - (b^2*(4*b*B*d - A*b*e - 3*a*B*e)*(d +
 e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(4 + m)*(a + b*x)) + (b^3
*B*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(5 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3(A+Bx)(d+ex)^m\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(-\frac{b^3(bd-ae)^3(-Bd+Ae)(d+ex)^m}{e^4}+\frac{b^3(bd-ae)^2(-}{}\right.}{}$$

$$= \frac{(bd-ae)^3(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^5(1+m)(a+bx)} - \frac{(bd-a}{}$$

Mathematica [**A**] time = 0.27, size = 183, normalized size = 0.57

$$\frac{\left((a+bx)^2\right)^{3/2}(d+ex)^{m+1}\left(-\frac{b^2(d+ex)^3(-3aBe-Abe+4bBd)}{m+4}+\frac{3b(d+ex)^2(bd-ae)(-aBe-Abe+2bBd)}{m+3}-\frac{(d+ex)(bd-ae)^2(-aBe-3Abe+4bB}{m+2}\right.}{e^5(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (((a + b*x)^2)^(3/2)*(d + e*x)^(1 + m)*(((b*d - a*e)^3*(B*d - A*e))/(1 + m)
 - ((b*d - a*e)^2*(4*b*B*d - 3*A*b*e - a*B*e)*(d + e*x))/(2 + m) + (3*b*(b*
d - a*e)*(2*b*B*d - A*b*e - a*B*e)*(d + e*x)^2)/(3 + m) - (b^2*(4*b*B*d - A
*b*e - 3*a*B*e)*(d + e*x)^3)/(4 + m) + (b^3*B*(d + e*x)^4)/(5 + m)))/(e^5*(
a + b*x)^3)
```

fricas [**B**] time = 1.26, size = 1282, normalized size = 3.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (A*a^3*d*e^4*m^4 + 24*B*b^3*d^5 + 120*A*a^3*d*e^4 - 30*(3*B*a*b^2 + A*b^3)*
d^4*e + 120*(B*a^2*b + A*a*b^2)*d^3*e^2 - 60*(B*a^3 + 3*A*a^2*b)*d^2*e^3 +
(B*b^3*e^5*m^4 + 10*B*b^3*e^5*m^3 + 35*B*b^3*e^5*m^2 + 50*B*b^3*e^5*m + 24*
B*b^3*e^5)*x^5 + (30*(3*B*a*b^2 + A*b^3)*e^5 + (B*b^3*d*e^4 + (3*B*a*b^2 +
A*b^3)*e^5)*m^4 + (6*B*b^3*d*e^4 + 11*(3*B*a*b^2 + A*b^3)*e^5)*m^3 + (11*B*
b^3*d*e^4 + 41*(3*B*a*b^2 + A*b^3)*e^5)*m^2 + (6*B*b^3*d*e^4 + 61*(3*B*a*b^
2 + A*b^3)*e^5)*m)*x^4 + (14*A*a^3*d*e^4 - (B*a^3 + 3*A*a^2*b)*d^2*e^3)*m^3
 + (120*(B*a^2*b + A*a*b^2)*e^5 + ((3*B*a*b^2 + A*b^3)*d*e^4 + 3*(B*a^2*b +
 A*a*b^2)*e^5)*m^4 - 4*(B*b^3*d^2*e^3 - 2*(3*B*a*b^2 + A*b^3)*d*e^4 - 9*(B*
a^2*b + A*a*b^2)*e^5)*m^3 - (12*B*b^3*d^2*e^3 - 17*(3*B*a*b^2 + A*b^3)*d*e^
4 - 147*(B*a^2*b + A*a*b^2)*e^5)*m^2 - 2*(4*B*b^3*d^2*e^3 - 5*(3*B*a*b^2 +
A*b^3)*d*e^4 - 117*(B*a^2*b + A*a*b^2)*e^5)*m)*x^3 + (71*A*a^3*d*e^4 + 6*(B
*a^2*b + A*a*b^2)*d^3*e^2 - 12*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*m^2 + (60*(B*a^
3 + 3*A*a^2*b)*e^5 + (3*(B*a^2*b + A*a*b^2)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5
)*m^4 - (3*(3*B*a*b^2 + A*b^3)*d^2*e^3 - 30*(B*a^2*b + A*a*b^2)*d*e^4 - 13*
(B*a^3 + 3*A*a^2*b)*e^5)*m^3 + (12*B*b^3*d^3*e^2 - 18*(3*B*a*b^2 + A*b^3)*d
^2*e^3 + 87*(B*a^2*b + A*a*b^2)*d*e^4 + 59*(B*a^3 + 3*A*a^2*b)*e^5)*m^2 + (
12*B*b^3*d^3*e^2 - 15*(3*B*a*b^2 + A*b^3)*d^2*e^3 + 60*(B*a^2*b + A*a*b^2)*
d*e^4 + 107*(B*a^3 + 3*A*a^2*b)*e^5)*m)*x^2 + (154*A*a^3*d*e^4 - 6*(3*B*a*b
^2 + A*b^3)*d^4*e + 54*(B*a^2*b + A*a*b^2)*d^3*e^2 - 47*(B*a^3 + 3*A*a^2*b)
*d^2*e^3)*m + (120*A*a^3*e^5 + (A*a^3*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^4)*m^4
+ 2*(7*A*a^3*e^5 - 3*(B*a^2*b + A*a*b^2)*d^2*e^3 + 6*(B*a^3 + 3*A*a^2*b)*d*
e^4)*m^3 + (71*A*a^3*e^5 + 6*(3*B*a*b^2 + A*b^3)*d^3*e^2 - 54*(B*a^2*b + A*
a*b^2)*d^2*e^3 + 47*(B*a^3 + 3*A*a^2*b)*d*e^4)*m^2 - 2*(12*B*b^3*d^4*e - 77
*A*a^3*e^5 - 15*(3*B*a*b^2 + A*b^3)*d^3*e^2 + 60*(B*a^2*b + A*a*b^2)*d^2*e^
3 - 30*(B*a^3 + 3*A*a^2*b)*d*e^4)*m)*x)*(e*x + d)^m/(e^5*m^5 + 15*e^5*m^4 +
 85*e^5*m^3 + 225*e^5*m^2 + 274*e^5*m + 120*e^5)
```

giac [B] time = 0.42, size = 3208, normalized size = 9.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*B*b^3*m^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*B*b^3*d*m^4*x^4*e
^4*sgn(b*x + a) + 3*(x*e + d)^m*B*a*b^2*m^4*x^4*e^5*sgn(b*x + a) + (x*e + d
)^m*A*b^3*m^4*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m*B*b^3*m^3*x^5*e^5*sgn(b
*x + a) + 3*(x*e + d)^m*B*a*b^2*d*m^4*x^3*e^4*sgn(b*x + a) + (x*e + d)^m*A*
b^3*d*m^4*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*B*b^3*d*m^3*x^4*e^4*sgn(b*x
+ a) - 4*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^3*sgn(b*x + a) + 3*(x*e + d)^m*B*a
^2*b*m^4*x^3*e^5*sgn(b*x + a) + 3*(x*e + d)^m*A*a*b^2*m^4*x^3*e^5*sgn(b*x +
 a) + 33*(x*e + d)^m*B*a*b^2*m^3*x^4*e^5*sgn(b*x + a) + 11*(x*e + d)^m*A*b^
3*m^3*x^4*e^5*sgn(b*x + a) + 35*(x*e + d)^m*B*b^3*m^2*x^5*e^5*sgn(b*x + a)
+ 3*(x*e + d)^m*B*a^2*b*d*m^4*x^2*e^4*sgn(b*x + a) + 3*(x*e + d)^m*A*a*b^2*
d*m^4*x^2*e^4*sgn(b*x + a) + 24*(x*e + d)^m*B*a*b^2*d*m^3*x^3*e^4*sgn(b*x +
 a) + 8*(x*e + d)^m*A*b^3*d*m^3*x^3*e^4*sgn(b*x + a) + 11*(x*e + d)^m*B*b^3
*d*m^2*x^4*e^4*sgn(b*x + a) - 9*(x*e + d)^m*B*a*b^2*d^2*m^3*x^2*e^3*sgn(b*x
 + a) - 3*(x*e + d)^m*A*b^3*d^2*m^3*x^2*e^3*sgn(b*x + a) - 12*(x*e + d)^m*B
*b^3*d^2*m^2*x^3*e^3*sgn(b*x + a) + 12*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^2*sg
n(b*x + a) + (x*e + d)^m*B*a^3*m^4*x^2*e^5*sgn(b*x + a) + 3*(x*e + d)^m*A*a
^2*b*m^4*x^2*e^5*sgn(b*x + a) + 36*(x*e + d)^m*B*a^2*b*m^3*x^3*e^5*sgn(b*x
+ a) + 36*(x*e + d)^m*A*a*b^2*m^3*x^3*e^5*sgn(b*x + a) + 123*(x*e + d)^m*B*
a*b^2*m^2*x^4*e^5*sgn(b*x + a) + 41*(x*e + d)^m*A*b^3*m^2*x^4*e^5*sgn(b*x +
 a) + 50*(x*e + d)^m*B*b^3*m*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*B*a^3*d*m^4
*x*e^4*sgn(b*x + a) + 3*(x*e + d)^m*A*a^2*b*d*m^4*x*e^4*sgn(b*x + a) + 30*(
x*e + d)^m*B*a^2*b*d*m^3*x^2*e^4*sgn(b*x + a) + 30*(x*e + d)^m*A*a*b^2*d*m^
3*x^2*e^4*sgn(b*x + a) + 51*(x*e + d)^m*B*a*b^2*d*m^2*x^3*e^4*sgn(b*x + a)
+ 17*(x*e + d)^m*A*b^3*d*m^2*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*B*b^3*d*m
*x^4*e^4*sgn(b*x + a) - 6*(x*e + d)^m*B*a^2*b*d^2*m^3*x*e^3*sgn(b*x + a) -
6*(x*e + d)^m*A*a*b^2*d^2*m^3*x*e^3*sgn(b*x + a) - 54*(x*e + d)^m*B*a*b^2*d
^2*m^2*x^2*e^3*sgn(b*x + a) - 18*(x*e + d)^m*A*b^3*d^2*m^2*x^2*e^3*sgn(b*x
+ a) - 8*(x*e + d)^m*B*b^3*d^2*m*x^3*e^3*sgn(b*x + a) + 18*(x*e + d)^m*B*a*
b^2*d^3*m^2*x*e^2*sgn(b*x + a) + 6*(x*e + d)^m*A*b^3*d^3*m^2*x*e^2*sgn(b*x
+ a) + 12*(x*e + d)^m*B*b^3*d^3*m*x^2*e^2*sgn(b*x + a) - 24*(x*e + d)^m*B*b
^3*d^4*m*x*e*sgn(b*x + a) + (x*e + d)^m*A*a^3*m^4*x*e^5*sgn(b*x + a) + 13*(
x*e + d)^m*B*a^3*m^3*x^2*e^5*sgn(b*x + a) + 39*(x*e + d)^m*A*a^2*b*m^3*x^2*
e^5*sgn(b*x + a) + 147*(x*e + d)^m*B*a^2*b*m^2*x^3*e^5*sgn(b*x + a) + 147*(
x*e + d)^m*A*a*b^2*m^2*x^3*e^5*sgn(b*x + a) + 183*(x*e + d)^m*B*a*b^2*m*x^4
*e^5*sgn(b*x + a) + 61*(x*e + d)^m*A*b^3*m*x^4*e^5*sgn(b*x + a) + 24*(x*e +
 d)^m*B*b^3*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*A*a^3*d*m^4*e^4*sgn(b*x + a)
 + 12*(x*e + d)^m*B*a^3*d*m^3*x*e^4*sgn(b*x + a) + 36*(x*e + d)^m*A*a^2*b*d
*m^3*x*e^4*sgn(b*x + a) + 87*(x*e + d)^m*B*a^2*b*d*m^2*x^2*e^4*sgn(b*x + a)
 + 87*(x*e + d)^m*A*a*b^2*d*m^2*x^2*e^4*sgn(b*x + a) + 30*(x*e + d)^m*B*a*b
^2*d*m*x^3*e^4*sgn(b*x + a) + 10*(x*e + d)^m*A*b^3*d*m*x^3*e^4*sgn(b*x + a)
 - (x*e + d)^m*B*a^3*d^2*m^3*e^3*sgn(b*x + a) - 3*(x*e + d)^m*A*a^2*b*d^2*m
^3*e^3*sgn(b*x + a) - 54*(x*e + d)^m*B*a^2*b*d^2*m^2*x*e^3*sgn(b*x + a) - 5
4*(x*e + d)^m*A*a*b^2*d^2*m^2*x*e^3*sgn(b*x + a) - 45*(x*e + d)^m*B*a*b^2*d
^2*m*x^2*e^3*sgn(b*x + a) - 15*(x*e + d)^m*A*b^3*d^2*m*x^2*e^3*sgn(b*x + a)
 + 6*(x*e + d)^m*B*a^2*b*d^3*m^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*A*a*b^2*d
^3*m^2*e^2*sgn(b*x + a) + 90*(x*e + d)^m*B*a*b^2*d^3*m*x*e^2*sgn(b*x + a) +
 30*(x*e + d)^m*A*b^3*d^3*m*x*e^2*sgn(b*x + a) - 18*(x*e + d)^m*B*a*b^2*d^4
*m*e*sgn(b*x + a) - 6*(x*e + d)^m*A*b^3*d^4*m*e*sgn(b*x + a) + 24*(x*e + d)
^m*B*b^3*d^5*sgn(b*x + a) + 14*(x*e + d)^m*A*a^3*m^3*x*e^5*sgn(b*x + a) + 5
9*(x*e + d)^m*B*a^3*m^2*x^2*e^5*sgn(b*x + a) + 177*(x*e + d)^m*A*a^2*b*m^2*
x^2*e^5*sgn(b*x + a) + 234*(x*e + d)^m*B*a^2*b*m*x^3*e^5*sgn(b*x + a) + 234
*(x*e + d)^m*A*a*b^2*m*x^3*e^5*sgn(b*x + a) + 90*(x*e + d)^m*B*a*b^2*x^4*e^
5*sgn(b*x + a) + 30*(x*e + d)^m*A*b^3*x^4*e^5*sgn(b*x + a) + 14*(x*e + d)^m
*A*a^3*d*m^3*e^4*sgn(b*x + a) + 47*(x*e + d)^m*B*a^3*d*m^2*x*e^4*sgn(b*x +
a) + 141*(x*e + d)^m*A*a^2*b*d*m^2*x*e^4*sgn(b*x + a) + 60*(x*e + d)^m*B*a^
2*b*d*m*x^2*e^4*sgn(b*x + a) + 60*(x*e + d)^m*A*a*b^2*d*m*x^2*e^4*sgn(b*x +
 a) - 12*(x*e + d)^m*B*a^3*d^2*m^2*e^3*sgn(b*x + a) - 36*(x*e + d)^m*A*a^2*
b*d^2*m^2*e^3*sgn(b*x + a) - 120*(x*e + d)^m*B*a^2*b*d^2*m*x*e^3*sgn(b*x +
a) - 120*(x*e + d)^m*A*a*b^2*d^2*m*x*e^3*sgn(b*x + a) + 54*(x*e + d)^m*B*a^
2*b*d^3*m*e^2*sgn(b*x + a) + 54*(x*e + d)^m*A*a*b^2*d^3*m*e^2*sgn(b*x + a)
- 90*(x*e + d)^m*B*a*b^2*d^4*e*sgn(b*x + a) - 30*(x*e + d)^m*A*b^3*d^4*e*sg
n(b*x + a) + 71*(x*e + d)^m*A*a^3*m^2*x*e^5*sgn(b*x + a) + 107*(x*e + d)^m*
B*a^3*m*x^2*e^5*sgn(b*x + a) + 321*(x*e + d)^m*A*a^2*b*m*x^2*e^5*sgn(b*x +
a) + 120*(x*e + d)^m*B*a^2*b*x^3*e^5*sgn(b*x + a) + 120*(x*e + d)^m*A*a*b^2
*x^3*e^5*sgn(b*x + a) + 71*(x*e + d)^m*A*a^3*d*m^2*e^4*sgn(b*x + a) + 60*(x
*e + d)^m*B*a^3*d*m*x*e^4*sgn(b*x + a) + 180*(x*e + d)^m*A*a^2*b*d*m*x*e^4*
sgn(b*x + a) - 47*(x*e + d)^m*B*a^3*d^2*m*e^3*sgn(b*x + a) - 141*(x*e + d)^
m*A*a^2*b*d^2*m*e^3*sgn(b*x + a) + 120*(x*e + d)^m*B*a^2*b*d^3*e^2*sgn(b*x
+ a) + 120*(x*e + d)^m*A*a*b^2*d^3*e^2*sgn(b*x + a) + 154*(x*e + d)^m*A*a^3
*m*x*e^5*sgn(b*x + a) + 60*(x*e + d)^m*B*a^3*x^2*e^5*sgn(b*x + a) + 180*(x*
e + d)^m*A*a^2*b*x^2*e^5*sgn(b*x + a) + 154*(x*e + d)^m*A*a^3*d*m*e^4*sgn(b
*x + a) - 60*(x*e + d)^m*B*a^3*d^2*e^3*sgn(b*x + a) - 180*(x*e + d)^m*A*a^2
*b*d^2*e^3*sgn(b*x + a) + 120*(x*e + d)^m*A*a^3*x*e^5*sgn(b*x + a) + 120*(x
*e + d)^m*A*a^3*d*e^4*sgn(b*x + a))/(m^5*e^5 + 15*m^4*e^5 + 85*m^3*e^5 + 22
5*m^2*e^5 + 274*m*e^5 + 120*e^5)
```

maple [B] time = 0.06, size = 1286, normalized size = 4.01

$$\frac{\left(B b^{3} e^{4} m^{4} x^{4}+A b^{3} e^{4} m^{4} x^{3}+3 B a b^{2} e^{4} m^{4} x^{3}+10 B b^{3} e^{4} m^{3} x^{4}+3 A a b^{2} e^{4} m^{4} x^{2}+11 A b^{3} e^{4} m^{3} x^{3}+3 B a^{2} b e^{4} m^{4} x^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b^3*e^4*m^4*x^4+A*b^3*e^4*m^4*x^3+3*B*a*b^2*e^4*m^4*x^3+10
*B*b^3*e^4*m^3*x^4+3*A*a*b^2*e^4*m^4*x^2+11*A*b^3*e^4*m^3*x^3+3*B*a^2*b*e^4
*m^4*x^2+33*B*a*b^2*e^4*m^3*x^3-4*B*b^3*d*e^3*m^3*x^3+35*B*b^3*e^4*m^2*x^4+
3*A*a^2*b*e^4*m^4*x+36*A*a*b^2*e^4*m^3*x^2-3*A*b^3*d*e^3*m^3*x^2+41*A*b^3*e
^4*m^2*x^3+B*a^3*e^4*m^4*x+36*B*a^2*b*e^4*m^3*x^2-9*B*a*b^2*d*e^3*m^3*x^2+1
23*B*a*b^2*e^4*m^2*x^3-24*B*b^3*d*e^3*m^2*x^3+50*B*b^3*e^4*m*x^4+A*a^3*e^4*
m^4+39*A*a^2*b*e^4*m^3*x-6*A*a*b^2*d*e^3*m^3*x+147*A*a*b^2*e^4*m^2*x^2-24*A
*b^3*d*e^3*m^2*x^2+61*A*b^3*e^4*m*x^3+13*B*a^3*e^4*m^3*x-6*B*a^2*b*d*e^3*m^
3*x+147*B*a^2*b*e^4*m^2*x^2-72*B*a*b^2*d*e^3*m^2*x^2+183*B*a*b^2*e^4*m*x^3+
12*B*b^3*d^2*e^2*m^2*x^2-44*B*b^3*d*e^3*m*x^3+24*B*b^3*e^4*x^4+14*A*a^3*e^4
*m^3-3*A*a^2*b*d*e^3*m^3+177*A*a^2*b*e^4*m^2*x-60*A*a*b^2*d*e^3*m^2*x+234*A
*a*b^2*e^4*m*x^2+6*A*b^3*d^2*e^2*m^2*x-51*A*b^3*d*e^3*m*x^2+30*A*b^3*e^4*x^
3-B*a^3*d*e^3*m^3+59*B*a^3*e^4*m^2*x-60*B*a^2*b*d*e^3*m^2*x+234*B*a^2*b*e^4
*m*x^2+18*B*a*b^2*d^2*e^2*m^2*x-153*B*a*b^2*d*e^3*m*x^2+90*B*a*b^2*e^4*x^3+
36*B*b^3*d^2*e^2*m*x^2-24*B*b^3*d*e^3*x^3+71*A*a^3*e^4*m^2-36*A*a^2*b*d*e^3
*m^2+321*A*a^2*b*e^4*m*x+6*A*a*b^2*d^2*e^2*m^2-174*A*a*b^2*d*e^3*m*x+120*A*
a*b^2*e^4*x^2+36*A*b^3*d^2*e^2*m*x-30*A*b^3*d*e^3*x^2-12*B*a^3*d*e^3*m^2+10
7*B*a^3*e^4*m*x+6*B*a^2*b*d^2*e^2*m^2-174*B*a^2*b*d*e^3*m*x+120*B*a^2*b*e^4
*x^2+108*B*a*b^2*d^2*e^2*m*x-90*B*a*b^2*d*e^3*x^2-24*B*b^3*d^3*e*m*x+24*B*b
^3*d^2*e^2*x^2+154*A*a^3*e^4*m-141*A*a^2*b*d*e^3*m+180*A*a^2*b*e^4*x+54*A*a
*b^2*d^2*e^2*m-120*A*a*b^2*d*e^3*x-6*A*b^3*d^3*e*m+30*A*b^3*d^2*e^2*x-47*B*
a^3*d*e^3*m+60*B*a^3*e^4*x+54*B*a^2*b*d^2*e^2*m-120*B*a^2*b*d*e^3*x-18*B*a*
b^2*d^3*e*m+90*B*a*b^2*d^2*e^2*x-24*B*b^3*d^3*e*x+120*A*a^3*e^4-180*A*a^2*b
*d*e^3+120*A*a*b^2*d^2*e^2-30*A*b^3*d^3*e-60*B*a^3*d*e^3+120*B*a^2*b*d^2*e^
2-90*B*a*b^2*d^3*e+24*B*b^3*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3/e^5/(m^5+15*m^
4+85*m^3+225*m^2+274*m+120)
```

maxima [B] time = 0.65, size = 756, normalized size = 2.36

$$\underline{\left(\left(m^3+6\,m^2+11\,m+6\right)b^3e^4x^4-3\left(m^2+7\,m+12\right)a^2bd^2e^2+\left(m^3+9\,m^2+26\,m+24\right)a^3de^3+6\,ab^2d^3e(m+4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*b^3*e^4*x^4 - 3*(m^2 + 7*m + 12)*a^2*b*d^2*e^2 +
(m^3 + 9*m^2 + 26*m + 24)*a^3*d*e^3 + 6*a*b^2*d^3*e*(m + 4) - 6*b^3*d^4 + (
(m^3 + 3*m^2 + 2*m)*b^3*d*e^3 + 3*(m^3 + 7*m^2 + 14*m + 8)*a*b^2*e^4)*x^3 -
 3*((m^2 + m)*b^3*d^2*e^2 - (m^3 + 5*m^2 + 4*m)*a*b^2*d*e^3 - (m^3 + 8*m^2
+ 19*m + 12)*a^2*b*e^4)*x^2 - (6*(m^2 + 4*m)*a*b^2*d^2*e^2 - 3*(m^3 + 7*m^2
 + 12*m)*a^2*b*d*e^3 - (m^3 + 9*m^2 + 26*m + 24)*a^3*e^4 - 6*b^3*d^3*e*m)*x
)*(e*x + d)^m*A/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*b^3*e^5*x^5 + 6*(m^2 + 9*m + 20)*a^2*b*d^3*e^2 - (m^3
 + 12*m^2 + 47*m + 60)*a^3*d^2*e^3 - 18*a*b^2*d^4*e*(m + 5) + 24*b^3*d^5 +
((m^4 + 6*m^3 + 11*m^2 + 6*m)*b^3*d*e^4 + 3*(m^4 + 11*m^3 + 41*m^2 + 61*m +
 30)*a*b^2*e^5)*x^4 - (4*(m^3 + 3*m^2 + 2*m)*b^3*d^2*e^3 - 3*(m^4 + 8*m^3 +
 17*m^2 + 10*m)*a*b^2*d*e^4 - 3*(m^4 + 12*m^3 + 49*m^2 + 78*m + 40)*a^2*b*e
^5)*x^3 + (12*(m^2 + m)*b^3*d^3*e^2 - 9*(m^3 + 6*m^2 + 5*m)*a*b^2*d^2*e^3 +
 3*(m^4 + 10*m^3 + 29*m^2 + 20*m)*a^2*b*d*e^4 + (m^4 + 13*m^3 + 59*m^2 + 10
7*m + 60)*a^3*e^5)*x^2 + (18*(m^2 + 5*m)*a*b^2*d^3*e^2 - 6*(m^3 + 9*m^2 + 2
0*m)*a^2*b*d^2*e^3 + (m^4 + 12*m^3 + 47*m^2 + 60*m)*a^3*d*e^4 - 24*b^3*d^4*
e*m)*x)*(e*x + d)^m*B/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (A+B\,x)\,\left(d+e\,x\right)^m\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(A + Bx\right) \left(d + ex\right)^{m} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m*((a + b*x)**2)**(3/2), x)
```

3.1890 $\int (A+Bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=171

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+2}(-aBe-Abe+2bBd)}{e^3(m+2)(a+bx)}+ bB$$

```
[Out] (-a*e+b*d)*(-A*e+B*d)*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^3/(1+m)/(b*x+a)-(-A
*b*e-B*a*e+2*B*b*d)*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^3/(2+m)/(b*x+a)+b*B*(
e*x+d)^(3+m)*((b*x+a)^2)^(1/2)/e^3/(3+m)/(b*x+a)
```

Rubi [A] time = 0.10, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {770, 77}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(Bd-Ae)(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{m+2}(-aBe-Abe+2bBd)}{e^3(m+2)(a+bx)}+ bB$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(B*d - A*e)*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^3*(1 + m)*(a + b*x)) - ((2*b*B*d - A*b*e - a*B*e)*(d + e*x)^(2 + m)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^3*(2 + m)*(a + b*x)) + (b*B*(d + e*x)^(3 + m)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(3 + m)*(a + b*x))
```

Rule 77

```
Int[((a_.) + (b_.)*(x_))*((c_) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p_
.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)*(c + d*x)^n*(e + f*x)^p, x],
 x] /; FreeQ[{a, b, c, d, e, f, n}, x] && NeQ[b*c - a*d, 0] && ((ILtQ[n, 0]
 && ILtQ[p, 0]) || EqQ[p, 1] || (IGtQ[p, 0] && ( !IntegerQ[n] || LeQ[9*p +
5*(n + 2), 0] || GeQ[n + p + 1, 0] || (GeQ[n + p + 2, 0] && RationalQ[a, b,
 c, d, e, f]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \left(ab+b^2x\right)(A+Bx)(d+ex)^m\,dx}{ab+b^2x}$$

$$=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int \Bigg(-\frac{b(bd-ae)(-Bd+Ae)(d+ex)^m}{e^2}+\frac{b(-2bBd+Abe+aBe)}{e^2}}{ab+b^2x}$$

$$=\frac{(bd-ae)(Bd-Ae)(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^3(1+m)(a+bx)}-\frac{(2bBd-A}{}$$

Mathematica [A] time = 0.12, size = 121, normalized size = 0.71

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\Big(ae(m+3)(Ae(m+2)-Bd+Be(m+1)x)+b\Big(Ae(m+3)(e(m+1)x-d)+B\Big(2d^2-2}{e^3(m+1)(m+2)(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(a*e*(3 + m)*(-(B*d) + A*e*(2 + m) + B
*e*(1 + m)*x) + b*(A*e*(3 + m)*(-d + e*(1 + m)*x) + B*(2*d^2 - 2*d*e*(1 + m
)*x + e^2*(2 + 3*m + m^2)*x^2))))/(e^3*(1 + m)*(2 + m)*(3 + m)*(a + b*x))
```

fricas [A] time = 1.16, size = 256, normalized size = 1.50

$$\Big(Aade^2m^2 + 2\,Bbd^3 + 6\,Aade^2 - 3\,(Ba + Ab)d^2e + \big(Bbe^3m^2 + 3\,Bbe^3m + 2\,Bbe^3\big)x^3 + \big(3\,(Ba + Ab)e^3 + \big(Bbde^2 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (A*a*d*e^2*m^2 + 2*B*b*d^3 + 6*A*a*d*e^2 - 3*(B*a + A*b)*d^2*e + (B*b*e^3*m
^2 + 3*B*b*e^3*m + 2*B*b*e^3)*x^3 + (3*(B*a + A*b)*e^3 + (B*b*d*e^2 + (B*a
+ A*b)*e^3)*m^2 + (B*b*d*e^2 + 4*(B*a + A*b)*e^3)*m)*x^2 + (5*A*a*d*e^2 - (
B*a + A*b)*d^2*e)*m + (6*A*a*e^3 + (A*a*e^3 + (B*a + A*b)*d*e^2)*m^2 - (2*B
*b*d^2*e - 5*A*a*e^3 - 3*(B*a + A*b)*d*e^2)*m)*x)*(e*x + d)^m/(e^3*m^3 + 6*
e^3*m^2 + 11*e^3*m + 6*e^3)
```

giac [B] time = 0.22, size = 659, normalized size = 3.85

$$(xe + d)^m Bbm^2x^3e^3\mathrm{sgn}\,(bx + a) + (xe + d)^m Bbdm^2x^2e^2\mathrm{sgn}\,(bx + a) + (xe + d)^m Bam^2x^2e^3\mathrm{sgn}\,(bx + a) + (xe + d)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*B*b*m^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*B*b*d*m^2*x^2*e^2*s
gn(b*x + a) + (x*e + d)^m*B*a*m^2*x^2*e^3*sgn(b*x + a) + (x*e + d)^m*A*b*m^
2*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*B*b*m*x^3*e^3*sgn(b*x + a) + (x*e +
d)^m*B*a*d*m^2*x*e^2*sgn(b*x + a) + (x*e + d)^m*A*b*d*m^2*x*e^2*sgn(b*x + a
) + (x*e + d)^m*B*b*d*m*x^2*e^2*sgn(b*x + a) - 2*(x*e + d)^m*B*b*d^2*m*x*e*
sgn(b*x + a) + (x*e + d)^m*A*a*m^2*x*e^3*sgn(b*x + a) + 4*(x*e + d)^m*B*a*m
*x^2*e^3*sgn(b*x + a) + 4*(x*e + d)^m*A*b*m*x^2*e^3*sgn(b*x + a) + 2*(x*e +
 d)^m*B*b*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*A*a*d*m^2*e^2*sgn(b*x + a) + 3
*(x*e + d)^m*B*a*d*m*x*e^2*sgn(b*x + a) + 3*(x*e + d)^m*A*b*d*m*x*e^2*sgn(b
*x + a) - (x*e + d)^m*B*a*d^2*m*e*sgn(b*x + a) - (x*e + d)^m*A*b*d^2*m*e*sg
n(b*x + a) + 2*(x*e + d)^m*B*b*d^3*sgn(b*x + a) + 5*(x*e + d)^m*A*a*m*x*e^3
*sgn(b*x + a) + 3*(x*e + d)^m*B*a*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*A*b*
x^2*e^3*sgn(b*x + a) + 5*(x*e + d)^m*A*a*d*m*e^2*sgn(b*x + a) - 3*(x*e + d)
^m*B*a*d^2*e*sgn(b*x + a) - 3*(x*e + d)^m*A*b*d^2*e*sgn(b*x + a) + 6*(x*e +
 d)^m*A*a*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*A*a*d*e^2*sgn(b*x + a))/(m^3*e
^3 + 6*m^2*e^3 + 11*m*e^3 + 6*e^3)
```

maple [A] time = 0.05, size = 205, normalized size = 1.20

$$\frac{\big(Bb\,e^2m^2x^2 + Ab\,e^2m^2x + Ba\,e^2m^2x + 3Bb\,e^2m\,x^2 + Aa\,e^2m^2 + 4Ab\,e^2mx + 4Ba\,e^2mx - 2Bbdemx + 2Bb\,x^2e^2 + 5}{(bx + a)\big(m^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (e*x+d)^(m+1)*(B*b*e^2*m^2*x^2+A*b*e^2*m^2*x+B*a*e^2*m^2*x+3*B*b*e^2*m*x^2+
A*a*e^2*m^2+4*A*b*e^2*m*x+4*B*a*e^2*m*x-2*B*b*d*e*m*x+2*B*b*e^2*x^2+5*A*a*e
^2*m-A*b*d*e*m+3*A*b*e^2*x-B*a*d*e*m+3*B*a*e^2*x-2*B*b*d*e*x+6*A*a*e^2-3*A*
b*d*e-3*B*a*d*e+2*B*b*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)/e^3/(m^3+6*m^2+11*m+6)
```

maxima [A] time = 0.59, size = 177, normalized size = 1.04

$$\frac{\left(be^2(m+1)x^2+ade(m+2)-bd^2+\left(ae^2(m+2)+bdem\right)x\right)(ex+d)^m A}{\left(m^2+3\,m+2\right)e^2}+\frac{\left(\left(m^2+3\,m+2\right)be^3x^3-ad^2e(m+3)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (b*e^2*(m + 1)*x^2 + a*d*e*(m + 2) - b*d^2 + (a*e^2*(m + 2) + b*d*e*m)*x)*(
e*x + d)^m*A/((m^2 + 3*m + 2)*e^2) + ((m^2 + 3*m + 2)*b*e^3*x^3 - a*d^2*e*(
m + 3) + 2*b*d^3 + ((m^2 + m)*b*d*e^2 + (m^2 + 4*m + 3)*a*e^3)*x^2 + ((m^2
+ 3*m)*a*d*e^2 - 2*b*d^2*e*m)*x)*(e*x + d)^m*B/((m^3 + 6*m^2 + 11*m + 6)*e^
3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A+B\,x)\,\left(d+e\,x\right)^m\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (A+Bx)\,(d+ex)^m\,\sqrt{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m*sqrt((a + b*x)**2), x)
```

3.1891 $\int \frac{(A+Bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=135

$$\frac{B(a+bx)(d+ex)^{m+1}}{be(m+1)\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{b(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

```
[Out] B*(b*x+a)*(e*x+d)^(1+m)/b/e/(1+m)/((b*x+a)^2)^(1/2)-(A*b-B*a)*(b*x+a)*(e*x+
d)^(1+m)*hypergeom([1, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/b/(-a*e+b*d)/(1+m)/
((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 80, 68}

$$\frac{B(a+bx)(d+ex)^{m+1}}{be(m+1)\sqrt{a^2+2abx+b^2x^2}}-\frac{(a+bx)(Ab-aB)(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{b(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (B*(a + b*x)*(d + e*x)^(1 + m))/(b*e*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 - ((A*b - a*B)*(a + b*x)*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 +
 m, (b*(d + e*x))/(b*d - a*e)])/(b*(b*d - a*e)*(1 + m)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(A+Bx)(d+ex)^m}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B(a+bx)(d+ex)^{1+m}}{be(1+m)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(\left(Ab^2e(1+m)-abBe(1+m)\right)\left(ab+b^2x\right)\right)\int \frac{(d+e}{ab+}}{b^2e(1+m)\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{B(a+bx)(d+ex)^{1+m}}{be(1+m)\sqrt{a^2+2abx+b^2x^2}} - \frac{(Ab-aB)(a+bx)(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;2+\right.}{b(bd-ae)(1+m)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 94, normalized size = 0.70

$$\frac{(a+bx)(d+ex)^{m+1}\left((aBe-Abe)\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)+B(bd-ae)\right)}{be(m+1)\sqrt{(a+bx)^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m)*(B*(b*d - a*e) + (-(A*b*e) + a*B*e)*Hypergeome
tric2F1[1, 1 + m, 2 + m, (b*(d + e*x))/(b*d - a*e)]))/(b*e*(b*d - a*e)*(1 +
 m)*Sqrt[(a + b*x)^2])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(Bx+A)(ex+d)^m}{\sqrt{b^2x^2+2\,abx+a^2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/sqrt(b^2*x^2 + 2*a*b*x + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\sqrt{b^2x^2+2\,abx+a^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/sqrt(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [F] time = 1.56, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{\sqrt{b^2x^2+2abx+a^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\sqrt{b^2x^2+2\,abx+a^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/sqrt(b^2*x^2 + 2*a*b*x + a^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^m}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m/sqrt((a + b*x)**2), x)
```

3.1892 $\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=169

$$\frac{e(a+bx)(d+ex)^{m+1}(b(2Bd-Ae(1-m))-aBe(m+1))\,{}_2F_1\left(2,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{2b(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{(Ab-aB)(d+}{2b(a+bx)\sqrt{a^2+2abx}}$$

```
[Out] -1/2*(A*b-B*a)*(e*x+d)^(1+m)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)+1/2*e*(
b*(2*B*d-A*e*(1-m))-a*B*e*(1+m))*(b*x+a)*(e*x+d)^(1+m)*hypergeom([2, 1+m],[
2+m],b*(e*x+d)/(-a*e+b*d))/b/(-a*e+b*d)^3/(1+m)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 168, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 78, 68}

$$\frac{e(a+bx)(d+ex)^{m+1}(-aBe(m+1)-Abe(1-m)+2bBd)\,{}_2F_1\left(2,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{2b(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{(Ab-aB)(d}{2b(a+bx)\sqrt{a^2+2abx}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((A*b - a*B)*(d + e*x)^(1 + m))/(2*b*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (e*(2*b*B*d - A*b*e*(1 - m) - a*B*e*(1 + m))*(a + b*x)*(d
 + e*x)^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, (b*(d + e*x))/(b*d - a*e
)])/(2*b*(b*d - a*e)^3*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 78

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> -Simp[((b*e - a*f)*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(
f*(p + 1)*(c*f - d*e)), x] - Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f
*(p + 1)))/(f*(p + 1)*(c*f - d*e)), Int[(c + d*x)^n*(e + f*x)^(p + 1), x],
x] /; FreeQ[{a, b, c, d, e, f, n}, x] && LtQ[p, -1] && ( !LtQ[n, -1] || Int
egerQ[p] ||  !(IntegerQ[n] ||  !(EqQ[e, 0] ||  !(EqQ[c, 0] || LtQ[p, n]))))
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(d+ex)^m}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(Ab-aB)(d+ex)^{1+m}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{((2bBd-Abe(1-m)-aBe(1+m))\,(a}{2(bd-ae)\sqrt{a^2+2abx}}$$

$$= -\frac{(Ab-aB)(d+ex)^{1+m}}{2b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{e(2bBd-Abe(1-m)-aBe(1+m))(a}{2b(bd-ae)^3(1+}$$

Mathematica [A] time = 0.15, size = 120, normalized size = 0.71

$$\frac{(a+bx)(d+ex)^{m+1}\left(\frac{e(a+bx)^2(-aBe(m+1)+Abe(m-1)+2bBd)\,{}_2F_1\left(2,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)^2}+aB-Ab\right)}{2b\left((a+bx)^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m)*(-(A*b) + a*B + (e*(2*b*B*d + A*b*e*(-1 + m) -
 a*B*e*(1 + m))*(a + b*x)^2*Hypergeometric2F1[2, 1 + m, 2 + m, (b*(d + e*x)
)/(b*d - a*e)])/((b*d - a*e)^2*(1 + m))))/(2*b*(b*d - a*e)*((a + b*x)^2)^(3
/2))
```

fricas [F] time = 1.28, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(Bx+A)(ex+d)^m}{b^4x^4+4\,ab^3x^3+6\,a^2b^2x^2+4\,a^3bx+a^4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(b^2*x^2 + 2*a*b*x + a^2)*(B*x + A)*(e*x + d)^m/(b^4*x^4 + 4*a
*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x + a^4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

maple [F] time = 1.94, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1893 $\int (A+Bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^p \, dx$

Optimal. Leaf size=174

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (d+ex)^{m+1} \left(-\frac{e(a+bx)}{bd-ae}\right)^{-2p} (Abe(m+2p+2)-B(ae(m+1)+b(2dp+d)))\,{}_2F_1\left(m+1,-2p;m\right.}{be^2(m+1)(m+2p+2)}$$

```
[Out] B*(b*x+a)*(e*x+d)^(1+m)*(b^2*x^2+2*a*b*x+a^2)^p/b/e/(2+m+2*p)+(A*b*e*(2+m+2
*p)-B*(a*e*(1+m)+b*(2*d*p+d)))*(e*x+d)^(1+m)*(b^2*x^2+2*a*b*x+a^2)^p*hyperg
eom([-2*p, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/b/e^2/(1+m)/(2+m+2*p)/((-e*(b*x
+a)/(-a*e+b*d))^(2*p))
```

Rubi **[A]** time = 0.19, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.129$, Rules used = {770, 80, 70, 69}

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (d+ex)^{m+1} \left(-\frac{e(a+bx)}{bd-ae}\right)^{-2p} (Abe(m+2p+2)-B(ae(m+1)+b(2dp+d)))\,{}_2F_1\left(m+1,-2p;m\right.}{be^2(m+1)(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (B*(a + b*x)*(d + e*x)^(1 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b*e*(2 + m + 2
*p)) + ((A*b*e*(2 + m + 2*p) - B*(a*e*(1 + m) + b*(d + 2*d*p)))*(d + e*x)^(
1 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p*Hypergeometric2F1[1 + m, -2*p, 2 + m, (b
*(d + e*x))/(b*d - a*e)])/(b*e^2*(1 + m)*(2 + m + 2*p)*(-((e*(a + b*x))/(b*
d - a*e)))^(2*p))
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 80

```
Int[((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x_))^(p
_.), x_Symbol] :> Simp[(b*(c + d*x)^(n + 1)*(e + f*x)^(p + 1))/(d*f*(n + p
+ 2)), x] + Dist[(a*d*f*(n + p + 2) - b*(d*e*(n + 1) + c*f*(p + 1)))/(d*f*(
n + p + 2)), Int[(c + d*x)^n*(e + f*x)^p, x], x] /; FreeQ[{a, b, c, d, e, f
, n, p}, x] && NeQ[n + p + 2, 0]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(ab+b^2x\right)^{2p}(A+Bx)(\\ &= \frac{B(a+bx)(d+ex)^{1+m}\left(a^2+2abx+b^2x^2\right)^p}{be(2+m+2p)}+\Bigg(\bigg(A-\frac{B(ae(1+m}{be(2}\\ &= \frac{B(a+bx)(d+ex)^{1+m}\left(a^2+2abx+b^2x^2\right)^p}{be(2+m+2p)}+\Bigg(\bigg(A-\frac{B(ae(1+m}{be(2}\\ &= \frac{B(a+bx)(d+ex)^{1+m}\left(a^2+2abx+b^2x^2\right)^p}{be(2+m+2p)}+\frac{\Big(A-\frac{B(ae(1+m)+b(}{be(2+m+2}}{}\end{aligned}$$

Mathematica [A] time = 0.12, size = 125, normalized size = 0.72

$$\frac{\left((a+bx)^2\right)^p(d+ex)^{m+1}\left(Be(a+bx)-\frac{\left(\frac{e(a+bx)}{ae-bd}\right)^{-2p}(aBe(m+1)-Abe(m+2p+2)+bB(2dp+d))\,{}_2F_1\left(m+1,-2p;m+2;\frac{b(d+ex)}{bd-ae}\right)}{m+1}\right)}{be^2(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^p*(d + e*x)^(1 + m)*(B*e*(a + b*x) - ((a*B*e*(1 + m) - A*b*e
*(2 + m + 2*p) + b*B*(d + 2*d*p))*Hypergeometric2F1[1 + m, -2*p, 2 + m, (b*
(d + e*x))/(b*d - a*e)])/((1 + m)*((e*(a + b*x))/(-(b*d) + a*e))^(2*p))))/(
b*e^2*(2 + m + 2*p))
```

fricas [F] time = 1.41, size = 0, normalized size = 0.00

$$\mathrm{integral}\left((Bx+A)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^m,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int(Bx+A)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^m, x)
```

maple [F] time = 1.42, size = 0, normalized size = 0.00

$$\int(Bx+A)\,(ex+d)^m\left(b^2x^2+2abx+a^2\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] int((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx + A)\left(b^2x^2 + 2\,abx + a^2\right)^p (ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (A + B\,x)\,(d + e\,x)^m\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^p \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] int((A + B*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^p, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1894 $\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=119

$$\frac{(a+bx)(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(d+ex)^{-2p-1}}{(2p+1)(bd-ae)^2}-\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}(ef-dg)(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)^2}$$

```
[Out] (-a*g+b*f)*(b*x+a)*(e*x+d)^(-1-2*p)*(b^2*x^2+2*a*b*x+a^2)^p/(-a*e+b*d)^2/(1
+2*p)-1/2*(-d*g+e*f)*(b^2*x^2+2*a*b*x+a^2)^(1+p)/(-a*e+b*d)^2/(1+p)/((e*x+d
)^(2+2*p))
```

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {769, 646, 37}

$$\frac{(a+bx)(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(d+ex)^{-2p-1}}{(2p+1)(bd-ae)^2}-\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}(ef-dg)(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*f - a*g)*(a + b*x)*(d + e*x)^(-1 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p)/((
b*d - a*e)^2*(1 + 2*p)) - ((e*f - d*g)*(a^2 + 2*a*b*x + b^2*x^2)^(1 + p))/(
2*(b*d - a*e)^2*(1 + p)*(d + e*x)^(2*(1 + p)))
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 769

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(-2*c*(e*f - d*g)*(d + e*x)^(m + 1)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d - b*e)^2), x] + Dist[(2*c*f - b*g)/
(2*c*d - b*e), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{
a, b, c, d, e, f, g, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0
] && NeQ[2*c*f - b*g, 0] && NeQ[2*c*d - b*e, 0]
```

Rubi steps

$$\int (d+ex)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx=-\frac{(ef-dg)(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)^2(1+p)}+\frac{(bf-ag)\int}{}$$

$$=-\frac{(ef-dg)(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)^2(1+p)}+\frac{\left((bf-ag)\right.}{}$$

$$=\frac{(bf-ag)(a+bx)(d+ex)^{-1-2p}\left(a^2+2abx+b^2x^2\right)^p}{(bd-ae)^2(1+2p)}-\frac{(ef-dg}{}$$

Mathematica [A] time = 0.08, size = 97, normalized size = 0.82

$$\frac{(a+bx)\left((a+bx)^2\right)^p(d+ex)^{-2(p+1)}(b(2df(p+1)+dg(2p+1)x+efx)-a(dg+e(2fp+f+2g(p+1)x)))}{2(p+1)(2p+1)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)*((a + b*x)^2)^p*(b*(2*d*f*(1 + p) + e*f*x + d*g*(1 + 2*p)*x) - a
*(d*g + e*(f + 2*f*p + 2*g*(1 + p)*x))))/(2*(b*d - a*e)^2*(1 + p)*(1 + 2*p)
*(d + e*x)^(2*(1 + p)))
```

fricas [B] time = 1.79, size = 348, normalized size = 2.92

$$-\frac{\left(a^2d^2g-\left(b^2e^2f+2\left(b^2de-abe^2\right)gp+\left(b^2de-2\,abe^2\right)g\right)x^3-2\left(abd^2-a^2de\right)fp-\left(3\,b^2def+\left(b^2d^2-2\,abde-2\right.\right.\right.}{2\left(b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fr
icas")
```

```
[Out] -1/2*(a^2*d^2*g - (b^2*e^2*f + 2*(b^2*d*e - a*b*e^2)*g*p + (b^2*d*e - 2*a*b
*e^2)*g)*x^3 - 2*(a*b*d^2 - a^2*d*e)*f*p - (3*b^2*d*e*f + (b^2*d^2 - 2*a*b*
d*e - 2*a^2*e^2)*g + 2*((b^2*d*e - a*b*e^2)*f + (b^2*d^2 - a^2*e^2)*g)*p)*x
^2 - (2*a*b*d^2 - a^2*d*e)*f + (3*a^2*d*e*g - (2*b^2*d^2 + 2*a*b*d*e - a^2*
e^2)*f - 2*((b^2*d^2 - a^2*e^2)*f + (a*b*d^2 - a^2*d*e)*g)*p)*x)*(b^2*x^2 +
 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2 + 2*(
b^2*d^2 - 2*a*b*d*e + a^2*e^2)*p^2 + 3*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*p)
```

giac [B] time = 0.34, size = 1352, normalized size = 11.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="gi
ac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d*g*p*x^3*e^(-2*p*log(x*e + d) - 3*l
og(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*g*p*x^2*e^(-2*p*lo
g(x*e + d) - 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*g*p*x^3*e^
(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^
2*d*f*p*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + (b^2*x^2 + 2*a*b*x
 + a^2)^p*b^2*d*g*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 2*(b^2*x
^2 + 2*a*b*x + a^2)^p*b^2*d^2*f*p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d))
+ 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*g*p*x*e^(-2*p*log(x*e + d) - 3*log(
x*e + d)) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*g*x^2*e^(-2*p*log(x*e + d)
- 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*f*p*x^2*e^(-2*p*log(x
*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*g*p*x^2*e
^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2
*f*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x +
a^2)^p*a*b*g*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 +
2*a*b*x + a^2)^p*a^2*d*g*p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 3
*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d*f*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e +
 d) + 1) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d*g*x^2*e^(-2*p*log(x*e + d) -
 3*log(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*f*p*e^(-2*p*lo
g(x*e + d) - 3*log(x*e + d)) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^2*d^2*f*x*e^
(-2*p*log(x*e + d) - 3*log(x*e + d)) - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*f*
p*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a*b*x + a^2
)^p*a^2*g*x^2*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 2) - 2*(b^2*x^2 + 2*a
*b*x + a^2)^p*a^2*d*f*p*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1) + 2*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b*d*f*x*e^(-2*p*log(x*e + d) - 3*log(x*e + d) + 1
) - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d*g*x*e^(-2*p*log(x*e + d) - 3*log(x*
e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*d^2*f*e^(-2*p*log(x*e + d)
- 3*log(x*e + d)) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d^2*g*e^(-2*p*log(x*e +
 d) - 3*log(x*e + d)) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*f*x*e^(-2*p*log(x*e
 + d) - 3*log(x*e + d) + 2) - (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*d*f*e^(-2*p*l
og(x*e + d) - 3*log(x*e + d) + 1))/(2*b^2*d^2*p^2 - 4*a*b*d*p^2*e + 3*b^2*d
^2*p + 2*a^2*p^2*e^2 - 6*a*b*d*p*e + b^2*d^2 + 3*a^2*p*e^2 - 2*a*b*d*e + a^
2*e^2)
```

maple [A] time = 0.05, size = 174, normalized size = 1.46

$$-\frac{(bx+a)\left(2aegpx-2bdgpx+2aefp+2aegx-2bdfp-bdgx-befx+adg+aef-2bdf\right)(ex+d)^{-2p-2}\left(b^2x^2\right.}{2\left(2a^2e^2p^2-4abdep^2+2b^2d^2p^2+3a^2e^2p-6abdep+3b^2d^2p+a^2e^2-2abde+b^2d^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(-2*p-3)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)*(e*x+d)^(-2*p-2)*(2*a*e*g*p*x-2*b*d*g*p*x+2*a*e*f*p+2*a*e*g*x-
2*b*d*f*p-b*d*g*x-b*e*f*x+a*d*g+a*e*f-2*b*d*f)*(b^2*x^2+2*a*b*x+a^2)^p/(2*a
^2*e^2*p^2-4*a*b*d*e*p^2+2*b^2*d^2*p^2+3*a^2*e^2*p-6*a*b*d*e*p+3*b^2*d^2*p+
a^2*e^2-2*a*b*d*e+b^2*d^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(gx+f\right)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^{-2\,p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="ma
xima")
```

```
[Out] integrate((g*x + f)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3), x)
```

mupad [B] time = 2.43, size = 375, normalized size = 3.15

$$-\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\left(\frac{x^2\,\left(2\,a^2\,e^2\,g-b^2\,d^2\,g-3\,b^2\,d\,e\,f+2\,a^2\,e^2\,g\,p-2\,b^2\,d^2\,g\,p+2\,a\,b\,d\,e\,g+2\,a\,b\,e^2\,f\,p-\right.}{2\,(a\,e-b\,d)^2\,(d+e\,x)^{2\,p+3}\,\left(2\,p^2+3\,p+1\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(2*a^2*e^2*g - b^2*d^2*g - 3*b^2*d*e*f +
 2*a^2*e^2*g*p - 2*b^2*d^2*g*p + 2*a*b*d*e*g + 2*a*b*e^2*f*p - 2*b^2*d*e*f*
p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p + 2*p^2 + 1)) + (x*(a^2*e^2*f
 - 2*b^2*d^2*f + 3*a^2*d*e*g + 2*a^2*e^2*f*p - 2*b^2*d^2*f*p - 2*a*b*d*e*f
- 2*a*b*d^2*g*p + 2*a^2*d*e*g*p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p
 + 2*p^2 + 1)) + (a*d*(a*d*g + a*e*f - 2*b*d*f + 2*a*e*f*p - 2*b*d*f*p))/(2
*(a*e - b*d)^2*(d + e*x)^(2*p + 3)*(3*p + 2*p^2 + 1)) - (b*e*x^3*(b*d*g - 2
*a*e*g + b*e*f - 2*a*e*g*p + 2*b*d*g*p))/(2*(a*e - b*d)^2*(d + e*x)^(2*p +
3)*(3*p + 2*p^2 + 1)))
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(-3-2*p)*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1895 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=92

$$-\frac{3b^2(d+ex)^8(bd-ae)}{8e^4}+\frac{3b(d+ex)^7(bd-ae)^2}{7e^4}-\frac{(d+ex)^6(bd-ae)^3}{6e^4}+\frac{b^3(d+ex)^9}{9e^4}$$

```
[Out] -1/6*(-a*e+b*d)^3*(e*x+d)^6/e^4+3/7*b*(-a*e+b*d)^2*(e*x+d)^7/e^4-3/8*b^2*(-
a*e+b*d)*(e*x+d)^8/e^4+1/9*b^3*(e*x+d)^9/e^4
```

Rubi [A] time = 0.15, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{3b^2(d+ex)^8(bd-ae)}{8e^4}+\frac{3b(d+ex)^7(bd-ae)^2}{7e^4}-\frac{(d+ex)^6(bd-ae)^3}{6e^4}+\frac{b^3(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^3*(d + e*x)^6)/(6*e^4) + (3*b*(b*d - a*e)^2*(d + e*x)^7)/(7*e
^4) - (3*b^2*(b*d - a*e)*(d + e*x)^8)/(8*e^4) + (b^3*(d + e*x)^9)/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^3(d+ex)^5\, dx\\ &= \int \Bigg(\frac{(-bd+ae)^3(d+ex)^5}{e^3}+\frac{3b(bd-ae)^2(d+ex)^6}{e^3}-\frac{3b^2(bd-ae)}{e^3}\\ &= -\frac{(bd-ae)^3(d+ex)^6}{6e^4}+\frac{3b(bd-ae)^2(d+ex)^7}{7e^4}-\frac{3b^2(bd-ae)(d+}{8e^4}\end{aligned}$$

Mathematica [B] time = 0.03, size = 267, normalized size = 2.90

$$a^3d^5x+\frac{1}{7}be^3x^7\left(3a^2e^2+15abde+10b^2d^2\right)+\frac{1}{3}ad^3x^3\left(10a^2e^2+15abde+3b^2d^2\right)+\frac{1}{2}a^2d^4x^2(5ae+3bd)+\frac{1}{6}e^2x^6\big(a^3$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^5*x + (a^2*d^4*(3*b*d + 5*a*e)*x^2)/2 + (a*d^3*(3*b^2*d^2 + 15*a*b*d*
e + 10*a^2*e^2)*x^3)/3 + (d^2*(b^3*d^3 + 15*a*b^2*d^2*e + 30*a^2*b*d*e^2 +
10*a^3*e^3)*x^4)/4 + d*e*(b^3*d^3 + 6*a*b^2*d^2*e + 6*a^2*b*d*e^2 + a^3*e^3
)*x^5 + (e^2*(10*b^3*d^3 + 30*a*b^2*d^2*e + 15*a^2*b*d*e^2 + a^3*e^3)*x^6)/
6 + (b*e^3*(10*b^2*d^2 + 15*a*b*d*e + 3*a^2*e^2)*x^7)/7 + (b^2*e^4*(5*b*d +
 3*a*e)*x^8)/8 + (b^3*e^5*x^9)/9
```

fricas [B] time = 0.78, size = 303, normalized size = 3.29

$$\frac{1}{9}x^9e^5b^3+\frac{5}{8}x^8e^4db^3+\frac{3}{8}x^8e^5b^2a+\frac{10}{7}x^7e^3d^2b^3+\frac{15}{7}x^7e^4db^2a+\frac{3}{7}x^7e^5ba^2+\frac{5}{3}x^6e^2d^3b^3+5x^6e^3d^2b^2a+\frac{5}{2}x^6e^4dba^2+\frac{1}{6}x^6e^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*b^3 + 5/8*x^8*e^4*d*b^3 + 3/8*x^8*e^5*b^2*a + 10/7*x^7*e^3*d^2*
b^3 + 15/7*x^7*e^4*d*b^2*a + 3/7*x^7*e^5*b*a^2 + 5/3*x^6*e^2*d^3*b^3 + 5*x^
6*e^3*d^2*b^2*a + 5/2*x^6*e^4*d*b*a^2 + 1/6*x^6*e^5*a^3 + x^5*e*d^4*b^3 + 6
*x^5*e^2*d^3*b^2*a + 6*x^5*e^3*d^2*b*a^2 + x^5*e^4*d*a^3 + 1/4*x^4*d^5*b^3
+ 15/4*x^4*e*d^4*b^2*a + 15/2*x^4*e^2*d^3*b*a^2 + 5/2*x^4*e^3*d^2*a^3 + x^3
*d^5*b^2*a + 5*x^3*e*d^4*b*a^2 + 10/3*x^3*e^2*d^3*a^3 + 3/2*x^2*d^5*b*a^2 +
 5/2*x^2*e*d^4*a^3 + x*d^5*a^3
```

giac [B] time = 0.15, size = 291, normalized size = 3.16

$$\frac{1}{9}\,b^3x^9e^5+\frac{5}{8}\,b^3dx^8e^4+\frac{10}{7}\,b^3d^2x^7e^3+\frac{5}{3}\,b^3d^3x^6e^2+b^3d^4x^5e+\frac{1}{4}\,b^3d^5x^4+\frac{3}{8}\,ab^2x^8e^5+\frac{15}{7}\,ab^2dx^7e^4+5\,ab^2d^2x^6e^3+6\,ab^2d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/9*b^3*x^9*e^5 + 5/8*b^3*d*x^8*e^4 + 10/7*b^3*d^2*x^7*e^3 + 5/3*b^3*d^3*x^
6*e^2 + b^3*d^4*x^5*e + 1/4*b^3*d^5*x^4 + 3/8*a*b^2*x^8*e^5 + 15/7*a*b^2*d*
x^7*e^4 + 5*a*b^2*d^2*x^6*e^3 + 6*a*b^2*d^3*x^5*e^2 + 15/4*a*b^2*d^4*x^4*e
+ a*b^2*d^5*x^3 + 3/7*a^2*b*x^7*e^5 + 5/2*a^2*b*d*x^6*e^4 + 6*a^2*b*d^2*x^5
*e^3 + 15/2*a^2*b*d^3*x^4*e^2 + 5*a^2*b*d^4*x^3*e + 3/2*a^2*b*d^5*x^2 + 1/6
*a^3*x^6*e^5 + a^3*d*x^5*e^4 + 5/2*a^3*d^2*x^4*e^3 + 10/3*a^3*d^3*x^3*e^2 +
 5/2*a^3*d^4*x^2*e + a^3*d^5*x
```

maple [B] time = 0.04, size = 394, normalized size = 4.28

$$\frac{b^3e^5x^9}{9}+a^3d^5x+\frac{\left(2a\,b^2e^5+\left(a\,e^5+5bd\,e^4\right)b^2\right)x^8}{8}+\frac{\left(a^2b\,e^5+2\left(a\,e^5+5bd\,e^4\right)ab+\left(5ad\,e^4+10b\,d^2e^3\right)b^2\right)x^7}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/9*b^3*e^5*x^9+1/8*((a*e^5+5*b*d*e^4)*b^2+2*b^2*e^5*a)*x^8+1/7*((5*a*d*e^4
+10*b*d^2*e^3)*b^2+2*(a*e^5+5*b*d*e^4)*a*b+a^2*b*e^5)*x^7+1/6*((10*a*d^2*e^
3+10*b*d^3*e^2)*b^2+2*(5*a*d*e^4+10*b*d^2*e^3)*a*b+(a*e^5+5*b*d*e^4)*a^2)*x
^6+1/5*((10*a*d^3*e^2+5*b*d^4*e)*b^2+2*(10*a*d^2*e^3+10*b*d^3*e^2)*a*b+(5*a
*d*e^4+10*b*d^2*e^3)*a^2)*x^5+1/4*((5*a*d^4*e+b*d^5)*b^2+2*(10*a*d^3*e^2+5*
b*d^4*e)*a*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^2)*x^4+1/3*(a*d^5*b^2+2*(5*a*d^4
*e+b*d^5)*a*b+(10*a*d^3*e^2+5*b*d^4*e)*a^2)*x^3+1/2*(2*a^2*d^5*b+(5*a*d^4*e
+b*d^5)*a^2)*x^2+a^3*d^5*x
```

maxima [B] time = 0.58, size = 277, normalized size = 3.01

$$\frac{1}{9}\,b^3e^5x^9+a^3d^5x+\frac{1}{8}\left(5\,b^3de^4+3\,ab^2e^5\right)x^8+\frac{1}{7}\left(10\,b^3d^2e^3+15\,ab^2de^4+3\,a^2be^5\right)x^7+\frac{1}{6}\left(10\,b^3d^3e^2+30\,ab^2d^2e^3+15\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/9*b^3*e^5*x^9 + a^3*d^5*x + 1/8*(5*b^3*d*e^4 + 3*a*b^2*e^5)*x^8 + 1/7*(10
*b^3*d^2*e^3 + 15*a*b^2*d*e^4 + 3*a^2*b*e^5)*x^7 + 1/6*(10*b^3*d^3*e^2 + 30
*a*b^2*d^2*e^3 + 15*a^2*b*d*e^4 + a^3*e^5)*x^6 + (b^3*d^4*e + 6*a*b^2*d^3*e
^2 + 6*a^2*b*d^2*e^3 + a^3*d*e^4)*x^5 + 1/4*(b^3*d^5 + 15*a*b^2*d^4*e + 30*
a^2*b*d^3*e^2 + 10*a^3*d^2*e^3)*x^4 + 1/3*(3*a*b^2*d^5 + 15*a^2*b*d^4*e + 1
0*a^3*d^3*e^2)*x^3 + 1/2*(3*a^2*b*d^5 + 5*a^3*d^4*e)*x^2
```

mupad [B] time = 0.11, size = 261, normalized size = 2.84

$$x^5\,\left(a^3\,d\,e^4+6\,a^2\,b\,d^2\,e^3+6\,a\,b^2\,d^3\,e^2+b^3\,d^4\,e\right)+x^4\,\left(\frac{5\,a^3\,d^2\,e^3}{2}+\frac{15\,a^2\,b\,d^3\,e^2}{2}+\frac{15\,a\,b^2\,d^4\,e}{4}+\frac{b^3\,d^5}{4}\right)+x^6\,\left(\frac{a^3\,e}{6}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^5*(a^3*d*e^4 + b^3*d^4*e + 6*a*b^2*d^3*e^2 + 6*a^2*b*d^2*e^3) + x^4*((b^3
*d^5)/4 + (5*a^3*d^2*e^3)/2 + (15*a^2*b*d^3*e^2)/2 + (15*a*b^2*d^4*e)/4) +
x^6*((a^3*e^5)/6 + (5*b^3*d^3*e^2)/3 + 5*a*b^2*d^2*e^3 + (5*a^2*b*d*e^4)/2)
 + a^3*d^5*x + (b^3*e^5*x^9)/9 + (a^2*d^4*x^2*(5*a*e + 3*b*d))/2 + (b^2*e^4
*x^8*(3*a*e + 5*b*d))/8 + (a*d^3*x^3*(10*a^2*e^2 + 3*b^2*d^2 + 15*a*b*d*e))
/3 + (b*e^3*x^7*(3*a^2*e^2 + 10*b^2*d^2 + 15*a*b*d*e))/7
```

sympy [B] time = 0.13, size = 308, normalized size = 3.35

$$a^3d^5x+\frac{b^3e^5x^9}{9}+x^8\left(\frac{3ab^2e^5}{8}+\frac{5b^3de^4}{8}\right)+x^7\left(\frac{3a^2be^5}{7}+\frac{15ab^2de^4}{7}+\frac{10b^3d^2e^3}{7}\right)+x^6\left(\frac{a^3e^5}{6}+\frac{5a^2bde^4}{2}+5ab^2d^2e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**5*x + b**3*e**5*x**9/9 + x**8*(3*a*b**2*e**5/8 + 5*b**3*d*e**4/8) +
 x**7*(3*a**2*b*e**5/7 + 15*a*b**2*d*e**4/7 + 10*b**3*d**2*e**3/7) + x**6*(
a**3*e**5/6 + 5*a**2*b*d*e**4/2 + 5*a*b**2*d**2*e**3 + 5*b**3*d**3*e**2/3)
+ x**5*(a**3*d*e**4 + 6*a**2*b*d**2*e**3 + 6*a*b**2*d**3*e**2 + b**3*d**4*e
) + x**4*(5*a**3*d**2*e**3/2 + 15*a**2*b*d**3*e**2/2 + 15*a*b**2*d**4*e/4 +
 b**3*d**5/4) + x**3*(10*a**3*d**3*e**2/3 + 5*a**2*b*d**4*e + a*b**2*d**5)
+ x**2*(5*a**3*d**4*e/2 + 3*a**2*b*d**5/2)
```

3.1896 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right) dx$

Optimal. Leaf size=92

$$-\frac{3b^2(d+ex)^7(bd-ae)}{7e^4}+\frac{b(d+ex)^6(bd-ae)^2}{2e^4}-\frac{(d+ex)^5(bd-ae)^3}{5e^4}+\frac{b^3(d+ex)^8}{8e^4}$$

```
[Out] -1/5*(-a*e+b*d)^3*(e*x+d)^5/e^4+1/2*b*(-a*e+b*d)^2*(e*x+d)^6/e^4-3/7*b^2*(-
a*e+b*d)*(e*x+d)^7/e^4+1/8*b^3*(e*x+d)^8/e^4
```

Rubi [A] time = 0.12, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{3b^2(d+ex)^7(bd-ae)}{7e^4}+\frac{b(d+ex)^6(bd-ae)^2}{2e^4}-\frac{(d+ex)^5(bd-ae)^3}{5e^4}+\frac{b^3(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -((b*d - a*e)^3*(d + e*x)^5)/(5*e^4) + (b*(b*d - a*e)^2*(d + e*x)^6)/(2*e^4
) - (3*b^2*(b*d - a*e)*(d + e*x)^7)/(7*e^4) + (b^3*(d + e*x)^8)/(8*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)dx &= \int (a+bx)^3(d+ex)^4\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^4}{e^3}+\frac{3b(bd-ae)^2(d+ex)^5}{e^3}-\frac{3b^2(bd-ae)(d}{e^3}\right.\\ &= -\frac{(bd-ae)^3(d+ex)^5}{5e^4}+\frac{b(bd-ae)^2(d+ex)^6}{2e^4}-\frac{3b^2(bd-ae)(d+ex)^7}{7e^4}\end{aligned}$$

Mathematica [B] time = 0.03, size = 217, normalized size = 2.36

$$a^3d^4x+\frac{1}{2}be^2x^6\left(a^2e^2+4abde+2b^2d^2\right)+ad^2x^3\left(2a^2e^2+4abde+b^2d^2\right)+\frac{1}{2}a^2d^3x^2(4ae+3bd)+\frac{1}{5}ex^5\left(a^3e^3+12a^2bde\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^4*x + (a^2*d^3*(3*b*d + 4*a*e)*x^2)/2 + a*d^2*(b^2*d^2 + 4*a*b*d*e +
2*a^2*e^2)*x^3 + (d*(b^3*d^3 + 12*a*b^2*d^2*e + 18*a^2*b*d*e^2 + 4*a^3*e^3)
*x^4)/4 + (e*(4*b^3*d^3 + 18*a*b^2*d^2*e + 12*a^2*b*d*e^2 + a^3*e^3)*x^5)/5
```

```
 + (b*e^2*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2)*x^6)/2 + (b^2*e^3*(4*b*d + 3*a*
e)*x^7)/7 + (b^3*e^4*x^8)/8
```

fricas [B] time = 0.93, size = 245, normalized size = 2.66

$$\frac{1}{8}x^8e^4b^3+\frac{4}{7}x^7e^3db^3+\frac{3}{7}x^7e^4b^2a+x^6e^2d^2b^3+2x^6e^3db^2a+\frac{1}{2}x^6e^4ba^2+\frac{4}{5}x^5ed^3b^3+\frac{18}{5}x^5e^2d^2b^2a+\frac{12}{5}x^5e^3dba^2+\frac{1}{5}x^5e^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*b^3 + 4/7*x^7*e^3*d*b^3 + 3/7*x^7*e^4*b^2*a + x^6*e^2*d^2*b^3 +
 2*x^6*e^3*d*b^2*a + 1/2*x^6*e^4*b*a^2 + 4/5*x^5*e*d^3*b^3 + 18/5*x^5*e^2*d
^2*b^2*a + 12/5*x^5*e^3*d*b*a^2 + 1/5*x^5*e^4*a^3 + 1/4*x^4*d^4*b^3 + 3*x^4
*e*d^3*b^2*a + 9/2*x^4*e^2*d^2*b*a^2 + x^4*e^3*d*a^3 + x^3*d^4*b^2*a + 4*x^
3*e*d^3*b*a^2 + 2*x^3*e^2*d^2*a^3 + 3/2*x^2*d^4*b*a^2 + 2*x^2*e*d^3*a^3 + x
*d^4*a^3
```

giac [B] time = 0.16, size = 237, normalized size = 2.58

$$\frac{1}{8}\,b^3x^8e^4+\frac{4}{7}\,b^3dx^7e^3+b^3d^2x^6e^2+\frac{4}{5}\,b^3d^3x^5e+\frac{1}{4}\,b^3d^4x^4+\frac{3}{7}\,ab^2x^7e^4+2\,ab^2dx^6e^3+\frac{18}{5}\,ab^2d^2x^5e^2+3\,ab^2d^3x^4e+ab^2d^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/8*b^3*x^8*e^4 + 4/7*b^3*d*x^7*e^3 + b^3*d^2*x^6*e^2 + 4/5*b^3*d^3*x^5*e +
 1/4*b^3*d^4*x^4 + 3/7*a*b^2*x^7*e^4 + 2*a*b^2*d*x^6*e^3 + 18/5*a*b^2*d^2*x
^5*e^2 + 3*a*b^2*d^3*x^4*e + a*b^2*d^4*x^3 + 1/2*a^2*b*x^6*e^4 + 12/5*a^2*b
*d*x^5*e^3 + 9/2*a^2*b*d^2*x^4*e^2 + 4*a^2*b*d^3*x^3*e + 3/2*a^2*b*d^4*x^2
+ 1/5*a^3*x^5*e^4 + a^3*d*x^4*e^3 + 2*a^3*d^2*x^3*e^2 + 2*a^3*d^3*x^2*e + a
^3*d^4*x
```

maple [B] time = 0.04, size = 319, normalized size = 3.47

$$\frac{b^3e^4x^8}{8}+a^3d^4x+\frac{\left(2a\,b^2e^4+\left(a\,e^4+4bd\,e^3\right)b^2\right)x^7}{7}+\frac{\left(a^2b\,e^4+2\left(a\,e^4+4bd\,e^3\right)ab+\left(4ad\,e^3+6b\,d^2e^2\right)b^2\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/8*b^3*e^4*x^8+1/7*((a*e^4+4*b*d*e^3)*b^2+2*a*b^2*e^4)*x^7+1/6*((4*a*d*e^3
+6*b*d^2*e^2)*b^2+2*(a*e^4+4*b*d*e^3)*a*b+b*e^4*a^2)*x^6+1/5*((6*a*d^2*e^2+
4*b*d^3*e)*b^2+2*(4*a*d*e^3+6*b*d^2*e^2)*a*b+(a*e^4+4*b*d*e^3)*a^2)*x^5+1/4
*((4*a*d^3*e+b*d^4)*b^2+2*(6*a*d^2*e^2+4*b*d^3*e)*a*b+(4*a*d*e^3+6*b*d^2*e^
2)*a^2)*x^4+1/3*(a*d^4*b^2+2*(4*a*d^3*e+b*d^4)*a*b+(6*a*d^2*e^2+4*b*d^3*e)*
a^2)*x^3+1/2*(2*a^2*d^4*b+(4*a*d^3*e+b*d^4)*a^2)*x^2+a^3*d^4*x
```

maxima [B] time = 0.50, size = 225, normalized size = 2.45

$$\frac{1}{8}\,b^3e^4x^8+a^3d^4x+\frac{1}{7}\left(4\,b^3de^3+3\,ab^2e^4\right)x^7+\frac{1}{2}\left(2\,b^3d^2e^2+4\,ab^2de^3+a^2be^4\right)x^6+\frac{1}{5}\left(4\,b^3d^3e+18\,ab^2d^2e^2+12\,a^2b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/8*b^3*e^4*x^8 + a^3*d^4*x + 1/7*(4*b^3*d*e^3 + 3*a*b^2*e^4)*x^7 + 1/2*(2*
b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^6 + 1/5*(4*b^3*d^3*e + 18*a*b^2*
d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^4)*x^5 + 1/4*(b^3*d^4 + 12*a*b^2*d^3*e + 1
8*a^2*b*d^2*e^2 + 4*a^3*d*e^3)*x^4 + (a*b^2*d^4 + 4*a^2*b*d^3*e + 2*a^3*d^2
*e^2)*x^3 + 1/2*(3*a^2*b*d^4 + 4*a^3*d^3*e)*x^2
```

mupad [B] time = 0.08, size = 208, normalized size = 2.26

$$x^4\left(a^3\,d\,e^3+\frac{9\,a^2\,b\,d^2\,e^2}{2}+3\,a\,b^2\,d^3\,e+\frac{b^3\,d^4}{4}\right)+x^5\left(\frac{a^3\,e^4}{5}+\frac{12\,a^2\,b\,d\,e^3}{5}+\frac{18\,a\,b^2\,d^2\,e^2}{5}+\frac{4\,b^3\,d^3\,e}{5}\right)+a^3\,d^4\,x+\frac{b^3\,e^4}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((b^3*d^4)/4 + a^3*d*e^3 + (9*a^2*b*d^2*e^2)/2 + 3*a*b^2*d^3*e) + x^5*(
(a^3*e^4)/5 + (4*b^3*d^3*e)/5 + (18*a*b^2*d^2*e^2)/5 + (12*a^2*b*d*e^3)/5)
+ a^3*d^4*x + (b^3*e^4*x^8)/8 + (a^2*d^3*x^2*(4*a*e + 3*b*d))/2 + (b^2*e^3*
x^7*(3*a*e + 4*b*d))/7 + a*d^2*x^3*(2*a^2*e^2 + b^2*d^2 + 4*a*b*d*e) + (b*e
^2*x^6*(a^2*e^2 + 2*b^2*d^2 + 4*a*b*d*e))/2
```

sympy [B] time = 0.11, size = 243, normalized size = 2.64

$$a^3d^4x+\frac{b^3e^4x^8}{8}+x^7\left(\frac{3ab^2e^4}{7}+\frac{4b^3de^3}{7}\right)+x^6\left(\frac{a^2be^4}{2}+2ab^2de^3+b^3d^2e^2\right)+x^5\left(\frac{a^3e^4}{5}+\frac{12a^2bde^3}{5}+\frac{18ab^2d^2e^2}{5}+\frac{4b^3}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**4*x + b**3*e**4*x**8/8 + x**7*(3*a*b**2*e**4/7 + 4*b**3*d*e**3/7) +
 x**6*(a**2*b*e**4/2 + 2*a*b**2*d*e**3 + b**3*d**2*e**2) + x**5*(a**3*e**4/
5 + 12*a**2*b*d*e**3/5 + 18*a*b**2*d**2*e**2/5 + 4*b**3*d**3*e/5) + x**4*(a
**3*d*e**3 + 9*a**2*b*d**2*e**2/2 + 3*a*b**2*d**3*e + b**3*d**4/4) + x**3*(
2*a**3*d**2*e**2 + 4*a**2*b*d**3*e + a*b**2*d**4) + x**2*(2*a**3*d**3*e + 3
*a**2*b*d**4/2)
```

3.1897 $\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=92

$$\frac{e^2(a+bx)^6(bd-ae)}{2b^4}+\frac{3e(a+bx)^5(bd-ae)^2}{5b^4}+\frac{(a+bx)^4(bd-ae)^3}{4b^4}+\frac{e^3(a+bx)^7}{7b^4}$$

```
[Out] 1/4*(-a*e+b*d)^3*(b*x+a)^4/b^4+3/5*e*(-a*e+b*d)^2*(b*x+a)^5/b^4+1/2*e^2*(-a
*e+b*d)*(b*x+a)^6/b^4+1/7*e^3*(b*x+a)^7/b^4
```

Rubi [A] time = 0.10, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 43\}$

$$\frac{e^2(a+bx)^6(bd-ae)}{2b^4}+\frac{3e(a+bx)^5(bd-ae)^2}{5b^4}+\frac{(a+bx)^4(bd-ae)^3}{4b^4}+\frac{e^3(a+bx)^7}{7b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^4)/(4*b^4) + (3*e*(b*d - a*e)^2*(a + b*x)^5)/(5*b^
4) + (e^2*(b*d - a*e)*(a + b*x)^6)/(2*b^4) + (e^3*(a + b*x)^7)/(7*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^3\,dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^3}{b^3}+\frac{3e(bd-ae)^2(a+bx)^4}{b^3}+\frac{3e^2(bd-ae)(a}{b^3}\right.\\ &= \frac{(bd-ae)^3(a+bx)^4}{4b^4}+\frac{3e(bd-ae)^2(a+bx)^5}{5b^4}+\frac{e^2(bd-ae)(a+bx}{2b^4}\end{aligned}$$

Mathematica [A] time = 0.02, size = 161, normalized size = 1.75

$$a^3d^3x+\frac{3}{5}bex^5\left(a^2e^2+3abde+b^2d^2\right)+adx^3\left(a^2e^2+3abde+b^2d^2\right)+\frac{3}{2}a^2d^2x^2(ae+bd)+\frac{1}{4}x^4\left(a^3e^3+9a^2bde^2+9a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^3*x + (3*a^2*d^2*(b*d + a*e)*x^2)/2 + a*d*(b^2*d^2 + 3*a*b*d*e + a^2*
e^2)*x^3 + ((b^3*d^3 + 9*a*b^2*d^2*e + 9*a^2*b*d*e^2 + a^3*e^3)*x^4)/4 + (3
*b*e*(b^2*d^2 + 3*a*b*d*e + a^2*e^2)*x^5)/5 + (b^2*e^2*(b*d + a*e)*x^6)/2 +
 (b^3*e^3*x^7)/7
```

fricas [B] time = 0.67, size = 188, normalized size = 2.04

$$\frac{1}{7}x^7e^3b^3+\frac{1}{2}x^6e^2db^3+\frac{1}{2}x^6e^3b^2a+\frac{3}{5}x^5ed^2b^3+\frac{9}{5}x^5e^2db^2a+\frac{3}{5}x^5e^3ba^2+\frac{1}{4}x^4d^3b^3+\frac{9}{4}x^4ed^2b^2a+\frac{9}{4}x^4e^2dba^2+\frac{1}{4}x^4e^3a^3+x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*b^3 + 1/2*x^6*e^2*d*b^3 + 1/2*x^6*e^3*b^2*a + 3/5*x^5*e*d^2*b^3
 + 9/5*x^5*e^2*d*b^2*a + 3/5*x^5*e^3*b*a^2 + 1/4*x^4*d^3*b^3 + 9/4*x^4*e*d^
2*b^2*a + 9/4*x^4*e^2*d*b*a^2 + 1/4*x^4*e^3*a^3 + x^3*d^3*b^2*a + 3*x^3*e*d
^2*b*a^2 + x^3*e^2*d*a^3 + 3/2*x^2*d^3*b*a^2 + 3/2*x^2*e*d^2*a^3 + x*d^3*a^
3
```

giac [B] time = 0.15, size = 184, normalized size = 2.00

$$\frac{1}{7}b^3x^7e^3+\frac{1}{2}b^3dx^6e^2+\frac{3}{5}b^3d^2x^5e+\frac{1}{4}b^3d^3x^4+\frac{1}{2}ab^2x^6e^3+\frac{9}{5}ab^2dx^5e^2+\frac{9}{4}ab^2d^2x^4e+ab^2d^3x^3+\frac{3}{5}a^2bx^5e^3+\frac{9}{4}a^2bdx^4e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/7*b^3*x^7*e^3 + 1/2*b^3*d*x^6*e^2 + 3/5*b^3*d^2*x^5*e + 1/4*b^3*d^3*x^4 +
 1/2*a*b^2*x^6*e^3 + 9/5*a*b^2*d*x^5*e^2 + 9/4*a*b^2*d^2*x^4*e + a*b^2*d^3*
x^3 + 3/5*a^2*b*x^5*e^3 + 9/4*a^2*b*d*x^4*e^2 + 3*a^2*b*d^2*x^3*e + 3/2*a^2
*b*d^3*x^2 + 1/4*a^3*x^4*e^3 + a^3*d*x^3*e^2 + 3/2*a^3*d^2*x^2*e + a^3*d^3*
x
```

maple [B] time = 0.04, size = 244, normalized size = 2.65

$$\frac{b^3e^3x^7}{7}+a^3d^3x+\frac{\left(2a\,b^2e^3+\left(a\,e^3+3bd\,e^2\right)b^2\right)x^6}{6}+\frac{\left(a^2b\,e^3+2\left(a\,e^3+3bd\,e^2\right)ab+\left(3ad\,e^2+3b\,d^2e\right)b^2\right)x^5}{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/7*b^3*e^3*x^7+1/6*((a*e^3+3*b*d*e^2)*b^2+2*b^2*e^3*a)*x^6+1/5*((3*a*d*e^2
+3*b*d^2*e)*b^2+2*(a*e^3+3*b*d*e^2)*a*b+b*e^3*a^2)*x^5+1/4*((3*a*d^2*e+b*d^
3)*b^2+2*(3*a*d*e^2+3*b*d^2*e)*a*b+(a*e^3+3*b*d*e^2)*a^2)*x^4+1/3*(a*d^3*b^
2+2*(3*a*d^2*e+b*d^3)*a*b+(3*a*d*e^2+3*b*d^2*e)*a^2)*x^3+1/2*(2*a^2*d^3*b+(
3*a*d^2*e+b*d^3)*a^2)*x^2+a^3*d^3*x
```

maxima [A] time = 0.52, size = 167, normalized size = 1.82

$$\frac{1}{7}b^3e^3x^7+a^3d^3x+\frac{1}{2}\left(b^3de^2+ab^2e^3\right)x^6+\frac{3}{5}\left(b^3d^2e+3\,ab^2de^2+a^2be^3\right)x^5+\frac{1}{4}\left(b^3d^3+9\,ab^2d^2e+9\,a^2bde^2+a^3e^3\right)x^4+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/7*b^3*e^3*x^7 + a^3*d^3*x + 1/2*(b^3*d*e^2 + a*b^2*e^3)*x^6 + 3/5*(b^3*d^
2*e + 3*a*b^2*d*e^2 + a^2*b*e^3)*x^5 + 1/4*(b^3*d^3 + 9*a*b^2*d^2*e + 9*a^2
*b*d*e^2 + a^3*e^3)*x^4 + (a*b^2*d^3 + 3*a^2*b*d^2*e + a^3*d*e^2)*x^3 + 3/2
*(a^2*b*d^3 + a^3*d^2*e)*x^2
```

mupad [B] time = 0.07, size = 152, normalized size = 1.65

$$x^4\left(\frac{a^3\,e^3}{4}+\frac{9\,a^2\,b\,d\,e^2}{4}+\frac{9\,a\,b^2\,d^2\,e}{4}+\frac{b^3\,d^3}{4}\right)+a^3\,d^3\,x+\frac{b^3\,e^3\,x^7}{7}+a\,d\,x^3\,\left(a^2\,e^2+3\,a\,b\,d\,e+b^2\,d^2\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^4*((a^3*e^3)/4 + (b^3*d^3)/4 + (9*a*b^2*d^2*e)/4 + (9*a^2*b*d*e^2)/4) + a
^3*d^3*x + (b^3*e^3*x^7)/7 + a*d*x^3*(a^2*e^2 + b^2*d^2 + 3*a*b*d*e) + (3*b
*e*x^5*(a^2*e^2 + b^2*d^2 + 3*a*b*d*e))/5 + (3*a^2*d^2*x^2*(a*e + b*d))/2 +
 (b^2*e^2*x^6*(a*e + b*d))/2
```

sympy [B] time = 0.10, size = 190, normalized size = 2.07

$$a^3d^3x+\frac{b^3e^3x^7}{7}+x^6\left(\frac{ab^2e^3}{2}+\frac{b^3de^2}{2}\right)+x^5\left(\frac{3a^2be^3}{5}+\frac{9ab^2de^2}{5}+\frac{3b^3d^2e}{5}\right)+x^4\left(\frac{a^3e^3}{4}+\frac{9a^2bde^2}{4}+\frac{9ab^2d^2e}{4}+\frac{b^3d^3}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**3*x + b**3*e**3*x**7/7 + x**6*(a*b**2*e**3/2 + b**3*d*e**2/2) + x**
5*(3*a**2*b*e**3/5 + 9*a*b**2*d*e**2/5 + 3*b**3*d**2*e/5) + x**4*(a**3*e**3
/4 + 9*a**2*b*d*e**2/4 + 9*a*b**2*d**2*e/4 + b**3*d**3/4) + x**3*(a**3*d*e*
*2 + 3*a**2*b*d**2*e + a*b**2*d**3) + x**2*(3*a**3*d**2*e/2 + 3*a**2*b*d**3
/2)
```

3.1898 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right) \, dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^5(bd-ae)}{5b^3}+\frac{(a+bx)^4(bd-ae)^2}{4b^3}+\frac{e^2(a+bx)^6}{6b^3}$$

```
[Out] 1/4*(-a*e+b*d)^2*(b*x+a)^4/b^3+2/5*e*(-a*e+b*d)*(b*x+a)^5/b^3+1/6*e^2*(b*x+
a)^6/b^3
```

Rubi [A] time = 0.07, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$\frac{2e(a+bx)^5(bd-ae)}{5b^3}+\frac{(a+bx)^4(bd-ae)^2}{4b^3}+\frac{e^2(a+bx)^6}{6b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^4)/(4*b^3) + (2*e*(b*d - a*e)*(a + b*x)^5)/(5*b^3)
 + (e^2*(a + b*x)^6)/(6*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right) dx &= \int (a+bx)^3(d+ex)^2 \, dx\\
&= \int \left(\frac{(bd-ae)^2(a+bx)^3}{b^2}+\frac{2e(bd-ae)(a+bx)^4}{b^2}+\frac{e^2(a+bx)^5}{b^2}\right) dx\\
&= \frac{(bd-ae)^2(a+bx)^4}{4b^3}+\frac{2e(bd-ae)(a+bx)^5}{5b^3}+\frac{e^2(a+bx)^6}{6b^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 122, normalized size = 1.88

$$a^3d^2x+\frac{1}{4}bx^4\left(3a^2e^2+6abde+b^2d^2\right)+\frac{1}{3}ax^3\left(a^2e^2+6abde+3b^2d^2\right)+\frac{1}{2}a^2dx^2(2ae+3bd)+\frac{1}{5}b^2ex^5(3ae+2bd)+\frac{1}{6}b^3e^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d^2*x + (a^2*d*(3*b*d + 2*a*e)*x^2)/2 + (a*(3*b^2*d^2 + 6*a*b*d*e + a^2
*e^2)*x^3)/3 + (b*(b^2*d^2 + 6*a*b*d*e + 3*a^2*e^2)*x^4)/4 + (b^2*e*(2*b*d
+ 3*a*e)*x^5)/5 + (b^3*e^2*x^6)/6
```

fricas [B] time = 1.04, size = 130, normalized size = 2.00

$$\frac{1}{6}x^6e^2b^3+\frac{2}{5}x^5edb^3+\frac{3}{5}x^5e^2b^2a+\frac{1}{4}x^4d^2b^3+\frac{3}{2}x^4edb^2a+\frac{3}{4}x^4e^2ba^2+x^3d^2b^2a+2x^3edba^2+\frac{1}{3}x^3e^2a^3+\frac{3}{2}x^2d^2ba^2+x^2ed$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*b^3 + 2/5*x^5*e*d*b^3 + 3/5*x^5*e^2*b^2*a + 1/4*x^4*d^2*b^3 + 3
/2*x^4*e*d*b^2*a + 3/4*x^4*e^2*b*a^2 + x^3*d^2*b^2*a + 2*x^3*e*d*b*a^2 + 1/
3*x^3*e^2*a^3 + 3/2*x^2*d^2*b*a^2 + x^2*e*d*a^3 + x*d^2*a^3
```

giac [B] time = 0.15, size = 130, normalized size = 2.00

$$\frac{1}{6}\,b^3x^6e^2+\frac{2}{5}\,b^3dx^5e+\frac{1}{4}\,b^3d^2x^4+\frac{3}{5}\,ab^2x^5e^2+\frac{3}{2}\,ab^2dx^4e+ab^2d^2x^3+\frac{3}{4}\,a^2bx^4e^2+2\,a^2bdx^3e+\frac{3}{2}\,a^2bd^2x^2+\frac{1}{3}\,a^3x^3e^2+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*b^3*x^6*e^2 + 2/5*b^3*d*x^5*e + 1/4*b^3*d^2*x^4 + 3/5*a*b^2*x^5*e^2 + 3
/2*a*b^2*d*x^4*e + a*b^2*d^2*x^3 + 3/4*a^2*b*x^4*e^2 + 2*a^2*b*d*x^3*e + 3/
2*a^2*b*d^2*x^2 + 1/3*a^3*x^3*e^2 + a^3*d*x^2*e + a^3*d^2*x
```

maple [B] time = 0.05, size = 169, normalized size = 2.60

$$\frac{b^3e^2x^6}{6}+a^3d^2x+\frac{\left(2a\,b^2e^2+\left(a\,e^2+2bde\right)b^2\right)x^5}{5}+\frac{\left(a^2b\,e^2+2\left(a\,e^2+2bde\right)ab+\left(2ade+b\,d^2\right)b^2\right)x^4}{4}+\big(a\,b^2d^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/6*b^3*e^2*x^6+1/5*((a*e^2+2*b*d*e)*b^2+2*b^2*e^2*a)*x^5+1/4*((2*a*d*e+b*d
^2)*b^2+2*(a*e^2+2*b*d*e)*a*b+b*e^2*a^2)*x^4+1/3*(a*b^2*d^2+2*(2*a*d*e+b*d^
2)*a*b+(a*e^2+2*b*d*e)*a^2)*x^3+1/2*(2*a^2*d^2*b+(2*a*d*e+b*d^2)*a^2)*x^2+a
^3*d^2*x
```

maxima [B] time = 0.53, size = 124, normalized size = 1.91

$$\frac{1}{6}\,b^3e^2x^6+a^3d^2x+\frac{1}{5}\left(2\,b^3de+3\,ab^2e^2\right)x^5+\frac{1}{4}\left(b^3d^2+6\,ab^2de+3\,a^2be^2\right)x^4+\frac{1}{3}\left(3\,ab^2d^2+6\,a^2bde+a^3e^2\right)x^3+\frac{1}{2}\big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*b^3*e^2*x^6 + a^3*d^2*x + 1/5*(2*b^3*d*e + 3*a*b^2*e^2)*x^5 + 1/4*(b^3*
d^2 + 6*a*b^2*d*e + 3*a^2*b*e^2)*x^4 + 1/3*(3*a*b^2*d^2 + 6*a^2*b*d*e + a^3
*e^2)*x^3 + 1/2*(3*a^2*b*d^2 + 2*a^3*d*e)*x^2
```

mupad [B] time = 0.05, size = 115, normalized size = 1.77

$$x^3\,\left(\frac{a^3\,e^2}{3}+2\,a^2\,b\,d\,e+a\,b^2\,d^2\right)+x^4\,\left(\frac{3\,a^2\,b\,e^2}{4}+\frac{3\,a\,b^2\,d\,e}{2}+\frac{b^3\,d^2}{4}\right)+a^3\,d^2\,x+\frac{b^3\,e^2\,x^6}{6}+\frac{a^2\,d\,x^2\,\left(2\,a\,e+3\,b\,d\right)}{2}+b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^3*((a^3*e^2)/3 + a*b^2*d^2 + 2*a^2*b*d*e) + x^4*((b^3*d^2)/4 + (3*a^2*b*e
^2)/4 + (3*a*b^2*d*e)/2) + a^3*d^2*x + (b^3*e^2*x^6)/6 + (a^2*d*x^2*(2*a*e
+ 3*b*d))/2 + (b^2*e*x^5*(3*a*e + 2*b*d))/5
```

sympy [**B**] time = 0.09, size = 133, normalized size = 2.05

$$a^{3}d^{2}x+\frac{b^{3}e^{2}x^{6}}{6}+x^{5}\left(\frac{3ab^{2}e^{2}}{5}+\frac{2b^{3}de}{5}\right)+x^{4}\left(\frac{3a^{2}be^{2}}{4}+\frac{3ab^{2}de}{2}+\frac{b^{3}d^{2}}{4}\right)+x^{3}\left(\frac{a^{3}e^{2}}{3}+2a^{2}bde+ab^{2}d^{2}\right)+x^{2}\left(a^{3}de+\frac{3a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d**2*x + b**3*e**2*x**6/6 + x**5*(3*a*b**2*e**2/5 + 2*b**3*d*e/5) + x*
*4*(3*a**2*b*e**2/4 + 3*a*b**2*d*e/2 + b**3*d**2/4) + x**3*(a**3*e**2/3 + 2
*a**2*b*d*e + a*b**2*d**2) + x**2*(a**3*d*e + 3*a**2*b*d**2/2)
```

3.1899 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^4(bd-ae)}{4b^2}+\frac{e(a+bx)^5}{5b^2}$$

```
[Out] 1/4*(-a*e+b*d)*(b*x+a)^4/b^2+1/5*e*(b*x+a)^5/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {27, 43}

$$\frac{(a+bx)^4(bd-ae)}{4b^2}+\frac{e(a+bx)^5}{5b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^4)/(4*b^2) + (e*(a + b*x)^5)/(5*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)\,dx&=\int (a+bx)^3(d+ex)\,dx\\&=\int \left(\frac{(bd-ae)(a+bx)^3}{b}+\frac{e(a+bx)^4}{b}\right)dx\\&=\frac{(bd-ae)(a+bx)^4}{4b^2}+\frac{e(a+bx)^5}{5b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 67, normalized size = 1.76

$$a^3dx+\frac{1}{2}a^2x^2(ae+3bd)+\frac{1}{4}b^2x^4(3ae+bd)+abx^3(ae+bd)+\frac{1}{5}b^3ex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] a^3*d*x + (a^2*(3*b*d + a*e)*x^2)/2 + a*b*(b*d + a*e)*x^3 + (b^2*(b*d + 3*a
*e)*x^4)/4 + (b^3*e*x^5)/5
```

fricas [B] time = 0.87, size = 72, normalized size = 1.89

$$\frac{1}{5}x^5eb^3+\frac{1}{4}x^4db^3+\frac{3}{4}x^4eb^2a+x^3db^2a+x^3eba^2+\frac{3}{2}x^2dba^2+\frac{1}{2}x^2ea^3+xda^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*b^3 + 1/4*x^4*d*b^3 + 3/4*x^4*e*b^2*a + x^3*d*b^2*a + x^3*e*b*a^2
 + 3/2*x^2*d*b*a^2 + 1/2*x^2*e*a^3 + x*d*a^3
```

giac [B] time = 0.17, size = 76, normalized size = 2.00

$$\frac{1}{5}\,b^{3}x^{5}e + \frac{1}{4}\,b^{3}dx^{4} + \frac{3}{4}\,ab^{2}x^{4}e + ab^{2}dx^{3} + a^{2}bx^{3}e + \frac{3}{2}\,a^{2}bdx^{2} + \frac{1}{2}\,a^{3}x^{2}e + a^{3}dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/5*b^3*x^5*e + 1/4*b^3*d*x^4 + 3/4*a*b^2*x^4*e + a*b^2*d*x^3 + a^2*b*x^3*e
 + 3/2*a^2*b*d*x^2 + 1/2*a^3*x^2*e + a^3*d*x
```

maple [B] time = 0.04, size = 94, normalized size = 2.47

$$\frac{b^{3}e\,x^{5}}{5}+a^{3}dx+\frac{\left(2a\,b^{2}e+\left(ae+bd\right)b^{2}\right)x^{4}}{4}+\frac{\left(a^{2}be+a\,b^{2}d+2\left(ae+bd\right)ab\right)x^{3}}{3}+\frac{\left(2a^{2}bd+\left(ae+bd\right)a^{2}\right)x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/5*b^3*e*x^5+1/4*((a*e+b*d)*b^2+2*b^2*e*a)*x^4+1/3*(a*d*b^2+2*(a*e+b*d)*a*
b+b*e*a^2)*x^3+1/2*(2*a^2*d*b+(a*e+b*d)*a^2)*x^2+a^3*d*x
```

maxima [B] time = 0.54, size = 69, normalized size = 1.82

$$\frac{1}{5}\,b^{3}ex^{5} + a^{3}dx + \frac{1}{4}\,\left(b^{3}d + 3\,ab^{2}e\right)x^{4} + \left(ab^{2}d + a^{2}be\right)x^{3} + \frac{1}{2}\,\left(3\,a^{2}bd + a^{3}e\right)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/5*b^3*e*x^5 + a^3*d*x + 1/4*(b^3*d + 3*a*b^2*e)*x^4 + (a*b^2*d + a^2*b*e)
*x^3 + 1/2*(3*a^2*b*d + a^3*e)*x^2
```

mupad [B] time = 0.04, size = 65, normalized size = 1.71

$$x^2\,\left(\frac{e\,a^3}{2}+\frac{3\,b\,d\,a^2}{2}\right)+x^4\,\left(\frac{d\,b^3}{4}+\frac{3\,a\,e\,b^2}{4}\right)+\frac{b^3\,e\,x^5}{5}+a^3\,d\,x+a\,b\,x^3\,\left(a\,e+b\,d\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x^2*((a^3*e)/2 + (3*a^2*b*d)/2) + x^4*((b^3*d)/4 + (3*a*b^2*e)/4) + (b^3*e*
x^5)/5 + a^3*d*x + a*b*x^3*(a*e + b*d)
```

sympy [B] time = 0.08, size = 73, normalized size = 1.92

$$a^{3}dx + \frac{b^{3}ex^{5}}{5} + x^{4}\left(\frac{3ab^{2}e}{4} + \frac{b^{3}d}{4}\right) + x^{3}\left(a^{2}be + ab^{2}d\right) + x^{2}\left(\frac{a^{3}e}{2} + \frac{3a^{2}bd}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d*x + b**3*e*x**5/5 + x**4*(3*a*b**2*e/4 + b**3*d/4) + x**3*(a**2*b*e
+ a*b**2*d) + x**2*(a**3*e/2 + 3*a**2*b*d/2)
```

3.1900 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^4}{4b}$$

```
[Out] 1/4*(b*x+a)^4/b
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 22, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{27, 32\}$

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a + b*x)^4/(4*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3\,dx\\ &= \frac{(a+bx)^4}{4b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (a + b*x)^4/(4*b)
```

fricas [B] time = 0.62, size = 31, normalized size = 2.21

$$\frac{1}{4}x^4b^3 + x^3b^2a + \frac{3}{2}x^2ba^2 + xa^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*b^3 + x^3*b^2*a + 3/2*x^2*b*a^2 + x*a^3
```

giac [**B**] time = 0.15, size = 31, normalized size = 2.21

$$\frac{1}{2}\left(bx^2+2\,ax\right)a^2+\frac{1}{4}\left(bx^2+2\,ax\right)^2b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*a^2 + 1/4*(b*x^2 + 2*a*x)^2*b
```

maple [**B**] time = 0.05, size = 32, normalized size = 2.29

$$\frac{1}{4}b^3x^4+a\,b^2x^3+\frac{3}{2}a^2b\,x^2+a^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*b^3*x^4+a*b^2*x^3+3/2*a^2*b*x^2+a^3*x
```

maxima [**A**] time = 0.49, size = 23, normalized size = 1.64

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^2}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^2/b
```

mupad [**B**] time = 0.04, size = 31, normalized size = 2.21

$$a^3\,x+\frac{3\,a^2\,b\,x^2}{2}+a\,b^2\,x^3+\frac{b^3\,x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] a^3*x + (b^3*x^4)/4 + (3*a^2*b*x^2)/2 + a*b^2*x^3
```

sympy [**B**] time = 0.07, size = 32, normalized size = 2.29

$$a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4
```

3.1901 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx$

Optimal. Leaf size=74

$$-\frac{(bd-ae)^3\log(d+ex)}{e^4}+\frac{bx(bd-ae)^2}{e^3}-\frac{(a+bx)^2(bd-ae)}{2e^2}+\frac{(a+bx)^3}{3e}$$

```
[Out] b*(-a*e+b*d)^2*x/e^3-1/2*(-a*e+b*d)*(b*x+a)^2/e^2+1/3*(b*x+a)^3/e-(-a*e+b*d
)^3*ln(e*x+d)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{bx(bd-ae)^2}{e^3}-\frac{(a+bx)^2(bd-ae)}{2e^2}-\frac{(bd-ae)^3\log(d+ex)}{e^4}+\frac{(a+bx)^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^2*x)/e^3 - ((b*d - a*e)*(a + b*x)^2)/(2*e^2) + (a + b*x)^3/(
3*e) - ((b*d - a*e)^3*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{d+ex}\,dx &= \int \frac{(a+bx)^3}{d+ex}\,dx\\ &= \int \left(\frac{b(bd-ae)^2}{e^3}-\frac{b(bd-ae)(a+bx)}{e^2}+\frac{b(a+bx)^2}{e}+\frac{(-bd+ae)^3}{e^3(d+ex)}\right)dx\\ &= \frac{b(bd-ae)^2x}{e^3}-\frac{(bd-ae)(a+bx)^2}{2e^2}+\frac{(a+bx)^3}{3e}-\frac{(bd-ae)^3\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 1.00

$$\frac{bex\left(18a^2e^2+9abe(ex-2d)+b^2\left(6d^2-3dex+2e^2x^2\right)\right)-6(bd-ae)^3\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x),x]
```

```
[Out] (b*e*x*(18*a^2*e^2 + 9*a*b*e*(-2*d + e*x) + b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^
2)) - 6*(b*d - a*e)^3*Log[d + e*x])/(6*e^4)
```

fricas [A] time = 1.43, size = 115, normalized size = 1.55

$$\frac{2\,b^{3}e^{3}x^{3}-3\left(b^{3}de^{2}-3\,ab^{2}e^{3}\right)x^{2}+6\left(b^{3}d^{2}e-3\,ab^{2}de^{2}+3\,a^{2}be^{3}\right)x-6\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\log\left(ex\right.}{6\,e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*e^3*x^3 - 3*(b^3*d*e^2 - 3*a*b^2*e^3)*x^2 + 6*(b^3*d^2*e - 3*a*b
^2*d*e^2 + 3*a^2*b*e^3)*x - 6*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^
3*e^3)*log(e*x + d))/e^4
```

giac [A] time = 0.18, size = 113, normalized size = 1.53

$$-\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,b^{3}x^{3}e^{2}-3\,b^{3}dx^{2}e+6\,b^{3}d^{2}x+9\,ab^{2}x^{2}e^{2}-18\,ab^{2}dxe\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)*log(abs(x*e + d
)) + 1/6*(2*b^3*x^3*e^2 - 3*b^3*d*x^2*e + 6*b^3*d^2*x + 9*a*b^2*x^2*e^2 - 1
8*a*b^2*d*x*e + 18*a^2*b*x*e^2)*e^(-3)
```

maple [A] time = 0.05, size = 133, normalized size = 1.80

$$\frac{b^{3}x^{3}}{3e}+\frac{3a\,b^{2}x^{2}}{2e}-\frac{b^{3}d\,x^{2}}{2e^{2}}+\frac{a^{3}\ln\left(ex+d\right)}{e}-\frac{3a^{2}bd\ln\left(ex+d\right)}{e^{2}}+\frac{3a^{2}bx}{e}+\frac{3a\,b^{2}d^{2}\ln\left(ex+d\right)}{e^{3}}-\frac{3a\,b^{2}dx}{e^{2}}-\frac{b^{3}d^{3}\ln\left(ex+d\right)}{e^{4}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x)
```

```
[Out] 1/3*b^3/e*x^3+3/2*b^2/e*x^2*a-1/2*b^3/e^2*x^2*d+3*b/e*a^2*x-3*b^2/e^2*a*d*x
+b^3/e^3*d^2*x+1/e*ln(e*x+d)*a^3-3/e^2*ln(e*x+d)*a^2*b*d+3/e^3*ln(e*x+d)*a*
b^2*d^2-1/e^4*ln(e*x+d)*b^3*d^3
```

maxima [A] time = 0.68, size = 114, normalized size = 1.54

$$\frac{2\,b^{3}e^{2}x^{3}-3\left(b^{3}de-3\,ab^{2}e^{2}\right)x^{2}+6\left(b^{3}d^{2}-3\,ab^{2}de+3\,a^{2}be^{2}\right)x}{6\,e^{3}}-\frac{\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)\log\left(ex+d\right)}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b^3*e^2*x^3 - 3*(b^3*d*e - 3*a*b^2*e^2)*x^2 + 6*(b^3*d^2 - 3*a*b^2*d
*e + 3*a^2*b*e^2)*x)/e^3 - (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e
^3)*log(e*x + d)/e^4
```

mupad [B] time = 2.03, size = 118, normalized size = 1.59

$$x^{2}\left(\frac{3\,a\,b^{2}}{2\,e}-\frac{b^{3}\,d}{2\,e^{2}}\right)+x\left(\frac{3\,a^{2}\,b}{e}-\frac{d\,\left(\frac{3\,a\,b^{2}}{e}-\frac{b^{3}\,d}{e^{2}}\right)}{e}\right)+\frac{\ln\left(d+e\,x\right)\,\left(a^{3}\,e^{3}-3\,a^{2}\,b\,d\,e^{2}+3\,a\,b^{2}\,d^{2}\,e-b^{3}\,d^{3}\right)}{e^{4}}+\frac{b^{3}\,x^{3}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x),x)
```

```
[Out] x^2*((3*a*b^2)/(2*e) - (b^3*d)/(2*e^2)) + x*((3*a^2*b)/e - (d*((3*a*b^2)/e
- (b^3*d)/e^2))/e) + (log(d + e*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a
^2*b*d*e^2))/e^4 + (b^3*x^3)/(3*e)
```

sympy [A] time = 0.32, size = 83, normalized size = 1.12

$$\frac{b^3x^3}{3e}+x^2\left(\frac{3ab^2}{2e}-\frac{b^3d}{2e^2}\right)+x\left(\frac{3a^2b}{e}-\frac{3ab^2d}{e^2}+\frac{b^3d^2}{e^3}\right)+\frac{(ae-bd)^3\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d),x)
```

```
[Out] b**3*x**3/(3*e) + x**2*(3*a*b**2/(2*e) - b**3*d/(2*e**2)) + x*(3*a**2*b/e -
 3*a*b**2*d/e**2 + b**3*d**2/e**3) + (a*e - b*d)**3*log(d + e*x)/e**4
```

3.1902 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=75

$$-\frac{b^2x(2bd-3ae)}{e^3}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}+\frac{b^3x^2}{2e^2}$$

```
[Out] -b^2*(-3*a*e+2*b*d)*x/e^3+1/2*b^3*x^2/e^2+(-a*e+b*d)^3/e^4/(e*x+d)+3*b*(-a*
e+b*d)^2*ln(e*x+d)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 75, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$-\frac{b^2x(2bd-3ae)}{e^3}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}+\frac{b^3x^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b^2*(2*b*d - 3*a*e)*x)/e^3) + (b^3*x^2)/(2*e^2) + (b*d - a*e)^3/(e^4*(d
+ e*x)) + (3*b*(b*d - a*e)^2*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^2}\,dx\\ &= \int \left(-\frac{b^2(2bd-3ae)}{e^3}+\frac{b^3x}{e^2}+\frac{(-bd+ae)^3}{e^3(d+ex)^2}+\frac{3b(bd-ae)^2}{e^3(d+ex)}\right)dx\\ &= -\frac{b^2(2bd-3ae)x}{e^3}+\frac{b^3x^2}{2e^2}+\frac{(bd-ae)^3}{e^4(d+ex)}+\frac{3b(bd-ae)^2\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.52

$$\frac{3\left(a^2be^2-2ab^2de+b^3d^2\right)\log(d+ex)}{e^4}+\frac{-a^3e^3+3a^2bde^2-3ab^2d^2e+b^3d^3}{e^4(d+ex)}-\frac{b^2x(2bd-3ae)}{e^3}+\frac{b^3x^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^2,x]
```

```
[Out] -((b^2*(2*b*d - 3*a*e)*x)/e^3) + (b^3*x^2)/(2*e^2) + (b^3*d^3 - 3*a*b^2*d^2
*e + 3*a^2*b*d*e^2 - a^3*e^3)/(e^4*(d + e*x)) + (3*(b^3*d^2 - 2*a*b^2*d*e +
 a^2*b*e^2)*Log[d + e*x])/e^4
```

fricas [B] time = 1.04, size = 172, normalized size = 2.29

$$\frac{b^3e^3x^3 + 2\,b^3d^3 - 6\,ab^2d^2e + 6\,a^2bde^2 - 2\,a^3e^3 - 3\,(b^3de^2 - 2\,ab^2e^3)x^2 - 2\,(2\,b^3d^2e - 3\,ab^2de^2)x + 6\,(b^3d^3 - 2\,a}{2\,(e^5x + de^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^3*e^3*x^3 + 2*b^3*d^3 - 6*a*b^2*d^2*e + 6*a^2*b*d*e^2 - 2*a^3*e^3 -
3*(b^3*d*e^2 - 2*a*b^2*e^3)*x^2 - 2*(2*b^3*d^2*e - 3*a*b^2*d*e^2)*x + 6*(b^
3*d^3 - 2*a*b^2*d^2*e + a^2*b*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^
3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [B] time = 0.16, size = 164, normalized size = 2.19

$$\frac{1}{2}\left(b^3 - \frac{6\,(b^3de - ab^2e^2)e^{(-1)}}{xe + d}\right)(xe + d)^2e^{(-4)} - 3\,(b^3d^2 - 2\,ab^2de + a^2be^2)e^{(-4)}\log\left(\frac{|xe + d|e^{(-1)}}{(xe + d)^2}\right) + \left(\frac{b^3d^3e^2}{xe + d} - \frac{3\,ab}{xe}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(b^3 - 6*(b^3*d*e - a*b^2*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*e^(-4) - 3
*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*e^(-4)*log(abs(x*e + d)*e^(-1)/(x*e +
d)^2) + (b^3*d^3*e^2/(x*e + d) - 3*a*b^2*d^2*e^3/(x*e + d) + 3*a^2*b*d*e^4/
(x*e + d) - a^3*e^5/(x*e + d))*e^(-6)
```

maple [B] time = 0.05, size = 149, normalized size = 1.99

$$\frac{b^3x^2}{2e^2} - \frac{a^3}{(ex + d)\,e} + \frac{3a^2bd}{(ex + d)\,e^2} + \frac{3a^2b\ln(ex + d)}{e^2} - \frac{3a\,b^2d^2}{(ex + d)\,e^3} - \frac{6a\,b^2d\ln(ex + d)}{e^3} + \frac{3a\,b^2x}{e^2} + \frac{b^3d^3}{(ex + d)\,e^4} + \frac{3b^3d^2\ln(}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x)
```

```
[Out] 1/2*b^3/e^2*x^2+3*b^2/e^2*a*x-2*b^3*d/e^3*x-1/e/(e*x+d)*a^3+3/e^2/(e*x+d)*a
^2*b*d-3/e^3/(e*x+d)*a*b^2*d^2+1/(e*x+d)*b^3*d^3/e^4+3*b/e^2*ln(e*x+d)*a^2-
6*b^2/e^3*ln(e*x+d)*a*d+3*b^3*d^2/e^4*ln(e*x+d)
```

maxima [A] time = 0.60, size = 117, normalized size = 1.56

$$\frac{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3}{e^5x + de^4} + \frac{b^3ex^2 - 2\,(2\,b^3d - 3\,ab^2e)x}{2\,e^3} + \frac{3\,(b^3d^2 - 2\,ab^2de + a^2be^2)\log(ex + d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)/(e^5*x + d*e^4) + 1/2*(
b^3*e*x^2 - 2*(2*b^3*d - 3*a*b^2*e)*x)/e^3 + 3*(b^3*d^2 - 2*a*b^2*d*e + a^2
*b*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 0.07, size = 123, normalized size = 1.64

$$x\left(\frac{3\,a\,b^2}{e^2} - \frac{2\,b^3\,d}{e^3}\right) + \frac{\ln(d + e\,x)\,\left(3\,a^2\,b\,e^2 - 6\,a\,b^2\,d\,e + 3\,b^3\,d^2\right)}{e^4} - \frac{a^3\,e^3 - 3\,a^2\,b\,d\,e^2 + 3\,a\,b^2\,d^2\,e - b^3\,d^3}{e\,\left(x\,e^4 + d\,e^3\right)} + \frac{b^3\,x^2}{2\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^2,x)
```

```
[Out] x*((3*a*b^2)/e^2 - (2*b^3*d)/e^3) + (log(d + e*x)*(3*b^3*d^2 + 3*a^2*b*e^2
- 6*a*b^2*d*e))/e^4 - (a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)/(
e*(d*e^3 + e^4*x)) + (b^3*x^2)/(2*e^2)
```

sympy [A] time = 0.66, size = 102, normalized size = 1.36

$$\frac{b^3x^2}{2e^2}+\frac{3b\left(ae-bd\right)^2\log\left(d+ex\right)}{e^4}+x\left(\frac{3ab^2}{e^2}-\frac{2b^3d}{e^3}\right)+\frac{-a^3e^3+3a^2bde^2-3ab^2d^2e+b^3d^3}{de^4+e^5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**2,x)
```

```
[Out] b**3*x**2/(2*e**2) + 3*b*(a*e - b*d)**2*log(d + e*x)/e**4 + x*(3*a*b**2/e**
2 - 2*b**3*d/e**3) + (-a**3*e**3 + 3*a**2*b*d*e**2 - 3*a*b**2*d**2*e + b**3
*d**3)/(d*e**4 + e**5*x)
```

3.1903 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=78

$$-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}-\frac{3b(bd-ae)^2}{e^4(d+ex)}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}+\frac{b^3x}{e^3}$$

```
[Out] b^3*x/e^3+1/2*(-a*e+b*d)^3/e^4/(e*x+d)^2-3*b*(-a*e+b*d)^2/e^4/(e*x+d)-3*b^2
*(-a*e+b*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}-\frac{3b(bd-ae)^2}{e^4(d+ex)}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}+\frac{b^3x}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (b^3*x)/e^3 + (b*d - a*e)^3/(2*e^4*(d + e*x)^2) - (3*b*(b*d - a*e)^2)/(e^4*
(d + e*x)) - (3*b^2*(b*d - a*e)*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^3}\,dx&=\int \frac{(a+bx)^3}{(d+ex)^3}\,dx\\&=\int \left(\frac{b^3}{e^3}+\frac{(-bd+ae)^3}{e^3(d+ex)^3}+\frac{3b(bd-ae)^2}{e^3(d+ex)^2}-\frac{3b^2(bd-ae)}{e^3(d+ex)}\right)dx\\&=\frac{b^3x}{e^3}+\frac{(bd-ae)^3}{2e^4(d+ex)^2}-\frac{3b(bd-ae)^2}{e^4(d+ex)}-\frac{3b^2(bd-ae)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.46

$$\frac{-a^3e^3-3a^2be^2(d+2ex)+3ab^2de(3d+4ex)-6b^2(d+ex)^2(bd-ae)\log(d+ex)+b^3\Big(-5d^3-4d^2ex+4de^2x^2}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^3,x]
```

```
[Out] (-(a^3*e^3) - 3*a^2*b*e^2*(d + 2*e*x) + 3*a*b^2*d*e*(3*d + 4*e*x) + b^3*(-5
*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) - 6*b^2*(b*d - a*e)*(d + e*x)^2
*Log[d + e*x])/(2*e^4*(d + e*x)^2)
```

fricas [B] time = 1.13, size = 188, normalized size = 2.41

$$\frac{2\,b^3e^3x^3+4\,b^3de^2x^2-5\,b^3d^3+9\,ab^2d^2e-3\,a^2bde^2-a^3e^3-2\bigl(2\,b^3d^2e-6\,ab^2de^2+3\,a^2be^3\bigr)x-6\bigl(b^3d^3-ab^2d^2e}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*e^3*x^3 + 4*b^3*d*e^2*x^2 - 5*b^3*d^3 + 9*a*b^2*d^2*e - 3*a^2*b*
d*e^2 - a^3*e^3 - 2*(2*b^3*d^2*e - 6*a*b^2*d*e^2 + 3*a^2*b*e^3)*x - 6*(b^3*
d^3 - a*b^2*d^2*e + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(b^3*d^2*e - a*b^2*d*e^
2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.16, size = 110, normalized size = 1.41

$$b^3xe^{(-3)}-3\left(b^3d-ab^2e\right)e^{(-4)}\log\left(|xe+d|\right)-\frac{\left(5\,b^3d^3-9\,ab^2d^2e+3\,a^2bde^2+a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x\right)e}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] b^3*x*e^(-3) - 3*(b^3*d - a*b^2*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*b^3*d^
3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2 + a^3*e^3 + 6*(b^3*d^2*e - 2*a*b^2*d*e^2
+ a^2*b*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [B] time = 0.05, size = 160, normalized size = 2.05

$$-\frac{a^3}{2\,(ex+d)^2\,e}+\frac{3a^2bd}{2\,(ex+d)^2\,e^2}-\frac{3a\,b^2d^2}{2\,(ex+d)^2\,e^3}+\frac{b^3d^3}{2\,(ex+d)^2\,e^4}-\frac{3a^2b}{(ex+d)\,e^2}+\frac{6a\,b^2d}{(ex+d)\,e^3}+\frac{3a\,b^2\ln(ex+d)}{e^3}-\frac{3b^3d^2}{(ex+d)\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x)
```

```
[Out] b^3*x/e^3-3*b/e^2/(e*x+d)*a^2+6*b^2/e^3/(e*x+d)*a*d-3*b^3/e^4/(e*x+d)*d^2-1
/2/e/(e*x+d)^2*a^3+3/2/e^2/(e*x+d)^2*a^2*b*d-3/2/e^3/(e*x+d)^2*d^2*a*b^2+1/
2/e^4/(e*x+d)^2*b^3*d^3+3*b^2/e^3*ln(e*x+d)*a-3*b^3/e^4*ln(e*x+d)*d
```

maxima [A] time = 0.49, size = 125, normalized size = 1.60

$$\frac{b^3x}{e^3}-\frac{5\,b^3d^3-9\,ab^2d^2e+3\,a^2bde^2+a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}-\frac{3\left(b^3d-ab^2e\right)\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] b^3*x/e^3 - 1/2*(5*b^3*d^3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2 + a^3*e^3 + 6*(b
^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4) -
3*(b^3*d - a*b^2*e)*log(e*x + d)/e^4
```

mupad [B] time = 2.04, size = 130, normalized size = 1.67

$$\frac{b^3\,x}{e^3}-\frac{\ln\left(d+e\,x\right)\,\left(3\,b^3\,d-3\,a\,b^2\,e\right)}{e^4}-\frac{\frac{a^3\,e^3+3\,a^2\,b\,d\,e^2-9\,a\,b^2\,d^2\,e+5\,b^3\,d^3}{2\,e}+x\,\left(3\,a^2\,b\,e^2-6\,a\,b^2\,d\,e+3\,b^3\,d^2\right)}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^3,x)
```

```
[Out] (b^3*x)/e^3 - (log(d + e*x)*(3*b^3*d - 3*a*b^2*e))/e^4 - ((a^3*e^3 + 5*b^3*
d^3 - 9*a*b^2*d^2*e + 3*a^2*b*d*e^2)/(2*e) + x*(3*b^3*d^2 + 3*a^2*b*e^2 - 6
*a*b^2*d*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x)
```

sympy [A] time = 0.83, size = 128, normalized size = 1.64

$$\frac{b^3x}{e^3}+\frac{3b^2\left(ae-bd\right)\log\left(d+ex\right)}{e^4}+\frac{-a^3e^3-3a^2bde^2+9ab^2d^2e-5b^3d^3+x\left(-6a^2be^3+12ab^2de^2-6b^3d^2e\right)}{2d^2e^4+4de^5x+2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**3,x)
```

```
[Out] b**3*x/e**3 + 3*b**2*(a*e - b*d)*log(d + e*x)/e**4 + (-a**3*e**3 - 3*a**2*b
*d*e**2 + 9*a*b**2*d**2*e - 5*b**3*d**3 + x*(-6*a**2*b*e**3 + 12*a*b**2*d*e
**2 - 6*b**3*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2)
```

3.1904 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=86

$$\frac{3b^2(bd-ae)}{e^4(d+ex)}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{(bd-ae)^3}{3e^4(d+ex)^3}+\frac{b^3\log(d+ex)}{e^4}$$

```
[Out] 1/3*(-a*e+b*d)^3/e^4/(e*x+d)^3-3/2*b*(-a*e+b*d)^2/e^4/(e*x+d)^2+3*b^2*(-a*e
+b*d)/e^4/(e*x+d)+b^3*ln(e*x+d)/e^4
```

Rubi [A] time = 0.06, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{3b^2(bd-ae)}{e^4(d+ex)}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{(bd-ae)^3}{3e^4(d+ex)^3}+\frac{b^3\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (b*d - a*e)^3/(3*e^4*(d + e*x)^3) - (3*b*(b*d - a*e)^2)/(2*e^4*(d + e*x)^2)
 + (3*b^2*(b*d - a*e))/(e^4*(d + e*x)) + (b^3*Log[d + e*x])/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^4}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^4}+\frac{3b(bd-ae)^2}{e^3(d+ex)^3}-\frac{3b^2(bd-ae)}{e^3(d+ex)^2}+\frac{b^3}{e^3(d+ex)}\right)dx\\ &= \frac{(bd-ae)^3}{3e^4(d+ex)^3}-\frac{3b(bd-ae)^2}{2e^4(d+ex)^2}+\frac{3b^2(bd-ae)}{e^4(d+ex)}+\frac{b^3\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.92

$$\frac{\frac{(bd-ae)\left(2a^2e^2+abe(5d+9ex)+b^2\left(11d^2+27dex+18e^2x^2\right)\right)}{(d+ex)^3}+6b^3\log(d+ex)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^4,x]
```

```
[Out] (((b*d - a*e)*(2*a^2*e^2 + a*b*e*(5*d + 9*e*x) + b^2*(11*d^2 + 27*d*e*x + 1
8*e^2*x^2)))/(d + e*x)^3 + 6*b^3*Log[d + e*x])/(6*e^4)
```

fricas [B] time = 0.98, size = 177, normalized size = 2.06

$$\frac{11\,b^3d^3 - 6\,ab^2d^2e - 3\,a^2bde^2 - 2\,a^3e^3 + 18\left(b^3de^2 - ab^2e^3\right)x^2 + 9\left(3\,b^3d^2e - 2\,ab^2de^2 - a^2be^3\right)x + 6\big(b^3e^3x^3 + 3}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d*e^2 - 2*a^3*e^3 + 18*(b^3*d*e^2
 - a*b^2*e^3)*x^2 + 9*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x + 6*(b^3*
e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(e*x + d))/(e^7*x^3
 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.16, size = 117, normalized size = 1.36

$$b^3e^{(-4)}\log\left(|xe+d|\right)+\frac{\big(18\left(b^3de - ab^2e^2\right)x^2 + 9\left(3\,b^3d^2 - 2\,ab^2de - a^2be^2\right)x + \big(11\,b^3d^3 - 6\,ab^2d^2e - 3\,a^2bde^2 - 2}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] b^3*e^(-4)*log(abs(x*e + d)) + 1/6*(18*(b^3*d*e - a*b^2*e^2)*x^2 + 9*(3*b^3
*d^2 - 2*a*b^2*d*e - a^2*b*e^2)*x + (11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d
*e^2 - 2*a^3*e^3)*e^(-1))*e^(-3)/(x*e + d)^3
```

maple [B] time = 0.05, size = 166, normalized size = 1.93

$$-\frac{a^3}{3\,(ex+d)^3\,e}+\frac{a^2bd}{(ex+d)^3\,e^2}-\frac{a\,b^2d^2}{(ex+d)^3\,e^3}+\frac{b^3d^3}{3\,(ex+d)^3\,e^4}-\frac{3a^2b}{2\,(ex+d)^2\,e^2}+\frac{3a\,b^2d}{(ex+d)^2\,e^3}-\frac{3b^3d^2}{2\,(ex+d)^2\,e^4}-\frac{3a\,b^2}{(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x)
```

```
[Out] -3*b^2/e^3/(e*x+d)*a+3*b^3/e^4/(e*x+d)*d-3/2*b/e^2/(e*x+d)^2*a^2+3*b^2/e^3/
(e*x+d)^2*a*d-3/2*b^3/e^4/(e*x+d)^2*d^2-1/3/e/(e*x+d)^3*a^3+1/e^2/(e*x+d)^3
*a^2*b*d-1/e^3/(e*x+d)^3*a*b^2*d^2+1/3/e^4/(e*x+d)^3*b^3*d^3+b^3*ln(e*x+d)/
e^4
```

maxima [A] time = 0.46, size = 143, normalized size = 1.66

$$\frac{11\,b^3d^3 - 6\,ab^2d^2e - 3\,a^2bde^2 - 2\,a^3e^3 + 18\left(b^3de^2 - ab^2e^3\right)x^2 + 9\left(3\,b^3d^2e - 2\,ab^2de^2 - a^2be^3\right)x}{6\left(e^7x^3 + 3\,de^6x^2 + 3\,d^2e^5x + d^3e^4\right)}+\frac{b^3\log(ex+d}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*b^3*d^3 - 6*a*b^2*d^2*e - 3*a^2*b*d*e^2 - 2*a^3*e^3 + 18*(b^3*d*e^2
 - a*b^2*e^3)*x^2 + 9*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x)/(e^7*x^3
 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + b^3*log(e*x + d)/e^4
```

mupad [B] time = 0.09, size = 138, normalized size = 1.60

$$\frac{b^3\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{2\,a^3\,e^3+3\,a^2\,b\,d\,e^2+6\,a\,b^2\,d^2\,e-11\,b^3\,d^3}{6\,e^4}+\frac{3\,x\,\left(a^2\,b\,e^2+2\,a\,b^2\,d\,e-3\,b^3\,d^2\right)}{2\,e^3}+\frac{3\,b^2\,x^2\,\left(a\,e-b\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^4,x)
```

```
[Out] (b^3*log(d + e*x))/e^4 - ((2*a^3*e^3 - 11*b^3*d^3 + 6*a*b^2*d^2*e + 3*a^2*b
*d*e^2)/(6*e^4) + (3*x*(a^2*b*e^2 - 3*b^3*d^2 + 2*a*b^2*d*e))/(2*e^3) + (3*
b^2*x^2*(a*e - b*d))/e^2)/(d^3 + e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 1.18, size = 148, normalized size = 1.72

$$\frac{b^3\log(d+ex)}{e^4}+\frac{-2a^3e^3-3a^2bde^2-6ab^2d^2e+11b^3d^3+x^2\left(-18ab^2e^3+18b^3de^2\right)+x\,(-9a^2be^3-18ab^2de^2+27b}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**4,x)
```

```
[Out] b**3*log(d + e*x)/e**4 + (-2*a**3*e**3 - 3*a**2*b*d*e**2 - 6*a*b**2*d**2*e
+ 11*b**3*d**3 + x**2*(-18*a*b**2*e**3 + 18*b**3*d*e**2) + x*(-9*a**2*b*e**
3 - 18*a*b**2*d*e**2 + 27*b**3*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*
d*e**6*x**2 + 6*e**7*x**3)
```

3.1905 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=143

$$-\frac{5b^4(d+ex)^{11}(bd-ae)}{11e^6}+\frac{b^3(d+ex)^{10}(bd-ae)^2}{e^6}-\frac{10b^2(d+ex)^9(bd-ae)^3}{9e^6}+\frac{5b(d+ex)^8(bd-ae)^4}{8e^6}-\frac{(d+ex)^7(b}{7e^6}$$

```
[Out] -1/7*(-a*e+b*d)^5*(e*x+d)^7/e^6+5/8*b*(-a*e+b*d)^4*(e*x+d)^8/e^6-10/9*b^2*(
-a*e+b*d)^3*(e*x+d)^9/e^6+b^3*(-a*e+b*d)^2*(e*x+d)^10/e^6-5/11*b^4*(-a*e+b*
d)*(e*x+d)^11/e^6+1/12*b^5*(e*x+d)^12/e^6
```

Rubi [A] time = 0.31, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{5b^4(d+ex)^{11}(bd-ae)}{11e^6}+\frac{b^3(d+ex)^{10}(bd-ae)^2}{e^6}-\frac{10b^2(d+ex)^9(bd-ae)^3}{9e^6}+\frac{5b(d+ex)^8(bd-ae)^4}{8e^6}-\frac{(d+ex)^7(b}{7e^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((b*d - a*e)^5*(d + e*x)^7)/(7*e^6) + (5*b*(b*d - a*e)^4*(d + e*x)^8)/(8*e
^6) - (10*b^2*(b*d - a*e)^3*(d + e*x)^9)/(9*e^6) + (b^3*(b*d - a*e)^2*(d +
e*x)^10)/e^6 - (5*b^4*(b*d - a*e)*(d + e*x)^11)/(11*e^6) + (b^5*(d + e*x)^1
2)/(12*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^6\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^6}{e^5}+\frac{5b(bd-ae)^4(d+ex)^7}{e^5}-\frac{10b^2(bd-a}{e}\right.\\ &= -\frac{(bd-ae)^5(d+ex)^7}{7e^6}+\frac{5b(bd-ae)^4(d+ex)^8}{8e^6}-\frac{10b^2(bd-ae)^3(}{9e^6}\end{aligned}$$

Mathematica [B] time = 0.07, size = 501, normalized size = 3.50

$$a^5d^6x+\frac{1}{2}a^4d^5x^2(6ae+5bd)+\frac{1}{2}b^3e^4x^{10}\left(2a^2e^2+6abde+3b^2d^2\right)+\frac{5}{3}a^3d^4x^3\left(3a^2e^2+6abde+2b^2d^2\right)+\frac{5}{9}b^2e^3x^9\left(2a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^6*x + (a^4*d^5*(5*b*d + 6*a*e)*x^2)/2 + (5*a^3*d^4*(2*b^2*d^2 + 6*a*b
*d*e + 3*a^2*e^2)*x^3)/3 + (5*a^2*d^3*(2*b^3*d^3 + 12*a*b^2*d^2*e + 15*a^2*
b*d*e^2 + 4*a^3*e^3)*x^4)/4 + a*d^2*(b^4*d^4 + 12*a*b^3*d^3*e + 30*a^2*b^2*
d^2*e^2 + 20*a^3*b*d*e^3 + 3*a^4*e^4)*x^5 + (d*(b^5*d^5 + 30*a*b^4*d^4*e +
150*a^2*b^3*d^3*e^2 + 200*a^3*b^2*d^2*e^3 + 75*a^4*b*d*e^4 + 6*a^5*e^5)*x^6
)/6 + (e*(6*b^5*d^5 + 75*a*b^4*d^4*e + 200*a^2*b^3*d^3*e^2 + 150*a^3*b^2*d^
2*e^3 + 30*a^4*b*d*e^4 + a^5*e^5)*x^7)/7 + (5*b*e^2*(3*b^4*d^4 + 20*a*b^3*d
^3*e + 30*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 + a^4*e^4)*x^8)/8 + (5*b^2*e^3*(
4*b^3*d^3 + 15*a*b^2*d^2*e + 12*a^2*b*d*e^2 + 2*a^3*e^3)*x^9)/9 + (b^3*e^4*
(3*b^2*d^2 + 6*a*b*d*e + 2*a^2*e^2)*x^10)/2 + (b^4*e^5*(6*b*d + 5*a*e)*x^11
)/11 + (b^5*e^6*x^12)/12
```

fricas [B] time = 0.86, size = 579, normalized size = 4.05

$$\frac{1}{12}x^{12}e^{6}b^{5}+\frac{6}{11}x^{11}e^{5}db^{5}+\frac{5}{11}x^{11}e^{6}b^{4}a+\frac{3}{2}x^{10}e^{4}d^{2}b^{5}+3x^{10}e^{5}db^{4}a+x^{10}e^{6}b^{3}a^{2}+\frac{20}{9}x^{9}e^{3}d^{3}b^{5}+\frac{25}{3}x^{9}e^{4}d^{2}b^{4}a+\frac{20}{3}x^{9}e^{5}db^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^6*b^5 + 6/11*x^11*e^5*d*b^5 + 5/11*x^11*e^6*b^4*a + 3/2*x^10*e^
4*d^2*b^5 + 3*x^10*e^5*d*b^4*a + x^10*e^6*b^3*a^2 + 20/9*x^9*e^3*d^3*b^5 +
25/3*x^9*e^4*d^2*b^4*a + 20/3*x^9*e^5*d*b^3*a^2 + 10/9*x^9*e^6*b^2*a^3 + 15
/8*x^8*e^2*d^4*b^5 + 25/2*x^8*e^3*d^3*b^4*a + 75/4*x^8*e^4*d^2*b^3*a^2 + 15
/2*x^8*e^5*d*b^2*a^3 + 5/8*x^8*e^6*b*a^4 + 6/7*x^7*e*d^5*b^5 + 75/7*x^7*e^2
*d^4*b^4*a + 200/7*x^7*e^3*d^3*b^3*a^2 + 150/7*x^7*e^4*d^2*b^2*a^3 + 30/7*x
^7*e^5*d*b*a^4 + 1/7*x^7*e^6*a^5 + 1/6*x^6*d^6*b^5 + 5*x^6*e*d^5*b^4*a + 25
*x^6*e^2*d^4*b^3*a^2 + 100/3*x^6*e^3*d^3*b^2*a^3 + 25/2*x^6*e^4*d^2*b*a^4 +
 x^6*e^5*d*a^5 + x^5*d^6*b^4*a + 12*x^5*e*d^5*b^3*a^2 + 30*x^5*e^2*d^4*b^2*
a^3 + 20*x^5*e^3*d^3*b*a^4 + 3*x^5*e^4*d^2*a^5 + 5/2*x^4*d^6*b^3*a^2 + 15*x
^4*e*d^5*b^2*a^3 + 75/4*x^4*e^2*d^4*b*a^4 + 5*x^4*e^3*d^3*a^5 + 10/3*x^3*d^
6*b^2*a^3 + 10*x^3*e*d^5*b*a^4 + 5*x^3*e^2*d^4*a^5 + 5/2*x^2*d^6*b*a^4 + 3*
x^2*e*d^5*a^5 + x*d^6*a^5
```

giac [B] time = 0.22, size = 555, normalized size = 3.88

$$\frac{1}{12}\,b^{5}x^{12}e^{6}+\frac{6}{11}\,b^{5}dx^{11}e^{5}+\frac{3}{2}\,b^{5}d^{2}x^{10}e^{4}+\frac{20}{9}\,b^{5}d^{3}x^{9}e^{3}+\frac{15}{8}\,b^{5}d^{4}x^{8}e^{2}+\frac{6}{7}\,b^{5}d^{5}x^{7}e+\frac{1}{6}\,b^{5}d^{6}x^{6}+\frac{5}{11}\,ab^{4}x^{11}e^{6}+3\,ab^{4}dx^{10}e^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/12*b^5*x^12*e^6 + 6/11*b^5*d*x^11*e^5 + 3/2*b^5*d^2*x^10*e^4 + 20/9*b^5*d
^3*x^9*e^3 + 15/8*b^5*d^4*x^8*e^2 + 6/7*b^5*d^5*x^7*e + 1/6*b^5*d^6*x^6 + 5
/11*a*b^4*x^11*e^6 + 3*a*b^4*d*x^10*e^5 + 25/3*a*b^4*d^2*x^9*e^4 + 25/2*a*b
^4*d^3*x^8*e^3 + 75/7*a*b^4*d^4*x^7*e^2 + 5*a*b^4*d^5*x^6*e + a*b^4*d^6*x^5
 + a^2*b^3*x^10*e^6 + 20/3*a^2*b^3*d*x^9*e^5 + 75/4*a^2*b^3*d^2*x^8*e^4 + 2
00/7*a^2*b^3*d^3*x^7*e^3 + 25*a^2*b^3*d^4*x^6*e^2 + 12*a^2*b^3*d^5*x^5*e +
5/2*a^2*b^3*d^6*x^4 + 10/9*a^3*b^2*x^9*e^6 + 15/2*a^3*b^2*d*x^8*e^5 + 150/7
*a^3*b^2*d^2*x^7*e^4 + 100/3*a^3*b^2*d^3*x^6*e^3 + 30*a^3*b^2*d^4*x^5*e^2 +
 15*a^3*b^2*d^5*x^4*e + 10/3*a^3*b^2*d^6*x^3 + 5/8*a^4*b*x^8*e^6 + 30/7*a^4
*b*d*x^7*e^5 + 25/2*a^4*b*d^2*x^6*e^4 + 20*a^4*b*d^3*x^5*e^3 + 75/4*a^4*b*d
^4*x^4*e^2 + 10*a^4*b*d^5*x^3*e + 5/2*a^4*b*d^6*x^2 + 1/7*a^5*x^7*e^6 + a^5
*d*x^6*e^5 + 3*a^5*d^2*x^5*e^4 + 5*a^5*d^3*x^4*e^3 + 5*a^5*d^4*x^3*e^2 + 3*
a^5*d^5*x^2*e + a^5*d^6*x
```

maple [B] time = 0.04, size = 817, normalized size = 5.71

$$\frac{b^{5}e^{6}x^{12}}{12}+a^{5}d^{6}x+\frac{\left(4a\,b^{4}e^{6}+\left(a\,e^{6}+6bd\,e^{5}\right)b^{4}\right)x^{11}}{11}+\frac{\left(6a^{2}b^{3}e^{6}+4\left(a\,e^{6}+6bd\,e^{5}\right)a\,b^{3}+\left(6ad\,e^{5}+15b\,d^{2}e^{4}\right)b^{4}\right)x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/12*b^5*e^6*x^12+1/11*((a*e^6+6*b*d*e^5)*b^4+4*b^4*e^6*a)*x^11+1/10*((6*a*
d*e^5+15*b*d^2*e^4)*b^4+4*(a*e^6+6*b*d*e^5)*a*b^3+6*b^3*e^6*a^2)*x^10+1/9*(
(15*a*d^2*e^4+20*b*d^3*e^3)*b^4+4*(6*a*d*e^5+15*b*d^2*e^4)*a*b^3+6*(a*e^6+6
*b*d*e^5)*a^2*b^2+4*b^2*e^6*a^3)*x^9+1/8*((20*a*d^3*e^3+15*b*d^4*e^2)*b^4+4
*(15*a*d^2*e^4+20*b*d^3*e^3)*a*b^3+6*(6*a*d*e^5+15*b*d^2*e^4)*a^2*b^2+4*(a*
e^6+6*b*d*e^5)*a^3*b+b*e^6*a^4)*x^8+1/7*((15*a*d^4*e^2+6*b*d^5*e)*b^4+4*(20
*a*d^3*e^3+15*b*d^4*e^2)*a*b^3+6*(15*a*d^2*e^4+20*b*d^3*e^3)*a^2*b^2+4*(6*a
*d*e^5+15*b*d^2*e^4)*a^3*b+(a*e^6+6*b*d*e^5)*a^4)*x^7+1/6*((6*a*d^5*e+b*d^6
)*b^4+4*(15*a*d^4*e^2+6*b*d^5*e)*a*b^3+6*(20*a*d^3*e^3+15*b*d^4*e^2)*a^2*b^
2+4*(15*a*d^2*e^4+20*b*d^3*e^3)*a^3*b+(6*a*d*e^5+15*b*d^2*e^4)*a^4)*x^6+1/5
*(a*d^6*b^4+4*(6*a*d^5*e+b*d^6)*a*b^3+6*(15*a*d^4*e^2+6*b*d^5*e)*a^2*b^2+4*
(20*a*d^3*e^3+15*b*d^4*e^2)*a^3*b+(15*a*d^2*e^4+20*b*d^3*e^3)*a^4)*x^5+1/4*
(4*a^2*d^6*b^3+6*(6*a*d^5*e+b*d^6)*a^2*b^2+4*(15*a*d^4*e^2+6*b*d^5*e)*a^3*b
+(20*a*d^3*e^3+15*b*d^4*e^2)*a^4)*x^4+1/3*(6*a^3*d^6*b^2+4*(6*a*d^5*e+b*d^6
)*a^3*b+(15*a*d^4*e^2+6*b*d^5*e)*a^4)*x^3+1/2*(4*a^4*d^6*b+(6*a*d^5*e+b*d^6
)*a^4)*x^2+a^5*d^6*x
```

maxima [B] time = 0.49, size = 517, normalized size = 3.62

$$\frac{1}{12}\,b^5e^6x^{12}+a^5d^6x+\frac{1}{11}\left(6\,b^5de^5+5\,ab^4e^6\right)x^{11}+\frac{1}{2}\left(3\,b^5d^2e^4+6\,ab^4de^5+2\,a^2b^3e^6\right)x^{10}+\frac{5}{9}\left(4\,b^5d^3e^3+15\,ab^4d^2e^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/12*b^5*e^6*x^12 + a^5*d^6*x + 1/11*(6*b^5*d*e^5 + 5*a*b^4*e^6)*x^11 + 1/2
*(3*b^5*d^2*e^4 + 6*a*b^4*d*e^5 + 2*a^2*b^3*e^6)*x^10 + 5/9*(4*b^5*d^3*e^3
+ 15*a*b^4*d^2*e^4 + 12*a^2*b^3*d*e^5 + 2*a^3*b^2*e^6)*x^9 + 5/8*(3*b^5*d^4
*e^2 + 20*a*b^4*d^3*e^3 + 30*a^2*b^3*d^2*e^4 + 12*a^3*b^2*d*e^5 + a^4*b*e^6
)*x^8 + 1/7*(6*b^5*d^5*e + 75*a*b^4*d^4*e^2 + 200*a^2*b^3*d^3*e^3 + 150*a^3
*b^2*d^2*e^4 + 30*a^4*b*d*e^5 + a^5*e^6)*x^7 + 1/6*(b^5*d^6 + 30*a*b^4*d^5*
e + 150*a^2*b^3*d^4*e^2 + 200*a^3*b^2*d^3*e^3 + 75*a^4*b*d^2*e^4 + 6*a^5*d*
e^5)*x^6 + (a*b^4*d^6 + 12*a^2*b^3*d^5*e + 30*a^3*b^2*d^4*e^2 + 20*a^4*b*d^
3*e^3 + 3*a^5*d^2*e^4)*x^5 + 5/4*(2*a^2*b^3*d^6 + 12*a^3*b^2*d^5*e + 15*a^4
*b*d^4*e^2 + 4*a^5*d^3*e^3)*x^4 + 5/3*(2*a^3*b^2*d^6 + 6*a^4*b*d^5*e + 3*a^
5*d^4*e^2)*x^3 + 1/2*(5*a^4*b*d^6 + 6*a^5*d^5*e)*x^2
```

mupad [B] time = 2.13, size = 492, normalized size = 3.44

$$x^5\,\left(3\,a^5\,d^2\,e^4+20\,a^4\,b\,d^3\,e^3+30\,a^3\,b^2\,d^4\,e^2+12\,a^2\,b^3\,d^5\,e+a\,b^4\,d^6\right)+x^8\,\left(\frac{5\,a^4\,b\,e^6}{8}+\frac{15\,a^3\,b^2\,d\,e^5}{2}+\frac{75\,a^2\,b^3\,d^2}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*(a*b^4*d^6 + 3*a^5*d^2*e^4 + 12*a^2*b^3*d^5*e + 20*a^4*b*d^3*e^3 + 30*a
^3*b^2*d^4*e^2) + x^8*((5*a^4*b*e^6)/8 + (15*b^5*d^4*e^2)/8 + (25*a*b^4*d^3
*e^3)/2 + (15*a^3*b^2*d*e^5)/2 + (75*a^2*b^3*d^2*e^4)/4) + x^6*((b^5*d^6)/6
 + a^5*d*e^5 + (25*a^4*b*d^2*e^4)/2 + 25*a^2*b^3*d^4*e^2 + (100*a^3*b^2*d^3
*e^3)/3 + 5*a*b^4*d^5*e) + x^7*((a^5*e^6)/7 + (6*b^5*d^5*e)/7 + (75*a*b^4*d
^4*e^2)/7 + (200*a^2*b^3*d^3*e^3)/7 + (150*a^3*b^2*d^2*e^4)/7 + (30*a^4*b*d
*e^5)/7) + a^5*d^6*x + (b^5*e^6*x^12)/12 + (5*a^2*d^3*x^4*(4*a^3*e^3 + 2*b^
3*d^3 + 12*a*b^2*d^2*e + 15*a^2*b*d*e^2))/4 + (5*b^2*e^3*x^9*(2*a^3*e^3 + 4
*b^3*d^3 + 15*a*b^2*d^2*e + 12*a^2*b*d*e^2))/9 + (a^4*d^5*x^2*(6*a*e + 5*b*
d))/2 + (b^4*e^5*x^11*(5*a*e + 6*b*d))/11 + (5*a^3*d^4*x^3*(3*a^2*e^2 + 2*b
^2*d^2 + 6*a*b*d*e))/3 + (b^3*e^4*x^10*(2*a^2*e^2 + 3*b^2*d^2 + 6*a*b*d*e))
/2
```

sympy [B] time = 0.16, size = 580, normalized size = 4.06

$$a^5d^6x+\frac{b^5e^6x^{12}}{12}+x^{11}\left(\frac{5ab^4e^6}{11}+\frac{6b^5de^5}{11}\right)+x^{10}\left(a^2b^3e^6+3ab^4de^5+\frac{3b^5d^2e^4}{2}\right)+x^9\left(\frac{10a^3b^2e^6}{9}+\frac{20a^2b^3de^5}{3}+\frac{25ab^4d}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**6*x + b**5*e**6*x**12/12 + x**11*(5*a*b**4*e**6/11 + 6*b**5*d*e**5/
11) + x**10*(a**2*b**3*e**6 + 3*a*b**4*d*e**5 + 3*b**5*d**2*e**4/2) + x**9*
(10*a**3*b**2*e**6/9 + 20*a**2*b**3*d*e**5/3 + 25*a*b**4*d**2*e**4/3 + 20*b
**5*d**3*e**3/9) + x**8*(5*a**4*b*e**6/8 + 15*a**3*b**2*d*e**5/2 + 75*a**2*
b**3*d**2*e**4/4 + 25*a*b**4*d**3*e**3/2 + 15*b**5*d**4*e**2/8) + x**7*(a**
5*e**6/7 + 30*a**4*b*d*e**5/7 + 150*a**3*b**2*d**2*e**4/7 + 200*a**2*b**3*d
**3*e**3/7 + 75*a*b**4*d**4*e**2/7 + 6*b**5*d**5*e/7) + x**6*(a**5*d*e**5 +
 25*a**4*b*d**2*e**4/2 + 100*a**3*b**2*d**3*e**3/3 + 25*a**2*b**3*d**4*e**2
 + 5*a*b**4*d**5*e + b**5*d**6/6) + x**5*(3*a**5*d**2*e**4 + 20*a**4*b*d**3
*e**3 + 30*a**3*b**2*d**4*e**2 + 12*a**2*b**3*d**5*e + a*b**4*d**6) + x**4*
(5*a**5*d**3*e**3 + 75*a**4*b*d**4*e**2/4 + 15*a**3*b**2*d**5*e + 5*a**2*b*
*3*d**6/2) + x**3*(5*a**5*d**4*e**2 + 10*a**4*b*d**5*e + 10*a**3*b**2*d**6/
3) + x**2*(3*a**5*d**5*e + 5*a**4*b*d**6/2)
```

3.1906 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=146

$$\frac{e^4(a+bx)^{10}(bd-ae)}{2b^6}+\frac{10e^3(a+bx)^9(bd-ae)^2}{9b^6}+\frac{5e^2(a+bx)^8(bd-ae)^3}{4b^6}+\frac{5e(a+bx)^7(bd-ae)^4}{7b^6}+\frac{(a+bx)^6(bd-}{6b^6}$$

```
[Out] 1/6*(-a*e+b*d)^5*(b*x+a)^6/b^6+5/7*e*(-a*e+b*d)^4*(b*x+a)^7/b^6+5/4*e^2*(-a
*e+b*d)^3*(b*x+a)^8/b^6+10/9*e^3*(-a*e+b*d)^2*(b*x+a)^9/b^6+1/2*e^4*(-a*e+b
*d)*(b*x+a)^10/b^6+1/11*e^5*(b*x+a)^11/b^6
```

Rubi **[A]** time = 0.25, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 43\}$

$$\frac{e^4(a+bx)^{10}(bd-ae)}{2b^6}+\frac{10e^3(a+bx)^9(bd-ae)^2}{9b^6}+\frac{5e^2(a+bx)^8(bd-ae)^3}{4b^6}+\frac{5e(a+bx)^7(bd-ae)^4}{7b^6}+\frac{(a+bx)^6(bd-}{6b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^6)/(6*b^6) + (5*e*(b*d - a*e)^4*(a + b*x)^7)/(7*b^
6) + (5*e^2*(b*d - a*e)^3*(a + b*x)^8)/(4*b^6) + (10*e^3*(b*d - a*e)^2*(a +
 b*x)^9)/(9*b^6) + (e^4*(b*d - a*e)*(a + b*x)^10)/(2*b^6) + (e^5*(a + b*x)^
11)/(11*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^5\,dx\\ &= \int \left(\frac{(bd-ae)^5(a+bx)^5}{b^5}+\frac{5e(bd-ae)^4(a+bx)^6}{b^5}+\frac{10e^2(bd-ae}{b^5}\right.\\ &= \frac{(bd-ae)^5(a+bx)^6}{6b^6}+\frac{5e(bd-ae)^4(a+bx)^7}{7b^6}+\frac{5e^2(bd-ae)^3(a+}{4b^6}\end{aligned}$$

Mathematica **[B]** time = 0.05, size = 413, normalized size = 2.83

$$a^5d^5x+\frac{5}{2}a^4d^4x^2(ae+bd)+\frac{5}{9}b^3e^3x^9\left(2a^2e^2+5abde+2b^2d^2\right)+\frac{5}{3}a^3d^3x^3\left(2a^2e^2+5abde+2b^2d^2\right)+\frac{5}{4}b^2e^2x^8\left(a^3e^3\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^5*x + (5*a^4*d^4*(b*d + a*e)*x^2)/2 + (5*a^3*d^3*(2*b^2*d^2 + 5*a*b*d
*e + 2*a^2*e^2)*x^3)/3 + (5*a^2*d^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^
2 + a^3*e^3)*x^4)/2 + a*d*(b^4*d^4 + 10*a*b^3*d^3*e + 20*a^2*b^2*d^2*e^2 +
10*a^3*b*d*e^3 + a^4*e^4)*x^5 + ((b^5*d^5 + 25*a*b^4*d^4*e + 100*a^2*b^3*d^
3*e^2 + 100*a^3*b^2*d^2*e^3 + 25*a^4*b*d*e^4 + a^5*e^5)*x^6)/6 + (5*b*e*(b^
4*d^4 + 10*a*b^3*d^3*e + 20*a^2*b^2*d^2*e^2 + 10*a^3*b*d*e^3 + a^4*e^4)*x^7
)/7 + (5*b^2*e^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2 + a^3*e^3)*x^8)/4
 + (5*b^3*e^3*(2*b^2*d^2 + 5*a*b*d*e + 2*a^2*e^2)*x^9)/9 + (b^4*e^4*(b*d +
a*e)*x^10)/2 + (b^5*e^5*x^11)/11
```

fricas [B] time = 0.41, size = 488, normalized size = 3.34

$$\frac{1}{11}x^{11}e^5b^5+\frac{1}{2}x^{10}e^4db^5+\frac{1}{2}x^{10}e^5b^4a+\frac{10}{9}x^9e^3d^2b^5+\frac{25}{9}x^9e^4db^4a+\frac{10}{9}x^9e^5b^3a^2+\frac{5}{4}x^8e^2d^3b^5+\frac{25}{4}x^8e^3d^2b^4a+\frac{25}{4}x^8e^4db^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*b^5 + 1/2*x^10*e^4*d*b^5 + 1/2*x^10*e^5*b^4*a + 10/9*x^9*e^3*
d^2*b^5 + 25/9*x^9*e^4*d*b^4*a + 10/9*x^9*e^5*b^3*a^2 + 5/4*x^8*e^2*d^3*b^5
 + 25/4*x^8*e^3*d^2*b^4*a + 25/4*x^8*e^4*d*b^3*a^2 + 5/4*x^8*e^5*b^2*a^3 +
5/7*x^7*e*d^4*b^5 + 50/7*x^7*e^2*d^3*b^4*a + 100/7*x^7*e^3*d^2*b^3*a^2 + 50
/7*x^7*e^4*d*b^2*a^3 + 5/7*x^7*e^5*b*a^4 + 1/6*x^6*d^5*b^5 + 25/6*x^6*e*d^4
*b^4*a + 50/3*x^6*e^2*d^3*b^3*a^2 + 50/3*x^6*e^3*d^2*b^2*a^3 + 25/6*x^6*e^4
*d*b*a^4 + 1/6*x^6*e^5*a^5 + x^5*d^5*b^4*a + 10*x^5*e*d^4*b^3*a^2 + 20*x^5*
e^2*d^3*b^2*a^3 + 10*x^5*e^3*d^2*b*a^4 + x^5*e^4*d*a^5 + 5/2*x^4*d^5*b^3*a^
2 + 25/2*x^4*e*d^4*b^2*a^3 + 25/2*x^4*e^2*d^3*b*a^4 + 5/2*x^4*e^3*d^2*a^5 +
 10/3*x^3*d^5*b^2*a^3 + 25/3*x^3*e*d^4*b*a^4 + 10/3*x^3*e^2*d^3*a^5 + 5/2*x
^2*d^5*b*a^4 + 5/2*x^2*e*d^4*a^5 + x*d^5*a^5
```

giac [B] time = 0.18, size = 470, normalized size = 3.22

$$\frac{1}{11}\,b^5x^{11}e^5+\frac{1}{2}\,b^5dx^{10}e^4+\frac{10}{9}\,b^5d^2x^9e^3+\frac{5}{4}\,b^5d^3x^8e^2+\frac{5}{7}\,b^5d^4x^7e+\frac{1}{6}\,b^5d^5x^6+\frac{1}{2}\,ab^4x^{10}e^5+\frac{25}{9}\,ab^4dx^9e^4+\frac{25}{4}\,ab^4d^2x^8e^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/11*b^5*x^11*e^5 + 1/2*b^5*d*x^10*e^4 + 10/9*b^5*d^2*x^9*e^3 + 5/4*b^5*d^3
*x^8*e^2 + 5/7*b^5*d^4*x^7*e + 1/6*b^5*d^5*x^6 + 1/2*a*b^4*x^10*e^5 + 25/9*
a*b^4*d*x^9*e^4 + 25/4*a*b^4*d^2*x^8*e^3 + 50/7*a*b^4*d^3*x^7*e^2 + 25/6*a*
b^4*d^4*x^6*e + a*b^4*d^5*x^5 + 10/9*a^2*b^3*x^9*e^5 + 25/4*a^2*b^3*d*x^8*e
^4 + 100/7*a^2*b^3*d^2*x^7*e^3 + 50/3*a^2*b^3*d^3*x^6*e^2 + 10*a^2*b^3*d^4*
x^5*e + 5/2*a^2*b^3*d^5*x^4 + 5/4*a^3*b^2*x^8*e^5 + 50/7*a^3*b^2*d*x^7*e^4
+ 50/3*a^3*b^2*d^2*x^6*e^3 + 20*a^3*b^2*d^3*x^5*e^2 + 25/2*a^3*b^2*d^4*x^4*
e + 10/3*a^3*b^2*d^5*x^3 + 5/7*a^4*b*x^7*e^5 + 25/6*a^4*b*d*x^6*e^4 + 10*a^
4*b*d^2*x^5*e^3 + 25/2*a^4*b*d^3*x^4*e^2 + 25/3*a^4*b*d^4*x^3*e + 5/2*a^4*b
*d^5*x^2 + 1/6*a^5*x^6*e^5 + a^5*d*x^5*e^4 + 5/2*a^5*d^2*x^4*e^3 + 10/3*a^5
*d^3*x^3*e^2 + 5/2*a^5*d^4*x^2*e + a^5*d^5*x
```

maple [B] time = 0.04, size = 688, normalized size = 4.71

$$\frac{b^5e^5x^{11}}{11}+a^5d^5x+\frac{\left(4a\,b^4e^5+\left(a\,e^5+5bd\,e^4\right)b^4\right)x^{10}}{10}+\frac{\left(6a^2b^3e^5+4\left(a\,e^5+5bd\,e^4\right)a\,b^3+\left(5ad\,e^4+10b\,d^2e^3\right)b^4\right)x^9}{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/11*b^5*e^5*x^11+1/10*((a*e^5+5*b*d*e^4)*b^4+4*b^4*e^5*a)*x^10+1/9*((5*a*d
*e^4+10*b*d^2*e^3)*b^4+4*(a*e^5+5*b*d*e^4)*a*b^3+6*b^3*e^5*a^2)*x^9+1/8*((1
0*a*d^2*e^3+10*b*d^3*e^2)*b^4+4*(5*a*d*e^4+10*b*d^2*e^3)*a*b^3+6*(a*e^5+5*b
*d*e^4)*a^2*b^2+4*b^2*e^5*a^3)*x^8+1/7*((10*a*d^3*e^2+5*b*d^4*e)*b^4+4*(10*
a*d^2*e^3+10*b*d^3*e^2)*a*b^3+6*(5*a*d*e^4+10*b*d^2*e^3)*a^2*b^2+4*(a*e^5+5
*b*d*e^4)*a^3*b+b*e^5*a^4)*x^7+1/6*((5*a*d^4*e+b*d^5)*b^4+4*(10*a*d^3*e^2+5
*b*d^4*e)*a*b^3+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a^2*b^2+4*(5*a*d*e^4+10*b*d^2
*e^3)*a^3*b+(a*e^5+5*b*d*e^4)*a^4)*x^6+1/5*(a*d^5*b^4+4*(5*a*d^4*e+b*d^5)*a
*b^3+6*(10*a*d^3*e^2+5*b*d^4*e)*a^2*b^2+4*(10*a*d^2*e^3+10*b*d^3*e^2)*a^3*b
+(5*a*d*e^4+10*b*d^2*e^3)*a^4)*x^5+1/4*(4*a^2*d^5*b^3+6*(5*a*d^4*e+b*d^5)*a
^2*b^2+4*(10*a*d^3*e^2+5*b*d^4*e)*a^3*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^4)*x^
4+1/3*(6*a^3*d^5*b^2+4*(5*a*d^4*e+b*d^5)*a^3*b+(10*a*d^3*e^2+5*b*d^4*e)*a^4
)*x^3+1/2*(4*a^4*d^5*b+(5*a*d^4*e+b*d^5)*a^4)*x^2+a^5*d^5*x
```

maxima [B] time = 0.53, size = 427, normalized size = 2.92

$$\frac{1}{11}\,b^{5}e^{5}x^{11}+a^{5}d^{5}x+\frac{1}{2}\left(b^{5}de^{4}+ab^{4}e^{5}\right)x^{10}+\frac{5}{9}\left(2\,b^{5}d^{2}e^{3}+5\,ab^{4}de^{4}+2\,a^{2}b^{3}e^{5}\right)x^{9}+\frac{5}{4}\left(b^{5}d^{3}e^{2}+5\,ab^{4}d^{2}e^{3}+5\,a^{2}b^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/11*b^5*e^5*x^11 + a^5*d^5*x + 1/2*(b^5*d*e^4 + a*b^4*e^5)*x^10 + 5/9*(2*b
^5*d^2*e^3 + 5*a*b^4*d*e^4 + 2*a^2*b^3*e^5)*x^9 + 5/4*(b^5*d^3*e^2 + 5*a*b^
4*d^2*e^3 + 5*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^8 + 5/7*(b^5*d^4*e + 10*a*b^4*
d^3*e^2 + 20*a^2*b^3*d^2*e^3 + 10*a^3*b^2*d*e^4 + a^4*b*e^5)*x^7 + 1/6*(b^5
*d^5 + 25*a*b^4*d^4*e + 100*a^2*b^3*d^3*e^2 + 100*a^3*b^2*d^2*e^3 + 25*a^4*
b*d*e^4 + a^5*e^5)*x^6 + (a*b^4*d^5 + 10*a^2*b^3*d^4*e + 20*a^3*b^2*d^3*e^2
 + 10*a^4*b*d^2*e^3 + a^5*d*e^4)*x^5 + 5/2*(a^2*b^3*d^5 + 5*a^3*b^2*d^4*e +
 5*a^4*b*d^3*e^2 + a^5*d^2*e^3)*x^4 + 5/3*(2*a^3*b^2*d^5 + 5*a^4*b*d^4*e +
2*a^5*d^3*e^2)*x^3 + 5/2*(a^4*b*d^5 + a^5*d^4*e)*x^2
```

mupad [B] time = 2.08, size = 405, normalized size = 2.77

$$x^{6}\left(\frac{a^{5}\,e^{5}}{6}+\frac{25\,a^{4}\,b\,d\,e^{4}}{6}+\frac{50\,a^{3}\,b^{2}\,d^{2}\,e^{3}}{3}+\frac{50\,a^{2}\,b^{3}\,d^{3}\,e^{2}}{3}+\frac{25\,a\,b^{4}\,d^{4}\,e}{6}+\frac{b^{5}\,d^{5}}{6}\right)+x^{5}\,\left(a^{5}\,d\,e^{4}+10\,a^{4}\,b\,d^{2}\,e^{3}+2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^6*((a^5*e^5)/6 + (b^5*d^5)/6 + (50*a^2*b^3*d^3*e^2)/3 + (50*a^3*b^2*d^2*e
^3)/3 + (25*a*b^4*d^4*e)/6 + (25*a^4*b*d*e^4)/6) + x^5*(a*b^4*d^5 + a^5*d*e
^4 + 10*a^2*b^3*d^4*e + 10*a^4*b*d^2*e^3 + 20*a^3*b^2*d^3*e^2) + x^7*((5*a^
4*b*e^5)/7 + (5*b^5*d^4*e)/7 + (50*a*b^4*d^3*e^2)/7 + (50*a^3*b^2*d*e^4)/7
+ (100*a^2*b^3*d^2*e^3)/7) + a^5*d^5*x + (b^5*e^5*x^11)/11 + (5*a^2*d^2*x^4
*(a^3*e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/2 + (5*b^2*e^2*x^8*(a
^3*e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/4 + (5*a^4*d^4*x^2*(a*e
+ b*d))/2 + (b^4*e^4*x^10*(a*e + b*d))/2 + (5*a^3*d^3*x^3*(2*a^2*e^2 + 2*b^
2*d^2 + 5*a*b*d*e))/3 + (5*b^3*e^3*x^9*(2*a^2*e^2 + 2*b^2*d^2 + 5*a*b*d*e))
/9
```

sympy [B] time = 0.15, size = 500, normalized size = 3.42

$$a^{5}d^{5}x+\frac{b^{5}e^{5}x^{11}}{11}+x^{10}\left(\frac{ab^{4}e^{5}}{2}+\frac{b^{5}de^{4}}{2}\right)+x^{9}\left(\frac{10a^{2}b^{3}e^{5}}{9}+\frac{25ab^{4}de^{4}}{9}+\frac{10b^{5}d^{2}e^{3}}{9}\right)+x^{8}\left(\frac{5a^{3}b^{2}e^{5}}{4}+\frac{25a^{2}b^{3}de^{4}}{4}+25$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**5*x + b**5*e**5*x**11/11 + x**10*(a*b**4*e**5/2 + b**5*d*e**4/2) +
x**9*(10*a**2*b**3*e**5/9 + 25*a*b**4*d*e**4/9 + 10*b**5*d**2*e**3/9) + x**
```

```
8*(5*a**3*b**2*e**5/4 + 25*a**2*b**3*d*e**4/4 + 25*a*b**4*d**2*e**3/4 + 5*b
**5*d**3*e**2/4) + x**7*(5*a**4*b*e**5/7 + 50*a**3*b**2*d*e**4/7 + 100*a**2
*b**3*d**2*e**3/7 + 50*a*b**4*d**3*e**2/7 + 5*b**5*d**4*e/7) + x**6*(a**5*e
**5/6 + 25*a**4*b*d*e**4/6 + 50*a**3*b**2*d**2*e**3/3 + 50*a**2*b**3*d**3*e
**2/3 + 25*a*b**4*d**4*e/6 + b**5*d**5/6) + x**5*(a**5*d*e**4 + 10*a**4*b*d
**2*e**3 + 20*a**3*b**2*d**3*e**2 + 10*a**2*b**3*d**4*e + a*b**4*d**5) + x*
*4*(5*a**5*d**2*e**3/2 + 25*a**4*b*d**3*e**2/2 + 25*a**3*b**2*d**4*e/2 + 5*
a**2*b**3*d**5/2) + x**3*(10*a**5*d**3*e**2/3 + 25*a**4*b*d**4*e/3 + 10*a**
3*b**2*d**5/3) + x**2*(5*a**5*d**4*e/2 + 5*a**4*b*d**5/2)
```

3.1907 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=119

$$\frac{4e^3(a+bx)^9(bd-ae)}{9b^5}+\frac{3e^2(a+bx)^8(bd-ae)^2}{4b^5}+\frac{4e(a+bx)^7(bd-ae)^3}{7b^5}+\frac{(a+bx)^6(bd-ae)^4}{6b^5}+\frac{e^4(a+bx)^{10}}{10b^5}$$

```
[Out] 1/6*(-a*e+b*d)^4*(b*x+a)^6/b^5+4/7*e*(-a*e+b*d)^3*(b*x+a)^7/b^5+3/4*e^2*(-a
*e+b*d)^2*(b*x+a)^8/b^5+4/9*e^3*(-a*e+b*d)*(b*x+a)^9/b^5+1/10*e^4*(b*x+a)^1
0/b^5
```

Rubi [A] time = 0.22, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{4e^3(a+bx)^9(bd-ae)}{9b^5}+\frac{3e^2(a+bx)^8(bd-ae)^2}{4b^5}+\frac{4e(a+bx)^7(bd-ae)^3}{7b^5}+\frac{(a+bx)^6(bd-ae)^4}{6b^5}+\frac{e^4(a+bx)^{10}}{10b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^6)/(6*b^5) + (4*e*(b*d - a*e)^3*(a + b*x)^7)/(7*b^
5) + (3*e^2*(b*d - a*e)^2*(a + b*x)^8)/(4*b^5) + (4*e^3*(b*d - a*e)*(a + b*
x)^9)/(9*b^5) + (e^4*(a + b*x)^10)/(10*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^4\,dx\\ &= \int \left(\frac{(bd-ae)^4(a+bx)^5}{b^4}+\frac{4e(bd-ae)^3(a+bx)^6}{b^4}+\frac{6e^2(bd-ae)^2}{b^4}\right.\\ &= \frac{(bd-ae)^4(a+bx)^6}{6b^5}+\frac{4e(bd-ae)^3(a+bx)^7}{7b^5}+\frac{3e^2(bd-ae)^2(a+}{4b^5}\end{aligned}$$

Mathematica [B] time = 0.08, size = 301, normalized size = 2.53

$$x\left(252a^5\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+210a^4bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(252*a^5*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3*x^3 + e^4*x^4) +
 210*a^4*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^3 + 5*e^4*x
^4) + 120*a^3*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^
3 + 15*e^4*x^4) + 45*a^2*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 +
160*d*e^3*x^3 + 35*e^4*x^4) + 10*a*b^4*x^4*(126*d^4 + 420*d^3*e*x + 540*d^2
*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + b^5*x^5*(210*d^4 + 720*d^3*e*x + 9
45*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4)))/1260
```

fricas [B] time = 0.89, size = 396, normalized size = 3.33

$$\frac{1}{10}x^{10}e^4b^5+\frac{4}{9}x^9e^3db^5+\frac{5}{9}x^9e^4b^4a+\frac{3}{4}x^8e^2d^2b^5+\frac{5}{2}x^8e^3db^4a+\frac{5}{4}x^8e^4b^3a^2+\frac{4}{7}x^7ed^3b^5+\frac{30}{7}x^7e^2d^2b^4a+\frac{40}{7}x^7e^3db^3a^2+\frac{10}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*b^5 + 4/9*x^9*e^3*d*b^5 + 5/9*x^9*e^4*b^4*a + 3/4*x^8*e^2*d^2
*b^5 + 5/2*x^8*e^3*d*b^4*a + 5/4*x^8*e^4*b^3*a^2 + 4/7*x^7*e*d^3*b^5 + 30/7
*x^7*e^2*d^2*b^4*a + 40/7*x^7*e^3*d*b^3*a^2 + 10/7*x^7*e^4*b^2*a^3 + 1/6*x^
6*d^4*b^5 + 10/3*x^6*e*d^3*b^4*a + 10*x^6*e^2*d^2*b^3*a^2 + 20/3*x^6*e^3*d*
b^2*a^3 + 5/6*x^6*e^4*b*a^4 + x^5*d^4*b^4*a + 8*x^5*e*d^3*b^3*a^2 + 12*x^5*
e^2*d^2*b^2*a^3 + 4*x^5*e^3*d*b*a^4 + 1/5*x^5*e^4*a^5 + 5/2*x^4*d^4*b^3*a^2
 + 10*x^4*e*d^3*b^2*a^3 + 15/2*x^4*e^2*d^2*b*a^4 + x^4*e^3*d*a^5 + 10/3*x^3
*d^4*b^2*a^3 + 20/3*x^3*e*d^3*b*a^4 + 2*x^3*e^2*d^2*a^5 + 5/2*x^2*d^4*b*a^4
 + 2*x^2*e*d^3*a^5 + x*d^4*a^5
```

giac [B] time = 0.16, size = 384, normalized size = 3.23

$$\frac{1}{10}b^5x^{10}e^4+\frac{4}{9}b^5dx^9e^3+\frac{3}{4}b^5d^2x^8e^2+\frac{4}{7}b^5d^3x^7e+\frac{1}{6}b^5d^4x^6+\frac{5}{9}ab^4x^9e^4+\frac{5}{2}ab^4dx^8e^3+\frac{30}{7}ab^4d^2x^7e^2+\frac{10}{3}ab^4d^3x^6e+a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/10*b^5*x^10*e^4 + 4/9*b^5*d*x^9*e^3 + 3/4*b^5*d^2*x^8*e^2 + 4/7*b^5*d^3*x
^7*e + 1/6*b^5*d^4*x^6 + 5/9*a*b^4*x^9*e^4 + 5/2*a*b^4*d*x^8*e^3 + 30/7*a*b
^4*d^2*x^7*e^2 + 10/3*a*b^4*d^3*x^6*e + a*b^4*d^4*x^5 + 5/4*a^2*b^3*x^8*e^4
 + 40/7*a^2*b^3*d*x^7*e^3 + 10*a^2*b^3*d^2*x^6*e^2 + 8*a^2*b^3*d^3*x^5*e +
5/2*a^2*b^3*d^4*x^4 + 10/7*a^3*b^2*x^7*e^4 + 20/3*a^3*b^2*d*x^6*e^3 + 12*a^
3*b^2*d^2*x^5*e^2 + 10*a^3*b^2*d^3*x^4*e + 10/3*a^3*b^2*d^4*x^3 + 5/6*a^4*b
*x^6*e^4 + 4*a^4*b*d*x^5*e^3 + 15/2*a^4*b*d^2*x^4*e^2 + 20/3*a^4*b*d^3*x^3*
e + 5/2*a^4*b*d^4*x^2 + 1/5*a^5*x^5*e^4 + a^5*d*x^4*e^3 + 2*a^5*d^2*x^3*e^2
 + 2*a^5*d^3*x^2*e + a^5*d^4*x
```

maple [B] time = 0.04, size = 559, normalized size = 4.70

$$\frac{b^5e^4x^{10}}{10}+a^5d^4x+\frac{\left(4a\,b^4e^4+\left(a\,e^4+4bd\,e^3\right)b^4\right)x^9}{9}+\frac{\left(6a^2b^3e^4+4\left(a\,e^4+4bd\,e^3\right)a\,b^3+\left(4ad\,e^3+6b\,d^2e^2\right)b^4\right)x^8}{8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/10*b^5*e^4*x^10+1/9*((a*e^4+4*b*d*e^3)*b^4+4*b^4*e^4*a)*x^9+1/8*((4*a*d*e
^3+6*b*d^2*e^2)*b^4+4*(a*e^4+4*b*d*e^3)*a*b^3+6*b^3*e^4*a^2)*x^8+1/7*((6*a*
d^2*e^2+4*b*d^3*e)*b^4+4*(4*a*d*e^3+6*b*d^2*e^2)*a*b^3+6*(a*e^4+4*b*d*e^3)*
a^2*b^2+4*b^2*e^4*a^3)*x^7+1/6*((4*a*d^3*e+b*d^4)*b^4+4*(6*a*d^2*e^2+4*b*d^
3*e)*a*b^3+6*(4*a*d*e^3+6*b*d^2*e^2)*a^2*b^2+4*(a*e^4+4*b*d*e^3)*a^3*b+e^4*
a^4*b)*x^6+1/5*(a*d^4*b^4+4*(4*a*d^3*e+b*d^4)*a*b^3+6*(6*a*d^2*e^2+4*b*d^3*
e)*a^2*b^2+4*(4*a*d*e^3+6*b*d^2*e^2)*a^3*b+(a*e^4+4*b*d*e^3)*a^4)*x^5+1/4*(
4*a^2*d^4*b^3+6*(4*a*d^3*e+b*d^4)*a^2*b^2+4*(6*a*d^2*e^2+4*b*d^3*e)*a^3*b+(
4*a*d*e^3+6*b*d^2*e^2)*a^4)*x^4+1/3*(6*a^3*d^4*b^2+4*(4*a*d^3*e+b*d^4)*a^3*
b+(6*a*d^2*e^2+4*b*d^3*e)*a^4)*x^3+1/2*(4*a^4*d^4*b+(4*a*d^3*e+b*d^4)*a^4)*
x^2+a^5*d^4*x
```

maxima [B] time = 0.64, size = 360, normalized size = 3.03

$$\frac{1}{10}\,b^5e^4x^{10}+a^5d^4x+\frac{1}{9}\,\big(4\,b^5de^3+5\,ab^4e^4\big)x^9+\frac{1}{4}\,\big(3\,b^5d^2e^2+10\,ab^4de^3+5\,a^2b^3e^4\big)x^8+\frac{2}{7}\,\big(2\,b^5d^3e+15\,ab^4d^2e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/10*b^5*e^4*x^10 + a^5*d^4*x + 1/9*(4*b^5*d*e^3 + 5*a*b^4*e^4)*x^9 + 1/4*(
3*b^5*d^2*e^2 + 10*a*b^4*d*e^3 + 5*a^2*b^3*e^4)*x^8 + 2/7*(2*b^5*d^3*e + 15
*a*b^4*d^2*e^2 + 20*a^2*b^3*d*e^3 + 5*a^3*b^2*e^4)*x^7 + 1/6*(b^5*d^4 + 20*
a*b^4*d^3*e + 60*a^2*b^3*d^2*e^2 + 40*a^3*b^2*d*e^3 + 5*a^4*b*e^4)*x^6 + 1/
5*(5*a*b^4*d^4 + 40*a^2*b^3*d^3*e + 60*a^3*b^2*d^2*e^2 + 20*a^4*b*d*e^3 + a
^5*e^4)*x^5 + 1/2*(5*a^2*b^3*d^4 + 20*a^3*b^2*d^3*e + 15*a^4*b*d^2*e^2 + 2*
a^5*d*e^3)*x^4 + 2/3*(5*a^3*b^2*d^4 + 10*a^4*b*d^3*e + 3*a^5*d^2*e^2)*x^3 +
 1/2*(5*a^4*b*d^4 + 4*a^5*d^3*e)*x^2
```

mupad [B] time = 2.07, size = 340, normalized size = 2.86

$$x^4\,\left(a^5\,d\,e^3+\frac{15\,a^4\,b\,d^2\,e^2}{2}+10\,a^3\,b^2\,d^3\,e+\frac{5\,a^2\,b^3\,d^4}{2}\right)+x^7\,\left(\frac{10\,a^3\,b^2\,e^4}{7}+\frac{40\,a^2\,b^3\,d\,e^3}{7}+\frac{30\,a\,b^4\,d^2\,e^2}{7}+\frac{4\,b^5\,d^3}{7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^4*(a^5*d*e^3 + (5*a^2*b^3*d^4)/2 + 10*a^3*b^2*d^3*e + (15*a^4*b*d^2*e^2)/
2) + x^7*((4*b^5*d^3*e)/7 + (10*a^3*b^2*e^4)/7 + (30*a*b^4*d^2*e^2)/7 + (40
*a^2*b^3*d*e^3)/7) + x^5*((a^5*e^4)/5 + a*b^4*d^4 + 8*a^2*b^3*d^3*e + 12*a^
3*b^2*d^2*e^2 + 4*a^4*b*d*e^3) + x^6*((b^5*d^4)/6 + (5*a^4*b*e^4)/6 + (20*a
^3*b^2*d*e^3)/3 + 10*a^2*b^3*d^2*e^2 + (10*a*b^4*d^3*e)/3) + a^5*d^4*x + (b
^5*e^4*x^10)/10 + (a^4*d^3*x^2*(4*a*e + 5*b*d))/2 + (b^4*e^3*x^9*(5*a*e + 4
*b*d))/9 + (2*a^3*d^2*x^3*(3*a^2*e^2 + 5*b^2*d^2 + 10*a*b*d*e))/3 + (b^3*e^
2*x^8*(5*a^2*e^2 + 3*b^2*d^2 + 10*a*b*d*e))/4
```

sympy [B] time = 0.14, size = 401, normalized size = 3.37

$$a^5d^4x+\frac{b^5e^4x^{10}}{10}+x^9\left(\frac{5ab^4e^4}{9}+\frac{4b^5de^3}{9}\right)+x^8\left(\frac{5a^2b^3e^4}{4}+\frac{5ab^4de^3}{2}+\frac{3b^5d^2e^2}{4}\right)+x^7\left(\frac{10a^3b^2e^4}{7}+\frac{40a^2b^3de^3}{7}+\frac{30a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**4*x + b**5*e**4*x**10/10 + x**9*(5*a*b**4*e**4/9 + 4*b**5*d*e**3/9)
 + x**8*(5*a**2*b**3*e**4/4 + 5*a*b**4*d*e**3/2 + 3*b**5*d**2*e**2/4) + x**
7*(10*a**3*b**2*e**4/7 + 40*a**2*b**3*d*e**3/7 + 30*a*b**4*d**2*e**2/7 + 4*
b**5*d**3*e/7) + x**6*(5*a**4*b*e**4/6 + 20*a**3*b**2*d*e**3/3 + 10*a**2*b*
*3*d**2*e**2 + 10*a*b**4*d**3*e/3 + b**5*d**4/6) + x**5*(a**5*e**4/5 + 4*a*
*4*b*d*e**3 + 12*a**3*b**2*d**2*e**2 + 8*a**2*b**3*d**3*e + a*b**4*d**4) +
x**4*(a**5*d*e**3 + 15*a**4*b*d**2*e**2/2 + 10*a**3*b**2*d**3*e + 5*a**2*b*
*3*d**4/2) + x**3*(2*a**5*d**2*e**2 + 20*a**4*b*d**3*e/3 + 10*a**3*b**2*d**
4/3) + x**2*(2*a**5*d**3*e + 5*a**4*b*d**4/2)
```

3.1908 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^2 \, dx$

Optimal. Leaf size=92

$$\frac{3e^2(a+bx)^8(bd-ae)}{8b^4}+\frac{3e(a+bx)^7(bd-ae)^2}{7b^4}+\frac{(a+bx)^6(bd-ae)^3}{6b^4}+\frac{e^3(a+bx)^9}{9b^4}$$

```
[Out] 1/6*(-a*e+b*d)^3*(b*x+a)^6/b^4+3/7*e*(-a*e+b*d)^2*(b*x+a)^7/b^4+3/8*e^2*(-a
*e+b*d)*(b*x+a)^8/b^4+1/9*e^3*(b*x+a)^9/b^4
```

Rubi [A] time = 0.15, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{3e^2(a+bx)^8(bd-ae)}{8b^4}+\frac{3e(a+bx)^7(bd-ae)^2}{7b^4}+\frac{(a+bx)^6(bd-ae)^3}{6b^4}+\frac{e^3(a+bx)^9}{9b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^6)/(6*b^4) + (3*e*(b*d - a*e)^2*(a + b*x)^7)/(7*b^
4) + (3*e^2*(b*d - a*e)*(a + b*x)^8)/(8*b^4) + (e^3*(a + b*x)^9)/(9*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^3\,dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^5}{b^3}+\frac{3e(bd-ae)^2(a+bx)^6}{b^3}+\frac{3e^2(bd-ae)(a+}{b^3}\right.\\ &= \frac{(bd-ae)^3(a+bx)^6}{6b^4}+\frac{3e(bd-ae)^2(a+bx)^7}{7b^4}+\frac{3e^2(bd-ae)(a+bx}{8b^4}\end{aligned}$$

Mathematica [B] time = 0.07, size = 235, normalized size = 2.55

$$\frac{1}{504}x\left(126a^5\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+126a^4bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+84a^3b^2x^2\left(20d^3+4\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (x*(126*a^5*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) + 126*a^4*b*x*(10*d
^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 84*a^3*b^2*x^2*(20*d^3 + 45*d
^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 36*a^2*b^3*x^3*(35*d^3 + 84*d^2*e*x +
 70*d*e^2*x^2 + 20*e^3*x^3) + 9*a*b^4*x^4*(56*d^3 + 140*d^2*e*x + 120*d*e^2
*x^2 + 35*e^3*x^3) + b^5*x^5*(84*d^3 + 216*d^2*e*x + 189*d*e^2*x^2 + 56*e^3
*x^3)))/504
```

fricas [**B**] time = 0.57, size = 303, normalized size = 3.29

$$\frac{1}{9}x^9e^3b^5+\frac{3}{8}x^8e^2db^5+\frac{5}{8}x^8e^3b^4a+\frac{3}{7}x^7ed^2b^5+\frac{15}{7}x^7e^2db^4a+\frac{10}{7}x^7e^3b^3a^2+\frac{1}{6}x^6d^3b^5+\frac{5}{2}x^6ed^2b^4a+5x^6e^2db^3a^2+\frac{5}{3}x^6e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*b^5 + 3/8*x^8*e^2*d*b^5 + 5/8*x^8*e^3*b^4*a + 3/7*x^7*e*d^2*b^5
 + 15/7*x^7*e^2*d*b^4*a + 10/7*x^7*e^3*b^3*a^2 + 1/6*x^6*d^3*b^5 + 5/2*x^6*
e*d^2*b^4*a + 5*x^6*e^2*d*b^3*a^2 + 5/3*x^6*e^3*b^2*a^3 + x^5*d^3*b^4*a + 6
*x^5*e*d^2*b^3*a^2 + 6*x^5*e^2*d*b^2*a^3 + x^5*e^3*b*a^4 + 5/2*x^4*d^3*b^3*
a^2 + 15/2*x^4*e*d^2*b^2*a^3 + 15/4*x^4*e^2*d*b*a^4 + 1/4*x^4*e^3*a^5 + 10/
3*x^3*d^3*b^2*a^3 + 5*x^3*e*d^2*b*a^4 + x^3*e^2*d*a^5 + 5/2*x^2*d^3*b*a^4 +
 3/2*x^2*e*d^2*a^5 + x*d^3*a^5
```

giac [**B**] time = 0.17, size = 297, normalized size = 3.23

$$\frac{1}{9}b^5x^9e^3+\frac{3}{8}b^5dx^8e^2+\frac{3}{7}b^5d^2x^7e+\frac{1}{6}b^5d^3x^6+\frac{5}{8}ab^4x^8e^3+\frac{15}{7}ab^4dx^7e^2+\frac{5}{2}ab^4d^2x^6e+ab^4d^3x^5+\frac{10}{7}a^2b^3x^7e^3+5a^2b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/9*b^5*x^9*e^3 + 3/8*b^5*d*x^8*e^2 + 3/7*b^5*d^2*x^7*e + 1/6*b^5*d^3*x^6 +
 5/8*a*b^4*x^8*e^3 + 15/7*a*b^4*d*x^7*e^2 + 5/2*a*b^4*d^2*x^6*e + a*b^4*d^3
*x^5 + 10/7*a^2*b^3*x^7*e^3 + 5*a^2*b^3*d*x^6*e^2 + 6*a^2*b^3*d^2*x^5*e + 5
/2*a^2*b^3*d^3*x^4 + 5/3*a^3*b^2*x^6*e^3 + 6*a^3*b^2*d*x^5*e^2 + 15/2*a^3*b
^2*d^2*x^4*e + 10/3*a^3*b^2*d^3*x^3 + a^4*b*x^5*e^3 + 15/4*a^4*b*d*x^4*e^2
+ 5*a^4*b*d^2*x^3*e + 5/2*a^4*b*d^3*x^2 + 1/4*a^5*x^4*e^3 + a^5*d*x^3*e^2 +
 3/2*a^5*d^2*x^2*e + a^5*d^3*x
```

maple [**B**] time = 0.04, size = 430, normalized size = 4.67

$$\frac{b^5e^3x^9}{9}+a^5d^3x+\frac{\left(4a\,b^4e^3+\left(a\,e^3+3bd\,e^2\right)b^4\right)x^8}{8}+\frac{\left(6a^2b^3e^3+4\left(a\,e^3+3bd\,e^2\right)a\,b^3+\left(3ad\,e^2+3b\,d^2e\right)b^4\right)x^7}{7}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/9*b^5*e^3*x^9+1/8*((a*e^3+3*b*d*e^2)*b^4+4*b^4*e^3*a)*x^8+1/7*((3*a*d*e^2
+3*b*d^2*e)*b^4+4*(a*e^3+3*b*d*e^2)*a*b^3+6*b^3*e^3*a^2)*x^7+1/6*((3*a*d^2*
e+b*d^3)*b^4+4*(3*a*d*e^2+3*b*d^2*e)*a*b^3+6*(a*e^3+3*b*d*e^2)*a^2*b^2+4*b^
2*e^3*a^3)*x^6+1/5*(a*d^3*b^4+4*(3*a*d^2*e+b*d^3)*a*b^3+6*(3*a*d*e^2+3*b*d^
2*e)*a^2*b^2+4*(a*e^3+3*b*d*e^2)*a^3*b+b*e^3*a^4)*x^5+1/4*(4*a^2*d^3*b^3+6*
(3*a*d^2*e+b*d^3)*a^2*b^2+4*(3*a*d*e^2+3*b*d^2*e)*a^3*b+(a*e^3+3*b*d*e^2)*a
^4)*x^4+1/3*(6*a^3*d^3*b^2+4*(3*a*d^2*e+b*d^3)*a^3*b+(3*a*d*e^2+3*b*d^2*e)*
a^4)*x^3+1/2*(4*a^4*d^3*b+(3*a*d^2*e+b*d^3)*a^4)*x^2+a^5*d^3*x
```

maxima [**B**] time = 0.61, size = 277, normalized size = 3.01

$$\frac{1}{9}\,b^5e^3x^9+a^5d^3x+\frac{1}{8}\left(3\,b^5de^2+5\,ab^4e^3\right)x^8+\frac{1}{7}\left(3\,b^5d^2e+15\,ab^4de^2+10\,a^2b^3e^3\right)x^7+\frac{1}{6}\left(b^5d^3+15\,ab^4d^2e+30\,a^2b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/9*b^5*e^3*x^9 + a^5*d^3*x + 1/8*(3*b^5*d*e^2 + 5*a*b^4*e^3)*x^8 + 1/7*(3*
b^5*d^2*e + 15*a*b^4*d*e^2 + 10*a^2*b^3*e^3)*x^7 + 1/6*(b^5*d^3 + 15*a*b^4*
d^2*e + 30*a^2*b^3*d*e^2 + 10*a^3*b^2*e^3)*x^6 + (a*b^4*d^3 + 6*a^2*b^3*d^2
*e + 6*a^3*b^2*d*e^2 + a^4*b*e^3)*x^5 + 1/4*(10*a^2*b^3*d^3 + 30*a^3*b^2*d^
2*e + 15*a^4*b*d*e^2 + a^5*e^3)*x^4 + 1/3*(10*a^3*b^2*d^3 + 15*a^4*b*d^2*e
+ 3*a^5*d*e^2)*x^3 + 1/2*(5*a^4*b*d^3 + 3*a^5*d^2*e)*x^2
```

mupad [**B**] time = 0.10, size = 261, normalized size = 2.84

$$x^5 \left(a^4\,b\,e^3 + 6\,a^3\,b^2\,d\,e^2 + 6\,a^2\,b^3\,d^2\,e + a\,b^4\,d^3\right) + x^4 \left(\frac{a^5\,e^3}{4} + \frac{15\,a^4\,b\,d\,e^2}{4} + \frac{15\,a^3\,b^2\,d^2\,e}{2} + \frac{5\,a^2\,b^3\,d^3}{2}\right) + x^6 \Bigg(\frac{5\,a^3\,b^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^5*(a*b^4*d^3 + a^4*b*e^3 + 6*a^2*b^3*d^2*e + 6*a^3*b^2*d*e^2) + x^4*((a^5
*e^3)/4 + (5*a^2*b^3*d^3)/2 + (15*a^3*b^2*d^2*e)/2 + (15*a^4*b*d*e^2)/4) +
x^6*((b^5*d^3)/6 + (5*a^3*b^2*e^3)/3 + 5*a^2*b^3*d*e^2 + (5*a*b^4*d^2*e)/2)
 + a^5*d^3*x + (b^5*e^3*x^9)/9 + (a^4*d^2*x^2*(3*a*e + 5*b*d))/2 + (b^4*e^2
*x^8*(5*a*e + 3*b*d))/8 + (a^3*d*x^3*(3*a^2*e^2 + 10*b^2*d^2 + 15*a*b*d*e))
/3 + (b^3*e*x^7*(10*a^2*e^2 + 3*b^2*d^2 + 15*a*b*d*e))/7
```

sympy [**B**] time = 0.12, size = 308, normalized size = 3.35

$$a^5d^3x + \frac{b^5e^3x^9}{9} + x^8\left(\frac{5ab^4e^3}{8} + \frac{3b^5de^2}{8}\right) + x^7\left(\frac{10a^2b^3e^3}{7} + \frac{15ab^4de^2}{7} + \frac{3b^5d^2e}{7}\right) + x^6\Bigg(\frac{5a^3b^2e^3}{3} + 5a^2b^3de^2 + \frac{5ab^4d^2e}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**3*x + b**5*e**3*x**9/9 + x**8*(5*a*b**4*e**3/8 + 3*b**5*d*e**2/8) +
 x**7*(10*a**2*b**3*e**3/7 + 15*a*b**4*d*e**2/7 + 3*b**5*d**2*e/7) + x**6*(
5*a**3*b**2*e**3/3 + 5*a**2*b**3*d*e**2 + 5*a*b**4*d**2*e/2 + b**5*d**3/6)
+ x**5*(a**4*b*e**3 + 6*a**3*b**2*d*e**2 + 6*a**2*b**3*d**2*e + a*b**4*d**3
) + x**4*(a**5*e**3/4 + 15*a**4*b*d*e**2/4 + 15*a**3*b**2*d**2*e/2 + 5*a**2
*b**3*d**3/2) + x**3*(a**5*d*e**2 + 5*a**4*b*d**2*e + 10*a**3*b**2*d**3/3)
+ x**2*(3*a**5*d**2*e/2 + 5*a**4*b*d**3/2)
```

3.1909 $\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^7(bd-ae)}{7b^3}+\frac{(a+bx)^6(bd-ae)^2}{6b^3}+\frac{e^2(a+bx)^8}{8b^3}$$

```
[Out] 1/6*(-a*e+b*d)^2*(b*x+a)^6/b^3+2/7*e*(-a*e+b*d)*(b*x+a)^7/b^3+1/8*e^2*(b*x+
a)^8/b^3
```

Rubi [A] time = 0.11, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 43\}$

$$\frac{2e(a+bx)^7(bd-ae)}{7b^3}+\frac{(a+bx)^6(bd-ae)^2}{6b^3}+\frac{e^2(a+bx)^8}{8b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^6)/(6*b^3) + (2*e*(b*d - a*e)*(a + b*x)^7)/(7*b^3)
 + (e^2*(a + b*x)^8)/(8*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^2\,dx\\ &= \int \left(\frac{(bd-ae)^2(a+bx)^5}{b^2}+\frac{2e(bd-ae)(a+bx)^6}{b^2}+\frac{e^2(a+bx)^7}{b^2}\right)\\ &= \frac{(bd-ae)^2(a+bx)^6}{6b^3}+\frac{2e(bd-ae)(a+bx)^7}{7b^3}+\frac{e^2(a+bx)^8}{8b^3}\end{aligned}$$

Mathematica [B] time = 0.03, size = 189, normalized size = 2.91

$$a^5d^2x+\frac{1}{2}a^4dx^2(2ae+5bd)+ab^2x^5\left(2a^2e^2+4abde+b^2d^2\right)+\frac{5}{4}a^2bx^4\left(a^2e^2+4abde+2b^2d^2\right)+\frac{1}{6}b^3x^6\left(10a^2e^2+10\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d^2*x + (a^4*d*(5*b*d + 2*a*e)*x^2)/2 + (a^3*(10*b^2*d^2 + 10*a*b*d*e +
 a^2*e^2)*x^3)/3 + (5*a^2*b*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2)*x^4)/4 + a*b^
```

```
2*(b^2*d^2 + 4*a*b*d*e + 2*a^2*e^2)*x^5 + (b^3*(b^2*d^2 + 10*a*b*d*e + 10*a
^2*e^2)*x^6)/6 + (b^4*e*(2*b*d + 5*a*e)*x^7)/7 + (b^5*e^2*x^8)/8
```

fricas [B] time = 0.60, size = 212, normalized size = 3.26

$$\frac{1}{8}x^8e^2b^5+\frac{2}{7}x^7edb^5+\frac{5}{7}x^7e^2b^4a+\frac{1}{6}x^6d^2b^5+\frac{5}{3}x^6edb^4a+\frac{5}{3}x^6e^2b^3a^2+x^5d^2b^4a+4x^5edb^3a^2+2x^5e^2b^2a^3+\frac{5}{2}x^4d^2b^3a^2+5x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*b^5 + 2/7*x^7*e*d*b^5 + 5/7*x^7*e^2*b^4*a + 1/6*x^6*d^2*b^5 + 5
/3*x^6*e*d*b^4*a + 5/3*x^6*e^2*b^3*a^2 + x^5*d^2*b^4*a + 4*x^5*e*d*b^3*a^2
+ 2*x^5*e^2*b^2*a^3 + 5/2*x^4*d^2*b^3*a^2 + 5*x^4*e*d*b^2*a^3 + 5/4*x^4*e^2
*b*a^4 + 10/3*x^3*d^2*b^2*a^3 + 10/3*x^3*e*d*b*a^4 + 1/3*x^3*e^2*a^5 + 5/2*
x^2*d^2*b*a^4 + x^2*e*d*a^5 + x*d^2*a^5
```

giac [B] time = 0.16, size = 212, normalized size = 3.26

$$\frac{1}{8}b^5x^8e^2+\frac{2}{7}b^5dx^7e+\frac{1}{6}b^5d^2x^6+\frac{5}{7}ab^4x^7e^2+\frac{5}{3}ab^4dx^6e+ab^4d^2x^5+\frac{5}{3}a^2b^3x^6e^2+4a^2b^3dx^5e+\frac{5}{2}a^2b^3d^2x^4+2a^3b^2x^5e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/8*b^5*x^8*e^2 + 2/7*b^5*d*x^7*e + 1/6*b^5*d^2*x^6 + 5/7*a*b^4*x^7*e^2 + 5
/3*a*b^4*d*x^6*e + a*b^4*d^2*x^5 + 5/3*a^2*b^3*x^6*e^2 + 4*a^2*b^3*d*x^5*e
+ 5/2*a^2*b^3*d^2*x^4 + 2*a^3*b^2*x^5*e^2 + 5*a^3*b^2*d*x^4*e + 10/3*a^3*b^
2*d^2*x^3 + 5/4*a^4*b*x^4*e^2 + 10/3*a^4*b*d*x^3*e + 5/2*a^4*b*d^2*x^2 + 1/
3*a^5*x^3*e^2 + a^5*d*x^2*e + a^5*d^2*x
```

maple [B] time = 0.05, size = 301, normalized size = 4.63

$$\frac{b^5e^2x^8}{8}+a^5d^2x+\frac{\left(4a\,b^4e^2+\left(a\,e^2+2bde\right)b^4\right)x^7}{7}+\frac{\left(6a^2b^3e^2+4\left(a\,e^2+2bde\right)a\,b^3+\left(2ade+b\,d^2\right)b^4\right)x^6}{6}+\left(4a^3b^2e^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/8*b^5*e^2*x^8+1/7*((a*e^2+2*b*d*e)*b^4+4*b^4*e^2*a)*x^7+1/6*((2*a*d*e+b*d
^2)*b^4+4*(a*e^2+2*b*d*e)*a*b^3+6*a^2*b^3*e^2)*x^6+1/5*(a*d^2*b^4+4*(2*a*d*
e+b*d^2)*a*b^3+6*(a*e^2+2*b*d*e)*a^2*b^2+4*b^2*e^2*a^3)*x^5+1/4*(4*a^2*d^2*
b^3+6*(2*a*d*e+b*d^2)*a^2*b^2+4*(a*e^2+2*b*d*e)*a^3*b+b*e^2*a^4)*x^4+1/3*(6
*a^3*d^2*b^2+4*(2*a*d*e+b*d^2)*a^3*b+(a*e^2+2*b*d*e)*a^4)*x^3+1/2*(4*a^4*d^
2*b+(2*a*d*e+b*d^2)*a^4)*x^2+a^5*d^2*x
```

maxima [B] time = 0.63, size = 197, normalized size = 3.03

$$\frac{1}{8}b^5e^2x^8+a^5d^2x+\frac{1}{7}\left(2\,b^5de+5\,ab^4e^2\right)x^7+\frac{1}{6}\left(b^5d^2+10\,ab^4de+10\,a^2b^3e^2\right)x^6+\left(ab^4d^2+4\,a^2b^3de+2\,a^3b^2e^2\right)x^5+\frac{5}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/8*b^5*e^2*x^8 + a^5*d^2*x + 1/7*(2*b^5*d*e + 5*a*b^4*e^2)*x^7 + 1/6*(b^5*
d^2 + 10*a*b^4*d*e + 10*a^2*b^3*e^2)*x^6 + (a*b^4*d^2 + 4*a^2*b^3*d*e + 2*a
^3*b^2*e^2)*x^5 + 5/4*(2*a^2*b^3*d^2 + 4*a^3*b^2*d*e + a^4*b*e^2)*x^4 + 1/3
*(10*a^3*b^2*d^2 + 10*a^4*b*d*e + a^5*e^2)*x^3 + 1/2*(5*a^4*b*d^2 + 2*a^5*d
*e)*x^2
```

mupad [B] time = 0.08, size = 181, normalized size = 2.78

$$x^3\left(\frac{a^5\,e^2}{3}+\frac{10\,a^4\,b\,d\,e}{3}+\frac{10\,a^3\,b^2\,d^2}{3}\right)+x^6\left(\frac{5\,a^2\,b^3\,e^2}{3}+\frac{5\,a\,b^4\,d\,e}{3}+\frac{b^5\,d^2}{6}\right)+a^5\,d^2\,x+\frac{b^5\,e^2\,x^8}{8}+\frac{a^4\,d\,x^2\,(2\,a\,e+5\,b}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^3*((a^5*e^2)/3 + (10*a^3*b^2*d^2)/3 + (10*a^4*b*d*e)/3) + x^6*((b^5*d^2)/
6 + (5*a^2*b^3*e^2)/3 + (5*a*b^4*d*e)/3) + a^5*d^2*x + (b^5*e^2*x^8)/8 + (a
^4*d*x^2*(2*a*e + 5*b*d))/2 + (b^4*e*x^7*(5*a*e + 2*b*d))/7 + (5*a^2*b*x^4*
(a^2*e^2 + 2*b^2*d^2 + 4*a*b*d*e))/4 + a*b^2*x^5*(2*a^2*e^2 + b^2*d^2 + 4*a
*b*d*e)
```

sympy [B] time = 0.11, size = 218, normalized size = 3.35

$$a^5d^2x+\frac{b^5e^2x^8}{8}+x^7\left(\frac{5ab^4e^2}{7}+\frac{2b^5de}{7}\right)+x^6\left(\frac{5a^2b^3e^2}{3}+\frac{5ab^4de}{3}+\frac{b^5d^2}{6}\right)+x^5\left(2a^3b^2e^2+4a^2b^3de+ab^4d^2\right)+x^4\left(\frac{5a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**2*x + b**5*e**2*x**8/8 + x**7*(5*a*b**4*e**2/7 + 2*b**5*d*e/7) + x*
*6*(5*a**2*b**3*e**2/3 + 5*a*b**4*d*e/3 + b**5*d**2/6) + x**5*(2*a**3*b**2*
e**2 + 4*a**2*b**3*d*e + a*b**4*d**2) + x**4*(5*a**4*b*e**2/4 + 5*a**3*b**2
*d*e + 5*a**2*b**3*d**2/2) + x**3*(a**5*e**2/3 + 10*a**4*b*d*e/3 + 10*a**3*
b**2*d**2/3) + x**2*(a**5*d*e + 5*a**4*b*d**2/2)
```

3.1910 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^6(bd-ae)}{6b^2}+\frac{e(a+bx)^7}{7b^2}$$

```
[Out] 1/6*(-a*e+b*d)*(b*x+a)^6/b^2+1/7*e*(b*x+a)^7/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$\frac{(a+bx)^6(bd-ae)}{6b^2}+\frac{e(a+bx)^7}{7b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^6)/(6*b^2) + (e*(a + b*x)^7)/(7*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)\,dx\\
&= \int \left(\frac{(bd-ae)(a+bx)^5}{b}+\frac{e(a+bx)^6}{b}\right)dx\\
&= \frac{(bd-ae)(a+bx)^6}{6b^2}+\frac{e(a+bx)^7}{7b^2}
\end{aligned}$$

Mathematica [B] time = 0.02, size = 109, normalized size = 2.87

$$a^5dx+\frac{1}{2}a^4x^2(ae+5bd)+\frac{5}{3}a^3bx^3(ae+2bd)+\frac{5}{2}a^2b^2x^4(ae+bd)+\frac{1}{6}b^4x^6(5ae+bd)+ab^3x^5(2ae+bd)+\frac{1}{7}b^5ex^7$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] a^5*d*x + (a^4*(5*b*d + a*e)*x^2)/2 + (5*a^3*b*(2*b*d + a*e)*x^3)/3 + (5*a^
2*b^2*(b*d + a*e)*x^4)/2 + a*b^3*(b*d + 2*a*e)*x^5 + (b^4*(b*d + 5*a*e)*x^6
)/6 + (b^5*e*x^7)/7
```

fricas [B] time = 1.03, size = 121, normalized size = 3.18

$$\frac{1}{7}x^7eb^5+\frac{1}{6}x^6db^5+\frac{5}{6}x^6eb^4a+x^5db^4a+2x^5eb^3a^2+\frac{5}{2}x^4db^3a^2+\frac{5}{2}x^4eb^2a^3+\frac{10}{3}x^3db^2a^3+\frac{5}{3}x^3eba^4+\frac{5}{2}x^2dba^4+\frac{1}{2}x^2ea^5+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*b^5 + 1/6*x^6*d*b^5 + 5/6*x^6*e*b^4*a + x^5*d*b^4*a + 2*x^5*e*b^3
*a^2 + 5/2*x^4*d*b^3*a^2 + 5/2*x^4*e*b^2*a^3 + 10/3*x^3*d*b^2*a^3 + 5/3*x^3
*e*b*a^4 + 5/2*x^2*d*b*a^4 + 1/2*x^2*e*a^5 + x*d*a^5
```

giac [B] time = 0.15, size = 127, normalized size = 3.34

$$\frac{1}{7}\,b^5x^7e+\frac{1}{6}\,b^5dx^6+\frac{5}{6}\,ab^4x^6e+ab^4dx^5+2\,a^2b^3x^5e+\frac{5}{2}\,a^2b^3dx^4+\frac{5}{2}\,a^3b^2x^4e+\frac{10}{3}\,a^3b^2dx^3+\frac{5}{3}\,a^4bx^3e+\frac{5}{2}\,a^4bdx^2+\frac{1}{2}\,a^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/7*b^5*x^7*e + 1/6*b^5*d*x^6 + 5/6*a*b^4*x^6*e + a*b^4*d*x^5 + 2*a^2*b^3*x
^5*e + 5/2*a^2*b^3*d*x^4 + 5/2*a^3*b^2*x^4*e + 10/3*a^3*b^2*d*x^3 + 5/3*a^4
*b*x^3*e + 5/2*a^4*b*d*x^2 + 1/2*a^5*x^2*e + a^5*d*x
```

maple [B] time = 0.04, size = 172, normalized size = 4.53

$$\frac{b^5e\,x^7}{7}+a^5dx+\frac{\left(4a\,b^4e+(ae+bd)\,b^4\right)x^6}{6}+\frac{\left(6a^2b^3e+a\,b^4d+4\,(ae+bd)\,a\,b^3\right)x^5}{5}+\frac{\left(4a^3b^2e+4a^2b^3d+6\,(ae+b\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/7*b^5*e*x^7+1/6*((a*e+b*d)*b^4+4*b^4*e*a)*x^6+1/5*(a*d*b^4+4*(a*e+b*d)*a*
b^3+6*b^3*e*a^2)*x^5+1/4*(4*a^2*d*b^3+6*(a*e+b*d)*a^2*b^2+4*b^2*e*a^3)*x^4+
1/3*(6*a^3*d*b^2+4*(a*e+b*d)*a^3*b+b*e*a^4)*x^3+1/2*(4*a^4*d*b+(a*e+b*d)*a^
4)*x^2+a^5*d*x
```

maxima [B] time = 0.60, size = 115, normalized size = 3.03

$$\frac{1}{7}\,b^5ex^7+a^5dx+\frac{1}{6}\left(b^5d+5\,ab^4e\right)x^6+\left(ab^4d+2\,a^2b^3e\right)x^5+\frac{5}{2}\left(a^2b^3d+a^3b^2e\right)x^4+\frac{5}{3}\left(2\,a^3b^2d+a^4be\right)x^3+\frac{1}{2}\left(5\,a^4bd\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/7*b^5*e*x^7 + a^5*d*x + 1/6*(b^5*d + 5*a*b^4*e)*x^6 + (a*b^4*d + 2*a^2*b^
3*e)*x^5 + 5/2*(a^2*b^3*d + a^3*b^2*e)*x^4 + 5/3*(2*a^3*b^2*d + a^4*b*e)*x^
3 + 1/2*(5*a^4*b*d + a^5*e)*x^2
```

mupad [B] time = 2.02, size = 103, normalized size = 2.71

$$x^2\,\left(\frac{e\,a^5}{2}+\frac{5\,b\,d\,a^4}{2}\right)+x^6\,\left(\frac{d\,b^5}{6}+\frac{5\,a\,e\,b^4}{6}\right)+\frac{b^5\,e\,x^7}{7}+a^5\,d\,x+\frac{5\,a^3\,b\,x^3\,\left(a\,e+2\,b\,d\right)}{3}+a\,b^3\,x^5\,\left(2\,a\,e+b\,d\right)+\frac{5\,a^2\,b^2\,x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] x^2*((a^5*e)/2 + (5*a^4*b*d)/2) + x^6*((b^5*d)/6 + (5*a*b^4*e)/6) + (b^5*e*
x^7)/7 + a^5*d*x + (5*a^3*b*x^3*(a*e + 2*b*d))/3 + a*b^3*x^5*(2*a*e + b*d)
+ (5*a^2*b^2*x^4*(a*e + b*d))/2
```

sympy [B] time = 0.10, size = 129, normalized size = 3.39

$$a^5dx+\frac{b^5ex^7}{7}+x^6\left(\frac{5ab^4e}{6}+\frac{b^5d}{6}\right)+x^5\left(2a^2b^3e+ab^4d\right)+x^4\left(\frac{5a^3b^2e}{2}+\frac{5a^2b^3d}{2}\right)+x^3\left(\frac{5a^4be}{3}+\frac{10a^3b^2d}{3}\right)+x^2\left(\frac{a^5e}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d*x + b**5*e*x**7/7 + x**6*(5*a*b**4*e/6 + b**5*d/6) + x**5*(2*a**2*b*
*3*e + a*b**4*d) + x**4*(5*a**3*b**2*e/2 + 5*a**2*b**3*d/2) + x**3*(5*a**4*
b*e/3 + 10*a**3*b**2*d/3) + x**2*(a**5*e/2 + 5*a**4*b*d/2)
```

3.1911 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^6}{6b}$$

```
[Out] 1/6*(b*x+a)^6/b
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{27, 32\}$

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a + b*x)^6/(6*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5\,dx\\ &= \frac{(a+bx)^6}{6b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^6}{6b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (a + b*x)^6/(6*b)
```

fricas [B] time = 0.99, size = 53, normalized size = 3.79

$$\frac{1}{6}x^6b^5 + x^5b^4a + \frac{5}{2}x^4b^3a^2 + \frac{10}{3}x^3b^2a^3 + \frac{5}{2}x^2ba^4 + xa^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*b^5 + x^5*b^4*a + 5/2*x^4*b^3*a^2 + 10/3*x^3*b^2*a^3 + 5/2*x^2*b*a^
4 + x*a^5
```

giac [B] time = 0.15, size = 51, normalized size = 3.64

$$\frac{1}{2}\left(bx^2+2\,ax\right)a^4+\frac{1}{2}\left(bx^2+2\,ax\right)^2a^2b+\frac{1}{6}\left(bx^2+2\,ax\right)^3b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*a^4 + 1/2*(b*x^2 + 2*a*x)^2*a^2*b + 1/6*(b*x^2 + 2*a*x)
^3*b^2
```

maple [B] time = 0.04, size = 54, normalized size = 3.86

$$\frac{1}{6}b^5x^6+a\,b^4x^5+\frac{5}{2}a^2b^3x^4+\frac{10}{3}a^3b^2x^3+\frac{5}{2}a^4b\,x^2+a^5x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/6*b^5*x^6+a*b^4*x^5+5/2*a^2*b^3*x^4+10/3*a^3*b^2*x^3+5/2*a^4*b*x^2+a^5*x
```

maxima [A] time = 0.48, size = 23, normalized size = 1.64

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^3}{6\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^3/b
```

mupad [B] time = 0.03, size = 53, normalized size = 3.79

$$a^5\,x+\frac{5\,a^4\,b\,x^2}{2}+\frac{10\,a^3\,b^2\,x^3}{3}+\frac{5\,a^2\,b^3\,x^4}{2}+a\,b^4\,x^5+\frac{b^5\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] a^5*x + (b^5*x^6)/6 + (5*a^4*b*x^2)/2 + a*b^4*x^5 + (10*a^3*b^2*x^3)/3 + (5
*a^2*b^3*x^4)/2
```

sympy [B] time = 0.08, size = 60, normalized size = 4.29

$$a^5x+\frac{5a^4bx^2}{2}+\frac{10a^3b^2x^3}{3}+\frac{5a^2b^3x^4}{2}+ab^4x^5+\frac{b^5x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*x**3/3 + 5*a**2*b**3*x**4/2 + a*b**
4*x**5 + b**5*x**6/6
```

3.1912 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=122

$$-\frac{(bd-ae)^5\log(d+ex)}{e^6}+\frac{bx(bd-ae)^4}{e^5}-\frac{(a+bx)^2(bd-ae)^3}{2e^4}+\frac{(a+bx)^3(bd-ae)^2}{3e^3}-\frac{(a+bx)^4(bd-ae)}{4e^2}+\frac{(a+bx)}{5e}$$

```
[Out] b*(-a*e+b*d)^4*x/e^5-1/2*(-a*e+b*d)^3*(b*x+a)^2/e^4+1/3*(-a*e+b*d)^2*(b*x+a
)^3/e^3-1/4*(-a*e+b*d)*(b*x+a)^4/e^2+1/5*(b*x+a)^5/e-(-a*e+b*d)^5*ln(e*x+d)
/e^6
```

Rubi [A] time = 0.06, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{bx(bd-ae)^4}{e^5}-\frac{(a+bx)^2(bd-ae)^3}{2e^4}+\frac{(a+bx)^3(bd-ae)^2}{3e^3}-\frac{(a+bx)^4(bd-ae)}{4e^2}-\frac{(bd-ae)^5\log(d+ex)}{e^6}+\frac{(a+bx)^5}{5e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^4*x)/e^5 - ((b*d - a*e)^3*(a + b*x)^2)/(2*e^4) + ((b*d - a*e
)^2*(a + b*x)^3)/(3*e^3) - ((b*d - a*e)*(a + b*x)^4)/(4*e^2) + (a + b*x)^5/
(5*e) - ((b*d - a*e)^5*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{d+ex}\,dx &= \int \frac{(a+bx)^5}{d+ex}\,dx\\ &= \int \left(\frac{b(bd-ae)^4}{e^5}-\frac{b(bd-ae)^3(a+bx)}{e^4}+\frac{b(bd-ae)^2(a+bx)^2}{e^3}-\frac{b(bd-a}{}\right.\\ &= \frac{b(bd-ae)^4x}{e^5}-\frac{(bd-ae)^3(a+bx)^2}{2e^4}+\frac{(bd-ae)^2(a+bx)^3}{3e^3}-\frac{(bd-ae)(a}{4e^2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 167, normalized size = 1.37

$$\frac{bex\left(300a^4e^4+300a^3be^3(ex-2d)+100a^2b^2e^2\left(6d^2-3dex+2e^2x^2\right)+25ab^3e\left(-12d^3+6d^2ex-4de^2x^2+3e^3x\right.\right.}{60e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x),x]
```

```
[Out] (b*e*x*(300*a^4*e^4 + 300*a^3*b*e^3*(-2*d + e*x) + 100*a^2*b^2*e^2*(6*d^2 -
 3*d*e*x + 2*e^2*x^2) + 25*a*b^3*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e
^3*x^3) + b^4*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4
*x^4)) - 60*(b*d - a*e)^5*Log[d + e*x])/(60*e^6)
```

fricas [B] time = 1.13, size = 259, normalized size = 2.12

$$\frac{12\,b^5e^5x^5-15\left(b^5de^4-5\,ab^4e^5\right)x^4+20\left(b^5d^2e^3-5\,ab^4de^4+10\,a^2b^3e^5\right)x^3-30\left(b^5d^3e^2-5\,ab^4d^2e^3+10\,a^2b^3de^4-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*b^5*e^5*x^5 - 15*(b^5*d*e^4 - 5*a*b^4*e^5)*x^4 + 20*(b^5*d^2*e^3 -
 5*a*b^4*d*e^4 + 10*a^2*b^3*e^5)*x^3 - 30*(b^5*d^3*e^2 - 5*a*b^4*d^2*e^3 +
10*a^2*b^3*d*e^4 - 10*a^3*b^2*e^5)*x^2 + 60*(b^5*d^4*e - 5*a*b^4*d^3*e^2 +
10*a^2*b^3*d^2*e^3 - 10*a^3*b^2*d*e^4 + 5*a^4*b*e^5)*x - 60*(b^5*d^5 - 5*a*
b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e
^5)*log(e*x + d))/e^6
```

giac [B] time = 0.16, size = 259, normalized size = 2.12

$$-\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)e^{(-6)}\log\left(|xe+d|\right)+\frac{1}{60}\left(12\,b^5x^5e^4-15\,b^5dx^4e^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4
*b*d*e^4 - a^5*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*b^5*x^5*e^4 - 15*b^
5*d*x^4*e^3 + 20*b^5*d^2*x^3*e^2 - 30*b^5*d^3*x^2*e + 60*b^5*d^4*x + 75*a*b
^4*x^4*e^4 - 100*a*b^4*d*x^3*e^3 + 150*a*b^4*d^2*x^2*e^2 - 300*a*b^4*d^3*x*
e + 200*a^2*b^3*x^3*e^4 - 300*a^2*b^3*d*x^2*e^3 + 600*a^2*b^3*d^2*x*e^2 + 3
00*a^3*b^2*x^2*e^4 - 600*a^3*b^2*d*x*e^3 + 300*a^4*b*x*e^4)*e^(-5)
```

maple [B] time = 0.05, size = 302, normalized size = 2.48

$$\frac{b^5x^5}{5e}+\frac{5a\,b^4x^4}{4e}-\frac{b^5d\,x^4}{4e^2}+\frac{10a^2b^3x^3}{3e}-\frac{5a\,b^4d\,x^3}{3e^2}+\frac{b^5d^2x^3}{3e^3}+\frac{5a^3b^2x^2}{e}-\frac{5a^2b^3d\,x^2}{e^2}+\frac{5a\,b^4d^2x^2}{2e^3}-\frac{b^5d^3x^2}{2e^4}+\frac{a^5\ln\left(ex+d\right)}{e}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x)
```

```
[Out] 1/5*b^5/e*x^5+5/4*b^4/e*x^4*a-1/4*b^5/e^2*x^4*d+10/3*b^3/e*x^3*a^2-5/3*b^4/
e^2*x^3*a*d+1/3*b^5/e^3*x^3*d^2+5*b^2/e*x^2*a^3-5*b^3/e^2*x^2*a^2*d+5/2*b^4
/e^3*x^2*a*d^2-1/2*b^5/e^4*x^2*d^3+5*b/e*a^4*x-10*b^2/e^2*a^3*d*x+10*b^3/e^
3*a^2*d^2*x-5*b^4/e^4*a*d^3*x+b^5/e^5*d^4*x+1/e*ln(e*x+d)*a^5-5/e^2*ln(e*x+
d)*a^4*b*d+10/e^3*ln(e*x+d)*a^3*b^2*d^2-10/e^4*ln(e*x+d)*a^2*b^3*d^3+5/e^5*
ln(e*x+d)*a*b^4*d^4-1/e^6*ln(e*x+d)*b^5*d^5
```

maxima [B] time = 0.55, size = 258, normalized size = 2.11

$$\frac{12\,b^5e^4x^5-15\left(b^5de^3-5\,ab^4e^4\right)x^4+20\left(b^5d^2e^2-5\,ab^4de^3+10\,a^2b^3e^4\right)x^3-30\left(b^5d^3e-5\,ab^4d^2e^2+10\,a^2b^3de^3-\right.}{60\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*b^5*e^4*x^5 - 15*(b^5*d*e^3 - 5*a*b^4*e^4)*x^4 + 20*(b^5*d^2*e^2 -
 5*a*b^4*d*e^3 + 10*a^2*b^3*e^4)*x^3 - 30*(b^5*d^3*e - 5*a*b^4*d^2*e^2 + 10
*a^2*b^3*d*e^3 - 10*a^3*b^2*e^4)*x^2 + 60*(b^5*d^4 - 5*a*b^4*d^3*e + 10*a^2
*b^3*d^2*e^2 - 10*a^3*b^2*d*e^3 + 5*a^4*b*e^4)*x)/e^5 - (b^5*d^5 - 5*a*b^4*
d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*
log(e*x + d)/e^6
```

mupad [**B**] time = 1.99, size = 280, normalized size = 2.30

$$x\left(\frac{5\,a^4\,b}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{5\,a\,b^4}{e}-\frac{b^5\,d}{e^2}\right)}{e}-\frac{10\,a^2\,b^3}{e}\right)}{e}+\frac{10\,a^3\,b^2}{e}\right)}{e}\right)+x^4\left(\frac{5\,a\,b^4}{4\,e}-\frac{b^5\,d}{4\,e^2}\right)+x^2\left(\frac{d\left(\frac{d\left(\frac{5\,a\,b^4}{e}-\frac{b^5\,d}{e^2}\right)}{e}-\frac{10\,a^2\,b^3}{e}\right)}{2\,e}+\frac{5\,a^3\,b^2}{e}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x),x)
```

```
[Out] x*((5*a^4*b)/e - (d*((d*((d*((5*a*b^4)/e - (b^5*d)/e^2))/e - (10*a^2*b^3)/e
))/e + (10*a^3*b^2)/e))/e) + x^4*((5*a*b^4)/(4*e) - (b^5*d)/(4*e^2)) + x^2*
((d*((d*((5*a*b^4)/e - (b^5*d)/e^2))/e - (10*a^2*b^3)/e))/(2*e) + (5*a^3*b^
2)/e) - x^3*((d*((5*a*b^4)/e - (b^5*d)/e^2))/(3*e) - (10*a^2*b^3)/(3*e)) +
(b^5*x^5)/(5*e) + (log(d + e*x)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 1
0*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/e^6
```

sympy [**B**] time = 0.51, size = 209, normalized size = 1.71

$$\frac{b^5x^5}{5e}+x^4\left(\frac{5ab^4}{4e}-\frac{b^5d}{4e^2}\right)+x^3\left(\frac{10a^2b^3}{3e}-\frac{5ab^4d}{3e^2}+\frac{b^5d^2}{3e^3}\right)+x^2\left(\frac{5a^3b^2}{e}-\frac{5a^2b^3d}{e^2}+\frac{5ab^4d^2}{2e^3}-\frac{b^5d^3}{2e^4}\right)+x\left(\frac{5a^4b}{e}-10a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d),x)
```

```
[Out] b**5*x**5/(5*e) + x**4*(5*a*b**4/(4*e) - b**5*d/(4*e**2)) + x**3*(10*a**2*b
**3/(3*e) - 5*a*b**4*d/(3*e**2) + b**5*d**2/(3*e**3)) + x**2*(5*a**3*b**2/e
 - 5*a**2*b**3*d/e**2 + 5*a*b**4*d**2/(2*e**3) - b**5*d**3/(2*e**4)) + x*(5
*a**4*b/e - 10*a**3*b**2*d/e**2 + 10*a**2*b**3*d**2/e**3 - 5*a*b**4*d**3/e*
*4 + b**5*d**4/e**5) + (a*e - b*d)**5*log(d + e*x)/e**6
```

3.1913 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=130

$$-\frac{5b^4(d+ex)^3(bd-ae)}{3e^6}+\frac{5b^3(d+ex)^2(bd-ae)^2}{e^6}-\frac{10b^2x(bd-ae)^3}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b(bd-ae)^4\log(d+ex)}{e^6}+\frac{b^5(d+e}{4e^6}$$

```
[Out] -10*b^2*(-a*e+b*d)^3*x/e^5+(-a*e+b*d)^5/e^6/(e*x+d)+5*b^3*(-a*e+b*d)^2*(e*x
+d)^2/e^6-5/3*b^4*(-a*e+b*d)*(e*x+d)^3/e^6+1/4*b^5*(e*x+d)^4/e^6+5*b*(-a*e+
b*d)^4*ln(e*x+d)/e^6
```

Rubi [A] time = 0.15, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{5b^4(d+ex)^3(bd-ae)}{3e^6}+\frac{5b^3(d+ex)^2(bd-ae)^2}{e^6}-\frac{10b^2x(bd-ae)^3}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b(bd-ae)^4\log(d+ex)}{e^6}+\frac{b^5(d+e}{4e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (-10*b^2*(b*d - a*e)^3*x)/e^5 + (b*d - a*e)^5/(e^6*(d + e*x)) + (5*b^3*(b*d
 - a*e)^2*(d + e*x)^2)/e^6 - (5*b^4*(b*d - a*e)*(d + e*x)^3)/(3*e^6) + (b^5
*(d + e*x)^4)/(4*e^6) + (5*b*(b*d - a*e)^4*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^2}\,dx\\ &= \int \bigg(-\frac{10b^2(bd-ae)^3}{e^5}+\frac{(-bd+ae)^5}{e^5(d+ex)^2}+\frac{5b(bd-ae)^4}{e^5(d+ex)}+\frac{10b^3(bd-ae)^2(d+ex}{e^5}\\ &= -\frac{10b^2(bd-ae)^3x}{e^5}+\frac{(bd-ae)^5}{e^6(d+ex)}+\frac{5b^3(bd-ae)^2(d+ex)^2}{e^6}-\frac{5b^4(bd-ae)(d+}{3e^6}\end{aligned}$$

Mathematica [A] time = 0.07, size = 228, normalized size = 1.75

$$\frac{-12a^5e^5+60a^4bde^4+120a^3b^2e^3\left(-d^2+dex+e^2x^2\right)+60a^2b^3e^2\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+20ab^4e\big(-3d^4+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (60*a^4*b*d*e^4 - 12*a^5*e^5 + 120*a^3*b^2*e^3*(-d^2 + d*e*x + e^2*x^2) + 6
0*a^2*b^3*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 20*a*b^4*e*(-3*
d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b^5*(12*d^5 - 48
*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5) + 60*
b*(b*d - a*e)^4*(d + e*x)*Log[d + e*x])/(12*e^6*(d + e*x))
```

fricas [B] time = 1.05, size = 373, normalized size = 2.87

$$\frac{3\,b^5e^5x^5 + 12\,b^5d^5 - 60\,ab^4d^4e + 120\,a^2b^3d^3e^2 - 120\,a^3b^2d^2e^3 + 60\,a^4bde^4 - 12\,a^5e^5 - 5\left(b^5de^4 - 4\,ab^4e^5\right)x^4 + 1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^5*e^5*x^5 + 12*b^5*d^5 - 60*a*b^4*d^4*e + 120*a^2*b^3*d^3*e^2 - 1
20*a^3*b^2*d^2*e^3 + 60*a^4*b*d*e^4 - 12*a^5*e^5 - 5*(b^5*d*e^4 - 4*a*b^4*e
^5)*x^4 + 10*(b^5*d^2*e^3 - 4*a*b^4*d*e^4 + 6*a^2*b^3*e^5)*x^3 - 30*(b^5*d^
3*e^2 - 4*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 - 4*a^3*b^2*e^5)*x^2 - 12*(4*b^5*
d^4*e - 15*a*b^4*d^3*e^2 + 20*a^2*b^3*d^2*e^3 - 10*a^3*b^2*d*e^4)*x + 60*(b
^5*d^5 - 4*a*b^4*d^4*e + 6*a^2*b^3*d^3*e^2 - 4*a^3*b^2*d^2*e^3 + a^4*b*d*e^
4 + (b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2*e^3 - 4*a^3*b^2*d*e^4 + a^
4*b*e^5)*x)*log(e*x + d))/(e^7*x + d*e^6)
```

giac [B] time = 0.19, size = 328, normalized size = 2.52

$$\frac{1}{12}\left(3\,b^5 - \frac{20\left(b^5de - ab^4e^2\right)e^{(-1)}}{xe + d} + \frac{60\left(b^5d^2e^2 - 2\,ab^4de^3 + a^2b^3e^4\right)e^{(-2)}}{(xe + d)^2} - \frac{120\,(b^5d^3e^3 - 3\,ab^4d^2e^4 + 3\,a^2b^3de^5}{(xe + d)^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*b^5 - 20*(b^5*d*e - a*b^4*e^2)*e^(-1)/(x*e + d) + 60*(b^5*d^2*e^2 -
 2*a*b^4*d*e^3 + a^2*b^3*e^4)*e^(-2)/(x*e + d)^2 - 120*(b^5*d^3*e^3 - 3*a*b
^4*d^2*e^4 + 3*a^2*b^3*d*e^5 - a^3*b^2*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4
*e^(-6) - 5*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
+ a^4*b*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (b^5*d^5*e^4/(x*
e + d) - 5*a*b^4*d^4*e^5/(x*e + d) + 10*a^2*b^3*d^3*e^6/(x*e + d) - 10*a^3*
b^2*d^2*e^7/(x*e + d) + 5*a^4*b*d*e^8/(x*e + d) - a^5*e^9/(x*e + d))*e^(-10
)
```

maple [B] time = 0.05, size = 326, normalized size = 2.51

$$\frac{b^5x^4}{4e^2}+\frac{5a\,b^4x^3}{3e^2}-\frac{2b^5d\,x^3}{3e^3}+\frac{5a^2b^3x^2}{e^2}-\frac{5a\,b^4d\,x^2}{e^3}+\frac{3b^5d^2x^2}{2e^4}-\frac{a^5}{(ex+d)\,e}+\frac{5a^4bd}{(ex+d)\,e^2}+\frac{5a^4b\ln(ex+d)}{e^2}-\frac{10a^3b^2d^2}{(ex+d)\,e^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x)
```

```
[Out] 1/4*b^5/e^2*x^4+5/3*b^4/e^2*x^3*a-2/3*b^5/e^3*x^3*d+5*b^3/e^2*x^2*a^2-5*b^4
/e^3*x^2*a*d+3/2*b^5/e^4*x^2*d^2+10*b^2/e^2*a^3*x-20*b^3/e^3*a^2*d*x+15*b^4
/e^4*a*d^2*x-4*b^5/e^5*d^3*x-1/e/(e*x+d)*a^5+5/e^2/(e*x+d)*a^4*b*d-10/e^3/(
e*x+d)*a^3*b^2*d^2+10/e^4/(e*x+d)*a^2*b^3*d^3-5/e^5/(e*x+d)*a*b^4*d^4+1/e^6
/(e*x+d)*b^5*d^5+5*b/e^2*ln(e*x+d)*a^4-20*b^2/e^3*ln(e*x+d)*a^3*d+30*b^3/e^
4*ln(e*x+d)*a^2*d^2-20*b^4/e^5*ln(e*x+d)*a*d^3+5*b^5/e^6*ln(e*x+d)*d^4
```

maxima [B] time = 0.51, size = 264, normalized size = 2.03

$$\frac{b^5d^5 - 5\,ab^4d^4e + 10\,a^2b^3d^3e^2 - 10\,a^3b^2d^2e^3 + 5\,a^4bde^4 - a^5e^5}{e^7x + de^6}+\frac{3\,b^5e^3x^4 - 4\left(2\,b^5de^2 - 5\,ab^4e^3\right)x^3 + 6\,(3\,b^5d^2e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*
b*d*e^4 - a^5*e^5)/(e^7*x + d*e^6) + 1/12*(3*b^5*e^3*x^4 - 4*(2*b^5*d*e^2 -
 5*a*b^4*e^3)*x^3 + 6*(3*b^5*d^2*e - 10*a*b^4*d*e^2 + 10*a^2*b^3*e^3)*x^2 -
 12*(4*b^5*d^3 - 15*a*b^4*d^2*e + 20*a^2*b^3*d*e^2 - 10*a^3*b^2*e^3)*x)/e^5
 + 5*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b
*e^4)*log(e*x + d)/e^6
```

mupad [**B**] time = 2.02, size = 327, normalized size = 2.52

$$x^3\,\left(\frac{5\,a\,b^4}{3\,e^2}-\frac{2\,b^5\,d}{3\,e^3}\right)-x^2\,\left(\frac{d\,\left(\frac{5\,a\,b^4}{e^2}-\frac{2\,b^5\,d}{e^3}\right)}{e}-\frac{5\,a^2\,b^3}{e^2}+\frac{b^5\,d^2}{2\,e^4}\right)+x\,\left(\frac{10\,a^3\,b^2}{e^2}+\frac{2\,d\,\left(\frac{2\,d\,\left(\frac{5\,a\,b^4}{e^2}-\frac{2\,b^5\,d}{e^3}\right)}{e}-\frac{10\,a^2\,b^3}{e^2}+\frac{b^5\,d^2}{e^4}\right)}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^2,x)
```

```
[Out] x^3*((5*a*b^4)/(3*e^2) - (2*b^5*d)/(3*e^3)) - x^2*((d*((5*a*b^4)/e^2 - (2*b
^5*d)/e^3))/e - (5*a^2*b^3)/e^2 + (b^5*d^2)/(2*e^4)) + x*((10*a^3*b^2)/e^2
+ (2*d*((2*d*((5*a*b^4)/e^2 - (2*b^5*d)/e^3))/e - (10*a^2*b^3)/e^2 + (b^5*d
^2)/e^4))/e - (d^2*((5*a*b^4)/e^2 - (2*b^5*d)/e^3))/e^2) + (log(d + e*x)*(5
*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a*b^4*d
^3*e))/e^6 - (a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 +
 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)/(e*(d*e^5 + e^6*x)) + (b^5*x^4)/(4*e^2)
```

sympy [**A**] time = 0.90, size = 231, normalized size = 1.78

$$\frac{b^5x^4}{4e^2}+\frac{5b\left(ae-bd\right)^4\log\left(d+ex\right)}{e^6}+x^3\left(\frac{5ab^4}{3e^2}-\frac{2b^5d}{3e^3}\right)+x^2\left(\frac{5a^2b^3}{e^2}-\frac{5ab^4d}{e^3}+\frac{3b^5d^2}{2e^4}\right)+x\left(\frac{10a^3b^2}{e^2}-\frac{20a^2b^3d}{e^3}+\frac{15ab}{e^4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**2,x)
```

```
[Out] b**5*x**4/(4*e**2) + 5*b*(a*e - b*d)**4*log(d + e*x)/e**6 + x**3*(5*a*b**4/
(3*e**2) - 2*b**5*d/(3*e**3)) + x**2*(5*a**2*b**3/e**2 - 5*a*b**4*d/e**3 +
3*b**5*d**2/(2*e**4)) + x*(10*a**3*b**2/e**2 - 20*a**2*b**3*d/e**3 + 15*a*b
**4*d**2/e**4 - 4*b**5*d**3/e**5) + (-a**5*e**5 + 5*a**4*b*d*e**4 - 10*a**3
*b**2*d**2*e**3 + 10*a**2*b**3*d**3*e**2 - 5*a*b**4*d**4*e + b**5*d**5)/(d*
e**6 + e**7*x)
```

3.1914 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=133

$$-\frac{5b^4(d+ex)^2(bd-ae)}{2e^6}+\frac{10b^3x(bd-ae)^2}{e^5}-\frac{10b^2(bd-ae)^3\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{e^6(d+ex)}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}+\frac{b^5(d+ex)}{3e^6}$$

```
[Out] 10*b^3*(-a*e+b*d)^2*x/e^5+1/2*(-a*e+b*d)^5/e^6/(e*x+d)^2-5*b*(-a*e+b*d)^4/e
^6/(e*x+d)-5/2*b^4*(-a*e+b*d)*(e*x+d)^2/e^6+1/3*b^5*(e*x+d)^3/e^6-10*b^2*(-
a*e+b*d)^3*ln(e*x+d)/e^6
```

Rubi [A] time = 0.13, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 43}

$$-\frac{5b^4(d+ex)^2(bd-ae)}{2e^6}+\frac{10b^3x(bd-ae)^2}{e^5}-\frac{10b^2(bd-ae)^3\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{e^6(d+ex)}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}+\frac{b^5(d+ex)}{3e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (10*b^3*(b*d - a*e)^2*x)/e^5 + (b*d - a*e)^5/(2*e^6*(d + e*x)^2) - (5*b*(b*
d - a*e)^4)/(e^6*(d + e*x)) - (5*b^4*(b*d - a*e)*(d + e*x)^2)/(2*e^6) + (b^
5*(d + e*x)^3)/(3*e^6) - (10*b^2*(b*d - a*e)^3*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^3}\,dx\\ &= \int \left(\frac{10b^3(bd-ae)^2}{e^5}+\frac{(-bd+ae)^5}{e^5(d+ex)^3}+\frac{5b(bd-ae)^4}{e^5(d+ex)^2}-\frac{10b^2(bd-ae)^3}{e^5(d+ex)}-5b\right.\\ &= \frac{10b^3(bd-ae)^2x}{e^5}+\frac{(bd-ae)^5}{2e^6(d+ex)^2}-\frac{5b(bd-ae)^4}{e^6(d+ex)}-\frac{5b^4(bd-ae)(d+ex)^2}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.07, size = 230, normalized size = 1.73

$$-3a^5e^5-15a^4be^4(d+2ex)+30a^3b^2de^3(3d+4ex)+30a^2b^3e^2\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+15ab^4e\left(7d^4\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (-3*a^5*e^5 - 15*a^4*b*e^4*(d + 2*e*x) + 30*a^3*b^2*d*e^3*(3*d + 4*e*x) + 3
0*a^2*b^3*e^2*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + 15*a*b^4*e*(
7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + b^5*(-27*d^5
+ 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*x^4 + 2*e^5*x^5) -
60*b^2*(b*d - a*e)^3*(d + e*x)^2*Log[d + e*x])/(6*e^6*(d + e*x)^2)
```

fricas [B] time = 1.09, size = 416, normalized size = 3.13

$$2\,b^5e^5x^5 - 27\,b^5d^5 + 105\,ab^4d^4e - 150\,a^2b^3d^3e^2 + 90\,a^3b^2d^2e^3 - 15\,a^4bde^4 - 3\,a^5e^5 - 5\left(b^5de^4 - 3\,ab^4e^5\right)x^4 + 20\,(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^5*e^5*x^5 - 27*b^5*d^5 + 105*a*b^4*d^4*e - 150*a^2*b^3*d^3*e^2 + 9
0*a^3*b^2*d^2*e^3 - 15*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(b^5*d*e^4 - 3*a*b^4*e^5
)*x^4 + 20*(b^5*d^2*e^3 - 3*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + 3*(21*b^5*d^
3*e^2 - 55*a*b^4*d^2*e^3 + 40*a^2*b^3*d*e^4)*x^2 + 6*(b^5*d^4*e + 5*a*b^4*d
^3*e^2 - 20*a^2*b^3*d^2*e^3 + 20*a^3*b^2*d*e^4 - 5*a^4*b*e^5)*x - 60*(b^5*d
^5 - 3*a*b^4*d^4*e + 3*a^2*b^3*d^3*e^2 - a^3*b^2*d^2*e^3 + (b^5*d^3*e^2 - 3
*a*b^4*d^2*e^3 + 3*a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 2*(b^5*d^4*e - 3*a*b^
4*d^3*e^2 + 3*a^2*b^3*d^2*e^3 - a^3*b^2*d*e^4)*x)*log(e*x + d))/(e^8*x^2 +
2*d*e^7*x + d^2*e^6)
```

giac [A] time = 0.16, size = 250, normalized size = 1.88

$$-10\left(b^5d^3 - 3\,ab^4d^2e + 3\,a^2b^3de^2 - a^3b^2e^3\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{6}\left(2\,b^5x^3e^6 - 9\,b^5dx^2e^5 + 36\,b^5d^2xe^4 + 15\,ab^4x^2e^6 -\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -10*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*e^(-6)*log(ab
s(x*e + d)) + 1/6*(2*b^5*x^3*e^6 - 9*b^5*d*x^2*e^5 + 36*b^5*d^2*x*e^4 + 15*
a*b^4*x^2*e^6 - 90*a*b^4*d*x*e^5 + 60*a^2*b^3*x*e^6)*e^(-9) - 1/2*(9*b^5*d^
5 - 35*a*b^4*d^4*e + 50*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^
4 + a^5*e^5 + 10*(b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2*e^3 - 4*a^3*b
^2*d*e^4 + a^4*b*e^5)*x)*e^(-6)/(x*e + d)^2
```

maple [B] time = 0.06, size = 346, normalized size = 2.60

$$\frac{b^5x^3}{3e^3} - \frac{a^5}{2\left(ex+d\right)^2 e} + \frac{5a^4bd}{2\left(ex+d\right)^2 e^2} - \frac{5a^3b^2d^2}{\left(ex+d\right)^2 e^3} + \frac{5a^2b^3d^3}{\left(ex+d\right)^2 e^4} - \frac{5a\,b^4d^4}{2\left(ex+d\right)^2 e^5} + \frac{5a\,b^4x^2}{2e^3} + \frac{b^5d^5}{2\left(ex+d\right)^2 e^6} - \frac{3b^5d\,x^2}{2e^4} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x)
```

```
[Out] 1/3*b^5/e^3*x^3+5/2*b^4/e^3*x^2*a-3/2*b^5/e^4*x^2*d+10*b^3/e^3*a^2*x-15*b^4
/e^4*a*d*x+6*b^5/e^5*d^2*x-5*b/e^2/(e*x+d)*a^4+20*b^2/e^3/(e*x+d)*a^3*d-30*
b^3/e^4/(e*x+d)*a^2*d^2+20*b^4/e^5/(e*x+d)*a*d^3-5*b^5/e^6/(e*x+d)*d^4-1/2/
e/(e*x+d)^2*a^5+5/2/e^2/(e*x+d)^2*a^4*b*d-5/e^3/(e*x+d)^2*a^3*b^2*d^2+5/e^4
/(e*x+d)^2*a^2*b^3*d^3-5/2/e^5/(e*x+d)^2*a*b^4*d^4+1/2/e^6/(e*x+d)^2*b^5*d^
5+10*b^2/e^3*ln(e*x+d)*a^3-30*b^3/e^4*ln(e*x+d)*a^2*d+30*b^4/e^5*ln(e*x+d)*
a*d^2-10*b^5/e^6*ln(e*x+d)*d^3
```

maxima [B] time = 0.72, size = 271, normalized size = 2.04

$$-\frac{9\,b^5d^5 - 35\,ab^4d^4e + 50\,a^2b^3d^3e^2 - 30\,a^3b^2d^2e^3 + 5\,a^4bde^4 + a^5e^5 + 10\,(b^5d^4e - 4\,ab^4d^3e^2 + 6\,a^2b^3d^2e^3 - 4\,a^3}{2\left(e^8x^2 + 2\,de^7x + d^2e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*b^5*d^5 - 35*a*b^4*d^4*e + 50*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3
+ 5*a^4*b*d*e^4 + a^5*e^5 + 10*(b^5*d^4*e - 4*a*b^4*d^3*e^2 + 6*a^2*b^3*d^2
*e^3 - 4*a^3*b^2*d*e^4 + a^4*b*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/
6*(2*b^5*e^2*x^3 - 3*(3*b^5*d*e - 5*a*b^4*e^2)*x^2 + 6*(6*b^5*d^2 - 15*a*b^
4*d*e + 10*a^2*b^3*e^2)*x)/e^5 - 10*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*
e^2 - a^3*b^2*e^3)*log(e*x + d)/e^6
```

mupad [B] time = 0.09, size = 291, normalized size = 2.19

$$x^2\left(\frac{5\,a\,b^4}{2\,e^3} - \frac{3\,b^5\,d}{2\,e^4}\right) - \frac{\frac{a^5\,e^5+5\,a^4\,b\,d\,e^4-30\,a^3\,b^2\,d^2\,e^3+50\,a^2\,b^3\,d^3\,e^2-35\,a\,b^4\,d^4\,e+9\,b^5\,d^5}{2\,e} + x\,(5\,a^4\,b\,e^4 - 20\,a^3\,b^2\,d\,e^3 + 30\,a^2\,b^3}{d^2\,e^5 + 2\,d\,e^6\,x + e^7\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((5*a*b^4)/(2*e^3) - (3*b^5*d)/(2*e^4)) - ((a^5*e^5 + 9*b^5*d^5 + 50*a^
2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 - 35*a*b^4*d^4*e + 5*a^4*b*d*e^4)/(2*e)
+ x*(5*b^5*d^4 + 5*a^4*b*e^4 - 20*a^3*b^2*d*e^3 + 30*a^2*b^3*d^2*e^2 - 20*a
*b^4*d^3*e))/(d^2*e^5 + e^7*x^2 + 2*d*e^6*x) - x*((3*d*((5*a*b^4)/e^3 - (3*
b^5*d)/e^4))/e - (10*a^2*b^3)/e^3 + (3*b^5*d^2)/e^5) - (log(d + e*x)*(10*b^
5*d^3 - 10*a^3*b^2*e^3 + 30*a^2*b^3*d*e^2 - 30*a*b^4*d^2*e))/e^6 + (b^5*x^3
)/(3*e^3)
```

sympy [B] time = 1.65, size = 258, normalized size = 1.94

$$\frac{b^5x^3}{3e^3} + \frac{10b^2\left(ae-bd\right)^3\log\left(d+ex\right)}{e^6} + x^2\left(\frac{5ab^4}{2e^3} - \frac{3b^5d}{2e^4}\right) + x\left(\frac{10a^2b^3}{e^3} - \frac{15ab^4d}{e^4} + \frac{6b^5d^2}{e^5}\right) + \frac{-a^5e^5 - 5a^4bde^4 + 30a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**3,x)
```

```
[Out] b**5*x**3/(3*e**3) + 10*b**2*(a*e - b*d)**3*log(d + e*x)/e**6 + x**2*(5*a*b
**4/(2*e**3) - 3*b**5*d/(2*e**4)) + x*(10*a**2*b**3/e**3 - 15*a*b**4*d/e**4
 + 6*b**5*d**2/e**5) + (-a**5*e**5 - 5*a**4*b*d*e**4 + 30*a**3*b**2*d**2*e*
*3 - 50*a**2*b**3*d**3*e**2 + 35*a*b**4*d**4*e - 9*b**5*d**5 + x*(-10*a**4*
b*e**5 + 40*a**3*b**2*d*e**4 - 60*a**2*b**3*d**2*e**3 + 40*a*b**4*d**3*e**2
 - 10*b**5*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2)
```

3.1915 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=130

$$-\frac{b^4x(4bd-5ae)}{e^5}+\frac{10b^3(bd-ae)^2\log(d+ex)}{e^6}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}+\frac{b^5x^2}{2e^4}$$

```
[Out] -b^4*(-5*a*e+4*b*d)*x/e^5+1/2*b^5*x^2/e^4+1/3*(-a*e+b*d)^5/e^6/(e*x+d)^3-5/
2*b*(-a*e+b*d)^4/e^6/(e*x+d)^2+10*b^2*(-a*e+b*d)^3/e^6/(e*x+d)+10*b^3*(-a*e
+b*d)^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.12, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{b^4x(4bd-5ae)}{e^5}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}+\frac{10b^3(bd-ae)^2\log(d+ex)}{e^6}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}+\frac{b^5x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((b^4*(4*b*d - 5*a*e)*x)/e^5) + (b^5*x^2)/(2*e^4) + (b*d - a*e)^5/(3*e^6*(
d + e*x)^3) - (5*b*(b*d - a*e)^4)/(2*e^6*(d + e*x)^2) + (10*b^2*(b*d - a*e)
^3)/(e^6*(d + e*x)) + (10*b^3*(b*d - a*e)^2*Log[d + e*x])/e^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^4}\,dx\\ &= \int \left(-\frac{b^4(4bd-5ae)}{e^5}+\frac{b^5x}{e^4}+\frac{(-bd+ae)^5}{e^5(d+ex)^4}+\frac{5b(bd-ae)^4}{e^5(d+ex)^3}-\frac{10b^2(bd-ae)^3}{e^5(d+ex)^2}\right.\\ &= -\frac{b^4(4bd-5ae)x}{e^5}+\frac{b^5x^2}{2e^4}+\frac{(bd-ae)^5}{3e^6(d+ex)^3}-\frac{5b(bd-ae)^4}{2e^6(d+ex)^2}+\frac{10b^2(bd-ae)^3}{e^6(d+ex)}+\end{aligned}$$

Mathematica [A] time = 0.08, size = 229, normalized size = 1.76

$$\frac{-2a^5e^5-5a^4be^4(d+3ex)-20a^3b^2e^3\left(d^2+3dex+3e^2x^2\right)+10a^2b^3de^2\left(11d^2+27dex+18e^2x^2\right)+10ab^4e\left(-13d^4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (-2*a^5*e^5 - 5*a^4*b*e^4*(d + 3*e*x) - 20*a^3*b^2*e^3*(d^2 + 3*d*e*x + 3*e
^2*x^2) + 10*a^2*b^3*d*e^2*(11*d^2 + 27*d*e*x + 18*e^2*x^2) + 10*a*b^4*e*(-
13*d^4 - 27*d^3*e*x - 9*d^2*e^2*x^2 + 9*d*e^3*x^3 + 3*e^4*x^4) + b^5*(47*d^
5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x^3 - 15*d*e^4*x^4 + 3*e^5*x^5)
 + 60*b^3*(b*d - a*e)^2*(d + e*x)^3*Log[d + e*x])/(6*e^6*(d + e*x)^3)
```

fricas [B] time = 1.50, size = 425, normalized size = 3.27

$$\frac{3\,b^5e^5x^5 + 47\,b^5d^5 - 130\,ab^4d^4e + 110\,a^2b^3d^3e^2 - 20\,a^3b^2d^2e^3 - 5\,a^4bde^4 - 2\,a^5e^5 - 15\left(b^5de^4 - 2\,ab^4e^5\right)x^4 - 9\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*b^5*e^5*x^5 + 47*b^5*d^5 - 130*a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 2
0*a^3*b^2*d^2*e^3 - 5*a^4*b*d*e^4 - 2*a^5*e^5 - 15*(b^5*d*e^4 - 2*a*b^4*e^5
)*x^4 - 9*(7*b^5*d^2*e^3 - 10*a*b^4*d*e^4)*x^3 - 3*(3*b^5*d^3*e^2 + 30*a*b^
4*d^2*e^3 - 60*a^2*b^3*d*e^4 + 20*a^3*b^2*e^5)*x^2 + 3*(27*b^5*d^4*e - 90*a
*b^4*d^3*e^2 + 90*a^2*b^3*d^2*e^3 - 20*a^3*b^2*d*e^4 - 5*a^4*b*e^5)*x + 60*
(b^5*d^5 - 2*a*b^4*d^4*e + a^2*b^3*d^3*e^2 + (b^5*d^2*e^3 - 2*a*b^4*d*e^4 +
 a^2*b^3*e^5)*x^3 + 3*(b^5*d^3*e^2 - 2*a*b^4*d^2*e^3 + a^2*b^3*d*e^4)*x^2 +
 3*(b^5*d^4*e - 2*a*b^4*d^3*e^2 + a^2*b^3*d^2*e^3)*x)*log(e*x + d))/(e^9*x^
3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)
```

giac [B] time = 0.16, size = 249, normalized size = 1.92

$$10\left(b^5d^2 - 2\,ab^4de + a^2b^3e^2\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{2}\left(b^5x^2e^4 - 8\,b^5dxe^3 + 10\,ab^4xe^4\right)e^{(-8)} + \frac{(47\,b^5d^5 - 130\,ab^4d^4e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 10*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(b^
5*x^2*e^4 - 8*b^5*d*x*e^3 + 10*a*b^4*x*e^4)*e^(-8) + 1/6*(47*b^5*d^5 - 130*
a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^3 - 5*a^4*b*d*e^4 - 2*
a^5*e^5 + 60*(b^5*d^3*e^2 - 3*a*b^4*d^2*e^3 + 3*a^2*b^3*d*e^4 - a^3*b^2*e^5
)*x^2 + 15*(7*b^5*d^4*e - 20*a*b^4*d^3*e^2 + 18*a^2*b^3*d^2*e^3 - 4*a^3*b^2
*d*e^4 - a^4*b*e^5)*x)*e^(-6)/(x*e + d)^3
```

maple [B] time = 0.06, size = 361, normalized size = 2.78

$$-\frac{a^5}{3\left(ex+d\right)^3 e} + \frac{5a^4bd}{3\left(ex+d\right)^3 e^2} - \frac{10a^3b^2d^2}{3\left(ex+d\right)^3 e^3} + \frac{10a^2b^3d^3}{3\left(ex+d\right)^3 e^4} - \frac{5a\,b^4d^4}{3\left(ex+d\right)^3 e^5} + \frac{b^5d^5}{3\left(ex+d\right)^3 e^6} - \frac{5a^4b}{2\left(ex+d\right)^2 e^2} + \frac{10}{(ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x)
```

```
[Out] 1/2*b^5*x^2/e^4+5*b^4/e^4*a*x-4*b^5/e^5*x*d-10*b^2/e^3/(e*x+d)*a^3+30*b^3/e
^4/(e*x+d)*a^2*d-30*b^4/e^5/(e*x+d)*a*d^2+10*b^5/e^6/(e*x+d)*d^3-5/2*b/e^2/
(e*x+d)^2*a^4+10*b^2/e^3/(e*x+d)^2*a^3*d-15*b^3/e^4/(e*x+d)^2*a^2*d^2+10*b^
4/e^5/(e*x+d)^2*a*d^3-5/2*b^5/e^6/(e*x+d)^2*d^4-1/3/e/(e*x+d)^3*a^5+5/3/e^2
/(e*x+d)^3*a^4*b*d-10/3/e^3/(e*x+d)^3*a^3*b^2*d^2+10/3/e^4/(e*x+d)^3*a^2*b^
3*d^3-5/3/e^5/(e*x+d)^3*a*b^4*d^4+1/3/e^6/(e*x+d)^3*b^5*d^5+10*b^3/e^4*ln(e
*x+d)*a^2-20*b^4/e^5*ln(e*x+d)*a*d+10*b^5/e^6*ln(e*x+d)*d^2
```

maxima [B] time = 0.76, size = 282, normalized size = 2.17

$$\frac{47\,b^5d^5 - 130\,ab^4d^4e + 110\,a^2b^3d^3e^2 - 20\,a^3b^2d^2e^3 - 5\,a^4bde^4 - 2\,a^5e^5 + 60\left(b^5d^3e^2 - 3\,ab^4d^2e^3 + 3\,a^2b^3de^4 - a^3b}{6\left(e^9x^3 + 3\,de^8x^2 + 3\,d^2e^7x + d^3e^6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*b^5*d^5 - 130*a*b^4*d^4*e + 110*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^
3 - 5*a^4*b*d*e^4 - 2*a^5*e^5 + 60*(b^5*d^3*e^2 - 3*a*b^4*d^2*e^3 + 3*a^2*b
^3*d*e^4 - a^3*b^2*e^5)*x^2 + 15*(7*b^5*d^4*e - 20*a*b^4*d^3*e^2 + 18*a^2*b
^3*d^2*e^3 - 4*a^3*b^2*d*e^4 - a^4*b*e^5)*x)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2
*e^7*x + d^3*e^6) + 1/2*(b^5*e*x^2 - 2*(4*b^5*d - 5*a*b^4*e)*x)/e^5 + 10*(b
^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 0.12, size = 285, normalized size = 2.19

$$x\left(\frac{5\,a\,b^4}{e^4} - \frac{4\,b^5\,d}{e^5}\right) - \frac{\frac{2\,a^5\,e^5 + 5\,a^4\,b\,d\,e^4 + 20\,a^3\,b^2\,d^2\,e^3 - 110\,a^2\,b^3\,d^3\,e^2 + 130\,a\,b^4\,d^4\,e - 47\,b^5\,d^5}{6\,e} + x\left(\frac{5\,a^4\,b\,e^4}{2} + 10\,a^3\,b^2\,d\,e^3 - 45\,a^2\,b^3\,d^2}{d^3\,e^5 + 3\,d^2\,e^6\,x + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^4,x)
```

```
[Out] x*((5*a*b^4)/e^4 - (4*b^5*d)/e^5) - ((2*a^5*e^5 - 47*b^5*d^5 - 110*a^2*b^3*
d^3*e^2 + 20*a^3*b^2*d^2*e^3 + 130*a*b^4*d^4*e + 5*a^4*b*d*e^4)/(6*e) + x*(
(5*a^4*b*e^4)/2 - (35*b^5*d^4)/2 + 10*a^3*b^2*d*e^3 - 45*a^2*b^3*d^2*e^2 +
50*a*b^4*d^3*e) - x^2*(10*b^5*d^3*e - 10*a^3*b^2*e^4 - 30*a*b^4*d^2*e^2 + 3
0*a^2*b^3*d*e^3))/(d^3*e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (b^5*x^
2)/(2*e^4) + (log(d + e*x)*(10*b^5*d^2 + 10*a^2*b^3*e^2 - 20*a*b^4*d*e))/e^
6
```

sympy [B] time = 3.06, size = 284, normalized size = 2.18

$$\frac{b^5x^2}{2e^4} + \frac{10b^3\left(ae - bd\right)^2\log\left(d + ex\right)}{e^6} + x\left(\frac{5ab^4}{e^4} - \frac{4b^5d}{e^5}\right) + \frac{-2a^5e^5 - 5a^4bde^4 - 20a^3b^2d^2e^3 + 110a^2b^3d^3e^2 - 130ab^4d^4e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**4,x)
```

```
[Out] b**5*x**2/(2*e**4) + 10*b**3*(a*e - b*d)**2*log(d + e*x)/e**6 + x*(5*a*b**4
/e**4 - 4*b**5*d/e**5) + (-2*a**5*e**5 - 5*a**4*b*d*e**4 - 20*a**3*b**2*d**
2*e**3 + 110*a**2*b**3*d**3*e**2 - 130*a*b**4*d**4*e + 47*b**5*d**5 + x**2*
(-60*a**3*b**2*e**5 + 180*a**2*b**3*d*e**4 - 180*a*b**4*d**2*e**3 + 60*b**5
*d**3*e**2) + x*(-15*a**4*b*e**5 - 60*a**3*b**2*d*e**4 + 270*a**2*b**3*d**2
*e**3 - 300*a*b**4*d**3*e**2 + 105*b**5*d**4*e))/(6*d**3*e**6 + 18*d**2*e**
7*x + 18*d*e**8*x**2 + 6*e**9*x**3)
```

3.1916 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=173

$$\frac{6e^5(a+bx)^{13}(bd-ae)}{13b^7}+\frac{5e^4(a+bx)^{12}(bd-ae)^2}{4b^7}+\frac{20e^3(a+bx)^{11}(bd-ae)^3}{11b^7}+\frac{3e^2(a+bx)^{10}(bd-ae)^4}{2b^7}+$$

```
[Out] 1/8*(-a*e+b*d)^6*(b*x+a)^8/b^7+2/3*e*(-a*e+b*d)^5*(b*x+a)^9/b^7+3/2*e^2*(-a
*e+b*d)^4*(b*x+a)^10/b^7+20/11*e^3*(-a*e+b*d)^3*(b*x+a)^11/b^7+5/4*e^4*(-a*
e+b*d)^2*(b*x+a)^12/b^7+6/13*e^5*(-a*e+b*d)*(b*x+a)^13/b^7+1/14*e^6*(b*x+a)
^14/b^7
```

Rubi [A] time = 0.44, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{6e^5(a+bx)^{13}(bd-ae)}{13b^7}+\frac{5e^4(a+bx)^{12}(bd-ae)^2}{4b^7}+\frac{20e^3(a+bx)^{11}(bd-ae)^3}{11b^7}+\frac{3e^2(a+bx)^{10}(bd-ae)^4}{2b^7}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^6*(a + b*x)^8)/(8*b^7) + (2*e*(b*d - a*e)^5*(a + b*x)^9)/(3*b^
7) + (3*e^2*(b*d - a*e)^4*(a + b*x)^10)/(2*b^7) + (20*e^3*(b*d - a*e)^3*(a
+ b*x)^11)/(11*b^7) + (5*e^4*(b*d - a*e)^2*(a + b*x)^12)/(4*b^7) + (6*e^5*(
b*d - a*e)*(a + b*x)^13)/(13*b^7) + (e^6*(a + b*x)^14)/(14*b^7)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^7(d+ex)^6 \, dx \\
&= \int \left(\frac{(bd-ae)^6(a+bx)^7}{b^6}+\frac{6e(bd-ae)^5(a+bx)^8}{b^6}+\right. \\
&= \frac{(bd-ae)^6(a+bx)^8}{8b^7}+\frac{2e(bd-ae)^5(a+bx)^9}{3b^7}+
\end{aligned}$$

Mathematica [B] time = 0.17, size = 581, normalized size = 3.36

$$x\left(3432a^7\left(7d^6+21d^5ex+35d^4e^2x^2+35d^3e^3x^3+21d^2e^4x^4+7de^5x^5+e^6x^6\right)+3003a^6bx\left(28d^6+112d^5ex+\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(3432*a^7*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 21*d^2
*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 3003*a^6*b*x*(28*d^6 + 112*d^5*e*x + 21
0*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^5*x^5 + 7*e^6*x^
6) + 2002*a^5*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2 + 840*d^3*e^3
*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 1001*a^4*b^3*x^3*(21
0*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575*d^2*e^4*x
^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 364*a^3*b^4*x^4*(462*d^6 + 2310*d^5*e*x
+ 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5 +
 210*e^6*x^6) + 91*a^2*b^5*x^5*(924*d^6 + 4752*d^5*e*x + 10395*d^4*e^2*x^2
+ 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*e^6*x^6) + 14
*a*b^6*x^6*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*x^2 + 24024*d^3*e^3*x^3
 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6) + b^7*x^7*(3003*d^6 +
16016*d^5*e*x + 36036*d^4*e^2*x^2 + 43680*d^3*e^3*x^3 + 30030*d^2*e^4*x^4 +
 11088*d*e^5*x^5 + 1716*e^6*x^6)))/24024
```

fricas **[B]** time = 0.77, size = 798, normalized size = 4.61

$$\frac{1}{14}x^{14}e^6b^7+\frac{6}{13}x^{13}e^5db^7+\frac{7}{13}x^{13}e^6b^6a+\frac{5}{4}x^{12}e^4d^2b^7+\frac{7}{2}x^{12}e^5db^6a+\frac{7}{4}x^{12}e^6b^5a^2+\frac{20}{11}x^{11}e^3d^3b^7+\frac{105}{11}x^{11}e^4d^2b^6a+\frac{126}{11}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*e^6*b^7 + 6/13*x^13*e^5*d*b^7 + 7/13*x^13*e^6*b^6*a + 5/4*x^12*e^
4*d^2*b^7 + 7/2*x^12*e^5*d*b^6*a + 7/4*x^12*e^6*b^5*a^2 + 20/11*x^11*e^3*d^
3*b^7 + 105/11*x^11*e^4*d^2*b^6*a + 126/11*x^11*e^5*d*b^5*a^2 + 35/11*x^11*
e^6*b^4*a^3 + 3/2*x^10*e^2*d^4*b^7 + 14*x^10*e^3*d^3*b^6*a + 63/2*x^10*e^4*
d^2*b^5*a^2 + 21*x^10*e^5*d*b^4*a^3 + 7/2*x^10*e^6*b^3*a^4 + 2/3*x^9*e*d^5*
b^7 + 35/3*x^9*e^2*d^4*b^6*a + 140/3*x^9*e^3*d^3*b^5*a^2 + 175/3*x^9*e^4*d^
2*b^4*a^3 + 70/3*x^9*e^5*d*b^3*a^4 + 7/3*x^9*e^6*b^2*a^5 + 1/8*x^8*d^6*b^7
+ 21/4*x^8*e*d^5*b^6*a + 315/8*x^8*e^2*d^4*b^5*a^2 + 175/2*x^8*e^3*d^3*b^4*
a^3 + 525/8*x^8*e^4*d^2*b^3*a^4 + 63/4*x^8*e^5*d*b^2*a^5 + 7/8*x^8*e^6*b*a^
6 + x^7*d^6*b^6*a + 18*x^7*e*d^5*b^5*a^2 + 75*x^7*e^2*d^4*b^4*a^3 + 100*x^7
*e^3*d^3*b^3*a^4 + 45*x^7*e^4*d^2*b^2*a^5 + 6*x^7*e^5*d*b*a^6 + 1/7*x^7*e^6
*a^7 + 7/2*x^6*d^6*b^5*a^2 + 35*x^6*e*d^5*b^4*a^3 + 175/2*x^6*e^2*d^4*b^3*a
^4 + 70*x^6*e^3*d^3*b^2*a^5 + 35/2*x^6*e^4*d^2*b*a^6 + x^6*e^5*d*a^7 + 7*x^
5*d^6*b^4*a^3 + 42*x^5*e*d^5*b^3*a^4 + 63*x^5*e^2*d^4*b^2*a^5 + 28*x^5*e^3*
d^3*b*a^6 + 3*x^5*e^4*d^2*a^7 + 35/4*x^4*d^6*b^3*a^4 + 63/2*x^4*e*d^5*b^2*a
^5 + 105/4*x^4*e^2*d^4*b*a^6 + 5*x^4*e^3*d^3*a^7 + 7*x^3*d^6*b^2*a^5 + 14*x
^3*e*d^5*b*a^6 + 5*x^3*e^2*d^4*a^7 + 7/2*x^2*d^6*b*a^6 + 3*x^2*e*d^5*a^7 +
x*d^6*a^7
```

giac **[B]** time = 0.27, size = 766, normalized size = 4.43

$$\frac{1}{14}b^7x^{14}e^6+\frac{6}{13}b^7dx^{13}e^5+\frac{5}{4}b^7d^2x^{12}e^4+\frac{20}{11}b^7d^3x^{11}e^3+\frac{3}{2}b^7d^4x^{10}e^2+\frac{2}{3}b^7d^5x^9e+\frac{1}{8}b^7d^6x^8+\frac{7}{13}ab^6x^{13}e^6+\frac{7}{2}ab^6dx^{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/14*b^7*x^14*e^6 + 6/13*b^7*d*x^13*e^5 + 5/4*b^7*d^2*x^12*e^4 + 20/11*b^7*
d^3*x^11*e^3 + 3/2*b^7*d^4*x^10*e^2 + 2/3*b^7*d^5*x^9*e + 1/8*b^7*d^6*x^8 +
 7/13*a*b^6*x^13*e^6 + 7/2*a*b^6*d*x^12*e^5 + 105/11*a*b^6*d^2*x^11*e^4 + 1
4*a*b^6*d^3*x^10*e^3 + 35/3*a*b^6*d^4*x^9*e^2 + 21/4*a*b^6*d^5*x^8*e + a*b^
6*d^6*x^7 + 7/4*a^2*b^5*x^12*e^6 + 126/11*a^2*b^5*d*x^11*e^5 + 63/2*a^2*b^5
*d^2*x^10*e^4 + 140/3*a^2*b^5*d^3*x^9*e^3 + 315/8*a^2*b^5*d^4*x^8*e^2 + 18*
a^2*b^5*d^5*x^7*e + 7/2*a^2*b^5*d^6*x^6 + 35/11*a^3*b^4*x^11*e^6 + 21*a^3*b
^4*d*x^10*e^5 + 175/3*a^3*b^4*d^2*x^9*e^4 + 175/2*a^3*b^4*d^3*x^8*e^3 + 75*
```

```
a^3*b^4*d^4*x^7*e^2 + 35*a^3*b^4*d^5*x^6*e + 7*a^3*b^4*d^6*x^5 + 7/2*a^4*b^
3*x^10*e^6 + 70/3*a^4*b^3*d*x^9*e^5 + 525/8*a^4*b^3*d^2*x^8*e^4 + 100*a^4*b
^3*d^3*x^7*e^3 + 175/2*a^4*b^3*d^4*x^6*e^2 + 42*a^4*b^3*d^5*x^5*e + 35/4*a^
4*b^3*d^6*x^4 + 7/3*a^5*b^2*x^9*e^6 + 63/4*a^5*b^2*d*x^8*e^5 + 45*a^5*b^2*d
^2*x^7*e^4 + 70*a^5*b^2*d^3*x^6*e^3 + 63*a^5*b^2*d^4*x^5*e^2 + 63/2*a^5*b^2
*d^5*x^4*e + 7*a^5*b^2*d^6*x^3 + 7/8*a^6*b*x^8*e^6 + 6*a^6*b*d*x^7*e^5 + 35
/2*a^6*b*d^2*x^6*e^4 + 28*a^6*b*d^3*x^5*e^3 + 105/4*a^6*b*d^4*x^4*e^2 + 14*
a^6*b*d^5*x^3*e + 7/2*a^6*b*d^6*x^2 + 1/7*a^7*x^7*e^6 + a^7*d*x^6*e^5 + 3*a
^7*d^2*x^5*e^4 + 5*a^7*d^3*x^4*e^3 + 5*a^7*d^4*x^3*e^2 + 3*a^7*d^5*x^2*e +
a^7*d^6*x
```

maple [B] time = 0.04, size = 1165, normalized size = 6.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/14*b^7*e^6*x^14+1/13*((a*e^6+6*b*d*e^5)*b^6+6*b^6*e^6*a)*x^13+1/12*((6*a*
d*e^5+15*b*d^2*e^4)*b^6+6*(a*e^6+6*b*d*e^5)*a*b^5+15*b^5*e^6*a^2)*x^12+1/11
*((15*a*d^2*e^4+20*b*d^3*e^3)*b^6+6*(6*a*d*e^5+15*b*d^2*e^4)*a*b^5+15*(a*e^
6+6*b*d*e^5)*a^2*b^4+20*b^4*e^6*a^3)*x^11+1/10*((20*a*d^3*e^3+15*b*d^4*e^2)
*b^6+6*(15*a*d^2*e^4+20*b*d^3*e^3)*a*b^5+15*(6*a*d*e^5+15*b*d^2*e^4)*a^2*b^
4+20*(a*e^6+6*b*d*e^5)*a^3*b^3+15*b^3*e^6*a^4)*x^10+1/9*((15*a*d^4*e^2+6*b*
d^5*e)*b^6+6*(20*a*d^3*e^3+15*b*d^4*e^2)*a*b^5+15*(15*a*d^2*e^4+20*b*d^3*e^
3)*a^2*b^4+20*(6*a*d*e^5+15*b*d^2*e^4)*a^3*b^3+15*(a*e^6+6*b*d*e^5)*a^4*b^2
+6*b^2*e^6*a^5)*x^9+1/8*((6*a*d^5*e+b*d^6)*b^6+6*(15*a*d^4*e^2+6*b*d^5*e)*a
*b^5+15*(20*a*d^3*e^3+15*b*d^4*e^2)*a^2*b^4+20*(15*a*d^2*e^4+20*b*d^3*e^3)*
a^3*b^3+15*(6*a*d*e^5+15*b*d^2*e^4)*a^4*b^2+6*(a*e^6+6*b*d*e^5)*a^5*b+b*e^6
*a^6)*x^8+1/7*(a*d^6*b^6+6*(6*a*d^5*e+b*d^6)*a*b^5+15*(15*a*d^4*e^2+6*b*d^5
*e)*a^2*b^4+20*(20*a*d^3*e^3+15*b*d^4*e^2)*a^3*b^3+15*(15*a*d^2*e^4+20*b*d^
3*e^3)*a^4*b^2+6*(6*a*d*e^5+15*b*d^2*e^4)*a^5*b+(a*e^6+6*b*d*e^5)*a^6)*x^7+
1/6*(6*a^2*d^6*b^5+15*(6*a*d^5*e+b*d^6)*a^2*b^4+20*(15*a*d^4*e^2+6*b*d^5*e)
*a^3*b^3+15*(20*a*d^3*e^3+15*b*d^4*e^2)*a^4*b^2+6*(15*a*d^2*e^4+20*b*d^3*e^
3)*a^5*b+(6*a*d*e^5+15*b*d^2*e^4)*a^6)*x^6+1/5*(15*a^3*d^6*b^4+20*(6*a*d^5*
e+b*d^6)*a^3*b^3+15*(15*a*d^4*e^2+6*b*d^5*e)*a^4*b^2+6*(20*a*d^3*e^3+15*b*d
^4*e^2)*a^5*b+(15*a*d^2*e^4+20*b*d^3*e^3)*a^6)*x^5+1/4*(20*a^4*d^6*b^3+15*(
6*a*d^5*e+b*d^6)*a^4*b^2+6*(15*a*d^4*e^2+6*b*d^5*e)*a^5*b+(20*a*d^3*e^3+15*
b*d^4*e^2)*a^6)*x^4+1/3*(15*a^5*d^6*b^2+6*(6*a*d^5*e+b*d^6)*a^5*b+(15*a*d^4
*e^2+6*b*d^5*e)*a^6)*x^3+1/2*(6*a^6*d^6*b+(6*a*d^5*e+b*d^6)*a^6)*x^2+a^7*d^
6*x
```

maxima [B] time = 0.61, size = 706, normalized size = 4.08

$$\frac{1}{14}\,b^7e^6x^{14}+a^7d^6x+\frac{1}{13}\left(6\,b^7de^5+7\,ab^6e^6\right)x^{13}+\frac{1}{4}\left(5\,b^7d^2e^4+14\,ab^6de^5+7\,a^2b^5e^6\right)x^{12}+\frac{1}{11}\left(20\,b^7d^3e^3+105\,ab^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/14*b^7*e^6*x^14 + a^7*d^6*x + 1/13*(6*b^7*d*e^5 + 7*a*b^6*e^6)*x^13 + 1/4
*(5*b^7*d^2*e^4 + 14*a*b^6*d*e^5 + 7*a^2*b^5*e^6)*x^12 + 1/11*(20*b^7*d^3*e
^3 + 105*a*b^6*d^2*e^4 + 126*a^2*b^5*d*e^5 + 35*a^3*b^4*e^6)*x^11 + 1/2*(3*
b^7*d^4*e^2 + 28*a*b^6*d^3*e^3 + 63*a^2*b^5*d^2*e^4 + 42*a^3*b^4*d*e^5 + 7*
a^4*b^3*e^6)*x^10 + 1/3*(2*b^7*d^5*e + 35*a*b^6*d^4*e^2 + 140*a^2*b^5*d^3*e
^3 + 175*a^3*b^4*d^2*e^4 + 70*a^4*b^3*d*e^5 + 7*a^5*b^2*e^6)*x^9 + 1/8*(b^7
*d^6 + 42*a*b^6*d^5*e + 315*a^2*b^5*d^4*e^2 + 700*a^3*b^4*d^3*e^3 + 525*a^4
*b^3*d^2*e^4 + 126*a^5*b^2*d*e^5 + 7*a^6*b*e^6)*x^8 + 1/7*(7*a*b^6*d^6 + 12
6*a^2*b^5*d^5*e + 525*a^3*b^4*d^4*e^2 + 700*a^4*b^3*d^3*e^3 + 315*a^5*b^2*d
^2*e^4 + 42*a^6*b*d*e^5 + a^7*e^6)*x^7 + 1/2*(7*a^2*b^5*d^6 + 70*a^3*b^4*d^
5*e + 175*a^4*b^3*d^4*e^2 + 140*a^5*b^2*d^3*e^3 + 35*a^6*b*d^2*e^4 + 2*a^7*
d*e^5)*x^6 + (7*a^3*b^4*d^6 + 42*a^4*b^3*d^5*e + 63*a^5*b^2*d^4*e^2 + 28*a^
6*b*d^3*e^3 + 3*a^7*d^2*e^4)*x^5 + 1/4*(35*a^4*b^3*d^6 + 126*a^5*b^2*d^5*e
+ 105*a^6*b*d^4*e^2 + 20*a^7*d^3*e^3)*x^4 + (7*a^5*b^2*d^6 + 14*a^6*b*d^5*e
 + 5*a^7*d^4*e^2)*x^3 + 1/2*(7*a^6*b*d^6 + 6*a^7*d^5*e)*x^2
```

mupad [B] time = 2.26, size = 683, normalized size = 3.95

$$x^5\,\left(3\,a^7\,d^2\,e^4+28\,a^6\,b\,d^3\,e^3+63\,a^5\,b^2\,d^4\,e^2+42\,a^4\,b^3\,d^5\,e+7\,a^3\,b^4\,d^6\right)+x^{10}\,\left(\frac{7\,a^4\,b^3\,e^6}{2}+21\,a^3\,b^4\,d\,e^5+\frac{63\,a^2\,b^5}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*(7*a^3*b^4*d^6 + 3*a^7*d^2*e^4 + 42*a^4*b^3*d^5*e + 28*a^6*b*d^3*e^3 +
63*a^5*b^2*d^4*e^2) + x^10*((7*a^4*b^3*e^6)/2 + (3*b^7*d^4*e^2)/2 + 14*a*b^
6*d^3*e^3 + 21*a^3*b^4*d*e^5 + (63*a^2*b^5*d^2*e^4)/2) + x^6*(a^7*d*e^5 + (
7*a^2*b^5*d^6)/2 + 35*a^3*b^4*d^5*e + (35*a^6*b*d^2*e^4)/2 + (175*a^4*b^3*d
^4*e^2)/2 + 70*a^5*b^2*d^3*e^3) + x^9*((2*b^7*d^5*e)/3 + (7*a^5*b^2*e^6)/3
+ (35*a*b^6*d^4*e^2)/3 + (70*a^4*b^3*d*e^5)/3 + (140*a^2*b^5*d^3*e^3)/3 + (
175*a^3*b^4*d^2*e^4)/3) + x^7*((a^7*e^6)/7 + a*b^6*d^6 + 18*a^2*b^5*d^5*e +
 75*a^3*b^4*d^4*e^2 + 100*a^4*b^3*d^3*e^3 + 45*a^5*b^2*d^2*e^4 + 6*a^6*b*d*
e^5) + x^8*((b^7*d^6)/8 + (7*a^6*b*e^6)/8 + (63*a^5*b^2*d*e^5)/4 + (315*a^2
*b^5*d^4*e^2)/8 + (175*a^3*b^4*d^3*e^3)/2 + (525*a^4*b^3*d^2*e^4)/8 + (21*a
*b^6*d^5*e)/4) + x^4*((35*a^4*b^3*d^6)/4 + 5*a^7*d^3*e^3 + (63*a^5*b^2*d^5*
e)/2 + (105*a^6*b*d^4*e^2)/4) + x^11*((35*a^3*b^4*e^6)/11 + (20*b^7*d^3*e^3
)/11 + (105*a*b^6*d^2*e^4)/11 + (126*a^2*b^5*d*e^5)/11) + a^7*d^6*x + (b^7*
e^6*x^14)/14 + (a^6*d^5*x^2*(6*a*e + 7*b*d))/2 + (b^6*e^5*x^13*(7*a*e + 6*b
*d))/13 + a^5*d^4*x^3*(5*a^2*e^2 + 7*b^2*d^2 + 14*a*b*d*e) + (b^5*e^4*x^12*
(7*a^2*e^2 + 5*b^2*d^2 + 14*a*b*d*e))/4
```

sympy [B] time = 0.19, size = 796, normalized size = 4.60

$$a^7d^6x+\frac{b^7e^6x^{14}}{14}+x^{13}\left(\frac{7ab^6e^6}{13}+\frac{6b^7de^5}{13}\right)+x^{12}\left(\frac{7a^2b^5e^6}{4}+\frac{7ab^6de^5}{2}+\frac{5b^7d^2e^4}{4}\right)+x^{11}\left(\frac{35a^3b^4e^6}{11}+\frac{126a^2b^5de^5}{11}+10\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**6*x + b**7*e**6*x**14/14 + x**13*(7*a*b**6*e**6/13 + 6*b**7*d*e**5/
13) + x**12*(7*a**2*b**5*e**6/4 + 7*a*b**6*d*e**5/2 + 5*b**7*d**2*e**4/4) +
 x**11*(35*a**3*b**4*e**6/11 + 126*a**2*b**5*d*e**5/11 + 105*a*b**6*d**2*e*
*4/11 + 20*b**7*d**3*e**3/11) + x**10*(7*a**4*b**3*e**6/2 + 21*a**3*b**4*d*
e**5 + 63*a**2*b**5*d**2*e**4/2 + 14*a*b**6*d**3*e**3 + 3*b**7*d**4*e**2/2)
 + x**9*(7*a**5*b**2*e**6/3 + 70*a**4*b**3*d*e**5/3 + 175*a**3*b**4*d**2*e*
*4/3 + 140*a**2*b**5*d**3*e**3/3 + 35*a*b**6*d**4*e**2/3 + 2*b**7*d**5*e/3)
 + x**8*(7*a**6*b*e**6/8 + 63*a**5*b**2*d*e**5/4 + 525*a**4*b**3*d**2*e**4/
8 + 175*a**3*b**4*d**3*e**3/2 + 315*a**2*b**5*d**4*e**2/8 + 21*a*b**6*d**5*
e/4 + b**7*d**6/8) + x**7*(a**7*e**6/7 + 6*a**6*b*d*e**5 + 45*a**5*b**2*d**
2*e**4 + 100*a**4*b**3*d**3*e**3 + 75*a**3*b**4*d**4*e**2 + 18*a**2*b**5*d*
*5*e + a*b**6*d**6) + x**6*(a**7*d*e**5 + 35*a**6*b*d**2*e**4/2 + 70*a**5*b
**2*d**3*e**3 + 175*a**4*b**3*d**4*e**2/2 + 35*a**3*b**4*d**5*e + 7*a**2*b*
*5*d**6/2) + x**5*(3*a**7*d**2*e**4 + 28*a**6*b*d**3*e**3 + 63*a**5*b**2*d*
*4*e**2 + 42*a**4*b**3*d**5*e + 7*a**3*b**4*d**6) + x**4*(5*a**7*d**3*e**3
+ 105*a**6*b*d**4*e**2/4 + 63*a**5*b**2*d**5*e/2 + 35*a**4*b**3*d**6/4) + x
**3*(5*a**7*d**4*e**2 + 14*a**6*b*d**5*e + 7*a**5*b**2*d**6) + x**2*(3*a**7
*d**5*e + 7*a**6*b*d**6/2)
```

3.1917 $\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=143

$$\frac{5e^4(a+bx)^{12}(bd-ae)}{12b^6}+\frac{10e^3(a+bx)^{11}(bd-ae)^2}{11b^6}+\frac{e^2(a+bx)^{10}(bd-ae)^3}{b^6}+\frac{5e(a+bx)^9(bd-ae)^4}{9b^6}+\frac{(a+bx)^8(b}{8b^6}$$

```
[Out] 1/8*(-a*e+b*d)^5*(b*x+a)^8/b^6+5/9*e*(-a*e+b*d)^4*(b*x+a)^9/b^6+e^2*(-a*e+b
*d)^3*(b*x+a)^10/b^6+10/11*e^3*(-a*e+b*d)^2*(b*x+a)^11/b^6+5/12*e^4*(-a*e+b
*d)*(b*x+a)^12/b^6+1/13*e^5*(b*x+a)^13/b^6
```

Rubi [A] time = 0.36, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{5e^4(a+bx)^{12}(bd-ae)}{12b^6}+\frac{10e^3(a+bx)^{11}(bd-ae)^2}{11b^6}+\frac{e^2(a+bx)^{10}(bd-ae)^3}{b^6}+\frac{5e(a+bx)^9(bd-ae)^4}{9b^6}+\frac{(a+bx)^8(b}{8b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^8)/(8*b^6) + (5*e*(b*d - a*e)^4*(a + b*x)^9)/(9*b^
6) + (e^2*(b*d - a*e)^3*(a + b*x)^10)/b^6 + (10*e^3*(b*d - a*e)^2*(a + b*x)
^11)/(11*b^6) + (5*e^4*(b*d - a*e)*(a + b*x)^12)/(12*b^6) + (e^5*(a + b*x)^
13)/(13*b^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^3\,dx&=\int (a+bx)^7(d+ex)^5\,dx\\&=\int \left(\frac{(bd-ae)^5(a+bx)^7}{b^5}+\frac{5e(bd-ae)^4(a+bx)^8}{b^5}+\frac{10e^2(bd-ae}{b^5}\right.\\&=\frac{(bd-ae)^5(a+bx)^8}{8b^6}+\frac{5e(bd-ae)^4(a+bx)^9}{9b^6}+\frac{e^2(bd-ae)^3(a+}{b^6}\end{aligned}$$

Mathematica [B] time = 0.14, size = 493, normalized size = 3.45

$$x\left(1716a^7\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+1716a^6bx\left(21d^5+70d^4ex+105d^3e^2x^2+8\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(1716*a^7*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 + 6*d*e^
4*x^4 + e^5*x^5) + 1716*a^6*b*x*(21*d^5 + 70*d^4*e*x + 105*d^3*e^2*x^2 + 84
*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 1287*a^5*b^2*x^2*(56*d^5 + 210*d
^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5) +
715*a^4*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d^2*e^3*x^3
+ 315*d*e^4*x^4 + 56*e^5*x^5) + 286*a^3*b^4*x^4*(252*d^5 + 1050*d^4*e*x + 1
800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5) + 78*a^2*
b^5*x^5*(462*d^5 + 1980*d^4*e*x + 3465*d^3*e^2*x^2 + 3080*d^2*e^3*x^3 + 138
6*d*e^4*x^4 + 252*e^5*x^5) + 13*a*b^6*x^6*(792*d^5 + 3465*d^4*e*x + 6160*d^
3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*e^4*x^4 + 462*e^5*x^5) + b^7*x^7*(128
7*d^5 + 5720*d^4*e*x + 10296*d^3*e^2*x^2 + 9360*d^2*e^3*x^3 + 4290*d*e^4*x^
4 + 792*e^5*x^5)))/10296
```

fricas [B] time = 1.03, size = 670, normalized size = 4.69

$$\frac{1}{13}x^{13}e^5b^7+\frac{5}{12}x^{12}e^4db^7+\frac{7}{12}x^{12}e^5b^6a+\frac{10}{11}x^{11}e^3d^2b^7+\frac{35}{11}x^{11}e^4db^6a+\frac{21}{11}x^{11}e^5b^5a^2+x^{10}e^2d^3b^7+7x^{10}e^3d^2b^6a+\frac{21}{2}x^{10}e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*b^7 + 5/12*x^12*e^4*d*b^7 + 7/12*x^12*e^5*b^6*a + 10/11*x^11*
e^3*d^2*b^7 + 35/11*x^11*e^4*d*b^6*a + 21/11*x^11*e^5*b^5*a^2 + x^10*e^2*d^
3*b^7 + 7*x^10*e^3*d^2*b^6*a + 21/2*x^10*e^4*d*b^5*a^2 + 7/2*x^10*e^5*b^4*a
^3 + 5/9*x^9*e*d^4*b^7 + 70/9*x^9*e^2*d^3*b^6*a + 70/3*x^9*e^3*d^2*b^5*a^2
+ 175/9*x^9*e^4*d*b^4*a^3 + 35/9*x^9*e^5*b^3*a^4 + 1/8*x^8*d^5*b^7 + 35/8*x
^8*e*d^4*b^6*a + 105/4*x^8*e^2*d^3*b^5*a^2 + 175/4*x^8*e^3*d^2*b^4*a^3 + 17
5/8*x^8*e^4*d*b^3*a^4 + 21/8*x^8*e^5*b^2*a^5 + x^7*d^5*b^6*a + 15*x^7*e*d^4
*b^5*a^2 + 50*x^7*e^2*d^3*b^4*a^3 + 50*x^7*e^3*d^2*b^3*a^4 + 15*x^7*e^4*d*b
^2*a^5 + x^7*e^5*b*a^6 + 7/2*x^6*d^5*b^5*a^2 + 175/6*x^6*e*d^4*b^4*a^3 + 17
5/3*x^6*e^2*d^3*b^3*a^4 + 35*x^6*e^3*d^2*b^2*a^5 + 35/6*x^6*e^4*d*b*a^6 + 1
/6*x^6*e^5*a^7 + 7*x^5*d^5*b^4*a^3 + 35*x^5*e*d^4*b^3*a^4 + 42*x^5*e^2*d^3*
b^2*a^5 + 14*x^5*e^3*d^2*b*a^6 + x^5*e^4*d*a^7 + 35/4*x^4*d^5*b^3*a^4 + 105
/4*x^4*e*d^4*b^2*a^5 + 35/2*x^4*e^2*d^3*b*a^6 + 5/2*x^4*e^3*d^2*a^7 + 7*x^3
*d^5*b^2*a^5 + 35/3*x^3*e*d^4*b*a^6 + 10/3*x^3*e^2*d^3*a^7 + 7/2*x^2*d^5*b*
a^6 + 5/2*x^2*e*d^4*a^7 + x*d^5*a^7
```

giac [B] time = 0.16, size = 646, normalized size = 4.52

$$\frac{1}{13}b^7x^{13}e^5+\frac{5}{12}b^7dx^{12}e^4+\frac{10}{11}b^7d^2x^{11}e^3+b^7d^3x^{10}e^2+\frac{5}{9}b^7d^4x^9e+\frac{1}{8}b^7d^5x^8+\frac{7}{12}ab^6x^{12}e^5+\frac{35}{11}ab^6dx^{11}e^4+7ab^6d^2x^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/13*b^7*x^13*e^5 + 5/12*b^7*d*x^12*e^4 + 10/11*b^7*d^2*x^11*e^3 + b^7*d^3*
x^10*e^2 + 5/9*b^7*d^4*x^9*e + 1/8*b^7*d^5*x^8 + 7/12*a*b^6*x^12*e^5 + 35/1
1*a*b^6*d*x^11*e^4 + 7*a*b^6*d^2*x^10*e^3 + 70/9*a*b^6*d^3*x^9*e^2 + 35/8*a
*b^6*d^4*x^8*e + a*b^6*d^5*x^7 + 21/11*a^2*b^5*x^11*e^5 + 21/2*a^2*b^5*d*x^
10*e^4 + 70/3*a^2*b^5*d^2*x^9*e^3 + 105/4*a^2*b^5*d^3*x^8*e^2 + 15*a^2*b^5*
d^4*x^7*e + 7/2*a^2*b^5*d^5*x^6 + 7/2*a^3*b^4*x^10*e^5 + 175/9*a^3*b^4*d*x^
9*e^4 + 175/4*a^3*b^4*d^2*x^8*e^3 + 50*a^3*b^4*d^3*x^7*e^2 + 175/6*a^3*b^4*
d^4*x^6*e + 7*a^3*b^4*d^5*x^5 + 35/9*a^4*b^3*x^9*e^5 + 175/8*a^4*b^3*d*x^8*
e^4 + 50*a^4*b^3*d^2*x^7*e^3 + 175/3*a^4*b^3*d^3*x^6*e^2 + 35*a^4*b^3*d^4*x
^5*e + 35/4*a^4*b^3*d^5*x^4 + 21/8*a^5*b^2*x^8*e^5 + 15*a^5*b^2*d*x^7*e^4 +
 35*a^5*b^2*d^2*x^6*e^3 + 42*a^5*b^2*d^3*x^5*e^2 + 105/4*a^5*b^2*d^4*x^4*e
+ 7*a^5*b^2*d^5*x^3 + a^6*b*x^7*e^5 + 35/6*a^6*b*d*x^6*e^4 + 14*a^6*b*d^2*x
^5*e^3 + 35/2*a^6*b*d^3*x^4*e^2 + 35/3*a^6*b*d^4*x^3*e + 7/2*a^6*b*d^5*x^2
+ 1/6*a^7*x^6*e^5 + a^7*d*x^5*e^4 + 5/2*a^7*d^2*x^4*e^3 + 10/3*a^7*d^3*x^3*
e^2 + 5/2*a^7*d^4*x^2*e + a^7*d^5*x
```

maple [B] time = 0.05, size = 982, normalized size = 6.87

$$\frac{b^7e^5x^{13}}{13}+a^7d^5x+\frac{\left(6a\,b^6e^5+\left(a\,e^5+5bd\,e^4\right)b^6\right)x^{12}}{12}+\frac{\left(15a^2b^5e^5+6\left(a\,e^5+5bd\,e^4\right)a\,b^5+\left(5ad\,e^4+10b\,d^2e^3\right)b^6\right)}{11}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/13*b^7*e^5*x^13+1/12*((a*e^5+5*b*d*e^4)*b^6+6*b^6*e^5*a)*x^12+1/11*((5*a*
d*e^4+10*b*d^2*e^3)*b^6+6*(a*e^5+5*b*d*e^4)*a*b^5+15*b^5*e^5*a^2)*x^11+1/10
*((10*a*d^2*e^3+10*b*d^3*e^2)*b^6+6*(5*a*d*e^4+10*b*d^2*e^3)*a*b^5+15*(a*e^
5+5*b*d*e^4)*a^2*b^4+20*b^4*e^5*a^3)*x^10+1/9*((10*a*d^3*e^2+5*b*d^4*e)*b^6
+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a*b^5+15*(5*a*d*e^4+10*b*d^2*e^3)*a^2*b^4+20
*(a*e^5+5*b*d*e^4)*a^3*b^3+15*b^3*e^5*a^4)*x^9+1/8*((5*a*d^4*e+b*d^5)*b^6+6
*(10*a*d^3*e^2+5*b*d^4*e)*a*b^5+15*(10*a*d^2*e^3+10*b*d^3*e^2)*a^2*b^4+20*(
5*a*d*e^4+10*b*d^2*e^3)*a^3*b^3+15*(a*e^5+5*b*d*e^4)*a^4*b^2+6*b^2*e^5*a^5)
*x^8+1/7*(a*d^5*b^6+6*(5*a*d^4*e+b*d^5)*a*b^5+15*(10*a*d^3*e^2+5*b*d^4*e)*a
^2*b^4+20*(10*a*d^2*e^3+10*b*d^3*e^2)*a^3*b^3+15*(5*a*d*e^4+10*b*d^2*e^3)*a
^4*b^2+6*(a*e^5+5*b*d*e^4)*a^5*b+b*e^5*a^6)*x^7+1/6*(6*a^2*d^5*b^5+15*(5*a*
d^4*e+b*d^5)*a^2*b^4+20*(10*a*d^3*e^2+5*b*d^4*e)*a^3*b^3+15*(10*a*d^2*e^3+1
0*b*d^3*e^2)*a^4*b^2+6*(5*a*d*e^4+10*b*d^2*e^3)*a^5*b+(a*e^5+5*b*d*e^4)*a^6
)*x^6+1/5*(15*a^3*d^5*b^4+20*(5*a*d^4*e+b*d^5)*a^3*b^3+15*(10*a*d^3*e^2+5*b
*d^4*e)*a^4*b^2+6*(10*a*d^2*e^3+10*b*d^3*e^2)*a^5*b+(5*a*d*e^4+10*b*d^2*e^3
)*a^6)*x^5+1/4*(20*a^4*d^5*b^3+15*(5*a*d^4*e+b*d^5)*a^4*b^2+6*(10*a*d^3*e^2
+5*b*d^4*e)*a^5*b+(10*a*d^2*e^3+10*b*d^3*e^2)*a^6)*x^4+1/3*(15*a^5*d^5*b^2+
6*(5*a*d^4*e+b*d^5)*a^5*b+(10*a*d^3*e^2+5*b*d^4*e)*a^6)*x^3+1/2*(6*a^6*d^5*
b+(5*a*d^4*e+b*d^5)*a^6)*x^2+a^7*d^5*x
```

maxima [B] time = 0.57, size = 594, normalized size = 4.15

$$\frac{1}{13}\,b^7e^5x^{13}+a^7d^5x+\frac{1}{12}\left(5\,b^7de^4+7\,ab^6e^5\right)x^{12}+\frac{1}{11}\left(10\,b^7d^2e^3+35\,ab^6de^4+21\,a^2b^5e^5\right)x^{11}+\frac{1}{2}\left(2\,b^7d^3e^2+14\,ab^6\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/13*b^7*e^5*x^13 + a^7*d^5*x + 1/12*(5*b^7*d*e^4 + 7*a*b^6*e^5)*x^12 + 1/1
1*(10*b^7*d^2*e^3 + 35*a*b^6*d*e^4 + 21*a^2*b^5*e^5)*x^11 + 1/2*(2*b^7*d^3*
e^2 + 14*a*b^6*d^2*e^3 + 21*a^2*b^5*d*e^4 + 7*a^3*b^4*e^5)*x^10 + 5/9*(b^7*
d^4*e + 14*a*b^6*d^3*e^2 + 42*a^2*b^5*d^2*e^3 + 35*a^3*b^4*d*e^4 + 7*a^4*b^
3*e^5)*x^9 + 1/8*(b^7*d^5 + 35*a*b^6*d^4*e + 210*a^2*b^5*d^3*e^2 + 350*a^3*
b^4*d^2*e^3 + 175*a^4*b^3*d*e^4 + 21*a^5*b^2*e^5)*x^8 + (a*b^6*d^5 + 15*a^2
*b^5*d^4*e + 50*a^3*b^4*d^3*e^2 + 50*a^4*b^3*d^2*e^3 + 15*a^5*b^2*d*e^4 + a
^6*b*e^5)*x^7 + 1/6*(21*a^2*b^5*d^5 + 175*a^3*b^4*d^4*e + 350*a^4*b^3*d^3*e
^2 + 210*a^5*b^2*d^2*e^3 + 35*a^6*b*d*e^4 + a^7*e^5)*x^6 + (7*a^3*b^4*d^5 +
 35*a^4*b^3*d^4*e + 42*a^5*b^2*d^3*e^2 + 14*a^6*b*d^2*e^3 + a^7*d*e^4)*x^5
+ 5/4*(7*a^4*b^3*d^5 + 21*a^5*b^2*d^4*e + 14*a^6*b*d^3*e^2 + 2*a^7*d^2*e^3)
*x^4 + 1/3*(21*a^5*b^2*d^5 + 35*a^6*b*d^4*e + 10*a^7*d^3*e^2)*x^3 + 1/2*(7*
a^6*b*d^5 + 5*a^7*d^4*e)*x^2
```

mupad [B] time = 2.17, size = 570, normalized size = 3.99

$$x^5\,\left(a^7\,d\,e^4+14\,a^6\,b\,d^2\,e^3+42\,a^5\,b^2\,d^3\,e^2+35\,a^4\,b^3\,d^4\,e+7\,a^3\,b^4\,d^5\right)+x^9\,\left(\frac{35\,a^4\,b^3\,e^5}{9}+\frac{175\,a^3\,b^4\,d\,e^4}{9}+\frac{70\,a^2\,b}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*(a^7*d*e^4 + 7*a^3*b^4*d^5 + 35*a^4*b^3*d^4*e + 14*a^6*b*d^2*e^3 + 42*a
^5*b^2*d^3*e^2) + x^9*((5*b^7*d^4*e)/9 + (35*a^4*b^3*e^5)/9 + (70*a*b^6*d^3
*e^2)/9 + (175*a^3*b^4*d*e^4)/9 + (70*a^2*b^5*d^2*e^3)/3) + x^7*(a*b^6*d^5
+ a^6*b*e^5 + 15*a^2*b^5*d^4*e + 15*a^5*b^2*d*e^4 + 50*a^3*b^4*d^3*e^2 + 50
*a^4*b^3*d^2*e^3) + x^6*((a^7*e^5)/6 + (7*a^2*b^5*d^5)/2 + (175*a^3*b^4*d^4
*e)/6 + (175*a^4*b^3*d^3*e^2)/3 + 35*a^5*b^2*d^2*e^3 + (35*a^6*b*d*e^4)/6)
+ x^8*((b^7*d^5)/8 + (21*a^5*b^2*e^5)/8 + (175*a^4*b^3*d*e^4)/8 + (105*a^2*
b^5*d^3*e^2)/4 + (175*a^3*b^4*d^2*e^3)/4 + (35*a*b^6*d^4*e)/8) + a^7*d^5*x
+ (b^7*e^5*x^13)/13 + (5*a^4*d^2*x^4*(2*a^3*e^3 + 7*b^3*d^3 + 21*a*b^2*d^2*
e + 14*a^2*b*d*e^2))/4 + (b^4*e^2*x^10*(7*a^3*e^3 + 2*b^3*d^3 + 14*a*b^2*d^
2*e + 21*a^2*b*d*e^2))/2 + (a^6*d^4*x^2*(5*a*e + 7*b*d))/2 + (b^6*e^4*x^12*
(7*a*e + 5*b*d))/12 + (a^5*d^3*x^3*(10*a^2*e^2 + 21*b^2*d^2 + 35*a*b*d*e))/
3 + (b^5*e^3*x^11*(21*a^2*e^2 + 10*b^2*d^2 + 35*a*b*d*e))/11
```

sympy [B] time = 0.18, size = 673, normalized size = 4.71

$$a^7d^5x+\frac{b^7e^5x^{13}}{13}+x^{12}\left(\frac{7ab^6e^5}{12}+\frac{5b^7de^4}{12}\right)+x^{11}\left(\frac{21a^2b^5e^5}{11}+\frac{35ab^6de^4}{11}+\frac{10b^7d^2e^3}{11}\right)+x^{10}\left(\frac{7a^3b^4e^5}{2}+\frac{21a^2b^5de^4}{2}+7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**5*x + b**7*e**5*x**13/13 + x**12*(7*a*b**6*e**5/12 + 5*b**7*d*e**4/
12) + x**11*(21*a**2*b**5*e**5/11 + 35*a*b**6*d*e**4/11 + 10*b**7*d**2*e**3
/11) + x**10*(7*a**3*b**4*e**5/2 + 21*a**2*b**5*d*e**4/2 + 7*a*b**6*d**2*e*
*3 + b**7*d**3*e**2) + x**9*(35*a**4*b**3*e**5/9 + 175*a**3*b**4*d*e**4/9 +
 70*a**2*b**5*d**2*e**3/3 + 70*a*b**6*d**3*e**2/9 + 5*b**7*d**4*e/9) + x**8
*(21*a**5*b**2*e**5/8 + 175*a**4*b**3*d*e**4/8 + 175*a**3*b**4*d**2*e**3/4
+ 105*a**2*b**5*d**3*e**2/4 + 35*a*b**6*d**4*e/8 + b**7*d**5/8) + x**7*(a**
6*b*e**5 + 15*a**5*b**2*d*e**4 + 50*a**4*b**3*d**2*e**3 + 50*a**3*b**4*d**3
*e**2 + 15*a**2*b**5*d**4*e + a*b**6*d**5) + x**6*(a**7*e**5/6 + 35*a**6*b*
d*e**4/6 + 35*a**5*b**2*d**2*e**3 + 175*a**4*b**3*d**3*e**2/3 + 175*a**3*b*
*4*d**4*e/6 + 7*a**2*b**5*d**5/2) + x**5*(a**7*d*e**4 + 14*a**6*b*d**2*e**3
 + 42*a**5*b**2*d**3*e**2 + 35*a**4*b**3*d**4*e + 7*a**3*b**4*d**5) + x**4*
(5*a**7*d**2*e**3/2 + 35*a**6*b*d**3*e**2/2 + 105*a**5*b**2*d**4*e/4 + 35*a
**4*b**3*d**5/4) + x**3*(10*a**7*d**3*e**2/3 + 35*a**6*b*d**4*e/3 + 7*a**5*
b**2*d**5) + x**2*(5*a**7*d**4*e/2 + 7*a**6*b*d**5/2)
```

3.1918 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=119

$$\frac{4e^3(a+bx)^{11}(bd-ae)}{11b^5}+\frac{3e^2(a+bx)^{10}(bd-ae)^2}{5b^5}+\frac{4e(a+bx)^9(bd-ae)^3}{9b^5}+\frac{(a+bx)^8(bd-ae)^4}{8b^5}+\frac{e^4(a+bx)^{12}}{12b^5}$$

```
[Out] 1/8*(-a*e+b*d)^4*(b*x+a)^8/b^5+4/9*e*(-a*e+b*d)^3*(b*x+a)^9/b^5+3/5*e^2*(-a
*e+b*d)^2*(b*x+a)^10/b^5+4/11*e^3*(-a*e+b*d)*(b*x+a)^11/b^5+1/12*e^4*(b*x+a
)^12/b^5
```

Rubi [A] time = 0.28, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{4e^3(a+bx)^{11}(bd-ae)}{11b^5}+\frac{3e^2(a+bx)^{10}(bd-ae)^2}{5b^5}+\frac{4e(a+bx)^9(bd-ae)^3}{9b^5}+\frac{(a+bx)^8(bd-ae)^4}{8b^5}+\frac{e^4(a+bx)^{12}}{12b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^8)/(8*b^5) + (4*e*(b*d - a*e)^3*(a + b*x)^9)/(9*b^
5) + (3*e^2*(b*d - a*e)^2*(a + b*x)^10)/(5*b^5) + (4*e^3*(b*d - a*e)*(a + b
*x)^11)/(11*b^5) + (e^4*(a + b*x)^12)/(12*b^5)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^4\,dx\\ &= \int \left(\frac{(bd-ae)^4(a+bx)^7}{b^4}+\frac{4e(bd-ae)^3(a+bx)^8}{b^4}+\frac{6e^2(bd-ae)^2}{b^4}\right.\\ &= \frac{(bd-ae)^4(a+bx)^8}{8b^5}+\frac{4e(bd-ae)^3(a+bx)^9}{9b^5}+\frac{3e^2(bd-ae)^2(a+}{5b^5}\end{aligned}$$

Mathematica [B] time = 0.12, size = 405, normalized size = 3.40

$$\frac{x\left(792a^7\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+924a^6bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+5e^4x^4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(792*a^7*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3*x^3 + e^4*x^4) +
 924*a^6*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*x^3 + 5*e^4*x
^4) + 792*a^5*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e^3*x^
3 + 15*e^4*x^4) + 495*a^4*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d^2*e^2*x^2 +
 160*d*e^3*x^3 + 35*e^4*x^4) + 220*a^3*b^4*x^4*(126*d^4 + 420*d^3*e*x + 540
*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + 66*a^2*b^5*x^5*(210*d^4 + 720*
d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + 12*a*b^6*x^6*(33
0*d^4 + 1155*d^3*e*x + 1540*d^2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4*x^4) + b^
7*x^7*(495*d^4 + 1760*d^3*e*x + 2376*d^2*e^2*x^2 + 1440*d*e^3*x^3 + 330*e^4
*x^4)))/3960
```

fricas [B] time = 0.90, size = 546, normalized size = 4.59

$$\frac{1}{12}x^{12}e^4b^7+\frac{4}{11}x^{11}e^3db^7+\frac{7}{11}x^{11}e^4b^6a+\frac{3}{5}x^{10}e^2d^2b^7+\frac{14}{5}x^{10}e^3db^6a+\frac{21}{10}x^{10}e^4b^5a^2+\frac{4}{9}x^9ed^3b^7+\frac{14}{3}x^9e^2d^2b^6a+\frac{28}{3}x^9e^3d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*b^7 + 4/11*x^11*e^3*d*b^7 + 7/11*x^11*e^4*b^6*a + 3/5*x^10*e^
2*d^2*b^7 + 14/5*x^10*e^3*d*b^6*a + 21/10*x^10*e^4*b^5*a^2 + 4/9*x^9*e*d^3*
b^7 + 14/3*x^9*e^2*d^2*b^6*a + 28/3*x^9*e^3*d*b^5*a^2 + 35/9*x^9*e^4*b^4*a^
3 + 1/8*x^8*d^4*b^7 + 7/2*x^8*e*d^3*b^6*a + 63/4*x^8*e^2*d^2*b^5*a^2 + 35/2
*x^8*e^3*d*b^4*a^3 + 35/8*x^8*e^4*b^3*a^4 + x^7*d^4*b^6*a + 12*x^7*e*d^3*b^
5*a^2 + 30*x^7*e^2*d^2*b^4*a^3 + 20*x^7*e^3*d*b^3*a^4 + 3*x^7*e^4*b^2*a^5 +
 7/2*x^6*d^4*b^5*a^2 + 70/3*x^6*e*d^3*b^4*a^3 + 35*x^6*e^2*d^2*b^3*a^4 + 14
*x^6*e^3*d*b^2*a^5 + 7/6*x^6*e^4*b*a^6 + 7*x^5*d^4*b^4*a^3 + 28*x^5*e*d^3*b
^3*a^4 + 126/5*x^5*e^2*d^2*b^2*a^5 + 28/5*x^5*e^3*d*b*a^6 + 1/5*x^5*e^4*a^7
 + 35/4*x^4*d^4*b^3*a^4 + 21*x^4*e*d^3*b^2*a^5 + 21/2*x^4*e^2*d^2*b*a^6 + x
^4*e^3*d*a^7 + 7*x^3*d^4*b^2*a^5 + 28/3*x^3*e*d^3*b*a^6 + 2*x^3*e^2*d^2*a^7
 + 7/2*x^2*d^4*b*a^6 + 2*x^2*e*d^3*a^7 + x*d^4*a^7
```

giac [B] time = 0.19, size = 530, normalized size = 4.45

$$\frac{1}{12}\,b^7x^{12}e^4+\frac{4}{11}\,b^7dx^{11}e^3+\frac{3}{5}\,b^7d^2x^{10}e^2+\frac{4}{9}\,b^7d^3x^9e+\frac{1}{8}\,b^7d^4x^8+\frac{7}{11}\,ab^6x^{11}e^4+\frac{14}{5}\,ab^6dx^{10}e^3+\frac{14}{3}\,ab^6d^2x^9e^2+\frac{7}{2}\,ab^6d^3x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/12*b^7*x^12*e^4 + 4/11*b^7*d*x^11*e^3 + 3/5*b^7*d^2*x^10*e^2 + 4/9*b^7*d^
3*x^9*e + 1/8*b^7*d^4*x^8 + 7/11*a*b^6*x^11*e^4 + 14/5*a*b^6*d*x^10*e^3 + 1
4/3*a*b^6*d^2*x^9*e^2 + 7/2*a*b^6*d^3*x^8*e + a*b^6*d^4*x^7 + 21/10*a^2*b^5
*x^10*e^4 + 28/3*a^2*b^5*d*x^9*e^3 + 63/4*a^2*b^5*d^2*x^8*e^2 + 12*a^2*b^5*
d^3*x^7*e + 7/2*a^2*b^5*d^4*x^6 + 35/9*a^3*b^4*x^9*e^4 + 35/2*a^3*b^4*d*x^8
*e^3 + 30*a^3*b^4*d^2*x^7*e^2 + 70/3*a^3*b^4*d^3*x^6*e + 7*a^3*b^4*d^4*x^5
+ 35/8*a^4*b^3*x^8*e^4 + 20*a^4*b^3*d*x^7*e^3 + 35*a^4*b^3*d^2*x^6*e^2 + 28
*a^4*b^3*d^3*x^5*e + 35/4*a^4*b^3*d^4*x^4 + 3*a^5*b^2*x^7*e^4 + 14*a^5*b^2*
d*x^6*e^3 + 126/5*a^5*b^2*d^2*x^5*e^2 + 21*a^5*b^2*d^3*x^4*e + 7*a^5*b^2*d^
4*x^3 + 7/6*a^6*b*x^6*e^4 + 28/5*a^6*b*d*x^5*e^3 + 21/2*a^6*b*d^2*x^4*e^2 +
 28/3*a^6*b*d^3*x^3*e + 7/2*a^6*b*d^4*x^2 + 1/5*a^7*x^5*e^4 + a^7*d*x^4*e^3
 + 2*a^7*d^2*x^3*e^2 + 2*a^7*d^3*x^2*e + a^7*d^4*x
```

maple [B] time = 0.05, size = 799, normalized size = 6.71

$$\frac{b^7e^4x^{12}}{12}+a^7d^4x+\frac{\left(6a\,b^6e^4+\left(a\,e^4+4bd\,e^3\right)b^6\right)x^{11}}{11}+\frac{\left(15a^2b^5e^4+6\left(a\,e^4+4bd\,e^3\right)a\,b^5+\left(4ad\,e^3+6b\,d^2e^2\right)b^6\right)x^{10}}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/12*b^7*e^4*x^12+1/11*((a*e^4+4*b*d*e^3)*b^6+6*b^6*e^4*a)*x^11+1/10*((4*a*
d*e^3+6*b*d^2*e^2)*b^6+6*(a*e^4+4*b*d*e^3)*a*b^5+15*b^5*e^4*a^2)*x^10+1/9*(
(6*a*d^2*e^2+4*b*d^3*e)*b^6+6*(4*a*d*e^3+6*b*d^2*e^2)*a*b^5+15*(a*e^4+4*b*d
*e^3)*a^2*b^4+20*b^4*e^4*a^3)*x^9+1/8*((4*a*d^3*e+b*d^4)*b^6+6*(6*a*d^2*e^2
+4*b*d^3*e)*a*b^5+15*(4*a*d*e^3+6*b*d^2*e^2)*a^2*b^4+20*(a*e^4+4*b*d*e^3)*a
^3*b^3+15*b^3*e^4*a^4)*x^8+1/7*(a*d^4*b^6+6*(4*a*d^3*e+b*d^4)*a*b^5+15*(6*a
*d^2*e^2+4*b*d^3*e)*a^2*b^4+20*(4*a*d*e^3+6*b*d^2*e^2)*a^3*b^3+15*(a*e^4+4*
b*d*e^3)*a^4*b^2+6*b^2*e^4*a^5)*x^7+1/6*(6*a^2*d^4*b^5+15*(4*a*d^3*e+b*d^4)
*a^2*b^4+20*(6*a*d^2*e^2+4*b*d^3*e)*a^3*b^3+15*(4*a*d*e^3+6*b*d^2*e^2)*a^4*
b^2+6*(a*e^4+4*b*d*e^3)*a^5*b+b*e^4*a^6)*x^6+1/5*(15*a^3*d^4*b^4+20*(4*a*d^
3*e+b*d^4)*a^3*b^3+15*(6*a*d^2*e^2+4*b*d^3*e)*a^4*b^2+6*(4*a*d*e^3+6*b*d^2*
e^2)*a^5*b+(a*e^4+4*b*d*e^3)*a^6)*x^5+1/4*(20*a^4*d^4*b^3+15*(4*a*d^3*e+b*d
^4)*a^4*b^2+6*(6*a*d^2*e^2+4*b*d^3*e)*a^5*b+(4*a*d*e^3+6*b*d^2*e^2)*a^6)*x^
4+1/3*(15*a^5*d^4*b^2+6*(4*a*d^3*e+b*d^4)*a^5*b+(6*a*d^2*e^2+4*b*d^3*e)*a^6
)*x^3+1/2*(6*a^6*d^4*b+(4*a*d^3*e+b*d^4)*a^6)*x^2+a^7*d^4*x
```

maxima [B] time = 0.59, size = 489, normalized size = 4.11

$$\frac{1}{12}\,b^{7}e^{4}x^{12}+a^{7}d^{4}x+\frac{1}{11}\,\left(4\,b^{7}de^{3}+7\,ab^{6}e^{4}\right)x^{11}+\frac{1}{10}\,\left(6\,b^{7}d^{2}e^{2}+28\,ab^{6}de^{3}+21\,a^{2}b^{5}e^{4}\right)x^{10}+\frac{1}{9}\,\left(4\,b^{7}d^{3}e+42\,ab^{6}d^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/12*b^7*e^4*x^12 + a^7*d^4*x + 1/11*(4*b^7*d*e^3 + 7*a*b^6*e^4)*x^11 + 1/1
0*(6*b^7*d^2*e^2 + 28*a*b^6*d*e^3 + 21*a^2*b^5*e^4)*x^10 + 1/9*(4*b^7*d^3*e
 + 42*a*b^6*d^2*e^2 + 84*a^2*b^5*d*e^3 + 35*a^3*b^4*e^4)*x^9 + 1/8*(b^7*d^4
 + 28*a*b^6*d^3*e + 126*a^2*b^5*d^2*e^2 + 140*a^3*b^4*d*e^3 + 35*a^4*b^3*e^
4)*x^8 + (a*b^6*d^4 + 12*a^2*b^5*d^3*e + 30*a^3*b^4*d^2*e^2 + 20*a^4*b^3*d*
e^3 + 3*a^5*b^2*e^4)*x^7 + 7/6*(3*a^2*b^5*d^4 + 20*a^3*b^4*d^3*e + 30*a^4*b
^3*d^2*e^2 + 12*a^5*b^2*d*e^3 + a^6*b*e^4)*x^6 + 1/5*(35*a^3*b^4*d^4 + 140*
a^4*b^3*d^3*e + 126*a^5*b^2*d^2*e^2 + 28*a^6*b*d*e^3 + a^7*e^4)*x^5 + 1/4*(
35*a^4*b^3*d^4 + 84*a^5*b^2*d^3*e + 42*a^6*b*d^2*e^2 + 4*a^7*d*e^3)*x^4 + 1
/3*(21*a^5*b^2*d^4 + 28*a^6*b*d^3*e + 6*a^7*d^2*e^2)*x^3 + 1/2*(7*a^6*b*d^4
 + 4*a^7*d^3*e)*x^2
```

mupad [B] time = 0.18, size = 470, normalized size = 3.95

$$x^5\,\left(\frac{a^7\,e^4}{5}+\frac{28\,a^6\,b\,d\,e^3}{5}+\frac{126\,a^5\,b^2\,d^2\,e^2}{5}+28\,a^4\,b^3\,d^3\,e+7\,a^3\,b^4\,d^4\right)+x^8\,\left(\frac{35\,a^4\,b^3\,e^4}{8}+\frac{35\,a^3\,b^4\,d\,e^3}{2}+\frac{63\,a^2\,b^5}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^5*((a^7*e^4)/5 + 7*a^3*b^4*d^4 + 28*a^4*b^3*d^3*e + (126*a^5*b^2*d^2*e^2)
/5 + (28*a^6*b*d*e^3)/5) + x^8*((b^7*d^4)/8 + (35*a^4*b^3*e^4)/8 + (35*a^3*
b^4*d*e^3)/2 + (63*a^2*b^5*d^2*e^2)/4 + (7*a*b^6*d^3*e)/2) + x^4*(a^7*d*e^3
 + (35*a^4*b^3*d^4)/4 + 21*a^5*b^2*d^3*e + (21*a^6*b*d^2*e^2)/2) + x^9*((4*
b^7*d^3*e)/9 + (35*a^3*b^4*e^4)/9 + (14*a*b^6*d^2*e^2)/3 + (28*a^2*b^5*d*e^
3)/3) + x^7*(a*b^6*d^4 + 3*a^5*b^2*e^4 + 12*a^2*b^5*d^3*e + 20*a^4*b^3*d*e^
3 + 30*a^3*b^4*d^2*e^2) + x^6*((7*a^6*b*e^4)/6 + (7*a^2*b^5*d^4)/2 + (70*a^
3*b^4*d^3*e)/3 + 14*a^5*b^2*d*e^3 + 35*a^4*b^3*d^2*e^2) + a^7*d^4*x + (b^7*
e^4*x^12)/12 + (a^6*d^3*x^2*(4*a*e + 7*b*d))/2 + (b^6*e^3*x^11*(7*a*e + 4*b
*d))/11 + (a^5*d^2*x^3*(6*a^2*e^2 + 21*b^2*d^2 + 28*a*b*d*e))/3 + (b^5*e^2*
x^10*(21*a^2*e^2 + 6*b^2*d^2 + 28*a*b*d*e))/10
```

sympy [B] time = 0.16, size = 549, normalized size = 4.61

$$a^{7}d^{4}x+\frac{b^{7}e^{4}x^{12}}{12}+x^{11}\left(\frac{7ab^{6}e^{4}}{11}+\frac{4b^{7}de^{3}}{11}\right)+x^{10}\left(\frac{21a^{2}b^{5}e^{4}}{10}+\frac{14ab^{6}de^{3}}{5}+\frac{3b^{7}d^{2}e^{2}}{5}\right)+x^{9}\left(\frac{35a^{3}b^{4}e^{4}}{9}+\frac{28a^{2}b^{5}de^{3}}{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**4*x + b**7*e**4*x**12/12 + x**11*(7*a*b**6*e**4/11 + 4*b**7*d*e**3/
11) + x**10*(21*a**2*b**5*e**4/10 + 14*a*b**6*d*e**3/5 + 3*b**7*d**2*e**2/5
) + x**9*(35*a**3*b**4*e**4/9 + 28*a**2*b**5*d*e**3/3 + 14*a*b**6*d**2*e**2
/3 + 4*b**7*d**3*e/9) + x**8*(35*a**4*b**3*e**4/8 + 35*a**3*b**4*d*e**3/2 +
 63*a**2*b**5*d**2*e**2/4 + 7*a*b**6*d**3*e/2 + b**7*d**4/8) + x**7*(3*a**5
*b**2*e**4 + 20*a**4*b**3*d*e**3 + 30*a**3*b**4*d**2*e**2 + 12*a**2*b**5*d*
*3*e + a*b**6*d**4) + x**6*(7*a**6*b*e**4/6 + 14*a**5*b**2*d*e**3 + 35*a**4
*b**3*d**2*e**2 + 70*a**3*b**4*d**3*e/3 + 7*a**2*b**5*d**4/2) + x**5*(a**7*
e**4/5 + 28*a**6*b*d*e**3/5 + 126*a**5*b**2*d**2*e**2/5 + 28*a**4*b**3*d**3
*e + 7*a**3*b**4*d**4) + x**4*(a**7*d*e**3 + 21*a**6*b*d**2*e**2/2 + 21*a**
5*b**2*d**3*e + 35*a**4*b**3*d**4/4) + x**3*(2*a**7*d**2*e**2 + 28*a**6*b*d
**3*e/3 + 7*a**5*b**2*d**4) + x**2*(2*a**7*d**3*e + 7*a**6*b*d**4/2)
```

3.1919 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=92

$$\frac{3e^2(a+bx)^{10}(bd-ae)}{10b^4}+\frac{e(a+bx)^9(bd-ae)^2}{3b^4}+\frac{(a+bx)^8(bd-ae)^3}{8b^4}+\frac{e^3(a+bx)^{11}}{11b^4}$$

```
[Out] 1/8*(-a*e+b*d)^3*(b*x+a)^8/b^4+1/3*e*(-a*e+b*d)^2*(b*x+a)^9/b^4+3/10*e^2*(-
a*e+b*d)*(b*x+a)^10/b^4+1/11*e^3*(b*x+a)^11/b^4
```

Rubi [A] time = 0.22, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{3e^2(a+bx)^{10}(bd-ae)}{10b^4}+\frac{e(a+bx)^9(bd-ae)^2}{3b^4}+\frac{(a+bx)^8(bd-ae)^3}{8b^4}+\frac{e^3(a+bx)^{11}}{11b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^8)/(8*b^4) + (e*(b*d - a*e)^2*(a + b*x)^9)/(3*b^4)
 + (3*e^2*(b*d - a*e)*(a + b*x)^10)/(10*b^4) + (e^3*(a + b*x)^11)/(11*b^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3 dx &= \int (a+bx)^7(d+ex)^3\,dx\\ &= \int \left(\frac{(bd-ae)^3(a+bx)^7}{b^3}+\frac{3e(bd-ae)^2(a+bx)^8}{b^3}+\frac{3e^2(bd-ae)(}{b^3}\right.\\ &= \frac{(bd-ae)^3(a+bx)^8}{8b^4}+\frac{e(bd-ae)^2(a+bx)^9}{3b^4}+\frac{3e^2(bd-ae)(a+b}{10b^4}\end{aligned}$$

Mathematica [B] time = 0.05, size = 360, normalized size = 3.91

$$a^7d^3x+\frac{1}{2}a^6d^2x^2(3ae+7bd)+\frac{1}{3}b^5ex^9\left(7a^2e^2+7abde+b^2d^2\right)+a^5dx^3\left(a^2e^2+7abde+7b^2d^2\right)+ab^3x^7\left(5a^3e^3+15a\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] a^7*d^3*x + (a^6*d^2*(7*b*d + 3*a*e)*x^2)/2 + a^5*d*(7*b^2*d^2 + 7*a*b*d*e
+ a^2*e^2)*x^3 + (a^4*(35*b^3*d^3 + 63*a*b^2*d^2*e + 21*a^2*b*d*e^2 + a^3*e
^3)*x^4)/4 + (7*a^3*b*(5*b^3*d^3 + 15*a*b^2*d^2*e + 9*a^2*b*d*e^2 + a^3*e^3
)*x^5)/5 + (7*a^2*b^2*(b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2 + a^3*e^3)*x
^6)/2 + a*b^3*(b^3*d^3 + 9*a*b^2*d^2*e + 15*a^2*b*d*e^2 + 5*a^3*e^3)*x^7 +
(b^4*(b^3*d^3 + 21*a*b^2*d^2*e + 63*a^2*b*d*e^2 + 35*a^3*e^3)*x^8)/8 + (b^5
*e*(b^2*d^2 + 7*a*b*d*e + 7*a^2*e^2)*x^9)/3 + (b^6*e^2*(3*b*d + 7*a*e)*x^10
)/10 + (b^7*e^3*x^11)/11
```

fricas [B] time = 1.20, size = 420, normalized size = 4.57

$$\frac{1}{11}x^{11}e^3b^7+\frac{3}{10}x^{10}e^2db^7+\frac{7}{10}x^{10}e^3b^6a+\frac{1}{3}x^9ed^2b^7+\frac{7}{3}x^9e^2db^6a+\frac{7}{3}x^9e^3b^5a^2+\frac{1}{8}x^8d^3b^7+\frac{21}{8}x^8ed^2b^6a+\frac{63}{8}x^8e^2db^5a^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*b^7 + 3/10*x^10*e^2*d*b^7 + 7/10*x^10*e^3*b^6*a + 1/3*x^9*e*d
^2*b^7 + 7/3*x^9*e^2*d*b^6*a + 7/3*x^9*e^3*b^5*a^2 + 1/8*x^8*d^3*b^7 + 21/8
*x^8*e*d^2*b^6*a + 63/8*x^8*e^2*d*b^5*a^2 + 35/8*x^8*e^3*b^4*a^3 + x^7*d^3*
b^6*a + 9*x^7*e*d^2*b^5*a^2 + 15*x^7*e^2*d*b^4*a^3 + 5*x^7*e^3*b^3*a^4 + 7/
2*x^6*d^3*b^5*a^2 + 35/2*x^6*e*d^2*b^4*a^3 + 35/2*x^6*e^2*d*b^3*a^4 + 7/2*x
^6*e^3*b^2*a^5 + 7*x^5*d^3*b^4*a^3 + 21*x^5*e*d^2*b^3*a^4 + 63/5*x^5*e^2*d*
b^2*a^5 + 7/5*x^5*e^3*b*a^6 + 35/4*x^4*d^3*b^3*a^4 + 63/4*x^4*e*d^2*b^2*a^5
 + 21/4*x^4*e^2*d*b*a^6 + 1/4*x^4*e^3*a^7 + 7*x^3*d^3*b^2*a^5 + 7*x^3*e*d^2
*b*a^6 + x^3*e^2*d*a^7 + 7/2*x^2*d^3*b*a^6 + 3/2*x^2*e*d^2*a^7 + x*d^3*a^7
```

giac [B] time = 0.17, size = 412, normalized size = 4.48

$$\frac{1}{11}b^7x^{11}e^3+\frac{3}{10}b^7dx^{10}e^2+\frac{1}{3}b^7d^2x^9e+\frac{1}{8}b^7d^3x^8+\frac{7}{10}ab^6x^{10}e^3+\frac{7}{3}ab^6dx^9e^2+\frac{21}{8}ab^6d^2x^8e+ab^6d^3x^7+\frac{7}{3}a^2b^5x^9e^3+\frac{63}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/11*b^7*x^11*e^3 + 3/10*b^7*d*x^10*e^2 + 1/3*b^7*d^2*x^9*e + 1/8*b^7*d^3*x
^8 + 7/10*a*b^6*x^10*e^3 + 7/3*a*b^6*d*x^9*e^2 + 21/8*a*b^6*d^2*x^8*e + a*b
^6*d^3*x^7 + 7/3*a^2*b^5*x^9*e^3 + 63/8*a^2*b^5*d*x^8*e^2 + 9*a^2*b^5*d^2*x
^7*e + 7/2*a^2*b^5*d^3*x^6 + 35/8*a^3*b^4*x^8*e^3 + 15*a^3*b^4*d*x^7*e^2 +
35/2*a^3*b^4*d^2*x^6*e + 7*a^3*b^4*d^3*x^5 + 5*a^4*b^3*x^7*e^3 + 35/2*a^4*b
^3*d*x^6*e^2 + 21*a^4*b^3*d^2*x^5*e + 35/4*a^4*b^3*d^3*x^4 + 7/2*a^5*b^2*x^
6*e^3 + 63/5*a^5*b^2*d*x^5*e^2 + 63/4*a^5*b^2*d^2*x^4*e + 7*a^5*b^2*d^3*x^3
 + 7/5*a^6*b*x^5*e^3 + 21/4*a^6*b*d*x^4*e^2 + 7*a^6*b*d^2*x^3*e + 7/2*a^6*b
*d^3*x^2 + 1/4*a^7*x^4*e^3 + a^7*d*x^3*e^2 + 3/2*a^7*d^2*x^2*e + a^7*d^3*x
```

maple [B] time = 0.04, size = 616, normalized size = 6.70

$$\frac{b^7e^3x^{11}}{11}+a^7d^3x+\frac{\left(6a\,b^6e^3+\left(a\,e^3+3bd\,e^2\right)b^6\right)x^{10}}{10}+\frac{\left(15a^2b^5e^3+6\left(a\,e^3+3bd\,e^2\right)a\,b^5+\left(3ad\,e^2+3b\,d^2e\right)b^6\right)x^9}{9}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/11*b^7*e^3*x^11+1/10*((a*e^3+3*b*d*e^2)*b^6+6*b^6*e^3*a)*x^10+1/9*((3*a*d
*e^2+3*b*d^2*e)*b^6+6*(a*e^3+3*b*d*e^2)*a*b^5+15*b^5*e^3*a^2)*x^9+1/8*((3*a
*d^2*e+b*d^3)*b^6+6*(3*a*d*e^2+3*b*d^2*e)*a*b^5+15*(a*e^3+3*b*d*e^2)*a^2*b^
4+20*b^4*e^3*a^3)*x^8+1/7*(a*d^3*b^6+6*(3*a*d^2*e+b*d^3)*a*b^5+15*(3*a*d*e^
2+3*b*d^2*e)*a^2*b^4+20*(a*e^3+3*b*d*e^2)*a^3*b^3+15*b^3*e^3*a^4)*x^7+1/6*(
6*a^2*d^3*b^5+15*(3*a*d^2*e+b*d^3)*a^2*b^4+20*(3*a*d*e^2+3*b*d^2*e)*a^3*b^3
+15*(a*e^3+3*b*d*e^2)*a^4*b^2+6*b^2*e^3*a^5)*x^6+1/5*(15*a^3*d^3*b^4+20*(3*
a*d^2*e+b*d^3)*a^3*b^3+15*(3*a*d*e^2+3*b*d^2*e)*a^4*b^2+6*(a*e^3+3*b*d*e^2)
*a^5*b+b*e^3*a^6)*x^5+1/4*(20*a^4*d^3*b^3+15*(3*a*d^2*e+b*d^3)*a^4*b^2+6*(3
*a*d*e^2+3*b*d^2*e)*a^5*b+(a*e^3+3*b*d*e^2)*a^6)*x^4+1/3*(15*a^5*d^3*b^2+6*
(3*a*d^2*e+b*d^3)*a^5*b+(3*a*d*e^2+3*b*d^2*e)*a^6)*x^3+1/2*(6*a^6*d^3*b+(3*
a*d^2*e+b*d^3)*a^6)*x^2+a^7*d^3*x
```

maxima [**B**] time = 0.58, size = 376, normalized size = 4.09

$$\frac{1}{11}\,b^7e^3x^{11}+a^7d^3x+\frac{1}{10}\left(3\,b^7de^2+7\,ab^6e^3\right)x^{10}+\frac{1}{3}\left(b^7d^2e+7\,ab^6de^2+7\,a^2b^5e^3\right)x^9+\frac{1}{8}\left(b^7d^3+21\,ab^6d^2e+63\,a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/11*b^7*e^3*x^11 + a^7*d^3*x + 1/10*(3*b^7*d*e^2 + 7*a*b^6*e^3)*x^10 + 1/3
*(b^7*d^2*e + 7*a*b^6*d*e^2 + 7*a^2*b^5*e^3)*x^9 + 1/8*(b^7*d^3 + 21*a*b^6*
d^2*e + 63*a^2*b^5*d*e^2 + 35*a^3*b^4*e^3)*x^8 + (a*b^6*d^3 + 9*a^2*b^5*d^2
*e + 15*a^3*b^4*d*e^2 + 5*a^4*b^3*e^3)*x^7 + 7/2*(a^2*b^5*d^3 + 5*a^3*b^4*d
^2*e + 5*a^4*b^3*d*e^2 + a^5*b^2*e^3)*x^6 + 7/5*(5*a^3*b^4*d^3 + 15*a^4*b^3
*d^2*e + 9*a^5*b^2*d*e^2 + a^6*b*e^3)*x^5 + 1/4*(35*a^4*b^3*d^3 + 63*a^5*b^
2*d^2*e + 21*a^6*b*d*e^2 + a^7*e^3)*x^4 + (7*a^5*b^2*d^3 + 7*a^6*b*d^2*e +
a^7*d*e^2)*x^3 + 1/2*(7*a^6*b*d^3 + 3*a^7*d^2*e)*x^2
```

mupad [**B**] time = 2.17, size = 356, normalized size = 3.87

$$x^7\,\left(5\,a^4\,b^3\,e^3+15\,a^3\,b^4\,d\,e^2+9\,a^2\,b^5\,d^2\,e+a\,b^6\,d^3\right)+x^5\,\left(\frac{7\,a^6\,b\,e^3}{5}+\frac{63\,a^5\,b^2\,d\,e^2}{5}+21\,a^4\,b^3\,d^2\,e+7\,a^3\,b^4\,d^3\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^7*(a*b^6*d^3 + 5*a^4*b^3*e^3 + 9*a^2*b^5*d^2*e + 15*a^3*b^4*d*e^2) + x^5*
((7*a^6*b*e^3)/5 + 7*a^3*b^4*d^3 + 21*a^4*b^3*d^2*e + (63*a^5*b^2*d*e^2)/5)
 + x^4*((a^7*e^3)/4 + (35*a^4*b^3*d^3)/4 + (63*a^5*b^2*d^2*e)/4 + (21*a^6*b
*d*e^2)/4) + x^8*((b^7*d^3)/8 + (35*a^3*b^4*e^3)/8 + (63*a^2*b^5*d*e^2)/8 +
 (21*a*b^6*d^2*e)/8) + a^7*d^3*x + (b^7*e^3*x^11)/11 + (7*a^2*b^2*x^6*(a^3*
e^3 + b^3*d^3 + 5*a*b^2*d^2*e + 5*a^2*b*d*e^2))/2 + (a^6*d^2*x^2*(3*a*e + 7
*b*d))/2 + (b^6*e^2*x^10*(7*a*e + 3*b*d))/10 + a^5*d*x^3*(a^2*e^2 + 7*b^2*d
^2 + 7*a*b*d*e) + (b^5*e*x^9*(7*a^2*e^2 + b^2*d^2 + 7*a*b*d*e))/3
```

sympy [**B**] time = 0.14, size = 427, normalized size = 4.64

$$a^7d^3x+\frac{b^7e^3x^{11}}{11}+x^{10}\left(\frac{7ab^6e^3}{10}+\frac{3b^7de^2}{10}\right)+x^9\left(\frac{7a^2b^5e^3}{3}+\frac{7ab^6de^2}{3}+\frac{b^7d^2e}{3}\right)+x^8\left(\frac{35a^3b^4e^3}{8}+\frac{63a^2b^5de^2}{8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**3*x + b**7*e**3*x**11/11 + x**10*(7*a*b**6*e**3/10 + 3*b**7*d*e**2/
10) + x**9*(7*a**2*b**5*e**3/3 + 7*a*b**6*d*e**2/3 + b**7*d**2*e/3) + x**8*
(35*a**3*b**4*e**3/8 + 63*a**2*b**5*d*e**2/8 + 21*a*b**6*d**2*e/8 + b**7*d*
*3/8) + x**7*(5*a**4*b**3*e**3 + 15*a**3*b**4*d*e**2 + 9*a**2*b**5*d**2*e +
 a*b**6*d**3) + x**6*(7*a**5*b**2*e**3/2 + 35*a**4*b**3*d*e**2/2 + 35*a**3*
b**4*d**2*e/2 + 7*a**2*b**5*d**3/2) + x**5*(7*a**6*b*e**3/5 + 63*a**5*b**2*
d*e**2/5 + 21*a**4*b**3*d**2*e + 7*a**3*b**4*d**3) + x**4*(a**7*e**3/4 + 21
*a**6*b*d*e**2/4 + 63*a**5*b**2*d**2*e/4 + 35*a**4*b**3*d**3/4) + x**3*(a**
7*d*e**2 + 7*a**6*b*d**2*e + 7*a**5*b**2*d**3) + x**2*(3*a**7*d**2*e/2 + 7*
a**6*b*d**3/2)
```

3.1920 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=65

$$\frac{2e(a+bx)^9(bd-ae)}{9b^3}+\frac{(a+bx)^8(bd-ae)^2}{8b^3}+\frac{e^2(a+bx)^{10}}{10b^3}$$

```
[Out] 1/8*(-a*e+b*d)^2*(b*x+a)^8/b^3+2/9*e*(-a*e+b*d)*(b*x+a)^9/b^3+1/10*e^2*(b*x
+a)^10/b^3
```

Rubi [A] time = 0.15, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 43\}$

$$\frac{2e(a+bx)^9(bd-ae)}{9b^3}+\frac{(a+bx)^8(bd-ae)^2}{8b^3}+\frac{e^2(a+bx)^{10}}{10b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^8)/(8*b^3) + (2*e*(b*d - a*e)*(a + b*x)^9)/(9*b^3)
 + (e^2*(a + b*x)^10)/(10*b^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^2\,dx\\ &= \int \left(\frac{(bd-ae)^2(a+bx)^7}{b^2}+\frac{2e(bd-ae)(a+bx)^8}{b^2}+\frac{e^2(a+bx)^9}{b^2}\right)dx\\ &= \frac{(bd-ae)^2(a+bx)^8}{8b^3}+\frac{2e(bd-ae)(a+bx)^9}{9b^3}+\frac{e^2(a+bx)^{10}}{10b^3}\end{aligned}$$

Mathematica [B] time = 0.07, size = 229, normalized size = 3.52

$$\frac{1}{360}x\left(120a^7\left(3d^2+3dex+e^2x^2\right)+210a^6bx\left(6d^2+8dex+3e^2x^2\right)+252a^5b^2x^2\left(10d^2+15dex+6e^2x^2\right)+210a^4b$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (x*(120*a^7*(3*d^2 + 3*d*e*x + e^2*x^2) + 210*a^6*b*x*(6*d^2 + 8*d*e*x + 3*
e^2*x^2) + 252*a^5*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2) + 210*a^4*b^3*x^
3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 120*a^3*b^4*x^4*(21*d^2 + 35*d*e*x + 1
5*e^2*x^2) + 45*a^2*b^5*x^5*(28*d^2 + 48*d*e*x + 21*e^2*x^2) + 10*a*b^6*x^6
*(36*d^2 + 63*d*e*x + 28*e^2*x^2) + b^7*x^7*(45*d^2 + 80*d*e*x + 36*e^2*x^2
)))/360
```

fricas [B] time = 1.60, size = 294, normalized size = 4.52

$$\frac{1}{10}x^{10}e^2b^7+\frac{2}{9}x^9edb^7+\frac{7}{9}x^9e^2b^6a+\frac{1}{8}x^8d^2b^7+\frac{7}{4}x^8edb^6a+\frac{21}{8}x^8e^2b^5a^2+x^7d^2b^6a+6x^7edb^5a^2+5x^7e^2b^4a^3+\frac{7}{2}x^6d^2b^5a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*b^7 + 2/9*x^9*e*d*b^7 + 7/9*x^9*e^2*b^6*a + 1/8*x^8*d^2*b^7 +
 7/4*x^8*e*d*b^6*a + 21/8*x^8*e^2*b^5*a^2 + x^7*d^2*b^6*a + 6*x^7*e*d*b^5*a
^2 + 5*x^7*e^2*b^4*a^3 + 7/2*x^6*d^2*b^5*a^2 + 35/3*x^6*e*d*b^4*a^3 + 35/6*
x^6*e^2*b^3*a^4 + 7*x^5*d^2*b^4*a^3 + 14*x^5*e*d*b^3*a^4 + 21/5*x^5*e^2*b^2
*a^5 + 35/4*x^4*d^2*b^3*a^4 + 21/2*x^4*e*d*b^2*a^5 + 7/4*x^4*e^2*b*a^6 + 7*
x^3*d^2*b^2*a^5 + 14/3*x^3*e*d*b*a^6 + 1/3*x^3*e^2*a^7 + 7/2*x^2*d^2*b*a^6
+ x^2*e*d*a^7 + x*d^2*a^7
```

giac [B] time = 0.19, size = 294, normalized size = 4.52

$$\frac{1}{10}b^7x^{10}e^2+\frac{2}{9}b^7dx^9e+\frac{1}{8}b^7d^2x^8+\frac{7}{9}ab^6x^9e^2+\frac{7}{4}ab^6dx^8e+ab^6d^2x^7+\frac{21}{8}a^2b^5x^8e^2+6a^2b^5dx^7e+\frac{7}{2}a^2b^5d^2x^6+5a^3b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/10*b^7*x^10*e^2 + 2/9*b^7*d*x^9*e + 1/8*b^7*d^2*x^8 + 7/9*a*b^6*x^9*e^2 +
 7/4*a*b^6*d*x^8*e + a*b^6*d^2*x^7 + 21/8*a^2*b^5*x^8*e^2 + 6*a^2*b^5*d*x^7
*e + 7/2*a^2*b^5*d^2*x^6 + 5*a^3*b^4*x^7*e^2 + 35/3*a^3*b^4*d*x^6*e + 7*a^3
*b^4*d^2*x^5 + 35/6*a^4*b^3*x^6*e^2 + 14*a^4*b^3*d*x^5*e + 35/4*a^4*b^3*d^2
*x^4 + 21/5*a^5*b^2*x^5*e^2 + 21/2*a^5*b^2*d*x^4*e + 7*a^5*b^2*d^2*x^3 + 7/
4*a^6*b*x^4*e^2 + 14/3*a^6*b*d*x^3*e + 7/2*a^6*b*d^2*x^2 + 1/3*a^7*x^3*e^2
+ a^7*d*x^2*e + a^7*d^2*x
```

maple [B] time = 0.05, size = 433, normalized size = 6.66

$$\frac{b^7e^2x^{10}}{10}+a^7d^2x+\frac{\left(6a\,b^6e^2+\left(a\,e^2+2bde\right)b^6\right)x^9}{9}+\frac{\left(15a^2b^5e^2+6\left(a\,e^2+2bde\right)a\,b^5+\left(2ade+b\,d^2\right)b^6\right)x^8}{8}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/10*b^7*e^2*x^10+1/9*((a*e^2+2*b*d*e)*b^6+6*b^6*e^2*a)*x^9+1/8*((2*a*d*e+b
*d^2)*b^6+6*(a*e^2+2*b*d*e)*a*b^5+15*b^5*e^2*a^2)*x^8+1/7*(a*d^2*b^6+6*(2*a
*d*e+b*d^2)*a*b^5+15*(a*e^2+2*b*d*e)*a^2*b^4+20*b^4*e^2*a^3)*x^7+1/6*(6*a^2
*d^2*b^5+15*(2*a*d*e+b*d^2)*a^2*b^4+20*(a*e^2+2*b*d*e)*a^3*b^3+15*b^3*e^2*a
^4)*x^6+1/5*(15*a^3*d^2*b^4+20*(2*a*d*e+b*d^2)*a^3*b^3+15*(a*e^2+2*b*d*e)*a
^4*b^2+6*b^2*e^2*a^5)*x^5+1/4*(20*a^4*d^2*b^3+15*(2*a*d*e+b*d^2)*a^4*b^2+6*
(a*e^2+2*b*d*e)*a^5*b+b*e^2*a^6)*x^4+1/3*(15*a^5*d^2*b^2+6*(2*a*d*e+b*d^2)*
a^5*b+(a*e^2+2*b*d*e)*a^6)*x^3+1/2*(6*a^6*d^2*b+(2*a*d*e+b*d^2)*a^6)*x^2+a^
7*d^2*x
```

maxima [B] time = 0.56, size = 273, normalized size = 4.20

$$\frac{1}{10}b^7e^2x^{10}+a^7d^2x+\frac{1}{9}\left(2\,b^7de+7\,ab^6e^2\right)x^9+\frac{1}{8}\left(b^7d^2+14\,ab^6de+21\,a^2b^5e^2\right)x^8+\left(ab^6d^2+6\,a^2b^5de+5\,a^3b^4e^2\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/10*b^7*e^2*x^10 + a^7*d^2*x + 1/9*(2*b^7*d*e + 7*a*b^6*e^2)*x^9 + 1/8*(b^
7*d^2 + 14*a*b^6*d*e + 21*a^2*b^5*e^2)*x^8 + (a*b^6*d^2 + 6*a^2*b^5*d*e + 5
*a^3*b^4*e^2)*x^7 + 7/6*(3*a^2*b^5*d^2 + 10*a^3*b^4*d*e + 5*a^4*b^3*e^2)*x^
6 + 7/5*(5*a^3*b^4*d^2 + 10*a^4*b^3*d*e + 3*a^5*b^2*e^2)*x^5 + 7/4*(5*a^4*b
^3*d^2 + 6*a^5*b^2*d*e + a^6*b*e^2)*x^4 + 1/3*(21*a^5*b^2*d^2 + 14*a^6*b*d*
e + a^7*e^2)*x^3 + 1/2*(7*a^6*b*d^2 + 2*a^7*d*e)*x^2
```

mupad [B] time = 2.09, size = 249, normalized size = 3.83

$$x^3\left(\frac{a^7\,e^2}{3}+\frac{14\,a^6\,b\,d\,e}{3}+7\,a^5\,b^2\,d^2\right)+x^8\left(\frac{21\,a^2\,b^5\,e^2}{8}+\frac{7\,a\,b^6\,d\,e}{4}+\frac{b^7\,d^2}{8}\right)+a^7\,d^2\,x+\frac{b^7\,e^2\,x^{10}}{10}+\frac{a^6\,d\,x^2\,(2\,a\,e+7\,b\,d}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^3*((a^7*e^2)/3 + 7*a^5*b^2*d^2 + (14*a^6*b*d*e)/3) + x^8*((b^7*d^2)/8 + (
21*a^2*b^5*e^2)/8 + (7*a*b^6*d*e)/4) + a^7*d^2*x + (b^7*e^2*x^10)/10 + (a^6
*d*x^2*(2*a*e + 7*b*d))/2 + (b^6*e*x^9*(7*a*e + 2*b*d))/9 + (7*a^4*b*x^4*(a
^2*e^2 + 5*b^2*d^2 + 6*a*b*d*e))/4 + a*b^4*x^7*(5*a^2*e^2 + b^2*d^2 + 6*a*b
*d*e) + (7*a^3*b^2*x^5*(3*a^2*e^2 + 5*b^2*d^2 + 10*a*b*d*e))/5 + (7*a^2*b^3
*x^6*(5*a^2*e^2 + 3*b^2*d^2 + 10*a*b*d*e))/6
```

sympy [B] time = 0.12, size = 303, normalized size = 4.66

$$a^7d^2x+\frac{b^7e^2x^{10}}{10}+x^9\left(\frac{7ab^6e^2}{9}+\frac{2b^7de}{9}\right)+x^8\left(\frac{21a^2b^5e^2}{8}+\frac{7ab^6de}{4}+\frac{b^7d^2}{8}\right)+x^7\left(5a^3b^4e^2+6a^2b^5de+ab^6d^2\right)+x^6\left(35\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**2*x + b**7*e**2*x**10/10 + x**9*(7*a*b**6*e**2/9 + 2*b**7*d*e/9) +
x**8*(21*a**2*b**5*e**2/8 + 7*a*b**6*d*e/4 + b**7*d**2/8) + x**7*(5*a**3*b*
*4*e**2 + 6*a**2*b**5*d*e + a*b**6*d**2) + x**6*(35*a**4*b**3*e**2/6 + 35*a
**3*b**4*d*e/3 + 7*a**2*b**5*d**2/2) + x**5*(21*a**5*b**2*e**2/5 + 14*a**4*
b**3*d*e + 7*a**3*b**4*d**2) + x**4*(7*a**6*b*e**2/4 + 21*a**5*b**2*d*e/2 +
 35*a**4*b**3*d**2/4) + x**3*(a**7*e**2/3 + 14*a**6*b*d*e/3 + 7*a**5*b**2*d
**2) + x**2*(a**7*d*e + 7*a**6*b*d**2/2)
```

3.1921 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=38

$$\frac{(a+bx)^8(bd-ae)}{8b^2}+\frac{e(a+bx)^9}{9b^2}$$

```
[Out] 1/8*(-a*e+b*d)*(b*x+a)^8/b^2+1/9*e*(b*x+a)^9/b^2
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {27, 43}

$$\frac{(a+bx)^8(bd-ae)}{8b^2}+\frac{e(a+bx)^9}{9b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^8)/(8*b^2) + (e*(a + b*x)^9)/(9*b^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)\,dx\\ &= \int \left(\frac{(bd-ae)(a+bx)^7}{b}+\frac{e(a+bx)^8}{b}\right)dx\\ &= \frac{(bd-ae)(a+bx)^8}{8b^2}+\frac{e(a+bx)^9}{9b^2}\end{aligned}$$

Mathematica [B] time = 0.02, size = 151, normalized size = 3.97

$$a^7dx+\frac{1}{2}a^6x^2(ae+7bd)+\frac{7}{3}a^5bx^3(ae+3bd)+\frac{7}{4}a^4b^2x^4(3ae+5bd)+7a^3b^3x^5(ae+bd)+\frac{7}{6}a^2b^4x^6(5ae+3bd)+\frac{1}{8}b^6x^8(7ae$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] a^7*d*x + (a^6*(7*b*d + a*e)*x^2)/2 + (7*a^5*b*(3*b*d + a*e)*x^3)/3 + (7*a^
4*b^2*(5*b*d + 3*a*e)*x^4)/4 + 7*a^3*b^3*(b*d + a*e)*x^5 + (7*a^2*b^4*(3*b*
d + 5*a*e)*x^6)/6 + a*b^5*(b*d + 3*a*e)*x^7 + (b^6*(b*d + 7*a*e)*x^8)/8 + (
b^7*e*x^9)/9
```

fricas [B] time = 0.77, size = 169, normalized size = 4.45

$$\frac{1}{9}x^9eb^7+\frac{1}{8}x^8db^7+\frac{7}{8}x^8eb^6a+x^7db^6a+3x^7eb^5a^2+\frac{7}{2}x^6db^5a^2+\frac{35}{6}x^6eb^4a^3+7x^5db^4a^3+7x^5eb^3a^4+\frac{35}{4}x^4db^3a^4+\frac{21}{4}x^4eb^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*b^7 + 1/8*x^8*d*b^7 + 7/8*x^8*e*b^6*a + x^7*d*b^6*a + 3*x^7*e*b^5
*a^2 + 7/2*x^6*d*b^5*a^2 + 35/6*x^6*e*b^4*a^3 + 7*x^5*d*b^4*a^3 + 7*x^5*e*b
^3*a^4 + 35/4*x^4*d*b^3*a^4 + 21/4*x^4*e*b^2*a^5 + 7*x^3*d*b^2*a^5 + 7/3*x^
3*e*b*a^6 + 7/2*x^2*d*b*a^6 + 1/2*x^2*e*a^7 + x*d*a^7
```

giac [B] time = 0.21, size = 177, normalized size = 4.66

$$\frac{1}{9}\,b^7x^9e+\frac{1}{8}\,b^7dx^8+\frac{7}{8}\,ab^6x^8e+ab^6dx^7+3\,a^2b^5x^7e+\frac{7}{2}\,a^2b^5dx^6+\frac{35}{6}\,a^3b^4x^6e+7\,a^3b^4dx^5+7\,a^4b^3x^5e+\frac{35}{4}\,a^4b^3dx^4+\frac{21}{4}\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/9*b^7*x^9*e + 1/8*b^7*d*x^8 + 7/8*a*b^6*x^8*e + a*b^6*d*x^7 + 3*a^2*b^5*x
^7*e + 7/2*a^2*b^5*d*x^6 + 35/6*a^3*b^4*x^6*e + 7*a^3*b^4*d*x^5 + 7*a^4*b^3
*x^5*e + 35/4*a^4*b^3*d*x^4 + 21/4*a^5*b^2*x^4*e + 7*a^5*b^2*d*x^3 + 7/3*a^
6*b*x^3*e + 7/2*a^6*b*d*x^2 + 1/2*a^7*x^2*e + a^7*d*x
```

maple [B] time = 0.04, size = 250, normalized size = 6.58

$$\frac{b^7e\,x^9}{9}+a^7dx+\frac{\left(6a\,b^6e+(ae+bd)\,b^6\right)x^8}{8}+\frac{\left(15a^2b^5e+a\,b^6d+6\,(ae+bd)\,a\,b^5\right)x^7}{7}+\frac{(20a^3b^4e+6a^2b^5d+15\,(ae+b}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/9*b^7*e*x^9+1/8*((a*e+b*d)*b^6+6*b^6*e*a)*x^8+1/7*(a*d*b^6+6*(a*e+b*d)*a*
b^5+15*b^5*e*a^2)*x^7+1/6*(6*a^2*d*b^5+15*(a*e+b*d)*a^2*b^4+20*b^4*e*a^3)*x
^6+1/5*(15*a^3*d*b^4+20*(a*e+b*d)*a^3*b^3+15*b^3*e*a^4)*x^5+1/4*(20*a^4*d*b
^3+15*(a*e+b*d)*a^4*b^2+6*b^2*e*a^5)*x^4+1/3*(15*a^5*d*b^2+6*(a*e+b*d)*a^5*
b+b*e*a^6)*x^3+1/2*(6*a^6*d*b+(a*e+b*d)*a^6)*x^2+a^7*d*x
```

maxima [B] time = 0.55, size = 163, normalized size = 4.29

$$\frac{1}{9}\,b^7ex^9+a^7dx+\frac{1}{8}\,\left(b^7d+7\,ab^6e\right)x^8+\left(ab^6d+3\,a^2b^5e\right)x^7+\frac{7}{6}\,\left(3\,a^2b^5d+5\,a^3b^4e\right)x^6+7\,\left(a^3b^4d+a^4b^3e\right)x^5+\frac{7}{4}\,(5\,a^4b^3d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/9*b^7*e*x^9 + a^7*d*x + 1/8*(b^7*d + 7*a*b^6*e)*x^8 + (a*b^6*d + 3*a^2*b^
5*e)*x^7 + 7/6*(3*a^2*b^5*d + 5*a^3*b^4*e)*x^6 + 7*(a^3*b^4*d + a^4*b^3*e)*
x^5 + 7/4*(5*a^4*b^3*d + 3*a^5*b^2*e)*x^4 + 7/3*(3*a^5*b^2*d + a^6*b*e)*x^3
 + 1/2*(7*a^6*b*d + a^7*e)*x^2
```

mupad [B] time = 0.07, size = 143, normalized size = 3.76

$$x^2\,\left(\frac{e\,a^7}{2}+\frac{7\,b\,d\,a^6}{2}\right)+x^8\,\left(\frac{d\,b^7}{8}+\frac{7\,a\,e\,b^6}{8}\right)+\frac{b^7\,e\,x^9}{9}+a^7\,d\,x+\frac{7\,a^5\,b\,x^3\,\left(a\,e+3\,b\,d\right)}{3}+a\,b^5\,x^7\,\left(3\,a\,e+b\,d\right)+7\,a^3\,b^3\,x^5\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] x^2*((a^7*e)/2 + (7*a^6*b*d)/2) + x^8*((b^7*d)/8 + (7*a*b^6*e)/8) + (b^7*e*
x^9)/9 + a^7*d*x + (7*a^5*b*x^3*(a*e + 3*b*d))/3 + a*b^5*x^7*(3*a*e + b*d)
+ 7*a^3*b^3*x^5*(a*e + b*d) + (7*a^4*b^2*x^4*(3*a*e + 5*b*d))/4 + (7*a^2*b^
4*x^6*(5*a*e + 3*b*d))/6
```

sympy [B] time = 0.10, size = 178, normalized size = 4.68

$$a^7dx+\frac{b^7ex^9}{9}+x^8\left(\frac{7ab^6e}{8}+\frac{b^7d}{8}\right)+x^7\left(3a^2b^5e+ab^6d\right)+x^6\left(\frac{35a^3b^4e}{6}+\frac{7a^2b^5d}{2}\right)+x^5\left(7a^4b^3e+7a^3b^4d\right)+x^4\left(\frac{21a^5}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d*x + b**7*e*x**9/9 + x**8*(7*a*b**6*e/8 + b**7*d/8) + x**7*(3*a**2*b*
*5*e + a*b**6*d) + x**6*(35*a**3*b**4*e/6 + 7*a**2*b**5*d/2) + x**5*(7*a**4
*b**3*e + 7*a**3*b**4*d) + x**4*(21*a**5*b**2*e/4 + 35*a**4*b**3*d/4) + x**
3*(7*a**6*b*e/3 + 7*a**5*b**2*d) + x**2*(a**7*e/2 + 7*a**6*b*d/2)
```

3.1922 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=14

$$\frac{(a+bx)^8}{8b}$$

```
[Out] 1/8*(b*x+a)^8/b
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = $\{27, 32\}$

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7\,dx\\ &= \frac{(a+bx)^8}{8b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$\frac{(a+bx)^8}{8b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a + b*x)^8/(8*b)
```

fricas [B] time = 1.29, size = 75, normalized size = 5.36

$$\frac{1}{8}x^8b^7 + x^7b^6a + \frac{7}{2}x^6b^5a^2 + 7x^5b^4a^3 + \frac{35}{4}x^4b^3a^4 + 7x^3b^2a^5 + \frac{7}{2}x^2ba^6 + xa^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b^7 + x^7*b^6*a + 7/2*x^6*b^5*a^2 + 7*x^5*b^4*a^3 + 35/4*x^4*b^3*a^
4 + 7*x^3*b^2*a^5 + 7/2*x^2*b*a^6 + x*a^7
```

giac [B] time = 0.18, size = 71, normalized size = 5.07

$$\frac{1}{2}\left(bx^2+2\,ax\right)a^6+\frac{3}{4}\left(bx^2+2\,ax\right)^2a^4b+\frac{1}{2}\left(bx^2+2\,ax\right)^3a^2b^2+\frac{1}{8}\left(bx^2+2\,ax\right)^4b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2 + 2*a*x)*a^6 + 3/4*(b*x^2 + 2*a*x)^2*a^4*b + 1/2*(b*x^2 + 2*a*x)
^3*a^2*b^2 + 1/8*(b*x^2 + 2*a*x)^4*b^3
```

maple [B] time = 0.04, size = 76, normalized size = 5.43

$$\frac{1}{8}b^7x^8+a\,b^6x^7+\frac{7}{2}a^2b^5x^6+7a^3b^4x^5+\frac{35}{4}a^4b^3x^4+7a^5b^2x^3+\frac{7}{2}a^6b\,x^2+a^7x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/8*b^7*x^8+a*b^6*x^7+7/2*a^2*b^5*x^6+7*a^3*b^4*x^5+35/4*a^4*b^3*x^4+7*a^5*
b^2*x^3+7/2*a^6*b*x^2+a^7*x
```

maxima [A] time = 0.48, size = 23, normalized size = 1.64

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^4}{8\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^4/b
```

mupad [B] time = 0.03, size = 75, normalized size = 5.36

$$a^7\,x+\frac{7\,a^6\,b\,x^2}{2}+7\,a^5\,b^2\,x^3+\frac{35\,a^4\,b^3\,x^4}{4}+7\,a^3\,b^4\,x^5+\frac{7\,a^2\,b^5\,x^6}{2}+a\,b^6\,x^7+\frac{b^7\,x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] a^7*x + (b^7*x^8)/8 + (7*a^6*b*x^2)/2 + a*b^6*x^7 + 7*a^5*b^2*x^3 + (35*a^4
*b^3*x^4)/4 + 7*a^3*b^4*x^5 + (7*a^2*b^5*x^6)/2
```

sympy [B] time = 0.08, size = 83, normalized size = 5.93

$$a^7x+\frac{7a^6bx^2}{2}+7a^5b^2x^3+\frac{35a^4b^3x^4}{4}+7a^3b^4x^5+\frac{7a^2b^5x^6}{2}+ab^6x^7+\frac{b^7x^8}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*x + 7*a**6*b*x**2/2 + 7*a**5*b**2*x**3 + 35*a**4*b**3*x**4/4 + 7*a**3*
b**4*x**5 + 7*a**2*b**5*x**6/2 + a*b**6*x**7 + b**7*x**8/8
```

3.1923 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=170

$$-\frac{(bd-ae)^7\log(d+ex)}{e^8}+\frac{bx(bd-ae)^6}{e^7}-\frac{(a+bx)^2(bd-ae)^5}{2e^6}+\frac{(a+bx)^3(bd-ae)^4}{3e^5}-\frac{(a+bx)^4(bd-ae)^3}{4e^4}+\frac{(a+bx)^5(}{5e}$$

```
[Out] b*(-a*e+b*d)^6*x/e^7-1/2*(-a*e+b*d)^5*(b*x+a)^2/e^6+1/3*(-a*e+b*d)^4*(b*x+a
)^3/e^5-1/4*(-a*e+b*d)^3*(b*x+a)^4/e^4+1/5*(-a*e+b*d)^2*(b*x+a)^5/e^3-1/6*(
-a*e+b*d)*(b*x+a)^6/e^2+1/7*(b*x+a)^7/e-(-a*e+b*d)^7*ln(e*x+d)/e^8
```

Rubi [A] time = 0.08, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$\frac{bx(bd-ae)^6}{e^7}-\frac{(a+bx)^2(bd-ae)^5}{2e^6}+\frac{(a+bx)^3(bd-ae)^4}{3e^5}-\frac{(a+bx)^4(bd-ae)^3}{4e^4}+\frac{(a+bx)^5(bd-ae)^2}{5e^3}-\frac{(a+bx)^6(bd-}{6e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x),x]
```

```
[Out] (b*(b*d - a*e)^6*x)/e^7 - ((b*d - a*e)^5*(a + b*x)^2)/(2*e^6) + ((b*d - a*e
)^4*(a + b*x)^3)/(3*e^5) - ((b*d - a*e)^3*(a + b*x)^4)/(4*e^4) + ((b*d - a*
e)^2*(a + b*x)^5)/(5*e^3) - ((b*d - a*e)*(a + b*x)^6)/(6*e^2) + (a + b*x)^7
/(7*e) - ((b*d - a*e)^7*Log[d + e*x])/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{d+ex}\,dx &= \int \frac{(a+bx)^7}{d+ex}\,dx\\ &= \int \left(\frac{b(bd-ae)^6}{e^7}-\frac{b(bd-ae)^5(a+bx)}{e^6}+\frac{b(bd-ae)^4(a+bx)^2}{e^5}-\frac{b(bd-ae)^3}{e^4}\right.\\ &= \frac{b(bd-ae)^6x}{e^7}-\frac{(bd-ae)^5(a+bx)^2}{2e^6}+\frac{(bd-ae)^4(a+bx)^3}{3e^5}-\frac{(bd-ae)^3(a+b}{4e^4}\end{aligned}$$

Mathematica [A] time = 0.11, size = 304, normalized size = 1.79

$$\frac{bex\left(2940a^6e^6+4410a^5be^5(ex-2d)+2450a^4b^2e^4\left(6d^2-3dex+2e^2x^2\right)+1225a^3b^3e^3\left(-12d^3+6d^2ex-4de^2x^2+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x),x]
```

```
[Out] (b*e*x*(2940*a^6*e^6 + 4410*a^5*b*e^5*(-2*d + e*x) + 2450*a^4*b^2*e^4*(6*d^
2 - 3*d*e*x + 2*e^2*x^2) + 1225*a^3*b^3*e^3*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*
x^2 + 3*e^3*x^3) + 147*a^2*b^4*e^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 -
15*d*e^3*x^3 + 12*e^4*x^4) + 49*a*b^5*e*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*
x^2 + 15*d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5) + b^6*(420*d^6 - 210*d^5*
e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84*d^2*e^4*x^4 - 70*d*e^5*x^5 + 6
0*e^6*x^6)) - 420*(b*d - a*e)^7*Log[d + e*x])/(420*e^8)
```

fricas [B] time = 1.35, size = 459, normalized size = 2.70

$$60\,b^7e^7x^7-70\,\left(b^7de^6-7\,ab^6e^7\right)x^6+84\,\left(b^7d^2e^5-7\,ab^6de^6+21\,a^2b^5e^7\right)x^5-105\,\left(b^7d^3e^4-7\,ab^6d^2e^5+21\,a^2b^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*b^7*e^7*x^7 - 70*(b^7*d*e^6 - 7*a*b^6*e^7)*x^6 + 84*(b^7*d^2*e^5
- 7*a*b^6*d*e^6 + 21*a^2*b^5*e^7)*x^5 - 105*(b^7*d^3*e^4 - 7*a*b^6*d^2*e^5
+ 21*a^2*b^5*d*e^6 - 35*a^3*b^4*e^7)*x^4 + 140*(b^7*d^4*e^3 - 7*a*b^6*d^3*e
^4 + 21*a^2*b^5*d^2*e^5 - 35*a^3*b^4*d*e^6 + 35*a^4*b^3*e^7)*x^3 - 210*(b^7
*d^5*e^2 - 7*a*b^6*d^4*e^3 + 21*a^2*b^5*d^3*e^4 - 35*a^3*b^4*d^2*e^5 + 35*a
^4*b^3*d*e^6 - 21*a^5*b^2*e^7)*x^2 + 420*(b^7*d^6*e - 7*a*b^6*d^5*e^2 + 21*
a^2*b^5*d^4*e^3 - 35*a^3*b^4*d^3*e^4 + 35*a^4*b^3*d^2*e^5 - 21*a^5*b^2*d*e^
6 + 7*a^6*b*e^7)*x - 420*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35
*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
- a^7*e^7)*log(e*x + d))/e^8
```

giac [B] time = 0.17, size = 469, normalized size = 2.76

$$-\left(b^7d^7-7\,ab^6d^6e+21\,a^2b^5d^5e^2-35\,a^3b^4d^4e^3+35\,a^4b^3d^3e^4-21\,a^5b^2d^2e^5+7\,a^6bde^6-a^7e^7\right)e^{(-8)}\log\left(|xe+d|\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^
4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*e^(-8)*log(ab
s(x*e + d)) + 1/420*(60*b^7*x^7*e^6 - 70*b^7*d*x^6*e^5 + 84*b^7*d^2*x^5*e^4
 - 105*b^7*d^3*x^4*e^3 + 140*b^7*d^4*x^3*e^2 - 210*b^7*d^5*x^2*e + 420*b^7*
d^6*x + 490*a*b^6*x^6*e^6 - 588*a*b^6*d*x^5*e^5 + 735*a*b^6*d^2*x^4*e^4 - 9
80*a*b^6*d^3*x^3*e^3 + 1470*a*b^6*d^4*x^2*e^2 - 2940*a*b^6*d^5*x*e + 1764*a
^2*b^5*x^5*e^6 - 2205*a^2*b^5*d*x^4*e^5 + 2940*a^2*b^5*d^2*x^3*e^4 - 4410*a
^2*b^5*d^3*x^2*e^3 + 8820*a^2*b^5*d^4*x*e^2 + 3675*a^3*b^4*x^4*e^6 - 4900*a
^3*b^4*d*x^3*e^5 + 7350*a^3*b^4*d^2*x^2*e^4 - 14700*a^3*b^4*d^3*x*e^3 + 490
0*a^4*b^3*x^3*e^6 - 7350*a^4*b^3*d*x^2*e^5 + 14700*a^4*b^3*d^2*x*e^4 + 4410
*a^5*b^2*x^2*e^6 - 8820*a^5*b^2*d*x*e^5 + 2940*a^6*b*x*e^6)*e^(-7)
```

maple [B] time = 0.05, size = 539, normalized size = 3.17

$$\frac{b^7x^7}{7e}+\frac{7a\,b^6x^6}{6e}-\frac{b^7d\,x^6}{6e^2}+\frac{21a^2b^5x^5}{5e}-\frac{7a\,b^6d\,x^5}{5e^2}+\frac{b^7d^2x^5}{5e^3}+\frac{35a^3b^4x^4}{4e}-\frac{21a^2b^5d\,x^4}{4e^2}+\frac{7a\,b^6d^2x^4}{4e^3}-\frac{b^7d^3x^4}{4e^4}+\frac{35a^4b^3x^3}{3e}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x)
```

```
[Out] -1/4*b^7/e^4*x^4*d^3-1/2*b^7/e^6*x^2*d^5+1/5*b^7/e^3*x^5*d^2+21/5*b^5/e*x^5
*a^2+35/4*b^4/e*x^4*a^3+1/3*b^7/e^5*x^3*d^4+21/2*b^2/e*x^2*a^5+35/3*b^3/e*x
^3*a^4+b^7/e^7*d^6*x-1/6*b^7/e^2*x^6*d+7/6*b^6/e*x^6*a-1/e^8*ln(e*x+d)*b^7*
```

```
d^7+7*b/e*a^6*x-7*b^6/e^6*a*d^5*x+35*b^3/e^3*a^4*d^2*x+1/e*ln(e*x+d)*a^7+1/
7*b^7/e*x^7-35/e^4*ln(e*x+d)*a^4*b^3*d^3+7/2*b^6/e^5*x^2*a*d^4+7/4*b^6/e^3*
x^4*a*d^2-21/e^6*ln(e*x+d)*a^2*b^5*d^5+21/e^3*ln(e*x+d)*a^5*b^2*d^2-35*b^4/
e^4*a^3*d^3*x-7/5*b^6/e^2*x^5*a*d+35/e^5*ln(e*x+d)*a^3*b^4*d^4-7/e^2*ln(e*x
+d)*a^6*b*d+7/e^7*ln(e*x+d)*a*b^6*d^6+21*b^5/e^5*a^2*d^4*x-21/2*b^5/e^4*x^2
*a^2*d^3-21*b^2/e^2*a^5*d*x-35/2*b^3/e^2*x^2*a^4*d+35/2*b^4/e^3*x^2*a^3*d^2
-7/3*b^6/e^4*x^3*a*d^3-35/3*b^4/e^2*x^3*a^3*d+7*b^5/e^3*x^3*a^2*d^2-21/4*b^
5/e^2*x^4*a^2*d
```

maxima [B] time = 0.65, size = 458, normalized size = 2.69

$$\frac{60\,b^7e^6x^7 - 70\left(b^7de^5 - 7\,ab^6e^6\right)x^6 + 84\left(b^7d^2e^4 - 7\,ab^6de^5 + 21\,a^2b^5e^6\right)x^5 - 105\left(b^7d^3e^3 - 7\,ab^6d^2e^4 + 21\,a^2b^5de^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*b^7*e^6*x^7 - 70*(b^7*d*e^5 - 7*a*b^6*e^6)*x^6 + 84*(b^7*d^2*e^4
- 7*a*b^6*d*e^5 + 21*a^2*b^5*e^6)*x^5 - 105*(b^7*d^3*e^3 - 7*a*b^6*d^2*e^4
+ 21*a^2*b^5*d*e^5 - 35*a^3*b^4*e^6)*x^4 + 140*(b^7*d^4*e^2 - 7*a*b^6*d^3*e
^3 + 21*a^2*b^5*d^2*e^4 - 35*a^3*b^4*d*e^5 + 35*a^4*b^3*e^6)*x^3 - 210*(b^7
*d^5*e - 7*a*b^6*d^4*e^2 + 21*a^2*b^5*d^3*e^3 - 35*a^3*b^4*d^2*e^4 + 35*a^4
*b^3*d*e^5 - 21*a^5*b^2*e^6)*x^2 + 420*(b^7*d^6 - 7*a*b^6*d^5*e + 21*a^2*b^
5*d^4*e^2 - 35*a^3*b^4*d^3*e^3 + 35*a^4*b^3*d^2*e^4 - 21*a^5*b^2*d*e^5 + 7*
a^6*b*e^6)*x)/e^7 - (b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*
b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7
*e^7)*log(e*x + d)/e^8
```

mupad [B] time = 0.07, size = 510, normalized size = 3.00

$$x^6\left(\frac{7\,a\,b^6}{6\,e}-\frac{b^7\,d}{6\,e^2}\right)+x\left(\frac{7\,a^6\,b}{e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{d\left(\frac{7\,a\,b^6}{e}-\frac{b^7\,d}{e^2}\right)}{e}-\frac{21\,a^2\,b^5}{e}\right)}{e}+\frac{35\,a^3\,b^4}{e}\right)}{e}-\frac{35\,a^4\,b^3}{e}\right)}{e}+\frac{21\,a^5\,b^2}{e}\right)}{e}\right)+x^4\left(\frac{d\left(\frac{d\left(\frac{7\,a\,b^6}{e}-\frac{b^7\,d}{e^2}\right)}{e}-2\right.}{4\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x),x)
```

```
[Out] x^6*((7*a*b^6)/(6*e) - (b^7*d)/(6*e^2)) + x*((7*a^6*b)/e - (d*((d*((d*((d*(
(d*((7*a*b^6)/e - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/e))/e
 - (35*a^4*b^3)/e))/e + (21*a^5*b^2)/e))/e) + x^4*((d*((d*((7*a*b^6)/e - (b
^7*d)/e^2))/e - (21*a^2*b^5)/e))/(4*e) + (35*a^3*b^4)/(4*e)) + x^2*((d*((d*
((d*((d*((7*a*b^6)/e - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/
e))/e - (35*a^4*b^3)/e))/(2*e) + (21*a^5*b^2)/(2*e)) - x^5*((d*((7*a*b^6)/e
 - (b^7*d)/e^2))/(5*e) - (21*a^2*b^5)/(5*e)) - x^3*((d*((d*((d*((7*a*b^6)/e
 - (b^7*d)/e^2))/e - (21*a^2*b^5)/e))/e + (35*a^3*b^4)/e))/(3*e) - (35*a^4*
b^3)/(3*e)) + (log(d + e*x)*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^
3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7
*a^6*b*d*e^6))/e^8 + (b^7*x^7)/(7*e)
```

sympy [B] time = 0.83, size = 408, normalized size = 2.40

$$\frac{b^7x^7}{7e}+x^6\bigg(\frac{7ab^6}{6e}-\frac{b^7d}{6e^2}\bigg)+x^5\bigg(\frac{21a^2b^5}{5e}-\frac{7ab^6d}{5e^2}+\frac{b^7d^2}{5e^3}\bigg)+x^4\bigg(\frac{35a^3b^4}{4e}-\frac{21a^2b^5d}{4e^2}+\frac{7ab^6d^2}{4e^3}-\frac{b^7d^3}{4e^4}\bigg)+x^3\bigg(\frac{35a^4b^3}{3e}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d),x)
```

```
[Out] b**7*x**7/(7*e) + x**6*(7*a*b**6/(6*e) - b**7*d/(6*e**2)) + x**5*(21*a**2*b
**5/(5*e) - 7*a*b**6*d/(5*e**2) + b**7*d**2/(5*e**3)) + x**4*(35*a**3*b**4/
(4*e) - 21*a**2*b**5*d/(4*e**2) + 7*a*b**6*d**2/(4*e**3) - b**7*d**3/(4*e**
4)) + x**3*(35*a**4*b**3/(3*e) - 35*a**3*b**4*d/(3*e**2) + 7*a**2*b**5*d**2
/e**3 - 7*a*b**6*d**3/(3*e**4) + b**7*d**4/(3*e**5)) + x**2*(21*a**5*b**2/(
2*e) - 35*a**4*b**3*d/(2*e**2) + 35*a**3*b**4*d**2/(2*e**3) - 21*a**2*b**5*
d**3/(2*e**4) + 7*a*b**6*d**4/(2*e**5) - b**7*d**5/(2*e**6)) + x*(7*a**6*b/
e - 21*a**5*b**2*d/e**2 + 35*a**4*b**3*d**2/e**3 - 35*a**3*b**4*d**3/e**4 +
 21*a**2*b**5*d**4/e**5 - 7*a*b**6*d**5/e**6 + b**7*d**6/e**7) + (a*e - b*d
)**7*log(d + e*x)/e**8
```

3.1924 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=186

$$-\frac{7b^6(d+ex)^5(bd-ae)}{5e^8}+\frac{21b^5(d+ex)^4(bd-ae)^2}{4e^8}-\frac{35b^4(d+ex)^3(bd-ae)^3}{3e^8}+\frac{35b^3(d+ex)^2(bd-ae)^4}{2e^8}-\frac{21b^2x(b}{e^7}$$

```
[Out] -21*b^2*(-a*e+b*d)^5*x/e^7+(-a*e+b*d)^7/e^8/(e*x+d)+35/2*b^3*(-a*e+b*d)^4*(
e*x+d)^2/e^8-35/3*b^4*(-a*e+b*d)^3*(e*x+d)^3/e^8+21/4*b^5*(-a*e+b*d)^2*(e*x
+d)^4/e^8-7/5*b^6*(-a*e+b*d)*(e*x+d)^5/e^8+1/6*b^7*(e*x+d)^6/e^8+7*b*(-a*e+
b*d)^6*ln(e*x+d)/e^8
```

Rubi [A] time = 0.26, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{7b^6(d+ex)^5(bd-ae)}{5e^8}+\frac{21b^5(d+ex)^4(bd-ae)^2}{4e^8}-\frac{35b^4(d+ex)^3(bd-ae)^3}{3e^8}+\frac{35b^3(d+ex)^2(bd-ae)^4}{2e^8}-\frac{21b^2x(b}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (-21*b^2*(b*d - a*e)^5*x)/e^7 + (b*d - a*e)^7/(e^8*(d + e*x)) + (35*b^3*(b*
d - a*e)^4*(d + e*x)^2)/(2*e^8) - (35*b^4*(b*d - a*e)^3*(d + e*x)^3)/(3*e^8
) + (21*b^5*(b*d - a*e)^2*(d + e*x)^4)/(4*e^8) - (7*b^6*(b*d - a*e)*(d + e*
x)^5)/(5*e^8) + (b^7*(d + e*x)^6)/(6*e^8) + (7*b*(b*d - a*e)^6*Log[d + e*x]
)/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^2}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^2}\,dx\\
&= \int \left(-\frac{21b^2(bd-ae)^5}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^2}+\frac{7b(bd-ae)^6}{e^7(d+ex)}+\frac{35b^3(bd-ae)^4(d+}{e^7}\right.\\
&= -\frac{21b^2(bd-ae)^5x}{e^7}+\frac{(bd-ae)^7}{e^8(d+ex)}+\frac{35b^3(bd-ae)^4(d+ex)^2}{2e^8}-\frac{35b^4(bd-a}{3}
\end{aligned}$$

Mathematica [B] time = 0.11, size = 387, normalized size = 2.08

$$\frac{-60a^7e^7+420a^6bde^6+1260a^5b^2e^5\left(-d^2+dex+e^2x^2\right)+1050a^4b^3e^4\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+700a^3b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (420*a^6*b*d*e^6 - 60*a^7*e^7 + 1260*a^5*b^2*e^5*(-d^2 + d*e*x + e^2*x^2) +
 1050*a^4*b^3*e^4*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 700*a^3*b^4
*e^3*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + 105*a^2
*b^5*e^2*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x
^4 + 3*e^5*x^5) + 42*a*b^6*e*(-10*d^6 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*d^
3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x^5 + 2*e^6*x^6) + b^7*(60*d^7 - 360*d^
6*e*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5
- 14*d*e^6*x^6 + 10*e^7*x^7) + 420*b*(b*d - a*e)^6*(d + e*x)*Log[d + e*x])/
(60*e^8*(d + e*x))
```

fricas [B] time = 1.30, size = 629, normalized size = 3.38

$$10\,b^{7}e^{7}x^{7}+60\,b^{7}d^{7}-420\,ab^{6}d^{6}e+1260\,a^{2}b^{5}d^{5}e^{2}-2100\,a^{3}b^{4}d^{4}e^{3}+2100\,a^{4}b^{3}d^{3}e^{4}-1260\,a^{5}b^{2}d^{2}e^{5}+420\,a^{6}bde^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*b^7*e^7*x^7 + 60*b^7*d^7 - 420*a*b^6*d^6*e + 1260*a^2*b^5*d^5*e^2
- 2100*a^3*b^4*d^4*e^3 + 2100*a^4*b^3*d^3*e^4 - 1260*a^5*b^2*d^2*e^5 + 420*
a^6*b*d*e^6 - 60*a^7*e^7 - 14*(b^7*d*e^6 - 6*a*b^6*e^7)*x^6 + 21*(b^7*d^2*e
^5 - 6*a*b^6*d*e^6 + 15*a^2*b^5*e^7)*x^5 - 35*(b^7*d^3*e^4 - 6*a*b^6*d^2*e^
5 + 15*a^2*b^5*d*e^6 - 20*a^3*b^4*e^7)*x^4 + 70*(b^7*d^4*e^3 - 6*a*b^6*d^3*
e^4 + 15*a^2*b^5*d^2*e^5 - 20*a^3*b^4*d*e^6 + 15*a^4*b^3*e^7)*x^3 - 210*(b^
7*d^5*e^2 - 6*a*b^6*d^4*e^3 + 15*a^2*b^5*d^3*e^4 - 20*a^3*b^4*d^2*e^5 + 15*
a^4*b^3*d*e^6 - 6*a^5*b^2*e^7)*x^2 - 60*(6*b^7*d^6*e - 35*a*b^6*d^5*e^2 + 8
4*a^2*b^5*d^4*e^3 - 105*a^3*b^4*d^3*e^4 + 70*a^4*b^3*d^2*e^5 - 21*a^5*b^2*d
*e^6)*x + 420*(b^7*d^7 - 6*a*b^6*d^6*e + 15*a^2*b^5*d^5*e^2 - 20*a^3*b^4*d^
4*e^3 + 15*a^4*b^3*d^3*e^4 - 6*a^5*b^2*d^2*e^5 + a^6*b*d*e^6 + (b^7*d^6*e -
 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^4*e^3 - 20*a^3*b^4*d^3*e^4 + 15*a^4*b^3*d^2
*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e^7)*x)*log(e*x + d))/(e^9*x + d*e^8)
```

giac [B] time = 0.21, size = 542, normalized size = 2.91

$$\frac{1}{60}\left(10\,b^{7}-\frac{84\left(b^{7}de-ab^{6}e^{2}\right)e^{(-1)}}{xe+d}+\frac{315\left(b^{7}d^{2}e^{2}-2\,ab^{6}de^{3}+a^{2}b^{5}e^{4}\right)e^{(-2)}}{(xe+d)^{2}}-\frac{700\,(b^{7}d^{3}e^{3}-3\,ab^{6}d^{2}e^{4}+3\,a^{2}b^{5}de^{5}}{(xe+d)^{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*b^7 - 84*(b^7*d*e - a*b^6*e^2)*e^(-1)/(x*e + d) + 315*(b^7*d^2*e^2
 - 2*a*b^6*d*e^3 + a^2*b^5*e^4)*e^(-2)/(x*e + d)^2 - 700*(b^7*d^3*e^3 - 3*a
*b^6*d^2*e^4 + 3*a^2*b^5*d*e^5 - a^3*b^4*e^6)*e^(-3)/(x*e + d)^3 + 1050*(b^
7*d^4*e^4 - 4*a*b^6*d^3*e^5 + 6*a^2*b^5*d^2*e^6 - 4*a^3*b^4*d*e^7 + a^4*b^3
*e^8)*e^(-4)/(x*e + d)^4 - 1260*(b^7*d^5*e^5 - 5*a*b^6*d^4*e^6 + 10*a^2*b^5
*d^3*e^7 - 10*a^3*b^4*d^2*e^8 + 5*a^4*b^3*d*e^9 - a^5*b^2*e^10)*e^(-5)/(x*e
 + d)^5)*(x*e + d)^6*e^(-8) - 7*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e
^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)
*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (b^7*d^7*e^6/(x*e + d) - 7*a
*b^6*d^6*e^7/(x*e + d) + 21*a^2*b^5*d^5*e^8/(x*e + d) - 35*a^3*b^4*d^4*e^9/
(x*e + d) + 35*a^4*b^3*d^3*e^10/(x*e + d) - 21*a^5*b^2*d^2*e^11/(x*e + d) +
 7*a^6*b*d*e^12/(x*e + d) - a^7*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 571, normalized size = 3.07

$$\frac{b^{7}x^{6}}{6e^{2}}+\frac{7a\,b^{6}x^{5}}{5e^{2}}-\frac{2b^{7}d\,x^{5}}{5e^{3}}+\frac{21a^{2}b^{5}x^{4}}{4e^{2}}-\frac{7a\,b^{6}d\,x^{4}}{2e^{3}}+\frac{3b^{7}d^{2}x^{4}}{4e^{4}}+\frac{35a^{3}b^{4}x^{3}}{3e^{2}}-\frac{14a^{2}b^{5}d\,x^{3}}{e^{3}}+\frac{7a\,b^{6}d^{2}x^{3}}{e^{4}}-\frac{4b^{7}d^{3}x^{3}}{3e^{5}}+\frac{35a^{4}b^{3}x^{2}}{2e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x)
```

```
[Out] 7/5*b^6/e^2*x^5*a-2/5*b^7/e^3*x^5*d+7*b/e^2*ln(e*x+d)*a^6+7*b^7/e^8*ln(e*x+
d)*d^6+1/e^8/(e*x+d)*b^7*d^7+35/2*b^3/e^2*x^2*a^4+5/2*b^7/e^6*x^2*d^4+21*b^
2/e^2*a^5*x-6*b^7/e^7*d^5*x+21/4*b^5/e^2*x^4*a^2+3/4*b^7/e^4*x^4*d^2+35/3*b
^4/e^2*x^3*a^3-4/3*b^7/e^5*x^3*d^3+1/6*b^7/e^2*x^6-1/e/(e*x+d)*a^7-42*b^2/e
^3*ln(e*x+d)*a^5*d+105*b^3/e^4*ln(e*x+d)*a^4*d^2-14*b^5/e^3*x^3*a^2*d-7/e^7
/(e*x+d)*a*b^6*d^6-84*b^5/e^5*a^2*d^3*x+35*b^6/e^6*a*d^4*x+7/e^2/(e*x+d)*d*
a^6*b-21/e^3/(e*x+d)*a^5*b^2*d^2+35/e^4/(e*x+d)*a^4*b^3*d^3-35/e^5/(e*x+d)*
a^3*b^4*d^4+21/e^6/(e*x+d)*a^2*b^5*d^5-140*b^4/e^5*ln(e*x+d)*a^3*d^3+105*b^
5/e^6*ln(e*x+d)*a^2*d^4-7/2*b^6/e^3*x^4*a*d-42*b^6/e^7*ln(e*x+d)*a*d^5+7*b^
6/e^4*x^3*a*d^2-35*b^4/e^3*x^2*a^3*d+63/2*b^5/e^4*x^2*a^2*d^2-14*b^6/e^5*x^
2*a*d^3-70*b^3/e^3*a^4*d*x+105*b^4/e^4*a^3*d^2*x
```

maxima [B] time = 0.79, size = 466, normalized size = 2.51

$$\frac{b^7d^7-7\,ab^6d^6e+21\,a^2b^5d^5e^2-35\,a^3b^4d^4e^3+35\,a^4b^3d^3e^4-21\,a^5b^2d^2e^5+7\,a^6bde^6-a^7e^7}{e^9x+de^8}+\frac{10\,b^7e^5x^6-12\left(2\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4
*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)/(e^9*x + d*e^8
) + 1/60*(10*b^7*e^5*x^6 - 12*(2*b^7*d*e^4 - 7*a*b^6*e^5)*x^5 + 15*(3*b^7*d
^2*e^3 - 14*a*b^6*d*e^4 + 21*a^2*b^5*e^5)*x^4 - 20*(4*b^7*d^3*e^2 - 21*a*b^
6*d^2*e^3 + 42*a^2*b^5*d*e^4 - 35*a^3*b^4*e^5)*x^3 + 30*(5*b^7*d^4*e - 28*a
*b^6*d^3*e^2 + 63*a^2*b^5*d^2*e^3 - 70*a^3*b^4*d*e^4 + 35*a^4*b^3*e^5)*x^2
- 60*(6*b^7*d^5 - 35*a*b^6*d^4*e + 84*a^2*b^5*d^3*e^2 - 105*a^3*b^4*d^2*e^3
 + 70*a^4*b^3*d*e^4 - 21*a^5*b^2*e^5)*x)/e^7 + 7*(b^7*d^6 - 6*a*b^6*d^5*e +
 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d
*e^5 + a^6*b*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 2.00, size = 839, normalized size = 4.51

$$x^5\left(\frac{7\,a\,b^6}{5\,e^2}-\frac{2\,b^7\,d}{5\,e^3}\right)+x^2\left(\frac{d^2\left(\frac{2\,d\left(\frac{7\,a\,b^6}{e^2}-\frac{2\,b^7\,d}{e^3}\right)}{e}-\frac{21\,a^2\,b^5}{e^2}+\frac{b^7\,d^2}{e^4}\right)}{2\,e^2}-\frac{d\left(\frac{35\,a^3\,b^4}{e^2}+\frac{2\,d\left(\frac{2\,d\left(\frac{7\,a\,b^6}{e^2}-\frac{2\,b^7\,d}{e^3}\right)}{e}-\frac{21\,a^2\,b^5}{e^2}+\frac{b^7\,d^2}{e^4}\right)}{e}-\frac{d^2\left(\right.}{}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^2,x)
```

```
[Out] x^5*((7*a*b^6)/(5*e^2) - (2*b^7*d)/(5*e^3)) + x^2*((d^2*((2*d*((7*a*b^6)/e^
2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/(2*e^2) - (d*((3
5*a^3*b^4)/e^2 + (2*d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^
5)/e^2 + (b^7*d^2)/e^4))/e - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e
+ (35*a^4*b^3)/(2*e^2)) - x^4*((d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/(2*e) -
(21*a^2*b^5)/(4*e^2) + (b^7*d^2)/(4*e^4)) + x^3*((35*a^3*b^4)/(3*e^2) + (2*
d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e
^4))/(3*e) - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/(3*e^2)) - x*((d^2*((35*
a^3*b^4)/e^2 + (2*d*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)
/e^2 + (b^7*d^2)/e^4))/e - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e^2
- (21*a^5*b^2)/e^2 + (2*d*((d^2*((2*d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e -
(21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/e^2 - (2*d*((35*a^3*b^4)/e^2 + (2*d*((2*
d*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e - (21*a^2*b^5)/e^2 + (b^7*d^2)/e^4))/e
 - (d^2*((7*a*b^6)/e^2 - (2*b^7*d)/e^3))/e^2))/e + (35*a^4*b^3)/e^2))/e) +
(log(d + e*x)*(7*b^7*d^6 + 7*a^6*b*e^6 - 42*a^5*b^2*d*e^5 + 105*a^2*b^5*d^4
*e^2 - 140*a^3*b^4*d^3*e^3 + 105*a^4*b^3*d^2*e^4 - 42*a*b^6*d^5*e))/e^8 - (
a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^
3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)/(e*(d*e^7 + e^8
*x)) + (b^7*x^6)/(6*e^2)
```

sympy [**B**] time = 1.50, size = 428, normalized size = 2.30

$$\frac{b^7x^6}{6e^2}+\frac{7b\left(ae-bd\right)^6\log\left(d+ex\right)}{e^8}+x^5\left(\frac{7ab^6}{5e^2}-\frac{2b^7d}{5e^3}\right)+x^4\left(\frac{21a^2b^5}{4e^2}-\frac{7ab^6d}{2e^3}+\frac{3b^7d^2}{4e^4}\right)+x^3\left(\frac{35a^3b^4}{3e^2}-\frac{14a^2b^5d}{e^3}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**2,x)
```

```
[Out] b**7*x**6/(6*e**2) + 7*b*(a*e - b*d)**6*log(d + e*x)/e**8 + x**5*(7*a*b**6/
(5*e**2) - 2*b**7*d/(5*e**3)) + x**4*(21*a**2*b**5/(4*e**2) - 7*a*b**6*d/(2
*e**3) + 3*b**7*d**2/(4*e**4)) + x**3*(35*a**3*b**4/(3*e**2) - 14*a**2*b**5
*d/e**3 + 7*a*b**6*d**2/e**4 - 4*b**7*d**3/(3*e**5)) + x**2*(35*a**4*b**3/(
2*e**2) - 35*a**3*b**4*d/e**3 + 63*a**2*b**5*d**2/(2*e**4) - 14*a*b**6*d**3
/e**5 + 5*b**7*d**4/(2*e**6)) + x*(21*a**5*b**2/e**2 - 70*a**4*b**3*d/e**3
+ 105*a**3*b**4*d**2/e**4 - 84*a**2*b**5*d**3/e**5 + 35*a*b**6*d**4/e**6 -
6*b**7*d**5/e**7) + (-a**7*e**7 + 7*a**6*b*d*e**6 - 21*a**5*b**2*d**2*e**5
+ 35*a**4*b**3*d**3*e**4 - 35*a**3*b**4*d**4*e**3 + 21*a**2*b**5*d**5*e**2
- 7*a*b**6*d**6*e + b**7*d**7)/(d*e**8 + e**9*x)
```

3.1925 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=185

$$-\frac{7b^6(d+ex)^4(bd-ae)}{4e^8}+\frac{7b^5(d+ex)^3(bd-ae)^2}{e^8}-\frac{35b^4(d+ex)^2(bd-ae)^3}{2e^8}+\frac{35b^3x(bd-ae)^4}{e^7}-\frac{21b^2(bd-ae)^5\,\mathrm{lo}}{e^8}$$

```
[Out] 35*b^3*(-a*e+b*d)^4*x/e^7+1/2*(-a*e+b*d)^7/e^8/(e*x+d)^2-7*b*(-a*e+b*d)^6/e
^8/(e*x+d)-35/2*b^4*(-a*e+b*d)^3*(e*x+d)^2/e^8+7*b^5*(-a*e+b*d)^2*(e*x+d)^3
/e^8-7/4*b^6*(-a*e+b*d)*(e*x+d)^4/e^8+1/5*b^7*(e*x+d)^5/e^8-21*b^2*(-a*e+b*
d)^5*ln(e*x+d)/e^8
```

Rubi [A] time = 0.22, antiderivative size = 185, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{7b^6(d+ex)^4(bd-ae)}{4e^8}+\frac{7b^5(d+ex)^3(bd-ae)^2}{e^8}-\frac{35b^4(d+ex)^2(bd-ae)^3}{2e^8}+\frac{35b^3x(bd-ae)^4}{e^7}-\frac{21b^2(bd-ae)^5\,\mathrm{lo}}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (35*b^3*(b*d - a*e)^4*x)/e^7 + (b*d - a*e)^7/(2*e^8*(d + e*x)^2) - (7*b*(b*
d - a*e)^6)/(e^8*(d + e*x)) - (35*b^4*(b*d - a*e)^3*(d + e*x)^2)/(2*e^8) +
(7*b^5*(b*d - a*e)^2*(d + e*x)^3)/e^8 - (7*b^6*(b*d - a*e)*(d + e*x)^4)/(4*
e^8) + (b^7*(d + e*x)^5)/(5*e^8) - (21*b^2*(b*d - a*e)^5*Log[d + e*x])/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^3}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^3}\,dx\\ &= \int \left(\frac{35b^3(bd-ae)^4}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^3}+\frac{7b(bd-ae)^6}{e^7(d+ex)^2}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)}-35\right.\\ &= \frac{35b^3(bd-ae)^4x}{e^7}+\frac{(bd-ae)^7}{2e^8(d+ex)^2}-\frac{7b(bd-ae)^6}{e^8(d+ex)}-\frac{35b^4(bd-ae)^3(d+ex}{2e^8}\end{aligned}$$

Mathematica [B] time = 0.12, size = 388, normalized size = 2.10

$$-10a^7e^7-70a^6be^6(d+2ex)+210a^5b^2de^5(3d+4ex)+350a^4b^3e^4\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+350a^3b^4$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (-10*a^7*e^7 - 70*a^6*b*e^6*(d + 2*e*x) + 210*a^5*b^2*d*e^5*(3*d + 4*e*x) +
 350*a^4*b^3*e^4*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) + 350*a^3*b
^4*e^3*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + 70*a^
2*b^5*e^2*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3 - 5*d*e^4*
x^4 + 2*e^5*x^5) + 35*a*b^6*e*(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20*d^
3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6) + b^7*(-130*d^7 + 160*d^
6*e*x + 500*d^5*e^2*x^2 + 140*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 14*d^2*e^5*x^5
 - 7*d*e^6*x^6 + 4*e^7*x^7) - 420*b^2*(b*d - a*e)^5*(d + e*x)^2*Log[d + e*x
])/(20*e^8*(d + e*x)^2)
```

fricas [B] time = 1.84, size = 701, normalized size = 3.79

$$\frac{4\,b^7e^7x^7 - 130\,b^7d^7 + 770\,ab^6d^6e - 1890\,a^2b^5d^5e^2 + 2450\,a^3b^4d^4e^3 - 1750\,a^4b^3d^3e^4 + 630\,a^5b^2d^2e^5 - 70\,a^6bde^6 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*b^7*e^7*x^7 - 130*b^7*d^7 + 770*a*b^6*d^6*e - 1890*a^2*b^5*d^5*e^2
+ 2450*a^3*b^4*d^4*e^3 - 1750*a^4*b^3*d^3*e^4 + 630*a^5*b^2*d^2*e^5 - 70*a^
6*b*d*e^6 - 10*a^7*e^7 - 7*(b^7*d*e^6 - 5*a*b^6*e^7)*x^6 + 14*(b^7*d^2*e^5
- 5*a*b^6*d*e^6 + 10*a^2*b^5*e^7)*x^5 - 35*(b^7*d^3*e^4 - 5*a*b^6*d^2*e^5 +
 10*a^2*b^5*d*e^6 - 10*a^3*b^4*e^7)*x^4 + 140*(b^7*d^4*e^3 - 5*a*b^6*d^3*e^
4 + 10*a^2*b^5*d^2*e^5 - 10*a^3*b^4*d*e^6 + 5*a^4*b^3*e^7)*x^3 + 10*(50*b^7
*d^5*e^2 - 238*a*b^6*d^4*e^3 + 441*a^2*b^5*d^3*e^4 - 385*a^3*b^4*d^2*e^5 +
140*a^4*b^3*d*e^6)*x^2 + 20*(8*b^7*d^6*e - 28*a*b^6*d^5*e^2 + 21*a^2*b^5*d^
4*e^3 + 35*a^3*b^4*d^3*e^4 - 70*a^4*b^3*d^2*e^5 + 42*a^5*b^2*d*e^6 - 7*a^6*
b*e^7)*x - 420*(b^7*d^7 - 5*a*b^6*d^6*e + 10*a^2*b^5*d^5*e^2 - 10*a^3*b^4*d
^4*e^3 + 5*a^4*b^3*d^3*e^4 - a^5*b^2*d^2*e^5 + (b^7*d^5*e^2 - 5*a*b^6*d^4*e
^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^
7)*x^2 + 2*(b^7*d^6*e - 5*a*b^6*d^5*e^2 + 10*a^2*b^5*d^4*e^3 - 10*a^3*b^4*d
^3*e^4 + 5*a^4*b^3*d^2*e^5 - a^5*b^2*d*e^6)*x)*log(e*x + d))/(e^10*x^2 + 2*
d*e^9*x + d^2*e^8)
```

giac [B] time = 0.21, size = 448, normalized size = 2.42

$$-21\left(b^7d^5 - 5\,ab^6d^4e + 10\,a^2b^5d^3e^2 - 10\,a^3b^4d^2e^3 + 5\,a^4b^3de^4 - a^5b^2e^5\right)e^{(-8)}\log\left(|xe + d|\right) + \frac{1}{20}\left(4\,b^7x^5e^{12} - 15\,b^7dx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -21*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*
a^4*b^3*d*e^4 - a^5*b^2*e^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*b^7*x^5*e^1
2 - 15*b^7*d*x^4*e^11 + 40*b^7*d^2*x^3*e^10 - 100*b^7*d^3*x^2*e^9 + 300*b^7
*d^4*x*e^8 + 35*a*b^6*x^4*e^12 - 140*a*b^6*d*x^3*e^11 + 420*a*b^6*d^2*x^2*e
^10 - 1400*a*b^6*d^3*x*e^9 + 140*a^2*b^5*x^3*e^12 - 630*a^2*b^5*d*x^2*e^11
+ 2520*a^2*b^5*d^2*x*e^10 + 350*a^3*b^4*x^2*e^12 - 2100*a^3*b^4*d*x*e^11 +
700*a^4*b^3*x*e^12)*e^(-15) - 1/2*(13*b^7*d^7 - 77*a*b^6*d^6*e + 189*a^2*b^
5*d^5*e^2 - 245*a^3*b^4*d^4*e^3 + 175*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5
+ 7*a^6*b*d*e^6 + a^7*e^7 + 14*(b^7*d^6*e - 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^
4*e^3 - 20*a^3*b^4*d^3*e^4 + 15*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e
^7)*x)*e^(-8)/(x*e + d)^2
```

maple [B] time = 0.06, size = 599, normalized size = 3.24

$$\frac{b^7x^5}{5e^3}+\frac{7a\,b^6x^4}{4e^3}-\frac{3b^7d\,x^4}{4e^4}+\frac{7a^2b^5x^3}{e^3}-\frac{7a\,b^6d\,x^3}{e^4}+\frac{2b^7d^2x^3}{e^5}-\frac{a^7}{2\,(ex+d)^2\,e}+\frac{7a^6bd}{2\,(ex+d)^2\,e^2}-\frac{21a^5b^2d^2}{2\,(ex+d)^2\,e^3}+\frac{35a^4b^3}{2\,(ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x)
```

```
[Out] 21/2/e^6/(e*x+d)^2*a^2*b^5*d^5-7/2/e^7/(e*x+d)^2*a*b^6*d^6-7*b^6/e^4*x^3*a*
d-63/2*b^5/e^4*x^2*a^2*d-105*b^3/e^4*ln(e*x+d)*a^4*d-7*b/e^2/(e*x+d)*a^6-7*
b^7/e^8/(e*x+d)*d^6+7/4*b^6/e^3*x^4*a-3/4*b^7/e^4*x^4*d+7*b^5/e^3*x^3*a^2+2
*b^7/e^5*x^3*d^2+35/2*b^4/e^3*x^2*a^3-5*b^7/e^6*x^2*d^3+35*b^3/e^3*a^4*x+1/
2/e^8/(e*x+d)^2*b^7*d^7+21*b^2/e^3*ln(e*x+d)*a^5-21*b^7/e^8*ln(e*x+d)*d^5+1
5*b^7/e^7*d^4*x-1/2/e/(e*x+d)^2*a^7+1/5*b^7/e^3*x^5+21*b^6/e^5*x^2*a*d^2-10
5*b^4/e^4*a^3*d*x+210*b^4/e^5*ln(e*x+d)*a^3*d^2-210*b^5/e^6*ln(e*x+d)*a^2*d
^3+105*b^6/e^7*ln(e*x+d)*a*d^4-21/2/e^3/(e*x+d)^2*d^2*a^5*b^2+35/2/e^4/(e*x
+d)^2*a^4*b^3*d^3-35/2/e^5/(e*x+d)^2*a^3*b^4*d^4+126*b^5/e^5*a^2*d^2*x-70*b
^6/e^6*a*d^3*x+42*b^2/e^3/(e*x+d)*a^5*d-105*b^3/e^4/(e*x+d)*a^4*d^2+140*b^4
/e^5/(e*x+d)*a^3*d^3-105*b^5/e^6/(e*x+d)*a^2*d^4+42*b^6/e^7/(e*x+d)*a*d^5+7
/2/e^2/(e*x+d)^2*d*a^6*b
```

maxima [B] time = 0.67, size = 473, normalized size = 2.56

$$-\frac{13\,b^7d^7-77\,ab^6d^6e+189\,a^2b^5d^5e^2-245\,a^3b^4d^4e^3+175\,a^4b^3d^3e^4-63\,a^5b^2d^2e^5+7\,a^6bde^6+a^7e^7+14\left(b^7d^6\right.}{2\left(e^{10}x^2+2\,de^9x+d^2e^8\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*b^7*d^7 - 77*a*b^6*d^6*e + 189*a^2*b^5*d^5*e^2 - 245*a^3*b^4*d^4*e
^3 + 175*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 + a^7*e^7 + 1
4*(b^7*d^6*e - 6*a*b^6*d^5*e^2 + 15*a^2*b^5*d^4*e^3 - 20*a^3*b^4*d^3*e^4 +
15*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 + a^6*b*e^7)*x)/(e^10*x^2 + 2*d*e^9*x
+ d^2*e^8) + 1/20*(4*b^7*e^4*x^5 - 5*(3*b^7*d*e^3 - 7*a*b^6*e^4)*x^4 + 20*(
2*b^7*d^2*e^2 - 7*a*b^6*d*e^3 + 7*a^2*b^5*e^4)*x^3 - 10*(10*b^7*d^3*e - 42*
a*b^6*d^2*e^2 + 63*a^2*b^5*d*e^3 - 35*a^3*b^4*e^4)*x^2 + 20*(15*b^7*d^4 - 7
0*a*b^6*d^3*e + 126*a^2*b^5*d^2*e^2 - 105*a^3*b^4*d*e^3 + 35*a^4*b^3*e^4)*x
)/e^7 - 21*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e
^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*log(e*x + d)/e^8
```

mupad [B] time = 2.02, size = 690, normalized size = 3.73

$$x^4\left(\frac{7\,a\,b^6}{4\,e^3}-\frac{3\,b^7\,d}{4\,e^4}\right)-x^3\left(\frac{d\left(\frac{7\,a\,b^6}{e^3}-\frac{3\,b^7\,d}{e^4}\right)}{e}-\frac{7\,a^2\,b^5}{e^3}+\frac{b^7\,d^2}{e^5}\right)+x^2\left(\frac{35\,a^3\,b^4}{2\,e^3}-\frac{b^7\,d^3}{2\,e^6}+\frac{3\,d\left(\frac{3\,d\left(\frac{7\,a\,b^6}{e^3}-\frac{3\,b^7\,d}{e^4}\right)}{e}-\frac{21\,a}{e}\right.}{2\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^3,x)
```

```
[Out] x^4*((7*a*b^6)/(4*e^3) - (3*b^7*d)/(4*e^4)) - x^3*((d*((7*a*b^6)/e^3 - (3*b
^7*d)/e^4))/e - (7*a^2*b^5)/e^3 + (b^7*d^2)/e^5) + x^2*((35*a^3*b^4)/(2*e^3
) - (b^7*d^3)/(2*e^6) + (3*d*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21
*a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/(2*e) - (3*d^2*((7*a*b^6)/e^3 - (3*b^7*d)
/e^4))/(2*e^2)) + x*((3*d^2*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21*
a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/e^2 + (35*a^4*b^3)/e^3 - (3*d*((35*a^3*b^4
)/e^3 - (b^7*d^3)/e^6 + (3*d*((3*d*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e - (21
*a^2*b^5)/e^3 + (3*b^7*d^2)/e^5))/e - (3*d^2*((7*a*b^6)/e^3 - (3*b^7*d)/e^4
))/e^2))/e - (d^3*((7*a*b^6)/e^3 - (3*b^7*d)/e^4))/e^3) - ((a^7*e^7 + 13*b^
7*d^7 + 189*a^2*b^5*d^5*e^2 - 245*a^3*b^4*d^4*e^3 + 175*a^4*b^3*d^3*e^4 - 6
3*a^5*b^2*d^2*e^5 - 77*a*b^6*d^6*e + 7*a^6*b*d*e^6)/(2*e) + x*(7*b^7*d^6 +
7*a^6*b*e^6 - 42*a^5*b^2*d*e^5 + 105*a^2*b^5*d^4*e^2 - 140*a^3*b^4*d^3*e^3
+ 105*a^4*b^3*d^2*e^4 - 42*a*b^6*d^5*e))/(d^2*e^7 + e^9*x^2 + 2*d*e^8*x) -
(log(d + e*x)*(21*b^7*d^5 - 21*a^5*b^2*e^5 + 105*a^4*b^3*d*e^4 + 210*a^2*b^
5*d^3*e^2 - 210*a^3*b^4*d^2*e^3 - 105*a*b^6*d^4*e))/e^8 + (b^7*x^5)/(5*e^3)
```

sympy [B] time = 3.02, size = 447, normalized size = 2.42

$$\frac{b^7x^5}{5e^3}+\frac{21b^2\left(ae-bd\right)^5\log\left(d+ex\right)}{e^8}+x^4\left(\frac{7ab^6}{4e^3}-\frac{3b^7d}{4e^4}\right)+x^3\left(\frac{7a^2b^5}{e^3}-\frac{7ab^6d}{e^4}+\frac{2b^7d^2}{e^5}\right)+x^2\left(\frac{35a^3b^4}{2e^3}-\frac{63a^2b^5d}{2e^4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**3,x)
```

```
[Out] b**7*x**5/(5*e**3) + 21*b**2*(a*e - b*d)**5*log(d + e*x)/e**8 + x**4*(7*a*b
**6/(4*e**3) - 3*b**7*d/(4*e**4)) + x**3*(7*a**2*b**5/e**3 - 7*a*b**6*d/e**
4 + 2*b**7*d**2/e**5) + x**2*(35*a**3*b**4/(2*e**3) - 63*a**2*b**5*d/(2*e**
4) + 21*a*b**6*d**2/e**5 - 5*b**7*d**3/e**6) + x*(35*a**4*b**3/e**3 - 105*a
**3*b**4*d/e**4 + 126*a**2*b**5*d**2/e**5 - 70*a*b**6*d**3/e**6 + 15*b**7*d
**4/e**7) + (-a**7*e**7 - 7*a**6*b*d*e**6 + 63*a**5*b**2*d**2*e**5 - 175*a*
*4*b**3*d**3*e**4 + 245*a**3*b**4*d**4*e**3 - 189*a**2*b**5*d**5*e**2 + 77*
a*b**6*d**6*e - 13*b**7*d**7 + x*(-14*a**6*b*e**7 + 84*a**5*b**2*d*e**6 - 2
10*a**4*b**3*d**2*e**5 + 280*a**3*b**4*d**3*e**4 - 210*a**2*b**5*d**4*e**3
+ 84*a*b**6*d**5*e**2 - 14*b**7*d**6*e))/(2*d**2*e**8 + 4*d*e**9*x + 2*e**1
0*x**2)
```

3.1926 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=187

$$-\frac{7b^6(d+ex)^3(bd-ae)}{3e^8}+\frac{21b^5(d+ex)^2(bd-ae)^2}{2e^8}-\frac{35b^4x(bd-ae)^3}{e^7}+\frac{35b^3(bd-ae)^4\log(d+ex)}{e^8}+\frac{21b^2(bd-ae}{e^8(d+ex)}$$

```
[Out] -35*b^4*(-a*e+b*d)^3*x/e^7+1/3*(-a*e+b*d)^7/e^8/(e*x+d)^3-7/2*b*(-a*e+b*d)^
6/e^8/(e*x+d)^2+21*b^2*(-a*e+b*d)^5/e^8/(e*x+d)+21/2*b^5*(-a*e+b*d)^2*(e*x+
d)^2/e^8-7/3*b^6*(-a*e+b*d)*(e*x+d)^3/e^8+1/4*b^7*(e*x+d)^4/e^8+35*b^3*(-a*
e+b*d)^4*ln(e*x+d)/e^8
```

Rubi [A]   time = 0.21, antiderivative size = 187, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{7b^6(d+ex)^3(bd-ae)}{3e^8}+\frac{21b^5(d+ex)^2(bd-ae)^2}{2e^8}-\frac{35b^4x(bd-ae)^3}{e^7}+\frac{21b^2(bd-ae)^5}{e^8(d+ex)}+\frac{35b^3(bd-ae)^4\log(d+ex}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-35*b^4*(b*d - a*e)^3*x)/e^7 + (b*d - a*e)^7/(3*e^8*(d + e*x)^3) - (7*b*(b
*d - a*e)^6)/(2*e^8*(d + e*x)^2) + (21*b^2*(b*d - a*e)^5)/(e^8*(d + e*x)) +
 (21*b^5*(b*d - a*e)^2*(d + e*x)^2)/(2*e^8) - (7*b^6*(b*d - a*e)*(d + e*x)^
3)/(3*e^8) + (b^7*(d + e*x)^4)/(4*e^8) + (35*b^3*(b*d - a*e)^4*Log[d + e*x]
)/e^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^4}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^4}\,dx\\ &= \int \left(-\frac{35b^4(bd-ae)^3}{e^7}+\frac{(-bd+ae)^7}{e^7(d+ex)^4}+\frac{7b(bd-ae)^6}{e^7(d+ex)^3}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)^2}+\right.\\ &= -\frac{35b^4(bd-ae)^3x}{e^7}+\frac{(bd-ae)^7}{3e^8(d+ex)^3}-\frac{7b(bd-ae)^6}{2e^8(d+ex)^2}+\frac{21b^2(bd-ae)^5}{e^8(d+ex)}+\end{aligned}$$

Mathematica [A]   time = 0.09, size = 199, normalized size = 1.06

$$\frac{6b^5e^2x^2\left(21a^2e^2-28abde+10b^2d^2\right)-12b^4ex\left(-35a^3e^3+84a^2bde^2-70ab^2d^2e+20b^3d^3\right)-4b^6e^3x^3(4bd-7ae}{12e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (-12*b^4*e*(20*b^3*d^3 - 70*a*b^2*d^2*e + 84*a^2*b*d*e^2 - 35*a^3*e^3)*x +
6*b^5*e^2*(10*b^2*d^2 - 28*a*b*d*e + 21*a^2*e^2)*x^2 - 4*b^6*e^3*(4*b*d - 7
*a*e)*x^3 + 3*b^7*e^4*x^4 + (4*(b*d - a*e)^7)/(d + e*x)^3 - (42*b*(b*d - a*
e)^6)/(d + e*x)^2 + (252*b^2*(b*d - a*e)^5)/(d + e*x) + 420*b^3*(b*d - a*e)
^4*Log[d + e*x])/(12*e^8)
```

fricas [B] time = 0.86, size = 737, normalized size = 3.94

$$\frac{3\, b^{7} e^{7} x^{7} + 214\, b^{7} d^{7} - 1036\, a b^{6} d^{6} e + 1974\, a^{2} b^{5} d^{5} e^{2} - 1820\, a^{3} b^{4} d^{4} e^{3} + 770\, a^{4} b^{3} d^{3} e^{4} - 84\, a^{5} b^{2} d^{2} e^{5} - 14\, a^{6} b d e^{6} - 4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^7*e^7*x^7 + 214*b^7*d^7 - 1036*a*b^6*d^6*e + 1974*a^2*b^5*d^5*e^2
 - 1820*a^3*b^4*d^4*e^3 + 770*a^4*b^3*d^3*e^4 - 84*a^5*b^2*d^2*e^5 - 14*a^6
*b*d*e^6 - 4*a^7*e^7 - 7*(b^7*d*e^6 - 4*a*b^6*e^7)*x^6 + 21*(b^7*d^2*e^5 -
4*a*b^6*d*e^6 + 6*a^2*b^5*e^7)*x^5 - 105*(b^7*d^3*e^4 - 4*a*b^6*d^2*e^5 + 6
*a^2*b^5*d*e^6 - 4*a^3*b^4*e^7)*x^4 - 2*(278*b^7*d^4*e^3 - 1022*a*b^6*d^3*e
^4 + 1323*a^2*b^5*d^2*e^5 - 630*a^3*b^4*d*e^6)*x^3 - 6*(68*b^7*d^5*e^2 - 18
2*a*b^6*d^4*e^3 + 63*a^2*b^5*d^3*e^4 + 210*a^3*b^4*d^2*e^5 - 210*a^4*b^3*d*
e^6 + 42*a^5*b^2*e^7)*x^2 + 6*(37*b^7*d^6*e - 238*a*b^6*d^5*e^2 + 567*a^2*b
^5*d^4*e^3 - 630*a^3*b^4*d^3*e^4 + 315*a^4*b^3*d^2*e^5 - 42*a^5*b^2*d*e^6 -
 7*a^6*b*e^7)*x + 420*(b^7*d^7 - 4*a*b^6*d^6*e + 6*a^2*b^5*d^5*e^2 - 4*a^3*
b^4*d^4*e^3 + a^4*b^3*d^3*e^4 + (b^7*d^4*e^3 - 4*a*b^6*d^3*e^4 + 6*a^2*b^5*
d^2*e^5 - 4*a^3*b^4*d*e^6 + a^4*b^3*e^7)*x^3 + 3*(b^7*d^5*e^2 - 4*a*b^6*d^4
*e^3 + 6*a^2*b^5*d^3*e^4 - 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + 3*(b^7*
d^6*e - 4*a*b^6*d^5*e^2 + 6*a^2*b^5*d^4*e^3 - 4*a^3*b^4*d^3*e^4 + a^4*b^3*d
^2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.18, size = 442, normalized size = 2.36

$$35 \left(b^{7} d^{4} - 4\, a b^{6} d^{3} e + 6\, a^{2} b^{5} d^{2} e^{2} - 4\, a^{3} b^{4} d e^{3} + a^{4} b^{3} e^{4}\right) e^{(-8)} \log\left(|xe + d|\right) + \frac{1}{12} \left(3\, b^{7} x^{4} e^{12} - 16\, b^{7} d x^{3} e^{11} + 60\, b^{7} d^{2} x^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] 35*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3
*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*b^7*x^4*e^12 - 16*b^7*d*x^3*e^11 +
 60*b^7*d^2*x^2*e^10 - 240*b^7*d^3*x*e^9 + 28*a*b^6*x^3*e^12 - 168*a*b^6*d*
x^2*e^11 + 840*a*b^6*d^2*x*e^10 + 126*a^2*b^5*x^2*e^12 - 1008*a^2*b^5*d*x*e
^11 + 420*a^3*b^4*x*e^12)*e^(-16) + 1/6*(107*b^7*d^7 - 518*a*b^6*d^6*e + 98
7*a^2*b^5*d^5*e^2 - 910*a^3*b^4*d^4*e^3 + 385*a^4*b^3*d^3*e^4 - 42*a^5*b^2*
d^2*e^5 - 7*a^6*b*d*e^6 - 2*a^7*e^7 + 126*(b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 +
10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^
2 + 21*(11*b^7*d^6*e - 54*a*b^6*d^5*e^2 + 105*a^2*b^5*d^4*e^3 - 100*a^3*b^4
*d^3*e^4 + 45*a^4*b^3*d^2*e^5 - 6*a^5*b^2*d*e^6 - a^6*b*e^7)*x)*e^(-8)/(x*e
 + d)^3
```

maple [B] time = 0.07, size = 622, normalized size = 3.33

$$\frac{b^{7} x^{4}}{4 e^{4}} - \frac{a^{7}}{3 \left(e x + d\right)^{3} e} + \frac{7 a^{6} b d}{3 \left(e x + d\right)^{3} e^{2}} - \frac{7 a^{5} b^{2} d^{2}}{\left(e x + d\right)^{3} e^{3}} + \frac{35 a^{4} b^{3} d^{3}}{3 \left(e x + d\right)^{3} e^{4}} - \frac{35 a^{3} b^{4} d^{4}}{3 \left(e x + d\right)^{3} e^{5}} + \frac{7 a^{2} b^{5} d^{5}}{\left(e x + d\right)^{3} e^{6}} - \frac{7 a\, b^{6} d^{6}}{3 \left(e x + d\right)^{3} e^{7}} + \frac{7 a\, b^{6}}{3 e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x)
```

```
[Out] 35*b^4/e^4*a^3*x-20*b^7/e^7*d^3*x-21*b^2/e^3/(e*x+d)*a^5+21*b^7/e^8/(e*x+d)
*d^5+1/3/e^8/(e*x+d)^3*b^7*d^7-7/2*b/e^2/(e*x+d)^2*a^6-7/2*b^7/e^8/(e*x+d)^
2*d^6+1/4*b^7/e^4*x^4-1/3/e/(e*x+d)^3*a^7+70*b^4/e^5/(e*x+d)^2*a^3*d^3+35*b
^3/e^4*ln(e*x+d)*a^4+35*b^7/e^8*ln(e*x+d)*d^4+7/3*b^6/e^4*x^3*a-4/3*b^7/e^5
*x^3*d+21/2*b^5/e^4*x^2*a^2+5*b^7/e^6*x^2*d^2+210*b^5/e^6/(e*x+d)*a^2*d^3-1
05*b^6/e^7/(e*x+d)*a*d^4+21*b^2/e^3/(e*x+d)^2*a^5*d-140*b^4/e^5*ln(e*x+d)*a
^3*d+210*b^5/e^6*ln(e*x+d)*a^2*d^2-140*b^6/e^7*ln(e*x+d)*a*d^3+21*b^6/e^7/(
e*x+d)^2*a*d^5+7/3/e^2/(e*x+d)^3*d*a^6*b-7/e^3/(e*x+d)^3*d^2*a^5*b^2+35/3/e
^4/(e*x+d)^3*d^3*a^4*b^3-35/3/e^5/(e*x+d)^3*a^3*b^4*d^4+7/e^6/(e*x+d)^3*a^2
*b^5*d^5-7/3/e^7/(e*x+d)^3*a*b^6*d^6-14*b^6/e^5*x^2*a*d-84*b^5/e^5*a^2*d*x+
70*b^6/e^6*a*d^2*x+105*b^3/e^4/(e*x+d)*a^4*d-210*b^4/e^5/(e*x+d)*a^3*d^2-10
5/2*b^3/e^4/(e*x+d)^2*a^4*d^2-105/2*b^5/e^6/(e*x+d)^2*a^2*d^4
```

maxima [B] time = 0.67, size = 485, normalized size = 2.59

$$107\,b^7d^7 - 518\,ab^6d^6e + 987\,a^2b^5d^5e^2 - 910\,a^3b^4d^4e^3 + 385\,a^4b^3d^3e^4 - 42\,a^5b^2d^2e^5 - 7\,a^6bde^6 - 2\,a^7e^7 + 126\,\big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*b^7*d^7 - 518*a*b^6*d^6*e + 987*a^2*b^5*d^5*e^2 - 910*a^3*b^4*d^4*
e^3 + 385*a^4*b^3*d^3*e^4 - 42*a^5*b^2*d^2*e^5 - 7*a^6*b*d*e^6 - 2*a^7*e^7
+ 126*(b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 + 10*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*
e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^2 + 21*(11*b^7*d^6*e - 54*a*b^6*d^5*
e^2 + 105*a^2*b^5*d^4*e^3 - 100*a^3*b^4*d^3*e^4 + 45*a^4*b^3*d^2*e^5 - 6*a^
5*b^2*d*e^6 - a^6*b*e^7)*x)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^
8) + 1/12*(3*b^7*e^3*x^4 - 4*(4*b^7*d*e^2 - 7*a*b^6*e^3)*x^3 + 6*(10*b^7*d^
2*e - 28*a*b^6*d*e^2 + 21*a^2*b^5*e^3)*x^2 - 12*(20*b^7*d^3 - 70*a*b^6*d^2*
e + 84*a^2*b^5*d*e^2 - 35*a^3*b^4*e^3)*x)/e^7 + 35*(b^7*d^4 - 4*a*b^6*d^3*e
 + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*log(e*x + d)/e^8
```

mupad [B] time = 2.12, size = 558, normalized size = 2.98

$$x\left(\frac{35\,a^3\,b^4}{e^4}-\frac{4\,b^7\,d^3}{e^7}+\frac{4\,d\left(\frac{4\,d\left(\frac{7\,a\,b^6}{e^4}-\frac{4\,b^7\,d}{e^5}\right)}{e}-\frac{21\,a^2\,b^5}{e^4}+\frac{6\,b^7\,d^2}{e^6}\right)}{e}-\frac{6\,d^2\left(\frac{7\,a\,b^6}{e^4}-\frac{4\,b^7\,d}{e^5}\right)}{e^2}\right)-\frac{2\,a^7\,e^7+7\,a^6\,b\,d\,e^6+42\,a^5\,b^2\,d^2\,e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^4,x)
```

```
[Out] x*((35*a^3*b^4)/e^4 - (4*b^7*d^3)/e^7 + (4*d*((4*d*((7*a*b^6)/e^4 - (4*b^7*
d)/e^5))/e - (21*a^2*b^5)/e^4 + (6*b^7*d^2)/e^6))/e - (6*d^2*((7*a*b^6)/e^4
 - (4*b^7*d)/e^5))/e^2) - ((2*a^7*e^7 - 107*b^7*d^7 - 987*a^2*b^5*d^5*e^2 +
 910*a^3*b^4*d^4*e^3 - 385*a^4*b^3*d^3*e^4 + 42*a^5*b^2*d^2*e^5 + 518*a*b^6
*d^6*e + 7*a^6*b*d*e^6)/(6*e) + x*((7*a^6*b*e^6)/2 - (77*b^7*d^6)/2 + 21*a^
5*b^2*d*e^5 - (735*a^2*b^5*d^4*e^2)/2 + 350*a^3*b^4*d^3*e^3 - (315*a^4*b^3*
d^2*e^4)/2 + 189*a*b^6*d^5*e) - x^2*(21*b^7*d^5*e - 21*a^5*b^2*e^6 - 105*a*
b^6*d^4*e^2 + 105*a^4*b^3*d*e^5 + 210*a^2*b^5*d^3*e^3 - 210*a^3*b^4*d^2*e^4
))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x^3*((7*a*b^6)/(3*e^4
) - (4*b^7*d)/(3*e^5)) - x^2*((2*d*((7*a*b^6)/e^4 - (4*b^7*d)/e^5))/e - (21
*a^2*b^5)/(2*e^4) + (3*b^7*d^2)/e^6) + (log(d + e*x)*(35*b^7*d^4 + 35*a^4*b
^3*e^4 - 140*a^3*b^4*d*e^3 + 210*a^2*b^5*d^2*e^2 - 140*a*b^6*d^3*e))/e^8 +
(b^7*x^4)/(4*e^4)
```

sympy [B] time = 6.27, size = 474, normalized size = 2.53

$$\frac{b^7x^4}{4e^4}+\frac{35b^3\left(ae-bd\right)^4\log\left(d+ex\right)}{e^8}+x^3\left(\frac{7ab^6}{3e^4}-\frac{4b^7d}{3e^5}\right)+x^2\left(\frac{21a^2b^5}{2e^4}-\frac{14ab^6d}{e^5}+\frac{5b^7d^2}{e^6}\right)+x\left(\frac{35a^3b^4}{e^4}-\frac{84a^2b^5d}{e^5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**4,x)
```

```
[Out] b**7*x**4/(4*e**4) + 35*b**3*(a*e - b*d)**4*log(d + e*x)/e**8 + x**3*(7*a*b
**6/(3*e**4) - 4*b**7*d/(3*e**5)) + x**2*(21*a**2*b**5/(2*e**4) - 14*a*b**6
*d/e**5 + 5*b**7*d**2/e**6) + x*(35*a**3*b**4/e**4 - 84*a**2*b**5*d/e**5 +
70*a*b**6*d**2/e**6 - 20*b**7*d**3/e**7) + (-2*a**7*e**7 - 7*a**6*b*d*e**6
- 42*a**5*b**2*d**2*e**5 + 385*a**4*b**3*d**3*e**4 - 910*a**3*b**4*d**4*e**
3 + 987*a**2*b**5*d**5*e**2 - 518*a*b**6*d**6*e + 107*b**7*d**7 + x**2*(-12
6*a**5*b**2*e**7 + 630*a**4*b**3*d*e**6 - 1260*a**3*b**4*d**2*e**5 + 1260*a
**2*b**5*d**3*e**4 - 630*a*b**6*d**4*e**3 + 126*b**7*d**5*e**2) + x*(-21*a*
*6*b*e**7 - 126*a**5*b**2*d*e**6 + 945*a**4*b**3*d**2*e**5 - 2100*a**3*b**4
*d**3*e**4 + 2205*a**2*b**5*d**4*e**3 - 1134*a*b**6*d**5*e**2 + 231*b**7*d*
*6*e))/(6*d**3*e**8 + 18*d**2*e**9*x + 18*d*e**10*x**2 + 6*e**11*x**3)
```

3.1927 $\int \frac{(a+bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=97

$$\frac{(bd-ae)^4\log(a+bx)}{b^5}+\frac{ex(bd-ae)^3}{b^4}+\frac{(d+ex)^2(bd-ae)^2}{2b^3}+\frac{(d+ex)^3(bd-ae)}{3b^2}+\frac{(d+ex)^4}{4b}$$

```
[Out] e*(-a*e+b*d)^3*x/b^4+1/2*(-a*e+b*d)^2*(e*x+d)^2/b^3+1/3*(-a*e+b*d)*(e*x+d)^
3/b^2+1/4*(e*x+d)^4/b+(-a*e+b*d)^4*ln(b*x+a)/b^5
```

Rubi [A] time = 0.04, antiderivative size = 97, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 43\}$

$$\frac{ex(bd-ae)^3}{b^4}+\frac{(d+ex)^2(bd-ae)^2}{2b^3}+\frac{(d+ex)^3(bd-ae)}{3b^2}+\frac{(bd-ae)^4\log(a+bx)}{b^5}+\frac{(d+ex)^4}{4b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)^3*x)/b^4 + ((b*d - a*e)^2*(d + e*x)^2)/(2*b^3) + ((b*d - a*e
)*(d + e*x)^3)/(3*b^2) + (d + e*x)^4/(4*b) + ((b*d - a*e)^4*Log[a + b*x])/b
^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^4}{a+bx}\,dx\\ &= \int \left(\frac{e(bd-ae)^3}{b^4}+\frac{(bd-ae)^4}{b^4(a+bx)}+\frac{e(bd-ae)^2(d+ex)}{b^3}+\frac{e(bd-ae)(d+ex)^2}{b^2}+\frac{e(d+ex}{b}\right.\\ &= \frac{e(bd-ae)^3x}{b^4}+\frac{(bd-ae)^2(d+ex)^2}{2b^3}+\frac{(bd-ae)(d+ex)^3}{3b^2}+\frac{(d+ex)^4}{4b}+\frac{(bd-ae)^4\,\mathrm{lo}}{b^5}\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.18

$$\frac{bex\left(-12a^3e^3+6a^2be^2(8d+ex)-4ab^2e\left(18d^2+6dex+e^2x^2\right)+b^3\left(48d^3+36d^2ex+16de^2x^2+3e^3x^3\right)\right)+12(b}{12b^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(-12*a^3*e^3 + 6*a^2*b*e^2*(8*d + e*x) - 4*a*b^2*e*(18*d^2 + 6*d*e*x
 + e^2*x^2) + b^3*(48*d^3 + 36*d^2*e*x + 16*d*e^2*x^2 + 3*e^3*x^3)) + 12*(b
*d - a*e)^4*Log[a + b*x])/(12*b^5)
```

fricas [A]   time = 0.99, size = 181, normalized size = 1.87

$$\frac{3\,b^4e^4x^4+4\,(4\,b^4de^3-ab^3e^4)x^3+6\,(6\,b^4d^2e^2-4\,ab^3de^3+a^2b^2e^4)x^2+12\,(4\,b^4d^3e-6\,ab^3d^2e^2+4\,a^2b^2de^3-a^3be}{12\,b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/12*(3*b^4*e^4*x^4 + 4*(4*b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(6*b^4*d^2*e^2 -
4*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 12*(4*b^4*d^3*e - 6*a*b^3*d^2*e^2 + 4*a^
2*b^2*d*e^3 - a^3*b*e^4)*x + 12*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^
2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(b*x + a))/b^5
```

giac [A]   time = 0.18, size = 174, normalized size = 1.79

$$\frac{3\,b^3x^4e^4+16\,b^3dx^3e^3+36\,b^3d^2x^2e^2+48\,b^3d^3xe-4\,ab^2x^3e^4-24\,ab^2dx^2e^3-72\,ab^2d^2xe^2+6\,a^2bx^2e^4+48\,a^2bdxe}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/12*(3*b^3*x^4*e^4 + 16*b^3*d*x^3*e^3 + 36*b^3*d^2*x^2*e^2 + 48*b^3*d^3*x*
e - 4*a*b^2*x^3*e^4 - 24*a*b^2*d*x^2*e^3 - 72*a*b^2*d^2*x*e^2 + 6*a^2*b*x^2
*e^4 + 48*a^2*b*d*x*e^3 - 12*a^3*x*e^4)/b^4 + (b^4*d^4 - 4*a*b^3*d^3*e + 6*
a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(abs(b*x + a))/b^5
```

maple [B]   time = 0.05, size = 209, normalized size = 2.15

$$\frac{e^4x^4}{4b}-\frac{a\,e^4x^3}{3b^2}+\frac{4d\,e^3x^3}{3b}+\frac{a^2e^4x^2}{2b^3}-\frac{2ad\,e^3x^2}{b^2}+\frac{3d^2e^2x^2}{b}+\frac{a^4e^4\ln(bx+a)}{b^5}-\frac{4a^3d\,e^3\ln(bx+a)}{b^4}-\frac{a^3e^4x}{b^4}+\frac{6a^2d^2e^2\ln(bx}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/4*e^4/b*x^4-1/3*e^4/b^2*x^3*a+4/3*e^3/b*x^3*d+1/2*e^4/b^3*x^2*a^2-2*e^3/b
^2*x^2*a*d+3*e^2/b*x^2*d^2-e^4/b^4*a^3*x+4*e^3/b^3*a^2*d*x-6*e^2/b^2*a*d^2*
x+4*e/b*d^3*x+1/b^5*ln(b*x+a)*a^4*e^4-4/b^4*ln(b*x+a)*a^3*d*e^3+6/b^3*ln(b*
x+a)*a^2*d^2*e^2-4/b^2*ln(b*x+a)*a*d^3*e+1/b*ln(b*x+a)*d^4
```

maxima [A]   time = 0.48, size = 179, normalized size = 1.85

$$\frac{3\,b^3e^4x^4+4\,(4\,b^3de^3-ab^2e^4)x^3+6\,(6\,b^3d^2e^2-4\,ab^2de^3+a^2be^4)x^2+12\,(4\,b^3d^3e-6\,ab^2d^2e^2+4\,a^2bde^3-a^3e^4)x}{12\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/12*(3*b^3*e^4*x^4 + 4*(4*b^3*d*e^3 - a*b^2*e^4)*x^3 + 6*(6*b^3*d^2*e^2 -
4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 12*(4*b^3*d^3*e - 6*a*b^2*d^2*e^2 + 4*a^2*
b*d*e^3 - a^3*e^4)*x)/b^4 + (b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 -
4*a^3*b*d*e^3 + a^4*e^4)*log(b*x + a)/b^5
```

mupad [B] time = 0.05, size = 188, normalized size = 1.94

$$x\left(\frac{4\,d^3\,e}{b}-\frac{a\,\left(\frac{a\,\left(\frac{a\,e^4}{b^2}-\frac{4\,d\,e^3}{b}\right)}{b}+\frac{6\,d^2\,e^2}{b}\right)}{b}\right)-x^3\,\left(\frac{a\,e^4}{3\,b^2}-\frac{4\,d\,e^3}{3\,b}\right)+x^2\,\left(\frac{a\,\left(\frac{a\,e^4}{b^2}-\frac{4\,d\,e^3}{b}\right)}{2\,b}+\frac{3\,d^2\,e^2}{b}\right)+\frac{\ln\left(a+b\,x\right)\,\left(a^4\,e^4-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((4*d^3*e)/b - (a*((a*((a*e^4)/b^2 - (4*d*e^3)/b))/b + (6*d^2*e^2)/b))/b)
 - x^3*((a*e^4)/(3*b^2) - (4*d*e^3)/(3*b)) + x^2*((a*((a*e^4)/b^2 - (4*d*e^
3)/b))/(2*b) + (3*d^2*e^2)/b) + (log(a + b*x)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^
2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/b^5 + (e^4*x^4)/(4*b)
```

sympy [A] time = 0.44, size = 136, normalized size = 1.40

$$x^3\left(-\frac{ae^4}{3b^2}+\frac{4de^3}{3b}\right)+x^2\left(\frac{a^2e^4}{2b^3}-\frac{2ade^3}{b^2}+\frac{3d^2e^2}{b}\right)+x\left(-\frac{a^3e^4}{b^4}+\frac{4a^2de^3}{b^3}-\frac{6ad^2e^2}{b^2}+\frac{4d^3e}{b}\right)+\frac{e^4x^4}{4b}+\frac{(ae-bd)^4\log\left(\right.}{b^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x**3*(-a*e**4/(3*b**2) + 4*d*e**3/(3*b)) + x**2*(a**2*e**4/(2*b**3) - 2*a*d
*e**3/b**2 + 3*d**2*e**2/b) + x*(-a**3*e**4/b**4 + 4*a**2*d*e**3/b**3 - 6*a
*d**2*e**2/b**2 + 4*d**3*e/b) + e**4*x**4/(4*b) + (a*e - b*d)**4*log(a + b*
x)/b**5
```

3.1928 $\int \frac{(a+bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=73

$$\frac{(bd-ae)^3\log(a+bx)}{b^4}+\frac{ex(bd-ae)^2}{b^3}+\frac{(d+ex)^2(bd-ae)}{2b^2}+\frac{(d+ex)^3}{3b}$$

```
[Out] e*(-a*e+b*d)^2*x/b^3+1/2*(-a*e+b*d)*(e*x+d)^2/b^2+1/3*(e*x+d)^3/b+(-a*e+b*d
)^3*ln(b*x+a)/b^4
```

Rubi [A] time = 0.03, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{ex(bd-ae)^2}{b^3}+\frac{(d+ex)^2(bd-ae)}{2b^2}+\frac{(bd-ae)^3\log(a+bx)}{b^4}+\frac{(d+ex)^3}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)^2*x)/b^3 + ((b*d - a*e)*(d + e*x)^2)/(2*b^2) + (d + e*x)^3/(
3*b) + ((b*d - a*e)^3*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^3}{a+bx}\,dx\\ &= \int \left(\frac{e(bd-ae)^2}{b^3}+\frac{(bd-ae)^3}{b^3(a+bx)}+\frac{e(bd-ae)(d+ex)}{b^2}+\frac{e(d+ex)^2}{b}\right)dx\\ &= \frac{e(bd-ae)^2x}{b^3}+\frac{(bd-ae)(d+ex)^2}{2b^2}+\frac{(d+ex)^3}{3b}+\frac{(bd-ae)^3\log(a+bx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 1.01

$$\frac{bex\left(6a^2e^2-3abe(6d+ex)+b^2\left(18d^2+9dex+2e^2x^2\right)\right)+6(bd-ae)^3\log(a+bx)}{6b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(6*a^2*e^2 - 3*a*b*e*(6*d + e*x) + b^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2
)) + 6*(b*d - a*e)^3*Log[a + b*x])/(6*b^4)
```

fricas [A] time = 1.30, size = 116, normalized size = 1.59

$$\frac{2\,b^3e^3x^3+3\,\big(3\,b^3de^2-ab^2e^3\big)x^2+6\,\big(3\,b^3d^2e-3\,ab^2de^2+a^2be^3\big)x+6\,\big(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\big)\log}{6\,b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(2*b^3*e^3*x^3 + 3*(3*b^3*d*e^2 - a*b^2*e^3)*x^2 + 6*(3*b^3*d^2*e - 3*a
*b^2*d*e^2 + a^2*b*e^3)*x + 6*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^
3*e^3)*log(b*x + a))/b^4
```

giac [A] time = 0.16, size = 110, normalized size = 1.51

$$\frac{2\,b^2x^3e^3+9\,b^2dx^2e^2+18\,b^2d^2xe-3\,abx^2e^3-18\,abdxe^2+6\,a^2xe^3}{6\,b^3}+\frac{\big(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\big)\log(|b}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/6*(2*b^2*x^3*e^3 + 9*b^2*d*x^2*e^2 + 18*b^2*d^2*x*e - 3*a*b*x^2*e^3 - 18*
a*b*d*x*e^2 + 6*a^2*x*e^3)/b^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 -
 a^3*e^3)*log(abs(b*x + a))/b^4
```

maple [A] time = 0.05, size = 133, normalized size = 1.82

$$\frac{e^3x^3}{3b}-\frac{a\,e^3x^2}{2b^2}+\frac{3d\,e^2x^2}{2b}-\frac{a^3e^3\ln(bx+a)}{b^4}+\frac{3a^2d\,e^2\ln(bx+a)}{b^3}+\frac{a^2e^3x}{b^3}-\frac{3a\,d^2e\ln(bx+a)}{b^2}-\frac{3ad\,e^2x}{b^2}+\frac{d^3\ln(bx+a}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/3*e^3/b*x^3-1/2*e^3/b^2*x^2*a+3/2*e^2/b*x^2*d+e^3/b^3*a^2*x-3*e^2/b^2*a*d
*x+3*e/b*d^2*x-1/b^4*ln(b*x+a)*a^3*e^3+3/b^3*ln(b*x+a)*a^2*d*e^2-3/b^2*ln(b
*x+a)*a*d^2*e+1/b*ln(b*x+a)*d^3
```

maxima [A] time = 0.50, size = 114, normalized size = 1.56

$$\frac{2\,b^2e^3x^3+3\,\big(3\,b^2de^2-abe^3\big)x^2+6\,\big(3\,b^2d^2e-3\,abde^2+a^2e^3\big)x}{6\,b^3}+\frac{\big(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\big)\log(bx+}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/6*(2*b^2*e^3*x^3 + 3*(3*b^2*d*e^2 - a*b*e^3)*x^2 + 6*(3*b^2*d^2*e - 3*a*b
*d*e^2 + a^2*e^3)*x)/b^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e
^3)*log(b*x + a)/b^4
```

mupad [B] time = 1.99, size = 118, normalized size = 1.62

$$x\left(\frac{3\,d^2\,e}{b}+\frac{a\,\left(\frac{a\,e^3}{b^2}-\frac{3\,d\,e^2}{b}\right)}{b}\right)-x^2\,\left(\frac{a\,e^3}{2\,b^2}-\frac{3\,d\,e^2}{2\,b}\right)-\frac{\ln\left(a+b\,x\right)\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{b^4}+\frac{e^3\,x^3}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] x*((3*d^2*e)/b + (a*((a*e^3)/b^2 - (3*d*e^2)/b))/b) - x^2*((a*e^3)/(2*b^2)
- (3*d*e^2)/(2*b)) - (log(a + b*x)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a
^2*b*d*e^2))/b^4 + (e^3*x^3)/(3*b)
```

sympy [**A**] time = 0.33, size = 83, normalized size = 1.14

$$x^2\left(-\frac{ae^3}{2b^2}+\frac{3de^2}{2b}\right)+x\left(\frac{a^2e^3}{b^3}-\frac{3ade^2}{b^2}+\frac{3d^2e}{b}\right)+\frac{e^3x^3}{3b}-\frac{(ae-bd)^3\log(a+bx)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x**2*(-a*e**3/(2*b**2) + 3*d*e**2/(2*b)) + x*(a**2*e**3/b**3 - 3*a*d*e**2/b
**2 + 3*d**2*e/b) + e**3*x**3/(3*b) - (a*e - b*d)**3*log(a + b*x)/b**4
```

3.1929 $\int \frac{(a+bx)(d+ex)^2}{a^2+2abx+b^2x^2} dx$

Optimal. Leaf size=49

$$\frac{(bd-ae)^2\log(a+bx)}{b^3}+\frac{ex(bd-ae)}{b^2}+\frac{(d+ex)^2}{2b}$$

```
[Out] e*(-a*e+b*d)*x/b^2+1/2*(e*x+d)^2/b+(-a*e+b*d)^2*ln(b*x+a)/b^3
```

Rubi [A] time = 0.02, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{ex(bd-ae)}{b^2}+\frac{(bd-ae)^2\log(a+bx)}{b^3}+\frac{(d+ex)^2}{2b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*(b*d - a*e)*x)/b^2 + (d + e*x)^2/(2*b) + ((b*d - a*e)^2*Log[a + b*x])/b^
3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^2}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^2}{a+bx}\,dx\\ &= \int \left(\frac{e(bd-ae)}{b^2}+\frac{(bd-ae)^2}{b^2(a+bx)}+\frac{e(d+ex)}{b}\right)dx\\ &= \frac{e(bd-ae)x}{b^2}+\frac{(d+ex)^2}{2b}+\frac{(bd-ae)^2\log(a+bx)}{b^3}\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 0.88

$$\frac{bex(-2ae+4bd+bex)+2(bd-ae)^2\log(a+bx)}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (b*e*x*(4*b*d - 2*a*e + b*e*x) + 2*(b*d - a*e)^2*Log[a + b*x])/(2*b^3)
```

fricas [A] time = 1.06, size = 63, normalized size = 1.29

$$\frac{b^2e^2x^2+2\left(2\,b^2de-abe^2\right)x+2\left(b^2d^2-2\,abde+a^2e^2\right)\log\left(bx+a\right)}{2\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*e^2*x^2 + 2*(2*b^2*d*e - a*b*e^2)*x + 2*(b^2*d^2 - 2*a*b*d*e + a^2
*e^2)*log(b*x + a))/b^3
```

giac [A] time = 0.15, size = 59, normalized size = 1.20

$$\frac{bx^2e^2 + 4\,bdxe - 2\,axe^2}{2\,b^2} + \frac{\left(b^2d^2 - 2\,abde + a^2e^2\right)\log\left(|bx + a|\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/2*(b*x^2*e^2 + 4*b*d*x*e - 2*a*x*e^2)/b^2 + (b^2*d^2 - 2*a*b*d*e + a^2*e^
2)*log(abs(b*x + a))/b^3
```

maple [A] time = 0.05, size = 74, normalized size = 1.51

$$\frac{e^2x^2}{2b} + \frac{a^2e^2\ln\left(bx + a\right)}{b^3} - \frac{2ade\ln\left(bx + a\right)}{b^2} - \frac{a\,e^2x}{b^2} + \frac{d^2\ln\left(bx + a\right)}{b} + \frac{2dex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/2*e^2/b*x^2-e^2/b^2*a*x+2*e/b*x*d+1/b^3*ln(b*x+a)*a^2*e^2-2/b^2*ln(b*x+a)
*a*d*e+1/b*ln(b*x+a)*d^2
```

maxima [A] time = 0.49, size = 61, normalized size = 1.24

$$\frac{be^2x^2 + 2\left(2\,bde - ae^2\right)x}{2\,b^2} + \frac{\left(b^2d^2 - 2\,abde + a^2e^2\right)\log\left(bx + a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*(b*e^2*x^2 + 2*(2*b*d*e - a*e^2)*x)/b^2 + (b^2*d^2 - 2*a*b*d*e + a^2*e^
2)*log(b*x + a)/b^3
```

mupad [B] time = 0.07, size = 62, normalized size = 1.27

$$\frac{\ln\left(a + b\,x\right)\,\left(a^2\,e^2 - 2\,a\,b\,d\,e + b^2\,d^2\right)}{b^3} - x\,\left(\frac{a\,e^2}{b^2} - \frac{2\,d\,e}{b}\right) + \frac{e^2\,x^2}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (log(a + b*x)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/b^3 - x*((a*e^2)/b^2 - (2*d*
e)/b) + (e^2*x^2)/(2*b)
```

sympy [A] time = 0.26, size = 44, normalized size = 0.90

$$x\left(-\frac{ae^2}{b^2} + \frac{2de}{b}\right) + \frac{e^2x^2}{2b} + \frac{\left(ae - bd\right)^2\log\left(a + bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] x*(-a*e**2/b**2 + 2*d*e/b) + e**2*x**2/(2*b) + (a*e - b*d)**2*log(a + b*x)/
b**3
```

3.1930 $\int \frac{(a+bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=25

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

```
[Out] e*x/b+(-a*e+b*d)*ln(b*x+a)/b^2
```

Rubi [A] time = 0.02, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = $\{27, 43\}$

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*x)/b + ((b*d - a*e)*Log[a + b*x])/b^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{a^2+2abx+b^2x^2}\,dx &= \int \frac{d+ex}{a+bx}\,dx\\ &= \int \left(\frac{e}{b}+\frac{bd-ae}{b(a+bx)}\right)dx\\ &= \frac{ex}{b}+\frac{(bd-ae)\log(a+bx)}{b^2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 1.00

$$\frac{(bd-ae)\log(a+bx)}{b^2}+\frac{ex}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (e*x)/b + ((b*d - a*e)*Log[a + b*x])/b^2
```

fricas [A] time = 1.17, size = 24, normalized size = 0.96

$$\frac{bex+(bd-ae)\log(bx+a)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (b*e*x + (b*d - a*e)*log(b*x + a))/b^2
```

giac [A] time = 0.16, size = 28, normalized size = 1.12

$$\frac{xe}{b}+\frac{(bd-ae)\log\left(|bx+a|\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] x*e/b + (b*d - a*e)*log(abs(b*x + a))/b^2
```

maple [A] time = 0.05, size = 32, normalized size = 1.28

$$-\frac{ae\ln\left(bx+a\right)}{b^2}+\frac{d\ln\left(bx+a\right)}{b}+\frac{ex}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/b*e*x-1/b^2*ln(b*x+a)*a*e+1/b*ln(b*x+a)*d
```

maxima [A] time = 0.55, size = 25, normalized size = 1.00

$$\frac{ex}{b}+\frac{(bd-ae)\log\left(bx+a\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] e*x/b + (b*d - a*e)*log(b*x + a)/b^2
```

mupad [B] time = 0.04, size = 26, normalized size = 1.04

$$\frac{e\,x}{b}-\frac{\ln\left(a+b\,x\right)\,\left(a\,e-b\,d\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (e*x)/b - (log(a + b*x)*(a*e - b*d))/b^2
```

sympy [A] time = 0.19, size = 20, normalized size = 0.80

$$\frac{ex}{b}-\frac{(ae-bd)\log\left(a+bx\right)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] e*x/b - (a*e - b*d)*log(a + b*x)/b**2
```

3.1931 $\int \frac{a+bx}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=10

$$\frac{\log(a+bx)}{b}$$

```
[Out] ln(b*x+a)/b
```

Rubi [A] time = 0.00, antiderivative size = 10, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {27, 31}

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Log[a + b*x]/b
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{a^2+2abx+b^2x^2}\,dx &= \int \frac{1}{a+bx}\,dx\\ &= \frac{\log(a+bx)}{b}\end{aligned}$$

Mathematica [A] time = 0.00, size = 10, normalized size = 1.00

$$\frac{\log(a+bx)}{b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] Log[a + b*x]/b
```

fricas [A] time = 1.03, size = 10, normalized size = 1.00

$$\frac{\log(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] log(b*x + a)/b
```

giac [B] time = 0.15, size = 22, normalized size = 2.20

$$\frac{\log\left(a^2 + \left(bx^2 + 2\,ax\right)b\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 1/2*log(a^2 + (b*x^2 + 2*a*x)*b)/b
```

maple [A] time = 0.04, size = 11, normalized size = 1.10

$$\frac{\ln\left(bx + a\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/b*ln(b*x+a)
```

maxima [B] time = 0.53, size = 22, normalized size = 2.20

$$\frac{\log\left(b^2x^2 + 2\,abx + a^2\right)}{2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 1/2*log(b^2*x^2 + 2*a*b*x + a^2)/b
```

mupad [B] time = 0.02, size = 10, normalized size = 1.00

$$\frac{\ln\left(a + b\,x\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] log(a + b*x)/b
```

sympy [A] time = 0.09, size = 7, normalized size = 0.70

$$\frac{\log\left(a + bx\right)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] log(a + b*x)/b
```

3.1932 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=36

$$\frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}$$

```
[Out] ln(b*x+a)/(-a*e+b*d)-ln(e*x+d)/(-a*e+b*d)
```

Rubi [A] time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {27, 36, 31}

$$\frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] Log[a + b*x]/(b*d - a*e) - Log[d + e*x]/(b*d - a*e)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 36

```
Int[1/(((a_.) + (b_.)*(x_))*((c_.) + (d_.)*(x_))), x_Symbol] :> Dist[b/(b*c
 - a*d), Int[1/(a + b*x), x], x] - Dist[d/(b*c - a*d), Int[1/(c + d*x), x],
 x] /; FreeQ[{a, b, c, d}, x] && NeQ[b*c - a*d, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)}\,dx\\ &= \frac{b\int \frac{1}{a+bx}\,dx}{bd-ae}-\frac{e\int \frac{1}{d+ex}\,dx}{bd-ae}\\ &= \frac{\log(a+bx)}{bd-ae}-\frac{\log(d+ex)}{bd-ae}\end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.72

$$\frac{\log(a+bx)-\log(d+ex)}{bd-ae}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (Log[a + b*x] - Log[d + e*x])/(b*d - a*e)
```

fricas [A] time = 0.95, size = 26, normalized size = 0.72

$$\frac{\log(bx+a)-\log(ex+d)}{bd-ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (log(b*x + a) - log(e*x + d))/(b*d - a*e)
```

giac [A] time = 0.16, size = 49, normalized size = 1.36

$$\frac{b\log(|bx+a|)}{b^2d-abe}-\frac{e\log(|xe+d|)}{bde-ae^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b*log(abs(b*x + a))/(b^2*d - a*b*e) - e*log(abs(x*e + d))/(b*d*e - a*e^2)
```

maple [A] time = 0.05, size = 37, normalized size = 1.03

$$-\frac{\ln(bx+a)}{ae-bd}+\frac{\ln(ex+d)}{ae-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)*ln(b*x+a)+1/(a*e-b*d)*ln(e*x+d)
```

maxima [A] time = 0.62, size = 36, normalized size = 1.00

$$\frac{\log(bx+a)}{bd-ae}-\frac{\log(ex+d)}{bd-ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] log(b*x + a)/(b*d - a*e) - log(e*x + d)/(b*d - a*e)
```

mupad [B] time = 0.08, size = 40, normalized size = 1.11

$$\frac{\operatorname{atan}\left(\frac{b\,d\,2\mathrm{i}+b\,e\,x\,2\mathrm{i}}{a\,e-b\,d}+1\mathrm{i}\right)\,2\mathrm{i}}{a\,e-b\,d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (atan((b*d*2i + b*e*x*2i)/(a*e - b*d) + 1i)*2i)/(a*e - b*d)
```

sympy [B] time = 0.38, size = 128, normalized size = 3.56

$$\frac{\log\left(x+\frac{-\frac{a^2e^2}{ae-bd}+\frac{2abde}{ae-bd}+ae-\frac{b^2d^2}{ae-bd}+bd}{2be}\right)}{ae-bd}-\frac{\log\left(x+\frac{\frac{a^2e^2}{ae-bd}-\frac{2abde}{ae-bd}+ae+\frac{b^2d^2}{ae-bd}+bd}{2be}\right)}{ae-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] log(x + (-a**2*e**2/(a*e - b*d) + 2*a*b*d*e/(a*e - b*d) + a*e - b**2*d**2/(
a*e - b*d) + b*d)/(2*b*e))/(a*e - b*d) - log(x + (a**2*e**2/(a*e - b*d) - 2
*a*b*d*e/(a*e - b*d) + a*e + b**2*d**2/(a*e - b*d) + b*d)/(2*b*e))/(a*e - b
*d)
```

3.1933 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=56

$$\frac{1}{(d+ex)(bd-ae)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}$$

```
[Out] 1/(-a*e+b*d)/(e*x+d)+b*ln(b*x+a)/(-a*e+b*d)^2-b*ln(e*x+d)/(-a*e+b*d)^2
```

Rubi [A] time = 0.04, antiderivative size = 56, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{1}{(d+ex)(bd-ae)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/((b*d - a*e)*(d + e*x)) + (b*Log[a + b*x])/(b*d - a*e)^2 - (b*Log[d + e*x
])/(b*d - a*e)^2
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^2}\,dx\\ &= \int \left(\frac{b^2}{(bd-ae)^2(a+bx)}-\frac{e}{(bd-ae)(d+ex)^2}-\frac{be}{(bd-ae)^2(d+ex)}\right)dx\\ &= \frac{1}{(bd-ae)(d+ex)}+\frac{b\log(a+bx)}{(bd-ae)^2}-\frac{b\log(d+ex)}{(bd-ae)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 53, normalized size = 0.95

$$\frac{b(d+ex)\log(a+bx)-ae-b(d+ex)\log(d+ex)+bd}{(d+ex)(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (b*d - a*e + b*(d + e*x)*Log[a + b*x] - b*(d + e*x)*Log[d + e*x])/((b*d - a
*e)^2*(d + e*x))
```

fricas [A] time = 1.06, size = 92, normalized size = 1.64

$$\frac{bd-ae+(bex+bd)\log(bx+a)-(bex+bd)\log(ex+d)}{b^2d^3-2\,abd^2e+a^2de^2+\left(b^2d^2e-2\,abde^2+a^2e^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (b*d - a*e + (b*e*x + b*d)*log(b*x + a) - (b*e*x + b*d)*log(e*x + d))/(b^2*
d^3 - 2*a*b*d^2*e + a^2*d*e^2 + (b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*x)
```

giac [A] time = 0.17, size = 82, normalized size = 1.46

$$\frac{be\log\left(\left|b-\frac{bd}{xe+d}+\frac{ae}{xe+d}\right|\right)}{b^2d^2e-2\,abde^2+a^2e^3}+\frac{e}{\left(bde-ae^2\right)(xe+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b*e*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^2*d^2*e - 2*a*b*d*e^2 +
a^2*e^3) + e/((b*d*e - a*e^2)*(x*e + d))
```

maple [A] time = 0.06, size = 58, normalized size = 1.04

$$\frac{b\ln(bx+a)}{(ae-bd)^2}-\frac{b\ln(ex+d)}{(ae-bd)^2}-\frac{1}{(ae-bd)(ex+d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] b/(a*e-b*d)^2*ln(b*x+a)-1/(a*e-b*d)/(e*x+d)-b/(a*e-b*d)^2*ln(e*x+d)
```

maxima [A] time = 0.48, size = 90, normalized size = 1.61

$$\frac{b\log(bx+a)}{b^2d^2-2\,abde+a^2e^2}-\frac{b\log(ex+d)}{b^2d^2-2\,abde+a^2e^2}+\frac{1}{bd^2-ade+\left(bde-ae^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] b*log(b*x + a)/(b^2*d^2 - 2*a*b*d*e + a^2*e^2) - b*log(e*x + d)/(b^2*d^2 -
2*a*b*d*e + a^2*e^2) + 1/(b*d^2 - a*d*e + (b*d*e - a*e^2)*x)
```

mupad [B] time = 2.32, size = 77, normalized size = 1.38

$$\frac{2\,b\,\mathrm{atanh}\left(\frac{a^2\,e^2-b^2\,d^2}{{\left(a\,e-b\,d\right)}^2}+\frac{2\,b\,e\,x}{a\,e-b\,d}\right)}{{\left(a\,e-b\,d\right)}^2}-\frac{1}{\left(a\,e-b\,d\right)\,\left(d+e\,x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b*atanh((a^2*e^2 - b^2*d^2)/(a*e - b*d)^2 + (2*b*e*x)/(a*e - b*d)))/(a*e
 - b*d)^2 - 1/((a*e - b*d)*(d + e*x))
```

sympy [B] time = 0.71, size = 233, normalized size = 4.16

$$-\frac{b\log\left(x+\frac{-\frac{a^3be^3}{(ae-bd)^2}+\frac{3a^2b^2de^2}{(ae-bd)^2}-\frac{3ab^3d^2e}{(ae-bd)^2}+abe+\frac{b^4d^3}{(ae-bd)^2}+b^2d}{2b^2e}\right)}{(ae-bd)^2}+\frac{b\log\left(x+\frac{\frac{a^3be^3}{(ae-bd)^2}-\frac{3a^2b^2de^2}{(ae-bd)^2}+\frac{3ab^3d^2e}{(ae-bd)^2}+abe-\frac{b^4d^3}{(ae-bd)^2}+b^2d}{2b^2e}\right)}{(ae-bd)^2}-\frac{}{ade-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -b*log(x + (-a**3*b*e**3/(a*e - b*d)**2 + 3*a**2*b**2*d*e**2/(a*e - b*d)**2
 - 3*a*b**3*d**2*e/(a*e - b*d)**2 + a*b*e + b**4*d**3/(a*e - b*d)**2 + b**2
*d)/(2*b**2*e))/(a*e - b*d)**2 + b*log(x + (a**3*b*e**3/(a*e - b*d)**2 - 3*
a**2*b**2*d*e**2/(a*e - b*d)**2 + 3*a*b**3*d**2*e/(a*e - b*d)**2 + a*b*e -
b**4*d**3/(a*e - b*d)**2 + b**2*d)/(2*b**2*e))/(a*e - b*d)**2 - 1/(a*d*e -
b*d**2 + x*(a*e**2 - b*d*e))
```

3.1934 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=82

$$\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+ex)}{(bd-ae)^3}+\frac{b}{(d+ex)(bd-ae)^2}+\frac{1}{2(d+ex)^2(bd-ae)}$$

```
[Out] 1/2/(-a*e+b*d)/(e*x+d)^2+b/(-a*e+b*d)^2/(e*x+d)+b^2*ln(b*x+a)/(-a*e+b*d)^3-
b^2*ln(e*x+d)/(-a*e+b*d)^3
```

Rubi [A] time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 44\}$

$$\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+ex)}{(bd-ae)^3}+\frac{b}{(d+ex)(bd-ae)^2}+\frac{1}{2(d+ex)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/(2*(b*d - a*e)*(d + e*x)^2) + b/((b*d - a*e)^2*(d + e*x)) + (b^2*Log[a +
b*x])/(b*d - a*e)^3 - (b^2*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)}-\frac{e}{(bd-ae)(d+ex)^3}-\frac{be}{(bd-ae)^2(d+ex)^2}-\frac{}{(bd-a}\right.\\ &= \frac{1}{2(bd-ae)(d+ex)^2}+\frac{b}{(bd-ae)^2(d+ex)}+\frac{b^2\log(a+bx)}{(bd-ae)^3}-\frac{b^2\log(d+ex)}{(bd-ae)^3}\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.82

$$\frac{2b^2\log(a+bx)+\frac{(bd-ae)(-ae+3bd+2bex)}{(d+ex)^2}-2b^2\log(d+ex)}{2(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (((b*d - a*e)*(3*b*d - a*e + 2*b*e*x))/(d + e*x)^2 + 2*b^2*Log[a + b*x] - 2
*b^2*Log[d + e*x])/(2*(b*d - a*e)^3)
```

fricas [B] time = 1.24, size = 242, normalized size = 2.95

$$\frac{3\,b^2d^2 - 4\,abde + a^2e^2 + 2\,(b^2de - abe^2)x + 2\,(b^2e^2x^2 + 2\,b^2dex + b^2d^2)\log{(bx + a)} - 2\,(b^2e^2x^2 + 2\,b^2dex +}{2\,(b^3d^5 - 3\,ab^2d^4e + 3\,a^2bd^3e^2 - a^3d^2e^3 + (b^3d^3e^2 - 3\,ab^2d^2e^3 + 3\,a^2bde^4 - a^3e^5)x^2 + 2\,(b^3d^4e - 3\,ab^2d^3e^2 + 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2
*x^2 + 2*b^2*d*e*x + b^2*d^2)*log(b*x + a) - 2*(b^2*e^2*x^2 + 2*b^2*d*e*x +
 b^2*d^2)*log(e*x + d))/(b^3*d^5 - 3*a*b^2*d^4*e + 3*a^2*b*d^3*e^2 - a^3*d^
2*e^3 + (b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*x^2 + 2*(
b^3*d^4*e - 3*a*b^2*d^3*e^2 + 3*a^2*b*d^2*e^3 - a^3*d*e^4)*x)
```

giac [B] time = 0.16, size = 166, normalized size = 2.02

$$\frac{b^3\log{(|bx + a|)}}{b^4d^3 - 3\,ab^3d^2e + 3\,a^2b^2de^2 - a^3be^3} - \frac{b^2e\log{(|xe + d|)}}{b^3d^3e - 3\,ab^2d^2e^2 + 3\,a^2bde^3 - a^3e^4} + \frac{3\,b^2d^2 - 4\,abde + a^2e^2 + 2\,(b^2de - a}{2\,(bd - ae)^3(xe + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b^3*log(abs(b*x + a))/(b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^
3) - b^2*e*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 -
 a^3*e^4) + 1/2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x)
/((b*d - a*e)^3*(x*e + d)^2)
```

maple [A] time = 0.05, size = 81, normalized size = 0.99

$$-\frac{b^2\ln{(bx + a)}}{(ae - bd)^3} + \frac{b^2\ln{(ex + d)}}{(ae - bd)^3} + \frac{b}{(ae - bd)^2\,(ex + d)} - \frac{1}{2\,(ae - bd)\,(ex + d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -1/(a*e-b*d)^3*b^2*ln(b*x+a)-1/2/(a*e-b*d)/(e*x+d)^2+1/(a*e-b*d)^3*b^2*ln(e
*x+d)+b/(a*e-b*d)^2/(e*x+d)
```

maxima [B] time = 0.47, size = 202, normalized size = 2.46

$$\frac{b^2\log{(bx + a)}}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{b^2\log{(ex + d)}}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} + \frac{2\,b}{2\,(b^2d^4 - 2\,abd^3e + a^2d^2e^2 + (b^2d^2e^2 -}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] b^2*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - b^2*
log(e*x + d)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) + 1/2*(2*b
*e*x + 3*b*d - a*e)/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e^2 + (b^2*d^2*e^2 - 2
*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e^2 + a^2*d*e^3)*x)
```

mupad [B] time = 2.26, size = 183, normalized size = 2.23

$$-\frac{\frac{a\,e-3\,b\,d}{2\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}-\frac{b\,e\,x}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{d^2+2\,d\,e\,x+e^2\,x^2}-\frac{2\,b^2\,\mathrm{atanh}\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{{\left(a\,e-b\,d\right)}^3}+\frac{2\,b\,e\,x\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^3}\right)}{{\left(a\,e-b\,d\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - ((a*e - 3*b*d)/(2*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) - (b*e*x)/(a^2*e^2 + b
^2*d^2 - 2*a*b*d*e))/(d^2 + e^2*x^2 + 2*d*e*x) - (2*b^2*atanh((a^3*e^3 + b^
3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a*e - b*d)^3 + (2*b*e*x*(a^2*e^2 + b^2*
d^2 - 2*a*b*d*e))/(a*e - b*d)^3))/(a*e - b*d)^3
```

sympy [B] time = 1.08, size = 381, normalized size = 4.65

$$\frac{b^2 \log\left(x + \frac{-\frac{a^4b^2e^4}{(ae-bd)^3} + \frac{4a^3b^3de^3}{(ae-bd)^3} - \frac{6a^2b^4d^2e^2}{(ae-bd)^3} + \frac{4ab^5d^3e}{(ae-bd)^3} + ab^2e - \frac{b^6d^4}{(ae-bd)^3} + b^3d}{2b^3e}\right)}{(ae-bd)^3} - \frac{b^2 \log\left(x + \frac{\frac{a^4b^2e^4}{(ae-bd)^3} - \frac{4a^3b^3de^3}{(ae-bd)^3} + \frac{6a^2b^4d^2e^2}{(ae-bd)^3} - \frac{4ab^5d^3e}{(ae-bd)^3} + ab^2e + \frac{b^6d^4}{(ae-bd)^3}}{2b^3e}\right.}{(ae-bd)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] b**2*log(x + (-a**4*b**2*e**4/(a*e - b*d)**3 + 4*a**3*b**3*d*e**3/(a*e - b*
d)**3 - 6*a**2*b**4*d**2*e**2/(a*e - b*d)**3 + 4*a*b**5*d**3*e/(a*e - b*d)*
*3 + a*b**2*e - b**6*d**4/(a*e - b*d)**3 + b**3*d)/(2*b**3*e))/(a*e - b*d)*
*3 - b**2*log(x + (a**4*b**2*e**4/(a*e - b*d)**3 - 4*a**3*b**3*d*e**3/(a*e
- b*d)**3 + 6*a**2*b**4*d**2*e**2/(a*e - b*d)**3 - 4*a*b**5*d**3*e/(a*e - b
*d)**3 + a*b**2*e + b**6*d**4/(a*e - b*d)**3 + b**3*d)/(2*b**3*e))/(a*e - b
*d)**3 + (-a*e + 3*b*d + 2*b*e*x)/(2*a**2*d**2*e**2 - 4*a*b*d**3*e + 2*b**2
*d**4 + x**2*(2*a**2*e**4 - 4*a*b*d*e**3 + 2*b**2*d**2*e**2) + x*(4*a**2*d*
e**3 - 8*a*b*d**2*e**2 + 4*b**2*d**3*e))
```

3.1935 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=106

$$\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b}{2(d+ex)^2(bd-ae)^2}+\frac{1}{3(d+ex)^3(bd-ae)}$$

```
[Out] 1/3/(-a*e+b*d)/(e*x+d)^3+1/2*b/(-a*e+b*d)^2/(e*x+d)^2+b^2/(-a*e+b*d)^3/(e*x
+d)+b^3*ln(b*x+a)/(-a*e+b*d)^4-b^3*ln(e*x+d)/(-a*e+b*d)^4
```

Rubi [A] time = 0.07, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b}{2(d+ex)^2(bd-ae)^2}+\frac{1}{3(d+ex)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 1/(3*(b*d - a*e)*(d + e*x)^3) + b/(2*(b*d - a*e)^2*(d + e*x)^2) + b^2/((b*d
 - a*e)^3*(d + e*x)) + (b^3*Log[a + b*x])/(b*d - a*e)^4 - (b^3*Log[d + e*x]
)/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^4}\,dx\\
&= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)}-\frac{e}{(bd-ae)(d+ex)^4}-\frac{be}{(bd-ae)^2(d+ex)^3}-\frac{}{(bd\,\cdot}\right.\\
&= \frac{1}{3(bd-ae)(d+ex)^3}+\frac{b}{2(bd-ae)^2(d+ex)^2}+\frac{b^2}{(bd-ae)^3(d+ex)}+\frac{b^3\,\mathrm{lo}}{(bd}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 106, normalized size = 1.00

$$\frac{b^3\log(a+bx)}{(bd-ae)^4}-\frac{b^3\log(d+ex)}{(bd-ae)^4}+\frac{b^2}{(d+ex)(bd-ae)^3}+\frac{b}{2(d+ex)^2(bd-ae)^2}-\frac{1}{3(d+ex)^3(ae-bd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] -1/3*1/((-(b*d) + a*e)*(d + e*x)^3) + b/(2*(b*d - a*e)^2*(d + e*x)^2) + b^2
/((b*d - a*e)^3*(d + e*x)) + (b^3*Log[a + b*x])/(b*d - a*e)^4 - (b^3*Log[d
+ e*x])/(b*d - a*e)^4
```

fricas [B] time = 1.33, size = 425, normalized size = 4.01

$$\frac{11\,b^3d^3-18\,ab^2d^2e+9\,a^2bde^2-2\,a^3e^3+6\,(b^3de^2-ab^2e^3)x^2+3\,(5\,b^3d^2e-6\,ab^2de^2+a^2be^3)x+6\,(b}{6\,(b^4d^7-4\,ab^3d^6e+6\,a^2b^2d^5e^2-4\,a^3bd^4e^3+a^4d^3e^4+(b^4d^4e^3-4\,ab^3d^3e^4+6\,a^2b^2d^2e^5-4\,a^3bde^6+a^4e^7)x^3+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] 1/6*(11*b^3*d^3 - 18*a*b^2*d^2*e + 9*a^2*b*d*e^2 - 2*a^3*e^3 + 6*(b^3*d*e^2
 - a*b^2*e^3)*x^2 + 3*(5*b^3*d^2*e - 6*a*b^2*d*e^2 + a^2*b*e^3)*x + 6*(b^3*
e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(b*x + a) - 6*(b^3*
e^3*x^3 + 3*b^3*d*e^2*x^2 + 3*b^3*d^2*e*x + b^3*d^3)*log(e*x + d))/(b^4*d^7
 - 4*a*b^3*d^6*e + 6*a^2*b^2*d^5*e^2 - 4*a^3*b*d^4*e^3 + a^4*d^3*e^4 + (b^4
*d^4*e^3 - 4*a*b^3*d^3*e^4 + 6*a^2*b^2*d^2*e^5 - 4*a^3*b*d*e^6 + a^4*e^7)*x
^3 + 3*(b^4*d^5*e^2 - 4*a*b^3*d^4*e^3 + 6*a^2*b^2*d^3*e^4 - 4*a^3*b*d^2*e^5
 + a^4*d*e^6)*x^2 + 3*(b^4*d^6*e - 4*a*b^3*d^5*e^2 + 6*a^2*b^2*d^4*e^3 - 4*
a^3*b*d^3*e^4 + a^4*d^2*e^5)*x)
```

giac [B] time = 0.17, size = 238, normalized size = 2.25

$$\frac{b^4\log\left(|bx+a|\right)}{b^5d^4-4\,ab^4d^3e+6\,a^2b^3d^2e^2-4\,a^3b^2de^3+a^4be^4}-\frac{b^3e\log\left(|xe+d|\right)}{b^4d^4e-4\,ab^3d^3e^2+6\,a^2b^2d^2e^3-4\,a^3bde^4+a^4e^5}+\frac{11\,b^3d^3-18}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] b^4*log(abs(b*x + a))/(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*
b^2*d*e^3 + a^4*b*e^4) - b^3*e*log(abs(x*e + d))/(b^4*d^4*e - 4*a*b^3*d^3*e
^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + 1/6*(11*b^3*d^3 - 18*a*
b^2*d^2*e + 9*a^2*b*d*e^2 - 2*a^3*e^3 + 6*(b^3*d*e^2 - a*b^2*e^3)*x^2 + 3*(
5*b^3*d^2*e - 6*a*b^2*d*e^2 + a^2*b*e^3)*x)/((b*d - a*e)^4*(x*e + d)^3)
```

maple [A] time = 0.10, size = 104, normalized size = 0.98

$$\frac{b^3\ln\left(bx+a\right)}{\left(ae-bd\right)^4}-\frac{b^3\ln\left(ex+d\right)}{\left(ae-bd\right)^4}-\frac{b^2}{\left(ae-bd\right)^3\left(ex+d\right)}+\frac{b}{2\left(ae-bd\right)^2\left(ex+d\right)^2}-\frac{1}{3\left(ae-bd\right)\left(ex+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 1/(a*e-b*d)^4*b^3*ln(b*x+a)-1/3/(a*e-b*d)/(e*x+d)^3-1/(a*e-b*d)^3*b^2/(e*x+
d)+1/2*b/(a*e-b*d)^2/(e*x+d)^2-1/(a*e-b*d)^4*b^3*ln(e*x+d)
```

maxima [B] time = 0.62, size = 362, normalized size = 3.42

$$\frac{b^3\log\left(bx+a\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}-\frac{b^3\log\left(ex+d\right)}{b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4}+\frac{}{6\,(b^3d^6-3\,ab^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] b^3*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e
^3 + a^4*e^4) - b^3*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e
^2 - 4*a^3*b*d*e^3 + a^4*e^4) + 1/6*(6*b^2*e^2*x^2 + 11*b^2*d^2 - 7*a*b*d*e
 + 2*a^2*e^2 + 3*(5*b^2*d*e - a*b*e^2)*x)/(b^3*d^6 - 3*a*b^2*d^5*e + 3*a^2*
b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 -
a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a^3*d*e
^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*e^4)*x
)
```

mupad [**B**] time = 0.22, size = 313, normalized size = 2.95

$$\frac{2\,b^3\,\operatorname{atanh}\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{{\left(a\,e-b\,d\right)}^4}+\frac{2\,b\,e\,x\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{{\left(a\,e-b\,d\right)}^4}\right)}{{\left(a\,e-b\,d\right)}^4}-\frac{\frac{2\,a^2\,e^2-7\,a\,b\,d\,e+11\,b^2\,d^2}{6\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}-\frac{}{2\,(a^3}}{d^3+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^3*atanh((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a*e - b*d
)^4 + (2*b*e*x*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e -
b*d)^4))/(a*e - b*d)^4 - ((2*a^2*e^2 + 11*b^2*d^2 - 7*a*b*d*e)/(6*(a^3*e^3
- b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) - (b*x*(a*e^2 - 5*b*d*e))/(2*(a
^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (b^2*e^2*x^2)/(a^3*e^3
 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(d^3 + e^3*x^3 + 3*d*e^2*x^2 +
 3*d^2*e*x)
```

sympy [**B**] time = 1.53, size = 570, normalized size = 5.38

$$-\frac{b^3\log\left(x+\frac{-\frac{a^5b^3e^5}{(ae-bd)^4}+\frac{5a^4b^4de^4}{(ae-bd)^4}-\frac{10a^3b^5d^2e^3}{(ae-bd)^4}+\frac{10a^2b^6d^3e^2}{(ae-bd)^4}-\frac{5ab^7d^4e}{(ae-bd)^4}+ab^3e+\frac{b^8d^5}{(ae-bd)^4}+b^4d}{2b^4e}\right)}{(ae-bd)^4}+\frac{b^3\log\left(x+\frac{\frac{a^5b^3e^5}{(ae-bd)^4}-\frac{5a^4b^4de^4}{(ae-bd)^4}+\frac{10a^3b^5d^2e^3}{(ae-bd)^4}-}{}\right.}{(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -b**3*log(x + (-a**5*b**3*e**5/(a*e - b*d)**4 + 5*a**4*b**4*d*e**4/(a*e - b
*d)**4 - 10*a**3*b**5*d**2*e**3/(a*e - b*d)**4 + 10*a**2*b**6*d**3*e**2/(a*
e - b*d)**4 - 5*a*b**7*d**4*e/(a*e - b*d)**4 + a*b**3*e + b**8*d**5/(a*e -
b*d)**4 + b**4*d)/(2*b**4*e))/(a*e - b*d)**4 + b**3*log(x + (a**5*b**3*e**5
/(a*e - b*d)**4 - 5*a**4*b**4*d*e**4/(a*e - b*d)**4 + 10*a**3*b**5*d**2*e**
3/(a*e - b*d)**4 - 10*a**2*b**6*d**3*e**2/(a*e - b*d)**4 + 5*a*b**7*d**4*e/
(a*e - b*d)**4 + a*b**3*e - b**8*d**5/(a*e - b*d)**4 + b**4*d)/(2*b**4*e))/
(a*e - b*d)**4 + (-2*a**2*e**2 + 7*a*b*d*e - 11*b**2*d**2 - 6*b**2*e**2*x**
2 + x*(3*a*b*e**2 - 15*b**2*d*e))/(6*a**3*d**3*e**3 - 18*a**2*b*d**4*e**2 +
 18*a*b**2*d**5*e - 6*b**3*d**6 + x**3*(6*a**3*e**6 - 18*a**2*b*d*e**5 + 18
*a*b**2*d**2*e**4 - 6*b**3*d**3*e**3) + x**2*(18*a**3*d*e**5 - 54*a**2*b*d*
*2*e**4 + 54*a*b**2*d**3*e**3 - 18*b**3*d**4*e**2) + x*(18*a**3*d**2*e**4 -
 54*a**2*b*d**3*e**3 + 54*a*b**2*d**4*e**2 - 18*b**3*d**5*e))
```

3.1936 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=102

$$\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}-\frac{4e(bd-ae)^3}{b^5(a+bx)}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}+\frac{e^3x(4bd-3ae)}{b^4}+\frac{e^4x^2}{2b^3}$$

```
[Out] e^3*(-3*a*e+4*b*d)*x/b^4+1/2*e^4*x^2/b^3-1/2*(-a*e+b*d)^4/b^5/(b*x+a)^2-4*e
*(-a*e+b*d)^3/b^5/(b*x+a)+6*e^2*(-a*e+b*d)^2*ln(b*x+a)/b^5
```

Rubi [A] time = 0.09, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 43\}$

$$\frac{e^3x(4bd-3ae)}{b^4}+\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}-\frac{4e(bd-ae)^3}{b^5(a+bx)}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}+\frac{e^4x^2}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*(4*b*d - 3*a*e)*x)/b^4 + (e^4*x^2)/(2*b^3) - (b*d - a*e)^4/(2*b^5*(a +
 b*x)^2) - (4*e*(b*d - a*e)^3)/(b^5*(a + b*x)) + (6*e^2*(b*d - a*e)^2*Log[a
 + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^4}{(a+bx)^3}\,dx\\ &= \int \left(\frac{e^3(4bd-3ae)}{b^4}+\frac{e^4x}{b^3}+\frac{(bd-ae)^4}{b^4(a+bx)^3}+\frac{4e(bd-ae)^3}{b^4(a+bx)^2}+\frac{6e^2(bd-ae)^2}{b^4(a+bx)}\right)dx\\ &= \frac{e^3(4bd-3ae)x}{b^4}+\frac{e^4x^2}{2b^3}-\frac{(bd-ae)^4}{2b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{b^5(a+bx)}+\frac{6e^2(bd-ae)^2\log(a+bx)}{b^5}\end{aligned}$$

Mathematica [A] time = 0.06, size = 163, normalized size = 1.60

$$\frac{7a^4e^4+2a^3be^3(ex-10d)+a^2b^2e^2\left(18d^2-16dex-11e^2x^2\right)-4ab^3e\left(d^3-6d^2ex-4de^2x^2+e^3x^3\right)+12e^2(a+bx)^2}{2b^5(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (7*a^4*e^4 + 2*a^3*b*e^3*(-10*d + e*x) + a^2*b^2*e^2*(18*d^2 - 16*d*e*x - 1
1*e^2*x^2) - 4*a*b^3*e*(d^3 - 6*d^2*e*x - 4*d*e^2*x^2 + e^3*x^3) + b^4*(-d^
4 - 8*d^3*e*x + 8*d*e^3*x^3 + e^4*x^4) + 12*e^2*(b*d - a*e)^2*(a + b*x)^2*L
og[a + b*x])/(2*b^5*(a + b*x)^2)
```

fricas [B] time = 0.73, size = 292, normalized size = 2.86

$$\frac{b^4e^4x^4 - b^4d^4 - 4\,ab^3d^3e + 18\,a^2b^2d^2e^2 - 20\,a^3bde^3 + 7\,a^4e^4 + 4\left(2\,b^4de^3 - ab^3e^4\right)x^3 + \left(16\,ab^3de^3 - 11\,a^2b^2e^4\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(b^4*e^4*x^4 - b^4*d^4 - 4*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 20*a^3*b*
d*e^3 + 7*a^4*e^4 + 4*(2*b^4*d*e^3 - a*b^3*e^4)*x^3 + (16*a*b^3*d*e^3 - 11*
a^2*b^2*e^4)*x^2 - 2*(4*b^4*d^3*e - 12*a*b^3*d^2*e^2 + 8*a^2*b^2*d*e^3 - a^
3*b*e^4)*x + 12*(a^2*b^2*d^2*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 -
 2*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^
3*b*e^4)*x)*log(b*x + a))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5)
```

giac [A] time = 0.16, size = 172, normalized size = 1.69

$$\frac{6\left(b^2d^2e^2 - 2\,abde^3 + a^2e^4\right)\log\left(|bx + a|\right)}{b^5} + \frac{b^3x^2e^4 + 8\,b^3dxe^3 - 6\,ab^2xe^4}{2\,b^6} - \frac{b^4d^4 + 4\,ab^3d^3e - 18\,a^2b^2d^2e^2 + 20\,a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 6*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*log(abs(b*x + a))/b^5 + 1/2*(b^3*x^
2*e^4 + 8*b^3*d*x*e^3 - 6*a*b^2*x*e^4)/b^6 - 1/2*(b^4*d^4 + 4*a*b^3*d^3*e -
 18*a^2*b^2*d^2*e^2 + 20*a^3*b*d*e^3 - 7*a^4*e^4 + 8*(b^4*d^3*e - 3*a*b^3*d
^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)/((b*x + a)^2*b^5)
```

maple [B] time = 0.07, size = 245, normalized size = 2.40

$$-\frac{a^4e^4}{2\left(bx+a\right)^2b^5} + \frac{2a^3d\,e^3}{\left(bx+a\right)^2b^4} - \frac{3a^2d^2e^2}{\left(bx+a\right)^2b^3} + \frac{2a\,d^3e}{\left(bx+a\right)^2b^2} - \frac{d^4}{2\left(bx+a\right)^2b} + \frac{e^4x^2}{2b^3} + \frac{4a^3e^4}{\left(bx+a\right)b^5} - \frac{12a^2d\,e^3}{\left(bx+a\right)b^4} + \frac{6a^2e^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2*e^4*x^2/b^3-3*e^4/b^4*a*x+4*e^3/b^3*x*d-1/2/b^5/(b*x+a)^2*a^4*e^4+2/b^4
/(b*x+a)^2*a^3*d*e^3-3/b^3/(b*x+a)^2*a^2*d^2*e^2+2/b^2/(b*x+a)^2*a*d^3*e-1/
2/b/(b*x+a)^2*d^4+6/b^5*e^4*ln(b*x+a)*a^2-12/b^4*e^3*ln(b*x+a)*a*d+6/b^3*e^
2*ln(b*x+a)*d^2+4/b^5*e^4/(b*x+a)*a^3-12/b^4*e^3/(b*x+a)*a^2*d+12/b^3*e^2/(
b*x+a)*a*d^2-4/b^2*e/(b*x+a)*d^3
```

maxima [A] time = 0.54, size = 190, normalized size = 1.86

$$-\frac{b^4d^4 + 4\,ab^3d^3e - 18\,a^2b^2d^2e^2 + 20\,a^3bde^3 - 7\,a^4e^4 + 8\left(b^4d^3e - 3\,ab^3d^2e^2 + 3\,a^2b^2de^3 - a^3be^4\right)x}{2\left(b^7x^2 + 2\,ab^6x + a^2b^5\right)} + \frac{be^4x^2 + 2\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^4*d^4 + 4*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 20*a^3*b*d*e^3 - 7*a^4
*e^4 + 8*(b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)/(b^
7*x^2 + 2*a*b^6*x + a^2*b^5) + 1/2*(b*e^4*x^2 + 2*(4*b*d*e^3 - 3*a*e^4)*x)/
b^4 + 6*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*log(b*x + a)/b^5
```

mupad [B] time = 0.10, size = 197, normalized size = 1.93

$$\frac{e^4\,x^2}{2\,b^3}-x\,\left(\frac{3\,a\,e^4}{b^4}-\frac{4\,d\,e^3}{b^3}\right)-\frac{\frac{-7\,a^4\,e^4+20\,a^3\,b\,d\,e^3-18\,a^2\,b^2\,d^2\,e^2+4\,a\,b^3\,d^3\,e+b^4\,d^4}{2\,b}-x\,\left(4\,a^3\,e^4-12\,a^2\,b\,d\,e^3+12\,a\,b^2\,d^2\,e^2-4\,b^3\right.}{a^2\,b^4+2\,a\,b^5\,x+b^6\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^4*x^2)/(2*b^3) - x*((3*a*e^4)/b^4 - (4*d*e^3)/b^3) - ((b^4*d^4 - 7*a^4*e
^4 - 18*a^2*b^2*d^2*e^2 + 4*a*b^3*d^3*e + 20*a^3*b*d*e^3)/(2*b) - x*(4*a^3*
e^4 - 4*b^3*d^3*e + 12*a*b^2*d^2*e^2 - 12*a^2*b*d*e^3))/(a^2*b^4 + b^6*x^2
+ 2*a*b^5*x) + (log(a + b*x)*(6*a^2*e^4 + 6*b^2*d^2*e^2 - 12*a*b*d*e^3))/b^
5
```

sympy [A] time = 1.24, size = 185, normalized size = 1.81

$$x\left(-\frac{3ae^4}{b^4}+\frac{4de^3}{b^3}\right)+\frac{7a^4e^4-20a^3bde^3+18a^2b^2d^2e^2-4ab^3d^3e-b^4d^4+x\left(8a^3be^4-24a^2b^2de^3+24ab^3d^2e^2-8b^4\right.}{2a^2b^5+4ab^6x+2b^7x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] x*(-3*a*e**4/b**4 + 4*d*e**3/b**3) + (7*a**4*e**4 - 20*a**3*b*d*e**3 + 18*a
**2*b**2*d**2*e**2 - 4*a*b**3*d**3*e - b**4*d**4 + x*(8*a**3*b*e**4 - 24*a*
*2*b**2*d*e**3 + 24*a*b**3*d**2*e**2 - 8*b**4*d**3*e))/(2*a**2*b**5 + 4*a*b
**6*x + 2*b**7*x**2) + e**4*x**2/(2*b**3) + 6*e**2*(a*e - b*d)**2*log(a + b
*x)/b**5
```

3.1937 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=78

$$\frac{3e^2(bd-ae)\log(a+bx)}{b^4}-\frac{3e(bd-ae)^2}{b^4(a+bx)}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}+\frac{e^3x}{b^3}$$

```
[Out] e^3*x/b^3-1/2*(-a*e+b*d)^3/b^4/(b*x+a)^2-3*e*(-a*e+b*d)^2/b^4/(b*x+a)+3*e^2
*(-a*e+b*d)*ln(b*x+a)/b^4
```

Rubi [A] time = 0.06, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{3e^2(bd-ae)\log(a+bx)}{b^4}-\frac{3e(bd-ae)^2}{b^4(a+bx)}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}+\frac{e^3x}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^3*x)/b^3 - (b*d - a*e)^3/(2*b^4*(a + b*x)^2) - (3*e*(b*d - a*e)^2)/(b^4*
(a + b*x)) + (3*e^2*(b*d - a*e)*Log[a + b*x])/b^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^3}{(a+bx)^3}\,dx\\ &= \int \left(\frac{e^3}{b^3}+\frac{(bd-ae)^3}{b^3(a+bx)^3}+\frac{3e(bd-ae)^2}{b^3(a+bx)^2}+\frac{3e^2(bd-ae)}{b^3(a+bx)}\right)dx\\ &= \frac{e^3x}{b^3}-\frac{(bd-ae)^3}{2b^4(a+bx)^2}-\frac{3e(bd-ae)^2}{b^4(a+bx)}+\frac{3e^2(bd-ae)\log(a+bx)}{b^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 114, normalized size = 1.46

$$\frac{-5a^3e^3+a^2be^2(9d-4ex)+ab^2e\left(-3d^2+12dex+4e^2x^2\right)-6e^2(a+bx)^2(ae-bd)\log(a+bx)-\left(b^3\left(d^3+6d^2e\right.\right.}{2b^4(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-5*a^3*e^3 + a^2*b*e^2*(9*d - 4*e*x) + a*b^2*e*(-3*d^2 + 12*d*e*x + 4*e^2*
x^2) - b^3*(d^3 + 6*d^2*e*x - 2*e^3*x^3) - 6*e^2*(-(b*d) + a*e)*(a + b*x)^2
*Log[a + b*x])/(2*b^4*(a + b*x)^2)
```

fricas [B] time = 0.95, size = 188, normalized size = 2.41

$$\frac{2\,b^3e^3x^3+4\,ab^2e^3x^2-b^3d^3-3\,ab^2d^2e+9\,a^2bde^2-5\,a^3e^3-2\left(3\,b^3d^2e-6\,ab^2de^2+2\,a^2be^3\right)x+6\left(a^2bde^2-a^3e^3\right.}{2\left(b^6x^2+2\,ab^5x+a^2b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(2*b^3*e^3*x^3 + 4*a*b^2*e^3*x^2 - b^3*d^3 - 3*a*b^2*d^2*e + 9*a^2*b*d*
e^2 - 5*a^3*e^3 - 2*(3*b^3*d^2*e - 6*a*b^2*d*e^2 + 2*a^2*b*e^3)*x + 6*(a^2*
b*d*e^2 - a^3*e^3 + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2*d*e^2 - a^2*b*e^
3)*x)*log(b*x + a))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)
```

giac [A] time = 0.16, size = 107, normalized size = 1.37

$$\frac{xe^3}{b^3}+\frac{3\left(bde^2-ae^3\right)\log\left(|bx+a|\right)}{b^4}-\frac{b^3d^3+3\,ab^2d^2e-9\,a^2bde^2+5\,a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\,(bx+a)^2b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] x*e^3/b^3 + 3*(b*d*e^2 - a*e^3)*log(abs(b*x + a))/b^4 - 1/2*(b^3*d^3 + 3*a*
b^2*d^2*e - 9*a^2*b*d*e^2 + 5*a^3*e^3 + 6*(b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*
b*e^3)*x)/((b*x + a)^2*b^4)
```

maple [B] time = 0.06, size = 160, normalized size = 2.05

$$\frac{a^3e^3}{2\,(bx+a)^2\,b^4}-\frac{3a^2d\,e^2}{2\,(bx+a)^2\,b^3}+\frac{3a\,d^2e}{2\,(bx+a)^2\,b^2}-\frac{d^3}{2\,(bx+a)^2\,b}-\frac{3a^2e^3}{(bx+a)\,b^4}+\frac{6ad\,e^2}{(bx+a)\,b^3}-\frac{3a\,e^3\ln(bx+a)}{b^4}-\frac{3d^2e}{(bx+a)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] e^3*x/b^3+1/2/b^4/(b*x+a)^2*a^3*e^3-3/2/b^3/(b*x+a)^2*a^2*d*e^2+3/2/b^2/(b*
x+a)^2*a*d^2*e-1/2/b/(b*x+a)^2*d^3-3/b^4*e^3*ln(b*x+a)*a+3/b^3*e^2*ln(b*x+a
)*d-3/b^4*e^3/(b*x+a)*a^2+6/b^3*e^2/(b*x+a)*a*d-3/b^2*e/(b*x+a)*d^2
```

maxima [A] time = 0.53, size = 125, normalized size = 1.60

$$\frac{e^3x}{b^3}-\frac{b^3d^3+3\,ab^2d^2e-9\,a^2bde^2+5\,a^3e^3+6\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x}{2\left(b^6x^2+2\,ab^5x+a^2b^4\right)}+\frac{3\left(bde^2-ae^3\right)\log\left(bx+a\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] e^3*x/b^3 - 1/2*(b^3*d^3 + 3*a*b^2*d^2*e - 9*a^2*b*d*e^2 + 5*a^3*e^3 + 6*(b
^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^6*x^2 + 2*a*b^5*x + a^2*b^4) +
3*(b*d*e^2 - a*e^3)*log(b*x + a)/b^4
```

mupad [B] time = 0.10, size = 130, normalized size = 1.67

$$\frac{e^3\,x}{b^3}-\frac{\ln\left(a+b\,x\right)\,\left(3\,a\,e^3-3\,b\,d\,e^2\right)}{b^4}-\frac{\frac{5\,a^3\,e^3-9\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e+b^3\,d^3}{2\,b}+x\,\left(3\,a^2\,e^3-6\,a\,b\,d\,e^2+3\,b^2\,d^2\,e\right)}{a^2\,b^3+2\,a\,b^4\,x+b^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^3*x)/b^3 - (log(a + b*x)*(3*a*e^3 - 3*b*d*e^2))/b^4 - ((5*a^3*e^3 + b^3*
d^3 + 3*a*b^2*d^2*e - 9*a^2*b*d*e^2)/(2*b) + x*(3*a^2*e^3 + 3*b^2*d^2*e - 6
*a*b*d*e^2))/(a^2*b^3 + b^5*x^2 + 2*a*b^4*x)
```

sympy [A] time = 0.85, size = 128, normalized size = 1.64

$$\frac{-5a^3e^3+9a^2bde^2-3ab^2d^2e-b^3d^3+x\left(-6a^2be^3+12ab^2de^2-6b^3d^2e\right)}{2a^2b^4+4ab^5x+2b^6x^2}+\frac{e^3x}{b^3}-\frac{3e^2\left(ae-bd\right)\log\left(a+bx\right)}{b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-5*a**3*e**3 + 9*a**2*b*d*e**2 - 3*a*b**2*d**2*e - b**3*d**3 + x*(-6*a**2*
b*e**3 + 12*a*b**2*d*e**2 - 6*b**3*d**2*e))/(2*a**2*b**4 + 4*a*b**5*x + 2*b
**6*x**2) + e**3*x/b**3 - 3*e**2*(a*e - b*d)*log(a + b*x)/b**4
```

3.1938 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2} dx$

Optimal. Leaf size=59

$$-\frac{2e(bd-ae)}{b^3(a+bx)}-\frac{(bd-ae)^2}{2b^3(a+bx)^2}+\frac{e^2\log(a+bx)}{b^3}$$

```
[Out] -1/2*(-a*e+b*d)^2/b^3/(b*x+a)^2-2*e*(-a*e+b*d)/b^3/(b*x+a)+e^2*ln(b*x+a)/b^
3
```

Rubi [A] time = 0.04, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{2e(bd-ae)}{b^3(a+bx)}-\frac{(bd-ae)^2}{2b^3(a+bx)^2}+\frac{e^2\log(a+bx)}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(b*d - a*e)^2/(2*b^3*(a + b*x)^2) - (2*e*(b*d - a*e))/(b^3*(a + b*x)) + (e
^2*Log[a + b*x])/b^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^2}{(a+bx)^3}\,dx\\
&= \int \left(\frac{(bd-ae)^2}{b^2(a+bx)^3}+\frac{2e(bd-ae)}{b^2(a+bx)^2}+\frac{e^2}{b^2(a+bx)}\right)dx\\
&= -\frac{(bd-ae)^2}{2b^3(a+bx)^2}-\frac{2e(bd-ae)}{b^3(a+bx)}+\frac{e^2\log(a+bx)}{b^3}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 49, normalized size = 0.83

$$\frac{2e^2\log(a+bx)-\frac{(bd-ae)(3ae+b(d+4ex))}{(a+bx)^2}}{2b^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-(((b*d - a*e)*(3*a*e + b*(d + 4*e*x)))/(a + b*x)^2) + 2*e^2*Log[a + b*x])
/(2*b^3)
```

fricas [A] time = 0.97, size = 99, normalized size = 1.68

$$-\frac{b^2d^2+2\,abde-3\,a^2e^2+4\left(b^2de-abe^2\right)x-2\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\log\left(bx+a\right)}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*d^2 + 2*a*b*d*e - 3*a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x - 2*(b^2*e^
2*x^2 + 2*a*b*e^2*x + a^2*e^2)*log(b*x + a))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3
)
```

giac [A] time = 0.15, size = 67, normalized size = 1.14

$$\frac{e^2\log\left(|bx+a|\right)}{b^3}-\frac{4\left(bde-ae^2\right)x+\frac{b^2d^2+2\,abde-3\,a^2e^2}{b}}{2\left(bx+a\right)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] e^2*log(abs(b*x + a))/b^3 - 1/2*(4*(b*d*e - a*e^2)*x + (b^2*d^2 + 2*a*b*d*e
 - 3*a^2*e^2)/b)/((b*x + a)^2*b^2)
```

maple [A] time = 0.06, size = 92, normalized size = 1.56

$$-\frac{a^2e^2}{2\left(bx+a\right)^2b^3}+\frac{ade}{\left(bx+a\right)^2b^2}-\frac{d^2}{2\left(bx+a\right)^2b}+\frac{2a\,e^2}{\left(bx+a\right)b^3}-\frac{2de}{\left(bx+a\right)b^2}+\frac{e^2\ln\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2/b^3/(b*x+a)^2*a^2*e^2+1/b^2/(b*x+a)^2*a*d*e-1/2/b/(b*x+a)^2*d^2+e^2*ln
(b*x+a)/b^3+2/b^3*e^2/(b*x+a)*a-2/b^2*e/(b*x+a)*d
```

maxima [A] time = 0.58, size = 79, normalized size = 1.34

$$-\frac{b^2d^2+2\,abde-3\,a^2e^2+4\left(b^2de-abe^2\right)x}{2\left(b^5x^2+2\,ab^4x+a^2b^3\right)}+\frac{e^2\log\left(bx+a\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(b^2*d^2 + 2*a*b*d*e - 3*a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x)/(b^5*x^2 +
 2*a*b^4*x + a^2*b^3) + e^2*log(b*x + a)/b^3
```

mupad [B] time = 0.07, size = 77, normalized size = 1.31

$$\frac{e^2\,\ln\left(a+b\,x\right)}{b^3}-\frac{\frac{-3\,a^2\,e^2+2\,a\,b\,d\,e+b^2\,d^2}{2\,b^3}-\frac{2\,e\,x\,\left(a\,e-b\,d\right)}{b^2}}{a^2+2\,a\,b\,x+b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*log(a + b*x))/b^3 - ((b^2*d^2 - 3*a^2*e^2 + 2*a*b*d*e)/(2*b^3) - (2*e*
x*(a*e - b*d))/b^2)/(a^2 + b^2*x^2 + 2*a*b*x)
```

sympy [A] time = 0.48, size = 80, normalized size = 1.36

$$\frac{3a^2e^2 - 2abde - b^2d^2 + x\left(4abe^2 - 4b^2de\right)}{2a^2b^3 + 4ab^4x + 2b^5x^2} + \frac{e^2\log\left(a + bx\right)}{b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (3*a**2*e**2 - 2*a*b*d*e - b**2*d**2 + x*(4*a*b*e**2 - 4*b**2*d*e))/(2*a**2
*b**3 + 4*a*b**4*x + 2*b**5*x**2) + e**2*log(a + b*x)/b**3
```

3.1939 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2} \, dx$

Optimal. Leaf size=28

$$-\frac{(d+ex)^2}{2(a+bx)^2(bd-ae)}$$

```
[Out] -1/2*(e*x+d)^2/(-a*e+b*d)/(b*x+a)^2
```

Rubi [A] time = 0.00, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 37\}$

$$-\frac{(d+ex)^2}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(d + e*x)^2/(2*(b*d - a*e)*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned} \int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^2} \, dx &= \int \frac{d+ex}{(a+bx)^3} \, dx \\ &= -\frac{(d+ex)^2}{2(bd-ae)(a+bx)^2} \end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.93

$$-\frac{ae+b(d+2ex)}{2b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/2*(a*e + b*(d + 2*e*x))/(b^2*(a + b*x)^2)
```

fricas [A] time = 1.13, size = 38, normalized size = 1.36

$$-\frac{2\,bex+bd+ae}{2\left(b^4x^2+2\,ab^3x+a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(2*b*e*x + b*d + a*e)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

giac [A] time = 0.16, size = 26, normalized size = 0.93

$$-\frac{2\,bxe + bd + ae}{2\,(bx+a)^2 b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2*(2*b*x*e + b*d + a*e)/((b*x + a)^2*b^2)
```

maple [A] time = 0.04, size = 35, normalized size = 1.25

$$-\frac{e}{(bx+a)\,b^2} - \frac{-ae+bd}{2\,(bx+a)^2\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2*(-a*e+b*d)/b^2/(b*x+a)^2-e/b^2/(b*x+a)
```

maxima [A] time = 0.50, size = 38, normalized size = 1.36

$$-\frac{2\,bex + bd + ae}{2\left(b^4x^2 + 2\,ab^3x + a^2b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2*(2*b*e*x + b*d + a*e)/(b^4*x^2 + 2*a*b^3*x + a^2*b^2)
```

mupad [B] time = 2.01, size = 39, normalized size = 1.39

$$-\frac{\frac{a\,e+b\,d}{2\,b^2}+\frac{e\,x}{b}}{a^2+2\,a\,b\,x+b^2\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -((a*e + b*d)/(2*b^2) + (e*x)/b)/(a^2 + b^2*x^2 + 2*a*b*x)
```

sympy [A] time = 0.28, size = 39, normalized size = 1.39

$$\frac{-ae - bd - 2bex}{2a^2b^2 + 4ab^3x + 2b^4x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] (-a*e - b*d - 2*b*e*x)/(2*a**2*b**2 + 4*a*b**3*x + 2*b**4*x**2)
```

3.1940 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{2b(a+bx)^2}$$

```
[Out] -1/2/b/(b*x+a)^2
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = $\{27, 32\}$

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/(2*b*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3}\,dx\\ &= -\frac{1}{2b(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$-\frac{1}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/2*1/(b*(a + b*x)^2)
```

fricas [A] time = 0.91, size = 24, normalized size = 1.71

$$-\frac{1}{2\left(b^3x^2+2\,ab^2x+a^2b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2/(b^3*x^2 + 2*a*b^2*x + a^2*b)
```

giac [A] time = 0.15, size = 23, normalized size = 1.64

$$-\frac{1}{2\left(a^{2}+\left(bx^{2}+2\,ax\right)b\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] -1/2/((a^2 + (b*x^2 + 2*a*x)*b)*b)
```

maple [A] time = 0.05, size = 13, normalized size = 0.93

$$-\frac{1}{2\left(bx+a\right)^{2}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2/b/(b*x+a)^2
```

maxima [A] time = 0.52, size = 23, normalized size = 1.64

$$-\frac{1}{2\left(b^{2}x^{2}+2\,abx+a^{2}\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] -1/2/((b^2*x^2 + 2*a*b*x + a^2)*b)
```

mupad [B] time = 0.03, size = 26, normalized size = 1.86

$$-\frac{1}{2\,a^{2}\,b+4\,a\,b^{2}\,x+2\,b^{3}\,x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] -1/(2*a^2*b + 2*b^3*x^2 + 4*a*b^2*x)
```

sympy [B] time = 0.19, size = 26, normalized size = 1.86

$$-\frac{1}{2a^{2}b+4ab^{2}x+2b^{3}x^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -1/(2*a**2*b + 4*a*b**2*x + 2*b**3*x**2)
```

3.1941 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=82

$$\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+ex)}{(bd-ae)^3}+\frac{e}{(a+bx)(bd-ae)^2}-\frac{1}{2(a+bx)^2(bd-ae)}$$

```
[Out] -1/2/(-a*e+b*d)/(b*x+a)^2+e/(-a*e+b*d)^2/(b*x+a)+e^2*ln(b*x+a)/(-a*e+b*d)^3
-e^2*ln(e*x+d)/(-a*e+b*d)^3
```

Rubi [A] time = 0.05, antiderivative size = 82, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = $\{27, 44\}$

$$\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+ex)}{(bd-ae)^3}+\frac{e}{(a+bx)(bd-ae)^2}-\frac{1}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -1/(2*(b*d - a*e)*(a + b*x)^2) + e/((b*d - a*e)^2*(a + b*x)) + (e^2*Log[a +
 b*x])/(b*d - a*e)^3 - (e^2*Log[d + e*x])/(b*d - a*e)^3
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)}\,dx\\ &= \int \left(\frac{b}{(bd-ae)(a+bx)^3}-\frac{be}{(bd-ae)^2(a+bx)^2}+\frac{be^2}{(bd-ae)^3(a+bx)}-\frac{}{(bd}\right.\\ &= -\frac{1}{2(bd-ae)(a+bx)^2}+\frac{e}{(bd-ae)^2(a+bx)}+\frac{e^2\log(a+bx)}{(bd-ae)^3}-\frac{e^2\log(d+}{(bd-ae}\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.82

$$\frac{\frac{(bd-ae)(3ae-bd+2bex)}{(a+bx)^2}+2e^2\log(a+bx)-2e^2\log(d+ex)}{2(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (((b*d - a*e)*(-(b*d) + 3*a*e + 2*b*e*x))/(a + b*x)^2 + 2*e^2*Log[a + b*x]
- 2*e^2*Log[d + e*x])/(2*(b*d - a*e)^3)
```

fricas [B] time = 1.07, size = 242, normalized size = 2.95

$$-\frac{b^2d^2 - 4\,abde + 3\,a^2e^2 - 2\left(b^2de - abe^2\right)x - 2\left(b^2e^2x^2 + 2\,abe^2x + a^2e^2\right)\log\left(bx + a\right) + 2\left(b^2e^2x^2 + 2\,abe^2x + a^2\right.}{2\left(a^2b^3d^3 - 3\,a^3b^2d^2e + 3\,a^4bde^2 - a^5e^3 + \left(b^5d^3 - 3\,ab^4d^2e + 3\,a^2b^3de^2 - a^3b^2e^3\right)x^2 + 2\left(ab^4d^3 - 3\,a^2b^3d^2e + 3\,a\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^2*d^2 - 4*a*b*d*e + 3*a^2*e^2 - 2*(b^2*d*e - a*b*e^2)*x - 2*(b^2*e^
2*x^2 + 2*a*b*e^2*x + a^2*e^2)*log(b*x + a) + 2*(b^2*e^2*x^2 + 2*a*b*e^2*x
+ a^2*e^2)*log(e*x + d))/(a^2*b^3*d^3 - 3*a^3*b^2*d^2*e + 3*a^4*b*d*e^2 - a
^5*e^3 + (b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*x^2 + 2*
(a*b^4*d^3 - 3*a^2*b^3*d^2*e + 3*a^3*b^2*d*e^2 - a^4*b*e^3)*x)
```

giac [B] time = 0.16, size = 162, normalized size = 1.98

$$\frac{be^2\log\left(|bx + a|\right)}{b^4d^3 - 3\,ab^3d^2e + 3\,a^2b^2de^2 - a^3be^3} - \frac{e^3\log\left(|xe + d|\right)}{b^3d^3e - 3\,ab^2d^2e^2 + 3\,a^2bde^3 - a^3e^4} - \frac{b^2d^2 - 4\,abde + 3\,a^2e^2 - 2\left(b^2de - abe^2\right.}{2\left(bd - ae\right)^3\left(bx + a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] b*e^2*log(abs(b*x + a))/(b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*
e^3) - e^3*log(abs(x*e + d))/(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 -
 a^3*e^4) - 1/2*(b^2*d^2 - 4*a*b*d*e + 3*a^2*e^2 - 2*(b^2*d*e - a*b*e^2)*x)
/((b*d - a*e)^3*(b*x + a)^2)
```

maple [A] time = 0.05, size = 81, normalized size = 0.99

$$-\frac{e^2\ln\left(bx + a\right)}{\left(ae - bd\right)^3} + \frac{e^2\ln\left(ex + d\right)}{\left(ae - bd\right)^3} + \frac{e}{\left(ae - bd\right)^2\left(bx + a\right)} + \frac{1}{2\left(ae - bd\right)\left(bx + a\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2/(a*e-b*d)/(b*x+a)^2-e^2/(a*e-b*d)^3*ln(b*x+a)+e/(a*e-b*d)^2/(b*x+a)+e^2
/(a*e-b*d)^3*ln(e*x+d)
```

maxima [B] time = 0.56, size = 202, normalized size = 2.46

$$\frac{e^2\log\left(bx + a\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} - \frac{e^2\log\left(ex + d\right)}{b^3d^3 - 3\,ab^2d^2e + 3\,a^2bde^2 - a^3e^3} + \frac{2\,bex}{2\left(a^2b^2d^2 - 2\,a^3bde + a^4e^2 + \left(b^4d^2 - 2\,ab^3\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] e^2*log(b*x + a)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) - e^2*
log(e*x + d)/(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3) + 1/2*(2*b
*e*x - b*d + 3*a*e)/(a^2*b^2*d^2 - 2*a^3*b*d*e + a^4*e^2 + (b^4*d^2 - 2*a*b
^3*d*e + a^2*b^2*e^2)*x^2 + 2*(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2)*x)
```

mupad [B] time = 2.16, size = 182, normalized size = 2.22

$$\frac{\frac{3\,a\,e-b\,d}{2\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}+\frac{b\,e\,x}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}}{a^2+2\,a\,b\,x+b^2\,x^2}-\frac{2\,e^2\,\mathrm{atanh}\left(\frac{a^3\,e^3-a^2\,b\,d\,e^2-a\,b^2\,d^2\,e+b^3\,d^3}{{\left(a\,e-b\,d\right)}^3}+\frac{2\,b\,e\,x\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{{\left(a\,e-b\,d\right)}^3}\right)}{{\left(a\,e-b\,d\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((3*a*e - b*d)/(2*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) + (b*e*x)/(a^2*e^2 + b^2
*d^2 - 2*a*b*d*e))/(a^2 + b^2*x^2 + 2*a*b*x) - (2*e^2*atanh((a^3*e^3 + b^3*
d^3 - a*b^2*d^2*e - a^2*b*d*e^2)/(a*e - b*d)^3 + (2*b*e*x*(a^2*e^2 + b^2*d^
2 - 2*a*b*d*e))/(a*e - b*d)^3))/(a*e - b*d)^3
```

sympy [B] time = 1.09, size = 381, normalized size = 4.65

$$\frac{e^{2}\log\left(x+\frac{-\frac{a^{4}e^{6}}{(ae-bd)^{3}}+\frac{4a^{3}bde^{5}}{(ae-bd)^{3}}-\frac{6a^{2}b^{2}d^{2}e^{4}}{(ae-bd)^{3}}+\frac{4ab^{3}d^{3}e^{3}}{(ae-bd)^{3}}+ae^{3}-\frac{b^{4}d^{4}e^{2}}{(ae-bd)^{3}}+bde^{2}}{2be^{3}}\right)}{(ae-bd)^{3}}-\frac{e^{2}\log\left(x+\frac{\frac{a^{4}e^{6}}{(ae-bd)^{3}}-\frac{4a^{3}bde^{5}}{(ae-bd)^{3}}+\frac{6a^{2}b^{2}d^{2}e^{4}}{(ae-bd)^{3}}-\frac{4ab^{3}d^{3}e^{3}}{(ae-bd)^{3}}+ae^{3}+}{2be^{3}}\right.}{(ae-bd)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] e**2*log(x + (-a**4*e**6/(a*e - b*d)**3 + 4*a**3*b*d*e**5/(a*e - b*d)**3 -
6*a**2*b**2*d**2*e**4/(a*e - b*d)**3 + 4*a*b**3*d**3*e**3/(a*e - b*d)**3 +
a*e**3 - b**4*d**4*e**2/(a*e - b*d)**3 + b*d*e**2)/(2*b*e**3))/(a*e - b*d)*
*3 - e**2*log(x + (a**4*e**6/(a*e - b*d)**3 - 4*a**3*b*d*e**5/(a*e - b*d)**
3 + 6*a**2*b**2*d**2*e**4/(a*e - b*d)**3 - 4*a*b**3*d**3*e**3/(a*e - b*d)**
3 + a*e**3 + b**4*d**4*e**2/(a*e - b*d)**3 + b*d*e**2)/(2*b*e**3))/(a*e - b
*d)**3 + (3*a*e - b*d + 2*b*e*x)/(2*a**4*e**2 - 4*a**3*b*d*e + 2*a**2*b**2*
d**2 + x**2*(2*a**2*b**2*e**2 - 4*a*b**3*d*e + 2*b**4*d**2) + x*(4*a**3*b*e
**2 - 8*a**2*b**2*d*e + 4*a*b**3*d**2))
```

3.1942 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=109

$$\frac{e^2}{(d+ex)(bd-ae)^3}+\frac{3be^2\log(a+bx)}{(bd-ae)^4}-\frac{3be^2\log(d+ex)}{(bd-ae)^4}+\frac{2be}{(a+bx)(bd-ae)^3}-\frac{b}{2(a+bx)^2(bd-ae)^2}$$

```
[Out] -1/2*b/(-a*e+b*d)^2/(b*x+a)^2+2*b*e/(-a*e+b*d)^3/(b*x+a)+e^2/(-a*e+b*d)^3/(
e*x+d)+3*b*e^2*ln(b*x+a)/(-a*e+b*d)^4-3*b*e^2*ln(e*x+d)/(-a*e+b*d)^4
```

Rubi [A] time = 0.07, antiderivative size = 109, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{e^2}{(d+ex)(bd-ae)^3}+\frac{3be^2\log(a+bx)}{(bd-ae)^4}-\frac{3be^2\log(d+ex)}{(bd-ae)^4}+\frac{2be}{(a+bx)(bd-ae)^3}-\frac{b}{2(a+bx)^2(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b/(2*(b*d - a*e)^2*(a + b*x)^2) + (2*b*e)/((b*d - a*e)^3*(a + b*x)) + e^2/
((b*d - a*e)^3*(d + e*x)) + (3*b*e^2*Log[a + b*x])/(b*d - a*e)^4 - (3*b*e^2
*Log[d + e*x])/(b*d - a*e)^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)^2}\,dx\\
&= \int \left(\frac{b^2}{(bd-ae)^2(a+bx)^3}-\frac{2b^2e}{(bd-ae)^3(a+bx)^2}+\frac{3b^2e^2}{(bd-ae)^4(a+bx)}-\frac{}{(bd-}\right.\\
&= -\frac{b}{2(bd-ae)^2(a+bx)^2}+\frac{2be}{(bd-ae)^3(a+bx)}+\frac{e^2}{(bd-ae)^3(d+ex)}+\frac{3be^2\,\mathrm{lo}}{(bd}
\end{aligned}$$

Mathematica [A] time = 0.07, size = 98, normalized size = 0.90

$$\frac{\frac{2e^2(bd-ae)}{d+ex}+\frac{4be(bd-ae)}{a+bx}-\frac{b(bd-ae)^2}{(a+bx)^2}+6be^2\log(a+bx)-6be^2\log(d+ex)}{2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-((b*(b*d - a*e)^2)/(a + b*x)^2) + (4*b*e*(b*d - a*e))/(a + b*x) + (2*e^2*
(b*d - a*e))/(d + e*x) + 6*b*e^2*Log[a + b*x] - 6*b*e^2*Log[d + e*x])/(2*(b
*d - a*e)^4)
```

fricas [B] time = 1.40, size = 494, normalized size = 4.53

$$-\frac{b^3d^3 - 6\,ab^2d^2e + 3\,a^2bde^2 + 2\,a^3e^3 - 6\,\left(b^3de^2 - ab^2e^3\right)x^2 - 3\,\left(b^3d^2e + 2\,ab^2de^2 - 3\,a^2be^3\right)x - 6\,(b^3e^3x^3 + a}{2\,(a^2b^4d^5 - 4\,a^3b^3d^4e + 6\,a^4b^2d^3e^2 - 4\,a^5bd^2e^3 + a^6de^4 + (b^6d^4e - 4\,ab^5d^3e^2 + 6\,a^2b^4d^2e^3 - 4\,a^3b^3de^4 + a^4b^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^3*d^3 - 6*a*b^2*d^2*e + 3*a^2*b*d*e^2 + 2*a^3*e^3 - 6*(b^3*d*e^2 -
a*b^2*e^3)*x^2 - 3*(b^3*d^2*e + 2*a*b^2*d*e^2 - 3*a^2*b*e^3)*x - 6*(b^3*e^3
*x^3 + a^2*b*d*e^2 + (b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + (2*a*b^2*d*e^2 + a^2*b
*e^3)*x)*log(b*x + a) + 6*(b^3*e^3*x^3 + a^2*b*d*e^2 + (b^3*d*e^2 + 2*a*b^2
*e^3)*x^2 + (2*a*b^2*d*e^2 + a^2*b*e^3)*x)*log(e*x + d))/(a^2*b^4*d^5 - 4*a
^3*b^3*d^4*e + 6*a^4*b^2*d^3*e^2 - 4*a^5*b*d^2*e^3 + a^6*d*e^4 + (b^6*d^4*e
 - 4*a*b^5*d^3*e^2 + 6*a^2*b^4*d^2*e^3 - 4*a^3*b^3*d*e^4 + a^4*b^2*e^5)*x^3
 + (b^6*d^5 - 2*a*b^5*d^4*e - 2*a^2*b^4*d^3*e^2 + 8*a^3*b^3*d^2*e^3 - 7*a^4
*b^2*d*e^4 + 2*a^5*b*e^5)*x^2 + (2*a*b^5*d^5 - 7*a^2*b^4*d^4*e + 8*a^3*b^3*
d^3*e^2 - 2*a^4*b^2*d^2*e^3 - 2*a^5*b*d*e^4 + a^6*e^5)*x)
```

giac [A] time = 0.19, size = 212, normalized size = 1.94

$$\frac{3\,be^3\log\left(\left|b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right|\right)}{b^4d^4e - 4\,ab^3d^3e^2 + 6\,a^2b^2d^2e^3 - 4\,a^3bde^4 + a^4e^5} + \frac{e^5}{\left(b^3d^3e^3 - 3\,ab^2d^2e^4 + 3\,a^2bde^5 - a^3e^6\right)(xe+d)} + \frac{5\,b^3e^2 -}{2\,(bd - ae)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 3*b*e^3*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^4*d^4*e - 4*a*b^3*d^
3*e^2 + 6*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*e^5) + e^5/((b^3*d^3*e^3 -
3*a*b^2*d^2*e^4 + 3*a^2*b*d*e^5 - a^3*e^6)*(x*e + d)) + 1/2*(5*b^3*e^2 - 6*
(b^3*d*e^3 - a*b^2*e^4)*e^(-1)/(x*e + d))/((b*d - a*e)^4*(b - b*d/(x*e + d)
 + a*e/(x*e + d))^2)
```

maple [A] time = 0.06, size = 109, normalized size = 1.00

$$\frac{3b\,e^2\ln(bx+a)}{(ae-bd)^4} - \frac{3b\,e^2\ln(ex+d)}{(ae-bd)^4} - \frac{2be}{(ae-bd)^3\,(bx+a)} - \frac{e^2}{(ae-bd)^3\,(ex+d)} - \frac{b}{2\,(ae-bd)^2\,(bx+a)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2*b/(a*e-b*d)^2/(b*x+a)^2+3*b/(a*e-b*d)^4*e^2*ln(b*x+a)-2*b/(a*e-b*d)^3*
e/(b*x+a)-e^2/(a*e-b*d)^3/(e*x+d)-3*b/(a*e-b*d)^4*e^2*ln(e*x+d)
```

maxima [B] time = 0.66, size = 386, normalized size = 3.54

$$\frac{3\,be^2\log(bx+a)}{b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4} - \frac{3\,be^2\log(ex+d)}{b^4d^4 - 4\,ab^3d^3e + 6\,a^2b^2d^2e^2 - 4\,a^3bde^3 + a^4e^4} + \frac{}{2\,(a^2b^3d^4 - 3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 3*b*e^2*log(b*x + a)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b
*d*e^3 + a^4*e^4) - 3*b*e^2*log(e*x + d)/(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b
^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4) + 1/2*(6*b^2*e^2*x^2 - b^2*d^2 + 5*a*
b*d*e + 2*a^2*e^2 + 3*(b^2*d*e + 3*a*b*e^2)*x)/(a^2*b^3*d^4 - 3*a^3*b^2*d^3
*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2*b^3
*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d^3*e - 3*a^2*b^3*d^2*e^2 + 5*
a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^4 - 5*a^2*b^3*d^3*e + 3*a^3*b
^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x)
```

mupad [B] time = 2.21, size = 330, normalized size = 3.03

$$\frac{6\,b\,e^2\,\mathrm{atanh}\left(\frac{a^4\,e^4-2\,a^3\,b\,d\,e^3+2\,a\,b^3\,d^3\,e-b^4\,d^4}{(a\,e-b\,d)^4}+\frac{2\,b\,e\,x\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{(a\,e-b\,d)^4}\right)}{(a\,e-b\,d)^4}-\frac{\frac{2\,a^2\,e^2+5\,a\,b\,d\,e-b^2\,d^2}{2\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}+\frac{}{2\,(a^3\,e^3}}{x\,\left(e\,a^2+2\,b\,d\,a\right)+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (6*b*e^2*atanh((a^4*e^4 - b^4*d^4 + 2*a*b^3*d^3*e - 2*a^3*b*d*e^3)/(a*e - b
*d)^4 + (2*b*e*x*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e
- b*d)^4))/(a*e - b*d)^4 - ((2*a^2*e^2 - b^2*d^2 + 5*a*b*d*e)/(2*(a^3*e^3 -
 b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (3*e*x*(b^2*d + 3*a*b*e))/(2*(
a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2)) + (3*b^2*e^2*x^2)/(a^3*
e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(x*(a^2*e + 2*a*b*d) + a^2*
d + x^2*(b^2*d + 2*a*b*e) + b^2*e*x^3)
```

sympy [B] time = 1.73, size = 634, normalized size = 5.82

$$-\frac{3be^2\log\left(x+\frac{-\frac{3a^5be^7}{(ae-bd)^4}+\frac{15a^4b^2de^6}{(ae-bd)^4}-\frac{30a^3b^3d^2e^5}{(ae-bd)^4}+\frac{30a^2b^4d^3e^4}{(ae-bd)^4}-\frac{15ab^5d^4e^3}{(ae-bd)^4}+3abe^3+\frac{3b^6d^5e^2}{(ae-bd)^4}+3b^2de^2}{6b^2e^3}\right)}{(ae-bd)^4}+\frac{3be^2\log\left(x+\frac{\frac{3a^5be^7}{(ae-bd)^4}-\frac{15a^4b^2de^6}{(ae-bd)^4}+\frac{30a^3}{(ae-}}{}\right.}{(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -3*b*e**2*log(x + (-3*a**5*b*e**7/(a*e - b*d)**4 + 15*a**4*b**2*d*e**6/(a*e
 - b*d)**4 - 30*a**3*b**3*d**2*e**5/(a*e - b*d)**4 + 30*a**2*b**4*d**3*e**4
/(a*e - b*d)**4 - 15*a*b**5*d**4*e**3/(a*e - b*d)**4 + 3*a*b*e**3 + 3*b**6*
d**5*e**2/(a*e - b*d)**4 + 3*b**2*d*e**2)/(6*b**2*e**3))/(a*e - b*d)**4 + 3
*b*e**2*log(x + (3*a**5*b*e**7/(a*e - b*d)**4 - 15*a**4*b**2*d*e**6/(a*e -
b*d)**4 + 30*a**3*b**3*d**2*e**5/(a*e - b*d)**4 - 30*a**2*b**4*d**3*e**4/(a
*e - b*d)**4 + 15*a*b**5*d**4*e**3/(a*e - b*d)**4 + 3*a*b*e**3 - 3*b**6*d**
5*e**2/(a*e - b*d)**4 + 3*b**2*d*e**2)/(6*b**2*e**3))/(a*e - b*d)**4 + (-2*
a**2*e**2 - 5*a*b*d*e + b**2*d**2 - 6*b**2*e**2*x**2 + x*(-9*a*b*e**2 - 3*b
**2*d*e))/(2*a**5*d*e**3 - 6*a**4*b*d**2*e**2 + 6*a**3*b**2*d**3*e - 2*a**2
*b**3*d**4 + x**3*(2*a**3*b**2*e**4 - 6*a**2*b**3*d*e**3 + 6*a*b**4*d**2*e*
*2 - 2*b**5*d**3*e) + x**2*(4*a**4*b*e**4 - 10*a**3*b**2*d*e**3 + 6*a**2*b*
*3*d**2*e**2 + 2*a*b**4*d**3*e - 2*b**5*d**4) + x*(2*a**5*e**4 - 2*a**4*b*d
*e**3 - 6*a**3*b**2*d**2*e**2 + 10*a**2*b**3*d**3*e - 4*a*b**4*d**4))
```

3.1943 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{6b^2e^2\log(a+bx)}{(bd-ae)^5}-\frac{6b^2e^2\log(d+ex)}{(bd-ae)^5}+\frac{3b^2e}{(a+bx)(bd-ae)^4}-\frac{b^2}{2(a+bx)^2(bd-ae)^3}+\frac{3be^2}{(d+ex)(bd-ae)^4}+\frac{}{2(d+ex}$$

```
[Out] -1/2*b^2/(-a*e+b*d)^3/(b*x+a)^2+3*b^2*e/(-a*e+b*d)^4/(b*x+a)+1/2*e^2/(-a*e+
b*d)^3/(e*x+d)^2+3*b*e^2/(-a*e+b*d)^4/(e*x+d)+6*b^2*e^2*ln(b*x+a)/(-a*e+b*d
)^5-6*b^2*e^2*ln(e*x+d)/(-a*e+b*d)^5
```

Rubi [A] time = 0.11, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{6b^2e^2\log(a+bx)}{(bd-ae)^5}-\frac{6b^2e^2\log(d+ex)}{(bd-ae)^5}+\frac{3b^2e}{(a+bx)(bd-ae)^4}-\frac{b^2}{2(a+bx)^2(bd-ae)^3}+\frac{3be^2}{(d+ex)(bd-ae)^4}+\frac{}{2(d+ex}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b^2/(2*(b*d - a*e)^3*(a + b*x)^2) + (3*b^2*e)/((b*d - a*e)^4*(a + b*x)) +
e^2/(2*(b*d - a*e)^3*(d + e*x)^2) + (3*b*e^2)/((b*d - a*e)^4*(d + e*x)) + (
6*b^2*e^2*Log[a + b*x])/(b*d - a*e)^5 - (6*b^2*e^2*Log[d + e*x])/(b*d - a*e
)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)^3}-\frac{3b^3e}{(bd-ae)^4(a+bx)^2}+\frac{6b^3e^2}{(bd-ae)^5(a+bx)}-\frac{}{(b}\right.\\ &= -\frac{b^2}{2(bd-ae)^3(a+bx)^2}+\frac{3b^2e}{(bd-ae)^4(a+bx)}+\frac{e^2}{2(bd-ae)^3(d+ex)^2}+\frac{}{(b}\end{aligned}$$

Mathematica [A] time = 0.10, size = 128, normalized size = 0.90

$$\frac{\frac{6b^2e(bd-ae)}{a+bx}-\frac{b^2(bd-ae)^2}{(a+bx)^2}+12b^2e^2\log(a+bx)+\frac{6be^2(bd-ae)}{d+ex}+\frac{e^2(bd-ae)^2}{(d+ex)^2}-12b^2e^2\log(d+ex)}{2(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-((b^2*(b*d - a*e)^2)/(a + b*x)^2) + (6*b^2*e*(b*d - a*e))/(a + b*x) + (e^
2*(b*d - a*e)^2)/(d + e*x)^2 + (6*b*e^2*(b*d - a*e))/(d + e*x) + 12*b^2*e^2
*Log[a + b*x] - 12*b^2*e^2*Log[d + e*x])/(2*(b*d - a*e)^5)
```

fricas [B] time = 1.15, size = 760, normalized size = 5.31

$$-\frac{b^4d^4 - 8\,ab^3d^3e + 8\,a^3bde^3 - a^4e^4 - 12\,(b^4de^3 - ab^3e^4)x^3 - 18\,(b^4d^2e^2 - a^2b^2e^4)x^2 - 4\,(b^4d^3e + 6\,ab^3d^2e}{2\,(a^2b^5d^7 - 5\,a^3b^4d^6e + 10\,a^4b^3d^5e^2 - 10\,a^5b^2d^4e^3 + 5\,a^6bd^3e^4 - a^7d^2e^5 + (b^7d^5e^2 - 5\,ab^6d^4e^3 + 10\,a^2b^5d^3e^4 - 10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/2*(b^4*d^4 - 8*a*b^3*d^3*e + 8*a^3*b*d*e^3 - a^4*e^4 - 12*(b^4*d*e^3 - a
*b^3*e^4)*x^3 - 18*(b^4*d^2*e^2 - a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e + 6*a*b^3
*d^2*e^2 - 6*a^2*b^2*d*e^3 - a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + a^2*b^2*d^2*e
^2 + 2*(b^4*d*e^3 + a*b^3*e^4)*x^3 + (b^4*d^2*e^2 + 4*a*b^3*d*e^3 + a^2*b^2
*e^4)*x^2 + 2*(a*b^3*d^2*e^2 + a^2*b^2*d*e^3)*x)*log(b*x + a) + 12*(b^4*e^4
*x^4 + a^2*b^2*d^2*e^2 + 2*(b^4*d*e^3 + a*b^3*e^4)*x^3 + (b^4*d^2*e^2 + 4*a
*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 + a^2*b^2*d*e^3)*x)*log(e*
x + d))/(a^2*b^5*d^7 - 5*a^3*b^4*d^6*e + 10*a^4*b^3*d^5*e^2 - 10*a^5*b^2*d^
4*e^3 + 5*a^6*b*d^3*e^4 - a^7*d^2*e^5 + (b^7*d^5*e^2 - 5*a*b^6*d^4*e^3 + 10
*a^2*b^5*d^3*e^4 - 10*a^3*b^4*d^2*e^5 + 5*a^4*b^3*d*e^6 - a^5*b^2*e^7)*x^4
+ 2*(b^7*d^6*e - 4*a*b^6*d^5*e^2 + 5*a^2*b^5*d^4*e^3 - 5*a^4*b^3*d^2*e^5 +
4*a^5*b^2*d*e^6 - a^6*b*e^7)*x^3 + (b^7*d^7 - a*b^6*d^6*e - 9*a^2*b^5*d^5*e
^2 + 25*a^3*b^4*d^4*e^3 - 25*a^4*b^3*d^3*e^4 + 9*a^5*b^2*d^2*e^5 + a^6*b*d*
e^6 - a^7*e^7)*x^2 + 2*(a*b^6*d^7 - 4*a^2*b^5*d^6*e + 5*a^3*b^4*d^5*e^2 - 5
*a^5*b^2*d^3*e^4 + 4*a^6*b*d^2*e^5 - a^7*d*e^6)*x)
```

giac [B] time = 0.20, size = 332, normalized size = 2.32

$$\frac{6\,b^3e^2\log(|bx+a|)}{b^6d^5 - 5\,ab^5d^4e + 10\,a^2b^4d^3e^2 - 10\,a^3b^3d^2e^3 + 5\,a^4b^2de^4 - a^5be^5} - \frac{6\,b^2e^3\log(|xe+d|)}{b^5d^5e - 5\,ab^4d^4e^2 + 10\,a^2b^3d^3e^3 - 10\,a^3b^2d^2e^4 +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 6*b^3*e^2*log(abs(b*x + a))/(b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 -
 10*a^3*b^3*d^2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5) - 6*b^2*e^3*log(abs(x*e
+ d))/(b^5*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^
4 + 5*a^4*b*d*e^5 - a^5*e^6) + 1/2*(12*b^3*x^3*e^3 + 18*b^3*d*x^2*e^2 + 4*b
^3*d^2*x*e - b^3*d^3 + 18*a*b^2*x^2*e^3 + 28*a*b^2*d*x*e^2 + 7*a*b^2*d^2*e
+ 4*a^2*b*x*e^3 + 7*a^2*b*d*e^2 - a^3*e^3)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^
2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*(b*x^2*e + b*d*x + a*x*e + a*d)^2)
```

maple [A] time = 0.06, size = 140, normalized size = 0.98

$$-\frac{6b^2e^2\ln(bx+a)}{(ae-bd)^5}+\frac{6b^2e^2\ln(ex+d)}{(ae-bd)^5}+\frac{3b^2e}{(ae-bd)^4(bx+a)}+\frac{3b\,e^2}{(ae-bd)^4(ex+d)}+\frac{b^2}{2\,(ae-bd)^3(bx+a)^2}-\frac{e}{2\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/2/(a*e-b*d)^3*b^2/(b*x+a)^2-6*b^2/(a*e-b*d)^5*e^2*ln(b*x+a)+3*b^2/(a*e-b*
d)^4*e/(b*x+a)-1/2*e^2/(a*e-b*d)^3/(e*x+d)^2+6*b^2/(a*e-b*d)^5*e^2*ln(e*x+d
)+3*e^2/(a*e-b*d)^4*b/(e*x+d)
```

maxima [B] time = 0.70, size = 594, normalized size = 4.15

$$\frac{6\, b^{2} e^{2} \log\left(bx + a\right)}{b^{5} d^{5} - 5\, a b^{4} d^{4} e + 10\, a^{2} b^{3} d^{3} e^{2} - 10\, a^{3} b^{2} d^{2} e^{3} + 5\, a^{4} b d e^{4} - a^{5} e^{5}} - \frac{6\, b^{2} e^{2} \log\left(ex + d\right)}{b^{5} d^{5} - 5\, a b^{4} d^{4} e + 10\, a^{2} b^{3} d^{3} e^{2} - 10\, a^{3} b^{2} d^{2} e^{3} +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 6*b^2*e^2*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a
^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - 6*b^2*e^2*log(e*x + d)/(b^5*d^5
 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4
- a^5*e^5) + 1/2*(12*b^3*e^3*x^3 - b^3*d^3 + 7*a*b^2*d^2*e + 7*a^2*b*d*e^2
- a^3*e^3 + 18*(b^3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + 7*a*b^2*d*e^2 +
 a^2*b*e^3)*x)/(a^2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b
*d^3*e^3 + a^6*d^2*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4
 - 4*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*
a^2*b^4*d^3*e^3 + 2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b
^6*d^6 - 9*a^2*b^4*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e
^6)*x^2 + 2*(a*b^5*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^
3*e^3 - 3*a^5*b*d^2*e^4 + a^6*d*e^5)*x)
```

mupad [B] time = 2.34, size = 542, normalized size = 3.79

$$\frac{\frac{6\,b^3\,e^3\,x^3}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}-\frac{a^3\,e^3-7\,a^2\,b\,d\,e^2-7\,a\,b^2\,d^2\,e+b^3\,d^3}{2\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+\frac{9\,b\,e\,x^2\,\left(d\,b^2\,e+a\,b\,e^2\right)}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+}}{x\,\left(2\,e\,a^2\,d+2\,b\,a\,d^2\right)+x^2\,\left(a^2\,e^2+4\,a\,b\,d\,e+b^2\,d^2\right)+x^3\,\left(2\,d\,b^2\,e+2\,a\,b\,e^2\right)+a^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((6*b^3*e^3*x^3)/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4
*a^3*b*d*e^3) - (a^3*e^3 + b^3*d^3 - 7*a*b^2*d^2*e - 7*a^2*b*d*e^2)/(2*(a^4
*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (9*b
*e*x^2*(a*b*e^2 + b^2*d*e))/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^
3*d^3*e - 4*a^3*b*d*e^3) + (2*b*e*x*(a^2*e^2 + b^2*d^2 + 7*a*b*d*e))/(a^4*e
^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(x*(2*a*
b*d^2 + 2*a^2*d*e) + x^2*(a^2*e^2 + b^2*d^2 + 4*a*b*d*e) + x^3*(2*a*b*e^2 +
 2*b^2*d*e) + a^2*d^2 + b^2*e^2*x^4) - (12*b^2*e^2*atanh((a^5*e^5 + b^5*d^5
 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d^4*e - 3*a^4*b*d*e^4)/(
a*e - b*d)^5 + (2*b*e*x*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^
3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^5))/(a*e - b*d)^5
```

sympy [B] time = 2.42, size = 881, normalized size = 6.16

$$\frac{6b^{2}e^{2}\log\left(x+\frac{-\frac{6a^{6}b^{2}e^{8}}{(ae-bd)^{5}}+\frac{36a^{5}b^{3}de^{7}}{(ae-bd)^{5}}-\frac{90a^{4}b^{4}d^{2}e^{6}}{(ae-bd)^{5}}+\frac{120a^{3}b^{5}d^{3}e^{5}}{(ae-bd)^{5}}-\frac{90a^{2}b^{6}d^{4}e^{4}}{(ae-bd)^{5}}+\frac{36ab^{7}d^{5}e^{3}}{(ae-bd)^{5}}+6ab^{2}e^{3}-\frac{6b^{8}d^{6}e^{2}}{(ae-bd)^{5}}+6b^{3}de^{2}}{12b^{3}e^{3}}\right)}{(ae-bd)^{5}}-\frac{6b^{2}e^{2}\log\left(x+\frac{\frac{6a^{6}b^{2}e}{(ae-bd)}}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] 6*b**2*e**2*log(x + (-6*a**6*b**2*e**8/(a*e - b*d)**5 + 36*a**5*b**3*d*e**7
/(a*e - b*d)**5 - 90*a**4*b**4*d**2*e**6/(a*e - b*d)**5 + 120*a**3*b**5*d**
3*e**5/(a*e - b*d)**5 - 90*a**2*b**6*d**4*e**4/(a*e - b*d)**5 + 36*a*b**7*d
**5*e**3/(a*e - b*d)**5 + 6*a*b**2*e**3 - 6*b**8*d**6*e**2/(a*e - b*d)**5 +
 6*b**3*d*e**2)/(12*b**3*e**3))/(a*e - b*d)**5 - 6*b**2*e**2*log(x + (6*a**
6*b**2*e**8/(a*e - b*d)**5 - 36*a**5*b**3*d*e**7/(a*e - b*d)**5 + 90*a**4*b
**4*d**2*e**6/(a*e - b*d)**5 - 120*a**3*b**5*d**3*e**5/(a*e - b*d)**5 + 90*
a**2*b**6*d**4*e**4/(a*e - b*d)**5 - 36*a*b**7*d**5*e**3/(a*e - b*d)**5 + 6
*a*b**2*e**3 + 6*b**8*d**6*e**2/(a*e - b*d)**5 + 6*b**3*d*e**2)/(12*b**3*e*
*3))/(a*e - b*d)**5 + (-a**3*e**3 + 7*a**2*b*d*e**2 + 7*a*b**2*d**2*e - b**
3*d**3 + 12*b**3*e**3*x**3 + x**2*(18*a*b**2*e**3 + 18*b**3*d*e**2) + x*(4*
a**2*b*e**3 + 28*a*b**2*d*e**2 + 4*b**3*d**2*e))/(2*a**6*d**2*e**4 - 8*a**5
*b*d**3*e**3 + 12*a**4*b**2*d**4*e**2 - 8*a**3*b**3*d**5*e + 2*a**2*b**4*d*
*6 + x**4*(2*a**4*b**2*e**6 - 8*a**3*b**3*d*e**5 + 12*a**2*b**4*d**2*e**4 -
 8*a*b**5*d**3*e**3 + 2*b**6*d**4*e**2) + x**3*(4*a**5*b*e**6 - 12*a**4*b**
2*d*e**5 + 8*a**3*b**3*d**2*e**4 + 8*a**2*b**4*d**3*e**3 - 12*a*b**5*d**4*e
**2 + 4*b**6*d**5*e) + x**2*(2*a**6*e**6 - 18*a**4*b**2*d**2*e**4 + 32*a**3
*b**3*d**3*e**3 - 18*a**2*b**4*d**4*e**2 + 2*b**6*d**6) + x*(4*a**6*d*e**5
- 12*a**5*b*d**2*e**4 + 8*a**4*b**2*d**3*e**3 + 8*a**3*b**3*d**4*e**2 - 12*
a**2*b**4*d**5*e + 4*a*b**5*d**6))
```

3.1944 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=170

$$\frac{10b^3e^2\log(a+bx)}{(bd-ae)^6}-\frac{10b^3e^2\log(d+ex)}{(bd-ae)^6}+\frac{4b^3e}{(a+bx)(bd-ae)^5}-\frac{b^3}{2(a+bx)^2(bd-ae)^4}+\frac{6b^2e^2}{(d+ex)(bd-ae)^5}+\frac{}{2(d+e}$$

```
[Out] -1/2*b^3/(-a*e+b*d)^4/(b*x+a)^2+4*b^3*e/(-a*e+b*d)^5/(b*x+a)+1/3*e^2/(-a*e+
b*d)^3/(e*x+d)^3+3/2*b*e^2/(-a*e+b*d)^4/(e*x+d)^2+6*b^2*e^2/(-a*e+b*d)^5/(e
*x+d)+10*b^3*e^2*ln(b*x+a)/(-a*e+b*d)^6-10*b^3*e^2*ln(e*x+d)/(-a*e+b*d)^6
```

Rubi [A] time = 0.15, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 44}

$$\frac{6b^2e^2}{(d+ex)(bd-ae)^5}+\frac{10b^3e^2\log(a+bx)}{(bd-ae)^6}-\frac{10b^3e^2\log(d+ex)}{(bd-ae)^6}+\frac{4b^3e}{(a+bx)(bd-ae)^5}-\frac{b^3}{2(a+bx)^2(bd-ae)^4}+\frac{}{2(d+e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -b^3/(2*(b*d - a*e)^4*(a + b*x)^2) + (4*b^3*e)/((b*d - a*e)^5*(a + b*x)) +
e^2/(3*(b*d - a*e)^3*(d + e*x)^3) + (3*b*e^2)/(2*(b*d - a*e)^4*(d + e*x)^2)
 + (6*b^2*e^2)/((b*d - a*e)^5*(d + e*x)) + (10*b^3*e^2*Log[a + b*x])/(b*d -
 a*e)^6 - (10*b^3*e^2*Log[d + e*x])/(b*d - a*e)^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{1}{(a+bx)^3(d+ex)^4}\,dx\\ &= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)^3}-\frac{4b^4e}{(bd-ae)^5(a+bx)^2}+\frac{10b^4e^2}{(bd-ae)^6(a+bx)}-\right.\\ &= -\frac{b^3}{2(bd-ae)^4(a+bx)^2}+\frac{4b^3e}{(bd-ae)^5(a+bx)}+\frac{e^2}{3(bd-ae)^3(d+ex)^3}+\end{aligned}$$

Mathematica [A] time = 0.15, size = 154, normalized size = 0.91

$$\frac{\frac{24b^3e(bd-ae)}{a+bx}-\frac{3b^3(bd-ae)^2}{(a+bx)^2}+60b^3e^2\log(a+bx)+\frac{36b^2e^2(bd-ae)}{d+ex}+\frac{9be^2(bd-ae)^2}{(d+ex)^2}+\frac{2e^2(bd-ae)^3}{(d+ex)^3}-60b^3e^2\log(d+ex)}{6(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] ((-3*b^3*(b*d - a*e)^2)/(a + b*x)^2 + (24*b^3*e*(b*d - a*e))/(a + b*x) + (2
*e^2*(b*d - a*e)^3)/(d + e*x)^3 + (9*b*e^2*(b*d - a*e)^2)/(d + e*x)^2 + (36
*b^2*e^2*(b*d - a*e))/(d + e*x) + 60*b^3*e^2*Log[a + b*x] - 60*b^3*e^2*Log[
d + e*x])/(6*(b*d - a*e)^6)
```

fricas [B] time = 1.75, size = 1151, normalized size = 6.77

$$-\frac{3\,b^5d^5 - 30\,ab^4d^4e - 20\,a^2b^3d^3e^2 + 60\,a^3b^2d^2e^3 - 15\,a^4bde^4 + 2\,a^5e^5 - 60\left(b^5de^4 - ab^4e^5\right)x^4 - 30\left(5\,b^5\right.}{6\left(a^2b^6d^9 - 6\,a^3b^5d^8e + 15\,a^4b^4d^7e^2 - 20\,a^5b^3d^6e^3 + 15\,a^6b^2d^5e^4 - 6\,a^7bd^4e^5 + a^8d^3e^6 + \left(b^8d^6e^3 - 6\,ab^7d^5e^4 + 1\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] -1/6*(3*b^5*d^5 - 30*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 60*a^3*b^2*d^2*e^3
- 15*a^4*b*d*e^4 + 2*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(5*b^5*d
^2*e^3 - 2*a*b^4*d*e^4 - 3*a^2*b^3*e^5)*x^3 - 10*(11*b^5*d^3*e^2 + 12*a*b^4
*d^2*e^3 - 21*a^2*b^3*d*e^4 - 2*a^3*b^2*e^5)*x^2 - 5*(3*b^5*d^4*e + 32*a*b^
4*d^3*e^2 - 24*a^2*b^3*d^2*e^3 - 12*a^3*b^2*d*e^4 + a^4*b*e^5)*x - 60*(b^5*
e^5*x^5 + a^2*b^3*d^3*e^2 + (3*b^5*d*e^4 + 2*a*b^4*e^5)*x^4 + (3*b^5*d^2*e^
3 + 6*a*b^4*d*e^4 + a^2*b^3*e^5)*x^3 + (b^5*d^3*e^2 + 6*a*b^4*d^2*e^3 + 3*a
^2*b^3*d*e^4)*x^2 + (2*a*b^4*d^3*e^2 + 3*a^2*b^3*d^2*e^3)*x)*log(b*x + a) +
 60*(b^5*e^5*x^5 + a^2*b^3*d^3*e^2 + (3*b^5*d*e^4 + 2*a*b^4*e^5)*x^4 + (3*b
^5*d^2*e^3 + 6*a*b^4*d*e^4 + a^2*b^3*e^5)*x^3 + (b^5*d^3*e^2 + 6*a*b^4*d^2*
e^3 + 3*a^2*b^3*d*e^4)*x^2 + (2*a*b^4*d^3*e^2 + 3*a^2*b^3*d^2*e^3)*x)*log(e
*x + d))/(a^2*b^6*d^9 - 6*a^3*b^5*d^8*e + 15*a^4*b^4*d^7*e^2 - 20*a^5*b^3*d
^6*e^3 + 15*a^6*b^2*d^5*e^4 - 6*a^7*b*d^4*e^5 + a^8*d^3*e^6 + (b^8*d^6*e^3
- 6*a*b^7*d^5*e^4 + 15*a^2*b^6*d^4*e^5 - 20*a^3*b^5*d^3*e^6 + 15*a^4*b^4*d^
2*e^7 - 6*a^5*b^3*d*e^8 + a^6*b^2*e^9)*x^5 + (3*b^8*d^7*e^2 - 16*a*b^7*d^6*
e^3 + 33*a^2*b^6*d^5*e^4 - 30*a^3*b^5*d^4*e^5 + 5*a^4*b^4*d^3*e^6 + 12*a^5*
b^3*d^2*e^7 - 9*a^6*b^2*d*e^8 + 2*a^7*b*e^9)*x^4 + (3*b^8*d^8*e - 12*a*b^7*
d^7*e^2 + 10*a^2*b^6*d^6*e^3 + 24*a^3*b^5*d^5*e^4 - 60*a^4*b^4*d^4*e^5 + 52
*a^5*b^3*d^3*e^6 - 18*a^6*b^2*d^2*e^7 + a^8*e^9)*x^3 + (b^8*d^9 - 18*a^2*b^
6*d^7*e^2 + 52*a^3*b^5*d^6*e^3 - 60*a^4*b^4*d^5*e^4 + 24*a^5*b^3*d^4*e^5 +
10*a^6*b^2*d^3*e^6 - 12*a^7*b*d^2*e^7 + 3*a^8*d*e^8)*x^2 + (2*a*b^7*d^9 - 9
*a^2*b^6*d^8*e + 12*a^3*b^5*d^7*e^2 + 5*a^4*b^4*d^6*e^3 - 30*a^5*b^3*d^5*e^
4 + 33*a^6*b^2*d^4*e^5 - 16*a^7*b*d^3*e^6 + 3*a^8*d^2*e^7)*x)
```

giac [B] time = 0.17, size = 435, normalized size = 2.56

$$\frac{10\,b^4e^2\log\left(|bx + a|\right)}{b^7d^6 - 6\,ab^6d^5e + 15\,a^2b^5d^4e^2 - 20\,a^3b^4d^3e^3 + 15\,a^4b^3d^2e^4 - 6\,a^5b^2de^5 + a^6be^6} - \frac{10\,b}{b^6d^6e - 6\,ab^5d^5e^2 + 15\,a^2b^4d^4e^3 -}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] 10*b^4*e^2*log(abs(b*x + a))/(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2
- 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6) -
10*b^3*e^3*log(abs(x*e + d))/(b^6*d^6*e - 6*a*b^5*d^5*e^2 + 15*a^2*b^4*d^4*
e^3 - 20*a^3*b^3*d^3*e^4 + 15*a^4*b^2*d^2*e^5 - 6*a^5*b*d*e^6 + a^6*e^7) -
1/6*(3*b^5*d^5 - 30*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 60*a^3*b^2*d^2*e^3 -
 15*a^4*b*d*e^4 + 2*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(5*b^5*d^
2*e^3 - 2*a*b^4*d*e^4 - 3*a^2*b^3*e^5)*x^3 - 10*(11*b^5*d^3*e^2 + 12*a*b^4*
d^2*e^3 - 21*a^2*b^3*d*e^4 - 2*a^3*b^2*e^5)*x^2 - 5*(3*b^5*d^4*e + 32*a*b^4
*d^3*e^2 - 24*a^2*b^3*d^2*e^3 - 12*a^3*b^2*d*e^4 + a^4*b*e^5)*x)/((b*d - a*
e)^6*(b*x + a)^2*(x*e + d)^3)
```

maple [A] time = 0.06, size = 165, normalized size = 0.97

$$\frac{10b^3e^2\ln(bx+a)}{(ae-bd)^6}-\frac{10b^3e^2\ln(ex+d)}{(ae-bd)^6}-\frac{4b^3e}{(ae-bd)^5(bx+a)}-\frac{6b^2e^2}{(ae-bd)^5(ex+d)}-\frac{b^3}{2(ae-bd)^4(bx+a)^2}+\frac{}{2(ae-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -1/2/(a*e-b*d)^4*b^3/(b*x+a)^2+10*b^3/(a*e-b*d)^6*e^2*ln(b*x+a)-4*b^3/(a*e-
b*d)^5*e/(b*x+a)-1/3*e^2/(a*e-b*d)^3/(e*x+d)^3-10*b^3/(a*e-b*d)^6*e^2*ln(e*
x+d)-6*e^2/(a*e-b*d)^5*b^2/(e*x+d)+3/2*e^2/(a*e-b*d)^4*b/(e*x+d)^2
```

maxima [B] time = 1.07, size = 890, normalized size = 5.24

$$\frac{10\,b^3e^2\log(bx+a)}{b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6}-\frac{10\,b}{b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 10*b^3*e^2*log(b*x + a)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*
a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) - 10*b^3*e^
2*log(e*x + d)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d
^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) + 1/6*(60*b^4*e^4*x^
4 - 3*b^4*d^4 + 27*a*b^3*d^3*e + 47*a^2*b^2*d^2*e^2 - 13*a^3*b*d*e^3 + 2*a^
4*e^4 + 30*(5*b^4*d*e^3 + 3*a*b^3*e^4)*x^3 + 10*(11*b^4*d^2*e^2 + 23*a*b^3*
d*e^3 + 2*a^2*b^2*e^4)*x^2 + 5*(3*b^4*d^3*e + 35*a*b^3*d^2*e^2 + 11*a^2*b^2
*d*e^3 - a^3*b*e^4)*x)/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^2
- 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b
^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^
5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 - 1
0*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4
+ (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 - 3
5*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^7*
d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^
4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8
 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^
4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)
```

mupad [B] time = 2.58, size = 798, normalized size = 4.69

$$\frac{20\,b^3\,e^2\,\mathrm{atanh}\left(\frac{a^6\,e^6-4\,a^5\,b\,d\,e^5+5\,a^4\,b^2\,d^2\,e^4-5\,a^2\,b^4\,d^4\,e^2+4\,a\,b^5\,d^5\,e-b^6\,d^6}{(a\,e-b\,d)^6}+\frac{2\,b\,e\,x\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\right.}{(a\,e-b\,d)^6}\right.}{(a\,e-b\,d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] (20*b^3*e^2*atanh((a^6*e^6 - b^6*d^6 - 5*a^2*b^4*d^4*e^2 + 5*a^4*b^2*d^2*e^
4 + 4*a*b^5*d^5*e - 4*a^5*b*d*e^5)/(a*e - b*d)^6 + (2*b*e*x*(a^5*e^5 - b^5*
d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e
^4))/(a*e - b*d)^6))/(a*e - b*d)^6 - ((2*a^4*e^4 - 3*b^4*d^4 + 47*a^2*b^2*d
^2*e^2 + 27*a*b^3*d^3*e - 13*a^3*b*d*e^3)/(6*(a^5*e^5 - b^5*d^5 - 10*a^2*b^
3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*b*x*(
3*b^3*d^3*e - a^3*e^4 + 35*a*b^2*d^2*e^2 + 11*a^2*b*d*e^3))/(6*(a^5*e^5 - b
^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*
d*e^4)) + (10*b^4*e^4*x^4)/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (5*b^2*x^2*(2*a^2*e^4 + 11*
b^2*d^2*e^2 + 23*a*b*d*e^3))/(3*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 1
0*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*b^2*e*x^3*(5*b^2*d
*e^2 + 3*a*b*e^3))/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2
*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/(x^2*(b^2*d^3 + 3*a^2*d*e^2 + 6*a*b*
d^2*e) + x^3*(a^2*e^3 + 3*b^2*d^2*e + 6*a*b*d*e^2) + x*(3*a^2*d^2*e + 2*a*b
*d^3) + x^4*(3*b^2*d*e^2 + 2*a*b*e^3) + a^2*d^3 + b^2*e^3*x^5)
```

sympy [B] time = 3.36, size = 1221, normalized size = 7.18

$$-\frac{10b^3e^2\log\left(x+\frac{-\frac{10a^7b^3e^9}{(ae-bd)^6}+\frac{70a^6b^4de^8}{(ae-bd)^6}-\frac{210a^5b^5d^2e^7}{(ae-bd)^6}+\frac{350a^4b^6d^3e^6}{(ae-bd)^6}-\frac{350a^3b^7d^4e^5}{(ae-bd)^6}+\frac{210a^2b^8d^5e^4}{(ae-bd)^6}-\frac{70ab^9d^6e^3}{(ae-bd)^6}+10ab^3e^3+\frac{10b^{10}d^7e^2}{(ae-bd)^6}+10b^4de^2}{20b^4e^3}\right)}{(ae-bd)^6}+ 10b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] -10*b**3*e**2*log(x + (-10*a**7*b**3*e**9/(a*e - b*d)**6 + 70*a**6*b**4*d*e
**8/(a*e - b*d)**6 - 210*a**5*b**5*d**2*e**7/(a*e - b*d)**6 + 350*a**4*b**6
*d**3*e**6/(a*e - b*d)**6 - 350*a**3*b**7*d**4*e**5/(a*e - b*d)**6 + 210*a*
*2*b**8*d**5*e**4/(a*e - b*d)**6 - 70*a*b**9*d**6*e**3/(a*e - b*d)**6 + 10*
a*b**3*e**3 + 10*b**10*d**7*e**2/(a*e - b*d)**6 + 10*b**4*d*e**2)/(20*b**4*
e**3))/(a*e - b*d)**6 + 10*b**3*e**2*log(x + (10*a**7*b**3*e**9/(a*e - b*d)
**6 - 70*a**6*b**4*d*e**8/(a*e - b*d)**6 + 210*a**5*b**5*d**2*e**7/(a*e - b
*d)**6 - 350*a**4*b**6*d**3*e**6/(a*e - b*d)**6 + 350*a**3*b**7*d**4*e**5/(
a*e - b*d)**6 - 210*a**2*b**8*d**5*e**4/(a*e - b*d)**6 + 70*a*b**9*d**6*e**
3/(a*e - b*d)**6 + 10*a*b**3*e**3 - 10*b**10*d**7*e**2/(a*e - b*d)**6 + 10*
b**4*d*e**2)/(20*b**4*e**3))/(a*e - b*d)**6 + (-2*a**4*e**4 + 13*a**3*b*d*e
**3 - 47*a**2*b**2*d**2*e**2 - 27*a*b**3*d**3*e + 3*b**4*d**4 - 60*b**4*e**
4*x**4 + x**3*(-90*a*b**3*e**4 - 150*b**4*d*e**3) + x**2*(-20*a**2*b**2*e**
4 - 230*a*b**3*d*e**3 - 110*b**4*d**2*e**2) + x*(5*a**3*b*e**4 - 55*a**2*b*
*2*d*e**3 - 175*a*b**3*d**2*e**2 - 15*b**4*d**3*e))/(6*a**7*d**3*e**5 - 30*
a**6*b*d**4*e**4 + 60*a**5*b**2*d**5*e**3 - 60*a**4*b**3*d**6*e**2 + 30*a**
3*b**4*d**7*e - 6*a**2*b**5*d**8 + x**5*(6*a**5*b**2*e**8 - 30*a**4*b**3*d*
e**7 + 60*a**3*b**4*d**2*e**6 - 60*a**2*b**5*d**3*e**5 + 30*a*b**6*d**4*e**
4 - 6*b**7*d**5*e**3) + x**4*(12*a**6*b*e**8 - 42*a**5*b**2*d*e**7 + 30*a**
4*b**3*d**2*e**6 + 60*a**3*b**4*d**3*e**5 - 120*a**2*b**5*d**4*e**4 + 78*a*
b**6*d**5*e**3 - 18*b**7*d**6*e**2) + x**3*(6*a**7*e**8 + 6*a**6*b*d*e**7 -
 102*a**5*b**2*d**2*e**6 + 210*a**4*b**3*d**3*e**5 - 150*a**3*b**4*d**4*e**
4 - 6*a**2*b**5*d**5*e**3 + 54*a*b**6*d**6*e**2 - 18*b**7*d**7*e) + x**2*(1
8*a**7*d*e**7 - 54*a**6*b*d**2*e**6 + 6*a**5*b**2*d**3*e**5 + 150*a**4*b**3
*d**4*e**4 - 210*a**3*b**4*d**5*e**3 + 102*a**2*b**5*d**6*e**2 - 6*a*b**6*d
**7*e - 6*b**7*d**8) + x*(18*a**7*d**2*e**6 - 78*a**6*b*d**3*e**5 + 120*a**
5*b**2*d**4*e**4 - 60*a**4*b**3*d**5*e**3 - 30*a**3*b**4*d**6*e**2 + 42*a**
2*b**5*d**7*e - 12*a*b**6*d**8))
```

3.1945 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=111

$$-\frac{4e^3(bd-ae)}{b^5(a+bx)}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^4}{4b^5(a+bx)^4}+\frac{e^4\log(a+bx)}{b^5}$$

```
[Out] -1/4*(-a*e+b*d)^4/b^5/(b*x+a)^4-4/3*e*(-a*e+b*d)^3/b^5/(b*x+a)^3-3*e^2*(-a*
e+b*d)^2/b^5/(b*x+a)^2-4*e^3*(-a*e+b*d)/b^5/(b*x+a)+e^4*ln(b*x+a)/b^5
```

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{4e^3(bd-ae)}{b^5(a+bx)}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{(bd-ae)^4}{4b^5(a+bx)^4}+\frac{e^4\log(a+bx)}{b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)^4/(4*b^5*(a + b*x)^4) - (4*e*(b*d - a*e)^3)/(3*b^5*(a + b*x)^3
) - (3*e^2*(b*d - a*e)^2)/(b^5*(a + b*x)^2) - (4*e^3*(b*d - a*e))/(b^5*(a +
 b*x)) + (e^4*Log[a + b*x])/b^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^4}{(a+bx)^5}\,dx\\ &= \int \left(\frac{(bd-ae)^4}{b^4(a+bx)^5}+\frac{4e(bd-ae)^3}{b^4(a+bx)^4}+\frac{6e^2(bd-ae)^2}{b^4(a+bx)^3}+\frac{4e^3(bd-ae)}{b^4(a+bx)^2}+\frac{e^4}{b^4(a+bx)}\right)dx\\ &= -\frac{(bd-ae)^4}{4b^5(a+bx)^4}-\frac{4e(bd-ae)^3}{3b^5(a+bx)^3}-\frac{3e^2(bd-ae)^2}{b^5(a+bx)^2}-\frac{4e^3(bd-ae)}{b^5(a+bx)}+\frac{e^4\log(a+bx)}{b^5}\end{aligned}$$

Mathematica [A] time = 0.06, size = 120, normalized size = 1.08

$$\frac{e^4\log(a+bx)}{b^5}-\frac{(bd-ae)\Big(25a^3e^3+a^2be^2(13d+88ex)+ab^2e\left(7d^2+40dex+108e^2x^2\right)+b^3\Big(3d^3+16d^2ex+3}{12b^5(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*((b*d - a*e)*(25*a^3*e^3 + a^2*b*e^2*(13*d + 88*e*x) + a*b^2*e*(7*d^2
 + 40*d*e*x + 108*e^2*x^2) + b^3*(3*d^3 + 16*d^2*e*x + 36*d*e^2*x^2 + 48*e^
3*x^3)))/(b^5*(a + b*x)^4) + (e^4*Log[a + b*x])/b^5
```

fricas [B] time = 0.93, size = 267, normalized size = 2.41

$$-\frac{3\,b^4d^4+4\,ab^3d^3e+6\,a^2b^2d^2e^2+12\,a^3bde^3-25\,a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(b^4d^2e^2+2\,ab^3de^3-3\,a^2b^2e^4\right)}{12\,\bigl(b^9x^4+4\,ab^8x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 - 25*
a^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(b^4*d^2*e^2 + 2*a*b^3*d*e^3
- 3*a^2*b^2*e^4)*x^2 + 8*(2*b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 -
 11*a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 +
4*a^3*b*e^4*x + a^4*e^4)*log(b*x + a))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5)
```

giac [A] time = 0.18, size = 174, normalized size = 1.57

$$\frac{e^4\log\left(|bx+a|\right)}{b^5}-\frac{48\left(b^3de^3-ab^2e^4\right)x^3+36\left(b^3d^2e^2+2\,ab^2de^3-3\,a^2be^4\right)x^2+8\,\bigl(2\,b^3d^3e+3\,ab^2d^2e^2+6\,a^2bde^3-}{12\,(bx+a)^4b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] e^4*log(abs(b*x + a))/b^5 - 1/12*(48*(b^3*d*e^3 - a*b^2*e^4)*x^3 + 36*(b^3*
d^2*e^2 + 2*a*b^2*d*e^3 - 3*a^2*b*e^4)*x^2 + 8*(2*b^3*d^3*e + 3*a*b^2*d^2*e
^2 + 6*a^2*b*d*e^3 - 11*a^3*e^4)*x + (3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2
*d^2*e^2 + 12*a^3*b*d*e^3 - 25*a^4*e^4)/b)/((b*x + a)^4*b^4)
```

maple [B] time = 0.05, size = 260, normalized size = 2.34

$$-\frac{a^4e^4}{4\,(bx+a)^4\,b^5}+\frac{a^3d\,e^3}{(bx+a)^4\,b^4}-\frac{3a^2d^2e^2}{2\,(bx+a)^4\,b^3}+\frac{a\,d^3e}{(bx+a)^4\,b^2}-\frac{d^4}{4\,(bx+a)^4\,b}+\frac{4a^3e^4}{3\,(bx+a)^3\,b^5}-\frac{4a^2d\,e^3}{(bx+a)^3\,b^4}+\frac{4a\,d^2e^2}{(bx+a)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 4/3*e^4/b^5/(b*x+a)^3*a^3-4*e^3/b^4/(b*x+a)^3*a^2*d+4*e^2/b^3/(b*x+a)^3*a*d
^2-4/3*e/b^2/(b*x+a)^3*d^3-3*e^4/b^5/(b*x+a)^2*a^2+6*e^3/b^4/(b*x+a)^2*a*d-
3*e^2/b^3/(b*x+a)^2*d^2+e^4*ln(b*x+a)/b^5+4/b^5*e^4/(b*x+a)*a-4/b^4*e^3/(b*
x+a)*d-1/4/b^5/(b*x+a)^4*a^4*e^4+1/b^4/(b*x+a)^4*a^3*d*e^3-3/2/b^3/(b*x+a)^
4*a^2*d^2*e^2+1/b^2/(b*x+a)^4*a*d^3*e-1/4/b/(b*x+a)^4*d^4
```

maxima [B] time = 0.59, size = 219, normalized size = 1.97

$$-\frac{3\,b^4d^4+4\,ab^3d^3e+6\,a^2b^2d^2e^2+12\,a^3bde^3-25\,a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(b^4d^2e^2+2\,ab^3de^3-3\,a^2b^2e^4\right)}{12\left(b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(3*b^4*d^4 + 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 12*a^3*b*d*e^3 - 25*
a^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(b^4*d^2*e^2 + 2*a*b^3*d*e^3
- 3*a^2*b^2*e^4)*x^2 + 8*(2*b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 -
```

```
 11*a^3*b*e^4)*x)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^
4*b^5) + e^4*log(b*x + a)/b^5
```

mupad [**B**] time = 2.09, size = 213, normalized size = 1.92

$$\frac{e^4\,\ln(a+b\,x)}{b^5}-\frac{\frac{-25\,a^4\,e^4+12\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2+4\,a\,b^3\,d^3\,e+3\,b^4\,d^4}{12\,b^5}+\frac{3\,x^2\,\left(-3\,a^2\,e^4+2\,a\,b\,d\,e^3+b^2\,d^2\,e^2\right)}{b^3}+\frac{2\,x\,(-11\,a^3\,e^4+6\,a^2\,b\,d\,e^3+3\,a}{3\,b^4}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (e^4*log(a + b*x))/b^5 - ((3*b^4*d^4 - 25*a^4*e^4 + 6*a^2*b^2*d^2*e^2 + 4*a
*b^3*d^3*e + 12*a^3*b*d*e^3)/(12*b^5) + (3*x^2*(b^2*d^2*e^2 - 3*a^2*e^4 + 2
*a*b*d*e^3))/b^3 + (2*x*(2*b^3*d^3*e - 11*a^3*e^4 + 3*a*b^2*d^2*e^2 + 6*a^2
*b*d*e^3))/(3*b^4) - (4*e^3*x^3*(a*e - b*d))/b^2)/(a^4 + b^4*x^4 + 4*a*b^3*
x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x)
```

sympy [**B**] time = 3.34, size = 230, normalized size = 2.07

$$\frac{25a^4e^4-12a^3bde^3-6a^2b^2d^2e^2-4ab^3d^3e-3b^4d^4+x^3\left(48ab^3e^4-48b^4de^3\right)+x^2\,(108a^2b^2e^4-72ab^3de^3-36b}{12a^4b^5+48a^3b^6x+72a^2b^7x^2+48ab^8x^3+12b^9x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (25*a**4*e**4 - 12*a**3*b*d*e**3 - 6*a**2*b**2*d**2*e**2 - 4*a*b**3*d**3*e
- 3*b**4*d**4 + x**3*(48*a*b**3*e**4 - 48*b**4*d*e**3) + x**2*(108*a**2*b**
2*e**4 - 72*a*b**3*d*e**3 - 36*b**4*d**2*e**2) + x*(88*a**3*b*e**4 - 48*a**
2*b**2*d*e**3 - 24*a*b**3*d**2*e**2 - 16*b**4*d**3*e))/(12*a**4*b**5 + 48*a
**3*b**6*x + 72*a**2*b**7*x**2 + 48*a*b**8*x**3 + 12*b**9*x**4) + e**4*log(
a + b*x)/b**5
```

3.1946 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=28

$$-\frac{(d+ex)^4}{4(a+bx)^4(bd-ae)}$$

```
[Out] -1/4*(e*x+d)^4/(-a*e+b*d)/(b*x+a)^4
```

Rubi [A] time = 0.00, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 37\}$

$$-\frac{(d+ex)^4}{4(a+bx)^4(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(d + e*x)^4/(4*(b*d - a*e)*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^3}{(a+bx)^5}\,dx\\ &= -\frac{(d+ex)^4}{4(bd-ae)(a+bx)^4}\end{aligned}$$

Mathematica [B] time = 0.03, size = 91, normalized size = 3.25

$$-\frac{a^3e^3+a^2be^2(d+4ex)+ab^2e\left(d^2+4dex+6e^2x^2\right)+b^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{4b^4(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/4*(a^3*e^3 + a^2*b*e^2*(d + 4*e*x) + a*b^2*e*(d^2 + 4*d*e*x + 6*e^2*x^2)
 + b^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3))/(b^4*(a + b*x)^4)
```

fricas [B] time = 1.52, size = 143, normalized size = 5.11

$$-\frac{4\,b^3e^3x^3+b^3d^3+ab^2d^2e+a^2bde^2+a^3e^3+6\left(b^3de^2+ab^2e^3\right)x^2+4\left(b^3d^2e+ab^2de^2+a^2be^3\right)x}{4\left(b^8x^4+4\,ab^7x^3+6\,a^2b^6x^2+4\,a^3b^5x+a^4b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(4*b^3*e^3*x^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2 + a^3*e^3 + 6*(b^
3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^8*
x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

giac [B] time = 0.16, size = 106, normalized size = 3.79

$$-\frac{4\,b^{3}x^{3}e^{3}+6\,b^{3}dx^{2}e^{2}+4\,b^{3}d^{2}xe+b^{3}d^{3}+6\,ab^{2}x^{2}e^{3}+4\,ab^{2}dxe^{2}+ab^{2}d^{2}e+4\,a^{2}bxe^{3}+a^{2}bde^{2}+a^{3}e^{3}}{4\,(bx+a)^{4}b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/4*(4*b^3*x^3*e^3 + 6*b^3*d*x^2*e^2 + 4*b^3*d^2*x*e + b^3*d^3 + 6*a*b^2*x
^2*e^3 + 4*a*b^2*d*x*e^2 + a*b^2*d^2*e + 4*a^2*b*x*e^3 + a^2*b*d*e^2 + a^3*
e^3)/((b*x + a)^4*b^4)
```

maple [B] time = 0.05, size = 122, normalized size = 4.36

$$-\frac{e^{3}}{(bx+a)\,b^{4}}+\frac{3\,(ae-bd)\,e^{2}}{2\,(bx+a)^{2}\,b^{4}}-\frac{\left(a^{2}e^{2}-2abde+b^{2}d^{2}\right)e}{(bx+a)^{3}\,b^{4}}-\frac{-e^{3}a^{3}+3a^{2}bd\,e^{2}-3a\,d^{2}e\,b^{2}+d^{3}b^{3}}{4\,(bx+a)^{4}\,b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -e*(a^2*e^2-2*a*b*d*e+b^2*d^2)/b^4/(b*x+a)^3+3/2*e^2*(a*e-b*d)/b^4/(b*x+a)^
2-e^3/b^4/(b*x+a)-1/4*(-a^3*e^3+3*a^2*b*d*e^2-3*a*b^2*d^2*e+b^3*d^3)/b^4/(b
*x+a)^4
```

maxima [B] time = 0.52, size = 143, normalized size = 5.11

$$-\frac{4\,b^{3}e^{3}x^{3}+b^{3}d^{3}+ab^{2}d^{2}e+a^{2}bde^{2}+a^{3}e^{3}+6\left(b^{3}de^{2}+ab^{2}e^{3}\right)x^{2}+4\left(b^{3}d^{2}e+ab^{2}de^{2}+a^{2}be^{3}\right)x}{4\left(b^{8}x^{4}+4\,ab^{7}x^{3}+6\,a^{2}b^{6}x^{2}+4\,a^{3}b^{5}x+a^{4}b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4*(4*b^3*e^3*x^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2 + a^3*e^3 + 6*(b^
3*d*e^2 + a*b^2*e^3)*x^2 + 4*(b^3*d^2*e + a*b^2*d*e^2 + a^2*b*e^3)*x)/(b^8*
x^4 + 4*a*b^7*x^3 + 6*a^2*b^6*x^2 + 4*a^3*b^5*x + a^4*b^4)
```

mupad [B] time = 0.06, size = 135, normalized size = 4.82

$$-\frac{\frac{a^{3}\,e^{3}+a^{2}\,b\,d\,e^{2}+a\,b^{2}\,d^{2}\,e+b^{3}\,d^{3}}{4\,b^{4}}+\frac{e^{3}\,x^{3}}{b}+\frac{e\,x\left(a^{2}\,e^{2}+a\,b\,d\,e+b^{2}\,d^{2}\right)}{b^{3}}+\frac{3\,e^{2}\,x^{2}\,(a\,e+b\,d)}{2\,b^{2}}}{a^{4}+4\,a^{3}\,b\,x+6\,a^{2}\,b^{2}\,x^{2}+4\,a\,b^{3}\,x^{3}+b^{4}\,x^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a^3*e^3 + b^3*d^3 + a*b^2*d^2*e + a^2*b*d*e^2)/(4*b^4) + (e^3*x^3)/b + (
e*x*(a^2*e^2 + b^2*d^2 + a*b*d*e))/b^3 + (3*e^2*x^2*(a*e + b*d))/(2*b^2))/(
a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x)
```

sympy [**B**] time = 1.83, size = 155, normalized size = 5.54

$$\frac{-a^3e^3 - a^2bde^2 - ab^2d^2e - b^3d^3 - 4b^3e^3x^3 + x^2\left(-6ab^2e^3 - 6b^3de^2\right) + x\left(-4a^2be^3 - 4ab^2de^2 - 4b^3d^2e\right)}{4a^4b^4 + 16a^3b^5x + 24a^2b^6x^2 + 16ab^7x^3 + 4b^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a**3*e**3 - a**2*b*d*e**2 - a*b**2*d**2*e - b**3*d**3 - 4*b**3*e**3*x**3
+ x**2*(-6*a*b**2*e**3 - 6*b**3*d*e**2) + x*(-4*a**2*b*e**3 - 4*a*b**2*d*e*
*2 - 4*b**3*d**2*e))/(4*a**4*b**4 + 16*a**3*b**5*x + 24*a**2*b**6*x**2 + 16
*a*b**7*x**3 + 4*b**8*x**4)
```

3.1947 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=65

$$-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{e^2}{2b^3(a+bx)^2}$$

```
[Out] -1/4*(-a*e+b*d)^2/b^3/(b*x+a)^4-2/3*e*(-a*e+b*d)/b^3/(b*x+a)^3-1/2*e^2/b^3/
(b*x+a)^2
```

Rubi [A] time = 0.04, antiderivative size = 65, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{e^2}{2b^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)^2/(4*b^3*(a + b*x)^4) - (2*e*(b*d - a*e))/(3*b^3*(a + b*x)^3)
- e^2/(2*b^3*(a + b*x)^2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^2}{(a+bx)^5}\,dx\\ &= \int \left(\frac{(bd-ae)^2}{b^2(a+bx)^5}+\frac{2e(bd-ae)}{b^2(a+bx)^4}+\frac{e^2}{b^2(a+bx)^3}\right)dx\\ &= -\frac{(bd-ae)^2}{4b^3(a+bx)^4}-\frac{2e(bd-ae)}{3b^3(a+bx)^3}-\frac{e^2}{2b^3(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 56, normalized size = 0.86

$$-\frac{a^2e^2+2abe(d+2ex)+b^2\left(3d^2+8dex+6e^2x^2\right)}{12b^3(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*(a^2*e^2 + 2*a*b*e*(d + 2*e*x) + b^2*(3*d^2 + 8*d*e*x + 6*e^2*x^2))/(
b^3*(a + b*x)^4)
```

fricas [A] time = 1.08, size = 98, normalized size = 1.51

$$-\frac{6\,b^2e^2x^2+3\,b^2d^2+2\,abde+a^2e^2+4\left(2\,b^2de+abe^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*e^2*x^2 + 3*b^2*d^2 + 2*a*b*d*e + a^2*e^2 + 4*(2*b^2*d*e + a*b
*e^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

giac [A] time = 0.15, size = 60, normalized size = 0.92

$$-\frac{6\,b^2x^2e^2+8\,b^2dxe+3\,b^2d^2+4\,abxe^2+2\,abde+a^2e^2}{12\,(bx+a)^4b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/12*(6*b^2*x^2*e^2 + 8*b^2*d*x*e + 3*b^2*d^2 + 4*a*b*x*e^2 + 2*a*b*d*e +
a^2*e^2)/((b*x + a)^4*b^3)
```

maple [A] time = 0.06, size = 71, normalized size = 1.09

$$-\frac{e^2}{2\,(bx+a)^2\,b^3}+\frac{2\,(ae-bd)\,e}{3\,(bx+a)^3\,b^3}-\frac{a^2e^2-2abde+b^2d^2}{4\,(bx+a)^4\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3*e*(a*e-b*d)/b^3/(b*x+a)^3-1/2*e^2/b^3/(b*x+a)^2-1/4*(a^2*e^2-2*a*b*d*e+
b^2*d^2)/b^3/(b*x+a)^4
```

maxima [A] time = 0.67, size = 98, normalized size = 1.51

$$-\frac{6\,b^2e^2x^2+3\,b^2d^2+2\,abde+a^2e^2+4\left(2\,b^2de+abe^2\right)x}{12\left(b^7x^4+4\,ab^6x^3+6\,a^2b^5x^2+4\,a^3b^4x+a^4b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(6*b^2*e^2*x^2 + 3*b^2*d^2 + 2*a*b*d*e + a^2*e^2 + 4*(2*b^2*d*e + a*b
*e^2)*x)/(b^7*x^4 + 4*a*b^6*x^3 + 6*a^2*b^5*x^2 + 4*a^3*b^4*x + a^4*b^3)
```

mupad [B] time = 0.04, size = 96, normalized size = 1.48

$$-\frac{\frac{a^2\,e^2+2\,a\,b\,d\,e+3\,b^2\,d^2}{12\,b^3}+\frac{e^2\,x^2}{2\,b}+\frac{e\,x\,\left(a\,e+2\,b\,d\right)}{3\,b^2}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a^2*e^2 + 3*b^2*d^2 + 2*a*b*d*e)/(12*b^3) + (e^2*x^2)/(2*b) + (e*x*(a*e
+ 2*b*d))/(3*b^2))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x
)
```

sympy [**A**] time = 0.80, size = 104, normalized size = 1.60

$$\frac{-a^2e^2-2abde-3b^2d^2-6b^2e^2x^2+x\left(-4abe^2-8b^2de\right)}{12a^4b^3+48a^3b^4x+72a^2b^5x^2+48ab^6x^3+12b^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a**2*e**2 - 2*a*b*d*e - 3*b**2*d**2 - 6*b**2*e**2*x**2 + x*(-4*a*b*e**2 -
 8*b**2*d*e))/(12*a**4*b**3 + 48*a**3*b**4*x + 72*a**2*b**5*x**2 + 48*a*b**
6*x**3 + 12*b**7*x**4)
```

3.1948 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=38

$$-\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}$$

```
[Out] 1/4*(a*e-b*d)/b^2/(b*x+a)^4-1/3*e/b^2/(b*x+a)^3
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(b*d - a*e)/(4*b^2*(a + b*x)^4) - e/(3*b^2*(a + b*x)^3)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{d+ex}{(a+bx)^5}\,dx\\ &= \int \left(\frac{bd-ae}{b(a+bx)^5}+\frac{e}{b(a+bx)^4}\right)dx\\ &= -\frac{bd-ae}{4b^2(a+bx)^4}-\frac{e}{3b^2(a+bx)^3}\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 0.71

$$-\frac{ae+3bd+4bex}{12b^2(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/12*(3*b*d + a*e + 4*b*e*x)/(b^2*(a + b*x)^4)
```

fricas [A] time = 1.07, size = 61, normalized size = 1.61

$$-\frac{4\,bex+3\,bd+ae}{12\left(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(4*b*e*x + 3*b*d + a*e)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

giac [**A**] time = 0.16, size = 27, normalized size = 0.71

$$-\frac{4\,bxe+3\,bd+ae}{12\,(bx+a)^4b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/12*(4*b*x*e + 3*b*d + a*e)/((b*x + a)^4*b^2)
```

maple [**A**] time = 0.09, size = 35, normalized size = 0.92

$$-\frac{e}{3\,(bx+a)^3\,b^2}-\frac{-ae+bd}{4\,(bx+a)^4\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/3*e/b^2/(b*x+a)^3-1/4*(-a*e+b*d)/b^2/(b*x+a)^4
```

maxima [**A**] time = 0.53, size = 61, normalized size = 1.61

$$-\frac{4\,bex+3\,bd+ae}{12\left(b^6x^4+4\,ab^5x^3+6\,a^2b^4x^2+4\,a^3b^3x+a^4b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/12*(4*b*e*x + 3*b*d + a*e)/(b^6*x^4 + 4*a*b^5*x^3 + 6*a^2*b^4*x^2 + 4*a^
3*b^3*x + a^4*b^2)
```

mupad [**B**] time = 2.01, size = 63, normalized size = 1.66

$$-\frac{\frac{a\,e+3\,b\,d}{12\,b^2}+\frac{e\,x}{3\,b}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a*e + 3*b*d)/(12*b^2) + (e*x)/(3*b))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^
2*b^2*x^2 + 4*a^3*b*x)
```

sympy [**B**] time = 0.46, size = 65, normalized size = 1.71

$$\frac{-ae-3bd-4bex}{12a^4b^2+48a^3b^3x+72a^2b^4x^2+48ab^5x^3+12b^6x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] (-a*e - 3*b*d - 4*b*e*x)/(12*a**4*b**2 + 48*a**3*b**3*x + 72*a**2*b**4*x**2
 + 48*a*b**5*x**3 + 12*b**6*x**4)
```

3.1949 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=14

$$-\frac{1}{4b(a+bx)^4}$$

```
[Out] -1/4/b/(b*x+a)^4
```

Rubi [A] time = 0.00, antiderivative size = 14, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = $\{27, 32\}$

$$-\frac{1}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/(4*b*(a + b*x)^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5}\,dx\\ &= -\frac{1}{4b(a+bx)^4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 14, normalized size = 1.00

$$-\frac{1}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -1/4*1/(b*(a + b*x)^4)
```

fricas [B] time = 1.10, size = 46, normalized size = 3.29

$$-\frac{1}{4\left(b^5x^4+4\,ab^4x^3+6\,a^2b^3x^2+4\,a^3b^2x+a^4b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4/(b^5*x^4 + 4*a*b^4*x^3 + 6*a^2*b^3*x^2 + 4*a^3*b^2*x + a^4*b)
```

giac [**A**] time = 0.15, size = 23, normalized size = 1.64

$$-\frac{1}{4\left(a^2+\left(bx^2+2\,ax\right)b\right)^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] -1/4/((a^2 + (b*x^2 + 2*a*x)*b)^2*b)
```

maple [**A**] time = 0.06, size = 13, normalized size = 0.93

$$-\frac{1}{4\left(bx+a\right)^4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/4/b/(b*x+a)^4
```

maxima [**A**] time = 0.56, size = 23, normalized size = 1.64

$$-\frac{1}{4\left(b^2x^2+2\,abx+a^2\right)^2b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] -1/4/((b^2*x^2 + 2*a*b*x + a^2)^2*b)
```

mupad [**B**] time = 1.99, size = 48, normalized size = 3.43

$$-\frac{1}{4\,a^4\,b+16\,a^3\,b^2\,x+24\,a^2\,b^3\,x^2+16\,a\,b^4\,x^3+4\,b^5\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -1/(4*a^4*b + 4*b^5*x^4 + 16*a^3*b^2*x + 16*a*b^4*x^3 + 24*a^2*b^3*x^2)
```

sympy [**B**] time = 0.32, size = 49, normalized size = 3.50

$$-\frac{1}{4a^4b+16a^3b^2x+24a^2b^3x^2+16ab^4x^3+4b^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] -1/(4*a**4*b + 16*a**3*b**2*x + 24*a**2*b**3*x**2 + 16*a*b**4*x**3 + 4*b**5
*x**4)
```

3.1950 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=130

$$\frac{e^4\log(a+bx)}{(bd-ae)^5}-\frac{e^4\log(d+ex)}{(bd-ae)^5}+\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e}{3(a+bx)^3(bd-ae)^2}-\frac{1}{4(a+bx)^4(bd-}$$

```
[Out] -1/4/(-a*e+b*d)/(b*x+a)^4+1/3*e/(-a*e+b*d)^2/(b*x+a)^3-1/2*e^2/(-a*e+b*d)^3
/(b*x+a)^2+e^3/(-a*e+b*d)^4/(b*x+a)+e^4*ln(b*x+a)/(-a*e+b*d)^5-e^4*ln(e*x+d
)/(-a*e+b*d)^5
```

Rubi [A] time = 0.09, antiderivative size = 130, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e^4\log(a+bx)}{(bd-ae)^5}-\frac{e^4\log(d+ex)}{(bd-ae)^5}+\frac{e}{3(a+bx)^3(bd-ae)^2}-\frac{1}{4(a+bx)^4(bd-}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -1/(4*(b*d - a*e)*(a + b*x)^4) + e/(3*(b*d - a*e)^2*(a + b*x)^3) - e^2/(2*(
b*d - a*e)^3*(a + b*x)^2) + e^3/((b*d - a*e)^4*(a + b*x)) + (e^4*Log[a + b*
x])/(b*d - a*e)^5 - (e^4*Log[d + e*x])/(b*d - a*e)^5
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)}\,dx\\ &= \int \left(\frac{b}{(bd-ae)(a+bx)^5}-\frac{be}{(bd-ae)^2(a+bx)^4}+\frac{be^2}{(bd-ae)^3(a+bx)^3}-\frac{}{(bd-}\right.\\ &= -\frac{1}{4(bd-ae)(a+bx)^4}+\frac{e}{3(bd-ae)^2(a+bx)^3}-\frac{e^2}{2(bd-ae)^3(a+bx)^2}+\frac{}{(bd-}\end{aligned}$$

Mathematica [A] time = 0.05, size = 130, normalized size = 1.00

$$\frac{e^4\log(a+bx)}{(bd-ae)^5}-\frac{e^4\log(d+ex)}{(bd-ae)^5}+\frac{e^3}{(a+bx)(bd-ae)^4}-\frac{e^2}{2(a+bx)^2(bd-ae)^3}+\frac{e}{3(a+bx)^3(bd-ae)^2}+\frac{1}{4(a+bx)^4(ae-}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] 1/(4*(-(b*d) + a*e)*(a + b*x)^4) + e/(3*(b*d - a*e)^2*(a + b*x)^3) - e^2/(2
*(b*d - a*e)^3*(a + b*x)^2) + e^3/((b*d - a*e)^4*(a + b*x)) + (e^4*Log[a +
b*x])/(b*d - a*e)^5 - (e^4*Log[d + e*x])/(b*d - a*e)^5
```

fricas [B] time = 1.37, size = 657, normalized size = 5.05

$$-\frac{3\,b^4d^4 - 16\,ab^3d^3e + 36\,a^2b^2d^2e^2 - 48\,a^3bde^3 + 25\,a^4e^4 - 12\,(b^4de^3 - ab^3e^4)}{12\,(a^4b^5d^5 - 5\,a^5b^4d^4e + 10\,a^6b^3d^3e^2 - 10\,a^7b^2d^2e^3 + 5\,a^8bde^4 - a^9e^5 + (b^9d^5 - 5\,ab^8d^4e + 10\,a^2b^7d^3e^2 - 10\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^4*d^4 - 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2 - 48*a^3*b*d*e^3 + 2
5*a^4*e^4 - 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 8*a*b^3*d*e^3
 + 7*a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e - 6*a*b^3*d^2*e^2 + 18*a^2*b^2*d*e^3 -
 13*a^3*b*e^4)*x - 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 +
4*a^3*b*e^4*x + a^4*e^4)*log(b*x + a) + 12*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 +
 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*log(e*x + d))/(a^4*b^5*d^5 -
5*a^5*b^4*d^4*e + 10*a^6*b^3*d^3*e^2 - 10*a^7*b^2*d^2*e^3 + 5*a^8*b*d*e^4 -
 a^9*e^5 + (b^9*d^5 - 5*a*b^8*d^4*e + 10*a^2*b^7*d^3*e^2 - 10*a^3*b^6*d^2*e
^3 + 5*a^4*b^5*d*e^4 - a^5*b^4*e^5)*x^4 + 4*(a*b^8*d^5 - 5*a^2*b^7*d^4*e +
10*a^3*b^6*d^3*e^2 - 10*a^4*b^5*d^2*e^3 + 5*a^5*b^4*d*e^4 - a^6*b^3*e^5)*x^
3 + 6*(a^2*b^7*d^5 - 5*a^3*b^6*d^4*e + 10*a^4*b^5*d^3*e^2 - 10*a^5*b^4*d^2*
e^3 + 5*a^6*b^3*d*e^4 - a^7*b^2*e^5)*x^2 + 4*(a^3*b^6*d^5 - 5*a^4*b^5*d^4*e
 + 10*a^5*b^4*d^3*e^2 - 10*a^6*b^3*d^2*e^3 + 5*a^7*b^2*d*e^4 - a^8*b*e^5)*x
)
```

giac [B] time = 0.18, size = 322, normalized size = 2.48

$$\frac{be^4\log(|bx+a|)}{b^6d^5 - 5\,ab^5d^4e + 10\,a^2b^4d^3e^2 - 10\,a^3b^3d^2e^3 + 5\,a^4b^2de^4 - a^5be^5} - \frac{e^5\log(|xe+d|)}{b^5d^5e - 5\,ab^4d^4e^2 + 10\,a^2b^3d^3e^3 - 10\,a^3b^2d^2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] b*e^4*log(abs(b*x + a))/(b^6*d^5 - 5*a*b^5*d^4*e + 10*a^2*b^4*d^3*e^2 - 10*
a^3*b^3*d^2*e^3 + 5*a^4*b^2*d*e^4 - a^5*b*e^5) - e^5*log(abs(x*e + d))/(b^5
*d^5*e - 5*a*b^4*d^4*e^2 + 10*a^2*b^3*d^3*e^3 - 10*a^3*b^2*d^2*e^4 + 5*a^4*
b*d*e^5 - a^5*e^6) - 1/12*(3*b^4*d^4 - 16*a*b^3*d^3*e + 36*a^2*b^2*d^2*e^2
- 48*a^3*b*d*e^3 + 25*a^4*e^4 - 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2
*e^2 - 8*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^2 - 4*(b^4*d^3*e - 6*a*b^3*d^2*e^2
+ 18*a^2*b^2*d*e^3 - 13*a^3*b*e^4)*x)/((b*d - a*e)^5*(b*x + a)^4)
```

maple [A] time = 0.06, size = 125, normalized size = 0.96

$$-\frac{e^4\ln(bx+a)}{(ae-bd)^5} + \frac{e^4\ln(ex+d)}{(ae-bd)^5} + \frac{e^3}{(ae-bd)^4\,(bx+a)} + \frac{e^2}{2\,(ae-bd)^3\,(bx+a)^2} + \frac{e}{3\,(ae-bd)^2\,(bx+a)^3} + \frac{1}{4\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/4/(a*e-b*d)/(b*x+a)^4+1/2*e^2/(a*e-b*d)^3/(b*x+a)^2+e^3/(a*e-b*d)^4/(b*x+
a)-e^4/(a*e-b*d)^5*ln(b*x+a)+1/3*e/(a*e-b*d)^2/(b*x+a)^3+e^4/(a*e-b*d)^5*ln
(e*x+d)
```

maxima [B] time = 0.78, size = 558, normalized size = 4.29

$$\frac{e^{4} \log\left(bx + a\right)}{b^{5} d^{5} - 5\, a b^{4} d^{4} e + 10\, a^{2} b^{3} d^{3} e^{2} - 10\, a^{3} b^{2} d^{2} e^{3} + 5\, a^{4} b d e^{4} - a^{5} e^{5}} - \frac{e^{4} \log\left(ex + d\right)}{b^{5} d^{5} - 5\, a b^{4} d^{4} e + 10\, a^{2} b^{3} d^{3} e^{2} - 10\, a^{3} b^{2} d^{2} e^{3} + 5\, a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] e^4*log(b*x + a)/(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2
*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) - e^4*log(e*x + d)/(b^5*d^5 - 5*a*b^4*d
^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5) +
 1/12*(12*b^3*e^3*x^3 - 3*b^3*d^3 + 13*a*b^2*d^2*e - 23*a^2*b*d*e^2 + 25*a^
3*e^3 - 6*(b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + 4*(b^3*d^2*e - 5*a*b^2*d*e^2 + 13
*a^2*b*e^3)*x)/(a^4*b^4*d^4 - 4*a^5*b^3*d^3*e + 6*a^6*b^2*d^2*e^2 - 4*a^7*b
*d*e^3 + a^8*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^5
*d*e^3 + a^4*b^4*e^4)*x^4 + 4*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2*
e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^3 + 6*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*e
 + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x^2 + 4*(a^3*b^5*d^4
- 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*d*e^3 + a^7*b*e^4)*x)
```

mupad [B] time = 2.27, size = 505, normalized size = 3.88

$$\frac{\frac{25\,a^3\,e^3-23\,a^2\,b\,d\,e^2+13\,a\,b^2\,d^2\,e-3\,b^3\,d^3}{12\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4\right)}+\frac{b^3\,e^3\,x^3}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}-\frac{e^2\,x^2\,\left(b^3\,d-7\,a\,b^2\,e\right)}{2\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+}}{a^4+4\,a^3\,b\,x+6\,a^2\,b^2\,x^2+4\,a\,b^3\,x^3+b^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((25*a^3*e^3 - 3*b^3*d^3 + 13*a*b^2*d^2*e - 23*a^2*b*d*e^2)/(12*(a^4*e^4 +
b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (b^3*e^3*x^
3)/(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
- (e^2*x^2*(b^3*d - 7*a*b^2*e))/(2*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 -
 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)) + (e*x*(b^3*d^2 + 13*a^2*b*e^2 - 5*a*b^2*d
*e))/(3*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*
e^3)))/(a^4 + b^4*x^4 + 4*a*b^3*x^3 + 6*a^2*b^2*x^2 + 4*a^3*b*x) - (2*e^4*a
tanh((a^5*e^5 + b^5*d^5 + 2*a^2*b^3*d^3*e^2 + 2*a^3*b^2*d^2*e^3 - 3*a*b^4*d
^4*e - 3*a^4*b*d*e^4)/(a*e - b*d)^5 + (2*b*e*x*(a^4*e^4 + b^4*d^4 + 6*a^2*b
^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))/(a*e - b*d)^5))/(a*e - b*d)^5
```

sympy [B] time = 2.14, size = 802, normalized size = 6.17

$$\frac{e^{4} \log{\left(x + \frac{- \frac{a^{6} e^{10}}{\left(a e - b d\right)^{5}} + \frac{6 a^{5} b d e^{9}}{\left(a e - b d\right)^{5}} - \frac{15 a^{4} b^{2} d^{2} e^{8}}{\left(a e - b d\right)^{5}} + \frac{20 a^{3} b^{3} d^{3} e^{7}}{\left(a e - b d\right)^{5}} - \frac{15 a^{2} b^{4} d^{4} e^{6}}{\left(a e - b d\right)^{5}} + \frac{6 a b^{5} d^{5} e^{5}}{\left(a e - b d\right)^{5}} + a e^{5} - \frac{b^{6} d^{6} e^{4}}{\left(a e - b d\right)^{5}} + b d e^{4}}{2 b e^{5}} \right)}}{\left(a e - b d\right)^{5}} - e^{4} \log{\left(x + \frac{\frac{a^{6} e^{10}}{\left(a e - b d\right)^{5}} - \frac{6 a^{5} b d e^{9}}{\left(a e - b d\right)^{5}} + \frac{15 a^{4} b^{2} d^{2} e^{8}}{\left(a e - b d\right)^{5}}}{} \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] e**4*log(x + (-a**6*e**10/(a*e - b*d)**5 + 6*a**5*b*d*e**9/(a*e - b*d)**5 -
 15*a**4*b**2*d**2*e**8/(a*e - b*d)**5 + 20*a**3*b**3*d**3*e**7/(a*e - b*d)
**5 - 15*a**2*b**4*d**4*e**6/(a*e - b*d)**5 + 6*a*b**5*d**5*e**5/(a*e - b*d
)**5 + a*e**5 - b**6*d**6*e**4/(a*e - b*d)**5 + b*d*e**4)/(2*b*e**5))/(a*e
- b*d)**5 - e**4*log(x + (a**6*e**10/(a*e - b*d)**5 - 6*a**5*b*d*e**9/(a*e
- b*d)**5 + 15*a**4*b**2*d**2*e**8/(a*e - b*d)**5 - 20*a**3*b**3*d**3*e**7/
(a*e - b*d)**5 + 15*a**2*b**4*d**4*e**6/(a*e - b*d)**5 - 6*a*b**5*d**5*e**5
/(a*e - b*d)**5 + a*e**5 + b**6*d**6*e**4/(a*e - b*d)**5 + b*d*e**4)/(2*b*e
**5))/(a*e - b*d)**5 + (25*a**3*e**3 - 23*a**2*b*d*e**2 + 13*a*b**2*d**2*e
- 3*b**3*d**3 + 12*b**3*e**3*x**3 + x**2*(42*a*b**2*e**3 - 6*b**3*d*e**2) +
 x*(52*a**2*b*e**3 - 20*a*b**2*d*e**2 + 4*b**3*d**2*e))/(12*a**8*e**4 - 48*
a**7*b*d*e**3 + 72*a**6*b**2*d**2*e**2 - 48*a**5*b**3*d**3*e + 12*a**4*b**4
*d**4 + x**4*(12*a**4*b**4*e**4 - 48*a**3*b**5*d*e**3 + 72*a**2*b**6*d**2*e
**2 - 48*a*b**7*d**3*e + 12*b**8*d**4) + x**3*(48*a**5*b**3*e**4 - 192*a**4
*b**4*d*e**3 + 288*a**3*b**5*d**2*e**2 - 192*a**2*b**6*d**3*e + 48*a*b**7*d
**4) + x**2*(72*a**6*b**2*e**4 - 288*a**5*b**3*d*e**3 + 432*a**4*b**4*d**2*
e**2 - 288*a**3*b**5*d**3*e + 72*a**2*b**6*d**4) + x*(48*a**7*b*e**4 - 192*
a**6*b**2*d*e**3 + 288*a**5*b**3*d**2*e**2 - 192*a**4*b**4*d**3*e + 48*a**3
*b**5*d**4))
```

3.1951 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=159

$$\frac{e^4}{(d+ex)(bd-ae)^5}+\frac{5be^4\log(a+bx)}{(bd-ae)^6}-\frac{5be^4\log(d+ex)}{(bd-ae)^6}+\frac{4be^3}{(a+bx)(bd-ae)^5}-\frac{3be^2}{2(a+bx)^2(bd-ae)^4}+\frac{2be}{3(a+bx)^3(bd}$$

```
[Out] -1/4*b/(-a*e+b*d)^2/(b*x+a)^4+2/3*b*e/(-a*e+b*d)^3/(b*x+a)^3-3/2*b*e^2/(-a*
e+b*d)^4/(b*x+a)^2+4*b*e^3/(-a*e+b*d)^5/(b*x+a)+e^4/(-a*e+b*d)^5/(e*x+d)+5*
b*e^4*ln(b*x+a)/(-a*e+b*d)^6-5*b*e^4*ln(e*x+d)/(-a*e+b*d)^6
```

Rubi [A] time = 0.14, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 44}

$$\frac{e^4}{(d+ex)(bd-ae)^5}+\frac{4be^3}{(a+bx)(bd-ae)^5}-\frac{3be^2}{2(a+bx)^2(bd-ae)^4}+\frac{5be^4\log(a+bx)}{(bd-ae)^6}-\frac{5be^4\log(d+ex)}{(bd-ae)^6}+\frac{2be}{3(a+bx)^3(bd}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b/(4*(b*d - a*e)^2*(a + b*x)^4) + (2*b*e)/(3*(b*d - a*e)^3*(a + b*x)^3) -
(3*b*e^2)/(2*(b*d - a*e)^4*(a + b*x)^2) + (4*b*e^3)/((b*d - a*e)^5*(a + b*x
)) + e^4/((b*d - a*e)^5*(d + e*x)) + (5*b*e^4*Log[a + b*x])/(b*d - a*e)^6 -
 (5*b*e^4*Log[d + e*x])/(b*d - a*e)^6
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^2}\,dx\\ &= \int \left(\frac{b^2}{(bd-ae)^2(a+bx)^5}-\frac{2b^2e}{(bd-ae)^3(a+bx)^4}+\frac{3b^2e^2}{(bd-ae)^4(a+bx)^3}-(bd\right.\\ &= -\frac{b}{4(bd-ae)^2(a+bx)^4}+\frac{2be}{3(bd-ae)^3(a+bx)^3}-\frac{3be^2}{2(bd-ae)^4(a+bx)^2}+(b\end{aligned}$$

Mathematica [A] time = 0.07, size = 144, normalized size = 0.91

$$\frac{\frac{12e^4(bd-ae)}{d+ex}+\frac{48be^3(bd-ae)}{a+bx}-\frac{18be^2(bd-ae)^2}{(a+bx)^2}+\frac{8be(bd-ae)^3}{(a+bx)^3}-\frac{3b(bd-ae)^4}{(a+bx)^4}+60be^4\log(a+bx)-60be^4\log(d+ex)}{12(bd-ae)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*b*(b*d - a*e)^4)/(a + b*x)^4 + (8*b*e*(b*d - a*e)^3)/(a + b*x)^3 - (18
*b*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (48*b*e^3*(b*d - a*e))/(a + b*x) + (12*
e^4*(b*d - a*e))/(d + e*x) + 60*b*e^4*Log[a + b*x] - 60*b*e^4*Log[d + e*x])
/(12*(b*d - a*e)^6)
```

fricas [B] time = 1.26, size = 1083, normalized size = 6.81

$$-\frac{3\,b^5d^5 - 20\,ab^4d^4e + 60\,a^2b^3d^3e^2 - 120\,a^3b^2d^2e^3 + 65\,a^4bde^4 + 12\,a^5e^5 -}{12\left(a^4b^6d^7 - 6\,a^5b^5d^6e + 15\,a^6b^4d^5e^2 - 20\,a^7b^3d^4e^3 + 15\,a^8b^2d^3e^4 - 6\,a^9bd^2e^5 + a^{10}de^6 + \left(b^{10}d^6e - 6\,ab^9d^5e^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^5*d^5 - 20*a*b^4*d^4*e + 60*a^2*b^3*d^3*e^2 - 120*a^3*b^2*d^2*e^
3 + 65*a^4*b*d*e^4 + 12*a^5*e^5 - 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 - 30*(b^5*
d^2*e^3 + 6*a*b^4*d*e^4 - 7*a^2*b^3*e^5)*x^3 + 10*(b^5*d^3*e^2 - 12*a*b^4*d
^2*e^3 - 15*a^2*b^3*d*e^4 + 26*a^3*b^2*e^5)*x^2 - 5*(b^5*d^4*e - 8*a*b^4*d^
3*e^2 + 36*a^2*b^3*d^2*e^3 - 4*a^3*b^2*d*e^4 - 25*a^4*b*e^5)*x - 60*(b^5*e^
5*x^5 + a^4*b*d*e^4 + (b^5*d*e^4 + 4*a*b^4*e^5)*x^4 + 2*(2*a*b^4*d*e^4 + 3*
a^2*b^3*e^5)*x^3 + 2*(3*a^2*b^3*d*e^4 + 2*a^3*b^2*e^5)*x^2 + (4*a^3*b^2*d*e
^4 + a^4*b*e^5)*x)*log(b*x + a) + 60*(b^5*e^5*x^5 + a^4*b*d*e^4 + (b^5*d*e^
4 + 4*a*b^4*e^5)*x^4 + 2*(2*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + 2*(3*a^2*b^3
*d*e^4 + 2*a^3*b^2*e^5)*x^2 + (4*a^3*b^2*d*e^4 + a^4*b*e^5)*x)*log(e*x + d)
)/(a^4*b^6*d^7 - 6*a^5*b^5*d^6*e + 15*a^6*b^4*d^5*e^2 - 20*a^7*b^3*d^4*e^3
+ 15*a^8*b^2*d^3*e^4 - 6*a^9*b*d^2*e^5 + a^10*d*e^6 + (b^10*d^6*e - 6*a*b^9
*d^5*e^2 + 15*a^2*b^8*d^4*e^3 - 20*a^3*b^7*d^3*e^4 + 15*a^4*b^6*d^2*e^5 - 6
*a^5*b^5*d*e^6 + a^6*b^4*e^7)*x^5 + (b^10*d^7 - 2*a*b^9*d^6*e - 9*a^2*b^8*d
^5*e^2 + 40*a^3*b^7*d^4*e^3 - 65*a^4*b^6*d^3*e^4 + 54*a^5*b^5*d^2*e^5 - 23*
a^6*b^4*d*e^6 + 4*a^7*b^3*e^7)*x^4 + 2*(2*a*b^9*d^7 - 9*a^2*b^8*d^6*e + 12*
a^3*b^7*d^5*e^2 + 5*a^4*b^6*d^4*e^3 - 30*a^5*b^5*d^3*e^4 + 33*a^6*b^4*d^2*e
^5 - 16*a^7*b^3*d*e^6 + 3*a^8*b^2*e^7)*x^3 + 2*(3*a^2*b^8*d^7 - 16*a^3*b^7*
d^6*e + 33*a^4*b^6*d^5*e^2 - 30*a^5*b^5*d^4*e^3 + 5*a^6*b^4*d^3*e^4 + 12*a^
7*b^3*d^2*e^5 - 9*a^8*b^2*d*e^6 + 2*a^9*b*e^7)*x^2 + (4*a^3*b^7*d^7 - 23*a^
4*b^6*d^6*e + 54*a^5*b^5*d^5*e^2 - 65*a^6*b^4*d^4*e^3 + 40*a^7*b^3*d^3*e^4
- 9*a^8*b^2*d^2*e^5 - 2*a^9*b*d*e^6 + a^10*e^7)*x)
```

giac [B] time = 0.21, size = 358, normalized size = 2.25

$$\frac{5\,be^5\log\left(\left|b - \frac{bd}{xe+d} + \frac{ae}{xe+d}\right|\right)}{b^6d^6e - 6\,ab^5d^5e^2 + 15\,a^2b^4d^4e^3 - 20\,a^3b^3d^3e^4 + 15\,a^4b^2d^2e^5 - 6\,a^5bde^6 + a^6e^7} + \frac{}{\left(b^5d^5e^5 - 5\,ab^4d^4e^6 + 10\,a^2b^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 5*b*e^5*log(abs(b - b*d/(x*e + d) + a*e/(x*e + d)))/(b^6*d^6*e - 6*a*b^5*d^
5*e^2 + 15*a^2*b^4*d^4*e^3 - 20*a^3*b^3*d^3*e^4 + 15*a^4*b^2*d^2*e^5 - 6*a^
5*b*d*e^6 + a^6*e^7) + e^9/((b^5*d^5*e^5 - 5*a*b^4*d^4*e^6 + 10*a^2*b^3*d^3
*e^7 - 10*a^3*b^2*d^2*e^8 + 5*a^4*b*d*e^9 - a^5*e^10)*(x*e + d)) + 1/12*(77
*b^5*e^4 - 260*(b^5*d*e^5 - a*b^4*e^6)*e^(-1)/(x*e + d) + 300*(b^5*d^2*e^6
- 2*a*b^4*d*e^7 + a^2*b^3*e^8)*e^(-2)/(x*e + d)^2 - 120*(b^5*d^3*e^7 - 3*a*
b^4*d^2*e^8 + 3*a^2*b^3*d*e^9 - a^3*b^2*e^10)*e^(-3)/(x*e + d)^3)/((b*d - a
*e)^6*(b - b*d/(x*e + d) + a*e/(x*e + d))^4)
```

maple [A] time = 0.06, size = 155, normalized size = 0.97

$$\frac{5b\,e^4\ln\left(bx+a\right)}{\left(ae-bd\right)^6}-\frac{5b\,e^4\ln\left(ex+d\right)}{\left(ae-bd\right)^6}-\frac{4b\,e^3}{\left(ae-bd\right)^5\left(bx+a\right)}-\frac{e^4}{\left(ae-bd\right)^5\left(ex+d\right)}-\frac{3b\,e^2}{2\left(ae-bd\right)^4\left(bx+a\right)^2}-\frac{2}{3\left(ae-bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/4*b/(a*e-b*d)^2/(b*x+a)^4+5*b/(a*e-b*d)^6*e^4*ln(b*x+a)-4*b/(a*e-b*d)^5*
e^3/(b*x+a)-3/2*b/(a*e-b*d)^4*e^2/(b*x+a)^2-2/3*b/(a*e-b*d)^3*e/(b*x+a)^3-e
^4/(a*e-b*d)^5/(e*x+d)-5*b/(a*e-b*d)^6*e^4*ln(e*x+d)
```

maxima [B] time = 0.86, size = 858, normalized size = 5.40

$$\frac{5\,be^4\log\left(bx+a\right)}{b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4-6\,a^5bde^5+a^6e^6}-\frac{5\,be^4}{b^6d^6-6\,ab^5d^5e+15\,a^2b^4d^4e^2-20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 5*b*e^4*log(b*x + a)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3
*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) - 5*b*e^4*log(
e*x + d)/(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3
 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6) + 1/12*(60*b^4*e^4*x^4 - 3
*b^4*d^4 + 17*a*b^3*d^3*e - 43*a^2*b^2*d^2*e^2 + 77*a^3*b*d*e^3 + 12*a^4*e^
4 + 30*(b^4*d*e^3 + 7*a*b^3*e^4)*x^3 - 10*(b^4*d^2*e^2 - 11*a*b^3*d*e^3 - 2
6*a^2*b^2*e^4)*x^2 + 5*(b^4*d^3*e - 7*a*b^3*d^2*e^2 + 29*a^2*b^2*d*e^3 + 25
*a^3*b*e^4)*x)/(a^4*b^5*d^6 - 5*a^5*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7
*b^2*d^3*e^3 + 5*a^8*b*d^2*e^4 - a^9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 +
 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x
^5 + (b^9*d^6 - a*b^8*d^5*e - 10*a^2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*
a^4*b^5*d^2*e^4 + 19*a^5*b^4*d*e^5 - 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 -
7*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^2 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e
^4 + 13*a^6*b^3*d*e^5 - 3*a^7*b^2*e^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*
d^5*e + 20*a^4*b^5*d^4*e^2 - 10*a^5*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7
*b^2*d*e^5 - 2*a^8*b*e^6)*x^2 + (4*a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*
b^4*d^4*e^2 - 30*a^6*b^3*d^3*e^3 + 10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e
^6)*x)
```

mupad [B] time = 0.52, size = 763, normalized size = 4.80

$$\frac{10\,b\,e^4\,\mathrm{atanh}\left(\frac{a^6\,e^6-4\,a^5\,b\,d\,e^5+5\,a^4\,b^2\,d^2\,e^4-5\,a^2\,b^4\,d^4\,e^2+4\,a\,b^5\,d^5\,e-b^6\,d^6}{{\left(a\,e-b\,d\right)}^6}+\frac{2\,b\,e\,x\,\left(a^5\,e^5-5\,a^4\,b\,d\,e^4+10\,a^3\,b^2\,d^2\,e^3-10\,a^2\,b^3\,d^3\,e^2+5\,a\,b^4\,d^4\,e-b^5}{{\left(a\,e-b\,d\right)}^6}\right.}{{\left(a\,e-b\,d\right)}^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (10*b*e^4*atanh((a^6*e^6 - b^6*d^6 - 5*a^2*b^4*d^4*e^2 + 5*a^4*b^2*d^2*e^4
+ 4*a*b^5*d^5*e - 4*a^5*b*d*e^5)/(a*e - b*d)^6 + (2*b*e*x*(a^5*e^5 - b^5*d^
5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4
))/(a*e - b*d)^6))/(a*e - b*d)^6 - ((12*a^4*e^4 - 3*b^4*d^4 - 43*a^2*b^2*d^
2*e^2 + 17*a*b^3*d^3*e + 77*a^3*b*d*e^3)/(12*(a^5*e^5 - b^5*d^5 - 10*a^2*b^
3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*e*x*(
b^4*d^3 + 25*a^3*b*e^3 + 29*a^2*b^2*d*e^2 - 7*a*b^3*d^2*e))/(12*(a^5*e^5 -
b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b
*d*e^4)) + (5*b^4*e^4*x^4)/(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4) + (5*e^3*x^3*(b^4*d + 7*a*b^3
*e))/(2*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*
b^4*d^4*e - 5*a^4*b*d*e^4)) + (5*e^2*x^2*(26*a^2*b^2*e^2 - b^4*d^2 + 11*a*b
^3*d*e))/(6*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 +
5*a*b^4*d^4*e - 5*a^4*b*d*e^4)))/(x^4*(b^4*d + 4*a*b^3*e) + a^4*d + x*(a^4*
e + 4*a^3*b*d) + x^2*(6*a^2*b^2*d + 4*a^3*b*e) + x^3*(6*a^2*b^2*e + 4*a*b^3
*d) + b^4*e*x^5)
```

sympy [B] time = 3.55, size = 1178, normalized size = 7.41

$$-\frac{5be^4\log\left(x+\frac{-\frac{5a^7be^{11}}{(ae-bd)^6}+\frac{35a^6b^2de^{10}}{(ae-bd)^6}-\frac{105a^5b^3d^2e^9}{(ae-bd)^6}+\frac{175a^4b^4d^3e^8}{(ae-bd)^6}-\frac{175a^3b^5d^4e^7}{(ae-bd)^6}+\frac{105a^2b^6d^5e^6}{(ae-bd)^6}-\frac{35ab^7d^6e^5}{(ae-bd)^6}+5abe^5+\frac{5b^8d^7e^4}{(ae-bd)^6}+5b^2de^4}{10b^2e^5}\right)}{(ae-bd)^6}+5be^4\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] -5*b*e**4*log(x + (-5*a**7*b*e**11/(a*e - b*d)**6 + 35*a**6*b**2*d*e**10/(a
*e - b*d)**6 - 105*a**5*b**3*d**2*e**9/(a*e - b*d)**6 + 175*a**4*b**4*d**3*
e**8/(a*e - b*d)**6 - 175*a**3*b**5*d**4*e**7/(a*e - b*d)**6 + 105*a**2*b**
6*d**5*e**6/(a*e - b*d)**6 - 35*a*b**7*d**6*e**5/(a*e - b*d)**6 + 5*a*b*e**
5 + 5*b**8*d**7*e**4/(a*e - b*d)**6 + 5*b**2*d*e**4)/(10*b**2*e**5))/(a*e -
 b*d)**6 + 5*b*e**4*log(x + (5*a**7*b*e**11/(a*e - b*d)**6 - 35*a**6*b**2*d
*e**10/(a*e - b*d)**6 + 105*a**5*b**3*d**2*e**9/(a*e - b*d)**6 - 175*a**4*b
**4*d**3*e**8/(a*e - b*d)**6 + 175*a**3*b**5*d**4*e**7/(a*e - b*d)**6 - 105
*a**2*b**6*d**5*e**6/(a*e - b*d)**6 + 35*a*b**7*d**6*e**5/(a*e - b*d)**6 +
5*a*b*e**5 - 5*b**8*d**7*e**4/(a*e - b*d)**6 + 5*b**2*d*e**4)/(10*b**2*e**5
))/(a*e - b*d)**6 + (-12*a**4*e**4 - 77*a**3*b*d*e**3 + 43*a**2*b**2*d**2*e
**2 - 17*a*b**3*d**3*e + 3*b**4*d**4 - 60*b**4*e**4*x**4 + x**3*(-210*a*b**
3*e**4 - 30*b**4*d*e**3) + x**2*(-260*a**2*b**2*e**4 - 110*a*b**3*d*e**3 +
10*b**4*d**2*e**2) + x*(-125*a**3*b*e**4 - 145*a**2*b**2*d*e**3 + 35*a*b**3
*d**2*e**2 - 5*b**4*d**3*e))/(12*a**9*d*e**5 - 60*a**8*b*d**2*e**4 + 120*a*
*7*b**2*d**3*e**3 - 120*a**6*b**3*d**4*e**2 + 60*a**5*b**4*d**5*e - 12*a**4
*b**5*d**6 + x**5*(12*a**5*b**4*e**6 - 60*a**4*b**5*d*e**5 + 120*a**3*b**6*
d**2*e**4 - 120*a**2*b**7*d**3*e**3 + 60*a*b**8*d**4*e**2 - 12*b**9*d**5*e)
 + x**4*(48*a**6*b**3*e**6 - 228*a**5*b**4*d*e**5 + 420*a**4*b**5*d**2*e**4
 - 360*a**3*b**6*d**3*e**3 + 120*a**2*b**7*d**4*e**2 + 12*a*b**8*d**5*e - 1
2*b**9*d**6) + x**3*(72*a**7*b**2*e**6 - 312*a**6*b**3*d*e**5 + 480*a**5*b*
*4*d**2*e**4 - 240*a**4*b**5*d**3*e**3 - 120*a**3*b**6*d**4*e**2 + 168*a**2
*b**7*d**5*e - 48*a*b**8*d**6) + x**2*(48*a**8*b*e**6 - 168*a**7*b**2*d*e**
5 + 120*a**6*b**3*d**2*e**4 + 240*a**5*b**4*d**3*e**3 - 480*a**4*b**5*d**4*
e**2 + 312*a**3*b**6*d**5*e - 72*a**2*b**7*d**6) + x*(12*a**9*e**6 - 12*a**
8*b*d*e**5 - 120*a**7*b**2*d**2*e**4 + 360*a**6*b**3*d**3*e**3 - 420*a**5*b
**4*d**4*e**2 + 228*a**4*b**5*d**5*e - 48*a**3*b**6*d**6))
```

3.1952 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=192

$$\frac{15b^2e^4\log(a+bx)}{(bd-ae)^7}-\frac{15b^2e^4\log(d+ex)}{(bd-ae)^7}+\frac{10b^2e^3}{(a+bx)(bd-ae)^6}-\frac{3b^2e^2}{(a+bx)^2(bd-ae)^5}+\frac{b^2e}{(a+bx)^3(bd-ae)^4}-\frac{b}{4(a+bx)^4}$$

```
[Out] -1/4*b^2/(-a*e+b*d)^3/(b*x+a)^4+b^2*e/(-a*e+b*d)^4/(b*x+a)^3-3*b^2*e^2/(-a*
e+b*d)^5/(b*x+a)^2+10*b^2*e^3/(-a*e+b*d)^6/(b*x+a)+1/2*e^4/(-a*e+b*d)^5/(e*
x+d)^2+5*b*e^4/(-a*e+b*d)^6/(e*x+d)+15*b^2*e^4*ln(b*x+a)/(-a*e+b*d)^7-15*b^
2*e^4*ln(e*x+d)/(-a*e+b*d)^7
```

Rubi [A] time = 0.19, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{10b^2e^3}{(a+bx)(bd-ae)^6}-\frac{3b^2e^2}{(a+bx)^2(bd-ae)^5}+\frac{15b^2e^4\log(a+bx)}{(bd-ae)^7}-\frac{15b^2e^4\log(d+ex)}{(bd-ae)^7}+\frac{b^2e}{(a+bx)^3(bd-ae)^4}-\frac{b}{4(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b^2/(4*(b*d - a*e)^3*(a + b*x)^4) + (b^2*e)/((b*d - a*e)^4*(a + b*x)^3) -
(3*b^2*e^2)/((b*d - a*e)^5*(a + b*x)^2) + (10*b^2*e^3)/((b*d - a*e)^6*(a +
b*x)) + e^4/(2*(b*d - a*e)^5*(d + e*x)^2) + (5*b*e^4)/((b*d - a*e)^6*(d + e
*x)) + (15*b^2*e^4*Log[a + b*x])/(b*d - a*e)^7 - (15*b^2*e^4*Log[d + e*x])/
(b*d - a*e)^7
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
 + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^3}\,dx\\ &= \int \left(\frac{b^3}{(bd-ae)^3(a+bx)^5}-\frac{3b^3e}{(bd-ae)^4(a+bx)^4}+\frac{6b^3e^2}{(bd-ae)^5(a+bx)^3}-\right.\\ &= -\frac{b^2}{4(bd-ae)^3(a+bx)^4}+\frac{b^2e}{(bd-ae)^4(a+bx)^3}-\frac{3b^2e^2}{(bd-ae)^5(a+bx)^2}+\end{aligned}$$

Mathematica [A] time = 0.10, size = 179, normalized size = 0.93

$$\frac{\frac{40b^2e^3(bd-ae)}{a+bx}-\frac{12b^2e^2(bd-ae)^2}{(a+bx)^2}+\frac{4b^2e(bd-ae)^3}{(a+bx)^3}-\frac{b^2(bd-ae)^4}{(a+bx)^4}+60b^2e^4\log(a+bx)+\frac{20be^4(bd-ae)}{d+ex}+\frac{2e^4(bd-ae)^2}{(d+ex)^2}-60b^2e^4\log(d}{4(bd-ae)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-((b^2*(b*d - a*e)^4)/(a + b*x)^4) + (4*b^2*e*(b*d - a*e)^3)/(a + b*x)^3 -
 (12*b^2*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (40*b^2*e^3*(b*d - a*e))/(a + b*x
) + (2*e^4*(b*d - a*e)^2)/(d + e*x)^2 + (20*b*e^4*(b*d - a*e))/(d + e*x) +
60*b^2*e^4*Log[a + b*x] - 60*b^2*e^4*Log[d + e*x])/(4*(b*d - a*e)^7)
```

fricas [B] time = 1.20, size = 1565, normalized size = 8.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/4*(b^6*d^6 - 8*a*b^5*d^5*e + 30*a^2*b^4*d^4*e^2 - 80*a^3*b^3*d^3*e^3 + 3
5*a^4*b^2*d^2*e^4 + 24*a^5*b*d*e^5 - 2*a^6*e^6 - 60*(b^6*d*e^5 - a*b^5*e^6)
*x^5 - 30*(3*b^6*d^2*e^4 + 4*a*b^5*d*e^5 - 7*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3
*e^3 + 15*a*b^5*d^2*e^4 - 3*a^2*b^4*d*e^5 - 13*a^3*b^3*e^6)*x^3 + 5*(b^6*d^
4*e^2 - 16*a*b^5*d^3*e^3 - 66*a^2*b^4*d^2*e^4 + 56*a^3*b^3*d*e^5 + 25*a^4*b
^2*e^6)*x^2 - 2*(b^6*d^5*e - 10*a*b^5*d^4*e^2 + 60*a^2*b^4*d^3*e^3 + 50*a^3
*b^3*d^2*e^4 - 95*a^4*b^2*d*e^5 - 6*a^5*b*e^6)*x - 60*(b^6*e^6*x^6 + a^4*b^
2*d^2*e^4 + 2*(b^6*d*e^5 + 2*a*b^5*e^6)*x^5 + (b^6*d^2*e^4 + 8*a*b^5*d*e^5
+ 6*a^2*b^4*e^6)*x^4 + 4*(a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^
3 + (6*a^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 2*(2*a^3*b^3*
d^2*e^4 + a^4*b^2*d*e^5)*x)*log(b*x + a) + 60*(b^6*e^6*x^6 + a^4*b^2*d^2*e^
4 + 2*(b^6*d*e^5 + 2*a*b^5*e^6)*x^5 + (b^6*d^2*e^4 + 8*a*b^5*d*e^5 + 6*a^2*
b^4*e^6)*x^4 + 4*(a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 + (6*a
^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 2*(2*a^3*b^3*d^2*e^4
+ a^4*b^2*d*e^5)*x)*log(e*x + d))/(a^4*b^7*d^9 - 7*a^5*b^6*d^8*e + 21*a^6*b
^5*d^7*e^2 - 35*a^7*b^4*d^6*e^3 + 35*a^8*b^3*d^5*e^4 - 21*a^9*b^2*d^4*e^5 +
 7*a^10*b*d^3*e^6 - a^11*d^2*e^7 + (b^11*d^7*e^2 - 7*a*b^10*d^6*e^3 + 21*a^
2*b^9*d^5*e^4 - 35*a^3*b^8*d^4*e^5 + 35*a^4*b^7*d^3*e^6 - 21*a^5*b^6*d^2*e^
7 + 7*a^6*b^5*d*e^8 - a^7*b^4*e^9)*x^6 + 2*(b^11*d^8*e - 5*a*b^10*d^7*e^2 +
 7*a^2*b^9*d^6*e^3 + 7*a^3*b^8*d^5*e^4 - 35*a^4*b^7*d^4*e^5 + 49*a^5*b^6*d^
3*e^6 - 35*a^6*b^5*d^2*e^7 + 13*a^7*b^4*d*e^8 - 2*a^8*b^3*e^9)*x^5 + (b^11*
d^9 + a*b^10*d^8*e - 29*a^2*b^9*d^7*e^2 + 91*a^3*b^8*d^6*e^3 - 119*a^4*b^7*
d^5*e^4 + 49*a^5*b^6*d^4*e^5 + 49*a^6*b^5*d^3*e^6 - 71*a^7*b^4*d^2*e^7 + 34
*a^8*b^3*d*e^8 - 6*a^9*b^2*e^9)*x^4 + 4*(a*b^10*d^9 - 4*a^2*b^9*d^8*e + a^3
*b^8*d^7*e^2 + 21*a^4*b^7*d^6*e^3 - 49*a^5*b^6*d^5*e^4 + 49*a^6*b^5*d^4*e^5
 - 21*a^7*b^4*d^3*e^6 - a^8*b^3*d^2*e^7 + 4*a^9*b^2*d*e^8 - a^10*b*e^9)*x^3
 + (6*a^2*b^9*d^9 - 34*a^3*b^8*d^8*e + 71*a^4*b^7*d^7*e^2 - 49*a^5*b^6*d^6*
e^3 - 49*a^6*b^5*d^5*e^4 + 119*a^7*b^4*d^4*e^5 - 91*a^8*b^3*d^3*e^6 + 29*a^
9*b^2*d^2*e^7 - a^10*b*d*e^8 - a^11*e^9)*x^2 + 2*(2*a^3*b^8*d^9 - 13*a^4*b^
7*d^8*e + 35*a^5*b^6*d^7*e^2 - 49*a^6*b^5*d^6*e^3 + 35*a^7*b^4*d^5*e^4 - 7*
a^8*b^3*d^4*e^5 - 7*a^9*b^2*d^3*e^6 + 5*a^10*b*d^2*e^7 - a^11*d*e^8)*x)
```

giac [B] time = 0.17, size = 547, normalized size = 2.85

$$\frac{15 \, b^{3} e^{4} \log\left({\left| b x + a \right|}\right)}{b^{8} d^{7} - 7 \, a b^{7} d^{6} e + 21 \, a^{2} b^{6} d^{5} e^{2} - 35 \, a^{3} b^{5} d^{4} e^{3} + 35 \, a^{4} b^{4} d^{3} e^{4} - 21 \, a^{5} b^{3} d^{2} e^{5} + 7 \, a^{6} b^{2} d e^{6} - a^{7} b e^{7}} - \frac{}{b^{7} d^{7} e - 7 \, a b^{6} d^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 15*b^3*e^4*log(abs(b*x + a))/(b^8*d^7 - 7*a*b^7*d^6*e + 21*a^2*b^6*d^5*e^2
- 35*a^3*b^5*d^4*e^3 + 35*a^4*b^4*d^3*e^4 - 21*a^5*b^3*d^2*e^5 + 7*a^6*b^2*
d*e^6 - a^7*b*e^7) - 15*b^2*e^5*log(abs(x*e + d))/(b^7*d^7*e - 7*a*b^6*d^6*
e^2 + 21*a^2*b^5*d^5*e^3 - 35*a^3*b^4*d^4*e^4 + 35*a^4*b^3*d^3*e^5 - 21*a^5
*b^2*d^2*e^6 + 7*a^6*b*d*e^7 - a^7*e^8) - 1/4*(b^6*d^6 - 8*a*b^5*d^5*e + 30
*a^2*b^4*d^4*e^2 - 80*a^3*b^3*d^3*e^3 + 35*a^4*b^2*d^2*e^4 + 24*a^5*b*d*e^5
 - 2*a^6*e^6 - 60*(b^6*d*e^5 - a*b^5*e^6)*x^5 - 30*(3*b^6*d^2*e^4 + 4*a*b^5
*d*e^5 - 7*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3*e^3 + 15*a*b^5*d^2*e^4 - 3*a^2*b^
4*d*e^5 - 13*a^3*b^3*e^6)*x^3 + 5*(b^6*d^4*e^2 - 16*a*b^5*d^3*e^3 - 66*a^2*
b^4*d^2*e^4 + 56*a^3*b^3*d*e^5 + 25*a^4*b^2*e^6)*x^2 - 2*(b^6*d^5*e - 10*a*
b^5*d^4*e^2 + 60*a^2*b^4*d^3*e^3 + 50*a^3*b^3*d^2*e^4 - 95*a^4*b^2*d*e^5 -
6*a^5*b*e^6)*x)/((b*d - a*e)^7*(b*x + a)^4*(x*e + d)^2)
```

maple [A] time = 0.06, size = 189, normalized size = 0.98

$$-\frac{15b^2e^4\ln(bx+a)}{(ae-bd)^7}+\frac{15b^2e^4\ln(ex+d)}{(ae-bd)^7}+\frac{10b^2e^3}{(ae-bd)^6\,(bx+a)}+\frac{5b\,e^4}{(ae-bd)^6\,(ex+d)}+\frac{3b^2e^2}{(ae-bd)^5\,(bx+a)^2}-\frac{\ }{2\,(ae-bd}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 1/4/(a*e-b*d)^3*b^2/(b*x+a)^4-15*b^2/(a*e-b*d)^7*e^4*ln(b*x+a)+10*b^2/(a*e-
b*d)^6*e^3/(b*x+a)+3*b^2/(a*e-b*d)^5*e^2/(b*x+a)^2+b^2/(a*e-b*d)^4*e/(b*x+a
)^3-1/2*e^4/(a*e-b*d)^5/(e*x+d)^2+15*b^2/(a*e-b*d)^7*e^4*ln(e*x+d)+5*e^4/(a
*e-b*d)^6*b/(e*x+d)
```

maxima [B] time = 1.27, size = 1200, normalized size = 6.25

$$\frac{15\,b^2e^4\log(bx+a)}{b^7d^7-7\,ab^6d^6e+21\,a^2b^5d^5e^2-35\,a^3b^4d^4e^3+35\,a^4b^3d^3e^4-21\,a^5b^2d^2e^5+7\,a^6bde^6-a^7e^7}-\frac{\ }{b^7d^7-7\,ab^6d^6e+21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 15*b^2*e^4*log(b*x + a)/(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*
a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 -
 a^7*e^7) - 15*b^2*e^4*log(e*x + d)/(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d
^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a
^6*b*d*e^6 - a^7*e^7) + 1/4*(60*b^5*e^5*x^5 - b^5*d^5 + 7*a*b^4*d^4*e - 23*
a^2*b^3*d^3*e^2 + 57*a^3*b^2*d^2*e^3 + 22*a^4*b*d*e^4 - 2*a^5*e^5 + 30*(3*b
^5*d*e^4 + 7*a*b^4*e^5)*x^4 + 20*(b^5*d^2*e^3 + 16*a*b^4*d*e^4 + 13*a^2*b^3
*e^5)*x^3 - 5*(b^5*d^3*e^2 - 15*a*b^4*d^2*e^3 - 81*a^2*b^3*d*e^4 - 25*a^3*b
^2*e^5)*x^2 + 2*(b^5*d^4*e - 9*a*b^4*d^3*e^2 + 51*a^2*b^3*d^2*e^3 + 101*a^3
*b^2*d*e^4 + 6*a^4*b*e^5)*x)/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^
6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^
2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d
^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*
d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b
^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (
b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4
*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 +
6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 1
9*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2
*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e
 + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3
*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^
7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7
*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)
```

mupad [B] time = 2.69, size = 1098, normalized size = 5.72

$$\frac{\frac{5\,e^3\,x^3\,\left(13\,a^2\,b^3\,e^2+16\,a\,b^4\,d\,e+b^5\,d^2\right)}{a^6\,e^6-6\,a^5\,b\,d\,e^5+15\,a^4\,b^2\,d^2\,e^4-20\,a^3\,b^3\,d^3\,e^3+15\,a^2\,b^4\,d^4\,e^2-6\,a\,b^5\,d^5\,e+b^6\,d^6}-\frac{2\,a^5\,e^5-22\,a^4\,b\,d\,e^4-57\,a^3\,b^2\,d^2\,e^3+23\,a^2\,b^3\,d^3\,e^2-7\,a\,b^4\,d^4}{4\,\left(a^6\,e^6-6\,a^5\,b\,d\,e^5+15\,a^4\,b^2\,d^2\,e^4-20\,a^3\,b^3\,d^3\,e^3+15\,a^2\,b^4\,d^4\,e^2-6\right.}}{x\,\left(2\,e\,a^4\,d+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((5*e^3*x^3*(b^5*d^2 + 13*a^2*b^3*e^2 + 16*a*b^4*d*e))/(a^6*e^6 + b^6*d^6 +
 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5
*e - 6*a^5*b*d*e^5) - (2*a^5*e^5 + b^5*d^5 + 23*a^2*b^3*d^3*e^2 - 57*a^3*b^
2*d^2*e^3 - 7*a*b^4*d^4*e - 22*a^4*b*d*e^4)/(4*(a^6*e^6 + b^6*d^6 + 15*a^2*
b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a
^5*b*d*e^5)) + (5*e^2*x^2*(25*a^3*b^2*e^3 - b^5*d^3 + 81*a^2*b^3*d*e^2 + 15
*a*b^4*d^2*e))/(4*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*
e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5)) + (15*b^5*e^5*x^
5)/(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^
2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5) + (e*x*(b^5*d^4 + 6*a^4*b*e^4 +
101*a^3*b^2*d*e^3 + 51*a^2*b^3*d^2*e^2 - 9*a*b^4*d^3*e))/(2*(a^6*e^6 + b^6*
d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a*b^
5*d^5*e - 6*a^5*b*d*e^5)) + (15*b*e^3*x^4*(7*a*b^3*e^2 + 3*b^4*d*e))/(2*(a^
6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*
e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5)))/(x*(4*a^3*b*d^2 + 2*a^4*d*e) + x^2*(
a^4*e^2 + 6*a^2*b^2*d^2 + 8*a^3*b*d*e) + x^4*(b^4*d^2 + 6*a^2*b^2*e^2 + 8*a
*b^3*d*e) + x^5*(4*a*b^3*e^2 + 2*b^4*d*e) + x^3*(4*a*b^3*d^2 + 4*a^3*b*e^2
+ 12*a^2*b^2*d*e) + a^4*d^2 + b^4*e^2*x^6) - (30*b^2*e^4*atanh((a^7*e^7 + b
^7*d^7 + 9*a^2*b^5*d^5*e^2 - 5*a^3*b^4*d^4*e^3 - 5*a^4*b^3*d^3*e^4 + 9*a^5*
b^2*d^2*e^5 - 5*a*b^6*d^6*e - 5*a^6*b*d*e^6)/(a*e - b*d)^7 + (2*b*e*x*(a^6*
e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^
4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))/(a*e - b*d)^7))/(a*e - b*d)^7
```

sympy [B] time = 5.06, size = 1571, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] 15*b**2*e**4*log(x + (-15*a**8*b**2*e**12/(a*e - b*d)**7 + 120*a**7*b**3*d*
e**11/(a*e - b*d)**7 - 420*a**6*b**4*d**2*e**10/(a*e - b*d)**7 + 840*a**5*b
**5*d**3*e**9/(a*e - b*d)**7 - 1050*a**4*b**6*d**4*e**8/(a*e - b*d)**7 + 84
0*a**3*b**7*d**5*e**7/(a*e - b*d)**7 - 420*a**2*b**8*d**6*e**6/(a*e - b*d)*
*7 + 120*a*b**9*d**7*e**5/(a*e - b*d)**7 + 15*a*b**2*e**5 - 15*b**10*d**8*e
**4/(a*e - b*d)**7 + 15*b**3*d*e**4)/(30*b**3*e**5))/(a*e - b*d)**7 - 15*b*
*2*e**4*log(x + (15*a**8*b**2*e**12/(a*e - b*d)**7 - 120*a**7*b**3*d*e**11/
(a*e - b*d)**7 + 420*a**6*b**4*d**2*e**10/(a*e - b*d)**7 - 840*a**5*b**5*d*
*3*e**9/(a*e - b*d)**7 + 1050*a**4*b**6*d**4*e**8/(a*e - b*d)**7 - 840*a**3
*b**7*d**5*e**7/(a*e - b*d)**7 + 420*a**2*b**8*d**6*e**6/(a*e - b*d)**7 - 1
20*a*b**9*d**7*e**5/(a*e - b*d)**7 + 15*a*b**2*e**5 + 15*b**10*d**8*e**4/(a
*e - b*d)**7 + 15*b**3*d*e**4)/(30*b**3*e**5))/(a*e - b*d)**7 + (-2*a**5*e*
*5 + 22*a**4*b*d*e**4 + 57*a**3*b**2*d**2*e**3 - 23*a**2*b**3*d**3*e**2 + 7
*a*b**4*d**4*e - b**5*d**5 + 60*b**5*e**5*x**5 + x**4*(210*a*b**4*e**5 + 90
*b**5*d*e**4) + x**3*(260*a**2*b**3*e**5 + 320*a*b**4*d*e**4 + 20*b**5*d**2
*e**3) + x**2*(125*a**3*b**2*e**5 + 405*a**2*b**3*d*e**4 + 75*a*b**4*d**2*e
**3 - 5*b**5*d**3*e**2) + x*(12*a**4*b*e**5 + 202*a**3*b**2*d*e**4 + 102*a*
*2*b**3*d**2*e**3 - 18*a*b**4*d**3*e**2 + 2*b**5*d**4*e))/(4*a**10*d**2*e**
6 - 24*a**9*b*d**3*e**5 + 60*a**8*b**2*d**4*e**4 - 80*a**7*b**3*d**5*e**3 +
 60*a**6*b**4*d**6*e**2 - 24*a**5*b**5*d**7*e + 4*a**4*b**6*d**8 + x**6*(4*
a**6*b**4*e**8 - 24*a**5*b**5*d*e**7 + 60*a**4*b**6*d**2*e**6 - 80*a**3*b**
7*d**3*e**5 + 60*a**2*b**8*d**4*e**4 - 24*a*b**9*d**5*e**3 + 4*b**10*d**6*e
**2) + x**5*(16*a**7*b**3*e**8 - 88*a**6*b**4*d*e**7 + 192*a**5*b**5*d**2*e
**6 - 200*a**4*b**6*d**3*e**5 + 80*a**3*b**7*d**4*e**4 + 24*a**2*b**8*d**5*
e**3 - 32*a*b**9*d**6*e**2 + 8*b**10*d**7*e) + x**4*(24*a**8*b**2*e**8 - 11
2*a**7*b**3*d*e**7 + 172*a**6*b**4*d**2*e**6 - 24*a**5*b**5*d**3*e**5 - 220
*a**4*b**6*d**4*e**4 + 256*a**3*b**7*d**5*e**3 - 108*a**2*b**8*d**6*e**2 +
8*a*b**9*d**7*e + 4*b**10*d**8) + x**3*(16*a**9*b*e**8 - 48*a**8*b**2*d*e**
7 - 32*a**7*b**3*d**2*e**6 + 304*a**6*b**4*d**3*e**5 - 480*a**5*b**5*d**4*e
**4 + 304*a**4*b**6*d**5*e**3 - 32*a**3*b**7*d**6*e**2 - 48*a**2*b**8*d**7*
e + 16*a*b**9*d**8) + x**2*(4*a**10*e**8 + 8*a**9*b*d*e**7 - 108*a**8*b**2*
d**2*e**6 + 256*a**7*b**3*d**3*e**5 - 220*a**6*b**4*d**4*e**4 - 24*a**5*b**
5*d**5*e**3 + 172*a**4*b**6*d**6*e**2 - 112*a**3*b**7*d**7*e + 24*a**2*b**8
*d**8) + x*(8*a**10*d*e**7 - 32*a**9*b*d**2*e**6 + 24*a**8*b**2*d**3*e**5 +
 80*a**7*b**3*d**4*e**4 - 200*a**6*b**4*d**5*e**3 + 192*a**5*b**5*d**6*e**2
 - 88*a**4*b**6*d**7*e + 16*a**3*b**7*d**8))
```

3.1953 $\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=222

$$\frac{35b^3e^4\log(a+bx)}{(bd-ae)^8}-\frac{35b^3e^4\log(d+ex)}{(bd-ae)^8}+\frac{20b^3e^3}{(a+bx)(bd-ae)^7}-\frac{5b^3e^2}{(a+bx)^2(bd-ae)^6}+\frac{4b^3e}{3(a+bx)^3(bd-ae)^5}-$$

```
[Out] -1/4*b^3/(-a*e+b*d)^4/(b*x+a)^4+4/3*b^3*e/(-a*e+b*d)^5/(b*x+a)^3-5*b^3*e^2/
(-a*e+b*d)^6/(b*x+a)^2+20*b^3*e^3/(-a*e+b*d)^7/(b*x+a)+1/3*e^4/(-a*e+b*d)^5
/(e*x+d)^3+5/2*b*e^4/(-a*e+b*d)^6/(e*x+d)^2+15*b^2*e^4/(-a*e+b*d)^7/(e*x+d)
+35*b^3*e^4*ln(b*x+a)/(-a*e+b*d)^8-35*b^3*e^4*ln(e*x+d)/(-a*e+b*d)^8
```

Rubi [A] time = 0.26, antiderivative size = 222, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 44\}$

$$\frac{15b^2e^4}{(d+ex)(bd-ae)^7}+\frac{20b^3e^3}{(a+bx)(bd-ae)^7}-\frac{5b^3e^2}{(a+bx)^2(bd-ae)^6}+\frac{35b^3e^4\log(a+bx)}{(bd-ae)^8}-\frac{35b^3e^4\log(d+ex)}{(bd-ae)^8}+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -b^3/(4*(b*d - a*e)^4*(a + b*x)^4) + (4*b^3*e)/(3*(b*d - a*e)^5*(a + b*x)^3
) - (5*b^3*e^2)/((b*d - a*e)^6*(a + b*x)^2) + (20*b^3*e^3)/((b*d - a*e)^7*(
a + b*x)) + e^4/(3*(b*d - a*e)^5*(d + e*x)^3) + (5*b*e^4)/(2*(b*d - a*e)^6*
(d + e*x)^2) + (15*b^2*e^4)/((b*d - a*e)^7*(d + e*x)) + (35*b^3*e^4*Log[a +
 b*x])/(b*d - a*e)^8 - (35*b^3*e^4*Log[d + e*x])/(b*d - a*e)^8
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^4\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{1}{(a+bx)^5(d+ex)^4}\,dx\\ &= \int \left(\frac{b^4}{(bd-ae)^4(a+bx)^5}-\frac{4b^4e}{(bd-ae)^5(a+bx)^4}+\frac{10b^4e^2}{(bd-ae)^6(a+bx)^3}-\right.\\ &= -\frac{b^3}{4(bd-ae)^4(a+bx)^4}+\frac{4b^3e}{3(bd-ae)^5(a+bx)^3}-\frac{5b^3e^2}{(bd-ae)^6(a+bx)^2}+\end{aligned}$$

Mathematica [A] time = 0.13, size = 204, normalized size = 0.92

$$\frac{\frac{240b^3e^3(bd-ae)}{a+bx}-\frac{60b^3e^2(bd-ae)^2}{(a+bx)^2}+\frac{16b^3e(bd-ae)^3}{(a+bx)^3}-\frac{3b^3(bd-ae)^4}{(a+bx)^4}+420b^3e^4\log(a+bx)+\frac{180b^2e^4(bd-ae)}{d+ex}+\frac{30be^4(bd-ae)^2}{(d+ex)^2}+}{12(bd-ae)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] ((-3*b^3*(b*d - a*e)^4)/(a + b*x)^4 + (16*b^3*e*(b*d - a*e)^3)/(a + b*x)^3
- (60*b^3*e^2*(b*d - a*e)^2)/(a + b*x)^2 + (240*b^3*e^3*(b*d - a*e))/(a + b
*x) + (4*e^4*(b*d - a*e)^3)/(d + e*x)^3 + (30*b*e^4*(b*d - a*e)^2)/(d + e*x
)^2 + (180*b^2*e^4*(b*d - a*e))/(d + e*x) + 420*b^3*e^4*Log[a + b*x] - 420*
b^3*e^4*Log[d + e*x])/(12*(b*d - a*e)^8)
```

fricas [B] time = 1.44, size = 2090, normalized size = 9.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] -1/12*(3*b^7*d^7 - 28*a*b^6*d^6*e + 126*a^2*b^5*d^5*e^2 - 420*a^3*b^4*d^4*e
^3 + 105*a^4*b^3*d^3*e^4 + 252*a^5*b^2*d^2*e^5 - 42*a^6*b*d*e^6 + 4*a^7*e^7
 - 420*(b^7*d*e^6 - a*b^6*e^7)*x^6 - 210*(5*b^7*d^2*e^5 + 2*a*b^6*d*e^6 - 7
*a^2*b^5*e^7)*x^5 - 70*(11*b^7*d^3*e^4 + 42*a*b^6*d^2*e^5 - 27*a^2*b^5*d*e^
6 - 26*a^3*b^4*e^7)*x^4 - 35*(3*b^7*d^4*e^3 + 76*a*b^6*d^3*e^4 + 54*a^2*b^5
*d^2*e^5 - 108*a^3*b^4*d*e^6 - 25*a^4*b^3*e^7)*x^3 + 21*(b^7*d^5*e^2 - 20*a
*b^6*d^4*e^3 - 150*a^2*b^5*d^3*e^4 + 60*a^3*b^4*d^2*e^5 + 105*a^4*b^3*d*e^6
 + 4*a^5*b^2*e^7)*x^2 - 7*(b^7*d^6*e - 12*a*b^6*d^5*e^2 + 90*a^2*b^5*d^4*e^
3 + 180*a^3*b^4*d^3*e^4 - 225*a^4*b^3*d^2*e^5 - 36*a^5*b^2*d*e^6 + 2*a^6*b*
e^7)*x - 420*(b^7*e^7*x^7 + a^4*b^3*d^3*e^4 + (3*b^7*d*e^6 + 4*a*b^6*e^7)*x
^6 + 3*(b^7*d^2*e^5 + 4*a*b^6*d*e^6 + 2*a^2*b^5*e^7)*x^5 + (b^7*d^3*e^4 + 1
2*a*b^6*d^2*e^5 + 18*a^2*b^5*d*e^6 + 4*a^3*b^4*e^7)*x^4 + (4*a*b^6*d^3*e^4
+ 18*a^2*b^5*d^2*e^5 + 12*a^3*b^4*d*e^6 + a^4*b^3*e^7)*x^3 + 3*(2*a^2*b^5*d
^3*e^4 + 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + (4*a^3*b^4*d^3*e^4 + 3*a^
4*b^3*d^2*e^5)*x)*log(b*x + a) + 420*(b^7*e^7*x^7 + a^4*b^3*d^3*e^4 + (3*b^
7*d*e^6 + 4*a*b^6*e^7)*x^6 + 3*(b^7*d^2*e^5 + 4*a*b^6*d*e^6 + 2*a^2*b^5*e^7
)*x^5 + (b^7*d^3*e^4 + 12*a*b^6*d^2*e^5 + 18*a^2*b^5*d*e^6 + 4*a^3*b^4*e^7)
*x^4 + (4*a*b^6*d^3*e^4 + 18*a^2*b^5*d^2*e^5 + 12*a^3*b^4*d*e^6 + a^4*b^3*e
^7)*x^3 + 3*(2*a^2*b^5*d^3*e^4 + 4*a^3*b^4*d^2*e^5 + a^4*b^3*d*e^6)*x^2 + (
4*a^3*b^4*d^3*e^4 + 3*a^4*b^3*d^2*e^5)*x)*log(e*x + d))/(a^4*b^8*d^11 - 8*a
^5*b^7*d^10*e + 28*a^6*b^6*d^9*e^2 - 56*a^7*b^5*d^8*e^3 + 70*a^8*b^4*d^7*e^
4 - 56*a^9*b^3*d^6*e^5 + 28*a^10*b^2*d^5*e^6 - 8*a^11*b*d^4*e^7 + a^12*d^3*
e^8 + (b^12*d^8*e^3 - 8*a*b^11*d^7*e^4 + 28*a^2*b^10*d^6*e^5 - 56*a^3*b^9*d
^5*e^6 + 70*a^4*b^8*d^4*e^7 - 56*a^5*b^7*d^3*e^8 + 28*a^6*b^6*d^2*e^9 - 8*a
^7*b^5*d*e^10 + a^8*b^4*e^11)*x^7 + (3*b^12*d^9*e^2 - 20*a*b^11*d^8*e^3 + 5
2*a^2*b^10*d^7*e^4 - 56*a^3*b^9*d^6*e^5 - 14*a^4*b^8*d^5*e^6 + 112*a^5*b^7*
d^4*e^7 - 140*a^6*b^6*d^3*e^8 + 88*a^7*b^5*d^2*e^9 - 29*a^8*b^4*d*e^10 + 4*
a^9*b^3*e^11)*x^6 + 3*(b^12*d^10*e - 4*a*b^11*d^9*e^2 - 2*a^2*b^10*d^8*e^3
+ 40*a^3*b^9*d^7*e^4 - 98*a^4*b^8*d^6*e^5 + 112*a^5*b^7*d^5*e^6 - 56*a^6*b^
6*d^4*e^7 - 8*a^7*b^5*d^3*e^8 + 25*a^8*b^4*d^2*e^9 - 12*a^9*b^3*d*e^10 + 2*
a^10*b^2*e^11)*x^5 + (b^12*d^11 + 4*a*b^11*d^10*e - 50*a^2*b^10*d^9*e^2 + 1
40*a^3*b^9*d^8*e^3 - 130*a^4*b^8*d^7*e^4 - 112*a^5*b^7*d^6*e^5 + 392*a^6*b^
6*d^5*e^6 - 400*a^7*b^5*d^4*e^7 + 185*a^8*b^4*d^3*e^8 - 20*a^9*b^3*d^2*e^9
- 14*a^10*b^2*d*e^10 + 4*a^11*b*e^11)*x^4 + (4*a*b^11*d^11 - 14*a^2*b^10*d^
10*e - 20*a^3*b^9*d^9*e^2 + 185*a^4*b^8*d^8*e^3 - 400*a^5*b^7*d^7*e^4 + 392
*a^6*b^6*d^6*e^5 - 112*a^7*b^5*d^5*e^6 - 130*a^8*b^4*d^4*e^7 + 140*a^9*b^3*
d^3*e^8 - 50*a^10*b^2*d^2*e^9 + 4*a^11*b*d*e^10 + a^12*e^11)*x^3 + 3*(2*a^2
*b^10*d^11 - 12*a^3*b^9*d^10*e + 25*a^4*b^8*d^9*e^2 - 8*a^5*b^7*d^8*e^3 - 5
6*a^6*b^6*d^7*e^4 + 112*a^7*b^5*d^6*e^5 - 98*a^8*b^4*d^5*e^6 + 40*a^9*b^3*d
^4*e^7 - 2*a^10*b^2*d^3*e^8 - 4*a^11*b*d^2*e^9 + a^12*d*e^10)*x^2 + (4*a^3*
b^9*d^11 - 29*a^4*b^8*d^10*e + 88*a^5*b^7*d^9*e^2 - 140*a^6*b^6*d^8*e^3 + 1
12*a^7*b^5*d^7*e^4 - 14*a^8*b^4*d^6*e^5 - 56*a^9*b^3*d^5*e^6 + 52*a^10*b^2*
d^4*e^7 - 20*a^11*b*d^3*e^8 + 3*a^12*d^2*e^9)*x)
```

giac [**B**] time = 0.18, size = 673, normalized size = 3.03

$$\frac{35\, b^4 e^4 \log\left(|bx + a|\right)}{b^9 d^8 - 8\, a b^8 d^7 e + 28\, a^2 b^7 d^6 e^2 - 56\, a^3 b^6 d^5 e^3 + 70\, a^4 b^5 d^4 e^4 - 56\, a^5 b^4 d^3 e^5 + 28\, a^6 b^3 d^2 e^6 - 8\, a^7 b^2 d e^7 + a^8 b e^8} - \frac{}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] 35*b^4*e^4*log(abs(b*x + a))/(b^9*d^8 - 8*a*b^8*d^7*e + 28*a^2*b^7*d^6*e^2
- 56*a^3*b^6*d^5*e^3 + 70*a^4*b^5*d^4*e^4 - 56*a^5*b^4*d^3*e^5 + 28*a^6*b^3
*d^2*e^6 - 8*a^7*b^2*d*e^7 + a^8*b*e^8) - 35*b^3*e^5*log(abs(x*e + d))/(b^8
*d^8*e - 8*a*b^7*d^7*e^2 + 28*a^2*b^6*d^6*e^3 - 56*a^3*b^5*d^5*e^4 + 70*a^4
*b^4*d^4*e^5 - 56*a^5*b^3*d^3*e^6 + 28*a^6*b^2*d^2*e^7 - 8*a^7*b*d*e^8 + a^
8*e^9) - 1/12*(3*b^7*d^7 - 28*a*b^6*d^6*e + 126*a^2*b^5*d^5*e^2 - 420*a^3*b
^4*d^4*e^3 + 105*a^4*b^3*d^3*e^4 + 252*a^5*b^2*d^2*e^5 - 42*a^6*b*d*e^6 + 4
*a^7*e^7 - 420*(b^7*d*e^6 - a*b^6*e^7)*x^6 - 210*(5*b^7*d^2*e^5 + 2*a*b^6*d
*e^6 - 7*a^2*b^5*e^7)*x^5 - 70*(11*b^7*d^3*e^4 + 42*a*b^6*d^2*e^5 - 27*a^2*
b^5*d*e^6 - 26*a^3*b^4*e^7)*x^4 - 35*(3*b^7*d^4*e^3 + 76*a*b^6*d^3*e^4 + 54
*a^2*b^5*d^2*e^5 - 108*a^3*b^4*d*e^6 - 25*a^4*b^3*e^7)*x^3 + 21*(b^7*d^5*e^
2 - 20*a*b^6*d^4*e^3 - 150*a^2*b^5*d^3*e^4 + 60*a^3*b^4*d^2*e^5 + 105*a^4*b
^3*d*e^6 + 4*a^5*b^2*e^7)*x^2 - 7*(b^7*d^6*e - 12*a*b^6*d^5*e^2 + 90*a^2*b^
5*d^4*e^3 + 180*a^3*b^4*d^3*e^4 - 225*a^4*b^3*d^2*e^5 - 36*a^5*b^2*d*e^6 +
2*a^6*b*e^7)*x)/((b*d - a*e)^8*(b*x + a)^4*(x*e + d)^3)
```

maple [**A**] time = 0.06, size = 215, normalized size = 0.97

$$\frac{35 b^3 e^4 \ln\left(bx + a\right)}{\left(ae - bd\right)^8} - \frac{35 b^3 e^4 \ln\left(ex + d\right)}{\left(ae - bd\right)^8} - \frac{20 b^3 e^3}{\left(ae - bd\right)^7 \left(bx + a\right)} - \frac{15 b^2 e^4}{\left(ae - bd\right)^7 \left(ex + d\right)} - \frac{5 b^3 e^2}{\left(ae - bd\right)^6 \left(bx + a\right)^2} + \frac{}{2\left(ae - b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -1/4/(a*e-b*d)^4*b^3/(b*x+a)^4+35*b^3/(a*e-b*d)^8*e^4*ln(b*x+a)-20*b^3/(a*e
-b*d)^7*e^3/(b*x+a)-5*b^3/(a*e-b*d)^6*e^2/(b*x+a)^2-4/3*b^3/(a*e-b*d)^5*e/(
b*x+a)^3-1/3*e^4/(a*e-b*d)^5/(e*x+d)^3-35*b^3/(a*e-b*d)^8*e^4*ln(e*x+d)-15*
e^4/(a*e-b*d)^7*b^2/(e*x+d)+5/2*e^4/(a*e-b*d)^6*b/(e*x+d)^2
```

maxima [**B**] time = 1.58, size = 1587, normalized size = 7.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 35*b^3*e^4*log(b*x + a)/(b^8*d^8 - 8*a*b^7*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*
a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*
e^6 - 8*a^7*b*d*e^7 + a^8*e^8) - 35*b^3*e^4*log(e*x + d)/(b^8*d^8 - 8*a*b^7
*d^7*e + 28*a^2*b^6*d^6*e^2 - 56*a^3*b^5*d^5*e^3 + 70*a^4*b^4*d^4*e^4 - 56*
a^5*b^3*d^3*e^5 + 28*a^6*b^2*d^2*e^6 - 8*a^7*b*d*e^7 + a^8*e^8) + 1/12*(420
*b^6*e^6*x^6 - 3*b^6*d^6 + 25*a*b^5*d^5*e - 101*a^2*b^4*d^4*e^2 + 319*a^3*b
^3*d^3*e^3 + 214*a^4*b^2*d^2*e^4 - 38*a^5*b*d*e^5 + 4*a^6*e^6 + 210*(5*b^6*
d*e^5 + 7*a*b^5*e^6)*x^5 + 70*(11*b^6*d^2*e^4 + 53*a*b^5*d*e^5 + 26*a^2*b^4
*e^6)*x^4 + 35*(3*b^6*d^3*e^3 + 79*a*b^5*d^2*e^4 + 133*a^2*b^4*d*e^5 + 25*a
^3*b^3*e^6)*x^3 - 21*(b^6*d^4*e^2 - 19*a*b^5*d^3*e^3 - 169*a^2*b^4*d^2*e^4
- 109*a^3*b^3*d*e^5 - 4*a^4*b^2*e^6)*x^2 + 7*(b^6*d^5*e - 11*a*b^5*d^4*e^2
+ 79*a^2*b^4*d^3*e^3 + 259*a^3*b^3*d^2*e^4 + 34*a^4*b^2*d*e^5 - 2*a^5*b*e^6
)*x)/(a^4*b^7*d^10 - 7*a^5*b^6*d^9*e + 21*a^6*b^5*d^8*e^2 - 35*a^7*b^4*d^7*
e^3 + 35*a^8*b^3*d^6*e^4 - 21*a^9*b^2*d^5*e^5 + 7*a^10*b*d^4*e^6 - a^11*d^3
*e^7 + (b^11*d^7*e^3 - 7*a*b^10*d^6*e^4 + 21*a^2*b^9*d^5*e^5 - 35*a^3*b^8*d
^4*e^6 + 35*a^4*b^7*d^3*e^7 - 21*a^5*b^6*d^2*e^8 + 7*a^6*b^5*d*e^9 - a^7*b^
4*e^10)*x^7 + (3*b^11*d^8*e^2 - 17*a*b^10*d^7*e^3 + 35*a^2*b^9*d^6*e^4 - 21
*a^3*b^8*d^5*e^5 - 35*a^4*b^7*d^4*e^6 + 77*a^5*b^6*d^3*e^7 - 63*a^6*b^5*d^2
*e^8 + 25*a^7*b^4*d*e^9 - 4*a^8*b^3*e^10)*x^6 + 3*(b^11*d^9*e - 3*a*b^10*d^
8*e^2 - 5*a^2*b^9*d^7*e^3 + 35*a^3*b^8*d^6*e^4 - 63*a^4*b^7*d^5*e^5 + 49*a^
5*b^6*d^4*e^6 - 7*a^6*b^5*d^3*e^7 - 15*a^7*b^4*d^2*e^8 + 10*a^8*b^3*d*e^9 -
 2*a^9*b^2*e^10)*x^5 + (b^11*d^10 + 5*a*b^10*d^9*e - 45*a^2*b^9*d^8*e^2 + 9
5*a^3*b^8*d^7*e^3 - 35*a^4*b^7*d^6*e^4 - 147*a^5*b^6*d^5*e^5 + 245*a^6*b^5*
d^4*e^6 - 155*a^7*b^4*d^3*e^7 + 30*a^8*b^3*d^2*e^8 + 10*a^9*b^2*d*e^9 - 4*a
^10*b*e^10)*x^4 + (4*a*b^10*d^10 - 10*a^2*b^9*d^9*e - 30*a^3*b^8*d^8*e^2 +
155*a^4*b^7*d^7*e^3 - 245*a^5*b^6*d^6*e^4 + 147*a^6*b^5*d^5*e^5 + 35*a^7*b^
4*d^4*e^6 - 95*a^8*b^3*d^3*e^7 + 45*a^9*b^2*d^2*e^8 - 5*a^10*b*d*e^9 - a^11
*e^10)*x^3 + 3*(2*a^2*b^9*d^10 - 10*a^3*b^8*d^9*e + 15*a^4*b^7*d^8*e^2 + 7*
a^5*b^6*d^7*e^3 - 49*a^6*b^5*d^6*e^4 + 63*a^7*b^4*d^5*e^5 - 35*a^8*b^3*d^4*
e^6 + 5*a^9*b^2*d^3*e^7 + 3*a^10*b*d^2*e^8 - a^11*d*e^9)*x^2 + (4*a^3*b^8*d
^10 - 25*a^4*b^7*d^9*e + 63*a^5*b^6*d^8*e^2 - 77*a^6*b^5*d^7*e^3 + 35*a^7*b
^4*d^6*e^4 + 21*a^8*b^3*d^5*e^5 - 35*a^9*b^2*d^4*e^6 + 17*a^10*b*d^3*e^7 -
3*a^11*d^2*e^8)*x)
```

mupad [B] time = 3.02, size = 1469, normalized size = 6.62

$$\frac{70\,b^3\,e^4\,\mathrm{atanh}\Bigg(\frac{a^8\,e^8-6\,a^7\,b\,d\,e^7+14\,a^6\,b^2\,d^2\,e^6-14\,a^5\,b^3\,d^3\,e^5+14\,a^3\,b^5\,d^5\,e^3-14\,a^2\,b^6\,d^6\,e^2+6\,a\,b^7\,d^7\,e-b^8\,d^8}{{\left(a\,e-b\,d\right)}^8}+\frac{2\,b\,e\,x\,\big(a^7\,e^7-7\,a^6\,b\,d\,e^6+21\,a^5\,b^2\,d}{}}{{\left(a\,e-b\,d\right)}^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] (70*b^3*e^4*atanh((a^8*e^8 - b^8*d^8 - 14*a^2*b^6*d^6*e^2 + 14*a^3*b^5*d^5*
e^3 - 14*a^5*b^3*d^3*e^5 + 14*a^6*b^2*d^2*e^6 + 6*a*b^7*d^7*e - 6*a^7*b*d*e
^7)/(a*e - b*d)^8 + (2*b*e*x*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a
^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e -
7*a^6*b*d*e^6))/(a*e - b*d)^8))/(a*e - b*d)^8 - ((4*a^6*e^6 - 3*b^6*d^6 - 1
01*a^2*b^4*d^4*e^2 + 319*a^3*b^3*d^3*e^3 + 214*a^4*b^2*d^2*e^4 + 25*a*b^5*d
^5*e - 38*a^5*b*d*e^5)/(12*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3
*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*
a^6*b*d*e^6)) + (35*b^6*e^6*x^6)/(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 +
35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*
e - 7*a^6*b*d*e^6) + (7*e^2*x^2*(4*a^4*b^2*e^4 - b^6*d^4 + 109*a^3*b^3*d*e^
3 + 169*a^2*b^4*d^2*e^2 + 19*a*b^5*d^3*e))/(4*(a^7*e^7 - b^7*d^7 - 21*a^2*b
^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 +
 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (7*e*x*(b^6*d^5 - 2*a^5*b*e^5 + 34*a^4*b
^2*d*e^4 + 79*a^2*b^4*d^3*e^2 + 259*a^3*b^3*d^2*e^3 - 11*a*b^5*d^4*e))/(12*
(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d
^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (35*e^2*x^3
*(3*b^6*d^3*e + 25*a^3*b^3*e^4 + 79*a*b^5*d^2*e^2 + 133*a^2*b^4*d*e^3))/(12
*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*
d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*d*e^6)) + (35*b^2*e^
3*x^5*(7*a*b^3*e^3 + 5*b^4*d*e^2))/(2*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e
^2 + 35*a^3*b^4*d^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6
*d^6*e - 7*a^6*b*d*e^6)) + (35*b*e^2*x^4*(26*a^2*b^3*e^4 + 11*b^5*d^2*e^2 +
 53*a*b^4*d*e^3))/(6*(a^7*e^7 - b^7*d^7 - 21*a^2*b^5*d^5*e^2 + 35*a^3*b^4*d
^4*e^3 - 35*a^4*b^3*d^3*e^4 + 21*a^5*b^2*d^2*e^5 + 7*a*b^6*d^6*e - 7*a^6*b*
d*e^6)))/(x^6*(4*a*b^3*e^3 + 3*b^4*d*e^2) + x^2*(3*a^4*d*e^2 + 6*a^2*b^2*d^
3 + 12*a^3*b*d^2*e) + x^5*(3*b^4*d^2*e + 6*a^2*b^2*e^3 + 12*a*b^3*d*e^2) +
x^3*(a^4*e^3 + 4*a*b^3*d^3 + 18*a^2*b^2*d^2*e + 12*a^3*b*d*e^2) + x^4*(b^4*
d^3 + 4*a^3*b*e^3 + 18*a^2*b^2*d*e^2 + 12*a*b^3*d^2*e) + x*(4*a^3*b*d^3 + 3
*a^4*d^2*e) + a^4*d^3 + b^4*e^3*x^7)
```

sympy [B] time = 7.63, size = 2009, normalized size = 9.05

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] -35*b**3*e**4*log(x + (-35*a**9*b**3*e**13/(a*e - b*d)**8 + 315*a**8*b**4*d
*e**12/(a*e - b*d)**8 - 1260*a**7*b**5*d**2*e**11/(a*e - b*d)**8 + 2940*a**
6*b**6*d**3*e**10/(a*e - b*d)**8 - 4410*a**5*b**7*d**4*e**9/(a*e - b*d)**8
+ 4410*a**4*b**8*d**5*e**8/(a*e - b*d)**8 - 2940*a**3*b**9*d**6*e**7/(a*e -
 b*d)**8 + 1260*a**2*b**10*d**7*e**6/(a*e - b*d)**8 - 315*a*b**11*d**8*e**5
/(a*e - b*d)**8 + 35*a*b**3*e**5 + 35*b**12*d**9*e**4/(a*e - b*d)**8 + 35*b
**4*d*e**4)/(70*b**4*e**5))/(a*e - b*d)**8 + 35*b**3*e**4*log(x + (35*a**9*
b**3*e**13/(a*e - b*d)**8 - 315*a**8*b**4*d*e**12/(a*e - b*d)**8 + 1260*a**
7*b**5*d**2*e**11/(a*e - b*d)**8 - 2940*a**6*b**6*d**3*e**10/(a*e - b*d)**8
 + 4410*a**5*b**7*d**4*e**9/(a*e - b*d)**8 - 4410*a**4*b**8*d**5*e**8/(a*e
- b*d)**8 + 2940*a**3*b**9*d**6*e**7/(a*e - b*d)**8 - 1260*a**2*b**10*d**7*
e**6/(a*e - b*d)**8 + 315*a*b**11*d**8*e**5/(a*e - b*d)**8 + 35*a*b**3*e**5
 - 35*b**12*d**9*e**4/(a*e - b*d)**8 + 35*b**4*d*e**4)/(70*b**4*e**5))/(a*e
 - b*d)**8 + (-4*a**6*e**6 + 38*a**5*b*d*e**5 - 214*a**4*b**2*d**2*e**4 - 3
19*a**3*b**3*d**3*e**3 + 101*a**2*b**4*d**4*e**2 - 25*a*b**5*d**5*e + 3*b**
6*d**6 - 420*b**6*e**6*x**6 + x**5*(-1470*a*b**5*e**6 - 1050*b**6*d*e**5) +
 x**4*(-1820*a**2*b**4*e**6 - 3710*a*b**5*d*e**5 - 770*b**6*d**2*e**4) + x*
*3*(-875*a**3*b**3*e**6 - 4655*a**2*b**4*d*e**5 - 2765*a*b**5*d**2*e**4 - 1
05*b**6*d**3*e**3) + x**2*(-84*a**4*b**2*e**6 - 2289*a**3*b**3*d*e**5 - 354
9*a**2*b**4*d**2*e**4 - 399*a*b**5*d**3*e**3 + 21*b**6*d**4*e**2) + x*(14*a
**5*b*e**6 - 238*a**4*b**2*d*e**5 - 1813*a**3*b**3*d**2*e**4 - 553*a**2*b**
4*d**3*e**3 + 77*a*b**5*d**4*e**2 - 7*b**6*d**5*e))/(12*a**11*d**3*e**7 - 8
4*a**10*b*d**4*e**6 + 252*a**9*b**2*d**5*e**5 - 420*a**8*b**3*d**6*e**4 + 4
20*a**7*b**4*d**7*e**3 - 252*a**6*b**5*d**8*e**2 + 84*a**5*b**6*d**9*e - 12
*a**4*b**7*d**10 + x**7*(12*a**7*b**4*e**10 - 84*a**6*b**5*d*e**9 + 252*a**
5*b**6*d**2*e**8 - 420*a**4*b**7*d**3*e**7 + 420*a**3*b**8*d**4*e**6 - 252*
a**2*b**9*d**5*e**5 + 84*a*b**10*d**6*e**4 - 12*b**11*d**7*e**3) + x**6*(48
*a**8*b**3*e**10 - 300*a**7*b**4*d*e**9 + 756*a**6*b**5*d**2*e**8 - 924*a**
5*b**6*d**3*e**7 + 420*a**4*b**7*d**4*e**6 + 252*a**3*b**8*d**5*e**5 - 420*
a**2*b**9*d**6*e**4 + 204*a*b**10*d**7*e**3 - 36*b**11*d**8*e**2) + x**5*(7
2*a**9*b**2*e**10 - 360*a**8*b**3*d*e**9 + 540*a**7*b**4*d**2*e**8 + 252*a*
*6*b**5*d**3*e**7 - 1764*a**5*b**6*d**4*e**6 + 2268*a**4*b**7*d**5*e**5 - 1
260*a**3*b**8*d**6*e**4 + 180*a**2*b**9*d**7*e**3 + 108*a*b**10*d**8*e**2 -
 36*b**11*d**9*e) + x**4*(48*a**10*b*e**10 - 120*a**9*b**2*d*e**9 - 360*a**
8*b**3*d**2*e**8 + 1860*a**7*b**4*d**3*e**7 - 2940*a**6*b**5*d**4*e**6 + 17
64*a**5*b**6*d**5*e**5 + 420*a**4*b**7*d**6*e**4 - 1140*a**3*b**8*d**7*e**3
 + 540*a**2*b**9*d**8*e**2 - 60*a*b**10*d**9*e - 12*b**11*d**10) + x**3*(12
*a**11*e**10 + 60*a**10*b*d*e**9 - 540*a**9*b**2*d**2*e**8 + 1140*a**8*b**3
*d**3*e**7 - 420*a**7*b**4*d**4*e**6 - 1764*a**6*b**5*d**5*e**5 + 2940*a**5
*b**6*d**6*e**4 - 1860*a**4*b**7*d**7*e**3 + 360*a**3*b**8*d**8*e**2 + 120*
a**2*b**9*d**9*e - 48*a*b**10*d**10) + x**2*(36*a**11*d*e**9 - 108*a**10*b*
d**2*e**8 - 180*a**9*b**2*d**3*e**7 + 1260*a**8*b**3*d**4*e**6 - 2268*a**7*
b**4*d**5*e**5 + 1764*a**6*b**5*d**6*e**4 - 252*a**5*b**6*d**7*e**3 - 540*a
**4*b**7*d**8*e**2 + 360*a**3*b**8*d**9*e - 72*a**2*b**9*d**10) + x*(36*a**
11*d**2*e**8 - 204*a**10*b*d**3*e**7 + 420*a**9*b**2*d**4*e**6 - 252*a**8*b
**3*d**5*e**5 - 420*a**7*b**4*d**6*e**4 + 924*a**6*b**5*d**7*e**3 - 756*a**
5*b**6*d**8*e**2 + 300*a**4*b**7*d**9*e - 48*a**3*b**8*d**10))
```

3.1954 $\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8}{8e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)}{7e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^2}{6e^3(a+bx)}$$

```
[Out] 1/6*(-a*e+b*d)^2*(e*x+d)^6*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/7*b*(-a*e+b*d)*(
e*x+d)^7*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/8*b^2*(e*x+d)^8*((b*x+a)^2)^(1/2)/
e^3/(b*x+a)
```

Rubi [**A**] time = 0.15, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8}{8e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)}{7e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)^2}{6e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x))
 - (2*b*(b*d - a*e)*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a +
b*x)) + (b^2*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^5\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^5\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^5}{e^2}-\frac{2b(bd-ae)(d+ex)^6}{e^2}+\frac{b^2(d+ex)^7}{e^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)}-\frac{2b(bd-ae)(d+ex)^7\sqrt{a^2+}}{7e^3(a+bx)}\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 196, normalized size = 1.34

$$\frac{x\sqrt{(a+bx)^2}\,\left(28a^2\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+8abx\left(21d^5+70d^4ex+105d^3e^2x\right.\right.}{168(a+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(28*a^2*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2*
e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 8*a*b*x*(21*d^5 + 70*d^4*e*x + 105*d^3*e
^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + b^2*x^2*(56*d^5 + 210
*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 + 21*e^5*x^5))
)/(168*(a + b*x))
```

fricas [**A**] time = 1.23, size = 197, normalized size = 1.35

$$\frac{1}{8}\,b^2e^5x^8+a^2d^5x+\frac{1}{7}\left(5\,b^2de^4+2\,abe^5\right)x^7+\frac{1}{6}\left(10\,b^2d^2e^3+10\,abde^4+a^2e^5\right)x^6+\left(2\,b^2d^3e^2+4\,abd^2e^3+a^2de^4\right)x^5+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/8*b^2*e^5*x^8 + a^2*d^5*x + 1/7*(5*b^2*d*e^4 + 2*a*b*e^5)*x^7 + 1/6*(10*b
^2*d^2*e^3 + 10*a*b*d*e^4 + a^2*e^5)*x^6 + (2*b^2*d^3*e^2 + 4*a*b*d^2*e^3 +
 a^2*d*e^4)*x^5 + 5/4*(b^2*d^4*e + 4*a*b*d^3*e^2 + 2*a^2*d^2*e^3)*x^4 + 1/3
*(b^2*d^5 + 10*a*b*d^4*e + 10*a^2*d^3*e^2)*x^3 + 1/2*(2*a*b*d^5 + 5*a^2*d^4
*e)*x^2
```

giac [**B**] time = 0.17, size = 311, normalized size = 2.13

$$\frac{1}{8}\,b^2x^8e^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{7}\,b^2dx^7e^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,b^2d^2x^6e^3\mathrm{sgn}\left(bx+a\right)+2\,b^2d^3x^5e^2\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}\,b^2d^4x^4e\mathrm{sgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/8*b^2*x^8*e^5*sgn(b*x + a) + 5/7*b^2*d*x^7*e^4*sgn(b*x + a) + 5/3*b^2*d^2
*x^6*e^3*sgn(b*x + a) + 2*b^2*d^3*x^5*e^2*sgn(b*x + a) + 5/4*b^2*d^4*x^4*e*
sgn(b*x + a) + 1/3*b^2*d^5*x^3*sgn(b*x + a) + 2/7*a*b*x^7*e^5*sgn(b*x + a)
+ 5/3*a*b*d*x^6*e^4*sgn(b*x + a) + 4*a*b*d^2*x^5*e^3*sgn(b*x + a) + 5*a*b*d
^3*x^4*e^2*sgn(b*x + a) + 10/3*a*b*d^4*x^3*e*sgn(b*x + a) + a*b*d^5*x^2*sgn
(b*x + a) + 1/6*a^2*x^6*e^5*sgn(b*x + a) + a^2*d*x^5*e^4*sgn(b*x + a) + 5/2
*a^2*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^2*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^2
*d^4*x^2*e*sgn(b*x + a) + a^2*d^5*x*sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 230, normalized size = 1.58

$$\frac{\left(21b^2e^5x^7+48x^6ab\,e^5+120x^6b^2d\,e^4+28x^5a^2e^5+280x^5abd\,e^4+280x^5b^2d^2e^3+168a^2d\,e^4x^4+672ab\,d^2e^3x^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/168*x*(21*b^2*e^5*x^7+48*a*b*e^5*x^6+120*b^2*d*e^4*x^6+28*a^2*e^5*x^5+280
*a*b*d*e^4*x^5+280*b^2*d^2*e^3*x^5+168*a^2*d*e^4*x^4+672*a*b*d^2*e^3*x^4+33
6*b^2*d^3*e^2*x^4+420*a^2*d^2*e^3*x^3+840*a*b*d^3*e^2*x^3+210*b^2*d^4*e*x^3
+560*a^2*d^3*e^2*x^2+560*a*b*d^4*e*x^2+56*b^2*d^5*x^2+420*a^2*d^4*e*x+168*a
*b*d^5*x+168*a^2*d^5)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.58, size = 1323, normalized size = 9.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^5*x^5/b - 13/56*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*e^5*x^4/b^2 + 9/28*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*e^5*x^3
/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^5*x + 1/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*a^6*e^5*x/b^5 - 11/28*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*e^5*x^2
/b^4 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^5/b + 1/2*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*a^7*e^5/b^6 + 25/56*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^5*x/b
^5 - 27/56*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^5/b^6 + 1/7*(5*b*d*e^4 + a
*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^4/b^2 - 11/42*(5*b*d*e^4 + a*e^5)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x^3/b^3 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/b^2 - 1/2*(5*b*d*e^4 + a*e^5)*sqrt(b^2*x^2
+ 2*a*b*x + a^2)*a^5*x/b^5 + 5/2*(2*b*d^2*e^3 + a*d*e^4)*sqrt(b^2*x^2 + 2*a
*b*x + a^2)*a^4*x/b^4 - 5*(b*d^3*e^2 + a*d^2*e^3)*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*a^3*x/b^3 + 5/2*(b*d^4*e + 2*a*d^3*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*
a^2*x/b^2 - 1/2*(b*d^5 + 5*a*d^4*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b + 5
/14*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x^2/b^4 - 3/2*(
2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x^2/b^3 + 2*(b*d^3
*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(5*b*d*e^4
+ a*e^5)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^6/b^6 + 5/2*(2*b*d^2*e^3 + a*d*e^4
)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5/b^5 - 5*(b*d^3*e^2 + a*d^2*e^3)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 5/2*(b*d^4*e + 2*a*d^3*e^2)*sqrt(b^2*x^2 +
 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^5 + 5*a*d^4*e)*sqrt(b^2*x^2 + 2*a*b*x +
a^2)*a^2/b^2 - 3/7*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*
x/b^5 + 2*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4
 - 7/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 5/
4*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 + 10/21*(5*
b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^6 - 7/3*(2*b*d^2*e^3
 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/2*(b*d^3*e^2 + a*d^
2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 25/12*(b*d^4*e + 2*a*d^3*e
^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^5 + 5*a*d^4*e)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 4.77, size = 1541, normalized size = 10.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^5,x)
```

```
[Out] a*d^5*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^5*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^5*x^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(8*b) + (a*e^5*x^4*(a^2 + b^2
*x^2 + 2*a*b*x)^(3/2))/(7*b^2) + (5*d*e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(7*b) - (13*a*e^5*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(6*b^4*x^4*(a^2 + b^2
*x^2 + 2*a*b*x) - a^6 + 20*a^4*b^2*x^2 + 19*a^5*b*x - 11*a*b^3*x^3*(a^2 + b
^2*x^2 + 2*a*b*x) + 15*a^2*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - 18*a^3*b*x*(
a^2 + b^2*x^2 + 2*a*b*x)))/(336*b^6) + (2*d^3*e^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x)^(3/2))/b + (5*d^2*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b) + (5*
d^4*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) - (a^3*e^5*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 +
 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(35*b^6) - (41*a^2*e^5*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 1
4*a^3*b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2
*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(560*b^6) - (5*a*d^4*e*(8*b^2*(a^2 + b^2*x
^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b^4) - (
5*a^3*d^3*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b^2) - (3
*a*d^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x))
)/(4*b^4) - (29*a^2*d*e^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 +
 b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*
x^2 + 2*a*b*x)))/(56*b^5) - (7*a*d^3*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a
^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(6*b^3) -
(5*a^3*d*e^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^
2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(24*b^5) + (5*a*d^3*e^2*x*(a^2 + b^2*x
^2 + 2*a*b*x)^(3/2))/(2*b^2) + (5*a*d*e^4*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(6*b^2) - (5*a^2*d^4*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/(4*b) - (19*a^2*d^2*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2
 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(12*b^4) - (11*a^2*d^3*e^2
*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(16*b^5) - (a^3*d^2*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b
^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^6) - (11*a*d*e^4*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*b^2*x
^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(a^2 +
 b^2*x^2 + 2*a*b*x)))/(42*b^5) + (2*a*d^2*e^3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)
^(3/2))/b^2
```

sympy [B] time = 0.16, size = 218, normalized size = 1.49

$$a^2d^5x+\frac{b^2e^5x^8}{8}+x^7\left(\frac{2abe^5}{7}+\frac{5b^2de^4}{7}\right)+x^6\left(\frac{a^2e^5}{6}+\frac{5abde^4}{3}+\frac{5b^2d^2e^3}{3}\right)+x^5\left(a^2de^4+4abd^2e^3+2b^2d^3e^2\right)+x^4\Bigg(\frac{5a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**5*x + b**2*e**5*x**8/8 + x**7*(2*a*b*e**5/7 + 5*b**2*d*e**4/7) + x*
*6*(a**2*e**5/6 + 5*a*b*d*e**4/3 + 5*b**2*d**2*e**3/3) + x**5*(a**2*d*e**4
+ 4*a*b*d**2*e**3 + 2*b**2*d**3*e**2) + x**4*(5*a**2*d**2*e**3/2 + 5*a*b*d*
*3*e**2 + 5*b**2*d**4*e/4) + x**3*(10*a**2*d**3*e**2/3 + 10*a*b*d**4*e/3 +
b**2*d**5/3) + x**2*(5*a**2*d**4*e/2 + a*b*d**5)
```

3.1955 $\int (a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7}{7e^3(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)}{3e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)^2}{5e^3(a+bx)}$$

```
[Out] 1/5*(-a*e+b*d)^2*(e*x+d)^5*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-1/3*b*(-a*e+b*d)*(
e*x+d)^6*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/7*b^2*(e*x+d)^7*((b*x+a)^2)^(1/2)/
e^3/(b*x+a)
```

Rubi [A] time = 0.13, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7}{7e^3(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6(bd-ae)}{3e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)^2}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x))
 - (b*(b*d - a*e)*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*
x)) + (b^2*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^4\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)(d+ex)^4\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^4\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Big(\frac{(-bd+ae)^2(d+ex)^4}{e^2}-\frac{2b(bd-ae)(d+ex)^5}{e^2}+\frac{b^2(d+ex)^6}{e^2}}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{b(bd-ae)(d+ex)^6\sqrt{a^2+2}}{3e^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.05, size = 163, normalized size = 1.12

$$\frac{x\sqrt{(a+bx)^2}\left(21a^2\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+7abx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3+\right.\right.}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(21*a^2*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^3
*x^3 + e^4*x^4) + 7*a*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*e^3*
x^3 + 5*e^4*x^4) + b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x^2 + 70*d*e
^3*x^3 + 15*e^4*x^4)))/(105*(a + b*x))
```

fricas [A] time = 1.23, size = 156, normalized size = 1.07

$$\frac{1}{7}\,b^2e^4x^7+a^2d^4x+\frac{1}{3}\left(2\,b^2de^3+abe^4\right)x^6+\frac{1}{5}\left(6\,b^2d^2e^2+8\,abde^3+a^2e^4\right)x^5+\left(b^2d^3e+3\,abd^2e^2+a^2de^3\right)x^4+\frac{1}{3}\left(b^2d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/7*b^2*e^4*x^7 + a^2*d^4*x + 1/3*(2*b^2*d*e^3 + a*b*e^4)*x^6 + 1/5*(6*b^2*
d^2*e^2 + 8*a*b*d*e^3 + a^2*e^4)*x^5 + (b^2*d^3*e + 3*a*b*d^2*e^2 + a^2*d*e
^3)*x^4 + 1/3*(b^2*d^4 + 8*a*b*d^3*e + 6*a^2*d^2*e^2)*x^3 + (a*b*d^4 + 2*a^
2*d^3*e)*x^2
```

giac [B] time = 0.18, size = 254, normalized size = 1.74

$$\frac{1}{7}\,b^2x^7e^4\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,b^2dx^6e^3\mathrm{sgn}\left(bx+a\right)+\frac{6}{5}\,b^2d^2x^5e^2\mathrm{sgn}\left(bx+a\right)+b^2d^3x^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^2d^4x^3\mathrm{sgn}\left(bx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/7*b^2*x^7*e^4*sgn(b*x + a) + 2/3*b^2*d*x^6*e^3*sgn(b*x + a) + 6/5*b^2*d^2
*x^5*e^2*sgn(b*x + a) + b^2*d^3*x^4*e*sgn(b*x + a) + 1/3*b^2*d^4*x^3*sgn(b*
x + a) + 1/3*a*b*x^6*e^4*sgn(b*x + a) + 8/5*a*b*d*x^5*e^3*sgn(b*x + a) + 3*
a*b*d^2*x^4*e^2*sgn(b*x + a) + 8/3*a*b*d^3*x^3*e*sgn(b*x + a) + a*b*d^4*x^2
*sgn(b*x + a) + 1/5*a^2*x^5*e^4*sgn(b*x + a) + a^2*d*x^4*e^3*sgn(b*x + a) +
 2*a^2*d^2*x^3*e^2*sgn(b*x + a) + 2*a^2*d^3*x^2*e*sgn(b*x + a) + a^2*d^4*x*
sgn(b*x + a)
```

maple [A] time = 0.05, size = 189, normalized size = 1.29

$$\frac{\left(15b^2e^4x^6+35x^5ab\,e^4+70x^5b^2d\,e^3+21x^4a^2e^4+168x^4abd\,e^3+126x^4b^2d^2e^2+105a^2d\,e^3x^3+315ab\,d^2e^2x^3+\right.}{105bx+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/105*x*(15*b^2*e^4*x^6+35*a*b*e^4*x^5+70*b^2*d*e^3*x^5+21*a^2*e^4*x^4+168*
a*b*d*e^3*x^4+126*b^2*d^2*e^2*x^4+105*a^2*d*e^3*x^3+315*a*b*d^2*e^2*x^3+105
*b^2*d^3*e*x^3+210*a^2*d^2*e^2*x^2+280*a*b*d^3*e*x^2+35*b^2*d^4*x^2+210*a^2
*d^3*e*x+105*a*b*d^4*x+105*a^2*d^4)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.70, size = 996, normalized size = 6.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^4*x^4/b - 11/42*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*e^4*x^3/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^4*x - 1/2*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5*e^4*x/b^4 + 5/14*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*a^2*e^4*x^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^4/b - 1/2
*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^6*e^4/b^5 - 3/7*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*a^3*e^4*x/b^4 + 10/21*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^4/b^5 + 1
/6*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^3/b^2 + 1/2*(4*b*d
*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*x/b^4 - (3*b*d^2*e^2 + 2*a*
d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*x/b^3 + (2*b*d^3*e + 3*a*d^2*e^2)*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1/2*(b*d^4 + 4*a*d^3*e)*sqrt(b^2*
x^2 + 2*a*b*x + a^2)*a*x/b - 3/10*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a*x^2/b^3 + 2/5*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*x^2/b^2 + 1/2*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a
^5/b^5 - (3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 +
(2*b*d^3*e + 3*a*d^2*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^
4 + 4*a*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^2 + 2/5*(4*b*d*e^3 + a*e
^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^4 - 7/10*(3*b*d^2*e^2 + 2*a*d*e
^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b^3 + 1/2*(2*b*d^3*e + 3*a*d^2*e^2)
*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 - 7/15*(4*b*d*e^3 + a*e^4)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*a^3/b^5 + 9/10*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 +
2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/6*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)/b^2
```

mupad [**B**] time = 3.59, size = 1095, normalized size = 7.50

$$a\,d^4\,\left(\frac{x}{2}+\frac{a}{2\,b}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{d^4\,\left(8\,b^2\,\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^3}+\frac{e^4\,x^4\,(a^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^4,x)
```

```
[Out] a*d^4*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^4*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^4*x^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(7*b) - (a^3*e^4*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) -
4*a^2*b*x))/(24*b^5) + (a*e^4*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b^2)
+ (2*d*e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(3*b) - (11*a*e^4*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(a^5 + 5*b^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x) - 14*a^3*
b^2*x^2 - 13*a^4*b*x - 9*a*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) + 12*a^2*b*x*(
a^2 + b^2*x^2 + 2*a*b*x)))/(210*b^5) + (6*d^2*e^2*x^2*(a^2 + b^2*x^2 + 2*a*
b*x)^(3/2))/(5*b) + (d^3*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/b - (29*a^2*e
^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a
^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(280*b
^5) - (a*d^3*e*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(24*b^4) - (3*a^3*d^2*e^2*(x/2 + a/(2*b))*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(2*b^2) - (7*a*d^2*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2
)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(10*b^
3) - (19*a^2*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b
*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(30*b^4) - (a^3*d*e^3*(8*b^2*(a^
2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(15
*b^6) + (3*a*d^2*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*b^2) + (4*a*d*e^
3*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b^2) - (a^2*d^3*e*(x/2 + a/(2*b))
*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/b - (3*a*d*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2)*(4*b^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*
x - 7*a*b*x*(a^2 + b^2*x^2 + 2*a*b*x)))/(10*b^4) - (33*a^2*d^2*e^2*(8*b^2*(
a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
80*b^5)
```

sympy [A] time = 0.16, size = 168, normalized size = 1.15

$$a^2d^4x+\frac{b^2e^4x^7}{7}+x^6\left(\frac{abe^4}{3}+\frac{2b^2de^3}{3}\right)+x^5\left(\frac{a^2e^4}{5}+\frac{8abde^3}{5}+\frac{6b^2d^2e^2}{5}\right)+x^4\left(a^2de^3+3abd^2e^2+b^2d^3e\right)+x^3\Bigg(2a^2d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**4*x + b**2*e**4*x**7/7 + x**6*(a*b*e**4/3 + 2*b**2*d*e**3/3) + x**5
*(a**2*e**4/5 + 8*a*b*d*e**3/5 + 6*b**2*d**2*e**2/5) + x**4*(a**2*d*e**3 +
3*a*b*d**2*e**2 + b**2*d**3*e) + x**3*(2*a**2*d**2*e**2 + 8*a*b*d**3*e/3 +
b**2*d**4/3) + x**2*(2*a**2*d**3*e + a*b*d**4)
```

3.1956 $\int (a+bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=146

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6}{6e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)^2}{4e^3(a+bx)}$$

```
[Out] 1/4*(-a*e+b*d)^2*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2/5*b*(-a*e+b*d)*(
e*x+d)^5*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+1/6*b^2*(e*x+d)^6*((b*x+a)^2)^(1/2)/
e^3/(b*x+a)
```

Rubi [A] time = 0.11, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^6}{6e^3(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5(bd-ae)}{5e^3(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)^2}{4e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x))
 - (2*b*(b*d - a*e)*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a +
b*x)) + (b^2*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)(d+ex)^3\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^3\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^3}{e^2}-\frac{2b(bd-ae)(d+ex)^4}{e^2}+\frac{b^2(d+ex)^5}{e^2}\right)}{ab+b^2x}\\ &= \frac{(bd-ae)^2(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)}-\frac{2b(bd-ae)(d+ex)^5\sqrt{a^2+}}{5e^3(a+bx)}\end{aligned}$$

Mathematica [A] time = 0.04, size = 130, normalized size = 0.89

$$\frac{x\sqrt{(a+bx)^2}\,\left(15a^2\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+6abx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+b^2x^2\left(20d^3+4\right.\right.}{60(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(15*a^2*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
6*a*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + b^2*x^2*(20*d^3
+ 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3)))/(60*(a + b*x))
```

fricas [A] time = 1.13, size = 124, normalized size = 0.85

$$\frac{1}{6}\,b^2e^3x^6+a^2d^3x+\frac{1}{5}\left(3\,b^2de^2+2\,abe^3\right)x^5+\frac{1}{4}\left(3\,b^2d^2e+6\,abde^2+a^2e^3\right)x^4+\frac{1}{3}\left(b^2d^3+6\,abd^2e+3\,a^2de^2\right)x^3+\frac{1}{2}\left(2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/6*b^2*e^3*x^6 + a^2*d^3*x + 1/5*(3*b^2*d*e^2 + 2*a*b*e^3)*x^5 + 1/4*(3*b^
2*d^2*e + 6*a*b*d*e^2 + a^2*e^3)*x^4 + 1/3*(b^2*d^3 + 6*a*b*d^2*e + 3*a^2*d
*e^2)*x^3 + 1/2*(2*a*b*d^3 + 3*a^2*d^2*e)*x^2
```

giac [A] time = 0.16, size = 199, normalized size = 1.36

$$\frac{1}{6}\,b^2x^6e^3\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}\,b^2dx^5e^2\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}\,b^2d^2x^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^2d^3x^3\mathrm{sgn}\left(bx+a\right)+\frac{2}{5}\,abx^5e^3\mathrm{sgn}\left(bx\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/6*b^2*x^6*e^3*sgn(b*x + a) + 3/5*b^2*d*x^5*e^2*sgn(b*x + a) + 3/4*b^2*d^2
*x^4*e*sgn(b*x + a) + 1/3*b^2*d^3*x^3*sgn(b*x + a) + 2/5*a*b*x^5*e^3*sgn(b*
x + a) + 3/2*a*b*d*x^4*e^2*sgn(b*x + a) + 2*a*b*d^2*x^3*e*sgn(b*x + a) + a*
b*d^3*x^2*sgn(b*x + a) + 1/4*a^2*x^4*e^3*sgn(b*x + a) + a^2*d*x^3*e^2*sgn(b
*x + a) + 3/2*a^2*d^2*x^2*e*sgn(b*x + a) + a^2*d^3*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 148, normalized size = 1.01

$$\frac{\left(10b^2e^3x^5+24x^4ab\,e^3+36x^4b^2d\,e^2+15x^3a^2e^3+90x^3abd\,e^2+45x^3b^2d^2e+60x^2a^2d\,e^2+120x^2ab\,d^2e+20x^2b\right.}{60bx+60a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/60*x*(10*b^2*e^3*x^5+24*a*b*e^3*x^4+36*b^2*d*e^2*x^4+15*a^2*e^3*x^3+90*a*
b*d*e^2*x^3+45*b^2*d^2*e*x^3+60*a^2*d*e^2*x^2+120*a*b*d^2*e*x^2+20*b^2*d^3*
x^2+90*a^2*d^2*e*x+60*a*b*d^3*x+60*a^2*d^3)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.61, size = 693, normalized size = 4.75

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}e^3x^3}{6\,b}+\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\,ad^3x+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^4e^3x}{2\,b^3}-\frac{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ae^3x}{10\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^3*x^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*a*d^3*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*e^3*x/b^3 - 3/10*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e^3*x^2/b^2 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*a^2*d^3/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^5*e^3/b^4 + 2/5*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^2*e^3*x/b^3 - 7/15*(b^2*x^2 + 2*a*b*x + a^2)^(3/
2)*a^3*e^3/b^4 - 1/2*(3*b*d*e^2 + a*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3*
x/b^3 + 3/2*(b*d^2*e + a*d*e^2)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*x/b^2 - 1
/2*(b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*x/b + 1/5*(3*b*d*e^2
 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x^2/b^2 - 1/2*(3*b*d*e^2 + a*e^3)
*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4/b^4 + 3/2*(b*d^2*e + a*d*e^2)*sqrt(b^2*x
^2 + 2*a*b*x + a^2)*a^3/b^3 - 1/2*(b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*
x + a^2)*a^2/b^2 - 7/20*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)
*a*x/b^3 + 3/4*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*x/b^2 +
9/20*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^4 - 5/4*(b*d
^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a/b^3 + 1/3*(b*d^3 + 3*a*d^
2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)/b^2
```

mupad [B] time = 3.01, size = 734, normalized size = 5.03

$$a\,d^3\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{d^3\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^3}+\frac{e^3\,x^3\left(a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^3,x)
```

```
[Out] a*d^3*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^3*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^3*x^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(6*b) - (19*a^2*e^3*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x)
 - 4*a^2*b*x))/(120*b^4) - (a^3*e^3*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4
*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(60*b^6) + (a*e^3*x^2*(a^2 + b^2
*x^2 + 2*a*b*x)^(3/2))/(5*b^2) + (3*d*e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/
2))/(5*b) - (3*a*e^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(4*b^2*x^2*(a^2 + b^2*
x^2 + 2*a*b*x) - a^4 + 9*a^2*b^2*x^2 + 8*a^3*b*x - 7*a*b*x*(a^2 + b^2*x^2 +
 2*a*b*x)))/(40*b^4) + (3*d^2*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) -
(7*a*d*e^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2
+ b^2*x^2 + 2*a*b*x) - 4*a^2*b*x))/(20*b^3) - (a*d^2*e*(8*b^2*(a^2 + b^2*x^
2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(32*b^4) + (3
*a*d*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (33*a^2*d*e^2*(8*b^2*
(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
(160*b^5) - (3*a^2*d^2*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
4*b) - (3*a^3*d*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2
)
```

sympy [A] time = 0.13, size = 133, normalized size = 0.91

$$a^2d^3x+\frac{b^2e^3x^6}{6}+x^5\left(\frac{2abe^3}{5}+\frac{3b^2de^2}{5}\right)+x^4\left(\frac{a^2e^3}{4}+\frac{3abde^2}{2}+\frac{3b^2d^2e}{4}\right)+x^3\left(a^2de^2+2abd^2e+\frac{b^2d^3}{3}\right)+x^2\left(\frac{3a^2d^2e}{2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**3*x + b**2*e**3*x**6/6 + x**5*(2*a*b*e**3/5 + 3*b**2*d*e**2/5) + x*
*4*(a**2*e**3/4 + 3*a*b*d*e**2/2 + 3*b**2*d**2*e/4) + x**3*(a**2*d*e**2 + 2
*a*b*d**2*e + b**2*d**3/3) + x**2*(3*a**2*d**2*e/2 + a*b*d**3)
```

3.1957 $\int (a+bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(bd-ae)}{2b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)^2}{3b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx}{5b^3}$$

```
[Out] 1/3*(-a*e+b*d)^2*(b*x+a)^2*((b*x+a)^2)^(1/2)/b^3+1/2*e*(-a*e+b*d)*(b*x+a)^3
*((b*x+a)^2)^(1/2)/b^3+1/5*e^2*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.10, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = $\{770, 21, 43\}$

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3(bd-ae)}{2b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)^2}{3b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx}{5b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (e*(b*d
 - a*e)*(a + b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^3) + (e^2*(a + b*x)
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^2\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)(d+ex)^2\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^2\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^2}{b^2}+\frac{2e(bd-ae)(a+bx)^3}{b^2}+\frac{e^2(a+bx}{b^2}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)^2(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}{3b^3}+\frac{e(bd-ae)(a+bx)^3\sqrt{a^2}}{2b^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 97, normalized size = 0.78

$$\frac{x\sqrt{(a+bx)^2}\left(10a^2\left(3d^2+3dex+e^2x^2\right)+5abx\left(6d^2+8dex+3e^2x^2\right)+b^2x^2\left(10d^2+15dex+6e^2x^2\right)\right)}{30(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(10*a^2*(3*d^2 + 3*d*e*x + e^2*x^2) + 5*a*b*x*(6*d^2 +
 8*d*e*x + 3*e^2*x^2) + b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2)))/(30*(a +
b*x))
```

fricas [A] time = 0.62, size = 81, normalized size = 0.65

$$\frac{1}{5}b^2e^2x^5+a^2d^2x+\frac{1}{2}\left(b^2de+abe^2\right)x^4+\frac{1}{3}\left(b^2d^2+4\,abde+a^2e^2\right)x^3+\left(abd^2+a^2de\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/5*b^2*e^2*x^5 + a^2*d^2*x + 1/2*(b^2*d*e + a*b*e^2)*x^4 + 1/3*(b^2*d^2 +
4*a*b*d*e + a^2*e^2)*x^3 + (a*b*d^2 + a^2*d*e)*x^2
```

giac [A] time = 0.16, size = 143, normalized size = 1.14

$$\frac{1}{5}b^2x^5e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}b^2dx^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}b^2d^2x^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}abx^4e^2\mathrm{sgn}\left(bx+a\right)+\frac{4}{3}abdx^3e\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/5*b^2*x^5*e^2*sgn(b*x + a) + 1/2*b^2*d*x^4*e*sgn(b*x + a) + 1/3*b^2*d^2*x
^3*sgn(b*x + a) + 1/2*a*b*x^4*e^2*sgn(b*x + a) + 4/3*a*b*d*x^3*e*sgn(b*x +
a) + a*b*d^2*x^2*sgn(b*x + a) + 1/3*a^2*x^3*e^2*sgn(b*x + a) + a^2*d*x^2*e*
sgn(b*x + a) + a^2*d^2*x*sgn(b*x + a)
```

maple [A] time = 0.05, size = 107, normalized size = 0.86

$$\frac{\left(6b^2e^2x^4+15x^3ab\,e^2+15x^3b^2de+10x^2a^2e^2+40x^2abde+10x^2b^2d^2+30a^2dex+30ab\,d^2x+30a^2d^2\right)\sqrt{(bx+a)^2}}{30bx+30a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/30*x*(6*b^2*e^2*x^4+15*a*b*e^2*x^3+15*b^2*d*e*x^3+10*a^2*e^2*x^2+40*a*b*d
*e*x^2+10*b^2*d^2*x^2+30*a^2*d*e*x+30*a*b*d^2*x+30*a^2*d^2)*((b*x+a)^2)^(1/
2)/(b*x+a)
```

maxima [B] time = 0.55, size = 452, normalized size = 3.62

$$\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\,ad^2x-\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^3e^2x}{2\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}e^2x^2}{5\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\,a^2d^2}{2\,b}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d^2*x - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^
2)*a^3*e^2*x/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e^2*x^2/b + 1/2*sqrt
```

```
(b^2*x^2 + 2*a*b*x + a^2)*a^2*d^2/b - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4
*e^2/b^3 - 7/20*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e^2*x/b^2 + 9/20*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*a^2*e^2/b^3 + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*
b*d*e + a*e^2)*a^2*x/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d
*e)*a*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(2*b*d*e + a*e^2)*a^3/b^3 - 1
/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d*e)*a^2/b^2 + 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(2*b*d*e + a*e^2)*x/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*
d^2 + 2*a*d*e)/b^2
```

mupad [B] time = 2.58, size = 438, normalized size = 3.50

$$a\,d^2\left(\frac{x}{2}+\frac{a}{2\,b}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{d^2\left(8\,b^2\left(a^2+b^2\,x^2\right)-12\,a^2\,b^2+4\,a\,b^3\,x\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{24\,b^3}+\frac{e^2\,x^2\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^2,x)
```

```
[Out] a*d^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (d^2*(8*b^2*(a^2 +
b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(24*b^3
) + (e^2*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b) - (11*a^2*e^2*(8*b^2*(a
^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(1
60*b^5) - (a^3*e^2*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b^2)
 + (d*e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(2*b) - (7*a*e^2*(a^2 + b^2*x^2
+ 2*a*b*x)^(1/2)*(a^3 - 5*a*b^2*x^2 + 3*b*x*(a^2 + b^2*x^2 + 2*a*b*x) - 4*a
^2*b*x))/(60*b^3) + (a*e^2*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b^2) - (a^
2*d*e*(x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*b) - (a*d*e*(8*b^
2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/(48*b^4)
```

sympy [A] time = 0.12, size = 87, normalized size = 0.70

$$a^2d^2x+\frac{b^2e^2x^5}{5}+x^4\left(\frac{abe^2}{2}+\frac{b^2de}{2}\right)+x^3\left(\frac{a^2e^2}{3}+\frac{4abde}{3}+\frac{b^2d^2}{3}\right)+x^2\left(a^2de+abd^2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d**2*x + b**2*e**2*x**5/5 + x**4*(a*b*e**2/2 + b**2*d*e/2) + x**3*(a**
2*e**2/3 + 4*a*b*d*e/3 + b**2*d**2/3) + x**2*(a**2*d*e + a*b*d**2)
```

3.1958 $\int (a+bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)}{3b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3}{4b^2}$$

```
[Out] 1/3*(-a*e+b*d)*(b*x+a)^2*((b*x+a)^2)^(1/2)/b^2+1/4*e*(b*x+a)^3*((b*x+a)^2)^
(1/2)/b^2
```

Rubi [**A**] time = 0.06, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.097, Rules used = {770, 21, 43}

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^2(bd-ae)}{3b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^3}{4b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^2) + (e*(a + b
*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)(d+ex)\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^2}{b}+\frac{e(a+bx)^3}{b}\right)dx}{ab+b^2x}\\ &= \frac{(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}{3b^2}+\frac{e(a+bx)^3\sqrt{a^2+2abx+b^2x^2}}{4b^2}\end{aligned}$$

Mathematica [A] time = 0.02, size = 64, normalized size = 0.82

$$\frac{x\sqrt{(a+bx)^2}\,\left(6a^2(2d+ex)+4abx(3d+2ex)+b^2x^2(4d+3ex)\right)}{12(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(6*a^2*(2*d + e*x) + 4*a*b*x*(3*d + 2*e*x) + b^2*x^2*(
4*d + 3*e*x)))/(12*(a + b*x))
```

fricas [A] time = 1.78, size = 48, normalized size = 0.62

$$\frac{1}{4}\,b^2ex^4+a^2dx+\frac{1}{3}\,\left(b^2d+2\,abe\right)x^3+\frac{1}{2}\,\left(2\,abd+a^2e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*b^2*e*x^4 + a^2*d*x + 1/3*(b^2*d + 2*a*b*e)*x^3 + 1/2*(2*a*b*d + a^2*e)
*x^2
```

giac [A] time = 0.16, size = 88, normalized size = 1.13

$$\frac{1}{4}\,b^2x^4e\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^2dx^3\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,abx^3e\mathrm{sgn}\left(bx+a\right)+abdx^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,a^2x^2e\mathrm{sgn}\left(bx+a\right)+a^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*b^2*x^4*e*sgn(b*x + a) + 1/3*b^2*d*x^3*sgn(b*x + a) + 2/3*a*b*x^3*e*sgn
(b*x + a) + a*b*d*x^2*sgn(b*x + a) + 1/2*a^2*x^2*e*sgn(b*x + a) + a^2*d*x*s
gn(b*x + a)
```

maple [A] time = 0.05, size = 66, normalized size = 0.85

$$\frac{\left(3e\,b^2x^3+8x^2abe+4x^2b^2d+6a^2ex+12abdx+12a^2d\right)\sqrt{\left(bx+a\right)^2}\;x}{12bx+12a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/12*x*(3*b^2*e*x^3+8*a*b*e*x^2+4*b^2*d*x^2+6*a^2*e*x+12*a*b*d*x+12*a^2*d)*
((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [B] time = 0.64, size = 251, normalized size = 3.22

$$\frac{1}{2}\,\sqrt{b^2x^2+2\,abx+a^2}\;adx+\frac{\sqrt{b^2x^2+2\,abx+a^2}\;a^2ex}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\;a^2d}{2\,b}+\frac{\sqrt{b^2x^2+2\,abx+a^2}\;a^3e}{2\,b^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*d*x + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^2*e*x/b + 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*d/b + 1/2*sqrt(b^2*x^2 +
 2*a*b*x + a^2)*a^3*e/b^2 - 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d + a*e)*a
*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*e*x/b - 1/2*sqrt(b^2*x^2 + 2*a*b
*x + a^2)*(b*d + a*e)*a^2/b^2 - 5/12*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*e/b^
2 + 1/3*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*d + a*e)/b^2
```

mupad [**B**] time = 2.50, size = 219, normalized size = 2.81

$$\frac{d\left(8b^2\left(a^2+b^2x^2\right)-12a^2b^2+4ab^3x\right)\sqrt{a^2+2abx+b^2x^2}}{24b^3}+\frac{ex\left(a^2+2abx+b^2x^2\right)^{3/2}}{4b}-\frac{a^2e\left(\frac{x}{2}+\frac{a}{2b}\right)\sqrt{a^2+}}{4b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x),x)
```

```
[Out] (d*(8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2))/(24*b^3) + (e*x*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(4*b) - (a^2*e*(
x/2 + a/(2*b))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*b) - (5*a*e*(8*b^2*(a^2
+ b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(96*b
^4) + (a*(a + b*x)*(3*b*d - a*e + 2*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/(6*b^2)
```

sympy [**A**] time = 0.11, size = 49, normalized size = 0.63

$$a^2dx+\frac{b^2ex^4}{4}+x^3\left(\frac{2abe}{3}+\frac{b^2d}{3}\right)+x^2\left(\frac{a^2e}{2}+abd\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*d*x + b**2*e*x**4/4 + x**3*(2*a*b*e/3 + b**2*d/3) + x**2*(a**2*e/2 + a
*b*d)
```

3.1959 $\int (a+bx)\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

```
[Out] 1/3*(b^2*x^2+2*a*b*x+a^2)^(3/2)/b
```

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(3/2)/(3*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\sqrt{a^2+2abx+b^2x^2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3b}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 0.67

$$\frac{\left((a+bx)^2\right)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)^2)^(3/2)/(3*b)
```

fricas [A] time = 1.02, size = 20, normalized size = 0.74

$$\frac{1}{3}b^2x^3+abx^2+a^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*b^2*x^3 + a*b*x^2 + a^2*x
```

giac [A] time = 0.15, size = 18, normalized size = 0.67

$$\frac{(bx+a)^3\operatorname{sgn}(bx+a)}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*(b*x + a)^3*sgn(b*x + a)/b
```

maple [A] time = 0.05, size = 38, normalized size = 1.41

$$\frac{\left(b^{2} x^{2}+3 a b x+3 a^{2}\right) \sqrt{\left(b x+a\right)^{2}}\, x}{3 b x+3 a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/3*x*(b^2*x^2+3*a*b*x+3*a^2)*((b*x+a)^2)^(1/2)/(b*x+a)
```

maxima [A] time = 0.70, size = 14, normalized size = 0.52

$$\frac{\left(\left(b x+a\right)^{2}\right)^{\frac{3}{2}}}{3\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/3*((b*x + a)^2)^(3/2)/b
```

mupad [B] time = 2.17, size = 76, normalized size = 2.81

$$\frac{\left(8\, b^{2}\, \left(a^{2}+b^{2}\, x^{2}\right)-12\, a^{2}\, b^{2}+4\, a\, b^{3}\, x\right)\, \sqrt{a^{2}+2\, a\, b\, x+b^{2}\, x^{2}}}{24\, b^{3}}+\frac{a\, \sqrt{{\left(a+b\, x\right)}^{2}}\, \left(a+b\, x\right)}{2\, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x),x)
```

```
[Out] ((8*b^2*(a^2 + b^2*x^2) - 12*a^2*b^2 + 4*a*b^3*x)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/(24*b^3) + (a*((a + b*x)^2)^(1/2)*(a + b*x))/(2*b)
```

sympy [A] time = 0.09, size = 19, normalized size = 0.70

$$a^{2} x + a b x^{2} + \frac{b^{2} x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2),x)
```

```
[Out] a**2*x + a*b*x**2 + b**2*x**3/3
```

3.1960 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=122

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^3(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^2(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}$$

```
[Out] -b*(-a*e+b*d)*x*((b*x+a)^2)^(1/2)/e^2/(b*x+a)+1/2*(b*x+a)*((b*x+a)^2)^(1/2)
/e+(-a*e+b*d)^2*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 122, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^2(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^3(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x))) + ((a +
b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e) + ((b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{d+ex}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{d+ex}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b(bd-ae)}{e^2}+\frac{b(a+bx)}{e}+\frac{(-bd+ae)^2}{e^2(d+ex)}\right)dx}{ab+b^2x}\\
&= -\frac{b(bd-ae)x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e}+(bd-a
\end{aligned}$$

Mathematica [A] time = 0.03, size = 61, normalized size = 0.50

$$\frac{\sqrt{(a+bx)^2}\left(bex(4ae-2bd+bex)+2(bd-ae)^2\log(d+ex)\right)}{2e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(-2*b*d + 4*a*e + b*e*x) + 2*(b*d - a*e)^2*Log[d
+ e*x]))/(2*e^3*(a + b*x))
```

fricas [A] time = 1.31, size = 62, normalized size = 0.51

$$\frac{b^2e^2x^2-2\left(b^2de-2\,abe^2\right)x+2\left(b^2d^2-2\,abde+a^2e^2\right)\log\left(ex+d\right)}{2\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*e^2*x^2 - 2*(b^2*d*e - 2*a*b*e^2)*x + 2*(b^2*d^2 - 2*a*b*d*e + a^2
*e^2)*log(e*x + d))/e^3
```

giac [A] time = 0.16, size = 97, normalized size = 0.80

$$\left(b^2d^2\mathrm{sgn}\left(bx+a\right)-2\,abde\mathrm{sgn}\left(bx+a\right)+a^2e^2\mathrm{sgn}\left(bx+a\right)\right)e^{(-3)}\log\left(|xe+d|\right)+\frac{1}{2}\left(b^2x^2e\mathrm{sgn}\left(bx+a\right)-2\,b^2dx\mathrm{sgn}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x + a))*e^(-
3)*log(abs(x*e + d)) + 1/2*(b^2*x^2*e*sgn(b*x + a) - 2*b^2*d*x*sgn(b*x + a)
 + 4*a*b*x*e*sgn(b*x + a))*e^(-2)
```

maple [C] time = 0.08, size = 102, normalized size = 0.84

$$\frac{\left(b^2e^2x^2+2a^2e^2\ln\left(bex+bd\right)-4abde\ln\left(bex+bd\right)+4ab\,e^2x+2b^2d^2\ln\left(bex+bd\right)-2b^2dex+3a^2e^2-2abde\right)\mathrm{cs}}{2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*csgn(b*x+a)*(x^2*b^2*e^2+2*ln(b*e*x+b*d)*a^2*e^2-4*ln(b*e*x+b*d)*a*b*d*
e+2*ln(b*e*x+b*d)*b^2*d^2+4*x*a*b*e^2-2*x*b^2*d*e+3*a^2*e^2-2*a*b*d*e)/e^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,\,(a+b\,x)}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x),x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x), x)
```

sympy [A] time = 0.24, size = 44, normalized size = 0.36

$$\frac{b^2x^2}{2e} + x\left(\frac{2ab}{e} - \frac{b^2d}{e^2}\right) + \frac{(ae-bd)^2\log\left(d+ex\right)}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d),x)
```

```
[Out] b**2*x**2/(2*e) + x*(2*a*b/e - b**2*d/e**2) + (a*e - b*d)**2*log(d + e*x)/e
**3
```

3.1961 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=132

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)(d+ex)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^3(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}$$

```
[Out] b^2*x*((b*x+a)^2)^(1/2)/e^2/(b*x+a)-(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x
+a)/(e*x+d)-2*b*(-a*e+b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)(d+ex)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)\log(d+ex)}{e^3(a+bx)}+\frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (b^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^2*(a + b*x)) - ((b*d - a*e)^2*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x)) - (2*b*(b*d - a*e)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^2}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^2}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^2}{e^2}+\frac{(-bd+ae)^2}{e^2(d+ex)^2}-\frac{2b(bd-ae)}{e^2(d+ex)}\right)dx}{ab+b^2x} \\
&= \frac{b^2x\sqrt{a^2+2abx+b^2x^2}}{e^2(a+bx)}-\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}-2b(bd-ae)\sqrt{a}
\end{aligned}
$$

Mathematica [**A**]   time = 0.05, size = 87, normalized size = 0.66

$$
\frac{\sqrt{(a+bx)^2}\left(-a^2e^2-2b(d+ex)(bd-ae)\log(d+ex)+2abde+b^2\left(-d^2+dex+e^2x^2\right)\right)}{e^3(a+bx)(d+ex)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(2*a*b*d*e - a^2*e^2 + b^2*(-d^2 + d*e*x + e^2*x^2) - 2*
b*(b*d - a*e)*(d + e*x)*Log[d + e*x]))/(e^3*(a + b*x)*(d + e*x))
```

fricas [**A**]   time = 1.01, size = 92, normalized size = 0.70

$$
\frac{b^2e^2x^2+b^2dex-b^2d^2+2\,abde-a^2e^2-2\left(b^2d^2-abde+\left(b^2de-abe^2\right)x\right)\log\left(ex+d\right)}{e^4x+de^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] (b^2*e^2*x^2 + b^2*d*e*x - b^2*d^2 + 2*a*b*d*e - a^2*e^2 - 2*(b^2*d^2 - a*b
*d*e + (b^2*d*e - a*b*e^2)*x)*log(e*x + d))/(e^4*x + d*e^3)
```

giac [**A**]   time = 0.15, size = 101, normalized size = 0.77

$$
b^2xe^{(-2)}\mathrm{sgn}\,(bx+a)-2\left(b^2d\mathrm{sgn}\,(bx+a)-abe\mathrm{sgn}\,(bx+a)\right)e^{(-3)}\log\left(|xe+d|\right)-\frac{(b^2d^2\mathrm{sgn}\,(bx+a)-2\,abde\mathrm{sgn}\,(}{xe}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] b^2*x*e^(-2)*sgn(b*x + a) - 2*(b^2*d*sgn(b*x + a) - a*b*e*sgn(b*x + a))*e^(
-3)*log(abs(x*e + d)) - (b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) + a^
2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)
```

maple [**C**]   time = 0.07, size = 131, normalized size = 0.99

$$
\frac{(2ab\,e^2x\ln\left(bex+bd\right)-2b^2dex\ln\left(bex+bd\right)+b^2e^2x^2+2abde\ln\left(bex+bd\right)+ab\,e^2x-2b^2d^2\ln\left(bex+bd\right)+b}{\left(ex+d\right)e^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] csgn(b*x+a)*(2*ln(b*e*x+b*d)*x*a*b*e^2-2*ln(b*e*x+b*d)*x*b^2*d*e+b^2*e^2*x^
2+2*a*b*d*e*ln(b*e*x+b*d)-2*b^2*d^2*ln(b*e*x+b*d)+a*b*e^2*x+b^2*d*e*x-a^2*e
^2+3*a*b*d*e-b^2*d^2)/e^3/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\,\,(a+b\,x)}{(d+e\,x)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^2,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^2, x)
```

sympy [A] time = 0.37, size = 60, normalized size = 0.45

$$\frac{b^2x}{e^2}+\frac{2b\,(ae-bd)\log{(d+ex)}}{e^3}+\frac{-a^2e^2+2abde-b^2d^2}{de^3+e^4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**2,x)
```

```
[Out] b**2*x/e**2 + 2*b*(a*e - b*d)*log(d + e*x)/e**3 + (-a**2*e**2 + 2*a*b*d*e -
 b**2*d**2)/(d*e**3 + e**4*x)
```

3.1962 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=140

$$\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3(a+bx)(d+ex)^2}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^3(a+bx)}$$

```
[Out] -1/2*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^2+2*b*(-a*e+b*d)*((
b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)+b^2*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^3/(b*
x+a)
```

Rubi [A] time = 0.08, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3(a+bx)(d+ex)^2}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,\log(d+ex)}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x)^2
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*(d + e*x
)) + (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^3}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^3}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^3}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^3}-\frac{2b(bd-ae)}{e^2(d+ex)^2}+\frac{b^2}{e^2(d+ex)}\right)dx}{ab+b^2x}\\ &= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)(d+ex)}+ b^2\sqrt{a^2+\end{aligned}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.52

$$\frac{\sqrt{(a+bx)^2}\,\left((bd-ae)(ae+3bd+4bex)+2b^2(d+ex)^2\log(d+ex)\right)}{2e^3(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(3*b*d + a*e + 4*b*e*x) + 2*b^2*(d + e*x)^2
*Log[d + e*x]))/(2*e^3*(a + b*x)*(d + e*x)^2)
```

fricas [A] time = 0.66, size = 100, normalized size = 0.71

$$\frac{3\,b^2d^2-2\,abde-a^2e^2+4\left(b^2de-abe^2\right)x+2\left(b^2e^2x^2+2\,b^2dex+b^2d^2\right)\log\left(ex+d\right)}{2\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(3*b^2*d^2 - 2*a*b*d*e - a^2*e^2 + 4*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2
*x^2 + 2*b^2*d*e*x + b^2*d^2)*log(e*x + d))/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [A] time = 0.16, size = 105, normalized size = 0.75

$$b^2e^{(-3)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(4\left(b^2d\mathrm{sgn}\left(bx+a\right)-abe\mathrm{sgn}\left(bx+a\right)\right)x+\left(3\,b^2d^2\mathrm{sgn}\left(bx+a\right)-2\,abde\mathrm{sgn}\left(bx\right.\right.}{2\left(xe+d\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] b^2*e^(-3)*log(abs(x*e + d))*sgn(b*x + a) + 1/2*(4*(b^2*d*sgn(b*x + a) - a*
b*e*sgn(b*x + a))*x + (3*b^2*d^2*sgn(b*x + a) - 2*a*b*d*e*sgn(b*x + a) - a^
2*e^2*sgn(b*x + a))*e^(-1))*e^(-2)/(x*e + d)^2
```

maple [C] time = 0.07, size = 112, normalized size = 0.80

$$\frac{\left(2b^2e^2x^2\ln\left(bex+bd\right)+4b^2dex\ln\left(bex+bd\right)-4ab\,e^2x+2b^2d^2\ln\left(bex+bd\right)+4b^2dex-a^2e^2-2abde+3b^2d^2\right)\mathrm{cs}}{2\left(ex+d\right)^2e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*csgn(b*x+a)*(2*ln(b*e*x+b*d)*x^2*b^2*e^2+4*b^2*d*e*x*ln(b*e*x+b*d)+2*b^
2*d^2*ln(b*e*x+b*d)-4*a*b*e^2*x+4*b^2*d*e*x-a^2*e^2-2*a*b*d*e+3*b^2*d^2)/e^
3/(e*x+d)^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\sqrt{(a+b\,x)^2}\;(a+b\,x)}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^3,x)
```

```
[Out] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^3, x)
```

sympy [**A**] time = 0.48, size = 80, normalized size = 0.57

$$\frac{b^2\log{(d+ex)}}{e^3}+\frac{-a^2e^2-2abde+3b^2d^2+x\left(-4abe^2+4b^2de\right)}{2d^2e^3+4de^4x+2e^5x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] b**2*log(d + e*x)/e**3 + (-a**2*e**2 - 2*a*b*d*e + 3*b**2*d**2 + x*(-4*a*b*
e**2 + 4*b**2*d*e))/(2*d**2*e**3 + 4*d*e**4*x + 2*e**5*x**2)
```

3.1963 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(d+ex)^3(bd-ae)}$$

```
[Out] 1/3*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(-a*e+b*d)/(e*x+d)^3
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(d+ex)^3(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(3/2)/(3*(b*d - a*e)*(d + e*x)^3)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^4}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{3/2}}{3(bd-ae)(d+ex)^3}$$

Mathematica [A] time = 0.03, size = 71, normalized size = 1.73

$$-\frac{\sqrt{(a+bx)^2}\left(a^2e^2+abe(d+3ex)+b^2\left(d^2+3dex+3e^2x^2\right)\right)}{3e^3(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^2*e^2 + a*b*e*(d + 3*e*x) + b^2*(d^2 + 3*d*e*x +
 3*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^3)
```

fricas [B] time = 0.97, size = 84, normalized size = 2.05

$$-\frac{3\,b^2e^2x^2+b^2d^2+abde+a^2e^2+3\left(b^2de+abe^2\right)x}{3\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] -1/3*(3*b^2*e^2*x^2 + b^2*d^2 + a*b*d*e + a^2*e^2 + 3*(b^2*d*e + a*b*e^2)*x
)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [**B**] time = 0.16, size = 94, normalized size = 2.29

$$-\frac{\left(3\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+3\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+3\,abxe^2\mathrm{sgn}\left(bx+a\right)+abde\mathrm{sgn}\left(bx+a\right)+\right.}{3\left(xe+d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] -1/3*(3*b^2*x^2*e^2*sgn(b*x + a) + 3*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn(b
*x + a) + 3*a*b*x*e^2*sgn(b*x + a) + a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x
 + a))*e^(-3)/(x*e + d)^3
```

maple [**B**] time = 0.05, size = 76, normalized size = 1.85

$$-\frac{\left(3b^2e^2x^2+3ab\,e^2x+3b^2dex+a^2e^2+abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{3\left(ex+d\right)^3\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -1/3*(3*b^2*e^2*x^2+3*a*b*e^2*x+3*b^2*d*e*x+a^2*e^2+a*b*d*e+b^2*d^2)*((b*x+
a)^2)^(1/2)/(e*x+d)^3/e^3/(b*x+a)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.10, size = 75, normalized size = 1.83

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(a^2\,e^2+a\,b\,d\,e+3\,a\,b\,e^2\,x+b^2\,d^2+3\,b^2\,d\,e\,x+3\,b^2\,e^2\,x^2\right)}{3\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^4,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(a^2*e^2 + b^2*d^2 + 3*b^2*e^2*x^2 + 3*a*b*e^2*x + 3*
b^2*d*e*x + a*b*d*e))/(3*e^3*(a + b*x)*(d + e*x)^3)
```

sympy [**B**] time = 0.65, size = 88, normalized size = 2.15

$$\frac{-a^2e^2-abde-b^2d^2-3b^2e^2x^2+x\left(-3abe^2-3b^2de\right)}{3d^3e^3+9d^2e^4x+9de^5x^2+3e^6x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] (-a**2*e**2 - a*b*d*e - b**2*d**2 - 3*b**2*e**2*x**2 + x*(-3*a*b*e**2 - 3*b
**2*d*e))/(3*d**3*e**3 + 9*d**2*e**4*x + 9*d*e**5*x**2 + 3*e**6*x**3)
```

3.1964 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^3(a+bx)(d+ex)^4}$$

```
[Out] -1/4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^4+2/3*b*(-a*e+b*d)*
((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^3-1/2*b^2*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)/(e*x+d)^2
```

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = $\{770, 21, 43\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(d + e*x)^4
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e
*x)^3) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x)^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^5}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^5}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^5}-\frac{2b(bd-ae)}{e^2(d+ex)^4}+\frac{b^2}{e^2(d+ex)^3}\right)dx}{ab+b^2x} \\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}-\frac{b^2\sqrt{a}}{2e^3(}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(3a^2e^2+2abe(d+4ex)+b^2\left(d^2+4dex+6e^2x^2\right)\right)}{12e^3(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^5,x]
```

```
[Out] -1/12*(Sqrt[(a + b*x)^2]*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2 + 4*d*
e*x + 6*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^4)
```

fricas [A] time = 1.05, size = 98, normalized size = 0.67

$$-\frac{6\,b^2e^2x^2+b^2d^2+2\,abde+3\,a^2e^2+4\left(b^2de+2\,abe^2\right)x}{12\left(e^7x^4+4\,de^6x^3+6\,d^2e^5x^2+4\,d^3e^4x+d^4e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(6*b^2*e^2*x^2 + b^2*d^2 + 2*a*b*d*e + 3*a^2*e^2 + 4*(b^2*d*e + 2*a*b
*e^2)*x)/(e^7*x^4 + 4*d*e^6*x^3 + 6*d^2*e^5*x^2 + 4*d^3*e^4*x + d^4*e^3)
```

giac [A] time = 0.17, size = 96, normalized size = 0.66

$$-\frac{\left(6\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+4\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+8\,abxe^2\mathrm{sgn}\left(bx+a\right)+2\,abde\mathrm{sgn}\left(bx+a\right)+}{12\,(xe+d)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(6*b^2*x^2*e^2*sgn(b*x + a) + 4*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn(
b*x + a) + 8*a*b*x*e^2*sgn(b*x + a) + 2*a*b*d*e*sgn(b*x + a) + 3*a^2*e^2*sg
n(b*x + a))*e^(-3)/(x*e + d)^4
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$-\frac{\left(6b^2e^2x^2+8ab\,e^2x+4b^2dex+3a^2e^2+2abde+b^2d^2\right)\sqrt{(bx+a)^2}}{12\,(ex+d)^4\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -1/12/e^3*(6*b^2*e^2*x^2+8*a*b*e^2*x+4*b^2*d*e*x+3*a^2*e^2+2*a*b*d*e+b^2*d^
2)*((b*x+a)^2)^(1/2)/(e*x+d)^4/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.14, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(3\,a^2\,e^2+2\,a\,b\,d\,e+8\,a\,b\,e^2\,x+b^2\,d^2+4\,b^2\,d\,e\,x+6\,b^2\,e^2\,x^2\right)}{12\,e^3\,(a+b\,x)\,(d+e\,x)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^5,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(3*a^2*e^2 + b^2*d^2 + 6*b^2*e^2*x^2 + 8*a*b*e^2*x +
4*b^2*d*e*x + 2*a*b*d*e))/(12*e^3*(a + b*x)*(d + e*x)^4)
```

sympy [A] time = 0.99, size = 104, normalized size = 0.71

$$\frac{-3a^2e^2-2abde-b^2d^2-6b^2e^2x^2+x\left(-8abe^2-4b^2de\right)}{12d^4e^3+48d^3e^4x+72d^2e^5x^2+48de^6x^3+12e^7x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] (-3*a**2*e**2 - 2*a*b*d*e - b**2*d**2 - 6*b**2*e**2*x**2 + x*(-8*a*b*e**2 -
 4*b**2*d*e))/(12*d**4*e**3 + 48*d**3*e**4*x + 72*d**2*e**5*x**2 + 48*d*e**
6*x**3 + 12*e**7*x**4)
```

3.1965 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^5}$$

```
[Out] -1/5*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^5+1/2*b*(-a*e+b*d)*
((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^4-1/3*b^2*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)/(e*x+d)^3
```

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^3(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)^5
) + (b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)*(d + e*x
)^4) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x)^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^6}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^6}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^6}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^6}-\frac{2b(bd-ae)}{e^2(d+ex)^5}+\frac{b^2}{e^2(d+ex)^4}\right)dx}{ab+b^2x}$$

$$= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)(d+ex)^4}-\frac{b^2\sqrt{a^2+2}}{3e^3(a+b}$$

Mathematica [**A**] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(6a^2e^2+3abe(d+5ex)+b^2\left(d^2+5dex+10e^2x^2\right)\right)}{30e^3(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^6,x]
```

```
[Out] -1/30*(Sqrt[(a + b*x)^2]*(6*a^2*e^2 + 3*a*b*e*(d + 5*e*x) + b^2*(d^2 + 5*d*
e*x + 10*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^5)
```

fricas [**A**] time = 1.26, size = 109, normalized size = 0.75

$$-\frac{10\,b^2e^2x^2+b^2d^2+3\,abde+6\,a^2e^2+5\left(b^2de+3\,abe^2\right)x}{30\left(e^8x^5+5\,de^7x^4+10\,d^2e^6x^3+10\,d^3e^5x^2+5\,d^4e^4x+d^5e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/30*(10*b^2*e^2*x^2 + b^2*d^2 + 3*a*b*d*e + 6*a^2*e^2 + 5*(b^2*d*e + 3*a*
b*e^2)*x)/(e^8*x^5 + 5*d*e^7*x^4 + 10*d^2*e^6*x^3 + 10*d^3*e^5*x^2 + 5*d^4*
e^4*x + d^5*e^3)
```

giac [**A**] time = 0.21, size = 96, normalized size = 0.66

$$-\frac{\left(10\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+5\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+15\,abxe^2\mathrm{sgn}\left(bx+a\right)+3\,abde\mathrm{sgn}\left(bx+a\right)+\right.}{30\left(xe+d\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/30*(10*b^2*x^2*e^2*sgn(b*x + a) + 5*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn
(b*x + a) + 15*a*b*x*e^2*sgn(b*x + a) + 3*a*b*d*e*sgn(b*x + a) + 6*a^2*e^2*
sgn(b*x + a))*e^(-3)/(x*e + d)^5
```

maple [**A**] time = 0.04, size = 78, normalized size = 0.53

$$-\frac{\left(10b^2e^2x^2+15ab\,e^2x+5b^2dex+6a^2e^2+3abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{30\left(ex+d\right)^5\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -1/30/e^3*(10*b^2*e^2*x^2+15*a*b*e^2*x+5*b^2*d*e*x+6*a^2*e^2+3*a*b*d*e+b^2*
d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^5/(b*x+a)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.12, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(6\,a^2\,e^2+3\,a\,b\,d\,e+15\,a\,b\,e^2\,x+b^2\,d^2+5\,b^2\,d\,e\,x+10\,b^2\,e^2\,x^2\right)}{30\,e^3\,(a+b\,x)\,(d+e\,x)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^6,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(6*a^2*e^2 + b^2*d^2 + 10*b^2*e^2*x^2 + 15*a*b*e^2*x
+ 5*b^2*d*e*x + 3*a*b*d*e))/(30*e^3*(a + b*x)*(d + e*x)^5)
```

sympy [**A**] time = 1.02, size = 116, normalized size = 0.79

$$\frac{-6a^2e^2-3abde-b^2d^2-10b^2e^2x^2+x\left(-15abe^2-5b^2de\right)}{30d^5e^3+150d^4e^4x+300d^3e^5x^2+300d^2e^6x^3+150de^7x^4+30e^8x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**6,x)
```

```
[Out] (-6*a**2*e**2 - 3*a*b*d*e - b**2*d**2 - 10*b**2*e**2*x**2 + x*(-15*a*b*e**2
 - 5*b**2*d*e))/(30*d**5*e**3 + 150*d**4*e**4*x + 300*d**3*e**5*x**2 + 300*
d**2*e**6*x**3 + 150*d*e**7*x**4 + 30*e**8*x**5)
```

3.1966 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{6e^3(a+bx)(d+ex)^6}$$

```
[Out] -1/6*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^6+2/5*b*(-a*e+b*d)*
((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^5-1/4*b^2*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)/(e*x+d)^4
```

Rubi **[A]** time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{4e^3(a+bx)(d+ex)^4}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^3(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{6e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^3*(a + b*x)*(d + e*x)^6
) + (2*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e
*x)^5) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3*(a + b*x)*(d + e*x)^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^7}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^7}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^7}-\frac{2b(bd-ae)}{e^2(d+ex)^6}+\frac{b^2}{e^2(d+ex)^5}\right)dx}{ab+b^2x}$$

$$= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{6e^3(a+bx)(d+ex)^6}+\frac{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}-\frac{b^2\sqrt{a}}{4e^3(}$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$-\frac{\sqrt{(a+bx)^2}\left(10a^2e^2+4abe(d+6ex)+b^2\left(d^2+6dex+15e^2x^2\right)\right)}{60e^3(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^7,x]
```

```
[Out] -1/60*(Sqrt[(a + b*x)^2]*(10*a^2*e^2 + 4*a*b*e*(d + 6*e*x) + b^2*(d^2 + 6*d
*e*x + 15*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^6)
```

fricas [A] time = 1.27, size = 120, normalized size = 0.82

$$-\frac{15\,b^2e^2x^2+b^2d^2+4\,abde+10\,a^2e^2+6\left(b^2de+4\,abe^2\right)x}{60\left(e^9x^6+6\,de^8x^5+15\,d^2e^7x^4+20\,d^3e^6x^3+15\,d^4e^5x^2+6\,d^5e^4x+d^6e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(15*b^2*e^2*x^2 + b^2*d^2 + 4*a*b*d*e + 10*a^2*e^2 + 6*(b^2*d*e + 4*a
*b*e^2)*x)/(e^9*x^6 + 6*d*e^8*x^5 + 15*d^2*e^7*x^4 + 20*d^3*e^6*x^3 + 15*d^
4*e^5*x^2 + 6*d^5*e^4*x + d^6*e^3)
```

giac [A] time = 0.16, size = 96, normalized size = 0.66

$$-\frac{\left(15\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+6\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+24\,abxe^2\mathrm{sgn}\left(bx+a\right)+4\,abde\mathrm{sgn}\left(bx+\right.\right.}{60\left(xe+d\right)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(15*b^2*x^2*e^2*sgn(b*x + a) + 6*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sgn
(b*x + a) + 24*a*b*x*e^2*sgn(b*x + a) + 4*a*b*d*e*sgn(b*x + a) + 10*a^2*e^2
*sgn(b*x + a))*e^(-3)/(x*e + d)^6
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$-\frac{\left(15b^2e^2x^2+24ab\,e^2x+6b^2dex+10a^2e^2+4abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{60\left(ex+d\right)^6\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -1/60/e^3*(15*b^2*e^2*x^2+24*a*b*e^2*x+6*b^2*d*e*x+10*a^2*e^2+4*a*b*d*e+b^2
*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^6/(b*x+a)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.12, size = 77, normalized size = 0.53

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(10\,a^2\,e^2+4\,a\,b\,d\,e+24\,a\,b\,e^2\,x+b^2\,d^2+6\,b^2\,d\,e\,x+15\,b^2\,e^2\,x^2\right)}{60\,e^3\,(a+b\,x)\,(d+e\,x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^7,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(10*a^2*e^2 + b^2*d^2 + 15*b^2*e^2*x^2 + 24*a*b*e^2*x
 + 6*b^2*d*e*x + 4*a*b*d*e))/(60*e^3*(a + b*x)*(d + e*x)^6)
```

sympy [**A**] time = 1.22, size = 128, normalized size = 0.88

$$\frac{-10a^2e^2-4abde-b^2d^2-15b^2e^2x^2+x\left(-24abe^2-6b^2de\right)}{60d^6e^3+360d^5e^4x+900d^4e^5x^2+1200d^3e^6x^3+900d^2e^7x^4+360de^8x^5+60e^9x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] (-10*a**2*e**2 - 4*a*b*d*e - b**2*d**2 - 15*b**2*e**2*x**2 + x*(-24*a*b*e**
2 - 6*b**2*d*e))/(60*d**6*e**3 + 360*d**5*e**4*x + 900*d**4*e**5*x**2 + 120
0*d**3*e**6*x**3 + 900*d**2*e**7*x**4 + 360*d*e**8*x**5 + 60*e**9*x**6)
```

3.1967 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=146

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^6}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^3(a+bx)(d+ex)^7}$$

```
[Out] -1/7*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^7+1/3*b*(-a*e+b*d)*
((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^6-1/5*b^2*((b*x+a)^2)^(1/2)/e^3/(b*x+
a)/(e*x+d)^5
```

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = $\{770, 21, 43\}$

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^5}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^6}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^3(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^8,x]
```

```
[Out] -((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a + b*x)*(d + e*x)^7
) + (b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x
)^6) - (b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^8}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^8}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^8}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^8}-\frac{2b(bd-ae)}{e^2(d+ex)^7}+\frac{b^2}{e^2(d+ex)^6}\right)dx}{ab+b^2x} \\
&= -\frac{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)(d+ex)^7}+\frac{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^6}-\frac{b^2\sqrt{a^2+}}{5e^3(a+}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 73, normalized size = 0.50

$$
-\frac{\sqrt{(a+bx)^2}\left(15a^2e^2+5abe(d+7ex)+b^2\left(d^2+7dex+21e^2x^2\right)\right)}{105e^3(a+bx)(d+ex)^7}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^8,x]
```

```
[Out] -1/105*(Sqrt[(a + b*x)^2]*(15*a^2*e^2 + 5*a*b*e*(d + 7*e*x) + b^2*(d^2 + 7*
d*e*x + 21*e^2*x^2)))/(e^3*(a + b*x)*(d + e*x)^7)
```

fricas [A] time = 1.07, size = 131, normalized size = 0.90

$$
-\frac{21\,b^2e^2x^2+b^2d^2+5\,abde+15\,a^2e^2+7\left(b^2de+5\,abe^2\right)x}{105\left(e^{10}x^7+7\,de^9x^6+21\,d^2e^8x^5+35\,d^3e^7x^4+35\,d^4e^6x^3+21\,d^5e^5x^2+7\,d^6e^4x+d^7e^3\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/105*(21*b^2*e^2*x^2 + b^2*d^2 + 5*a*b*d*e + 15*a^2*e^2 + 7*(b^2*d*e + 5*
a*b*e^2)*x)/(e^10*x^7 + 7*d*e^9*x^6 + 21*d^2*e^8*x^5 + 35*d^3*e^7*x^4 + 35*
d^4*e^6*x^3 + 21*d^5*e^5*x^2 + 7*d^6*e^4*x + d^7*e^3)
```

giac [A] time = 0.20, size = 96, normalized size = 0.66

$$
-\frac{\left(21\,b^2x^2e^2\mathrm{sgn}\left(bx+a\right)+7\,b^2dxe\mathrm{sgn}\left(bx+a\right)+b^2d^2\mathrm{sgn}\left(bx+a\right)+35\,abxe^2\mathrm{sgn}\left(bx+a\right)+5\,abde\mathrm{sgn}\left(bx+a\right)+\right.}{105\left(xe+d\right)^7}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/105*(21*b^2*x^2*e^2*sgn(b*x + a) + 7*b^2*d*x*e*sgn(b*x + a) + b^2*d^2*sg
n(b*x + a) + 35*a*b*x*e^2*sgn(b*x + a) + 5*a*b*d*e*sgn(b*x + a) + 15*a^2*e^
2*sgn(b*x + a))*e^(-3)/(x*e + d)^7
```

maple [A] time = 0.06, size = 78, normalized size = 0.53

$$
-\frac{\left(21b^2e^2x^2+35ab\,e^2x+7b^2dex+15a^2e^2+5abde+b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{105\left(ex+d\right)^7\left(bx+a\right)e^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x)
```

```
[Out] -1/105/e^3*(21*b^2*e^2*x^2+35*a*b*e^2*x+7*b^2*d*e*x+15*a^2*e^2+5*a*b*d*e+b^
2*d^2)*((b*x+a)^2)^(1/2)/(e*x+d)^7/(b*x+a)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.13, size = 77, normalized size = 0.53

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(15\,a^2\,e^2+5\,a\,b\,d\,e+35\,a\,b\,e^2\,x+b^2\,d^2+7\,b^2\,d\,e\,x+21\,b^2\,e^2\,x^2\right)}{105\,e^3\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^8,x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*(15*a^2*e^2 + b^2*d^2 + 21*b^2*e^2*x^2 + 35*a*b*e^2*x
 + 7*b^2*d*e*x + 5*a*b*d*e))/(105*e^3*(a + b*x)*(d + e*x)^7)
```

sympy [A] time = 1.43, size = 139, normalized size = 0.95

$$\frac{-15a^2e^2-5abde-b^2d^2-21b^2e^2x^2+x\left(-35abe^2-7b^2de\right)}{105d^7e^3+735d^6e^4x+2205d^5e^5x^2+3675d^4e^6x^3+3675d^3e^7x^4+2205d^2e^8x^5+735de^9x^6+105e^{10}x^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**8,x)
```

```
[Out] (-15*a**2*e**2 - 5*a*b*d*e - b**2*d**2 - 21*b**2*e**2*x**2 + x*(-35*a*b*e**
2 - 7*b**2*d*e))/(105*d**7*e**3 + 735*d**6*e**4*x + 2205*d**5*e**5*x**2 + 3
675*d**4*e**6*x**3 + 3675*d**3*e**7*x**4 + 2205*d**2*e**8*x**5 + 735*d*e**9
*x**6 + 105*e**10*x**7)
```

3.1968 $\int (a+bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=254

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^2}{5e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^3}{9e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+e}{8e^5(a+bx)}$$

```
[Out] 1/8*(-a*e+b*d)^4*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-4/9*b*(-a*e+b*d)^3
*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+3/5*b^2*(-a*e+b*d)^2*(e*x+d)^10*((
b*x+a)^2)^(1/2)/e^5/(b*x+a)-4/11*b^3*(-a*e+b*d)*(e*x+d)^11*((b*x+a)^2)^(1/2
)/e^5/(b*x+a)+1/12*b^4*(e*x+d)^12*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.35, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}}{12e^5(a+bx)}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)}{11e^5(a+bx)}+\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd}{5e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x))
 - (4*b*(b*d - a*e)^3*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a
+ b*x)) + (3*b^2*(b*d - a*e)^2*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^5*(a + b*x)) - (4*b^3*(b*d - a*e)*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(11*e^5*(a + b*x)) + (b^4*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(12*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{3/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^7 \, dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int (a+bx)^4(d+ex)^7 \, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int \left(\frac{(-bd+ae)^4(d+ex)^7}{e^4} - \frac{4b(bd-ae)^3(d+ex)^8}{e^4} + 6b}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(d+ex)^8\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)} - \frac{4b(bd-ae)^3(d+ex)^9}{9e^5(a}$$

Mathematica [A] time = 0.13, size = 432, normalized size = 1.70

$$\frac{x\sqrt{(a+bx)^2}\left(495a^4\left(8d^7+28d^6ex+56d^5e^2x^2+70d^4e^3x^3+56d^3e^4x^4+28d^2e^5x^5+8de^6x^6+e^7x^7\right)+220a^3b}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(495*a^4*(8*d^7 + 28*d^6*e*x + 56*d^5*e^2*x^2 + 70*d^4
*e^3*x^3 + 56*d^3*e^4*x^4 + 28*d^2*e^5*x^5 + 8*d*e^6*x^6 + e^7*x^7) + 220*a
^3*b*x*(36*d^7 + 168*d^6*e*x + 378*d^5*e^2*x^2 + 504*d^4*e^3*x^3 + 420*d^3*
e^4*x^4 + 216*d^2*e^5*x^5 + 63*d*e^6*x^6 + 8*e^7*x^7) + 66*a^2*b^2*x^2*(120
*d^7 + 630*d^6*e*x + 1512*d^5*e^2*x^2 + 2100*d^4*e^3*x^3 + 1800*d^3*e^4*x^4
 + 945*d^2*e^5*x^5 + 280*d*e^6*x^6 + 36*e^7*x^7) + 12*a*b^3*x^3*(330*d^7 +
1848*d^6*e*x + 4620*d^5*e^2*x^2 + 6600*d^4*e^3*x^3 + 5775*d^3*e^4*x^4 + 308
0*d^2*e^5*x^5 + 924*d*e^6*x^6 + 120*e^7*x^7) + b^4*x^4*(792*d^7 + 4620*d^6*
e*x + 11880*d^5*e^2*x^2 + 17325*d^4*e^3*x^3 + 15400*d^3*e^4*x^4 + 8316*d^2*
e^5*x^5 + 2520*d*e^6*x^6 + 330*e^7*x^7)))/(3960*(a + b*x))
```

fricas [B] time = 0.94, size = 489, normalized size = 1.93

$$\frac{1}{12}b^4e^7x^{12}+a^4d^7x+\frac{1}{11}\left(7b^4de^6+4ab^3e^7\right)x^{11}+\frac{1}{10}\left(21b^4d^2e^5+28ab^3de^6+6a^2b^2e^7\right)x^{10}+\frac{1}{9}\left(35b^4d^3e^4+84ab^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/12*b^4*e^7*x^12 + a^4*d^7*x + 1/11*(7*b^4*d*e^6 + 4*a*b^3*e^7)*x^11 + 1/1
0*(21*b^4*d^2*e^5 + 28*a*b^3*d*e^6 + 6*a^2*b^2*e^7)*x^10 + 1/9*(35*b^4*d^3*
e^4 + 84*a*b^3*d^2*e^5 + 42*a^2*b^2*d*e^6 + 4*a^3*b*e^7)*x^9 + 1/8*(35*b^4*
d^4*e^3 + 140*a*b^3*d^3*e^4 + 126*a^2*b^2*d^2*e^5 + 28*a^3*b*d*e^6 + a^4*e^
7)*x^8 + (3*b^4*d^5*e^2 + 20*a*b^3*d^4*e^3 + 30*a^2*b^2*d^3*e^4 + 12*a^3*b*
d^2*e^5 + a^4*d*e^6)*x^7 + 7/6*(b^4*d^6*e + 12*a*b^3*d^5*e^2 + 30*a^2*b^2*d
^4*e^3 + 20*a^3*b*d^3*e^4 + 3*a^4*d^2*e^5)*x^6 + 1/5*(b^4*d^7 + 28*a*b^3*d^
6*e + 126*a^2*b^2*d^5*e^2 + 140*a^3*b*d^4*e^3 + 35*a^4*d^3*e^4)*x^5 + 1/4*(
4*a*b^3*d^7 + 42*a^2*b^2*d^6*e + 84*a^3*b*d^5*e^2 + 35*a^4*d^4*e^3)*x^4 + 1
/3*(6*a^2*b^2*d^7 + 28*a^3*b*d^6*e + 21*a^4*d^5*e^2)*x^3 + 1/2*(4*a^3*b*d^7
 + 7*a^4*d^6*e)*x^2
```

giac [B] time = 0.21, size = 761, normalized size = 3.00

$$\frac{1}{12}b^4x^{12}e^7\operatorname{sgn}(bx+a)+\frac{7}{11}b^4dx^{11}e^6\operatorname{sgn}(bx+a)+\frac{21}{10}b^4d^2x^{10}e^5\operatorname{sgn}(bx+a)+\frac{35}{9}b^4d^3x^9e^4\operatorname{sgn}(bx+a)+\frac{35}{8}b^4d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/12*b^4*x^12*e^7*sgn(b*x + a) + 7/11*b^4*d*x^11*e^6*sgn(b*x + a) + 21/10*b
^4*d^2*x^10*e^5*sgn(b*x + a) + 35/9*b^4*d^3*x^9*e^4*sgn(b*x + a) + 35/8*b^4
*d^4*x^8*e^3*sgn(b*x + a) + 3*b^4*d^5*x^7*e^2*sgn(b*x + a) + 7/6*b^4*d^6*x^
6*e*sgn(b*x + a) + 1/5*b^4*d^7*x^5*sgn(b*x + a) + 4/11*a*b^3*x^11*e^7*sgn(b
*x + a) + 14/5*a*b^3*d*x^10*e^6*sgn(b*x + a) + 28/3*a*b^3*d^2*x^9*e^5*sgn(b
*x + a) + 35/2*a*b^3*d^3*x^8*e^4*sgn(b*x + a) + 20*a*b^3*d^4*x^7*e^3*sgn(b*
x + a) + 14*a*b^3*d^5*x^6*e^2*sgn(b*x + a) + 28/5*a*b^3*d^6*x^5*e*sgn(b*x +
 a) + a*b^3*d^7*x^4*sgn(b*x + a) + 3/5*a^2*b^2*x^10*e^7*sgn(b*x + a) + 14/3
*a^2*b^2*d*x^9*e^6*sgn(b*x + a) + 63/4*a^2*b^2*d^2*x^8*e^5*sgn(b*x + a) + 3
0*a^2*b^2*d^3*x^7*e^4*sgn(b*x + a) + 35*a^2*b^2*d^4*x^6*e^3*sgn(b*x + a) +
126/5*a^2*b^2*d^5*x^5*e^2*sgn(b*x + a) + 21/2*a^2*b^2*d^6*x^4*e*sgn(b*x + a
) + 2*a^2*b^2*d^7*x^3*sgn(b*x + a) + 4/9*a^3*b*x^9*e^7*sgn(b*x + a) + 7/2*a
^3*b*d*x^8*e^6*sgn(b*x + a) + 12*a^3*b*d^2*x^7*e^5*sgn(b*x + a) + 70/3*a^3*
b*d^3*x^6*e^4*sgn(b*x + a) + 28*a^3*b*d^4*x^5*e^3*sgn(b*x + a) + 21*a^3*b*d
^5*x^4*e^2*sgn(b*x + a) + 28/3*a^3*b*d^6*x^3*e*sgn(b*x + a) + 2*a^3*b*d^7*x
^2*sgn(b*x + a) + 1/8*a^4*x^8*e^7*sgn(b*x + a) + a^4*d*x^7*e^6*sgn(b*x + a)
 + 7/2*a^4*d^2*x^6*e^5*sgn(b*x + a) + 7*a^4*d^3*x^5*e^4*sgn(b*x + a) + 35/4
*a^4*d^4*x^4*e^3*sgn(b*x + a) + 7*a^4*d^5*x^3*e^2*sgn(b*x + a) + 7/2*a^4*d^
6*x^2*e*sgn(b*x + a) + a^4*d^7*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 564, normalized size = 2.22

$$\big(330b^4e^7x^{11}+1440x^{10}a\,b^3e^7+2520x^{10}b^4d\,e^6+2376x^9a^2b^2e^7+11088x^9a\,b^3d\,e^6+8316x^9b^4d^2e^5+1760x^8a^3b\,e^7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3960*x*(330*b^4*e^7*x^11+1440*a*b^3*e^7*x^10+2520*b^4*d*e^6*x^10+2376*a^2
*b^2*e^7*x^9+11088*a*b^3*d*e^6*x^9+8316*b^4*d^2*e^5*x^9+1760*a^3*b*e^7*x^8+
18480*a^2*b^2*d*e^6*x^8+36960*a*b^3*d^2*e^5*x^8+15400*b^4*d^3*e^4*x^8+495*a
^4*e^7*x^7+13860*a^3*b*d*e^6*x^7+62370*a^2*b^2*d^2*e^5*x^7+69300*a*b^3*d^3*
e^4*x^7+17325*b^4*d^4*e^3*x^7+3960*a^4*d*e^6*x^6+47520*a^3*b*d^2*e^5*x^6+11
8800*a^2*b^2*d^3*e^4*x^6+79200*a*b^3*d^4*e^3*x^6+11880*b^4*d^5*e^2*x^6+1386
0*a^4*d^2*e^5*x^5+92400*a^3*b*d^3*e^4*x^5+138600*a^2*b^2*d^4*e^3*x^5+55440*
a*b^3*d^5*e^2*x^5+4620*b^4*d^6*e*x^5+27720*a^4*d^3*e^4*x^4+110880*a^3*b*d^4
*e^3*x^4+99792*a^2*b^2*d^5*e^2*x^4+22176*a*b^3*d^6*e*x^4+792*b^4*d^7*x^4+34
650*a^4*d^4*e^3*x^3+83160*a^3*b*d^5*e^2*x^3+41580*a^2*b^2*d^6*e*x^3+3960*a*
b^3*d^7*x^3+27720*a^4*d^5*e^2*x^2+36960*a^3*b*d^6*e*x^2+7920*a^2*b^2*d^7*x^
2+13860*a^4*d^6*e*x+7920*a^3*b*d^7*x+3960*a^4*d^7)*((b*x+a)^2)^(3/2)/(b*x+a
)^3
```

maxima [B] time = 0.75, size = 2152, normalized size = 8.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^7*x^7/b - 19/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a*e^7*x^6/b^2 + 41/220*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^7
*x^5/b^3 - 85/396*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^7*x^4/b^4 + 23/99*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^7*x^3/b^5 + 1/4*(b^2*x^2 + 2*a*b*x + a
^2)^(3/2)*a*d^7*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^8*e^7*x/b^7 - 8/3
3*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^7*x^2/b^6 + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^2*d^7/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^9*e^7/b^8 +
49/198*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^7*x/b^7 - 247/990*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^7*e^7/b^8 + 1/11*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*x^6/b^2 - 17/110*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*x^5/b^3 + 7/10*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*x^5/b^2 + 13/66*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^2*x^4/b^4 - 7/6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a*x^4/b^3 + 7/9*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*x^4/b^2 - 59/264*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x
^3/b^5 + 35/24*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*
x^3/b^4 - 91/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a*x^3/b^3 + 35/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x
^3/b^2 - 1/4*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7*x/b^7
+ 7/4*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6*x/b^6 - 7
/4*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 +
35/4*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 7/
4*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 7
/4*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*
(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b + 21/88*(7*b*d*e^
6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x^2/b^6 - 13/8*(3*b*d^2*e^5
+ a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x^2/b^5 + 37/24*(5*b*d^3*e^4
 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x^2/b^4 - 55/8*(b*d^4*e
^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + (3*b*d^5*e^2 +
5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^8/b^8 + 7/4*(3*b*d^2*e^5 + a*d*e^6)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7/b^7 - 7/4*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b^6 + 35/4*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 7/4*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^
2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 7/4*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^2/b^2 - 65/264*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^5*x/b^7 + 41/24*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^4*x/b^6 - 121/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^3*x/b^5 + 65/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a^2*x/b^4 - 3/2*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a*x/b^3 + 7/6*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*x/b^2 + 329/1320*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/
b^8 - 209/120*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b
^7 + 125/72*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4
/b^6 - 69/8*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5
 + 17/10*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^
4 - 49/30*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1
/5*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^7\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^7\,\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**7*((a + b*x)**2)**(3/2), x)
```

3.1969 $\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=254

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^2}{3e^5(a+bx)}-\frac{b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^3}{2e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+}{7e^5(a+bx)}$$

```
[Out] 1/7*(-a*e+b*d)^4*(e*x+d)^7*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-1/2*b*(-a*e+b*d)^3
*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/3*b^2*(-a*e+b*d)^2*(e*x+d)^9*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)-2/5*b^3*(-a*e+b*d)*(e*x+d)^10*((b*x+a)^2)^(1/2)/
e^5/(b*x+a)+1/11*b^4*(e*x+d)^11*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.30, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}}{11e^5(a+bx)}-\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)}{5e^5(a+bx)}+\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x))
 - (b*(b*d - a*e)^3*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a +
b*x)) + (2*b^2*(b*d - a*e)^2*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*
e^5*(a + b*x)) - (2*b^3*(b*d - a*e)*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x
^2])/(5*e^5*(a + b*x)) + (b^4*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^6 \, dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^6 \, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^6}{e^4} - \frac{4b(bd-ae)^3(d+ex)^7}{e^4} + 6b^2(bd}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(d+ex)^7\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)} - \frac{b(bd-ae)^3(d+ex)^8\sqrt{a^2}}{2e^5(a+b}$$

Mathematica [**A**]   time = 0.12, size = 377, normalized size = 1.48

$$x\sqrt{(a+bx)^2}\left(330a^4\left(7d^6+21d^5ex+35d^4e^2x^2+35d^3e^3x^3+21d^2e^4x^4+7de^5x^5+e^6x^6\right)+165a^3bx\left(28d^6+112d^5\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(330*a^4*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^3
*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 165*a^3*b*x*(28*d^6 +
112*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*e^
5*x^5 + 7*e^6*x^6) + 55*a^2*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*x^2
 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 11*a*b
^3*x^3*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3 + 1575
*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + b^4*x^4*(462*d^6 + 2310*d^5*e*
x + 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1386*d*e^5*x^5
 + 210*e^6*x^6)))/(2310*(a + b*x))
```

fricas [**B**]   time = 1.25, size = 418, normalized size = 1.65

$$\frac{1}{11}\,b^4e^6x^{11}+a^4d^6x+\frac{1}{5}\left(3\,b^4de^5+2\,ab^3e^6\right)x^{10}+\frac{1}{3}\left(5\,b^4d^2e^4+8\,ab^3de^5+2\,a^2b^2e^6\right)x^9+\frac{1}{2}\left(5\,b^4d^3e^3+15\,ab^3d^2e^4+9\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/11*b^4*e^6*x^11 + a^4*d^6*x + 1/5*(3*b^4*d*e^5 + 2*a*b^3*e^6)*x^10 + 1/3*
(5*b^4*d^2*e^4 + 8*a*b^3*d*e^5 + 2*a^2*b^2*e^6)*x^9 + 1/2*(5*b^4*d^3*e^3 +
15*a*b^3*d^2*e^4 + 9*a^2*b^2*d*e^5 + a^3*b*e^6)*x^8 + 1/7*(15*b^4*d^4*e^2 +
 80*a*b^3*d^3*e^3 + 90*a^2*b^2*d^2*e^4 + 24*a^3*b*d*e^5 + a^4*e^6)*x^7 + (b
^4*d^5*e + 10*a*b^3*d^4*e^2 + 20*a^2*b^2*d^3*e^3 + 10*a^3*b*d^2*e^4 + a^4*d
*e^5)*x^6 + 1/5*(b^4*d^6 + 24*a*b^3*d^5*e + 90*a^2*b^2*d^4*e^2 + 80*a^3*b*d
^3*e^3 + 15*a^4*d^2*e^4)*x^5 + (a*b^3*d^6 + 9*a^2*b^2*d^5*e + 15*a^3*b*d^4*
e^2 + 5*a^4*d^3*e^3)*x^4 + (2*a^2*b^2*d^6 + 8*a^3*b*d^5*e + 5*a^4*d^4*e^2)*
x^3 + (2*a^3*b*d^6 + 3*a^4*d^5*e)*x^2
```

giac [**B**]   time = 0.22, size = 660, normalized size = 2.60

$$\frac{1}{11}\,b^4x^{11}e^6\mathrm{sgn}\left(bx+a\right)+\frac{3}{5}\,b^4dx^{10}e^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{3}\,b^4d^2x^9e^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,b^4d^3x^8e^3\mathrm{sgn}\left(bx+a\right)+\frac{15}{7}\,b^4d^4x^7e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/11*b^4*x^11*e^6*sgn(b*x + a) + 3/5*b^4*d*x^10*e^5*sgn(b*x + a) + 5/3*b^4*
d^2*x^9*e^4*sgn(b*x + a) + 5/2*b^4*d^3*x^8*e^3*sgn(b*x + a) + 15/7*b^4*d^4*
x^7*e^2*sgn(b*x + a) + b^4*d^5*x^6*e*sgn(b*x + a) + 1/5*b^4*d^6*x^5*sgn(b*x
 + a) + 2/5*a*b^3*x^10*e^6*sgn(b*x + a) + 8/3*a*b^3*d*x^9*e^5*sgn(b*x + a)
+ 15/2*a*b^3*d^2*x^8*e^4*sgn(b*x + a) + 80/7*a*b^3*d^3*x^7*e^3*sgn(b*x + a)
 + 10*a*b^3*d^4*x^6*e^2*sgn(b*x + a) + 24/5*a*b^3*d^5*x^5*e*sgn(b*x + a) +
a*b^3*d^6*x^4*sgn(b*x + a) + 2/3*a^2*b^2*x^9*e^6*sgn(b*x + a) + 9/2*a^2*b^2
*d*x^8*e^5*sgn(b*x + a) + 90/7*a^2*b^2*d^2*x^7*e^4*sgn(b*x + a) + 20*a^2*b^
2*d^3*x^6*e^3*sgn(b*x + a) + 18*a^2*b^2*d^4*x^5*e^2*sgn(b*x + a) + 9*a^2*b^
2*d^5*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^6*x^3*sgn(b*x + a) + 1/2*a^3*b*x^8*e
^6*sgn(b*x + a) + 24/7*a^3*b*d*x^7*e^5*sgn(b*x + a) + 10*a^3*b*d^2*x^6*e^4*
sgn(b*x + a) + 16*a^3*b*d^3*x^5*e^3*sgn(b*x + a) + 15*a^3*b*d^4*x^4*e^2*sgn
(b*x + a) + 8*a^3*b*d^5*x^3*e*sgn(b*x + a) + 2*a^3*b*d^6*x^2*sgn(b*x + a) +
 1/7*a^4*x^7*e^6*sgn(b*x + a) + a^4*d*x^6*e^5*sgn(b*x + a) + 3*a^4*d^2*x^5*
e^4*sgn(b*x + a) + 5*a^4*d^3*x^4*e^3*sgn(b*x + a) + 5*a^4*d^4*x^3*e^2*sgn(b
*x + a) + 3*a^4*d^5*x^2*e*sgn(b*x + a) + a^4*d^6*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 489, normalized size = 1.93

$$\left(210b^4e^6x^{10} + 924x^9 a\, b^3 e^6 + 1386x^9 b^4 d\, e^5 + 1540x^8 a^2 b^2 e^6 + 6160x^8 a\, b^3 d\, e^5 + 3850x^8 b^4 d^2 e^4 + 1155x^7 a^3 b\, e^6 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2310*x*(210*b^4*e^6*x^10+924*a*b^3*e^6*x^9+1386*b^4*d*e^5*x^9+1540*a^2*b^
2*e^6*x^8+6160*a*b^3*d*e^5*x^8+3850*b^4*d^2*e^4*x^8+1155*a^3*b*e^6*x^7+1039
5*a^2*b^2*d*e^5*x^7+17325*a*b^3*d^2*e^4*x^7+5775*b^4*d^3*e^3*x^7+330*a^4*e^
6*x^6+7920*a^3*b*d*e^5*x^6+29700*a^2*b^2*d^2*e^4*x^6+26400*a*b^3*d^3*e^3*x^
6+4950*b^4*d^4*e^2*x^6+2310*a^4*d*e^5*x^5+23100*a^3*b*d^2*e^4*x^5+46200*a^2
*b^2*d^3*e^3*x^5+23100*a*b^3*d^4*e^2*x^5+2310*b^4*d^5*e*x^5+6930*a^4*d^2*e^
4*x^4+36960*a^3*b*d^3*e^3*x^4+41580*a^2*b^2*d^4*e^2*x^4+11088*a*b^3*d^5*e*x
^4+462*b^4*d^6*x^4+11550*a^4*d^3*e^3*x^3+34650*a^3*b*d^4*e^2*x^3+20790*a^2*
b^2*d^5*e*x^3+2310*a*b^3*d^6*x^3+11550*a^4*d^4*e^2*x^2+18480*a^3*b*d^5*e*x^
2+4620*a^2*b^2*d^6*x^2+6930*a^4*d^5*e*x+4620*a^3*b*d^6*x+2310*a^4*d^6)*((b*
x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.64, size = 1736, normalized size = 6.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^6*x^6/b - 17/110*(b^2*x^2 + 2*a*b*x
+ a^2)^(5/2)*a*e^6*x^5/b^2 + 13/66*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^6*
x^4/b^3 - 59/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^6*x^3/b^4 + 1/4*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^6*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a
^7*e^6*x/b^6 + 21/88*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^6*x^2/b^5 + 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^6/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^8*e^6/b^7 - 65/264*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^6*x/b^6 + 3
29/1320*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^6/b^7 + 1/10*(6*b*d*e^5 + a*e
^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^5/b^2 - 1/6*(6*b*d*e^5 + a*e^6)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a*x^4/b^3 + 1/3*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 + 5/24*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a^2*x^3/b^4 - 13/24*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*x^3/b^2 + 1/4*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6*x/b^6 - 3/4*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(3/2)*a^5*x/b^5 + 5/4*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^4*x/b^4 - 5/4*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x
 + a^2)^(3/2)*a^3*x/b^3 + 3/4*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^2*x/b^2 - 1/4*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^
(3/2)*a*x/b - 13/56*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3
*x^2/b^5 + 37/56*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^2*x^2/b^4 - 55/56*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a*x^2/b^3 + 5/7*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*x^2/b^2 + 1/4*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^7
/b^7 - 3/4*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b^
6 + 5/4*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5
 - 5/4*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4
+ 3/4*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1
/4*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 + 41/168*(6*
b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^6 - 121/168*(5*b*d
^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/56*(4*b*
d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/14*(3
*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(2*
b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 - 209/840*(6*b
*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^7 + 125/168*(5*b*d^2*
e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(4*b*d^3*e
^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/14*(3*b*d^4*
e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^4 - 7/10*(2*b*d^5*
e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b^3 + 1/5*(b*d^6 + 6*a*d
^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+bx)\,(d+ex)^6\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^6\,\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**6*((a + b*x)**2)**(3/2), x)
```

3.1970 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=254

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(bd-ae)^2}{4e^5(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^7(bd-ae)^3}{7e^5(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+}{6e^5(a+b}$$

```
[Out] 1/6*(-a*e+b*d)^4*(e*x+d)^6*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-4/7*b*(-a*e+b*d)^3
*(e*x+d)^7*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+3/4*b^2*(-a*e+b*d)^2*(e*x+d)^8*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)-4/9*b^3*(-a*e+b*d)*(e*x+d)^9*((b*x+a)^2)^(1/2)/e
^5/(b*x+a)+1/10*b^4*(e*x+d)^10*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.27, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 43}

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}}{10e^5(a+bx)}-\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)}{9e^5(a+bx)}+\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^8(b}{4e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a + b*x))
 - (4*b*(b*d - a*e)^3*(d + e*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a
+ b*x)) + (3*b^2*(b*d - a*e)^2*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
4*e^5*(a + b*x)) - (4*b^3*(b*d - a*e)*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(9*e^5*(a + b*x)) + (b^4*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(10*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^5 \, dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int (a+bx)^4 (d+ex)^5 \, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int \left(\frac{(-bd+ae)^4(d+ex)^5}{e^4} - \frac{4b(bd-ae)^3(d+ex)^6}{e^4} + 6b^2(b\right.}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(d+ex)^6\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)} - \frac{4b(bd-ae)^3(d+ex)^7\sqrt{a}}{7e^5(a+b}$$

Mathematica [A] time = 0.10, size = 322, normalized size = 1.27

$$x\sqrt{(a+bx)^2}\left(210a^4\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+120a^3bx\left(21d^5+70d^4ex+105d^3e^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(210*a^4*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2
*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 120*a^3*b*x*(21*d^5 + 70*d^4*e*x + 105*
d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 45*a^2*b^2*x^2*(
56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 +
21*e^5*x^5) + 10*a*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 720*d
^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + b^4*x^4*(252*d^5 + 1050*d^4*e*x
+ 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*x^5)))/(126
0*(a + b*x))
```

fricas [A] time = 1.01, size = 360, normalized size = 1.42

$$\frac{1}{10}\,b^4e^5x^{10}+a^4d^5x+\frac{1}{9}\left(5\,b^4de^4+4\,ab^3e^5\right)x^9+\frac{1}{4}\left(5\,b^4d^2e^3+10\,ab^3de^4+3\,a^2b^2e^5\right)x^8+\frac{2}{7}\left(5\,b^4d^3e^2+20\,ab^3d^2e^3+15\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/10*b^4*e^5*x^10 + a^4*d^5*x + 1/9*(5*b^4*d*e^4 + 4*a*b^3*e^5)*x^9 + 1/4*(
5*b^4*d^2*e^3 + 10*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^8 + 2/7*(5*b^4*d^3*e^2 +
20*a*b^3*d^2*e^3 + 15*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^7 + 1/6*(5*b^4*d^4*e +
 40*a*b^3*d^3*e^2 + 60*a^2*b^2*d^2*e^3 + 20*a^3*b*d*e^4 + a^4*e^5)*x^6 + 1/
5*(b^4*d^5 + 20*a*b^3*d^4*e + 60*a^2*b^2*d^3*e^2 + 40*a^3*b*d^2*e^3 + 5*a^4
*d*e^4)*x^5 + 1/2*(2*a*b^3*d^5 + 15*a^2*b^2*d^4*e + 20*a^3*b*d^3*e^2 + 5*a^
4*d^2*e^3)*x^4 + 2/3*(3*a^2*b^2*d^5 + 10*a^3*b*d^4*e + 5*a^4*d^3*e^2)*x^3 +
 1/2*(4*a^3*b*d^5 + 5*a^4*d^4*e)*x^2
```

giac [B] time = 0.19, size = 561, normalized size = 2.21

$$\frac{1}{10}\,b^4x^{10}e^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{9}\,b^4dx^9e^4\mathrm{sgn}\left(bx+a\right)+\frac{5}{4}\,b^4d^2x^8e^3\mathrm{sgn}\left(bx+a\right)+\frac{10}{7}\,b^4d^3x^7e^2\mathrm{sgn}\left(bx+a\right)+\frac{5}{6}\,b^4d^4x^6e\mathrm{sgn}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/10*b^4*x^10*e^5*sgn(b*x + a) + 5/9*b^4*d*x^9*e^4*sgn(b*x + a) + 5/4*b^4*d
^2*x^8*e^3*sgn(b*x + a) + 10/7*b^4*d^3*x^7*e^2*sgn(b*x + a) + 5/6*b^4*d^4*x
^6*e*sgn(b*x + a) + 1/5*b^4*d^5*x^5*sgn(b*x + a) + 4/9*a*b^3*x^9*e^5*sgn(b*
x + a) + 5/2*a*b^3*d*x^8*e^4*sgn(b*x + a) + 40/7*a*b^3*d^2*x^7*e^3*sgn(b*x
+ a) + 20/3*a*b^3*d^3*x^6*e^2*sgn(b*x + a) + 4*a*b^3*d^4*x^5*e*sgn(b*x + a)
 + a*b^3*d^5*x^4*sgn(b*x + a) + 3/4*a^2*b^2*x^8*e^5*sgn(b*x + a) + 30/7*a^2
*b^2*d*x^7*e^4*sgn(b*x + a) + 10*a^2*b^2*d^2*x^6*e^3*sgn(b*x + a) + 12*a^2*
b^2*d^3*x^5*e^2*sgn(b*x + a) + 15/2*a^2*b^2*d^4*x^4*e*sgn(b*x + a) + 2*a^2*
b^2*d^5*x^3*sgn(b*x + a) + 4/7*a^3*b*x^7*e^5*sgn(b*x + a) + 10/3*a^3*b*d*x^
6*e^4*sgn(b*x + a) + 8*a^3*b*d^2*x^5*e^3*sgn(b*x + a) + 10*a^3*b*d^3*x^4*e^
2*sgn(b*x + a) + 20/3*a^3*b*d^4*x^3*e*sgn(b*x + a) + 2*a^3*b*d^5*x^2*sgn(b*
x + a) + 1/6*a^4*x^6*e^5*sgn(b*x + a) + a^4*d*x^5*e^4*sgn(b*x + a) + 5/2*a^
4*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^4*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^4*d^
4*x^2*e*sgn(b*x + a) + a^4*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 414, normalized size = 1.63

$$\left(126b^4e^5x^9 + 560x^8ab^3e^5 + 700x^8b^4de^4 + 945x^7a^2b^2e^5 + 3150x^7ab^3de^4 + 1575x^7b^4d^2e^3 + 720x^6a^3be^5 + 540$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/1260*x*(126*b^4*e^5*x^9+560*a*b^3*e^5*x^8+700*b^4*d*e^4*x^8+945*a^2*b^2*e
^5*x^7+3150*a*b^3*d*e^4*x^7+1575*b^4*d^2*e^3*x^7+720*a^3*b*e^5*x^6+5400*a^2
*b^2*d*e^4*x^6+7200*a*b^3*d^2*e^3*x^6+1800*b^4*d^3*e^2*x^6+210*a^4*e^5*x^5+
4200*a^3*b*d*e^4*x^5+12600*a^2*b^2*d^2*e^3*x^5+8400*a*b^3*d^3*e^2*x^5+1050*
b^4*d^4*e*x^5+1260*a^4*d*e^4*x^4+10080*a^3*b*d^2*e^3*x^4+15120*a^2*b^2*d^3*
e^2*x^4+5040*a*b^3*d^4*e*x^4+252*b^4*d^5*x^4+3150*a^4*d^2*e^3*x^3+12600*a^3
*b*d^3*e^2*x^3+9450*a^2*b^2*d^4*e*x^3+1260*a*b^3*d^5*x^3+4200*a^4*d^3*e^2*x
^2+8400*a^3*b*d^4*e*x^2+2520*a^2*b^2*d^5*x^2+3150*a^4*d^4*e*x+2520*a^3*b*d^
5*x+1260*a^4*d^5)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.77, size = 1323, normalized size = 5.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^5*x^5/b - 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*e^5*x^4/b^2 + 5/24*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^5*x^3/
b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^5*x + 1/4*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a^6*e^5*x/b^5 - 13/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*e^5*
x^2/b^4 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^5/b + 1/4*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*a^7*e^5/b^6 + 41/168*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4
*e^5*x/b^5 - 209/840*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^5/b^6 + 1/9*(5*b
*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^4/b^2 - 13/72*(5*b*d*e^4
+ a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^3/b^3 + 5/8*(2*b*d^2*e^3 + a*d
*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/b^2 - 1/4*(5*b*d*e^4 + a*e^5)*(b^
2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*x/b^5 + 5/4*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x
^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 5/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 5/4*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2
*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x
+ a^2)^(3/2)*a*x/b + 37/168*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^2*x^2/b^4 - 55/56*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a*x^2/b^3 + 10/7*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*x^2/b^2 - 1/4*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6/b
```

```
^6 + 5/4*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 -
5/2*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 5/4*(
b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^5
 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 121/504*(5*b*d*e^4
+ a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^5 + 65/56*(2*b*d^2*e^3 + a
*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^4 - 15/7*(b*d^3*e^2 + a*d^2
*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 5/6*(b*d^4*e + 2*a*d^3*e^2)
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x/b^2 + 125/504*(5*b*d*e^4 + a*e^5)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^6 - 69/56*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2
+ 2*a*b*x + a^2)^(5/2)*a^3/b^5 + 17/7*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*
a*b*x + a^2)^(5/2)*a^2/b^4 - 7/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a/b^3 + 1/5*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^5\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^5\,\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**5*((a + b*x)**2)**(3/2), x)
```

3.1971 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx$

Optimal. Leaf size=219

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{2b^5}+\frac{6e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^5}+\frac{2e\sqrt{a^2+2abx+b^2x^2}\,(a}{3b^5}$$

```
[Out] 1/5*(-a*e+b*d)^4*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^5+2/3*e*(-a*e+b*d)^3*(b*x+a)
^5*((b*x+a)^2)^(1/2)/b^5+6/7*e^2*(-a*e+b*d)^2*(b*x+a)^6*((b*x+a)^2)^(1/2)/b
^5+1/2*e^3*(-a*e+b*d)*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^5+1/9*e^4*(b*x+a)^8*((b
*x+a)^2)^(1/2)/b^5
```

Rubi [A] time = 0.22, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{2b^5}+\frac{6e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^5}+\frac{2e\sqrt{a^2+2abx+b^2x^2}\,(a}{3b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^5) + (2*e*(b
*d - a*e)^3*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^5) + (6*e^2*(b*
d - a*e)^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (e^3*(b*d -
 a*e)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (e^4*(a + b*x)^8
*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{3/2} \, dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^4 \, dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^4 \, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^4(a+bx)^4}{b^4} + \frac{4e(bd-ae)^3(a+bx)^5}{b^4} + \frac{6e^2(bd-}{}\right.}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^5} + \frac{2e(bd-ae)^3(a+bx)^5\sqrt{}}{3b^5}$$

Mathematica [A]   time = 0.08, size = 267, normalized size = 1.22

$$\frac{x\sqrt{(a+bx)^2}\left(126a^4\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+84a^3bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de^3x^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(126*a^4*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^
3*x^3 + e^4*x^4) + 84*a^3*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d*
e^3*x^3 + 5*e^4*x^4) + 36*a^2*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2*x
^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 9*a*b^3*x^3*(70*d^4 + 224*d^3*e*x + 280*d
^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + b^4*x^4*(126*d^4 + 420*d^3*e*x +
 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4)))/(630*(a + b*x))
```

fricas [A]   time = 1.28, size = 285, normalized size = 1.30

$$\frac{1}{9}\,b^4e^4x^9+a^4d^4x+\frac{1}{2}\left(b^4de^3+ab^3e^4\right)x^8+\frac{2}{7}\left(3\,b^4d^2e^2+8\,ab^3de^3+3\,a^2b^2e^4\right)x^7+\frac{2}{3}\left(b^4d^3e+6\,ab^3d^2e^2+6\,a^2b^2de^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/9*b^4*e^4*x^9 + a^4*d^4*x + 1/2*(b^4*d*e^3 + a*b^3*e^4)*x^8 + 2/7*(3*b^4*
d^2*e^2 + 8*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^7 + 2/3*(b^4*d^3*e + 6*a*b^3*d^2
*e^2 + 6*a^2*b^2*d*e^3 + a^3*b*e^4)*x^6 + 1/5*(b^4*d^4 + 16*a*b^3*d^3*e + 3
6*a^2*b^2*d^2*e^2 + 16*a^3*b*d*e^3 + a^4*e^4)*x^5 + (a*b^3*d^4 + 6*a^2*b^2*
d^3*e + 6*a^3*b*d^2*e^2 + a^4*d*e^3)*x^4 + 2/3*(3*a^2*b^2*d^4 + 8*a^3*b*d^3
*e + 3*a^4*d^2*e^2)*x^3 + 2*(a^3*b*d^4 + a^4*d^3*e)*x^2
```

giac [B]   time = 0.19, size = 461, normalized size = 2.11

$$\frac{1}{9}\,b^4x^9e^4\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}\,b^4dx^8e^3\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,b^4d^2x^7e^2\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,b^4d^3x^6e\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}\,b^4d^4x^5\mathrm{sgn}\left(bx+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/9*b^4*x^9*e^4*sgn(b*x + a) + 1/2*b^4*d*x^8*e^3*sgn(b*x + a) + 6/7*b^4*d^2
*x^7*e^2*sgn(b*x + a) + 2/3*b^4*d^3*x^6*e*sgn(b*x + a) + 1/5*b^4*d^4*x^5*sg
n(b*x + a) + 1/2*a*b^3*x^8*e^4*sgn(b*x + a) + 16/7*a*b^3*d*x^7*e^3*sgn(b*x
+ a) + 4*a*b^3*d^2*x^6*e^2*sgn(b*x + a) + 16/5*a*b^3*d^3*x^5*e*sgn(b*x + a)
```

```
 + a*b^3*d^4*x^4*sgn(b*x + a) + 6/7*a^2*b^2*x^7*e^4*sgn(b*x + a) + 4*a^2*b^
2*d*x^6*e^3*sgn(b*x + a) + 36/5*a^2*b^2*d^2*x^5*e^2*sgn(b*x + a) + 6*a^2*b^
2*d^3*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^4*x^3*sgn(b*x + a) + 2/3*a^3*b*x^6*e
^4*sgn(b*x + a) + 16/5*a^3*b*d*x^5*e^3*sgn(b*x + a) + 6*a^3*b*d^2*x^4*e^2*s
gn(b*x + a) + 16/3*a^3*b*d^3*x^3*e*sgn(b*x + a) + 2*a^3*b*d^4*x^2*sgn(b*x +
 a) + 1/5*a^4*x^5*e^4*sgn(b*x + a) + a^4*d*x^4*e^3*sgn(b*x + a) + 2*a^4*d^2
*x^3*e^2*sgn(b*x + a) + 2*a^4*d^3*x^2*e*sgn(b*x + a) + a^4*d^4*x*sgn(b*x +
a)
```

maple [B] time = 0.05, size = 339, normalized size = 1.55

$$\underline{\left(70b^4e^4x^8 + 315x^7a\,b^3e^4 + 315x^7b^4d\,e^3 + 540x^6a^2b^2e^4 + 1440x^6a\,b^3d\,e^3 + 540x^6b^4d^2e^2 + 420x^5a^3b\,e^4 + 2520x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/630*x*(70*b^4*e^4*x^8+315*a*b^3*e^4*x^7+315*b^4*d*e^3*x^7+540*a^2*b^2*e^4
*x^6+1440*a*b^3*d*e^3*x^6+540*b^4*d^2*e^2*x^6+420*a^3*b*e^4*x^5+2520*a^2*b^
2*d*e^3*x^5+2520*a*b^3*d^2*e^2*x^5+420*b^4*d^3*e*x^5+126*a^4*e^4*x^4+2016*a
^3*b*d*e^3*x^4+4536*a^2*b^2*d^2*e^2*x^4+2016*a*b^3*d^3*e*x^4+126*b^4*d^4*x^
4+630*a^4*d*e^3*x^3+3780*a^3*b*d^2*e^2*x^3+3780*a^2*b^2*d^3*e*x^3+630*a*b^3
*d^4*x^3+1260*a^4*d^2*e^2*x^2+3360*a^3*b*d^3*e*x^2+1260*a^2*b^2*d^4*x^2+126
0*a^4*d^3*e*x+1260*a^3*b*d^4*x+630*a^4*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.74, size = 998, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^4*x^4/b - 13/72*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a*e^4*x^3/b^2 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^4*x - 1/
4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^4*x/b^4 + 37/168*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*a^2*e^4*x^2/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^4
/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^6*e^4/b^5 - 121/504*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^3*e^4*x/b^4 + 125/504*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^4*e^4/b^5 + 1/8*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^3/
b^2 + 1/4*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*x/b^4 - 1
/2*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3*x/b^3 + 1/
2*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*x/b^2 - 1/4
*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x/b - 11/56*(4*b*d*e
^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x^2/b^3 + 2/7*(3*b*d^2*e^2 +
2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 + 1/4*(4*b*d*e^3 + a*e^4
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5/b^5 - 1/2*(3*b*d^2*e^2 + 2*a*d*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 1/2*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*
a*b*x + a^2)^(3/2)*a^2/b^2 + 13/56*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^2*x/b^4 - 3/7*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a*x/b^3 + 1/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*x/b^2 - 69/280*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^3/b^5 + 17/35*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a
^2/b^4 - 7/15*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a/b
^3 + 1/5*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^4\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (a + bx) (d + ex)^4 \left((a + bx)^2\right)^{\frac{3}{2}} dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**4*((a + b*x)**2)**(3/2), x)
```

3.1972 $\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=172

$$\frac{3e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^4}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)^2}{2b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+b}{5b^4}$$

```
[Out] 1/5*(-a*e+b*d)^3*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^4+1/2*e*(-a*e+b*d)^2*(b*x+a)
^5*((b*x+a)^2)^(1/2)/b^4+3/7*e^2*(-a*e+b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^4
+1/8*e^3*(b*x+a)^7*((b*x+a)^2)^(1/2)/b^4
```

Rubi [A] time = 0.18, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{3e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^4}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)^2}{2b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+b}{5b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^4) + (e*(b*d
 - a*e)^2*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^4) + (3*e^2*(b*d
- a*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + (e^3*(a + b*x)^
7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\ \int (a+bx)\left(ab+b^2x\right)^3(d+ex)^3\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^3\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^3(a+bx)^4}{b^3}+\frac{3e(bd-ae)^2(a+bx)^5}{b^3}+ 3e^2(bd-\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^3(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^4}+\frac{e(bd-ae)^2(a+bx)^5\sqrt{a^2}}{2b^4}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 212, normalized size = 1.23

$$
x\sqrt{(a+bx)^2}\left(70a^4\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+56a^3bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+28a^2b^2x^2\left(20d\right.\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(70*a^4*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
56*a^3*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 28*a^2*b^2*x^
2*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 8*a*b^3*x^3*(35*d^3 +
 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3) + b^4*x^4*(56*d^3 + 140*d^2*e*x +
120*d*e^2*x^2 + 35*e^3*x^3)))/(280*(a + b*x))
```

fricas [A] time = 1.54, size = 225, normalized size = 1.31

$$
\frac{1}{8}b^4e^3x^8+a^4d^3x+\frac{1}{7}\left(3\,b^4de^2+4\,ab^3e^3\right)x^7+\frac{1}{2}\left(b^4d^2e+4\,ab^3de^2+2\,a^2b^2e^3\right)x^6+\frac{1}{5}\left(b^4d^3+12\,ab^3d^2e+18\,a^2b^2de^2+\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/8*b^4*e^3*x^8 + a^4*d^3*x + 1/7*(3*b^4*d*e^2 + 4*a*b^3*e^3)*x^7 + 1/2*(b^
4*d^2*e + 4*a*b^3*d*e^2 + 2*a^2*b^2*e^3)*x^6 + 1/5*(b^4*d^3 + 12*a*b^3*d^2*
e + 18*a^2*b^2*d*e^2 + 4*a^3*b*e^3)*x^5 + 1/4*(4*a*b^3*d^3 + 18*a^2*b^2*d^2
*e + 12*a^3*b*d*e^2 + a^4*e^3)*x^4 + (2*a^2*b^2*d^3 + 4*a^3*b*d^2*e + a^4*d
*e^2)*x^3 + 1/2*(4*a^3*b*d^3 + 3*a^4*d^2*e)*x^2
```

giac [B] time = 0.21, size = 360, normalized size = 2.09

$$
\frac{1}{8}b^4x^8e^3\mathrm{sgn}\left(bx+a\right)+\frac{3}{7}b^4dx^7e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{2}b^4d^2x^6e\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}b^4d^3x^5\mathrm{sgn}\left(bx+a\right)+\frac{4}{7}ab^3x^7e^3\mathrm{sgn}\left(bx+\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/8*b^4*x^8*e^3*sgn(b*x + a) + 3/7*b^4*d*x^7*e^2*sgn(b*x + a) + 1/2*b^4*d^2
*x^6*e*sgn(b*x + a) + 1/5*b^4*d^3*x^5*sgn(b*x + a) + 4/7*a*b^3*x^7*e^3*sgn(
b*x + a) + 2*a*b^3*d*x^6*e^2*sgn(b*x + a) + 12/5*a*b^3*d^2*x^5*e*sgn(b*x +
a) + a*b^3*d^3*x^4*sgn(b*x + a) + a^2*b^2*x^6*e^3*sgn(b*x + a) + 18/5*a^2*b
^2*d*x^5*e^2*sgn(b*x + a) + 9/2*a^2*b^2*d^2*x^4*e*sgn(b*x + a) + 2*a^2*b^2*
d^3*x^3*sgn(b*x + a) + 4/5*a^3*b*x^5*e^3*sgn(b*x + a) + 3*a^3*b*d*x^4*e^2*s
```

```
gn(b*x + a) + 4*a^3*b*d^2*x^3*e*sgn(b*x + a) + 2*a^3*b*d^3*x^2*sgn(b*x + a)
 + 1/4*a^4*x^4*e^3*sgn(b*x + a) + a^4*d*x^3*e^2*sgn(b*x + a) + 3/2*a^4*d^2*
x^2*e*sgn(b*x + a) + a^4*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 264, normalized size = 1.53

$$\frac{\left(35e^3b^4x^7+160x^6e^3a\,b^3+120x^6d\,e^2b^4+280x^5e^3a^2b^2+560x^5d\,e^2a\,b^3+140x^5d^2e\,b^4+224x^4e^3a^3b+1008x^4d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/280*x*(35*b^4*e^3*x^7+160*a*b^3*e^3*x^6+120*b^4*d*e^2*x^6+280*a^2*b^2*e^3
*x^5+560*a*b^3*d*e^2*x^5+140*b^4*d^2*e*x^5+224*a^3*b*e^3*x^4+1008*a^2*b^2*d
*e^2*x^4+672*a*b^3*d^2*e*x^4+56*b^4*d^3*x^4+70*a^4*e^3*x^3+840*a^3*b*d*e^2*
x^3+1260*a^2*b^2*d^2*e*x^3+280*a*b^3*d^3*x^3+280*a^4*d*e^2*x^2+1120*a^3*b*d
^2*e*x^2+560*a^2*b^2*d^3*x^2+420*a^4*d^2*e*x+560*a^3*b*d^3*x+280*a^4*d^3)*(
(b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.65, size = 693, normalized size = 4.03

$$\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}e^3x^3}{8\,b}+\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ad^3x+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^4e^3x}{4\,b^3}-\frac{11\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a}{56\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^3*x^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^
2)^(3/2)*a*d^3*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4*e^3*x/b^3 - 11/5
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*e^3*x^2/b^2 + 1/4*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^2*d^3/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^5*e^3/b^4 + 13
/56*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^3*x/b^3 - 69/280*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*a^3*e^3/b^4 - 1/4*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x +
a^2)^(3/2)*a^3*x/b^3 + 3/4*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*a^2*x/b^2 - 1/4*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*x
/b + 1/7*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*x^2/b^2 - 1/4*
(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^4/b^4 + 3/4*(b*d^2*e
+ a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^3/b^3 - 1/4*(b*d^3 + 3*a*d^2*e
)*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2/b^2 - 3/14*(3*b*d*e^2 + a*e^3)*(b^2*x
^2 + 2*a*b*x + a^2)^(5/2)*a*x/b^3 + 1/2*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*x/b^2 + 17/70*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^2/b^4 - 7/10*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a/b^3 + 1/5*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)^3\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^3\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3*((a + b*x)**2)**(3/2), x)
```

3.1973 $\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)}{3b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^2}{5b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx}{7b^3}$$

```
[Out] 1/5*(-a*e+b*d)^2*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^3+1/3*e*(-a*e+b*d)*(b*x+a)^5
*((b*x+a)^2)^(1/2)/b^3+1/7*e^2*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.13, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5(bd-ae)}{3b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)^2}{5b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx}{7b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^3) + (e*(b*d
 - a*e)*(a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^3) + (e^2*(a + b*x)
^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^2\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^2\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^4}{b^2}+\frac{2e(bd-ae)(a+bx)^5}{b^2}+\frac{e^2(a}{b}\right.}{ab+b^2x}\\ &= \frac{(bd-ae)^2(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^3}+\frac{e(bd-ae)(a+bx)^5}{3b}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 157, normalized size = 1.26

$$\frac{x\sqrt{(a+bx)^2}\,\big(35a^4\big(3d^2+3dex+e^2x^2\big)+35a^3bx\big(6d^2+8dex+3e^2x^2\big)+21a^2b^2x^2\big(10d^2+15dex+6e^2x^2\big)+7ab}{105(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(35*a^4*(3*d^2 + 3*d*e*x + e^2*x^2) + 35*a^3*b*x*(6*d^
2 + 8*d*e*x + 3*e^2*x^2) + 21*a^2*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2) +
 7*a*b^3*x^3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + b^4*x^4*(21*d^2 + 35*d*e*x
+ 15*e^2*x^2)))/(105*(a + b*x))
```

fricas [**A**] time = 0.46, size = 156, normalized size = 1.25

$$\frac{1}{7}\,b^4e^2x^7+a^4d^2x+\frac{1}{3}\,\big(b^4de+2\,ab^3e^2\big)x^6+\frac{1}{5}\,\big(b^4d^2+8\,ab^3de+6\,a^2b^2e^2\big)x^5+\big(ab^3d^2+3\,a^2b^2de+a^3be^2\big)x^4+\frac{1}{3}\,\big(6\,a^2b^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/7*b^4*e^2*x^7 + a^4*d^2*x + 1/3*(b^4*d*e + 2*a*b^3*e^2)*x^6 + 1/5*(b^4*d^
2 + 8*a*b^3*d*e + 6*a^2*b^2*e^2)*x^5 + (a*b^3*d^2 + 3*a^2*b^2*d*e + a^3*b*e
^2)*x^4 + 1/3*(6*a^2*b^2*d^2 + 8*a^3*b*d*e + a^4*e^2)*x^3 + (2*a^3*b*d^2 +
a^4*d*e)*x^2
```

giac [**B**] time = 0.18, size = 260, normalized size = 2.08

$$\frac{1}{7}\,b^4x^7e^2\mathrm{sgn}\,(bx+a)+\frac{1}{3}\,b^4dx^6e\mathrm{sgn}\,(bx+a)+\frac{1}{5}\,b^4d^2x^5\mathrm{sgn}\,(bx+a)+\frac{2}{3}\,ab^3x^6e^2\mathrm{sgn}\,(bx+a)+\frac{8}{5}\,ab^3dx^5e\mathrm{sgn}\,(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/7*b^4*x^7*e^2*sgn(b*x + a) + 1/3*b^4*d*x^6*e*sgn(b*x + a) + 1/5*b^4*d^2*x
^5*sgn(b*x + a) + 2/3*a*b^3*x^6*e^2*sgn(b*x + a) + 8/5*a*b^3*d*x^5*e*sgn(b*
x + a) + a*b^3*d^2*x^4*sgn(b*x + a) + 6/5*a^2*b^2*x^5*e^2*sgn(b*x + a) + 3*
a^2*b^2*d*x^4*e*sgn(b*x + a) + 2*a^2*b^2*d^2*x^3*sgn(b*x + a) + a^3*b*x^4*e
^2*sgn(b*x + a) + 8/3*a^3*b*d*x^3*e*sgn(b*x + a) + 2*a^3*b*d^2*x^2*sgn(b*x
+ a) + 1/3*a^4*x^3*e^2*sgn(b*x + a) + a^4*d*x^2*e*sgn(b*x + a) + a^4*d^2*x*
sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 189, normalized size = 1.51

$$\frac{\big(15e^2b^4x^6+70x^5e^2a\,b^3+35x^5b^4de+126x^4a^2b^2e^2+168x^4dea\,b^3+21x^4b^4d^2+105a^3b\,e^2x^3+315a^2b^2de\,x^3+105}{105\,(bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/105*x*(15*b^4*e^2*x^6+70*a*b^3*e^2*x^5+35*b^4*d*e*x^5+126*a^2*b^2*e^2*x^4
+168*a*b^3*d*e*x^4+21*b^4*d^2*x^4+105*a^3*b*e^2*x^3+315*a^2*b^2*d*e*x^3+105
*a*b^3*d^2*x^3+35*a^4*e^2*x^2+280*a^3*b*d*e*x^2+210*a^2*b^2*d^2*x^2+105*a^4
*d*e*x+210*a^3*b*d^2*x+105*a^4*d^2)*((b*x+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.57, size = 452, normalized size = 3.62

$$\frac{1}{4}\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^3e^2x}{4\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}e^2x^2}{7\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}a^2d^2}{4\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d^2*x - 1/4*(b^2*x^2 + 2*a*b*x + a^2)
^(3/2)*a^3*e^2*x/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e^2*x^2/b + 1/4*
(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d^2/b - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^4*e^2/b^3 - 3/14*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*e^2*x/b^2 + 17/70
*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*e^2/b^3 + 1/4*(b^2*x^2 + 2*a*b*x + a^2
)^(3/2)*(2*b*d*e + a*e^2)*a^2*x/b^2 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(
b*d^2 + 2*a*d*e)*a*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(2*b*d*e + a*e
^2)*a^3/b^3 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*d^2 + 2*a*d*e)*a^2/b^2
 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a*e^2)*x/b^2 - 7/30*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/5*(b^2*x^2 + 2*a*b*x
 + a^2)^(5/2)*(b*d^2 + 2*a*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,\left(d+e\,x\right)^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^2\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2*((a + b*x)**2)**(3/2), x)
```

3.1974 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)}{5b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^2}$$

```
[Out] 1/5*(-a*e+b*d)*(b*x+a)^4*((b*x+a)^2)^(1/2)/b^2+1/6*e*(b*x+a)^5*((b*x+a)^2)^
(1/2)/b^2
```

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4(bd-ae)}{5b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^5}{6b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^2) + (e*(a + b
*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3(d+ex)\,dx}{b^2\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^4}{b}+\frac{e(a+bx)^5}{b}\right)dx}{ab+b^2x}\\
&= \frac{(bd-ae)(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{5b^2}+\frac{e(a+bx)^5\sqrt{a^2+2abx+b}}{6b^2}
\end{aligned}$$

Mathematica [A] time = 0.03, size = 102, normalized size = 1.31

$$\frac{x\sqrt{(a+bx)^2}\left(15a^4(2d+ex)+20a^3bx(3d+2ex)+15a^2b^2x^2(4d+3ex)+6ab^3x^3(5d+4ex)+b^4x^4(6d+5ex)\right)}{30(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(15*a^4*(2*d + e*x) + 20*a^3*b*x*(3*d + 2*e*x) + 15*a^
2*b^2*x^2*(4*d + 3*e*x) + 6*a*b^3*x^3*(5*d + 4*e*x) + b^4*x^4*(6*d + 5*e*x)
))/(30*(a + b*x))
```

fricas [A] time = 0.60, size = 96, normalized size = 1.23

$$\frac{1}{6}b^4ex^6+a^4dx+\frac{1}{5}\left(b^4d+4ab^3e\right)x^5+\frac{1}{2}\left(2ab^3d+3a^2b^2e\right)x^4+\frac{2}{3}\left(3a^2b^2d+2a^3be\right)x^3+\frac{1}{2}\left(4a^3bd+a^4e\right)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 1/6*b^4*e*x^6 + a^4*d*x + 1/5*(b^4*d + 4*a*b^3*e)*x^5 + 1/2*(2*a*b^3*d + 3*
a^2*b^2*e)*x^4 + 2/3*(3*a^2*b^2*d + 2*a^3*b*e)*x^3 + 1/2*(4*a^3*b*d + a^4*e
)*x^2
```

giac [B] time = 0.18, size = 162, normalized size = 2.08

$$\frac{1}{6}b^4x^6e\mathrm{sgn}\left(bx+a\right)+\frac{1}{5}b^4dx^5\mathrm{sgn}\left(bx+a\right)+\frac{4}{5}ab^3x^5e\mathrm{sgn}\left(bx+a\right)+ab^3dx^4\mathrm{sgn}\left(bx+a\right)+\frac{3}{2}a^2b^2x^4e\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/6*b^4*x^6*e*sgn(b*x + a) + 1/5*b^4*d*x^5*sgn(b*x + a) + 4/5*a*b^3*x^5*e*s
gn(b*x + a) + a*b^3*d*x^4*sgn(b*x + a) + 3/2*a^2*b^2*x^4*e*sgn(b*x + a) + 2
*a^2*b^2*d*x^3*sgn(b*x + a) + 4/3*a^3*b*x^3*e*sgn(b*x + a) + 2*a^3*b*d*x^2*
sgn(b*x + a) + 1/2*a^4*x^2*e*sgn(b*x + a) + a^4*d*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 114, normalized size = 1.46

$$\frac{\big(5e\,b^4x^5+24x^4ea\,b^3+6x^4d\,b^4+45x^3e\,a^2b^2+30x^3da\,b^3+40x^2e\,a^3b+60x^2d\,a^2b^2+15a^4ex+60a^3bdx+30d}{30\left(bx+a\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/30*x*(5*b^4*e*x^5+24*a*b^3*e*x^4+6*b^4*d*x^4+45*a^2*b^2*e*x^3+30*a*b^3*d*
x^3+40*a^3*b*e*x^2+60*a^2*b^2*d*x^2+15*a^4*e*x+60*a^3*b*d*x+30*a^4*d)*((b*x
+a)^2)^(3/2)/(b*x+a)^3
```

maxima [B] time = 0.61, size = 251, normalized size = 3.22

$$\frac{1}{4}\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}adx+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2ex}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^2d}{4b}+\frac{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}a^3e}{4b^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a*d*x + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(
3/2)*a^2*e*x/b + 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*a^2*d/b + 1/4*(b^2*x^2
 + 2*a*b*x + a^2)^(3/2)*a^3*e/b^2 - 1/4*(b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(b*
d + a*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*e*x/b - 1/4*(b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*(b*d + a*e)*a^2/b^2 - 7/30*(b^2*x^2 + 2*a*b*x + a^2)^
(5/2)*a*e/b^2 + 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.1975 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

```
[Out] 1/5*(b^2*x^2+2*a*b*x+a^2)^(5/2)/b
```

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(5/2)/(5*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5b}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(a+bx)^4\sqrt{(a+bx)^2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)^4*Sqrt[(a + b*x)^2])/(5*b)
```

fricas [A] time = 1.14, size = 42, normalized size = 1.56

$$\frac{1}{5}\,b^4x^5+ab^3x^4+2\,a^2b^2x^3+2\,a^3bx^2+a^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/5*b^4*x^5 + a*b^3*x^4 + 2*a^2*b^2*x^3 + 2*a^3*b*x^2 + a^4*x
```

giac [B] time = 0.20, size = 86, normalized size = 3.19

$$\frac{1}{5}\,b^4x^5\operatorname{sgn}(bx+a)+ab^3x^4\operatorname{sgn}(bx+a)+2\,a^2b^2x^3\operatorname{sgn}(bx+a)+2\,a^3bx^2\operatorname{sgn}(bx+a)+a^4x\operatorname{sgn}(bx+a)+\frac{a^5\operatorname{sgn}(b}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/5*b^4*x^5*sgn(b*x + a) + a*b^3*x^4*sgn(b*x + a) + 2*a^2*b^2*x^3*sgn(b*x +
 a) + 2*a^3*b*x^2*sgn(b*x + a) + a^4*x*sgn(b*x + a) + 1/5*a^5*sgn(b*x + a)/
b
```

maple [B] time = 0.05, size = 60, normalized size = 2.22

$$\frac{\left(b^{4} x^{4}+5 a \,b^{3} x^{3}+10 a^{2} b^{2} x^{2}+10 a^{3} b x +5 a^{4}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{3}{2}} x}{5 \left(b x +a \right)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/5*x*(b^4*x^4+5*a*b^3*x^3+10*a^2*b^2*x^2+10*a^3*b*x+5*a^4)*((b*x+a)^2)^(3/
2)/(b*x+a)^3
```

maxima [A] time = 0.48, size = 23, normalized size = 0.85

$$\frac{\left(b^{2} x^{2}+2 \,a b x +a^{2}\right)^{\frac{5}{2}}}{5 \,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] 1/5*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)/b
```

mupad [B] time = 2.16, size = 30, normalized size = 1.11

$$\frac{{\left(a+b\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{5\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] ((a + b*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(5*b)
```

sympy [A] time = 0.93, size = 158, normalized size = 5.85

$$\begin{cases} \frac{a^{4} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{5 b} + \frac{4 a^{3} x \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{5} + \frac{6 a^{2} b x^{2} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{5} + \frac{4 a b^{2} x^{3} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{5} + \frac{b^{3} x^{4} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{5} & \text{for}\: b \neq 0 \\a x \left(a^{2}\right)^{\frac{3}{2}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Piecewise((a**4*sqrt(a**2 + 2*a*b*x + b**2*x**2)/(5*b) + 4*a**3*x*sqrt(a**2
 + 2*a*b*x + b**2*x**2)/5 + 6*a**2*b*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2)/
5 + 4*a*b**2*x**3*sqrt(a**2 + 2*a*b*x + b**2*x**2)/5 + b**3*x**4*sqrt(a**2
+ 2*a*b*x + b**2*x**2)/5, Ne(b, 0)), (a*x*(a**2)**(3/2), True))
```

3.1976 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx$

Optimal. Leaf size=210

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^5(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-}{2e^3}$$

```
[Out] -b*(-a*e+b*d)^3*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)+1/2*(-a*e+b*d)^2*(b*x+a)*((
b*x+a)^2)^(1/2)/e^3-1/3*(-a*e+b*d)*(b*x+a)^2*((b*x+a)^2)^(1/2)/e^2+1/4*(b*x
+a)^3*((b*x+a)^2)^(1/2)/e+(-a*e+b*d)^4*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x
+a)
```

Rubi [A] time = 0.10, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^4(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^3}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-a}{3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x))) + ((b*
d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3) - ((b*d - a*e)*
(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^2) + ((a + b*x)^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*e) + ((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*
Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{d+ex}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{d+ex}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigl(-\frac{b(bd-ae)^3}{e^4}+\frac{b(bd-ae)^2(a+bx)}{e^3}-\frac{b(bd-ae)(a+bx)^2}{e^2}+\frac{b(a+}{e}}{ab+b^2x}$$

$$= -\frac{b(bd-ae)^3x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{(bd-ae)^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}{2e^3}$$

Mathematica [**A**] time = 0.06, size = 133, normalized size = 0.63

$$\frac{\sqrt{(a+bx)^2}\ \Bigl(bex\left(48a^3e^3+36a^2be^2(ex-2d)+8ab^2e\left(6d^2-3dex+2e^2x^2\right)+b^3\Bigl(-12d^3+6d^2ex-4de^2x^2+3e^3x^3}{12e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(48*a^3*e^3 + 36*a^2*b*e^2*(-2*d + e*x) + 8*a*b^2
*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^3*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 +
 3*e^3*x^3)) + 12*(b*d - a*e)^4*Log[d + e*x]))/(12*e^5*(a + b*x))
```

fricas [**A**] time = 1.29, size = 179, normalized size = 0.85

$$\frac{3\,b^4e^4x^4-4\left(b^4de^3-4\,ab^3e^4\right)x^3+6\left(b^4d^2e^2-4\,ab^3de^3+6\,a^2b^2e^4\right)x^2-12\,\Bigl(b^4d^3e-4\,ab^3d^2e^2+6\,a^2b^2de^3-4\,a^3be}{12\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/12*(3*b^4*e^4*x^4 - 4*(b^4*d*e^3 - 4*a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 4*
a*b^3*d*e^3 + 6*a^2*b^2*e^4)*x^2 - 12*(b^4*d^3*e - 4*a*b^3*d^2*e^2 + 6*a^2*
b^2*d*e^3 - 4*a^3*b*e^4)*x + 12*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^
2 - 4*a^3*b*d*e^3 + a^4*e^4)*log(e*x + d))/e^5
```

giac [**A**] time = 0.17, size = 266, normalized size = 1.27

$$\left(b^4d^4\mathrm{sgn}\left(bx+a\right)-4\,ab^3d^3e\mathrm{sgn}\left(bx+a\right)+6\,a^2b^2d^2e^2\mathrm{sgn}\left(bx+a\right)-4\,a^3bde^3\mathrm{sgn}\left(bx+a\right)+a^4e^4\mathrm{sgn}\left(bx+a\right)\right)e^{(-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sgn(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(
b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*sgn(b*x + a))*e^(-5)*log(ab
s(x*e + d)) + 1/12*(3*b^4*x^4*e^3*sgn(b*x + a) - 4*b^4*d*x^3*e^2*sgn(b*x +
a) + 6*b^4*d^2*x^2*e*sgn(b*x + a) - 12*b^4*d^3*x*sgn(b*x + a) + 16*a*b^3*x^
3*e^3*sgn(b*x + a) - 24*a*b^3*d*x^2*e^2*sgn(b*x + a) + 48*a*b^3*d^2*x*e*sgn
(b*x + a) + 36*a^2*b^2*x^2*e^3*sgn(b*x + a) - 72*a^2*b^2*d*x*e^2*sgn(b*x +
a) + 48*a^3*b*x*e^3*sgn(b*x + a))*e^(-4)
```

maple [A] time = 0.06, size = 225, normalized size = 1.07

$$\frac{\left((bx+a)^{2}\right)^{\frac{3}{2}}\left(3b^{4}e^{4}x^{4}+16a\,b^{3}e^{4}x^{3}-4b^{4}d\,e^{3}x^{3}+36a^{2}b^{2}e^{4}x^{2}-24a\,b^{3}d\,e^{3}x^{2}+6b^{4}d^{2}e^{2}x^{2}+12a^{4}e^{4}\ln\left(ex+d\right)-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(3*x^4*b^4*e^4+16*x^3*a*b^3*e^4-4*x^3*b^4*d*e^3+36*x
^2*a^2*b^2*e^4-24*x^2*a*b^3*d*e^3+6*x^2*b^4*d^2*e^2+12*ln(e*x+d)*a^4*e^4-48
*ln(e*x+d)*a^3*b*d*e^3+72*ln(e*x+d)*a^2*b^2*d^2*e^2-48*ln(e*x+d)*a*b^3*d^3*
e+12*ln(e*x+d)*b^4*d^4+48*x*a^3*b*e^4-72*x*a^2*b^2*d*e^3+48*x*a*b^3*d^2*e^2
-12*x*b^4*d^3*e)/(b*x+a)^3/e^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^{2}\right)^{\frac{3}{2}}}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x), x)
```

3.1977 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=239

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^5(a+bx)(d+ex)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3\log(d+ex)}{e^5(a+bx)}+\frac{6b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^4(a+bx)}$$

```
[Out] 6*b^2*(-a*e+b*d)^2*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)-(-a*e+b*d)^4*((b*x+a)^2)
^(1/2)/e^5/(b*x+a)/(e*x+d)-2*b^3*(-a*e+b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^5
/(b*x+a)+1/3*b^4*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-4*b*(-a*e+b*d)^3*l
n(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.16, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^5(a+bx)}-\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}{e^5(a+bx)}+\frac{6b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^4(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (6*b^2*(b*d - a*e)^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b
*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (2*b
^3*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) +
 (b^4*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) - (4*b*(
b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{6b^2(bd-ae)^2}{e^4}+\frac{(-bd+ae)^4}{e^4(d+ex)^2}-\frac{4b(bd-ae)^3}{e^4(d+ex)}-\right.}{ab+b^2x}$$

$$= \frac{6b^2(bd-ae)^2x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)(d+ex)}-$$

Mathematica [A] time = 0.12, size = 183, normalized size = 0.77

$$\frac{\sqrt{(a+bx)^2}\left(-3a^4e^4+12a^3bde^3+18a^2b^2e^2\left(-d^2+dex+e^2x^2\right)+6ab^3e\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)-12b(d\right.}{3e^5(a+bx)(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(12*a^3*b*d*e^3 - 3*a^4*e^4 + 18*a^2*b^2*e^2*(-d^2 + d*e
*x + e^2*x^2) + 6*a*b^3*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + b^4
*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) - 12*b*(b*d -
 a*e)^3*(d + e*x)*Log[d + e*x]))/(3*e^5*(a + b*x)*(d + e*x))
```

fricas [A] time = 1.00, size = 267, normalized size = 1.12

$$b^4e^4x^4-3\,b^4d^4+12\,ab^3d^3e-18\,a^2b^2d^2e^2+12\,a^3bde^3-3\,a^4e^4-2\left(b^4de^3-3\,ab^3e^4\right)x^3+6\left(b^4d^2e^2-3\,ab^3de^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/3*(b^4*e^4*x^4 - 3*b^4*d^4 + 12*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 12*a^3
*b*d*e^3 - 3*a^4*e^4 - 2*(b^4*d*e^3 - 3*a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 - 3
*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 3*(3*b^4*d^3*e - 8*a*b^3*d^2*e^2 + 6*a^
2*b^2*d*e^3)*x - 12*(b^4*d^4 - 3*a*b^3*d^3*e + 3*a^2*b^2*d^2*e^2 - a^3*b*d*
e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(e*
x + d))/(e^6*x + d*e^5)
```

giac [A] time = 0.21, size = 268, normalized size = 1.12

$$-4\left(b^4d^3\mathrm{sgn}\left(bx+a\right)-3\,ab^3d^2e\mathrm{sgn}\left(bx+a\right)+3\,a^2b^2de^2\mathrm{sgn}\left(bx+a\right)-a^3be^3\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -4*(b^4*d^3*sgn(b*x + a) - 3*a*b^3*d^2*e*sgn(b*x + a) + 3*a^2*b^2*d*e^2*sgn
(b*x + a) - a^3*b*e^3*sgn(b*x + a))*e^(-5)*log(abs(x*e + d)) + 1/3*(b^4*x^3
*e^4*sgn(b*x + a) - 3*b^4*d*x^2*e^3*sgn(b*x + a) + 9*b^4*d^2*x*e^2*sgn(b*x
+ a) + 6*a*b^3*x^2*e^4*sgn(b*x + a) - 24*a*b^3*d*x*e^3*sgn(b*x + a) + 18*a^
2*b^2*x*e^4*sgn(b*x + a))*e^(-6) - (b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sg
n(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) +
a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)
```

maple [A] time = 0.06, size = 327, normalized size = 1.37

$$\frac{\left((bx+a)^{2}\right)^{\frac{3}{2}}\left(b^{4}e^{4}x^{4}+6a\,b^{3}e^{4}x^{3}-2b^{4}d\,e^{3}x^{3}+12a^{3}b\,e^{4}x\ln\left(ex+d\right)-36a^{2}b^{2}d\,e^{3}x\ln\left(ex+d\right)+18a^{2}b^{2}e^{4}x^{2}+36a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] 1/3*((b*x+a)^2)^(3/2)*(b^4*e^4*x^4+6*a*b^3*e^4*x^3-2*b^4*d*e^3*x^3+12*ln(e*
x+d)*x*a^3*b*e^4-36*ln(e*x+d)*x*a^2*b^2*d*e^3+36*ln(e*x+d)*x*a*b^3*d^2*e^2-
12*ln(e*x+d)*x*b^4*d^3*e+18*a^2*b^2*e^4*x^2-18*a*b^3*d*e^3*x^2+6*b^4*d^2*e^
2*x^2+12*a^3*b*d*e^3*ln(e*x+d)-36*a^2*b^2*d^2*e^2*ln(e*x+d)+36*a*b^3*d^3*e*
ln(e*x+d)-12*b^4*d^4*ln(e*x+d)+18*a^2*b^2*d*e^3*x-24*a*b^3*d^2*e^2*x+9*b^4*
d^3*e*x-3*a^4*e^4+12*d*e^3*a^3*b-18*a^2*b^2*d^2*e^2+12*a*b^3*d^3*e-3*b^4*d^
4)/(b*x+a)^3/e^5/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{{(d+e\,x)}^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^{2}\right)^{\frac{3}{2}}}{(d+ex)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**2, x)
```

3.1978 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=238

$$\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5(a+bx)(d+ex)^2}+\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2\log(d+ex)}{e^5(a+bx)}$$

```
[Out] -b^3*(-4*a*e+3*b*d)*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)+1/2*b^4*x^2*((b*x+a)^2)
^(1/2)/e^3/(b*x+a)-1/2*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^2
+4*b*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)+6*b^2*(-a*e+b*d)^2*
ln(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.15, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^3x\sqrt{a^2+2abx+b^2x^2}\,(3bd-4ae)}{e^4(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5(a+bx)(d+ex)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] -((b^3*(3*b*d - 4*a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x))) +
(b^4*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^3*(a + b*x)) - ((b*d - a*e)^4*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e*x)^2) + (4*b*(b*d -
a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) + (6*b^2*(b
*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^3}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^3}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b^3(3bd-4ae)}{e^4}+\frac{b^4x}{e^3}+\frac{(-bd+ae)^4}{e^4(d+ex)^3}-\frac{4b(bd-ae)^3}{e^4(d+ex)^2}+\frac{6b^2(bd}{e^4(d}\right.}{ab+b^2x}$$

$$= -\frac{b^3(3bd-4ae)x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}+\frac{b^4x^2\sqrt{a^2+2abx+b^2x^2}}{2e^3(a+bx)}-\frac{(bd-ae}{2e^5}$$

Mathematica [A] time = 0.12, size = 185, normalized size = 0.78

$$\frac{\sqrt{(a+bx)^2}\left(-a^4e^4-4a^3be^3(d+2ex)+6a^2b^2de^2(3d+4ex)+4ab^3e\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+12b^2(d+\right.}{2e^5(a+bx)(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-(a^4*e^4) - 4*a^3*b*e^3*(d + 2*e*x) + 6*a^2*b^2*d*e^2*
(3*d + 4*e*x) + 4*a*b^3*e*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*x^3) +
b^4*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e^4*x^4) + 12*b^2*(
b*d - a*e)^2*(d + e*x)^2*Log[d + e*x]))/(2*e^5*(a + b*x)*(d + e*x)^2)
```

fricas [A] time = 1.70, size = 291, normalized size = 1.22

$$\frac{b^4e^4x^4+7\,b^4d^4-20\,ab^3d^3e+18\,a^2b^2d^2e^2-4\,a^3bde^3-a^4e^4-4\left(b^4de^3-2\,ab^3e^4\right)x^3-\left(11\,b^4d^2e^2-16\,ab^3de^3\right)x^2+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/2*(b^4*e^4*x^4 + 7*b^4*d^4 - 20*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 4*a^3*
b*d*e^3 - a^4*e^4 - 4*(b^4*d*e^3 - 2*a*b^3*e^4)*x^3 - (11*b^4*d^2*e^2 - 16*
a*b^3*d*e^3)*x^2 + 2*(b^4*d^3*e - 8*a*b^3*d^2*e^2 + 12*a^2*b^2*d*e^3 - 4*a^
3*b*e^4)*x + 12*(b^4*d^4 - 2*a*b^3*d^3*e + a^2*b^2*d^2*e^2 + (b^4*d^2*e^2 -
 2*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(b^4*d^3*e - 2*a*b^3*d^2*e^2 + a^2*b^
2*d*e^3)*x)*log(e*x + d))/(e^7*x^2 + 2*d*e^6*x + d^2*e^5)
```

giac [A] time = 0.18, size = 265, normalized size = 1.11

$$6\left(b^4d^2\operatorname{sgn}(bx+a)-2\,ab^3de\operatorname{sgn}(bx+a)+a^2b^2e^2\operatorname{sgn}(bx+a)\right)e^{(-5)}\log\left(|xe+d|\right)+\frac{1}{2}\left(b^4x^2e^3\operatorname{sgn}(bx+a)-6\,b^4d\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 6*(b^4*d^2*sgn(b*x + a) - 2*a*b^3*d*e*sgn(b*x + a) + a^2*b^2*e^2*sgn(b*x +
a))*e^(-5)*log(abs(x*e + d)) + 1/2*(b^4*x^2*e^3*sgn(b*x + a) - 6*b^4*d*x*e^
2*sgn(b*x + a) + 8*a*b^3*x*e^3*sgn(b*x + a))*e^(-6) + 1/2*(7*b^4*d^4*sgn(b*
x + a) - 20*a*b^3*d^3*e*sgn(b*x + a) + 18*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*
a^3*b*d*e^3*sgn(b*x + a) - a^4*e^4*sgn(b*x + a) + 8*(b^4*d^3*e*sgn(b*x + a)
 - 3*a*b^3*d^2*e^2*sgn(b*x + a) + 3*a^2*b^2*d*e^3*sgn(b*x + a) - a^3*b*e^4*
sgn(b*x + a))*x)*e^(-5)/(x*e + d)^2
```

maple [A] time = 0.08, size = 350, normalized size = 1.47

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}} \left(b^4e^4x^4 + 12a^2b^2e^4x^2 \ln(ex+d) - 24a\,b^3d\,e^3x^2 \ln(ex+d) + 8a\,b^3e^4x^3 + 12b^4d^2e^2x^2 \ln(ex+d) - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] 1/2*((b*x+a)^2)^(3/2)*(b^4*e^4*x^4+12*ln(e*x+d)*x^2*a^2*b^2*e^4-24*ln(e*x+d
)*x^2*a*b^3*d*e^3+12*ln(e*x+d)*x^2*b^4*d^2*e^2+8*a*b^3*e^4*x^3-4*b^4*d*e^3*
x^3+24*a^2*b^2*d*e^3*x*ln(e*x+d)-48*a*b^3*d^2*e^2*x*ln(e*x+d)+24*b^4*d^3*e*
x*ln(e*x+d)+16*a*b^3*d*e^3*x^2-11*b^4*d^2*e^2*x^2+12*a^2*b^2*d^2*e^2*ln(e*x
+d)-24*a*b^3*d^3*e*ln(e*x+d)+12*b^4*d^4*ln(e*x+d)-8*a^3*b*e^4*x+24*a^2*b^2*
d*e^3*x-16*a*b^3*d^2*e^2*x+2*b^4*d^3*e*x-a^4*e^4-4*a^3*b*d*e^3+18*a^2*b^2*d
^2*e^2-20*a*b^3*d^3*e+7*b^4*d^4)/(b*x+a)^3/e^5/(e*x+d)^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{(d+e\,x)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**3, x)
```

3.1979 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=238

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^3}+\frac{b^4x\sqrt{a^2+2}}{e^4(a}$$

```
[Out] b^4*x*((b*x+a)^2)^(1/2)/e^4/(b*x+a)-1/3*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/
(b*x+a)/(e*x+d)^3+2*b*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^2-
6*b^2*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)-4*b^3*(-a*e+b*d)*l
n(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 238, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^3}-\frac{4b^3\sqrt{a^2+2}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (b^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^4*(a + b*x)) - ((b*d - a*e)^4*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^3) + (2*b*(b*d - a*e)
^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)^2) - (6*b^2*(b*d
 - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*(d + e*x)) - (4*b^3
*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^4}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^4}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^4}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^4}{e^4}+\frac{(-bd+ae)^4}{e^4(d+ex)^4}-\frac{4b(bd-ae)^3}{e^4(d+ex)^3}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^2}-\frac{4b^3(b}{e^4(d-}\right.}{ab+b^2x}$$

$$= \frac{b^4x\sqrt{a^2+2abx+b^2x^2}}{e^4(a+bx)}-\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3}+\frac{2b(bd-ae)^3}{e^5(a+}$$

Mathematica [A] time = 0.09, size = 181, normalized size = 0.76

$$-\frac{\sqrt{(a+bx)^2}\left(a^4e^4+2a^3be^3(d+3ex)+6a^2b^2e^2\left(d^2+3dex+3e^2x^2\right)-2ab^3de\left(11d^2+27dex+18e^2x^2\right)+12b^3\right.}{3e^5(a+bx)(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^4*e^4 + 2*a^3*b*e^3*(d + 3*e*x) + 6*a^2*b^2*e^2*
(d^2 + 3*d*e*x + 3*e^2*x^2) - 2*a*b^3*d*e*(11*d^2 + 27*d*e*x + 18*e^2*x^2)
+ b^4*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 - 3*e^4*x^4) + 12*
b^3*(b*d - a*e)*(d + e*x)^3*Log[d + e*x]))/(e^5*(a + b*x)*(d + e*x)^3)
```

fricas [A] time = 0.79, size = 292, normalized size = 1.23

$$\frac{3\,b^4e^4x^4+9\,b^4de^3x^3-13\,b^4d^4+22\,ab^3d^3e-6\,a^2b^2d^2e^2-2\,a^3bde^3-a^4e^4-9\left(b^4d^2e^2-4\,ab^3de^3+2\,a^2b^2e^4\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/3*(3*b^4*e^4*x^4 + 9*b^4*d*e^3*x^3 - 13*b^4*d^4 + 22*a*b^3*d^3*e - 6*a^2*
b^2*d^2*e^2 - 2*a^3*b*d*e^3 - a^4*e^4 - 9*(b^4*d^2*e^2 - 4*a*b^3*d*e^3 + 2*
a^2*b^2*e^4)*x^2 - 3*(9*b^4*d^3*e - 18*a*b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 + 2*
a^3*b*e^4)*x - 12*(b^4*d^4 - a*b^3*d^3*e + (b^4*d*e^3 - a*b^3*e^4)*x^3 + 3*
(b^4*d^2*e^2 - a*b^3*d*e^3)*x^2 + 3*(b^4*d^3*e - a*b^3*d^2*e^2)*x)*log(e*x
+ d))/(e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x + d^3*e^5)
```

giac [A] time = 0.20, size = 260, normalized size = 1.09

$$b^4xe^{(-4)}\mathrm{sgn}\left(bx+a\right)-4\left(b^4d\mathrm{sgn}\left(bx+a\right)-ab^3e\mathrm{sgn}\left(bx+a\right)\right)e^{(-5)}\log\left(|xe+d|\right)-\frac{\left(13\,b^4d^4\mathrm{sgn}\left(bx+a\right)-22\,ab^3d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] b^4*x*e^(-4)*sgn(b*x + a) - 4*(b^4*d*sgn(b*x + a) - a*b^3*e*sgn(b*x + a))*e
^(-5)*log(abs(x*e + d)) - 1/3*(13*b^4*d^4*sgn(b*x + a) - 22*a*b^3*d^3*e*sgn
(b*x + a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) + 2*a^3*b*d*e^3*sgn(b*x + a) + a
^4*e^4*sgn(b*x + a) + 18*(b^4*d^2*e^2*sgn(b*x + a) - 2*a*b^3*d*e^3*sgn(b*x
+ a) + a^2*b^2*e^4*sgn(b*x + a))*x^2 + 6*(5*b^4*d^3*e*sgn(b*x + a) - 9*a*b^
3*d^2*e^2*sgn(b*x + a) + 3*a^2*b^2*d*e^3*sgn(b*x + a) + a^3*b*e^4*sgn(b*x +
 a))*x)*e^(-5)/(x*e + d)^3
```

maple [A] time = 0.06, size = 330, normalized size = 1.39

$$\left((bx+a)^2\right)^{\frac{3}{2}} \left(12a\,b^3e^4x^3 \ln(ex+d) - 12b^4d\,e^3x^3 \ln(ex+d) + 3b^4e^4x^4 + 36a\,b^3d\,e^3x^2 \ln(ex+d) - 36b^4d^2e^2x^2 \ln(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] 1/3*((b*x+a)^2)^(3/2)*(12*ln(e*x+d)*x^3*a*b^3*e^4-12*ln(e*x+d)*x^3*b^4*d*e^
3+3*b^4*e^4*x^4+36*a*b^3*d*e^3*x^2*ln(e*x+d)-36*b^4*d^2*e^2*x^2*ln(e*x+d)+9
*b^4*d*e^3*x^3+36*a*b^3*d^2*e^2*x*ln(e*x+d)-36*b^4*d^3*e*x*ln(e*x+d)-18*a^2
*b^2*e^4*x^2+36*a*b^3*d*e^3*x^2-9*b^4*d^2*e^2*x^2+12*a*b^3*d^3*e*ln(e*x+d)-
12*b^4*d^4*ln(e*x+d)-6*a^3*b*e^4*x-18*a^2*b^2*d*e^3*x+54*a*b^3*d^2*e^2*x-27
*b^4*d^3*e*x-a^4*e^4-2*a^3*b*d*e^3-6*a^2*b^2*d^2*e^2+22*a*b^3*d^3*e-13*b^4*
d^4)/(b*x+a)^3/e^5/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**4, x)
```

3.1980 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=246

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^2}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^5(a+bx)(d+ex)^4}+\frac{b^4\sqrt{a^2+}}{}$$

```
[Out] -1/4*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^4+4/3*b*(-a*e+b*d)^
3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^3-3*b^2*(-a*e+b*d)^2*((b*x+a)^2)^(1
/2)/e^5/(b*x+a)/(e*x+d)^2+4*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e
*x+d)+b^4*ln(e*x+d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [**A**] time = 0.14, antiderivative size = 246, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)(d+ex)}-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^2}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2}}{4e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x)*(d + e*x)^4
) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d +
 e*x)^3) - (3*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*
x)*(d + e*x)^2) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a
 + b*x)*(d + e*x)) + (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/(e^5*
(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^5}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^5}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^5}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^5} - \frac{4b(bd-ae)^3}{e^4(d+ex)^4} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^3} - \frac{4b^3(bd-ae)}{e^4(d+ex)^2} + \right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{4e^5(a+bx)(d+ex)^4} + \frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^3} - \frac{3b^2(}{}$$

Mathematica [A] time = 0.09, size = 144, normalized size = 0.59

$$\frac{\sqrt{(a+bx)^2}\left((bd-ae)\left(3a^3e^3+a^2be^2(7d+16ex)+ab^2e\left(13d^2+40dex+36e^2x^2\right)+b^3\left(25d^3+88d^2ex+108de^2x^2\right.\right.\right.}{12e^5(a+bx)(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(3*a^3*e^3 + a^2*b*e^2*(7*d + 16*e*x) + a*b
^2*e*(13*d^2 + 40*d*e*x + 36*e^2*x^2) + b^3*(25*d^3 + 88*d^2*e*x + 108*d*e^
2*x^2 + 48*e^3*x^3)) + 12*b^4*(d + e*x)^4*Log[d + e*x]))/(12*e^5*(a + b*x)*
(d + e*x)^4)
```

fricas [A] time = 0.90, size = 268, normalized size = 1.09

$$\frac{25\,b^4d^4-12\,ab^3d^3e-6\,a^2b^2d^2e^2-4\,a^3bde^3-3\,a^4e^4+48\left(b^4de^3-ab^3e^4\right)x^3+36\left(3\,b^4d^2e^2-2\,ab^3de^3-a^2b^2e^4\right)x^2}{12\left(e^9x^4+4\,de^8x^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/12*(25*b^4*d^4 - 12*a*b^3*d^3*e - 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 - 3*a
^4*e^4 + 48*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 36*(3*b^4*d^2*e^2 - 2*a*b^3*d*e^3
 - a^2*b^2*e^4)*x^2 + 8*(11*b^4*d^3*e - 6*a*b^3*d^2*e^2 - 3*a^2*b^2*d*e^3 -
 2*a^3*b*e^4)*x + 12*(b^4*e^4*x^4 + 4*b^4*d*e^3*x^3 + 6*b^4*d^2*e^2*x^2 + 4
*b^4*d^3*e*x + b^4*d^4)*log(e*x + d))/(e^9*x^4 + 4*d*e^8*x^3 + 6*d^2*e^7*x^
2 + 4*d^3*e^6*x + d^4*e^5)
```

giac [A] time = 0.17, size = 268, normalized size = 1.09

$$b^4e^{(-5)}\log\left(|xe+d|\right)\mathrm{sgn}\left(bx+a\right)+\frac{\left(48\left(b^4de^2\mathrm{sgn}\left(bx+a\right)-ab^3e^3\mathrm{sgn}\left(bx+a\right)\right)x^3+36\left(3\,b^4d^2e\mathrm{sgn}\left(bx+a\right)-2\,a\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] b^4*e^(-5)*log(abs(x*e + d))*sgn(b*x + a) + 1/12*(48*(b^4*d*e^2*sgn(b*x + a
) - a*b^3*e^3*sgn(b*x + a))*x^3 + 36*(3*b^4*d^2*e*sgn(b*x + a) - 2*a*b^3*d*
e^2*sgn(b*x + a) - a^2*b^2*e^3*sgn(b*x + a))*x^2 + 8*(11*b^4*d^3*sgn(b*x +
a) - 6*a*b^3*d^2*e*sgn(b*x + a) - 3*a^2*b^2*d*e^2*sgn(b*x + a) - 2*a^3*b*e^
3*sgn(b*x + a))*x + (25*b^4*d^4*sgn(b*x + a) - 12*a*b^3*d^3*e*sgn(b*x + a)
- 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) - 3*a^4*e^4*s
gn(b*x + a))*e^(-1))*e^(-4)/(x*e + d)^4
```

maple [A] time = 0.06, size = 276, normalized size = 1.12

$$\left(\left(bx+a\right)^{2}\right)^{\frac{3}{2}}\big(12b^{4}e^{4}x^{4}\ln\left(ex+d\right)+48b^{4}d\,e^{3}x^{3}\ln\left(ex+d\right)-48a\,b^{3}e^{4}x^{3}+72b^{4}d^{2}e^{2}x^{2}\ln\left(ex+d\right)+48b^{4}d\,e^{3}x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] 1/12*((b*x+a)^2)^(3/2)*(12*ln(e*x+d)*x^4*b^4*e^4+48*b^4*d*e^3*x^3*ln(e*x+d)
+72*b^4*d^2*e^2*x^2*ln(e*x+d)-48*a*b^3*e^4*x^3+48*b^4*d*e^3*x^3+48*b^4*d^3*
e*x*ln(e*x+d)-36*a^2*b^2*e^4*x^2-72*a*b^3*d*e^3*x^2+108*b^4*d^2*e^2*x^2+12*
b^4*d^4*ln(e*x+d)-16*a^3*b*e^4*x-24*a^2*b^2*d*e^3*x-48*a*b^3*d^2*e^2*x+88*b
^4*d^3*e*x-3*a^4*e^4-4*a^3*b*d*e^3-6*a^2*b^2*d^2*e^2-12*a*b^3*d^3*e+25*b^4*
d^4)/(b*x+a)^3/e^5/(e*x+d)^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + bx\right) \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}{\left(d + ex\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**5, x)
```

3.1981 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(d+ex)^5(bd-ae)}$$

```
[Out] 1/5*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(-a*e+b*d)/(e*x+d)^5
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(d+ex)^5(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(5/2)/(5*(b*d - a*e)*(d + e*x)^5)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^6}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{5/2}}{5(bd-ae)(d+ex)^5}$$

Mathematica [B] time = 0.06, size = 158, normalized size = 3.85

$$-\frac{\sqrt{(a+bx)^2}\,\left(a^4e^4+a^3be^3(d+5ex)+a^2b^2e^2\left(d^2+5dex+10e^2x^2\right)+ab^3e\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)+b^4 (}{5e^5(a+bx)(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] -1/5*(Sqrt[(a + b*x)^2]*(a^4*e^4 + a^3*b*e^3*(d + 5*e*x) + a^2*b^2*e^2*(d^2
 + 5*d*e*x + 10*e^2*x^2) + a*b^3*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3
*x^3) + b^4*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)))
/(e^5*(a + b*x)*(d + e*x)^5)
```

fricas [B] time = 1.09, size = 215, normalized size = 5.24

$$-\frac{5\,b^4e^4x^4+b^4d^4+ab^3d^3e+a^2b^2d^2e^2+a^3bde^3+a^4e^4+10\left(b^4de^3+ab^3e^4\right)x^3+10\left(b^4d^2e^2+ab^3de^3+a^2b^2e^4\right)x^2}{5\left(e^{10}x^5+5\,de^9x^4+10\,d^2e^8x^3+10\,d^3e^7x^2+5\,d^4e^6x+d^5e^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] -1/5*(5*b^4*e^4*x^4 + b^4*d^4 + a*b^3*d^3*e + a^2*b^2*d^2*e^2 + a^3*b*d*e^3
 + a^4*e^4 + 10*(b^4*d*e^3 + a*b^3*e^4)*x^3 + 10*(b^4*d^2*e^2 + a*b^3*d*e^3
 + a^2*b^2*e^4)*x^2 + 5*(b^4*d^3*e + a*b^3*d^2*e^2 + a^2*b^2*d*e^3 + a^3*b*
e^4)*x)/(e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e
^6*x + d^5*e^5)
```

giac [B] time = 0.21, size = 260, normalized size = 6.34

$$-\frac{\left(5\,b^4x^4e^4\operatorname{sgn}(bx+a)+10\,b^4dx^3e^3\operatorname{sgn}(bx+a)+10\,b^4d^2x^2e^2\operatorname{sgn}(bx+a)+5\,b^4d^3xe\operatorname{sgn}(bx+a)+b^4d^4\operatorname{sgn}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] -1/5*(5*b^4*x^4*e^4*sgn(b*x + a) + 10*b^4*d*x^3*e^3*sgn(b*x + a) + 10*b^4*d
^2*x^2*e^2*sgn(b*x + a) + 5*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x + a)
 + 10*a*b^3*x^3*e^4*sgn(b*x + a) + 10*a*b^3*d*x^2*e^3*sgn(b*x + a) + 5*a*b^
3*d^2*x*e^2*sgn(b*x + a) + a*b^3*d^3*e*sgn(b*x + a) + 10*a^2*b^2*x^2*e^4*sg
n(b*x + a) + 5*a^2*b^2*d*x*e^3*sgn(b*x + a) + a^2*b^2*d^2*e^2*sgn(b*x + a)
+ 5*a^3*b*x*e^4*sgn(b*x + a) + a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*sgn(b*x +
 a))*e^(-5)/(x*e + d)^5
```

maple [B] time = 0.06, size = 197, normalized size = 4.80

$$-\frac{\left(5b^4e^4x^4+10a\,b^3e^4x^3+10b^4d\,e^3x^3+10a^2b^2e^4x^2+10a\,b^3d\,e^3x^2+10b^4d^2e^2x^2+5a^3b\,e^4x+5a^2b^2d\,e^3x+5a\,b}{5\,(ex+d)^5\,(bx+a)^3\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -1/5*(5*b^4*e^4*x^4+10*a*b^3*e^4*x^3+10*b^4*d*e^3*x^3+10*a^2*b^2*e^4*x^2+10
*a*b^3*d*e^3*x^2+10*b^4*d^2*e^2*x^2+5*a^3*b*e^4*x+5*a^2*b^2*d*e^3*x+5*a*b^3
*d^2*e^2*x+5*b^4*d^3*e*x+a^4*e^4+a^3*b*d*e^3+a^2*b^2*d^2*e^2+a*b^3*d^3*e+b^
4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^5/e^5/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.15, size = 449, normalized size = 10.95

$$\frac{\left(\frac{-4a^3be^3+6a^2b^2de^2-4ab^3d^2e+b^4d^3}{4e^5}+\frac{d\left(\frac{d\left(\frac{b^4d}{4e^3}-\frac{b^3(4ae-bd)}{4e^3}\right)}{e}+\frac{b^2\left(6a^2e^2-4abde+b^2d^2\right)}{4e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^4}-\frac{\left(\frac{a^4}{5e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{4ab^3}{5e}-\right.}{e}\right.}{}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(4*e^5) + (d*((
d*((b^4*d)/(4*e^3) - (b^3*(4*a*e - b*d))/(4*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(4*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^4) - ((a^4/(5*e) - (d*((d*((d*((4*a*b^3)/(5*e) - (b^4*d)/(5*e^2
)))/e - (6*a^2*b^2)/(5*e)))/e + (4*a^3*b)/(5*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^5) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(3*e^5) + (d*((b^4*d)/(3*e^4) - (2*b^3*(2*a*e - b*d))/(3*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) + (((3*b^4*d - 4*a*b
^3*e)/(2*e^5) + (b^4*d)/(2*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^2) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^5*(a + b*x)*(d +
e*x))
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**6, x)
```

3.1982 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7} dx$

Optimal. Leaf size=98

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{30(d+ex)^5(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{6(d+ex)^6(bd-ae)}$$

```
[Out] 1/6*(b*x+a)^4*((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)^6+1/30*b*(b*x+a)^4*((b*x
+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^5
```

Rubi [A] time = 0.05, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = $\{770, 21, 45, 37\}$

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{30(d+ex)^5(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{6(d+ex)^6(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] ((a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*(b*d - a*e)*(d + e*x)^6) + (
b*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(30*(b*d - a*e)^2*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^7}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^7}\,dx}{b^2\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{ab+b^2x} \\
&= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)(d+ex)^6}+\frac{\left(b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^6}\,dx}{6(bd-ae)\left(ab+b^2x\right)} \\
&= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{6(bd-ae)(d+ex)^6}+\frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^5}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 162, normalized size = 1.65

$$-\frac{\sqrt{(a+bx)^2}\,\big(5a^4e^4+4a^3be^3(d+6ex)+3a^2b^2e^2\left(d^2+6dex+15e^2x^2\right)+2ab^3e\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)}{30e^5(a+bx)(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] -1/30*(Sqrt[(a + b*x)^2]*(5*a^4*e^4 + 4*a^3*b*e^3*(d + 6*e*x) + 3*a^2*b^2*e
^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 2*a*b^3*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2
 + 20*e^3*x^3) + b^4*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*
e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^6)
```

fricas [B] time = 1.16, size = 236, normalized size = 2.41

$$-\frac{15\,b^4e^4x^4+b^4d^4+2\,ab^3d^3e+3\,a^2b^2d^2e^2+4\,a^3bde^3+5\,a^4e^4+20\left(b^4de^3+2\,ab^3e^4\right)x^3+15\,\big(b^4d^2e^2+2\,ab^3de^3+}{30\,\big(e^{11}x^6+6\,de^{10}x^5+15\,d^2e^9x^4+20\,d^3e^8x^3+15\,d^4e^7x^2+6\,d^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] -1/30*(15*b^4*e^4*x^4 + b^4*d^4 + 2*a*b^3*d^3*e + 3*a^2*b^2*d^2*e^2 + 4*a^3
*b*d*e^3 + 5*a^4*e^4 + 20*(b^4*d*e^3 + 2*a*b^3*e^4)*x^3 + 15*(b^4*d^2*e^2 +
 2*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 6*(b^4*d^3*e + 2*a*b^3*d^2*e^2 + 3*a^
2*b^2*d*e^3 + 4*a^3*b*e^4)*x)/(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 2
0*d^3*e^8*x^3 + 15*d^4*e^7*x^2 + 6*d^5*e^6*x + d^6*e^5)
```

giac [B] time = 0.21, size = 264, normalized size = 2.69

$$-\frac{\big(15\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+20\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+15\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+6\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] -1/30*(15*b^4*x^4*e^4*sgn(b*x + a) + 20*b^4*d*x^3*e^3*sgn(b*x + a) + 15*b^4
*d^2*x^2*e^2*sgn(b*x + a) + 6*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
a) + 40*a*b^3*x^3*e^4*sgn(b*x + a) + 30*a*b^3*d*x^2*e^3*sgn(b*x + a) + 12*a
*b^3*d^2*x*e^2*sgn(b*x + a) + 2*a*b^3*d^3*e*sgn(b*x + a) + 45*a^2*b^2*x^2*e
^4*sgn(b*x + a) + 18*a^2*b^2*d*x*e^3*sgn(b*x + a) + 3*a^2*b^2*d^2*e^2*sgn(b
*x + a) + 24*a^3*b*x*e^4*sgn(b*x + a) + 4*a^3*b*d*e^3*sgn(b*x + a) + 5*a^4*
e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^6
```

maple [**B**] time = 0.05, size = 201, normalized size = 2.05

$$-\frac{\left(15b^4e^4x^4+40a\,b^3e^4x^3+20b^4d\,e^3x^3+45a^2b^2e^4x^2+30a\,b^3d\,e^3x^2+15b^4d^2e^2x^2+24a^3b\,e^4x+18a^2b^2d\,e^3x+\right.}{30\,(ex+d)^6\,(bx+a)^3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -1/30/e^5*(15*b^4*e^4*x^4+40*a*b^3*e^4*x^3+20*b^4*d*e^3*x^3+45*a^2*b^2*e^4*
x^2+30*a*b^3*d*e^3*x^2+15*b^4*d^2*e^2*x^2+24*a^3*b*e^4*x+18*a^2*b^2*d*e^3*x
+12*a*b^3*d^2*e^2*x+6*b^4*d^3*e*x+5*a^4*e^4+4*a^3*b*d*e^3+3*a^2*b^2*d^2*e^2
+2*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^6/(b*x+a)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.14, size = 449, normalized size = 4.58

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{5\,e^5}+\frac{d\left(\frac{d\left(\frac{b^4\,d}{5\,e^3}-\frac{b^3\,(4\,a\,e-b\,d)}{5\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{5\,e^4}\right)}{e}\right)\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{(a+b\,x)\,(d+e\,x)^5}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(5*e^5) + (d*((
d*((b^4*d)/(5*e^3) - (b^3*(4*a*e - b*d))/(5*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(5*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^5) - ((a^4/(6*e) - (d*((d*((d*((2*a*b^3)/(3*e) - (b^4*d)/(6*e^2
)))/e - (a^2*b^2)/e))/e + (2*a^3*b)/(3*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1
/2))/((a + b*x)*(d + e*x)^6) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3*d*e)/
(4*e^5) + (d*((b^4*d)/(4*e^4) - (b^3*(2*a*e - b*d))/(2*e^4)))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) + (((3*b^4*d - 4*a*b^3*e)/(3
*e^5) + (b^4*d)/(3*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^3) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^5*(a + b*x)*(d + e*x)^2
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**7, x)
```

3.1983 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=149

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{105(d+ex)^5(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{21(d+ex)^6(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{7(d+ex)^7(bd-ae)}$$

```
[Out] 1/7*(b*x+a)^4*((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)^7+1/21*b*(b*x+a)^4*((b*x
+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^6+1/105*b^2*(b*x+a)^4*((b*x+a)^2)^(1/2)/(
-a*e+b*d)^3/(e*x+d)^5
```

Rubi [A] time = 0.07, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{105(d+ex)^5(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{21(d+ex)^6(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^4}{7(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] ((a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*(b*d - a*e)*(d + e*x)^7) + (
b*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(21*(b*d - a*e)^2*(d + e*x)^6)
 + (b^2*(a + b*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(105*(b*d - a*e)^3*(d +
e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^8}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^8}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^8}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{\left(2b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^7}\,dx}{7(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{21(bd-ae)^2(d+ex)^6} + \frac{\left(b^3\sqrt{a^2+}\right.}{21}$$

$$= \frac{(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{7(bd-ae)(d+ex)^7} + \frac{b(a+bx)^4\sqrt{a^2+2abx+b^2x^2}}{21(bd-ae)^2(d+ex)^6} + \frac{b^2(a+bx}{105(}$$

Mathematica [**A**] time = 0.06, size = 162, normalized size = 1.09

$$-\frac{\sqrt{(a+bx)^2}\left(15a^4e^4+10a^3be^3(d+7ex)+6a^2b^2e^2\left(d^2+7dex+21e^2x^2\right)+3ab^3e\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right.\right.}{105e^5(a+bx)(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] -1/105*(Sqrt[(a + b*x)^2]*(15*a^4*e^4 + 10*a^3*b*e^3*(d + 7*e*x) + 6*a^2*b^
2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*a*b^3*e*(d^3 + 7*d^2*e*x + 21*d*e^2*
x^2 + 35*e^3*x^3) + b^4*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 +
35*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^7)
```

fricas [**B**] time = 1.28, size = 247, normalized size = 1.66

$$-\frac{35\,b^4e^4x^4+b^4d^4+3\,ab^3d^3e+6\,a^2b^2d^2e^2+10\,a^3bde^3+15\,a^4e^4+35\left(b^4de^3+3\,ab^3e^4\right)x^3+21\left(b^4d^2e^2+3\,ab^3de^3\right.}{105\left(e^{12}x^7+7\,de^{11}x^6+21\,d^2e^{10}x^5+35\,d^3e^9x^4+35\,d^4e^8x^3+21\,d^5e^7\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/105*(35*b^4*e^4*x^4 + b^4*d^4 + 3*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 + 10*a
^3*b*d*e^3 + 15*a^4*e^4 + 35*(b^4*d*e^3 + 3*a*b^3*e^4)*x^3 + 21*(b^4*d^2*e^
2 + 3*a*b^3*d*e^3 + 6*a^2*b^2*e^4)*x^2 + 7*(b^4*d^3*e + 3*a*b^3*d^2*e^2 + 6
*a^2*b^2*d*e^3 + 10*a^3*b*e^4)*x)/(e^12*x^7 + 7*d*e^11*x^6 + 21*d^2*e^10*x^
5 + 35*d^3*e^9*x^4 + 35*d^4*e^8*x^3 + 21*d^5*e^7*x^2 + 7*d^6*e^6*x + d^7*e^
5)
```

giac [**B**] time = 0.17, size = 264, normalized size = 1.77

$$-\frac{\left(35\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+35\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+21\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+7\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/105*(35*b^4*x^4*e^4*sgn(b*x + a) + 35*b^4*d*x^3*e^3*sgn(b*x + a) + 21*b^
4*d^2*x^2*e^2*sgn(b*x + a) + 7*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
 a) + 105*a*b^3*x^3*e^4*sgn(b*x + a) + 63*a*b^3*d*x^2*e^3*sgn(b*x + a) + 21
*a*b^3*d^2*x*e^2*sgn(b*x + a) + 3*a*b^3*d^3*e*sgn(b*x + a) + 126*a^2*b^2*x^
2*e^4*sgn(b*x + a) + 42*a^2*b^2*d*x*e^3*sgn(b*x + a) + 6*a^2*b^2*d^2*e^2*sg
n(b*x + a) + 70*a^3*b*x*e^4*sgn(b*x + a) + 10*a^3*b*d*e^3*sgn(b*x + a) + 15
*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^7
```

maple [**A**] time = 0.05, size = 201, normalized size = 1.35

$$-\frac{\left(35b^4e^4x^4 + 105a\,b^3e^4x^3 + 35b^4d\,e^3x^3 + 126a^2b^2e^4x^2 + 63a\,b^3d\,e^3x^2 + 21b^4d^2e^2x^2 + 70a^3b\,e^4x + 42a^2b^2d\,e^3x}{105\,(ex+d)^7\,(bx+a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -1/105/e^5*(35*b^4*e^4*x^4+105*a*b^3*e^4*x^3+35*b^4*d*e^3*x^3+126*a^2*b^2*e
^4*x^2+63*a*b^3*d*e^3*x^2+21*b^4*d^2*e^2*x^2+70*a^3*b*e^4*x+42*a^2*b^2*d*e^
3*x+21*a*b^3*d^2*e^2*x+7*b^4*d^3*e*x+15*a^4*e^4+10*a^3*b*d*e^3+6*a^2*b^2*d^
2*e^2+3*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^7/(b*x+a)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.15, size = 449, normalized size = 3.01

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{6\,e^5}+\frac{d\,\left(\frac{d\,\left(\frac{b^4\,d}{6\,e^3}-\frac{b^3\,\left(4\,a\,e-b\,d\right)}{6\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{6\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^6}-\frac{\left(\frac{a^4}{7\,e}-\frac{d\left(\frac{d\left(\frac{d\left(\frac{4\,a}{7}\right.}{}\right.}{}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(6*e^5) + (d*((
d*((b^4*d)/(6*e^3) - (b^3*(4*a*e - b*d))/(6*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(6*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^6) - ((a^4/(7*e) - (d*((d*((d*((4*a*b^3)/(7*e) - (b^4*d)/(7*e^2
)))/e - (6*a^2*b^2)/(7*e)))/e + (4*a^3*b)/(7*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(5*e^5) + (d*((b^4*d)/(5*e^4) - (2*b^3*(2*a*e - b*d))/(5*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + (((3*b^4*d - 4*a*b
^3*e)/(4*e^5) + (b^4*d)/(4*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^4) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^5*(a + b*x)*(d
+ e*x)^3)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**8, x)
```

3.1984 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=252

$$-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^6}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^7}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{8e^5(a+bx)(d+ex)^8}-\frac{b^4\sqrt{a^2+2}}{4e^5(a+b}$$

```
[Out] -1/8*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^8+4/7*b*(-a*e+b*d)^
3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^7-b^2*(-a*e+b*d)^2*((b*x+a)^2)^(1/2
)/e^5/(b*x+a)/(e*x+d)^6+4/5*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e
*x+d)^5-1/4*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^4
```

Rubi [A] time = 0.13, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{4e^5(a+bx)(d+ex)^4}+\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^5(a+bx)(d+ex)^5}-\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^6}+\frac{4b\sqrt{a^2+2abx+}}{7e^5(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^5*(a + b*x)*(d + e*x)^8
) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d +
 e*x)^7) - (b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)
*(d + e*x)^6) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a
 + b*x)*(d + e*x)^5) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a + b*x)
*(d + e*x)^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^9}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^9}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^9}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^9}-\frac{4b(bd-ae)^3}{e^4(d+ex)^8}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^7}-\frac{4b^3(bd-ae)}{e^4(d+ex)^6}+\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{8e^5(a+bx)(d+ex)^8}+\frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}-\frac{b^2(b}{}$$

Mathematica [A] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(35a^4e^4+20a^3be^3(d+8ex)+10a^2b^2e^2\left(d^2+8dex+28e^2x^2\right)+4ab^3e\left(d^3+8d^2ex+28de^2x^2+56e^3\right.\right.}{280e^5(a+bx)(d+ex)^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] -1/280*(Sqrt[(a + b*x)^2]*(35*a^4*e^4 + 20*a^3*b*e^3*(d + 8*e*x) + 10*a^2*b
^2*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 4*a*b^3*e*(d^3 + 8*d^2*e*x + 28*d*e^2
*x^2 + 56*e^3*x^3) + b^4*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 +
 70*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^8)
```

fricas [A] time = 0.76, size = 258, normalized size = 1.02

$$-\frac{70\,b^4e^4x^4+b^4d^4+4\,ab^3d^3e+10\,a^2b^2d^2e^2+20\,a^3bde^3+35\,a^4e^4+56\left(b^4de^3+4\,ab^3e^4\right)x^3+28\left(b^4d^2e^2+4\,ab^3d\right.}{280\left(e^{13}x^8+8\,de^{12}x^7+28\,d^2e^{11}x^6+56\,d^3e^{10}x^5+70\,d^4e^9x^4+56\,d^5e^8x^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/280*(70*b^4*e^4*x^4 + b^4*d^4 + 4*a*b^3*d^3*e + 10*a^2*b^2*d^2*e^2 + 20*
a^3*b*d*e^3 + 35*a^4*e^4 + 56*(b^4*d*e^3 + 4*a*b^3*e^4)*x^3 + 28*(b^4*d^2*e
^2 + 4*a*b^3*d*e^3 + 10*a^2*b^2*e^4)*x^2 + 8*(b^4*d^3*e + 4*a*b^3*d^2*e^2 +
 10*a^2*b^2*d*e^3 + 20*a^3*b*e^4)*x)/(e^13*x^8 + 8*d*e^12*x^7 + 28*d^2*e^11
*x^6 + 56*d^3*e^10*x^5 + 70*d^4*e^9*x^4 + 56*d^5*e^8*x^3 + 28*d^6*e^7*x^2 +
 8*d^7*e^6*x + d^8*e^5)
```

giac [A] time = 0.20, size = 264, normalized size = 1.05

$$-\frac{\left(70\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+56\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+28\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+8\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/280*(70*b^4*x^4*e^4*sgn(b*x + a) + 56*b^4*d*x^3*e^3*sgn(b*x + a) + 28*b^
4*d^2*x^2*e^2*sgn(b*x + a) + 8*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x +
 a) + 224*a*b^3*x^3*e^4*sgn(b*x + a) + 112*a*b^3*d*x^2*e^3*sgn(b*x + a) + 3
2*a*b^3*d^2*x*e^2*sgn(b*x + a) + 4*a*b^3*d^3*e*sgn(b*x + a) + 280*a^2*b^2*x
^2*e^4*sgn(b*x + a) + 80*a^2*b^2*d*x*e^3*sgn(b*x + a) + 10*a^2*b^2*d^2*e^2*
sgn(b*x + a) + 160*a^3*b*x*e^4*sgn(b*x + a) + 20*a^3*b*d*e^3*sgn(b*x + a) +
 35*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^8
```

maple [**A**] time = 0.07, size = 201, normalized size = 0.80

$$-\frac{\left(70b^4e^4x^4+224ab^3e^4x^3+56b^4de^3x^3+280a^2b^2e^4x^2+112ab^3de^3x^2+28b^4d^2e^2x^2+160a^3be^4x+80a^2b^2de\right.}{280\,(ex+d)^8\,(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -1/280/e^5*(70*b^4*e^4*x^4+224*a*b^3*e^4*x^3+56*b^4*d*e^3*x^3+280*a^2*b^2*e
^4*x^2+112*a*b^3*d*e^3*x^2+28*b^4*d^2*e^2*x^2+160*a^3*b*e^4*x+80*a^2*b^2*d*
e^3*x+32*a*b^3*d^2*e^2*x+8*b^4*d^3*e*x+35*a^4*e^4+20*a^3*b*d*e^3+10*a^2*b^2
*d^2*e^2+4*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^8/(b*x+a)^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.17, size = 449, normalized size = 1.78

$$\frac{\left(\frac{-4a^3be^3+6a^2b^2de^2-4ab^3d^2e+b^4d^3}{7e^5}+\frac{d\left(\frac{d\left(\frac{b^4d}{7e^3}-\frac{b^3(4ae-bd)}{7e^3}\right)}{e}+\frac{b^2\left(6a^2e^2-4abde+b^2d^2\right)}{7e^4}\right)}{e}\right)\sqrt{a^2+2abx+b^2x^2}}{(a+bx)\,(d+ex)^7}-\frac{\left(\frac{a^4}{8e}-\frac{d\left(d\left(d\left(\frac{ab}{2e}\right.\right.\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(7*e^5) + (d*((
d*((b^4*d)/(7*e^3) - (b^3*(4*a*e - b*d))/(7*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(7*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^7) - ((a^4/(8*e) - (d*((d*((d*((a*b^3)/(2*e) - (b^4*d)/(8*e^2))
)/e - (3*a^2*b^2)/(4*e)))/e + (a^3*b)/(2*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^8) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3*d*e
)/(6*e^5) + (d*((b^4*d)/(6*e^4) - (b^3*(2*a*e - b*d))/(3*e^4)))/e)*(a^2 + b
^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) + (((3*b^4*d - 4*a*b^3*e)/
(5*e^5) + (b^4*d)/(5*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d +
 e*x)^5) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^5*(a + b*x)*(d + e*x)
^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.1985 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=254

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^7}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{2e^5(a+bx)(d+ex)^8}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^9}-\frac{b^4\sqrt{a^2+2}}{5e^5(a+b}$$

```
[Out] -1/9*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^9+1/2*b*(-a*e+b*d)^
3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^8-6/7*b^2*(-a*e+b*d)^2*((b*x+a)^2)^
(1/2)/e^5/(b*x+a)/(e*x+d)^7+2/3*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)/(e*x+d)^6-1/5*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^5
```

Rubi [A] time = 0.13, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^5}+\frac{2b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^5(a+bx)(d+ex)^6}-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^7}+\frac{b\sqrt{a^2+2abx+}}{2e^5(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)^9
) + (b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)*(d + e
*x)^8) - (6*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*
x)*(d + e*x)^7) + (2*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*
(a + b*x)*(d + e*x)^6) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*
x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{10}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{10}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{10}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^9} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^8} - \frac{4b^3(bd-ae)}{e^4(d+ex)^7} + \right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9} + \frac{b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)(d+ex)^8} - \frac{6b^2(b}{}$$

Mathematica [**A**] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(70a^4e^4+35a^3be^3(d+9ex)+15a^2b^2e^2\left(d^2+9dex+36e^2x^2\right)+5ab^3e\left(d^3+9d^2ex+36de^2x^2+84e^3\right.\right.}{630e^5(a+bx)(d+ex)^9}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^10,x]
```

```
[Out] -1/630*(Sqrt[(a + b*x)^2]*(70*a^4*e^4 + 35*a^3*b*e^3*(d + 9*e*x) + 15*a^2*b
^2*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + 5*a*b^3*e*(d^3 + 9*d^2*e*x + 36*d*e^2
*x^2 + 84*e^3*x^3) + b^4*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 +
 126*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^9)
```

fricas [**A**] time = 1.43, size = 269, normalized size = 1.06

$$-\frac{126\,b^4e^4x^4+b^4d^4+5\,ab^3d^3e+15\,a^2b^2d^2e^2+35\,a^3bde^3+70\,a^4e^4+84\left(b^4de^3+5\,ab^3e^4\right)x^3+36\left(b^4d^2e^2+5\,ab^3\right.}{630\left(e^{14}x^9+9\,de^{13}x^8+36\,d^2e^{12}x^7+84\,d^3e^{11}x^6+126\,d^4e^{10}x^5+126\,d^5e^9x^4+84\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/630*(126*b^4*e^4*x^4 + b^4*d^4 + 5*a*b^3*d^3*e + 15*a^2*b^2*d^2*e^2 + 35
*a^3*b*d*e^3 + 70*a^4*e^4 + 84*(b^4*d*e^3 + 5*a*b^3*e^4)*x^3 + 36*(b^4*d^2*
e^2 + 5*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 9*(b^4*d^3*e + 5*a*b^3*d^2*e^2
+ 15*a^2*b^2*d*e^3 + 35*a^3*b*e^4)*x)/(e^14*x^9 + 9*d*e^13*x^8 + 36*d^2*e^1
2*x^7 + 84*d^3*e^11*x^6 + 126*d^4*e^10*x^5 + 126*d^5*e^9*x^4 + 84*d^6*e^8*x
^3 + 36*d^7*e^7*x^2 + 9*d^8*e^6*x + d^9*e^5)
```

giac [**A**] time = 0.17, size = 264, normalized size = 1.04

$$-\frac{\left(126\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+84\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+36\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+9\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sgn}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/630*(126*b^4*x^4*e^4*sgn(b*x + a) + 84*b^4*d*x^3*e^3*sgn(b*x + a) + 36*b
^4*d^2*x^2*e^2*sgn(b*x + a) + 9*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b*x
+ a) + 420*a*b^3*x^3*e^4*sgn(b*x + a) + 180*a*b^3*d*x^2*e^3*sgn(b*x + a) +
45*a*b^3*d^2*x*e^2*sgn(b*x + a) + 5*a*b^3*d^3*e*sgn(b*x + a) + 540*a^2*b^2*
x^2*e^4*sgn(b*x + a) + 135*a^2*b^2*d*x*e^3*sgn(b*x + a) + 15*a^2*b^2*d^2*e^
2*sgn(b*x + a) + 315*a^3*b*x*e^4*sgn(b*x + a) + 35*a^3*b*d*e^3*sgn(b*x + a)
 + 70*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^9
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(126b^4e^4x^4+420a\,b^3e^4x^3+84b^4d\,e^3x^3+540a^2b^2e^4x^2+180a\,b^3d\,e^3x^2+36b^4d^2e^2x^2+315a^3b\,e^4x+135a^2b^2}{630\,(ex+d)^9\,(bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x)
```

```
[Out] -1/630/e^5*(126*b^4*e^4*x^4+420*a*b^3*e^4*x^3+84*b^4*d*e^3*x^3+540*a^2*b^2*
e^4*x^2+180*a*b^3*d*e^3*x^2+36*b^4*d^2*e^2*x^2+315*a^3*b*e^4*x+135*a^2*b^2*
d*e^3*x+45*a*b^3*d^2*e^2*x+9*b^4*d^3*e*x+70*a^4*e^4+35*a^3*b*d*e^3+15*a^2*b
^2*d^2*e^2+5*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^9/(b*x+a)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{8\,e^5}+\frac{d\,\left(\frac{d\,\left(\frac{b^4\,d}{8\,e^3}-\frac{b^3\,\left(4\,a\,e-b\,d\right)}{8\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{8\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^8}-\frac{\left(\frac{a^4}{9\,e}-\frac{d\,\left(\frac{d\,\left(\frac{d\,\left(\frac{4\,a}{9}}{}}{}}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^10,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(8*e^5) + (d*((
d*((b^4*d)/(8*e^3) - (b^3*(4*a*e - b*d))/(8*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(8*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^8) - ((a^4/(9*e) - (d*((d*((d*((4*a*b^3)/(9*e) - (b^4*d)/(9*e^2
)))/e - (2*a^2*b^2)/(3*e)))/e + (4*a^3*b)/(9*e)))/e)*(a^2 + b^2*x^2 + 2*a*b
*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*b^3
*d*e)/(7*e^5) + (d*((b^4*d)/(7*e^4) - (2*b^3*(2*a*e - b*d))/(7*e^4)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) + (((3*b^4*d - 4*a*b
^3*e)/(6*e^5) + (b^4*d)/(6*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^6) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(5*e^5*(a + b*x)*(d
+ e*x)^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.1986 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=254

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^5(a+bx)(d+ex)^8}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^9}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{10e^5(a+bx)(d+ex)^{10}}-\frac{b^4\sqrt{a^2+}}{6e^5(a+}$$

```
[Out] -1/10*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^10+4/9*b*(-a*e+b*d
)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^9-3/4*b^2*(-a*e+b*d)^2*((b*x+a)^2
)^(1/2)/e^5/(b*x+a)/(e*x+d)^8+4/7*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^5/(b*x
+a)/(e*x+d)^7-1/6*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^6
```

Rubi [A] time = 0.14, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{6e^5(a+bx)(d+ex)^6}+\frac{4b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{7e^5(a+bx)(d+ex)^7}-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^5(a+bx)(d+ex)^8}+\frac{4b\sqrt{a^2+2abx+}}{9e^5(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^5*(a + b*x)*(d + e*x)^
10) + (4*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d
 + e*x)^9) - (3*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^5*(a
+ b*x)*(d + e*x)^8) + (4*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*
e^5*(a + b*x)*(d + e*x)^7) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^5*(a
+ b*x)*(d + e*x)^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{11}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{11}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Big(\frac{(-bd+ae)^4}{e^4(d+ex)^{11}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{10}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^9} - \frac{4b^3(bd-ae)}{e^4(d+ex)^8} +}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{10e^5(a+bx)(d+ex)^{10}} + \frac{4b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^9} - \frac{3b^2(}{}$$

Mathematica [A] time = 0.06, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(126a^4e^4+56a^3be^3(d+10ex)+21a^2b^2e^2\left(d^2+10dex+45e^2x^2\right)+6ab^3e\left(d^3+10d^2ex+45de^2x^2+\right.\right.}{1260e^5(a+bx)(d+ex)^{10}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^11,x]
```

```
[Out] -1/1260*(Sqrt[(a + b*x)^2]*(126*a^4*e^4 + 56*a^3*b*e^3*(d + 10*e*x) + 21*a^
2*b^2*e^2*(d^2 + 10*d*e*x + 45*e^2*x^2) + 6*a*b^3*e*(d^3 + 10*d^2*e*x + 45*
d*e^2*x^2 + 120*e^3*x^3) + b^4*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e
^3*x^3 + 210*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^10)
```

fricas [A] time = 1.27, size = 280, normalized size = 1.10

$$-\frac{210\,b^4e^4x^4+b^4d^4+6\,ab^3d^3e+21\,a^2b^2d^2e^2+56\,a^3bde^3+126\,a^4e^4+120\left(b^4de^3+6\,ab^3e^4\right)x^3+45\left(b^4d^2e^2+6\,a\right.}{1260\left(e^{15}x^{10}+10\,de^{14}x^9+45\,d^2e^{13}x^8+120\,d^3e^{12}x^7+210\,d^4e^{11}x^6+252\,d^5e^{10}x^5+210\,d^6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/1260*(210*b^4*e^4*x^4 + b^4*d^4 + 6*a*b^3*d^3*e + 21*a^2*b^2*d^2*e^2 + 5
6*a^3*b*d*e^3 + 126*a^4*e^4 + 120*(b^4*d*e^3 + 6*a*b^3*e^4)*x^3 + 45*(b^4*d
^2*e^2 + 6*a*b^3*d*e^3 + 21*a^2*b^2*e^4)*x^2 + 10*(b^4*d^3*e + 6*a*b^3*d^2*
e^2 + 21*a^2*b^2*d*e^3 + 56*a^3*b*e^4)*x)/(e^15*x^10 + 10*d*e^14*x^9 + 45*d
^2*e^13*x^8 + 120*d^3*e^12*x^7 + 210*d^4*e^11*x^6 + 252*d^5*e^10*x^5 + 210*
d^6*e^9*x^4 + 120*d^7*e^8*x^3 + 45*d^8*e^7*x^2 + 10*d^9*e^6*x + d^10*e^5)
```

giac [A] time = 0.20, size = 264, normalized size = 1.04

$$-\frac{\left(210\,b^4x^4e^4\mathrm{sgn}\,(bx+a)+120\,b^4dx^3e^3\mathrm{sgn}\,(bx+a)+45\,b^4d^2x^2e^2\mathrm{sgn}\,(bx+a)+10\,b^4d^3xe\mathrm{sgn}\,(bx+a)+b^4d^4\mathrm{sg}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/1260*(210*b^4*x^4*e^4*sgn(b*x + a) + 120*b^4*d*x^3*e^3*sgn(b*x + a) + 45
*b^4*d^2*x^2*e^2*sgn(b*x + a) + 10*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b
*x + a) + 720*a*b^3*x^3*e^4*sgn(b*x + a) + 270*a*b^3*d*x^2*e^3*sgn(b*x + a)
```

```
 + 60*a*b^3*d^2*x*e^2*sgn(b*x + a) + 6*a*b^3*d^3*e*sgn(b*x + a) + 945*a^2*b
^2*x^2*e^4*sgn(b*x + a) + 210*a^2*b^2*d*x*e^3*sgn(b*x + a) + 21*a^2*b^2*d^2
*e^2*sgn(b*x + a) + 560*a^3*b*x*e^4*sgn(b*x + a) + 56*a^3*b*d*e^3*sgn(b*x +
 a) + 126*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^10
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(210b^4e^4x^4 + 720a\,b^3e^4x^3 + 120b^4d\,e^3x^3 + 945a^2b^2e^4x^2 + 270a\,b^3d\,e^3x^2 + 45b^4d^2e^2x^2 + 560a^3b\,e^4x + 210a^2\right.}{1260\,(ex+d)^{10}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x)
```

```
[Out] -1/1260/e^5*(210*b^4*e^4*x^4+720*a*b^3*e^4*x^3+120*b^4*d*e^3*x^3+945*a^2*b^
2*e^4*x^2+270*a*b^3*d*e^3*x^2+45*b^4*d^2*e^2*x^2+560*a^3*b*e^4*x+210*a^2*b^
2*d*e^3*x+60*a*b^3*d^2*e^2*x+10*b^4*d^3*e*x+126*a^4*e^4+56*a^3*b*d*e^3+21*a
^2*b^2*d^2*e^2+6*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^10/(b*x+a)^
3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.20, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{9\,e^5}+\frac{d\left(\frac{d\left(\frac{b^4\,d}{9\,e^3}-\frac{b^3\,(4\,a\,e-b\,d)}{9\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{9\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{(a+b\,x)\,(d+e\,x)^9}-\frac{\left(\frac{a^4}{10\,e}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^11,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(9*e^5) + (d*((
d*((b^4*d)/(9*e^3) - (b^3*(4*a*e - b*d))/(9*e^3)))/e + (b^2*(6*a^2*e^2 + b^
2*d^2 - 4*a*b*d*e))/(9*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x
)*(d + e*x)^9) - ((a^4/(10*e) - (d*((d*((d*((2*a*b^3)/(5*e) - (b^4*d)/(10*e
^2)))/e - (3*a^2*b^2)/(5*e)))/e + (2*a^3*b)/(5*e)))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((3*b^4*d^2 + 6*a^2*b^2*e^2 - 8*a*
b^3*d*e)/(8*e^5) + (d*((b^4*d)/(8*e^4) - (b^3*(2*a*e - b*d))/(4*e^4)))/e)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) + (((3*b^4*d - 4*a*
b^3*e)/(7*e^5) + (b^4*d)/(7*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*
x)*(d + e*x)^7) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e^5*(a + b*x)*(d
 + e*x)^6)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.1987 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=254

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^5(a+bx)(d+ex)^9}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11}}-\frac{b^4\sqrt{a^2+}}{7e^5(a+}$$

```
[Out] -1/11*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^11+2/5*b*(-a*e+b*d
)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^10-2/3*b^2*(-a*e+b*d)^2*((b*x+a)^
2)^(1/2)/e^5/(b*x+a)/(e*x+d)^9+1/2*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^5/(b*
x+a)/(e*x+d)^8-1/7*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^7
```

Rubi [**A**] time = 0.13, antiderivative size = 254, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^4\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^7}+\frac{b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{2e^5(a+bx)(d+ex)^8}-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^5(a+bx)(d+ex)^9}+\frac{2b\sqrt{a^2+2abx+}}{5e^5(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)*(d + e*x)^
11) + (2*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d
 + e*x)^10) - (2*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a
 + b*x)*(d + e*x)^9) + (b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e
^5*(a + b*x)*(d + e*x)^8) - (b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{12}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{12}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{12}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{11}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{10}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^9} + \right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11}} + \frac{2b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{10}} - 2b^2($$

Mathematica [A] time = 0.07, size = 162, normalized size = 0.64

$$-\frac{\sqrt{(a+bx)^2}\left(210a^4e^4+84a^3be^3(d+11ex)+28a^2b^2e^2\left(d^2+11dex+55e^2x^2\right)+7ab^3e\left(d^3+11d^2ex+55de^2x^2+1\right.\right.}{2310e^5(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^12,x]
```

```
[Out] -1/2310*(Sqrt[(a + b*x)^2]*(210*a^4*e^4 + 84*a^3*b*e^3*(d + 11*e*x) + 28*a^
2*b^2*e^2*(d^2 + 11*d*e*x + 55*e^2*x^2) + 7*a*b^3*e*(d^3 + 11*d^2*e*x + 55*
d*e^2*x^2 + 165*e^3*x^3) + b^4*(d^4 + 11*d^3*e*x + 55*d^2*e^2*x^2 + 165*d*e
^3*x^3 + 330*e^4*x^4)))/(e^5*(a + b*x)*(d + e*x)^11)
```

fricas [A] time = 1.23, size = 291, normalized size = 1.15

$$-\frac{330\,b^4e^4x^4+b^4d^4+7\,ab^3d^3e+28\,a^2b^2d^2e^2+84\,a^3bde^3+210\,a^4e^4+165\left(b^4de^3+7\,ab^3e^4\right)x^3+55\left(b^4d^2e^2+7\,a\right.}{2310\left(e^{16}x^{11}+11\,de^{15}x^{10}+55\,d^2e^{14}x^9+165\,d^3e^{13}x^8+330\,d^4e^{12}x^7+462\,d^5e^{11}x^6+462\,d^6e^{10}x^5+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/2310*(330*b^4*e^4*x^4 + b^4*d^4 + 7*a*b^3*d^3*e + 28*a^2*b^2*d^2*e^2 + 8
4*a^3*b*d*e^3 + 210*a^4*e^4 + 165*(b^4*d*e^3 + 7*a*b^3*e^4)*x^3 + 55*(b^4*d
^2*e^2 + 7*a*b^3*d*e^3 + 28*a^2*b^2*e^4)*x^2 + 11*(b^4*d^3*e + 7*a*b^3*d^2*
e^2 + 28*a^2*b^2*d*e^3 + 84*a^3*b*e^4)*x)/(e^16*x^11 + 11*d*e^15*x^10 + 55*
d^2*e^14*x^9 + 165*d^3*e^13*x^8 + 330*d^4*e^12*x^7 + 462*d^5*e^11*x^6 + 462
*d^6*e^10*x^5 + 330*d^7*e^9*x^4 + 165*d^8*e^8*x^3 + 55*d^9*e^7*x^2 + 11*d^1
0*e^6*x + d^11*e^5)
```

giac [A] time = 0.17, size = 264, normalized size = 1.04

$$-\frac{\left(330\,b^4x^4e^4\mathrm{sgn}\left(bx+a\right)+165\,b^4dx^3e^3\mathrm{sgn}\left(bx+a\right)+55\,b^4d^2x^2e^2\mathrm{sgn}\left(bx+a\right)+11\,b^4d^3xe\mathrm{sgn}\left(bx+a\right)+b^4d^4\mathrm{sg}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/2310*(330*b^4*x^4*e^4*sgn(b*x + a) + 165*b^4*d*x^3*e^3*sgn(b*x + a) + 55
*b^4*d^2*x^2*e^2*sgn(b*x + a) + 11*b^4*d^3*x*e*sgn(b*x + a) + b^4*d^4*sgn(b
*x + a) + 1155*a*b^3*x^3*e^4*sgn(b*x + a) + 385*a*b^3*d*x^2*e^3*sgn(b*x + a
) + 77*a*b^3*d^2*x*e^2*sgn(b*x + a) + 7*a*b^3*d^3*e*sgn(b*x + a) + 1540*a^2
*b^2*x^2*e^4*sgn(b*x + a) + 308*a^2*b^2*d*x*e^3*sgn(b*x + a) + 28*a^2*b^2*d
^2*e^2*sgn(b*x + a) + 924*a^3*b*x*e^4*sgn(b*x + a) + 84*a^3*b*d*e^3*sgn(b*x
 + a) + 210*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^11
```

maple [A] time = 0.06, size = 201, normalized size = 0.79

$$-\frac{\left(330b^4e^4x^4+1155a\,b^3e^4x^3+165b^4d\,e^3x^3+1540a^2b^2e^4x^2+385a\,b^3d\,e^3x^2+55b^4d^2e^2x^2+924a^3b\,e^4x+308\right.}{2310\,(ex+d)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x)
```

```
[Out] -1/2310/e^5*(330*b^4*e^4*x^4+1155*a*b^3*e^4*x^3+165*b^4*d*e^3*x^3+1540*a^2*
b^2*e^4*x^2+385*a*b^3*d*e^3*x^2+55*b^4*d^2*e^2*x^2+924*a^3*b*e^4*x+308*a^2*
b^2*d*e^3*x+77*a*b^3*d^2*e^2*x+11*b^4*d^3*e*x+210*a^4*e^4+84*a^3*b*d*e^3+28
*a^2*b^2*d^2*e^2+7*a*b^3*d^3*e+b^4*d^4)*((b*x+a)^2)^(3/2)/(e*x+d)^11/(b*x+a
)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.20, size = 449, normalized size = 1.77

$$\frac{\left(\frac{-4\,a^3\,b\,e^3+6\,a^2\,b^2\,d\,e^2-4\,a\,b^3\,d^2\,e+b^4\,d^3}{10\,e^5}+\frac{d\left(\frac{d\left(\frac{b^4\,d}{10\,e^3}-\frac{b^3\,(4\,a\,e-b\,d)}{10\,e^3}\right)}{e}+\frac{b^2\,\left(6\,a^2\,e^2-4\,a\,b\,d\,e+b^2\,d^2\right)}{10\,e^4}\right)}{e}\right)\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{(a+b\,x)\,\left(d+e\,x\right)^{10}}-\left(\frac{a^4}{11\,e}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^12,x)
```

```
[Out] (((b^4*d^3 - 4*a^3*b*e^3 + 6*a^2*b^2*d*e^2 - 4*a*b^3*d^2*e)/(10*e^5) + (d*(
(d*((b^4*d)/(10*e^3) - (b^3*(4*a*e - b*d))/(10*e^3)))/e + (b^2*(6*a^2*e^2 +
 b^2*d^2 - 4*a*b*d*e))/(10*e^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a +
 b*x)*(d + e*x)^10) - ((a^4/(11*e) - (d*((d*((d*((4*a*b^3)/(11*e) - (b^4*d)
/(11*e^2)))/e - (6*a^2*b^2)/(11*e)))/e + (4*a^3*b)/(11*e)))/e)*(a^2 + b^2*x
^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((3*b^4*d^2 + 6*a^2*b^2*e^
2 - 8*a*b^3*d*e)/(9*e^5) + (d*((b^4*d)/(9*e^4) - (2*b^3*(2*a*e - b*d))/(9*e
^4)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) + (((3*b^
4*d - 4*a*b^3*e)/(8*e^5) + (b^4*d)/(8*e^5))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)
)/((a + b*x)*(d + e*x)^8) - (b^4*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(7*e^5*(a
 + b*x)*(d + e*x)^7)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.1988 $\int (a+bx)(d+ex)^9\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=362

$$\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd-ae)^4}{4e^7(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^5}{11e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d}{10e^7(a+}$$

```
[Out] 1/10*(-a*e+b*d)^6*(e*x+d)^10*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-6/11*b*(-a*e+b*d
)^5*(e*x+d)^11*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+5/4*b^2*(-a*e+b*d)^4*(e*x+d)^1
2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-20/13*b^3*(-a*e+b*d)^3*(e*x+d)^13*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)+15/14*b^4*(-a*e+b*d)^2*(e*x+d)^14*((b*x+a)^2)^(1/2)/e^
7/(b*x+a)-2/5*b^5*(-a*e+b*d)*(e*x+d)^15*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/16*
b^6*(e*x+d)^16*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.69, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{16}}{16e^7(a+bx)}-\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15}(bd-ae)}{5e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^1}{14e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*e^7*(a + b*x
)) - (6*b*(b*d - a*e)^5*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7
*(a + b*x)) + (5*b^2*(b*d - a*e)^4*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(4*e^7*(a + b*x)) - (20*b^3*(b*d - a*e)^3*(d + e*x)^13*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(13*e^7*(a + b*x)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^14*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x)) - (2*b^5*(b*d - a*e)*(d + e*x
)^15*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (b^6*(d + e*x)^16*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(16*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^9 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx = \frac{\sqrt{a^2+2abx+b^2x^2} \int (a+bx) \left(ab+b^2x\right)^5 (d+ex)^9 \, dx}{b^4 \left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int (a+bx)^6 (d+ex)^9 \, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right) \int \left(\frac{(-bd+ae)^6(d+ex)^9}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{10}}{e^6} + 15b^2$$

$$= \frac{(bd-ae)^6(d+ex)^{10}\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)} - \frac{6b(bd-ae)^5(d+ex)^{11}}{11e^7(a+$$

Mathematica [B] time = 0.23, size = 756, normalized size = 2.09

$$x\sqrt{(a+bx)^2} \left(8008a^6 \left(10d^9 + 45d^8ex + 120d^7e^2x^2 + 210d^6e^3x^3 + 252d^5e^4x^4 + 210d^4e^5x^5 + 120d^3e^6x^6 + 45d^2e^7x$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^9*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(8008*a^6*(10*d^9 + 45*d^8*e*x + 120*d^7*e^2*x^2 + 210
*d^6*e^3*x^3 + 252*d^5*e^4*x^4 + 210*d^4*e^5*x^5 + 120*d^3*e^6*x^6 + 45*d^2
*e^7*x^7 + 10*d*e^8*x^8 + e^9*x^9) + 4368*a^5*b*x*(55*d^9 + 330*d^8*e*x + 9
90*d^7*e^2*x^2 + 1848*d^6*e^3*x^3 + 2310*d^5*e^4*x^4 + 1980*d^4*e^5*x^5 + 1
155*d^3*e^6*x^6 + 440*d^2*e^7*x^7 + 99*d*e^8*x^8 + 10*e^9*x^9) + 1820*a^4*b
^2*x^2*(220*d^9 + 1485*d^8*e*x + 4752*d^7*e^2*x^2 + 9240*d^6*e^3*x^3 + 1188
0*d^5*e^4*x^4 + 10395*d^4*e^5*x^5 + 6160*d^3*e^6*x^6 + 2376*d^2*e^7*x^7 + 5
40*d*e^8*x^8 + 55*e^9*x^9) + 560*a^3*b^3*x^3*(715*d^9 + 5148*d^8*e*x + 1716
0*d^7*e^2*x^2 + 34320*d^6*e^3*x^3 + 45045*d^5*e^4*x^4 + 40040*d^4*e^5*x^5 +
 24024*d^3*e^6*x^6 + 9360*d^2*e^7*x^7 + 2145*d*e^8*x^8 + 220*e^9*x^9) + 120
*a^2*b^4*x^4*(2002*d^9 + 15015*d^8*e*x + 51480*d^7*e^2*x^2 + 105105*d^6*e^3
*x^3 + 140140*d^5*e^4*x^4 + 126126*d^4*e^5*x^5 + 76440*d^3*e^6*x^6 + 30030*
d^2*e^7*x^7 + 6930*d*e^8*x^8 + 715*e^9*x^9) + 16*a*b^5*x^5*(5005*d^9 + 3861
0*d^8*e*x + 135135*d^7*e^2*x^2 + 280280*d^6*e^3*x^3 + 378378*d^5*e^4*x^4 +
343980*d^4*e^5*x^5 + 210210*d^3*e^6*x^6 + 83160*d^2*e^7*x^7 + 19305*d*e^8*x
^8 + 2002*e^9*x^9) + b^6*x^6*(11440*d^9 + 90090*d^8*e*x + 320320*d^7*e^2*x^
2 + 672672*d^6*e^3*x^3 + 917280*d^5*e^4*x^4 + 840840*d^4*e^5*x^5 + 517440*d
^3*e^6*x^6 + 205920*d^2*e^7*x^7 + 48048*d*e^8*x^8 + 5005*e^9*x^9)))/(80080*
(a + b*x))
```

fricas [B] time = 0.62, size = 892, normalized size = 2.46

$$\frac{1}{16}\,b^6e^9x^{16}+a^6d^9x+\frac{1}{5}\left(3\,b^6de^8+2\,ab^5e^9\right)x^{15}+\frac{3}{14}\left(12\,b^6d^2e^7+18\,ab^5de^8+5\,a^2b^4e^9\right)x^{14}+\frac{1}{13}\left(84\,b^6d^3e^6+216\,ab^5d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/16*b^6*e^9*x^16 + a^6*d^9*x + 1/5*(3*b^6*d*e^8 + 2*a*b^5*e^9)*x^15 + 3/14
*(12*b^6*d^2*e^7 + 18*a*b^5*d*e^8 + 5*a^2*b^4*e^9)*x^14 + 1/13*(84*b^6*d^3*
e^6 + 216*a*b^5*d^2*e^7 + 135*a^2*b^4*d*e^8 + 20*a^3*b^3*e^9)*x^13 + 1/4*(4
2*b^6*d^4*e^5 + 168*a*b^5*d^3*e^6 + 180*a^2*b^4*d^2*e^7 + 60*a^3*b^3*d*e^8
+ 5*a^4*b^2*e^9)*x^12 + 3/11*(42*b^6*d^5*e^4 + 252*a*b^5*d^4*e^5 + 420*a^2*
b^4*d^3*e^6 + 240*a^3*b^3*d^2*e^7 + 45*a^4*b^2*d*e^8 + 2*a^5*b*e^9)*x^11 +
1/10*(84*b^6*d^6*e^3 + 756*a*b^5*d^5*e^4 + 1890*a^2*b^4*d^4*e^5 + 1680*a^3*
b^3*d^3*e^6 + 540*a^4*b^2*d^2*e^7 + 54*a^5*b*d*e^8 + a^6*e^9)*x^10 + (4*b^6
*d^7*e^2 + 56*a*b^5*d^6*e^3 + 210*a^2*b^4*d^5*e^4 + 280*a^3*b^3*d^4*e^5 + 1
40*a^4*b^2*d^3*e^6 + 24*a^5*b*d^2*e^7 + a^6*d*e^8)*x^9 + 9/8*(b^6*d^8*e + 2
4*a*b^5*d^7*e^2 + 140*a^2*b^4*d^6*e^3 + 280*a^3*b^3*d^5*e^4 + 210*a^4*b^2*d
^4*e^5 + 56*a^5*b*d^3*e^6 + 4*a^6*d^2*e^7)*x^8 + 1/7*(b^6*d^9 + 54*a*b^5*d^
8*e + 540*a^2*b^4*d^7*e^2 + 1680*a^3*b^3*d^6*e^3 + 1890*a^4*b^2*d^5*e^4 + 7
56*a^5*b*d^4*e^5 + 84*a^6*d^3*e^6)*x^7 + 1/2*(2*a*b^5*d^9 + 45*a^2*b^4*d^8*
e + 240*a^3*b^3*d^7*e^2 + 420*a^4*b^2*d^6*e^3 + 252*a^5*b*d^5*e^4 + 42*a^6*
d^4*e^5)*x^6 + 3/5*(5*a^2*b^4*d^9 + 60*a^3*b^3*d^8*e + 180*a^4*b^2*d^7*e^2
+ 168*a^5*b*d^6*e^3 + 42*a^6*d^5*e^4)*x^5 + 1/4*(20*a^3*b^3*d^9 + 135*a^4*b
^2*d^8*e + 216*a^5*b*d^7*e^2 + 84*a^6*d^6*e^3)*x^4 + (5*a^4*b^2*d^9 + 18*a^
5*b*d^8*e + 12*a^6*d^7*e^2)*x^3 + 3/2*(2*a^5*b*d^9 + 3*a^6*d^8*e)*x^2
```

giac [B] time = 0.29, size = 1387, normalized size = 3.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/16*b^6*x^16*e^9*sgn(b*x + a) + 3/5*b^6*d*x^15*e^8*sgn(b*x + a) + 18/7*b^6
*d^2*x^14*e^7*sgn(b*x + a) + 84/13*b^6*d^3*x^13*e^6*sgn(b*x + a) + 21/2*b^6
*d^4*x^12*e^5*sgn(b*x + a) + 126/11*b^6*d^5*x^11*e^4*sgn(b*x + a) + 42/5*b^
6*d^6*x^10*e^3*sgn(b*x + a) + 4*b^6*d^7*x^9*e^2*sgn(b*x + a) + 9/8*b^6*d^8*
x^8*e*sgn(b*x + a) + 1/7*b^6*d^9*x^7*sgn(b*x + a) + 2/5*a*b^5*x^15*e^9*sgn(
b*x + a) + 27/7*a*b^5*d*x^14*e^8*sgn(b*x + a) + 216/13*a*b^5*d^2*x^13*e^7*s
gn(b*x + a) + 42*a*b^5*d^3*x^12*e^6*sgn(b*x + a) + 756/11*a*b^5*d^4*x^11*e^
5*sgn(b*x + a) + 378/5*a*b^5*d^5*x^10*e^4*sgn(b*x + a) + 56*a*b^5*d^6*x^9*e
^3*sgn(b*x + a) + 27*a*b^5*d^7*x^8*e^2*sgn(b*x + a) + 54/7*a*b^5*d^8*x^7*e*
sgn(b*x + a) + a*b^5*d^9*x^6*sgn(b*x + a) + 15/14*a^2*b^4*x^14*e^9*sgn(b*x
+ a) + 135/13*a^2*b^4*d*x^13*e^8*sgn(b*x + a) + 45*a^2*b^4*d^2*x^12*e^7*sgn
(b*x + a) + 1260/11*a^2*b^4*d^3*x^11*e^6*sgn(b*x + a) + 189*a^2*b^4*d^4*x^1
0*e^5*sgn(b*x + a) + 210*a^2*b^4*d^5*x^9*e^4*sgn(b*x + a) + 315/2*a^2*b^4*d
^6*x^8*e^3*sgn(b*x + a) + 540/7*a^2*b^4*d^7*x^7*e^2*sgn(b*x + a) + 45/2*a^2
*b^4*d^8*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^9*x^5*sgn(b*x + a) + 20/13*a^3*b^
3*x^13*e^9*sgn(b*x + a) + 15*a^3*b^3*d*x^12*e^8*sgn(b*x + a) + 720/11*a^3*b
^3*d^2*x^11*e^7*sgn(b*x + a) + 168*a^3*b^3*d^3*x^10*e^6*sgn(b*x + a) + 280*
a^3*b^3*d^4*x^9*e^5*sgn(b*x + a) + 315*a^3*b^3*d^5*x^8*e^4*sgn(b*x + a) + 2
40*a^3*b^3*d^6*x^7*e^3*sgn(b*x + a) + 120*a^3*b^3*d^7*x^6*e^2*sgn(b*x + a)
+ 36*a^3*b^3*d^8*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^9*x^4*sgn(b*x + a) + 5/4*
a^4*b^2*x^12*e^9*sgn(b*x + a) + 135/11*a^4*b^2*d*x^11*e^8*sgn(b*x + a) + 54
*a^4*b^2*d^2*x^10*e^7*sgn(b*x + a) + 140*a^4*b^2*d^3*x^9*e^6*sgn(b*x + a) +
 945/4*a^4*b^2*d^4*x^8*e^5*sgn(b*x + a) + 270*a^4*b^2*d^5*x^7*e^4*sgn(b*x +
 a) + 210*a^4*b^2*d^6*x^6*e^3*sgn(b*x + a) + 108*a^4*b^2*d^7*x^5*e^2*sgn(b*
x + a) + 135/4*a^4*b^2*d^8*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^9*x^3*sgn(b*x +
 a) + 6/11*a^5*b*x^11*e^9*sgn(b*x + a) + 27/5*a^5*b*d*x^10*e^8*sgn(b*x + a)
 + 24*a^5*b*d^2*x^9*e^7*sgn(b*x + a) + 63*a^5*b*d^3*x^8*e^6*sgn(b*x + a) +
108*a^5*b*d^4*x^7*e^5*sgn(b*x + a) + 126*a^5*b*d^5*x^6*e^4*sgn(b*x + a) + 5
04/5*a^5*b*d^6*x^5*e^3*sgn(b*x + a) + 54*a^5*b*d^7*x^4*e^2*sgn(b*x + a) + 1
8*a^5*b*d^8*x^3*e*sgn(b*x + a) + 3*a^5*b*d^9*x^2*sgn(b*x + a) + 1/10*a^6*x^
10*e^9*sgn(b*x + a) + a^6*d*x^9*e^8*sgn(b*x + a) + 9/2*a^6*d^2*x^8*e^7*sgn(
b*x + a) + 12*a^6*d^3*x^7*e^6*sgn(b*x + a) + 21*a^6*d^4*x^6*e^5*sgn(b*x + a
) + 126/5*a^6*d^5*x^5*e^4*sgn(b*x + a) + 21*a^6*d^6*x^4*e^3*sgn(b*x + a) +
12*a^6*d^7*x^3*e^2*sgn(b*x + a) + 9/2*a^6*d^8*x^2*e*sgn(b*x + a) + a^6*d^9*
x*sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 1034, normalized size = 2.86

$$\frac{\left(5005b^{6}e^{9}x^{15} + 32032x^{14}a\,b^{5}e^{9} + 48048x^{14}b^{6}d\,e^{8} + 85800x^{13}a^{2}b^{4}e^{9} + 308880x^{13}a\,b^{5}d\,e^{8} + 205920x^{13}b^{6}d^{2}e^{7} +\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/80080*x*(5005*b^6*e^9*x^15+32032*a*b^5*e^9*x^14+48048*b^6*d*e^8*x^14+8580
0*a^2*b^4*e^9*x^13+308880*a*b^5*d*e^8*x^13+205920*b^6*d^2*e^7*x^13+123200*a
^3*b^3*e^9*x^12+831600*a^2*b^4*d*e^8*x^12+1330560*a*b^5*d^2*e^7*x^12+517440
*b^6*d^3*e^6*x^12+100100*a^4*b^2*e^9*x^11+1201200*a^3*b^3*d*e^8*x^11+360360
0*a^2*b^4*d^2*e^7*x^11+3363360*a*b^5*d^3*e^6*x^11+840840*b^6*d^4*e^5*x^11+4
3680*a^5*b*e^9*x^10+982800*a^4*b^2*d*e^8*x^10+5241600*a^3*b^3*d^2*e^7*x^10+
9172800*a^2*b^4*d^3*e^6*x^10+5503680*a*b^5*d^4*e^5*x^10+917280*b^6*d^5*e^4*
x^10+8008*a^6*e^9*x^9+432432*a^5*b*d*e^8*x^9+4324320*a^4*b^2*d^2*e^7*x^9+13
453440*a^3*b^3*d^3*e^6*x^9+15135120*a^2*b^4*d^4*e^5*x^9+6054048*a*b^5*d^5*e
^4*x^9+672672*b^6*d^6*e^3*x^9+80080*a^6*d*e^8*x^8+1921920*a^5*b*d^2*e^7*x^8
+11211200*a^4*b^2*d^3*e^6*x^8+22422400*a^3*b^3*d^4*e^5*x^8+16816800*a^2*b^4
*d^5*e^4*x^8+4484480*a*b^5*d^6*e^3*x^8+320320*b^6*d^7*e^2*x^8+360360*a^6*d^
2*e^7*x^7+5045040*a^5*b*d^3*e^6*x^7+18918900*a^4*b^2*d^4*e^5*x^7+25225200*a
^3*b^3*d^5*e^4*x^7+12612600*a^2*b^4*d^6*e^3*x^7+2162160*a*b^5*d^7*e^2*x^7+9
0090*b^6*d^8*e*x^7+960960*a^6*d^3*e^6*x^6+8648640*a^5*b*d^4*e^5*x^6+2162160
0*a^4*b^2*d^5*e^4*x^6+19219200*a^3*b^3*d^6*e^3*x^6+6177600*a^2*b^4*d^7*e^2*
x^6+617760*a*b^5*d^8*e*x^6+11440*b^6*d^9*x^6+1681680*a^6*d^4*e^5*x^5+100900
80*a^5*b*d^5*e^4*x^5+16816800*a^4*b^2*d^6*e^3*x^5+9609600*a^3*b^3*d^7*e^2*x
^5+1801800*a^2*b^4*d^8*e*x^5+80080*a*b^5*d^9*x^5+2018016*a^6*d^5*e^4*x^4+80
72064*a^5*b*d^6*e^3*x^4+8648640*a^4*b^2*d^7*e^2*x^4+2882880*a^3*b^3*d^8*e*x
^4+240240*a^2*b^4*d^9*x^4+1681680*a^6*d^6*e^3*x^3+4324320*a^5*b*d^7*e^2*x^3
+2702700*a^4*b^2*d^8*e*x^3+400400*a^3*b^3*d^9*x^3+960960*a^6*d^7*e^2*x^2+14
41440*a^5*b*d^8*e*x^2+400400*a^4*b^2*d^9*x^2+360360*a^6*d^8*e*x+240240*a^5*
b*d^9*x+80080*a^6*d^9)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**] time = 0.80, size = 3175, normalized size = 8.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^9*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/16*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^9*x^9/b - 5/48*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^9*x^8/b^2 + 11/84*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^9*x^
7/b^3 - 23/156*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^9*x^6/b^4 + 49/312*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^9*x^5/b^5 - 557/3432*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a^5*e^9*x^4/b^6 + 283/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6
*e^9*x^3/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^9*x + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^10*e^9*x/b^9 - 95/572*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*a^7*e^9*x^2/b^8 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^9/b + 1/6*(b
^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^11*e^9/b^10 + 381/2288*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^8*e^9*x/b^9 - 2669/16016*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^9*
e^9/b^10 + 1/15*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^8/b^2
 - 23/210*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^7/b^3 + 9
/14*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^7/b^2 + 53/39
0*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^6/b^4 - 27/26*(
4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^6/b^3 + 12/13*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^6/b^2 - 59/390*
(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^5/b^5 + 33/26*(4*
b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^5/b^4 - 19/13*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^5/b^3 + 7/2*(
3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2 + 137/85
8*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^4/b^6 - 399/286
*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^4/b^5 + 251/
143*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^4/b^4
 - 119/22*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4
/b^3 + 126/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b
^2 - 703/4290*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^3/b
^7 + 417/286*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^
3/b^6 - 272/143*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^3*x^3/b^5 + 70/11*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a^2*x^3/b^4 - 189/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2
)^(7/2)*a*x^3/b^3 + 21/5*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*x^3/b^2 - 1/6*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^9*x/b^9 + 3/2*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^
8*x/b^8 - 2*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7
*x/b^7 + 7*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*
x/b^6 - 21*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^
5 + 7*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4
 - 2*(3*b*d^7*e^2 + 7*a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3
+ 3/2*(b*d^8*e + 4*a*d^7*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1
/6*(b*d^9 + 9*a*d^8*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b + 237/1430*(9*
b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*x^2/b^8 - 425/286*(4*b
*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^2/b^7 + 844/429*(
7*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^2/b^6 - 22
4/33*(3*b*d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^
5 + 217/11*(b*d^5*e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^2/
b^4 - 91/15*(2*b*d^6*e^3 + 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x
^2/b^3 + 4/3*(3*b*d^7*e^2 + 7*a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^
2/b^2 - 1/6*(9*b*d*e^8 + a*e^9)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^10/b^10 +
 3/2*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9/b^9 - 2*(7
*b*d^3*e^6 + 3*a*d^2*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8/b^8 + 7*(3*b*
d^4*e^5 + 2*a*d^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 21*(b*d^5*
e^4 + a*d^4*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 7*(2*b*d^6*e^3 +
 3*a*d^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 2*(3*b*d^7*e^2 + 7*
a*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 3/2*(b*d^8*e + 4*a*d^7
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^9 + 9*a*d^8*e)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 119/715*(9*b*d*e^8 + a*e^9)*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*a^7*x/b^9 + 214/143*(4*b*d^2*e^7 + a*d*e^8)*(b^2*x^
2 + 2*a*b*x + a^2)^(7/2)*a^6*x/b^8 - 1709/858*(7*b*d^3*e^6 + 3*a*d^2*e^7)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/132*(3*b*d^4*e^5 + 2*a*d^3*e
^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 455/22*(b*d^5*e^4 + a*d^4*e
^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 203/30*(2*b*d^6*e^3 + 3*a*d
^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 11/6*(3*b*d^7*e^2 + 7*a
*d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 9/8*(b*d^8*e + 4*a*d^7*
e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 834/5005*(9*b*d*e^8 + a*e^9)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^8/b^10 - 1501/1001*(4*b*d^2*e^7 + a*d*e^8)
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7/b^9 + 1715/858*(7*b*d^3*e^6 + 3*a*d^2*
e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 - 923/132*(3*b*d^4*e^5 + 2*a*d
^3*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 461/22*(b*d^5*e^4 + a*d^4
*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/30*(2*b*d^6*e^3 + 3*a*d
^5*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/42*(3*b*d^7*e^2 + 7*a*
d^6*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 81/56*(b*d^8*e + 4*a*d^7
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^9 + 9*a*d^8*e)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^9\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^9*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^9*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^9\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**9*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**9*((a + b*x)**2)**(5/2), x)
```

3.1989 $\int (a+bx)(d+ex)^8 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=362

$$\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11}(bd-ae)^4}{11e^7(a+bx)}-\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^5}{5e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(}{9e^7(a+}$$

```
[Out] 1/9*(-a*e+b*d)^6*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-3/5*b*(-a*e+b*d)^5
*(e*x+d)^10*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+15/11*b^2*(-a*e+b*d)^4*(e*x+d)^11
*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-5/3*b^3*(-a*e+b*d)^3*(e*x+d)^12*((b*x+a)^2)^
(1/2)/e^7/(b*x+a)+15/13*b^4*(-a*e+b*d)^2*(e*x+d)^13*((b*x+a)^2)^(1/2)/e^7/(
b*x+a)-3/7*b^5*(-a*e+b*d)*(e*x+d)^14*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/15*b^6
*(e*x+d)^15*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.59, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15}}{15e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{14}(bd-ae)}{7e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{1}}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
 - (3*b*(b*d - a*e)^5*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a
 + b*x)) + (15*b^2*(b*d - a*e)^4*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(11*e^7*(a + b*x)) - (5*b^3*(b*d - a*e)^3*(d + e*x)^12*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^7*(a + b*x)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^13*Sqrt[a^
2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^1
4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (b^6*(d + e*x)^15*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^8\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^8\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^8\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^8}{e^6}-\frac{6b(bd-ae)^5(d+ex)^9}{e^6}+\frac{15b^2(}{}\right.}{}\\ &= \frac{(bd-ae)^6(d+ex)^9\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)}-\frac{3b(bd-ae)^5(d+ex)^{10}\sqrt{}}{5e^7(a+}\end{aligned}$$

Mathematica [**A**] time = 0.22, size = 679, normalized size = 1.88

$$\frac{x\sqrt{(a+bx)^2}\left(5005a^6\left(9d^8+36d^7ex+84d^6e^2x^2+126d^5e^3x^3+126d^4e^4x^4+84d^3e^5x^5+36d^2e^6x^6+9de^7x^7+e^8x\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^8*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(5005*a^6*(9*d^8 + 36*d^7*e*x + 84*d^6*e^2*x^2 + 126*d
^5*e^3*x^3 + 126*d^4*e^4*x^4 + 84*d^3*e^5*x^5 + 36*d^2*e^6*x^6 + 9*d*e^7*x^
7 + e^8*x^8) + 3003*a^5*b*x*(45*d^8 + 240*d^7*e*x + 630*d^6*e^2*x^2 + 1008*
d^5*e^3*x^3 + 1050*d^4*e^4*x^4 + 720*d^3*e^5*x^5 + 315*d^2*e^6*x^6 + 80*d*e
^7*x^7 + 9*e^8*x^8) + 1365*a^4*b^2*x^2*(165*d^8 + 990*d^7*e*x + 2772*d^6*e^
2*x^2 + 4620*d^5*e^3*x^3 + 4950*d^4*e^4*x^4 + 3465*d^3*e^5*x^5 + 1540*d^2*e
^6*x^6 + 396*d*e^7*x^7 + 45*e^8*x^8) + 455*a^3*b^3*x^3*(495*d^8 + 3168*d^7*
e*x + 9240*d^6*e^2*x^2 + 15840*d^5*e^3*x^3 + 17325*d^4*e^4*x^4 + 12320*d^3*
e^5*x^5 + 5544*d^2*e^6*x^6 + 1440*d*e^7*x^7 + 165*e^8*x^8) + 105*a^2*b^4*x^
4*(1287*d^8 + 8580*d^7*e*x + 25740*d^6*e^2*x^2 + 45045*d^5*e^3*x^3 + 50050*
d^4*e^4*x^4 + 36036*d^3*e^5*x^5 + 16380*d^2*e^6*x^6 + 4290*d*e^7*x^7 + 495*
e^8*x^8) + 15*a*b^5*x^5*(3003*d^8 + 20592*d^7*e*x + 63063*d^6*e^2*x^2 + 112
112*d^5*e^3*x^3 + 126126*d^4*e^4*x^4 + 91728*d^3*e^5*x^5 + 42042*d^2*e^6*x^
6 + 11088*d*e^7*x^7 + 1287*e^8*x^8) + b^6*x^6*(6435*d^8 + 45045*d^7*e*x + 1
40140*d^6*e^2*x^2 + 252252*d^5*e^3*x^3 + 286650*d^4*e^4*x^4 + 210210*d^3*e^
5*x^5 + 97020*d^2*e^6*x^6 + 25740*d*e^7*x^7 + 3003*e^8*x^8)))/(45045*(a + b
*x))
```

fricas [**B**] time = 0.99, size = 797, normalized size = 2.20

$$\frac{1}{15}\,b^6e^8x^{15}+a^6d^8x+\frac{1}{7}\left(4\,b^6de^7+3\,ab^5e^8\right)x^{14}+\frac{1}{13}\left(28\,b^6d^2e^6+48\,ab^5de^7+15\,a^2b^4e^8\right)x^{13}+\frac{1}{3}\left(14\,b^6d^3e^5+42\,ab^5d^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/15*b^6*e^8*x^15 + a^6*d^8*x + 1/7*(4*b^6*d*e^7 + 3*a*b^5*e^8)*x^14 + 1/13
*(28*b^6*d^2*e^6 + 48*a*b^5*d*e^7 + 15*a^2*b^4*e^8)*x^13 + 1/3*(14*b^6*d^3*
e^5 + 42*a*b^5*d^2*e^6 + 30*a^2*b^4*d*e^7 + 5*a^3*b^3*e^8)*x^12 + 1/11*(70*
b^6*d^4*e^4 + 336*a*b^5*d^3*e^5 + 420*a^2*b^4*d^2*e^6 + 160*a^3*b^3*d*e^7 +
 15*a^4*b^2*e^8)*x^11 + 1/5*(28*b^6*d^5*e^3 + 210*a*b^5*d^4*e^4 + 420*a^2*b
^4*d^3*e^5 + 280*a^3*b^3*d^2*e^6 + 60*a^4*b^2*d*e^7 + 3*a^5*b*e^8)*x^10 + 1
/9*(28*b^6*d^6*e^2 + 336*a*b^5*d^5*e^3 + 1050*a^2*b^4*d^4*e^4 + 1120*a^3*b^
3*d^3*e^5 + 420*a^4*b^2*d^2*e^6 + 48*a^5*b*d*e^7 + a^6*e^8)*x^9 + (b^6*d^7*
e + 21*a*b^5*d^6*e^2 + 105*a^2*b^4*d^5*e^3 + 175*a^3*b^3*d^4*e^4 + 105*a^4*
b^2*d^3*e^5 + 21*a^5*b*d^2*e^6 + a^6*d*e^7)*x^8 + 1/7*(b^6*d^8 + 48*a*b^5*d
^7*e + 420*a^2*b^4*d^6*e^2 + 1120*a^3*b^3*d^5*e^3 + 1050*a^4*b^2*d^4*e^4 +
336*a^5*b*d^3*e^5 + 28*a^6*d^2*e^6)*x^7 + 1/3*(3*a*b^5*d^8 + 60*a^2*b^4*d^7
*e + 280*a^3*b^3*d^6*e^2 + 420*a^4*b^2*d^5*e^3 + 210*a^5*b*d^4*e^4 + 28*a^6
*d^3*e^5)*x^6 + 1/5*(15*a^2*b^4*d^8 + 160*a^3*b^3*d^7*e + 420*a^4*b^2*d^6*e
^2 + 336*a^5*b*d^5*e^3 + 70*a^6*d^4*e^4)*x^5 + (5*a^3*b^3*d^8 + 30*a^4*b^2*
d^7*e + 42*a^5*b*d^6*e^2 + 14*a^6*d^5*e^3)*x^4 + 1/3*(15*a^4*b^2*d^8 + 48*a
^5*b*d^7*e + 28*a^6*d^6*e^2)*x^3 + (3*a^5*b*d^8 + 4*a^6*d^7*e)*x^2
```

giac [B] time = 0.24, size = 1242, normalized size = 3.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/15*b^6*x^15*e^8*sgn(b*x + a) + 4/7*b^6*d*x^14*e^7*sgn(b*x + a) + 28/13*b^
6*d^2*x^13*e^6*sgn(b*x + a) + 14/3*b^6*d^3*x^12*e^5*sgn(b*x + a) + 70/11*b^
6*d^4*x^11*e^4*sgn(b*x + a) + 28/5*b^6*d^5*x^10*e^3*sgn(b*x + a) + 28/9*b^6
*d^6*x^9*e^2*sgn(b*x + a) + b^6*d^7*x^8*e*sgn(b*x + a) + 1/7*b^6*d^8*x^7*sg
n(b*x + a) + 3/7*a*b^5*x^14*e^8*sgn(b*x + a) + 48/13*a*b^5*d*x^13*e^7*sgn(b
*x + a) + 14*a*b^5*d^2*x^12*e^6*sgn(b*x + a) + 336/11*a*b^5*d^3*x^11*e^5*sg
n(b*x + a) + 42*a*b^5*d^4*x^10*e^4*sgn(b*x + a) + 112/3*a*b^5*d^5*x^9*e^3*s
gn(b*x + a) + 21*a*b^5*d^6*x^8*e^2*sgn(b*x + a) + 48/7*a*b^5*d^7*x^7*e*sgn(
b*x + a) + a*b^5*d^8*x^6*sgn(b*x + a) + 15/13*a^2*b^4*x^13*e^8*sgn(b*x + a)
 + 10*a^2*b^4*d*x^12*e^7*sgn(b*x + a) + 420/11*a^2*b^4*d^2*x^11*e^6*sgn(b*x
 + a) + 84*a^2*b^4*d^3*x^10*e^5*sgn(b*x + a) + 350/3*a^2*b^4*d^4*x^9*e^4*sg
n(b*x + a) + 105*a^2*b^4*d^5*x^8*e^3*sgn(b*x + a) + 60*a^2*b^4*d^6*x^7*e^2*
sgn(b*x + a) + 20*a^2*b^4*d^7*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^8*x^5*sgn(b*
x + a) + 5/3*a^3*b^3*x^12*e^8*sgn(b*x + a) + 160/11*a^3*b^3*d*x^11*e^7*sgn(
b*x + a) + 56*a^3*b^3*d^2*x^10*e^6*sgn(b*x + a) + 1120/9*a^3*b^3*d^3*x^9*e^
5*sgn(b*x + a) + 175*a^3*b^3*d^4*x^8*e^4*sgn(b*x + a) + 160*a^3*b^3*d^5*x^7
*e^3*sgn(b*x + a) + 280/3*a^3*b^3*d^6*x^6*e^2*sgn(b*x + a) + 32*a^3*b^3*d^7
*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^8*x^4*sgn(b*x + a) + 15/11*a^4*b^2*x^11*e
^8*sgn(b*x + a) + 12*a^4*b^2*d*x^10*e^7*sgn(b*x + a) + 140/3*a^4*b^2*d^2*x^
9*e^6*sgn(b*x + a) + 105*a^4*b^2*d^3*x^8*e^5*sgn(b*x + a) + 150*a^4*b^2*d^4
*x^7*e^4*sgn(b*x + a) + 140*a^4*b^2*d^5*x^6*e^3*sgn(b*x + a) + 84*a^4*b^2*d
^6*x^5*e^2*sgn(b*x + a) + 30*a^4*b^2*d^7*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^8
*x^3*sgn(b*x + a) + 3/5*a^5*b*x^10*e^8*sgn(b*x + a) + 16/3*a^5*b*d*x^9*e^7*
sgn(b*x + a) + 21*a^5*b*d^2*x^8*e^6*sgn(b*x + a) + 48*a^5*b*d^3*x^7*e^5*sgn
(b*x + a) + 70*a^5*b*d^4*x^6*e^4*sgn(b*x + a) + 336/5*a^5*b*d^5*x^5*e^3*sgn
(b*x + a) + 42*a^5*b*d^6*x^4*e^2*sgn(b*x + a) + 16*a^5*b*d^7*x^3*e*sgn(b*x
+ a) + 3*a^5*b*d^8*x^2*sgn(b*x + a) + 1/9*a^6*x^9*e^8*sgn(b*x + a) + a^6*d*
x^8*e^7*sgn(b*x + a) + 4*a^6*d^2*x^7*e^6*sgn(b*x + a) + 28/3*a^6*d^3*x^6*e^
5*sgn(b*x + a) + 14*a^6*d^4*x^5*e^4*sgn(b*x + a) + 14*a^6*d^5*x^4*e^3*sgn(b
*x + a) + 28/3*a^6*d^6*x^3*e^2*sgn(b*x + a) + 4*a^6*d^7*x^2*e*sgn(b*x + a)
+ a^6*d^8*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 925, normalized size = 2.56

$$\big(3003b^{6}e^{8}x^{14}+19305x^{13}a\,b^{5}e^{8}+25740x^{13}b^{6}d\,e^{7}+51975x^{12}a^{2}b^{4}e^{8}+166320x^{12}a\,b^{5}d\,e^{7}+97020x^{12}b^{6}d^{2}e^{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/45045*x*(3003*b^6*e^8*x^14+19305*a*b^5*e^8*x^13+25740*b^6*d*e^7*x^13+5197
5*a^2*b^4*e^8*x^12+166320*a*b^5*d*e^7*x^12+97020*b^6*d^2*e^6*x^12+75075*a^3
*b^3*e^8*x^11+450450*a^2*b^4*d*e^7*x^11+630630*a*b^5*d^2*e^6*x^11+210210*b^
6*d^3*e^5*x^11+61425*a^4*b^2*e^8*x^10+655200*a^3*b^3*d*e^7*x^10+1719900*a^2
*b^4*d^2*e^6*x^10+1375920*a*b^5*d^3*e^5*x^10+286650*b^6*d^4*e^4*x^10+27027*
a^5*b*e^8*x^9+540540*a^4*b^2*d*e^7*x^9+2522520*a^3*b^3*d^2*e^6*x^9+3783780*
a^2*b^4*d^3*e^5*x^9+1891890*a*b^5*d^4*e^4*x^9+252252*b^6*d^5*e^3*x^9+5005*a
^6*e^8*x^8+240240*a^5*b*d*e^7*x^8+2102100*a^4*b^2*d^2*e^6*x^8+5605600*a^3*b
^3*d^3*e^5*x^8+5255250*a^2*b^4*d^4*e^4*x^8+1681680*a*b^5*d^5*e^3*x^8+140140
*b^6*d^6*e^2*x^8+45045*a^6*d*e^7*x^7+945945*a^5*b*d^2*e^6*x^7+4729725*a^4*b
^2*d^3*e^5*x^7+7882875*a^3*b^3*d^4*e^4*x^7+4729725*a^2*b^4*d^5*e^3*x^7+9459
45*a*b^5*d^6*e^2*x^7+45045*b^6*d^7*e*x^7+180180*a^6*d^2*e^6*x^6+2162160*a^5
*b*d^3*e^5*x^6+6756750*a^4*b^2*d^4*e^4*x^6+7207200*a^3*b^3*d^5*e^3*x^6+2702
700*a^2*b^4*d^6*e^2*x^6+308880*a*b^5*d^7*e*x^6+6435*b^6*d^8*x^6+420420*a^6*
d^3*e^5*x^5+3153150*a^5*b*d^4*e^4*x^5+6306300*a^4*b^2*d^5*e^3*x^5+4204200*a
^3*b^3*d^6*e^2*x^5+900900*a^2*b^4*d^7*e*x^5+45045*a*b^5*d^8*x^5+630630*a^6*
d^4*e^4*x^4+3027024*a^5*b*d^5*e^3*x^4+3783780*a^4*b^2*d^6*e^2*x^4+1441440*a
^3*b^3*d^7*e*x^4+135135*a^2*b^4*d^8*x^4+630630*a^6*d^5*e^3*x^3+1891890*a^5*
b*d^6*e^2*x^3+1351350*a^4*b^2*d^7*e*x^3+225225*a^3*b^3*d^8*x^3+420420*a^6*d
^6*e^2*x^2+720720*a^5*b*d^7*e*x^2+225225*a^4*b^2*d^8*x^2+180180*a^6*d^7*e*x
+135135*a^5*b*d^8*x+45045*a^6*d^8)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**]   time = 0.82, size = 2653, normalized size = 7.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^8*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/15*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^8*x^8/b - 23/210*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^8*x^7/b^2 + 53/390*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^8
*x^6/b^3 - 59/390*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^8*x^5/b^4 + 137/858
*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^8*x^4/b^5 - 703/4290*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*a^5*e^8*x^3/b^6 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^
8*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9*e^8*x/b^8 + 237/1430*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*a^6*e^8*x^2/b^7 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^2*d^8/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^10*e^8/b^9 - 119/715*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7*e^8*x/b^8 + 834/5005*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a^8*e^8/b^9 + 1/14*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*x^7/b^2 - 3/26*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a*x^6/b^3 + 4/13*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*x^6/b^2 + 11/78*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^
5/b^4 - 19/39*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x
^5/b^3 + 7/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/
b^2 - 133/858*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^4/b
^5 + 251/429*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*
x^4/b^4 - 119/33*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*
a*x^4/b^3 + 14/11*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*x^4/b^2 + 139/858*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^
4*x^3/b^6 - 272/429*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/
2)*a^3*x^3/b^5 + 140/33*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a^2*x^3/b^4 - 21/11*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a*x^3/b^3 + 7/5*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*x^3/b^2 + 1/6*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^8*x/b^8 - 2/3*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^7*x/b^7 + 14/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^6*x/b^6 - 7/3*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^5*x/b^5 + 7/3*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^4*x/b^4 - 14/3*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^3*x/b^3 + 2/3*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^2*x/b^2 - 1/6*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x
```

```
/b - 425/2574*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x^2/b
^7 + 844/1287*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4
*x^2/b^6 - 448/99*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^3*x^2/b^5 + 217/99*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a^2*x^2/b^4 - 91/45*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a*x^2/b^3 + 28/9*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*x^2/b^2 + 1/6*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^9/b^9 - 2/3*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^8/b^8 + 14/3*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^
7/b^7 - 7/3*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6
/b^6 + 7/3*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/
b^5 - 14/3*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^
4 + 2/3*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 -
 1/6*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 + 214/1287
*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*x/b^8 - 1709/2574*
(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/1
98*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 45
5/198*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5
 + 203/90*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
/b^4 - 77/18*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/
b^3 + 1/2*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 -
 1501/9009*(8*b*d*e^7 + a*e^8)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^7/b^9 + 17
15/2574*(7*b*d^2*e^6 + 2*a*d*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 -
 923/198*(2*b*d^3*e^5 + a*d^2*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7
+ 461/198*(5*b*d^4*e^4 + 4*a*d^3*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b
^6 - 209/90*(4*b*d^5*e^3 + 5*a*d^4*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3
/b^5 + 83/18*(b*d^6*e^2 + 2*a*d^5*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/
b^4 - 9/14*(2*b*d^7*e + 7*a*d^6*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3
+ 1/7*(b*d^8 + 8*a*d^7*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^8\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^8*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^8*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^8\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**8*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**8*((a + b*x)**2)**(5/2), x)
```

3.1990 $\int (a+bx)(d+ex)^7 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=362

$$\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{10}(bd-ae)^4}{2e^7(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^9(bd-ae)^5}{3e^7(a+bx)}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(d+e}{8e^7(a+bx)}$$

```
[Out] 1/8*(-a*e+b*d)^6*(e*x+d)^8*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-2/3*b*(-a*e+b*d)^5
*(e*x+d)^9*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+3/2*b^2*(-a*e+b*d)^4*(e*x+d)^10*((
b*x+a)^2)^(1/2)/e^7/(b*x+a)-20/11*b^3*(-a*e+b*d)^3*(e*x+d)^11*((b*x+a)^2)^(
1/2)/e^7/(b*x+a)+5/4*b^4*(-a*e+b*d)^2*(e*x+d)^12*((b*x+a)^2)^(1/2)/e^7/(b*x
+a)-6/13*b^5*(-a*e+b*d)*(e*x+d)^13*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/14*b^6*(
e*x+d)^14*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.52, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{14}}{14e^7(a+bx)}-\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13}(bd-ae)}{13e^7(a+bx)}+\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{12}(bd}{4e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*e^7*(a + b*x))
 - (2*b*(b*d - a*e)^5*(d + e*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
+ b*x)) + (3*b^2*(b*d - a*e)^4*(d + e*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(2*e^7*(a + b*x)) - (20*b^3*(b*d - a*e)^3*(d + e*x)^11*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(11*e^7*(a + b*x)) + (5*b^4*(b*d - a*e)^2*(d + e*x)^12*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)) - (6*b^5*(b*d - a*e)*(d + e*x)^13*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (b^6*(d + e*x)^14*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^7\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^7\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^7\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^7}{e^6}-\frac{6b(bd-ae)^5(d+ex)^8}{e^6}+15\right.}{}$$

$$= \frac{(bd-ae)^6(d+ex)^8\sqrt{a^2+2abx+b^2x^2}}{8e^7(a+bx)}-\frac{2b(bd-ae)^5(d+ex)^9}{3e^7(a}$$

Mathematica [**A**] time = 0.19, size = 602, normalized size = 1.66

$$\frac{x\sqrt{(a+bx)^2}\left(3003a^6\left(8d^7+28d^6ex+56d^5e^2x^2+70d^4e^3x^3+56d^3e^4x^4+28d^2e^5x^5+8de^6x^6+e^7x^7\right)+2002a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^7*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(3003*a^6*(8*d^7 + 28*d^6*e*x + 56*d^5*e^2*x^2 + 70*d^
4*e^3*x^3 + 56*d^3*e^4*x^4 + 28*d^2*e^5*x^5 + 8*d*e^6*x^6 + e^7*x^7) + 2002
*a^5*b*x*(36*d^7 + 168*d^6*e*x + 378*d^5*e^2*x^2 + 504*d^4*e^3*x^3 + 420*d^
3*e^4*x^4 + 216*d^2*e^5*x^5 + 63*d*e^6*x^6 + 8*e^7*x^7) + 1001*a^4*b^2*x^2*
(120*d^7 + 630*d^6*e*x + 1512*d^5*e^2*x^2 + 2100*d^4*e^3*x^3 + 1800*d^3*e^4
*x^4 + 945*d^2*e^5*x^5 + 280*d*e^6*x^6 + 36*e^7*x^7) + 364*a^3*b^3*x^3*(330
*d^7 + 1848*d^6*e*x + 4620*d^5*e^2*x^2 + 6600*d^4*e^3*x^3 + 5775*d^3*e^4*x^
4 + 3080*d^2*e^5*x^5 + 924*d*e^6*x^6 + 120*e^7*x^7) + 91*a^2*b^4*x^4*(792*d
^7 + 4620*d^6*e*x + 11880*d^5*e^2*x^2 + 17325*d^4*e^3*x^3 + 15400*d^3*e^4*x
^4 + 8316*d^2*e^5*x^5 + 2520*d*e^6*x^6 + 330*e^7*x^7) + 14*a*b^5*x^5*(1716*
d^7 + 10296*d^6*e*x + 27027*d^5*e^2*x^2 + 40040*d^4*e^3*x^3 + 36036*d^3*e^4
*x^4 + 19656*d^2*e^5*x^5 + 6006*d*e^6*x^6 + 792*e^7*x^7) + b^6*x^6*(3432*d^
7 + 21021*d^6*e*x + 56056*d^5*e^2*x^2 + 84084*d^4*e^3*x^3 + 76440*d^3*e^4*x
^4 + 42042*d^2*e^5*x^5 + 12936*d*e^6*x^6 + 1716*e^7*x^7)))/(24024*(a + b*x)
)
```

fricas [**B**] time = 1.22, size = 706, normalized size = 1.95

$$\frac{1}{14}\,b^6e^7x^{14}+a^6d^7x+\frac{1}{13}\left(7\,b^6de^6+6\,ab^5e^7\right)x^{13}+\frac{1}{4}\left(7\,b^6d^2e^5+14\,ab^5de^6+5\,a^2b^4e^7\right)x^{12}+\frac{1}{11}\left(35\,b^6d^3e^4+126\,ab^5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/14*b^6*e^7*x^14 + a^6*d^7*x + 1/13*(7*b^6*d*e^6 + 6*a*b^5*e^7)*x^13 + 1/4
*(7*b^6*d^2*e^5 + 14*a*b^5*d*e^6 + 5*a^2*b^4*e^7)*x^12 + 1/11*(35*b^6*d^3*e
^4 + 126*a*b^5*d^2*e^5 + 105*a^2*b^4*d*e^6 + 20*a^3*b^3*e^7)*x^11 + 1/2*(7*
b^6*d^4*e^3 + 42*a*b^5*d^3*e^4 + 63*a^2*b^4*d^2*e^5 + 28*a^3*b^3*d*e^6 + 3*
a^4*b^2*e^7)*x^10 + 1/3*(7*b^6*d^5*e^2 + 70*a*b^5*d^4*e^3 + 175*a^2*b^4*d^3
*e^4 + 140*a^3*b^3*d^2*e^5 + 35*a^4*b^2*d*e^6 + 2*a^5*b*e^7)*x^9 + 1/8*(7*b
^6*d^6*e + 126*a*b^5*d^5*e^2 + 525*a^2*b^4*d^4*e^3 + 700*a^3*b^3*d^3*e^4 +
315*a^4*b^2*d^2*e^5 + 42*a^5*b*d*e^6 + a^6*e^7)*x^8 + 1/7*(b^6*d^7 + 42*a*b
^5*d^6*e + 315*a^2*b^4*d^5*e^2 + 700*a^3*b^3*d^4*e^3 + 525*a^4*b^2*d^3*e^4
+ 126*a^5*b*d^2*e^5 + 7*a^6*d*e^6)*x^7 + 1/2*(2*a*b^5*d^7 + 35*a^2*b^4*d^6*
e + 140*a^3*b^3*d^5*e^2 + 175*a^4*b^2*d^4*e^3 + 70*a^5*b*d^3*e^4 + 7*a^6*d^
2*e^5)*x^6 + (3*a^2*b^4*d^7 + 28*a^3*b^3*d^6*e + 63*a^4*b^2*d^5*e^2 + 42*a^
5*b*d^4*e^3 + 7*a^6*d^3*e^4)*x^5 + 1/4*(20*a^3*b^3*d^7 + 105*a^4*b^2*d^6*e
+ 126*a^5*b*d^5*e^2 + 35*a^6*d^4*e^3)*x^4 + (5*a^4*b^2*d^7 + 14*a^5*b*d^6*e
 + 7*a^6*d^5*e^2)*x^3 + 1/2*(6*a^5*b*d^7 + 7*a^6*d^6*e)*x^2
```

giac [**B**] time = 0.28, size = 1099, normalized size = 3.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/14*b^6*x^14*e^7*sgn(b*x + a) + 7/13*b^6*d*x^13*e^6*sgn(b*x + a) + 7/4*b^6
*d^2*x^12*e^5*sgn(b*x + a) + 35/11*b^6*d^3*x^11*e^4*sgn(b*x + a) + 7/2*b^6*
d^4*x^10*e^3*sgn(b*x + a) + 7/3*b^6*d^5*x^9*e^2*sgn(b*x + a) + 7/8*b^6*d^6*
x^8*e*sgn(b*x + a) + 1/7*b^6*d^7*x^7*sgn(b*x + a) + 6/13*a*b^5*x^13*e^7*sgn
(b*x + a) + 7/2*a*b^5*d*x^12*e^6*sgn(b*x + a) + 126/11*a*b^5*d^2*x^11*e^5*s
gn(b*x + a) + 21*a*b^5*d^3*x^10*e^4*sgn(b*x + a) + 70/3*a*b^5*d^4*x^9*e^3*s
gn(b*x + a) + 63/4*a*b^5*d^5*x^8*e^2*sgn(b*x + a) + 6*a*b^5*d^6*x^7*e*sgn(b
*x + a) + a*b^5*d^7*x^6*sgn(b*x + a) + 5/4*a^2*b^4*x^12*e^7*sgn(b*x + a) +
105/11*a^2*b^4*d*x^11*e^6*sgn(b*x + a) + 63/2*a^2*b^4*d^2*x^10*e^5*sgn(b*x
+ a) + 175/3*a^2*b^4*d^3*x^9*e^4*sgn(b*x + a) + 525/8*a^2*b^4*d^4*x^8*e^3*s
gn(b*x + a) + 45*a^2*b^4*d^5*x^7*e^2*sgn(b*x + a) + 35/2*a^2*b^4*d^6*x^6*e*
sgn(b*x + a) + 3*a^2*b^4*d^7*x^5*sgn(b*x + a) + 20/11*a^3*b^3*x^11*e^7*sgn(
b*x + a) + 14*a^3*b^3*d*x^10*e^6*sgn(b*x + a) + 140/3*a^3*b^3*d^2*x^9*e^5*s
gn(b*x + a) + 175/2*a^3*b^3*d^3*x^8*e^4*sgn(b*x + a) + 100*a^3*b^3*d^4*x^7*
e^3*sgn(b*x + a) + 70*a^3*b^3*d^5*x^6*e^2*sgn(b*x + a) + 28*a^3*b^3*d^6*x^5
*e*sgn(b*x + a) + 5*a^3*b^3*d^7*x^4*sgn(b*x + a) + 3/2*a^4*b^2*x^10*e^7*sgn
(b*x + a) + 35/3*a^4*b^2*d*x^9*e^6*sgn(b*x + a) + 315/8*a^4*b^2*d^2*x^8*e^5
*sgn(b*x + a) + 75*a^4*b^2*d^3*x^7*e^4*sgn(b*x + a) + 175/2*a^4*b^2*d^4*x^6
*e^3*sgn(b*x + a) + 63*a^4*b^2*d^5*x^5*e^2*sgn(b*x + a) + 105/4*a^4*b^2*d^6
*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^7*x^3*sgn(b*x + a) + 2/3*a^5*b*x^9*e^7*sg
n(b*x + a) + 21/4*a^5*b*d*x^8*e^6*sgn(b*x + a) + 18*a^5*b*d^2*x^7*e^5*sgn(b
*x + a) + 35*a^5*b*d^3*x^6*e^4*sgn(b*x + a) + 42*a^5*b*d^4*x^5*e^3*sgn(b*x
+ a) + 63/2*a^5*b*d^5*x^4*e^2*sgn(b*x + a) + 14*a^5*b*d^6*x^3*e*sgn(b*x + a
) + 3*a^5*b*d^7*x^2*sgn(b*x + a) + 1/8*a^6*x^8*e^7*sgn(b*x + a) + a^6*d*x^7
*e^6*sgn(b*x + a) + 7/2*a^6*d^2*x^6*e^5*sgn(b*x + a) + 7*a^6*d^3*x^5*e^4*sg
n(b*x + a) + 35/4*a^6*d^4*x^4*e^3*sgn(b*x + a) + 7*a^6*d^5*x^3*e^2*sgn(b*x
+ a) + 7/2*a^6*d^6*x^2*e*sgn(b*x + a) + a^6*d^7*x*sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 816, normalized size = 2.25

$$\big(1716b^6e^7x^{13}+11088x^{12}a\,b^5e^7+12936x^{12}b^6d\,e^6+30030x^{11}a^2b^4e^7+84084x^{11}a\,b^5d\,e^6+42042x^{11}b^6d^2e^5+4368$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24024*x*(1716*b^6*e^7*x^13+11088*a*b^5*e^7*x^12+12936*b^6*d*e^6*x^12+3003
0*a^2*b^4*e^7*x^11+84084*a*b^5*d*e^6*x^11+42042*b^6*d^2*e^5*x^11+43680*a^3*
b^3*e^7*x^10+229320*a^2*b^4*d*e^6*x^10+275184*a*b^5*d^2*e^5*x^10+76440*b^6*
d^3*e^4*x^10+36036*a^4*b^2*e^7*x^9+336336*a^3*b^3*d*e^6*x^9+756756*a^2*b^4*
d^2*e^5*x^9+504504*a*b^5*d^3*e^4*x^9+84084*b^6*d^4*e^3*x^9+16016*a^5*b*e^7*
x^8+280280*a^4*b^2*d*e^6*x^8+1121120*a^3*b^3*d^2*e^5*x^8+1401400*a^2*b^4*d^
3*e^4*x^8+560560*a*b^5*d^4*e^3*x^8+56056*b^6*d^5*e^2*x^8+3003*a^6*e^7*x^7+1
26126*a^5*b*d*e^6*x^7+945945*a^4*b^2*d^2*e^5*x^7+2102100*a^3*b^3*d^3*e^4*x^
7+1576575*a^2*b^4*d^4*e^3*x^7+378378*a*b^5*d^5*e^2*x^7+21021*b^6*d^6*e*x^7+
24024*a^6*d*e^6*x^6+432432*a^5*b*d^2*e^5*x^6+1801800*a^4*b^2*d^3*e^4*x^6+24
02400*a^3*b^3*d^4*e^3*x^6+1081080*a^2*b^4*d^5*e^2*x^6+144144*a*b^5*d^6*e*x^
6+3432*b^6*d^7*x^6+84084*a^6*d^2*e^5*x^5+840840*a^5*b*d^3*e^4*x^5+2102100*a
^4*b^2*d^4*e^3*x^5+1681680*a^3*b^3*d^5*e^2*x^5+420420*a^2*b^4*d^6*e*x^5+240
24*a*b^5*d^7*x^5+168168*a^6*d^3*e^4*x^4+1009008*a^5*b*d^4*e^3*x^4+1513512*a
^4*b^2*d^5*e^2*x^4+672672*a^3*b^3*d^6*e*x^4+72072*a^2*b^4*d^7*x^4+210210*a^
6*d^4*e^3*x^3+756756*a^5*b*d^5*e^2*x^3+630630*a^4*b^2*d^6*e*x^3+120120*a^3*
b^3*d^7*x^3+168168*a^6*d^5*e^2*x^2+336336*a^5*b*d^6*e*x^2+120120*a^4*b^2*d^
7*x^2+84084*a^6*d^6*e*x+72072*a^5*b*d^7*x+24024*a^6*d^7)*((b*x+a)^2)^(5/2)/
(b*x+a)^5
```

maxima [**B**] time = 0.72, size = 2153, normalized size = 5.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^7*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/14*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^7*x^7/b - 3/26*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^7*x^6/b^2 + 11/78*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^7*x^
5/b^3 - 133/858*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^7*x^4/b^4 + 139/858*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^7*x^3/b^5 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*d^7*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8*e^7*x/b^7 - 425
/2574*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^7*x^2/b^6 + 1/6*(b^2*x^2 + 2*a*
b*x + a^2)^(5/2)*a^2*d^7/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^9*e^7/b^
8 + 214/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*e^7*x/b^7 - 1501/9009*(b^2
*x^2 + 2*a*b*x + a^2)^(7/2)*a^7*e^7/b^8 + 1/13*(7*b*d*e^6 + a*e^7)*(b^2*x^2
 + 2*a*b*x + a^2)^(7/2)*x^6/b^2 - 19/156*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a
*b*x + a^2)^(7/2)*a*x^5/b^3 + 7/12*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*x^5/b^2 + 251/1716*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^2*x^4/b^4 - 119/132*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a*x^4/b^3 + 7/11*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*x^4/b^2 - 68/429*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a^3*x^3/b^5 + 35/33*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^2*x^3/b^4 - 21/22*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*
b*x + a^2)^(7/2)*a*x^3/b^3 + 7/2*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*x^3/b^2 - 1/6*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^7*x/b^7 + 7/6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^6*x/b^6 - 7/6*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/
2)*a^5*x/b^5 + 35/6*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a^4*x/b^4 - 7/6*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^3*x/b^3 + 7/6*(b*d^6*e + 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a
^2*x/b^2 - 1/6*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b +
211/1287*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x^2/b^6 -
112/99*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x^2/b^5
+ 217/198*(5*b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
^2/b^4 - 91/18*(b*d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^
2/b^3 + 7/9*(3*b*d^5*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2
/b^2 - 1/6*(7*b*d*e^6 + a*e^7)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^8/b^8 + 7/
6*(3*b*d^2*e^5 + a*d*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^7/b^7 - 7/6*(5*
b*d^3*e^4 + 3*a*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6/b^6 + 35/6*(b*
d^4*e^3 + a*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 7/6*(3*b*d^5
*e^2 + 5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 7/6*(b*d^6*e
+ 3*a*d^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^7 + 7*a*d
^6*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 1709/10296*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*x/b^7 + 917/792*(3*b*d^2*e^5 + a*d*
e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6 - 455/396*(5*b*d^3*e^4 + 3*a
*d^2*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 203/36*(b*d^4*e^3 + a
*d^3*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 77/72*(3*b*d^5*e^2 +
5*a*d^4*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 7/8*(b*d^6*e + 3*a*d
^5*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 1715/10296*(7*b*d*e^6 + a*e
^7)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6/b^8 - 923/792*(3*b*d^2*e^5 + a*d*e^
6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 461/396*(5*b*d^3*e^4 + 3*a*d^2
*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/36*(b*d^4*e^3 + a*d^3*e
^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 83/72*(3*b*d^5*e^2 + 5*a*d^4*
e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 9/8*(b*d^6*e + 3*a*d^5*e^2)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^7 + 7*a*d^6*e)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^7\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^7*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^7\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**7*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**7*((a + b*x)**2)**(5/2), x)
```

3.1991 $\int (a+bx)(d+ex)^6 \left(a^2+2abx+b^2x^2\right)^{5/2} dx$

Optimal. Leaf size=311

$$\frac{e^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}(bd-ae)}{2b^7}+\frac{15e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)^2}{11b^7}+\frac{2e^3\sqrt{a^2+2abx+b^2x^2}}{b^7}$$

```
[Out] 1/7*(-a*e+b*d)^6*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^7+3/4*e*(-a*e+b*d)^5*(b*x+a)
^7*((b*x+a)^2)^(1/2)/b^7+5/3*e^2*(-a*e+b*d)^4*(b*x+a)^8*((b*x+a)^2)^(1/2)/b
^7+2*e^3*(-a*e+b*d)^3*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^7+15/11*e^4*(-a*e+b*d)^
2*(b*x+a)^10*((b*x+a)^2)^(1/2)/b^7+1/2*e^5*(-a*e+b*d)*(b*x+a)^11*((b*x+a)^2
)^(1/2)/b^7+1/13*e^6*(b*x+a)^12*((b*x+a)^2)^(1/2)/b^7
```

Rubi [A] time = 0.45, antiderivative size = 311, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e^5\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{11}(bd-ae)}{2b^7}+\frac{15e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)^2}{11b^7}+\frac{2e^3\sqrt{a^2+2abx+b^2x^2}}{b^7}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^7) + (3*e*(b
*d - a*e)^5*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^7) + (5*e^2*(b*
d - a*e)^4*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^7) + (2*e^3*(b*d
 - a*e)^3*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^7 + (15*e^4*(b*d - a
*e)^2*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^7) + (e^5*(b*d - a*
e)*(a + b*x)^11*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^7) + (e^6*(a + b*x)^12*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*b^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^6\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^6\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^6\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^6(a+bx)^6}{b^6}+\frac{6e(bd-ae)^5(a+bx)^7}{b^6}+\frac{15e^2(bd}{}\right.}{}$$

$$= \frac{(bd-ae)^6(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^7}+\frac{3e(bd-ae)^5(a+bx)^7\sqrt{}}{4b^7}$$

Mathematica [A] time = 0.16, size = 525, normalized size = 1.69

$$\frac{x\sqrt{(a+bx)^2}\left(1716a^6\left(7d^6+21d^5ex+35d^4e^2x^2+35d^3e^3x^3+21d^2e^4x^4+7de^5x^5+e^6x^6\right)+1287a^5bx\left(28d^6+112\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^6*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(1716*a^6*(7*d^6 + 21*d^5*e*x + 35*d^4*e^2*x^2 + 35*d^
3*e^3*x^3 + 21*d^2*e^4*x^4 + 7*d*e^5*x^5 + e^6*x^6) + 1287*a^5*b*x*(28*d^6
+ 112*d^5*e*x + 210*d^4*e^2*x^2 + 224*d^3*e^3*x^3 + 140*d^2*e^4*x^4 + 48*d*
e^5*x^5 + 7*e^6*x^6) + 715*a^4*b^2*x^2*(84*d^6 + 378*d^5*e*x + 756*d^4*e^2*
x^2 + 840*d^3*e^3*x^3 + 540*d^2*e^4*x^4 + 189*d*e^5*x^5 + 28*e^6*x^6) + 286
*a^3*b^3*x^3*(210*d^6 + 1008*d^5*e*x + 2100*d^4*e^2*x^2 + 2400*d^3*e^3*x^3
+ 1575*d^2*e^4*x^4 + 560*d*e^5*x^5 + 84*e^6*x^6) + 78*a^2*b^4*x^4*(462*d^6
+ 2310*d^5*e*x + 4950*d^4*e^2*x^2 + 5775*d^3*e^3*x^3 + 3850*d^2*e^4*x^4 + 1
386*d*e^5*x^5 + 210*e^6*x^6) + 13*a*b^5*x^5*(924*d^6 + 4752*d^5*e*x + 10395
*d^4*e^2*x^2 + 12320*d^3*e^3*x^3 + 8316*d^2*e^4*x^4 + 3024*d*e^5*x^5 + 462*
e^6*x^6) + b^6*x^6*(1716*d^6 + 9009*d^5*e*x + 20020*d^4*e^2*x^2 + 24024*d^3
*e^3*x^3 + 16380*d^2*e^4*x^4 + 6006*d*e^5*x^5 + 924*e^6*x^6)))/(12012*(a +
b*x))
```

fricas [B] time = 0.81, size = 599, normalized size = 1.93

$$\frac{1}{13}b^6e^6x^{13}+a^6d^6x+\frac{1}{2}\left(b^6de^5+ab^5e^6\right)x^{12}+\frac{3}{11}\left(5\,b^6d^2e^4+12\,ab^5de^5+5\,a^2b^4e^6\right)x^{11}+\left(2\,b^6d^3e^3+9\,ab^5d^2e^4+9\,a^2b^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/13*b^6*e^6*x^13 + a^6*d^6*x + 1/2*(b^6*d*e^5 + a*b^5*e^6)*x^12 + 3/11*(5*
b^6*d^2*e^4 + 12*a*b^5*d*e^5 + 5*a^2*b^4*e^6)*x^11 + (2*b^6*d^3*e^3 + 9*a*b
^5*d^2*e^4 + 9*a^2*b^4*d*e^5 + 2*a^3*b^3*e^6)*x^10 + 5/3*(b^6*d^4*e^2 + 8*a
*b^5*d^3*e^3 + 15*a^2*b^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^9 + 3/
4*(b^6*d^5*e + 15*a*b^5*d^4*e^2 + 50*a^2*b^4*d^3*e^3 + 50*a^3*b^3*d^2*e^4 +
 15*a^4*b^2*d*e^5 + a^5*b*e^6)*x^8 + 1/7*(b^6*d^6 + 36*a*b^5*d^5*e + 225*a^
2*b^4*d^4*e^2 + 400*a^3*b^3*d^3*e^3 + 225*a^4*b^2*d^2*e^4 + 36*a^5*b*d*e^5
+ a^6*e^6)*x^7 + (a*b^5*d^6 + 15*a^2*b^4*d^5*e + 50*a^3*b^3*d^4*e^2 + 50*a^
4*b^2*d^3*e^3 + 15*a^5*b*d^2*e^4 + a^6*d*e^5)*x^6 + 3*(a^2*b^4*d^6 + 8*a^3*
b^3*d^5*e + 15*a^4*b^2*d^4*e^2 + 8*a^5*b*d^3*e^3 + a^6*d^2*e^4)*x^5 + 5/2*(
2*a^3*b^3*d^6 + 9*a^4*b^2*d^5*e + 9*a^5*b*d^4*e^2 + 2*a^6*d^3*e^3)*x^4 + (5
*a^4*b^2*d^6 + 12*a^5*b*d^5*e + 5*a^6*d^4*e^2)*x^3 + 3*(a^5*b*d^6 + a^6*d^5
*e)*x^2
```

giac [B] time = 0.21, size = 955, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/13*b^6*x^13*e^6*sgn(b*x + a) + 1/2*b^6*d*x^12*e^5*sgn(b*x + a) + 15/11*b^
6*d^2*x^11*e^4*sgn(b*x + a) + 2*b^6*d^3*x^10*e^3*sgn(b*x + a) + 5/3*b^6*d^4
*x^9*e^2*sgn(b*x + a) + 3/4*b^6*d^5*x^8*e*sgn(b*x + a) + 1/7*b^6*d^6*x^7*sg
n(b*x + a) + 1/2*a*b^5*x^12*e^6*sgn(b*x + a) + 36/11*a*b^5*d*x^11*e^5*sgn(b
*x + a) + 9*a*b^5*d^2*x^10*e^4*sgn(b*x + a) + 40/3*a*b^5*d^3*x^9*e^3*sgn(b*
x + a) + 45/4*a*b^5*d^4*x^8*e^2*sgn(b*x + a) + 36/7*a*b^5*d^5*x^7*e*sgn(b*x
 + a) + a*b^5*d^6*x^6*sgn(b*x + a) + 15/11*a^2*b^4*x^11*e^6*sgn(b*x + a) +
9*a^2*b^4*d*x^10*e^5*sgn(b*x + a) + 25*a^2*b^4*d^2*x^9*e^4*sgn(b*x + a) + 7
5/2*a^2*b^4*d^3*x^8*e^3*sgn(b*x + a) + 225/7*a^2*b^4*d^4*x^7*e^2*sgn(b*x +
a) + 15*a^2*b^4*d^5*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^6*x^5*sgn(b*x + a) + 2
*a^3*b^3*x^10*e^6*sgn(b*x + a) + 40/3*a^3*b^3*d*x^9*e^5*sgn(b*x + a) + 75/2
*a^3*b^3*d^2*x^8*e^4*sgn(b*x + a) + 400/7*a^3*b^3*d^3*x^7*e^3*sgn(b*x + a)
+ 50*a^3*b^3*d^4*x^6*e^2*sgn(b*x + a) + 24*a^3*b^3*d^5*x^5*e*sgn(b*x + a) +
 5*a^3*b^3*d^6*x^4*sgn(b*x + a) + 5/3*a^4*b^2*x^9*e^6*sgn(b*x + a) + 45/4*a
^4*b^2*d*x^8*e^5*sgn(b*x + a) + 225/7*a^4*b^2*d^2*x^7*e^4*sgn(b*x + a) + 50
*a^4*b^2*d^3*x^6*e^3*sgn(b*x + a) + 45*a^4*b^2*d^4*x^5*e^2*sgn(b*x + a) + 4
5/2*a^4*b^2*d^5*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^6*x^3*sgn(b*x + a) + 3/4*a
^5*b*x^8*e^6*sgn(b*x + a) + 36/7*a^5*b*d*x^7*e^5*sgn(b*x + a) + 15*a^5*b*d^
2*x^6*e^4*sgn(b*x + a) + 24*a^5*b*d^3*x^5*e^3*sgn(b*x + a) + 45/2*a^5*b*d^4
*x^4*e^2*sgn(b*x + a) + 12*a^5*b*d^5*x^3*e*sgn(b*x + a) + 3*a^5*b*d^6*x^2*s
gn(b*x + a) + 1/7*a^6*x^7*e^6*sgn(b*x + a) + a^6*d*x^6*e^5*sgn(b*x + a) + 3
*a^6*d^2*x^5*e^4*sgn(b*x + a) + 5*a^6*d^3*x^4*e^3*sgn(b*x + a) + 5*a^6*d^4*
x^3*e^2*sgn(b*x + a) + 3*a^6*d^5*x^2*e*sgn(b*x + a) + a^6*d^6*x*sgn(b*x + a
)
```

maple [B] time = 0.05, size = 707, normalized size = 2.27

$$\frac{\left(924b^{6}e^{6}x^{12}+6006x^{11}a\,b^{5}e^{6}+6006x^{11}b^{6}d\,e^{5}+16380x^{10}a^{2}b^{4}e^{6}+39312x^{10}a\,b^{5}d\,e^{5}+16380x^{10}b^{6}d^{2}e^{4}+2402}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/12012*x*(924*b^6*e^6*x^12+6006*a*b^5*e^6*x^11+6006*b^6*d*e^5*x^11+16380*a
^2*b^4*e^6*x^10+39312*a*b^5*d*e^5*x^10+16380*b^6*d^2*e^4*x^10+24024*a^3*b^3
*e^6*x^9+108108*a^2*b^4*d*e^5*x^9+108108*a*b^5*d^2*e^4*x^9+24024*b^6*d^3*e^
3*x^9+20020*a^4*b^2*e^6*x^8+160160*a^3*b^3*d*e^5*x^8+300300*a^2*b^4*d^2*e^4
*x^8+160160*a*b^5*d^3*e^3*x^8+20020*b^6*d^4*e^2*x^8+9009*a^5*b*e^6*x^7+1351
35*a^4*b^2*d*e^5*x^7+450450*a^3*b^3*d^2*e^4*x^7+450450*a^2*b^4*d^3*e^3*x^7+
135135*a*b^5*d^4*e^2*x^7+9009*b^6*d^5*e*x^7+1716*a^6*e^6*x^6+61776*a^5*b*d*
e^5*x^6+386100*a^4*b^2*d^2*e^4*x^6+686400*a^3*b^3*d^3*e^3*x^6+386100*a^2*b^
4*d^4*e^2*x^6+61776*a*b^5*d^5*e*x^6+1716*b^6*d^6*x^6+12012*a^6*d*e^5*x^5+18
0180*a^5*b*d^2*e^4*x^5+600600*a^4*b^2*d^3*e^3*x^5+600600*a^3*b^3*d^4*e^2*x^
5+180180*a^2*b^4*d^5*e*x^5+12012*a*b^5*d^6*x^5+36036*a^6*d^2*e^4*x^4+288288
*a^5*b*d^3*e^3*x^4+540540*a^4*b^2*d^4*e^2*x^4+288288*a^3*b^3*d^5*e*x^4+3603
6*a^2*b^4*d^6*x^4+60060*a^6*d^3*e^3*x^3+270270*a^5*b*d^4*e^2*x^3+270270*a^4
*b^2*d^5*e*x^3+60060*a^3*b^3*d^6*x^3+60060*a^6*d^4*e^2*x^2+144144*a^5*b*d^5
*e*x^2+60060*a^4*b^2*d^6*x^2+36036*a^6*d^5*e*x+36036*a^5*b*d^6*x+12012*a^6*
d^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.70, size = 1736, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^6*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/13*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^6*x^6/b - 19/156*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^6*x^5/b^2 + 251/1716*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e
^6*x^4/b^3 - 68/429*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e^6*x^3/b^4 + 1/6*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^6*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2
)*a^7*e^6*x/b^6 + 211/1287*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*e^6*x^2/b^5
+ 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^6/b - 1/6*(b^2*x^2 + 2*a*b*x +
a^2)^(5/2)*a^8*e^6/b^7 - 1709/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^6
*x/b^6 + 1715/10296*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^6*e^6/b^7 + 1/12*(6*b
*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^5/b^2 - 17/132*(6*b*d*e^5
 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^4/b^3 + 3/11*(5*b*d^2*e^4 + 2
*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 + 5/33*(6*b*d*e^5 + a*e^6
)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x^3/b^4 - 9/22*(5*b*d^2*e^4 + 2*a*d*e
^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(4*b*d^3*e^3 + 3*a*d^2*
e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 + 1/6*(6*b*d*e^5 + a*e^6)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*x/b^6 - 1/2*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*
x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/6*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 +
2*a*b*x + a^2)^(5/2)*a*x/b - 16/99*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*a^3*x^2/b^5 + 31/66*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a^2*x^2/b^4 - 13/18*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 5/9*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 +
2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^7/b^7 - 1/2*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^
2)^(5/2)*a^6/b^6 + 5/6*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^5/b^5 - 5/6*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a^4/b^4 + 1/2*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5
/2)*a^3/b^3 - 1/6*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b
^2 + 131/792*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4*x/b^6
- 65/132*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^
5 + 29/36*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x
/b^4 - 55/72*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*
x/b^3 + 3/8*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2
 - 923/5544*(6*b*d*e^5 + a*e^6)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5/b^7 + 4
61/924*(5*b*d^2*e^4 + 2*a*d*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 -
209/252*(4*b*d^3*e^3 + 3*a*d^2*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5
 + 415/504*(3*b*d^4*e^2 + 4*a*d^3*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/
b^4 - 27/56*(2*b*d^5*e + 5*a*d^4*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3
 + 1/7*(b*d^6 + 6*a*d^5*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^6\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^6*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^6 \left((a+bx)^2\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**6*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**6*((a + b*x)**2)**(5/2), x)
```

3.1992 $\int (a+bx)(d+ex)^5 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=263

$$\frac{5e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)}{11b^6}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)^2}{b^6}+\frac{10e^2\sqrt{a^2+2abx+b^2x^2}\,(a}{9b^6}$$

```
[Out] 1/7*(-a*e+b*d)^5*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^6+5/8*e*(-a*e+b*d)^4*(b*x+a)
^7*((b*x+a)^2)^(1/2)/b^6+10/9*e^2*(-a*e+b*d)^3*(b*x+a)^8*((b*x+a)^2)^(1/2)/
b^6+e^3*(-a*e+b*d)^2*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^6+5/11*e^4*(-a*e+b*d)*(b
*x+a)^10*((b*x+a)^2)^(1/2)/b^6+1/12*e^5*(b*x+a)^11*((b*x+a)^2)^(1/2)/b^6
```

Rubi [A] time = 0.38, antiderivative size = 263, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{5e^4\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^{10}(bd-ae)}{11b^6}+\frac{e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)^2}{b^6}+\frac{10e^2\sqrt{a^2+2abx+b^2x^2}\,(a}{9b^6}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^5*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^6) + (5*e*(b
*d - a*e)^4*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^6) + (10*e^2*(b
*d - a*e)^3*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^6) + (e^3*(b*d
- a*e)^2*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/b^6 + (5*e^4*(b*d - a*e
)*(a + b*x)^10*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^6) + (e^5*(a + b*x)^11*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*b^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^5\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\ \int (a+bx)\left(ab+b^2x\right)^5(d+ex)^5\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^5\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(bd-ae)^5(a+bx)^6}{b^5}+\frac{5e(bd-ae)^4(a+bx)^7}{b^5}+\frac{10e}{}\right.}{ab}\\ &= \frac{(bd-ae)^5(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^6}+\frac{5e(bd-ae)^4(a+bx)}{8b}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 448, normalized size = 1.70

$$\frac{x\sqrt{(a+bx)^2}\left(924a^6\left(6d^5+15d^4ex+20d^3e^2x^2+15d^2e^3x^3+6de^4x^4+e^5x^5\right)+792a^5bx\left(21d^5+70d^4ex+105d\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(924*a^6*(6*d^5 + 15*d^4*e*x + 20*d^3*e^2*x^2 + 15*d^2
*e^3*x^3 + 6*d*e^4*x^4 + e^5*x^5) + 792*a^5*b*x*(21*d^5 + 70*d^4*e*x + 105*
d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 35*d*e^4*x^4 + 6*e^5*x^5) + 495*a^4*b^2*x^2*
(56*d^5 + 210*d^4*e*x + 336*d^3*e^2*x^2 + 280*d^2*e^3*x^3 + 120*d*e^4*x^4 +
 21*e^5*x^5) + 220*a^3*b^3*x^3*(126*d^5 + 504*d^4*e*x + 840*d^3*e^2*x^2 + 7
20*d^2*e^3*x^3 + 315*d*e^4*x^4 + 56*e^5*x^5) + 66*a^2*b^4*x^4*(252*d^5 + 10
50*d^4*e*x + 1800*d^3*e^2*x^2 + 1575*d^2*e^3*x^3 + 700*d*e^4*x^4 + 126*e^5*
x^5) + 12*a*b^5*x^5*(462*d^5 + 1980*d^4*e*x + 3465*d^3*e^2*x^2 + 3080*d^2*e
^3*x^3 + 1386*d*e^4*x^4 + 252*e^5*x^5) + b^6*x^6*(792*d^5 + 3465*d^4*e*x +
6160*d^3*e^2*x^2 + 5544*d^2*e^3*x^3 + 2520*d*e^4*x^4 + 462*e^5*x^5)))/(5544
*(a + b*x))
```

fricas [**B**] time = 0.90, size = 517, normalized size = 1.97

$$\frac{1}{12}\,b^6e^5x^{12}+a^6d^5x+\frac{1}{11}\left(5\,b^6de^4+6\,ab^5e^5\right)x^{11}+\frac{1}{2}\left(2\,b^6d^2e^3+6\,ab^5de^4+3\,a^2b^4e^5\right)x^{10}+\frac{5}{9}\left(2\,b^6d^3e^2+12\,ab^5d^2e^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/12*b^6*e^5*x^12 + a^6*d^5*x + 1/11*(5*b^6*d*e^4 + 6*a*b^5*e^5)*x^11 + 1/2
*(2*b^6*d^2*e^3 + 6*a*b^5*d*e^4 + 3*a^2*b^4*e^5)*x^10 + 5/9*(2*b^6*d^3*e^2
+ 12*a*b^5*d^2*e^3 + 15*a^2*b^4*d*e^4 + 4*a^3*b^3*e^5)*x^9 + 5/8*(b^6*d^4*e
 + 12*a*b^5*d^3*e^2 + 30*a^2*b^4*d^2*e^3 + 20*a^3*b^3*d*e^4 + 3*a^4*b^2*e^5
)*x^8 + 1/7*(b^6*d^5 + 30*a*b^5*d^4*e + 150*a^2*b^4*d^3*e^2 + 200*a^3*b^3*d
^2*e^3 + 75*a^4*b^2*d*e^4 + 6*a^5*b*e^5)*x^7 + 1/6*(6*a*b^5*d^5 + 75*a^2*b^
4*d^4*e + 200*a^3*b^3*d^3*e^2 + 150*a^4*b^2*d^2*e^3 + 30*a^5*b*d*e^4 + a^6*
e^5)*x^6 + (3*a^2*b^4*d^5 + 20*a^3*b^3*d^4*e + 30*a^4*b^2*d^3*e^2 + 12*a^5*
b*d^2*e^3 + a^6*d*e^4)*x^5 + 5/4*(4*a^3*b^3*d^5 + 15*a^4*b^2*d^4*e + 12*a^5
*b*d^3*e^2 + 2*a^6*d^2*e^3)*x^4 + 5/3*(3*a^4*b^2*d^5 + 6*a^5*b*d^4*e + 2*a^
6*d^3*e^2)*x^3 + 1/2*(6*a^5*b*d^5 + 5*a^6*d^4*e)*x^2
```

giac [**B**] time = 0.21, size = 810, normalized size = 3.08

$$\frac{1}{12}\,b^6x^{12}e^5\mathrm{sgn}\left(bx+a\right)+\frac{5}{11}\,b^6dx^{11}e^4\mathrm{sgn}\left(bx+a\right)+b^6d^2x^{10}e^3\mathrm{sgn}\left(bx+a\right)+\frac{10}{9}\,b^6d^3x^9e^2\mathrm{sgn}\left(bx+a\right)+\frac{5}{8}\,b^6d^4x^8e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/12*b^6*x^12*e^5*sgn(b*x + a) + 5/11*b^6*d*x^11*e^4*sgn(b*x + a) + b^6*d^2
*x^10*e^3*sgn(b*x + a) + 10/9*b^6*d^3*x^9*e^2*sgn(b*x + a) + 5/8*b^6*d^4*x^
8*e*sgn(b*x + a) + 1/7*b^6*d^5*x^7*sgn(b*x + a) + 6/11*a*b^5*x^11*e^5*sgn(b
*x + a) + 3*a*b^5*d*x^10*e^4*sgn(b*x + a) + 20/3*a*b^5*d^2*x^9*e^3*sgn(b*x
+ a) + 15/2*a*b^5*d^3*x^8*e^2*sgn(b*x + a) + 30/7*a*b^5*d^4*x^7*e*sgn(b*x +
 a) + a*b^5*d^5*x^6*sgn(b*x + a) + 3/2*a^2*b^4*x^10*e^5*sgn(b*x + a) + 25/3
*a^2*b^4*d*x^9*e^4*sgn(b*x + a) + 75/4*a^2*b^4*d^2*x^8*e^3*sgn(b*x + a) + 1
50/7*a^2*b^4*d^3*x^7*e^2*sgn(b*x + a) + 25/2*a^2*b^4*d^4*x^6*e*sgn(b*x + a)
 + 3*a^2*b^4*d^5*x^5*sgn(b*x + a) + 20/9*a^3*b^3*x^9*e^5*sgn(b*x + a) + 25/
2*a^3*b^3*d*x^8*e^4*sgn(b*x + a) + 200/7*a^3*b^3*d^2*x^7*e^3*sgn(b*x + a) +
 100/3*a^3*b^3*d^3*x^6*e^2*sgn(b*x + a) + 20*a^3*b^3*d^4*x^5*e*sgn(b*x + a)
 + 5*a^3*b^3*d^5*x^4*sgn(b*x + a) + 15/8*a^4*b^2*x^8*e^5*sgn(b*x + a) + 75/
7*a^4*b^2*d*x^7*e^4*sgn(b*x + a) + 25*a^4*b^2*d^2*x^6*e^3*sgn(b*x + a) + 30
*a^4*b^2*d^3*x^5*e^2*sgn(b*x + a) + 75/4*a^4*b^2*d^4*x^4*e*sgn(b*x + a) + 5
*a^4*b^2*d^5*x^3*sgn(b*x + a) + 6/7*a^5*b*x^7*e^5*sgn(b*x + a) + 5*a^5*b*d*
x^6*e^4*sgn(b*x + a) + 12*a^5*b*d^2*x^5*e^3*sgn(b*x + a) + 15*a^5*b*d^3*x^4
*e^2*sgn(b*x + a) + 10*a^5*b*d^4*x^3*e*sgn(b*x + a) + 3*a^5*b*d^5*x^2*sgn(b
*x + a) + 1/6*a^6*x^6*e^5*sgn(b*x + a) + a^6*d*x^5*e^4*sgn(b*x + a) + 5/2*a
^6*d^2*x^4*e^3*sgn(b*x + a) + 10/3*a^6*d^3*x^3*e^2*sgn(b*x + a) + 5/2*a^6*d
^4*x^2*e*sgn(b*x + a) + a^6*d^5*x*sgn(b*x + a)
```

maple [B] time = 0.06, size = 598, normalized size = 2.27

$$\frac{\left(462b^6e^5x^{11} + 3024x^{10}e^5a\,b^5 + 2520x^{10}d\,e^4b^6 + 8316x^9e^5a^2b^4 + 16632x^9d\,e^4a\,b^5 + 5544x^9d^2e^3b^6 + 12320x^8e^5a^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/5544*x*(462*b^6*e^5*x^11+3024*a*b^5*e^5*x^10+2520*b^6*d*e^4*x^10+8316*a^2
*b^4*e^5*x^9+16632*a*b^5*d*e^4*x^9+5544*b^6*d^2*e^3*x^9+12320*a^3*b^3*e^5*x
^8+46200*a^2*b^4*d*e^4*x^8+36960*a*b^5*d^2*e^3*x^8+6160*b^6*d^3*e^2*x^8+103
95*a^4*b^2*e^5*x^7+69300*a^3*b^3*d*e^4*x^7+103950*a^2*b^4*d^2*e^3*x^7+41580
*a*b^5*d^3*e^2*x^7+3465*b^6*d^4*e*x^7+4752*a^5*b*e^5*x^6+59400*a^4*b^2*d*e^
4*x^6+158400*a^3*b^3*d^2*e^3*x^6+118800*a^2*b^4*d^3*e^2*x^6+23760*a*b^5*d^4
*e*x^6+792*b^6*d^5*x^6+924*a^6*e^5*x^5+27720*a^5*b*d*e^4*x^5+138600*a^4*b^2
*d^2*e^3*x^5+184800*a^3*b^3*d^3*e^2*x^5+69300*a^2*b^4*d^4*e*x^5+5544*a*b^5*
d^5*x^5+5544*a^6*d*e^4*x^4+66528*a^5*b*d^2*e^3*x^4+166320*a^4*b^2*d^3*e^2*x
^4+110880*a^3*b^3*d^4*e*x^4+16632*a^2*b^4*d^5*x^4+13860*a^6*d^2*e^3*x^3+831
60*a^5*b*d^3*e^2*x^3+103950*a^4*b^2*d^4*e*x^3+27720*a^3*b^3*d^5*x^3+18480*a
^6*d^3*e^2*x^2+55440*a^5*b*d^4*e*x^2+27720*a^4*b^2*d^5*x^2+13860*a^6*d^4*e*
x+16632*a^5*b*d^5*x+5544*a^6*d^5)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.64, size = 1323, normalized size = 5.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^5*x^5/b - 17/132*(b^2*x^2 + 2*a*b*x
+ a^2)^(7/2)*a*e^5*x^4/b^2 + 5/33*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^5*x
^3/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^5*x + 1/6*(b^2*x^2 + 2*a*b
*x + a^2)^(5/2)*a^6*e^5*x/b^5 - 16/99*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*e
^5*x^2/b^4 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^5/b + 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*a^7*e^5/b^6 + 131/792*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^4*e^5*x/b^5 - 923/5544*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^5*e^5/b^6 + 1/1
1*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^4/b^2 - 3/22*(5*b*d
*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^3/b^3 + 1/2*(2*b*d^2*e^3
+ a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3/b^2 - 1/6*(5*b*d*e^4 + a*e^5
)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*x/b^5 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(
b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 - 5/3*(b*d^3*e^2 + a*d^2*e^3)*(b^2
*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 5/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^
2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/6*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a
*b*x + a^2)^(5/2)*a*x/b + 31/198*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a
^2)^(7/2)*a^2*x^2/b^4 - 13/18*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*x^2/b^3 + 10/9*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^
2)^(7/2)*x^2/b^2 - 1/6*(5*b*d*e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*
a^6/b^6 + 5/6*(2*b*d^2*e^3 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b
^5 - 5/3*(b*d^3*e^2 + a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 +
5/6*(b*d^4*e + 2*a*d^3*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(
b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 65/396*(5*b*d*
e^4 + a*e^5)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3*x/b^5 + 29/36*(2*b*d^2*e^3
 + a*d*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*x/b^4 - 55/36*(b*d^3*e^2 +
a*d^2*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 5/8*(b*d^4*e + 2*a*d^3
*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x/b^2 + 461/2772*(5*b*d*e^4 + a*e^5)*
(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^4/b^6 - 209/252*(2*b*d^2*e^3 + a*d*e^4)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^3/b^5 + 415/252*(b*d^3*e^2 + a*d^2*e^3)*(b
^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2/b^4 - 45/56*(b*d^4*e + 2*a*d^3*e^2)*(b^2*
x^2 + 2*a*b*x + a^2)^(7/2)*a/b^3 + 1/7*(b*d^5 + 5*a*d^4*e)*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)/b^2
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\left(d+e\,x\right)^5\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^5*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(a + bx\right) \left(d + ex\right)^{5} \left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**5*((a + b*x)**2)**(5/2), x)
```

3.1993 $\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=219

$$\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)}{5b^5}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^2}{3b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+b}{2b^5}$$

```
[Out] 1/7*(-a*e+b*d)^4*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^5+1/2*e*(-a*e+b*d)^3*(b*x+a)
^7*((b*x+a)^2)^(1/2)/b^5+2/3*e^2*(-a*e+b*d)^2*(b*x+a)^8*((b*x+a)^2)^(1/2)/b
^5+2/5*e^3*(-a*e+b*d)*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^5+1/11*e^4*(b*x+a)^10*(
(b*x+a)^2)^(1/2)/b^5
```

Rubi [A] time = 0.30, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$\frac{2e^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^9(bd-ae)}{5b^5}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)^2}{3b^5}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+b}{2b^5}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^4*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^5) + (e*(b*d
 - a*e)^3*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*b^5) + (2*e^2*(b*d
- a*e)^2*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^5) + (2*e^3*(b*d -
 a*e)*(a + b*x)^9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*b^5) + (e^4*(a + b*x)^1
0*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*b^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^4 \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^4 dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^4 dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^4(a+bx)^6}{b^4}+\frac{4e(bd-ae)^3(a+bx)^7}{b^4}+\frac{6e^2}{}\right.}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^5}+\frac{e(bd-ae)^3(a+bx)^7}{2b}$$

Mathematica [A] time = 0.12, size = 371, normalized size = 1.69

$$x\sqrt{(a+bx)^2}\left(462a^6\left(5d^4+10d^3ex+10d^2e^2x^2+5de^3x^3+e^4x^4\right)+462a^5bx\left(15d^4+40d^3ex+45d^2e^2x^2+24de\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(462*a^6*(5*d^4 + 10*d^3*e*x + 10*d^2*e^2*x^2 + 5*d*e^
3*x^3 + e^4*x^4) + 462*a^5*b*x*(15*d^4 + 40*d^3*e*x + 45*d^2*e^2*x^2 + 24*d
*e^3*x^3 + 5*e^4*x^4) + 330*a^4*b^2*x^2*(35*d^4 + 105*d^3*e*x + 126*d^2*e^2
*x^2 + 70*d*e^3*x^3 + 15*e^4*x^4) + 165*a^3*b^3*x^3*(70*d^4 + 224*d^3*e*x +
 280*d^2*e^2*x^2 + 160*d*e^3*x^3 + 35*e^4*x^4) + 55*a^2*b^4*x^4*(126*d^4 +
420*d^3*e*x + 540*d^2*e^2*x^2 + 315*d*e^3*x^3 + 70*e^4*x^4) + 11*a*b^5*x^5*
(210*d^4 + 720*d^3*e*x + 945*d^2*e^2*x^2 + 560*d*e^3*x^3 + 126*e^4*x^4) + b
^6*x^6*(330*d^4 + 1155*d^3*e*x + 1540*d^2*e^2*x^2 + 924*d*e^3*x^3 + 210*e^4
*x^4)))/(2310*(a + b*x))
```

fricas [B] time = 0.89, size = 418, normalized size = 1.91

$$\frac{1}{11}b^6e^4x^{11}+a^6d^4x+\frac{1}{5}\left(2b^6de^3+3ab^5e^4\right)x^{10}+\frac{1}{3}\left(2b^6d^2e^2+8ab^5de^3+5a^2b^4e^4\right)x^9+\frac{1}{2}\left(b^6d^3e+9ab^5d^2e^2+15\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/11*b^6*e^4*x^11 + a^6*d^4*x + 1/5*(2*b^6*d*e^3 + 3*a*b^5*e^4)*x^10 + 1/3*
(2*b^6*d^2*e^2 + 8*a*b^5*d*e^3 + 5*a^2*b^4*e^4)*x^9 + 1/2*(b^6*d^3*e + 9*a*
b^5*d^2*e^2 + 15*a^2*b^4*d*e^3 + 5*a^3*b^3*e^4)*x^8 + 1/7*(b^6*d^4 + 24*a*b
^5*d^3*e + 90*a^2*b^4*d^2*e^2 + 80*a^3*b^3*d*e^3 + 15*a^4*b^2*e^4)*x^7 + (a
*b^5*d^4 + 10*a^2*b^4*d^3*e + 20*a^3*b^3*d^2*e^2 + 10*a^4*b^2*d*e^3 + a^5*b
*e^4)*x^6 + 1/5*(15*a^2*b^4*d^4 + 80*a^3*b^3*d^3*e + 90*a^4*b^2*d^2*e^2 + 2
4*a^5*b*d*e^3 + a^6*e^4)*x^5 + (5*a^3*b^3*d^4 + 15*a^4*b^2*d^3*e + 9*a^5*b*
d^2*e^2 + a^6*d*e^3)*x^4 + (5*a^4*b^2*d^4 + 8*a^5*b*d^3*e + 2*a^6*d^2*e^2)*
x^3 + (3*a^5*b*d^4 + 2*a^6*d^3*e)*x^2
```

giac [B] time = 0.19, size = 666, normalized size = 3.04

$$\frac{1}{11}b^6x^{11}e^4\mathrm{sgn}(bx+a)+\frac{2}{5}b^6dx^{10}e^3\mathrm{sgn}(bx+a)+\frac{2}{3}b^6d^2x^9e^2\mathrm{sgn}(bx+a)+\frac{1}{2}b^6d^3x^8e\mathrm{sgn}(bx+a)+\frac{1}{7}b^6d^4x^7\mathrm{sg}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/11*b^6*x^11*e^4*sgn(b*x + a) + 2/5*b^6*d*x^10*e^3*sgn(b*x + a) + 2/3*b^6*
d^2*x^9*e^2*sgn(b*x + a) + 1/2*b^6*d^3*x^8*e*sgn(b*x + a) + 1/7*b^6*d^4*x^7
*sgn(b*x + a) + 3/5*a*b^5*x^10*e^4*sgn(b*x + a) + 8/3*a*b^5*d*x^9*e^3*sgn(b
*x + a) + 9/2*a*b^5*d^2*x^8*e^2*sgn(b*x + a) + 24/7*a*b^5*d^3*x^7*e*sgn(b*x
 + a) + a*b^5*d^4*x^6*sgn(b*x + a) + 5/3*a^2*b^4*x^9*e^4*sgn(b*x + a) + 15/
2*a^2*b^4*d*x^8*e^3*sgn(b*x + a) + 90/7*a^2*b^4*d^2*x^7*e^2*sgn(b*x + a) +
10*a^2*b^4*d^3*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^4*x^5*sgn(b*x + a) + 5/2*a^
3*b^3*x^8*e^4*sgn(b*x + a) + 80/7*a^3*b^3*d*x^7*e^3*sgn(b*x + a) + 20*a^3*b
^3*d^2*x^6*e^2*sgn(b*x + a) + 16*a^3*b^3*d^3*x^5*e*sgn(b*x + a) + 5*a^3*b^3
*d^4*x^4*sgn(b*x + a) + 15/7*a^4*b^2*x^7*e^4*sgn(b*x + a) + 10*a^4*b^2*d*x^
6*e^3*sgn(b*x + a) + 18*a^4*b^2*d^2*x^5*e^2*sgn(b*x + a) + 15*a^4*b^2*d^3*x
^4*e*sgn(b*x + a) + 5*a^4*b^2*d^4*x^3*sgn(b*x + a) + a^5*b*x^6*e^4*sgn(b*x
+ a) + 24/5*a^5*b*d*x^5*e^3*sgn(b*x + a) + 9*a^5*b*d^2*x^4*e^2*sgn(b*x + a)
 + 8*a^5*b*d^3*x^3*e*sgn(b*x + a) + 3*a^5*b*d^4*x^2*sgn(b*x + a) + 1/5*a^6*
x^5*e^4*sgn(b*x + a) + a^6*d*x^4*e^3*sgn(b*x + a) + 2*a^6*d^2*x^3*e^2*sgn(b
*x + a) + 2*a^6*d^3*x^2*e*sgn(b*x + a) + a^6*d^4*x*sgn(b*x + a)
```

maple [B] time = 0.06, size = 489, normalized size = 2.23

$$\big(210e^4b^6x^{10} + 1386x^9e^4a\,b^5 + 924x^9d\,e^3b^6 + 3850x^8e^4a^2b^4 + 6160x^8d\,e^3a\,b^5 + 1540x^8d^2e^2b^6 + 5775x^7e^4a^3b^3 + 1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/2310*x*(210*b^6*e^4*x^10+1386*a*b^5*e^4*x^9+924*b^6*d*e^3*x^9+3850*a^2*b^
4*e^4*x^8+6160*a*b^5*d*e^3*x^8+1540*b^6*d^2*e^2*x^8+5775*a^3*b^3*e^4*x^7+17
325*a^2*b^4*d*e^3*x^7+10395*a*b^5*d^2*e^2*x^7+1155*b^6*d^3*e*x^7+4950*a^4*b
^2*e^4*x^6+26400*a^3*b^3*d*e^3*x^6+29700*a^2*b^4*d^2*e^2*x^6+7920*a*b^5*d^3
*e*x^6+330*b^6*d^4*x^6+2310*a^5*b*e^4*x^5+23100*a^4*b^2*d*e^3*x^5+46200*a^3
*b^3*d^2*e^2*x^5+23100*a^2*b^4*d^3*e*x^5+2310*a*b^5*d^4*x^5+462*a^6*e^4*x^4
+11088*a^5*b*d*e^3*x^4+41580*a^4*b^2*d^2*e^2*x^4+36960*a^3*b^3*d^3*e*x^4+69
30*a^2*b^4*d^4*x^4+2310*a^6*d*e^3*x^3+20790*a^5*b*d^2*e^2*x^3+34650*a^4*b^2
*d^3*e*x^3+11550*a^3*b^3*d^4*x^3+4620*a^6*d^2*e^2*x^2+18480*a^5*b*d^3*e*x^2
+11550*a^4*b^2*d^4*x^2+4620*a^6*d^3*e*x+6930*a^5*b*d^4*x+2310*a^6*d^4)*((b*
x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.53, size = 998, normalized size = 4.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/11*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^4*x^4/b - 3/22*(b^2*x^2 + 2*a*b*x +
a^2)^(7/2)*a*e^4*x^3/b^2 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^4*x - 1/
6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^4*x/b^4 + 31/198*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2*e^4*x^2/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^4
/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^6*e^4/b^5 - 65/396*(b^2*x^2 + 2*
a*b*x + a^2)^(7/2)*a^3*e^4*x/b^4 + 461/2772*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)
*a^4*e^4/b^5 + 1/10*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^3
/b^2 + 1/6*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*x/b^4 -
1/3*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3*x/b^3 + 1
/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*x/b^2 - 1/
6*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*x/b - 13/90*(4*b*d*
e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x^2/b^3 + 2/9*(3*b*d^2*e^2 +
 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 + 1/6*(4*b*d*e^3 + a*e^
4)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5/b^5 - 1/3*(3*b*d^2*e^2 + 2*a*d*e^3)*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/3*(2*b*d^3*e + 3*a*d^2*e^2)*(b^
2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2
*a*b*x + a^2)^(5/2)*a^2/b^2 + 29/180*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2*x/b^4 - 11/36*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(7/2)*a*x/b^3 + 1/4*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x +
 a^2)^(7/2)*x/b^2 - 209/1260*(4*b*d*e^3 + a*e^4)*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a^3/b^5 + 83/252*(3*b*d^2*e^2 + 2*a*d*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a^2/b^4 - 9/28*(2*b*d^3*e + 3*a*d^2*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(7
/2)*a/b^3 + 1/7*(b*d^4 + 4*a*d^3*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^4\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^4*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^4\,\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**4*((a + b*x)**2)**(5/2), x)
```

3.1994 $\int (a+bx)(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=172

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)}{3b^4}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^2}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{7b^4}$$

```
[Out] 1/7*(-a*e+b*d)^3*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^4+3/8*e*(-a*e+b*d)^2*(b*x+a)
^7*((b*x+a)^2)^(1/2)/b^4+1/3*e^2*(-a*e+b*d)*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^4
+1/10*e^3*(b*x+a)^9*((b*x+a)^2)^(1/2)/b^4
```

Rubi [A] time = 0.24, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8(bd-ae)}{3b^4}+\frac{3e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)^2}{8b^4}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{7b^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^4) + (3*e*(b
*d - a*e)^2*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^4) + (e^2*(b*d
- a*e)*(a + b*x)^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*b^4) + (e^3*(a + b*x)^
9*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*b^4)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^3\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^3\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(bd-ae)^3(a+bx)^6}{b^3}+\frac{3e(bd-ae)^2(a+bx)^7}{b^3}+\frac{3e^2}{}\right.}{ab+b^2x}$$

$$= \frac{(bd-ae)^3(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^4}+\frac{3e(bd-ae)^2(a+bx)}{8}$$

Mathematica [**A**] time = 0.10, size = 294, normalized size = 1.71

$$x\sqrt{(a+bx)^2}\,\left(210a^6\left(4d^3+6d^2ex+4de^2x^2+e^3x^3\right)+252a^5bx\left(10d^3+20d^2ex+15de^2x^2+4e^3x^3\right)+210a^4b^2x\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(210*a^6*(4*d^3 + 6*d^2*e*x + 4*d*e^2*x^2 + e^3*x^3) +
 252*a^5*b*x*(10*d^3 + 20*d^2*e*x + 15*d*e^2*x^2 + 4*e^3*x^3) + 210*a^4*b^2
*x^2*(20*d^3 + 45*d^2*e*x + 36*d*e^2*x^2 + 10*e^3*x^3) + 120*a^3*b^3*x^3*(3
5*d^3 + 84*d^2*e*x + 70*d*e^2*x^2 + 20*e^3*x^3) + 45*a^2*b^4*x^4*(56*d^3 +
140*d^2*e*x + 120*d*e^2*x^2 + 35*e^3*x^3) + 10*a*b^5*x^5*(84*d^3 + 216*d^2*
e*x + 189*d*e^2*x^2 + 56*e^3*x^3) + b^6*x^6*(120*d^3 + 315*d^2*e*x + 280*d*
e^2*x^2 + 84*e^3*x^3)))/(840*(a + b*x))
```

fricas [**B**] time = 1.00, size = 327, normalized size = 1.90

$$\frac{1}{10}\,b^6e^3x^{10}+a^6d^3x+\frac{1}{3}\,\left(b^6de^2+2\,ab^5e^3\right)x^9+\frac{3}{8}\,\left(b^6d^2e+6\,ab^5de^2+5\,a^2b^4e^3\right)x^8+\frac{1}{7}\,\left(b^6d^3+18\,ab^5d^2e+45\,a^2b^4de\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/10*b^6*e^3*x^10 + a^6*d^3*x + 1/3*(b^6*d*e^2 + 2*a*b^5*e^3)*x^9 + 3/8*(b^
6*d^2*e + 6*a*b^5*d*e^2 + 5*a^2*b^4*e^3)*x^8 + 1/7*(b^6*d^3 + 18*a*b^5*d^2*
e + 45*a^2*b^4*d*e^2 + 20*a^3*b^3*e^3)*x^7 + 1/2*(2*a*b^5*d^3 + 15*a^2*b^4*
d^2*e + 20*a^3*b^3*d*e^2 + 5*a^4*b^2*e^3)*x^6 + 3/5*(5*a^2*b^4*d^3 + 20*a^3
*b^3*d^2*e + 15*a^4*b^2*d*e^2 + 2*a^5*b*e^3)*x^5 + 1/4*(20*a^3*b^3*d^3 + 45
*a^4*b^2*d^2*e + 18*a^5*b*d*e^2 + a^6*e^3)*x^4 + (5*a^4*b^2*d^3 + 6*a^5*b*d
^2*e + a^6*d*e^2)*x^3 + 3/2*(2*a^5*b*d^3 + a^6*d^2*e)*x^2
```

giac [**B**] time = 0.22, size = 523, normalized size = 3.04

$$\frac{1}{10}\,b^6x^{10}e^3\mathrm{sgn}\left(bx+a\right)+\frac{1}{3}\,b^6dx^9e^2\mathrm{sgn}\left(bx+a\right)+\frac{3}{8}\,b^6d^2x^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,b^6d^3x^7\mathrm{sgn}\left(bx+a\right)+\frac{2}{3}\,ab^5x^9e^3\mathrm{sgn}\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/10*b^6*x^10*e^3*sgn(b*x + a) + 1/3*b^6*d*x^9*e^2*sgn(b*x + a) + 3/8*b^6*d
^2*x^8*e*sgn(b*x + a) + 1/7*b^6*d^3*x^7*sgn(b*x + a) + 2/3*a*b^5*x^9*e^3*sg
```

```
n(b*x + a) + 9/4*a*b^5*d*x^8*e^2*sgn(b*x + a) + 18/7*a*b^5*d^2*x^7*e*sgn(b*
x + a) + a*b^5*d^3*x^6*sgn(b*x + a) + 15/8*a^2*b^4*x^8*e^3*sgn(b*x + a) + 4
5/7*a^2*b^4*d*x^7*e^2*sgn(b*x + a) + 15/2*a^2*b^4*d^2*x^6*e*sgn(b*x + a) +
3*a^2*b^4*d^3*x^5*sgn(b*x + a) + 20/7*a^3*b^3*x^7*e^3*sgn(b*x + a) + 10*a^3
*b^3*d*x^6*e^2*sgn(b*x + a) + 12*a^3*b^3*d^2*x^5*e*sgn(b*x + a) + 5*a^3*b^3
*d^3*x^4*sgn(b*x + a) + 5/2*a^4*b^2*x^6*e^3*sgn(b*x + a) + 9*a^4*b^2*d*x^5*
e^2*sgn(b*x + a) + 45/4*a^4*b^2*d^2*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d^3*x^3*
sgn(b*x + a) + 6/5*a^5*b*x^5*e^3*sgn(b*x + a) + 9/2*a^5*b*d*x^4*e^2*sgn(b*x
 + a) + 6*a^5*b*d^2*x^3*e*sgn(b*x + a) + 3*a^5*b*d^3*x^2*sgn(b*x + a) + 1/4
*a^6*x^4*e^3*sgn(b*x + a) + a^6*d*x^3*e^2*sgn(b*x + a) + 3/2*a^6*d^2*x^2*e*
sgn(b*x + a) + a^6*d^3*x*sgn(b*x + a)
```

maple [B] time = 0.05, size = 380, normalized size = 2.21

$$\frac{(84e^3b^6x^9 + 560x^8e^3a\,b^5 + 280x^8d\,e^2b^6 + 1575x^7e^3a^2b^4 + 1890x^7d\,e^2a\,b^5 + 315x^7d^2e\,b^6 + 2400x^6e^3a^3b^3 + 5400x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/840*x*(84*b^6*e^3*x^9+560*a*b^5*e^3*x^8+280*b^6*d*e^2*x^8+1575*a^2*b^4*e^
3*x^7+1890*a*b^5*d*e^2*x^7+315*b^6*d^2*e*x^7+2400*a^3*b^3*e^3*x^6+5400*a^2*
b^4*d*e^2*x^6+2160*a*b^5*d^2*e*x^6+120*b^6*d^3*x^6+2100*a^4*b^2*e^3*x^5+840
0*a^3*b^3*d*e^2*x^5+6300*a^2*b^4*d^2*e*x^5+840*a*b^5*d^3*x^5+1008*a^5*b*e^3
*x^4+7560*a^4*b^2*d*e^2*x^4+10080*a^3*b^3*d^2*e*x^4+2520*a^2*b^4*d^3*x^4+21
0*a^6*e^3*x^3+3780*a^5*b*d*e^2*x^3+9450*a^4*b^2*d^2*e*x^3+4200*a^3*b^3*d^3*
x^3+840*a^6*d*e^2*x^2+5040*a^5*b*d^2*e*x^2+4200*a^4*b^2*d^3*x^2+1260*a^6*d^
2*e*x+2520*a^5*b*d^3*x+840*a^6*d^3)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.60, size = 693, normalized size = 4.03

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}}e^3x^3}{10\,b} + \frac{1}{6}\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}ad^3x + \frac{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}a^4e^3x}{6\,b^3} - \frac{13\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{7}{2}}ae^3x}{90\,b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/10*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^3*x^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*a*d^3*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4*e^3*x/b^3 - 13/
90*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*e^3*x^2/b^2 + 1/6*(b^2*x^2 + 2*a*b*x +
 a^2)^(5/2)*a^2*d^3/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^5*e^3/b^4 + 2
9/180*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^3*x/b^3 - 209/1260*(b^2*x^2 + 2
*a*b*x + a^2)^(7/2)*a^3*e^3/b^4 - 1/6*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*
x + a^2)^(5/2)*a^3*x/b^3 + 1/2*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2
)^(5/2)*a^2*x/b^2 - 1/6*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*a*x/b + 1/9*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*x^2/b^2 -
1/6*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^4/b^4 + 1/2*(b*d^
2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^3/b^3 - 1/6*(b*d^3 + 3*a*d
^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2/b^2 - 11/72*(3*b*d*e^2 + a*e^3)*(
b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*x/b^3 + 3/8*(b*d^2*e + a*d*e^2)*(b^2*x^2 +
 2*a*b*x + a^2)^(7/2)*x/b^2 + 83/504*(3*b*d*e^2 + a*e^3)*(b^2*x^2 + 2*a*b*x
 + a^2)^(7/2)*a^2/b^4 - 27/56*(b*d^2*e + a*d*e^2)*(b^2*x^2 + 2*a*b*x + a^2)
^(7/2)*a/b^3 + 1/7*(b*d^3 + 3*a*d^2*e)*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a + b\,x)\,(d + e\,x)^3\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)(d+ex)^3\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**3*((a + b*x)**2)**(5/2), x)
```

3.1995 $\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx$

Optimal. Leaf size=125

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{4b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^3}$$

```
[Out] 1/7*(-a*e+b*d)^2*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^3+1/4*e*(-a*e+b*d)*(b*x+a)^7
*((b*x+a)^2)^(1/2)/b^3+1/9*e^2*(b*x+a)^8*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.18, antiderivative size = 125, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7(bd-ae)}{4b^3}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)^2}{7b^3}+\frac{e^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^8}{9b^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^3) + (e*(b*d
 - a*e)*(a + b*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*b^3) + (e^2*(a + b*x)
^8*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*b^3)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)^2 \left(a^2+2abx+b^2x^2\right)^{5/2} \, dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^2 \, dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^2 \, dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)^2(a+bx)^6}{b^2}+\frac{2e(bd-ae)(a+bx)^7}{b^2}+\frac{e^2(a+bx)}{b^2}\right.}{ab+b^2x}\\
&= \frac{(bd-ae)^2(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^3}+\frac{e(bd-ae)(a+bx)^7\sqrt{a^2}}{4b^3}
\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 217, normalized size = 1.74

$$x\sqrt{(a+bx)^2}\left(84a^6\left(3d^2+3dex+e^2x^2\right)+126a^5bx\left(6d^2+8dex+3e^2x^2\right)+126a^4b^2x^2\left(10d^2+15dex+6e^2x^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(84*a^6*(3*d^2 + 3*d*e*x + e^2*x^2) + 126*a^5*b*x*(6*d
^2 + 8*d*e*x + 3*e^2*x^2) + 126*a^4*b^2*x^2*(10*d^2 + 15*d*e*x + 6*e^2*x^2)
 + 84*a^3*b^3*x^3*(15*d^2 + 24*d*e*x + 10*e^2*x^2) + 36*a^2*b^4*x^4*(21*d^2
 + 35*d*e*x + 15*e^2*x^2) + 9*a*b^5*x^5*(28*d^2 + 48*d*e*x + 21*e^2*x^2) +
b^6*x^6*(36*d^2 + 63*d*e*x + 28*e^2*x^2)))/(252*(a + b*x))
```

fricas [**B**] time = 0.90, size = 234, normalized size = 1.87

$$\frac{1}{9}b^6e^2x^9+a^6d^2x+\frac{1}{4}\left(b^6de+3\,ab^5e^2\right)x^8+\frac{1}{7}\left(b^6d^2+12\,ab^5de+15\,a^2b^4e^2\right)x^7+\frac{1}{3}\left(3\,ab^5d^2+15\,a^2b^4de+10\,a^3b^3e^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/9*b^6*e^2*x^9 + a^6*d^2*x + 1/4*(b^6*d*e + 3*a*b^5*e^2)*x^8 + 1/7*(b^6*d^
2 + 12*a*b^5*d*e + 15*a^2*b^4*e^2)*x^7 + 1/3*(3*a*b^5*d^2 + 15*a^2*b^4*d*e
+ 10*a^3*b^3*e^2)*x^6 + (3*a^2*b^4*d^2 + 8*a^3*b^3*d*e + 3*a^4*b^2*e^2)*x^5
 + 1/2*(10*a^3*b^3*d^2 + 15*a^4*b^2*d*e + 3*a^5*b*e^2)*x^4 + 1/3*(15*a^4*b^
2*d^2 + 12*a^5*b*d*e + a^6*e^2)*x^3 + (3*a^5*b*d^2 + a^6*d*e)*x^2
```

giac [**B**] time = 0.18, size = 379, normalized size = 3.03

$$\frac{1}{9}b^6x^9e^2\mathrm{sgn}\left(bx+a\right)+\frac{1}{4}b^6dx^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}b^6d^2x^7\mathrm{sgn}\left(bx+a\right)+\frac{3}{4}ab^5x^8e^2\mathrm{sgn}\left(bx+a\right)+\frac{12}{7}ab^5dx^7e\mathrm{sgn}\left(b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 1/9*b^6*x^9*e^2*sgn(b*x + a) + 1/4*b^6*d*x^8*e*sgn(b*x + a) + 1/7*b^6*d^2*x
^7*sgn(b*x + a) + 3/4*a*b^5*x^8*e^2*sgn(b*x + a) + 12/7*a*b^5*d*x^7*e*sgn(b
*x + a) + a*b^5*d^2*x^6*sgn(b*x + a) + 15/7*a^2*b^4*x^7*e^2*sgn(b*x + a) +
5*a^2*b^4*d*x^6*e*sgn(b*x + a) + 3*a^2*b^4*d^2*x^5*sgn(b*x + a) + 10/3*a^3*
b^3*x^6*e^2*sgn(b*x + a) + 8*a^3*b^3*d*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d^2*x
^4*sgn(b*x + a) + 3*a^4*b^2*x^5*e^2*sgn(b*x + a) + 15/2*a^4*b^2*d*x^4*e*sgn
(b*x + a) + 5*a^4*b^2*d^2*x^3*sgn(b*x + a) + 3/2*a^5*b*x^4*e^2*sgn(b*x + a)
 + 4*a^5*b*d*x^3*e*sgn(b*x + a) + 3*a^5*b*d^2*x^2*sgn(b*x + a) + 1/3*a^6*x^
3*e^2*sgn(b*x + a) + a^6*d*x^2*e*sgn(b*x + a) + a^6*d^2*x*sgn(b*x + a)
```

maple [**B**] time = 0.05, size = 271, normalized size = 2.17

$$\left(28b^6e^2x^8+189x^7e^2a\,b^5+63x^7de\,b^6+540x^6e^2a^2b^4+432x^6dea\,b^5+36x^6d^2b^6+840x^5e^2a^3b^3+1260x^5de\,a^2b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/252*x*(28*b^6*e^2*x^8+189*a*b^5*e^2*x^7+63*b^6*d*e*x^7+540*a^2*b^4*e^2*x^
6+432*a*b^5*d*e*x^6+36*b^6*d^2*x^6+840*a^3*b^3*e^2*x^5+1260*a^2*b^4*d*e*x^5
+252*a*b^5*d^2*x^5+756*a^4*b^2*e^2*x^4+2016*a^3*b^3*d*e*x^4+756*a^2*b^4*d^2
*x^4+378*a^5*b*e^2*x^3+1890*a^4*b^2*d*e*x^3+1260*a^3*b^3*d^2*x^3+84*a^6*e^2
*x^2+1008*a^5*b*d*e*x^2+1260*a^4*b^2*d^2*x^2+252*a^6*d*e*x+756*a^5*b*d^2*x+
252*a^6*d^2)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [B] time = 0.76, size = 452, normalized size = 3.62

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}ad^2x-\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^3e^2x}{6\,b^2}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{7}{2}}e^2x^2}{9\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2d^2}{6\,b}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d^2*x - 1/6*(b^2*x^2 + 2*a*b*x + a^2)
^(5/2)*a^3*e^2*x/b^2 + 1/9*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e^2*x^2/b + 1/6*
(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d^2/b - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^4*e^2/b^3 - 11/72*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a*e^2*x/b^2 + 83/5
04*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*a^2*e^2/b^3 + 1/6*(b^2*x^2 + 2*a*b*x + a
^2)^(5/2)*(2*b*d*e + a*e^2)*a^2*x/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)
*(b*d^2 + 2*a*d*e)*a*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(2*b*d*e + a
*e^2)*a^3/b^3 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*d^2 + 2*a*d*e)*a^2/b
^2 + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*b*d*e + a*e^2)*x/b^2 - 9/56*(b^
2*x^2 + 2*a*b*x + a^2)^(7/2)*(2*b*d*e + a*e^2)*a/b^3 + 1/7*(b^2*x^2 + 2*a*b
*x + a^2)^(7/2)*(b*d^2 + 2*a*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)^2\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^2\,\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2*((a + b*x)**2)**(5/2), x)
```

3.1996 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=78

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^2}$$

```
[Out] 1/7*(-a*e+b*d)*(b*x+a)^6*((b*x+a)^2)^(1/2)/b^2+1/8*e*(b*x+a)^7*((b*x+a)^2)^
(1/2)/b^2
```

Rubi [A] time = 0.05, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6(bd-ae)}{7b^2}+\frac{e\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^7}{8b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*b^2) + (e*(a + b
*x)^7*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*b^2)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(bd-ae)(a+bx)^6}{b}+\frac{e(a+bx)^7}{b}\right)dx}{ab+b^2x}\\
&= \frac{(bd-ae)(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{7b^2}+\frac{e(a+bx)^7\sqrt{a^2+2abx}}{8b^2}
\end{aligned}$$

Mathematica [**A**]   time = 0.05, size = 140, normalized size = 1.79

$$\frac{x\sqrt{(a+bx)^2}\,\big(28a^6(2d+ex)+56a^5bx(3d+2ex)+70a^4b^2x^2(4d+3ex)+56a^3b^3x^3(5d+4ex)+28a^2b^4x^4(6d+5e}{56(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (x*Sqrt[(a + b*x)^2]*(28*a^6*(2*d + e*x) + 56*a^5*b*x*(3*d + 2*e*x) + 70*a^
4*b^2*x^2*(4*d + 3*e*x) + 56*a^3*b^3*x^3*(5*d + 4*e*x) + 28*a^2*b^4*x^4*(6*
d + 5*e*x) + 8*a*b^5*x^5*(7*d + 6*e*x) + b^6*x^6*(8*d + 7*e*x)))/(56*(a + b
*x))
```

fricas [**B**]   time = 0.96, size = 142, normalized size = 1.82

$$\frac{1}{8}\,b^6ex^8+a^6dx+\frac{1}{7}\left(b^6d+6\,ab^5e\right)x^7+\frac{1}{2}\left(2\,ab^5d+5\,a^2b^4e\right)x^6+\left(3\,a^2b^4d+4\,a^3b^3e\right)x^5+\frac{5}{4}\left(4\,a^3b^3d+3\,a^4b^2e\right)x^4+\big(5\,a^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 1/8*b^6*e*x^8 + a^6*d*x + 1/7*(b^6*d + 6*a*b^5*e)*x^7 + 1/2*(2*a*b^5*d + 5*
a^2*b^4*e)*x^6 + (3*a^2*b^4*d + 4*a^3*b^3*e)*x^5 + 5/4*(4*a^3*b^3*d + 3*a^4
*b^2*e)*x^4 + (5*a^4*b^2*d + 2*a^5*b*e)*x^3 + 1/2*(6*a^5*b*d + a^6*e)*x^2
```

giac [**B**]   time = 0.17, size = 236, normalized size = 3.03

$$\frac{1}{8}\,b^6x^8e\mathrm{sgn}\left(bx+a\right)+\frac{1}{7}\,b^6dx^7\mathrm{sgn}\left(bx+a\right)+\frac{6}{7}\,ab^5x^7e\mathrm{sgn}\left(bx+a\right)+ab^5dx^6\mathrm{sgn}\left(bx+a\right)+\frac{5}{2}\,a^2b^4x^6e\mathrm{sgn}\left(bx+a\right)+3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/8*b^6*x^8*e*sgn(b*x + a) + 1/7*b^6*d*x^7*sgn(b*x + a) + 6/7*a*b^5*x^7*e*s
gn(b*x + a) + a*b^5*d*x^6*sgn(b*x + a) + 5/2*a^2*b^4*x^6*e*sgn(b*x + a) + 3
*a^2*b^4*d*x^5*sgn(b*x + a) + 4*a^3*b^3*x^5*e*sgn(b*x + a) + 5*a^3*b^3*d*x^
4*sgn(b*x + a) + 15/4*a^4*b^2*x^4*e*sgn(b*x + a) + 5*a^4*b^2*d*x^3*sgn(b*x
+ a) + 2*a^5*b*x^3*e*sgn(b*x + a) + 3*a^5*b*d*x^2*sgn(b*x + a) + 1/2*a^6*x^
2*e*sgn(b*x + a) + a^6*d*x*sgn(b*x + a)
```

maple [**B**]   time = 0.05, size = 162, normalized size = 2.08

$$\frac{\big(7e\,b^6x^7+48x^6ea\,b^5+8x^6d\,b^6+140x^5e\,a^2b^4+56x^5da\,b^5+224a^3b^3e\,x^4+168a^2b^4d\,x^4+210x^3e\,a^4b^2+280x^3d\,a}{56\left(bx+a\right)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/56*x*(7*b^6*e*x^7+48*a*b^5*e*x^6+8*b^6*d*x^6+140*a^2*b^4*e*x^5+56*a*b^5*d
*x^5+224*a^3*b^3*e*x^4+168*a^2*b^4*d*x^4+210*a^4*b^2*e*x^3+280*a^3*b^3*d*x^
3+112*a^5*b*e*x^2+280*a^4*b^2*d*x^2+28*a^6*e*x+168*a^5*b*d*x+56*a^6*d)*((b*
x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [**B**]   time = 0.63, size = 251, normalized size = 3.22

$$\frac{1}{6}\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}adx+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2ex}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^2d}{6\,b}+\frac{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}a^3e}{6\,b^2}-\big(b^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a*d*x + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(
5/2)*a^2*e*x/b + 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*a^2*d/b + 1/6*(b^2*x^2
 + 2*a*b*x + a^2)^(5/2)*a^3*e/b^2 - 1/6*(b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(b*
d + a*e)*a*x/b + 1/8*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*e*x/b - 1/6*(b^2*x^2 +
 2*a*b*x + a^2)^(5/2)*(b*d + a*e)*a^2/b^2 - 9/56*(b^2*x^2 + 2*a*b*x + a^2)^
(7/2)*a*e/b^2 + 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,\left(d+e\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.1997 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=27

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

```
[Out] 1/7*(b^2*x^2+2*a*b*x+a^2)^(7/2)/b
```

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(7/2)/(7*b)
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7b}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(a+bx)^6\sqrt{(a+bx)^2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((a + b*x)^6*Sqrt[(a + b*x)^2])/(7*b)
```

fricas [B] time = 1.11, size = 64, normalized size = 2.37

$$\frac{1}{7}\,b^6x^7+ab^5x^6+3\,a^2b^4x^5+5\,a^3b^3x^4+5\,a^4b^2x^3+3\,a^5bx^2+a^6x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] 1/7*b^6*x^7 + a*b^5*x^6 + 3*a^2*b^4*x^5 + 5*a^3*b^3*x^4 + 5*a^4*b^2*x^3 + 3
*a^5*b*x^2 + a^6*x
```

giac [B] time = 0.19, size = 120, normalized size = 4.44

$$\frac{1}{7}\,b^6x^7\mathrm{sgn}\left(bx+a\right)+ab^5x^6\mathrm{sgn}\left(bx+a\right)+3\,a^2b^4x^5\mathrm{sgn}\left(bx+a\right)+5\,a^3b^3x^4\mathrm{sgn}\left(bx+a\right)+5\,a^4b^2x^3\mathrm{sgn}\left(bx+a\right)+3\,a^5b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] 1/7*b^6*x^7*sgn(b*x + a) + a*b^5*x^6*sgn(b*x + a) + 3*a^2*b^4*x^5*sgn(b*x +
 a) + 5*a^3*b^3*x^4*sgn(b*x + a) + 5*a^4*b^2*x^3*sgn(b*x + a) + 3*a^5*b*x^2
*sgn(b*x + a) + a^6*x*sgn(b*x + a) + 1/7*a^7*sgn(b*x + a)/b
```

maple [B] time = 0.04, size = 82, normalized size = 3.04

$$\frac{\left(b^{6} x^{6}+7 a \,b^{5} x^{5}+21 a^{2} b^{4} x^{4}+35 a^{3} b^{3} x^{3}+35 a^{4} b^{2} x^{2}+21 a^{5} b x +7 a^{6}\right) \left(\left(b x +a \right)^{2}\right)^{\frac{5}{2}} x}{7 \left(b x +a \right)^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/7*x*(b^6*x^6+7*a*b^5*x^5+21*a^2*b^4*x^4+35*a^3*b^3*x^3+35*a^4*b^2*x^2+21*
a^5*b*x+7*a^6)*((b*x+a)^2)^(5/2)/(b*x+a)^5
```

maxima [A] time = 0.68, size = 23, normalized size = 0.85

$$\frac{\left(b^{2} x^{2}+2 \, a b x+a^{2}\right)^{\frac{7}{2}}}{7 \, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] 1/7*(b^2*x^2 + 2*a*b*x + a^2)^(7/2)/b
```

mupad [B] time = 2.24, size = 14, normalized size = 0.52

$$\frac{{\left({\left(a+b\,x\right)}^2\right)}^{7/2}}{7\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] ((a + b*x)^2)^(7/2)/(7*b)
```

sympy [A] time = 5.52, size = 226, normalized size = 8.37

$$\begin{cases} \frac{a^{6} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{7 b} + \frac{6 a^{5} x \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{7} + \frac{15 a^{4} b x^{2} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{7} + \frac{20 a^{3} b^{2} x^{3} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{7} + \frac{15 a^{2} b^{3} x^{4} \sqrt{a^{2} + 2 a b x + b^{2} x^{2}}}{7} + \\ a x \left(a^{2}\right)^{\frac{5}{2}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Piecewise((a**6*sqrt(a**2 + 2*a*b*x + b**2*x**2)/(7*b) + 6*a**5*x*sqrt(a**2
 + 2*a*b*x + b**2*x**2)/7 + 15*a**4*b*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2)
/7 + 20*a**3*b**2*x**3*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7 + 15*a**2*b**3*x*
*4*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7 + 6*a*b**4*x**5*sqrt(a**2 + 2*a*b*x +
 b**2*x**2)/7 + b**5*x**6*sqrt(a**2 + 2*a*b*x + b**2*x**2)/7, Ne(b, 0)), (a
*x*(a**2)**(5/2), True))
```

3.1998 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=298

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6\log(d+ex)}{e^7(a+bx)}-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae}{2e^5}$$

```
[Out] -b*(-a*e+b*d)^5*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)+1/2*(-a*e+b*d)^4*(b*x+a)*((
b*x+a)^2)^(1/2)/e^5-1/3*(-a*e+b*d)^3*(b*x+a)^2*((b*x+a)^2)^(1/2)/e^4+1/4*(-
a*e+b*d)^2*(b*x+a)^3*((b*x+a)^2)^(1/2)/e^3-1/5*(-a*e+b*d)*(b*x+a)^4*((b*x+a
)^2)^(1/2)/e^2+1/6*(b*x+a)^5*((b*x+a)^2)^(1/2)/e+(-a*e+b*d)^6*ln(e*x+d)*((b
*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [**A**] time = 0.16, antiderivative size = 298, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{bx\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^6(a+bx)}+\frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^5}-\frac{(a+bx)^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((b*(b*d - a*e)^5*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x))) + ((b*
d - a*e)^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5) - ((b*d - a*e)^
3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^4) + ((b*d - a*e)^2*(a +
b*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^3) - ((b*d - a*e)*(a + b*x)^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^2) + ((a + b*x)^5*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(6*e) + ((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{d+ex}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{d+ex}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b(bd-ae)^5}{e^6}+\frac{b(bd-ae)^4(a+bx)}{e^5}-\frac{b(bd-ae)^3(a+bx)^2}{e^4}+\right.}{ab+b^2x}$$

$$= -\frac{b(bd-ae)^5x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{(bd-ae)^4(a+bx)\sqrt{a^2+2abx+b}}{2e^5}$$

Mathematica [**A**] time = 0.11, size = 248, normalized size = 0.83

$$\sqrt{(a+bx)^2}\left(bex\left(360a^5e^5+450a^4be^4(ex-2d)+200a^3b^2e^3\left(6d^2-3dex+2e^2x^2\right)+75a^2b^3e^2\left(-12d^3+6d^2ex\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(b*e*x*(360*a^5*e^5 + 450*a^4*b*e^4*(-2*d + e*x) + 200*a
^3*b^2*e^3*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + 75*a^2*b^3*e^2*(-12*d^3 + 6*d^2*
e*x - 4*d*e^2*x^2 + 3*e^3*x^3) + 6*a*b^4*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^
2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4) + b^5*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2
*x^2 + 15*d^2*e^3*x^3 - 12*d*e^4*x^4 + 10*e^5*x^5)) + 60*(b*d - a*e)^6*Log[
d + e*x]))/(60*e^7*(a + b*x))
```

fricas [**A**] time = 0.99, size = 351, normalized size = 1.18

$$10\,b^6e^6x^6-12\left(b^6de^5-6\,ab^5e^6\right)x^5+15\left(b^6d^2e^4-6\,ab^5de^5+15\,a^2b^4e^6\right)x^4-20\left(b^6d^3e^3-6\,ab^5d^2e^4+15\,a^2b^4de\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="fricas"
)
```

```
[Out] 1/60*(10*b^6*e^6*x^6 - 12*(b^6*d*e^5 - 6*a*b^5*e^6)*x^5 + 15*(b^6*d^2*e^4 -
 6*a*b^5*d*e^5 + 15*a^2*b^4*e^6)*x^4 - 20*(b^6*d^3*e^3 - 6*a*b^5*d^2*e^4 +
15*a^2*b^4*d*e^5 - 20*a^3*b^3*e^6)*x^3 + 30*(b^6*d^4*e^2 - 6*a*b^5*d^3*e^3
+ 15*a^2*b^4*d^2*e^4 - 20*a^3*b^3*d*e^5 + 15*a^4*b^2*e^6)*x^2 - 60*(b^6*d^5
*e - 6*a*b^5*d^4*e^2 + 15*a^2*b^4*d^3*e^3 - 20*a^3*b^3*d^2*e^4 + 15*a^4*b^2
*d*e^5 - 6*a^5*b*e^6)*x + 60*(b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2
- 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*log(e*
x + d))/e^7
```

giac [**B**] time = 0.22, size = 522, normalized size = 1.75

$$\left(b^6d^6\mathrm{sgn}\,(bx+a)-6\,ab^5d^5e\mathrm{sgn}\,(bx+a)+15\,a^2b^4d^4e^2\mathrm{sgn}\,(bx+a)-20\,a^3b^3d^3e^3\mathrm{sgn}\,(bx+a)+15\,a^4b^2d^2e^4\mathrm{s}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="giac")
```

```
[Out] (b^6*d^6*sgn(b*x + a) - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn
(b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x +
a) - 6*a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)*log(abs(x*e
+ d)) + 1/60*(10*b^6*x^6*e^5*sgn(b*x + a) - 12*b^6*d*x^5*e^4*sgn(b*x + a) +
 15*b^6*d^2*x^4*e^3*sgn(b*x + a) - 20*b^6*d^3*x^3*e^2*sgn(b*x + a) + 30*b^6
*d^4*x^2*e*sgn(b*x + a) - 60*b^6*d^5*x*sgn(b*x + a) + 72*a*b^5*x^5*e^5*sgn(
b*x + a) - 90*a*b^5*d*x^4*e^4*sgn(b*x + a) + 120*a*b^5*d^2*x^3*e^3*sgn(b*x
+ a) - 180*a*b^5*d^3*x^2*e^2*sgn(b*x + a) + 360*a*b^5*d^4*x*e*sgn(b*x + a)
+ 225*a^2*b^4*x^4*e^5*sgn(b*x + a) - 300*a^2*b^4*d*x^3*e^4*sgn(b*x + a) + 4
50*a^2*b^4*d^2*x^2*e^3*sgn(b*x + a) - 900*a^2*b^4*d^3*x*e^2*sgn(b*x + a) +
400*a^3*b^3*x^3*e^5*sgn(b*x + a) - 600*a^3*b^3*d*x^2*e^4*sgn(b*x + a) + 120
0*a^3*b^3*d^2*x*e^3*sgn(b*x + a) + 450*a^4*b^2*x^2*e^5*sgn(b*x + a) - 900*a
^4*b^2*d*x*e^4*sgn(b*x + a) + 360*a^5*b*x*e^5*sgn(b*x + a))*e^(-6)
```

maple [B] time = 0.06, size = 428, normalized size = 1.44

$$\frac{\left((bx+a)^{2}\right)^{\frac{5}{2}}\left(10b^{6}e^{6}x^{6}+72a\,b^{5}e^{6}x^{5}-12b^{6}d\,e^{5}x^{5}+225a^{2}b^{4}e^{6}x^{4}-90a\,b^{5}d\,e^{5}x^{4}+15b^{6}d^{2}e^{4}x^{4}+400a^{3}b^{3}e^{6}x^{3}-30\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(10*x^6*b^6*e^6+60*ln(e*x+d)*a^6*e^6+60*ln(e*x+d)*b^
6*d^6-360*ln(e*x+d)*a*b^5*d^5*e-180*x^2*a*b^5*d^3*e^3-900*x*a^4*b^2*d*e^5+1
200*x*a^3*b^3*d^2*e^4-900*x*a^2*b^4*d^3*e^3+360*x*a*b^5*d^4*e^2+900*ln(e*x+
d)*a^2*b^4*d^4*e^2-90*x^4*a*b^5*d*e^5-300*x^3*a^2*b^4*d*e^5-20*x^3*b^6*d^3*
e^3+72*x^5*a*b^5*e^6-12*x^5*b^6*d*e^5+225*x^4*a^2*b^4*e^6+15*x^4*b^6*d^2*e^
4+400*x^3*a^3*b^3*e^6-1200*ln(e*x+d)*a^3*b^3*d^3*e^3+450*x^2*a^4*b^2*e^6+30
*x^2*b^6*d^4*e^2+360*x*a^5*b*e^6-360*ln(e*x+d)*a^5*b*d*e^5+900*ln(e*x+d)*a^
4*b^2*d^2*e^4+120*x^3*a*b^5*d^2*e^4-600*x^2*a^3*b^3*d*e^5+450*x^2*a^2*b^4*d
^2*e^4-60*x*b^6*d^5*e)/(b*x+a)^5/e^7
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x),x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^{2}\right)^{\frac{5}{2}}}{d+ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x), x)
```

3.1999 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=345

$$-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{e^7(a+bx)(d+ex)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5\log(d+ex)}{e^7(a+bx)}+\frac{15b^2x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^6(a+bx)}$$

```
[Out] 15*b^2*(-a*e+b*d)^4*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-(-a*e+b*d)^6*((b*x+a)^2
)^(1/2)/e^7/(b*x+a)/(e*x+d)-10*b^3*(-a*e+b*d)^3*(e*x+d)^2*((b*x+a)^2)^(1/2)
/e^7/(b*x+a)+5*b^4*(-a*e+b*d)^2*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-3/2
*b^5*(-a*e+b*d)*(e*x+d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/5*b^6*(e*x+d)^5*(
(b*x+a)^2)^(1/2)/e^7/(b*x+a)-6*b*(-a*e+b*d)^5*ln(e*x+d)*((b*x+a)^2)^(1/2)/e
^7/(b*x+a)
```

Rubi [**A**] time = 0.30, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^5}{5e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4(bd-ae)}{2e^7(a+bx)}+\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (15*b^2*(b*d - a*e)^4*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((
b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) - (10
*b^3*(b*d - a*e)^3*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x
)) + (5*b^4*(b*d - a*e)^2*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(
a + b*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
2*e^7*(a + b*x)) + (b^6*(d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(
a + b*x)) - (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^2}\,dx}{b^4\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{15b^2(bd-ae)^4}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^2}-\frac{6b(bd-ae)^5}{e^6(d+ex)}-\frac{20b^3(bd-ae}{e^6}\right.}{ab+b^2x}\\ &= \frac{15b^2(bd-ae)^4x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)(d+ex)}-\end{aligned}$$

Mathematica [**A**] time = 0.20, size = 320, normalized size = 0.93

$$\frac{\sqrt{(a+bx)^2}\left(-10a^6e^6+60a^5bde^5+150a^4b^2e^4\left(-d^2+dex+e^2x^2\right)+100a^3b^3e^3\left(2d^3-4d^2ex-3de^2x^2+e^3x^3\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(60*a^5*b*d*e^5 - 10*a^6*e^6 + 150*a^4*b^2*e^4*(-d^2 + d
*e*x + e^2*x^2) + 100*a^3*b^3*e^3*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^
3) + 50*a^2*b^4*e^2*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4
*x^4) + 5*a*b^5*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 -
5*d*e^4*x^4 + 3*e^5*x^5) + b^6*(-10*d^6 + 50*d^5*e*x + 30*d^4*e^2*x^2 - 10*
d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 3*d*e^5*x^5 + 2*e^6*x^6) - 60*b*(b*d - a*e)^5
*(d + e*x)*Log[d + e*x]))/(10*e^7*(a + b*x)*(d + e*x))
```

fricas [**A**] time = 0.94, size = 496, normalized size = 1.44

$$\frac{2\,b^6e^6x^6-10\,b^6d^6+60\,ab^5d^5e-150\,a^2b^4d^4e^2+200\,a^3b^3d^3e^3-150\,a^4b^2d^2e^4+60\,a^5bde^5-10\,a^6e^6-3\left(b^6de^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="frica
s")
```

```
[Out] 1/10*(2*b^6*e^6*x^6 - 10*b^6*d^6 + 60*a*b^5*d^5*e - 150*a^2*b^4*d^4*e^2 + 2
00*a^3*b^3*d^3*e^3 - 150*a^4*b^2*d^2*e^4 + 60*a^5*b*d*e^5 - 10*a^6*e^6 - 3*
(b^6*d*e^5 - 5*a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - 5*a*b^5*d*e^5 + 10*a^2*b^4
*e^6)*x^4 - 10*(b^6*d^3*e^3 - 5*a*b^5*d^2*e^4 + 10*a^2*b^4*d*e^5 - 10*a^3*b
^3*e^6)*x^3 + 30*(b^6*d^4*e^2 - 5*a*b^5*d^3*e^3 + 10*a^2*b^4*d^2*e^4 - 10*a
^3*b^3*d*e^5 + 5*a^4*b^2*e^6)*x^2 + 10*(5*b^6*d^5*e - 24*a*b^5*d^4*e^2 + 45
*a^2*b^4*d^3*e^3 - 40*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5)*x - 60*(b^6*d^6 -
 5*a*b^5*d^5*e + 10*a^2*b^4*d^4*e^2 - 10*a^3*b^3*d^3*e^3 + 5*a^4*b^2*d^2*e^
4 - a^5*b*d*e^5 + (b^6*d^5*e - 5*a*b^5*d^4*e^2 + 10*a^2*b^4*d^3*e^3 - 10*a^
3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 - a^5*b*e^6)*x)*log(e*x + d))/(e^8*x + d*e^
7)
```

giac [**A**] time = 0.20, size = 519, normalized size = 1.50

$$-6\left(b^6d^5\operatorname{sgn}(bx+a)-5\,ab^5d^4e\operatorname{sgn}(bx+a)+10\,a^2b^4d^3e^2\operatorname{sgn}(bx+a)-10\,a^3b^3d^2e^3\operatorname{sgn}(bx+a)+5\,a^4b^2de^4\mathrm{s}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="giac"
)
```

```
[Out] -6*(b^6*d^5*sgn(b*x + a) - 5*a*b^5*d^4*e*sgn(b*x + a) + 10*a^2*b^4*d^3*e^2*
sgn(b*x + a) - 10*a^3*b^3*d^2*e^3*sgn(b*x + a) + 5*a^4*b^2*d*e^4*sgn(b*x +
a) - a^5*b*e^5*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) + 1/10*(2*b^6*x^5*e^8
*sgn(b*x + a) - 5*b^6*d*x^4*e^7*sgn(b*x + a) + 10*b^6*d^2*x^3*e^6*sgn(b*x +
 a) - 20*b^6*d^3*x^2*e^5*sgn(b*x + a) + 50*b^6*d^4*x*e^4*sgn(b*x + a) + 15*
a*b^5*x^4*e^8*sgn(b*x + a) - 40*a*b^5*d*x^3*e^7*sgn(b*x + a) + 90*a*b^5*d^2
*x^2*e^6*sgn(b*x + a) - 240*a*b^5*d^3*x*e^5*sgn(b*x + a) + 50*a^2*b^4*x^3*e
^8*sgn(b*x + a) - 150*a^2*b^4*d*x^2*e^7*sgn(b*x + a) + 450*a^2*b^4*d^2*x*e^
6*sgn(b*x + a) + 100*a^3*b^3*x^2*e^8*sgn(b*x + a) - 400*a^3*b^3*d*x*e^7*sgn
(b*x + a) + 150*a^4*b^2*x*e^8*sgn(b*x + a))*e^(-10) - (b^6*d^6*sgn(b*x + a)
 - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 20*a^3*b^
3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 6*a^5*b*d*e^5*sg
n(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)
```

maple [B] time = 0.07, size = 601, normalized size = 1.74

$$\left((bx+a)^{2}\right)^{\frac{5}{2}} (2b^{6}e^{6}x^{6}+15a\,b^{5}e^{6}x^{5}-3b^{6}d\,e^{5}x^{5}+50a^{2}b^{4}e^{6}x^{4}-25a\,b^{5}d\,e^{5}x^{4}+5b^{6}d^{2}e^{4}x^{4}+100a^{3}b^{3}e^{6}x^{3}-100a^{2}b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 1/10*((b*x+a)^2)^(5/2)*(2*b^6*e^6*x^6+600*ln(e*x+d)*x*a^3*b^3*d^2*e^4+300*l
n(e*x+d)*x*a*b^5*d^4*e^2-300*ln(e*x+d)*x*a^4*b^2*d*e^5-600*ln(e*x+d)*x*a^2*
b^4*d^3*e^3-60*b^6*d^6*ln(e*x+d)+300*a*b^5*d^5*e*ln(e*x+d)-150*a*b^5*d^3*e^
3*x^2+150*a^4*b^2*d*e^5*x-400*a^3*b^3*d^2*e^4*x+450*a^2*b^4*d^3*e^3*x-240*a
*b^5*d^4*e^2*x+60*d*e^5*a^5*b-10*b^6*d^6-10*a^6*e^6-150*a^4*b^2*d^2*e^4+200
*a^3*b^3*d^3*e^3-150*a^2*b^4*d^4*e^2+60*a*b^5*d^5*e-600*a^2*b^4*d^4*e^2*ln(
e*x+d)-25*a*b^5*d*e^5*x^4-100*a^2*b^4*d*e^5*x^3-10*b^6*d^3*e^3*x^3+15*a*b^5
*e^6*x^5-3*b^6*d*e^5*x^5+50*a^2*b^4*e^6*x^4+5*b^6*d^2*e^4*x^4+100*a^3*b^3*e
^6*x^3+600*a^3*b^3*d^3*e^3*ln(e*x+d)+150*a^4*b^2*e^6*x^2+30*b^6*d^4*e^2*x^2
+60*a^5*b*d*e^5*ln(e*x+d)-300*a^4*b^2*d^2*e^4*ln(e*x+d)+50*a*b^5*d^2*e^4*x^
3-300*a^3*b^3*d*e^5*x^2+300*a^2*b^4*d^2*e^4*x^2+50*b^6*d^5*e*x+60*ln(e*x+d)
*x*a^5*b*e^6-60*ln(e*x+d)*x*b^6*d^5*e)/(b*x+a)^5/e^7/(e*x+d)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**2, x)
```

3.2000 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=347

$$\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{2e^7(a+bx)(d+ex)^2}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4\log(d+ex)}{e^7(a+bx)}+$$

```
[Out] -20*b^3*(-a*e+b*d)^3*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-1/2*(-a*e+b*d)^6*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2+6*b*(-a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(
b*x+a)/(e*x+d)+15/2*b^4*(-a*e+b*d)^2*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)-2*b^5*(-a*e+b*d)*(e*x+d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/4*b^6*(e*x+d)^
4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+15*b^2*(-a*e+b*d)^4*ln(e*x+d)*((b*x+a)^2)^(
1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.26, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}{4e^7(a+bx)}-\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3(bd-ae)}{e^7(a+bx)}+\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-}{2e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (-20*b^3*(b*d - a*e)^3*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - (
(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2)
+ (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x
)) + (15*b^4*(b*d - a*e)^2*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^
7*(a + b*x)) - (2*b^5*(b*d - a*e)*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(e^7*(a + b*x)) + (b^6*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*
(a + b*x)) + (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*
x])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^3}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^3}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigl(-\frac{20b^3(bd-ae)^3}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^3}-\frac{6b(bd-ae)^5}{e^6(d+ex)^2}+\frac{15b^2(bd-}{e^6(d+e}}{ab+b^2x}$$

$$= -\frac{20b^3(bd-ae)^3x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{2e^7(a+bx)(d+ex)^2}$$

Mathematica [**A**] time = 0.14, size = 321, normalized size = 0.93

$$\sqrt{(a+bx)^2}\,\Bigl(-2a^6e^6-12a^5be^5(d+2ex)+30a^4b^2de^4(3d+4ex)+40a^3b^3e^3\left(-5d^3-4d^2ex+4de^2x^2+2e^3x^3\right)+$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(-2*a^6*e^6 - 12*a^5*b*e^5*(d + 2*e*x) + 30*a^4*b^2*d*e^
4*(3*d + 4*e*x) + 40*a^3*b^3*e^3*(-5*d^3 - 4*d^2*e*x + 4*d*e^2*x^2 + 2*e^3*
x^3) + 30*a^2*b^4*e^2*(7*d^4 + 2*d^3*e*x - 11*d^2*e^2*x^2 - 4*d*e^3*x^3 + e
^4*x^4) + 4*a*b^5*e*(-27*d^5 + 6*d^4*e*x + 63*d^3*e^2*x^2 + 20*d^2*e^3*x^3
- 5*d*e^4*x^4 + 2*e^5*x^5) + b^6*(22*d^6 - 16*d^5*e*x - 68*d^4*e^2*x^2 - 20
*d^3*e^3*x^3 + 5*d^2*e^4*x^4 - 2*d*e^5*x^5 + e^6*x^6) + 60*b^2*(b*d - a*e)^
4*(d + e*x)^2*Log[d + e*x]))/(4*e^7*(a + b*x)*(d + e*x)^2)
```

fricas [**B**] time = 1.98, size = 548, normalized size = 1.58

$$b^6e^6x^6+22\,b^6d^6-108\,ab^5d^5e+210\,a^2b^4d^4e^2-200\,a^3b^3d^3e^3+90\,a^4b^2d^2e^4-12\,a^5bde^5-2\,a^6e^6-2\,\Bigl(b^6de^5-4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="frica
s")
```

```
[Out] 1/4*(b^6*e^6*x^6 + 22*b^6*d^6 - 108*a*b^5*d^5*e + 210*a^2*b^4*d^4*e^2 - 200
*a^3*b^3*d^3*e^3 + 90*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 2*a^6*e^6 - 2*(b^6
*d*e^5 - 4*a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - 4*a*b^5*d*e^5 + 6*a^2*b^4*e^6)
*x^4 - 20*(b^6*d^3*e^3 - 4*a*b^5*d^2*e^4 + 6*a^2*b^4*d*e^5 - 4*a^3*b^3*e^6)
*x^3 - 2*(34*b^6*d^4*e^2 - 126*a*b^5*d^3*e^3 + 165*a^2*b^4*d^2*e^4 - 80*a^3
*b^3*d*e^5)*x^2 - 4*(4*b^6*d^5*e - 6*a*b^5*d^4*e^2 - 15*a^2*b^4*d^3*e^3 + 4
0*a^3*b^3*d^2*e^4 - 30*a^4*b^2*d*e^5 + 6*a^5*b*e^6)*x + 60*(b^6*d^6 - 4*a*b
^5*d^5*e + 6*a^2*b^4*d^4*e^2 - 4*a^3*b^3*d^3*e^3 + a^4*b^2*d^2*e^4 + (b^6*d
^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5 + a^4*b^2*e^
6)*x^2 + 2*(b^6*d^5*e - 4*a*b^5*d^4*e^2 + 6*a^2*b^4*d^3*e^3 - 4*a^3*b^3*d^2
*e^4 + a^4*b^2*d*e^5)*x)*log(e*x + d))/(e^9*x^2 + 2*d*e^8*x + d^2*e^7)
```

giac [**A**] time = 0.19, size = 509, normalized size = 1.47

$$15\,\Bigl(b^6d^4\mathrm{sgn}\left(bx+a\right)-4\,ab^5d^3e\mathrm{sgn}\left(bx+a\right)+6\,a^2b^4d^2e^2\mathrm{sgn}\left(bx+a\right)-4\,a^3b^3de^3\mathrm{sgn}\left(bx+a\right)+a^4b^2e^4\mathrm{sgn}\,(bx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="giac"
)
```

```
[Out] 15*(b^6*d^4*sgn(b*x + a) - 4*a*b^5*d^3*e*sgn(b*x + a) + 6*a^2*b^4*d^2*e^2*s
gn(b*x + a) - 4*a^3*b^3*d*e^3*sgn(b*x + a) + a^4*b^2*e^4*sgn(b*x + a))*e^(-
7)*log(abs(x*e + d)) + 1/4*(b^6*x^4*e^9*sgn(b*x + a) - 4*b^6*d*x^3*e^8*sgn(
b*x + a) + 12*b^6*d^2*x^2*e^7*sgn(b*x + a) - 40*b^6*d^3*x*e^6*sgn(b*x + a)
+ 8*a*b^5*x^3*e^9*sgn(b*x + a) - 36*a*b^5*d*x^2*e^8*sgn(b*x + a) + 144*a*b^
5*d^2*x*e^7*sgn(b*x + a) + 30*a^2*b^4*x^2*e^9*sgn(b*x + a) - 180*a^2*b^4*d*
x*e^8*sgn(b*x + a) + 80*a^3*b^3*x*e^9*sgn(b*x + a))*e^(-12) + 1/2*(11*b^6*d
^6*sgn(b*x + a) - 54*a*b^5*d^5*e*sgn(b*x + a) + 105*a^2*b^4*d^4*e^2*sgn(b*x
 + a) - 100*a^3*b^3*d^3*e^3*sgn(b*x + a) + 45*a^4*b^2*d^2*e^4*sgn(b*x + a)
- 6*a^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a) + 12*(b^6*d^5*e*sgn(b*x
 + a) - 5*a*b^5*d^4*e^2*sgn(b*x + a) + 10*a^2*b^4*d^3*e^3*sgn(b*x + a) - 10
*a^3*b^3*d^2*e^4*sgn(b*x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) - a^5*b*e^6*sg
n(b*x + a))*x)*e^(-7)/(x*e + d)^2
```

maple [**B**] time = 0.07, size = 669, normalized size = 1.93

$$\frac{\left(\left(bx+a\right)^{2}\right)^{\frac{5}{2}} \left(b^{6} e^{6} x^{6}+8 a \,b^{5} e^{6} x^{5}-2 b^{6} d \,e^{5} x^{5}+30 a^{2} b^{4} e^{6} x^{4}-20 a \,b^{5} d \,e^{5} x^{4}+5 b^{6} d^{2} e^{4} x^{4}+60 a^{4} b^{2} e^{6} x^{2} \ln \left(ex+d\right)-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x)
```

```
[Out] 1/4*((b*x+a)^2)^(5/2)*(b^6*e^6*x^6-240*ln(e*x+d)*x^2*a^3*b^3*d*e^5+360*ln(e
*x+d)*x^2*a^2*b^4*d^2*e^4-240*ln(e*x+d)*x^2*a*b^5*d^3*e^3-480*a^3*b^3*d^2*e
^4*x*ln(e*x+d)-480*a*b^5*d^4*e^2*x*ln(e*x+d)+120*a^4*b^2*d*e^5*x*ln(e*x+d)+
720*a^2*b^4*d^3*e^3*x*ln(e*x+d)+60*b^6*d^6*ln(e*x+d)-240*a*b^5*d^5*e*ln(e*x
+d)+252*a*b^5*d^3*e^3*x^2+120*a^4*b^2*d*e^5*x-160*a^3*b^3*d^2*e^4*x+60*a^2*
b^4*d^3*e^3*x+24*a*b^5*d^4*e^2*x-12*a^5*b*d*e^5+22*b^6*d^6-2*a^6*e^6+90*a^4
*b^2*d^2*e^4-200*a^3*b^3*d^3*e^3+210*a^2*b^4*d^4*e^2-108*a*b^5*d^5*e+360*a^
2*b^4*d^4*e^2*ln(e*x+d)-20*a*b^5*d*e^5*x^4-120*a^2*b^4*d*e^5*x^3-20*b^6*d^3
*e^3*x^3+8*a*b^5*e^6*x^5-2*b^6*d*e^5*x^5+30*a^2*b^4*e^6*x^4+5*b^6*d^2*e^4*x
^4+80*a^3*b^3*e^6*x^3-240*a^3*b^3*d^3*e^3*ln(e*x+d)-68*b^6*d^4*e^2*x^2-24*a
^5*b*e^6*x+60*a^4*b^2*d^2*e^4*ln(e*x+d)+80*a*b^5*d^2*e^4*x^3+160*a^3*b^3*d*
e^5*x^2-330*a^2*b^4*d^2*e^4*x^2+60*ln(e*x+d)*x^2*a^4*b^2*e^6+60*ln(e*x+d)*x
^2*b^6*d^4*e^2-16*b^6*d^5*e*x+120*b^6*d^5*e*x*ln(e*x+d))/(b*x+a)^5/e^7/(e*x
+d)^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^3, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**3, x)
```

3.2001 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=345

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^2}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^3}+\frac{b^6\sqrt{a^2+2}{3}$$

```
[Out] 15*b^4*(-a*e+b*d)^2*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-1/3*(-a*e+b*d)^6*((b*x+
a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3+3*b*(-a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b
*x+a)/(e*x+d)^2-15*b^2*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)-3
*b^5*(-a*e+b*d)*(e*x+d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+1/3*b^6*(e*x+d)^3*(
(b*x+a)^2)^(1/2)/e^7/(b*x+a)-20*b^3*(-a*e+b*d)^3*ln(e*x+d)*((b*x+a)^2)^(1/2
)/e^7/(b*x+a)
```

Rubi [A] time = 0.25, antiderivative size = 345, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}{3e^7(a+bx)}-\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)}{e^7(a+bx)}+\frac{15b^4x\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^6(a+bx)}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (15*b^4*(b*d - a*e)^2*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((
b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^3) +
 (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)
^2) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(
d + e*x)) - (3*b^5*(b*d - a*e)*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)) + (b^6*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
+ b*x)) - (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])
/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^4}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^4}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^4}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{15b^4(bd-ae)^2}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^4}-\frac{6b(bd-ae)^5}{e^6(d+ex)^3}+\frac{15b^2(bd-ae}{e^6(d+ex)^2}\right.}{ab+b^2x}$$

$$= \frac{15b^4(bd-ae)^2x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)} - \frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^3} +$$

Mathematica [**A**] time = 0.15, size = 320, normalized size = 0.93

$$-\frac{\sqrt{(a+bx)^2}\left(a^6e^6+3a^5be^5(d+3ex)+15a^4b^2e^4\left(d^2+3dex+3e^2x^2\right)-10a^3b^3de^3\left(11d^2+27dex+18e^2x^2\right)+\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] -1/3*(Sqrt[(a + b*x)^2]*(a^6*e^6 + 3*a^5*b*e^5*(d + 3*e*x) + 15*a^4*b^2*e^4
*(d^2 + 3*d*e*x + 3*e^2*x^2) - 10*a^3*b^3*d*e^3*(11*d^2 + 27*d*e*x + 18*e^2
*x^2) + 15*a^2*b^4*e^2*(13*d^4 + 27*d^3*e*x + 9*d^2*e^2*x^2 - 9*d*e^3*x^3 -
 3*e^4*x^4) - 3*a*b^5*e*(47*d^5 + 81*d^4*e*x - 9*d^3*e^2*x^2 - 63*d^2*e^3*x
^3 - 15*d*e^4*x^4 + 3*e^5*x^5) + b^6*(37*d^6 + 51*d^5*e*x - 39*d^4*e^2*x^2
- 73*d^3*e^3*x^3 - 15*d^2*e^4*x^4 + 3*d*e^5*x^5 - e^6*x^6) + 60*b^3*(b*d -
a*e)^3*(d + e*x)^3*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^3)
```

fricas [**B**] time = 0.82, size = 576, normalized size = 1.67

$$\frac{b^6e^6x^6-37\,b^6d^6+141\,ab^5d^5e-195\,a^2b^4d^4e^2+110\,a^3b^3d^3e^3-15\,a^4b^2d^2e^4-3\,a^5bde^5-a^6e^6-3\left(b^6de^5-3\,ab^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="frica
s")
```

```
[Out] 1/3*(b^6*e^6*x^6 - 37*b^6*d^6 + 141*a*b^5*d^5*e - 195*a^2*b^4*d^4*e^2 + 110
*a^3*b^3*d^3*e^3 - 15*a^4*b^2*d^2*e^4 - 3*a^5*b*d*e^5 - a^6*e^6 - 3*(b^6*d*
e^5 - 3*a*b^5*e^6)*x^5 + 15*(b^6*d^2*e^4 - 3*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x
^4 + (73*b^6*d^3*e^3 - 189*a*b^5*d^2*e^4 + 135*a^2*b^4*d*e^5)*x^3 + 3*(13*b
^6*d^4*e^2 - 9*a*b^5*d^3*e^3 - 45*a^2*b^4*d^2*e^4 + 60*a^3*b^3*d*e^5 - 15*a
^4*b^2*e^6)*x^2 - 3*(17*b^6*d^5*e - 81*a*b^5*d^4*e^2 + 135*a^2*b^4*d^3*e^3
- 90*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5 + 3*a^5*b*e^6)*x - 60*(b^6*d^6 - 3*
a*b^5*d^5*e + 3*a^2*b^4*d^4*e^2 - a^3*b^3*d^3*e^3 + (b^6*d^3*e^3 - 3*a*b^5*
d^2*e^4 + 3*a^2*b^4*d*e^5 - a^3*b^3*e^6)*x^3 + 3*(b^6*d^4*e^2 - 3*a*b^5*d^3
*e^3 + 3*a^2*b^4*d^2*e^4 - a^3*b^3*d*e^5)*x^2 + 3*(b^6*d^5*e - 3*a*b^5*d^4*
e^2 + 3*a^2*b^4*d^3*e^3 - a^3*b^3*d^2*e^4)*x)*log(e*x + d))/(e^10*x^3 + 3*d
*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)
```

giac [**A**] time = 0.19, size = 503, normalized size = 1.46

$$-20\left(b^6d^3\operatorname{sgn}(bx+a)-3\,ab^5d^2e\operatorname{sgn}(bx+a)+3\,a^2b^4de^2\operatorname{sgn}(bx+a)-a^3b^3e^3\operatorname{sgn}(bx+a)\right)e^{(-7)}\log\left(|xe+d|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="giac"
)
```

```
[Out] -20*(b^6*d^3*sgn(b*x + a) - 3*a*b^5*d^2*e*sgn(b*x + a) + 3*a^2*b^4*d*e^2*sg
n(b*x + a) - a^3*b^3*e^3*sgn(b*x + a))*e^(-7)*log(abs(x*e + d)) + 1/3*(b^6*
x^3*e^8*sgn(b*x + a) - 6*b^6*d*x^2*e^7*sgn(b*x + a) + 30*b^6*d^2*x*e^6*sgn(
b*x + a) + 9*a*b^5*x^2*e^8*sgn(b*x + a) - 72*a*b^5*d*x*e^7*sgn(b*x + a) + 4
5*a^2*b^4*x*e^8*sgn(b*x + a))*e^(-12) - 1/3*(37*b^6*d^6*sgn(b*x + a) - 141*
a*b^5*d^5*e*sgn(b*x + a) + 195*a^2*b^4*d^4*e^2*sgn(b*x + a) - 110*a^3*b^3*d
^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3*a^5*b*d*e^5*sgn(b
*x + a) + a^6*e^6*sgn(b*x + a) + 45*(b^6*d^4*e^2*sgn(b*x + a) - 4*a*b^5*d^3
*e^3*sgn(b*x + a) + 6*a^2*b^4*d^2*e^4*sgn(b*x + a) - 4*a^3*b^3*d*e^5*sgn(b*
x + a) + a^4*b^2*e^6*sgn(b*x + a))*x^2 + 9*(9*b^6*d^5*e*sgn(b*x + a) - 35*a
*b^5*d^4*e^2*sgn(b*x + a) + 50*a^2*b^4*d^3*e^3*sgn(b*x + a) - 30*a^3*b^3*d^
2*e^4*sgn(b*x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) + a^5*b*e^6*sgn(b*x + a))
*x)*e^(-7)/(x*e + d)^3
```

maple [B] time = 0.11, size = 692, normalized size = 2.01

$$\left((bx+a)^2\right)^{\frac{5}{2}}\left(b^6e^6x^6+9a\,b^5e^6x^5-3b^6d\,e^5x^5+60a^3b^3e^6x^3\ln(ex+d)-180a^2b^4d\,e^5x^3\ln(ex+d)+45a^2b^4e^6x^4+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x)
```

```
[Out] 1/3*((b*x+a)^2)^(5/2)*(b^6*e^6*x^6+180*ln(e*x+d)*x^3*a*b^5*d^2*e^4-180*ln(e
*x+d)*x^3*a^2*b^4*d*e^5+180*a^3*b^3*d*e^5*x^2*ln(e*x+d)-540*a^2*b^4*d^2*e^4
*x^2*ln(e*x+d)+540*a*b^5*d^3*e^3*x^2*ln(e*x+d)+180*a^3*b^3*d^2*e^4*x*ln(e*x
+d)+540*a*b^5*d^4*e^2*x*ln(e*x+d)-540*a^2*b^4*d^3*e^3*x*ln(e*x+d)-60*b^6*d^
6*ln(e*x+d)+180*a*b^5*d^5*e*ln(e*x+d)-27*a*b^5*d^3*e^3*x^2-45*a^4*b^2*d*e^5
*x+270*a^3*b^3*d^2*e^4*x-405*a^2*b^4*d^3*e^3*x+243*a*b^5*d^4*e^2*x-3*a^5*b*
d*e^5-37*b^6*d^6-a^6*e^6-15*a^4*b^2*d^2*e^4+110*a^3*b^3*d^3*e^3-195*a^2*b^4
*d^4*e^2+141*a*b^5*d^5*e-180*a^2*b^4*d^4*e^2*ln(e*x+d)-45*a*b^5*d*e^5*x^4+1
35*a^2*b^4*d*e^5*x^3+73*b^6*d^3*e^3*x^3+9*a*b^5*e^6*x^5-3*b^6*d*e^5*x^5+45*
a^2*b^4*e^6*x^4+15*b^6*d^2*e^4*x^4+60*a^3*b^3*d^3*e^3*ln(e*x+d)-45*a^4*b^2*
e^6*x^2+39*b^6*d^4*e^2*x^2-9*a^5*b*e^6*x-189*a*b^5*d^2*e^4*x^3+180*a^3*b^3*
d*e^5*x^2-135*a^2*b^4*d^2*e^4*x^2-180*b^6*d^4*e^2*x^2*ln(e*x+d)-51*b^6*d^5*
e*x-180*b^6*d^5*e*x*ln(e*x+d)+60*ln(e*x+d)*x^3*a^3*b^3*e^6-60*ln(e*x+d)*x^3
*b^6*d^3*e^3)/(b*x+a)^5/e^7/(e*x+d)^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^4,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**4, x)
```

3.2002 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=344

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^2}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^3}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{4e^7(a+bx)(d+ex)^4}+\frac{b^6x^2\sqrt{a^2+}}{2e^5(}$$

```
[Out] -b^5*(-6*a*e+5*b*d)*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)+1/2*b^6*x^2*((b*x+a)^2)
^(1/2)/e^5/(b*x+a)-1/4*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^4
+2*b*(-a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3-15/2*b^2*(-a*e+b*
d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2+20*b^3*(-a*e+b*d)^3*((b*x+a)^2
)^(1/2)/e^7/(b*x+a)/(e*x+d)+15*b^4*(-a*e+b*d)^2*ln(e*x+d)*((b*x+a)^2)^(1/2)
/e^7/(b*x+a)
```

Rubi **[A]** time = 0.24, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^5x\sqrt{a^2+2abx+b^2x^2}\,(5bd-6ae)}{e^6(a+bx)}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)}-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^2}+2b$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -((b^5*(5*b*d - 6*a*e)*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x))) +
(b^6*x^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^5*(a + b*x)) - ((b*d - a*e)^6*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^4) + (2*b*(b*d -
a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^3) - (15*b^2
*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2)
 + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d +
 e*x)) + (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^5}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^5}\,dx}{b^4\left(ab+b^2x\right)} \\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^5}\,dx}{ab+b^2x} \\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(-\frac{b^5(5bd-6ae)}{e^6}+\frac{b^6x}{e^5}+\frac{(-bd+ae)^6}{e^6(d+ex)^5}-\frac{6b(bd-ae)^5}{e^6(d+ex)^4}+\frac{15}{}\right.}{ab+b^2x} \\ &= -\frac{b^5(5bd-6ae)x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}+\frac{b^6x^2\sqrt{a^2+2abx+b^2x^2}}{2e^5(a+bx)}-\frac{(bd-}{}\end{aligned}$$

Mathematica [**A**] time = 0.15, size = 318, normalized size = 0.92

$$-\frac{\sqrt{(a+bx)^2}\,\left(a^6e^6+2a^5be^5(d+4ex)+5a^4b^2e^4\left(d^2+4dex+6e^2x^2\right)+20a^3b^3e^3\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] -1/4*(Sqrt[(a + b*x)^2]*(a^6*e^6 + 2*a^5*b*e^5*(d + 4*e*x) + 5*a^4*b^2*e^4*
(d^2 + 4*d*e*x + 6*e^2*x^2) + 20*a^3*b^3*e^3*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2
 + 4*e^3*x^3) - 5*a^2*b^4*d*e^2*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e
^3*x^3) + 2*a*b^5*e*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3*x^
3 - 48*d*e^4*x^4 - 12*e^5*x^5) + b^6*(-57*d^6 - 168*d^5*e*x - 132*d^4*e^2*x
^2 + 32*d^3*e^3*x^3 + 68*d^2*e^4*x^4 + 12*d*e^5*x^5 - 2*e^6*x^6) - 60*b^4*(
b*d - a*e)^2*(d + e*x)^4*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^4)
```

fricas [**B**] time = 1.08, size = 571, normalized size = 1.66

$$\frac{2\,b^6e^6x^6+57\,b^6d^6-154\,ab^5d^5e+125\,a^2b^4d^4e^2-20\,a^3b^3d^3e^3-5\,a^4b^2d^2e^4-2\,a^5bde^5-a^6e^6-12\left(b^6de^5-2\,ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="frica
s")
```

```
[Out] 1/4*(2*b^6*e^6*x^6 + 57*b^6*d^6 - 154*a*b^5*d^5*e + 125*a^2*b^4*d^4*e^2 - 2
0*a^3*b^3*d^3*e^3 - 5*a^4*b^2*d^2*e^4 - 2*a^5*b*d*e^5 - a^6*e^6 - 12*(b^6*d
*e^5 - 2*a*b^5*e^6)*x^5 - 4*(17*b^6*d^2*e^4 - 24*a*b^5*d*e^5)*x^4 - 16*(2*b
^6*d^3*e^3 + 6*a*b^5*d^2*e^4 - 15*a^2*b^4*d*e^5 + 5*a^3*b^3*e^6)*x^3 + 6*(2
2*b^6*d^4*e^2 - 84*a*b^5*d^3*e^3 + 90*a^2*b^4*d^2*e^4 - 20*a^3*b^3*d*e^5 -
5*a^4*b^2*e^6)*x^2 + 4*(42*b^6*d^5*e - 124*a*b^5*d^4*e^2 + 110*a^2*b^4*d^3*
e^3 - 20*a^3*b^3*d^2*e^4 - 5*a^4*b^2*d*e^5 - 2*a^5*b*e^6)*x + 60*(b^6*d^6 -
 2*a*b^5*d^5*e + a^2*b^4*d^4*e^2 + (b^6*d^2*e^4 - 2*a*b^5*d*e^5 + a^2*b^4*e
^6)*x^4 + 4*(b^6*d^3*e^3 - 2*a*b^5*d^2*e^4 + a^2*b^4*d*e^5)*x^3 + 6*(b^6*d^
4*e^2 - 2*a*b^5*d^3*e^3 + a^2*b^4*d^2*e^4)*x^2 + 4*(b^6*d^5*e - 2*a*b^5*d^4
*e^2 + a^2*b^4*d^3*e^3)*x)*log(e*x + d))/(e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e
^9*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [**A**] time = 0.23, size = 504, normalized size = 1.47

$$15\left(b^6d^2\mathrm{sgn}\,(bx+a)-2\,ab^5de\mathrm{sgn}\,(bx+a)+a^2b^4e^2\mathrm{sgn}\,(bx+a)\right)e^{(-7)}\log\left(|xe+d|\right)+\frac{1}{2}\left(b^6x^2e^5\mathrm{sgn}\,(bx+a)-1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="giac"
)
```

```
[Out] 15*(b^6*d^2*sgn(b*x + a) - 2*a*b^5*d*e*sgn(b*x + a) + a^2*b^4*e^2*sgn(b*x +
 a))*e^(-7)*log(abs(x*e + d)) + 1/2*(b^6*x^2*e^5*sgn(b*x + a) - 10*b^6*d*x*
e^4*sgn(b*x + a) + 12*a*b^5*x*e^5*sgn(b*x + a))*e^(-10) + 1/4*(57*b^6*d^6*s
gn(b*x + a) - 154*a*b^5*d^5*e*sgn(b*x + a) + 125*a^2*b^4*d^4*e^2*sgn(b*x +
a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) - 5*a^4*b^2*d^2*e^4*sgn(b*x + a) - 2*a
^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a) + 80*(b^6*d^3*e^3*sgn(b*x +
a) - 3*a*b^5*d^2*e^4*sgn(b*x + a) + 3*a^2*b^4*d*e^5*sgn(b*x + a) - a^3*b^3*
e^6*sgn(b*x + a))*x^3 + 30*(7*b^6*d^4*e^2*sgn(b*x + a) - 20*a*b^5*d^3*e^3*s
gn(b*x + a) + 18*a^2*b^4*d^2*e^4*sgn(b*x + a) - 4*a^3*b^3*d*e^5*sgn(b*x + a
) - a^4*b^2*e^6*sgn(b*x + a))*x^2 + 4*(47*b^6*d^5*e*sgn(b*x + a) - 130*a*b^
5*d^4*e^2*sgn(b*x + a) + 110*a^2*b^4*d^3*e^3*sgn(b*x + a) - 20*a^3*b^3*d^2*
e^4*sgn(b*x + a) - 5*a^4*b^2*d*e^5*sgn(b*x + a) - 2*a^5*b*e^6*sgn(b*x + a))
*x)*e^(-7)/(x*e + d)^4
```

maple [B] time = 0.08, size = 670, normalized size = 1.95

$$\left((bx+a)^2\right)^{\frac{5}{2}} \left(2b^6e^6x^6 + 60a^2b^4e^6x^4 \ln(ex+d) - 120a\,b^5d\,e^5x^4 \ln(ex+d) + 24a\,b^5e^6x^5 + 60b^6d^2e^4x^4 \ln(ex+d) -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] 1/4*((b*x+a)^2)^(5/2)*(2*b^6*e^6*x^6-120*ln(e*x+d)*x^4*a*b^5*d*e^5-480*a*b^
5*d^2*e^4*x^3*ln(e*x+d)+240*a^2*b^4*d*e^5*x^3*ln(e*x+d)+360*a^2*b^4*d^2*e^4
*x^2*ln(e*x+d)-720*a*b^5*d^3*e^3*x^2*ln(e*x+d)-480*a*b^5*d^4*e^2*x*ln(e*x+d
)+240*a^2*b^4*d^3*e^3*x*ln(e*x+d)+60*b^6*d^6*ln(e*x+d)-120*a*b^5*d^5*e*ln(e
*x+d)-504*a*b^5*d^3*e^3*x^2-20*a^4*b^2*d*e^5*x-80*a^3*b^3*d^2*e^4*x+440*a^2
*b^4*d^3*e^3*x-496*a*b^5*d^4*e^2*x-2*a^5*b*d*e^5+57*b^6*d^6-a^6*e^6-5*a^4*b
^2*d^2*e^4-20*a^3*b^3*d^3*e^3+125*a^2*b^4*d^4*e^2-154*a*b^5*d^5*e+60*a^2*b^
4*d^4*e^2*ln(e*x+d)+96*a*b^5*d*e^5*x^4+240*a^2*b^4*d*e^5*x^3-32*b^6*d^3*e^3
*x^3+24*a*b^5*e^6*x^5-12*b^6*d*e^5*x^5-68*b^6*d^2*e^4*x^4-80*a^3*b^3*e^6*x^
3-30*a^4*b^2*e^6*x^2+132*b^6*d^4*e^2*x^2-8*a^5*b*e^6*x-96*a*b^5*d^2*e^4*x^3
-120*a^3*b^3*d*e^5*x^2+540*a^2*b^4*d^2*e^4*x^2+360*b^6*d^4*e^2*x^2*ln(e*x+d
)+60*ln(e*x+d)*x^4*a^2*b^4*e^6+60*ln(e*x+d)*x^4*b^6*d^2*e^4+168*b^6*d^5*e*x
+240*b^6*d^5*e*x*ln(e*x+d)+240*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*
x+d)^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^5,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{(d+e\,x)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**5, x)
```

3.2003 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=344

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^3}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^4}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^5}+\frac{b^6x\sqrt{a^2+2}}{e^6(a}$$

```
[Out] b^6*x*((b*x+a)^2)^(1/2)/e^6/(b*x+a)-1/5*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/
(b*x+a)/(e*x+d)^5+3/2*b*(-a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^
4-5*b^2*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^3+10*b^3*(-a*e+b
*d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^2-15*b^4*(-a*e+b*d)^2*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)-6*b^5*(-a*e+b*d)*ln(e*x+d)*((b*x+a)^2)^(1/2)/e
^7/(b*x+a)
```

Rubi [A] time = 0.23, antiderivative size = 344, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)}+\frac{10b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^7(a+bx)(d+ex)^2}-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^3}+3b\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] (b^6*x*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^6*(a + b*x)) - ((b*d - a*e)^6*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^5) + (3*b*(b*d - a*e)
^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^4) - (5*b^2*(b
*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^3) + (1
0*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)
^2) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(
d + e*x)) - (6*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]*Log[d + e*x])/
(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^6}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^6}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^6}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{b^6}{e^6}+\frac{(-bd+ae)^6}{e^6(d+ex)^6}-\frac{6b(bd-ae)^5}{e^6(d+ex)^5}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^4}-\frac{20b^3}{e^6(}\right.}{ab+b^2x}$$

$$= \frac{b^6x\sqrt{a^2+2abx+b^2x^2}}{e^6(a+bx)}-\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}+\frac{3b(bd-ae)^5}{2e^7(a}$$

Mathematica **[A]** time = 0.16, size = 315, normalized size = 0.92

$$-\frac{\sqrt{(a+bx)^2}\,\left(2a^6e^6+3a^5be^5(d+5ex)+5a^4b^2e^4\left(d^2+5dex+10e^2x^2\right)+10a^3b^3e^3\left(d^3+5d^2ex+10de^2x^2+10\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -1/10*(Sqrt[(a + b*x)^2]*(2*a^6*e^6 + 3*a^5*b*e^5*(d + 5*e*x) + 5*a^4*b^2*e
^4*(d^2 + 5*d*e*x + 10*e^2*x^2) + 10*a^3*b^3*e^3*(d^3 + 5*d^2*e*x + 10*d*e^
2*x^2 + 10*e^3*x^3) + 30*a^2*b^4*e^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10
*d*e^3*x^3 + 5*e^4*x^4) - a*b^5*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x
^2 + 900*d*e^3*x^3 + 300*e^4*x^4) + b^6*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2
*x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6) + 60*b
^5*(b*d - a*e)*(d + e*x)^5*Log[d + e*x]))/(e^7*(a + b*x)*(d + e*x)^5)
```

fricas **[B]** time = 0.79, size = 542, normalized size = 1.58

$$\frac{10\,b^6e^6x^6+50\,b^6de^5x^5-87\,b^6d^6+137\,ab^5d^5e-30\,a^2b^4d^4e^2-10\,a^3b^3d^3e^3-5\,a^4b^2d^2e^4-3\,a^5bde^5-2\,a^6e^6-5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="frica
s")
```

```
[Out] 1/10*(10*b^6*e^6*x^6 + 50*b^6*d*e^5*x^5 - 87*b^6*d^6 + 137*a*b^5*d^5*e - 30
*a^2*b^4*d^4*e^2 - 10*a^3*b^3*d^3*e^3 - 5*a^4*b^2*d^2*e^4 - 3*a^5*b*d*e^5 -
 2*a^6*e^6 - 50*(b^6*d^2*e^4 - 6*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x^4 - 100*(4*
b^6*d^3*e^3 - 9*a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 - 50*(12
*b^6*d^4*e^2 - 22*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 + 2*a^3*b^3*d*e^5 + a^4
*b^2*e^6)*x^2 - 5*(75*b^6*d^5*e - 125*a*b^5*d^4*e^2 + 30*a^2*b^4*d^3*e^3 +
10*a^3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 + 3*a^5*b*e^6)*x - 60*(b^6*d^6 - a*b^5
*d^5*e + (b^6*d*e^5 - a*b^5*e^6)*x^5 + 5*(b^6*d^2*e^4 - a*b^5*d*e^5)*x^4 +
10*(b^6*d^3*e^3 - a*b^5*d^2*e^4)*x^3 + 10*(b^6*d^4*e^2 - a*b^5*d^3*e^3)*x^2
 + 5*(b^6*d^5*e - a*b^5*d^4*e^2)*x)*log(e*x + d))/(e^12*x^5 + 5*d*e^11*x^4
+ 10*d^2*e^10*x^3 + 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)
```

giac **[A]** time = 0.20, size = 499, normalized size = 1.45

$$b^6xe^{(-6)}\operatorname{sgn}(bx+a)-6\left(b^6d\operatorname{sgn}(bx+a)-ab^5e\operatorname{sgn}(bx+a)\right)e^{(-7)}\log\left(|xe+d|\right)-\frac{\left(87\,b^6d^6\operatorname{sgn}(bx+a)-137\,ab^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="giac"
)
```

```
[Out] b^6*x*e^(-6)*sgn(b*x + a) - 6*(b^6*d*sgn(b*x + a) - a*b^5*e*sgn(b*x + a))*e
^(-7)*log(abs(x*e + d)) - 1/10*(87*b^6*d^6*sgn(b*x + a) - 137*a*b^5*d^5*e*s
gn(b*x + a) + 30*a^2*b^4*d^4*e^2*sgn(b*x + a) + 10*a^3*b^3*d^3*e^3*sgn(b*x
+ a) + 5*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3*a^5*b*d*e^5*sgn(b*x + a) + 2*a^6*
e^6*sgn(b*x + a) + 150*(b^6*d^2*e^4*sgn(b*x + a) - 2*a*b^5*d*e^5*sgn(b*x +
a) + a^2*b^4*e^6*sgn(b*x + a))*x^4 + 100*(5*b^6*d^3*e^3*sgn(b*x + a) - 9*a*
b^5*d^2*e^4*sgn(b*x + a) + 3*a^2*b^4*d*e^5*sgn(b*x + a) + a^3*b^3*e^6*sgn(b
*x + a))*x^3 + 50*(13*b^6*d^4*e^2*sgn(b*x + a) - 22*a*b^5*d^3*e^3*sgn(b*x +
 a) + 6*a^2*b^4*d^2*e^4*sgn(b*x + a) + 2*a^3*b^3*d*e^5*sgn(b*x + a) + a^4*b
^2*e^6*sgn(b*x + a))*x^2 + 5*(77*b^6*d^5*e*sgn(b*x + a) - 125*a*b^5*d^4*e^2
*sgn(b*x + a) + 30*a^2*b^4*d^3*e^3*sgn(b*x + a) + 10*a^3*b^3*d^2*e^4*sgn(b*
x + a) + 5*a^4*b^2*d*e^5*sgn(b*x + a) + 3*a^5*b*e^6*sgn(b*x + a))*x)*e^(-7)
/(x*e + d)^5
```

maple [B] time = 0.11, size = 603, normalized size = 1.75

$$\frac{\left((bx+a)^2\right)^{\frac{5}{2}} \left(60a\, b^5e^6x^5 \ln(ex+d) - 60b^6d\, e^5x^5 \ln(ex+d) + 10b^6e^6x^6 + 300a\, b^5d\, e^5x^4 \ln(ex+d) - 300b^6d^2e^4x^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] 1/10*((b*x+a)^2)^(5/2)*(10*b^6*e^6*x^6+300*a*b^5*d*e^5*x^4*ln(e*x+d)+600*a*
b^5*d^2*e^4*x^3*ln(e*x+d)+600*a*b^5*d^3*e^3*x^2*ln(e*x+d)+300*a*b^5*d^4*e^2
*x*ln(e*x+d)-60*b^6*d^6*ln(e*x+d)+60*a*b^5*d^5*e*ln(e*x+d)+1100*a*b^5*d^3*e
^3*x^2-25*a^4*b^2*d*e^5*x-50*a^3*b^3*d^2*e^4*x-150*a^2*b^4*d^3*e^3*x+625*a*
b^5*d^4*e^2*x-3*a^5*b*d*e^5-87*b^6*d^6-2*a^6*e^6-5*a^4*b^2*d^2*e^4-10*a^3*b
^3*d^3*e^3-30*a^2*b^4*d^4*e^2+137*a*b^5*d^5*e+300*a*b^5*d*e^5*x^4-300*a^2*b
^4*d*e^5*x^3-400*b^6*d^3*e^3*x^3+50*b^6*d*e^5*x^5-150*a^2*b^4*e^6*x^4-50*b^
6*d^2*e^4*x^4-100*a^3*b^3*e^6*x^3+60*ln(e*x+d)*x^5*a*b^5*e^6-50*a^4*b^2*e^6
*x^2-600*b^6*d^4*e^2*x^2-15*a^5*b*e^6*x+900*a*b^5*d^2*e^4*x^3-100*a^3*b^3*d
*e^5*x^2-300*a^2*b^4*d^2*e^4*x^2-60*ln(e*x+d)*x^5*b^6*d*e^5-600*b^6*d^4*e^2
*x^2*ln(e*x+d)-300*b^6*d^2*e^4*x^4*ln(e*x+d)-375*b^6*d^5*e*x-300*b^6*d^5*e*
x*ln(e*x+d)-600*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*x+d)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^6,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}{{(d+e\,x)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{5}{2}}}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**6,x)
[Out] Integral((a + b*x)*((a + b*x)**2)**(5/2)/(d + e*x)**6, x)
```

3.2004 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=356

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^4}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^5}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{6e^7(a+bx)(d+ex)^6}+\frac{b^6\sqrt{a^2+2}}{}$$

```
[Out] -1/6*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^6+6/5*b*(-a*e+b*d)^
5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^5-15/4*b^2*(-a*e+b*d)^4*((b*x+a)^2)
^(1/2)/e^7/(b*x+a)/(e*x+d)^4+20/3*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^7/(b
*x+a)/(e*x+d)^3-15/2*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)
^2+6*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)+b^6*ln(e*x+d)*((b
*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.21, antiderivative size = 356, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^7(a+bx)(d+ex)^2}+\frac{20b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^7(a+bx)(d+ex)^3}-\frac{15b^2\sqrt{a}}{4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^6
) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d +
 e*x)^5) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(a +
 b*x)*(d + e*x)^4) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
3*e^7*(a + b*x)*(d + e*x)^3) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^2) + (6*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)) + (b^6*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]*Log[d + e*x])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^7}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^7}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^7} - \frac{6b(bd-ae)^5}{e^6(d+ex)^6} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^5} - \frac{20b^3(bd-ae}{e^6(d+ex)^4}}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{6e^7(a+bx)(d+ex)^6} + \frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5} - \frac{15}{}$$

Mathematica [A] time = 0.17, size = 258, normalized size = 0.72

$$\frac{\sqrt{(a+bx)^2}\ \left((bd-ae)\left(10a^5e^5+2a^4be^4(11d+36ex)+a^3b^2e^3\left(37d^2+162dex+225e^2x^2\right)+a^2b^3e^2\left(57d^3+282\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] (Sqrt[(a + b*x)^2]*((b*d - a*e)*(10*a^5*e^5 + 2*a^4*b*e^4*(11*d + 36*e*x) +
 a^3*b^2*e^3*(37*d^2 + 162*d*e*x + 225*e^2*x^2) + a^2*b^3*e^2*(57*d^3 + 282
*d^2*e*x + 525*d*e^2*x^2 + 400*e^3*x^3) + a*b^4*e*(87*d^4 + 462*d^3*e*x + 9
75*d^2*e^2*x^2 + 1000*d*e^3*x^3 + 450*e^4*x^4) + b^5*(147*d^5 + 822*d^4*e*x
 + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) + 6
0*b^6*(d + e*x)^6*Log[d + e*x]))/(60*e^7*(a + b*x)*(d + e*x)^6)
```

fricas [A] time = 0.86, size = 492, normalized size = 1.38

$$\frac{147\,b^6d^6 - 60\,ab^5d^5e - 30\,a^2b^4d^4e^2 - 20\,a^3b^3d^3e^3 - 15\,a^4b^2d^2e^4 - 12\,a^5bde^5 - 10\,a^6e^6 + 360\left(b^6de^5 - ab^5e^6\right)x^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="frica
s")
```

```
[Out] 1/60*(147*b^6*d^6 - 60*a*b^5*d^5*e - 30*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^
3 - 15*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 10*a^6*e^6 + 360*(b^6*d*e^5 - a*b
^5*e^6)*x^5 + 450*(3*b^6*d^2*e^4 - 2*a*b^5*d*e^5 - a^2*b^4*e^6)*x^4 + 200*(
11*b^6*d^3*e^3 - 6*a*b^5*d^2*e^4 - 3*a^2*b^4*d*e^5 - 2*a^3*b^3*e^6)*x^3 + 7
5*(25*b^6*d^4*e^2 - 12*a*b^5*d^3*e^3 - 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5
- 3*a^4*b^2*e^6)*x^2 + 6*(137*b^6*d^5*e - 60*a*b^5*d^4*e^2 - 30*a^2*b^4*d^3
*e^3 - 20*a^3*b^3*d^2*e^4 - 15*a^4*b^2*d*e^5 - 12*a^5*b*e^6)*x + 60*(b^6*e^
6*x^6 + 6*b^6*d*e^5*x^5 + 15*b^6*d^2*e^4*x^4 + 20*b^6*d^3*e^3*x^3 + 15*b^6*
d^4*e^2*x^2 + 6*b^6*d^5*e*x + b^6*d^6)*log(e*x + d))/(e^13*x^6 + 6*d*e^12*x
^5 + 15*d^2*e^11*x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6
*e^7)
```

giac [A] time = 0.19, size = 507, normalized size = 1.42

$$b^6e^{(-7)}\log\left(|xe+d|\right)\operatorname{sgn}\left(bx+a\right) + \frac{\left(360\left(b^6de^4\operatorname{sgn}\left(bx+a\right) - ab^5e^5\operatorname{sgn}\left(bx+a\right)\right)x^5 + 450\left(3\,b^6d^2e^3\operatorname{sgn}\left(bx+a\right)\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="giac"
)
```

```
[Out] b^6*e^(-7)*log(abs(x*e + d))*sgn(b*x + a) + 1/60*(360*(b^6*d*e^4*sgn(b*x +
a) - a*b^5*e^5*sgn(b*x + a))*x^5 + 450*(3*b^6*d^2*e^3*sgn(b*x + a) - 2*a*b^
5*d*e^4*sgn(b*x + a) - a^2*b^4*e^5*sgn(b*x + a))*x^4 + 200*(11*b^6*d^3*e^2*
sgn(b*x + a) - 6*a*b^5*d^2*e^3*sgn(b*x + a) - 3*a^2*b^4*d*e^4*sgn(b*x + a)
- 2*a^3*b^3*e^5*sgn(b*x + a))*x^3 + 75*(25*b^6*d^4*e*sgn(b*x + a) - 12*a*b^
5*d^3*e^2*sgn(b*x + a) - 6*a^2*b^4*d^2*e^3*sgn(b*x + a) - 4*a^3*b^3*d*e^4*s
gn(b*x + a) - 3*a^4*b^2*e^5*sgn(b*x + a))*x^2 + 6*(137*b^6*d^5*sgn(b*x + a)
 - 60*a*b^5*d^4*e*sgn(b*x + a) - 30*a^2*b^4*d^3*e^2*sgn(b*x + a) - 20*a^3*b
^3*d^2*e^3*sgn(b*x + a) - 15*a^4*b^2*d*e^4*sgn(b*x + a) - 12*a^5*b*e^5*sgn(
b*x + a))*x + (147*b^6*d^6*sgn(b*x + a) - 60*a*b^5*d^5*e*sgn(b*x + a) - 30*
a^2*b^4*d^4*e^2*sgn(b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) - 15*a^4*b^2
*d^2*e^4*sgn(b*x + a) - 12*a^5*b*d*e^5*sgn(b*x + a) - 10*a^6*e^6*sgn(b*x +
a))*e^(-1))*e^(-6)/(x*e + d)^6
```

maple [**A**] time = 0.07, size = 507, normalized size = 1.42

$$\left((bx+a)^2\right)^{\frac{5}{2}} \left(60b^6e^6x^6 \ln(ex+d) + 360b^6 d\, e^5x^5 \ln(ex+d) - 360a\, b^5e^6x^5 + 900b^6d^2e^4x^4 \ln(ex+d) + 360b^6 d\, e^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] 1/60*((b*x+a)^2)^(5/2)*(60*b^6*d^6*ln(e*x+d)+60*ln(e*x+d)*x^6*b^6*e^6-900*a
*b^5*d^3*e^3*x^2-90*a^4*b^2*d*e^5*x-120*a^3*b^3*d^2*e^4*x-180*a^2*b^4*d^3*e
^3*x-360*a*b^5*d^4*e^2*x-12*a^5*b*d*e^5+147*b^6*d^6-10*a^6*e^6-15*a^4*b^2*d
^2*e^4-20*a^3*b^3*d^3*e^3-30*a^2*b^4*d^4*e^2-60*a*b^5*d^5*e-900*a*b^5*d*e^5
*x^4-600*a^2*b^4*d*e^5*x^3+2200*b^6*d^3*e^3*x^3-360*a*b^5*e^6*x^5+360*b^6*d
*e^5*x^5-450*a^2*b^4*e^6*x^4+1350*b^6*d^2*e^4*x^4-400*a^3*b^3*e^6*x^3-225*a
^4*b^2*e^6*x^2+1875*b^6*d^4*e^2*x^2-72*a^5*b*e^6*x-1200*a*b^5*d^2*e^4*x^3-3
00*a^3*b^3*d*e^5*x^2-450*a^2*b^4*d^2*e^4*x^2+360*b^6*d*e^5*x^5*ln(e*x+d)+90
0*b^6*d^4*e^2*x^2*ln(e*x+d)+900*b^6*d^2*e^4*x^4*ln(e*x+d)+822*b^6*d^5*e*x+3
60*b^6*d^5*e*x*ln(e*x+d)+1200*b^6*d^3*e^3*x^3*ln(e*x+d))/(b*x+a)^5/e^7/(e*x
+d)^6
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^7,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}{(d+e\,x)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^7, x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2005 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=41

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(d+ex)^7(bd-ae)}$$

```
[Out] 1/7*(b^2*x^2+2*a*b*x+a^2)^(7/2)/(-a*e+b*d)/(e*x+d)^7
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(d+ex)^7(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(7/2)/(7*(b*d - a*e)*(d + e*x)^7)
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^8}\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{7/2}}{7(bd-ae)(d+ex)^7}$$

Mathematica [B] time = 0.11, size = 289, normalized size = 7.05

$$-\frac{\sqrt{(a+bx)^2}\left(a^6e^6+a^5be^5(d+7ex)+a^4b^2e^4\left(d^2+7dex+21e^2x^2\right)+a^3b^3e^3\left(d^3+7d^2ex+21de^2x^2+35e^3x^3\right)+a\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] -1/7*(Sqrt[(a + b*x)^2]*(a^6*e^6 + a^5*b*e^5*(d + 7*e*x) + a^4*b^2*e^4*(d^2
 + 7*d*e*x + 21*e^2*x^2) + a^3*b^3*e^3*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35
*e^3*x^3) + a^2*b^4*e^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 +
35*e^4*x^4) + a*b^5*e*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 +
35*d*e^4*x^4 + 21*e^5*x^5) + b^6*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3
*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6)))/(e^7*(a + b*x)*(d +
 e*x)^7)
```

fricas [B] time = 0.83, size = 398, normalized size = 9.71

$$-\frac{7\,b^6e^6x^6+b^6d^6+ab^5d^5e+a^2b^4d^4e^2+a^3b^3d^3e^3+a^4b^2d^2e^4+a^5bde^5+a^6e^6+21\left(b^6de^5+ab^5e^6\right)x^5+35\left(b^6d^2e^4\right.}{7\left(e^1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="frica
s")
```

```
[Out] -1/7*(7*b^6*e^6*x^6 + b^6*d^6 + a*b^5*d^5*e + a^2*b^4*d^4*e^2 + a^3*b^3*d^3
*e^3 + a^4*b^2*d^2*e^4 + a^5*b*d*e^5 + a^6*e^6 + 21*(b^6*d*e^5 + a*b^5*e^6)
*x^5 + 35*(b^6*d^2*e^4 + a*b^5*d*e^5 + a^2*b^4*e^6)*x^4 + 35*(b^6*d^3*e^3 +
 a*b^5*d^2*e^4 + a^2*b^4*d*e^5 + a^3*b^3*e^6)*x^3 + 21*(b^6*d^4*e^2 + a*b^5
*d^3*e^3 + a^2*b^4*d^2*e^4 + a^3*b^3*d*e^5 + a^4*b^2*e^6)*x^2 + 7*(b^6*d^5*
e + a*b^5*d^4*e^2 + a^2*b^4*d^3*e^3 + a^3*b^3*d^2*e^4 + a^4*b^2*d*e^5 + a^5
*b*e^6)*x)/(e^14*x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 3
5*d^4*e^10*x^3 + 21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)
```

giac [B] time = 0.19, size = 514, normalized size = 12.54

$$-\frac{\left(7\,b^{6}x^{6}e^{6}\mathrm{sgn}\left(bx+a\right)+21\,b^{6}dx^{5}e^{5}\mathrm{sgn}\left(bx+a\right)+35\,b^{6}d^{2}x^{4}e^{4}\mathrm{sgn}\left(bx+a\right)+35\,b^{6}d^{3}x^{3}e^{3}\mathrm{sgn}\left(bx+a\right)+21\,b^{6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="giac"
)
```

```
[Out] -1/7*(7*b^6*x^6*e^6*sgn(b*x + a) + 21*b^6*d*x^5*e^5*sgn(b*x + a) + 35*b^6*d
^2*x^4*e^4*sgn(b*x + a) + 35*b^6*d^3*x^3*e^3*sgn(b*x + a) + 21*b^6*d^4*x^2*
e^2*sgn(b*x + a) + 7*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) + 21*a
*b^5*x^5*e^6*sgn(b*x + a) + 35*a*b^5*d*x^4*e^5*sgn(b*x + a) + 35*a*b^5*d^2*
x^3*e^4*sgn(b*x + a) + 21*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 7*a*b^5*d^4*x*e^
2*sgn(b*x + a) + a*b^5*d^5*e*sgn(b*x + a) + 35*a^2*b^4*x^4*e^6*sgn(b*x + a)
 + 35*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 21*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a)
+ 7*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + a^2*b^4*d^4*e^2*sgn(b*x + a) + 35*a^3*
b^3*x^3*e^6*sgn(b*x + a) + 21*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 7*a^3*b^3*d^
2*x*e^4*sgn(b*x + a) + a^3*b^3*d^3*e^3*sgn(b*x + a) + 21*a^4*b^2*x^2*e^6*sg
n(b*x + a) + 7*a^4*b^2*d*x*e^5*sgn(b*x + a) + a^4*b^2*d^2*e^4*sgn(b*x + a)
+ 7*a^5*b*x*e^6*sgn(b*x + a) + a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x +
 a))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.05, size = 386, normalized size = 9.41

$$-\frac{\left(7b^{6}e^{6}x^{6}+21a\,b^{5}e^{6}x^{5}+21b^{6}d\,e^{5}x^{5}+35a^{2}b^{4}e^{6}x^{4}+35a\,b^{5}d\,e^{5}x^{4}+35b^{6}d^{2}e^{4}x^{4}+35a^{3}b^{3}e^{6}x^{3}+35a^{2}b^{4}d\,e^{5}x^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x)
```

```
[Out] -1/7*(7*b^6*e^6*x^6+21*a*b^5*e^6*x^5+21*b^6*d*e^5*x^5+35*a^2*b^4*e^6*x^4+35
*a*b^5*d*e^5*x^4+35*b^6*d^2*e^4*x^4+35*a^3*b^3*e^6*x^3+35*a^2*b^4*d*e^5*x^3
+35*a*b^5*d^2*e^4*x^3+35*b^6*d^3*e^3*x^3+21*a^4*b^2*e^6*x^2+21*a^3*b^3*d*e^
5*x^2+21*a^2*b^4*d^2*e^4*x^2+21*a*b^5*d^3*e^3*x^2+21*b^6*d^4*e^2*x^2+7*a^5*
b*e^6*x+7*a^4*b^2*d*e^5*x+7*a^3*b^3*d^2*e^4*x+7*a^2*b^4*d^3*e^3*x+7*a*b^5*d
^4*e^2*x+7*b^6*d^5*e*x+a^6*e^6+a^5*b*d*e^5+a^4*b^2*d^2*e^4+a^3*b^3*d^3*e^3+
a^2*b^4*d^4*e^2+a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^7/e^7/(b*x+a
)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^8,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.38, size = 1010, normalized size = 24.63

$$\frac{\left(\frac{-6\,a^5\,b\,e^5+15\,a^4\,b^2\,d\,e^4-20\,a^3\,b^3\,d^2\,e^3+15\,a^2\,b^4\,d^3\,e^2-6\,a\,b^5\,d^4\,e+b^6\,d^5}{6\,e^7}+\frac{d\left(\frac{15\,a^4\,b^2\,e^5-20\,a^3\,b^3\,d\,e^4+15\,a^2\,b^4\,d^2\,e^3-6\,a\,b^5\,d^3\,e^2+b^6\,d^4\,e}{6\,e^7}-\frac{d\left(\frac{20\,a^3\,b^3\,e^5-15\,a^2\,b^4}{}\right.}{}\right)}{e}\right.}{(a+b\,x)\,(d+e\,x)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^8,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(6*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(6*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(6*e^7) - (d*(
(d*((b^6*d)/(6*e^3) - (b^5*(6*a*e - b*d))/(6*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(6*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^6) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
3*e^7) + (d*((b^6*d)/(3*e^6) - (2*b^5*(3*a*e - 2*b*d))/(3*e^6)))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) - ((a^6/(7*e) - (d*((d*((
d*((d*((d*((6*a*b^5)/(7*e) - (b^6*d)/(7*e^2)))/e - (15*a^2*b^4)/(7*e)))/e +
 (20*a^3*b^3)/(7*e)))/e - (15*a^4*b^2)/(7*e)))/e + (6*a^5*b)/(7*e)))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - (((5*b^6*d^4 + 15*a
^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(5*e^7
) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3
)/(5*e^7) + (d*((d*((b^6*d)/(5*e^4) - (2*b^5*(3*a*e - b*d))/(5*e^4)))/e + (
3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(5*e^5)))/e))/e)*(a^2 + b^2*x^2 +
2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + (((5*b^6*d - 6*a*b^5*e)/(2*e^7) +
 (b^6*d)/(2*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^2)
+ (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(4*e^
7) + (d*((d*((b^6*d)/(4*e^5) - (3*b^5*(2*a*e - b*d))/(4*e^5)))/e + (3*b^4*(
5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^4) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(e^7
*(a + b*x)*(d + e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.2006 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9} dx$

Optimal. Leaf size=98

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{56(d+ex)^7(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{8(d+ex)^8(bd-ae)}$$

```
[Out] 1/8*(b*x+a)^6*((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)^8+1/56*b*(b*x+a)^6*((b*x
+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^7
```

Rubi [A] time = 0.05, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{56(d+ex)^7(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{8(d+ex)^8(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(8*(b*d - a*e)*(d + e*x)^8) + (
b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(56*(b*d - a*e)^2*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^9}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^9}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^9}\,dx}{ab+b^2x}\\
&= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{8(bd-ae)(d+ex)^8}+\frac{\left(b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^8}\,dx}{8(bd-ae)\left(ab+b^2x\right)}\\
&= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{8(bd-ae)(d+ex)^8}+\frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{56(bd-ae)^2(d+ex)^7}\end{aligned}$$

Mathematica [B] time = 0.11, size = 295, normalized size = 3.01

$$-\frac{\sqrt{(a+bx)^2}\left(7a^6e^6+6a^5be^5(d+8ex)+5a^4b^2e^4\left(d^2+8dex+28e^2x^2\right)+4a^3b^3e^3\left(d^3+8d^2ex+28de^2x^2+56e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] -1/56*(Sqrt[(a + b*x)^2]*(7*a^6*e^6 + 6*a^5*b*e^5*(d + 8*e*x) + 5*a^4*b^2*e
^4*(d^2 + 8*d*e*x + 28*e^2*x^2) + 4*a^3*b^3*e^3*(d^3 + 8*d^2*e*x + 28*d*e^2
*x^2 + 56*e^3*x^3) + 3*a^2*b^4*e^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d
*e^3*x^3 + 70*e^4*x^4) + 2*a*b^5*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d
^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + b^6*(d^6 + 8*d^5*e*x + 28*d^4*e^2
*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6)))/(e^7*
(a + b*x)*(d + e*x)^8)
```

fricas [B] time = 0.79, size = 430, normalized size = 4.39

$$-\frac{28\,b^6e^6x^6+b^6d^6+2\,ab^5d^5e+3\,a^2b^4d^4e^2+4\,a^3b^3d^3e^3+5\,a^4b^2d^2e^4+6\,a^5bde^5+7\,a^6e^6+56\,\left(b^6de^5+2\,ab^5e^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="frica
s")
```

```
[Out] -1/56*(28*b^6*e^6*x^6 + b^6*d^6 + 2*a*b^5*d^5*e + 3*a^2*b^4*d^4*e^2 + 4*a^3
*b^3*d^3*e^3 + 5*a^4*b^2*d^2*e^4 + 6*a^5*b*d*e^5 + 7*a^6*e^6 + 56*(b^6*d*e^
5 + 2*a*b^5*e^6)*x^5 + 70*(b^6*d^2*e^4 + 2*a*b^5*d*e^5 + 3*a^2*b^4*e^6)*x^4
 + 56*(b^6*d^3*e^3 + 2*a*b^5*d^2*e^4 + 3*a^2*b^4*d*e^5 + 4*a^3*b^3*e^6)*x^3
 + 28*(b^6*d^4*e^2 + 2*a*b^5*d^3*e^3 + 3*a^2*b^4*d^2*e^4 + 4*a^3*b^3*d*e^5
+ 5*a^4*b^2*e^6)*x^2 + 8*(b^6*d^5*e + 2*a*b^5*d^4*e^2 + 3*a^2*b^4*d^3*e^3 +
 4*a^3*b^3*d^2*e^4 + 5*a^4*b^2*d*e^5 + 6*a^5*b*e^6)*x)/(e^15*x^8 + 8*d*e^14
*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^11*x^4 + 56*d^5*e^10*x^
3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [B] time = 0.24, size = 520, normalized size = 5.31

$$-\frac{\left(28\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+56\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+70\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+56\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)+28\,b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="giac"
)
```

```
[Out] -1/56*(28*b^6*x^6*e^6*sgn(b*x + a) + 56*b^6*d*x^5*e^5*sgn(b*x + a) + 70*b^6
*d^2*x^4*e^4*sgn(b*x + a) + 56*b^6*d^3*x^3*e^3*sgn(b*x + a) + 28*b^6*d^4*x^
2*e^2*sgn(b*x + a) + 8*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) + 11
2*a*b^5*x^5*e^6*sgn(b*x + a) + 140*a*b^5*d*x^4*e^5*sgn(b*x + a) + 112*a*b^5
*d^2*x^3*e^4*sgn(b*x + a) + 56*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 16*a*b^5*d^
4*x*e^2*sgn(b*x + a) + 2*a*b^5*d^5*e*sgn(b*x + a) + 210*a^2*b^4*x^4*e^6*sgn
(b*x + a) + 168*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 84*a^2*b^4*d^2*x^2*e^4*sgn
(b*x + a) + 24*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 3*a^2*b^4*d^4*e^2*sgn(b*x +
 a) + 224*a^3*b^3*x^3*e^6*sgn(b*x + a) + 112*a^3*b^3*d*x^2*e^5*sgn(b*x + a)
 + 32*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 4*a^3*b^3*d^3*e^3*sgn(b*x + a) + 140
*a^4*b^2*x^2*e^6*sgn(b*x + a) + 40*a^4*b^2*d*x*e^5*sgn(b*x + a) + 5*a^4*b^2
*d^2*e^4*sgn(b*x + a) + 48*a^5*b*x*e^6*sgn(b*x + a) + 6*a^5*b*d*e^5*sgn(b*x
 + a) + 7*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^8
```

maple [B] time = 0.05, size = 392, normalized size = 4.00

$$-\frac{(28b^6e^6x^6+112a\,b^5e^6x^5+56b^6d\,e^5x^5+210a^2b^4e^6x^4+140a\,b^5d\,e^5x^4+70b^6d^2e^4x^4+224a^3b^3e^6x^3+168a^2b^4d\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -1/56/e^7*(28*b^6*e^6*x^6+112*a*b^5*e^6*x^5+56*b^6*d*e^5*x^5+210*a^2*b^4*e^
6*x^4+140*a*b^5*d*e^5*x^4+70*b^6*d^2*e^4*x^4+224*a^3*b^3*e^6*x^3+168*a^2*b^
4*d*e^5*x^3+112*a*b^5*d^2*e^4*x^3+56*b^6*d^3*e^3*x^3+140*a^4*b^2*e^6*x^2+11
2*a^3*b^3*d*e^5*x^2+84*a^2*b^4*d^2*e^4*x^2+56*a*b^5*d^3*e^3*x^2+28*b^6*d^4*
e^2*x^2+48*a^5*b*e^6*x+40*a^4*b^2*d*e^5*x+32*a^3*b^3*d^2*e^4*x+24*a^2*b^4*d
^3*e^3*x+16*a*b^5*d^4*e^2*x+8*b^6*d^5*e*x+7*a^6*e^6+6*a^5*b*d*e^5+5*a^4*b^2
*d^2*e^4+4*a^3*b^3*d^3*e^3+3*a^2*b^4*d^4*e^2+2*a*b^5*d^5*e+b^6*d^6)*((b*x+a
)^2)^(5/2)/(e*x+d)^8/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^9,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.30, size = 1010, normalized size = 10.31

$$\frac{\left(\frac{-6a^5be^5+15a^4b^2de^4-20a^3b^3d^2e^3+15a^2b^4d^3e^2-6ab^5d^4e+b^6d^5}{7e^7}+\frac{d\left(\frac{15a^4b^2e^5-20a^3b^3de^4+15a^2b^4d^2e^3-6ab^5d^3e^2+b^6d^4e}{7e^7}-\frac{d\left(\frac{20a^3b^3e^5-15a}{}\right.}{}\right.}{}\right.}{(a+bx)\,(d+ex)^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(7*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(7*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(7*e^7) - (d*(
(d*((b^6*d)/(7*e^3) - (b^5*(6*a*e - b*d))/(7*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(7*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^7) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
4*e^7) + (d*((b^6*d)/(4*e^6) - (b^5*(3*a*e - 2*b*d))/(2*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) - ((a^6/(8*e) - (d*((d*((d*
((d*((d*((3*a*b^5)/(4*e) - (b^6*d)/(8*e^2)))/e - (15*a^2*b^4)/(8*e)))/e + (
5*a^3*b^3)/(2*e)))/e - (15*a^4*b^2)/(8*e)))/e + (3*a^5*b)/(4*e)))/e)*(a^2 +
 b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (((5*b^6*d^4 + 15*a^4*
b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(6*e^7) +
 (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/(
6*e^7) + (d*((d*((b^6*d)/(6*e^4) - (b^5*(3*a*e - b*d))/(3*e^4)))/e + (b^4*(
5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(2*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/((a + b*x)*(d + e*x)^6) + (((5*b^6*d - 6*a*b^5*e)/(3*e^7) + (b^6*d
)/(3*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^3) + (((10
*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(5*e^7) + (d
*((d*((b^6*d)/(5*e^5) - (3*b^5*(2*a*e - b*d))/(5*e^5)))/e + (3*b^4*(5*a^2*e
^2 + 2*b^2*d^2 - 6*a*b*d*e))/(5*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/
((a + b*x)*(d + e*x)^5) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(2*e^7*(a +
 b*x)*(d + e*x)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2007 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=149

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{252(d+ex)^7(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{36(d+ex)^8(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{9(d+ex)^9(bd-ae)}$$

```
[Out] 1/9*(b*x+a)^6*((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)^9+1/36*b*(b*x+a)^6*((b*x
+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^8+1/252*b^2*(b*x+a)^6*((b*x+a)^2)^(1/2)/(
-a*e+b*d)^3/(e*x+d)^7
```

Rubi [A] time = 0.06, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{770, 21, 45, 37\}$

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{252(d+ex)^7(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{36(d+ex)^8(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{9(d+ex)^9(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*(b*d - a*e)*(d + e*x)^9) + (
b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(36*(b*d - a*e)^2*(d + e*x)^8)
 + (b^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(252*(b*d - a*e)^3*(d +
e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{10}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{10}}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{\left(2b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^9}\,dx}{9(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{36(bd-ae)^2(d+ex)^8} + \frac{\left(b^3\sqrt{a^2+\right.}{36}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{9(bd-ae)(d+ex)^9} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{36(bd-ae)^2(d+ex)^8} + \frac{b^2(a+bx}{252(}$$

Mathematica [A] time = 0.11, size = 295, normalized size = 1.98

$$-\frac{\sqrt{(a+bx)^2}\left(28a^6e^6+21a^5be^5(d+9ex)+15a^4b^2e^4\left(d^2+9dex+36e^2x^2\right)+10a^3b^3e^3\left(d^3+9d^2ex+36de^2x^2+8\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] -1/252*(Sqrt[(a + b*x)^2]*(28*a^6*e^6 + 21*a^5*b*e^5*(d + 9*e*x) + 15*a^4*b
^2*e^4*(d^2 + 9*d*e*x + 36*e^2*x^2) + 10*a^3*b^3*e^3*(d^3 + 9*d^2*e*x + 36*
d*e^2*x^2 + 84*e^3*x^3) + 6*a^2*b^4*e^2*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 +
 84*d*e^3*x^3 + 126*e^4*x^4) + 3*a*b^5*e*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2
+ 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5) + b^6*(d^6 + 9*d^5*e*x + 36
*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^
6)))/(e^7*(a + b*x)*(d + e*x)^9)
```

fricas [B] time = 1.24, size = 441, normalized size = 2.96

$$-\frac{84\,b^6e^6x^6+b^6d^6+3\,ab^5d^5e+6\,a^2b^4d^4e^2+10\,a^3b^3d^3e^3+15\,a^4b^2d^2e^4+21\,a^5bde^5+28\,a^6e^6+126\left(b^6de^5+3\,ab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="fric
as")
```

```
[Out] -1/252*(84*b^6*e^6*x^6 + b^6*d^6 + 3*a*b^5*d^5*e + 6*a^2*b^4*d^4*e^2 + 10*a
^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 + 21*a^5*b*d*e^5 + 28*a^6*e^6 + 126*(b^
6*d*e^5 + 3*a*b^5*e^6)*x^5 + 126*(b^6*d^2*e^4 + 3*a*b^5*d*e^5 + 6*a^2*b^4*e
^6)*x^4 + 84*(b^6*d^3*e^3 + 3*a*b^5*d^2*e^4 + 6*a^2*b^4*d*e^5 + 10*a^3*b^3*
e^6)*x^3 + 36*(b^6*d^4*e^2 + 3*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 + 10*a^3*b
^3*d*e^5 + 15*a^4*b^2*e^6)*x^2 + 9*(b^6*d^5*e + 3*a*b^5*d^4*e^2 + 6*a^2*b^4
*d^3*e^3 + 10*a^3*b^3*d^2*e^4 + 15*a^4*b^2*d*e^5 + 21*a^5*b*e^6)*x)/(e^16*x
^9 + 9*d*e^15*x^8 + 36*d^2*e^14*x^7 + 84*d^3*e^13*x^6 + 126*d^4*e^12*x^5 +
126*d^5*e^11*x^4 + 84*d^6*e^10*x^3 + 36*d^7*e^9*x^2 + 9*d^8*e^8*x + d^9*e^7
)
```

giac [B] time = 0.19, size = 520, normalized size = 3.49

$$-\frac{\left(84\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+126\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+126\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+84\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="giac
")
```

```
[Out] -1/252*(84*b^6*x^6*e^6*sgn(b*x + a) + 126*b^6*d*x^5*e^5*sgn(b*x + a) + 126*
b^6*d^2*x^4*e^4*sgn(b*x + a) + 84*b^6*d^3*x^3*e^3*sgn(b*x + a) + 36*b^6*d^4
*x^2*e^2*sgn(b*x + a) + 9*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) +
 378*a*b^5*x^5*e^6*sgn(b*x + a) + 378*a*b^5*d*x^4*e^5*sgn(b*x + a) + 252*a*
b^5*d^2*x^3*e^4*sgn(b*x + a) + 108*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 27*a*b^
5*d^4*x*e^2*sgn(b*x + a) + 3*a*b^5*d^5*e*sgn(b*x + a) + 756*a^2*b^4*x^4*e^6
*sgn(b*x + a) + 504*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 216*a^2*b^4*d^2*x^2*e^
4*sgn(b*x + a) + 54*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 6*a^2*b^4*d^4*e^2*sgn(
b*x + a) + 840*a^3*b^3*x^3*e^6*sgn(b*x + a) + 360*a^3*b^3*d*x^2*e^5*sgn(b*x
 + a) + 90*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 10*a^3*b^3*d^3*e^3*sgn(b*x + a)
 + 540*a^4*b^2*x^2*e^6*sgn(b*x + a) + 135*a^4*b^2*d*x*e^5*sgn(b*x + a) + 15
*a^4*b^2*d^2*e^4*sgn(b*x + a) + 189*a^5*b*x*e^6*sgn(b*x + a) + 21*a^5*b*d*e
^5*sgn(b*x + a) + 28*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^9
```

maple [B] time = 0.06, size = 392, normalized size = 2.63

$$-\frac{\left(84b^6e^6x^6+378a\,b^5e^6x^5+126b^6d\,e^5x^5+756a^2b^4e^6x^4+378a\,b^5d\,e^5x^4+126b^6d^2e^4x^4+840a^3b^3e^6x^3+504a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -1/252/e^7*(84*b^6*e^6*x^6+378*a*b^5*e^6*x^5+126*b^6*d*e^5*x^5+756*a^2*b^4*
e^6*x^4+378*a*b^5*d*e^5*x^4+126*b^6*d^2*e^4*x^4+840*a^3*b^3*e^6*x^3+504*a^2
*b^4*d*e^5*x^3+252*a*b^5*d^2*e^4*x^3+84*b^6*d^3*e^3*x^3+540*a^4*b^2*e^6*x^2
+360*a^3*b^3*d*e^5*x^2+216*a^2*b^4*d^2*e^4*x^2+108*a*b^5*d^3*e^3*x^2+36*b^6
*d^4*e^2*x^2+189*a^5*b*e^6*x+135*a^4*b^2*d*e^5*x+90*a^3*b^3*d^2*e^4*x+54*a^
2*b^4*d^3*e^3*x+27*a*b^5*d^4*e^2*x+9*b^6*d^5*e*x+28*a^6*e^6+21*a^5*b*d*e^5+
15*a^4*b^2*d^2*e^4+10*a^3*b^3*d^3*e^3+6*a^2*b^4*d^4*e^2+3*a*b^5*d^5*e+b^6*d
^6)*((b*x+a)^2)^(5/2)/(e*x+d)^9/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^10,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.26, size = 1010, normalized size = 6.78

$$\frac{\left(\frac{-6a^5be^5+15a^4b^2de^4-20a^3b^3d^2e^3+15a^2b^4d^3e^2-6ab^5d^4e+b^6d^5}{8e^7}+\frac{d\left(\frac{15a^4b^2e^5-20a^3b^3de^4+15a^2b^4d^2e^3-6ab^5d^3e^2+b^6d^4e}{8e^7}-\frac{d\left(\frac{20a^3b^3e^5-15a^2b^4}{}\right.}{}\right.}{e}\right.}{(a+bx)\,(d+ex)^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(8*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(8*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(8*e^7) - (d*(
(d*((b^6*d)/(8*e^3) - (b^5*(6*a*e - b*d))/(8*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(8*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^8) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
5*e^7) + (d*((b^6*d)/(5*e^6) - (2*b^5*(3*a*e - 2*b*d))/(5*e^6)))/e)*(a^2 +
b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) - ((a^6/(9*e) - (d*((d*((
d*((d*((d*((2*a*b^5)/(3*e) - (b^6*d)/(9*e^2)))/e - (5*a^2*b^4)/(3*e)))/e +
(20*a^3*b^3)/(9*e)))/e - (5*a^4*b^2)/(3*e)))/e + (2*a^5*b)/(3*e)))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - (((5*b^6*d^4 + 15*a^4
*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(7*e^7)
+ (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/
(7*e^7) + (d*((d*((b^6*d)/(7*e^4) - (2*b^5*(3*a*e - b*d))/(7*e^4)))/e + (3*
b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(7*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) + (((5*b^6*d - 6*a*b^5*e)/(4*e^7) + (
b^6*d)/(4*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^4) +
(((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(6*e^7)
 + (d*((d*((b^6*d)/(6*e^5) - (b^5*(2*a*e - b*d))/(2*e^5)))/e + (b^4*(5*a^2*
e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(2*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^6) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(3*e^7*(a
+ b*x)*(d + e*x)^3)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.2008 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=200

$$\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{120(d+ex)^8(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{30(d+ex)^9(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{10(d+ex)^{10}(bd-ae)}+\frac{b^3\sqrt{a^2+2abx+b}{840(d+ex)^7(}$$

```
[Out] 1/10*(b*x+a)^6*((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)^10+1/30*b*(b*x+a)^6*((b
*x+a)^2)^(1/2)/(-a*e+b*d)^2/(e*x+d)^9+1/120*b^2*(b*x+a)^6*((b*x+a)^2)^(1/2)
/(-a*e+b*d)^3/(e*x+d)^8+1/840*b^3*(b*x+a)^6*((b*x+a)^2)^(1/2)/(-a*e+b*d)^4/
(e*x+d)^7
```

Rubi [A] time = 0.09, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {770, 21, 45, 37}

$$\frac{b^3\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{840(d+ex)^7(bd-ae)^4}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{120(d+ex)^8(bd-ae)^3}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(a+bx)^6}{30(d+ex)^9(bd-ae)^2}+\frac{\sqrt{a^2+2abx+b}{10(d+ex)^{1}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] ((a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(10*(b*d - a*e)*(d + e*x)^10) +
 (b*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(30*(b*d - a*e)^2*(d + e*x)^
9) + (b^2*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(120*(b*d - a*e)^3*(d
+ e*x)^8) + (b^3*(a + b*x)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(840*(b*d - a*e
)^4*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 45

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*S
implify[m + n + 2])/((b*c - a*d)*(m + 1)), Int[(a + b*x)^Simplify[m + 1]*(c
 + d*x)^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && I
LtQ[Simplify[m + n + 2], 0] && NeQ[m, -1] &&  !(LtQ[m, -1] && LtQ[n, -1] &&
 (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && (SumSimpler
Q[m, 1] ||  !SumSimplerQ[n, 1])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{11}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{11}}\,dx}{ab+b^2x}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{\left(3b^2\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{10}}\,dx}{10(bd-ae)\left(ab+b^2x\right)}$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} +$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} +$$

$$= \frac{(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{10(bd-ae)(d+ex)^{10}} + \frac{b(a+bx)^6\sqrt{a^2+2abx+b^2x^2}}{30(bd-ae)^2(d+ex)^9} +$$

Mathematica [A] time = 0.11, size = 295, normalized size = 1.48

$$-\sqrt{(a+bx)^2}\left(84a^6e^6+56a^5be^5(d+10ex)+35a^4b^2e^4\left(d^2+10dex+45e^2x^2\right)+20a^3b^3e^3\left(d^3+10d^2ex+45de^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] -1/840*(Sqrt[(a + b*x)^2]*(84*a^6*e^6 + 56*a^5*b*e^5*(d + 10*e*x) + 35*a^4*
b^2*e^4*(d^2 + 10*d*e*x + 45*e^2*x^2) + 20*a^3*b^3*e^3*(d^3 + 10*d^2*e*x +
45*d*e^2*x^2 + 120*e^3*x^3) + 10*a^2*b^4*e^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2
*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + 4*a*b^5*e*(d^5 + 10*d^4*e*x + 45*d^3*
e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5) + b^6*(d^6 + 10*d^
5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5
+ 210*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^10)
```

fricas [B] time = 0.79, size = 452, normalized size = 2.26

$$-210\,b^6e^6x^6+b^6d^6+4\,ab^5d^5e+10\,a^2b^4d^4e^2+20\,a^3b^3d^3e^3+35\,a^4b^2d^2e^4+56\,a^5bde^5+84\,a^6e^6+252\left(b^6de^5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="fric
as")
```

```
[Out] -1/840*(210*b^6*e^6*x^6 + b^6*d^6 + 4*a*b^5*d^5*e + 10*a^2*b^4*d^4*e^2 + 20
*a^3*b^3*d^3*e^3 + 35*a^4*b^2*d^2*e^4 + 56*a^5*b*d*e^5 + 84*a^6*e^6 + 252*(
b^6*d*e^5 + 4*a*b^5*e^6)*x^5 + 210*(b^6*d^2*e^4 + 4*a*b^5*d*e^5 + 10*a^2*b^
4*e^6)*x^4 + 120*(b^6*d^3*e^3 + 4*a*b^5*d^2*e^4 + 10*a^2*b^4*d*e^5 + 20*a^3
*b^3*e^6)*x^3 + 45*(b^6*d^4*e^2 + 4*a*b^5*d^3*e^3 + 10*a^2*b^4*d^2*e^4 + 20
*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 + 10*(b^6*d^5*e + 4*a*b^5*d^4*e^2 + 10
*a^2*b^4*d^3*e^3 + 20*a^3*b^3*d^2*e^4 + 35*a^4*b^2*d*e^5 + 56*a^5*b*e^6)*x)
/(e^17*x^10 + 10*d*e^16*x^9 + 45*d^2*e^15*x^8 + 120*d^3*e^14*x^7 + 210*d^4*
e^13*x^6 + 252*d^5*e^12*x^5 + 210*d^6*e^11*x^4 + 120*d^7*e^10*x^3 + 45*d^8*
e^9*x^2 + 10*d^9*e^8*x + d^10*e^7)
```

giac [B] time = 0.20, size = 520, normalized size = 2.60

$$-\frac{\left(210\, b^6x^6e^6\mathrm{sgn}\left(bx+a\right) + 252\, b^6dx^5e^5\mathrm{sgn}\left(bx+a\right) + 210\, b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right) + 120\, b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right) + 45}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="giac
")
```

```
[Out] -1/840*(210*b^6*x^6*e^6*sgn(b*x + a) + 252*b^6*d*x^5*e^5*sgn(b*x + a) + 210
*b^6*d^2*x^4*e^4*sgn(b*x + a) + 120*b^6*d^3*x^3*e^3*sgn(b*x + a) + 45*b^6*d
^4*x^2*e^2*sgn(b*x + a) + 10*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x + a
) + 1008*a*b^5*x^5*e^6*sgn(b*x + a) + 840*a*b^5*d*x^4*e^5*sgn(b*x + a) + 48
0*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 180*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 40*
a*b^5*d^4*x*e^2*sgn(b*x + a) + 4*a*b^5*d^5*e*sgn(b*x + a) + 2100*a^2*b^4*x^
4*e^6*sgn(b*x + a) + 1200*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 450*a^2*b^4*d^2*
x^2*e^4*sgn(b*x + a) + 100*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 10*a^2*b^4*d^4*
e^2*sgn(b*x + a) + 2400*a^3*b^3*x^3*e^6*sgn(b*x + a) + 900*a^3*b^3*d*x^2*e^
5*sgn(b*x + a) + 200*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 20*a^3*b^3*d^3*e^3*sg
n(b*x + a) + 1575*a^4*b^2*x^2*e^6*sgn(b*x + a) + 350*a^4*b^2*d*x*e^5*sgn(b*
x + a) + 35*a^4*b^2*d^2*e^4*sgn(b*x + a) + 560*a^5*b*x*e^6*sgn(b*x + a) + 5
6*a^5*b*d*e^5*sgn(b*x + a) + 84*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^10
```

maple [B] time = 0.06, size = 392, normalized size = 1.96

$$-\frac{\left(210b^6e^6x^6 + 1008a\, b^5e^6x^5 + 252b^6d\, e^5x^5 + 2100a^2b^4e^6x^4 + 840a\, b^5d\, e^5x^4 + 210b^6d^2e^4x^4 + 2400a^3b^3e^6x^3 + 120}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -1/840/e^7*(210*b^6*e^6*x^6+1008*a*b^5*e^6*x^5+252*b^6*d*e^5*x^5+2100*a^2*b
^4*e^6*x^4+840*a*b^5*d*e^5*x^4+210*b^6*d^2*e^4*x^4+2400*a^3*b^3*e^6*x^3+120
0*a^2*b^4*d*e^5*x^3+480*a*b^5*d^2*e^4*x^3+120*b^6*d^3*e^3*x^3+1575*a^4*b^2*
e^6*x^2+900*a^3*b^3*d*e^5*x^2+450*a^2*b^4*d^2*e^4*x^2+180*a*b^5*d^3*e^3*x^2
+45*b^6*d^4*e^2*x^2+560*a^5*b*e^6*x+350*a^4*b^2*d*e^5*x+200*a^3*b^3*d^2*e^4
*x+100*a^2*b^4*d^3*e^3*x+40*a*b^5*d^4*e^2*x+10*b^6*d^5*e*x+84*a^6*e^6+56*a^
5*b*d*e^5+35*a^4*b^2*d^2*e^4+20*a^3*b^3*d^3*e^3+10*a^2*b^4*d^4*e^2+4*a*b^5*
d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^10/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^11,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.53, size = 1010, normalized size = 5.05

$$\frac{\left(\frac{-6\,a^5\,b\,e^5+15\,a^4\,b^2\,d\,e^4-20\,a^3\,b^3\,d^2\,e^3+15\,a^2\,b^4\,d^3\,e^2-6\,a\,b^5\,d^4\,e+b^6\,d^5}{9\,e^7}+\frac{d\left(\frac{15\,a^4\,b^2\,e^5-20\,a^3\,b^3\,d\,e^4+15\,a^2\,b^4\,d^2\,e^3-6\,a\,b^5\,d^3\,e^2+b^6\,d^4\,e}{9\,e^7}-\frac{d\left(\frac{20\,a^3\,b^3\,e^5-15\,a}{}\right.}{}\right.}{}\right.}{(a+b\,x)\,(d+e\,x)^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(9*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*a
*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(9*e^7) - (d*((20*a^3
*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(9*e^7) - (d*(
(d*((b^6*d)/(9*e^3) - (b^5*(6*a*e - b*d))/(9*e^3)))/e + (b^4*(15*a^2*e^2 +
b^2*d^2 - 6*a*b*d*e))/(9*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
/((a + b*x)*(d + e*x)^9) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5*d*e)/(
6*e^7) + (d*((b^6*d)/(6*e^6) - (b^5*(3*a*e - 2*b*d))/(3*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^6) - ((a^6/(10*e) - (d*((d*((d
*((d*((d*((3*a*b^5)/(5*e) - (b^6*d)/(10*e^2)))/e - (3*a^2*b^4)/(2*e)))/e +
(2*a^3*b^3)/e))/e - (3*a^4*b^2)/(2*e)))/e + (3*a^5*b)/(5*e)))/e)*(a^2 + b^2
*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (((5*b^6*d^4 + 15*a^4*b^2
*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(8*e^7) + (d
*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3)/(8*e
^7) + (d*((d*((b^6*d)/(8*e^4) - (b^5*(3*a*e - b*d))/(4*e^4)))/e + (3*b^4*(5
*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(8*e^5)))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)
^(1/2))/((a + b*x)*(d + e*x)^8) + (((5*b^6*d - 6*a*b^5*e)/(5*e^7) + (b^6*d)
/(5*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^5) + (((10*
b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(7*e^7) + (d*
((d*((b^6*d)/(7*e^5) - (3*b^5*(2*a*e - b*d))/(7*e^5)))/e + (3*b^4*(5*a^2*e^
2 + 2*b^2*d^2 - 6*a*b*d*e))/(7*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(
(a + b*x)*(d + e*x)^7) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(4*e^7*(a +
b*x)*(d + e*x)^4)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.2009 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx$

Optimal. Leaf size=359

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^9}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{10}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11}}-\frac{b^6\sqrt{a^2+}}{5e^7(a+}$$

```
[Out] -1/11*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^11+3/5*b*(-a*e+b*d
)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^10-5/3*b^2*(-a*e+b*d)^4*((b*x+a)^
2)^(1/2)/e^7/(b*x+a)/(e*x+d)^9+5/2*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^7/(
b*x+a)/(e*x+d)^8-15/7*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d
)^7+b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^6-1/5*b^6*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^5
```

Rubi [A] time = 0.20, antiderivative size = 359, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^5}+\frac{b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)^6}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^7(a+bx)(d+ex)^7}+\frac{5b^3\sqrt{a^2+2abx}}{2e^7(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^
11) + (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d
 + e*x)^10) - (5*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a
 + b*x)*(d + e*x)^9) + (5*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(2*e^7*(a + b*x)*(d + e*x)^8) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) + (b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^6) - (b^6*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(5*e^7*(a + b*x)*(d + e*x)^5)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{12}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{12}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{12}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{12}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{11}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{10}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^9}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}} + \frac{3b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{10}} - 5b^2($$

Mathematica [A] time = 0.11, size = 295, normalized size = 0.82

$$-\frac{\sqrt{(a+bx)^2}\left(210a^6e^6+126a^5be^5(d+11ex)+70a^4b^2e^4\left(d^2+11dex+55e^2x^2\right)+35a^3b^3e^3\left(d^3+11d^2ex+55de^2x\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^12,x]
```

```
[Out] -1/2310*(Sqrt[(a + b*x)^2]*(210*a^6*e^6 + 126*a^5*b*e^5*(d + 11*e*x) + 70*a
^4*b^2*e^4*(d^2 + 11*d*e*x + 55*e^2*x^2) + 35*a^3*b^3*e^3*(d^3 + 11*d^2*e*x
 + 55*d*e^2*x^2 + 165*e^3*x^3) + 15*a^2*b^4*e^2*(d^4 + 11*d^3*e*x + 55*d^2*
e^2*x^2 + 165*d*e^3*x^3 + 330*e^4*x^4) + 5*a*b^5*e*(d^5 + 11*d^4*e*x + 55*d
^3*e^2*x^2 + 165*d^2*e^3*x^3 + 330*d*e^4*x^4 + 462*e^5*x^5) + b^6*(d^6 + 11
*d^5*e*x + 55*d^4*e^2*x^2 + 165*d^3*e^3*x^3 + 330*d^2*e^4*x^4 + 462*d*e^5*x
^5 + 462*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^11)
```

fricas [A] time = 0.87, size = 463, normalized size = 1.29

$$-\frac{462\,b^6e^6x^6 + b^6d^6 + 5\,ab^5d^5e + 15\,a^2b^4d^4e^2 + 35\,a^3b^3d^3e^3 + 70\,a^4b^2d^2e^4 + 126\,a^5bde^5 + 210\,a^6e^6 + 462\left(b^6de^5 +\right.}{2310\left(e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="fric
as")
```

```
[Out] -1/2310*(462*b^6*e^6*x^6 + b^6*d^6 + 5*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 + 3
5*a^3*b^3*d^3*e^3 + 70*a^4*b^2*d^2*e^4 + 126*a^5*b*d*e^5 + 210*a^6*e^6 + 46
2*(b^6*d*e^5 + 5*a*b^5*e^6)*x^5 + 330*(b^6*d^2*e^4 + 5*a*b^5*d*e^5 + 15*a^2
*b^4*e^6)*x^4 + 165*(b^6*d^3*e^3 + 5*a*b^5*d^2*e^4 + 15*a^2*b^4*d*e^5 + 35*
a^3*b^3*e^6)*x^3 + 55*(b^6*d^4*e^2 + 5*a*b^5*d^3*e^3 + 15*a^2*b^4*d^2*e^4 +
 35*a^3*b^3*d*e^5 + 70*a^4*b^2*e^6)*x^2 + 11*(b^6*d^5*e + 5*a*b^5*d^4*e^2 +
 15*a^2*b^4*d^3*e^3 + 35*a^3*b^3*d^2*e^4 + 70*a^4*b^2*d*e^5 + 126*a^5*b*e^6
)*x)/(e^18*x^11 + 11*d*e^17*x^10 + 55*d^2*e^16*x^9 + 165*d^3*e^15*x^8 + 330
*d^4*e^14*x^7 + 462*d^5*e^13*x^6 + 462*d^6*e^12*x^5 + 330*d^7*e^11*x^4 + 16
5*d^8*e^10*x^3 + 55*d^9*e^9*x^2 + 11*d^10*e^8*x + d^11*e^7)
```

giac [A] time = 0.20, size = 520, normalized size = 1.45

$$-\frac{\left(462\,b^6x^6e^6\mathrm{sgn}\,(bx+a) + 462\,b^6dx^5e^5\mathrm{sgn}\,(bx+a) + 330\,b^6d^2x^4e^4\mathrm{sgn}\,(bx+a) + 165\,b^6d^3x^3e^3\mathrm{sgn}\,(bx+a) + 5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="giac
")
```

```
[Out] -1/2310*(462*b^6*x^6*e^6*sgn(b*x + a) + 462*b^6*d*x^5*e^5*sgn(b*x + a) + 33
0*b^6*d^2*x^4*e^4*sgn(b*x + a) + 165*b^6*d^3*x^3*e^3*sgn(b*x + a) + 55*b^6*
d^4*x^2*e^2*sgn(b*x + a) + 11*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x +
a) + 2310*a*b^5*x^5*e^6*sgn(b*x + a) + 1650*a*b^5*d*x^4*e^5*sgn(b*x + a) +
825*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 275*a*b^5*d^3*x^2*e^3*sgn(b*x + a) + 5
5*a*b^5*d^4*x*e^2*sgn(b*x + a) + 5*a*b^5*d^5*e*sgn(b*x + a) + 4950*a^2*b^4*
x^4*e^6*sgn(b*x + a) + 2475*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 825*a^2*b^4*d^
2*x^2*e^4*sgn(b*x + a) + 165*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 15*a^2*b^4*d^
4*e^2*sgn(b*x + a) + 5775*a^3*b^3*x^3*e^6*sgn(b*x + a) + 1925*a^3*b^3*d*x^2
*e^5*sgn(b*x + a) + 385*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 35*a^3*b^3*d^3*e^3
*sgn(b*x + a) + 3850*a^4*b^2*x^2*e^6*sgn(b*x + a) + 770*a^4*b^2*d*x*e^5*sgn
(b*x + a) + 70*a^4*b^2*d^2*e^4*sgn(b*x + a) + 1386*a^5*b*x*e^6*sgn(b*x + a)
 + 126*a^5*b*d*e^5*sgn(b*x + a) + 210*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d
)^11
```

maple [A] time = 0.07, size = 392, normalized size = 1.09

$$-\frac{(462 b^{6} e^{6} x^{6}+2310 a\, b^{5} e^{6} x^{5}+462 b^{6} d\, e^{5} x^{5}+4950 a^{2} b^{4} e^{6} x^{4}+1650 a\, b^{5} d\, e^{5} x^{4}+330 b^{6} d^{2} e^{4} x^{4}+5775 a^{3} b^{3} e^{6} x^{3}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x)
```

```
[Out] -1/2310/e^7*(462*b^6*e^6*x^6+2310*a*b^5*e^6*x^5+462*b^6*d*e^5*x^5+4950*a^2*
b^4*e^6*x^4+1650*a*b^5*d*e^5*x^4+330*b^6*d^2*e^4*x^4+5775*a^3*b^3*e^6*x^3+2
475*a^2*b^4*d*e^5*x^3+825*a*b^5*d^2*e^4*x^3+165*b^6*d^3*e^3*x^3+3850*a^4*b^
2*e^6*x^2+1925*a^3*b^3*d*e^5*x^2+825*a^2*b^4*d^2*e^4*x^2+275*a*b^5*d^3*e^3*
x^2+55*b^6*d^4*e^2*x^2+1386*a^5*b*e^6*x+770*a^4*b^2*d*e^5*x+385*a^3*b^3*d^2
*e^4*x+165*a^2*b^4*d^3*e^3*x+55*a*b^5*d^4*e^2*x+11*b^6*d^5*e*x+210*a^6*e^6+
126*a^5*b*d*e^5+70*a^4*b^2*d^2*e^4+35*a^3*b^3*d^3*e^3+15*a^2*b^4*d^4*e^2+5*
a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^11/(b*x+a)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^12,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.53, size = 1010, normalized size = 2.81

$$\left(\frac{-6 a^5 b e^5+15 a^4 b^2 d e^4-20 a^3 b^3 d^2 e^3+15 a^2 b^4 d^3 e^2-6 a b^5 d^4 e+b^6 d^5}{10 e^7} + \frac{d\left(\frac{15 a^4 b^2 e^5-20 a^3 b^3 d e^4+15 a^2 b^4 d^2 e^3-6 a b^5 d^3 e^2+b^6 d^4 e}{10 e^7} - \frac{d\left(\frac{20 a^3 b^3 e^5-15 a^2 b^4}{}\right.}{}\right.}{}\right.$$

$$(a+b\,x)\,(d+e\,x)^{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^12,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(10*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(10*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(10*e^7) - (
d*((d*((b^6*d)/(10*e^3) - (b^5*(6*a*e - b*d))/(10*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(10*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^10) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(7*e^7) + (d*((b^6*d)/(7*e^6) - (2*b^5*(3*a*e - 2*b*d))/(7*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^7) - ((a^6/(11*e) - (
d*((d*((d*((d*((d*((6*a*b^5)/(11*e) - (b^6*d)/(11*e^2)))/e - (15*a^2*b^4)/(
11*e)))/e + (20*a^3*b^3)/(11*e)))/e - (15*a^4*b^2)/(11*e)))/e + (6*a^5*b)/(
11*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (((5
*b^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^
5*d^3*e)/(9*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 3
0*a^2*b^4*d*e^3)/(9*e^7) + (d*((d*((b^6*d)/(9*e^4) - (2*b^5*(3*a*e - b*d))/
(9*e^4)))/e + (b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(3*e^5)))/e))/e)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) + (((5*b^6*d - 6*a*b^5
*e)/(6*e^7) + (b^6*d)/(6*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*
(d + e*x)^6) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5
*d^2*e)/(8*e^7) + (d*((d*((b^6*d)/(8*e^5) - (3*b^5*(2*a*e - b*d))/(8*e^5)))
/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(8*e^6)))/e)*(a^2 + b^2*x^
2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x
)^(1/2))/(5*e^7*(a + b*x)*(d + e*x)^5)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**12,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2010 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx$

Optimal. Leaf size=362

$$-\frac{3b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{2e^7(a+bx)(d+ex)^{10}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{12e^7(a+bx)(d+ex)^{12}}-\frac{b^6\sqrt{a^2+2a}}{6e^7(a+bx}$$

```
[Out] -1/12*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^12+6/11*b*(-a*e+b*
d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^11-3/2*b^2*(-a*e+b*d)^4*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^10+20/9*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^
7/(b*x+a)/(e*x+d)^9-15/8*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*
x+d)^8+6/7*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^7-1/6*b^6*(
(b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^6
```

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{6e^7(a+bx)(d+ex)^6}+\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{7e^7(a+bx)(d+ex)^7}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{8e^7(a+bx)(d+ex)^8}+\frac{20b^3\sqrt{a^2+2abx+}}{9e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(12*e^7*(a + b*x)*(d + e*x)^
12) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(
d + e*x)^11) - (3*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(
a + b*x)*(d + e*x)^10) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(9*e^7*(a + b*x)*(d + e*x)^9) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)^8) + (6*b^5*(b*d - a*e)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7) - (b^6*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(6*e^7*(a + b*x)*(d + e*x)^6)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{13}}\,dx}{b^4\left(ab+b^2x\right)} \\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{13}}\,dx}{ab+b^2x} \\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{13}}-\frac{6b(bd-ae)^5}{e^6(d+ex)^{12}}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^{11}}-\frac{20b^3(bd-a}{e^6(d+ex)^1}\right.}{ab+b^2x} \\ &= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{12e^7(a+bx)(d+ex)^{12}}+\frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11}}-\frac{3b}{}\end{aligned}$$

Mathematica [**A**] time = 0.10, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(462a^6e^6+252a^5be^5(d+12ex)+126a^4b^2e^4\left(d^2+12dex+66e^2x^2\right)+56a^3b^3e^3\left(d^3+12d^2ex+66\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^13,x]
```

```
[Out] -1/5544*(Sqrt[(a + b*x)^2]*(462*a^6*e^6 + 252*a^5*b*e^5*(d + 12*e*x) + 126*
a^4*b^2*e^4*(d^2 + 12*d*e*x + 66*e^2*x^2) + 56*a^3*b^3*e^3*(d^3 + 12*d^2*e*
x + 66*d*e^2*x^2 + 220*e^3*x^3) + 21*a^2*b^4*e^2*(d^4 + 12*d^3*e*x + 66*d^2
*e^2*x^2 + 220*d*e^3*x^3 + 495*e^4*x^4) + 6*a*b^5*e*(d^5 + 12*d^4*e*x + 66*
d^3*e^2*x^2 + 220*d^2*e^3*x^3 + 495*d*e^4*x^4 + 792*e^5*x^5) + b^6*(d^6 + 1
2*d^5*e*x + 66*d^4*e^2*x^2 + 220*d^3*e^3*x^3 + 495*d^2*e^4*x^4 + 792*d*e^5*
x^5 + 924*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^12)
```

fricas [**A**] time = 1.11, size = 474, normalized size = 1.31

$$-\frac{924\,b^6e^6x^6+b^6d^6+6\,ab^5d^5e+21\,a^2b^4d^4e^2+56\,a^3b^3d^3e^3+126\,a^4b^2d^2e^4+252\,a^5bde^5+462\,a^6e^6+792\left(b^6d\right.}{5544\left(e^{19}x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="fric
as")
```

```
[Out] -1/5544*(924*b^6*e^6*x^6 + b^6*d^6 + 6*a*b^5*d^5*e + 21*a^2*b^4*d^4*e^2 + 5
6*a^3*b^3*d^3*e^3 + 126*a^4*b^2*d^2*e^4 + 252*a^5*b*d*e^5 + 462*a^6*e^6 + 7
92*(b^6*d*e^5 + 6*a*b^5*e^6)*x^5 + 495*(b^6*d^2*e^4 + 6*a*b^5*d*e^5 + 21*a^
2*b^4*e^6)*x^4 + 220*(b^6*d^3*e^3 + 6*a*b^5*d^2*e^4 + 21*a^2*b^4*d*e^5 + 56
*a^3*b^3*e^6)*x^3 + 66*(b^6*d^4*e^2 + 6*a*b^5*d^3*e^3 + 21*a^2*b^4*d^2*e^4
+ 56*a^3*b^3*d*e^5 + 126*a^4*b^2*e^6)*x^2 + 12*(b^6*d^5*e + 6*a*b^5*d^4*e^2
 + 21*a^2*b^4*d^3*e^3 + 56*a^3*b^3*d^2*e^4 + 126*a^4*b^2*d*e^5 + 252*a^5*b*
e^6)*x)/(e^19*x^12 + 12*d*e^18*x^11 + 66*d^2*e^17*x^10 + 220*d^3*e^16*x^9 +
 495*d^4*e^15*x^8 + 792*d^5*e^14*x^7 + 924*d^6*e^13*x^6 + 792*d^7*e^12*x^5
+ 495*d^8*e^11*x^4 + 220*d^9*e^10*x^3 + 66*d^10*e^9*x^2 + 12*d^11*e^8*x + d
^12*e^7)
```

giac [**A**] time = 0.24, size = 520, normalized size = 1.44

$$-\frac{\left(924\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+792\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+495\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+220\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="giac
")
```

```
[Out] -1/5544*(924*b^6*x^6*e^6*sgn(b*x + a) + 792*b^6*d*x^5*e^5*sgn(b*x + a) + 49
5*b^6*d^2*x^4*e^4*sgn(b*x + a) + 220*b^6*d^3*x^3*e^3*sgn(b*x + a) + 66*b^6*
d^4*x^2*e^2*sgn(b*x + a) + 12*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x +
a) + 4752*a*b^5*x^5*e^6*sgn(b*x + a) + 2970*a*b^5*d*x^4*e^5*sgn(b*x + a) +
1320*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 396*a*b^5*d^3*x^2*e^3*sgn(b*x + a) +
72*a*b^5*d^4*x*e^2*sgn(b*x + a) + 6*a*b^5*d^5*e*sgn(b*x + a) + 10395*a^2*b^
4*x^4*e^6*sgn(b*x + a) + 4620*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 1386*a^2*b^4
*d^2*x^2*e^4*sgn(b*x + a) + 252*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 21*a^2*b^4
*d^4*e^2*sgn(b*x + a) + 12320*a^3*b^3*x^3*e^6*sgn(b*x + a) + 3696*a^3*b^3*d
*x^2*e^5*sgn(b*x + a) + 672*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 56*a^3*b^3*d^3
*e^3*sgn(b*x + a) + 8316*a^4*b^2*x^2*e^6*sgn(b*x + a) + 1512*a^4*b^2*d*x*e^
5*sgn(b*x + a) + 126*a^4*b^2*d^2*e^4*sgn(b*x + a) + 3024*a^5*b*x*e^6*sgn(b*
x + a) + 252*a^5*b*d*e^5*sgn(b*x + a) + 462*a^6*e^6*sgn(b*x + a))*e^(-7)/(x
*e + d)^12
```

maple [A] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{(924 b^{6} e^{6} x^{6}+4752 a b^{5} e^{6} x^{5}+792 b^{6} d e^{5} x^{5}+10395 a^{2} b^{4} e^{6} x^{4}+2970 a b^{5} d e^{5} x^{4}+495 b^{6} d^{2} e^{4} x^{4}+12320 a^{3} b^{3} e^{6} x^{3}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x)
```

```
[Out] -1/5544/e^7*(924*b^6*e^6*x^6+4752*a*b^5*e^6*x^5+792*b^6*d*e^5*x^5+10395*a^2
*b^4*e^6*x^4+2970*a*b^5*d*e^5*x^4+495*b^6*d^2*e^4*x^4+12320*a^3*b^3*e^6*x^3
+4620*a^2*b^4*d*e^5*x^3+1320*a*b^5*d^2*e^4*x^3+220*b^6*d^3*e^3*x^3+8316*a^4
*b^2*e^6*x^2+3696*a^3*b^3*d*e^5*x^2+1386*a^2*b^4*d^2*e^4*x^2+396*a*b^5*d^3*
e^3*x^2+66*b^6*d^4*e^2*x^2+3024*a^5*b*e^6*x+1512*a^4*b^2*d*e^5*x+672*a^3*b^
3*d^2*e^4*x+252*a^2*b^4*d^3*e^3*x+72*a*b^5*d^4*e^2*x+12*b^6*d^5*e*x+462*a^6
*e^6+252*a^5*b*d*e^5+126*a^4*b^2*d^2*e^4+56*a^3*b^3*d^3*e^3+21*a^2*b^4*d^4*
e^2+6*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^12/(b*x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^13,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.37, size = 1010, normalized size = 2.79

$$\frac{\left(\frac{-6a^5be^5+15a^4b^2de^4-20a^3b^3d^2e^3+15a^2b^4d^3e^2-6ab^5d^4e+b^6d^5}{11e^7}+\frac{d\left(\frac{15a^4b^2e^5-20a^3b^3de^4+15a^2b^4d^2e^3-6ab^5d^3e^2+b^6d^4e}{11e^7}-\frac{d\left(\frac{20a^3b^3e^5-15a}{}\right.}{}\right.}{}\right.}{(a+bx)\,(d+ex)^{11}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^13,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(11*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(11*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(11*e^7) - (
d*((d*((b^6*d)/(11*e^3) - (b^5*(6*a*e - b*d))/(11*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(11*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^11) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(8*e^7) + (d*((b^6*d)/(8*e^6) - (b^5*(3*a*e - 2*b*d))/(4*e^6)))/e)*(a
^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^8) - ((a^6/(12*e) - (d*
((d*((d*((d*((d*((a*b^5)/(2*e) - (b^6*d)/(12*e^2)))/e - (5*a^2*b^4)/(4*e)))
/e + (5*a^3*b^3)/(3*e)))/e - (5*a^4*b^2)/(4*e)))/e + (a^5*b)/(2*e)))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (((5*b^6*d^4 + 15*
a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(10*e
^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e
^3)/(10*e^7) + (d*((d*((b^6*d)/(10*e^4) - (b^5*(3*a*e - b*d))/(5*e^4)))/e +
 (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(10*e^5)))/e))/e)*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) + (((5*b^6*d - 6*a*b^5*e)/(7*e^
7) + (b^6*d)/(7*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)
^7) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*e)/(
9*e^7) + (d*((d*((b^6*d)/(9*e^5) - (b^5*(2*a*e - b*d))/(3*e^5)))/e + (b^4*(
5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(3*e^6)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^9) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*e
^7*(a + b*x)*(d + e*x)^6)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**13,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2011 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx$

Optimal. Leaf size=360

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11}}+\frac{b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{2e^7(a+bx)(d+ex)^{12}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13}}-\frac{b^6\sqrt{a^2+}}{7e^7(a+}$$

```
[Out] -1/13*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^13+1/2*b*(-a*e+b*d
)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^12-15/11*b^2*(-a*e+b*d)^4*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^11+2*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^7/
(b*x+a)/(e*x+d)^10-5/3*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+
d)^9+3/4*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^8-1/7*b^6*((b
*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^7
```

Rubi [A] time = 0.19, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^7}+\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{4e^7(a+bx)(d+ex)^8}-\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^7(a+bx)(d+ex)^9}+\frac{2b^3\sqrt{a^2+2abx}}{e^7(a+bx}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(d + e*x)^
13) + (b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(2*e^7*(a + b*x)*(d +
 e*x)^12) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a
 + b*x)*(d + e*x)^11) + (2*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(e^7*(a + b*x)*(d + e*x)^10) - (5*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^9) + (3*b^5*(b*d - a*e)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^8) - (b^6*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^7)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{14}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{14}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{14}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{14}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{13}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{12}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{11}}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}} + \frac{b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{2e^7(a+bx)(d+ex)^{12}} - 15b^2($$

Mathematica [**A**] time = 0.12, size = 295, normalized size = 0.82

$$-\frac{\sqrt{(a+bx)^2}\left(924a^6e^6+462a^5be^5(d+13ex)+210a^4b^2e^4\left(d^2+13dex+78e^2x^2\right)+84a^3b^3e^3\left(d^3+13d^2ex+78de^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^14,x]
```

```
[Out] -1/12012*(Sqrt[(a + b*x)^2]*(924*a^6*e^6 + 462*a^5*b*e^5*(d + 13*e*x) + 210
*a^4*b^2*e^4*(d^2 + 13*d*e*x + 78*e^2*x^2) + 84*a^3*b^3*e^3*(d^3 + 13*d^2*e
*x + 78*d*e^2*x^2 + 286*e^3*x^3) + 28*a^2*b^4*e^2*(d^4 + 13*d^3*e*x + 78*d^
2*e^2*x^2 + 286*d*e^3*x^3 + 715*e^4*x^4) + 7*a*b^5*e*(d^5 + 13*d^4*e*x + 78
*d^3*e^2*x^2 + 286*d^2*e^3*x^3 + 715*d*e^4*x^4 + 1287*e^5*x^5) + b^6*(d^6 +
 13*d^5*e*x + 78*d^4*e^2*x^2 + 286*d^3*e^3*x^3 + 715*d^2*e^4*x^4 + 1287*d*e
^5*x^5 + 1716*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^13)
```

fricas [**A**] time = 1.10, size = 485, normalized size = 1.35

$$-\frac{1716\,b^6e^6x^6+b^6d^6+7\,ab^5d^5e+28\,a^2b^4d^4e^2+84\,a^3b^3d^3e^3+210\,a^4b^2d^2e^4+462\,a^5bde^5+924\,a^6e^6+1287\left(b^6d\right.}{12012\left(e^{20}x^{13}+13\,de^{1}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="fric
as")
```

```
[Out] -1/12012*(1716*b^6*e^6*x^6 + b^6*d^6 + 7*a*b^5*d^5*e + 28*a^2*b^4*d^4*e^2 +
 84*a^3*b^3*d^3*e^3 + 210*a^4*b^2*d^2*e^4 + 462*a^5*b*d*e^5 + 924*a^6*e^6 +
 1287*(b^6*d*e^5 + 7*a*b^5*e^6)*x^5 + 715*(b^6*d^2*e^4 + 7*a*b^5*d*e^5 + 28
*a^2*b^4*e^6)*x^4 + 286*(b^6*d^3*e^3 + 7*a*b^5*d^2*e^4 + 28*a^2*b^4*d*e^5 +
 84*a^3*b^3*e^6)*x^3 + 78*(b^6*d^4*e^2 + 7*a*b^5*d^3*e^3 + 28*a^2*b^4*d^2*e
^4 + 84*a^3*b^3*d*e^5 + 210*a^4*b^2*e^6)*x^2 + 13*(b^6*d^5*e + 7*a*b^5*d^4*
e^2 + 28*a^2*b^4*d^3*e^3 + 84*a^3*b^3*d^2*e^4 + 210*a^4*b^2*d*e^5 + 462*a^5
*b*e^6)*x)/(e^20*x^13 + 13*d*e^19*x^12 + 78*d^2*e^18*x^11 + 286*d^3*e^17*x^
10 + 715*d^4*e^16*x^9 + 1287*d^5*e^15*x^8 + 1716*d^6*e^14*x^7 + 1716*d^7*e^
13*x^6 + 1287*d^8*e^12*x^5 + 715*d^9*e^11*x^4 + 286*d^10*e^10*x^3 + 78*d^11
*e^9*x^2 + 13*d^12*e^8*x + d^13*e^7)
```

giac [**A**] time = 0.20, size = 520, normalized size = 1.44

$$-\frac{\left(1716\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+1287\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+715\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+286\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="giac
")
```

```
[Out] -1/12012*(1716*b^6*x^6*e^6*sgn(b*x + a) + 1287*b^6*d*x^5*e^5*sgn(b*x + a) +
 715*b^6*d^2*x^4*e^4*sgn(b*x + a) + 286*b^6*d^3*x^3*e^3*sgn(b*x + a) + 78*b
^6*d^4*x^2*e^2*sgn(b*x + a) + 13*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*x
 + a) + 9009*a*b^5*x^5*e^6*sgn(b*x + a) + 5005*a*b^5*d*x^4*e^5*sgn(b*x + a)
 + 2002*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 546*a*b^5*d^3*x^2*e^3*sgn(b*x + a)
 + 91*a*b^5*d^4*x*e^2*sgn(b*x + a) + 7*a*b^5*d^5*e*sgn(b*x + a) + 20020*a^2
*b^4*x^4*e^6*sgn(b*x + a) + 8008*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 2184*a^2*
b^4*d^2*x^2*e^4*sgn(b*x + a) + 364*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 28*a^2*
b^4*d^4*e^2*sgn(b*x + a) + 24024*a^3*b^3*x^3*e^6*sgn(b*x + a) + 6552*a^3*b^
3*d*x^2*e^5*sgn(b*x + a) + 1092*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 84*a^3*b^3
*d^3*e^3*sgn(b*x + a) + 16380*a^4*b^2*x^2*e^6*sgn(b*x + a) + 2730*a^4*b^2*d
*x*e^5*sgn(b*x + a) + 210*a^4*b^2*d^2*e^4*sgn(b*x + a) + 6006*a^5*b*x*e^6*s
gn(b*x + a) + 462*a^5*b*d*e^5*sgn(b*x + a) + 924*a^6*e^6*sgn(b*x + a))*e^(-
7)/(x*e + d)^13
```

maple [**A**] time = 0.06, size = 392, normalized size = 1.09

$$-\frac{\left(1716b^6e^6x^6 + 9009a\,b^5e^6x^5 + 1287b^6d\,e^5x^5 + 20020a^2b^4e^6x^4 + 5005a\,b^5d\,e^5x^4 + 715b^6d^2e^4x^4 + 24024a^3b^3e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x)
```

```
[Out] -1/12012/e^7*(1716*b^6*e^6*x^6+9009*a*b^5*e^6*x^5+1287*b^6*d*e^5*x^5+20020*
a^2*b^4*e^6*x^4+5005*a*b^5*d*e^5*x^4+715*b^6*d^2*e^4*x^4+24024*a^3*b^3*e^6*
x^3+8008*a^2*b^4*d*e^5*x^3+2002*a*b^5*d^2*e^4*x^3+286*b^6*d^3*e^3*x^3+16380
*a^4*b^2*e^6*x^2+6552*a^3*b^3*d*e^5*x^2+2184*a^2*b^4*d^2*e^4*x^2+546*a*b^5*
d^3*e^3*x^2+78*b^6*d^4*e^2*x^2+6006*a^5*b*e^6*x+2730*a^4*b^2*d*e^5*x+1092*a
^3*b^3*d^2*e^4*x+364*a^2*b^4*d^3*e^3*x+91*a*b^5*d^4*e^2*x+13*b^6*d^5*e*x+92
4*a^6*e^6+462*a^5*b*d*e^5+210*a^4*b^2*d^2*e^4+84*a^3*b^3*d^3*e^3+28*a^2*b^4
*d^4*e^2+7*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^13/(b*x+a)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^14,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.39, size = 1010, normalized size = 2.81

$$\frac{\left(\frac{-6a^5be^5+15a^4b^2de^4-20a^3b^3d^2e^3+15a^2b^4d^3e^2-6ab^5d^4e+b^6d^5}{12e^7}+\frac{d\left(\frac{15a^4b^2e^5-20a^3b^3de^4+15a^2b^4d^2e^3-6ab^5d^3e^2+b^6d^4e}{12e^7}-\frac{d\left(\frac{20a^3b^3e^5-15a^2b^4}{}\right.}{}\right.}{}\right.}{(a+bx)\,(d+ex)^{12}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^14,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(12*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(12*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(12*e^7) - (
d*((d*((b^6*d)/(12*e^3) - (b^5*(6*a*e - b*d))/(12*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(12*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^12) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(9*e^7) + (d*((b^6*d)/(9*e^6) - (2*b^5*(3*a*e - 2*b*d))/(9*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^9) - ((a^6/(13*e) - (
d*((d*((d*((d*((d*((6*a*b^5)/(13*e) - (b^6*d)/(13*e^2)))/e - (15*a^2*b^4)/(
13*e)))/e + (20*a^3*b^3)/(13*e)))/e - (15*a^4*b^2)/(13*e)))/e + (6*a^5*b)/(
13*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (((5
*b^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^
5*d^3*e)/(11*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 +
30*a^2*b^4*d*e^3)/(11*e^7) + (d*((d*((b^6*d)/(11*e^4) - (2*b^5*(3*a*e - b*d
))/(11*e^4)))/e + (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(11*e^5)))/e))/
e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) + (((5*b^6*d -
 6*a*b^5*e)/(8*e^7) + (b^6*d)/(8*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a
 + b*x)*(d + e*x)^8) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 -
36*a*b^5*d^2*e)/(10*e^7) + (d*((d*((b^6*d)/(10*e^5) - (3*b^5*(2*a*e - b*d))
/(10*e^5)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(10*e^6)))/e)*(
a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - (b^6*(a^2 + b^2*
x^2 + 2*a*b*x)^(1/2))/(7*e^7*(a + b*x)*(d + e*x)^7)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**14,x)
```

```
[Out] Timed out
```

3.2012 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15}}\,dx$

Optimal. Leaf size=362

$$-\frac{5b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{4e^7(a+bx)(d+ex)^{12}}+\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{14e^7(a+bx)(d+ex)^{14}}-\frac{b^6\sqrt{a^2+2a}}{8e^7(a+bx}$$

```
[Out] -1/14*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^14+6/13*b*(-a*e+b*
d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^13-5/4*b^2*(-a*e+b*d)^4*((b*x+a)
^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^12+20/11*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e
^7/(b*x+a)/(e*x+d)^11-3/2*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e
*x+d)^10+2/3*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^9-1/8*b^6
*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^8
```

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{8e^7(a+bx)(d+ex)^8}+\frac{2b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^7(a+bx)(d+ex)^9}-\frac{3b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{2e^7(a+bx)(d+ex)^{10}}+\frac{20b^3\sqrt{a^2+2abx+}}{11e^7(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^15,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*(a + b*x)*(d + e*x)^
14) + (6*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(
d + e*x)^13) - (5*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(4*e^7*(
a + b*x)*(d + e*x)^12) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(11*e^7*(a + b*x)*(d + e*x)^11) - (3*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(2*e^7*(a + b*x)*(d + e*x)^10) + (2*b^5*(b*d - a*e)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^9) - (b^6*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(8*e^7*(a + b*x)*(d + e*x)^8)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{15}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{15}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(-bd+ae)^6}{e^6(d+ex)^{15}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{14}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{13}} - \frac{20b^3(bd-a}{e^6(d+ex)^1}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{14e^7(a+bx)(d+ex)^{14}} + \frac{6b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13}} - 5$$

Mathematica [A] time = 0.11, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(1716a^6e^6+792a^5be^5(d+14ex)+330a^4b^2e^4\left(d^2+14dex+91e^2x^2\right)+120a^3b^3e^3\left(d^3+14d^2ex+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^15,x]
```

```
[Out] -1/24024*(Sqrt[(a + b*x)^2]*(1716*a^6*e^6 + 792*a^5*b*e^5*(d + 14*e*x) + 33
0*a^4*b^2*e^4*(d^2 + 14*d*e*x + 91*e^2*x^2) + 120*a^3*b^3*e^3*(d^3 + 14*d^2
*e*x + 91*d*e^2*x^2 + 364*e^3*x^3) + 36*a^2*b^4*e^2*(d^4 + 14*d^3*e*x + 91*
d^2*e^2*x^2 + 364*d*e^3*x^3 + 1001*e^4*x^4) + 8*a*b^5*e*(d^5 + 14*d^4*e*x +
 91*d^3*e^2*x^2 + 364*d^2*e^3*x^3 + 1001*d*e^4*x^4 + 2002*e^5*x^5) + b^6*(d
^6 + 14*d^5*e*x + 91*d^4*e^2*x^2 + 364*d^3*e^3*x^3 + 1001*d^2*e^4*x^4 + 200
2*d*e^5*x^5 + 3003*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^14)
```

fricas [A] time = 0.87, size = 496, normalized size = 1.37

$$-\frac{3003\,b^6e^6x^6+b^6d^6+8\,ab^5d^5e+36\,a^2b^4d^4e^2+120\,a^3b^3d^3e^3+330\,a^4b^2d^2e^4+792\,a^5bde^5+1716\,a^6e^6+2002}{24024\left(e^{21}x^{14}+14\,de^{20}x^{13}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="fric
as")
```

```
[Out] -1/24024*(3003*b^6*e^6*x^6 + b^6*d^6 + 8*a*b^5*d^5*e + 36*a^2*b^4*d^4*e^2 +
 120*a^3*b^3*d^3*e^3 + 330*a^4*b^2*d^2*e^4 + 792*a^5*b*d*e^5 + 1716*a^6*e^6
 + 2002*(b^6*d*e^5 + 8*a*b^5*e^6)*x^5 + 1001*(b^6*d^2*e^4 + 8*a*b^5*d*e^5 +
 36*a^2*b^4*e^6)*x^4 + 364*(b^6*d^3*e^3 + 8*a*b^5*d^2*e^4 + 36*a^2*b^4*d*e^
5 + 120*a^3*b^3*e^6)*x^3 + 91*(b^6*d^4*e^2 + 8*a*b^5*d^3*e^3 + 36*a^2*b^4*d
^2*e^4 + 120*a^3*b^3*d*e^5 + 330*a^4*b^2*e^6)*x^2 + 14*(b^6*d^5*e + 8*a*b^5
*d^4*e^2 + 36*a^2*b^4*d^3*e^3 + 120*a^3*b^3*d^2*e^4 + 330*a^4*b^2*d*e^5 + 7
92*a^5*b*e^6)*x)/(e^21*x^14 + 14*d*e^20*x^13 + 91*d^2*e^19*x^12 + 364*d^3*e
^18*x^11 + 1001*d^4*e^17*x^10 + 2002*d^5*e^16*x^9 + 3003*d^6*e^15*x^8 + 343
2*d^7*e^14*x^7 + 3003*d^8*e^13*x^6 + 2002*d^9*e^12*x^5 + 1001*d^10*e^11*x^4
 + 364*d^11*e^10*x^3 + 91*d^12*e^9*x^2 + 14*d^13*e^8*x + d^14*e^7)
```

giac [A] time = 0.20, size = 520, normalized size = 1.44

$$-\frac{\left(3003\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+2002\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+1001\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+364\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="giac
")
```

```
[Out] -1/24024*(3003*b^6*x^6*e^6*sgn(b*x + a) + 2002*b^6*d*x^5*e^5*sgn(b*x + a) +
 1001*b^6*d^2*x^4*e^4*sgn(b*x + a) + 364*b^6*d^3*x^3*e^3*sgn(b*x + a) + 91*
b^6*d^4*x^2*e^2*sgn(b*x + a) + 14*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b*
x + a) + 16016*a*b^5*x^5*e^6*sgn(b*x + a) + 8008*a*b^5*d*x^4*e^5*sgn(b*x +
a) + 2912*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 728*a*b^5*d^3*x^2*e^3*sgn(b*x +
a) + 112*a*b^5*d^4*x*e^2*sgn(b*x + a) + 8*a*b^5*d^5*e*sgn(b*x + a) + 36036*
a^2*b^4*x^4*e^6*sgn(b*x + a) + 13104*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 3276*
a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 504*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 36*
a^2*b^4*d^4*e^2*sgn(b*x + a) + 43680*a^3*b^3*x^3*e^6*sgn(b*x + a) + 10920*a
^3*b^3*d*x^2*e^5*sgn(b*x + a) + 1680*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 120*a
^3*b^3*d^3*e^3*sgn(b*x + a) + 30030*a^4*b^2*x^2*e^6*sgn(b*x + a) + 4620*a^4
*b^2*d*x*e^5*sgn(b*x + a) + 330*a^4*b^2*d^2*e^4*sgn(b*x + a) + 11088*a^5*b*
x*e^6*sgn(b*x + a) + 792*a^5*b*d*e^5*sgn(b*x + a) + 1716*a^6*e^6*sgn(b*x +
a))*e^(-7)/(x*e + d)^14
```

maple [A] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{(3003b^6e^6x^6 + 16016a\,b^5e^6x^5 + 2002b^6d\,e^5x^5 + 36036a^2b^4e^6x^4 + 8008a\,b^5d\,e^5x^4 + 1001b^6d^2e^4x^4 + 43680a^3b^3e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x)
```

```
[Out] -1/24024/e^7*(3003*b^6*e^6*x^6+16016*a*b^5*e^6*x^5+2002*b^6*d*e^5*x^5+36036
*a^2*b^4*e^6*x^4+8008*a*b^5*d*e^5*x^4+1001*b^6*d^2*e^4*x^4+43680*a^3*b^3*e^
6*x^3+13104*a^2*b^4*d*e^5*x^3+2912*a*b^5*d^2*e^4*x^3+364*b^6*d^3*e^3*x^3+30
030*a^4*b^2*e^6*x^2+10920*a^3*b^3*d*e^5*x^2+3276*a^2*b^4*d^2*e^4*x^2+728*a*
b^5*d^3*e^3*x^2+91*b^6*d^4*e^2*x^2+11088*a^5*b*e^6*x+4620*a^4*b^2*d*e^5*x+1
680*a^3*b^3*d^2*e^4*x+504*a^2*b^4*d^3*e^3*x+112*a*b^5*d^4*e^2*x+14*b^6*d^5*
e*x+1716*a^6*e^6+792*a^5*b*d*e^5+330*a^4*b^2*d^2*e^4+120*a^3*b^3*d^3*e^3+36
*a^2*b^4*d^4*e^2+8*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^14/(b*x+a
)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^15,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.40, size = 1010, normalized size = 2.79

$$\frac{\left(\frac{-6a^5be^5+15a^4b^2de^4-20a^3b^3d^2e^3+15a^2b^4d^3e^2-6ab^5d^4e+b^6d^5}{13e^7}+\frac{d\left(\frac{15a^4b^2e^5-20a^3b^3de^4+15a^2b^4d^2e^3-6ab^5d^3e^2+b^6d^4e}{13e^7}-\frac{d\left(\frac{20a^3b^3e^5-15a}{}\right.}{}\right.}{}\right.}{(a+bx)(d+ex)^{13}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^15,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(13*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(13*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(13*e^7) - (
d*((d*((b^6*d)/(13*e^3) - (b^5*(6*a*e - b*d))/(13*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(13*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^13) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(10*e^7) + (d*((b^6*d)/(10*e^6) - (b^5*(3*a*e - 2*b*d))/(5*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^10) - ((a^6/(14*e) -
(d*((d*((d*((d*((d*((3*a*b^5)/(7*e) - (b^6*d)/(14*e^2)))/e - (15*a^2*b^4)/(
14*e)))/e + (10*a^3*b^3)/(7*e)))/e - (15*a^4*b^2)/(14*e)))/e + (3*a^5*b)/(7
*e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^14) - (((5*b
^6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*
d^3*e)/(12*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30
*a^2*b^4*d*e^3)/(12*e^7) + (d*((d*((b^6*d)/(12*e^4) - (b^5*(3*a*e - b*d))/(
6*e^4)))/e + (b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(4*e^5)))/e))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) + (((5*b^6*d - 6*a*b^5
*e)/(9*e^7) + (b^6*d)/(9*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*
(d + e*x)^9) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5
*d^2*e)/(11*e^7) + (d*((d*((b^6*d)/(11*e^5) - (3*b^5*(2*a*e - b*d))/(11*e^5
)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(11*e^6)))/e)*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - (b^6*(a^2 + b^2*x^2 + 2*
a*b*x)^(1/2))/(8*e^7*(a + b*x)*(d + e*x)^8)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**15,x)
```

```
[Out] Timed out
```

3.2013 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{16}}\,dx$

Optimal. Leaf size=362

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{13e^7(a+bx)(d+ex)^{13}}+\frac{3b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{14}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15}}-\frac{b^6\sqrt{a^2}}{9e^7(a+}$$

```
[Out] -1/15*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^15+3/7*b*(-a*e+b*d
)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^14-15/13*b^2*(-a*e+b*d)^4*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^13+5/3*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^
7/(b*x+a)/(e*x+d)^12-15/11*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(
e*x+d)^11+3/5*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^10-1/9*b
^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^9
```

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 43}

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)(d+ex)^9}+\frac{3b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^7(a+bx)(d+ex)^{10}}-\frac{15b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{11e^7(a+bx)(d+ex)^{11}}+\frac{5b^3\sqrt{a^2+2abx}}{3e^7(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^16,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)*(d + e*x)^
15) + (3*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d
 + e*x)^14) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*
(a + b*x)*(d + e*x)^13) + (5*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
])/(3*e^7*(a + b*x)*(d + e*x)^12) - (15*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) + (3*b^5*(b*d - a*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^10) - (b^6*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^9)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{16}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{16}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{16}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{16}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{15}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{14}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{13}}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{15e^7(a+bx)(d+ex)^{15}} + \frac{3b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{14}} - 15b^2$$

Mathematica [**A**] time = 0.12, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(3003a^6e^6+1287a^5be^5(d+15ex)+495a^4b^2e^4\left(d^2+15dex+105e^2x^2\right)+165a^3b^3e^3\left(d^3+15d^2ex+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^16,x]
```

```
[Out] -1/45045*(Sqrt[(a + b*x)^2]*(3003*a^6*e^6 + 1287*a^5*b*e^5*(d + 15*e*x) + 4
95*a^4*b^2*e^4*(d^2 + 15*d*e*x + 105*e^2*x^2) + 165*a^3*b^3*e^3*(d^3 + 15*d
^2*e*x + 105*d*e^2*x^2 + 455*e^3*x^3) + 45*a^2*b^4*e^2*(d^4 + 15*d^3*e*x +
105*d^2*e^2*x^2 + 455*d*e^3*x^3 + 1365*e^4*x^4) + 9*a*b^5*e*(d^5 + 15*d^4*e
*x + 105*d^3*e^2*x^2 + 455*d^2*e^3*x^3 + 1365*d*e^4*x^4 + 3003*e^5*x^5) + b
^6*(d^6 + 15*d^5*e*x + 105*d^4*e^2*x^2 + 455*d^3*e^3*x^3 + 1365*d^2*e^4*x^4
 + 3003*d*e^5*x^5 + 5005*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^15)
```

fricas [**A**] time = 0.94, size = 507, normalized size = 1.40

$$-\frac{5005\,b^6e^6x^6+b^6d^6+9\,ab^5d^5e+45\,a^2b^4d^4e^2+165\,a^3b^3d^3e^3+495\,a^4b^2d^2e^4+1287\,a^5bde^5+3003\,a^6e^6+3003\,\left(\right.}{45045\left(e^{22}x^{15}+15\,de^{21}x^{14}+105\,d^2e^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="fric
as")
```

```
[Out] -1/45045*(5005*b^6*e^6*x^6 + b^6*d^6 + 9*a*b^5*d^5*e + 45*a^2*b^4*d^4*e^2 +
 165*a^3*b^3*d^3*e^3 + 495*a^4*b^2*d^2*e^4 + 1287*a^5*b*d*e^5 + 3003*a^6*e^
6 + 3003*(b^6*d*e^5 + 9*a*b^5*e^6)*x^5 + 1365*(b^6*d^2*e^4 + 9*a*b^5*d*e^5
+ 45*a^2*b^4*e^6)*x^4 + 455*(b^6*d^3*e^3 + 9*a*b^5*d^2*e^4 + 45*a^2*b^4*d*e
^5 + 165*a^3*b^3*e^6)*x^3 + 105*(b^6*d^4*e^2 + 9*a*b^5*d^3*e^3 + 45*a^2*b^4
*d^2*e^4 + 165*a^3*b^3*d*e^5 + 495*a^4*b^2*e^6)*x^2 + 15*(b^6*d^5*e + 9*a*b
^5*d^4*e^2 + 45*a^2*b^4*d^3*e^3 + 165*a^3*b^3*d^2*e^4 + 495*a^4*b^2*d*e^5 +
 1287*a^5*b*e^6)*x)/(e^22*x^15 + 15*d*e^21*x^14 + 105*d^2*e^20*x^13 + 455*d
^3*e^19*x^12 + 1365*d^4*e^18*x^11 + 3003*d^5*e^17*x^10 + 5005*d^6*e^16*x^9
+ 6435*d^7*e^15*x^8 + 6435*d^8*e^14*x^7 + 5005*d^9*e^13*x^6 + 3003*d^10*e^1
2*x^5 + 1365*d^11*e^11*x^4 + 455*d^12*e^10*x^3 + 105*d^13*e^9*x^2 + 15*d^14
*e^8*x + d^15*e^7)
```

giac [**A**] time = 0.19, size = 520, normalized size = 1.44

$$-\frac{\left(5005\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+3003\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+1365\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+455\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+a\right)\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="giac
")
```

```
[Out] -1/45045*(5005*b^6*x^6*e^6*sgn(b*x + a) + 3003*b^6*d*x^5*e^5*sgn(b*x + a) +
 1365*b^6*d^2*x^4*e^4*sgn(b*x + a) + 455*b^6*d^3*x^3*e^3*sgn(b*x + a) + 105
*b^6*d^4*x^2*e^2*sgn(b*x + a) + 15*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b
*x + a) + 27027*a*b^5*x^5*e^6*sgn(b*x + a) + 12285*a*b^5*d*x^4*e^5*sgn(b*x
+ a) + 4095*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 945*a*b^5*d^3*x^2*e^3*sgn(b*x
+ a) + 135*a*b^5*d^4*x*e^2*sgn(b*x + a) + 9*a*b^5*d^5*e*sgn(b*x + a) + 6142
5*a^2*b^4*x^4*e^6*sgn(b*x + a) + 20475*a^2*b^4*d*x^3*e^5*sgn(b*x + a) + 472
5*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 675*a^2*b^4*d^3*x*e^3*sgn(b*x + a) + 4
5*a^2*b^4*d^4*e^2*sgn(b*x + a) + 75075*a^3*b^3*x^3*e^6*sgn(b*x + a) + 17325
*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 2475*a^3*b^3*d^2*x*e^4*sgn(b*x + a) + 165
*a^3*b^3*d^3*e^3*sgn(b*x + a) + 51975*a^4*b^2*x^2*e^6*sgn(b*x + a) + 7425*a
^4*b^2*d*x*e^5*sgn(b*x + a) + 495*a^4*b^2*d^2*e^4*sgn(b*x + a) + 19305*a^5*
b*x*e^6*sgn(b*x + a) + 1287*a^5*b*d*e^5*sgn(b*x + a) + 3003*a^6*e^6*sgn(b*x
 + a))*e^(-7)/(x*e + d)^15
```

maple [A] time = 0.07, size = 392, normalized size = 1.08

$$-\frac{\left(5005 b^{6} e^{6} x^{6}+27027 a \,b^{5} e^{6} x^{5}+3003 b^{6} d \,e^{5} x^{5}+61425 a^{2} b^{4} e^{6} x^{4}+12285 a \,b^{5} d \,e^{5} x^{4}+1365 b^{6} d^{2} e^{4} x^{4}+75075 a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x)
```

```
[Out] -1/45045/e^7*(5005*b^6*e^6*x^6+27027*a*b^5*e^6*x^5+3003*b^6*d*e^5*x^5+61425
*a^2*b^4*e^6*x^4+12285*a*b^5*d*e^5*x^4+1365*b^6*d^2*e^4*x^4+75075*a^3*b^3*e
^6*x^3+20475*a^2*b^4*d*e^5*x^3+4095*a*b^5*d^2*e^4*x^3+455*b^6*d^3*e^3*x^3+5
1975*a^4*b^2*e^6*x^2+17325*a^3*b^3*d*e^5*x^2+4725*a^2*b^4*d^2*e^4*x^2+945*a
*b^5*d^3*e^3*x^2+105*b^6*d^4*e^2*x^2+19305*a^5*b*e^6*x+7425*a^4*b^2*d*e^5*x
+2475*a^3*b^3*d^2*e^4*x+675*a^2*b^4*d^3*e^3*x+135*a*b^5*d^4*e^2*x+15*b^6*d^
5*e*x+3003*a^6*e^6+1287*a^5*b*d*e^5+495*a^4*b^2*d^2*e^4+165*a^3*b^3*d^3*e^3
+45*a^2*b^4*d^4*e^2+9*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^15/(b*
x+a)^5
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^16,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.45, size = 1010, normalized size = 2.79

$$\frac{\left(\frac{-6\,a^5\,b\,e^5+15\,a^4\,b^2\,d\,e^4-20\,a^3\,b^3\,d^2\,e^3+15\,a^2\,b^4\,d^3\,e^2-6\,a\,b^5\,d^4\,e+b^6\,d^5}{14\,e^7}+\frac{d\left(\frac{15\,a^4\,b^2\,e^5-20\,a^3\,b^3\,d\,e^4+15\,a^2\,b^4\,d^2\,e^3-6\,a\,b^5\,d^3\,e^2+b^6\,d^4\,e}{14\,e^7}-\frac{d\left(\frac{20\,a^3\,b^3\,e^5-15\,a^2\,b^4}{}\right.}{}\right.}{}\right.}{(a+b\,x)\,(d+e\,x)^{14}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^16,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(14*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(14*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(14*e^7) - (
d*((d*((b^6*d)/(14*e^3) - (b^5*(6*a*e - b*d))/(14*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(14*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^14) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(11*e^7) + (d*((b^6*d)/(11*e^6) - (2*b^5*(3*a*e - 2*b*d))/(11*e^6)))/
e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^11) - ((a^6/(15*e)
```

```
 - (d*((d*((d*((d*((d*((2*a*b^5)/(5*e) - (b^6*d)/(15*e^2)))/e - (a^2*b^4)/e
))/e + (4*a^3*b^3)/(3*e)))/e - (a^4*b^2)/e))/e + (2*a^5*b)/(5*e)))/e)*(a^2
+ b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^15) - (((5*b^6*d^4 + 15*a^
4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d^3*e)/(13*e^7
) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*a^2*b^4*d*e^3
)/(13*e^7) + (d*((d*((b^6*d)/(13*e^4) - (2*b^5*(3*a*e - b*d))/(13*e^4)))/e
+ (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(13*e^5)))/e))/e)*(a^2 + b^2*x^
2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) + (((5*b^6*d - 6*a*b^5*e)/(10*
e^7) + (b^6*d)/(10*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e
*x)^10) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*a*b^5*d^2*
e)/(12*e^7) + (d*((d*((b^6*d)/(12*e^5) - (b^5*(2*a*e - b*d))/(4*e^5)))/e +
(b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(4*e^6)))/e)*(a^2 + b^2*x^2 + 2*a
*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - (b^6*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2
))/(9*e^7*(a + b*x)*(d + e*x)^9)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**16,x)
```

```
[Out] Timed out
```

3.2014 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17}}\,dx$

Optimal. Leaf size=362

$$-\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{14e^7(a+bx)(d+ex)^{14}}+\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{15}}-\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{16e^7(a+bx)(d+ex)^{16}}-\frac{b^6\sqrt{a^2+2}}{10e^7(a+b}$$

```
[Out] -1/16*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^16+2/5*b*(-a*e+b*d
)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^15-15/14*b^2*(-a*e+b*d)^4*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^14+20/13*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/
e^7/(b*x+a)/(e*x+d)^13-5/4*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(
e*x+d)^12+6/11*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^11-1/10
*b^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^10
```

Rubi [A] time = 0.20, antiderivative size = 362, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$-\frac{b^6\sqrt{a^2+2abx+b^2x^2}}{10e^7(a+bx)(d+ex)^{10}}+\frac{6b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{11e^7(a+bx)(d+ex)^{11}}-\frac{5b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{4e^7(a+bx)(d+ex)^{12}}+\frac{20b^3\sqrt{a^2+2abx+}}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^17,x]
```

```
[Out] -((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(16*e^7*(a + b*x)*(d + e*x)^
16) + (2*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d
 + e*x)^15) - (15*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(14*e^7*
(a + b*x)*(d + e*x)^14) + (20*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(13*e^7*(a + b*x)*(d + e*x)^13) - (5*b^4*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(4*e^7*(a + b*x)*(d + e*x)^12) + (6*b^5*(b*d - a*e)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x)^11) - (b^6*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(10*e^7*(a + b*x)*(d + e*x)^10)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{17}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{17}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{17}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{16}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{15}} - \frac{20b^3(bd-a}{e^6(d+ex)^1}\right.}{ab+b^2x}$$

$$= -\frac{(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{16e^7(a+bx)(d+ex)^{16}} + \frac{2b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{15}} - 15$$

Mathematica [A] time = 0.10, size = 295, normalized size = 0.81

$$-\frac{\sqrt{(a+bx)^2}\left(5005a^6e^6+2002a^5be^5(d+16ex)+715a^4b^2e^4\left(d^2+16dex+120e^2x^2\right)+220a^3b^3e^3\left(d^3+16d^2ex\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^17,x]
```

```
[Out] -1/80080*(Sqrt[(a + b*x)^2]*(5005*a^6*e^6 + 2002*a^5*b*e^5*(d + 16*e*x) + 7
15*a^4*b^2*e^4*(d^2 + 16*d*e*x + 120*e^2*x^2) + 220*a^3*b^3*e^3*(d^3 + 16*d
^2*e*x + 120*d*e^2*x^2 + 560*e^3*x^3) + 55*a^2*b^4*e^2*(d^4 + 16*d^3*e*x +
120*d^2*e^2*x^2 + 560*d*e^3*x^3 + 1820*e^4*x^4) + 10*a*b^5*e*(d^5 + 16*d^4*
e*x + 120*d^3*e^2*x^2 + 560*d^2*e^3*x^3 + 1820*d*e^4*x^4 + 4368*e^5*x^5) +
b^6*(d^6 + 16*d^5*e*x + 120*d^4*e^2*x^2 + 560*d^3*e^3*x^3 + 1820*d^2*e^4*x^
4 + 4368*d*e^5*x^5 + 8008*e^6*x^6)))/(e^7*(a + b*x)*(d + e*x)^16)
```

fricas [A] time = 0.79, size = 518, normalized size = 1.43

$$-\frac{8008\,b^6e^6x^6+b^6d^6+10\,ab^5d^5e+55\,a^2b^4d^4e^2+220\,a^3b^3d^3e^3+715\,a^4b^2d^2e^4+2002\,a^5bde^5+5005\,a^6e^6+4}{80080\left(e^{23}x^{16}+16\,de^{22}x^{15}+120\,d^2e^{21}x^1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="fric
as")
```

```
[Out] -1/80080*(8008*b^6*e^6*x^6 + b^6*d^6 + 10*a*b^5*d^5*e + 55*a^2*b^4*d^4*e^2
+ 220*a^3*b^3*d^3*e^3 + 715*a^4*b^2*d^2*e^4 + 2002*a^5*b*d*e^5 + 5005*a^6*e
^6 + 4368*(b^6*d*e^5 + 10*a*b^5*e^6)*x^5 + 1820*(b^6*d^2*e^4 + 10*a*b^5*d*e
^5 + 55*a^2*b^4*e^6)*x^4 + 560*(b^6*d^3*e^3 + 10*a*b^5*d^2*e^4 + 55*a^2*b^4
*d*e^5 + 220*a^3*b^3*e^6)*x^3 + 120*(b^6*d^4*e^2 + 10*a*b^5*d^3*e^3 + 55*a^
2*b^4*d^2*e^4 + 220*a^3*b^3*d*e^5 + 715*a^4*b^2*e^6)*x^2 + 16*(b^6*d^5*e +
10*a*b^5*d^4*e^2 + 55*a^2*b^4*d^3*e^3 + 220*a^3*b^3*d^2*e^4 + 715*a^4*b^2*d
*e^5 + 2002*a^5*b*e^6)*x)/(e^23*x^16 + 16*d*e^22*x^15 + 120*d^2*e^21*x^14 +
 560*d^3*e^20*x^13 + 1820*d^4*e^19*x^12 + 4368*d^5*e^18*x^11 + 8008*d^6*e^1
7*x^10 + 11440*d^7*e^16*x^9 + 12870*d^8*e^15*x^8 + 11440*d^9*e^14*x^7 + 800
8*d^10*e^13*x^6 + 4368*d^11*e^12*x^5 + 1820*d^12*e^11*x^4 + 560*d^13*e^10*x
^3 + 120*d^14*e^9*x^2 + 16*d^15*e^8*x + d^16*e^7)
```

giac [A] time = 0.22, size = 520, normalized size = 1.44

$$-\frac{\left(8008\,b^6x^6e^6\mathrm{sgn}\left(bx+a\right)+4368\,b^6dx^5e^5\mathrm{sgn}\left(bx+a\right)+1820\,b^6d^2x^4e^4\mathrm{sgn}\left(bx+a\right)+560\,b^6d^3x^3e^3\mathrm{sgn}\left(bx+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="giac
")
```

```
[Out] -1/80080*(8008*b^6*x^6*e^6*sgn(b*x + a) + 4368*b^6*d*x^5*e^5*sgn(b*x + a) +
 1820*b^6*d^2*x^4*e^4*sgn(b*x + a) + 560*b^6*d^3*x^3*e^3*sgn(b*x + a) + 120
*b^6*d^4*x^2*e^2*sgn(b*x + a) + 16*b^6*d^5*x*e*sgn(b*x + a) + b^6*d^6*sgn(b
*x + a) + 43680*a*b^5*x^5*e^6*sgn(b*x + a) + 18200*a*b^5*d*x^4*e^5*sgn(b*x
+ a) + 5600*a*b^5*d^2*x^3*e^4*sgn(b*x + a) + 1200*a*b^5*d^3*x^2*e^3*sgn(b*x
 + a) + 160*a*b^5*d^4*x*e^2*sgn(b*x + a) + 10*a*b^5*d^5*e*sgn(b*x + a) + 10
0100*a^2*b^4*x^4*e^6*sgn(b*x + a) + 30800*a^2*b^4*d*x^3*e^5*sgn(b*x + a) +
6600*a^2*b^4*d^2*x^2*e^4*sgn(b*x + a) + 880*a^2*b^4*d^3*x*e^3*sgn(b*x + a)
+ 55*a^2*b^4*d^4*e^2*sgn(b*x + a) + 123200*a^3*b^3*x^3*e^6*sgn(b*x + a) + 2
6400*a^3*b^3*d*x^2*e^5*sgn(b*x + a) + 3520*a^3*b^3*d^2*x*e^4*sgn(b*x + a) +
 220*a^3*b^3*d^3*e^3*sgn(b*x + a) + 85800*a^4*b^2*x^2*e^6*sgn(b*x + a) + 11
440*a^4*b^2*d*x*e^5*sgn(b*x + a) + 715*a^4*b^2*d^2*e^4*sgn(b*x + a) + 32032
*a^5*b*x*e^6*sgn(b*x + a) + 2002*a^5*b*d*e^5*sgn(b*x + a) + 5005*a^6*e^6*sg
n(b*x + a))*e^(-7)/(x*e + d)^16
```

maple [**A**] time = 0.06, size = 392, normalized size = 1.08

$$-\frac{(8008b^{6}e^{6}x^{6}+43680a\,b^{5}e^{6}x^{5}+4368b^{6}d\,e^{5}x^{5}+100100a^{2}b^{4}e^{6}x^{4}+18200a\,b^{5}d\,e^{5}x^{4}+1820b^{6}d^{2}e^{4}x^{4}+123200a^{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x)
```

```
[Out] -1/80080/e^7*(8008*b^6*e^6*x^6+43680*a*b^5*e^6*x^5+4368*b^6*d*e^5*x^5+10010
0*a^2*b^4*e^6*x^4+18200*a*b^5*d*e^5*x^4+1820*b^6*d^2*e^4*x^4+123200*a^3*b^3
*e^6*x^3+30800*a^2*b^4*d*e^5*x^3+5600*a*b^5*d^2*e^4*x^3+560*b^6*d^3*e^3*x^3
+85800*a^4*b^2*e^6*x^2+26400*a^3*b^3*d*e^5*x^2+6600*a^2*b^4*d^2*e^4*x^2+120
0*a*b^5*d^3*e^3*x^2+120*b^6*d^4*e^2*x^2+32032*a^5*b*e^6*x+11440*a^4*b^2*d*e
^5*x+3520*a^3*b^3*d^2*e^4*x+880*a^2*b^4*d^3*e^3*x+160*a*b^5*d^4*e^2*x+16*b^
6*d^5*e*x+5005*a^6*e^6+2002*a^5*b*d*e^5+715*a^4*b^2*d^2*e^4+220*a^3*b^3*d^3
*e^3+55*a^2*b^4*d^4*e^2+10*a*b^5*d^5*e+b^6*d^6)*((b*x+a)^2)^(5/2)/(e*x+d)^1
6/(b*x+a)^5
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^17,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.45, size = 1010, normalized size = 2.79

$$\frac{\left(\frac{-6\,a^5\,b\,e^5+15\,a^4\,b^2\,d\,e^4-20\,a^3\,b^3\,d^2\,e^3+15\,a^2\,b^4\,d^3\,e^2-6\,a\,b^5\,d^4\,e+b^6\,d^5}{15\,e^7}+\frac{d\left(\frac{15\,a^4\,b^2\,e^5-20\,a^3\,b^3\,d\,e^4+15\,a^2\,b^4\,d^2\,e^3-6\,a\,b^5\,d^3\,e^2+b^6\,d^4\,e}{15\,e^7}-\frac{d\left(\frac{20\,a^3\,b^3\,e^5-15\,a}{}\right.}{}\right.}{}\right.}{(a+b\,x)\,(d+e\,x)^{15}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^17,x)
```

```
[Out] (((b^6*d^5 - 6*a^5*b*e^5 + 15*a^4*b^2*d*e^4 + 15*a^2*b^4*d^3*e^2 - 20*a^3*b
^3*d^2*e^3 - 6*a*b^5*d^4*e)/(15*e^7) + (d*((b^6*d^4*e + 15*a^4*b^2*e^5 - 6*
a*b^5*d^3*e^2 - 20*a^3*b^3*d*e^4 + 15*a^2*b^4*d^2*e^3)/(15*e^7) - (d*((20*a
^3*b^3*e^5 - b^6*d^3*e^2 + 6*a*b^5*d^2*e^3 - 15*a^2*b^4*d*e^4)/(15*e^7) - (
d*((d*((b^6*d)/(15*e^3) - (b^5*(6*a*e - b*d))/(15*e^3)))/e + (b^4*(15*a^2*e
^2 + b^2*d^2 - 6*a*b*d*e))/(15*e^4)))/e))/e))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^
(1/2))/((a + b*x)*(d + e*x)^15) - (((10*b^6*d^2 + 15*a^2*b^4*e^2 - 24*a*b^5
*d*e)/(12*e^7) + (d*((b^6*d)/(12*e^6) - (b^5*(3*a*e - 2*b*d))/(6*e^6)))/e)*
(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^12) - ((a^6/(16*e) -
(d*((d*((d*((d*((d*((3*a*b^5)/(8*e) - (b^6*d)/(16*e^2)))/e - (15*a^2*b^4)/(
16*e)))/e + (5*a^3*b^3)/(4*e)))/e - (15*a^4*b^2)/(16*e)))/e + (3*a^5*b)/(8*
e)))/e)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^16) - (((5*b^
6*d^4 + 15*a^4*b^2*e^4 - 40*a^3*b^3*d*e^3 + 45*a^2*b^4*d^2*e^2 - 24*a*b^5*d
^3*e)/(14*e^7) + (d*((4*b^6*d^3*e - 20*a^3*b^3*e^4 - 18*a*b^5*d^2*e^2 + 30*
a^2*b^4*d*e^3)/(14*e^7) + (d*((d*((b^6*d)/(14*e^4) - (b^5*(3*a*e - b*d))/(7
*e^4)))/e + (3*b^4*(5*a^2*e^2 + b^2*d^2 - 4*a*b*d*e))/(14*e^5)))/e))/e)*(a^
2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^14) + (((5*b^6*d - 6*a*b
^5*e)/(11*e^7) + (b^6*d)/(11*e^7))*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b
*x)*(d + e*x)^11) + (((10*b^6*d^3 - 20*a^3*b^3*e^3 + 45*a^2*b^4*d*e^2 - 36*
a*b^5*d^2*e)/(13*e^7) + (d*((d*((b^6*d)/(13*e^5) - (3*b^5*(2*a*e - b*d))/(1
3*e^5)))/e + (3*b^4*(5*a^2*e^2 + 2*b^2*d^2 - 6*a*b*d*e))/(13*e^6)))/e)*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2))/((a + b*x)*(d + e*x)^13) - (b^6*(a^2 + b^2*x^2
 + 2*a*b*x)^(1/2))/(10*e^7*(a + b*x)*(d + e*x)^10)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**17,x)

[Out] Exception raised: HeuristicGCDFailed
```

3.2015 $\int \frac{(a+bx)(d+ex)^4}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/5*(b*x+a)*(e*x+d)^5/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 32\}$

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^5)/(5*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^4}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^4}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^4\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^5}{5e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^5}{5e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
[Out] ((a + b*x)*(d + e*x)^5)/(5*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.81, size = 42, normalized size = 1.08

$$\frac{1}{5}e^4x^5 + de^3x^4 + 2\,d^2e^2x^3 + 2\,d^3ex^2 + d^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] 1/5*e^4*x^5 + d*e^3*x^4 + 2*d^2*e^2*x^3 + 2*d^3*e*x^2 + d^4*x
```

giac [A] time = 0.15, size = 18, normalized size = 0.46

$$\frac{1}{5}(xe + d)^5e^{(-1)}\mathrm{sgn}\,(bx + a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] 1/5*(x*e + d)^5*e^(-1)*sgn(b*x + a)
```

maple [B] time = 0.05, size = 58, normalized size = 1.49

$$\frac{\left(e^4x^4 + 5d\,e^3x^3 + 10d^2e^2x^2 + 10d^3ex + 5d^4\right)(bx + a)\,x}{5\sqrt{(bx + a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x)
[Out] 1/5*x*(e^4*x^4+5*d*e^3*x^3+10*d^2*e^2*x^2+10*d^3*e*x+5*d^4)*(b*x+a)/((b*x+a
)^2)^(1/2)
```

maxima [B] time = 0.57, size = 688, normalized size = 17.64

$$\frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,e^4x^4}{5\,b} - \frac{9\,\sqrt{b^2x^2 + 2\,abx + a^2}\,ae^4x^3}{20\,b^2} - \frac{77\,a^3e^4x^2}{60\,b^3} + \frac{47\,\sqrt{b^2x^2 + 2\,abx + a^2}\,a^2e^4x^2}{60\,b^3} + \frac{77\,a^4e^4x}{30\,b^4} + \frac{ad^4\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] 1/5*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^4*x^4/b - 9/20*sqrt(b^2*x^2 + 2*a*b*x +
 a^2)*a*e^4*x^3/b^2 - 77/60*a^3*e^4*x^2/b^3 + 47/60*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*a^2*e^4*x^2/b^3 + 77/30*a^4*e^4*x/b^4 + a*d^4*log(x + a/b)/b - a^5*e
^4*log(x + a/b)/b^5 - 47/30*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^4*e^4/b^5 + 1/4
*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*x^3/b^2 + 13/12*(4*b*d*e
^3 + a*e^4)*a^2*x^2/b^3 - 5/3*(3*b*d^2*e^2 + 2*a*d*e^3)*a*x^2/b^2 + (2*b*d^
3*e + 3*a*d^2*e^2)*x^2/b - 7/12*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*a*x^2/b^3 + 2/3*(3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a
^2)*x^2/b^2 - 13/6*(4*b*d*e^3 + a*e^4)*a^3*x/b^4 + 10/3*(3*b*d^2*e^2 + 2*a*
d*e^3)*a^2*x/b^3 - 2*(2*b*d^3*e + 3*a*d^2*e^2)*a*x/b^2 + (4*b*d*e^3 + a*e^4
)*a^4*log(x + a/b)/b^5 - 2*(3*b*d^2*e^2 + 2*a*d*e^3)*a^3*log(x + a/b)/b^4 +
 2*(2*b*d^3*e + 3*a*d^2*e^2)*a^2*log(x + a/b)/b^3 - (b*d^4 + 4*a*d^3*e)*a*l
og(x + a/b)/b^2 + 7/6*(4*b*d*e^3 + a*e^4)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^3
/b^5 - 4/3*(3*b*d^2*e^2 + 2*a*d*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2/b^4
+ (b*d^4 + 4*a*d^3*e)*sqrt(b^2*x^2 + 2*a*b*x + a^2)/b^2
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^4}{\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^4)/((a + b*x)^2)^(1/2), x)
```

sympy [**A**] time = 0.12, size = 42, normalized size = 1.08

$$d^{4} x + 2 d^{3} e x^{2} + 2 d^{2} e^{2} x^{3} + d e^{3} x^{4} + \frac{e^{4} x^{5}}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] d**4*x + 2*d**3*e*x**2 + 2*d**2*e**2*x**3 + d*e**3*x**4 + e**4*x**5/5
```

3.2016 $\int \frac{(a+bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/4*(b*x+a)*(e*x+d)^4/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 32\}$

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^4)/(4*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^3}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^3\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)(d+ex)^4}{4e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^4}{4e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^4)/(4*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.33, size = 31, normalized size = 0.79

$$\frac{1}{4}\,e^{3}x^{4}+de^{2}x^{3}+\frac{3}{2}\,d^{2}ex^{2}+d^{3}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/4*e^3*x^4 + d*e^2*x^3 + 3/2*d^2*e*x^2 + d^3*x
```

giac [A] time = 0.17, size = 18, normalized size = 0.46

$$\frac{1}{4}\,(xe+d)^{4}e^{(-1)}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*(x*e + d)^4*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 47, normalized size = 1.21

$$\frac{\left(e^{3}x^{3}+4d\,e^{2}x^{2}+6d^{2}ex+4d^{3}\right)(bx+a)\,x}{4\sqrt{(bx+a)^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/4*x*(e^3*x^3+4*d*e^2*x^2+6*d^2*e*x+4*d^3)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.53, size = 432, normalized size = 11.08

$$\frac{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,e^{3}x^{3}}{4\,b}+\frac{13\,a^{2}e^{3}x^{2}}{12\,b^{2}}-\frac{7\,\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,ae^{3}x^{2}}{12\,b^{2}}-\frac{13\,a^{3}e^{3}x}{6\,b^{3}}+\frac{ad^{3}\log\left(x+\frac{a}{b}\right)}{b}+\frac{a^{4}e^{3}\log\left(x+\frac{a}{b}\right)}{b^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/4*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^3*x^3/b + 13/12*a^2*e^3*x^2/b^2 - 7/12*
sqrt(b^2*x^2 + 2*a*b*x + a^2)*a*e^3*x^2/b^2 - 13/6*a^3*e^3*x/b^3 + a*d^3*lo
g(x + a/b)/b + a^4*e^3*log(x + a/b)/b^4 + 7/6*sqrt(b^2*x^2 + 2*a*b*x + a^2)
*a^3*e^3/b^4 - 5/6*(3*b*d*e^2 + a*e^3)*a*x^2/b^2 + 3/2*(b*d^2*e + a*d*e^2)*
x^2/b + 1/3*(3*b*d*e^2 + a*e^3)*sqrt(b^2*x^2 + 2*a*b*x + a^2)*x^2/b^2 + 5/3
*(3*b*d*e^2 + a*e^3)*a^2*x/b^3 - 3*(b*d^2*e + a*d*e^2)*a*x/b^2 - (3*b*d*e^2
 + a*e^3)*a^3*log(x + a/b)/b^4 + 3*(b*d^2*e + a*d*e^2)*a^2*log(x + a/b)/b^3
 - (b*d^3 + 3*a*d^2*e)*a*log(x + a/b)/b^2 - 2/3*(3*b*d*e^2 + a*e^3)*sqrt(b^
2*x^2 + 2*a*b*x + a^2)*a^2/b^4 + (b*d^3 + 3*a*d^2*e)*sqrt(b^2*x^2 + 2*a*b*x
 + a^2)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int\frac{(a+b\,x)\,\left(d+e\,x\right)^{3}}{\sqrt{(a+b\,x)^{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/((a + b*x)^2)^(1/2), x)
```

sympy [**A**] time = 0.11, size = 32, normalized size = 0.82

$$d^3x + \frac{3d^2ex^2}{2} + de^2x^3 + \frac{e^3x^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4
```

3.2017 $\int \frac{(a+bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=39

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/3*(b*x+a)*(e*x+d)^3/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 32\}$

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^3)/(3*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned} \int \frac{(a+bx)(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}} \, dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^2}{ab+b^2x} \, dx}{\sqrt{a^2+2abx+b^2x^2}} \\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^2 \, dx}{b\sqrt{a^2+2abx+b^2x^2}} \\ &= \frac{(a+bx)(d+ex)^3}{3e\sqrt{a^2+2abx+b^2x^2}} \end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{(a+bx)(d+ex)^3}{3e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^3)/(3*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.85, size = 20, normalized size = 0.51

$$\frac{1}{3}e^2x^3 + dex^2 + d^2x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3*e^2*x^3 + d*e*x^2 + d^2*x
```

giac [A] time = 0.18, size = 18, normalized size = 0.46

$$\frac{1}{3}(xe + d)^3 e^{(-1)} \mathrm{sgn}(bx + a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/3*(x*e + d)^3*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.04, size = 36, normalized size = 0.92

$$\frac{\left(e^2x^2 + 3dex + 3d^2\right)(bx + a)x}{3\sqrt{(bx + a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/3*x*(e^2*x^2+3*d*e*x+3*d^2)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.49, size = 239, normalized size = 6.13

$$-\frac{5\,ae^2x^2}{6\,b} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,e^2x^2}{3\,b} + \frac{5\,a^2e^2x}{3\,b^2} + \frac{ad^2\log\left(x + \frac{a}{b}\right)}{b} - \frac{a^3e^2\log\left(x + \frac{a}{b}\right)}{b^3} + \frac{\left(2\,bde + ae^2\right)x^2}{2\,b} - \frac{2\,\sqrt{b^2x^2 + 2\,a}}{3\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5/6*a*e^2*x^2/b + 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*e^2*x^2/b + 5/3*a^2*e^
2*x/b^2 + a*d^2*log(x + a/b)/b - a^3*e^2*log(x + a/b)/b^3 + 1/2*(2*b*d*e +
a*e^2)*x^2/b - 2/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*a^2*e^2/b^3 - (2*b*d*e + a
*e^2)*a*x/b^2 + (2*b*d*e + a*e^2)*a^2*log(x + a/b)/b^3 - (b*d^2 + 2*a*d*e)*
a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d^2 + 2*a*d*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{(a + b\,x)\,(d + e\,x)^2}{\sqrt{(a + b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^2)/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.10, size = 19, normalized size = 0.49

$$d^2x + dex^2 + \frac{e^2x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] d**2*x + d*e*x**2 + e**2*x**3/3
```

3.2018 $\int \frac{(a+bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}} \, dx$

Optimal. Leaf size=62

$$\frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] d*x*(b*x+a)/((b*x+a)^2)^(1/2)+1/2*e*x^2*(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{770, 21\}$

$$\frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (d*x*(a + b*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2] + (e*x^2*(a + b*x))/(2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)}{\sqrt{a^2+2abx+b^2x^2}} \, dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)}{ab+b^2x} \, dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int (d+ex) \, dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{dx(a+bx)}{\sqrt{a^2+2abx+b^2x^2}}+\frac{ex^2(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.45

$$\frac{x(a+bx)(2d+ex)}{2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*(a + b*x)*(2*d + e*x))/(2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.82, size = 10, normalized size = 0.16

$$\frac{1}{2}ex^2 + dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/2*e*x^2 + d*x
```

giac [A] time = 0.15, size = 19, normalized size = 0.31

$$\frac{1}{2}\left(x^2e + 2\,dx\right)\mathrm{sgn}\left(bx + a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/2*(x^2*e + 2*d*x)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 25, normalized size = 0.40

$$\frac{(ex + 2d)\,(bx + a)\,x}{2\sqrt{(bx + a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 1/2*x*(e*x+2*d)*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [B] time = 0.76, size = 95, normalized size = 1.53

$$\frac{1}{2}ex^2 - \frac{aex}{b} + \frac{ad\log\left(x + \frac{a}{b}\right)}{b} + \frac{a^2e\log\left(x + \frac{a}{b}\right)}{b^2} - \frac{(bd + ae)a\log\left(x + \frac{a}{b}\right)}{b^2} + \frac{\sqrt{b^2x^2 + 2\,abx + a^2}\,(bd + ae)}{b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 1/2*e*x^2 - a*e*x/b + a*d*log(x + a/b)/b + a^2*e*log(x + a/b)/b^2 - (b*d +
a*e)*a*log(x + a/b)/b^2 + sqrt(b^2*x^2 + 2*a*b*x + a^2)*(b*d + a*e)/b^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a + b\,x)\,(d + e\,x)}{\sqrt{(a + b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x))/((a + b*x)^2)^(1/2), x)
```

sympy [A] time = 0.09, size = 8, normalized size = 0.13

$$dx + \frac{ex^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] d*x + e*x**2/2
```

3.2019 $\int \frac{a+bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=24

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

```
[Out] ((b*x+a)^2)^(1/2)/b
```

Rubi [A] time = 0.01, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] Sqrt[a^2 + 2*a*b*x + b^2*x^2]/b
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{a^2+2abx+b^2x^2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}}{b}$$

Mathematica [A] time = 0.00, size = 18, normalized size = 0.75

$$\frac{x(a+bx)}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (x*(a + b*x))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 0.87, size = 1, normalized size = 0.04

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] x
```

giac [A] time = 0.15, size = 20, normalized size = 0.83

$$x\operatorname{sgn}(bx+a)+\frac{a\operatorname{sgn}(bx+a)}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] x*sgn(b*x + a) + a*sgn(b*x + a)/b
```

maple [A] time = 0.05, size = 17, normalized size = 0.71

$$\frac{(bx+a)\,x}{\sqrt{(bx+a)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)/((b*x+a)^2)^(1/2)*x
```

maxima [A] time = 0.55, size = 13, normalized size = 0.54

$$\frac{\sqrt{(bx+a)^2}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] sqrt((b*x + a)^2)/b
```

mupad [B] time = 2.38, size = 76, normalized size = 3.17

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b}+\frac{a\,\ln\left(a+b\,x+\sqrt{(a+b\,x)^2}\right)}{b}-\frac{a\,\ln\left(a\,b+\sqrt{(a+b\,x)^2}\,\sqrt{b^2}\,+b^2\,x\right)}{\sqrt{b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((a + b*x)^2)^(1/2),x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^(1/2)/b + (a*log(a + b*x + ((a + b*x)^2)^(1/2)))/
b - (a*log(a*b + ((a + b*x)^2)^(1/2)*(b^2)^(1/2) + b^2*x))/(b^2)^(1/2)
```

sympy [A] time = 0.08, size = 0, normalized size = 0.00

$$x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/((b*x+a)**2)**(1/2),x)
```

```
[Out] x
```

3.2020 $\int \frac{a+bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=35

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (b*x+a)*ln(e*x+d)/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 31\}$

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*Log[d + e*x])/(e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{d+ex}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{(a+bx)\log(d+ex)}{e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 26, normalized size = 0.74

$$\frac{(a+bx)\log(d+ex)}{e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] ((a + b*x)*Log[d + e*x])/(e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.06, size = 10, normalized size = 0.29

$$\frac{\log(ex+d)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] log(e*x + d)/e
```

giac [A] time = 0.16, size = 17, normalized size = 0.49

$$e^{(-1)}\log(|xe+d|)\operatorname{sgn}(bx+a)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] e^(-1)*log(abs(x*e + d))*sgn(b*x + a)
```

maple [A] time = 0.05, size = 25, normalized size = 0.71

$$\frac{(bx+a)\ln(ex+d)}{\sqrt{(bx+a)^2}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x)
```

```
[Out] (b*x+a)*ln(e*x+d)/e/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{a+b\,x}{\sqrt{(a+b\,x)^2}\,\,(d+e\,x)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)),x)
```

```
[Out] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)), x)
```

sympy [A] time = 0.10, size = 7, normalized size = 0.20

$$\frac{\log(d+ex)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/((b*x+a)**2)**(1/2),x)
```

```
[Out] log(d + e*x)/e
```

3.2021 $\int \frac{a+bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=38

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)(bd-ae)}$$

```
[Out] ((b*x+a)^2)^(1/2)/(-a*e+b*d)/(e*x+d)
```

Rubi [A] time = 0.02, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.030$, Rules used = {767}

$$\frac{\sqrt{a^2+2abx+b^2x^2}}{(d+ex)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] Sqrt[a^2 + 2*a*b*x + b^2*x^2]/((b*d - a*e)*(d + e*x))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}}{(bd-ae)(d+ex)}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.74

$$-\frac{a+bx}{e\sqrt{(a+bx)^2}\,(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -((a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)))
```

fricas [A] time = 1.19, size = 13, normalized size = 0.34

$$-\frac{1}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/(e^2*x + d*e)
```

giac [A] time = 0.17, size = 18, normalized size = 0.47

$$-\frac{e^{(-1)}\mathrm{sgn}\,(bx+a)}{xe+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -e^(-1)*sgn(b*x + a)/(x*e + d)
```

maple [A] time = 0.05, size = 27, normalized size = 0.71

$$-\frac{bx+a}{(ex+d)\sqrt{(bx+a)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/(e*x+d)/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.10, size = 28, normalized size = 0.74

$$-\frac{\sqrt{(a+b\,x)^2}}{e\,(a+b\,x)\,(d+e\,x)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^2),x)
```

```
[Out] -((a + b*x)^2)^(1/2)/(e*(a + b*x)*(d + e*x))
```

sympy [A] time = 0.17, size = 10, normalized size = 0.26

$$-\frac{1}{de+e^{2}x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/((b*x+a)**2)**(1/2),x)
```

```
[Out] -1/(d*e + e**2*x)
```

3.2022 $\int \frac{a+bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2}$$

```
[Out] 1/2*(-b*x-a)/e/(e*x+d)^2/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$-\frac{a+bx}{2e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(2*e*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a+bx}{2e(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{2e\sqrt{(a+bx)^2}\,(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/2*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^2)
```

fricas [A] time = 0.77, size = 24, normalized size = 0.57

$$-\frac{1}{2\left(e^{3}x^{2}+2\,de^{2}x+d^{2}e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/2/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

giac [A] time = 0.15, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{2\left(xe+d\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/2*e^(-1)*sgn(b*x + a)/(x*e + d)^2
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx+a}{2\left(ex+d\right)^{2}\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/2/(e*x+d)^2/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.17, size = 28, normalized size = 0.67

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}}{2\,e\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^3),x)
```

```
[Out] -((a + b*x)^2)^(1/2)/(2*e*(a + b*x)*(d + e*x)^2)
```

sympy **[A]** time = 0.22, size = 26, normalized size = 0.62

$$-\frac{1}{2d^2e + 4de^2x + 2e^3x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/((b*x+a)**2)**(1/2),x)
```

```
[Out] -1/(2*d**2*e + 4*d*e**2*x + 2*e**3*x**2)
```

3.2023 $\int \frac{a+bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}$$

```
[Out] 1/3*(-b*x-a)/e/(e*x+d)^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 32\}$

$$-\frac{a+bx}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(3*e*(d + e*x)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^4}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^4}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a+bx}{3e(d+ex)^3\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{3e\sqrt{(a+bx)^2}\,(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/3*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^3)
```

fricas [A] time = 2.11, size = 35, normalized size = 0.83

$$-\frac{1}{3\left(e^4x^3 + 3\,de^3x^2 + 3\,d^2e^2x + d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\mathrm{sgn}\left(bx + a\right)}{3\left(xe + d\right)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3*e^(-1)*sgn(b*x + a)/(x*e + d)^3
```

maple [A] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx + a}{3\left(ex + d\right)^3\sqrt{\left(bx + a\right)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/3/(e*x+d)^3/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^4/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [B] time = 2.14, size = 28, normalized size = 0.67

$$-\frac{\sqrt{{\left(a + b\,x\right)}^2}}{3\,e\,\left(a + b\,x\right)\,{\left(d + e\,x\right)}^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^4),x)
```

```
[Out] -((a + b*x)^2)^(1/2)/(3*e*(a + b*x)*(d + e*x)^3)
```

sympy [**A**] time = 0.28, size = 37, normalized size = 0.88

$$-\frac{1}{3d^3e+9d^2e^2x+9de^3x^2+3e^4x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**4/((b*x+a)**2)**(1/2),x)
```

```
[Out] -1/(3*d**3*e + 9*d**2*e**2*x + 9*d*e**3*x**2 + 3*e**4*x**3)
```

3.2024 $\int \frac{a+bx}{(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=42

$$\frac{-a-bx}{4e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}$$

```
[Out] 1/4*(-b*x-a)/e/(e*x+d)^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 0.93, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 32}

$$-\frac{a+bx}{4e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -(a + b*x)/(4*e*(d + e*x)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^5\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^5}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{a+bx}{4e(d+ex)^4\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.71

$$-\frac{a+bx}{4e\sqrt{(a+bx)^2}\,(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] -1/4*(a + b*x)/(e*Sqrt[(a + b*x)^2]*(d + e*x)^4)
```

fricas [**A**] time = 0.90, size = 46, normalized size = 1.10

$$-\frac{1}{4\left(e^{5}x^{4}+4\,de^{4}x^{3}+6\,d^{2}e^{3}x^{2}+4\,d^{3}e^{2}x+d^{4}e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/4/(e^5*x^4 + 4*d*e^4*x^3 + 6*d^2*e^3*x^2 + 4*d^3*e^2*x + d^4*e)
```

giac [**A**] time = 0.15, size = 18, normalized size = 0.43

$$-\frac{e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{4\left(xe+d\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*e^(-1)*sgn(b*x + a)/(x*e + d)^4
```

maple [**A**] time = 0.05, size = 27, normalized size = 0.64

$$-\frac{bx+a}{4\left(ex+d\right)^{4}\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x)
```

```
[Out] -1/4/(e*x+d)^4/e*(b*x+a)/((b*x+a)^2)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^5/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**B**] time = 2.17, size = 28, normalized size = 0.67

$$-\frac{\sqrt{{\left(a+b\,x\right)}^2}}{4\,e\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^5),x)
```

```
[Out] -((a + b*x)^2)^(1/2)/(4*e*(a + b*x)*(d + e*x)^4)
```

sympy **[A]** time = 0.34, size = 49, normalized size = 1.17

$$-\frac{1}{4d^4e + 16d^3e^2x + 24d^2e^3x^2 + 16de^4x^3 + 4e^5x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**5/((b*x+a)**2)**(1/2),x)
```

```
[Out] -1/(4*d**4*e + 16*d**3*e**2*x + 24*d**2*e**3*x**2 + 16*d*e**4*x**3 + 4*e**5
*x**4)
```

3.2025 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(bd-ae)^3\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{4e^2x(a+bx)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a}{b}$$

```
[Out] 4*e^2*(-a*e+b*d)^2*x*(b*x+a)/b^4/((b*x+a)^2)^(1/2)+2*e*(-a*e+b*d)*(b*x+a)*(
e*x+d)^2/b^3/((b*x+a)^2)^(1/2)+4/3*e*(b*x+a)*(e*x+d)^3/b^2/((b*x+a)^2)^(1/2
)-(e*x+d)^4/b/((b*x+a)^2)^(1/2)+4*e*(-a*e+b*d)^3*(b*x+a)*ln(b*x+a)/b^5/((b*
x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {768, 646, 43}

$$\frac{4e^2x(a+bx)(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(d+ex)^2(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{4e(a+bx)}{b^5\sqrt{a}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (4*e^2*(b*d - a*e)^2*x*(a + b*x))/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*
e*(b*d - a*e)*(a + b*x)*(d + e*x)^2)/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
(4*e*(a + b*x)*(d + e*x)^3)/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*
x)^4/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*e*(b*d - a*e)^3*(a + b*x)*Log[a
 + b*x])/(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(4e)\int \frac{(d+ex)^3}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$

$$= -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(4e\left(ab+b^2x\right)\right)\int \left(\frac{e(bd-ae)^2}{b^4} + \frac{(bd-ae)^3}{b^3\left(ab+b^2x\right)} + \frac{e(bd-ae)(d+ex)}{b^3}\right.}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{4e^2(bd-ae)^2x(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}} + \frac{2e(bd-ae)(a+bx)(d+ex)^2}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{4e(a+bx)(d+ex)^3}{3b^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.08, size = 170, normalized size = 0.81

$$\frac{-3a^4e^4+3a^3be^3(4d+3ex)+6a^2b^2e^2\left(-3d^2-4dex+e^2x^2\right)-2ab^3e\left(-6d^3-9d^2ex+9de^2x^2+e^3x^3\right)-12e(a+}{3b^5\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-3*a^4*e^4 + 3*a^3*b*e^3*(4*d + 3*e*x) + 6*a^2*b^2*e^2*(-3*d^2 - 4*d*e*x +
 e^2*x^2) - 2*a*b^3*e*(-6*d^3 - 9*d^2*e*x + 9*d*e^2*x^2 + e^3*x^3) + b^4*(-
3*d^4 + 18*d^2*e^2*x^2 + 6*d*e^3*x^3 + e^4*x^4) - 12*e*(-(b*d) + a*e)^3*(a
+ b*x)*Log[a + b*x])/(3*b^5*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.86, size = 268, normalized size = 1.28

$$b^4e^4x^4-3\,b^4d^4+12\,ab^3d^3e-18\,a^2b^2d^2e^2+12\,a^3bde^3-3\,a^4e^4+2\left(3\,b^4de^3-ab^3e^4\right)x^3+6\left(3\,b^4d^2e^2-3\,ab^3de^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/3*(b^4*e^4*x^4 - 3*b^4*d^4 + 12*a*b^3*d^3*e - 18*a^2*b^2*d^2*e^2 + 12*a^3
*b*d*e^3 - 3*a^4*e^4 + 2*(3*b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(3*b^4*d^2*e^2 -
 3*a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 3*(6*a*b^3*d^2*e^2 - 8*a^2*b^2*d*e^3 +
3*a^3*b*e^4)*x + 12*(a*b^3*d^3*e - 3*a^2*b^2*d^2*e^2 + 3*a^3*b*d*e^3 - a^4*
e^4 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(b*
x + a))/(b^6*x + a*b^5)
```

giac [A] time = 0.33, size = 237, normalized size = 1.13

$$\frac{1}{3}\sqrt{b^2x^2+2\,abx+a^2}\left(x\left(\frac{xe^4}{b^3}+\frac{2\left(3\,b^{13}de^3-2\,ab^{12}e^4\right)}{b^{16}}\right)+\frac{18\,b^{13}d^2e^2-30\,ab^{12}de^3+13\,a^2b^{11}e^4}{b^{16}}\right)-\frac{4\left(b^3d^3e-3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/3*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(x*(x*e^4/b^3 + 2*(3*b^13*d*e^3 - 2*a*b^1
2*e^4)/b^16) + (18*b^13*d^2*e^2 - 30*a*b^12*d*e^3 + 13*a^2*b^11*e^4)/b^16)
```

```
- 4/3*(b^3*d^3*e - 3*a*b^2*d^2*e^2 + 3*a^2*b*d*e^3 - a^3*e^4)*log(abs(-3*(x
*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b - (x*abs(b) - sqrt(b
^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x +
a^2))*a^2*abs(b)))/(b^4*abs(b))
```

maple [B] time = 0.07, size = 321, normalized size = 1.53

$$-\frac{\left(-b^4e^4x^4+2a\,b^3e^4x^3-6b^4d\,e^3x^3+12a^3b\,e^4x\ln\left(bx+a\right)-36a^2b^2d\,e^3x\ln\left(bx+a\right)-6a^2b^2e^4x^2+36a\,b^3d^2e^2x\ln}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/3*(-b^4*e^4*x^4+2*a*b^3*e^4*x^3-6*b^4*d*e^3*x^3+12*ln(b*x+a)*x*a^3*b*e^4
-36*ln(b*x+a)*x*a^2*b^2*d*e^3+36*ln(b*x+a)*x*a*b^3*d^2*e^2-12*ln(b*x+a)*x*b
^4*d^3*e-6*a^2*b^2*e^4*x^2+18*a*b^3*d*e^3*x^2-18*b^4*d^2*e^2*x^2+12*ln(b*x+
a)*a^4*e^4-36*ln(b*x+a)*a^3*b*d*e^3+36*ln(b*x+a)*a^2*b^2*d^2*e^2-12*ln(b*x+
a)*a*b^3*d^3*e-9*a^3*b*e^4*x+24*a^2*b^2*d*e^3*x-18*a*b^3*d^2*e^2*x+3*a^4*e^
4-12*a^3*b*d*e^3+18*a^2*b^2*d^2*e^2-12*a*b^3*d^3*e+3*b^4*d^4)*(b*x+a)^2/b^5
/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.64, size = 754, normalized size = 3.59

$$\frac{e^4x^4}{3\sqrt{b^2x^2+2\,abx+a^2}\,b}-\frac{7\,ae^4x^3}{6\sqrt{b^2x^2+2\,abx+a^2}\,b^2}+\frac{9\,a^2e^4x^2}{2\sqrt{b^2x^2+2\,abx+a^2}\,b^3}-\frac{10\,a^3e^4\log\left(x+\frac{a}{b}\right)}{b^5}+\frac{9\,a^4e^4}{\sqrt{b^2x^2+2\,abx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/3*e^4*x^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 7/6*a*e^4*x^3/(sqrt(b^2*x^2
 + 2*a*b*x + a^2)*b^2) + 9/2*a^2*e^4*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3
) - 10*a^3*e^4*log(x + a/b)/b^5 + 9*a^4*e^4/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*
b^5) + 1/2*(4*b*d*e^3 + a*e^4)*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) - 20
*a^4*e^4*x/(b^6*(x + a/b)^2) - 5/2*(4*b*d*e^3 + a*e^4)*a*x^2/(sqrt(b^2*x^2
+ 2*a*b*x + a^2)*b^3) + 2*(3*b*d^2*e^2 + 2*a*d*e^3)*x^2/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^2) - 1/2*a*d^4/(b^3*(x + a/b)^2) - 39/2*a^5*e^4/(b^7*(x + a/b
)^2) + 6*(4*b*d*e^3 + a*e^4)*a^2*log(x + a/b)/b^5 - 6*(3*b*d^2*e^2 + 2*a*d*
e^3)*a*log(x + a/b)/b^4 + 2*(2*b*d^3*e + 3*a*d^2*e^2)*log(x + a/b)/b^3 - 5*
(4*b*d*e^3 + a*e^4)*a^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^5) + 4*(3*b*d^2*e^
2 + 2*a*d*e^3)*a^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (b*d^4 + 4*a*d^3*e
)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 12*(4*b*d*e^3 + a*e^4)*a^3*x/(b^6*(
x + a/b)^2) - 12*(3*b*d^2*e^2 + 2*a*d*e^3)*a^2*x/(b^5*(x + a/b)^2) + 4*(2*b
*d^3*e + 3*a*d^2*e^2)*a*x/(b^4*(x + a/b)^2) + 23/2*(4*b*d*e^3 + a*e^4)*a^4/
(b^7*(x + a/b)^2) - 11*(3*b*d^2*e^2 + 2*a*d*e^3)*a^3/(b^6*(x + a/b)^2) + 3*
(2*b*d^3*e + 3*a*d^2*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(b*d^4 + 4*a*d^3*e)*a
/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{(d+e\,x)}^4}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a + bx)(d + ex)^4}{\left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**4/((a + b*x)**2)**(3/2), x)
```

3.2026 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=162

$$-\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{3e^2x(a+bx)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 3*e^2*(-a*e+b*d)*x*(b*x+a)/b^3/((b*x+a)^2)^(1/2)+3/2*e*(b*x+a)*(e*x+d)^2/b^
2/((b*x+a)^2)^(1/2)-(e*x+d)^3/b/((b*x+a)^2)^(1/2)+3*e*(-a*e+b*d)^2*(b*x+a)*
ln(b*x+a)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {768, 646, 43}

$$\frac{3e^2x(a+bx)(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)(bd-ae)^2\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e^2*(b*d - a*e)*x*(a + b*x))/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*
(a + b*x)*(d + e*x)^2)/(2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*x)^3/
(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*e*(b*d - a*e)^2*(a + b*x)*Log[a + b*
x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(3e)\int \frac{(d+ex)^2}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$

$$= -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^2}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(3e\left(ab+b^2x\right)\right)\int \left(\frac{e(bd-ae)}{b^3}+\frac{(bd-ae)^2}{b^2\left(ab+b^2x\right)}+\frac{e(d+ex)}{b^2}\right)dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{3e^2(bd-ae)x(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}} + \frac{3e(a+bx)(d+ex)^2}{2b^2\sqrt{a^2+2abx+b^2x^2}} - \frac{(d+ex)^3}{b\sqrt{a^2+2abx+b^2x^2}} + 3e(b$$

Mathematica [**A**] time = 0.05, size = 120, normalized size = 0.74

$$\frac{2a^3e^3-2a^2be^2(3d+2ex)+3ab^2e\left(2d^2+2dex-e^2x^2\right)+6e(a+bx)(bd-ae)^2\log(a+bx)+b^3\left(-2d^3+6de^2x^2\right.}{2b^4\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*a^3*e^3 - 2*a^2*b*e^2*(3*d + 2*e*x) + 3*a*b^2*e*(2*d^2 + 2*d*e*x - e^2*x
^2) + b^3*(-2*d^3 + 6*d*e^2*x^2 + e^3*x^3) + 6*e*(b*d - a*e)^2*(a + b*x)*Lo
g[a + b*x])/(2*b^4*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.87, size = 173, normalized size = 1.07

$$\frac{b^3e^3x^3-2\,b^3d^3+6\,ab^2d^2e-6\,a^2bde^2+2\,a^3e^3+3\left(2\,b^3de^2-ab^2e^3\right)x^2+2\left(3\,ab^2de^2-2\,a^2be^3\right)x+6\left(ab^2d^2e-\right.}{2\left(b^5x+ab^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] 1/2*(b^3*e^3*x^3 - 2*b^3*d^3 + 6*a*b^2*d^2*e - 6*a^2*b*d*e^2 + 2*a^3*e^3 +
3*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(3*a*b^2*d*e^2 - 2*a^2*b*e^3)*x + 6*(a*
b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^
3)*x)*log(b*x + a))/(b^5*x + a*b^4)
```

giac [**A**] time = 0.34, size = 185, normalized size = 1.14

$$\frac{1}{2}\sqrt{b^2x^2+2\,abx+a^2}\left(\frac{xe^3}{b^3}+\frac{6\,b^7de^2-5\,ab^6e^3}{b^{10}}\right)-\frac{\left(b^2d^2e-2\,abde^2+a^2e^3\right)\log\left(\left|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 1/2*sqrt(b^2*x^2 + 2*a*b*x + a^2)*(x*e^3/b^3 + (6*b^7*d*e^2 - 5*a*b^6*e^3)/
b^10) - (b^2*d^2*e - 2*a*b*d*e^2 + a^2*e^3)*log(abs(-3*(x*abs(b) - sqrt(b^2
*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b - (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x +
 a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))
/(b^3*abs(b))
```

maple [A] time = 0.07, size = 209, normalized size = 1.29

$$\frac{\left(b^{3}e^{3}x^{3}+6a^{2}b\,e^{3}x\ln\left(bx+a\right)-12a\,b^{2}d\,e^{2}x\ln\left(bx+a\right)-3a\,b^{2}e^{3}x^{2}+6b^{3}d^{2}ex\ln\left(bx+a\right)+6b^{3}d\,e^{2}x^{2}+6a^{3}e^{3}\ln(b\right.}{2\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/2*(b^3*e^3*x^3+6*ln(b*x+a)*x*a^2*b*e^3-12*ln(b*x+a)*x*a*b^2*d*e^2+6*ln(b*
x+a)*x*b^3*d^2*e-3*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)-12*a^2
*b*d*e^2*ln(b*x+a)+6*a*b^2*d^2*e*ln(b*x+a)-4*a^2*b*e^3*x+6*a*b^2*d*e^2*x+2*
a^3*e^3-6*a^2*b*d*e^2+6*a*b^2*d^2*e-2*b^3*d^3)*(b*x+a)^2/b^4/((b*x+a)^2)^(3
/2)
```

maxima [B] time = 0.63, size = 481, normalized size = 2.97

$$\frac{e^{3}x^{3}}{2\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b}-\frac{5\,ae^{3}x^{2}}{2\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{2}}+\frac{6\,a^{2}e^{3}\log\left(x+\frac{a}{b}\right)}{b^{4}}-\frac{5\,a^{3}e^{3}}{\sqrt{b^{2}x^{2}+2\,abx+a^{2}}\,b^{4}}+\frac{\left(3\,bde^{2}+ae^{3}\right)x}{\sqrt{b^{2}x^{2}+2\,abx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 1/2*e^3*x^3/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 5/2*a*e^3*x^2/(sqrt(b^2*x^2
 + 2*a*b*x + a^2)*b^2) + 6*a^2*e^3*log(x + a/b)/b^4 - 5*a^3*e^3/(sqrt(b^2*x
^2 + 2*a*b*x + a^2)*b^4) + (3*b*d*e^2 + a*e^3)*x^2/(sqrt(b^2*x^2 + 2*a*b*x
+ a^2)*b^2) + 12*a^3*e^3*x/(b^5*(x + a/b)^2) - 1/2*a*d^3/(b^3*(x + a/b)^2)
+ 23/2*a^4*e^3/(b^6*(x + a/b)^2) - 3*(3*b*d*e^2 + a*e^3)*a*log(x + a/b)/b^4
 + 3*(b*d^2*e + a*d*e^2)*log(x + a/b)/b^3 + 2*(3*b*d*e^2 + a*e^3)*a^2/(sqrt
(b^2*x^2 + 2*a*b*x + a^2)*b^4) - (b*d^3 + 3*a*d^2*e)/(sqrt(b^2*x^2 + 2*a*b*
x + a^2)*b^2) - 6*(3*b*d*e^2 + a*e^3)*a^2*x/(b^5*(x + a/b)^2) + 6*(b*d^2*e
+ a*d*e^2)*a*x/(b^4*(x + a/b)^2) - 11/2*(3*b*d*e^2 + a*e^3)*a^3/(b^6*(x + a
/b)^2) + 9/2*(b*d^2*e + a*d*e^2)*a^2/(b^5*(x + a/b)^2) + 1/2*(b*d^3 + 3*a*d
^2*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + bx\right) \left(d + ex\right)^{3}}{\left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(3/2), x)
```

3.2027 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=106

$$-\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3}$$

```
[Out] -(e*x+d)^2/b/((b*x+a)^2)^(1/2)+2*e*(-a*e+b*d)*(b*x+a)*ln(b*x+a)/b^3/((b*x+a
)^2)^(1/2)+2*e^2*((b*x+a)^2)^(1/2)/b^3
```

Rubi [A] time = 0.06, antiderivative size = 106, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {768, 640, 608, 31}

$$-\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{2e(a+bx)(bd-ae)\log(a+bx)}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((d + e*x)^2/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (2*e^2*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/b^3 + (2*e*(b*d - a*e)*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{(2e)\int \frac{d+ex}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{(2e(bd-ae))\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,d}{b^2}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{\left(2e(bd-ae)\left(ab+b^2x\right)\right)\int \frac{1}{ab+b}}{b^2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^2}{b\sqrt{a^2+2abx+b^2x^2}} + \frac{2e^2\sqrt{a^2+2abx+b^2x^2}}{b^3} + \frac{2e(bd-ae)(a+bx)\log(a+bx}{b^3\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.70

$$\frac{-a^2e^2+abe(2d+ex)-2e(a+bx)(ae-bd)\log(a+bx)+b^2\left(e^2x^2-d^2\right)}{b^3\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(a^2*e^2) + a*b*e*(2*d + e*x) + b^2*(-d^2 + e^2*x^2) - 2*e*(-(b*d) + a*e)
*(a + b*x)*Log[a + b*x])/(b^3*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.80, size = 92, normalized size = 0.87

$$\frac{b^2e^2x^2+abe^2x-b^2d^2+2\,abde-a^2e^2+2\left(abde-a^2e^2+\left(b^2de-abe^2\right)x\right)\log\left(bx+a\right)}{b^4x+ab^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (b^2*e^2*x^2 + a*b*e^2*x - b^2*d^2 + 2*a*b*d*e - a^2*e^2 + 2*(a*b*d*e - a^2
*e^2 + (b^2*d*e - a*b*e^2)*x)*log(b*x + a))/(b^4*x + a*b^3)
```

giac [B] time = 0.36, size = 148, normalized size = 1.40

$$-\frac{2\left(bde-ae^2\right)\log\Big(\Big|-3\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^2ab-a^3b-\left(x|b|-\sqrt{b^2x^2+2\,abx+a^2}\right)^3|b|-3\,\Big(x|b|-\sqrt{b^2x^2}}{3\,b^2|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] -2/3*(b*d*e - a*e^2)*log(abs(-3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^
2*a*b - a^3*b - (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*
abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))/(b^2*abs(b)) + sqrt(b^
2*x^2 + 2*a*b*x + a^2)*e^2/b^3
```

maple [A] time = 0.07, size = 116, normalized size = 1.09

$$-\frac{\Big(2ab\,e^2x\ln\left(bx+a\right)-2b^2dex\ln\left(bx+a\right)-b^2e^2x^2+2a^2e^2\ln\left(bx+a\right)-2abde\ln\left(bx+a\right)-ab\,e^2x+a^2e^2-2abd}{\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(2*ln(b*x+a)*x*a*b*e^2-2*ln(b*x+a)*x*b^2*d*e-b^2*e^2*x^2+2*ln(b*x+a)*a^2*e
^2-2*ln(b*x+a)*a*b*d*e-a*b*e^2*x+a^2*e^2-2*a*b*d*e+b^2*d^2)*(b*x+a)^2/b^3/(
(b*x+a)^2)^(3/2)
```

maxima [B] time = 0.57, size = 272, normalized size = 2.57

$$\frac{e^2x^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b}-\frac{3\,ae^2\log\left(x+\frac{a}{b}\right)}{b^3}+\frac{2\,a^2e^2}{\sqrt{b^2x^2+2\,abx+a^2}\,b^3}-\frac{6\,a^2e^2x}{b^4\left(x+\frac{a}{b}\right)^2}+\frac{\left(2\,bde+ae^2\right)\log\left(x+\frac{a}{b}\right)}{b^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] e^2*x^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b) - 3*a*e^2*log(x + a/b)/b^3 + 2*a^
2*e^2/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^3) - 6*a^2*e^2*x/(b^4*(x + a/b)^2) +
 (2*b*d*e + a*e^2)*log(x + a/b)/b^3 - (b*d^2 + 2*a*d*e)/(sqrt(b^2*x^2 + 2*a
*b*x + a^2)*b^2) - 1/2*a*d^2/(b^3*(x + a/b)^2) - 11/2*a^3*e^2/(b^5*(x + a/b
)^2) + 2*(2*b*d*e + a*e^2)*a*x/(b^4*(x + a/b)^2) + 3/2*(2*b*d*e + a*e^2)*a^
2/(b^5*(x + a/b)^2) + 1/2*(b*d^2 + 2*a*d*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^2}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^2}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2/((a + b*x)**2)**(3/2), x)
```

3.2028 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=67

$$\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (-e*x-d)/b/((b*x+a)^2)^(1/2)+e*(b*x+a)*ln(b*x+a)/b^2/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = {768, 608, 31}

$$\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -((d + e*x)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (e*(a + b*x)*Log[a + b*x])
/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 608

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[(b/2 + c*x)
/Sqrt[a + b*x + c*x^2], Int[1/(b/2 + c*x), x], x] /; FreeQ[{a, b, c}, x] &&
 EqQ[b^2 - 4*a*c, 0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{e\int \frac{1}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{b}\\ &= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{ab+b^2x}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{d+ex}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\log(a+bx)}{b^2\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 36, normalized size = 0.54

$$\frac{e(a+bx)\log(a+bx)+ae-bd}{b^2\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(b*d) + a*e + e*(a + b*x)*Log[a + b*x])/(b^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.46, size = 39, normalized size = 0.58

$$-\frac{bd - ae - (bex + ae)\log(bx + a)}{b^3x + ab^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -(b*d - a*e - (b*e*x + a*e)*log(b*x + a))/(b^3*x + a*b^2)
```

giac [B] time = 0.33, size = 114, normalized size = 1.70

$$-\frac{e\log\left(\left|-3\left(x|b| - \sqrt{b^2x^2 + 2\,abx + a^2}\right)^2 ab - a^3b - \left(x|b| - \sqrt{b^2x^2 + 2\,abx + a^2}\right)^3 |b| - 3\left(x|b| - \sqrt{b^2x^2 + 2\,abx}\right.\right.\right.}{3\,b|b|}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/3*e*log(abs(-3*(x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^2*a*b - a^3*b
- (x*abs(b) - sqrt(b^2*x^2 + 2*a*b*x + a^2))^3*abs(b) - 3*(x*abs(b) - sqrt(
b^2*x^2 + 2*a*b*x + a^2))*a^2*abs(b)))/(b*abs(b))
```

maple [A] time = 0.06, size = 48, normalized size = 0.72

$$\frac{(bex\ln(bx + a) + ae\ln(bx + a) + ae - bd)(bx + a)^2}{\left((bx + a)^2\right)^{\frac{3}{2}} b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (ln(b*x+a)*x*b*e+ln(b*x+a)*a*e+a*e-b*d)*(b*x+a)^2/b^2/((b*x+a)^2)^(3/2)
```

maxima [B] time = 0.55, size = 117, normalized size = 1.75

$$\frac{e\log\left(x + \frac{a}{b}\right)}{b^2} - \frac{bd + ae}{\sqrt{b^2x^2 + 2\,abx + a^2}\,b^2} + \frac{2\,aex}{b^3\left(x + \frac{a}{b}\right)^2} - \frac{ad}{2\,b^3\left(x + \frac{a}{b}\right)^2} + \frac{3\,a^2e}{2\,b^4\left(x + \frac{a}{b}\right)^2} + \frac{(bd + ae)a}{2\,b^4\left(x + \frac{a}{b}\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] e*log(x + a/b)/b^2 - (b*d + a*e)/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b^2) + 2*a*
e*x/(b^3*(x + a/b)^2) - 1/2*a*d/(b^3*(x + a/b)^2) + 3/2*a^2*e/(b^4*(x + a/b
)^2) + 1/2*(b*d + a*e)*a/(b^4*(x + a/b)^2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a + b\,x)\,(d + e\,x)}{\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.2029 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=25

$$-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/b/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.038, Rules used = {629}

$$-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(1/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx=-\frac{1}{b\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.01, size = 16, normalized size = 0.64

$$-\frac{1}{b\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(1/(b*Sqrt[(a + b*x)^2]))
```

fricas [A] time = 0.80, size = 13, normalized size = 0.52

$$-\frac{1}{b^2x+ab}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/(b^2*x + a*b)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\mathit{undef}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] undef
```

maple [A] time = 0.04, size = 22, normalized size = 0.88

$$-\frac{(bx+a)^2}{\left((bx+a)^2\right)^{\frac{3}{2}} b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(b*x+a)^2/b/((b*x+a)^2)^(3/2)
```

maxima [A] time = 0.67, size = 23, normalized size = 0.92

$$-\frac{1}{\sqrt{b^2x^2+2\,abx+a^2}\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/(sqrt(b^2*x^2 + 2*a*b*x + a^2)*b)
```

mupad [B] time = 2.15, size = 23, normalized size = 0.92

$$-\frac{1}{b\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -1/(b*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))
```

sympy [A] time = 0.85, size = 34, normalized size = 1.36

$$\begin{cases} -\frac{1}{b\sqrt{a^2+2abx+b^2x^2}} & \text{for}\ b\neq 0 \\ \frac{ax}{\left(a^2\right)^{\frac{3}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Piecewise((-1/(b*sqrt(a**2 + 2*a*b*x + b**2*x**2)), Ne(b, 0)), (a*x/(a**2)*
*(3/2), True))
```

3.2030 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=120

$$-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

```
[Out] -1/(-a*e+b*d)/((b*x+a)^2)^(1/2)-e*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^2/((b*x+a)^2
)^(1/2)+e*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 120, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}+\frac{e(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x)*Log[a + b*x
])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e*(a + b*x)*Log[d + e*x
])/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \left(\frac{b}{(bd-ae)(a+bx)^2}-\frac{be}{(bd-ae)^2(a+bx)}+\frac{e^2}{(bd-ae)^2(d+ex)}\right)dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{1}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\log(a+bx)}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a}{(bd-ae}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 57, normalized size = 0.48

$$\frac{e(a+bx)\log(d+ex)-e(a+bx)\log(a+bx)+ae-bd}{\sqrt{(a+bx)^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-(b*d) + a*e - e*(a + b*x)*Log[a + b*x] + e*(a + b*x)*Log[d + e*x])/((b*d
 - a*e)^2*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.85, size = 93, normalized size = 0.78

$$-\frac{bd-ae+(bex+ae)\log(bx+a)-(bex+ae)\log(ex+d)}{ab^2d^2-2\,a^2bde+a^3e^2+\left(b^3d^2-2\,ab^2de+a^2be^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="fricas"
)
```

```
[Out] -(b*d - a*e + (b*e*x + a*e)*log(b*x + a) - (b*e*x + a*e)*log(e*x + d))/(a*b
^2*d^2 - 2*a^2*b*d*e + a^3*e^2 + (b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*x)
```

giac [**B**] time = 0.24, size = 203, normalized size = 1.69

$$-\frac{ae\log\left(\left|b+\frac{a}{x}\right|\right)}{ab^2d^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-2\,a^2bde\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^3e^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)}+\frac{de\log\left(\left|\frac{d}{x}+e\right|\right)}{b^2d^3\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-2\,abd^2e\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^2de^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac")
```

```
[Out] -a*e*log(abs(b + a/x))/(a*b^2*d^2*sgn(b/x + a/x^2) - 2*a^2*b*d*e*sgn(b/x +
a/x^2) + a^3*e^2*sgn(b/x + a/x^2)) + d*e*log(abs(d/x + e))/(b^2*d^3*sgn(b/x
 + a/x^2) - 2*a*b*d^2*e*sgn(b/x + a/x^2) + a^2*d*e^2*sgn(b/x + a/x^2)) + (b
^2*d - a*b*e)/((b*d - a*e)^2*a*(b + a/x)*sgn(b/x + a/x^2))
```

maple [**A**] time = 0.06, size = 77, normalized size = 0.64

$$-\frac{(bex\ln(bx+a)-bex\ln(ex+d)+ae\ln(bx+a)-ae\ln(ex+d)-ae+bd)\,(bx+a)^2}{(ae-bd)^2\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(b*e*x*ln(b*x+a)-ln(e*x+d)*x*b*e+a*e*ln(b*x+a)-ln(e*x+d)*a*e-a*e+b*d)*(b*x
+a)^2/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{\left(d+e\,x\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right) \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.2031 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=169

$$-\frac{b}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{2be(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{2be(a}{\sqrt{a^2+2a}}$$

```
[Out] -b/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)-e*(b*x+a)/(-a*e+b*d)^2/(e*x+d)/((b*x+a)^2
)^(1/2)-2*b*e*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)+2*b*e*(b*x+a
)*ln(e*x+d)/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 44\}$

$$-\frac{b}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^2}-\frac{2be(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{2be(a}{\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(b/((b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x))/((b*d -
a*e)^2*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*e*(a + b*x)*Log[a +
b*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (2*b*e*(a + b*x)*Log[
d + e*x])/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \Big(\frac{b^2}{(bd-ae)^2(a+bx)^2} - \frac{2b^2e}{(bd-ae)^3(a+bx)} + \frac{e^2}{(bd-ae)^2(d+ex)^2} + \frac{2be^2}{(bd-ae)^3(d+}}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{b}{(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}} - \frac{e(a+bx)}{(bd-ae)^2(d+ex)\sqrt{a^2+2abx+b^2x}}$$

Mathematica [A] time = 0.07, size = 92, normalized size = 0.54

$$\frac{-((bd-ae)(ae+b(d+2ex))) - 2be(a+bx)(d+ex)\log(a+bx) + 2be(a+bx)(d+ex)\log(d+ex)}{\sqrt{(a+bx)^2}\,(d+ex)(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(a*e + b*(d + 2*e*x))) - 2*b*e*(a + b*x)*(d + e*x)*Log[a + b
*x] + 2*b*e*(a + b*x)*(d + e*x)*Log[d + e*x])/((b*d - a*e)^3*Sqrt[(a + b*x)
^2]*(d + e*x))
```

fricas [A] time = 0.85, size = 241, normalized size = 1.43

$$-\frac{b^2d^2 - a^2e^2 + 2\left(b^2de - abe^2\right)x + 2\left(b^2e^2x^2 + abde + \left(b^2de + abe^2\right)x\right)\log(bx+a) - 2\Big(b^2e^2x^2 + abde + \Big(b^2de}{ab^3d^4 - 3\,a^2b^2d^3e + 3\,a^3bd^2e^2 - a^4de^3 + \left(b^4d^3e - 3\,ab^3d^2e^2 + 3\,a^2b^2de^3 - a^3be^4\right)x^2 + \Big(b^4d^4 - 2\,ab^3d^3e +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -(b^2*d^2 - a^2*e^2 + 2*(b^2*d*e - a*b*e^2)*x + 2*(b^2*e^2*x^2 + a*b*d*e +
(b^2*d*e + a*b*e^2)*x)*log(b*x + a) - 2*(b^2*e^2*x^2 + a*b*d*e + (b^2*d*e +
 a*b*e^2)*x)*log(e*x + d))/(a*b^3*d^4 - 3*a^2*b^2*d^3*e + 3*a^3*b*d^2*e^2 -
 a^4*d*e^3 + (b^4*d^3*e - 3*a*b^3*d^2*e^2 + 3*a^2*b^2*d*e^3 - a^3*b*e^4)*x^
2 + (b^4*d^4 - 2*a*b^3*d^3*e + 2*a^3*b*d*e^3 - a^4*e^4)*x)
```

giac [B] time = 0.46, size = 486, normalized size = 2.88

$$\frac{2\,be^2\log\left(\left|-b + \frac{bd}{xe+d} - \frac{ae}{xe+d}\right|\right)}{b^3d^3e\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - 3\,ab^2d^2e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) + 3\,a^2bde^3\,\mathrm{sgn}\Big(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2*b*e^2*log(abs(-b + b*d/(x*e + d) - a*e/(x*e + d)))/(b^3*d^3*e*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 3*a*b^2*d^2*e^2*sgn(-b*e
/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 3*a^2*b*d*e^3*sgn(-b*
e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^3*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + e^3/((b^2*d^2*e^2*sgn(-b
*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 2*a*b*d*e^3*sgn(-b*
e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + a^2*e^4*sgn(-b*e/(x*
e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))*(x*e + d)) + b^2*e/((b*d -
 a*e)^3*(b - b*d/(x*e + d) + a*e/(x*e + d))*sgn(-b*e/(x*e + d) + b*d*e/(x*e
 + d)^2 - a*e^2/(x*e + d)^2))
```

maple **[A]** time = 0.09, size = 181, normalized size = 1.07

$$\frac{(2b^2e^2x^2\ln(bx+a) - 2b^2e^2x^2\ln(ex+d) + 2ab\,e^2x\ln(bx+a) - 2ab\,e^2x\ln(ex+d) + 2b^2dex\ln(bx+a) - 2b^2dex}{(ex+d)(ae-bd)^3((bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (2*ln(b*x+a)*x^2*b^2*e^2-2*ln(e*x+d)*x^2*b^2*e^2+2*a*b*e^2*x*ln(b*x+a)+2*b^
2*d*e*x*ln(b*x+a)-2*ln(e*x+d)*x*a*b*e^2-2*ln(e*x+d)*x*b^2*d*e+2*a*b*d*e*ln(
b*x+a)-2*ln(e*x+d)*a*b*d*e-2*a*b*e^2*x+2*b^2*d*e*x-a^2*e^2+b^2*d^2)*(b*x+a)
^2/(e*x+d)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right)^{2} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**2*((a + b*x)**2)**(3/2)), x)
```

3.2032 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{b^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{2be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}-\frac{e(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae}$$

```
[Out] -b^2/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)-1/2*e*(b*x+a)/(-a*e+b*d)^2/(e*x+d)^2/((
b*x+a)^2)^(1/2)-2*b*e*(b*x+a)/(-a*e+b*d)^3/(e*x+d)/((b*x+a)^2)^(1/2)-3*b^2*
e*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)+3*b^2*e*(b*x+a)*ln(e*x+d
)/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 44\}$

$$-\frac{b^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{2be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^3}-\frac{e(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(b^2/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x))/(2*(b*
d - a*e)^2*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*b*e*(a + b*x))/(
(b*d - a*e)^3*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*b^2*e*(a + b*x)
*Log[a + b*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b^2*e*(a
+ b*x)*Log[d + e*x])/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \left(\frac{b^3}{(bd-ae)^3(a+bx)^2} - \frac{3b^3e}{(bd-ae)^4(a+bx)} + \frac{e^2}{(bd-ae)^2(d+ex)^3} + \frac{2be^2}{(bd-ae)^3(d+ex)^2}\right.}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{b^2}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{e(a+bx)}{2(bd-ae)^2(d+ex)^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [**A**] time = 0.10, size = 135, normalized size = 0.61

$$\frac{-(bd-ae)\left(-a^2e^2+abe(5d+3ex)+b^2\left(2d^2+9dex+6e^2x^2\right)\right)-6b^2e(a+bx)(d+ex)^2\log(a+bx)+6b^2e(a+bx)}{2\sqrt{(a+bx)^2}\,(d+ex)^2(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-((b*d - a*e)*(-(a^2*e^2) + a*b*e*(5*d + 3*e*x) + b^2*(2*d^2 + 9*d*e*x + 6
*e^2*x^2))) - 6*b^2*e*(a + b*x)*(d + e*x)^2*Log[a + b*x] + 6*b^2*e*(a + b*x
)*(d + e*x)^2*Log[d + e*x])/(2*(b*d - a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^2)
```

fricas [**B**] time = 1.50, size = 495, normalized size = 2.22

$$-\frac{2\,b^3d^3+3\,ab^2d^2e-6\,a^2bde^2+a^3e^3+6\left(b^3de^2-ab^2e^3\right)x^2+3\left(3\,b^3d^2e-2\,ab^2de^2-a^2be^3\right)x+6\left(b^3e^3x^3+ab^2\right.}{2\left(ab^4d^6-4\,a^2b^3d^5e+6\,a^3b^2d^4e^2-4\,a^4bd^3e^3+a^5d^2e^4+\left(b^5d^4e^2-4\,ab^4d^3e^3+6\,a^2b^3d^2e^4-4\,a^3b^2de^5+a^4be^6\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] -1/2*(2*b^3*d^3 + 3*a*b^2*d^2*e - 6*a^2*b*d*e^2 + a^3*e^3 + 6*(b^3*d*e^2 -
a*b^2*e^3)*x^2 + 3*(3*b^3*d^2*e - 2*a*b^2*d*e^2 - a^2*b*e^3)*x + 6*(b^3*e^3
*x^3 + a*b^2*d^2*e + (2*b^3*d*e^2 + a*b^2*e^3)*x^2 + (b^3*d^2*e + 2*a*b^2*d
*e^2)*x)*log(b*x + a) - 6*(b^3*e^3*x^3 + a*b^2*d^2*e + (2*b^3*d*e^2 + a*b^2
*e^3)*x^2 + (b^3*d^2*e + 2*a*b^2*d*e^2)*x)*log(e*x + d))/(a*b^4*d^6 - 4*a^2
*b^3*d^5*e + 6*a^3*b^2*d^4*e^2 - 4*a^4*b*d^3*e^3 + a^5*d^2*e^4 + (b^5*d^4*e
^2 - 4*a*b^4*d^3*e^3 + 6*a^2*b^3*d^2*e^4 - 4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^3
 + (2*b^5*d^5*e - 7*a*b^4*d^4*e^2 + 8*a^2*b^3*d^3*e^3 - 2*a^3*b^2*d^2*e^4 -
 2*a^4*b*d*e^5 + a^5*e^6)*x^2 + (b^5*d^6 - 2*a*b^4*d^5*e - 2*a^2*b^3*d^4*e^
2 + 8*a^3*b^2*d^3*e^3 - 7*a^4*b*d^2*e^4 + 2*a^5*d*e^5)*x)
```

giac [**B**] time = 2.85, size = 461, normalized size = 2.07

$$-\frac{3\,ab^2e\log\left(\left|b+\frac{a}{x}\right|\right)}{ab^4d^4\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4\,a^2b^3d^3e\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+6\,a^3b^2d^2e^2\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)-4\,a^4bde^3\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right)+a^5e^4\mathrm{sgn}\left(\frac{b}{x}+\frac{a}{x^2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] -3*a*b^2*e*log(abs(b + a/x))/(a*b^4*d^4*sgn(b/x + a/x^2) - 4*a^2*b^3*d^3*e*
sgn(b/x + a/x^2) + 6*a^3*b^2*d^2*e^2*sgn(b/x + a/x^2) - 4*a^4*b*d*e^3*sgn(b
/x + a/x^2) + a^5*e^4*sgn(b/x + a/x^2)) + 3*b^2*d*e*log(abs(d/x + e))/(b^4*
d^5*sgn(b/x + a/x^2) - 4*a*b^3*d^4*e*sgn(b/x + a/x^2) + 6*a^2*b^2*d^3*e^2*s
gn(b/x + a/x^2) - 4*a^3*b*d^2*e^3*sgn(b/x + a/x^2) + a^4*d*e^4*sgn(b/x + a/
x^2)) + 1/2*(2*b^4*d^3*e^2 + 3*a*b^3*d^2*e^3 - 6*a^2*b^2*d*e^4 + a^3*b*e^5
+ (4*b^4*d^4*e + 2*a*b^3*d^3*e^2 - 3*a^2*b^2*d^2*e^3 - 4*a^3*b*d*e^4 + a^4*
e^5)/x + 2*(b^4*d^5 - a*b^3*d^4*e + 3*a^2*b^2*d^3*e^2 - 4*a^3*b*d^2*e^3 + a
^4*d*e^4)/x^2)/((b*d - a*e)^4*a*(b + a/x)*d^2*(d/x + e)^2*sgn(b/x + a/x^2))
```

maple [A] time = 0.07, size = 331, normalized size = 1.48

$$-\frac{(6b^3e^3x^3\ln(bx+a)-6b^3e^3x^3\ln(ex+d)+6a\,b^2e^3x^2\ln(bx+a)-6a\,b^2e^3x^2\ln(ex+d)+12b^3d\,e^2x^2\ln(bx+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/2*(6*ln(b*x+a)*x^3*b^3*e^3-6*ln(e*x+d)*x^3*b^3*e^3+6*ln(b*x+a)*x^2*a*b^2
*e^3+12*ln(b*x+a)*x^2*b^3*d*e^2-6*ln(e*x+d)*x^2*a*b^2*e^3-12*ln(e*x+d)*x^2*
b^3*d*e^2+12*a*b^2*d*e^2*x*ln(b*x+a)+6*b^3*d^2*e*x*ln(b*x+a)-12*ln(e*x+d)*x
*a*b^2*d*e^2-6*ln(e*x+d)*x*b^3*d^2*e-6*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a*b^
2*d^2*e*ln(b*x+a)-6*ln(e*x+d)*a*b^2*d^2*e-3*a^2*b*e^3*x-6*a*b^2*d*e^2*x+9*b
^3*d^2*e*x+a^3*e^3-6*a^2*b*d*e^2+3*a*b^2*d^2*e+2*b^3*d^3)*(b*x+a)^2/(e*x+d)
^2/(a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right)^{3} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**3*((a + b*x)**2)**(3/2)), x)
```

3.2033 $\int \frac{(a+bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=252

$$-\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{10e^3(a+bx)(bd-ae)^2\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx}}$$

```
[Out] -1/3*(e*x+d)^5/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-20/3*e^2*(-a*e+b*d)^3/b^6/((b*
x+a)^2)^(1/2)-5/6*e*(-a*e+b*d)^4/b^6/(b*x+a)/((b*x+a)^2)^(1/2)+5/3*e^4*(-3*
a*e+4*b*d)*x*(b*x+a)/b^5/((b*x+a)^2)^(1/2)+5/6*e^5*x^2*(b*x+a)/b^4/((b*x+a)
^2)^(1/2)+10*e^3*(-a*e+b*d)^2*(b*x+a)*ln(b*x+a)/b^6/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 252, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {768, 646, 43}

$$\frac{5e^4x(a+bx)(4bd-3ae)}{3b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}}+\frac{10e^3(a+bx)(bd-ae)^2\log(a+bx)}{b^6\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx+}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^5/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (20*e^2*(b*d - a*e)^3)
/(3*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^4)/(6*b^6*(a + b*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^4*(4*b*d - 3*a*e)*x*(a + b*x))/(3*
b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*e^5*x^2*(a + b*x))/(6*b^4*Sqrt[a^2
+ 2*a*b*x + b^2*x^2]) + (10*e^3*(b*d - a*e)^2*(a + b*x)*Log[a + b*x])/(b^6*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^5}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(5e)\int \frac{(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(5be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^4}{\left(ab+b^2x\right)^3}\,dx}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(5be\left(ab+b^2x\right)\right)\int \left(\frac{e^3(4bd-3ae)}{b^7} + \frac{e^4x}{b^6} + \frac{(bd-ae)^4}{b^7(a+bx)^3} +}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^5}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{20e^2(bd-ae)^3}{3b^6\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(bd-ae)^4}{6b^6(a+bx)\sqrt{a^2+2abx}}$$

Mathematica [A] time = 0.11, size = 232, normalized size = 0.92

$$47a^5e^5 + a^4be^4(81ex-130d) + a^3b^2e^3\left(110d^2-270dex-9e^2x^2\right) - a^2b^3e^2\left(20d^3-270d^2ex+90de^2x^2+63e^3x^3\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^5)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (47*a^5*e^5 + a^4*b*e^4*(-130*d + 81*e*x) + a^3*b^2*e^3*(110*d^2 - 270*d*e*
x - 9*e^2*x^2) - a^2*b^3*e^2*(20*d^3 - 270*d^2*e*x + 90*d*e^2*x^2 + 63*e^3*
x^3) - 5*a*b^4*e*(d^4 + 12*d^3*e*x - 36*d^2*e^2*x^2 - 18*d*e^3*x^3 + 3*e^4*
x^4) + b^5*(-2*d^5 - 15*d^4*e*x - 60*d^3*e^2*x^2 + 30*d*e^4*x^4 + 3*e^5*x^5
) + 60*e^3*(b*d - a*e)^2*(a + b*x)^3*Log[a + b*x])/(6*b^6*((a + b*x)^2)^(3/
2))
```

fricas [B] time = 0.92, size = 426, normalized size = 1.69

$$3\,b^5e^5x^5 - 2\,b^5d^5 - 5\,ab^4d^4e - 20\,a^2b^3d^3e^2 + 110\,a^3b^2d^2e^3 - 130\,a^4bde^4 + 47\,a^5e^5 + 15\left(2\,b^5de^4 - ab^4e^5\right)x^4 + 9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/6*(3*b^5*e^5*x^5 - 2*b^5*d^5 - 5*a*b^4*d^4*e - 20*a^2*b^3*d^3*e^2 + 110*a
^3*b^2*d^2*e^3 - 130*a^4*b*d*e^4 + 47*a^5*e^5 + 15*(2*b^5*d*e^4 - a*b^4*e^5
)*x^4 + 9*(10*a*b^4*d*e^4 - 7*a^2*b^3*e^5)*x^3 - 3*(20*b^5*d^3*e^2 - 60*a*b
^4*d^2*e^3 + 30*a^2*b^3*d*e^4 + 3*a^3*b^2*e^5)*x^2 - 3*(5*b^5*d^4*e + 20*a*
b^4*d^3*e^2 - 90*a^2*b^3*d^2*e^3 + 90*a^3*b^2*d*e^4 - 27*a^4*b*e^5)*x + 60*
(a^3*b^2*d^2*e^3 - 2*a^4*b*d*e^4 + a^5*e^5 + (b^5*d^2*e^3 - 2*a*b^4*d*e^4 +
 a^2*b^3*e^5)*x^3 + 3*(a*b^4*d^2*e^3 - 2*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^2 +
 3*(a^2*b^3*d^2*e^3 - 2*a^3*b^2*d*e^4 + a^4*b*e^5)*x)*log(b*x + a))/(b^9*x^
3 + 3*a*b^8*x^2 + 3*a^2*b^7*x + a^3*b^6)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^5}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^5/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [B] time = 0.06, size = 495, normalized size = 1.96

$$\Big(3b^5e^5x^5 + 60a^2b^3e^5x^3 \ln(bx + a) - 120a\, b^4d\, e^4x^3 \ln(bx + a) - 15a\, b^4e^5x^4 + 60b^5d^2e^3x^3 \ln(bx + a) + 30b^5d\, e^4x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/6*(-130*a^4*b*d*e^4+110*a^3*b^2*d^2*e^3-20*a^2*b^3*d^3*e^2-5*a*b^4*d^4*e+
180*ln(b*x+a)*x^2*a*b^4*d^2*e^3-360*ln(b*x+a)*x*a^3*b^2*d*e^4-360*ln(b*x+a)
*x^2*a^2*b^3*d*e^4-120*ln(b*x+a)*x^3*a*b^4*d*e^4+180*ln(b*x+a)*x*a^2*b^3*d^
2*e^3+47*a^5*e^5+3*x^5*b^5*e^5-60*x^2*b^5*d^3*e^2-9*x^2*a^3*b^2*e^5-63*x^3*
a^2*b^3*e^5-15*x^4*a*b^4*e^5+30*x^4*b^5*d*e^4-15*x*b^5*d^4*e+81*x*a^4*b*e^5
-2*b^5*d^5+270*x*a^2*b^3*d^2*e^3-60*x*a*b^4*d^3*e^2+60*ln(b*x+a)*a^5*e^5+18
0*ln(b*x+a)*x*a^4*b*e^5-120*ln(b*x+a)*a^4*b*d*e^4-90*x^2*a^2*b^3*d*e^4-270*
x*a^3*b^2*d*e^4+90*x^3*a*b^4*d*e^4+60*ln(b*x+a)*x^3*a^2*b^3*e^5+60*ln(b*x+a
)*x^3*b^5*d^2*e^3+180*ln(b*x+a)*x^2*a^3*b^2*e^5+60*ln(b*x+a)*a^3*b^2*d^2*e^
3+180*x^2*a*b^4*d^2*e^3)*(b*x+a)^2/b^6/((b*x+a)^2)^(5/2)
```

maxima [B] time = 1.18, size = 1010, normalized size = 4.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^5/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/4*b*e^5*((2*b^6*x^6 - 12*a*b^5*x^5 - 68*a^2*b^4*x^4 - 32*a^3*b^3*x^3 + 13
2*a^4*b^2*x^2 + 168*a^5*b*x + 57*a^6)/(b^11*x^4 + 4*a*b^10*x^3 + 6*a^2*b^9*
x^2 + 4*a^3*b^8*x + a^4*b^7) + 60*a^2*log(b*x + a)/b^7) + 5/12*b*d*e^4*((12
*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x -
77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) -
60*a*log(b*x + a)/b^6) + 1/12*a*e^5*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^
3*x^3 - 252*a^3*b^2*x^2 - 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6
*a^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 5/6*b*d^2*
e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*
b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 5
/12*a*d*e^4*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^
4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/
b^5) - 5/6*b*d^3*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*
(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 5/6*a*d^2*e^3*(12*x^2/((b^2*x^2 +
 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) +
6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4))
- 1/12*b*d^5*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^
4)) - 5/12*a*d^4*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x +
 a/b)^4)) - 5/12*b*d^4*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a
^2/(b^7*(x + a/b)^4)) - 5/6*a*d^3*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x +
a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/4*a*d^5/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^5}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
[Out] int(((a + b*x)*(d + e*x)^5)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^5}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**5/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Integral((a + b*x)*(d + e*x)**5/((a + b*x)**2)**(5/2), x)
```

3.2034 $\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=201

$$-\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{4e^3(a+bx)(bd-ae)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+b}}$$

```
[Out] -1/3*(e*x+d)^4/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-4*e^2*(-a*e+b*d)^2/b^5/((b*x+a
)^2)^(1/2)-2/3*e*(-a*e+b*d)^3/b^5/(b*x+a)/((b*x+a)^2)^(1/2)+4/3*e^4*x*(b*x+
a)/b^4/((b*x+a)^2)^(1/2)+4*e^3*(-a*e+b*d)*(b*x+a)*ln(b*x+a)/b^5/((b*x+a)^2)
^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 201, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {768, 646, 43}

$$-\frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}}+\frac{4e^3(a+bx)(bd-ae)\log(a+bx)}{b^5\sqrt{a^2+2abx+b^2x^2}}-\frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^4/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (4*e^2*(b*d - a*e)^2)/
(b^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (2*e*(b*d - a*e)^3)/(3*b^5*(a + b*x)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*e^4*x*(a + b*x))/(3*b^4*Sqrt[a^2 + 2*a*
b*x + b^2*x^2]) + (4*e^3*(b*d - a*e)*(a + b*x)*Log[a + b*x])/(b^5*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^4}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(4e)\int \frac{(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(4be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^3}{\left(ab+b^2x\right)^3}\,dx}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(4be\left(ab+b^2x\right)\right)\int \left(\frac{e^3}{b^6}+\frac{(bd-ae)^3}{b^6(a+bx)^3}+\frac{3e(bd-ae)^2}{b^6(a+bx)^2}+\frac{3e^2}{b^6}\right.}{3\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^4}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{4e^2(bd-ae)^2}{b^5\sqrt{a^2+2abx+b^2x^2}} - \frac{2e(bd-ae)^3}{3b^5(a+bx)\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.08, size = 170, normalized size = 0.85

$$\frac{-13a^4e^4+a^3be^3(22d-27ex)-3a^2b^2e^2\left(2d^2-18dex+3e^2x^2\right)+ab^3e\left(-2d^3-18d^2ex+36de^2x^2+9e^3x^3\right)-12}{3b^5\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^4)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-13*a^4*e^4 + a^3*b*e^3*(22*d - 27*e*x) - 3*a^2*b^2*e^2*(2*d^2 - 18*d*e*x
+ 3*e^2*x^2) + a*b^3*e*(-2*d^3 - 18*d^2*e*x + 36*d*e^2*x^2 + 9*e^3*x^3) - b
^4*(d^4 + 6*d^3*e*x + 18*d^2*e^2*x^2 - 3*e^4*x^4) - 12*e^3*(-(b*d) + a*e)*(
a + b*x)^3*Log[a + b*x])/(3*b^5*((a + b*x)^2)^(3/2))
```

fricas [A] time = 1.43, size = 292, normalized size = 1.45

$$\frac{3\,b^4e^4x^4+9\,ab^3e^4x^3-b^4d^4-2\,ab^3d^3e-6\,a^2b^2d^2e^2+22\,a^3bde^3-13\,a^4e^4-9\left(2\,b^4d^2e^2-4\,ab^3de^3+a^2b^2e^4\right)x^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] 1/3*(3*b^4*e^4*x^4 + 9*a*b^3*e^4*x^3 - b^4*d^4 - 2*a*b^3*d^3*e - 6*a^2*b^2*
d^2*e^2 + 22*a^3*b*d*e^3 - 13*a^4*e^4 - 9*(2*b^4*d^2*e^2 - 4*a*b^3*d*e^3 +
a^2*b^2*e^4)*x^2 - 3*(2*b^4*d^3*e + 6*a*b^3*d^2*e^2 - 18*a^2*b^2*d*e^3 + 9*
a^3*b*e^4)*x + 12*(a^3*b*d*e^3 - a^4*e^4 + (b^4*d*e^3 - a*b^3*e^4)*x^3 + 3*
(a*b^3*d*e^3 - a^2*b^2*e^4)*x^2 + 3*(a^2*b^2*d*e^3 - a^3*b*e^4)*x)*log(b*x
+ a))/(b^8*x^3 + 3*a*b^7*x^2 + 3*a^2*b^6*x + a^3*b^5)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^4}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^4/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [B] time = 0.07, size = 322, normalized size = 1.60

$$-\frac{\left(12a\,b^{3}e^{4}x^{3}\ln\left(bx+a\right)-12b^{4}d\,e^{3}x^{3}\ln\left(bx+a\right)-3b^{4}e^{4}x^{4}+36a^{2}b^{2}e^{4}x^{2}\ln\left(bx+a\right)-36a\,b^{3}d\,e^{3}x^{2}\ln\left(bx+a\right)-9\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/3*(12*ln(b*x+a)*x^3*a*b^3*e^4-12*ln(b*x+a)*x^3*b^4*d*e^3-3*b^4*e^4*x^4+3
6*ln(b*x+a)*x^2*a^2*b^2*e^4-36*ln(b*x+a)*x^2*a*b^3*d*e^3-9*a*b^3*e^4*x^3+36
*a^3*b*e^4*x*ln(b*x+a)-36*a^2*b^2*d*e^3*x*ln(b*x+a)+9*a^2*b^2*e^4*x^2-36*a*
b^3*d*e^3*x^2+18*b^4*d^2*e^2*x^2+12*a^4*e^4*ln(b*x+a)-12*a^3*b*d*e^3*ln(b*x
+a)+27*a^3*b*e^4*x-54*a^2*b^2*d*e^3*x+18*a*b^3*d^2*e^2*x+6*b^4*d^3*e*x+13*a
^4*e^4-22*a^3*b*d*e^3+6*a^2*b^2*d^2*e^2+2*a*b^3*d^3*e+b^4*d^4)*(b*x+a)^2/b^
5/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.99, size = 755, normalized size = 3.76

$$\frac{1}{12}\,be^{4}\left(\frac{12\,b^{5}x^{5}+48\,ab^{4}x^{4}-48\,a^{2}b^{3}x^{3}-252\,a^{3}b^{2}x^{2}-248\,a^{4}bx-77\,a^{5}}{b^{10}x^{4}+4\,ab^{9}x^{3}+6\,a^{2}b^{8}x^{2}+4\,a^{3}b^{7}x+a^{4}b^{6}}-\frac{60\,a\log\left(bx+a\right)}{b^{6}}\right)+\frac{1}{3}\,bde^{3}\left(\frac{48\,ab^{3}x^{3}+}{b^{9}x^{4}+4\,ab}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^4/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*b*e^4*((12*b^5*x^5 + 48*a*b^4*x^4 - 48*a^2*b^3*x^3 - 252*a^3*b^2*x^2 -
 248*a^4*b*x - 77*a^5)/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x^2 + 4*a^3*b^7*
x + a^4*b^6) - 60*a*log(b*x + a)/b^6) + 1/3*b*d*e^3*((48*a*b^3*x^3 + 108*a^
2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) + 1/12*a*e^4*((48*a*b^3*x^3 +
108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x
^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b^5) - 1/2*b*d^2*e^2*(12*x^2/
((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x
+ a/b)^4)) - 1/3*a*d*e^3*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*
a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(
b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*b*d^4*(4/((b^2*x^2 + 2*a
*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*a*d^3*e*(4/((b^2*x^2
+ 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) - 1/3*b*d^3*e*(6/(b^5*
(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)) - 1/2*a*d^2
*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*(x + a/b)^4)
) - 1/4*a*d^4/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^4}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^4)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^4}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**4/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**4/((a + b*x)**2)**(5/2), x)
```

3.2035 $\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=154

$$-\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{e^3(a+bx)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -1/3*(e*x+d)^3/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-2*e^2*(-a*e+b*d)/b^4/((b*x+a)^
2)^(1/2)-1/2*e*(-a*e+b*d)^2/b^4/(b*x+a)/((b*x+a)^2)^(1/2)+e^3*(b*x+a)*ln(b*
x+a)/b^4/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {768, 646, 43}

$$-\frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^3(a+bx)\log(a+bx)}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^3/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (2*e^2*(b*d - a*e))/(b
^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*(b*d - a*e)^2)/(2*b^4*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*Log[a + b*x])/(b^4*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^3}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{e\int \frac{(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{b}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^2}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(be\left(ab+b^2x\right)\right)\int \left(\frac{(bd-ae)^2}{b^5(a+bx)^3}+\frac{2e(bd-ae)}{b^5(a+bx)^2}+\frac{e^2}{b^5(a+bx)}\right)}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^3}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{2e^2(bd-ae)}{b^4\sqrt{a^2+2abx+b^2x^2}} - \frac{e(bd-ae)^2}{2b^4(a+bx)\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.05, size = 91, normalized size = 0.59

$$\frac{6e^3(a+bx)^3\log(a+bx)-(bd-ae)\left(11a^2e^2+abe(5d+27ex)+b^2\left(2d^2+9dex+18e^2x^2\right)\right)}{6b^4\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^3)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-((b*d - a*e)*(11*a^2*e^2 + a*b*e*(5*d + 27*e*x) + b^2*(2*d^2 + 9*d*e*x +
18*e^2*x^2))) + 6*e^3*(a + b*x)^3*Log[a + b*x])/(6*b^4*((a + b*x)^2)^(3/2))
```

fricas [A] time = 1.27, size = 176, normalized size = 1.14

$$-\frac{2\,b^3d^3+3\,ab^2d^2e+6\,a^2bde^2-11\,a^3e^3+18\left(b^3de^2-ab^2e^3\right)x^2+9\left(b^3d^2e+2\,ab^2de^2-3\,a^2be^3\right)x-6\,(b^3e^3x^3+}{6\left(b^7x^3+3\,ab^6x^2+3\,a^2b^5x+a^3b^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/6*(2*b^3*d^3 + 3*a*b^2*d^2*e + 6*a^2*b*d*e^2 - 11*a^3*e^3 + 18*(b^3*d*e^
2 - a*b^2*e^3)*x^2 + 9*(b^3*d^2*e + 2*a*b^2*d*e^2 - 3*a^2*b*e^3)*x - 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(b*x + a))/(b^7*x^
3 + 3*a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^3}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^3/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.06, size = 179, normalized size = 1.16

$$\frac{(6b^3e^3x^3\ln(bx+a)+18a\,b^2e^3x^2\ln(bx+a)+18a^2b\,e^3x\ln(bx+a)+18a\,b^2e^3x^2-18b^3d\,e^2x^2+6a^3e^3\ln(bx+}{6\left((bx+a)^2\right)^{\frac{5}{2}}b^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/6*(6*b^3*e^3*x^3*ln(b*x+a)+18*a*b^2*e^3*x^2*ln(b*x+a)+18*a^2*b*e^3*x*ln(b
*x+a)+18*a*b^2*e^3*x^2-18*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)+27*a^2*b*e^3*x-
18*a*b^2*d*e^2*x-9*b^3*d^2*e*x+11*a^3*e^3-6*a^2*b*d*e^2-3*a*b^2*d^2*e-2*b^3
*d^3)*(b*x+a)^2/b^4/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.78, size = 533, normalized size = 3.46

$$\frac{1}{12}\,be^3\left(\frac{48\,ab^3x^3+108\,a^2b^2x^2+88\,a^3bx+25\,a^4}{b^9x^4+4\,ab^8x^3+6\,a^2b^7x^2+4\,a^3b^6x+a^4b^5}+\frac{12\,\log\left(bx+a\right)}{b^5}\right)-\frac{1}{4}\,bde^2\left(\frac{12\,x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}+\frac{}{\left(b^2x^2+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 1/12*b*e^3*((48*a*b^3*x^3 + 108*a^2*b^2*x^2 + 88*a^3*b*x + 25*a^4)/(b^9*x^4
 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*a^3*b^6*x + a^4*b^5) + 12*log(b*x + a)/b
^5) - 1/4*b*d*e^2*(12*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) + 8*a^2/((b
^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b^6*(x + a/b)^2) - 8*a^2/(b^7*(x
+ a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12*a*e^3*(12*x^2/((b^2*x^2 + 2*a*b
*x + a^2)^(3/2)*b^2) + 8*a^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^4) + 6*a/(b
^6*(x + a/b)^2) - 8*a^2/(b^7*(x + a/b)^3) - 3*a^3/(b^8*(x + a/b)^4)) - 1/12
*b*d^3*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4)) -
1/4*a*d^2*e*(4/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 3*a/(b^6*(x + a/b)^4
)) - 1/4*b*d^2*e*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) + 3*a^2/(b^7*
(x + a/b)^4)) - 1/4*a*d*e^2*(6/(b^5*(x + a/b)^2) - 8*a/(b^6*(x + a/b)^3) +
3*a^2/(b^7*(x + a/b)^4)) - 1/4*a*d^3/(b^5*(x + a/b)^4)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^3)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(a + bx\right) \left(d + ex\right)^{3}}{\left(\left(a + bx\right)^{2}\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x)
```

3.2036 $\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=41

$$-\frac{(d+ex)^3}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)}$$

```
[Out] -1/3*(e*x+d)^3/(-a*e+b*d)/(b^2*x^2+2*a*b*x+a^2)^(3/2)
```

Rubi [A] time = 0.02, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.030, Rules used = {767}

$$-\frac{(d+ex)^3}{3\left(a^2+2abx+b^2x^2\right)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^3/(3*(b*d - a*e)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^2}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^3}{3(bd-ae)\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Mathematica [A] time = 0.03, size = 60, normalized size = 1.46

$$\frac{-a^2e^2-abe(d+3ex)-\left(b^2\left(d^2+3dex+3e^2x^2\right)\right)}{3b^3\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^2)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(a^2*e^2) - a*b*e*(d + 3*e*x) - b^2*(d^2 + 3*d*e*x + 3*e^2*x^2))/(3*b^3*(
(a + b*x)^2)^(3/2))
```

fricas [B] time = 0.81, size = 84, normalized size = 2.05

$$-\frac{3\,b^2e^2x^2+b^2d^2+abde+a^2e^2+3\left(b^2de+abe^2\right)x}{3\left(b^6x^3+3\,ab^5x^2+3\,a^2b^4x+a^3b^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/3*(3*b^2*e^2*x^2 + b^2*d^2 + a*b*d*e + a^2*e^2 + 3*(b^2*d*e + a*b*e^2)*x
)/(b^6*x^3 + 3*a*b^5*x^2 + 3*a^2*b^4*x + a^3*b^3)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^2/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.05, size = 69, normalized size = 1.68

$$-\frac{(bx+a)^2\left(3b^2e^2x^2+3ab\,e^2x+3b^2dex+a^2e^2+abde+b^2d^2\right)}{3\left((bx+a)^2\right)^{\frac{5}{2}}b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/3*(b*x+a)^2*(3*b^2*e^2*x^2+3*a*b*e^2*x+3*b^2*d*e*x+a^2*e^2+a*b*d*e+b^2*d
^2)/b^3/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.73, size = 274, normalized size = 6.68

$$-\frac{e^2x^2}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b}-\frac{2\,a^2e^2}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^3}-\frac{bd^2+2\,ade}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b^2}-\frac{ae^2}{2\,b^5\left(x+\frac{a}{b}\right)^2}+\frac{2\,a^2e^2}{3\,b^6\left(x+\frac{a}{b}\right)^3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] -e^2*x^2/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b) - 2/3*a^2*e^2/((b^2*x^2 + 2*a*
b*x + a^2)^(3/2)*b^3) - 1/3*(b*d^2 + 2*a*d*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3
/2)*b^2) - 1/2*a*e^2/(b^5*(x + a/b)^2) + 2/3*a^2*e^2/(b^6*(x + a/b)^3) - 1/
4*a*d^2/(b^5*(x + a/b)^4) + 1/4*a^3*e^2/(b^7*(x + a/b)^4) - 1/2*(2*b*d*e +
a*e^2)/(b^5*(x + a/b)^2) + 2/3*(2*b*d*e + a*e^2)*a/(b^6*(x + a/b)^3) - 1/4*
(2*b*d*e + a*e^2)*a^2/(b^7*(x + a/b)^4) + 1/4*(b*d^2 + 2*a*d*e)*a/(b^6*(x +
 a/b)^4)
```

mupad [B] time = 2.24, size = 77, normalized size = 1.88

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(a^2\,e^2+a\,b\,d\,e+3\,a\,b\,e^2\,x+b^2\,d^2+3\,b^2\,d\,e\,x+3\,b^2\,e^2\,x^2\right)}{3\,b^3\,{\left(a+b\,x\right)}^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^2)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(a^2*e^2 + b^2*d^2 + 3*b^2*e^2*x^2 + 3*a*
b*e^2*x + 3*b^2*d*e*x + a*b*d*e))/(3*b^3*(a + b*x)^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^2}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**2/((a + b*x)**2)**(5/2), x)
```

3.2037 $\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=68

$$-\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 1/3*(-e*x-d)/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-1/6*e/b^2/(b*x+a)/((b*x+a)^2)^(1
/2)
```

Rubi [A] time = 0.03, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {768, 607}

$$-\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - e/(6*b^2*(a + b*x)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])
```

Rule 607

```
Int[((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(2*(a + b*x
+ c*x^2)^(p + 1))/((2*p + 1)*(b + 2*c*x)), x] /; FreeQ[{a, b, c, p}, x] &&
EqQ[b^2 - 4*a*c, 0] && LtQ[p, -1]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{1}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{3b}\\ &= -\frac{d+ex}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e}{6b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.47

$$\frac{-ae-2bd-3bex}{6b^2\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-2*b*d - a*e - 3*b*e*x)/(6*b^2*((a + b*x)^2)^(3/2))
```

fricas [A] time = 0.95, size = 50, normalized size = 0.74

$$-\frac{3\,bex+2\,bd+ae}{6\,\left(b^{5}x^{3}+3\,ab^{4}x^{2}+3\,a^{2}b^{3}x+a^{3}b^{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/6*(3*b*e*x + 2*b*d + a*e)/(b^5*x^3 + 3*a*b^4*x^2 + 3*a^2*b^3*x + a^3*b^2
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [A] time = 0.06, size = 35, normalized size = 0.51

$$-\frac{(bx+a)^{2}\,(3bex+ae+2bd)}{6\left((bx+a)^{2}\right)^{\frac{5}{2}}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(b*x+a)^2/b^2*(3*b*e*x+a*e+2*b*d)/((b*x+a)^2)^(5/2)
```

maxima [B] time = 0.60, size = 118, normalized size = 1.74

$$-\frac{bd+ae}{3\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}b^{2}}-\frac{e}{2\,b^{4}\left(x+\frac{a}{b}\right)^{2}}+\frac{2\,ae}{3\,b^{5}\left(x+\frac{a}{b}\right)^{3}}-\frac{ad}{4\,b^{5}\left(x+\frac{a}{b}\right)^{4}}-\frac{a^{2}e}{4\,b^{6}\left(x+\frac{a}{b}\right)^{4}}+\frac{(bd+ae)a}{4\,b^{6}\left(x+\frac{a}{b}\right)^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] -1/3*(b*d + a*e)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b^2) - 1/2*e/(b^4*(x + a/
b)^2) + 2/3*a*e/(b^5*(x + a/b)^3) - 1/4*a*d/(b^5*(x + a/b)^4) - 1/4*a^2*e/(
b^6*(x + a/b)^4) + 1/4*(b*d + a*e)*a/(b^6*(x + a/b)^4)
```

mupad [B] time = 2.16, size = 43, normalized size = 0.63

$$-\frac{\left(a\,e+2\,b\,d+3\,b\,e\,x\right)\,\sqrt{a^{2}+2\,a\,b\,x+b^{2}\,x^{2}}}{6\,b^{2}\,{\left(a+b\,x\right)}^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -((a*e + 2*b*d + 3*b*e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(6*b^2*(a + b*x)
^4)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)}{\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)/((a + b*x)**2)**(5/2), x)
```

3.2038 $\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=27

$$-\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

```
[Out] -1/3/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)
```

Rubi [A] time = 0.01, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 26, $\frac{\text{number of rules}}{\text{integrand size}} = 0.038$, Rules used = {629}

$$-\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -1/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int \frac{a+bx}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{1}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}$$

Mathematica [A] time = 0.01, size = 18, normalized size = 0.67

$$-\frac{1}{3b\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -1/3*1/(b*((a + b*x)^2)^(3/2))
```

fricas [A] time = 0.93, size = 35, normalized size = 1.30

$$-\frac{1}{3\left(b^4x^3+3\,ab^3x^2+3\,a^2b^2x+a^3b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3/(b^4*x^3 + 3*a*b^3*x^2 + 3*a^2*b^2*x + a^3*b)
```

giac [A] time = 0.20, size = 23, normalized size = 0.85

$$-\frac{1}{3\left(a^2+\left(bx^2+2\,ax\right)b\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/3/((a^2 + (b*x^2 + 2*a*x)*b)^(3/2)*b)
```

maple [A] time = 0.05, size = 22, normalized size = 0.81

$$-\frac{\left(bx+a\right)^2}{3\left(\left(bx+a\right)^2\right)^{\frac{5}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/3*(b*x+a)^2/b/((b*x+a)^2)^(5/2)
```

maxima [A] time = 0.59, size = 23, normalized size = 0.85

$$-\frac{1}{3\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/3/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*b)
```

mupad [B] time = 2.09, size = 30, normalized size = 1.11

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{3\,b\,\left(a+b\,x\right)^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)/(3*b*(a + b*x)^4)
```

sympy [A] time = 1.57, size = 97, normalized size = 3.59

$$\begin{cases} -\frac{1}{3a^2b\sqrt{a^2+2abx+b^2x^2}+6ab^2x\sqrt{a^2+2abx+b^2x^2}+3b^3x^2\sqrt{a^2+2abx+b^2x^2}} & \text{for } b\neq 0 \\ \frac{ax}{\left(a^2\right)^{\frac{5}{2}}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Piecewise((-1/(3*a**2*b*sqrt(a**2 + 2*a*b*x + b**2*x**2) + 6*a*b**2*x*sqrt(
a**2 + 2*a*b*x + b**2*x**2) + 3*b**3*x**2*sqrt(a**2 + 2*a*b*x + b**2*x**2))
, Ne(b, 0)), (a*x/(a**2)**(5/2), True))
```

3.2039 $\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{}{2(a+bx)\sqrt{a^2}}$$

```
[Out] -e^2/(-a*e+b*d)^3/((b*x+a)^2)^(1/2)-1/3/(-a*e+b*d)/(b*x+a)^2/((b*x+a)^2)^(1
/2)+1/2*e/(-a*e+b*d)^2/(b*x+a)/((b*x+a)^2)^(1/2)-e^3*(b*x+a)*ln(b*x+a)/(-a*
e+b*d)^4/((b*x+a)^2)^(1/2)+e^3*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^4/((b*x+a)^2)^(
1/2)
```

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 44\}$

$$-\frac{e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}-\frac{e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{e^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}+\frac{}{2(a+bx)\sqrt{a^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] -(e^2/((b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - 1/(3*(b*d - a*e)*(a
+ b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + e/(2*(b*d - a*e)^2*(a + b*x)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x)*Log[a + b*x])/((b*d - a*e)^4*Sq
rt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*Log[d + e*x])/((b*d - a*e)^4*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \bigg(\frac{b}{(bd-ae)(a+bx)^4} - \frac{be}{(bd-ae)^2(a+bx)^3} + \frac{be^2}{(bd-ae)^3(a+bx)^2} - \frac{be^3}{(bd-ae)^4(a+bx)} +}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{e^2}{(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.08, size = 116, normalized size = 0.55

$$\frac{-(bd-ae)\left(11a^2e^2+abe(15ex-7d)+b^2\left(2d^2-3dex+6e^2x^2\right)\right)+6e^3(a+bx)^3\log(d+ex)-6e^3(a+bx)^3\log(a+}{6\left((a+bx)^2\right)^{3/2}(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-((b*d - a*e)*(11*a^2*e^2 + a*b*e*(-7*d + 15*e*x) + b^2*(2*d^2 - 3*d*e*x +
 6*e^2*x^2))) - 6*e^3*(a + b*x)^3*Log[a + b*x] + 6*e^3*(a + b*x)^3*Log[d +
e*x])/(6*(b*d - a*e)^4*((a + b*x)^2)^(3/2))
```

fricas [B] time = 1.09, size = 425, normalized size = 2.02

$$-\frac{2\,b^3d^3-9\,ab^2d^2e+18\,a^2bde^2-11\,a^3e^3+6\left(b^3de^2-ab^2e^3\right)x^2-3\left(b^3d^2e-6\,ab^2de^2+5\,a^2be^3\right)x+6}{6\left(a^3b^4d^4-4\,a^4b^3d^3e+6\,a^5b^2d^2e^2-4\,a^6bde^3+a^7e^4+\left(b^7d^4-4\,ab^6d^3e+6\,a^2b^5d^2e^2-4\,a^3b^4de^3+a^4b^3e^4\right)x^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="fricas"
)
```

```
[Out] -1/6*(2*b^3*d^3 - 9*a*b^2*d^2*e + 18*a^2*b*d*e^2 - 11*a^3*e^3 + 6*(b^3*d*e^
2 - a*b^2*e^3)*x^2 - 3*(b^3*d^2*e - 6*a*b^2*d*e^2 + 5*a^2*b*e^3)*x + 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(b*x + a) - 6*(b^3
*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*log(e*x + d))/(a^3*b^
4*d^4 - 4*a^4*b^3*d^3*e + 6*a^5*b^2*d^2*e^2 - 4*a^6*b*d*e^3 + a^7*e^4 + (b^
7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*
x^3 + 3*(a*b^6*d^4 - 4*a^2*b^5*d^3*e + 6*a^3*b^4*d^2*e^2 - 4*a^4*b^3*d*e^3
+ a^5*b^2*e^4)*x^2 + 3*(a^2*b^5*d^4 - 4*a^3*b^4*d^3*e + 6*a^4*b^3*d^2*e^2 -
 4*a^5*b^2*d*e^3 + a^6*b*e^4)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)), x)
```

maple [A] time = 0.06, size = 251, normalized size = 1.20

$$-\frac{\left(6b^3e^3x^3\ln(bx+a) - 6b^3e^3x^3\ln(ex+d) + 18a\,b^2e^3x^2\ln(bx+a) - 18a\,b^2e^3x^2\ln(ex+d) + 18a^2b\,e^3x\ln(bx\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(6*b^3*e^3*x^3*ln(b*x+a)-6*b^3*e^3*x^3*ln(e*x+d)+18*a*b^2*e^3*x^2*ln(b
*x+a)-18*a*b^2*e^3*x^2*ln(e*x+d)+18*a^2*b*e^3*x*ln(b*x+a)-18*ln(e*x+d)*x*a^
2*b*e^3-6*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+6*a^3*e^3*ln(b*x+a)-6*ln(e*x+d)*a^3
*e^3-15*a^2*b*e^3*x+18*a*b^2*d*e^2*x-3*b^3*d^2*e*x-11*a^3*e^3+18*a^2*b*d*e^
2-9*a*b^2*d^2*e+2*b^3*d^3)*(b*x+a)^2/(a*e-b*d)^4/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(((2*a*b)/e>0)', see `assume?` for m
ore details)Is ((2*a*b)/e    -(2*b^2*d)/e^2)    ^2    -(4*b^2       *((-(2*
a*b*d)/e)        +(b^2*d^2)/e^2+a^2))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{(d+e\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(d+ex)\left((a+bx)^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)*((a + b*x)**2)**(5/2)), x)
```

3.2040 $\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=260

$$-\frac{e^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}-\frac{4be^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{4be^3(a+bx)\log(d+ex)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-\frac{}{\sqrt{a^2+2a}}$$

```
[Out] -3*b*e^2/(-a*e+b*d)^4/((b*x+a)^2)^(1/2)-1/3*b/(-a*e+b*d)^2/(b*x+a)^2/((b*x+
a)^2)^(1/2)+b*e/(-a*e+b*d)^3/(b*x+a)/((b*x+a)^2)^(1/2)-e^3*(b*x+a)/(-a*e+b*
d)^4/(e*x+d)/((b*x+a)^2)^(1/2)-4*b*e^3*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^5/((b*x
+a)^2)^(1/2)+4*b*e^3*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 44\}$

$$-\frac{e^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^4}-\frac{3be^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}-\frac{4be^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}+\frac{4be^3(a}{\sqrt{a^2+2a}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-3*b*e^2)/((b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - b/(3*(b*d - a*e)
^2*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (b*e)/((b*d - a*e)^3*(a + b
*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x))/((b*d - a*e)^4*(d + e*
x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (4*b*e^3*(a + b*x)*Log[a + b*x])/((b*d
- a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (4*b*e^3*(a + b*x)*Log[d + e*x])/
((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^2\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^2}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \left(\frac{b^2}{(bd-ae)^2(a+bx)^4} - \frac{2b^2e}{(bd-ae)^3(a+bx)^3} + \frac{3b^2e^2}{(bd-ae)^4(a+bx)^2} - \frac{4b^2e^3}{(bd-ae)^5(a-}\right.}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{3be^2}{(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}} - \frac{b}{3(bd-ae)^2(a+bx)^2\sqrt{a^2+2abx+b}}$$

Mathematica [**A**] time = 0.10, size = 144, normalized size = 0.55

$$\frac{\frac{3e^3(a+bx)^3(ae-bd)}{d+ex} + 12be^3(a+bx)^3\log(d+ex) - 9be^2(a+bx)^2(bd-ae) + 3be(a+bx)(bd-ae)^2 - b(bd-ae)^3 - 1}{3\left((a+bx)^2\right)^{3/2}(bd-ae)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-(b*(b*d - a*e)^3) + 3*b*e*(b*d - a*e)^2*(a + b*x) - 9*b*e^2*(b*d - a*e)*(
a + b*x)^2 + (3*e^3*(-(b*d) + a*e)*(a + b*x)^3)/(d + e*x) - 12*b*e^3*(a + b
*x)^3*Log[a + b*x] + 12*b*e^3*(a + b*x)^3*Log[d + e*x])/(3*(b*d - a*e)^5*((
a + b*x)^2)^(3/2))
```

fricas [**B**] time = 0.88, size = 751, normalized size = 2.89

$$-\frac{b^4d^4 - 6\,ab^3d^3e + 18\,a^2b^2d^2e^2 - 10\,a^3bde^3 - 3\,a^4e^4 + 12\left(b^4de^3 - ab^3e^4\right)x^3 + 6\left(b^4d^2e^2 + 4\,ab^3de^3 -\right.}{3\left(a^3b^5d^6 - 5\,a^4b^4d^5e + 10\,a^5b^3d^4e^2 - 10\,a^6b^2d^3e^3 + 5\,a^7bd^2e^4 - a^8de^5 + \left(b^8d^5e - 5\,ab^7d^4e^2 + 10\,a^2b^6d^3e^3 - 1\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/3*(b^4*d^4 - 6*a*b^3*d^3*e + 18*a^2*b^2*d^2*e^2 - 10*a^3*b*d*e^3 - 3*a^4
*e^4 + 12*(b^4*d*e^3 - a*b^3*e^4)*x^3 + 6*(b^4*d^2*e^2 + 4*a*b^3*d*e^3 - 5*
a^2*b^2*e^4)*x^2 - 2*(b^4*d^3*e - 9*a*b^3*d^2*e^2 - 3*a^2*b^2*d*e^3 + 11*a^
3*b*e^4)*x + 12*(b^4*e^4*x^4 + a^3*b*d*e^3 + (b^4*d*e^3 + 3*a*b^3*e^4)*x^3
+ 3*(a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + (3*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*log(
b*x + a) - 12*(b^4*e^4*x^4 + a^3*b*d*e^3 + (b^4*d*e^3 + 3*a*b^3*e^4)*x^3 +
3*(a*b^3*d*e^3 + a^2*b^2*e^4)*x^2 + (3*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*log(e*
x + d))/(a^3*b^5*d^6 - 5*a^4*b^4*d^5*e + 10*a^5*b^3*d^4*e^2 - 10*a^6*b^2*d^
3*e^3 + 5*a^7*b*d^2*e^4 - a^8*d*e^5 + (b^8*d^5*e - 5*a*b^7*d^4*e^2 + 10*a^2
*b^6*d^3*e^3 - 10*a^3*b^5*d^2*e^4 + 5*a^4*b^4*d*e^5 - a^5*b^3*e^6)*x^4 + (b
^8*d^6 - 2*a*b^7*d^5*e - 5*a^2*b^6*d^4*e^2 + 20*a^3*b^5*d^3*e^3 - 25*a^4*b^
4*d^2*e^4 + 14*a^5*b^3*d*e^5 - 3*a^6*b^2*e^6)*x^3 + 3*(a*b^7*d^6 - 4*a^2*b^
6*d^5*e + 5*a^3*b^5*d^4*e^2 - 5*a^5*b^3*d^2*e^4 + 4*a^6*b^2*d*e^5 - a^7*b*e
^6)*x^2 + (3*a^2*b^6*d^6 - 14*a^3*b^5*d^5*e + 25*a^4*b^4*d^4*e^2 - 20*a^5*b
^3*d^3*e^3 + 5*a^6*b^2*d^2*e^4 + 2*a^7*b*d*e^5 - a^8*e^6)*x)
```

giac [**B**] time = 0.51, size = 774, normalized size = 2.98

$$\frac{4}{b^5d^5e\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) - 5\,ab^4d^4e^2\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bde}{(xe+d)^2} - \frac{ae^2}{(xe+d)^2}\right) + 10\,a^2b^3d^3e^3\,\mathrm{sgn}\left(-\frac{be}{xe+d} + \frac{bd}{(xe+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] 4*b*e^4*log(abs(-b + b*d/(x*e + d) - a*e/(x*e + d)))/(b^5*d^5*e*sgn(-b*e/(x
*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 5*a*b^4*d^4*e^2*sgn(-b*e
/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 10*a^2*b^3*d^3*e^3*sg
n(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 10*a^3*b^2*d^2*
e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 5*a^4*b*d
*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - a^5*e^6*
sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)) + e^7/((b^4*d^
4*e^4*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) - 4*a*b^3
*d^3*e^5*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) + 6*a^
2*b^2*d^2*e^6*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2) -
 4*a^3*b*d*e^7*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2)
+ a^4*e^8*sgn(-b*e/(x*e + d) + b*d*e/(x*e + d)^2 - a*e^2/(x*e + d)^2))*(x*e
 + d)) + 1/3*(13*b^4*e^3 - 30*(b^4*d*e^4 - a*b^3*e^5)*e^(-1)/(x*e + d) + 18
*(b^4*d^2*e^5 - 2*a*b^3*d*e^6 + a^2*b^2*e^7)*e^(-2)/(x*e + d)^2)/((b*d - a*
e)^5*(b - b*d/(x*e + d) + a*e/(x*e + d))^3*sgn(-b*e/(x*e + d) + b*d*e/(x*e
+ d)^2 - a*e^2/(x*e + d)^2))
```

maple [B] time = 0.07, size = 483, normalized size = 1.86

$$(12b^4e^4x^4\ln(bx+a) - 12b^4e^4x^4\ln(ex+d) + 36a\,b^3e^4x^3\ln(bx+a) - 36a\,b^3e^4x^3\ln(ex+d) + 12b^4d\,e^3x^3\ln(bx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/3*(36*a^2*b^2*d*e^3*x*ln(b*x+a)+36*a*b^3*d*e^3*x^2*ln(b*x+a)-6*a*b^3*d^3*
e+18*a^2*b^2*d^2*e^2-36*a*b^3*d*e^3*x^2*ln(e*x+d)-36*a^2*b^2*d*e^3*x*ln(e*x
+d)-12*b^4*e^4*x^4*ln(e*x+d)+b^4*d^4-3*a^4*e^4+6*b^4*d^2*e^2*x^2-22*a^3*b*e
^4*x-2*b^4*d^3*e*x-30*a^2*b^2*e^4*x^2-12*a*b^3*e^4*x^3+12*b^4*d*e^3*x^3-10*
a^3*b*d*e^3+6*a^2*b^2*d*e^3*x+18*a*b^3*d^2*e^2*x-12*a^3*b*d*e^3*ln(e*x+d)+3
6*a*b^3*e^4*x^3*ln(b*x+a)+24*a*b^3*d*e^3*x^2+12*ln(b*x+a)*x^4*b^4*e^4+12*a^
3*b*e^4*x*ln(b*x+a)-12*a^3*b*e^4*x*ln(e*x+d)+12*a^3*b*d*e^3*ln(b*x+a)-12*b^
4*d*e^3*x^3*ln(e*x+d)+12*b^4*d*e^3*x^3*ln(b*x+a)+36*a^2*b^2*e^4*x^2*ln(b*x+
a)-36*a^2*b^2*e^4*x^2*ln(e*x+d)-36*a*b^3*e^4*x^3*ln(e*x+d))*(b*x+a)^2/(e*x+
d)/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^2/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^2\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**2/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2041 $\int \frac{a+bx}{(d+ex)^3\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=323

$$-\frac{4be^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^4}-\frac{10b^2e^3(a+bx)\log(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}+$$

```
[Out] -6*b^2*e^2/(-a*e+b*d)^5/((b*x+a)^2)^(1/2)-1/3*b^2/(-a*e+b*d)^3/(b*x+a)^2/((
b*x+a)^2)^(1/2)+3/2*b^2*e/(-a*e+b*d)^4/(b*x+a)/((b*x+a)^2)^(1/2)-1/2*e^3*(b
*x+a)/(-a*e+b*d)^4/(e*x+d)^2/((b*x+a)^2)^(1/2)-4*b*e^3*(b*x+a)/(-a*e+b*d)^5
/(e*x+d)/((b*x+a)^2)^(1/2)-10*b^2*e^3*(b*x+a)*ln(b*x+a)/(-a*e+b*d)^6/((b*x+
a)^2)^(1/2)+10*b^2*e^3*(b*x+a)*ln(e*x+d)/(-a*e+b*d)^6/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.24, antiderivative size = 323, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {770, 21, 44}

$$-\frac{4be^3(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,(d+ex)(bd-ae)^5}-\frac{e^3(a+bx)}{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^2(bd-ae)^4}-\frac{6b^2e^2}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-6*b^2*e^2)/((b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - b^2/(3*(b*d -
a*e)^3*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*b^2*e)/(2*(b*d - a*e
)^4*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x))/(2*(b*d - a*
e)^4*(d + e*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (4*b*e^3*(a + b*x))/((b*d
 - a*e)^5*(d + e*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (10*b^2*e^3*(a + b*x)*
Log[a + b*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (10*b^2*e^3*(
a + b*x)*Log[d + e*x])/((b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 44

```
Int[((a_) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int[
ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d}, x] &
& NeQ[b*c - a*d, 0] && ILtQ[m, 0] && IntegerQ[n] &&  !(IGtQ[n, 0] && LtQ[m
+ n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(d+ex)^3 \left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4 \left(ab+b^2x\right)\right) \int \frac{a+bx}{\left(ab+b^2x\right)^5 (d+ex)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{\left(ab+b^2x\right) \int \frac{1}{(a+bx)^4(d+ex)^3}\,dx}{b\sqrt{a^2+2abx+b^2x^2}} \\
&= \frac{\left(ab+b^2x\right) \int \Big(\frac{b^3}{(bd-ae)^3(a+bx)^4} - \frac{3b^3e}{(bd-ae)^4(a+bx)^3} + \frac{6b^3e^2}{(bd-ae)^5(a+bx)^2} - \frac{10b^3e^3}{(bd-ae)^6(a-}}{b\sqrt{a^2+2abx+b^2}} \\
&= -\frac{6b^2e^2}{(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}} - \frac{b^2}{3(bd-ae)^3(a+bx)^2\sqrt{a^2+2abx+b}}
\end{aligned}
$$

Mathematica [**A**]   time = 0.12, size = 184, normalized size = 0.57

$$
\frac{60b^2e^3(a+bx)^3\log(d+ex) - 36b^2e^2(a+bx)^2(bd-ae) + 9b^2e(a+bx)(bd-ae)^2 - 2b^2(bd-ae)^3 - 60b^2e^3(a+}{6\left((a+bx)^2\right)^{3/2}(bd-ae)^6}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*b^2*(b*d - a*e)^3 + 9*b^2*e*(b*d - a*e)^2*(a + b*x) - 36*b^2*e^2*(b*d -
 a*e)*(a + b*x)^2 - (3*e^3*(b*d - a*e)^2*(a + b*x)^3)/(d + e*x)^2 - (24*b*e
^3*(b*d - a*e)*(a + b*x)^3)/(d + e*x) - 60*b^2*e^3*(a + b*x)^3*Log[a + b*x]
 + 60*b^2*e^3*(a + b*x)^3*Log[d + e*x])/(6*(b*d - a*e)^6*((a + b*x)^2)^(3/2
))
```

fricas [**B**]   time = 0.62, size = 1151, normalized size = 3.56

$$
-\frac{2\,b^5d^5 - 15\,ab^4d^4e + 60\,a^2b^3d^3e^2 - 20\,a^3b^2d^2e^3 - 30\,a^4bde^4 + 3\,a^5e^5 + 60\left(b^5de^4 - ab^4e^5\right)x^4 + 30\,(}{6\,\big(a^3b^6d^8 - 6\,a^4b^5d^7e + 15\,a^5b^4d^6e^2 - 20\,a^6b^3d^5e^3 + 15\,a^7b^2d^4e^4 - 6\,a^8bd^3e^5 + a^9d^2e^6 + \big(b^9d^6e^2 - 6\,ab^8d^5e^3 -}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] -1/6*(2*b^5*d^5 - 15*a*b^4*d^4*e + 60*a^2*b^3*d^3*e^2 - 20*a^3*b^2*d^2*e^3
- 30*a^4*b*d*e^4 + 3*a^5*e^5 + 60*(b^5*d*e^4 - a*b^4*e^5)*x^4 + 30*(3*b^5*d
^2*e^3 + 2*a*b^4*d*e^4 - 5*a^2*b^3*e^5)*x^3 + 10*(2*b^5*d^3*e^2 + 21*a*b^4*
d^2*e^3 - 12*a^2*b^3*d*e^4 - 11*a^3*b^2*e^5)*x^2 - 5*(b^5*d^4*e - 12*a*b^4*
d^3*e^2 - 24*a^2*b^3*d^2*e^3 + 32*a^3*b^2*d*e^4 + 3*a^4*b*e^5)*x + 60*(b^5*
e^5*x^5 + a^3*b^2*d^2*e^3 + (2*b^5*d*e^4 + 3*a*b^4*e^5)*x^4 + (b^5*d^2*e^3
+ 6*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + (3*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 +
 a^3*b^2*e^5)*x^2 + (3*a^2*b^3*d^2*e^3 + 2*a^3*b^2*d*e^4)*x)*log(b*x + a) -
 60*(b^5*e^5*x^5 + a^3*b^2*d^2*e^3 + (2*b^5*d*e^4 + 3*a*b^4*e^5)*x^4 + (b^5
*d^2*e^3 + 6*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 + (3*a*b^4*d^2*e^3 + 6*a^2*b^
3*d*e^4 + a^3*b^2*e^5)*x^2 + (3*a^2*b^3*d^2*e^3 + 2*a^3*b^2*d*e^4)*x)*log(e
*x + d))/(a^3*b^6*d^8 - 6*a^4*b^5*d^7*e + 15*a^5*b^4*d^6*e^2 - 20*a^6*b^3*d
^5*e^3 + 15*a^7*b^2*d^4*e^4 - 6*a^8*b*d^3*e^5 + a^9*d^2*e^6 + (b^9*d^6*e^2
- 6*a*b^8*d^5*e^3 + 15*a^2*b^7*d^4*e^4 - 20*a^3*b^6*d^3*e^5 + 15*a^4*b^5*d^
2*e^6 - 6*a^5*b^4*d*e^7 + a^6*b^3*e^8)*x^5 + (2*b^9*d^7*e - 9*a*b^8*d^6*e^2
 + 12*a^2*b^7*d^5*e^3 + 5*a^3*b^6*d^4*e^4 - 30*a^4*b^5*d^3*e^5 + 33*a^5*b^4
*d^2*e^6 - 16*a^6*b^3*d*e^7 + 3*a^7*b^2*e^8)*x^4 + (b^9*d^8 - 18*a^2*b^7*d^
6*e^2 + 52*a^3*b^6*d^5*e^3 - 60*a^4*b^5*d^4*e^4 + 24*a^5*b^4*d^3*e^5 + 10*a
^6*b^3*d^2*e^6 - 12*a^7*b^2*d*e^7 + 3*a^8*b*e^8)*x^3 + (3*a*b^8*d^8 - 12*a^
2*b^7*d^7*e + 10*a^3*b^6*d^6*e^2 + 24*a^4*b^5*d^5*e^3 - 60*a^5*b^4*d^4*e^4
+ 52*a^6*b^3*d^3*e^5 - 18*a^7*b^2*d^2*e^6 + a^9*e^8)*x^2 + (3*a^2*b^7*d^8 -
 16*a^3*b^6*d^7*e + 33*a^4*b^5*d^6*e^2 - 30*a^5*b^4*d^5*e^3 + 5*a^6*b^3*d^4
*e^4 + 12*a^7*b^2*d^3*e^5 - 9*a^8*b*d^2*e^6 + 2*a^9*d*e^7)*x)
```

giac [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^3), x)
```

maple [**B**]   time = 0.08, size = 753, normalized size = 2.33

$$-\frac{\left(60b^5e^5x^5\ln(bx+a)-60b^5e^5x^5\ln(ex+d)+180a\,b^4e^5x^4\ln(bx+a)-180a\,b^4e^5x^4\ln(ex+d)+120b^5d\,e^4x^4\ln\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/6*(-30*a^4*b*d*e^4-20*a^3*b^2*d^2*e^3+60*a^2*b^3*d^3*e^2-15*a*b^4*d^4*e+
180*a*b^4*d^2*e^3*x^2*ln(b*x+a)+120*a^3*b^2*d*e^4*x*ln(b*x+a)+360*a^2*b^3*d
*e^4*x^2*ln(b*x+a)+360*a*b^4*d*e^4*x^3*ln(b*x+a)+180*a^2*b^3*d^2*e^3*x*ln(b
*x+a)+3*a^5*e^5+90*x^3*b^5*d^2*e^3+20*b^5*d^3*e^2*x^2-110*a^3*b^2*e^5*x^2-1
50*a^2*b^3*e^5*x^3-60*a*b^4*e^5*x^4+60*b^5*d*e^4*x^4-5*b^5*d^4*e*x-15*a^4*b
*e^5*x+2*b^5*d^5-120*ln(e*x+d)*x*a^3*b^2*d*e^4-180*ln(e*x+d)*x*a^2*b^3*d^2*
e^3-360*ln(e*x+d)*x^2*a^2*b^3*d*e^4-180*ln(e*x+d)*x^2*a*b^4*d^2*e^3-360*ln(
e*x+d)*x^3*a*b^4*d*e^4+120*a^2*b^3*d^2*e^3*x+60*a*b^4*d^3*e^2*x+60*ln(b*x+a
)*x^5*b^5*e^5-60*ln(e*x+d)*x^5*b^5*e^5-180*ln(e*x+d)*x^3*a^2*b^3*e^5-60*ln(
e*x+d)*x^3*b^5*d^2*e^3-60*ln(e*x+d)*x^2*a^3*b^2*e^5-60*ln(e*x+d)*a^3*b^2*d^
2*e^3+180*ln(b*x+a)*x^4*a*b^4*e^5+120*ln(b*x+a)*x^4*b^5*d*e^4-180*ln(e*x+d)
*x^4*a*b^4*e^5-120*ln(e*x+d)*x^4*b^5*d*e^4-120*a^2*b^3*d*e^4*x^2-160*a^3*b^
2*d*e^4*x+60*a*b^4*d*e^4*x^3+180*a^2*b^3*e^5*x^3*ln(b*x+a)+60*b^5*d^2*e^3*x
^3*ln(b*x+a)+60*a^3*b^2*e^5*x^2*ln(b*x+a)+60*a^3*b^2*d^2*e^3*ln(b*x+a)+210*
a*b^4*d^2*e^3*x^2)*(b*x+a)^2/(e*x+d)^2/(a*e-b*d)^6/((b*x+a)^2)^(5/2)
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^3/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d zero or nonzero?
```

mupad [**F**]   time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^3\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
[Out] int((a + b*x)/((d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**3/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.2042 $\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{13/2}(bd-ae)}{13e^4}+\frac{6b(d+ex)^{11/2}(bd-ae)^2}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^3}{9e^4}+\frac{2b^3(d+ex)^{15/2}}{15e^4}$$

```
[Out] -2/9*(-a*e+b*d)^3*(e*x+d)^(9/2)/e^4+6/11*b*(-a*e+b*d)^2*(e*x+d)^(11/2)/e^4-
6/13*b^2*(-a*e+b*d)*(e*x+d)^(13/2)/e^4+2/15*b^3*(e*x+d)^(15/2)/e^4
```

Rubi [A] time = 0.04, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 43}

$$-\frac{6b^2(d+ex)^{13/2}(bd-ae)}{13e^4}+\frac{6b(d+ex)^{11/2}(bd-ae)^2}{11e^4}-\frac{2(d+ex)^{9/2}(bd-ae)^3}{9e^4}+\frac{2b^3(d+ex)^{15/2}}{15e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
11/2))/(11*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(13/2))/(13*e^4) + (2*b^3*(d
 + e*x)^(15/2))/(15*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^{7/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{9/2}}{e^3}-\frac{3b^2(bd-ae}{}\right.\\ &= -\frac{2(bd-ae)^3(d+ex)^{9/2}}{9e^4}+\frac{6b(bd-ae)^2(d+ex)^{11/2}}{11e^4}-\frac{6b^2(bd-ae)(}{13e}\end{aligned}$$

Mathematica [A] time = 0.08, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{9/2}\left(-1485b^2(d+ex)^2(bd-ae)+1755b(d+ex)(bd-ae)^2-715(bd-ae)^3+429b^3(d+ex)^3\right)}{6435e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-715*(b*d - a*e)^3 + 1755*b*(b*d - a*e)^2*(d + e*x) - 1
485*b^2*(b*d - a*e)*(d + e*x)^2 + 429*b^3*(d + e*x)^3))/(6435*e^4)
```

fricas [B] time = 1.09, size = 320, normalized size = 3.20

$$\frac{2\bigl(429\,b^3e^7x^7 - 16\,b^3d^7 + 120\,ab^2d^6e - 390\,a^2bd^5e^2 + 715\,a^3d^4e^3 + 33\bigl(46\,b^3de^6 + 45\,ab^2e^7\bigr)x^6 + 9\bigl(206\,b^3d^2e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/6435*(429*b^3*e^7*x^7 - 16*b^3*d^7 + 120*a*b^2*d^6*e - 390*a^2*b*d^5*e^2
+ 715*a^3*d^4*e^3 + 33*(46*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 9*(206*b^3*d^2*e
^5 + 600*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 5*(160*b^3*d^3*e^4 + 1374*a*b^2
*d^2*e^5 + 1326*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 + 5*(b^3*d^4*e^3 + 636*a*b^2
*d^3*e^4 + 1794*a^2*b*d^2*e^5 + 572*a^3*d*e^6)*x^3 - 3*(2*b^3*d^5*e^2 - 15*
a*b^2*d^4*e^3 - 1560*a^2*b*d^3*e^4 - 1430*a^3*d^2*e^5)*x^2 + (8*b^3*d^6*e -
 60*a*b^2*d^5*e^2 + 195*a^2*b*d^4*e^3 + 2860*a^3*d^3*e^4)*x)*sqrt(e*x + d)/
e^4
```

giac [B] time = 0.26, size = 1270, normalized size = 12.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/45045*(45045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^4*e^(-1) + 900
9*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d
^4*e^(-2) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^4*e^(-3) + 36036*(3*(x*e + d)^(5/2)
- 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d^3*e^(-1) + 15444*(5*
(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x
*e + d)*d^3)*a*b^2*d^3*e^(-2) + 572*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/
2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d
)*d^4)*b^3*d^3*e^(-3) + 45045*sqrt(x*e + d)*a^3*d^4 + 60060*((x*e + d)^(3/2
) - 3*sqrt(x*e + d)*d)*a^3*d^3 + 23166*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5
/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*d^2*e^(-1) + 2
574*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*d^2*e^(-2) + 390*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^
3*d^2*e^(-3) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^3*d^2 + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^
2*b*d*e^(-1) + 780*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e
+ d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*
sqrt(x*e + d)*d^5)*a*b^2*d*e^(-2) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e +
d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x
*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*
d*e^(-3) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*d + 195*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b*e^(-1) + 45*(231*(x*e + d
)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
 d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*
sqrt(x*e + d)*d^6)*a*b^2*e^(-2) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^
(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(
x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
- 6435*sqrt(x*e + d)*d^7)*b^3*e^(-3) + 143*(35*(x*e + d)^(9/2) - 180*(x*e +
 d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(
x*e + d)*d^4)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{9}{2}}\left(429b^3e^3x^3+1485a\,b^2e^3x^2-198b^3d\,e^2x^2+1755a^2b\,e^3x-540a\,b^2d\,e^2x+72b^3d^2ex+715a^3e^3-390a\right.}{6435e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/6435*(e*x+d)^(9/2)*(429*b^3*e^3*x^3+1485*a*b^2*e^3*x^2-198*b^3*d*e^2*x^2+
1755*a^2*b*e^3*x-540*a*b^2*d*e^2*x+72*b^3*d^2*e*x+715*a^3*e^3-390*a^2*b*d*e
^2+120*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.60, size = 118, normalized size = 1.18

$$\frac{2\left(429\,(ex+d)^{\frac{15}{2}}b^3-1485\left(b^3d-ab^2e\right)(ex+d)^{\frac{13}{2}}+1755\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{11}{2}}-715\left(b^3d^3-3\,ab^2d\right.\right.}{6435\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*b^3 - 1485*(b^3*d - a*b^2*e)*(e*x + d)^(13/2)
+ 1755*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(11/2) - 715*(b^3*d^3
- 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(9/2))/e^4
```

mupad [B] time = 0.08, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{15/2}}{15\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{13/2}}{13\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(15/2))/(15*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(13/2)
)/(13*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(9/2))/(9*e^4) + (6*b*(a*e - b*d)^2
*(d + e*x)^(11/2))/(11*e^4)
```

sympy [A] time = 9.58, size = 654, normalized size = 6.54

$$\begin{cases}\frac{2a^3d^4\sqrt{d+ex}}{9e}+\frac{8a^3d^3x\sqrt{d+ex}}{9}+\frac{4a^3d^2ex^2\sqrt{d+ex}}{3}+\frac{8a^3de^2x^3\sqrt{d+ex}}{9}+\frac{2a^3e^3x^4\sqrt{d+ex}}{9}-\frac{4a^2bd^5\sqrt{d+ex}}{33e^2}+\frac{2a^2bd^4x\sqrt{d+ex}}{33e}+\frac{16a^2bd^3x^2}{11} \\ d^{\frac{7}{2}}\left(a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*a**3*d**4*sqrt(d + e*x)/(9*e) + 8*a**3*d**3*x*sqrt(d + e*x)/9
+ 4*a**3*d**2*e*x**2*sqrt(d + e*x)/3 + 8*a**3*d*e**2*x**3*sqrt(d + e*x)/9 +
 2*a**3*e**3*x**4*sqrt(d + e*x)/9 - 4*a**2*b*d**5*sqrt(d + e*x)/(33*e**2) +
 2*a**2*b*d**4*x*sqrt(d + e*x)/(33*e) + 16*a**2*b*d**3*x**2*sqrt(d + e*x)/1
1 + 92*a**2*b*d**2*e*x**3*sqrt(d + e*x)/33 + 68*a**2*b*d*e**2*x**4*sqrt(d +
 e*x)/33 + 6*a**2*b*e**3*x**5*sqrt(d + e*x)/11 + 16*a*b**2*d**6*sqrt(d + e*
x)/(429*e**3) - 8*a*b**2*d**5*x*sqrt(d + e*x)/(429*e**2) + 2*a*b**2*d**4*x*
*2*sqrt(d + e*x)/(143*e) + 424*a*b**2*d**3*x**3*sqrt(d + e*x)/429 + 916*a*b
**2*d**2*e*x**4*sqrt(d + e*x)/429 + 240*a*b**2*d*e**2*x**5*sqrt(d + e*x)/14
3 + 6*a*b**2*e**3*x**6*sqrt(d + e*x)/13 - 32*b**3*d**7*sqrt(d + e*x)/(6435*
e**4) + 16*b**3*d**6*x*sqrt(d + e*x)/(6435*e**3) - 4*b**3*d**5*x**2*sqrt(d
+ e*x)/(2145*e**2) + 2*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 320*b**3*d**
3*x**4*sqrt(d + e*x)/1287 + 412*b**3*d**2*e*x**5*sqrt(d + e*x)/715 + 92*b**
3*d*e**2*x**6*sqrt(d + e*x)/195 + 2*b**3*e**3*x**7*sqrt(d + e*x)/15, Ne(e,
0)), (d**(7/2)*(a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), True
))
```

3.2043 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{11/2}(bd-ae)}{11e^4}+\frac{2b(d+ex)^{9/2}(bd-ae)^2}{3e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^3}{7e^4}+\frac{2b^3(d+ex)^{13/2}}{13e^4}$$

```
[Out] -2/7*(-a*e+b*d)^3*(e*x+d)^(7/2)/e^4+2/3*b*(-a*e+b*d)^2*(e*x+d)^(9/2)/e^4-6/
11*b^2*(-a*e+b*d)*(e*x+d)^(11/2)/e^4+2/13*b^3*(e*x+d)^(13/2)/e^4
```

Rubi [A] time = 0.04, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{6b^2(d+ex)^{11/2}(bd-ae)}{11e^4}+\frac{2b(d+ex)^{9/2}(bd-ae)^2}{3e^4}-\frac{2(d+ex)^{7/2}(bd-ae)^3}{7e^4}+\frac{2b^3(d+ex)^{13/2}}{13e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(7/2))/(7*e^4) + (2*b*(b*d - a*e)^2*(d + e*x)^(
9/2))/(3*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(11/2))/(11*e^4) + (2*b^3*(d +
 e*x)^(13/2))/(13*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^{5/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{7/2}}{e^3}-\frac{3b^2(bd-ae}{e}\right.\\ &= -\frac{2(bd-ae)^3(d+ex)^{7/2}}{7e^4}+\frac{2b(bd-ae)^2(d+ex)^{9/2}}{3e^4}-\frac{6b^2(bd-ae)(d}{11e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{7/2}\left(-819b^2(d+ex)^2(bd-ae)+1001b(d+ex)(bd-ae)^2-429(bd-ae)^3+231b^3(d+ex)^3\right)}{3003e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-429*(b*d - a*e)^3 + 1001*b*(b*d - a*e)^2*(d + e*x) - 8
19*b^2*(b*d - a*e)*(d + e*x)^2 + 231*b^3*(d + e*x)^3))/(3003*e^4)
```

fricas [B] time = 1.01, size = 268, normalized size = 2.68

$$2\left(231\,b^3e^6x^6 - 16\,b^3d^6 + 104\,ab^2d^5e - 286\,a^2bd^4e^2 + 429\,a^3d^3e^3 + 63\left(9\,b^3de^5 + 13\,ab^2e^6\right)x^5 + 7\left(53\,b^3d^2e^4 +\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.22, size = 908, normalized size = 9.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/15015*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^3*e^(-1) + 300
3*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d
^3*e^(-2) + 429*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3
/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^3*e^(-3) + 9009*(3*(x*e + d)^(5/2) -
10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d^2*e^(-1) + 3861*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*a*b^2*d^2*e^(-2) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*b^3*d^2*e^(-3) + 15015*sqrt(x*e + d)*a^3*d^3 + 15015*((x*e + d)^(3/2) -
 3*sqrt(x*e + d)*d)*a^3*d^2 + 3861*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*
d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*d*e^(-1) + 429*(35
*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x
*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^2*d*e^(-2) + 65*(63*(x*e + d
)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)
^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*d*e^(-3)
 + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a
^3*d + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b*e^(-1) + 65*
(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 13
86*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*
a*b^2*e^(-2) + 5*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*
e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 60
06*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^3*e^(-3) + 429*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{7}{2}}\left(231b^3e^3x^3 + 819a\,b^2e^3x^2 - 126b^3d\,e^2x^2 + 1001a^2b\,e^3x - 364a\,b^2d\,e^2x + 56b^3d^2ex + 429a^3e^3 - 286\right.}{3003e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3003*(e*x+d)^(7/2)*(231*b^3*e^3*x^3+819*a*b^2*e^3*x^2-126*b^3*d*e^2*x^2+1
001*a^2*b*e^3*x-364*a*b^2*d*e^2*x+56*b^3*d^2*e*x+429*a^3*e^3-286*a^2*b*d*e^
2+104*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.57, size = 118, normalized size = 1.18

$$\frac{2\left(231\,(ex+d)^{\frac{13}{2}}b^3-819\,\left(b^3d-ab^2e\right)(ex+d)^{\frac{11}{2}}+1001\,\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)^{\frac{9}{2}}-429\,\left(b^3d^3-3\,ab^2d^2e\right.\right.}{3003\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/3003*(231*(e*x + d)^(13/2)*b^3 - 819*(b^3*d - a*b^2*e)*(e*x + d)^(11/2) +
 1001*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(9/2) - 429*(b^3*d^3 -
3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(7/2))/e^4
```

mupad [B] time = 2.07, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,(d+e\,x)^{13/2}}{13\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,(d+e\,x)^{11/2}}{11\,e^4}+\frac{2\,(a\,e-b\,d)^3\,(d+e\,x)^{7/2}}{7\,e^4}+\frac{2\,b\,(a\,e-b\,d)^2\,(d+e\,x)^{9/2}}{3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(13/2))/(13*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(11/2)
)/(11*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(7/2))/(7*e^4) + (2*b*(a*e - b*d)^2
*(d + e*x)^(9/2))/(3*e^4)
```

sympy [A] time = 4.59, size = 549, normalized size = 5.49

$$\begin{cases}\frac{2a^3d^3\sqrt{d+ex}}{7e}+\frac{6a^3d^2x\sqrt{d+ex}}{7}+\frac{6a^3dex^2\sqrt{d+ex}}{7}+\frac{2a^3e^2x^3\sqrt{d+ex}}{7}-\frac{4a^2bd^4\sqrt{d+ex}}{21e^2}+\frac{2a^2bd^3x\sqrt{d+ex}}{21e}+\frac{10a^2bd^2x^2\sqrt{d+ex}}{7}+\frac{38a^2bdex^3}{21} \\ d^{\frac{5}{2}}\left(a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}\right)\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((2*a**3*d**3*sqrt(d + e*x)/(7*e) + 6*a**3*d**2*x*sqrt(d + e*x)/7
+ 6*a**3*d*e*x**2*sqrt(d + e*x)/7 + 2*a**3*e**2*x**3*sqrt(d + e*x)/7 - 4*a*
*2*b*d**4*sqrt(d + e*x)/(21*e**2) + 2*a**2*b*d**3*x*sqrt(d + e*x)/(21*e) +
10*a**2*b*d**2*x**2*sqrt(d + e*x)/7 + 38*a**2*b*d*e*x**3*sqrt(d + e*x)/21 +
 2*a**2*b*e**2*x**4*sqrt(d + e*x)/3 + 16*a*b**2*d**5*sqrt(d + e*x)/(231*e**
3) - 8*a*b**2*d**4*x*sqrt(d + e*x)/(231*e**2) + 2*a*b**2*d**3*x**2*sqrt(d +
 e*x)/(77*e) + 226*a*b**2*d**2*x**3*sqrt(d + e*x)/231 + 46*a*b**2*d*e*x**4*
sqrt(d + e*x)/33 + 6*a*b**2*e**2*x**5*sqrt(d + e*x)/11 - 32*b**3*d**6*sqrt(
d + e*x)/(3003*e**4) + 16*b**3*d**5*x*sqrt(d + e*x)/(3003*e**3) - 4*b**3*d*
*4*x**2*sqrt(d + e*x)/(1001*e**2) + 10*b**3*d**3*x**3*sqrt(d + e*x)/(3003*e
) + 106*b**3*d**2*x**4*sqrt(d + e*x)/429 + 54*b**3*d*e*x**5*sqrt(d + e*x)/1
43 + 2*b**3*e**2*x**6*sqrt(d + e*x)/13, Ne(e, 0)), (d**(5/2)*(a**3*x + 3*a*
*2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), True))
```

3.2044 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{2b^2(d+ex)^{9/2}(bd-ae)}{3e^4}+\frac{6b(d+ex)^{7/2}(bd-ae)^2}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^3}{5e^4}+\frac{2b^3(d+ex)^{11/2}}{11e^4}$$

```
[Out] -2/5*(-a*e+b*d)^3*(e*x+d)^(5/2)/e^4+6/7*b*(-a*e+b*d)^2*(e*x+d)^(7/2)/e^4-2/
3*b^2*(-a*e+b*d)*(e*x+d)^(9/2)/e^4+2/11*b^3*(e*x+d)^(11/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{2b^2(d+ex)^{9/2}(bd-ae)}{3e^4}+\frac{6b(d+ex)^{7/2}(bd-ae)^2}{7e^4}-\frac{2(d+ex)^{5/2}(bd-ae)^3}{5e^4}+\frac{2b^3(d+ex)^{11/2}}{11e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(5/2))/(5*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
7/2))/(7*e^4) - (2*b^2*(b*d - a*e)*(d + e*x)^(9/2))/(3*e^4) + (2*b^3*(d + e
*x)^(11/2))/(11*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^{3/2}\,dx\\ &= \int \Bigg(\frac{(-bd+ae)^3(d+ex)^{3/2}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{5/2}}{e^3}-\frac{3b^2(bd-}{}\\ &= -\frac{2(bd-ae)^3(d+ex)^{5/2}}{5e^4}+\frac{6b(bd-ae)^2(d+ex)^{7/2}}{7e^4}-\frac{2b^2(bd-ae}{3}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{5/2}\left(-385b^2(d+ex)^2(bd-ae)+495b(d+ex)(bd-ae)^2-231(bd-ae)^3+105b^3(d+ex)^3\right)}{1155e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-231*(b*d - a*e)^3 + 495*b*(b*d - a*e)^2*(d + e*x) - 38
5*b^2*(b*d - a*e)*(d + e*x)^2 + 105*b^3*(d + e*x)^3))/(1155*e^4)
```

fricas [B] time = 0.78, size = 216, normalized size = 2.16

$$\frac{2\left(105\,b^3e^5x^5 - 16\,b^3d^5 + 88\,ab^2d^4e - 198\,a^2bd^3e^2 + 231\,a^3d^2e^3 + 35\left(4\,b^3de^4 + 11\,ab^2e^5\right)x^4 + 5\left(b^3d^2e^3 + 110\,ab^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [B] time = 0.18, size = 598, normalized size = 5.98

$$\frac{2}{3465}\left(3465\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)a^2bd^2e^{(-1)} + 693\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\,\sqrt{xe+d}\,d^2\right)ab^2d^2e^{(-2)} + \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2/3465*(3465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d^2*e^(-1) + 693*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d^2*
e^(-2) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*b^3*d^2*e^(-3) + 1386*(3*(x*e + d)^(5/2) - 10*(
x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*d*e^(-1) + 594*(5*(x*e + d)^
(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^
3)*a*b^2*d*e^(-2) + 22*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*d*
e^(-3) + 3465*sqrt(x*e + d)*a^3*d^2 + 2310*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^3*d + 297*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^
(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b*e^(-1) + 33*(35*(x*e + d)^(9/2) - 1
80*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
315*sqrt(x*e + d)*d^4)*a*b^2*e^(-2) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^3*e^(-3) + 231*(3*(x*e + d)^(5/2)
 - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3)*e^(-1)
```

maple [A] time = 0.06, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(105b^3e^3x^3 + 385a\,b^2e^3x^2 - 70b^3d\,e^2x^2 + 495a^2b\,e^3x - 220a\,b^2d\,e^2x + 40b^3d^2ex + 231a^3e^3 - 198a^2bd\right.}{1155e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/1155*(e*x+d)^(5/2)*(105*b^3*e^3*x^3+385*a*b^2*e^3*x^2-70*b^3*d*e^2*x^2+49
5*a^2*b*e^3*x-220*a*b^2*d*e^2*x+40*b^3*d^2*e*x+231*a^3*e^3-198*a^2*b*d*e^2+
88*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [A] time = 0.55, size = 118, normalized size = 1.18

$$\frac{2\left(105\,(ex+d)^{\frac{11}{2}}b^3 - 385\left(b^3d - ab^2e\right)(ex+d)^{\frac{9}{2}} + 495\left(b^3d^2 - 2\,ab^2de + a^2be^2\right)(ex+d)^{\frac{7}{2}} - 231\left(b^3d^3 - 3\,ab^2d^2e + \right.\right.}{1155\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] 2/1155*(105*(e*x + d)^(11/2)*b^3 - 385*(b^3*d - a*b^2*e)*(e*x + d)^(9/2) +
495*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(7/2) - 231*(b^3*d^3 - 3*
a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(5/2))/e^4
```

mupad [**B**] time = 0.06, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{11/2}}{11\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(11/2))/(11*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(9/2))
/(9*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(5/2))/(5*e^4) + (6*b*(a*e - b*d)^2*(
d + e*x)^(7/2))/(7*e^4)
```

sympy [**A**] time = 16.77, size = 386, normalized size = 3.86

$$a^{3} d \left(\begin{cases} \sqrt{d} x & \text{for}\: e = 0 \\ \frac{2 \left(d + e x\right)^{\frac{3}{2}}}{3 e} & \text{otherwise} \end{cases}\right) + \frac{2 a^{3} \left(- \frac{d \left(d + e x\right)^{\frac{3}{2}}}{3} + \frac{\left(d + e x\right)^{\frac{5}{2}}}{5}\right)}{e} + \frac{6 a^{2} b d \left(- \frac{d \left(d + e x\right)^{\frac{3}{2}}}{3} + \frac{\left(d + e x\right)^{\frac{5}{2}}}{5}\right)}{e^{2}} + \frac{6 a^{2} b \left(\frac{d^{2} \left(d + e x\right)^{\frac{3}{2}}}{3} - \frac{2 d (d+e}{5}\right.}{e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] a**3*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**3*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*a**2*b*d*(-d*(d
+ e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 6*a**2*b*(d**2*(d + e*x)**(3/2
)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 6*a*b**2*d*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 6*
a*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x
)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 2*b**3*d*(-d**3*(d + e*x)**(3/2)/3
+ 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/
e**4 + 2*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2
*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**4
```

3.2045 $\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=100

$$-\frac{6b^2(d+ex)^{7/2}(bd-ae)}{7e^4}+\frac{6b(d+ex)^{5/2}(bd-ae)^2}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^3}{3e^4}+\frac{2b^3(d+ex)^{9/2}}{9e^4}$$

```
[Out] -2/3*(-a*e+b*d)^3*(e*x+d)^(3/2)/e^4+6/5*b*(-a*e+b*d)^2*(e*x+d)^(5/2)/e^4-6/
7*b^2*(-a*e+b*d)*(e*x+d)^(7/2)/e^4+2/9*b^3*(e*x+d)^(9/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{6b^2(d+ex)^{7/2}(bd-ae)}{7e^4}+\frac{6b(d+ex)^{5/2}(bd-ae)^2}{5e^4}-\frac{2(d+ex)^{3/2}(bd-ae)^3}{3e^4}+\frac{2b^3(d+ex)^{9/2}}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (-2*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^4) + (6*b*(b*d - a*e)^2*(d + e*x)^(
5/2))/(5*e^4) - (6*b^2*(b*d - a*e)*(d + e*x)^(7/2))/(7*e^4) + (2*b^3*(d + e
*x)^(9/2))/(9*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^3\sqrt{d+ex}}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{3/2}}{e^3}-\frac{3b^2(bd-ae)(d}{e^3}\right.\\ &= -\frac{2(bd-ae)^3(d+ex)^{3/2}}{3e^4}+\frac{6b(bd-ae)^2(d+ex)^{5/2}}{5e^4}-\frac{6b^2(bd-ae)(d+}{7e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.79

$$\frac{2(d+ex)^{3/2}\left(-135b^2(d+ex)^2(bd-ae)+189b(d+ex)(bd-ae)^2-105(bd-ae)^3+35b^3(d+ex)^3\right)}{315e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-105*(b*d - a*e)^3 + 189*b*(b*d - a*e)^2*(d + e*x) - 13
5*b^2*(b*d - a*e)*(d + e*x)^2 + 35*b^3*(d + e*x)^3))/(315*e^4)
```

fricas [**A**] time = 1.21, size = 164, normalized size = 1.64

$$\frac{2\,(35\,b^3e^4x^4 - 16\,b^3d^4 + 72\,ab^2d^3e - 126\,a^2bd^2e^2 + 105\,a^3de^3 + 5\,(b^3de^3 + 27\,ab^2e^4)x^3 - 3\,(2\,b^3d^2e^2 - 9\,ab^2de^3}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)/e^4
```

giac [**B**] time = 0.24, size = 339, normalized size = 3.39

$$\frac{2}{315}\,(315\,((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d)a^2bde^{(-1)} + 63\,(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\,\sqrt{xe+d}\,d^2)ab^2de^{(-2)} + 9\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(315*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*d*e^(-1) + 63*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*d*e^(-2)
+ 9*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35
*sqrt(x*e + d)*d^3)*b^3*d*e^(-3) + 63*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/
2)*d + 15*sqrt(x*e + d)*d^2)*a^2*b*e^(-1) + 27*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^2*e^(-2)
 + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^3*e^(-3) + 315*sqrt(x*e
+ d)*a^3*d + 105*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3)*e^(-1)
```

maple [**A**] time = 0.05, size = 116, normalized size = 1.16

$$\frac{2\,(ex+d)^{\frac{3}{2}}\,(35b^3e^3x^3 + 135a\,b^2e^3x^2 - 30b^3d\,e^2x^2 + 189a^2b\,e^3x - 108a\,b^2d\,e^2x + 24b^3d^2ex + 105a^3e^3 - 126a^2b}{315e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(3/2)*(35*b^3*e^3*x^3+135*a*b^2*e^3*x^2-30*b^3*d*e^2*x^2+189*
a^2*b*e^3*x-108*a*b^2*d*e^2*x+24*b^3*d^2*e*x+105*a^3*e^3-126*a^2*b*d*e^2+72
*a*b^2*d^2*e-16*b^3*d^3)/e^4
```

maxima [**A**] time = 0.62, size = 118, normalized size = 1.18

$$\frac{2\,(35\,(ex+d)^{\frac{9}{2}}b^3 - 135\,(b^3d - ab^2e)(ex+d)^{\frac{7}{2}} + 189\,(b^3d^2 - 2\,ab^2de + a^2be^2)(ex+d)^{\frac{5}{2}} - 105\,(b^3d^3 - 3\,ab^2d^2e}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)*(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/315*(35*(e*x + d)^(9/2)*b^3 - 135*(b^3*d - a*b^2*e)*(e*x + d)^(7/2) + 189
*(b^3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(5/2) - 105*(b^3*d^3 - 3*a*b
^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(e*x + d)^(3/2))/e^4
```

mupad [B] time = 0.06, size = 87, normalized size = 0.87

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{9/2}}{9\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{3/2}}{3\,e^4}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*b^3*(d + e*x)^(9/2))/(9*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(7/2))/(
7*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(3/2))/(3*e^4) + (6*b*(a*e - b*d)^2*(d
+ e*x)^(5/2))/(5*e^4)
```

sympy [A] time = 4.58, size = 146, normalized size = 1.46

$$\frac{2\left(\frac{b^{3}(d+ex)^{\frac{9}{2}}}{9e^{3}}+\frac{(d+ex)^{\frac{7}{2}}\left(3ab^{2}e-3b^{3}d\right)}{7e^{3}}+\frac{(d+ex)^{\frac{5}{2}}\left(3a^{2}be^{2}-6ab^{2}de+3b^{3}d^{2}\right)}{5e^{3}}+\frac{(d+ex)^{\frac{3}{2}}\left(a^{3}e^{3}-3a^{2}bde^{2}+3ab^{2}d^{2}e-b^{3}d^{3}\right)}{3e^{3}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**3*(d + e*x)**(9/2)/(9*e**3) + (d + e*x)**(7/2)*(3*a*b**2*e - 3*b**3*d
)/(7*e**3) + (d + e*x)**(5/2)*(3*a**2*b*e**2 - 6*a*b**2*d*e + 3*b**3*d**2)/
(5*e**3) + (d + e*x)**(3/2)*(a**3*e**3 - 3*a**2*b*d*e**2 + 3*a*b**2*d**2*e
- b**3*d**3)/(3*e**3))/e
```

3.2046 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2(d+ex)^{5/2}(bd-ae)}{5e^4}+\frac{2b(d+ex)^{3/2}(bd-ae)^2}{e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^3}{e^4}+\frac{2b^3(d+ex)^{7/2}}{7e^4}$$

```
[Out] 2*b*(-a*e+b*d)^2*(e*x+d)^(3/2)/e^4-6/5*b^2*(-a*e+b*d)*(e*x+d)^(5/2)/e^4+2/7
*b^3*(e*x+d)^(7/2)/e^4-2*(-a*e+b*d)^3*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{6b^2(d+ex)^{5/2}(bd-ae)}{5e^4}+\frac{2b(d+ex)^{3/2}(bd-ae)^2}{e^4}-\frac{2\sqrt{d+ex}\,(bd-ae)^3}{e^4}+\frac{2b^3(d+ex)^{7/2}}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^3*Sqrt[d + e*x])/e^4 + (2*b*(b*d - a*e)^2*(d + e*x)^(3/2))/
e^4 - (6*b^2*(b*d - a*e)*(d + e*x)^(5/2))/(5*e^4) + (2*b^3*(d + e*x)^(7/2))
/(7*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^3}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3\sqrt{d+ex}}+\frac{3b(bd-ae)^2\sqrt{d+ex}}{e^3}-\frac{3b^2(bd-ae)(d+ex)^{3/2}}{e^3}+b^3(d\right.\\ &= -\frac{2(bd-ae)^3\sqrt{d+ex}}{e^4}+\frac{2b(bd-ae)^2(d+ex)^{3/2}}{e^4}-\frac{6b^2(bd-ae)(d+ex)^{5/2}}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.82

$$\frac{2\sqrt{d+ex}\left(-21b^2(d+ex)^2(bd-ae)+35b(d+ex)(bd-ae)^2-35(bd-ae)^3+5b^3(d+ex)^3\right)}{35e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-35*(b*d - a*e)^3 + 35*b*(b*d - a*e)^2*(d + e*x) - 21*b^2
*(b*d - a*e)*(d + e*x)^2 + 5*b^3*(d + e*x)^3))/(35*e^4)
```

fricas [A] time = 1.30, size = 115, normalized size = 1.20

$$\frac{2\,(5\,b^3e^3x^3 - 16\,b^3d^3 + 56\,ab^2d^2e - 70\,a^2bde^2 + 35\,a^3e^3 - 3\,\left(2\,b^3de^2 - 7\,ab^2e^3\right)x^2 + (8\,b^3d^2e - 28\,ab^2de^2 + 35\,a^2b}{35\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] 2/35*(5*b^3*e^3*x^3 - 16*b^3*d^3 + 56*a*b^2*d^2*e - 70*a^2*b*d*e^2 + 35*a^3
*e^3 - 3*(2*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 28*a*b^2*d*e^2 +
35*a^2*b*e^3)*x)*sqrt(e*x + d)/e^4
```

giac [A] time = 0.19, size = 143, normalized size = 1.49

$$\frac{2}{35}\,(35\,\left((xe+d)^{\frac{3}{2}} - 3\,\sqrt{xe+d}\,d\right)a^2be^{(-1)} + 7\,\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\,\sqrt{xe+d}\,d^2\right)ab^2e^{(-2)} + (5\,(xe+d)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/35*(35*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*b*e^(-1) + 7*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b^2*e^(-2) + (5*(x
*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
 + d)*d^3)*b^3*e^(-3) + 35*sqrt(x*e + d)*a^3)*e^(-1)
```

maple [A] time = 0.05, size = 116, normalized size = 1.21

$$\frac{2\,(5b^3e^3x^3 + 21a\,b^2e^3x^2 - 6b^3d\,e^2x^2 + 35a^2b\,e^3x - 28a\,b^2d\,e^2x + 8b^3d^2ex + 35a^3e^3 - 70a^2bd\,e^2 + 56a\,b^2d^2e - 16b}{35e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/35*(5*b^3*e^3*x^3+21*a*b^2*e^3*x^2-6*b^3*d*e^2*x^2+35*a^2*b*e^3*x-28*a*b^
2*d*e^2*x+8*b^3*d^2*e*x+35*a^3*e^3-70*a^2*b*d*e^2+56*a*b^2*d^2*e-16*b^3*d^3
)*(e*x+d)^(1/2)/e^4
```

maxima [A] time = 0.54, size = 118, normalized size = 1.23

$$\frac{2\,(5\,(ex+d)^{\frac{7}{2}}b^3 - 21\,\left(b^3d - ab^2e\right)(ex+d)^{\frac{5}{2}} + 35\,\left(b^3d^2 - 2\,ab^2de + a^2be^2\right)(ex+d)^{\frac{3}{2}} - 35\,(b^3d^3 - 3\,ab^2d^2e + 3\,a^2b}{35\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] 2/35*(5*(e*x + d)^(7/2)*b^3 - 21*(b^3*d - a*b^2*e)*(e*x + d)^(5/2) + 35*(b^
3*d^2 - 2*a*b^2*d*e + a^2*b*e^2)*(e*x + d)^(3/2) - 35*(b^3*d^3 - 3*a*b^2*d^
2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(e*x + d))/e^4
```

mupad [B] time = 0.06, size = 87, normalized size = 0.91

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}+\frac{2\,{\left(a\,e-b\,d\right)}^3\,\sqrt{d+e\,x}}{e^4}+\frac{2\,b\,{\left(a\,e-b\,d\right)}^2\,{\left(d+e\,x\right)}^{3/2}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(1/2),x)
```

```
[Out] (2*b^3*(d + e*x)^(7/2))/(7*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(5/2))/(
5*e^4) + (2*(a*e - b*d)^3*(d + e*x)^(1/2))/e^4 + (2*b*(a*e - b*d)^2*(d + e*
x)^(3/2))/e^4
```

sympy **[A]**   time = 38.31, size = 394, normalized size = 4.10

$$\begin{cases} \frac{-\frac{2a^3d}{\sqrt{d+ex}} - 2a^3\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right) - \frac{6a^2bd\left(-\frac{d}{\sqrt{d+ex}} - \sqrt{d+ex}\right)}{e} - \frac{6a^2b\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e} - \frac{6ab^2d\left(\frac{d^2}{\sqrt{d+ex}} + 2d\sqrt{d+ex} - \frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^2} - 6ab^2\left(-\frac{d^3}{\sqrt{d+ex}} - 3d^2\right.}{e} \\ \frac{\begin{cases} a^3x & \text{for } b = 0 \\ \frac{a^3bx + \frac{3a^2b^2x^2}{2} + ab^3x^3 + \frac{b^4x^4}{4}}{b} & \text{otherwise} \end{cases}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**3*d/sqrt(d + e*x) - 2*a**3*(-d/sqrt(d + e*x) - sqrt(d + e
*x)) - 6*a**2*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 6*a**2*b*(d**2/sqr
t(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 6*a*b**2*d*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 6*a*b**2*(-d*
*3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(
5/2)/5)/e**2 - 2*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d
+ e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 2*b**3*(d**4/sqrt(d + e*x) + 4*d
**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5 - (d +
 e*x)**(7/2)/7)/e**3)/e, Ne(e, 0)), (Piecewise((a**3*x, Eq(b, 0)), ((a**3*b
*x + 3*a**2*b**2*x**2/2 + a*b**3*x**3 + b**4*x**4/4)/b, True))/sqrt(d), Tru
e))
```

3.2047 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{2b^2(d+ex)^{3/2}(bd-ae)}{e^4}+\frac{6b\sqrt{d+ex}\,(bd-ae)^2}{e^4}+\frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{2b^3(d+ex)^{5/2}}{5e^4}$$

```
[Out] -2*b^2*(-a*e+b*d)*(e*x+d)^(3/2)/e^4+2/5*b^3*(e*x+d)^(5/2)/e^4+2*(-a*e+b*d)^
3/e^4/(e*x+d)^(1/2)+6*b*(-a*e+b*d)^2*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{2b^2(d+ex)^{3/2}(bd-ae)}{e^4}+\frac{6b\sqrt{d+ex}\,(bd-ae)^2}{e^4}+\frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{2b^3(d+ex)^{5/2}}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(e^4*Sqrt[d + e*x]) + (6*b*(b*d - a*e)^2*Sqrt[d + e*x])/e
^4 - (2*b^2*(b*d - a*e)*(d + e*x)^(3/2))/e^4 + (2*b^3*(d + e*x)^(5/2))/(5*e
^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{3/2}}+\frac{3b(bd-ae)^2}{e^3\sqrt{d+ex}}-\frac{3b^2(bd-ae)\sqrt{d+ex}}{e^3}+\frac{b^3(d+ex)^{3/2}}{e^3}\right) dx\\ &= \frac{2(bd-ae)^3}{e^4\sqrt{d+ex}}+\frac{6b(bd-ae)^2\sqrt{d+ex}}{e^4}-\frac{2b^2(bd-ae)(d+ex)^{3/2}}{e^4}+\frac{2b^3(d+ex)}{5e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 78, normalized size = 0.83

$$\frac{2\left(-5b^2(d+ex)^2(bd-ae)+15b(d+ex)(bd-ae)^2+5(bd-ae)^3+b^3(d+ex)^3\right)}{5e^4\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*(5*(b*d - a*e)^3 + 15*b*(b*d - a*e)^2*(d + e*x) - 5*b^2*(b*d - a*e)*(d +
 e*x)^2 + b^3*(d + e*x)^3))/(5*e^4*Sqrt[d + e*x])
```

fricas [A]   time = 0.82, size = 124, normalized size = 1.32

$$\frac{2\left(b^{3}e^{3}x^{3}+16\,b^{3}d^{3}-40\,ab^{2}d^{2}e+30\,a^{2}bde^{2}-5\,a^{3}e^{3}-\left(2\,b^{3}de^{2}-5\,ab^{2}e^{3}\right)x^{2}+\left(8\,b^{3}d^{2}e-20\,ab^{2}de^{2}+15\,a^{2}be^{3}\right.}{5\left(e^{5}x+de^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="fricas"
)
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*sqrt(e*x + d)/(e^5*x + d*e^4)
```

giac [A]   time = 0.19, size = 150, normalized size = 1.60

$$\frac{2}{5}\left(\left(xe+d\right)^{\frac{5}{2}}b^{3}e^{16}-5\left(xe+d\right)^{\frac{3}{2}}b^{3}de^{16}+15\,\sqrt{xe+d}\,b^{3}d^{2}e^{16}+5\left(xe+d\right)^{\frac{3}{2}}ab^{2}e^{17}-30\,\sqrt{xe+d}\,ab^{2}de^{17}+15\,\sqrt{xe\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/5*((x*e + d)^(5/2)*b^3*e^16 - 5*(x*e + d)^(3/2)*b^3*d*e^16 + 15*sqrt(x*e
+ d)*b^3*d^2*e^16 + 5*(x*e + d)^(3/2)*a*b^2*e^17 - 30*sqrt(x*e + d)*a*b^2*d
*e^17 + 15*sqrt(x*e + d)*a^2*b*e^18)*e^(-20) + 2*(b^3*d^3 - 3*a*b^2*d^2*e +
 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)/sqrt(x*e + d)
```

maple [A]   time = 0.05, size = 116, normalized size = 1.23

$$-\frac{2\left(-b^{3}e^{3}x^{3}-5a\,b^{2}e^{3}x^{2}+2b^{3}d\,e^{2}x^{2}-15a^{2}b\,e^{3}x+20a\,b^{2}d\,e^{2}x-8b^{3}d^{2}ex+5a^{3}e^{3}-30a^{2}bd\,e^{2}+40a\,b^{2}d^{2}e-16\right.}{5\sqrt{ex+d}\;e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/5*(-b^3*e^3*x^3-5*a*b^2*e^3*x^2+2*b^3*d*e^2*x^2-15*a^2*b*e^3*x+20*a*b^2*
d*e^2*x-8*b^3*d^2*e*x+5*a^3*e^3-30*a^2*b*d*e^2+40*a*b^2*d^2*e-16*b^3*d^3)/(
e*x+d)^(1/2)/e^4
```

maxima [A]   time = 0.59, size = 125, normalized size = 1.33

$$\frac{2\left(\frac{(ex+d)^{\frac{5}{2}}b^{3}-5\left(b^{3}d-ab^{2}e\right)(ex+d)^{\frac{3}{2}}+15\left(b^{3}d^{2}-2\,ab^{2}de+a^{2}be^{2}\right)\sqrt{ex+d}}{e^{3}}+\frac{5\left(b^{3}d^{3}-3\,ab^{2}d^{2}e+3\,a^{2}bde^{2}-a^{3}e^{3}\right)}{\sqrt{ex+d}\,e^{3}}\right)}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(3/2),x, algorithm="maxima"
)
```

```
[Out] 2/5*(((e*x + d)^(5/2)*b^3 - 5*(b^3*d - a*b^2*e)*(e*x + d)^(3/2) + 15*(b^3*d
^2 - 2*a*b^2*d*e + a^2*b*e^2)*sqrt(e*x + d))/e^3 + 5*(b^3*d^3 - 3*a*b^2*d^2
*e + 3*a^2*b*d*e^2 - a^3*e^3)/(sqrt(e*x + d)*e^3))/e
```

mupad [B] time = 2.07, size = 114, normalized size = 1.21

$$\frac{2\,b^3\,{\left(d+e\,x\right)}^{5/2}}{5\,e^4}-\frac{\left(6\,b^3\,d-6\,a\,b^2\,e\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,e^4}-\frac{2\,a^3\,e^3-6\,a^2\,b\,d\,e^2+6\,a\,b^2\,d^2\,e-2\,b^3\,d^3}{e^4\,\sqrt{d+e\,x}}+\frac{6\,b\,{\left(a\,e-b\,d\right)}^2\,\sqrt{d+e\,x}}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^3*(d + e*x)^(5/2))/(5*e^4) - ((6*b^3*d - 6*a*b^2*e)*(d + e*x)^(3/2))/(
3*e^4) - (2*a^3*e^3 - 2*b^3*d^3 + 6*a*b^2*d^2*e - 6*a^2*b*d*e^2)/(e^4*(d +
e*x)^(1/2)) + (6*b*(a*e - b*d)^2*(d + e*x)^(1/2))/e^4
```

sympy [A] time = 22.10, size = 109, normalized size = 1.16

$$\frac{2b^3\left(d+ex\right)^{\frac{5}{2}}}{5e^4}+\frac{\left(d+ex\right)^{\frac{3}{2}}\left(6ab^2e-6b^3d\right)}{3e^4}+\frac{\sqrt{d+ex}\left(6a^2be^2-12ab^2de+6b^3d^2\right)}{e^4}-\frac{2\left(ae-bd\right)^3}{e^4\sqrt{d+ex}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**3*(d + e*x)**(5/2)/(5*e**4) + (d + e*x)**(3/2)*(6*a*b**2*e - 6*b**3*d)
/(3*e**4) + sqrt(d + e*x)*(6*a**2*b*e**2 - 12*a*b**2*d*e + 6*b**3*d**2)/e**
4 - 2*(a*e - b*d)**3/(e**4*sqrt(d + e*x))
```

3.2048 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=96

$$-\frac{6b^2\sqrt{d+ex}\,(bd-ae)}{e^4}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}+\frac{2b^3(d+ex)^{3/2}}{3e^4}$$

```
[Out] 2/3*(-a*e+b*d)^3/e^4/(e*x+d)^(3/2)+2/3*b^3*(e*x+d)^(3/2)/e^4-6*b*(-a*e+b*d)
^2/e^4/(e*x+d)^(1/2)-6*b^2*(-a*e+b*d)*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{6b^2\sqrt{d+ex}\,(bd-ae)}{e^4}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}+\frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}+\frac{2b^3(d+ex)^{3/2}}{3e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(3*e^4*(d + e*x)^(3/2)) - (6*b*(b*d - a*e)^2)/(e^4*Sqrt[d
 + e*x]) - (6*b^2*(b*d - a*e)*Sqrt[d + e*x])/e^4 + (2*b^3*(d + e*x)^(3/2))/
(3*e^4)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{5/2}}+\frac{3b(bd-ae)^2}{e^3(d+ex)^{3/2}}-\frac{3b^2(bd-ae)}{e^3\sqrt{d+ex}}+\frac{b^3\sqrt{d+ex}}{e^3}\right)dx\\ &= \frac{2(bd-ae)^3}{3e^4(d+ex)^{3/2}}-\frac{6b(bd-ae)^2}{e^4\sqrt{d+ex}}-\frac{6b^2(bd-ae)\sqrt{d+ex}}{e^4}+\frac{2b^3(d+ex)^{3/2}}{3e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 76, normalized size = 0.79

$$\frac{2\left(-9b^2(d+ex)^2(bd-ae)-9b(d+ex)(bd-ae)^2+(bd-ae)^3+b^3(d+ex)^3\right)}{3e^4(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*((b*d - a*e)^3 - 9*b*(b*d - a*e)^2*(d + e*x) - 9*b^2*(b*d - a*e)*(d + e*
x)^2 + b^3*(d + e*x)^3))/(3*e^4*(d + e*x)^(3/2))
```

fricas [A] time = 0.89, size = 136, normalized size = 1.42

$$\frac{2\left(b^{3} e^{3} x^{3} - 16\, b^{3} d^{3} + 24\, a b^{2} d^{2} e - 6\, a^{2} b d e^{2} - a^{3} e^{3} - 3\left(2\, b^{3} d e^{2} - 3\, a b^{2} e^{3}\right) x^{2} - 3\left(8\, b^{3} d^{2} e - 12\, a b^{2} d e^{2} + 3\, a^{2} b e^{3}\right) x\right)}{3\left(e^{6} x^{2} + 2\, d e^{5} x + d^{2} e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="fricas"
)
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*sqrt(e*x + d)/(e^6*x^2 + 2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 142, normalized size = 1.48

$$\frac{2}{3}\left((xe + d)^{\frac{3}{2}} b^{3} e^{8} - 9\sqrt{xe + d}\, b^{3} d e^{8} + 9\sqrt{xe + d}\, a b^{2} e^{9}\right) e^{(-12)} - \frac{2\left(9\,(xe + d) b^{3} d^{2} - b^{3} d^{3} - 18\,(xe + d) a b^{2} d e + 3\, a b^{2} d\right.}{3\,(xe + d)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^3*e^8 - 9*sqrt(x*e + d)*b^3*d*e^8 + 9*sqrt(x*e + d)*
a*b^2*e^9)*e^(-12) - 2/3*(9*(x*e + d)*b^3*d^2 - b^3*d^3 - 18*(x*e + d)*a*b^
2*d*e + 3*a*b^2*d^2*e + 9*(x*e + d)*a^2*b*e^2 - 3*a^2*b*d*e^2 + a^3*e^3)*e^
(-4)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.20

$$-\frac{2\left(-b^{3} e^{3} x^{3} - 9 a\, b^{2} e^{3} x^{2} + 6 b^{3} d\, e^{2} x^{2} + 9 a^{2} b\, e^{3} x - 36 a\, b^{2} d\, e^{2} x + 24 b^{3} d^{2} e x + a^{3} e^{3} + 6 a^{2} b d\, e^{2} - 24 a\, b^{2} d^{2} e + 16 b^{3} d^{3}\right.}{3\,(ex + d)^{\frac{3}{2}}\, e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3*(-b^3*e^3*x^3-9*a*b^2*e^3*x^2+6*b^3*d*e^2*x^2+9*a^2*b*e^3*x-36*a*b^2*d
*e^2*x+24*b^3*d^2*e*x+a^3*e^3+6*a^2*b*d*e^2-24*a*b^2*d^2*e+16*b^3*d^3)/(e*x
+d)^(3/2)/e^4
```

maxima [A] time = 0.51, size = 122, normalized size = 1.27

$$\frac{2\left(\frac{(ex+d)^{\frac{3}{2}} b^{3} - 9\left(b^{3} d - a b^{2} e\right)\sqrt{ex+d}}{e^{3}} + \frac{b^{3} d^{3} - 3\, a b^{2} d^{2} e + 3\, a^{2} b d e^{2} - a^{3} e^{3} - 9\left(b^{3} d^{2} - 2\, a b^{2} d e + a^{2} b e^{2}\right)(ex+d)}{(ex+d)^{\frac{3}{2}} e^{3}}\right)}{3\, e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(5/2),x, algorithm="maxima"
)
```

```
[Out] 2/3*(((e*x + d)^(3/2)*b^3 - 9*(b^3*d - a*b^2*e)*sqrt(e*x + d))/e^3 + (b^3*d
^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3 - 9*(b^3*d^2 - 2*a*b^2*d*e + a
^2*b*e^2)*(e*x + d))/((e*x + d)^(3/2)*e^3))/e
```

mupad [B] time = 0.07, size = 128, normalized size = 1.33

$$\frac{2\,b^3\,(d+e\,x)^3-2\,a^3\,e^3+2\,b^3\,d^3-18\,b^3\,d\,(d+e\,x)^2-18\,b^3\,d^2\,(d+e\,x)+18\,a\,b^2\,e\,(d+e\,x)^2-18\,a^2\,b\,e^2\,(d+e}{3\,e^4\,(d+e\,x)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^3*(d + e*x)^3 - 2*a^3*e^3 + 2*b^3*d^3 - 18*b^3*d*(d + e*x)^2 - 18*b^3*
d^2*(d + e*x) + 18*a*b^2*e*(d + e*x)^2 - 18*a^2*b*e^2*(d + e*x) - 6*a*b^2*d
^2*e + 6*a^2*b*d*e^2 + 36*a*b^2*d*e*(d + e*x))/(3*e^4*(d + e*x)^(3/2))
```

sympy [A] time = 1.55, size = 461, normalized size = 4.80

$$\begin{cases} -\frac{2a^3e^3}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}-\frac{12a^2bde^2}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}-\frac{18a^2be^3x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}+\frac{48ab^2d^2e}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+ex}}+\frac{72ab^2de^2x}{3de^4\sqrt{d+ex}+3e^5x\sqrt{d+e}} \\ \frac{a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}}{d^{\frac{5}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(5/2),x)
```

```
[Out] Piecewise((-2*a**3*e**3/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) -
 12*a**2*b*d*e**2/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 18*a*
*2*b*e**3*x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 48*a*b**2*d
**2*e/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 72*a*b**2*d*e**2*
x/(3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) + 18*a*b**2*e**3*x**2/(
3*d*e**4*sqrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 32*b**3*d**3/(3*d*e**4*s
qrt(d + e*x) + 3*e**5*x*sqrt(d + e*x)) - 48*b**3*d**2*e*x/(3*d*e**4*sqrt(d
+ e*x) + 3*e**5*x*sqrt(d + e*x)) - 12*b**3*d*e**2*x**2/(3*d*e**4*sqrt(d + e
*x) + 3*e**5*x*sqrt(d + e*x)) + 2*b**3*e**3*x**3/(3*d*e**4*sqrt(d + e*x) +
3*e**5*x*sqrt(d + e*x)), Ne(e, 0)), ((a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**
3 + b**3*x**4/4)/d**(5/2), True))
```

3.2049 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=94

$$\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}+\frac{2b^3\sqrt{d+ex}}{e^4}$$

```
[Out] 2/5*(-a*e+b*d)^3/e^4/(e*x+d)^(5/2)-2*b*(-a*e+b*d)^2/e^4/(e*x+d)^(3/2)+6*b^2
*(-a*e+b*d)/e^4/(e*x+d)^(1/2)+2*b^3*(e*x+d)^(1/2)/e^4
```

Rubi [A] time = 0.03, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}+\frac{2b^3\sqrt{d+ex}}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^3)/(5*e^4*(d + e*x)^(5/2)) - (2*b*(b*d - a*e)^2)/(e^4*(d + e
*x)^(3/2)) + (6*b^2*(b*d - a*e))/(e^4*Sqrt[d + e*x]) + (2*b^3*Sqrt[d + e*x]
)/e^4
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^3}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^3}{e^3(d+ex)^{7/2}}+\frac{3b(bd-ae)^2}{e^3(d+ex)^{5/2}}-\frac{3b^2(bd-ae)}{e^3(d+ex)^{3/2}}+\frac{b^3}{e^3\sqrt{d+ex}}\right)dx\\ &= \frac{2(bd-ae)^3}{5e^4(d+ex)^{5/2}}-\frac{2b(bd-ae)^2}{e^4(d+ex)^{3/2}}+\frac{6b^2(bd-ae)}{e^4\sqrt{d+ex}}+\frac{2b^3\sqrt{d+ex}}{e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 77, normalized size = 0.82

$$\frac{2\left(15b^2(d+ex)^2(bd-ae)-5b(d+ex)(bd-ae)^2+(bd-ae)^3+5b^3(d+ex)^3\right)}{5e^4(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*((b*d - a*e)^3 - 5*b*(b*d - a*e)^2*(d + e*x) + 15*b^2*(b*d - a*e)*(d + e
*x)^2 + 5*b^3*(d + e*x)^3))/(5*e^4*(d + e*x)^(5/2))
```

fricas [**A**]   time = 0.83, size = 148, normalized size = 1.57

$$\frac{2\left(5\,b^3e^3x^3+16\,b^3d^3-8\,ab^2d^2e-2\,a^2bde^2-a^3e^3+15\left(2\,b^3de^2-ab^2e^3\right)x^2+5\left(8\,b^3d^2e-4\,ab^2de^2-a^2be^3\right)x\right)}{5\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="fricas"
)
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*sqrt(e*x + d)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [**A**]   time = 0.19, size = 136, normalized size = 1.45

$$2\sqrt{xe+d}\,b^3e^{(-4)}+\frac{2\left(15\,(xe+d)^2b^3d-5\,(xe+d)b^3d^2+b^3d^3-15\,(xe+d)^2ab^2e+10\,(xe+d)ab^2de-3\,ab^2d^2e\right.}{5\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*b^3*e^(-4) + 2/5*(15*(x*e + d)^2*b^3*d - 5*(x*e + d)*b^3*d^
2 + b^3*d^3 - 15*(x*e + d)^2*a*b^2*e + 10*(x*e + d)*a*b^2*d*e - 3*a*b^2*d^2
*e - 5*(x*e + d)*a^2*b*e^2 + 3*a^2*b*d*e^2 - a^3*e^3)*e^(-4)/(x*e + d)^(5/2
)
```

maple [**A**]   time = 0.05, size = 115, normalized size = 1.22

$$-\frac{2\left(-5b^3e^3x^3+15a\,b^2e^3x^2-30b^3d\,e^2x^2+5a^2b\,e^3x+20a\,b^2d\,e^2x-40b^3d^2ex+a^3e^3+2a^2bd\,e^2+8a\,b^2d^2e-1\right.}{5\,(ex+d)^{\frac{5}{2}}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/5*(-5*b^3*e^3*x^3+15*a*b^2*e^3*x^2-30*b^3*d*e^2*x^2+5*a^2*b*e^3*x+20*a*b
^2*d*e^2*x-40*b^3*d^2*e*x+a^3*e^3+2*a^2*b*d*e^2+8*a*b^2*d^2*e-16*b^3*d^3)/(
e*x+d)^(5/2)/e^4
```

maxima [**A**]   time = 0.71, size = 121, normalized size = 1.29

$$\frac{2\left(\frac{5\,\sqrt{ex+d}\,b^3}{e^3}+\frac{b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3+15\left(b^3d-ab^2e\right)(ex+d)^2-5\left(b^3d^2-2\,ab^2de+a^2be^2\right)(ex+d)}{(ex+d)^{\frac{5}{2}}e^3}\right)}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(7/2),x, algorithm="maxima"
)
```

```
[Out] 2/5*(5*sqrt(e*x + d)*b^3/e^3 + (b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a
^3*e^3 + 15*(b^3*d - a*b^2*e)*(e*x + d)^2 - 5*(b^3*d^2 - 2*a*b^2*d*e + a^2*
b*e^2)*(e*x + d))/((e*x + d)^(5/2)*e^3))/e
```

mupad [B] time = 2.06, size = 114, normalized size = 1.21

$$-\frac{2\left(a^3e^3+2a^2bde^2+5a^2be^3x+8ab^2d^2e+20ab^2de^2x+15ab^2e^3x^2-16b^3d^3-40b^3d^2ex-30b^3de^2x\right.}{5e^4\left(d+ex\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(2*(a^3*e^3 - 16*b^3*d^3 - 5*b^3*e^3*x^3 + 15*a*b^2*e^3*x^2 - 30*b^3*d*e^2
*x^2 + 8*a*b^2*d^2*e + 2*a^2*b*d*e^2 + 5*a^2*b*e^3*x - 40*b^3*d^2*e*x + 20*
a*b^2*d*e^2*x))/(5*e^4*(d + e*x)^(5/2))
```

sympy [A] time = 3.45, size = 665, normalized size = 7.07

$$\begin{cases} -\frac{2a^3e^3}{5d^2e^4\sqrt{d+ex}+10de^5x\sqrt{d+ex}+5e^6x^2\sqrt{d+ex}}-\frac{4a^2bde^2}{5d^2e^4\sqrt{d+ex}+10de^5x\sqrt{d+ex}+5e^6x^2\sqrt{d+ex}}-\frac{10a^2be^3x}{5d^2e^4\sqrt{d+ex}+10de^5x\sqrt{d+ex}+5e^6x^2\sqrt{d+ex}}- \\ \frac{a^3x+\frac{3a^2bx^2}{2}+ab^2x^3+\frac{b^3x^4}{4}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-2*a**3*e**3/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e
*x) + 5*e**6*x**2*sqrt(d + e*x)) - 4*a**2*b*d*e**2/(5*d**2*e**4*sqrt(d + e*
x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 10*a**2*b*e**
3*x/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sq
rt(d + e*x)) - 16*a*b**2*d**2*e/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sq
rt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 40*a*b**2*d*e**2*x/(5*d**2*e**4*
sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) - 30
*a*b**2*e**3*x**2/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) +
5*e**6*x**2*sqrt(d + e*x)) + 32*b**3*d**3/(5*d**2*e**4*sqrt(d + e*x) + 10*d
*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)) + 80*b**3*d**2*e*x/(5*d*
*2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*
x)) + 60*b**3*d*e**2*x**2/(5*d**2*e**4*sqrt(d + e*x) + 10*d*e**5*x*sqrt(d +
 e*x) + 5*e**6*x**2*sqrt(d + e*x)) + 10*b**3*e**3*x**3/(5*d**2*e**4*sqrt(d
+ e*x) + 10*d*e**5*x*sqrt(d + e*x) + 5*e**6*x**2*sqrt(d + e*x)), Ne(e, 0)),
 ((a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4)/d**(7/2), True))
```

3.2050 $\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=158

$$-\frac{10b^4(d+ex)^{17/2}(bd-ae)}{17e^6}+\frac{4b^3(d+ex)^{15/2}(bd-ae)^2}{3e^6}-\frac{20b^2(d+ex)^{13/2}(bd-ae)^3}{13e^6}+\frac{10b(d+ex)^{11/2}(bd-ae)^4}{11e^6}-$$

```
[Out] -2/9*(-a*e+b*d)^5*(e*x+d)^(9/2)/e^6+10/11*b*(-a*e+b*d)^4*(e*x+d)^(11/2)/e^6
-20/13*b^2*(-a*e+b*d)^3*(e*x+d)^(13/2)/e^6+4/3*b^3*(-a*e+b*d)^2*(e*x+d)^(15
/2)/e^6-10/17*b^4*(-a*e+b*d)*(e*x+d)^(17/2)/e^6+2/19*b^5*(e*x+d)^(19/2)/e^6
```

Rubi [A] time = 0.07, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{17/2}(bd-ae)}{17e^6}+\frac{4b^3(d+ex)^{15/2}(bd-ae)^2}{3e^6}-\frac{20b^2(d+ex)^{13/2}(bd-ae)^3}{13e^6}+\frac{10b(d+ex)^{11/2}(bd-ae)^4}{11e^6}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(9/2))/(9*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(11/2))/(11*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(13/2))/(13*e^6) + (4*b^
3*(b*d - a*e)^2*(d + e*x)^(15/2))/(3*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(
17/2))/(17*e^6) + (2*b^5*(d + e*x)^(19/2))/(19*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^{7/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{7/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{9/2}}{e^5}-\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{9/2}}{9e^6}+\frac{10b(bd-ae)^4(d+ex)^{11/2}}{11e^6}-\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{9/2}\left(-122265b^4(d+ex)^4(bd-ae)+277134b^3(d+ex)^3(bd-ae)^2-319770b^2(d+ex)^2(bd-ae)^3+188\right.}{415701e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-46189*(b*d - a*e)^5 + 188955*b*(b*d - a*e)^4*(d + e*x)
 - 319770*b^2*(b*d - a*e)^3*(d + e*x)^2 + 277134*b^3*(b*d - a*e)^2*(d + e*x
)^3 - 122265*b^4*(b*d - a*e)*(d + e*x)^4 + 21879*b^5*(d + e*x)^5))/(415701*
e^6)
```

fricas [B] time = 1.63, size = 579, normalized size = 3.66

$$2\big(21879\,b^5e^9x^9 - 256\,b^5d^9 + 2432\,ab^4d^8e - 10336\,a^2b^3d^7e^2 + 25840\,a^3b^2d^6e^3 - 41990\,a^4bd^5e^4 + 46189\,a^5d^4e^5 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/415701*(21879*b^5*e^9*x^9 - 256*b^5*d^9 + 2432*a*b^4*d^8*e - 10336*a^2*b^
3*d^7*e^2 + 25840*a^3*b^2*d^6*e^3 - 41990*a^4*b*d^5*e^4 + 46189*a^5*d^4*e^5
 + 1287*(58*b^5*d*e^8 + 95*a*b^4*e^9)*x^8 + 858*(101*b^5*d^2*e^7 + 494*a*b^
4*d*e^8 + 323*a^2*b^3*e^9)*x^7 + 66*(524*b^5*d^3*e^6 + 7619*a*b^4*d^2*e^7 +
 14858*a^2*b^3*d*e^8 + 4845*a^3*b^2*e^9)*x^6 + 9*(7*b^5*d^4*e^5 + 23028*a*b
^4*d^3*e^6 + 133076*a^2*b^3*d^2*e^7 + 129200*a^3*b^2*d*e^8 + 20995*a^4*b*e^
9)*x^5 - (70*b^5*d^5*e^4 - 665*a*b^4*d^4*e^5 - 516800*a^2*b^3*d^3*e^6 - 147
9340*a^3*b^2*d^2*e^7 - 713830*a^4*b*d*e^8 - 46189*a^5*e^9)*x^4 + 2*(40*b^5*
d^6*e^3 - 380*a*b^4*d^5*e^4 + 1615*a^2*b^3*d^4*e^5 + 342380*a^3*b^2*d^3*e^6
 + 482885*a^4*b*d^2*e^7 + 92378*a^5*d*e^8)*x^3 - 6*(16*b^5*d^7*e^2 - 152*a*
b^4*d^6*e^3 + 646*a^2*b^3*d^5*e^4 - 1615*a^3*b^2*d^4*e^5 - 83980*a^4*b*d^3*
e^6 - 46189*a^5*d^2*e^7)*x^2 + (128*b^5*d^8*e - 1216*a*b^4*d^7*e^2 + 5168*a
^2*b^3*d^6*e^3 - 12920*a^3*b^2*d^5*e^4 + 20995*a^4*b*d^4*e^5 + 184756*a^5*d
^3*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.31, size = 2325, normalized size = 14.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(24249225*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^4*e^(-1)
 + 9699690*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*a^3*b^2*d^4*e^(-2) + 4157010*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^4*e^(-3) + 230945*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^4*e^(-4) + 20995*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*
d^4*e^(-5) + 19399380*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x
*e + d)*d^2)*a^4*b*d^3*e^(-1) + 16628040*(5*(x*e + d)^(7/2) - 21*(x*e + d)^
(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d^3*e^(-2)
 + 1847560*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2
)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d^3*e^(-3)
 + 419900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2
)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e
+ d)*d^5)*a*b^4*d^3*e^(-4) + 19380*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^5*d^3*
e^(-5) + 14549535*sqrt(x*e + d)*a^5*d^4 + 19399380*((x*e + d)^(3/2) - 3*sqr
t(x*e + d)*d)*a^5*d^3 + 12471030*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b*d^2*e^(-1) + 2771340
*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 42
0*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^2*d^2*e^(-2) + 1259700
*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1
386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)
*a^2*b^3*d^2*e^(-3) + 145350*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^4*d^2*e^(-
4) + 13566*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d
)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 2702
7*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)
*b^5*d^2*e^(-5) + 5819814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*a^5*d^2 + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*a^4*b*d*e^(-1) + 839800*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^2*d*e^(-2) + 193800*(231*(x*e + d)^(13/2
) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/
2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*
e + d)*d^6)*a^2*b^3*d*e^(-3) + 45220*(429*(x*e + d)^(15/2) - 3465*(x*e + d)
^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*
(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
 - 6435*sqrt(x*e + d)*d^7)*a*b^4*d*e^(-4) + 532*(6435*(x*e + d)^(17/2) - 58
344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11
/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*
(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8
)*b^5*d*e^(-5) + 1662804*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*
e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*d + 104975*(63*(x*e + d)^(11/2
) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*
d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b*e^(-1) + 4845
0*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^
2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3
/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^2*e^(-2) + 22610*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^3*e^(-3) + 665*(6435*(
x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 -
556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)
^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 1093
95*sqrt(x*e + d)*d^8)*a*b^4*e^(-4) + 63*(12155*(x*e + d)^(19/2) - 122265*(x
*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d
^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(
x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d
^8 - 230945*sqrt(x*e + d)*d^9)*b^5*e^(-5) + 46189*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*a^5)*e^(-1)
```

<u>**maple**</u> **[B]** time = 0.05, size = 273, normalized size = 1.73

$$2\left(ex+d\right)^{\frac{9}{2}}\left(21879b^5e^5x^5+122265a\,b^4e^5x^4-12870b^5d\,e^4x^4+277134a^2b^3e^5x^3-65208a\,b^4d\,e^4x^3+6864b^5d^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/415701*(e*x+d)^(9/2)*(21879*b^5*e^5*x^5+122265*a*b^4*e^5*x^4-12870*b^5*d*
e^4*x^4+277134*a^2*b^3*e^5*x^3-65208*a*b^4*d*e^4*x^3+6864*b^5*d^2*e^3*x^3+3
19770*a^3*b^2*e^5*x^2-127908*a^2*b^3*d*e^4*x^2+30096*a*b^4*d^2*e^3*x^2-3168
*b^5*d^3*e^2*x^2+188955*a^4*b*e^5*x-116280*a^3*b^2*d*e^4*x+46512*a^2*b^3*d^
2*e^3*x-10944*a*b^4*d^3*e^2*x+1152*b^5*d^4*e*x+46189*a^5*e^5-41990*a^4*b*d*
e^4+25840*a^3*b^2*d^2*e^3-10336*a^2*b^3*d^3*e^2+2432*a*b^4*d^4*e-256*b^5*d^
5)/e^6
```

maxima [A] time = 0.51, size = 259, normalized size = 1.64

$$\frac{2\left(21879\,(ex+d)^{\frac{19}{2}}b^5 - 122265\left(b^5d - ab^4e\right)(ex+d)^{\frac{17}{2}} + 277134\left(b^5d^2 - 2\,ab^4de + a^2b^3e^2\right)(ex+d)^{\frac{15}{2}} - 319770\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/415701*(21879*(e*x + d)^(19/2)*b^5 - 122265*(b^5*d - a*b^4*e)*(e*x + d)^(
17/2) + 277134*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(15/2) - 319
770*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(13
/2) + 188955*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
 + a^4*b*e^4)*(e*x + d)^(11/2) - 46189*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^
3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(9/2))/
e^6
```

mupad [B] time = 0.07, size = 137, normalized size = 0.87

$$\frac{2\,b^5\,(d+e\,x)^{19/2}}{19\,e^6} - \frac{\left(10\,b^5\,d - 10\,a\,b^4\,e\right)\,(d+e\,x)^{17/2}}{17\,e^6} + \frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{9/2}}{9\,e^6} + \frac{20\,b^2\,(a\,e-b\,d)^3\,(d+e\,x)^{13/2}}{13\,e^6} + \frac{4\,b^3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(19/2))/(19*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(17/
2))/(17*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(9/2))/(9*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(13/2))/(13*e^6) + (4*b^3*(a*e - b*d)^2*(d + e*x)^(15/2))/(
3*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(11/2))/(11*e^6)
```

sympy [A] time = 15.96, size = 1187, normalized size = 7.51

$$\begin{cases} \frac{2a^5d^4\sqrt{d+ex}}{9e} + \frac{8a^5d^3x\sqrt{d+ex}}{9} + \frac{4a^5d^2ex^2\sqrt{d+ex}}{3} + \frac{8a^5de^2x^3\sqrt{d+ex}}{9} + \frac{2a^5e^3x^4\sqrt{d+ex}}{9} - \frac{20a^4bd^5\sqrt{d+ex}}{99e^2} + \frac{10a^4bd^4x\sqrt{d+ex}}{99e} + \frac{80a^4bd^3x^2}{33} \\ d^{\frac{7}{2}}\left(a^5x + \frac{5a^4bx^2}{2} + \frac{10a^3b^2x^3}{3} + \frac{5a^2b^3x^4}{2} + ab^4x^5 + \frac{b^5x^6}{6}\right) \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Piecewise((2*a**5*d**4*sqrt(d + e*x)/(9*e) + 8*a**5*d**3*x*sqrt(d + e*x)/9
+ 4*a**5*d**2*e*x**2*sqrt(d + e*x)/3 + 8*a**5*d*e**2*x**3*sqrt(d + e*x)/9 +
 2*a**5*e**3*x**4*sqrt(d + e*x)/9 - 20*a**4*b*d**5*sqrt(d + e*x)/(99*e**2)
+ 10*a**4*b*d**4*x*sqrt(d + e*x)/(99*e) + 80*a**4*b*d**3*x**2*sqrt(d + e*x)
/33 + 460*a**4*b*d**2*e*x**3*sqrt(d + e*x)/99 + 340*a**4*b*d*e**2*x**4*sqrt
(d + e*x)/99 + 10*a**4*b*e**3*x**5*sqrt(d + e*x)/11 + 160*a**3*b**2*d**6*sq
rt(d + e*x)/(1287*e**3) - 80*a**3*b**2*d**5*x*sqrt(d + e*x)/(1287*e**2) + 2
0*a**3*b**2*d**4*x**2*sqrt(d + e*x)/(429*e) + 4240*a**3*b**2*d**3*x**3*sqrt
(d + e*x)/1287 + 9160*a**3*b**2*d**2*e*x**4*sqrt(d + e*x)/1287 + 800*a**3*b
**2*d*e**2*x**5*sqrt(d + e*x)/143 + 20*a**3*b**2*e**3*x**6*sqrt(d + e*x)/13
 - 64*a**2*b**3*d**7*sqrt(d + e*x)/(1287*e**4) + 32*a**2*b**3*d**6*x*sqrt(d
 + e*x)/(1287*e**3) - 8*a**2*b**3*d**5*x**2*sqrt(d + e*x)/(429*e**2) + 20*a
**2*b**3*d**4*x**3*sqrt(d + e*x)/(1287*e) + 3200*a**2*b**3*d**3*x**4*sqrt(d
 + e*x)/1287 + 824*a**2*b**3*d**2*e*x**5*sqrt(d + e*x)/143 + 184*a**2*b**3*
d*e**2*x**6*sqrt(d + e*x)/39 + 4*a**2*b**3*e**3*x**7*sqrt(d + e*x)/3 + 256*
a*b**4*d**8*sqrt(d + e*x)/(21879*e**5) - 128*a*b**4*d**7*x*sqrt(d + e*x)/(2
1879*e**4) + 32*a*b**4*d**6*x**2*sqrt(d + e*x)/(7293*e**3) - 80*a*b**4*d**5
*x**3*sqrt(d + e*x)/(21879*e**2) + 70*a*b**4*d**4*x**4*sqrt(d + e*x)/(21879
*e) + 2424*a*b**4*d**3*x**5*sqrt(d + e*x)/2431 + 1604*a*b**4*d**2*e*x**6*sq
rt(d + e*x)/663 + 104*a*b**4*d*e**2*x**7*sqrt(d + e*x)/51 + 10*a*b**4*e**3*
x**8*sqrt(d + e*x)/17 - 512*b**5*d**9*sqrt(d + e*x)/(415701*e**6) + 256*b**
5*d**8*x*sqrt(d + e*x)/(415701*e**5) - 64*b**5*d**7*x**2*sqrt(d + e*x)/(138
567*e**4) + 160*b**5*d**6*x**3*sqrt(d + e*x)/(415701*e**3) - 140*b**5*d**5*
x**4*sqrt(d + e*x)/(415701*e**2) + 14*b**5*d**4*x**5*sqrt(d + e*x)/(46189*e
) + 2096*b**5*d**3*x**6*sqrt(d + e*x)/12597 + 404*b**5*d**2*e*x**7*sqrt(d +
 e*x)/969 + 116*b**5*d*e**2*x**8*sqrt(d + e*x)/323 + 2*b**5*e**3*x**9*sqrt(
d + e*x)/19, Ne(e, 0)), (d**(7/2)*(a**5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*
x**3/3 + 5*a**2*b**3*x**4/2 + a*b**4*x**5 + b**5*x**6/6), True))
```

3.2051 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=158

$$-\frac{2b^4(d+ex)^{15/2}(bd-ae)}{3e^6}+\frac{20b^3(d+ex)^{13/2}(bd-ae)^2}{13e^6}-\frac{20b^2(d+ex)^{11/2}(bd-ae)^3}{11e^6}+\frac{10b(d+ex)^{9/2}(bd-ae)^4}{9e^6}-2(d$$

```
[Out] -2/7*(-a*e+b*d)^5*(e*x+d)^(7/2)/e^6+10/9*b*(-a*e+b*d)^4*(e*x+d)^(9/2)/e^6-2
0/11*b^2*(-a*e+b*d)^3*(e*x+d)^(11/2)/e^6+20/13*b^3*(-a*e+b*d)^2*(e*x+d)^(13
/2)/e^6-2/3*b^4*(-a*e+b*d)*(e*x+d)^(15/2)/e^6+2/17*b^5*(e*x+d)^(17/2)/e^6
```

Rubi [A] time = 0.06, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{2b^4(d+ex)^{15/2}(bd-ae)}{3e^6}+\frac{20b^3(d+ex)^{13/2}(bd-ae)^2}{13e^6}-\frac{20b^2(d+ex)^{11/2}(bd-ae)^3}{11e^6}+\frac{10b(d+ex)^{9/2}(bd-ae)^4}{9e^6}-2(d$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(7/2))/(7*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(9/2))/(9*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(11/2))/(11*e^6) + (20*b^3
*(b*d - a*e)^2*(d + e*x)^(13/2))/(13*e^6) - (2*b^4*(b*d - a*e)*(d + e*x)^(1
5/2))/(3*e^6) + (2*b^5*(d + e*x)^(17/2))/(17*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{5/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{7/2}}{e^5}-10b^2(bd-\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{7/2}}{7e^6}+\frac{10b(bd-ae)^4(d+ex)^{9/2}}{9e^6}-20b^2(bd-a\end{aligned}$$

Mathematica [A] time = 0.08, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{7/2}\left(-51051b^4(d+ex)^4(bd-ae)+117810b^3(d+ex)^3(bd-ae)^2-139230b^2(d+ex)^2(bd-ae)^3+85085b\right.}{153153e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-21879*(b*d - a*e)^5 + 85085*b*(b*d - a*e)^4*(d + e*x)
- 139230*b^2*(b*d - a*e)^3*(d + e*x)^2 + 117810*b^3*(b*d - a*e)^2*(d + e*x)
^3 - 51051*b^4*(b*d - a*e)*(d + e*x)^4 + 9009*b^5*(d + e*x)^5))/(153153*e^6
)
```

fricas [B] time = 1.10, size = 497, normalized size = 3.15

$$2\left(9009\,b^{5}e^{8}x^{8} - 256\,b^{5}d^{8} + 2176\,ab^{4}d^{7}e - 8160\,a^{2}b^{3}d^{6}e^{2} + 17680\,a^{3}b^{2}d^{5}e^{3} - 24310\,a^{4}bd^{4}e^{4} + 21879\,a^{5}d^{3}e^{5} +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.27, size = 1698, normalized size = 10.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/765765*(1276275*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^3*e^(-1) +
510510*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^
3*b^2*d^3*e^(-2) + 218790*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^3*e^(-3) + 12155*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^3*e^(-4) + 1105*(63*(x*e +
d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d
)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d^3*e^(
-5) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*a^4*b*d^2*e^(-1) + 656370*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d^2*e^(-2) + 72930*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d^2*e^(-3) + 16575*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^
4*d^2*e^(-4) + 765*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^5*d^2*e^(-5) + 765765*
sqrt(x*e + d)*a^5*d^3 + 765765*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*d^
2 + 328185*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d
^2 - 35*sqrt(x*e + d)*d^3)*a^4*b*d*e^(-1) + 72930*(35*(x*e + d)^(9/2) - 180
*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 31
5*sqrt(x*e + d)*d^4)*a^3*b^2*d*e^(-2) + 33150*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^3*d*e^(-3) + 3825*(231*
(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 858
0*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
 + 3003*sqrt(x*e + d)*d^6)*a*b^4*d*e^(-4) + 357*(429*(x*e + d)^(15/2) - 346
5*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d
^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d
)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^5*d*e^(-5) + 153153*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*d + 12155*(35*(x*e +
 d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)
^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b*e^(-1) + 11050*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^2*e^(-2) + 2
550*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^3*e^(-3) + 595*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^4*e^(-4) + 7*(6435*(x*e
+ d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 5569
20*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/
2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*s
qrt(x*e + d)*d^8)*b^5*e^(-5) + 21879*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.73

$$2\,(ex+d)^{\frac{7}{2}}\left(9009b^5e^5x^5+51051a\,b^4e^5x^4-6006b^5d\,e^4x^4+117810a^2b^3e^5x^3-31416a\,b^4d\,e^4x^3+3696b^5d^2e^3x^3+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/153153*(e*x+d)^(7/2)*(9009*b^5*e^5*x^5+51051*a*b^4*e^5*x^4-6006*b^5*d*e^4
*x^4+117810*a^2*b^3*e^5*x^3-31416*a*b^4*d*e^4*x^3+3696*b^5*d^2*e^3*x^3+1392
30*a^3*b^2*e^5*x^2-64260*a^2*b^3*d*e^4*x^2+17136*a*b^4*d^2*e^3*x^2-2016*b^5
*d^3*e^2*x^2+85085*a^4*b*e^5*x-61880*a^3*b^2*d*e^4*x+28560*a^2*b^3*d^2*e^3*
x-7616*a*b^4*d^3*e^2*x+896*b^5*d^4*e*x+21879*a^5*e^5-24310*a^4*b*d*e^4+1768
0*a^3*b^2*d^2*e^3-8160*a^2*b^3*d^3*e^2+2176*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [A] time = 0.53, size = 259, normalized size = 1.64

$$2\left(9009\,(ex+d)^{\frac{17}{2}}b^5-51051\left(b^5d-ab^4e\right)(ex+d)^{\frac{15}{2}}+117810\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{13}{2}}-139230\left(b^5d\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/153153*(9009*(e*x + d)^(17/2)*b^5 - 51051*(b^5*d - a*b^4*e)*(e*x + d)^(15
/2) + 117810*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(13/2) - 13923
0*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(11/2
) + 85085*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 +
a^4*b*e^4)*(e*x + d)^(9/2) - 21879*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^
3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(7/2))/e^6
```

mupad [B] time = 2.05, size = 137, normalized size = 0.87

$$\frac{2\,b^5\,(d+e\,x)^{17/2}}{17\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,(d+e\,x)^{15/2}}{15\,e^6}+\frac{2\,(a\,e-b\,d)^5\,(d+e\,x)^{7/2}}{7\,e^6}+\frac{20\,b^2\,(a\,e-b\,d)^3\,(d+e\,x)^{11/2}}{11\,e^6}+20\,b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(17/2))/(17*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(15/
2))/(15*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(7/2))/(7*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(11/2))/(11*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(13/2))/
(13*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(9/2))/(9*e^6)
```

sympy **[A]** time = 48.32, size = 1292, normalized size = 8.18

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 4*a**5*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**5*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e + 10*a*
*4*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 20*a**4*b*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
 + 10*a**4*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 20*a**3*b**2*d**2*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 40*a**3
*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*
x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 20*a**3*b**2*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 20*a**2*b**3*d**2*(-d**3*(d + e*x)
**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)*
*(9/2)/9)/e**4 + 40*a**2*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)
**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)*
*(11/2)/11)/e**4 + 20*a**2*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)*
*(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
 e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 10*a*b**4*d**2*(d**4*(d + e
*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*
(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 20*a*b**4*d*(-d**5*(d + e
*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2
*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5
 + 10*a*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4
*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2
)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 2*b**5*d**2*
(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2
)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(1
3/2)/13)/e**6 + 4*b**5*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)
/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d +
 e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 +
2*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 2
1*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/
17)/e**6
```

3.2052 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=158

$$-\frac{10b^4(d+ex)^{13/2}(bd-ae)}{13e^6}+\frac{20b^3(d+ex)^{11/2}(bd-ae)^2}{11e^6}-\frac{20b^2(d+ex)^{9/2}(bd-ae)^3}{9e^6}+\frac{10b(d+ex)^{7/2}(bd-ae)^4}{7e^6}-2(d$$

```
[Out] -2/5*(-a*e+b*d)^5*(e*x+d)^(5/2)/e^6+10/7*b*(-a*e+b*d)^4*(e*x+d)^(7/2)/e^6-2
0/9*b^2*(-a*e+b*d)^3*(e*x+d)^(9/2)/e^6+20/11*b^3*(-a*e+b*d)^2*(e*x+d)^(11/2
)/e^6-10/13*b^4*(-a*e+b*d)*(e*x+d)^(13/2)/e^6+2/15*b^5*(e*x+d)^(15/2)/e^6
```

Rubi [A] time = 0.06, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = {27, 43}

$$-\frac{10b^4(d+ex)^{13/2}(bd-ae)}{13e^6}+\frac{20b^3(d+ex)^{11/2}(bd-ae)^2}{11e^6}-\frac{20b^2(d+ex)^{9/2}(bd-ae)^3}{9e^6}+\frac{10b(d+ex)^{7/2}(bd-ae)^4}{7e^6}-2(d$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(5/2))/(5*e^6) + (10*b*(b*d - a*e)^4*(d + e*x)^
(7/2))/(7*e^6) - (20*b^2*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^6) + (20*b^3*(
b*d - a*e)^2*(d + e*x)^(11/2))/(11*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(13
/2))/(13*e^6) + (2*b^5*(d + e*x)^(15/2))/(15*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^{3/2}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{5/2}}{e^5}-10b^2(bd-\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{5/2}}{5e^6}+\frac{10b(bd-ae)^4(d+ex)^{7/2}}{7e^6}-20b^2(bd-a\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.78

$$\frac{2(d+ex)^{5/2}\left(-17325b^4(d+ex)^4(bd-ae)+40950b^3(d+ex)^3(bd-ae)^2-50050b^2(d+ex)^2(bd-ae)^3+32175b(d\right.}{45045e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-9009*(b*d - a*e)^5 + 32175*b*(b*d - a*e)^4*(d + e*x) -
 50050*b^2*(b*d - a*e)^3*(d + e*x)^2 + 40950*b^3*(b*d - a*e)^2*(d + e*x)^3
- 17325*b^4*(b*d - a*e)*(d + e*x)^4 + 3003*b^5*(d + e*x)^5))/(45045*e^6)
```

fricas [B] time = 1.39, size = 418, normalized size = 2.65

$$\frac{2\left(3003\,b^{5}e^{7}x^{7} - 256\,b^{5}d^{7} + 1920\,ab^{4}d^{6}e - 6240\,a^{2}b^{3}d^{5}e^{2} + 11440\,a^{3}b^{2}d^{4}e^{3} - 12870\,a^{4}bd^{3}e^{4} + 9009\,a^{5}d^{2}e^{5} + 2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.23, size = 1149, normalized size = 7.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 2/45045*(75075*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d^2*e^(-1) + 300
30*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^
2*d^2*e^(-2) + 12870*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d^2*e^(-3) + 715*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^4*d^2*e^(-4) + 65*(63*(x*e + d)^(11/2)
 - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d
^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d^2*e^(-5) + 300
30*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*b*
d*e^(-1) + 25740*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(
3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^2*d*e^(-2) + 2860*(35*(x*e + d)^(9/2
) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d
^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^3*d*e^(-3) + 650*(63*(x*e + d)^(11/2) - 3
85*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 +
 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^4*d*e^(-4) + 30*(231
*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 85
80*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^
5 + 3003*sqrt(x*e + d)*d^6)*b^5*d*e^(-5) + 45045*sqrt(x*e + d)*a^5*d^2 + 30
030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*d + 6435*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*
b*e^(-1) + 1430*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^2*e^(-2
) + 650*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*
d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
d)*d^5)*a^2*b^3*e^(-3) + 75*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d
 + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/
2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^4*e^(-4) +
7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^5*e^(-
5) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.73

$$2 (ex + d)^{\frac{5}{2}} (3003b^5e^5x^5 + 17325a b^4e^5x^4 - 2310b^5d e^4x^4 + 40950a^2b^3e^5x^3 - 12600a b^4d e^4x^3 + 1680b^5d^2e^3x^3 + 5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/45045*(e*x+d)^(5/2)*(3003*b^5*e^5*x^5+17325*a*b^4*e^5*x^4-2310*b^5*d*e^4*
x^4+40950*a^2*b^3*e^5*x^3-12600*a*b^4*d*e^4*x^3+1680*b^5*d^2*e^3*x^3+50050*
a^3*b^2*e^5*x^2-27300*a^2*b^3*d*e^4*x^2+8400*a*b^4*d^2*e^3*x^2-1120*b^5*d^3
*e^2*x^2+32175*a^4*b*e^5*x-28600*a^3*b^2*d*e^4*x+15600*a^2*b^3*d^2*e^3*x-48
00*a*b^4*d^3*e^2*x+640*b^5*d^4*e*x+9009*a^5*e^5-12870*a^4*b*d*e^4+11440*a^3
*b^2*d^2*e^3-6240*a^2*b^3*d^3*e^2+1920*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [A] time = 0.56, size = 259, normalized size = 1.64

$$2 (3003 (ex + d)^{\frac{15}{2}} b^5 - 17325 (b^5d - ab^4e)(ex + d)^{\frac{13}{2}} + 40950 (b^5d^2 - 2 ab^4de + a^2b^3e^2)(ex + d)^{\frac{11}{2}} - 50050 (b^5d^3 -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] 2/45045*(3003*(e*x + d)^(15/2)*b^5 - 17325*(b^5*d - a*b^4*e)*(e*x + d)^(13/
2) + 40950*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(11/2) - 50050*(
b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(9/2) +
32175*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*
b*e^4)*(e*x + d)^(7/2) - 9009*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2
 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(5/2))/e^6
```

mupad [B] time = 0.05, size = 137, normalized size = 0.87

$$\frac{2 b^5 (d + e x)^{15/2}}{15 e^6} - \frac{(10 b^5 d - 10 a b^4 e) (d + e x)^{13/2}}{13 e^6} + \frac{2 (a e - b d)^5 (d + e x)^{5/2}}{5 e^6} + \frac{20 b^2 (a e - b d)^3 (d + e x)^{9/2}}{9 e^6} + \frac{20 b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(15/2))/(15*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(13/
2))/(13*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(5/2))/(5*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(9/2))/(9*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(11/2))/(1
1*e^6) + (10*b*(a*e - b*d)^4*(d + e*x)^(7/2))/(7*e^6)
```

sympy [A] time = 30.56, size = 763, normalized size = 4.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] a**5*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**5*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 10*a**4*b*d*(-d*(d
 + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 10*a**4*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 20*a**3*b**2*d*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**
3 + 20*a**3*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*
d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 20*a**2*b**3*d*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**4 + 20*a**2*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**4 + 10*a*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e
*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*
x)**(11/2)/11)/e**5 + 10*a*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)*
*(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d +
 e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 2*b**5*d*(-d**5*(d + e*x)**
(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d +
 e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 2*
b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*
x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6
*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6
```

3.2053 $\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=156

$$-\frac{10b^4(d+ex)^{11/2}(bd-ae)}{11e^6}+\frac{20b^3(d+ex)^{9/2}(bd-ae)^2}{9e^6}-\frac{20b^2(d+ex)^{7/2}(bd-ae)^3}{7e^6}+\frac{2b(d+ex)^{5/2}(bd-ae)^4}{e^6}-2(d+$$

```
[Out] -2/3*(-a*e+b*d)^5*(e*x+d)^(3/2)/e^6+2*b*(-a*e+b*d)^4*(e*x+d)^(5/2)/e^6-20/7
*b^2*(-a*e+b*d)^3*(e*x+d)^(7/2)/e^6+20/9*b^3*(-a*e+b*d)^2*(e*x+d)^(9/2)/e^6
-10/11*b^4*(-a*e+b*d)*(e*x+d)^(11/2)/e^6+2/13*b^5*(e*x+d)^(13/2)/e^6
```

Rubi [A] time = 0.05, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{11/2}(bd-ae)}{11e^6}+\frac{20b^3(d+ex)^{9/2}(bd-ae)^2}{9e^6}-\frac{20b^2(d+ex)^{7/2}(bd-ae)^3}{7e^6}+\frac{2b(d+ex)^{5/2}(bd-ae)^4}{e^6}-2(d+$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-2*(b*d - a*e)^5*(d + e*x)^(3/2))/(3*e^6) + (2*b*(b*d - a*e)^4*(d + e*x)^(
5/2))/e^6 - (20*b^2*(b*d - a*e)^3*(d + e*x)^(7/2))/(7*e^6) + (20*b^3*(b*d -
 a*e)^2*(d + e*x)^(9/2))/(9*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(11/2))/(1
1*e^6) + (2*b^5*(d + e*x)^(13/2))/(13*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^5\sqrt{d+ex}}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{3/2}}{e^5}-\frac{10b^2(bd-ae)}{e^5}\right.\\ &= -\frac{2(bd-ae)^5(d+ex)^{3/2}}{3e^6}+\frac{2b(bd-ae)^4(d+ex)^{5/2}}{e^6}-\frac{20b^2(bd-ae)^3}{7e^6}\end{aligned}$$

Mathematica [A] time = 0.11, size = 123, normalized size = 0.79

$$\frac{2(d+ex)^{3/2}\left(-4095b^4(d+ex)^4(bd-ae)+10010b^3(d+ex)^3(bd-ae)^2-12870b^2(d+ex)^2(bd-ae)^3+9009b(d+\right.}{9009e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-3003*(b*d - a*e)^5 + 9009*b*(b*d - a*e)^4*(d + e*x) -
12870*b^2*(b*d - a*e)^3*(d + e*x)^2 + 10010*b^3*(b*d - a*e)^2*(d + e*x)^3 -
 4095*b^4*(b*d - a*e)*(d + e*x)^4 + 693*b^5*(d + e*x)^5))/(9009*e^6)
```

fricas [B] time = 1.20, size = 338, normalized size = 2.17

$$\frac{2\left(693\,b^5e^6x^6 - 256\,b^5d^6 + 1664\,ab^4d^5e - 4576\,a^2b^3d^4e^2 + 6864\,a^3b^2d^3e^3 - 6006\,a^4bd^2e^4 + 3003\,a^5de^5 + 63\left(b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.19, size = 678, normalized size = 4.35

$$\frac{2}{9009}\left(15015\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)a^4bde^{(-1)} + 6006\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\right)a^3b^2de^{(-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/9009*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*d*e^(-1) + 6006*(
3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^2*d*
e^(-2) + 2574*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2
)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^3*d*e^(-3) + 143*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*a*b^4*d*e^(-4) + 13*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^5*d*e^(-5) + 3003*(3*(x*e + d
)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*b*e^(-1) + 2574*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*a^3*b^2*e^(-2) + 286*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a^2*b^3*e^(-3) + 65*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*a*b^4*e^(-4) + 3*(231*(x*e + d)^(13/2) - 1638*(
x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9
009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6
)*b^5*e^(-5) + 9009*sqrt(x*e + d)*a^5*d + 3003*((x*e + d)^(3/2) - 3*sqrt(x*
e + d)*d)*a^5)*e^(-1)
```

maple [B] time = 0.05, size = 273, normalized size = 1.75

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(693b^5e^5x^5 + 4095a\,b^4e^5x^4 - 630b^5d\,e^4x^4 + 10010a^2b^3e^5x^3 - 3640a\,b^4d\,e^4x^3 + 560b^5d^2e^3x^3 + 1287\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x)
```

```
[Out] 2/9009*(e*x+d)^(3/2)*(693*b^5*e^5*x^5+4095*a*b^4*e^5*x^4-630*b^5*d*e^4*x^4+
10010*a^2*b^3*e^5*x^3-3640*a*b^4*d*e^4*x^3+560*b^5*d^2*e^3*x^3+12870*a^3*b^
2*e^5*x^2-8580*a^2*b^3*d*e^4*x^2+3120*a*b^4*d^2*e^3*x^2-480*b^5*d^3*e^2*x^2
+9009*a^4*b*e^5*x-10296*a^3*b^2*d*e^4*x+6864*a^2*b^3*d^2*e^3*x-2496*a*b^4*d
^3*e^2*x+384*b^5*d^4*e*x+3003*a^5*e^5-6006*a^4*b*d*e^4+6864*a^3*b^2*d^2*e^3
-4576*a^2*b^3*d^3*e^2+1664*a*b^4*d^4*e-256*b^5*d^5)/e^6
```

maxima [A] time = 0.49, size = 259, normalized size = 1.66

$$2\left(693\,(ex+d)^{\frac{13}{2}}b^5 - 4095\,\left(b^5d - ab^4e\right)(ex+d)^{\frac{11}{2}} + 10010\,\left(b^5d^2 - 2\,ab^4de + a^2b^3e^2\right)(ex+d)^{\frac{9}{2}} - 12870\,\left(b^5d^3 - 3\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/9009*(693*(e*x + d)^(13/2)*b^5 - 4095*(b^5*d - a*b^4*e)*(e*x + d)^(11/2)
+ 10010*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(9/2) - 12870*(b^5*
d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(7/2) + 9009
*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4
)*(e*x + d)^(5/2) - 3003*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10
*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*(e*x + d)^(3/2))/e^6
```

mupad [B] time = 0.05, size = 137, normalized size = 0.88

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{13/2}}{13\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{11/2}}{11\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{3/2}}{3\,e^6}+\frac{20\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{7/2}}{7\,e^6}+\frac{20\,b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*b^5*(d + e*x)^(13/2))/(13*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(11/
2))/(11*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(3/2))/(3*e^6) + (20*b^2*(a*e - b
*d)^3*(d + e*x)^(7/2))/(7*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(9/2))/(9*
e^6) + (2*b*(a*e - b*d)^4*(d + e*x)^(5/2))/e^6
```

sympy [B] time = 7.70, size = 314, normalized size = 2.01

$$\frac{2\left(\frac{b^5(d+ex)^{\frac{13}{2}}}{13e^5}+\frac{(d+ex)^{\frac{11}{2}}\left(5ab^4e-5b^5d\right)}{11e^5}+\frac{(d+ex)^{\frac{9}{2}}\left(10a^2b^3e^2-20ab^4de+10b^5d^2\right)}{9e^5}+\frac{(d+ex)^{\frac{7}{2}}\left(10a^3b^2e^3-30a^2b^3de^2+30ab^4d^2e-10b^5d^3\right)}{7e^5}+\frac{(d+ex)}{}\right.}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**5*(d + e*x)**(13/2)/(13*e**5) + (d + e*x)**(11/2)*(5*a*b**4*e - 5*b**
5*d)/(11*e**5) + (d + e*x)**(9/2)*(10*a**2*b**3*e**2 - 20*a*b**4*d*e + 10*b
**5*d**2)/(9*e**5) + (d + e*x)**(7/2)*(10*a**3*b**2*e**3 - 30*a**2*b**3*d*e
**2 + 30*a*b**4*d**2*e - 10*b**5*d**3)/(7*e**5) + (d + e*x)**(5/2)*(5*a**4*
b*e**4 - 20*a**3*b**2*d*e**3 + 30*a**2*b**3*d**2*e**2 - 20*a*b**4*d**3*e +
5*b**5*d**4)/(5*e**5) + (d + e*x)**(3/2)*(a**5*e**5 - 5*a**4*b*d*e**4 + 10*
a**3*b**2*d**2*e**3 - 10*a**2*b**3*d**3*e**2 + 5*a*b**4*d**4*e - b**5*d**5)
/(3*e**5))/e
```

3.2054 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=154

$$-\frac{10b^4(d+ex)^{9/2}(bd-ae)}{9e^6}+\frac{20b^3(d+ex)^{7/2}(bd-ae)^2}{7e^6}-\frac{4b^2(d+ex)^{5/2}(bd-ae)^3}{e^6}+\frac{10b(d+ex)^{3/2}(bd-ae)^4}{3e^6}-2\sqrt{\ }$$

```
[Out] 10/3*b*(-a*e+b*d)^4*(e*x+d)^(3/2)/e^6-4*b^2*(-a*e+b*d)^3*(e*x+d)^(5/2)/e^6+
20/7*b^3*(-a*e+b*d)^2*(e*x+d)^(7/2)/e^6-10/9*b^4*(-a*e+b*d)*(e*x+d)^(9/2)/e
^6+2/11*b^5*(e*x+d)^(11/2)/e^6-2*(-a*e+b*d)^5*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.06, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{9/2}(bd-ae)}{9e^6}+\frac{20b^3(d+ex)^{7/2}(bd-ae)^2}{7e^6}-\frac{4b^2(d+ex)^{5/2}(bd-ae)^3}{e^6}+\frac{10b(d+ex)^{3/2}(bd-ae)^4}{3e^6}-2\sqrt{\ }$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^5*Sqrt[d + e*x])/e^6 + (10*b*(b*d - a*e)^4*(d + e*x)^(3/2))
/(3*e^6) - (4*b^2*(b*d - a*e)^3*(d + e*x)^(5/2))/e^6 + (20*b^3*(b*d - a*e)^
2*(d + e*x)^(7/2))/(7*e^6) - (10*b^4*(b*d - a*e)*(d + e*x)^(9/2))/(9*e^6) +
 (2*b^5*(d + e*x)^(11/2))/(11*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^5}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5\sqrt{d+ex}}+\frac{5b(bd-ae)^4\sqrt{d+ex}}{e^5}-\frac{10b^2(bd-ae)^3(d+ex)^{3/2}}{e^5}+1\right.\\ &= -\frac{2(bd-ae)^5\sqrt{d+ex}}{e^6}+\frac{10b(bd-ae)^4(d+ex)^{3/2}}{3e^6}-\frac{4b^2(bd-ae)^3(d+ex}{e^6}\end{aligned}$$

Mathematica [A] time = 0.07, size = 123, normalized size = 0.80

$$\frac{2\sqrt{d+ex}\left(-385b^4(d+ex)^4(bd-ae)+990b^3(d+ex)^3(bd-ae)^2-1386b^2(d+ex)^2(bd-ae)^3+1155b(d+ex)(\right.}{693e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-693*(b*d - a*e)^5 + 1155*b*(b*d - a*e)^4*(d + e*x) - 138
6*b^2*(b*d - a*e)^3*(d + e*x)^2 + 990*b^3*(b*d - a*e)^2*(d + e*x)^3 - 385*b
^4*(b*d - a*e)*(d + e*x)^4 + 63*b^5*(d + e*x)^5))/(693*e^6)
```

fricas [A] time = 0.90, size = 261, normalized size = 1.69

$$2\left(63\,b^5e^5x^5 - 256\,b^5d^5 + 1408\,ab^4d^4e - 3168\,a^2b^3d^3e^2 + 3696\,a^3b^2d^2e^3 - 2310\,a^4bde^4 + 693\,a^5e^5 - 35\left(2\,b^5de^4 - \right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/693*(63*b^5*e^5*x^5 - 256*b^5*d^5 + 1408*a*b^4*d^4*e - 3168*a^2*b^3*d^3*e
^2 + 3696*a^3*b^2*d^2*e^3 - 2310*a^4*b*d*e^4 + 693*a^5*e^5 - 35*(2*b^5*d*e^
4 - 11*a*b^4*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 44*a*b^4*d*e^4 + 99*a^2*b^3*e^5
)*x^3 - 6*(16*b^5*d^3*e^2 - 88*a*b^4*d^2*e^3 + 198*a^2*b^3*d*e^4 - 231*a^3*
b^2*e^5)*x^2 + (128*b^5*d^4*e - 704*a*b^4*d^3*e^2 + 1584*a^2*b^3*d^2*e^3 -
1848*a^3*b^2*d*e^4 + 1155*a^4*b*e^5)*x)*sqrt(e*x + d)/e^6
```

giac [B] time = 0.17, size = 298, normalized size = 1.94

$$\frac{2}{693}\left(1155\left((xe+d)^{\frac{3}{2}} - 3\sqrt{xe+d}\,d\right)a^4be^{(-1)} + 462\left(3\,(xe+d)^{\frac{5}{2}} - 10\,(xe+d)^{\frac{3}{2}}d + 15\sqrt{xe+d}\,d^2\right)a^3b^2e^{(-2)} + 198\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/693*(1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*b*e^(-1) + 462*(3*(x*
e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^3*b^2*e^(-2)
+ 198*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 -
35*sqrt(x*e + d)*d^3)*a^2*b^3*e^(-3) + 11*(35*(x*e + d)^(9/2) - 180*(x*e +
d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x
*e + d)*d^4)*a*b^4*e^(-4) + (63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*b^5*e^(-5) + 693*sqrt(x*e + d)*a^5)*e^(-1)
```

maple [B] time = 0.04, size = 273, normalized size = 1.77

$$2\left(63b^5e^5x^5 + 385a\,b^4e^5x^4 - 70b^5d\,e^4x^4 + 990a^2b^3e^5x^3 - 440a\,b^4d\,e^4x^3 + 80b^5d^2e^3x^3 + 1386a^3b^2e^5x^2 - 1188a^2b^3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 2/693*(63*b^5*e^5*x^5+385*a*b^4*e^5*x^4-70*b^5*d*e^4*x^4+990*a^2*b^3*e^5*x^
3-440*a*b^4*d*e^4*x^3+80*b^5*d^2*e^3*x^3+1386*a^3*b^2*e^5*x^2-1188*a^2*b^3*
d*e^4*x^2+528*a*b^4*d^2*e^3*x^2-96*b^5*d^3*e^2*x^2+1155*a^4*b*e^5*x-1848*a^
3*b^2*d*e^4*x+1584*a^2*b^3*d^2*e^3*x-704*a*b^4*d^3*e^2*x+128*b^5*d^4*e*x+69
3*a^5*e^5-2310*a^4*b*d*e^4+3696*a^3*b^2*d^2*e^3-3168*a^2*b^3*d^3*e^2+1408*a
*b^4*d^4*e-256*b^5*d^5)*(e*x+d)^(1/2)/e^6
```

maxima [A] time = 0.56, size = 259, normalized size = 1.68

$$2\left(63\,(ex+d)^{\frac{11}{2}}b^5 - 385\left(b^5d - ab^4e\right)(ex+d)^{\frac{9}{2}} + 990\left(b^5d^2 - 2\,ab^4de + a^2b^3e^2\right)(ex+d)^{\frac{7}{2}} - 1386\left(b^5d^3 - 3\,ab^4d^2e\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/693*(63*(e*x + d)^(11/2)*b^5 - 385*(b^5*d - a*b^4*e)*(e*x + d)^(9/2) + 99
0*(b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(7/2) - 1386*(b^5*d^3 - 3
*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(5/2) + 1155*(b^5*d
^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4)*(e*x
+ d)^(3/2) - 693*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2
*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(e*x + d))/e^6
```

mupad [B] time = 0.05, size = 137, normalized size = 0.89

$$\frac{2\,b^5\,{\left(d+e\,x\right)}^{11/2}}{11\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,{\left(d+e\,x\right)}^{9/2}}{9\,e^6}+\frac{2\,{\left(a\,e-b\,d\right)}^5\,\sqrt{d+e\,x}}{e^6}+\frac{4\,b^2\,{\left(a\,e-b\,d\right)}^3\,{\left(d+e\,x\right)}^{5/2}}{e^6}+\frac{20\,b^3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(1/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(11/2))/(11*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(9/2
))/(9*e^6) + (2*(a*e - b*d)^5*(d + e*x)^(1/2))/e^6 + (4*b^2*(a*e - b*d)^3*(
d + e*x)^(5/2))/e^6 + (20*b^3*(a*e - b*d)^2*(d + e*x)^(7/2))/(7*e^6) + (10*
b*(a*e - b*d)^4*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A] time = 84.60, size = 740, normalized size = 4.81

$$\begin{cases} \frac{-\frac{2a^{5}d}{\sqrt{d+ex}}-2a^{5}\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)-\frac{10a^{4}bd\left(-\frac{d}{\sqrt{d+ex}}-\sqrt{d+ex}\right)}{e}-\frac{10a^{4}b\left(\frac{d^{2}}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e}-\frac{20a^{3}b^{2}d\left(\frac{d^{2}}{\sqrt{d+ex}}+2d\sqrt{d+ex}-\frac{(d+ex)^{\frac{3}{2}}}{3}\right)}{e^{2}}-20a^{3}b^{2}\left(-\frac{d^{3}}{\sqrt{d+e}}\right.}{} \\ \frac{\begin{cases} a^{5}x & \text{for}\: b=0 \\ \frac{\left(a^{2}+2abx+b^{2}x^{2}\right)^{3}}{6b} & \text{otherwise} \end{cases}}{\sqrt{d}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**5*d/sqrt(d + e*x) - 2*a**5*(-d/sqrt(d + e*x) - sqrt(d + e
*x)) - 10*a**4*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 10*a**4*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 20*a**3*b**2*d*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 20*a**3
*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
 + e*x)**(5/2)/5)/e**2 - 20*a**2*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 20*a**2*b**3*(d*
*4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d
+ e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 10*a*b**4*d*(d**4/sqrt(d + e*x
) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2)/5
 - (d + e*x)**(7/2)/7)/e**4 - 10*a*b**4*(-d**5/sqrt(d + e*x) - 5*d**4*sqrt(
d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d*(d +
e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 2*b**5*d*(-d**5/sqrt(d + e*x) -
5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2)
 + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 2*b**5*(d**6/sqrt(d
+ e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)*
*(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(
11/2)/11)/e**5)/e, Ne(e, 0)), (Piecewise((a**5*x, Eq(b, 0)), ((a**2 + 2*a*b
*x + b**2*x**2)**3/(6*b), True))/sqrt(d), True))
```

3.2055 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{10b^4(d+ex)^{7/2}(bd-ae)}{7e^6}+\frac{4b^3(d+ex)^{5/2}(bd-ae)^2}{e^6}-\frac{20b^2(d+ex)^{3/2}(bd-ae)^3}{3e^6}+\frac{10b\sqrt{d+ex}\,(bd-ae)^4}{e^6}+\frac{2(bd-a}{e^6\sqrt{d+}}$$

```
[Out] -20/3*b^2*(-a*e+b*d)^3*(e*x+d)^(3/2)/e^6+4*b^3*(-a*e+b*d)^2*(e*x+d)^(5/2)/e
^6-10/7*b^4*(-a*e+b*d)*(e*x+d)^(7/2)/e^6+2/9*b^5*(e*x+d)^(9/2)/e^6+2*(-a*e+
b*d)^5/e^6/(e*x+d)^(1/2)+10*b*(-a*e+b*d)^4*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.06, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{7/2}(bd-ae)}{7e^6}+\frac{4b^3(d+ex)^{5/2}(bd-ae)^2}{e^6}-\frac{20b^2(d+ex)^{3/2}(bd-ae)^3}{3e^6}+\frac{10b\sqrt{d+ex}\,(bd-ae)^4}{e^6}+\frac{2(bd-a}{e^6\sqrt{d+}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(e^6*Sqrt[d + e*x]) + (10*b*(b*d - a*e)^4*Sqrt[d + e*x])/
e^6 - (20*b^2*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^6) + (4*b^3*(b*d - a*e)^2
*(d + e*x)^(5/2))/e^6 - (10*b^4*(b*d - a*e)*(d + e*x)^(7/2))/(7*e^6) + (2*b
^5*(d + e*x)^(9/2))/(9*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^{3/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{3/2}}+\frac{5b(bd-ae)^4}{e^5\sqrt{d+ex}}-\frac{10b^2(bd-ae)^3\sqrt{d+ex}}{e^5}+\frac{10b^3(bd-ae)}{e^5}\right.\\ &= \frac{2(bd-ae)^5}{e^6\sqrt{d+ex}}+\frac{10b(bd-ae)^4\sqrt{d+ex}}{e^6}-\frac{20b^2(bd-ae)^3(d+ex)^{3/2}}{3e^6}+\frac{4b^3(bd}{}\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.81

$$\frac{2\left(-45b^4(d+ex)^4(bd-ae)+126b^3(d+ex)^3(bd-ae)^2-210b^2(d+ex)^2(bd-ae)^3+315b(d+ex)(bd-ae)^4+63(\right.}{63e^6\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(63*(b*d - a*e)^5 + 315*b*(b*d - a*e)^4*(d + e*x) - 210*b^2*(b*d - a*e)^
3*(d + e*x)^2 + 126*b^3*(b*d - a*e)^2*(d + e*x)^3 - 45*b^4*(b*d - a*e)*(d +
 e*x)^4 + 7*b^5*(d + e*x)^5))/(63*e^6*Sqrt[d + e*x])
```

fricas [B] time = 1.56, size = 271, normalized size = 1.78

$$\frac{2\bigl(7\,b^5e^5x^5 + 256\,b^5d^5 - 1152\,ab^4d^4e + 2016\,a^2b^3d^3e^2 - 1680\,a^3b^2d^2e^3 + 630\,a^4bde^4 - 63\,a^5e^5 - 5\bigl(2\,b^5de^4 - 9}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2
 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9
*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 -
 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5
)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3
*b^2*d*e^4 + 315*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^7*x + d*e^6)
```

giac [B] time = 0.20, size = 346, normalized size = 2.28

$$\frac{2}{63}\bigl(7\,(xe+d)^{\frac{9}{2}}b^5e^{48} - 45\,(xe+d)^{\frac{7}{2}}b^5de^{48} + 126\,(xe+d)^{\frac{5}{2}}b^5d^2e^{48} - 210\,(xe+d)^{\frac{3}{2}}b^5d^3e^{48} + 315\,\sqrt{xe+d}\,b^5d^4e^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*b^5*e^48 - 45*(x*e + d)^(7/2)*b^5*d*e^48 + 126*(x*e
 + d)^(5/2)*b^5*d^2*e^48 - 210*(x*e + d)^(3/2)*b^5*d^3*e^48 + 315*sqrt(x*e
+ d)*b^5*d^4*e^48 + 45*(x*e + d)^(7/2)*a*b^4*e^49 - 252*(x*e + d)^(5/2)*a*b
^4*d*e^49 + 630*(x*e + d)^(3/2)*a*b^4*d^2*e^49 - 1260*sqrt(x*e + d)*a*b^4*d
^3*e^49 + 126*(x*e + d)^(5/2)*a^2*b^3*e^50 - 630*(x*e + d)^(3/2)*a^2*b^3*d*
e^50 + 1890*sqrt(x*e + d)*a^2*b^3*d^2*e^50 + 210*(x*e + d)^(3/2)*a^3*b^2*e^
51 - 1260*sqrt(x*e + d)*a^3*b^2*d*e^51 + 315*sqrt(x*e + d)*a^4*b*e^52)*e^(-
54) + 2*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3
+ 5*a^4*b*d*e^4 - a^5*e^5)*e^(-6)/sqrt(x*e + d)
```

maple [B] time = 0.05, size = 273, normalized size = 1.80

$$-\frac{2\bigl(-7b^5e^5x^5 - 45a\,b^4e^5x^4 + 10b^5d\,e^4x^4 - 126a^2b^3e^5x^3 + 72a\,b^4d\,e^4x^3 - 16b^5d^2e^3x^3 - 210a^3b^2e^5x^2 + 252a^2b^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x)
```

```
[Out] -2/63*(-7*b^5*e^5*x^5-45*a*b^4*e^5*x^4+10*b^5*d*e^4*x^4-126*a^2*b^3*e^5*x^3
+72*a*b^4*d*e^4*x^3-16*b^5*d^2*e^3*x^3-210*a^3*b^2*e^5*x^2+252*a^2*b^3*d*e^
4*x^2-144*a*b^4*d^2*e^3*x^2+32*b^5*d^3*e^2*x^2-315*a^4*b*e^5*x+840*a^3*b^2*
d*e^4*x-1008*a^2*b^3*d^2*e^3*x+576*a*b^4*d^3*e^2*x-128*b^5*d^4*e*x+63*a^5*e
^5-630*a^4*b*d*e^4+1680*a^3*b^2*d^2*e^3-2016*a^2*b^3*d^3*e^2+1152*a*b^4*d^4
*e-256*b^5*d^5)/(e*x+d)^(1/2)/e^6
```

maxima [**A**] time = 0.52, size = 267, normalized size = 1.76

$$\frac{2\left(\frac{7\,(ex+d)^{\frac{9}{2}}b^5-45\left(b^5d-ab^4e\right)(ex+d)^{\frac{7}{2}}+126\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{5}{2}}-210\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)(ex+d)^{\frac{3}{2}}+315\left(b^5d^4-4\,ab^4d^3e+6}{e^5}\right.}{63\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/63*((7*(e*x + d)^(9/2)*b^5 - 45*(b^5*d - a*b^4*e)*(e*x + d)^(7/2) + 126*(
b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(5/2) - 210*(b^5*d^3 - 3*a*b
^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x + d)^(3/2) + 315*(b^5*d^4 -
4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3 + a^4*b*e^4)*sqrt(e*x +
 d))/e^5 + 63*(b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^
2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)/(sqrt(e*x + d)*e^5))/e
```

mupad [**B**] time = 2.04, size = 192, normalized size = 1.26

$$\frac{2\,b^5\,(d+e\,x)^{9/2}}{9\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,(d+e\,x)^{7/2}}{7\,e^6}-\frac{2\,a^5\,e^5-10\,a^4\,b\,d\,e^4+20\,a^3\,b^2\,d^2\,e^3-20\,a^2\,b^3\,d^3\,e^2+10\,a\,b^4\,d^4}{e^6\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(9/2))/(9*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(7/2))
/(7*e^6) - (2*a^5*e^5 - 2*b^5*d^5 - 20*a^2*b^3*d^3*e^2 + 20*a^3*b^2*d^2*e^3
 + 10*a*b^4*d^4*e - 10*a^4*b*d*e^4)/(e^6*(d + e*x)^(1/2)) + (20*b^2*(a*e -
b*d)^3*(d + e*x)^(3/2))/(3*e^6) + (4*b^3*(a*e - b*d)^2*(d + e*x)^(5/2))/e^6
 + (10*b*(a*e - b*d)^4*(d + e*x)^(1/2))/e^6
```

sympy [**A**] time = 49.19, size = 243, normalized size = 1.60

$$\frac{2b^5\,(d+ex)^{\frac{9}{2}}}{9e^6}+\frac{(d+ex)^{\frac{7}{2}}\left(10ab^4e-10b^5d\right)}{7e^6}+\frac{(d+ex)^{\frac{5}{2}}\left(20a^2b^3e^2-40ab^4de+20b^5d^2\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(20a^3b^2e^3-60a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**5*(d + e*x)**(9/2)/(9*e**6) + (d + e*x)**(7/2)*(10*a*b**4*e - 10*b**5*
d)/(7*e**6) + (d + e*x)**(5/2)*(20*a**2*b**3*e**2 - 40*a*b**4*d*e + 20*b**5
*d**2)/(5*e**6) + (d + e*x)**(3/2)*(20*a**3*b**2*e**3 - 60*a**2*b**3*d*e**2
 + 60*a*b**4*d**2*e - 20*b**5*d**3)/(3*e**6) + sqrt(d + e*x)*(10*a**4*b*e**
4 - 40*a**3*b**2*d*e**3 + 60*a**2*b**3*d**2*e**2 - 40*a*b**4*d**3*e + 10*b*
*5*d**4)/e**6 - 2*(a*e - b*d)**5/(e**6*sqrt(d + e*x))
```

3.2056 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=152

$$-\frac{2b^4(d+ex)^{5/2}(bd-ae)}{e^6}+\frac{20b^3(d+ex)^{3/2}(bd-ae)^2}{3e^6}-\frac{20b^2\sqrt{d+ex}\,(bd-ae)^3}{e^6}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}+$$

```
[Out] 2/3*(-a*e+b*d)^5/e^6/(e*x+d)^(3/2)+20/3*b^3*(-a*e+b*d)^2*(e*x+d)^(3/2)/e^6-
2*b^4*(-a*e+b*d)*(e*x+d)^(5/2)/e^6+2/7*b^5*(e*x+d)^(7/2)/e^6-10*b*(-a*e+b*d
)^4/e^6/(e*x+d)^(1/2)-20*b^2*(-a*e+b*d)^3*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.06, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = {27, 43}

$$-\frac{2b^4(d+ex)^{5/2}(bd-ae)}{e^6}+\frac{20b^3(d+ex)^{3/2}(bd-ae)^2}{3e^6}-\frac{20b^2\sqrt{d+ex}\,(bd-ae)^3}{e^6}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}+\frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(3*e^6*(d + e*x)^(3/2)) - (10*b*(b*d - a*e)^4)/(e^6*Sqrt[
d + e*x]) - (20*b^2*(b*d - a*e)^3*Sqrt[d + e*x])/e^6 + (20*b^3*(b*d - a*e)^
2*(d + e*x)^(3/2))/(3*e^6) - (2*b^4*(b*d - a*e)*(d + e*x)^(5/2))/e^6 + (2*b
^5*(d + e*x)^(7/2))/(7*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{5/2}}+\frac{5b(bd-ae)^4}{e^5(d+ex)^{3/2}}-\frac{10b^2(bd-ae)^3}{e^5\sqrt{d+ex}}+\frac{10b^3(bd-ae)^2\sqrt{d+}}{e^5}\right.\\ &= \frac{2(bd-ae)^5}{3e^6(d+ex)^{3/2}}-\frac{10b(bd-ae)^4}{e^6\sqrt{d+ex}}-\frac{20b^2(bd-ae)^3\sqrt{d+ex}}{e^6}+\frac{20b^3(bd-a}{3}\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.81

$$\frac{2\left(-21b^4(d+ex)^4(bd-ae)+70b^3(d+ex)^3(bd-ae)^2-210b^2(d+ex)^2(bd-ae)^3-105b(d+ex)(bd-ae)^4+7(\right.}{21e^6(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(7*(b*d - a*e)^5 - 105*b*(b*d - a*e)^4*(d + e*x) - 210*b^2*(b*d - a*e)^3
*(d + e*x)^2 + 70*b^3*(b*d - a*e)^2*(d + e*x)^3 - 21*b^4*(b*d - a*e)*(d + e
*x)^4 + 3*b^5*(d + e*x)^5))/(21*e^6*(d + e*x)^(3/2))
```

fricas [B] time = 0.75, size = 283, normalized size = 1.86

$$2\left(3\,b^{5}e^{5}x^{5}-256\,b^{5}d^{5}+896\,ab^{4}d^{4}e-1120\,a^{2}b^{3}d^{3}e^{2}+560\,a^{3}b^{2}d^{2}e^{3}-70\,a^{4}bde^{4}-7\,a^{5}e^{5}-3\left(2\,b^{5}de^{4}-7\,ab^{4}e^{5}\right)x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6)
```

giac [B] time = 0.21, size = 334, normalized size = 2.20

$$\frac{2}{21}\left(3\,(xe+d)^{\frac{7}{2}}b^{5}e^{36}-21\,(xe+d)^{\frac{5}{2}}b^{5}de^{36}+70\,(xe+d)^{\frac{3}{2}}b^{5}d^{2}e^{36}-210\,\sqrt{xe+d}\,b^{5}d^{3}e^{36}+21\,(xe+d)^{\frac{5}{2}}ab^{4}e^{37}-140\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/21*(3*(x*e + d)^(7/2)*b^5*e^36 - 21*(x*e + d)^(5/2)*b^5*d*e^36 + 70*(x*e
+ d)^(3/2)*b^5*d^2*e^36 - 210*sqrt(x*e + d)*b^5*d^3*e^36 + 21*(x*e + d)^(5/
2)*a*b^4*e^37 - 140*(x*e + d)^(3/2)*a*b^4*d*e^37 + 630*sqrt(x*e + d)*a*b^4*
d^2*e^37 + 70*(x*e + d)^(3/2)*a^2*b^3*e^38 - 630*sqrt(x*e + d)*a^2*b^3*d*e^
38 + 210*sqrt(x*e + d)*a^3*b^2*e^39)*e^(-42) - 2/3*(15*(x*e + d)*b^5*d^4 -
b^5*d^5 - 60*(x*e + d)*a*b^4*d^3*e + 5*a*b^4*d^4*e + 90*(x*e + d)*a^2*b^3*d
^2*e^2 - 10*a^2*b^3*d^3*e^2 - 60*(x*e + d)*a^3*b^2*d*e^3 + 10*a^3*b^2*d^2*e
^3 + 15*(x*e + d)*a^4*b*e^4 - 5*a^4*b*d*e^4 + a^5*e^5)*e^(-6)/(x*e + d)^(3/
2)
```

maple [B] time = 0.06, size = 273, normalized size = 1.80

$$-2\left(-3b^{5}e^{5}x^{5}-21a\,b^{4}e^{5}x^{4}+6b^{5}d\,e^{4}x^{4}-70a^{2}b^{3}e^{5}x^{3}+56a\,b^{4}d\,e^{4}x^{3}-16b^{5}d^{2}e^{3}x^{3}-210a^{3}b^{2}e^{5}x^{2}+420a^{2}b^{3}d\,e^{4}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x)
```

```
[Out] -2/21*(-3*b^5*e^5*x^5-21*a*b^4*e^5*x^4+6*b^5*d*e^4*x^4-70*a^2*b^3*e^5*x^3+5
6*a*b^4*d*e^4*x^3-16*b^5*d^2*e^3*x^3-210*a^3*b^2*e^5*x^2+420*a^2*b^3*d*e^4*
x^2-336*a*b^4*d^2*e^3*x^2+96*b^5*d^3*e^2*x^2+105*a^4*b*e^5*x-840*a^3*b^2*d*
e^4*x+1680*a^2*b^3*d^2*e^3*x-1344*a*b^4*d^3*e^2*x+384*b^5*d^4*e*x+7*a^5*e^5
+70*a^4*b*d*e^4-560*a^3*b^2*d^2*e^3+1120*a^2*b^3*d^3*e^2-896*a*b^4*d^4*e+25
6*b^5*d^5)/(e*x+d)^(3/2)/e^6
```

maxima [A] time = 0.52, size = 265, normalized size = 1.74

$$\frac{2\left(\frac{3(ex+d)^{\frac{7}{2}}b^5-21\left(b^5d-ab^4e\right)(ex+d)^{\frac{5}{2}}+70\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)(ex+d)^{\frac{3}{2}}-210\left(b^5d^3-3\,ab^4d^2e+3\,a^2b^3de^2-a^3b^2e^3\right)\sqrt{ex+d}}{e^5}+\frac{7\left(b^5d^5-5\,ab^4d^4e-\right.}{}\right.}{21\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/21*((3*(e*x + d)^(7/2)*b^5 - 21*(b^5*d - a*b^4*e)*(e*x + d)^(5/2) + 70*(b
^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*(e*x + d)^(3/2) - 210*(b^5*d^3 - 3*a*b^
4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*sqrt(e*x + d))/e^5 + 7*(b^5*d^5 -
5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a
^5*e^5 - 15*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
+ a^4*b*e^4)*(e*x + d))/((e*x + d)^(3/2)*e^5))/e
```

mupad [B] time = 2.02, size = 229, normalized size = 1.51

$$\frac{2\,b^5\,(d+e\,x)^{7/2}}{7\,e^6}-\frac{\left(10\,b^5\,d-10\,a\,b^4\,e\right)\,(d+e\,x)^{5/2}}{5\,e^6}-\frac{(d+e\,x)\,\left(10\,a^4\,b\,e^4-40\,a^3\,b^2\,d\,e^3+60\,a^2\,b^3\,d^2\,e^2-40\,a\,b^4\,d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(7/2))/(7*e^6) - ((10*b^5*d - 10*a*b^4*e)*(d + e*x)^(5/2))
/(5*e^6) - ((d + e*x)*(10*b^5*d^4 + 10*a^4*b*e^4 - 40*a^3*b^2*d*e^3 + 60*a^
2*b^3*d^2*e^2 - 40*a*b^4*d^3*e) + (2*a^5*e^5)/3 - (2*b^5*d^5)/3 - (20*a^2*b
^3*d^3*e^2)/3 + (20*a^3*b^2*d^2*e^3)/3 + (10*a*b^4*d^4*e)/3 - (10*a^4*b*d*e
^4)/3)/(e^6*(d + e*x)^(3/2)) + (20*b^2*(a*e - b*d)^3*(d + e*x)^(1/2))/e^6 +
 (20*b^3*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*e^6)
```

sympy [A] time = 59.86, size = 196, normalized size = 1.29

$$\frac{2b^5\,(d+ex)^{\frac{7}{2}}}{7e^6}-\frac{10b\,(ae-bd)^4}{e^6\sqrt{d+ex}}+\frac{(d+ex)^{\frac{5}{2}}\left(10ab^4e-10b^5d\right)}{5e^6}+\frac{(d+ex)^{\frac{3}{2}}\left(20a^2b^3e^2-40ab^4de+20b^5d^2\right)}{3e^6}+\frac{\sqrt{d+e}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(5/2),x)
```

```
[Out] 2*b**5*(d + e*x)**(7/2)/(7*e**6) - 10*b*(a*e - b*d)**4/(e**6*sqrt(d + e*x))
 + (d + e*x)**(5/2)*(10*a*b**4*e - 10*b**5*d)/(5*e**6) + (d + e*x)**(3/2)*(
20*a**2*b**3*e**2 - 40*a*b**4*d*e + 20*b**5*d**2)/(3*e**6) + sqrt(d + e*x)*
(20*a**3*b**2*e**3 - 60*a**2*b**3*d*e**2 + 60*a*b**4*d**2*e - 20*b**5*d**3)
/e**6 - 2*(a*e - b*d)**5/(3*e**6*(d + e*x)**(3/2))
```

3.2057 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=154

$$-\frac{10b^4(d+ex)^{3/2}(bd-ae)}{3e^6}+\frac{20b^3\sqrt{d+ex}\,(bd-ae)^2}{e^6}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}+\frac{2b^5(d+ex)^{5}}{5e^6}$$

```
[Out] 2/5*(-a*e+b*d)^5/e^6/(e*x+d)^(5/2)-10/3*b*(-a*e+b*d)^4/e^6/(e*x+d)^(3/2)-10
/3*b^4*(-a*e+b*d)*(e*x+d)^(3/2)/e^6+2/5*b^5*(e*x+d)^(5/2)/e^6+20*b^2*(-a*e+
b*d)^3/e^6/(e*x+d)^(1/2)+20*b^3*(-a*e+b*d)^2*(e*x+d)^(1/2)/e^6
```

Rubi [A] time = 0.05, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{10b^4(d+ex)^{3/2}(bd-ae)}{3e^6}+\frac{20b^3\sqrt{d+ex}\,(bd-ae)^2}{e^6}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}+\frac{2b^5(d+ex)^{5}}{5e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^5)/(5*e^6*(d + e*x)^(5/2)) - (10*b*(b*d - a*e)^4)/(3*e^6*(d
+ e*x)^(3/2)) + (20*b^2*(b*d - a*e)^3)/(e^6*Sqrt[d + e*x]) + (20*b^3*(b*d -
 a*e)^2*Sqrt[d + e*x])/e^6 - (10*b^4*(b*d - a*e)*(d + e*x)^(3/2))/(3*e^6) +
 (2*b^5*(d + e*x)^(5/2))/(5*e^6)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^2}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^5}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^5}{e^5(d+ex)^{7/2}}+\frac{5b(bd-ae)^4}{e^5(d+ex)^{5/2}}-\frac{10b^2(bd-ae)^3}{e^5(d+ex)^{3/2}}+\frac{10b^3(bd-ae)^2}{e^5\sqrt{d+ex}}-5b^4(\right.\\ &= \frac{2(bd-ae)^5}{5e^6(d+ex)^{5/2}}-\frac{10b(bd-ae)^4}{3e^6(d+ex)^{3/2}}+\frac{20b^2(bd-ae)^3}{e^6\sqrt{d+ex}}+\frac{20b^3(bd-ae)^2\sqrt{d+ex}}{e^6}\end{aligned}$$

Mathematica [A] time = 0.09, size = 123, normalized size = 0.80

$$\frac{2\left(-25b^4(d+ex)^4(bd-ae)+150b^3(d+ex)^3(bd-ae)^2+150b^2(d+ex)^2(bd-ae)^3-25b(d+ex)(bd-ae)^4+3(bd\right.}{15e^6(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^2)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(3*(b*d - a*e)^5 - 25*b*(b*d - a*e)^4*(d + e*x) + 150*b^2*(b*d - a*e)^3*
(d + e*x)^2 + 150*b^3*(b*d - a*e)^2*(d + e*x)^3 - 25*b^4*(b*d - a*e)*(d + e
*x)^4 + 3*b^5*(d + e*x)^5))/(15*e^6*(d + e*x)^(5/2))
```

fricas [B] time = 0.79, size = 294, normalized size = 1.91

$$\frac{2\left(3\,b^5e^5x^5+256\,b^5d^5-640\,ab^4d^4e+480\,a^2b^3d^3e^2-80\,a^3b^2d^2e^3-10\,a^4bde^4-3\,a^5e^5-5\left(2\,b^5de^4-5\,ab^4e^5\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*sqrt(e*x + d)/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x +
d^3*e^6)
```

giac [B] time = 0.20, size = 333, normalized size = 2.16

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}b^5e^{24}-25\,(xe+d)^{\frac{3}{2}}b^5de^{24}+150\,\sqrt{xe+d}\,b^5d^2e^{24}+25\,(xe+d)^{\frac{3}{2}}ab^4e^{25}-300\,\sqrt{xe+d}\,ab^4de^{25}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*b^5*e^24 - 25*(x*e + d)^(3/2)*b^5*d*e^24 + 150*sqrt
(x*e + d)*b^5*d^2*e^24 + 25*(x*e + d)^(3/2)*a*b^4*e^25 - 300*sqrt(x*e + d)*
a*b^4*d*e^25 + 150*sqrt(x*e + d)*a^2*b^3*e^26)*e^(-30) + 2/15*(150*(x*e + d
)^2*b^5*d^3 - 25*(x*e + d)*b^5*d^4 + 3*b^5*d^5 - 450*(x*e + d)^2*a*b^4*d^2*
e + 100*(x*e + d)*a*b^4*d^3*e - 15*a*b^4*d^4*e + 450*(x*e + d)^2*a^2*b^3*d*
e^2 - 150*(x*e + d)*a^2*b^3*d^2*e^2 + 30*a^2*b^3*d^3*e^2 - 150*(x*e + d)^2*
a^3*b^2*e^3 + 100*(x*e + d)*a^3*b^2*d*e^3 - 30*a^3*b^2*d^2*e^3 - 25*(x*e +
d)*a^4*b*e^4 + 15*a^4*b*d*e^4 - 3*a^5*e^5)*e^(-6)/(x*e + d)^(5/2)
```

maple [B] time = 0.06, size = 273, normalized size = 1.77

$$-\frac{2\left(-3b^5e^5x^5-25a\,b^4e^5x^4+10b^5d\,e^4x^4-150a^2b^3e^5x^3+200a\,b^4d\,e^4x^3-80b^5d^2e^3x^3+150a^3b^2e^5x^2-900a^2b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x)
```

```
[Out] -2/15*(-3*b^5*e^5*x^5-25*a*b^4*e^5*x^4+10*b^5*d*e^4*x^4-150*a^2*b^3*e^5*x^3
+200*a*b^4*d*e^4*x^3-80*b^5*d^2*e^3*x^3+150*a^3*b^2*e^5*x^2-900*a^2*b^3*d*e
^4*x^2+1200*a*b^4*d^2*e^3*x^2-480*b^5*d^3*e^2*x^2+25*a^4*b*e^5*x+200*a^3*b^
2*d*e^4*x-1200*a^2*b^3*d^2*e^3*x+1600*a*b^4*d^3*e^2*x-640*b^5*d^4*e*x+3*a^5
*e^5+10*a^4*b*d*e^4+80*a^3*b^2*d^2*e^3-480*a^2*b^3*d^3*e^2+640*a*b^4*d^4*e-
256*b^5*d^5)/(e*x+d)^(5/2)/e^6
```

maxima [A] time = 0.54, size = 265, normalized size = 1.72

$$\frac{2\left(\frac{3\,(ex+d)^{\frac{5}{2}}b^5-25\left(b^5d-ab^4e\right)(ex+d)^{\frac{3}{2}}+150\left(b^5d^2-2\,ab^4de+a^2b^3e^2\right)\sqrt{ex+d}}{e^5}+\frac{3\,b^5d^5-15\,ab^4d^4e+30\,a^2b^3d^3e^2-30\,a^3b^2d^2e^3+15\,a^4bde^4-3\,a^5e^5+150\,(}{}\right.}{15\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/15*((3*(e*x + d)^(5/2)*b^5 - 25*(b^5*d - a*b^4*e)*(e*x + d)^(3/2) + 150*(
b^5*d^2 - 2*a*b^4*d*e + a^2*b^3*e^2)*sqrt(e*x + d))/e^5 + (3*b^5*d^5 - 15*a
*b^4*d^4*e + 30*a^2*b^3*d^3*e^2 - 30*a^3*b^2*d^2*e^3 + 15*a^4*b*d*e^4 - 3*a
^5*e^5 + 150*(b^5*d^3 - 3*a*b^4*d^2*e + 3*a^2*b^3*d*e^2 - a^3*b^2*e^3)*(e*x
 + d)^2 - 25*(b^5*d^4 - 4*a*b^4*d^3*e + 6*a^2*b^3*d^2*e^2 - 4*a^3*b^2*d*e^3
 + a^4*b*e^4)*(e*x + d))/((e*x + d)^(5/2)*e^5))/e
```

mupad [B] time = 0.08, size = 255, normalized size = 1.66

$$\frac{2\,b^5\,(d+e\,x)^{5/2}}{5\,e^6}-\frac{(d+e\,x)\left(\frac{10\,a^4\,b\,e^4}{3}-\frac{40\,a^3\,b^2\,d\,e^3}{3}+20\,a^2\,b^3\,d^2\,e^2-\frac{40\,a\,b^4\,d^3\,e}{3}+\frac{10\,b^5\,d^4}{3}\right)-(d+e\,x)^2\,\left(-20\,a^3\,b^2\,e^3+6\right.}{e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^2)/(d + e*x)^(7/2),x)
```

```
[Out] (2*b^5*(d + e*x)^(5/2))/(5*e^6) - ((d + e*x)*((10*b^5*d^4)/3 + (10*a^4*b*e^
4)/3 - (40*a^3*b^2*d*e^3)/3 + 20*a^2*b^3*d^2*e^2 - (40*a*b^4*d^3*e)/3) - (d
 + e*x)^2*(20*b^5*d^3 - 20*a^3*b^2*e^3 + 60*a^2*b^3*d*e^2 - 60*a*b^4*d^2*e)
 + (2*a^5*e^5)/5 - (2*b^5*d^5)/5 - 4*a^2*b^3*d^3*e^2 + 4*a^3*b^2*d^2*e^3 +
2*a*b^4*d^4*e - 2*a^4*b*d*e^4)/(e^6*(d + e*x)^(5/2)) - ((10*b^5*d - 10*a*b^
4*e)*(d + e*x)^(3/2))/(3*e^6) + (20*b^3*(a*e - b*d)^2*(d + e*x)^(1/2))/e^6
```

sympy [A] time = 4.35, size = 1428, normalized size = 9.27

$$\begin{cases} -\frac{6a^5e^5}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}}-\frac{20a^4bde^4}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}}-\frac{50a^4be^5x}{15d^2e^6\sqrt{d+ex}+30de^7x\sqrt{d+ex}+15e^8x^2\sqrt{d+ex}} \\ \frac{a^5x+\frac{5a^4bx^2}{2}+\frac{10a^3b^2x^3}{3}+\frac{5a^2b^3x^4}{2}+ab^4x^5+\frac{b^5x^6}{6}}{d^{\frac{7}{2}}} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(7/2),x)
```

```
[Out] Piecewise((-6*a**5*e**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d +
e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*a**4*b*d*e**4/(15*d**2*e**6*sqrt(d
+ e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 50*a**4*
b*e**5*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*
x**2*sqrt(d + e*x)) - 160*a**3*b**2*d**2*e**3/(15*d**2*e**6*sqrt(d + e*x) +
 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 400*a**3*b**2*d*
e**4*x/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 300*a**3*b**2*e**5*x**2/(15*d**2*e**6*sqrt(d + e*x) + 3
0*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 960*a**2*b**3*d**3
*e**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**
2*sqrt(d + e*x)) + 2400*a**2*b**3*d**2*e**3*x/(15*d**2*e**6*sqrt(d + e*x) +
 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1800*a**2*b**3*d
*e**4*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**
8*x**2*sqrt(d + e*x)) + 300*a**2*b**3*e**5*x**3/(15*d**2*e**6*sqrt(d + e*x)
 + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 1280*a*b**4*d*
*4*e/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2
*sqrt(d + e*x)) - 3200*a*b**4*d**3*e**2*x/(15*d**2*e**6*sqrt(d + e*x) + 30*
d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 2400*a*b**4*d**2*e**
3*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x*
*2*sqrt(d + e*x)) - 400*a*b**4*d*e**4*x**3/(15*d**2*e**6*sqrt(d + e*x) + 30
*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 50*a*b**4*e**5*x**4
/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqr
t(d + e*x)) + 512*b**5*d**5/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(
d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 1280*b**5*d**4*e*x/(15*d**2*e**6*s
qrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) + 96
0*b**5*d**3*e**2*x**2/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*
x) + 15*e**8*x**2*sqrt(d + e*x)) + 160*b**5*d**2*e**3*x**3/(15*d**2*e**6*sq
rt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)) - 20*
b**5*d*e**4*x**4/(15*d**2*e**6*sqrt(d + e*x) + 30*d*e**7*x*sqrt(d + e*x) +
15*e**8*x**2*sqrt(d + e*x)) + 6*b**5*e**5*x**5/(15*d**2*e**6*sqrt(d + e*x)
+ 30*d*e**7*x*sqrt(d + e*x) + 15*e**8*x**2*sqrt(d + e*x)), Ne(e, 0)), ((a**
5*x + 5*a**4*b*x**2/2 + 10*a**3*b**2*x**3/3 + 5*a**2*b**3*x**4/2 + a*b**4*x
**5 + b**5*x**6/6)/d**(7/2), True))
```

3.2058 $\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=216

$$-\frac{2b^6(d+ex)^{21/2}(bd-ae)}{3e^8}+\frac{42b^5(d+ex)^{19/2}(bd-ae)^2}{19e^8}-\frac{70b^4(d+ex)^{17/2}(bd-ae)^3}{17e^8}+\frac{14b^3(d+ex)^{15/2}(bd-ae)^4}{3e^8}-42$$

```
[Out] -2/9*(-a*e+b*d)^7*(e*x+d)^(9/2)/e^8+14/11*b*(-a*e+b*d)^6*(e*x+d)^(11/2)/e^8
-42/13*b^2*(-a*e+b*d)^5*(e*x+d)^(13/2)/e^8+14/3*b^3*(-a*e+b*d)^4*(e*x+d)^(1
5/2)/e^8-70/17*b^4*(-a*e+b*d)^3*(e*x+d)^(17/2)/e^8+42/19*b^5*(-a*e+b*d)^2*(
e*x+d)^(19/2)/e^8-2/3*b^6*(-a*e+b*d)*(e*x+d)^(21/2)/e^8+2/23*b^7*(e*x+d)^(2
3/2)/e^8
```

Rubi [A] time = 0.11, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{2b^6(d+ex)^{21/2}(bd-ae)}{3e^8}+\frac{42b^5(d+ex)^{19/2}(bd-ae)^2}{19e^8}-\frac{70b^4(d+ex)^{17/2}(bd-ae)^3}{17e^8}+\frac{14b^3(d+ex)^{15/2}(bd-ae)^4}{3e^8}-42$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(9/2))/(9*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(11/2))/(11*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(13/2))/(13*e^8) + (14*b
^3*(b*d - a*e)^4*(d + e*x)^(15/2))/(3*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x
)^(17/2))/(17*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(19/2))/(19*e^8) - (2*
b^6*(b*d - a*e)*(d + e*x)^(21/2))/(3*e^8) + (2*b^7*(d + e*x)^(23/2))/(23*e^
8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\int (a+bx)(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^3\,dx = \int (a+bx)^7(d+ex)^{7/2}\,dx$$

$$= \int \left(\frac{(-bd+ae)^7(d+ex)^{7/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{9/2}}{e^7}-21b^2(bd-\right.$$

$$= -\frac{2(bd-ae)^7(d+ex)^{9/2}}{9e^8}+\frac{14b(bd-ae)^6(d+ex)^{11/2}}{11e^8}-42b^2(bd-$$

Mathematica [A] time = 0.18, size = 167, normalized size = 0.77

$$2(d+ex)^{9/2}\left(-3187041b^6(d+ex)^6(bd-ae)+10567557b^5(d+ex)^5(bd-ae)^2-19684665b^4(d+ex)^4(bd-ae)^3+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(9/2)*(-1062347*(b*d - a*e)^7 + 6084351*b*(b*d - a*e)^6*(d + e
*x) - 15444891*b^2*(b*d - a*e)^5*(d + e*x)^2 + 22309287*b^3*(b*d - a*e)^4*(
d + e*x)^3 - 19684665*b^4*(b*d - a*e)^3*(d + e*x)^4 + 10567557*b^5*(b*d - a
*e)^2*(d + e*x)^5 - 3187041*b^6*(b*d - a*e)*(d + e*x)^6 + 415701*b^7*(d + e
*x)^7))/(9561123*e^8)
```

fricas [B]   time = 0.76, size = 891, normalized size = 4.12

$$2\left(415701\,b^7e^{11}x^{11} - 2048\,b^7d^{11} + 23552\,ab^6d^{10}e - 123648\,a^2b^5d^9e^2 + 391552\,a^3b^4d^8e^3 - 832048\,a^4b^3d^7e^4 + 1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/9561123*(415701*b^7*e^11*x^11 - 2048*b^7*d^11 + 23552*a*b^6*d^10*e - 1236
48*a^2*b^5*d^9*e^2 + 391552*a^3*b^4*d^8*e^3 - 832048*a^4*b^3*d^7*e^4 + 1248
072*a^5*b^2*d^6*e^5 - 1352078*a^6*b*d^5*e^6 + 1062347*a^7*d^4*e^7 + 138567*
(10*b^7*d*e^10 + 23*a*b^6*e^11)*x^10 + 7293*(214*b^7*d^2*e^9 + 1472*a*b^6*d
*e^10 + 1449*a^2*b^5*e^11)*x^9 + 1287*(464*b^7*d^3*e^8 + 9522*a*b^6*d^2*e^9
 + 28014*a^2*b^5*d*e^10 + 15295*a^3*b^4*e^11)*x^8 + 429*(b^7*d^4*e^7 + 1113
2*a*b^6*d^3*e^8 + 97566*a^2*b^5*d^2*e^9 + 159068*a^3*b^4*d*e^10 + 52003*a^4
*b^3*e^11)*x^7 - 231*(2*b^7*d^5*e^6 - 23*a*b^6*d^4*e^7 - 72312*a^2*b^5*d^3*
e^8 - 350474*a^3*b^4*d^2*e^9 - 341734*a^4*b^3*d*e^10 - 66861*a^5*b^2*e^11)*
x^6 + 63*(8*b^7*d^6*e^5 - 92*a*b^6*d^5*e^6 + 483*a^2*b^5*d^4*e^7 + 529644*a
^3*b^4*d^3*e^8 + 1530374*a^4*b^3*d^2*e^9 + 891480*a^5*b^2*d*e^10 + 96577*a^
6*b*e^11)*x^5 - (560*b^7*d^7*e^4 - 6440*a*b^6*d^6*e^5 + 33810*a^2*b^5*d^5*e
^6 - 107065*a^3*b^4*d^4*e^7 - 41602400*a^4*b^3*d^3*e^8 - 71452122*a^5*b^2*d
^2*e^9 - 22985326*a^6*b*d*e^10 - 1062347*a^7*e^11)*x^4 + (640*b^7*d^8*e^3 -
 7360*a*b^6*d^7*e^4 + 38640*a^2*b^5*d^6*e^5 - 122360*a^3*b^4*d^5*e^6 + 2600
15*a^4*b^3*d^4*e^7 + 33073908*a^5*b^2*d^3*e^8 + 31097794*a^6*b*d^2*e^9 + 42
49388*a^7*d*e^10)*x^3 - 3*(256*b^7*d^9*e^2 - 2944*a*b^6*d^8*e^3 + 15456*a^2
*b^5*d^7*e^4 - 48944*a^3*b^4*d^6*e^5 + 104006*a^4*b^3*d^5*e^6 - 156009*a^5*
b^2*d^4*e^7 - 5408312*a^6*b*d^3*e^8 - 2124694*a^7*d^2*e^9)*x^2 + (1024*b^7*
d^10*e - 11776*a*b^6*d^9*e^2 + 61824*a^2*b^5*d^8*e^3 - 195776*a^3*b^4*d^7*e
^4 + 416024*a^4*b^3*d^6*e^5 - 624036*a^5*b^2*d^5*e^6 + 676039*a^6*b*d^4*e^7
 + 4249388*a^7*d^3*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B]   time = 0.41, size = 3640, normalized size = 16.85

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/334639305*(780825045*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^4*e^(-
1) + 468495027*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^5*b^2*d^4*e^(-2) + 334639305*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^4*e^(-3) + 3
7182145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d
^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^4*e^(-4) +
10140585*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a^2*b^5*d^4*e^(-5) + 780045*(231*(x*e + d)^(13/2) - 1638*(x*e + d)
^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e
 + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*
d^4*e^(-6) + 52003*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*
(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^
4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e +
 d)*d^7)*b^7*d^4*e^(-7) + 624660036*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a^6*b*d^3*e^(-1) + 803134332*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5
*b^2*d^3*e^(-2) + 148728580*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 3
78*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a
^4*b^3*d^3*e^(-3) + 67603900*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^4*d^3*e^(-4) + 9360540*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*a^2*b^5*d^3*e^(-5) + 1456084*(429*(x*e + d)^(15/2) - 3465*(x
*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 +
 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3
/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^6*d^3*e^(-6) + 12236*(6435*(x*e + d)^
(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x
*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^
5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x
*e + d)*d^8)*b^7*d^3*e^(-7) + 334639305*sqrt(x*e + d)*a^7*d^4 + 446185740*(
(x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^7*d^3 + 401567166*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^
6*b*d^2*e^(-1) + 133855722*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 37
8*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^
5*b^2*d^2*e^(-2) + 101405850*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*
d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^3*d^2*e^(-3) + 23401350*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*a^3*b^4*d^2*e^(-4) + 6552378*(429*(x*e + d)^(15/2) - 3465*(
x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3
+ 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(
3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^5*d^2*e^(-5) + 128478*(6435*(x*e +
 d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 55692
0*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2
)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sq
rt(x*e + d)*d^8)*a*b^6*d^2*e^(-6) + 8694*(12155*(x*e + d)^(19/2) - 122265*(
x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*
d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*
(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*
d^8 - 230945*sqrt(x*e + d)*d^9)*b^7*d^2*e^(-7) + 133855722*(3*(x*e + d)^(5/
2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^7*d^2 + 29745716*(35*(x
*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e
+ d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^6*b*d*e^(-1) + 40562340*(63*(x*e
+ d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e +
 d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^5*b^2*d
*e^(-2) + 15600900*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(
x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 -
6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^4*b^3*d*e^(-3) + 72804
20*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^3*b^4
*d*e^(-4) + 256956*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 2356
20*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9
/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*
(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^2*b^5*d*e^(-5) + 40572*(1
2155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)
```

```
*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 323323
0*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/
2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*a*b^6*d*e^(
-6) + 1380*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x
*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/
2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 166
28040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)
^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*b^7*d*e^(-7) + 38244492*(5*(x*e + d
)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*
d^3)*a^7*d + 3380195*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*
e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 69
3*sqrt(x*e + d)*d^5)*a^6*b*e^(-1) + 2340135*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*a^5*b^2*e^(-2) + 1820105*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d +
 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(
7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqr
t(x*e + d)*d^7)*a^4*b^3*e^(-3) + 107065*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^3*b^
4*e^(-4) + 30429*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 5542
68*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^
(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16
62804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e +
d)*d^9)*a^2*b^5*e^(-5) + 2415*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(1
9/2)*d + 2567565*(x*e + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 1566
8730*(x*e + d)^(13/2)*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e +
 d)^(9/2)*d^6 - 16628040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8
- 3233230*(x*e + d)^(3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*a*b^6*e^(-6) + 1
65*(88179*(x*e + d)^(23/2) - 1062347*(x*e + d)^(21/2)*d + 5870865*(x*e + d)
^(19/2)*d^2 - 19684665*(x*e + d)^(17/2)*d^3 + 44618574*(x*e + d)^(15/2)*d^4
 - 72076158*(x*e + d)^(13/2)*d^5 + 85180914*(x*e + d)^(11/2)*d^6 - 74364290
*(x*e + d)^(9/2)*d^7 + 47805615*(x*e + d)^(7/2)*d^8 - 22309287*(x*e + d)^(5
/2)*d^9 + 7436429*(x*e + d)^(3/2)*d^10 - 2028117*sqrt(x*e + d)*d^11)*b^7*e^
(-7) + 1062347*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.31

$$2 (ex+d)^{\frac{9}{2}} \left(415701 b^7 x^7 e^7 + 3187041 a b^6 e^7 x^6 - 277134 b^7 d e^6 x^6 + 10567557 a^2 b^5 e^7 x^5 - 2012868 a b^6 d e^6 x^5 + 1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/9561123*(e*x+d)^(9/2)*(415701*b^7*e^7*x^7+3187041*a*b^6*e^7*x^6-277134*b^
7*d*e^6*x^6+10567557*a^2*b^5*e^7*x^5-2012868*a*b^6*d*e^6*x^5+175032*b^7*d^2
*e^5*x^5+19684665*a^3*b^4*e^7*x^4-6216210*a^2*b^5*d*e^6*x^4+1184040*a*b^6*d
^2*e^5*x^4-102960*b^7*d^3*e^4*x^4+22309287*a^4*b^3*e^7*x^3-10498488*a^3*b^4
*d*e^6*x^3+3315312*a^2*b^5*d^2*e^5*x^3-631488*a*b^6*d^3*e^4*x^3+54912*b^7*d
^4*e^3*x^3+15444891*a^5*b^2*e^7*x^2-10296594*a^4*b^3*d*e^6*x^2+4845456*a^3*
b^4*d^2*e^5*x^2-1530144*a^2*b^5*d^3*e^4*x^2+291456*a*b^6*d^4*e^3*x^2-25344*
b^7*d^5*e^2*x^2+6084351*a^6*b*e^7*x-5616324*a^5*b^2*d*e^6*x+3744216*a^4*b^3
*d^2*e^5*x-1761984*a^3*b^4*d^3*e^4*x+556416*a^2*b^5*d^4*e^3*x-105984*a*b^6*
d^5*e^2*x+9216*b^7*d^6*e*x+1062347*a^7*e^7-1352078*a^6*b*d*e^6+1248072*a^5*
b^2*d^2*e^5-832048*a^4*b^3*d^3*e^4+391552*a^3*b^4*d^4*e^3-123648*a^2*b^5*d^
5*e^2+23552*a*b^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B] time = 0.58, size = 456, normalized size = 2.11

$$2\left(415701\,(ex+d)^{\frac{23}{2}}b^{7}-3187041\left(b^{7}d-ab^{6}e\right)(ex+d)^{\frac{21}{2}}+10567557\left(b^{7}d^{2}-2\,ab^{6}de+a^{2}b^{5}e^{2}\right)(ex+d)^{\frac{19}{2}}-1968$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/9561123*(415701*(e*x + d)^(23/2)*b^7 - 3187041*(b^7*d - a*b^6*e)*(e*x + d
)^(21/2) + 10567557*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(19/2)
- 19684665*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x +
 d)^(17/2) + 22309287*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*
b^4*d*e^3 + a^4*b^3*e^4)*(e*x + d)^(15/2) - 15444891*(b^7*d^5 - 5*a*b^6*d^4
*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^
5)*(e*x + d)^(13/2) + 6084351*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2
 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(
e*x + d)^(11/2) - 1062347*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 3
5*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6
 - a^7*e^7)*(e*x + d)^(9/2))/e^8
```

mupad [B] time = 2.08, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{23/2}}{23\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{21/2}}{21\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}+\frac{42\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{13/2}}{13\,e^8}+\frac{14\,b^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(23/2))/(23*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(21/
2))/(21*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(9/2))/(9*e^8) + (42*b^2*(a*e - b
*d)^5*(d + e*x)^(13/2))/(13*e^8) + (14*b^3*(a*e - b*d)^4*(d + e*x)^(15/2))/
(3*e^8) + (70*b^4*(a*e - b*d)^3*(d + e*x)^(17/2))/(17*e^8) + (42*b^5*(a*e -
 b*d)^2*(d + e*x)^(19/2))/(19*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(11/2))/
(11*e^8)
```

sympy [A] time = 101.43, size = 3046, normalized size = 14.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**3*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 6*a**7*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 6*a**7*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e +
2*a**7*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x
)**(7/2)/7 + (d + e*x)**(9/2)/9)/e + 14*a**6*b*d**3*(-d*(d + e*x)**(3/2)/3
+ (d + e*x)**(5/2)/5)/e**2 + 42*a**6*b*d**2*(d**2*(d + e*x)**(3/2)/3 - 2*d*
(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 42*a**6*b*d*(-d**3*(d + e*x
)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)
**(9/2)/9)/e**2 + 14*a**6*b*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5
/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11
/2)/11)/e**2 + 42*a**5*b**2*d**3*(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**
(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 126*a**5*b**2*d**2*(-d**3*(d + e*x)**(
3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)**(9
/2)/9)/e**3 + 126*a**5*b**2*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**
(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(
11/2)/11)/e**3 + 42*a**5*b**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(
5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e
*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**3 + 70*a**4*b**3*d**3*(-d**3*(d +
 e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
e*x)**(9/2)/9)/e**4 + 210*a**4*b**3*d**2*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*
(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (
d + e*x)**(11/2)/11)/e**4 + 210*a**4*b**3*d*(-d**5*(d + e*x)**(3/2)/3 + d**
4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/
9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 70*a**4*b**3*(d
**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/
2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d +
 e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**4 + 70*a**3*b**4*d**3*(d**4*(d
+ e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4
*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 210*a**3*b**4*d**2*(-d
**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7
 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2
)/13)/e**5 + 210*a**3*b**4*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(
5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*
(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**
5 + 70*a**3*b**4*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*
d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11
/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x
)**(17/2)/17)/e**5 + 42*a**2*b**5*d**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d
+ e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5
*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**6 + 126*a**2*b**5*d**2*(
d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7
/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d
+ e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 126*a**2*b**5*d*(-d**7*(d
+ e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*
d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)*
*(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 42*a**
2*b**5*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e
*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56
*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**
(17/2)/17 + (d + e*x)**(19/2)/19)/e**6 + 14*a*b**6*d**3*(d**6*(d + e*x)**(3
/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
 + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13
+ (d + e*x)**(15/2)/15)/e**7 + 42*a*b**6*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7
*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/
2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d
 + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 42*a*b**6*d*(d**8*(d + e*
x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5
*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13
/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x
)**(19/2)/19)/e**7 + 14*a*b**6*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)
**(5/2)/5 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d
**5*(d + e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x
)**(15/2)/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d
+ e*x)**(21/2)/21)/e**7 + 2*b**7*d**3*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d
 + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 3
5*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)*
*(15/2)/15 + (d + e*x)**(17/2)/17)/e**8 + 6*b**7*d**2*(d**8*(d + e*x)**(3/2
)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*
x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 +
 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2
)/19)/e**8 + 6*b**7*d*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5
 - 36*d**7*(d + e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d +
e*x)**(11/2)/11 + 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)
/5 + 36*d**2*(d + e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(
21/2)/21)/e**8 + 2*b**7*(d**10*(d + e*x)**(3/2)/3 - 2*d**9*(d + e*x)**(5/2)
 + 45*d**8*(d + e*x)**(7/2)/7 - 40*d**7*(d + e*x)**(9/2)/3 + 210*d**6*(d +
e*x)**(11/2)/11 - 252*d**5*(d + e*x)**(13/2)/13 + 14*d**4*(d + e*x)**(15/2)
 - 120*d**3*(d + e*x)**(17/2)/17 + 45*d**2*(d + e*x)**(19/2)/19 - 10*d*(d +
 e*x)**(21/2)/21 + (d + e*x)**(23/2)/23)/e**8
```

3.2059 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=216

$$-\frac{14b^6(d+ex)^{19/2}(bd-ae)}{19e^8}+\frac{42b^5(d+ex)^{17/2}(bd-ae)^2}{17e^8}-\frac{14b^4(d+ex)^{15/2}(bd-ae)^3}{3e^8}+\frac{70b^3(d+ex)^{13/2}(bd-ae)^4}{13e^8}$$

```
[Out] -2/7*(-a*e+b*d)^7*(e*x+d)^(7/2)/e^8+14/9*b*(-a*e+b*d)^6*(e*x+d)^(9/2)/e^8-4
2/11*b^2*(-a*e+b*d)^5*(e*x+d)^(11/2)/e^8+70/13*b^3*(-a*e+b*d)^4*(e*x+d)^(13
/2)/e^8-14/3*b^4*(-a*e+b*d)^3*(e*x+d)^(15/2)/e^8+42/17*b^5*(-a*e+b*d)^2*(e*
x+d)^(17/2)/e^8-14/19*b^6*(-a*e+b*d)*(e*x+d)^(19/2)/e^8+2/21*b^7*(e*x+d)^(2
1/2)/e^8
```

Rubi [A] time = 0.08, antiderivative size = 216, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{19/2}(bd-ae)}{19e^8}+\frac{42b^5(d+ex)^{17/2}(bd-ae)^2}{17e^8}-\frac{14b^4(d+ex)^{15/2}(bd-ae)^3}{3e^8}+\frac{70b^3(d+ex)^{13/2}(bd-ae)^4}{13e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(7/2))/(7*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(9/2))/(9*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(11/2))/(11*e^8) + (70*b^3
*(b*d - a*e)^4*(d + e*x)^(13/2))/(13*e^8) - (14*b^4*(b*d - a*e)^3*(d + e*x)
^(15/2))/(3*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(17/2))/(17*e^8) - (14*b
^6*(b*d - a*e)*(d + e*x)^(19/2))/(19*e^8) + (2*b^7*(d + e*x)^(21/2))/(21*e^
8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^{5/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^7(d+ex)^{5/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{7/2}}{e^7}-21b^2(b\right.\\ &= -\frac{2(bd-ae)^7(d+ex)^{7/2}}{7e^8}+\frac{14b(bd-ae)^6(d+ex)^{9/2}}{9e^8}-42b^2(bd\end{aligned}$$

Mathematica [A] time = 0.13, size = 167, normalized size = 0.77

$$2(d+ex)^{7/2}\left(-1072071b^6(d+ex)^6(bd-ae)+3594591b^5(d+ex)^5(bd-ae)^2-6789783b^4(d+ex)^4(bd-ae)^3+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(7/2)*(-415701*(b*d - a*e)^7 + 2263261*b*(b*d - a*e)^6*(d + e*
x) - 5555277*b^2*(b*d - a*e)^5*(d + e*x)^2 + 7834365*b^3*(b*d - a*e)^4*(d +
 e*x)^3 - 6789783*b^4*(b*d - a*e)^3*(d + e*x)^4 + 3594591*b^5*(b*d - a*e)^2
*(d + e*x)^5 - 1072071*b^6*(b*d - a*e)*(d + e*x)^6 + 138567*b^7*(d + e*x)^7
))/(2909907*e^8)
```

fricas [B] time = 0.99, size = 783, normalized size = 3.62

$$2\big(138567\,b^7e^{10}x^{10} - 2048\,b^7d^{10} + 21504\,ab^6d^9e - 102144\,a^2b^5d^8e^2 + 289408\,a^3b^4d^7e^3 - 542640\,a^4b^3d^6e^4 + 7054$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/2909907*(138567*b^7*e^10*x^10 - 2048*b^7*d^10 + 21504*a*b^6*d^9*e - 10214
4*a^2*b^5*d^8*e^2 + 289408*a^3*b^4*d^7*e^3 - 542640*a^4*b^3*d^6*e^4 + 70543
2*a^5*b^2*d^5*e^5 - 646646*a^6*b*d^4*e^6 + 415701*a^7*d^3*e^7 + 7293*(43*b^
7*d*e^9 + 147*a*b^6*e^10)*x^9 + 3861*(47*b^7*d^2*e^8 + 637*a*b^6*d*e^9 + 93
1*a^2*b^5*e^10)*x^8 + 429*(b^7*d^3*e^7 + 3381*a*b^6*d^2*e^8 + 19551*a^2*b^5
*d*e^9 + 15827*a^3*b^4*e^10)*x^7 - 231*(2*b^7*d^4*e^6 - 21*a*b^6*d^3*e^7 -
21945*a^2*b^5*d^2*e^8 - 70091*a^3*b^4*d*e^9 - 33915*a^4*b^3*e^10)*x^6 + 63*
(8*b^7*d^5*e^5 - 84*a*b^6*d^4*e^6 + 399*a^2*b^5*d^3*e^7 + 160531*a^3*b^4*d^
2*e^8 + 305235*a^4*b^3*d*e^9 + 88179*a^5*b^2*e^10)*x^5 - 7*(80*b^7*d^6*e^4
- 840*a*b^6*d^5*e^5 + 3990*a^2*b^5*d^4*e^6 - 11305*a^3*b^4*d^3*e^7 - 179749
5*a^4*b^3*d^2*e^8 - 2028117*a^5*b^2*d*e^9 - 323323*a^6*b*e^10)*x^4 + (640*b
^7*d^7*e^3 - 6720*a*b^6*d^6*e^4 + 31920*a^2*b^5*d^5*e^5 - 90440*a^3*b^4*d^4
*e^6 + 169575*a^4*b^3*d^3*e^7 + 9964227*a^5*b^2*d^2*e^8 + 6143137*a^6*b*d*e
^9 + 415701*a^7*e^10)*x^3 - 3*(256*b^7*d^8*e^2 - 2688*a*b^6*d^7*e^3 + 12768
*a^2*b^5*d^6*e^4 - 36176*a^3*b^4*d^5*e^5 + 67830*a^4*b^3*d^4*e^6 - 88179*a^
5*b^2*d^3*e^7 - 1616615*a^6*b*d^2*e^8 - 415701*a^7*d*e^9)*x^2 + (1024*b^7*d
^9*e - 10752*a*b^6*d^8*e^2 + 51072*a^2*b^5*d^7*e^3 - 144704*a^3*b^4*d^6*e^4
 + 271320*a^4*b^3*d^5*e^5 - 352716*a^5*b^2*d^4*e^6 + 323323*a^6*b*d^3*e^7 +
 1247103*a^7*d^2*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.43, size = 2696, normalized size = 12.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/14549535*(33948915*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^3*e^(-1)
 + 20369349*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^
2)*a^5*b^2*d^3*e^(-2) + 14549535*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^3*e^(-3) + 16166
15*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^3*e^(-4) + 44089
5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 -
1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5
)*a^2*b^5*d^3*e^(-5) + 33915*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*
d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5
/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d^3*e^(-
6) + 2261*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)
^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027
```

```
*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*
b^7*d^3*e^(-7) + 20369349*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sq
rt(x*e + d)*d^2)*a^6*b*d^2*e^(-1) + 26189163*(5*(x*e + d)^(7/2) - 21*(x*e +
 d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b^2*d^2*e^
(-2) + 4849845*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^
(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^3*d^2*e^
(-3) + 2204475*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)
^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt
(x*e + d)*d^5)*a^3*b^4*d^2*e^(-4) + 305235*(231*(x*e + d)^(13/2) - 1638*(x*
e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 900
9*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*
a^2*b^5*d^2*e^(-5) + 47481*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d
+ 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^
(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sq
rt(x*e + d)*d^7)*a*b^6*d^2*e^(-6) + 399*(6435*(x*e + d)^(17/2) - 58344*(x*e
 + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
+ 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d
)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*d^
2*e^(-7) + 14549535*sqrt(x*e + d)*a^7*d^3 + 14549535*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^7*d^2 + 8729721*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
 + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^6*b*d*e^(-1) + 2909907*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^5*b^2*d*e^(-2) + 2204475*(6
3*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386
*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^
4*b^3*d*e^(-3) + 508725*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5
005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d
^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^4*d*e^(-4) +
142443*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(1
1/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x
*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2
*b^5*d*e^(-5) + 2793*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 23
5620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^
(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 29172
0*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*b^6*d*e^(-6) + 189*(121
55*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/2)*d
^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233230*
(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(5/2)
*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b^7*d*e^(-7)
+ 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*a^7*d + 323323*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)
^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^6*b*e^(-1)
+ 440895*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a^5*b^2*e^(-2) + 169575*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11
/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d
)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^4*b^3*e^
(-3) + 79135*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
 d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27
027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^
7)*a^3*b^4*e^(-4) + 2793*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
+ 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e +
 d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 2
91720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a^2*b^5*e^(-5) + 441*
(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(15/
2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 3233
230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)^(
5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*a*b^6*e^(
-6) + 15*(46189*(x*e + d)^(21/2) - 510510*(x*e + d)^(19/2)*d + 2567565*(x*e
 + d)^(17/2)*d^2 - 7759752*(x*e + d)^(15/2)*d^3 + 15668730*(x*e + d)^(13/2)
*d^4 - 22221108*(x*e + d)^(11/2)*d^5 + 22632610*(x*e + d)^(9/2)*d^6 - 16628
040*(x*e + d)^(7/2)*d^7 + 8729721*(x*e + d)^(5/2)*d^8 - 3233230*(x*e + d)^(
3/2)*d^9 + 969969*sqrt(x*e + d)*d^10)*b^7*e^(-7) + 415701*(5*(x*e + d)^(7/2
) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a
^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.31

$$2\,(ex+d)^{\frac{7}{2}}\,(138567b^7x^7e^7+1072071a\,b^6e^7x^6-102102b^7d\,e^6x^6+3594591a^2b^5e^7x^5-756756a\,b^6d\,e^6x^5+72072$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/2909907*(e*x+d)^(7/2)*(138567*b^7*e^7*x^7+1072071*a*b^6*e^7*x^6-102102*b^
7*d*e^6*x^6+3594591*a^2*b^5*e^7*x^5-756756*a*b^6*d*e^6*x^5+72072*b^7*d^2*e^
5*x^5+6789783*a^3*b^4*e^7*x^4-2396394*a^2*b^5*d*e^6*x^4+504504*a*b^6*d^2*e^
5*x^4-48048*b^7*d^3*e^4*x^4+7834365*a^4*b^3*e^7*x^3-4178328*a^3*b^4*d*e^6*x
^3+1474704*a^2*b^5*d^2*e^5*x^3-310464*a*b^6*d^3*e^4*x^3+29568*b^7*d^4*e^3*x
^3+5555277*a^5*b^2*e^7*x^2-4273290*a^4*b^3*d*e^6*x^2+2279088*a^3*b^4*d^2*e^
5*x^2-804384*a^2*b^5*d^3*e^4*x^2+169344*a*b^6*d^4*e^3*x^2-16128*b^7*d^5*e^2
*x^2+2263261*a^6*b*e^7*x-2469012*a^5*b^2*d*e^6*x+1899240*a^4*b^3*d^2*e^5*x-
1012928*a^3*b^4*d^3*e^4*x+357504*a^2*b^5*d^4*e^3*x-75264*a*b^6*d^5*e^2*x+71
68*b^7*d^6*e*x+415701*a^7*e^7-646646*a^6*b*d*e^6+705432*a^5*b^2*d^2*e^5-542
640*a^4*b^3*d^3*e^4+289408*a^3*b^4*d^4*e^3-102144*a^2*b^5*d^5*e^2+21504*a*b
^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B] time = 0.65, size = 456, normalized size = 2.11

$$2\,\Big(138567\,(ex+d)^{\frac{21}{2}}b^7-1072071\,\big(b^7d-ab^6e\big)(ex+d)^{\frac{19}{2}}+3594591\,\big(b^7d^2-2\,ab^6de+a^2b^5e^2\big)(ex+d)^{\frac{17}{2}}-67897$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/2909907*(138567*(e*x + d)^(21/2)*b^7 - 1072071*(b^7*d - a*b^6*e)*(e*x + d
)^(19/2) + 3594591*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(17/2) -
 6789783*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d
)^(15/2) + 7834365*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4
*d*e^3 + a^4*b^3*e^4)*(e*x + d)^(13/2) - 5555277*(b^7*d^5 - 5*a*b^6*d^4*e +
 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(
e*x + d)^(11/2) + 2263261*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 2
0*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x
+ d)^(9/2) - 415701*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*
b^4*d^4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7
*e^7)*(e*x + d)^(7/2))/e^8
```

mupad [B] time = 0.06, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{21/2}}{21\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{19/2}}{19\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{7/2}}{7\,e^8}+\frac{42\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{11/2}}{11\,e^8}+70\,b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(21/2))/(21*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(19/
2))/(19*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(7/2))/(7*e^8) + (42*b^2*(a*e - b
*d)^5*(d + e*x)^(11/2))/(11*e^8) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(13/2))/
(13*e^8) + (14*b^4*(a*e - b*d)^3*(d + e*x)^(15/2))/(3*e^8) + (42*b^5*(a*e -
 b*d)^2*(d + e*x)^(17/2))/(17*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(9/2))/(
9*e^8)
```

sympy [A] time = 70.41, size = 2096, normalized size = 9.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d**2*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)
) + 4*a**7*d*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 2*a**7*(d**2*
(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e + 14*a*
*6*b*d**2*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 28*a**6*b*d*(
d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2
 + 14*a**6*b*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d
 + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**2 + 42*a**5*b**2*d**2*(d**2*(d +
e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**3 + 84*a**5
*b**2*d*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*
x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 42*a**5*b**2*(d**4*(d + e*x)**(3/2
)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)
**(9/2)/9 + (d + e*x)**(11/2)/11)/e**3 + 70*a**4*b**3*d**2*(-d**3*(d + e*x)
**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d + e*x)*
*(9/2)/9)/e**4 + 140*a**4*b**3*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d + e*x
)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e*x)
**(11/2)/11)/e**4 + 70*a**4*b**3*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)
**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d
+ e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**4 + 70*a**3*b**4*d**2*(d**4*(d
 + e*x)**(3/2)/3 - 4*d**3*(d + e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 -
4*d*(d + e*x)**(9/2)/9 + (d + e*x)**(11/2)/11)/e**5 + 140*a**3*b**4*d*(-d**
5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/
13)/e**5 + 70*a**3*b**4*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/
5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d +
e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**5 + 4
2*a**2*b**5*d**2*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**
3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/1
1 + (d + e*x)**(13/2)/13)/e**6 + 84*a**2*b**5*d*(d**6*(d + e*x)**(3/2)/3 -
6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)*
*(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e
*x)**(15/2)/15)/e**6 + 42*a**2*b**5*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d +
 e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*
d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(
15/2)/15 + (d + e*x)**(17/2)/17)/e**6 + 14*a*b**6*d**2*(d**6*(d + e*x)**(3/
2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d
+ e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 +
 (d + e*x)**(15/2)/15)/e**7 + 28*a*b**6*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**
6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9
 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e
*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 14*a*b**6*(d**8*(d + e*x)**(3
/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d +
e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13
 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19
/2)/19)/e**7 + 2*b**7*d**2*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5
/2)/5 - 3*d**5*(d + e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d +
 e*x)**(11/2)/11 + 21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15
+ (d + e*x)**(17/2)/17)/e**8 + 4*b**7*d*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(
d + e*x)**(5/2)/5 + 4*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 +
70*d**4*(d + e*x)**(11/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d +
e*x)**(15/2)/15 - 8*d*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8 + 2
*b**7*(-d**9*(d + e*x)**(3/2)/3 + 9*d**8*(d + e*x)**(5/2)/5 - 36*d**7*(d +
e*x)**(7/2)/7 + 28*d**6*(d + e*x)**(9/2)/3 - 126*d**5*(d + e*x)**(11/2)/11
+ 126*d**4*(d + e*x)**(13/2)/13 - 28*d**3*(d + e*x)**(15/2)/5 + 36*d**2*(d
+ e*x)**(17/2)/17 - 9*d*(d + e*x)**(19/2)/19 + (d + e*x)**(21/2)/21)/e**8
```

3.2060 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=214

$$-\frac{14b^6(d+ex)^{17/2}(bd-ae)}{17e^8}+\frac{14b^5(d+ex)^{15/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{13/2}(bd-ae)^3}{13e^8}+\frac{70b^3(d+ex)^{11/2}(bd-ae)^4}{11e^8}$$

```
[Out] -2/5*(-a*e+b*d)^7*(e*x+d)^(5/2)/e^8+2*b*(-a*e+b*d)^6*(e*x+d)^(7/2)/e^8-14/3
*b^2*(-a*e+b*d)^5*(e*x+d)^(9/2)/e^8+70/11*b^3*(-a*e+b*d)^4*(e*x+d)^(11/2)/e
^8-70/13*b^4*(-a*e+b*d)^3*(e*x+d)^(13/2)/e^8+14/5*b^5*(-a*e+b*d)^2*(e*x+d)^
(15/2)/e^8-14/17*b^6*(-a*e+b*d)*(e*x+d)^(17/2)/e^8+2/19*b^7*(e*x+d)^(19/2)/
e^8
```

Rubi [A] time = 0.07, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{17/2}(bd-ae)}{17e^8}+\frac{14b^5(d+ex)^{15/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{13/2}(bd-ae)^3}{13e^8}+\frac{70b^3(d+ex)^{11/2}(bd-ae)^4}{11e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(5/2))/(5*e^8) + (2*b*(b*d - a*e)^6*(d + e*x)^(
7/2))/e^8 - (14*b^2*(b*d - a*e)^5*(d + e*x)^(9/2))/(3*e^8) + (70*b^3*(b*d -
 a*e)^4*(d + e*x)^(11/2))/(11*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x)^(13/2)
)/(13*e^8) + (14*b^5*(b*d - a*e)^2*(d + e*x)^(15/2))/(5*e^8) - (14*b^6*(b*d
 - a*e)*(d + e*x)^(17/2))/(17*e^8) + (2*b^7*(d + e*x)^(19/2))/(19*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7(d+ex)^{3/2}\,dx\\ &= \int \left(\frac{(-bd+ae)^7(d+ex)^{3/2}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{5/2}}{e^7}-21b^2(bd\right.\\ &= -\frac{2(bd-ae)^7(d+ex)^{5/2}}{5e^8}+\frac{2b(bd-ae)^6(d+ex)^{7/2}}{e^8}-14b^2(bd-\end{aligned}$$

Mathematica [A] time = 0.12, size = 167, normalized size = 0.78

$$2(d+ex)^{5/2}\left(-285285b^6(d+ex)^6(bd-ae)+969969b^5(d+ex)^5(bd-ae)^2-1865325b^4(d+ex)^4(bd-ae)^3+2\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(5/2)*(-138567*(b*d - a*e)^7 + 692835*b*(b*d - a*e)^6*(d + e*x
) - 1616615*b^2*(b*d - a*e)^5*(d + e*x)^2 + 2204475*b^3*(b*d - a*e)^4*(d +
e*x)^3 - 1865325*b^4*(b*d - a*e)^3*(d + e*x)^4 + 969969*b^5*(b*d - a*e)^2*(
d + e*x)^5 - 285285*b^6*(b*d - a*e)*(d + e*x)^6 + 36465*b^7*(d + e*x)^7))/(
692835*e^8)
```

fricas [B] time = 0.96, size = 676, normalized size = 3.16

$$2\left(36465\, b^7 e^9 x^9 - 2048\, b^7 d^9 + 19456\, a b^6 d^8 e - 82688\, a^2 b^5 d^7 e^2 + 206720\, a^3 b^4 d^6 e^3 - 335920\, a^4 b^3 d^5 e^4 + 369512\, a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] 2/692835*(36465*b^7*e^9*x^9 - 2048*b^7*d^9 + 19456*a*b^6*d^8*e - 82688*a^2*
b^5*d^7*e^2 + 206720*a^3*b^4*d^6*e^3 - 335920*a^4*b^3*d^5*e^4 + 369512*a^5*
b^2*d^4*e^5 - 277134*a^6*b*d^3*e^6 + 138567*a^7*d^2*e^7 + 2145*(20*b^7*d*e^
8 + 133*a*b^6*e^9)*x^8 + 429*(b^7*d^2*e^7 + 798*a*b^6*d*e^8 + 2261*a^2*b^5*
e^9)*x^7 - 231*(2*b^7*d^3*e^6 - 19*a*b^6*d^2*e^7 - 5168*a^2*b^5*d*e^8 - 807
5*a^3*b^4*e^9)*x^6 + 21*(24*b^7*d^4*e^5 - 228*a*b^6*d^3*e^6 + 969*a^2*b^5*d
^2*e^7 + 113050*a^3*b^4*d*e^8 + 104975*a^4*b^3*e^9)*x^5 - 35*(16*b^7*d^5*e^
4 - 152*a*b^6*d^4*e^5 + 646*a^2*b^5*d^3*e^6 - 1615*a^3*b^4*d^2*e^7 - 83980*
a^4*b^3*d*e^8 - 46189*a^5*b^2*e^9)*x^4 + 5*(128*b^7*d^6*e^3 - 1216*a*b^6*d^
5*e^4 + 5168*a^2*b^5*d^4*e^5 - 12920*a^3*b^4*d^3*e^6 + 20995*a^4*b^3*d^2*e^
7 + 461890*a^5*b^2*d*e^8 + 138567*a^6*b*e^9)*x^3 - 3*(256*b^7*d^7*e^2 - 243
2*a*b^6*d^6*e^3 + 10336*a^2*b^5*d^5*e^4 - 25840*a^3*b^4*d^4*e^5 + 41990*a^4
*b^3*d^3*e^6 - 46189*a^5*b^2*d^2*e^7 - 369512*a^6*b*d*e^8 - 46189*a^7*e^9)*
x^2 + (1024*b^7*d^8*e - 9728*a*b^6*d^7*e^2 + 41344*a^2*b^5*d^6*e^3 - 103360
*a^3*b^4*d^5*e^4 + 167960*a^4*b^3*d^4*e^5 - 184756*a^5*b^2*d^3*e^6 + 138567
*a^6*b*d^2*e^7 + 277134*a^7*d*e^8)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.27, size = 1856, normalized size = 8.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 2/2078505*(4849845*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d^2*e^(-1) +
 2909907*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a^5*b^2*d^2*e^(-2) + 2078505*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35
*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d^2*e^(-3) + 230945*(3
5*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(
x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d^2*e^(-4) + 62985*(63*
(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(
x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*
b^5*d^2*e^(-5) + 4845*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 500
5*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d^2*e^(-6) + 32
3*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^7*d^2*
e^(-7) + 1939938*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e +
d)*d^2)*a^6*b*d*e^(-1) + 2494206*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b^2*d*e^(-2) + 461890*
(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420
*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^3*d*e^(-3) + 209950*(63
*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*
(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3
*b^4*d*e^(-4) + 29070*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 500
5*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4
 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^5*d*e^(-5) + 45
22*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^6*d
*e^(-6) + 38*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*
e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^
4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e +
 d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*d*e^(-7) + 2078505*sqrt(x*e +
 d)*a^7*d^2 + 1385670*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^7*d + 415701*
(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqr
t(x*e + d)*d^3)*a^6*b*e^(-1) + 138567*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(
7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
 d)*d^4)*a^5*b^2*e^(-2) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)
*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3
/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^3*e^(-3) + 24225*(231*(x*e + d)^(13/
2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7
/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x
*e + d)*d^6)*a^3*b^4*e^(-4) + 6783*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(
13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x
*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
 6435*sqrt(x*e + d)*d^7)*a^2*b^5*e^(-5) + 133*(6435*(x*e + d)^(17/2) - 5834
4*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2
)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x
*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*
a*b^6*e^(-6) + 9*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 5542
68*(x*e + d)^(15/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^
(11/2)*d^4 - 3233230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 16
62804*(x*e + d)^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e +
d)*d^9)*b^7*e^(-7) + 138567*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*a^7)*e^(-1)
```

maple [B] time = 0.05, size = 498, normalized size = 2.33

$$2 \left(e x + d\right)^{\frac{5}{2}} \left(36465 b^{7} x^{7} e^{7} + 285285 a \,b^{6} e^{7} x^{6} - 30030 b^{7} d \,e^{6} x^{6} + 969969 a^{2} b^{5} e^{7} x^{5} - 228228 a \,b^{6} d \,e^{6} x^{5} + 24024 b^{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/692835*(e*x+d)^(5/2)*(36465*b^7*e^7*x^7+285285*a*b^6*e^7*x^6-30030*b^7*d*
e^6*x^6+969969*a^2*b^5*e^7*x^5-228228*a*b^6*d*e^6*x^5+24024*b^7*d^2*e^5*x^5
+1865325*a^3*b^4*e^7*x^4-746130*a^2*b^5*d*e^6*x^4+175560*a*b^6*d^2*e^5*x^4-
18480*b^7*d^3*e^4*x^4+2204475*a^4*b^3*e^7*x^3-1356600*a^3*b^4*d*e^6*x^3+542
640*a^2*b^5*d^2*e^5*x^3-127680*a*b^6*d^3*e^4*x^3+13440*b^7*d^4*e^3*x^3+1616
615*a^5*b^2*e^7*x^2-1469650*a^4*b^3*d*e^6*x^2+904400*a^3*b^4*d^2*e^5*x^2-36
1760*a^2*b^5*d^3*e^4*x^2+85120*a*b^6*d^4*e^3*x^2-8960*b^7*d^5*e^2*x^2+69283
5*a^6*b*e^7*x-923780*a^5*b^2*d*e^6*x+839800*a^4*b^3*d^2*e^5*x-516800*a^3*b^
4*d^3*e^4*x+206720*a^2*b^5*d^4*e^3*x-48640*a*b^6*d^5*e^2*x+5120*b^7*d^6*e*x
+138567*a^7*e^7-277134*a^6*b*d*e^6+369512*a^5*b^2*d^2*e^5-335920*a^4*b^3*d^
3*e^4+206720*a^3*b^4*d^4*e^3-82688*a^2*b^5*d^5*e^2+19456*a*b^6*d^6*e-2048*b
^7*d^7)/e^8
```

maxima [B] time = 0.60, size = 456, normalized size = 2.13

$$2\Big(36465\,(ex+d)^{\frac{19}{2}}b^7 - 285285\,\big(b^7d - ab^6e\big)(ex+d)^{\frac{17}{2}} + 969969\,\big(b^7d^2 - 2\,ab^6de + a^2b^5e^2\big)(ex+d)^{\frac{15}{2}} - 1865325\,\big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 2/692835*(36465*(e*x + d)^(19/2)*b^7 - 285285*(b^7*d - a*b^6*e)*(e*x + d)^(
17/2) + 969969*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(15/2) - 186
5325*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(1
3/2) + 2204475*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e
^3 + a^4*b^3*e^4)*(e*x + d)^(11/2) - 1616615*(b^7*d^5 - 5*a*b^6*d^4*e + 10*
a^2*b^5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x
+ d)^(9/2) + 692835*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*
b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(
7/2) - 138567*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^
4*e^3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*
(e*x + d)^(5/2))/e^8
```

mupad [B] time = 2.04, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{19/2}}{19\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{17/2}}{17\,e^8}+\frac{2\,{\left(a\,e-b\,d\right)}^7\,{\left(d+e\,x\right)}^{5/2}}{5\,e^8}+\frac{14\,b^2\,{\left(a\,e-b\,d\right)}^5\,{\left(d+e\,x\right)}^{9/2}}{3\,e^8}+\frac{70\,b^3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(19/2))/(19*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(17/
2))/(17*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(5/2))/(5*e^8) + (14*b^2*(a*e - b
*d)^5*(d + e*x)^(9/2))/(3*e^8) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(11/2))/(1
1*e^8) + (70*b^4*(a*e - b*d)^3*(d + e*x)^(13/2))/(13*e^8) + (14*b^5*(a*e -
b*d)^2*(d + e*x)^(15/2))/(5*e^8) + (2*b*(a*e - b*d)^6*(d + e*x)^(7/2))/e^8
```

sympy [A] time = 45.36, size = 1265, normalized size = 5.91

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] a**7*d*Piecewise((sqrt(d)*x, Eq(e, 0)), (2*(d + e*x)**(3/2)/(3*e), True)) +
 2*a**7*(-d*(d + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e + 14*a**6*b*d*(-d*(d
 + e*x)**(3/2)/3 + (d + e*x)**(5/2)/5)/e**2 + 14*a**6*b*(d**2*(d + e*x)**(3
/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**2 + 42*a**5*b**2*d*
(d**2*(d + e*x)**(3/2)/3 - 2*d*(d + e*x)**(5/2)/5 + (d + e*x)**(7/2)/7)/e**
3 + 42*a**5*b**2*(-d**3*(d + e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*
d*(d + e*x)**(7/2)/7 + (d + e*x)**(9/2)/9)/e**3 + 70*a**4*b**3*d*(-d**3*(d
+ e*x)**(3/2)/3 + 3*d**2*(d + e*x)**(5/2)/5 - 3*d*(d + e*x)**(7/2)/7 + (d +
 e*x)**(9/2)/9)/e**4 + 70*a**4*b**3*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d +
e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d + e
*x)**(11/2)/11)/e**4 + 70*a**3*b**4*d*(d**4*(d + e*x)**(3/2)/3 - 4*d**3*(d
+ e*x)**(5/2)/5 + 6*d**2*(d + e*x)**(7/2)/7 - 4*d*(d + e*x)**(9/2)/9 + (d +
 e*x)**(11/2)/11)/e**5 + 70*a**3*b**4*(-d**5*(d + e*x)**(3/2)/3 + d**4*(d +
 e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 + 10*d**2*(d + e*x)**(9/2)/9 - 5*
d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/13)/e**5 + 42*a**2*b**5*d*(-d**5
*(d + e*x)**(3/2)/3 + d**4*(d + e*x)**(5/2) - 10*d**3*(d + e*x)**(7/2)/7 +
10*d**2*(d + e*x)**(9/2)/9 - 5*d*(d + e*x)**(11/2)/11 + (d + e*x)**(13/2)/1
3)/e**6 + 42*a**2*b**5*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5
 + 15*d**4*(d + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e
*x)**(11/2)/11 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**6 + 14
*a*b**6*d*(d**6*(d + e*x)**(3/2)/3 - 6*d**5*(d + e*x)**(5/2)/5 + 15*d**4*(d
 + e*x)**(7/2)/7 - 20*d**3*(d + e*x)**(9/2)/9 + 15*d**2*(d + e*x)**(11/2)/1
1 - 6*d*(d + e*x)**(13/2)/13 + (d + e*x)**(15/2)/15)/e**7 + 14*a*b**6*(-d**
7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d + e*x)**(7/2)
+ 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 + 21*d**2*(d +
e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)/17)/e**7 + 2
*b**7*d*(-d**7*(d + e*x)**(3/2)/3 + 7*d**6*(d + e*x)**(5/2)/5 - 3*d**5*(d +
 e*x)**(7/2) + 35*d**4*(d + e*x)**(9/2)/9 - 35*d**3*(d + e*x)**(11/2)/11 +
21*d**2*(d + e*x)**(13/2)/13 - 7*d*(d + e*x)**(15/2)/15 + (d + e*x)**(17/2)
/17)/e**8 + 2*b**7*(d**8*(d + e*x)**(3/2)/3 - 8*d**7*(d + e*x)**(5/2)/5 + 4
*d**6*(d + e*x)**(7/2) - 56*d**5*(d + e*x)**(9/2)/9 + 70*d**4*(d + e*x)**(1
1/2)/11 - 56*d**3*(d + e*x)**(13/2)/13 + 28*d**2*(d + e*x)**(15/2)/15 - 8*d
*(d + e*x)**(17/2)/17 + (d + e*x)**(19/2)/19)/e**8
```

3.2061 $\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^3\,dx$

Optimal. Leaf size=214

$$-\frac{14b^6(d+ex)^{15/2}(bd-ae)}{15e^8}+\frac{42b^5(d+ex)^{13/2}(bd-ae)^2}{13e^8}-\frac{70b^4(d+ex)^{11/2}(bd-ae)^3}{11e^8}+\frac{70b^3(d+ex)^{9/2}(bd-ae)^4}{9e^8}-$$

```
[Out] -2/3*(-a*e+b*d)^7*(e*x+d)^(3/2)/e^8+14/5*b*(-a*e+b*d)^6*(e*x+d)^(5/2)/e^8-6
*b^2*(-a*e+b*d)^5*(e*x+d)^(7/2)/e^8+70/9*b^3*(-a*e+b*d)^4*(e*x+d)^(9/2)/e^8
-70/11*b^4*(-a*e+b*d)^3*(e*x+d)^(11/2)/e^8+42/13*b^5*(-a*e+b*d)^2*(e*x+d)^(
13/2)/e^8-14/15*b^6*(-a*e+b*d)*(e*x+d)^(15/2)/e^8+2/17*b^7*(e*x+d)^(17/2)/e
^8
```

Rubi [A] time = 0.07, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.061, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{15/2}(bd-ae)}{15e^8}+\frac{42b^5(d+ex)^{13/2}(bd-ae)^2}{13e^8}-\frac{70b^4(d+ex)^{11/2}(bd-ae)^3}{11e^8}+\frac{70b^3(d+ex)^{9/2}(bd-ae)^4}{9e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-2*(b*d - a*e)^7*(d + e*x)^(3/2))/(3*e^8) + (14*b*(b*d - a*e)^6*(d + e*x)^
(5/2))/(5*e^8) - (6*b^2*(b*d - a*e)^5*(d + e*x)^(7/2))/e^8 + (70*b^3*(b*d -
 a*e)^4*(d + e*x)^(9/2))/(9*e^8) - (70*b^4*(b*d - a*e)^3*(d + e*x)^(11/2))/
(11*e^8) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(13/2))/(13*e^8) - (14*b^6*(b*d
- a*e)*(d + e*x)^(15/2))/(15*e^8) + (2*b^7*(d + e*x)^(17/2))/(17*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^3\,dx &= \int (a+bx)^7\sqrt{d+ex}\,dx\\ &= \int \left(\frac{(-bd+ae)^7\sqrt{d+ex}}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{3/2}}{e^7}-\right.\\ &= -\frac{2(bd-ae)^7(d+ex)^{3/2}}{3e^8}+\frac{14b(bd-ae)^6(d+ex)^{5/2}}{5e^8}-\end{aligned}$$

Mathematica [A] time = 0.11, size = 167, normalized size = 0.78

$$2(d+ex)^{3/2}\left(-51051b^6(d+ex)^6(bd-ae)+176715b^5(d+ex)^5(bd-ae)^2-348075b^4(d+ex)^4(bd-ae)^3+425425\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*(d + e*x)^(3/2)*(-36465*(b*d - a*e)^7 + 153153*b*(b*d - a*e)^6*(d + e*x)
 - 328185*b^2*(b*d - a*e)^5*(d + e*x)^2 + 425425*b^3*(b*d - a*e)^4*(d + e*x
)^3 - 348075*b^4*(b*d - a*e)^3*(d + e*x)^4 + 176715*b^5*(b*d - a*e)^2*(d +
e*x)^5 - 51051*b^6*(b*d - a*e)*(d + e*x)^6 + 6435*b^7*(d + e*x)^7))/(109395
*e^8)
```

fricas [B] time = 0.98, size = 568, normalized size = 2.65

$$2\left(6435\,b^{7}e^{8}x^{8} - 2048\,b^{7}d^{8} + 17408\,ab^{6}d^{7}e - 65280\,a^{2}b^{5}d^{6}e^{2} + 141440\,a^{3}b^{4}d^{5}e^{3} - 194480\,a^{4}b^{3}d^{4}e^{4} + 175032\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/109395*(6435*b^7*e^8*x^8 - 2048*b^7*d^8 + 17408*a*b^6*d^7*e - 65280*a^2*b
^5*d^6*e^2 + 141440*a^3*b^4*d^5*e^3 - 194480*a^4*b^3*d^4*e^4 + 175032*a^5*b
^2*d^3*e^5 - 102102*a^6*b*d^2*e^6 + 36465*a^7*d*e^7 + 429*(b^7*d*e^7 + 119*
a*b^6*e^8)*x^7 - 231*(2*b^7*d^2*e^6 - 17*a*b^6*d*e^7 - 765*a^2*b^5*e^8)*x^6
 + 63*(8*b^7*d^3*e^5 - 68*a*b^6*d^2*e^6 + 255*a^2*b^5*d*e^7 + 5525*a^3*b^4*
e^8)*x^5 - 35*(16*b^7*d^4*e^4 - 136*a*b^6*d^3*e^5 + 510*a^2*b^5*d^2*e^6 - 1
105*a^3*b^4*d*e^7 - 12155*a^4*b^3*e^8)*x^4 + 5*(128*b^7*d^5*e^3 - 1088*a*b^
6*d^4*e^4 + 4080*a^2*b^5*d^3*e^5 - 8840*a^3*b^4*d^2*e^6 + 12155*a^4*b^3*d*e
^7 + 65637*a^5*b^2*e^8)*x^3 - 3*(256*b^7*d^6*e^2 - 2176*a*b^6*d^5*e^3 + 816
0*a^2*b^5*d^4*e^4 - 17680*a^3*b^4*d^3*e^5 + 24310*a^4*b^3*d^2*e^6 - 21879*a
^5*b^2*d*e^7 - 51051*a^6*b*e^8)*x^2 + (1024*b^7*d^7*e - 8704*a*b^6*d^6*e^2
+ 32640*a^2*b^5*d^5*e^3 - 70720*a^3*b^4*d^4*e^4 + 97240*a^4*b^3*d^3*e^5 - 8
7516*a^5*b^2*d^2*e^6 + 51051*a^6*b*d*e^7 + 36465*a^7*e^8)*x)*sqrt(e*x + d)/
e^8
```

giac [B] time = 0.22, size = 1119, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/109395*(255255*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*d*e^(-1) + 153
153*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b
^2*d*e^(-2) + 109395*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e +
d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*d*e^(-3) + 12155*(35*(x*e + d)
^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3
/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^4*d*e^(-4) + 3315*(63*(x*e + d)^(11/
2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)
*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^5*d*e^(-5) +
 255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)
*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)
^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^6*d*e^(-6) + 17*(429*(x*e + d)^(15
/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d
)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015
*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^7*d*e^(-7) + 51051*(3*(x*e
 + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^6*b*e^(-1) + 6
5637*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 3
5*sqrt(x*e + d)*d^3)*a^5*b^2*e^(-2) + 12155*(35*(x*e + d)^(9/2) - 180*(x*e
+ d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt
(x*e + d)*d^4)*a^4*b^3*e^(-3) + 5525*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(
9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d
)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^4*e^(-4) + 765*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*a^2*b^5*e^(-5) + 119*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^
(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(
x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6
- 6435*sqrt(x*e + d)*d^7)*a*b^6*e^(-6) + (6435*(x*e + d)^(17/2) - 58344*(x*
e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3
 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e +
d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^7*e
^(-7) + 109395*sqrt(x*e + d)*a^7*d + 36465*((x*e + d)^(3/2) - 3*sqrt(x*e +
d)*d)*a^7)*e^(-1)
```

maple [B]   time = 0.05, size = 498, normalized size = 2.33

$$2 (ex + d)^{\frac{3}{2}} (6435b^7x^7e^7 + 51051a b^6e^7x^6 - 6006b^7d e^6x^6 + 176715a^2b^5e^7x^5 - 47124a b^6d e^6x^5 + 5544b^7d^2e^5x^5 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x)
```

```
[Out] 2/109395*(e*x+d)^(3/2)*(6435*b^7*e^7*x^7+51051*a*b^6*e^7*x^6-6006*b^7*d*e^6
*x^6+176715*a^2*b^5*e^7*x^5-47124*a*b^6*d*e^6*x^5+5544*b^7*d^2*e^5*x^5+3480
75*a^3*b^4*e^7*x^4-160650*a^2*b^5*d*e^6*x^4+42840*a*b^6*d^2*e^5*x^4-5040*b^
7*d^3*e^4*x^4+425425*a^4*b^3*e^7*x^3-309400*a^3*b^4*d*e^6*x^3+142800*a^2*b^
5*d^2*e^5*x^3-38080*a*b^6*d^3*e^4*x^3+4480*b^7*d^4*e^3*x^3+328185*a^5*b^2*e
^7*x^2-364650*a^4*b^3*d*e^6*x^2+265200*a^3*b^4*d^2*e^5*x^2-122400*a^2*b^5*d
^3*e^4*x^2+32640*a*b^6*d^4*e^3*x^2-3840*b^7*d^5*e^2*x^2+153153*a^6*b*e^7*x-
262548*a^5*b^2*d*e^6*x+291720*a^4*b^3*d^2*e^5*x-212160*a^3*b^4*d^3*e^4*x+97
920*a^2*b^5*d^4*e^3*x-26112*a*b^6*d^5*e^2*x+3072*b^7*d^6*e*x+36465*a^7*e^7-
102102*a^6*b*d*e^6+175032*a^5*b^2*d^2*e^5-194480*a^4*b^3*d^3*e^4+141440*a^3
*b^4*d^4*e^3-65280*a^2*b^5*d^5*e^2+17408*a*b^6*d^6*e-2048*b^7*d^7)/e^8
```

maxima [B]   time = 0.60, size = 456, normalized size = 2.13

$$2 (6435 (ex + d)^{\frac{17}{2}} b^7 - 51051 \left(b^7d - ab^6e\right)(ex + d)^{\frac{15}{2}} + 176715 \left(b^7d^2 - 2\,ab^6de + a^2b^5e^2\right)(ex + d)^{\frac{13}{2}} - 348075 (b^7d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3*(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/109395*(6435*(e*x + d)^(17/2)*b^7 - 51051*(b^7*d - a*b^6*e)*(e*x + d)^(15
/2) + 176715*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(13/2) - 34807
5*(b^7*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(11/2
) + 425425*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 +
 a^4*b^3*e^4)*(e*x + d)^(9/2) - 328185*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^
5*d^3*e^2 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(
7/2) + 153153*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^
3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(5/2) -
 36465*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 +
 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*(e*x +
d)^(3/2))/e^8
```

mupad [B]   time = 2.05, size = 187, normalized size = 0.87

$$\frac{2\,b^7\,(d+e\,x)^{17/2}}{17\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,(d+e\,x)^{15/2}}{15\,e^8}+\frac{2\,(a\,e-b\,d)^7\,(d+e\,x)^{3/2}}{3\,e^8}+\frac{6\,b^2\,(a\,e-b\,d)^5\,(d+e\,x)^{7/2}}{e^8}+ 70\,b^3\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*b^7*(d + e*x)^(17/2))/(17*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(15/
2))/(15*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(3/2))/(3*e^8) + (6*b^2*(a*e - b*
d)^5*(d + e*x)^(7/2))/e^8 + (70*b^3*(a*e - b*d)^4*(d + e*x)^(9/2))/(9*e^8)
+ (70*b^4*(a*e - b*d)^3*(d + e*x)^(11/2))/(11*e^8) + (42*b^5*(a*e - b*d)^2*
(d + e*x)^(13/2))/(13*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(5/2))/(5*e^8)
```

sympy [B] time = 10.16, size = 544, normalized size = 2.54

$$\frac{2\left(\frac{b^7(d+ex)^{\frac{17}{2}}}{17e^7}+\frac{(d+ex)^{\frac{15}{2}}\left(7ab^6e-7b^7d\right)}{15e^7}+\frac{(d+ex)^{\frac{13}{2}}\left(21a^2b^5e^2-42ab^6de+21b^7d^2\right)}{13e^7}+\frac{(d+ex)^{\frac{11}{2}}\left(35a^3b^4e^3-105a^2b^5de^2+105ab^6d^2e-35b^7d^3\right)}{11e^7}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3*(e*x+d)**(1/2),x)
```

```
[Out] 2*(b**7*(d + e*x)**(17/2)/(17*e**7) + (d + e*x)**(15/2)*(7*a*b**6*e - 7*b**
7*d)/(15*e**7) + (d + e*x)**(13/2)*(21*a**2*b**5*e**2 - 42*a*b**6*d*e + 21*
b**7*d**2)/(13*e**7) + (d + e*x)**(11/2)*(35*a**3*b**4*e**3 - 105*a**2*b**5
*d*e**2 + 105*a*b**6*d**2*e - 35*b**7*d**3)/(11*e**7) + (d + e*x)**(9/2)*(3
5*a**4*b**3*e**4 - 140*a**3*b**4*d*e**3 + 210*a**2*b**5*d**2*e**2 - 140*a*b
**6*d**3*e + 35*b**7*d**4)/(9*e**7) + (d + e*x)**(7/2)*(21*a**5*b**2*e**5 -
 105*a**4*b**3*d*e**4 + 210*a**3*b**4*d**2*e**3 - 210*a**2*b**5*d**3*e**2 +
 105*a*b**6*d**4*e - 21*b**7*d**5)/(7*e**7) + (d + e*x)**(5/2)*(7*a**6*b*e*
*6 - 42*a**5*b**2*d*e**5 + 105*a**4*b**3*d**2*e**4 - 140*a**3*b**4*d**3*e**
3 + 105*a**2*b**5*d**4*e**2 - 42*a*b**6*d**5*e + 7*b**7*d**6)/(5*e**7) + (d
 + e*x)**(3/2)*(a**7*e**7 - 7*a**6*b*d*e**6 + 21*a**5*b**2*d**2*e**5 - 35*a
**4*b**3*d**3*e**4 + 35*a**3*b**4*d**4*e**3 - 21*a**2*b**5*d**5*e**2 + 7*a*
b**6*d**6*e - b**7*d**7)/(3*e**7))/e
```

3.2062 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=212

$$-\frac{14b^6(d+ex)^{13/2}(bd-ae)}{13e^8}+\frac{42b^5(d+ex)^{11/2}(bd-ae)^2}{11e^8}-\frac{70b^4(d+ex)^{9/2}(bd-ae)^3}{9e^8}+\frac{10b^3(d+ex)^{7/2}(bd-ae)^4}{e^8}-$$

```
[Out] 14/3*b*(-a*e+b*d)^6*(e*x+d)^(3/2)/e^8-42/5*b^2*(-a*e+b*d)^5*(e*x+d)^(5/2)/e
^8+10*b^3*(-a*e+b*d)^4*(e*x+d)^(7/2)/e^8-70/9*b^4*(-a*e+b*d)^3*(e*x+d)^(9/2
)/e^8+42/11*b^5*(-a*e+b*d)^2*(e*x+d)^(11/2)/e^8-14/13*b^6*(-a*e+b*d)*(e*x+d
)^(13/2)/e^8+2/15*b^7*(e*x+d)^(15/2)/e^8-2*(-a*e+b*d)^7*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.07, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{13/2}(bd-ae)}{13e^8}+\frac{42b^5(d+ex)^{11/2}(bd-ae)^2}{11e^8}-\frac{70b^4(d+ex)^{9/2}(bd-ae)^3}{9e^8}+\frac{10b^3(d+ex)^{7/2}(bd-ae)^4}{e^8}-$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (-2*(b*d - a*e)^7*Sqrt[d + e*x])/e^8 + (14*b*(b*d - a*e)^6*(d + e*x)^(3/2))
/(3*e^8) - (42*b^2*(b*d - a*e)^5*(d + e*x)^(5/2))/(5*e^8) + (10*b^3*(b*d -
a*e)^4*(d + e*x)^(7/2))/e^8 - (70*b^4*(b*d - a*e)^3*(d + e*x)^(9/2))/(9*e^8
) + (42*b^5*(b*d - a*e)^2*(d + e*x)^(11/2))/(11*e^8) - (14*b^6*(b*d - a*e)*
(d + e*x)^(13/2))/(13*e^8) + (2*b^7*(d + e*x)^(15/2))/(15*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{\sqrt{d+ex}}\,dx &= \int \frac{(a+bx)^7}{\sqrt{d+ex}}\,dx\\ &= \int \left(\frac{(-bd+ae)^7}{e^7\sqrt{d+ex}}+\frac{7b(bd-ae)^6\sqrt{d+ex}}{e^7}-\frac{21b^2(bd-ae)^5(d+ex)^{3/2}}{e^7}+35b\right.\\ &= -\frac{2(bd-ae)^7\sqrt{d+ex}}{e^8}+\frac{14b(bd-ae)^6(d+ex)^{3/2}}{3e^8}-\frac{42b^2(bd-ae)^5(d+ex)^{5}}{5e^8}\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.79

$$\frac{2\sqrt{d+ex}\left(-3465b^6(d+ex)^6(bd-ae)+12285b^5(d+ex)^5(bd-ae)^2-25025b^4(d+ex)^4(bd-ae)^3+32175b^3(d+\right.}{6435e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-6435*(b*d - a*e)^7 + 15015*b*(b*d - a*e)^6*(d + e*x) - 2
7027*b^2*(b*d - a*e)^5*(d + e*x)^2 + 32175*b^3*(b*d - a*e)^4*(d + e*x)^3 -
25025*b^4*(b*d - a*e)^3*(d + e*x)^4 + 12285*b^5*(b*d - a*e)^2*(d + e*x)^5 -
 3465*b^6*(b*d - a*e)*(d + e*x)^6 + 429*b^7*(d + e*x)^7))/(6435*e^8)
```

fricas [B] time = 1.17, size = 463, normalized size = 2.18

$$2\left(429\,b^{7}e^{7}x^{7}-2048\,b^{7}d^{7}+15360\,ab^{6}d^{6}e-49920\,a^{2}b^{5}d^{5}e^{2}+91520\,a^{3}b^{4}d^{4}e^{3}-102960\,a^{4}b^{3}d^{3}e^{4}+72072\,a^{5}b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] 2/6435*(429*b^7*e^7*x^7 - 2048*b^7*d^7 + 15360*a*b^6*d^6*e - 49920*a^2*b^5*
d^5*e^2 + 91520*a^3*b^4*d^4*e^3 - 102960*a^4*b^3*d^3*e^4 + 72072*a^5*b^2*d^
2*e^5 - 30030*a^6*b*d*e^6 + 6435*a^7*e^7 - 231*(2*b^7*d*e^6 - 15*a*b^6*e^7)
*x^6 + 63*(8*b^7*d^2*e^5 - 60*a*b^6*d*e^6 + 195*a^2*b^5*e^7)*x^5 - 35*(16*b
^7*d^3*e^4 - 120*a*b^6*d^2*e^5 + 390*a^2*b^5*d*e^6 - 715*a^3*b^4*e^7)*x^4 +
 5*(128*b^7*d^4*e^3 - 960*a*b^6*d^3*e^4 + 3120*a^2*b^5*d^2*e^5 - 5720*a^3*b
^4*d*e^6 + 6435*a^4*b^3*e^7)*x^3 - 3*(256*b^7*d^5*e^2 - 1920*a*b^6*d^4*e^3
+ 6240*a^2*b^5*d^3*e^4 - 11440*a^3*b^4*d^2*e^5 + 12870*a^4*b^3*d*e^6 - 9009
*a^5*b^2*e^7)*x^2 + (1024*b^7*d^6*e - 7680*a*b^6*d^5*e^2 + 24960*a^2*b^5*d^
4*e^3 - 45760*a^3*b^4*d^3*e^4 + 51480*a^4*b^3*d^2*e^5 - 36036*a^5*b^2*d*e^6
 + 15015*a^6*b*e^7)*x)*sqrt(e*x + d)/e^8
```

giac [B] time = 0.19, size = 505, normalized size = 2.38

$$\frac{2}{6435}\left(15015\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^{6}be^{(-1)}+9009\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^{2}\right)a^{5}b^{2}e^{(-2)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 2/6435*(15015*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*b*e^(-1) + 9009*(3*
(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b^2*e^(-
2) + 6435*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^
2 - 35*sqrt(x*e + d)*d^3)*a^4*b^3*e^(-3) + 715*(35*(x*e + d)^(9/2) - 180*(x
*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*s
qrt(x*e + d)*d^4)*a^3*b^4*e^(-4) + 195*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^5*e^(-5) + 15*(231*(x*e + d)^(
13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)
^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqr
t(x*e + d)*d^6)*a*b^6*e^(-6) + (429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2
)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e +
 d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 643
5*sqrt(x*e + d)*d^7)*b^7*e^(-7) + 6435*sqrt(x*e + d)*a^7)*e^(-1)
```

maple [B] time = 0.06, size = 498, normalized size = 2.35

$$2\left(429b^{7}x^{7}e^{7}+3465a\,b^{6}e^{7}x^{6}-462b^{7}d\,e^{6}x^{6}+12285a^{2}b^{5}e^{7}x^{5}-3780a\,b^{6}d\,e^{6}x^{5}+504b^{7}d^{2}e^{5}x^{5}+25025a^{3}b^{4}e^{7}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 2/6435*(429*b^7*e^7*x^7+3465*a*b^6*e^7*x^6-462*b^7*d*e^6*x^6+12285*a^2*b^5*
e^7*x^5-3780*a*b^6*d*e^6*x^5+504*b^7*d^2*e^5*x^5+25025*a^3*b^4*e^7*x^4-1365
0*a^2*b^5*d*e^6*x^4+4200*a*b^6*d^2*e^5*x^4-560*b^7*d^3*e^4*x^4+32175*a^4*b^
3*e^7*x^3-28600*a^3*b^4*d*e^6*x^3+15600*a^2*b^5*d^2*e^5*x^3-4800*a*b^6*d^3*
e^4*x^3+640*b^7*d^4*e^3*x^3+27027*a^5*b^2*e^7*x^2-38610*a^4*b^3*d*e^6*x^2+3
4320*a^3*b^4*d^2*e^5*x^2-18720*a^2*b^5*d^3*e^4*x^2+5760*a*b^6*d^4*e^3*x^2-7
68*b^7*d^5*e^2*x^2+15015*a^6*b*e^7*x-36036*a^5*b^2*d*e^6*x+51480*a^4*b^3*d^
2*e^5*x-45760*a^3*b^4*d^3*e^4*x+24960*a^2*b^5*d^4*e^3*x-7680*a*b^6*d^5*e^2*
x+1024*b^7*d^6*e*x+6435*a^7*e^7-30030*a^6*b*d*e^6+72072*a^5*b^2*d^2*e^5-102
960*a^4*b^3*d^3*e^4+91520*a^3*b^4*d^4*e^3-49920*a^2*b^5*d^5*e^2+15360*a*b^6
*d^6*e-2048*b^7*d^7)*(e*x+d)^(1/2)/e^8
```

maxima [**B**] time = 0.71, size = 456, normalized size = 2.15

$$2\Bigl(429\,(ex+d)^{\frac{15}{2}}b^7 - 3465\,\bigl(b^7d - ab^6e\bigr)(ex+d)^{\frac{13}{2}} + 12285\,\bigl(b^7d^2 - 2\,ab^6de + a^2b^5e^2\bigr)(ex+d)^{\frac{11}{2}} - 25025\,\bigl(b^7d^3 - 3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] 2/6435*(429*(e*x + d)^(15/2)*b^7 - 3465*(b^7*d - a*b^6*e)*(e*x + d)^(13/2)
+ 12285*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(11/2) - 25025*(b^7
*d^3 - 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(9/2) + 321
75*(b^7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3
*e^4)*(e*x + d)^(7/2) - 27027*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2
 - 10*a^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(5/2) + 15
015*(b^7*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15
*a^4*b^3*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d)^(3/2) - 6435*(b^7
*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3
*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*sqrt(e*x + d))/e^8
```

mupad [**B**] time = 2.07, size = 187, normalized size = 0.88

$$\frac{2\,b^7\,(d+e\,x)^{15/2}}{15\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,(d+e\,x)^{13/2}}{13\,e^8}+\frac{2\,(a\,e-b\,d)^7\,\sqrt{d+e\,x}}{e^8}+\frac{42\,b^2\,(a\,e-b\,d)^5\,(d+e\,x)^{5/2}}{5\,e^8}+\frac{10\,b^3\,(a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(1/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(15/2))/(15*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(13/
2))/(13*e^8) + (2*(a*e - b*d)^7*(d + e*x)^(1/2))/e^8 + (42*b^2*(a*e - b*d)^
5*(d + e*x)^(5/2))/(5*e^8) + (10*b^3*(a*e - b*d)^4*(d + e*x)^(7/2))/e^8 + (
70*b^4*(a*e - b*d)^3*(d + e*x)^(9/2))/(9*e^8) + (42*b^5*(a*e - b*d)^2*(d +
e*x)^(11/2))/(11*e^8) + (14*b*(a*e - b*d)^6*(d + e*x)^(3/2))/(3*e^8)
```

sympy [**A**] time = 140.05, size = 1217, normalized size = 5.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Piecewise(((-2*a**7*d/sqrt(d + e*x) - 2*a**7*(-d/sqrt(d + e*x) - sqrt(d + e
*x)) - 14*a**6*b*d*(-d/sqrt(d + e*x) - sqrt(d + e*x))/e - 14*a**6*b*(d**2/s
qrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e - 42*a**5*b**2*d*(
d**2/sqrt(d + e*x) + 2*d*sqrt(d + e*x) - (d + e*x)**(3/2)/3)/e**2 - 42*a**5
*b**2*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(d + e*x) + d*(d + e*x)**(3/2) - (d
 + e*x)**(5/2)/5)/e**2 - 70*a**4*b**3*d*(-d**3/sqrt(d + e*x) - 3*d**2*sqrt(
d + e*x) + d*(d + e*x)**(3/2) - (d + e*x)**(5/2)/5)/e**3 - 70*a**4*b**3*(d*
*4/sqrt(d + e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d
+ e*x)**(5/2)/5 - (d + e*x)**(7/2)/7)/e**3 - 70*a**3*b**4*d*(d**4/sqrt(d +
e*x) + 4*d**3*sqrt(d + e*x) - 2*d**2*(d + e*x)**(3/2) + 4*d*(d + e*x)**(5/2
)/5 - (d + e*x)**(7/2)/7)/e**4 - 70*a**3*b**4*(-d**5/sqrt(d + e*x) - 5*d**4
*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d + e*x)**(5/2) + 5*d
*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**4 - 42*a**2*b**5*d*(-d**5/sqrt
(d + e*x) - 5*d**4*sqrt(d + e*x) + 10*d**3*(d + e*x)**(3/2)/3 - 2*d**2*(d +
 e*x)**(5/2) + 5*d*(d + e*x)**(7/2)/7 - (d + e*x)**(9/2)/9)/e**5 - 42*a**2*
b**5*(d**6/sqrt(d + e*x) + 6*d**5*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) +
 4*d**3*(d + e*x)**(5/2) - 15*d**2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2
)/3 - (d + e*x)**(11/2)/11)/e**5 - 14*a*b**6*d*(d**6/sqrt(d + e*x) + 6*d**5
*sqrt(d + e*x) - 5*d**4*(d + e*x)**(3/2) + 4*d**3*(d + e*x)**(5/2) - 15*d**
2*(d + e*x)**(7/2)/7 + 2*d*(d + e*x)**(9/2)/3 - (d + e*x)**(11/2)/11)/e**6
- 14*a*b**6*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)*
*(3/2) - 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*
x)**(9/2)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**6 - 2*b**
7*d*(-d**7/sqrt(d + e*x) - 7*d**6*sqrt(d + e*x) + 7*d**5*(d + e*x)**(3/2) -
 7*d**4*(d + e*x)**(5/2) + 5*d**3*(d + e*x)**(7/2) - 7*d**2*(d + e*x)**(9/2
)/3 + 7*d*(d + e*x)**(11/2)/11 - (d + e*x)**(13/2)/13)/e**7 - 2*b**7*(d**8/
sqrt(d + e*x) + 8*d**7*sqrt(d + e*x) - 28*d**6*(d + e*x)**(3/2)/3 + 56*d**5
*(d + e*x)**(5/2)/5 - 10*d**4*(d + e*x)**(7/2) + 56*d**3*(d + e*x)**(9/2)/9
 - 28*d**2*(d + e*x)**(11/2)/11 + 8*d*(d + e*x)**(13/2)/13 - (d + e*x)**(15
/2)/15)/e**7)/e, Ne(e, 0)), (Piecewise((a**7*x, Eq(b, 0)), ((a**2 + 2*a*b*x
 + b**2*x**2)**4/(8*b), True))/sqrt(d), True))
```

3.2063 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=206

$$-\frac{14b^6(d+ex)^{11/2}(bd-ae)}{11e^8}+\frac{14b^5(d+ex)^{9/2}(bd-ae)^2}{3e^8}-\frac{10b^4(d+ex)^{7/2}(bd-ae)^3}{e^8}+\frac{14b^3(d+ex)^{5/2}(bd-ae)^4}{e^8}-14b$$

```
[Out] -14*b^2*(-a*e+b*d)^5*(e*x+d)^(3/2)/e^8+14*b^3*(-a*e+b*d)^4*(e*x+d)^(5/2)/e^
8-10*b^4*(-a*e+b*d)^3*(e*x+d)^(7/2)/e^8+14/3*b^5*(-a*e+b*d)^2*(e*x+d)^(9/2)
/e^8-14/11*b^6*(-a*e+b*d)*(e*x+d)^(11/2)/e^8+2/13*b^7*(e*x+d)^(13/2)/e^8+2*
(-a*e+b*d)^7/e^8/(e*x+d)^(1/2)+14*b*(-a*e+b*d)^6*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.08, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{11/2}(bd-ae)}{11e^8}+\frac{14b^5(d+ex)^{9/2}(bd-ae)^2}{3e^8}-\frac{10b^4(d+ex)^{7/2}(bd-ae)^3}{e^8}+\frac{14b^3(d+ex)^{5/2}(bd-ae)^4}{e^8}-14b$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(e^8*Sqrt[d + e*x]) + (14*b*(b*d - a*e)^6*Sqrt[d + e*x])/
e^8 - (14*b^2*(b*d - a*e)^5*(d + e*x)^(3/2))/e^8 + (14*b^3*(b*d - a*e)^4*(d
 + e*x)^(5/2))/e^8 - (10*b^4*(b*d - a*e)^3*(d + e*x)^(7/2))/e^8 + (14*b^5*(
b*d - a*e)^2*(d + e*x)^(9/2))/(3*e^8) - (14*b^6*(b*d - a*e)*(d + e*x)^(11/2
))/(11*e^8) + (2*b^7*(d + e*x)^(13/2))/(13*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{3/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{3/2}}\,dx\\ &= \int \bigg(\frac{(-bd+ae)^7}{e^7(d+ex)^{3/2}}+\frac{7b(bd-ae)^6}{e^7\sqrt{d+ex}}-\frac{21b^2(bd-ae)^5\sqrt{d+ex}}{e^7}+\frac{35b^3(bd-ae)}{e^7}\\ &= \frac{2(bd-ae)^7}{e^8\sqrt{d+ex}}+\frac{14b(bd-ae)^6\sqrt{d+ex}}{e^8}-\frac{14b^2(bd-ae)^5(d+ex)^{3/2}}{e^8}+14b^3(ba\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.81

$$\frac{2\big(-273b^6(d+ex)^6(bd-ae)+1001b^5(d+ex)^5(bd-ae)^2-2145b^4(d+ex)^4(bd-ae)^3+3003b^3(d+ex)^3(bd-ae)}{429e^8\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(3/2),x]
```

```
[Out] (2*(429*(b*d - a*e)^7 + 3003*b*(b*d - a*e)^6*(d + e*x) - 3003*b^2*(b*d - a*
e)^5*(d + e*x)^2 + 3003*b^3*(b*d - a*e)^4*(d + e*x)^3 - 2145*b^4*(b*d - a*e
)^3*(d + e*x)^4 + 1001*b^5*(b*d - a*e)^2*(d + e*x)^5 - 273*b^6*(b*d - a*e)*
(d + e*x)^6 + 33*b^7*(d + e*x)^7))/(429*e^8*Sqrt[d + e*x])
```

fricas [B] time = 0.79, size = 472, normalized size = 2.29

$$2\left(33\,b^7e^7x^7 + 2048\,b^7d^7 - 13312\,ab^6d^6e + 36608\,a^2b^5d^5e^2 - 54912\,a^3b^4d^4e^3 + 48048\,a^4b^3d^3e^4 - 24024\,a^5b^2d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="frica
s")
```

```
[Out] 2/429*(33*b^7*e^7*x^7 + 2048*b^7*d^7 - 13312*a*b^6*d^6*e + 36608*a^2*b^5*d^
5*e^2 - 54912*a^3*b^4*d^4*e^3 + 48048*a^4*b^3*d^3*e^4 - 24024*a^5*b^2*d^2*e
^5 + 6006*a^6*b*d*e^6 - 429*a^7*e^7 - 21*(2*b^7*d*e^6 - 13*a*b^6*e^7)*x^6 +
 7*(8*b^7*d^2*e^5 - 52*a*b^6*d*e^6 + 143*a^2*b^5*e^7)*x^5 - 5*(16*b^7*d^3*e
^4 - 104*a*b^6*d^2*e^5 + 286*a^2*b^5*d*e^6 - 429*a^3*b^4*e^7)*x^4 + (128*b^
7*d^4*e^3 - 832*a*b^6*d^3*e^4 + 2288*a^2*b^5*d^2*e^5 - 3432*a^3*b^4*d*e^6 +
 3003*a^4*b^3*e^7)*x^3 - (256*b^7*d^5*e^2 - 1664*a*b^6*d^4*e^3 + 4576*a^2*b
^5*d^3*e^4 - 6864*a^3*b^4*d^2*e^5 + 6006*a^4*b^3*d*e^6 - 3003*a^5*b^2*e^7)*
x^2 + (1024*b^7*d^6*e - 6656*a*b^6*d^5*e^2 + 18304*a^2*b^5*d^4*e^3 - 27456*
a^3*b^4*d^3*e^4 + 24024*a^4*b^3*d^2*e^5 - 12012*a^5*b^2*d*e^6 + 3003*a^6*b*
e^7)*x)*sqrt(e*x + d)/(e^9*x + d*e^8)
```

giac [B] time = 0.23, size = 625, normalized size = 3.03

$$\frac{2}{429}\left(33\,(xe+d)^{\frac{13}{2}}b^7e^{96} - 273\,(xe+d)^{\frac{11}{2}}b^7de^{96} + 1001\,(xe+d)^{\frac{9}{2}}b^7d^2e^{96} - 2145\,(xe+d)^{\frac{7}{2}}b^7d^3e^{96} + 3003\,(xe+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="giac"
)
```

```
[Out] 2/429*(33*(x*e + d)^(13/2)*b^7*e^96 - 273*(x*e + d)^(11/2)*b^7*d*e^96 + 100
1*(x*e + d)^(9/2)*b^7*d^2*e^96 - 2145*(x*e + d)^(7/2)*b^7*d^3*e^96 + 3003*(
x*e + d)^(5/2)*b^7*d^4*e^96 - 3003*(x*e + d)^(3/2)*b^7*d^5*e^96 + 3003*sqrt
(x*e + d)*b^7*d^6*e^96 + 273*(x*e + d)^(11/2)*a*b^6*e^97 - 2002*(x*e + d)^(
9/2)*a*b^6*d*e^97 + 6435*(x*e + d)^(7/2)*a*b^6*d^2*e^97 - 12012*(x*e + d)^(
5/2)*a*b^6*d^3*e^97 + 15015*(x*e + d)^(3/2)*a*b^6*d^4*e^97 - 18018*sqrt(x*e
 + d)*a*b^6*d^5*e^97 + 1001*(x*e + d)^(9/2)*a^2*b^5*e^98 - 6435*(x*e + d)^(
7/2)*a^2*b^5*d*e^98 + 18018*(x*e + d)^(5/2)*a^2*b^5*d^2*e^98 - 30030*(x*e +
 d)^(3/2)*a^2*b^5*d^3*e^98 + 45045*sqrt(x*e + d)*a^2*b^5*d^4*e^98 + 2145*(x
*e + d)^(7/2)*a^3*b^4*e^99 - 12012*(x*e + d)^(5/2)*a^3*b^4*d*e^99 + 30030*(
x*e + d)^(3/2)*a^3*b^4*d^2*e^99 - 60060*sqrt(x*e + d)*a^3*b^4*d^3*e^99 + 30
03*(x*e + d)^(5/2)*a^4*b^3*e^100 - 15015*(x*e + d)^(3/2)*a^4*b^3*d*e^100 +
45045*sqrt(x*e + d)*a^4*b^3*d^2*e^100 + 3003*(x*e + d)^(3/2)*a^5*b^2*e^101
- 18018*sqrt(x*e + d)*a^5*b^2*d*e^101 + 3003*sqrt(x*e + d)*a^6*b*e^102)*e^(
-104) + 2*(b^7*d^7 - 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^
3 + 35*a^4*b^3*d^3*e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)*e^(-
8)/sqrt(x*e + d)
```

maple [B] time = 0.05, size = 498, normalized size = 2.42

$$-2\left(-33b^7x^7e^7 - 273a\,b^6e^7x^6 + 42b^7d\,e^6x^6 - 1001a^2b^5e^7x^5 + 364a\,b^6d\,e^6x^5 - 56b^7d^2e^5x^5 - 2145a^3b^4e^7x^4 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x)
```

```
[Out] -2/429*(-33*b^7*e^7*x^7-273*a*b^6*e^7*x^6+42*b^7*d*e^6*x^6-1001*a^2*b^5*e^7
*x^5+364*a*b^6*d*e^6*x^5-56*b^7*d^2*e^5*x^5-2145*a^3*b^4*e^7*x^4+1430*a^2*b
^5*d*e^6*x^4-520*a*b^6*d^2*e^5*x^4+80*b^7*d^3*e^4*x^4-3003*a^4*b^3*e^7*x^3+
3432*a^3*b^4*d*e^6*x^3-2288*a^2*b^5*d^2*e^5*x^3+832*a*b^6*d^3*e^4*x^3-128*b
^7*d^4*e^3*x^3-3003*a^5*b^2*e^7*x^2+6006*a^4*b^3*d*e^6*x^2-6864*a^3*b^4*d^2
*e^5*x^2+4576*a^2*b^5*d^3*e^4*x^2-1664*a*b^6*d^4*e^3*x^2+256*b^7*d^5*e^2*x^
2-3003*a^6*b*e^7*x+12012*a^5*b^2*d*e^6*x-24024*a^4*b^3*d^2*e^5*x+27456*a^3*
b^4*d^3*e^4*x-18304*a^2*b^5*d^4*e^3*x+6656*a*b^6*d^5*e^2*x-1024*b^7*d^6*e*x
+429*a^7*e^7-6006*a^6*b*d*e^6+24024*a^5*b^2*d^2*e^5-48048*a^4*b^3*d^3*e^4+5
4912*a^3*b^4*d^4*e^3-36608*a^2*b^5*d^5*e^2+13312*a*b^6*d^6*e-2048*b^7*d^7)/
(e*x+d)^(1/2)/e^8
```

maxima [**B**] time = 0.50, size = 464, normalized size = 2.25

$$2\left(\frac{33\,(ex+d)^{\frac{13}{2}}b^7-273\,(b^7d-ab^6e)(ex+d)^{\frac{11}{2}}+1001\,(b^7d^2-2\,ab^6de+a^2b^5e^2)(ex+d)^{\frac{9}{2}}-2145\,(b^7d^3-3\,ab^6d^2e+3\,a^2b^5de^2-a^3b^4e^3)(ex+d)^{\frac{7}{2}}+3003\,(b^7d^4-4\,a}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(3/2),x, algorithm="maxim
a")
```

```
[Out] 2/429*((33*(e*x + d)^(13/2)*b^7 - 273*(b^7*d - a*b^6*e)*(e*x + d)^(11/2) +
1001*(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(9/2) - 2145*(b^7*d^3
- 3*a*b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(7/2) + 3003*(b^
7*d^4 - 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*
(e*x + d)^(5/2) - 3003*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a
^3*b^4*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^(3/2) + 3003*(b^7
*d^6 - 6*a*b^6*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3
*d^2*e^4 - 6*a^5*b^2*d*e^5 + a^6*b*e^6)*sqrt(e*x + d))/e^7 + 429*(b^7*d^7 -
 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*e
^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7)/(sqrt(e*x + d)*e^7))/e
```

mupad [**B**] time = 2.07, size = 270, normalized size = 1.31

$$\frac{2\,b^7\,(d+e\,x)^{13/2}}{13\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,(d+e\,x)^{11/2}}{11\,e^8}-\frac{2\,a^7\,e^7-14\,a^6\,b\,d\,e^6+42\,a^5\,b^2\,d^2\,e^5-70\,a^4\,b^3\,d^3\,e^4+70\,a^3\,b^4}{e^8\,\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(3/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(13/2))/(13*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(11/
2))/(11*e^8) - (2*a^7*e^7 - 2*b^7*d^7 - 42*a^2*b^5*d^5*e^2 + 70*a^3*b^4*d^4
*e^3 - 70*a^4*b^3*d^3*e^4 + 42*a^5*b^2*d^2*e^5 + 14*a*b^6*d^6*e - 14*a^6*b*
d*e^6)/(e^8*(d + e*x)^(1/2)) + (14*b^2*(a*e - b*d)^5*(d + e*x)^(3/2))/e^8 +
 (14*b^3*(a*e - b*d)^4*(d + e*x)^(5/2))/e^8 + (10*b^4*(a*e - b*d)^3*(d + e*
x)^(7/2))/e^8 + (14*b^5*(a*e - b*d)^2*(d + e*x)^(9/2))/(3*e^8) + (14*b*(a*e
 - b*d)^6*(d + e*x)^(1/2))/e^8
```

sympy [**B**] time = 99.36, size = 439, normalized size = 2.13

$$\frac{2b^7\,(d+ex)^{\frac{13}{2}}}{13e^8}+\frac{(d+ex)^{\frac{11}{2}}\left(14ab^6e-14b^7d\right)}{11e^8}+\frac{(d+ex)^{\frac{9}{2}}\left(42a^2b^5e^2-84ab^6de+42b^7d^2\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(70a^3b^4e^3-21\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(3/2),x)
```

```
[Out] 2*b**7*(d + e*x)**(13/2)/(13*e**8) + (d + e*x)**(11/2)*(14*a*b**6*e - 14*b*
*7*d)/(11*e**8) + (d + e*x)**(9/2)*(42*a**2*b**5*e**2 - 84*a*b**6*d*e + 42*
b**7*d**2)/(9*e**8) + (d + e*x)**(7/2)*(70*a**3*b**4*e**3 - 210*a**2*b**5*d
*e**2 + 210*a*b**6*d**2*e - 70*b**7*d**3)/(7*e**8) + (d + e*x)**(5/2)*(70*a
**4*b**3*e**4 - 280*a**3*b**4*d*e**3 + 420*a**2*b**5*d**2*e**2 - 280*a*b**6
*d**3*e + 70*b**7*d**4)/(5*e**8) + (d + e*x)**(3/2)*(42*a**5*b**2*e**5 - 21
0*a**4*b**3*d*e**4 + 420*a**3*b**4*d**2*e**3 - 420*a**2*b**5*d**3*e**2 + 21
0*a*b**6*d**4*e - 42*b**7*d**5)/(3*e**8) + sqrt(d + e*x)*(14*a**6*b*e**6 -
84*a**5*b**2*d*e**5 + 210*a**4*b**3*d**2*e**4 - 280*a**3*b**4*d**3*e**3 + 2
10*a**2*b**5*d**4*e**2 - 84*a*b**6*d**5*e + 14*b**7*d**6)/e**8 - 2*(a*e - b
*d)**7/(e**8*sqrt(d + e*x))
```

3.2064 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{14b^6(d+ex)^{9/2}(bd-ae)}{9e^8}+\frac{6b^5(d+ex)^{7/2}(bd-ae)^2}{e^8}-\frac{14b^4(d+ex)^{5/2}(bd-ae)^3}{e^8}+\frac{70b^3(d+ex)^{3/2}(bd-ae)^4}{3e^8}-42b^2$$

```
[Out] 2/3*(-a*e+b*d)^7/e^8/(e*x+d)^(3/2)+70/3*b^3*(-a*e+b*d)^4*(e*x+d)^(3/2)/e^8-
14*b^4*(-a*e+b*d)^3*(e*x+d)^(5/2)/e^8+6*b^5*(-a*e+b*d)^2*(e*x+d)^(7/2)/e^8-
14/9*b^6*(-a*e+b*d)*(e*x+d)^(9/2)/e^8+2/11*b^7*(e*x+d)^(11/2)/e^8-14*b*(-a*
e+b*d)^6/e^8/(e*x+d)^(1/2)-42*b^2*(-a*e+b*d)^5*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.08, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{14b^6(d+ex)^{9/2}(bd-ae)}{9e^8}+\frac{6b^5(d+ex)^{7/2}(bd-ae)^2}{e^8}-\frac{14b^4(d+ex)^{5/2}(bd-ae)^3}{e^8}+\frac{70b^3(d+ex)^{3/2}(bd-ae)^4}{3e^8}-42b^2$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(3*e^8*(d + e*x)^(3/2)) - (14*b*(b*d - a*e)^6)/(e^8*Sqrt[
d + e*x]) - (42*b^2*(b*d - a*e)^5*Sqrt[d + e*x])/e^8 + (70*b^3*(b*d - a*e)^
4*(d + e*x)^(3/2))/(3*e^8) - (14*b^4*(b*d - a*e)^3*(d + e*x)^(5/2))/e^8 + (
6*b^5*(b*d - a*e)^2*(d + e*x)^(7/2))/e^8 - (14*b^6*(b*d - a*e)*(d + e*x)^(9
/2))/(9*e^8) + (2*b^7*(d + e*x)^(11/2))/(11*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{5/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{5/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^7}{e^7(d+ex)^{5/2}}+\frac{7b(bd-ae)^6}{e^7(d+ex)^{3/2}}-\frac{21b^2(bd-ae)^5}{e^7\sqrt{d+ex}}+\frac{35b^3(bd-ae)^4\sqrt{d+e}}{e^7}\right.\\ &= \frac{2(bd-ae)^7}{3e^8(d+ex)^{3/2}}-\frac{14b(bd-ae)^6}{e^8\sqrt{d+ex}}-\frac{42b^2(bd-ae)^5\sqrt{d+ex}}{e^8}+\frac{70b^3(bd-ae)^4(}{3e^8}\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.80

$$\frac{2\left(-77b^6(d+ex)^6(bd-ae)+297b^5(d+ex)^5(bd-ae)^2-693b^4(d+ex)^4(bd-ae)^3+1155b^3(d+ex)^3(bd-ae)^4-\right.}{99e^8(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(5/2),x]
```

```
[Out] (2*(33*(b*d - a*e)^7 - 693*b*(b*d - a*e)^6*(d + e*x) - 2079*b^2*(b*d - a*e)
^5*(d + e*x)^2 + 1155*b^3*(b*d - a*e)^4*(d + e*x)^3 - 693*b^4*(b*d - a*e)^3
*(d + e*x)^4 + 297*b^5*(b*d - a*e)^2*(d + e*x)^5 - 77*b^6*(b*d - a*e)*(d +
e*x)^6 + 9*b^7*(d + e*x)^7))/(99*e^8*(d + e*x)^(3/2))
```

fricas [B] time = 0.88, size = 484, normalized size = 2.33

$$2\Big(9\,b^7e^7x^7 - 2048\,b^7d^7 + 11264\,ab^6d^6e - 25344\,a^2b^5d^5e^2 + 29568\,a^3b^4d^4e^3 - 18480\,a^4b^3d^3e^4 + 5544\,a^5b^2d^2e^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="frica
s")
```

```
[Out] 2/99*(9*b^7*e^7*x^7 - 2048*b^7*d^7 + 11264*a*b^6*d^6*e - 25344*a^2*b^5*d^5*
e^2 + 29568*a^3*b^4*d^4*e^3 - 18480*a^4*b^3*d^3*e^4 + 5544*a^5*b^2*d^2*e^5
- 462*a^6*b*d*e^6 - 33*a^7*e^7 - 7*(2*b^7*d*e^6 - 11*a*b^6*e^7)*x^6 + 3*(8*
b^7*d^2*e^5 - 44*a*b^6*d*e^6 + 99*a^2*b^5*e^7)*x^5 - 3*(16*b^7*d^3*e^4 - 88
*a*b^6*d^2*e^5 + 198*a^2*b^5*d*e^6 - 231*a^3*b^4*e^7)*x^4 + (128*b^7*d^4*e^
3 - 704*a*b^6*d^3*e^4 + 1584*a^2*b^5*d^2*e^5 - 1848*a^3*b^4*d*e^6 + 1155*a^
4*b^3*e^7)*x^3 - 3*(256*b^7*d^5*e^2 - 1408*a*b^6*d^4*e^3 + 3168*a^2*b^5*d^3
*e^4 - 3696*a^3*b^4*d^2*e^5 + 2310*a^4*b^3*d*e^6 - 693*a^5*b^2*e^7)*x^2 - 3
*(1024*b^7*d^6*e - 5632*a*b^6*d^5*e^2 + 12672*a^2*b^5*d^4*e^3 - 14784*a^3*b
^4*d^3*e^4 + 9240*a^4*b^3*d^2*e^5 - 2772*a^5*b^2*d*e^6 + 231*a^6*b*e^7)*x)*
sqrt(e*x + d)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [B] time = 0.34, size = 609, normalized size = 2.93

$$\frac{2}{99}\Big(9\,(xe+d)^{\frac{11}{2}}b^7e^{80} - 77\,(xe+d)^{\frac{9}{2}}b^7de^{80} + 297\,(xe+d)^{\frac{7}{2}}b^7d^2e^{80} - 693\,(xe+d)^{\frac{5}{2}}b^7d^3e^{80} + 1155\,(xe+d)^{\frac{3}{2}}b^7d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="giac"
)
```

```
[Out] 2/99*(9*(x*e + d)^(11/2)*b^7*e^80 - 77*(x*e + d)^(9/2)*b^7*d*e^80 + 297*(x*
e + d)^(7/2)*b^7*d^2*e^80 - 693*(x*e + d)^(5/2)*b^7*d^3*e^80 + 1155*(x*e +
d)^(3/2)*b^7*d^4*e^80 - 2079*sqrt(x*e + d)*b^7*d^5*e^80 + 77*(x*e + d)^(9/2
)*a*b^6*e^81 - 594*(x*e + d)^(7/2)*a*b^6*d*e^81 + 2079*(x*e + d)^(5/2)*a*b^
6*d^2*e^81 - 4620*(x*e + d)^(3/2)*a*b^6*d^3*e^81 + 10395*sqrt(x*e + d)*a*b^
6*d^4*e^81 + 297*(x*e + d)^(7/2)*a^2*b^5*e^82 - 2079*(x*e + d)^(5/2)*a^2*b^
5*d*e^82 + 6930*(x*e + d)^(3/2)*a^2*b^5*d^2*e^82 - 20790*sqrt(x*e + d)*a^2*
b^5*d^3*e^82 + 693*(x*e + d)^(5/2)*a^3*b^4*e^83 - 4620*(x*e + d)^(3/2)*a^3*
b^4*d*e^83 + 20790*sqrt(x*e + d)*a^3*b^4*d^2*e^83 + 1155*(x*e + d)^(3/2)*a^
4*b^3*e^84 - 10395*sqrt(x*e + d)*a^4*b^3*d*e^84 + 2079*sqrt(x*e + d)*a^5*b^
2*e^85)*e^(-88) - 2/3*(21*(x*e + d)*b^7*d^6 - b^7*d^7 - 126*(x*e + d)*a*b^6
*d^5*e + 7*a*b^6*d^6*e + 315*(x*e + d)*a^2*b^5*d^4*e^2 - 21*a^2*b^5*d^5*e^2
 - 420*(x*e + d)*a^3*b^4*d^3*e^3 + 35*a^3*b^4*d^4*e^3 + 315*(x*e + d)*a^4*b
^3*d^2*e^4 - 35*a^4*b^3*d^3*e^4 - 126*(x*e + d)*a^5*b^2*d*e^5 + 21*a^5*b^2*
d^2*e^5 + 21*(x*e + d)*a^6*b*e^6 - 7*a^6*b*d*e^6 + a^7*e^7)*e^(-8)/(x*e + d
)^(3/2)
```

maple [B] time = 0.05, size = 498, normalized size = 2.39

$$-2\Big(-9b^7x^7e^7 - 77a\,b^6e^7x^6 + 14b^7d\,e^6x^6 - 297a^2b^5e^7x^5 + 132a\,b^6d\,e^6x^5 - 24b^7d^2e^5x^5 - 693a^3b^4e^7x^4 + 594a^2b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x)
```

```
[Out] -2/99*(-9*b^7*e^7*x^7-77*a*b^6*e^7*x^6+14*b^7*d*e^6*x^6-297*a^2*b^5*e^7*x^5
+132*a*b^6*d*e^6*x^5-24*b^7*d^2*e^5*x^5-693*a^3*b^4*e^7*x^4+594*a^2*b^5*d*e
^6*x^4-264*a*b^6*d^2*e^5*x^4+48*b^7*d^3*e^4*x^4-1155*a^4*b^3*e^7*x^3+1848*a
^3*b^4*d*e^6*x^3-1584*a^2*b^5*d^2*e^5*x^3+704*a*b^6*d^3*e^4*x^3-128*b^7*d^4
*e^3*x^3-2079*a^5*b^2*e^7*x^2+6930*a^4*b^3*d*e^6*x^2-11088*a^3*b^4*d^2*e^5*
x^2+9504*a^2*b^5*d^3*e^4*x^2-4224*a*b^6*d^4*e^3*x^2+768*b^7*d^5*e^2*x^2+693
*a^6*b*e^7*x-8316*a^5*b^2*d*e^6*x+27720*a^4*b^3*d^2*e^5*x-44352*a^3*b^4*d^3
*e^4*x+38016*a^2*b^5*d^4*e^3*x-16896*a*b^6*d^5*e^2*x+3072*b^7*d^6*e*x+33*a^
7*e^7+462*a^6*b*d*e^6-5544*a^5*b^2*d^2*e^5+18480*a^4*b^3*d^3*e^4-29568*a^3*
b^4*d^4*e^3+25344*a^2*b^5*d^5*e^2-11264*a*b^6*d^6*e+2048*b^7*d^7)/(e*x+d)^(
3/2)/e^8
```

maxima [**B**] time = 0.58, size = 462, normalized size = 2.22

$$2\Bigg(\frac{9\,(ex+d)^{\frac{11}{2}}\,b^7-77\,\big(b^7d-ab^6e\big)(ex+d)^{\frac{9}{2}}+297\,\big(b^7d^2-2\,ab^6de+a^2b^5e^2\big)(ex+d)^{\frac{7}{2}}-693\,\big(b^7d^3-3\,ab^6d^2e+3\,a^2b^5de^2-a^3b^4e^3\big)(ex+d)^{\frac{5}{2}}+1155\,\big(b^7d^4-4\,ab^6d^3e-}{e^7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(5/2),x, algorithm="maxim
a")
```

```
[Out] 2/99*((9*(e*x + d)^(11/2)*b^7 - 77*(b^7*d - a*b^6*e)*(e*x + d)^(9/2) + 297*
(b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(7/2) - 693*(b^7*d^3 - 3*a*
b^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(5/2) + 1155*(b^7*d^4
- 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*(e*x +
 d)^(3/2) - 2079*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4
*d^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*sqrt(e*x + d))/e^7 + 33*(b^7*d^7
- 7*a*b^6*d^6*e + 21*a^2*b^5*d^5*e^2 - 35*a^3*b^4*d^4*e^3 + 35*a^4*b^3*d^3*
e^4 - 21*a^5*b^2*d^2*e^5 + 7*a^6*b*d*e^6 - a^7*e^7 - 21*(b^7*d^6 - 6*a*b^6*
d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a^
5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d))/((e*x + d)^(3/2)*e^7))/e
```

mupad [**B**] time = 2.05, size = 335, normalized size = 1.61

$$\frac{2\,b^7\,{(d+e\,x)}^{11/2}}{11\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{(d+e\,x)}^{9/2}}{9\,e^8}-\frac{(d+e\,x)\,\big(14\,a^6\,b\,e^6-84\,a^5\,b^2\,d\,e^5+210\,a^4\,b^3\,d^2\,e^4-280\,a^3\,b^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(5/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(11/2))/(11*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(9/2
))/(9*e^8) - ((d + e*x)*(14*b^7*d^6 + 14*a^6*b*e^6 - 84*a^5*b^2*d*e^5 + 210
*a^2*b^5*d^4*e^2 - 280*a^3*b^4*d^3*e^3 + 210*a^4*b^3*d^2*e^4 - 84*a*b^6*d^5
*e) + (2*a^7*e^7)/3 - (2*b^7*d^7)/3 - 14*a^2*b^5*d^5*e^2 + (70*a^3*b^4*d^4*
e^3)/3 - (70*a^4*b^3*d^3*e^4)/3 + 14*a^5*b^2*d^2*e^5 + (14*a*b^6*d^6*e)/3 -
 (14*a^6*b*d*e^6)/3)/(e^8*(d + e*x)^(3/2)) + (42*b^2*(a*e - b*d)^5*(d + e*x
)^(1/2))/e^8 + (70*b^3*(a*e - b*d)^4*(d + e*x)^(3/2))/(3*e^8) + (14*b^4*(a*
e - b*d)^3*(d + e*x)^(5/2))/e^8 + (6*b^5*(a*e - b*d)^2*(d + e*x)^(7/2))/e^8
```

sympy [**A**] time = 113.69, size = 360, normalized size = 1.73

$$\frac{2b^7\,(d+ex)^{\frac{11}{2}}}{11e^8}-\frac{14b\,(ae-bd)^6}{e^8\sqrt{d+ex}}+\frac{(d+ex)^{\frac{9}{2}}\left(14ab^6e-14b^7d\right)}{9e^8}+\frac{(d+ex)^{\frac{7}{2}}\left(42a^2b^5e^2-84ab^6de+42b^7d^2\right)}{7e^8}+\frac{(d+ex)^{\frac{5}{2}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(5/2),x)
```

```
[Out] 2*b**7*(d + e*x)**(11/2)/(11*e**8) - 14*b*(a*e - b*d)**6/(e**8*sqrt(d + e*x
)) + (d + e*x)**(9/2)*(14*a*b**6*e - 14*b**7*d)/(9*e**8) + (d + e*x)**(7/2)
*(42*a**2*b**5*e**2 - 84*a*b**6*d*e + 42*b**7*d**2)/(7*e**8) + (d + e*x)**(
5/2)*(70*a**3*b**4*e**3 - 210*a**2*b**5*d*e**2 + 210*a*b**6*d**2*e - 70*b**
7*d**3)/(5*e**8) + (d + e*x)**(3/2)*(70*a**4*b**3*e**4 - 280*a**3*b**4*d*e*
*3 + 420*a**2*b**5*d**2*e**2 - 280*a*b**6*d**3*e + 70*b**7*d**4)/(3*e**8) +
 sqrt(d + e*x)*(42*a**5*b**2*e**5 - 210*a**4*b**3*d*e**4 + 420*a**3*b**4*d*
*2*e**3 - 420*a**2*b**5*d**3*e**2 + 210*a*b**6*d**4*e - 42*b**7*d**5)/e**8
- 2*(a*e - b*d)**7/(3*e**8*(d + e*x)**(3/2))
```

3.2065 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2b^6(d+ex)^{7/2}(bd-ae)}{e^8}+\frac{42b^5(d+ex)^{5/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{3/2}(bd-ae)^3}{3e^8}+\frac{70b^3\sqrt{d+ex}\,(bd-ae)^4}{e^8}+\frac{42b^2(b}{e^8\sqrt{d}}$$

```
[Out] 2/5*(-a*e+b*d)^7/e^8/(e*x+d)^(5/2)-14/3*b*(-a*e+b*d)^6/e^8/(e*x+d)^(3/2)-70
/3*b^4*(-a*e+b*d)^3*(e*x+d)^(3/2)/e^8+42/5*b^5*(-a*e+b*d)^2*(e*x+d)^(5/2)/e
^8-2*b^6*(-a*e+b*d)*(e*x+d)^(7/2)/e^8+2/9*b^7*(e*x+d)^(9/2)/e^8+42*b^2*(-a*
e+b*d)^5/e^8/(e*x+d)^(1/2)+70*b^3*(-a*e+b*d)^4*(e*x+d)^(1/2)/e^8
```

Rubi [A] time = 0.08, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.061$, Rules used = $\{27, 43\}$

$$-\frac{2b^6(d+ex)^{7/2}(bd-ae)}{e^8}+\frac{42b^5(d+ex)^{5/2}(bd-ae)^2}{5e^8}-\frac{70b^4(d+ex)^{3/2}(bd-ae)^3}{3e^8}+\frac{70b^3\sqrt{d+ex}\,(bd-ae)^4}{e^8}+\frac{42b^2(b}{e^8\sqrt{d}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(b*d - a*e)^7)/(5*e^8*(d + e*x)^(5/2)) - (14*b*(b*d - a*e)^6)/(3*e^8*(d
+ e*x)^(3/2)) + (42*b^2*(b*d - a*e)^5)/(e^8*Sqrt[d + e*x]) + (70*b^3*(b*d -
 a*e)^4*Sqrt[d + e*x])/e^8 - (70*b^4*(b*d - a*e)^3*(d + e*x)^(3/2))/(3*e^8)
 + (42*b^5*(b*d - a*e)^2*(d + e*x)^(5/2))/(5*e^8) - (2*b^6*(b*d - a*e)*(d +
 e*x)^(7/2))/e^8 + (2*b^7*(d + e*x)^(9/2))/(9*e^8)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^3}{(d+ex)^{7/2}}\,dx &= \int \frac{(a+bx)^7}{(d+ex)^{7/2}}\,dx\\ &= \int \left(\frac{(-bd+ae)^7}{e^7(d+ex)^{7/2}}+\frac{7b(bd-ae)^6}{e^7(d+ex)^{5/2}}-\frac{21b^2(bd-ae)^5}{e^7(d+ex)^{3/2}}+\frac{35b^3(bd-ae)^4}{e^7\sqrt{d+ex}}-35b^4\right.\\ &= \frac{2(bd-ae)^7}{5e^8(d+ex)^{5/2}}-\frac{14b(bd-ae)^6}{3e^8(d+ex)^{3/2}}+\frac{42b^2(bd-ae)^5}{e^8\sqrt{d+ex}}+\frac{70b^3(bd-ae)^4\sqrt{d+ex}}{e^8}\end{aligned}$$

Mathematica [A] time = 0.10, size = 167, normalized size = 0.80

$$\frac{2\left(-45b^6(d+ex)^6(bd-ae)+189b^5(d+ex)^5(bd-ae)^2-525b^4(d+ex)^4(bd-ae)^3+1575b^3(d+ex)^3(bd-ae)^4+\right.}{45e^8(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^3)/(d + e*x)^(7/2),x]
```

```
[Out] (2*(9*(b*d - a*e)^7 - 105*b*(b*d - a*e)^6*(d + e*x) + 945*b^2*(b*d - a*e)^5
*(d + e*x)^2 + 1575*b^3*(b*d - a*e)^4*(d + e*x)^3 - 525*b^4*(b*d - a*e)^3*(
d + e*x)^4 + 189*b^5*(b*d - a*e)^2*(d + e*x)^5 - 45*b^6*(b*d - a*e)*(d + e*
x)^6 + 5*b^7*(d + e*x)^7))/(45*e^8*(d + e*x)^(5/2))
```

fricas [B] time = 1.08, size = 496, normalized size = 2.36

$$2 (5\,b^{7}e^{7}x^{7} + 2048\,b^{7}d^{7} - 9216\,ab^{6}d^{6}e + 16128\,a^{2}b^{5}d^{5}e^{2} - 13440\,a^{3}b^{4}d^{4}e^{3} + 5040\,a^{4}b^{3}d^{3}e^{4} - 504\,a^{5}b^{2}d^{2}e^{5} - 4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="frica
s")
```

```
[Out] 2/45*(5*b^7*e^7*x^7 + 2048*b^7*d^7 - 9216*a*b^6*d^6*e + 16128*a^2*b^5*d^5*e
^2 - 13440*a^3*b^4*d^4*e^3 + 5040*a^4*b^3*d^3*e^4 - 504*a^5*b^2*d^2*e^5 - 4
2*a^6*b*d*e^6 - 9*a^7*e^7 - 5*(2*b^7*d*e^6 - 9*a*b^6*e^7)*x^6 + 3*(8*b^7*d^
2*e^5 - 36*a*b^6*d*e^6 + 63*a^2*b^5*e^7)*x^5 - 5*(16*b^7*d^3*e^4 - 72*a*b^6
*d^2*e^5 + 126*a^2*b^5*d*e^6 - 105*a^3*b^4*e^7)*x^4 + 5*(128*b^7*d^4*e^3 -
576*a*b^6*d^3*e^4 + 1008*a^2*b^5*d^2*e^5 - 840*a^3*b^4*d*e^6 + 315*a^4*b^3*
e^7)*x^3 + 15*(256*b^7*d^5*e^2 - 1152*a*b^6*d^4*e^3 + 2016*a^2*b^5*d^3*e^4
- 1680*a^3*b^4*d^2*e^5 + 630*a^4*b^3*d*e^6 - 63*a^5*b^2*e^7)*x^2 + 5*(1024*
b^7*d^6*e - 4608*a*b^6*d^5*e^2 + 8064*a^2*b^5*d^4*e^3 - 6720*a^3*b^4*d^3*e^
4 + 2520*a^4*b^3*d^2*e^5 - 252*a^5*b^2*d*e^6 - 21*a^6*b*e^7)*x)*sqrt(e*x +
d)/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.23, size = 608, normalized size = 2.90

$$\frac{2}{45} (5\,(xe+d)^{\frac{9}{2}}b^{7}e^{64} - 45\,(xe+d)^{\frac{7}{2}}b^{7}de^{64} + 189\,(xe+d)^{\frac{5}{2}}b^{7}d^{2}e^{64} - 525\,(xe+d)^{\frac{3}{2}}b^{7}d^{3}e^{64} + 1575\,\sqrt{xe+d}\,b^{7}d^{4}e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="giac"
)
```

```
[Out] 2/45*(5*(x*e + d)^(9/2)*b^7*e^64 - 45*(x*e + d)^(7/2)*b^7*d*e^64 + 189*(x*e
 + d)^(5/2)*b^7*d^2*e^64 - 525*(x*e + d)^(3/2)*b^7*d^3*e^64 + 1575*sqrt(x*e
 + d)*b^7*d^4*e^64 + 45*(x*e + d)^(7/2)*a*b^6*e^65 - 378*(x*e + d)^(5/2)*a*
b^6*d*e^65 + 1575*(x*e + d)^(3/2)*a*b^6*d^2*e^65 - 6300*sqrt(x*e + d)*a*b^6
*d^3*e^65 + 189*(x*e + d)^(5/2)*a^2*b^5*e^66 - 1575*(x*e + d)^(3/2)*a^2*b^5
*d*e^66 + 9450*sqrt(x*e + d)*a^2*b^5*d^2*e^66 + 525*(x*e + d)^(3/2)*a^3*b^4
*e^67 - 6300*sqrt(x*e + d)*a^3*b^4*d*e^67 + 1575*sqrt(x*e + d)*a^4*b^3*e^68
)*e^(-72) + 2/15*(315*(x*e + d)^2*b^7*d^5 - 35*(x*e + d)*b^7*d^6 + 3*b^7*d^
7 - 1575*(x*e + d)^2*a*b^6*d^4*e + 210*(x*e + d)*a*b^6*d^5*e - 21*a*b^6*d^6
*e + 3150*(x*e + d)^2*a^2*b^5*d^3*e^2 - 525*(x*e + d)*a^2*b^5*d^4*e^2 + 63*
a^2*b^5*d^5*e^2 - 3150*(x*e + d)^2*a^3*b^4*d^2*e^3 + 700*(x*e + d)*a^3*b^4*
d^3*e^3 - 105*a^3*b^4*d^4*e^3 + 1575*(x*e + d)^2*a^4*b^3*d*e^4 - 525*(x*e +
 d)*a^4*b^3*d^2*e^4 + 105*a^4*b^3*d^3*e^4 - 315*(x*e + d)^2*a^5*b^2*e^5 + 2
10*(x*e + d)*a^5*b^2*d*e^5 - 63*a^5*b^2*d^2*e^5 - 35*(x*e + d)*a^6*b*e^6 +
21*a^6*b*d*e^6 - 3*a^7*e^7)*e^(-8)/(x*e + d)^(5/2)
```

maple [B] time = 0.05, size = 498, normalized size = 2.37

$$-2 (-5b^{7}x^{7}e^{7} - 45a\,b^{6}e^{7}x^{6} + 10b^{7}d\,e^{6}x^{6} - 189a^{2}b^{5}e^{7}x^{5} + 108a\,b^{6}d\,e^{6}x^{5} - 24b^{7}d^{2}e^{5}x^{5} - 525a^{3}b^{4}e^{7}x^{4} + 630a^{2}b^{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x)
```

```
[Out] -2/45*(-5*b^7*e^7*x^7-45*a*b^6*e^7*x^6+10*b^7*d*e^6*x^6-189*a^2*b^5*e^7*x^5
+108*a*b^6*d*e^6*x^5-24*b^7*d^2*e^5*x^5-525*a^3*b^4*e^7*x^4+630*a^2*b^5*d*e
^6*x^4-360*a*b^6*d^2*e^5*x^4+80*b^7*d^3*e^4*x^4-1575*a^4*b^3*e^7*x^3+4200*a
^3*b^4*d*e^6*x^3-5040*a^2*b^5*d^2*e^5*x^3+2880*a*b^6*d^3*e^4*x^3-640*b^7*d^
4*e^3*x^3+945*a^5*b^2*e^7*x^2-9450*a^4*b^3*d*e^6*x^2+25200*a^3*b^4*d^2*e^5*
x^2-30240*a^2*b^5*d^3*e^4*x^2+17280*a*b^6*d^4*e^3*x^2-3840*b^7*d^5*e^2*x^2+
105*a^6*b*e^7*x+1260*a^5*b^2*d*e^6*x-12600*a^4*b^3*d^2*e^5*x+33600*a^3*b^4*
d^3*e^4*x-40320*a^2*b^5*d^4*e^3*x+23040*a*b^6*d^5*e^2*x-5120*b^7*d^6*e*x+9*
a^7*e^7+42*a^6*b*d*e^6+504*a^5*b^2*d^2*e^5-5040*a^4*b^3*d^3*e^4+13440*a^3*b
^4*d^4*e^3-16128*a^2*b^5*d^5*e^2+9216*a*b^6*d^6*e-2048*b^7*d^7)/(e*x+d)^(5/
2)/e^8
```

maxima [**B**] time = 0.55, size = 463, normalized size = 2.20

$$2\left(\frac{5\,(ex+d)^{\frac{9}{2}}b^7-45\left(b^7d-ab^6e\right)(ex+d)^{\frac{7}{2}}+189\left(b^7d^2-2\,ab^6de+a^2b^5e^2\right)(ex+d)^{\frac{5}{2}}-525\left(b^7d^3-3\,ab^6d^2e+3\,a^2b^5de^2-a^3b^4e^3\right)(ex+d)^{\frac{3}{2}}+1575\left(b^7d^4-4\,ab^6d^3e+\right.}{e^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(7/2),x, algorithm="maxim
a")
```

```
[Out] 2/45*((5*(e*x + d)^(9/2)*b^7 - 45*(b^7*d - a*b^6*e)*(e*x + d)^(7/2) + 189*(
b^7*d^2 - 2*a*b^6*d*e + a^2*b^5*e^2)*(e*x + d)^(5/2) - 525*(b^7*d^3 - 3*a*b
^6*d^2*e + 3*a^2*b^5*d*e^2 - a^3*b^4*e^3)*(e*x + d)^(3/2) + 1575*(b^7*d^4 -
 4*a*b^6*d^3*e + 6*a^2*b^5*d^2*e^2 - 4*a^3*b^4*d*e^3 + a^4*b^3*e^4)*sqrt(e*
x + d))/e^7 + 3*(3*b^7*d^7 - 21*a*b^6*d^6*e + 63*a^2*b^5*d^5*e^2 - 105*a^3*
b^4*d^4*e^3 + 105*a^4*b^3*d^3*e^4 - 63*a^5*b^2*d^2*e^5 + 21*a^6*b*d*e^6 - 3
*a^7*e^7 + 315*(b^7*d^5 - 5*a*b^6*d^4*e + 10*a^2*b^5*d^3*e^2 - 10*a^3*b^4*d
^2*e^3 + 5*a^4*b^3*d*e^4 - a^5*b^2*e^5)*(e*x + d)^2 - 35*(b^7*d^6 - 6*a*b^6
*d^5*e + 15*a^2*b^5*d^4*e^2 - 20*a^3*b^4*d^3*e^3 + 15*a^4*b^3*d^2*e^4 - 6*a
^5*b^2*d*e^5 + a^6*b*e^6)*(e*x + d))/((e*x + d)^(5/2)*e^7))/e
```

mupad [**B**] time = 0.08, size = 388, normalized size = 1.85

$$\frac{2\,b^7\,{\left(d+e\,x\right)}^{9/2}}{9\,e^8}-\frac{\left(14\,b^7\,d-14\,a\,b^6\,e\right)\,{\left(d+e\,x\right)}^{7/2}}{7\,e^8}+\frac{{\left(d+e\,x\right)}^2\,\left(-42\,a^5\,b^2\,e^5+210\,a^4\,b^3\,d\,e^4-420\,a^3\,b^4\,d^2\,e^3+420\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3)/(d + e*x)^(7/2),x)
```

```
[Out] (2*b^7*(d + e*x)^(9/2))/(9*e^8) - ((14*b^7*d - 14*a*b^6*e)*(d + e*x)^(7/2))
/(7*e^8) + ((d + e*x)^2*(42*b^7*d^5 - 42*a^5*b^2*e^5 + 210*a^4*b^3*d*e^4 +
420*a^2*b^5*d^3*e^2 - 420*a^3*b^4*d^2*e^3 - 210*a*b^6*d^4*e) - (d + e*x)*((
14*b^7*d^6)/3 + (14*a^6*b*e^6)/3 - 28*a^5*b^2*d*e^5 + 70*a^2*b^5*d^4*e^2 -
(280*a^3*b^4*d^3*e^3)/3 + 70*a^4*b^3*d^2*e^4 - 28*a*b^6*d^5*e) - (2*a^7*e^7
)/5 + (2*b^7*d^7)/5 + (42*a^2*b^5*d^5*e^2)/5 - 14*a^3*b^4*d^4*e^3 + 14*a^4*
b^3*d^3*e^4 - (42*a^5*b^2*d^2*e^5)/5 - (14*a*b^6*d^6*e)/5 + (14*a^6*b*d*e^6
)/5)/(e^8*(d + e*x)^(5/2)) + (70*b^3*(a*e - b*d)^4*(d + e*x)^(1/2))/e^8 + (
70*b^4*(a*e - b*d)^3*(d + e*x)^(3/2))/(3*e^8) + (42*b^5*(a*e - b*d)^2*(d +
e*x)^(5/2))/(5*e^8)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.2066 $\int \frac{(a+bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=138

$$-\frac{2(bd-ae)^{7/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)^3}{b^4}+\frac{2(d+ex)^{3/2}(bd-ae)^2}{3b^3}+\frac{2(d+ex)^{5/2}(bd-ae)}{5b^2}+\frac{2(d+ex)^{7}}{7b}$$

```
[Out] 2/3*(-a*e+b*d)^2*(e*x+d)^(3/2)/b^3+2/5*(-a*e+b*d)*(e*x+d)^(5/2)/b^2+2/7*(e*
x+d)^(7/2)/b-2*(-a*e+b*d)^(7/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1
/2))/b^(9/2)+2*(-a*e+b*d)^3*(e*x+d)^(1/2)/b^4
```

Rubi [A] time = 0.12, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 50, 63, 208\}$

$$\frac{2\sqrt{d+ex}\,(bd-ae)^3}{b^4}+\frac{2(d+ex)^{3/2}(bd-ae)^2}{3b^3}+\frac{2(d+ex)^{5/2}(bd-ae)}{5b^2}-\frac{2(bd-ae)^{7/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}}+\frac{2(d+ex)^{7/2}}{7b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)^3*Sqrt[d + e*x])/b^4 + (2*(b*d - a*e)^2*(d + e*x)^(3/2))/(3*
b^3) + (2*(b*d - a*e)*(d + e*x)^(5/2))/(5*b^2) + (2*(d + e*x)^(7/2))/(7*b)
- (2*(b*d - a*e)^(7/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^
(9/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{7/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^{7/2}}{a+bx}\,dx \\
&= \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{b} \\
&= \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)^2\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{b^2} \\
&= \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/2}}{7b} + \frac{(bd-ae)^3\int \frac{\sqrt{d+ex}}{a+bx}}{b^3} \\
&= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b} \\
&= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b} \\
&= \frac{2(bd-ae)^3\sqrt{d+ex}}{b^4} + \frac{2(bd-ae)^2(d+ex)^{3/2}}{3b^3} + \frac{2(bd-ae)(d+ex)^{5/2}}{5b^2} + \frac{2(d+ex)^{7/}}{7b}
\end{aligned}
$$

Mathematica [**A**]   time = 0.22, size = 132, normalized size = 0.96

$$
\frac{2(bd-ae)\left(5(bd-ae)\left(\sqrt{b}\,\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)+3b^{5/2}(d+ex)^{5/2}\right)}{15b^{9/2}}+
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(7/2))/(7*b) + (2*(b*d - a*e)*(3*b^(5/2)*(d + e*x)^(5/2) + 5*(
b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x) - 3*(b*d - a*e)^(
3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])))/(15*b^(9/2))
```

fricas [**A**]   time = 0.88, size = 424, normalized size = 3.07

$$
\left[-\frac{105\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(15\,b^3e^3x^3+176\,b^3d^3-4\right.}{10}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/105*(105*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt((b*d
- a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))
/(b*x + a)) - 2*(15*b^3*e^3*x^3 + 176*b^3*d^3 - 406*a*b^2*d^2*e + 350*a^2*b
*d*e^2 - 105*a^3*e^3 + 3*(22*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 + (122*b^3*d^2*e
- 112*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x + d))/b^4, -2/105*(105*(b^3*d
^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-
sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (15*b^3*e^3*x^3 + 176*b
^3*d^3 - 406*a*b^2*d^2*e + 350*a^2*b*d*e^2 - 105*a^3*e^3 + 3*(22*b^3*d*e^2
- 7*a*b^2*e^3)*x^2 + (122*b^3*d^2*e - 112*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sq
rt(e*x + d))/b^4]
```

giac [B] time = 0.19, size = 264, normalized size = 1.91

$$\frac{2\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^4}+\frac{2\left(15\,(xe+d)^{\frac{7}{2}}b^6+21\,(xe+d)^{\frac{5}{2}}b^6d+35\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*a
rctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) + 2/
105*(15*(x*e + d)^(7/2)*b^6 + 21*(x*e + d)^(5/2)*b^6*d + 35*(x*e + d)^(3/2)
*b^6*d^2 + 105*sqrt(x*e + d)*b^6*d^3 - 21*(x*e + d)^(5/2)*a*b^5*e - 70*(x*e
 + d)^(3/2)*a*b^5*d*e - 315*sqrt(x*e + d)*a*b^5*d^2*e + 35*(x*e + d)^(3/2)*
a^2*b^4*e^2 + 315*sqrt(x*e + d)*a^2*b^4*d*e^2 - 105*sqrt(x*e + d)*a^3*b^3*e
^3)/b^7
```

maple [B] time = 0.06, size = 380, normalized size = 2.75

$$\frac{2a^4e^4\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^4}-\frac{8a^3d\,e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^3}+\frac{12a^2d^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b^2}-\frac{8a\,d^3e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\;b}+\frac{2d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/7*(e*x+d)^(7/2)/b-2/5/b^2*(e*x+d)^(5/2)*a*e+2/5/b*(e*x+d)^(5/2)*d+2/3/b^3
*(e*x+d)^(3/2)*a^2*e^2-4/3/b^2*(e*x+d)^(3/2)*a*d*e+2/3/b*(e*x+d)^(3/2)*d^2-
2/b^4*a^3*e^3*(e*x+d)^(1/2)+6/b^3*a^2*d*e^2*(e*x+d)^(1/2)-6/b^2*a*d^2*e*(e*
x+d)^(1/2)+2/b*d^3*(e*x+d)^(1/2)+2/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)*a^4*e^4-8/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*d*e^3+12/b^2/((a*e-b*d)*b)^(1/2)*arctan(
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d^2*e^2-8/b/((a*e-b*d)*b)^(1/2)*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^3*e+2/((a*e-b*d)*b)^(1/2)*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^4
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.06, size = 165, normalized size = 1.20

$$\frac{2\,(d+e\,x)^{7/2}}{7\,b}-\frac{2\,(a\,e-b\,d)\,(d+e\,x)^{5/2}}{5\,b^2}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,(a\,e-b\,d)^{7/2}\,\sqrt{d+e\,x}}{a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d^4}\right)\,(a\,e-b\,d)^{7/2}}{b^{9/2}}+\frac{2\,(a\,e-b\,d)^2\,(}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(7/2))/(7*b) - (2*(a*e - b*d)*(d + e*x)^(5/2))/(5*b^2) + (2*at
an((b^(1/2)*(a*e - b*d)^(7/2)*(d + e*x)^(1/2))/(a^4*e^4 + b^4*d^4 + 6*a^2*b
^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3))*(a*e - b*d)^(7/2))/b^(9/2) + (
2*(a*e - b*d)^2*(d + e*x)^(3/2))/(3*b^3) - (2*(a*e - b*d)^3*(d + e*x)^(1/2)
)/b^4
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.2067 $\int \frac{(a+bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=112

$$-\frac{2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)^2}{b^3}+\frac{2(d+ex)^{3/2}(bd-ae)}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}$$

```
[Out] 2/3*(-a*e+b*d)*(e*x+d)^(3/2)/b^2+2/5*(e*x+d)^(5/2)/b-2*(-a*e+b*d)^(5/2)*arc
tanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)+2*(-a*e+b*d)^2*(e*x+d)
^(1/2)/b^3
```

Rubi **[A]** time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 50, 63, 208\}$

$$\frac{2\sqrt{d+ex}\,(bd-ae)^2}{b^3}+\frac{2(d+ex)^{3/2}(bd-ae)}{3b^2}-\frac{2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}}+\frac{2(d+ex)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)^2*Sqrt[d + e*x])/b^3 + (2*(b*d - a*e)*(d + e*x)^(3/2))/(3*b^
2) + (2*(d + e*x)^(5/2))/(5*b) - (2*(b*d - a*e)^(5/2)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/b^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^{5/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^{5/2}}{a+bx}\,dx\\ &= \frac{2(d+ex)^{5/2}}{5b}+\frac{(bd-ae)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{b}\\ &= \frac{2(bd-ae)(d+ex)^{3/2}}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}+\frac{(bd-ae)^2\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{b^2}\\ &= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3}+\frac{2(bd-ae)(d+ex)^{3/2}}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}+\frac{(bd-ae)^3\int \frac{1}{(a+bx)\sqrt{d}}}{b^3}\\ &= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3}+\frac{2(bd-ae)(d+ex)^{3/2}}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}+\frac{\left(2(bd-ae)^3\right)\text{Subst}\big(}{}\\ &= \frac{2(bd-ae)^2\sqrt{d+ex}}{b^3}+\frac{2(bd-ae)(d+ex)^{3/2}}{3b^2}+\frac{2(d+ex)^{5/2}}{5b}-\frac{2(bd-ae)^{5/2}\tanh^{-1}}{b^{7/2}}\end{aligned}$$

Mathematica [**A**] time = 0.12, size = 105, normalized size = 0.94

$$\frac{2(bd-ae)\left(\sqrt{b}\sqrt{d+ex}\,(-3ae+4bd+bex)-3(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)\right)}{3b^{7/2}}+\frac{2(d+ex)^{5/2}}{5b}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(d + e*x)^(5/2))/(5*b) + (2*(b*d - a*e)*(Sqrt[b]*Sqrt[d + e*x]*(4*b*d -
3*a*e + b*e*x) - 3*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b
*d - a*e]]))/(3*b^(7/2))
```

fricas [**A**] time = 1.15, size = 290, normalized size = 2.59

$$\left[\frac{15\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(3\,b^2e^2x^2+23\,b^2d^2-35\,abde+15\,a^2e^2+\right.}{15\,b^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/15*(15*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt((b*d - a*e)/b)*log((b*e*x +
2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(3*b^2*
e^2*x^2 + 23*b^2*d^2 - 35*a*b*d*e + 15*a^2*e^2 + (11*b^2*d*e - 5*a*b*e^2)*x
)*sqrt(e*x + d))/b^3, -2/15*(15*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*sqrt(-(b*d
- a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (3*b^
2*e^2*x^2 + 23*b^2*d^2 - 35*a*b*d*e + 15*a^2*e^2 + (11*b^2*d*e - 5*a*b*e^2)
*x)*sqrt(e*x + d))/b^3]
```

giac [**A**] time = 0.17, size = 180, normalized size = 1.61

$$\frac{2\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^3}+\frac{2\left(3\,(xe+d)^{\frac{5}{2}}b^4+5\,(xe+d)^{\frac{3}{2}}b^4d+15\,\sqrt{xe+d}\,b^4d^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*arctan(sqrt(x*e + d)*
b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^3) + 2/15*(3*(x*e + d)^(5/2
)*b^4 + 5*(x*e + d)^(3/2)*b^4*d + 15*sqrt(x*e + d)*b^4*d^2 - 5*(x*e + d)^(3
/2)*a*b^3*e - 30*sqrt(x*e + d)*a*b^3*d*e + 15*sqrt(x*e + d)*a^2*b^2*e^2)/b^
5
```

maple [B] time = 0.05, size = 263, normalized size = 2.35

$$-\frac{2a^3e^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^3}+\frac{6a^2d\,e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^2}-\frac{6a\,d^2e\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{2d^3\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}+2\sqrt{ex}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/5*(e*x+d)^(5/2)/b-2/3/b^2*(e*x+d)^(3/2)*a*e+2/3/b*(e*x+d)^(3/2)*d+2/b^3*a
^2*e^2*(e*x+d)^(1/2)-4/b^2*a*d*e*(e*x+d)^(1/2)+2/b*d^2*(e*x+d)^(1/2)-2/b^3/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*e^3+6/b
^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d*e^
2-6/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^2
*e+2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.07, size = 130, normalized size = 1.16

$$\frac{2\,{\left(d+e\,x\right)}^{5/2}}{5\,b}-\frac{2\,\left(a\,e-b\,d\right)\,{\left(d+e\,x\right)}^{3/2}}{3\,b^2}+\frac{2\,{\left(a\,e-b\,d\right)}^2\,\sqrt{d+e\,x}}{b^3}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{5/2}\,\sqrt{d+e\,x}}{a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3}\right)\,{\left(a\,e-b\,d\right)}^{5/2}}{b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(5/2))/(5*b) - (2*(a*e - b*d)*(d + e*x)^(3/2))/(3*b^2) + (2*(a
*e - b*d)^2*(d + e*x)^(1/2))/b^3 - (2*atan((b^(1/2)*(a*e - b*d)^(5/2)*(d +
e*x)^(1/2))/(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))*(a*e - b*d
)^(5/2))/b^(7/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.2068 $\int \frac{(a+bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=86

$$-\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}+\frac{2\sqrt{d+ex}\,(bd-ae)}{b^2}+\frac{2(d+ex)^{3/2}}{3b}$$

```
[Out] 2/3*(e*x+d)^(3/2)/b-2*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/b^(5/2)+2*(-a*e+b*d)*(e*x+d)^(1/2)/b^2
```

Rubi [A] time = 0.04, antiderivative size = 86, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 50, 63, 208\}$

$$\frac{2\sqrt{d+ex}\,(bd-ae)}{b^2}-\frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}+\frac{2(d+ex)^{3/2}}{3b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*(b*d - a*e)*Sqrt[d + e*x])/b^2 + (2*(d + e*x)^(3/2))/(3*b) - (2*(b*d - a
*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(5/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{3/2}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^{3/2}}{a+bx}\,dx \\
&= \frac{2(d+ex)^{3/2}}{3b} + \frac{(bd-ae)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{b} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} + \frac{(bd-ae)^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{b^2} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} + \frac{\left(2(bd-ae)^2\right)\operatorname{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{b^2e} \\
&= \frac{2(bd-ae)\sqrt{d+ex}}{b^2} + \frac{2(d+ex)^{3/2}}{3b} - \frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}
\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 77, normalized size = 0.90

$$\frac{2\sqrt{d+ex}\,(-3ae+4bd+bex)}{3b^2} - \frac{2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(4*b*d - 3*a*e + b*e*x))/(3*b^2) - (2*(b*d - a*e)^(3/2)*Ar
cTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/b^(5/2)
```

fricas [**A**] time = 1.64, size = 188, normalized size = 2.19

$$\left[-\frac{3\,(bd-ae)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\,(bex+4\,bd-3\,ae)\sqrt{ex+d}}{3\,b^2}, -\frac{2\left(3\,(bd-ae)\sqrt{-\frac{bd-ae}{b}}\ \mathrm{arct}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/3*(3*(b*d - a*e)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqrt(
e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(b*e*x + 4*b*d - 3*a*e)*sqrt
(e*x + d))/b^2, -2/3*(3*(b*d - a*e)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (b*e*x + 4*b*d - 3*a*e)*sqrt(e*x
+ d))/b^2]
```

giac [**A**] time = 0.19, size = 112, normalized size = 1.30

$$\frac{2\left(b^2d^2-2\,abde+a^2e^2\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b^2}+\frac{2\left((xe+d)^{\frac{3}{2}}b^2+3\,\sqrt{xe+d}\,b^2d-3\,\sqrt{xe+d}\,abe\right)}{3\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b^2*d^2 - 2*a*b*d*e + a^2*e^2)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*
e))/(sqrt(-b^2*d + a*b*e)*b^2) + 2/3*((x*e + d)^(3/2)*b^2 + 3*sqrt(x*e + d)
*b^2*d - 3*sqrt(x*e + d)*a*b*e)/b^3
```

maple [B] time = 0.05, size = 167, normalized size = 1.94

$$\frac{2a^2e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b^2}-\frac{4ade\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{2d^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}-\frac{2\sqrt{ex+d}\,ae}{b^2}+\frac{2\sqrt{ex+d}\,d}{b}+\frac{2\,(ex}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2/3*(e*x+d)^(3/2)/b-2/b^2*a*e*(e*x+d)^(1/2)+2/b*(e*x+d)^(1/2)*d+2/b^2/((a*e
-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*e^2-4/b/((a*
e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d*e+2/((a*e-b
*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.07, size = 93, normalized size = 1.08

$$\frac{2\,{\left(d+e\,x\right)}^{3/2}}{3\,b}-\frac{2\,\left(a\,e-b\,d\right)\,\sqrt{d+e\,x}}{b^2}+\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,{\left(a\,e-b\,d\right)}^{3/2}\,\sqrt{d+e\,x}}{a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2}\right)\,{\left(a\,e-b\,d\right)}^{3/2}}{b^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(3/2))/(3*b) - (2*(a*e - b*d)*(d + e*x)^(1/2))/b^2 + (2*atan((
b^(1/2)*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))
*(a*e - b*d)^(3/2))/b^(5/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Timed out
```

3.2069 $\int \frac{(a+bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=62

$$\frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

```
[Out] -2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(3/2)
+2*(e*x+d)^(1/2)/b
```

Rubi [A] time = 0.03, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 50, 63, 208}

$$\frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x])/b - (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/b^(3/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{d+ex}}{a^2+2abx+b^2x^2}\,dx &= \int \frac{\sqrt{d+ex}}{a+bx}\,dx\\ &= \frac{2\sqrt{d+ex}}{b}+\frac{(bd-ae)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{b}\\ &= \frac{2\sqrt{d+ex}}{b}+\frac{(2(bd-ae))\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{be}\\ &= \frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 62, normalized size = 1.00

$$\frac{2\sqrt{d+ex}}{b}-\frac{2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] (2*Sqrt[d + e*x])/b - (2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/b^(3/2)
```

fricas [**A**] time = 1.08, size = 143, normalized size = 2.31

$$\left[\frac{\sqrt{\frac{bd-ae}{b}}\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\,\sqrt{ex+d}}{b},-\frac{2\left(\sqrt{-\frac{bd-ae}{b}}\arctan\left(-\frac{\sqrt{ex+d}\,b\sqrt{-\frac{bd-ae}{b}}}{bd-ae}\right)-\sqrt{ex+d}\right)}{b}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [(sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*
d - a*e)/b))/(b*x + a)) + 2*sqrt(e*x + d))/b, -2*(sqrt(-(b*d - a*e)/b)*arct
an(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - sqrt(e*x + d))/b]
```

giac [**A**] time = 0.16, size = 67, normalized size = 1.08

$$\frac{2\,(bd-ae)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,b}+\frac{2\,\sqrt{xe+d}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*(b*d - a*e)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a
*b*e)*b) + 2*sqrt(x*e + d)/b
```

maple [**A**] time = 0.05, size = 92, normalized size = 1.48

$$-\frac{2ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}\,b}+\frac{2d\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}+\frac{2\sqrt{ex+d}}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*(e*x+d)^(1/2)/b-2/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b
)^(1/2)*b)*a*e+2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/
2)*b)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.06, size = 50, normalized size = 0.81

$$\frac{2\sqrt{d+e\,x}}{b}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)\,\sqrt{a\,e-b\,d}}{b^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (2*(d + e*x)^(1/2))/b - (2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)
)*(a*e - b*d)^(1/2))/b^(3/2)
```

sympy [A] time = 58.92, size = 61, normalized size = 0.98

$$\frac{2\left(\frac{e\sqrt{d+ex}}{b}-\frac{e(ae-bd)\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{b^2\sqrt{\frac{ae-bd}{b}}}\right)}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*(e*sqrt(d + e*x)/b - e*(a*e - b*d)*atan(sqrt(d + e*x)/sqrt((a*e - b*d)/b)
)/(b**2*sqrt((a*e - b*d)/b)))/e
```

3.2070 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=47

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

```
[Out] -2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(1/2)/(-a*e+b*d)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{27, 63, 208\}$

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*Sqrt[b*d - a
*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx\\ &= \frac{2\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{e}\\ &= -\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}\end{aligned}$$

Mathematica [A]   time = 0.01, size = 47, normalized size = 1.00

$$-\frac{2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*Sqrt[b*d - a
*e])
```

fricas [A]   time = 0.92, size = 119, normalized size = 2.53

$$\left[\frac{\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)}{\sqrt{b^2d-abe}},\ \frac{2\,\sqrt{-b^2d+abe}\,\arctan\left(\frac{\sqrt{-b^2d+abe}\,\sqrt{ex+d}}{bex+bd}\right)}{b^2d-abe}\right]$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="fricas"
)
```

```
[Out] [log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a))
/sqrt(b^2*d - a*b*e), 2*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sq
rt(e*x + d)/(b*e*x + b*d))/(b^2*d - a*b*e)]
```

giac [A]   time = 0.23, size = 41, normalized size = 0.87

$$\frac{2\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/sqrt(-b^2*d + a*b*e)
```

maple [A]   time = 0.05, size = 37, normalized size = 0.79

$$\frac{2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{\sqrt{(ae-bd)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)/(e*x+d)^(1/2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.05, size = 38, normalized size = 0.81

$$\frac{2\,\mathrm{atan}\left(\frac{b\,\sqrt{d+e\,x}}{\sqrt{a\,b\,e-b^2\,d}}\right)}{\sqrt{a\,b\,e-b^2\,d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*atan((b*(d + e*x)^(1/2))/(a*b*e - b^2*d)^(1/2)))/(a*b*e - b^2*d)^(1/2)
```

sympy [A] time = 96.51, size = 44, normalized size = 0.94

$$-\frac{2\,\mathrm{atan}\left(\frac{1}{\sqrt{\frac{b}{ae-bd}}\,\sqrt{d+ex}}\right)}{\sqrt{\frac{b}{ae-bd}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)/(e*x+d)**(1/2),x)
```

```
[Out] -2*atan(1/(sqrt(b/(a*e - b*d))*sqrt(d + e*x)))/(sqrt(b/(a*e - b*d))*(a*e -
b*d))
```

3.2071 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=69

$$\frac{2}{\sqrt{d+ex}\,(bd-ae)}-\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

```
[Out] -2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d)^(3/2)
+2/(-a*e+b*d)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{2}{\sqrt{d+ex}\,(bd-ae)}-\frac{2\sqrt{b}\,\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/((b*d - a*e)*Sqrt[d + e*x]) - (2*Sqrt[b]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/
Sqrt[b*d - a*e]])/(b*d - a*e)^(3/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)}\,dx &= \int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx \\
&= \frac{2}{(bd-ae)\sqrt{d+ex}} + \frac{b\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{bd-ae} \\
&= \frac{2}{(bd-ae)\sqrt{d+ex}} + \frac{(2b)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx, x, \sqrt{d+ex}\right)}{e(bd-ae)} \\
&= \frac{2}{(bd-ae)\sqrt{d+ex}} - \frac{2\sqrt{b}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 46, normalized size = 0.67

$$
-\frac{2\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{\sqrt{d+ex}\,(ae-bd)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (-2*Hypergeometric2F1[-1/2, 1, 1/2, (b*(d + e*x))/(b*d - a*e)])/((-(b*d) +
a*e)*Sqrt[d + e*x])
```

fricas [A] time = 0.93, size = 214, normalized size = 3.10

$$
\left[-\frac{(ex+d)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\sqrt{ex+d}}{bd^2-ade+\left(bde-ae^2\right)x}, -\frac{2\left((ex+d)\sqrt{-\frac{b}{bd-ae}}\arctan\left(-\frac{(bd-ae)\sqrt{ex+}}{bex+}\right.\right.}{bd^2-ade+\left(bde-ae\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-((e*x + d)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*s
qrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*sqrt(e*x + d))/(b*d^2 - a*
d*e + (b*d*e - a*e^2)*x), -2*((e*x + d)*sqrt(-b/(b*d - a*e))*arctan(-(b*d -
 a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - sqrt(e*x + d))/(b
*d^2 - a*d*e + (b*d*e - a*e^2)*x)]
```

giac [A] time = 0.18, size = 75, normalized size = 1.09

$$
\frac{2\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\sqrt{-b^2d+abe}\,(bd-ae)} + \frac{2}{(bd-ae)\sqrt{xe+d}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*(b*d
 - a*e)) + 2/((b*d - a*e)*sqrt(x*e + d))
```

maple [A] time = 0.06, size = 68, normalized size = 0.99

$$-\frac{2b\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)\sqrt{(ae-bd)\,b}}-\frac{2}{(ae-bd)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -2*b/(a*e-b*d)/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)
*b)-2/(a*e-b*d)/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.07, size = 57, normalized size = 0.83

$$-\frac{2}{(a\,e-b\,d)\,\sqrt{d+e\,x}}-\frac{2\,\sqrt{b}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{(a\,e-b\,d)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - 2/((a*e - b*d)*(d + e*x)^(1/2)) - (2*b^(1/2)*atan((b^(1/2)*(d + e*x)^(1/2
))/(a*e - b*d)^(1/2)))/(a*e - b*d)^(3/2)
```

sympy [A] time = 121.04, size = 60, normalized size = 0.87

$$-\frac{2}{\sqrt{d+ex}\,(ae-bd)}-\frac{2\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2/(sqrt(d + e*x)*(a*e - b*d)) - 2*atan(sqrt(d + e*x)/sqrt((a*e - b*d)/b))/
(sqrt((a*e - b*d)/b)*(a*e - b*d))
```

3.2072 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=93

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}+\frac{2b}{\sqrt{d+ex}\,(bd-ae)^2}+\frac{2}{3(d+ex)^{3/2}(bd-ae)}$$

```
[Out] 2/3/(-a*e+b*d)/(e*x+d)^(3/2)-2*b^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/(-a*e+b*d)^(5/2)+2*b/(-a*e+b*d)^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 93, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 51, 63, 208\}$

$$-\frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}+\frac{2b}{\sqrt{d+ex}\,(bd-ae)^2}+\frac{2}{3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/(3*(b*d - a*e)*(d + e*x)^(3/2)) + (2*b)/((b*d - a*e)^2*Sqrt[d + e*x]) - (
2*b^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(5/
2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{1}{(a+bx)(d+ex)^{5/2}}\,dx$$

$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{b\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{bd-ae}$$

$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} + \frac{b^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{(bd-ae)^2}$$

$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} + \frac{\left(2b^2\right)\text{Subst}\Bigg(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,}{e(bd-ae)^2}$$

$$= \frac{2}{3(bd-ae)(d+ex)^{3/2}} + \frac{2b}{(bd-ae)^2\sqrt{d+ex}} - \frac{2b^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{5/2}}$$

Mathematica [C] time = 0.01, size = 48, normalized size = 0.52

$$\frac{2\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{b(d+ex)}{bd-ae}\right)}{3(d+ex)^{3/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*Hypergeometric2F1[-3/2, 1, -1/2, (b*(d + e*x))/(b*d - a*e)])/(3*(b*d - a
*e)*(d + e*x)^(3/2))
```

fricas [B] time = 1.05, size = 398, normalized size = 4.28

$$\Bigg[\frac{3\left(be^2x^2+2\,bdex+bd^2\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)+2\,(3\,bex+4\,bd-ae)\sqrt{ex+d}}{3\left(b^2d^4-2\,abd^3e+a^2d^2e^2+\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)x^2+2\left(b^2d^3e-2\,abd^2e^2+a^2de^3\right)x\right)},-\frac{2\Bigg(3\,\Big(be^2x}{3\,\Big(b^2d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [1/3*(3*(b*e^2*x^2 + 2*b*d*e*x + b*d^2)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*
b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2
*(3*b*e*x + 4*b*d - a*e)*sqrt(e*x + d))/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e^
2 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e^
2 + a^2*d*e^3)*x), -2/3*(3*(b*e^2*x^2 + 2*b*d*e*x + b*d^2)*sqrt(-b/(b*d - a
*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d))
- (3*b*e*x + 4*b*d - a*e)*sqrt(e*x + d))/(b^2*d^4 - 2*a*b*d^3*e + a^2*d^2*e
^2 + (b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*x^2 + 2*(b^2*d^3*e - 2*a*b*d^2*e
^2 + a^2*d*e^3)*x)]
```

giac [A] time = 0.18, size = 119, normalized size = 1.28

$$\frac{2\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}}+\frac{2\,(3\,(xe+d)b+bd-ae)}{3\left(b^2d^2-2\,abde+a^2e^2\right)(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^2*d^2 - 2*a*b*d*e +
a^2*e^2)*sqrt(-b^2*d + a*b*e)) + 2/3*(3*(x*e + d)*b + b*d - a*e)/((b^2*d^2
- 2*a*b*d*e + a^2*e^2)*(x*e + d)^(3/2))
```

maple [A] time = 0.06, size = 90, normalized size = 0.97

$$\frac{2b^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^{2}\sqrt{(ae-bd)\,b}}+\frac{2b}{(ae-bd)^{2}\sqrt{ex+d}}-\frac{2}{3\,(ae-bd)\,(ex+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] 2*b^2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)-2/3/(a*e-b*d)/(e*x+d)^(3/2)+2*b/(a*e-b*d)^2/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.09, size = 100, normalized size = 1.08

$$\frac{2\,b^{3/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}{(a\,e-b\,d)^{5/2}}\right)}{(a\,e-b\,d)^{5/2}}-\frac{\frac{2}{3\,(a\,e-b\,d)}-\frac{2\,b\,(d+e\,x)}{(a\,e-b\,d)^2}}{(d+e\,x)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] (2*b^(3/2)*atan((b^(1/2)*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(
a*e - b*d)^(5/2)))/(a*e - b*d)^(5/2) - (2/(3*(a*e - b*d)) - (2*b*(d + e*x))
/(a*e - b*d)^2)/(d + e*x)^(3/2)
```

sympy [A] time = 136.91, size = 83, normalized size = 0.89

$$\frac{2b}{\sqrt{d+ex}\,(ae-bd)^{2}}+\frac{2b\,\mathrm{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)^{2}}-\frac{2}{3\,(d+ex)^{\frac{3}{2}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] 2*b/(sqrt(d + e*x)*(a*e - b*d)**2) + 2*b*atan(sqrt(d + e*x)/sqrt((a*e - b*d
)/b))/(sqrt((a*e - b*d)/b)*(a*e - b*d)**2) - 2/(3*(d + e*x)**(3/2)*(a*e - b
*d))
```

3.2073 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx$

Optimal. Leaf size=119

$$-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{7/2}}+\frac{2b^2}{\sqrt{d+ex}\,(bd-ae)^3}+\frac{2b}{3(d+ex)^{3/2}(bd-ae)^2}+\frac{2}{5(d+ex)^{5/2}(bd-ae)}$$

```
[Out] 2/5/(-a*e+b*d)/(e*x+d)^(5/2)+2/3*b/(-a*e+b*d)^2/(e*x+d)^(3/2)-2*b^(5/2)*arc
tanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(7/2)+2*b^2/(-a*e+b
*d)^3/(e*x+d)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{2b^2}{\sqrt{d+ex}\,(bd-ae)^3}-\frac{2b^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{(bd-ae)^{7/2}}+\frac{2b}{3(d+ex)^{3/2}(bd-ae)^2}+\frac{2}{5(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] 2/(5*(b*d - a*e)*(d + e*x)^(5/2)) + (2*b)/(3*(b*d - a*e)^2*(d + e*x)^(3/2))
 + (2*b^2)/((b*d - a*e)^3*Sqrt[d + e*x]) - (2*b^(5/2)*ArcTanh[(Sqrt[b]*Sqrt
[d + e*x])/Sqrt[b*d - a*e]])/(b*d - a*e)^(7/2)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)}\,dx = \int \frac{1}{(a+bx)(d+ex)^{7/2}}\,dx$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{b\int \frac{1}{(a+bx)(d+ex)^{5/2}}\,dx}{bd-ae}$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{b^2\int \frac{1}{(a+bx)(d+ex)^{3/2}}\,dx}{(bd-ae)^2}$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} +$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} +$$

$$= \frac{2}{5(bd-ae)(d+ex)^{5/2}} + \frac{2b}{3(bd-ae)^2(d+ex)^{3/2}} + \frac{2b^2}{(bd-ae)^3\sqrt{d+ex}} -$$

Mathematica [C] time = 0.01, size = 48, normalized size = 0.40

$$\frac{2\,{}_2F_1\left(-\frac{5}{2},1;-\frac{3}{2};\frac{b(d+ex)}{bd-ae}\right)}{5(d+ex)^{5/2}(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)),x]
```

```
[Out] (2*Hypergeometric2F1[-5/2, 1, -3/2, (b*(d + e*x))/(b*d - a*e)])/(5*(b*d - a
*e)*(d + e*x)^(5/2))
```

fricas [B] time = 0.85, size = 706, normalized size = 5.93

$$\left[-\frac{15\left(b^2e^3x^3+3\,b^2de^2x^2+3\,b^2d^2ex+b^2d^3\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\left(15\,b^2e^2\right.}{15\left(b^3d^6-3\,ab^2d^5e+3\,a^2bd^4e^2-a^3d^3e^3+\left(b^3d^3e^3-3\,ab^2d^2e^4+3\,a^2bde^5-a^3e^6\right)x^3+3\left(b^3d^4e^2-3\,ab^2d^3e^3\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas"
)
```

```
[Out] [-1/15*(15*(b^2*e^3*x^3 + 3*b^2*d*e^2*x^2 + 3*b^2*d^2*e*x + b^2*d^3)*sqrt(b
/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b
/(b*d - a*e)))/(b*x + a)) - 2*(15*b^2*e^2*x^2 + 23*b^2*d^2 - 11*a*b*d*e + 3
*a^2*e^2 + 5*(7*b^2*d*e - a*b*e^2)*x)*sqrt(e*x + d))/(b^3*d^6 - 3*a*b^2*d^5
*e + 3*a^2*b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2
*b*d*e^5 - a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^
4 - a^3*d*e^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3
*d^2*e^4)*x), -2/15*(15*(b^2*e^3*x^3 + 3*b^2*d*e^2*x^2 + 3*b^2*d^2*e*x + b^
2*d^3)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d
- a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 + 23*b^2*d^2 - 11*a*b*d*e + 3*a^2*
e^2 + 5*(7*b^2*d*e - a*b*e^2)*x)*sqrt(e*x + d))/(b^3*d^6 - 3*a*b^2*d^5*e +
3*a^2*b*d^4*e^2 - a^3*d^3*e^3 + (b^3*d^3*e^3 - 3*a*b^2*d^2*e^4 + 3*a^2*b*d*
e^5 - a^3*e^6)*x^3 + 3*(b^3*d^4*e^2 - 3*a*b^2*d^3*e^3 + 3*a^2*b*d^2*e^4 - a
^3*d*e^5)*x^2 + 3*(b^3*d^5*e - 3*a*b^2*d^4*e^2 + 3*a^2*b*d^3*e^3 - a^3*d^2*
e^4)*x)]
```

giac [**A**] time = 0.21, size = 189, normalized size = 1.59

$$\frac{2\,b^3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{-b^2d+abe}}+\frac{2\left(15\,(xe+d)^2b^2+5\,(xe+d)b^2d+3\,b^2d^2-5\,(xe+d)abe-6\,a\right.}{15\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] 2*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/((b^3*d^3 - 3*a*b^2*d^2*
e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*b*e)) + 2/15*(15*(x*e + d)^2*b
^2 + 5*(x*e + d)*b^2*d + 3*b^2*d^2 - 5*(x*e + d)*a*b*e - 6*a*b*d*e + 3*a^2*
e^2)/((b^3*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*(x*e + d)^(5/2))
```

maple [**A**] time = 0.06, size = 112, normalized size = 0.94

$$-\frac{2b^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{(ae-bd)^3\sqrt{(ae-bd)\,b}}-\frac{2b^2}{(ae-bd)^3\sqrt{ex+d}}+\frac{2b}{3\,(ae-bd)^2\,(ex+d)^{\frac{3}{2}}}-\frac{2}{5\,(ae-bd)\,(ex+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] -2*b^3/(a*e-b*d)^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)-2/5/(a*e-b*d)/(e*x+d)^(5/2)-2/(a*e-b*d)^3*b^2/(e*x+d)^(1/2)+2/3*b/(
a*e-b*d)^2/(e*x+d)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima"
)
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.12, size = 137, normalized size = 1.15

$$-\frac{\frac{2}{5\,(a\,e-b\,d)}+\frac{2\,b^2\,(d+e\,x)^2}{(a\,e-b\,d)^3}-\frac{2\,b\,(d+e\,x)}{3\,(a\,e-b\,d)^2}}{(d+e\,x)^{5/2}}-\frac{2\,b^{5/2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^3\,e^3-3\,a^2\,b\,d\,e^2+3\,a\,b^2\,d^2\,e-b^3\,d^3\right)}{(a\,e-b\,d)^{7/2}}\right)}{(a\,e-b\,d)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)),x)
```

```
[Out] - (2/(5*(a*e - b*d)) + (2*b^2*(d + e*x)^2)/(a*e - b*d)^3 - (2*b*(d + e*x))/
(3*(a*e - b*d)^2))/(d + e*x)^(5/2) - (2*b^(5/2)*atan((b^(1/2)*(d + e*x)^(1/
2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(a*e - b*d)^(7/2)))
/(a*e - b*d)^(7/2)
```

sympy [**A**] time = 140.18, size = 109, normalized size = 0.92

$$-\frac{2b^2}{\sqrt{d+ex}\,(ae-bd)^3}-\frac{2b^2\operatorname{atan}\left(\frac{\sqrt{d+ex}}{\sqrt{\frac{ae-bd}{b}}}\right)}{\sqrt{\frac{ae-bd}{b}}\,(ae-bd)^3}+\frac{2b}{3\,(d+ex)^{\frac{3}{2}}\,(ae-bd)^2}-\frac{2}{5\,(d+ex)^{\frac{5}{2}}\,(ae-bd)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] -2*b**2/(sqrt(d + e*x)*(a*e - b*d)**3) - 2*b**2*atan(sqrt(d + e*x)/sqrt((a*
e - b*d)/b))/(sqrt((a*e - b*d)/b)*(a*e - b*d)**3) + 2*b/(3*(d + e*x)**(3/2)
*(a*e - b*d)**2) - 2/(5*(d + e*x)**(5/2)*(a*e - b*d))
```

3.2074 $\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=175

$$-\frac{63e^2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{11/2}}+\frac{63e^2\sqrt{d+ex}\,(bd-ae)^2}{4b^5}+\frac{21e^2(d+ex)^{3/2}(bd-ae)}{4b^4}-\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)}-\frac{(d+ex)^9}{2b(a+bx}$$

```
[Out] 21/4*e^2*(-a*e+b*d)*(e*x+d)^(3/2)/b^4+63/20*e^2*(e*x+d)^(5/2)/b^3-9/4*e*(e*
x+d)^(7/2)/b^2/(b*x+a)-1/2*(e*x+d)^(9/2)/b/(b*x+a)^2-63/4*e^2*(-a*e+b*d)^(5
/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(11/2)+63/4*e^2*(-a*e
+b*d)^2*(e*x+d)^(1/2)/b^5
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 47, 50, 63, 208\}$

$$\frac{21e^2(d+ex)^{3/2}(bd-ae)}{4b^4}+\frac{63e^2\sqrt{d+ex}\,(bd-ae)^2}{4b^5}-\frac{63e^2(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{11/2}}-\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)}-\frac{(d+ex)^{9/2}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (63*e^2*(b*d - a*e)^2*Sqrt[d + e*x])/(4*b^5) + (21*e^2*(b*d - a*e)*(d + e*x
)^(3/2))/(4*b^4) + (63*e^2*(d + e*x)^(5/2))/(20*b^3) - (9*e*(d + e*x)^(7/2)
)/(4*b^2*(a + b*x)) - (d + e*x)^(9/2)/(2*b*(a + b*x)^2) - (63*e^2*(b*d - a*
e)^(5/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^{9/2}}{(a+bx)^3}\,dx \\
&= -\frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{(9e)\int \frac{(d+ex)^{7/2}}{(a+bx)^2}\,dx}{4b} \\
&= -\frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{\left(63e^2\right)\int \frac{(d+ex)^{5/2}}{a+bx}\,dx}{8b^2} \\
&= \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \frac{\left(63e^2(bd-ae)\right)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{8b^3} \\
&= \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex)^{7/2}}{4b^2(a+bx)} - \frac{(d+ex)^{9/2}}{2b(a+bx)^2} + \left(63e^2\right. \\
&= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex}{4b^2(a+b} \\
&= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex}{4b^2(a+b} \\
&= \frac{63e^2(bd-ae)^2\sqrt{d+ex}}{4b^5} + \frac{21e^2(bd-ae)(d+ex)^{3/2}}{4b^4} + \frac{63e^2(d+ex)^{5/2}}{20b^3} - \frac{9e(d+ex}{4b^2(a+b}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^2(d+ex)^{11/2}\,{}_2F_1\left(3,\frac{11}{2};\frac{13}{2};-\frac{b(d+ex)}{ae-bd}\right)}{11(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(11/2)*Hypergeometric2F1[3, 11/2, 13/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(11*(-(b*d) + a*e)^3)
```

fricas [B] time = 0.86, size = 730, normalized size = 4.17

$$\left[\frac{315\left(a^2b^2d^2e^2 - 2\,a^3bde^3 + a^4e^4 + \left(b^4d^2e^2 - 2\,ab^3de^3 + a^2b^2e^4\right)x^2 + 2\left(ab^3d^2e^2 - 2\,a^2b^2de^3 + a^3be^4\right)x\right)\sqrt{\frac{bd-ae}{b}}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/40*(315*(a^2*b^2*d^2*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 - 2*a*
b^3*d*e^3 + a^2*b^2*e^4)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^3*b*e
^4)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqr
t((b*d - a*e)/b))/(b*x + a)) + 2*(8*b^4*e^4*x^4 - 10*b^4*d^4 - 45*a*b^3*d^3
*e + 483*a^2*b^2*d^2*e^2 - 735*a^3*b*d*e^3 + 315*a^4*e^4 + 8*(7*b^4*d*e^3 -
 3*a*b^3*e^4)*x^3 + 24*(12*b^4*d^2*e^2 - 17*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^
2 - (85*b^4*d^3*e - 831*a*b^3*d^2*e^2 + 1239*a^2*b^2*d*e^3 - 525*a^3*b*e^4)
*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a^2*b^5), -1/20*(315*(a^2*b^2*d^2
*e^2 - 2*a^3*b*d*e^3 + a^4*e^4 + (b^4*d^2*e^2 - 2*a*b^3*d*e^3 + a^2*b^2*e^4
)*x^2 + 2*(a*b^3*d^2*e^2 - 2*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*sqrt(-(b*d - a*e
)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^4*e^4
*x^4 - 10*b^4*d^4 - 45*a*b^3*d^3*e + 483*a^2*b^2*d^2*e^2 - 735*a^3*b*d*e^3
+ 315*a^4*e^4 + 8*(7*b^4*d*e^3 - 3*a*b^3*e^4)*x^3 + 24*(12*b^4*d^2*e^2 - 17
*a*b^3*d*e^3 + 7*a^2*b^2*e^4)*x^2 - (85*b^4*d^3*e - 831*a*b^3*d^2*e^2 + 123
9*a^2*b^2*d*e^3 - 525*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^7*x^2 + 2*a*b^6*x + a
^2*b^5)]
```

giac **[B]** time = 0.22, size = 374, normalized size = 2.14

$$\frac{63\left(b^{3}d^{3}e^{2}-3\,ab^{2}d^{2}e^{3}+3\,a^{2}bde^{4}-a^{3}e^{5}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\,\sqrt{-b^{2}d+abe}\,b^{5}}-\frac{17\,(xe+d)^{\frac{3}{2}}b^{4}d^{3}e^{2}-15\,\sqrt{xe+d}\,b^{4}d^{4}e^{2}-51\,(xe+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 63/4*(b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*arctan(sqrt(
x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^5) - 1/4*(17*(x*e
+ d)^(3/2)*b^4*d^3*e^2 - 15*sqrt(x*e + d)*b^4*d^4*e^2 - 51*(x*e + d)^(3/2)*
a*b^3*d^2*e^3 + 60*sqrt(x*e + d)*a*b^3*d^3*e^3 + 51*(x*e + d)^(3/2)*a^2*b^2
*d*e^4 - 90*sqrt(x*e + d)*a^2*b^2*d^2*e^4 - 17*(x*e + d)^(3/2)*a^3*b*e^5 +
60*sqrt(x*e + d)*a^3*b*d*e^5 - 15*sqrt(x*e + d)*a^4*e^6)/(((x*e + d)*b - b*
d + a*e)^2*b^5) + 2/5*((x*e + d)^(5/2)*b^12*e^2 + 5*(x*e + d)^(3/2)*b^12*d*
e^2 + 30*sqrt(x*e + d)*b^12*d^2*e^2 - 5*(x*e + d)^(3/2)*a*b^11*e^3 - 60*sqr
t(x*e + d)*a*b^11*d*e^3 + 30*sqrt(x*e + d)*a^2*b^10*e^4)/b^15
```

maple **[B]** time = 0.10, size = 543, normalized size = 3.10

$$\frac{15\sqrt{ex+d}\;a^{4}e^{6}}{4\,(bex+ae)^{2}\,b^{5}}-\frac{15\sqrt{ex+d}\;a^{3}d\,e^{5}}{(bex+ae)^{2}\,b^{4}}+\frac{45\sqrt{ex+d}\;a^{2}d^{2}e^{4}}{2\,(bex+ae)^{2}\,b^{3}}-\frac{15\sqrt{ex+d}\;a\,d^{3}e^{3}}{(bex+ae)^{2}\,b^{2}}+\frac{15\sqrt{ex+d}\;d^{4}e^{2}}{4\,(bex+ae)^{2}\,b}+\frac{17\,(ex+d)^{\frac{3}{2}}\,a^{3}e^{5}}{4\,(bex+ae)^{2}\,b^{4}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/5*e^2*(e*x+d)^(5/2)/b^3-2*e^3/b^4*(e*x+d)^(3/2)*a+2*e^2/b^3*(e*x+d)^(3/2)
*d+12*e^4/b^5*a^2*(e*x+d)^(1/2)-24*e^3/b^4*a*d*(e*x+d)^(1/2)+12*e^2/b^3*d^2
*(e*x+d)^(1/2)+17/4*e^5/b^4/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a^3-51/4*e^4/b^3/(b
*e*x+a*e)^2*(e*x+d)^(3/2)*a^2*d+51/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a*
d^2-17/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d^3+15/4*e^6/b^5/(b*e*x+a*e)^2*(
e*x+d)^(1/2)*a^4-15*e^5/b^4/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^3*d+45/2*e^4/b^3/
(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2*d^2-15*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*
a*d^3+15/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(1/2)*d^4-63/4*e^5/b^5/((a*e-b*d)*b)
^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3+189/4*e^4/b^4/((a*e-
b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2*d-189/4*e^3/b
^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*d^2+63
```

```
/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
d^3
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad **[B]** time = 0.14, size = 361, normalized size = 2.06

$$\left(\frac{2\,e^2\,{\left(3\,b^3\,d-3\,a\,b^2\,e\right)}^2}{b^9}-\frac{6\,e^2\,{\left(a\,e-b\,d\right)}^2}{b^5}\right)\,\sqrt{d+e\,x}+\frac{{\left(d+e\,x\right)}^{3/2}\,\left(\frac{17\,a^3\,b\,e^5}{4}-\frac{51\,a^2\,b^2\,d\,e^4}{4}+\frac{51\,a\,b^3\,d^2\,e^3}{4}-\frac{17\,b^4\,d^3\,e^2}{4}\right)}{b^7\,{\left(d+e\,x\right)}^2-\bigl(2\,b^7\,d-2\,a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((2*e^2*(3*b^3*d - 3*a*b^2*e)^2)/b^9 - (6*e^2*(a*e - b*d)^2)/b^5)*(d + e*x)
^(1/2) + ((d + e*x)^(3/2)*((17*a^3*b*e^5)/4 - (17*b^4*d^3*e^2)/4 + (51*a*b^
3*d^2*e^3)/4 - (51*a^2*b^2*d*e^4)/4) + (d + e*x)^(1/2)*((15*a^4*e^6)/4 + (1
5*b^4*d^4*e^2)/4 - 15*a*b^3*d^3*e^3 + (45*a^2*b^2*d^2*e^4)/2 - 15*a^3*b*d*e
^5))/(b^7*(d + e*x)^2 - (2*b^7*d - 2*a*b^6*e)*(d + e*x) + b^7*d^2 + a^2*b^5
*e^2 - 2*a*b^6*d*e) + (2*e^2*(d + e*x)^(5/2))/(5*b^3) + (2*e^2*(3*b^3*d - 3
*a*b^2*e)*(d + e*x)^(3/2))/(3*b^6) - (63*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^
(5/2)*(d + e*x)^(1/2))/(a^3*e^5 - b^3*d^3*e^2 + 3*a*b^2*d^2*e^3 - 3*a^2*b*d
*e^4))*(a*e - b*d)^(5/2))/(4*b^(11/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2075 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=146

$$-\frac{35e^2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{9/2}}+\frac{35e^2\sqrt{d+ex}\,(bd-ae)}{4b^4}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{35e^2(d+ex)^{3/2}}{12b^3}$$

```
[Out] 35/12*e^2*(e*x+d)^(3/2)/b^3-7/4*e*(e*x+d)^(5/2)/b^2/(b*x+a)-1/2*(e*x+d)^(7/
2)/b/(b*x+a)^2-35/4*e^2*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*
e+b*d)^(1/2))/b^(9/2)+35/4*e^2*(-a*e+b*d)*(e*x+d)^(1/2)/b^4
```

Rubi [A] time = 0.08, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 50, 63, 208}

$$\frac{35e^2\sqrt{d+ex}\,(bd-ae)}{4b^4}-\frac{35e^2(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{9/2}}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{35e^2(d+ex)^{3/2}}{12b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (35*e^2*(b*d - a*e)*Sqrt[d + e*x])/(4*b^4) + (35*e^2*(d + e*x)^(3/2))/(12*b
^3) - (7*e*(d + e*x)^(5/2))/(4*b^2*(a + b*x)) - (d + e*x)^(7/2)/(2*b*(a + b
*x)^2) - (35*e^2*(b*d - a*e)^(3/2)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d
 - a*e]])/(4*b^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx\\
&= -\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{(a+bx)^2}\,dx}{4b}\\
&= -\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2\right)\int \frac{(d+ex)^{3/2}}{a+bx}\,dx}{8b^2}\\
&= \frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2(bd-ae)\right)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{8b^3}\\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e^2(\right.}{}\\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}+\frac{\left(35e(b\right.}{}\\
&= \frac{35e^2(bd-ae)\sqrt{d+ex}}{4b^4}+\frac{35e^2(d+ex)^{3/2}}{12b^3}-\frac{7e(d+ex)^{5/2}}{4b^2(a+bx)}-\frac{(d+ex)^{7/2}}{2b(a+bx)^2}-\frac{35e^2(b}{}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.36

$$\frac{2e^2(d+ex)^{9/2}\,{}_2F_1\left(3,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(9/2)*Hypergeometric2F1[3, 9/2, 11/2, -((b*(d + e*x))/(-(b
*d) + a*e))])/(9*(-(b*d) + a*e)^3)
```

fricas [B] time = 1.19, size = 520, normalized size = 3.56

$$\left[-\frac{105\left(a^2bde^2-a^3e^3+\left(b^3de^2-ab^2e^3\right)x^2+2\left(ab^2de^2-a^2be^3\right)x\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\,(8}{24}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/24*(105*(a^2*b*d*e^2 - a^3*e^3 + (b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2
*d*e^2 - a^2*b*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*sqr
t(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(8*b^3*e^3*x^3 - 6*b^3*d^3
 - 21*a*b^2*d^2*e + 140*a^2*b*d*e^2 - 105*a^3*e^3 + 8*(10*b^3*d*e^2 - 7*a*b
^2*e^3)*x^2 - (39*b^3*d^2*e - 238*a*b^2*d*e^2 + 175*a^2*b*e^3)*x)*sqrt(e*x
+ d))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4), -1/12*(105*(a^2*b*d*e^2 - a^3*e^3 +
(b^3*d*e^2 - a*b^2*e^3)*x^2 + 2*(a*b^2*d*e^2 - a^2*b*e^3)*x)*sqrt(-(b*d - a
*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^3*e
^3*x^3 - 6*b^3*d^3 - 21*a*b^2*d^2*e + 140*a^2*b*d*e^2 - 105*a^3*e^3 + 8*(10
*b^3*d*e^2 - 7*a*b^2*e^3)*x^2 - (39*b^3*d^2*e - 238*a*b^2*d*e^2 + 175*a^2*b
*e^3)*x)*sqrt(e*x + d))/(b^6*x^2 + 2*a*b^5*x + a^2*b^4)]
```

giac [B] time = 0.20, size = 265, normalized size = 1.82

$$\frac{35\left(b^2d^2e^2-2\,abde^3+a^2e^4\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{4\sqrt{-b^2d+abe}\,b^4}-\frac{13\,(xe+d)^{\frac{3}{2}}b^3d^2e^2-11\sqrt{xe+d}\,b^3d^3e^2-26\,(xe+d)^{\frac{3}{2}}ab^2de^3+}{4\,((xe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/4*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2
*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^4) - 1/4*(13*(x*e + d)^(3/2)*b^3*d^2*e
^2 - 11*sqrt(x*e + d)*b^3*d^3*e^2 - 26*(x*e + d)^(3/2)*a*b^2*d*e^3 + 33*sqr
t(x*e + d)*a*b^2*d^2*e^3 + 13*(x*e + d)^(3/2)*a^2*b*e^4 - 33*sqrt(x*e + d)*
a^2*b*d*e^4 + 11*sqrt(x*e + d)*a^3*e^5)/(((x*e + d)*b - b*d + a*e)^2*b^4) +
 2/3*((x*e + d)^(3/2)*b^6*e^2 + 9*sqrt(x*e + d)*b^6*d*e^2 - 9*sqrt(x*e + d)
*a*b^5*e^3)/b^9
```

maple [B] time = 0.07, size = 380, normalized size = 2.60

$$-\frac{11\sqrt{ex+d}\;a^3e^5}{4\left(bex+ae\right)^2b^4}+\frac{33\sqrt{ex+d}\;a^2d\,e^4}{4\left(bex+ae\right)^2b^3}-\frac{33\sqrt{ex+d}\;a\,d^2e^3}{4\left(bex+ae\right)^2b^2}+\frac{11\sqrt{ex+d}\;d^3e^2}{4\left(bex+ae\right)^2b}-\frac{13\,(ex+d)^{\frac{3}{2}}\,a^2e^4}{4\left(bex+ae\right)^2b^3}+\frac{35a^2e^4\arctan\bigg(\frac{\sqrt{e}}{\sqrt{(a}}}{4\sqrt{(ae-bd)\,b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2/3*e^2*(e*x+d)^(3/2)/b^3-6*e^3/b^4*a*(e*x+d)^(1/2)+6*e^2/b^3*(e*x+d)^(1/2)
*d-13/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a^2+13/2*e^3/b^2/(b*e*x+a*e)^2*
(e*x+d)^(3/2)*a*d-13/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d^2-11/4*e^5/b^4/(
b*e*x+a*e)^2*(e*x+d)^(1/2)*a^3+33/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2
*d-33/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a*d^2+11/4*e^2/b/(b*e*x+a*e)^2*
(e*x+d)^(1/2)*d^3+35/4*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a
*e-b*d)*b)^(1/2)*b)*a^2-35/2*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)*a*d+35/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+
d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.14, size = 268, normalized size = 1.84

$$\frac{2\,e^2\,(d+e\,x)^{3/2}}{3\,b^3}-\frac{\sqrt{d+e\,x}\,\left(\frac{11\,a^3\,e^5}{4}-\frac{33\,a^2\,b\,d\,e^4}{4}+\frac{33\,a\,b^2\,d^2\,e^3}{4}-\frac{11\,b^3\,d^3\,e^2}{4}\right)+(d+e\,x)^{3/2}\,\left(\frac{13\,a^2\,b\,e^4}{4}-\frac{13\,a\,b^2\,d\,e^3}{2}+\frac{13\,b^3}{}\right.}{b^6\,(d+e\,x)^2-\left(2\,b^6\,d-2\,a\,b^5\,e\right)\,(d+e\,x)+b^6\,d^2+a^2\,b^4\,e^2-2\,a\,b^5\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*e^2*(d + e*x)^(3/2))/(3*b^3) - ((d + e*x)^(1/2)*((11*a^3*e^5)/4 - (11*b^
3*d^3*e^2)/4 + (33*a*b^2*d^2*e^3)/4 - (33*a^2*b*d*e^4)/4) + (d + e*x)^(3/2)
*((13*a^2*b*e^4)/4 + (13*b^3*d^2*e^2)/4 - (13*a*b^2*d*e^3)/2))/(b^6*(d + e*
x)^2 - (2*b^6*d - 2*a*b^5*e)*(d + e*x) + b^6*d^2 + a^2*b^4*e^2 - 2*a*b^5*d*
e) + (2*e^2*(3*b^3*d - 3*a*b^2*e)*(d + e*x)^(1/2))/b^6 + (35*e^2*atan((b^(1
/2)*e^2*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^4 + b^2*d^2*e^2 - 2*a*b*d
*e^3))*(a*e - b*d)^(3/2))/(4*b^(9/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2076 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=119

$$-\frac{15e^2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{15e^2\sqrt{d+ex}}{4b^3}$$

```
[Out] -5/4*e*(e*x+d)^(3/2)/b^2/(b*x+a)-1/2*(e*x+d)^(5/2)/b/(b*x+a)^2-15/4*e^2*arc
tanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(7/2)+15/4*
e^2*(e*x+d)^(1/2)/b^3
```

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 47, 50, 63, 208\}$

$$-\frac{15e^2\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{15e^2\sqrt{d+ex}}{4b^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (15*e^2*Sqrt[d + e*x])/(4*b^3) - (5*e*(d + e*x)^(3/2))/(4*b^2*(a + b*x)) -
(d + e*x)^(5/2)/(2*b*(a + b*x)^2) - (15*e^2*Sqrt[b*d - a*e]*ArcTanh[(Sqrt[b
]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx$$

$$=-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{(5e)\int \frac{(d+ex)^{3/2}}{(a+bx)^2}\,dx}{4b}$$

$$=-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{\left(15e^2\right)\int \frac{\sqrt{d+ex}}{a+bx}\,dx}{8b^2}$$

$$=\frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{\left(15e^2(bd-ae)\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b^3}$$

$$=\frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}+\frac{(15e(bd-ae))\operatorname{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,d\right.}{4b^3}$$

$$=\frac{15e^2\sqrt{d+ex}}{4b^3}-\frac{5e(d+ex)^{3/2}}{4b^2(a+bx)}-\frac{(d+ex)^{5/2}}{2b(a+bx)^2}-\frac{15e^2\sqrt{bd-ae}\,\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{7/2}}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.44

$$\frac{2e^2(d+ex)^{7/2}\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(7/2)*Hypergeometric2F1[3, 7/2, 9/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(7*(-(b*d) + a*e)^3)
```

fricas [A] time = 0.88, size = 344, normalized size = 2.89

$$\left[\frac{15\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(8\,b^2e^2x^2-2\,b^2d^2-5\,abde+15\,a^2e^2-\right.}{8\left(b^5x^2+2\,ab^4x+a^2b^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/8*(15*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt((b*d - a*e)/b)*log((b*e
*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(8
*b^2*e^2*x^2 - 2*b^2*d^2 - 5*a*b*d*e + 15*a^2*e^2 - (9*b^2*d*e - 25*a*b*e^2
)*x)*sqrt(e*x + d))/(b^5*x^2 + 2*a*b^4*x + a^2*b^3), -1/4*(15*(b^2*e^2*x^2
+ 2*a*b*e^2*x + a^2*e^2)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(
-(b*d - a*e)/b)/(b*d - a*e)) - (8*b^2*e^2*x^2 - 2*b^2*d^2 - 5*a*b*d*e + 15*
a^2*e^2 - (9*b^2*d*e - 25*a*b*e^2)*x)*sqrt(e*x + d))/(b^5*x^2 + 2*a*b^4*x +
 a^2*b^3)]
```

giac [A] time = 0.23, size = 174, normalized size = 1.46

$$\frac{15\left(bde^{2}-ae^{3}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{4\sqrt{-b^{2}d+abe}\,b^{3}}+\frac{2\sqrt{xe+d}\,e^{2}}{b^{3}}-\frac{9\left(xe+d\right)^{\frac{3}{2}}b^{2}de^{2}-7\sqrt{xe+d}\,b^{2}d^{2}e^{2}-9\left(xe+d\right)^{\frac{3}{2}}abe^{3}+14\sqrt{x}}{4\left((xe+d)b-bd+ae\right)^{2}b^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 15/4*(b*d*e^2 - a*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-
b^2*d + a*b*e)*b^3) + 2*sqrt(x*e + d)*e^2/b^3 - 1/4*(9*(x*e + d)^(3/2)*b^2*
d*e^2 - 7*sqrt(x*e + d)*b^2*d^2*e^2 - 9*(x*e + d)^(3/2)*a*b*e^3 + 14*sqrt(x
*e + d)*a*b*d*e^3 - 7*sqrt(x*e + d)*a^2*e^4)/(((x*e + d)*b - b*d + a*e)^2*b
^3)
```

maple [B] time = 0.07, size = 238, normalized size = 2.00

$$\frac{7\sqrt{ex+d}\;a^{2}e^{4}}{4\left(bex+ae\right)^{2}b^{3}}-\frac{7\sqrt{ex+d}\;ad\,e^{3}}{2\left(bex+ae\right)^{2}b^{2}}+\frac{7\sqrt{ex+d}\;d^{2}e^{2}}{4\left(bex+ae\right)^{2}b}+\frac{9\left(ex+d\right)^{\frac{3}{2}}\,a\,e^{3}}{4\left(bex+ae\right)^{2}b^{2}}-\frac{15a\,e^{3}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\;b^{3}}-\frac{9\left(ex+d\right)^{\frac{3}{2}}\,d\,e^{2}}{4\left(bex+ae\right)^{2}b}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 2*e^2*(e*x+d)^(1/2)/b^3+9/4*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)*a-9/4*e^2/b
/(b*e*x+a*e)^2*(e*x+d)^(3/2)*d+7/4*e^4/b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a^2-
7/2*e^3/b^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a*d+7/4*e^2/b/(b*e*x+a*e)^2*(e*x+d)
^(1/2)*d^2-15/4*e^3/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*a+15/4*e^2/b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.16, size = 199, normalized size = 1.67

$$\frac{2\,e^{2}\,\sqrt{d+e\,x}}{b^{3}}-\frac{\left(\frac{9\,b^{2}\,d\,e^{2}}{4}-\frac{9\,a\,b\,e^{3}}{4}\right)\,\left(d+e\,x\right)^{3/2}-\sqrt{d+e\,x}\,\left(\frac{7\,a^{2}\,e^{4}}{4}-\frac{7\,a\,b\,d\,e^{3}}{2}+\frac{7\,b^{2}\,d^{2}\,e^{2}}{4}\right)}{b^{5}\,\left(d+e\,x\right)^{2}-\left(2\,b^{5}\,d-2\,a\,b^{4}\,e\right)\,\left(d+e\,x\right)+b^{5}\,d^{2}+a^{2}\,b^{3}\,e^{2}-2\,a\,b^{4}\,d\,e}-\frac{15\,e^{2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,e^{2}\,\sqrt{a\,e-b\,d}\,\sqrt{d}}{a\,e^{3}-b\,d\,e^{2}}\right.}{4\,b^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (2*e^2*(d + e*x)^(1/2))/b^3 - (((9*b^2*d*e^2)/4 - (9*a*b*e^3)/4)*(d + e*x)^
(3/2) - (d + e*x)^(1/2)*((7*a^2*e^4)/4 + (7*b^2*d^2*e^2)/4 - (7*a*b*d*e^3)/
2))/(b^5*(d + e*x)^2 - (2*b^5*d - 2*a*b^4*e)*(d + e*x) + b^5*d^2 + a^2*b^3*
e^2 - 2*a*b^4*d*e) - (15*e^2*atan((b^(1/2)*e^2*(a*e - b*d)^(1/2)*(d + e*x)^
(1/2))/(a*e^3 - b*d*e^2))*(a*e - b*d)^(1/2))/(4*b^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2077 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2} \, dx$

Optimal. Leaf size=100

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}-\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}$$

```
[Out] -1/2*(e*x+d)^(3/2)/b/(b*x+a)^2-3/4*e^2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^(1/2)-3/4*e*(e*x+d)^(1/2)/b^2/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = $\{27, 47, 63, 208\}$

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}-\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (-3*e*Sqrt[d + e*x])/(4*b^2*(a + b*x)) - (d + e*x)^(3/2)/(2*b*(a + b*x)^2)
- (3*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(5/2)*Sqrt[
b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx \\
&= -\frac{(d+ex)^{3/2}}{2b(a+bx)^2}+\frac{(3e)\int \frac{\sqrt{d+ex}}{(a+bx)^2}\,dx}{4b} \\
&= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}+\frac{\left(3e^2\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b^2} \\
&= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}+\frac{(3e)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{4b^2} \\
&= -\frac{3e\sqrt{d+ex}}{4b^2(a+bx)}-\frac{(d+ex)^{3/2}}{2b(a+bx)^2}-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{5/2}\sqrt{bd-ae}}
\end{aligned}
$$

Mathematica [**A**]   time = 0.09, size = 90, normalized size = 0.90

$$\frac{3e^2\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{4b^{5/2}\sqrt{ae-bd}}-\frac{\sqrt{d+ex}\,(3ae+2bd+5bex)}{4b^2(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -1/4*(Sqrt[d + e*x]*(2*b*d + 3*a*e + 5*b*e*x))/(b^2*(a + b*x)^2) + (3*e^2*A
rcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d) + a*e]])/(4*b^(5/2)*Sqrt[-(b*d) +
 a*e])
```

fricas [**B**]   time = 0.96, size = 383, normalized size = 3.83

$$\Bigg[\frac{3\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(2\,b^3d^2+ab^2de-3\,a^2be^2+5\,\big(b^3}{8\left(a^2b^4d-a^3b^3e+\left(b^6d-ab^5e\right)x^2+2\left(ab^5d-a^2b^4e\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/8*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*
x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(2*b^
3*d^2 + a*b^2*d*e - 3*a^2*b*e^2 + 5*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))
/(a^2*b^4*d - a^3*b^3*e + (b^6*d - a*b^5*e)*x^2 + 2*(a*b^5*d - a^2*b^4*e)*x
), 1/4*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan
(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (2*b^3*d^2 + a*b^2*d*e
 - 3*a^2*b*e^2 + 5*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d - a^3
*b^3*e + (b^6*d - a*b^5*e)*x^2 + 2*(a*b^5*d - a^2*b^4*e)*x)]
```

giac [**A**]   time = 0.18, size = 112, normalized size = 1.12

$$\frac{3\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\,\sqrt{-b^2d+abe}\,b^2}-\frac{5\,(xe+d)^{\frac{3}{2}}\,be^2-3\,\sqrt{xe+d}\,bde^2+3\,\sqrt{xe+d}\,ae^3}{4\,((xe+d)b-bd+ae)^2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 3/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/(sqrt(-b^2*d + a*b*e)*
b^2) - 1/4*(5*(x*e + d)^(3/2)*b*e^2 - 3*sqrt(x*e + d)*b*d*e^2 + 3*sqrt(x*e
+ d)*a*e^3)/(((x*e + d)*b - b*d + a*e)^2*b^2)
```

maple [A] time = 0.07, size = 121, normalized size = 1.21

$$-\frac{3\sqrt{ex+d}\,a e^{3}}{4\left(bex+ae\right)^{2} b^{2}}+\frac{3\sqrt{ex+d}\,d e^{2}}{4\left(bex+ae\right)^{2} b}-\frac{5\left(ex+d\right)^{\frac{3}{2}} e^{2}}{4\left(bex+ae\right)^{2} b}+\frac{3e^{2}\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\sqrt{(ae-bd)\,b}\,b^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -5/4*e^2/(b*e*x+a*e)^2/b*(e*x+d)^(3/2)-3/4*e^3/(b*e*x+a*e)^2/b^2*(e*x+d)^(1
/2)*a+3/4*e^2/(b*e*x+a*e)^2/b*(e*x+d)^(1/2)*d+3/4*e^2/b^2/((a*e-b*d)*b)^(1/
2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.12, size = 135, normalized size = 1.35

$$\frac{3\,e^{2}\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,b^{5/2}\,\sqrt{a\,e-b\,d}}-\frac{\frac{5\,e^{2}\,(d+e\,x)^{3/2}}{4\,b}+\frac{3\,e^{2}\,(a\,e-b\,d)\,\sqrt{d+e\,x}}{4\,b^{2}}}{b^{2}\,(d+e\,x)^{2}-\left(2\,b^{2}\,d-2\,a\,b\,e\right)\,(d+e\,x)+a^{2}\,e^{2}+b^{2}\,d^{2}-2\,a\,b\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (3*e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(4*b^(5/2)*(a*e -
 b*d)^(1/2)) - ((5*e^2*(d + e*x)^(3/2))/(4*b) + (3*e^2*(a*e - b*d)*(d + e*x
)^(1/2))/(4*b^2))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^
2 + b^2*d^2 - 2*a*b*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2078 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=110

$$\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b(a+bx)(bd-ae)}-\frac{\sqrt{d+ex}}{2b(a+bx)^2}$$

```
[Out] 1/4*e^2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(3/2)/(-a*e+b*d)^
(3/2)-1/2*(e*x+d)^(1/2)/b/(b*x+a)^2-1/4*e*(e*x+d)^(1/2)/b/(-a*e+b*d)/(b*x+a
)
```

Rubi [A] time = 0.06, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 47, 51, 63, 208\}$

$$\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b(a+bx)(bd-ae)}-\frac{\sqrt{d+ex}}{2b(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -Sqrt[d + e*x]/(2*b*(a + b*x)^2) - (e*Sqrt[d + e*x])/(4*b*(b*d - a*e)*(a +
b*x)) + (e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*b^(3/2)*(
b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx \\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}+\frac{e\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{4b} \\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}-\frac{e^2\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8b(bd-ae)} \\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}-\frac{e\,\mathrm{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{4b(bd-ae)} \\
&= -\frac{\sqrt{d+ex}}{2b(a+bx)^2}-\frac{e\sqrt{d+ex}}{4b(bd-ae)(a+bx)}+\frac{e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4b^{3/2}(bd-ae)^{3/2}}
\end{aligned}
$$

Mathematica [C] time = 0.01, size = 52, normalized size = 0.47

$$\frac{2e^2(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (2*e^2*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 3, 5/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(3*(-(b*d) + a*e)^3)
```

fricas [B] time = 0.94, size = 456, normalized size = 4.15

$$\Bigg[-\frac{\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\,\Big(2\,b^3d^2-3\,ab^2de+a^2be^2+\Big(b^3de-a}{8\,\left(a^2b^4d^2-2\,a^3b^3de+a^4b^2e^2+\left(b^6d^2-2\,ab^5de+a^2b^4e^2\right)x^2+2\,\left(ab^5d^2-2\,a^2b^4de+a^3b^3e^2\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/8*((b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*x
 + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(2*b^3
*d^2 - 3*a*b^2*d*e + a^2*b*e^2 + (b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a
^2*b^4*d^2 - 2*a^3*b^3*d*e + a^4*b^2*e^2 + (b^6*d^2 - 2*a*b^5*d*e + a^2*b^4
*e^2)*x^2 + 2*(a*b^5*d^2 - 2*a^2*b^4*d*e + a^3*b^3*e^2)*x), -1/4*((b^2*e^2*
x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*
e)*sqrt(e*x + d)/(b*e*x + b*d)) + (2*b^3*d^2 - 3*a*b^2*d*e + a^2*b*e^2 + (b
^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d^2 - 2*a^3*b^3*d*e + a^4*b^
2*e^2 + (b^6*d^2 - 2*a*b^5*d*e + a^2*b^4*e^2)*x^2 + 2*(a*b^5*d^2 - 2*a^2*b^
4*d*e + a^3*b^3*e^2)*x)]
```

giac [A] time = 0.18, size = 132, normalized size = 1.20

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^2d-abe\right)\sqrt{-b^2d+abe}}-\frac{(xe+d)^{\frac{3}{2}}be^2+\sqrt{xe+d}\,bde^2-\sqrt{xe+d}\,ae^3}{4\left(b^2d-abe\right)((xe+d)b-bd+ae)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] -1/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d - a*b*e)*sqrt
(-b^2*d + a*b*e)) - 1/4*((x*e + d)^(3/2)*b*e^2 + sqrt(x*e + d)*b*d*e^2 - sq
rt(x*e + d)*a*e^3)/((b^2*d - a*b*e)*((x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.06, size = 111, normalized size = 1.01

$$\frac{e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)\,\sqrt{(ae-bd)\,b}\,b}+\frac{(ex+d)^{\frac{3}{2}}\,e^2}{4\,(bex+ae)^2\,(ae-bd)}-\frac{\sqrt{ex+d}\,e^2}{4\,(bex+ae)^2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 1/4*e^2/(b*e*x+a*e)^2/(a*e-b*d)*(e*x+d)^(3/2)-1/4*e^2/(b*e*x+a*e)^2/b*(e*x+
d)^(1/2)+1/4*e^2/(a*e-b*d)/b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e
-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 0.10, size = 135, normalized size = 1.23

$$\frac{e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,b^{3/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{e^2\,\sqrt{d+e\,x}}{4\,b}-\frac{e^2\,{\left(d+e\,x\right)}^{3/2}}{4\,\left(a\,e-b\,d\right)}}{b^2\,{\left(d+e\,x\right)}^2-\left(2\,b^2\,d-2\,a\,b\,e\right)\,\left(d+e\,x\right)+a^2\,e^2+b^2\,d^2-2\,a\,b\,d\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] (e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(4*b^(3/2)*(a*e - b
*d)^(3/2)) - ((e^2*(d + e*x)^(1/2))/(4*b) - (e^2*(d + e*x)^(3/2))/(4*(a*e -
 b*d)))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^2 + b^2*d^
2 - 2*a*b*d*e)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2079 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=114

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}+\frac{3e\sqrt{d+ex}}{4(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}}{2(a+bx)^2(bd-ae)}$$

```
[Out] -3/4*e^2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(5/2)/b
^(1/2)-1/2*(e*x+d)^(1/2)/(-a*e+b*d)/(b*x+a)^2+3/4*e*(e*x+d)^(1/2)/(-a*e+b*d
)^2/(b*x+a)
```

Rubi [A] time = 0.05, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = $\{27, 51, 63, 208\}$

$$-\frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}+\frac{3e\sqrt{d+ex}}{4(a+bx)(bd-ae)^2}-\frac{\sqrt{d+ex}}{2(a+bx)^2(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] -Sqrt[d + e*x]/(2*(b*d - a*e)*(a + b*x)^2) + (3*e*Sqrt[d + e*x])/(4*(b*d -
a*e)^2*(a + b*x)) - (3*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/(4*Sqrt[b]*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx$$

$$= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2} - \frac{(3e)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{4(bd-ae)}$$

$$= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2} + \frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)} + \frac{\left(3e^2\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{8(bd-ae)^2}$$

$$= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2} + \frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)} + \frac{(3e)\,\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx\right.}{4(bd-ae)^2}$$

$$= -\frac{\sqrt{d+ex}}{2(bd-ae)(a+bx)^2} + \frac{3e\sqrt{d+ex}}{4(bd-ae)^2(a+bx)} - \frac{3e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4\sqrt{b}\,(bd-ae)^{5/2}}$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.44

$$\frac{2e^2\sqrt{d+ex}\,{}_2F_1\left(\frac{1}{2},3;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (2*e^2*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 3, 3/2, -((b*(d + e*x))/(-(b*d)
 + a*e))])/(-(b*d) + a*e)^3
```

fricas [B] time = 0.86, size = 549, normalized size = 4.82

$$\left[\frac{3\left(b^2e^2x^2+2\,abe^2x+a^2e^2\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(2\,b^3d^2-7\,ab^2de+5\,a^2be^2-3\left(b\right.\right.}{8\left(a^2b^4d^3-3\,a^3b^3d^2e+3\,a^4b^2de^2-a^5be^3+\left(b^6d^3-3\,ab^5d^2e+3\,a^2b^4de^2-a^3b^3e^3\right)x^2+2\left(ab^5d^3-3\,a^2b^4d^2e\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/8*(3*(b^2*e^2*x^2 + 2*a*b*e^2*x + a^2*e^2)*sqrt(b^2*d - a*b*e)*log((b*e*
x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(2*b^
3*d^2 - 7*a*b^2*d*e + 5*a^2*b*e^2 - 3*(b^3*d*e - a*b^2*e^2)*x)*sqrt(e*x + d
))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e + 3*a^4*b^2*d*e^2 - a^5*b*e^3 + (b^6*d^3
- 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3)*x^2 + 2*(a*b^5*d^3 - 3*a^2
*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4*b^2*e^3)*x), 1/4*(3*(b^2*e^2*x^2 + 2*a*b
*e^2*x + a^2*e^2)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x
 + d)/(b*e*x + b*d)) - (2*b^3*d^2 - 7*a*b^2*d*e + 5*a^2*b*e^2 - 3*(b^3*d*e
- a*b^2*e^2)*x)*sqrt(e*x + d))/(a^2*b^4*d^3 - 3*a^3*b^3*d^2*e + 3*a^4*b^2*d
*e^2 - a^5*b*e^3 + (b^6*d^3 - 3*a*b^5*d^2*e + 3*a^2*b^4*d*e^2 - a^3*b^3*e^3
)*x^2 + 2*(a*b^5*d^3 - 3*a^2*b^4*d^2*e + 3*a^3*b^3*d*e^2 - a^4*b^2*e^3)*x)]
```

giac [A] time = 0.17, size = 152, normalized size = 1.33

$$\frac{3\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^2d^2-2\,abde+a^2e^2\right)\sqrt{-b^2d+abe}} + \frac{3\,(xe+d)^{\frac{3}{2}}be^2-5\,\sqrt{xe+d}\,bde^2+5\,\sqrt{xe+d}\,ae^3}{4\left(b^2d^2-2\,abde+a^2e^2\right)\left((xe+d)b-bd+ae\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 3/4*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d^2 - 2*a*b*d*e
+ a^2*e^2)*sqrt(-b^2*d + a*b*e)) + 1/4*(3*(x*e + d)^(3/2)*b*e^2 - 5*sqrt(x*
e + d)*b*d*e^2 + 5*sqrt(x*e + d)*a*e^3)/((b^2*d^2 - 2*a*b*d*e + a^2*e^2)*((
x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.05, size = 115, normalized size = 1.01

$$\frac{3e^2\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^2\sqrt{(ae-bd)\,b}}+\frac{\sqrt{ex+d}\,e^2}{2\,(ae-bd)\,(bex+ae)^2}+\frac{3\sqrt{ex+d}\,e^2}{4\,(ae-bd)^2\,(bex+ae)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x)
```

```
[Out] 1/2*e^2*(e*x+d)^(1/2)/(a*e-b*d)/(b*e*x+a*e)^2+3/4*e^2/(a*e-b*d)^2*(e*x+d)^(
1/2)/(b*e*x+a*e)+3/4*e^2/(a*e-b*d)^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/
2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^2/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.15, size = 142, normalized size = 1.25

$$\frac{\frac{5\,e^2\,\sqrt{d+e\,x}}{4\,(a\,e-b\,d)}+\frac{3\,b\,e^2\,(d+e\,x)^{3/2}}{4\,(a\,e-b\,d)^2}}{b^2\,(d+e\,x)^2-\left(2\,b^2\,d-2\,a\,b\,e\right)\,(d+e\,x)+a^2\,e^2+b^2\,d^2-2\,a\,b\,d\,e}+\frac{3\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{4\,\sqrt{b}\,(a\,e-b\,d)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((5*e^2*(d + e*x)^(1/2))/(4*(a*e - b*d)) + (3*b*e^2*(d + e*x)^(3/2))/(4*(a*
e - b*d)^2))/(b^2*(d + e*x)^2 - (2*b^2*d - 2*a*b*e)*(d + e*x) + a^2*e^2 + b
^2*d^2 - 2*a*b*d*e) + (3*e^2*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/
2)))/(4*b^(1/2)*(a*e - b*d)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**2/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.2080 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=140

$$\frac{15e^2}{4\sqrt{d+ex}\,(bd-ae)^3}-\frac{15\sqrt{b}\,e^2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{7/2}}+\frac{5e}{4(a+bx)\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{2(a+bx)^2\sqrt{d+ex}\,(bd-ae)}$$

```
[Out] -15/4*e^2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b*d
)^(7/2)+15/4*e^2/(-a*e+b*d)^3/(e*x+d)^(1/2)-1/2/(-a*e+b*d)/(b*x+a)^2/(e*x+d
)^(1/2)+5/4*e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 140, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 51, 63, 208\}$

$$\frac{15e^2}{4\sqrt{d+ex}\,(bd-ae)^3}-\frac{15\sqrt{b}\,e^2\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{7/2}}+\frac{5e}{4(a+bx)\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{2(a+bx)^2\sqrt{d+ex}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (15*e^2)/(4*(b*d - a*e)^3*Sqrt[d + e*x]) - 1/(2*(b*d - a*e)*(a + b*x)^2*Sqr
t[d + e*x]) + (5*e)/(4*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x]) - (15*Sqrt[b]
*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(7/2)
)
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3(d+ex)^{3/2}}\,dx$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} - \frac{(5e)\int \frac{1}{(a+bx)^2(d+ex)^{3/2}}\,dx}{4(bd-ae)}$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+bx)\sqrt{d+ex}} + \frac{\left(15e^2\right)\int}{8(}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+bx}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+bx}$$

$$= \frac{15e^2}{4(bd-ae)^3\sqrt{d+ex}} - \frac{1}{2(bd-ae)(a+bx)^2\sqrt{d+ex}} + \frac{5e}{4(bd-ae)^2(a+bx}$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.36

$$-\frac{2e^2\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{d+ex}\,(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-1/2, 3, 1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/(
(-(b*d) + a*e)^3*Sqrt[d + e*x])
```

fricas [B] time = 0.88, size = 782, normalized size = 5.59

$$\left[-\frac{15\left(b^2e^3x^3+a^2de^2+\left(b^2de^2+2\,abe^3\right)x^2+\left(2\,abde^2+a^2e^3\right)x\right)\sqrt{\frac{b}{bd-ae}}\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\,\sqrt{}}{bx+a}\right.}{8\left(a^2b^3d^4-3\,a^3b^2d^3e+3\,a^4bd^2e^2-a^5de^3+\left(b^5d^3e-3\,ab^4d^2e^2+3\,a^2b^3de^3-a^3b^2e^4\right)x^3+\left(b^5d^4-ab^4d^3e-3\,a^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/8*(15*(b^2*e^3*x^3 + a^2*d*e^2 + (b^2*d*e^2 + 2*a*b*e^3)*x^2 + (2*a*b*d
*e^2 + a^2*e^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d -
a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(15*b^2*e^2*x^2 - 2*
b^2*d^2 + 9*a*b*d*e + 8*a^2*e^2 + 5*(b^2*d*e + 5*a*b*e^2)*x)*sqrt(e*x + d))
/(a^2*b^3*d^4 - 3*a^3*b^2*d^3*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e
- 3*a*b^4*d^2*e^2 + 3*a^2*b^3*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d
^3*e - 3*a^2*b^3*d^2*e^2 + 5*a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^
4 - 5*a^2*b^3*d^3*e + 3*a^3*b^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x), -1/4*(
15*(b^2*e^3*x^3 + a^2*d*e^2 + (b^2*d*e^2 + 2*a*b*e^3)*x^2 + (2*a*b*d*e^2 +
a^2*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/
(b*d - a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 - 2*b^2*d^2 + 9*a*b*d*e + 8*a
^2*e^2 + 5*(b^2*d*e + 5*a*b*e^2)*x)*sqrt(e*x + d))/(a^2*b^3*d^4 - 3*a^3*b^2
*d^3*e + 3*a^4*b*d^2*e^2 - a^5*d*e^3 + (b^5*d^3*e - 3*a*b^4*d^2*e^2 + 3*a^2
*b^3*d*e^3 - a^3*b^2*e^4)*x^3 + (b^5*d^4 - a*b^4*d^3*e - 3*a^2*b^3*d^2*e^2
+ 5*a^3*b^2*d*e^3 - 2*a^4*b*e^4)*x^2 + (2*a*b^4*d^4 - 5*a^2*b^3*d^3*e + 3*a
^3*b^2*d^2*e^2 + a^4*b*d*e^3 - a^5*e^4)*x)]
```

giac [**B**] time = 0.18, size = 235, normalized size = 1.68

$$\frac{15\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{-b^2d+abe}}+\frac{2\,e^2}{\left(b^3d^3-3\,ab^2d^2e+3\,a^2bde^2-a^3e^3\right)\sqrt{xe+d}}+\frac{7\,(xe+}{4\,(b^3d^3-3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 15/4*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^3*d^3 - 3*a*b^2
*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(-b^2*d + a*b*e)) + 2*e^2/((b^3*d^3 -
 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*sqrt(x*e + d)) + 1/4*(7*(x*e + d)
^(3/2)*b^2*e^2 - 9*sqrt(x*e + d)*b^2*d*e^2 + 9*sqrt(x*e + d)*a*b*e^3)/((b^3
*d^3 - 3*a*b^2*d^2*e + 3*a^2*b*d*e^2 - a^3*e^3)*((x*e + d)*b - b*d + a*e)^2
)
```

maple [**A**] time = 0.11, size = 179, normalized size = 1.28

$$-\frac{9\sqrt{ex+d}\;abe^3}{4\,(ae-bd)^3\,(bex+ae)^2}+\frac{9\sqrt{ex+d}\;b^2de^2}{4\,(ae-bd)^3\,(bex+ae)^2}-\frac{7\,(ex+d)^{\frac{3}{2}}\,b^2e^2}{4\,(ae-bd)^3\,(bex+ae)^2}-\frac{15b\,e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^3\,\sqrt{(ae-bd)\,b}}-\frac{}{(ae-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -7/4*e^2/(a*e-b*d)^3*b^2/(b*e*x+a*e)^2*(e*x+d)^(3/2)-9/4*e^3/(a*e-b*d)^3*b/
(b*e*x+a*e)^2*(e*x+d)^(1/2)*a+9/4*e^2/(a*e-b*d)^3*b^2/(b*e*x+a*e)^2*(e*x+d)
^(1/2)*d-15/4*e^2/(a*e-b*d)^3*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)-2*e^2/(a*e-b*d)^3/(e*x+d)^(1/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.32, size = 205, normalized size = 1.46

$$-\frac{\frac{2\,e^2}{a\,e-b\,d}+\frac{15\,b^2\,e^2\,(d+e\,x)^2}{4\,(a\,e-b\,d)^3}+\frac{25\,b\,e^2\,(d+e\,x)}{4\,(a\,e-b\,d)^2}}{b^2\,(d+e\,x)^{5/2}-\left(2\,b^2\,d-2\,a\,b\,e\right)\,(d+e\,x)^{3/2}+\sqrt{d+e\,x}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}-\frac{15\,\sqrt{b}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,(}{}\right.}{4\,(a\,e-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*e^2)/(a*e - b*d) + (15*b^2*e^2*(d + e*x)^2)/(4*(a*e - b*d)^3) + (25*b
*e^2*(d + e*x))/(4*(a*e - b*d)^2))/(b^2*(d + e*x)^(5/2) - (2*b^2*d - 2*a*b*
e)*(d + e*x)^(3/2) + (d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) - (15
*b^(1/2)*e^2*atan((b^(1/2)*(d + e*x)^(1/2)*(a^3*e^3 - b^3*d^3 + 3*a*b^2*d^2
*e - 3*a^2*b*d*e^2))/(a*e - b*d)^(7/2)))/(4*(a*e - b*d)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2081 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=167

$$-\frac{35b^{3/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{9/2}}+\frac{35be^2}{4\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^2}{12(d+ex)^{3/2}(bd-ae)^3}+\frac{7e}{4(a+bx)(d+ex)^{3/2}(bd-ae)^2}-$$

```
[Out] 35/12*e^2/(-a*e+b*d)^3/(e*x+d)^(3/2)-1/2/(-a*e+b*d)/(b*x+a)^2/(e*x+d)^(3/2)
+7/4*e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(3/2)-35/4*b^(3/2)*e^2*arctanh(b^(1/2)*
(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(9/2)+35/4*b*e^2/(-a*e+b*d)^4/(e
*x+d)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 51, 63, 208\}$

$$-\frac{35b^{3/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{9/2}}+\frac{35be^2}{4\sqrt{d+ex}\,(bd-ae)^4}+\frac{35e^2}{12(d+ex)^{3/2}(bd-ae)^3}+\frac{7e}{4(a+bx)(d+ex)^{3/2}(bd-ae)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (35*e^2)/(12*(b*d - a*e)^3*(d + e*x)^(3/2)) - 1/(2*(b*d - a*e)*(a + b*x)^2*
(d + e*x)^(3/2)) + (7*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(3/2)) + (35*
b*e^2)/(4*(b*d - a*e)^4*Sqrt[d + e*x]) - (35*b^(3/2)*e^2*ArcTanh[(Sqrt[b]*S
qrt[d + e*x])/Sqrt[b*d - a*e]])/(4*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx = \int \frac{1}{(a+bx)^3(d+ex)^{5/2}}\,dx$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} - \frac{(7e)\int \frac{1}{(a+bx)^2(d+ex)^{5/2}}\,dx}{4(bd-ae)}$$

$$= -\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7e}{4(bd-ae)^2(a+bx)(d+ex)^{3/2}} + \big(35e^2$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7}{4(bd-ae)^2(a}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7}{4(bd-ae)^2(a}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7}{4(bd-ae)^2(a}$$

$$= \frac{35e^2}{12(bd-ae)^3(d+ex)^{3/2}} - \frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{3/2}} + \frac{7}{4(bd-ae)^2(a}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.31

$$-\frac{2e^2\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(d+ex)^{3/2}(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-3/2, 3, -1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(3*(-(b*d) + a*e)^3*(d + e*x)^(3/2))
```

fricas [B] time = 0.89, size = 1226, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [1/24*(105*(b^3*e^4*x^4 + a^2*b*d^2*e^2 + 2*(b^3*d*e^3 + a*b^2*e^4)*x^3 + (
b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 2*(a*b^2*d^2*e^2 + a^2*b*d*e
^3)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*
x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(105*b^3*e^3*x^3 - 6*b^3*d^3 + 3
9*a*b^2*d^2*e + 80*a^2*b*d*e^2 - 8*a^3*e^3 + 35*(4*b^3*d*e^2 + 5*a*b^2*e^3)
*x^2 + 7*(3*b^3*d^2*e + 34*a*b^2*d*e^2 + 8*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^
2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^6*d^2
*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*d*e^5
 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e^3 +
2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^2*b^4
*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(a*b^5
*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5*b*d^
2*e^4 + a^6*d*e^5)*x), -1/12*(105*(b^3*e^4*x^4 + a^2*b*d^2*e^2 + 2*(b^3*d*e
^3 + a*b^2*e^4)*x^3 + (b^3*d^2*e^2 + 4*a*b^2*d*e^3 + a^2*b*e^4)*x^2 + 2*(a*
b^2*d^2*e^2 + a^2*b*d*e^3)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt
(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (105*b^3*e^3*x^3 - 6*b^3*d^
3 + 39*a*b^2*d^2*e + 80*a^2*b*d*e^2 - 8*a^3*e^3 + 35*(4*b^3*d*e^2 + 5*a*b^2
*e^3)*x^2 + 7*(3*b^3*d^2*e + 34*a*b^2*d*e^2 + 8*a^2*b*e^3)*x)*sqrt(e*x + d)
)/(a^2*b^4*d^6 - 4*a^3*b^3*d^5*e + 6*a^4*b^2*d^4*e^2 - 4*a^5*b*d^3*e^3 + a^
6*d^2*e^4 + (b^6*d^4*e^2 - 4*a*b^5*d^3*e^3 + 6*a^2*b^4*d^2*e^4 - 4*a^3*b^3*
d*e^5 + a^4*b^2*e^6)*x^4 + 2*(b^6*d^5*e - 3*a*b^5*d^4*e^2 + 2*a^2*b^4*d^3*e
^3 + 2*a^3*b^3*d^2*e^4 - 3*a^4*b^2*d*e^5 + a^5*b*e^6)*x^3 + (b^6*d^6 - 9*a^
2*b^4*d^4*e^2 + 16*a^3*b^3*d^3*e^3 - 9*a^4*b^2*d^2*e^4 + a^6*e^6)*x^2 + 2*(
a*b^5*d^6 - 3*a^2*b^4*d^5*e + 2*a^3*b^3*d^4*e^2 + 2*a^4*b^2*d^3*e^3 - 3*a^5
*b*d^2*e^4 + a^6*d*e^5)*x)]
```

giac [B] time = 0.21, size = 295, normalized size = 1.77

$$\frac{35\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{2\left(9\,(xe+d)be^2+bde^2-ae^3\right)}{3\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 35/4*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^4*d^4 - 4*a*b
^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(-b^2*d + a*b*e
)) + 2/3*(9*(x*e + d)*b*e^2 + b*d*e^2 - a*e^3)/((b^4*d^4 - 4*a*b^3*d^3*e +
6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*(x*e + d)^(3/2)) + 1/4*(11*(x*
e + d)^(3/2)*b^3*e^2 - 13*sqrt(x*e + d)*b^3*d*e^2 + 13*sqrt(x*e + d)*a*b^2*
e^3)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^
4)*((x*e + d)*b - b*d + a*e)^2)
```

maple [A] time = 0.07, size = 206, normalized size = 1.23

$$\frac{13\sqrt{ex+d}\;a\,b^2e^3}{4\,(ae-bd)^4\,(bex+ae)^2}-\frac{13\sqrt{ex+d}\;b^3d\,e^2}{4\,(ae-bd)^4\,(bex+ae)^2}+\frac{11\,(ex+d)^{\frac{3}{2}}\,b^3e^2}{4\,(ae-bd)^4\,(bex+ae)^2}+\frac{35b^2e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\,(ae-bd)^4\,\sqrt{(ae-bd)\,b}}+\frac{}{(ae-b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] 11/4*e^2/(a*e-b*d)^4*b^3/(b*e*x+a*e)^2*(e*x+d)^(3/2)+13/4*e^3/(a*e-b*d)^4*b
^2/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a-13/4*e^2/(a*e-b*d)^4*b^3/(b*e*x+a*e)^2*(e*
x+d)^(1/2)*d+35/4*e^2/(a*e-b*d)^4*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1
/2)/((a*e-b*d)*b)^(1/2)*b)-2/3*e^2/(a*e-b*d)^3/(e*x+d)^(3/2)+6*e^2/(a*e-b*d
)^4*b/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad **[B]** time = 2.54, size = 243, normalized size = 1.46

$$\frac{\frac{175\,b^2\,e^2\,(d+e\,x)^2}{12\,(a\,e-b\,d)^3}-\frac{2\,e^2}{3\,(a\,e-b\,d)}+\frac{35\,b^3\,e^2\,(d+e\,x)^3}{4\,(a\,e-b\,d)^4}+\frac{14\,b\,e^2\,(d+e\,x)}{3\,(a\,e-b\,d)^2}}{b^2\,(d+e\,x)^{7/2}-\left(2\,b^2\,d-2\,a\,b\,e\right)\,(d+e\,x)^{5/2}+(d+e\,x)^{3/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}+\frac{35\,b^{3/2}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a^4\,e\right.}{}\right.}{4\,(a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] ((175*b^2*e^2*(d + e*x)^2)/(12*(a*e - b*d)^3) - (2*e^2)/(3*(a*e - b*d)) + (
35*b^3*e^2*(d + e*x)^3)/(4*(a*e - b*d)^4) + (14*b*e^2*(d + e*x))/(3*(a*e -
b*d)^2))/(b^2*(d + e*x)^(7/2) - (2*b^2*d - 2*a*b*e)*(d + e*x)^(5/2) + (d +
e*x)^(3/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e)) + (35*b^(3/2)*e^2*atan((b^(1/2)
*(d + e*x)^(1/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4
*a^3*b*d*e^3))/(a*e - b*d)^(9/2)))/(4*(a*e - b*d)^(9/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2082 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=196

$$-\frac{63b^{5/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{11/2}}+\frac{63b^2e^2}{4\sqrt{d+ex}\,(bd-ae)^5}+\frac{21be^2}{4(d+ex)^{3/2}(bd-ae)^4}+\frac{63e^2}{20(d+ex)^{5/2}(bd-ae)^3}+\frac{}{4(a+bx}$$

```
[Out] 63/20*e^2/(-a*e+b*d)^3/(e*x+d)^(5/2)-1/2/(-a*e+b*d)/(b*x+a)^2/(e*x+d)^(5/2)
+9/4*e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(5/2)+21/4*b*e^2/(-a*e+b*d)^4/(e*x+d)^(
3/2)-63/4*b^(5/2)*e^2*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e
+b*d)^(11/2)+63/4*b^2*e^2/(-a*e+b*d)^5/(e*x+d)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 196, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = $\{27, 51, 63, 208\}$

$$\frac{63b^2e^2}{4\sqrt{d+ex}\,(bd-ae)^5}-\frac{63b^{5/2}e^2\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{4(bd-ae)^{11/2}}+\frac{21be^2}{4(d+ex)^{3/2}(bd-ae)^4}+\frac{63e^2}{20(d+ex)^{5/2}(bd-ae)^3}+\frac{}{4(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (63*e^2)/(20*(b*d - a*e)^3*(d + e*x)^(5/2)) - 1/(2*(b*d - a*e)*(a + b*x)^2*
(d + e*x)^(5/2)) + (9*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(5/2)) + (21*
b*e^2)/(4*(b*d - a*e)^4*(d + e*x)^(3/2)) + (63*b^2*e^2)/(4*(b*d - a*e)^5*Sq
rt[d + e*x]) - (63*b^(5/2)*e^2*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a
*e]])/(4*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^2}\,dx=\int \frac{1}{(a+bx)^3(d+ex)^{7/2}}\,dx$$

$$=-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}-\frac{(9e)\int \frac{1}{(a+bx)^2(d+ex)^{7/2}}\,dx}{4(bd-ae)}$$

$$=-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{9e}{4(bd-ae)^2(a+bx)(d+ex)^{5/2}}+\frac{\big(63e^2}{}$$

$$=\frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}}-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{}{4(bd-ae)^2(a}$$

$$=\frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}}-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{}{4(bd-ae)^2(a}$$

$$=\frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}}-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{}{4(bd-ae)^2(a}$$

$$=\frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}}-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{}{4(bd-ae)^2(a}$$

$$=\frac{63e^2}{20(bd-ae)^3(d+ex)^{5/2}}-\frac{1}{2(bd-ae)(a+bx)^2(d+ex)^{5/2}}+\frac{}{4(bd-ae)^2(a}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.27

$$-\frac{2e^2\,{}_2F_1\left(-\frac{5}{2},3;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5(d+ex)^{5/2}(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^2),x]
```

```
[Out] (-2*e^2*Hypergeometric2F1[-5/2, 3, -3/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(5*(-(b*d) + a*e)^3*(d + e*x)^(5/2))
```

fricas [B] time = 1.32, size = 1858, normalized size = 9.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="frica
s")
```

```
[Out] [-1/40*(315*(b^4*e^5*x^5 + a^2*b^2*d^3*e^2 + (3*b^4*d*e^4 + 2*a*b^3*e^5)*x^
4 + (3*b^4*d^2*e^3 + 6*a*b^3*d*e^4 + a^2*b^2*e^5)*x^3 + (b^4*d^3*e^2 + 6*a*
b^3*d^2*e^3 + 3*a^2*b^2*d*e^4)*x^2 + (2*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3)*
x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x +
d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(315*b^4*e^4*x^4 - 10*b^4*d^4 + 85*a
*b^3*d^3*e + 288*a^2*b^2*d^2*e^2 - 56*a^3*b*d*e^3 + 8*a^4*e^4 + 105*(7*b^4*
d*e^3 + 5*a*b^3*e^4)*x^3 + 21*(23*b^4*d^2*e^2 + 59*a*b^3*d*e^3 + 8*a^2*b^2*
e^4)*x^2 + 3*(15*b^4*d^3*e + 277*a*b^3*d^2*e^2 + 136*a^2*b^2*d*e^3 - 8*a^3*
b*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*b^4*d^7*e + 10*a^4*b^3*d^6*e^
2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7*d^3*e^5 + (b^7*d^5*e^3 - 5*a
*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4*d^2*e^6 + 5*a^4*b^3*d*e^7 -
a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d^5*e^3 + 20*a^2*b^5*d^4*e^4 -
 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^5*b^2*d*e^7 - 2*a^6*b*e^8)*x^
4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d^5*e^3 + 25*a^3*b^4*d^4*e^4 -
 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6*b*d*e^7 - a^7*e^8)*x^3 + (b^
7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*a^3*b^4*d^5*e^3 - 25*a^4*b^3*
d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 - 3*a^7*d*e^7)*x^2 + (2*a*b^6*d
^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*a^4*b^3*d^5*e^3 - 20*a^5*b^2*
d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x), -1/20*(315*(b^4*e^5*x^5 + a
^2*b^2*d^3*e^2 + (3*b^4*d*e^4 + 2*a*b^3*e^5)*x^4 + (3*b^4*d^2*e^3 + 6*a*b^3
*d*e^4 + a^2*b^2*e^5)*x^3 + (b^4*d^3*e^2 + 6*a*b^3*d^2*e^3 + 3*a^2*b^2*d*e^
4)*x^2 + (2*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3)*x)*sqrt(-b/(b*d - a*e))*arct
an(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (315*b^
4*e^4*x^4 - 10*b^4*d^4 + 85*a*b^3*d^3*e + 288*a^2*b^2*d^2*e^2 - 56*a^3*b*d*
e^3 + 8*a^4*e^4 + 105*(7*b^4*d*e^3 + 5*a*b^3*e^4)*x^3 + 21*(23*b^4*d^2*e^2
+ 59*a*b^3*d*e^3 + 8*a^2*b^2*e^4)*x^2 + 3*(15*b^4*d^3*e + 277*a*b^3*d^2*e^2
 + 136*a^2*b^2*d*e^3 - 8*a^3*b*e^4)*x)*sqrt(e*x + d))/(a^2*b^5*d^8 - 5*a^3*
b^4*d^7*e + 10*a^4*b^3*d^6*e^2 - 10*a^5*b^2*d^5*e^3 + 5*a^6*b*d^4*e^4 - a^7
*d^3*e^5 + (b^7*d^5*e^3 - 5*a*b^6*d^4*e^4 + 10*a^2*b^5*d^3*e^5 - 10*a^3*b^4
*d^2*e^6 + 5*a^4*b^3*d*e^7 - a^5*b^2*e^8)*x^5 + (3*b^7*d^6*e^2 - 13*a*b^6*d
^5*e^3 + 20*a^2*b^5*d^4*e^4 - 10*a^3*b^4*d^3*e^5 - 5*a^4*b^3*d^2*e^6 + 7*a^
5*b^2*d*e^7 - 2*a^6*b*e^8)*x^4 + (3*b^7*d^7*e - 9*a*b^6*d^6*e^2 + a^2*b^5*d
^5*e^3 + 25*a^3*b^4*d^4*e^4 - 35*a^4*b^3*d^3*e^5 + 17*a^5*b^2*d^2*e^6 - a^6
*b*d*e^7 - a^7*e^8)*x^3 + (b^7*d^8 + a*b^6*d^7*e - 17*a^2*b^5*d^6*e^2 + 35*
a^3*b^4*d^5*e^3 - 25*a^4*b^3*d^4*e^4 - a^5*b^2*d^3*e^5 + 9*a^6*b*d^2*e^6 -
3*a^7*d*e^7)*x^2 + (2*a*b^6*d^8 - 7*a^2*b^5*d^7*e + 5*a^3*b^4*d^6*e^2 + 10*
a^4*b^3*d^5*e^3 - 20*a^5*b^2*d^4*e^4 + 13*a^6*b*d^3*e^5 - 3*a^7*d^2*e^6)*x)
]
```

giac [**B**] time = 0.23, size = 379, normalized size = 1.93

$$\frac{63\,b^3\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{4\left(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d^3e^2-10\,a^3b^2d^2e^3+5\,a^4bde^4-a^5e^5\right)\sqrt{-b^2d+abe}}+\frac{15\,(xe+d)^{\frac{3}{2}}b}{4\,(b^5d^5-5\,ab^4d^4e+10\,a^2b^3d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac"
)
```

```
[Out] 63/4*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^5*d^5 - 5*a*b
^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^
5)*sqrt(-b^2*d + a*b*e)) + 1/4*(15*(x*e + d)^(3/2)*b^4*e^2 - 17*sqrt(x*e +
d)*b^4*d*e^2 + 17*sqrt(x*e + d)*a*b^3*e^3)/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a
^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*((x*e + d)*b
 - b*d + a*e)^2) + 2/5*(30*(x*e + d)^2*b^2*e^2 + 5*(x*e + d)*b^2*d*e^2 + b^
2*d^2*e^2 - 5*(x*e + d)*a*b*e^3 - 2*a*b*d*e^3 + a^2*e^4)/((b^5*d^5 - 5*a*b^
4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5
)*(x*e + d)^(5/2))
```

maple [**A**] time = 0.07, size = 231, normalized size = 1.18

$$-\frac{17\sqrt{ex+d}\;a\,b^3e^3}{4\left(ae-bd\right)^5\left(bex+ae\right)^2}+\frac{17\sqrt{ex+d}\;b^4d\,e^2}{4\left(ae-bd\right)^5\left(bex+ae\right)^2}-\frac{15\left(ex+d\right)^{\frac{3}{2}}b^4e^2}{4\left(ae-bd\right)^5\left(bex+ae\right)^2}-\frac{63b^3e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{4\left(ae-bd\right)^5\sqrt{(ae-bd)\,b}}-\frac{}{(ae-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] -15/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^2*(e*x+d)^(3/2)-17/4*e^3/(a*e-b*d)^5*
b^3/(b*e*x+a*e)^2*(e*x+d)^(1/2)*a+17/4*e^2/(a*e-b*d)^5*b^4/(b*e*x+a*e)^2*(e
*x+d)^(1/2)*d-63/4*e^2/(a*e-b*d)^5*b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)*b)-2/5*e^2/(a*e-b*d)^3/(e*x+d)^(5/2)-12*e^2/(a*e-b
*d)^5*b^2/(e*x+d)^(1/2)+2*e^2/(a*e-b*d)^4*b/(e*x+d)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.54, size = 284, normalized size = 1.45

$$-\frac{\frac{2\,e^2}{5\,\left(a\,e-b\,d\right)}+\frac{42\,b^2\,e^2\,{\left(d+e\,x\right)}^2}{5\,{\left(a\,e-b\,d\right)}^3}+\frac{105\,b^3\,e^2\,{\left(d+e\,x\right)}^3}{4\,{\left(a\,e-b\,d\right)}^4}+\frac{63\,b^4\,e^2\,{\left(d+e\,x\right)}^4}{4\,{\left(a\,e-b\,d\right)}^5}-\frac{6\,b\,e^2\,\left(d+e\,x\right)}{5\,{\left(a\,e-b\,d\right)}^2}}{b^2\,{\left(d+e\,x\right)}^{9/2}-\left(2\,b^2\,d-2\,a\,b\,e\right)\,{\left(d+e\,x\right)}^{7/2}+{\left(d+e\,x\right)}^{5/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\,d^2\right)}-63\,b^{5/2}\,e^2\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}\,\left(a\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^2),x)
```

```
[Out] - ((2*e^2)/(5*(a*e - b*d)) + (42*b^2*e^2*(d + e*x)^2)/(5*(a*e - b*d)^3) + (
105*b^3*e^2*(d + e*x)^3)/(4*(a*e - b*d)^4) + (63*b^4*e^2*(d + e*x)^4)/(4*(a
*e - b*d)^5) - (6*b*e^2*(d + e*x))/(5*(a*e - b*d)^2))/(b^2*(d + e*x)^(9/2)
- (2*b^2*d - 2*a*b*e)*(d + e*x)^(7/2) + (d + e*x)^(5/2)*(a^2*e^2 + b^2*d^2
- 2*a*b*d*e)) - (63*b^(5/2)*e^2*atan((b^(1/2)*(d + e*x)^(1/2)*(a^5*e^5 - b^
5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d
*e^4))/(a*e - b*d)^(11/2)))/(4*(a*e - b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2083 $\int \frac{(a+bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=198

$$-\frac{1155e^4(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{13/2}}+\frac{1155e^4\sqrt{d+ex}\,(bd-ae)}{64b^6}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{11e(d+}{24b^2(a+}$$

```
[Out] 385/64*e^4*(e*x+d)^(3/2)/b^5-231/64*e^3*(e*x+d)^(5/2)/b^4/(b*x+a)-33/32*e^2
*(e*x+d)^(7/2)/b^3/(b*x+a)^2-11/24*e*(e*x+d)^(9/2)/b^2/(b*x+a)^3-1/4*(e*x+d
)^(11/2)/b/(b*x+a)^4-1155/64*e^4*(-a*e+b*d)^(3/2)*arctanh(b^(1/2)*(e*x+d)^(
1/2)/(-a*e+b*d)^(1/2))/b^(13/2)+1155/64*e^4*(-a*e+b*d)*(e*x+d)^(1/2)/b^6
```

Rubi [A] time = 0.12, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = {27, 47, 50, 63, 208}

$$-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}+\frac{1155e^4\sqrt{d+ex}\,(bd-ae)}{64b^6}-\frac{1155e^4(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{13/2}}-\frac{11e(d+}{24b^2(a+}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (1155*e^4*(b*d - a*e)*Sqrt[d + e*x])/(64*b^6) + (385*e^4*(d + e*x)^(3/2))/(
64*b^5) - (231*e^3*(d + e*x)^(5/2))/(64*b^4*(a + b*x)) - (33*e^2*(d + e*x)^
(7/2))/(32*b^3*(a + b*x)^2) - (11*e*(d + e*x)^(9/2))/(24*b^2*(a + b*x)^3) -
 (d + e*x)^(11/2)/(4*b*(a + b*x)^4) - (1155*e^4*(b*d - a*e)^(3/2)*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{11/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(d+ex)^{11/2}}{(a+bx)^5}\,dx$$

$$=-\frac{(d+ex)^{11/2}}{4b(a+bx)^4}+\frac{(11e)\int \frac{(d+ex)^{9/2}}{(a+bx)^4}\,dx}{8b}$$

$$=-\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{11/2}}{4b(a+bx)^4}+\frac{\left(33e^2\right)\int \frac{(d+ex)^{7/2}}{(a+bx)^3}\,dx}{16b^2}$$

$$=-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{11/2}}{4b(a+bx)^4}+\frac{\left(231e^3\right)\int \frac{(d+ex)^{5/2}}{(a+bx)^2}\,dx}{64b^3}$$

$$=-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{11/2}}{4b(a+bx)^4}+\frac{\left(1155e^4\right)\int \frac{(d}{}}{128b}$$

$$=\frac{385e^4(d+ex)^{3/2}}{64b^5}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-\frac{11e(d+ex)^{9/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{11/}}{4b(a+bx)}$$

$$=\frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6}+\frac{385e^4(d+ex)^{3/2}}{64b^5}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-$$

$$=\frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6}+\frac{385e^4(d+ex)^{3/2}}{64b^5}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-$$

$$=\frac{1155e^4(bd-ae)\sqrt{d+ex}}{64b^6}+\frac{385e^4(d+ex)^{3/2}}{64b^5}-\frac{231e^3(d+ex)^{5/2}}{64b^4(a+bx)}-\frac{33e^2(d+ex)^{7/2}}{32b^3(a+bx)^2}-$$

Mathematica [C] time = 0.03, size = 52, normalized size = 0.26

$$\frac{2e^4(d+ex)^{13/2}\,{}_2F_1\left(5,\frac{13}{2};\frac{15}{2};-\frac{b(d+ex)}{ae-bd}\right)}{13(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(11/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(13/2)*Hypergeometric2F1[5, 13/2, 15/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(13*(-(b*d) + a*e)^5)
```

fricas [B] time = 1.28, size = 968, normalized size = 4.89

$$\left[-\frac{3465\left(a^4bde^4-a^5e^5+\left(b^5de^4-ab^4e^5\right)x^4+4\left(ab^4de^4-a^2b^3e^5\right)x^3+6\left(a^2b^3de^4-a^3b^2e^5\right)x^2+4\left(a^3b^2de^4-a^4be\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fric
as")
```

```
[Out] [-1/384*(3465*(a^4*b*d*e^4 - a^5*e^5 + (b^5*d*e^4 - a*b^4*e^5)*x^4 + 4*(a*b
^4*d*e^4 - a^2*b^3*e^5)*x^3 + 6*(a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 4*(a^3*
b^2*d*e^4 - a^4*b*e^5)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e + 2*
sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) - 2*(128*b^5*e^5*x^5 - 48*b
^5*d^5 - 88*a*b^4*d^4*e - 198*a^2*b^3*d^3*e^2 - 693*a^3*b^2*d^2*e^3 + 4620*
a^4*b*d*e^4 - 3465*a^5*e^5 + 128*(16*b^5*d*e^4 - 11*a*b^4*e^5)*x^4 - (2295*
b^5*d^2*e^3 - 12782*a*b^4*d*e^4 + 9207*a^2*b^3*e^5)*x^3 - (1030*b^5*d^3*e^2
 + 3795*a*b^4*d^2*e^3 - 22968*a^2*b^3*d*e^4 + 16863*a^3*b^2*e^5)*x^2 - (328
*b^5*d^4*e + 748*a*b^4*d^3*e^2 + 2673*a^2*b^3*d^2*e^3 - 17094*a^3*b^2*d*e^4
 + 12705*a^4*b*e^5)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a^2*b^8*x
^2 + 4*a^3*b^7*x + a^4*b^6), -1/192*(3465*(a^4*b*d*e^4 - a^5*e^5 + (b^5*d*e
^4 - a*b^4*e^5)*x^4 + 4*(a*b^4*d*e^4 - a^2*b^3*e^5)*x^3 + 6*(a^2*b^3*d*e^4
- a^3*b^2*e^5)*x^2 + 4*(a^3*b^2*d*e^4 - a^4*b*e^5)*x)*sqrt(-(b*d - a*e)/b)*
arctan(-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (128*b^5*e^5*x^
5 - 48*b^5*d^5 - 88*a*b^4*d^4*e - 198*a^2*b^3*d^3*e^2 - 693*a^3*b^2*d^2*e^3
 + 4620*a^4*b*d*e^4 - 3465*a^5*e^5 + 128*(16*b^5*d*e^4 - 11*a*b^4*e^5)*x^4
- (2295*b^5*d^2*e^3 - 12782*a*b^4*d*e^4 + 9207*a^2*b^3*e^5)*x^3 - (1030*b^5
*d^3*e^2 + 3795*a*b^4*d^2*e^3 - 22968*a^2*b^3*d*e^4 + 16863*a^3*b^2*e^5)*x^
2 - (328*b^5*d^4*e + 748*a*b^4*d^3*e^2 + 2673*a^2*b^3*d^2*e^3 - 17094*a^3*b
^2*d*e^4 + 12705*a^4*b*e^5)*x)*sqrt(e*x + d))/(b^10*x^4 + 4*a*b^9*x^3 + 6*a
^2*b^8*x^2 + 4*a^3*b^7*x + a^4*b^6)]
```

giac [B] time = 0.24, size = 476, normalized size = 2.40

$$\frac{1155\left(b^{2}d^{2}e^{4}-2\,abde^{5}+a^{2}e^{6}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{64\,\sqrt{-b^{2}d+abe}\,b^{6}}-\frac{2295\,(xe+d)^{\frac{7}{2}}b^{5}d^{2}e^{4}-5855\,(xe+d)^{\frac{5}{2}}b^{5}d^{3}e^{4}+5153\,(xe+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac
")
```

```
[Out] 1155/64*(b^2*d^2*e^4 - 2*a*b*d*e^5 + a^2*e^6)*arctan(sqrt(x*e + d)*b/sqrt(-
b^2*d + a*b*e))/(sqrt(-b^2*d + a*b*e)*b^6) - 1/192*(2295*(x*e + d)^(7/2)*b^
5*d^2*e^4 - 5855*(x*e + d)^(5/2)*b^5*d^3*e^4 + 5153*(x*e + d)^(3/2)*b^5*d^4
*e^4 - 1545*sqrt(x*e + d)*b^5*d^5*e^4 - 4590*(x*e + d)^(7/2)*a*b^4*d*e^5 +
17565*(x*e + d)^(5/2)*a*b^4*d^2*e^5 - 20612*(x*e + d)^(3/2)*a*b^4*d^3*e^5 +
 7725*sqrt(x*e + d)*a*b^4*d^4*e^5 + 2295*(x*e + d)^(7/2)*a^2*b^3*e^6 - 1756
5*(x*e + d)^(5/2)*a^2*b^3*d*e^6 + 30918*(x*e + d)^(3/2)*a^2*b^3*d^2*e^6 - 1
5450*sqrt(x*e + d)*a^2*b^3*d^3*e^6 + 5855*(x*e + d)^(5/2)*a^3*b^2*e^7 - 206
12*(x*e + d)^(3/2)*a^3*b^2*d*e^7 + 15450*sqrt(x*e + d)*a^3*b^2*d^2*e^7 + 51
53*(x*e + d)^(3/2)*a^4*b*e^8 - 7725*sqrt(x*e + d)*a^4*b*d*e^8 + 1545*sqrt(x
*e + d)*a^5*e^9)/(((x*e + d)*b - b*d + a*e)^4*b^6) + 2/3*((x*e + d)^(3/2)*b
^10*e^4 + 15*sqrt(x*e + d)*b^10*d*e^4 - 15*sqrt(x*e + d)*a*b^9*e^5)/b^15
```

maple [B] time = 0.07, size = 701, normalized size = 3.54

$$-\frac{515\sqrt{ex+d}\;a^{5}e^{9}}{64\,(bex+ae)^{4}\,b^{6}}+\frac{2575\sqrt{ex+d}\;a^{4}d\,e^{8}}{64\,(bex+ae)^{4}\,b^{5}}-\frac{2575\sqrt{ex+d}\;a^{3}d^{2}e^{7}}{32\,(bex+ae)^{4}\,b^{4}}+\frac{2575\sqrt{ex+d}\;a^{2}d^{3}e^{6}}{32\,(bex+ae)^{4}\,b^{3}}-\frac{2575\sqrt{ex+d}\;a\,d^{4}e^{5}}{64\,(bex+ae)^{4}\,b^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2/3*e^4*(e*x+d)^(3/2)/b^5-10*e^5/b^6*a*(e*x+d)^(1/2)+10*e^4/b^5*(e*x+d)^(1/
2)*d-765/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(7/2)*a^2+765/32*e^5/b^2/(b*e*x+a
*e)^4*(e*x+d)^(7/2)*a*d-765/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(7/2)*d^2-5855/1
92*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a^3+5855/64*e^6/b^3/(b*e*x+a*e)^4*(e
*x+d)^(5/2)*a^2*d-5855/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a*d^2+5855/19
2*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(5/2)*d^3-5153/192*e^8/b^5/(b*e*x+a*e)^4*(e*x
+d)^(3/2)*a^4+5153/48*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^3*d-5153/32*e^6
/b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2*a^2+5153/48*e^5/b^2/(b*e*x+a*e)^4*(e*x
+d)^(3/2)*a*d^3-5153/192*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^4-515/64*e^9/b
^6/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^5+2575/64*e^8/b^5/(b*e*x+a*e)^4*(e*x+d)^(1
/2)*a^4*d-2575/32*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^3*d^2+2575/32*e^6/b
^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^2*d^3-2575/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d
)^(1/2)*a*d^4+515/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^5+1155/64*e^6/b^6/
((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^2-1155/32
*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*
d+1155/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(11/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxi
ma")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.25, size = 535, normalized size = 2.70

$$\frac{2\,e^4\,{\left(d+e\,x\right)}^{3/2}}{3\,b^5}-\frac{{\left(d+e\,x\right)}^{7/2}\,\left(\frac{765\,a^2\,b^3\,e^6}{64}-\frac{765\,a\,b^4\,d\,e^5}{32}+\frac{765\,b^5\,d^2\,e^4}{64}\right)+\sqrt{d+e\,x}\,\left(\frac{515\,a^5\,e^9}{64}-\frac{2575\,a^4\,b\,d\,e^8}{64}+\frac{2575\,a^3\,b^2\,d^2\,e^7}{32}\right.}{b^{10}\,{\left(d+e\,x\right)}^4-\left(4\,b^{10}\,d-4\,a\,b^9\,e\right)\,{\left(d+e\,x\right)}^3+b^{10}\,d^4+(d+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(11/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (2*e^4*(d + e*x)^(3/2))/(3*b^5) - ((d + e*x)^(7/2)*((765*a^2*b^3*e^6)/64 +
(765*b^5*d^2*e^4)/64 - (765*a*b^4*d*e^5)/32) + (d + e*x)^(1/2)*((515*a^5*e^
9)/64 - (515*b^5*d^5*e^4)/64 + (2575*a*b^4*d^4*e^5)/64 - (2575*a^2*b^3*d^3*
e^6)/32 + (2575*a^3*b^2*d^2*e^7)/32 - (2575*a^4*b*d*e^8)/64) + (d + e*x)^(5
/2)*((5855*a^3*b^2*e^7)/192 - (5855*b^5*d^3*e^4)/192 + (5855*a*b^4*d^2*e^5)
/64 - (5855*a^2*b^3*d*e^6)/64) + (d + e*x)^(3/2)*((5153*a^4*b*e^8)/192 + (5
153*b^5*d^4*e^4)/192 - (5153*a*b^4*d^3*e^5)/48 - (5153*a^3*b^2*d*e^7)/48 +
(5153*a^2*b^3*d^2*e^6)/32))/(b^10*(d + e*x)^4 - (4*b^10*d - 4*a*b^9*e)*(d +
 e*x)^3 + b^10*d^4 + (d + e*x)^2*(6*b^10*d^2 + 6*a^2*b^8*e^2 - 12*a*b^9*d*e
) - (d + e*x)*(4*b^10*d^3 - 4*a^3*b^7*e^3 + 12*a^2*b^8*d*e^2 - 12*a*b^9*d^2
*e) + a^4*b^6*e^4 - 4*a^3*b^7*d*e^3 + 6*a^2*b^8*d^2*e^2 - 4*a*b^9*d^3*e) +
(2*e^4*(5*b^5*d - 5*a*b^4*e)*(d + e*x)^(1/2))/b^10 + (1155*e^4*atan((b^(1/2
)*e^4*(a*e - b*d)^(3/2)*(d + e*x)^(1/2))/(a^2*e^6 + b^2*d^2*e^4 - 2*a*b*d*e
^5))*(a*e - b*d)^(3/2))/(64*b^(13/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(11/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2084 $\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=171

$$-\frac{315e^4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{11/2}}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{315e^4\sqrt{d+e}}{64b^5}$$

```
[Out] -105/64*e^3*(e*x+d)^(3/2)/b^4/(b*x+a)-21/32*e^2*(e*x+d)^(5/2)/b^3/(b*x+a)^2
-3/8*e*(e*x+d)^(7/2)/b^2/(b*x+a)^3-1/4*(e*x+d)^(9/2)/b/(b*x+a)^4-315/64*e^4
*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(11/2)+
315/64*e^4*(e*x+d)^(1/2)/b^5
```

Rubi [A] time = 0.08, antiderivative size = 171, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 47, 50, 63, 208\}$

$$-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{315e^4\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{11/2}}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{315e^4\sqrt{d+e}}{64b^5}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (315*e^4*Sqrt[d + e*x])/(64*b^5) - (105*e^3*(d + e*x)^(3/2))/(64*b^4*(a + b
*x)) - (21*e^2*(d + e*x)^(5/2))/(32*b^3*(a + b*x)^2) - (3*e*(d + e*x)^(7/2)
)/(8*b^2*(a + b*x)^3) - (d + e*x)^(9/2)/(4*b*(a + b*x)^4) - (315*e^4*Sqrt[b
*d - a*e]*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{9/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(d+ex)^{9/2}}{(a+bx)^5}\,dx \\
&= -\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{(9e)\int \frac{(d+ex)^{7/2}}{(a+bx)^4}\,dx}{8b} \\
&= -\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(21e^2\right)\int \frac{(d+ex)^{5/2}}{(a+bx)^3}\,dx}{16b^2} \\
&= -\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(105e^3\right)\int \frac{(d+ex)^{3/2}}{(a+bx)^2}\,dx}{64b^3} \\
&= -\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)^4}+\frac{\left(315e^4\right)\int}{128b} \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)} \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)} \\
&= \frac{315e^4\sqrt{d+ex}}{64b^5}-\frac{105e^3(d+ex)^{3/2}}{64b^4(a+bx)}-\frac{21e^2(d+ex)^{5/2}}{32b^3(a+bx)^2}-\frac{3e(d+ex)^{7/2}}{8b^2(a+bx)^3}-\frac{(d+ex)^{9/2}}{4b(a+bx)}
\end{aligned}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^4(d+ex)^{11/2}\,{}_2F_1\left(5,\frac{11}{2};\frac{13}{2};-\frac{b(d+ex)}{ae-bd}\right)}{11(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(9/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(11/2)*Hypergeometric2F1[5, 11/2, 13/2, -((b*(d + e*x))/(-
(b*d) + a*e))])/(11*(-(b*d) + a*e)^5)
```

fricas [B] time = 0.90, size = 680, normalized size = 3.98

$$\left[\frac{315\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(128\,b^4e^4x\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/128*(315*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x +
d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(128*b^4*e^4*x^4 - 16*b^4*d^4 - 24
*a*b^3*d^3*e - 42*a^2*b^2*d^2*e^2 - 105*a^3*b*d*e^3 + 315*a^4*e^4 - (325*b^
4*d*e^3 - 837*a*b^3*e^4)*x^3 - 3*(70*b^4*d^2*e^2 + 185*a*b^3*d*e^3 - 511*a^
2*b^2*e^4)*x^2 - (88*b^4*d^3*e + 156*a*b^3*d^2*e^2 + 399*a^2*b^2*d*e^3 - 11
55*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4*
a^3*b^6*x + a^4*b^5), -1/64*(315*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2
*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x +
 d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (128*b^4*e^4*x^4 - 16*b^4*d^4 - 2
4*a*b^3*d^3*e - 42*a^2*b^2*d^2*e^2 - 105*a^3*b*d*e^3 + 315*a^4*e^4 - (325*b
^4*d*e^3 - 837*a*b^3*e^4)*x^3 - 3*(70*b^4*d^2*e^2 + 185*a*b^3*d*e^3 - 511*a
^2*b^2*e^4)*x^2 - (88*b^4*d^3*e + 156*a*b^3*d^2*e^2 + 399*a^2*b^2*d*e^3 - 1
155*a^3*b*e^4)*x)*sqrt(e*x + d))/(b^9*x^4 + 4*a*b^8*x^3 + 6*a^2*b^7*x^2 + 4
*a^3*b^6*x + a^4*b^5)]
```

giac [B] time = 0.23, size = 343, normalized size = 2.01

$$\frac{315\left(bde^4 - ae^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)}{64\sqrt{-b^2d+abe}\,b^5} + \frac{2\sqrt{xe+d}\,e^4}{b^5} - \frac{325\,(xe+d)^{\frac{7}{2}}b^4de^4 - 765\,(xe+d)^{\frac{5}{2}}b^4d^2e^4 + 643\,(xe+d)^{\frac{3}{2}}b^4d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 315/64*(b*d*e^4 - a*e^5)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt
(-b^2*d + a*b*e)*b^5) + 2*sqrt(x*e + d)*e^4/b^5 - 1/64*(325*(x*e + d)^(7/2)
*b^4*d*e^4 - 765*(x*e + d)^(5/2)*b^4*d^2*e^4 + 643*(x*e + d)^(3/2)*b^4*d^3*
e^4 - 187*sqrt(x*e + d)*b^4*d^4*e^4 - 325*(x*e + d)^(7/2)*a*b^3*e^5 + 1530*
(x*e + d)^(5/2)*a*b^3*d*e^5 - 1929*(x*e + d)^(3/2)*a*b^3*d^2*e^5 + 748*sqrt
(x*e + d)*a*b^3*d^3*e^5 - 765*(x*e + d)^(5/2)*a^2*b^2*e^6 + 1929*(x*e + d)^
(3/2)*a^2*b^2*d*e^6 - 1122*sqrt(x*e + d)*a^2*b^2*d^2*e^6 - 643*(x*e + d)^(3
/2)*a^3*b*e^7 + 748*sqrt(x*e + d)*a^3*b*d*e^7 - 187*sqrt(x*e + d)*a^4*e^8)/
(((x*e + d)*b - b*d + a*e)^4*b^5)
```

maple [B] time = 0.07, size = 497, normalized size = 2.91

$$\frac{187\sqrt{ex+d}\;a^4e^8}{64\,(bex+ae)^4\,b^5} - \frac{187\sqrt{ex+d}\;a^3d\,e^7}{16\,(bex+ae)^4\,b^4} + \frac{561\sqrt{ex+d}\;a^2d^2e^6}{32\,(bex+ae)^4\,b^3} - \frac{187\sqrt{ex+d}\;a\,d^3e^5}{16\,(bex+ae)^4\,b^2} + \frac{187\sqrt{ex+d}\;d^4e^4}{64\,(bex+ae)^4\,b} + \frac{643\,(ex+d)}{64\,(bex+ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 2*e^4*(e*x+d)^(1/2)/b^5+325/64*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(7/2)*a-325/64
*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(7/2)*d+765/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(
5/2)*a^2-765/32*e^5/b^2/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a*d+765/64*e^4/b/(b*e*x
+a*e)^4*(e*x+d)^(5/2)*d^2+643/64*e^7/b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^3-19
29/64*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a^2*d+1929/64*e^5/b^2/(b*e*x+a*e)
^4*(e*x+d)^(3/2)*a*d^2-643/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^3+187/64*
e^8/b^5/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^4-187/16*e^7/b^4/(b*e*x+a*e)^4*(e*x+d
)^(1/2)*a^3*d+561/32*e^6/b^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^2*d^2-187/16*e^5
/b^2/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a*d^3+187/64*e^4/b/(b*e*x+a*e)^4*(e*x+d)^(
1/2)*d^4-315/64*e^5/b^5/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)*a+315/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(9/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.25, size = 436, normalized size = 2.55

$$\frac{(d+e\,x)^{5/2}\left(\frac{765\,a^2\,b^2\,e^6}{64}-\frac{765\,a\,b^3\,d\,e^5}{32}+\frac{765\,b^4\,d^2\,e^4}{64}\right)+(d+e\,x)^{3/2}\left(\frac{643\,a^3\,b\,e^7}{64}-\frac{1929\,a^2\,b^2\,d\,e^6}{64}+\frac{1929\,a\,b^3\,d^2\,e^5}{64}-\frac{643\,b^4\,d^3\,e^4}{64}\right.}{b^9\,(d+e\,x)^4-\left(4\,b^9\,d-4\,a\,b^8\,e\right)\,(d+e\,x)^3+b^9\,d^4+(d+e\,x)^2\,\left(6\,a^2\,b^7\,e^2-12\,a\,b^8\,d\,e+6\,b^9\,d^2\right)-(d+e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(9/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^(5/2)*((765*a^2*b^2*e^6)/64 + (765*b^4*d^2*e^4)/64 - (765*a*b^3*
d*e^5)/32) + (d + e*x)^(3/2)*((643*a^3*b*e^7)/64 - (643*b^4*d^3*e^4)/64 + (
1929*a*b^3*d^2*e^5)/64 - (1929*a^2*b^2*d*e^6)/64) + ((325*a*b^3*e^5)/64 - (
325*b^4*d*e^4)/64)*(d + e*x)^(7/2) + (d + e*x)^(1/2)*((187*a^4*e^8)/64 + (1
87*b^4*d^4*e^4)/64 - (187*a*b^3*d^3*e^5)/16 + (561*a^2*b^2*d^2*e^6)/32 - (1
87*a^3*b*d*e^7)/16))/(b^9*(d + e*x)^4 - (4*b^9*d - 4*a*b^8*e)*(d + e*x)^3 +
 b^9*d^4 + (d + e*x)^2*(6*b^9*d^2 + 6*a^2*b^7*e^2 - 12*a*b^8*d*e) - (d + e*
x)*(4*b^9*d^3 - 4*a^3*b^6*e^3 + 12*a^2*b^7*d*e^2 - 12*a*b^8*d^2*e) + a^4*b^
5*e^4 - 4*a^3*b^6*d*e^3 + 6*a^2*b^7*d^2*e^2 - 4*a*b^8*d^3*e) + (2*e^4*(d +
e*x)^(1/2))/b^5 - (315*e^4*atan((b^(1/2)*e^4*(a*e - b*d)^(1/2)*(d + e*x)^(1
/2))/(a*e^5 - b*d*e^4))*(a*e - b*d)^(1/2))/(64*b^(11/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(9/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2085 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=152

$$-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{bd-ae}}-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}$$

```
[Out] -35/96*e^2*(e*x+d)^(3/2)/b^3/(b*x+a)^2-7/24*e*(e*x+d)^(5/2)/b^2/(b*x+a)^3-1
/4*(e*x+d)^(7/2)/b/(b*x+a)^4-35/64*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+
b*d)^(1/2))/b^(9/2)/(-a*e+b*d)^(1/2)-35/64*e^3*(e*x+d)^(1/2)/b^4/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = $\{27, 47, 63, 208\}$

$$-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{9/2}\sqrt{bd-ae}}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-35*e^3*Sqrt[d + e*x])/(64*b^4*(a + b*x)) - (35*e^2*(d + e*x)^(3/2))/(96*b
^3*(a + b*x)^2) - (7*e*(d + e*x)^(5/2))/(24*b^2*(a + b*x)^3) - (d + e*x)^(7
/2)/(4*b*(a + b*x)^4) - (35*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
a*e]])/(64*b^(9/2)*Sqrt[b*d - a*e])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(d+ex)^{7/2}}{(a+bx)^5}\,dx$$

$$=-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{(a+bx)^4}\,dx}{8b}$$

$$=-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}+\frac{\left(35e^2\right)\int \frac{(d+ex)^{3/2}}{(a+bx)^3}\,dx}{48b^2}$$

$$=-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}+\frac{\left(35e^3\right)\int \frac{\sqrt{d+ex}}{(a+bx)^2}\,dx}{64b^3}$$

$$=-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}+\frac{\left(35e^4\right)\int}{128b}$$

$$=-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}+\frac{\left(35e^3\right)\text{Subst}}{}$$

$$=-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}-\frac{35e^4\tanh^{-1}\left(\right.}{64b^{9/2}\sqrt{b}}$$

Mathematica [A] time = 0.21, size = 152, normalized size = 1.00

$$\frac{35e^4\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{64b^{9/2}\sqrt{ae-bd}}-\frac{35e^3\sqrt{d+ex}}{64b^4(a+bx)}-\frac{35e^2(d+ex)^{3/2}}{96b^3(a+bx)^2}-\frac{7e(d+ex)^{5/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{7/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-35*e^3*Sqrt[d + e*x])/(64*b^4*(a + b*x)) - (35*e^2*(d + e*x)^(3/2))/(96*b
^3*(a + b*x)^2) - (7*e*(d + e*x)^(5/2))/(24*b^2*(a + b*x)^3) - (d + e*x)^(7
/2)/(4*b*(a + b*x)^4) + (35*e^4*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[-(b*d)
+ a*e]])/(64*b^(9/2)*Sqrt[-(b*d) + a*e])
```

fricas [B] time = 0.70, size = 765, normalized size = 5.03

$$\left[\frac{105\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(48\,b\right.}{384\left(a^4b^6d\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/384*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(48*b^5*d^4 + 8*a*b^4*d^3*e + 14*a^2
*b^3*d^2*e^2 + 35*a^3*b^2*d*e^3 - 105*a^4*b*e^4 + 279*(b^5*d*e^3 - a*b^4*e^
4)*x^3 + (326*b^5*d^2*e^2 + 185*a*b^4*d*e^3 - 511*a^2*b^3*e^4)*x^2 + (200*b
^5*d^3*e + 52*a*b^4*d^2*e^2 + 133*a^2*b^3*d*e^3 - 385*a^3*b^2*e^4)*x)*sqrt(
e*x + d))/(a^4*b^6*d - a^5*b^5*e + (b^10*d - a*b^9*e)*x^4 + 4*(a*b^9*d - a^
2*b^8*e)*x^3 + 6*(a^2*b^8*d - a^3*b^7*e)*x^2 + 4*(a^3*b^7*d - a^4*b^6*e)*x)
, 1/192*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e
^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x +
 d)/(b*e*x + b*d)) - (48*b^5*d^4 + 8*a*b^4*d^3*e + 14*a^2*b^3*d^2*e^2 + 35*
a^3*b^2*d*e^3 - 105*a^4*b*e^4 + 279*(b^5*d*e^3 - a*b^4*e^4)*x^3 + (326*b^5*
d^2*e^2 + 185*a*b^4*d*e^3 - 511*a^2*b^3*e^4)*x^2 + (200*b^5*d^3*e + 52*a*b^
4*d^2*e^2 + 133*a^2*b^3*d*e^3 - 385*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6
*d - a^5*b^5*e + (b^10*d - a*b^9*e)*x^4 + 4*(a*b^9*d - a^2*b^8*e)*x^3 + 6*(
a^2*b^8*d - a^3*b^7*e)*x^2 + 4*(a^3*b^7*d - a^4*b^6*e)*x)]
```

giac [**A**] time = 0.22, size = 239, normalized size = 1.57

$$\frac{35 \arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\,\sqrt{-b^2d+abe}\,b^4} - \frac{279\,(xe+d)^{\frac{7}{2}}b^3e^4 - 511\,(xe+d)^{\frac{5}{2}}b^3de^4 + 385\,(xe+d)^{\frac{3}{2}}b^3d^2e^4 - 105\,\sqrt{xe+d}\,b^3d^3e^4 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 35/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/(sqrt(-b^2*d + a*b*e
)*b^4) - 1/192*(279*(x*e + d)^(7/2)*b^3*e^4 - 511*(x*e + d)^(5/2)*b^3*d*e^4
 + 385*(x*e + d)^(3/2)*b^3*d^2*e^4 - 105*sqrt(x*e + d)*b^3*d^3*e^4 + 511*(x
*e + d)^(5/2)*a*b^2*e^5 - 770*(x*e + d)^(3/2)*a*b^2*d*e^5 + 315*sqrt(x*e +
d)*a*b^2*d^2*e^5 + 385*(x*e + d)^(3/2)*a^2*b*e^6 - 315*sqrt(x*e + d)*a^2*b*
d*e^6 + 105*sqrt(x*e + d)*a^3*e^7)/(((x*e + d)*b - b*d + a*e)^4*b^4)
```

maple [**B**] time = 0.07, size = 318, normalized size = 2.09

$$-\frac{35\sqrt{ex+d}\;a^3e^7}{64\,(bex+ae)^4\,b^4}+\frac{105\sqrt{ex+d}\;a^2d\,e^6}{64\,(bex+ae)^4\,b^3}-\frac{105\sqrt{ex+d}\;a\,d^2e^5}{64\,(bex+ae)^4\,b^2}+\frac{35\sqrt{ex+d}\;d^3e^4}{64\,(bex+ae)^4\,b}-\frac{385\,(ex+d)^{\frac{3}{2}}\;a^2e^6}{192\,(bex+ae)^4\,b^3}+\frac{385\,(ex+d)^{\frac{3}{2}}}{96\,(bex+ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -93/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(7/2)-511/192*e^5/(b*e*x+a*e)^4/b^2*(e*x
+d)^(5/2)*a+511/192*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(5/2)*d-385/192*e^6/(b*e*x+
a*e)^4/b^3*(e*x+d)^(3/2)*a^2+385/96*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(3/2)*a*d
-385/192*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(3/2)*d^2-35/64*e^7/(b*e*x+a*e)^4/b^4*
(e*x+d)^(1/2)*a^3+105/64*e^6/(b*e*x+a*e)^4/b^3*(e*x+d)^(1/2)*a^2*d-105/64*e
^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a*d^2+35/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^
(1/2)*d^3+35/64*e^4/b^4/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)
*b)^(1/2)*b)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.18, size = 337, normalized size = 2.22

$$\frac{35\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{9/2}\,\sqrt{a\,e-b\,d}}-\frac{\frac{93\,e^4\,(d+e\,x)^{7/2}}{64\,b}+\frac{385\,e^4\,(d+e\,x)^{3/2}\,\left(a^2\,e^2-2\,a\,b\,d\,e+b^2\right.}{192\,b^3}}{b^4\,(d+e\,x)^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,(d+e\,x)^3-(d+e\,x)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (35*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(9/2)*(a*e
 - b*d)^(1/2)) - ((93*e^4*(d + e*x)^(7/2))/(64*b) + (385*e^4*(d + e*x)^(3/2
)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))/(192*b^3) + (35*e^4*(d + e*x)^(1/2)*(a^3
*e^3 - b^3*d^3 + 3*a*b^2*d^2*e - 3*a^2*b*d*e^2))/(64*b^4) + (511*e^4*(a*e -
 b*d)*(d + e*x)^(5/2))/(192*b^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3*e)*
(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*
b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 1
2*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2086 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=162

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}(bd-ae)^{3/2}}-\frac{5e^3\sqrt{d+ex}}{64b^3(a+bx)(bd-ae)}-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}$$

```
[Out] -5/24*e*(e*x+d)^(3/2)/b^2/(b*x+a)^3-1/4*(e*x+d)^(5/2)/b/(b*x+a)^4+5/64*e^4*
arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(7/2)/(-a*e+b*d)^(3/2)-5/
32*e^2*(e*x+d)^(1/2)/b^3/(b*x+a)^2-5/64*e^3*(e*x+d)^(1/2)/b^3/(-a*e+b*d)/(b
*x+a)
```

Rubi **[A]** time = 0.09, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = $\{27, 47, 51, 63, 208\}$

$$-\frac{5e^3\sqrt{d+ex}}{64b^3(a+bx)(bd-ae)}-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}+\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{7/2}(bd-ae)^{3/2}}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (-5*e^2*Sqrt[d + e*x])/(32*b^3*(a + b*x)^2) - (5*e^3*Sqrt[d + e*x])/(64*b^3
*(b*d - a*e)*(a + b*x)) - (5*e*(d + e*x)^(3/2))/(24*b^2*(a + b*x)^3) - (d +
 e*x)^(5/2)/(4*b*(a + b*x)^4) + (5*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt
[b*d - a*e]])/(64*b^(7/2)*(b*d - a*e)^(3/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{(d+ex)^{5/2}}{(a+bx)^5}\,dx$$

$$=-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{(5e)\int \frac{(d+ex)^{3/2}}{(a+bx)^4}\,dx}{8b}$$

$$=-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{\left(5e^2\right)\int \frac{\sqrt{d+ex}}{(a+bx)^3}\,dx}{16b^2}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{\left(5e^3\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{64b^3}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}-\frac{\left(5e^4\right)}{12}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}-\frac{\left(5e^3\right)}{}$$

$$=-\frac{5e^2\sqrt{d+ex}}{32b^3(a+bx)^2}-\frac{5e^3\sqrt{d+ex}}{64b^3(bd-ae)(a+bx)}-\frac{5e(d+ex)^{3/2}}{24b^2(a+bx)^3}-\frac{(d+ex)^{5/2}}{4b(a+bx)^4}+\frac{5e^4\,\mathrm{ta}}{64b}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.32

$$\frac{2e^4(d+ex)^{7/2}\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(7/2)*Hypergeometric2F1[7/2, 5, 9/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(7*(-(b*d) + a*e)^5)
```

fricas [B] time = 0.98, size = 894, normalized size = 5.52

$$\left[-\frac{15\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(48\,b\right.}{384\left(a^4b^6d^2-2\,a^5b^5de+a^6b^4e^2+\left(b^{10}d^2-2\,ab\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/384*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(48*b^5*d^4 - 56*a*b^4*d^3*e - 2*a^2
*b^3*d^2*e^2 - 5*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4)*
x^3 + (118*b^5*d^2*e^2 - 191*a*b^4*d*e^3 + 73*a^2*b^3*e^4)*x^2 + (136*b^5*d
^3*e - 172*a*b^4*d^2*e^2 - 19*a^2*b^3*d*e^3 + 55*a^3*b^2*e^4)*x)*sqrt(e*x +
 d))/(a^4*b^6*d^2 - 2*a^5*b^5*d*e + a^6*b^4*e^2 + (b^10*d^2 - 2*a*b^9*d*e +
 a^2*b^8*e^2)*x^4 + 4*(a*b^9*d^2 - 2*a^2*b^8*d*e + a^3*b^7*e^2)*x^3 + 6*(a^
2*b^8*d^2 - 2*a^3*b^7*d*e + a^4*b^6*e^2)*x^2 + 4*(a^3*b^7*d^2 - 2*a^4*b^6*d
*e + a^5*b^5*e^2)*x), -1/192*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2
*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d
 + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (48*b^5*d^4 - 56*a*b^4*d^3*e - 2*a
^2*b^3*d^2*e^2 - 5*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4
)*x^3 + (118*b^5*d^2*e^2 - 191*a*b^4*d*e^3 + 73*a^2*b^3*e^4)*x^2 + (136*b^5
*d^3*e - 172*a*b^4*d^2*e^2 - 19*a^2*b^3*d*e^3 + 55*a^3*b^2*e^4)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^2 - 2*a^5*b^5*d*e + a^6*b^4*e^2 + (b^10*d^2 - 2*a*b^9*d*e
 + a^2*b^8*e^2)*x^4 + 4*(a*b^9*d^2 - 2*a^2*b^8*d*e + a^3*b^7*e^2)*x^3 + 6*(
a^2*b^8*d^2 - 2*a^3*b^7*d*e + a^4*b^6*e^2)*x^2 + 4*(a^3*b^7*d^2 - 2*a^4*b^6
*d*e + a^5*b^5*e^2)*x)]
```

giac [A] time = 0.21, size = 265, normalized size = 1.64

$$-\frac{5 \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2 d+abe}}\right) e^4}{64 \left(b^4 d - ab^3 e\right) \sqrt{-b^2 d + abe}} - \frac{15 (xe+d)^{\frac{7}{2}} b^3 e^4 + 73 (xe+d)^{\frac{5}{2}} b^3 d e^4 - 55 (xe+d)^{\frac{3}{2}} b^3 d^2 e^4 + 15 \sqrt{xe+d}\, b^3 d^3 e^4 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -5/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d - a*b^3*e)*s
qrt(-b^2*d + a*b*e)) - 1/192*(15*(x*e + d)^(7/2)*b^3*e^4 + 73*(x*e + d)^(5/
2)*b^3*d*e^4 - 55*(x*e + d)^(3/2)*b^3*d^2*e^4 + 15*sqrt(x*e + d)*b^3*d^3*e^
4 - 73*(x*e + d)^(5/2)*a*b^2*e^5 + 110*(x*e + d)^(3/2)*a*b^2*d*e^5 - 45*sqr
t(x*e + d)*a*b^2*d^2*e^5 - 55*(x*e + d)^(3/2)*a^2*b*e^6 + 45*sqrt(x*e + d)*
a^2*b*d*e^6 - 15*sqrt(x*e + d)*a^3*e^7)/((b^4*d - a*b^3*e)*((x*e + d)*b - b
*d + a*e)^4)
```

maple [A] time = 0.07, size = 246, normalized size = 1.52

$$-\frac{5\sqrt{ex+d}\; a^2 e^6}{64 (bex+ae)^4 b^3} + \frac{5\sqrt{ex+d}\; ad\, e^5}{32 (bex+ae)^4 b^2} - \frac{5\sqrt{ex+d}\; d^2 e^4}{64 (bex+ae)^4 b} - \frac{55 (ex+d)^{\frac{3}{2}}\, a\, e^5}{192 (bex+ae)^4 b^2} + \frac{55 (ex+d)^{\frac{3}{2}}\, d\, e^4}{192 (bex+ae)^4 b} + \frac{5 (ex+d)^{\frac{7}{2}}\, e^4}{64 (bex+ae)^4 (ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 5/64*e^4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(7/2)-73/192*e^4/(b*e*x+a*e)^4/b*(
e*x+d)^(5/2)-55/192*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(3/2)*a+55/192*e^4/(b*e*x
+a*e)^4/b*(e*x+d)^(3/2)*d-5/64*e^6/(b*e*x+a*e)^4/b^3*(e*x+d)^(1/2)*a^2+5/32
*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a*d-5/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(
1/2)*d^2+5/64*e^4/(a*e-b*d)/b^3/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 2.12, size = 309, normalized size = 1.91

$$\frac{5\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{7/2}\,{\left(a\,e-b\,d\right)}^{3/2}}-\frac{\frac{73\,e^4\,{\left(d+e\,x\right)}^{5/2}}{192\,b}-\frac{5\,e^4\,{\left(d+e\,x\right)}^{7/}}{64\,\left(a\,e-b\,d\right)}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^{3}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (5*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(7/2)*(a*e
- b*d)^(3/2)) - ((73*e^4*(d + e*x)^(5/2))/(192*b) - (5*e^4*(d + e*x)^(7/2))
/(64*(a*e - b*d)) + (5*e^4*(d + e*x)^(1/2)*(a^2*e^2 + b^2*d^2 - 2*a*b*d*e))
/(64*b^3) + (55*e^4*(a*e - b*d)*(d + e*x)^(3/2))/(192*b^2))/(b^4*(d + e*x)^
4 - (4*b^4*d - 4*a*b^3*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3
+ 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b
^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e
- 4*a^3*b*d*e^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2087 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=172

$$-\frac{3e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}(bd-ae)^{5/2}}+\frac{3e^3\sqrt{d+ex}}{64b^2(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}}{32b^2(a+bx)^2(bd-ae)}-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

```
[Out] -1/4*(e*x+d)^(3/2)/b/(b*x+a)^4-3/64*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e
+b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^(5/2)-1/8*e*(e*x+d)^(1/2)/b^2/(b*x+a)^3-1/3
2*e^2*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/(b*x+a)^2+3/64*e^3*(e*x+d)^(1/2)/b^2/(-a
*e+b*d)^2/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 172, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.152, Rules used = {27, 47, 51, 63, 208}

$$\frac{3e^3\sqrt{d+ex}}{64b^2(a+bx)(bd-ae)^2}-\frac{e^2\sqrt{d+ex}}{32b^2(a+bx)^2(bd-ae)}-\frac{3e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{5/2}(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3}-\frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(e*Sqrt[d + e*x])/(8*b^2*(a + b*x)^3) - (e^2*Sqrt[d + e*x])/(32*b^2*(b*d -
 a*e)*(a + b*x)^2) + (3*e^3*Sqrt[d + e*x])/(64*b^2*(b*d - a*e)^2*(a + b*x))
 - (d + e*x)^(3/2)/(4*b*(a + b*x)^4) - (3*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*b^(5/2)*(b*d - a*e)^(5/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{(d+ex)^{3/2}}{(a+bx)^5}\,dx$$

$$= -\frac{(d+ex)^{3/2}}{4b(a+bx)^4} + \frac{(3e)\int \frac{\sqrt{d+ex}}{(a+bx)^4}\,dx}{8b}$$

$$= -\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3} - \frac{(d+ex)^{3/2}}{4b(a+bx)^4} + \frac{e^2\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{16b^2}$$

$$= -\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3} - \frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2} - \frac{(d+ex)^{3/2}}{4b(a+bx)^4} - \frac{\left(3e^3\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{64b^2(bd-ae)}$$

$$= -\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3} - \frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2} + \frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)} - \frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

$$= -\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3} - \frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2} + \frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)} - \frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

$$= -\frac{e\sqrt{d+ex}}{8b^2(a+bx)^3} - \frac{e^2\sqrt{d+ex}}{32b^2(bd-ae)(a+bx)^2} + \frac{3e^3\sqrt{d+ex}}{64b^2(bd-ae)^2(a+bx)} - \frac{(d+ex)^{3/2}}{4b(a+bx)^4}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.30

$$\frac{2e^4(d+ex)^{5/2}\,{}_2F_1\left(\frac{5}{2},5;\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(5/2)*Hypergeometric2F1[5/2, 5, 7/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(5*(-(b*d) + a*e)^5)
```

fricas [B] time = 0.89, size = 1043, normalized size = 6.06

$$\left[\frac{3\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(16\,b^5d\right.}{128\left(a^4b^6d^3-3\,a^5b^5d^2e+3\,a^6b^4de^2-a^7b^3e^3+\left(b^{10}d^3-3\,ab^9d^2e+3\,a^2b^8de^2-a^3b^7e^3\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/128*(3*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*
x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d -
a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(16*b^5*d^4 - 40*a*b^4*d^3*e + 26*a^2*
b^3*d^2*e^2 + a^3*b^2*d*e^3 - 3*a^4*b*e^4 - 3*(b^5*d*e^3 - a*b^4*e^4)*x^3 +
 (2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (24*b^5*d^3*e - 68
*a*b^4*d^2*e^2 + 55*a^2*b^3*d*e^3 - 11*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*
b^6*d^3 - 3*a^5*b^5*d^2*e + 3*a^6*b^4*d*e^2 - a^7*b^3*e^3 + (b^10*d^3 - 3*a
*b^9*d^2*e + 3*a^2*b^8*d*e^2 - a^3*b^7*e^3)*x^4 + 4*(a*b^9*d^3 - 3*a^2*b^8*
d^2*e + 3*a^3*b^7*d*e^2 - a^4*b^6*e^3)*x^3 + 6*(a^2*b^8*d^3 - 3*a^3*b^7*d^2
*e + 3*a^4*b^6*d*e^2 - a^5*b^5*e^3)*x^2 + 4*(a^3*b^7*d^3 - 3*a^4*b^6*d^2*e
+ 3*a^5*b^5*d*e^2 - a^6*b^4*e^3)*x), 1/64*(3*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3
 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan
(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (16*b^5*d^4 - 40*a*b^4
*d^3*e + 26*a^2*b^3*d^2*e^2 + a^3*b^2*d*e^3 - 3*a^4*b*e^4 - 3*(b^5*d*e^3 -
a*b^4*e^4)*x^3 + (2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (2
4*b^5*d^3*e - 68*a*b^4*d^2*e^2 + 55*a^2*b^3*d*e^3 - 11*a^3*b^2*e^4)*x)*sqrt
(e*x + d))/(a^4*b^6*d^3 - 3*a^5*b^5*d^2*e + 3*a^6*b^4*d*e^2 - a^7*b^3*e^3 +
 (b^10*d^3 - 3*a*b^9*d^2*e + 3*a^2*b^8*d*e^2 - a^3*b^7*e^3)*x^4 + 4*(a*b^9*
d^3 - 3*a^2*b^8*d^2*e + 3*a^3*b^7*d*e^2 - a^4*b^6*e^3)*x^3 + 6*(a^2*b^8*d^3
 - 3*a^3*b^7*d^2*e + 3*a^4*b^6*d*e^2 - a^5*b^5*e^3)*x^2 + 4*(a^3*b^7*d^3 -
3*a^4*b^6*d^2*e + 3*a^5*b^5*d*e^2 - a^6*b^4*e^3)*x)]
```

giac [B] time = 0.20, size = 289, normalized size = 1.68

$$\frac{3\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)\sqrt{-b^2d+abe}}+\frac{3\,(xe+d)^{\frac{7}{2}}b^3e^4-11\,(xe+d)^{\frac{5}{2}}b^3de^4-11\,(xe+d)^{\frac{3}{2}}b^3d^2e^4+3\,\sqrt{xe+d}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 3/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^2 - 2*a*b^3*d
*e + a^2*b^2*e^2)*sqrt(-b^2*d + a*b*e)) + 1/64*(3*(x*e + d)^(7/2)*b^3*e^4 -
 11*(x*e + d)^(5/2)*b^3*d*e^4 - 11*(x*e + d)^(3/2)*b^3*d^2*e^4 + 3*sqrt(x*e
 + d)*b^3*d^3*e^4 + 11*(x*e + d)^(5/2)*a*b^2*e^5 + 22*(x*e + d)^(3/2)*a*b^2
*d*e^5 - 9*sqrt(x*e + d)*a*b^2*d^2*e^5 - 11*(x*e + d)^(3/2)*a^2*b*e^6 + 9*s
qrt(x*e + d)*a^2*b*d*e^6 - 3*sqrt(x*e + d)*a^3*e^7)/((b^4*d^2 - 2*a*b^3*d*e
 + a^2*b^2*e^2)*((x*e + d)*b - b*d + a*e)^4)
```

maple [A] time = 0.07, size = 222, normalized size = 1.29

$$\frac{3\,(ex+d)^{\frac{7}{2}}\,b\,e^4}{64\,(bex+ae)^4\left(a^2e^2-2abde+b^2d^2\right)}-\frac{3\sqrt{ex+d}\;a\,e^5}{64\,(bex+ae)^4\,b^2}+\frac{3\sqrt{ex+d}\;d\,e^4}{64\,(bex+ae)^4\,b}+\frac{11\,(ex+d)^{\frac{5}{2}}\,e^4}{64\,(bex+ae)^4\,(ae-bd)}-\frac{11\,(ex+d)^{\frac{3}{2}}}{64\,(bex+ae)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 3/64*e^4/(b*e*x+a*e)^4*b/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^(7/2)+11/64*e^
4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(5/2)-11/64*e^4/(b*e*x+a*e)^4/b*(e*x+d)^(
3/2)-3/64*e^5/(b*e*x+a*e)^4/b^2*(e*x+d)^(1/2)*a+3/64*e^4/(b*e*x+a*e)^4/b*(e
*x+d)^(1/2)*d+3/64*e^4/b^2/(a^2*e^2-2*a*b*d*e+b^2*d^2)/((a*e-b*d)*b)^(1/2)*
arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.14, size = 296, normalized size = 1.72

$$\frac{3\,e^4\,\mathrm{atan}\left(\frac{\sqrt{b}\,\sqrt{d+e\,x}}{\sqrt{a\,e-b\,d}}\right)}{64\,b^{5/2}\,{\left(a\,e-b\,d\right)}^{5/2}}-\frac{\frac{11\,e^4\,{\left(d+e\,x\right)}^{3/2}}{64\,b}-11}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (3*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(5/2)*(a*e
- b*d)^(5/2)) - ((11*e^4*(d + e*x)^(3/2))/(64*b) - (11*e^4*(d + e*x)^(5/2))
/(64*(a*e - b*d)) + (3*e^4*(a*e - b*d)*(d + e*x)^(1/2))/(64*b^2) - (3*b*e^4
*(d + e*x)^(7/2))/(64*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3
*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 1
2*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2
 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2088 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=182

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}(bd-ae)^{7/2}}-\frac{5e^3\sqrt{d+ex}}{64b(a+bx)(bd-ae)^3}+\frac{5e^2\sqrt{d+ex}}{96b(a+bx)^2(bd-ae)^2}-\frac{e\sqrt{d+ex}}{24b(a+bx)^3(bd-ae)}-\frac{\sqrt{d+ex}}{4b(a+bx)^4}$$

```
[Out] 5/64*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(3/2)/(-a*e+b*d)
^(7/2)-1/4*(e*x+d)^(1/2)/b/(b*x+a)^4-1/24*e*(e*x+d)^(1/2)/b/(-a*e+b*d)/(b*x
+a)^3+5/96*e^2*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/(b*x+a)^2-5/64*e^3*(e*x+d)^(1/2
)/b/(-a*e+b*d)^3/(b*x+a)
```

Rubi [A] time = 0.09, antiderivative size = 182, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.152$, Rules used = $\{27, 47, 51, 63, 208\}$

$$\frac{5e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64b^{3/2}(bd-ae)^{7/2}}-\frac{5e^3\sqrt{d+ex}}{64b(a+bx)(bd-ae)^3}+\frac{5e^2\sqrt{d+ex}}{96b(a+bx)^2(bd-ae)^2}-\frac{e\sqrt{d+ex}}{24b(a+bx)^3(bd-ae)}-\frac{\sqrt{d+ex}}{4b(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -Sqrt[d + e*x]/(4*b*(a + b*x)^4) - (e*Sqrt[d + e*x])/(24*b*(b*d - a*e)*(a +
 b*x)^3) + (5*e^2*Sqrt[d + e*x])/(96*b*(b*d - a*e)^2*(a + b*x)^2) - (5*e^3*
Sqrt[d + e*x])/(64*b*(b*d - a*e)^3*(a + b*x)) + (5*e^4*ArcTanh[(Sqrt[b]*Sqr
t[d + e*x])/Sqrt[b*d - a*e]])/(64*b^(3/2)*(b*d - a*e)^(7/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{\sqrt{d+ex}}{(a+bx)^5}\,dx$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} + \frac{e\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{8b}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} - \frac{\left(5e^2\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,dx}{48b(bd-ae)}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} + \frac{\left(5e^3\right)\int \frac{}{(a+bx)}}{64b(bd-}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+}}{64b(bd-ae)^3}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+}}{64b(bd-ae)^3}$$

$$= -\frac{\sqrt{d+ex}}{4b(a+bx)^4} - \frac{e\sqrt{d+ex}}{24b(bd-ae)(a+bx)^3} + \frac{5e^2\sqrt{d+ex}}{96b(bd-ae)^2(a+bx)^2} - \frac{5e^3\sqrt{d+}}{64b(bd-ae)^3}$$

Mathematica [C] time = 0.01, size = 52, normalized size = 0.29

$$\frac{2e^4(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},5;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (2*e^4*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 5, 5/2, -((b*(d + e*x))/(-(b*
d) + a*e))])/(3*(-(b*d) + a*e)^5)
```

fricas [B] time = 0.87, size = 1176, normalized size = 6.46

$$\left[-\frac{15\left(b^4e^4x^4+4\,ab^3e^4x^3+6\,a^2b^2e^4x^2+4\,a^3be^4x+a^4e^4\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\,(}{384\,\left(a^4b^6d^4-4\,a^5b^5d^3e+6\,a^6b^4d^2e^2-4\,a^7b^3de^3+a^8b^2e^4+\left(b^{10}d^4-4\,ab^9d^3e+6\,a^2b^8d^2e^2-4\,a^3b^7de^3+a^4\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/384*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(48*b^5*d^4 - 184*a*b^4*d^3*e + 254*
a^2*b^3*d^2*e^2 - 133*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*
e^4)*x^3 - 5*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (8*b^5
*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqrt(e*x
 + d))/(a^4*b^6*d^4 - 4*a^5*b^5*d^3*e + 6*a^6*b^4*d^2*e^2 - 4*a^7*b^3*d*e^3
 + a^8*b^2*e^4 + (b^10*d^4 - 4*a*b^9*d^3*e + 6*a^2*b^8*d^2*e^2 - 4*a^3*b^7*
d*e^3 + a^4*b^6*e^4)*x^4 + 4*(a*b^9*d^4 - 4*a^2*b^8*d^3*e + 6*a^3*b^7*d^2*e
^2 - 4*a^4*b^6*d*e^3 + a^5*b^5*e^4)*x^3 + 6*(a^2*b^8*d^4 - 4*a^3*b^7*d^3*e
+ 6*a^4*b^6*d^2*e^2 - 4*a^5*b^5*d*e^3 + a^6*b^4*e^4)*x^2 + 4*(a^3*b^7*d^4 -
 4*a^4*b^6*d^3*e + 6*a^5*b^5*d^2*e^2 - 4*a^6*b^4*d*e^3 + a^7*b^3*e^4)*x), -
1/192*(15*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*
x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)
/(b*e*x + b*d)) + (48*b^5*d^4 - 184*a*b^4*d^3*e + 254*a^2*b^3*d^2*e^2 - 133
*a^3*b^2*d*e^3 + 15*a^4*b*e^4 + 15*(b^5*d*e^3 - a*b^4*e^4)*x^3 - 5*(2*b^5*d
^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 + (8*b^5*d^3*e - 44*a*b^4*d^2
*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6*d^4 -
 4*a^5*b^5*d^3*e + 6*a^6*b^4*d^2*e^2 - 4*a^7*b^3*d*e^3 + a^8*b^2*e^4 + (b^1
0*d^4 - 4*a*b^9*d^3*e + 6*a^2*b^8*d^2*e^2 - 4*a^3*b^7*d*e^3 + a^4*b^6*e^4)*
x^4 + 4*(a*b^9*d^4 - 4*a^2*b^8*d^3*e + 6*a^3*b^7*d^2*e^2 - 4*a^4*b^6*d*e^3
+ a^5*b^5*e^4)*x^3 + 6*(a^2*b^8*d^4 - 4*a^3*b^7*d^3*e + 6*a^4*b^6*d^2*e^2 -
 4*a^5*b^5*d*e^3 + a^6*b^4*e^4)*x^2 + 4*(a^3*b^7*d^4 - 4*a^4*b^6*d^3*e + 6*
a^5*b^5*d^2*e^2 - 4*a^6*b^4*d*e^3 + a^7*b^3*e^4)*x)]
```

giac [B] time = 0.19, size = 313, normalized size = 1.72

$$-\frac{5\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^4d^3-3\,ab^3d^2e+3\,a^2b^2de^2-a^3be^3\right)\sqrt{-b^2d+abe}}-\frac{15\,(xe+d)^{\frac{7}{2}}b^3e^4-55\,(xe+d)^{\frac{5}{2}}b^3de^4+73\,(xe+d)^{\frac{3}{2}}b^3d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] -5/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^3 - 3*a*b^3*
d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*sqrt(-b^2*d + a*b*e)) - 1/192*(15*(x*e
 + d)^(7/2)*b^3*e^4 - 55*(x*e + d)^(5/2)*b^3*d*e^4 + 73*(x*e + d)^(3/2)*b^3
*d^2*e^4 + 15*sqrt(x*e + d)*b^3*d^3*e^4 + 55*(x*e + d)^(5/2)*a*b^2*e^5 - 14
6*(x*e + d)^(3/2)*a*b^2*d*e^5 - 45*sqrt(x*e + d)*a*b^2*d^2*e^5 + 73*(x*e +
d)^(3/2)*a^2*b*e^6 + 45*sqrt(x*e + d)*a^2*b*d*e^6 - 15*sqrt(x*e + d)*a^3*e^
7)/((b^4*d^3 - 3*a*b^3*d^2*e + 3*a^2*b^2*d*e^2 - a^3*b*e^3)*((x*e + d)*b -
b*d + a*e)^4)
```

maple [A] time = 0.06, size = 248, normalized size = 1.36

$$\frac{5\,(ex+d)^{\frac{7}{2}}\,b^2e^4}{64\,(bex+ae)^4\left(a^3e^3-3a^2bd\,e^2+3a\,b^2d^2e-b^3d^3\right)}+\frac{55\,(ex+d)^{\frac{5}{2}}\,b\,e^4}{192\,(bex+ae)^4\left(a^2e^2-2abde+b^2d^2\right)}+\frac{5e^4\,\mathrm{ar}}{64\left(a^3e^3-3a^2bd\,e^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 5/64*e^4/(b*e*x+a*e)^4*b^2/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)*(e
*x+d)^(7/2)+55/192*e^4/(b*e*x+a*e)^4*b/(a^2*e^2-2*a*b*d*e+b^2*d^2)*(e*x+d)^
(5/2)+73/192*e^4/(b*e*x+a*e)^4/(a*e-b*d)*(e*x+d)^(3/2)-5/64*e^4/(b*e*x+a*e)
^4/b*(e*x+d)^(1/2)+5/64*e^4/b/(a^3*e^3-3*a^2*b*d*e^2+3*a*b^2*d^2*e-b^3*d^3)
/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [**B**] time = 0.15, size = 297, normalized size = 1.63

$$\frac{\frac{73\,e^4\,{\left(d+e\,x\right)}^{3/2}}{192\,\left(a\,e-b\,d\right)}-\frac{5\,e^4\,\sqrt{d+e\,x}}{64\,b}+\frac{5\,b^2\,e^4\,\left(d+e\,x\right)}{64\,\left(a\,e-b\,d\right)}}{b^4\,{\left(d+e\,x\right)}^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,{\left(d+e\,x\right)}^3-\left(d+e\,x\right)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((73*e^4*(d + e*x)^(3/2))/(192*(a*e - b*d)) - (5*e^4*(d + e*x)^(1/2))/(64*b
) + (5*b^2*e^4*(d + e*x)^(7/2))/(64*(a*e - b*d)^3) + (55*b*e^4*(d + e*x)^(5
/2))/(192*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d - 4*a*b^3*e)*(d + e*x
)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*
e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*
d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (5*e^4*atan((b^
(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(3/2)*(a*e - b*d)^(7/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2089 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=180

$$-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\,(bd-ae)^{9/2}}+\frac{35e^3\sqrt{d+ex}}{64(a+bx)(bd-ae)^4}-\frac{35e^2\sqrt{d+ex}}{96(a+bx)^2(bd-ae)^3}+\frac{7e\sqrt{d+ex}}{24(a+bx)^3(bd-ae)^2}-\frac{\sqrt{d+ex}}{4(a+bx)^4(bd-}$$

```
[Out] -35/64*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(9/2)
/b^(1/2)-1/4*(e*x+d)^(1/2)/(-a*e+b*d)/(b*x+a)^4+7/24*e*(e*x+d)^(1/2)/(-a*e+
b*d)^2/(b*x+a)^3-35/96*e^2*(e*x+d)^(1/2)/(-a*e+b*d)^3/(b*x+a)^2+35/64*e^3*(
e*x+d)^(1/2)/(-a*e+b*d)^4/(b*x+a)
```

Rubi [**A**] time = 0.09, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$\frac{35e^3\sqrt{d+ex}}{64(a+bx)(bd-ae)^4}-\frac{35e^2\sqrt{d+ex}}{96(a+bx)^2(bd-ae)^3}-\frac{35e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64\sqrt{b}\,(bd-ae)^{9/2}}+\frac{7e\sqrt{d+ex}}{24(a+bx)^3(bd-ae)^2}-\frac{\sqrt{d+ex}}{4(a+bx)^4(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] -Sqrt[d + e*x]/(4*(b*d - a*e)*(a + b*x)^4) + (7*e*Sqrt[d + e*x])/(24*(b*d -
 a*e)^2*(a + b*x)^3) - (35*e^2*Sqrt[d + e*x])/(96*(b*d - a*e)^3*(a + b*x)^2
) + (35*e^3*Sqrt[d + e*x])/(64*(b*d - a*e)^4*(a + b*x)) - (35*e^4*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(64*Sqrt[b]*(b*d - a*e)^(9/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{1}{(a+bx)^5\sqrt{d+ex}}\,dx$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} - \frac{(7e)\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{8(bd-ae)}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} + \frac{\left(35e^2\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}\,d}{48(bd-ae)^2}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2}$$

$$= -\frac{\sqrt{d+ex}}{4(bd-ae)(a+bx)^4} + \frac{7e\sqrt{d+ex}}{24(bd-ae)^2(a+bx)^3} - \frac{35e^2\sqrt{d+ex}}{96(bd-ae)^3(a+bx)^2}$$

Mathematica [C] time = 0.01, size = 50, normalized size = 0.28

$$\frac{2e^4\sqrt{d+ex}\,{}_2F_1\left(\frac{1}{2},5;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (2*e^4*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 5, 3/2, -((b*(d + e*x))/(-(b*d)
 + a*e))])/(-(b*d) + a*e)^5
```

fricas [B] time = 0.77, size = 1325, normalized size = 7.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="frica
s")
```

```
[Out] [1/384*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^
4*x + a^4*e^4)*sqrt(b^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d
- a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(48*b^5*d^4 - 248*a*b^4*d^3*e + 526*
a^2*b^3*d^2*e^2 - 605*a^3*b^2*d*e^3 + 279*a^4*b*e^4 - 105*(b^5*d*e^3 - a*b^
4*e^4)*x^3 + 35*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b^3*e^4)*x^2 - 7*(
8*b^5*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^3*b^2*e^4)*x)*sqr
t(e*x + d))/(a^4*b^6*d^5 - 5*a^5*b^5*d^4*e + 10*a^6*b^4*d^3*e^2 - 10*a^7*b^
3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a^9*b*e^5 + (b^10*d^5 - 5*a*b^9*d^4*e + 10*a^
2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*e^3 + 5*a^4*b^6*d*e^4 - a^5*b^5*e^5)*x^4 + 4
*(a*b^9*d^5 - 5*a^2*b^8*d^4*e + 10*a^3*b^7*d^3*e^2 - 10*a^4*b^6*d^2*e^3 + 5
*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x^3 + 6*(a^2*b^8*d^5 - 5*a^3*b^7*d^4*e + 10*a
^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2*e^3 + 5*a^6*b^4*d*e^4 - a^7*b^3*e^5)*x^2 +
4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*e + 10*a^5*b^5*d^3*e^2 - 10*a^6*b^4*d^2*e^3
+ 5*a^7*b^3*d*e^4 - a^8*b^2*e^5)*x), 1/192*(105*(b^4*e^4*x^4 + 4*a*b^3*e^4*
x^3 + 6*a^2*b^2*e^4*x^2 + 4*a^3*b*e^4*x + a^4*e^4)*sqrt(-b^2*d + a*b*e)*arc
tan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (48*b^5*d^4 - 248*a
*b^4*d^3*e + 526*a^2*b^3*d^2*e^2 - 605*a^3*b^2*d*e^3 + 279*a^4*b*e^4 - 105*
(b^5*d*e^3 - a*b^4*e^4)*x^3 + 35*(2*b^5*d^2*e^2 - 13*a*b^4*d*e^3 + 11*a^2*b
^3*e^4)*x^2 - 7*(8*b^5*d^3*e - 44*a*b^4*d^2*e^2 + 109*a^2*b^3*d*e^3 - 73*a^
3*b^2*e^4)*x)*sqrt(e*x + d))/(a^4*b^6*d^5 - 5*a^5*b^5*d^4*e + 10*a^6*b^4*d^
3*e^2 - 10*a^7*b^3*d^2*e^3 + 5*a^8*b^2*d*e^4 - a^9*b*e^5 + (b^10*d^5 - 5*a*
b^9*d^4*e + 10*a^2*b^8*d^3*e^2 - 10*a^3*b^7*d^2*e^3 + 5*a^4*b^6*d*e^4 - a^5
*b^5*e^5)*x^4 + 4*(a*b^9*d^5 - 5*a^2*b^8*d^4*e + 10*a^3*b^7*d^3*e^2 - 10*a^
4*b^6*d^2*e^3 + 5*a^5*b^5*d*e^4 - a^6*b^4*e^5)*x^3 + 6*(a^2*b^8*d^5 - 5*a^3
*b^7*d^4*e + 10*a^4*b^6*d^3*e^2 - 10*a^5*b^5*d^2*e^3 + 5*a^6*b^4*d*e^4 - a^
7*b^3*e^5)*x^2 + 4*(a^3*b^7*d^5 - 5*a^4*b^6*d^4*e + 10*a^5*b^5*d^3*e^2 - 10
*a^6*b^4*d^2*e^3 + 5*a^7*b^3*d*e^4 - a^8*b^2*e^5)*x)]
```

giac [B] time = 0.18, size = 331, normalized size = 1.84

$$\frac{35\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^4}{64\left(b^4d^4-4\,ab^3d^3e+6\,a^2b^2d^2e^2-4\,a^3bde^3+a^4e^4\right)\sqrt{-b^2d+abe}}+\frac{105\,(xe+d)^{\frac{7}{2}}b^3e^4-385\,(xe+d)^{\frac{5}{2}}b^3de^4+511\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="giac"
)
```

```
[Out] 35/64*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^4*d^4 - 4*a*b^3*
d^3*e + 6*a^2*b^2*d^2*e^2 - 4*a^3*b*d*e^3 + a^4*e^4)*sqrt(-b^2*d + a*b*e))
+ 1/192*(105*(x*e + d)^(7/2)*b^3*e^4 - 385*(x*e + d)^(5/2)*b^3*d*e^4 + 511*
(x*e + d)^(3/2)*b^3*d^2*e^4 - 279*sqrt(x*e + d)*b^3*d^3*e^4 + 385*(x*e + d)
^(5/2)*a*b^2*e^5 - 1022*(x*e + d)^(3/2)*a*b^2*d*e^5 + 837*sqrt(x*e + d)*a*b
^2*d^2*e^5 + 511*(x*e + d)^(3/2)*a^2*b*e^6 - 837*sqrt(x*e + d)*a^2*b*d*e^6
+ 279*sqrt(x*e + d)*a^3*e^7)/((b^4*d^4 - 4*a*b^3*d^3*e + 6*a^2*b^2*d^2*e^2
- 4*a^3*b*d*e^3 + a^4*e^4)*((x*e + d)*b - b*d + a*e)^4)
```

maple [A] time = 0.06, size = 179, normalized size = 0.99

$$\frac{35e^4\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)}{64\,(ae-bd)^4\,\sqrt{(ae-bd)\,b}}+\frac{\sqrt{ex+d}\;e^4}{4\,(ae-bd)\,(bex+ae)^4}+\frac{7\sqrt{ex+d}\;e^4}{24\,(ae-bd)^2\,(bex+ae)^3}+\frac{35\sqrt{ex+d}\;e^4}{96\,(ae-bd)^3\,(bex+ae)^2}+\frac{35}{64\,(ae-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x)
```

```
[Out] 1/4*e^4*(e*x+d)^(1/2)/(a*e-b*d)/(b*e*x+a*e)^4+7/24*e^4/(a*e-b*d)^2*(e*x+d)^
(1/2)/(b*e*x+a*e)^3+35/96*e^4/(a*e-b*d)^3*(e*x+d)^(1/2)/(b*e*x+a*e)^2+35/64
*e^4/(a*e-b*d)^4*(e*x+d)^(1/2)/(b*e*x+a*e)+35/64*e^4/(a*e-b*d)^4/((a*e-b*d)
*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^3/(e*x+d)^(1/2),x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad **[B]** time = 2.15, size = 307, normalized size = 1.71

$$\frac{\frac{93\,e^4\,\sqrt{d+e\,x}}{64\,(a\,e-b\,d)}+\frac{385\,b^2\,e^4\,(d+e\,x)^{5/2}}{192\,(a\,e-b\,d)^3}+\frac{35\,b^3\,e^4\,(d+}{64\,(a\,e-b}}{b^4\,(d+e\,x)^4-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,(d+e\,x)^3-(d+e\,x)\,\left(-4\,a^3\,b\,e^3+12\,a^2\,b^2\,d\,e^2-12\,a\,b^3\,d^2\,e+4\,b^4\,d^3\right)+a^4\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((93*e^4*(d + e*x)^(1/2))/(64*(a*e - b*d)) + (385*b^2*e^4*(d + e*x)^(5/2))/
(192*(a*e - b*d)^3) + (35*b^3*e^4*(d + e*x)^(7/2))/(64*(a*e - b*d)^4) + (51
1*b*e^4*(d + e*x)^(3/2))/(192*(a*e - b*d)^2))/(b^4*(d + e*x)^4 - (4*b^4*d -
 4*a*b^3*e)*(d + e*x)^3 - (d + e*x)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b^2*d
*e^2 - 12*a*b^3*d^2*e) + a^4*e^4 + b^4*d^4 + (d + e*x)^2*(6*b^4*d^2 + 6*a^2
*b^2*e^2 - 12*a*b^3*d*e) + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^
3) + (35*e^4*atan((b^(1/2)*(d + e*x)^(1/2))/(a*e - b*d)^(1/2)))/(64*b^(1/2)
*(a*e - b*d)^(9/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**3/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.2090 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=206

$$\frac{315e^4}{64\sqrt{d+ex}\,(bd-ae)^5}-\frac{315\sqrt{b}\,e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{11/2}}+\frac{105e^3}{64(a+bx)\sqrt{d+ex}\,(bd-ae)^4}-\frac{21e^2}{32(a+bx)^2\sqrt{d+ex}\,(bd-ae)}$$

```
[Out] -315/64*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b
*d)^(11/2)+315/64*e^4/(-a*e+b*d)^5/(e*x+d)^(1/2)-1/4/(-a*e+b*d)/(b*x+a)^4/(
e*x+d)^(1/2)+3/8*e/(-a*e+b*d)^2/(b*x+a)^3/(e*x+d)^(1/2)-21/32*e^2/(-a*e+b*d
)^3/(b*x+a)^2/(e*x+d)^(1/2)+105/64*e^3/(-a*e+b*d)^4/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.121$, Rules used = {27, 51, 63, 208}

$$\frac{315e^4}{64\sqrt{d+ex}\,(bd-ae)^5}+\frac{105e^3}{64(a+bx)\sqrt{d+ex}\,(bd-ae)^4}-\frac{21e^2}{32(a+bx)^2\sqrt{d+ex}\,(bd-ae)^3}-\frac{315\sqrt{b}\,e^4\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right.}{64(bd-ae)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (315*e^4)/(64*(b*d - a*e)^5*Sqrt[d + e*x]) - 1/(4*(b*d - a*e)*(a + b*x)^4*S
qrt[d + e*x]) + (3*e)/(8*(b*d - a*e)^2*(a + b*x)^3*Sqrt[d + e*x]) - (21*e^2
)/(32*(b*d - a*e)^3*(a + b*x)^2*Sqrt[d + e*x]) + (105*e^3)/(64*(b*d - a*e)^
4*(a + b*x)*Sqrt[d + e*x]) - (315*Sqrt[b]*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[b*d - a*e]])/(64*(b*d - a*e)^(11/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx=\int \frac{1}{(a+bx)^5(d+ex)^{3/2}}\,dx$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}-\frac{(9e)\int \frac{1}{(a+bx)^4(d+ex)^{3/2}}\,dx}{8(bd-ae)}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}}+\frac{\left(21e^2\right.}{}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}}-\frac{}{32(bc}$$

$$=-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3e}{8(bd-ae)^2(a+bx)^3\sqrt{d+ex}}-\frac{}{32(bc}$$

$$=\frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}}-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3}{8(bd-ae)^2(a}$$

$$=\frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}}-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3}{8(bd-ae)^2(a}$$

$$=\frac{315e^4}{64(bd-ae)^5\sqrt{d+ex}}-\frac{1}{4(bd-ae)(a+bx)^4\sqrt{d+ex}}+\frac{3}{8(bd-ae)^2(a}$$

Mathematica [**C**] time = 0.01, size = 50, normalized size = 0.24

$$-\frac{2e^4\,{}_2F_1\left(-\frac{1}{2},5;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{d+ex}\,(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-2*e^4*Hypergeometric2F1[-1/2, 5, 1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/(
(-(b*d) + a*e)^5*Sqrt[d + e*x])
```

fricas [**B**] time = 0.96, size = 1734, normalized size = 8.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [-1/128*(315*(b^4*e^5*x^5 + a^4*d*e^4 + (b^4*d*e^4 + 4*a*b^3*e^5)*x^4 + 2*(
2*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^3 + 2*(3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^2
+ (4*a^3*b*d*e^4 + a^4*e^5)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e
 + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(315*b^4
*e^4*x^4 - 16*b^4*d^4 + 88*a*b^3*d^3*e - 210*a^2*b^2*d^2*e^2 + 325*a^3*b*d*
e^3 + 128*a^4*e^4 + 105*(b^4*d*e^3 + 11*a*b^3*e^4)*x^3 - 21*(2*b^4*d^2*e^2
- 19*a*b^3*d*e^3 - 73*a^2*b^2*e^4)*x^2 + 3*(8*b^4*d^3*e - 52*a*b^3*d^2*e^2
+ 185*a^2*b^2*d*e^3 + 279*a^3*b*e^4)*x)*sqrt(e*x + d))/(a^4*b^5*d^6 - 5*a^5
*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7*b^2*d^3*e^3 + 5*a^8*b*d^2*e^4 - a^
9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2*b^7*d^3*e^3 - 10*a^3*b^6*d^
2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^5 + (b^9*d^6 - a*b^8*d^5*e - 10*a^
2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*a^4*b^5*d^2*e^4 + 19*a^5*b^4*d*e^5
- 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 - 7*a^2*b^7*d^5*e + 5*a^3*b^6*d^4*e^2
 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e^4 + 13*a^6*b^3*d*e^5 - 3*a^7*b^2*e
^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*d^5*e + 20*a^4*b^5*d^4*e^2 - 10*a^5
*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7*b^2*d*e^5 - 2*a^8*b*e^6)*x^2 + (4*
a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*b^4*d^4*e^2 - 30*a^6*b^3*d^3*e^3 +
10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e^6)*x), -1/64*(315*(b^4*e^5*x^5 + a
^4*d*e^4 + (b^4*d*e^4 + 4*a*b^3*e^5)*x^4 + 2*(2*a*b^3*d*e^4 + 3*a^2*b^2*e^5
)*x^3 + 2*(3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*x^2 + (4*a^3*b*d*e^4 + a^4*e^5)*x
)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e
))/(b*e*x + b*d)) - (315*b^4*e^4*x^4 - 16*b^4*d^4 + 88*a*b^3*d^3*e - 210*a^
2*b^2*d^2*e^2 + 325*a^3*b*d*e^3 + 128*a^4*e^4 + 105*(b^4*d*e^3 + 11*a*b^3*e
^4)*x^3 - 21*(2*b^4*d^2*e^2 - 19*a*b^3*d*e^3 - 73*a^2*b^2*e^4)*x^2 + 3*(8*b
^4*d^3*e - 52*a*b^3*d^2*e^2 + 185*a^2*b^2*d*e^3 + 279*a^3*b*e^4)*x)*sqrt(e*
x + d))/(a^4*b^5*d^6 - 5*a^5*b^4*d^5*e + 10*a^6*b^3*d^4*e^2 - 10*a^7*b^2*d^
3*e^3 + 5*a^8*b*d^2*e^4 - a^9*d*e^5 + (b^9*d^5*e - 5*a*b^8*d^4*e^2 + 10*a^2
*b^7*d^3*e^3 - 10*a^3*b^6*d^2*e^4 + 5*a^4*b^5*d*e^5 - a^5*b^4*e^6)*x^5 + (b
^9*d^6 - a*b^8*d^5*e - 10*a^2*b^7*d^4*e^2 + 30*a^3*b^6*d^3*e^3 - 35*a^4*b^5
*d^2*e^4 + 19*a^5*b^4*d*e^5 - 4*a^6*b^3*e^6)*x^4 + 2*(2*a*b^8*d^6 - 7*a^2*b
^7*d^5*e + 5*a^3*b^6*d^4*e^2 + 10*a^4*b^5*d^3*e^3 - 20*a^5*b^4*d^2*e^4 + 13
*a^6*b^3*d*e^5 - 3*a^7*b^2*e^6)*x^3 + 2*(3*a^2*b^7*d^6 - 13*a^3*b^6*d^5*e +
 20*a^4*b^5*d^4*e^2 - 10*a^5*b^4*d^3*e^3 - 5*a^6*b^3*d^2*e^4 + 7*a^7*b^2*d*
e^5 - 2*a^8*b*e^6)*x^2 + (4*a^3*b^6*d^6 - 19*a^4*b^5*d^5*e + 35*a^5*b^4*d^4
*e^2 - 30*a^6*b^3*d^3*e^3 + 10*a^7*b^2*d^2*e^4 + a^8*b*d*e^5 - a^9*e^6)*x)]
```

giac [B] time = 0.25, size = 440, normalized size = 2.14

$$\frac{315\, b \arctan\left(\frac{\sqrt{xe+d}\, b}{\sqrt{-b^2d+abe}}\right) e^4}{64\left(b^5d^5 - 5\,ab^4d^4e + 10\,a^2b^3d^3e^2 - 10\,a^3b^2d^2e^3 + 5\,a^4bde^4 - a^5e^5\right)\sqrt{-b^2d+abe}} + \frac{}{\left(b^5d^5 - 5\,ab^4d^4e + 10\,a^2b^3d^3e^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 315/64*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^5*d^5 - 5*a*b
^4*d^4*e + 10*a^2*b^3*d^3*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^
5)*sqrt(-b^2*d + a*b*e)) + 2*e^4/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3
*e^2 - 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*sqrt(x*e + d)) + 1/64*
(187*(x*e + d)^(7/2)*b^4*e^4 - 643*(x*e + d)^(5/2)*b^4*d*e^4 + 765*(x*e + d
)^(3/2)*b^4*d^2*e^4 - 325*sqrt(x*e + d)*b^4*d^3*e^4 + 643*(x*e + d)^(5/2)*a
*b^3*e^5 - 1530*(x*e + d)^(3/2)*a*b^3*d*e^5 + 975*sqrt(x*e + d)*a*b^3*d^2*e
^5 + 765*(x*e + d)^(3/2)*a^2*b^2*e^6 - 975*sqrt(x*e + d)*a^2*b^2*d*e^6 + 32
5*sqrt(x*e + d)*a^3*b*e^7)/((b^5*d^5 - 5*a*b^4*d^4*e + 10*a^2*b^3*d^3*e^2 -
 10*a^3*b^2*d^2*e^3 + 5*a^4*b*d*e^4 - a^5*e^5)*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.07, size = 446, normalized size = 2.17

$$-\frac{325\sqrt{ex+d}\; a^3b\,e^7}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{975\sqrt{ex+d}\; a^2b^2d\,e^6}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{975\sqrt{ex+d}\; a\,b^3d^2e^5}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}+\frac{325\sqrt{ex+d}\; b^4d^3e^4}{64\left(ae-bd\right)^5\left(bex+ae\right)^4}-\frac{765}{64\,(ae}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] -187/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(7/2)-643/64*e^5/(a*e-b*d
)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a+643/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e
)^4*(e*x+d)^(5/2)*d-765/64*e^6/(a*e-b*d)^5*b^2/(b*e*x+a*e)^4*(e*x+d)^(3/2)*
a^2+765/32*e^5/(a*e-b*d)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a*d-765/64*e^4/(
a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2-325/64*e^7/(a*e-b*d)^5*b/(b*
e*x+a*e)^4*(e*x+d)^(1/2)*a^3+975/64*e^6/(a*e-b*d)^5*b^2/(b*e*x+a*e)^4*(e*x+
d)^(1/2)*a^2*d-975/64*e^5/(a*e-b*d)^5*b^3/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a*d^2
+325/64*e^4/(a*e-b*d)^5*b^4/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^3-315/64*e^4/(a*e
-b*d)^5*b/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-2
*e^4/(a*e-b*d)^5/(e*x+d)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.39, size = 398, normalized size = 1.93

$$-\frac{\frac{2e^4}{ae-bd}+\frac{1533\,b^2\,e^4\,(d+e\,x)^2}{64\,(a\,e-b\,d)^3}+\frac{1155\,b^3\,e^4\,(}{64\,(a\,e-}}{b^4\,(d+e\,x)^{9/2}-\left(4\,b^4\,d-4\,a\,b^3\,e\right)\,(d+e\,x)^{7/2}+\sqrt{d+e\,x}\,\left(a^4\,e^4-4\,a^3\,b\,d\,e^3+6\,a^2\,b^2\,d^2\,e^2-4\,a\,b^3\,d^3\,e+b^4\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] - ((2*e^4)/(a*e - b*d) + (1533*b^2*e^4*(d + e*x)^2)/(64*(a*e - b*d)^3) + (1
155*b^3*e^4*(d + e*x)^3)/(64*(a*e - b*d)^4) + (315*b^4*e^4*(d + e*x)^4)/(64
*(a*e - b*d)^5) + (837*b*e^4*(d + e*x))/(64*(a*e - b*d)^2))/(b^4*(d + e*x)^
(9/2) - (4*b^4*d - 4*a*b^3*e)*(d + e*x)^(7/2) + (d + e*x)^(1/2)*(a^4*e^4 +
b^4*d^4 + 6*a^2*b^2*d^2*e^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (d + e*x)^(5
/2)*(6*b^4*d^2 + 6*a^2*b^2*e^2 - 12*a*b^3*d*e) - (d + e*x)^(3/2)*(4*b^4*d^3
 - 4*a^3*b*e^3 + 12*a^2*b^2*d*e^2 - 12*a*b^3*d^2*e)) - (315*b^(1/2)*e^4*ata
n((b^(1/2)*(d + e*x)^(1/2)*(a^5*e^5 - b^5*d^5 - 10*a^2*b^3*d^3*e^2 + 10*a^3
*b^2*d^2*e^3 + 5*a*b^4*d^4*e - 5*a^4*b*d*e^4))/(a*e - b*d)^(11/2)))/(64*(a*
e - b*d)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2091 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=233

$$-\frac{1155b^{3/2}e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{13/2}}+\frac{1155be^4}{64\sqrt{d+ex}\,(bd-ae)^6}+\frac{385e^4}{64(d+ex)^{3/2}(bd-ae)^5}+\frac{231e^3}{64(a+bx)(d+ex)^{3/2}(bd-ae)^4}-$$

```
[Out] 385/64*e^4/(-a*e+b*d)^5/(e*x+d)^(3/2)-1/4/(-a*e+b*d)/(b*x+a)^4/(e*x+d)^(3/2
)+11/24*e/(-a*e+b*d)^2/(b*x+a)^3/(e*x+d)^(3/2)-33/32*e^2/(-a*e+b*d)^3/(b*x+
a)^2/(e*x+d)^(3/2)+231/64*e^3/(-a*e+b*d)^4/(b*x+a)/(e*x+d)^(3/2)-1155/64*b^
(3/2)*e^4*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(13/2)
+1155/64*b*e^4/(-a*e+b*d)^6/(e*x+d)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 4, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.121, Rules used = {27, 51, 63, 208}

$$-\frac{1155b^{3/2}e^4\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{64(bd-ae)^{13/2}}+\frac{1155be^4}{64\sqrt{d+ex}\,(bd-ae)^6}+\frac{385e^4}{64(d+ex)^{3/2}(bd-ae)^5}+\frac{231e^3}{64(a+bx)(d+ex)^{3/2}(bd-ae)^4}-$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (385*e^4)/(64*(b*d - a*e)^5*(d + e*x)^(3/2)) - 1/(4*(b*d - a*e)*(a + b*x)^4
*(d + e*x)^(3/2)) + (11*e)/(24*(b*d - a*e)^2*(a + b*x)^3*(d + e*x)^(3/2)) -
 (33*e^2)/(32*(b*d - a*e)^3*(a + b*x)^2*(d + e*x)^(3/2)) + (231*e^3)/(64*(b
*d - a*e)^4*(a + b*x)*(d + e*x)^(3/2)) + (1155*b*e^4)/(64*(b*d - a*e)^6*Sqr
t[d + e*x]) - (1155*b^(3/2)*e^4*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d -
a*e]])/(64*(b*d - a*e)^(13/2))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^3}\,dx = \int \frac{1}{(a+bx)^5(d+ex)^{5/2}}\,dx$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} - \frac{(11e)\int \frac{1}{(a+bx)^4(d+ex)^{5/2}}\,dx}{8(bd-ae)}$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}} +$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}} -$$

$$= -\frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{11e}{24(bd-ae)^2(a+bx)^3(d+ex)^{3/2}} -$$

$$= \frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}} - \frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{\ }{24(bd-ae}$$

$$= \frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}} - \frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{\ }{24(bd-ae}$$

$$= \frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}} - \frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{\ }{24(bd-ae}$$

$$= \frac{385e^4}{64(bd-ae)^5(d+ex)^{3/2}} - \frac{1}{4(bd-ae)(a+bx)^4(d+ex)^{3/2}} + \frac{\ }{24(bd-ae}$$

Mathematica [C] time = 0.02, size = 52, normalized size = 0.22

$$-\frac{2e^4\,{}_2F_1\left(-\frac{3}{2},5;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3(d+ex)^{3/2}(ae-bd)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^3),x]
```

```
[Out] (-2*e^4*Hypergeometric2F1[-3/2, 5, -1/2, -((b*(d + e*x))/(-(b*d) + a*e))])/
(3*(-(b*d) + a*e)^5*(d + e*x)^(3/2))
```

fricas [B] time = 0.96, size = 2494, normalized size = 10.70

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] [1/384*(3465*(b^5*e^6*x^6 + a^4*b*d^2*e^4 + 2*(b^5*d*e^5 + 2*a*b^4*e^6)*x^5
 + (b^5*d^2*e^4 + 8*a*b^4*d*e^5 + 6*a^2*b^3*e^6)*x^4 + 4*(a*b^4*d^2*e^4 + 3
*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + (6*a^2*b^3*d^2*e^4 + 8*a^3*b^2*d*e^5 +
a^4*b*e^6)*x^2 + 2*(2*a^3*b^2*d^2*e^4 + a^4*b*d*e^5)*x)*sqrt(b/(b*d - a*e))
*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e))
)/(b*x + a)) + 2*(3465*b^5*e^5*x^5 - 48*b^5*d^5 + 328*a*b^4*d^4*e - 1030*a^
2*b^3*d^3*e^2 + 2295*a^3*b^2*d^2*e^3 + 2048*a^4*b*d*e^4 - 128*a^5*e^5 + 115
5*(4*b^5*d*e^4 + 11*a*b^4*e^5)*x^4 + 231*(3*b^5*d^2*e^3 + 74*a*b^4*d*e^4 +
73*a^2*b^3*e^5)*x^3 - 99*(2*b^5*d^3*e^2 - 27*a*b^4*d^2*e^3 - 232*a^2*b^3*d*
e^4 - 93*a^3*b^2*e^5)*x^2 + 11*(8*b^5*d^4*e - 68*a*b^4*d^3*e^2 + 345*a^2*b^
3*d^2*e^3 + 1162*a^3*b^2*d*e^4 + 128*a^4*b*e^5)*x)*sqrt(e*x + d))/(a^4*b^6*
d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5*e^3 + 15*a^8*b^
2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2 - 6*a*b^9*d^5*e^
3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^2*e^6 - 6*a^5*b^
5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^2 + 3*a^2*b^8*d^
5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^5*d^2*e^6 - 11*a
^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7*e - 27*a^2*b^8*
d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b^5*d^3*e^5 + 43*
a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a*b^9*d^8 - 3*
a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30*a^5*b^5*d^4*e^4
 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7 + a^9*b*e^8)*x^
3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2 - 6*a^5*b^5*d^5*
e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*d^2*e^6 + 2*a^9*
b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7*e + 24*a^5*b^5*
d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b^2*d^3*e^5 - 4*a
^9*b*d^2*e^6 + a^10*d*e^7)*x), -1/192*(3465*(b^5*e^6*x^6 + a^4*b*d^2*e^4 +
2*(b^5*d*e^5 + 2*a*b^4*e^6)*x^5 + (b^5*d^2*e^4 + 8*a*b^4*d*e^5 + 6*a^2*b^3*
e^6)*x^4 + 4*(a*b^4*d^2*e^4 + 3*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + (6*a^2*b
^3*d^2*e^4 + 8*a^3*b^2*d*e^5 + a^4*b*e^6)*x^2 + 2*(2*a^3*b^2*d^2*e^4 + a^4*
b*d*e^5)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/
(b*d - a*e))/(b*e*x + b*d)) - (3465*b^5*e^5*x^5 - 48*b^5*d^5 + 328*a*b^4*d^
4*e - 1030*a^2*b^3*d^3*e^2 + 2295*a^3*b^2*d^2*e^3 + 2048*a^4*b*d*e^4 - 128*
a^5*e^5 + 1155*(4*b^5*d*e^4 + 11*a*b^4*e^5)*x^4 + 231*(3*b^5*d^2*e^3 + 74*a
*b^4*d*e^4 + 73*a^2*b^3*e^5)*x^3 - 99*(2*b^5*d^3*e^2 - 27*a*b^4*d^2*e^3 - 2
32*a^2*b^3*d*e^4 - 93*a^3*b^2*e^5)*x^2 + 11*(8*b^5*d^4*e - 68*a*b^4*d^3*e^2
 + 345*a^2*b^3*d^2*e^3 + 1162*a^3*b^2*d*e^4 + 128*a^4*b*e^5)*x)*sqrt(e*x +
d))/(a^4*b^6*d^8 - 6*a^5*b^5*d^7*e + 15*a^6*b^4*d^6*e^2 - 20*a^7*b^3*d^5*e^
3 + 15*a^8*b^2*d^4*e^4 - 6*a^9*b*d^3*e^5 + a^10*d^2*e^6 + (b^10*d^6*e^2 - 6
*a*b^9*d^5*e^3 + 15*a^2*b^8*d^4*e^4 - 20*a^3*b^7*d^3*e^5 + 15*a^4*b^6*d^2*e
^6 - 6*a^5*b^5*d*e^7 + a^6*b^4*e^8)*x^6 + 2*(b^10*d^7*e - 4*a*b^9*d^6*e^2 +
 3*a^2*b^8*d^5*e^3 + 10*a^3*b^7*d^4*e^4 - 25*a^4*b^6*d^3*e^5 + 24*a^5*b^5*d
^2*e^6 - 11*a^6*b^4*d*e^7 + 2*a^7*b^3*e^8)*x^5 + (b^10*d^8 + 2*a*b^9*d^7*e
- 27*a^2*b^8*d^6*e^2 + 64*a^3*b^7*d^5*e^3 - 55*a^4*b^6*d^4*e^4 - 6*a^5*b^5*
d^3*e^5 + 43*a^6*b^4*d^2*e^6 - 28*a^7*b^3*d*e^7 + 6*a^8*b^2*e^8)*x^4 + 4*(a
*b^9*d^8 - 3*a^2*b^8*d^7*e - 2*a^3*b^7*d^6*e^2 + 19*a^4*b^6*d^5*e^3 - 30*a^
5*b^5*d^4*e^4 + 19*a^6*b^4*d^3*e^5 - 2*a^7*b^3*d^2*e^6 - 3*a^8*b^2*d*e^7 +
a^9*b*e^8)*x^3 + (6*a^2*b^8*d^8 - 28*a^3*b^7*d^7*e + 43*a^4*b^6*d^6*e^2 - 6
*a^5*b^5*d^5*e^3 - 55*a^6*b^4*d^4*e^4 + 64*a^7*b^3*d^3*e^5 - 27*a^8*b^2*d^2
*e^6 + 2*a^9*b*d*e^7 + a^10*e^8)*x^2 + 2*(2*a^3*b^7*d^8 - 11*a^4*b^6*d^7*e
+ 24*a^5*b^5*d^6*e^2 - 25*a^6*b^4*d^5*e^3 + 10*a^7*b^3*d^4*e^4 + 3*a^8*b^2*
d^3*e^5 - 4*a^9*b*d^2*e^6 + a^10*d*e^7)*x)]
```

giac [B] time = 0.27, size = 500, normalized size = 2.15

$$\frac{1155 \, b^{2} \arctan\left(\frac{\sqrt{x e + d} b}{\sqrt{-b^{2} d + a b e}}\right) e^{4}}{64 \, {\left(b^{6} d^{6} - 6 \, a b^{5} d^{5} e + 15 \, a^{2} b^{4} d^{4} e^{2} - 20 \, a^{3} b^{3} d^{3} e^{3} + 15 \, a^{4} b^{2} d^{2} e^{4} - 6 \, a^{5} b d e^{5} + a^{6} e^{6}\right)} \sqrt{-b^{2} d + a b e}} + \frac{}{3 \, (b^{6} d^{6} - 6 \, a b^{5} d^{5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] 1155/64*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^4/((b^6*d^6 - 6*
a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4
- 6*a^5*b*d*e^5 + a^6*e^6)*sqrt(-b^2*d + a*b*e)) + 2/3*(15*(x*e + d)*b*e^4
+ b*d*e^4 - a*e^5)/((b^6*d^6 - 6*a*b^5*d^5*e + 15*a^2*b^4*d^4*e^2 - 20*a^3*
b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*e^5 + a^6*e^6)*(x*e + d)^(3/2)
) + 1/192*(1545*(x*e + d)^(7/2)*b^5*e^4 - 5153*(x*e + d)^(5/2)*b^5*d*e^4 +
5855*(x*e + d)^(3/2)*b^5*d^2*e^4 - 2295*sqrt(x*e + d)*b^5*d^3*e^4 + 5153*(x
*e + d)^(5/2)*a*b^4*e^5 - 11710*(x*e + d)^(3/2)*a*b^4*d*e^5 + 6885*sqrt(x*e
 + d)*a*b^4*d^2*e^5 + 5855*(x*e + d)^(3/2)*a^2*b^3*e^6 - 6885*sqrt(x*e + d)
*a^2*b^3*d*e^6 + 2295*sqrt(x*e + d)*a^3*b^2*e^7)/((b^6*d^6 - 6*a*b^5*d^5*e
+ 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^2*d^2*e^4 - 6*a^5*b*d*
e^5 + a^6*e^6)*((x*e + d)*b - b*d + a*e)^4)
```

maple [B] time = 0.08, size = 473, normalized size = 2.03

$$\frac{765\sqrt{ex+d}\ a^{3}b^{2}e^{7}}{64\left(ae-bd\right)^{6}\left(bex+ae\right)^{4}}-\frac{2295\sqrt{ex+d}\ a^{2}b^{3}d\,e^{6}}{64\left(ae-bd\right)^{6}\left(bex+ae\right)^{4}}+\frac{2295\sqrt{ex+d}\ a\,b^{4}d^{2}e^{5}}{64\left(ae-bd\right)^{6}\left(bex+ae\right)^{4}}-\frac{765\sqrt{ex+d}\ b^{5}d^{3}e^{4}}{64\left(ae-bd\right)^{6}\left(bex+ae\right)^{4}}+\frac{58}{192\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] 515/64*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(7/2)+5153/192*e^5/(a*e-b*
d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)^(5/2)*a-5153/192*e^4/(a*e-b*d)^6*b^5/(b*e*x+
a*e)^4*(e*x+d)^(5/2)*d+5855/192*e^6/(a*e-b*d)^6*b^3/(b*e*x+a*e)^4*(e*x+d)^(
3/2)*a^2-5855/96*e^5/(a*e-b*d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)^(3/2)*a*d+5855/1
92*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(3/2)*d^2+765/64*e^7/(a*e-b*d)
^6*b^2/(b*e*x+a*e)^4*(e*x+d)^(1/2)*a^3-2295/64*e^6/(a*e-b*d)^6*b^3/(b*e*x+a
*e)^4*(e*x+d)^(1/2)*a^2*d+2295/64*e^5/(a*e-b*d)^6*b^4/(b*e*x+a*e)^4*(e*x+d)
^(1/2)*a*d^2-765/64*e^4/(a*e-b*d)^6*b^5/(b*e*x+a*e)^4*(e*x+d)^(1/2)*d^3+115
5/64*e^4/(a*e-b*d)^6*b^2/((a*e-b*d)*b)^(1/2)*arctan((e*x+d)^(1/2)/((a*e-b*d
)*b)^(1/2)*b)-2/3*e^4/(a*e-b*d)^5/(e*x+d)^(3/2)+10*e^4/(a*e-b*d)^6*b/(e*x+d
)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e-b*d>0)', see `assume?` for more
 details)Is a*e-b*d positive or negative?
```

mupad [B] time = 2.64, size = 436, normalized size = 1.87

$$\frac{\frac{3069\,b^{2}\,e^{4}\,{\left(d+e\,x\right)}^{2}}{64\,{\left(a\,e-b\,d\right)}^{3}}-\frac{2\,e^{4}}{3\,\left(a\,e-b\,d\right)}+\frac{5621\,b^{3}\,e^{4}\,{\left(d+e\,x\right)}^{3}}{64\,{\left(a\,e-b\,d\right)}^{4}}+}{b^{4}\,{\left(d+e\,x\right)}^{11/2}-\left(4\,b^{4}\,d-4\,a\,b^{3}\,e\right)\,{\left(d+e\,x\right)}^{9/2}+{\left(d+e\,x\right)}^{3/2}\,\left(a^{4}\,e^{4}-4\,a^{3}\,b\,d\,e^{3}+6\,a^{2}\,b^{2}\,d^{2}\,e^{2}-4\,a\,b^{3}\,d^{3}\,e+b^{4}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^3),x)
```

```
[Out] ((3069*b^2*e^4*(d + e*x)^2)/(64*(a*e - b*d)^3) - (2*e^4)/(3*(a*e - b*d)) +
(5621*b^3*e^4*(d + e*x)^3)/(64*(a*e - b*d)^4) + (4235*b^4*e^4*(d + e*x)^4)/
(64*(a*e - b*d)^5) + (1155*b^5*e^4*(d + e*x)^5)/(64*(a*e - b*d)^6) + (22*b*
e^4*(d + e*x))/(3*(a*e - b*d)^2))/(b^4*(d + e*x)^(11/2) - (4*b^4*d - 4*a*b^
3*e)*(d + e*x)^(9/2) + (d + e*x)^(3/2)*(a^4*e^4 + b^4*d^4 + 6*a^2*b^2*d^2*e
^2 - 4*a*b^3*d^3*e - 4*a^3*b*d*e^3) + (d + e*x)^(7/2)*(6*b^4*d^2 + 6*a^2*b^
2*e^2 - 12*a*b^3*d*e) - (d + e*x)^(5/2)*(4*b^4*d^3 - 4*a^3*b*e^3 + 12*a^2*b
^2*d*e^2 - 12*a*b^3*d^2*e)) + (1155*b^(3/2)*e^4*atan((b^(1/2)*(d + e*x)^(1/
2)*(a^6*e^6 + b^6*d^6 + 15*a^2*b^4*d^4*e^2 - 20*a^3*b^3*d^3*e^3 + 15*a^4*b^
2*d^2*e^4 - 6*a*b^5*d^5*e - 6*a^5*b*d*e^5))/(a*e - b*d)^(13/2)))/(64*(a*e -
 b*d)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2092 $\int (a+bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/}}{9e^3(a+bx)}$$

```
[Out] 2/9*(-a*e+b*d)^2*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-4/11*b*(-a*e+b
*d)*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/13*b^2*(e*x+d)^(13/2)*((
b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/}}{9e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
11*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(13*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^{7/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{7/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^{7/2}}{e^2} - \frac{2b(bd-ae)(d+ex)^{9/2}}{e^2} + \frac{b^2(d+}{e}\right.}{ab+b^2x}$$

$$= \frac{2(bd-ae)^2(d+ex)^{9/2}\sqrt{a^2+2abx+b^2x^2}}{9e^3(a+bx)} - \frac{4b(bd-ae)(d+ex)^{11/2}}{11e^3(a+}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{9/2}\left(143a^2e^2+26abe(9ex-2d)+b^2\left(8d^2-36dex+99e^2x^2\right)\right)}{1287e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(9/2)*(143*a^2*e^2 + 26*a*b*e*(-2*d + 9*e*x)
 + b^2*(8*d^2 - 36*d*e*x + 99*e^2*x^2)))/(1287*e^3*(a + b*x))
```

fricas [A] time = 0.81, size = 212, normalized size = 1.39

$$\frac{2\left(99\,b^2e^6x^6+8\,b^2d^6-52\,abd^5e+143\,a^2d^4e^2+18\left(20\,b^2de^5+13\,abe^6\right)x^5+\left(458\,b^2d^2e^4+884\,abde^5+143\,a^2e^6\right)x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/1287*(99*b^2*e^6*x^6 + 8*b^2*d^6 - 52*a*b*d^5*e + 143*a^2*d^4*e^2 + 18*(2
0*b^2*d*e^5 + 13*a*b*e^6)*x^5 + (458*b^2*d^2*e^4 + 884*a*b*d*e^5 + 143*a^2*
e^6)*x^4 + 4*(53*b^2*d^3*e^3 + 299*a*b*d^2*e^4 + 143*a^2*d*e^5)*x^3 + 3*(b^
2*d^4*e^2 + 208*a*b*d^3*e^3 + 286*a^2*d^2*e^4)*x^2 - 2*(2*b^2*d^5*e - 13*a*
b*d^4*e^2 - 286*a^2*d^3*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.27, size = 930, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/45045*(30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^4*e^(-1)*sgn(b*x
 + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d
^2)*b^2*d^4*e^(-2)*sgn(b*x + a) + 24024*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(
3/2)*d + 15*sqrt(x*e + d)*d^2)*a*b*d^3*e^(-1)*sgn(b*x + a) + 5148*(5*(x*e +
 d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d
)*d^3)*b^2*d^3*e^(-2)*sgn(b*x + a) + 45045*sqrt(x*e + d)*a^2*d^4*sgn(b*x +
a) + 60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d^3*sgn(b*x + a) + 154
44*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*
sqrt(x*e + d)*d^3)*a*b*d^2*e^(-1)*sgn(b*x + a) + 858*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*b^2*d^2*e^(-2)*sgn(b*x + a) + 18018*(3*(x*e + d)^(5
/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*d^2*sgn(b*x + a) + 1
144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*d*e^(-1)*sgn(b*x + a)
 + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d
^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d
)*d^5)*b^2*d*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(
5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*d*sgn(b*x + a)
+ 130*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^
2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)
*d^5)*a*b*e^(-1)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(
11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e +
 d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^2*e^(-
2)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*
e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*sgn
(b*x + a))*e^(-1)
```

maple [**A**] time = 0.06, size = 79, normalized size = 0.52

$$\frac{2\,(ex+d)^{\frac{9}{2}}\left(99b^2x^2e^2+234ab\,e^2x-36b^2dex+143a^2e^2-52abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{1287\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/1287*(e*x+d)^(9/2)*(99*b^2*e^2*x^2+234*a*b*e^2*x-36*b^2*d*e*x+143*a^2*e^2
-52*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [**B**] time = 0.66, size = 263, normalized size = 1.73

$$\frac{2\left(9\,be^5x^5-2\,bd^5+11\,ad^4e+\left(34\,bde^4+11\,ae^5\right)x^4+2\left(23\,bd^2e^3+22\,ade^4\right)x^3+6\left(4\,bd^3e^2+11\,ad^2e^3\right)x^2+(b}{99\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/99*(9*b*e^5*x^5 - 2*b*d^5 + 11*a*d^4*e + (34*b*d*e^4 + 11*a*e^5)*x^4 + 2*
(23*b*d^2*e^3 + 22*a*d*e^4)*x^3 + 6*(4*b*d^3*e^2 + 11*a*d^2*e^3)*x^2 + (b*d
^4*e + 44*a*d^3*e^2)*x)*sqrt(e*x + d)*a/e^2 + 2/1287*(99*b*e^6*x^6 + 8*b*d^
6 - 26*a*d^5*e + 9*(40*b*d*e^5 + 13*a*e^6)*x^5 + 2*(229*b*d^2*e^4 + 221*a*d
*e^5)*x^4 + 2*(106*b*d^3*e^3 + 299*a*d^2*e^4)*x^3 + 3*(b*d^4*e^2 + 104*a*d^
3*e^3)*x^2 - (4*b*d^5*e - 13*a*d^4*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\ \ (a+b\,x)\ (d+e\,x)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(7/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(7/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2093 $\int (a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(b}{7e^3(a+bx)}$$

```
[Out] 2/7*(-a*e+b*d)^2*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-4/9*b*(-a*e+b*
d)*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/11*b^2*(e*x+d)^(11/2)*((b*
x+a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [**A**] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(b}{7e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(1
1*e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^{5/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{5/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2(d+ex)^{5/2}}{e^2} - \frac{2b(bd-ae)(d+ex)^{7/2}}{e^2} + \right.}{ab+b^2x}$$

$$= \frac{2(bd-ae)^2(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^3(a+bx)} - \frac{4b(bd-ae)(d+ex)}{9e^3(}$$

Mathematica [**A**] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(99a^2e^2+22abe(7ex-2d)+b^2\left(8d^2-28dex+63e^2x^2\right)\right)}{693e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(99*a^2*e^2 + 22*a*b*e*(-2*d + 7*e*x)
+ b^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2)))/(693*e^3*(a + b*x))
```

fricas [**A**] time = 0.79, size = 174, normalized size = 1.14

$$\frac{2\left(63\,b^2e^5x^5+8\,b^2d^5-44\,abd^4e+99\,a^2d^3e^2+7\left(23\,b^2de^4+22\,abe^5\right)x^4+\left(113\,b^2d^2e^3+418\,abde^4+99\,a^2e^5\right)x\right.}{693\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/693*(63*b^2*e^5*x^5 + 8*b^2*d^5 - 44*a*b*d^4*e + 99*a^2*d^3*e^2 + 7*(23*b
^2*d*e^4 + 22*a*b*e^5)*x^4 + (113*b^2*d^2*e^3 + 418*a*b*d*e^4 + 99*a^2*e^5)
*x^3 + 3*(b^2*d^3*e^2 + 110*a*b*d^2*e^3 + 99*a^2*d*e^4)*x^2 - (4*b^2*d^4*e
- 22*a*b*d^3*e^2 - 297*a^2*d^2*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [**B**] time = 0.24, size = 663, normalized size = 4.36

$$\frac{2}{3465}\left(2310\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)abd^3e^{(-1)}\mathrm{sgn}\left(bx+a\right)+231\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3465*(2310*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^3*e^(-1)*sgn(b*x +
 a) + 231*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)
*b^2*d^3*e^(-2)*sgn(b*x + a) + 1386*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)
*d + 15*sqrt(x*e + d)*d^2)*a*b*d^2*e^(-1)*sgn(b*x + a) + 297*(5*(x*e + d)^(
7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3
)*b^2*d^2*e^(-2)*sgn(b*x + a) + 3465*sqrt(x*e + d)*a^2*d^3*sgn(b*x + a) + 3
465*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d^2*sgn(b*x + a) + 594*(5*(x*
e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e
+ d)*d^3)*a*b*d*e^(-1)*sgn(b*x + a) + 33*(35*(x*e + d)^(9/2) - 180*(x*e + d
)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*
e + d)*d^4)*b^2*d*e^(-2)*sgn(b*x + a) + 693*(3*(x*e + d)^(5/2) - 10*(x*e +
d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2*d*sgn(b*x + a) + 22*(35*(x*e + d)^(9
/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)
*d^3 + 315*sqrt(x*e + d)*d^4)*a*b*e^(-1)*sgn(b*x + a) + 5*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^2*e^(-2)*sgn(b*
x + a) + 99*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*
d^2 - 35*sqrt(x*e + d)*d^3)*a^2*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\left(ex+d\right)^{\frac{7}{2}}\left(63b^2x^2e^2+154ab\,e^2x-28b^2dex+99a^2e^2-44abde+8b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{693\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/693*(e*x+d)^(7/2)*(63*b^2*e^2*x^2+154*a*b*e^2*x-28*b^2*d*e*x+99*a^2*e^2-4
4*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [**A**] time = 0.71, size = 214, normalized size = 1.41

$$\frac{2\left(7\,be^4x^4-2\,bd^4+9\,ad^3e+\left(19\,bde^3+9\,ae^4\right)x^3+3\left(5\,bd^2e^2+9\,ade^3\right)x^2+\left(bd^3e+27\,ad^2e^2\right)x\right)\sqrt{ex+d}\,a}{63\,e^2}+\frac{2\,(63}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/63*(7*b*e^4*x^4 - 2*b*d^4 + 9*a*d^3*e + (19*b*d*e^3 + 9*a*e^4)*x^3 + 3*(5
*b*d^2*e^2 + 9*a*d*e^3)*x^2 + (b*d^3*e + 27*a*d^2*e^2)*x)*sqrt(e*x + d)*a/e
^2 + 2/693*(63*b*e^5*x^5 + 8*b*d^5 - 22*a*d^4*e + 7*(23*b*d*e^4 + 11*a*e^5)
*x^4 + (113*b*d^2*e^3 + 209*a*d*e^4)*x^3 + 3*(b*d^3*e^2 + 55*a*d^2*e^3)*x^2
 - (4*b*d^4*e - 11*a*d^3*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{{\left(a+b\,x\right)}^2}\,\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(5/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2094 $\int (a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(}{5e^3(a+bx)}$$

```
[Out] 2/5*(-a*e+b*d)^2*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-4/7*b*(-a*e+b*
d)*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/9*b^2*(e*x+d)^(9/2)*((b*x+
a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(}{5e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*
e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^{3/2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^{3/2}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigg(\frac{(-bd+ae)^2(d+ex)^{3/2}}{e^2}-\frac{2b(bd-ae)(d+ex)^{5/2}}{e^2}+\frac{b^2(d+}{e}}{ab+b^2x}\\ &= \frac{2(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{7/2}}{7e^3(a+}\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(63a^2e^2+18abe(5ex-2d)+b^2\left(8d^2-20dex+35e^2x^2\right)\right)}{315e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(63*a^2*e^2 + 18*a*b*e*(-2*d + 5*e*x)
+ b^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2)))/(315*e^3*(a + b*x))
```

fricas [A] time = 1.08, size = 137, normalized size = 0.90

$$\frac{2\,(35\,b^2e^4x^4+8\,b^2d^4-36\,abd^3e+63\,a^2d^2e^2+10\,(5\,b^2de^3+9\,abe^4)x^3+3\,(b^2d^2e^2+48\,abde^3+21\,a^2e^4)x^2-2\,(2}{315\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/315*(35*b^2*e^4*x^4 + 8*b^2*d^4 - 36*a*b*d^3*e + 63*a^2*d^2*e^2 + 10*(5*b
^2*d*e^3 + 9*a*b*e^4)*x^3 + 3*(b^2*d^2*e^2 + 48*a*b*d*e^3 + 21*a^2*e^4)*x^2
 - 2*(2*b^2*d^3*e - 9*a*b*d^2*e^2 - 63*a^2*d*e^3)*x)*sqrt(e*x + d)/e^3
```

giac [B] time = 0.21, size = 434, normalized size = 2.86

$$\frac{2}{315}\,\Bigg(210\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)abd^2e^{(-1)}\mathrm{sgn}\,(bx+a)+21\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\,\sqrt{xe+d}\,d^2\right)b^2d^2e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(210*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d^2*e^(-1)*sgn(b*x + a
) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^
2*d^2*e^(-2)*sgn(b*x + a) + 84*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d +
15*sqrt(x*e + d)*d^2)*a*b*d*e^(-1)*sgn(b*x + a) + 18*(5*(x*e + d)^(7/2) - 2
1*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*d*
e^(-2)*sgn(b*x + a) + 315*sqrt(x*e + d)*a^2*d^2*sgn(b*x + a) + 210*((x*e +
d)^(3/2) - 3*sqrt(x*e + d)*d)*a^2*d*sgn(b*x + a) + 18*(5*(x*e + d)^(7/2) -
21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b*e
^(-1)*sgn(b*x + a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^2*e^(-
2)*sgn(b*x + a) + 21*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*
e + d)*d^2)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A]   time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\,(ex+d)^{\frac{5}{2}}\left(35b^2x^2e^2+90ab\,e^2x-20b^2dex+63a^2e^2-36abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{315\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(5/2)*(35*b^2*e^2*x^2+90*a*b*e^2*x-20*b^2*d*e*x+63*a^2*e^2-36
*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A]   time = 0.62, size = 167, normalized size = 1.10

$$\frac{2\left(5\,be^3x^3-2\,bd^3+7\,ad^2e+\left(8\,bde^2+7\,ae^3\right)x^2+\left(bd^2e+14\,ade^2\right)x\right)\sqrt{ex+d}\,a}{35\,e^2}+\frac{2\bigl(35\,be^4x^4+8\,bd^4-18\,ad^3e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/35*(5*b*e^3*x^3 - 2*b*d^3 + 7*a*d^2*e + (8*b*d*e^2 + 7*a*e^3)*x^2 + (b*d^
2*e + 14*a*d*e^2)*x)*sqrt(e*x + d)*a/e^2 + 2/315*(35*b*e^4*x^4 + 8*b*d^4 -
18*a*d^3*e + 5*(10*b*d*e^3 + 9*a*e^4)*x^3 + 3*(b*d^2*e^2 + 24*a*d*e^3)*x^2
- (4*b*d^3*e - 9*a*d^2*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\ \ (a+b\,x)\ (d+e\,x)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(3/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(3/2), x)
```

sympy [F(-1)]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2095 $\int (a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=152

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd}{3e^3(a+bx)}$$

```
[Out] 2/3*(-a*e+b*d)^2*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-4/5*b*(-a*e+b*
d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/7*b^2*(e*x+d)^(7/2)*((b*x+
a)^2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd}{3e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a +
 b*x)) - (4*b*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5
*e^3*(a + b*x)) + (2*b^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*
e^3*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)\sqrt{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2\sqrt{d+ex}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigg(\frac{(-bd+ae)^2\sqrt{d+ex}}{e^2}-\frac{2b(bd-ae)(d+ex)^{3/2}}{e^2}+\frac{b^2(d+}{e^2}}{ab+b^2x}\\ &= \frac{2(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{5/2}}{5e^3(a}\end{aligned}$$

Mathematica [A] time = 0.04, size = 79, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(35a^2e^2+14abe(3ex-2d)+b^2\left(8d^2-12dex+15e^2x^2\right)\right)}{105e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(35*a^2*e^2 + 14*a*b*e*(-2*d + 3*e*x)
+ b^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2)))/(105*e^3*(a + b*x))
```

fricas [A] time = 0.52, size = 99, normalized size = 0.65

$$\frac{2\Big(15\,b^2e^3x^3+8\,b^2d^3-28\,abd^2e+35\,a^2de^2+3\left(b^2de^2+14\,abe^3\right)x^2-\left(4\,b^2d^2e-14\,abde^2-35\,a^2e^3\right)x\Big)\sqrt{ex+d}}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/105*(15*b^2*e^3*x^3 + 8*b^2*d^3 - 28*a*b*d^2*e + 35*a^2*d*e^2 + 3*(b^2*d*
e^2 + 14*a*b*e^3)*x^2 - (4*b^2*d^2*e - 14*a*b*d*e^2 - 35*a^2*e^3)*x)*sqrt(e
*x + d)/e^3
```

giac [B] time = 0.17, size = 246, normalized size = 1.62

$$\frac{2}{105}\Bigg(70\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)abde^{(-1)}\mathrm{sgn}\left(bx+a\right)+7\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\,\sqrt{xe+d}\,d^2\right)b^2de^{(-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/105*(70*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*d*e^(-1)*sgn(b*x + a) +
 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^2*d*
e^(-2)*sgn(b*x + a) + 14*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqr
t(x*e + d)*d^2)*a*b*e^(-1)*sgn(b*x + a) + 3*(5*(x*e + d)^(7/2) - 21*(x*e +
d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*b^2*e^(-2)*sgn(
b*x + a) + 105*sqrt(x*e + d)*a^2*d*sgn(b*x + a) + 35*((x*e + d)^(3/2) - 3*s
qrt(x*e + d)*d)*a^2*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 79, normalized size = 0.52

$$\frac{2\,(ex+d)^{\frac{3}{2}}\left(15b^2x^2e^2+42ab\,e^2x-12b^2dex+35a^2e^2-28abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{105\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/105*(e*x+d)^(3/2)*(15*b^2*e^2*x^2+42*a*b*e^2*x-12*b^2*d*e*x+35*a^2*e^2-28
*a*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.67, size = 120, normalized size = 0.79

$$\frac{2\,\big(3\,be^2x^2-2\,bd^2+5\,ade+\big(bde+5\,ae^2\big)x\big)\sqrt{ex+d}\,a}{15\,e^2}+\frac{2\,\big(15\,be^3x^3+8\,bd^3-14\,ad^2e+3\,\big(bde^2+7\,ae^3\big)x^2-\big(4\,bd^2}{105\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/15*(3*b*e^2*x^2 - 2*b*d^2 + 5*a*d*e + (b*d*e + 5*a*e^2)*x)*sqrt(e*x + d)*
a/e^2 + 2/105*(15*b*e^3*x^3 + 8*b*d^3 - 14*a*d^2*e + 3*(b*d*e^2 + 7*a*e^3)*
x^2 - (4*b*d^2*e - 7*a*d*e^2)*x)*sqrt(e*x + d)*b/e^3
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \sqrt{(a+b\,x)^2}\,\,(a+b\,x)\,\sqrt{d+e\,x}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(1/2),x)
```

```
[Out] int(((a + b*x)^2)^(1/2)*(a + b*x)*(d + e*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\sqrt{d+ex}\sqrt{(a+bx)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)*((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*sqrt((a + b*x)**2), x)
```

3.2096 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=150

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(b}{e^3(a+bx)}$$

```
[Out] -4/3*b*(-a*e+b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2/5*b^2*(e*x+
d)^(5/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)+2*(-a*e+b*d)^2*(e*x+d)^(1/2)*((b*x+a
)^2)^(1/2)/e^3/(b*x+a)
```

Rubi **[A]** time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^3(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(b}{e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x
)) - (4*b*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3
*(a + b*x)) + (2*b^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*
(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{\sqrt{d+ex}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{\sqrt{d+ex}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2\sqrt{d+ex}}-\frac{2b(bd-ae)\sqrt{d+ex}}{e^2}+\frac{b^2(d+ex)^{3/2}}{e^2}\right)dx}{ab+b^2x}\\ &= \frac{2(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)}-\frac{4b(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx}}{3e^3(a+bx)}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 78, normalized size = 0.52

$$\frac{2\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,\left(15a^2e^2+10abe(ex-2d)+b^2\left(8d^2-4dex+3e^2x^2\right)\right)}{15e^3(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(15*a^2*e^2 + 10*a*b*e*(-2*d + e*x) + b^
2*(8*d^2 - 4*d*e*x + 3*e^2*x^2)))/(15*e^3*(a + b*x))
```

fricas [**A**] time = 0.82, size = 64, normalized size = 0.43

$$\frac{2\left(3\,b^2e^2x^2+8\,b^2d^2-20\,abde+15\,a^2e^2-2\left(2\,b^2de-5\,abe^2\right)x\right)\sqrt{ex+d}}{15\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/15*(3*b^2*e^2*x^2 + 8*b^2*d^2 - 20*a*b*d*e + 15*a^2*e^2 - 2*(2*b^2*d*e -
5*a*b*e^2)*x)*sqrt(e*x + d)/e^3
```

giac [**A**] time = 0.19, size = 103, normalized size = 0.69

$$\frac{2}{15}\left(10\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)abe^{(-1)}\mathrm{sgn}\,(bx+a)+\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\,\sqrt{xe+d}\,d^2\right)b^2e^{(-2)}\mathrm{sgn}\,(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(10*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a*b*e^(-1)*sgn(b*x + a) + (3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*b^2*e^(-2)*
sgn(b*x + a) + 15*sqrt(x*e + d)*a^2*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.53

$$\frac{2\sqrt{ex+d}\,\left(3b^2x^2e^2+10ab\,e^2x-4b^2dex+15a^2e^2-20abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{15\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/15*(e*x+d)^(1/2)*(3*b^2*e^2*x^2+10*a*b*e^2*x-4*b^2*d*e*x+15*a^2*e^2-20*a*
b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.66, size = 119, normalized size = 0.79

$$\frac{2\left(be^2x^2 - 2\,bd^2 + 3\,ade - \left(bde - 3\,ae^2\right)x\right)a}{3\,\sqrt{ex+d}\,e^2} + \frac{2\left(3\,be^3x^3 + 8\,bd^3 - 10\,ad^2e - \left(bde^2 - 5\,ae^3\right)x^2 + \left(4\,bd^2e - 5\,ade^2\right.\right.}{15\,\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(b*e^2*x^2 - 2*b*d^2 + 3*a*d*e - (b*d*e - 3*a*e^2)*x)*a/(sqrt(e*x + d)*
e^2) + 2/15*(3*b*e^3*x^3 + 8*b*d^3 - 10*a*d^2*e - (b*d*e^2 - 5*a*e^3)*x^2 +
 (4*b*d^2*e - 5*a*d*e^2)*x)*b/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.41, size = 127, normalized size = 0.85

$$\frac{\sqrt{{\left(a+b\,x\right)}^2}\,\left(\frac{2\,b\,x^3}{5}+\frac{2\,x^2\,\left(10\,a\,e-b\,d\right)}{15\,e}+\frac{30\,a^2\,d\,e^2-40\,a\,b\,d^2\,e+16\,b^2\,d^3}{15\,b\,e^3}+\frac{x\,\left(30\,a^2\,e^3-20\,a\,b\,d\,e^2+8\,b^2\,d^2\,e\right)}{15\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(1/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((2*b*x^3)/5 + (2*x^2*(10*a*e - b*d))/(15*e) + (16*b^2
*d^3 + 30*a^2*d*e^2 - 40*a*b*d^2*e)/(15*b*e^3) + (x*(30*a^2*e^3 + 8*b^2*d^2
*e - 20*a*b*d*e^2))/(15*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b
)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{(a+bx)^2}}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt((a + b*x)**2)/sqrt(d + e*x), x)
```

3.2097 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)\sqrt{d+ex}}$$

```
[Out] 2/3*b^2*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)-2*(-a*e+b*d)^2*((b*x+a)
^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(1/2)-4*b*(-a*e+b*d)*(e*x+d)^(1/2)*((b*x+a)^2
)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^3(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^3(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^3(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sqrt[d + e*
x]) - (4*b*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a
 + b*x)) + (2*b^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a
+ b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{3/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{3/2}}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{3/2}}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{3/2}}-\frac{2b(bd-ae)}{e^2\sqrt{d+ex}}+\frac{b^2\sqrt{d+ex}}{e^2}\right)dx}{ab+b^2x} \\
&= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}-\frac{4b(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x}}{e^3(a+bx)}
\end{aligned}
$$

Mathematica [**A**] time = 0.04, size = 78, normalized size = 0.53

$$
-\frac{2\sqrt{(a+bx)^2}\left(3a^2e^2-6abe(2d+ex)+b^2\left(8d^2+4dex-e^2x^2\right)\right)}{3e^3(a+bx)\sqrt{d+ex}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(3/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^2*e^2 - 6*a*b*e*(2*d + e*x) + b^2*(8*d^2 + 4*d*e
*x - e^2*x^2)))/(3*e^3*(a + b*x)*Sqrt[d + e*x])
```

fricas [**A**] time = 0.84, size = 73, normalized size = 0.49

$$
\frac{2\left(b^2e^2x^2-8\,b^2d^2+12\,abde-3\,a^2e^2-2\left(2\,b^2de-3\,abe^2\right)x\right)\sqrt{ex+d}}{3\left(e^4x+de^3\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="fricas")
```

```
[Out] 2/3*(b^2*e^2*x^2 - 8*b^2*d^2 + 12*a*b*d*e - 3*a^2*e^2 - 2*(2*b^2*d*e - 3*a*
b*e^2)*x)*sqrt(e*x + d)/(e^4*x + d*e^3)
```

giac [**A**] time = 0.18, size = 119, normalized size = 0.80

$$
\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^2e^6\operatorname{sgn}(bx+a)-6\sqrt{xe+d}\,b^2de^6\operatorname{sgn}(bx+a)+6\sqrt{xe+d}\,abe^7\operatorname{sgn}(bx+a)\right)e^{(-9)}-\frac{2\left(b^2d^2\operatorname{sgn}(b\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^2*e^6*sgn(b*x + a) - 6*sqrt(x*e + d)*b^2*d*e^6*sgn(b
*x + a) + 6*sqrt(x*e + d)*a*b*e^7*sgn(b*x + a))*e^(-9) - 2*(b^2*d^2*sgn(b*x
 + a) - 2*a*b*d*e*sgn(b*x + a) + a^2*e^2*sgn(b*x + a))*e^(-3)/sqrt(x*e + d)
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.53

$$
-\frac{2\left(-b^2x^2e^2-6ab\,e^2x+4b^2dex+3a^2e^2-12abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{3\sqrt{ex+d}\,\;(bx+a)\,e^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/3/(e*x+d)^(1/2)*(-b^2*e^2*x^2-6*a*b*e^2*x+4*b^2*d*e*x+3*a^2*e^2-12*a*b*d
*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.66, size = 75, normalized size = 0.51

$$\frac{2\,(bex+2\,bd-ae)a}{\sqrt{ex+d}\,e^2}+\frac{2\left(be^2x^2-8\,bd^2+6\,ade-\left(4\,bde-3\,ae^2\right)x\right)b}{3\,\sqrt{ex+d}\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(3/2),x, algorithm="maxima")
```

```
[Out] 2*(b*e*x + 2*b*d - a*e)*a/(sqrt(e*x + d)*e^2) + 2/3*(b*e^2*x^2 - 8*b*d^2 +
6*a*d*e - (4*b*d*e - 3*a*e^2)*x)*b/(sqrt(e*x + d)*e^3)
```

mupad [B] time = 2.65, size = 90, normalized size = 0.61

$$\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(3\,a\,e-2\,b\,d)}{3\,e^2}+\frac{2\,b\,x^2}{3\,e}-\frac{6\,a^2\,e^2-24\,a\,b\,d\,e+16\,b^2\,d^2}{3\,b\,e^3}\right)}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(3/2),x)
```

```
[Out] (((a + b*x)^2)^(1/2)*((4*x*(3*a*e - 2*b*d))/(3*e^2) + (2*b*x^2)/(3*e) - (6*
a^2*e^2 + 16*b^2*d^2 - 24*a*b*d*e)/(3*b*e^3)))/(x*(d + e*x)^(1/2) + (a*(d +
 e*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,\sqrt{(a+bx)^2}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((a + b*x)*sqrt((a + b*x)**2)/(d + e*x)**(3/2), x)
```

3.2098 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^3(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^3(a+bx)(d+ex)^{3/2}}$$

```
[Out] -2/3*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(3/2)+4*b*(-a*e+b*d
)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(1/2)+2*b^2*(e*x+d)^(1/2)*((b*x+a)^
2)^(1/2)/e^3/(b*x+a)
```

Rubi [A] time = 0.07, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^3(a+bx)}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^3(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*(d + e*x)
^(3/2)) + (4*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sq
rt[d + e*x]) + (2*b^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a
+ b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{5/2}}-\frac{2b(bd-ae)}{e^2(d+ex)^{3/2}}+\frac{b^2}{e^2\sqrt{d+ex}}\right)dx}{ab+b^2x}\\ &= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}+\frac{4b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{2b^2\sqrt{d}}{}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 79, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(a^2e^2+2abe(2d+3ex)-\left(b^2\left(8d^2+12dex+3e^2x^2\right)\right)\right)}{3e^3(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(5/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(a^2*e^2 + 2*a*b*e*(2*d + 3*e*x) - b^2*(8*d^2 + 12*d*
e*x + 3*e^2*x^2)))/(3*e^3*(a + b*x)*(d + e*x)^(3/2))
```

fricas [**A**] time = 0.76, size = 85, normalized size = 0.57

$$\frac{2\left(3\,b^2e^2x^2+8\,b^2d^2-4\,abde-a^2e^2+6\left(2\,b^2de-abe^2\right)x\right)\sqrt{ex+d}}{3\left(e^5x^2+2\,de^4x+d^2e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(3*b^2*e^2*x^2 + 8*b^2*d^2 - 4*a*b*d*e - a^2*e^2 + 6*(2*b^2*d*e - a*b*e
^2)*x)*sqrt(e*x + d)/(e^5*x^2 + 2*d*e^4*x + d^2*e^3)
```

giac [**A**] time = 0.20, size = 111, normalized size = 0.75

$$2\sqrt{xe+d}\,b^2e^{(-3)}\mathrm{sgn}\left(bx+a\right)+\frac{2\left(6\left(xe+d\right)b^2d\mathrm{sgn}\left(bx+a\right)-b^2d^2\mathrm{sgn}\left(bx+a\right)-6\left(xe+d\right)abe\mathrm{sgn}\left(bx+a\right)+2\,ab\right.}{3\left(xe+d\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*b^2*e^(-3)*sgn(b*x + a) + 2/3*(6*(x*e + d)*b^2*d*sgn(b*x +
a) - b^2*d^2*sgn(b*x + a) - 6*(x*e + d)*a*b*e*sgn(b*x + a) + 2*a*b*d*e*sgn(
b*x + a) - a^2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)^(3/2)
```

maple [**A**] time = 0.07, size = 78, normalized size = 0.53

$$-\frac{2\left(-3b^2x^2e^2+6ab\,e^2x-12b^2dex+a^2e^2+4abde-8b^2d^2\right)\sqrt{\left(bx+a\right)^2}}{3\left(ex+d\right)^{\frac{3}{2}}\left(bx+a\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/3/(e*x+d)^(3/2)*(-3*b^2*e^2*x^2+6*a*b*e^2*x-12*b^2*d*e*x+a^2*e^2+4*a*b*d
*e-8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [A] time = 0.81, size = 96, normalized size = 0.65

$$-\frac{2\,(3\,bex+2\,bd+ae)a}{3\left(e^3x+de^2\right)\sqrt{ex+d}}+\frac{2\left(3\,be^2x^2+8\,bd^2-2\,ade+3\left(4\,bde-ae^2\right)x\right)b}{3\left(e^4x+de^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(5/2),x, algorithm="maxima")
```

```
[Out] -2/3*(3*b*e*x + 2*b*d + a*e)*a/((e^3*x + d*e^2)*sqrt(e*x + d)) + 2/3*(3*b*e
^2*x^2 + 8*b*d^2 - 2*a*d*e + 3*(4*b*d*e - a*e^2)*x)*b/((e^4*x + d*e^3)*sqrt
(e*x + d))
```

mupad [B] time = 2.72, size = 126, normalized size = 0.85

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(a\,e-2\,b\,d)}{e^3}-\frac{2\,b\,x^2}{e^2}+\frac{2\,a^2\,e^2+8\,a\,b\,d\,e-16\,b^2\,d^2}{3\,b\,e^4}\right)}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,\left(3\,a\,e^4+3\,b\,d\,e^3\right)\,\sqrt{d+e\,x}}{3\,b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(5/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((4*x*(a*e - 2*b*d))/e^3 - (2*b*x^2)/e^2 + (2*a^2*e^2
 - 16*b^2*d^2 + 8*a*b*d*e)/(3*b*e^4)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x
)^(1/2))/(b*e) + (x*(3*a*e^4 + 3*b*d*e^3)*(d + e*x)^(1/2))/(3*b*e^4))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.2099 $\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=150

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^{5/2}}$$

```
[Out] -2/5*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(5/2)+4/3*b*(-a*e+b
*d)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)/(e*x+d)^(3/2)-2*b^2*((b*x+a)^2)^(1/2)/e^3
/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$-\frac{2b^2\sqrt{a^2+2abx+b^2x^2}}{e^3(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^3*(a + b*x)*(d + e*x)
^(5/2)) + (4*b*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^3*(a + b*x)*
(d + e*x)^(3/2)) - (2*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(a + b*x)*Sqr
t[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\sqrt{a^2+2abx+b^2x^2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^2}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^2}{e^2(d+ex)^{7/2}}-\frac{2b(bd-ae)}{e^2(d+ex)^{5/2}}+\frac{b^2}{e^2(d+ex)^{3/2}}\right)dx}{ab+b^2x}\\ &= -\frac{2(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}{5e^3(a+bx)(d+ex)^{5/2}}+\frac{4b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}{3e^3(a+bx)(d+ex)^{3/2}}-\frac{2b^2}{e^3}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 79, normalized size = 0.53

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^2e^2+2abe(2d+5ex)+b^2\left(8d^2+20dex+15e^2x^2\right)\right)}{15e^3(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^2*e^2 + 2*a*b*e*(2*d + 5*e*x) + b^2*(8*d^2 + 20*
d*e*x + 15*e^2*x^2)))/(15*e^3*(a + b*x)*(d + e*x)^(5/2))
```

fricas [**A**] time = 0.86, size = 95, normalized size = 0.63

$$-\frac{2\left(15\,b^2e^2x^2+8\,b^2d^2+4\,abde+3\,a^2e^2+10\left(2\,b^2de+abe^2\right)x\right)\sqrt{ex+d}}{15\left(e^6x^3+3\,de^5x^2+3\,d^2e^4x+d^3e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(15*b^2*e^2*x^2 + 8*b^2*d^2 + 4*a*b*d*e + 3*a^2*e^2 + 10*(2*b^2*d*e +
 a*b*e^2)*x)*sqrt(e*x + d)/(e^6*x^3 + 3*d*e^5*x^2 + 3*d^2*e^4*x + d^3*e^3)
```

giac [**A**] time = 0.20, size = 108, normalized size = 0.72

$$-\frac{2\left(15\,(xe+d)^2b^2\mathrm{sgn}\,(bx+a)-10\,(xe+d)b^2d\mathrm{sgn}\,(bx+a)+3\,b^2d^2\mathrm{sgn}\,(bx+a)+10\,(xe+d)abe\mathrm{sgn}\,(bx+a)\right.}{15\,(xe+d)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="giac")
```

```
[Out] -2/15*(15*(x*e + d)^2*b^2*sgn(b*x + a) - 10*(x*e + d)*b^2*d*sgn(b*x + a) +
3*b^2*d^2*sgn(b*x + a) + 10*(x*e + d)*a*b*e*sgn(b*x + a) - 6*a*b*d*e*sgn(b*
x + a) + 3*a^2*e^2*sgn(b*x + a))*e^(-3)/(x*e + d)^(5/2)
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.53

$$-\frac{2\left(15b^2x^2e^2+10ab\,e^2x+20b^2dex+3a^2e^2+4abde+8b^2d^2\right)\sqrt{(bx+a)^2}}{15\,(ex+d)^{\frac{5}{2}}\,(bx+a)\,e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(15*b^2*e^2*x^2+10*a*b*e^2*x+20*b^2*d*e*x+3*a^2*e^2+4*a
*b*d*e+8*b^2*d^2)*((b*x+a)^2)^(1/2)/e^3/(b*x+a)
```

maxima [**A**] time = 0.61, size = 118, normalized size = 0.79

$$-\frac{2\,(5\,bex+2\,bd+3\,ae)a}{15\left(e^4x^2+2\,de^3x+d^2e^2\right)\sqrt{ex+d}}-\frac{2\left(15\,be^2x^2+8\,bd^2+2\,ade+5\left(4\,bde+ae^2\right)x\right)b}{15\left(e^5x^2+2\,de^4x+d^2e^3\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)^2)^(1/2)/(e*x+d)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/15*(5*b*e*x + 2*b*d + 3*a*e)*a/((e^4*x^2 + 2*d*e^3*x + d^2*e^2)*sqrt(e*x
 + d)) - 2/15*(15*b*e^2*x^2 + 8*b*d^2 + 2*a*d*e + 5*(4*b*d*e + a*e^2)*x)*b/
((e^5*x^2 + 2*d*e^4*x + d^2*e^3)*sqrt(e*x + d))
```

mupad [**B**] time = 2.63, size = 151, normalized size = 1.01

$$-\frac{\sqrt{(a+b\,x)^2}\,\left(\frac{4\,x\,(a\,e+2\,b\,d)}{3\,e^4}+\frac{2\,b\,x^2}{e^3}+\frac{\frac{2\,a^2\,e^2}{5}+\frac{8\,a\,b\,d\,e}{15}+\frac{16\,b^2\,d^2}{15}}{b\,e^5}\right)}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(a\,e^5+2\,b\,d\,e^4\right)\,\sqrt{d+e\,x}}{b\,e^5}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{d+e\,x}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((((a + b*x)^2)^(1/2)*(a + b*x))/(d + e*x)^(7/2),x)
```

```
[Out] -(((a + b*x)^2)^(1/2)*((4*x*(a*e + 2*b*d))/(3*e^4) + (2*b*x^2)/e^3 + ((2*a^
2*e^2)/5 + (16*b^2*d^2)/15 + (8*a*b*d*e)/15)/(b*e^5)))/(x^3*(d + e*x)^(1/2)
 + (a*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(a*e^5 + 2*b*d*e^4)*(d + e*x)^(1/
2))/(b*e^5) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*((b*x+a)**2)**(1/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.2100 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=264

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^2}{11e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^3}{9e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2}}{7e^5(}$$

```
[Out] 2/7*(-a*e+b*d)^4*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/9*b*(-a*e+b*
d)^3*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+12/11*b^2*(-a*e+b*d)^2*(e*
x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/13*b^3*(-a*e+b*d)*(e*x+d)^(13/2
)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/15*b^4*(e*x+d)^(15/2)*((b*x+a)^2)^(1/2)/e
^5/(b*x+a)
```

Rubi [A] time = 0.13, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)}{13e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+}{11e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(9*e^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(13/2)*Sqr
t[a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(15/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^{5/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^{5/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Big(\frac{(-bd+ae)^4(d+ex)^{5/2}}{e^4} - \frac{4b(bd-ae)^3(d+ex)^{7/2}}{e^4} + 6}{ab+b^2x}$$

$$= \frac{2(bd-ae)^4(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)} - \frac{8b(bd-ae)^3(d+ex}{9e^5(}$$

Mathematica [A] time = 0.12, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\Big(6435a^4e^4+2860a^3be^3(7ex-2d)+390a^2b^2e^2\left(8d^2-28dex+63e^2x^2\right)+60ab^3e\big(-16d^3+}{45045e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(6435*a^4*e^4 + 2860*a^3*b*e^3*(-2*d +
 7*e*x) + 390*a^2*b^2*e^2*(8*d^2 - 28*d*e*x + 63*e^2*x^2) + 60*a*b^3*e*(-16
*d^3 + 56*d^2*e*x - 126*d*e^2*x^2 + 231*e^3*x^3) + b^4*(128*d^4 - 448*d^3*e
*x + 1008*d^2*e^2*x^2 - 1848*d*e^3*x^3 + 3003*e^4*x^4)))/(45045*e^5*(a + b*
x))
```

fricas [A] time = 0.87, size = 377, normalized size = 1.43

$$\frac{2\Big(3003\,b^4e^7x^7+128\,b^4d^7-960\,ab^3d^6e+3120\,a^2b^2d^5e^2-5720\,a^3bd^4e^3+6435\,a^4d^3e^4+231\big(31\,b^4de^6+60\,ab^3e^7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*b^4*e^7*x^7 + 128*b^4*d^7 - 960*a*b^3*d^6*e + 3120*a^2*b^2*d^
5*e^2 - 5720*a^3*b*d^4*e^3 + 6435*a^4*d^3*e^4 + 231*(31*b^4*d*e^6 + 60*a*b^
3*e^7)*x^6 + 63*(71*b^4*d^2*e^5 + 540*a*b^3*d*e^6 + 390*a^2*b^2*e^7)*x^5 +
35*(b^4*d^3*e^4 + 636*a*b^3*d^2*e^5 + 1794*a^2*b^2*d*e^6 + 572*a^3*b*e^7)*x
^4 - 5*(8*b^4*d^4*e^3 - 60*a*b^3*d^3*e^4 - 8814*a^2*b^2*d^2*e^5 - 10868*a^3
*b*d*e^6 - 1287*a^4*e^7)*x^3 + 3*(16*b^4*d^5*e^2 - 120*a*b^3*d^4*e^3 + 390*
a^2*b^2*d^3*e^4 + 14300*a^3*b*d^2*e^5 + 6435*a^4*d*e^6)*x^2 - (64*b^4*d^6*e
 - 480*a*b^3*d^5*e^2 + 1560*a^2*b^2*d^4*e^3 - 2860*a^3*b*d^3*e^4 - 19305*a^
4*d^2*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [B] time = 0.32, size = 1397, normalized size = 5.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^3*e^(-1)*sgn(b
*x + a) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*a^2*b^2*d^3*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^3*e^(
-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d^
3*e^(-4)*sgn(b*x + a) + 36036*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*a^3*b*d^2*e^(-1)*sgn(b*x + a) + 23166*(5*(x*e + d)^(7/
2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*
a^2*b^2*d^2*e^(-2)*sgn(b*x + a) + 1716*(35*(x*e + d)^(9/2) - 180*(x*e + d)^
(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e
+ d)*d^4)*a*b^3*d^2*e^(-3)*sgn(b*x + a) + 195*(63*(x*e + d)^(11/2) - 385*(x
*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155
*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d^2*e^(-4)*sgn(b*x + a) +
 45045*sqrt(x*e + d)*a^4*d^3*sgn(b*x + a) + 45045*((x*e + d)^(3/2) - 3*sqrt
(x*e + d)*d)*a^4*d^2*sgn(b*x + a) + 15444*(5*(x*e + d)^(7/2) - 21*(x*e + d)
^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b*d*e^(-1)*sg
n(b*x + a) + 2574*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^2*d*e
^(-2)*sgn(b*x + a) + 780*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990
*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4
- 693*sqrt(x*e + d)*d^5)*a*b^3*d*e^(-3)*sgn(b*x + a) + 45*(231*(x*e + d)^(1
3/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^
(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt
(x*e + d)*d^6)*b^4*d*e^(-4)*sgn(b*x + a) + 9009*(3*(x*e + d)^(5/2) - 10*(x*
e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^4*d*sgn(b*x + a) + 572*(35*(x*e +
d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^
(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b*e^(-1)*sgn(b*x + a) + 390*(63*(x*e
 + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e
+ d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^2*
e^(-2)*sgn(b*x + a) + 60*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d +
5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*
d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^3*e^(-3)*sgn(b
*x + a) + 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e +
d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 270
27*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7
)*b^4*e^(-4)*sgn(b*x + a) + 1287*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d
+ 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$2\,(ex+d)^{\frac{7}{2}}\,\big(3003b^4e^4x^4+13860a\,b^3e^4x^3-1848b^4d\,e^3x^3+24570a^2b^2e^4x^2-7560a\,b^3d\,e^3x^2+1008b^4d^2e^2x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/45045*(e*x+d)^(7/2)*(3003*b^4*e^4*x^4+13860*a*b^3*e^4*x^3-1848*b^4*d*e^3*
x^3+24570*a^2*b^2*e^4*x^2-7560*a*b^3*d*e^3*x^2+1008*b^4*d^2*e^2*x^2+20020*a
^3*b*e^4*x-10920*a^2*b^2*d*e^3*x+3360*a*b^3*d^2*e^2*x-448*b^4*d^3*e*x+6435*
a^4*e^4-5720*a^3*b*d*e^3+3120*a^2*b^2*d^2*e^2-960*a*b^3*d^3*e+128*b^4*d^4)*
((b*x+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.85, size = 592, normalized size = 2.24

$$2\,\big(231\,b^3e^6x^6-16\,b^3d^6+104\,ab^2d^5e-286\,a^2bd^4e^2+429\,a^3d^3e^3+63\,\big(9\,b^3de^5+13\,ab^2e^6\big)x^5+7\,\big(53\,b^3d^2e^4+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/3003*(231*b^3*e^6*x^6 - 16*b^3*d^6 + 104*a*b^2*d^5*e - 286*a^2*b*d^4*e^2
+ 429*a^3*d^3*e^3 + 63*(9*b^3*d*e^5 + 13*a*b^2*e^6)*x^5 + 7*(53*b^3*d^2*e^4
 + 299*a*b^2*d*e^5 + 143*a^2*b*e^6)*x^4 + (5*b^3*d^3*e^3 + 1469*a*b^2*d^2*e
^4 + 2717*a^2*b*d*e^5 + 429*a^3*e^6)*x^3 - 3*(2*b^3*d^4*e^2 - 13*a*b^2*d^3*
e^3 - 715*a^2*b*d^2*e^4 - 429*a^3*d*e^5)*x^2 + (8*b^3*d^5*e - 52*a*b^2*d^4*
e^2 + 143*a^2*b*d^3*e^3 + 1287*a^3*d^2*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/4504
5*(3003*b^3*e^7*x^7 + 128*b^3*d^7 - 720*a*b^2*d^6*e + 1560*a^2*b*d^5*e^2 -
1430*a^3*d^4*e^3 + 231*(31*b^3*d*e^6 + 45*a*b^2*e^7)*x^6 + 63*(71*b^3*d^2*e
^5 + 405*a*b^2*d*e^6 + 195*a^2*b*e^7)*x^5 + 35*(b^3*d^3*e^4 + 477*a*b^2*d^2
*e^5 + 897*a^2*b*d*e^6 + 143*a^3*e^7)*x^4 - 5*(8*b^3*d^4*e^3 - 45*a*b^2*d^3
*e^4 - 4407*a^2*b*d^2*e^5 - 2717*a^3*d*e^6)*x^3 + 3*(16*b^3*d^5*e^2 - 90*a*
b^2*d^4*e^3 + 195*a^2*b*d^3*e^4 + 3575*a^3*d^2*e^5)*x^2 - (64*b^3*d^6*e - 3
60*a*b^2*d^5*e^2 + 780*a^2*b*d^4*e^3 - 715*a^3*d^3*e^4)*x)*sqrt(e*x + d)*b/
e^5
```

mupad **[F]**   time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,{\left(d+e\,x\right)}^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy **[F(-1)]**   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.2101 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=264

$$\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^2}{3e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^3}{7e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}}{5e^5(a}$$

```
[Out] 2/5*(-a*e+b*d)^4*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/7*b*(-a*e+b*
d)^3*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+4/3*b^2*(-a*e+b*d)^2*(e*x+
d)^(9/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/11*b^3*(-a*e+b*d)*(e*x+d)^(11/2)*(
(b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/13*b^4*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^5/
(b*x+a)
```

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^5(a+bx)}+\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+e}{3e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(7*e^5*(a + b*x)) + (4*b^2*(b*d - a*e)^2*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2])/(3*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(11/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(13/2)*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(13*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3(d+ex)^{3/2}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^{3/2}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigg(\frac{(-bd+ae)^4(d+ex)^{3/2}}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{5/2}}{e^4}+6}{ab+b^2x}$$

$$=\frac{2(bd-ae)^4(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)}-\frac{8b(bd-ae)^3(d+ex}{7e^5(}$$

Mathematica [**A**] time = 0.08, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\Big(3003a^4e^4+1716a^3be^3(5ex-2d)+286a^2b^2e^2\left(8d^2-20dex+35e^2x^2\right)+52ab^3e\Big(-16d^3+}{15015e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(3003*a^4*e^4 + 1716*a^3*b*e^3*(-2*d +
 5*e*x) + 286*a^2*b^2*e^2*(8*d^2 - 20*d*e*x + 35*e^2*x^2) + 52*a*b^3*e*(-16
*d^3 + 40*d^2*e*x - 70*d*e^2*x^2 + 105*e^3*x^3) + b^4*(128*d^4 - 320*d^3*e*
x + 560*d^2*e^2*x^2 - 840*d*e^3*x^3 + 1155*e^4*x^4)))/(15015*e^5*(a + b*x))
```

fricas [**A**] time = 1.03, size = 311, normalized size = 1.18

$$\frac{2\left(1155\,b^4e^6x^6+128\,b^4d^6-832\,ab^3d^5e+2288\,a^2b^2d^4e^2-3432\,a^3bd^3e^3+3003\,a^4d^2e^4+210\left(7\,b^4de^5+26\,ab^3e^6\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/15015*(1155*b^4*e^6*x^6 + 128*b^4*d^6 - 832*a*b^3*d^5*e + 2288*a^2*b^2*d^
4*e^2 - 3432*a^3*b*d^3*e^3 + 3003*a^4*d^2*e^4 + 210*(7*b^4*d*e^5 + 26*a*b^3
*e^6)*x^5 + 35*(b^4*d^2*e^4 + 208*a*b^3*d*e^5 + 286*a^2*b^2*e^6)*x^4 - 20*(
2*b^4*d^3*e^3 - 13*a*b^3*d^2*e^4 - 715*a^2*b^2*d*e^5 - 429*a^3*b*e^6)*x^3 +
 3*(16*b^4*d^4*e^2 - 104*a*b^3*d^3*e^3 + 286*a^2*b^2*d^2*e^4 + 4576*a^3*b*d
*e^5 + 1001*a^4*e^6)*x^2 - 2*(32*b^4*d^5*e - 208*a*b^3*d^4*e^2 + 572*a^2*b^
2*d^3*e^3 - 858*a^3*b*d^2*e^4 - 3003*a^4*d*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [**B**] time = 0.27, size = 944, normalized size = 3.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(60060*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d^2*e^(-1)*sgn(b
*x + a) + 18018*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d
)*d^2)*a^2*b^2*d^2*e^(-2)*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e
+ d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d^2*e^(
-3)*sgn(b*x + a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x
*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d^
2*e^(-4)*sgn(b*x + a) + 24024*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 1
5*sqrt(x*e + d)*d^2)*a^3*b*d*e^(-1)*sgn(b*x + a) + 15444*(5*(x*e + d)^(7/2)
 - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^
2*b^2*d*e^(-2)*sgn(b*x + a) + 1144*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2
)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)
*d^4)*a*b^3*d*e^(-3)*sgn(b*x + a) + 130*(63*(x*e + d)^(11/2) - 385*(x*e + d
)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e
+ d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*b^4*d*e^(-4)*sgn(b*x + a) + 45045*s
qrt(x*e + d)*a^4*d^2*sgn(b*x + a) + 30030*((x*e + d)^(3/2) - 3*sqrt(x*e + d
)*d)*a^4*d*sgn(b*x + a) + 5148*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d +
35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b*e^(-1)*sgn(b*x + a) +
858*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 -
 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^2*e^(-2)*sgn(b*x +
a) + 260*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a*b^3*e^(-3)*sgn(b*x + a) + 15*(231*(x*e + d)^(13/2) - 1638*(x*e +
 d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(
x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^4
*e^(-4)*sgn(b*x + a) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*
sqrt(x*e + d)*d^2)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$2\,(ex+d)^{\frac{5}{2}}\left(1155b^4e^4x^4+5460a\,b^3e^4x^3-840b^4d\,e^3x^3+10010a^2b^2e^4x^2-3640a\,b^3d\,e^3x^2+560b^4d^2e^2x^2+858$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 2/15015*(e*x+d)^(5/2)*(1155*b^4*e^4*x^4+5460*a*b^3*e^4*x^3-840*b^4*d*e^3*x^
3+10010*a^2*b^2*e^4*x^2-3640*a*b^3*d*e^3*x^2+560*b^4*d^2*e^2*x^2+8580*a^3*b
*e^4*x-5720*a^2*b^2*d*e^3*x+2080*a*b^3*d^2*e^2*x-320*b^4*d^3*e*x+3003*a^4*e
^4-3432*a^3*b*d*e^3+2288*a^2*b^2*d^2*e^2-832*a*b^3*d^3*e+128*b^4*d^4)*((b*x
+a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.70, size = 488, normalized size = 1.85

$$2\left(105\,b^3e^5x^5-16\,b^3d^5+88\,ab^2d^4e-198\,a^2bd^3e^2+231\,a^3d^2e^3+35\left(4\,b^3de^4+11\,ab^2e^5\right)x^4+5\left(b^3d^2e^3+110\,a\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/1155*(105*b^3*e^5*x^5 - 16*b^3*d^5 + 88*a*b^2*d^4*e - 198*a^2*b*d^3*e^2 +
 231*a^3*d^2*e^3 + 35*(4*b^3*d*e^4 + 11*a*b^2*e^5)*x^4 + 5*(b^3*d^2*e^3 + 1
10*a*b^2*d*e^4 + 99*a^2*b*e^5)*x^3 - 3*(2*b^3*d^3*e^2 - 11*a*b^2*d^2*e^3 -
264*a^2*b*d*e^4 - 77*a^3*e^5)*x^2 + (8*b^3*d^4*e - 44*a*b^2*d^3*e^2 + 99*a^
2*b*d^2*e^3 + 462*a^3*d*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/15015*(1155*b^3*e^6
*x^6 + 128*b^3*d^6 - 624*a*b^2*d^5*e + 1144*a^2*b*d^4*e^2 - 858*a^3*d^3*e^3
 + 105*(14*b^3*d*e^5 + 39*a*b^2*e^6)*x^5 + 35*(b^3*d^2*e^4 + 156*a*b^2*d*e^
5 + 143*a^2*b*e^6)*x^4 - 5*(8*b^3*d^3*e^3 - 39*a*b^2*d^2*e^4 - 1430*a^2*b*d
*e^5 - 429*a^3*e^6)*x^3 + 3*(16*b^3*d^4*e^2 - 78*a*b^2*d^3*e^3 + 143*a^2*b*
d^2*e^4 + 1144*a^3*d*e^5)*x^2 - (64*b^3*d^5*e - 312*a*b^2*d^4*e^2 + 572*a^2
*b*d^3*e^3 - 429*a^3*d^2*e^4)*x)*sqrt(e*x + d)*b/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.2102 $\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=264

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^2}{7e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^3}{5e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x}}{3e^5(}$$

```
[Out] 2/3*(-a*e+b*d)^4*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/5*b*(-a*e+b*
d)^3*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+12/7*b^2*(-a*e+b*d)^2*(e*x
+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/9*b^3*(-a*e+b*d)*(e*x+d)^(9/2)*((
b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/11*b^4*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^5/(
b*x+a)
```

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{9e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+e}{7e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a +
 b*x)) - (8*b*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(5*e^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(9/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(11/2)*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)\sqrt{d+ex}\,\left(a^2+2abx+b^2x^2\right)^{3/2}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^3\sqrt{d+ex}\,dx}{b^2\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4\sqrt{d+ex}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\left(\frac{(-bd+ae)^4\sqrt{d+ex}}{e^4}-\frac{4b(bd-ae)^3(d+ex)^{3/2}}{e^4}+\frac{6b^2(b}{}\right.}{ab+b^2x}$$

$$=\frac{2(bd-ae)^4(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)}-\frac{8b(bd-ae)^3(d+ex)^{5/}}{5e^5(a}$$

Mathematica [**A**] time = 0.08, size = 172, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(1155a^4e^4+924a^3be^3(3ex-2d)+198a^2b^2e^2\left(8d^2-12dex+15e^2x^2\right)+44ab^3e\left(-16d^3+2\right.\right.}{3465e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(1155*a^4*e^4 + 924*a^3*b*e^3*(-2*d +
3*e*x) + 198*a^2*b^2*e^2*(8*d^2 - 12*d*e*x + 15*e^2*x^2) + 44*a*b^3*e*(-16*
d^3 + 24*d^2*e*x - 30*d*e^2*x^2 + 35*e^3*x^3) + b^4*(128*d^4 - 192*d^3*e*x
+ 240*d^2*e^2*x^2 - 280*d*e^3*x^3 + 315*e^4*x^4)))/(3465*e^5*(a + b*x))
```

fricas [**A**] time = 0.89, size = 245, normalized size = 0.93

$$\frac{2\left(315\,b^4e^5x^5+128\,b^4d^5-704\,ab^3d^4e+1584\,a^2b^2d^3e^2-1848\,a^3bd^2e^3+1155\,a^4de^4+35\left(b^4de^4+44\,ab^3e^5\right)x^4-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3465*(315*b^4*e^5*x^5 + 128*b^4*d^5 - 704*a*b^3*d^4*e + 1584*a^2*b^2*d^3*
e^2 - 1848*a^3*b*d^2*e^3 + 1155*a^4*d*e^4 + 35*(b^4*d*e^4 + 44*a*b^3*e^5)*x
^4 - 10*(4*b^4*d^2*e^3 - 22*a*b^3*d*e^4 - 297*a^2*b^2*e^5)*x^3 + 6*(8*b^4*d
^3*e^2 - 44*a*b^3*d^2*e^3 + 99*a^2*b^2*d*e^4 + 462*a^3*b*e^5)*x^2 - (64*b^4
*d^4*e - 352*a*b^3*d^3*e^2 + 792*a^2*b^2*d^2*e^3 - 924*a^3*b*d*e^4 - 1155*a
^4*e^5)*x)*sqrt(e*x + d)/e^5
```

giac [**B**] time = 0.21, size = 556, normalized size = 2.11

$$\frac{2}{3465}\left(4620\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^3bde^{(-1)}\mathrm{sgn}\left(bx+a\right)+1386\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3465*(4620*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*d*e^(-1)*sgn(b*x +
 a) + 1386*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2
)*a^2*b^2*d*e^(-2)*sgn(b*x + a) + 396*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*d*e^(-3)*sgn(b*
x + a) + 11*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/
2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*d*e^(-4)*sgn(
b*x + a) + 924*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^3*b*e^(-1)*sgn(b*x + a) + 594*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/
2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^2*b^2*e^(-2)*sgn(b*
x + a) + 44*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/
2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a*b^3*e^(-3)*sgn(
b*x + a) + 5*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(
7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x
*e + d)*d^5)*b^4*e^(-4)*sgn(b*x + a) + 3465*sqrt(x*e + d)*a^4*d*sgn(b*x + a
) + 1155*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^4*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 202, normalized size = 0.77

$$\frac{2\,(ex+d)^{\frac{3}{2}}\,\big(315b^4e^4x^4+1540a\,b^3e^4x^3-280b^4d\,e^3x^3+2970a^2b^2e^4x^2-1320a\,b^3d\,e^3x^2+240b^4d^2e^2x^2+2772}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/3465*(e*x+d)^(3/2)*(315*b^4*e^4*x^4+1540*a*b^3*e^4*x^3-280*b^4*d*e^3*x^3+
2970*a^2*b^2*e^4*x^2-1320*a*b^3*d*e^3*x^2+240*b^4*d^2*e^2*x^2+2772*a^3*b*e^
4*x-2376*a^2*b^2*d*e^3*x+1056*a*b^3*d^2*e^2*x-192*b^4*d^3*e*x+1155*a^4*e^4-
1848*a^3*b*d*e^3+1584*a^2*b^2*d^2*e^2-704*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)
^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.65, size = 384, normalized size = 1.45

$$\frac{2\,\big(35\,b^3e^4x^4-16\,b^3d^4+72\,ab^2d^3e-126\,a^2bd^2e^2+105\,a^3de^3+5\,\big(b^3de^3+27\,ab^2e^4\big)x^3-3\,\big(2\,b^3d^2e^2-9\,ab^2de^3}{315\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/315*(35*b^3*e^4*x^4 - 16*b^3*d^4 + 72*a*b^2*d^3*e - 126*a^2*b*d^2*e^2 + 1
05*a^3*d*e^3 + 5*(b^3*d*e^3 + 27*a*b^2*e^4)*x^3 - 3*(2*b^3*d^2*e^2 - 9*a*b^
2*d*e^3 - 63*a^2*b*e^4)*x^2 + (8*b^3*d^3*e - 36*a*b^2*d^2*e^2 + 63*a^2*b*d*
e^3 + 105*a^3*e^4)*x)*sqrt(e*x + d)*a/e^4 + 2/3465*(315*b^3*e^5*x^5 + 128*b
^3*d^5 - 528*a*b^2*d^4*e + 792*a^2*b*d^3*e^2 - 462*a^3*d^2*e^3 + 35*(b^3*d*
e^4 + 33*a*b^2*e^5)*x^4 - 5*(8*b^3*d^2*e^3 - 33*a*b^2*d*e^4 - 297*a^2*b*e^5
)*x^3 + 3*(16*b^3*d^3*e^2 - 66*a*b^2*d^2*e^3 + 99*a^2*b*d*e^4 + 231*a^3*e^5
)*x^2 - (64*b^3*d^4*e - 264*a*b^2*d^3*e^2 + 396*a^2*b*d^2*e^3 - 231*a^3*d*e
^4)*x)*sqrt(e*x + d)*b/e^5
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\sqrt{d+ex}\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*((a + b*x)**2)**(3/2), x)
```

3.2103 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=262

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^2}{5e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}{3e^5(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x}}{e^5(a}$$

```
[Out] -8/3*b*(-a*e+b*d)^3*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+12/5*b^2*(-
a*e+b*d)^2*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/7*b^3*(-a*e+b*d)*(
e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/9*b^4*(e*x+d)^(9/2)*((b*x+a)^2
)^(1/2)/e^5/(b*x+a)+2*(-a*e+b*d)^4*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x
+a)
```

Rubi [A] time = 0.10, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(d+e}{5e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x
)) - (8*b*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e
^5*(a + b*x)) + (12*b^2*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(5*e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(7/2)*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{\sqrt{d+ex}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{\sqrt{d+ex}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Big(\frac{(-bd+ae)^4}{e^4\sqrt{d+ex}} - \frac{4b(bd-ae)^3\sqrt{d+ex}}{e^4} + \frac{6b^2(bd-ae)^2(d+ex)^{3/2}}{e^4} -}{ab+b^2x}$$

$$= \frac{2(bd-ae)^4\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)} - \frac{8b(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2a}}{3e^5(a+bx)}$$

Mathematica [A] time = 0.09, size = 171, normalized size = 0.65

$$\frac{2\sqrt{(a+bx)^2}\sqrt{d+ex}\,\Big(315a^4e^4+420a^3be^3(ex-2d)+126a^2b^2e^2\left(8d^2-4dex+3e^2x^2\right)+36ab^3e\big(-16d^3+8d^2ex-}{315e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(315*a^4*e^4 + 420*a^3*b*e^3*(-2*d + e*x
) + 126*a^2*b^2*e^2*(8*d^2 - 4*d*e*x + 3*e^2*x^2) + 36*a*b^3*e*(-16*d^3 + 8
*d^2*e*x - 6*d*e^2*x^2 + 5*e^3*x^3) + b^4*(128*d^4 - 64*d^3*e*x + 48*d^2*e^
2*x^2 - 40*d*e^3*x^3 + 35*e^4*x^4)))/(315*e^5*(a + b*x))
```

fricas [A] time = 1.03, size = 182, normalized size = 0.69

$$\frac{2\Big(35\,b^4e^4x^4+128\,b^4d^4-576\,ab^3d^3e+1008\,a^2b^2d^2e^2-840\,a^3bde^3+315\,a^4e^4-20\left(2\,b^4de^3-9\,ab^3e^4\right)x^3+6\big(8\,b}{315\,e^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/315*(35*b^4*e^4*x^4 + 128*b^4*d^4 - 576*a*b^3*d^3*e + 1008*a^2*b^2*d^2*e^
2 - 840*a^3*b*d*e^3 + 315*a^4*e^4 - 20*(2*b^4*d*e^3 - 9*a*b^3*e^4)*x^3 + 6*
(8*b^4*d^2*e^2 - 36*a*b^3*d*e^3 + 63*a^2*b^2*e^4)*x^2 - 4*(16*b^4*d^3*e - 7
2*a*b^3*d^2*e^2 + 126*a^2*b^2*d*e^3 - 105*a^3*b*e^4)*x)*sqrt(e*x + d)/e^5
```

giac [A] time = 0.19, size = 244, normalized size = 0.93

$$\frac{2}{315}\Big(420\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^3be^{(-1)}\mathrm{sgn}\left(bx+a\right)+126\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a^2b^2e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/315*(420*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^3*b*e^(-1)*sgn(b*x + a)
+ 126*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^2
*b^2*e^(-2)*sgn(b*x + a) + 36*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 3
5*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a*b^3*e^(-3)*sgn(b*x + a) + (
35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*
(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*b^4*e^(-4)*sgn(b*x + a) + 315*
sqrt(x*e + d)*a^4*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.06, size = 202, normalized size = 0.77

$$\frac{2\sqrt{ex+d}\,\left(35b^4e^4x^4+180a\,b^3e^4x^3-40b^4d\,e^3x^3+378a^2b^2e^4x^2-216a\,b^3d\,e^3x^2+48b^4d^2e^2x^2+420a^3b\,e^4x-}{315}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(e*x+d)^(1/2)*(35*b^4*e^4*x^4+180*a*b^3*e^4*x^3-40*b^4*d*e^3*x^3+378*
a^2*b^2*e^4*x^2-216*a*b^3*d*e^3*x^2+48*b^4*d^2*e^2*x^2+420*a^3*b*e^4*x-504*
a^2*b^2*d*e^3*x+288*a*b^3*d^2*e^2*x-64*b^4*d^3*e*x+315*a^4*e^4-840*a^3*b*d*
e^3+1008*a^2*b^2*d^2*e^2-576*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5
/(b*x+a)^3
```

maxima [**B**] time = 0.63, size = 382, normalized size = 1.46

$$\frac{2\left(5\,b^3e^4x^4-16\,b^3d^4+56\,ab^2d^3e-70\,a^2bd^2e^2+35\,a^3de^3-\left(b^3de^3-21\,ab^2e^4\right)x^3+\left(2\,b^3d^2e^2-7\,ab^2de^3+35\,a\right.}{35\,\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/35*(5*b^3*e^4*x^4 - 16*b^3*d^4 + 56*a*b^2*d^3*e - 70*a^2*b*d^2*e^2 + 35*a
^3*d*e^3 - (b^3*d*e^3 - 21*a*b^2*e^4)*x^3 + (2*b^3*d^2*e^2 - 7*a*b^2*d*e^3
+ 35*a^2*b*e^4)*x^2 - (8*b^3*d^3*e - 28*a*b^2*d^2*e^2 + 35*a^2*b*d*e^3 - 35
*a^3*e^4)*x)*a/(sqrt(e*x + d)*e^4) + 2/315*(35*b^3*e^5*x^5 + 128*b^3*d^5 -
432*a*b^2*d^4*e + 504*a^2*b*d^3*e^2 - 210*a^3*d^2*e^3 - 5*(b^3*d*e^4 - 27*a
*b^2*e^5)*x^4 + (8*b^3*d^2*e^3 - 27*a*b^2*d*e^4 + 189*a^2*b*e^5)*x^3 - (16*
b^3*d^3*e^2 - 54*a*b^2*d^2*e^3 + 63*a^2*b*d*e^4 - 105*a^3*e^5)*x^2 + (64*b^
3*d^4*e - 216*a*b^2*d^3*e^2 + 252*a^2*b*d^2*e^3 - 105*a^3*d*e^4)*x)*b/(sqrt
(e*x + d)*e^5)
```

mupad [**B**] time = 2.50, size = 285, normalized size = 1.09

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^3\,x^5}{9}+\frac{630\,a^4\,d\,e^4-1680\,a^3\,b\,d^2\,e^3+2016\,a^2\,b^2\,d^3\,e^2-1152\,a\,b^3\,d^4\,e+256\,b^4\,d^5}{315\,b\,e^5}+\frac{x\left(630\,a^4\,e^5-840\,a^3\,b\,d\,e^4+1008\right.}{3}\right.}{x\,\sqrt{d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^5)/9 + (256*b^4*d^5 + 630*a^4*d*
e^4 - 1680*a^3*b*d^2*e^3 + 2016*a^2*b^2*d^3*e^2 - 1152*a*b^3*d^4*e)/(315*b*
e^5) + (x*(630*a^4*e^5 + 128*b^4*d^4*e - 576*a*b^3*d^3*e^2 + 1008*a^2*b^2*d
^2*e^3 - 840*a^3*b*d*e^4))/(315*b*e^5) + (x^2*(840*a^3*b*e^5 - 32*b^4*d^3*e
^2 + 144*a*b^3*d^2*e^3 - 252*a^2*b^2*d*e^4))/(315*b*e^5) + (2*b^2*x^4*(36*a
*e - b*d))/(63*e) + (4*b*x^3*(189*a^2*e^2 + 4*b^2*d^2 - 18*a*b*d*e))/(315*e
^2)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.2104 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=258

$$\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}{e^5(a+bx)}-\frac{8b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}{e^5(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-}{e^5(a+bx)\sqrt{d+ex}}$$

```
[Out] 4*b^2*(-a*e+b*d)^2*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)-8/5*b^3*(-a*
e+b*d)*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/7*b^4*(e*x+d)^(7/2)*((
b*x+a)^2)^(1/2)/e^5/(b*x+a)-2*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e
*x+d)^(1/2)-8*b*(-a*e+b*d)^3*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi [A] time = 0.11, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^5(a+bx)}+\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*
x]) - (8*b*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*
(a + b*x)) + (4*b^2*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(5*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(7*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{3/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{3/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{3/2}} - \frac{4b(bd-ae)^3}{e^4\sqrt{d+ex}} + \frac{6b^2(bd-ae)^2\sqrt{d+ex}}{e^4} - \frac{4b^3(}{}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}} - \frac{8b(bd-ae)^3\sqrt{d+ex}\,\sqrt{a^2+2abx+}}{e^5(a+bx)}$$

Mathematica [A] time = 0.10, size = 169, normalized size = 0.66

$$\frac{2\sqrt{(a+bx)^2}\left(-35a^4e^4+140a^3be^3(2d+ex)+70a^2b^2e^2\left(-8d^2-4dex+e^2x^2\right)+28ab^3e\left(16d^3+8d^2ex-2de^2x^2\right.\right.}{35e^5(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-35*a^4*e^4 + 140*a^3*b*e^3*(2*d + e*x) + 70*a^2*b^2*
e^2*(-8*d^2 - 4*d*e*x + e^2*x^2) + 28*a*b^3*e*(16*d^3 + 8*d^2*e*x - 2*d*e^2
*x^2 + e^3*x^3) + b^4*(-128*d^4 - 64*d^3*e*x + 16*d^2*e^2*x^2 - 8*d*e^3*x^3
 + 5*e^4*x^4)))/(35*e^5*(a + b*x)*Sqrt[d + e*x])
```

fricas [A] time = 0.80, size = 192, normalized size = 0.74

$$\frac{2\left(5\,b^4e^4x^4-128\,b^4d^4+448\,ab^3d^3e-560\,a^2b^2d^2e^2+280\,a^3bde^3-35\,a^4e^4-4\left(2\,b^4de^3-7\,ab^3e^4\right)x^3+2\left(8\,b^4d\right.\right.}{35\left(e^6x+de^5\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*b^4*e^4*x^4 - 128*b^4*d^4 + 448*a*b^3*d^3*e - 560*a^2*b^2*d^2*e^2 +
 280*a^3*b*d*e^3 - 35*a^4*e^4 - 4*(2*b^4*d*e^3 - 7*a*b^3*e^4)*x^3 + 2*(8*b^
4*d^2*e^2 - 28*a*b^3*d*e^3 + 35*a^2*b^2*e^4)*x^2 - 4*(16*b^4*d^3*e - 56*a*b
^3*d^2*e^2 + 70*a^2*b^2*d*e^3 - 35*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^6*x + d*e
^5)
```

giac [A] time = 0.22, size = 327, normalized size = 1.27

$$\frac{2}{35}\left(5\,(xe+d)^{\frac{7}{2}}b^4e^{30}\mathrm{sgn}\,(bx+a)-28\,(xe+d)^{\frac{5}{2}}b^4de^{30}\mathrm{sgn}\,(bx+a)+70\,(xe+d)^{\frac{3}{2}}b^4d^2e^{30}\mathrm{sgn}\,(bx+a)-140\,\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*b^4*e^30*sgn(b*x + a) - 28*(x*e + d)^(5/2)*b^4*d*e^
30*sgn(b*x + a) + 70*(x*e + d)^(3/2)*b^4*d^2*e^30*sgn(b*x + a) - 140*sqrt(x
*e + d)*b^4*d^3*e^30*sgn(b*x + a) + 28*(x*e + d)^(5/2)*a*b^3*e^31*sgn(b*x +
 a) - 140*(x*e + d)^(3/2)*a*b^3*d*e^31*sgn(b*x + a) + 420*sqrt(x*e + d)*a*b
^3*d^2*e^31*sgn(b*x + a) + 70*(x*e + d)^(3/2)*a^2*b^2*e^32*sgn(b*x + a) - 4
20*sqrt(x*e + d)*a^2*b^2*d*e^32*sgn(b*x + a) + 140*sqrt(x*e + d)*a^3*b*e^33
*sgn(b*x + a))*e^(-35) - 2*(b^4*d^4*sgn(b*x + a) - 4*a*b^3*d^3*e*sgn(b*x +
a) + 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 4*a^3*b*d*e^3*sgn(b*x + a) + a^4*e^4*
sgn(b*x + a))*e^(-5)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-5b^4e^4x^4-28a\,b^3e^4x^3+8b^4d\,e^3x^3-70a^2b^2e^4x^2+56a\,b^3d\,e^3x^2-16b^4d^2e^2x^2-140a^3b\,e^4x+280a^2b^2d\,e^3x-\right.}{35\sqrt{ex+d}\,\left(bx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35/(e*x+d)^(1/2)*(-5*b^4*e^4*x^4-28*a*b^3*e^4*x^3+8*b^4*d*e^3*x^3-70*a^2
*b^2*e^4*x^2+56*a*b^3*d*e^3*x^2-16*b^4*d^2*e^2*x^2-140*a^3*b*e^4*x+280*a^2*
b^2*d*e^3*x-224*a*b^3*d^2*e^2*x+64*b^4*d^3*e*x+35*a^4*e^4-280*a^3*b*d*e^3+5
60*a^2*b^2*d^2*e^2-448*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+
a)^3
```

maxima [A] time = 0.81, size = 282, normalized size = 1.09

$$\frac{2\left(b^3e^3x^3+16\,b^3d^3-40\,ab^2d^2e+30\,a^2bde^2-5\,a^3e^3-\left(2\,b^3de^2-5\,ab^2e^3\right)x^2+\left(8\,b^3d^2e-20\,ab^2de^2+15\,a^2be^3\right)x\right)}{5\,\sqrt{ex+d}\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(b^3*e^3*x^3 + 16*b^3*d^3 - 40*a*b^2*d^2*e + 30*a^2*b*d*e^2 - 5*a^3*e^3
 - (2*b^3*d*e^2 - 5*a*b^2*e^3)*x^2 + (8*b^3*d^2*e - 20*a*b^2*d*e^2 + 15*a^2
*b*e^3)*x)*a/(sqrt(e*x + d)*e^4) + 2/35*(5*b^3*e^4*x^4 - 128*b^3*d^4 + 336*
a*b^2*d^3*e - 280*a^2*b*d^2*e^2 + 70*a^3*d*e^3 - (8*b^3*d*e^3 - 21*a*b^2*e^
4)*x^3 + (16*b^3*d^2*e^2 - 42*a*b^2*d*e^3 + 35*a^2*b*e^4)*x^2 - (64*b^3*d^3
*e - 168*a*b^2*d^2*e^2 + 140*a^2*b*d*e^3 - 35*a^3*e^4)*x)*b/(sqrt(e*x + d)*
e^5)
```

mupad [B] time = 2.81, size = 218, normalized size = 0.84

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^3\,x^4}{7\,e}-\frac{70\,a^4\,e^4-560\,a^3\,b\,d\,e^3+1120\,a^2\,b^2\,d^2\,e^2-896\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{35\,b\,e^5}+\frac{x\left(280\,a^3\,b\,e^4-560\,a^2\,b^2\,d\,e^3+448\,a\,b^3\,d^2\,e^2\right.}{35\,b\,e^5}\right.}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^4)/(7*e) - (70*a^4*e^4 + 256*b^4
*d^4 + 1120*a^2*b^2*d^2*e^2 - 896*a*b^3*d^3*e - 560*a^3*b*d*e^3)/(35*b*e^5)
 + (x*(280*a^3*b*e^4 - 128*b^4*d^3*e + 448*a*b^3*d^2*e^2 - 560*a^2*b^2*d*e^
3))/(35*b*e^5) + (8*b^2*x^3*(7*a*e - 2*b*d))/(35*e^2) + (4*b*x^2*(35*a^2*e^
2 + 8*b^2*d^2 - 28*a*b*d*e))/(35*e^3)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(
1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(3/2),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(3/2), x)
```

3.2105 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=260

$$\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^2}{e^5(a+bx)}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{e^5(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^5(a+bx)(d+ex)^{3/2}}+$$

```
[Out] -2/3*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(3/2)-8/3*b^3*(-a*e
+b*d)*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)+2/5*b^4*(e*x+d)^(5/2)*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)+8*b*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(
e*x+d)^(1/2)+12*b^2*(-a*e+b*d)^2*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)
```

Rubi [A] time = 0.10, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{3e^5(a+bx)}+\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)
^(3/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(a + b*x)*
Sqrt[d + e*x]) + (12*b^2*(b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^5*(a + b*x)) - (8*b^3*(b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(3*e^5*(a + b*x)) + (2*b^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(5*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{5/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{5/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{5/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{3/2}} + \frac{6b^2(bd-ae)^2}{e^4\sqrt{d+ex}} - \frac{4b^3(bd-ae)}{e^4}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}} +$$

Mathematica [A] time = 0.09, size = 171, normalized size = 0.66

$$\frac{2\sqrt{(a+bx)^2}\left(-5a^4e^4-20a^3be^3(2d+3ex)+30a^2b^2e^2\left(8d^2+12dex+3e^2x^2\right)+20ab^3e\left(-16d^3-24d^2ex-6de^2\right.\right.}{15e^5(a+bx)(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*a^4*e^4 - 20*a^3*b*e^3*(2*d + 3*e*x) + 30*a^2*b^2*
e^2*(8*d^2 + 12*d*e*x + 3*e^2*x^2) + 20*a*b^3*e*(-16*d^3 - 24*d^2*e*x - 6*d
*e^2*x^2 + e^3*x^3) + b^4*(128*d^4 + 192*d^3*e*x + 48*d^2*e^2*x^2 - 8*d*e^3
*x^3 + 3*e^4*x^4)))/(15*e^5*(a + b*x)*(d + e*x)^(3/2))
```

fricas [A] time = 0.78, size = 203, normalized size = 0.78

$$\frac{2\left(3\,b^4e^4x^4+128\,b^4d^4-320\,ab^3d^3e+240\,a^2b^2d^2e^2-40\,a^3bde^3-5\,a^4e^4-4\left(2\,b^4de^3-5\,ab^3e^4\right)x^3+6\left(8\,b^4d^2e^2\right.\right.}{15\left(e^7x^2+2\,de^6x+d^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(3*b^4*e^4*x^4 + 128*b^4*d^4 - 320*a*b^3*d^3*e + 240*a^2*b^2*d^2*e^2 -
 40*a^3*b*d*e^3 - 5*a^4*e^4 - 4*(2*b^4*d*e^3 - 5*a*b^3*e^4)*x^3 + 6*(8*b^4*
d^2*e^2 - 20*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 12*(16*b^4*d^3*e - 40*a*b^
3*d^2*e^2 + 30*a^2*b^2*d*e^3 - 5*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^7*x^2 + 2*d
*e^6*x + d^2*e^5)
```

giac [A] time = 0.26, size = 319, normalized size = 1.23

$$\frac{2}{15}\left(3\,(xe+d)^{\frac{5}{2}}b^4e^{20}\mathrm{sgn}\left(bx+a\right)-20\,(xe+d)^{\frac{3}{2}}b^4de^{20}\mathrm{sgn}\left(bx+a\right)+90\,\sqrt{xe+d}\,b^4d^2e^{20}\mathrm{sgn}\left(bx+a\right)+20\,(xe\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/15*(3*(x*e + d)^(5/2)*b^4*e^20*sgn(b*x + a) - 20*(x*e + d)^(3/2)*b^4*d*e^
20*sgn(b*x + a) + 90*sqrt(x*e + d)*b^4*d^2*e^20*sgn(b*x + a) + 20*(x*e + d)
^(3/2)*a*b^3*e^21*sgn(b*x + a) - 180*sqrt(x*e + d)*a*b^3*d*e^21*sgn(b*x + a
) + 90*sqrt(x*e + d)*a^2*b^2*e^22*sgn(b*x + a))*e^(-25) + 2/3*(12*(x*e + d)
*b^4*d^3*sgn(b*x + a) - b^4*d^4*sgn(b*x + a) - 36*(x*e + d)*a*b^3*d^2*e*sgn
(b*x + a) + 4*a*b^3*d^3*e*sgn(b*x + a) + 36*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x
 + a) - 6*a^2*b^2*d^2*e^2*sgn(b*x + a) - 12*(x*e + d)*a^3*b*e^3*sgn(b*x + a
) + 4*a^3*b*d*e^3*sgn(b*x + a) - a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(3/
2)
```

maple [A]   time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2(-3b^4e^4x^4-20ab^3e^4x^3+8b^4de^3x^3-90a^2b^2e^4x^2+120ab^3de^3x^2-48b^4d^2e^2x^2+60a^3be^4x-360a^2b^2de^3x+}{15(ex+d)^{\frac{3}{2}}(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15/(e*x+d)^(3/2)*(-3*b^4*e^4*x^4-20*a*b^3*e^4*x^3+8*b^4*d*e^3*x^3-90*a^2
*b^2*e^4*x^2+120*a*b^3*d*e^3*x^2-48*b^4*d^2*e^2*x^2+60*a^3*b*e^4*x-360*a^2*
b^2*d*e^3*x+480*a*b^3*d^2*e^2*x-192*b^4*d^3*e*x+5*a^4*e^4+40*a^3*b*d*e^3-24
0*a^2*b^2*d^2*e^2+320*a*b^3*d^3*e-128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [A]   time = 0.73, size = 304, normalized size = 1.17

$$\frac{2(b^3e^3x^3-16b^3d^3+24ab^2d^2e-6a^2bde^2-a^3e^3-3(2b^3de^2-3ab^2e^3)x^2-3(8b^3d^2e-12ab^2de^2+3a^2be^3)x)a}{3(e^5x+de^4)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/3*(b^3*e^3*x^3 - 16*b^3*d^3 + 24*a*b^2*d^2*e - 6*a^2*b*d*e^2 - a^3*e^3 -
3*(2*b^3*d*e^2 - 3*a*b^2*e^3)*x^2 - 3*(8*b^3*d^2*e - 12*a*b^2*d*e^2 + 3*a^2
*b*e^3)*x)*a/((e^5*x + d*e^4)*sqrt(e*x + d)) + 2/15*(3*b^3*e^4*x^4 + 128*b^
3*d^4 - 240*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 - 10*a^3*d*e^3 - (8*b^3*d*e^3 -
 15*a*b^2*e^4)*x^3 + 3*(16*b^3*d^2*e^2 - 30*a*b^2*d*e^3 + 15*a^2*b*e^4)*x^2
 + 3*(64*b^3*d^3*e - 120*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 - 5*a^3*e^4)*x)*b/(
(e^6*x + d*e^5)*sqrt(e*x + d))
```

mupad [B]   time = 2.89, size = 254, normalized size = 0.98

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,(\frac{2\,b^3\,x^4}{5\,e^2}-\frac{10\,a^4\,e^4+80\,a^3\,b\,d\,e^3-480\,a^2\,b^2\,d^2\,e^2+640\,a\,b^3\,d^3\,e-256\,b^4\,d^4}{15\,b\,e^6}-\frac{x\,(120\,a^3\,b\,e^4-720\,a^2\,b^2\,d\,e^3+960\,a\,b^3\,d^2\,e^2-3}{15\,b\,e^6}}{x^2\,\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\,(15\,a\,e^6+15\,b\,d\,e^5)\,\sqrt{d+e\,x}}{15\,b\,e^6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^3*x^4)/(5*e^2) - (10*a^4*e^4 - 256*b
^4*d^4 - 480*a^2*b^2*d^2*e^2 + 640*a*b^3*d^3*e + 80*a^3*b*d*e^3)/(15*b*e^6)
 - (x*(120*a^3*b*e^4 - 384*b^4*d^3*e + 960*a*b^3*d^2*e^2 - 720*a^2*b^2*d*e^
3))/(15*b*e^6) + (8*b^2*x^3*(5*a*e - 2*b*d))/(15*e^3) + (4*b*x^2*(15*a^2*e^
2 + 8*b^2*d^2 - 20*a*b*d*e))/(5*e^4)))/(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x
)^(1/2))/(b*e) + (x*(15*a*e^6 + 15*b*d*e^5)*(d + e*x)^(1/2))/(15*b*e^6))
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(5/2),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(5/2), x)
```

3.2106 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=260

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)\sqrt{d+ex}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{2b^4\sqrt{a^2+}}{}$$

```
[Out] -2/5*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(5/2)+8/3*b*(-a*e+b
*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(3/2)+2/3*b^4*(e*x+d)^(3/2)*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)-12*b^2*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)/(e*x+d)^(1/2)-8*b^3*(-a*e+b*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a
)
```

Rubi [A] time = 0.10, antiderivative size = 260, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^5(a+bx)}-\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^5(a+bx)}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)\sqrt{d+ex}}+$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)
^(5/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^5*(a + b*x
)*(d + e*x)^(3/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^5*(a + b*x)*Sqrt[d + e*x]) - (8*b^3*(b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(e^5*(a + b*x)) + (2*b^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])/(3*e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{7/2}}\,dx}{b^2\left(ab+b^2x\right)}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{7/2}}\,dx}{ab+b^2x}\\ &= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{7/2}}-\frac{4b(bd-ae)^3}{e^4(d+ex)^{5/2}}+\frac{6b^2(bd-ae)^2}{e^4(d+ex)^{3/2}}-\frac{4b^3(bd-ae)}{e^4\sqrt{d+ex}}\right.}{ab+b^2x}\\ &= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}}-\end{aligned}$$

Mathematica [A] time = 0.08, size = 172, normalized size = 0.66

$$-\frac{2\sqrt{(a+bx)^2}\left(3a^4e^4+4a^3be^3(2d+5ex)+6a^2b^2e^2\left(8d^2+20dex+15e^2x^2\right)-12ab^3e\left(16d^3+40d^2ex+30de^2x\right.\right.}{15e^5(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(3*a^4*e^4 + 4*a^3*b*e^3*(2*d + 5*e*x) + 6*a^2*b^2*e^
2*(8*d^2 + 20*d*e*x + 15*e^2*x^2) - 12*a*b^3*e*(16*d^3 + 40*d^2*e*x + 30*d*
e^2*x^2 + 5*e^3*x^3) + b^4*(128*d^4 + 320*d^3*e*x + 240*d^2*e^2*x^2 + 40*d*
e^3*x^3 - 5*e^4*x^4)))/(15*e^5*(a + b*x)*(d + e*x)^(5/2))
```

fricas [A] time = 0.87, size = 213, normalized size = 0.82

$$\frac{2\left(5\,b^4e^4x^4-128\,b^4d^4+192\,ab^3d^3e-48\,a^2b^2d^2e^2-8\,a^3bde^3-3\,a^4e^4-20\left(2\,b^4de^3-3\,ab^3e^4\right)x^3-30\left(8\,b^4d^2e^2\right.\right.}{15\left(e^8x^3+3\,de^7x^2+3\,d^2e^6x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/15*(5*b^4*e^4*x^4 - 128*b^4*d^4 + 192*a*b^3*d^3*e - 48*a^2*b^2*d^2*e^2 -
8*a^3*b*d*e^3 - 3*a^4*e^4 - 20*(2*b^4*d*e^3 - 3*a*b^3*e^4)*x^3 - 30*(8*b^4*
d^2*e^2 - 12*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 - 20*(16*b^4*d^3*e - 24*a*b^3
*d^2*e^2 + 6*a^2*b^2*d*e^3 + a^3*b*e^4)*x)*sqrt(e*x + d)/(e^8*x^3 + 3*d*e^7
*x^2 + 3*d^2*e^6*x + d^3*e^5)
```

giac [A] time = 0.22, size = 316, normalized size = 1.22

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^4e^{10}\mathrm{sgn}\left(bx+a\right)-12\sqrt{xe+d}\,b^4de^{10}\mathrm{sgn}\left(bx+a\right)+12\sqrt{xe+d}\,ab^3e^{11}\mathrm{sgn}\left(bx+a\right)\right)e^{(-15)}-\frac{2\left(90\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^4*e^10*sgn(b*x + a) - 12*sqrt(x*e + d)*b^4*d*e^10*sg
n(b*x + a) + 12*sqrt(x*e + d)*a*b^3*e^11*sgn(b*x + a))*e^(-15) - 2/15*(90*(
x*e + d)^2*b^4*d^2*sgn(b*x + a) - 20*(x*e + d)*b^4*d^3*sgn(b*x + a) + 3*b^4
*d^4*sgn(b*x + a) - 180*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 60*(x*e + d)*a
*b^3*d^2*e*sgn(b*x + a) - 12*a*b^3*d^3*e*sgn(b*x + a) + 90*(x*e + d)^2*a^2*
b^2*e^2*sgn(b*x + a) - 60*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 18*a^2*b^2
*d^2*e^2*sgn(b*x + a) + 20*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 12*a^3*b*d*e^
3*sgn(b*x + a) + 3*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2\left(-5b^4e^4x^4-60a\,b^3e^4x^3+40b^4d\,e^3x^3+90a^2b^2e^4x^2-360a\,b^3d\,e^3x^2+240b^4d^2e^2x^2+20a^3b\,e^4x+120a^2b^2d\,e^3x\right.}{15\,(ex+d)^{\frac{5}{2}}\,(bx+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/15/(e*x+d)^(5/2)*(-5*b^4*e^4*x^4-60*a*b^3*e^4*x^3+40*b^4*d*e^3*x^3+90*a^
2*b^2*e^4*x^2-360*a*b^3*d*e^3*x^2+240*b^4*d^2*e^2*x^2+20*a^3*b*e^4*x+120*a^
2*b^2*d*e^3*x-480*a*b^3*d^2*e^2*x+320*b^4*d^3*e*x+3*a^4*e^4+8*a^3*b*d*e^3+4
8*a^2*b^2*d^2*e^2-192*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+a
)^3
```

maxima [A] time = 0.69, size = 326, normalized size = 1.25

$$\frac{2\left(5\,b^3e^3x^3+16\,b^3d^3-8\,ab^2d^2e-2\,a^2bde^2-a^3e^3+15\left(2\,b^3de^2-ab^2e^3\right)x^2+5\left(8\,b^3d^2e-4\,ab^2de^2-a^2be^3\right)x\right)a}{5\left(e^6x^2+2\,de^5x+d^2e^4\right)\sqrt{ex+d}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/5*(5*b^3*e^3*x^3 + 16*b^3*d^3 - 8*a*b^2*d^2*e - 2*a^2*b*d*e^2 - a^3*e^3 +
 15*(2*b^3*d*e^2 - a*b^2*e^3)*x^2 + 5*(8*b^3*d^2*e - 4*a*b^2*d*e^2 - a^2*b*
e^3)*x)*a/((e^6*x^2 + 2*d*e^5*x + d^2*e^4)*sqrt(e*x + d)) + 2/15*(5*b^3*e^4
*x^4 - 128*b^3*d^4 + 144*a*b^2*d^3*e - 24*a^2*b*d^2*e^2 - 2*a^3*d*e^3 - 5*(
8*b^3*d*e^3 - 9*a*b^2*e^4)*x^3 - 15*(16*b^3*d^2*e^2 - 18*a*b^2*d*e^3 + 3*a^
2*b*e^4)*x^2 - 5*(64*b^3*d^3*e - 72*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + a^3*e^
4)*x)*b/((e^7*x^2 + 2*d*e^6*x + d^2*e^5)*sqrt(e*x + d))
```

mupad [B] time = 2.98, size = 283, normalized size = 1.09

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{6\,a^4\,e^4+16\,a^3\,b\,d\,e^3+96\,a^2\,b^2\,d^2\,e^2-384\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{15\,b\,e^7}-\frac{2\,b^3\,x^4}{3\,e^3}+\frac{x\left(40\,a^3\,b\,e^4+240\,a^2\,b^2\,d\,e^3-960\,a\,b^3\,d^2\,e^2+64\right.}{15\,b\,e^7}\right.}{x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\left(15\,a\,e^7+30\,b\,d\,e^6\right)\sqrt{d+e\,x}}{15\,b\,e^7}+\frac{d\,x\,(2\,a\,e+b\,d)\,\sqrt{}}{b\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(7/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6*a^4*e^4 + 256*b^4*d^4 + 96*a^2*b^2*d^
2*e^2 - 384*a*b^3*d^3*e + 16*a^3*b*d*e^3)/(15*b*e^7) - (2*b^3*x^4)/(3*e^3)
+ (x*(40*a^3*b*e^4 + 640*b^4*d^3*e - 960*a*b^3*d^2*e^2 + 240*a^2*b^2*d*e^3)
)/(15*b*e^7) - (8*b^2*x^3*(3*a*e - 2*b*d))/(3*e^4) + (4*b*x^2*(3*a^2*e^2 +
8*b^2*d^2 - 12*a*b*d*e))/e^5))/(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(1/2
))/(b*e^2) + (x^2*(15*a*e^7 + 30*b*d*e^6)*(d + e*x)^(1/2))/(15*b*e^7) + (d*
x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^{\frac{3}{2}}}{(d+ex)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(7/2),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**(3/2)/(d + e*x)**(7/2), x)
```

3.2107 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=258

$$-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^{3/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{5e^5(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^5(a+bx)(d+ex)^{7/2}}+2b^4\sqrt{a^2+}$$

```
[Out] -2/7*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(7/2)+8/5*b*(-a*e+b
*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(5/2)-4*b^2*(-a*e+b*d)^2*((b*x+
a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(3/2)+8*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^
5/(b*x+a)/(e*x+d)^(1/2)+2*b^4*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^5/(b*x+a)
```

Rubi **[A]** time = 0.10, antiderivative size = 258, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^5(a+bx)}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^5(a+bx)\sqrt{d+ex}}-\frac{4b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^5(a+bx)(d+ex)^{3/2}}+\frac{8b\sqrt{a^2+2}}{5e^5(a}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x)*(d + e*x)
^(7/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^5*(a + b*x
)*(d + e*x)^(5/2)) - (4*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e
^5*(a + b*x)*(d + e*x)^(3/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x]) + (2*b^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])/(e^5*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{9/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{9/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{9/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{7/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{5/2}} - \frac{4b^3(bd-ae)}{e^4(d+ex)^{3/2}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^{7/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{5e^5(a+bx)(d+ex)^{5/2}} -$$

Mathematica [**A**] time = 0.09, size = 173, normalized size = 0.67

$$-\frac{2\sqrt{(a+bx)^2}\left(5a^4e^4+4a^3be^3(2d+7ex)+2a^2b^2e^2\left(8d^2+28dex+35e^2x^2\right)+4ab^3e\left(16d^3+56d^2ex+70de^2x^2\right.\right.}{35e^5(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(5*a^4*e^4 + 4*a^3*b*e^3*(2*d + 7*e*x) + 2*a^2*b^2*e^
2*(8*d^2 + 28*d*e*x + 35*e^2*x^2) + 4*a*b^3*e*(16*d^3 + 56*d^2*e*x + 70*d*e
^2*x^2 + 35*e^3*x^3) - b^4*(128*d^4 + 448*d^3*e*x + 560*d^2*e^2*x^2 + 280*d
*e^3*x^3 + 35*e^4*x^4)))/(35*e^5*(a + b*x)*(d + e*x)^(7/2))
```

fricas [**A**] time = 0.95, size = 225, normalized size = 0.87

$$\frac{2\left(35\,b^4e^4x^4+128\,b^4d^4-64\,ab^3d^3e-16\,a^2b^2d^2e^2-8\,a^3bde^3-5\,a^4e^4+140\left(2\,b^4de^3-ab^3e^4\right)x^3+70\left(8\,b^4d^2e^2\right.\right.}{35\left(e^9x^4+4\,de^8x^3+6\,d^2e^7x^2+4\,d^3e^6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(35*b^4*e^4*x^4 + 128*b^4*d^4 - 64*a*b^3*d^3*e - 16*a^2*b^2*d^2*e^2 -
8*a^3*b*d*e^3 - 5*a^4*e^4 + 140*(2*b^4*d*e^3 - a*b^3*e^4)*x^3 + 70*(8*b^4*d
^2*e^2 - 4*a*b^3*d*e^3 - a^2*b^2*e^4)*x^2 + 28*(16*b^4*d^3*e - 8*a*b^3*d^2*
e^2 - 2*a^2*b^2*d*e^3 - a^3*b*e^4)*x)*sqrt(e*x + d)/(e^9*x^4 + 4*d*e^8*x^3
+ 6*d^2*e^7*x^2 + 4*d^3*e^6*x + d^4*e^5)
```

giac [**A**] time = 0.23, size = 310, normalized size = 1.20

$$2\,\sqrt{xe+d}\,b^4e^{(-5)}\mathrm{sgn}\,(bx+a)+\frac{2\left(140\,(xe+d)^3b^4d\mathrm{sgn}\,(bx+a)-70\,(xe+d)^2b^4d^2\mathrm{sgn}\,(bx+a)+28\,(xe+d)b^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="g
iac")
```

```
[Out] 2*sqrt(x*e + d)*b^4*e^(-5)*sgn(b*x + a) + 2/35*(140*(x*e + d)^3*b^4*d*sgn(b
*x + a) - 70*(x*e + d)^2*b^4*d^2*sgn(b*x + a) + 28*(x*e + d)*b^4*d^3*sgn(b*
x + a) - 5*b^4*d^4*sgn(b*x + a) - 140*(x*e + d)^3*a*b^3*e*sgn(b*x + a) + 14
0*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) - 84*(x*e + d)*a*b^3*d^2*e*sgn(b*x + a
) + 20*a*b^3*d^3*e*sgn(b*x + a) - 70*(x*e + d)^2*a^2*b^2*e^2*sgn(b*x + a) +
 84*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) - 30*a^2*b^2*d^2*e^2*sgn(b*x + a)
- 28*(x*e + d)*a^3*b*e^3*sgn(b*x + a) + 20*a^3*b*d*e^3*sgn(b*x + a) - 5*a^4
*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(7/2)
```

maple [A] time = 0.05, size = 202, normalized size = 0.78

$$-\frac{2(-35b^4e^4x^4+140a\,b^3e^4x^3-280b^4d\,e^3x^3+70a^2b^2e^4x^2+280a\,b^3d\,e^3x^2-560b^4d^2e^2x^2+28a^3b\,e^4x+56a^2b^2d\,e}{35\,(ex+d)^{\frac{7}{2}}\,(bx}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-35*b^4*e^4*x^4+140*a*b^3*e^4*x^3-280*b^4*d*e^3*x^3+70
*a^2*b^2*e^4*x^2+280*a*b^3*d*e^3*x^2-560*b^4*d^2*e^2*x^2+28*a^3*b*e^4*x+56*
a^2*b^2*d*e^3*x+224*a*b^3*d^2*e^2*x-448*b^4*d^3*e*x+5*a^4*e^4+8*a^3*b*d*e^3
+16*a^2*b^2*d^2*e^2+64*a*b^3*d^3*e-128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^5/(b*x+
a)^3
```

maxima [A] time = 0.73, size = 348, normalized size = 1.35

$$-\frac{2\,(35\,b^3e^3x^3+16\,b^3d^3+8\,ab^2d^2e+6\,a^2bde^2+5\,a^3e^3+35\,(2\,b^3de^2+ab^2e^3)x^2+7\,(8\,b^3d^2e+4\,ab^2de^2+3\,a^2be^3}{35\,(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(9/2),x, algorithm="m
axima")
```

```
[Out] -2/35*(35*b^3*e^3*x^3 + 16*b^3*d^3 + 8*a*b^2*d^2*e + 6*a^2*b*d*e^2 + 5*a^3*
e^3 + 35*(2*b^3*d*e^2 + a*b^2*e^3)*x^2 + 7*(8*b^3*d^2*e + 4*a*b^2*d*e^2 + 3
*a^2*b*e^3)*x)*a/((e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)*sqrt(e*x
+ d)) + 2/35*(35*b^3*e^4*x^4 + 128*b^3*d^4 - 48*a*b^2*d^3*e - 8*a^2*b*d^2*e
^2 - 2*a^3*d*e^3 + 35*(8*b^3*d*e^3 - 3*a*b^2*e^4)*x^3 + 35*(16*b^3*d^2*e^2
- 6*a*b^2*d*e^3 - a^2*b*e^4)*x^2 + 7*(64*b^3*d^3*e - 24*a*b^2*d^2*e^2 - 4*a
^2*b*d*e^3 - a^3*e^4)*x)*b/((e^8*x^3 + 3*d*e^7*x^2 + 3*d^2*e^6*x + d^3*e^5)
*sqrt(e*x + d))
```

mupad [B] time = 3.00, size = 309, normalized size = 1.20

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{10\,a^4\,e^4+16\,a^3\,b\,d\,e^3+32\,a^2\,b^2\,d^2\,e^2+128\,a\,b^3\,d^3\,e-256\,b^4\,d^4}{35\,b\,e^8}-\frac{2\,b^3\,x^4}{e^4}+\frac{x\,(56\,a^3\,b\,e^4+112\,a^2\,b^2\,d\,e^3+448\,a\,b^3\,d^2\,e^2-8}{35\,b\,e^8}\right.}{x^4\,\sqrt{d+e\,x}+\frac{a\,d^3\,\sqrt{d+e\,x}}{b\,e^3}+\frac{x^3\,\left(35\,a\,e^8+105\,b\,d\,e^7\right)\,\sqrt{d+e\,x}}{35\,b\,e^8}+\frac{3\,d\,x^2\,\left(a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+d^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(9/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((10*a^4*e^4 - 256*b^4*d^4 + 32*a^2*b^2*d
^2*e^2 + 128*a*b^3*d^3*e + 16*a^3*b*d*e^3)/(35*b*e^8) - (2*b^3*x^4)/e^4 + (
x*(56*a^3*b*e^4 - 896*b^4*d^3*e + 448*a*b^3*d^2*e^2 + 112*a^2*b^2*d*e^3))/(
35*b*e^8) + (8*b^2*x^3*(a*e - 2*b*d))/e^5 + (4*b*x^2*(a^2*e^2 - 8*b^2*d^2 +
 4*a*b*d*e))/e^6))/(x^4*(d + e*x)^(1/2) + (a*d^3*(d + e*x)^(1/2))/(b*e^3) +
 (x^3*(35*a*e^8 + 105*b*d*e^7)*(d + e*x)^(1/2))/(35*b*e^8) + (3*d*x^2*(a*e
+ b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^2*x*(3*a*e + b*d)*(d + e*x)^(1/2))/(b*
e^3))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(9/2),x)
```

```
[Out] Timed out
```

3.2108 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=262

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{7e^5(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{9e^5(a+bx)(d+ex)^{9/2}}-\frac{2b^4\sqrt{a^2+}}{e^5(a+}$$

```
[Out] -2/9*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(9/2)+8/7*b*(-a*e+b
*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(7/2)-12/5*b^2*(-a*e+b*d)^2*((b
*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(5/2)+8/3*b^3*(-a*e+b*d)*((b*x+a)^2)^(1/
2)/e^5/(b*x+a)/(e*x+d)^(3/2)-2*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(1
/2)
```

Rubi [A] time = 0.10, antiderivative size = 262, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}}{e^5(a+bx)\sqrt{d+ex}}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{3e^5(a+bx)(d+ex)^{3/2}}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{5e^5(a+bx)(d+ex)^{5/2}}+\frac{8b\sqrt{a^2+2abx+}}{7e^5(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b*x)*(d + e*x)
^(9/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^5*(a + b*x
)*(d + e*x)^(7/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
5*e^5*(a + b*x)*(d + e*x)^(5/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2)) - (2*b^4*Sqrt[a^2 + 2*a*b*x + b
^2*x^2])/(e^5*(a + b*x)*Sqrt[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{11/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{11/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{11/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{9/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{7/2}} - \frac{4b^3(bd-ae}{e^4(d+ex)^{5}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^{9/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{7e^5(a+bx)(d+ex)^{7/2}} -$$

Mathematica [A] time = 0.08, size = 172, normalized size = 0.66

$$-\frac{2\sqrt{(a+bx)^2}\left(35a^4e^4+20a^3be^3(2d+9ex)+6a^2b^2e^2\left(8d^2+36dex+63e^2x^2\right)+4ab^3e\left(16d^3+72d^2ex+126d\right.\right.}{315e^5(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(35*a^4*e^4 + 20*a^3*b*e^3*(2*d + 9*e*x) + 6*a^2*b^2*
e^2*(8*d^2 + 36*d*e*x + 63*e^2*x^2) + 4*a*b^3*e*(16*d^3 + 72*d^2*e*x + 126*
d*e^2*x^2 + 105*e^3*x^3) + b^4*(128*d^4 + 576*d^3*e*x + 1008*d^2*e^2*x^2 +
840*d*e^3*x^3 + 315*e^4*x^4)))/(315*e^5*(a + b*x)*(d + e*x)^(9/2))
```

fricas [A] time = 0.88, size = 235, normalized size = 0.90

$$-\frac{2\left(315\,b^4e^4x^4+128\,b^4d^4+64\,ab^3d^3e+48\,a^2b^2d^2e^2+40\,a^3bde^3+35\,a^4e^4+420\left(2\,b^4de^3+ab^3e^4\right)x^3+126\left(8\right.\right.}{315\left(e^{10}x^5+5\,de^9x^4+10\,d^2e^8x^3+10\,d\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="
fricas")
```

```
[Out] -2/315*(315*b^4*e^4*x^4 + 128*b^4*d^4 + 64*a*b^3*d^3*e + 48*a^2*b^2*d^2*e^2
 + 40*a^3*b*d*e^3 + 35*a^4*e^4 + 420*(2*b^4*d*e^3 + a*b^3*e^4)*x^3 + 126*(8
*b^4*d^2*e^2 + 4*a*b^3*d*e^3 + 3*a^2*b^2*e^4)*x^2 + 36*(16*b^4*d^3*e + 8*a*
b^3*d^2*e^2 + 6*a^2*b^2*d*e^3 + 5*a^3*b*e^4)*x)*sqrt(e*x + d)/(e^10*x^5 + 5
*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2 + 5*d^4*e^6*x + d^5*e^5)
```

giac [A] time = 0.23, size = 307, normalized size = 1.17

$$-\frac{2\left(315\,(xe+d)^4b^4\mathrm{sgn}\,(bx+a)-420\,(xe+d)^3b^4d\mathrm{sgn}\,(bx+a)+378\,(xe+d)^2b^4d^2\mathrm{sgn}\,(bx+a)-180\,(xe+d\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="
giac")
```

```
[Out] -2/315*(315*(x*e + d)^4*b^4*sgn(b*x + a) - 420*(x*e + d)^3*b^4*d*sgn(b*x +
a) + 378*(x*e + d)^2*b^4*d^2*sgn(b*x + a) - 180*(x*e + d)*b^4*d^3*sgn(b*x +
 a) + 35*b^4*d^4*sgn(b*x + a) + 420*(x*e + d)^3*a*b^3*e*sgn(b*x + a) - 756*
(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 540*(x*e + d)*a*b^3*d^2*e*sgn(b*x + a)
```

```
 - 140*a*b^3*d^3*e*sgn(b*x + a) + 378*(x*e + d)^2*a^2*b^2*e^2*sgn(b*x + a)
- 540*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 210*a^2*b^2*d^2*e^2*sgn(b*x +
a) + 180*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 140*a^3*b*d*e^3*sgn(b*x + a) +
35*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(9/2)
```

maple [**A**] time = 0.05, size = 202, normalized size = 0.77

$$-\frac{2\left(315b^4e^4x^4+420a\,b^3e^4x^3+840b^4d\,e^3x^3+378a^2b^2e^4x^2+504a\,b^3d\,e^3x^2+1008b^4d^2e^2x^2+180a^3b\,e^4x+216a^2}{315\left(ex+d\right)^{\frac{9}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x)
```

```
[Out] -2/315/(e*x+d)^(9/2)*(315*b^4*e^4*x^4+420*a*b^3*e^4*x^3+840*b^4*d*e^3*x^3+3
78*a^2*b^2*e^4*x^2+504*a*b^3*d*e^3*x^2+1008*b^4*d^2*e^2*x^2+180*a^3*b*e^4*x
+216*a^2*b^2*d*e^3*x+288*a*b^3*d^2*e^2*x+576*b^4*d^3*e*x+35*a^4*e^4+40*a^3*
b*d*e^3+48*a^2*b^2*d^2*e^2+64*a*b^3*d^3*e+128*b^4*d^4)*((b*x+a)^2)^(3/2)/e^
5/(b*x+a)^3
```

maxima [**A**] time = 0.78, size = 371, normalized size = 1.42

$$-\frac{2\left(105\,b^3e^3x^3+16\,b^3d^3+24\,ab^2d^2e+30\,a^2bde^2+35\,a^3e^3+63\left(2\,b^3de^2+3\,ab^2e^3\right)x^2+9\left(8\,b^3d^2e+12\,ab^2de^2+\right.\right.}{315\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)\sqrt{ex+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(11/2),x, algorithm="
maxima")
```

```
[Out] -2/315*(105*b^3*e^3*x^3 + 16*b^3*d^3 + 24*a*b^2*d^2*e + 30*a^2*b*d*e^2 + 35
*a^3*e^3 + 63*(2*b^3*d*e^2 + 3*a*b^2*e^3)*x^2 + 9*(8*b^3*d^2*e + 12*a*b^2*d
*e^2 + 15*a^2*b*e^3)*x)*a/((e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 + 4*d^3*e
^5*x + d^4*e^4)*sqrt(e*x + d)) - 2/315*(315*b^3*e^4*x^4 + 128*b^3*d^4 + 48*
a*b^2*d^3*e + 24*a^2*b*d^2*e^2 + 10*a^3*d*e^3 + 105*(8*b^3*d*e^3 + 3*a*b^2*
e^4)*x^3 + 63*(16*b^3*d^2*e^2 + 6*a*b^2*d*e^3 + 3*a^2*b*e^4)*x^2 + 9*(64*b^
3*d^3*e + 24*a*b^2*d^2*e^2 + 12*a^2*b*d*e^3 + 5*a^3*e^4)*x)*b/((e^9*x^4 + 4
*d*e^8*x^3 + 6*d^2*e^7*x^2 + 4*d^3*e^6*x + d^4*e^5)*sqrt(e*x + d))
```

mupad [**B**] time = 2.93, size = 333, normalized size = 1.27

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{8\,x\,\left(5\,a^3\,e^3+6\,a^2\,b\,d\,e^2+8\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{35\,e^8}+\frac{2\,b^3\,x^4}{e^5}+\frac{70\,a^4\,e^4+80\,a^3\,b\,d\,e^3+96\,a^2\,b^2\,d^2\,e^2+128\,a\,b^3\,d^3\,e+256\,b^4\,d^4}{315\,b\,e^9}\right.}{x^5\,\sqrt{d+e\,x}+\frac{a\,d^4\,\sqrt{d+e\,x}}{b\,e^4}+\frac{x^4\,\left(315\,a\,e^9+1260\,b\,d\,e^8\right)\,\sqrt{d+e\,x}}{315\,b\,e^9}+\frac{2\,d\,x^3\,\left(2\,a\,e+3\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}+\frac{d^3\,x\,\left(4\,a\,e+b\,d\right)\,\sqrt{d+e}}{b\,e^4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(11/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((8*x*(5*a^3*e^3 + 16*b^3*d^3 + 8*a*b^2*d
^2*e + 6*a^2*b*d*e^2))/(35*e^8) + (2*b^3*x^4)/e^5 + (70*a^4*e^4 + 256*b^4*d
^4 + 96*a^2*b^2*d^2*e^2 + 128*a*b^3*d^3*e + 80*a^3*b*d*e^3)/(315*b*e^9) + (
8*b^2*x^3*(a*e + 2*b*d))/(3*e^6) + (4*b*x^2*(3*a^2*e^2 + 8*b^2*d^2 + 4*a*b*
d*e))/(5*e^7)))/(x^5*(d + e*x)^(1/2) + (a*d^4*(d + e*x)^(1/2))/(b*e^4) + (x
^4*(315*a*e^9 + 1260*b*d*e^8)*(d + e*x)^(1/2))/(315*b*e^9) + (2*d*x^3*(2*a*
e + 3*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^3*x*(4*a*e + b*d)*(d + e*x)^(1/2))
/(b*e^4) + (2*d^2*x^2*(3*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(11/2),x)
```

```
[Out] Timed out
```

3.2109 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^{7/2}}+\frac{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}{9e^5(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^5(a+bx)(d+ex)^{11/2}}-\frac{2b^4\sqrt{a^2+}}{3e^5(a+}$$

```
[Out] -2/11*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(11/2)+8/9*b*(-a*e
+b*d)^3*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(9/2)-12/7*b^2*(-a*e+b*d)^2*(
(b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d)^(7/2)+8/5*b^3*(-a*e+b*d)*((b*x+a)^2)^(
1/2)/e^5/(b*x+a)/(e*x+d)^(5/2)-2/3*b^4*((b*x+a)^2)^(1/2)/e^5/(b*x+a)/(e*x+d
)^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$-\frac{2b^4\sqrt{a^2+2abx+b^2x^2}}{3e^5(a+bx)(d+ex)^{3/2}}+\frac{8b^3\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^5(a+bx)(d+ex)^{5/2}}-\frac{12b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^5(a+bx)(d+ex)^{7/2}}+\frac{8b\sqrt{a^2+2abx+}}{9e^5(a+bx)(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^5*(a + b*x)*(d + e*x
)^(11/2)) + (8*b*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^5*(a + b
*x)*(d + e*x)^(9/2)) - (12*b^2*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^5*(a + b*x)*(d + e*x)^(7/2)) + (8*b^3*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(5*e^5*(a + b*x)*(d + e*x)^(5/2)) - (2*b^4*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(3*e^5*(a + b*x)*(d + e*x)^(3/2))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^3}{(d+ex)^{13/2}}\,dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^4}{(d+ex)^{13/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4}{e^4(d+ex)^{13/2}} - \frac{4b(bd-ae)^3}{e^4(d+ex)^{11/2}} + \frac{6b^2(bd-ae)^2}{e^4(d+ex)^{9/2}} - \frac{4b^3(bd-}{e^4(d+ex)}}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^4\sqrt{a^2+2abx+b^2x^2}}{11e^5(a+bx)(d+ex)^{11/2}} + \frac{8b(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}{9e^5(a+bx)(d+ex)^{9/2}} -$$

Mathematica [A] time = 0.09, size = 172, normalized size = 0.65

$$-\frac{2\sqrt{(a+bx)^2}\left(315a^4e^4+140a^3be^3(2d+11ex)+30a^2b^2e^2\left(8d^2+44dex+99e^2x^2\right)+12ab^3e\left(16d^3+88d^2ex+\right.\right.}{3465e^5(a+bx)(d+ex)^{11}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*Sqrt[(a + b*x)^2]*(315*a^4*e^4 + 140*a^3*b*e^3*(2*d + 11*e*x) + 30*a^2*
b^2*e^2*(8*d^2 + 44*d*e*x + 99*e^2*x^2) + 12*a*b^3*e*(16*d^3 + 88*d^2*e*x +
 198*d*e^2*x^2 + 231*e^3*x^3) + b^4*(128*d^4 + 704*d^3*e*x + 1584*d^2*e^2*x
^2 + 1848*d*e^3*x^3 + 1155*e^4*x^4)))/(3465*e^5*(a + b*x)*(d + e*x)^(11/2))
```

fricas [A] time = 0.82, size = 247, normalized size = 0.94

$$-\frac{2\left(1155\,b^4e^4x^4+128\,b^4d^4+192\,ab^3d^3e+240\,a^2b^2d^2e^2+280\,a^3bde^3+315\,a^4e^4+924\left(2\,b^4de^3+3\,ab^3e^4\right)x^3\right.}{3465\left(e^{11}x^6+6\,de^{10}x^5+15\,d^2e^9x^4+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
fricas")
```

```
[Out] -2/3465*(1155*b^4*e^4*x^4 + 128*b^4*d^4 + 192*a*b^3*d^3*e + 240*a^2*b^2*d^2
*e^2 + 280*a^3*b*d*e^3 + 315*a^4*e^4 + 924*(2*b^4*d*e^3 + 3*a*b^3*e^4)*x^3
+ 198*(8*b^4*d^2*e^2 + 12*a*b^3*d*e^3 + 15*a^2*b^2*e^4)*x^2 + 44*(16*b^4*d^
3*e + 24*a*b^3*d^2*e^2 + 30*a^2*b^2*d*e^3 + 35*a^3*b*e^4)*x)*sqrt(e*x + d)/
(e^11*x^6 + 6*d*e^10*x^5 + 15*d^2*e^9*x^4 + 20*d^3*e^8*x^3 + 15*d^4*e^7*x^2
 + 6*d^5*e^6*x + d^6*e^5)
```

giac [A] time = 0.24, size = 307, normalized size = 1.16

$$-\frac{2\left(1155\,(xe+d)^4b^4\mathrm{sgn}\,(bx+a)-2772\,(xe+d)^3b^4d\mathrm{sgn}\,(bx+a)+2970\,(xe+d)^2b^4d^2\mathrm{sgn}\,(bx+a)-1540\,(x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
giac")
```

```
[Out] -2/3465*(1155*(x*e + d)^4*b^4*sgn(b*x + a) - 2772*(x*e + d)^3*b^4*d*sgn(b*x
 + a) + 2970*(x*e + d)^2*b^4*d^2*sgn(b*x + a) - 1540*(x*e + d)*b^4*d^3*sgn(
b*x + a) + 315*b^4*d^4*sgn(b*x + a) + 2772*(x*e + d)^3*a*b^3*e*sgn(b*x + a)
```

```
 - 5940*(x*e + d)^2*a*b^3*d*e*sgn(b*x + a) + 4620*(x*e + d)*a*b^3*d^2*e*sgn
(b*x + a) - 1260*a*b^3*d^3*e*sgn(b*x + a) + 2970*(x*e + d)^2*a^2*b^2*e^2*sg
n(b*x + a) - 4620*(x*e + d)*a^2*b^2*d*e^2*sgn(b*x + a) + 1890*a^2*b^2*d^2*e
^2*sgn(b*x + a) + 1540*(x*e + d)*a^3*b*e^3*sgn(b*x + a) - 1260*a^3*b*d*e^3*
sgn(b*x + a) + 315*a^4*e^4*sgn(b*x + a))*e^(-5)/(x*e + d)^(11/2)
```

maple [A] time = 0.06, size = 202, normalized size = 0.77

$$-\frac{2 \left(1155 b^4 e^4 x^4 + 2772 a\, b^3 e^4 x^3 + 1848 b^4 d\, e^3 x^3 + 2970 a^2 b^2 e^4 x^2 + 2376 a\, b^3 d\, e^3 x^2 + 1584 b^4 d^2 e^2 x^2 + 1540 a^3 b\, e^4 x \right.}{3465 \left(e\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x)
```

```
[Out] -2/3465/(e*x+d)^(11/2)*(1155*b^4*e^4*x^4+2772*a*b^3*e^4*x^3+1848*b^4*d*e^3*
x^3+2970*a^2*b^2*e^4*x^2+2376*a*b^3*d*e^3*x^2+1584*b^4*d^2*e^2*x^2+1540*a^3
*b*e^4*x+1320*a^2*b^2*d*e^3*x+1056*a*b^3*d^2*e^2*x+704*b^4*d^3*e*x+315*a^4*
e^4+280*a^3*b*d*e^3+240*a^2*b^2*d^2*e^2+192*a*b^3*d^3*e+128*b^4*d^4)*((b*x+
a)^2)^(3/2)/e^5/(b*x+a)^3
```

maxima [B] time = 0.77, size = 393, normalized size = 1.49

$$-\frac{2 \left(231 \, b^3 e^3 x^3 + 16 \, b^3 d^3 + 40 \, a b^2 d^2 e + 70 \, a^2 b d e^2 + 105 \, a^3 e^3 + 99 \left(2 \, b^3 d e^2 + 5 \, a b^2 e^3\right) x^2 + 11 \left(8 \, b^3 d^2 e + 20 \, a b^2 d e^2 \right.\right.}{1155 \left(e^9 x^5 + 5 \, d e^8 x^4 + 10 \, d^2 e^7 x^3 + 10 \, d^3 e^6 x^2 + 5 \, d^4 e^5 x + d^5 e^4\right) \sqrt{e x + d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(13/2),x, algorithm="
maxima")
```

```
[Out] -2/1155*(231*b^3*e^3*x^3 + 16*b^3*d^3 + 40*a*b^2*d^2*e + 70*a^2*b*d*e^2 + 1
05*a^3*e^3 + 99*(2*b^3*d*e^2 + 5*a*b^2*e^3)*x^2 + 11*(8*b^3*d^2*e + 20*a*b^
2*d*e^2 + 35*a^2*b*e^3)*x)*a/((e^9*x^5 + 5*d*e^8*x^4 + 10*d^2*e^7*x^3 + 10*
d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)*sqrt(e*x + d)) - 2/3465*(1155*b^3*e^4*
x^4 + 128*b^3*d^4 + 144*a*b^2*d^3*e + 120*a^2*b*d^2*e^2 + 70*a^3*d*e^3 + 23
1*(8*b^3*d*e^3 + 9*a*b^2*e^4)*x^3 + 99*(16*b^3*d^2*e^2 + 18*a*b^2*d*e^3 + 1
5*a^2*b*e^4)*x^2 + 11*(64*b^3*d^3*e + 72*a*b^2*d^2*e^2 + 60*a^2*b*d*e^3 + 3
5*a^3*e^4)*x)*b/((e^10*x^5 + 5*d*e^9*x^4 + 10*d^2*e^8*x^3 + 10*d^3*e^7*x^2
+ 5*d^4*e^6*x + d^5*e^5)*sqrt(e*x + d))
```

mupad [B] time = 2.95, size = 353, normalized size = 1.34

$$-\frac{\sqrt{a^2 + 2\,a\,b\,x + b^2\,x^2}\,\left(\frac{8\,x\,\left(35\,a^3\,e^3+30\,a^2\,b\,d\,e^2+24\,a\,b^2\,d^2\,e+16\,b^3\,d^3\right)}{315\,e^9} + \frac{2\,b^3\,x^4}{3\,e^6} + \frac{630\,a^4\,e^4+560\,a^3\,b\,d\,e^3+480\,a^2\,b^2\,d^2\,e^2+384\,a\,b^3\,d^3\,e+25}{3465\,b\,e^{10}}\right.}{x^6\,\sqrt{d + e\,x} + \frac{a\,d^5\,\sqrt{d+e\,x}}{b\,e^5} + \frac{x^5\,\left(a\,e+5\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e} + \frac{5\,d\,x^4\,\left(a\,e+2\,b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2} + \frac{d^4\,x\,\left(5\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^5} + 10\,d^2\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2))/(d + e*x)^(13/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((8*x*(35*a^3*e^3 + 16*b^3*d^3 + 24*a*b^2
*d^2*e + 30*a^2*b*d*e^2))/(315*e^9) + (2*b^3*x^4)/(3*e^6) + (630*a^4*e^4 +
256*b^4*d^4 + 480*a^2*b^2*d^2*e^2 + 384*a*b^3*d^3*e + 560*a^3*b*d*e^3)/(346
5*b*e^10) + (8*b^2*x^3*(3*a*e + 2*b*d))/(15*e^7) + (4*b*x^2*(15*a^2*e^2 + 8
*b^2*d^2 + 12*a*b*d*e))/(35*e^8)))/(x^6*(d + e*x)^(1/2) + (a*d^5*(d + e*x)^
(1/2))/(b*e^5) + (x^5*(a*e + 5*b*d)*(d + e*x)^(1/2))/(b*e) + (5*d*x^4*(a*e
+ 2*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^4*x*(5*a*e + b*d)*(d + e*x)^(1/2))/(
b*e^5) + (10*d^2*x^3*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^2*(2*a
*e + b*d)*(d + e*x)^(1/2))/(b*e^4))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(13/2),x)
[Out] Timed out
```

3.2110 $\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=374

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)^4}{11e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^5}{3e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}\,(}{7e^7(a+}$$

```
[Out] 2/7*(-a*e+b*d)^6*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-4/3*b*(-a*e+b*
d)^5*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+30/11*b^2*(-a*e+b*d)^4*(e*
x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-40/13*b^3*(-a*e+b*d)^3*(e*x+d)^(1
3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2*b^4*(-a*e+b*d)^2*(e*x+d)^(15/2)*((b*x+
a)^2)^(1/2)/e^7/(b*x+a)-12/17*b^5*(-a*e+b*d)*(e*x+d)^(17/2)*((b*x+a)^2)^(1/
2)/e^7/(b*x+a)+2/19*b^6*(e*x+d)^(19/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.17, antiderivative size = 374, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{19/2}}{19e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}(bd-ae)}{17e^7(a+bx)}+\frac{2b^4\sqrt{a^2+2abx+b^2x^2}\,(d+ex)}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a +
 b*x)) - (4*b*(b*d - a*e)^5*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(3*e^7*(a + b*x)) + (30*b^2*(b*d - a*e)^4*(d + e*x)^(11/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(11*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(13/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) + (2*b^4*(b*d - a*e)^2*(d
 + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*
d - a*e)*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x))
 + (2*b^6*(d + e*x)^(19/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(19*e^7*(a + b*x)
)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\,\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^{5/2}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^{5/2}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^{5/2}}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{7/2}}{e^6}\right.}{}$$

$$= \frac{2(bd-ae)^6(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)} - \frac{4b(bd-ae)^5(d+}{3}$$

Mathematica [**A**] time = 0.20, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{7/2}\left(-342342b^5(d+ex)^5(bd-ae)+969969b^4(d+ex)^4(bd-ae)^2-1492260b^3(d+ex)^3(bd\right.}{969969e^7}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(7/2)*(138567*(b*d - a*e)^6 - 646646*b*(b*d
- a*e)^5*(d + e*x) + 1322685*b^2*(b*d - a*e)^4*(d + e*x)^2 - 1492260*b^3*(b
*d - a*e)^3*(d + e*x)^3 + 969969*b^4*(b*d - a*e)^2*(d + e*x)^4 - 342342*b^5
*(b*d - a*e)*(d + e*x)^5 + 51051*b^6*(d + e*x)^6))/(969969*e^7*(a + b*x))
```

fricas [**B**] time = 0.91, size = 635, normalized size = 1.70

$$\frac{2\left(51051\,b^6e^9x^9+1024\,b^6d^9-9728\,ab^5d^8e+41344\,a^2b^4d^7e^2-103360\,a^3b^3d^6e^3+167960\,a^4b^2d^5e^4-184756\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/969969*(51051*b^6*e^9*x^9 + 1024*b^6*d^9 - 9728*a*b^5*d^8*e + 41344*a^2*b
^4*d^7*e^2 - 103360*a^3*b^3*d^6*e^3 + 167960*a^4*b^2*d^5*e^4 - 184756*a^5*b
*d^4*e^5 + 138567*a^6*d^3*e^6 + 9009*(13*b^6*d*e^8 + 38*a*b^5*e^9)*x^8 + 30
03*(23*b^6*d^2*e^7 + 266*a*b^5*d*e^8 + 323*a^2*b^4*e^9)*x^7 + 231*(b^6*d^3*
e^6 + 2090*a*b^5*d^2*e^7 + 10013*a^2*b^4*d*e^8 + 6460*a^3*b^3*e^9)*x^6 - 63
*(4*b^6*d^4*e^5 - 38*a*b^5*d^3*e^6 - 22933*a^2*b^4*d^2*e^7 - 58140*a^3*b^3*
d*e^8 - 20995*a^4*b^2*e^9)*x^5 + 7*(40*b^6*d^5*e^4 - 380*a*b^5*d^4*e^5 + 16
15*a^2*b^4*d^3*e^6 + 342380*a^3*b^3*d^2*e^7 + 482885*a^4*b^2*d*e^8 + 92378*
a^5*b*e^9)*x^4 - (320*b^6*d^6*e^3 - 3040*a*b^5*d^5*e^4 + 12920*a^2*b^4*d^4*
e^5 - 32300*a^3*b^3*d^3*e^6 - 2372435*a^4*b^2*d^2*e^7 - 1755182*a^5*b*d*e^8
 - 138567*a^6*e^9)*x^3 + 3*(128*b^6*d^7*e^2 - 1216*a*b^5*d^6*e^3 + 5168*a^2
*b^4*d^5*e^4 - 12920*a^3*b^3*d^4*e^5 + 20995*a^4*b^2*d^3*e^6 + 461890*a^5*b
*d^2*e^7 + 138567*a^6*d*e^8)*x^2 - (512*b^6*d^8*e - 4864*a*b^5*d^7*e^2 + 20
672*a^2*b^4*d^6*e^3 - 51680*a^3*b^3*d^5*e^4 + 83980*a^4*b^2*d^4*e^5 - 92378
*a^5*b*d^3*e^6 - 415701*a^6*d^2*e^7)*x)*sqrt(e*x + d)/e^7
```

giac [**B**] time = 0.46, size = 2339, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/4849845*(9699690*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d^3*e^(-1)*s
gn(b*x + a) + 4849845*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x
*e + d)*d^2)*a^4*b^2*d^3*e^(-2)*sgn(b*x + a) + 2771340*(5*(x*e + d)^(7/2) -
 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*
b^3*d^3*e^(-3)*sgn(b*x + a) + 230945*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7
/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e +
d)*d^4)*a^2*b^4*d^3*e^(-4)*sgn(b*x + a) + 41990*(63*(x*e + d)^(11/2) - 385*
(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 11
55*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d^3*e^(-5)*sgn(b*x +
a) + 1615*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^
(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e
 + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^6*d^3*e^(-6)*sgn(b*x + a) + 581
9814*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*
b*d^2*e^(-1)*sgn(b*x + a) + 6235515*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)
*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^2*d^2*e^(-2)*sgn(
b*x + a) + 923780*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e +
d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^3*d^2
*e^(-3)*sgn(b*x + a) + 314925*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d
+ 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)
*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^4*d^2*e^(-4)*sgn(b*x + a) + 29070*(231*
(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 858
0*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5
 + 3003*sqrt(x*e + d)*d^6)*a*b^5*d^2*e^(-5)*sgn(b*x + a) + 2261*(429*(x*e +
 d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(
x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5
+ 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*d^2*e^(-6)*sgn(b*
x + a) + 4849845*sqrt(x*e + d)*a^6*d^3*sgn(b*x + a) + 4849845*((x*e + d)^(3
/2) - 3*sqrt(x*e + d)*d)*a^6*d^2*sgn(b*x + a) + 2494206*(5*(x*e + d)^(7/2)
- 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5
*b*d*e^(-1)*sgn(b*x + a) + 692835*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)
*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*
d^4)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 419900*(63*(x*e + d)^(11/2) - 385*(x*e
 + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(
x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^3*b^3*d*e^(-3)*sgn(b*x + a) +
 72675*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/
2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e +
d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^2*b^4*d*e^(-4)*sgn(b*x + a) + 1356
6*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*
d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a*b^5*d*
e^(-5)*sgn(b*x + a) + 133*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d
 + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e
+ d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 -
291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*b^6*d*e^(-6)*sgn(b*x
 + a) + 969969*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)
*d^2)*a^6*d*sgn(b*x + a) + 92378*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*a^5*b*e^(-1)*sgn(b*x + a) + 104975*(63*(x*e + d)^(11/2) - 385*(x*e + d)
^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e +
 d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^4*b^2*e^(-2)*sgn(b*x + a) + 32300*
(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2
- 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2
)*d^5 + 3003*sqrt(x*e + d)*d^6)*a^3*b^3*e^(-3)*sgn(b*x + a) + 11305*(429*(x
*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 250
25*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*
d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*a^2*b^4*e^(-4)*sg
n(b*x + a) + 266*(6435*(x*e + d)^(17/2) - 58344*(x*e + d)^(15/2)*d + 235620
*(x*e + d)^(13/2)*d^2 - 556920*(x*e + d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2
)*d^4 - 875160*(x*e + d)^(7/2)*d^5 + 612612*(x*e + d)^(5/2)*d^6 - 291720*(x
*e + d)^(3/2)*d^7 + 109395*sqrt(x*e + d)*d^8)*a*b^5*e^(-5)*sgn(b*x + a) + 2
1*(12155*(x*e + d)^(19/2) - 122265*(x*e + d)^(17/2)*d + 554268*(x*e + d)^(1
5/2)*d^2 - 1492260*(x*e + d)^(13/2)*d^3 + 2645370*(x*e + d)^(11/2)*d^4 - 32
33230*(x*e + d)^(9/2)*d^5 + 2771340*(x*e + d)^(7/2)*d^6 - 1662804*(x*e + d)
^(5/2)*d^7 + 692835*(x*e + d)^(3/2)*d^8 - 230945*sqrt(x*e + d)*d^9)*b^6*e^(
-6)*sgn(b*x + a) + 138567*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^6*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.04, size = 393, normalized size = 1.05

$$2(ex+d)^{\frac{7}{2}}(51051b^{6}e^{6}x^{6}+342342a\,b^{5}e^{6}x^{5}-36036b^{6}d\,e^{5}x^{5}+969969a^{2}b^{4}e^{6}x^{4}-228228a\,b^{5}d\,e^{5}x^{4}+24024b^{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/969969*(e*x+d)^(7/2)*(51051*b^6*e^6*x^6+342342*a*b^5*e^6*x^5-36036*b^6*d*
e^5*x^5+969969*a^2*b^4*e^6*x^4-228228*a*b^5*d*e^5*x^4+24024*b^6*d^2*e^4*x^4
+1492260*a^3*b^3*e^6*x^3-596904*a^2*b^4*d*e^5*x^3+140448*a*b^5*d^2*e^4*x^3-
14784*b^6*d^3*e^3*x^3+1322685*a^4*b^2*e^6*x^2-813960*a^3*b^3*d*e^5*x^2+3255
84*a^2*b^4*d^2*e^4*x^2-76608*a*b^5*d^3*e^3*x^2+8064*b^6*d^4*e^2*x^2+646646*
a^5*b*e^6*x-587860*a^4*b^2*d*e^5*x+361760*a^3*b^3*d^2*e^4*x-144704*a^2*b^4*
d^3*e^3*x+34048*a*b^5*d^4*e^2*x-3584*b^6*d^5*e*x+138567*a^6*e^6-184756*a^5*
b*d*e^5+167960*a^4*b^2*d^2*e^4-103360*a^3*b^3*d^3*e^3+41344*a^2*b^4*d^4*e^2
-9728*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**B**] time = 0.78, size = 1080, normalized size = 2.89

$$2(9009\,b^{5}e^{8}x^{8}-256\,b^{5}d^{8}+2176\,ab^{4}d^{7}e-8160\,a^{2}b^{3}d^{6}e^{2}+17680\,a^{3}b^{2}d^{5}e^{3}-24310\,a^{4}bd^{4}e^{4}+21879\,a^{5}d^{3}e^{5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/153153*(9009*b^5*e^8*x^8 - 256*b^5*d^8 + 2176*a*b^4*d^7*e - 8160*a^2*b^3*
d^6*e^2 + 17680*a^3*b^2*d^5*e^3 - 24310*a^4*b*d^4*e^4 + 21879*a^5*d^3*e^5 +
 3003*(7*b^5*d*e^7 + 17*a*b^4*e^8)*x^7 + 231*(55*b^5*d^2*e^6 + 527*a*b^4*d*
e^7 + 510*a^2*b^3*e^8)*x^6 + 63*(b^5*d^3*e^5 + 1207*a*b^4*d^2*e^6 + 4590*a^
2*b^3*d*e^7 + 2210*a^3*b^2*e^8)*x^5 - 35*(2*b^5*d^4*e^4 - 17*a*b^4*d^3*e^5
- 5406*a^2*b^3*d^2*e^6 - 10166*a^3*b^2*d*e^7 - 2431*a^4*b*e^8)*x^4 + (80*b^
5*d^5*e^3 - 680*a*b^4*d^4*e^4 + 2550*a^2*b^3*d^3*e^5 + 249730*a^3*b^2*d^2*e
^6 + 230945*a^4*b*d*e^7 + 21879*a^5*e^8)*x^3 - 3*(32*b^5*d^6*e^2 - 272*a*b^
4*d^5*e^3 + 1020*a^2*b^3*d^4*e^4 - 2210*a^3*b^2*d^3*e^5 - 60775*a^4*b*d^2*e
^6 - 21879*a^5*d*e^7)*x^2 + (128*b^5*d^7*e - 1088*a*b^4*d^6*e^2 + 4080*a^2*
b^3*d^5*e^3 - 8840*a^3*b^2*d^4*e^4 + 12155*a^4*b*d^3*e^5 + 65637*a^5*d^2*e^
6)*x)*sqrt(e*x + d)*a/e^6 + 2/2909907*(153153*b^5*e^9*x^9 + 3072*b^5*d^9 -
24320*a*b^4*d^8*e + 82688*a^2*b^3*d^7*e^2 - 155040*a^3*b^2*d^6*e^3 + 167960
*a^4*b*d^5*e^4 - 92378*a^5*d^4*e^5 + 9009*(39*b^5*d*e^8 + 95*a*b^4*e^9)*x^8
 + 3003*(69*b^5*d^2*e^7 + 665*a*b^4*d*e^8 + 646*a^2*b^3*e^9)*x^7 + 231*(3*b
^5*d^3*e^6 + 5225*a*b^4*d^2*e^7 + 20026*a^2*b^3*d*e^8 + 9690*a^3*b^2*e^9)*x
^6 - 63*(12*b^5*d^4*e^5 - 95*a*b^4*d^3*e^6 - 45866*a^2*b^3*d^2*e^7 - 87210*
a^3*b^2*d*e^8 - 20995*a^4*b*e^9)*x^5 + 7*(120*b^5*d^5*e^4 - 950*a*b^4*d^4*e
^5 + 3230*a^2*b^3*d^3*e^6 + 513570*a^3*b^2*d^2*e^7 + 482885*a^4*b*d*e^8 + 4
6189*a^5*e^9)*x^4 - (960*b^5*d^6*e^3 - 7600*a*b^4*d^5*e^4 + 25840*a^2*b^3*d
^4*e^5 - 48450*a^3*b^2*d^3*e^6 - 2372435*a^4*b*d^2*e^7 - 877591*a^5*d*e^8)*
x^3 + 3*(384*b^5*d^7*e^2 - 3040*a*b^4*d^6*e^3 + 10336*a^2*b^3*d^5*e^4 - 193
80*a^3*b^2*d^4*e^5 + 20995*a^4*b*d^3*e^6 + 230945*a^5*d^2*e^7)*x^2 - (1536*
b^5*d^8*e - 12160*a*b^4*d^7*e^2 + 41344*a^2*b^3*d^6*e^3 - 77520*a^3*b^2*d^5
*e^4 + 83980*a^4*b*d^4*e^5 - 46189*a^5*d^3*e^6)*x)*sqrt(e*x + d)*b/e^7
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^{5/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2111 $\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=376

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)^4}{3e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^5}{7e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2}}{5e^7}$$

```
[Out] 2/5*(-a*e+b*d)^6*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-12/7*b*(-a*e+b
*d)^5*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/3*b^2*(-a*e+b*d)^4*(e*
x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-40/11*b^3*(-a*e+b*d)^3*(e*x+d)^(11
/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+30/13*b^4*(-a*e+b*d)^2*(e*x+d)^(13/2)*((b
*x+a)^2)^(1/2)/e^7/(b*x+a)-4/5*b^5*(-a*e+b*d)*(e*x+d)^(15/2)*((b*x+a)^2)^(1
/2)/e^7/(b*x+a)+2/17*b^6*(e*x+d)^(17/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{17/2}}{17e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}(bd-ae)}{5e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+}{13e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a +
 b*x)) - (12*b*(b*d - a*e)^5*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)) + (10*b^2*(b*d - a*e)^4*(d + e*x)^(9/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(3*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(11/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d
 + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)) - (4*b^5*(
b*d - a*e)*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)
) + (2*b^6*(d + e*x)^(17/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(17*e^7*(a + b*x
))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (a+bx)(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5(d+ex)^{3/2}\,dx}{b^4\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^{3/2}\,dx}{ab+b^2x} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^{3/2}}{e^6}-\frac{6b(bd-ae)^5(d+ex)^{5/2}}{e^6}+ 1\right.}{} \\
&= \frac{2(bd-ae)^6(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)}-\frac{12b(bd-ae)^5(d+e}{7e^7}
\end{aligned}
$$

Mathematica [A] time = 0.16, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{5/2}\left(-102102b^5(d+ex)^5(bd-ae)+294525b^4(d+ex)^4(bd-ae)^2-464100b^3(d+ex)^3(bd-a\right.}{255255e^7(a+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2)*(51051*(b*d - a*e)^6 - 218790*b*(b*d -
 a*e)^5*(d + e*x) + 425425*b^2*(b*d - a*e)^4*(d + e*x)^2 - 464100*b^3*(b*d
- a*e)^3*(d + e*x)^3 + 294525*b^4*(b*d - a*e)^2*(d + e*x)^4 - 102102*b^5*(b
*d - a*e)*(d + e*x)^5 + 15015*b^6*(d + e*x)^6))/(255255*e^7*(a + b*x))
```

fricas [A] time = 0.88, size = 541, normalized size = 1.44

$$\frac{2\left(15015\,b^6e^8x^8+1024\,b^6d^8-8704\,ab^5d^7e+32640\,a^2b^4d^6e^2-70720\,a^3b^3d^5e^3+97240\,a^4b^2d^4e^4-87516\,a^5bd^3e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/255255*(15015*b^6*e^8*x^8 + 1024*b^6*d^8 - 8704*a*b^5*d^7*e + 32640*a^2*b
^4*d^6*e^2 - 70720*a^3*b^3*d^5*e^3 + 97240*a^4*b^2*d^4*e^4 - 87516*a^5*b*d^
3*e^5 + 51051*a^6*d^2*e^6 + 6006*(3*b^6*d*e^7 + 17*a*b^5*e^8)*x^7 + 231*(b^
6*d^2*e^6 + 544*a*b^5*d*e^7 + 1275*a^2*b^4*e^8)*x^6 - 42*(6*b^6*d^3*e^5 - 5
1*a*b^5*d^2*e^6 - 8925*a^2*b^4*d*e^7 - 11050*a^3*b^3*e^8)*x^5 + 35*(8*b^6*d
^4*e^4 - 68*a*b^5*d^3*e^5 + 255*a^2*b^4*d^2*e^6 + 17680*a^3*b^3*d*e^7 + 121
55*a^4*b^2*e^8)*x^4 - 10*(32*b^6*d^5*e^3 - 272*a*b^5*d^4*e^4 + 1020*a^2*b^4
*d^3*e^5 - 2210*a^3*b^3*d^2*e^6 - 60775*a^4*b^2*d*e^7 - 21879*a^5*b*e^8)*x^
3 + 3*(128*b^6*d^6*e^2 - 1088*a*b^5*d^5*e^3 + 4080*a^2*b^4*d^4*e^4 - 8840*a
^3*b^3*d^3*e^5 + 12155*a^4*b^2*d^2*e^6 + 116688*a^5*b*d*e^7 + 17017*a^6*e^8
)*x^2 - 2*(256*b^6*d^7*e - 2176*a*b^5*d^6*e^2 + 8160*a^2*b^4*d^5*e^3 - 1768
0*a^3*b^3*d^4*e^4 + 24310*a^4*b^2*d^3*e^5 - 21879*a^5*b*d^2*e^6 - 51051*a^6
*d*e^7)*x)*sqrt(e*x + d)/e^7
```

giac [B] time = 0.38, size = 1609, normalized size = 4.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/765765*(1531530*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d^2*e^(-1)*sg
n(b*x + a) + 765765*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e
 + d)*d^2)*a^4*b^2*d^2*e^(-2)*sgn(b*x + a) + 437580*(5*(x*e + d)^(7/2) - 21
*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3
*d^2*e^(-3)*sgn(b*x + a) + 36465*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*
d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d
^4)*a^2*b^4*d^2*e^(-4)*sgn(b*x + a) + 6630*(63*(x*e + d)^(11/2) - 385*(x*e
+ d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x
*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d^2*e^(-5)*sgn(b*x + a) +
255*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*
d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^
(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b^6*d^2*e^(-6)*sgn(b*x + a) + 612612*(3
*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b*d*e^(
-1)*sgn(b*x + a) + 656370*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x
*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 9
7240*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^3*b^3*d*e^(-3)*sgn(b*x
 + a) + 33150*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^
(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(
x*e + d)*d^5)*a^2*b^4*d*e^(-4)*sgn(b*x + a) + 3060*(231*(x*e + d)^(13/2) -
1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d
^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e +
d)*d^6)*a*b^5*d*e^(-5)*sgn(b*x + a) + 238*(429*(x*e + d)^(15/2) - 3465*(x*e
 + d)^(13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 3
2175*(x*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2
)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*d*e^(-6)*sgn(b*x + a) + 765765*sqrt(x*e
 + d)*a^6*d^2*sgn(b*x + a) + 510510*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a
^6*d*sgn(b*x + a) + 131274*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(
x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^5*b*e^(-1)*sgn(b*x + a) + 3646
5*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 4
20*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^4*b^2*e^(-2)*sgn(b*x + a)
 + 22100*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)
*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e +
 d)*d^5)*a^3*b^3*e^(-3)*sgn(b*x + a) + 3825*(231*(x*e + d)^(13/2) - 1638*(x
*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 90
09*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)
*a^2*b^4*e^(-4)*sgn(b*x + a) + 714*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(
13/2)*d + 12285*(x*e + d)^(11/2)*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x
*e + d)^(7/2)*d^4 - 27027*(x*e + d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 -
 6435*sqrt(x*e + d)*d^7)*a*b^5*e^(-5)*sgn(b*x + a) + 7*(6435*(x*e + d)^(17/
2) - 58344*(x*e + d)^(15/2)*d + 235620*(x*e + d)^(13/2)*d^2 - 556920*(x*e +
 d)^(11/2)*d^3 + 850850*(x*e + d)^(9/2)*d^4 - 875160*(x*e + d)^(7/2)*d^5 +
612612*(x*e + d)^(5/2)*d^6 - 291720*(x*e + d)^(3/2)*d^7 + 109395*sqrt(x*e +
 d)*d^8)*b^6*e^(-6)*sgn(b*x + a) + 51051*(3*(x*e + d)^(5/2) - 10*(x*e + d)^
(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 393, normalized size = 1.05

$$2\left(ex+d\right)^{\frac{5}{2}}\left(15015b^{6}e^{6}x^{6}+102102a\,b^{5}e^{6}x^{5}-12012b^{6}d\,e^{5}x^{5}+294525a^{2}b^{4}e^{6}x^{4}-78540a\,b^{5}d\,e^{5}x^{4}+9240b^{6}d^{2}e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 2/255255*(e*x+d)^(5/2)*(15015*b^6*e^6*x^6+102102*a*b^5*e^6*x^5-12012*b^6*d*
e^5*x^5+294525*a^2*b^4*e^6*x^4-78540*a*b^5*d*e^5*x^4+9240*b^6*d^2*e^4*x^4+4
64100*a^3*b^3*e^6*x^3-214200*a^2*b^4*d*e^5*x^3+57120*a*b^5*d^2*e^4*x^3-6720
*b^6*d^3*e^3*x^3+425425*a^4*b^2*e^6*x^2-309400*a^3*b^3*d*e^5*x^2+142800*a^2
*b^4*d^2*e^4*x^2-38080*a*b^5*d^3*e^3*x^2+4480*b^6*d^4*e^2*x^2+218790*a^5*b*
e^6*x-243100*a^4*b^2*d*e^5*x+176800*a^3*b^3*d^2*e^4*x-81600*a^2*b^4*d^3*e^3
*x+21760*a*b^5*d^4*e^2*x-2560*b^6*d^5*e*x+51051*a^6*e^6-87516*a^5*b*d*e^5+9
7240*a^4*b^2*d^2*e^4-70720*a^3*b^3*d^3*e^3+32640*a^2*b^4*d^4*e^2-8704*a*b^5
*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**B**] time = 0.82, size = 921, normalized size = 2.45

$$\underline{2\Bigl(3003\,b^5e^7x^7 - 256\,b^5d^7 + 1920\,ab^4d^6e - 6240\,a^2b^3d^5e^2 + 11440\,a^3b^2d^4e^3 - 12870\,a^4bd^3e^4 + 9009\,a^5d^2e^5 + 231}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/45045*(3003*b^5*e^7*x^7 - 256*b^5*d^7 + 1920*a*b^4*d^6*e - 6240*a^2*b^3*d
^5*e^2 + 11440*a^3*b^2*d^4*e^3 - 12870*a^4*b*d^3*e^4 + 9009*a^5*d^2*e^5 + 2
31*(16*b^5*d*e^6 + 75*a*b^4*e^7)*x^6 + 63*(b^5*d^2*e^5 + 350*a*b^4*d*e^6 +
650*a^2*b^3*e^7)*x^5 - 35*(2*b^5*d^3*e^4 - 15*a*b^4*d^2*e^5 - 1560*a^2*b^3*
d*e^6 - 1430*a^3*b^2*e^7)*x^4 + 5*(16*b^5*d^4*e^3 - 120*a*b^4*d^3*e^4 + 390
*a^2*b^3*d^2*e^5 + 14300*a^3*b^2*d*e^6 + 6435*a^4*b*e^7)*x^3 - 3*(32*b^5*d^
5*e^2 - 240*a*b^4*d^4*e^3 + 780*a^2*b^3*d^3*e^4 - 1430*a^3*b^2*d^2*e^5 - 17
160*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (128*b^5*d^6*e - 960*a*b^4*d^5*e^2 +
3120*a^2*b^3*d^4*e^3 - 5720*a^3*b^2*d^3*e^4 + 6435*a^4*b*d^2*e^5 + 18018*a^
5*d*e^6)*x)*sqrt(e*x + d)*a/e^6 + 2/765765*(45045*b^5*e^8*x^8 + 3072*b^5*d^
8 - 21760*a*b^4*d^7*e + 65280*a^2*b^3*d^6*e^2 - 106080*a^3*b^2*d^5*e^3 + 97
240*a^4*b*d^4*e^4 - 43758*a^5*d^3*e^5 + 3003*(18*b^5*d*e^7 + 85*a*b^4*e^8)*
x^7 + 231*(3*b^5*d^2*e^6 + 1360*a*b^4*d*e^7 + 2550*a^2*b^3*e^8)*x^6 - 63*(1
2*b^5*d^3*e^5 - 85*a*b^4*d^2*e^6 - 11900*a^2*b^3*d*e^7 - 11050*a^3*b^2*e^8)
*x^5 + 35*(24*b^5*d^4*e^4 - 170*a*b^4*d^3*e^5 + 510*a^2*b^3*d^2*e^6 + 26520
*a^3*b^2*d*e^7 + 12155*a^4*b*e^8)*x^4 - 5*(192*b^5*d^5*e^3 - 1360*a*b^4*d^4
*e^4 + 4080*a^2*b^3*d^3*e^5 - 6630*a^3*b^2*d^2*e^6 - 121550*a^4*b*d*e^7 - 2
1879*a^5*e^8)*x^3 + 3*(384*b^5*d^6*e^2 - 2720*a*b^4*d^5*e^3 + 8160*a^2*b^3*
d^4*e^4 - 13260*a^3*b^2*d^3*e^5 + 12155*a^4*b*d^2*e^6 + 58344*a^5*d*e^7)*x^
2 - (1536*b^5*d^7*e - 10880*a*b^4*d^6*e^2 + 32640*a^2*b^3*d^5*e^3 - 53040*a
^3*b^2*d^4*e^4 + 48620*a^4*b*d^3*e^5 - 21879*a^5*d^2*e^6)*x)*sqrt(e*x + d)*
b/e^7
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2112 $\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=376

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)^4}{7e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^5}{5e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2}}{3e^7}$$

```
[Out] 2/3*(-a*e+b*d)^6*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-12/5*b*(-a*e+b
*d)^5*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+30/7*b^2*(-a*e+b*d)^4*(e*
x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-40/9*b^3*(-a*e+b*d)^3*(e*x+d)^(9/2
)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+30/11*b^4*(-a*e+b*d)^2*(e*x+d)^(11/2)*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)-12/13*b^5*(-a*e+b*d)*(e*x+d)^(13/2)*((b*x+a)^2)^(1
/2)/e^7/(b*x+a)+2/15*b^6*(e*x+d)^(15/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{15/2}}{15e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}(bd-ae)}{13e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+}{11e^7(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*(b*d - a*e)^6*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a +
 b*x)) - (12*b*(b*d - a*e)^5*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(5*e^7*(a + b*x)) + (30*b^2*(b*d - a*e)^4*(d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b
*x + b^2*x^2])/(7*e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(9/2)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d +
 e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) - (12*b^5*(b
*d - a*e)*(d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)
) + (2*b^6*(d + e*x)^(15/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x
))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^5\sqrt{d+ex}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6\sqrt{d+ex}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6\sqrt{d+ex}}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{3/2}}{e^6} + 15b^2(\right.}{}$$

$$= \frac{2(bd-ae)^6(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)} - \frac{12b(bd-ae)^5(d+ex)}{5e^7(a}$$

Mathematica [**A**] time = 0.15, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}\,(d+ex)^{3/2}\left(-20790b^5(d+ex)^5(bd-ae)+61425b^4(d+ex)^4(bd-ae)^2-100100b^3(d+ex)^3(bd-ae)^3\right.}{45045e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2)*(15015*(b*d - a*e)^6 - 54054*b*(b*d -
a*e)^5*(d + e*x) + 96525*b^2*(b*d - a*e)^4*(d + e*x)^2 - 100100*b^3*(b*d -
a*e)^3*(d + e*x)^3 + 61425*b^4*(b*d - a*e)^2*(d + e*x)^4 - 20790*b^5*(b*d -
 a*e)*(d + e*x)^5 + 3003*b^6*(d + e*x)^6))/(45045*e^7*(a + b*x))
```

fricas [**A**] time = 0.88, size = 447, normalized size = 1.19

$$\frac{2\left(3003\,b^6e^7x^7+1024\,b^6d^7-7680\,ab^5d^6e+24960\,a^2b^4d^5e^2-45760\,a^3b^3d^4e^3+51480\,a^4b^2d^3e^4-36036\,a^5bd^2e^5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/45045*(3003*b^6*e^7*x^7 + 1024*b^6*d^7 - 7680*a*b^5*d^6*e + 24960*a^2*b^4
*d^5*e^2 - 45760*a^3*b^3*d^4*e^3 + 51480*a^4*b^2*d^3*e^4 - 36036*a^5*b*d^2*
e^5 + 15015*a^6*d*e^6 + 231*(b^6*d*e^6 + 90*a*b^5*e^7)*x^6 - 63*(4*b^6*d^2*
e^5 - 30*a*b^5*d*e^6 - 975*a^2*b^4*e^7)*x^5 + 35*(8*b^6*d^3*e^4 - 60*a*b^5*
d^2*e^5 + 195*a^2*b^4*d*e^6 + 2860*a^3*b^3*e^7)*x^4 - 5*(64*b^6*d^4*e^3 - 4
80*a*b^5*d^3*e^4 + 1560*a^2*b^4*d^2*e^5 - 2860*a^3*b^3*d*e^6 - 19305*a^4*b^
2*e^7)*x^3 + 3*(128*b^6*d^5*e^2 - 960*a*b^5*d^4*e^3 + 3120*a^2*b^4*d^3*e^4
- 5720*a^3*b^3*d^2*e^5 + 6435*a^4*b^2*d*e^6 + 18018*a^5*b*e^7)*x^2 - (512*b
^6*d^6*e - 3840*a*b^5*d^5*e^2 + 12480*a^2*b^4*d^4*e^3 - 22880*a^3*b^3*d^3*e
^4 + 25740*a^4*b^2*d^2*e^5 - 18018*a^5*b*d*e^6 - 15015*a^6*e^7)*x)*sqrt(e*x
 + d)/e^7
```

giac [**B**] time = 0.27, size = 970, normalized size = 2.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/45045*(90090*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*d*e^(-1)*sgn(b*x
 + a) + 45045*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*
d^2)*a^4*b^2*d*e^(-2)*sgn(b*x + a) + 25740*(5*(x*e + d)^(7/2) - 21*(x*e + d
)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3*d*e^(-3)
*sgn(b*x + a) + 2145*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e
 + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^4*
d*e^(-4)*sgn(b*x + a) + 390*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d +
990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d
^4 - 693*sqrt(x*e + d)*d^5)*a*b^5*d*e^(-5)*sgn(b*x + a) + 15*(231*(x*e + d)
^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e +
d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*s
qrt(x*e + d)*d^6)*b^6*d*e^(-6)*sgn(b*x + a) + 18018*(3*(x*e + d)^(5/2) - 10
*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*a^5*b*e^(-1)*sgn(b*x + a) + 1930
5*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*s
qrt(x*e + d)*d^3)*a^4*b^2*e^(-2)*sgn(b*x + a) + 2860*(35*(x*e + d)^(9/2) -
180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2 - 420*(x*e + d)^(3/2)*d^3 +
 315*sqrt(x*e + d)*d^4)*a^3*b^3*e^(-3)*sgn(b*x + a) + 975*(63*(x*e + d)^(11
/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^(7/2)*d^2 - 1386*(x*e + d)^(5/2
)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(x*e + d)*d^5)*a^2*b^4*e^(-4)*sg
n(b*x + a) + 90*(231*(x*e + d)^(13/2) - 1638*(x*e + d)^(11/2)*d + 5005*(x*e
 + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009*(x*e + d)^(5/2)*d^4 - 600
6*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*a*b^5*e^(-5)*sgn(b*x + a) +
 7*(429*(x*e + d)^(15/2) - 3465*(x*e + d)^(13/2)*d + 12285*(x*e + d)^(11/2)
*d^2 - 25025*(x*e + d)^(9/2)*d^3 + 32175*(x*e + d)^(7/2)*d^4 - 27027*(x*e +
 d)^(5/2)*d^5 + 15015*(x*e + d)^(3/2)*d^6 - 6435*sqrt(x*e + d)*d^7)*b^6*e^(
-6)*sgn(b*x + a) + 45045*sqrt(x*e + d)*a^6*d*sgn(b*x + a) + 15015*((x*e + d
)^(3/2) - 3*sqrt(x*e + d)*d)*a^6*sgn(b*x + a))*e^(-1)
```

maple [**A**] time = 0.06, size = 393, normalized size = 1.05

$$2\,(ex+d)^{\frac{3}{2}}\,\bigl(3003b^{6}e^{6}x^{6}+20790a\,b^{5}e^{6}x^{5}-2772b^{6}d\,e^{5}x^{5}+61425a^{2}b^{4}e^{6}x^{4}-18900a\,b^{5}d\,e^{5}x^{4}+2520b^{6}d^{2}e^{4}x^{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x)
```

```
[Out] 2/45045*(e*x+d)^(3/2)*(3003*b^6*e^6*x^6+20790*a*b^5*e^6*x^5-2772*b^6*d*e^5*
x^5+61425*a^2*b^4*e^6*x^4-18900*a*b^5*d*e^5*x^4+2520*b^6*d^2*e^4*x^4+100100
*a^3*b^3*e^6*x^3-54600*a^2*b^4*d*e^5*x^3+16800*a*b^5*d^2*e^4*x^3-2240*b^6*d
^3*e^3*x^3+96525*a^4*b^2*e^6*x^2-85800*a^3*b^3*d*e^5*x^2+46800*a^2*b^4*d^2*
e^4*x^2-14400*a*b^5*d^3*e^3*x^2+1920*b^6*d^4*e^2*x^2+54054*a^5*b*e^6*x-7722
0*a^4*b^2*d*e^5*x+68640*a^3*b^3*d^2*e^4*x-37440*a^2*b^4*d^3*e^3*x+11520*a*b
^5*d^4*e^2*x-1536*b^6*d^5*e*x+15015*a^6*e^6-36036*a^5*b*d*e^5+51480*a^4*b^2
*d^2*e^4-45760*a^3*b^3*d^3*e^3+24960*a^2*b^4*d^4*e^2-7680*a*b^5*d^5*e+1024*
b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**B**] time = 0.95, size = 760, normalized size = 2.02

$$2\,\bigl(693\,b^{5}e^{6}x^{6}-256\,b^{5}d^{6}+1664\,ab^{4}d^{5}e-4576\,a^{2}b^{3}d^{4}e^{2}+6864\,a^{3}b^{2}d^{3}e^{3}-6006\,a^{4}bd^{2}e^{4}+3003\,a^{5}de^{5}+63\,\bigl(b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)*(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/9009*(693*b^5*e^6*x^6 - 256*b^5*d^6 + 1664*a*b^4*d^5*e - 4576*a^2*b^3*d^4
*e^2 + 6864*a^3*b^2*d^3*e^3 - 6006*a^4*b*d^2*e^4 + 3003*a^5*d*e^5 + 63*(b^5
*d*e^5 + 65*a*b^4*e^6)*x^5 - 35*(2*b^5*d^2*e^4 - 13*a*b^4*d*e^5 - 286*a^2*b
^3*e^6)*x^4 + 10*(8*b^5*d^3*e^3 - 52*a*b^4*d^2*e^4 + 143*a^2*b^3*d*e^5 + 12
87*a^3*b^2*e^6)*x^3 - 3*(32*b^5*d^4*e^2 - 208*a*b^4*d^3*e^3 + 572*a^2*b^3*d
^2*e^4 - 858*a^3*b^2*d*e^5 - 3003*a^4*b*e^6)*x^2 + (128*b^5*d^5*e - 832*a*b
^4*d^4*e^2 + 2288*a^2*b^3*d^3*e^3 - 3432*a^3*b^2*d^2*e^4 + 3003*a^4*b*d*e^5
 + 3003*a^5*e^6)*x)*sqrt(e*x + d)*a/e^6 + 2/45045*(3003*b^5*e^7*x^7 + 1024*
b^5*d^7 - 6400*a*b^4*d^6*e + 16640*a^2*b^3*d^5*e^2 - 22880*a^3*b^2*d^4*e^3
+ 17160*a^4*b*d^3*e^4 - 6006*a^5*d^2*e^5 + 231*(b^5*d*e^6 + 75*a*b^4*e^7)*x
^6 - 63*(4*b^5*d^2*e^5 - 25*a*b^4*d*e^6 - 650*a^2*b^3*e^7)*x^5 + 70*(4*b^5*
d^3*e^4 - 25*a*b^4*d^2*e^5 + 65*a^2*b^3*d*e^6 + 715*a^3*b^2*e^7)*x^4 - 5*(6
4*b^5*d^4*e^3 - 400*a*b^4*d^3*e^4 + 1040*a^2*b^3*d^2*e^5 - 1430*a^3*b^2*d*e
^6 - 6435*a^4*b*e^7)*x^3 + 3*(128*b^5*d^5*e^2 - 800*a*b^4*d^4*e^3 + 2080*a^
2*b^3*d^3*e^4 - 2860*a^3*b^2*d^2*e^5 + 2145*a^4*b*d*e^6 + 3003*a^5*e^7)*x^2
 - (512*b^5*d^6*e - 3200*a*b^4*d^5*e^2 + 8320*a^2*b^3*d^4*e^3 - 11440*a^3*b
^2*d^3*e^4 + 8580*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*sqrt(e*x + d)*b/e^7
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,\sqrt{d+e\,x}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\sqrt{d+ex}\left((a+bx)^2\right)^{\frac{5}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)*(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)*((a + b*x)**2)**(5/2), x)
```

3.2113 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=370

$$\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)^4}{e^7(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}{e^7(a+bx)}+\frac{2\sqrt{a^2+2abx+b^2x^2}}{e^7(a+}$$

```
[Out] -4*b*(-a*e+b*d)^5*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+6*b^2*(-a*e+b
*d)^4*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-40/7*b^3*(-a*e+b*d)^3*(e*
x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+10/3*b^4*(-a*e+b*d)^2*(e*x+d)^(9/2
)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-12/11*b^5*(-a*e+b*d)*(e*x+d)^(11/2)*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)+2/13*b^6*(e*x+d)^(13/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a
)+2*(-a*e+b*d)^6*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{13/2}}{13e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}(bd-ae)}{11e^7(a+bx)}+\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(d+}{3e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*(b*d - a*e)^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x
)) - (4*b*(b*d - a*e)^5*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7
*(a + b*x)) + (6*b^2*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2
*x^2])/(e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(7/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (10*b^4*(b*d - a*e)^2*(d + e*x)^(9/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d
 + e*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)) + (2*b^6*(
d + e*x)^(13/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{\sqrt{d+ex}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{\sqrt{d+ex}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigl(\frac{(-bd+ae)^6}{e^6\sqrt{d+ex}} - \frac{6b(bd-ae)^5\sqrt{d+ex}}{e^6} + \frac{15b^2(bd-ae)^4(d+ex)^{3/2}}{e^6} -}{ab +}$$

$$= \frac{2(bd-ae)^6\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)} - \frac{4b(bd-ae)^5(d+ex)^{3/2}\sqrt{a^2+2a}}{e^7(a+bx)}$$

Mathematica [A] time = 0.10, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,\bigl(-1638b^5(d+ex)^5(bd-ae)+5005b^4(d+ex)^4(bd-ae)^2-8580b^3(d+ex)^3(bd-ae)^3+900}{3003e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/Sqrt[d + e*x],x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x]*(3003*(b*d - a*e)^6 - 6006*b*(b*d - a*e)
^5*(d + e*x) + 9009*b^2*(b*d - a*e)^4*(d + e*x)^2 - 8580*b^3*(b*d - a*e)^3*
(d + e*x)^3 + 5005*b^4*(b*d - a*e)^2*(d + e*x)^4 - 1638*b^5*(b*d - a*e)*(d
+ e*x)^5 + 231*b^6*(d + e*x)^6))/(3003*e^7*(a + b*x))
```

fricas [A] time = 0.77, size = 356, normalized size = 0.96

$$\frac{2\bigl(231\,b^6e^6x^6+1024\,b^6d^6-6656\,ab^5d^5e+18304\,a^2b^4d^4e^2-27456\,a^3b^3d^3e^3+24024\,a^4b^2d^2e^4-12012\,a^5bde^5+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] 2/3003*(231*b^6*e^6*x^6 + 1024*b^6*d^6 - 6656*a*b^5*d^5*e + 18304*a^2*b^4*d
^4*e^2 - 27456*a^3*b^3*d^3*e^3 + 24024*a^4*b^2*d^2*e^4 - 12012*a^5*b*d*e^5
+ 3003*a^6*e^6 - 126*(2*b^6*d*e^5 - 13*a*b^5*e^6)*x^5 + 35*(8*b^6*d^2*e^4 -
 52*a*b^5*d*e^5 + 143*a^2*b^4*e^6)*x^4 - 20*(16*b^6*d^3*e^3 - 104*a*b^5*d^2
*e^4 + 286*a^2*b^4*d*e^5 - 429*a^3*b^3*e^6)*x^3 + 3*(128*b^6*d^4*e^2 - 832*
a*b^5*d^3*e^3 + 2288*a^2*b^4*d^2*e^4 - 3432*a^3*b^3*d*e^5 + 3003*a^4*b^2*e^
6)*x^2 - 2*(256*b^6*d^5*e - 1664*a*b^5*d^4*e^2 + 4576*a^2*b^4*d^3*e^3 - 686
4*a^3*b^3*d^2*e^4 + 6006*a^4*b^2*d*e^5 - 3003*a^5*b*e^6)*x)*sqrt(e*x + d)/e
^7
```

giac [A] time = 0.23, size = 437, normalized size = 1.18

$$\frac{2}{3003}\Bigl(6006\left((xe+d)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)a^5be^{(-1)}\mathrm{sgn}\left(bx+a\right)+3003\left(3\,(xe+d)^{\frac{5}{2}}-10\,(xe+d)^{\frac{3}{2}}d+15\sqrt{xe+d}\,d^2\right)a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] 2/3003*(6006*((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)*a^5*b*e^(-1)*sgn(b*x + a
) + 3003*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqrt(x*e + d)*d^2)*
a^4*b^2*e^(-2)*sgn(b*x + a) + 1716*(5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2)*
d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*a^3*b^3*e^(-3)*sgn(b*x +
 a) + 143*(35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)
*d^2 - 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*a^2*b^4*e^(-4)*sgn(
b*x + a) + 26*(63*(x*e + d)^(11/2) - 385*(x*e + d)^(9/2)*d + 990*(x*e + d)^
(7/2)*d^2 - 1386*(x*e + d)^(5/2)*d^3 + 1155*(x*e + d)^(3/2)*d^4 - 693*sqrt(
x*e + d)*d^5)*a*b^5*e^(-5)*sgn(b*x + a) + (231*(x*e + d)^(13/2) - 1638*(x*e
 + d)^(11/2)*d + 5005*(x*e + d)^(9/2)*d^2 - 8580*(x*e + d)^(7/2)*d^3 + 9009
*(x*e + d)^(5/2)*d^4 - 6006*(x*e + d)^(3/2)*d^5 + 3003*sqrt(x*e + d)*d^6)*b
^6*e^(-6)*sgn(b*x + a) + 3003*sqrt(x*e + d)*a^6*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

$$2\sqrt{ex+d}\ \left(231b^6e^6x^6+1638a\,b^5e^6x^5-252b^6d\,e^5x^5+5005a^2b^4e^6x^4-1820a\,b^5d\,e^5x^4+280b^6d^2e^4x^4+8580a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/3003*(e*x+d)^(1/2)*(231*b^6*e^6*x^6+1638*a*b^5*e^6*x^5-252*b^6*d*e^5*x^5+
5005*a^2*b^4*e^6*x^4-1820*a*b^5*d*e^5*x^4+280*b^6*d^2*e^4*x^4+8580*a^3*b^3*
e^6*x^3-5720*a^2*b^4*d*e^5*x^3+2080*a*b^5*d^2*e^4*x^3-320*b^6*d^3*e^3*x^3+9
009*a^4*b^2*e^6*x^2-10296*a^3*b^3*d*e^5*x^2+6864*a^2*b^4*d^2*e^4*x^2-2496*a
*b^5*d^3*e^3*x^2+384*b^6*d^4*e^2*x^2+6006*a^5*b*e^6*x-12012*a^4*b^2*d*e^5*x
+13728*a^3*b^3*d^2*e^4*x-9152*a^2*b^4*d^3*e^3*x+3328*a*b^5*d^4*e^2*x-512*b^
6*d^5*e*x+3003*a^6*e^6-12012*a^5*b*d*e^5+24024*a^4*b^2*d^2*e^4-27456*a^3*b^
3*d^3*e^3+18304*a^2*b^4*d^4*e^2-6656*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^
(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.70, size = 758, normalized size = 2.05

$$2\left(63\,b^5e^6x^6-256\,b^5d^6+1408\,ab^4d^5e-3168\,a^2b^3d^4e^2+3696\,a^3b^2d^3e^3-2310\,a^4bd^2e^4+693\,a^5de^5-7\left(b^5de^5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] 2/693*(63*b^5*e^6*x^6 - 256*b^5*d^6 + 1408*a*b^4*d^5*e - 3168*a^2*b^3*d^4*e
^2 + 3696*a^3*b^2*d^3*e^3 - 2310*a^4*b*d^2*e^4 + 693*a^5*d*e^5 - 7*(b^5*d*e
^5 - 55*a*b^4*e^6)*x^5 + 5*(2*b^5*d^2*e^4 - 11*a*b^4*d*e^5 + 198*a^2*b^3*e^
6)*x^4 - 2*(8*b^5*d^3*e^3 - 44*a*b^4*d^2*e^4 + 99*a^2*b^3*d*e^5 - 693*a^3*b
^2*e^6)*x^3 + (32*b^5*d^4*e^2 - 176*a*b^4*d^3*e^3 + 396*a^2*b^3*d^2*e^4 - 4
62*a^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (128*b^5*d^5*e - 704*a*b^4*d^4*e^2
 + 1584*a^2*b^3*d^3*e^3 - 1848*a^3*b^2*d^2*e^4 + 1155*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*a/(sqrt(e*x + d)*e^6) + 2/9009*(693*b^5*e^7*x^7 + 3072*b^5*d^7 - 1
6640*a*b^4*d^6*e + 36608*a^2*b^3*d^5*e^2 - 41184*a^3*b^2*d^4*e^3 + 24024*a^
4*b*d^3*e^4 - 6006*a^5*d^2*e^5 - 63*(b^5*d*e^6 - 65*a*b^4*e^7)*x^6 + 7*(12*
b^5*d^2*e^5 - 65*a*b^4*d*e^6 + 1430*a^2*b^3*e^7)*x^5 - 10*(12*b^5*d^3*e^4 -
 65*a*b^4*d^2*e^5 + 143*a^2*b^3*d*e^6 - 1287*a^3*b^2*e^7)*x^4 + (192*b^5*d^
4*e^3 - 1040*a*b^4*d^3*e^4 + 2288*a^2*b^3*d^2*e^5 - 2574*a^3*b^2*d*e^6 + 90
09*a^4*b*e^7)*x^3 - (384*b^5*d^5*e^2 - 2080*a*b^4*d^4*e^3 + 4576*a^2*b^3*d^
3*e^4 - 5148*a^3*b^2*d^2*e^5 + 3003*a^4*b*d*e^6 - 3003*a^5*e^7)*x^2 + (1536
*b^5*d^6*e - 8320*a*b^4*d^5*e^2 + 18304*a^2*b^3*d^4*e^3 - 20592*a^3*b^2*d^3
*e^4 + 12012*a^4*b*d^2*e^5 - 3003*a^5*d*e^6)*x)*b/(sqrt(e*x + d)*e^7)
```

mupad [**B**] time = 2.78, size = 491, normalized size = 1.33

$$\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^7}{13}+\frac{6006\,a^6\,d\,e^6-24024\,a^5\,b\,d^2\,e^5+48048\,a^4\,b^2\,d^3\,e^4-54912\,a^3\,b^3\,d^4\,e^3+36608\,a^2\,b^4\,d^5\,e^2-13312\,a\,b^5\,d^6\,e+2048\,b^6}{3003\,b\,e^7}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(1/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^7)/13 + (2048*b^6*d^7 + 6006*a^6
*d*e^6 - 24024*a^5*b*d^2*e^5 + 36608*a^2*b^4*d^5*e^2 - 54912*a^3*b^3*d^4*e^
3 + 48048*a^4*b^2*d^3*e^4 - 13312*a*b^5*d^6*e)/(3003*b*e^7) + (10*b^2*x^4*(
1716*a^3*e^3 - 8*b^3*d^3 + 52*a*b^2*d^2*e - 143*a^2*b*d*e^2))/(3003*e^3) +
(2*b^4*x^6*(78*a*e - b*d))/(143*e) + (2*b^3*x^5*(715*a^2*e^2 + 4*b^2*d^2 -
26*a*b*d*e))/(429*e^2) + (x*(6006*a^6*e^7 + 1024*b^6*d^6*e - 6656*a*b^5*d^5
*e^2 + 18304*a^2*b^4*d^4*e^3 - 27456*a^3*b^3*d^3*e^4 + 24024*a^4*b^2*d^2*e^
5 - 12012*a^5*b*d*e^6))/(3003*b*e^7) + (x^3*(18018*a^4*b^2*e^7 + 128*b^6*d^
4*e^3 - 832*a*b^5*d^3*e^4 - 3432*a^3*b^3*d*e^6 + 2288*a^2*b^4*d^2*e^5))/(30
03*b*e^7) + (x^2*(12012*a^5*b*e^7 - 256*b^6*d^5*e^2 + 1664*a*b^5*d^4*e^3 -
6006*a^4*b^2*d*e^6 - 4576*a^2*b^4*d^3*e^4 + 6864*a^3*b^3*d^2*e^5))/(3003*b*
e^7)))/(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.2114 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=368

$$\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}{e^7(a+bx)}-\frac{12b\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}{e^7(a+bx)}-\frac{2\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d}}$$

```
[Out] 10*b^2*(-a*e+b*d)^4*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-8*b^3*(-a*e
+b*d)^3*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+30/7*b^4*(-a*e+b*d)^2*(
e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-4/3*b^5*(-a*e+b*d)*(e*x+d)^(9/2)
*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/11*b^6*(e*x+d)^(11/2)*((b*x+a)^2)^(1/2)/e^
7/(b*x+a)-2*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)-12*b*(
-a*e+b*d)^5*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{11/2}}{11e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}(bd-ae)}{3e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(d+e}{7e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*
x]) - (12*b*(b*d - a*e)^5*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7
*(a + b*x)) + (10*b^2*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^7*(a + b*x)) - (8*b^3*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (30*b^4*(b*d - a*e)^2*(d + e*x)^(7/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) - (4*b^5*(b*d - a*e)*(d +
e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (2*b^6*(d + e
*x)^(11/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{3/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{3/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{3/2}} - \frac{6b(bd-ae)^5}{e^6\sqrt{d+ex}} + \frac{15b^2(bd-ae)^4\sqrt{d+ex}}{e^6} - \frac{20b^3(b}{}\right.}{ab+b^2}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}} - \frac{12b(bd-ae)^5\sqrt{d+ex}\sqrt{a^2+2abx+b^2}}{e^7(a+bx)}$$

Mathematica [**A**] time = 0.14, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-154b^5(d+ex)^5(bd-ae)+495b^4(d+ex)^4(bd-ae)^2-924b^3(d+ex)^3(bd-ae)^3+1155b^2(d+ex)^2\right.}{231e^7(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(3/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-231*(b*d - a*e)^6 - 1386*b*(b*d - a*e)^5*(d + e*x) +
 1155*b^2*(b*d - a*e)^4*(d + e*x)^2 - 924*b^3*(b*d - a*e)^3*(d + e*x)^3 + 4
95*b^4*(b*d - a*e)^2*(d + e*x)^4 - 154*b^5*(b*d - a*e)*(d + e*x)^5 + 21*b^6
*(d + e*x)^6))/(231*e^7*(a + b*x)*Sqrt[d + e*x])
```

fricas [**A**] time = 1.28, size = 365, normalized size = 0.99

$$\frac{2\left(21\,b^6e^6x^6-1024\,b^6d^6+5632\,ab^5d^5e-12672\,a^2b^4d^4e^2+14784\,a^3b^3d^3e^3-9240\,a^4b^2d^2e^4+2772\,a^5bde^5-231\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="f
ricas")
```

```
[Out] 2/231*(21*b^6*e^6*x^6 - 1024*b^6*d^6 + 5632*a*b^5*d^5*e - 12672*a^2*b^4*d^4
*e^2 + 14784*a^3*b^3*d^3*e^3 - 9240*a^4*b^2*d^2*e^4 + 2772*a^5*b*d*e^5 - 23
1*a^6*e^6 - 14*(2*b^6*d*e^5 - 11*a*b^5*e^6)*x^5 + 5*(8*b^6*d^2*e^4 - 44*a*b
^5*d*e^5 + 99*a^2*b^4*e^6)*x^4 - 4*(16*b^6*d^3*e^3 - 88*a*b^5*d^2*e^4 + 198
*a^2*b^4*d*e^5 - 231*a^3*b^3*e^6)*x^3 + (128*b^6*d^4*e^2 - 704*a*b^5*d^3*e^
3 + 1584*a^2*b^4*d^2*e^4 - 1848*a^3*b^3*d*e^5 + 1155*a^4*b^2*e^6)*x^2 - 2*(
256*b^6*d^5*e - 1408*a*b^5*d^4*e^2 + 3168*a^2*b^4*d^3*e^3 - 3696*a^3*b^3*d^
2*e^4 + 2310*a^4*b^2*d*e^5 - 693*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^8*x + d*e^7
)
```

giac [**B**] time = 0.28, size = 642, normalized size = 1.74

$$\frac{2}{231}\left(21\,(xe+d)^{\frac{11}{2}}b^6e^{70}\mathrm{sgn}\,(bx+a)-154\,(xe+d)^{\frac{9}{2}}b^6de^{70}\mathrm{sgn}\,(bx+a)+495\,(xe+d)^{\frac{7}{2}}b^6d^2e^{70}\mathrm{sgn}\,(bx+a)-924\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="g
iac")
```

```
[Out] 2/231*(21*(x*e + d)^(11/2)*b^6*e^70*sgn(b*x + a) - 154*(x*e + d)^(9/2)*b^6*
d*e^70*sgn(b*x + a) + 495*(x*e + d)^(7/2)*b^6*d^2*e^70*sgn(b*x + a) - 924*(
x*e + d)^(5/2)*b^6*d^3*e^70*sgn(b*x + a) + 1155*(x*e + d)^(3/2)*b^6*d^4*e^7
0*sgn(b*x + a) - 1386*sqrt(x*e + d)*b^6*d^5*e^70*sgn(b*x + a) + 154*(x*e +
d)^(9/2)*a*b^5*e^71*sgn(b*x + a) - 990*(x*e + d)^(7/2)*a*b^5*d*e^71*sgn(b*x
 + a) + 2772*(x*e + d)^(5/2)*a*b^5*d^2*e^71*sgn(b*x + a) - 4620*(x*e + d)^(
3/2)*a*b^5*d^3*e^71*sgn(b*x + a) + 6930*sqrt(x*e + d)*a*b^5*d^4*e^71*sgn(b*
x + a) + 495*(x*e + d)^(7/2)*a^2*b^4*e^72*sgn(b*x + a) - 2772*(x*e + d)^(5/
2)*a^2*b^4*d*e^72*sgn(b*x + a) + 6930*(x*e + d)^(3/2)*a^2*b^4*d^2*e^72*sgn(
b*x + a) - 13860*sqrt(x*e + d)*a^2*b^4*d^3*e^72*sgn(b*x + a) + 924*(x*e + d
)^(5/2)*a^3*b^3*e^73*sgn(b*x + a) - 4620*(x*e + d)^(3/2)*a^3*b^3*d*e^73*sgn
(b*x + a) + 13860*sqrt(x*e + d)*a^3*b^3*d^2*e^73*sgn(b*x + a) + 1155*(x*e +
 d)^(3/2)*a^4*b^2*e^74*sgn(b*x + a) - 6930*sqrt(x*e + d)*a^4*b^2*d*e^74*sgn
(b*x + a) + 1386*sqrt(x*e + d)*a^5*b*e^75*sgn(b*x + a))*e^(-77) - 2*(b^6*d^
6*sgn(b*x + a) - 6*a*b^5*d^5*e*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x +
a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 6*
a^5*b*d*e^5*sgn(b*x + a) + a^6*e^6*sgn(b*x + a))*e^(-7)/sqrt(x*e + d)
```

maple [A] time = 0.06, size = 393, normalized size = 1.07

$$-\frac{2\left(-21b^6e^6x^6 - 154a\,b^5e^6x^5 + 28b^6d\,e^5x^5 - 495a^2b^4e^6x^4 + 220a\,b^5d\,e^5x^4 - 40b^6d^2e^4x^4 - 924a^3b^3e^6x^3 + 792a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/231/(e*x+d)^(1/2)*(-21*b^6*e^6*x^6-154*a*b^5*e^6*x^5+28*b^6*d*e^5*x^5-49
5*a^2*b^4*e^6*x^4+220*a*b^5*d*e^5*x^4-40*b^6*d^2*e^4*x^4-924*a^3*b^3*e^6*x^
3+792*a^2*b^4*d*e^5*x^3-352*a*b^5*d^2*e^4*x^3+64*b^6*d^3*e^3*x^3-1155*a^4*b
^2*e^6*x^2+1848*a^3*b^3*d*e^5*x^2-1584*a^2*b^4*d^2*e^4*x^2+704*a*b^5*d^3*e^
3*x^2-128*b^6*d^4*e^2*x^2-1386*a^5*b*e^6*x+4620*a^4*b^2*d*e^5*x-7392*a^3*b^
3*d^2*e^4*x+6336*a^2*b^4*d^3*e^3*x-2816*a*b^5*d^4*e^2*x+512*b^6*d^5*e*x+231
*a^6*e^6-2772*a^5*b*d*e^5+9240*a^4*b^2*d^2*e^4-14784*a^3*b^3*d^3*e^3+12672*
a^2*b^4*d^4*e^2-5632*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a
)^5
```

maxima [B] time = 0.63, size = 603, normalized size = 1.64

$$\frac{2\left(7\,b^5e^5x^5 + 256\,b^5d^5 - 1152\,ab^4d^4e + 2016\,a^2b^3d^3e^2 - 1680\,a^3b^2d^2e^3 + 630\,a^4bde^4 - 63\,a^5e^5 - 5\left(2\,b^5de^4 - 9\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(3/2),x, algorithm="m
axima")
```

```
[Out] 2/63*(7*b^5*e^5*x^5 + 256*b^5*d^5 - 1152*a*b^4*d^4*e + 2016*a^2*b^3*d^3*e^2
 - 1680*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 - 63*a^5*e^5 - 5*(2*b^5*d*e^4 - 9
*a*b^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 36*a*b^4*d*e^4 + 63*a^2*b^3*e^5)*x^3 -
 2*(16*b^5*d^3*e^2 - 72*a*b^4*d^2*e^3 + 126*a^2*b^3*d*e^4 - 105*a^3*b^2*e^5
)*x^2 + (128*b^5*d^4*e - 576*a*b^4*d^3*e^2 + 1008*a^2*b^3*d^2*e^3 - 840*a^3
*b^2*d*e^4 + 315*a^4*b*e^5)*x)*a/(sqrt(e*x + d)*e^6) + 2/693*(63*b^5*e^6*x^
6 - 3072*b^5*d^6 + 14080*a*b^4*d^5*e - 25344*a^2*b^3*d^4*e^2 + 22176*a^3*b^
2*d^3*e^3 - 9240*a^4*b*d^2*e^4 + 1386*a^5*d*e^5 - 7*(12*b^5*d*e^5 - 55*a*b^
4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 55*a*b^4*d*e^5 + 99*a^2*b^3*e^6)*x^4 - 2*
(96*b^5*d^3*e^3 - 440*a*b^4*d^2*e^4 + 792*a^2*b^3*d*e^5 - 693*a^3*b^2*e^6)*
x^3 + (384*b^5*d^4*e^2 - 1760*a*b^4*d^3*e^3 + 3168*a^2*b^3*d^2*e^4 - 2772*a
^3*b^2*d*e^5 + 1155*a^4*b*e^6)*x^2 - (1536*b^5*d^5*e - 7040*a*b^4*d^4*e^2 +
 12672*a^2*b^3*d^3*e^3 - 11088*a^3*b^2*d^2*e^4 + 4620*a^4*b*d*e^5 - 693*a^5
*e^6)*x)*b/(sqrt(e*x + d)*e^7)
```

mupad [B] time = 3.09, size = 396, normalized size = 1.08

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{11\,e}-\frac{462\,a^6\,e^6-5544\,a^5\,b\,d\,e^5+18480\,a^4\,b^2\,d^2\,e^4-29568\,a^3\,b^3\,d^3\,e^3+25344\,a^2\,b^4\,d^4\,e^2-11264\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{231\,b\,e^7}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(3/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(11*e) - (462*a^6*e^6 + 2048*
b^6*d^6 + 25344*a^2*b^4*d^4*e^2 - 29568*a^3*b^3*d^3*e^3 + 18480*a^4*b^2*d^2
*e^4 - 11264*a*b^5*d^5*e - 5544*a^5*b*d*e^5)/(231*b*e^7) + (x*(2772*a^5*b*e
^6 - 1024*b^6*d^5*e + 5632*a*b^5*d^4*e^2 - 9240*a^4*b^2*d*e^5 - 12672*a^2*b
^4*d^3*e^3 + 14784*a^3*b^3*d^2*e^4))/(231*b*e^7) + (8*b^2*x^3*(231*a^3*e^3
- 16*b^3*d^3 + 88*a*b^2*d^2*e - 198*a^2*b*d*e^2))/(231*e^4) + (4*b^4*x^5*(1
1*a*e - 2*b*d))/(33*e^2) + (10*b^3*x^4*(99*a^2*e^2 + 8*b^2*d^2 - 44*a*b*d*e
))/(231*e^3) + (x^2*(2310*a^4*b^2*e^6 + 256*b^6*d^4*e^2 - 1408*a*b^5*d^3*e^
3 - 3696*a^3*b^3*d*e^5 + 3168*a^2*b^4*d^2*e^4))/(231*b*e^7)))/(x*(d + e*x)^
(1/2) + (a*(d + e*x)^(1/2))/b)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(3/2),x)
```

```
[Out] Timed out
```

3.2115 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=370

$$\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}{e^7(a+bx)}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)\sqrt{d+ex}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{3e^7(a+bx)(d+ex)^{3/2}}$$

```
[Out] -2/3*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(3/2)-40/3*b^3*(-a*
e+b*d)^3*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)+6*b^4*(-a*e+b*d)^2*(e*
x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-12/7*b^5*(-a*e+b*d)*(e*x+d)^(7/2)*
((b*x+a)^2)^(1/2)/e^7/(b*x+a)+2/9*b^6*(e*x+d)^(9/2)*((b*x+a)^2)^(1/2)/e^7/(
b*x+a)+12*b*(-a*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)+30*b^2
*(-a*e+b*d)^4*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{9/2}}{9e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}(bd-ae)}{7e^7(a+bx)}+\frac{6b^4\sqrt{a^2+2abx+b^2x^2}\,(d+e}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)
^(3/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)
*Sqrt[d + e*x]) + (30*b^2*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x +
b^2*x^2])/(e^7*(a + b*x)) - (40*b^3*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)) + (6*b^4*(b*d - a*e)^2*(d + e*x)^(5
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d
 + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)) + (2*b^6*(d
+ e*x)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{5/2}}\,dx}{b^4\left(ab+b^2x\right)}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{5/2}}\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{5/2}}-\frac{6b(bd-ae)^5}{e^6(d+ex)^{3/2}}+\frac{15b^2(bd-ae)^4}{e^6\sqrt{d+ex}}-\frac{20b^3(bd-ae)^3}{e^6}\right.}{ab+b^2x}\\
&= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}}+\frac{30}{}
\end{aligned}
$$

Mathematica [**A**] time = 0.15, size = 163, normalized size = 0.44

$$
\frac{2\sqrt{(a+bx)^2}\left(-54b^5(d+ex)^5(bd-ae)+189b^4(d+ex)^4(bd-ae)^2-420b^3(d+ex)^3(bd-ae)^3+945b^2(d+ex)^2(bd\right.}{63e^7(a+bx)(d+ex)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(5/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^6 + 378*b*(b*d - a*e)^5*(d + e*x) + 9
45*b^2*(b*d - a*e)^4*(d + e*x)^2 - 420*b^3*(b*d - a*e)^3*(d + e*x)^3 + 189*
b^4*(b*d - a*e)^2*(d + e*x)^4 - 54*b^5*(b*d - a*e)*(d + e*x)^5 + 7*b^6*(d +
 e*x)^6))/(63*e^7*(a + b*x)*(d + e*x)^(3/2))
```

fricas [**A**] time = 0.77, size = 377, normalized size = 1.02

$$
\frac{2\left(7\,b^6e^6x^6+1024\,b^6d^6-4608\,ab^5d^5e+8064\,a^2b^4d^4e^2-6720\,a^3b^3d^3e^3+2520\,a^4b^2d^2e^4-252\,a^5bde^5-21\,a^6e^6-\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="f
ricas")
```

```
[Out] 2/63*(7*b^6*e^6*x^6 + 1024*b^6*d^6 - 4608*a*b^5*d^5*e + 8064*a^2*b^4*d^4*e^
2 - 6720*a^3*b^3*d^3*e^3 + 2520*a^4*b^2*d^2*e^4 - 252*a^5*b*d*e^5 - 21*a^6*
e^6 - 6*(2*b^6*d*e^5 - 9*a*b^5*e^6)*x^5 + 3*(8*b^6*d^2*e^4 - 36*a*b^5*d*e^5
 + 63*a^2*b^4*e^6)*x^4 - 4*(16*b^6*d^3*e^3 - 72*a*b^5*d^2*e^4 + 126*a^2*b^4
*d*e^5 - 105*a^3*b^3*e^6)*x^3 + 3*(128*b^6*d^4*e^2 - 576*a*b^5*d^3*e^3 + 10
08*a^2*b^4*d^2*e^4 - 840*a^3*b^3*d*e^5 + 315*a^4*b^2*e^6)*x^2 + 6*(256*b^6*
d^5*e - 1152*a*b^5*d^4*e^2 + 2016*a^2*b^4*d^3*e^3 - 1680*a^3*b^3*d^2*e^4 +
630*a^4*b^2*d*e^5 - 63*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^9*x^2 + 2*d*e^8*x + d
^2*e^7)
```

giac [**B**] time = 0.28, size = 630, normalized size = 1.70

$$
\frac{2}{63}\left(7\,(xe+d)^{\frac{9}{2}}b^6e^{56}\mathrm{sgn}\,(bx+a)-54\,(xe+d)^{\frac{7}{2}}b^6de^{56}\mathrm{sgn}\,(bx+a)+189\,(xe+d)^{\frac{5}{2}}b^6d^2e^{56}\mathrm{sgn}\,(bx+a)-420\,(xe\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="g
iac")
```

```
[Out] 2/63*(7*(x*e + d)^(9/2)*b^6*e^56*sgn(b*x + a) - 54*(x*e + d)^(7/2)*b^6*d*e^
56*sgn(b*x + a) + 189*(x*e + d)^(5/2)*b^6*d^2*e^56*sgn(b*x + a) - 420*(x*e
+ d)^(3/2)*b^6*d^3*e^56*sgn(b*x + a) + 945*sqrt(x*e + d)*b^6*d^4*e^56*sgn(b
*x + a) + 54*(x*e + d)^(7/2)*a*b^5*e^57*sgn(b*x + a) - 378*(x*e + d)^(5/2)*
a*b^5*d*e^57*sgn(b*x + a) + 1260*(x*e + d)^(3/2)*a*b^5*d^2*e^57*sgn(b*x + a
) - 3780*sqrt(x*e + d)*a*b^5*d^3*e^57*sgn(b*x + a) + 189*(x*e + d)^(5/2)*a^
2*b^4*e^58*sgn(b*x + a) - 1260*(x*e + d)^(3/2)*a^2*b^4*d*e^58*sgn(b*x + a)
+ 5670*sqrt(x*e + d)*a^2*b^4*d^2*e^58*sgn(b*x + a) + 420*(x*e + d)^(3/2)*a^
3*b^3*e^59*sgn(b*x + a) - 3780*sqrt(x*e + d)*a^3*b^3*d*e^59*sgn(b*x + a) +
945*sqrt(x*e + d)*a^4*b^2*e^60*sgn(b*x + a))*e^(-63) + 2/3*(18*(x*e + d)*b^
6*d^5*sgn(b*x + a) - b^6*d^6*sgn(b*x + a) - 90*(x*e + d)*a*b^5*d^4*e*sgn(b*
x + a) + 6*a*b^5*d^5*e*sgn(b*x + a) + 180*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x
 + a) - 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 180*(x*e + d)*a^3*b^3*d^2*e^3*sgn
(b*x + a) + 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 90*(x*e + d)*a^4*b^2*d*e^4*sg
n(b*x + a) - 15*a^4*b^2*d^2*e^4*sgn(b*x + a) - 18*(x*e + d)*a^5*b*e^5*sgn(b
*x + a) + 6*a^5*b*d*e^5*sgn(b*x + a) - a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e +
d)^(3/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

$$-\frac{2\left(-7b^{6}e^{6}x^{6}-54a\,b^{5}e^{6}x^{5}+12b^{6}d\,e^{5}x^{5}-189a^{2}b^{4}e^{6}x^{4}+108a\,b^{5}d\,e^{5}x^{4}-24b^{6}d^{2}e^{4}x^{4}-420a^{3}b^{3}e^{6}x^{3}+504a^{2}b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63/(e*x+d)^(3/2)*(-7*b^6*e^6*x^6-54*a*b^5*e^6*x^5+12*b^6*d*e^5*x^5-189*a
^2*b^4*e^6*x^4+108*a*b^5*d*e^5*x^4-24*b^6*d^2*e^4*x^4-420*a^3*b^3*e^6*x^3+5
04*a^2*b^4*d*e^5*x^3-288*a*b^5*d^2*e^4*x^3+64*b^6*d^3*e^3*x^3-945*a^4*b^2*e
^6*x^2+2520*a^3*b^3*d*e^5*x^2-3024*a^2*b^4*d^2*e^4*x^2+1728*a*b^5*d^3*e^3*x
^2-384*b^6*d^4*e^2*x^2+378*a^5*b*e^6*x-3780*a^4*b^2*d*e^5*x+10080*a^3*b^3*d
^2*e^4*x-12096*a^2*b^4*d^3*e^3*x+6912*a*b^5*d^4*e^2*x-1536*b^6*d^5*e*x+21*a
^6*e^6+252*a^5*b*d*e^5-2520*a^4*b^2*d^2*e^4+6720*a^3*b^3*d^3*e^3-8064*a^2*b
^4*d^4*e^2+4608*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.88, size = 625, normalized size = 1.69

$$\frac{2\left(3\,b^{5}e^{5}x^{5}-256\,b^{5}d^{5}+896\,ab^{4}d^{4}e-1120\,a^{2}b^{3}d^{3}e^{2}+560\,a^{3}b^{2}d^{2}e^{3}-70\,a^{4}bde^{4}-7\,a^{5}e^{5}-3\left(2\,b^{5}de^{4}-7\,ab^{4}e^{5}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(5/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(3*b^5*e^5*x^5 - 256*b^5*d^5 + 896*a*b^4*d^4*e - 1120*a^2*b^3*d^3*e^2
+ 560*a^3*b^2*d^2*e^3 - 70*a^4*b*d*e^4 - 7*a^5*e^5 - 3*(2*b^5*d*e^4 - 7*a*b
^4*e^5)*x^4 + 2*(8*b^5*d^2*e^3 - 28*a*b^4*d*e^4 + 35*a^2*b^3*e^5)*x^3 - 6*(
16*b^5*d^3*e^2 - 56*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 - 35*a^3*b^2*e^5)*x^2
- 3*(128*b^5*d^4*e - 448*a*b^4*d^3*e^2 + 560*a^2*b^3*d^2*e^3 - 280*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*a/((e^7*x + d*e^6)*sqrt(e*x + d)) + 2/63*(7*b^5*e^
6*x^6 + 1024*b^5*d^6 - 3840*a*b^4*d^5*e + 5376*a^2*b^3*d^4*e^2 - 3360*a^3*b
^2*d^3*e^3 + 840*a^4*b*d^2*e^4 - 42*a^5*d*e^5 - 3*(4*b^5*d*e^5 - 15*a*b^4*e
^6)*x^5 + 6*(4*b^5*d^2*e^4 - 15*a*b^4*d*e^5 + 21*a^2*b^3*e^6)*x^4 - 2*(32*b
^5*d^3*e^3 - 120*a*b^4*d^2*e^4 + 168*a^2*b^3*d*e^5 - 105*a^3*b^2*e^6)*x^3 +
 3*(128*b^5*d^4*e^2 - 480*a*b^4*d^3*e^3 + 672*a^2*b^3*d^2*e^4 - 420*a^3*b^2
*d*e^5 + 105*a^4*b*e^6)*x^2 + 3*(512*b^5*d^5*e - 1920*a*b^4*d^4*e^2 + 2688*
a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 - 21*a^5*e^6)*x)*b
/((e^8*x + d*e^7)*sqrt(e*x + d))
```

mupad [**B**] time = 3.15, size = 432, normalized size = 1.17

$$\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{9\,e^2}-\frac{42\,a^6\,e^6+504\,a^5\,b\,d\,e^5-5040\,a^4\,b^2\,d^2\,e^4+13440\,a^3\,b^3\,d^3\,e^3-16128\,a^2\,b^4\,d^4\,e^2+9216\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{63\,b\,e^8}-x\,(7\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(5/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(9*e^2) - (42*a^6*e^6 - 2048*
b^6*d^6 - 16128*a^2*b^4*d^4*e^2 + 13440*a^3*b^3*d^3*e^3 - 5040*a^4*b^2*d^2*
e^4 + 9216*a*b^5*d^5*e + 504*a^5*b*d*e^5)/(63*b*e^8) - (x*(756*a^5*b*e^6 -
3072*b^6*d^5*e + 13824*a*b^5*d^4*e^2 - 7560*a^4*b^2*d*e^5 - 24192*a^2*b^4*d
^3*e^3 + 20160*a^3*b^3*d^2*e^4))/(63*b*e^8) + (8*b^2*x^3*(105*a^3*e^3 - 16*
b^3*d^3 + 72*a*b^2*d^2*e - 126*a^2*b*d*e^2))/(63*e^5) + (4*b^4*x^5*(9*a*e -
 2*b*d))/(21*e^3) + (2*b^3*x^4*(63*a^2*e^2 + 8*b^2*d^2 - 36*a*b*d*e))/(21*e
^4) + (x^2*(1890*a^4*b^2*e^6 + 768*b^6*d^4*e^2 - 3456*a*b^5*d^3*e^3 - 5040*
a^3*b^3*d*e^5 + 6048*a^2*b^4*d^2*e^4))/(63*b*e^8)))/(x^2*(d + e*x)^(1/2) +
(a*d*(d + e*x)^(1/2))/(b*e) + (x*(63*a*e^8 + 63*b*d*e^7)*(d + e*x)^(1/2))/(
63*b*e^8))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(5/2),x)
```

```
[Out] Timed out
```

3.2116 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)\sqrt{d+ex}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{e^7(a+bx)(d+ex)^{3/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{5e^7(a+bx)(d+ex)^{5/2}}+\frac{2b^6\sqrt{a}}{}$$

```
[Out] -2/5*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(5/2)+4*b*(-a*e+b*d
)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(3/2)+10*b^4*(-a*e+b*d)^2*(e*x+d)
^(3/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)-12/5*b^5*(-a*e+b*d)*(e*x+d)^(5/2)*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)+2/7*b^6*(e*x+d)^(7/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+
a)-30*b^2*(-a*e+b*d)^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)-40*b^3*(
-a*e+b*d)^3*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{7/2}}{7e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}(bd-ae)}{5e^7(a+bx)}+\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(d+e}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)
^(5/2)) + (4*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*
(d + e*x)^(3/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^
7*(a + b*x)*Sqrt[d + e*x]) - (40*b^3*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 +
 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (10*b^4*(b*d - a*e)^2*(d + e*x)^(3/2
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (12*b^5*(b*d - a*e)*(d +
 e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)) + (2*b^6*(d +
e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int\frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{7/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\frac{(a+bx)^6}{(d+ex)^{7/2}}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int\Big(\frac{(-bd+ae)^6}{e^6(d+ex)^{7/2}}-\frac{6b(bd-ae)^5}{e^6(d+ex)^{5/2}}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^{3/2}}-\frac{20b^3(bd-ae)^3}{e^6\sqrt{d+ex}}}{ab+b^2x}$$

$$=-\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}}+\frac{4b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)(d+ex)^{3/2}}-30b$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\Big(-42b^5(d+ex)^5(bd-ae)+175b^4(d+ex)^4(bd-ae)^2-700b^3(d+ex)^3(bd-ae)^3-525b^2(d+ex)^2(bd}{35e^7(a+bx)(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(7/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-7*(b*d - a*e)^6 + 70*b*(b*d - a*e)^5*(d + e*x) - 525
*b^2*(b*d - a*e)^4*(d + e*x)^2 - 700*b^3*(b*d - a*e)^3*(d + e*x)^3 + 175*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 42*b^5*(b*d - a*e)*(d + e*x)^5 + 5*b^6*(d + e
*x)^6))/(35*e^7*(a + b*x)*(d + e*x)^(5/2))
```

fricas [A] time = 0.78, size = 388, normalized size = 1.05

$$2\Big(5\,b^6e^6x^6-1024\,b^6d^6+3584\,ab^5d^5e-4480\,a^2b^4d^4e^2+2240\,a^3b^3d^3e^3-280\,a^4b^2d^2e^4-28\,a^5bde^5-7\,a^6e^6-6\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(5*b^6*e^6*x^6 - 1024*b^6*d^6 + 3584*a*b^5*d^5*e - 4480*a^2*b^4*d^4*e^
2 + 2240*a^3*b^3*d^3*e^3 - 280*a^4*b^2*d^2*e^4 - 28*a^5*b*d*e^5 - 7*a^6*e^6
 - 6*(2*b^6*d*e^5 - 7*a*b^5*e^6)*x^5 + 5*(8*b^6*d^2*e^4 - 28*a*b^5*d*e^5 +
35*a^2*b^4*e^6)*x^4 - 20*(16*b^6*d^3*e^3 - 56*a*b^5*d^2*e^4 + 70*a^2*b^4*d*
e^5 - 35*a^3*b^3*e^6)*x^3 - 15*(128*b^6*d^4*e^2 - 448*a*b^5*d^3*e^3 + 560*a
^2*b^4*d^2*e^4 - 280*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 - 10*(256*b^6*d^5*
e - 896*a*b^5*d^4*e^2 + 1120*a^2*b^4*d^3*e^3 - 560*a^3*b^3*d^2*e^4 + 70*a^4
*b^2*d*e^5 + 7*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*
e^8*x + d^3*e^7)
```

giac [B] time = 0.30, size = 626, normalized size = 1.70

$$\frac{2}{35}\Big(5\,(xe+d)^{\frac{7}{2}}b^6e^{42}\mathrm{sgn}\,(bx+a)-42\,(xe+d)^{\frac{5}{2}}b^6de^{42}\mathrm{sgn}\,(bx+a)+175\,(xe+d)^{\frac{3}{2}}b^6d^2e^{42}\mathrm{sgn}\,(bx+a)-700\,\sqrt{xe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="g
iac")
```

```
[Out] 2/35*(5*(x*e + d)^(7/2)*b^6*e^42*sgn(b*x + a) - 42*(x*e + d)^(5/2)*b^6*d*e^
42*sgn(b*x + a) + 175*(x*e + d)^(3/2)*b^6*d^2*e^42*sgn(b*x + a) - 700*sqrt(
x*e + d)*b^6*d^3*e^42*sgn(b*x + a) + 42*(x*e + d)^(5/2)*a*b^5*e^43*sgn(b*x
+ a) - 350*(x*e + d)^(3/2)*a*b^5*d*e^43*sgn(b*x + a) + 2100*sqrt(x*e + d)*a
*b^5*d^2*e^43*sgn(b*x + a) + 175*(x*e + d)^(3/2)*a^2*b^4*e^44*sgn(b*x + a)
- 2100*sqrt(x*e + d)*a^2*b^4*d*e^44*sgn(b*x + a) + 700*sqrt(x*e + d)*a^3*b^
3*e^45*sgn(b*x + a))*e^(-49) - 2/5*(75*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 1
0*(x*e + d)*b^6*d^5*sgn(b*x + a) + b^6*d^6*sgn(b*x + a) - 300*(x*e + d)^2*a
*b^5*d^3*e*sgn(b*x + a) + 50*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 6*a*b^5*d
^5*e*sgn(b*x + a) + 450*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 100*(x*e
 + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) + 15*a^2*b^4*d^4*e^2*sgn(b*x + a) - 300*
(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a) + 100*(x*e + d)*a^3*b^3*d^2*e^3*sgn(
b*x + a) - 20*a^3*b^3*d^3*e^3*sgn(b*x + a) + 75*(x*e + d)^2*a^4*b^2*e^4*sgn
(b*x + a) - 50*(x*e + d)*a^4*b^2*d*e^4*sgn(b*x + a) + 15*a^4*b^2*d^2*e^4*sg
n(b*x + a) + 10*(x*e + d)*a^5*b*e^5*sgn(b*x + a) - 6*a^5*b*d*e^5*sgn(b*x +
a) + a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(5/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.07

$$-\frac{2\left(-5b^6e^6x^6-42a\,b^5e^5x^5+12b^6d\,e^5x^5-175a^2b^4e^6x^4+140a\,b^5d\,e^5x^4-40b^6d^2e^4x^4-700a^3b^3e^6x^3+1400a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] -2/35/(e*x+d)^(5/2)*(-5*b^6*e^6*x^6-42*a*b^5*e^6*x^5+12*b^6*d*e^5*x^5-175*a
^2*b^4*e^6*x^4+140*a*b^5*d*e^5*x^4-40*b^6*d^2*e^4*x^4-700*a^3*b^3*e^6*x^3+1
400*a^2*b^4*d*e^5*x^3-1120*a*b^5*d^2*e^4*x^3+320*b^6*d^3*e^3*x^3+525*a^4*b^
2*e^6*x^2-4200*a^3*b^3*d*e^5*x^2+8400*a^2*b^4*d^2*e^4*x^2-6720*a*b^5*d^3*e^
3*x^2+1920*b^6*d^4*e^2*x^2+70*a^5*b*e^6*x+700*a^4*b^2*d*e^5*x-5600*a^3*b^3*
d^2*e^4*x+11200*a^2*b^4*d^3*e^3*x-8960*a*b^5*d^4*e^2*x+2560*b^6*d^5*e*x+7*a
^6*e^6+28*a^5*b*d*e^5+280*a^4*b^2*d^2*e^4-2240*a^3*b^3*d^3*e^3+4480*a^2*b^4
*d^4*e^2-3584*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.86, size = 647, normalized size = 1.76

$$\frac{2\left(3\,b^5e^5x^5+256\,b^5d^5-640\,ab^4d^4e+480\,a^2b^3d^3e^2-80\,a^3b^2d^2e^3-10\,a^4bde^4-3\,a^5e^5-5\left(2\,b^5de^4-5\,ab^4e^5\right)x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(7/2),x, algorithm="m
axima")
```

```
[Out] 2/15*(3*b^5*e^5*x^5 + 256*b^5*d^5 - 640*a*b^4*d^4*e + 480*a^2*b^3*d^3*e^2 -
 80*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 3*a^5*e^5 - 5*(2*b^5*d*e^4 - 5*a*b^4
*e^5)*x^4 + 10*(8*b^5*d^2*e^3 - 20*a*b^4*d*e^4 + 15*a^2*b^3*e^5)*x^3 + 30*(
16*b^5*d^3*e^2 - 40*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 - 5*a^3*b^2*e^5)*x^2 +
 5*(128*b^5*d^4*e - 320*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^3 - 40*a^3*b^2*d*
e^4 - 5*a^4*b*e^5)*x)*a/((e^8*x^2 + 2*d*e^7*x + d^2*e^6)*sqrt(e*x + d)) + 2
/105*(15*b^5*e^6*x^6 - 3072*b^5*d^6 + 8960*a*b^4*d^5*e - 8960*a^2*b^3*d^4*e
^2 + 3360*a^3*b^2*d^3*e^3 - 280*a^4*b*d^2*e^4 - 14*a^5*d*e^5 - 3*(12*b^5*d*
e^5 - 35*a*b^4*e^6)*x^5 + 10*(12*b^5*d^2*e^4 - 35*a*b^4*d*e^5 + 35*a^2*b^3*
e^6)*x^4 - 10*(96*b^5*d^3*e^3 - 280*a*b^4*d^2*e^4 + 280*a^2*b^3*d*e^5 - 105
*a^3*b^2*e^6)*x^3 - 15*(384*b^5*d^4*e^2 - 1120*a*b^4*d^3*e^3 + 1120*a^2*b^3
*d^2*e^4 - 420*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 - 5*(1536*b^5*d^5*e - 4480
*a*b^4*d^4*e^2 + 4480*a^2*b^3*d^3*e^3 - 1680*a^3*b^2*d^2*e^4 + 140*a^4*b*d*
e^5 + 7*a^5*e^6)*x)*b/((e^9*x^2 + 2*d*e^8*x + d^2*e^7)*sqrt(e*x + d))
```

mupad [**B**] time = 3.18, size = 455, normalized size = 1.24

$$\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{2\,b^5\,x^6}{7\,e^3}-\frac{\frac{2\,a^6\,e^6}{5}+\frac{8\,a^5\,b\,d\,e^5}{5}+16\,a^4\,b^2\,d^2\,e^4-128\,a^3\,b^3\,d^3\,e^3+256\,a^2\,b^4\,d^4\,e^2-\frac{1024\,a\,b^5\,d^5\,e}{5}+\frac{2048\,b^6\,d^6}{35}}{b\,e^9}-\frac{x\left(140\,a^5\,b\,e^6+140\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(7/2),x)
```

```
[Out] ((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((2*b^5*x^6)/(7*e^3) - ((2*a^6*e^6)/5 + (2
048*b^6*d^6)/35 + 256*a^2*b^4*d^4*e^2 - 128*a^3*b^3*d^3*e^3 + 16*a^4*b^2*d^
2*e^4 - (1024*a*b^5*d^5*e)/5 + (8*a^5*b*d*e^5)/5)/(b*e^9) - (x*(140*a^5*b*e
^6 + 5120*b^6*d^5*e - 17920*a*b^5*d^4*e^2 + 1400*a^4*b^2*d*e^5 + 22400*a^2*
b^4*d^3*e^3 - 11200*a^3*b^3*d^2*e^4))/(35*b*e^9) + (b^2*x^3*(40*a^3*e^3 - (
128*b^3*d^3)/7 + 64*a*b^2*d^2*e - 80*a^2*b*d*e^2))/e^6 + (b^4*x^5*((12*a*e)
/5 - (24*b*d)/35))/e^4 + (b^3*x^4*(10*a^2*e^2 + (16*b^2*d^2)/7 - 8*a*b*d*e)
)/e^5 - (x^2*(30*a^4*b^2*e^6 + (768*b^6*d^4*e^2)/7 - 384*a*b^5*d^3*e^3 - 24
0*a^3*b^3*d*e^5 + 480*a^2*b^4*d^2*e^4))/(b*e^9)))/(x^3*(d + e*x)^(1/2) + (a
*d^2*(d + e*x)^(1/2))/(b*e^2) + (x^2*(a*e^9 + 2*b*d*e^8)*(d + e*x)^(1/2))/(
b*e^9) + (d*x*(2*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(7/2),x)
```

```
[Out] Timed out
```

3.2117 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{3/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{5e^7(a+bx)(d+ex)^{5/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{7e^7(a+bx)(d+ex)^{7/2}}+2b^6\surd$$

```
[Out] -2/7*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(7/2)+12/5*b*(-a*e+
b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(5/2)-10*b^2*(-a*e+b*d)^4*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(3/2)-4*b^5*(-a*e+b*d)*(e*x+d)^(3/2)*((b*
x+a)^2)^(1/2)/e^7/(b*x+a)+2/5*b^6*(e*x+d)^(5/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+
a)+40*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)+30*b^4*(
-a*e+b*d)^2*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}{5e^7(a+bx)}-\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)}{e^7(a+bx)}+\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+}}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(9/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)
^(7/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*
x)*(d + e*x)^(5/2)) - (10*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/
(e^7*(a + b*x)*(d + e*x)^(3/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (30*b^4*(b*d - a*e)^2*Sqrt[d +
e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) - (4*b^5*(b*d - a*e)*(d
 + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (2*b^6*(d +
e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{9/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{9/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Big(\frac{(-bd+ae)^6}{e^6(d+ex)^{9/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{7/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{5/2}} - \frac{20b^3(bd-ae)^3}{e^6(d+ex)^{3/2}}}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{7/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{5e^7(a+bx)(d+ex)^{5/2}} - 10$$

Mathematica [**A**] time = 0.16, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\ \big(-70b^5(d+ex)^5(bd-ae)+525b^4(d+ex)^4(bd-ae)^2+700b^3(d+ex)^3(bd-ae)^3-175b^2(d+ex)^2(bd}{35e^7(a+bx)(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(9/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-5*(b*d - a*e)^6 + 42*b*(b*d - a*e)^5*(d + e*x) - 175
*b^2*(b*d - a*e)^4*(d + e*x)^2 + 700*b^3*(b*d - a*e)^3*(d + e*x)^3 + 525*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 70*b^5*(b*d - a*e)*(d + e*x)^5 + 7*b^6*(d + e
*x)^6))/(35*e^7*(a + b*x)*(d + e*x)^(7/2))
```

fricas [**A**] time = 1.00, size = 399, normalized size = 1.08

$$2\big(7\,b^6e^6x^6+1024\,b^6d^6-2560\,ab^5d^5e+1920\,a^2b^4d^4e^2-320\,a^3b^3d^3e^3-40\,a^4b^2d^2e^4-12\,a^5bde^5-5\,a^6e^6-14\big(2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="f
ricas")
```

```
[Out] 2/35*(7*b^6*e^6*x^6 + 1024*b^6*d^6 - 2560*a*b^5*d^5*e + 1920*a^2*b^4*d^4*e^
2 - 320*a^3*b^3*d^3*e^3 - 40*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 5*a^6*e^6 -
 14*(2*b^6*d*e^5 - 5*a*b^5*e^6)*x^5 + 35*(8*b^6*d^2*e^4 - 20*a*b^5*d*e^5 +
15*a^2*b^4*e^6)*x^4 + 140*(16*b^6*d^3*e^3 - 40*a*b^5*d^2*e^4 + 30*a^2*b^4*d
*e^5 - 5*a^3*b^3*e^6)*x^3 + 35*(128*b^6*d^4*e^2 - 320*a*b^5*d^3*e^3 + 240*a
^2*b^4*d^2*e^4 - 40*a^3*b^3*d*e^5 - 5*a^4*b^2*e^6)*x^2 + 14*(256*b^6*d^5*e
- 640*a*b^5*d^4*e^2 + 480*a^2*b^4*d^3*e^3 - 80*a^3*b^3*d^2*e^4 - 10*a^4*b^2
*d*e^5 - 3*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e^9
*x^2 + 4*d^3*e^8*x + d^4*e^7)
```

giac [**B**] time = 0.28, size = 625, normalized size = 1.70

$$\frac{2}{5}\Big((xe+d)^{\frac{5}{2}}b^6e^{28}\mathrm{sgn}\left(bx+a\right)-10\,(xe+d)^{\frac{3}{2}}b^6de^{28}\mathrm{sgn}\left(bx+a\right)+75\,\sqrt{xe+d}\,b^6d^2e^{28}\mathrm{sgn}\left(bx+a\right)+10\,(xe+d)^{\frac{3}{2}}a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="g
iac")
```

```
[Out] 2/5*((x*e + d)^(5/2)*b^6*e^28*sgn(b*x + a) - 10*(x*e + d)^(3/2)*b^6*d*e^28*
sgn(b*x + a) + 75*sqrt(x*e + d)*b^6*d^2*e^28*sgn(b*x + a) + 10*(x*e + d)^(3
/2)*a*b^5*e^29*sgn(b*x + a) - 150*sqrt(x*e + d)*a*b^5*d*e^29*sgn(b*x + a) +
 75*sqrt(x*e + d)*a^2*b^4*e^30*sgn(b*x + a))*e^(-35) + 2/35*(700*(x*e + d)^
3*b^6*d^3*sgn(b*x + a) - 175*(x*e + d)^2*b^6*d^4*sgn(b*x + a) + 42*(x*e + d
)*b^6*d^5*sgn(b*x + a) - 5*b^6*d^6*sgn(b*x + a) - 2100*(x*e + d)^3*a*b^5*d^
2*e*sgn(b*x + a) + 700*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) - 210*(x*e + d)
*a*b^5*d^4*e*sgn(b*x + a) + 30*a*b^5*d^5*e*sgn(b*x + a) + 2100*(x*e + d)^3*
a^2*b^4*d*e^2*sgn(b*x + a) - 1050*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a)
+ 420*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) - 75*a^2*b^4*d^4*e^2*sgn(b*x +
 a) - 700*(x*e + d)^3*a^3*b^3*e^3*sgn(b*x + a) + 700*(x*e + d)^2*a^3*b^3*d*
e^3*sgn(b*x + a) - 420*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) + 100*a^3*b^3
*d^3*e^3*sgn(b*x + a) - 175*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) + 210*(x*e
 + d)*a^4*b^2*d*e^4*sgn(b*x + a) - 75*a^4*b^2*d^2*e^4*sgn(b*x + a) - 42*(x*
e + d)*a^5*b*e^5*sgn(b*x + a) + 30*a^5*b*d*e^5*sgn(b*x + a) - 5*a^6*e^6*sgn
(b*x + a))*e^(-7)/(x*e + d)^(7/2)
```

maple [**A**] time = 0.05, size = 393, normalized size = 1.07

$$-\frac{2\Big(-7b^{6}e^{6}x^{6}-70a\,b^{5}e^{6}x^{5}+28b^{6}d\,e^{5}x^{5}-525a^{2}b^{4}e^{6}x^{4}+700a\,b^{5}d\,e^{5}x^{4}-280b^{6}d^{2}e^{4}x^{4}+700a^{3}b^{3}e^{6}x^{3}-4200}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x)
```

```
[Out] -2/35/(e*x+d)^(7/2)*(-7*b^6*e^6*x^6-70*a*b^5*e^6*x^5+28*b^6*d*e^5*x^5-525*a
^2*b^4*e^6*x^4+700*a*b^5*d*e^5*x^4-280*b^6*d^2*e^4*x^4+700*a^3*b^3*e^6*x^3-
4200*a^2*b^4*d*e^5*x^3+5600*a*b^5*d^2*e^4*x^3-2240*b^6*d^3*e^3*x^3+175*a^4*
b^2*e^6*x^2+1400*a^3*b^3*d*e^5*x^2-8400*a^2*b^4*d^2*e^4*x^2+11200*a*b^5*d^3
*e^3*x^2-4480*b^6*d^4*e^2*x^2+42*a^5*b*e^6*x+140*a^4*b^2*d*e^5*x+1120*a^3*b
^3*d^2*e^4*x-6720*a^2*b^4*d^3*e^3*x+8960*a*b^5*d^4*e^2*x-3584*b^6*d^5*e*x+5
*a^6*e^6+12*a^5*b*d*e^5+40*a^4*b^2*d^2*e^4+320*a^3*b^3*d^3*e^3-1920*a^2*b^4
*d^4*e^2+2560*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [**B**] time = 0.82, size = 668, normalized size = 1.82

$$\frac{2\Big(7\,b^{5}e^{5}x^{5}-256\,b^{5}d^{5}+384\,ab^{4}d^{4}e-96\,a^{2}b^{3}d^{3}e^{2}-16\,a^{3}b^{2}d^{2}e^{3}-6\,a^{4}bde^{4}-3\,a^{5}e^{5}-35\left(2\,b^{5}de^{4}-3\,ab^{4}e^{5}\right)x^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(9/2),x, algorithm="m
axima")
```

```
[Out] 2/21*(7*b^5*e^5*x^5 - 256*b^5*d^5 + 384*a*b^4*d^4*e - 96*a^2*b^3*d^3*e^2 -
16*a^3*b^2*d^2*e^3 - 6*a^4*b*d*e^4 - 3*a^5*e^5 - 35*(2*b^5*d*e^4 - 3*a*b^4*
e^5)*x^4 - 70*(8*b^5*d^2*e^3 - 12*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 - 70*(16
*b^5*d^3*e^2 - 24*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 + a^3*b^2*e^5)*x^2 - 7*(1
28*b^5*d^4*e - 192*a*b^4*d^3*e^2 + 48*a^2*b^3*d^2*e^3 + 8*a^3*b^2*d*e^4 + 3
*a^4*b*e^5)*x)*a/((e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6)*sqrt(e*x
+ d)) + 2/105*(21*b^5*e^6*x^6 + 3072*b^5*d^6 - 6400*a*b^4*d^5*e + 3840*a^2*
b^3*d^4*e^2 - 480*a^3*b^2*d^3*e^3 - 40*a^4*b*d^2*e^4 - 6*a^5*d*e^5 - 7*(12*
b^5*d*e^5 - 25*a*b^4*e^6)*x^5 + 70*(12*b^5*d^2*e^4 - 25*a*b^4*d*e^5 + 15*a^
2*b^3*e^6)*x^4 + 70*(96*b^5*d^3*e^3 - 200*a*b^4*d^2*e^4 + 120*a^2*b^3*d*e^5
 - 15*a^3*b^2*e^6)*x^3 + 35*(384*b^5*d^4*e^2 - 800*a*b^4*d^3*e^3 + 480*a^2*
b^3*d^2*e^4 - 60*a^3*b^2*d*e^5 - 5*a^4*b*e^6)*x^2 + 7*(1536*b^5*d^5*e - 320
0*a*b^4*d^4*e^2 + 1920*a^2*b^3*d^3*e^3 - 240*a^3*b^2*d^2*e^4 - 20*a^4*b*d*e
^5 - 3*a^5*e^6)*x)*b/((e^10*x^3 + 3*d*e^9*x^2 + 3*d^2*e^8*x + d^3*e^7)*sqrt
(e*x + d))
```

mupad [**B**] time = 3.23, size = 489, normalized size = 1.33

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{10\,a^6\,e^6+24\,a^5\,b\,d\,e^5+80\,a^4\,b^2\,d^2\,e^4+640\,a^3\,b^3\,d^3\,e^3-3840\,a^2\,b^4\,d^4\,e^2+5120\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{35\,b\,e^{10}}-\frac{2\,b^5\,x^6}{5\,e^4}+\frac{x\,\left(84\,a^5\,b\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(9/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((10*a^6*e^6 - 2048*b^6*d^6 - 3840*a^2*b^
4*d^4*e^2 + 640*a^3*b^3*d^3*e^3 + 80*a^4*b^2*d^2*e^4 + 5120*a*b^5*d^5*e + 2
4*a^5*b*d*e^5)/(35*b*e^10) - (2*b^5*x^6)/(5*e^4) + (x*(84*a^5*b*e^6 - 7168*
b^6*d^5*e + 17920*a*b^5*d^4*e^2 + 280*a^4*b^2*d*e^5 - 13440*a^2*b^4*d^3*e^3
 + 2240*a^3*b^3*d^2*e^4))/(35*b*e^10) + (8*b^2*x^3*(5*a^3*e^3 - 16*b^3*d^3
+ 40*a*b^2*d^2*e - 30*a^2*b*d*e^2))/e^7 - (4*b^4*x^5*(5*a*e - 2*b*d))/(5*e^
5) - (2*b^3*x^4*(15*a^2*e^2 + 8*b^2*d^2 - 20*a*b*d*e))/e^6 + (x^2*(350*a^4*
b^2*e^6 - 8960*b^6*d^4*e^2 + 22400*a*b^5*d^3*e^3 + 2800*a^3*b^3*d*e^5 - 168
00*a^2*b^4*d^2*e^4))/(35*b*e^10)))/(x^4*(d + e*x)^(1/2) + (a*d^3*(d + e*x)^
(1/2))/(b*e^3) + (x^3*(35*a*e^10 + 105*b*d*e^9)*(d + e*x)^(1/2))/(35*b*e^10
) + (3*d*x^2*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^2*x*(3*a*e + b*d)*(d
 + e*x)^(1/2))/(b*e^3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(9/2),x)
```

```
[Out] Timed out
```

3.2118 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=370

$$-\frac{6b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{e^7(a+bx)(d+ex)^{5/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{7e^7(a+bx)(d+ex)^{7/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{9e^7(a+bx)(d+ex)^{9/2}}+2b^6\sqrt{a}$$

```
[Out] -2/9*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(9/2)+12/7*b*(-a*e+
b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(7/2)-6*b^2*(-a*e+b*d)^4*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(5/2)+40/3*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(1
/2)/e^7/(b*x+a)/(e*x+d)^(3/2)+2/3*b^6*(e*x+d)^(3/2)*((b*x+a)^2)^(1/2)/e^7/(
b*x+a)-30*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)-12*b
^5*(-a*e+b*d)*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.15, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}{3e^7(a+bx)}-\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)}{e^7(a+bx)}-\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-a}{e^7(a+bx)\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(11/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)
^(9/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*
x)*(d + e*x)^(7/2)) - (6*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(a + b*x)*(d + e*x)^(5/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/2)) - (30*b^4*(b*d - a*e)^2*Sqrt[a
^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) - (12*b^5*(b*d - a*e
)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)) + (2*b^6*(d
+ e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{11/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{11/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{11/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{9/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{7/2}} - \frac{20b^3(bd-ae)}{e^6(d+ex)^{5/2}}}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{9e^7(a+bx)(d+ex)^{9/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{7e^7(a+bx)(d+ex)^{7/2}} - 6b$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(-378b^5(d+ex)^5(bd-ae) - 945b^4(d+ex)^4(bd-ae)^2 + 420b^3(d+ex)^3(bd-ae)^3 - 189b^2(d+ex)^2(}{63e^7(a+bx)(d+ex)^{9/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(11/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-7*(b*d - a*e)^6 + 54*b*(b*d - a*e)^5*(d + e*x) - 189
*b^2*(b*d - a*e)^4*(d + e*x)^2 + 420*b^3*(b*d - a*e)^3*(d + e*x)^3 - 945*b^
4*(b*d - a*e)^2*(d + e*x)^4 - 378*b^5*(b*d - a*e)*(d + e*x)^5 + 21*b^6*(d +
 e*x)^6))/(63*e^7*(a + b*x)*(d + e*x)^(9/2))
```

fricas [A] time = 0.93, size = 409, normalized size = 1.11

$$2\left(21\,b^6e^6x^6 - 1024\,b^6d^6 + 1536\,ab^5d^5e - 384\,a^2b^4d^4e^2 - 64\,a^3b^3d^3e^3 - 24\,a^4b^2d^2e^4 - 12\,a^5bde^5 - 7\,a^6e^6 - 126\left(2\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="
fricas")
```

```
[Out] 2/63*(21*b^6*e^6*x^6 - 1024*b^6*d^6 + 1536*a*b^5*d^5*e - 384*a^2*b^4*d^4*e^
2 - 64*a^3*b^3*d^3*e^3 - 24*a^4*b^2*d^2*e^4 - 12*a^5*b*d*e^5 - 7*a^6*e^6 -
126*(2*b^6*d*e^5 - 3*a*b^5*e^6)*x^5 - 315*(8*b^6*d^2*e^4 - 12*a*b^5*d*e^5 +
 3*a^2*b^4*e^6)*x^4 - 420*(16*b^6*d^3*e^3 - 24*a*b^5*d^2*e^4 + 6*a^2*b^4*d*
e^5 + a^3*b^3*e^6)*x^3 - 63*(128*b^6*d^4*e^2 - 192*a*b^5*d^3*e^3 + 48*a^2*b
^4*d^2*e^4 + 8*a^3*b^3*d*e^5 + 3*a^4*b^2*e^6)*x^2 - 18*(256*b^6*d^5*e - 384
*a*b^5*d^4*e^2 + 96*a^2*b^4*d^3*e^3 + 16*a^3*b^3*d^2*e^4 + 6*a^4*b^2*d*e^5
+ 3*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^12*x^5 + 5*d*e^11*x^4 + 10*d^2*e^10*x^3
+ 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)
```

giac [B] time = 0.27, size = 623, normalized size = 1.68

$$\frac{2}{3}\left((xe+d)^{\frac{3}{2}}b^6e^{14}\mathrm{sgn}\left(bx+a\right) - 18\sqrt{xe+d}\,b^6de^{14}\mathrm{sgn}\left(bx+a\right) + 18\sqrt{xe+d}\,ab^5e^{15}\mathrm{sgn}\left(bx+a\right)\right)e^{(-21)} - \frac{2\left(945\,(xe\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="
giac")
```

```
[Out] 2/3*((x*e + d)^(3/2)*b^6*e^14*sgn(b*x + a) - 18*sqrt(x*e + d)*b^6*d*e^14*sg
n(b*x + a) + 18*sqrt(x*e + d)*a*b^5*e^15*sgn(b*x + a))*e^(-21) - 2/63*(945*
(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 420*(x*e + d)^3*b^6*d^3*sgn(b*x + a) + 1
89*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 54*(x*e + d)*b^6*d^5*sgn(b*x + a) + 7
*b^6*d^6*sgn(b*x + a) - 1890*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 1260*(x*e
 + d)^3*a*b^5*d^2*e*sgn(b*x + a) - 756*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a)
 + 270*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 42*a*b^5*d^5*e*sgn(b*x + a) + 9
45*(x*e + d)^4*a^2*b^4*e^2*sgn(b*x + a) - 1260*(x*e + d)^3*a^2*b^4*d*e^2*sg
n(b*x + a) + 1134*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 540*(x*e + d)*
a^2*b^4*d^3*e^2*sgn(b*x + a) + 105*a^2*b^4*d^4*e^2*sgn(b*x + a) + 420*(x*e
+ d)^3*a^3*b^3*e^3*sgn(b*x + a) - 756*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a
) + 540*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) - 140*a^3*b^3*d^3*e^3*sgn(b*
x + a) + 189*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) - 270*(x*e + d)*a^4*b^2*d
*e^4*sgn(b*x + a) + 105*a^4*b^2*d^2*e^4*sgn(b*x + a) + 54*(x*e + d)*a^5*b*e
^5*sgn(b*x + a) - 42*a^5*b*d*e^5*sgn(b*x + a) + 7*a^6*e^6*sgn(b*x + a))*e^(
-7)/(x*e + d)^(9/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

$$-\frac{2\left(-21b^{6}e^{6}x^{6}-378a\,b^{5}e^{6}x^{5}+252b^{6}d\,e^{5}x^{5}+945a^{2}b^{4}e^{6}x^{4}-3780a\,b^{5}d\,e^{5}x^{4}+2520b^{6}d^{2}e^{4}x^{4}+420a^{3}b^{3}e^{6}x^{3}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x)
```

```
[Out] -2/63/(e*x+d)^(9/2)*(-21*b^6*e^6*x^6-378*a*b^5*e^6*x^5+252*b^6*d*e^5*x^5+94
5*a^2*b^4*e^6*x^4-3780*a*b^5*d*e^5*x^4+2520*b^6*d^2*e^4*x^4+420*a^3*b^3*e^6
*x^3+2520*a^2*b^4*d*e^5*x^3-10080*a*b^5*d^2*e^4*x^3+6720*b^6*d^3*e^3*x^3+18
9*a^4*b^2*e^6*x^2+504*a^3*b^3*d*e^5*x^2+3024*a^2*b^4*d^2*e^4*x^2-12096*a*b^
5*d^3*e^3*x^2+8064*b^6*d^4*e^2*x^2+54*a^5*b*e^6*x+108*a^4*b^2*d*e^5*x+288*a
^3*b^3*d^2*e^4*x+1728*a^2*b^4*d^3*e^3*x-6912*a*b^5*d^4*e^2*x+4608*b^6*d^5*e
*x+7*a^6*e^6+12*a^5*b*d*e^5+24*a^4*b^2*d^2*e^4+64*a^3*b^3*d^3*e^3+384*a^2*b
^4*d^4*e^2-1536*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.92, size = 687, normalized size = 1.86

$$\frac{2\left(63\,b^{5}e^{5}x^{5}+256\,b^{5}d^{5}-128\,ab^{4}d^{4}e-32\,a^{2}b^{3}d^{3}e^{2}-16\,a^{3}b^{2}d^{2}e^{3}-10\,a^{4}bde^{4}-7\,a^{5}e^{5}+315\left(2\,b^{5}de^{4}-ab^{4}e^{5}\right)x\right.}{63}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(11/2),x, algorithm="
maxima")
```

```
[Out] 2/63*(63*b^5*e^5*x^5 + 256*b^5*d^5 - 128*a*b^4*d^4*e - 32*a^2*b^3*d^3*e^2 -
 16*a^3*b^2*d^2*e^3 - 10*a^4*b*d*e^4 - 7*a^5*e^5 + 315*(2*b^5*d*e^4 - a*b^4
*e^5)*x^4 + 210*(8*b^5*d^2*e^3 - 4*a*b^4*d*e^4 - a^2*b^3*e^5)*x^3 + 126*(16
*b^5*d^3*e^2 - 8*a*b^4*d^2*e^3 - 2*a^2*b^3*d*e^4 - a^3*b^2*e^5)*x^2 + 9*(12
8*b^5*d^4*e - 64*a*b^4*d^3*e^2 - 16*a^2*b^3*d^2*e^3 - 8*a^3*b^2*d*e^4 - 5*a
^4*b*e^5)*x)*a/((e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4
*e^6)*sqrt(e*x + d)) + 2/63*(21*b^5*e^6*x^6 - 1024*b^5*d^6 + 1280*a*b^4*d^5
*e - 256*a^2*b^3*d^4*e^2 - 32*a^3*b^2*d^3*e^3 - 8*a^4*b*d^2*e^4 - 2*a^5*d*e
^5 - 63*(4*b^5*d*e^5 - 5*a*b^4*e^6)*x^5 - 630*(4*b^5*d^2*e^4 - 5*a*b^4*d*e^
5 + a^2*b^3*e^6)*x^4 - 210*(32*b^5*d^3*e^3 - 40*a*b^4*d^2*e^4 + 8*a^2*b^3*d
*e^5 + a^3*b^2*e^6)*x^3 - 63*(128*b^5*d^4*e^2 - 160*a*b^4*d^3*e^3 + 32*a^2*
b^3*d^2*e^4 + 4*a^3*b^2*d*e^5 + a^4*b*e^6)*x^2 - 9*(512*b^5*d^5*e - 640*a*b
^4*d^4*e^2 + 128*a^2*b^3*d^3*e^3 + 16*a^3*b^2*d^2*e^4 + 4*a^4*b*d*e^5 + a^5
*e^6)*x)*b/((e^11*x^4 + 4*d*e^10*x^3 + 6*d^2*e^9*x^2 + 4*d^3*e^8*x + d^4*e^
7)*sqrt(e*x + d))
```

mupad [**B**] time = 3.28, size = 508, normalized size = 1.37

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{14\,a^6\,e^6+24\,a^5\,b\,d\,e^5+48\,a^4\,b^2\,d^2\,e^4+128\,a^3\,b^3\,d^3\,e^3+768\,a^2\,b^4\,d^4\,e^2-3072\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{63\,b\,e^{11}}-\frac{2\,b^5\,x^6}{3\,e^5}+\frac{x\,\left(108\,a^5\,b\right.}{}\right.}{x^5\,\sqrt{d+e\,x}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(11/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((14*a^6*e^6 + 2048*b^6*d^6 + 768*a^2*b^4
*d^4*e^2 + 128*a^3*b^3*d^3*e^3 + 48*a^4*b^2*d^2*e^4 - 3072*a*b^5*d^5*e + 24
*a^5*b*d*e^5)/(63*b*e^11) - (2*b^5*x^6)/(3*e^5) + (x*(108*a^5*b*e^6 + 9216*
b^6*d^5*e - 13824*a*b^5*d^4*e^2 + 216*a^4*b^2*d*e^5 + 3456*a^2*b^4*d^3*e^3
+ 576*a^3*b^3*d^2*e^4))/(63*b*e^11) + (40*b^2*x^3*(a^3*e^3 + 16*b^3*d^3 - 2
4*a*b^2*d^2*e + 6*a^2*b*d*e^2))/(3*e^8) + (2*b*x^2*(3*a^4*e^4 + 128*b^4*d^4
 + 48*a^2*b^2*d^2*e^2 - 192*a*b^3*d^3*e + 8*a^3*b*d*e^3))/e^9 - (4*b^4*x^5*
(3*a*e - 2*b*d))/e^6 + (10*b^3*x^4*(3*a^2*e^2 + 8*b^2*d^2 - 12*a*b*d*e))/e^
7))/(x^5*(d + e*x)^(1/2) + (a*d^4*(d + e*x)^(1/2))/(b*e^4) + (x^4*(63*a*e^1
1 + 252*b*d*e^10)*(d + e*x)^(1/2))/(63*b*e^11) + (2*d*x^3*(2*a*e + 3*b*d)*(
d + e*x)^(1/2))/(b*e^2) + (d^3*x*(4*a*e + b*d)*(d + e*x)^(1/2))/(b*e^4) + (
2*d^2*x^2*(3*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^3))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(11/2),x)
```

```
[Out] Timed out
```

3.2119 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=368

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{3e^7(a+bx)(d+ex)^{9/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{11e^7(a+bx)(d+ex)^{11/2}}+2b^6\sqrt{}$$

```
[Out] -2/11*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(11/2)+4/3*b*(-a*e
+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(9/2)-30/7*b^2*(-a*e+b*d)^4*(
(b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(7/2)+8*b^3*(-a*e+b*d)^3*((b*x+a)^2)^(
1/2)/e^7/(b*x+a)/(e*x+d)^(5/2)-10*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e^7/(b
*x+a)/(e*x+d)^(3/2)+12*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)
^(1/2)+2*b^6*(e*x+d)^(1/2)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)
```

Rubi [A] time = 0.14, antiderivative size = 368, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = {770, 21, 43}

$$\frac{2b^6\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}{e^7(a+bx)}+\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)\sqrt{d+ex}}-\frac{10b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^{3/2}}+8b^3\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(13/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a + b*x)*(d + e*x
)^(11/2)) + (4*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b
*x)*(d + e*x)^(9/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) + (8*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(5/2)) - (10*b^4*(b*d - a*e)^2*Sqrt[
a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(3/2)) + (12*b^5*(b*d -
a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x]) + (2*b^6*
Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx=\frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{13/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{13/2}}\,dx}{ab+b^2x}$$

$$=\frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{13/2}}-\frac{6b(bd-ae)^5}{e^6(d+ex)^{11/2}}+\frac{15b^2(bd-ae)^4}{e^6(d+ex)^{9/2}}-\frac{20b^3(bd-ae}{e^6(d+ex)^{7/2}}\right.}{ab+b^2x}$$

$$=-\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11/2}}+\frac{4b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{9/2}}-30b$$

Mathematica [A] time = 0.15, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(1386b^5(d+ex)^5(bd-ae)-1155b^4(d+ex)^4(bd-ae)^2+924b^3(d+ex)^3(bd-ae)^3-495b^2(d+ex)^2(\right.}{231e^7(a+bx)(d+ex)^{11/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(13/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-21*(b*d - a*e)^6 + 154*b*(b*d - a*e)^5*(d + e*x) - 4
95*b^2*(b*d - a*e)^4*(d + e*x)^2 + 924*b^3*(b*d - a*e)^3*(d + e*x)^3 - 1155
*b^4*(b*d - a*e)^2*(d + e*x)^4 + 1386*b^5*(b*d - a*e)*(d + e*x)^5 + 231*b^6
*(d + e*x)^6))/(231*e^7*(a + b*x)*(d + e*x)^(11/2))
```

fricas [A] time = 1.17, size = 421, normalized size = 1.14

$$\frac{2\left(231\,b^6e^6x^6+1024\,b^6d^6-512\,ab^5d^5e-128\,a^2b^4d^4e^2-64\,a^3b^3d^3e^3-40\,a^4b^2d^2e^4-28\,a^5bde^5-21\,a^6e^6+1386\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
fricas")
```

```
[Out] 2/231*(231*b^6*e^6*x^6 + 1024*b^6*d^6 - 512*a*b^5*d^5*e - 128*a^2*b^4*d^4*e
^2 - 64*a^3*b^3*d^3*e^3 - 40*a^4*b^2*d^2*e^4 - 28*a^5*b*d*e^5 - 21*a^6*e^6
+ 1386*(2*b^6*d*e^5 - a*b^5*e^6)*x^5 + 1155*(8*b^6*d^2*e^4 - 4*a*b^5*d*e^5
- a^2*b^4*e^6)*x^4 + 924*(16*b^6*d^3*e^3 - 8*a*b^5*d^2*e^4 - 2*a^2*b^4*d*e^
5 - a^3*b^3*e^6)*x^3 + 99*(128*b^6*d^4*e^2 - 64*a*b^5*d^3*e^3 - 16*a^2*b^4*
d^2*e^4 - 8*a^3*b^3*d*e^5 - 5*a^4*b^2*e^6)*x^2 + 22*(256*b^6*d^5*e - 128*a*
b^5*d^4*e^2 - 32*a^2*b^4*d^3*e^3 - 16*a^3*b^3*d^2*e^4 - 10*a^4*b^2*d*e^5 -
7*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^13*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*x^4 +
20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6*e^7)
```

giac [B] time = 0.28, size = 617, normalized size = 1.68

$$2\sqrt{xe+d}\,b^6e^{(-7)}\mathrm{sgn}\left(bx+a\right)+\frac{2\left(1386\left(xe+d\right)^5b^6d\mathrm{sgn}\left(bx+a\right)-1155\left(xe+d\right)^4b^6d^2\mathrm{sgn}\left(bx+a\right)+924\left(xe+d\right)^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
giac")
```

```
[Out] 2*sqrt(x*e + d)*b^6*e^(-7)*sgn(b*x + a) + 2/231*(1386*(x*e + d)^5*b^6*d*sgn
(b*x + a) - 1155*(x*e + d)^4*b^6*d^2*sgn(b*x + a) + 924*(x*e + d)^3*b^6*d^3
*sgn(b*x + a) - 495*(x*e + d)^2*b^6*d^4*sgn(b*x + a) + 154*(x*e + d)*b^6*d^
5*sgn(b*x + a) - 21*b^6*d^6*sgn(b*x + a) - 1386*(x*e + d)^5*a*b^5*e*sgn(b*x
 + a) + 2310*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) - 2772*(x*e + d)^3*a*b^5*d^
2*e*sgn(b*x + a) + 1980*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) - 770*(x*e + d
)*a*b^5*d^4*e*sgn(b*x + a) + 126*a*b^5*d^5*e*sgn(b*x + a) - 1155*(x*e + d)^
4*a^2*b^4*e^2*sgn(b*x + a) + 2772*(x*e + d)^3*a^2*b^4*d*e^2*sgn(b*x + a) -
2970*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) + 1540*(x*e + d)*a^2*b^4*d^3*
e^2*sgn(b*x + a) - 315*a^2*b^4*d^4*e^2*sgn(b*x + a) - 924*(x*e + d)^3*a^3*b
^3*e^3*sgn(b*x + a) + 1980*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a) - 1540*(x
*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) + 420*a^3*b^3*d^3*e^3*sgn(b*x + a) - 4
95*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) + 770*(x*e + d)*a^4*b^2*d*e^4*sgn(b
*x + a) - 315*a^4*b^2*d^2*e^4*sgn(b*x + a) - 154*(x*e + d)*a^5*b*e^5*sgn(b*
x + a) + 126*a^5*b*d*e^5*sgn(b*x + a) - 21*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*
e + d)^(11/2)
```

maple [A] time = 0.06, size = 393, normalized size = 1.07

$$-\frac{2\left(-231b^{6}e^{6}x^{6}+1386a\,b^{5}e^{6}x^{5}-2772b^{6}d\,e^{5}x^{5}+1155a^{2}b^{4}e^{6}x^{4}+4620a\,b^{5}d\,e^{5}x^{4}-9240b^{6}d^{2}e^{4}x^{4}+924a^{3}b^{3}e^{6}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x)
```

```
[Out] -2/231/(e*x+d)^(11/2)*(-231*b^6*e^6*x^6+1386*a*b^5*e^6*x^5-2772*b^6*d*e^5*x
^5+1155*a^2*b^4*e^6*x^4+4620*a*b^5*d*e^5*x^4-9240*b^6*d^2*e^4*x^4+924*a^3*b
^3*e^6*x^3+1848*a^2*b^4*d*e^5*x^3+7392*a*b^5*d^2*e^4*x^3-14784*b^6*d^3*e^3*
x^3+495*a^4*b^2*e^6*x^2+792*a^3*b^3*d*e^5*x^2+1584*a^2*b^4*d^2*e^4*x^2+6336
*a*b^5*d^3*e^3*x^2-12672*b^6*d^4*e^2*x^2+154*a^5*b*e^6*x+220*a^4*b^2*d*e^5*
x+352*a^3*b^3*d^2*e^4*x+704*a^2*b^4*d^3*e^3*x+2816*a*b^5*d^4*e^2*x-5632*b^6
*d^5*e*x+21*a^6*e^6+28*a^5*b*d*e^5+40*a^4*b^2*d^2*e^4+64*a^3*b^3*d^3*e^3+12
8*a^2*b^4*d^4*e^2+512*a*b^5*d^5*e-1024*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+
a)^5
```

maxima [B] time = 0.98, size = 712, normalized size = 1.93

$$-\frac{2\left(693\,b^{5}e^{5}x^{5}+256\,b^{5}d^{5}+128\,ab^{4}d^{4}e+96\,a^{2}b^{3}d^{3}e^{2}+80\,a^{3}b^{2}d^{2}e^{3}+70\,a^{4}bde^{4}+63\,a^{5}e^{5}+1155\left(2\,b^{5}de^{4}+\right.\right.}{69}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(13/2),x, algorithm="
maxima")
```

```
[Out] -2/693*(693*b^5*e^5*x^5 + 256*b^5*d^5 + 128*a*b^4*d^4*e + 96*a^2*b^3*d^3*e^
2 + 80*a^3*b^2*d^2*e^3 + 70*a^4*b*d*e^4 + 63*a^5*e^5 + 1155*(2*b^5*d*e^4 +
a*b^4*e^5)*x^4 + 462*(8*b^5*d^2*e^3 + 4*a*b^4*d*e^4 + 3*a^2*b^3*e^5)*x^3 +
198*(16*b^5*d^3*e^2 + 8*a*b^4*d^2*e^3 + 6*a^2*b^3*d*e^4 + 5*a^3*b^2*e^5)*x^
2 + 11*(128*b^5*d^4*e + 64*a*b^4*d^3*e^2 + 48*a^2*b^3*d^2*e^3 + 40*a^3*b^2*
d*e^4 + 35*a^4*b*e^5)*x)*a/((e^11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*
d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)*sqrt(e*x + d)) + 2/693*(693*b^5*e^6*x^
6 + 3072*b^5*d^6 - 1280*a*b^4*d^5*e - 256*a^2*b^3*d^4*e^2 - 96*a^3*b^2*d^3*
e^3 - 40*a^4*b*d^2*e^4 - 14*a^5*d*e^5 + 693*(12*b^5*d*e^5 - 5*a*b^4*e^6)*x^
5 + 2310*(12*b^5*d^2*e^4 - 5*a*b^4*d*e^5 - a^2*b^3*e^6)*x^4 + 462*(96*b^5*d
^3*e^3 - 40*a*b^4*d^2*e^4 - 8*a^2*b^3*d*e^5 - 3*a^3*b^2*e^6)*x^3 + 99*(384*
b^5*d^4*e^2 - 160*a*b^4*d^3*e^3 - 32*a^2*b^3*d^2*e^4 - 12*a^3*b^2*d*e^5 - 5
*a^4*b*e^6)*x^2 + 11*(1536*b^5*d^5*e - 640*a*b^4*d^4*e^2 - 128*a^2*b^3*d^3*
e^3 - 48*a^3*b^2*d^2*e^4 - 20*a^4*b*d*e^5 - 7*a^5*e^6)*x)*b/((e^12*x^5 + 5*
d*e^11*x^4 + 10*d^2*e^10*x^3 + 10*d^3*e^9*x^2 + 5*d^4*e^8*x + d^5*e^7)*sqrt
(e*x + d))
```

mupad [**B**] time = 3.37, size = 532, normalized size = 1.45

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{42\,a^6\,e^6+56\,a^5\,b\,d\,e^5+80\,a^4\,b^2\,d^2\,e^4+128\,a^3\,b^3\,d^3\,e^3+256\,a^2\,b^4\,d^4\,e^2+1024\,a\,b^5\,d^5\,e-2048\,b^6\,d^6}{231\,b\,e^{12}}-\frac{2\,b^5\,x^6}{e^6}+\frac{x\left(308\,a^5\,b\right.}{}\right.}{x^6\,\sqrt{d+e\,x}+\frac{a\,d^5\,\sqrt{d+e\,x}}{b\,e^5}+\frac{x^5}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(13/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((42*a^6*e^6 - 2048*b^6*d^6 + 256*a^2*b^4
*d^4*e^2 + 128*a^3*b^3*d^3*e^3 + 80*a^4*b^2*d^2*e^4 + 1024*a*b^5*d^5*e + 56
*a^5*b*d*e^5)/(231*b*e^12) - (2*b^5*x^6)/e^6 + (x*(308*a^5*b*e^6 - 11264*b^
6*d^5*e + 5632*a*b^5*d^4*e^2 + 440*a^4*b^2*d*e^5 + 1408*a^2*b^4*d^3*e^3 + 7
04*a^3*b^3*d^2*e^4))/(231*b*e^12) + (8*b^2*x^3*(a^3*e^3 - 16*b^3*d^3 + 8*a*
b^2*d^2*e + 2*a^2*b*d*e^2))/e^9 + (6*b*x^2*(5*a^4*e^4 - 128*b^4*d^4 + 16*a^
2*b^2*d^2*e^2 + 64*a*b^3*d^3*e + 8*a^3*b*d*e^3))/(7*e^10) + (12*b^4*x^5*(a*
e - 2*b*d))/e^7 + (10*b^3*x^4*(a^2*e^2 - 8*b^2*d^2 + 4*a*b*d*e))/e^8))/(x^6
*(d + e*x)^(1/2) + (a*d^5*(d + e*x)^(1/2))/(b*e^5) + (x^5*(231*a*e^12 + 115
5*b*d*e^11)*(d + e*x)^(1/2))/(231*b*e^12) + (5*d*x^4*(a*e + 2*b*d)*(d + e*x
)^(1/2))/(b*e^2) + (d^4*x*(5*a*e + b*d)*(d + e*x)^(1/2))/(b*e^5) + (10*d^2*
x^3*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^2*(2*a*e + b*d)*(d + e*
x)^(1/2))/(b*e^4))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(13/2),x)
```

```
[Out] Timed out
```

3.2120 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx$

Optimal. Leaf size=370

$$-\frac{10b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{3e^7(a+bx)(d+ex)^{9/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{11e^7(a+bx)(d+ex)^{11/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{13e^7(a+bx)(d+ex)^{13/2}}-\frac{2b^6\sqrt{}}{e^7(}$$

```
[Out] -2/13*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(13/2)+12/11*b*(-a
*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(11/2)-10/3*b^2*(-a*e+b*d)^
4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(9/2)+40/7*b^3*(-a*e+b*d)^3*((b*x+a
)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(7/2)-6*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1/2)/e
^7/(b*x+a)/(e*x+d)^(5/2)+4*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*
x+d)^(3/2)-2*b^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 370, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 43}

$$-\frac{2b^6\sqrt{a^2+2abx+b^2x^2}}{e^7(a+bx)\sqrt{d+ex}}+\frac{4b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{e^7(a+bx)(d+ex)^{3/2}}-\frac{6b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{e^7(a+bx)(d+ex)^{5/2}}+\frac{40b^3\sqrt{a^2+2ab}}{7e^7(a+b}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(15/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a + b*x)*(d + e*x
)^(13/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(11*e^7*(a +
 b*x)*(d + e*x)^(11/2)) - (10*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(3*e^7*(a + b*x)*(d + e*x)^(9/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) - (6*b^4*(b*d - a*e)^2*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(5/2)) + (4*b^5*(b*
d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*(d + e*x)^(3/2)) - (
2*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(a + b*x)*Sqrt[d + e*x])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{15/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{15/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{15/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{13/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{11/2}} - \frac{20b^3(bd-ae)}{e^6(d+ex)^{9/2}}}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{11e^7(a+bx)(d+ex)^{11/2}} - 10$$

Mathematica [**A**] time = 0.16, size = 163, normalized size = 0.44

$$\frac{2\sqrt{(a+bx)^2}\left(6006b^5(d+ex)^5(bd-ae) - 9009b^4(d+ex)^4(bd-ae)^2 + 8580b^3(d+ex)^3(bd-ae)^3 - 5005b^2(d+ex\right.}{3003e^7(a+bx)(d+ex)^{13/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(15/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-231*(b*d - a*e)^6 + 1638*b*(b*d - a*e)^5*(d + e*x) -
 5005*b^2*(b*d - a*e)^4*(d + e*x)^2 + 8580*b^3*(b*d - a*e)^3*(d + e*x)^3 -
9009*b^4*(b*d - a*e)^2*(d + e*x)^4 + 6006*b^5*(b*d - a*e)*(d + e*x)^5 - 300
3*b^6*(d + e*x)^6))/(3003*e^7*(a + b*x)*(d + e*x)^(13/2))
```

fricas [**A**] time = 0.87, size = 431, normalized size = 1.16

$$-\frac{2\left(3003\,b^6e^6x^6 + 1024\,b^6d^6 + 512\,ab^5d^5e + 384\,a^2b^4d^4e^2 + 320\,a^3b^3d^3e^3 + 280\,a^4b^2d^2e^4 + 252\,a^5bde^5 + 231\,a^6e^6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
fricas")
```

```
[Out] -2/3003*(3003*b^6*e^6*x^6 + 1024*b^6*d^6 + 512*a*b^5*d^5*e + 384*a^2*b^4*d^
4*e^2 + 320*a^3*b^3*d^3*e^3 + 280*a^4*b^2*d^2*e^4 + 252*a^5*b*d*e^5 + 231*a
^6*e^6 + 6006*(2*b^6*d*e^5 + a*b^5*e^6)*x^5 + 3003*(8*b^6*d^2*e^4 + 4*a*b^5
*d*e^5 + 3*a^2*b^4*e^6)*x^4 + 1716*(16*b^6*d^3*e^3 + 8*a*b^5*d^2*e^4 + 6*a^
2*b^4*d*e^5 + 5*a^3*b^3*e^6)*x^3 + 143*(128*b^6*d^4*e^2 + 64*a*b^5*d^3*e^3
+ 48*a^2*b^4*d^2*e^4 + 40*a^3*b^3*d*e^5 + 35*a^4*b^2*e^6)*x^2 + 26*(256*b^6
*d^5*e + 128*a*b^5*d^4*e^2 + 96*a^2*b^4*d^3*e^3 + 80*a^3*b^3*d^2*e^4 + 70*a
^4*b^2*d*e^5 + 63*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^14*x^7 + 7*d*e^13*x^6 + 21
*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3 + 21*d^5*e^9*x^2 + 7*d^6*
e^8*x + d^7*e^7)
```

giac [**B**] time = 0.29, size = 614, normalized size = 1.66

$$-\frac{2\left(3003\,(xe+d)^6b^6\mathrm{sgn}\,(bx+a) - 6006\,(xe+d)^5b^6d\,\mathrm{sgn}\,(bx+a) + 9009\,(xe+d)^4b^6d^2\mathrm{sgn}\,(bx+a) - 8580\,(xe+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
giac")
```

```
[Out] -2/3003*(3003*(x*e + d)^6*b^6*sgn(b*x + a) - 6006*(x*e + d)^5*b^6*d*sgn(b*x
 + a) + 9009*(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 8580*(x*e + d)^3*b^6*d^3*sg
n(b*x + a) + 5005*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 1638*(x*e + d)*b^6*d^5
*sgn(b*x + a) + 231*b^6*d^6*sgn(b*x + a) + 6006*(x*e + d)^5*a*b^5*e*sgn(b*x
 + a) - 18018*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 25740*(x*e + d)^3*a*b^5*
d^2*e*sgn(b*x + a) - 20020*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a) + 8190*(x*e
 + d)*a*b^5*d^4*e*sgn(b*x + a) - 1386*a*b^5*d^5*e*sgn(b*x + a) + 9009*(x*e
+ d)^4*a^2*b^4*e^2*sgn(b*x + a) - 25740*(x*e + d)^3*a^2*b^4*d*e^2*sgn(b*x +
 a) + 30030*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 16380*(x*e + d)*a^2*
b^4*d^3*e^2*sgn(b*x + a) + 3465*a^2*b^4*d^4*e^2*sgn(b*x + a) + 8580*(x*e +
d)^3*a^3*b^3*e^3*sgn(b*x + a) - 20020*(x*e + d)^2*a^3*b^3*d*e^3*sgn(b*x + a
) + 16380*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) - 4620*a^3*b^3*d^3*e^3*sgn
(b*x + a) + 5005*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x + a) - 8190*(x*e + d)*a^4*
b^2*d*e^4*sgn(b*x + a) + 3465*a^4*b^2*d^2*e^4*sgn(b*x + a) + 1638*(x*e + d)
*a^5*b*e^5*sgn(b*x + a) - 1386*a^5*b*d*e^5*sgn(b*x + a) + 231*a^6*e^6*sgn(b
*x + a))*e^(-7)/(x*e + d)^(13/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.06

$$-\frac{2\left(3003b^6e^6x^6+6006a\,b^5e^6x^5+12012b^6d\,e^5x^5+9009a^2b^4e^6x^4+12012a\,b^5d\,e^5x^4+24024b^6d^2e^4x^4+8580a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x)
```

```
[Out] -2/3003/(e*x+d)^(13/2)*(3003*b^6*e^6*x^6+6006*a*b^5*e^6*x^5+12012*b^6*d*e^5
*x^5+9009*a^2*b^4*e^6*x^4+12012*a*b^5*d*e^5*x^4+24024*b^6*d^2*e^4*x^4+8580*
a^3*b^3*e^6*x^3+10296*a^2*b^4*d*e^5*x^3+13728*a*b^5*d^2*e^4*x^3+27456*b^6*d
^3*e^3*x^3+5005*a^4*b^2*e^6*x^2+5720*a^3*b^3*d*e^5*x^2+6864*a^2*b^4*d^2*e^4
*x^2+9152*a*b^5*d^3*e^3*x^2+18304*b^6*d^4*e^2*x^2+1638*a^5*b*e^6*x+1820*a^4
*b^2*d*e^5*x+2080*a^3*b^3*d^2*e^4*x+2496*a^2*b^4*d^3*e^3*x+3328*a*b^5*d^4*e
^2*x+6656*b^6*d^5*e*x+231*a^6*e^6+252*a^5*b*d*e^5+280*a^4*b^2*d^2*e^4+320*a
^3*b^3*d^3*e^3+384*a^2*b^4*d^4*e^2+512*a*b^5*d^5*e+1024*b^6*d^6)*((b*x+a)^2
)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.90, size = 735, normalized size = 1.99

$$-\frac{2\left(3003\,b^5e^5x^5+256\,b^5d^5+384\,ab^4d^4e+480\,a^2b^3d^3e^2+560\,a^3b^2d^2e^3+630\,a^4bde^4+693\,a^5e^5+3003\left(2\,b^5\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(15/2),x, algorithm="
maxima")
```

```
[Out] -2/9009*(3003*b^5*e^5*x^5 + 256*b^5*d^5 + 384*a*b^4*d^4*e + 480*a^2*b^3*d^3
*e^2 + 560*a^3*b^2*d^2*e^3 + 630*a^4*b*d*e^4 + 693*a^5*e^5 + 3003*(2*b^5*d*
e^4 + 3*a*b^4*e^5)*x^4 + 858*(8*b^5*d^2*e^3 + 12*a*b^4*d*e^4 + 15*a^2*b^3*e
^5)*x^3 + 286*(16*b^5*d^3*e^2 + 24*a*b^4*d^2*e^3 + 30*a^2*b^3*d*e^4 + 35*a^
3*b^2*e^5)*x^2 + 13*(128*b^5*d^4*e + 192*a*b^4*d^3*e^2 + 240*a^2*b^3*d^2*e^
3 + 280*a^3*b^2*d*e^4 + 315*a^4*b*e^5)*x)*a/((e^12*x^6 + 6*d*e^11*x^5 + 15*
d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2 + 6*d^5*e^7*x + d^6*e^6)*sqr
t(e*x + d)) - 2/9009*(9009*b^5*e^6*x^6 + 3072*b^5*d^6 + 1280*a*b^4*d^5*e +
768*a^2*b^3*d^4*e^2 + 480*a^3*b^2*d^3*e^3 + 280*a^4*b*d^2*e^4 + 126*a^5*d*e
^5 + 3003*(12*b^5*d*e^5 + 5*a*b^4*e^6)*x^5 + 6006*(12*b^5*d^2*e^4 + 5*a*b^4
*d*e^5 + 3*a^2*b^3*e^6)*x^4 + 858*(96*b^5*d^3*e^3 + 40*a*b^4*d^2*e^4 + 24*a
^2*b^3*d*e^5 + 15*a^3*b^2*e^6)*x^3 + 143*(384*b^5*d^4*e^2 + 160*a*b^4*d^3*e
^3 + 96*a^2*b^3*d^2*e^4 + 60*a^3*b^2*d*e^5 + 35*a^4*b*e^6)*x^2 + 13*(1536*b
^5*d^5*e + 640*a*b^4*d^4*e^2 + 384*a^2*b^3*d^3*e^3 + 240*a^3*b^2*d^2*e^4 +
140*a^4*b*d*e^5 + 63*a^5*e^6)*x)*b/((e^13*x^6 + 6*d*e^12*x^5 + 15*d^2*e^11*
x^4 + 20*d^3*e^10*x^3 + 15*d^4*e^9*x^2 + 6*d^5*e^8*x + d^6*e^7)*sqrt(e*x +
d))
```

mupad [B] time = 3.49, size = 561, normalized size = 1.52

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\Bigg(\frac{462\,a^6\,e^6+504\,a^5\,b\,d\,e^5+560\,a^4\,b^2\,d^2\,e^4+640\,a^3\,b^3\,d^3\,e^3+768\,a^2\,b^4\,d^4\,e^2+1024\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{3003\,b\,e^{13}}+\frac{2\,b^5\,x^6}{e^7}+\frac{x\,(327}{}}{x^7\,\sqrt{d+e\,x}+\frac{a\,d^6\,\sqrt{d+e\,x}}{b\,e^6}+\frac{x^6\,(a\,e+}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(15/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((462*a^6*e^6 + 2048*b^6*d^6 + 768*a^2*b^
4*d^4*e^2 + 640*a^3*b^3*d^3*e^3 + 560*a^4*b^2*d^2*e^4 + 1024*a*b^5*d^5*e +
504*a^5*b*d*e^5)/(3003*b*e^13) + (2*b^5*x^6)/e^7 + (x*(3276*a^5*b*e^6 + 133
12*b^6*d^5*e + 6656*a*b^5*d^4*e^2 + 3640*a^4*b^2*d*e^5 + 4992*a^2*b^4*d^3*e
^3 + 4160*a^3*b^3*d^2*e^4))/(3003*b*e^13) + (8*b^2*x^3*(5*a^3*e^3 + 16*b^3*
d^3 + 8*a*b^2*d^2*e + 6*a^2*b*d*e^2))/(7*e^10) + (2*b*x^2*(35*a^4*e^4 + 128
*b^4*d^4 + 48*a^2*b^2*d^2*e^2 + 64*a*b^3*d^3*e + 40*a^3*b*d*e^3))/(21*e^11)
 + (4*b^4*x^5*(a*e + 2*b*d))/e^8 + (2*b^3*x^4*(3*a^2*e^2 + 8*b^2*d^2 + 4*a*
b*d*e))/e^9))/(x^7*(d + e*x)^(1/2) + (a*d^6*(d + e*x)^(1/2))/(b*e^6) + (x^6
*(a*e + 6*b*d)*(d + e*x)^(1/2))/(b*e) + (3*d*x^5*(2*a*e + 5*b*d)*(d + e*x)^
(1/2))/(b*e^2) + (d^5*x*(6*a*e + b*d)*(d + e*x)^(1/2))/(b*e^6) + (5*d^2*x^4
*(3*a*e + 4*b*d)*(d + e*x)^(1/2))/(b*e^3) + (5*d^3*x^3*(4*a*e + 3*b*d)*(d +
 e*x)^(1/2))/(b*e^4) + (3*d^4*x^2*(5*a*e + 2*b*d)*(d + e*x)^(1/2))/(b*e^5))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(15/2),x)
```

```
[Out] Timed out
```

3.2121 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx$

Optimal. Leaf size=376

$$-\frac{30b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}{11e^7(a+bx)(d+ex)^{11/2}}+\frac{12b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5}{13e^7(a+bx)(d+ex)^{13/2}}-\frac{2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6}{15e^7(a+bx)(d+ex)^{15/2}}-\frac{2b^6\sqrt{}}{3e^7(}$$

```
[Out] -2/15*(-a*e+b*d)^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(15/2)+12/13*b*(-a
*e+b*d)^5*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(13/2)-30/11*b^2*(-a*e+b*d)
^4*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(11/2)+40/9*b^3*(-a*e+b*d)^3*((b*x
+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(9/2)-30/7*b^4*(-a*e+b*d)^2*((b*x+a)^2)^(1
/2)/e^7/(b*x+a)/(e*x+d)^(7/2)+12/5*b^5*(-a*e+b*d)*((b*x+a)^2)^(1/2)/e^7/(b*
x+a)/(e*x+d)^(5/2)-2/3*b^6*((b*x+a)^2)^(1/2)/e^7/(b*x+a)/(e*x+d)^(3/2)
```

Rubi [A] time = 0.14, antiderivative size = 376, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 43\}$

$$-\frac{2b^6\sqrt{a^2+2abx+b^2x^2}}{3e^7(a+bx)(d+ex)^{3/2}}+\frac{12b^5\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}{5e^7(a+bx)(d+ex)^{5/2}}-\frac{30b^4\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}{7e^7(a+bx)(d+ex)^{7/2}}+\frac{40b^3\sqrt{a^2+2}}{9e^7(a}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(17/2),x]
```

```
[Out] (-2*(b*d - a*e)^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(15*e^7*(a + b*x)*(d + e*x
)^(15/2)) + (12*b*(b*d - a*e)^5*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(13*e^7*(a +
 b*x)*(d + e*x)^(13/2)) - (30*b^2*(b*d - a*e)^4*Sqrt[a^2 + 2*a*b*x + b^2*x^
2])/(11*e^7*(a + b*x)*(d + e*x)^(11/2)) + (40*b^3*(b*d - a*e)^3*Sqrt[a^2 +
2*a*b*x + b^2*x^2])/(9*e^7*(a + b*x)*(d + e*x)^(9/2)) - (30*b^4*(b*d - a*e)
^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(7*e^7*(a + b*x)*(d + e*x)^(7/2)) + (12*b
^5*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(5*e^7*(a + b*x)*(d + e*x)^(5
/2)) - (2*b^6*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(3*e^7*(a + b*x)*(d + e*x)^(3/
2))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int \frac{(a+bx)\left(ab+b^2x\right)^5}{(d+ex)^{17/2}}\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \frac{(a+bx)^6}{(d+ex)^{17/2}}\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6}{e^6(d+ex)^{17/2}} - \frac{6b(bd-ae)^5}{e^6(d+ex)^{15/2}} + \frac{15b^2(bd-ae)^4}{e^6(d+ex)^{13/2}} - \frac{20b^3(bd-ae}{e^6(d+ex)^{11/}}\right.}{ab+b^2x}$$

$$= -\frac{2(bd-ae)^6\sqrt{a^2+2abx+b^2x^2}}{15e^7(a+bx)(d+ex)^{15/2}} + \frac{12b(bd-ae)^5\sqrt{a^2+2abx+b^2x^2}}{13e^7(a+bx)(d+ex)^{13/2}} - 30$$

Mathematica [**A**] time = 0.16, size = 163, normalized size = 0.43

$$\frac{2\sqrt{(a+bx)^2}\,\left(54054b^5(d+ex)^5(bd-ae) - 96525b^4(d+ex)^4(bd-ae)^2 + 100100b^3(d+ex)^3(bd-ae)^3 - 61425b^2(\right.}{45045e^7(a+bx)(d+ex)^{15/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2))/(d + e*x)^(17/2),x]
```

```
[Out] (2*Sqrt[(a + b*x)^2]*(-3003*(b*d - a*e)^6 + 20790*b*(b*d - a*e)^5*(d + e*x)
 - 61425*b^2*(b*d - a*e)^4*(d + e*x)^2 + 100100*b^3*(b*d - a*e)^3*(d + e*x)
^3 - 96525*b^4*(b*d - a*e)^2*(d + e*x)^4 + 54054*b^5*(b*d - a*e)*(d + e*x)^
5 - 15015*b^6*(d + e*x)^6))/(45045*e^7*(a + b*x)*(d + e*x)^(15/2))
```

fricas [**A**] time = 0.84, size = 443, normalized size = 1.18

$$-\frac{2\left(15015\,b^6e^6x^6 + 1024\,b^6d^6 + 1536\,ab^5d^5e + 1920\,a^2b^4d^4e^2 + 2240\,a^3b^3d^3e^3 + 2520\,a^4b^2d^2e^4 + 2772\,a^5bde^5 + 3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
fricas")
```

```
[Out] -2/45045*(15015*b^6*e^6*x^6 + 1024*b^6*d^6 + 1536*a*b^5*d^5*e + 1920*a^2*b^
4*d^4*e^2 + 2240*a^3*b^3*d^3*e^3 + 2520*a^4*b^2*d^2*e^4 + 2772*a^5*b*d*e^5
+ 3003*a^6*e^6 + 18018*(2*b^6*d*e^5 + 3*a*b^5*e^6)*x^5 + 6435*(8*b^6*d^2*e^
4 + 12*a*b^5*d*e^5 + 15*a^2*b^4*e^6)*x^4 + 2860*(16*b^6*d^3*e^3 + 24*a*b^5*
d^2*e^4 + 30*a^2*b^4*d*e^5 + 35*a^3*b^3*e^6)*x^3 + 195*(128*b^6*d^4*e^2 + 1
92*a*b^5*d^3*e^3 + 240*a^2*b^4*d^2*e^4 + 280*a^3*b^3*d*e^5 + 315*a^4*b^2*e^
6)*x^2 + 30*(256*b^6*d^5*e + 384*a*b^5*d^4*e^2 + 480*a^2*b^4*d^3*e^3 + 560*
a^3*b^3*d^2*e^4 + 630*a^4*b^2*d*e^5 + 693*a^5*b*e^6)*x)*sqrt(e*x + d)/(e^15
*x^8 + 8*d*e^14*x^7 + 28*d^2*e^13*x^6 + 56*d^3*e^12*x^5 + 70*d^4*e^11*x^4 +
 56*d^5*e^10*x^3 + 28*d^6*e^9*x^2 + 8*d^7*e^8*x + d^8*e^7)
```

giac [**B**] time = 0.29, size = 614, normalized size = 1.63

$$-\frac{2\left(15015\,(xe+d)^6b^6\mathrm{sgn}\,(bx+a) - 54054\,(xe+d)^5b^6d\mathrm{sgn}\,(bx+a) + 96525\,(xe+d)^4b^6d^2\mathrm{sgn}\,(bx+a) - 100100\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
giac")
```

```
[Out] -2/45045*(15015*(x*e + d)^6*b^6*sgn(b*x + a) - 54054*(x*e + d)^5*b^6*d*sgn(
b*x + a) + 96525*(x*e + d)^4*b^6*d^2*sgn(b*x + a) - 100100*(x*e + d)^3*b^6*
d^3*sgn(b*x + a) + 61425*(x*e + d)^2*b^6*d^4*sgn(b*x + a) - 20790*(x*e + d)
*b^6*d^5*sgn(b*x + a) + 3003*b^6*d^6*sgn(b*x + a) + 54054*(x*e + d)^5*a*b^5
*e*sgn(b*x + a) - 193050*(x*e + d)^4*a*b^5*d*e*sgn(b*x + a) + 300300*(x*e +
 d)^3*a*b^5*d^2*e*sgn(b*x + a) - 245700*(x*e + d)^2*a*b^5*d^3*e*sgn(b*x + a
) + 103950*(x*e + d)*a*b^5*d^4*e*sgn(b*x + a) - 18018*a*b^5*d^5*e*sgn(b*x +
 a) + 96525*(x*e + d)^4*a^2*b^4*e^2*sgn(b*x + a) - 300300*(x*e + d)^3*a^2*b
^4*d*e^2*sgn(b*x + a) + 368550*(x*e + d)^2*a^2*b^4*d^2*e^2*sgn(b*x + a) - 2
07900*(x*e + d)*a^2*b^4*d^3*e^2*sgn(b*x + a) + 45045*a^2*b^4*d^4*e^2*sgn(b*
x + a) + 100100*(x*e + d)^3*a^3*b^3*e^3*sgn(b*x + a) - 245700*(x*e + d)^2*a
^3*b^3*d*e^3*sgn(b*x + a) + 207900*(x*e + d)*a^3*b^3*d^2*e^3*sgn(b*x + a) -
 60060*a^3*b^3*d^3*e^3*sgn(b*x + a) + 61425*(x*e + d)^2*a^4*b^2*e^4*sgn(b*x
 + a) - 103950*(x*e + d)*a^4*b^2*d*e^4*sgn(b*x + a) + 45045*a^4*b^2*d^2*e^4
*sgn(b*x + a) + 20790*(x*e + d)*a^5*b*e^5*sgn(b*x + a) - 18018*a^5*b*d*e^5*
sgn(b*x + a) + 3003*a^6*e^6*sgn(b*x + a))*e^(-7)/(x*e + d)^(15/2)
```

maple [A] time = 0.05, size = 393, normalized size = 1.05

$$-\frac{2\left(15015b^{6}e^{6}x^{6}+54054a\,b^{5}e^{6}x^{5}+36036b^{6}d\,e^{5}x^{5}+96525a^{2}b^{4}e^{6}x^{4}+77220a\,b^{5}d\,e^{5}x^{4}+51480b^{6}d^{2}e^{4}x^{4}+10\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x)
```

```
[Out] -2/45045/(e*x+d)^(15/2)*(15015*b^6*e^6*x^6+54054*a*b^5*e^6*x^5+36036*b^6*d*
e^5*x^5+96525*a^2*b^4*e^6*x^4+77220*a*b^5*d*e^5*x^4+51480*b^6*d^2*e^4*x^4+1
00100*a^3*b^3*e^6*x^3+85800*a^2*b^4*d*e^5*x^3+68640*a*b^5*d^2*e^4*x^3+45760
*b^6*d^3*e^3*x^3+61425*a^4*b^2*e^6*x^2+54600*a^3*b^3*d*e^5*x^2+46800*a^2*b^
4*d^2*e^4*x^2+37440*a*b^5*d^3*e^3*x^2+24960*b^6*d^4*e^2*x^2+20790*a^5*b*e^6
*x+18900*a^4*b^2*d*e^5*x+16800*a^3*b^3*d^2*e^4*x+14400*a^2*b^4*d^3*e^3*x+11
520*a*b^5*d^4*e^2*x+7680*b^6*d^5*e*x+3003*a^6*e^6+2772*a^5*b*d*e^5+2520*a^4
*b^2*d^2*e^4+2240*a^3*b^3*d^3*e^3+1920*a^2*b^4*d^4*e^2+1536*a*b^5*d^5*e+102
4*b^6*d^6)*((b*x+a)^2)^(5/2)/e^7/(b*x+a)^5
```

maxima [B] time = 0.97, size = 757, normalized size = 2.01

$$-\frac{2\left(9009\,b^{5}e^{5}x^{5}+256\,b^{5}d^{5}+640\,ab^{4}d^{4}e+1120\,a^{2}b^{3}d^{3}e^{2}+1680\,a^{3}b^{2}d^{2}e^{3}+2310\,a^{4}bde^{4}+3003\,a^{5}e^{5}+6435\,(\right.}{45}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(17/2),x, algorithm="
maxima")
```

```
[Out] -2/45045*(9009*b^5*e^5*x^5 + 256*b^5*d^5 + 640*a*b^4*d^4*e + 1120*a^2*b^3*d
^3*e^2 + 1680*a^3*b^2*d^2*e^3 + 2310*a^4*b*d*e^4 + 3003*a^5*e^5 + 6435*(2*b
^5*d*e^4 + 5*a*b^4*e^5)*x^4 + 1430*(8*b^5*d^2*e^3 + 20*a*b^4*d*e^4 + 35*a^2
*b^3*e^5)*x^3 + 390*(16*b^5*d^3*e^2 + 40*a*b^4*d^2*e^3 + 70*a^2*b^3*d*e^4 +
 105*a^3*b^2*e^5)*x^2 + 15*(128*b^5*d^4*e + 320*a*b^4*d^3*e^2 + 560*a^2*b^3
*d^2*e^3 + 840*a^3*b^2*d*e^4 + 1155*a^4*b*e^5)*x)*a/((e^13*x^7 + 7*d*e^12*x
^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 +
7*d^6*e^7*x + d^7*e^6)*sqrt(e*x + d)) - 2/45045*(15015*b^5*e^6*x^6 + 1024*b
^5*d^6 + 1280*a*b^4*d^5*e + 1280*a^2*b^3*d^4*e^2 + 1120*a^3*b^2*d^3*e^3 + 8
40*a^4*b*d^2*e^4 + 462*a^5*d*e^5 + 9009*(4*b^5*d*e^5 + 5*a*b^4*e^6)*x^5 + 1
2870*(4*b^5*d^2*e^4 + 5*a*b^4*d*e^5 + 5*a^2*b^3*e^6)*x^4 + 1430*(32*b^5*d^3
*e^3 + 40*a*b^4*d^2*e^4 + 40*a^2*b^3*d*e^5 + 35*a^3*b^2*e^6)*x^3 + 195*(128
*b^5*d^4*e^2 + 160*a*b^4*d^3*e^3 + 160*a^2*b^3*d^2*e^4 + 140*a^3*b^2*d*e^5
+ 105*a^4*b*e^6)*x^2 + 15*(512*b^5*d^5*e + 640*a*b^4*d^4*e^2 + 640*a^2*b^3*
d^3*e^3 + 560*a^3*b^2*d^2*e^4 + 420*a^4*b*d*e^5 + 231*a^5*e^6)*x)*b/((e^14*
x^7 + 7*d*e^13*x^6 + 21*d^2*e^12*x^5 + 35*d^3*e^11*x^4 + 35*d^4*e^10*x^3 +
21*d^5*e^9*x^2 + 7*d^6*e^8*x + d^7*e^7)*sqrt(e*x + d))
```

mupad [B] time = 3.53, size = 588, normalized size = 1.56

$$-\frac{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(\frac{6006\,a^6\,e^6+5544\,a^5\,b\,d\,e^5+5040\,a^4\,b^2\,d^2\,e^4+4480\,a^3\,b^3\,d^3\,e^3+3840\,a^2\,b^4\,d^4\,e^2+3072\,a\,b^5\,d^5\,e+2048\,b^6\,d^6}{45045\,b\,e^{14}}+\frac{2\,b^5\,x^6}{3\,e^8}+\right.}{x^8\,\sqrt{d+e\,x}+\frac{a\,d^7\,\sqrt{d+e\,x}}{b\,e^7}+\frac{x^7\,(a\,e+7}{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2))/(d + e*x)^(17/2),x)
```

```
[Out] -((a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*((6006*a^6*e^6 + 2048*b^6*d^6 + 3840*a^2*
b^4*d^4*e^2 + 4480*a^3*b^3*d^3*e^3 + 5040*a^4*b^2*d^2*e^4 + 3072*a*b^5*d^5*
e + 5544*a^5*b*d*e^5)/(45045*b*e^14) + (2*b^5*x^6)/(3*e^8) + (x*(41580*a^5*
b*e^6 + 15360*b^6*d^5*e + 23040*a*b^5*d^4*e^2 + 37800*a^4*b^2*d*e^5 + 28800
*a^2*b^4*d^3*e^3 + 33600*a^3*b^3*d^2*e^4))/(45045*b*e^14) + (8*b^2*x^3*(35*
a^3*e^3 + 16*b^3*d^3 + 24*a*b^2*d^2*e + 30*a^2*b*d*e^2))/(63*e^11) + (2*b*x
^2*(315*a^4*e^4 + 128*b^4*d^4 + 240*a^2*b^2*d^2*e^2 + 192*a*b^3*d^3*e + 280
*a^3*b*d*e^3))/(231*e^12) + (4*b^4*x^5*(3*a*e + 2*b*d))/(5*e^9) + (2*b^3*x^
4*(15*a^2*e^2 + 8*b^2*d^2 + 12*a*b*d*e))/(7*e^10)))/(x^8*(d + e*x)^(1/2) +
(a*d^7*(d + e*x)^(1/2))/(b*e^7) + (x^7*(a*e + 7*b*d)*(d + e*x)^(1/2))/(b*e)
 + (7*d*x^6*(a*e + 3*b*d)*(d + e*x)^(1/2))/(b*e^2) + (d^6*x*(7*a*e + b*d)*(
d + e*x)^(1/2))/(b*e^7) + (35*d^3*x^4*(a*e + b*d)*(d + e*x)^(1/2))/(b*e^4)
+ (7*d^5*x^2*(3*a*e + b*d)*(d + e*x)^(1/2))/(b*e^6) + (7*d^2*x^5*(3*a*e + 5
*b*d)*(d + e*x)^(1/2))/(b*e^3) + (7*d^4*x^3*(5*a*e + 3*b*d)*(d + e*x)^(1/2)
)/(b*e^5))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(17/2),x)
```

```
[Out] Timed out
```

3.2122 $\int \frac{(a+bx)(d+ex)^{7/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/9*(b*x+a)*(e*x+d)^(9/2)/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(9/2))/(9*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^{7/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{7/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^{7/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{9/2}}{9e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(9/2))/(9*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.89, size = 50, normalized size = 1.22

$$\frac{2\left(e^{4}x^{4}+4\,de^{3}x^{3}+6\,d^{2}e^{2}x^{2}+4\,d^{3}ex+d^{4}\right)\sqrt{ex+d}}{9\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/9*(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*sqrt(e*x + d)
/e
```

giac [B] time = 0.18, size = 226, normalized size = 5.51

$$\frac{2}{315}\Big(315\sqrt{xe+d}\,d^{4}\mathrm{sgn}\left(bx+a\right)+420\left(\left(xe+d\right)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)d^{3}\mathrm{sgn}\left(bx+a\right)+126\Big(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/315*(315*sqrt(x*e + d)*d^4*sgn(b*x + a) + 420*((x*e + d)^(3/2) - 3*sqrt(x
*e + d)*d)*d^3*sgn(b*x + a) + 126*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d
 + 15*sqrt(x*e + d)*d^2)*d^2*sgn(b*x + a) + 36*(5*(x*e + d)^(7/2) - 21*(x*e
 + d)^(5/2)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*d*sgn(b*x +
a) + (35*(x*e + d)^(9/2) - 180*(x*e + d)^(7/2)*d + 378*(x*e + d)^(5/2)*d^2
- 420*(x*e + d)^(3/2)*d^3 + 315*sqrt(x*e + d)*d^4)*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.04, size = 27, normalized size = 0.66

$$\frac{2\left(bx+a\right)\left(ex+d\right)^{\frac{9}{2}}}{9\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/9*(b*x+a)*(e*x+d)^(9/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 1.01, size = 50, normalized size = 1.22

$$\frac{2\left(e^{4}x^{4}+4\,de^{3}x^{3}+6\,d^{2}e^{2}x^{2}+4\,d^{3}ex+d^{4}\right)\sqrt{ex+d}}{9\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/9*(e^4*x^4 + 4*d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x + d^4)*sqrt(e*x + d)
/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{7/2}}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/((a + b*x)^2)^(1/2),x)
[Out] int(((a + b*x)*(d + e*x)^(7/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
[Out] Timed out
```

3.2123 $\int \frac{(a+bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/7*(b*x+a)*(e*x+d)^(7/2)/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(7/2))/(7*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{5/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int (d+ex)^{5/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{7/2}}{7e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(7/2))/(7*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.96, size = 39, normalized size = 0.95

$$\frac{2\left(e^{3}x^{3}+3\,de^{2}x^{2}+3\,d^{2}ex+d^{3}\right)\sqrt{ex+d}}{7\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/7*(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*sqrt(e*x + d)/e
```

giac [B] time = 0.24, size = 154, normalized size = 3.76

$$\frac{2}{35}\left(35\,\sqrt{xe+d}\,d^{3}\mathrm{sgn}\left(bx+a\right)+35\left(\left(xe+d\right)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)d^{2}\mathrm{sgn}\left(bx+a\right)+7\left(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}d\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/35*(35*sqrt(x*e + d)*d^3*sgn(b*x + a) + 35*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*d^2*sgn(b*x + a) + 7*(3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15
*sqrt(x*e + d)*d^2)*d*sgn(b*x + a) + (5*(x*e + d)^(7/2) - 21*(x*e + d)^(5/2
)*d + 35*(x*e + d)^(3/2)*d^2 - 35*sqrt(x*e + d)*d^3)*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\left(bx+a\right)\left(ex+d\right)^{\frac{7}{2}}}{7\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/7*(b*x+a)*(e*x+d)^(7/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.97, size = 39, normalized size = 0.95

$$\frac{2\left(e^{3}x^{3}+3\,de^{2}x^{2}+3\,d^{2}ex+d^{3}\right)\sqrt{ex+d}}{7\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/7*(e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x + d^3)*sqrt(e*x + d)/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{5/2}}{\sqrt{{\left(a+b\,x\right)}^2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(5/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2124 $\int \frac{(a+bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/5*(b*x+a)*(e*x+d)^(5/2)/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(5/2))/(5*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^{3/2}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int (d+ex)^{3/2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{5/2}}{5e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(5/2))/(5*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.11, size = 28, normalized size = 0.68

$$\frac{2\left(e^2x^2+2\,dex+d^2\right)\sqrt{ex+d}}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/5*(e^2*x^2 + 2*d*e*x + d^2)*sqrt(e*x + d)/e
```

giac [B] time = 0.16, size = 95, normalized size = 2.32

$$\frac{2}{15}\left(15\sqrt{xe+d}\,d^2\mathrm{sgn}\left(bx+a\right)+10\left(\left(xe+d\right)^{\frac{3}{2}}-3\sqrt{xe+d}\,d\right)d\mathrm{sgn}\left(bx+a\right)+\left(3\left(xe+d\right)^{\frac{5}{2}}-10\left(xe+d\right)^{\frac{3}{2}}d+15\sqrt{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/15*(15*sqrt(x*e + d)*d^2*sgn(b*x + a) + 10*((x*e + d)^(3/2) - 3*sqrt(x*e
+ d)*d)*d*sgn(b*x + a) + (3*(x*e + d)^(5/2) - 10*(x*e + d)^(3/2)*d + 15*sqr
t(x*e + d)*d^2)*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\left(bx+a\right)\left(ex+d\right)^{\frac{5}{2}}}{5\sqrt{\left(bx+a\right)^{2}}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/5*(b*x+a)*(e*x+d)^(5/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.95, size = 28, normalized size = 0.68

$$\frac{2\left(e^2x^2+2\,dex+d^2\right)\sqrt{ex+d}}{5\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/5*(e^2*x^2 + 2*d*e*x + d^2)*sqrt(e*x + d)/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{\left(a+b\,x\right)\,{\left(d+e\,x\right)}^{3/2}}{\sqrt{{\left(a+b\,x\right)}^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(3/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^{\frac{3}{2}}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**(3/2)/sqrt((a + b*x)**2), x)
```

3.2125 $\int \frac{(a+bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2/3*(b*x+a)*(e*x+d)^(3/2)/e/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(3/2))/(3*e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)\sqrt{d+ex}}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \sqrt{d+ex}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 32, normalized size = 0.78

$$\frac{2(a+bx)(d+ex)^{3/2}}{3e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (2*(a + b*x)*(d + e*x)^(3/2))/(3*e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 0.80, size = 12, normalized size = 0.29

$$\frac{2\,(ex+d)^{\frac{3}{2}}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2/3*(e*x + d)^(3/2)/e
```

giac [A] time = 0.17, size = 49, normalized size = 1.20

$$\frac{2}{3}\left(3\,\sqrt{xe+d}\,d\mathrm{sgn}\left(bx+a\right)+\left((xe+d)^{\frac{3}{2}}-3\,\sqrt{xe+d}\,d\right)\mathrm{sgn}\left(bx+a\right)\right)e^{(-1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2/3*(3*sqrt(x*e + d)*d*sgn(b*x + a) + ((x*e + d)^(3/2) - 3*sqrt(x*e + d)*d)
*sgn(b*x + a))*e^(-1)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$\frac{2\,(bx+a)\,(ex+d)^{\frac{3}{2}}}{3\sqrt{(bx+a)^{2}}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2/3*(b*x+a)*(e*x+d)^(3/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.84, size = 12, normalized size = 0.29

$$\frac{2\,(ex+d)^{\frac{3}{2}}}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2/3*(e*x + d)^(3/2)/e
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,\sqrt{d+e\,x}}{\sqrt{(a+b\,x)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(1/2))/((a + b*x)^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\sqrt{d+ex}}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)/sqrt((a + b*x)**2), x)
```

3.2126 $\int \frac{a+bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] 2*(b*x+a)*(e*x+d)^(1/2)/e/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*Sqrt[d + e*x])/(e*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$\frac{2(a+bx)\sqrt{d+ex}}{e\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (2*(a + b*x)*Sqrt[d + e*x])/(e*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.19, size = 12, normalized size = 0.31

$$\frac{2\sqrt{ex+d}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(e*x + d)/e
```

giac [A] time = 0.16, size = 18, normalized size = 0.46

$$2\sqrt{xe+d}\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] 2*sqrt(x*e + d)*e^(-1)*sgn(b*x + a)
```

maple [A] time = 0.05, size = 27, normalized size = 0.69

$$\frac{2\left(bx+a\right)\sqrt{ex+d}}{\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] 2*(b*x+a)*(e*x+d)^(1/2)/e/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.74, size = 12, normalized size = 0.31

$$\frac{2\sqrt{ex+d}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] 2*sqrt(e*x + d)/e
```

mupad [B] time = 2.42, size = 50, normalized size = 1.28

$$\frac{\left(\frac{2\,x}{b}+\frac{2\,d}{b\,e}\right)\,\sqrt{{\left(a+b\,x\right)}^2}}{x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(1/2)),x)
```

```
[Out] (((2*x)/b + (2*d)/(b*e))*((a + b*x)^2)^(1/2))/(x*(d + e*x)^(1/2) + (a*(d +
e*x)^(1/2))/b)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\sqrt{d+ex}\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(1/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(sqrt(d + e*x)*sqrt((a + b*x)**2)), x)
```

3.2127 $\int \frac{a+bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=39

$$-\frac{2(a+bx)}{e\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}}$$

```
[Out] -2*(b*x+a)/e/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 39, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$-\frac{2(a+bx)}{e\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(e*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{2(a+bx)}{e\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 30, normalized size = 0.77

$$-\frac{2(a+bx)}{e\sqrt{(a+bx)^2}\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
[Out] (-2*(a + b*x))/(e*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [A] time = 1.35, size = 20, normalized size = 0.51

$$-\frac{2\sqrt{ex+d}}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
[Out] -2*sqrt(e*x + d)/(e^2*x + d*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.46

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{\sqrt{xe+d}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
[Out] -2*e^(-1)*sgn(b*x + a)/sqrt(x*e + d)
```

maple [A] time = 0.05, size = 27, normalized size = 0.69

$$-\frac{2\left(bx+a\right)}{\sqrt{ex+d}\,\sqrt{\left(bx+a\right)^2}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x)
[Out] -2*(b*x+a)/e/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.80, size = 20, normalized size = 0.51

$$-\frac{2\sqrt{ex+d}}{e^2x+de}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
[Out] -2*sqrt(e*x + d)/(e^2*x + d*e)
```

mupad [B] time = 2.50, size = 41, normalized size = 1.05

$$-\frac{2\sqrt{\left(a+b\,x\right)^2}}{b\,e\,\left(x\,\sqrt{d+e\,x}+\frac{a\,\sqrt{d+e\,x}}{b}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(3/2)),x)
[Out] -(2*((a + b*x)^2)^(1/2))/(b*e*(x*(d + e*x)^(1/2) + (a*(d + e*x)^(1/2))/b))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+bx}{\left(d+ex\right)^{\frac{3}{2}}\sqrt{\left(a+bx\right)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**(3/2)*sqrt((a + b*x)**2)), x)
```

3.2128 $\int \frac{a+bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2(a+bx)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}$$

```
[Out] -2/3*(b*x+a)/e/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.086, Rules used = {770, 21, 32}

$$-\frac{2(a+bx)}{3e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(3*e*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{2(a+bx)}{3e(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 32, normalized size = 0.78

$$-\frac{2(a+bx)}{3e\sqrt{(a+bx)^2}\,(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(3*e*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

fricas [A] time = 0.76, size = 31, normalized size = 0.76

$$-\frac{2\sqrt{ex+d}}{3\left(e^3x^2+2\,de^2x+d^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/3*sqrt(e*x + d)/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

giac [A] time = 0.16, size = 18, normalized size = 0.44

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{3\,(xe+d)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2/3*e^(-1)*sgn(b*x + a)/(x*e + d)^(3/2)
```

maple [A] time = 0.05, size = 27, normalized size = 0.66

$$-\frac{2\,(bx+a)}{3\,(ex+d)^{\frac{3}{2}}\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/3*(b*x+a)/e/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.82, size = 31, normalized size = 0.76

$$-\frac{2\sqrt{ex+d}}{3\left(e^3x^2+2\,de^2x+d^2e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(e*x + d)/(e^3*x^2 + 2*d*e^2*x + d^2*e)
```

mupad [B] time = 2.56, size = 75, normalized size = 1.83

$$-\frac{2\sqrt{(a+b\,x)^2}}{3\,b\,e^2\left(x^2\sqrt{d+e\,x}+\frac{a\,d\,\sqrt{d+e\,x}}{b\,e}+\frac{x\left(3\,a\,e^2+3\,b\,d\,e\right)\sqrt{d+e\,x}}{3\,b\,e^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(5/2)),x)
```

```
[Out] -(2*((a + b*x)^2)^(1/2))/(3*b*e^2*(x^2*(d + e*x)^(1/2) + (a*d*(d + e*x)^(1/
2))/(b*e) + (x*(3*a*e^2 + 3*b*d*e)*(d + e*x)^(1/2))/(3*b*e^2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2129 $\int \frac{a+bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=41

$$-\frac{2(a+bx)}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}$$

```
[Out] -2/5*(b*x+a)/e/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 41, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.086$, Rules used = $\{770, 21, 32\}$

$$-\frac{2(a+bx)}{5e\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(5*e*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(d+ex)^{7/2}\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{a+bx}{\left(ab+b^2x\right)(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{2(a+bx)}{5e(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.78

$$-\frac{2(a+bx)}{5e\sqrt{(a+bx)^2}\,(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]),x]
```

```
[Out] (-2*(a + b*x))/(5*e*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

fricas [**A**] time = 1.24, size = 42, normalized size = 1.02

$$-\frac{2\sqrt{ex+d}}{5\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="fricas")
```

```
[Out] -2/5*sqrt(e*x + d)/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

giac [**A**] time = 0.17, size = 18, normalized size = 0.44

$$-\frac{2\,e^{(-1)}\mathrm{sgn}\left(bx+a\right)}{5\left(xe+d\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="giac")
```

```
[Out] -2/5*e^(-1)*sgn(b*x + a)/(x*e + d)^(5/2)
```

maple [**A**] time = 0.04, size = 27, normalized size = 0.66

$$-\frac{2\left(bx+a\right)}{5\left(ex+d\right)^{\frac{5}{2}}\sqrt{\left(bx+a\right)^{2}}\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x)
```

```
[Out] -2/5*(b*x+a)/e/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)
```

maxima [**A**] time = 0.83, size = 42, normalized size = 1.02

$$-\frac{2\sqrt{ex+d}}{5\left(e^4x^3+3\,de^3x^2+3\,d^2e^2x+d^3e\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/((b*x+a)^2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/5*sqrt(e*x + d)/(e^4*x^3 + 3*d*e^3*x^2 + 3*d^2*e^2*x + d^3*e)
```

mupad [**B**] time = 2.56, size = 103, normalized size = 2.51

$$-\frac{2\sqrt{{\left(a+b\,x\right)}^2}}{5\,b\,e^3\,\left(x^3\,\sqrt{d+e\,x}+\frac{a\,d^2\,\sqrt{d+e\,x}}{b\,e^2}+\frac{x^2\,\left(a\,e^3+2\,b\,d\,e^2\right)\,\sqrt{d+e\,x}}{b\,e^3}+\frac{d\,x\,\left(2\,a\,e+b\,d\right)\,\sqrt{d+e\,x}}{b\,e^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/(((a + b*x)^2)^(1/2)*(d + e*x)^(7/2)),x)
```

```
[Out] -(2*((a + b*x)^2)^(1/2))/(5*b*e^3*(x^3*(d + e*x)^(1/2) + (a*d^2*(d + e*x)^(
1/2))/(b*e^2) + (x^2*(a*e^3 + 2*b*d*e^2)*(d + e*x)^(1/2))/(b*e^3) + (d*x*(2
*a*e + b*d)*(d + e*x)^(1/2))/(b*e^2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/((b*x+a)**2)**(1/2),x)
```

```
[Out] Timed out
```

3.2130 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=250

$$-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(a+bx)(bd-ae)^{5/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx}}$$

```
[Out] 7/3*e*(-a*e+b*d)*(b*x+a)*(e*x+d)^(3/2)/b^3/((b*x+a)^2)^(1/2)+7/5*e*(b*x+a)*
(e*x+d)^(5/2)/b^2/((b*x+a)^2)^(1/2)-(e*x+d)^(7/2)/b/((b*x+a)^2)^(1/2)-7*e*(
-a*e+b*d)^(5/2)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(
9/2)/((b*x+a)^2)^(1/2)+7*e*(-a*e+b*d)^2*(b*x+a)*(e*x+d)^(1/2)/b^4/((b*x+a)^
2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{3/2}(bd-ae)}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)\sqrt{d+ex}\,(bd-ae)^2}{b^4\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (7*e*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x])/(b^4*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) + (7*e*(b*d - a*e)*(a + b*x)*(d + e*x)^(3/2))/(3*b^3*Sqrt[a^2 + 2*a*b*
x + b^2*x^2]) + (7*e*(a + b*x)*(d + e*x)^(5/2))/(5*b^2*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - (d + e*x)^(7/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(b*d
- a*e)^(5/2)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b
^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(7e\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(7e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int \frac{(d+}{ab}}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+ex)^{5/2}}{5b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{7/2}}{b\sqrt{a^2+2abx+b^2x^2}}+$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

$$= \frac{7e(bd-ae)^2(a+bx)\sqrt{d+ex}}{b^4\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(bd-ae)(a+bx)(d+ex)^{3/2}}{3b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{7e(a+bx)(d+e}{5b^2\sqrt{a^2+2abx+}}$$

Mathematica [C]   time = 0.03, size = 66, normalized size = 0.26

$$\frac{2e(a+bx)(d+ex)^{9/2}\,{}_2F_1\left(2,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(9/2)*Hypergeometric2F1[2, 9/2, 11/2, -((b*(d + e*
x))/(-(b*d) + a*e))])/(9*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

fricas [A]   time = 0.83, size = 486, normalized size = 1.94

$$\left[\frac{105\left(ab^2d^2e-2\,a^2bde^2+a^3e^3+\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(6\,b^3e^3x\right.}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/30*(105*(a*b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (b^3*d^2*e - 2*a*b^2*d*
e^2 + a^2*b*e^3)*x)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e
*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(6*b^3*e^3*x^3 - 15*b^3*d^3 +
 161*a*b^2*d^2*e - 245*a^2*b*d*e^2 + 105*a^3*e^3 + 2*(16*b^3*d*e^2 - 7*a*b^
2*e^3)*x^2 + 2*(58*b^3*d^2*e - 84*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x +
 d))/(b^5*x + a*b^4), -1/15*(105*(a*b^2*d^2*e - 2*a^2*b*d*e^2 + a^3*e^3 + (
b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt
(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (6*b^3*e^3*x^3 - 15*b^3*d^3
 + 161*a*b^2*d^2*e - 245*a^2*b*d*e^2 + 105*a^3*e^3 + 2*(16*b^3*d*e^2 - 7*a*
b^2*e^3)*x^2 + 2*(58*b^3*d^2*e - 84*a*b^2*d*e^2 + 35*a^2*b*e^3)*x)*sqrt(e*x
 + d))/(b^5*x + a*b^4)]
```

giac [B] time = 0.30, size = 359, normalized size = 1.44

$$\frac{7\left(b^3d^3e^2-3\,ab^2d^2e^3+3\,a^2bde^4-a^3e^5\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{\sqrt{-b^2d+abe}\,b^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{(\sqrt{xe+d}\,b^3d^3e^2-3\,\sqrt{xe+d}\,ab^2d^2e^3+3\,\sqrt{x}}{((xe+d)b-bd+ae)b^4\mathrm{sgn}\,((xe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 7*(b^3*d^3*e^2 - 3*a*b^2*d^2*e^3 + 3*a^2*b*d*e^4 - a^3*e^5)*arctan(sqrt(x*e
 + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^4*sgn((x*e + d
)*b*e - b*d*e + a*e^2)) - (sqrt(x*e + d)*b^3*d^3*e^2 - 3*sqrt(x*e + d)*a*b^
2*d^2*e^3 + 3*sqrt(x*e + d)*a^2*b*d*e^4 - sqrt(x*e + d)*a^3*e^5)*e^(-1)/(((
x*e + d)*b - b*d + a*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2/15*(3*(
x*e + d)^(5/2)*b^8*e^6 + 10*(x*e + d)^(3/2)*b^8*d*e^6 + 45*sqrt(x*e + d)*b^
8*d^2*e^6 - 10*(x*e + d)^(3/2)*a*b^7*e^7 - 90*sqrt(x*e + d)*a*b^7*d*e^7 + 4
5*sqrt(x*e + d)*a^2*b^6*e^8)*e^(-5)/(b^10*sgn((x*e + d)*b*e - b*d*e + a*e^2
))
```

maple [B] time = 0.08, size = 662, normalized size = 2.65

$$\left(-105a^3b\,e^4x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+315a^2b^2d\,e^3x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-315a\,b^3d^2e^2x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+105b^4a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/15*(6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(5/2)*x*b^3*e+6*(e*x+d)^(5/2)*((a*e-b*d
)*b)^(1/2)*a*b^2*e-20*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*a*b^2*e^2+20*((a*
e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*b^3*d*e-105*a^3*b*e^4*x*arctan((e*x+d)^(1/2
)/((a*e-b*d)*b)^(1/2)*b)+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*
a^2*b^2*d*e^3-315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*a*b^3*d^2*e
^2+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^4*d^3*e-20*(e*x+d)^(
3/2)*((a*e-b*d)*b)^(1/2)*a^2*b*e^2+20*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*a*b
^2*d*e+90*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*a^2*b*e^3-180*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*x*a*b^2*d*e^2+90*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*b^3
*d^2*e-105*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+315*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*b*d*e^3-315*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*a^2*b^2*d^2*e^2+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)
^(1/2)*b)*a*b^3*d^3*e+105*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^3*e^3-225*(e*
x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2+135*(e*x+d)^(1/2)*((a*e-b*d)*b)^
(1/2)*a*b^2*d^2*e-15*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(
(a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.2131 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=198

$$-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(a+bx)(bd-ae)^{3/2}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx}}$$

```
[Out] 5/3*e*(b*x+a)*(e*x+d)^(3/2)/b^2/((b*x+a)^2)^(1/2)-(e*x+d)^(5/2)/b/((b*x+a)^
2)^(1/2)-5*e*(-a*e+b*d)^(3/2)*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b
*d)^(1/2))/b^(7/2)/((b*x+a)^2)^(1/2)+5*e*(-a*e+b*d)*(b*x+a)*(e*x+d)^(1/2)/b
^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 198, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)\sqrt{d+ex}\,(bd-ae)}{b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e(a+bx)(bd-ae)^{3/2}\tanh^{-1}\left(\right.}{b^{7/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (5*e*(b*d - a*e)*(a + b*x)*Sqrt[d + e*x])/(b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2
]) + (5*e*(a + b*x)*(d + e*x)^(3/2))/(3*b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
- (d + e*x)^(5/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(b*d - a*e)^(3/2
)*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(7/2)*Sqrt
[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = -\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{(5e)\int\frac{(d+ex)^{3/2}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(5e\left(ab+b^2x\right)\right)\int\frac{(d+ex)^{3/2}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(5e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+$$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}+$$

$$= \frac{5e(bd-ae)(a+bx)\sqrt{d+ex}}{b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{5e(a+bx)(d+ex)^{3/2}}{3b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{b\sqrt{a^2+2abx+b^2x^2}}-$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.33

$$\frac{2e(a+bx)(d+ex)^{7/2}\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};-\frac{b(d+ex)}{ae-bd}\right)}{7\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(7/2)*Hypergeometric2F1[2, 7/2, 9/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/(7*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.10, size = 330, normalized size = 1.67

$$\left[-\frac{15\left(abde-a^2e^2+\left(b^2de-abe^2\right)x\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae+2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)-2\left(2\,b^2e^2x^2-3\,b^2d^2+20\,abde-15\right.}{6\left(b^4x+ab^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/6*(15*(a*b*d*e - a^2*e^2 + (b^2*d*e - a*b*e^2)*x)*sqrt((b*d - a*e)/b)*l
og((b*e*x + 2*b*d - a*e + 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a))
 - 2*(2*b^2*e^2*x^2 - 3*b^2*d^2 + 20*a*b*d*e - 15*a^2*e^2 + 2*(7*b^2*d*e -
5*a*b*e^2)*x)*sqrt(e*x + d))/(b^4*x + a*b^3), -1/3*(15*(a*b*d*e - a^2*e^2 +
 (b^2*d*e - a*b*e^2)*x)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-
(b*d - a*e)/b)/(b*d - a*e)) - (2*b^2*e^2*x^2 - 3*b^2*d^2 + 20*a*b*d*e - 15*
a^2*e^2 + 2*(7*b^2*d*e - 5*a*b*e^2)*x)*sqrt(e*x + d))/(b^4*x + a*b^3)]
```

giac [A] time = 0.28, size = 269, normalized size = 1.36

$$\frac{5\left(b^{2}d^{2}e^{2}-2\,abde^{3}+a^{2}e^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)e^{(-1)}}{\sqrt{-b^{2}d+abe}\,b^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}-\frac{\left(\sqrt{xe+d}\,b^{2}d^{2}e^{2}-2\sqrt{xe+d}\,abde^{3}+\sqrt{xe+d}\,a^{2}e^{4}\right)e^{(-1)}}{((xe+d)b-bd+ae)b^{3}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 5*(b^2*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d
+ a*b*e))*e^(-1)/(sqrt(-b^2*d + a*b*e)*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^
2)) - (sqrt(x*e + d)*b^2*d^2*e^2 - 2*sqrt(x*e + d)*a*b*d*e^3 + sqrt(x*e + d
)*a^2*e^4)*e^(-1)/(((x*e + d)*b - b*d + a*e)*b^3*sgn((x*e + d)*b*e - b*d*e
+ a*e^2)) + 2/3*((x*e + d)^(3/2)*b^4*e^4 + 6*sqrt(x*e + d)*b^4*d*e^4 - 6*sq
rt(x*e + d)*a*b^3*e^5)*e^(-3)/(b^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.06, size = 409, normalized size = 2.07

$$\left(15a^{2}b\,e^{3}x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-30a\,b^{2}d\,e^{2}x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+15b^{3}d^{2}ex\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+15a^{3}e^{3}\arctan\left(\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3*(2*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*x*b^2*e+15*arctan((e*x+d)^(1/2)/((
a*e-b*d)*b)^(1/2)*b)*x*a^2*b*e^3-30*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2
)*b)*x*a*b^2*d*e^2+15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^3*d^2
*e+2*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-12*((a*e-b*d)*b)^(1/2)*(e*x+d)
^(1/2)*x*a*b*e^2+12*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x*b^2*d*e+15*arctan((
e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a^3*e^3-30*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*a^2*b*d*e^2+15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*
a*b^2*d^2*e-15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2+18*((a*e-b*d)*b)^(
1/2)*(e*x+d)^(1/2)*a*b*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*
x+a)^2/((a*e-b*d)*b)^(1/2)/b^3/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{5}{2}}}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)^{5/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.2132 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=148

$$-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3e(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -(e*x+d)^(3/2)/b/((b*x+a)^2)^(1/2)-3*e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2
)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/2)/b^(5/2)/((b*x+a)^2)^(1/2)+3*e*(b*x+a)*
(e*x+d)^(1/2)/b^2/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {768, 646, 50, 63, 208}

$$-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{3e(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (3*e*(a + b*x)*Sqrt[d + e*x])/(b^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (d + e*
x)^(3/2)/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (3*e*Sqrt[b*d - a*e]*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(5/2)*Sqrt[a^2 + 2*a*
b*x + b^2*x^2])
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] && !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) && !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] && !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx=-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{(3e)\int \frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b}$$

$$=-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{ab+b^2x}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(3e\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\int \frac{}{\left(ab+\right.}}{2b^3\sqrt{a^2+2abx+b^2x^2}}$$

$$=\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(3\left(b^2d-abe\right)\left(ab+b^2x\right)\right)\operatorname{Subst}\left(\right.}{b^3\sqrt{a^2+2ab}}$$

$$=\frac{3e(a+bx)\sqrt{d+ex}}{b^2\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{3e\sqrt{bd-ae}\,(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{}}{\sqrt{bd}}\right.}{b^{5/2}\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.45

$$\frac{2e(a+bx)(d+ex)^{5/2}\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (2*e*(a + b*x)*(d + e*x)^(5/2)*Hypergeometric2F1[2, 5/2, 7/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/(5*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.57, size = 210, normalized size = 1.42

$$\left[\frac{3\,(bex+ae)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\,(2\,bex-bd+3\,ae)\sqrt{ex+d}}{2\,\left(b^3x+ab^2\right)},-\frac{3\,(bex+ae)\sqrt{-\frac{bd-ae}{b}}\,\arctan}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(3*(b*e*x + a*e)*sqrt((b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt
(e*x + d)*b*sqrt((b*d - a*e)/b))/(b*x + a)) + 2*(2*b*e*x - b*d + 3*a*e)*sqr
t(e*x + d))/(b^3*x + a*b^2), -(3*(b*e*x + a*e)*sqrt(-(b*d - a*e)/b)*arctan(
-sqrt(e*x + d)*b*sqrt(-(b*d - a*e)/b)/(b*d - a*e)) - (2*b*e*x - b*d + 3*a*e
)*sqrt(e*x + d))/(b^3*x + a*b^2)]
```

giac [A] time = 0.33, size = 198, normalized size = 1.34

$$\frac{3\left(bde^2 - ae^3\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^{(-1)}}{\sqrt{-b^2d+abe}\,b^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)} + \frac{2\sqrt{xe+d}\,e}{b^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)} - \frac{\left(\sqrt{xe+d}\,bde^2 - \sqrt{xe+}\right.}{((xe+d)b-bd+ae)b^2\mathrm{sgn}\left((xe\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] 3*(b*d*e^2 - a*e^3)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^(-1)/(sq
rt(-b^2*d + a*b*e)*b^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2*sqrt(x*e + d
)*e/(b^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - (sqrt(x*e + d)*b*d*e^2 - sqr
t(x*e + d)*a*e^3)*e^(-1)/(((x*e + d)*b - b*d + a*e)*b^2*sgn((x*e + d)*b*e -
 b*d*e + a*e^2))
```

maple [B] time = 0.07, size = 222, normalized size = 1.50

$$\frac{\left(-3ab\,e^2x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3b^2dex\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-3a^2e^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3abde\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right.\right.}{\sqrt{(ae-bd)\,b}\;\left((bx+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (-3*a*b*e^2*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*arctan((e*x+d)^
(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b^2*d*e+2*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*
b*e*x-3*a^2*e^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*arctan((e*x+d
)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*a*b*d*e+3*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*
a*e-(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*b*d)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^
2/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{3}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,\left(d+e\,x\right)^{3/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\,(d+ex)^{\frac{3}{2}}}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**(3/2)/((a + b*x)**2)**(3/2), x)
```

3.2133 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=108

$$-\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}$$

```
[Out] -e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(3/2)/(-a*e+b*
d)^(1/2)/((b*x+a)^2)^(1/2)-(e*x+d)^(1/2)/b/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {768, 646, 63, 208}

$$-\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(Sqrt[d + e*x]/(b*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (e*(a + b*x)*ArcTanh[(
Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(b^(3/2)*Sqrt[b*d - a*e]*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{e\int \frac{1}{\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}}\,dx}{2b} \\
&= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)\sqrt{d+ex}}\,dx}{2b\sqrt{a^2+2abx+b^2x^2}} \\
&= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(ab+b^2x\right)\text{Subst}\left(\int \frac{1}{ab-\frac{b^2d}{e}+\frac{b^2x^2}{e}}\,dx,x,\sqrt{d+ex}\right)}{b\sqrt{a^2+2abx+b^2x^2}} \\
&= -\frac{\sqrt{d+ex}}{b\sqrt{a^2+2abx+b^2x^2}}-\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{b^{3/2}\sqrt{bd-ae}\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.08, size = 81, normalized size = 0.75

$$
\frac{\frac{e(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{ae-bd}}-\sqrt{b}\sqrt{d+ex}}{b^{3/2}\sqrt{(a+bx)^2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[d + e*x]) + (e*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[d + e*x])/Sqr
t[-(b*d) + a*e]])/Sqrt[-(b*d) + a*e])/(b^(3/2)*Sqrt[(a + b*x)^2])
```

fricas [**A**] time = 0.93, size = 232, normalized size = 2.15

$$
\left[\frac{\sqrt{b^2d-abe}\,(bex+ae)\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(b^2d-abe\right)\sqrt{ex+d}}{2\left(ab^3d-a^2b^2e+\left(b^4d-ab^3e\right)x\right)}, \frac{\sqrt{-b^2d+abe}\,(bex+ae)\arctan\Bigg(}{ab^3d-a^2b^2}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(sqrt(b^2*d - a*b*e)*(b*e*x + a*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b
^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) - 2*(b^2*d - a*b*e)*sqrt(e*x + d))/
(a*b^3*d - a^2*b^2*e + (b^4*d - a*b^3*e)*x), (sqrt(-b^2*d + a*b*e)*(b*e*x +
 a*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (b^2*d - a
*b*e)*sqrt(e*x + d))/(a*b^3*d - a^2*b^2*e + (b^4*d - a*b^3*e)*x)]
```

giac [**A**] time = 0.22, size = 128, normalized size = 1.19

$$
\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e}{\sqrt{-b^2d+abe}\,b\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{\sqrt{xe+d}\,e}{((xe+d)b-bd+ae)b\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e/(sqrt(-b^2*d + a*b*e)*b*sgn(
(x*e + d)*b*e - b*d*e + a*e^2)) - sqrt(x*e + d)*e/(((x*e + d)*b - b*d + a*e
)*b*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [A] time = 0.06, size = 108, normalized size = 1.00

$$-\frac{\left(-bex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)-ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\,\sqrt{(ae-bd)\,b}\right)(bx+a)^{2}}{\sqrt{(ae-bd)\,b}\,\left((bx+a)^{2}\right)^{\frac{3}{2}}b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(-arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x*b*e-arctan((e*x+d)^(1/2)/(
(a*e-b*d)*b)^(1/2)*b)*a*e+(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))*(b*x+a)^2/((a*
e-b*d)*b)^(1/2)/b/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)\sqrt{ex+d}}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(a+b\,x)\,\sqrt{d+e\,x}}{\left(a^{2}+2\,a\,b\,x+b^{2}\,x^{2}\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(a+bx)\sqrt{d+ex}}{\left((a+bx)^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(d + e*x)/((a + b*x)**2)**(3/2), x)
```

3.2134 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=114

$$\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

```
[Out] e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(3/2)/
b^(1/2)/((b*x+a)^2)^(1/2)-(e*x+d)^(1/2)/(-a*e+b*d)/((b*x+a)^2)^(1/2)
```

Rubi [**A**] time = 0.09, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{\sqrt{d+ex}}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(Sqrt[d + e*x]/((b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) + (e*(a + b*x)
*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(Sqrt[b]*(b*d - a*e)^(3/
2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)\sqrt{d+ex}}\,dx}{2b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(ab+b^2x\right)\text{Subst}\left(\int \frac{1}{a-\frac{bd}{e}+\frac{bx^2}{e}}\,dx,x,\sqrt{}\right.}{b(bd-ae)\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{\sqrt{d+ex}}{(bd-ae)\sqrt{a^2+2abx+b^2x^2}}+\frac{e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{\sqrt{b}\,(bd-ae)^{3/2}\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.08, size = 85, normalized size = 0.75

$$\frac{\frac{\sqrt{d+ex}}{ae-bd}+\frac{e(a+bx)\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{b}\,(ae-bd)^{3/2}}}{\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[d + e*x]/(-(b*d) + a*e) + (e*(a + b*x)*ArcTan[(Sqrt[b]*Sqrt[d + e*x])
/Sqrt[-(b*d) + a*e]])/(Sqrt[b]*(-(b*d) + a*e)^(3/2)))/Sqrt[(a + b*x)^2]
```

fricas [A] time = 1.21, size = 280, normalized size = 2.46

$$\left[-\frac{\sqrt{b^2d-abe}\,(bex+ae)\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(b^2d-abe\right)\sqrt{ex+d}}{2\left(ab^3d^2-2\,a^2b^2de+a^3be^2+\left(b^4d^2-2\,ab^3de+a^2b^2e^2\right)x\right)},-\frac{\sqrt{-b^2d+abe}\,(bex+ae)\,\text{ar}}{ab^3d^2-2\,a^2b^2de}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/2*(sqrt(b^2*d - a*b*e)*(b*e*x + a*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(
b^2*d - a*b*e)*sqrt(e*x + d))/(b*x + a)) + 2*(b^2*d - a*b*e)*sqrt(e*x + d))
/(a*b^3*d^2 - 2*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*
e^2)*x), -(sqrt(-b^2*d + a*b*e)*(b*e*x + a*e)*arctan(sqrt(-b^2*d + a*b*e)*s
qrt(e*x + d)/(b*e*x + b*d)) + (b^2*d - a*b*e)*sqrt(e*x + d))/(a*b^3*d^2 - 2
*a^2*b^2*d*e + a^3*b*e^2 + (b^4*d^2 - 2*a*b^3*d*e + a^2*b^2*e^2)*x)]
```

giac [B] time = 0.24, size = 189, normalized size = 1.66

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\left(bde\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-ae^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}-\frac{}{\left(bde\,\mathrm{sgn}\left((xe+d)be-bde+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b*d*e*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - a*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d +
 a*b*e)) - sqrt(x*e + d)*e^2/((b*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a
*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e))
```

maple [A] time = 0.06, size = 112, normalized size = 0.98

$$\frac{\left(bex\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+ae\arctan\left(\frac{\sqrt{ex+d}\,b}{\sqrt{(ae-bd)b}}\right)+\sqrt{ex+d}\,\sqrt{(ae-bd)b}\right)(bx+a)^2}{\sqrt{(ae-bd)b}\,(ae-bd)\left((bx+a)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] (b*e*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+a*e*arctan((e*x+d)^(1/2)
/((a*e-b*d)*b)^(1/2)*b)+(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2))*(b*x+a)^2/((a*e-
b*d)*b)^(1/2)/(a*e-b*d)/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(3/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{a+b\,x}{\sqrt{d+e\,x}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{a+bx}{\sqrt{d+ex}\,\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(3/2)/(e*x+d)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(sqrt(d + e*x)*((a + b*x)**2)**(3/2)), x)
```

3.2135 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=162

$$-\frac{3e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)}+\frac{3\sqrt{b}\,e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+}}{\sqrt{bd-a}}\right.}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

```
[Out] 3*e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-a*e+b
*d)^(5/2)/((b*x+a)^2)^(1/2)-1/(-a*e+b*d)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)-3*
e*(b*x+a)/(-a*e+b*d)^2/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 162, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 21, 51, 63, 208}

$$-\frac{3e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\sqrt{d+ex}\,(bd-ae)}+\frac{3\sqrt{b}\,e(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+}}{\sqrt{bd-a}}\right.}{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (3*e*(a +
b*x))/((b*d - a*e)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (3*Sqrt
[b]*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/((b*d - a
*e)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{1}{(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)^{3/2}}}{2b(bd-ae)\sqrt{a^2+2abx+b^2}}\\
&= -\frac{1}{(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx}}\\
&= -\frac{1}{(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx}}\\
&= -\frac{1}{(bd-ae)\sqrt{d+ex}\,\sqrt{a^2+2abx+b^2x^2}} - \frac{3e(a+bx)}{(bd-ae)^2\sqrt{d+ex}\,\sqrt{a^2+2abx}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 64, normalized size = 0.40

$$
-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\,\sqrt{d+ex}\,(ae-bd)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-1/2, 2, 1/2, -((b*(d + e*x))/(-(b*d) + a
*e))])/((-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [A] time = 1.36, size = 423, normalized size = 2.61

$$
\left[\frac{3\left(be^2x^2+ade+\left(bde+ae^2\right)x\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae+2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{b}{bd-ae}}}{bx+a}\right)-2\,(3\,bex+bd+2\,ae)\sqrt{ex+d}}{2\left(ab^2d^3-2\,a^2bd^2e+a^3de^2+\left(b^3d^2e-2\,ab^2de^2+a^2be^3\right)x^2+\left(b^3d^3-ab^2d^2e-a^2bde^2+a^3e^3\right)x\right)},\ \frac{3\,(be}{a}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/2*(3*(b*e^2*x^2 + a*d*e + (b*d*e + a*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*
e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x +
 a)) - 2*(3*b*e*x + b*d + 2*a*e)*sqrt(e*x + d))/(a*b^2*d^3 - 2*a^2*b*d^2*e
+ a^3*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x^2 + (b^3*d^3 - a*b^
2*d^2*e - a^2*b*d*e^2 + a^3*e^3)*x), (3*(b*e^2*x^2 + a*d*e + (b*d*e + a*e^2
)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d -
a*e))/(b*e*x + b*d)) - (3*b*e*x + b*d + 2*a*e)*sqrt(e*x + d))/(a*b^2*d^3 -
2*a^2*b*d^2*e + a^3*d*e^2 + (b^3*d^2*e - 2*a*b^2*d*e^2 + a^2*b*e^3)*x^2 + (
b^3*d^3 - a*b^2*d^2*e - a^2*b*d*e^2 + a^3*e^3)*x)]
```

giac [B] time = 0.27, size = 289, normalized size = 1.78

$$-\frac{3\,b\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\left(b^2d^2e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-2\,abde^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^2e^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -3*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^2*d^2*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) - 2*a*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - (3*(x
*e + d)*b*e^2 - 2*b*d*e^2 + 2*a*e^3)/((b^2*d^2*e*sgn((x*e + d)*b*e - b*d*e
+ a*e^2) - 2*a*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*e^3*sgn((x*
e + d)*b*e - b*d*e + a*e^2))*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(
x*e + d)*a*e))
```

maple [A] time = 0.07, size = 167, normalized size = 1.03

$$-\frac{\left(3\sqrt{ex+d}\;b^2ex\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3\sqrt{ex+d}\;abe\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3\sqrt{(ae-bd)\,b}\;bex+2\sqrt{(ae-bd)\,b}\;a\right.}{\sqrt{ex+d}\;\sqrt{(ae-bd)\,b}\;\left(ae-bd\right)^2\left(\left(bx+a\right)^2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -(3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*b^2*e+3*arc
tan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a*b*e+3*((a*e-b*d)*b
)^(1/2)*x*b*e+2*((a*e-b*d)*b)^(1/2)*a*e+((a*e-b*d)*b)^(1/2)*b*d)*(b*x+a)^2/
(e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^2/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}\left(ex+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{a+b\,x}{{\left(d+e\,x\right)}^{3/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{(d + ex)^{\frac{3}{2}} \left((a + bx)^2\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**(3/2)*((a + b*x)**2)**(3/2)), x)
```

3.2136 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=212

$$-\frac{5be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}-\frac{5e(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(d+e}$$

```
[Out] -1/(-a*e+b*d)/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-5/3*e*(b*x+a)/(-a*e+b*d)^2/(e
*x+d)^(3/2)/((b*x+a)^2)^(1/2)+5*b^(3/2)*e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(
1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^(7/2)/((b*x+a)^2)^(1/2)-5*b*e*(b*x+a)/(-a
*e+b*d)^3/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 21, 51, 63, 208}

$$-\frac{5be(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}-\frac{5e(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^2}-\frac{1}{\sqrt{a^2+2abx+b^2x^2}\,(d+e}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (5*e*(a
+ b*x))/(3*(b*d - a*e)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
5*b*e*(a + b*x))/((b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (5*b^(3/2)*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]]
)/((b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(5e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)}}{2b(bd-ae)\sqrt{a^2+2abx+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(a+bx)}{3(bd-ae)^2(d+ex)^{3/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.02, size = 66, normalized size = 0.31

$$-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-3/2, 2, -1/2, -((b*(d + e*x))/(-(b*d) +
a*e))])/(3*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

fricas [B] time = 1.29, size = 782, normalized size = 3.69

$$\left[-\frac{15\left(b^2e^3x^3+abd^2e+\left(2\,b^2de^2+abe^3\right)x^2+\left(b^2d^2e+2\,abde^2\right)x\right)\sqrt{\frac{b}{bd-ae}}\,\log\left(\frac{bex+2\,bd-ae-2\,(bd-ae)\sqrt{ex+d}\,\sqrt{\frac{}{b}}}{bx+a}\right.}{6\left(ab^3d^5-3\,a^2b^2d^4e+3\,a^3bd^3e^2-a^4d^2e^3+\left(b^4d^3e^2-3\,ab^3d^2e^3+3\,a^2b^2de^4-a^3be^5\right)x^3+\left(2\,b^4d^4e-5\,ab^3d^3e^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [-1/6*(15*(b^2*e^3*x^3 + a*b*d^2*e + (2*b^2*d*e^2 + a*b*e^3)*x^2 + (b^2*d^2
*e + 2*a*b*d*e^2)*x)*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d
- a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e)))/(b*x + a)) + 2*(15*b^2*e^2*x^2 +
3*b^2*d^2 + 14*a*b*d*e - 2*a^2*e^2 + 10*(2*b^2*d*e + a*b*e^2)*x)*sqrt(e*x +
 d))/(a*b^3*d^5 - 3*a^2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^
3*e^2 - 3*a*b^3*d^2*e^3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e -
 5*a*b^3*d^3*e^2 + 3*a^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^
5 - a*b^3*d^4*e - 3*a^2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x), 1/
3*(15*(b^2*e^3*x^3 + a*b*d^2*e + (2*b^2*d*e^2 + a*b*e^3)*x^2 + (b^2*d^2*e +
 2*a*b*d*e^2)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqr
t(-b/(b*d - a*e))/(b*e*x + b*d)) - (15*b^2*e^2*x^2 + 3*b^2*d^2 + 14*a*b*d*e
 - 2*a^2*e^2 + 10*(2*b^2*d*e + a*b*e^2)*x)*sqrt(e*x + d))/(a*b^3*d^5 - 3*a^
2*b^2*d^4*e + 3*a^3*b*d^3*e^2 - a^4*d^2*e^3 + (b^4*d^3*e^2 - 3*a*b^3*d^2*e^
3 + 3*a^2*b^2*d*e^4 - a^3*b*e^5)*x^3 + (2*b^4*d^4*e - 5*a*b^3*d^3*e^2 + 3*a
^2*b^2*d^2*e^3 + a^3*b*d*e^4 - a^4*e^5)*x^2 + (b^4*d^5 - a*b^3*d^4*e - 3*a^
2*b^2*d^3*e^2 + 5*a^3*b*d^2*e^3 - 2*a^4*d*e^4)*x)]
```

giac [**B**]   time = 0.36, size = 494, normalized size = 2.33

$$-\frac{5\,b^2\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^2}{\Big(b^3d^3e\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)-3\,ab^2d^2e^2\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)+3\,a^2bde^3\operatorname{sgn}\Big((xe+d)be-bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -5*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^3*d^3*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e
 + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - sqrt(x*e + d)*b^2*e^2/(
(b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e +
d)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)
- a^3*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)) -
2/3*(6*(x*e + d)*b*e^2 + b*d*e^2 - a*e^3)/((b^3*d^3*e*sgn((x*e + d)*b*e - b
*d*e + a*e^2) - 3*a*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 3*a^2*
b*d*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^4*sgn((x*e + d)*b*e - b*
d*e + a*e^2))*(x*e + d)^(3/2))
```

maple [**A**]   time = 0.07, size = 242, normalized size = 1.14

$$\frac{\Big(15\,(ex+d)^{\frac{3}{2}}\,b^3ex\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+15\sqrt{(ae-bd)\,b}\;b^2e^2x^2+15\,(ex+d)^{\frac{3}{2}}\,a\,b^2e\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+10\sqrt{(ae}}{3\,(ex+d)^{\frac{3}{2}}\,\sqrt{(ae-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] 1/3*(15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*b^3*e+1
5*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a*b^2*e+15*((a*
e-b*d)*b)^(1/2)*x^2*b^2*e^2+10*((a*e-b*d)*b)^(1/2)*x*a*b*e^2+20*((a*e-b*d)*
b)^(1/2)*x*b^2*d*e-2*((a*e-b*d)*b)^(1/2)*a^2*e^2+14*((a*e-b*d)*b)^(1/2)*a*b
*d*e+3*((a*e-b*d)*b)^(1/2)*b^2*d^2)*(b*x+a)^2/(e*x+d)^(3/2)/((a*e-b*d)*b)^(
1/2)/(a*e-b*d)^3/((b*x+a)^2)^(3/2)
```

maxima [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a + bx}{\left(d + ex\right)^{\frac{5}{2}} \left(\left(a + bx\right)^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((d + e*x)**(5/2)*((a + b*x)**2)**(3/2)), x)
```

3.2137 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{7b^2e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{7be(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}-\frac{7e(a+bx)}{5\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

```
[Out] -1/(-a*e+b*d)/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)-7/5*e*(b*x+a)/(-a*e+b*d)^2/(e
*x+d)^(5/2)/((b*x+a)^2)^(1/2)-7/3*b*e*(b*x+a)/(-a*e+b*d)^3/(e*x+d)^(3/2)/((
b*x+a)^2)^(1/2)+7*b^(5/2)*e*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d
)^(1/2))/(-a*e+b*d)^(9/2)/((b*x+a)^2)^(1/2)-7*b^2*e*(b*x+a)/(-a*e+b*d)^4/(e
*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 21, 51, 63, 208\}$

$$-\frac{7b^2e(a+bx)}{\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{7be(a+bx)}{3\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^3}-\frac{7e(a+bx)}{5\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] -(1/((b*d - a*e)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])) - (7*e*(a
+ b*x))/(5*(b*d - a*e)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (
7*b*e*(a + b*x))/(3*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2]) - (7*b^2*e*(a + b*x))/((b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (7*b^(5/2)*e*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[
b*d - a*e]])/((b*d - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^3(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^2(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)(d+ex)}}{2b(bd-ae)\sqrt{a^2+2abx+b}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

$$= -\frac{1}{(bd-ae)(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{7e(a+bx)}{5(bd-ae)^2(d+ex)^{5/2}\sqrt{a^2+}}$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.25

$$-\frac{2e(a+bx)\,{}_2F_1\left(-\frac{5}{2},2;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)),x]
```

```
[Out] (-2*e*(a + b*x)*Hypergeometric2F1[-5/2, 2, -3/2, -((b*(d + e*x))/(-(b*d) +
a*e))])/(5*(-(b*d) + a*e)^2*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

fricas [B] time = 1.91, size = 1218, normalized size = 4.61

$$\left[\frac{105\left(b^3e^4x^4+ab^2d^3e+\left(3\,b^3de^3+ab^2e^4\right)x^3+3\left(b^3d^2e^2+ab^2de^3\right)x^2+\left(b^3d^3e+3\,a\right.\right.}{30\left(ab^4d^7-4\,a^2b^3d^6e+6\,a^3b^2d^5e^2-4\,a^4bd^4e^3+a^5d^3e^4+\left(b^5d^4e^3-4\,ab^4d^3e^4+6\,a^2b^3d^2e^5-4\,a^3b^2de^6+a^4be^7\right)\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] [1/30*(105*(b^3*e^4*x^4 + a*b^2*d^3*e + (3*b^3*d*e^3 + a*b^2*e^4)*x^3 + 3*(
b^3*d^2*e^2 + a*b^2*d*e^3)*x^2 + (b^3*d^3*e + 3*a*b^2*d^2*e^2)*x)*sqrt(b/(b
*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b
*d - a*e)))/(b*x + a)) - 2*(105*b^3*e^3*x^3 + 15*b^3*d^3 + 116*a*b^2*d^2*e
- 32*a^2*b*d*e^2 + 6*a^3*e^3 + 35*(7*b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + 7*(23*b
^3*d^2*e + 24*a*b^2*d*e^2 - 2*a^2*b*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 - 4*a
^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5*d^4
*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^7)*x
^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2*d^2
*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*a^2*
b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b^5*d
^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^3*e^
4 + 3*a^5*d^2*e^5)*x), 1/15*(105*(b^3*e^4*x^4 + a*b^2*d^3*e + (3*b^3*d*e^3
+ a*b^2*e^4)*x^3 + 3*(b^3*d^2*e^2 + a*b^2*d*e^3)*x^2 + (b^3*d^3*e + 3*a*b^2
*d^2*e^2)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b
/(b*d - a*e))/(b*e*x + b*d)) - (105*b^3*e^3*x^3 + 15*b^3*d^3 + 116*a*b^2*d^
2*e - 32*a^2*b*d*e^2 + 6*a^3*e^3 + 35*(7*b^3*d*e^2 + 2*a*b^2*e^3)*x^2 + 7*(
23*b^3*d^2*e + 24*a*b^2*d*e^2 - 2*a^2*b*e^3)*x)*sqrt(e*x + d))/(a*b^4*d^7 -
 4*a^2*b^3*d^6*e + 6*a^3*b^2*d^5*e^2 - 4*a^4*b*d^4*e^3 + a^5*d^3*e^4 + (b^5
*d^4*e^3 - 4*a*b^4*d^3*e^4 + 6*a^2*b^3*d^2*e^5 - 4*a^3*b^2*d*e^6 + a^4*b*e^
7)*x^4 + (3*b^5*d^5*e^2 - 11*a*b^4*d^4*e^3 + 14*a^2*b^3*d^3*e^4 - 6*a^3*b^2
*d^2*e^5 - a^4*b*d*e^6 + a^5*e^7)*x^3 + 3*(b^5*d^6*e - 3*a*b^4*d^5*e^2 + 2*
a^2*b^3*d^4*e^3 + 2*a^3*b^2*d^3*e^4 - 3*a^4*b*d^2*e^5 + a^5*d*e^6)*x^2 + (b
^5*d^7 - a*b^4*d^6*e - 6*a^2*b^3*d^5*e^2 + 14*a^3*b^2*d^4*e^3 - 11*a^4*b*d^
3*e^4 + 3*a^5*d^2*e^5)*x)]
```

giac [B] time = 0.40, size = 640, normalized size = 2.42

$$-\frac{7\,b^3\arctan\left(\frac{\sqrt{xe+}}{\sqrt{-b^2d-}}\right.}{\left(b^4d^4e\,\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4\,ab^3d^3e^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+6\,a^2b^2d^2e^3\mathrm{sgn}\left((xe+d)be-bd\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] -7*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^2/((b^4*d^4*e*sgn((x*
e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^
4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e +
a*e^2))*sqrt(-b^2*d + a*b*e)) - sqrt(x*e + d)*b^3*e^2/((b^4*d^4*e*sgn((x*e
+ d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e
^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^4*
sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn((x*e + d)*b*e - b*d*e + a*
e^2))*((x*e + d)*b - b*d + a*e)) - 2/15*(45*(x*e + d)^2*b^2*e^2 + 10*(x*e +
 d)*b^2*d*e^2 + 3*b^2*d^2*e^2 - 10*(x*e + d)*a*b*e^3 - 6*a*b*d*e^3 + 3*a^2*
e^4)/((b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e^2*sgn((
x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e
 + a*e^2) - 4*a^3*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^5*sgn(
(x*e + d)*b*e - b*d*e + a*e^2))*(x*e + d)^(5/2))
```

maple [A] time = 0.07, size = 343, normalized size = 1.30

$$-\frac{\left(105\sqrt{(ae-bd)\,b}\;b^{3}e^{3}x^{3}+70\sqrt{(ae-bd)\,b}\;a\,b^{2}e^{3}x^{2}+245\sqrt{(ae-bd)\,b}\;b^{3}d\,e^{2}x^{2}-14\sqrt{(ae-bd)\,b}\;a^{2}b\,e^{3}x+168\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] -1/15*(105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*x*b^4*
e+105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(5/2)*a*b^3*e+105
*((a*e-b*d)*b)^(1/2)*x^3*b^3*e^3+70*((a*e-b*d)*b)^(1/2)*x^2*a*b^2*e^3+245*(
(a*e-b*d)*b)^(1/2)*x^2*b^3*d*e^2-14*((a*e-b*d)*b)^(1/2)*x*a^2*b*e^3+168*((a
*e-b*d)*b)^(1/2)*x*a*b^2*d*e^2+161*((a*e-b*d)*b)^(1/2)*x*b^3*d^2*e+6*((a*e-
b*d)*b)^(1/2)*a^3*e^3-32*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2+116*((a*e-b*d)*b)^
(1/2)*a*b^2*d^2*e+15*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(e*x+d)^(5/2)/(
(a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^2)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^{2}x^{2}+2\,abx+a^{2}\right)^{\frac{3}{2}}(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(3/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Timed out
```

3.2138 $\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=241

$$-\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^3(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{a^2+2abx+b^2x^2}}+\frac{35e^3}{8b^4}$$

```
[Out] -1/3*(e*x+d)^(7/2)/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-35/24*e^2*(e*x+d)^(3/2)/b^
3/((b*x+a)^2)^(1/2)-7/12*e*(e*x+d)^(5/2)/b^2/(b*x+a)/((b*x+a)^2)^(1/2)-35/8
*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*(-a*e+b*d)^(1/
2)/b^(9/2)/((b*x+a)^2)^(1/2)+35/8*e^3*(b*x+a)*(e*x+d)^(1/2)/b^4/((b*x+a)^2)
^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 241, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.171$, Rules used = $\{768, 646, 47, 50, 63, 208\}$

$$-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^3(a+bx)\sqrt{bd-ae}\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{9/2}\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)}{3b\left(a^2+2abx\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(7/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) + (35*e^3*(a + b*x)*
Sqrt[d + e*x])/(8*b^4*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^2*(d + e*x)^(3
/2))/(24*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (7*e*(d + e*x)^(5/2))/(12*b^2
*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (35*e^3*Sqrt[b*d - a*e]*(a + b*
x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(9/2)*Sqrt[a^2 +
2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 50

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + n + 1)), x] + Dist[(n*(b*c - a*d))/
(b*(m + n + 1)), Int[(a + b*x)^m*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b,
c, d}, x] && NeQ[b*c - a*d, 0] && GtQ[n, 0] && NeQ[m + n + 1, 0] &&  !(IGtQ
[m, 0] && ( !IntegerQ[n] || (GtQ[m, 0] && LtQ[m - n, 0]))) &&  !ILtQ[m + n
+ 2, 0] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{7/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{(7e)\int \frac{(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(7be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{5/2}}{\left(ab+b^2x\right)^3}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(35e^2\left(ab+b^2x\right)\right)}{24b\sqrt{a^2+2a}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{7e(d+ex)^{5/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

$$= -\frac{(d+ex)^{7/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{35e^3(a+bx)\sqrt{d+ex}}{8b^4\sqrt{a^2+2abx+b^2x^2}}-\frac{35e^2(d+ex)^{3/2}}{24b^3\sqrt{a^2+2abx+b^2x^2}}-$$

Mathematica [C] time = 0.04, size = 68, normalized size = 0.28

$$\frac{2e^3(a+bx)(d+ex)^{9/2}\,{}_2F_1\left(4,\frac{9}{2};\frac{11}{2};-\frac{b(d+ex)}{ae-bd}\right)}{9\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(7/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(9/2)*Hypergeometric2F1[4, 9/2, 11/2, -((b*(d +
e*x))/(-(b*d) + a*e))])/(9*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.12, size = 498, normalized size = 2.07

$$\left[\frac{105\left(b^{3}e^{3}x^{3}+3\,ab^{2}e^{3}x^{2}+3\,a^{2}be^{3}x+a^{3}e^{3}\right)\sqrt{\frac{bd-ae}{b}}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{ex+d}\,b\sqrt{\frac{bd-ae}{b}}}{bx+a}\right)+2\left(48\,b^{3}e^{3}x^{3}-8\,b^{3}d^{3}-1\right.}{48\left(b^{7}x^{3}+3\,ab^{6}x^{2}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(105*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt((
b*d - a*e)/b)*log((b*e*x + 2*b*d - a*e - 2*sqrt(e*x + d)*b*sqrt((b*d - a*e)
/b))/(b*x + a)) + 2*(48*b^3*e^3*x^3 - 8*b^3*d^3 - 14*a*b^2*d^2*e - 35*a^2*b
*d*e^2 + 105*a^3*e^3 - 3*(29*b^3*d*e^2 - 77*a*b^2*e^3)*x^2 - 2*(19*b^3*d^2*
e + 49*a*b^2*d*e^2 - 140*a^2*b*e^3)*x)*sqrt(e*x + d))/(b^7*x^3 + 3*a*b^6*x^
2 + 3*a^2*b^5*x + a^3*b^4), -1/24*(105*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a
^2*b*e^3*x + a^3*e^3)*sqrt(-(b*d - a*e)/b)*arctan(-sqrt(e*x + d)*b*sqrt(-(b
*d - a*e)/b)/(b*d - a*e)) - (48*b^3*e^3*x^3 - 8*b^3*d^3 - 14*a*b^2*d^2*e -
35*a^2*b*d*e^2 + 105*a^3*e^3 - 3*(29*b^3*d*e^2 - 77*a*b^2*e^3)*x^2 - 2*(19*
b^3*d^2*e + 49*a*b^2*d*e^2 - 140*a^2*b*e^3)*x)*sqrt(e*x + d))/(b^7*x^3 + 3*
a*b^6*x^2 + 3*a^2*b^5*x + a^3*b^4)]
```

giac [A] time = 0.35, size = 320, normalized size = 1.33

$$\frac{35\left(bde^{3}-ae^{4}\right)\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^{2}d+abe}}\right)}{8\,\sqrt{-b^{2}d+abe}\,b^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}+\frac{2\,\sqrt{xe+d}\,e^{3}}{b^{4}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)}-\frac{87\,(xe+d)^{\frac{5}{2}}b^{3}de^{3}-136\,(xe+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 35/8*(b*d*e^3 - a*e^4)*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))/(sqrt(-
b^2*d + a*b*e)*b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) + 2*sqrt(x*e + d)*e^
3/(b^4*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/24*(87*(x*e + d)^(5/2)*b^3*d
*e^3 - 136*(x*e + d)^(3/2)*b^3*d^2*e^3 + 57*sqrt(x*e + d)*b^3*d^3*e^3 - 87*
(x*e + d)^(5/2)*a*b^2*e^4 + 272*(x*e + d)^(3/2)*a*b^2*d*e^4 - 171*sqrt(x*e
+ d)*a*b^2*d^2*e^4 - 136*(x*e + d)^(3/2)*a^2*b*e^5 + 171*sqrt(x*e + d)*a^2*
b*d*e^5 - 57*sqrt(x*e + d)*a^3*e^6)/(((x*e + d)*b - b*d + a*e)^3*b^4*sgn((x
*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.07, size = 638, normalized size = 2.65

$$\frac{\left(-105a\,b^{3}e^{4}x^{3}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+105b^{4}d\,e^{3}x^{3}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-315a^{2}b^{2}e^{4}x^{2}\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+315a\,b^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(-105*a*b^3*e^4*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*ar
ctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*b^4*d*e^3+48*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(1/2)*x^3*b^3*e^3-315*a^2*b^2*e^4*x^2*arctan((e*x+d)^(1/2)/((a*
e-b*d)*b)^(1/2)*b)+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^
3*d*e^3+87*(e*x+d)^(5/2)*((a*e-b*d)*b)^(1/2)*a*b^2*e-87*(e*x+d)^(5/2)*((a*e
-b*d)*b)^(1/2)*b^3*d+144*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*x^2*a*b^2*e^3-31
5*a^3*b*e^4*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+315*a^2*b^2*d*e^3
*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+136*(e*x+d)^(3/2)*((a*e-b*d)
*b)^(1/2)*a^2*b*e^2-272*(e*x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*a*b^2*d*e+136*(e*
x+d)^(3/2)*((a*e-b*d)*b)^(1/2)*b^3*d^2+144*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2
)*a^2*b*e^3*x-105*a^4*e^4*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*a
^3*b*d*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+105*(e*x+d)^(1/2)*((
a*e-b*d)*b)^(1/2)*a^3*e^3-171*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2
+171*(e*x+d)^(1/2)*((a*e-b*d)*b)^(1/2)*a*b^2*d^2*e-57*(e*x+d)^(1/2)*((a*e-b
*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^4/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{7}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(7/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,(d+e\,x)^{7/2}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(7/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2139 $\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=197

$$-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}-\frac{5e^2\sqrt{d}}{8b^3\sqrt{a^2+2a}}$$

```
[Out] -1/3*(e*x+d)^(5/2)/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-5/12*e*(e*x+d)^(3/2)/b^2/(
b*x+a)/((b*x+a)^2)^(1/2)-5/8*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*
e+b*d)^(1/2))/b^(7/2)/(-a*e+b*d)^(1/2)/((b*x+a)^2)^(1/2)-5/8*e^2*(e*x+d)^(1
/2)/b^3/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {768, 646, 47, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}}-\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{7/2}\sqrt{a^2+2abx+b^2x^2}\sqrt{bd-ae}}-\frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex}{3b\left(a^2+2abx\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(5/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (5*e^2*Sqrt[d + e*
x])/(8*b^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e*(d + e*x)^(3/2))/(12*b^2*(
a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (5*e^3*(a + b*x)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(7/2)*Sqrt[b*d - a*e]*Sqrt[a^2 + 2*a
*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{5/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{(5e)\int \frac{(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} + \frac{\left(5be\left(ab+b^2x\right)\right)\int \frac{(d+ex)^{3/2}}{\left(ab+b^2x\right)^3}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}} + \frac{\left(5e^2\left(ab+b^2x\right)\right)\int}{8b\sqrt{a^2+2ab}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

$$= -\frac{(d+ex)^{5/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}} - \frac{5e^2\sqrt{d+ex}}{8b^3\sqrt{a^2+2abx+b^2x^2}} - \frac{5e(d+ex)^{3/2}}{12b^2(a+bx)\sqrt{a^2+2abx+}}$$

Mathematica [A] time = 0.16, size = 132, normalized size = 0.67

$$\frac{\frac{15e^3(a+bx)^3\tan^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{ae-bd}}\right)}{\sqrt{ae-bd}} - \sqrt{b}\sqrt{d+ex}\left(15a^2e^2+10abe(d+4ex)+b^2\left(8d^2+26dex+33e^2x^2\right)\right)}{24b^{7/2}\left((a+bx)^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(5/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (-(Sqrt[b]*Sqrt[d + e*x]*(15*a^2*e^2 + 10*a*b*e*(d + 4*e*x) + b^2*(8*d^2 +
26*d*e*x + 33*e^2*x^2))) + (15*e^3*(a + b*x)^3*ArcTan[(Sqrt[b]*Sqrt[d + e*x
])/Sqrt[-(b*d) + a*e]])/Sqrt[-(b*d) + a*e])/(24*b^(7/2)*((a + b*x)^2)^(3/2)
)
```

fricas [A] time = 1.10, size = 563, normalized size = 2.86

$$\Bigg[\frac{15\,(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\,(8\,b^4d^3+2\,ab^3d^2e-}{48\,(a^3b^5d-a^4b^4e+(b^8d-ab^7e)x^3+3\,(ab^7d-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^
2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d)
)/(b*x + a)) - 2*(8*b^4*d^3 + 2*a*b^3*d^2*e + 5*a^2*b^2*d*e^2 - 15*a^3*b*e^
3 + 33*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(13*b^4*d^2*e + 7*a*b^3*d*e^2 - 20*a
^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d - a^4*b^4*e + (b^8*d - a*b^7*e)*x^
3 + 3*(a*b^7*d - a^2*b^6*e)*x^2 + 3*(a^2*b^6*d - a^3*b^5*e)*x), 1/24*(15*(b
^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a*b*e
)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (8*b^4*d^3 + 2
*a*b^3*d^2*e + 5*a^2*b^2*d*e^2 - 15*a^3*b*e^3 + 33*(b^4*d*e^2 - a*b^3*e^3)*
x^2 + 2*(13*b^4*d^2*e + 7*a*b^3*d*e^2 - 20*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(
a^3*b^5*d - a^4*b^4*e + (b^8*d - a*b^7*e)*x^3 + 3*(a*b^7*d - a^2*b^6*e)*x^2
 + 3*(a^2*b^6*d - a^3*b^5*e)*x)]
```

giac [A] time = 0.29, size = 213, normalized size = 1.08

$$\frac{5\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\,\sqrt{-b^2d+abe}\,b^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)}-\frac{33\,(xe+d)^{\frac{5}{2}}b^2e^3-40\,(xe+d)^{\frac{3}{2}}b^2de^3+15\,\sqrt{xe+d}\,b^2d^2e^3+40}{24\,((xe+d)b-bd+ae)^3b^3\mathrm{sgn}\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 5/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/(sqrt(-b^2*d + a*b*e)*
b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)) - 1/24*(33*(x*e + d)^(5/2)*b^2*e^3
- 40*(x*e + d)^(3/2)*b^2*d*e^3 + 15*sqrt(x*e + d)*b^2*d^2*e^3 + 40*(x*e + d
)^(3/2)*a*b*e^4 - 30*sqrt(x*e + d)*a*b*d*e^4 + 15*sqrt(x*e + d)*a^2*e^5)/((
(x*e + d)*b - b*d + a*e)^3*b^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))
```

maple [B] time = 0.11, size = 316, normalized size = 1.60

$$-\frac{(-15b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-45a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-45a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)-15a^3e^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/24*(-15*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^3*b^3*e^3-45*arcta
n((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*x^2*a*b^2*e^3+33*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(5/2)*b^2-45*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*
b)+40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-40*((a*e-b*d)*b)^(1/2)*(e*x+d
)^(3/2)*b^2*d-15*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-30*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)
*a*b*d*e+15*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)^2/((a*e-b*d)
*b)^(1/2)/b^3/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{5}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(5/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,{(d+e\,x)}^{5/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(5/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2140 $\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=207

$$-\frac{e^2\sqrt{d+ex}}{8b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^3(a+bx)\,\mathrm{ta}}{8b^{5/2}\sqrt{a^2+2ab}}$$

```
[Out] -1/3*(e*x+d)^(3/2)/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)+1/8*e^3*(b*x+a)*arctanh(b^
(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(5/2)/(-a*e+b*d)^(3/2)/((b*x+a)^2)^
(1/2)-1/8*e^2*(e*x+d)^(1/2)/b^2/(-a*e+b*d)/((b*x+a)^2)^(1/2)-1/4*e*(e*x+d)^
(1/2)/b^2/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.171, Rules used = {768, 646, 47, 51, 63, 208}

$$-\frac{e^2\sqrt{d+ex}}{8b^2\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}+\frac{e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{5/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{3/2}}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\frac{}{3b\,(}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -(d + e*x)^(3/2)/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) - (e^2*Sqrt[d + e*x]
)/(8*b^2*(b*d - a*e)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*Sqrt[d + e*x])/(4*
b^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (e^3*(a + b*x)*ArcTanh[(Sqrt
[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(5/2)*(b*d - a*e)^(3/2)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])
```

Rule 47

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^n)/(b*(m + 1)), x] - Dist[(d*n)/(b*(m + 1)), I
nt[(a + b*x)^(m + 1)*(c + d*x)^(n - 1), x], x] /; FreeQ[{a, b, c, d}, x] &&
 NeQ[b*c - a*d, 0] && GtQ[n, 0] && LtQ[m, -1] &&  !(IntegerQ[n] &&  !Intege
rQ[m]) &&  !(ILeQ[m + n + 2, 0] && (FractionQ[m] || GeQ[2*n + m + 1, 0])) &
& IntLinearQ[a, b, c, d, m, n, x]
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^{3/2}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{2b}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(be\left(ab+b^2x\right)\right)\int \frac{\sqrt{d+ex}}{\left(ab+b^2x\right)^3}\,dx}{2\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e\sqrt{d+ex}}{4b^2(a+bx)\sqrt{a^2+2abx+b^2x^2}}+\frac{\left(e^2\left(ab+b^2x\right)\right)\int}{8b\sqrt{a^2+2ab}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

$$= -\frac{(d+ex)^{3/2}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^2\sqrt{d+ex}}{8b^2(bd-ae)\sqrt{a^2+2abx+b^2x^2}}-\frac{e\sqrt{d+e}}{4b^2(a+bx)\sqrt{a^2+}}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.33

$$\frac{2e^3(a+bx)(d+ex)^{5/2}\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^(3/2))/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(5/2)*Hypergeometric2F1[5/2, 4, 7/2, -((b*(d + e
*x))/(-(b*d) + a*e))])/(5*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

fricas [B] time = 1.06, size = 666, normalized size = 3.22

$$\left[-\frac{3\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(8\,b^4d^3-10\,ab^3d^2e\right.}{48\left(a^3b^5d^2-2\,a^4b^4de+a^5b^3e^2+\left(b^8d^2-2\,ab^7de+a^2b^6e^2\right)x^3+3\left(ab^7d^2-\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^
2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d)
)/(b*x + a)) + 2*(8*b^4*d^3 - 10*a*b^3*d^2*e - a^2*b^2*d*e^2 + 3*a^3*b*e^3
+ 3*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(7*b^4*d^2*e - 11*a*b^3*d*e^2 + 4*a^2*b
^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^2 - 2*a^4*b^4*d*e + a^5*b^3*e^2 + (b^8
*d^2 - 2*a*b^7*d*e + a^2*b^6*e^2)*x^3 + 3*(a*b^7*d^2 - 2*a^2*b^6*d*e + a^3*
b^5*e^2)*x^2 + 3*(a^2*b^6*d^2 - 2*a^3*b^5*d*e + a^4*b^4*e^2)*x), -1/24*(3*(
b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a*b*
e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) + (8*b^4*d^3 -
10*a*b^3*d^2*e - a^2*b^2*d*e^2 + 3*a^3*b*e^3 + 3*(b^4*d*e^2 - a*b^3*e^3)*x^
2 + 2*(7*b^4*d^2*e - 11*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3
*b^5*d^2 - 2*a^4*b^4*d*e + a^5*b^3*e^2 + (b^8*d^2 - 2*a*b^7*d*e + a^2*b^6*e
^2)*x^3 + 3*(a*b^7*d^2 - 2*a^2*b^6*d*e + a^3*b^5*e^2)*x^2 + 3*(a^2*b^6*d^2
- 2*a^3*b^5*d*e + a^4*b^4*e^2)*x)]
```

giac [A] time = 0.28, size = 279, normalized size = 1.35

$$-\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\left(b^3d\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-ab^2e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right)\sqrt{-b^2d+abe}}-\frac{3\,(xe+d)^{\frac{5}{2}}b^2e^3+8\,(xe}{24\left(b^3d\mathrm{sgn}\left((xe\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -1/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d*sgn((x*e + d)
*b*e - b*d*e + a*e^2) - a*b^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b
^2*d + a*b*e)) - 1/24*(3*(x*e + d)^(5/2)*b^2*e^3 + 8*(x*e + d)^(3/2)*b^2*d*
e^3 - 3*sqrt(x*e + d)*b^2*d^2*e^3 - 8*(x*e + d)^(3/2)*a*b*e^4 + 6*sqrt(x*e
+ d)*a*b*d*e^4 - 3*sqrt(x*e + d)*a^2*e^5)/((b^3*d*sgn((x*e + d)*b*e - b*d*e
 + a*e^2) - a*b^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d
+ a*e)^3)
```

maple [B] time = 0.07, size = 326, normalized size = 1.57

$$\left(3b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+9a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+9a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3a^3e^3\arctan\left(\frac{\sqrt{ex+}}{\sqrt{(ae-}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(3*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9*a*b^2*e^3
*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(5/2)*b^2+9*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-8*(
(a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*
b^2*d+3*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-3*((a*e-b*d)*b)
^(1/2)*(e*x+d)^(1/2)*a^2*e^2+6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b*d*e-3*
((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)^2/((a*e-b*d)*b)^(1/2)/b^
2/(a*e-b*d)/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^{\frac{3}{2}}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^(3/2)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,{(d+e\,x)}^{3/2}}{{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(3/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2141 $\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=217

$$\frac{e^2\sqrt{d+ex}}{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e\sqrt{d+ex}}{12b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)}-\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e^3(a}{8b^{3/2}\sqrt{a}}$$

```
[Out] -1/3*(e*x+d)^(1/2)/b/(b^2*x^2+2*a*b*x+a^2)^(3/2)-1/8*e^3*(b*x+a)*arctanh(b^
(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/b^(3/2)/(-a*e+b*d)^(5/2)/((b*x+a)^2)^
(1/2)+1/8*e^2*(e*x+d)^(1/2)/b/(-a*e+b*d)^2/((b*x+a)^2)^(1/2)-1/12*e*(e*x+d)
^(1/2)/b/(-a*e+b*d)/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {768, 646, 51, 63, 208}

$$\frac{e^2\sqrt{d+ex}}{8b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}-\frac{e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8b^{3/2}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{5/2}}-\frac{e\sqrt{d+ex}}{12b(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-a}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] -Sqrt[d + e*x]/(3*b*(a^2 + 2*a*b*x + b^2*x^2)^(3/2)) + (e^2*Sqrt[d + e*x])/
(8*b*(b*d - a*e)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e*Sqrt[d + e*x])/(12*b
*(b*d - a*e)*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (e^3*(a + b*x)*ArcT
anh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*b^(3/2)*(b*d - a*e)^(5/2)*
Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 646

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPart[p]*(b/2 + c*x)^(2*Fr
acPart[p])), Int[(d + e*x)^m*(b/2 + c*x)^(2*p), x], x] /; FreeQ[{a, b, c, d
, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !IntegerQ[p] && NeQ[2*c*d - b*e,
0]
```

Rule 768

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(2*c*(p + 1)), x] - Dist[(e*g*m)/(2*c*(p + 1)), Int[(d + e*x)^(m - 1)*(
a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && EqQ[
2*c*f - b*g, 0] && LtQ[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)\sqrt{d+ex}}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e\int \frac{1}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx}{6b}\\
&= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{\left(be\left(ab+b^2x\right)\right)\int \frac{1}{\left(ab+b^2x\right)^3\sqrt{d+ex}}\,dx}{6\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}-\frac{e\sqrt{d+ex}}{12b(bd-ae)(a+bx)\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-\\
&= -\frac{\sqrt{d+ex}}{3b\left(a^2+2abx+b^2x^2\right)^{3/2}}+\frac{e^2\sqrt{d+ex}}{8b(bd-ae)^2\sqrt{a^2+2abx+b^2x^2}}-
\end{aligned}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.31

$$\frac{2e^3(a+bx)(d+ex)^{3/2}\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*Sqrt[d + e*x])/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (2*e^3*(a + b*x)*(d + e*x)^(3/2)*Hypergeometric2F1[3/2, 4, 5/2, -((b*(d + e
*x))/(-(b*d) + a*e))])/(3*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

fricas [B] time = 1.06, size = 785, normalized size = 3.62

$$\left[\frac{3\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)-2\left(8\,b^4d^3-22\,ab^3d^2e+1\right.}{48\left(a^3b^5d^3-3\,a^4b^4d^2e+3\,a^5b^3de^2-a^6b^2e^3+\left(b^8d^3-3\,ab^7d^2e+3\,a^2b^6de^2-a^3b^5e^3\right)x^3+3\left(ab^7d^3-3\,a^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b^2
*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d))
/(b*x + a)) - 2*(8*b^4*d^3 - 22*a*b^3*d^2*e + 17*a^2*b^2*d*e^2 - 3*a^3*b*e^
3 - 3*(b^4*d*e^2 - a*b^3*e^3)*x^2 + 2*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^
2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^3 - 3*a^4*b^4*d^2*e + 3*a^5*b^3*d*e^2 -
 a^6*b^2*e^3 + (b^8*d^3 - 3*a*b^7*d^2*e + 3*a^2*b^6*d*e^2 - a^3*b^5*e^3)*x^
3 + 3*(a*b^7*d^3 - 3*a^2*b^6*d^2*e + 3*a^3*b^5*d*e^2 - a^4*b^4*e^3)*x^2 + 3
*(a^2*b^6*d^3 - 3*a^3*b^5*d^2*e + 3*a^4*b^4*d*e^2 - a^5*b^3*e^3)*x), 1/24*(
3*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(-b^2*d + a
*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) - (8*b^4*d^3
 - 22*a*b^3*d^2*e + 17*a^2*b^2*d*e^2 - 3*a^3*b*e^3 - 3*(b^4*d*e^2 - a*b^3*e
^3)*x^2 + 2*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqrt(e*x + d))/(
a^3*b^5*d^3 - 3*a^4*b^4*d^2*e + 3*a^5*b^3*d*e^2 - a^6*b^2*e^3 + (b^8*d^3 -
3*a*b^7*d^2*e + 3*a^2*b^6*d*e^2 - a^3*b^5*e^3)*x^3 + 3*(a*b^7*d^3 - 3*a^2*b
^6*d^2*e + 3*a^3*b^5*d*e^2 - a^4*b^4*e^3)*x^2 + 3*(a^2*b^6*d^3 - 3*a^3*b^5*
d^2*e + 3*a^4*b^4*d*e^2 - a^5*b^3*e^3)*x)]
```

giac [B] time = 0.29, size = 343, normalized size = 1.58

$$\frac{\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\left(b^3d^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-2\,ab^2de\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+a^2be^2\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] 1/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d^2*sgn((x*e + d
)*b*e - b*d*e + a*e^2) - 2*a*b^2*d*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a
^2*b*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) + 1/24*(
3*(x*e + d)^(5/2)*b^2*e^3 - 8*(x*e + d)^(3/2)*b^2*d*e^3 - 3*sqrt(x*e + d)*b
^2*d^2*e^3 + 8*(x*e + d)^(3/2)*a*b*e^4 + 6*sqrt(x*e + d)*a*b*d*e^4 - 3*sqrt
(x*e + d)*a^2*e^5)/((b^3*d^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 2*a*b^2*d
*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^2*b*e^2*sgn((x*e + d)*b*e - b*d*e
 + a*e^2))*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.07, size = 326, normalized size = 1.50

$$\frac{(bx+a)^2\left(3b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+9a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+9a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+3a^3e^3\,\mathrm{arct}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(b*x+a)^2*(3*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+9
*a*b^2*e^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+3*((a*e-b*d)*b)^
(1/2)*(e*x+d)^(5/2)*b^2+9*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(3/2)*a*b*e-8*((a*e-b*d)*b)^(1/2)*(e*x
+d)^(3/2)*b^2*d+3*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)-3*((a
*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2+6*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*
a*b*d*e-3*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)/((a*e-b*d)*b)^(1/2)/b/
(a*e-b*d)^2/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\sqrt{ex+d}}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^(1/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)*sqrt(e*x + d)/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(a+b\,x)\,\sqrt{d+e\,x}}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^(1/2))/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**(1/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2142 $\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=225

$$\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}-\frac{5e^2\sqrt{d+ex}}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{5e\sqrt{d+ex}}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

```
[Out] 5/8*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/(-a*e+b*d)^
(7/2)/b^(1/2)/((b*x+a)^2)^(1/2)-5/8*e^2*(e*x+d)^(1/2)/(-a*e+b*d)^3/((b*x+a)
^2)^(1/2)-1/3*(e*x+d)^(1/2)/(-a*e+b*d)/(b*x+a)^2/((b*x+a)^2)^(1/2)+5/12*e*(
e*x+d)^(1/2)/(-a*e+b*d)^2/(b*x+a)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = {770, 21, 51, 63, 208}

$$-\frac{5e^2\sqrt{d+ex}}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3}+\frac{5e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{b}\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{7/2}}+\frac{5e\sqrt{d+ex}}{12(a+bx)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-5*e^2*Sqrt[d + e*x])/(8*(b*d - a*e)^3*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - Sq
rt[d + e*x]/(3*(b*d - a*e)*(a + b*x)^2*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (5*
e*Sqrt[d + e*x])/(12*(b*d - a*e)^2*(a + b*x)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
 + (5*e^3*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*Sq
rt[b]*(b*d - a*e)^(7/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{\sqrt{d+ex}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5\sqrt{d+ex}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4\sqrt{d+ex}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}-\frac{\left(5e\left(ab+b^2x\right)\right)\int \frac{1}{(a+bx)^3\sqrt{d+ex}}}{6b(bd-ae)\sqrt{a^2+2abx+b^2x}}\\
&= -\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}+\frac{5e\sqrt{d+ex}}{12(bd-ae)^2(a+bx)\sqrt{a^2+2a}}\\
&= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{5e^2\sqrt{d+ex}}{8(bd-ae)^3\sqrt{a^2+2abx+b^2x^2}}-\frac{\sqrt{d+ex}}{3(bd-ae)(a+bx)^2\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}
$$

Mathematica [C] time = 0.02, size = 66, normalized size = 0.29

$$\frac{2e^3(a+bx)\sqrt{d+ex}\,{}_2F_1\left(\frac{1}{2},4;\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[d + e*x]*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (2*e^3*(a + b*x)*Sqrt[d + e*x]*Hypergeometric2F1[1/2, 4, 3/2, -((b*(d + e*x
))/(-(b*d) + a*e))])/((-(b*d) + a*e)^4*Sqrt[(a + b*x)^2])
```

fricas [B] time = 0.97, size = 884, normalized size = 3.93

$$\left[-\frac{15\left(b^3e^3x^3+3\,ab^2e^3x^2+3\,a^2be^3x+a^3e^3\right)\sqrt{b^2d-abe}\,\log\left(\frac{bex+2\,bd-ae-2\,\sqrt{b^2d-abe}\,\sqrt{ex+d}}{bx+a}\right)+2\left(8\,b^4\right.}{48\left(a^3b^5d^4-4\,a^4b^4d^3e+6\,a^5b^3d^2e^2-4\,a^6b^2de^3+a^7be^4+\left(b^8d^4-4\,ab^7d^3e+6\,a^2b^6d^2e^2-4\,a^3b^5de^3+a^4b^4e^4\right)\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(b
^2*d - a*b*e)*log((b*e*x + 2*b*d - a*e - 2*sqrt(b^2*d - a*b*e)*sqrt(e*x + d
))/(b*x + a)) + 2*(8*b^4*d^3 - 34*a*b^3*d^2*e + 59*a^2*b^2*d*e^2 - 33*a^3*b
*e^3 + 15*(b^4*d*e^2 - a*b^3*e^3)*x^2 - 10*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a
^2*b^2*e^3)*x)*sqrt(e*x + d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^
2*e^2 - 4*a^6*b^2*d*e^3 + a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*
d^2*e^2 - 4*a^3*b^5*d*e^3 + a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3
*e + 6*a^3*b^5*d^2*e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^
4 - 4*a^3*b^5*d^3*e + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)
, -1/24*(15*(b^3*e^3*x^3 + 3*a*b^2*e^3*x^2 + 3*a^2*b*e^3*x + a^3*e^3)*sqrt(
-b^2*d + a*b*e)*arctan(sqrt(-b^2*d + a*b*e)*sqrt(e*x + d)/(b*e*x + b*d)) +
(8*b^4*d^3 - 34*a*b^3*d^2*e + 59*a^2*b^2*d*e^2 - 33*a^3*b*e^3 + 15*(b^4*d*e
^2 - a*b^3*e^3)*x^2 - 10*(b^4*d^2*e - 5*a*b^3*d*e^2 + 4*a^2*b^2*e^3)*x)*sqr
t(e*x + d))/(a^3*b^5*d^4 - 4*a^4*b^4*d^3*e + 6*a^5*b^3*d^2*e^2 - 4*a^6*b^2*
d*e^3 + a^7*b*e^4 + (b^8*d^4 - 4*a*b^7*d^3*e + 6*a^2*b^6*d^2*e^2 - 4*a^3*b^
5*d*e^3 + a^4*b^4*e^4)*x^3 + 3*(a*b^7*d^4 - 4*a^2*b^6*d^3*e + 6*a^3*b^5*d^2
*e^2 - 4*a^4*b^4*d*e^3 + a^5*b^3*e^4)*x^2 + 3*(a^2*b^6*d^4 - 4*a^3*b^5*d^3*
e + 6*a^4*b^4*d^2*e^2 - 4*a^5*b^3*d*e^3 + a^6*b^2*e^4)*x)]
```

giac [B] time = 0.30, size = 409, normalized size = 1.82

$$-\frac{5\,\arctan\left(\frac{\sqrt{xe+d}\,b}{\sqrt{-b^2d+abe}}\right)e^3}{8\left(b^3d^3\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-3\,ab^2d^2e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+3\,a^2bde^2\mathrm{sgn}\left((xe+d)be-bde\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="g
iac")
```

```
[Out] -5/8*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^3*d^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ 3*a^2*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^3*e^3*sgn((x*e + d)*
b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 1/24*(15*(x*e + d)^(5/2)*b^2*
e^3 - 40*(x*e + d)^(3/2)*b^2*d*e^3 + 33*sqrt(x*e + d)*b^2*d^2*e^3 + 40*(x*e
 + d)^(3/2)*a*b*e^4 - 66*sqrt(x*e + d)*a*b*d*e^4 + 33*sqrt(x*e + d)*a^2*e^5
)/((b^3*d^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 3*a*b^2*d^2*e*sgn((x*e + d
)*b*e - b*d*e + a*e^2) + 3*a^2*b*d*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) -
 a^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.06, size = 334, normalized size = 1.48

$$\frac{\left(15b^3e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+45a\,b^2e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+45a^2b\,e^3x\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+15a^3e^3\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] 1/24*(15*b^3*e^3*x^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+45*a*b^2*e
^3*x^2*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)+15*((a*e-b*d)*b)^(1/2)*(
e*x+d)^(1/2)*x^2*b^2*e^2+45*a^2*b*e^3*x*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^
(1/2)*b)+40*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a*b*e^2*x-10*((a*e-b*d)*b)^(1
/2)*(e*x+d)^(1/2)*b^2*d*e*x+15*a^3*e^3*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(
1/2)*b)+33*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*a^2*e^2-26*((a*e-b*d)*b)^(1/2)
*(e*x+d)^(1/2)*a*b*d*e+8*((a*e-b*d)*b)^(1/2)*(e*x+d)^(1/2)*b^2*d^2)*(b*x+a)
^2/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^3/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx + a}{\left(b^2x^2 + 2\,abx + a^2\right)^{\frac{5}{2}}\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b^2*x^2+2*a*b*x+a^2)^(5/2)/(e*x+d)^(1/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a + b\,x}{\sqrt{d + e\,x}\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(1/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(b**2*x**2+2*a*b*x+a**2)**(5/2)/(e*x+d)**(1/2),x)
```

```
[Out] Timed out
```

3.2143 $\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=276

$$-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}+\frac{35\sqrt{b}\,e^3(a+bx)\tanh^{-1}\left(\frac{\sqrt{b}\,\sqrt{d+ex}}{\sqrt{bd-ae}}\right)}{8\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^{9/2}}-\frac{35e^2}{24\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}}$$

```
[Out] 35/8*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))*b^(1/2)/(-
a*e+b*d)^(9/2)/((b*x+a)^2)^(1/2)-35/24*e^2/(-a*e+b*d)^3/(e*x+d)^(1/2)/((b*x
+a)^2)^(1/2)-1/3/(-a*e+b*d)/(b*x+a)^2/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)+7/12*
e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)-35/8*e^3*(b*x+a)/(-a
*e+b*d)^4/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.143, Rules used = {770, 21, 51, 63, 208}

$$-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^4}-\frac{35e^2}{24\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^3}+\frac{35\sqrt{b}\,e^3(a+bx)\tanh^{-1}(}{8\sqrt{a^2+2abx+b^2x^2}\,(b}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-35*e^2)/(24*(b*d - a*e)^3*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
1/(3*(b*d - a*e)*(a + b*x)^2*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) +
 (7*e)/(12*(b*d - a*e)^2*(a + b*x)*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x
^2]) - (35*e^3*(a + b*x))/(8*(b*d - a*e)^4*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x
 + b^2*x^2]) + (35*Sqrt[b]*e^3*(a + b*x)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sq
rt[b*d - a*e]])/(8*(b*d - a*e)^(9/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(d+ex)^{3/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx &= \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{3/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{3/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= -\frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(7e\left(ab+b^2x\right)\right)\int}{6b(bd-ae)\sqrt{a^2+}}\\
&= -\frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{12(bd-ae)^2(a+bx}\\
&= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}\\
&= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}\\
&= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}\\
&= -\frac{35e^2}{24(bd-ae)^3\sqrt{d+ex}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2\sqrt{d+e}}
\end{aligned}
$$

Mathematica [C] time = 0.03, size = 66, normalized size = 0.24

$$
-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{1}{2},4;\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{\sqrt{(a+bx)^2}\sqrt{d+ex}\,(ae-bd)^4}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(3/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-1/2, 4, 1/2, -((b*(d + e*x))/(-(b*d) +
 a*e))])/((-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*Sqrt[d + e*x])
```

fricas [B] time = 0.94, size = 1204, normalized size = 4.36

$$
\left[\frac{105\left(b^3e^4x^4+a^3de^3+\left(b^3de^3+3\,ab^2e^4\right)x^3+3\left(ab^2de^3+a^2be^4\right)x^2+\left(3\,a^2bde^3\right.\right.}{48\left(a^3b^4d^5-4\,a^4b^3d^4e+6\,a^5b^2d^3e^2-4\,a^6bd^2e^3+a^7de^4+\left(b^7d^4e-4\,ab^6d^3e^2+6\,a^2b^5d^2e^3-4\,a^3b^4de^4+a^4b^3e^5\right)\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/48*(105*(b^3*e^4*x^4 + a^3*d*e^3 + (b^3*d*e^3 + 3*a*b^2*e^4)*x^3 + 3*(a*
b^2*d*e^3 + a^2*b*e^4)*x^2 + (3*a^2*b*d*e^3 + a^3*e^4)*x)*sqrt(b/(b*d - a*e
))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)*sqrt(b/(b*d - a*e
)))/(b*x + a)) - 2*(105*b^3*e^3*x^3 + 8*b^3*d^3 - 38*a*b^2*d^2*e + 87*a^2*b
*d*e^2 + 48*a^3*e^3 + 35*(b^3*d*e^2 + 8*a*b^2*e^3)*x^2 - 7*(2*b^3*d^2*e - 1
4*a*b^2*d*e^2 - 33*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^3*b^4*d^5 - 4*a^4*b^3*d^
4*e + 6*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^
6*d^3*e^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d
^5 - a*b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^
4 + 3*a^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2
 + 2*a^4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 -
11*a^3*b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a
^7*e^5)*x), 1/24*(105*(b^3*e^4*x^4 + a^3*d*e^3 + (b^3*d*e^3 + 3*a*b^2*e^4)*
x^3 + 3*(a*b^2*d*e^3 + a^2*b*e^4)*x^2 + (3*a^2*b*d*e^3 + a^3*e^4)*x)*sqrt(-
b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*
x + b*d)) - (105*b^3*e^3*x^3 + 8*b^3*d^3 - 38*a*b^2*d^2*e + 87*a^2*b*d*e^2
+ 48*a^3*e^3 + 35*(b^3*d*e^2 + 8*a*b^2*e^3)*x^2 - 7*(2*b^3*d^2*e - 14*a*b^2
*d*e^2 - 33*a^2*b*e^3)*x)*sqrt(e*x + d))/(a^3*b^4*d^5 - 4*a^4*b^3*d^4*e + 6
*a^5*b^2*d^3*e^2 - 4*a^6*b*d^2*e^3 + a^7*d*e^4 + (b^7*d^4*e - 4*a*b^6*d^3*e
^2 + 6*a^2*b^5*d^2*e^3 - 4*a^3*b^4*d*e^4 + a^4*b^3*e^5)*x^4 + (b^7*d^5 - a*
b^6*d^4*e - 6*a^2*b^5*d^3*e^2 + 14*a^3*b^4*d^2*e^3 - 11*a^4*b^3*d*e^4 + 3*a
^5*b^2*e^5)*x^3 + 3*(a*b^6*d^5 - 3*a^2*b^5*d^4*e + 2*a^3*b^4*d^3*e^2 + 2*a^
4*b^3*d^2*e^3 - 3*a^5*b^2*d*e^4 + a^6*b*e^5)*x^2 + (3*a^2*b^5*d^5 - 11*a^3*
b^4*d^4*e + 14*a^4*b^3*d^3*e^2 - 6*a^5*b^2*d^2*e^3 - a^6*b*d*e^4 + a^7*e^5)
*x)]
```

giac [B] time = 0.41, size = 654, normalized size = 2.37

$$-\frac{35\,b\arctan\left(\frac{\sqrt{xe+}}{\sqrt{-b^2d-}}\right.}{8\left(b^4d^4\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)-4\,ab^3d^3e\mathrm{sgn}\left((xe+d)be-bde+ae^2\right)+6\,a^2b^2d^2e^2\mathrm{sgn}\left((xe+d)be-bd\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -35/8*b*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^4*d^4*sgn((x*e
 + d)*b*e - b*d*e + a*e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^
2) + 6*a^2*b^2*d^2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*s
gn((x*e + d)*b*e - b*d*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e
^2))*sqrt(-b^2*d + a*b*e)) - 2*e^3/((b^4*d^4*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^2*e^2
*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*sgn((x*e + d)*b*e - b*d
*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(x*e + d)) -
1/24*(57*(x*e + d)^(5/2)*b^3*e^3 - 136*(x*e + d)^(3/2)*b^3*d*e^3 + 87*sqrt(
x*e + d)*b^3*d^2*e^3 + 136*(x*e + d)^(3/2)*a*b^2*e^4 - 174*sqrt(x*e + d)*a*
b^2*d*e^4 + 87*sqrt(x*e + d)*a^2*b*e^5)/((b^4*d^4*sgn((x*e + d)*b*e - b*d*e
 + a*e^2) - 4*a*b^3*d^3*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 6*a^2*b^2*d^
2*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 4*a^3*b*d*e^3*sgn((x*e + d)*b*e
- b*d*e + a*e^2) + a^4*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2))*((x*e + d)*b
 - b*d + a*e)^3)
```

maple [B] time = 0.07, size = 431, normalized size = 1.56

$$-\frac{\left(105\sqrt{ex+d}\;b^4e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+315\sqrt{ex+d}\;a\,b^3e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+315\sqrt{ex+d}\;a^2b^2e^3x\arctan\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/24*(105*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^3*b^
4*e^3+315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x^2*a*b
^3*e^3+105*((a*e-b*d)*b)^(1/2)*b^3*e^3*x^3+315*arctan((e*x+d)^(1/2)/((a*e-b
*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*x*a^2*b^2*e^3+280*((a*e-b*d)*b)^(1/2)*a*b^2*e
^3*x^2+35*((a*e-b*d)*b)^(1/2)*b^3*d*e^2*x^2+105*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(1/2)*a^3*b*e^3+231*((a*e-b*d)*b)^(1/2)*a^2*b*e^3*
x+98*((a*e-b*d)*b)^(1/2)*a*b^2*d*e^2*x-14*((a*e-b*d)*b)^(1/2)*b^3*d^2*e*x+4
8*((a*e-b*d)*b)^(1/2)*a^3*e^3+87*((a*e-b*d)*b)^(1/2)*a^2*b*d*e^2-38*((a*e-b
*d)*b)^(1/2)*a*b^2*d^2*e+8*((a*e-b*d)*b)^(1/2)*b^3*d^3)*(b*x+a)^2/(e*x+d)^(
1/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^4/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(3/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{(d+e\,x)^{3/2}\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(3/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(3/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2144 $\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=328

$$-\frac{105be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{21e^2}{8\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

```
[Out] -21/8*e^2/(-a*e+b*d)^3/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)-1/3/(-a*e+b*d)/(b*x+
a)^2/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)+3/4*e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(3/
2)/((b*x+a)^2)^(1/2)-35/8*e^3*(b*x+a)/(-a*e+b*d)^4/(e*x+d)^(3/2)/((b*x+a)^2
)^(1/2)+105/8*b^(3/2)*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^
(1/2))/(-a*e+b*d)^(11/2)/((b*x+a)^2)^(1/2)-105/8*b*e^3*(b*x+a)/(-a*e+b*d)^5
/(e*x+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 328, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 21, 51, 63, 208\}$

$$-\frac{105be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^5}-\frac{35e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^4}-\frac{21e^2}{8\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-21*e^2)/(8*(b*d - a*e)^3*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 1/(3*(b*d - a*e)*(a + b*x)^2*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (3*e)/(4*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(3/2)*Sqrt[a^2 + 2*a*b*x + b
^2*x^2]) - (35*e^3*(a + b*x))/(8*(b*d - a*e)^4*(d + e*x)^(3/2)*Sqrt[a^2 + 2
*a*b*x + b^2*x^2]) - (105*b*e^3*(a + b*x))/(8*(b*d - a*e)^5*Sqrt[d + e*x]*S
qrt[a^2 + 2*a*b*x + b^2*x^2]) + (105*b^(3/2)*e^3*(a + b*x)*ArcTanh[(Sqrt[b]
*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(11/2)*Sqrt[a^2 + 2*a*b*x
+ b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{5/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{5/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{5/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(3e\left(ab+b^2x\right)\right)\int}{2b(bd-ae)\sqrt{a^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{4(bd-ae)^2(a+b}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

$$= -\frac{21e^2}{8(bd-ae)^3(d+ex)^{3/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{1}{3(bd-ae)(a+bx)^2(d+e}$$

Mathematica [C] time = 0.03, size = 68, normalized size = 0.21

$$-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{3}{2},4;-\frac{1}{2};-\frac{b(d+ex)}{ae-bd}\right)}{3\sqrt{(a+bx)^2}\,(d+ex)^{3/2}(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(5/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-3/2, 4, -1/2, -((b*(d + e*x))/(-(b*d)
+ a*e))])/(3*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^(3/2))
```

fricas [B] time = 1.52, size = 1840, normalized size = 5.61

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [-1/48*(315*(b^4*e^5*x^5 + a^3*b*d^2*e^3 + (2*b^4*d*e^4 + 3*a*b^3*e^5)*x^4
+ (b^4*d^2*e^3 + 6*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*x^3 + (3*a*b^3*d^2*e^3 + 6*
a^2*b^2*d*e^4 + a^3*b*e^5)*x^2 + (3*a^2*b^2*d^2*e^3 + 2*a^3*b*d*e^4)*x)*sqr
t(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e - 2*(b*d - a*e)*sqrt(e*x + d)*sqr
t(b/(b*d - a*e)))/(b*x + a)) + 2*(315*b^4*e^4*x^4 + 8*b^4*d^4 - 50*a*b^3*d^
3*e + 165*a^2*b^2*d^2*e^2 + 208*a^3*b*d*e^3 - 16*a^4*e^4 + 420*(b^4*d*e^3 +
 2*a*b^3*e^4)*x^3 + 63*(b^4*d^2*e^2 + 18*a*b^3*d*e^3 + 11*a^2*b^2*e^4)*x^2
- 18*(b^4*d^3*e - 10*a*b^3*d^2*e^2 - 53*a^2*b^2*d*e^3 - 8*a^3*b*e^4)*x)*sqr
t(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*e^2 - 10*a^6*b^
2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5*a*b^7*d^4*e^3
+ 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6 - a^5*b^3*e^7)*
x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 10*a^3*b^5*d^3*e
^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*x^4 + (b^8*d^7
+ a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25*a^4*b^4*d^3*e^
4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (3*a*b^7*d^7 - 9
*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a^5*b^3*d^3*e^4
+ 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b^6*d^7 - 13*a^3
*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6*b^2*d^3*e^4 +
7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x), 1/24*(315*(b^4*e^5*x^5 + a^3*b*d^2*e^3 +
 (2*b^4*d*e^4 + 3*a*b^3*e^5)*x^4 + (b^4*d^2*e^3 + 6*a*b^3*d*e^4 + 3*a^2*b^2
*e^5)*x^3 + (3*a*b^3*d^2*e^3 + 6*a^2*b^2*d*e^4 + a^3*b*e^5)*x^2 + (3*a^2*b^
2*d^2*e^3 + 2*a^3*b*d*e^4)*x)*sqrt(-b/(b*d - a*e))*arctan(-(b*d - a*e)*sqrt
(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (315*b^4*e^4*x^4 + 8*b^4*d^
4 - 50*a*b^3*d^3*e + 165*a^2*b^2*d^2*e^2 + 208*a^3*b*d*e^3 - 16*a^4*e^4 + 4
20*(b^4*d*e^3 + 2*a*b^3*e^4)*x^3 + 63*(b^4*d^2*e^2 + 18*a*b^3*d*e^3 + 11*a^
2*b^2*e^4)*x^2 - 18*(b^4*d^3*e - 10*a*b^3*d^2*e^2 - 53*a^2*b^2*d*e^3 - 8*a^
3*b*e^4)*x)*sqrt(e*x + d))/(a^3*b^5*d^7 - 5*a^4*b^4*d^6*e + 10*a^5*b^3*d^5*
e^2 - 10*a^6*b^2*d^4*e^3 + 5*a^7*b*d^3*e^4 - a^8*d^2*e^5 + (b^8*d^5*e^2 - 5
*a*b^7*d^4*e^3 + 10*a^2*b^6*d^3*e^4 - 10*a^3*b^5*d^2*e^5 + 5*a^4*b^4*d*e^6
- a^5*b^3*e^7)*x^5 + (2*b^8*d^6*e - 7*a*b^7*d^5*e^2 + 5*a^2*b^6*d^4*e^3 + 1
0*a^3*b^5*d^3*e^4 - 20*a^4*b^4*d^2*e^5 + 13*a^5*b^3*d*e^6 - 3*a^6*b^2*e^7)*
x^4 + (b^8*d^7 + a*b^7*d^6*e - 17*a^2*b^6*d^5*e^2 + 35*a^3*b^5*d^4*e^3 - 25
*a^4*b^4*d^3*e^4 - a^5*b^3*d^2*e^5 + 9*a^6*b^2*d*e^6 - 3*a^7*b*e^7)*x^3 + (
3*a*b^7*d^7 - 9*a^2*b^6*d^6*e + a^3*b^5*d^5*e^2 + 25*a^4*b^4*d^4*e^3 - 35*a
^5*b^3*d^3*e^4 + 17*a^6*b^2*d^2*e^5 - a^7*b*d*e^6 - a^8*e^7)*x^2 + (3*a^2*b
^6*d^7 - 13*a^3*b^5*d^6*e + 20*a^4*b^4*d^5*e^2 - 10*a^5*b^3*d^4*e^3 - 5*a^6
*b^2*d^3*e^4 + 7*a^7*b*d^2*e^5 - 2*a^8*d*e^6)*x)]
```

giac [B] time = 0.47, size = 691, normalized size = 2.11

$$-\frac{}{8\left(b^5d^5\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)-5\,ab^4d^4e\operatorname{sgn}\left((xe+d)be-bde+ae^2\right)+10\,a^2b^3d^3e^2\operatorname{sgn}\left((xe+d)be-b\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -105/8*b^2*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^5*d^5*sgn((
x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^4*e*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 10*a^3*b^2*
d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 5*a^4*b*d*e^4*sgn((x*e + d)*b*
e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*
d + a*b*e)) - 1/24*(315*(x*e + d)^4*b^4*e^3 - 840*(x*e + d)^3*b^4*d*e^3 + 6
93*(x*e + d)^2*b^4*d^2*e^3 - 144*(x*e + d)*b^4*d^3*e^3 - 16*b^4*d^4*e^3 + 8
40*(x*e + d)^3*a*b^3*e^4 - 1386*(x*e + d)^2*a*b^3*d*e^4 + 432*(x*e + d)*a*b
^3*d^2*e^4 + 64*a*b^3*d^3*e^4 + 693*(x*e + d)^2*a^2*b^2*e^5 - 432*(x*e + d)
*a^2*b^2*d*e^5 - 96*a^2*b^2*d^2*e^5 + 144*(x*e + d)*a^3*b*e^6 + 64*a^3*b*d*
e^6 - 16*a^4*e^7)/((b^5*d^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 5*a*b^4*d^
4*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 10*a^2*b^3*d^3*e^2*sgn((x*e + d)*b
*e - b*d*e + a*e^2) - 10*a^3*b^2*d^2*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2)
 + 5*a^4*b*d*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - a^5*e^5*sgn((x*e + d)
*b*e - b*d*e + a*e^2))*((x*e + d)^(3/2)*b - sqrt(x*e + d)*b*d + sqrt(x*e +
d)*a*e)^3)
```

maple [B] time = 0.09, size = 563, normalized size = 1.72

$$\left(315\,(ex+d)^{\frac{3}{2}}\,b^5e^3x^3\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+315\sqrt{(ae-bd)\,b}\;b^4e^4x^4+945\,(ex+d)^{\frac{3}{2}}\,a\,b^4e^3x^2\arctan\left(\frac{\sqrt{ex+d}\;b}{\sqrt{(ae-bd)b}}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] 1/24*(315*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^3*b^5
*e^3+945*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x^2*a*b^
4*e^3+315*((a*e-b*d)*b)^(1/2)*x^4*b^4*e^4+945*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*(e*x+d)^(3/2)*x*a^2*b^3*e^3+840*((a*e-b*d)*b)^(1/2)*x^3*a*b^
3*e^4+420*((a*e-b*d)*b)^(1/2)*x^3*b^4*d*e^3+315*arctan((e*x+d)^(1/2)/((a*e-
b*d)*b)^(1/2)*b)*(e*x+d)^(3/2)*a^3*b^2*e^3+693*((a*e-b*d)*b)^(1/2)*x^2*a^2*
b^2*e^4+1134*((a*e-b*d)*b)^(1/2)*x^2*a*b^3*d*e^3+63*((a*e-b*d)*b)^(1/2)*x^2
*b^4*d^2*e^2+144*((a*e-b*d)*b)^(1/2)*x*a^3*b*e^4+954*((a*e-b*d)*b)^(1/2)*x*
a^2*b^2*d*e^3+180*((a*e-b*d)*b)^(1/2)*x*a*b^3*d^2*e^2-18*((a*e-b*d)*b)^(1/2
)*x*b^4*d^3*e-16*((a*e-b*d)*b)^(1/2)*a^4*e^4+208*((a*e-b*d)*b)^(1/2)*a^3*b*
d*e^3+165*((a*e-b*d)*b)^(1/2)*a^2*b^2*d^2*e^2-50*((a*e-b*d)*b)^(1/2)*a*b^3*
d^3*e+8*((a*e-b*d)*b)^(1/2)*b^4*d^4)*(b*x+a)^2/(e*x+d)^(3/2)/((a*e-b*d)*b)^
(1/2)/(a*e-b*d)^5/((b*x+a)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(5/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{(d+e\,x)}^{5/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(5/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(5/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
[Out] Timed out
```

3.2145 $\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=382

$$-\frac{231b^2e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{77be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}-\frac{231e^3(a+bx}{40\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

```
[Out] -33/8*e^2/(-a*e+b*d)^3/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)-1/3/(-a*e+b*d)/(b*x+
a)^2/(e*x+d)^(5/2)/((b*x+a)^2)^(1/2)+11/12*e/(-a*e+b*d)^2/(b*x+a)/(e*x+d)^(
5/2)/((b*x+a)^2)^(1/2)-231/40*e^3*(b*x+a)/(-a*e+b*d)^4/(e*x+d)^(5/2)/((b*x+
a)^2)^(1/2)-77/8*b*e^3*(b*x+a)/(-a*e+b*d)^5/(e*x+d)^(3/2)/((b*x+a)^2)^(1/2)
+231/8*b^(5/2)*e^3*(b*x+a)*arctanh(b^(1/2)*(e*x+d)^(1/2)/(-a*e+b*d)^(1/2))/
(-a*e+b*d)^(13/2)/((b*x+a)^2)^(1/2)-231/8*b^2*e^3*(b*x+a)/(-a*e+b*d)^6/(e*x
+d)^(1/2)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.25, antiderivative size = 382, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 35, $\frac{\text{number of rules}}{\text{integrand size}} = 0.143$, Rules used = $\{770, 21, 51, 63, 208\}$

$$-\frac{231b^2e^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,\sqrt{d+ex}\,(bd-ae)^6}-\frac{77be^3(a+bx)}{8\sqrt{a^2+2abx+b^2x^2}\,(d+ex)^{3/2}(bd-ae)^5}-\frac{231e^3(a+bx}{40\sqrt{a^2+2abx+b^2x^2}\,(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-33*e^2)/(8*(b*d - a*e)^3*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) -
 1/(3*(b*d - a*e)*(a + b*x)^2*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
) + (11*e)/(12*(b*d - a*e)^2*(a + b*x)*(d + e*x)^(5/2)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2]) - (231*e^3*(a + b*x))/(40*(b*d - a*e)^4*(d + e*x)^(5/2)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2]) - (77*b*e^3*(a + b*x))/(8*(b*d - a*e)^5*(d + e*x)^(3
/2)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) - (231*b^2*e^3*(a + b*x))/(8*(b*d - a*e)
^6*Sqrt[d + e*x]*Sqrt[a^2 + 2*a*b*x + b^2*x^2]) + (231*b^(5/2)*e^3*(a + b*x
)*ArcTanh[(Sqrt[b]*Sqrt[d + e*x])/Sqrt[b*d - a*e]])/(8*(b*d - a*e)^(13/2)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 51

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[
((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] - Dist[(d*(
m + n + 2))/((b*c - a*d)*(m + 1)), Int[(a + b*x)^(m + 1)*(c + d*x)^n, x], x
] /; FreeQ[{a, b, c, d, n}, x] && NeQ[b*c - a*d, 0] && LtQ[m, -1] &&  !(LtQ
[n, -1] && (EqQ[a, 0] || (NeQ[c, 0] && LtQ[m - n, 0] && IntegerQ[n]))) && I
ntLinearQ[a, b, c, d, m, n, x]
```

Rule 63

```
Int[((a_.) + (b_.)*(x_))^(m_)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> With[
{p = Denominator[m]}, Dist[p/b, Subst[Int[x^(p*(m + 1) - 1)*(c - (a*d)/b +
(d*x^p)/b)^n, x], x, (a + b*x)^(1/p)], x]] /; FreeQ[{a, b, c, d}, x] && NeQ
```

```
[b*c - a*d, 0] && LtQ[-1, m, 0] && LeQ[-1, n, 0] && LeQ[Denominator[n], Den
ominator[m]] && IntLinearQ[a, b, c, d, m, n, x]
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{a+bx}{(d+ex)^{7/2}\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{a+bx}{\left(ab+b^2x\right)^5(d+ex)^{7/2}}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$

$$= \frac{\left(ab+b^2x\right)\int \frac{1}{(a+bx)^4(d+ex)^{7/2}}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{\left(11e\left(ab+b^2x\right.\right.}{6b(bd-ae)}$$

$$= -\frac{1}{3(bd-ae)(a+bx)^2(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} + \frac{}{12(bd-ae)^2(a}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

$$= -\frac{33e^2}{8(bd-ae)^3(d+ex)^{5/2}\sqrt{a^2+2abx+b^2x^2}} - \frac{}{3(bd-ae)(a+bx)^2(d+}$$

Mathematica [C] time = 0.04, size = 68, normalized size = 0.18

$$-\frac{2e^3(a+bx)\,{}_2F_1\left(-\frac{5}{2},4;-\frac{3}{2};-\frac{b(d+ex)}{ae-bd}\right)}{5\sqrt{(a+bx)^2}\,(d+ex)^{5/2}(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((d + e*x)^(7/2)*(a^2 + 2*a*b*x + b^2*x^2)^(5/2)),x]
```

```
[Out] (-2*e^3*(a + b*x)*Hypergeometric2F1[-5/2, 4, -3/2, -((b*(d + e*x))/(-(b*d)
+ a*e))])/(5*(-(b*d) + a*e)^4*Sqrt[(a + b*x)^2]*(d + e*x)^(5/2))
```

fricas [B] time = 0.97, size = 2550, normalized size = 6.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="f
ricas")
```

```
[Out] [1/240*(3465*(b^5*e^6*x^6 + a^3*b^2*d^3*e^3 + 3*(b^5*d*e^5 + a*b^4*e^6)*x^5
 + 3*(b^5*d^2*e^4 + 3*a*b^4*d*e^5 + a^2*b^3*e^6)*x^4 + (b^5*d^3*e^3 + 9*a*b
^4*d^2*e^4 + 9*a^2*b^3*d*e^5 + a^3*b^2*e^6)*x^3 + 3*(a*b^4*d^3*e^3 + 3*a^2*
b^3*d^2*e^4 + a^3*b^2*d*e^5)*x^2 + 3*(a^2*b^3*d^3*e^3 + a^3*b^2*d^2*e^4)*x)
*sqrt(b/(b*d - a*e))*log((b*e*x + 2*b*d - a*e + 2*(b*d - a*e)*sqrt(e*x + d)
*sqrt(b/(b*d - a*e)))/(b*x + a)) - 2*(3465*b^5*e^5*x^5 + 40*b^5*d^5 - 310*a
*b^4*d^4*e + 1335*a^2*b^3*d^3*e^2 + 2768*a^3*b^2*d^2*e^3 - 416*a^4*b*d*e^4
+ 48*a^5*e^5 + 1155*(7*b^5*d*e^4 + 8*a*b^4*e^5)*x^4 + 231*(23*b^5*d^2*e^3 +
 94*a*b^4*d*e^4 + 33*a^2*b^3*e^5)*x^3 + 99*(5*b^5*d^3*e^2 + 146*a*b^4*d^2*e
^3 + 183*a^2*b^3*d*e^4 + 16*a^3*b^2*e^5)*x^2 - 11*(10*b^5*d^4*e - 130*a*b^4
*d^3*e^2 - 1119*a^2*b^3*d^2*e^3 - 352*a^3*b^2*d*e^4 + 16*a^4*b*e^5)*x)*sqrt
(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e + 15*a^5*b^4*d^7*e^2 - 20*a^6*b^3
*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*e^5 + a^9*d^3*e^6 + (b^9*d^6*e^
3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 20*a^3*b^6*d^3*e^6 + 15*a^4*b^5*
d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6
*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^
4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7
*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^4 - 30*a^4*b^5*d^4*e^5 + 19*a^5
*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2*d*e^8 + a^8*b*e^9)*x^4 + (b^9*
d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 62*a^3*b^6*d^6*e^3 - 36*a^4*b^5*
d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*
a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 - 3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7
*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7
*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^
6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7
*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7)*x), 1/120*(3465*(b^5*e^6*x^6
+ a^3*b^2*d^3*e^3 + 3*(b^5*d*e^5 + a*b^4*e^6)*x^5 + 3*(b^5*d^2*e^4 + 3*a*b^
4*d*e^5 + a^2*b^3*e^6)*x^4 + (b^5*d^3*e^3 + 9*a*b^4*d^2*e^4 + 9*a^2*b^3*d*e
^5 + a^3*b^2*e^6)*x^3 + 3*(a*b^4*d^3*e^3 + 3*a^2*b^3*d^2*e^4 + a^3*b^2*d*e^
5)*x^2 + 3*(a^2*b^3*d^3*e^3 + a^3*b^2*d^2*e^4)*x)*sqrt(-b/(b*d - a*e))*arct
an(-(b*d - a*e)*sqrt(e*x + d)*sqrt(-b/(b*d - a*e))/(b*e*x + b*d)) - (3465*b
^5*e^5*x^5 + 40*b^5*d^5 - 310*a*b^4*d^4*e + 1335*a^2*b^3*d^3*e^2 + 2768*a^3
*b^2*d^2*e^3 - 416*a^4*b*d*e^4 + 48*a^5*e^5 + 1155*(7*b^5*d*e^4 + 8*a*b^4*e
^5)*x^4 + 231*(23*b^5*d^2*e^3 + 94*a*b^4*d*e^4 + 33*a^2*b^3*e^5)*x^3 + 99*(
5*b^5*d^3*e^2 + 146*a*b^4*d^2*e^3 + 183*a^2*b^3*d*e^4 + 16*a^3*b^2*e^5)*x^2
 - 11*(10*b^5*d^4*e - 130*a*b^4*d^3*e^2 - 1119*a^2*b^3*d^2*e^3 - 352*a^3*b^
2*d*e^4 + 16*a^4*b*e^5)*x)*sqrt(e*x + d))/(a^3*b^6*d^9 - 6*a^4*b^5*d^8*e +
15*a^5*b^4*d^7*e^2 - 20*a^6*b^3*d^6*e^3 + 15*a^7*b^2*d^5*e^4 - 6*a^8*b*d^4*
e^5 + a^9*d^3*e^6 + (b^9*d^6*e^3 - 6*a*b^8*d^5*e^4 + 15*a^2*b^7*d^4*e^5 - 2
0*a^3*b^6*d^3*e^6 + 15*a^4*b^5*d^2*e^7 - 6*a^5*b^4*d*e^8 + a^6*b^3*e^9)*x^6
 + 3*(b^9*d^7*e^2 - 5*a*b^8*d^6*e^3 + 9*a^2*b^7*d^5*e^4 - 5*a^3*b^6*d^4*e^5
 - 5*a^4*b^5*d^3*e^6 + 9*a^5*b^4*d^2*e^7 - 5*a^6*b^3*d*e^8 + a^7*b^2*e^9)*x
^5 + 3*(b^9*d^8*e - 3*a*b^8*d^7*e^2 - 2*a^2*b^7*d^6*e^3 + 19*a^3*b^6*d^5*e^
4 - 30*a^4*b^5*d^4*e^5 + 19*a^5*b^4*d^3*e^6 - 2*a^6*b^3*d^2*e^7 - 3*a^7*b^2
*d*e^8 + a^8*b*e^9)*x^4 + (b^9*d^9 + 3*a*b^8*d^8*e - 30*a^2*b^7*d^7*e^2 + 6
2*a^3*b^6*d^6*e^3 - 36*a^4*b^5*d^5*e^4 - 36*a^5*b^4*d^4*e^5 + 62*a^6*b^3*d^
3*e^6 - 30*a^7*b^2*d^2*e^7 + 3*a^8*b*d*e^8 + a^9*e^9)*x^3 + 3*(a*b^8*d^9 -
3*a^2*b^7*d^8*e - 2*a^3*b^6*d^7*e^2 + 19*a^4*b^5*d^6*e^3 - 30*a^5*b^4*d^5*e
^4 + 19*a^6*b^3*d^4*e^5 - 2*a^7*b^2*d^3*e^6 - 3*a^8*b*d^2*e^7 + a^9*d*e^8)*
x^2 + 3*(a^2*b^7*d^9 - 5*a^3*b^6*d^8*e + 9*a^4*b^5*d^7*e^2 - 5*a^5*b^4*d^6*
e^3 - 5*a^6*b^3*d^5*e^4 + 9*a^7*b^2*d^4*e^5 - 5*a^8*b*d^3*e^6 + a^9*d^2*e^7
)*x)]
```

giac [B] time = 0.55, size = 932, normalized size = 2.44

$$-\frac{}{8\left(b^{6}d^{6}\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)-6\,ab^{5}d^{5}e\mathrm{sgn}\left((xe+d)be-bde+ae^{2}\right)+15\,a^{2}b^{4}d^{4}e^{2}\mathrm{sgn}\left((xe+d)be-b\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="g
iac")
```

```
[Out] -231/8*b^3*arctan(sqrt(x*e + d)*b/sqrt(-b^2*d + a*b*e))*e^3/((b^6*d^6*sgn((
x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a
*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*
d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e +
d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2)
+ a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2))*sqrt(-b^2*d + a*b*e)) - 2/15*
(150*(x*e + d)^2*b^2*e^3 + 20*(x*e + d)*b^2*d*e^3 + 3*b^2*d^2*e^3 - 20*(x*e
 + d)*a*b*e^4 - 6*a*b*d*e^4 + 3*a^2*e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*
e + a*e^2) - 6*a*b^5*d^5*e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*
d^4*e^2*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e +
d)*b*e - b*d*e + a*e^2) + 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*
e^2) - 6*a^5*b*d*e^5*sgn((x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e
+ d)*b*e - b*d*e + a*e^2))*(x*e + d)^(5/2)) - 1/24*(213*(x*e + d)^(5/2)*b^5
*e^3 - 472*(x*e + d)^(3/2)*b^5*d*e^3 + 267*sqrt(x*e + d)*b^5*d^2*e^3 + 472*
(x*e + d)^(3/2)*a*b^4*e^4 - 534*sqrt(x*e + d)*a*b^4*d*e^4 + 267*sqrt(x*e +
d)*a^2*b^3*e^5)/((b^6*d^6*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a*b^5*d^5*
e*sgn((x*e + d)*b*e - b*d*e + a*e^2) + 15*a^2*b^4*d^4*e^2*sgn((x*e + d)*b*e
 - b*d*e + a*e^2) - 20*a^3*b^3*d^3*e^3*sgn((x*e + d)*b*e - b*d*e + a*e^2) +
 15*a^4*b^2*d^2*e^4*sgn((x*e + d)*b*e - b*d*e + a*e^2) - 6*a^5*b*d*e^5*sgn(
(x*e + d)*b*e - b*d*e + a*e^2) + a^6*e^6*sgn((x*e + d)*b*e - b*d*e + a*e^2)
)*((x*e + d)*b - b*d + a*e)^3)
```

maple [B] time = 0.08, size = 722, normalized size = 1.89

$$-\frac{\left(3465\sqrt{(ae-bd)\,b}\;b^{5}e^{5}x^{5}+9240\sqrt{(ae-bd)\,b}\;a\,b^{4}e^{5}x^{4}+8085\sqrt{(ae-bd)\,b}\;b^{5}d\,e^{4}x^{4}+7623\sqrt{(ae-bd)\,b}\;a^{2}b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] -1/120*(12309*((a*e-b*d)*b)^(1/2)*x*a^2*b^3*d^2*e^3-416*((a*e-b*d)*b)^(1/2)
*a^4*b*d*e^4+2768*((a*e-b*d)*b)^(1/2)*a^3*b^2*d^2*e^3+40*((a*e-b*d)*b)^(1/2
)*b^5*d^5+9240*((a*e-b*d)*b)^(1/2)*x^4*a*b^4*e^5+7623*((a*e-b*d)*b)^(1/2)*x
^3*a^2*b^3*e^5-176*((a*e-b*d)*b)^(1/2)*x*a^4*b*e^5-110*((a*e-b*d)*b)^(1/2)*
x*b^5*d^4*e+5313*((a*e-b*d)*b)^(1/2)*x^3*b^5*d^2*e^3+1584*((a*e-b*d)*b)^(1/
2)*x^2*a^3*b^2*e^5+3465*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*x^3*b^6*e^3+3465*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*b)^(1
/2)*b)*a^3*b^3*e^3+495*((a*e-b*d)*b)^(1/2)*x^2*b^5*d^3*e^2+8085*((a*e-b*d)*
b)^(1/2)*x^4*b^5*d*e^4+10395*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*d)*
b)^(1/2)*b)*x^2*a*b^5*e^3+10395*(e*x+d)^(5/2)*arctan((e*x+d)^(1/2)/((a*e-b*
d)*b)^(1/2)*b)*x*a^2*b^4*e^3+1430*((a*e-b*d)*b)^(1/2)*x*a*b^4*d^3*e^2+48*((
a*e-b*d)*b)^(1/2)*a^5*e^5+3465*((a*e-b*d)*b)^(1/2)*x^5*b^5*e^5+18117*((a*e-
b*d)*b)^(1/2)*x^2*a^2*b^3*d*e^4+14454*((a*e-b*d)*b)^(1/2)*x^2*a*b^4*d^2*e^3
+3872*((a*e-b*d)*b)^(1/2)*x*a^3*b^2*d*e^4+21714*((a*e-b*d)*b)^(1/2)*x^3*a*b
^4*d*e^4+1335*((a*e-b*d)*b)^(1/2)*a^2*b^3*d^3*e^2-310*((a*e-b*d)*b)^(1/2)*a
*b^4*d^4*e)*(b*x+a)^2/(e*x+d)^(5/2)/((a*e-b*d)*b)^(1/2)/(a*e-b*d)^6/((b*x+a
)^2)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}(ex+d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)^(7/2)/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="m
axima")
```

```
[Out] integrate((b*x + a)/((b^2*x^2 + 2*a*b*x + a^2)^(5/2)*(e*x + d)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(d+e\,x\right)}^{7/2}\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)),x)
```

```
[Out] int((a + b*x)/((d + e*x)^(7/2)*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(e*x+d)**(7/2)/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2146 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=239

$$-\frac{7b^6(bd-ae)(d+ex)^{m+7}}{e^8(m+7)}+\frac{21b^5(bd-ae)^2(d+ex)^{m+6}}{e^8(m+6)}-\frac{35b^4(bd-ae)^3(d+ex)^{m+5}}{e^8(m+5)}+\frac{35b^3(bd-ae)^4(d+ex)^{m+4}}{e^8(m+4)}$$

```
[Out] -(-a*e+b*d)^7*(e*x+d)^(1+m)/e^8/(1+m)+7*b*(-a*e+b*d)^6*(e*x+d)^(2+m)/e^8/(2
+m)-21*b^2*(-a*e+b*d)^5*(e*x+d)^(3+m)/e^8/(3+m)+35*b^3*(-a*e+b*d)^4*(e*x+d)
^(4+m)/e^8/(4+m)-35*b^4*(-a*e+b*d)^3*(e*x+d)^(5+m)/e^8/(5+m)+21*b^5*(-a*e+b
*d)^2*(e*x+d)^(6+m)/e^8/(6+m)-7*b^6*(-a*e+b*d)*(e*x+d)^(7+m)/e^8/(7+m)+b^7*
(e*x+d)^(8+m)/e^8/(8+m)
```

Rubi [A] time = 0.14, antiderivative size = 239, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = $\{27, 43\}$

$$-\frac{21b^2(bd-ae)^5(d+ex)^{m+3}}{e^8(m+3)}+\frac{35b^3(bd-ae)^4(d+ex)^{m+4}}{e^8(m+4)}-\frac{35b^4(bd-ae)^3(d+ex)^{m+5}}{e^8(m+5)}+\frac{21b^5(bd-ae)^2(d+ex)^{m}}{e^8(m+6)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(((b*d - a*e)^7*(d + e*x)^(1 + m))/(e^8*(1 + m))) + (7*b*(b*d - a*e)^6*(d
+ e*x)^(2 + m))/(e^8*(2 + m)) - (21*b^2*(b*d - a*e)^5*(d + e*x)^(3 + m))/(e
^8*(3 + m)) + (35*b^3*(b*d - a*e)^4*(d + e*x)^(4 + m))/(e^8*(4 + m)) - (35*
b^4*(b*d - a*e)^3*(d + e*x)^(5 + m))/(e^8*(5 + m)) + (21*b^5*(b*d - a*e)^2*
(d + e*x)^(6 + m))/(e^8*(6 + m)) - (7*b^6*(b*d - a*e)*(d + e*x)^(7 + m))/(e
^8*(7 + m)) + (b^7*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^7(d+ex)^m \, dx\\ &= \int \left(\frac{(-bd+ae)^7(d+ex)^m}{e^7}+\frac{7b(bd-ae)^6(d+ex)^{1+m}}{e^7}-21b^2(bd\right.\\ &= -\frac{(bd-ae)^7(d+ex)^{1+m}}{e^8(1+m)}+\frac{7b(bd-ae)^6(d+ex)^{2+m}}{e^8(2+m)}-\frac{21b^2(bd-}{e^8}\end{aligned}$$

Mathematica [A] time = 0.21, size = 203, normalized size = 0.85

$$\frac{(d+ex)^{m+1}\left(-\frac{7b^6(d+ex)^6(bd-ae)}{m+7}+\frac{21b^5(d+ex)^5(bd-ae)^2}{m+6}-\frac{35b^4(d+ex)^4(bd-ae)^3}{m+5}+\frac{35b^3(d+ex)^3(bd-ae)^4}{m+4}-\frac{21b^2(d+ex)^2(bd-ae)^5}{m+3}+7b\right.}{e^8}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^7/(1 + m)) + (7*b*(b*d - a*e)^6*(d + e*x)
)/(2 + m) - (21*b^2*(b*d - a*e)^5*(d + e*x)^2)/(3 + m) + (35*b^3*(b*d - a*e
)^4*(d + e*x)^3)/(4 + m) - (35*b^4*(b*d - a*e)^3*(d + e*x)^4)/(5 + m) + (21
*b^5*(b*d - a*e)^2*(d + e*x)^5)/(6 + m) - (7*b^6*(b*d - a*e)*(d + e*x)^6)/(
7 + m) + (b^7*(d + e*x)^7)/(8 + m)))/e^8
```

fricas [B] time = 1.01, size = 3201, normalized size = 13.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="fricas")
```

```
[Out] (a^7*d*e^7*m^7 - 5040*b^7*d^8 + 40320*a*b^6*d^7*e - 141120*a^2*b^5*d^6*e^2
+ 282240*a^3*b^4*d^5*e^3 - 352800*a^4*b^3*d^4*e^4 + 282240*a^5*b^2*d^3*e^5
- 141120*a^6*b*d^2*e^6 + 40320*a^7*d*e^7 + (b^7*e^8*m^7 + 28*b^7*e^8*m^6 +
322*b^7*e^8*m^5 + 1960*b^7*e^8*m^4 + 6769*b^7*e^8*m^3 + 13132*b^7*e^8*m^2 +
 13068*b^7*e^8*m + 5040*b^7*e^8)*x^8 + (40320*a*b^6*e^8 + (b^7*d*e^7 + 7*a*
b^6*e^8)*m^7 + 7*(3*b^7*d*e^7 + 29*a*b^6*e^8)*m^6 + 7*(25*b^7*d*e^7 + 343*a
*b^6*e^8)*m^5 + 245*(3*b^7*d*e^7 + 61*a*b^6*e^8)*m^4 + 56*(29*b^7*d*e^7 + 9
38*a*b^6*e^8)*m^3 + 196*(9*b^7*d*e^7 + 527*a*b^6*e^8)*m^2 + 144*(5*b^7*d*e^
7 + 721*a*b^6*e^8)*m)*x^7 - 7*(a^6*b*d^2*e^6 - 5*a^7*d*e^7)*m^6 + 7*(20160*
a^2*b^5*e^8 + (a*b^6*d*e^7 + 3*a^2*b^5*e^8)*m^7 - (b^7*d^2*e^6 - 23*a*b^6*d
*e^7 - 90*a^2*b^5*e^8)*m^6 - (15*b^7*d^2*e^6 - 205*a*b^6*d*e^7 - 1098*a^2*b
^5*e^8)*m^5 - 5*(17*b^7*d^2*e^6 - 181*a*b^6*d*e^7 - 1404*a^2*b^5*e^8)*m^4 -
 (225*b^7*d^2*e^6 - 2074*a*b^6*d*e^7 - 25227*a^2*b^5*e^8)*m^3 - 2*(137*b^7*
d^2*e^6 - 1156*a*b^6*d*e^7 - 25245*a^2*b^5*e^8)*m^2 - 24*(5*b^7*d^2*e^6 - 4
0*a*b^6*d*e^7 - 2143*a^2*b^5*e^8)*m)*x^6 + 7*(6*a^5*b^2*d^3*e^5 - 33*a^6*b*
d^2*e^6 + 73*a^7*d*e^7)*m^5 + 7*(40320*a^3*b^4*e^8 + (3*a^2*b^5*d*e^7 + 5*a
^3*b^4*e^8)*m^7 - (6*a*b^6*d^2*e^6 - 75*a^2*b^5*d*e^7 - 155*a^3*b^4*e^8)*m^
6 + (6*b^7*d^3*e^5 - 108*a*b^6*d^2*e^6 + 723*a^2*b^5*d*e^7 + 1955*a^3*b^4*e
^8)*m^5 + 5*(12*b^7*d^3*e^5 - 138*a*b^6*d^2*e^6 + 681*a^2*b^5*d*e^7 + 2581*
a^3*b^4*e^8)*m^4 + 2*(105*b^7*d^3*e^5 - 990*a*b^6*d^2*e^6 + 4101*a^2*b^5*d*
e^7 + 23860*a^3*b^4*e^8)*m^3 + 4*(75*b^7*d^3*e^5 - 636*a*b^6*d^2*e^6 + 2370
*a^2*b^5*d*e^7 + 24455*a^3*b^4*e^8)*m^2 + 144*(b^7*d^3*e^5 - 8*a*b^6*d^2*e^
6 + 28*a^2*b^5*d*e^7 + 705*a^3*b^4*e^8)*m)*x^5 - 35*(6*a^4*b^3*d^4*e^4 - 36
*a^5*b^2*d^3*e^5 + 89*a^6*b*d^2*e^6 - 115*a^7*d*e^7)*m^4 + 35*(10080*a^4*b^
3*e^8 + (a^3*b^4*d*e^7 + a^4*b^3*e^8)*m^7 - (3*a^2*b^5*d^2*e^6 - 27*a^3*b^4
*d*e^7 - 32*a^4*b^3*e^8)*m^6 + (6*a*b^6*d^3*e^5 - 63*a^2*b^5*d^2*e^6 + 283*
a^3*b^4*d*e^7 + 418*a^4*b^3*e^8)*m^5 - (6*b^7*d^4*e^4 - 84*a*b^6*d^3*e^5 +
471*a^2*b^5*d^2*e^6 - 1449*a^3*b^4*d*e^7 - 2864*a^4*b^3*e^8)*m^4 - (36*b^7*
d^4*e^4 - 354*a*b^6*d^3*e^5 + 1521*a^2*b^5*d^2*e^6 - 3748*a^3*b^4*d*e^7 - 1
0993*a^4*b^3*e^8)*m^3 - 2*(33*b^7*d^4*e^4 - 282*a*b^6*d^3*e^5 + 1059*a^2*b^
5*d^2*e^6 - 2286*a^3*b^4*d*e^7 - 11656*a^4*b^3*e^8)*m^2 - 36*(b^7*d^4*e^4 -
 8*a*b^6*d^3*e^5 + 28*a^2*b^5*d^2*e^6 - 56*a^3*b^4*d*e^7 - 691*a^4*b^3*e^8)
*m)*x^4 + 7*(120*a^3*b^4*d^5*e^3 - 780*a^4*b^3*d^4*e^4 + 2130*a^5*b^2*d^3*e
^5 - 3135*a^6*b*d^2*e^6 + 2632*a^7*d*e^7)*m^3 + 7*(40320*a^5*b^2*e^8 + (5*a
^4*b^3*d*e^7 + 3*a^5*b^2*e^8)*m^7 - (20*a^3*b^4*d^2*e^6 - 145*a^4*b^3*d*e^7
 - 99*a^5*b^2*e^8)*m^6 + (60*a^2*b^5*d^3*e^5 - 480*a^3*b^4*d^2*e^6 + 1655*a
^4*b^3*d*e^7 + 1341*a^5*b^2*e^8)*m^5 - 5*(24*a*b^6*d^4*e^4 - 216*a^2*b^5*d^
3*e^5 + 844*a^3*b^4*d^2*e^6 - 1871*a^4*b^3*d*e^7 - 1917*a^5*b^2*e^8)*m^4 +
4*(30*b^7*d^5*e^3 - 330*a*b^6*d^4*e^4 + 1545*a^2*b^5*d^3*e^5 - 4080*a^3*b^4
*d^2*e^6 + 6725*a^4*b^3*d*e^7 + 9648*a^5*b^2*e^8)*m^3 + 4*(90*b^7*d^5*e^3 -
 780*a*b^6*d^4*e^4 + 2970*a^2*b^5*d^3*e^5 - 6500*a^3*b^4*d^2*e^6 + 8965*a^4
*b^3*d*e^7 + 21519*a^5*b^2*e^8)*m^2 + 48*(5*b^7*d^5*e^3 - 40*a*b^6*d^4*e^4
+ 140*a^2*b^5*d^3*e^5 - 280*a^3*b^4*d^2*e^6 + 350*a^4*b^3*d*e^7 + 2003*a^5*
b^2*e^8)*m)*x^3 - 14*(180*a^2*b^5*d^6*e^2 - 1260*a^3*b^4*d^5*e^3 + 3765*a^4
*b^3*d^4*e^4 - 6210*a^5*b^2*d^3*e^5 + 6077*a^6*b*d^2*e^6 - 3490*a^7*d*e^7)*
m^2 + 7*(20160*a^6*b*e^8 + (3*a^5*b^2*d*e^7 + a^6*b*e^8)*m^7 - (15*a^4*b^3*
d^2*e^6 - 93*a^5*b^2*d*e^7 - 34*a^6*b*e^8)*m^6 + (60*a^3*b^4*d^3*e^5 - 405*
a^4*b^3*d^2*e^6 + 1155*a^5*b^2*d*e^7 + 478*a^6*b*e^8)*m^5 - 5*(36*a^2*b^5*d
^4*e^4 - 264*a^3*b^4*d^3*e^5 + 831*a^4*b^3*d^2*e^6 - 1455*a^5*b^2*d*e^7 - 7
16*a^6*b*e^8)*m^4 + (360*a*b^6*d^5*e^3 - 2880*a^2*b^5*d^4*e^4 + 10020*a^3*b
^4*d^3*e^5 - 19755*a^4*b^3*d^2*e^6 + 24042*a^5*b^2*d*e^7 + 15289*a^6*b*e^8)
*m^3 - 2*(180*b^7*d^6*e^2 - 1620*a*b^6*d^5*e^3 + 6390*a^2*b^5*d^4*e^4 - 144
60*a^3*b^4*d^3*e^5 + 20595*a^4*b^3*d^2*e^6 - 18996*a^5*b^2*d*e^7 - 18353*a^
6*b*e^8)*m^2 - 72*(5*b^7*d^6*e^2 - 40*a*b^6*d^5*e^3 + 140*a^2*b^5*d^4*e^4 -
 280*a^3*b^4*d^3*e^5 + 350*a^4*b^3*d^2*e^6 - 280*a^5*b^2*d*e^7 - 621*a^6*b*
e^8)*m)*x^2 + 12*(420*a*b^6*d^7*e - 3150*a^2*b^5*d^6*e^2 + 10220*a^3*b^4*d^
5*e^3 - 18655*a^4*b^3*d^4*e^4 + 20804*a^5*b^2*d^3*e^5 - 14322*a^6*b*d^2*e^6
 + 5772*a^7*d*e^7)*m + (40320*a^7*e^8 + (7*a^6*b*d*e^7 + a^7*e^8)*m^7 - 7*(
6*a^5*b^2*d^2*e^6 - 33*a^6*b*d*e^7 - 5*a^7*e^8)*m^6 + 7*(30*a^4*b^3*d^3*e^5
 - 180*a^5*b^2*d^2*e^6 + 445*a^6*b*d*e^7 + 73*a^7*e^8)*m^5 - 35*(24*a^3*b^4
*d^4*e^4 - 156*a^4*b^3*d^3*e^5 + 426*a^5*b^2*d^2*e^6 - 627*a^6*b*d*e^7 - 11
5*a^7*e^8)*m^4 + 14*(180*a^2*b^5*d^5*e^3 - 1260*a^3*b^4*d^4*e^4 + 3765*a^4*
b^3*d^3*e^5 - 6210*a^5*b^2*d^2*e^6 + 6077*a^6*b*d*e^7 + 1316*a^7*e^8)*m^3 -
 28*(180*a*b^6*d^6*e^2 - 1350*a^2*b^5*d^5*e^3 + 4380*a^3*b^4*d^4*e^4 - 7995
*a^4*b^3*d^3*e^5 + 8916*a^5*b^2*d^2*e^6 - 6138*a^6*b*d*e^7 - 1745*a^7*e^8)*
m^2 + 144*(35*b^7*d^7*e - 280*a*b^6*d^6*e^2 + 980*a^2*b^5*d^5*e^3 - 1960*a^
3*b^4*d^4*e^4 + 2450*a^4*b^3*d^3*e^5 - 1960*a^5*b^2*d^2*e^6 + 980*a^6*b*d*e
^7 + 481*a^7*e^8)*m)*x)*(e*x + d)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4
536*e^8*m^5 + 22449*e^8*m^4 + 67284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m
 + 40320*e^8)
```

giac [B] time = 0.37, size = 5639, normalized size = 23.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^7*m^7*x^8*e^8 + (x*e + d)^m*b^7*d*m^7*x^7*e^7 + 7*(x*e + d)^
m*a*b^6*m^7*x^7*e^8 + 28*(x*e + d)^m*b^7*m^6*x^8*e^8 + 7*(x*e + d)^m*a*b^6*
d*m^7*x^6*e^7 + 21*(x*e + d)^m*b^7*d*m^6*x^7*e^7 - 7*(x*e + d)^m*b^7*d^2*m^
6*x^6*e^6 + 21*(x*e + d)^m*a^2*b^5*m^7*x^6*e^8 + 203*(x*e + d)^m*a*b^6*m^6*
x^7*e^8 + 322*(x*e + d)^m*b^7*m^5*x^8*e^8 + 21*(x*e + d)^m*a^2*b^5*d*m^7*x^
5*e^7 + 161*(x*e + d)^m*a*b^6*d*m^6*x^6*e^7 + 175*(x*e + d)^m*b^7*d*m^5*x^7
*e^7 - 42*(x*e + d)^m*a*b^6*d^2*m^6*x^5*e^6 - 105*(x*e + d)^m*b^7*d^2*m^5*x
^6*e^6 + 42*(x*e + d)^m*b^7*d^3*m^5*x^5*e^5 + 35*(x*e + d)^m*a^3*b^4*m^7*x^
5*e^8 + 630*(x*e + d)^m*a^2*b^5*m^6*x^6*e^8 + 2401*(x*e + d)^m*a*b^6*m^5*x^
7*e^8 + 1960*(x*e + d)^m*b^7*m^4*x^8*e^8 + 35*(x*e + d)^m*a^3*b^4*d*m^7*x^4
*e^7 + 525*(x*e + d)^m*a^2*b^5*d*m^6*x^5*e^7 + 1435*(x*e + d)^m*a*b^6*d*m^5
*x^6*e^7 + 735*(x*e + d)^m*b^7*d*m^4*x^7*e^7 - 105*(x*e + d)^m*a^2*b^5*d^2*
m^6*x^4*e^6 - 756*(x*e + d)^m*a*b^6*d^2*m^5*x^5*e^6 - 595*(x*e + d)^m*b^7*d
^2*m^4*x^6*e^6 + 210*(x*e + d)^m*a*b^6*d^3*m^5*x^4*e^5 + 420*(x*e + d)^m*b^
7*d^3*m^4*x^5*e^5 - 210*(x*e + d)^m*b^7*d^4*m^4*x^4*e^4 + 35*(x*e + d)^m*a^
4*b^3*m^7*x^4*e^8 + 1085*(x*e + d)^m*a^3*b^4*m^6*x^5*e^8 + 7686*(x*e + d)^m
*a^2*b^5*m^5*x^6*e^8 + 14945*(x*e + d)^m*a*b^6*m^4*x^7*e^8 + 6769*(x*e + d)
^m*b^7*m^3*x^8*e^8 + 35*(x*e + d)^m*a^4*b^3*d*m^7*x^3*e^7 + 945*(x*e + d)^m
*a^3*b^4*d*m^6*x^4*e^7 + 5061*(x*e + d)^m*a^2*b^5*d*m^5*x^5*e^7 + 6335*(x*e
 + d)^m*a*b^6*d*m^4*x^6*e^7 + 1624*(x*e + d)^m*b^7*d*m^3*x^7*e^7 - 140*(x*e
 + d)^m*a^3*b^4*d^2*m^6*x^3*e^6 - 2205*(x*e + d)^m*a^2*b^5*d^2*m^5*x^4*e^6
- 4830*(x*e + d)^m*a*b^6*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*b^7*d^2*m^3*x^6
*e^6 + 420*(x*e + d)^m*a^2*b^5*d^3*m^5*x^3*e^5 + 2940*(x*e + d)^m*a*b^6*d^3
*m^4*x^4*e^5 + 1470*(x*e + d)^m*b^7*d^3*m^3*x^5*e^5 - 840*(x*e + d)^m*a*b^6
*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*b^7*d^4*m^3*x^4*e^4 + 840*(x*e + d)^m*b
```

```
^7*d^5*m^3*x^3*e^3 + 21*(x*e + d)^m*a^5*b^2*m^7*x^3*e^8 + 1120*(x*e + d)^m*
a^4*b^3*m^6*x^4*e^8 + 13685*(x*e + d)^m*a^3*b^4*m^5*x^5*e^8 + 49140*(x*e +
d)^m*a^2*b^5*m^4*x^6*e^8 + 52528*(x*e + d)^m*a*b^6*m^3*x^7*e^8 + 13132*(x*e
 + d)^m*b^7*m^2*x^8*e^8 + 21*(x*e + d)^m*a^5*b^2*d*m^7*x^2*e^7 + 1015*(x*e
+ d)^m*a^4*b^3*d*m^6*x^3*e^7 + 9905*(x*e + d)^m*a^3*b^4*d*m^5*x^4*e^7 + 238
35*(x*e + d)^m*a^2*b^5*d*m^4*x^5*e^7 + 14518*(x*e + d)^m*a*b^6*d*m^3*x^6*e^
7 + 1764*(x*e + d)^m*b^7*d*m^2*x^7*e^7 - 105*(x*e + d)^m*a^4*b^3*d^2*m^6*x^
2*e^6 - 3360*(x*e + d)^m*a^3*b^4*d^2*m^5*x^3*e^6 - 16485*(x*e + d)^m*a^2*b^
5*d^2*m^4*x^4*e^6 - 13860*(x*e + d)^m*a*b^6*d^2*m^3*x^5*e^6 - 1918*(x*e + d
)^m*b^7*d^2*m^2*x^6*e^6 + 420*(x*e + d)^m*a^3*b^4*d^3*m^5*x^2*e^5 + 7560*(x
*e + d)^m*a^2*b^5*d^3*m^4*x^3*e^5 + 12390*(x*e + d)^m*a*b^6*d^3*m^3*x^4*e^5
 + 2100*(x*e + d)^m*b^7*d^3*m^2*x^5*e^5 - 1260*(x*e + d)^m*a^2*b^5*d^4*m^4*
x^2*e^4 - 9240*(x*e + d)^m*a*b^6*d^4*m^3*x^3*e^4 - 2310*(x*e + d)^m*b^7*d^4
*m^2*x^4*e^4 + 2520*(x*e + d)^m*a*b^6*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^m*b^
7*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*b^7*d^6*m^2*x^2*e^2 + 7*(x*e + d)^m*a^
6*b*m^7*x^2*e^8 + 693*(x*e + d)^m*a^5*b^2*m^6*x^3*e^8 + 14630*(x*e + d)^m*a
^4*b^3*m^5*x^4*e^8 + 90335*(x*e + d)^m*a^3*b^4*m^4*x^5*e^8 + 176589*(x*e +
d)^m*a^2*b^5*m^3*x^6*e^8 + 103292*(x*e + d)^m*a*b^6*m^2*x^7*e^8 + 13068*(x*
e + d)^m*b^7*m*x^8*e^8 + 7*(x*e + d)^m*a^6*b*d*m^7*x*e^7 + 651*(x*e + d)^m*
a^5*b^2*d*m^6*x^2*e^7 + 11585*(x*e + d)^m*a^4*b^3*d*m^5*x^3*e^7 + 50715*(x*
e + d)^m*a^3*b^4*d*m^4*x^4*e^7 + 57414*(x*e + d)^m*a^2*b^5*d*m^3*x^5*e^7 +
16184*(x*e + d)^m*a*b^6*d*m^2*x^6*e^7 + 720*(x*e + d)^m*b^7*d*m*x^7*e^7 - 4
2*(x*e + d)^m*a^5*b^2*d^2*m^6*x*e^6 - 2835*(x*e + d)^m*a^4*b^3*d^2*m^5*x^2*
e^6 - 29540*(x*e + d)^m*a^3*b^4*d^2*m^4*x^3*e^6 - 53235*(x*e + d)^m*a^2*b^5
*d^2*m^3*x^4*e^6 - 17808*(x*e + d)^m*a*b^6*d^2*m^2*x^5*e^6 - 840*(x*e + d)^
m*b^7*d^2*m*x^6*e^6 + 210*(x*e + d)^m*a^4*b^3*d^3*m^5*x*e^5 + 9240*(x*e + d
)^m*a^3*b^4*d^3*m^4*x^2*e^5 + 43260*(x*e + d)^m*a^2*b^5*d^3*m^3*x^3*e^5 + 1
9740*(x*e + d)^m*a*b^6*d^3*m^2*x^4*e^5 + 1008*(x*e + d)^m*b^7*d^3*m*x^5*e^5
 - 840*(x*e + d)^m*a^3*b^4*d^4*m^4*x*e^4 - 20160*(x*e + d)^m*a^2*b^5*d^4*m^
3*x^2*e^4 - 21840*(x*e + d)^m*a*b^6*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*b^7*
d^4*m*x^4*e^4 + 2520*(x*e + d)^m*a^2*b^5*d^5*m^3*x*e^3 + 22680*(x*e + d)^m*
a*b^6*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*b^7*d^5*m*x^3*e^3 - 5040*(x*e + d)
^m*a*b^6*d^6*m^2*x*e^2 - 2520*(x*e + d)^m*b^7*d^6*m*x^2*e^2 + 5040*(x*e + d
)^m*b^7*d^7*m*x*e + (x*e + d)^m*a^7*m^7*x*e^8 + 238*(x*e + d)^m*a^6*b*m^6*x
^2*e^8 + 9387*(x*e + d)^m*a^5*b^2*m^5*x^3*e^8 + 100240*(x*e + d)^m*a^4*b^3*
m^4*x^4*e^8 + 334040*(x*e + d)^m*a^3*b^4*m^3*x^5*e^8 + 353430*(x*e + d)^m*a
^2*b^5*m^2*x^6*e^8 + 103824*(x*e + d)^m*a*b^6*m*x^7*e^8 + 5040*(x*e + d)^m*
b^7*x^8*e^8 + (x*e + d)^m*a^7*d*m^7*e^7 + 231*(x*e + d)^m*a^6*b*d*m^6*x*e^7
 + 8085*(x*e + d)^m*a^5*b^2*d*m^5*x^2*e^7 + 65485*(x*e + d)^m*a^4*b^3*d*m^4
*x^3*e^7 + 131180*(x*e + d)^m*a^3*b^4*d*m^3*x^4*e^7 + 66360*(x*e + d)^m*a^2
*b^5*d*m^2*x^5*e^7 + 6720*(x*e + d)^m*a*b^6*d*m*x^6*e^7 - 7*(x*e + d)^m*a^6
*b*d^2*m^6*e^6 - 1260*(x*e + d)^m*a^5*b^2*d^2*m^5*x*e^6 - 29085*(x*e + d)^m
*a^4*b^3*d^2*m^4*x^2*e^6 - 114240*(x*e + d)^m*a^3*b^4*d^2*m^3*x^3*e^6 - 741
30*(x*e + d)^m*a^2*b^5*d^2*m^2*x^4*e^6 - 8064*(x*e + d)^m*a*b^6*d^2*m*x^5*e
^6 + 42*(x*e + d)^m*a^5*b^2*d^3*m^5*e^5 + 5460*(x*e + d)^m*a^4*b^3*d^3*m^4*
x*e^5 + 70140*(x*e + d)^m*a^3*b^4*d^3*m^3*x^2*e^5 + 83160*(x*e + d)^m*a^2*b
^5*d^3*m^2*x^3*e^5 + 10080*(x*e + d)^m*a*b^6*d^3*m*x^4*e^5 - 210*(x*e + d)^
m*a^4*b^3*d^4*m^4*e^4 - 17640*(x*e + d)^m*a^3*b^4*d^4*m^3*x*e^4 - 89460*(x*
e + d)^m*a^2*b^5*d^4*m^2*x^2*e^4 - 13440*(x*e + d)^m*a*b^6*d^4*m*x^3*e^4 +
840*(x*e + d)^m*a^3*b^4*d^5*m^3*e^3 + 37800*(x*e + d)^m*a^2*b^5*d^5*m^2*x*e
^3 + 20160*(x*e + d)^m*a*b^6*d^5*m*x^2*e^3 - 2520*(x*e + d)^m*a^2*b^5*d^6*m
^2*e^2 - 40320*(x*e + d)^m*a*b^6*d^6*m*x*e^2 + 5040*(x*e + d)^m*a*b^6*d^7*m
*e - 5040*(x*e + d)^m*b^7*d^8 + 35*(x*e + d)^m*a^7*m^6*x*e^8 + 3346*(x*e +
d)^m*a^6*b*m^5*x^2*e^8 + 67095*(x*e + d)^m*a^5*b^2*m^4*x^3*e^8 + 384755*(x*
e + d)^m*a^4*b^3*m^3*x^4*e^8 + 684740*(x*e + d)^m*a^3*b^4*m^2*x^5*e^8 + 360
024*(x*e + d)^m*a^2*b^5*m*x^6*e^8 + 40320*(x*e + d)^m*a*b^6*x^7*e^8 + 35*(x
*e + d)^m*a^7*d*m^6*e^7 + 3115*(x*e + d)^m*a^6*b*d*m^5*x*e^7 + 50925*(x*e +
 d)^m*a^5*b^2*d*m^4*x^2*e^7 + 188300*(x*e + d)^m*a^4*b^3*d*m^3*x^3*e^7 + 16
0020*(x*e + d)^m*a^3*b^4*d*m^2*x^4*e^7 + 28224*(x*e + d)^m*a^2*b^5*d*m*x^5*
```

```
e^7 - 231*(x*e + d)^m*a^6*b*d^2*m^5*e^6 - 14910*(x*e + d)^m*a^5*b^2*d^2*m^4
*x*e^6 - 138285*(x*e + d)^m*a^4*b^3*d^2*m^3*x^2*e^6 - 182000*(x*e + d)^m*a^
3*b^4*d^2*m^2*x^3*e^6 - 35280*(x*e + d)^m*a^2*b^5*d^2*m*x^4*e^6 + 1260*(x*e
 + d)^m*a^5*b^2*d^3*m^4*e^5 + 52710*(x*e + d)^m*a^4*b^3*d^3*m^3*x*e^5 + 202
440*(x*e + d)^m*a^3*b^4*d^3*m^2*x^2*e^5 + 47040*(x*e + d)^m*a^2*b^5*d^3*m*x
^3*e^5 - 5460*(x*e + d)^m*a^4*b^3*d^4*m^3*e^4 - 122640*(x*e + d)^m*a^3*b^4*
d^4*m^2*x*e^4 - 70560*(x*e + d)^m*a^2*b^5*d^4*m*x^2*e^4 + 17640*(x*e + d)^m
*a^3*b^4*d^5*m^2*e^3 + 141120*(x*e + d)^m*a^2*b^5*d^5*m*x*e^3 - 37800*(x*e
+ d)^m*a^2*b^5*d^6*m*e^2 + 40320*(x*e + d)^m*a*b^6*d^7*e + 511*(x*e + d)^m*
a^7*m^5*x*e^8 + 25060*(x*e + d)^m*a^6*b*m^4*x^2*e^8 + 270144*(x*e + d)^m*a^
5*b^2*m^3*x^3*e^8 + 815920*(x*e + d)^m*a^4*b^3*m^2*x^4*e^8 + 710640*(x*e +
d)^m*a^3*b^4*m*x^5*e^8 + 141120*(x*e + d)^m*a^2*b^5*x^6*e^8 + 511*(x*e + d)
^m*a^7*d*m^5*e^7 + 21945*(x*e + d)^m*a^6*b*d*m^4*x*e^7 + 168294*(x*e + d)^m
*a^5*b^2*d*m^3*x^2*e^7 + 251020*(x*e + d)^m*a^4*b^3*d*m^2*x^3*e^7 + 70560*(
x*e + d)^m*a^3*b^4*d*m*x^4*e^7 - 3115*(x*e + d)^m*a^6*b*d^2*m^4*e^6 - 86940
*(x*e + d)^m*a^5*b^2*d^2*m^3*x*e^6 - 288330*(x*e + d)^m*a^4*b^3*d^2*m^2*x^2
*e^6 - 94080*(x*e + d)^m*a^3*b^4*d^2*m*x^3*e^6 + 14910*(x*e + d)^m*a^5*b^2*
d^3*m^3*e^5 + 223860*(x*e + d)^m*a^4*b^3*d^3*m^2*x*e^5 + 141120*(x*e + d)^m
*a^3*b^4*d^3*m*x^2*e^5 - 52710*(x*e + d)^m*a^4*b^3*d^4*m^2*e^4 - 282240*(x*
e + d)^m*a^3*b^4*d^4*m*x*e^4 + 122640*(x*e + d)^m*a^3*b^4*d^5*m*e^3 - 14112
0*(x*e + d)^m*a^2*b^5*d^6*e^2 + 4025*(x*e + d)^m*a^7*m^4*x*e^8 + 107023*(x*
e + d)^m*a^6*b*m^3*x^2*e^8 + 602532*(x*e + d)^m*a^5*b^2*m^2*x^3*e^8 + 87066
0*(x*e + d)^m*a^4*b^3*m*x^4*e^8 + 282240*(x*e + d)^m*a^3*b^4*x^5*e^8 + 4025
*(x*e + d)^m*a^7*d*m^4*e^7 + 85078*(x*e + d)^m*a^6*b*d*m^3*x*e^7 + 265944*(
x*e + d)^m*a^5*b^2*d*m^2*x^2*e^7 + 117600*(x*e + d)^m*a^4*b^3*d*m*x^3*e^7 -
 21945*(x*e + d)^m*a^6*b*d^2*m^3*e^6 - 249648*(x*e + d)^m*a^5*b^2*d^2*m^2*x
*e^6 - 176400*(x*e + d)^m*a^4*b^3*d^2*m*x^2*e^6 + 86940*(x*e + d)^m*a^5*b^2
*d^3*m^2*e^5 + 352800*(x*e + d)^m*a^4*b^3*d^3*m*x*e^5 - 223860*(x*e + d)^m*
a^4*b^3*d^4*m*e^4 + 282240*(x*e + d)^m*a^3*b^4*d^5*e^3 + 18424*(x*e + d)^m*
a^7*m^3*x*e^8 + 256942*(x*e + d)^m*a^6*b*m^2*x^2*e^8 + 673008*(x*e + d)^m*a
^5*b^2*m*x^3*e^8 + 352800*(x*e + d)^m*a^4*b^3*x^4*e^8 + 18424*(x*e + d)^m*a
^7*d*m^3*e^7 + 171864*(x*e + d)^m*a^6*b*d*m^2*x*e^7 + 141120*(x*e + d)^m*a^
5*b^2*d*m*x^2*e^7 - 85078*(x*e + d)^m*a^6*b*d^2*m^2*e^6 - 282240*(x*e + d)^
m*a^5*b^2*d^2*m*x*e^6 + 249648*(x*e + d)^m*a^5*b^2*d^3*m*e^5 - 352800*(x*e
+ d)^m*a^4*b^3*d^4*e^4 + 48860*(x*e + d)^m*a^7*m^2*x*e^8 + 312984*(x*e + d)
^m*a^6*b*m*x^2*e^8 + 282240*(x*e + d)^m*a^5*b^2*x^3*e^8 + 48860*(x*e + d)^m
*a^7*d*m^2*e^7 + 141120*(x*e + d)^m*a^6*b*d*m*x*e^7 - 171864*(x*e + d)^m*a^
6*b*d^2*m*e^6 + 282240*(x*e + d)^m*a^5*b^2*d^3*e^5 + 69264*(x*e + d)^m*a^7*
m*x*e^8 + 141120*(x*e + d)^m*a^6*b*x^2*e^8 + 69264*(x*e + d)^m*a^7*d*m*e^7
- 141120*(x*e + d)^m*a^6*b*d^2*e^6 + 40320*(x*e + d)^m*a^7*x*e^8 + 40320*(x
*e + d)^m*a^7*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 2
2449*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.07, size = 3244, normalized size = 13.57

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (e*x+d)^(m+1)*(b^7*e^7*m^7*x^7+7*a*b^6*e^7*m^7*x^6+28*b^7*e^7*m^6*x^7+21*a^
2*b^5*e^7*m^7*x^5+203*a*b^6*e^7*m^6*x^6-7*b^7*d*e^6*m^6*x^6+322*b^7*e^7*m^5
*x^7+35*a^3*b^4*e^7*m^7*x^4+630*a^2*b^5*e^7*m^6*x^5-42*a*b^6*d*e^6*m^6*x^5+
2401*a*b^6*e^7*m^5*x^6-147*b^7*d*e^6*m^5*x^6+1960*b^7*e^7*m^4*x^7+35*a^4*b^
3*e^7*m^7*x^3+1085*a^3*b^4*e^7*m^6*x^4-105*a^2*b^5*d*e^6*m^6*x^4+7686*a^2*b
^5*e^7*m^5*x^5-966*a*b^6*d*e^6*m^5*x^5+14945*a*b^6*e^7*m^4*x^6+42*b^7*d^2*e
^5*m^5*x^5-1225*b^7*d*e^6*m^4*x^6+6769*b^7*e^7*m^3*x^7+21*a^5*b^2*e^7*m^7*x
^2+1120*a^4*b^3*e^7*m^6*x^3-140*a^3*b^4*d*e^6*m^6*x^3+13685*a^3*b^4*e^7*m^5
*x^4-2625*a^2*b^5*d*e^6*m^5*x^4+49140*a^2*b^5*e^7*m^4*x^5+210*a*b^6*d^2*e^5
*m^5*x^4-8610*a*b^6*d*e^6*m^4*x^5+52528*a*b^6*e^7*m^3*x^6+630*b^7*d^2*e^5*m
^4*x^5-5145*b^7*d*e^6*m^3*x^6+13132*b^7*e^7*m^2*x^7+7*a^6*b*e^7*m^7*x+693*a
^5*b^2*e^7*m^6*x^2-105*a^4*b^3*d*e^6*m^6*x^2+14630*a^4*b^3*e^7*m^5*x^3-3780
*a^3*b^4*d*e^6*m^5*x^3+90335*a^3*b^4*e^7*m^4*x^4+420*a^2*b^5*d^2*e^5*m^5*x^
3-25305*a^2*b^5*d*e^6*m^4*x^4+176589*a^2*b^5*e^7*m^3*x^5+3780*a*b^6*d^2*e^5
*m^4*x^4-38010*a*b^6*d*e^6*m^3*x^5+103292*a*b^6*e^7*m^2*x^6-210*b^7*d^3*e^4
*m^4*x^4+3570*b^7*d^2*e^5*m^3*x^5-11368*b^7*d*e^6*m^2*x^6+13068*b^7*e^7*m*x
^7+a^7*e^7*m^7+238*a^6*b*e^7*m^6*x-42*a^5*b^2*d*e^6*m^6*x+9387*a^5*b^2*e^7*
m^5*x^2-3045*a^4*b^3*d*e^6*m^5*x^2+100240*a^4*b^3*e^7*m^4*x^3+420*a^3*b^4*d
^2*e^5*m^5*x^2-39620*a^3*b^4*d*e^6*m^4*x^3+334040*a^3*b^4*e^7*m^3*x^4+8820*
a^2*b^5*d^2*e^5*m^4*x^3-119175*a^2*b^5*d*e^6*m^3*x^4+353430*a^2*b^5*e^7*m^2
*x^5-840*a*b^6*d^3*e^4*m^4*x^3+24150*a*b^6*d^2*e^5*m^3*x^4-87108*a*b^6*d*e^
6*m^2*x^5+103824*a*b^6*e^7*m*x^6-2100*b^7*d^3*e^4*m^3*x^4+9450*b^7*d^2*e^5*
m^2*x^5-12348*b^7*d*e^6*m*x^6+5040*b^7*e^7*x^7+35*a^7*e^7*m^6-7*a^6*b*d*e^6
*m^6+3346*a^6*b*e^7*m^5*x-1302*a^5*b^2*d*e^6*m^5*x+67095*a^5*b^2*e^7*m^4*x^
2+210*a^4*b^3*d^2*e^5*m^5*x-34755*a^4*b^3*d*e^6*m^4*x^2+384755*a^4*b^3*e^7*
m^3*x^3+10080*a^3*b^4*d^2*e^5*m^4*x^2-202860*a^3*b^4*d*e^6*m^3*x^3+684740*a
^3*b^4*e^7*m^2*x^4-1260*a^2*b^5*d^3*e^4*m^4*x^2+65940*a^2*b^5*d^2*e^5*m^3*x
^3-287070*a^2*b^5*d*e^6*m^2*x^4+360024*a^2*b^5*e^7*m*x^5-11760*a*b^6*d^3*e^
4*m^3*x^3+69300*a*b^6*d^2*e^5*m^2*x^4-97104*a*b^6*d*e^6*m*x^5+40320*a*b^6*e
^7*x^6+840*b^7*d^4*e^3*m^3*x^3-7350*b^7*d^3*e^4*m^2*x^4+11508*b^7*d^2*e^5*m
*x^5-5040*b^7*d*e^6*x^6+511*a^7*e^7*m^5-231*a^6*b*d*e^6*m^5+25060*a^6*b*e^7
*m^4*x+42*a^5*b^2*d^2*e^5*m^5-16170*a^5*b^2*d*e^6*m^4*x+270144*a^5*b^2*e^7*
m^3*x^2+5670*a^4*b^3*d^2*e^5*m^4*x-196455*a^4*b^3*d*e^6*m^3*x^2+815920*a^4*
b^3*e^7*m^2*x^3-840*a^3*b^4*d^3*e^4*m^4*x+88620*a^3*b^4*d^2*e^5*m^3*x^2-524
720*a^3*b^4*d*e^6*m^2*x^3+710640*a^3*b^4*e^7*m*x^4-22680*a^2*b^5*d^3*e^4*m^
3*x^2+212940*a^2*b^5*d^2*e^5*m^2*x^3-331800*a^2*b^5*d*e^6*m*x^4+141120*a^2*
b^5*e^7*x^5+2520*a*b^6*d^4*e^3*m^3*x^2-49560*a*b^6*d^3*e^4*m^2*x^3+89040*a*
b^6*d^2*e^5*m*x^4-40320*a*b^6*d*e^6*x^5+5040*b^7*d^4*e^3*m^2*x^3-10500*b^7*
d^3*e^4*m*x^4+5040*b^7*d^2*e^5*x^5+4025*a^7*e^7*m^4-3115*a^6*b*d*e^6*m^4+10
7023*a^6*b*e^7*m^3*x+1260*a^5*b^2*d^2*e^5*m^4-101850*a^5*b^2*d*e^6*m^3*x+60
2532*a^5*b^2*e^7*m^2*x^2-210*a^4*b^3*d^3*e^4*m^4+58170*a^4*b^3*d^2*e^5*m^3*
x-564900*a^4*b^3*d*e^6*m^2*x^2+870660*a^4*b^3*e^7*m*x^3-18480*a^3*b^4*d^3*e
^4*m^3*x+342720*a^3*b^4*d^2*e^5*m^2*x^2-640080*a^3*b^4*d*e^6*m*x^3+282240*a
^3*b^4*e^7*x^4+2520*a^2*b^5*d^4*e^3*m^3*x-129780*a^2*b^5*d^3*e^4*m^2*x^2+29
6520*a^2*b^5*d^2*e^5*m*x^3-141120*a^2*b^5*d*e^6*x^4+27720*a*b^6*d^4*e^3*m^2
*x^2-78960*a*b^6*d^3*e^4*m*x^3+40320*a*b^6*d^2*e^5*x^4-2520*b^7*d^5*e^2*m^2
*x^2+9240*b^7*d^4*e^3*m*x^3-5040*b^7*d^3*e^4*x^4+18424*a^7*e^7*m^3-21945*a^
6*b*d*e^6*m^3+256942*a^6*b*e^7*m^2*x+14910*a^5*b^2*d^2*e^5*m^3-336588*a^5*b
^2*d*e^6*m^2*x+673008*a^5*b^2*e^7*m*x^2-5460*a^4*b^3*d^3*e^4*m^3+276570*a^4
*b^3*d^2*e^5*m^2*x-753060*a^4*b^3*d*e^6*m*x^2+352800*a^4*b^3*e^7*x^3+840*a^
3*b^4*d^4*e^3*m^3-140280*a^3*b^4*d^3*e^4*m^2*x+546000*a^3*b^4*d^2*e^5*m*x^2
-282240*a^3*b^4*d*e^6*x^3+40320*a^2*b^5*d^4*e^3*m^2*x-249480*a^2*b^5*d^3*e^
4*m*x^2+141120*a^2*b^5*d^2*e^5*x^3-5040*a*b^6*d^5*e^2*m^2*x+65520*a*b^6*d^4
*e^3*m*x^2-40320*a*b^6*d^3*e^4*x^3-7560*b^7*d^5*e^2*m*x^2+5040*b^7*d^4*e^3*
x^3+48860*a^7*e^7*m^2-85078*a^6*b*d*e^6*m^2+312984*a^6*b*e^7*m*x+86940*a^5*
b^2*d^2*e^5*m^2-531888*a^5*b^2*d*e^6*m*x+282240*a^5*b^2*e^7*x^2-52710*a^4*b
^3*d^3*e^4*m^2+576660*a^4*b^3*d^2*e^5*m*x-352800*a^4*b^3*d*e^6*x^2+17640*a^
3*b^4*d^4*e^3*m^2-404880*a^3*b^4*d^3*e^4*m*x+282240*a^3*b^4*d^2*e^5*x^2-252
0*a^2*b^5*d^5*e^2*m^2+178920*a^2*b^5*d^4*e^3*m*x-141120*a^2*b^5*d^3*e^4*x^2
-45360*a*b^6*d^5*e^2*m*x+40320*a*b^6*d^4*e^3*x^2+5040*b^7*d^6*e*m*x-5040*b^
7*d^5*e^2*x^2+69264*a^7*e^7*m-171864*a^6*b*d*e^6*m+141120*a^6*b*e^7*x+24964
8*a^5*b^2*d^2*e^5*m-282240*a^5*b^2*d*e^6*x-223860*a^4*b^3*d^3*e^4*m+352800*
a^4*b^3*d^2*e^5*x+122640*a^3*b^4*d^4*e^3*m-282240*a^3*b^4*d^3*e^4*x-37800*a
^2*b^5*d^5*e^2*m+141120*a^2*b^5*d^4*e^3*x+5040*a*b^6*d^6*e*m-40320*a*b^6*d^
5*e^2*x+5040*b^7*d^6*e*x+40320*a^7*e^7-141120*a^6*b*d*e^6+282240*a^5*b^2*d^
2*e^5-352800*a^4*b^3*d^3*e^4+282240*a^3*b^4*d^4*e^3-141120*a^2*b^5*d^5*e^2+
40320*a*b^6*d^6*e-5040*b^7*d^7)/e^8/(m^8+36*m^7+546*m^6+4536*m^5+22449*m^4+
67284*m^3+118124*m^2+109584*m+40320)
```

maxima [B] time = 0.84, size = 1108, normalized size = 4.64

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxima")
```

```
[Out] 7*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^6*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^7/(e*(m + 1)) + 21*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
 m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a^5*b^2/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + 35*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d
*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a^4*b
^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 35*((m^4 + 10*m^3 + 35*m^2 +
 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m
^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(
e*x + d)^m*a^3*b^4/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) +
21*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4
 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e
^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 12
0*d^5*e*m*x - 120*d^6)*(e*x + d)^m*a^2*b^5/((m^6 + 21*m^5 + 175*m^4 + 735*m
^3 + 1624*m^2 + 1764*m + 720)*e^6) + 7*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 +
 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*
m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*
x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)
*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x +
d)^m*a*b^6/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 130
68*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*
m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^
3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*
m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^3*e
^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4 + 840*(m^3 + 3*m^2 +
2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*d^7*e*m*x - 5040*d^8)*
(e*x + d)^m*b^7/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3
 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 3.67, size = 2653, normalized size = 11.10

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] ((d + e*x)^m*(40320*a^7*d*e^7 - 5040*b^7*d^8 - 141120*a^6*b*d^2*e^6 + 48860
*a^7*d*e^7*m^2 + 18424*a^7*d*e^7*m^3 + 4025*a^7*d*e^7*m^4 + 511*a^7*d*e^7*m
^5 + 35*a^7*d*e^7*m^6 + a^7*d*e^7*m^7 - 141120*a^2*b^5*d^6*e^2 + 282240*a^3
*b^4*d^5*e^3 - 352800*a^4*b^3*d^4*e^4 + 282240*a^5*b^2*d^3*e^5 + 40320*a*b^
6*d^7*e + 69264*a^7*d*e^7*m + 5040*a*b^6*d^7*e*m - 2520*a^2*b^5*d^6*e^2*m^2
 + 17640*a^3*b^4*d^5*e^3*m^2 - 52710*a^4*b^3*d^4*e^4*m^2 + 86940*a^5*b^2*d^
3*e^5*m^2 + 840*a^3*b^4*d^5*e^3*m^3 - 5460*a^4*b^3*d^4*e^4*m^3 + 14910*a^5*
b^2*d^3*e^5*m^3 - 210*a^4*b^3*d^4*e^4*m^4 + 1260*a^5*b^2*d^3*e^5*m^4 + 42*a
^5*b^2*d^3*e^5*m^5 - 171864*a^6*b*d^2*e^6*m - 37800*a^2*b^5*d^6*e^2*m + 122
640*a^3*b^4*d^5*e^3*m - 223860*a^4*b^3*d^4*e^4*m + 249648*a^5*b^2*d^3*e^5*m
 - 85078*a^6*b*d^2*e^6*m^2 - 21945*a^6*b*d^2*e^6*m^3 - 3115*a^6*b*d^2*e^6*m
^4 - 231*a^6*b*d^2*e^6*m^5 - 7*a^6*b*d^2*e^6*m^6))/(e^8*(109584*m + 118124*
m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) +
 (x*(d + e*x)^m*(40320*a^7*e^8 + 69264*a^7*e^8*m + 48860*a^7*e^8*m^2 + 1842
4*a^7*e^8*m^3 + 4025*a^7*e^8*m^4 + 511*a^7*e^8*m^5 + 35*a^7*e^8*m^6 + a^7*e
^8*m^7 + 5040*b^7*d^7*e*m + 141120*a^6*b*d*e^7*m + 37800*a^2*b^5*d^5*e^3*m^
2 - 122640*a^3*b^4*d^4*e^4*m^2 + 223860*a^4*b^3*d^3*e^5*m^2 - 249648*a^5*b^
2*d^2*e^6*m^2 + 2520*a^2*b^5*d^5*e^3*m^3 - 17640*a^3*b^4*d^4*e^4*m^3 + 5271
0*a^4*b^3*d^3*e^5*m^3 - 86940*a^5*b^2*d^2*e^6*m^3 - 840*a^3*b^4*d^4*e^4*m^4
 + 5460*a^4*b^3*d^3*e^5*m^4 - 14910*a^5*b^2*d^2*e^6*m^4 + 210*a^4*b^3*d^3*e
^5*m^5 - 1260*a^5*b^2*d^2*e^6*m^5 - 42*a^5*b^2*d^2*e^6*m^6 - 40320*a*b^6*d^
6*e^2*m + 171864*a^6*b*d*e^7*m^2 + 85078*a^6*b*d*e^7*m^3 + 21945*a^6*b*d*e^
7*m^4 + 3115*a^6*b*d*e^7*m^5 + 231*a^6*b*d*e^7*m^6 + 7*a^6*b*d*e^7*m^7 + 14
1120*a^2*b^5*d^5*e^3*m - 282240*a^3*b^4*d^4*e^4*m + 352800*a^4*b^3*d^3*e^5*
m - 282240*a^5*b^2*d^2*e^6*m - 5040*a*b^6*d^6*e^2*m^2))/(e^8*(109584*m + 11
8124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 4032
0)) + (b^7*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322
*m^5 + 28*m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4
 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (7*b^5*x^6*(d + e*x)^m*(274
*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*a^2*e^2 + 45*a^2*e^2*m - b
^2*d^2*m + 3*a^2*e^2*m^2 + 8*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(109584*m + 118
124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320
)) + (7*b*x^2*(m + 1)*(d + e*x)^m*(20160*a^6*e^6 + 24552*a^6*e^6*m - 360*b^
6*d^6*m + 12154*a^6*e^6*m^2 + 3135*a^6*e^6*m^3 + 445*a^6*e^6*m^4 + 33*a^6*e
^6*m^5 + a^6*e^6*m^6 + 2880*a*b^5*d^5*e*m + 20160*a^5*b*d*e^5*m - 2700*a^2*
b^4*d^4*e^2*m^2 + 8760*a^3*b^3*d^3*e^3*m^2 - 15990*a^4*b^2*d^2*e^4*m^2 - 18
0*a^2*b^4*d^4*e^2*m^3 + 1260*a^3*b^3*d^3*e^3*m^3 - 3765*a^4*b^2*d^2*e^4*m^3
 + 60*a^3*b^3*d^3*e^3*m^4 - 390*a^4*b^2*d^2*e^4*m^4 - 15*a^4*b^2*d^2*e^4*m^
5 + 360*a*b^5*d^5*e*m^2 + 17832*a^5*b*d*e^5*m^2 + 6210*a^5*b*d*e^5*m^3 + 10
65*a^5*b*d*e^5*m^4 + 90*a^5*b*d*e^5*m^5 + 3*a^5*b*d*e^5*m^6 - 10080*a^2*b^4
*d^4*e^2*m + 20160*a^3*b^3*d^3*e^3*m - 25200*a^4*b^2*d^2*e^4*m))/(e^6*(1095
84*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m
^8 + 40320)) + (7*b^4*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(
1680*a^3*e^3 + 730*a^3*e^3*m + 6*b^3*d^3*m + 105*a^3*e^3*m^2 + 5*a^3*e^3*m^
3 - 48*a*b^2*d^2*e*m + 168*a^2*b*d*e^2*m - 6*a*b^2*d^2*e*m^2 + 45*a^2*b*d*e
^2*m^2 + 3*a^2*b*d*e^2*m^3))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 2244
9*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (b^6*x^7*(d + e*x)^m*
(56*a*e + 7*a*e*m + b*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5
+ m^6 + 720))/(e*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5
+ 546*m^6 + 36*m^7 + m^8 + 40320)) + (35*b^3*x^4*(d + e*x)^m*(11*m + 6*m^2
+ m^3 + 6)*(1680*a^4*e^4 + 1066*a^4*e^4*m - 6*b^4*d^4*m + 251*a^4*e^4*m^2 +
 26*a^4*e^4*m^3 + a^4*e^4*m^4 + 48*a*b^3*d^3*e*m + 336*a^3*b*d*e^3*m - 45*a
^2*b^2*d^2*e^2*m^2 - 3*a^2*b^2*d^2*e^2*m^3 + 6*a*b^3*d^3*e*m^2 + 146*a^3*b*
d*e^3*m^2 + 21*a^3*b*d*e^3*m^3 + a^3*b*d*e^3*m^4 - 168*a^2*b^2*d^2*e^2*m))/
(e^4*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 +
36*m^7 + m^8 + 40320)) + (7*b^2*x^3*(d + e*x)^m*(3*m + m^2 + 2)*(20160*a^5*
e^5 + 17832*a^5*e^5*m + 120*b^5*d^5*m + 6210*a^5*e^5*m^2 + 1065*a^5*e^5*m^3
 + 90*a^5*e^5*m^4 + 3*a^5*e^5*m^5 - 960*a*b^4*d^4*e*m + 8400*a^4*b*d*e^4*m
+ 900*a^2*b^3*d^3*e^2*m^2 - 2920*a^3*b^2*d^2*e^3*m^2 + 60*a^2*b^3*d^3*e^2*m
^3 - 420*a^3*b^2*d^2*e^3*m^3 - 20*a^3*b^2*d^2*e^3*m^4 - 120*a*b^4*d^4*e*m^2
 + 5330*a^4*b*d*e^4*m^2 + 1255*a^4*b*d*e^4*m^3 + 130*a^4*b*d*e^4*m^4 + 5*a^
4*b*d*e^4*m^5 + 3360*a^2*b^3*d^3*e^2*m - 6720*a^3*b^2*d^2*e^3*m))/(e^5*(109
584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 +
m^8 + 40320))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Timed out
```

3.2147 $\int (a+bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^2\,dx$

Optimal. Leaf size=175

$$-\frac{5b^4(bd-ae)(d+ex)^{m+5}}{e^6(m+5)}+\frac{10b^3(bd-ae)^2(d+ex)^{m+4}}{e^6(m+4)}-\frac{10b^2(bd-ae)^3(d+ex)^{m+3}}{e^6(m+3)}-\frac{(bd-ae)^5(d+ex)^{m+1}}{e^6(m+1)}+5b$$

```
[Out] -(-a*e+b*d)^5*(e*x+d)^(1+m)/e^6/(1+m)+5*b*(-a*e+b*d)^4*(e*x+d)^(2+m)/e^6/(2
+m)-10*b^2*(-a*e+b*d)^3*(e*x+d)^(3+m)/e^6/(3+m)+10*b^3*(-a*e+b*d)^2*(e*x+d)
^(4+m)/e^6/(4+m)-5*b^4*(-a*e+b*d)*(e*x+d)^(5+m)/e^6/(5+m)+b^5*(e*x+d)^(6+m)
/e^6/(6+m)
```

Rubi [A] time = 0.09, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 43}

$$-\frac{10b^2(bd-ae)^3(d+ex)^{m+3}}{e^6(m+3)}+\frac{10b^3(bd-ae)^2(d+ex)^{m+4}}{e^6(m+4)}-\frac{5b^4(bd-ae)(d+ex)^{m+5}}{e^6(m+5)}-\frac{(bd-ae)^5(d+ex)^{m+1}}{e^6(m+1)}+5b$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -(((b*d - a*e)^5*(d + e*x)^(1 + m))/(e^6*(1 + m))) + (5*b*(b*d - a*e)^4*(d
+ e*x)^(2 + m))/(e^6*(2 + m)) - (10*b^2*(b*d - a*e)^3*(d + e*x)^(3 + m))/(e
^6*(3 + m)) + (10*b^3*(b*d - a*e)^2*(d + e*x)^(4 + m))/(e^6*(4 + m)) - (5*b
^4*(b*d - a*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (b^5*(d + e*x)^(6 + m))/(
e^6*(6 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)^2\,dx &= \int (a+bx)^5(d+ex)^m\,dx\\ &= \int \left(\frac{(-bd+ae)^5(d+ex)^m}{e^5}+\frac{5b(bd-ae)^4(d+ex)^{1+m}}{e^5}-10b^2(bd\right.\\ &= -\frac{(bd-ae)^5(d+ex)^{1+m}}{e^6(1+m)}+\frac{5b(bd-ae)^4(d+ex)^{2+m}}{e^6(2+m)}-\frac{10b^2(bd-}{e^6}\end{aligned}$$

Mathematica [A] time = 0.13, size = 149, normalized size = 0.85

$$\frac{(d+ex)^{m+1}\left(-\frac{5b^4(d+ex)^4(bd-ae)}{m+5}+\frac{10b^3(d+ex)^3(bd-ae)^2}{m+4}-\frac{10b^2(d+ex)^2(bd-ae)^3}{m+3}+\frac{5b(d+ex)(bd-ae)^4}{m+2}-\frac{(bd-ae)^5}{m+1}+\frac{b^5(d+ex)^5}{m+6}\right)}{e^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^5/(1 + m)) + (5*b*(b*d - a*e)^4*(d + e*x)
)/(2 + m) - (10*b^2*(b*d - a*e)^3*(d + e*x)^2)/(3 + m) + (10*b^3*(b*d - a*e
)^2*(d + e*x)^3)/(4 + m) - (5*b^4*(b*d - a*e)*(d + e*x)^4)/(5 + m) + (b^5*(
d + e*x)^5)/(6 + m)))/e^6
```

fricas [B] time = 2.46, size = 1460, normalized size = 8.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] (a^5*d*e^5*m^5 - 120*b^5*d^6 + 720*a*b^4*d^5*e - 1800*a^2*b^3*d^4*e^2 + 240
0*a^3*b^2*d^3*e^3 - 1800*a^4*b*d^2*e^4 + 720*a^5*d*e^5 + (b^5*e^6*m^5 + 15*
b^5*e^6*m^4 + 85*b^5*e^6*m^3 + 225*b^5*e^6*m^2 + 274*b^5*e^6*m + 120*b^5*e^
6)*x^6 + (720*a*b^4*e^6 + (b^5*d*e^5 + 5*a*b^4*e^6)*m^5 + 10*(b^5*d*e^5 + 8
*a*b^4*e^6)*m^4 + 5*(7*b^5*d*e^5 + 95*a*b^4*e^6)*m^3 + 50*(b^5*d*e^5 + 26*a
*b^4*e^6)*m^2 + 12*(2*b^5*d*e^5 + 135*a*b^4*e^6)*m)*x^5 - 5*(a^4*b*d^2*e^4
- 4*a^5*d*e^5)*m^4 + 5*(360*a^2*b^3*e^6 + (a*b^4*d*e^5 + 2*a^2*b^3*e^6)*m^5
 - (b^5*d^2*e^4 - 12*a*b^4*d*e^5 - 34*a^2*b^3*e^6)*m^4 - (6*b^5*d^2*e^4 - 4
7*a*b^4*d*e^5 - 214*a^2*b^3*e^6)*m^3 - (11*b^5*d^2*e^4 - 72*a*b^4*d*e^5 - 6
14*a^2*b^3*e^6)*m^2 - 6*(b^5*d^2*e^4 - 6*a*b^4*d*e^5 - 132*a^2*b^3*e^6)*m)*
x^4 + 5*(4*a^3*b^2*d^3*e^3 - 18*a^4*b*d^2*e^4 + 31*a^5*d*e^5)*m^3 + 10*(240
*a^3*b^2*e^6 + (a^2*b^3*d*e^5 + a^3*b^2*e^6)*m^5 - 2*(a*b^4*d^2*e^4 - 7*a^2
*b^3*d*e^5 - 9*a^3*b^2*e^6)*m^4 + (2*b^5*d^3*e^3 - 18*a*b^4*d^2*e^4 + 65*a^
2*b^3*d*e^5 + 121*a^3*b^2*e^6)*m^3 + 2*(3*b^5*d^3*e^3 - 20*a*b^4*d^2*e^4 +
56*a^2*b^3*d*e^5 + 186*a^3*b^2*e^6)*m^2 + 4*(b^5*d^3*e^3 - 6*a*b^4*d^2*e^4
+ 15*a^2*b^3*d*e^5 + 127*a^3*b^2*e^6)*m)*x^3 - 5*(12*a^2*b^3*d^4*e^2 - 60*a
^3*b^2*d^3*e^3 + 119*a^4*b*d^2*e^4 - 116*a^5*d*e^5)*m^2 + 5*(360*a^4*b*e^6
+ (2*a^3*b^2*d*e^5 + a^4*b*e^6)*m^5 - (6*a^2*b^3*d^2*e^4 - 32*a^3*b^2*d*e^5
 - 19*a^4*b*e^6)*m^4 + (12*a*b^4*d^3*e^3 - 72*a^2*b^3*d^2*e^4 + 178*a^3*b^2
*d*e^5 + 137*a^4*b*e^6)*m^3 - (12*b^5*d^4*e^2 - 84*a*b^4*d^3*e^3 + 246*a^2*
b^3*d^2*e^4 - 388*a^3*b^2*d*e^5 - 461*a^4*b*e^6)*m^2 - 6*(2*b^5*d^4*e^2 - 1
2*a*b^4*d^3*e^3 + 30*a^2*b^3*d^2*e^4 - 40*a^3*b^2*d*e^5 - 117*a^4*b*e^6)*m)
*x^2 + 2*(60*a*b^4*d^5*e - 330*a^2*b^3*d^4*e^2 + 740*a^3*b^2*d^3*e^3 - 855*
a^4*b*d^2*e^4 + 522*a^5*d*e^5)*m + (720*a^5*e^6 + (5*a^4*b*d*e^5 + a^5*e^6)
*m^5 - 10*(2*a^3*b^2*d^2*e^4 - 9*a^4*b*d*e^5 - 2*a^5*e^6)*m^4 + 5*(12*a^2*b
^3*d^3*e^3 - 60*a^3*b^2*d^2*e^4 + 119*a^4*b*d*e^5 + 31*a^5*e^6)*m^3 - 10*(1
2*a*b^4*d^4*e^2 - 66*a^2*b^3*d^3*e^3 + 148*a^3*b^2*d^2*e^4 - 171*a^4*b*d*e^
5 - 58*a^5*e^6)*m^2 + 12*(10*b^5*d^5*e - 60*a*b^4*d^4*e^2 + 150*a^2*b^3*d^3
*e^3 - 200*a^3*b^2*d^2*e^4 + 150*a^4*b*d*e^5 + 87*a^5*e^6)*m)*x)*(e*x + d)^
m/(e^6*m^6 + 21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e
^6*m + 720*e^6)
```

giac [B] time = 0.25, size = 2525, normalized size = 14.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^5*m^5*x^6*e^6 + (x*e + d)^m*b^5*d*m^5*x^5*e^5 + 5*(x*e + d)^
m*a*b^4*m^5*x^5*e^6 + 15*(x*e + d)^m*b^5*m^4*x^6*e^6 + 5*(x*e + d)^m*a*b^4*
d*m^5*x^4*e^5 + 10*(x*e + d)^m*b^5*d*m^4*x^5*e^5 - 5*(x*e + d)^m*b^5*d^2*m^
4*x^4*e^4 + 10*(x*e + d)^m*a^2*b^3*m^5*x^4*e^6 + 80*(x*e + d)^m*a*b^4*m^4*x
^5*e^6 + 85*(x*e + d)^m*b^5*m^3*x^6*e^6 + 10*(x*e + d)^m*a^2*b^3*d*m^5*x^3*
e^5 + 60*(x*e + d)^m*a*b^4*d*m^4*x^4*e^5 + 35*(x*e + d)^m*b^5*d*m^3*x^5*e^5
 - 20*(x*e + d)^m*a*b^4*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m*b^5*d^2*m^3*x^4*e^
4 + 20*(x*e + d)^m*b^5*d^3*m^3*x^3*e^3 + 10*(x*e + d)^m*a^3*b^2*m^5*x^3*e^6
 + 170*(x*e + d)^m*a^2*b^3*m^4*x^4*e^6 + 475*(x*e + d)^m*a*b^4*m^3*x^5*e^6
+ 225*(x*e + d)^m*b^5*m^2*x^6*e^6 + 10*(x*e + d)^m*a^3*b^2*d*m^5*x^2*e^5 +
140*(x*e + d)^m*a^2*b^3*d*m^4*x^3*e^5 + 235*(x*e + d)^m*a*b^4*d*m^3*x^4*e^5
 + 50*(x*e + d)^m*b^5*d*m^2*x^5*e^5 - 30*(x*e + d)^m*a^2*b^3*d^2*m^4*x^2*e^
4 - 180*(x*e + d)^m*a*b^4*d^2*m^3*x^3*e^4 - 55*(x*e + d)^m*b^5*d^2*m^2*x^4*
e^4 + 60*(x*e + d)^m*a*b^4*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*b^5*d^3*m^2*x^3
*e^3 - 60*(x*e + d)^m*b^5*d^4*m^2*x^2*e^2 + 5*(x*e + d)^m*a^4*b*m^5*x^2*e^6
 + 180*(x*e + d)^m*a^3*b^2*m^4*x^3*e^6 + 1070*(x*e + d)^m*a^2*b^3*m^3*x^4*e
^6 + 1300*(x*e + d)^m*a*b^4*m^2*x^5*e^6 + 274*(x*e + d)^m*b^5*m*x^6*e^6 + 5
*(x*e + d)^m*a^4*b*d*m^5*x*e^5 + 160*(x*e + d)^m*a^3*b^2*d*m^4*x^2*e^5 + 65
0*(x*e + d)^m*a^2*b^3*d*m^3*x^3*e^5 + 360*(x*e + d)^m*a*b^4*d*m^2*x^4*e^5 +
 24*(x*e + d)^m*b^5*d*m*x^5*e^5 - 20*(x*e + d)^m*a^3*b^2*d^2*m^4*x*e^4 - 36
0*(x*e + d)^m*a^2*b^3*d^2*m^3*x^2*e^4 - 400*(x*e + d)^m*a*b^4*d^2*m^2*x^3*e
^4 - 30*(x*e + d)^m*b^5*d^2*m*x^4*e^4 + 60*(x*e + d)^m*a^2*b^3*d^3*m^3*x*e^
3 + 420*(x*e + d)^m*a*b^4*d^3*m^2*x^2*e^3 + 40*(x*e + d)^m*b^5*d^3*m*x^3*e^
3 - 120*(x*e + d)^m*a*b^4*d^4*m^2*x*e^2 - 60*(x*e + d)^m*b^5*d^4*m*x^2*e^2
+ 120*(x*e + d)^m*b^5*d^5*m*x*e + (x*e + d)^m*a^5*m^5*x*e^6 + 95*(x*e + d)^
m*a^4*b*m^4*x^2*e^6 + 1210*(x*e + d)^m*a^3*b^2*m^3*x^3*e^6 + 3070*(x*e + d)
^m*a^2*b^3*m^2*x^4*e^6 + 1620*(x*e + d)^m*a*b^4*m*x^5*e^6 + 120*(x*e + d)^m
*b^5*x^6*e^6 + (x*e + d)^m*a^5*d*m^5*e^5 + 90*(x*e + d)^m*a^4*b*d*m^4*x*e^5
 + 890*(x*e + d)^m*a^3*b^2*d*m^3*x^2*e^5 + 1120*(x*e + d)^m*a^2*b^3*d*m^2*x
^3*e^5 + 180*(x*e + d)^m*a*b^4*d*m*x^4*e^5 - 5*(x*e + d)^m*a^4*b*d^2*m^4*e^
4 - 300*(x*e + d)^m*a^3*b^2*d^2*m^3*x*e^4 - 1230*(x*e + d)^m*a^2*b^3*d^2*m^
2*x^2*e^4 - 240*(x*e + d)^m*a*b^4*d^2*m*x^3*e^4 + 20*(x*e + d)^m*a^3*b^2*d^
3*m^3*e^3 + 660*(x*e + d)^m*a^2*b^3*d^3*m^2*x*e^3 + 360*(x*e + d)^m*a*b^4*d
^3*m*x^2*e^3 - 60*(x*e + d)^m*a^2*b^3*d^4*m^2*e^2 - 720*(x*e + d)^m*a*b^4*d
^4*m*x*e^2 + 120*(x*e + d)^m*a*b^4*d^5*m*e - 120*(x*e + d)^m*b^5*d^6 + 20*(
x*e + d)^m*a^5*m^4*x*e^6 + 685*(x*e + d)^m*a^4*b*m^3*x^2*e^6 + 3720*(x*e +
d)^m*a^3*b^2*m^2*x^3*e^6 + 3960*(x*e + d)^m*a^2*b^3*m*x^4*e^6 + 720*(x*e +
d)^m*a*b^4*x^5*e^6 + 20*(x*e + d)^m*a^5*d*m^4*e^5 + 595*(x*e + d)^m*a^4*b*d
*m^3*x*e^5 + 1940*(x*e + d)^m*a^3*b^2*d*m^2*x^2*e^5 + 600*(x*e + d)^m*a^2*b
^3*d*m*x^3*e^5 - 90*(x*e + d)^m*a^4*b*d^2*m^3*e^4 - 1480*(x*e + d)^m*a^3*b^
2*d^2*m^2*x*e^4 - 900*(x*e + d)^m*a^2*b^3*d^2*m*x^2*e^4 + 300*(x*e + d)^m*a
^3*b^2*d^3*m^2*e^3 + 1800*(x*e + d)^m*a^2*b^3*d^3*m*x*e^3 - 660*(x*e + d)^m
*a^2*b^3*d^4*m*e^2 + 720*(x*e + d)^m*a*b^4*d^5*e + 155*(x*e + d)^m*a^5*m^3*
x*e^6 + 2305*(x*e + d)^m*a^4*b*m^2*x^2*e^6 + 5080*(x*e + d)^m*a^3*b^2*m*x^3
*e^6 + 1800*(x*e + d)^m*a^2*b^3*x^4*e^6 + 155*(x*e + d)^m*a^5*d*m^3*e^5 + 1
710*(x*e + d)^m*a^4*b*d*m^2*x*e^5 + 1200*(x*e + d)^m*a^3*b^2*d*m*x^2*e^5 -
595*(x*e + d)^m*a^4*b*d^2*m^2*e^4 - 2400*(x*e + d)^m*a^3*b^2*d^2*m*x*e^4 +
1480*(x*e + d)^m*a^3*b^2*d^3*m*e^3 - 1800*(x*e + d)^m*a^2*b^3*d^4*e^2 + 580
*(x*e + d)^m*a^5*m^2*x*e^6 + 3510*(x*e + d)^m*a^4*b*m*x^2*e^6 + 2400*(x*e +
 d)^m*a^3*b^2*x^3*e^6 + 580*(x*e + d)^m*a^5*d*m^2*e^5 + 1800*(x*e + d)^m*a^
4*b*d*m*x*e^5 - 1710*(x*e + d)^m*a^4*b*d^2*m*e^4 + 2400*(x*e + d)^m*a^3*b^2
*d^3*e^3 + 1044*(x*e + d)^m*a^5*m*x*e^6 + 1800*(x*e + d)^m*a^4*b*x^2*e^6 +
1044*(x*e + d)^m*a^5*d*m*e^5 - 1800*(x*e + d)^m*a^4*b*d^2*e^4 + 720*(x*e +
d)^m*a^5*x*e^6 + 720*(x*e + d)^m*a^5*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^4
*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.06, size = 1345, normalized size = 7.69

$$\left(b^5e^5m^5x^5 + 5a\,b^4e^5m^5x^4 + 15b^5e^5m^4x^5 + 10a^2b^3e^5m^5x^3 + 80a\,b^4e^5m^4x^4 - 5b^5d\,e^4m^4x^4 + 85b^5e^5m^3x^5 + 10a^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] (e*x+d)^(m+1)*(b^5*e^5*m^5*x^5+5*a*b^4*e^5*m^5*x^4+15*b^5*e^5*m^4*x^5+10*a^
2*b^3*e^5*m^5*x^3+80*a*b^4*e^5*m^4*x^4-5*b^5*d*e^4*m^4*x^4+85*b^5*e^5*m^3*x
^5+10*a^3*b^2*e^5*m^5*x^2+170*a^2*b^3*e^5*m^4*x^3-20*a*b^4*d*e^4*m^4*x^3+47
5*a*b^4*e^5*m^3*x^4-50*b^5*d*e^4*m^3*x^4+225*b^5*e^5*m^2*x^5+5*a^4*b*e^5*m^
5*x+180*a^3*b^2*e^5*m^4*x^2-30*a^2*b^3*d*e^4*m^4*x^2+1070*a^2*b^3*e^5*m^3*x
^3-240*a*b^4*d*e^4*m^3*x^3+1300*a*b^4*e^5*m^2*x^4+20*b^5*d^2*e^3*m^3*x^3-17
5*b^5*d*e^4*m^2*x^4+274*b^5*e^5*m*x^5+a^5*e^5*m^5+95*a^4*b*e^5*m^4*x-20*a^3
*b^2*d*e^4*m^4*x+1210*a^3*b^2*e^5*m^3*x^2-420*a^2*b^3*d*e^4*m^3*x^2+3070*a^
2*b^3*e^5*m^2*x^3+60*a*b^4*d^2*e^3*m^3*x^2-940*a*b^4*d*e^4*m^2*x^3+1620*a*b
^4*e^5*m*x^4+120*b^5*d^2*e^3*m^2*x^3-250*b^5*d*e^4*m*x^4+120*b^5*e^5*x^5+20
*a^5*e^5*m^4-5*a^4*b*d*e^4*m^4+685*a^4*b*e^5*m^3*x-320*a^3*b^2*d*e^4*m^3*x+
3720*a^3*b^2*e^5*m^2*x^2+60*a^2*b^3*d^2*e^3*m^3*x-1950*a^2*b^3*d*e^4*m^2*x^
2+3960*a^2*b^3*e^5*m*x^3+540*a*b^4*d^2*e^3*m^2*x^2-1440*a*b^4*d*e^4*m*x^3+7
20*a*b^4*e^5*x^4-60*b^5*d^3*e^2*m^2*x^2+220*b^5*d^2*e^3*m*x^3-120*b^5*d*e^4
*x^4+155*a^5*e^5*m^3-90*a^4*b*d*e^4*m^3+2305*a^4*b*e^5*m^2*x+20*a^3*b^2*d^2
*e^3*m^3-1780*a^3*b^2*d*e^4*m^2*x+5080*a^3*b^2*e^5*m*x^2+720*a^2*b^3*d^2*e^
3*m^2*x-3360*a^2*b^3*d*e^4*m*x^2+1800*a^2*b^3*e^5*x^3-120*a*b^4*d^3*e^2*m^2
*x+1200*a*b^4*d^2*e^3*m*x^2-720*a*b^4*d*e^4*x^3-180*b^5*d^3*e^2*m*x^2+120*b
^5*d^2*e^3*x^3+580*a^5*e^5*m^2-595*a^4*b*d*e^4*m^2+3510*a^4*b*e^5*m*x+300*a
^3*b^2*d^2*e^3*m^2-3880*a^3*b^2*d*e^4*m*x+2400*a^3*b^2*e^5*x^2-60*a^2*b^3*d
^3*e^2*m^2+2460*a^2*b^3*d^2*e^3*m*x-1800*a^2*b^3*d*e^4*x^2-840*a*b^4*d^3*e^
2*m*x+720*a*b^4*d^2*e^3*x^2+120*b^5*d^4*e*m*x-120*b^5*d^3*e^2*x^2+1044*a^5*
e^5*m-1710*a^4*b*d*e^4*m+1800*a^4*b*e^5*x+1480*a^3*b^2*d^2*e^3*m-2400*a^3*b
^2*d*e^4*x-660*a^2*b^3*d^3*e^2*m+1800*a^2*b^3*d^2*e^3*x+120*a*b^4*d^4*e*m-7
20*a*b^4*d^3*e^2*x+120*b^5*d^4*e*x+720*a^5*e^5-1800*a^4*b*d*e^4+2400*a^3*b^
2*d^2*e^3-1800*a^2*b^3*d^3*e^2+720*a*b^4*d^4*e-120*b^5*d^5)/e^6/(m^6+21*m^5
+175*m^4+735*m^3+1624*m^2+1764*m+720)
```

maxima [B] time = 0.67, size = 581, normalized size = 3.32

$$\frac{5\left(e^2(m+1)x^2+demx-d^2\right)(ex+d)^m a^4b}{\left(m^2+3m+2\right)e^2}+\frac{(ex+d)^{m+1}a^5}{e(m+1)}+\frac{10\left(\left(m^2+3m+2\right)e^3x^3+\left(m^2+m\right)de^2x^2-2d^2emx-\right.}{\left(m^3+6m^2+11m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] 5*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^4*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^5/(e*(m + 1)) + 10*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
 m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a^3*b^2/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + 10*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d
*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*a^2*b
^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 5*((m^4 + 10*m^3 + 35*m^2 +
50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^
2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e
*x + d)^m*a*b^4/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m
^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*
m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4
 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*
e*m*x - 120*d^6)*(e*x + d)^m*b^5/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*
m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 2.78, size = 1291, normalized size = 7.38

$$\frac{(d+e\,x)^m\,\left(a^5\,d\,e^5\,m^5+20\,a^5\,d\,e^5\,m^4+155\,a^5\,d\,e^5\,m^3+580\,a^5\,d\,e^5\,m^2+1044\,a^5\,d\,e^5\,m+720\,a^5\,d\,e^5-5\,a^4\,b\,d^2\,e^4\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] ((d + e*x)^m*(720*a^5*d*e^5 - 120*b^5*d^6 - 1800*a^4*b*d^2*e^4 + 580*a^5*d*
e^5*m^2 + 155*a^5*d*e^5*m^3 + 20*a^5*d*e^5*m^4 + a^5*d*e^5*m^5 - 1800*a^2*b
^3*d^4*e^2 + 2400*a^3*b^2*d^3*e^3 + 720*a*b^4*d^5*e + 1044*a^5*d*e^5*m + 12
0*a*b^4*d^5*e*m - 60*a^2*b^3*d^4*e^2*m^2 + 300*a^3*b^2*d^3*e^3*m^2 + 20*a^3
*b^2*d^3*e^3*m^3 - 1710*a^4*b*d^2*e^4*m - 660*a^2*b^3*d^4*e^2*m + 1480*a^3*
b^2*d^3*e^3*m - 595*a^4*b*d^2*e^4*m^2 - 90*a^4*b*d^2*e^4*m^3 - 5*a^4*b*d^2*
e^4*m^4))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)
) + (b^5*x^6*(d + e*x)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(
1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720) + (x*(d + e*x)^
m*(720*a^5*e^6 + 1044*a^5*e^6*m + 580*a^5*e^6*m^2 + 155*a^5*e^6*m^3 + 20*a^
5*e^6*m^4 + a^5*e^6*m^5 + 120*b^5*d^5*e*m + 1800*a^4*b*d*e^5*m + 660*a^2*b^
3*d^3*e^3*m^2 - 1480*a^3*b^2*d^2*e^4*m^2 + 60*a^2*b^3*d^3*e^3*m^3 - 300*a^3
*b^2*d^2*e^4*m^3 - 20*a^3*b^2*d^2*e^4*m^4 - 720*a*b^4*d^4*e^2*m + 1710*a^4*
b*d*e^5*m^2 + 595*a^4*b*d*e^5*m^3 + 90*a^4*b*d*e^5*m^4 + 5*a^4*b*d*e^5*m^5
+ 1800*a^2*b^3*d^3*e^3*m - 2400*a^3*b^2*d^2*e^4*m - 120*a*b^4*d^4*e^2*m^2))
/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (5*b*
x^2*(m + 1)*(d + e*x)^m*(360*a^4*e^4 + 342*a^4*e^4*m - 12*b^4*d^4*m + 119*a
^4*e^4*m^2 + 18*a^4*e^4*m^3 + a^4*e^4*m^4 + 72*a*b^3*d^3*e*m + 240*a^3*b*d*
e^3*m - 66*a^2*b^2*d^2*e^2*m^2 - 6*a^2*b^2*d^2*e^2*m^3 + 12*a*b^3*d^3*e*m^2
 + 148*a^3*b*d*e^3*m^2 + 30*a^3*b*d*e^3*m^3 + 2*a^3*b*d*e^3*m^4 - 180*a^2*b
^2*d^2*e^2*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 +
 720)) + (5*b^3*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(60*a^2*e^2 + 22*a
^2*e^2*m - b^2*d^2*m + 2*a^2*e^2*m^2 + 6*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(17
64*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (10*b^2*x^3*(d
 + e*x)^m*(3*m + m^2 + 2)*(120*a^3*e^3 + 74*a^3*e^3*m + 2*b^3*d^3*m + 15*a^
3*e^3*m^2 + a^3*e^3*m^3 - 12*a*b^2*d^2*e*m + 30*a^2*b*d*e^2*m - 2*a*b^2*d^2
*e*m^2 + 11*a^2*b*d*e^2*m^2 + a^2*b*d*e^2*m^3))/(e^3*(1764*m + 1624*m^2 + 7
35*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (b^4*x^5*(d + e*x)^m*(30*a*e + 5*
a*e*m + b*d*m)*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))/(e*(1764*m + 1624*m^2 +
 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Timed out
```

3.2148 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)\,dx$

Optimal. Leaf size=111

$$-\frac{3b^2(bd-ae)(d+ex)^{m+3}}{e^4(m+3)}-\frac{(bd-ae)^3(d+ex)^{m+1}}{e^4(m+1)}+\frac{3b(bd-ae)^2(d+ex)^{m+2}}{e^4(m+2)}+\frac{b^3(d+ex)^{m+4}}{e^4(m+4)}$$

```
[Out] -(-a*e+b*d)^3*(e*x+d)^(1+m)/e^4/(1+m)+3*b*(-a*e+b*d)^2*(e*x+d)^(2+m)/e^4/(2
+m)-3*b^2*(-a*e+b*d)*(e*x+d)^(3+m)/e^4/(3+m)+b^3*(e*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.05, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.069$, Rules used = $\{27, 43\}$

$$-\frac{3b^2(bd-ae)(d+ex)^{m+3}}{e^4(m+3)}-\frac{(bd-ae)^3(d+ex)^{m+1}}{e^4(m+1)}+\frac{3b(bd-ae)^2(d+ex)^{m+2}}{e^4(m+2)}+\frac{b^3(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((b*d - a*e)^3*(d + e*x)^(1 + m))/(e^4*(1 + m))) + (3*b*(b*d - a*e)^2*(d
+ e*x)^(2 + m))/(e^4*(2 + m)) - (3*b^2*(b*d - a*e)*(d + e*x)^(3 + m))/(e^4*
(3 + m)) + (b^3*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^m\left(a^2+2abx+b^2x^2\right)\,dx &= \int (a+bx)^3(d+ex)^m\,dx\\ &= \int \left(\frac{(-bd+ae)^3(d+ex)^m}{e^3}+\frac{3b(bd-ae)^2(d+ex)^{1+m}}{e^3}-\frac{3b^2(bd-ae}{e}\right.\\ &= -\frac{(bd-ae)^3(d+ex)^{1+m}}{e^4(1+m)}+\frac{3b(bd-ae)^2(d+ex)^{2+m}}{e^4(2+m)}-\frac{3b^2(bd-ae)(}{e^4(3+}\end{aligned}$$

Mathematica [A] time = 0.07, size = 95, normalized size = 0.86

$$\frac{(d+ex)^{m+1}\left(-\frac{3b^2(d+ex)^2(bd-ae)}{m+3}+\frac{3b(d+ex)(bd-ae)^2}{m+2}-\frac{(bd-ae)^3}{m+1}+\frac{b^3(d+ex)^3}{m+4}\right)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-((b*d - a*e)^3/(1 + m)) + (3*b*(b*d - a*e)^2*(d + e*x)
)/(2 + m) - (3*b^2*(b*d - a*e)*(d + e*x)^2)/(3 + m) + (b^3*(d + e*x)^3)/(4
+ m)))/e^4
```

fricas [B] time = 1.11, size = 496, normalized size = 4.47

$$\left(a^3de^3m^3 - 6\,b^3d^4 + 24\,ab^2d^3e - 36\,a^2bd^2e^2 + 24\,a^3de^3 + \left(b^3e^4m^3 + 6\,b^3e^4m^2 + 11\,b^3e^4m + 6\,b^3e^4\right)x^4 + \left(24\,ab\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] (a^3*d*e^3*m^3 - 6*b^3*d^4 + 24*a*b^2*d^3*e - 36*a^2*b*d^2*e^2 + 24*a^3*d*e
^3 + (b^3*e^4*m^3 + 6*b^3*e^4*m^2 + 11*b^3*e^4*m + 6*b^3*e^4)*x^4 + (24*a*b
^2*e^4 + (b^3*d*e^3 + 3*a*b^2*e^4)*m^3 + 3*(b^3*d*e^3 + 7*a*b^2*e^4)*m^2 +
2*(b^3*d*e^3 + 21*a*b^2*e^4)*m)*x^3 - 3*(a^2*b*d^2*e^2 - 3*a^3*d*e^3)*m^2 +
 3*(12*a^2*b*e^4 + (a*b^2*d*e^3 + a^2*b*e^4)*m^3 - (b^3*d^2*e^2 - 5*a*b^2*d
*e^3 - 8*a^2*b*e^4)*m^2 - (b^3*d^2*e^2 - 4*a*b^2*d*e^3 - 19*a^2*b*e^4)*m)*x
^2 + (6*a*b^2*d^3*e - 21*a^2*b*d^2*e^2 + 26*a^3*d*e^3)*m + (24*a^3*e^4 + (3
*a^2*b*d*e^3 + a^3*e^4)*m^3 - 3*(2*a*b^2*d^2*e^2 - 7*a^2*b*d*e^3 - 3*a^3*e^
4)*m^2 + 2*(3*b^3*d^3*e - 12*a*b^2*d^2*e^2 + 18*a^2*b*d*e^3 + 13*a^3*e^4)*m
)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.18, size = 835, normalized size = 7.52

$$(xe + d)^m b^3m^3x^4e^4 + (xe + d)^m b^3dm^3x^3e^3 + 3\,(xe + d)^m ab^2m^3x^3e^4 + 6\,(xe + d)^m b^3m^2x^4e^4 + 3\,(xe + d)^m ab^2dm$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*b^3*m^3*x^4*e^4 + (x*e + d)^m*b^3*d*m^3*x^3*e^3 + 3*(x*e + d)^
m*a*b^2*m^3*x^3*e^4 + 6*(x*e + d)^m*b^3*m^2*x^4*e^4 + 3*(x*e + d)^m*a*b^2*d
*m^3*x^2*e^3 + 3*(x*e + d)^m*b^3*d*m^2*x^3*e^3 - 3*(x*e + d)^m*b^3*d^2*m^2*
x^2*e^2 + 3*(x*e + d)^m*a^2*b*m^3*x^2*e^4 + 21*(x*e + d)^m*a*b^2*m^2*x^3*e^
4 + 11*(x*e + d)^m*b^3*m*x^4*e^4 + 3*(x*e + d)^m*a^2*b*d*m^3*x*e^3 + 15*(x*
e + d)^m*a*b^2*d*m^2*x^2*e^3 + 2*(x*e + d)^m*b^3*d*m*x^3*e^3 - 6*(x*e + d)^
m*a*b^2*d^2*m^2*x*e^2 - 3*(x*e + d)^m*b^3*d^2*m*x^2*e^2 + 6*(x*e + d)^m*b^3
*d^3*m*x*e + (x*e + d)^m*a^3*m^3*x*e^4 + 24*(x*e + d)^m*a^2*b*m^2*x^2*e^4 +
 42*(x*e + d)^m*a*b^2*m*x^3*e^4 + 6*(x*e + d)^m*b^3*x^4*e^4 + (x*e + d)^m*a
^3*d*m^3*e^3 + 21*(x*e + d)^m*a^2*b*d*m^2*x*e^3 + 12*(x*e + d)^m*a*b^2*d*m*
x^2*e^3 - 3*(x*e + d)^m*a^2*b*d^2*m^2*e^2 - 24*(x*e + d)^m*a*b^2*d^2*m*x*e^
2 + 6*(x*e + d)^m*a*b^2*d^3*m*e - 6*(x*e + d)^m*b^3*d^4 + 9*(x*e + d)^m*a^3
*m^2*x*e^4 + 57*(x*e + d)^m*a^2*b*m*x^2*e^4 + 24*(x*e + d)^m*a*b^2*x^3*e^4
+ 9*(x*e + d)^m*a^3*d*m^2*e^3 + 36*(x*e + d)^m*a^2*b*d*m*x*e^3 - 21*(x*e +
d)^m*a^2*b*d^2*m*e^2 + 24*(x*e + d)^m*a*b^2*d^3*e + 26*(x*e + d)^m*a^3*m*x*
e^4 + 36*(x*e + d)^m*a^2*b*x^2*e^4 + 26*(x*e + d)^m*a^3*d*m*e^3 - 36*(x*e +
 d)^m*a^2*b*d^2*e^2 + 24*(x*e + d)^m*a^3*x*e^4 + 24*(x*e + d)^m*a^3*d*e^3)/
(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.05, size = 386, normalized size = 3.48

$$\left(b^3e^3m^3x^3 + 3a\,b^2e^3m^3x^2 + 6b^3e^3m^2x^3 + 3a^2b\,e^3m^3x + 21a\,b^2e^3m^2x^2 - 3b^3d\,e^2m^2x^2 + 11b^3e^3m\,x^3 + a^3e^3m^3 +\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^3*e^3*m^3*x^3+3*a*b^2*e^3*m^3*x^2+6*b^3*e^3*m^2*x^3+3*a^2*
b*e^3*m^3*x+21*a*b^2*e^3*m^2*x^2-3*b^3*d*e^2*m^2*x^2+11*b^3*e^3*m*x^3+a^3*e
^3*m^3+24*a^2*b*e^3*m^2*x-6*a*b^2*d*e^2*m^2*x+42*a*b^2*e^3*m*x^2-9*b^3*d*e^
2*m*x^2+6*b^3*e^3*x^3+9*a^3*e^3*m^2-3*a^2*b*d*e^2*m^2+57*a^2*b*e^3*m*x-30*a
*b^2*d*e^2*m*x+24*a*b^2*e^3*x^2+6*b^3*d^2*e*m*x-6*b^3*d*e^2*x^2+26*a^3*e^3*
m-21*a^2*b*d*e^2*m+36*a^2*b*e^3*x+6*a*b^2*d^2*e*m-24*a*b^2*d*e^2*x+6*b^3*d^
2*e*x+24*a^3*e^3-36*a^2*b*d*e^2+24*a*b^2*d^2*e-6*b^3*d^3)/e^4/(m^4+10*m^3+3
5*m^2+50*m+24)
```

maxima [B] time = 0.66, size = 246, normalized size = 2.22

$$\frac{3\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}a^{2}b}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{(ex+d)^{m+1}a^{3}}{e(m+1)}+\frac{3\left(\left(m^{2}+3\,m+2\right)e^{3}x^{3}+\left(m^{2}+m\right)de^{2}x^{2}-2\,d^{2}emx+\right.}{\left(m^{3}+6\,m^{2}+11\,m+6\right)e^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a^2*b/((m^2 + 3*m + 2)*e^2)
 + (e*x + d)^(m + 1)*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 +
m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*a*b^2/((m^3 + 6*m^2 + 11*m
+ 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x
^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*b^3/((m^4 +
 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.43, size = 478, normalized size = 4.31

$$\frac{x\,(d+e\,x)^{m}\,\left(a^{3}\,e^{4}\,m^{3}+9\,a^{3}\,e^{4}\,m^{2}+26\,a^{3}\,e^{4}\,m+24\,a^{3}\,e^{4}+3\,a^{2}\,b\,d\,e^{3}\,m^{3}+21\,a^{2}\,b\,d\,e^{3}\,m^{2}+36\,a^{2}\,b\,d\,e^{3}\,m-6\,a\,b^{2}\right.}{e^{4}\,\left(m^{4}+10\,m^{3}+35\,m^{2}+50\,m+24\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] (x*(d + e*x)^m*(24*a^3*e^4 + 26*a^3*e^4*m + 9*a^3*e^4*m^2 + a^3*e^4*m^3 + 6
*b^3*d^3*e*m + 36*a^2*b*d*e^3*m - 24*a*b^2*d^2*e^2*m + 21*a^2*b*d*e^3*m^2 +
 3*a^2*b*d*e^3*m^3 - 6*a*b^2*d^2*e^2*m^2))/(e^4*(50*m + 35*m^2 + 10*m^3 + m
^4 + 24)) + (b^3*x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 +
 10*m^3 + m^4 + 24) + (d*(d + e*x)^m*(24*a^3*e^3 - 6*b^3*d^3 + 26*a^3*e^3*m
 + 9*a^3*e^3*m^2 + a^3*e^3*m^3 + 24*a*b^2*d^2*e - 36*a^2*b*d*e^2 + 6*a*b^2*
d^2*e*m - 21*a^2*b*d*e^2*m - 3*a^2*b*d*e^2*m^2))/(e^4*(50*m + 35*m^2 + 10*m
^3 + m^4 + 24)) + (3*b*x^2*(m + 1)*(d + e*x)^m*(12*a^2*e^2 + 7*a^2*e^2*m -
b^2*d^2*m + a^2*e^2*m^2 + 4*a*b*d*e*m + a*b*d*e*m^2))/(e^2*(50*m + 35*m^2 +
 10*m^3 + m^4 + 24)) + (b^2*x^3*(d + e*x)^m*(12*a*e + 3*a*e*m + b*d*m)*(3*m
 + m^2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 4.73, size = 4058, normalized size = 36.56

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Piecewise((d**m*(a**3*x + 3*a**2*b*x**2/2 + a*b**2*x**3 + b**3*x**4/4), Eq(
e, 0)), (-2*a**3*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) - 3*a**2*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
 6*e**7*x**3) - 9*a**2*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x
**2 + 6*e**7*x**3) - 6*a*b**2*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e
**6*x**2 + 6*e**7*x**3) - 18*a*b**2*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*x
+ 18*d*e**6*x**2 + 6*e**7*x**3) - 18*a*b**2*e**3*x**2/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*b**3*d**3*log(d/e + x)/(6*d**3
*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*b**3*d**3/(6*d*
*3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*b**3*d**2*e*x
*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
 + 27*b**3*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7
*x**3) + 18*b**3*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 1
8*d*e**6*x**2 + 6*e**7*x**3) + 18*b**3*d*e**2*x**2/(6*d**3*e**4 + 18*d**2*e
**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*b**3*e**3*x**3*log(d/e + x)/(6*d*
*3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a**
3*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 3*a**2*b*d*e**2/(2*d**2*e
**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*a**2*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x
 + 2*e**6*x**2) + 6*a*b**2*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x +
2*e**6*x**2) + 9*a*b**2*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 1
2*a*b**2*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 1
2*a*b**2*d*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 6*a*b**2*e**3*
x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*b**3*d**3*lo
g(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*b**3*d**3/(2*d**2*e
**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*b**3*d**2*e*x*log(d/e + x)/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 12*b**3*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 6*b**3*d*e**2*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) + 2*b**3*e**3*x**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2),
 Eq(m, -3)), (-2*a**3*e**3/(2*d*e**4 + 2*e**5*x) + 6*a**2*b*d*e**2*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 6*a**2*b*d*e**2/(2*d*e**4 + 2*e**5*x) + 6*a**2
*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 12*a*b**2*d**2*e*log(d/e + x
)/(2*d*e**4 + 2*e**5*x) - 12*a*b**2*d**2*e/(2*d*e**4 + 2*e**5*x) - 12*a*b**
2*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*a*b**2*e**3*x**2/(2*d*e**
4 + 2*e**5*x) + 6*b**3*d**3*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 6*b**3*d**
3/(2*d*e**4 + 2*e**5*x) + 6*b**3*d**2*e*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x
) - 3*b**3*d*e**2*x**2/(2*d*e**4 + 2*e**5*x) + b**3*e**3*x**3/(2*d*e**4 + 2
*e**5*x), Eq(m, -2)), (a**3*log(d/e + x)/e - 3*a**2*b*d*log(d/e + x)/e**2 +
 3*a**2*b*x/e + 3*a*b**2*d**2*log(d/e + x)/e**3 - 3*a*b**2*d*x/e**2 + 3*a*b
**2*x**2/(2*e) - b**3*d**3*log(d/e + x)/e**4 + b**3*d**2*x/e**3 - b**3*d*x*
*2/(2*e**2) + b**3*x**3/(3*e), Eq(m, -1)), (a**3*d*e**3*m**3*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9*a**3*d*e
**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) + 26*a**3*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + 24*a**3*d*e**3*(d + e*x)**m/(e**4*m**4 +
10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a**3*e**4*m**3*x*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 9
*a**3*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 26*a**3*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a**3*e**4*x*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*a**2*b*d**2
*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*
m + 24*e**4) - 21*a**2*b*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 36*a**2*b*d**2*e**2*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a**2*b*d
*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 21*a**2*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 36*a**2*b*d*e**3*m*x*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a**
2*b*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
50*e**4*m + 24*e**4) + 24*a**2*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 57*a**2*b*e**4*m*x**2*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + 36*a**2*b*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 6*a*b**2*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*a*b**2*d**3*e*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*a*b
```

```
**2*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) - 24*a*b**2*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 +
10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a*b**2*d*e**3*m**3*x
**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*
e**4) + 15*a*b**2*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 +
 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*a*b**2*d*e**3*m*x**2*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*a*b**2
*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 21*a*b**2*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 42*a*b**2*e**4*m*x**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
24*a*b**2*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) - 6*b**3*d**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*b**3*d**3*e*m*x*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*b**3*d**2*e
**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) - 3*b**3*d**2*e**2*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4
*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**3*d*e**3*m**3*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 3*b
**3*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 2*b**3*d*e**3*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b**3*e**4*m**3*x**4*(d +
e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6
*b**3*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 11*b**3*e**4*m*x**4*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*b**3*e**4*x**4*(d + e*x)
**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4), True))
```

3.2149 $\int \frac{(a+bx)(d+ex)^m}{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=51

$$-\frac{(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)}$$

```
[Out] -(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/(-a*e+b*d)/(1
+m)
```

Rubi [A] time = 0.01, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {27, 68}

$$-\frac{(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, (b*(d + e*x))/(b*d
- a*e)])/((b*d - a*e)*(1 + m)))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^m}{a^2+2abx+b^2x^2}\,dx &= \int \frac{(d+ex)^m}{a+bx}\,dx\\ &= -\frac{(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;2+m;\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)(1+m)}\end{aligned}$$

Mathematica [A] time = 0.01, size = 51, normalized size = 1.00

$$-\frac{(d+ex)^{m+1}\,{}_2F_1\left(1,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2),x]
```

```
[Out] -(((d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, (b*(d + e*x))/(b*d
- a*e)])/((b*d - a*e)*(1 + m)))
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(ex+d)^m}{bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="fricas")
```

```
[Out] integral((e*x + d)^m/(b*x + a), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [F] time = 1.25, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\,(ex+d)^m}{b^2x^2+2abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x)
```

```
[Out] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{b^2x^2+2\,abx+a^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,(d+e\,x)^m}{a^2+2\,a\,b\,x+b^2\,x^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^m}{a+bx}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2),x)
```

```
[Out] Integral((d + e*x)**m/(a + b*x), x)
```

3.2150 $\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^2}\,dx$

Optimal. Leaf size=54

$$-\frac{e^2(d+ex)^{m+1}\,{}_2F_1\left(3,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)^3}$$

```
[Out] -e^2*(e*x+d)^(1+m)*hypergeom([3, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/(-a*e+b*d
)^3/(1+m)
```

Rubi [A] time = 0.01, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {27, 68}

$$-\frac{e^2(d+ex)^{m+1}\,{}_2F_1\left(3,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)(bd-ae)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] -((e^2*(d + e*x)^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, (b*(d + e*x))/(
b*d - a*e)])/((b*d - a*e)^3*(1 + m)))
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^m}{(a+bx)^3}\,dx\\ &= -\frac{e^2(d+ex)^{1+m}\,{}_2F_1\left(3,1+m;2+m;\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^3(1+m)}\end{aligned}$$

Mathematica [A] time = 0.01, size = 54, normalized size = 1.00

$$\frac{e^2(d+ex)^{m+1}\,{}_2F_1\left(3,m+1;m+2;-\frac{b(d+ex)}{ae-bd}\right)}{(m+1)(ae-bd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^2,x]
```

```
[Out] (e^2*(d + e*x)^(1 + m)*Hypergeometric2F1[3, 1 + m, 2 + m, -((b*(d + e*x))/(
-(b*d) + a*e))])/((-(b*d) + a*e)^3*(1 + m))
```

fricas [F] time = 1.51, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(ex+d)^m}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="fricas")
```

```
[Out] integral((e*x + d)^m/(b^3*x^3 + 3*a*b^2*x^2 + 3*a^2*b*x + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

maple [F] time = 1.26, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)\,(ex+d)^m}{\left(b^2x^2+2abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

```
[Out] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^2,x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int\frac{(a+b\,x)\,(d+e\,x)^m}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^2,x)
```

```
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(d+ex)^m}{(a+bx)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**2,x)
```

```
[Out] Integral((d + e*x)**m/(a + b*x)**3, x)
```

3.2151 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=395

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(d+ex)^{m+2}}{e^7(m+2)(a+bx)}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(}{e^7(m+3)(}$$

```
[Out] (-a*e+b*d)^6*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^7/(1+m)/(b*x+a)-6*b*(-a*e+b*
d)^5*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^7/(2+m)/(b*x+a)+15*b^2*(-a*e+b*d)^4*
(e*x+d)^(3+m)*((b*x+a)^2)^(1/2)/e^7/(3+m)/(b*x+a)-20*b^3*(-a*e+b*d)^3*(e*x+
d)^(4+m)*((b*x+a)^2)^(1/2)/e^7/(4+m)/(b*x+a)+15*b^4*(-a*e+b*d)^2*(e*x+d)^(5
+m)*((b*x+a)^2)^(1/2)/e^7/(5+m)/(b*x+a)-6*b^5*(-a*e+b*d)*(e*x+d)^(6+m)*((b*
x+a)^2)^(1/2)/e^7/(6+m)/(b*x+a)+b^6*(e*x+d)^(7+m)*((b*x+a)^2)^(1/2)/e^7/(7+
m)/(b*x+a)
```

Rubi [A] time = 0.22, antiderivative size = 395, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^6(d+ex)^{m+1}}{e^7(m+1)(a+bx)}-\frac{6b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^5(d+ex)^{m+2}}{e^7(m+2)(a+bx)}+\frac{15b^2\sqrt{a^2+2abx+b^2x^2}\,(}{e^7(m+3)(}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] ((b*d - a*e)^6*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(1 + m
)*(a + b*x)) - (6*b*(b*d - a*e)^5*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^7*(2 + m)*(a + b*x)) + (15*b^2*(b*d - a*e)^4*(d + e*x)^(3 + m)*S
qrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(3 + m)*(a + b*x)) - (20*b^3*(b*d - a*e)
^3*(d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^7*(4 + m)*(a + b*x))
 + (15*b^4*(b*d - a*e)^2*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(
e^7*(5 + m)*(a + b*x)) - (6*b^5*(b*d - a*e)*(d + e*x)^(6 + m)*Sqrt[a^2 + 2*
a*b*x + b^2*x^2])/(e^7*(6 + m)*(a + b*x)) + (b^6*(d + e*x)^(7 + m)*Sqrt[a^2
 + 2*a*b*x + b^2*x^2])/(e^7*(7 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{5/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\ \int (a+bx)\left(ab+b^2x\right)^5 (d+ex)^m\,dx}{b^4\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^6(d+ex)^m\,dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^6(d+ex)^m}{e^6} - \frac{6b(bd-ae)^5(d+ex)^{1+m}}{e^6} +\right.}{}$$

$$= \frac{(bd-ae)^6(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^7(1+m)(a+bx)} - \frac{6b(bd-ae)^5(d+}{e^7(2}$$

Mathematica [**A**]   time = 0.18, size = 193, normalized size = 0.49

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(-\frac{6b^5(d+ex)^5(bd-ae)}{m+6}+\frac{15b^4(d+ex)^4(bd-ae)^2}{m+5}-\frac{20b^3(d+ex)^3(bd-ae)^3}{m+4}+\frac{15b^2(d+ex)^2(bd-ae)^4}{m+3}-\frac{6b(d+ex)(bd}{m+2}\right.}{e^7(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*((b*d - a*e)^6/(1 + m) - (6*b*(b*d - a
*e)^5*(d + e*x))/(2 + m) + (15*b^2*(b*d - a*e)^4*(d + e*x)^2)/(3 + m) - (20
*b^3*(b*d - a*e)^3*(d + e*x)^3)/(4 + m) + (15*b^4*(b*d - a*e)^2*(d + e*x)^4
)/(5 + m) - (6*b^5*(b*d - a*e)*(d + e*x)^5)/(6 + m) + (b^6*(d + e*x)^6)/(7
+ m)))/(e^7*(a + b*x))
```

fricas [**B**]   time = 1.22, size = 2230, normalized size = 5.65

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] (a^6*d*e^6*m^6 + 720*b^6*d^7 - 5040*a*b^5*d^6*e + 15120*a^2*b^4*d^5*e^2 - 2
5200*a^3*b^3*d^4*e^3 + 25200*a^4*b^2*d^3*e^4 - 15120*a^5*b*d^2*e^5 + 5040*a
^6*d*e^6 + (b^6*e^7*m^6 + 21*b^6*e^7*m^5 + 175*b^6*e^7*m^4 + 735*b^6*e^7*m^
3 + 1624*b^6*e^7*m^2 + 1764*b^6*e^7*m + 720*b^6*e^7)*x^7 + (5040*a*b^5*e^7
+ (b^6*d*e^6 + 6*a*b^5*e^7)*m^6 + 3*(5*b^6*d*e^6 + 44*a*b^5*e^7)*m^5 + 5*(1
7*b^6*d*e^6 + 228*a*b^5*e^7)*m^4 + 15*(15*b^6*d*e^6 + 328*a*b^5*e^7)*m^3 +
2*(137*b^6*d*e^6 + 5547*a*b^5*e^7)*m^2 + 12*(10*b^6*d*e^6 + 1019*a*b^5*e^7)
*m)*x^6 - 3*(2*a^5*b*d^2*e^5 - 9*a^6*d*e^6)*m^5 + 3*(5040*a^2*b^4*e^7 + (2*
a*b^5*d*e^6 + 5*a^2*b^4*e^7)*m^6 - (2*b^6*d^2*e^5 - 34*a*b^5*d*e^6 - 115*a^
2*b^4*e^7)*m^5 - 5*(4*b^6*d^2*e^5 - 42*a*b^5*d*e^6 - 207*a^2*b^4*e^7)*m^4 -
 5*(14*b^6*d^2*e^5 - 118*a*b^5*d*e^6 - 925*a^2*b^4*e^7)*m^3 - 4*(25*b^6*d^2
*e^5 - 187*a*b^5*d*e^6 - 2680*a^2*b^4*e^7)*m^2 - 12*(4*b^6*d^2*e^5 - 28*a*b
^5*d*e^6 - 1005*a^2*b^4*e^7)*m)*x^5 + 5*(6*a^4*b^2*d^3*e^4 - 30*a^5*b*d^2*e
^5 + 59*a^6*d*e^6)*m^4 + 5*(5040*a^3*b^3*e^7 + (3*a^2*b^4*d*e^6 + 4*a^3*b^3
*e^7)*m^6 - 3*(2*a*b^5*d^2*e^5 - 19*a^2*b^4*d*e^6 - 32*a^3*b^3*e^7)*m^5 + (
6*b^6*d^3*e^4 - 78*a*b^5*d^2*e^5 + 393*a^2*b^4*d*e^6 + 904*a^3*b^3*e^7)*m^4
 + 3*(12*b^6*d^3*e^4 - 106*a*b^5*d^2*e^5 + 401*a^2*b^4*d*e^6 + 1408*a^3*b^3
*e^7)*m^3 + 2*(33*b^6*d^3*e^4 - 249*a*b^5*d^2*e^5 + 810*a^2*b^4*d*e^6 + 509
0*a^3*b^3*e^7)*m^2 + 36*(b^6*d^3*e^4 - 7*a*b^5*d^2*e^5 + 21*a^2*b^4*d*e^6 +
 328*a^3*b^3*e^7)*m)*x^4 - 15*(8*a^3*b^3*d^4*e^3 - 44*a^4*b^2*d^3*e^4 + 98*
a^5*b*d^2*e^5 - 111*a^6*d*e^6)*m^3 + 5*(5040*a^4*b^2*e^7 + (4*a^3*b^3*d*e^6
 + 3*a^4*b^2*e^7)*m^6 - 3*(4*a^2*b^4*d^2*e^5 - 28*a^3*b^3*d*e^6 - 25*a^4*b^
2*e^7)*m^5 + (24*a*b^5*d^3*e^4 - 192*a^2*b^4*d^2*e^5 + 652*a^3*b^3*d*e^6 +
741*a^4*b^2*e^7)*m^4 - 3*(8*b^6*d^4*e^3 - 80*a*b^5*d^3*e^4 + 332*a^2*b^4*d^
2*e^5 - 756*a^3*b^3*d*e^6 - 1219*a^4*b^2*e^7)*m^3 - 8*(9*b^6*d^4*e^3 - 69*a
*b^5*d^3*e^4 + 228*a^2*b^4*d^2*e^5 - 422*a^3*b^3*d*e^6 - 1167*a^4*b^2*e^7)*
m^2 - 12*(4*b^6*d^4*e^3 - 28*a*b^5*d^3*e^4 + 84*a^2*b^4*d^2*e^5 - 140*a^3*b
^3*d*e^6 - 949*a^4*b^2*e^7)*m)*x^3 + 2*(180*a^2*b^4*d^5*e^2 - 1080*a^3*b^3*
d^4*e^3 + 2685*a^4*b^2*d^3*e^4 - 3525*a^5*b*d^2*e^5 + 2552*a^6*d*e^6)*m^2 +
 3*(5040*a^5*b*e^7 + (5*a^4*b^2*d*e^6 + 2*a^5*b*e^7)*m^6 - (20*a^3*b^3*d^2*
e^5 - 115*a^4*b^2*d*e^6 - 52*a^5*b*e^7)*m^5 + 5*(12*a^2*b^4*d^3*e^4 - 76*a^
3*b^3*d^2*e^5 + 201*a^4*b^2*d*e^6 + 108*a^5*b*e^7)*m^4 - 5*(24*a*b^5*d^4*e^
3 - 168*a^2*b^4*d^3*e^4 + 500*a^3*b^3*d^2*e^5 - 817*a^4*b^2*d*e^6 - 568*a^5
*b*e^7)*m^3 + 2*(60*b^6*d^5*e^2 - 480*a*b^5*d^4*e^3 + 1650*a^2*b^4*d^3*e^4
- 3170*a^3*b^3*d^2*e^5 + 3695*a^4*b^2*d*e^6 + 3929*a^5*b*e^7)*m^2 + 12*(10*
b^6*d^5*e^2 - 70*a*b^5*d^4*e^3 + 210*a^2*b^4*d^3*e^4 - 350*a^3*b^3*d^2*e^5
+ 350*a^4*b^2*d*e^6 + 879*a^5*b*e^7)*m)*x^2 - 12*(60*a*b^5*d^6*e - 390*a^2*
b^4*d^5*e^2 + 1070*a^3*b^3*d^4*e^3 - 1595*a^4*b^2*d^3*e^4 + 1377*a^5*b*d^2*
e^5 - 669*a^6*d*e^6)*m + (5040*a^6*e^7 + (6*a^5*b*d*e^6 + a^6*e^7)*m^6 - 3*
(10*a^4*b^2*d^2*e^5 - 50*a^5*b*d*e^6 - 9*a^6*e^7)*m^5 + 5*(24*a^3*b^3*d^3*e
^4 - 132*a^4*b^2*d^2*e^5 + 294*a^5*b*d*e^6 + 59*a^6*e^7)*m^4 - 15*(24*a^2*b
^4*d^4*e^3 - 144*a^3*b^3*d^3*e^4 + 358*a^4*b^2*d^2*e^5 - 470*a^5*b*d*e^6 -
111*a^6*e^7)*m^3 + 4*(180*a*b^5*d^5*e^2 - 1170*a^2*b^4*d^4*e^3 + 3210*a^3*b
^3*d^3*e^4 - 4785*a^4*b^2*d^2*e^5 + 4131*a^5*b*d*e^6 + 1276*a^6*e^7)*m^2 -
36*(20*b^6*d^6*e - 140*a*b^5*d^5*e^2 + 420*a^2*b^4*d^4*e^3 - 700*a^3*b^3*d^
3*e^4 + 700*a^4*b^2*d^2*e^5 - 420*a^5*b*d*e^6 - 223*a^6*e^7)*m)*x)*(e*x + d
)^m/(e^7*m^7 + 28*e^7*m^6 + 322*e^7*m^5 + 1960*e^7*m^4 + 6769*e^7*m^3 + 131
32*e^7*m^2 + 13068*e^7*m + 5040*e^7)
```

giac [**B**] time = 0.66, size = 4885, normalized size = 12.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^6*m^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*b^6*d*m^6*x^6*e^6*s
gn(b*x + a) + 6*(x*e + d)^m*a*b^5*m^6*x^6*e^7*sgn(b*x + a) + 21*(x*e + d)^m
*b^6*m^5*x^7*e^7*sgn(b*x + a) + 6*(x*e + d)^m*a*b^5*d*m^6*x^5*e^6*sgn(b*x +
 a) + 15*(x*e + d)^m*b^6*d*m^5*x^6*e^6*sgn(b*x + a) - 6*(x*e + d)^m*b^6*d^2
*m^5*x^5*e^5*sgn(b*x + a) + 15*(x*e + d)^m*a^2*b^4*m^6*x^5*e^7*sgn(b*x + a)
 + 132*(x*e + d)^m*a*b^5*m^5*x^6*e^7*sgn(b*x + a) + 175*(x*e + d)^m*b^6*m^4
*x^7*e^7*sgn(b*x + a) + 15*(x*e + d)^m*a^2*b^4*d*m^6*x^4*e^6*sgn(b*x + a) +
 102*(x*e + d)^m*a*b^5*d*m^5*x^5*e^6*sgn(b*x + a) + 85*(x*e + d)^m*b^6*d*m^
4*x^6*e^6*sgn(b*x + a) - 30*(x*e + d)^m*a*b^5*d^2*m^5*x^4*e^5*sgn(b*x + a)
- 60*(x*e + d)^m*b^6*d^2*m^4*x^5*e^5*sgn(b*x + a) + 30*(x*e + d)^m*b^6*d^3*
m^4*x^4*e^4*sgn(b*x + a) + 20*(x*e + d)^m*a^3*b^3*m^6*x^4*e^7*sgn(b*x + a)
+ 345*(x*e + d)^m*a^2*b^4*m^5*x^5*e^7*sgn(b*x + a) + 1140*(x*e + d)^m*a*b^5
*m^4*x^6*e^7*sgn(b*x + a) + 735*(x*e + d)^m*b^6*m^3*x^7*e^7*sgn(b*x + a) +
20*(x*e + d)^m*a^3*b^3*d*m^6*x^3*e^6*sgn(b*x + a) + 285*(x*e + d)^m*a^2*b^4
*d*m^5*x^4*e^6*sgn(b*x + a) + 630*(x*e + d)^m*a*b^5*d*m^4*x^5*e^6*sgn(b*x +
 a) + 225*(x*e + d)^m*b^6*d*m^3*x^6*e^6*sgn(b*x + a) - 60*(x*e + d)^m*a^2*b
^4*d^2*m^5*x^3*e^5*sgn(b*x + a) - 390*(x*e + d)^m*a*b^5*d^2*m^4*x^4*e^5*sgn
(b*x + a) - 210*(x*e + d)^m*b^6*d^2*m^3*x^5*e^5*sgn(b*x + a) + 120*(x*e + d
)^m*a*b^5*d^3*m^4*x^3*e^4*sgn(b*x + a) + 180*(x*e + d)^m*b^6*d^3*m^3*x^4*e^
4*sgn(b*x + a) - 120*(x*e + d)^m*b^6*d^4*m^3*x^3*e^3*sgn(b*x + a) + 15*(x*e
 + d)^m*a^4*b^2*m^6*x^3*e^7*sgn(b*x + a) + 480*(x*e + d)^m*a^3*b^3*m^5*x^4*
e^7*sgn(b*x + a) + 3105*(x*e + d)^m*a^2*b^4*m^4*x^5*e^7*sgn(b*x + a) + 4920
*(x*e + d)^m*a*b^5*m^3*x^6*e^7*sgn(b*x + a) + 1624*(x*e + d)^m*b^6*m^2*x^7*
e^7*sgn(b*x + a) + 15*(x*e + d)^m*a^4*b^2*d*m^6*x^2*e^6*sgn(b*x + a) + 420*
```

(x*e + d)^m*a^3*b^3*d*m^5*x^3*e^6*sgn(b*x + a) + 1965*(x*e + d)^m*a^2*b^4*d
*m^4*x^4*e^6*sgn(b*x + a) + 1770*(x*e + d)^m*a*b^5*d*m^3*x^5*e^6*sgn(b*x +
a) + 274*(x*e + d)^m*b^6*d*m^2*x^6*e^6*sgn(b*x + a) - 60*(x*e + d)^m*a^3*b^
3*d^2*m^5*x^2*e^5*sgn(b*x + a) - 960*(x*e + d)^m*a^2*b^4*d^2*m^4*x^3*e^5*sg
n(b*x + a) - 1590*(x*e + d)^m*a*b^5*d^2*m^3*x^4*e^5*sgn(b*x + a) - 300*(x*e
 + d)^m*b^6*d^2*m^2*x^5*e^5*sgn(b*x + a) + 180*(x*e + d)^m*a^2*b^4*d^3*m^4*
x^2*e^4*sgn(b*x + a) + 1200*(x*e + d)^m*a*b^5*d^3*m^3*x^3*e^4*sgn(b*x + a)
+ 330*(x*e + d)^m*b^6*d^3*m^2*x^4*e^4*sgn(b*x + a) - 360*(x*e + d)^m*a*b^5*
d^4*m^3*x^2*e^3*sgn(b*x + a) - 360*(x*e + d)^m*b^6*d^4*m^2*x^3*e^3*sgn(b*x
+ a) + 360*(x*e + d)^m*b^6*d^5*m^2*x^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*a^5
*b*m^6*x^2*e^7*sgn(b*x + a) + 375*(x*e + d)^m*a^4*b^2*m^5*x^3*e^7*sgn(b*x +
 a) + 4520*(x*e + d)^m*a^3*b^3*m^4*x^4*e^7*sgn(b*x + a) + 13875*(x*e + d)^m
*a^2*b^4*m^3*x^5*e^7*sgn(b*x + a) + 11094*(x*e + d)^m*a*b^5*m^2*x^6*e^7*sgn
(b*x + a) + 1764*(x*e + d)^m*b^6*m*x^7*e^7*sgn(b*x + a) + 6*(x*e + d)^m*a^5
*b*d*m^6*x*e^6*sgn(b*x + a) + 345*(x*e + d)^m*a^4*b^2*d*m^5*x^2*e^6*sgn(b*x
 + a) + 3260*(x*e + d)^m*a^3*b^3*d*m^4*x^3*e^6*sgn(b*x + a) + 6015*(x*e + d
)^m*a^2*b^4*d*m^3*x^4*e^6*sgn(b*x + a) + 2244*(x*e + d)^m*a*b^5*d*m^2*x^5*e
^6*sgn(b*x + a) + 120*(x*e + d)^m*b^6*d*m*x^6*e^6*sgn(b*x + a) - 30*(x*e +
d)^m*a^4*b^2*d^2*m^5*x*e^5*sgn(b*x + a) - 1140*(x*e + d)^m*a^3*b^3*d^2*m^4*
x^2*e^5*sgn(b*x + a) - 4980*(x*e + d)^m*a^2*b^4*d^2*m^3*x^3*e^5*sgn(b*x + a
) - 2490*(x*e + d)^m*a*b^5*d^2*m^2*x^4*e^5*sgn(b*x + a) - 144*(x*e + d)^m*b
^6*d^2*m*x^5*e^5*sgn(b*x + a) + 120*(x*e + d)^m*a^3*b^3*d^3*m^4*x*e^4*sgn(b
x + a) + 2520(x*e + d)^m*a^2*b^4*d^3*m^3*x^2*e^4*sgn(b*x + a) + 2760*(x*e
 + d)^m*a*b^5*d^3*m^2*x^3*e^4*sgn(b*x + a) + 180*(x*e + d)^m*b^6*d^3*m*x^4*
e^4*sgn(b*x + a) - 360*(x*e + d)^m*a^2*b^4*d^4*m^3*x*e^3*sgn(b*x + a) - 288
0*(x*e + d)^m*a*b^5*d^4*m^2*x^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*b^6*d^4*
m*x^3*e^3*sgn(b*x + a) + 720*(x*e + d)^m*a*b^5*d^5*m^2*x*e^2*sgn(b*x + a) +
 360*(x*e + d)^m*b^6*d^5*m*x^2*e^2*sgn(b*x + a) - 720*(x*e + d)^m*b^6*d^6*m
*x*e*sgn(b*x + a) + (x*e + d)^m*a^6*m^6*x*e^7*sgn(b*x + a) + 156*(x*e + d)^
m*a^5*b*m^5*x^2*e^7*sgn(b*x + a) + 3705*(x*e + d)^m*a^4*b^2*m^4*x^3*e^7*sgn
(b*x + a) + 21120*(x*e + d)^m*a^3*b^3*m^3*x^4*e^7*sgn(b*x + a) + 32160*(x*e
 + d)^m*a^2*b^4*m^2*x^5*e^7*sgn(b*x + a) + 12228*(x*e + d)^m*a*b^5*m*x^6*e^
7*sgn(b*x + a) + 720*(x*e + d)^m*b^6*x^7*e^7*sgn(b*x + a) + (x*e + d)^m*a^6
*d*m^6*e^6*sgn(b*x + a) + 150*(x*e + d)^m*a^5*b*d*m^5*x*e^6*sgn(b*x + a) +
3015*(x*e + d)^m*a^4*b^2*d*m^4*x^2*e^6*sgn(b*x + a) + 11340*(x*e + d)^m*a^3
*b^3*d*m^3*x^3*e^6*sgn(b*x + a) + 8100*(x*e + d)^m*a^2*b^4*d*m^2*x^4*e^6*sg
n(b*x + a) + 1008*(x*e + d)^m*a*b^5*d*m*x^5*e^6*sgn(b*x + a) - 6*(x*e + d)^
m*a^5*b*d^2*m^5*e^5*sgn(b*x + a) - 660*(x*e + d)^m*a^4*b^2*d^2*m^4*x*e^5*sg
n(b*x + a) - 7500*(x*e + d)^m*a^3*b^3*d^2*m^3*x^2*e^5*sgn(b*x + a) - 9120*(
x*e + d)^m*a^2*b^4*d^2*m^2*x^3*e^5*sgn(b*x + a) - 1260*(x*e + d)^m*a*b^5*d^
2*m*x^4*e^5*sgn(b*x + a) + 30*(x*e + d)^m*a^4*b^2*d^3*m^4*e^4*sgn(b*x + a)
+ 2160*(x*e + d)^m*a^3*b^3*d^3*m^3*x*e^4*sgn(b*x + a) + 9900*(x*e + d)^m*a^
2*b^4*d^3*m^2*x^2*e^4*sgn(b*x + a) + 1680*(x*e + d)^m*a*b^5*d^3*m*x^3*e^4*s
gn(b*x + a) - 120*(x*e + d)^m*a^3*b^3*d^4*m^3*e^3*sgn(b*x + a) - 4680*(x*e
+ d)^m*a^2*b^4*d^4*m^2*x*e^3*sgn(b*x + a) - 2520*(x*e + d)^m*a*b^5*d^4*m*x^
2*e^3*sgn(b*x + a) + 360*(x*e + d)^m*a^2*b^4*d^5*m^2*e^2*sgn(b*x + a) + 504
0*(x*e + d)^m*a*b^5*d^5*m*x*e^2*sgn(b*x + a) - 720*(x*e + d)^m*a*b^5*d^6*m*
e*sgn(b*x + a) + 720*(x*e + d)^m*b^6*d^7*sgn(b*x + a) + 27*(x*e + d)^m*a^6*
m^5*x*e^7*sgn(b*x + a) + 1620*(x*e + d)^m*a^5*b*m^4*x^2*e^7*sgn(b*x + a) +
18285*(x*e + d)^m*a^4*b^2*m^3*x^3*e^7*sgn(b*x + a) + 50900*(x*e + d)^m*a^3*
b^3*m^2*x^4*e^7*sgn(b*x + a) + 36180*(x*e + d)^m*a^2*b^4*m*x^5*e^7*sgn(b*x
+ a) + 5040*(x*e + d)^m*a*b^5*x^6*e^7*sgn(b*x + a) + 27*(x*e + d)^m*a^6*d*m
^5*e^6*sgn(b*x + a) + 1470*(x*e + d)^m*a^5*b*d*m^4*x*e^6*sgn(b*x + a) + 122
55*(x*e + d)^m*a^4*b^2*d*m^3*x^2*e^6*sgn(b*x + a) + 16880*(x*e + d)^m*a^3*b
^3*d*m^2*x^3*e^6*sgn(b*x + a) + 3780*(x*e + d)^m*a^2*b^4*d*m*x^4*e^6*sgn(b*
x + a) - 150*(x*e + d)^m*a^5*b*d^2*m^4*e^5*sgn(b*x + a) - 5370*(x*e + d)^m*
a^4*b^2*d^2*m^3*x*e^5*sgn(b*x + a) - 19020*(x*e + d)^m*a^3*b^3*d^2*m^2*x^2*
e^5*sgn(b*x + a) - 5040*(x*e + d)^m*a^2*b^4*d^2*m*x^3*e^5*sgn(b*x + a) + 66
0*(x*e + d)^m*a^4*b^2*d^3*m^3*e^4*sgn(b*x + a) + 12840*(x*e + d)^m*a^3*b^3*

```
d^3*m^2*x*e^4*sgn(b*x + a) + 7560*(x*e + d)^m*a^2*b^4*d^3*m*x^2*e^4*sgn(b*x
 + a) - 2160*(x*e + d)^m*a^3*b^3*d^4*m^2*e^3*sgn(b*x + a) - 15120*(x*e + d)
^m*a^2*b^4*d^4*m*x*e^3*sgn(b*x + a) + 4680*(x*e + d)^m*a^2*b^4*d^5*m*e^2*sg
n(b*x + a) - 5040*(x*e + d)^m*a*b^5*d^6*e*sgn(b*x + a) + 295*(x*e + d)^m*a^
6*m^4*x*e^7*sgn(b*x + a) + 8520*(x*e + d)^m*a^5*b*m^3*x^2*e^7*sgn(b*x + a)
+ 46680*(x*e + d)^m*a^4*b^2*m^2*x^3*e^7*sgn(b*x + a) + 59040*(x*e + d)^m*a^
3*b^3*m*x^4*e^7*sgn(b*x + a) + 15120*(x*e + d)^m*a^2*b^4*x^5*e^7*sgn(b*x +
a) + 295*(x*e + d)^m*a^6*d*m^4*e^6*sgn(b*x + a) + 7050*(x*e + d)^m*a^5*b*d*
m^3*x*e^6*sgn(b*x + a) + 22170*(x*e + d)^m*a^4*b^2*d*m^2*x^2*e^6*sgn(b*x +
a) + 8400*(x*e + d)^m*a^3*b^3*d*m*x^3*e^6*sgn(b*x + a) - 1470*(x*e + d)^m*a
^5*b*d^2*m^3*e^5*sgn(b*x + a) - 19140*(x*e + d)^m*a^4*b^2*d^2*m^2*x*e^5*sgn
(b*x + a) - 12600*(x*e + d)^m*a^3*b^3*d^2*m*x^2*e^5*sgn(b*x + a) + 5370*(x*
e + d)^m*a^4*b^2*d^3*m^2*e^4*sgn(b*x + a) + 25200*(x*e + d)^m*a^3*b^3*d^3*m
*x*e^4*sgn(b*x + a) - 12840*(x*e + d)^m*a^3*b^3*d^4*m*e^3*sgn(b*x + a) + 15
120*(x*e + d)^m*a^2*b^4*d^5*e^2*sgn(b*x + a) + 1665*(x*e + d)^m*a^6*m^3*x*e
^7*sgn(b*x + a) + 23574*(x*e + d)^m*a^5*b*m^2*x^2*e^7*sgn(b*x + a) + 56940*
(x*e + d)^m*a^4*b^2*m*x^3*e^7*sgn(b*x + a) + 25200*(x*e + d)^m*a^3*b^3*x^4*
e^7*sgn(b*x + a) + 1665*(x*e + d)^m*a^6*d*m^3*e^6*sgn(b*x + a) + 16524*(x*e
 + d)^m*a^5*b*d*m^2*x*e^6*sgn(b*x + a) + 12600*(x*e + d)^m*a^4*b^2*d*m*x^2*
e^6*sgn(b*x + a) - 7050*(x*e + d)^m*a^5*b*d^2*m^2*e^5*sgn(b*x + a) - 25200*
(x*e + d)^m*a^4*b^2*d^2*m*x*e^5*sgn(b*x + a) + 19140*(x*e + d)^m*a^4*b^2*d^
3*m*e^4*sgn(b*x + a) - 25200*(x*e + d)^m*a^3*b^3*d^4*e^3*sgn(b*x + a) + 510
4*(x*e + d)^m*a^6*m^2*x*e^7*sgn(b*x + a) + 31644*(x*e + d)^m*a^5*b*m*x^2*e^
7*sgn(b*x + a) + 25200*(x*e + d)^m*a^4*b^2*x^3*e^7*sgn(b*x + a) + 5104*(x*e
 + d)^m*a^6*d*m^2*e^6*sgn(b*x + a) + 15120*(x*e + d)^m*a^5*b*d*m*x*e^6*sgn(
b*x + a) - 16524*(x*e + d)^m*a^5*b*d^2*m*e^5*sgn(b*x + a) + 25200*(x*e + d)
^m*a^4*b^2*d^3*e^4*sgn(b*x + a) + 8028*(x*e + d)^m*a^6*m*x*e^7*sgn(b*x + a)
 + 15120*(x*e + d)^m*a^5*b*x^2*e^7*sgn(b*x + a) + 8028*(x*e + d)^m*a^6*d*m*
e^6*sgn(b*x + a) - 15120*(x*e + d)^m*a^5*b*d^2*e^5*sgn(b*x + a) + 5040*(x*e
 + d)^m*a^6*x*e^7*sgn(b*x + a) + 5040*(x*e + d)^m*a^6*d*e^6*sgn(b*x + a))/(
m^7*e^7 + 28*m^6*e^7 + 322*m^5*e^7 + 1960*m^4*e^7 + 6769*m^3*e^7 + 13132*m^
2*e^7 + 13068*m*e^7 + 5040*e^7)
```

maple [B] time = 0.07, size = 2173, normalized size = 5.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^6*e^6*m^6*x^6+6*a*b^5*e^6*m^6*x^5+21*b^6*e^6*m^5*x^6+15*a^
2*b^4*e^6*m^6*x^4+132*a*b^5*e^6*m^5*x^5-6*b^6*d*e^5*m^5*x^5+175*b^6*e^6*m^4
*x^6+20*a^3*b^3*e^6*m^6*x^3+345*a^2*b^4*e^6*m^5*x^4-30*a*b^5*d*e^5*m^5*x^4+
1140*a*b^5*e^6*m^4*x^5-90*b^6*d*e^5*m^4*x^5+735*b^6*e^6*m^3*x^6+15*a^4*b^2*
e^6*m^6*x^2+480*a^3*b^3*e^6*m^5*x^3-60*a^2*b^4*d*e^5*m^5*x^3+3105*a^2*b^4*e
^6*m^4*x^4-510*a*b^5*d*e^5*m^4*x^4+4920*a*b^5*e^6*m^3*x^5+30*b^6*d^2*e^4*m^
4*x^4-510*b^6*d*e^5*m^3*x^5+1624*b^6*e^6*m^2*x^6+6*a^5*b*e^6*m^6*x+375*a^4*
b^2*e^6*m^5*x^2-60*a^3*b^3*d*e^5*m^5*x^2+4520*a^3*b^3*e^6*m^4*x^3-1140*a^2*
b^4*d*e^5*m^4*x^3+13875*a^2*b^4*e^6*m^3*x^4+120*a*b^5*d^2*e^4*m^4*x^3-3150*
a*b^5*d*e^5*m^3*x^4+11094*a*b^5*e^6*m^2*x^5+300*b^6*d^2*e^4*m^3*x^4-1350*b^
6*d*e^5*m^2*x^5+1764*b^6*e^6*m*x^6+a^6*e^6*m^6+156*a^5*b*e^6*m^5*x-30*a^4*b
^2*d*e^5*m^5*x+3705*a^4*b^2*e^6*m^4*x^2-1260*a^3*b^3*d*e^5*m^4*x^2+21120*a^
3*b^3*e^6*m^3*x^3+180*a^2*b^4*d^2*e^4*m^4*x^2-7860*a^2*b^4*d*e^5*m^3*x^3+32
160*a^2*b^4*e^6*m^2*x^4+1560*a*b^5*d^2*e^4*m^3*x^3-8850*a*b^5*d*e^5*m^2*x^4
+12228*a*b^5*e^6*m*x^5-120*b^6*d^3*e^3*m^3*x^3+1050*b^6*d^2*e^4*m^2*x^4-164
4*b^6*d*e^5*m*x^5+720*b^6*e^6*x^6+27*a^6*e^6*m^5-6*a^5*b*d*e^5*m^5+1620*a^5
*b*e^6*m^4*x-690*a^4*b^2*d*e^5*m^4*x+18285*a^4*b^2*e^6*m^3*x^2+120*a^3*b^3*
d^2*e^4*m^4*x-9780*a^3*b^3*d*e^5*m^3*x^2+50900*a^3*b^3*e^6*m^2*x^3+2880*a^2
*b^4*d^2*e^4*m^3*x^2-24060*a^2*b^4*d*e^5*m^2*x^3+36180*a^2*b^4*e^6*m*x^4-36
0*a*b^5*d^3*e^3*m^3*x^2+6360*a*b^5*d^2*e^4*m^2*x^3-11220*a*b^5*d*e^5*m*x^4+
5040*a*b^5*e^6*x^5-720*b^6*d^3*e^3*m^2*x^3+1500*b^6*d^2*e^4*m*x^4-720*b^6*d
*e^5*x^5+295*a^6*e^6*m^4-150*a^5*b*d*e^5*m^4+8520*a^5*b*e^6*m^3*x+30*a^4*b^
2*d^2*e^4*m^4-6030*a^4*b^2*d*e^5*m^3*x+46680*a^4*b^2*e^6*m^2*x^2+2280*a^3*b
^3*d^2*e^4*m^3*x-34020*a^3*b^3*d*e^5*m^2*x^2+59040*a^3*b^3*e^6*m*x^3-360*a^
2*b^4*d^3*e^3*m^3*x+14940*a^2*b^4*d^2*e^4*m^2*x^2-32400*a^2*b^4*d*e^5*m*x^3
+15120*a^2*b^4*e^6*x^4-3600*a*b^5*d^3*e^3*m^2*x^2+9960*a*b^5*d^2*e^4*m*x^3-
5040*a*b^5*d*e^5*x^4+360*b^6*d^4*e^2*m^2*x^2-1320*b^6*d^3*e^3*m*x^3+720*b^6
*d^2*e^4*x^4+1665*a^6*e^6*m^3-1470*a^5*b*d*e^5*m^3+23574*a^5*b*e^6*m^2*x+66
0*a^4*b^2*d^2*e^4*m^3-24510*a^4*b^2*d*e^5*m^2*x+56940*a^4*b^2*e^6*m*x^2-120
*a^3*b^3*d^3*e^3*m^3+15000*a^3*b^3*d^2*e^4*m^2*x-50640*a^3*b^3*d*e^5*m*x^2+
25200*a^3*b^3*e^6*x^3-5040*a^2*b^4*d^3*e^3*m^2*x+27360*a^2*b^4*d^2*e^4*m*x^
2-15120*a^2*b^4*d*e^5*x^3+720*a*b^5*d^4*e^2*m^2*x-8280*a*b^5*d^3*e^3*m*x^2+
5040*a*b^5*d^2*e^4*x^3+1080*b^6*d^4*e^2*m*x^2-720*b^6*d^3*e^3*x^3+5104*a^6*
e^6*m^2-7050*a^5*b*d*e^5*m^2+31644*a^5*b*e^6*m*x+5370*a^4*b^2*d^2*e^4*m^2-4
4340*a^4*b^2*d*e^5*m*x+25200*a^4*b^2*e^6*x^2-2160*a^3*b^3*d^3*e^3*m^2+38040
*a^3*b^3*d^2*e^4*m*x-25200*a^3*b^3*d*e^5*x^2+360*a^2*b^4*d^4*e^2*m^2-19800*
a^2*b^4*d^3*e^3*m*x+15120*a^2*b^4*d^2*e^4*x^2+5760*a*b^5*d^4*e^2*m*x-5040*a
*b^5*d^3*e^3*x^2-720*b^6*d^5*e*m*x+720*b^6*d^4*e^2*x^2+8028*a^6*e^6*m-16524
*a^5*b*d*e^5*m+15120*a^5*b*e^6*x+19140*a^4*b^2*d^2*e^4*m-25200*a^4*b^2*d*e^
5*x-12840*a^3*b^3*d^3*e^3*m+25200*a^3*b^3*d^2*e^4*x+4680*a^2*b^4*d^4*e^2*m-
15120*a^2*b^4*d^3*e^3*x-720*a*b^5*d^5*e*m+5040*a*b^5*d^4*e^2*x-720*b^6*d^5*
e*x+5040*a^6*e^6-15120*a^5*b*d*e^5+25200*a^4*b^2*d^2*e^4-25200*a^3*b^3*d^3*
e^3+15120*a^2*b^4*d^4*e^2-5040*a*b^5*d^5*e+720*b^6*d^6)*((b*x+a)^2)^(5/2)/(
b*x+a)^5/e^7/(m^7+28*m^6+322*m^5+1960*m^4+6769*m^3+13132*m^2+13068*m+5040)
```

maxima [B] time = 0.85, size = 1864, normalized size = 4.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^5*e^6*x^6 - 60*(m^2 + 11
*m + 30)*a^2*b^3*d^4*e^2 + 20*(m^3 + 15*m^2 + 74*m + 120)*a^3*b^2*d^3*e^3 -
 5*(m^4 + 18*m^3 + 119*m^2 + 342*m + 360)*a^4*b*d^2*e^4 + (m^5 + 20*m^4 + 1
55*m^3 + 580*m^2 + 1044*m + 720)*a^5*d*e^5 + 120*a*b^4*d^5*e*(m + 6) - 120*
b^5*d^6 + ((m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d*e^5 + 5*(m^5 + 16*
m^4 + 95*m^3 + 260*m^2 + 324*m + 144)*a*b^4*e^6)*x^5 - 5*((m^4 + 6*m^3 + 11
*m^2 + 6*m)*b^5*d^2*e^4 - (m^5 + 12*m^4 + 47*m^3 + 72*m^2 + 36*m)*a*b^4*d*e
^5 - 2*(m^5 + 17*m^4 + 107*m^3 + 307*m^2 + 396*m + 180)*a^2*b^3*e^6)*x^4 +
10*(2*(m^3 + 3*m^2 + 2*m)*b^5*d^3*e^3 - 2*(m^4 + 9*m^3 + 20*m^2 + 12*m)*a*b
^4*d^2*e^4 + (m^5 + 14*m^4 + 65*m^3 + 112*m^2 + 60*m)*a^2*b^3*d*e^5 + (m^5
+ 18*m^4 + 121*m^3 + 372*m^2 + 508*m + 240)*a^3*b^2*e^6)*x^3 - 5*(12*(m^2 +
 m)*b^5*d^4*e^2 - 12*(m^3 + 7*m^2 + 6*m)*a*b^4*d^3*e^3 + 6*(m^4 + 12*m^3 +
41*m^2 + 30*m)*a^2*b^3*d^2*e^4 - 2*(m^5 + 16*m^4 + 89*m^3 + 194*m^2 + 120*m
)*a^3*b^2*d*e^5 - (m^5 + 19*m^4 + 137*m^3 + 461*m^2 + 702*m + 360)*a^4*b*e^
6)*x^2 - (120*(m^2 + 6*m)*a*b^4*d^4*e^2 - 60*(m^3 + 11*m^2 + 30*m)*a^2*b^3*
d^3*e^3 + 20*(m^4 + 15*m^3 + 74*m^2 + 120*m)*a^3*b^2*d^2*e^4 - 5*(m^5 + 18*
m^4 + 119*m^3 + 342*m^2 + 360*m)*a^4*b*d*e^5 - (m^5 + 20*m^4 + 155*m^3 + 58
0*m^2 + 1044*m + 720)*a^5*e^6 - 120*b^5*d^5*e*m)*x)*(e*x + d)^m*a/((m^6 + 2
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + ((m^6 + 21*m^5
+ 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^5*e^7*x^7 + 240*(m^2 + 13*
m + 42)*a^2*b^3*d^5*e^2 - 60*(m^3 + 18*m^2 + 107*m + 210)*a^3*b^2*d^4*e^3 +
 10*(m^4 + 22*m^3 + 179*m^2 + 638*m + 840)*a^4*b*d^3*e^4 - (m^5 + 25*m^4 +
245*m^3 + 1175*m^2 + 2754*m + 2520)*a^5*d^2*e^5 - 600*a*b^4*d^6*e*(m + 7) +
 720*b^5*d^7 + ((m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*b^5*d*e
^6 + 5*(m^6 + 22*m^5 + 190*m^4 + 820*m^3 + 1849*m^2 + 2038*m + 840)*a*b^4*e
^7)*x^6 - (6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*b^5*d^2*e^5 - 5*(m^6 +
 17*m^5 + 105*m^4 + 295*m^3 + 374*m^2 + 168*m)*a*b^4*d*e^6 - 10*(m^6 + 23*m
^5 + 207*m^4 + 925*m^3 + 2144*m^2 + 2412*m + 1008)*a^2*b^3*e^7)*x^5 + 5*(6*
(m^4 + 6*m^3 + 11*m^2 + 6*m)*b^5*d^3*e^4 - 5*(m^5 + 13*m^4 + 53*m^3 + 83*m^
2 + 42*m)*a*b^4*d^2*e^5 + 2*(m^6 + 19*m^5 + 131*m^4 + 401*m^3 + 540*m^2 + 2
52*m)*a^2*b^3*d*e^6 + 2*(m^6 + 24*m^5 + 226*m^4 + 1056*m^3 + 2545*m^2 + 295
2*m + 1260)*a^3*b^2*e^7)*x^4 - 5*(24*(m^3 + 3*m^2 + 2*m)*b^5*d^4*e^3 - 20*(
m^4 + 10*m^3 + 23*m^2 + 14*m)*a*b^4*d^3*e^4 + 8*(m^5 + 16*m^4 + 83*m^3 + 15
2*m^2 + 84*m)*a^2*b^3*d^2*e^5 - 2*(m^6 + 21*m^5 + 163*m^4 + 567*m^3 + 844*m
^2 + 420*m)*a^3*b^2*d*e^6 - (m^6 + 25*m^5 + 247*m^4 + 1219*m^3 + 3112*m^2 +
 3796*m + 1680)*a^4*b*e^7)*x^3 + (360*(m^2 + m)*b^5*d^5*e^2 - 300*(m^3 + 8*
m^2 + 7*m)*a*b^4*d^4*e^3 + 120*(m^4 + 14*m^3 + 55*m^2 + 42*m)*a^2*b^3*d^3*e
^4 - 30*(m^5 + 19*m^4 + 125*m^3 + 317*m^2 + 210*m)*a^3*b^2*d^2*e^5 + 5*(m^6
 + 23*m^5 + 201*m^4 + 817*m^3 + 1478*m^2 + 840*m)*a^4*b*d*e^6 + (m^6 + 26*m
^5 + 270*m^4 + 1420*m^3 + 3929*m^2 + 5274*m + 2520)*a^5*e^7)*x^2 + (600*(m^
2 + 7*m)*a*b^4*d^5*e^2 - 240*(m^3 + 13*m^2 + 42*m)*a^2*b^3*d^4*e^3 + 60*(m^
4 + 18*m^3 + 107*m^2 + 210*m)*a^3*b^2*d^3*e^4 - 10*(m^5 + 22*m^4 + 179*m^3
+ 638*m^2 + 840*m)*a^4*b*d^2*e^5 + (m^6 + 25*m^5 + 245*m^4 + 1175*m^3 + 275
4*m^2 + 2520*m)*a^5*d*e^6 - 720*b^5*d^6*e*m)*x)*(e*x + d)^m*b/((m^7 + 28*m^
6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (a+b\,x)\,(d+e\,x)^m\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2152 $\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=277

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+2}}{e^5(m+2)(a+bx)}+\frac{6b^2\sqrt{a^2+2abx+b^2x}}{e^5(m+3}$$

```
[Out] (-a*e+b*d)^4*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^5/(1+m)/(b*x+a)-4*b*(-a*e+b*
d)^3*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^5/(2+m)/(b*x+a)+6*b^2*(-a*e+b*d)^2*(
e*x+d)^(3+m)*((b*x+a)^2)^(1/2)/e^5/(3+m)/(b*x+a)-4*b^3*(-a*e+b*d)*(e*x+d)^(
4+m)*((b*x+a)^2)^(1/2)/e^5/(4+m)/(b*x+a)+b^4*(e*x+d)^(5+m)*((b*x+a)^2)^(1/2
)/e^5/(5+m)/(b*x+a)
```

Rubi [A] time = 0.15, antiderivative size = 277, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4(d+ex)^{m+1}}{e^5(m+1)(a+bx)}-\frac{4b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^3(d+ex)^{m+2}}{e^5(m+2)(a+bx)}+\frac{6b^2\sqrt{a^2+2abx+b^2x}}{e^5(m+3}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((b*d - a*e)^4*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(1 + m
)*(a + b*x)) - (4*b*(b*d - a*e)^3*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^
2*x^2])/(e^5*(2 + m)*(a + b*x)) + (6*b^2*(b*d - a*e)^2*(d + e*x)^(3 + m)*Sq
rt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(3 + m)*(a + b*x)) - (4*b^3*(b*d - a*e)*(
d + e*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(4 + m)*(a + b*x)) + (
b^4*(d + e*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^5*(5 + m)*(a + b*x)
)
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^m \left(a^2+2abx+b^2x^2\right)^{3/2} dx = \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)^3 (d+ex)^m\, dx}{b^2\left(ab+b^2x\right)}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^4(d+ex)^m\, dx}{ab+b^2x}$$

$$= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(-bd+ae)^4(d+ex)^m}{e^4} - \frac{4b(bd-ae)^3(d+ex)^{1+m}}{e^4} + 6b}{ab+b^2x}$$

$$= \frac{(bd-ae)^4(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^5(1+m)(a+bx)} - \frac{4b(bd-ae)^3(d+ex)}{e^5(2+}$$

Mathematica [A] time = 0.16, size = 139, normalized size = 0.50

$$\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(-\frac{4b^3(d+ex)^3(bd-ae)}{m+4}+\frac{6b^2(d+ex)^2(bd-ae)^2}{m+3}-\frac{4b(d+ex)(bd-ae)^3}{m+2}+\frac{(bd-ae)^4}{m+1}+\frac{b^4(d+ex)^4}{m+5}\right)}{e^5(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*((b*d - a*e)^4/(1 + m) - (4*b*(b*d - a
*e)^3*(d + e*x))/(2 + m) + (6*b^2*(b*d - a*e)^2*(d + e*x)^2)/(3 + m) - (4*b
^3*(b*d - a*e)*(d + e*x)^3)/(4 + m) + (b^4*(d + e*x)^4)/(5 + m)))/(e^5*(a +
 b*x))
```

fricas [B] time = 1.19, size = 901, normalized size = 3.25

$$\frac{\left(a^4de^4m^4 + 24\,b^4d^5 - 120\,ab^3d^4e + 240\,a^2b^2d^3e^2 - 240\,a^3bd^2e^3 + 120\,a^4de^4 + \left(b^4e^5m^4 + 10\,b^4e^5m^3 + 35\,b^4e^5m^2 +\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] (a^4*d*e^4*m^4 + 24*b^4*d^5 - 120*a*b^3*d^4*e + 240*a^2*b^2*d^3*e^2 - 240*a
^3*b*d^2*e^3 + 120*a^4*d*e^4 + (b^4*e^5*m^4 + 10*b^4*e^5*m^3 + 35*b^4*e^5*m
^2 + 50*b^4*e^5*m + 24*b^4*e^5)*x^5 + (120*a*b^3*e^5 + (b^4*d*e^4 + 4*a*b^3
*e^5)*m^4 + 2*(3*b^4*d*e^4 + 22*a*b^3*e^5)*m^3 + (11*b^4*d*e^4 + 164*a*b^3*
e^5)*m^2 + 2*(3*b^4*d*e^4 + 122*a*b^3*e^5)*m)*x^4 - 2*(2*a^3*b*d^2*e^3 - 7*
a^4*d*e^4)*m^3 + 2*(120*a^2*b^2*e^5 + (2*a*b^3*d*e^4 + 3*a^2*b^2*e^5)*m^4 -
 2*(b^4*d^2*e^3 - 8*a*b^3*d*e^4 - 18*a^2*b^2*e^5)*m^3 - (6*b^4*d^2*e^3 - 34
*a*b^3*d*e^4 - 147*a^2*b^2*e^5)*m^2 - 2*(2*b^4*d^2*e^3 - 10*a*b^3*d*e^4 - 1
17*a^2*b^2*e^5)*m)*x^3 + (12*a^2*b^2*d^3*e^2 - 48*a^3*b*d^2*e^3 + 71*a^4*d*
e^4)*m^2 + 2*(120*a^3*b*e^5 + (3*a^2*b^2*d*e^4 + 2*a^3*b*e^5)*m^4 - 2*(3*a*
b^3*d^2*e^3 - 15*a^2*b^2*d*e^4 - 13*a^3*b*e^5)*m^3 + (6*b^4*d^3*e^2 - 36*a*
b^3*d^2*e^3 + 87*a^2*b^2*d*e^4 + 118*a^3*b*e^5)*m^2 + 2*(3*b^4*d^3*e^2 - 15
*a*b^3*d^2*e^3 + 30*a^2*b^2*d*e^4 + 107*a^3*b*e^5)*m)*x^2 - 2*(12*a*b^3*d^4
*e - 54*a^2*b^2*d^3*e^2 + 94*a^3*b*d^2*e^3 - 77*a^4*d*e^4)*m + (120*a^4*e^5
 + (4*a^3*b*d*e^4 + a^4*e^5)*m^4 - 2*(6*a^2*b^2*d^2*e^3 - 24*a^3*b*d*e^4 -
7*a^4*e^5)*m^3 + (24*a*b^3*d^3*e^2 - 108*a^2*b^2*d^2*e^3 + 188*a^3*b*d*e^4
+ 71*a^4*e^5)*m^2 - 2*(12*b^4*d^4*e - 60*a*b^3*d^3*e^2 + 120*a^2*b^2*d^2*e^
3 - 120*a^3*b*d*e^4 - 77*a^4*e^5)*m)*x)*(e*x + d)^m/(e^5*m^5 + 15*e^5*m^4 +
 85*e^5*m^3 + 225*e^5*m^2 + 274*e^5*m + 120*e^5)
```

giac [B] time = 0.33, size = 1949, normalized size = 7.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^4*m^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*b^4*d*m^4*x^4*e^4*s
gn(b*x + a) + 4*(x*e + d)^m*a*b^3*m^4*x^4*e^5*sgn(b*x + a) + 10*(x*e + d)^m
*b^4*m^3*x^5*e^5*sgn(b*x + a) + 4*(x*e + d)^m*a*b^3*d*m^4*x^3*e^4*sgn(b*x +
 a) + 6*(x*e + d)^m*b^4*d*m^3*x^4*e^4*sgn(b*x + a) - 4*(x*e + d)^m*b^4*d^2*
m^3*x^3*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a^2*b^2*m^4*x^3*e^5*sgn(b*x + a) +
 44*(x*e + d)^m*a*b^3*m^3*x^4*e^5*sgn(b*x + a) + 35*(x*e + d)^m*b^4*m^2*x^5
*e^5*sgn(b*x + a) + 6*(x*e + d)^m*a^2*b^2*d*m^4*x^2*e^4*sgn(b*x + a) + 32*(
x*e + d)^m*a*b^3*d*m^3*x^3*e^4*sgn(b*x + a) + 11*(x*e + d)^m*b^4*d*m^2*x^4*
e^4*sgn(b*x + a) - 12*(x*e + d)^m*a*b^3*d^2*m^3*x^2*e^3*sgn(b*x + a) - 12*(
x*e + d)^m*b^4*d^2*m^2*x^3*e^3*sgn(b*x + a) + 12*(x*e + d)^m*b^4*d^3*m^2*x^
2*e^2*sgn(b*x + a) + 4*(x*e + d)^m*a^3*b*m^4*x^2*e^5*sgn(b*x + a) + 72*(x*e
 + d)^m*a^2*b^2*m^3*x^3*e^5*sgn(b*x + a) + 164*(x*e + d)^m*a*b^3*m^2*x^4*e^
5*sgn(b*x + a) + 50*(x*e + d)^m*b^4*m*x^5*e^5*sgn(b*x + a) + 4*(x*e + d)^m*
a^3*b*d*m^4*x*e^4*sgn(b*x + a) + 60*(x*e + d)^m*a^2*b^2*d*m^3*x^2*e^4*sgn(b
*x + a) + 68*(x*e + d)^m*a*b^3*d*m^2*x^3*e^4*sgn(b*x + a) + 6*(x*e + d)^m*b
^4*d*m*x^4*e^4*sgn(b*x + a) - 12*(x*e + d)^m*a^2*b^2*d^2*m^3*x*e^3*sgn(b*x
+ a) - 72*(x*e + d)^m*a*b^3*d^2*m^2*x^2*e^3*sgn(b*x + a) - 8*(x*e + d)^m*b^
4*d^2*m*x^3*e^3*sgn(b*x + a) + 24*(x*e + d)^m*a*b^3*d^3*m^2*x*e^2*sgn(b*x +
 a) + 12*(x*e + d)^m*b^4*d^3*m*x^2*e^2*sgn(b*x + a) - 24*(x*e + d)^m*b^4*d^
4*m*x*e*sgn(b*x + a) + (x*e + d)^m*a^4*m^4*x*e^5*sgn(b*x + a) + 52*(x*e + d
)^m*a^3*b*m^3*x^2*e^5*sgn(b*x + a) + 294*(x*e + d)^m*a^2*b^2*m^2*x^3*e^5*sg
n(b*x + a) + 244*(x*e + d)^m*a*b^3*m*x^4*e^5*sgn(b*x + a) + 24*(x*e + d)^m*
b^4*x^5*e^5*sgn(b*x + a) + (x*e + d)^m*a^4*d*m^4*e^4*sgn(b*x + a) + 48*(x*e
 + d)^m*a^3*b*d*m^3*x*e^4*sgn(b*x + a) + 174*(x*e + d)^m*a^2*b^2*d*m^2*x^2*
e^4*sgn(b*x + a) + 40*(x*e + d)^m*a*b^3*d*m*x^3*e^4*sgn(b*x + a) - 4*(x*e +
 d)^m*a^3*b*d^2*m^3*e^3*sgn(b*x + a) - 108*(x*e + d)^m*a^2*b^2*d^2*m^2*x*e^
3*sgn(b*x + a) - 60*(x*e + d)^m*a*b^3*d^2*m*x^2*e^3*sgn(b*x + a) + 12*(x*e
+ d)^m*a^2*b^2*d^3*m^2*e^2*sgn(b*x + a) + 120*(x*e + d)^m*a*b^3*d^3*m*x*e^2
*sgn(b*x + a) - 24*(x*e + d)^m*a*b^3*d^4*m*e*sgn(b*x + a) + 24*(x*e + d)^m*
b^4*d^5*sgn(b*x + a) + 14*(x*e + d)^m*a^4*m^3*x*e^5*sgn(b*x + a) + 236*(x*e
 + d)^m*a^3*b*m^2*x^2*e^5*sgn(b*x + a) + 468*(x*e + d)^m*a^2*b^2*m*x^3*e^5*
sgn(b*x + a) + 120*(x*e + d)^m*a*b^3*x^4*e^5*sgn(b*x + a) + 14*(x*e + d)^m*
a^4*d*m^3*e^4*sgn(b*x + a) + 188*(x*e + d)^m*a^3*b*d*m^2*x*e^4*sgn(b*x + a)
 + 120*(x*e + d)^m*a^2*b^2*d*m*x^2*e^4*sgn(b*x + a) - 48*(x*e + d)^m*a^3*b*
d^2*m^2*e^3*sgn(b*x + a) - 240*(x*e + d)^m*a^2*b^2*d^2*m*x*e^3*sgn(b*x + a)
 + 108*(x*e + d)^m*a^2*b^2*d^3*m*e^2*sgn(b*x + a) - 120*(x*e + d)^m*a*b^3*d
^4*e*sgn(b*x + a) + 71*(x*e + d)^m*a^4*m^2*x*e^5*sgn(b*x + a) + 428*(x*e +
d)^m*a^3*b*m*x^2*e^5*sgn(b*x + a) + 240*(x*e + d)^m*a^2*b^2*x^3*e^5*sgn(b*x
 + a) + 71*(x*e + d)^m*a^4*d*m^2*e^4*sgn(b*x + a) + 240*(x*e + d)^m*a^3*b*d
*m*x*e^4*sgn(b*x + a) - 188*(x*e + d)^m*a^3*b*d^2*m*e^3*sgn(b*x + a) + 240*
(x*e + d)^m*a^2*b^2*d^3*e^2*sgn(b*x + a) + 154*(x*e + d)^m*a^4*m*x*e^5*sgn(
b*x + a) + 240*(x*e + d)^m*a^3*b*x^2*e^5*sgn(b*x + a) + 154*(x*e + d)^m*a^4
*d*m*e^4*sgn(b*x + a) - 240*(x*e + d)^m*a^3*b*d^2*e^3*sgn(b*x + a) + 120*(x
*e + d)^m*a^4*x*e^5*sgn(b*x + a) + 120*(x*e + d)^m*a^4*d*e^4*sgn(b*x + a))/
(m^5*e^5 + 15*m^4*e^5 + 85*m^3*e^5 + 225*m^2*e^5 + 274*m*e^5 + 120*e^5)
```

maple [B] time = 0.05, size = 784, normalized size = 2.83

$$\frac{\left(b^{4}e^{4}m^{4}x^{4}+4a\,b^{3}e^{4}m^{4}x^{3}+10b^{4}e^{4}m^{3}x^{4}+6a^{2}b^{2}e^{4}m^{4}x^{2}+44a\,b^{3}e^{4}m^{3}x^{3}-4b^{4}d\,e^{3}m^{3}x^{3}+35b^{4}e^{4}m^{2}x^{4}+4a^{3}b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^4*e^4*m^4*x^4+4*a*b^3*e^4*m^4*x^3+10*b^4*e^4*m^3*x^4+6*a^2
*b^2*e^4*m^4*x^2+44*a*b^3*e^4*m^3*x^3-4*b^4*d*e^3*m^3*x^3+35*b^4*e^4*m^2*x^
4+4*a^3*b*e^4*m^4*x+72*a^2*b^2*e^4*m^3*x^2-12*a*b^3*d*e^3*m^3*x^2+164*a*b^3
*e^4*m^2*x^3-24*b^4*d*e^3*m^2*x^3+50*b^4*e^4*m*x^4+a^4*e^4*m^4+52*a^3*b*e^4
*m^3*x-12*a^2*b^2*d*e^3*m^3*x+294*a^2*b^2*e^4*m^2*x^2-96*a*b^3*d*e^3*m^2*x^
2+244*a*b^3*e^4*m*x^3+12*b^4*d^2*e^2*m^2*x^2-44*b^4*d*e^3*m*x^3+24*b^4*e^4*
x^4+14*a^4*e^4*m^3-4*a^3*b*d*e^3*m^3+236*a^3*b*e^4*m^2*x-120*a^2*b^2*d*e^3*
m^2*x+468*a^2*b^2*e^4*m*x^2+24*a*b^3*d^2*e^2*m^2*x-204*a*b^3*d*e^3*m*x^2+12
0*a*b^3*e^4*x^3+36*b^4*d^2*e^2*m*x^2-24*b^4*d*e^3*x^3+71*a^4*e^4*m^2-48*a^3
*b*d*e^3*m^2+428*a^3*b*e^4*m*x+12*a^2*b^2*d^2*e^2*m^2-348*a^2*b^2*d*e^3*m*x
+240*a^2*b^2*e^4*x^2+144*a*b^3*d^2*e^2*m*x-120*a*b^3*d*e^3*x^2-24*b^4*d^3*e
*m*x+24*b^4*d^2*e^2*x^2+154*a^4*e^4*m-188*a^3*b*d*e^3*m+240*a^3*b*e^4*x+108
*a^2*b^2*d^2*e^2*m-240*a^2*b^2*d*e^3*x-24*a*b^3*d^3*e*m+120*a*b^3*d^2*e^2*x
-24*b^4*d^3*e*x+120*a^4*e^4-240*a^3*b*d*e^3+240*a^2*b^2*d^2*e^2-120*a*b^3*d
^3*e+24*b^4*d^4)*((b*x+a)^2)^(3/2)/(b*x+a)^3/e^5/(m^5+15*m^4+85*m^3+225*m^2
+274*m+120)
```

maxima [**B**] time = 0.76, size = 756, normalized size = 2.73

$$\frac{((m^3 + 6\,m^2 + 11\,m + 6)b^3e^4x^4 - 3\,(m^2 + 7\,m + 12)a^2bd^2e^2 + (m^3 + 9\,m^2 + 26\,m + 24)a^3de^3 + 6\,ab^2d^3e(m + 4)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] ((m^3 + 6*m^2 + 11*m + 6)*b^3*e^4*x^4 - 3*(m^2 + 7*m + 12)*a^2*b*d^2*e^2 +
(m^3 + 9*m^2 + 26*m + 24)*a^3*d*e^3 + 6*a*b^2*d^3*e*(m + 4) - 6*b^3*d^4 + (
(m^3 + 3*m^2 + 2*m)*b^3*d*e^3 + 3*(m^3 + 7*m^2 + 14*m + 8)*a*b^2*e^4)*x^3 -
 3*((m^2 + m)*b^3*d^2*e^2 - (m^3 + 5*m^2 + 4*m)*a*b^2*d*e^3 - (m^3 + 8*m^2
+ 19*m + 12)*a^2*b*e^4)*x^2 - (6*(m^2 + 4*m)*a*b^2*d^2*e^2 - 3*(m^3 + 7*m^2
 + 12*m)*a^2*b*d*e^3 - (m^3 + 9*m^2 + 26*m + 24)*a^3*e^4 - 6*b^3*d^3*e*m)*x
)*(e*x + d)^m*a/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + ((m^4 + 10*m^3
+ 35*m^2 + 50*m + 24)*b^3*e^5*x^5 + 6*(m^2 + 9*m + 20)*a^2*b*d^3*e^2 - (m^3
 + 12*m^2 + 47*m + 60)*a^3*d^2*e^3 - 18*a*b^2*d^4*e*(m + 5) + 24*b^3*d^5 +
((m^4 + 6*m^3 + 11*m^2 + 6*m)*b^3*d*e^4 + 3*(m^4 + 11*m^3 + 41*m^2 + 61*m +
 30)*a*b^2*e^5)*x^4 - (4*(m^3 + 3*m^2 + 2*m)*b^3*d^2*e^3 - 3*(m^4 + 8*m^3 +
 17*m^2 + 10*m)*a*b^2*d*e^4 - 3*(m^4 + 12*m^3 + 49*m^2 + 78*m + 40)*a^2*b*e
^5)*x^3 + (12*(m^2 + m)*b^3*d^3*e^2 - 9*(m^3 + 6*m^2 + 5*m)*a*b^2*d^2*e^3 +
 3*(m^4 + 10*m^3 + 29*m^2 + 20*m)*a^2*b*d*e^4 + (m^4 + 13*m^3 + 59*m^2 + 10
7*m + 60)*a^3*e^5)*x^2 + (18*(m^2 + 5*m)*a*b^2*d^3*e^2 - 6*(m^3 + 9*m^2 + 2
0*m)*a^2*b*d^2*e^3 + (m^4 + 12*m^3 + 47*m^2 + 60*m)*a^3*d*e^4 - 24*b^3*d^4*
e*m)*x)*(e*x + d)^m*b/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int (a + b\,x)\,(d + e\,x)^m\,\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int (a + bx)\,(d + ex)^m\,\left((a + bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
[Out] Integral((a + b*x)*(d + e*x)**m*((a + b*x)**2)**(3/2), x)
```

3.2153 $\int (a+bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx$

Optimal. Leaf size=159

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+2}}{e^3(m+2)(a+bx)}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+}{e^3(m+3)(a+bx)}$$

```
[Out] (-a*e+b*d)^2*(e*x+d)^(1+m)*((b*x+a)^2)^(1/2)/e^3/(1+m)/(b*x+a)-2*b*(-a*e+b*
d)*(e*x+d)^(2+m)*((b*x+a)^2)^(1/2)/e^3/(2+m)/(b*x+a)+b^2*(e*x+d)^(3+m)*((b*
x+a)^2)^(1/2)/e^3/(3+m)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 159, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2(d+ex)^{m+1}}{e^3(m+1)(a+bx)}-\frac{2b\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)(d+ex)^{m+2}}{e^3(m+2)(a+bx)}+\frac{b^2\sqrt{a^2+2abx+b^2x^2}\,(d+}{e^3(m+3)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((b*d - a*e)^2*(d + e*x)^(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(e^3*(1 + m
)*(a + b*x)) - (2*b*(b*d - a*e)*(d + e*x)^(2 + m)*Sqrt[a^2 + 2*a*b*x + b^2*
x^2])/(e^3*(2 + m)*(a + b*x)) + (b^2*(d + e*x)^(3 + m)*Sqrt[a^2 + 2*a*b*x +
 b^2*x^2])/(e^3*(3 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (a+bx)(d+ex)^m\sqrt{a^2+2abx+b^2x^2}\,dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int (a+bx)\left(ab+b^2x\right)(d+ex)^m\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (a+bx)^2(d+ex)^m\,dx}{ab+b^2x}\\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \Bigg(\frac{(-bd+ae)^2(d+ex)^m}{e^2}-\frac{2b(bd-ae)(d+ex)^{1+m}}{e^2}+\frac{b^2(}{}}{ab+b^2x}\\
&= \frac{(bd-ae)^2(d+ex)^{1+m}\sqrt{a^2+2abx+b^2x^2}}{e^3(1+m)(a+bx)}-\frac{2b(bd-ae)(d+ex)^{2-}}{e^3(2+m}
\end{aligned}
$$

Mathematica [**A**] time = 0.09, size = 113, normalized size = 0.71

$$
\frac{\sqrt{(a+bx)^2}\,(d+ex)^{m+1}\left(a^2e^2\left(m^2+5m+6\right)+2abe(m+3)(e(m+1)x-d)+b^2\left(2d^2-2de(m+1)x+e^2\left(m^2+\right.\right.\right.}{e^3(m+1)(m+2)(m+3)(a+bx)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^m*Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] (Sqrt[(a + b*x)^2]*(d + e*x)^(1 + m)*(a^2*e^2*(6 + 5*m + m^2) + 2*a*b*e*(3
+ m)*(-d + e*(1 + m)*x) + b^2*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2
)*x^2)))/(e^3*(1 + m)*(2 + m)*(3 + m)*(a + b*x))
```

fricas [**A**] time = 0.81, size = 237, normalized size = 1.49

$$
\frac{\left(a^2de^2m^2+2\,b^2d^3-6\,abd^2e+6\,a^2de^2+\left(b^2e^3m^2+3\,b^2e^3m+2\,b^2e^3\right)x^3+\left(6\,abe^3+\left(b^2de^2+2\,abe^3\right)m^2+\left(b^2d\right.\right.\right.}{e^3m^3+6\,e^3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (a^2*d*e^2*m^2 + 2*b^2*d^3 - 6*a*b*d^2*e + 6*a^2*d*e^2 + (b^2*e^3*m^2 + 3*b
^2*e^3*m + 2*b^2*e^3)*x^3 + (6*a*b*e^3 + (b^2*d*e^2 + 2*a*b*e^3)*m^2 + (b^2
*d*e^2 + 8*a*b*e^3)*m)*x^2 - (2*a*b*d^2*e - 5*a^2*d*e^2)*m + (6*a^2*e^3 + (
2*a*b*d*e^2 + a^2*e^3)*m^2 - (2*b^2*d^2*e - 6*a*b*d*e^2 - 5*a^2*e^3)*m)*x)*
(e*x + d)^m/(e^3*m^3 + 6*e^3*m^2 + 11*e^3*m + 6*e^3)
```

giac [**B**] time = 0.22, size = 508, normalized size = 3.19

$$
\frac{(xe+d)^m b^2m^2x^3e^3\mathrm{sgn}\,(bx+a)+(xe+d)^m b^2dm^2x^2e^2\mathrm{sgn}\,(bx+a)+2\,(xe+d)^m abm^2x^2e^3\mathrm{sgn}\,(bx+a)+3\,(xe}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] ((x*e + d)^m*b^2*m^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*b^2*d*m^2*x^2*e^2*s
gn(b*x + a) + 2*(x*e + d)^m*a*b*m^2*x^2*e^3*sgn(b*x + a) + 3*(x*e + d)^m*b^
2*m*x^3*e^3*sgn(b*x + a) + 2*(x*e + d)^m*a*b*d*m^2*x*e^2*sgn(b*x + a) + (x*
e + d)^m*b^2*d*m*x^2*e^2*sgn(b*x + a) - 2*(x*e + d)^m*b^2*d^2*m*x*e*sgn(b*x
 + a) + (x*e + d)^m*a^2*m^2*x*e^3*sgn(b*x + a) + 8*(x*e + d)^m*a*b*m*x^2*e^
3*sgn(b*x + a) + 2*(x*e + d)^m*b^2*x^3*e^3*sgn(b*x + a) + (x*e + d)^m*a^2*d
*m^2*e^2*sgn(b*x + a) + 6*(x*e + d)^m*a*b*d*m*x*e^2*sgn(b*x + a) - 2*(x*e +
 d)^m*a*b*d^2*m*e*sgn(b*x + a) + 2*(x*e + d)^m*b^2*d^3*sgn(b*x + a) + 5*(x*
e + d)^m*a^2*m*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a*b*x^2*e^3*sgn(b*x + a)
+ 5*(x*e + d)^m*a^2*d*m*e^2*sgn(b*x + a) - 6*(x*e + d)^m*a*b*d^2*e*sgn(b*x
+ a) + 6*(x*e + d)^m*a^2*x*e^3*sgn(b*x + a) + 6*(x*e + d)^m*a^2*d*e^2*sgn(b
*x + a))/(m^3*e^3 + 6*m^2*e^3 + 11*m*e^3 + 6*e^3)
```

maple [A] time = 0.06, size = 175, normalized size = 1.10

$$\frac{\big(b^2e^2m^2x^2+2ab\,e^2m^2x+3b^2e^2m\,x^2+a^2e^2m^2+8ab\,e^2mx-2b^2demx+2b^2x^2e^2+5a^2e^2m-2abdem+6ab\,e^2x-}{(bx+a)\left(m^3+6m^2+11m+6\right)e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (e*x+d)^(m+1)*(b^2*e^2*m^2*x^2+2*a*b*e^2*m^2*x+3*b^2*e^2*m*x^2+a^2*e^2*m^2+
8*a*b*e^2*m*x-2*b^2*d*e*m*x+2*b^2*e^2*x^2+5*a^2*e^2*m-2*a*b*d*e*m+6*a*b*e^2
*x-2*b^2*d*e*x+6*a^2*e^2-6*a*b*d*e+2*b^2*d^2)*((b*x+a)^2)^(1/2)/(b*x+a)/e^3
/(m^3+6*m^2+11*m+6)
```

maxima [A] time = 0.58, size = 177, normalized size = 1.11

$$\frac{\left(be^2(m+1)x^2+ade(m+2)-bd^2+\left(ae^2(m+2)+bdem\right)x\right)(ex+d)^m a}{\left(m^2+3\,m+2\right)e^2}+\frac{\big(\left(m^2+3\,m+2\right)be^3x^3-ad^2e(m+3)+2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m*(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (b*e^2*(m + 1)*x^2 + a*d*e*(m + 2) - b*d^2 + (a*e^2*(m + 2) + b*d*e*m)*x)*(
e*x + d)^m*a/((m^2 + 3*m + 2)*e^2) + ((m^2 + 3*m + 2)*b*e^3*x^3 - a*d^2*e*(
m + 3) + 2*b*d^3 + ((m^2 + m)*b*d*e^2 + (m^2 + 4*m + 3)*a*e^3)*x^2 + ((m^2
+ 3*m)*a*d*e^2 - 2*b*d^2*e*m)*x)*(e*x + d)^m*b/((m^3 + 6*m^2 + 11*m + 6)*e^
3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int (a+b\,x)\,(d+e\,x)^m\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int((a + b*x)*(d + e*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(d+ex)^m\,\sqrt{(a+bx)^2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m*(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**m*sqrt((a + b*x)**2), x)
```

3.2154 $\int \frac{(a+bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx$

Optimal. Leaf size=43

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] (b*x+a)*(e*x+d)^(1+m)/e/(1+m)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {770, 21, 32}

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m))/(e*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(d+ex)^m}{\sqrt{a^2+2abx+b^2x^2}}\,dx &= \frac{\left(ab+b^2x\right)\int \frac{(a+bx)(d+ex)^m}{ab+b^2x}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{\left(ab+b^2x\right)\int (d+ex)^m\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\
&= \frac{(a+bx)(d+ex)^{1+m}}{e(1+m)\sqrt{a^2+2abx+b^2x^2}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 34, normalized size = 0.79

$$\frac{(a+bx)(d+ex)^{m+1}}{e(m+1)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/Sqrt[a^2 + 2*a*b*x + b^2*x^2],x]
```

```
[Out] ((a + b*x)*(d + e*x)^(1 + m))/(e*(1 + m)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.66, size = 20, normalized size = 0.47

$$\frac{(ex+d)(ex+d)^m}{em+e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="frica
s")
```

```
[Out] (e*x + d)*(e*x + d)^m/(e*m + e)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\sqrt{b^2x^2+2\,abx+a^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/sqrt(b^2*x^2 + 2*a*b*x + a^2), x)
```

maple [A] time = 0.04, size = 33, normalized size = 0.77

$$\frac{(bx+a)\,(ex+d)^{m+1}}{(m+1)\sqrt{(bx+a)^2}\;e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x)
```

```
[Out] (b*x+a)*(e*x+d)^(m+1)/e/(m+1)/((b*x+a)^2)^(1/2)
```

maxima [A] time = 0.75, size = 21, normalized size = 0.49

$$\frac{(ex+d)(ex+d)^m}{e(m+1)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(1/2),x, algorithm="maxim
a")
```

```
[Out] (e*x + d)*(e*x + d)^m/(e*(m + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$\int \frac{(a+b\,x)\,(d+e\,x)^m}{\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)(d+ex)^m}{\sqrt{(a+bx)^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(1/2),x)
```

```
[Out] Integral((a + b*x)*(d + e*x)**m/sqrt((a + b*x)**2), x)
```

3.2155 $\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=76

$$\frac{e(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(2,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

```
[Out] e*(b*x+a)*(e*x+d)^(1+m)*hypergeom([2, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/(-a*
e+b*d)^2/(1+m)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 76, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 68\}$

$$\frac{e(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(2,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (e*(a + b*x)*(d + e*x)^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, (b*(d + e
*x))/(b*d - a*e)])/((b*d - a*e)^2*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx = \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(a+bx)(d+ex)^m}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{\left(ab+b^2x\right)\int \frac{(d+ex)^m}{(a+bx)^2}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{e(a+bx)(d+ex)^{1+m}\,{}_2F_1\left(2,1+m;2+m;\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^2(1+m)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 68, normalized size = 0.89

$$\frac{e(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(2,m+1;m+2;-\frac{b(d+ex)}{ae-bd}\right)}{(m+1)\sqrt{(a+bx)^2}\,(ae-bd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (e*(a + b*x)*(d + e*x)^(1 + m)*Hypergeometric2F1[2, 1 + m, 2 + m, -((b*(d +
 e*x))/(-(b*d) + a*e))])/((-(b*d) + a*e)^2*(1 + m)*Sqrt[(a + b*x)^2])
```

fricas [F] time = 0.92, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(ex+d)^m}{b^3x^3+3\,ab^2x^2+3\,a^2bx+a^3}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(b^2*x^2 + 2*a*b*x + a^2)*(e*x + d)^m/(b^3*x^3 + 3*a*b^2*x^2 +
 3*a^2*b*x + a^3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

maple [F] time = 1.34, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\,(ex+d)^m}{\left(b^2x^2+2abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)^m}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2156 $\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=78

$$\frac{e^3(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(4,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}$$

```
[Out] e^3*(b*x+a)*(e*x+d)^(1+m)*hypergeom([4, 1+m],[2+m],b*(e*x+d)/(-a*e+b*d))/(-
a*e+b*d)^4/(1+m)/((b*x+a)^2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 33, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = $\{770, 21, 68\}$

$$\frac{e^3(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(4,m+1;m+2;\frac{b(d+ex)}{bd-ae}\right)}{(m+1)\sqrt{a^2+2abx+b^2x^2}\,(bd-ae)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (e^3*(a + b*x)*(d + e*x)^(1 + m)*Hypergeometric2F1[4, 1 + m, 2 + m, (b*(d +
 e*x))/(b*d - a*e)])/((b*d - a*e)^4*(1 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{(a+bx)(d+ex)^m}{\left(a^2+2abx+b^2x^2\right)^{5/2}}\,dx = \frac{\left(b^4\left(ab+b^2x\right)\right)\int \frac{(a+bx)(d+ex)^m}{\left(ab+b^2x\right)^5}\,dx}{\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{\left(ab+b^2x\right)\int \frac{(d+ex)^m}{(a+bx)^4}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}$$
$$= \frac{e^3(a+bx)(d+ex)^{1+m}\,{}_2F_1\left(4,1+m;2+m;\frac{b(d+ex)}{bd-ae}\right)}{(bd-ae)^4(1+m)\sqrt{a^2+2abx+b^2x^2}}$$

Mathematica [A] time = 0.03, size = 70, normalized size = 0.90

$$\frac{e^3(a+bx)(d+ex)^{m+1}\,{}_2F_1\left(4,m+1;m+2;-\frac{b(d+ex)}{ae-bd}\right)}{(m+1)\sqrt{(a+bx)^2}\,(ae-bd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(d + e*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(5/2),x]
```

```
[Out] (e^3*(a + b*x)*(d + e*x)^(1 + m)*Hypergeometric2F1[4, 1 + m, 2 + m, -((b*(d
 + e*x))/(-(b*d) + a*e))])/((-(b*d) + a*e)^4*(1 + m)*Sqrt[(a + b*x)^2])
```

fricas [F] time = 1.09, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{b^2x^2+2\,abx+a^2}\,(ex+d)^m}{b^5x^5+5\,ab^4x^4+10\,a^2b^3x^3+10\,a^3b^2x^2+5\,a^4bx+a^5},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="frica
s")
```

```
[Out] integral(sqrt(b^2*x^2 + 2*a*b*x + a^2)*(e*x + d)^m/(b^5*x^5 + 5*a*b^4*x^4 +
 10*a^2*b^3*x^3 + 10*a^3*b^2*x^2 + 5*a^4*b*x + a^5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

maple [F] time = 1.64, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)\,(ex+d)^m}{\left(b^2x^2+2abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

```
[Out] int((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(bx+a)(ex+d)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^m/(b^2*x^2+2*a*b*x+a^2)^(5/2),x, algorithm="maxim
a")
```

```
[Out] integrate((b*x + a)*(e*x + d)^m/(b^2*x^2 + 2*a*b*x + a^2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(a+b\,x)\,(d+e\,x)^m}{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2),x)
```

```
[Out] int(((a + b*x)*(d + e*x)^m)/(a^2 + b^2*x^2 + 2*a*b*x)^(5/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**m/(b**2*x**2+2*a*b*x+a**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2157 $\int (ac+bcx)(d+ex)^{-3-2p}\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=51

$$\frac{c\left(a^2+2abx+b^2x^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

```
[Out] 1/2*c*(b^2*x^2+2*a*b*x+a^2)^(1+p)/(-a*e+b*d)/(1+p)/((e*x+d)^(2+2*p))
```

Rubi [A] time = 0.03, antiderivative size = 51, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.026, Rules used = {767}

$$\frac{c\left(a^2+2abx+b^2x^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (c*(a^2 + 2*a*b*x + b^2*x^2)^(1 + p))/(2*(b*d - a*e)*(1 + p)*(d + e*x)^(2*(
1 + p)))
```

Rule 767

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[(f*g*(d + e*x)^(m + 1)*(a + b*x + c*x^
2)^(p + 1))/(b*(p + 1)*(e*f - d*g)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p
}, x] && EqQ[b^2 - 4*a*c, 0] && EqQ[m + 2*p + 3, 0] && EqQ[2*c*f - b*g, 0]
```

Rubi steps

$$\int (ac+bcx)(d+ex)^{-3-2p}\left(a^2+2abx+b^2x^2\right)^p\,dx=\frac{c(d+ex)^{-2(1+p)}\left(a^2+2abx+b^2x^2\right)^{1+p}}{2(bd-ae)(1+p)}$$

Mathematica [A] time = 0.03, size = 42, normalized size = 0.82

$$\frac{c\left((a+bx)^2\right)^{p+1}(d+ex)^{-2(p+1)}}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)*(d + e*x)^(-3 - 2*p)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (c*((a + b*x)^2)^(1 + p))/(2*(b*d - a*e)*(1 + p)*(d + e*x)^(2*(1 + p)))
```

fricas [A] time = 0.90, size = 99, normalized size = 1.94

$$\frac{\left(b^2cex^3+a^2cd+\left(b^2cd+2\,abce\right)x^2+\left(2\,abcd+a^2ce\right)x\right)\left(b^2x^2+2\,abx+a^2\right)^p(ex+d)^{-2\,p-3}}{2\left(bd-ae+(bd-ae)p\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="fricas")
```

```
[Out] 1/2*(b^2*c*e*x^3 + a^2*c*d + (b^2*c*d + 2*a*b*c*e)*x^2 + (2*a*b*c*d + a^2*c
*e)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3)/(b*d - a*e + (b*d -
 a*e)*p)
```

giac [B] time = 0.27, size = 305, normalized size = 5.98

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^p b^2cx^3e^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d) + 1\right)} + \left(b^2x^2 + 2\,abx + a^2\right)^p b^2cdx^2e^{\left(-2\,p\log(xe+d) - 3\,\log(xe+d)\right)} + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="giac")
```

```
[Out] 1/2*((b^2*x^2 + 2*a*b*x + a^2)^p*b^2*c*x^3*e^(-2*p*log(x*e + d) - 3*log(x*e
 + d) + 1) + (b^2*x^2 + 2*a*b*x + a^2)^p*b^2*c*d*x^2*e^(-2*p*log(x*e + d) -
 3*log(x*e + d)) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*c*x^2*e^(-2*p*log(x*e
+ d) - 3*log(x*e + d) + 1) + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b*c*d*x*e^(-2*
p*log(x*e + d) - 3*log(x*e + d)) + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*c*x*e^(-
2*p*log(x*e + d) - 3*log(x*e + d) + 1) + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*c*
d*e^(-2*p*log(x*e + d) - 3*log(x*e + d)))/(b*d*p - a*p*e + b*d - a*e)
```

maple [A] time = 0.05, size = 59, normalized size = 1.16

$$-\frac{(bx + a)^2\, c\, (ex + d)^{-2p-2} \left(b^2x^2 + 2abx + a^2\right)^p}{2\left(aep - bdp + ae - bd\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)*(e*x+d)^(-2*p-3)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)^2*(e*x+d)^(-2*p-2)*c*(b^2*x^2+2*a*b*x+a^2)^p/(a*e*p-b*d*p+a*e-
b*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bcx + ac)\left(b^2x^2 + 2\,abx + a^2\right)^p (ex + d)^{-2\,p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)^(-3-2*p)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="maxima")
```

```
[Out] integrate((b*c*x + a*c)*(b^2*x^2 + 2*a*b*x + a^2)^p*(e*x + d)^(-2*p - 3), x
)
```

mupad [B] time = 2.25, size = 178, normalized size = 3.49

$$-\left(a^2 + 2\,a\,b\,x + b^2\,x^2\right)^p \left(\frac{a^2\,c\,d}{2\,\left(a\,e - b\,d\right)\,\left(p+1\right)\,\left(d + e\,x\right)^{2\,p+3}} + \frac{a\,c\,x\,\left(a\,e + 2\,b\,d\right)}{2\,\left(a\,e - b\,d\right)\,\left(p+1\right)\,\left(d + e\,x\right)^{2\,p+3}} + \frac{b\,c}{2\,\left(a\,e - b\,d\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(a^2 + b^2*x^2 + 2*a*b*x)^p*((a^2*c*d)/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2
*p + 3)) + (a*c*x*(a*e + 2*b*d))/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)
) + (b*c*x^2*(2*a*e + b*d))/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)) + (
b^2*c*e*x^3)/(2*(a*e - b*d)*(p + 1)*(d + e*x)^(2*p + 3)))
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)*(e*x+d)**(-3-2*p)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2158 $\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=183

$$\frac{3e^2(a+bx)^4(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^4(p+2)}+\frac{3e(a+bx)^3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{b^4(2p+3)}+\frac{(a+bx)^2(bd-ae)^3\,(a^2}{2b^4(p+}$$

```
[Out] 1/2*(-a*e+b*d)^3*(b*x+a)^2*(b^2*x^2+2*a*b*x+a^2)^p/b^4/(1+p)+3*e*(-a*e+b*d)
^2*(b*x+a)^3*(b^2*x^2+2*a*b*x+a^2)^p/b^4/(3+2*p)+3/2*e^2*(-a*e+b*d)*(b*x+a)
^4*(b^2*x^2+2*a*b*x+a^2)^p/b^4/(2+p)+e^3*(b*x+a)^5*(b^2*x^2+2*a*b*x+a^2)^p/
b^4/(5+2*p)
```

Rubi [A] time = 0.12, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{770, 21, 43\}$

$$\frac{3e^2(a+bx)^4(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^4(p+2)}+\frac{3e(a+bx)^3(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{b^4(2p+3)}+\frac{(a+bx)^2(bd-ae)^3\,(a^2}{2b^4(p+}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)^3*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^4*(1 + p)) + (
3*e*(b*d - a*e)^2*(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^4*(3 + 2*p))
+ (3*e^2*(b*d - a*e)*(a + b*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^4*(2 + p
)) + (e^3*(a + b*x)^5*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^4*(5 + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(d+ex)^3\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d+e\\ &= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(ab+b^2x\right)^{1+2p}(d+ex)^3\,dx}{b}\\ &= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int\left(\frac{(bd-ae)^3\left(ab+b^2x\right)^{1+2p}}{b^3}+\frac{3e(bd-ae}{}\right.}{b}\\ &= \frac{(bd-ae)^3(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^4(1+p)}+\frac{3e(bd-ae)^2(a+bx)^3\left(a\right.}{b^4(3+2}\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 104, normalized size = 0.57

$$\frac{\left((a+bx)^2\right)^{p+1}\left(\frac{3e^2(a+bx)^2(bd-ae)}{p+2}+\frac{6e(a+bx)(bd-ae)^2}{2p+3}+\frac{(bd-ae)^3}{p+1}+\frac{2e^3(a+bx)^3}{2p+5}\right)}{2b^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*((b*d - a*e)^3/(1 + p) + (6*e*(b*d - a*e)^2*(a + b*x
))/(3 + 2*p) + (3*e^2*(b*d - a*e)*(a + b*x)^2)/(2 + p) + (2*e^3*(a + b*x)^3
)/(5 + 2*p)))/(2*b^4)
```

fricas [**B**] time = 1.15, size = 715, normalized size = 3.91

$$\frac{\left(4\,a^2b^3d^3p^3+30\,a^2b^3d^3-30\,a^3b^2d^2e+15\,a^4bde^2-3\,a^5e^3+2\left(2\,b^5e^3p^3+9\,b^5e^3p^2+13\,b^5e^3p+6\,b^5e^3\right)x^5+\left(45\,b\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(4*a^2*b^3*d^3*p^3 + 30*a^2*b^3*d^3 - 30*a^3*b^2*d^2*e + 15*a^4*b*d*e^2
 - 3*a^5*e^3 + 2*(2*b^5*e^3*p^3 + 9*b^5*e^3*p^2 + 13*b^5*e^3*p + 6*b^5*e^3)
*x^5 + (45*b^5*d*e^2 + 15*a*b^4*e^3 + 4*(3*b^5*d*e^2 + 2*a*b^4*e^3)*p^3 + 3
0*(2*b^5*d*e^2 + a*b^4*e^3)*p^2 + (93*b^5*d*e^2 + 37*a*b^4*e^3)*p)*x^4 + 2*
(30*b^5*d^2*e + 30*a*b^4*d*e^2 + 2*(3*b^5*d^2*e + 6*a*b^4*d*e^2 + a^2*b^3*e
^3)*p^3 + 3*(11*b^5*d^2*e + 18*a*b^4*d*e^2 + a^2*b^3*e^3)*p^2 + (57*b^5*d^2
*e + 72*a*b^4*d*e^2 + a^2*b^3*e^3)*p)*x^3 + 6*(4*a^2*b^3*d^3 - a^3*b^2*d^2*
e)*p^2 + (30*b^5*d^3 + 90*a*b^4*d^2*e + 4*(b^5*d^3 + 6*a*b^4*d^2*e + 3*a^2*
b^3*d*e^2)*p^3 + 6*(4*b^5*d^3 + 21*a*b^4*d^2*e + 6*a^2*b^3*d*e^2 - a^3*b^2*
e^3)*p^2 + (47*b^5*d^3 + 201*a*b^4*d^2*e + 15*a^2*b^3*d*e^2 - 3*a^3*b^2*e^3
)*p)*x^2 + (47*a^2*b^3*d^3 - 27*a^3*b^2*d^2*e + 6*a^4*b*d*e^2)*p + 2*(30*a*
b^4*d^3 + 2*(2*a*b^4*d^3 + 3*a^2*b^3*d^2*e)*p^3 + 3*(8*a*b^4*d^3 + 9*a^2*b^
3*d^2*e - 2*a^3*b^2*d*e^2)*p^2 + (47*a*b^4*d^3 + 30*a^2*b^3*d^2*e - 15*a^3*
b^2*d*e^2 + 3*a^4*b*e^3)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(4*b^4*p^4 + 28*
b^4*p^3 + 71*b^4*p^2 + 77*b^4*p + 30*b^4)
```

giac [**B**] time = 0.29, size = 1805, normalized size = 9.86

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(4*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p^3*x^5*e^3 + 12*(b^2*x^2 + 2*a*b*x
+ a^2)^p*b^5*d*p^3*x^4*e^2 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^2*p^3*x^3
*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^3*p^3*x^2 + 8*(b^2*x^2 + 2*a*b*x +
 a^2)^p*a*b^4*p^3*x^4*e^3 + 18*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p^2*x^5*e^3
+ 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d*p^3*x^3*e^2 + 60*(b^2*x^2 + 2*a*b*
x + a^2)^p*b^5*d*p^2*x^4*e^2 + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p^3
*x^2*e + 66*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^2*p^2*x^3*e + 8*(b^2*x^2 + 2*
a*b*x + a^2)^p*a*b^4*d^3*p^3*x + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d^3*p^2
*x^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*p^3*x^3*e^3 + 30*(b^2*x^2 + 2*
a*b*x + a^2)^p*a*b^4*p^2*x^4*e^3 + 26*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*p*x^5
*e^3 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d*p^3*x^2*e^2 + 108*(b^2*x^2
+ 2*a*b*x + a^2)^p*a*b^4*d*p^2*x^3*e^2 + 93*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5
*d*p*x^4*e^2 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^2*p^3*x*e + 126*(b^
2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p^2*x^2*e + 114*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^5*d^2*p*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p^3 + 48*(b
^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^3*p^2*x + 47*(b^2*x^2 + 2*a*b*x + a^2)^p*
b^5*d^3*p*x^2 + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*p^2*x^3*e^3 + 37*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b^4*p*x^4*e^3 + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*b^
5*x^5*e^3 + 36*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d*p^2*x^2*e^2 + 144*(b^2
*x^2 + 2*a*b*x + a^2)^p*a*b^4*d*p*x^3*e^2 + 45*(b^2*x^2 + 2*a*b*x + a^2)^p*
b^5*d*x^4*e^2 + 54*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^2*p^2*x*e + 201*(b
^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*d^2*p*x^2*e + 60*(b^2*x^2 + 2*a*b*x + a^2)^
p*b^5*d^2*x^3*e + 24*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p^2 + 94*(b^2*
x^2 + 2*a*b*x + a^2)^p*a*b^4*d^3*p*x + 30*(b^2*x^2 + 2*a*b*x + a^2)^p*b^5*d
^3*x^2 - 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*p^2*x^2*e^3 + 2*(b^2*x^2 + 2
*a*b*x + a^2)^p*a^2*b^3*p*x^3*e^3 + 15*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4*x^
4*e^3 - 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d*p^2*x*e^2 + 15*(b^2*x^2 +
2*a*b*x + a^2)^p*a^2*b^3*d*p*x^2*e^2 + 60*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4
*d*x^3*e^2 - 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d^2*p^2*e + 60*(b^2*x^2
+ 2*a*b*x + a^2)^p*a^2*b^3*d^2*p*x*e + 90*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^4
*d^2*x^2*e + 47*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3*p + 60*(b^2*x^2 + 2
*a*b*x + a^2)^p*a*b^4*d^3*x - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*p*x^2*e
^3 - 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d*p*x*e^2 - 27*(b^2*x^2 + 2*a*b
*x + a^2)^p*a^3*b^2*d^2*p*e + 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^3*d^3 +
6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^4*b*p*x*e^3 + 6*(b^2*x^2 + 2*a*b*x + a^2)^p
*a^4*b*d*p*e^2 - 30*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b^2*d^2*e + 15*(b^2*x^2
 + 2*a*b*x + a^2)^p*a^4*b*d*e^2 - 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a^5*e^3)/(4
*b^4*p^4 + 28*b^4*p^3 + 71*b^4*p^2 + 77*b^4*p + 30*b^4)
```

maple [B] time = 0.05, size = 407, normalized size = 2.22

$$-\frac{\left(-4b^3e^3p^3x^3-12b^3d\,e^2p^3x^2-18b^3e^3p^2x^3+6a\,b^2e^3p^2x^2-12b^3d^2e\,p^3x-60b^3d\,e^2p^2x^2-26b^3e^3p\,x^3+12a\,b^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b^2*x^2+2*a*b*x+a^2)^p*(-4*b^3*e^3*p^3*x^3-12*b^3*d*e^2*p^3*x^2-18*b^
3*e^3*p^2*x^3+6*a*b^2*e^3*p^2*x^2-12*b^3*d^2*e*p^3*x-60*b^3*d*e^2*p^2*x^2-2
6*b^3*e^3*p*x^3+12*a*b^2*d*e^2*p^2*x+15*a*b^2*e^3*p*x^2-4*b^3*d^3*p^3-66*b^
3*d^2*e*p^2*x-93*b^3*d*e^2*p*x^2-12*b^3*e^3*x^3-6*a^2*b*e^3*p*x+6*a*b^2*d^2
*e*p^2+42*a*b^2*d*e^2*p*x+9*a*b^2*e^3*x^2-24*b^3*d^3*p^2-114*b^3*d^2*e*p*x-
45*b^3*d*e^2*x^2-6*a^2*b*d*e^2*p-6*a^2*b*e^3*x+27*a*b^2*d^2*e*p+30*a*b^2*d*
e^2*x-47*b^3*d^3*p-60*b^3*d^2*e*x+3*a^3*e^3-15*a^2*b*d*e^2+30*a*b^2*d^2*e-3
0*b^3*d^3)*(b*x+a)^2/b^4/(4*p^4+28*p^3+71*p^2+77*p+30)
```

maxima [B] time = 0.75, size = 679, normalized size = 3.71

$$\frac{(bx+a)(bx+a)^{2\,p}ad^3}{b\left(2\,p+1\right)}+\frac{\left(b^2\left(2\,p+1\right)x^2+2\,abpx-a^2\right)(bx+a)^{2\,p}d^3}{2\left(2\,p^2+3\,p+1\right)b}+\frac{3\left(b^2\left(2\,p+1\right)x^2+2\,abpx-a^2\right)(bx+a)^{2\,p}}{2\left(2\,p^2+3\,p+1\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^3*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d^3/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*
a*b*p*x - a^2)*(b*x + a)^(2*p)*d^3/((2*p^2 + 3*p + 1)*b) + 3/2*(b^2*(2*p +
1)*x^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*d^2*e/((2*p^2 + 3*p + 1)*b^2) +
 3*((2*p^2 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*
(b*x + a)^(2*p)*d^2*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2) + 3*((2*p^2 + 3*p +
 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^(2*p)*a*
d*e^2/((4*p^3 + 12*p^2 + 11*p + 3)*b^3) + 3/2*((4*p^3 + 12*p^2 + 11*p + 3)*
b^4*x^4 + 2*(2*p^3 + 3*p^2 + p)*a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a
^3*b*p*x - 3*a^4)*(b*x + a)^(2*p)*d*e^2/((4*p^4 + 20*p^3 + 35*p^2 + 25*p +
6)*b^3) + 1/2*((4*p^3 + 12*p^2 + 11*p + 3)*b^4*x^4 + 2*(2*p^3 + 3*p^2 + p)*
a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a^3*b*p*x - 3*a^4)*(b*x + a)^(2*p
)*a*e^3/((4*p^4 + 20*p^3 + 35*p^2 + 25*p + 6)*b^4) + ((4*p^4 + 20*p^3 + 35*
p^2 + 25*p + 6)*b^5*x^5 + (4*p^4 + 12*p^3 + 11*p^2 + 3*p)*a*b^4*x^4 - 4*(2*
p^3 + 3*p^2 + p)*a^2*b^3*x^3 + 6*(2*p^2 + p)*a^3*b^2*x^2 - 12*a^4*b*p*x + 6
*a^5)*(b*x + a)^(2*p)*e^3/((8*p^5 + 60*p^4 + 170*p^3 + 225*p^2 + 137*p + 30
)*b^4)
```

mupad [B] time = 2.49, size = 683, normalized size = 3.73

$$(a^2 + 2\,a\,b\,x + b^2\,x^2)^p \left(\frac{x^2\,\left(-6\,a^3\,b^2\,e^3\,p^2 - 3\,a^3\,b^2\,e^3\,p + 12\,a^2\,b^3\,d\,e^2\,p^3 + 36\,a^2\,b^3\,d\,e^2\,p^2 + 15\,a^2\,b^3\,d\,e^2\,p + 24\,a\,b\right.}{2\,b^4\,\left(4\,p^4 +\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^3*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(30*b^5*d^3 + 47*b^5*d^3*p + 24*b^5*d^3*p
^2 + 4*b^5*d^3*p^3 - 3*a^3*b^2*e^3*p - 6*a^3*b^2*e^3*p^2 + 90*a*b^4*d^2*e +
 201*a*b^4*d^2*e*p + 15*a^2*b^3*d*e^2*p + 126*a*b^4*d^2*e*p^2 + 24*a*b^4*d^
2*e*p^3 + 36*a^2*b^3*d*e^2*p^2 + 12*a^2*b^3*d*e^2*p^3))/(2*b^4*(77*p + 71*p
^2 + 28*p^3 + 4*p^4 + 30)) + (a^2*(30*b^3*d^3 - 3*a^3*e^3 + 47*b^3*d^3*p +
24*b^3*d^3*p^2 + 4*b^3*d^3*p^3 - 30*a*b^2*d^2*e + 15*a^2*b*d*e^2 - 27*a*b^2
*d^2*e*p + 6*a^2*b*d*e^2*p - 6*a*b^2*d^2*e*p^2))/(2*b^4*(77*p + 71*p^2 + 28
*p^3 + 4*p^4 + 30)) + (b*e^3*x^5*(13*p + 9*p^2 + 2*p^3 + 6))/(77*p + 71*p^2
 + 28*p^3 + 4*p^4 + 30) + (a*x*(30*b^3*d^3 + 3*a^3*e^3*p + 47*b^3*d^3*p + 2
4*b^3*d^3*p^2 + 4*b^3*d^3*p^3 + 30*a*b^2*d^2*e*p - 15*a^2*b*d*e^2*p + 27*a*
b^2*d^2*e*p^2 - 6*a^2*b*d*e^2*p^2 + 6*a*b^2*d^2*e*p^3))/(b^3*(77*p + 71*p^2
 + 28*p^3 + 4*p^4 + 30)) + (e^2*x^4*(5*p + 2*p^2 + 3)*(5*a*e + 15*b*d + 4*a
*e*p + 6*b*d*p))/(2*(77*p + 71*p^2 + 28*p^3 + 4*p^4 + 30)) + (e*x^3*(p + 1)
*(30*b^2*d^2 + a^2*e^2*p + 27*b^2*d^2*p + 2*a^2*e^2*p^2 + 6*b^2*d^2*p^2 + 3
0*a*b*d*e + 42*a*b*d*e*p + 12*a*b*d*e*p^2))/(b*(77*p + 71*p^2 + 28*p^3 + 4*
p^4 + 30)))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**3*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d**3*x + 3*d**2*e*x**2/2 + d*e**2*x**3 + e**3*x**4/4)*(a**2)*
*p, Eq(b, 0)), (Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(5/2), x),
Eq(p, -5/2)), (-6*a**3*e**3*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6
*x**2) - 11*a**3*e**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 6*a**2*b*d
*e**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) + 9*a**2*b*d*e*
*2/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 12*a**2*b*e**3*x*log(a/b + x)
```

```
/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 16*a**2*b*e**3*x/(2*a**2*b**4 +
 4*a*b**5*x + 2*b**6*x**2) - 3*a*b**2*d**2*e/(2*a**2*b**4 + 4*a*b**5*x + 2*
b**6*x**2) + 12*a*b**2*d*e**2*x*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*
b**6*x**2) + 12*a*b**2*d*e**2*x/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) -
6*a*b**2*e**3*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) -
2*a*b**2*e**3*x**2/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - b**3*d**3/(2*
a**2*b**4 + 4*a*b**5*x + 2*b**6*x**2) - 6*b**3*d**2*e*x/(2*a**2*b**4 + 4*a*
b**5*x + 2*b**6*x**2) + 6*b**3*d*e**2*x**2*log(a/b + x)/(2*a**2*b**4 + 4*a*
b**5*x + 2*b**6*x**2) + 2*b**3*e**3*x**3/(2*a**2*b**4 + 4*a*b**5*x + 2*b**6
*x**2), Eq(p, -2)), (Integral((a + b*x)*(d + e*x)**3/((a + b*x)**2)**(3/2),
 x), Eq(p, -3/2)), (-a**3*e**3*log(a/b + x)/b**4 + 3*a**2*d*e**2*log(a/b +
x)/b**3 + a**2*e**3*x/b**3 - 3*a*d**2*e*log(a/b + x)/b**2 - 3*a*d*e**2*x/b*
*2 - a*e**3*x**2/(2*b**2) + d**3*log(a/b + x)/b + 3*d**2*e*x/b + 3*d*e**2*x
**2/(2*b) + e**3*x**3/(3*b), Eq(p, -1)), (-3*a**5*e**3*(a**2 + 2*a*b*x + b*
*2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b
**4) + 6*a**4*b*d*e**2*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*
b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a**4*b*d*e**2*(a**2
 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154
*b**4*p + 60*b**4) + 6*a**4*b*e**3*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b
**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 6*a**3*b*
*2*d**2*e*p**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3
 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 27*a**3*b**2*d**2*e*p*(a**2 + 2*a
*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4
*p + 60*b**4) - 30*a**3*b**2*d**2*e*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4
*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 12*a**3*b**2
*d*e**2*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3
 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 30*a**3*b**2*d*e**2*p*x*(a**2 + 2
*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b*
*4*p + 60*b**4) - 6*a**3*b**2*e**3*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) - 3*a
**3*b**2*e**3*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4
*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 4*a**2*b**3*d**3*p**3*(a**2
 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 15
4*b**4*p + 60*b**4) + 24*a**2*b**3*d**3*p**2*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 47*
a**2*b**3*d**3*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**
3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 30*a**2*b**3*d**3*(a**2 + 2*a*b
*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p
 + 60*b**4) + 12*a**2*b**3*d**2*e*p**3*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8
*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 54*a**2
*b**3*d**2*e*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*
p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 60*a**2*b**3*d**2*e*p*x*(a**
2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 1
54*b**4*p + 60*b**4) + 12*a**2*b**3*d*e**2*p**3*x**2*(a**2 + 2*a*b*x + b**2
*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**
4) + 36*a**2*b**3*d*e**2*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*
p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a**2*b**3*
d*e**2*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 +
 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 4*a**2*b**3*e**3*p**3*x**3*(a**2 +
 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*
b**4*p + 60*b**4) + 6*a**2*b**3*e**3*p**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)
**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 2
*a**2*b**3*e**3*p*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b*
*4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 8*a*b**4*d**3*p**3*x*(a**
2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 1
54*b**4*p + 60*b**4) + 48*a*b**4*d**3*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 94*
a*b**4*d**3*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3
 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 60*a*b**4*d**3*x*(a**2 + 2*a*b*x
 + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p +
 60*b**4) + 24*a*b**4*d**2*e*p**3*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b
**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 126*a*b**
4*d**2*e*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p
**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 201*a*b**4*d**2*e*p*x**2*(a**
2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 1
54*b**4*p + 60*b**4) + 90*a*b**4*d**2*e*x**2*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 24*
a*b**4*d*e**2*p**3*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b
**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 108*a*b**4*d*e**2*p**2*x
**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*
p**2 + 154*b**4*p + 60*b**4) + 144*a*b**4*d*e**2*p*x**3*(a**2 + 2*a*b*x + b
**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*
b**4) + 60*a*b**4*d*e**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4
+ 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 8*a*b**4*e**3*p**3
*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**
4*p**2 + 154*b**4*p + 60*b**4) + 30*a*b**4*e**3*p**2*x**4*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 6
0*b**4) + 37*a*b**4*e**3*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**
4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 15*a*b**4*e**3*x
**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*
p**2 + 154*b**4*p + 60*b**4) + 4*b**5*d**3*p**3*x**2*(a**2 + 2*a*b*x + b**2
*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**
4) + 24*b**5*d**3*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 +
56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 47*b**5*d**3*p*x**2*
(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2
 + 154*b**4*p + 60*b**4) + 30*b**5*d**3*x**2*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*
b**5*d**2*e*p**3*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**
4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 66*b**5*d**2*e*p**2*x**3*(
a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2
+ 154*b**4*p + 60*b**4) + 114*b**5*d**2*e*p*x**3*(a**2 + 2*a*b*x + b**2*x**
2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) +
 60*b**5*d**2*e*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4
*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 12*b**5*d*e**2*p**3*x**4*(a
**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 +
 154*b**4*p + 60*b**4) + 60*b**5*d*e**2*p**2*x**4*(a**2 + 2*a*b*x + b**2*x*
*2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4)
+ 93*b**5*d*e**2*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b
**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 45*b**5*d*e**2*x**4*(a**
2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 1
54*b**4*p + 60*b**4) + 4*b**5*e**3*p**3*x**5*(a**2 + 2*a*b*x + b**2*x**2)**
p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 18*
b**5*e**3*p**2*x**5*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*
p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4) + 26*b**5*e**3*p*x**5*(a**2 +
2*a*b*x + b**2*x**2)**p/(8*b**4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b
**4*p + 60*b**4) + 12*b**5*e**3*x**5*(a**2 + 2*a*b*x + b**2*x**2)**p/(8*b**
4*p**4 + 56*b**4*p**3 + 142*b**4*p**2 + 154*b**4*p + 60*b**4), True))
```

3.2159 $\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=134

$$\frac{2e(a+bx)^3(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{b^3(2p+3)}+\frac{(a+bx)^2(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(p+1)}+\frac{e^2(a+bx)^4\left(a^2+2abx+\right.}{2b^3(p+2)}$$

```
[Out] 1/2*(-a*e+b*d)^2*(b*x+a)^2*(b^2*x^2+2*a*b*x+a^2)^p/b^3/(1+p)+2*e*(-a*e+b*d)
*(b*x+a)^3*(b^2*x^2+2*a*b*x+a^2)^p/b^3/(3+2*p)+1/2*e^2*(b*x+a)^4*(b^2*x^2+2
*a*b*x+a^2)^p/b^3/(2+p)
```

Rubi [A] time = 0.09, antiderivative size = 134, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{770, 21, 43\}$

$$\frac{2e(a+bx)^3(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{b^3(2p+3)}+\frac{(a+bx)^2(bd-ae)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(p+1)}+\frac{e^2(a+bx)^4\left(a^2+2abx+\right.}{2b^3(p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)^2*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^3*(1 + p)) + (
2*e*(b*d - a*e)*(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^3*(3 + 2*p)) +
(e^2*(a + b*x)^4*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^3*(2 + p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\int (a+bx)(d+ex)^2\left(a^2+2abx+b^2x^2\right)^p\,dx=\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d+e$$

$$=\frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{1+2p}(d+ex)^2\,dx}{b}$$

$$=\frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(\frac{(bd-ae)^2\left(ab+b^2x\right)^{1+2p}}{b^2}+\frac{2e(bd-ae}{}\right.}{b}$$

$$=\frac{(bd-ae)^2(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^3(1+p)}+\frac{2e(bd-ae)(a+bx)^3\left(a^2\right.}{b^3(3+2}$$

Mathematica [A] time = 0.07, size = 109, normalized size = 0.81

$$\frac{\left((a+bx)^2\right)^{p+1}\left(a^2e^2-2abe(d(p+2)+e(p+1)x)+b^2\left(d^2\left(2p^2+7p+6\right)+4de\left(p^2+3p+2\right)x+e^2\left(2p^2+5p+3\right.\right.\right.}{2b^3(p+1)(p+2)(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*(a^2*e^2 - 2*a*b*e*(d*(2 + p) + e*(1 + p)*x) + b^2*(
d^2*(6 + 7*p + 2*p^2) + 4*d*e*(2 + 3*p + p^2)*x + e^2*(3 + 5*p + 2*p^2)*x^2
)))/(2*b^3*(1 + p)*(2 + p)*(3 + 2*p))
```

fricas [B] time = 1.00, size = 353, normalized size = 2.63

$$\frac{\left(2\,a^2b^2d^2p^2+6\,a^2b^2d^2-4\,a^3bde+a^4e^2+\left(2\,b^4e^2p^2+5\,b^4e^2p+3\,b^4e^2\right)x^4+4\left(2\,b^4de+ab^3e^2+\left(b^4de+ab^3e^2\right)p^2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^2*b^2*d^2*p^2 + 6*a^2*b^2*d^2 - 4*a^3*b*d*e + a^4*e^2 + (2*b^4*e^2
*p^2 + 5*b^4*e^2*p + 3*b^4*e^2)*x^4 + 4*(2*b^4*d*e + a*b^3*e^2 + (b^4*d*e +
 a*b^3*e^2)*p^2 + (3*b^4*d*e + 2*a*b^3*e^2)*p)*x^3 + (6*b^4*d^2 + 12*a*b^3*
d*e + 2*(b^4*d^2 + 4*a*b^3*d*e + a^2*b^2*e^2)*p^2 + (7*b^4*d^2 + 22*a*b^3*d
*e + a^2*b^2*e^2)*p)*x^2 + (7*a^2*b^2*d^2 - 2*a^3*b*d*e)*p + 2*(6*a*b^3*d^2
 + 2*(a*b^3*d^2 + a^2*b^2*d*e)*p^2 + (7*a*b^3*d^2 + 4*a^2*b^2*d*e - a^3*b*e
^2)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(2*b^3*p^3 + 9*b^3*p^2 + 13*b^3*p + 6
*b^3)
```

giac [B] time = 0.32, size = 903, normalized size = 6.74

$$\frac{2\left(b^2x^2+2\,abx+a^2\right)^pb^4p^2x^4e^2+4\left(b^2x^2+2\,abx+a^2\right)^pb^4dp^2x^3e+2\left(b^2x^2+2\,abx+a^2\right)^pb^4d^2p^2x^2+4\left(b^2x^2+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*p^2*x^4*e^2 + 4*(b^2*x^2 + 2*a*b*x +
 a^2)^p*b^4*d*p^2*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d^2*p^2*x^2 + 4
*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*p^2*x^3*e^2 + 5*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^4*p*x^4*e^2 + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*p^2*x^2*e + 12*(b
^2*x^2 + 2*a*b*x + a^2)^p*b^4*d*p*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b
^3*d^2*p^2*x + 7*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d^2*p*x^2 + 2*(b^2*x^2 + 2
*a*b*x + a^2)^p*a^2*b^2*p^2*x^2*e^2 + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*p
*x^3*e^2 + 3*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*x^4*e^2 + 4*(b^2*x^2 + 2*a*b*x
 + a^2)^p*a^2*b^2*d*p^2*x*e + 22*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*p*x^2*
e + 8*(b^2*x^2 + 2*a*b*x + a^2)^p*b^4*d*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2)
^p*a^2*b^2*d^2*p^2 + 14*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d^2*p*x + 6*(b^2*
x^2 + 2*a*b*x + a^2)^p*b^4*d^2*x^2 + (b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*p*
x^2*e^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*x^3*e^2 + 8*(b^2*x^2 + 2*a*b*
x + a^2)^p*a^2*b^2*d*p*x*e + 12*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^3*d*x^2*e +
 7*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*d^2*p + 12*(b^2*x^2 + 2*a*b*x + a^2)
^p*a*b^3*d^2*x - 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b*p*x*e^2 - 2*(b^2*x^2 +
 2*a*b*x + a^2)^p*a^3*b*d*p*e + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2*b^2*d^2 -
 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a^3*b*d*e + (b^2*x^2 + 2*a*b*x + a^2)^p*a^4*
e^2)/(2*b^3*p^3 + 9*b^3*p^2 + 13*b^3*p + 6*b^3)
```

maple [**A**] time = 0.05, size = 179, normalized size = 1.34

$$\frac{(bx+a)^2\left(2b^2e^2p^2x^2+4b^2dep^2x+5b^2e^2px^2-2abe^2px+2b^2d^2p^2+12b^2depx+3e^2x^2b^2-2abdep-2abe^2x\right.}{2\left(2p^3+9p^2+13p+6\right)b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] 1/2*(b*x+a)^2*(2*b^2*e^2*p^2*x^2+4*b^2*d*e*p^2*x+5*b^2*e^2*p*x^2-2*a*b*e^2*
p*x+2*b^2*d^2*p^2+12*b^2*d*e*p*x+3*b^2*e^2*x^2-2*a*b*d*e*p-2*a*b*e^2*x+7*b^
2*d^2*p+8*b^2*d*e*x+a^2*e^2-4*a*b*d*e+6*b^2*d^2)*(b^2*x^2+2*a*b*x+a^2)^p/b^
3/(2*p^3+9*p^2+13*p+6)
```

maxima [**B**] time = 0.64, size = 404, normalized size = 3.01

$$\frac{(bx+a)(bx+a)^{2p}ad^2}{b(2p+1)}+\frac{\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}d^2}{2\left(2p^2+3p+1\right)b}+\frac{\left(b^2(2p+1)x^2+2abpx-a^2\right)(bx+a)^{2p}ad}{\left(2p^2+3p+1\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)^2*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d^2/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*
a*b*p*x - a^2)*(b*x + a)^(2*p)*d^2/((2*p^2 + 3*p + 1)*b) + (b^2*(2*p + 1)*x
^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*d*e/((2*p^2 + 3*p + 1)*b^2) + 2*((2
*p^2 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x +
 a)^(2*p)*d*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2) + ((2*p^2 + 3*p + 1)*b^3*x^
3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^(2*p)*a*e^2/((4*p^
3 + 12*p^2 + 11*p + 3)*b^3) + 1/2*((4*p^3 + 12*p^2 + 11*p + 3)*b^4*x^4 + 2*
(2*p^3 + 3*p^2 + p)*a*b^3*x^3 - 3*(2*p^2 + p)*a^2*b^2*x^2 + 6*a^3*b*p*x - 3
*a^4)*(b*x + a)^(2*p)*e^2/((4*p^4 + 20*p^3 + 35*p^2 + 25*p + 6)*b^3)
```

mupad [**B**] time = 2.27, size = 355, normalized size = 2.65

$$\left(a^2+2abx+b^2x^2\right)^p\left(\frac{a^2\left(a^2e^2-2abdep-4abde+2b^2d^2p^2+7b^2d^2p+6b^2d^2\right)}{2b^3\left(2p^3+9p^2+13p+6\right)}+\frac{x^2\left(2a^2b^2e^2p^2+\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)^2*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((a^2*(a^2*e^2 + 6*b^2*d^2 + 7*b^2*d^2*p + 2*b^
2*d^2*p^2 - 4*a*b*d*e - 2*a*b*d*e*p))/(2*b^3*(13*p + 9*p^2 + 2*p^3 + 6)) +
(x^2*(6*b^4*d^2 + 7*b^4*d^2*p + 2*b^4*d^2*p^2 + a^2*b^2*e^2*p + 12*a*b^3*d*
e + 2*a^2*b^2*e^2*p^2 + 8*a*b^3*d*e*p^2 + 22*a*b^3*d*e*p))/(2*b^3*(13*p + 9
*p^2 + 2*p^3 + 6)) + (2*e*x^3*(p + 1)*(a*e + 2*b*d + a*e*p + b*d*p))/(13*p
+ 9*p^2 + 2*p^3 + 6) + (a*x*(6*b^2*d^2 - a^2*e^2*p + 7*b^2*d^2*p + 2*b^2*d^
2*p^2 + 4*a*b*d*e*p + 2*a*b*d*e*p^2))/(b^2*(13*p + 9*p^2 + 2*p^3 + 6)) + (b
*e^2*x^4*(5*p + 2*p^2 + 3))/(2*(13*p + 9*p^2 + 2*p^3 + 6)))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)**2*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d**2*x + d*e*x**2 + e**2*x**3/3)*(a**2)**p, Eq(b, 0)), (2*a**
2*e**2*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) + 3*a**2*e**2/
(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - 2*a*b*d*e/(2*a**2*b**3 + 4*a*b**
4*x + 2*b**5*x**2) + 4*a*b*e**2*x*log(a/b + x)/(2*a**2*b**3 + 4*a*b**4*x +
2*b**5*x**2) + 4*a*b*e**2*x/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - b**2
*d**2/(2*a**2*b**3 + 4*a*b**4*x + 2*b**5*x**2) - 4*b**2*d*e*x/(2*a**2*b**3
+ 4*a*b**4*x + 2*b**5*x**2) + 2*b**2*e**2*x**2*log(a/b + x)/(2*a**2*b**3 +
4*a*b**4*x + 2*b**5*x**2), Eq(p, -2)), (Integral((a + b*x)*(d + e*x)**2/((a
 + b*x)**2)**(3/2), x), Eq(p, -3/2)), (a**2*e**2*log(a/b + x)/b**3 - 2*a*d*
e*log(a/b + x)/b**2 - a*e**2*x/b**2 + d**2*log(a/b + x)/b + 2*d*e*x/b + e**
2*x**2/(2*b), Eq(p, -1)), (a**4*e**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**
3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) - 2*a**3*b*d*e*p*(a**2 + 2*a*b
*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) - 4*a
**3*b*d*e*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*
b**3*p + 12*b**3) - 2*a**3*b*e**2*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b*
*3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*a**2*b**2*d**2*p**2*(a**2
 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**
3) + 7*a**2*b**2*d**2*p*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b
**3*p**2 + 26*b**3*p + 12*b**3) + 6*a**2*b**2*d**2*(a**2 + 2*a*b*x + b**2*x
**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a**2*b**2*d*
e*p**2*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b
**3*p + 12*b**3) + 8*a**2*b**2*d*e*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b
**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*a**2*b**2*e**2*p**2*x**2
*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p +
12*b**3) + a**2*b**2*e**2*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p*
*3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a*b**3*d**2*p**2*x*(a**2 + 2*a
*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 1
4*a*b**3*d**2*p*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p*
*2 + 26*b**3*p + 12*b**3) + 12*a*b**3*d**2*x*(a**2 + 2*a*b*x + b**2*x**2)**
p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 8*a*b**3*d*e*p**2*x*
*2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p
+ 12*b**3) + 22*a*b**3*d*e*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p
**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 12*a*b**3*d*e*x**2*(a**2 + 2*a*
b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*
a*b**3*e**2*p**2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**
3*p**2 + 26*b**3*p + 12*b**3) + 8*a*b**3*e**2*p*x**3*(a**2 + 2*a*b*x + b**2
*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 4*a*b**3*e**
2*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**
3*p + 12*b**3) + 2*b**4*d**2*p**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b
**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 7*b**4*d**2*p*x**2*(a**2 +
 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3)
 + 6*b**4*d**2*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*
p**2 + 26*b**3*p + 12*b**3) + 4*b**4*d*e*p**2*x**3*(a**2 + 2*a*b*x + b**2*x
**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 12*b**4*d*e*p*
x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*
p + 12*b**3) + 8*b**4*d*e*x**3*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3
 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 2*b**4*e**2*p**2*x**4*(a**2 + 2*a*
b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3) + 5*
b**4*e**2*p*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**3*p**3 + 18*b**3*p**
2 + 26*b**3*p + 12*b**3) + 3*b**4*e**2*x**4*(a**2 + 2*a*b*x + b**2*x**2)**p
/(4*b**3*p**3 + 18*b**3*p**2 + 26*b**3*p + 12*b**3), True))
```

3.2160 $\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=83

$$\frac{(a+bx)^2(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^2(p+1)}+\frac{e(a+bx)^3\left(a^2+2abx+b^2x^2\right)^p}{b^2(2p+3)}$$

```
[Out] 1/2*(-a*e+b*d)*(b*x+a)^2*(b^2*x^2+2*a*b*x+a^2)^p/b^2/(1+p)+e*(b*x+a)^3*(b^2
*x^2+2*a*b*x+a^2)^p/b^2/(3+2*p)
```

Rubi [A] time = 0.05, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.103$, Rules used = $\{770, 21, 43\}$

$$\frac{(a+bx)^2(bd-ae)\left(a^2+2abx+b^2x^2\right)^p}{2b^2(p+1)}+\frac{e(a+bx)^3\left(a^2+2abx+b^2x^2\right)^p}{b^2(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*d - a*e)*(a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*b^2*(1 + p)) + (e*
(a + b*x)^3*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*(3 + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(d+ex)\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (a+bx)\left(ab+b^2x\right)^{2p}(d+ex \\
&= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{1+2p}(d+ex)\,dx}{b} \\
&= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(\frac{(bd-ae)\left(ab+b^2x\right)^{1+2p}}{b}+\frac{e\left(ab+b^2x\right)^{2}}{b^2}\right.}{b} \\
&= \frac{(bd-ae)(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p}{2b^2(1+p)}+\frac{e(a+bx)^3\left(a^2+2abx+b^2\right.}{b^2(3+2p)}
\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 51, normalized size = 0.61

$$\frac{\left((a+bx)^2\right)^{p+1}(-ae+bd(2p+3)+2be(p+1)x)}{2b^2(p+1)(2p+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(d + e*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*(-(a*e) + b*d*(3 + 2*p) + 2*b*e*(1 + p)*x))/(2*b^2*(
1 + p)*(3 + 2*p))
```

fricas [**A**] time = 0.94, size = 142, normalized size = 1.71

$$\frac{(2\,a^2bdp+3\,a^2bd-a^3e+2\,(b^3ep+b^3e)x^3+(3\,b^3d+3\,ab^2e+2\,(b^3d+2\,ab^2e)p)x^2+2\,(3\,ab^2d+(2\,ab^2d+a^2}{2\,(2\,b^2p^2+5\,b^2p+3\,b^2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(2*a^2*b*d*p + 3*a^2*b*d - a^3*e + 2*(b^3*e*p + b^3*e)*x^3 + (3*b^3*d +
 3*a*b^2*e + 2*(b^3*d + 2*a*b^2*e)*p)*x^2 + 2*(3*a*b^2*d + (2*a*b^2*d + a^2
*b*e)*p)*x)*(b^2*x^2 + 2*a*b*x + a^2)^p/(2*b^2*p^2 + 5*b^2*p + 3*b^2)
```

giac [**B**] time = 0.22, size = 353, normalized size = 4.25

$$\frac{2\,(b^2x^2+2\,abx+a^2)^pb^3px^3e+2\,(b^2x^2+2\,abx+a^2)^pb^3dpx^2+4\,(b^2x^2+2\,abx+a^2)^pab^2px^2e+2\,(b^2x^2+2\,ab}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(2*(b^2*x^2 + 2*a*b*x + a^2)^p*b^3*p*x^3*e + 2*(b^2*x^2 + 2*a*b*x + a^2
)^p*b^3*d*p*x^2 + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*p*x^2*e + 2*(b^2*x^2
+ 2*a*b*x + a^2)^p*b^3*x^3*e + 4*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*d*p*x +
3*(b^2*x^2 + 2*a*b*x + a^2)^p*b^3*d*x^2 + 2*(b^2*x^2 + 2*a*b*x + a^2)^p*a^2
*b*p*x*e + 3*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*x^2*e + 2*(b^2*x^2 + 2*a*b*x
 + a^2)^p*a^2*b*d*p + 6*(b^2*x^2 + 2*a*b*x + a^2)^p*a*b^2*d*x + 3*(b^2*x^2
+ 2*a*b*x + a^2)^p*a^2*b*d - (b^2*x^2 + 2*a*b*x + a^2)^p*a^3*e)/(2*b^2*p^2
+ 5*b^2*p + 3*b^2)
```

maple [**A**] time = 0.05, size = 67, normalized size = 0.81

$$-\frac{\left(-2bepx-2bdp-2bex+ae-3bd\right)(bx+a)^2\left(b^2x^2+2abx+a^2\right)^p}{2\left(2p^2+5p+3\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b^2*x^2+2*a*b*x+a^2)^p*(-2*b*e*p*x-2*b*d*p-2*b*e*x+a*e-3*b*d)*(b*x+a)
^2/b^2/(2*p^2+5*p+3)
```

maxima [**B**] time = 0.54, size = 206, normalized size = 2.48

$$\frac{(bx+a)(bx+a)^{2\,p}ad}{b\left(2\,p+1\right)}+\frac{\left(b^2\left(2\,p+1\right)x^2+2\,abpx-a^2\right)(bx+a)^{2\,p}d}{2\,\left(2\,p^2+3\,p+1\right)b}+\frac{\left(b^2\left(2\,p+1\right)x^2+2\,abpx-a^2\right)(bx+a)^{2\,p}ae}{2\,\left(2\,p^2+3\,p+1\right)b^2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] (b*x + a)*(b*x + a)^(2*p)*a*d/(b*(2*p + 1)) + 1/2*(b^2*(2*p + 1)*x^2 + 2*a*
b*p*x - a^2)*(b*x + a)^(2*p)*d/((2*p^2 + 3*p + 1)*b) + 1/2*(b^2*(2*p + 1)*x
^2 + 2*a*b*p*x - a^2)*(b*x + a)^(2*p)*a*e/((2*p^2 + 3*p + 1)*b^2) + ((2*p^2
 + 3*p + 1)*b^3*x^3 + (2*p^2 + p)*a*b^2*x^2 - 2*a^2*b*p*x + a^3)*(b*x + a)^
(2*p)*e/((4*p^3 + 12*p^2 + 11*p + 3)*b^2)
```

mupad [B] time = 2.15, size = 142, normalized size = 1.71

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\,\left(\frac{x^2\,\left(3\,a\,e+3\,b\,d+4\,a\,e\,p+2\,b\,d\,p\right)}{2\,\left(2\,p^2+5\,p+3\right)}+\frac{a^2\,\left(3\,b\,d-a\,e+2\,b\,d\,p\right)}{2\,b^2\,\left(2\,p^2+5\,p+3\right)}+\frac{a\,x\,\left(3\,b\,d+a\,e\,p+2\,b\,d\,p\right.}{b\,\left(2\,p^2+5\,p+3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(d + e*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((x^2*(3*a*e + 3*b*d + 4*a*e*p + 2*b*d*p))/(2*(
5*p + 2*p^2 + 3)) + (a^2*(3*b*d - a*e + 2*b*d*p))/(2*b^2*(5*p + 2*p^2 + 3))
 + (a*x*(3*b*d + a*e*p + 2*b*d*p))/(b*(5*p + 2*p^2 + 3)) + (b*e*x^3*(p + 1)
)/(5*p + 2*p^2 + 3))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\begin{cases} a\left(dx+\frac{ex^2}{2}\right)\left(a^2\right)^p \\ \int\frac{(a+bx)(d+ex)}{\left((a+bx)^2\right)^{\frac{3}{2}}}\,dx \\ -\frac{ae\log\left(\frac{a}{b}+x\right)}{b^2}+\frac{d\log\left(\frac{a}{b}+x\right)}{b}+\frac{ex}{b} \\ -\frac{a^3e\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2a^2bdp\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{3a^2bd\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{2a^2bepx\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+\frac{4ab^2dpx\left(a^2+2abx+b^2x^2\right)^p}{4b^2p^2+10b^2p+6b^2}+6ab \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(e*x+d)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((a*(d*x + e*x**2/2)*(a**2)**p, Eq(b, 0)), (Integral((a + b*x)*(d
+ e*x)/((a + b*x)**2)**(3/2), x), Eq(p, -3/2)), (-a*e*log(a/b + x)/b**2 + d
*log(a/b + x)/b + e*x/b, Eq(p, -1)), (-a**3*e*(a**2 + 2*a*b*x + b**2*x**2)*
*p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*a**2*b*d*p*(a**2 + 2*a*b*x + b**2
*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 3*a**2*b*d*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*a**2*b*e*p*x*(a**2 +
2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 4*a*b**2*d*p*x
*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 6*a*b
**2*d*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2)
+ 4*a*b**2*e*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*
p + 6*b**2) + 3*a*b**2*e*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*b**2*p**2
+ 10*b**2*p + 6*b**2) + 2*b**3*d*p*x**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(4*
b**2*p**2 + 10*b**2*p + 6*b**2) + 3*b**3*d*x**2*(a**2 + 2*a*b*x + b**2*x**2
)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*b**3*e*p*x**3*(a**2 + 2*a*b*x +
 b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2) + 2*b**3*e*x**3*(a**2 + 2
*a*b*x + b**2*x**2)**p/(4*b**2*p**2 + 10*b**2*p + 6*b**2), True))
```

3.2161 $\int (a+bx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=32

$$\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}}{2b(p+1)}$$

```
[Out] 1/2*(b^2*x^2+2*a*b*x+a^2)^(1+p)/b/(1+p)
```

Rubi [A] time = 0.01, antiderivative size = 32, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 24, $\frac{\text{number of rules}}{\text{integrand size}} = 0.042$, Rules used = {629}

$$\frac{\left(a^2+2abx+b^2x^2\right)^{p+1}}{2b(p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] (a^2 + 2*a*b*x + b^2*x^2)^(1 + p)/(2*b*(1 + p))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (a+bx)\left(a^2+2abx+b^2x^2\right)^p\,dx=\frac{\left(a^2+2abx+b^2x^2\right)^{1+p}}{2b(1+p)}$$

Mathematica [A] time = 0.01, size = 23, normalized size = 0.72

$$\frac{\left((a+bx)^2\right)^{p+1}}{2b(p+1)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)^2)^(1 + p)/(2*b*(1 + p))
```

fricas [A] time = 1.18, size = 43, normalized size = 1.34

$$\frac{\left(b^2x^2+2\,abx+a^2\right)\left(b^2x^2+2\,abx+a^2\right)^p}{2\left(bp+b\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="fricas")
```

```
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)*(b^2*x^2 + 2*a*b*x + a^2)^p/(b*p + b)
```

giac [A] time = 0.16, size = 30, normalized size = 0.94

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^{p+1}}{2\,b\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac")
```

```
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(p + 1)/(b*(p + 1))
```

maple [A] time = 0.05, size = 36, normalized size = 1.12

$$\frac{(bx+a)^2\left(b^2x^2+2abx+a^2\right)^p}{2\left(p+1\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] 1/2*(b*x+a)^2/b/(p+1)*(b^2*x^2+2*a*b*x+a^2)^p
```

maxima [A] time = 0.65, size = 30, normalized size = 0.94

$$\frac{\left(b^2x^2 + 2\,abx + a^2\right)^{p+1}}{2\,b\left(p+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxima")
```

```
[Out] 1/2*(b^2*x^2 + 2*a*b*x + a^2)^(p + 1)/(b*(p + 1))
```

mupad [B] time = 2.07, size = 53, normalized size = 1.66

$$\left(\frac{a^2}{2\,b\,\left(p+1\right)}+\frac{a\,x}{p+1}+\frac{b\,x^2}{2\,\left(p+1\right)}\right)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2/(2*b*(p + 1)) + (a*x)/(p + 1) + (b*x^2)/(2*(p + 1)))*(a^2 + b^2*x^2 +
2*a*b*x)^p
```

sympy [A] time = 0.48, size = 119, normalized size = 3.72

$$\begin{cases} \frac{x}{a} & \text{for}\: b = 0 \wedge p = -1 \\ ax\left(a^2\right)^p & \text{for}\: b = 0 \\ \frac{\log\left(\frac{a}{b}+x\right)}{b} & \text{for}\: p = -1 \\ \frac{a^2\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} + \frac{2abx\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} + \frac{b^2x^2\left(a^2+2abx+b^2x^2\right)^p}{2bp+2b} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Piecewise((x/a, Eq(b, 0) & Eq(p, -1)), (a*x*(a**2)**p, Eq(b, 0)), (log(a/b
+ x)/b, Eq(p, -1)), (a**2*(a**2 + 2*a*b*x + b**2*x**2)**p/(2*b*p + 2*b) + 2
*a*b*x*(a**2 + 2*a*b*x + b**2*x**2)**p/(2*b*p + 2*b) + b**2*x**2*(a**2 + 2*
a*b*x + b**2*x**2)**p/(2*b*p + 2*b), True))
```

3.2162 $\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^p}{d+ex}\,dx$

Optimal. Leaf size=74

$$\frac{(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p\,{}_2F_1\left(1,2(p+1);2p+3;-\frac{e(a+bx)}{bd-ae}\right)}{2(p+1)(bd-ae)}$$

```
[Out] 1/2*(b*x+a)^2*(b^2*x^2+2*a*b*x+a^2)^p*hypergeom([1, 2+2*p],[3+2*p],-e*(b*x+
a)/(-a*e+b*d))/(-a*e+b*d)/(1+p)
```

Rubi [A] time = 0.05, antiderivative size = 74, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 31, $\frac{\text{number of rules}}{\text{integrand size}} = 0.097$, Rules used = $\{770, 21, 68\}$

$$\frac{(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p\,{}_2F_1\left(1,2(p+1);2p+3;-\frac{e(a+bx)}{bd-ae}\right)}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(d + e*x),x]
```

```
[Out] ((a + b*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p*Hypergeometric2F1[1, 2*(1 + p), 3
+ 2*p, -((e*(a + b*x))/(b*d - a*e))])/(2*(b*d - a*e)*(1 + p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(a+bx)\left(a^2+2abx+b^2x^2\right)^p}{d+ex}\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \frac{(a+bx)\left(ab+b^2x\right)^{2p}}{d+ex}\,dx\\ &= \frac{\left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \frac{\left(ab+b^2x\right)^{1+2p}}{d+ex}\,dx}{b}\\ &= \frac{(a+bx)^2\left(a^2+2abx+b^2x^2\right)^p\,{}_2F_1\left(1,2(1+p);3+2p;-\frac{e(a+bx)}{bd-ae}\right)}{2(bd-ae)(1+p)}\end{aligned}$$

Mathematica [A] time = 0.02, size = 59, normalized size = 0.80

$$\frac{\left((a+bx)^2\right)^{p+1}\,{}_2F_1\left(1,2(p+1);2p+3;\frac{e(a+bx)}{ae-bd}\right)}{2(p+1)(bd-ae)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(d + e*x),x]
```

```
[Out] (((a + b*x)^2)^(1 + p)*Hypergeometric2F1[1, 2*(1 + p), 3 + 2*p, (e*(a + b*x
))/(-(b*d) + a*e)])/(2*(b*d - a*e)*(1 + p))
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(bx+a)\left(b^2x^2+2\,abx+a^2\right)^p}{ex+d},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p/(e*x+d),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)*(b^2*x^2 + 2*a*b*x + a^2)^p/(e*x + d), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)\left(b^2x^2+2\,abx+a^2\right)^p}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p/(e*x+d),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(b^2*x^2 + 2*a*b*x + a^2)^p/(e*x + d), x)
```

maple [F] time = 1.50, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)\left(b^2x^2+2abx+a^2\right)^p}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p/(e*x+d),x)
```

```
[Out] int((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p/(e*x+d),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)\left(b^2x^2+2\,abx+a^2\right)^p}{ex+d}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b^2*x^2+2*a*b*x+a^2)^p/(e*x+d),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)*(b^2*x^2 + 2*a*b*x + a^2)^p/(e*x + d), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int\frac{(a+b\,x)\,\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p}{d+e\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x),x)
```

```
[Out] int(((a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(a+bx)\left((a+bx)^2\right)^p}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b**2*x**2+2*a*b*x+a**2)**p/(e*x+d),x)
```

```
[Out] Integral((a + b*x)*((a + b*x)**2)**p/(d + e*x), x)
```

3.2163 $\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=58

$$\frac{(Ab-aB)(ac+bcx)^{m+7}}{b^2c^7(m+7)}+\frac{B(ac+bcx)^{m+8}}{b^2c^8(m+8)}$$

```
[Out] (A*b-B*a)*(b*c*x+a*c)^(7+m)/b^2/c^7/(7+m)+B*(b*c*x+a*c)^(8+m)/b^2/c^8/(8+m)
```

Rubi [A] time = 0.04, antiderivative size = 58, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = $\{27, 21, 43\}$

$$\frac{(Ab-aB)(ac+bcx)^{m+7}}{b^2c^7(m+7)}+\frac{B(ac+bcx)^{m+8}}{b^2c^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((A*b - a*B)*(a*c + b*c*x)^(7 + m))/(b^2*c^7*(7 + m)) + (B*(a*c + b*c*x)^(8
 + m))/(b^2*c^8*(8 + m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}
\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \int (a+bx)^6(A+Bx)(ac+bcx)^m \, dx\\
&= \frac{\int (A+Bx)(ac+bcx)^{6+m} \, dx}{c^6}\\
&= \frac{\int \left(\frac{(Ab-aB)(ac+bcx)^{6+m}}{b}+\frac{B(ac+bcx)^{7+m}}{bc}\right) \, dx}{c^6}\\
&= \frac{(Ab-aB)(ac+bcx)^{7+m}}{b^2c^7(7+m)}+\frac{B(ac+bcx)^{8+m}}{b^2c^8(8+m)}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 48, normalized size = 0.83

$$\frac{(a+bx)^7(c(a+bx))^m(-aB+Ab(m+8)+bB(m+7)x)}{b^2(m+7)(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((a + b*x)^7*(c*(a + b*x))^m*(-(a*B) + A*b*(8 + m) + b*B*(7 + m)*x))/(b^2*(
7 + m)*(8 + m))
```

fricas [B] time = 0.93, size = 350, normalized size = 6.03

$$\left(Aa^7bm - Ba^8 + 8\,Aa^7b + \left(Bb^8m + 7\,Bb^8\right)x^8 + \left(48\,Bab^7 + 8\,Ab^8 + \left(7\,Bab^7 + Ab^8\right)m\right)x^7 + 7\left(20\,Ba^2b^6 + 8\,Aab^7\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (A*a^7*b*m - B*a^8 + 8*A*a^7*b + (B*b^8*m + 7*B*b^8)*x^8 + (48*B*a*b^7 + 8*
A*b^8 + (7*B*a*b^7 + A*b^8)*m)*x^7 + 7*(20*B*a^2*b^6 + 8*A*a*b^7 + (3*B*a^2
*b^6 + A*a*b^7)*m)*x^6 + 7*(32*B*a^3*b^5 + 24*A*a^2*b^6 + (5*B*a^3*b^5 + 3*
A*a^2*b^6)*m)*x^5 + 35*(6*B*a^4*b^4 + 8*A*a^3*b^5 + (B*a^4*b^4 + A*a^3*b^5)
*m)*x^4 + 7*(16*B*a^5*b^3 + 40*A*a^4*b^4 + (3*B*a^5*b^3 + 5*A*a^4*b^4)*m)*x
^3 + 7*(4*B*a^6*b^2 + 24*A*a^5*b^3 + (B*a^6*b^2 + 3*A*a^5*b^3)*m)*x^2 + (56
*A*a^6*b^2 + (B*a^7*b + 7*A*a^6*b^2)*m)*x)*(b*c*x + a*c)^m/(b^2*m^2 + 15*b^
2*m + 56*b^2)
```

giac [B] time = 0.28, size = 695, normalized size = 11.98

$$(bcx + ac)^m Bb^8mx^8 + 7\,(bcx + ac)^m Bab^7mx^7 + (bcx + ac)^m Ab^8mx^7 + 7\,(bcx + ac)^m Bb^8x^8 + 21\,(bcx + ac)^m Ba^2b^6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] ((b*c*x + a*c)^m*B*b^8*m*x^8 + 7*(b*c*x + a*c)^m*B*a*b^7*m*x^7 + (b*c*x + a
*c)^m*A*b^8*m*x^7 + 7*(b*c*x + a*c)^m*B*b^8*x^8 + 21*(b*c*x + a*c)^m*B*a^2*
b^6*m*x^6 + 7*(b*c*x + a*c)^m*A*a*b^7*m*x^6 + 48*(b*c*x + a*c)^m*B*a*b^7*x^
7 + 8*(b*c*x + a*c)^m*A*b^8*x^7 + 35*(b*c*x + a*c)^m*B*a^3*b^5*m*x^5 + 21*(
b*c*x + a*c)^m*A*a^2*b^6*m*x^5 + 140*(b*c*x + a*c)^m*B*a^2*b^6*x^6 + 56*(b*
c*x + a*c)^m*A*a*b^7*x^6 + 35*(b*c*x + a*c)^m*B*a^4*b^4*m*x^4 + 35*(b*c*x +
 a*c)^m*A*a^3*b^5*m*x^4 + 224*(b*c*x + a*c)^m*B*a^3*b^5*x^5 + 168*(b*c*x +
a*c)^m*A*a^2*b^6*x^5 + 21*(b*c*x + a*c)^m*B*a^5*b^3*m*x^3 + 35*(b*c*x + a*c
)^m*A*a^4*b^4*m*x^3 + 210*(b*c*x + a*c)^m*B*a^4*b^4*x^4 + 280*(b*c*x + a*c)
^m*A*a^3*b^5*x^4 + 7*(b*c*x + a*c)^m*B*a^6*b^2*m*x^2 + 21*(b*c*x + a*c)^m*A
*a^5*b^3*m*x^2 + 112*(b*c*x + a*c)^m*B*a^5*b^3*x^3 + 280*(b*c*x + a*c)^m*A*
a^4*b^4*x^3 + (b*c*x + a*c)^m*B*a^7*b*m*x + 7*(b*c*x + a*c)^m*A*a^6*b^2*m*x
 + 28*(b*c*x + a*c)^m*B*a^6*b^2*x^2 + 168*(b*c*x + a*c)^m*A*a^5*b^3*x^2 + (
b*c*x + a*c)^m*A*a^7*b*m + 56*(b*c*x + a*c)^m*A*a^6*b^2*x - (b*c*x + a*c)^m
*B*a^8 + 8*(b*c*x + a*c)^m*A*a^7*b)/(b^2*m^2 + 15*b^2*m + 56*b^2)
```

maple [A] time = 0.05, size = 71, normalized size = 1.22

$$\frac{\left(b^2x^2 + 2abx + a^2\right)^3 (Bbmx + Abm + 7Bbx + 8Ab - Ba)(bx + a)(bcx + ac)^m}{\left(m^2 + 15m + 56\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b^2*x^2+2*a*b*x+a^2)^3*(b*c*x+a*c)^m*(B*b*m*x+A*b*m+7*B*b*x+8*A*b-B*a)*(b*
x+a)/b^2/(m^2+15*m+56)
```

maxima [B] time = 1.01, size = 2113, normalized size = 36.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*B*a^6/((m^2 + 3*m
 + 2)*b^2) + 6*(b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*A*
a^5/((m^2 + 3*m + 2)*b) + 6*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*
c^m*x^2 - 2*a^2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*B*a^5/((m^3 + 6*m^2 + 11
*m + 6)*b^2) + 15*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*c^m*x^2 -
2*a^2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*A*a^4/((m^3 + 6*m^2 + 11*m + 6)*b)
 + (b*c*x + a*c)^(m + 1)*A*a^6/(b*c*(m + 1)) + 15*((m^3 + 6*m^2 + 11*m + 6)
*b^4*c^m*x^4 + (m^3 + 3*m^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*
x^2 + 6*a^3*b*c^m*m*x - 6*a^4*c^m)*(b*x + a)^m*B*a^4/((m^4 + 10*m^3 + 35*m^
2 + 50*m + 24)*b^2) + 20*((m^3 + 6*m^2 + 11*m + 6)*b^4*c^m*x^4 + (m^3 + 3*m
^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*x^2 + 6*a^3*b*c^m*m*x - 6
*a^4*c^m)*(b*x + a)^m*A*a^3/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b) + 20*((
m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*
m)*a*b^4*c^m*x^4 - 4*(m^3 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 12*(m^2 + m)*a^3
*b^2*c^m*x^2 - 24*a^4*b*c^m*m*x + 24*a^5*c^m)*(b*x + a)^m*B*a^3/((m^5 + 15*
m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^2) + 15*((m^4 + 10*m^3 + 35*m^2 + 5
0*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*a*b^4*c^m*x^4 - 4*(m^3
 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 12*(m^2 + m)*a^3*b^2*c^m*x^2 - 24*a^4*b*c
^m*m*x + 24*a^5*c^m)*(b*x + a)^m*A*a^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 +
274*m + 120)*b) + 15*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c
^m*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6
*m^3 + 11*m^2 + 6*m)*a^2*b^4*c^m*x^4 + 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x
^3 - 60*(m^2 + m)*a^4*b^2*c^m*x^2 + 120*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x +
 a)^m*B*a^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b
^2) + 6*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c^m*x^6 + (m^5
 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6*m^3 + 11*m^2
 + 6*m)*a^2*b^4*c^m*x^4 + 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x^3 - 60*(m^2
+ m)*a^4*b^2*c^m*x^2 + 120*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x + a)^m*A*a/((m
^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b) + 6*((m^6 + 2
1*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7 + (m^6 + 1
5*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m^5 + 10*m^4
 + 35*m^3 + 50*m^2 + 24*m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m
)*a^3*b^4*c^m*x^4 - 120*(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 360*(m^2 + m)
*a^5*b^2*c^m*x^2 - 720*a^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*B*a/((m^7 +
 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b^2)
+ ((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7
 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m
^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 1
1*m^2 + 6*m)*a^3*b^4*c^m*x^4 - 120*(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 36
0*(m^2 + m)*a^5*b^2*c^m*x^2 - 720*a^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*
A/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 50
40)*b) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068
*m + 5040)*b^8*c^m*x^8 + (m^7 + 21*m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 176
4*m^2 + 720*m)*a*b^7*c^m*x^7 - 7*(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2
 + 120*m)*a^2*b^6*c^m*x^6 + 42*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^3*
b^5*c^m*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^4*b^4*c^m*x^4 + 840*(m^3 +
 3*m^2 + 2*m)*a^5*b^3*c^m*x^3 - 2520*(m^2 + m)*a^6*b^2*c^m*x^2 + 5040*a^7*b
*c^m*m*x - 5040*a^8*c^m)*(b*x + a)^m*B/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5
+ 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*b^2)
```

mupad [B] time = 2.55, size = 319, normalized size = 5.50

$$(a\,c+b\,c\,x)^m\left(\frac{a^7\,\left(8\,A\,b-B\,a+A\,b\,m\right)}{b^2\,\left(m^2+15\,m+56\right)}+\frac{7\,a^5\,x^2\,\left(24\,A\,b+4\,B\,a+3\,A\,b\,m+B\,a\,m\right)}{m^2+15\,m+56}+\frac{b^5\,x^7\,\left(8\,A\,b+48\,B\,a+A\right.}{m^2+15\,m+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m*((a^7*(8*A*b - B*a + A*b*m))/(b^2*(15*m + m^2 + 56)) + (7*a
^5*x^2*(24*A*b + 4*B*a + 3*A*b*m + B*a*m))/(15*m + m^2 + 56) + (b^5*x^7*(8*
A*b + 48*B*a + A*b*m + 7*B*a*m))/(15*m + m^2 + 56) + (35*a^3*b^2*x^4*(8*A*b
 + 6*B*a + A*b*m + B*a*m))/(15*m + m^2 + 56) + (7*a^2*b^3*x^5*(24*A*b + 32*
B*a + 3*A*b*m + 5*B*a*m))/(15*m + m^2 + 56) + (B*b^6*x^8*(m + 7))/(15*m + m
^2 + 56) + (a^6*x*(56*A*b + 7*A*b*m + B*a*m))/(b*(15*m + m^2 + 56)) + (7*a*
b^4*x^6*(8*A*b + 20*B*a + A*b*m + 3*B*a*m))/(15*m + m^2 + 56) + (7*a^4*b*x^
3*(40*A*b + 16*B*a + 5*A*b*m + 3*B*a*m))/(15*m + m^2 + 56))
```

sympy [A] time = 7.82, size = 1488, normalized size = 25.66

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((a**6*(a*c)**m*(A*x + B*x**2/2), Eq(b, 0)), (-A*b/(a*b**2*c**8 +
b**3*c**8*x) + B*a*log(a/b + x)/(a*b**2*c**8 + b**3*c**8*x) + B*a/(a*b**2*c
**8 + b**3*c**8*x) + B*b*x*log(a/b + x)/(a*b**2*c**8 + b**3*c**8*x), Eq(m,
-8)), (A*log(a/b + x)/(b*c**7) - B*a*log(a/b + x)/(b**2*c**7) + B*x/(b*c**7
), Eq(m, -7)), (A*a**7*b*m*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**
2) + 8*A*a**7*b*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*A*a*
*6*b**2*m*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 56*A*a**6*
b**2*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 21*A*a**5*b**3*
m*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 168*A*a**5*b**3
*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 35*A*a**4*b**4*m
*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 280*A*a**4*b**4*
x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 35*A*a**3*b**5*m*
x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 280*A*a**3*b**5*x
**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 21*A*a**2*b**6*m*x
**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 168*A*a**2*b**6*x*
*5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*A*a*b**7*m*x**6*(
a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 56*A*a*b**7*x**6*(a*c +
 b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + A*b**8*m*x**7*(a*c + b*c*x)*
*m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 8*A*b**8*x**7*(a*c + b*c*x)**m/(b**2
*m**2 + 15*b**2*m + 56*b**2) - B*a**8*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2
*m + 56*b**2) + B*a**7*b*m*x*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b
**2) + 7*B*a**6*b**2*m*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b*
*2) + 28*B*a**6*b**2*x**2*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2
) + 21*B*a**5*b**3*m*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2
) + 112*B*a**5*b**3*x**3*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
 + 35*B*a**4*b**4*m*x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
 + 210*B*a**4*b**4*x**4*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
+ 35*B*a**3*b**5*m*x**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2)
+ 224*B*a**3*b**5*x**5*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
 21*B*a**2*b**6*m*x**6*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
 140*B*a**2*b**6*x**6*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) +
7*B*a*b**7*m*x**7*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 48*B
*a*b**7*x**7*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + B*b**8*m*
x**8*(a*c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2) + 7*B*b**8*x**8*(a*
c + b*c*x)**m/(b**2*m**2 + 15*b**2*m + 56*b**2), True))
```

3.2164 $\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=64

$$-\frac{c^5(Ab-aB)(ac+bcx)^{m-5}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{m-4}}{b^2(4-m)}$$

```
[Out] -(A*b-B*a)*c^5*(b*c*x+a*c)^(-5+m)/b^2/(5-m)-B*c^4*(b*c*x+a*c)^(-4+m)/b^2/(4
-m)
```

Rubi [A] time = 0.05, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {27, 21, 43}

$$-\frac{c^5(Ab-aB)(ac+bcx)^{m-5}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{m-4}}{b^2(4-m)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -(((A*b - a*B)*c^5*(a*c + b*c*x)^(-5 + m))/(b^2*(5 - m))) - (B*c^4*(a*c + b
*c*x)^(-4 + m))/(b^2*(4 - m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \int \frac{(A+Bx)(ac+bcx)^m}{(a+bx)^6}\,dx\\ &= c^6\int (A+Bx)(ac+bcx)^{-6+m}\,dx\\ &= c^6\int \left(\frac{(Ab-aB)(ac+bcx)^{-6+m}}{b}+\frac{B(ac+bcx)^{-5+m}}{bc}\right)dx\\ &= -\frac{(Ab-aB)c^5(ac+bcx)^{-5+m}}{b^2(5-m)}-\frac{Bc^4(ac+bcx)^{-4+m}}{b^2(4-m)}\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 48, normalized size = 0.75

$$\frac{(c(a+bx))^m(-aB+Ab(m-4)+bB(m-5)x)}{b^2(m-5)(m-4)(a+bx)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((c*(a + b*x))^m*(-(a*B) + A*b*(-4 + m) + b*B*(-5 + m)*x))/(b^2*(-5 + m)*(-
4 + m)*(a + b*x)^5)
```

fricas [**B**] time = 1.30, size = 212, normalized size = 3.31

$$\frac{(Abm-Ba-4\,Ab+(Bbm-5\,Bb)x}{a^5b^2m^2-9\,a^5b^2m+20\,a^5b^2+\left(b^7m^2-9\,b^7m+20\,b^7\right)x^5+5\left(ab^6m^2-9\,ab^6m+20\,ab^6\right)x^4+10\left(a^2b^5m^2-9\,a^2b^5\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (A*b*m - B*a - 4*A*b + (B*b*m - 5*B*b)*x)*(b*c*x + a*c)^m/(a^5*b^2*m^2 - 9*
a^5*b^2*m + 20*a^5*b^2 + (b^7*m^2 - 9*b^7*m + 20*b^7)*x^5 + 5*(a*b^6*m^2 -
9*a*b^6*m + 20*a*b^6)*x^4 + 10*(a^2*b^5*m^2 - 9*a^2*b^5*m + 20*a^2*b^5)*x^3
 + 10*(a^3*b^4*m^2 - 9*a^3*b^4*m + 20*a^3*b^4)*x^2 + 5*(a^4*b^3*m^2 - 9*a^4
*b^3*m + 20*a^4*b^3)*x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] integrate((B*x + A)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^3, x)
```

maple [**A**] time = 0.04, size = 73, normalized size = 1.14

$$\frac{(Bbmx+Abm-5Bbx-4Ab-Ba)\,(bcx+ac)^m}{(bx+a)\left(b^2x^2+2abx+a^2\right)^2\left(m^2-9m+20\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (B*b*m*x+A*b*m-5*B*b*x-4*A*b-B*a)*(b*c*x+a*c)^m/(b*x+a)/(b^2*x^2+2*a*b*x+a^
2)^2/b^2/(m^2-9*m+20)
```

maxima [**B**] time = 0.74, size = 216, normalized size = 3.38

$$\frac{(bc^m(m-5)x-ac^m)(bx+a)^mB}{\left(m^2-9\,m+20\right)b^7x^5+5\left(m^2-9\,m+20\right)ab^6x^4+10\left(m^2-9\,m+20\right)a^2b^5x^3+10\left(m^2-9\,m+20\right)a^3b^4x^2+5\left(m^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*(m - 5)*x - a*c^m)*(b*x + a)^m*B/((m^2 - 9*m + 20)*b^7*x^5 + 5*(m^2
- 9*m + 20)*a*b^6*x^4 + 10*(m^2 - 9*m + 20)*a^2*b^5*x^3 + 10*(m^2 - 9*m + 2
0)*a^3*b^4*x^2 + 5*(m^2 - 9*m + 20)*a^4*b^3*x + (m^2 - 9*m + 20)*a^5*b^2) +
 (b*x + a)^m*A*c^m/(b^6*(m - 5)*x^5 + 5*a*b^5*(m - 5)*x^4 + 10*a^2*b^4*(m -
 5)*x^3 + 10*a^3*b^3*(m - 5)*x^2 + 5*a^4*b^2*(m - 5)*x + a^5*b*(m - 5))
```

mupad [**B**] time = 2.20, size = 113, normalized size = 1.77

$$-\frac{(a\,c+b\,c\,x)^m\left(\frac{4\,A\,b+B\,a-A\,b\,m}{b^7\left(m^2-9\,m+20\right)}-\frac{B\,x\,(m-5)}{b^6\left(m^2-9\,m+20\right)}\right)}{x^5+\frac{a^5}{b^5}+\frac{5\,a\,x^4}{b}+\frac{5\,a^4\,x}{b^4}+\frac{10\,a^2\,x^3}{b^2}+\frac{10\,a^3\,x^2}{b^3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] -((a*c + b*c*x)^m*((4*A*b + B*a - A*b*m)/(b^7*(m^2 - 9*m + 20)) - (B*x*(m -
 5))/(b^6*(m^2 - 9*m + 20))))/(x^5 + a^5/b^5 + (5*a*x^4)/b + (5*a^4*x)/b^4
+ (10*a^2*x^3)/b^2 + (10*a^3*x^2)/b^3)
```

sympy [**A**] time = 5.73, size = 1268, normalized size = 19.81

$$\begin{cases}\frac{(ac)^m\left(Ax+\frac{Bx^2}{2}\right)}{a^6}\\ -\frac{Abc^4}{ab^2+b^3x}+\frac{Bac^4\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x}+\frac{Bac^4}{ab^2+b^3x}+\frac{Bbc^4x\log\left(\frac{a}{b}+x\right)}{ab^2+b^3x}\\ \frac{Ac^5\log\left(\frac{a}{b}+x\right)}{b}-\frac{Bac^5\log\left(\frac{a}{b}+x\right)}{b^2}+\frac{Bc^5x}{b}\\ \frac{Abm(ac+bcx)^m}{a^5b^2m^2-9a^5b^2m+20a^5b^2+5a^4b^3m^2x-45a^4b^3mx+100a^4b^3x+10a^3b^4m^2x^2-90a^3b^4mx^2+200a^3b^4x^2+10a^2b^5m^2x^3-90a^2b^5mx^3+200a^2b^5x^3+5ab^6m}\end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise(((a*c)**m*(A*x + B*x**2/2)/a**6, Eq(b, 0)), (-A*b*c**4/(a*b**2 +
b**3*x) + B*a*c**4*log(a/b + x)/(a*b**2 + b**3*x) + B*a*c**4/(a*b**2 + b**3
*x) + B*b*c**4*x*log(a/b + x)/(a*b**2 + b**3*x), Eq(m, 4)), (A*c**5*log(a/b
 + x)/b - B*a*c**5*log(a/b + x)/b**2 + B*c**5*x/b, Eq(m, 5)), (A*b*m*(a*c +
 b*c*x)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**
2*x - 45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3
*b**4*m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m
*x**3 + 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*
b**6*x**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - 4*A*b*(a*c + b
*c*x)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*
x - 45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b
**4*m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x
**3 + 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b*
*6*x**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - B*a*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) + B*b*m*x*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5) - 5*B*b*x*(a*c + b*c*x
)**m/(a**5*b**2*m**2 - 9*a**5*b**2*m + 20*a**5*b**2 + 5*a**4*b**3*m**2*x -
45*a**4*b**3*m*x + 100*a**4*b**3*x + 10*a**3*b**4*m**2*x**2 - 90*a**3*b**4*
m*x**2 + 200*a**3*b**4*x**2 + 10*a**2*b**5*m**2*x**3 - 90*a**2*b**5*m*x**3
+ 200*a**2*b**5*x**3 + 5*a*b**6*m**2*x**4 - 45*a*b**6*m*x**4 + 100*a*b**6*x
**4 + b**7*m**2*x**5 - 9*b**7*m*x**5 + 20*b**7*x**5), True))
```

3.2165 $\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^{3/2} dx$

Optimal. Leaf size=112

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)(ac+bcx)^{m+4}}{b^2c^4(m+4)(a+bx)}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(ac+bcx)^{m+5}}{b^2c^5(m+5)(a+bx)}$$

```
[Out] (A*b-B*a)*(b*c*x+a*c)^(4+m)*((b*x+a)^2)^(1/2)/b^2/c^4/(4+m)/(b*x+a)+B*(b*c*
x+a*c)^(5+m)*((b*x+a)^2)^(1/2)/b^2/c^5/(5+m)/(b*x+a)
```

Rubi [A] time = 0.08, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}} = 0.083$, Rules used = $\{770, 21, 43\}$

$$\frac{\sqrt{a^2+2abx+b^2x^2}\,(Ab-aB)(ac+bcx)^{m+4}}{b^2c^4(m+4)(a+bx)}+\frac{B\sqrt{a^2+2abx+b^2x^2}\,(ac+bcx)^{m+5}}{b^2c^5(m+5)(a+bx)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((A*b - a*B)*(a*c + b*c*x)^(4 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])/(b^2*c^4*
(4 + m)*(a + b*x)) + (B*(a*c + b*c*x)^(5 + m)*Sqrt[a^2 + 2*a*b*x + b^2*x^2]
)/(b^2*c^5*(5 + m)*(a + b*x))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$
\begin{aligned}
\int (A+Bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^{3/2} dx &= \frac{\sqrt{a^2+2abx+b^2x^2}\int \left(ab+b^2x\right)^3 (A+Bx)(ac+bcx)^m \, dx}{b^2\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int (A+Bx)(ac+bcx)^{3+m} \, dx}{c^3\left(ab+b^2x\right)} \\
&= \frac{\left(b\sqrt{a^2+2abx+b^2x^2}\right)\int \left(\frac{(Ab-aB)(ac+bcx)^{3+m}}{b}+\frac{B(ac+bcx)^{4+m}}{bc}\right) dx}{c^3\left(ab+b^2x\right)} \\
&= \frac{(Ab-aB)(ac+bcx)^{4+m}\sqrt{a^2+2abx+b^2x^2}}{b^2c^4(4+m)(a+bx)}+\frac{B(ac+bcx)^{5+m}}{b^2c^5(5}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 59, normalized size = 0.53

$$\frac{(a+bx)^3\sqrt{(a+bx)^2}\,(c(a+bx))^m(-aB+Ab(m+5)+bB(m+4)x)}{b^2(m+4)(m+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] ((a + b*x)^3*(c*(a + b*x))^m*Sqrt[(a + b*x)^2]*(-(a*B) + A*b*(5 + m) + b*B*
(4 + m)*x))/(b^2*(4 + m)*(5 + m))
```

fricas [B] time = 0.95, size = 219, normalized size = 1.96

$$\frac{\left(Aa^4bm-Ba^5+5\,Aa^4b+\left(Bb^5m+4\,Bb^5\right)x^5+\left(15\,Bab^4+5\,Ab^5+\left(4\,Bab^4+Ab^5\right)m\right)x^4+2\left(10\,Ba^2b^3+10\,Aab\right.}{b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] (A*a^4*b*m - B*a^5 + 5*A*a^4*b + (B*b^5*m + 4*B*b^5)*x^5 + (15*B*a*b^4 + 5*
A*b^5 + (4*B*a*b^4 + A*b^5)*m)*x^4 + 2*(10*B*a^2*b^3 + 10*A*a*b^4 + (3*B*a^
2*b^3 + 2*A*a*b^4)*m)*x^3 + 2*(5*B*a^3*b^2 + 15*A*a^2*b^3 + (2*B*a^3*b^2 +
3*A*a^2*b^3)*m)*x^2 + (20*A*a^3*b^2 + (B*a^4*b + 4*A*a^3*b^2)*m)*x)*(b*c*x
+ a*c)^m/(b^2*m^2 + 9*b^2*m + 20*b^2)
```

giac [B] time = 0.27, size = 545, normalized size = 4.87

$$\frac{(bcx+ac)^m Bb^5mx^5\mathrm{sgn}\,(bx+a)+4\,(bcx+ac)^m Bab^4mx^4\mathrm{sgn}\,(bx+a)+(bcx+ac)^m Ab^5mx^4\mathrm{sgn}\,(bx+a)+4\,(bcx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] ((b*c*x + a*c)^m*B*b^5*m*x^5*sgn(b*x + a) + 4*(b*c*x + a*c)^m*B*a*b^4*m*x^4
*sgn(b*x + a) + (b*c*x + a*c)^m*A*b^5*m*x^4*sgn(b*x + a) + 4*(b*c*x + a*c)^
m*B*b^5*x^5*sgn(b*x + a) + 6*(b*c*x + a*c)^m*B*a^2*b^3*m*x^3*sgn(b*x + a) +
 4*(b*c*x + a*c)^m*A*a*b^4*m*x^3*sgn(b*x + a) + 15*(b*c*x + a*c)^m*B*a*b^4*
x^4*sgn(b*x + a) + 5*(b*c*x + a*c)^m*A*b^5*x^4*sgn(b*x + a) + 4*(b*c*x + a*
c)^m*B*a^3*b^2*m*x^2*sgn(b*x + a) + 6*(b*c*x + a*c)^m*A*a^2*b^3*m*x^2*sgn(b
*x + a) + 20*(b*c*x + a*c)^m*B*a^2*b^3*x^3*sgn(b*x + a) + 20*(b*c*x + a*c)^
m*A*a*b^4*x^3*sgn(b*x + a) + (b*c*x + a*c)^m*B*a^4*b*m*x*sgn(b*x + a) + 4*(
b*c*x + a*c)^m*A*a^3*b^2*m*x*sgn(b*x + a) + 10*(b*c*x + a*c)^m*B*a^3*b^2*x^
2*sgn(b*x + a) + 30*(b*c*x + a*c)^m*A*a^2*b^3*x^2*sgn(b*x + a) + (b*c*x + a
*c)^m*A*a^4*b*m*sgn(b*x + a) + 20*(b*c*x + a*c)^m*A*a^3*b^2*x*sgn(b*x + a)
- (b*c*x + a*c)^m*B*a^5*sgn(b*x + a) + 5*(b*c*x + a*c)^m*A*a^4*b*sgn(b*x +
a))/(b^2*m^2 + 9*b^2*m + 20*b^2)
```

maple [A] time = 0.05, size = 62, normalized size = 0.55

$$\frac{\left((bx+a)^2\right)^{\frac{3}{2}}(Bbmx+Abm+4Bbx+5Ab-Ba)(bx+a)(bcx+ac)^m}{\left(m^2+9m+20\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] ((b*x+a)^2)^(3/2)*(b*c*x+a*c)^m*(B*b*m*x+A*b*m+4*B*b*x+5*A*b-B*a)*(b*x+a)/b
^2/(m^2+9*m+20)
```

maxima [A] time = 0.68, size = 180, normalized size = 1.61

$$\frac{\left(b^4c^mx^4+4\,ab^3c^mx^3+6\,a^2b^2c^mx^2+4\,a^3bc^mx+a^4c^m\right)(bx+a)^mA}{b(m+4)}+\frac{\left(b^5c^m(m+4)x^5+ab^4c^m(4\,m+15)x^4+2\,\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] (b^4*c^m*x^4 + 4*a*b^3*c^m*x^3 + 6*a^2*b^2*c^m*x^2 + 4*a^3*b*c^m*x + a^4*c^
m)*(b*x + a)^m*A/(b*(m + 4)) + (b^5*c^m*(m + 4)*x^5 + a*b^4*c^m*(4*m + 15)*
x^4 + 2*a^2*b^3*c^m*(3*m + 10)*x^3 + 2*a^3*b^2*c^m*(2*m + 5)*x^2 + a^4*b*c^
m*m*x - a^5*c^m)*(b*x + a)^m*B/((m^2 + 9*m + 20)*b^2)
```

mupad [B] time = 2.30, size = 254, normalized size = 2.27

$$(a\,c+b\,c\,x)^m\left(\frac{a^3\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(5\,A\,b-B\,a+A\,b\,m\right)}{b^2\,\left(m^2+9\,m+20\right)}+\frac{3\,a\,x^2\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}\,\left(5\,A\,b+3\,B\,a+A\right.}{m^2+9\,m+20}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(A + B*x)*(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] (a*c + b*c*x)^m*((a^3*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(5*A*b - B*a + A*b*m)
)/(b^2*(9*m + m^2 + 20)) + (3*a*x^2*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2)*(5*A*b
+ 3*B*a + A*b*m + B*a*m))/(9*m + m^2 + 20) + (b*x^3*(a^2 + b^2*x^2 + 2*a*b*
x)^(1/2)*(5*A*b + 11*B*a + A*b*m + 3*B*a*m))/(9*m + m^2 + 20) + (a^2*x*(a^2
 + b^2*x^2 + 2*a*b*x)^(1/2)*(15*A*b + B*a + 3*A*b*m + B*a*m))/(b*(9*m + m^2
 + 20)) + (B*b^2*x^4*(m + 4)*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2))/(9*m + m^2 +
20))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (c\,(a+bx))^m\,(A+Bx)\left((a+bx)^2\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((c*(a + b*x))**m*(A + B*x)*((a + b*x)**2)**(3/2), x)
```

3.2166 $\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=112

$$-\frac{c^2(a+bx)(Ab-aB)(ac+bcx)^{m-2}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{m-1}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}$$

```
[Out] -(A*b-B*a)*c^2*(b*x+a)*(b*c*x+a*c)^(-2+m)/b^2/(2-m)/((b*x+a)^2)^(1/2)-B*c*(
b*x+a)*(b*c*x+a*c)^(-1+m)/b^2/(1-m)/((b*x+a)^2)^(1/2)
```

Rubi **[A]** time = 0.09, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 36, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = $\{770, 21, 43\}$

$$-\frac{c^2(a+bx)(Ab-aB)(ac+bcx)^{m-2}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{m-1}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] -(((A*b - a*B)*c^2*(a + b*x)*(a*c + b*c*x)^(-2 + m))/(b^2*(2 - m)*Sqrt[a^2
+ 2*a*b*x + b^2*x^2])) - (B*c*(a + b*x)*(a*c + b*c*x)^(-1 + m))/(b^2*(1 - m
)*Sqrt[a^2 + 2*a*b*x + b^2*x^2])
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^{3/2}}\,dx &= \frac{\left(b^2\left(ab+b^2x\right)\right)\int \frac{(A+Bx)(ac+bcx)^m}{\left(ab+b^2x\right)^3}\,dx}{\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(c^3\left(ab+b^2x\right)\right)\int (A+Bx)(ac+bcx)^{-3+m}\,dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= \frac{\left(c^3\left(ab+b^2x\right)\right)\int \left(\frac{(Ab-aB)(ac+bcx)^{-3+m}}{b}+\frac{B(ac+bcx)^{-2+m}}{bc}\right)dx}{b\sqrt{a^2+2abx+b^2x^2}}\\ &= -\frac{(Ab-aB)c^2(a+bx)(ac+bcx)^{-2+m}}{b^2(2-m)\sqrt{a^2+2abx+b^2x^2}}-\frac{Bc(a+bx)(ac+bcx)^{-1+m}}{b^2(1-m)\sqrt{a^2+2abx+b^2x^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 55, normalized size = 0.49

$$\frac{c(c(a+bx))^{m-1}(-aB+Ab(m-1)+bB(m-2)x)}{b^2(m-2)(m-1)\sqrt{(a+bx)^2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^(3/2),x]
```

```
[Out] (c*(c*(a + b*x))^(-1 + m)*(-(a*B) + A*b*(-1 + m) + b*B*(-2 + m)*x))/(b^2*(-
2 + m)*(-1 + m)*Sqrt[(a + b*x)^2])
```

fricas [A] time = 1.39, size = 113, normalized size = 1.01

$$\frac{(Abm-Ba-Ab+(Bbm-2\,Bb)x)(bcx+ac)^m}{a^2b^2m^2-3\,a^2b^2m+2\,a^2b^2+\left(b^4m^2-3\,b^4m+2\,b^4\right)x^2+2\left(ab^3m^2-3\,ab^3m+2\,ab^3\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="f
ricas")
```

```
[Out] (A*b*m - B*a - A*b + (B*b*m - 2*B*b)*x)*(b*c*x + a*c)^m/(a^2*b^2*m^2 - 3*a^
2*b^2*m + 2*a^2*b^2 + (b^4*m^2 - 3*b^4*m + 2*b^4)*x^2 + 2*(a*b^3*m^2 - 3*a*
b^3*m + 2*a*b^3)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="g
iac")
```

```
[Out] integrate((B*x + A)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^(3/2), x)
```

maple [A] time = 0.05, size = 62, normalized size = 0.55

$$\frac{(Bbmx+Abm-2Bbx-Ab-Ba)\,(bx+a)\,(bcx+ac)^m}{\left((bx+a)^2\right)^{\frac{3}{2}}\left(m^2-3m+2\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x)
```

```
[Out] (b*c*x+a*c)^m*(B*b*m*x+A*b*m-2*B*b*x-A*b-B*a)*(b*x+a)/((b*x+a)^2)^(3/2)/b^2
/(m^2-3*m+2)
```

maxima [A] time = 0.75, size = 117, normalized size = 1.04

$$\frac{(bc^m(m-2)x-ac^m)(bx+a)^mB}{\left(m^2-3\,m+2\right)b^4x^2+2\left(m^2-3\,m+2\right)ab^3x+\left(m^2-3\,m+2\right)a^2b^2}+\frac{(bx+a)^mAc^m}{b^3(m-2)x^2+2\,ab^2(m-2)x+a^2b(m-2)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^(3/2),x, algorithm="m
axima")
```

```
[Out] (b*c^m*(m - 2)*x - a*c^m)*(b*x + a)^m*B/((m^2 - 3*m + 2)*b^4*x^2 + 2*(m^2 -
 3*m + 2)*a*b^3*x + (m^2 - 3*m + 2)*a^2*b^2) + (b*x + a)^m*A*c^m/(b^3*(m -
2)*x^2 + 2*a*b^2*(m - 2)*x + a^2*b*(m - 2))
```

mupad [B] time = 2.30, size = 105, normalized size = 0.94

$$-\frac{\left(a\,c+b\,c\,x\right)^m\,\left(\frac{A\,b+B\,a-A\,b\,m}{b^3\,\left(m^2-3\,m+2\right)}-\frac{B\,x\,\left(m-2\right)}{b^2\,\left(m^2-3\,m+2\right)}\right)}{x\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}+\frac{a\,\sqrt{a^2+2\,a\,b\,x+b^2\,x^2}}{b}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(A + B*x))/(a^2 + b^2*x^2 + 2*a*b*x)^(3/2),x)
```

```
[Out] -((a*c + b*c*x)^m*((A*b + B*a - A*b*m)/(b^3*(m^2 - 3*m + 2)) - (B*x*(m - 2)
)/(b^2*(m^2 - 3*m + 2))))/(x*(a^2 + b^2*x^2 + 2*a*b*x)^(1/2) + (a*(a^2 + b^
2*x^2 + 2*a*b*x)^(1/2))/b)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(c\left(a+bx\right)\right)^{m}\left(A+Bx\right)}{\left(\left(a+bx\right)^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**(3/2),x)
```

```
[Out] Integral((c*(a + b*x))**m*(A + B*x)/((a + b*x)**2)**(3/2), x)
```

3.2167 $\int (ac+bcx)^m(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=100

$$\frac{g\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+2}}{b^2c^2(m+2p+2)}+\frac{(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+1}}{b^2c(m+2p+1)}$$

```
[Out] (-a*g+b*f)*(b*c*x+a*c)^(1+m)*(b^2*x^2+2*a*b*x+a^2)^p/b^2/c/(1+m+2*p)+g*(b*c
*x+a*c)^(2+m)*(b^2*x^2+2*a*b*x+a^2)^p/b^2/c^2/(2+m+2*p)
```

Rubi [A] time = 0.08, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.088, Rules used = {770, 23, 43}

$$\frac{g\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+2}}{b^2c^2(m+2p+2)}+\frac{(bf-ag)\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{m+1}}{b^2c(m+2p+1)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((b*f - a*g)*(a*c + b*c*x)^(1 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*c*(1 +
 m + 2*p)) + (g*(a*c + b*c*x)^(2 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b^2*c^2
*(2 + m + 2*p))
```

Rule 23

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_)*((c_) + (d_.)*(v_))^(n_), x_Symbol] :> D
ist[(a + b*v)^m/(c + d*v)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b
, c, d, m, n}, x] && EqQ[b*c - a*d, 0] &&  !(IntegerQ[m] || IntegerQ[n] ||
GtQ[b/d, 0])
```

Rule 43

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.), x_Symbol] :> Int
[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n, x], x] /; FreeQ[{a, b, c, d, n},
x] && NeQ[b*c - a*d, 0] && IGtQ[m, 0] && ( !IntegerQ[n] || (EqQ[c, 0] && Le
Q[7*m + 4*n + 4, 0]) || LtQ[9*m + 5*(n + 1), 0] || GtQ[m + n + 2, 0])
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (ac+bcx)^m(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{2p}(ac+bc\\ &= \left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int (ac+bcx)^{m+2p}(f+gx\\ &= \left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(\frac{(bf-ag)(ac+bcx)}{b}\right.\\ &= \frac{(bf-ag)(ac+bcx)^{1+m}\left(a^2+2abx+b^2x^2\right)^p}{b^2c(1+m+2p)}+\frac{g(ac+bcx)^{2+}}{b^2c^2}\end{aligned}$$

Mathematica [A] time = 0.05, size = 67, normalized size = 0.67

$$\frac{(a+bx)\left((a+bx)^2\right)^p (c(a+bx))^m(-ag+bf(m+2p+2)+bgx(m+2p+1))}{b^2(m+2p+1)(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)^m*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a + b*x)*(c*(a + b*x))^m*((a + b*x)^2)^p*(-(a*g) + b*f*(2 + m + 2*p) + b*
g*(1 + m + 2*p)*x))/(b^2*(1 + m + 2*p)*(2 + m + 2*p))
```

fricas [A] time = 1.32, size = 155, normalized size = 1.55

$$\frac{\left(abfm + 2\,abfp + 2\,abf - a^2g + \left(b^2gm + 2\,b^2gp + b^2g\right)x^2 + \left(2\,b^2f + \left(b^2f + abg\right)m + 2\left(b^2f + abg\right)p\right)x\right)(bcx + a}{b^2m^2 + 4\,b^2p^2 + 3\,b^2m + 2\,b^2 + 2\left(2\,b^2m + 3\,b^2\right)p}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="frica
s")
```

```
[Out] (a*b*f*m + 2*a*b*f*p + 2*a*b*f - a^2*g + (b^2*g*m + 2*b^2*g*p + b^2*g)*x^2
+ (2*b^2*f + (b^2*f + a*b*g)*m + 2*(b^2*f + a*b*g)*p)*x)*(b*c*x + a*c)^m*e^
(2*p*log(b*c*x + a*c) + p*log(c^(-2)))/(b^2*m^2 + 4*b^2*p^2 + 3*b^2*m + 2*b
^2 + 2*(2*b^2*m + 3*b^2)*p)
```

giac [B] time = 0.21, size = 404, normalized size = 4.04

$$\frac{(bx+a)^{2\,p}b^2gmx^2e^{\left(m\log(bx+a)+m\log(c)\right)} + 2\,(bx+a)^{2\,p}b^2gpx^2e^{\left(m\log(bx+a)+m\log(c)\right)} + (bx+a)^{2\,p}b^2fmxe^{\left(m\log(bx+a)+m\,\mathrm{l}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac"
)
```

```
[Out] ((b*x + a)^(2*p)*b^2*g*m*x^2*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)^(2
*p)*b^2*g*p*x^2*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*b^2*f*m*x*e
^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a*b*g*m*x*e^(m*log(b*x + a)
+ m*log(c)) + 2*(b*x + a)^(2*p)*b^2*f*p*x*e^(m*log(b*x + a) + m*log(c)) + 2
*(b*x + a)^(2*p)*a*b*g*p*x*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*
b^2*g*x^2*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a*b*f*m*e^(m*log(
b*x + a) + m*log(c)) + 2*(b*x + a)^(2*p)*a*b*f*p*e^(m*log(b*x + a) + m*log(
c)) + 2*(b*x + a)^(2*p)*b^2*f*x*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)
^(2*p)*a*b*f*e^(m*log(b*x + a) + m*log(c)) - (b*x + a)^(2*p)*a^2*g*e^(m*log
(b*x + a) + m*log(c)))/(b^2*m^2 + 4*b^2*m*p + 4*b^2*p^2 + 3*b^2*m + 6*b^2*p
 + 2*b^2)
```

maple [A] time = 0.05, size = 96, normalized size = 0.96

$$-\frac{\left(-bgmx-2bgpx-bfm-2bfp-bgx+ag-2bf\right)(bx+a)\,(bcx+ac)^m\left(b^2x^2+2abx+a^2\right)^p}{\left(m^2+4mp+4p^2+3m+6p+2\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -(b^2*x^2+2*a*b*x+a^2)^p*(b*c*x+a*c)^m*(-b*g*m*x-2*b*g*p*x-b*f*m-2*b*f*p-b*
g*x+a*g-2*b*f)*(b*x+a)/b^2/(m^2+4*m*p+4*p^2+3*m+6*p+2)
```

maxima [**A**] time = 0.67, size = 128, normalized size = 1.28

$$\frac{(bc^m x + ac^m)fe^{\left(m\log(bx+a)+2\,p\log(bx+a)\right)}}{b\left(m+2\,p+1\right)}+\frac{\left(b^2c^m\left(m+2\,p+1\right)x^2+abc^m\left(m+2\,p\right)x-a^2c^m\right)ge^{(m\log(bx+a)+2\,p\log(bx}}{\left(m^2+m\left(4\,p+3\right)+4\,p^2+6\,p+2\right)b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^m*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*x + a*c^m)*f*e^(m*log(b*x + a) + 2*p*log(b*x + a))/(b*(m + 2*p + 1))
 + (b^2*c^m*(m + 2*p + 1)*x^2 + a*b*c^m*(m + 2*p)*x - a^2*c^m)*g*e^(m*log(b
*x + a) + 2*p*log(b*x + a))/((m^2 + m*(4*p + 3) + 4*p^2 + 6*p + 2)*b^2)
```

mupad [**B**] time = 2.21, size = 178, normalized size = 1.78

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\Bigg(\frac{g\,x^2\,(a\,c+b\,c\,x)^m\,\left(m+2\,p+1\right)}{m^2+4\,m\,p+3\,m+4\,p^2+6\,p+2}+\frac{a\,(a\,c+b\,c\,x)^m\,\left(2\,b\,f-a\,g+b\,f\,m+2\,b\,f\,p\right)}{b^2\,\left(m^2+4\,m\,p+3\,m+4\,p^2+6\,p+2\right)}+\frac{x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(a*c + b*c*x)^m*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((g*x^2*(a*c + b*c*x)^m*(m + 2*p + 1))/(3*m + 6
*p + 4*m*p + m^2 + 4*p^2 + 2) + (a*(a*c + b*c*x)^m*(2*b*f - a*g + b*f*m + 2
*b*f*p))/(b^2*(3*m + 6*p + 4*m*p + m^2 + 4*p^2 + 2)) + (x*(a*c + b*c*x)^m*(
2*b*f + a*g*m + b*f*m + 2*a*g*p + 2*b*f*p))/(b*(3*m + 6*p + 4*m*p + m^2 + 4
*p^2 + 2)))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)**m*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.2168 $\int (ac+bcx)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx$

Optimal. Leaf size=61

$$-\frac{(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{-2p}}{2c^3(a+bx)^2(bf-ag)}$$

```
[Out] -1/2*(g*x+f)^2*(b^2*x^2+2*a*b*x+a^2)^p/c^3/(-a*g+b*f)/(b*x+a)^2/((b*c*x+a*c
)^(2*p))
```

Rubi [A] time = 0.04, antiderivative size = 61, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 38, $\frac{\text{number of rules}}{\text{integrand size}}=0.079$, Rules used = $\{770, 23, 37\}$

$$-\frac{(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p(ac+bcx)^{-2p}}{2c^3(a+bx)^2(bf-ag)}$$

Antiderivative was successfully verified.

```
[In] Int[(a*c + b*c*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] -((f + g*x)^2*(a^2 + 2*a*b*x + b^2*x^2)^p)/(2*c^3*(b*f - a*g)*(a + b*x)^2*(
a*c + b*c*x)^(2*p))
```

Rule 23

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_)*((c_) + (d_.)*(v_))^(n_), x_Symbol] :> D
ist[(a + b*v)^m/(c + d*v)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b
, c, d, m, n}, x] && EqQ[b*c - a*d, 0] &&  !(IntegerQ[m] || IntegerQ[n] ||
GtQ[b/d, 0])
```

Rule 37

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_), x_Symbol] :> Simp
[((a + b*x)^(m + 1)*(c + d*x)^(n + 1))/((b*c - a*d)*(m + 1)), x] /; FreeQ[{
a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] && EqQ[m + n + 2, 0] && NeQ[m, -
1]
```

Rule 770

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[(a + b*x + c*x^2)^FracPart[p]/(c^IntPa
rt[p]*(b/2 + c*x)^(2*FracPart[p])), Int[(d + e*x)^m*(f + g*x)*(b/2 + c*x)^(
2*p), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && EqQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int (ac+bcx)^{-3-2p}(f+gx)\left(a^2+2abx+b^2x^2\right)^p\,dx &= \left(\left(ab+b^2x\right)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \left(ab+b^2x\right)^{2p}(ac+bc\\ &= \left((ac+bcx)^{-2p}\left(a^2+2abx+b^2x^2\right)^p\right)\int \frac{f+gx}{(ac+bcx)^3}\,dx\\ &= -\frac{(ac+bcx)^{-2p}(f+gx)^2\left(a^2+2abx+b^2x^2\right)^p}{2c^3(bf-ag)(a+bx)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.80

$$-\frac{\left((a+bx)^2\right)^p(c(a+bx))^{-2p}(ag+b(f+2gx))}{2b^2c^3(a+bx)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a*c + b*c*x)^(-3 - 2*p)*(f + g*x)*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] -1/2*(((a + b*x)^2)^p*(a*g + b*(f + 2*g*x)))/(b^2*c^3*(a + b*x)^2*(c*(a + b
*x))^(2*p))
```

fricas [A]   time = 1.09, size = 52, normalized size = 0.85

$$-\frac{\left(2\,bgx+bf+ag\right)\frac{1}{c^2}^{p}}{2\left(b^4c^3x^2+2\,ab^3c^3x+a^2b^2c^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="fricas")
```

```
[Out] -1/2*(2*b*g*x + b*f + a*g)*(c^(-2))^p/(b^4*c^3*x^2 + 2*a*b^3*c^3*x + a^2*b^
2*c^3)
```

giac [B]   time = 0.26, size = 221, normalized size = 3.62

$$-\frac{2\,(bx+a)^{2\,p}b^2gx^2e^{\left(-2\,p\log(bx+a)-2\,p\log(c)-3\,\log(bx+a)-3\,\log(c)\right)}+(bx+a)^{2\,p}b^2fxe^{(-2\,p\log(bx+a)-2\,p\log(c)-3\,\log(bx+a)-3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="giac")
```

```
[Out] -1/2*(2*(b*x + a)^(2*p)*b^2*g*x^2*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log
(b*x + a) - 3*log(c)) + (b*x + a)^(2*p)*b^2*f*x*e^(-2*p*log(b*x + a) - 2*p*
log(c) - 3*log(b*x + a) - 3*log(c)) + 3*(b*x + a)^(2*p)*a*b*g*x*e^(-2*p*log
(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c)) + (b*x + a)^(2*p)*a*b*f
*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c)) + (b*x + a)
^(2*p)*a^2*g*e^(-2*p*log(b*x + a) - 2*p*log(c) - 3*log(b*x + a) - 3*log(c))
)/b^2
```

maple [A]   time = 0.05, size = 55, normalized size = 0.90

$$-\frac{(bx+a)\left(2bgx+ag+bf\right)(bcx+ac)^{-2p-3}\left(b^2x^2+2abx+a^2\right)^p}{2b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*c*x+a*c)^(-2*p-3)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] -1/2*(b*x+a)*(2*b*g*x+a*g+b*f)*(b*c*x+a*c)^(-2*p-3)*(b^2*x^2+2*a*b*x+a^2)^p
/b^2
```

maxima [A]   time = 0.58, size = 101, normalized size = 1.66

$$-\frac{(2\,bx+a)g}{2\left(b^4c^{2\,p+3}x^2+2\,ab^3c^{2\,p+3}x+a^2b^2c^{2\,p+3}\right)}-\frac{f}{2\left(b^3c^{2\,p+3}x^2+2\,ab^2c^{2\,p+3}x+a^2bc^{2\,p+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)^(-3-2*p)*(g*x+f)*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm
="maxima")
```

```
[Out] -1/2*(2*b*x + a)*g/(b^4*c^(2*p + 3)*x^2 + 2*a*b^3*c^(2*p + 3)*x + a^2*b^2*c
^(2*p + 3)) - 1/2*f/(b^3*c^(2*p + 3)*x^2 + 2*a*b^2*c^(2*p + 3)*x + a^2*b*c^
(2*p + 3))
```

mupad **[B]** time = 2.14, size = 106, normalized size = 1.74

$$-\left(\frac{g\,a^2+b\,f\,a}{2\,b^2\,{\left(a\,c+b\,c\,x\right)}^{2\,p+3}}+\frac{g\,x^2}{{\left(a\,c+b\,c\,x\right)}^{2\,p+3}}+\frac{x\,\left(f\,b^2+3\,a\,g\,b\right)}{2\,b^2\,{\left(a\,c+b\,c\,x\right)}^{2\,p+3}}\right)\,{\left(a^2+2\,a\,b\,x+b^2\,x^2\right)}^p$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p)/(a*c + b*c*x)^(2*p + 3),x)
```

```
[Out] -((a^2*g + a*b*f)/(2*b^2*(a*c + b*c*x)^(2*p + 3)) + (g*x^2)/(a*c + b*c*x)^(
2*p + 3) + (x*(b^2*f + 3*a*b*g))/(2*b^2*(a*c + b*c*x)^(2*p + 3)))*(a^2 + b^
2*x^2 + 2*a*b*x)^p
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*c*x+a*c)**(-3-2*p)*(g*x+f)*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.2169 $\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^p \, dx$

Optimal. Leaf size=45

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (ac+bcx)^{m+2}}{bc^2(m+2p+2)}$$

```
[Out] (b*c*x+a*c)^(2+m)*(b^2*x^2+2*a*b*x+a^2)^p/b/c^2/(2+m+2*p)
```

Rubi [A] time = 0.03, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$, Rules used = {21, 644, 32}

$$\frac{\left(a^2+2abx+b^2x^2\right)^p (ac+bcx)^{m+2}}{bc^2(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((a*c + b*c*x)^(2 + m)*(a^2 + 2*a*b*x + b^2*x^2)^p)/(b*c^2*(2 + m + 2*p))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rule 644

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sym
bol] :> Dist[(a + b*x + c*x^2)^p/(d + e*x)^(2*p), Int[(d + e*x)^(m + 2*p),
x], x] /; FreeQ[{a, b, c, d, e, m, p}, x] && EqQ[b^2 - 4*a*c, 0] &&  !Integ
erQ[p] && EqQ[2*c*d - b*e, 0] &&  !IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^p \, dx &= \frac{\int (ac+bcx)^{1+m} \left(a^2+2abx+b^2x^2\right)^p \, dx}{c} \\
&= \frac{\left((ac+bcx)^{-2p} \left(a^2+2abx+b^2x^2\right)^p\right) \int (ac+bcx)^{1+m+2p} \, dx}{c} \\
&= \frac{(ac+bcx)^{2+m} \left(a^2+2abx+b^2x^2\right)^p}{bc^2(2+m+2p)}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 32, normalized size = 0.71

$$\frac{\left((a+bx)^2\right)^{p+1} (c(a+bx))^m}{b(m+2p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^p,x]
```

```
[Out] ((c*(a + b*x))^m*((a + b*x)^2)^(1 + p))/(b*(2 + m + 2*p))
```

fricas [A] time = 0.82, size = 60, normalized size = 1.33

$$\frac{\left(b^2x^2+2\,abx+a^2\right)(bcx+ac)^m e^{\left(2\,p\log(bcx+ac)+p\log\left(\frac{1}{c^2}\right)\right)}}{bm+2\,bp+2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="frica
s")
```

```
[Out] (b^2*x^2 + 2*a*b*x + a^2)*(b*c*x + a*c)^m*e^(2*p*log(b*c*x + a*c) + p*log(c
^(-2)))/(b*m + 2*b*p + 2*b)
```

giac [B] time = 0.19, size = 100, normalized size = 2.22

$$\frac{(bx+a)^{2\,p}b^2x^2e^{\left(m\log(bx+a)+m\log(c)\right)}+2\,(bx+a)^{2\,p}abxe^{\left(m\log(bx+a)+m\log(c)\right)}+(bx+a)^{2\,p}a^2e^{\left(m\log(bx+a)+m\log(c)\right)}}{bm+2\,bp+2\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="giac"
)
```

```
[Out] ((b*x + a)^(2*p)*b^2*x^2*e^(m*log(b*x + a) + m*log(c)) + 2*(b*x + a)^(2*p)*
a*b*x*e^(m*log(b*x + a) + m*log(c)) + (b*x + a)^(2*p)*a^2*e^(m*log(b*x + a)
 + m*log(c)))/(b*m + 2*b*p + 2*b)
```

maple [A] time = 0.04, size = 48, normalized size = 1.07

$$\frac{(bx+a)^2\,(bcx+ac)^m\left(b^2x^2+2abx+a^2\right)^p}{\left(m+2p+2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x)
```

```
[Out] (b*x+a)^2/b/(2+m+2*p)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p
```

maxima [B] time = 0.57, size = 127, normalized size = 2.82

$$\frac{(bc^mx+ac^m)ae^{\left(m\log(bx+a)+2\,p\log(bx+a)\right)}}{b\left(m+2\,p+1\right)}+\frac{\left(b^2c^m\left(m+2\,p+1\right)x^2+abc^m\left(m+2\,p\right)x-a^2c^m\right)e^{\left(m\log(bx+a)+2\,p\log(bx+a)\right)}}{\left(m^2+m\left(4\,p+3\right)+4\,p^2+6\,p+2\right)b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^p,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*x + a*c^m)*a*e^(m*log(b*x + a) + 2*p*log(b*x + a))/(b*(m + 2*p + 1))
 + (b^2*c^m*(m + 2*p + 1)*x^2 + a*b*c^m*(m + 2*p)*x - a^2*c^m)*e^(m*log(b*x
 + a) + 2*p*log(b*x + a))/((m^2 + m*(4*p + 3) + 4*p^2 + 6*p + 2)*b)
```

mupad [B] time = 2.12, size = 90, normalized size = 2.00

$$\left(a^2+2\,a\,b\,x+b^2\,x^2\right)^p\,\left(\frac{2\,a\,x\,{\left(a\,c+b\,c\,x\right)}^m}{m+2\,p+2}+\frac{b\,x^2\,{\left(a\,c+b\,c\,x\right)}^m}{m+2\,p+2}+\frac{a^2\,{\left(a\,c+b\,c\,x\right)}^m}{b\,\left(m+2\,p+2\right)}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^p,x)
```

```
[Out] (a^2 + b^2*x^2 + 2*a*b*x)^p*((2*a*x*(a*c + b*c*x)^m)/(m + 2*p + 2) + (b*x^2
*(a*c + b*c*x)^m)/(m + 2*p + 2) + (a^2*(a*c + b*c*x)^m)/(b*(m + 2*p + 2)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**p,x)
```

```
[Out] Timed out
```

3.2170 $\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx$

Optimal. Leaf size=24

$$\frac{(ac+bcx)^{m+8}}{bc^8(m+8)}$$

```
[Out] (b*c*x+a*c)^(8+m)/b/c^8/(8+m)
```

Rubi [A] time = 0.02, antiderivative size = 24, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$, Rules used = $\{21, 27, 32\}$

$$\frac{(ac+bcx)^{m+8}}{bc^8(m+8)}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (a*c + b*c*x)^(8 + m)/(b*c^8*(8 + m))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}\int (a+bx)(ac+bcx)^m \left(a^2+2abx+b^2x^2\right)^3 \, dx &= \frac{\int (ac+bcx)^{1+m} \left(a^2+2abx+b^2x^2\right)^3 \, dx}{c}\\ &= \frac{\int (a+bx)^6(ac+bcx)^{1+m} \, dx}{c}\\ &= \frac{\int (ac+bcx)^{7+m} \, dx}{c^7}\\ &= \frac{(ac+bcx)^{8+m}}{bc^8(8+m)}\end{aligned}$$

Mathematica [A] time = 0.02, size = 25, normalized size = 1.04

$$\frac{(a+bx)^8(c(a+bx))^m}{b(m+8)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)*(a*c + b*c*x)^m*(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] ((a + b*x)^8*(c*(a + b*x))^m)/(b*(8 + m))
```

fricas [B] time = 1.33, size = 102, normalized size = 4.25

$$\frac{\left(b^{8} x^{8} + 8 \, a b^{7} x^{7} + 28 \, a^{2} b^{6} x^{6} + 56 \, a^{3} b^{5} x^{5} + 70 \, a^{4} b^{4} x^{4} + 56 \, a^{5} b^{3} x^{3} + 28 \, a^{6} b^{2} x^{2} + 8 \, a^{7} b x + a^{8}\right)} {\left(b c x + a c\right)}^{m}}{b m + 8 \, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (b^8*x^8 + 8*a*b^7*x^7 + 28*a^2*b^6*x^6 + 56*a^3*b^5*x^5 + 70*a^4*b^4*x^4 +
 56*a^5*b^3*x^3 + 28*a^6*b^2*x^2 + 8*a^7*b*x + a^8)*(b*c*x + a*c)^m/(b*m +
8*b)
```

giac [B] time = 0.21, size = 183, normalized size = 7.62

$$\frac{{\left(b c x + a c\right)}^{m} b^{8} x^{8} + 8 \, {\left(b c x + a c\right)}^{m} a b^{7} x^{7} + 28 \, {\left(b c x + a c\right)}^{m} a^{2} b^{6} x^{6} + 56 \, {\left(b c x + a c\right)}^{m} a^{3} b^{5} x^{5} + 70 \, {\left(b c x + a c\right)}^{m} a^{4} b^{4} x^{4}}{b m + 8 \, b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] ((b*c*x + a*c)^m*b^8*x^8 + 8*(b*c*x + a*c)^m*a*b^7*x^7 + 28*(b*c*x + a*c)^m
*a^2*b^6*x^6 + 56*(b*c*x + a*c)^m*a^3*b^5*x^5 + 70*(b*c*x + a*c)^m*a^4*b^4*
x^4 + 56*(b*c*x + a*c)^m*a^5*b^3*x^3 + 28*(b*c*x + a*c)^m*a^6*b^2*x^2 + 8*(
b*c*x + a*c)^m*a^7*b*x + (b*c*x + a*c)^m*a^8)/(b*m + 8*b)
```

maple [A] time = 0.05, size = 45, normalized size = 1.88

$$\frac{\left(b x +a \right)^{2} \left(b^{2} x^{2}+2 a b x +a^{2}\right)^{3} \left(b c x +a c \right)^{m}}{\left(m +8\right) b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b*x+a)^2/b/(m+8)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3
```

maxima [B] time = 0.91, size = 1221, normalized size = 50.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m*(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] 7*(b^2*c^m*(m + 1)*x^2 + a*b*c^m*m*x - a^2*c^m)*(b*x + a)^m*a^6/((m^2 + 3*m
 + 2)*b) + 21*((m^2 + 3*m + 2)*b^3*c^m*x^3 + (m^2 + m)*a*b^2*c^m*x^2 - 2*a^
2*b*c^m*m*x + 2*a^3*c^m)*(b*x + a)^m*a^5/((m^3 + 6*m^2 + 11*m + 6)*b) + (b*
c*x + a*c)^(m + 1)*a^7/(b*c*(m + 1)) + 35*((m^3 + 6*m^2 + 11*m + 6)*b^4*c^m
*x^4 + (m^3 + 3*m^2 + 2*m)*a*b^3*c^m*x^3 - 3*(m^2 + m)*a^2*b^2*c^m*x^2 + 6*
a^3*b*c^m*m*x - 6*a^4*c^m)*(b*x + a)^m*a^4/((m^4 + 10*m^3 + 35*m^2 + 50*m +
 24)*b) + 35*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*b^5*c^m*x^5 + (m^4 + 6*m^
3 + 11*m^2 + 6*m)*a*b^4*c^m*x^4 - 4*(m^3 + 3*m^2 + 2*m)*a^2*b^3*c^m*x^3 + 1
2*(m^2 + m)*a^3*b^2*c^m*x^2 - 24*a^4*b*c^m*m*x + 24*a^5*c^m)*(b*x + a)^m*a^
3/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*b) + 21*((m^5 + 15*m^4 +
 85*m^3 + 225*m^2 + 274*m + 120)*b^6*c^m*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*
m^2 + 24*m)*a*b^5*c^m*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^2*b^4*c^m*x^4
+ 20*(m^3 + 3*m^2 + 2*m)*a^3*b^3*c^m*x^3 - 60*(m^2 + m)*a^4*b^2*c^m*x^2 + 1
20*a^5*b*c^m*m*x - 120*a^6*c^m)*(b*x + a)^m*a^2/((m^6 + 21*m^5 + 175*m^4 +
735*m^3 + 1624*m^2 + 1764*m + 720)*b) + 7*((m^6 + 21*m^5 + 175*m^4 + 735*m^
3 + 1624*m^2 + 1764*m + 720)*b^7*c^m*x^7 + (m^6 + 15*m^5 + 85*m^4 + 225*m^3
 + 274*m^2 + 120*m)*a*b^6*c^m*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*
m)*a^2*b^5*c^m*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*a^3*b^4*c^m*x^4 - 120*
(m^3 + 3*m^2 + 2*m)*a^4*b^3*c^m*x^3 + 360*(m^2 + m)*a^5*b^2*c^m*x^2 - 720*a
^6*b*c^m*m*x + 720*a^7*c^m)*(b*x + a)^m*a/((m^7 + 28*m^6 + 322*m^5 + 1960*m
^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b) + ((m^7 + 28*m^6 + 322*m^5 +
 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*b^8*c^m*x^8 + (m^7 + 21*
m^6 + 175*m^5 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*a*b^7*c^m*x^7 - 7*(m
^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*a^2*b^6*c^m*x^6 + 42*(m^5
 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*a^3*b^5*c^m*x^5 - 210*(m^4 + 6*m^3 + 11
*m^2 + 6*m)*a^4*b^4*c^m*x^4 + 840*(m^3 + 3*m^2 + 2*m)*a^5*b^3*c^m*x^3 - 252
0*(m^2 + m)*a^6*b^2*c^m*x^2 + 5040*a^7*b*c^m*m*x - 5040*a^8*c^m)*(b*x + a)^
m/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5 + 22449*m^4 + 67284*m^3 + 118124*m^2
+ 109584*m + 40320)*b)
```

mupad [B] time = 2.18, size = 139, normalized size = 5.79

$$(a\,c+b\,c\,x)^m\,\left(\frac{a^8}{b\,\left(m+8\right)}+\frac{b^7\,x^8}{m+8}+\frac{8\,a^7\,x}{m+8}+\frac{28\,a^6\,b\,x^2}{m+8}+\frac{8\,a\,b^6\,x^7}{m+8}+\frac{56\,a^5\,b^2\,x^3}{m+8}+\frac{70\,a^4\,b^3\,x^4}{m+8}+\frac{56\,a^3\,b^4\,x^5}{m+8}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a*c + b*c*x)^m*(a + b*x)*(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m*(a^8/(b*(m + 8)) + (b^7*x^8)/(m + 8) + (8*a^7*x)/(m + 8) +
(28*a^6*b*x^2)/(m + 8) + (8*a*b^6*x^7)/(m + 8) + (56*a^5*b^2*x^3)/(m + 8) +
 (70*a^4*b^3*x^4)/(m + 8) + (56*a^3*b^4*x^5)/(m + 8) + (28*a^2*b^5*x^6)/(m
+ 8))
```

sympy [A] time = 3.92, size = 270, normalized size = 11.25

$$\begin{cases} \frac{x}{ac^8} \\ a^7x\left(ac\right)^m \\ \frac{\log\left(\frac{a}{b}+x\right)}{bc^8} \\ \frac{a^8(ac+bcx)^m}{bm+8b}+\frac{8a^7bx(ac+bcx)^m}{bm+8b}+\frac{28a^6b^2x^2(ac+bcx)^m}{bm+8b}+\frac{56a^5b^3x^3(ac+bcx)^m}{bm+8b}+\frac{70a^4b^4x^4(ac+bcx)^m}{bm+8b}+\frac{56a^3b^5x^5(ac+bcx)^m}{bm+8b}+ \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m*(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((x/(a*c**8), Eq(b, 0) & Eq(m, -8)), (a**7*x*(a*c)**m, Eq(b, 0)),
(log(a/b + x)/(b*c**8), Eq(m, -8)), (a**8*(a*c + b*c*x)**m/(b*m + 8*b) + 8*
a**7*b*x*(a*c + b*c*x)**m/(b*m + 8*b) + 28*a**6*b**2*x**2*(a*c + b*c*x)**m/
(b*m + 8*b) + 56*a**5*b**3*x**3*(a*c + b*c*x)**m/(b*m + 8*b) + 70*a**4*b**4
*x**4*(a*c + b*c*x)**m/(b*m + 8*b) + 56*a**3*b**5*x**5*(a*c + b*c*x)**m/(b*
m + 8*b) + 28*a**2*b**6*x**6*(a*c + b*c*x)**m/(b*m + 8*b) + 8*a*b**7*x**7*(
a*c + b*c*x)**m/(b*m + 8*b) + b**8*x**8*(a*c + b*c*x)**m/(b*m + 8*b), True)
)
```

3.2171 $\int \frac{(a+bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx$

Optimal. Leaf size=27

$$-\frac{c^4(ac+bcx)^{m-4}}{b(4-m)}$$

```
[Out] -c^4*(b*c*x+a*c)^(-4+m)/b/(4-m)
```

Rubi [A] time = 0.02, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 34, $\frac{\text{number of rules}}{\text{integrand size}} = 0.088$, Rules used = $\{21, 27, 32\}$

$$-\frac{c^4(ac+bcx)^{m-4}}{b(4-m)}$$

Antiderivative was successfully verified.

```
[In] Int[((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] -((c^4*(a*c + b*c*x)^(-4 + m))/(b*(4 - m)))
```

Rule 21

```
Int[(u_.)*((a_) + (b_.)*(v_))^(m_.)*((c_) + (d_.)*(v_))^(n_.), x_Symbol] :>
 Dist[(b/d)^m, Int[u*(c + d*v)^(m + n), x], x] /; FreeQ[{a, b, c, d, n}, x]
 && EqQ[b*c - a*d, 0] && IntegerQ[m] && ( !IntegerQ[n] || SimplerQ[c + d*x,
 a + b*x])
```

Rule 27

```
Int[(u_.)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[u*Canc
el[(b/2 + c*x)^(2*p)/c^p], x] /; FreeQ[{a, b, c}, x] && EqQ[b^2 - 4*a*c, 0]
 && IntegerQ[p]
```

Rule 32

```
Int[((a_.) + (b_.)*(x_))^(m_), x_Symbol] :> Simp[(a + b*x)^(m + 1)/(b*(m +
1)), x] /; FreeQ[{a, b, m}, x] && NeQ[m, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(a+bx)(ac+bcx)^m}{\left(a^2+2abx+b^2x^2\right)^3}\,dx &= \frac{\int \frac{(ac+bcx)^{1+m}}{\left(a^2+2abx+b^2x^2\right)^3}\,dx}{c}\\
&= \frac{\int \frac{(ac+bcx)^{1+m}}{(a+bx)^6}\,dx}{c}\\
&= c^5\int (ac+bcx)^{-5+m}\,dx\\
&= -\frac{c^4(ac+bcx)^{-4+m}}{b(4-m)}
\end{aligned}$$

Mathematica [A] time = 0.01, size = 25, normalized size = 0.93

$$\frac{(c(a+bx))^m}{b(m-4)(a+bx)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((a + b*x)*(a*c + b*c*x)^m)/(a^2 + 2*a*b*x + b^2*x^2)^3,x]
```

```
[Out] (c*(a + b*x))^m/(b*(-4 + m)*(a + b*x)^4)
```

fricas [B] time = 1.08, size = 101, normalized size = 3.74

$$\frac{(bcx+ac)^m}{a^4bm-4\,a^4b+\left(b^5m-4\,b^5\right)x^4+4\,\left(ab^4m-4\,ab^4\right)x^3+6\,\left(a^2b^3m-4\,a^2b^3\right)x^2+4\,\left(a^3b^2m-4\,a^3b^2\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="frica
s")
```

```
[Out] (b*c*x + a*c)^m/(a^4*b*m - 4*a^4*b + (b^5*m - 4*b^5)*x^4 + 4*(a*b^4*m - 4*a
*b^4)*x^3 + 6*(a^2*b^3*m - 4*a^2*b^3)*x^2 + 4*(a^3*b^2*m - 4*a^3*b^2)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(bx+a)(bcx+ac)^m}{\left(b^2x^2+2\,abx+a^2\right)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="giac"
)
```

```
[Out] integrate((b*x + a)*(b*c*x + a*c)^m/(b^2*x^2 + 2*a*b*x + a^2)^3, x)
```

maple [A] time = 0.05, size = 45, normalized size = 1.67

$$\frac{(bcx+ac)^m}{(bx+a)^2\left(b^2x^2+2abx+a^2\right)(m-4)\,b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x)
```

```
[Out] (b*c*x+a*c)^m/(b*x+a)^2/(b^2*x^2+2*a*b*x+a^2)/b/(-4+m)
```

maxima [B] time = 0.85, size = 216, normalized size = 8.00

$$\frac{(bc^m(m-5)x-ac^m)(bx+a)^m b}{\left(m^2-9\,m+20\right)b^7x^5+5\,\left(m^2-9\,m+20\right)ab^6x^4+10\,\left(m^2-9\,m+20\right)a^2b^5x^3+10\,\left(m^2-9\,m+20\right)a^3b^4x^2+5\,\left(m^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)^m/(b^2*x^2+2*a*b*x+a^2)^3,x, algorithm="maxim
a")
```

```
[Out] (b*c^m*(m - 5)*x - a*c^m)*(b*x + a)^m*b/((m^2 - 9*m + 20)*b^7*x^5 + 5*(m^2
- 9*m + 20)*a*b^6*x^4 + 10*(m^2 - 9*m + 20)*a^2*b^5*x^3 + 10*(m^2 - 9*m + 2
0)*a^3*b^4*x^2 + 5*(m^2 - 9*m + 20)*a^4*b^3*x + (m^2 - 9*m + 20)*a^5*b^2) +
 (b*x + a)^m*a*c^m/(b^6*(m - 5)*x^5 + 5*a*b^5*(m - 5)*x^4 + 10*a^2*b^4*(m -
 5)*x^3 + 10*a^3*b^3*(m - 5)*x^2 + 5*a^4*b^2*(m - 5)*x + a^5*b*(m - 5))
```

mupad [B] time = 2.18, size = 61, normalized size = 2.26

$$\frac{(a\,c+b\,c\,x)^m}{b^5\,(m-4)\,\left(x^4+\frac{a^4}{b^4}+\frac{4\,a\,x^3}{b}+\frac{4\,a^3\,x}{b^3}+\frac{6\,a^2\,x^2}{b^2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((a*c + b*c*x)^m*(a + b*x))/(a^2 + b^2*x^2 + 2*a*b*x)^3,x)
```

```
[Out] (a*c + b*c*x)^m/(b^5*(m - 4)*(x^4 + a^4/b^4 + (4*a*x^3)/b + (4*a^3*x)/b^3 +
 (6*a^2*x^2)/b^2))
```

sympy [A] time = 4.18, size = 136, normalized size = 5.04

$$\begin{cases} \frac{c^{4}x}{a} & \text{for}\: b = 0 \wedge m = 4 \\ \frac{x \left(a c\right)^{m}}{a^{5}} & \text{for}\: b = 0 \\ \frac{c^{4} \log{\left(\frac{a}{b} + x \right)}}{b} & \text{for}\: m = 4 \\ \frac{\left(a c + b c x\right)^{m}}{a^{4} b m - 4 a^{4} b + 4 a^{3} b^{2} m x - 16 a^{3} b^{2} x + 6 a^{2} b^{3} m x^{2} - 24 a^{2} b^{3} x^{2} + 4 a b^{4} m x^{3} - 16 a b^{4} x^{3} + b^{5} m x^{4} - 4 b^{5} x^{4}} & \text{otherwise} \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)*(b*c*x+a*c)**m/(b**2*x**2+2*a*b*x+a**2)**3,x)
```

```
[Out] Piecewise((c**4*x/a, Eq(b, 0) & Eq(m, 4)), (x*(a*c)**m/a**5, Eq(b, 0)), (c*
*4*log(a/b + x)/b, Eq(m, 4)), ((a*c + b*c*x)**m/(a**4*b*m - 4*a**4*b + 4*a*
*3*b**2*m*x - 16*a**3*b**2*x + 6*a**2*b**3*m*x**2 - 24*a**2*b**3*x**2 + 4*a
*b**4*m*x**3 - 16*a*b**4*x**3 + b**5*m*x**4 - 4*b**5*x**4), True))
```

3.2172 $\int (d+ex)^3(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=414

$$\frac{7(2cd-be)^5(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{11/2}e^2}+\frac{7(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce}}{512c^5e}$$

```
[Out] -7/192*(-b*e+2*c*d)^2*(-3*b*e*g+2*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^
2*x^2)^(3/2)/c^4/e^2-7/160*(-b*e+2*c*d)*(-3*b*e*g+2*c*d*g+4*c*e*f)*(e*x+d)*
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^3/e^2-1/20*(-3*b*e*g+2*c*d*g+4*c*e
*f)*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^2/e^2-1/6*g*(e*x+d)^
3*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2+7/1024*(-b*e+2*c*d)^5*(-3*b*
e*g+2*c*d*g+4*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c
*e^2*x^2)^(1/2))/c^(11/2)/e^2+7/512*(-b*e+2*c*d)^3*(-3*b*e*g+2*c*d*g+4*c*e*
f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^5/e
```

Rubi [A] time = 0.83, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{7(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+2cdg+4cef)}{512c^5e}-\frac{7(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)}{192c^4e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (7*(2*c*d - b*e)^3*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2])/(512*c^5*e) - (7*(2*c*d - b*e)^2*(4*c*e*f + 2*
c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*c^4*e^2)
 - (7*(2*c*d - b*e)*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(d + e*x)*(d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2)^(3/2))/(160*c^3*e^2) - ((4*c*e*f + 2*c*d*g - 3*b*e*g
)*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(20*c^2*e^2) - (
g*(d + e*x)^3*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(6*c*e^2) + (7*(
2*c*d - b*e)^5*(4*c*e*f + 2*c*d*g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt
[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(1024*c^(11/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int (d+ex)^3(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx &= -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{6ce^2} - \frac{\left(\frac{3}{2}e\left(-2ce^2f\right.\right.}{} \\
&= -\frac{(4cef+2cdg-3beg)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{20c^2e^2} \\
&= -\frac{7(2cd-be)(4cef+2cdg-3beg)(d+ex)\left(d(cd-be)-be\right.}{160c^3e^2} \\
&= -\frac{7(2cd-be)^2(4cef+2cdg-3beg)\left(d(cd-be)-be^2x-ce\right.}{192c^4e^2} \\
&= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e} \\
&= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e} \\
&= \frac{7(2cd-be)^3(4cef+2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-b}}{512c^5e}
\end{aligned}
$$

Mathematica [A] time = 5.93, size = 527, normalized size = 1.27

$$
\frac{(d+ex)^3((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{9(-3beg+2cdg+4cef)\left(-384c^5e^{12}(d+ex)^5\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-48c^4e^{12}(d+ex)^4\sqrt{e(2c}\right.}{}\right.}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] ((d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-9*e*g + (9*(4*c*e*f
 + 2*c*d*g - 3*b*e*g)*(105*c*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^5*(d
 + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 70*c^2*e^12*Sqrt[e*(2
*c*d - b*e)]*(-2*c*d + b*e)^4*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c
*d + b*e)] + 56*c^3*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^3*(d + e*x)^3
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 48*c^4*e^12*Sqrt[e*(2*c*d -
b*e)]*(-2*c*d + b*e)^2*(d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)] - 384*c^5*e^12*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^5*Sqrt[(-
(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 105*Sqrt[c]*e^(25/2)*(-2*c*d + b*e)^
6*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)
]]))/(1280*c^5*e^11*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)^5*((-(
c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2))))/(54*c*e^3)
```

fricas [A] time = 4.18, size = 1469, normalized size = 3.55

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [-1/30720*(105*(4*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 256*b*c
^5*d^5*e + 400*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 + 140*b^4*c^2*d^2*e^4
- 32*b^5*c*d*e^5 + 3*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x -
 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f
+ (36*c^6*d*e^4 + b*c^5*e^5)*g)*x^4 + 16*(12*(30*c^6*d*e^4 + b*c^5*e^5)*f +
 (340*c^6*d^2*e^3 + 56*b*c^5*d*e^4 - 9*b^2*c^4*e^5)*g)*x^3 + 8*(4*(224*c^6*
d^2*e^3 + 46*b*c^5*d*e^4 - 7*b^2*c^4*e^5)*f + (128*c^6*d^3*e^2 + 380*b*c^5*
d^2*e^3 - 152*b^2*c^4*d*e^4 + 21*b^3*c^3*e^5)*g)*x^2 - 4*(2176*c^6*d^4*e -
4472*b*c^5*d^3*e^2 + 2996*b^2*c^4*d^2*e^3 - 910*b^3*c^3*d*e^4 + 105*b^4*c^2
*e^5)*f - (5632*c^6*d^5 - 16752*b*c^5*d^4*e + 19408*b^2*c^4*d^3*e^2 - 10808
*b^3*c^3*d^2*e^3 + 2940*b^4*c^2*d*e^4 - 315*b^5*c*e^5)*g + 2*(4*(120*c^6*d^
3*e^2 + 716*b*c^5*d^2*e^3 - 266*b^2*c^4*d*e^4 + 35*b^3*c^3*e^5)*f - (1680*c
^6*d^4*e - 3632*b*c^5*d^3*e^2 + 2680*b^2*c^4*d^2*e^3 - 868*b^3*c^3*d*e^4 +
105*b^4*c^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2
), -1/15360*(105*(4*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 -
 40*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 256*b
*c^5*d^5*e + 400*b^2*c^4*d^4*e^2 - 320*b^3*c^3*d^3*e^3 + 140*b^4*c^2*d^2*e^
4 - 32*b^5*c*d*e^5 + 3*b^6*e^6)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^
2*d^2 + b*c*d*e)) - 2*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f + (36*c^6*d*e
^4 + b*c^5*e^5)*g)*x^4 + 16*(12*(30*c^6*d*e^4 + b*c^5*e^5)*f + (340*c^6*d^2
*e^3 + 56*b*c^5*d*e^4 - 9*b^2*c^4*e^5)*g)*x^3 + 8*(4*(224*c^6*d^2*e^3 + 46*
b*c^5*d*e^4 - 7*b^2*c^4*e^5)*f + (128*c^6*d^3*e^2 + 380*b*c^5*d^2*e^3 - 152
*b^2*c^4*d*e^4 + 21*b^3*c^3*e^5)*g)*x^2 - 4*(2176*c^6*d^4*e - 4472*b*c^5*d^
3*e^2 + 2996*b^2*c^4*d^2*e^3 - 910*b^3*c^3*d*e^4 + 105*b^4*c^2*e^5)*f - (56
32*c^6*d^5 - 16752*b*c^5*d^4*e + 19408*b^2*c^4*d^3*e^2 - 10808*b^3*c^3*d^2*
e^3 + 2940*b^4*c^2*d*e^4 - 315*b^5*c*e^5)*g + 2*(4*(120*c^6*d^3*e^2 + 716*b
*c^5*d^2*e^3 - 266*b^2*c^4*d*e^4 + 35*b^3*c^3*e^5)*f - (1680*c^6*d^4*e - 36
32*b*c^5*d^3*e^2 + 2680*b^2*c^4*d^2*e^3 - 868*b^3*c^3*d*e^4 + 105*b^4*c^2*e
^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2)]
```

giac [A] time = 0.47, size = 699, normalized size = 1.69

$$\frac{1}{7680}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\,gxe^3+\frac{\left(36\,c^5dge^{10}+12\,c^5fe^{11}+bc^4ge^{11}\right)e^{(-8)}}{c^5}\Bigg)x+\frac{\left(340\,c^5d^2ge^9\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] 1/7680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*g*x*e^3 +
 (36*c^5*d*g*e^10 + 12*c^5*f*e^11 + b*c^4*g*e^11)*e^(-8)/c^5)*x + (340*c^5*
d^2*g*e^9 + 360*c^5*d*f*e^10 + 56*b*c^4*d*g*e^10 + 12*b*c^4*f*e^11 - 9*b^2*
c^3*g*e^11)*e^(-8)/c^5)*x + (128*c^5*d^3*g*e^8 + 896*c^5*d^2*f*e^9 + 380*b*
c^4*d^2*g*e^9 + 184*b*c^4*d*f*e^10 - 152*b^2*c^3*d*g*e^10 - 28*b^2*c^3*f*e^
11 + 21*b^3*c^2*g*e^11)*e^(-8)/c^5)*x - (1680*c^5*d^4*g*e^7 - 480*c^5*d^3*f
*e^8 - 3632*b*c^4*d^3*g*e^8 - 2864*b*c^4*d^2*f*e^9 + 2680*b^2*c^3*d^2*g*e^9
 + 1064*b^2*c^3*d*f*e^10 - 868*b^3*c^2*d*g*e^10 - 140*b^3*c^2*f*e^11 + 105*
b^4*c*g*e^11)*e^(-8)/c^5)*x - (5632*c^5*d^5*g*e^6 + 8704*c^5*d^4*f*e^7 - 16
752*b*c^4*d^4*g*e^7 - 17888*b*c^4*d^3*f*e^8 + 19408*b^2*c^3*d^3*g*e^8 + 119
84*b^2*c^3*d^2*f*e^9 - 10808*b^3*c^2*d^2*g*e^9 - 3640*b^3*c^2*d*f*e^10 + 29
40*b^4*c*d*g*e^10 + 420*b^4*c*f*e^11 - 315*b^5*g*e^11)*e^(-8)/c^5) + 7/1024
*(64*c^6*d^6*g + 128*c^6*d^5*f*e - 256*b*c^5*d^5*g*e - 320*b*c^5*d^4*f*e^2
+ 400*b^2*c^4*d^4*g*e^2 + 320*b^2*c^4*d^3*f*e^3 - 320*b^3*c^3*d^3*g*e^3 - 1
60*b^3*c^3*d^2*f*e^4 + 140*b^4*c^2*d^2*g*e^4 + 40*b^4*c^2*d*f*e^5 - 32*b^5*
c*d*g*e^5 - 4*b^5*c*f*e^6 + 3*b^6*g*e^6)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sq
rt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)
*b))/c^6
```

maple [B] time = 0.11, size = 2217, normalized size = 5.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -21/16*b/c*e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-35/64*e^2*g*b^3
/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+35/128*b^4/c^3*e^4/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2))*d*f+21/32*b^2/c^2*e^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-7/32
*e^4*g*b^5/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2))*d+21/16*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*d^2-35/16*e^2*g*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3+35/16*b^2/c*e^2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^3*f-35/32*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e^3*f+175/64*e*g*b^2/c/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
)*d^4+245/256*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+7/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^3*f-3/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c*d*f+7/16
/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*f+7/8*c/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*f-7
7/120*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-21/32*g/c^2*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1/6*e*g*x^3*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(3/2)/c+7/16/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4+91
/120/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f-3/5*x^2*(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(3/2)/c*d*g-1/5*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)/c*e*f-7/48*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-7/128*b^4
/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*f-7/4*g/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5+7
/64*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-11/15/e^2/c*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*g-17/15/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d^2*f+21/512*e^3*g*b^5/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)-7/8/e*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+7/40*b/c^2*x*(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-7/64*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*e^3*f-21/32*b^2/c^2*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*d^2*f-35/16*b*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+21/64*b^3/c^3*e^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)*d*f-7/256*b^5/c^4*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f-21/16*g/c*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3+13/20*g/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(3/2)*b*d+3/20*e*g*b/c^2*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)-21/160*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+21/1024*e^5*g
*b^6/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2))+21/256*e^3*g*b^4/c^4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)-35/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+21/32
*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+59/48/e*g*b/c^2*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+7/32/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*b*d^4+7/16/e*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[B]** time = 8.14, size = 3311, normalized size = 8.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d^3*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (3*d*f*
(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c
) - (7*b*e^3*f*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d
+ c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c
*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^
4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((
c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
 - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2
*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*
e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) +
 (3*b*e^3*g*((7*b*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c
*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*
(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c
*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) +
 ((c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2)
+ 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4
*c*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c
) + ((2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e -
c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16
*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*
c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c*e
^2) + (x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c*e^2)))/(4*c) -
```

```
(d^3*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2)
 + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2)) - (
3*d*g*(2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e -
 c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(1
6*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b
*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c)
 - (e*f*(2*c*d^2 - 2*b*d*e)*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e
 - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/
(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2
*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*
c) - (3*d*f*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c) - (d^3*g*l
og(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^
2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) + (e*g*(3*c
*d^2 - 3*b*d*e)*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d
 + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-
c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e
^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + (
(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c
*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(6*c) -
 (3*d*g*x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c) - (e*f*x^2*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(5*c) - (e*g*x^3*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(3/2))/(6*c) + (15*b*d*e^2*f*((log(b*e^2 - 2*(-c*e^
2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b
*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2
 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(24*c^2*e^4)))/(8*c) + (15*b*d^2*e*g*((log(b*e^2 - 2*(-c*e^2)^(1/2)*
(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c
*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e)
 - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(2
4*c^2*e^4)))/(8*c) - (3*d^2*e*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b
*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e))
)/(16*(-c*e^2)^(5/2)) + (d^2*f*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2
*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(8*c^2*e^3
) + (d^3*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4) + (3*d^2*g*(c*d^2
 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (l
og(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^
2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e) -
(21*b*d*e^2*g*((5*b*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d +
 c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*
e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4
*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((c
*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
- (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*
c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e
^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) -
(3*d^2*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c*e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)\,(be-cd+cex)}\,(d+ex)^3\,\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**3*(f + g*x), x)
```

3.2173 $\int (d+ex)^2(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=339

$$\frac{(2cd-be)^4(-7beg+4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{9/2}e^2}+\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x}}{128c^4e}$$

```
[Out] -1/48*(-b*e+2*c*d)*(-7*b*e*g+4*c*d*g+10*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(3/2)/c^3/e^2-1/40*(-7*b*e*g+4*c*d*g+10*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(3/2)/c^2/e^2-1/5*g*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*e^2
*x^2)^(3/2)/c/e^2+1/256*(-b*e+2*c*d)^4*(-7*b*e*g+4*c*d*g+10*c*e*f)*arctan(1
/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(9/2)/e^2+
1/128*(-b*e+2*c*d)^2*(-7*b*e*g+4*c*d*g+10*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(1/2)/c^4/e
```

Rubi [A] time = 0.46, antiderivative size = 339, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.159$, Rules used = {1638, 12, 670, 640, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+4cdg+10cef)}{128c^4e}-\frac{(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{48c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((2*c*d - b*e)^2*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(128*c^4*e) - ((2*c*d - b*e)*(10*c*e*f + 4*c*d*
g - 7*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(48*c^3*e^2) - ((
10*c*e*f + 4*c*d*g - 7*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(3/2))/(40*c^2*e^2) - (g*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(3/2))/(5*c*e^2) + ((2*c*d - b*e)^4*(10*c*e*f + 4*c*d*g - 7*b*e*g)*ArcTa
n[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(
256*c^(9/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2} - \int -\tfrac{1}{2}e^2(10ce$$

$$= -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2} + (10cef+4cd$$

$$= -\frac{(10cef+4cdg-7beg)(d+ex)\,(d(cd-be)-be^2x-ce^2x^2}{40c^2e^2}$$

$$= -\frac{(2cd-be)(10cef+4cdg-7beg)\,(d(cd-be)-be^2x-ce^2}{48c^3e^2}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b}}{128c^4e}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b}}{128c^4e}$$

$$= \frac{(2cd-be)^2(10cef+4cdg-7beg)(b+2cx)\sqrt{d(cd-be)-b}}{128c^4e}$$

Mathematica [A] time = 3.93, size = 464, normalized size = 1.37

$$\frac{(d+ex)^2((d+ex)(c(d-ex)-be))^{3/2}\,\Bigg(\frac{7(-7beg+4cdg+10cef)\Big(-48c^4e^{10}(d+ex)^4\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-e^4(be-2cd)^2\Big(8c^3e^6(d+}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] ((d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-7*e*g + (7*(10*c*e*
f + 4*c*d*g - 7*b*e*g)*(-48*c^4*e^10*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(
d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - e^4*(-2*c*d + b*e)
^2*(15*c*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)*Sqrt[(-(c*d)
+ b*e + c*e*x)/(-2*c*d + b*e)] - 10*c^2*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d +
 b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 8*c^3*e^6*S
qrt[e*(2*c*d - b*e)]*(d + e*x)^3*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)
] + 15*Sqrt[c]*e^(13/2)*(-2*c*d + b*e)^3*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt
[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])))/(384*c^4*e^9*Sqrt[e*(2*c*d - b
*e)]*(-2*c*d + b*e)^2*(d + e*x)^4*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(
3/2))))/(35*c*e^3)
```

fricas [A] time = 2.10, size = 1117, normalized size = 3.29

$$\left[\frac{15\left(10\left(16\,c^5d^4e - 32\,bc^4d^3e^2 + 24\,b^2c^3d^2e^3 - 8\,b^3c^2de^4 + b^4ce^5\right)f + \left(64\,c^5d^5 - 240\,bc^4d^4e + 320\,b^2c^3d^3e^2 - 200\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [1/7680*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b
^3*c^2*d*e^4 + b^4*c*e^5)*f + (64*c^5*d^5 - 240*b*c^4*d^4*e + 320*b^2*c^3*d
^3*e^2 - 200*b^3*c^2*d^2*e^3 + 60*b^4*c*d*e^4 - 7*b^5*e^5)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(384*c^5*e^
4*g*x^4 + 48*(10*c^5*e^4*f + (20*c^5*d*e^3 + b*c^4*e^4)*g)*x^3 + 8*(10*(16*
c^5*d*e^3 + b*c^4*e^4)*f + (64*c^5*d^2*e^2 + 36*b*c^4*d*e^3 - 7*b^2*c^3*e^4
)*g)*x^2 - 10*(128*c^5*d^3*e - 228*b*c^4*d^2*e^2 + 100*b^2*c^3*d*e^3 - 15*b
^3*c^2*e^4)*f - (896*c^5*d^4 - 2192*b*c^4*d^3*e + 1996*b^2*c^3*d^2*e^2 - 76
0*b^3*c^2*d*e^3 + 105*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 + 28*b*c^4*d*e^3
 - 5*b^2*c^3*e^4)*f - (240*c^5*d^3*e - 436*b*c^4*d^2*e^2 + 216*b^2*c^3*d*e^
3 - 35*b^3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*
e^2), -1/3840*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3
 - 8*b^3*c^2*d*e^4 + b^4*c*e^5)*f + (64*c^5*d^5 - 240*b*c^4*d^4*e + 320*b^2
*c^3*d^3*e^2 - 200*b^3*c^2*d^2*e^3 + 60*b^4*c*d*e^4 - 7*b^5*e^5)*g)*sqrt(c)
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(384*c^5*e^4*g*x^4 +
 48*(10*c^5*e^4*f + (20*c^5*d*e^3 + b*c^4*e^4)*g)*x^3 + 8*(10*(16*c^5*d*e^3
 + b*c^4*e^4)*f + (64*c^5*d^2*e^2 + 36*b*c^4*d*e^3 - 7*b^2*c^3*e^4)*g)*x^2
- 10*(128*c^5*d^3*e - 228*b*c^4*d^2*e^2 + 100*b^2*c^3*d*e^3 - 15*b^3*c^2*e^
4)*f - (896*c^5*d^4 - 2192*b*c^4*d^3*e + 1996*b^2*c^3*d^2*e^2 - 760*b^3*c^2
*d*e^3 + 105*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 + 28*b*c^4*d*e^3 - 5*b^2*
c^3*e^4)*f - (240*c^5*d^3*e - 436*b*c^4*d^2*e^2 + 216*b^2*c^3*d*e^3 - 35*b^
3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [A] time = 0.35, size = 526, normalized size = 1.55

$$\frac{1}{1920}\sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\left(2\left(4\left(6\left(8\,gxe^2 + \frac{\left(20\,c^4dge^7 + 10\,c^4fe^8 + bc^3ge^8\right)e^{(-6)}}{c^4}\right)x + \frac{\left(64\,c^4d^2ge^6 + 160\,c\right.}{}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] 1/1920*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*(8*g*x*e^2 + (20
*c^4*d*g*e^7 + 10*c^4*f*e^8 + b*c^3*g*e^8)*e^(-6)/c^4)*x + (64*c^4*d^2*g*e^
6 + 160*c^4*d*f*e^7 + 36*b*c^3*d*g*e^7 + 10*b*c^3*f*e^8 - 7*b^2*c^2*g*e^8)*
e^(-6)/c^4)*x - (240*c^4*d^3*g*e^5 - 360*c^4*d^2*f*e^6 - 436*b*c^3*d^2*g*e^
6 - 280*b*c^3*d*f*e^7 + 216*b^2*c^2*d*g*e^7 + 50*b^2*c^2*f*e^8 - 35*b^3*c*g
*e^8)*e^(-6)/c^4)*x - (896*c^4*d^4*g*e^4 + 1280*c^4*d^3*f*e^5 - 2192*b*c^3*
d^3*g*e^5 - 2280*b*c^3*d^2*f*e^6 + 1996*b^2*c^2*d^2*g*e^6 + 1000*b^2*c^2*d*
f*e^7 - 760*b^3*c*d*g*e^7 - 150*b^3*c*f*e^8 + 105*b^4*g*e^8)*e^(-6)/c^4) +
1/256*(64*c^5*d^5*g + 160*c^5*d^4*f*e - 240*b*c^4*d^4*g*e - 320*b*c^4*d^3*f
*e^2 + 320*b^2*c^3*d^3*g*e^2 + 240*b^2*c^3*d^2*f*e^3 - 200*b^3*c^2*d^2*g*e^
3 - 80*b^3*c^2*d*f*e^4 + 60*b^4*c*d*g*e^4 + 10*b^4*c*f*e^5 - 7*b^5*g*e^5)*s
qrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b
*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^5
```

maple [B] time = 0.07, size = 1618, normalized size = 4.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 15/64*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d+7/40*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)-7/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-5/4
*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))*b*d^3*f+1/4/e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/
c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*g+5/128*b^4/c^3*e^4/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2))*f-5/16*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d*f+1/8/e/c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*g-1/2*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)/c/e*d*g+15/16*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2
*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e^2*f-5/8*e/c*x*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f-5/16*b^3/c^2*e^3/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-25/32*
e^2*g*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^2+1/2*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d+5/4*e*g*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-1/5*g*x^2*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)/c-7/48*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-1
/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c*f+5/24*b/c^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)*f+5/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f
+11/20/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d-11/16*g*b/c*x*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+1/4*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*d-7/64*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)-7/256*e^4*g*b^5/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/32*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*e^2*f-11/32*g*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^2-15/16*g*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-7/15/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d^2-2/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e*d*f+5/16/c*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^2*f+5/8*c/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+5/64*b
^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*f+1/4/e*x*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*d^3*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 5.55, size = 1732, normalized size = 5.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d^2*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (f*x*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(4*c) - (g*x^2*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(3/2))/(5*c) + (f*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-
(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d
^2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c) - (g*(2*c*d^2 - 2*b*d*e)*((log(b*e
^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(
b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^
2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(5*c) - (7*b*e^2*g*((5*b*((log(b*e^2 - 2
*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^
6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2
- c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) + ((c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(
d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^
2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(4*c*e^2) - (x*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(3/2))/(4*c*e^2)))/(10*c) - (d^2*f*log(b*e^2 - 2*(-c*e^2)^(1/2)
*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(
c*d^2 - b*d*e)))/(2*(-c*e^2)^(3/2)) + (5*b*e^2*f*((log(b*e^2 - 2*(-c*e^2)^(
1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e
^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*e^2*(c*e^2*x^2 - c*d^2 + b
*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(24*c^2*e^4)))/(8*c) - (d^2*g*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(
b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)
))/(16*(-c*e^2)^(5/2)) + (d^2*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^
2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e
^4) - (d*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(2*c*e) + (5*b*d*
e*g*((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) +
 2*c*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((
8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(4*c) - (d*e*f*log(b*e^2 -
2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e
^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(8*(-c*e^2)^(5/2)) + (d*f*(8*c*e^2*(c*e^2*
x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(12*c^2*e^3) + (d*g*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(
d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^
2 - b*d*e)))/(2*(-c*e^2)^(3/2))))/(2*c*e)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^2\left(f+gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**2*(f + g*x), x)
```

3.2174 $\int (d+ex)(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=223

$$\frac{(2cd-be)^3(-5beg+2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{7/2}e^2}+\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^3e}$$

```
[Out] 1/24*(5*b*e*g-8*c*(d*g+e*f)-6*c*e*g*x)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/
2)/c^2/e^2+1/128*(-b*e+2*c*d)^3*(-5*b*e*g+2*c*d*g+8*c*e*f)*arctan(1/2*e*(2*
c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(7/2)/e^2+1/64*(-b
*e+2*c*d)*(-5*b*e*g+2*c*d*g+8*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(1/2)/c^3/e
```

Rubi **[A]** time = 0.28, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$, Rules used = {779, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+2cdg+8cef)}{64c^3e}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(5beg-8c(}{24c^2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((2*c*d - b*e)*(8*c*e*f + 2*c*d*g - 5*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c^3*e) + ((5*b*e*g - 8*c*(e*f + d*g) - 6*c*e*g
*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*c^2*e^2) + ((2*c*d - b
*e)^3*(8*c*e*f + 2*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(128*c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = \frac{(5beg-8c(ef+dg)-6cegx)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24c^2e^2}$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x}}{64c^3e}$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x}}{64c^3e}$$

$$= \frac{(2cd-be)(8cef+2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x}}{64c^3e}$$

Mathematica [**A**] time = 2.44, size = 391, normalized size = 1.75

$$\frac{(d+ex)((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{5(-5beg+2cdg+8cef)\left(-8c^3e^8(d+ex)^3\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}-2c^2e^8(d+ex)^2\sqrt{e(2cd-be)}\right.}{48c^3e^7(d+ex)^3}\right.}{20ce^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((d + e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-5*e*g + (5*(8*c*e*f +
 2*c*d*g - 5*b*e*g)*(3*c*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^3*(d + e*
x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 2*c^2*e^8*Sqrt[e*(2*c*d -
b*e)]*(-2*c*d + b*e)^2*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)] - 8*c^3*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^3*Sqrt[(-(c*
d) + b*e + c*e*x)/(-2*c*d + b*e)] + 3*Sqrt[c]*e^(17/2)*(-2*c*d + b*e)^4*Sqr
t[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/
(48*c^3*e^7*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)^3*((-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e))^(3/2))))/(20*c*e^3)
```

fricas [**A**] time = 2.14, size = 825, normalized size = 3.70

$$\left[-\frac{3\left(8\left(8c^4d^3e-12bc^3d^2e^2+6b^2c^2de^3-b^3ce^4\right)f+\left(16c^4d^4-64bc^3d^3e+72b^2c^2d^2e^2-32b^3cde^3+5b^4e^4\right)g\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/768*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4
)*f + (16*c^4*d^4 - 64*b*c^3*d^3*e + 72*b^2*c^2*d^2*e^2 - 32*b^3*c*d*e^3 +
5*b^4*e^4)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*
d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e
)*sqrt(-c)) - 4*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (8*c^4*d*e^2 + b*c^3*e
^3)*g)*x^2 - 8*(8*c^4*d^2*e - 14*b*c^3*d*e^2 + 3*b^2*c^2*e^3)*f - (64*c^4*d
^3 - 116*b*c^3*d^2*e + 76*b^2*c^2*d*e^2 - 15*b^3*c*e^3)*g + 2*(8*(6*c^4*d*e
^2 + b*c^3*e^3)*f - (12*c^4*d^2*e - 20*b*c^3*d*e^2 + 5*b^2*c^2*e^3)*g)*x)*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^2), -1/384*(3*(8*(8*c^4*d
^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f + (16*c^4*d^4 - 64
*b*c^3*d^3*e + 72*b^2*c^2*d^2*e^2 - 32*b^3*c*d*e^3 + 5*b^4*e^4)*g)*sqrt(c)*
arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(
c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(48*c^4*e^3*g*x^3 + 8
*(8*c^4*e^3*f + (8*c^4*d*e^2 + b*c^3*e^3)*g)*x^2 - 8*(8*c^4*d^2*e - 14*b*c^
3*d*e^2 + 3*b^2*c^2*e^3)*f - (64*c^4*d^3 - 116*b*c^3*d^2*e + 76*b^2*c^2*d*e
^2 - 15*b^3*c*e^3)*g + 2*(8*(6*c^4*d*e^2 + b*c^3*e^3)*f - (12*c^4*d^2*e - 2
0*b*c^3*d*e^2 + 5*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^4*e^2)]
```

giac [A] time = 0.39, size = 381, normalized size = 1.71

$$\frac{1}{192}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(2\left(4\left(6\,gxe+\frac{\left(8\,c^3dge^4+8\,c^3fe^5+bc^2ge^5\right)e^{(-4)}}{c^3}\right)x-\frac{\left(12\,c^3d^2ge^3-48\,c^3dfe^4-\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] 1/192*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*g*x*e + (8*c^3*d*
g*e^4 + 8*c^3*f*e^5 + b*c^2*g*e^5)*e^(-4)/c^3)*x - (12*c^3*d^2*g*e^3 - 48*c
^3*d*f*e^4 - 20*b*c^2*d*g*e^4 - 8*b*c^2*f*e^5 + 5*b^2*c*g*e^5)*e^(-4)/c^3)*
x - (64*c^3*d^3*g*e^2 + 64*c^3*d^2*f*e^3 - 116*b*c^2*d^2*g*e^3 - 112*b*c^2*
d*f*e^4 + 76*b^2*c*d*g*e^4 + 24*b^2*c*f*e^5 - 15*b^3*g*e^5)*e^(-4)/c^3) + 1
/128*(16*c^4*d^4*g + 64*c^4*d^3*f*e - 64*b*c^3*d^3*g*e - 96*b*c^3*d^2*f*e^2
 + 72*b^2*c^2*d^2*g*e^2 + 48*b^2*c^2*d*f*e^3 - 32*b^3*c*d*g*e^3 - 8*b^3*c*f
*e^4 + 5*b^4*g*e^4)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-
c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^4
```

maple [B] time = 0.07, size = 1114, normalized size = 5.00

$$\frac{5b^4e^3g\arctan\left(\frac{\sqrt{c\,e^2}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{128\sqrt{c\,e^2}\;c^3}-\frac{b^3d\,e^2g\arctan\left(\frac{\sqrt{c\,e^2}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{4\sqrt{c\,e^2}\;c^2}-\frac{b^3e^3f\arctan\left(\frac{\sqrt{c\,e^2}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{16\sqrt{c\,e^2}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/4*b/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e*f-1/16*b^3/c^2*e^3/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*f-3/4*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*e*f+3/8*b^2/c*e^2/(c*e^2)^(1/2)*arctan((c*e
^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-1/4*e^2*g
*b^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2))*d+9/16*e*g*b^2/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x
+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+5/32*e*g*b^2/c^2*x*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+5/128*e^3*g*b^4/c^3/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-3/8*g/
c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+1/16/e*g/c*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2)*b*d^2+1/8/e*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x
+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4+1/2*d*f*x*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e*
f+1/2*d^3*f*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))+1/8/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*
d^2-1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c/e^2*d*g-1/8*b^2/c^2*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e*f+1/4*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*b+5/64*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/4/e*
g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c+5/24/e*g*b/c^2*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)-3/16*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b
^2*d-1/2*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2))*b*d^3
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**]   time = 4.16, size = 801, normalized size = 3.59

$$d f \left(\frac{x}{2}+\frac{b}{4 c}\right) \sqrt{c d^2-b d e-c e^2 x^2-b e^2 x}+\frac{5 b e g \left(\frac{\ln\left(b e^2-2 \sqrt{-c e^2} \sqrt{-(d+e x) (b e-c d+c e x)}+2 c e^2 x\right) \left(b^3 e^6+4 b c e^4 \left(c d^2-b\right.\right.}{16 \left(-c e^2\right)^{5/2}}\right.}{8 c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] d*f*(x/2 + b/(4*c))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (5*b*e*g*
((log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c
*e^2*x)*(b^3*e^6 + 4*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - ((8*c*
e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)))/(8*c) - (d*g*log(b*e^2 - 2*(-c*
e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4
*b*c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) - (e*f*log(b*e^2 - 2*(-c*e^2
)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*(b^3*e^6 + 4*b*
c*e^4*(c*d^2 - b*d*e)))/(16*(-c*e^2)^(5/2)) + (f*(8*c*e^2*(c*e^2*x^2 - c*d^
2 + b*d*e) - 3*b^2*e^4 + 2*b*c*e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(24*c^2*e^3) + (g*(c*d^2 - b*d*e)*((x/2 + b/(4*c))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2) - (log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*
e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e)))
/(2*(-c*e^2)^(3/2))))/(4*c*e) - (d*f*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*
x)*(b*e - c*d + c*e*x))^(1/2) + 2*c*e^2*x)*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*
d*e)))/(2*(-c*e^2)^(3/2)) - (g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2
))/(4*c*e) + (d*g*(8*c*e^2*(c*e^2*x^2 - c*d^2 + b*d*e) - 3*b^2*e^4 + 2*b*c*
e^4*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(24*c^2*e^4)
```

sympy [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)*(f + g*x), x)
```

3.2175 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{d+ex}\,dx$

Optimal. Leaf size=192

$$\frac{(2cd-be)(-beg-2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{3/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-beg-2cdg+4cef)}{4ce^2}$$

```
[Out] -1/2*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2/(e*x+d)+1/8*(-b*e+2*c*d
)*(-b*e*g-2*c*d*g+4*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(1/2))/c^(3/2)/e^2+1/4*(-b*e*g-2*c*d*g+4*c*e*f)*(d*(-b*e+c*
d)-b*e^2*x-c*e^2*x^2)^(1/2)/c/e^2
```

Rubi [A] time = 0.22, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {794, 664, 621, 204}

$$\frac{(2cd-be)(-beg-2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{3/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-beg-2cdg+4cef)}{4ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x),x]
```

```
[Out] ((4*c*e*f - 2*c*d*g - b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4*
c*e^2) - (g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(2*c*e^2*(d + e*x)
) + ((2*c*d - b*e)*(4*c*e*f - 2*c*d*g - b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sq
rt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2ce^2(d+ex)} - \frac{\left(ce^3f-\left(-cde^2+be^3\right)g+\frac{3}{2}e\left(\right.}{}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-\right.}{2ce^2(d}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-\right.}{2ce^2(d}$$

$$= \frac{(4cef-2cdg-beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \frac{g\left(d(cd-be)-\right.}{2ce^2(d}$$

Mathematica [**A**] time = 0.51, size = 174, normalized size = 0.91

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c}\sqrt{e}\,(beg+2c(-2dg+2ef+egx))+\frac{\sqrt{e(2cd-be)}\,(-beg-2cdg+4cef)\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{d+ex}\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{4c^{3/2}e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x),x
]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[c]*Sqrt[e]*(b*e*g + 2*c*(2*e*
f - 2*d*g + e*g*x)) + (Sqrt[e*(2*c*d - b*e)]*(4*c*e*f - 2*c*d*g - b*e*g)*Ar
cSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[d + e*x]
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]]))/(4*c^(3/2)*e^(5/2))
```

fricas [**A**] time = 1.41, size = 395, normalized size = 2.06

$$\left[-\frac{\left(4\left(2c^2de-bce^2\right)f-\left(4c^2d^2-b^2e^2\right)g\right)\sqrt{-c}\,\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-ce^2x^2-b}\right.}{16c^2e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/16*((4*(2*c^2*d*e - b*c*e^2)*f - (4*c^2*d^2 - b^2*e^2)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(2*c^2*e*g*
x + 4*c^2*e*f - (4*c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^2*e^2), -1/8*((4*(2*c^2*d*e - b*c*e^2)*f - (4*c^2*d^2 - b^2*e^2)*g
)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x +
b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(2*c^2*e*g*
x + 4*c^2*e*f - (4*c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e))/(c^2*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 697, normalized size = 3.63

$$\frac{b^2eg\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{8\sqrt{c\,e^2}\;c}-\frac{bdg\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{2\sqrt{c\,e^2}}+\frac{bdg\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\frac{d}{e}-\frac{-b\,e^2+2cde}{2c\,e^2}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^2c\,e^2+\left(-b\,e^2+2cde\right)\left(x+\frac{d}{e}\right)}}\right)}{2\sqrt{c\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x)
```

```
[Out] 1/2*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+1/4*g/e/c*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*b+1/8*g*e/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^2-1/2*g/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d+1/
2*g/e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d^2-1/e^2*(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2)*d*g+1/e*(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)
^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*b*d*g-1/2*e/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2))*b*f-1/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/
2*(-b*e^2+2*c*d*e)/c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
)*c*d^2*g+1/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-c*(x+d/e)^2*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*c*d*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{d+ex}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d),x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x), x)
```

3.2176 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=200

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^2(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-4cdg+2cef)}{e^2(2cd-be)}-\frac{(beg-4cdg+2cef)}{}$$

```
[Out] -2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*x+
d)^2-1/2*(b*e*g-4*c*d*g+2*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*
d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^2/c^(1/2)-(b*e*g-4*c*d*g+2*c*e*f)*(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.34, antiderivative size = 200, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^2(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(beg-4cdg+2cef)}{e^2(2cd-be)}-\frac{(beg-4cdg+2cef)}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^2,x]
```

```
[Out] -(((2*c*e*f - 4*c*d*g + b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*(2*c*d - b*e))) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^
(3/2))/(e^2*(2*c*d - b*e)*(d + e*x)^2) - ((2*c*e*f - 4*c*d*g + b*e*g)*ArcTa
n[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(
2*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(2cd-be)(d+ex)^2} - \frac{(2cef-4cdg+beg)}{e(2c}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\big(d(}{e^2(2}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\big(d(}{e^2(2}$$

$$= -\frac{(2cef-4cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2(ef-dg)\big(d(}{e^2(2}$$

Mathematica [A] time = 0.71, size = 185, normalized size = 0.92

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{\sqrt{e}\,(be-2cd)(3dg-2ef+egx)}{d+ex}-\frac{\sqrt{e(2cd-be)}\,(beg-4cdg+2cef)\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{c}\,\sqrt{d+ex}\,\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{e^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^2
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((Sqrt[e]*(-2*c*d + b*e)*(-2*e*f
+ 3*d*g + e*g*x))/(d + e*x)) - (Sqrt[e*(2*c*d - b*e)]*(2*c*e*f - 4*c*d*g +
b*e*g)*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt
[c]*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(e^(5/2)*(
2*c*d - b*e))
```

fricas [A] time = 2.35, size = 399, normalized size = 2.00

$$\Bigg[-\frac{\left(2\,cdef-\left(4\,cd^2-bde\right)g+\left(2\,ce^2f-\left(4\,cde-be^2\right)g\right)x\right)\sqrt{-c}\,\log\left(8\,c^2e^2x^2+8\,bce^2x-4\,c^2d^2+4\,bcde+b^2e^2\right.}{4\left(ce^3x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [-1/4*((2*c*d*e*f - (4*c*d^2 - b*d*e)*g + (2*c*e^2*f - (4*c*d*e - b*e^2)*g)
*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*
e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)
) - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - 2*c*e*f + 3*c*d
*g))/(c*e^3*x + c*d*e^2), 1/2*((2*c*d*e*f - (4*c*d^2 - b*d*e)*g + (2*c*e^2*
f - (4*c*d*e - b*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x +
c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 +
 b*c*d*e)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - 2*c*e*
f + 3*c*d*g))/(c*e^3*x + c*d*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 880, normalized size = 4.40

$$-\frac{b c d e g \arctan\left(\frac{\sqrt{c e^{2}}\left(x+\frac{d}{e}-\frac{-b e^{2}+2 c d e}{2 c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2 c d e\right) \sqrt{c e^{2}}}+\frac{b c e^{2} f \arctan\left(\frac{\sqrt{c e^{2}}\left(x+\frac{d}{e}-\frac{-b e^{2}+2 c d e}{2 c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2 c d e\right) \sqrt{c e^{2}}}+\frac{2 c^{2} d^{2} g \arctan\left(\right.}{\left(-b e^{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x)
```

```
[Out] 2/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(3/2)*d*g-2/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(3/2)*f+2/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*d*g-2*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*f-e*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*b*d*g+e^2*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*b*f+2*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2))*d^2*g-2*e*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))*d*f+g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)-1
/2*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*b+g/e/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e
^2+2*c*d*e)*(x+d/e))^(1/2))*c*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(f+gx\right)}{\left(d+ex\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**2,x)
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**2, x)
```

3.2177 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=168

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3(2cd-be)}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{\sqrt{c}\,g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}$$

```
[Out] -2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^3-g*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1
/2))*c^(1/2)/e^2-2*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)
```

Rubi **[A]** time = 0.32, antiderivative size = 168, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {792, 662, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3(2cd-be)}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{\sqrt{c}\,g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^3,x]
```

```
[Out] (-2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) - (2*(e*f
- d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d
 + e*x)^3) - (Sqrt[c]*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^3}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^3}+\frac{g\int\frac{\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^2}}{e}$$

$$=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-\right.}{3e^2(2cd-be)(d+ex)^3}$$

$$=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-\right.}{3e^2(2cd-be)(d+ex)^3}$$

$$=-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-\right.}{3e^2(2cd-be)(d+ex)^3}$$

Mathematica [C] time = 0.22, size = 146, normalized size = 0.87

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left((be-cd+cex)(-beg+cdg+cef)+\frac{g(be-2cd)^2\,{}_2F_1\left(-\frac{3}{2},-\frac{3}{2};-\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{3ce^2(d+ex)^2(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^3
,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*((c*e*f + c*d*g - b*e*g)*(-(c*d)
+ b*e + c*e*x) + ((-2*c*d + b*e)^2*g*Hypergeometric2F1[-3/2, -3/2, -1/2, (c
*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]))/(
3*c*e^2*(2*c*d - b*e)*(d + e*x)^2)
```

fricas [A] time = 4.68, size = 579, normalized size = 3.45

$$\left[\frac{3\left(\left(2\,cde^2-be^3\right)gx^2+2\left(2\,cd^2e-bde^2\right)gx+\left(2\,cd^3-bd^2e\right)g\right)\sqrt{-c}\,\log\left(8\,c^2e^2x^2+8\,bce^2x-4\,c^2d^2+4\,bcde+\right.}{6\left(2\,cd^3e^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="fricas")
```

```
[Out] [1/6*(3*((2*c*d*e^2 - b*e^3)*g*x^2 + 2*(2*c*d^2*e - b*d*e^2)*g*x + (2*c*d^3
 - b*d^2*e)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c
*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(-c)) - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((c*d*e - b*e^2
)*f + (5*c*d^2 - 2*b*d*e)*g - (c*e^2*f - (7*c*d*e - 3*b*e^2)*g)*x))/(2*c*d^
3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x),
 1/3*(3*((2*c*d*e^2 - b*e^3)*g*x^2 + 2*(2*c*d^2*e - b*d*e^2)*g*x + (2*c*d^3
 - b*d^2*e)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) -
2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((c*d*e - b*e^2)*f + (5*c*d^2
- 2*b*d*e)*g - (c*e^2*f - (7*c*d*e - 3*b*e^2)*g)*x))/(2*c*d^3*e^2 - b*d^2*e
^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x)]
```

giac **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(-c
*sqrt(-c*exp(2))*g/2/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(4*exp(2)*g*ex
p(1)^4*b^2*d-16*c*exp(2)*g*exp(1)^3*b*d^2-3*exp(2)^2*g*exp(1)^2*b^2*d+12*c^
2*exp(2)*g*exp(1)^2*d^3+12*c*exp(2)^2*g*exp(1)*b*d^2-8*c^2*exp(2)^2*g*d^3+4
*c*exp(2)*exp(1)^4*b*d*f-exp(2)^2*exp(1)^3*b^2*f-4*c^2*exp(2)*exp(1)^3*d^2*
f)/2/(-4*exp(1)^6*b*d+4*c*exp(1)^5*d^2+4*exp(2)*exp(1)^4*b*d-4*c*exp(2)*exp
(1)^3*d^2)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))
*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*
d*exp(1)*exp(2)))+(4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^3*g*exp(1)^5*b^2*d-16*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*b*d^2-5*exp(2)^2*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp
(1)^3*b^2*d+12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^3*g*exp(1)^3*d^3+20*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^2*b*d^2-16*c^2*exp(2)
^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*
exp(1)*d^3+4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*exp(1)^5*b*d*f+exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^4*b^2*f-4*c^2*exp(2)*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^4*d^2*f-8
*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^3*exp(1)^3*b*d*f+8*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*d^2*f-8*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^6*b^2*
d^2+16*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*g*exp(1)^5*b*d^3+12*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^4*b^2*d^
2-8*c^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*g*exp(1)^4*d^4-8*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*b*d^3-ex
p(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*g*exp(1)^2*b^2*d^2-4*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^4
-20*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)*b*d^3+24*c^2*exp(2)^2*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*d^4-8
*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*exp(1)^5*b^2*d*f+12*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^4*b*d^2*f
+5*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^2*exp(1)^3*b^2*d*f-4*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^3*d^
3*f-8*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)*d^3*f+4*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^6*b^3*d^2-28*c*exp(2)
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(
1)^5*b^2*d^3-7*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*g*exp(1)^4*b^3*d^2+44*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*b*d^4+55*c*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)
^3*b^2*d^3-20*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)*g*exp(1)^3*d^5+3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^2*b^3*d^2-80*c^2*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^2
*b*d^4-24*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*g*exp(1)*b^2*d^3+32*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)*d^5+24*c^2*exp(2)^3*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^4-4*c*e
xp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*e
xp(1)^6*b^2*d^2*f-exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)*exp(1)^5*b^3*d*f+8*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*b*d^3*f-3*c*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^4*
b^2*d^2*f-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)*exp(1)^4*d^4*f+exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*b^3*d*f+12*c^2*exp(2)^2*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*b*d^3*f
+4*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*exp(1)^2*b^2*d^2*f-8*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^2*d^4*f-8*c^2*exp(2)^3*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)*b*d^3*f-8*s
qrt(-c*exp(2))*g*exp(1)^7*b^3*d^3+24*c*sqrt(-c*exp(2))*g*exp(1)^6*b^2*d^4+2
0*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*b^3*d^3-24*c^2*sqrt(-c*exp(2))*g*exp(1)
^5*b*d^5-52*c*exp(2)*sqrt(-c*exp(2))*g*exp(1)^4*b^2*d^4+8*c^3*sqrt(-c*exp(2
))*g*exp(1)^4*d^6-17*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)^3*b^3*d^3+44*c^2*exp
(2)*sqrt(-c*exp(2))*g*exp(1)^3*b*d^5+33*c*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)
^2*b^2*d^4-12*c^3*exp(2)*sqrt(-c*exp(2))*g*exp(1)^2*d^6+5*exp(2)^3*sqrt(-c*
exp(2))*g*exp(1)*b^3*d^3-16*c^2*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)*b*d^5-6*c
*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^4+4*c*exp(2)*sqrt(-c*exp(2))*exp(1)^5*b^2
*d^3*f+exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*b^3*d^2*f-8*c^2*exp(2)*sqrt(-c*exp
(2))*exp(1)^4*b*d^4*f-5*c*exp(2)^2*sqrt(-c*exp(2))*exp(1)^3*b^2*d^3*f+4*c^3
*exp(2)*sqrt(-c*exp(2))*exp(1)^3*d^5*f-exp(2)^3*sqrt(-c*exp(2))*exp(1)^2*b^
3*d^2*f+4*c^2*exp(2)^2*sqrt(-c*exp(2))*exp(1)^2*b*d^4*f+2*c*exp(2)^3*sqrt(-
c*exp(2))*exp(1)*b^2*d^3*f)/(8*exp(1)^6*b*d-8*c*exp(1)^5*d^2-8*exp(2)*exp(1
)^4*b*d+8*c*exp(2)*exp(1)^3*d^2)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+exp(1)^2*b*d-c*exp(1)*d^2-
exp(2)*b*d)^2)
```

maple [B] time = 0.07, size = 404, normalized size = 2.40

$$\frac{b c e g \arctan\left(\frac{\sqrt{c e^{2}}\,\left(x+\frac{d}{e}-\frac{-b e^{2}+2 c d e}{2 c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2 c d e\right) \sqrt{c e^{2}}}-\frac{2 c^{2} d g \arctan\left(\frac{\sqrt{c e^{2}}\,\left(x+\frac{d}{e}-\frac{-b e^{2}+2 c d e}{2 c e^{2}}\right)}{\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+\left(-b e^{2}+2 c d e\right)\left(x+\frac{d}{e}\right)}}\right)}{\left(-b e^{2}+2 c d e\right) \sqrt{c e^{2}}}-\frac{2\sqrt{-\left(x+\frac{d}{e}\right)^{2} c e^{2}+}}{\left(-b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x)
```

```
[Out] -2*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)-2*g/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2)+g*e*c/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*b-2*g*c^2/(-b*e^2+2*c*d*e)/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1
/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2
))*d-2/3*(-d*g+e*f)/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**3,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**3, x)
```

3.2178 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=137

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-5beg+8cdg+2cef)}{15e^2(d+ex)^3(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(d+ex)^4(2cd-be)}$$

```
[Out] -2/5*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^4-2/15*(-5*b*e*g+8*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/
2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^3
```

Rubi [A] time = 0.21, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-5beg+8cdg+2cef)}{15e^2(d+ex)^3(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(d+ex)^4(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^4,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(5*e^2*(2*c*d
- b*e)*(d + e*x)^4) - (2*(2*c*e*f + 8*c*d*g - 5*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(15*e^2*(2*c*d - b*e)^2*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^4}\,dx &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(2cd-be)(d+ex)^4}+\frac{(2cef+8cdg-5beg}{5e(2}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5e^2(2cd-be)(d+ex)^4}-\frac{2(2cef+8cdg-5be}{15e^2(2}\end{aligned}$$

Mathematica [A] time = 0.06, size = 102, normalized size = 0.74

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+4de(f+gx)+e^2fx\right)-be(2dg+3ef+5egx)\right)}{15e^2(d+ex)^3(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^4
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*(3*
e*f + 2*d*g + 5*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 4*d*e*(f + g*x))))/(15*e^2
*(-2*c*d + b*e)^2*(d + e*x)^3)
```

fricas [B] time = 10.30, size = 307, normalized size = 2.24

$$\frac{2\,\sqrt{-ce^{2}x^{2} - be^{2}x + cd^{2} - bde}\left(\left(2\,c^{2}e^{3}f + \left(8\,c^{2}de^{2} - 5\,bce^{3}\right)g\right)x^{2} - \left(8\,c^{2}d^{2}e - 11\,bcde^{2} + 3\,b^{2}e^{3}\right)f - 2\left(c^{2}d^{3} - 2\,bc\right.\right.}{15\left(4\,c^{2}d^{5}e^{2} - 4\,bcd^{4}e^{3} + b^{2}d^{3}e^{4} + \left(4\,c^{2}d^{2}e^{5} - 4\,bcde^{6} + b^{2}e^{7}\right)x^{3} + 3\left(4\,c^{2}d^{3}e^{4} - 4\,bcd^{2}e^{5} + \right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] 2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^2*e^3*f + (8*c^2*d*e^
2 - 5*b*c*e^3)*g)*x^2 - (8*c^2*d^2*e - 11*b*c*d*e^2 + 3*b^2*e^3)*f - 2*(c^2
*d^3 - 2*b*c*d^2*e + b^2*d*e^2)*g + ((6*c^2*d*e^2 - b*c*e^3)*f - (6*c^2*d^2
*e - 11*b*c*d*e^2 + 5*b^2*e^3)*g)*x)/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^3 + b^2*d
^3*e^4 + (4*c^2*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^3*e^4 - 4
*b*c*d^2*e^5 + b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 + b^2*d^2*
e^5)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((1
00663296*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^5*g*b^3*d*exp(1)^7-50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^3*d*exp(1)^5+402653184*c*exp
(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g
*b^2*d^2*exp(1)^8-1509949440*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^6+805306368*c*exp(2)^3*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b^2
*d^2*exp(1)^4-805306368*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^7+3019898880*c^2*exp(2)^2*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*e
xp(1)^5-1610612736*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^3+402653184*c^3*exp(2)*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^6-
1610612736*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^5*g*d^4*exp(1)^4+805306368*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^2-50331648
*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^5*b^3*f*exp(1)^6+201326592*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp(1)^7+100663296*c*exp(2)^3*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*f*
d*exp(1)^5-603979776*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^6+402653184*c^3*exp(2)^2*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*f*d^3*exp(1
)^5-805306368*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^8+1107296256*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^4*g*b^3*d^2*exp(1)^6-553648128*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^4+
2013265920*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^7-503316480*c*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^4*g*b^2*d^3*exp(1)^5-1610612736*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^6
-3825205248*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^4+2415919104*c^2*exp(2)^
3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^4*g*b*d^4*exp(1)^2+402653184*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^
5+3221225472*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^3-1610612736*c^3*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^4*g*d^5*exp(1)+251658240*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*f*d*exp(1)^5-805
306368*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^8+603979776*c*exp(2)^2*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^4*b^2*f*d^2*exp(1)^6-1308622848*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^4+1
610612736*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^7-201326592*c^2*exp(2)^2*sqr
t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^4*b*f*d^3*exp(1)^5+1610612736*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^
3-805306368*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^6-402653184*c^3*exp(2)^2*sqr
t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^4*f*d^4*exp(1)^4-805306368*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^2+134
217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*g*b^4*d^2*exp(1)^6-134217728*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^4-2415919104*c
*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*g*b^3*d^3*exp(1)^7+2885681152*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^5-973078528*c*exp
(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3
*g*b^3*d^3*exp(1)^3+8858370048*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^6-8254390272*c^2*ex
p(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
3*g*b^2*d^4*exp(1)^4+2415919104*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^2-10468982784*c^3*
exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^3*g*b*d^5*exp(1)^5+4160749568*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)^3+268435456*c^3*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
g*b*d^5*exp(1)+4026531840*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6*exp(1)^4+1073741824*c^4*exp(2)^3*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6*e
xp(1)^2-1073741824*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*g*d^6-134217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*f*d*exp(1)^7+134217728*e
xp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*b^4*f*d*exp(1)^5-805306368*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^8+2550136832*c*exp(2)^
```

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3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3
*f*d^2*exp(1)^6-1241513984*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^4-4429185024*c^2*exp(2)^3
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*
f*d^3*exp(1)^5+1409286144*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(1)^3+2415919104*c^3*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f
*d^4*exp(1)^6+3892314112*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^4-268435456*c^3*exp(2)^4*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*f*d^4
*exp(1)^2-1610612736*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)^5-1879048192*c^4*exp(2)^3*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)
^3-536870912*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)-805306368*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp
(1)^9+1610612736*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(1)^7-1207959552*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^2*g*b^4*d^3*exp(1)^5+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(
1)^3+4026531840*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^8-4831838208*c*exp(2)^
2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^2*g*b^3*d^4*exp(1)^6+1409286144*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*
exp(1)^4-100663296*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^2-7247757312*c^2*
exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^7+805306368*c^2*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^
2*d^5*exp(1)^5+5838471168*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^3-241591
9104*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)+5637144576*c^3*exp(2)*sqrt(-c
*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*b*d^6*exp(1)^6+6442450944*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^4-76
50410496*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^2+1610612736*c^3*exp(2)^4*s
qrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^2*g*b*d^6-1610612736*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^5-402653184
0*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^3+1610612736*c^4*exp(2)^3*sqrt(-c*ex
p(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2
*g*d^7*exp(1)+805306368*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1)^8-1207959552*e
xp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1)^6+402653184*exp(2)^4*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*f*d
^2*exp(1)^4-2415919104*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^7+2013265920*
c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^5-100663296*c*exp(2)^4*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
3*f*d^3*exp(1)^3+5637144576*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^6-2013
265920*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^4-603979776*c^2*exp(2)^4*sq
rt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^2*b^2*f*d^4*exp(1)^2-7247757312*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(
1)^5+402653184*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^3+805306368*c^3*exp(2
)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)^2*b*f*d^5*exp(1)+3221225472*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(
1)^4+805306368*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(1)^2-100663296*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^5*d^3
*exp(1)^9+251658240*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^7-201326592*exp(2)^4*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^5+503
31648*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)*g*b^5*d^3*exp(1)^3-402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^10+100663296*c*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*
b^4*d^4*exp(1)^8+905969664*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^6-905969664*c*exp(2)^4*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^4*d^4*e
xp(1)^4+301989888*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^2+1610612736*c^2*exp(2)*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^9+
2717908992*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^7-8606711808*c^2*exp(2)^3*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^5+593
9134464*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*g*b^3*d^5*exp(1)^3-1409286144*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)-24159191
04*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*g*b^2*d^6*exp(1)^8-7751073792*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^6+14294188032*c
^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*g*b^2*d^6*exp(1)^4-6442450944*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^2+805306368*c^3*e
xp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
*g*b^2*d^6+1610612736*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^7+7449083904*c^4*exp(2)^2*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^
5-7650410496*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^3+1610612736*c^4*exp(2)^4*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)-4026531
84*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*g*d^8*exp(1)^6-2415919104*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^4+805306368*c^5*exp(2)^
3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*d^8
*exp(1)^2+50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^8-100663296*exp(2)^4*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^6+5033
1648*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b^5*f*d^2*exp(1)^4+603979776*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^9-603979776*c*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
4*f*d^3*exp(1)^7-201326592*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^5+201326592*c*exp(2)^5*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*f*d^3*e
xp(1)^3-3019898880*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^8+3070230528*c^2*exp(2)^3*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(
1)^6+100663296*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^4-402653184*c^2*exp(2)^5*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^2+
5435817984*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^7-3724541952*c^3*exp(2)^3*(sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^5-603
979776*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)*b^2*f*d^5*exp(1)^3+402653184*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)-4227858432
*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b*f*d^6*exp(1)^6+402653184*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^4+805306368*c^4*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*
f*d^6*exp(1)^2+1207959552*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)^5+805306368*c^5*exp(2)^3*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)
^3+100663296*exp(2)^2*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^8-251658240*exp(2)^3
*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^6+201326592*exp(2)^4*sqrt(-c*exp(2))*g*b^
5*d^4*exp(1)^4-50331648*exp(2)^5*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^2+6710886
40*c*exp(2)*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^9-1979711488*c*exp(2)^2*sqrt(-
c*exp(2))*g*b^4*d^5*exp(1)^7+2315255808*c*exp(2)^3*sqrt(-c*exp(2))*g*b^4*d^
5*exp(1)^5-1241513984*c*exp(2)^4*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^3+2348810
24*c*exp(2)^5*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)-2684354560*c^2*exp(2)*sqrt(-
c*exp(2))*g*b^3*d^6*exp(1)^8+5603590144*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b^3*
d^6*exp(1)^6-4278190080*c^2*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^4+144
2840576*c^2*exp(2)^4*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^2-134217728*c^2*exp(2
)^5*sqrt(-c*exp(2))*g*b^3*d^6+4026531840*c^3*exp(2)*sqrt(-c*exp(2))*g*b^2*d
^7*exp(1)^7-5939134464*c^3*exp(2)^2*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^5+2617
245696*c^3*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^3-402653184*c^3*exp(2)
^4*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)-2684354560*c^4*exp(2)*sqrt(-c*exp(2))*g
*b*d^8*exp(1)^6+2483027968*c^4*exp(2)^2*sqrt(-c*exp(2))*g*b*d^8*exp(1)^4-40
2653184*c^4*exp(2)^3*sqrt(-c*exp(2))*g*b*d^8*exp(1)^2+671088640*c^5*exp(2)*
sqrt(-c*exp(2))*g*d^9*exp(1)^5-268435456*c^5*exp(2)^2*sqrt(-c*exp(2))*g*d^9
*exp(1)^3-50331648*exp(2)^3*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^7+100663296*ex
p(2)^4*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^5-50331648*exp(2)^5*sqrt(-c*exp(2))
*b^5*f*d^3*exp(1)^3-268435456*c*exp(2)*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^10+
469762048*c*exp(2)^2*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^8-201326592*c*exp(2)^
3*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^6-67108864*c*exp(2)^4*sqrt(-c*exp(2))*b^
4*f*d^4*exp(1)^4+67108864*c*exp(2)^5*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^2+107
3741824*c^2*exp(2)*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^9-1275068416*c^2*exp(2)
^2*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^7+150994944*c^2*exp(2)^3*sqrt(-c*exp(2)
)*b^3*f*d^5*exp(1)^5+167772160*c^2*exp(2)^4*sqrt(-c*exp(2))*b^3*f*d^5*exp(1
)^3-67108864*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)-1610612736*c^3*e
xp(2)*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^8+1006632960*c^3*exp(2)^2*sqrt(-c*ex
p(2))*b^2*f*d^6*exp(1)^6+503316480*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*f*d^6*e
xp(1)^4-201326592*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^2+107374182
4*c^4*exp(2)*sqrt(-c*exp(2))*b*f*d^7*exp(1)^7-67108864*c^4*exp(2)^2*sqrt(-c
*exp(2))*b*f*d^7*exp(1)^5-402653184*c^4*exp(2)^3*sqrt(-c*exp(2))*b*f*d^7*ex
p(1)^3-268435456*c^5*exp(2)*sqrt(-c*exp(2))*f*d^8*exp(1)^6-134217728*c^5*ex
p(2)^2*sqrt(-c*exp(2))*f*d^8*exp(1)^4)/(805306368*b^2*d^2*exp(1)^9-16106127
36*exp(2)*b^2*d^2*exp(1)^7+805306368*exp(2)^2*b^2*d^2*exp(1)^5-1610612736*c
*b*d^3*exp(1)^8+3221225472*c*exp(2)*b*d^3*exp(1)^6-1610612736*c*exp(2)^2*b*
d^3*exp(1)^4+805306368*c^2*d^4*exp(1)^7-1610612736*c^2*exp(2)*d^4*exp(1)^5+
805306368*c^2*exp(2)^2*d^4*exp(1)^3)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*
d-c*d^2*exp(1))^3+(4*exp(2)^2*g*b^3*d*exp(1)^2-2*exp(2)^3*g*b^3*d-16*c*exp(
2)*g*b^2*d^2*exp(1)^3+4*c*exp(2)^2*g*b^2*d^2*exp(1)+32*c^2*exp(2)*g*b*d^3*e
xp(1)^2-8*c^2*exp(2)^2*g*b*d^3-16*c^3*exp(2)*g*d^4*exp(1)-2*exp(2)^3*b^3*f*
exp(1)+8*c*exp(2)^2*b^2*f*d*exp(1)^2+4*c*exp(2)^3*b^2*f*d-24*c^2*exp(2)^2*b
*f*d^2*exp(1)+16*c^3*exp(2)^2*f*d^3)/32/(b^2*d^2*exp(1)^6-2*exp(2)*b^2*d^2*
exp(1)^4+exp(2)^2*b^2*d^2*exp(1)^2-2*c*b*d^3*exp(1)^5+4*c*exp(2)*b*d^3*exp(
1)^3-2*c*exp(2)^2*b*d^3*exp(1)+c^2*d^4*exp(1)^4-2*c^2*exp(2)*d^4*exp(1)^2+c
^2*exp(2)^2*d^4)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*e
xp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp
(2)-b*d*exp(1)*exp(2))))
```

maple [A] time = 0.07, size = 128, normalized size = 0.93

$$-\frac{2\left(cex+be-cd\right)\left(5b\,e^{2}gx-8cdegx-2c\,e^{2}fx+2bdeg+3b\,e^{2}f-2c\,d^{2}g-8cdef\right)\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c}}{15\left(ex+d\right)^{3}\left(b^{2}e^{2}-4bcde+4c^{2}d^{2}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(5*b*e^2*g*x-8*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+3*b*e^
2*f-2*c*d^2*g-8*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^3/e
^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.29, size = 1022, normalized size = 7.46

$$\frac{\left(\frac{20\,g\,b^2\,c\,e^2-64\,g\,b\,c^2\,d\,e+12\,f\,b\,c^2\,e^2+48\,g\,c^3\,d^2-16\,f\,c^3\,d\,e}{15\,e^2\,{\left(b\,e-2\,c\,d\right)}^3}-\frac{d\,\left(\frac{4\,c^2\,\left(7\,b\,e\,g-12\,c\,d\,g+2\,c\,e\,f\right)}{15\,e\,{\left(b\,e-2\,c\,d\right)}^3}-\frac{8\,c^3\,d\,g}{15\,e\,{\left(b\,e-2\,c\,d\right)}^3}\right)}{e}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{d+e\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4,x)
```

```
[Out] (((48*c^3*d^2*g - 16*c^3*d*e*f + 12*b*c^2*e^2*f + 20*b^2*c*e^2*g - 64*b*c^2
*d*e*g)/(15*e^2*(b*e - 2*c*d)^3) - (d*((4*c^2*(7*b*e*g - 12*c*d*g + 2*c*e*f
))/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(b*e - 2*c*d)^3)))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2*f*(b*e - c*d))/(5*b*
e^2 - 10*c*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c*e*f)/(5*b*e^2 - 10*c*d*e) -
(2*c*d*g)/(5*b*e^2 - 10*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^3 - (((d*((4*c^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(5*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
)))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^2
*(6*b*e*g - 11*c*d*g + c*e*f))/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(
b*e - 2*c*d)^3)))/e - (8*c*(b*e - c*d)*(5*b*e*g - 10*c*d*g + c*e*f))/(15*e^
2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((d*((4*c*(4*b*e*g - 7*c*d*g + c*e*f))/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)) - (4*c^2*d*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*
d)*(3*b*e*g - 6*c*d*g + c*e*f))/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^3*e*f -
 24*c^3*d*g + 16*b*c^2*e*g)/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*e*(b*e
 - 2*c*d)^3)))/e - (2*b*c*(3*b*e*g - 6*c*d*g + 2*c*e*f))/(15*e*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((8*c^3
*e*f - 64*c^3*d*g + 36*b*c^2*e*g)/(15*e*(b*e - 2*c*d)^3) - (8*c^3*d*g)/(15*
e*(b*e - 2*c*d)^3)))/e - (4*b*c*(4*b*e*g - 8*c*d*g + c*e*f))/(15*e*(b*e - 2
*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**4,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**4, x)
```

3.2179 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4cef)}{105e^2(d+ex)^3(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+}{35e^2(d+ex)^4(2cd-be)^2}$$

```
[Out] -2/7*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^5-2/35*(-7*b*e*g+10*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3
/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^4-4/105*c*(-7*b*e*g+10*c*d*g+4*c*e*f)*(d*(-b
*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^3
```

Rubi [A] time = 0.34, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+4cef)}{105e^2(d+ex)^3(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-7beg+10cdg+}{35e^2(d+ex)^4(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^5,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(7*e^2*(2*c*d
- b*e)*(d + e*x)^5) - (2*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^4) - (4*c*(4*c*
e*f + 10*c*d*g - 7*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105
*e^2*(2*c*d - b*e)^3*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^5}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} + \frac{(4cef+10cdg-7beg)}{7e(2cd}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} - \frac{2(4cef+10cdg-7beg)}{35e^2(2cd}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7e^2(2cd-be)(d+ex)^5} - \frac{2(4cef+10cdg-7beg)}{35e^2(2cd}$$

Mathematica [**A**] time = 0.12, size = 154, normalized size = 0.73

$$\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(3b^2e^2(2dg+5ef+7egx)-2bce\left(13d^2g+de(36f+50gx)+e^2x(6f+7gx)\right)+4c^2\right.}{105e^2(d+ex)^5(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^5
,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(3*b^2*e^2*(5*e*f + 2*d*g + 7*e
*g*x) + 4*c^2*(5*d^3*g + 2*e^3*f*x^2 + 5*d*e^2*x*(2*f + g*x) + d^2*e*(23*f
+ 25*g*x)) - 2*b*c*e*(13*d^2*g + e^2*x*(6*f + 7*g*x) + d*e*(36*f + 50*g*x))
))/(105*e^2*(-2*c*d + b*e)^3*(d + e*x)^5)
```

fricas [**B**] time = 59.72, size = 540, normalized size = 2.57

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(2\left(4c^3e^4f+\left(10c^3de^3-7bc^2e^4\right)g\right)x^3+\left(4\left(8c^3de^3-bc^2e^4\right)f+\left(80c^3d^2e^2-66bc^2\right.\right.\right.}{105\left(8c^3d^7e^2-12bc^2d^6e^3+6b^2cd^5e^4-b^3d^4e^5+\left(8c^3d^3e^6-12bc^2d^2e^7+\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] 2/105*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^3*e^4*f + (10*c^3*
d*e^3 - 7*b*c^2*e^4)*g)*x^3 + (4*(8*c^3*d*e^3 - b*c^2*e^4)*f + (80*c^3*d^2*
e^2 - 66*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 - (92*c^3*d^3*e - 164*b*c^2*d^2*
e^2 + 87*b^2*c*d*e^3 - 15*b^3*e^4)*f - 2*(10*c^3*d^4 - 23*b*c^2*d^3*e + 16*
b^2*c*d^2*e^2 - 3*b^3*d*e^3)*g + ((52*c^3*d^2*e^2 - 20*b*c^2*d*e^3 + 3*b^2*
c*e^4)*f - (80*c^3*d^3*e - 174*b*c^2*d^2*e^2 + 115*b^2*c*d*e^3 - 21*b^3*e^4
)*g)*x)/(8*c^3*d^7*e^2 - 12*b*c^2*d^6*e^3 + 6*b^2*c*d^5*e^4 - b^3*d^4*e^5 +
 (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7 + 6*b^2*c*d*e^8 - b^3*e^9)*x^4 + 4*(8*c^
3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^2*c*d^2*e^7 - b^3*d*e^8)*x^3 + 6*(8*c^3*
d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*c*d^3*e^6 - b^3*d^2*e^7)*x^2 + 4*(8*c^3*
d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*c*d^4*e^5 - b^3*d^3*e^6)*x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: Warni
ng, choosing root of [1,0,%%%{2,[1,0,1,0,3,0]%%%}+%%%{-2,[1,0,1,0,1,1]%%%}+
%%%{2,[1,0,1,0,1,0]%%%}+%%%{2,[1,0,0,1,0,1]%%%}+%%%{-2,[0,1,2,0,2,0]%%%}+%%
%{2,[0,1,2,0,0,1]%%%}+%%%{-2,[0,1,2,0,0,0]%%%}+%%%{2,[0,1,0,2,0,1]%%%},0,%%
%{1,[2,0,2,0,6,0]%%%}+%%%{-2,[2,0,2,0,4,1]%%%}+%%%{-2,[2,0,2,0,4,0]%%%}+%%%
{1,[2,0,2,0,2,2]%%%}+%%%{2,[2,0,2,0,2,1]%%%}+%%%{1,[2,0,2,0,2,0]%%%}+%%%{-2
,[2,0,1,1,3,1]%%%}+%%%{2,[2,0,1,1,1,2]%%%}+%%%{2,[2,0,1,1,1,1]%%%}+%%%{1,[2
,0,0,2,0,2]%%%}+%%%{-2,[1,1,3,0,5,0]%%%}+%%%{4,[1,1,3,0,3,1]%%%}+%%%{4,[1,1
,3,0,3,0]%%%}+%%%{-2,[1,1,3,0,1,2]%%%}+%%%{-4,[1,1,3,0,1,1]%%%}+%%%{-2,[1,1
,3,0,1,0]%%%}+%%%{2,[1,1,2,1,2,1]%%%}+%%%{-2,[1,1,2,1,0,2]%%%}+%%%{-2,[1,1,
2,1,0,1]%%%}+%%%{-2,[1,1,1,2,3,1]%%%}+%%%{2,[1,1,1,2,1,2]%%%}+%%%{2,[1,1,1,
2,1,1]%%%}+%%%{2,[1,1,0,3,0,2]%%%}+%%%{1,[0,2,4,0,4,0]%%%}+%%%{-2,[0,2,4,0,
2,1]%%%}+%%%{-2,[0,2,4,0,2,0]%%%}+%%%{1,[0,2,4,0,0,2]%%%}+%%%{2,[0,2,4,0,0,
1]%%%}+%%%{1,[0,2,4,0,0,0]%%%}+%%%{2,[0,2,2,2,2,1]%%%}+%%%{-2,[0,2,2,2,0,2]
%%%}+%%%{-2,[0,2,2,2,0,1]%%%}+%%%{1,[0,2,0,4,0,2]%%%}] at parameters values
 [-62,52,82,66,20,-30]exp(1)^2*(2*(-(exp(1)*x+d)^-1/exp(1)*(-(exp(1)*x+d)^-
1/exp(1)*(-(21*b^3*g*sign((exp(1)*x+d)^-1)*exp(1)^12+3*b^2*c*f*sign((exp(1)
*x+d)^-1)*exp(1)^12+12*c^3*d^2*f*sign((exp(1)*x+d)^-1)*exp(1)^10-180*c^3*d^
3*g*sign((exp(1)*x+d)^-1)*exp(1)^9-12*b*c^2*d*f*sign((exp(1)*x+d)^-1)*exp(1
)^11+264*b*c^2*d^2*g*sign((exp(1)*x+d)^-1)*exp(1)^10-129*b^2*c*d*g*sign((ex
p(1)*x+d)^-1)*exp(1)^11)/(105*b^3*exp(1)^15-840*c^3*d^3*exp(1)^12+1260*b*c^
2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14)+(exp(1)*x+d)^-1/exp(1)*(-15*b^3*f*si
gn((exp(1)*x+d)^-1)*exp(1)^14+15*b^3*d*g*sign((exp(1)*x+d)^-1)*exp(1)^13+12
0*c^3*d^3*f*sign((exp(1)*x+d)^-1)*exp(1)^11-120*c^3*d^4*g*sign((exp(1)*x+d)
^-1)*exp(1)^10-180*b*c^2*d^2*f*sign((exp(1)*x+d)^-1)*exp(1)^12+180*b*c^2*d^
3*g*sign((exp(1)*x+d)^-1)*exp(1)^11+90*b^2*c*d*f*sign((exp(1)*x+d)^-1)*exp(
1)^13-90*b^2*c*d^2*g*sign((exp(1)*x+d)^-1)*exp(1)^12)/(105*b^3*exp(1)^15-84
0*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))-(4*b*c
^2*f*sign((exp(1)*x+d)^-1)*exp(1)^10-7*b^2*c*g*sign((exp(1)*x+d)^-1)*exp(1)
^10-8*c^3*d*f*sign((exp(1)*x+d)^-1)*exp(1)^9-20*c^3*d^2*g*sign((exp(1)*x+d)
^-1)*exp(1)^8+24*b*c^2*d*g*sign((exp(1)*x+d)^-1)*exp(1)^9)/(105*b^3*exp(1)^
15-840*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))-(
8*c^3*f*sign((exp(1)*x+d)^-1)*exp(1)^8-14*b*c^2*g*sign((exp(1)*x+d)^-1)*exp
(1)^8+20*c^3*d*g*sign((exp(1)*x+d)^-1)*exp(1)^7)/(105*b^3*exp(1)^15-840*c^3
*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14)-C_0*(210*b^2
*exp(1)^11+840*c^2*d^2*exp(1)^9-840*b*c*d*exp(1)^10)/(105*b^3*exp(1)^15-840
*c^3*d^3*exp(1)^12+1260*b*c^2*d^2*exp(1)^13-630*b^2*c*d*exp(1)^14))*sqrt(-c
*exp(2)-b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^5-b*(exp(1)*x+d)^-1/exp(1)*e
xp(1)^2*exp(2)+c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^4+b*d*(-(exp(1)*x+d
)^-1/exp(1))^2*exp(1)^3*exp(2)+2*c*d*(exp(1)*x+d)^-1/exp(1)*exp(1)*exp(2)-c
*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^2*exp(2))-2*C_0*ln(abs(-2*((exp(1)*
x+d)^-1/exp(1)*sqrt(-b*d*exp(1)^5+c*d^2*exp(1)^4+b*d*exp(1)^3*exp(2)-c*d^2*
exp(1)^2*exp(2))+sqrt(-c*exp(2)-b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^5-b*
(exp(1)*x+d)^-1/exp(1)*exp(1)^2*exp(2)+c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*ex
p(1)^4+b*d*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^3*exp(2)+2*c*d*(exp(1)*x+d)^-
1/exp(1)*exp(1)*exp(2)-c*d^2*(-(exp(1)*x+d)^-1/exp(1))^2*exp(1)^2*exp(2)))*
sqrt(-b*d*exp(1)^3+c*d^2*exp(1)^2-c*d^2*exp(2)+b*d*exp(1)*exp(2))+b*exp(1)*
exp(2)-2*c*d*exp(2)))/sqrt(-b*d*exp(1)^3+c*d^2*exp(1)^2-c*d^2*exp(2)+b*d*ex
p(1)*exp(2))/exp(1)-(28*b*c^2*g*sqrt(-c*exp(2))*exp(1)-40*c^3*d*g*sqrt(-c*e
xp(2))-16*c^3*f*sqrt(-c*exp(2))*exp(1))/(105*b^3*exp(1)^8-630*b^2*c*d*exp(1
)^7+1260*b*c^2*d^2*exp(1)^6-840*c^3*d^3*exp(1)^5)*sign((exp(1)*x+d)^-1))
```

maple [A] time = 0.06, size = 236, normalized size = 1.12

$$-\frac{2\left(cex+be-cd\right)\left(-14bc\,e^{3}g\,x^{2}+20c^{2}d\,e^{2}g\,x^{2}+8c^{2}e^{3}f\,x^{2}+21b^{2}e^{3}gx-100bcd\,e^{2}gx-12bc\,e^{3}f\,x+100c^{2}d^{2}e\right.}{105\left(ex+d\right)^{4}\left(b^{3}e^{3}-6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-14*b*c*e^3*g*x^2+20*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+21*b^2*e^3*g*x-100*b*c*d*e^2*g*x-12*b*c*e^3*f*x+100*c^2*d^2*e*g*x+40*c^2*
d*e^2*f*x+6*b^2*d*e^2*g+15*b^2*e^3*f-26*b*c*d^2*e*g-72*b*c*d*e^2*f+20*c^2*d
^3*g+92*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^4/(b^3*
e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [F(-2)]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B]   time = 6.89, size = 2325, normalized size = 11.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5,x)
```

```
[Out] (((d*((16*c^4*e*f - 144*c^4*d*g + 80*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^4) - (
16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (4*b*c^2*(9*b*e*g - 18*c*d*g + 2*
c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((d*((16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(105*e*(b*e -
 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (8*b*c^2*(2*b*e*g -
 4*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((16*c^4*e*f - 176*c^4*d*g + 96*b*c^3*e*g)/(
105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e - (4*b*c^
2*(11*b*e*g - 22*c*d*g + 2*c*e*f))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((16*c^4*e*f - 256*c^4*d*g +
 136*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)
^4)))/e - (8*b*c^2*(8*b*e*g - 16*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c^2*e*f -
8*c^2*d*g + 6*b*c*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)
/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f
))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^3 - (((2*f*(b*e - c*d))/(7*b*e^2 - 14*c*d*e) - (d*((
2*b*e*g - 2*c*d*g + 2*c*e*f)/(7*b*e^2 - 14*c*d*e) - (2*c*d*g)/(7*b*e^2 - 14
*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((
d*((4*c^2*(9*b*e*g - 16*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (72*c^
3*d^2*g - 24*c^3*d*e*f + 16*b*c^2*e^2*f + 28*b^2*c*e^2*g - 92*b*c^2*d*e*g)/
(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^2 + (((d*((8*c^2*(8*b*e*g - 15*c*d*g + c*e*f))/(35*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(7*b*e*g - 14*c*d*g + c*e*f))/(35*e
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^2 + (((d*((4*c*(5*b*e*g - 9*c*d*g + c*e*f))/(7*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d))))/e - (4*(b*e - c*d)*(4*b*e*g - 8*c*d*g + c*e*f))/(7*e*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^3 - (((128*c^4*d^2*g + 52*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f -
 168*b*c^3*d*e*g)/(105*e^2*(b*e - 2*c*d)^4) - (d*((16*c^3*(4*b*e*g - 7*c*d*
g + c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((352*c^4*d^
2*g + 136*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 448*b*c^3*d*e*g)/
(105*e^2*(b*e - 2*c*d)^4) - (d*((8*c^3*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(10
5*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((16*c^3*(10*b*e*g - 19
*c*d*g + c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d
)^4)))/e - (16*c^2*(b*e - c*d)*(9*b*e*g - 18*c*d*g + c*e*f))/(105*e^2*(b*e
- 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*
((8*c^3*e*f - 24*c^3*d*g + 16*b*c^2*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^2) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*
(3*b*e*g - 6*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*e*f -
 80*c^3*d*g + 44*b*c^2*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c
^3*d*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(5*b*e*g - 10
*c*d*g + c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*(13*b*e*g - 24*c*d*
g + 2*c*e*f))/(105*e*(b*e - 2*c*d)^4) - (16*c^4*d*g)/(105*e*(b*e - 2*c*d)^4
)))/e - (144*c^4*d^2*g + 88*b^2*c^2*e^2*g + 16*c^4*d*e*f - 248*b*c^3*d*e*g)
/(105*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**5,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**5, x)
```

3.2180 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{315e^2(d+ex)^3(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2c}{105e^2(d+ex)^4(2cd-be)^3}$$

```
[Out] -2/9*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^6-2/21*(-3*b*e*g+4*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/
2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^5-8/105*c*(-3*b*e*g+4*c*d*g+2*c*e*f)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^4-16/315*c^2*(-3*
b*e*g+4*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c
*d)^4/(e*x+d)^3
```

Rubi [A] time = 0.46, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2cef)}{315e^2(d+ex)^3(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-3beg+4cdg+2c}{105e^2(d+ex)^4(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^6,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^6) - (2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(21*e^2*(2*c*d - b*e)^2*(d + e*x)^5) - (8*c*(2*c*e
*f + 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105*e
^2*(2*c*d - b*e)^3*(d + e*x)^4) - (16*c^2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(315*e^2*(2*c*d - b*e)^4*(d + e*x
)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^6}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} + \frac{(2cef+4cdg-3beg}{3e(2}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3be}{21e^2(2}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3be}{21e^2(2}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9e^2(2cd-be)(d+ex)^6} - \frac{2(2cef+4cdg-3be}{21e^2(2}$$

Mathematica [A] time = 0.17, size = 232, normalized size = 0.81

$$-\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(-5b^3e^3(2dg+7ef+9egx)+6b^2ce^2\left(11d^2g+de(40f+52gx)+e^2x(5f+6gx)\right)\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^6
,x]
```

```
[Out] (-2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-5*b^3*e^3*(7*e*f + 2*d*g + 9
*e*g*x) + 6*b^2*c*e^2*(11*d^2*g + e^2*x*(5*f + 6*g*x) + d*e*(40*f + 52*g*x)
) - 12*b*c^2*e*(12*d^3*g + 2*e^3*x^2*(f + g*x) + 2*d*e^2*x*(7*f + 8*g*x) +
d^2*e*(47*f + 61*g*x)) + 8*c^3*(11*d^4*g + 2*e^4*f*x^3 + 4*d*e^3*x^2*(3*f +
 g*x) + 3*d^2*e^2*x*(11*f + 8*g*x) + d^3*e*(58*f + 66*g*x))))/(315*e^2*(-2*
c*d + b*e)^4*(d + e*x)^6)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 382, normalized size = 1.34

$$-\frac{2\,(cex+be-cd)\left(24b\,c^2e^4g\,x^3-32c^3d\,e^3g\,x^3-16c^3e^4f\,x^3-36b^2c\,e^4g\,x^2+192b\,c^2d\,e^3g\,x^2+24b\,c^2e^4f\,x^2-1\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(24*b*c^2*e^4*g*x^3-32*c^3*d*e^3*g*x^3-16*c^3*e^4*f*
x^3-36*b^2*c*e^4*g*x^2+192*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2-192*c^3*d^2
*e^2*g*x^2-96*c^3*d*e^3*f*x^2+45*b^3*e^4*g*x-312*b^2*c*d*e^3*g*x-30*b^2*c*e
^4*f*x+732*b*c^2*d^2*e^2*g*x+168*b*c^2*d*e^3*f*x-528*c^3*d^3*e*g*x-264*c^3*
d^2*e^2*f*x+10*b^3*d*e^3*g+35*b^3*e^4*f-66*b^2*c*d^2*e^2*g-240*b^2*c*d*e^3*
f+144*b*c^2*d^3*e*g+564*b*c^2*d^2*e^2*f-88*c^3*d^4*g-464*c^3*d^3*e*f)*(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^5/e^2/(b^4*e^4-8*b^3*c*d*e^3+24*b
^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 13.95, size = 4962, normalized size = 17.41

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6,x)
```

```
[Out] (((d*((32*c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (
32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(5*b*e*g - 10*c*d*g + 2*
c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((d*((32*c^5*e*f - 320*c^5*d*g + 176*b*c^4*e*g)/(945*e*(b*e
 - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (16*b*c^3*(5*b*e*
g - 10*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 384*c^5*d*g + 208*b*c^4*e
*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (1
6*b*c^3*(6*b*e*g - 12*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 448*c^5*d*
g + 240*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c
*d)^5)))/e - (16*b*c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32*c^5*e
*f - 544*c^5*d*g + 288*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(9
45*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(945*
e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((d*((32*c^5*e*f - 608*c^5*d*g + 320*b*c^4*e*g)/(945*e*(b*e - 2*c*d)^5)
- (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(19*b*e*g - 38*c*d*g
+ 2*c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) + (((d*((32*c^5*e*f - 672*c^5*d*g + 352*b*c^4*e*g)/(945*e*
(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (8*b*c^3*(21*
b*e*g - 42*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*e*f - 832*c^5*d*g + 432*b
*c^4*e*g)/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/
e - (16*b*c^3*(13*b*e*g - 26*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c^2*e*f - 8*c^
2*d*g + 6*b*c*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(9*
(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(
9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^4 - (((2*f*(b*e - c*d))/(9*b*e^2 - 18*c*d*e) - (d*((2*b*
e*g - 2*c*d*g + 2*c*e*f)/(9*b*e^2 - 18*c*d*e) - (2*c*d*g)/(9*b*e^2 - 18*c*d
*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((
4*c^2*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (96*c^3
*d^2*g - 32*c^3*d*e*f + 20*b*c^2*e^2*f + 36*b^2*c*e^2*g - 120*b*c^2*d*e*g)/
(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((8*c^2*(10*b*e*g - 19*c*d*g + c*e*f))/(6
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(9*b*e*g - 18*c*d*g + c*e*f))/(
63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/
(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^3)))/e - (8*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((16*c^4*e*f - 176*c^4*d*g + 96*b*c^3*e*g)/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^3)))/e - (4*b*c^2*(11*b*e*g - 22*c*d*g + 2*c*e*f))/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^2 + (((d*((16*c^4*e*f - 208*c^4*d*g + 112*b*c^3*e*g)/(315*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^3)))/e - (4*b*c^2*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 - (((d*((16*c^4*e*f - 320*c^4*d*g + 168*b*c^3*e*g)/(315*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3)))/e - (8*b*c^2*(10*b*e*g - 20*c*d*g + c*e*f))/(315*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 + (((d*((4*c*(6*b*e*g - 11*c*d*g + c*e*f))/(9*(7*b*e^2 - 14*c*d*e)
*(b*e - 2*c*d)) - (4*c^2*d*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e -
(4*(b*e - c*d)*(5*b*e*g - 10*c*d*g + c*e*f))/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e
 - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d
*((16*c^3*(5*b*e*g - 9*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (192*c
^4*d^2*g + 72*b^2*c^2*e^2*g - 48*c^4*d*e*f + 32*b*c^3*e^2*f - 240*b*c^3*d*e
*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((8*c^3*(17*b*e*g - 32*c*d*g + 2*c*e*
f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (144*c^4*d^2*g + 120*b^2*c^2*e^2*g + 80*c
^4*d*e*f - 32*b*c^3*e^2*f - 312*b*c^3*d*e*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (
((d*((8*c^3*(19*b*e*g - 36*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^3) - (16*c^4*d*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e -
(624*c^4*d^2*g + 216*b^2*c^2*e^2*g - 48*c^4*d*e*f + 32*b*c^3*e^2*f - 744*b*
c^3*d*e*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((16*c^3*(13*b*e*g - 25*c*d*g
+ c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(315*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(12*b*e*g - 24*
c*d*g + c*e*f))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((320*c^5*d^2*g + 128*b^2*c^3
*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 416*b*c^4*d*e*g)/(945*e^2*(b*e - 2
*c*d)^5) - (d*((16*c^4*(9*b*e*g - 16*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)
^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((768*c^5*d^2*g + 296*b^2*c^3*e^2*g - 64*c^5
*d*e*f + 48*b*c^4*e^2*f - 976*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*(
(32*c^4*(8*b*e*g - 15*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g
)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) + (((800*c^5*d^2*g + 304*b^2*c^3*e^2*g - 224*c^5*d*e*f + 128*b*c
^4*e^2*f - 1008*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^4*(21*b*
e*g - 40*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b
*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
- (((896*c^5*d^2*g + 344*b^2*c^3*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 11
36*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((32*c^4*(9*b*e*g - 17*c*d*g
 + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))
/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1344*c^5*d^
2*g + 512*b^2*c^3*e^2*g - 64*c^5*d*e*f + 48*b*c^4*e^2*f - 1696*b*c^4*d*e*g)
/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^4*(25*b*e*g - 48*c*d*g + 2*c*e*f))/(
945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32*c^4*(15*b*e*g -
29*c*d*g + c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c
*d)^5)))/e - (32*c^3*(b*e - c*d)*(14*b*e*g - 28*c*d*g + c*e*f))/(945*e^2*(b
*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + ((
(d*((8*c^3*e*f - 24*c^3*d*g + 16*b*c^2*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^2) - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (2
*b*c*(3*b*e*g - 6*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3
*e*f - 96*c^3*d*g + 52*b*c^2*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^3*d*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(6*b*
e*g - 12*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(23*b*e*g
 - 44*c*d*g + 2*c*e*f))/(945*e*(b*e - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e
- 2*c*d)^5)))/e + (32*c^5*d^2*g - 176*b^2*c^3*e^2*g - 32*c^5*d*e*f + 336*b*
c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((d*((32*c^4*(7*b*e*g - 13*c*d*g + c*e*f))/(945*e*(b*e
 - 2*c*d)^5) - (32*c^5*d*g)/(945*e*(b*e - 2*c*d)^5)))/e - (256*c^5*d^2*g +
176*b^2*c^3*e^2*g + 32*c^5*d*e*f - 480*b*c^4*d*e*g)/(945*e^2*(b*e - 2*c*d)^
5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,(f+gx)}{(d+ex)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**6,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**6, x)
```

3.2181 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{3465e^2(d+ex)^3(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+1}{1155e^2(d+ex)^4(2cd-be)^4}$$

```
[Out] -2/11*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^7-2/99*(-11*b*e*g+14*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(3/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^6-4/231*c*(-11*b*e*g+14*c*d*g+8*c*e*f)*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^5-16/1155*c^
2*(-11*b*e*g+14*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(
-b*e+2*c*d)^4/(e*x+d)^4-32/3465*c^3*(-11*b*e*g+14*c*d*g+8*c*e*f)*(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^5/(e*x+d)^3
```

Rubi [A] time = 0.58, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+14cdg+8cef)}{3465e^2(d+ex)^3(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-11beg+1}{1155e^2(d+ex)^4(2cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^7,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^7) - (2*(8*c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(3/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^6) - (4*c*(8*
c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(
231*e^2*(2*c*d - b*e)^3*(d + e*x)^5) - (16*c^2*(8*c*e*f + 14*c*d*g - 11*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(1155*e^2*(2*c*d - b*e)^4*
(d + e*x)^4) - (32*c^3*(8*c*e*f + 14*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(3465*e^2*(2*c*d - b*e)^5*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7}+\frac{(8cef+14cdg-11beg)}{11e(2c}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7}-\frac{2(8cef+14cdg-11beg}{99e^2(2cd}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7}-\frac{2(8cef+14cdg-11beg}{99e^2(2cd}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7}-\frac{2(8cef+14cdg-11beg}{99e^2(2cd}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11e^2(2cd-be)(d+ex)^7}-\frac{2(8cef+14cdg-11beg}{99e^2(2cd}$$

Mathematica [**A**]   time = 0.26, size = 335, normalized size = 0.93

$$\frac{2((d+ex)(c(d-ex)-be))^{3/2}\left(35b^4e^4(2dg+9ef+11egx)-10b^3ce^3\left(61d^2g+de(280f+346gx)+e^2x(28f+33g\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^7
,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(35*b^4*e^4*(9*e*f + 2*d*g + 11
*e*g*x) - 10*b^3*c*e^3*(61*d^2*g + e^2*x*(28*f + 33*g*x) + d*e*(280*f + 346
*g*x)) + 16*c^4*(91*d^5*g + 8*e^5*f*x^4 + 14*d*e^4*x^3*(4*f + g*x) + 7*d^3*
e^2*x*(52*f + 45*g*x) + 2*d^2*e^3*x^2*(90*f + 49*g*x) + d^4*e*(547*f + 637*
g*x)) + 12*b^2*c^2*e^2*(167*d^3*g + 2*e^3*x^2*(10*f + 11*g*x) + d*e^2*x*(18
0*f + 211*g*x) + d^2*e*(790*f + 986*g*x)) - 8*b*c^3*e*(365*d^4*g + 2*e^4*x^
3*(12*f + 11*g*x) + 4*d*e^3*x^2*(48*f + 49*g*x) + 3*d^2*e^2*x*(244*f + 277*
g*x) + 2*d^3*e*(912*f + 1141*g*x))))/(3465*e^2*(-2*c*d + b*e)^5*(d + e*x)^7
)
```

fricas [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**]   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2\left(cex+be-cd\right)\left(-176b\,c^3e^5g\,x^4+224c^4d\,e^4g\,x^4+128c^4e^5f\,x^4+264b^2c^2e^5g\,x^3-1568b\,c^3d\,e^4g\,x^3-192b\,c^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(-176*b*c^3*e^5*g*x^4+224*c^4*d*e^4*g*x^4+128*c^4*e
^5*f*x^4+264*b^2*c^2*e^5*g*x^3-1568*b*c^3*d*e^4*g*x^3-192*b*c^3*e^5*f*x^3+1
568*c^4*d^2*e^3*g*x^3+896*c^4*d*e^4*f*x^3-330*b^3*c*e^5*g*x^2+2532*b^2*c^2*
d*e^4*g*x^2+240*b^2*c^2*e^5*f*x^2-6648*b*c^3*d^2*e^3*g*x^2-1536*b*c^3*d*e^4
*f*x^2+5040*c^4*d^3*e^2*g*x^2+2880*c^4*d^2*e^3*f*x^2+385*b^4*e^5*g*x-3460*b
^3*c*d*e^4*g*x-280*b^3*c*e^5*f*x+11832*b^2*c^2*d^2*e^3*g*x+2160*b^2*c^2*d*e
^4*f*x-18256*b*c^3*d^3*e^2*g*x-5856*b*c^3*d^2*e^3*f*x+10192*c^4*d^4*e*g*x+5
824*c^4*d^3*e^2*f*x+70*b^4*d*e^4*g+315*b^4*e^5*f-610*b^3*c*d^2*e^3*g-2800*b
^3*c*d*e^4*f+2004*b^2*c^2*d^3*e^2*g+9480*b^2*c^2*d^2*e^3*f-2920*b*c^3*d^4*e
*g-14592*b*c^3*d^3*e^2*f+1456*c^4*d^5*g+8752*c^4*d^4*e*f)*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^6/e^2/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*
e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 28.09, size = 10084, normalized size = 28.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^7,x)
```

```
[Out] (((d*((8*c^2*(12*b*e*g - 23*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (8
*c*(b*e - c*d)*(11*b*e*g - 22*c*d*g + c*e*f))/(99*e*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 -
(((d*((64*c^6*e*f - 1152*c^6*d*g + 608*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6)
 - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4*(9*b*e*g - 18*c*d
*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((64*c^6*e*f - 1280*c^6*d*g + 672*b*c^5*e*g)/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b
*c^4*(10*b*e*g - 20*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (2*((d*((64*c^6*e*f - 1408*c^6
*d*g + 736*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*
e - 2*c*d)^6)))/e - (32*b*c^4*(11*b*e*g - 22*c*d*g + c*e*f))/(10395*e*(b*e
- 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((64*c^6*e*f - 1536*c^6*d*g + 800*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4*(12*b*e*g - 24*c*d*g +
 c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) - (((d*((64*c^6*e*f - 1664*c^6*d*g + 864*b*c^5*e*g)/(10395*
e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (32*b*c^4
*(13*b*e*g - 26*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*e*f - 2432*c^6*d*g +
 1248*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2
*c*d)^6)))/e - (32*b*c^4*(19*b*e*g - 38*c*d*g + c*e*f))/(10395*e*(b*e - 2*c
*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4*c
^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (
4*c^2*d*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (2*b*(b*e*g - 2*c*
d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((2*f*(b*e - c*d))/(11*b*e^2 - 22*c
*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c*e*f)/(11*b*e^2 - 22*c*d*e) - (2*c*d*g)
/(11*b*e^2 - 22*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^6 - (((d*((4*c^2*(13*b*e*g - 24*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14
*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*
d)^2)))/e - (120*c^3*d^2*g - 40*c^3*d*e*f + 24*b*c^2*e^2*f + 44*b^2*c*e^2*g
 - 148*b*c^2*d*e*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((64*c^6*e*f - 384*c^
6*d*g + 224*b*c^5*e*g)/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b
*e - 2*c*d)^6)))/e - (32*b*c^4*(3*b*e*g - 6*c*d*g + c*e*f))/(10395*e*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*(
(16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8
*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)
^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((16*c
^4*e*f - 208*c^4*d*g + 112*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b*
c^2*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((16*
c^4*e*f - 240*c^4*d*g + 128*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*b
*c^2*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16
*c^4*e*f - 384*c^4*d*g + 200*b*c^3*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*
b*c^2*(12*b*e*g - 24*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*
c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*
c^3*(5*b*e*g - 10*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*e*f - 384*c^5*d*g + 208*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b
*c^3*(6*b*e*g - 12*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^
5*e*f - 448*c^5*d*g + 240*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*
c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5
*e*f - 512*c^5*d*g + 272*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c
^3*(8*b*e*g - 16*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^5*
e*f - 672*c^5*d*g + 352*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^3
```

```
*(21*b*e*g - 42*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^5
*e*f - 736*c^5*d*g + 384*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c^
3*(23*b*e*g - 46*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^
5*e*f - 800*c^5*d*g + 416*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*b*c
^3*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*e*f - 1024*c^5*d*g + 528*b*c^4*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*
b*c^3*(16*b*e*g - 32*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*
c^5*(6*b*e*g - 11*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/
(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(11*b*e*g - 22*c*d*g + 2*c*e*f))/
(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) + (((d*((64*c^5*(7*b*e*g - 13*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)
^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(13*b*e*g - 26
*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(8*b*e*g - 15*c*d*g + c*e*f))/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b
*c^4*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(9*b*e*g - 17*
c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*
c*d)^6)))/e - (16*b*c^4*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*
c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64
*c^5*(14*b*e*g - 27*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g
)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(27*b*e*g - 54*c*d*g + 2*c*e*f)
)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) + (((d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(10395*e*(b*e - 2*c
*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (16*b*c^4*(29*b*e*g -
 58*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(16*b*e*g - 31*c*d*g + c*e*f))
/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (
16*b*c^4*(31*b*e*g - 62*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((64*c^5*(17*b*e*g
- 33*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e
 - 2*c*d)^6)))/e - (16*b*c^4*(33*b*e*g - 66*c*d*g + 2*c*e*f))/(10395*e*(b*e
 - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((4*c*(7*b*e*g - 13*c*d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)
) - (4*c^2*d*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*d
)*(6*b*e*g - 12*c*d*g + c*e*f))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((16*c^3*(6
*b*e*g - 11*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (1
6*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (256*c^4*d^2*g
+ 92*b^2*c^2*e^2*g - 64*c^4*d*e*f + 40*b*c^3*e^2*f - 312*b*c^3*d*e*g)/(693*
e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(693
*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^3)))/e - (112*c^4*d^2*g + 152*b^2*c^2*e^2*g + 176*c^4*d*
e*f - 80*b*c^3*e^2*f - 360*b*c^3*d*e*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*
((8*c^3*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (9
60*c^4*d^2*g + 312*b^2*c^2*e^2*g - 64*c^4*d*e*f + 40*b*c^3*e^2*f - 1104*b*c
^3*d*e*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^4*(9*b*e*g - 17*c*d*g +
 c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (128*c^5*d^2*g + 208*b^2*c^3*e^2*g
 + 160*c^5*d*e*f - 64*b*c^4*e^2*f - 480*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x)^2 - (((d*((16*c^4*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4)))/e - (480*c^5*d^2*g + 176*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^
2*f - 592*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(29*b*e*
g - 56*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c
^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1632*c^5*d^2*g +
144*b^2*c^3*e^2*g - 160*c^5*d*e*f + 64*b*c^4*e^2*f - 1104*b*c^4*d*e*g)/(346
5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x)^2 + (((d*((32*c^4*(10*b*e*g - 19*c*d*g + c*e*f))/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4)))/e - (1344*c^5*d^2*g + 464*b^2*c^3*e^2*g - 96*c^5*d*
e*f + 64*b*c^4*e^2*f - 1600*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d
*((32*c^4*(11*b*e*g - 21*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1
536*c^5*d^2*g + 528*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*b*c^4*e^2*f - 1824*b*
c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16*c^4*(27*b*e*g - 52*c*d*g
 + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1568*c^5*d^2*g + 400*b^2*c^3*
e^2*g - 800*c^5*d*e*f + 416*b*c^4*e^2*f - 1584*b*c^4*d*e*g)/(3465*e*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 - (((d*((16*c^4*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(3465*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^4)))/e - (2400*c^5*d^2*g + 816*b^2*c^3*e^2*g - 96*c^5*d*e*f + 64*
b*c^4*e^2*f - 2832*b*c^4*d*e*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((16*c^3
*(16*b*e*g - 31*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)
- (16*c^4*d*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*
e - c*d)*(15*b*e*g - 30*c*d*g + c*e*f))/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*
((32*c^4*(19*b*e*g - 37*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^4) - (32*c^5*d*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (32
*c^3*(b*e - c*d)*(18*b*e*g - 36*c*d*g + c*e*f))/(3465*e*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
 - (((768*c^6*d^2*g + 304*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f -
992*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((64*c^5*(5*b*e*g - 9*c*d
*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d
)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1664*
c^6*d^2*g + 640*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2112*b*c^5
*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(17*b*e*g - 32*c*d*g + 2*
c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1920*c^6*d
^2*g + 736*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2432*b*c^5*d*e*
g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(19*b*e*g - 36*c*d*g + 2*c*e*f
))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((320*c^6*d^2*g +
 928*b^2*c^4*e^2*g + 1472*c^6*d*e*f - 704*b*c^5*e^2*f - 2016*b*c^5*d*e*g)/(
10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(
10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2176*c^6*d^2*g + 83
2*b^2*c^4*e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 2752*b*c^5*d*e*g)/(10395
*e^2*(b*e - 2*c*d)^6) - (d*((32*c^5*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(10395
*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2048*c^6*d^2*g + 736*b^2
*c^4*e^2*g - 448*c^6*d*e*f + 256*b*c^5*e^2*f - 2496*b*c^5*d*e*g)/(10395*e^2
*(b*e - 2*c*d)^6) - (d*((64*c^5*(11*b*e*g - 21*c*d*g + c*e*f))/(10395*e*(b*
e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2816*c^6*d^2*g + 1072*b^2*c^4*
e^2*g - 128*c^6*d*e*f + 96*b*c^5*e^2*f - 3552*b*c^5*d*e*g)/(10395*e^2*(b*e
- 2*c*d)^6) - (d*((64*c^5*(13*b*e*g - 25*c*d*g + c*e*f))/(10395*e*(b*e - 2*
c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3072*c^6*d^2*g + 1168*b^2*c^4*e^2*g
- 128*c^6*d*e*f + 96*b*c^5*e^2*f - 3872*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*
d)^6) - (d*((64*c^5*(14*b*e*g - 27*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6
) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((3328*c^6*d^2*g + 1264*b^2*c^4*e^2*g - 128*
c^6*d*e*f + 96*b*c^5*e^2*f - 4192*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6)
- (d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((4224*c^6*d^2*g + 1600*b^2*c^4*e^2*g - 128*c^6*d*
e*f + 96*b*c^5*e^2*f - 5312*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*(
(32*c^5*(37*b*e*g - 72*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^
6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((6976*c^6*d^2*g + 2144*b^2*c^4*e^2*g - 448*c^6*d*e*f
+ 256*b*c^5*e^2*f - 7776*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32
*c^5*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d
*g)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) + (((d*((64*c^5*(21*b*e*g - 41*c*d*g + c*e*f))/(10395*e*(b*e
 - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (64*c^4*(b*e -
c*d)*(20*b*e*g - 40*c*d*g + c*e*f))/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8*c^3*e*f - 24*c^3*d*
g + 16*b*c^2*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(
99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*(3*b*e*g - 6*c*d*g +
2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*e*f - 112*c^3*d*g + 60*b*
c^2*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(99*(7*b*e
^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(7*b*e*g - 14*c*d*g + c*e*f))/
(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^4 + (((d*((64*c^5*(12*b*e*g - 23*c*d*g + c*e*f))/(10
395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (128*
c^6*d^2*g - 352*b^2*c^4*e^2*g - 64*c^6*d*e*f + 640*b*c^5*d*e*g)/(10395*e^2*
(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) +
(((d*((64*c^5*(13*b*e*g - 25*c*d*g + c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (6
4*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (256*c^6*d^2*g - 352*b^2*c^4*e^2
*g - 64*c^6*d*e*f + 576*b*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((32*c^5*(35*b*e*g - 6
8*c*d*g + 2*c*e*f))/(10395*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e
- 2*c*d)^6)))/e + (832*c^6*d^2*g - 352*b^2*c^4*e^2*g - 64*c^6*d*e*f + 288*b
*c^5*d*e*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x) - (((d*((32*c^5*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(1039
5*e*(b*e - 2*c*d)^6) - (64*c^6*d*g)/(10395*e*(b*e - 2*c*d)^6)))/e - (448*c^
6*d^2*g + 352*b^2*c^4*e^2*g + 64*c^6*d*e*f - 928*b*c^5*d*e*g)/(10395*e^2*(b
*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-(d+ex)(be-cd+cex)}\,\left(f+gx\right)}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**7,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**7, x)
```

3.2182 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=439

$$-\frac{256c^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{45045e^2(d+ex)^3(2cd-be)^6}+\frac{128c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(13beg-2c}{15015e^2(d+ex)^4(2cd-be)^5}$$

```
[Out] -2/13*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^8-2/143*(-13*b*e*g+16*c*d*g+10*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(3/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^7+16/1287*c*(13*b*e*g-2*c*(8*d*g+5*e*f))
*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^6-32/300
3*c^2*(-13*b*e*g+16*c*d*g+10*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/
e^2/(-b*e+2*c*d)^4/(e*x+d)^5+128/15015*c^3*(13*b*e*g-2*c*(8*d*g+5*e*f))*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)^5/(e*x+d)^4-256/45045*
c^4*(-13*b*e*g+16*c*d*g+10*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^
2/(-b*e+2*c*d)^6/(e*x+d)^3
```

Rubi [A] time = 0.72, antiderivative size = 439, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{256c^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-13beg+16cdg+10cef)}{45045e^2(d+ex)^3(2cd-be)^6}+\frac{128c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(13beg-2c}{15015e^2(d+ex)^4(2cd-be)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^8) - (2*(10*c*e*f + 16*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(3/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^7) + (16*c*
(13*b*e*g - 2*c*(5*e*f + 8*d*g))*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2
))/(1287*e^2*(2*c*d - b*e)^3*(d + e*x)^6) - (32*c^2*(10*c*e*f + 16*c*d*g -
13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3003*e^2*(2*c*d - b
*e)^4*(d + e*x)^5) + (128*c^3*(13*b*e*g - 2*c*(5*e*f + 8*d*g))*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2))/(15015*e^2*(2*c*d - b*e)^5*(d + e*x)^4) -
(256*c^4*(10*c*e*f + 16*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2)^(3/2))/(45045*e^2*(2*c*d - b*e)^6*(d + e*x)^3)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^8}\,dx &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}+\frac{(10cef+16cdg-13}{13e}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}-\frac{2(10cef+16cdg-1}{143e^2}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}-\frac{2(10cef+16cdg-1}{143e^2}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}-\frac{2(10cef+16cdg-1}{143e^2}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}-\frac{2(10cef+16cdg-1}{143e^2}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{13e^2(2cd-be)(d+ex)^8}-\frac{2(10cef+16cdg-1}{143e^2}\end{aligned}$$

Mathematica [A] time = 0.45, size = 176, normalized size = 0.40

$$-\frac{2((d+ex)(c(d-ex)-be))^{3/2}\Big(2(d+ex)\Big(8c(d+ex)\Big(2c(d+ex)\Big(4c(d+ex)(-3be+8cd+2cex)+15(be-2cd}{45045e^3(d+ex)^8(be}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^8
,x]
```

```
[Out] (-2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3465*e*(-2*c*d + b*e)^5*(e*f
 - d*g) + 2*((-13*b*e^2*g)/2 + c*e*(5*e*f + 8*d*g))*(d + e*x)*(315*(-2*c*d
+ b*e)^4 + 8*c*(d + e*x)*(35*(2*c*d - b*e)^3 + 2*c*(d + e*x)*(15*(-2*c*d +
b*e)^2 + 4*c*(d + e*x)*(8*c*d - 3*b*e + 2*c*e*x))))))/(45045*e^3*(-2*c*d +
b*e)^6*(d + e*x)^8)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.07, size = 782, normalized size = 1.78

$$-\frac{2\left(cex+be-cd\right)\left(1664b\,c^4e^6g\,x^5-2048c^5d\,e^5g\,x^5-1280c^5e^6f\,x^5-2496b^2c^3e^6g\,x^4+16384b\,c^4d\,e^5g\,x^4+1920b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(1664*b*c^4*e^6*g*x^5-2048*c^5*d*e^5*g*x^5-1280*c^
5*e^6*f*x^5-2496*b^2*c^3*e^6*g*x^4+16384*b*c^4*d*e^5*g*x^4+1920*b*c^4*e^6*f
*x^4-16384*c^5*d^2*e^4*g*x^4-10240*c^5*d*e^5*f*x^4+3120*b^3*c^2*e^6*g*x^3-2
6304*b^2*c^3*d*e^5*g*x^3-2400*b^2*c^3*e^6*f*x^3+76736*b*c^4*d^2*e^4*g*x^3+1
7280*b*c^4*d*e^5*f*x^3-60416*c^5*d^3*e^3*g*x^3-37760*c^5*d^2*e^4*f*x^3-3640
*b^4*c*e^6*g*x^2+35680*b^3*c^2*d*e^5*g*x^2+2800*b^3*c^2*e^6*f*x^2-134496*b^
2*c^3*d^2*e^4*g*x^2-24000*b^2*c^3*d*e^5*f*x^2+231424*b*c^4*d^3*e^3*g*x^2+73
920*b*c^4*d^2*e^4*f*x^2-139264*c^5*d^4*e^2*g*x^2-87040*c^5*d^3*e^3*f*x^2+40
95*b^5*e^6*g*x-45080*b^4*c*d*e^5*g*x-3150*b^4*c*e^6*f*x+200600*b^3*c^2*d^2*
e^4*g*x+30800*b^3*c^2*d*e^5*f*x-452064*b^2*c^3*d^3*e^3*g*x-116400*b^2*c^3*d
^2*e^4*f*x+516656*b*c^4*d^4*e^2*g*x+204480*b*c^4*d^3*e^3*f*x-233216*c^5*d^5
*e*g*x-145760*c^5*d^4*e^2*f*x+630*b^5*d*e^5*g+3465*b^5*e^6*f-6790*b^4*c*d^2
*e^4*g-37800*b^4*c*d*e^5*f+29440*b^3*c^2*d^3*e^3*g+166600*b^3*c^2*d^2*e^4*f
-64176*b^2*c^3*d^4*e^2*g-372000*b^2*c^3*d^3*e^3*f+70048*b*c^4*d^5*e*g+42312
0*b*c^4*d^4*e^2*f-29152*c^5*d^6*g-198400*c^5*d^5*e*f)*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)/(e*x+d)^7/e^2/(b^6*e^6-12*b^5*c*d*e^5+60*b^4*c^2*d^2*e^4-
160*b^3*c^3*d^3*e^3+240*b^2*c^4*d^4*e^2-192*b*c^5*d^5*e+64*c^6*d^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^8,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 55.43, size = 19572, normalized size = 44.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^8,x)
```

```
[Out] (((d*((8*c^2*(14*b*e*g - 27*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e
- 2*c*d)^2) - (8*c^3*d*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e -
(8*c*(b*e - c*d)*(13*b*e*g - 26*c*d*g + c*e*f))/(143*e*(9*b*e^2 - 18*c*d*e)
*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5
 - (((2*f*(b*e - c*d))/(13*b*e^2 - 26*c*d*e) - (d*((2*b*e*g - 2*c*d*g + 2*c
*e*f)/(13*b*e^2 - 26*c*d*e) - (2*c*d*g)/(13*b*e^2 - 26*c*d*e)))/e)*(c*d^2 -
```

```
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^7 - (((d*((4*c^2*(15*b*e*g -
 28*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d
*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (144*c^3*d^2*g - 48*c^
3*d*e*f + 28*b*c^2*e^2*f + 52*b^2*c*e^2*g - 176*b*c^2*d*e*g)/(143*e*(9*b*e^
2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^5 - (((d*((4*c^2*e*f - 8*c^2*d*g + 6*b*c*e*g)/(13*(11*b*e^2 - 2
2*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*
d))))/e - (2*b*(b*e*g - 2*c*d*g + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e -
2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((
16*c^4*e*f - 64*c^4*d*g + 40*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (
8*b*c^2*(2*b*e*g - 4*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*
d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((16
*c^4*e*f - 240*c^4*d*g + 128*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (
4*b*c^2*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*
((16*c^4*e*f - 272*c^4*d*g + 144*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e
 - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e
 - (4*b*c^2*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*
e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (
((d*((16*c^4*e*f - 448*c^4*d*g + 232*b*c^3*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*
(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)
))/e - (8*b*c^2*(14*b*e*g - 28*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(
b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 +
 (((d*((32*c^5*e*f - 160*c^5*d*g + 96*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
)))/e - (8*b*c^3*(5*b*e*g - 10*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3
 - (((d*((32*c^5*e*f - 448*c^5*d*g + 240*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^4)))/e - (16*b*c^3*(7*b*e*g - 14*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*
e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^3 - (((d*((32*c^5*e*f - 512*c^5*d*g + 272*b*c^4*e*g)/(9009*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^4)))/e - (16*b*c^3*(8*b*e*g - 16*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^3 - (((d*((32*c^5*e*f - 576*c^5*d*g + 304*b*c^4*e*g)/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^4)))/e - (16*b*c^3*(9*b*e*g - 18*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^3 + (((d*((32*c^5*e*f - 800*c^5*d*g + 416*b*c^4*e*g)/(9009*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^4)))/e - (8*b*c^3*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^3 + (((d*((32*c^5*e*f - 864*c^5*d*g + 448*b*c^4*e*g)/(9009*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b
*e - 2*c*d)^4)))/e - (8*b*c^3*(27*b*e*g - 54*c*d*g + 2*c*e*f))/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^3 + (((d*((32*c^5*e*f - 928*c^5*d*g + 480*b*c^4*e*g)/(9009*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e
)*(b*e - 2*c*d)^4)))/e - (8*b*c^3*(29*b*e*g - 58*c*d*g + 2*c*e*f))/(9009*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x)^3 - (((d*((32*c^5*e*f - 1216*c^5*d*g + 624*b*c^4*e*g)/(900
9*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4)))/e - (16*b*c^3*(19*b*e*g - 38*c*d*g + c*e*f))/(900
9*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^3 - (((d*((64*c^6*e*f - 384*c^6*d*g + 224*b*c^5*e*g)/(
45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(3*b*e*g - 6*c*d*g + c*e*f))/(45
045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1408*c^6*d*g + 736*b*c^5*e*g)
/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(11*b*e*g - 22*c*d*g + c*e*f))
/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1536*c^6*d*g + 800*b*c^5*
e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(12*b*e*g - 24*c*d*g + c*e
*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^2 - (2*((d*((64*c^6*e*f - 1664*c^6*d*g + 864*
b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(4504
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(13*b*e*g - 26*c*d*g
 + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1792*c^6*d*g +
928*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(
45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(14*b*e*g - 28*c
*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 1920*c^6*d*
g + 992*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*
g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(15*b*e*g -
30*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*e*f - 2944*c^
6*d*g + 1504*b*c^5*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c
^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*b*c^4*(23*b*e
*g - 46*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((64*c^6*(13*b*e*
g - 24*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135
*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(6*b*e*g - 12*c*d*g + c*e*f))/(135135*e
*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((64*c^6*(15*b*e*g - 28*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7)
- (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(7*b*e*g - 14*c*
d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(4*b*e*g - 7*c*d*g + c*e*f))/(135135
*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*
c^5*(7*b*e*g - 14*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(17*b*e*g - 32*
c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
 - 2*c*d)^7)))/e - (64*b*c^5*(8*b*e*g - 16*c*d*g + c*e*f))/(135135*e*(b*e -
 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*(
(64*c^6*(19*b*e*g - 36*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*
c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(9*b*e*g - 18*c*d*g + c
*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((d*((64*c^6*(21*b*e*g - 40*c*d*g + 2*c*e*f))/(135135*e*(
b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*
(10*b*e*g - 20*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(10*b*e*g - 19*c*d*
g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c
*d)^7)))/e - (32*b*c^5*(19*b*e*g - 38*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64
*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7
*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(14*b*e*g - 28*c*d*g + c*e
*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((d*((128*c^6*(11*b*e*g - 21*c*d*g + c*e*f))/(135135*e*(b*e
 - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(21
*b*e*g - 42*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(31*b*e*g - 60*c*d*g
+ 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c
*d)^7)))/e - (64*b*c^5*(15*b*e*g - 30*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*
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d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d*((12
8*c^6*(12*b*e*g - 23*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*
d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(23*b*e*g - 46*c*d*g + 2*c*
e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x) - (2*((d*((64*c^6*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5
*(16*b*e*g - 32*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d*((128*c^6*(13*b*e*g - 25*c
*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e -
2*c*d)^7)))/e - (32*b*c^5*(25*b*e*g - 50*c*d*g + 2*c*e*f))/(135135*e*(b*e -
 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((d
*((128*c^6*(14*b*e*g - 27*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(27*b*e*g - 54*c*d*g +
 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) - (2*((d*((64*c^6*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(1351
35*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*
b*c^5*(17*b*e*g - 34*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(15*b*e*g - 2
9*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
 - 2*c*d)^7)))/e - (32*b*c^5*(29*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*e*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (2*
((d*((64*c^6*(37*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) -
(128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(18*b*e*g - 36*c*d
*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(16*b*e*g - 31*c*d*g + c*e*f))/(13513
5*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b
*c^5*(31*b*e*g - 62*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(39*b*e*g - 7
6*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b
*e - 2*c*d)^7)))/e - (64*b*c^5*(19*b*e*g - 38*c*d*g + c*e*f))/(135135*e*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((
d*((64*c^6*(41*b*e*g - 80*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (1
28*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (64*b*c^5*(20*b*e*g - 40*c*d*g
 + c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((128*c^6*(20*b*e*g - 39*c*d*g + c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c
^5*(39*b*e*g - 78*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(21*b*e*g - 41
*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e - (32*b*c^5*(41*b*e*g - 82*c*d*g + 2*c*e*f))/(135135*e*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((128*c^6*(22*b*e*g - 43*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(43*b*e*g - 86*c*d*g +
 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((128*c^6*(23*b*e*g - 45*c*d*g + c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c
^5*(45*b*e*g - 90*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(53*b*e*g - 104
*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*
e - 2*c*d)^7)))/e - (64*b*c^5*(26*b*e*g - 52*c*d*g + c*e*f))/(135135*e*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((128*c^6*(24*b*e*g - 47*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128
*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (32*b*c^5*(47*b*e*g - 94*c*d*g +
 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x) + (((d*((4*c*(8*b*e*g - 15*c*d*g + c*e*f))/(13*(11*b*e^2
 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^2*d*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e -
2*c*d))))/e - (4*(b*e - c*d)*(7*b*e*g - 14*c*d*g + c*e*f))/(13*e*(11*b*e^2
 - 22*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^6 + (((d*((64*c^5*(7*b*e*g - 13*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(13*b*e*g - 26*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 + (((d*((64*c^5*(8*b*e*g - 15*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(15*b*e*g - 30*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 + (((d*((64*c^5*(9*b*e*g - 17*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e - (16*b*c^4*(17*b*e*g - 34*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 + (((d*((64*c^5*(10*b*e*g - 19*c*d*g + c*e*f))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5)))/e - (16*b*c^4*(19*b*e*g - 38*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^2 + (((d*((64*c^5*(17*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (16*b*c^4*(33*b*e*g - 66*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x)^2 + (((d*((64*c^5*(18*b*e*g - 35*c*d*g + c*e*f))/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5)))/e - (16*b*c^4*(35*b*e*g - 70*c*d*g + 2*c*e*f))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 + (((d*((64*c^5*(19*b*e*g - 37*c*d*g + c*e*f))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e - (16*b*c^4*(37*b*e*g - 74*c*d*g + 2*c*e*f))/(45045*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^2 + (((d*((64*c^5*(20*b*e*g - 39*c*d*g + c*e*f))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5)))/e - (16*b*c^4*(39*b*e*g - 78*c*d*g + 2*c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^2 + (((d*((16*c^3*(7*b*e*g - 13*c*d*g + c*e*f))/(1287*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*
e - 2*c*d)^3)))/e - (320*c^4*d^2*g + 112*b^2*c^2*e^2*g - 80*c^4*d*e*f + 48*
b*c^3*e^2*f - 384*b*c^3*d*e*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*
(25*b*e*g - 48*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (48*c^4*
d^2*g + 184*b^2*c^2*e^2*g + 304*c^4*d*e*f - 144*b*c^3*e^2*f - 392*b*c^3*d*e
*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((8*c^3*(27*b*e*g - 52*c*d*g + 2*c*
e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (1360*c^4*d^2*g + 424*b^2*c^2*e^2*g
 - 80*c^4*d*e*f + 48*b*c^3*e^2*f - 1528*b*c^3*d*e*g)/(1287*e*(7*b*e^2 - 14*
c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^4 + (((d*((32*c^4*(11*b*e*g - 21*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^4)))/e + (128*c^5*d^2*g - 224*b^2*c^3*e^2*g - 352*c^5*d*e*f + 160*b*c^4
*e^2*f + 384*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(13*
b*e*g - 24*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) -
(32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (640*c^5*d^2
*g + 224*b^2*c^3*e^2*g - 128*c^5*d*e*f + 80*b*c^4*e^2*f - 768*b*c^4*d*e*g)/
(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((32*c^4*(12*b*e*g - 23*c*d*g + c*e*f))
/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2048*c^5*d^2*g + 664*b^2*c^3*e^2*g - 12
8*c^5*d*e*f + 80*b*c^4*e^2*f - 2352*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*
e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

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^3 + (((d*((32*c^4*(13*b*e*g - 25*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e
)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
4)))/e - (2304*c^5*d^2*g + 744*b^2*c^3*e^2*g - 128*c^5*d*e*f + 80*b*c^4*e^2
*f - 2640*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(33*b*e
*g - 64*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32
*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2912*c^5*d^2*g
 + 496*b^2*c^3*e^2*g - 1952*c^5*d*e*f + 992*b*c^4*e^2*f - 2448*b*c^4*d*e*g)
/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((16*c^4*(37*b*e*g - 72*c*d*g + 2*c*e*
f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (3712*c^5*d^2*g + 1184*b^2*c^3*e^2*g
- 128*c^5*d*e*f + 80*b*c^4*e^2*f - 4224*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^3 - (((d*((16*c^4*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^4)))/e + (4704*c^5*d^2*g + 816*b^2*c^3*e^2*g - 352*c^5*d*e*f + 160*b*
c^4*e^2*f - 3984*b*c^4*d*e*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((32*c^5*
(19*b*e*g - 36*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (64*c^6*
d^2*g - 352*b^2*c^4*e^2*g - 320*c^6*d*e*f + 128*b*c^5*e^2*f + 672*b*c^5*d*e
*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(6*b*e*g - 11*c*d*g + c*e*
f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1152*c^6*d^2*g + 416*b^2*c^4*e^2*g -
 192*c^6*d*e*f + 128*b*c^5*e^2*f - 1408*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^2 + (((d*((64*c^5*(15*b*e*g - 29*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^5)))/e + (3584*c^6*d^2*g + 352*b^2*c^4*e^2*g - 320*c^6*d*e*f + 128*b*c^
5*e^2*f - 2496*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(2
1*b*e*g - 40*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (2880*c^6*
d^2*g + 992*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 3424*b*c^5*d*
e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(16*b*e*g - 31*c*d*g + c*
e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4224*c^6*d^2*g + 480*b^2*c^4*e^2*g
 - 320*c^6*d*e*f + 128*b*c^5*e^2*f - 3072*b*c^5*d*e*g)/(45045*e*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x)^2 - (((d*((32*c^5*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (3264*c^6*d^2*g + 1120*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128
*b*c^5*e^2*f - 3872*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c
^5*(25*b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (3648
*c^6*d^2*g + 1248*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 4320*b*
c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(16*b*e*g - 31*c*d*
g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (4992*c^6*d^2*g + 1696*b^2*c^
4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 5888*b*c^5*d*e*g)/(45045*e*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^2 + (((d*((64*c^5*(14*b*e*g - 27*c*d*g + c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^5)))/e - (4736*c^6*d^2*g + 1216*b^2*c^4*e^2*g - 1600*c^6*d*e*f
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 + 832*b*c^5*e^2*f - 4800*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*
((64*c^5*(17*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (
5376*c^6*d^2*g + 1824*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 633
6*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((64*c^5*(18*b*e*g - 35*
c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (5760*c^6*d^2*g + 1952*b^
2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 6784*b*c^5*d*e*g)/(45045*e*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(43*b*e*g - 84*c*d*g + 2*c*e*f))/(45045
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^5)))/e + (7744*c^6*d^2*g + 1184*b^2*c^4*e^2*g - 320*c^6*
d*e*f + 128*b*c^5*e^2*f - 6240*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
(((d*((32*c^5*(39*b*e*g - 76*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))
)/e - (1184*b^2*c^4*e^2*g - 5312*c^6*d^2*g + 7616*c^6*d*e*f - 3776*b*c^5*e^
2*f + 288*b*c^5*d*e*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(45*b*e
*g - 88*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64
*c^6*d*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (7488*c^6*d^2*g
 + 2528*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 8800*b*c^5*d*e*g)
/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((32*c^5*(41*b*e*g - 80*c*d*g + 2*c*e*
f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (25536*c^6*d^2*g + 6624*b^2*c^4*e^2*g
 - 1600*c^6*d*e*f + 832*b*c^5*e^2*f - 26016*b*c^5*d*e*g)/(45045*e*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^2 + (((d*((16*c^3*(19*b*e*g - 37*c*d*g + c*e*f))/(1287*(7*b*e^2 -
14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^4*d*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(18*b*e*g - 36*c*d*g + c*e*f))/(1287*e
*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x)^4 + (((d*((32*c^4*(23*b*e*g - 45*c*d*g + c*e*f))/(9009*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^5*d*g)/(9009*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^4)))/e - (32*c^3*(b*e - c*d)*(22*b*e*g - 44*c*d*g + c*e*
f))/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((64*c^5*(26*b*e*g - 51*c*d*g + c*e
*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^6*d*g)/(45045*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^4*(b*e - c*d)*(25*b*e*g - 50*c
*d*g + c*e*f))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((1792*c^7*d^2*g + 704*b^2*c
^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 2304*b*c^6*d*e*g)/(135135*e^2*
(b*e - 2*c*d)^7) - (d*((64*c^6*(11*b*e*g - 20*c*d*g + 2*c*e*f))/(135135*e*(
b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2304*c^7*d^2*g - 1152*b^2*
c^5*e^2*g - 2944*c^7*d*e*f + 1408*b*c^6*e^2*f + 1152*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) + (d*((128*c^6*(16*b*e*g - 31*c*d*g + c*e*f))/(135135*e
*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3584*c^7*d^2*g + 1376*b^
2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 4544*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(9*b*e*g - 17*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4096*c^7*d^2*g + 1568*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 5184*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(10*b*e*g - 19*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4608*c^7*d^2*g + 1760*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 5824*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(11*b*e*g - 21*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((5120*c^7*d^2*g + 1952*b^2
*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 6464*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((128*c^6*(12*b*e*g - 23*c*d*g + c*e*f))/(135135*e*
(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4992*c^7*d^2*g + 1728*b^2
*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5952*b*c^6*d*e*g)/(135135*e^
2*(b*e - 2*c*d)^7) - (d*((64*c^6*(23*b*e*g - 44*c*d*g + 2*c*e*f))/(135135*e
*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5888*c^7*d^2*g + 2240*b^
2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 7424*b*c^6*d*e*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(27*b*e*g - 52*c*d*g + 2*c*e*f))/(135135*
e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((6400*c^7*d^2*g + 2432*b
^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 8064*b*c^6*d*e*g)/(135135*
e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135
*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (2*((6912*c^7*d^2*g + 262
4*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 8704*b*c^6*d*e*g)/(1351
35*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(31*b*e*g - 60*c*d*g + 2*c*e*f))/(135
135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((7424*c^7*d^2*g + 28
16*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 9344*b*c^6*d*e*g)/(135
135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(33*b*e*g - 64*c*d*g + 2*c*e*f))/(13
5135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((7936*c^7*d^2*g + 3
008*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 9984*b*c^6*d*e*g)/(13
5135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(35*b*e*g - 68*c*d*g + 2*c*e*f))/(1
35135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((8704*c^7*d^2*g +
3296*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 10944*b*c^6*d*e*g)/(
135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(19*b*e*g - 37*c*d*g + c*e*f))/(
135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9216*c^7*d^2*g +
 3488*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 11584*b*c^6*d*e*g)/
(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(20*b*e*g - 39*c*d*g + c*e*f))/
(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9728*c^7*d^2*g
+ 3680*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 12224*b*c^6*d*e*g)
/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(21*b*e*g - 41*c*d*g + c*e*f))
/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e)
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((10240*c^7*d^2*
g + 3872*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 12864*b*c^6*d*e*
g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(22*b*e*g - 43*c*d*g + c*e*f
))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/
e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((12032*c^7*d^
2*g + 4544*b^2*c^5*e^2*g - 256*c^7*d*e*f + 192*b*c^6*e^2*f - 15104*b*c^6*d*
e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(51*b*e*g - 100*c*d*g + 2*c
*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7
)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((14848*c^
7*d^2*g + 4544*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 16512*b*c^
6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(17*b*e*g - 33*c*d*g +
 c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)
^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((16640*
c^7*d^2*g + 5056*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 18432*b*
c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^6*(18*b*e*g - 35*c*d*g
 + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*
d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2060
8*c^7*d^2*g + 2624*b^2*c^5*e^2*g - 15488*c^7*d*e*f + 7808*b*c^6*e^2*f - 155
52*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(43*b*e*g - 84*c
*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (
((26496*c^7*d^2*g + 7872*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f -
28992*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^6*(47*b*e*g - 9
2*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b
*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
- (((40576*c^7*d^2*g + 8000*b^2*c^5*e^2*g - 2944*c^7*d*e*f + 1408*b*c^6*e^2
*f - 36288*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((64*c^6*(45*b*e*
g - 88*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135
*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) + (((d*((128*c^6*(28*b*e*g - 55*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d
)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (128*c^5*(b*e - c*d)*
(27*b*e*g - 54*c*d*g + c*e*f))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8*c^3*e*f - 24*c^3*d*g +
16*b*c^2*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(143
*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (2*b*c*(3*b*e*g - 6*c*d*g + 2*
c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((8*c^3*e*f - 128*c^3*d*g + 68*b*c
^2*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^3*d*g)/(143*(9*b*
e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*b*c*(8*b*e*g - 16*c*d*g + c*e*f))
/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((64*c^6*(25*b*e*g - 48*c*d*g + 2*c*e*f))
/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e
+ (384*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 1216*b*c^6*d*e*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) - (((d*((64*c^6*(27*b*e*g - 52*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2
*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (640*c^7*d^2*g -
704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 1088*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64
*c^6*(29*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7
*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (896*c^7*d^2*g - 704*b^2*c^5*e^2*g -
 128*c^7*d*e*f + 960*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(18*b*e*g - 35
*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e
- 2*c*d)^7)))/e + (1792*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 512
*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*(19*b*e*g - 37*c*d*g + c*e*f))/(13
5135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (2
048*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c^7*d*e*f + 384*b*c^6*d*e*g)/(13513
5*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((128*c^6*(8*b*e*g - 15*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^
7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c*d)^7)))/e - (768*c^7*d^2*g + 704*b^
2*c^5*e^2*g + 128*c^7*d*e*f - 1792*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((128*c^6*
(20*b*e*g - 39*c*d*g + c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(
135135*e*(b*e - 2*c*d)^7)))/e + (2304*c^7*d^2*g - 704*b^2*c^5*e^2*g - 128*c
^7*d*e*f + 256*b*c^6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((64*c^6*(49*b*e*g - 96*c*d*g
+ 2*c*e*f))/(135135*e*(b*e - 2*c*d)^7) - (128*c^7*d*g)/(135135*e*(b*e - 2*c
*d)^7)))/e - (704*b^2*c^5*e^2*g - 3456*c^7*d^2*g + 128*c^7*d*e*f + 320*b*c^
6*d*e*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{8}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**8,x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**8, x)
```

3.2183 $\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=488

$$\frac{9(2cd-be)^7(-11beg+6cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{13/2}e^2}+\frac{9(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-}}{16384c^6e}$$

```
[Out] 3/2048*(-b*e+2*c*d)^3*(-11*b*e*g+6*c*d*g+16*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(3/2)/c^5/e-3/640*(-b*e+2*c*d)^2*(-11*b*e*g+6*c*d*g+16*c
*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^4/e^2-3/448*(-b*e+2*c*d)*(-1
1*b*e*g+6*c*d*g+16*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^
3/e^2-1/112*(-11*b*e*g+6*c*d*g+16*c*e*f)*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(5/2)/c^2/e^2-1/8*g*(e*x+d)^3*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/
2)/c/e^2+9/32768*(-b*e+2*c*d)^7*(-11*b*e*g+6*c*d*g+16*c*e*f)*arctan(1/2*e*(
2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(13/2)/e^2+9/163
84*(-b*e+2*c*d)^5*(-11*b*e*g+6*c*d*g+16*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(1/2)/c^6/e
```

Rubi [A] time = 1.07, antiderivative size = 488, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{9(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-11beg+6cdg+16cef)}{16384c^6e}+\frac{3(b+2cx)(2cd-be)^3\big(d(cd-be)-be}{204}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (9*(2*c*d - b*e)^5*(16*c*e*f + 6*c*d*g - 11*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2])/(16384*c^6*e) + (3*(2*c*d - b*e)^3*(16*c*e*f
 + 6*c*d*g - 11*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3
/2))/(2048*c^5*e) - (3*(2*c*d - b*e)^2*(16*c*e*f + 6*c*d*g - 11*b*e*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(640*c^4*e^2) - (3*(2*c*d - b*e)*(
16*c*e*f + 6*c*d*g - 11*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2)^(5/2))/(448*c^3*e^2) - ((16*c*e*f + 6*c*d*g - 11*b*e*g)*(d + e*x)^2*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(112*c^2*e^2) - (g*(d + e*x)^3*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(8*c*e^2) + (9*(2*c*d - b*e)^7*(
16*c*e*f + 6*c*d*g - 11*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(32768*c^(13/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$
\begin{aligned}
\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx &= -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{8ce^2}-\frac{\left(\frac{5}{2}e\left(-2ce^2\right.\right.}{} \\
&= -\frac{(16cef+6cdg-11beg)(d+ex)^2\left(d(cd-be)-be^2x-\right.}{112c^2e^2} \\
&= -\frac{3(2cd-be)(16cef+6cdg-11beg)(d+ex)\left(d(cd-be\right.}{448c^3e^2} \\
&= -\frac{3(2cd-be)^2(16cef+6cdg-11beg)\left(d(cd-be)-be^2\right.}{640c^4e^2} \\
&= \frac{3(2cd-be)^3(16cef+6cdg-11beg)(b+2cx)\left(d(cd-b\right.}{2048c^5e} \\
&= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{16384c^6e} \\
&= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{16384c^6e} \\
&= \frac{9(2cd-be)^5(16cef+6cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{16384c^6e}
\end{aligned}
$$

Mathematica [**B**]   time = 6.48, size = 1418, normalized size = 2.91

$$(cde+(cd-be)e)\left(-8cfe^2-\left(\frac{11}{2}e(cd-be)-\frac{5cde}{2}\right)g\right)((d+$$

$$-\frac{g(cd-be-cex)((d+ex)(c(d-ex)-be))^{3/2}(d+ex)^4}{8ce^2}-$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] -1/8*(g*(d + e*x)^4*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(3/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))*(-8*c*e^2*f - ((-5*c*d*e)/2 + (11
*e*(c*d - b*e))/2)*g)*(d + e*x)^4*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*
(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
- b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(5/2)*((11*(1/(4*(1
- (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e
*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*
d - b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/14 + (99*(c*d*e + e*(c*d - b*e)
)^6*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d
- b*e)))^6*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
 + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^
4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*
e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)
^3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c
*d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*
e))/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e +
e*(c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*
d*e + e*(c*d - b*e)))^5) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqr
t[d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d -
 b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e +
e*(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e
^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))])
))/(4096*c^6*e^12*(d + e*x)^6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e
))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e)))))^2)))/(44*c*e^4*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d
- b*e))/(c*d*e + e*(c*d - b*e))))^(3/2)*(c*d - b*e - c*e*x)*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

fricas [**B**]   time = 12.59, size = 2337, normalized size = 4.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [-1/2293760*(315*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e
^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^
6*c^2*d*e^7 - b^7*c*e^8)*f + (768*c^8*d^8 - 4096*b*c^7*d^7*e + 8960*b^2*c^6
*d^6*e^2 - 10752*b^3*c^5*d^5*e^3 + 7840*b^4*c^4*d^4*e^4 - 3584*b^5*c^3*d^3*
e^5 + 1008*b^6*c^2*d^2*e^6 - 160*b^7*c*d*e^7 + 11*b^8*e^8)*g)*sqrt(-c)*log(
8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(71680*c^8*
e^7*g*x^7 + 5120*(16*c^8*e^7*f + (48*c^8*d*e^6 + 17*b*c^7*e^7)*g)*x^6 + 128
0*(16*(14*c^8*d*e^6 + 5*b*c^7*e^7)*f + (140*c^8*d^2*e^5 + 324*b*c^7*d*e^6 +
 b^2*c^6*e^7)*g)*x^5 + 128*(16*(104*c^8*d^2*e^5 + 246*b*c^7*d*e^6 + b^2*c^6
*e^7)*f - (2176*c^8*d^3*e^4 - 5932*b*c^7*d^2*e^5 - 100*b^2*c^6*d*e^6 + 11*b
^3*c^5*e^7)*g)*x^4 - 16*(16*(1400*c^8*d^3*e^4 - 3764*b*c^7*d^2*e^5 - 86*b^2
*c^6*d*e^6 + 9*b^3*c^5*e^7)*f + (30800*c^8*d^4*e^3 - 37984*b*c^7*d^3*e^4 -
3912*b^2*c^6*d^2*e^5 + 1000*b^3*c^5*d*e^6 - 99*b^4*c^4*e^7)*g)*x^3 - 8*(16*
(5248*c^8*d^4*e^3 - 6296*b*c^7*d^3*e^4 - 924*b^2*c^6*d^2*e^5 + 222*b^3*c^5*
d*e^6 - 21*b^4*c^4*e^7)*f + (22528*c^8*d^5*e^2 - 5904*b*c^7*d^4*e^3 - 25888
*b^2*c^6*d^3*e^4 + 11496*b^3*c^5*d^2*e^5 - 2568*b^4*c^4*d*e^6 + 231*b^5*c^3
*e^7)*g)*x^2 + 16*(23552*c^8*d^6*e - 78496*b*c^7*d^5*e^2 + 97424*b^2*c^6*d^
4*e^3 - 60288*b^3*c^5*d^3*e^4 + 21168*b^4*c^4*d^2*e^5 - 3990*b^5*c^3*d*e^6
+ 315*b^6*c^2*e^7)*f + (212992*c^8*d^7 - 873408*b*c^7*d^6*e + 1519680*b^2*c
^6*d^5*e^2 - 1433392*b^3*c^5*d^4*e^3 + 790176*b^4*c^4*d^3*e^4 - 256788*b^5*
c^3*d^2*e^5 + 45780*b^6*c^2*d*e^6 - 3465*b^7*c*e^7)*g - 2*(16*(7840*c^8*d^5
*e^2 + 1392*b*c^7*d^4*e^3 - 13984*b^2*c^6*d^3*e^4 + 5760*b^3*c^5*d^2*e^5 -
1218*b^4*c^4*d*e^6 + 105*b^5*c^3*e^7)*f - (60480*c^8*d^6*e - 208832*b*c^7*d
^5*e^2 + 278416*b^2*c^6*d^4*e^3 - 188384*b^3*c^5*d^3*e^4 + 70668*b^4*c^4*d^
2*e^5 - 14028*b^5*c^3*d*e^6 + 1155*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e))/(c^7*e^2), -1/1146880*(315*(16*(128*c^8*d^7*e - 448*
b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3
*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^6*c^2*d*e^7 - b^7*c*e^8)*f + (768*c^8*d^8
- 4096*b*c^7*d^7*e + 8960*b^2*c^6*d^6*e^2 - 10752*b^3*c^5*d^5*e^3 + 7840*b^
4*c^4*d^4*e^4 - 3584*b^5*c^3*d^3*e^5 + 1008*b^6*c^2*d^2*e^6 - 160*b^7*c*d*e
^7 + 11*b^8*e^8)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 -
b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e
)) + 2*(71680*c^8*e^7*g*x^7 + 5120*(16*c^8*e^7*f + (48*c^8*d*e^6 + 17*b*c^7
*e^7)*g)*x^6 + 1280*(16*(14*c^8*d*e^6 + 5*b*c^7*e^7)*f + (140*c^8*d^2*e^5 +
 324*b*c^7*d*e^6 + b^2*c^6*e^7)*g)*x^5 + 128*(16*(104*c^8*d^2*e^5 + 246*b*c
^7*d*e^6 + b^2*c^6*e^7)*f - (2176*c^8*d^3*e^4 - 5932*b*c^7*d^2*e^5 - 100*b^
2*c^6*d*e^6 + 11*b^3*c^5*e^7)*g)*x^4 - 16*(16*(1400*c^8*d^3*e^4 - 3764*b*c^
7*d^2*e^5 - 86*b^2*c^6*d*e^6 + 9*b^3*c^5*e^7)*f + (30800*c^8*d^4*e^3 - 3798
4*b*c^7*d^3*e^4 - 3912*b^2*c^6*d^2*e^5 + 1000*b^3*c^5*d*e^6 - 99*b^4*c^4*e^
7)*g)*x^3 - 8*(16*(5248*c^8*d^4*e^3 - 6296*b*c^7*d^3*e^4 - 924*b^2*c^6*d^2*
e^5 + 222*b^3*c^5*d*e^6 - 21*b^4*c^4*e^7)*f + (22528*c^8*d^5*e^2 - 5904*b*c
^7*d^4*e^3 - 25888*b^2*c^6*d^3*e^4 + 11496*b^3*c^5*d^2*e^5 - 2568*b^4*c^4*d
*e^6 + 231*b^5*c^3*e^7)*g)*x^2 + 16*(23552*c^8*d^6*e - 78496*b*c^7*d^5*e^2
+ 97424*b^2*c^6*d^4*e^3 - 60288*b^3*c^5*d^3*e^4 + 21168*b^4*c^4*d^2*e^5 - 3
990*b^5*c^3*d*e^6 + 315*b^6*c^2*e^7)*f + (212992*c^8*d^7 - 873408*b*c^7*d^6
*e + 1519680*b^2*c^6*d^5*e^2 - 1433392*b^3*c^5*d^4*e^3 + 790176*b^4*c^4*d^3
*e^4 - 256788*b^5*c^3*d^2*e^5 + 45780*b^6*c^2*d*e^6 - 3465*b^7*c*e^7)*g - 2
*(16*(7840*c^8*d^5*e^2 + 1392*b*c^7*d^4*e^3 - 13984*b^2*c^6*d^3*e^4 + 5760*
b^3*c^5*d^2*e^5 - 1218*b^4*c^4*d*e^6 + 105*b^5*c^3*e^7)*f - (60480*c^8*d^6*
e - 208832*b*c^7*d^5*e^2 + 278416*b^2*c^6*d^4*e^3 - 188384*b^3*c^5*d^3*e^4
+ 70668*b^4*c^4*d^2*e^5 - 14028*b^5*c^3*d*e^6 + 1155*b^6*c^2*e^7)*g)*x)*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^2)]
```

giac [B] time = 0.64, size = 1138, normalized size = 2.33

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] -1/573440*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*(4*(14
*c*g*x*e^5 + (48*c^8*d*g*e^16 + 16*c^8*f*e^17 + 17*b*c^7*g*e^17)*e^(-12)/c^
7)*x + (140*c^8*d^2*g*e^15 + 224*c^8*d*f*e^16 + 324*b*c^7*d*g*e^16 + 80*b*c
^7*f*e^17 + b^2*c^6*g*e^17)*e^(-12)/c^7)*x - (2176*c^8*d^3*g*e^14 - 1664*c^
8*d^2*f*e^15 - 5932*b*c^7*d^2*g*e^15 - 3936*b*c^7*d*f*e^16 - 100*b^2*c^6*d*
g*e^16 - 16*b^2*c^6*f*e^17 + 11*b^3*c^5*g*e^17)*e^(-12)/c^7)*x - (30800*c^8
*d^4*g*e^13 + 22400*c^8*d^3*f*e^14 - 37984*b*c^7*d^3*g*e^14 - 60224*b*c^7*d
^2*f*e^15 - 3912*b^2*c^6*d^2*g*e^15 - 1376*b^2*c^6*d*f*e^16 + 1000*b^3*c^5*
d*g*e^16 + 144*b^3*c^5*f*e^17 - 99*b^4*c^4*g*e^17)*e^(-12)/c^7)*x - (22528*
c^8*d^5*g*e^12 + 83968*c^8*d^4*f*e^13 - 5904*b*c^7*d^4*g*e^13 - 100736*b*c^
7*d^3*f*e^14 - 25888*b^2*c^6*d^3*g*e^14 - 14784*b^2*c^6*d^2*f*e^15 + 11496*
b^3*c^5*d^2*g*e^15 + 3552*b^3*c^5*d*f*e^16 - 2568*b^4*c^4*d*g*e^16 - 336*b^
4*c^4*f*e^17 + 231*b^5*c^3*g*e^17)*e^(-12)/c^7)*x + (60480*c^8*d^6*g*e^11 -
 125440*c^8*d^5*f*e^12 - 208832*b*c^7*d^5*g*e^12 - 22272*b*c^7*d^4*f*e^13 +
 278416*b^2*c^6*d^4*g*e^13 + 223744*b^2*c^6*d^3*f*e^14 - 188384*b^3*c^5*d^3
*g*e^14 - 92160*b^3*c^5*d^2*f*e^15 + 70668*b^4*c^4*d^2*g*e^15 + 19488*b^4*c
^4*d*f*e^16 - 14028*b^5*c^3*d*g*e^16 - 1680*b^5*c^3*f*e^17 + 1155*b^6*c^2*g
*e^17)*e^(-12)/c^7)*x + (212992*c^8*d^7*g*e^10 + 376832*c^8*d^6*f*e^11 - 87
3408*b*c^7*d^6*g*e^11 - 1255936*b*c^7*d^5*f*e^12 + 1519680*b^2*c^6*d^5*g*e^
12 + 1558784*b^2*c^6*d^4*f*e^13 - 1433392*b^3*c^5*d^4*g*e^13 - 964608*b^3*c
^5*d^3*f*e^14 + 790176*b^4*c^4*d^3*g*e^14 + 338688*b^4*c^4*d^2*f*e^15 - 256
788*b^5*c^3*d^2*g*e^15 - 63840*b^5*c^3*d*f*e^16 + 45780*b^6*c^2*d*g*e^16 +
5040*b^6*c^2*f*e^17 - 3465*b^7*c*g*e^17)*e^(-12)/c^7) + 9/32768*(768*c^8*d^
8*g + 2048*c^8*d^7*f*e - 4096*b*c^7*d^7*g*e - 7168*b*c^7*d^6*f*e^2 + 8960*b
^2*c^6*d^6*g*e^2 + 10752*b^2*c^6*d^5*f*e^3 - 10752*b^3*c^5*d^5*g*e^3 - 8960
*b^3*c^5*d^4*f*e^4 + 7840*b^4*c^4*d^4*g*e^4 + 4480*b^4*c^4*d^3*f*e^5 - 3584
*b^5*c^3*d^3*g*e^5 - 1344*b^5*c^3*d^2*f*e^6 + 1008*b^6*c^2*d^2*g*e^6 + 224*
b^6*c^2*d*f*e^7 - 160*b^7*c*d*g*e^7 - 16*b^7*c*f*e^8 + 11*b^8*g*e^8)*sqrt(-
c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^
2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^7
```

maple [B]   time = 0.08, size = 3576, normalized size = 7.33

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 9/32*b^2/c^2*e^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f+45/256*b^4/c^
3*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+63/1024*b^6/c^4*e^6/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*d*f+315/256*b^4/c^2*e^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-189/512*b^5/c^3*e^5/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d^2*f-63/32*b*c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6*f+45/32*b^2/c*e^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*x*d^3*f+3/8*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
*d^3*f+9/32*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^5*f+3/16/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3*f+567/2048*e^5*g*b^6/c^4/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^
2-63/64*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-45/64*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*x*d^2*e^3*f+63/128*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d^2+765/512*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x
*d^4-27/128*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-189/64
```

```
*e^2*g*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2))*d^5-315/256*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x*d^3+1125/2048*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)*x*d^2+2205/1024*e^3*g*b^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-315/128*b^3/c/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^4*e^3*f-261/2048*e^4*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*x*d-45/1024*e^6*g*b^7/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d+33/2048*e^3*g*b^5/c^5*(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(3/2)-1/8*e*g*x^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
5/2)/c+9/64/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^4+27/256/e*g*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^6-69/224*g*b^2/c^3*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(5/2)*d-117/128*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x
*d^5*b-117/256*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^5-13/35/e^2
/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^3*g-23/35/e/c*(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(5/2)*d^2*f-1/7*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/
c*e*f-3/128*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^3*f-15/64*g/c^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d^3+9/16*c*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*x*d^5*f+9/16*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7*f-1/2*x*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)/c*d*f-3/40*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(5/2)*e*f-9/1024*b^6/c^5*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-3/7
*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c*d*g+57/140/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)*b*d*f+33/640*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(5/2)+99/16384*e^5*g*b^7/c^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
-9/16*b/c*e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f-261/4096*e^4*g*b
^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+99/32768*e^7*g*b^8/c^6/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))+99/8192*e^5*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-33/4
48*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+11/112*e*g*b/c^2*x^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+45/64*b^3/c^2*e^2*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)*d^3*f+765/1024*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^4-315/512*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^3+677/1120/e*g*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-45/32
*b*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4*f-3/64*b^3/c^3*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^3*f-45/128*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*d^2*e^3*f-9/32*b^2/c^2*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)*d^2*f-45/64*b^2/c*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*f-27/25
6*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d+9/64*b^3/c^3*e^2*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f-9/16/e*g/c*x*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(5/2)*d^2+43/112*g/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2
)*b*d-9/8*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^7*b-15/32*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*d^3*b+9/128/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^4+27/1
28/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6+27/128/e*g*c^2/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))*d^8+189/64*b^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5*f+3/28*b/c^2*x*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(5/2)*e*f-9/512*b^5/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*x*f+45/512*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-9/2
048*b^7/c^5*e^7/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2))*f+63/256*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d^2+33/1024*e^3*g*b^4/c^4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)+315/128*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6+1125/4096*e^3*g*b^5/c^4*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2)*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^3\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(d + e x\right)^{3} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**3*(f + g*x), x)
```

3.2184 $\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=413

$$\frac{(2cd-be)^6(-9beg+4cdg+14cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2048c^{11/2}e^2}+\frac{(b+2cx)(2cd-be)^4\sqrt{d(cd-be)-be^2x-c}}{1024c^5e}$$

```
[Out] 1/384*(-b*e+2*c*d)^2*(-9*b*e*g+4*c*d*g+14*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(3/2)/c^4/e-1/120*(-b*e+2*c*d)*(-9*b*e*g+4*c*d*g+14*c*e*f)
*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^3/e^2-1/84*(-9*b*e*g+4*c*d*g+14*c
*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^2/e^2-1/7*g*(e*x+d)^
2*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2+1/2048*(-b*e+2*c*d)^6*(-9*b*
e*g+4*c*d*g+14*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(1/2))/c^(11/2)/e^2+1/1024*(-b*e+2*c*d)^4*(-9*b*e*g+4*c*d*g+14*c
*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^5/e
```

Rubi [A] time = 0.60, antiderivative size = 413, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {1638, 12, 670, 640, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+4cdg+14cef)}{1024c^5e}+\frac{(b+2cx)(2cd-be)^2\left(d(cd-be)-be\right.}{38}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] ((2*c*d - b*e)^4*(14*c*e*f + 4*c*d*g - 9*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(1024*c^5*e) + ((2*c*d - b*e)^2*(14*c*e*f + 4*c
*d*g - 9*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3
84*c^4*e) - ((2*c*d - b*e)*(14*c*e*f + 4*c*d*g - 9*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(120*c^3*e^2) - ((14*c*e*f + 4*c*d*g - 9*b*e*g)
*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(84*c^2*e^2) - (g*(
d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(7*c*e^2) + ((2*c*d
 - b*e)^6*(14*c*e*f + 4*c*d*g - 9*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*
Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(2048*c^(11/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2} - \int -\tfrac{1}{2}e^2(14ce$$

$$= -\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2} + (14cef+4cd$$

$$= -\frac{(14cef+4cdg-9beg)(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right.}{84c^2e^2}$$

$$= -\frac{(2cd-be)(14cef+4cdg-9beg)\left(d(cd-be)-be^2x-ce^2\right.}{120c^3e^2}$$

$$= \frac{(2cd-be)^2(14cef+4cdg-9beg)(b+2cx)\left(d(cd-be)-b\right.}{384c^4e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)-b}}{1024c^5e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)-b}}{1024c^5e}$$

$$= \frac{(2cd-be)^4(14cef+4cdg-9beg)(b+2cx)\sqrt{d(cd-be)-b}}{1024c^5e}$$

Mathematica [B] time = 6.30, size = 1329, normalized size = 3.22

$$2(cde+(cd-be)e)\left(-7cfe^2-\left(\frac{9}{2}e(cd-be)-\frac{5cde}{2}\right)g\right)(($$

$$-\frac{g(cd-be-cex)((d+ex)(c(d-ex)-be))^{3/2}(d+ex)^3}{7ce^2}-$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] -1/7*(g*(d + e*x)^3*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(3/2))/(c*e^2) - (2*(c*d*e + e*(c*d - b*e))*(-7*c*e^2*f - ((-5*c*d*e)/2 + (
9*e*(c*d - b*e))/2)*g)*(d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)
*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(5/2)*((3*(3/(10*(1
 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d -
b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d +
e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c
*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/4 + (63*(c*d*e + e*(c*d - b*e)
)^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d
- b*e)))^5*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
 + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^
4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*
e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)
^3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c
*d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*
e))/(c*d*e + e*(c*d - b*e)))^4) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c
]*e*Sqrt[d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e
*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c
*d*e + e*(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*
((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*
e)))]))))/(2048*c^5*e^10*(d + e*x)^5*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*
d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e
*(c*d - b*e)))))^2)))/(63*c*e^4*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^
2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))^(3/2)*(c*d - b*e - c*e*x)*Sqrt[(e*
(c*d - b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

fricas [B] time = 5.52, size = 1877, normalized size = 4.54

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [1/430080*(105*(14*(64*c^7*d^6*e - 192*b*c^6*d^5*e^2 + 240*b^2*c^5*d^4*e^3
- 160*b^3*c^4*d^3*e^4 + 60*b^4*c^3*d^2*e^5 - 12*b^5*c^2*d*e^6 + b^6*c*e^7)*
f + (256*c^7*d^7 - 1344*b*c^6*d^6*e + 2688*b^2*c^5*d^5*e^2 - 2800*b^3*c^4*d
^4*e^3 + 1680*b^4*c^3*d^3*e^4 - 588*b^5*c^2*d^2*e^5 + 112*b^6*c*d*e^6 - 9*b
^7*e^7)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e
 + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*s
qrt(-c)) - 4*(15360*c^7*e^6*g*x^6 + 1280*(14*c^7*e^6*f + (28*c^7*d*e^5 + 15
*b*c^6*e^6)*g)*x^5 + 128*(14*(24*c^7*d*e^5 + 13*b*c^6*e^6)*f - (24*c^7*d^2*
e^4 - 556*b*c^6*d*e^5 - 3*b^2*c^5*e^6)*g)*x^4 - 16*(14*(20*c^7*d^2*e^4 - 40
4*b*c^6*d*e^5 - 3*b^2*c^5*e^6)*f + (3920*c^7*d^3*e^3 - 5636*b*c^6*d^2*e^4 -
 216*b^2*c^5*d*e^5 + 27*b^3*c^4*e^6)*g)*x^3 - 8*(14*(768*c^7*d^3*e^3 - 1092
*b*c^6*d^2*e^4 - 60*b^2*c^5*d*e^5 + 7*b^3*c^4*e^6)*f + (4992*c^7*d^4*e^2 -
3600*b*c^6*d^3*e^3 - 1932*b^2*c^5*d^2*e^4 + 568*b^3*c^4*d*e^5 - 63*b^4*c^3*
e^6)*g)*x^2 + 14*(3072*c^7*d^5*e - 9840*b*c^6*d^4*e^2 + 10464*b^2*c^5*d^3*e
^3 - 4816*b^3*c^4*d^2*e^4 + 1120*b^4*c^3*d*e^5 - 105*b^5*c^2*e^6)*f + (2764
8*c^7*d^6 - 97728*b*c^6*d^5*e + 145776*b^2*c^5*d^4*e^2 - 113440*b^3*c^4*d^3
*e^3 + 47824*b^4*c^3*d^2*e^4 - 10500*b^5*c^2*d*e^5 + 945*b^6*c*e^6)*g - 2*(
14*(2160*c^7*d^4*e^2 - 1248*b*c^6*d^3*e^3 - 1248*b^2*c^5*d^2*e^4 + 336*b^3*
c^4*d*e^5 - 35*b^4*c^3*e^6)*f - (6720*c^7*d^5*e - 21648*b*c^6*d^4*e^2 + 244
80*b^2*c^5*d^3*e^3 - 12576*b^3*c^4*d^2*e^4 + 3164*b^4*c^3*d*e^5 - 315*b^5*c
^2*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2), -1/215
040*(105*(14*(64*c^7*d^6*e - 192*b*c^6*d^5*e^2 + 240*b^2*c^5*d^4*e^3 - 160*
b^3*c^4*d^3*e^4 + 60*b^4*c^3*d^2*e^5 - 12*b^5*c^2*d*e^6 + b^6*c*e^7)*f + (2
56*c^7*d^7 - 1344*b*c^6*d^6*e + 2688*b^2*c^5*d^5*e^2 - 2800*b^3*c^4*d^4*e^3
 + 1680*b^4*c^3*d^3*e^4 - 588*b^5*c^2*d^2*e^5 + 112*b^6*c*d*e^6 - 9*b^7*e^7
)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x
 + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(15360*c
^7*e^6*g*x^6 + 1280*(14*c^7*e^6*f + (28*c^7*d*e^5 + 15*b*c^6*e^6)*g)*x^5 +
128*(14*(24*c^7*d*e^5 + 13*b*c^6*e^6)*f - (24*c^7*d^2*e^4 - 556*b*c^6*d*e^5
 - 3*b^2*c^5*e^6)*g)*x^4 - 16*(14*(20*c^7*d^2*e^4 - 404*b*c^6*d*e^5 - 3*b^2
*c^5*e^6)*f + (3920*c^7*d^3*e^3 - 5636*b*c^6*d^2*e^4 - 216*b^2*c^5*d*e^5 +
27*b^3*c^4*e^6)*g)*x^3 - 8*(14*(768*c^7*d^3*e^3 - 1092*b*c^6*d^2*e^4 - 60*b
^2*c^5*d*e^5 + 7*b^3*c^4*e^6)*f + (4992*c^7*d^4*e^2 - 3600*b*c^6*d^3*e^3 -
1932*b^2*c^5*d^2*e^4 + 568*b^3*c^4*d*e^5 - 63*b^4*c^3*e^6)*g)*x^2 + 14*(307
2*c^7*d^5*e - 9840*b*c^6*d^4*e^2 + 10464*b^2*c^5*d^3*e^3 - 4816*b^3*c^4*d^2
*e^4 + 1120*b^4*c^3*d*e^5 - 105*b^5*c^2*e^6)*f + (27648*c^7*d^6 - 97728*b*c
^6*d^5*e + 145776*b^2*c^5*d^4*e^2 - 113440*b^3*c^4*d^3*e^3 + 47824*b^4*c^3*
d^2*e^4 - 10500*b^5*c^2*d*e^5 + 945*b^6*c*e^6)*g - 2*(14*(2160*c^7*d^4*e^2
- 1248*b*c^6*d^3*e^3 - 1248*b^2*c^5*d^2*e^4 + 336*b^3*c^4*d*e^5 - 35*b^4*c^
3*e^6)*f - (6720*c^7*d^5*e - 21648*b*c^6*d^4*e^2 + 24480*b^2*c^5*d^3*e^3 -
12576*b^3*c^4*d^2*e^4 + 3164*b^4*c^3*d*e^5 - 315*b^5*c^2*e^6)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6*e^2)]
```

giac [B] time = 0.47, size = 910, normalized size = 2.20

$$-\frac{1}{107520}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\,(2(4(2(8(10(12\,cgxe^4+\frac{(28\,c^7dge^{13}+14\,c^7fe^{14}+15\,bc^6ge^{14})e^{(-10)}}{c^6})x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] -1/107520*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*(12*c*
g*x*e^4 + (28*c^7*d*g*e^13 + 14*c^7*f*e^14 + 15*b*c^6*g*e^14)*e^(-10)/c^6)*
x - (24*c^7*d^2*g*e^12 - 336*c^7*d*f*e^13 - 556*b*c^6*d*g*e^13 - 182*b*c^6*
f*e^14 - 3*b^2*c^5*g*e^14)*e^(-10)/c^6)*x - (3920*c^7*d^3*g*e^11 + 280*c^7*
d^2*f*e^12 - 5636*b*c^6*d^2*g*e^12 - 5656*b*c^6*d*f*e^13 - 216*b^2*c^5*d*g*
e^13 - 42*b^2*c^5*f*e^14 + 27*b^3*c^4*g*e^14)*e^(-10)/c^6)*x - (4992*c^7*d^
4*g*e^10 + 10752*c^7*d^3*f*e^11 - 3600*b*c^6*d^3*g*e^11 - 15288*b*c^6*d^2*f
*e^12 - 1932*b^2*c^5*d^2*g*e^12 - 840*b^2*c^5*d*f*e^13 + 568*b^3*c^4*d*g*e^
13 + 98*b^3*c^4*f*e^14 - 63*b^4*c^3*g*e^14)*e^(-10)/c^6)*x + (6720*c^7*d^5*
g*e^9 - 30240*c^7*d^4*f*e^10 - 21648*b*c^6*d^4*g*e^10 + 17472*b*c^6*d^3*f*e
^11 + 24480*b^2*c^5*d^3*g*e^11 + 17472*b^2*c^5*d^2*f*e^12 - 12576*b^3*c^4*d
^2*g*e^12 - 4704*b^3*c^4*d*f*e^13 + 3164*b^4*c^3*d*g*e^13 + 490*b^4*c^3*f*e
^14 - 315*b^5*c^2*g*e^14)*e^(-10)/c^6)*x + (27648*c^7*d^6*g*e^8 + 43008*c^7
*d^5*f*e^9 - 97728*b*c^6*d^5*g*e^9 - 137760*b*c^6*d^4*f*e^10 + 145776*b^2*c
^5*d^4*g*e^10 + 146496*b^2*c^5*d^3*f*e^11 - 113440*b^3*c^4*d^3*g*e^11 - 674
24*b^3*c^4*d^2*f*e^12 + 47824*b^4*c^3*d^2*g*e^12 + 15680*b^4*c^3*d*f*e^13 -
 10500*b^5*c^2*d*g*e^13 - 1470*b^5*c^2*f*e^14 + 945*b^6*c*g*e^14)*e^(-10)/c
^6) + 1/2048*(256*c^7*d^7*g + 896*c^7*d^6*f*e - 1344*b*c^6*d^6*g*e - 2688*b
*c^6*d^5*f*e^2 + 2688*b^2*c^5*d^5*g*e^2 + 3360*b^2*c^5*d^4*f*e^3 - 2800*b^3
*c^4*d^4*g*e^3 - 2240*b^3*c^4*d^3*f*e^4 + 1680*b^4*c^3*d^3*g*e^4 + 840*b^4*
c^3*d^2*f*e^5 - 588*b^5*c^2*d^2*g*e^5 - 168*b^5*c^2*d*f*e^6 + 112*b^6*c*d*g
*e^6 + 14*b^6*c*f*e^7 - 9*b^7*g*e^7)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-
c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))
/c^6
```

maple [B]   time = 0.07, size = 2799, normalized size = 6.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -1/6*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c*f+7/60*b/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(5/2)*f+7/32*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^
4*f-21/256*b^5/c^3*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f+19/128*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*x*d+5/24*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*d+105/128*e^3*g*b^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-175/128*e^2*g*b^3/c/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2))*d^4-147/512*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2
*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+7/128*e^5*g*b^6/c^4/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d-31/64*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+7
/24*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f-3/40*g*b^2/c^3*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-1/7*g*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)/c-3/128*e^2*g*b^4/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)-9/1024*e^4
*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+105/256*b^4/c^2*e^4/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2))*d^2*f-35/32*b^3/c*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-7/32*b^3/c^2*e^3*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-21/16*e*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1
/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5*f-7/24*e/c*x*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f+21/32*b^2/c*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2)*x*d^2*e^2*f+3/4*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*x*d^3-7/64*b^4/c^3*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*
f+7/1024*b^6/c^4*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+7/256*b^4/c^3*e^4*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*f+105/64*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*e^2*f-7/8*e*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2)*x*b*d^3*f-1/3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)/c/e*d*g-21/32*g*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6-13/48*g*b/c*x*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d^2-3/64*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)+21/16*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^5+3/8*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*d^3+5/48*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)*d-9/35/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-2/5*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(5/2)/c/e*d*f-17/64*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*d^4+3/28*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-13/
96*g*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2-17/32*g*b*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4+7/16*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*x*d^4*f+7/16*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6*f+7/48/c*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*b*d^2*f+7/512*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+7/192*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^2*f+1/16/e*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^5*g+1/12/e*x*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(3/2)*d^3*g-31/128*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*d^2+19/256*e^3*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-9/
2048*e^6*g*b^7/c^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-9/512*e^4*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x+61/210/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d+
7/96*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^2*f+21/64*b^3/c^2*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*e^2*f+1/8/e*c*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*x*d^5*g-7/16*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*b^2*d^3*f+1/8/e*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7*g-7/48*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)*b^2*d*f+1/24/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3
*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^2\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(d + e x\right)^{2} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**2*(f + g*x), x)
```

3.2185 $\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=297

$$\frac{(2cd-be)^5(-7beg+2cdg+12cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{9/2}e^2}+\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-c}}{512c^4e}$$

```
[Out] 1/192*(-b*e+2*c*d)*(-7*b*e*g+2*c*d*g+12*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(3/2)/c^3/e+1/60*(7*b*e*g-12*c*(d*g+e*f)-10*c*e*g*x)*(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^2/e^2+1/1024*(-b*e+2*c*d)^5*(-7*b*e*g+2*c
*d*g+12*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x
^2)^(1/2))/c^(9/2)/e^2+1/512*(-b*e+2*c*d)^3*(-7*b*e*g+2*c*d*g+12*c*e*f)*(2*
c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^4/e
```

Rubi [A] time = 0.44, antiderivative size = 297, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.095$, Rules used = {779, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+2cdg+12cef)}{512c^4e}+\frac{(b+2cx)(2cd-be)\left(d(cd-be)-be^2\right.}{192}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] ((2*c*d - b*e)^3*(12*c*e*f + 2*c*d*g - 7*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(512*c^4*e) + ((2*c*d - b*e)*(12*c*e*f + 2*c*d*
g - 7*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*
c^3*e) + ((7*b*e*g - 12*c*(e*f + d*g) - 10*c*e*g*x)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(5/2))/(60*c^2*e^2) + ((2*c*d - b*e)^5*(12*c*e*f + 2*c*d*g -
 7*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2])])/(1024*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = \frac{(7beg-12c(ef+dg)-10cegx)\left(d(cd-be)-be^2x-ce^2x^2\right)}{60c^2e^2}$$

$$= \frac{(2cd-be)(12cef+2cdg-7beg)(b+2cx)\left(d(cd-be)-be^2\right.}{192c^3e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-be}}{512c^4e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-be}}{512c^4e}$$

$$= \frac{(2cd-be)^3(12cef+2cdg-7beg)(b+2cx)\sqrt{d(cd-be)-be}}{512c^4e}$$

Mathematica [A] time = 5.72, size = 504, normalized size = 1.70

$$\frac{(d+ex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{7\sqrt{e(2cd-be)}\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}\left(ce(dg+6ef)-\frac{7}{2}be^2g\right)\left(16c^4e^{12}(d+ex)^4\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,(11be\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] ((d + e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-7*e^2*g*(-(c*d) + b*e
 + c*e*x)^2 + (7*Sqrt[e*(2*c*d - b*e)]*((-7*b*e^2*g)/2 + c*e*(6*e*f + d*g))
*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*(16*c^4*e^12*Sqrt[e*(2*c*d -
 b*e)]*(-2*c*d + b*e)*(d + e*x)^4*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e
)]*(-14*c*d + 11*b*e + 8*c*e*x) - e^6*(2*c*d - b*e)^3*(15*c*e^6*Sqrt[e*(2*c
*d - b*e)]*(-2*c*d + b*e)^2*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)] - 10*c^2*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^2*Sqrt[(
-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 8*c^3*e^6*Sqrt[e*(2*c*d - b*e)]*(d
+ e*x)^3*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + 15*Sqrt[c]*e^(13/2)*
(-2*c*d + b*e)^3*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[
e*(2*c*d - b*e)]])))/(640*c^4*e^12*(d + e*x)^4*(-(c*d) + b*e + c*e*x)^2)))/
(42*c*e^4)
```

fricas [B] time = 2.11, size = 1473, normalized size = 4.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] [-1/30720*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 384*b*c
^5*d^5*e + 720*b^2*c^4*d^4*e^2 - 640*b^3*c^3*d^3*e^3 + 300*b^4*c^2*d^2*e^4
- 72*b^5*c*d*e^5 + 7*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x -
4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f
 + (12*c^6*d*e^4 + 13*b*c^5*e^5)*g)*x^4 + 16*(12*(10*c^6*d*e^4 + 11*b*c^5*e^
5)*f - (140*c^6*d^2*e^3 - 272*b*c^5*d*e^4 - 3*b^2*c^4*e^5)*g)*x^3 - 8*(12*(
32*c^6*d^2*e^3 - 62*b*c^5*d*e^4 - b^2*c^4*e^5)*f + (384*c^6*d^3*e^2 - 348*b
*c^5*d^2*e^3 - 48*b^2*c^4*d*e^4 + 7*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e
 - 456*b*c^5*d^3*e^2 + 428*b^2*c^4*d^2*e^3 - 130*b^3*c^3*d*e^4 + 15*b^4*c^2
*e^5)*f + (1536*c^6*d^5 - 4368*b*c^5*d^4*e + 5328*b^2*c^4*d^3*e^2 - 3256*b^
3*c^3*d^2*e^3 + 940*b^4*c^2*d*e^4 - 105*b^5*c*e^5)*g - 2*(12*(200*c^6*d^3*e
^2 - 172*b*c^5*d^2*e^3 - 38*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f - (240*c^6*d^4
*e - 816*b*c^5*d^3*e^2 + 792*b^2*c^4*d^2*e^3 - 276*b^3*c^3*d*e^4 + 35*b^4*c
^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2), -1/153
60*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 40*b^3*c
^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f + (64*c^6*d^6 - 384*b*c^5*d^5*
e + 720*b^2*c^4*d^4*e^2 - 640*b^3*c^3*d^3*e^3 + 300*b^4*c^2*d^2*e^4 - 72*b^
5*c*d*e^5 + 7*b^6*e^6)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b
*c*d*e)) + 2*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f + (12*c^6*d*e^4 + 13*b
*c^5*e^5)*g)*x^4 + 16*(12*(10*c^6*d*e^4 + 11*b*c^5*e^5)*f - (140*c^6*d^2*e^
3 - 272*b*c^5*d*e^4 - 3*b^2*c^4*e^5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 62*b*
c^5*d*e^4 - b^2*c^4*e^5)*f + (384*c^6*d^3*e^2 - 348*b*c^5*d^2*e^3 - 48*b^2*
c^4*d*e^4 + 7*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e - 456*b*c^5*d^3*e^2 +
 428*b^2*c^4*d^2*e^3 - 130*b^3*c^3*d*e^4 + 15*b^4*c^2*e^5)*f + (1536*c^6*d^
5 - 4368*b*c^5*d^4*e + 5328*b^2*c^4*d^3*e^2 - 3256*b^3*c^3*d^2*e^3 + 940*b^
4*c^2*d*e^4 - 105*b^5*c*e^5)*g - 2*(12*(200*c^6*d^3*e^2 - 172*b*c^5*d^2*e^3
 - 38*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f - (240*c^6*d^4*e - 816*b*c^5*d^3*e^2
 + 792*b^2*c^4*d^2*e^3 - 276*b^3*c^3*d*e^4 + 35*b^4*c^2*e^5)*g)*x)*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [B] time = 0.45, size = 708, normalized size = 2.38

$$-\frac{1}{7680}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\Bigg(2\Bigg(4\Bigg(2\Bigg(8\Bigg(10\,cgxe^3+\frac{\left(12\,c^6dge^{10}+12\,c^6fe^{11}+13\,bc^5ge^{11}\right)e^{(-8)}}{c^5}\Bigg)x-(140$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] -1/7680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(10*c*g*x*e^
3 + (12*c^6*d*g*e^10 + 12*c^6*f*e^11 + 13*b*c^5*g*e^11)*e^(-8)/c^5)*x - (14
0*c^6*d^2*g*e^9 - 120*c^6*d*f*e^10 - 272*b*c^5*d*g*e^10 - 132*b*c^5*f*e^11
- 3*b^2*c^4*g*e^11)*e^(-8)/c^5)*x - (384*c^6*d^3*g*e^8 + 384*c^6*d^2*f*e^9
- 348*b*c^5*d^2*g*e^9 - 744*b*c^5*d*f*e^10 - 48*b^2*c^4*d*g*e^10 - 12*b^2*c
^4*f*e^11 + 7*b^3*c^3*g*e^11)*e^(-8)/c^5)*x + (240*c^6*d^4*g*e^7 - 2400*c^6
*d^3*f*e^8 - 816*b*c^5*d^3*g*e^8 + 2064*b*c^5*d^2*f*e^9 + 792*b^2*c^4*d^2*g
*e^9 + 456*b^2*c^4*d*f*e^10 - 276*b^3*c^3*d*g*e^10 - 60*b^3*c^3*f*e^11 + 35
*b^4*c^2*g*e^11)*e^(-8)/c^5)*x + (1536*c^6*d^5*g*e^6 + 1536*c^6*d^4*f*e^7 -
 4368*b*c^5*d^4*g*e^7 - 5472*b*c^5*d^3*f*e^8 + 5328*b^2*c^4*d^3*g*e^8 + 513
6*b^2*c^4*d^2*f*e^9 - 3256*b^3*c^3*d^2*g*e^9 - 1560*b^3*c^3*d*f*e^10 + 940*
b^4*c^2*d*g*e^10 + 180*b^4*c^2*f*e^11 - 105*b^5*c*g*e^11)*e^(-8)/c^5) + 1/1
024*(64*c^6*d^6*g + 384*c^6*d^5*f*e - 384*b*c^5*d^5*g*e - 960*b*c^5*d^4*f*e
^2 + 720*b^2*c^4*d^4*g*e^2 + 960*b^2*c^4*d^3*f*e^3 - 640*b^3*c^3*d^3*g*e^3
- 480*b^3*c^3*d^2*f*e^4 + 300*b^4*c^2*d^2*g*e^4 + 120*b^4*c^2*d*f*e^5 - 72*
b^5*c*d*g*e^5 - 12*b^5*c*f*e^6 + 7*b^6*g*e^6)*sqrt(-c*e^2)*e^(-3)*log(abs(-
2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c
*e^2)*b))/c^5
```

maple [B] time = 0.07, size = 2117, normalized size = 7.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -1/6*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d-1/8*b/c*x*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*e*f-5/8*e^2*g*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2
)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3+7/256*e^3*g
*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+1/48/e*g/c*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*b*d^2+15/16*b^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f+9/64*b^3/c^2
*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-1/5*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(5/2)/c/e*f+1/4*d*f*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+3/16
*d^3*f*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b+1/16/e*g*c^2/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^
6-11/128*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+1/16/e*g*c*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4-5/16*g*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*x*b*d^3+1/24/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d
^2+1/32/e*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^4-5/32*g/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1/12*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*b^2*d+7/192*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
+1/8*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b+3/8*e*g*b^2/c*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+15/128*b^4/c^2*e^4/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-15/3
2*b^3/c*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2))*d^2*f-15/16*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*
(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*e*f+75/256*e^3*g*b^
4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2))*d^2+9/32*b^2/c*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*x*d*f-11/64*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d-9/128
*e^4*g*b^5/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2))*d+3/8*d^3*f*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*x+3/8*d^5*f*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-1/16*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(3/2)*e*f-3/128*b^4/c^3*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+7/
512*e^3*g*b^5/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+7/60/e*g*b/c^2*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-9/32*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(1/2)*d^2*e*f-3/8*g*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^5+7/1024*e^5*g*b^6/c^4/(c*e^2)^(
1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
))+45/64*e*g*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-3/64*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*x*f-9/16*b*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*e*f-3
/256*b^5/c^3*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+7/96*e*g*b^2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)+3/16*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-1
/6/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c-1/5*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)/c/e^2*d*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,\left(d+e\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
[Out] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)\left(f+gx\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)*(f + g*x), x)
```

3.2186 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{d+ex} \, dx$

Optimal. Leaf size=266

$$\frac{(2cd-be)^3(-3beg-2cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{5/2}e^2}+\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(}{64c^2e}$$

```
[Out] 1/24*(-3*b*e*g-2*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^
2-1/4*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2/(e*x+d)+1/128*(-b*e+2*
c*d)^3*(-3*b*e*g-2*c*d*g+8*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(5/2)/e^2+1/64*(-b*e+2*c*d)*(-3*b*e*g-2*c*d
*g+8*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e
```

Rubi [A] time = 0.33, antiderivative size = 266, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {794, 664, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg-2cdg+8cef)}{64c^2e}+\frac{(2cd-be)^3(-3beg-2cdg+8cef)\tan^{-1}\left(\right.}{128c^{5/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x),x]
```

```
[Out] ((2*c*d - b*e)*(8*c*e*f - 2*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c^2*e) + ((8*c*e*f - 2*c*d*g - 3*b*e*g)*(d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*c*e^2) - (g*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(5/2))/(4*c*e^2*(d + e*x)) + ((2*c*d - b*e)^3*(8*c*e*f -
2*c*d*g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(128*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4ce^2(d+ex)} - \frac{\left(ce^3f-\left(-cde^2+be^3\right)g+\frac{5}{2}\right.}{}$$

$$= \frac{(8cef-2cdg-3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24ce^2} - \frac{g\left(d(cd-\right.}{}$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-c}}{64c^2e}$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-c}}{64c^2e}$$

$$= \frac{(2cd-be)(8cef-2cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-c}}{64c^2e}$$

Mathematica [A] time = 2.57, size = 361, normalized size = 1.36

$$\frac{(d+ex)\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{\sqrt{e(2cd-be)}\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-3beg-2cdg+8cef)\left(2c^2e^8(d+ex)^2\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,(7be-1\right.}{16c^2e^7(d+}\right.}{12ce^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
,x]
```

```
[Out] ((d + e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-3*e^2*g*(-(c*d) + b*e +
 c*e*x)^2 + (Sqrt[e*(2*c*d - b*e)]*(8*c*e*f - 2*c*d*g - 3*b*e*g)*((-(c*d) +
 b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*(2*c^2*e^8*Sqrt[e*(2*c*d - b*e)]*(-2*c*
d + b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*(-10*c*d +
 7*b*e + 4*c*e*x) - 3*e^6*(2*c*d - b*e)^3*(c*e^2*Sqrt[e*(2*c*d - b*e)]*(d +
 e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + Sqrt[c]*e^(5/2)*(-2*c*d
 + b*e)*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d
- b*e)]])))/(16*c^2*e^7*(d + e*x)^2*(-(c*d) + b*e + c*e*x)^2)))/(12*c*e^4)
```

fricas [A] time = 0.75, size = 809, normalized size = 3.04

$$\left[-\frac{3\left(8\left(8c^4d^3e-12bc^3d^2e^2+6b^2c^2de^3-b^3ce^4\right)f-\left(16c^4d^4-24b^2c^2d^2e^2+16b^3cde^3-3b^4e^4\right)g\right)\sqrt{-c}\,\log\left(8\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/768*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4
)*f - (16*c^4*d^4 - 24*b^2*c^2*d^2*e^2 + 16*b^3*c*d*e^3 - 3*b^4*e^4)*g)*sqr
t(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4
*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(
48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (8*c^4*d*e^2 - 9*b*c^3*e^3)*g)*x^2 - 8*
(8*c^4*d^2*e - 2*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*f + (64*c^4*d^3 - 76*b*c^3*d^
2*e + 36*b^2*c^2*d*e^2 - 9*b^3*c*e^3)*g - 2*(8*(6*c^4*d*e^2 - 7*b*c^3*e^3)*
f + (12*c^4*d^2*e - 4*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/384*(3*(8*(8*c^4*d^3*e - 12*b*c^3*d
^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f - (16*c^4*d^4 - 24*b^2*c^2*d^2*e^2
+ 16*b^3*c*d*e^3 - 3*b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2
*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*
d^2 + b*c*d*e)) + 2*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (8*c^4*d*e^2 - 9*b
*c^3*e^3)*g)*x^2 - 8*(8*c^4*d^2*e - 2*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*f + (64*
c^4*d^3 - 76*b*c^3*d^2*e + 36*b^2*c^2*d*e^2 - 9*b^3*c*e^3)*g - 2*(8*(6*c^4*
d*e^2 - 7*b*c^3*e^3)*f + (12*c^4*d^2*e - 4*b*c^3*d*e^2 - 3*b^2*c^2*e^3)*g)*
x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 1817, normalized size = 6.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x)
```

```
[Out] 3/4*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^
2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g-1/2/e*c*d^2*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-1/2/e*c^2*d^4/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-1/16*e^3*b^3/c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2))*f-3/8*e*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d
/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2))*d^2*g+3/8*e^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+
3/8*g/e*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2))*d^4-1/3/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*d*g+1/4*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+
1/4*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x-1/8*e*b^2/c*(-(x+d/e)^2*c*
e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/2*c*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*f+1/16*e^2*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*
(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2))*d*g-3/4*e*b*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*
```

```
f+3/64*g*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^3-1/4*e*b*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+1/8*b^2/c*(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g+3/16*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*b*d^2-1/4/e*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*
g+1/2*c^2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+1/8*g/e/c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b-3/8*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)*x*b*d+1/4*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g
-3/16*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d-3/16*g*e^2/c/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2))*b^3*d+1/3/e*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-3/4*g*
c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2))*b*d^3+3/128*g*e^3/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1
/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^4+9/16*g*e/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^
2*d^2+3/32*g*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b^2+3/8*g/e*c*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(f + g x\right)}{d + e x}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x), x)
```

3.2187 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=278

$$\frac{(2cd-be)^2(-beg-4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^2(2cd-be)}+\Big(d(cd$$

```
[Out] 1/3*(-b*e*g-4*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b
*e+2*c*d)+2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c
*d)/(e*x+d)^2+1/16*(-b*e+2*c*d)^2*(-b*e*g-4*c*d*g+6*c*e*f)*arctan(1/2*e*(2*
c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(3/2)/e^2+1/8*(-b*
e*g-4*c*d*g+6*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c/e
```

Rubi [A] time = 0.42, antiderivative size = 278, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {792, 664, 612, 621, 204}

$$\frac{(2cd-be)^2(-beg-4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^2(2cd-be)}+\Big(d(cd$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^2,x]
```

```
[Out] ((6*c*e*f - 4*c*d*g - b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(8*c*e) + ((6*c*e*f - 4*c*d*g - b*e*g)*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x)^2) + ((2*c*d - b*e)
^2*(6*c*e*f - 4*c*d*g - b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(16*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^2}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^2} + \frac{(6cef-4cdg-beg)}{e(2}$$

$$= \frac{(6cef-4cdg-beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)} + \frac{2(ef-dg)}{e}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6ce}{}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6ce}{}$$

$$= \frac{(6cef-4cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8ce} + \frac{(6ce}{}$$

Mathematica [**A**] time = 0.87, size = 228, normalized size = 0.82

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\sqrt{c}\,\sqrt{e}\,\left(3b^2e^2g+2bce(-14dg+15ef+7egx)+4c^2\left(10d^2g-6de(2f+gx)+e^2x(3\right.\right.\right.}{24c^{3/2}e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^2,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(Sqrt[c]*Sqrt[e]*(3*b^2*e^2*g + 2
*b*c*e*(15*e*f - 14*d*g + 7*e*g*x) + 4*c^2*(10*d^2*g - 6*d*e*(2*f + g*x) +
e^2*x*(3*f + 2*g*x)))) - (3*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*(6*c*e*f -
 4*c*d*g - b*e*g)*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*
e)]])/(Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(24*c^(
3/2)*e^(5/2))
```

fricas [**A**] time = 0.93, size = 567, normalized size = 2.04

$$\left[\frac{3\left(6\left(4c^3d^2e-4bc^2de^2+b^2ce^3\right)f-\left(16c^3d^3-12bc^2d^2e+b^3e^3\right)g\right)\sqrt{-c}\,\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bc\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [1/96*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f - (16*c^3*d^3 - 12*
b*c^2*d^2*e + b^3*e^3)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*
d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2
*c*e*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^2*g*x^2 - 6*(8*c^3*d*e - 5*b*c^2*e^2)*
f + (40*c^3*d^2 - 28*b*c^2*d*e + 3*b^2*c*e^2)*g + 2*(6*c^3*e^2*f - (12*c^3*
d*e - 7*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e
^2), -1/48*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f - (16*c^3*d^3
- 12*b*c^2*d^2*e + b^3*e^3)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^
2 + b*c*d*e)) + 2*(8*c^3*e^2*g*x^2 - 6*(8*c^3*d*e - 5*b*c^2*e^2)*f + (40*c^
3*d^2 - 28*b*c^2*d*e + 3*b^2*c*e^2)*g + 2*(6*c^3*e^2*f - (12*c^3*d*e - 7*b*
c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 2174, normalized size = 7.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x)
```

```
[Out] -3*c^3/(-b*e^2+2*c*d*e)*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(
-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g
-3/8*e^4/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2
*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
*f-3*c^2/(-b*e^2+2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2)*x*g+1/2*g/e*c*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+1/
2*g/e*c^2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-3/4*g*b*c/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2-3/2*c/(-b*e^2+2*c*d*e)*d^2*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-2/e*c/(-b*e^2+2*c*d*e)*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-2/e^3/(-b*e^2+2*c*d*e)
/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-1/16*g*e^2
*b^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2
)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+3/8*g*e*b^2/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d+1/4*g/e*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2)*b-9/2*e^2*c^2/(-b*e^2+2*c*d*e)*b/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-9/4*e^2*c/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/
2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+9/4*e^3*c/(-b*e^2+2*c*d*e)*b^2/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+9/2*e*c^2/(-b*e^2+2*c*d*e)*b
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g+3/2*e*c/(-b*e^2+2*c*d*
e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g-1/4*g*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-1/8*g*b^2/c*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+2*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b
*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+1/3*g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(3/2)+3/4*e/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*d*g-3/4*e^2/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2)*f+2/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*
e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-3/2*e^2*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/8*e^3/(-b*e^2+2*c*d*e)*b^3/
(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g+3*e*c^2/(-b*e^2+2*c*d*e)*
d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/2*e*c/(-b*e^2+2*c
*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+3*e*c^3/(-b*e
^2+2*c*d*e)*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d
*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^2,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^2, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**2,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**2, x)
```

3.2188 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=271

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^3(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(beg-6cdg+4cef)}{2e^2(d+ex)(2cd-be)}-\frac{3\sqrt{d(cd-be)-be}}{}$$

```
[Out] -1/2*(b*e*g-6*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b
*e+2*c*d)/(e*x+d)-2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(
-b*e+2*c*d)/(e*x+d)^3-3/8*(-b*e+2*c*d)*(b*e*g-6*c*d*g+4*c*e*f)*arctan(1/2*e
*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^2/c^(1/2)-3/4*
(b*e*g-6*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2
```

Rubi [A] time = 0.47, antiderivative size = 271, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {792, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^3(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(beg-6cdg+4cef)}{2e^2(d+ex)(2cd-be)}-\frac{3\sqrt{d(cd-be)-be}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^3,x]
```

```
[Out] (-3*(4*c*e*f - 6*c*d*g + b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(4*e^2) - ((4*c*e*f - 6*c*d*g + b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
)^(3/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)) - (2*(e*f - d*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x)^3) - (3*(2*c*d - b
*e)*(4*c*e*f - 6*c*d*g + b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^3}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^3} -$$

$$= -\frac{(4cef-6cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(2cd-be)(d+ex)} -$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} -$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} -$$

$$= -\frac{3(4cef-6cdg+beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} -$$

Mathematica [A]   time = 0.85, size = 208, normalized size = 0.77

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{\sqrt{e}\left(be(13dg-8ef+5egx)+c\left(-28d^2g+10de(2f-gx)+2e^2x(2f+gx)\right)\right)}{d+ex}-\frac{3\sqrt{e(2cd-be)}\,(beg-6cdg+4cef)\sin^{-1}\left(\right.}{\sqrt{c}\,\sqrt{d+ex}\,\sqrt{\frac{be-cd+cex}{be-2cd}}}\right.}{4e^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^3,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((Sqrt[e]*(b*e*(-8*e*f + 13*d*g +
 5*e*g*x) + c*(-28*d^2*g + 10*d*e*(2*f - g*x) + 2*e^2*x*(2*f + g*x))))/(d +
 e*x)) - (3*Sqrt[e*(2*c*d - b*e)]*(4*c*e*f - 6*c*d*g + b*e*g)*ArcSin[(Sqrt[
c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[c]*Sqrt[d + e*x]*Sq
rt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(4*e^(5/2))
```

fricas [A]   time = 1.86, size = 635, normalized size = 2.34

$$\left[\frac{3\left(4\left(2c^2d^2e-bcde^2\right)f-\left(12c^2d^3-8bcd^2e+b^2de^2\right)g+\left(4\left(2c^2de^2-bce^3\right)f-\left(12c^2d^2e-8bcde^2+b^2e^3\right)g\right)x\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="fricas")
```

```
[Out] [1/16*(3*(4*(2*c^2*d^2*e - b*c*d*e^2)*f - (12*c^2*d^3 - 8*b*c*d^2*e + b^2*d
*e^2)*g + (4*(2*c^2*d*e^2 - b*c*e^3)*f - (12*c^2*d^2*e - 8*b*c*d*e^2 + b^2*
e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e
```

```
 + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*s
qrt(-c)) - 4*(2*c^2*e^2*g*x^2 + 4*(5*c^2*d*e - 2*b*c*e^2)*f - (28*c^2*d^2 -
 13*b*c*d*e)*g + (4*c^2*e^2*f - 5*(2*c^2*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x + c*d*e^2), 1/8*(3*(4*(2*c^2*d^2*e
- b*c*d*e^2)*f - (12*c^2*d^3 - 8*b*c*d^2*e + b^2*d*e^2)*g + (4*(2*c^2*d*e^2
 - b*c*e^3)*f - (12*c^2*d^2*e - 8*b*c*d*e^2 + b^2*e^3)*g)*x)*sqrt(c)*arctan
(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^
2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(2*c^2*e^2*g*x^2 + 4*(5*c^2
*d*e - 2*b*c*e^2)*f - (28*c^2*d^2 - 13*b*c*d*e)*g + (4*c^2*e^2*f - 5*(2*c^2
*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x
+ c*d*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(-4
*exp(1)^3*c^2*g*1/16/exp(1)^4/c*x+(-8*exp(1)^3*c^2*f-10*exp(1)^3*c*g*b+24*e
xp(1)^2*c^2*g*d)*1/16/exp(1)^4/c)*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))+2*((3*sqrt(-c*exp(2))*b^2*g*exp(1)^2-24*c*sqrt(-c*exp(2))*b*g*exp(1)
*d+12*c*sqrt(-c*exp(2))*b*exp(1)^2*f+36*c^2*sqrt(-c*exp(2))*g*d^2-24*c^2*sq
rt(-c*exp(2))*exp(1)*d*f)/16/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(12*ex
p(2)*b^2*g*exp(1)^4*d-15*exp(2)^2*b^2*g*exp(1)^2*d+3*exp(2)^2*b^2*exp(1)^3*
f-48*c*exp(2)*b*g*exp(1)^3*d^2+60*c*exp(2)^2*b*g*exp(1)*d^2+12*c*exp(2)*b*e
xp(1)^4*d*f-24*c*exp(2)^2*b*exp(1)^2*d*f+36*c^2*exp(2)*g*exp(1)^2*d^3-48*c^
2*exp(2)^2*g*d^3-12*c^2*exp(2)*exp(1)^3*d^2*f+24*c^2*exp(2)^2*exp(1)*d^2*f)
/4/exp(1)^5/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(
2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)
-b*d*exp(1)*exp(2)))-(4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^5*d-9*exp(2)^2*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^3*d+5*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2
*exp(1)^4*f-16*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^3*b*g*exp(1)^4*d^2+36*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^2*d^2+4*c*exp(2)*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1
)^5*d*f-24*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*b*exp(1)^3*d*f+12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^3*d^3-32*c^2*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)
*d^3-4*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^3*exp(1)^4*d^2*f+24*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*d^2*f-8*sqrt(-c*exp(2))*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*ex
p(1)^6*d^2+20*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^4*d^2+3*exp(2)^2*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
2*g*exp(1)^2*d^2-16*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^5*d*f+exp(2)^2*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*
b^2*exp(1)^3*d*f+16*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^5*d^3-32*c*exp(2)*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*
g*exp(1)^3*d^3-44*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)*d^3+36*c*exp(2)*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b*exp(1)^4*d^2*f+24*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^2*d^2*f-8*c^2*sqrt(-c
*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*exp(1)^4*d^4+12*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^4+56*c^2*exp(2)^2*
sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^2*g*d^4-20*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^3*d^3*f-40*c^2*exp(2)^2*sq
rt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^2*exp(1)*d^3*f+4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^6*d^2-11*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^4*d^2+7*exp(2)
^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*
g*exp(1)^2*d^2+3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^3*exp(1)^5*d*f-3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^3*d*f-28*c*exp(2)*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^
5*d^3+91*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)*b^2*g*exp(1)^3*d^3-48*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)*d^3-4*c*exp(2)*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^6*d^
2*f-39*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)*b^2*exp(1)^4*d^2*f+28*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^2*d^2*f+44*c^2*exp(2)*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^4
*d^4-160*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)*b*g*exp(1)^2*d^4+56*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*d^4+8*c^2*exp(2)*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^5*d^3*f+92*
c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b*exp(1)^3*d^3*f-40*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)*d^3*f-20*c^3*exp(2)*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^3*d^5+80*c^3
*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*g*exp(1)*d^5-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)*exp(1)^4*d^4*f-56*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^2*d^4*f-8*sqrt(-c*exp(
2))*b^3*g*exp(1)^7*d^3+28*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^5*d^3-29*exp(
2)^2*sqrt(-c*exp(2))*b^3*g*exp(1)^3*d^3+9*exp(2)^3*sqrt(-c*exp(2))*b^3*g*ex
p(1)*d^3-8*exp(2)*sqrt(-c*exp(2))*b^3*exp(1)^6*d^2*f+13*exp(2)^2*sqrt(-c*ex
p(2))*b^3*exp(1)^4*d^2*f-5*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^2*d^2*f+24*c
*sqrt(-c*exp(2))*b^2*g*exp(1)^6*d^4-84*c*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1
)^4*d^4+69*c*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d^4-14*c*exp(2)^3*sqrt
(-c*exp(2))*b^2*g*d^4+36*c*exp(2)*sqrt(-c*exp(2))*b^2*exp(1)^5*d^3*f-41*c*e
xp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^3*d^3*f+10*c*exp(2)^3*sqrt(-c*exp(2))*b^
2*exp(1)*d^3*f-24*c^2*sqrt(-c*exp(2))*b*g*exp(1)^5*d^5+84*c^2*exp(2)*sqrt(-
c*exp(2))*b*g*exp(1)^3*d^5-40*c^2*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)*d^5-4
8*c^2*exp(2)*sqrt(-c*exp(2))*b*exp(1)^4*d^4*f+28*c^2*exp(2)^2*sqrt(-c*exp(2
))*b*exp(1)^2*d^4*f+8*c^3*sqrt(-c*exp(2))*g*exp(1)^4*d^6-28*c^3*exp(2)*sqrt
(-c*exp(2))*g*exp(1)^2*d^6+20*c^3*exp(2)*sqrt(-c*exp(2))*exp(1)^3*d^5*f)/8/
exp(1)^5/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^2)
```

maple [B] time = 0.07, size = 2535, normalized size = 9.35

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x)
```

```
[Out] -9*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*d*f-18*e^2*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2))*d^3*g-6*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2)*x*d*g+18*e^3*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)
*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-3/2*e^4*c/(-b*e^2+2*c*d*e)^2*b^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g+9*e^3*c^2/(-b*e^2+2*c*d*e)^2
*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g-9/2*g*e*c^2/(-b*e^
2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)
/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+9/4*g*e^2*c/
(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+
2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d+3*g*c^
3/(-b*e^2+2*c*d*e)*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^
2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+3*g*c^
2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+3/
2*g*c/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*
b-3/8*g*e^3/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))+2/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(5/2)*d*g-8/e*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(5/2)*f+3*e^3*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+2*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+2*g/e*c/(-b*e^2+2*c*d*e)*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-3/4*g*e/(-b*e^2+2*c*d*e)*b^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)-2/e^3/(-b*e^2+2*c*d*e)/(x
+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f+8*c^2/(-b*e^2+2
*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-8*e*c^2/(-b
*e^2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+6*e*c^2
/(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b
*g-6*e^2*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2)*b*f+12*e*c^4/(-b*e^2+2*c*d*e)^2*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2))*g-12*e^2*c^4/(-b*e^2+2*c*d*e)^2*d^3/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2))*f+12*e*c^3/(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-3/2*g*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-12*e^2*c^3/(-b*e^2+2*c*d*e)^2*d*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+8/e^2*c/(-b*e^2+2*c*d*
e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g+6*e^3*
c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*
x*f-3*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2)*d*g+3/2*e^5*c/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e
)*(x+d/e))^(1/2))*f
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^3,x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^3, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**3,x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**3, x)
```

3.2189 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=276

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^4(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(3beg-8cdg+2cef)}{3e^2(d+ex)^2(2cd-be)}+\frac{c\sqrt{d(cd-be)-}}{}$$

```
[Out] 2/3*(3*b*e*g-8*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-
b*e+2*c*d)/(e*x+d)^2-2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/
e^2/(-b*e+2*c*d)/(e*x+d)^4+1/2*(3*b*e*g-8*c*d*g+2*c*e*f)*arctan(1/2*e*(2*c*
x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))*c^(1/2)/e^2+c*(3*b*e*g
-8*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.45, antiderivative size = 276, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {792, 662, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^4(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(3beg-8cdg+2cef)}{3e^2(d+ex)^2(2cd-be)}+\frac{c\sqrt{d(cd-be)-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^4,x]
```

```
[Out] (c*(2*c*e*f - 8*c*d*g + 3*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(e^2*(2*c*d - b*e)) + (2*(2*c*e*f - 8*c*d*g + 3*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) - (2*(e*f - d*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c*d - b*e)*(d + e*
x)^4) + (Sqrt[c]*(2*c*e*f - 8*c*d*g + 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sq
rt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(2*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^4}\,dx &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^4} - \frac{(2cef-8cdg+3b}{3}\\ &= \frac{2(2cef-8cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^2} - \frac{2(ef-}{}\\ &= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8}{}\\ &= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8}{}\\ &= \frac{c(2cef-8cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} + \frac{2(2cef-8}{}\end{aligned}$$

Mathematica [**C**] time = 0.20, size = 150, normalized size = 0.54

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{e(d+ex)(3beg-8cdg+2cef)\,{}_2F_1\left(-\frac{3}{2},-\frac{1}{2};\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+\frac{e(ef-dg)(be-cd+cex)^2}{be-2cd}\right)}{3e^3(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^4,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*((e*(e*f - d*g)*(-(c*d) + b*e + c
*e*x)^2)/(-2*c*d + b*e) + (e*(2*c*e*f - 8*c*d*g + 3*b*e*g)*(d + e*x)*Hyperg
eometric2F1[-3/2, -1/2, 1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)]))/(3*e^3*(d + e*x)^2)
```

fricas [**A**] time = 3.22, size = 593, normalized size = 2.15

$$\left[\frac{3\left(2\,cd^2ef+\left(2\,ce^3f-\left(8\,cde^2-3\,be^3\right)g\right)x^2-\left(8\,cd^3-3\,bd^2e\right)g+2\left(2\,cde^2f-\left(8\,cd^2e-3\,bde^2\right)g\right)x\right)\sqrt{-c}\,\log\left(\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] [1/12*(3*(2*c*d^2*e*f + (2*c*e^3*f - (8*c*d*e^2 - 3*b*e^3)*g)*x^2 - (8*c*d^
3 - 3*b*d^2*e)*g + 2*(2*c*d*e^2*f - (8*c*d^2*e - 3*b*d*e^2)*g)*x)*sqrt(-c)*
log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(3*c*e^
2*g*x^2 - 2*(2*c*d*e + b*e^2)*f + (19*c*d^2 - 4*b*d*e)*g - 2*(4*c*e^2*f - (
13*c*d*e - 3*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(e^4*
x^2 + 2*d*e^3*x + d^2*e^2), -1/6*(3*(2*c*d^2*e*f + (2*c*e^3*f - (8*c*d*e^2
- 3*b*e^3)*g)*x^2 - (8*c*d^3 - 3*b*d^2*e)*g + 2*(2*c*d*e^2*f - (8*c*d^2*e -
 3*b*d*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e))
 + 2*(3*c*e^2*g*x^2 - 2*(2*c*d*e + b*e^2)*f + (19*c*d^2 - 4*b*d*e)*g - 2*(4
*c*e^2*f - (13*c*d*e - 3*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: -4*ex
p(1)*c*g*1/4/exp(1)^3*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2*((3
*c*sqrt(-c*exp(2))*b*g*exp(1)-8*c^2*sqrt(-c*exp(2))*g*d+2*c^2*sqrt(-c*exp(2
))*exp(1)*f)/4/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(12*exp(2)^2*b^3*g*e
xp(1)^5*d-10*exp(2)^3*b^3*g*exp(1)^3*d-2*exp(2)^3*b^3*exp(1)^4*f+48*c*exp(2
)*b^2*g*exp(1)^6*d^2-180*c*exp(2)^2*b^2*g*exp(1)^4*d^2+120*c*exp(2)^3*b^2*g
*exp(1)^2*d^2+24*c*exp(2)^2*b^2*exp(1)^5*d*f-12*c*exp(2)^3*b^2*exp(1)^3*d*f
-96*c^2*exp(2)*b*g*exp(1)^5*d^3+360*c^2*exp(2)^2*b*g*exp(1)^3*d^3-240*c^2*e
xp(2)^3*b*g*exp(1)*d^3-72*c^2*exp(2)^2*b*exp(1)^4*d^2*f+48*c^2*exp(2)^3*b*e
xp(1)^2*d^2*f+48*c^3*exp(2)*g*exp(1)^4*d^4-192*c^3*exp(2)^2*g*exp(1)^2*d^4+
128*c^3*exp(2)^3*g*d^4+48*c^3*exp(2)^2*exp(1)^3*d^3*f-32*c^3*exp(2)^3*exp(1
)*d^3*f)/32/(b*exp(1)^8*d-exp(2)*b*exp(1)^6*d-c*exp(1)^7*d^2+c*exp(2)*exp(1
)^5*d^2)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))*a
tan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*
exp(1)*exp(2)))+(503316480*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^7*d-553648128*exp(2)^3*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^
5*d+50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^5*b^3*exp(1)^6*f+402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^8*d^2-4328521728
*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^5*b^2*g*exp(1)^6*d^2+4227858432*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^4*d^2+1006632960*c*
exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^5*b^2*exp(1)^7*d*f-1308622848*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*exp(1)^5*d*f-805306368*c^2*exp(2)
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*
exp(1)^7*d^3+8657043456*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^5*d^3-8455716864*c^2*exp(2)^3*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp
(1)^3*d^3-3019898880*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^6*d^2*f+3623878656*c^2*exp(2)^3*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^4
```

```
*d^2*f+402653184*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^5*g*exp(1)^6*d^4-4831838208*c^3*exp(2)^2*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^4*d^4+483
1838208*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^5*g*exp(1)^2*d^4+2013265920*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*exp(1)^5*d^3*f-2415919104
*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^5*exp(1)^3*d^3*f-1610612736*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^8*d^2+150
9949440*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^6*d^2+352321536*exp(2)^3*sqrt(-c*e
xp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
4*b^3*g*exp(1)^4*d^2-805306368*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^7*d*f+5536481
28*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^5*d*f+6039797760*c*exp(2)*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*
g*exp(1)^7*d^3+1509949440*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^5*d^3-90596966
40*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^3*d^3-1610612736*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*
b^2*exp(1)^8*d^2*f+2214592512*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^6*d^2*f+9059
69664*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^4*d^2*f-7247757312*c^2*exp(2)*sqrt(-
c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^4*b*g*exp(1)^6*d^4-14294188032*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^4*d^4+
24561844224*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^2*d^4+3221225472*c^2*exp(2)*
sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^4*b*exp(1)^7*d^3*f+2214592512*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^5*d
^3*f-8455716864*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^3*d^3*f+2818572288*c^3*exp
(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-
c*exp(2))*x)^4*g*exp(1)^5*d^5+11274289152*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)^
3*d^5-16106127360*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)*d^5-1610612736*c^3*exp(2
)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^4*exp(1)^6*d^4*f-3623878656*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^4*d^4
*f+7247757312*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^2*d^4*f+805306368*exp(2)^2*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*ex
p(1)^8*d^2-1476395008*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^6*d^2+671088640*exp(2)^4*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^4*d
^2-134217728*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^3*b^4*exp(1)^7*d*f+134217728*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*exp(1)^5*d*f-1127428915
2*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^3*b^3*g*exp(1)^7*d^3+19797114880*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^5*d^3-8019509248*
c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^3*b^3*g*exp(1)^3*d^3-2281701376*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^6*d^2*f+1778384896*c*e
```

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xp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*b^3*exp(1)^4*d^2*f+38654705664*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^6*d^4-55767465984*c^
2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^3*b^2*g*exp(1)^4*d^4+14092861440*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^2*d^4-6442450944*
c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^3*b^2*exp(1)^7*d^3*f+16508780544*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^5*d^3*f-704643072
0*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^3*b^2*exp(1)^3*d^3*f-46707769344*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^5*d^5+460366807
04*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*b*g*exp(1)^3*d^5+6710886400*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)*d^5+12884901888*c
^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)^3*b*exp(1)^6*d^4*f-18656264192*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^4*d^4*f-268435456*c^3*
exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^3*b*exp(1)^2*d^4*f+18522046464*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*d^6-8589934592*c^4*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
g*exp(1)^2*d^6-13958643712*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6-6442450944*c^4*exp(2)^2*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^5*d^5*f+
4563402752*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^3*exp(1)^3*d^5*f+5905580032*c^4*exp(2)^4*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)*d^5*f-241591910
4*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*b^4*g*exp(1)^9*d^3+4831838208*exp(2)^2*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g
*exp(1)^7*d^3-2818572288*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^5*d^3+402653184*e
xp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^2*b^4*g*exp(1)^3*d^3+402653184*exp(2)^3*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp
(1)^6*d^2*f-402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp(1)^4*d^2*f+13690208256*c*
exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*b^3*g*exp(1)^8*d^4-16911433728*c*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*
g*exp(1)^6*d^4-4227858432*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^4*d^4+69457674
24*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^2*d^4-1610612736*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*
b^3*exp(1)^9*d^3*f+4831838208*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^7*d^3*f-2818
572288*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^5*d^3*f+100663296*c*exp(2)^4*sqrt(-
c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^2*b^3*exp(1)^3*d^3*f-26575110144*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^7*d^
5+4026531840*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^5*d^5+53351546880*c^2*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^2*b^2*g*exp(1)^3*d^5-27783069696*c^2*exp(2)^4*sqrt(-c*exp(2)
)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2
*g*exp(1)*d^5+4831838208*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^8*d^4*f-483183820
8*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^6*d^4*f-11676942336*c^2*exp(2)^3*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*b^2*exp(1)^4*d^4*f+8657043456*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^2*d^
4*f+21743271936*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^6*d^6+23353884672*c^3*exp(
2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^2*b*g*exp(1)^4*d^6-72074919936*c^3*exp(2)^3*sqrt(-c*exp(2))*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*ex
p(1)^2*d^6+20937965568*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*d^6-4831838208*c^3*exp(2
)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)^2*b*exp(1)^7*d^5*f-4831838208*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^5
*d^5*f+24561844224*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^3*d^5*f-8858370048*c^3*
exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*b*exp(1)*d^5*f-6442450944*c^4*exp(2)*sqrt(-c*exp(2))*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1
)^5*d^7-15300820992*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*d^7+25769803776*c^4*
exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^2*g*exp(1)*d^7+1610612736*c^4*exp(2)*sqrt(-c*exp(2))*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^6*
d^6*f+4831838208*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^4*d^6*f-10468982784*c^4*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^2*exp(1)^2*d^6*f+301989888*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^9*d^3-855638016*ex
p(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*
b^5*g*exp(1)^7*d^3+805306368*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^5*d^3-251658240*exp(2)^5*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^
3*d^3-50331648*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*b^5*exp(1)^8*d^2*f+100663296*exp(2)^4*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^6*d^2*f-50331648
*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*b^5*exp(1)^4*d^2*f-402653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^10*d^4-5939134464*c*exp(2)^2
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*
exp(1)^8*d^4+17414750208*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^6*d^4-15804137472*c*exp(2)^4*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1
)^4*d^4+4731174912*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^2*d^4+603979776*c*exp(2)^2*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^9*d^3*f-
1409286144*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)*b^4*exp(1)^7*d^3*f+1409286144*c*exp(2)^4*(sqrt(-b*d*exp(1)-b
*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^5*d^3*f-6039797
76*c*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b^4*exp(1)^3*d^3*f+1610612736*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^9*d^5+29695672320*c^2
*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*b^3*g*exp(1)^7*d^5-76554436608*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)
+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^5*d^5+59693334528*c^2*
exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b^3*g*exp(1)^3*d^5-14696841216*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)*d^5-6241124352*c^2*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
3*exp(1)^8*d^4*f+17465081856*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^6*d^4*f-15804137472*c^2*exp(2
)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3
*exp(1)^4*d^4*f+4831838208*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^2*d^4*f-2415919104*c^3*exp(2)*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*ex
p(1)^8*d^6-56472109056*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^6*d^6+120393302016*c^3*exp(2)^3*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*ex
p(1)^4*d^6-70464307200*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^2*d^6+10468982784*c^3*exp(2)^5*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*d^6
+15099494400*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^2*exp(1)^7*d^5*f-36943429632*c^3*exp(2)^3*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^5*d^5*f+
24763170816*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)*b^2*exp(1)^3*d^5*f-4429185024*c^3*exp(2)^5*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)*d^5*f+1610
612736*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*
exp(2))*x)*b*g*exp(1)^7*d^7+46103789568*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^5*d^7-76504104960*
c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b*g*exp(1)^3*d^7+25769803776*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)*d^7-13891534848*c^4*exp
(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b
*exp(1)^6*d^6*f+27380416512*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^4*d^6*f-10468982784*c^4*exp(2)^4
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(
1)^2*d^6*f-402653184*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)*g*exp(1)^6*d^8-13690208256*c^5*exp(2)^2*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*d^8+16
106127360*c^5*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)*g*exp(1)^2*d^8+4429185024*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*d^7*f-6442450944*c
^5*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*exp(1)^3*d^7*f-805306368*exp(2)*sqrt(-c*exp(2))*b^5*g*exp(1)^10*d^4+29
19235584*exp(2)^2*sqrt(-c*exp(2))*b^5*g*exp(1)^8*d^4-3976200192*exp(2)^3*sq
rt(-c*exp(2))*b^5*g*exp(1)^6*d^4+2415919104*exp(2)^4*sqrt(-c*exp(2))*b^5*g*
exp(1)^4*d^4-553648128*exp(2)^5*sqrt(-c*exp(2))*b^5*g*exp(1)^2*d^4+50331648
*exp(2)^3*sqrt(-c*exp(2))*b^5*exp(1)^7*d^3*f-100663296*exp(2)^4*sqrt(-c*exp
(2))*b^5*exp(1)^5*d^3*f+50331648*exp(2)^5*sqrt(-c*exp(2))*b^5*exp(1)^3*d^3*
f+6308233216*c*exp(2)*sqrt(-c*exp(2))*b^4*g*exp(1)^9*d^5-20099104768*c*exp(
2)^2*sqrt(-c*exp(2))*b^4*g*exp(1)^7*d^5+23655874560*c*exp(2)^3*sqrt(-c*exp(
2))*b^4*g*exp(1)^5*d^5-12113149952*c*exp(2)^4*sqrt(-c*exp(2))*b^4*g*exp(1)^
3*d^5+2248146944*c*exp(2)^5*sqrt(-c*exp(2))*b^4*g*exp(1)*d^5-1073741824*c*e
xp(2)*sqrt(-c*exp(2))*b^4*exp(1)^10*d^4*f+3690987520*c*exp(2)^2*sqrt(-c*exp
(2))*b^4*exp(1)^8*d^4*f-5033164800*c*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^6*
d^4*f+3154116608*c*exp(2)^4*sqrt(-c*exp(2))*b^4*exp(1)^4*d^4*f-738197504*c*
exp(2)^5*sqrt(-c*exp(2))*b^4*exp(1)^2*d^4*f-17179869184*c^2*exp(2)*sqrt(-c*
exp(2))*b^3*g*exp(1)^8*d^6+46271561728*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*g*e
xp(1)^6*d^6-43436212224*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp(1)^4*d^6+161
39681792*c^2*exp(2)^4*sqrt(-c*exp(2))*b^3*g*exp(1)^2*d^6-1744830464*c^2*exp
(2)^5*sqrt(-c*exp(2))*b^3*g*d^6+4294967296*c^2*exp(2)*sqrt(-c*exp(2))*b^3*e
xp(1)^9*d^5*f-12549357568*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^7*d^5*f+1
3136560128*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^5*d^5*f-5670699008*c^2*e
xp(2)^4*sqrt(-c*exp(2))*b^3*exp(1)^3*d^5*f+738197504*c^2*exp(2)^5*sqrt(-c*e
xp(2))*b^3*exp(1)*d^5*f+21743271936*c^3*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)
```

```
^7*d^7-47412412416*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^5*d^7+31809601
536*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*g*exp(1)^3*d^7-6442450944*c^3*exp(2)^4
*sqrt(-c*exp(2))*b^2*g*exp(1)*d^7-6442450944*c^3*exp(2)*sqrt(-c*exp(2))*b^2
*exp(1)^8*d^6*f+15502147584*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^6*d^6*f
-11374952448*c^3*exp(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^4*d^6*f+2617245696*c^3
*exp(2)^4*sqrt(-c*exp(2))*b^2*exp(1)^2*d^6*f-13153337344*c^4*exp(2)*sqrt(-c
*exp(2))*b*g*exp(1)^6*d^8+21810380800*c^4*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(
1)^4*d^8-8053063680*c^4*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)^2*d^8+429496729
6*c^4*exp(2)*sqrt(-c*exp(2))*b*exp(1)^7*d^7*f-8120172544*c^4*exp(2)^2*sqrt(
-c*exp(2))*b*exp(1)^5*d^7*f+3221225472*c^4*exp(2)^3*sqrt(-c*exp(2))*b*exp(1
)^3*d^7*f+3087007744*c^5*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*d^9-3489660928*c
^5*exp(2)^2*sqrt(-c*exp(2))*g*exp(1)^3*d^9-1073741824*c^5*exp(2)*sqrt(-c*ex
p(2))*exp(1)^6*d^8*f+1476395008*c^5*exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*d^8*f
)/(-805306368*b*exp(1)^8*d+805306368*exp(2)*b*exp(1)^6*d+805306368*c*exp(1)
^7*d^2-805306368*c*exp(2)*exp(1)^5*d^2)/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)
*b*d-c*exp(1)*d^2)^3)
```

maple [B] time = 0.07, size = 2773, normalized size = 10.05

Expression too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x)
```

```
[Out] -12*e^4*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))*d^2*f+4*e^3*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(1/2)*x*d*g+12*e^3*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d^3*g+16/3*e^2*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-2*g/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)-8*g*c^2/(-b*e^2+2*c*d*e)^
2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-2/3/e^4/(-b*e^2+2*c*d*e
)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f+16/3*c^2/(-
b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2
)*f-9*g*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d+18*g*e^2*c^3/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^
(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(1/2))*d^2+6*e^5*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d*f+e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g-6*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g-8*g/e^2*c/(-b*e^2+2*c*d*e)^2/(
x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+3*g*e^2*c/(-b*e^
2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+2/3/e^5/
(-b*e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2
)*d*g+4/3/e^2*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(5/2)*f-16/3*e*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e
^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-2*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2
*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+8*e^3*c^5/(-b*e^2+2*c*d*e)^3*d^3/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-12*g*e*c^4/(-b*e^2+2*c*d*e)^
2*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)
/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-12*g*e*c^3/(-b*e^2+2*c*
d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-6*g*e*c^2/(-b*
e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b+2*e^3*
c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2
)*d*g-e^6*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+
d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2))*f-8*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*x*g+8*e^3*c^4/(-b*e^2+2*c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-4*e^2*c^3/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g+4*e^3*c^3/(-b*e^2+2*c*d*e)^3*d*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f-8*e^2*c^5/(-b*e^2+2*c
*d*e)^3*d^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g+3/2*g*e^4*c/(-b
*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2
*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-4/3/e^3*c
/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
5/2)*d*g-16/3/e*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(5/2)*d*g-4*e^4*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+6*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^4,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**4,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**4, x)
```

3.2190 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=214

$$\frac{c^{3/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5(2cd-be)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3}}{3e^2(d+ex)^3}$$

```
[Out] -2/3*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(e*x+d)^3-2/5*(-d*g+e*f)*
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^5+c^(3/2)*g
*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^2
+2*c*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)
```

Rubi [A] time = 0.44, antiderivative size = 214, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {792, 662, 621, 204}

$$\frac{c^{3/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5(2cd-be)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3}}{3e^2(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^5,x]
```

```
[Out] (2*c*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) - (2*g*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^3) - (2*(e*f -
d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(2*c*d - b*e)*(d +
 e*x)^5) + (c^(3/2)*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^5}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(2cd-be)(d+ex)^5}+\frac{g\int\frac{\left(cd^2-bde-be^2x-ce^2x^2\right)}{(d+ex)^4}}{e}$$

$$=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}-\frac{2(ef-dg)\left(d(cd-be)-be^2x\right.}{5e^2(2cd-be)(d+ex}$$

$$=\frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}$$

$$=\frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}$$

$$=\frac{2cg\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}$$

Mathematica [C] time = 0.28, size = 150, normalized size = 0.70

$$\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{g(2cd-be)^3\,{}_2F_1\left(-\frac{5}{2},-\frac{5}{2};-\frac{3}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}-(be-cd+cex)^2(-beg+cdg+cef)\right)}{5ce^2(d+ex)^3(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^5,x]
```

```
[Out] (2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((c*e*f + c*d*g - b*e*g)*(-(c*d
) + b*e + c*e*x)^2) + ((2*c*d - b*e)^3*g*Hypergeometric2F1[-5/2, -5/2, -3/2
, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]
))/(5*c*e^2*(2*c*d - b*e)*(d + e*x)^3)
```

fricas [B] time = 14.11, size = 879, normalized size = 4.11

$$\left[\frac{15\left(\left(2\,c^2de^3-bce^4\right)gx^3+3\left(2\,c^2d^2e^2-bcde^3\right)gx^2+3\left(2\,c^2d^3e-bcd^2e^2\right)gx+\left(2\,c^2d^4-bcd^3e\right)g\right)\sqrt{-c}\,\log\left(8\,c^2e^2x\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] [1/30*(15*((2*c^2*d*e^3 - b*c*e^4)*g*x^3 + 3*(2*c^2*d^2*e^2 - b*c*d*e^3)*g*
x^2 + 3*(2*c^2*d^3*e - b*c*d^2*e^2)*g*x + (2*c^2*d^4 - b*c*d^3*e)*g)*sqrt(-
c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((3*c^2*e^3*f - (43*c^2*d*e^2 - 20*b
*c*e^3)*g)*x^2 + 3*(c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3)*f - (23*c^2*d^3 - 6*
b*c*d^2*e - 2*b^2*d*e^2)*g - (6*(c^2*d*e^2 - b*c*e^3)*f + (54*c^2*d^2*e - 1
4*b*c*d*e^2 - 5*b^2*e^3)*g)*x))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*c*d*e^5 - b*e
^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d^2*e^4)*x), -
1/15*(15*((2*c^2*d*e^3 - b*c*e^4)*g*x^3 + 3*(2*c^2*d^2*e^2 - b*c*d*e^3)*g*x
^2 + 3*(2*c^2*d^3*e - b*c*d^2*e^2)*g*x + (2*c^2*d^4 - b*c*d^3*e)*g)*sqrt(c)
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*((3*c^2*e^3*f - (43*c^2*d*e^2 - 20*b*c*e^3)*g)*x^2 +
 3*(c^2*d^2*e - 2*b*c*d*e^2 + b^2*e^3)*f - (23*c^2*d^3 - 6*b*c*d^2*e - 2*b^
2*d*e^2)*g - (6*(c^2*d*e^2 - b*c*e^3)*f + (54*c^2*d^2*e - 14*b*c*d*e^2 - 5*
b^2*e^3)*g)*x))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*c*d*e^5 - b*e^6)*x^3 + 3*(2*c
*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d^2*e^4)*x)]
```

giac [B] time = 1.75, size = 849, normalized size = 3.97

$$\frac{2}{15}\left(\sqrt{-ce^2+\frac{2\,cde^2}{xe+d}-\frac{be^3}{xe+d}}\left(\frac{30\left(4\,c^2d^2e^9-4\,bcde^{10}+b^2e^{11}\right)C_0}{8\,c^3d^3e^{12}-12\,bc^2d^2e^{13}+6\,b^2cde^{14}-b^3e^{15}}-\frac{\left(128\,c^4d^4ge^8\mathrm{sgn}\left(\frac{1}{xe+d}\right)-48\,c^4d^3fe^9\mathrm{sgn}\left(\frac{1}{xe\cdots}\right.\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] 2/15*(sqrt(-c*e^2 + 2*c*d*e^2/(x*e + d) - b*e^3/(x*e + d))*(30*(4*c^2*d^2*e
^9 - 4*b*c*d*e^10 + b^2*e^11)*C_0/(8*c^3*d^3*e^12 - 12*b*c^2*d^2*e^13 + 6*b
^2*c*d*e^14 - b^3*e^15) - ((128*c^4*d^4*g*e^8*sgn(1/(x*e + d)) - 48*c^4*d^3
*f*e^9*sgn(1/(x*e + d)) - 232*b*c^3*d^3*g*e^9*sgn(1/(x*e + d)) + 72*b*c^3*d
^2*f*e^10*sgn(1/(x*e + d)) + 156*b^2*c^2*d^2*g*e^10*sgn(1/(x*e + d)) - 36*b
^2*c^2*d*f*e^11*sgn(1/(x*e + d)) - 46*b^3*c*d*g*e^11*sgn(1/(x*e + d)) + 6*b
^3*c*f*e^12*sgn(1/(x*e + d)) + 5*b^4*g*e^12*sgn(1/(x*e + d)))/(8*c^3*d^3*e^
12 - 12*b*c^2*d^2*e^13 + 6*b^2*c*d*e^14 - b^3*e^15) - 3*(16*c^4*d^5*g*e^9*s
gn(1/(x*e + d)) - 16*c^4*d^4*f*e^10*sgn(1/(x*e + d)) - 32*b*c^3*d^4*g*e^10*
sgn(1/(x*e + d)) + 32*b*c^3*d^3*f*e^11*sgn(1/(x*e + d)) + 24*b^2*c^2*d^3*g*
e^11*sgn(1/(x*e + d)) - 24*b^2*c^2*d^2*f*e^12*sgn(1/(x*e + d)) - 8*b^3*c*d^
2*g*e^12*sgn(1/(x*e + d)) + 8*b^3*c*d*f*e^13*sgn(1/(x*e + d)) + b^4*d*g*e^1
3*sgn(1/(x*e + d)) - b^4*f*e^14*sgn(1/(x*e + d)))*e^(-1)/((8*c^3*d^3*e^12 -
 12*b*c^2*d^2*e^13 + 6*b^2*c*d*e^14 - b^3*e^15)*(x*e + d)))*e^(-1)/(x*e + d
) + (172*c^4*d^3*g*e^7*sgn(1/(x*e + d)) - 12*c^4*d^2*f*e^8*sgn(1/(x*e + d))
 - 252*b*c^3*d^2*g*e^8*sgn(1/(x*e + d)) + 12*b*c^3*d*f*e^9*sgn(1/(x*e + d))
 + 123*b^2*c^2*d*g*e^9*sgn(1/(x*e + d)) - 3*b^2*c^2*f*e^10*sgn(1/(x*e + d))
 - 20*b^3*c*g*e^10*sgn(1/(x*e + d)))/(8*c^3*d^3*e^12 - 12*b*c^2*d^2*e^13 +
6*b^2*c*d*e^14 - b^3*e^15)) - (43*sqrt(-c*e^2)*c^2*d*g - 3*sqrt(-c*e^2)*c^2
*f*e - 20*sqrt(-c*e^2)*b*c*g*e)*sgn(1/(x*e + d))/(2*c*d*e^5 - b*e^6))*e^2
```

maple [B] time = 0.07, size = 1023, normalized size = 4.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x)
```

```
[Out] -2/5*(-d*g+e*f)/e^6/(-b*e^2+2*c*d*e)/(x+d/e)^5*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(5/2)-2/3*g/e^5/(-b*e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+4/3*g/e^3*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+16/3*g/e*c^2/(-b*e^2+2*c*
d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+16/3*g*e
*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-4
```

```
*g*e^3*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*x-2*g*e^3*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d
*e)*(x+d/e))^(1/2)-g*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c
*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2))+6*g*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))*d-12*g*e^3*c^4/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+8*g*e^2*c^4/(-b*e^2+2*c*d*e)^3*d*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+4*g*e^2*c^3/(-b*e^2+2*c*d
*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b+8*g*e^2*c^5/(-b
*e^2+2*c*d*e)^3*d^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2
*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^5} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^5,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^5, x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(f + g x\right)}{\left(d + e x\right)^{5}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**5,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**5, x)
```

3.2191 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=138

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(7beg-2c(6dg+ef))}{35e^2(d+ex)^5(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(d+ex)^6(2cd-be)}$$

```
[Out] -2/7*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^6+2/35*(7*b*e*g-2*c*(6*d*g+e*f))*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2
)/e^2/(-b*e+2*c*d)^2/(e*x+d)^5
```

Rubi [A] time = 0.23, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(7beg-2c(6dg+ef))}{35e^2(d+ex)^5(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(d+ex)^6(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^6,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(7*e^2*(2*c*d
- b*e)*(d + e*x)^6) + (2*(7*b*e*g - 2*c*(e*f + 6*d*g))*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(5/2))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^6}\,dx &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(2cd-be)(d+ex)^6}-\frac{\Big(2\Big(\frac{5}{2}e\Big(-2ce^2f+b}{}\\ &= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7e^2(2cd-be)(d+ex)^6}+\frac{2(7beg-2c(ef+}{35e}\end{aligned}$$

Mathematica [A] time = 0.08, size = 104, normalized size = 0.75

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+6de(f+gx)+e^2fx\right)-be(2dg+5ef+7egx)\right)}{35e^2(d+ex)^4(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^6,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*
(5*e*f + 2*d*g + 7*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 6*d*e*(f + g*x))))/(35*
e^2*(-2*c*d + b*e)^2*(d + e*x)^4)
```

fricas [**B**] time = 67.19, size = 464, normalized size = 3.36

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,((2\,c^3e^4f+(12\,c^3de^3-7\,bc^2e^4)g)x^3+((8\,c^3de^3-bc^2e^4)f-2\,(11\,c^3d^2e^2-18\,bc^2d}{35\,(4\,c^2d^6e^2-4\,bcd^5e^3+b^2d^4e^4+(4\,c^2d^2e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] -2/35*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^3*e^4*f + (12*c^3*d*
e^3 - 7*b*c^2*e^4)*g)*x^3 + ((8*c^3*d*e^3 - b*c^2*e^4)*f - 2*(11*c^3*d^2*e^
2 - 18*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 + (12*c^3*d^3*e - 29*b*c^2*d^2*e^2
 + 22*b^2*c*d*e^3 - 5*b^3*e^4)*f + 2*(c^3*d^4 - 3*b*c^2*d^3*e + 3*b^2*c*d^2
*e^2 - b^3*d*e^3)*g - (2*(11*c^3*d^2*e^2 - 15*b*c^2*d*e^3 + 4*b^2*c*e^4)*f
- (8*c^3*d^3*e - 23*b*c^2*d^2*e^2 + 22*b^2*c*d*e^3 - 7*b^3*e^4)*g)*x)/(4*c^
2*d^6*e^2 - 4*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*d^2*e^6 - 4*b*c*d*e^7 + b^
2*e^8)*x^4 + 4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b^2*d*e^7)*x^3 + 6*(4*c^2*d
^4*e^4 - 4*b*c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*c^2*d^5*e^3 - 4*b*c*d^4*e^
4 + b^2*d^3*e^5)*x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.06, size = 128, normalized size = 0.93

$$-\frac{2\,(cex+be-cd)\left(7b\,e^2gx-12cdegx-2c\,e^2fx+2bdeg+5b\,e^2f-2c\,d^2g-12cdef\right)(-c\,e^2x^2-b\,e^2x-bde+c\,d^2}{35\,(ex+d)^5\left(b^2e^2-4bcde+4c^2d^2\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(7*b*e^2*g*x-12*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+5*b*e
^2*f-2*c*d^2*g-12*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^5
/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 9.50, size = 3763, normalized size = 27.27

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^6,x)
```

```
[Out] (((d*((d*((16*c^4*(6*b*e*g - 10*c*d*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16
*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (608*c^5*d^2*g + 196*b^2*c^3*e^2*g -
160*c^5*d*e*f + 96*b*c^4*e^2*f - 688*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))
/e + (4*b*c^2*(19*b^2*e^2*g + 76*c^2*d^2*g + 11*b*c*e^2*f - 20*c^2*d*e*f -
76*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((8*c^4*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(105
*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (208*c^5*d^2*g
 + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(105
*e*(b*e - 2*c*d)^4)))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2*d^2*g + 12*b*c*e^
2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((16*c^4*(7*b*e*g - 12*
c*d*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4))
)/e - (768*c^5*d^2*g + 244*b^2*c^3*e^2*g - 192*c^5*d*e*f + 112*b*c^4*e^2*f
- 864*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))/e + (4*b*c^2*(24*b^2*e^2*g + 9
6*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 96*b*c*d*e*g))/(105*e*(b*e - 2*
c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*
((8*c^4*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*
g)/(105*(b*e - 2*c*d)^4)))/e - (1728*c^5*d^2*g + 504*b^2*c^3*e^2*g - 272*c^
5*d*e*f + 152*b*c^4*e^2*f - 1864*b*c^4*d*e*g)/(105*e*(b*e - 2*c*d)^4)))/e +
 (8*b*c^2*(27*b^2*e^2*g + 108*c^2*d^2*g + 9*b*c*e^2*f - 17*c^2*d*e*f - 108*
b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) + (((d*((d*((8*c^3*e*(9*b*e*g - 16*c*d*g + c*e*f))/(35*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^2)))/e - (216*b^2*c^2*e^3*g + 72*b*c^3*e^3*f - 128*c^4*d*e^2*f
 + 728*c^4*d^2*e*g - 792*b*c^3*d*e^2*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^2)))/e + (8*c*(b*e - c*d)*(19*b^2*e^2*g + 76*c^2*d^2*g + 8*b*c*e^2*f -
 15*c^2*d*e*f - 76*b*c*d*e*g))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((8*c^3
*e*(3*b*e*g - 4*c*d*g + c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) -
(8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g
+ 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(35*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g
 + 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(35*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((
d*((d*((4*c^3*e*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^2) - (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e
 - (288*c^4*d^2*g + 96*b^2*c^2*e^2*g - 88*c^4*d*e*f + 52*b*c^3*e^2*f - 332*
b*c^3*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(9*b^2*e
^2*g + 36*c^2*d^2*g + 6*b*c*e^2*f - 11*c^2*d*e*f - 36*b*c*d*e*g))/(35*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^2 + (((76*b^2*c^3*e^3*f - 416*c^5*d^3*g + 88*b^3*c^2*e^3*g + 1
60*c^5*d^2*e*f - 224*b*c^4*d*e^2*f + 768*b*c^4*d^2*e*g - 456*b^2*c^3*d*e^2*
g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((16*c^4*(5*b*e*g - 8*c*d*g + c*e*f))
/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e - (148*b^2*
c^3*e^3*g + 80*b*c^4*e^3*f - 128*c^5*d*e^2*f + 448*c^5*d^2*e*g - 512*b*c^4*
d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((88*b^2*c^3*e^3*f - 832*c^5*d^3*g + 224*b^3*c^2*e^3
*g + 128*c^5*d^2*e*f - 232*b*c^4*d*e^2*f + 1728*b*c^4*d^2*e*g - 1104*b^2*c^
3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((8*c^4*(15*b*e*g - 26*c*d*g
+ 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e
- (328*b^2*c^3*e^3*g + 120*b*c^4*e^3*f - 208*c^5*d*e^2*f + 1088*c^5*d^2*e*g
 - 1192*b*c^4*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((160*b^2*c^3*e^3*f - 1536*c^5*d^3*g +
 312*b^3*c^2*e^3*g + 384*c^5*d^2*e*f - 504*b*c^4*d*e^2*f + 2784*b*c^4*d^2*e
*g - 1632*b^2*c^3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4) + (d*((d*((8*c^4*(17*b
*e*g - 30*c*d*g + 2*c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e
- 2*c*d)^4)))/e - (400*b^2*c^3*e^3*g + 136*b*c^4*e^3*f - 240*c^5*d*e^2*f +
1344*c^5*d^2*e*g - 1464*b*c^4*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^4)))/e)*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(6*b
*e*g - 10*c*d*g + c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d
*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e - (4*c*(3*b*e - 5*c*d)*(3*
b*e*g - 5*c*d*g + 2*c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e + (4
*(b*e - c*d)*(4*b^2*e^2*g + 16*c^2*d^2*g + 5*b*c*e^2*f - 9*c^2*d*e*f - 16*b
*c*d*e*g))/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((2*b^3*e^2*g + 8*b*c^2*d^2*g + 4*b^2
*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*e^2*f + 8*b^2*c*e^2*g -
 22*b*c^2*d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (d*((2*c^2*e*(5*b
*e*g - 6*c*d*g + 2*c*e*f))/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c^3*
d*e*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*(11*b*e*g - 20*c*d
*g + c*e*f))/(105*(b*e - 2*c*d)^4) - (16*c^5*d*g)/(105*(b*e - 2*c*d)^4)))/e
 - (16*c^3*(45*b^2*e^2*g + 159*c^2*d^2*g + 11*b*c*e^2*f - 20*c^2*d*e*f - 16
9*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^4)))/e + (16*c^2*(b*e - c*d)*(35*b^2*e^2
*g + 140*c^2*d^2*g + 10*b*c*e^2*f - 19*c^2*d*e*f - 140*b*c*d*e*g))/(105*e^2
*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) +
 (((2*f*(b*e - c*d)^2)/(7*b*e^2 - 14*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c
*d*g + c*e*f))/(7*b*e^2 - 14*c*d*e) - (2*c^2*d*e*g)/(7*b*e^2 - 14*c*d*e)))/
e - (2*(b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(7*b*e^2 - 14*c*d*e)))/e)*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((4*c^3*e*
(11*b*e*g - 18*c*d*g + 2*c*e*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) -
 (8*c^4*d*e*g)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e - (76*b^2*c^2*e
^3*g + 44*b*c^3*e^3*f - 72*c^4*d*e^2*f + 224*c^4*d^2*e*g - 260*b*c^3*d*e^2*
g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)))/e + (44*b^2*c^2*e^3*f - 192
*c^4*d^3*g + 40*b^3*c*e^3*g + 96*c^4*d^2*e*f - 132*b*c^3*d*e^2*f + 352*b*c^
3*d^2*e*g - 208*b^2*c^2*d*e^2*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**6,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**6, x)
```

3.2192 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4cef)}{315e^2(d+ex)^5(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+}{63e^2(d+ex)^6(2cd-be)^2}$$

```
[Out] -2/9*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^7-2/63*(-9*b*e*g+14*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5
/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^6-4/315*c*(-9*b*e*g+14*c*d*g+4*c*e*f)*(d*(-b
*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^5
```

Rubi [A] time = 0.35, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+4cef)}{315e^2(d+ex)^5(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-9beg+14cdg+}{63e^2(d+ex)^6(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^7,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^7) - (2*(4*c*e*f + 14*c*d*g - 9*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^6) - (4*c*(4*c*
e*f + 14*c*d*g - 9*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(315
*e^2*(2*c*d - b*e)^3*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\Big(cd^2-bde-be^2x-ce^2x^2\Big)^{3/2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\Big(d(cd-be)-be^2x-ce^2x^2\Big)^{5/2}}{9e^2(2cd-be)(d+ex)^7} + \frac{(4cef+14cdg-9beg}{9e(2}$$

$$= -\frac{2(ef-dg)\Big(d(cd-be)-be^2x-ce^2x^2\Big)^{5/2}}{9e^2(2cd-be)(d+ex)^7} - \frac{2(4cef+14cdg-9be}{63e^2(2}$$

$$= -\frac{2(ef-dg)\Big(d(cd-be)-be^2x-ce^2x^2\Big)^{5/2}}{9e^2(2cd-be)(d+ex)^7} - \frac{2(4cef+14cdg-9be}{63e^2(2}$$

Mathematica [**A**] time = 0.12, size = 168, normalized size = 0.80

$$\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\Big(5b^2e^2(2dg+7ef+9egx)-2bce\Big(19d^2g+de(80f+98gx)+e^2x(10f}{315e^2(d+ex)^5(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^7,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(5*b^2*e
^2*(7*e*f + 2*d*g + 9*e*g*x) + 4*c^2*(7*d^3*g + 2*e^3*f*x^2 + 7*d*e^2*x*(2*
f + g*x) + d^2*e*(47*f + 49*g*x)) - 2*b*c*e*(19*d^2*g + e^2*x*(10*f + 9*g*x
) + d*e*(80*f + 98*g*x))))/(315*e^2*(-2*c*d + b*e)^3*(d + e*x)^5)
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 236, normalized size = 1.12

$$-\frac{2\,(cex+be-cd)\,\Big(-18bc\,e^3g\,x^2+28c^2d\,e^2g\,x^2+8c^2e^3f\,x^2+45b^2e^3gx-196bcd\,e^2gx-20bc\,e^3fx+196c^2d^2egx}{315\,(ex+d)^6\,\Big(b^3e^3-6b}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-18*b*c*e^3*g*x^2+28*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+45*b^2*e^3*g*x-196*b*c*d*e^2*g*x-20*b*c*e^3*f*x+196*c^2*d^2*e*g*x+56*c^2*
d*e^2*f*x+10*b^2*d*e^2*g+35*b^2*e^3*f-38*b*c*d^2*e*g-160*b*c*d*e^2*f+28*c^2
*d^3*g+188*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^6/(b
^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 19.83, size = 8039, normalized size = 38.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^7,x)
```

```
[Out] (((d*((d*((32*c^5*(4*b*e*g - 6*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*
c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (608*c^6*d^2*g + 208*b^2*c^4*e^2*g - 1
92*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))
/e + (4*b*c^3*(19*b^2*e^2*g + 76*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f -
76*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(9
45*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (1568*c^6*d^
2*g + 488*b^2*c^4*e^2*g - 352*c^6*d*e*f + 208*b*c^5*e^2*f - 1744*b*c^5*d*e*
g)/(945*e*(b*e - 2*c*d)^5)))/e + (4*b*c^3*(49*b^2*e^2*g + 196*c^2*d^2*g + 2
4*b*c*e^2*f - 44*c^2*d*e*f - 196*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(15*b
*e*g - 26*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e
- 2*c*d)^5)))/e - (1952*c^6*d^2*g + 600*b^2*c^4*e^2*g - 416*c^6*d*e*f + 240
*b*c^5*e^2*f - 2160*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (4*b*c^3*(61
*b^2*e^2*g + 244*c^2*d^2*g + 28*b*c*e^2*f - 52*c^2*d*e*f - 244*b*c*d*e*g))/
(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) - (((d*((d*((16*c^5*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d
)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (2336*c^6*d^2*g + 712*b^2*c
^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2576*b*c^5*d*e*g)/(945*e*(b*e
- 2*c*d)^5)))/e + (4*b*c^3*(73*b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 6
0*c^2*d*e*f - 292*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((32*c^5*(10*b*e*g - 18*c*d*g
 + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e -
 (4032*c^6*d^2*g + 1160*b^2*c^4*e^2*g - 576*c^6*d*e*f + 320*b*c^5*e^2*f - 4
320*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (8*b*c^3*(63*b^2*e^2*g + 252
*c^2*d^2*g + 19*b*c*e^2*f - 36*c^2*d*e*f - 252*b*c*d*e*g))/(945*e*(b*e - 2*
c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*
((32*c^5*(11*b*e*g - 20*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g
)/(945*(b*e - 2*c*d)^5)))/e - (4736*c^6*d^2*g + 1352*b^2*c^4*e^2*g - 640*c^
6*d*e*f + 352*b*c^5*e^2*f - 5056*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e +
 (8*b*c^3*(74*b^2*e^2*g + 296*c^2*d^2*g + 21*b*c*e^2*f - 40*c^2*d*e*f - 296
*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) + (((d*((d*((32*c^5*(12*b*e*g - 22*c*d*g + c*e*f))/(945*(
b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (5696*c^6*d^2*g
+ 1608*b^2*c^4*e^2*g - 704*c^6*d*e*f + 384*b*c^5*e^2*f - 6048*b*c^5*d*e*g)/
(945*e*(b*e - 2*c*d)^5)))/e + (8*b*c^3*(89*b^2*e^2*g + 356*c^2*d^2*g + 23*b
```

```
*c*e^2*f - 44*c^2*d*e*f - 356*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(29*b*e*
g - 54*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2
*c*d)^5)))/e - (9216*c^6*d^2*g + 2528*b^2*c^4*e^2*g - 864*c^6*d*e*f + 464*b
*c^5*e^2*f - 9648*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^5)))/e + (16*b*c^3*(72*
b^2*e^2*g + 288*c^2*d^2*g + 14*b*c*e^2*f - 27*c^2*d*e*f - 288*b*c*d*e*g))/(
945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((d*((8*c^3*e*(11*b*e*g - 20*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^2)))/e - (312*b^2*c^2*e^3*g + 88*b*c^3*e^3*f - 160*c^4*d*e^2*f + 1080*c^
4*d^2*e*g - 1160*b*c^3*d*e^2*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)
))/e + (8*c*(b*e - c*d)*(29*b^2*e^2*g + 116*c^2*d^2*g + 10*b*c*e^2*f - 19*c
^2*d*e*f - 116*b*c*d*e*g))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((8*c^3*e*
(3*b*e*g - 4*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8
*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g +
 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(63*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g
 + 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - ((
(d*((d*((4*c^3*e*(15*b*e*g - 26*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))
)/e - (352*c^4*d^2*g + 116*b^2*c^2*e^2*g - 104*c^4*d*e*f + 60*b*c^3*e^2*f -
 404*b*c^3*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(1
1*b^2*e^2*g + 44*c^2*d^2*g + 7*b*c*e^2*f - 13*c^2*d*e*f - 44*b*c*d*e*g))/(6
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^3 - (((176*b^2*c^4*e^3*f - 1216*c^6*d^3*g + 252*b^3*c^
3*e^3*g + 384*c^6*d^2*e*f - 528*b*c^5*d*e^2*f + 2224*b*c^5*d^2*e*g - 1312*b
^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(11*b*e*g - 18*
c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5
)))/e - (376*b^2*c^4*e^3*g + 176*b*c^5*e^3*f - 288*c^6*d*e^2*f + 1184*c^6*d
^2*e*g - 1328*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((176*b^2*c^4*e^3*f - 1888*c^6*d
^3*g + 536*b^3*c^3*e^3*g + 224*c^6*d^2*e*f - 448*b*c^5*d*e^2*f + 4032*b*c^5
*d^2*e*g - 2616*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((32*c^
5*(8*b*e*g - 14*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(
b*e - 2*c*d)^5)))/e - (776*b^2*c^4*e^3*g + 256*b*c^5*e^3*f - 448*c^6*d*e^2*
f + 2624*c^6*d^2*e*g - 2848*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((344*b^2*c^4*e^3*
f - 3904*c^6*d^3*g + 784*b^3*c^3*e^3*g + 832*c^6*d^2*e*f - 1088*b*c^5*d*e^2
*f + 7040*b*c^5*d^2*e*g - 4112*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) +
 (d*((d*((32*c^5*(9*b*e*g - 16*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*
c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (936*b^2*c^4*e^3*g + 288*b*c^5*e^3*f -
 512*c^6*d*e^2*f + 3200*c^6*d^2*e*g - 3456*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2
*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3
92*b^2*c^4*e^3*f - 4672*c^6*d^3*g + 936*b^3*c^3*e^3*g + 960*c^6*d^2*e*f - 1
248*b*c^5*d*e^2*f + 8416*b*c^5*d^2*e*g - 4912*b^2*c^4*d*e^2*g)/(945*e^2*(b*
e - 2*c*d)^5) + (d*((d*((32*c^5*(10*b*e*g - 18*c*d*g + c*e*f))/(945*(b*e -
2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (1096*b^2*c^4*e^3*g +
320*b*c^5*e^3*f - 576*c^6*d*e^2*f + 3776*c^6*d^2*e*g - 4064*b*c^5*d*e^2*g)/
(945*e^2*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) + (((d*((d*((16*c^4*e*(6*b*e*g - 10*c*d*g + c*e*f))/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^3)))/e - (196*b^2*c^3*e^3*g + 96*b*c^4*e^3*f - 160*c^5*d*e^2*f +
 608*c^5*d^2*e*g - 688*b*c^4*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e + (104*b^2*c^3*e^3*f - 624*c^5*d^3*g + 124*b^3*c^2*e^3*g + 240*c
^5*d^2*e*f - 320*b*c^4*d*e^2*f + 1120*b*c^4*d^2*e*g - 652*b^2*c^3*d*e^2*g)/
(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*e*(19*b*e*g - 34*c*d*g + 2*c*
e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (504*b^2*c^3*e^3*g + 152*b*c^4*e^3*f
- 272*c^5*d*e^2*f + 1728*c^5*d^2*e*g - 1864*b*c^4*d*e^2*g)/(315*e*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (88*b^2*c^3*e^3*f - 1280*c^5*d^3*g + 368*
b^3*c^2*e^3*g + 64*c^5*d^2*e*f - 200*b*c^4*d*e^2*f + 2752*b*c^4*d^2*e*g - 1
792*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*e*(21*b*
e*g - 38*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*
c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (592*b^2*c^3*e^3
*g + 168*b*c^4*e^3*f - 304*c^5*d*e^2*f + 2048*c^5*d^2*e*g - 2200*b*c^4*d*e^
2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (248*b^2*c^3*e^3*f -
 2784*c^5*d^3*g + 520*b^3*c^2*e^3*g + 672*c^5*d^2*e*f - 824*b*c^4*d*e^2*f +
 4864*b*c^4*d^2*e*g - 2776*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((
(3904*c^6*d^3*g - 176*b^2*c^4*e^3*f - 1328*b^3*c^3*e^3*g + 64*c^6*d^2*e*f +
 304*b*c^5*d*e^2*f - 9216*b*c^5*d^2*e*g + 6288*b^2*c^4*d*e^2*g)/(945*e^2*(b
*e - 2*c*d)^5) - (d*((d*((16*c^5*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(945*(b*e
 - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (16*c^4*(116*b^2*e^
2*g + 416*c^2*d^2*g + 25*b*c*e^2*f - 46*c^2*d*e*f - 439*b*c*d*e*g))/(945*e*
(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) - (((432*b^2*c^4*e^3*f - 5504*c^6*d^3*g + 1280*b^3*c^3*e^3*g + 1024*c^6*d
^2*e*f - 1360*b*c^5*d*e^2*f + 10624*b*c^5*d^2*e*g - 6496*b^2*c^4*d*e^2*g)/(
945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(23*b*e*g - 42*c*d*g + 2*c*e*f))
/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (16*c^4*(
101*b^2*e^2*g + 360*c^2*d^2*g + 23*b*c*e^2*f - 42*c^2*d*e*f - 381*b*c*d*e*g
))/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((560*b^2*c^4*e^3*f - 11392*c^6*d^3*g + 2224*b^3*c^3*e^3*g +
 1408*c^6*d^2*e*f - 1808*b*c^5*d*e^2*f + 20288*b*c^5*d^2*e*g - 11744*b^2*c^
4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^5) + (d*((d*((16*c^5*(27*b*e*g - 50*c*d*g
 + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e
 - (16*c^4*(135*b^2*e^2*g + 488*c^2*d^2*g + 27*b*c*e^2*f - 50*c^2*d*e*f - 5
13*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^5)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(7*b*e*g - 12*c*d*g + c*e*f))/
(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(9*(7*b*e^2 - 14*c*d
*e)*(b*e - 2*c*d))))/e - (28*b*c^2*e^3*f + 44*b^2*c*e^3*g - 48*c^3*d*e^2*f
+ 124*c^3*d^2*e*g - 148*b*c^2*d*e^2*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c
*d))))/e + (4*(b*e - c*d)*(5*b^2*e^2*g + 20*c^2*d^2*g + 6*b*c*e^2*f - 11*c^
2*d*e*f - 20*b*c*d*e*g))/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((2*b^3*e^2*g + 8*b*c^2
*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(9*(7*b*e^2 - 14*c*
d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*e^2*f + 8
*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (d*
((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c
*d)) - (4*c^3*d*e*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*(7*
b*e*g - 10*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (1
6*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (208*c^5*d^2*g
 + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(315
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2
*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 + (((d*((d*((16*c^4*e*(7*b*e*g - 12*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e - (768*c^5*d^2*g + 244*b^2*c^3*e^2*g - 192*c^5*d*e*f + 112*b*c^4
*e^2*f - 864*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (
4*b*c^2*(24*b^2*e^2*g + 96*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 96*b*c
*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*g
 + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(315*
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(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (928*c^5*d^2*g + 292*b^2*c^3*e^2
*g - 224*c^5*d*e*f + 128*b*c^4*e^2*f - 1040*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(29*b^2*e^2*g + 116*c^2*d^2*g + 15*b
*c*e^2*f - 28*c^2*d*e*f - 116*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*(
(d*((8*c^4*e*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3) - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e
 - (2496*c^5*d^2*g + 712*b^2*c^3*e^2*g - 336*c^5*d*e*f + 184*b*c^4*e^2*f -
2664*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (8*b*c^2*
(39*b^2*e^2*g + 156*c^2*d^2*g + 11*b*c*e^2*f - 21*c^2*d*e*f - 156*b*c*d*e*g
))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^5*(16*b*e*g - 30*c*d*g + c*e*
f))/(945*(b*e - 2*c*d)^5) - (32*c^6*d*g)/(945*(b*e - 2*c*d)^5)))/e - (32*c^
4*(100*b^2*e^2*g + 369*c^2*d^2*g + 16*b*c*e^2*f - 30*c^2*d*e*f - 384*b*c*d*
e*g))/(945*e*(b*e - 2*c*d)^5)))/e + (32*c^3*(b*e - c*d)*(85*b^2*e^2*g + 340
*c^2*d^2*g + 15*b*c*e^2*f - 29*c^2*d*e*f - 340*b*c*d*e*g))/(945*e^2*(b*e -
2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*f*
(b*e - c*d)^2)/(9*b*e^2 - 18*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c*d*g + c
*e*f))/(9*b*e^2 - 18*c*d*e) - (2*c^2*d*e*g)/(9*b*e^2 - 18*c*d*e)))/e - (2*(
b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(9*b*e^2 - 18*c*d*e)))/e)*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((d*((4*c^3*e*(13*b*e*
g - 22*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4
*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (96*b^2*c^2*e^3*g +
 52*b*c^3*e^3*f - 88*c^4*d*e^2*f + 288*c^4*d^2*e*g - 332*b*c^3*d*e^2*g)/(63
*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e + (56*b^2*c^2*e^3*f - 256*c^4*
d^3*g + 52*b^3*c*e^3*g + 128*c^4*d^2*e*f - 172*b*c^3*d*e^2*f + 464*b*c^3*d^
2*e*g - 272*b^2*c^2*d*e^2*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4
*e*(14*b*e*g - 26*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)
 - (16*c^5*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(
72*b^2*e^2*g + 261*c^2*d^2*g + 14*b*c*e^2*f - 26*c^2*d*e*f - 274*b*c*d*e*g)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(59*b
^2*e^2*g + 236*c^2*d^2*g + 13*b*c*e^2*f - 25*c^2*d*e*f - 236*b*c*d*e*g))/(3
15*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(d+ex)(be-cd+cex))^{\frac{3}{2}}\left(f+gx\right)}{(d+ex)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**7,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**7, x)
```

3.2193 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{3465e^2(d+ex)^5(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16c}{693e^2(d+ex)^6(2cd-be)^3}$$

```
[Out] -2/11*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^8-2/99*(-11*b*e*g+16*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(5/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^7-8/693*c*(-11*b*e*g+16*c*d*g+6*c*e*f)*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^6-16/3465*c^
2*(-11*b*e*g+16*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(
-b*e+2*c*d)^4/(e*x+d)^5
```

Rubi [A] time = 0.45, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16cdg+6cef)}{3465e^2(d+ex)^5(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-11beg+16c}{693e^2(d+ex)^6(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^8) - (2*(6*c*e*f + 16*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^7) - (8*c*(6*
c*e*f + 16*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(
693*e^2*(2*c*d - b*e)^3*(d + e*x)^6) - (16*c^2*(6*c*e*f + 16*c*d*g - 11*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3465*e^2*(2*c*d - b*e)^4*
(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^8}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8}+\frac{(6cef+16cdg-11be}{11e}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8}-\frac{2(6cef+16cdg-11b}{99e^2(2}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8}-\frac{2(6cef+16cdg-11b}{99e^2(2}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11e^2(2cd-be)(d+ex)^8}-\frac{2(6cef+16cdg-11b}{99e^2(2}$$

Mathematica [A] time = 0.18, size = 249, normalized size = 0.87

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\left(-35b^3e^3(2dg+9ef+11egx)+10b^2ce^2\left(43d^2g+de(210f+254gx)\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^8,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-35*b^
3*e^3*(9*e*f + 2*d*g + 11*e*g*x) + 8*c^3*(61*d^4*g + 6*e^4*f*x^3 + 16*d*e^3
*x^2*(3*f + g*x) + 8*d^3*e*(57*f + 61*g*x) + d^2*e^2*x*(183*f + 128*g*x)) +
 10*b^2*c*e^2*(43*d^2*g + e^2*x*(21*f + 22*g*x) + d*e*(210*f + 254*g*x)) -
4*b*c^2*e*(212*d^3*g + 2*e^3*x^2*(15*f + 11*g*x) + 2*d*e^2*x*(135*f + 128*g
*x) + d^2*e*(1185*f + 1391*g*x))))/(3465*e^2*(-2*c*d + b*e)^4*(d + e*x)^6)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 382, normalized size = 1.34

$$-\frac{2\,(cex+be-cd)\left(88b\,c^2e^4g\,x^3-128c^3d\,e^3g\,x^3-48c^3e^4f\,x^3-220b^2c\,e^4g\,x^2+1024b\,c^2d\,e^3g\,x^2+120b\,c^2e^4f\,x^2-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(88*b*c^2*e^4*g*x^3-128*c^3*d*e^3*g*x^3-48*c^3*e^4*
f*x^3-220*b^2*c*e^4*g*x^2+1024*b*c^2*d*e^3*g*x^2+120*b*c^2*e^4*f*x^2-1024*c
^3*d^2*e^2*g*x^2-384*c^3*d*e^3*f*x^2+385*b^3*e^4*g*x-2540*b^2*c*d*e^3*g*x-2
10*b^2*c*e^4*f*x+5564*b*c^2*d^2*e^2*g*x+1080*b*c^2*d*e^3*f*x-3904*c^3*d^3*e
*g*x-1464*c^3*d^2*e^2*f*x+70*b^3*d*e^3*g+315*b^3*e^4*f-430*b^2*c*d^2*e^2*g-
2100*b^2*c*d*e^3*f+848*b*c^2*d^3*e*g+4740*b*c^2*d^2*e^2*f-488*c^3*d^4*g-364
8*c^3*d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^7/e^2/(b^4*e^
4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 42.70, size = 16485, normalized size = 57.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^8,x)
```

```
[Out] (((d*((d*((64*c^6*(7*b*e*g - 12*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (
64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (3904*c^7*d^2*g + 1184*b^2*c^5*e^
2*g - 768*c^7*d*e*f + 448*b*c^6*e^2*f - 4288*b*c^6*d*e*g)/(10395*e*(b*e - 2
*c*d)^6)))/e + (8*b*c^4*(61*b^2*e^2*g + 244*c^2*d^2*g + 26*b*c*e^2*f - 48*c
^2*d*e*f - 244*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(9*b*e*g - 14*c*d*g +
 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))
/e - (1664*c^7*d^2*g + 544*b^2*c^5*e^2*g - 448*c^7*d*e*f + 288*b*c^6*e^2*f
- 1888*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(13*b^2*e^2*g
 + 52*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*d*e*f - 52*b*c*d*e*g))/(10395*e*(b*e
 - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((d*((64*c^6*(8*b*e*g - 14*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c
^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (4800*c^7*d^2*g + 1440*b^2*c^5*e^2*g
- 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5248*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d
)^6)))/e + (8*b*c^4*(75*b^2*e^2*g + 300*c^2*d^2*g + 30*b*c*e^2*f - 56*c^2*d
*e*f - 300*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(9*b*e*g - 16*c*d*g + c*e
*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (
5696*c^7*d^2*g + 1696*b^2*c^5*e^2*g - 1024*c^7*d*e*f + 576*b*c^6*e^2*f - 62
08*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(89*b^2*e^2*g + 35
6*c^2*d^2*g + 34*b*c*e^2*f - 64*c^2*d*e*f - 356*b*c*d*e*g))/(10395*e*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*(
(d*((64*c^6*(10*b*e*g - 18*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^
7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (6592*c^7*d^2*g + 1952*b^2*c^5*e^2*g -
 1152*c^7*d*e*f + 640*b*c^6*e^2*f - 7168*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d
)^6)))/e + (8*b*c^4*(103*b^2*e^2*g + 412*c^2*d^2*g + 38*b*c*e^2*f - 72*c^2*
d*e*f - 412*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d
```

```
*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(21*b*e*g - 38*c*d*g + 2
*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e
 - (9280*c^7*d^2*g + 2640*b^2*c^5*e^2*g - 1216*c^7*d*e*f + 672*b*c^6*e^2*f
- 9888*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(145*b^2*e^2*g
 + 580*c^2*d^2*g + 40*b*c*e^2*f - 76*c^2*d*e*f - 580*b*c*d*e*g))/(10395*e*(
b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (
((d*((d*((32*c^6*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) -
 (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (10816*c^7*d^2*g + 3056*b^2*c^5
*e^2*g - 1344*c^7*d*e*f + 736*b*c^6*e^2*f - 11488*b*c^6*d*e*g)/(10395*e*(b*
e - 2*c*d)^6)))/e + (8*b*c^4*(169*b^2*e^2*g + 676*c^2*d^2*g + 44*b*c*e^2*f
 - 84*c^2*d*e*f - 676*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(25*b*e*g - 46*
c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*
d)^6)))/e - (12352*c^7*d^2*g + 3472*b^2*c^5*e^2*g - 1472*c^7*d*e*f + 800*b*
c^6*e^2*f - 13088*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(19
3*b^2*e^2*g + 772*c^2*d^2*g + 48*b*c*e^2*f - 92*c^2*d*e*f - 772*b*c*d*e*g))
/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) - (((d*((d*((32*c^6*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(10395*(b*e -
2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (12864*c^7*d^2*g + 3
600*b^2*c^5*e^2*g - 1472*c^7*d*e*f + 800*b*c^6*e^2*f - 13600*b*c^6*d*e*g)/(
10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(201*b^2*e^2*g + 804*c^2*d^2*g + 48
*b*c*e^2*f - 92*c^2*d*e*f - 804*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(27*
b*e*g - 50*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*
(b*e - 2*c*d)^6)))/e - (14656*c^7*d^2*g + 4080*b^2*c^5*e^2*g - 1600*c^7*d*e
*f + 864*b*c^6*e^2*f - 15456*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (
8*b*c^4*(229*b^2*e^2*g + 916*c^2*d^2*g + 52*b*c*e^2*f - 100*c^2*d*e*f - 916
*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((32*c^6*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(1
0395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16960*c
^7*d^2*g + 4688*b^2*c^5*e^2*g - 1728*c^7*d*e*f + 928*b*c^6*e^2*f - 17824*b*
c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (8*b*c^4*(265*b^2*e^2*g + 1060*c
^2*d^2*g + 56*b*c*e^2*f - 108*c^2*d*e*f - 1060*b*c*d*e*g))/(10395*e*(b*e -
2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((
d*((64*c^6*(15*b*e*g - 28*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7
*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (20224*c^7*d^2*g + 5520*b^2*c^5*e^2*g -
 1792*c^7*d*e*f + 960*b*c^6*e^2*f - 21120*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*
d)^6)))/e + (16*b*c^4*(158*b^2*e^2*g + 632*c^2*d^2*g + 29*b*c*e^2*f - 56*c^
2*d*e*f - 632*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(16*b*e*g - 30*c*d*g +
 c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e
 - (22656*c^7*d^2*g + 6160*b^2*c^5*e^2*g - 1920*c^7*d*e*f + 1024*b*c^6*e^2*
f - 23616*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4*(177*b^2*e
^2*g + 708*c^2*d^2*g + 31*b*c*e^2*f - 60*c^2*d*e*f - 708*b*c*d*e*g))/(10395
*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
 + (((d*((d*((64*c^6*(17*b*e*g - 32*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6)
 - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (25600*c^7*d^2*g + 6928*b^2*c
^5*e^2*g - 2048*c^7*d*e*f + 1088*b*c^6*e^2*f - 26624*b*c^6*d*e*g)/(10395*e*
(b*e - 2*c*d)^6)))/e + (16*b*c^4*(200*b^2*e^2*g + 800*c^2*d^2*g + 33*b*c*e^
2*f - 64*c^2*d*e*f - 800*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((64*c^6*(18*b*e*g -
 34*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*
c*d)^6)))/e - (29056*c^7*d^2*g + 7824*b^2*c^5*e^2*g - 2176*c^7*d*e*f + 1152
*b*c^6*e^2*f - 30144*b*c^6*d*e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (16*b*c^4
*(227*b^2*e^2*g + 908*c^2*d^2*g + 35*b*c*e^2*f - 68*c^2*d*e*f - 908*b*c*d*e
*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((d*((d*((32*c^6*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(10395*(b*
e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (39936*c^7*d^2*g
 + 10624*b^2*c^5*e^2*g - 2496*c^7*d*e*f + 1312*b*c^6*e^2*f - 41184*b*c^6*d*
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e*g)/(10395*e*(b*e - 2*c*d)^6)))/e + (32*b*c^4*(156*b^2*e^2*g + 624*c^2*d^2
*g + 20*b*c*e^2*f - 39*c^2*d*e*f - 624*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((8*c^
3*e*(13*b*e*g - 24*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2
) - (8*c^4*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (424*b^2*
c^2*e^3*g + 104*b*c^3*e^3*f - 192*c^4*d*e^2*f + 1496*c^4*d^2*e*g - 1592*b*c
^3*d*e^2*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (8*c*(b*e - c
*d)*(41*b^2*e^2*g + 164*c^2*d^2*g + 12*b*c*e^2*f - 23*c^2*d*e*f - 164*b*c*d
*e*g))/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((8*c^3*e*(3*b*e*g - 4*c*d*g +
 c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d^2*g + 26*b^2*c^2*e^2*g -
32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^2*d^2*g + 5*b*c*e^2*f - 8*c
^2*d*e*f - 16*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((4*c^3*e*(17
*b*e*g - 30*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (
8*c^4*d*e*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (416*c^4*d^2*g
 + 136*b^2*c^2*e^2*g - 120*c^4*d*e*f + 68*b*c^3*e^2*f - 476*b*c^3*d*e*g)/(9
9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (4*b*c*(13*b^2*e^2*g + 52*c^2
*d^2*g + 8*b*c*e^2*f - 15*c^2*d*e*f - 52*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*
e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^4 + (((d*((d*((16*c^4*e*(7*b*e*g - 12*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^3)))/e - (244*b^2*c^3*e^3*g + 112*b*c^4*e^3*f - 192*c^5*d*e^2*f + 768*
c^5*d^2*e*g - 864*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
3)))/e + (132*b^2*c^3*e^3*f - 832*c^5*d^3*g + 160*b^3*c^2*e^3*g + 320*c^5*d
^2*e*f - 416*b*c^4*d*e^2*f + 1472*b*c^4*d^2*e*g - 848*b^2*c^3*d*e^2*g)/(693
*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((8*c^4*e*(23*b*e*g - 42*c*d*g + 2*c*e*f
))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (712*b^2*c^3*e^3*g + 184*b*c^4*e^3*f -
 336*c^5*d*e^2*f + 2496*c^5*d^2*e*g - 2664*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1792*c^5*d^3*g - 72*b^2*c^3*e^3*f - 544*
b^3*c^2*e^3*g + 64*c^5*d^2*e*f + 104*b*c^4*d*e^2*f - 3968*b*c^4*d^2*e*g + 2
624*b^2*c^3*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(13*
b*e*g - 22*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (
32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (488*b^2*c^4
*e^3*g + 208*b*c^5*e^3*f - 352*c^6*d*e^2*f + 1568*c^6*d^2*e*g - 1744*b*c^5*
d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (240*b^2*c^4*e^
3*f - 1824*c^6*d^3*g + 352*b^3*c^3*e^3*g + 576*c^6*d^2*e*f - 752*b*c^5*d*e^
2*f + 3232*b*c^5*d^2*e*g - 1864*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
2 - (((d*((d*((8*c^4*e*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3)))/e - (816*b^2*c^3*e^3*g + 200*b*c^4*e^3*f - 368*c^5*d*e^2*f + 288
0*c^5*d^2*e*g - 3064*b*c^4*d*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3)))/e + (352*b^2*c^3*e^3*f - 4352*c^5*d^3*g + 776*b^3*c^2*e^3*g + 1024*
c^5*d^2*e*f - 1208*b*c^4*d*e^2*f + 7456*b*c^4*d^2*e*g - 4192*b^2*c^3*d*e^2*
g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(10*b*e*g - 18*c*d*g +
 c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1160*b^2*c^4*e^3*g + 320*b*c^5*
e^3*f - 576*c^6*d*e^2*f + 4032*c^6*d^2*e*g - 4320*b*c^5*d*e^2*g)/(3465*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2528*c^6*d^3*g - 144*b^2*c^4*e^3*
f - 824*b^3*c^3*e^3*g + 32*c^6*d^2*e*f + 256*b*c^5*d*e^2*f - 5824*b*c^5*d^2
*e*g + 3928*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^
5*e*(11*b*e*g - 20*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1352*
b^2*c^4*e^3*g + 352*b*c^5*e^3*f - 640*c^6*d*e^2*f + 4736*c^6*d^2*e*g - 5056
*b*c^5*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (528*b^2
*c^4*e^3*f - 7008*c^6*d^3*g + 1288*b^3*c^3*e^3*g + 1440*c^6*d^2*e*f - 1760*
b*c^5*d*e^2*f + 12160*b*c^5*d^2*e*g - 6904*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x)^2 + (((d*((d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(3465*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^4)))/e - (1544*b^2*c^4*e^3*g + 384*b*c^5*e^3*f - 704*c^6*d*
e^2*f + 5440*c^6*d^2*e*g - 5792*b*c^5*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^4)))/e + (592*b^2*c^4*e^3*f - 8160*c^6*d^3*g + 1496*b^3*c^3*e
^3*g + 1632*c^6*d^2*e*f - 1984*b*c^5*d*e^2*f + 14144*b*c^5*d^2*e*g - 8024*b
^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((400*b^2*c^5*e^3*f - 3328*c
^7*d^3*g + 680*b^3*c^4*e^3*g + 896*c^7*d^2*e*f - 1216*b*c^6*d*e^2*f + 6048*
b*c^6*d^2*e*g - 3552*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*
((64*c^6*(6*b*e*g - 10*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*
g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(29*b^2*e^2*g + 94*c^2*d^2*g + 12*
b*c*e^2*f - 20*c^2*d*e*f - 104*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((352*b^2*c^5*e^3*
f - 4160*c^7*d^3*g + 1248*b^3*c^4*e^3*g + 384*c^7*d^2*e*f - 864*b*c^6*d*e^2
*f + 9152*b*c^6*d^2*e*g - 6032*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6)
 + (d*((d*((32*c^6*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6)
 - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(113*b^2*e^2*g + 388*
c^2*d^2*g + 34*b*c*e^2*f - 60*c^2*d*e*f - 418*b*c*d*e*g))/(10395*e*(b*e - 2
*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((7
36*b^2*c^5*e^3*f - 9600*c^7*d^3*g + 1912*b^3*c^4*e^3*g + 1792*c^7*d^2*e*f -
 2336*b*c^6*d*e^2*f + 17248*b*c^6*d^2*e*g - 10048*b^2*c^5*d*e^2*g)/(10395*e
^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(103
95*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(1
35*b^2*e^2*g + 468*c^2*d^2*g + 38*b*c*e^2*f - 68*c^2*d*e*f - 502*b*c*d*e*g)
)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((7616*c^7*d^3*g - 352*b^2*c^5*e^3*f - 2832*b^3*c^4*e^3*g +
 192*c^7*d^2*e*f + 576*b*c^6*d*e^2*f - 18944*b*c^6*d^2*e*g + 13232*b^2*c^5*
d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((d*((64*c^6*(13*b*e*g - 24*c*d*g
 + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))
/e - (16*c^5*(257*b^2*e^2*g + 928*c^2*d^2*g + 52*b*c*e^2*f - 96*c^2*d*e*f -
 976*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((8384*c^7*d^3*g - 352*b^2*c^5*e^3*f - 3184*
b^3*c^4*e^3*g + 320*c^7*d^2*e*f + 512*b*c^6*d*e^2*f - 21120*b*c^6*d^2*e*g +
 14832*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((d*((64*c^6*(14*b
*e*g - 26*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*
e - 2*c*d)^6)))/e - (16*c^5*(289*b^2*e^2*g + 1048*c^2*d^2*g + 56*b*c*e^2*f
- 104*c^2*d*e*f - 1100*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((832*b^2*c^5*e^3*f - 1139
2*c^7*d^3*g + 2264*b^3*c^4*e^3*g + 2048*c^7*d^2*e*f - 2656*b*c^6*d*e^2*f +
20448*b*c^6*d^2*e*g - 11904*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) +
(d*((d*((32*c^6*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) -
(64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(157*b^2*e^2*g + 548*c^2
*d^2*g + 42*b*c*e^2*f - 76*c^2*d*e*f - 586*b*c*d*e*g))/(10395*e*(b*e - 2*c*
d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5504
*c^7*d^3*g - 352*b^2*c^5*e^3*f - 4768*b^3*c^4*e^3*g + 896*c^7*d^2*e*f + 224
*b*c^6*d*e^2*f - 24576*b*c^6*d^2*e*g + 20448*b^2*c^5*d*e^2*g)/(10395*e^2*(b
*e - 2*c*d)^6) - (d*((d*((32*c^6*(37*b*e*g - 70*c*d*g + 2*c*e*f))/(10395*(b
*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(266*b^
2*e^2*g + 992*c^2*d^2*g + 37*b*c*e^2*f - 70*c^2*d*e*f - 1027*b*c*d*e*g))/(1
0395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) - (((928*b^2*c^5*e^3*f - 13184*c^7*d^3*g + 2616*b^3*c^4*e^3*g + 23
04*c^7*d^2*e*f - 2976*b*c^6*d*e^2*f + 23648*b*c^6*d^2*e*g - 13760*b^2*c^5*d
*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(23*b*e*g - 42*c*d*g
+ 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6))
)/e - (16*c^5*(179*b^2*e^2*g + 628*c^2*d^2*g + 46*b*c*e^2*f - 84*c^2*d*e*f
- 670*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x) + (((992*b^2*c^5*e^3*f - 13504*c^7*d^3*g + 299
2*b^3*c^4*e^3*g + 2496*c^7*d^2*e*f - 3200*b*c^6*d*e^2*f + 25472*b*c^6*d^2*e
*g - 15344*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(
12*b*e*g - 22*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395
*(b*e - 2*c*d)^6)))/e - (16*c^5*(225*b^2*e^2*g + 808*c^2*d^2*g + 48*b*c*e^2
*f - 88*c^2*d*e*f - 852*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((224*b^2*c^5*e^3*f - 206
08*c^7*d^3*g + 5920*b^3*c^4*e^3*g - 1152*c^7*d^2*e*f + 160*b*c^6*d*e^2*f +
44288*b*c^6*d^2*e*g - 28832*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) +
(d*((d*((32*c^6*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) -
(64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(216*b^2*e^2*g + 800*c^2
*d^2*g + 33*b*c*e^2*f - 62*c^2*d*e*f - 831*b*c*d*e*g))/(10395*e*(b*e - 2*c*
d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1168
*b^2*c^5*e^3*f - 25728*c^7*d^3*g + 5008*b^3*c^4*e^3*g + 2944*c^7*d^2*e*f -
3776*b*c^6*d*e^2*f + 45760*b*c^6*d^2*e*g - 26464*b^2*c^5*d*e^2*g)/(10395*e^
2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(14*b*e*g - 26*c*d*g + c*e*f))/(10395*
(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(297*
b^2*e^2*g + 1080*c^2*d^2*g + 56*b*c*e^2*f - 104*c^2*d*e*f - 1132*b*c*d*e*g)
)/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((1264*b^2*c^5*e^3*f - 29312*c^7*d^3*g + 5696*b^3*c^4*e^3*g
 + 3200*c^7*d^2*e*f - 4096*b*c^6*d*e^2*f + 52096*b*c^6*d^2*e*g - 30112*b^2*
c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((64*c^6*(15*b*e*g - 28*c
*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^
6)))/e - (16*c^5*(333*b^2*e^2*g + 1216*c^2*d^2*g + 60*b*c*e^2*f - 112*c^2*d
*e*f - 1272*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1360*b^2*c^5*e^3*f - 33920*c^7*d^3*
g + 6576*b^3*c^4*e^3*g + 3456*c^7*d^2*e*f - 4416*b*c^6*d*e^2*f + 60224*b*c^
6*d^2*e*g - 34784*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((6
4*c^6*(16*b*e*g - 30*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)
/(10395*(b*e - 2*c*d)^6)))/e - (16*c^5*(377*b^2*e^2*g + 1384*c^2*d^2*g + 64
*b*c*e^2*f - 120*c^2*d*e*f - 1444*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2400*b^2*c^5*
e^3*f - 40960*c^7*d^3*g + 7744*b^3*c^4*e^3*g + 7424*c^7*d^2*e*f - 8480*b*c^
6*d*e^2*f + 71936*b*c^6*d^2*e*g - 41216*b^2*c^5*d*e^2*g)/(10395*e^2*(b*e -
2*c*d)^6) + (d*((d*((32*c^6*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(10395*(b*e -
2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (32*c^5*(239*b^2*e^2
*g + 888*c^2*d^2*g + 35*b*c*e^2*f - 66*c^2*d*e*f - 921*b*c*d*e*g))/(10395*e
*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x) - (((1696*b^2*c^5*e^3*f - 58112*c^7*d^3*g + 11168*b^3*c^4*e^3*g + 4352*c
^7*d^2*e*f - 5536*b*c^6*d*e^2*f + 102784*b*c^6*d^2*e*g - 59200*b^2*c^5*d*e^
2*g)/(10395*e^2*(b*e - 2*c*d)^6) + (d*((d*((32*c^6*(39*b*e*g - 74*c*d*g + 2
*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e
 - (32*c^5*(297*b^2*e^2*g + 1112*c^2*d^2*g + 39*b*c*e^2*f - 74*c^2*d*e*f -
1149*b*c*d*e*g))/(10395*e*(b*e - 2*c*d)^6)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(8*b*e*g - 14*c*d*g + c*e*
f))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(11*(9*b*e^2 -
18*c*d*e)*(b*e - 2*c*d))))/e - (32*b*c^2*e^3*f + 52*b^2*c*e^3*g - 56*c^3*d*
e^2*f + 148*c^3*d^2*e*g - 176*b*c^2*d*e^2*g)/(11*e*(9*b*e^2 - 18*c*d*e)*(b*
e - 2*c*d))))/e + (4*(b*e - c*d)*(6*b^2*e^2*g + 24*c^2*d^2*g + 7*b*c*e^2*f
- 13*c^2*d*e*f - 24*b*c*d*e*g))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((2*b^3*e^2*g +
 8*b*c^2*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*e*g)/(11*(9*b*e^
2 - 18*c*d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*d*e*f + 10*b*c^2*
e^2*f + 8*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c
*d)) - (d*((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(11*(9*b*e^2 - 18*c*d*e)
*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((d*(
(8*c^4*e*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e -
(208*c^5*d^2*g + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56*b*c^4*e^2*f - 248*b*c
^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (2*b*c^2*(13*b^2
*e^2*g + 52*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 52*b*c*d*e*g))/(693*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*g + c*e*f))/(69
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^3)))/e - (928*c^5*d^2*g + 292*b^2*c^3*e^2*g - 224*c^5
*d*e*f + 128*b*c^4*e^2*f - 1040*b*c^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^3)))/e + (4*b*c^2*(29*b^2*e^2*g + 116*c^2*d^2*g + 15*b*c*e^2*f -
28*c^2*d*e*f - 116*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^
4*e*(9*b*e*g - 16*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^5*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1088*c
^5*d^2*g + 340*b^2*c^3*e^2*g - 256*c^5*d*e*f + 144*b*c^4*e^2*f - 1216*b*c^4
*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(34*b^2*e
^2*g + 136*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 136*b*c*d*e*g))/(693*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^3 - (((d*((d*((8*c^4*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(
693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(693*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^3)))/e - (3392*c^5*d^2*g + 952*b^2*c^3*e^2*g - 400*
c^5*d*e*f + 216*b*c^4*e^2*f - 3592*b*c^4*d*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^3)))/e + (8*b*c^2*(53*b^2*e^2*g + 212*c^2*d^2*g + 13*b*c*e^2*f
 - 25*c^2*d*e*f - 212*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32
*c^5*e*(4*b*e*g - 6*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (608*
c^6*d^2*g + 208*b^2*c^4*e^2*g - 192*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5
*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(19*b^2*e
^2*g + 76*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 76*b*c*d*e*g))/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(15*b*e*g - 26*c*d*g + 2*c*e*f))/(3
465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1952*c^6*d^2*g + 600*b^2*c^4*e^2*g - 416*c
^6*d*e*f + 240*b*c^5*e^2*f - 2160*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^4)))/e + (4*b*c^3*(61*b^2*e^2*g + 244*c^2*d^2*g + 28*b*c*e^2*f
- 52*c^2*d*e*f - 244*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*
c^5*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2
336*c^6*d^2*g + 712*b^2*c^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2576*
b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(73*
b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 60*c^2*d*e*f - 292*b*c*d*e*g))/(
3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(19*b*e*g - 34*c*d*g + 2*c*e
*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2720*c^6*d^2*g + 824*b^2*c^4*e^2*g
- 544*c^6*d*e*f + 304*b*c^5*e^2*f - 2992*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(85*b^2*e^2*g + 340*c^2*d^2*g + 36*b*c
*e^2*f - 68*c^2*d*e*f - 340*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((
d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e
 - (5696*c^6*d^2*g + 1608*b^2*c^4*e^2*g - 704*c^6*d*e*f + 384*b*c^5*e^2*f -
 6048*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^
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3*(89*b^2*e^2*g + 356*c^2*d^2*g + 23*b*c*e^2*f - 44*c^2*d*e*f - 356*b*c*d*e
*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((32*c^5*e*(13*b*e*g - 24*c*d*g +
 c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (6528*c^6*d^2*g + 1832*b^2*c^4*e
^2*g - 768*c^6*d*e*f + 416*b*c^5*e^2*f - 6912*b*c^5*d*e*g)/(3465*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(102*b^2*e^2*g + 408*c^2*d^2*g +
25*b*c*e^2*f - 48*c^2*d*e*f - 408*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (
((d*((d*((32*c^5*e*(14*b*e*g - 26*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4)))/e - (7616*c^6*d^2*g + 2120*b^2*c^4*e^2*g - 832*c^6*d*e*f + 448*b*c^5*e
^2*f - 8032*b*c^5*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (
8*b*c^3*(119*b^2*e^2*g + 476*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 476*
b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(35*b*e*g - 66*
c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*
g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (13440*c^6*d^2*g + 3632
*b^2*c^4*e^2*g - 1056*c^6*d*e*f + 560*b*c^5*e^2*f - 13968*b*c^5*d*e*g)/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (16*b*c^3*(105*b^2*e^2*g + 420
*c^2*d^2*g + 17*b*c*e^2*f - 33*c^2*d*e*f - 420*b*c*d*e*g))/(3465*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((d*((d*((16*c^5*e*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(3465*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4)))/e - (16*c^4*(177*b^2*e^2*g + 648*c^2*d^2*g + 31*b*c*e^2
*f - 58*c^2*d*e*f - 677*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^4)))/e - (2176*c^6*d^3*g + 208*b^2*c^4*e^3*f - 1792*b^3*c^3*e^3*g + 1792*c
^6*d^2*e*f - 1328*b*c^5*d*e^2*f - 9344*b*c^5*d^2*e*g + 7712*b^2*c^4*d*e^2*g
)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(29*b*e*g - 54*c*d*g +
2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(158*b^2*e^2*g + 576*c^
2*d^2*g + 29*b*c*e^2*f - 54*c^2*d*e*f - 603*b*c*d*e*g))/(3465*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^4)))/e + (816*b^2*c^4*e^3*f - 9920*c^6*d^3*g + 2096*b^
3*c^3*e^3*g + 2368*c^6*d^2*e*f - 2800*b*c^5*d*e^2*f + 18304*b*c^5*d^2*e*g -
 10864*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*(
33*b*e*g - 62*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
- (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(
200*b^2*e^2*g + 736*c^2*d^2*g + 33*b*c*e^2*f - 62*c^2*d*e*f - 767*b*c*d*e*g
))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (880*b^2*c^4*e^3*f - 22
848*c^6*d^3*g + 4016*b^3*c^3*e^3*g + 2496*c^6*d^2*e*f - 2992*b*c^5*d*e^2*f
+ 38912*b*c^5*d^2*e*g - 21776*b^2*c^4*d*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
+ (((d*((d*((64*c^6*(22*b*e*g - 42*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6)
- (64*c^7*d*g)/(10395*(b*e - 2*c*d)^6)))/e - (64*c^5*(196*b^2*e^2*g + 741*c
^2*d^2*g + 22*b*c*e^2*f - 42*c^2*d*e*f - 762*b*c*d*e*g))/(10395*e*(b*e - 2*
c*d)^6)))/e + (64*c^4*(b*e - c*d)*(175*b^2*e^2*g + 700*c^2*d^2*g + 21*b*c*e
^2*f - 41*c^2*d*e*f - 700*b*c*d*e*g))/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*f*(b*e - c*d)^2)/(11*
b*e^2 - 22*c*d*e) + (d*((d*((2*c*e*(2*b*e*g - 2*c*d*g + c*e*f))/(11*b*e^2 -
 22*c*d*e) - (2*c^2*d*e*g)/(11*b*e^2 - 22*c*d*e)))/e - (2*(b*e - c*d)*(b*e*
g - c*d*g + 2*c*e*f))/(11*b*e^2 - 22*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^6 - (((d*((d*((4*c^3*e*(15*b*e*g - 26*c*d*g +
2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(99*(7*
b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (116*b^2*c^2*e^3*g + 60*b*c^3*e^3*
f - 104*c^4*d*e^2*f + 352*c^4*d^2*e*g - 404*b*c^3*d*e^2*g)/(99*e*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (68*b^2*c^2*e^3*f - 320*c^4*d^3*g + 64*b^
3*c*e^3*g + 160*c^4*d^2*e*f - 212*b*c^3*d*e^2*f + 576*b*c^3*d^2*e*g - 336*b
```

```
^2*c^2*d*e^2*g)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((16*c^4*e*(17*b*e*g
- 32*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d
*e*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(105*b^2*e^2
*g + 387*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 403*b*c*d*e*g))/(693*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(89*b^2*e^2*g
+ 356*c^2*d^2*g + 16*b*c*e^2*f - 31*c^2*d*e*f - 356*b*c*d*e*g))/(693*e*(5*b
*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(20*b*e*g - 38*c*d*g + c*e*f))/(3465
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(3465*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^4*(156*b^2*e^2*g + 585*c^2*d^2*g + 20*b*
c*e^2*f - 38*c^2*d*e*f - 604*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4)))/e + (32*c^3*(b*e - c*d)*(137*b^2*e^2*g + 548*c^2*d^2*g + 19*b*c*
e^2*f - 37*c^2*d*e*f - 548*b*c*d*e*g))/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{8}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**8,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**8, x)
```

3.2194 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{15015e^2(d+ex)^5(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+1}{3003e^2(d+ex)^6(2cd-be)^4}$$

```
[Out] -2/13*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^9-2/143*(-13*b*e*g+18*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(5/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^8-4/429*c*(-13*b*e*g+18*c*d*g+8*c*e*f)*(d
*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^7-16/3003*c
^2*(-13*b*e*g+18*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/
(-b*e+2*c*d)^4/(e*x+d)^6-32/15015*c^3*(-13*b*e*g+18*c*d*g+8*c*e*f)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)^5/(e*x+d)^5
```

Rubi [A] time = 0.57, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+18cdg+8cef)}{15015e^2(d+ex)^5(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-13beg+1}{3003e^2(d+ex)^6(2cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^9,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^9) - (2*(8*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^8) - (4*c*(8
*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/
(429*e^2*(2*c*d - b*e)^3*(d + e*x)^7) - (16*c^2*(8*c*e*f + 18*c*d*g - 13*b*
e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3003*e^2*(2*c*d - b*e)^4
*(d + e*x)^6) - (32*c^3*(8*c*e*f + 18*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(15015*e^2*(2*c*d - b*e)^5*(d + e*x)^5)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\big(cd^2-bde-be^2x-ce^2x^2\big)^{3/2}}{(d+ex)^9}\,dx = -\frac{2(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{5/2}}{13e^2(2cd-be)(d+ex)^9} + \frac{(8cef+18cdg-13be}{13e}$$

$$= -\frac{2(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-13b}{143e^2(}$$

$$= -\frac{2(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-13b}{143e^2(}$$

$$= -\frac{2(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-13b}{143e^2(}$$

$$= -\frac{2(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{5/2}}{13e^2(2cd-be)(d+ex)^9} - \frac{2(8cef+18cdg-13b}{143e^2(}$$

Mathematica [A] time = 0.26, size = 349, normalized size = 0.97

$$2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\ \big(105b^4e^4(2dg+11ef+13egx)-70b^3ce^3\big(25d^2g+2de(72f+85gx)+$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^9,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(105*b^4
*e^4*(11*e*f + 2*d*g + 13*e*g*x) - 70*b^3*c*e^3*(25*d^2*g + e^2*x*(12*f + 1
3*g*x) + 2*d*e*(72*f + 85*g*x)) + 20*b^2*c^2*e^2*(271*d^3*g + 2*e^3*x^2*(14
*f + 13*g*x) + d*e^2*x*(308*f + 323*g*x) + 2*d^2*e*(833*f + 977*g*x)) + 16*
c^4*(213*d^5*g + 8*e^5*f*x^4 + 18*d*e^4*x^3*(4*f + g*x) + 2*d^2*e^3*x^2*(15
4*f + 81*g*x) + 3*d^3*e^2*x*(284*f + 231*g*x) + d^4*e*(1763*f + 1917*g*x))
- 8*b*c^3*e*(911*d^4*g + 2*e^4*x^3*(20*f + 13*g*x) + 4*d*e^3*x^2*(100*f + 8
1*g*x) + d^2*e^2*x*(1940*f + 1901*g*x) + d^3*e*(6200*f + 7134*g*x))))/(1501
5*e^2*(-2*c*d + b*e)^5*(d + e*x)^7)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2 (cex+be-cd) \left(-208b c^3 e^5 g x^4+288c^4 d e^4 g x^4+128c^4 e^5 f x^4+520b^2 c^2 e^5 g x^3-2592b c^3 d e^4 g x^3-320b c^3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x)
```

```
[Out] -2/15015*(c*e*x+b*e-c*d)*(-208*b*c^3*e^5*g*x^4+288*c^4*d*e^4*g*x^4+128*c^4*
e^5*f*x^4+520*b^2*c^2*e^5*g*x^3-2592*b*c^3*d*e^4*g*x^3-320*b*c^3*e^5*f*x^3+
2592*c^4*d^2*e^3*g*x^3+1152*c^4*d*e^4*f*x^3-910*b^3*c*e^5*g*x^2+6460*b^2*c^
2*d*e^4*g*x^2+560*b^2*c^2*e^5*f*x^2-15208*b*c^3*d^2*e^3*g*x^2-3200*b*c^3*d*
e^4*f*x^2+11088*c^4*d^3*e^2*g*x^2+4928*c^4*d^2*e^3*f*x^2+1365*b^4*e^5*g*x-1
1900*b^3*c*d*e^4*g*x-840*b^3*c*e^5*f*x+39080*b^2*c^2*d^2*e^3*g*x+6160*b^2*c
^2*d*e^4*f*x-57072*b*c^3*d^3*e^2*g*x-15520*b*c^3*d^2*e^3*f*x+30672*c^4*d^4*
e*g*x+13632*c^4*d^3*e^2*f*x+210*b^4*d*e^4*g+1155*b^4*e^5*f-1750*b^3*c*d^2*e
^3*g-10080*b^3*c*d*e^4*f+5420*b^2*c^2*d^3*e^2*g+33320*b^2*c^2*d^2*e^3*f-728
8*b*c^3*d^4*e*g-49600*b*c^3*d^3*e^2*f+3408*c^4*d^5*g+28208*c^4*d^4*e*f)*(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^8/e^2/(b^5*e^5-10*b^4*c*d*e^4+4
0*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^9,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 82.71, size = 33375, normalized size = 92.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^9,x)
```

```
[Out] (((d*((d*((128*c^7*(5*b*e*g - 8*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) -
(128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (4352*c^8*d^2*g + 1376*b^2*c^6
*e^2*g - 1024*c^8*d*e*f + 640*b*c^7*e^2*f - 4864*b*c^7*d*e*g)/(135135*e*(b*
e - 2*c*d)^7)))/e + (32*b*c^5*(17*b^2*e^2*g + 68*c^2*d^2*g + 9*b*c*e^2*f -
16*c^2*d*e*f - 68*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(15*b*e*g - 26*c*
d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c
*d)^7)))/e - (9472*c^8*d^2*g + 2816*b^2*c^6*e^2*g - 1664*c^8*d*e*f + 960*b*
c^7*e^2*f - 10304*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(
37*b^2*e^2*g + 148*c^2*d^2*g + 14*b*c*e^2*f - 26*c^2*d*e*f - 148*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) - (((d*((d*((64*c^7*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (11520*c^8*d^2*
g + 3392*b^2*c^6*e^2*g - 1920*c^8*d*e*f + 1088*b*c^7*e^2*f - 12480*b*c^7*d*
e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(45*b^2*e^2*g + 180*c^2*d^2
*g + 16*b*c*e^2*f - 30*c^2*d*e*f - 180*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*
c^7*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (13568*c^8*d^2*g + 3968*b^2*c^6*e^2*g - 2
176*c^8*d*e*f + 1216*b*c^7*e^2*f - 14656*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*
d)^7)))/e + (32*b*c^5*(53*b^2*e^2*g + 212*c^2*d^2*g + 18*b*c*e^2*f - 34*c^2
*d*e*f - 212*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(21*b*e*g - 38*c*d*g +
 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7
)))/e - (15616*c^8*d^2*g + 4544*b^2*c^6*e^2*g - 2432*c^8*d*e*f + 1344*b*c^7
*e^2*f - 16832*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(61*
b^2*e^2*g + 244*c^2*d^2*g + 20*b*c*e^2*f - 38*c^2*d*e*f - 244*b*c*d*e*g))/(
135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) - (((d*((d*((64*c^7*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(135135*(b*e -
2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (17664*c^8*d^2*g +
 5120*b^2*c^6*e^2*g - 2688*c^8*d*e*f + 1472*b*c^7*e^2*f - 19008*b*c^7*d*e*g
)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(69*b^2*e^2*g + 276*c^2*d^2*g
+ 22*b*c*e^2*f - 42*c^2*d*e*f - 276*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^
7*(11*b*e*g - 20*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(
135135*(b*e - 2*c*d)^7)))/e - (21120*c^8*d^2*g + 5952*b^2*c^6*e^2*g - 2560*
c^8*d*e*f + 1408*b*c^7*e^2*f - 22400*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7
)))/e + (16*b*c^5*(165*b^2*e^2*g + 660*c^2*d^2*g + 42*b*c*e^2*f - 80*c^2*d*
e*f - 660*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(12*b*e*g - 22*c*d*g + c
*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/
e - (24448*c^8*d^2*g + 6848*b^2*c^6*e^2*g - 2816*c^8*d*e*f + 1536*b*c^7*e^2
*f - 25856*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(191*b^2
*e^2*g + 764*c^2*d^2*g + 46*b*c*e^2*f - 88*c^2*d*e*f - 764*b*c*d*e*g))/(135
135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((d*((128*c^7*(13*b*e*g - 24*c*d*g + c*e*f))/(135135*(b*e - 2*c*
d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (27776*c^8*d^2*g + 774
4*b^2*c^6*e^2*g - 3072*c^8*d*e*f + 1664*b*c^7*e^2*f - 29312*b*c^7*d*e*g)/(1
35135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(217*b^2*e^2*g + 868*c^2*d^2*g + 5
0*b*c*e^2*f - 96*c^2*d*e*f - 868*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(
13*b*e*g - 24*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135
135*(b*e - 2*c*d)^7)))/e - (28800*c^8*d^2*g + 8000*b^2*c^6*e^2*g - 3072*c^8
*d*e*f + 1664*b*c^7*e^2*f - 30336*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))
/e + (16*b*c^5*(225*b^2*e^2*g + 900*c^2*d^2*g + 50*b*c*e^2*f - 96*c^2*d*e*f
 - 900*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(14*b*e*g - 26*c*d*g + c*e*
f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e -
 (31104*c^8*d^2*g + 8640*b^2*c^6*e^2*g - 3328*c^8*d*e*f + 1792*b*c^7*e^2*f
- 32768*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(243*b^2*e^
2*g + 972*c^2*d^2*g + 54*b*c*e^2*f - 104*c^2*d*e*f - 972*b*c*d*e*g))/(13513
5*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) + (((d*((d*((128*c^7*(14*b*e*g - 26*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32640*c^8*d^2*g + 9024*
b^2*c^6*e^2*g - 3328*c^8*d*e*f + 1792*b*c^7*e^2*f - 34304*b*c^7*d*e*g)/(135
135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(255*b^2*e^2*g + 1020*c^2*d^2*g + 54
*b*c*e^2*f - 104*c^2*d*e*f - 1020*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*
(15*b*e*g - 28*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(13
5135*(b*e - 2*c*d)^7)))/e - (36480*c^8*d^2*g + 10048*b^2*c^6*e^2*g - 3584*c
^8*d*e*f + 1920*b*c^7*e^2*f - 38272*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)
```

```
))/e + (16*b*c^5*(285*b^2*e^2*g + 1140*c^2*d^2*g + 58*b*c*e^2*f - 112*c^2*d
*e*f - 1140*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(15*b*e*g - 28*c*d*g +
 c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7))
)/e - (37504*c^8*d^2*g + 10304*b^2*c^6*e^2*g - 3584*c^8*d*e*f + 1920*b*c^7*
e^2*f - 39296*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(293*
b^2*e^2*g + 1172*c^2*d^2*g + 58*b*c*e^2*f - 112*c^2*d*e*f - 1172*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) + (((d*((d*((128*c^7*(16*b*e*g - 30*c*d*g + c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (41856*c^8*d^2*g
 + 11456*b^2*c^6*e^2*g - 3840*c^8*d*e*f + 2048*b*c^7*e^2*f - 43776*b*c^7*d*
e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(327*b^2*e^2*g + 1308*c^2*d
^2*g + 62*b*c*e^2*f - 120*c^2*d*e*f - 1308*b*c*d*e*g))/(135135*e*(b*e - 2*c
*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*(
(64*c^7*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (44160*c^8*d^2*g + 12000*b^2*c^6*e^2*
g - 3712*c^8*d*e*f + 1984*b*c^7*e^2*f - 46016*b*c^7*d*e*g)/(135135*e*(b*e -
 2*c*d)^7)))/e + (16*b*c^5*(345*b^2*e^2*g + 1380*c^2*d^2*g + 60*b*c*e^2*f -
 116*c^2*d*e*f - 1380*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(17*b*e*g -
32*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e -
2*c*d)^7)))/e - (47232*c^8*d^2*g + 12864*b^2*c^6*e^2*g - 4096*c^8*d*e*f + 2
176*b*c^7*e^2*f - 49280*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b
*c^5*(369*b^2*e^2*g + 1476*c^2*d^2*g + 66*b*c*e^2*f - 128*c^2*d*e*f - 1476*
b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(1
35135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (4928
0*c^8*d^2*g + 13344*b^2*c^6*e^2*g - 3968*c^8*d*e*f + 2112*b*c^7*e^2*f - 512
64*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(385*b^2*e^2*g +
 1540*c^2*d^2*g + 64*b*c*e^2*f - 124*c^2*d*e*f - 1540*b*c*d*e*g))/(135135*e
*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((d*((64*c^7*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7
) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (54400*c^8*d^2*g + 14688*b
^2*c^6*e^2*g - 4224*c^8*d*e*f + 2240*b*c^7*e^2*f - 56512*b*c^7*d*e*g)/(1351
35*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(425*b^2*e^2*g + 1700*c^2*d^2*g + 68*
b*c*e^2*f - 132*c^2*d*e*f - 1700*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(3
5*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(13
5135*(b*e - 2*c*d)^7)))/e - (55424*c^8*d^2*g + 14944*b^2*c^6*e^2*g - 4224*c
^8*d*e*f + 2240*b*c^7*e^2*f - 57536*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)
))/e + (16*b*c^5*(433*b^2*e^2*g + 1732*c^2*d^2*g + 68*b*c*e^2*f - 132*c^2*d
*e*f - 1732*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(37*b*e*g - 70*c*d*g +
2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)
))/e - (61056*c^8*d^2*g + 16416*b^2*c^6*e^2*g - 4480*c^8*d*e*f + 2368*b*c^7
*e^2*f - 63296*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(477
*b^2*e^2*g + 1908*c^2*d^2*g + 72*b*c*e^2*f - 140*c^2*d*e*f - 1908*b*c*d*e*g
))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) - (((d*((d*((64*c^7*(37*b*e*g - 70*c*d*g + 2*c*e*f))/(135135*(b*
e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (62592*c^8*d^2
*g + 16800*b^2*c^6*e^2*g - 4480*c^8*d*e*f + 2368*b*c^7*e^2*f - 64832*b*c^7*
d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(489*b^2*e^2*g + 1956*c^2
*d^2*g + 72*b*c*e^2*f - 140*c^2*d*e*f - 1956*b*c*d*e*g))/(135135*e*(b*e - 2
*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d
*((64*c^7*(39*b*e*g - 74*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*
c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (67712*c^8*d^2*g + 18144*b^2*c^6*e^
2*g - 4736*c^8*d*e*f + 2496*b*c^7*e^2*f - 70080*b*c^7*d*e*g)/(135135*e*(b*e
 - 2*c*d)^7)))/e + (16*b*c^5*(529*b^2*e^2*g + 2116*c^2*d^2*g + 76*b*c*e^2*f
 - 148*c^2*d*e*f - 2116*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*
```

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e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(39*b*e*g -
 74*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e
 - 2*c*d)^7)))/e - (68736*c^8*d^2*g + 18400*b^2*c^6*e^2*g - 4736*c^8*d*e*f
+ 2496*b*c^7*e^2*f - 71104*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (1
6*b*c^5*(537*b^2*e^2*g + 2148*c^2*d^2*g + 76*b*c*e^2*f - 148*c^2*d*e*f - 21
48*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(41*b*e*g - 78*c*d*g + 2*c*e*f))
/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (7
5904*c^8*d^2*g + 20256*b^2*c^6*e^2*g - 4992*c^8*d*e*f + 2624*b*c^7*e^2*f -
78400*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (16*b*c^5*(593*b^2*e^2*
g + 2372*c^2*d^2*g + 80*b*c*e^2*f - 156*c^2*d*e*f - 2372*b*c*d*e*g))/(13513
5*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) + (((d*((d*((128*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (84992*c^8*d^2*g + 22560
*b^2*c^6*e^2*g - 5120*c^8*d*e*f + 2688*b*c^7*e^2*f - 87552*b*c^7*d*e*g)/(13
5135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(332*b^2*e^2*g + 1328*c^2*d^2*g + 4
1*b*c*e^2*f - 80*c^2*d*e*f - 1328*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(
43*b*e*g - 82*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(1
35135*(b*e - 2*c*d)^7)))/e - (84096*c^8*d^2*g + 22368*b^2*c^6*e^2*g - 5248*
c^8*d*e*f + 2752*b*c^7*e^2*f - 86720*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7
)))/e + (16*b*c^5*(657*b^2*e^2*g + 2628*c^2*d^2*g + 84*b*c*e^2*f - 164*c^2*
d*e*f - 2628*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(22*b*e*g - 42*c*d*g
 + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)
))/e - (92416*c^8*d^2*g + 24480*b^2*c^6*e^2*g - 5376*c^8*d*e*f + 2816*b*c^7
*e^2*f - 95104*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(361
*b^2*e^2*g + 1444*c^2*d^2*g + 43*b*c*e^2*f - 84*c^2*d*e*f - 1444*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) + (((d*((d*((128*c^7*(23*b*e*g - 44*c*d*g + c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (100864*c^8*d^2*
g + 26656*b^2*c^6*e^2*g - 5632*c^8*d*e*f + 2944*b*c^7*e^2*f - 103680*b*c^7*
d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (32*b*c^5*(394*b^2*e^2*g + 1576*c^2
*d^2*g + 45*b*c*e^2*f - 88*c^2*d*e*f - 1576*b*c*d*e*g))/(135135*e*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*
((128*c^7*(24*b*e*g - 46*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (110336*c^8*d^2*g + 29088*b^2*c^6*e^2
*g - 5888*c^8*d*e*f + 3072*b*c^7*e^2*f - 113280*b*c^7*d*e*g)/(135135*e*(b*e
 - 2*c*d)^7)))/e + (32*b*c^5*(431*b^2*e^2*g + 1724*c^2*d^2*g + 47*b*c*e^2*f
 - 92*c^2*d*e*f - 1724*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((128*c^7*(25*b*e*g -
 48*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e -
 2*c*d)^7)))/e - (120832*c^8*d^2*g + 31776*b^2*c^6*e^2*g - 6144*c^8*d*e*f +
 3200*b*c^7*e^2*f - 123904*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (3
2*b*c^5*(472*b^2*e^2*g + 1888*c^2*d^2*g + 49*b*c*e^2*f - 96*c^2*d*e*f - 188
8*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) - (((d*((d*((64*c^7*(55*b*e*g - 106*c*d*g + 2*c*e*f))
/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (1
51552*c^8*d^2*g + 39616*b^2*c^6*e^2*g - 6784*c^8*d*e*f + 3520*b*c^7*e^2*f -
 154944*b*c^7*d*e*g)/(135135*e*(b*e - 2*c*d)^7)))/e + (64*b*c^5*(296*b^2*e^
2*g + 1184*c^2*d^2*g + 27*b*c*e^2*f - 53*c^2*d*e*f - 1184*b*c*d*e*g))/(1351
35*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x) + (((d*((d*((8*c^3*e*(15*b*e*g - 28*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c
*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c
*d)^2)))/e - (552*b^2*c^2*e^3*g + 120*b*c^3*e^3*f - 224*c^4*d*e^2*f + 1976*
c^4*d^2*e*g - 2088*b*c^3*d*e^2*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)
^2)))/e + (8*c*(b*e - c*d)*(55*b^2*e^2*g + 220*c^2*d^2*g + 14*b*c*e^2*f - 2
7*c^2*d*e*f - 220*b*c*d*e*g))/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((8*c^
3*e*(3*b*e*g - 4*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (64*c^4*d
^2*g + 26*b^2*c^2*e^2*g - 32*c^4*d*e*f + 24*b*c^3*e^2*f - 80*b*c^3*d*e*g)/(
143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (2*b*c*(4*b^2*e^2*g + 16*c^
2*d^2*g + 5*b*c*e^2*f - 8*c^2*d*e*f - 16*b*c*d*e*g))/(143*(9*b*e^2 - 18*c*d
*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^5 - (((d*((d*((4*c^3*e*(19*b*e*g - 34*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2)))/e - (480*c^4*d^2*g + 156*b^2*c^2*e^2*g - 136*c^4*d*e*f + 76*b*c
^3*e^2*f - 548*b*c^3*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e
+ (4*b*c*(15*b^2*e^2*g + 60*c^2*d^2*g + 9*b*c*e^2*f - 17*c^2*d*e*f - 60*b*c
*d*e*g))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((16*c^4*e*(8*b*e*g - 14*c*d*
g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1
287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (292*b^2*c^3*e^3*g + 128*b*
c^4*e^3*f - 224*c^5*d*e^2*f + 928*c^5*d^2*e*g - 1040*b*c^4*d*e^2*g)/(1287*e
*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (160*b^2*c^3*e^3*f - 1040*c^5*
d^3*g + 196*b^3*c^2*e^3*g + 400*c^5*d^2*e*f - 512*b*c^4*d*e^2*f + 1824*b*c^
4*d^2*e*g - 1044*b^2*c^3*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*(
(8*c^4*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e
 - (952*b^2*c^3*e^3*g + 216*b*c^4*e^3*f - 400*c^5*d*e^2*f + 3392*c^5*d^2*e*
g - 3592*b*c^4*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e +
 (40*b^2*c^3*e^3*f - 2368*c^5*d^3*g + 752*b^3*c^2*e^3*g - 256*c^5*d^2*e*f +
 56*b*c^4*d*e^2*f + 5376*b*c^4*d^2*e*g - 3600*b^2*c^3*d*e^2*g)/(1287*e*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(128
7*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 1
4*c*d*e)*(b*e - 2*c*d)^3)))/e - (1072*b^2*c^3*e^3*g + 232*b*c^4*e^3*f - 432
*c^5*d*e^2*f + 3840*c^5*d^2*e*g - 4056*b*c^4*d*e^2*g)/(1287*e*(7*b*e^2 - 14
*c*d*e)*(b*e - 2*c*d)^3)))/e + (472*b^2*c^3*e^3*f - 6240*c^5*d^3*g + 1080*b
^3*c^2*e^3*g + 1440*c^5*d^2*e*f - 1656*b*c^4*d*e^2*f + 10560*b*c^4*d^2*e*g
- 5880*b^2*c^3*d*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((16*c^5*e*
(15*b*e*g - 26*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (600*b
^2*c^4*e^3*g + 240*b*c^5*e^3*f - 416*c^6*d*e^2*f + 1952*c^6*d^2*e*g - 2160*
b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (304*b^2
*c^4*e^3*f - 2432*c^6*d^3*g + 452*b^3*c^3*e^3*g + 768*c^6*d^2*e*f - 976*b*c
^5*d*e^2*f + 4240*b*c^5*d^2*e*g - 2416*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^3 + (((d*((d*((32*c^5*e*(12*b*e*g - 22*c*d*g + c*e*f))/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4)))/e - (1608*b^2*c^4*e^3*g + 384*b*c^5*e^3*f - 704*c^6*d*e
^2*f + 5696*c^6*d^2*e*g - 6048*b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^4)))/e + (64*b^2*c^4*e^3*f - 3104*c^6*d^3*g + 1160*b^3*c^3*e^
3*g - 480*c^6*d^2*e*f + 128*b*c^5*d*e^2*f + 7744*b*c^5*d^2*e*g - 5416*b^2*c
^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(13*b*e*g -
24*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*
e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (1832*b^2*c^4*e^3*g
+ 416*b*c^5*e^3*f - 768*c^6*d*e^2*f + 6528*c^6*d^2*e*g - 6912*b*c^5*d*e^2*g
)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (744*b^2*c^4*e^3*f -
10880*c^6*d^3*g + 1904*b^3*c^3*e^3*g + 2176*c^6*d^2*e*f - 2560*b*c^5*d*e^2*
f + 18496*b*c^5*d^2*e*g - 10336*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*
e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^3 + (((d*((d*((32*c^5*e*(14*b*e*g - 26*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
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2*c*d)^4)))/e - (2056*b^2*c^4*e^3*g + 448*b*c^5*e^3*f - 832*c^6*d*e^2*f +
7360*c^6*d^2*e*g - 7776*b*c^5*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4)))/e + (824*b^2*c^4*e^3*f - 12416*c^6*d^3*g + 2168*b^3*c^3*e^3*g +
 2432*c^6*d^2*e*f - 2848*b*c^5*d*e^2*f + 21088*b*c^5*d^2*e*g - 11776*b^2*c^
4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((896*b^2*c^6*e^3*f - 8704*c^8*d
^3*g + 1760*b^3*c^5*e^3*g + 2048*c^8*d^2*e*f - 2752*b*c^7*d*e^2*f + 15744*b
*c^7*d^2*e*g - 9216*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*
((64*c^7*(13*b*e*g - 22*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c
^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(35*b^2*e^2*g + 116*c^2*d^2*
g + 13*b*c*e^2*f - 22*c^2*d*e*f - 127*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7
)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((704*b^2*
c^6*e^3*f - 8960*c^8*d^3*g + 2848*b^3*c^5*e^3*g + 640*c^8*d^2*e*f - 1664*b*
c^7*d*e^2*f + 20352*b*c^7*d^2*e*g - 13632*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7) + (d*((d*((128*c^7*(9*b*e*g - 16*c*d*g + c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(65*b^2*
e^2*g + 226*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 242*b*c*d*e*g))/(1351
35*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
+ e*x) + (((14720*c^8*d^3*g - 704*b^2*c^6*e^3*f - 6016*b^3*c^5*e^3*g + 512*
c^8*d^2*e*f + 1088*b*c^7*d*e^2*f - 38784*b*c^7*d^2*e*g + 27744*b^2*c^6*d*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c^7*(27*b*e*g - 50*c*d*g +
2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)
))/e - (32*c^6*(283*b^2*e^2*g + 1028*c^2*d^2*g + 54*b*c*e^2*f - 100*c^2*d*e
*f - 1078*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((16000*c^8*d^3*g - 704*b^2*c^6*e^3*f
- 6720*b^3*c^5*e^3*g + 768*c^8*d^2*e*f + 960*b*c^7*d*e^2*f - 42880*b*c^7*d^
2*e*g + 30880*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c
^7*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g
)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(317*b^2*e^2*g + 1156*c^2*d^2*g +
58*b*c*e^2*f - 108*c^2*d*e*f - 1210*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1568*b^2*c
^6*e^3*f - 23040*c^8*d^3*g + 4560*b^3*c^5*e^3*g + 3840*c^8*d^2*e*f - 4992*b
*c^7*d*e^2*f + 41280*b*c^7*d^2*e*g - 24000*b^2*c^6*d*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7) + (d*((d*((128*c^7*(10*b*e*g - 18*c*d*g + c*e*f))/(135135*(b*
e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(77*b^
2*e^2*g + 270*c^2*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f - 288*b*c*d*e*g))/(13
5135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) + (((17280*c^8*d^3*g - 704*b^2*c^6*e^3*f - 7424*b^3*c^5*e^3*g + 10
24*c^8*d^2*e*f + 832*b*c^7*d*e^2*f - 46976*b*c^7*d^2*e*g + 34016*b^2*c^6*d*
e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((64*c^7*(31*b*e*g - 58*c*d*g
+ 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^
7)))/e - (32*c^6*(351*b^2*e^2*g + 1284*c^2*d^2*g + 62*b*c*e^2*f - 116*c^2*d
*e*f - 1342*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((9088*c^8*d^3*g - 704*b^2*c^6*e^3*f
 - 9888*b^3*c^5*e^3*g + 1920*c^8*d^2*e*f + 384*b*c^7*d*e^2*f - 48640*b*c^7*
d^2*e*g + 41824*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((12
8*c^7*(19*b*e*g - 36*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(569*b^2*e^2*g + 2128*c^2*d^2*g +
 76*b*c*e^2*f - 144*c^2*d*e*f - 2200*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((1760*b^2*
c^6*e^3*f - 27136*c^8*d^3*g + 5360*b^3*c^5*e^3*g + 4352*c^8*d^2*e*f - 5632*
b*c^7*d*e^2*f + 48576*b*c^7*d^2*e*g - 28224*b^2*c^6*d*e^2*g)/(135135*e^2*(b
*e - 2*c*d)^7) + (d*((d*((128*c^7*(11*b*e*g - 20*c*d*g + c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(89*b
^2*e^2*g + 314*c^2*d^2*g + 22*b*c*e^2*f - 40*c^2*d*e*f - 334*b*c*d*e*g))/(1
35135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) - (((8064*c^8*d^3*g - 704*b^2*c^6*e^3*f - 10592*b^3*c^5*e^3*g + 2
176*c^8*d^2*e*f + 256*b*c^7*d*e^2*f - 50432*b*c^7*d^2*e*g + 44384*b^2*c^6*d
*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((128*c^7*(20*b*e*g - 38*c*d*
g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^
7)))/e - (32*c^6*(621*b^2*e^2*g + 2328*c^2*d^2*g + 80*b*c*e^2*f - 152*c^2*d
*e*f - 2404*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((6016*c^8*d^3*g - 704*b^2*c^6*e^3*f
 - 11296*b^3*c^5*e^3*g + 2432*c^8*d^2*e*f + 128*b*c^7*d*e^2*f - 51200*b*c^7
*d^2*e*g + 46688*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((1
28*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d
*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(681*b^2*e^2*g + 2560*c^2*d^2*g
+ 84*b*c*e^2*f - 160*c^2*d*e*f - 2640*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7
)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((15872*c^
8*d^3*g + 704*b^2*c^6*e^3*f + 14464*b^3*c^5*e^3*g - 3584*c^8*d^2*e*f + 448*
b*c^7*d*e^2*f + 41984*b*c^7*d^2*e*g - 53888*b^2*c^6*d*e^2*g)/(135135*e^2*(b
*e - 2*c*d)^7) + (d*((d*((64*c^7*(51*b*e*g - 98*c*d*g + 2*c*e*f))/(135135*(
b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(525
*b^2*e^2*g + 2000*c^2*d^2*g + 51*b*c*e^2*f - 98*c^2*d*e*f - 2049*b*c*d*e*g)
)/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x) + (((1952*b^2*c^6*e^3*f - 31232*c^8*d^3*g + 6160*b^3*c^5*e^3*
g + 4864*c^8*d^2*e*f - 6272*b*c^7*d*e^2*f + 55872*b*c^7*d^2*e*g - 32448*b^2
*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(12*b*e*g - 2
2*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2
*c*d)^7)))/e - (64*c^6*(101*b^2*e^2*g + 358*c^2*d^2*g + 24*b*c*e^2*f - 44*c
^2*d*e*f - 380*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2240*b^2*c^6*e^3*f - 32896*c^8*
d^3*g + 6976*b^3*c^5*e^3*g + 5888*c^8*d^2*e*f - 7360*b*c^7*d*e^2*f + 60800*
b*c^7*d^2*e*g - 36128*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((
d*((64*c^7*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128
*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(249*b^2*e^2*g + 900*c^2*d
^2*g + 50*b*c*e^2*f - 92*c^2*d*e*f - 946*b*c*d*e*g))/(135135*e*(b*e - 2*c*d
)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2144*
b^2*c^6*e^3*f - 35328*c^8*d^3*g + 6960*b^3*c^5*e^3*g + 5376*c^8*d^2*e*f - 6
912*b*c^7*d*e^2*f + 63168*b*c^7*d^2*e*g - 36672*b^2*c^6*d*e^2*g)/(135135*e^
2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(13*b*e*g - 24*c*d*g + c*e*f))/(13513
5*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(
113*b^2*e^2*g + 402*c^2*d^2*g + 26*b*c*e^2*f - 48*c^2*d*e*f - 426*b*c*d*e*g
))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((35968*c^8*d^3*g + 256*b^2*c^6*e^3*f - 12064*b^3*c^5*e^3
*g + 5248*c^8*d^2*e*f - 3200*b*c^7*d*e^2*f - 84224*b*c^7*d^2*e*g + 57248*b^
2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((d*((128*c^7*(17*b*e*g -
32*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e -
2*c*d)^7)))/e - (32*c^6*(465*b^2*e^2*g + 1728*c^2*d^2*g + 68*b*c*e^2*f - 12
8*c^2*d*e*f - 1792*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((32256*c^8*d^3*g - 9408*b^2*
c^6*e^3*f + 14976*b^3*c^5*e^3*g - 43520*c^8*d^2*e*f + 40640*b*c^7*d*e^2*f +
 27648*b*c^7*d^2*e*g - 51840*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7)
+ (d*((d*((64*c^7*(47*b*e*g - 90*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7)
 - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(447*b^2*e^2*g + 16
96*c^2*d^2*g + 47*b*c*e^2*f - 90*c^2*d*e*f - 1741*b*c*d*e*g))/(135135*e*(b*
e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((2432*b^2*c^6*e^3*f - 57600*c^8*d^3*g + 11184*b^3*c^5*e^3*g + 6144*c^8*d
^2*e*f - 7872*b*c^7*d*e^2*f + 102336*b*c^7*d^2*e*g - 59136*b^2*c^6*d*e^2*g)
/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(29*b*e*g - 54*c*d*g + 2*c*
e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e
 - (32*c^6*(325*b^2*e^2*g + 1188*c^2*d^2*g + 58*b*c*e^2*f - 108*c^2*d*e*f -
 1242*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) - (((2624*b^2*c^6*e^3*f - 65280*c^8*d^3*g + 1
2656*b^3*c^5*e^3*g + 6656*c^8*d^2*e*f - 8512*b*c^7*d*e^2*f + 115904*b*c^7*d
^2*e*g - 66944*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*
c^7*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*
g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(363*b^2*e^2*g + 1332*c^2*d^2*g +
 62*b*c*e^2*f - 116*c^2*d*e*f - 1390*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((2816*b^2*
c^6*e^3*f - 72960*c^8*d^3*g + 14128*b^3*c^5*e^3*g + 7168*c^8*d^2*e*f - 9152
*b*c^7*d*e^2*f + 129472*b*c^7*d^2*e*g - 74752*b^2*c^6*d*e^2*g)/(135135*e^2*
(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(33*b*e*g - 62*c*d*g + 2*c*e*f))/(135135
*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(4
01*b^2*e^2*g + 1476*c^2*d^2*g + 66*b*c*e^2*f - 124*c^2*d*e*f - 1538*b*c*d*e
*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x) - (((2816*b^2*c^6*e^3*f - 75008*c^8*d^3*g + 14512*b^3*c^5*
e^3*g + 7168*c^8*d^2*e*f - 9152*b*c^7*d*e^2*f + 133056*b*c^7*d^2*e*g - 7680
0*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(33*b*e*g
 - 62*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b
*e - 2*c*d)^7)))/e - (32*c^6*(409*b^2*e^2*g + 1508*c^2*d^2*g + 66*b*c*e^2*f
 - 124*c^2*d*e*f - 1570*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((3008*b^2*c^6*e^3*f - 8
3712*c^8*d^3*g + 16176*b^3*c^5*e^3*g + 7680*c^8*d^2*e*f - 9792*b*c^7*d*e^2*
f + 148416*b*c^7*d^2*e*g - 85632*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)
^7) + (d*((d*((64*c^7*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d
)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(451*b^2*e^2*g
+ 1668*c^2*d^2*g + 70*b*c*e^2*f - 132*c^2*d*e*f - 1734*b*c*d*e*g))/(135135*
e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) - (((3200*b^2*c^6*e^3*f - 94464*c^8*d^3*g + 18224*b^3*c^5*e^3*g + 8192*
c^8*d^2*e*f - 10432*b*c^7*d*e^2*f + 167360*b*c^7*d^2*e*g - 96512*b^2*c^6*d*
e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(37*b*e*g - 70*c*d*g
+ 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^
7)))/e - (32*c^6*(501*b^2*e^2*g + 1860*c^2*d^2*g + 74*b*c*e^2*f - 140*c^2*d
*e*f - 1930*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((5056*b^2*c^6*e^3*f - 97664*c^8*d^3
*g + 17888*b^3*c^5*e^3*g + 15744*c^8*d^2*e*f - 17920*b*c^7*d*e^2*f + 169216
*b*c^7*d^2*e*g - 95968*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*(
(d*((128*c^7*(18*b*e*g - 34*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128
*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(513*b^2*e^2*g + 1912*c^2*
d^2*g + 72*b*c*e^2*f - 136*c^2*d*e*f - 1980*b*c*d*e*g))/(135135*e*(b*e - 2*
c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((55
68*b^2*c^6*e^3*f - 109440*c^8*d^3*g + 19872*b^3*c^5*e^3*g + 17536*c^8*d^2*e
*f - 19840*b*c^7*d*e^2*f + 188928*b*c^7*d^2*e*g - 106848*b^2*c^6*d*e^2*g)/(
135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(19*b*e*g - 36*c*d*g + c*e*f
))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e -
(32*c^6*(561*b^2*e^2*g + 2096*c^2*d^2*g + 76*b*c*e^2*f - 144*c^2*d*e*f - 21
68*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((3488*b^2*c^6*e^3*f - 125184*c^8*d^3*g + 240
32*b^3*c^5*e^3*g + 8960*c^8*d^2*e*f - 11392*b*c^7*d*e^2*f + 221312*b*c^7*d^
2*e*g - 127424*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128
*c^7*(20*b*e*g - 38*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g
)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(633*b^2*e^2*g + 2376*c^2*d^2*g +
80*b*c*e^2*f - 152*c^2*d*e*f - 2452*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7))
)/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3680*b^2*c
^6*e^3*f - 137472*c^8*d^3*g + 26368*b^3*c^5*e^3*g + 9472*c^8*d^2*e*f - 1203
2*b*c^7*d*e^2*f + 242944*b*c^7*d^2*e*g - 139840*b^2*c^6*d*e^2*g)/(135135*e^
2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(21*b*e*g - 40*c*d*g + c*e*f))/(13513
5*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(
689*b^2*e^2*g + 2592*c^2*d^2*g + 84*b*c*e^2*f - 160*c^2*d*e*f - 2672*b*c*d*
e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) - (((10432*b^2*c^6*e^3*f - 125696*c^8*d^3*g + 23744*b^3*c
^5*e^3*g + 36096*c^8*d^2*e*f - 38848*b*c^7*d*e^2*f + 220672*b*c^7*d^2*e*g -
 126400*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(45
*b*e*g - 86*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135
135*(b*e - 2*c*d)^7)))/e - (64*c^6*(414*b^2*e^2*g + 1568*c^2*d^2*g + 45*b*c
*e^2*f - 86*c^2*d*e*f - 1611*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c
```

```
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((3872*b^2*c^6*e^3*
f - 151808*c^8*d^3*g + 29088*b^3*c^5*e^3*g + 9984*c^8*d^2*e*f - 12672*b*c^7
*d*e^2*f + 268160*b*c^7*d^2*e*g - 154304*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e
- 2*c*d)^7) + (d*((d*((128*c^7*(22*b*e*g - 42*c*d*g + c*e*f))/(135135*(b*e
- 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (32*c^6*(753*b^2
*e^2*g + 2840*c^2*d^2*g + 88*b*c*e^2*f - 168*c^2*d*e*f - 2924*b*c*d*e*g))/(
135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
/(d + e*x) + (((4064*b^2*c^6*e^3*f - 168192*c^8*d^3*g + 32192*b^3*c^5*e^3*g
 + 10496*c^8*d^2*e*f - 13312*b*c^7*d*e^2*f + 296960*b*c^7*d^2*e*g - 170816*
b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((128*c^7*(23*b*e*g
- 44*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e
- 2*c*d)^7)))/e - (32*c^6*(825*b^2*e^2*g + 3120*c^2*d^2*g + 92*b*c*e^2*f -
176*c^2*d*e*f - 3208*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4736*b^2*c^6*e^3*f - 2416
64*c^8*d^3*g + 46080*b^3*c^5*e^3*g + 12288*c^8*d^2*e*f - 15552*b*c^7*d*e^2*
f + 425984*b*c^7*d^2*e*g - 244736*b^2*c^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d
)^7) + (d*((d*((64*c^7*(53*b*e*g - 102*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c
*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)^7)))/e - (64*c^6*(570*b^2*e^2*
g + 2176*c^2*d^2*g + 53*b*c*e^2*f - 102*c^2*d*e*f - 2227*b*c*d*e*g))/(13513
5*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x) - (((8384*b^2*c^6*e^3*f - 302336*c^8*d^3*g + 49088*b^3*c^5*e^3*g + 27
392*c^8*d^2*e*f - 30400*b*c^7*d*e^2*f + 498688*b*c^7*d^2*e*g - 271936*b^2*c
^6*d*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7) + (d*((d*((64*c^7*(49*b*e*g - 94*c
*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*
c*d)^7)))/e - (64*c^6*(484*b^2*e^2*g + 1840*c^2*d^2*g + 49*b*c*e^2*f - 94*c
^2*d*e*f - 1887*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e)*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((4*c^2*e*(9*b*e*g - 16*
c*d*g + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(1
3*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (36*b*c^2*e^3*f + 60*b^2*c*e^3
*g - 64*c^3*d*e^2*f + 172*c^3*d^2*e*g - 204*b*c^2*d*e^2*g)/(13*e*(11*b*e^2
- 22*c*d*e)*(b*e - 2*c*d))))/e + (4*(b*e - c*d)*(7*b^2*e^2*g + 28*c^2*d^2*g
 + 8*b*c*e^2*f - 15*c^2*d*e*f - 28*b*c*d*e*g))/(13*e*(11*b*e^2 - 22*c*d*e)*
(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 -
(((2*b^3*e^2*g + 8*b*c^2*d^2*g + 4*b^2*c*e^2*f - 6*b*c^2*d*e*f - 8*b^2*c*d*
e*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (d*((16*c^3*d^2*g - 12*c^3*
d*e*f + 10*b*c^2*e^2*f + 8*b^2*c*e^2*g - 22*b*c^2*d*e*g)/(13*(11*b*e^2 - 22
*c*d*e)*(b*e - 2*c*d)) - (d*((2*c^2*e*(5*b*e*g - 6*c*d*g + 2*c*e*f))/(13*(1
1*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^3*d*e*g)/(13*(11*b*e^2 - 22*c*d*e
)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x)^6 - (((d*((d*((8*c^4*e*(7*b*e*g - 10*c*d*g + 2*c*e*f))/(1287*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(
b*e - 2*c*d)^3)))/e - (208*c^5*d^2*g + 76*b^2*c^3*e^2*g - 80*c^5*d*e*f + 56
*b*c^4*e^2*f - 248*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)
))/e + (2*b*c^2*(13*b^2*e^2*g + 52*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f
- 52*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((16*c^4*e*(9*b*e*g
- 16*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*
d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (1088*c^5*d^2*g +
340*b^2*c^3*e^2*g - 256*c^5*d*e*f + 144*b*c^4*e^2*f - 1216*b*c^4*d*e*g)/(12
87*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (4*b*c^2*(34*b^2*e^2*g + 136
*c^2*d^2*g + 17*b*c*e^2*f - 32*c^2*d*e*f - 136*b*c*d*e*g))/(1287*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^4 + (((d*((d*((16*c^4*e*(10*b*e*g - 18*c*d*g + c*e*f))/(1287*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e
)*(b*e - 2*c*d)^3)))/e - (1248*c^5*d^2*g + 388*b^2*c^3*e^2*g - 288*c^5*d*e*
f + 160*b*c^4*e^2*f - 1392*b*c^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2
*c*d)^3)))/e + (4*b*c^2*(39*b^2*e^2*g + 156*c^2*d^2*g + 19*b*c*e^2*f - 36*c
^2*d*e*f - 156*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((8*c^4*e*
(31*b*e*g - 58*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^5*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4416*
c^5*d^2*g + 1224*b^2*c^3*e^2*g - 464*c^5*d*e*f + 248*b*c^4*e^2*f - 4648*b*c
^4*d*e*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (8*b*c^2*(69*b^
2*e^2*g + 276*c^2*d^2*g + 15*b*c*e^2*f - 29*c^2*d*e*f - 276*b*c*d*e*g))/(12
87*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((32*c^5*e*(4*b*e*g - 6*c*d*g + c*e*f))/
(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2
 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (608*c^6*d^2*g + 208*b^2*c^4*e^2*g - 19
2*c^6*d*e*f + 128*b*c^5*e^2*f - 704*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(19*b^2*e^2*g + 76*c^2*d^2*g + 14*b*c*e^2*
f - 24*c^2*d*e*f - 76*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((1
6*c^5*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e
- (2336*c^6*d^2*g + 712*b^2*c^4*e^2*g - 480*c^6*d*e*f + 272*b*c^5*e^2*f - 2
576*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3
*(73*b^2*e^2*g + 292*c^2*d^2*g + 32*b*c*e^2*f - 60*c^2*d*e*f - 292*b*c*d*e*
g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(19*b*e*g - 34*c*d*g +
 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(90
09*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2720*c^6*d^2*g + 824*b^2*c^
4*e^2*g - 544*c^6*d*e*f + 304*b*c^5*e^2*f - 2992*b*c^5*d*e*g)/(9009*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4*b*c^3*(85*b^2*e^2*g + 340*c^2*d^2*g
 + 36*b*c*e^2*f - 68*c^2*d*e*f - 340*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3
 - (((d*((d*((16*c^5*e*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^4)))/e - (3104*c^6*d^2*g + 936*b^2*c^4*e^2*g - 608*c^6*d*e*f + 336*
b*c^5*e^2*f - 3408*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)
))/e + (4*b*c^3*(97*b^2*e^2*g + 388*c^2*d^2*g + 40*b*c*e^2*f - 76*c^2*d*e*f
 - 388*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(14*b*e
*g - 26*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c
^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (7616*c^6*d^2*g
 + 2120*b^2*c^4*e^2*g - 832*c^6*d*e*f + 448*b*c^5*e^2*f - 8032*b*c^5*d*e*g)
/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3*(119*b^2*e^2*g
+ 476*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 476*b*c*d*e*g))/(9009*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^3 + (((d*((d*((32*c^5*e*(15*b*e*g - 28*c*d*g + c*e*f))/(9009*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4)))/e - (8576*c^6*d^2*g + 2376*b^2*c^4*e^2*g - 896*c^
6*d*e*f + 480*b*c^5*e^2*f - 9024*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b
*e - 2*c*d)^4)))/e + (8*b*c^3*(134*b^2*e^2*g + 536*c^2*d^2*g + 29*b*c*e^2*f
 - 56*c^2*d*e*f - 536*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((3
2*c^5*e*(16*b*e*g - 30*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e -
(9792*c^6*d^2*g + 2696*b^2*c^4*e^2*g - 960*c^6*d*e*f + 512*b*c^5*e^2*f - 10
272*b*c^5*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (8*b*c^3
*(153*b^2*e^2*g + 612*c^2*d^2*g + 31*b*c*e^2*f - 60*c^2*d*e*f - 612*b*c*d*e
*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(41*b*e*g - 78*c*d*g
+ 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9
009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (18432*c^6*d^2*g + 4928*b^2
*c^4*e^2*g - 1248*c^6*d*e*f + 656*b*c^5*e^2*f - 19056*b*c^5*d*e*g)/(9009*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (16*b*c^3*(144*b^2*e^2*g + 576*c^
2*d^2*g + 20*b*c*e^2*f - 39*c^2*d*e*f - 576*b*c*d*e*g))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x)^3 - (((d*((d*((32*c^6*e*(9*b*e*g - 14*c*d*g + 2*c*e*f))/(45045*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^5)))/e - (1664*c^7*d^2*g + 544*b^2*c^5*e^2*g - 448*c^7*d*e*f
+ 288*b*c^6*e^2*f - 1888*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^5)))/e + (16*b*c^4*(13*b^2*e^2*g + 52*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*
d*e*f - 52*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(8*
b*e*g - 14*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (6
4*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (4800*c^7*d^
2*g + 1440*b^2*c^5*e^2*g - 896*c^7*d*e*f + 512*b*c^6*e^2*f - 5248*b*c^6*d*e
*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(75*b^2*e^2*
g + 300*c^2*d^2*g + 30*b*c*e^2*f - 56*c^2*d*e*f - 300*b*c*d*e*g))/(45045*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(9*b*e*g - 16*c*d*g + c*e*f))/(4504
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5)))/e - (5696*c^7*d^2*g + 1696*b^2*c^5*e^2*g - 1024*
c^7*d*e*f + 576*b*c^6*e^2*f - 6208*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^5)))/e + (8*b*c^4*(89*b^2*e^2*g + 356*c^2*d^2*g + 34*b*c*e^2*
f - 64*c^2*d*e*f - 356*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((
64*c^6*e*(10*b*e*g - 18*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e -
 (6592*c^7*d^2*g + 1952*b^2*c^5*e^2*g - 1152*c^7*d*e*f + 640*b*c^6*e^2*f -
7168*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^
4*(103*b^2*e^2*g + 412*c^2*d^2*g + 38*b*c*e^2*f - 72*c^2*d*e*f - 412*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(11*b*e*g - 20*c*d*g
 + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45
045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (7488*c^7*d^2*g + 2208*b^2*c
^5*e^2*g - 1280*c^7*d*e*f + 704*b*c^6*e^2*f - 8128*b*c^6*d*e*g)/(45045*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(117*b^2*e^2*g + 468*c^2*d^
2*g + 42*b*c*e^2*f - 80*c^2*d*e*f - 468*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 - (((d*((d*((32*c^6*e*(25*b*e*g - 46*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5)))/e - (12864*c^7*d^2*g + 3600*b^2*c^5*e^2*g - 1472*c^7*d*e*f
+ 800*b*c^6*e^2*f - 13600*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5)))/e + (8*b*c^4*(201*b^2*e^2*g + 804*c^2*d^2*g + 48*b*c*e^2*f - 92*c
^2*d*e*f - 804*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e
*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1465
6*c^7*d^2*g + 4080*b^2*c^5*e^2*g - 1600*c^7*d*e*f + 864*b*c^6*e^2*f - 15456
*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(2
29*b^2*e^2*g + 916*c^2*d^2*g + 52*b*c*e^2*f - 100*c^2*d*e*f - 916*b*c*d*e*g
))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(29*b*e*g - 54*c*d*g +
2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16448*c^7*d^2*g + 4560*b^2*c
^5*e^2*g - 1728*c^7*d*e*f + 928*b*c^6*e^2*f - 17312*b*c^6*d*e*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(257*b^2*e^2*g + 1028*c^2*
d^2*g + 56*b*c*e^2*f - 108*c^2*d*e*f - 1028*b*c*d*e*g))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x)^2 - (((d*((d*((32*c^6*e*(29*b*e*g - 54*c*d*g + 2*c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^5)))/e - (16960*c^7*d^2*g + 4688*b^2*c^5*e^2*g - 1728*c^7*d*
e*f + 928*b*c^6*e^2*f - 17824*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5)))/e + (8*b*c^4*(265*b^2*e^2*g + 1060*c^2*d^2*g + 56*b*c*e^2*f -
 108*c^2*d*e*f - 1060*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((3
2*c^6*e*(31*b*e*g - 58*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
- (19008*c^7*d^2*g + 5232*b^2*c^5*e^2*g - 1856*c^7*d*e*f + 992*b*c^6*e^2*f
- 19936*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b
*c^4*(297*b^2*e^2*g + 1188*c^2*d^2*g + 60*b*c*e^2*f - 116*c^2*d*e*f - 1188*
b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(33*b*e*g - 62
*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*
e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (21568*c^7*d^2*g + 5
904*b^2*c^5*e^2*g - 1984*c^7*d*e*f + 1056*b*c^6*e^2*f - 22560*b*c^6*d*e*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8*b*c^4*(337*b^2*e^2*g +
 1348*c^2*d^2*g + 64*b*c*e^2*f - 124*c^2*d*e*f - 1348*b*c*d*e*g))/(45045*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(18*b*e*g - 34*c*d*g + c*e*f))/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5)))/e - (29056*c^7*d^2*g + 7824*b^2*c^5*e^2*g - 217
6*c^7*d*e*f + 1152*b*c^6*e^2*f - 30144*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(227*b^2*e^2*g + 908*c^2*d^2*g + 35*b*
c*e^2*f - 68*c^2*d*e*f - 908*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*
((d*((64*c^6*e*(19*b*e*g - 36*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e - (32000*c^7*d^2*g + 8592*b^2*c^5*e^2*g - 2304*c^7*d*e*f + 1216*b*c^6*
e^2*f - 33152*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
+ (16*b*c^4*(250*b^2*e^2*g + 1000*c^2*d^2*g + 37*b*c*e^2*f - 72*c^2*d*e*f -
 1000*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(20*b*e*
g - 38*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^
7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (35456*c^7*d^2*g
 + 9488*b^2*c^5*e^2*g - 2432*c^7*d*e*f + 1280*b*c^6*e^2*f - 36672*b*c^6*d*e
*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(277*b^2*e^
2*g + 1108*c^2*d^2*g + 39*b*c*e^2*f - 76*c^2*d*e*f - 1108*b*c*d*e*g))/(4504
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(21*b*e*g - 40*c*d*g + c*e*f))/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (39424*c^7*d^2*g + 10512*b^2*c^5*e^2*g
- 2560*c^7*d*e*f + 1344*b*c^6*e^2*f - 40704*b*c^6*d*e*g)/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16*b*c^4*(308*b^2*e^2*g + 1232*c^2*d^2*g +
 41*b*c*e^2*f - 80*c^2*d*e*f - 1232*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*
(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
- (((d*((d*((32*c^6*e*(49*b*e*g - 94*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5)))/e - (57344*c^7*d^2*g + 15104*b^2*c^5*e^2*g - 3008*c^7*d*e*f + 1
568*b*c^6*e^2*f - 58848*b*c^6*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5)))/e + (32*b*c^4*(224*b^2*e^2*g + 896*c^2*d^2*g + 24*b*c*e^2*f - 47*c^
2*d*e*f - 896*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((16*c^5*e*
(37*b*e*g - 70*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^
4*(250*b^2*e^2*g + 928*c^2*d^2*g + 37*b*c*e^2*f - 70*c^2*d*e*f - 963*b*c*d*
e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (3136*c^6*d^3*g - 9
76*b^2*c^4*e^3*f + 2096*b^3*c^3*e^3*g - 5056*c^6*d^2*e*f + 4496*b*c^5*d*e^2
*f + 5248*b*c^5*d^2*e*g - 7600*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e
)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
3 - (((d*((d*((16*c^5*e*(35*b*e*g - 66*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e
- 2*c*d)^4)))/e - (16*c^4*(227*b^2*e^2*g + 840*c^2*d^2*g + 35*b*c*e^2*f - 6
6*c^2*d*e*f - 873*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))
```

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/e + (1488*b^2*c^4*e^3*f - 16256*c^6*d^3*g + 3104*b^3*c^3*e^3*g + 4864*c^6*
d^2*e*f - 5392*b*c^5*d*e^2*f + 28672*b*c^5*d^2*e*g - 16480*b^2*c^4*d*e^2*g)
/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((16*c^5*e*(39*b*e*g - 74*c*d*g +
2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(900
9*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^4*(277*b^2*e^2*g + 1032
*c^2*d^2*g + 39*b*c*e^2*f - 74*c^2*d*e*f - 1069*b*c*d*e*g))/(9009*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (1264*b^2*c^4*e^3*f - 39168*c^6*d^3*g +
6480*b^3*c^3*e^3*g + 3840*c^6*d^2*e*f - 4432*b*c^5*d*e^2*f + 65088*b*c^5*d^
2*e*g - 35712*b^2*c^4*d*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((64
*c^6*e*(7*b*e*g - 12*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (3
2*c^5*(37*b^2*e^2*g + 122*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 134*b*c
*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (544*b^2*c^5*e^3
*f - 4992*c^7*d^3*g + 944*b^3*c^4*e^3*g + 1344*c^7*d^2*e*f - 1728*b*c^6*d*e
^2*f + 8768*b*c^6*d^2*e*g - 5024*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 - (((d*((d*((32*c^6*e*(21*b*e*g - 38*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5)))/e - (16*c^5*(165*b^2*e^2*g + 580*c^2*d^2*g + 42*b*c*e^2*f -
 76*c^2*d*e*f - 618*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e - (4672*c^7*d^3*g - 224*b^2*c^5*e^3*f - 1792*b^3*c^4*e^3*g + 384*c^7*d
^2*e*f + 224*b*c^6*d*e^2*f - 11840*b*c^6*d^2*e*g + 8336*b^2*c^5*d*e^2*g)/(4
5045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(16*b*e*g - 30*c*d*g + c*e
*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(385*b^2*e^2*g + 1416*c^2*
d^2*g + 64*b*c*e^2*f - 120*c^2*d*e*f - 1476*b*c*d*e*g))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5)))/e - (448*c^7*d^3*g + 480*b^2*c^5*e^3*f - 3376*b^
3*c^4*e^3*g + 3904*c^7*d^2*e*f - 2944*b*c^6*d*e^2*f - 13952*b*c^6*d^2*e*g +
 13616*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*
(17*b*e*g - 32*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*
(425*b^2*e^2*g + 1568*c^2*d^2*g + 68*b*c*e^2*f - 128*c^2*d*e*f - 1632*b*c*d
*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (320*c^7*d^3*g - 6
08*b^2*c^5*e^3*f + 3664*b^3*c^4*e^3*g - 4544*c^7*d^2*e*f + 3520*b*c^6*d*e^2
*f + 14336*b*c^6*d^2*e*g - 14576*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 - (((d*((d*((32*c^6*e*(23*b*e*g - 42*c*d*g + 2*c*e*f))/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5)))/e - (16*c^5*(191*b^2*e^2*g + 676*c^2*d^2*g + 46*b*c*e^2*f -
 84*c^2*d*e*f - 718*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e + (1120*b^2*c^5*e^3*f - 17088*c^7*d^3*g + 3104*b^3*c^4*e^3*g + 3072*c^
7*d^2*e*f - 3744*b*c^6*d*e^2*f + 29504*b*c^6*d^2*e*g - 16688*b^2*c^5*d*e^2*
g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(25*b*e*g - 46*c*d*g
+ 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(4
5045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(217*b^2*e^2*g + 77
2*c^2*d^2*g + 50*b*c*e^2*f - 92*c^2*d*e*f - 818*b*c*d*e*g))/(45045*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1248*b^2*c^5*e^3*f - 19776*c^7*d^3*g +
3584*b^3*c^4*e^3*g + 3456*c^7*d^2*e*f - 4192*b*c^6*d*e^2*f + 34112*b*c^6*d^
2*e*g - 19280*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32
*c^6*e*(27*b*e*g - 50*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e -
 (16*c^5*(243*b^2*e^2*g + 868*c^2*d^2*g + 54*b*c*e^2*f - 100*c^2*d*e*f - 91
8*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1376*b^2*c
```

```
^5*e^3*f - 22464*c^7*d^3*g + 4064*b^3*c^4*e^3*g + 3840*c^7*d^2*e*f - 4640*b
*c^6*d*e^2*f + 38720*b*c^6*d^2*e*g - 21872*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^2 + (((d*((d*((64*c^6*e*(15*b*e*g - 28*c*d*g + c*e*f))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(345*b^2*e^2*g + 1264*c^2*d^2*g + 60*b*
c*e^2*f - 112*c^2*d*e*f - 1320*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e + (2048*b^2*c^5*e^3*f - 26176*c^7*d^3*g + 5008*b^3*c^4*e^3*
g + 6336*c^7*d^2*e*f - 7232*b*c^6*d*e^2*f + 46208*b*c^6*d^2*e*g - 26576*b^2
*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(45*b*e*g
 - 86*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^
7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(394*b^2
*e^2*g + 1488*c^2*d^2*g + 45*b*c*e^2*f - 86*c^2*d*e*f - 1531*b*c*d*e*g))/(4
5045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (50304*c^7*d^3*g - 1312*b^2
*c^5*e^3*f + 672*b^3*c^4*e^3*g - 8064*c^7*d^2*e*f + 6688*b*c^6*d*e^2*f - 47
616*b*c^6*d^2*e*g + 9888*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - ((
(d*((d*((32*c^6*e*(41*b*e*g - 78*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5)))/e - (32*c^5*(332*b^2*e^2*g + 1248*c^2*d^2*g + 41*b*c*e^2*f - 78*c^2
*d*e*f - 1287*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e -
 (22144*c^7*d^3*g + 2592*b^2*c^5*e^3*f - 9376*b^3*c^4*e^3*g + 12928*c^7*d^2
*e*f - 11680*b*c^6*d*e^2*f - 59648*b*c^6*d^2*e*g + 43040*b^2*c^5*d*e^2*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^6*e*(17*b*e*g - 32*c*d*g + c*
e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^5*(433*b^2*e^2*g + 1600*c^2
*d^2*g + 68*b*c*e^2*f - 128*c^2*d*e*f - 1664*b*c*d*e*g))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1824*b^2*c^5*e^3*f - 50880*c^7*d^3*g + 891
2*b^3*c^4*e^3*g + 5184*c^7*d^2*e*f - 6208*b*c^6*d*e^2*f + 86528*b*c^6*d^2*e
*g - 48368*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((64*c^
6*e*(18*b*e*g - 34*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*
c^5*(477*b^2*e^2*g + 1768*c^2*d^2*g + 72*b*c*e^2*f - 136*c^2*d*e*f - 1836*b
*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (1952*b^2*c^5*
e^3*f - 57024*c^7*d^3*g + 9968*b^3*c^4*e^3*g + 5568*c^7*d^2*e*f - 6656*b*c^
6*d*e^2*f + 96896*b*c^6*d^2*e*g - 54128*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^2 + (((d*((d*((64*c^6*e*(19*b*e*g - 36*c*d*g + c*e*f))/(45045*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^5)))/e - (16*c^5*(529*b^2*e^2*g + 1968*c^2*d^2*g + 76*b*c*e
^2*f - 144*c^2*d*e*f - 2040*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e + (2080*b^2*c^5*e^3*f - 64704*c^7*d^3*g + 11280*b^3*c^4*e^3*g
+ 5952*c^7*d^2*e*f - 7104*b*c^6*d*e^2*f + 109824*b*c^6*d^2*e*g - 61296*b^2*
c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((32*c^6*e*(43*b*e*g -
 82*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7
*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^5*(361*b^2*
e^2*g + 1360*c^2*d^2*g + 43*b*c*e^2*f - 82*c^2*d*e*f - 1401*b*c*d*e*g))/(45
045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (7456*b^2*c^5*e^3*f - 108544
*c^7*d^3*g + 15616*b^3*c^4*e^3*g + 27136*c^7*d^2*e*f - 28448*b*c^6*d*e^2*f
+ 171008*b*c^6*d^2*e*g - 89600*b^2*c^5*d*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
2 - (((d*((d*((32*c^6*e*(47*b*e*g - 90*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e - (32*c^5*(431*b^2*e^2*g + 1632*c^2*d^2*g + 47*b*c*e^2*f -
90*c^2*d*e*f - 1677*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e + (2656*b^2*c^5*e^3*f - 118272*c^7*d^3*g + 20352*b^3*c^4*e^3*g + 7680*
c^7*d^2*e*f - 9120*b*c^6*d*e^2*f + 199680*b*c^6*d^2*e*g - 110976*b^2*c^5*d*
e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((128*c^7*(29*b*e*g - 56*c*d
*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^8*d*g)/(135135*(b*e - 2*c*d)
^7)))/e - (128*c^6*(350*b^2*e^2*g + 1343*c^2*d^2*g + 29*b*c*e^2*f - 56*c^2*
d*e*f - 1371*b*c*d*e*g))/(135135*e*(b*e - 2*c*d)^7)))/e + (128*c^5*(b*e - c
*d)*(322*b^2*e^2*g + 1288*c^2*d^2*g + 28*b*c*e^2*f - 55*c^2*d*e*f - 1288*b*
c*d*e*g))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) + (((2*f*(b*e - c*d)^2)/(13*b*e^2 - 26*c*d*e) + (d*((d*
((2*c*e*(2*b*e*g - 2*c*d*g + c*e*f))/(13*b*e^2 - 26*c*d*e) - (2*c^2*d*e*g)/
(13*b*e^2 - 26*c*d*e)))/e - (2*(b*e - c*d)*(b*e*g - c*d*g + 2*c*e*f))/(13*b
*e^2 - 26*c*d*e)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^7 - (((d*((d*((4*c^3*e*(17*b*e*g - 30*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^4*d*e*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2)))/e - (136*b^2*c^2*e^3*g + 68*b*c^3*e^3*f - 120*c^4*d*e^2*f + 416
*c^4*d^2*e*g - 476*b*c^3*d*e^2*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)
^2)))/e + (80*b^2*c^2*e^3*f - 384*c^4*d^3*g + 76*b^3*c*e^3*g + 192*c^4*d^2*
e*f - 252*b*c^3*d*e^2*f + 688*b*c^3*d^2*e*g - 400*b^2*c^2*d*e^2*g)/(143*e*(
9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x)^5 + (((d*((d*((16*c^4*e*(20*b*e*g - 38*c*d*g + c*e*f))/(1
287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^5*d*e*g)/(1287*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^3*(144*b^2*e^2*g + 537*c^2*d^2*g +
20*b*c*e^2*f - 38*c^2*d*e*f - 556*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^3)))/e + (16*c^2*(b*e - c*d)*(125*b^2*e^2*g + 500*c^2*d^2*g + 1
9*b*c*e^2*f - 37*c^2*d*e*f - 500*b*c*d*e*g))/(1287*e*(7*b*e^2 - 14*c*d*e)*(
b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 +
 (((d*((d*((32*c^5*e*(24*b*e*g - 46*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4) - (32*c^6*d*e*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c
*d)^4)))/e - (32*c^4*(224*b^2*e^2*g + 849*c^2*d^2*g + 24*b*c*e^2*f - 46*c^2
*d*e*f - 872*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e +
(32*c^3*(b*e - c*d)*(201*b^2*e^2*g + 804*c^2*d^2*g + 23*b*c*e^2*f - 45*c^2*
d*e*f - 804*b*c*d*e*g))/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((64*c^6*e*
(27*b*e*g - 52*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^7*d*e*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^5*
(296*b^2*e^2*g + 1131*c^2*d^2*g + 27*b*c*e^2*f - 52*c^2*d*e*f - 1157*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (64*c^4*(b*e - c*d)
*(270*b^2*e^2*g + 1080*c^2*d^2*g + 26*b*c*e^2*f - 51*c^2*d*e*f - 1080*b*c*d
*e*g))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2195 $\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=562

$$\frac{11(2cd-be)^9(-13beg+6cdg+20cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{262144c^{15/2}e^2}+\frac{11(b+2cx)(2cd-be)^7\sqrt{d(cd-be)-be^2x}}{131072c^7}$$

```
[Out] 11/49152*(-b*e+2*c*d)^5*(-13*b*e*g+6*c*d*g+20*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(3/2)/c^6/e+11/15360*(-b*e+2*c*d)^3*(-13*b*e*g+6*c*d*g
+20*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^5/e-11/4480*(
-b*e+2*c*d)^2*(-13*b*e*g+6*c*d*g+20*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(7/2)/c^4/e^2-11/2880*(-b*e+2*c*d)*(-13*b*e*g+6*c*d*g+20*c*e*f)*(e*x+d)*(d
*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^3/e^2-1/180*(-13*b*e*g+6*c*d*g+20*c*
e*f)*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2-1/10*g*(e*x+d
)^3*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2+11/262144*(-b*e+2*c*d)^9*(
-13*b*e*g+6*c*d*g+20*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(1/2))/c^(15/2)/e^2+11/131072*(-b*e+2*c*d)^7*(-13*b*e*g+6*
c*d*g+20*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^7/e
```

Rubi [A] time = 1.21, antiderivative size = 562, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {794, 670, 640, 612, 621, 204}

$$\frac{11(b+2cx)(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-13beg+6cdg+20cef)}{131072c^7e}+\frac{11(b+2cx)(2cd-be)^5\left(d(cd-be)-\right.}{4}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (11*(2*c*d - b*e)^7*(20*c*e*f + 6*c*d*g - 13*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])/(131072*c^7*e) + (11*(2*c*d - b*e)^5*(20*c*
e*f + 6*c*d*g - 13*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(3/2))/(49152*c^6*e) + (11*(2*c*d - b*e)^3*(20*c*e*f + 6*c*d*g - 13*b*e*g)
*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(15360*c^5*e) - (
11*(2*c*d - b*e)^2*(20*c*e*f + 6*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(7/2))/(4480*c^4*e^2) - (11*(2*c*d - b*e)*(20*c*e*f + 6*c*d*g
 - 13*b*e*g)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(2880*c
^3*e^2) - ((20*c*e*f + 6*c*d*g - 13*b*e*g)*(d + e*x)^2*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(180*c^2*e^2) - (g*(d + e*x)^3*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(7/2))/(10*c*e^2) + (11*(2*c*d - b*e)^9*(20*c*e*f + 6*c*
d*g - 13*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2])])/(262144*c^(15/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^3(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{g(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{10ce^2} - \frac{\Bigl(\frac{7}{2}e\,\bigl(-2ce^2}{}$$

$$= -\frac{(20cef+6cdg-13beg)(d+ex)^2\,\bigl(d(cd-be)-be^2x-}{180c^2e^2}$$

$$= -\frac{11(2cd-be)(20cef+6cdg-13beg)(d+ex)\,\bigl(d(cd-b}{2880c^3e^2}$$

$$= -\frac{11(2cd-be)^2(20cef+6cdg-13beg)\,\bigl(d(cd-be)-be^2}{4480c^4e^2}$$

$$= \frac{11(2cd-be)^3(20cef+6cdg-13beg)(b+2cx)\,\bigl(d(cd-}{15360c^5e}$$

$$= \frac{11(2cd-be)^5(20cef+6cdg-13beg)(b+2cx)\,\bigl(d(cd-}{49152c^6e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-}}{131072c^7e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-}}{131072c^7e}$$

$$= \frac{11(2cd-be)^7(20cef+6cdg-13beg)(b+2cx)\sqrt{d(cd-}}{131072c^7e}$$

Mathematica [B] time = 6.78, size = 1600, normalized size = 2.85

$$(cde+(cd-be)e)^2\left(-10cfe^2-\left(\frac{13}{2}e(cd-be)-\frac{7cde}{2}\right)g\right)((d$$

$$-\frac{g(cd-be-cex)((d+ex)(c(d-ex)-be))^{5/2}(d+ex)^4}{10ce^2}-$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^3*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] -1/10*(g*(d + e*x)^4*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))
^(5/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))^2*(-10*c*e^2*f - ((-7*c*d*e)/2 +
 (13*e*(c*d - b*e))/2)*g)*(d + e*x)^4*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5
/2)*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((13*(15/(
224*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(16*(1 -
(c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x
))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d
- b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/18 + (715*(c*d*e + e*(c*d - b*e))
^7*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e)))^7*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
+ e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4
*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^
3)/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*
(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*
d*e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e
))/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e + e
*(c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d
*e + e*(c*d - b*e)))^5) - (512*c^6*e^12*(d + e*x)^6)/(693*(c*d*e + e*(c*d -
 b*e))^6*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e)))^6) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d + e*
x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (
e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b*e)]*S
qrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d -
 b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d
*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))]))))/(1310
72*c^7*e^14*(d + e*x)^7*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c
*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))
)))^3)))/(65*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e)
)/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d - b*e
- c*e*x))/(c*d*e + e*(c*d - b*e))]])
```

fricas [B] time = 73.16, size = 3437, normalized size = 6.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [-1/165150720*(3465*(20*(512*c^10*d^9*e - 2304*b*c^9*d^8*e^2 + 4608*b^2*c^8
*d^7*e^3 - 5376*b^3*c^7*d^6*e^4 + 4032*b^4*c^6*d^5*e^5 - 2016*b^5*c^5*d^4*e
^6 + 672*b^6*c^4*d^3*e^7 - 144*b^7*c^3*d^2*e^8 + 18*b^8*c^2*d*e^9 - b^9*c*e
^10)*f + (3072*c^10*d^10 - 20480*b*c^9*d^9*e + 57600*b^2*c^8*d^8*e^2 - 9216
0*b^3*c^7*d^7*e^3 + 94080*b^4*c^6*d^6*e^4 - 64512*b^5*c^5*d^5*e^5 + 30240*b
^6*c^4*d^4*e^6 - 9600*b^7*c^3*d^3*e^7 + 1980*b^8*c^2*d^2*e^8 - 240*b^9*c*d*
e^9 + 13*b^10*e^10)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2
 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*
e*x + b*e)*sqrt(-c)) - 4*(4128768*c^10*e^9*g*x^9 + 229376*(20*c^10*e^9*f +
(60*c^10*d*e^8 + 41*b*c^9*e^9)*g)*x^8 + 14336*(20*(54*c^10*d*e^8 + 37*b*c^9
*e^9)*f + (324*c^10*d^2*e^7 + 2976*b*c^9*d*e^8 + 383*b^2*c^8*e^9)*g)*x^7 +
1024*(20*(256*c^10*d^2*e^7 + 2390*b*c^9*d*e^8 + 309*b^2*c^8*e^9)*f - (30720
*c^10*d^3*e^6 - 59396*b*c^9*d^2*e^7 - 31264*b^2*c^8*d*e^8 - 15*b^3*c^7*e^9)
*g)*x^6 - 256*(20*(7224*c^10*d^3*e^6 - 13908*b*c^9*d^2*e^7 - 7386*b^2*c^8*d
*e^8 - 5*b^3*c^7*e^9)*f + (140112*c^10*d^4*e^5 + 16176*b*c^9*d^3*e^6 - 2989
68*b^2*c^8*d^2*e^7 - 780*b^3*c^7*d*e^8 + 65*b^4*c^6*e^9)*g)*x^5 - 128*(20*(
16896*c^10*d^4*e^5 + 2328*b*c^9*d^3*e^6 - 36516*b^2*c^8*d^2*e^7 - 138*b^3*c
^7*d*e^8 + 11*b^4*c^6*e^9)*f - (92160*c^10*d^5*e^4 - 762000*b*c^9*d^4*e^5 +
 733200*b^2*c^8*d^3*e^6 + 9960*b^3*c^7*d^2*e^7 - 1860*b^4*c^6*d*e^8 + 143*b
^5*c^5*e^9)*g)*x^4 + 16*(20*(49056*c^10*d^5*e^4 - 392976*b*c^9*d^4*e^5 + 37
4352*b^2*c^8*d^3*e^6 + 7576*b^3*c^7*d^2*e^7 - 1342*b^4*c^6*d*e^8 + 99*b^5*c
^5*e^9)*f + (2358720*c^10*d^6*e^3 - 6092160*b*c^9*d^5*e^4 + 3484080*b^2*c^8
*d^4*e^5 + 339840*b^3*c^7*d^3*e^6 - 106540*b^4*c^6*d^2*e^7 + 18040*b^5*c^5*
d*e^8 - 1287*b^6*c^4*e^9)*g)*x^3 + 8*(20*(327680*c^10*d^6*e^3 - 835872*b*c^
9*d^5*e^4 + 455376*b^2*c^8*d^4*e^5 + 70768*b^3*c^7*d^3*e^6 - 20856*b^4*c^6*
d^2*e^7 + 3366*b^5*c^5*d*e^8 - 231*b^6*c^4*e^9)*f + (1966080*c^10*d^7*e^2 -
 3081920*b*c^9*d^6*e^3 - 336000*b^2*c^8*d^5*e^4 + 2246160*b^3*c^7*d^4*e^5 -
 1045120*b^4*c^6*d^3*e^6 + 291324*b^5*c^5*d^2*e^7 - 45144*b^6*c^4*d*e^8 + 3
003*b^7*c^3*e^9)*g)*x^2 - 20*(950272*c^10*d^8*e - 4389760*b*c^9*d^7*e^2 + 8
056896*b^2*c^8*d^6*e^3 - 7874464*b^3*c^7*d^5*e^4 + 4655728*b^4*c^6*d^4*e^5
- 1770120*b^5*c^5*d^3*e^6 + 422268*b^6*c^4*d^2*e^7 - 57750*b^7*c^3*d*e^8 +
3465*b^8*c^2*e^9)*f - (9830400*c^10*d^9 - 51078400*b*c^9*d^8*e + 117794560*
b^2*c^8*d^7*e^2 - 156115200*b^3*c^7*d^6*e^3 + 130302400*b^4*c^6*d^5*e^4 - 7
1145184*b^5*c^5*d^4*e^5 + 25545168*b^6*c^4*d^3*e^6 - 5835984*b^7*c^3*d^2*e^
7 + 771540*b^8*c^2*d*e^8 - 45045*b^9*c*e^9)*g + 2*(20*(588672*c^10*d^7*e^2
- 749632*b*c^9*d^6*e^3 - 547296*b^2*c^8*d^5*e^4 + 1063248*b^3*c^7*d^4*e^5 -
 460856*b^4*c^6*d^3*e^6 + 121572*b^5*c^5*d^2*e^7 - 18018*b^6*c^4*d*e^8 + 11
55*b^7*c^3*e^9)*f - (2661120*c^10*d^8*e - 12622080*b*c^9*d^7*e^2 + 24504320
*b^2*c^8*d^6*e^3 - 25880640*b^3*c^7*d^5*e^4 + 16587360*b^4*c^6*d^4*e^5 - 67
20560*b^5*c^5*d^3*e^6 + 1688544*b^6*c^4*d^2*e^7 - 241164*b^7*c^3*d*e^8 + 15
015*b^8*c^2*e^9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^8*e^2
), -1/82575360*(3465*(20*(512*c^10*d^9*e - 2304*b*c^9*d^8*e^2 + 4608*b^2*c^
8*d^7*e^3 - 5376*b^3*c^7*d^6*e^4 + 4032*b^4*c^6*d^5*e^5 - 2016*b^5*c^5*d^4*
e^6 + 672*b^6*c^4*d^3*e^7 - 144*b^7*c^3*d^2*e^8 + 18*b^8*c^2*d*e^9 - b^9*c*
e^10)*f + (3072*c^10*d^10 - 20480*b*c^9*d^9*e + 57600*b^2*c^8*d^8*e^2 - 921
60*b^3*c^7*d^7*e^3 + 94080*b^4*c^6*d^6*e^4 - 64512*b^5*c^5*d^5*e^5 + 30240*
b^6*c^4*d^4*e^6 - 9600*b^7*c^3*d^3*e^7 + 1980*b^8*c^2*d^2*e^8 - 240*b^9*c*d
*e^9 + 13*b^10*e^10)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c
*d*e)) - 2*(4128768*c^10*e^9*g*x^9 + 229376*(20*c^10*e^9*f + (60*c^10*d*e^8
 + 41*b*c^9*e^9)*g)*x^8 + 14336*(20*(54*c^10*d*e^8 + 37*b*c^9*e^9)*f + (324
*c^10*d^2*e^7 + 2976*b*c^9*d*e^8 + 383*b^2*c^8*e^9)*g)*x^7 + 1024*(20*(256*
c^10*d^2*e^7 + 2390*b*c^9*d*e^8 + 309*b^2*c^8*e^9)*f - (30720*c^10*d^3*e^6
- 59396*b*c^9*d^2*e^7 - 31264*b^2*c^8*d*e^8 - 15*b^3*c^7*e^9)*g)*x^6 - 256*
(20*(7224*c^10*d^3*e^6 - 13908*b*c^9*d^2*e^7 - 7386*b^2*c^8*d*e^8 - 5*b^3*c
^7*e^9)*f + (140112*c^10*d^4*e^5 + 16176*b*c^9*d^3*e^6 - 298968*b^2*c^8*d^2
*e^7 - 780*b^3*c^7*d*e^8 + 65*b^4*c^6*e^9)*g)*x^5 - 128*(20*(16896*c^10*d^4
*e^5 + 2328*b*c^9*d^3*e^6 - 36516*b^2*c^8*d^2*e^7 - 138*b^3*c^7*d*e^8 + 11*
b^4*c^6*e^9)*f - (92160*c^10*d^5*e^4 - 762000*b*c^9*d^4*e^5 + 733200*b^2*c^
8*d^3*e^6 + 9960*b^3*c^7*d^2*e^7 - 1860*b^4*c^6*d*e^8 + 143*b^5*c^5*e^9)*g)
*x^4 + 16*(20*(49056*c^10*d^5*e^4 - 392976*b*c^9*d^4*e^5 + 374352*b^2*c^8*d
^3*e^6 + 7576*b^3*c^7*d^2*e^7 - 1342*b^4*c^6*d*e^8 + 99*b^5*c^5*e^9)*f + (2
358720*c^10*d^6*e^3 - 6092160*b*c^9*d^5*e^4 + 3484080*b^2*c^8*d^4*e^5 + 339
840*b^3*c^7*d^3*e^6 - 106540*b^4*c^6*d^2*e^7 + 18040*b^5*c^5*d*e^8 - 1287*b
^6*c^4*e^9)*g)*x^3 + 8*(20*(327680*c^10*d^6*e^3 - 835872*b*c^9*d^5*e^4 + 45
5376*b^2*c^8*d^4*e^5 + 70768*b^3*c^7*d^3*e^6 - 20856*b^4*c^6*d^2*e^7 + 3366
*b^5*c^5*d*e^8 - 231*b^6*c^4*e^9)*f + (1966080*c^10*d^7*e^2 - 3081920*b*c^9
*d^6*e^3 - 336000*b^2*c^8*d^5*e^4 + 2246160*b^3*c^7*d^4*e^5 - 1045120*b^4*c
^6*d^3*e^6 + 291324*b^5*c^5*d^2*e^7 - 45144*b^6*c^4*d*e^8 + 3003*b^7*c^3*e^
9)*g)*x^2 - 20*(950272*c^10*d^8*e - 4389760*b*c^9*d^7*e^2 + 8056896*b^2*c^8
*d^6*e^3 - 7874464*b^3*c^7*d^5*e^4 + 4655728*b^4*c^6*d^4*e^5 - 1770120*b^5*
c^5*d^3*e^6 + 422268*b^6*c^4*d^2*e^7 - 57750*b^7*c^3*d*e^8 + 3465*b^8*c^2*e
^9)*f - (9830400*c^10*d^9 - 51078400*b*c^9*d^8*e + 117794560*b^2*c^8*d^7*e^
2 - 156115200*b^3*c^7*d^6*e^3 + 130302400*b^4*c^6*d^5*e^4 - 71145184*b^5*c^
5*d^4*e^5 + 25545168*b^6*c^4*d^3*e^6 - 5835984*b^7*c^3*d^2*e^7 + 771540*b^8
*c^2*d*e^8 - 45045*b^9*c*e^9)*g + 2*(20*(588672*c^10*d^7*e^2 - 749632*b*c^9
*d^6*e^3 - 547296*b^2*c^8*d^5*e^4 + 1063248*b^3*c^7*d^4*e^5 - 460856*b^4*c^
6*d^3*e^6 + 121572*b^5*c^5*d^2*e^7 - 18018*b^6*c^4*d*e^8 + 1155*b^7*c^3*e^9
)*f - (2661120*c^10*d^8*e - 12622080*b*c^9*d^7*e^2 + 24504320*b^2*c^8*d^6*e
^3 - 25880640*b^3*c^7*d^5*e^4 + 16587360*b^4*c^6*d^4*e^5 - 6720560*b^5*c^5*
d^3*e^6 + 1688544*b^6*c^4*d^2*e^7 - 241164*b^7*c^3*d*e^8 + 15015*b^8*c^2*e^
9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^8*e^2)]
```

giac [**B**] time = 0.94, size = 1686, normalized size = 3.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 1/41287680*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(4*(14
*(16*(18*c^2*g*x*e^7 + (60*c^11*d*g*e^22 + 20*c^11*f*e^23 + 41*b*c^10*g*e^2
3)*e^(-16)/c^9)*x + (324*c^11*d^2*g*e^21 + 1080*c^11*d*f*e^22 + 2976*b*c^10
*d*g*e^22 + 740*b*c^10*f*e^23 + 383*b^2*c^9*g*e^23)*e^(-16)/c^9)*x - (30720
*c^11*d^3*g*e^20 - 5120*c^11*d^2*f*e^21 - 59396*b*c^10*d^2*g*e^21 - 47800*b
*c^10*d*f*e^22 - 31264*b^2*c^9*d*g*e^22 - 6180*b^2*c^9*f*e^23 - 15*b^3*c^8*
g*e^23)*e^(-16)/c^9)*x - (140112*c^11*d^4*g*e^19 + 144480*c^11*d^3*f*e^20 +
 16176*b*c^10*d^3*g*e^20 - 278160*b*c^10*d^2*f*e^21 - 298968*b^2*c^9*d^2*g*
e^21 - 147720*b^2*c^9*d*f*e^22 - 780*b^3*c^8*d*g*e^22 - 100*b^3*c^8*f*e^23
+ 65*b^4*c^7*g*e^23)*e^(-16)/c^9)*x + (92160*c^11*d^5*g*e^18 - 337920*c^11*
d^4*f*e^19 - 762000*b*c^10*d^4*g*e^19 - 46560*b*c^10*d^3*f*e^20 + 733200*b^
2*c^9*d^3*g*e^20 + 730320*b^2*c^9*d^2*f*e^21 + 9960*b^3*c^8*d^2*g*e^21 + 27
60*b^3*c^8*d*f*e^22 - 1860*b^4*c^7*d*g*e^22 - 220*b^4*c^7*f*e^23 + 143*b^5*
c^6*g*e^23)*e^(-16)/c^9)*x + (2358720*c^11*d^6*g*e^17 + 981120*c^11*d^5*f*e
^18 - 6092160*b*c^10*d^5*g*e^18 - 7859520*b*c^10*d^4*f*e^19 + 3484080*b^2*c
^9*d^4*g*e^19 + 7487040*b^2*c^9*d^3*f*e^20 + 339840*b^3*c^8*d^3*g*e^20 + 15
1520*b^3*c^8*d^2*f*e^21 - 106540*b^4*c^7*d^2*g*e^21 - 26840*b^4*c^7*d*f*e^2
2 + 18040*b^5*c^6*d*g*e^22 + 1980*b^5*c^6*f*e^23 - 1287*b^6*c^5*g*e^23)*e^(
-16)/c^9)*x + (1966080*c^11*d^7*g*e^16 + 6553600*c^11*d^6*f*e^17 - 3081920*
b*c^10*d^6*g*e^17 - 16717440*b*c^10*d^5*f*e^18 - 336000*b^2*c^9*d^5*g*e^18
+ 9107520*b^2*c^9*d^4*f*e^19 + 2246160*b^3*c^8*d^4*g*e^19 + 1415360*b^3*c^8
*d^3*f*e^20 - 1045120*b^4*c^7*d^3*g*e^20 - 417120*b^4*c^7*d^2*f*e^21 + 2913
24*b^5*c^6*d^2*g*e^21 + 67320*b^5*c^6*d*f*e^22 - 45144*b^6*c^5*d*g*e^22 - 4
620*b^6*c^5*f*e^23 + 3003*b^7*c^4*g*e^23)*e^(-16)/c^9)*x - (2661120*c^11*d^
8*g*e^15 - 11773440*c^11*d^7*f*e^16 - 12622080*b*c^10*d^7*g*e^16 + 14992640
*b*c^10*d^6*f*e^17 + 24504320*b^2*c^9*d^6*g*e^17 + 10945920*b^2*c^9*d^5*f*e
^18 - 25880640*b^3*c^8*d^5*g*e^18 - 21264960*b^3*c^8*d^4*f*e^19 + 16587360*
b^4*c^7*d^4*g*e^19 + 9217120*b^4*c^7*d^3*f*e^20 - 6720560*b^5*c^6*d^3*g*e^2
0 - 2431440*b^5*c^6*d^2*f*e^21 + 1688544*b^6*c^5*d^2*g*e^21 + 360360*b^6*c^
5*d*f*e^22 - 241164*b^7*c^4*d*g*e^22 - 23100*b^7*c^4*f*e^23 + 15015*b^8*c^3
*g*e^23)*e^(-16)/c^9)*x - (9830400*c^11*d^9*g*e^14 + 19005440*c^11*d^8*f*e^
15 - 51078400*b*c^10*d^8*g*e^15 - 87795200*b*c^10*d^7*f*e^16 + 117794560*b^
2*c^9*d^7*g*e^16 + 161137920*b^2*c^9*d^6*f*e^17 - 156115200*b^3*c^8*d^6*g*e
^17 - 157489280*b^3*c^8*d^5*f*e^18 + 130302400*b^4*c^7*d^5*g*e^18 + 9311456
0*b^4*c^7*d^4*f*e^19 - 71145184*b^5*c^6*d^4*g*e^19 - 35402400*b^5*c^6*d^3*f
*e^20 + 25545168*b^6*c^5*d^3*g*e^20 + 8445360*b^6*c^5*d^2*f*e^21 - 5835984*
b^7*c^4*d^2*g*e^21 - 1155000*b^7*c^4*d*f*e^22 + 771540*b^8*c^3*d*g*e^22 + 6
9300*b^8*c^3*f*e^23 - 45045*b^9*c^2*g*e^23)*e^(-16)/c^9) + 11/262144*(3072*
c^10*d^10*g + 10240*c^10*d^9*f*e - 20480*b*c^9*d^9*g*e - 46080*b*c^9*d^8*f*
e^2 + 57600*b^2*c^8*d^8*g*e^2 + 92160*b^2*c^8*d^7*f*e^3 - 92160*b^3*c^7*d^7
*g*e^3 - 107520*b^3*c^7*d^6*f*e^4 + 94080*b^4*c^6*d^6*g*e^4 + 80640*b^4*c^6
*d^5*f*e^5 - 64512*b^5*c^5*d^5*g*e^5 - 40320*b^5*c^5*d^4*f*e^6 + 30240*b^6*
c^4*d^4*g*e^6 + 13440*b^6*c^4*d^3*f*e^7 - 9600*b^7*c^3*d^3*g*e^7 - 2880*b^7
*c^3*d^2*f*e^8 + 1980*b^8*c^2*d^2*g*e^8 + 360*b^8*c^2*d*f*e^9 - 240*b^9*c*d
*g*e^9 - 20*b^9*c*f*e^10 + 13*b^10*g*e^10)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(
sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^
2)*b))/c^8
```

maple [**B**] time = 0.12, size = 5287, normalized size = 9.41

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^3\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right)^{3} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)**3*(f + g*x), x)
```

3.2196 $\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=487

$$\frac{5(2cd-be)^8(-11beg+4cdg+18cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{65536c^{13/2}e^2}+\frac{5(b+2cx)(2cd-be)^6\sqrt{d(cd-be)-be^2x}}{32768c^6}$$

```
[Out] 5/12288*(-b*e+2*c*d)^4*(-11*b*e*g+4*c*d*g+18*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)
-b*e^2*x-c*e^2*x^2)^(3/2)/c^5/e+1/768*(-b*e+2*c*d)^2*(-11*b*e*g+4*c*d*g+18*
c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^4/e-1/224*(-b*e+2
*c*d)*(-11*b*e*g+4*c*d*g+18*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c
^3/e^2-1/144*(-11*b*e*g+4*c*d*g+18*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(7/2)/c^2/e^2-1/9*g*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2
)/c/e^2+5/65536*(-b*e+2*c*d)^8*(-11*b*e*g+4*c*d*g+18*c*e*f)*arctan(1/2*e*(2
*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(13/2)/e^2+5/3276
8*(-b*e+2*c*d)^6*(-11*b*e*g+4*c*d*g+18*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(1/2)/c^6/e
```

Rubi [A] time = 0.81, antiderivative size = 487, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.159$, Rules used = $\{1638, 12, 670, 640, 612, 621, 204\}$

$$\frac{5(b+2cx)(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-11beg+4cdg+18cef)}{32768c^6e}+\frac{5(b+2cx)(2cd-be)^4\left(d(cd-be)-\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (5*(2*c*d - b*e)^6*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2])/(32768*c^6*e) + (5*(2*c*d - b*e)^4*(18*c*e*f
 + 4*c*d*g - 11*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3
/2))/(12288*c^5*e) + ((2*c*d - b*e)^2*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(b +
2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(768*c^4*e) - ((2*c*d -
 b*e)*(18*c*e*f + 4*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(7/2))/(224*c^3*e^2) - ((18*c*e*f + 4*c*d*g - 11*b*e*g)*(d + e*x)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(144*c^2*e^2) - (g*(d + e*x)^2*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9*c*e^2) + (5*(2*c*d - b*e)^8*(18*c*
e*f + 4*c*d*g - 11*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])])/(65536*c^(13/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int (d+ex)^2(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx=-\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2}-\frac{\int -\frac{1}{2}e^2(18}{}$$

$$=-\frac{g(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2}+\frac{(18cef+4}{}$$

$$=-\frac{(18cef+4cdg-11beg)(d+ex)\Big(d(cd-be)-be^2x-c}{144c^2e^2}$$

$$=-\frac{(2cd-be)(18cef+4cdg-11beg)\Big(d(cd-be)-be^2x-}{224c^3e^2}$$

$$=\frac{(2cd-be)^2(18cef+4cdg-11beg)(b+2cx)\Big(d(cd-be)}{768c^4e}$$

$$=\frac{5(2cd-be)^4(18cef+4cdg-11beg)(b+2cx)\Big(d(cd-be}{12288c^5e}$$

$$=\frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{32768c^6e}$$

$$=\frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{32768c^6e}$$

$$=\frac{5(2cd-be)^6(18cef+4cdg-11beg)(b+2cx)\sqrt{d(cd-b}}{32768c^6e}$$

Mathematica [B] time = 6.56, size = 1511, normalized size = 3.10

$$-\frac{2(cde+(cd-be)e)^2\left(-9cfe^2-\left(\frac{11}{2}e(cd-be)-\frac{7cde}{2}\right)g\right)(d+ex)^3((d+ex)(c(d-ex)-be))^{5/2}\Bigg(\frac{495(cde+(cd-be)e)^6\Big(}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^2*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] -1/9*(g*(d + e*x)^3*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(5/2))/(c*e^2) - (2*(c*d*e + e*(c*d - b*e))^2*(-9*c*e^2*f - ((-7*c*d*e)/2 +
 (11*e*(c*d - b*e))/2)*g)*(d + e*x)^3*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5
/2)*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(
c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((11*(5/(5
6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*
d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(14*(1 - (c
*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))
/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
b*e))/(c*d*e + e*(c*d - b*e)))))^(-1)))/16 + (495*(c*d*e + e*(c*d - b*e))^6
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))^6*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e +
e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(
d + e*x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^3)
/(15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c
*d - b*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*d*
e + e*(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))
/(c*d*e + e*(c*d - b*e)))^4) - (256*c^5*e^10*(d + e*x)^5)/(315*(c*d*e + e*(
c*d - b*e))^5*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e
 + e*(c*d - b*e)))^5) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d
 + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)
) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))])])/(Sqrt[c*d*e + e*(c*d - b*
e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(
c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)
/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))]))))/
(65536*c^6*e^12*(d + e*x)^6*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))))^3)))/(99*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
b*e))/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

fricas [B] time = 31.67, size = 2861, normalized size = 5.87

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [1/8257536*(315*(18*(256*c^9*d^8*e - 1024*b*c^8*d^7*e^2 + 1792*b^2*c^7*d^6*
e^3 - 1792*b^3*c^6*d^5*e^4 + 1120*b^4*c^5*d^4*e^5 - 448*b^5*c^4*d^3*e^6 + 1
12*b^6*c^3*d^2*e^7 - 16*b^7*c^2*d*e^8 + b^8*c*e^9)*f + (1024*c^9*d^9 - 6912
*b*c^8*d^8*e + 18432*b^2*c^7*d^7*e^2 - 26880*b^3*c^6*d^6*e^3 + 24192*b^4*c^
5*d^5*e^4 - 14112*b^5*c^4*d^4*e^5 + 5376*b^6*c^3*d^3*e^6 - 1296*b^7*c^2*d^2
*e^7 + 180*b^8*c*d*e^8 - 11*b^9*e^9)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*
e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d
^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(229376*c^9*e^8*g*x^8 + 14336*(18
*c^9*e^8*f + (36*c^9*d*e^7 + 37*b*c^8*e^8)*g)*x^7 + 1024*(18*(32*c^9*d*e^7
+ 33*b*c^8*e^8)*f - (320*c^9*d^2*e^6 - 1796*b*c^8*d*e^7 - 309*b^2*c^7*e^8)*
g)*x^6 - 256*(54*(28*c^9*d^2*e^6 - 156*b*c^8*d*e^7 - 27*b^2*c^7*e^8)*f + (5
712*c^9*d^3*e^5 - 5484*b*c^8*d^2*e^6 - 5928*b^2*c^7*d*e^7 - 5*b^3*c^6*e^8)*
g)*x^5 - 128*(18*(768*c^9*d^3*e^5 - 732*b*c^8*d^2*e^6 - 804*b^2*c^7*d*e^7 -
 b^3*c^6*e^8)*f + (3072*c^9*d^4*e^4 + 15504*b*c^8*d^3*e^5 - 22044*b^2*c^7*d
^2*e^6 - 120*b^3*c^6*d*e^7 + 11*b^4*c^5*e^8)*g)*x^4 - 16*(18*(1680*c^9*d^4*
e^4 + 8928*b*c^8*d^3*e^5 - 12552*b^2*c^7*d^2*e^6 - 104*b^3*c^6*d*e^7 + 9*b^
4*c^5*e^8)*f - (79296*c^9*d^5*e^3 - 232272*b*c^8*d^4*e^4 + 148416*b^2*c^7*d
^3*e^5 + 5704*b^3*c^6*d^2*e^6 - 1180*b^4*c^5*d*e^7 + 99*b^5*c^4*e^8)*g)*x^3
 + 8*(54*(4096*c^9*d^5*e^3 - 11920*b*c^8*d^4*e^4 + 7456*b^2*c^7*d^3*e^5 + 4
56*b^3*c^6*d^2*e^6 - 88*b^4*c^5*d*e^7 + 7*b^5*c^4*e^8)*f + (106496*c^9*d^6*
e^2 - 192192*b*c^8*d^5*e^3 + 52752*b^2*c^7*d^4*e^4 + 46144*b^3*c^6*d^3*e^5
- 16104*b^4*c^5*d^2*e^6 + 2988*b^5*c^4*d*e^7 - 231*b^6*c^3*e^8)*g)*x^2 - 18
*(32768*c^9*d^7*e - 151872*b*c^8*d^6*e^2 + 259008*b^2*c^7*d^5*e^3 - 218000*
b^3*c^6*d^4*e^4 + 102624*b^4*c^5*d^3*e^5 - 29148*b^5*c^4*d^2*e^6 + 4620*b^6
*c^3*d*e^7 - 315*b^7*c^2*e^8)*f - (360448*c^9*d^8 - 1656064*b*c^8*d^7*e + 3
394752*b^2*c^7*d^6*e^2 - 3950464*b^3*c^6*d^5*e^3 + 2808496*b^4*c^5*d^4*e^4
- 1245456*b^5*c^4*d^3*e^5 + 339108*b^6*c^3*d^2*e^6 - 52080*b^7*c^2*d*e^7 +
3465*b^8*c*e^8)*g + 2*(18*(37184*c^9*d^6*e^2 - 62400*b*c^8*d^5*e^3 + 6480*b
^2*c^7*d^4*e^4 + 25504*b^3*c^6*d^3*e^5 - 8196*b^4*c^5*d^2*e^6 + 1428*b^5*c^
4*d*e^7 - 105*b^6*c^3*e^8)*f - (80640*c^9*d^7*e - 373568*b*c^8*d^6*e^2 + 66
3936*b^2*c^7*d^5*e^3 - 604176*b^3*c^6*d^4*e^4 + 313328*b^4*c^5*d^3*e^5 - 95
868*b^5*c^4*d^2*e^6 + 16128*b^6*c^3*d*e^7 - 1155*b^7*c^2*e^8)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^2), -1/4128768*(315*(18*(256*c^
9*d^8*e - 1024*b*c^8*d^7*e^2 + 1792*b^2*c^7*d^6*e^3 - 1792*b^3*c^6*d^5*e^4
+ 1120*b^4*c^5*d^4*e^5 - 448*b^5*c^4*d^3*e^6 + 112*b^6*c^3*d^2*e^7 - 16*b^7
*c^2*d*e^8 + b^8*c*e^9)*f + (1024*c^9*d^9 - 6912*b*c^8*d^8*e + 18432*b^2*c^
7*d^7*e^2 - 26880*b^3*c^6*d^6*e^3 + 24192*b^4*c^5*d^5*e^4 - 14112*b^5*c^4*d
^4*e^5 + 5376*b^6*c^3*d^3*e^6 - 1296*b^7*c^2*d^2*e^7 + 180*b^8*c*d*e^8 - 11
*b^9*e^9)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*
(229376*c^9*e^8*g*x^8 + 14336*(18*c^9*e^8*f + (36*c^9*d*e^7 + 37*b*c^8*e^8)
*g)*x^7 + 1024*(18*(32*c^9*d*e^7 + 33*b*c^8*e^8)*f - (320*c^9*d^2*e^6 - 179
6*b*c^8*d*e^7 - 309*b^2*c^7*e^8)*g)*x^6 - 256*(54*(28*c^9*d^2*e^6 - 156*b*c
^8*d*e^7 - 27*b^2*c^7*e^8)*f + (5712*c^9*d^3*e^5 - 5484*b*c^8*d^2*e^6 - 592
8*b^2*c^7*d*e^7 - 5*b^3*c^6*e^8)*g)*x^5 - 128*(18*(768*c^9*d^3*e^5 - 732*b*
c^8*d^2*e^6 - 804*b^2*c^7*d*e^7 - b^3*c^6*e^8)*f + (3072*c^9*d^4*e^4 + 1550
4*b*c^8*d^3*e^5 - 22044*b^2*c^7*d^2*e^6 - 120*b^3*c^6*d*e^7 + 11*b^4*c^5*e^
8)*g)*x^4 - 16*(18*(1680*c^9*d^4*e^4 + 8928*b*c^8*d^3*e^5 - 12552*b^2*c^7*d
^2*e^6 - 104*b^3*c^6*d*e^7 + 9*b^4*c^5*e^8)*f - (79296*c^9*d^5*e^3 - 232272
*b*c^8*d^4*e^4 + 148416*b^2*c^7*d^3*e^5 + 5704*b^3*c^6*d^2*e^6 - 1180*b^4*c
^5*d*e^7 + 99*b^5*c^4*e^8)*g)*x^3 + 8*(54*(4096*c^9*d^5*e^3 - 11920*b*c^8*d
^4*e^4 + 7456*b^2*c^7*d^3*e^5 + 456*b^3*c^6*d^2*e^6 - 88*b^4*c^5*d*e^7 + 7*
b^5*c^4*e^8)*f + (106496*c^9*d^6*e^2 - 192192*b*c^8*d^5*e^3 + 52752*b^2*c^7
*d^4*e^4 + 46144*b^3*c^6*d^3*e^5 - 16104*b^4*c^5*d^2*e^6 + 2988*b^5*c^4*d*e
^7 - 231*b^6*c^3*e^8)*g)*x^2 - 18*(32768*c^9*d^7*e - 151872*b*c^8*d^6*e^2 +
 259008*b^2*c^7*d^5*e^3 - 218000*b^3*c^6*d^4*e^4 + 102624*b^4*c^5*d^3*e^5 -
 29148*b^5*c^4*d^2*e^6 + 4620*b^6*c^3*d*e^7 - 315*b^7*c^2*e^8)*f - (360448*
c^9*d^8 - 1656064*b*c^8*d^7*e + 3394752*b^2*c^7*d^6*e^2 - 3950464*b^3*c^6*d
^5*e^3 + 2808496*b^4*c^5*d^4*e^4 - 1245456*b^5*c^4*d^3*e^5 + 339108*b^6*c^3
*d^2*e^6 - 52080*b^7*c^2*d*e^7 + 3465*b^8*c*e^8)*g + 2*(18*(37184*c^9*d^6*e
^2 - 62400*b*c^8*d^5*e^3 + 6480*b^2*c^7*d^4*e^4 + 25504*b^3*c^6*d^3*e^5 - 8
196*b^4*c^5*d^2*e^6 + 1428*b^5*c^4*d*e^7 - 105*b^6*c^3*e^8)*f - (80640*c^9*
d^7*e - 373568*b*c^8*d^6*e^2 + 663936*b^2*c^7*d^5*e^3 - 604176*b^3*c^6*d^4*
e^4 + 313328*b^4*c^5*d^3*e^5 - 95868*b^5*c^4*d^2*e^6 + 16128*b^6*c^3*d*e^7
- 1155*b^7*c^2*e^8)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*
e^2)]
```

giac [B] time = 0.72, size = 1402, normalized size = 2.88

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 1/2064384*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(4*(14*
(16*c^2*g*x*e^6 + (36*c^10*d*g*e^19 + 18*c^10*f*e^20 + 37*b*c^9*g*e^20)*e^(
-14)/c^8)*x - (320*c^10*d^2*g*e^18 - 576*c^10*d*f*e^19 - 1796*b*c^9*d*g*e^1
9 - 594*b*c^9*f*e^20 - 309*b^2*c^8*g*e^20)*e^(-14)/c^8)*x - (5712*c^10*d^3*
g*e^17 + 1512*c^10*d^2*f*e^18 - 5484*b*c^9*d^2*g*e^18 - 8424*b*c^9*d*f*e^19
 - 5928*b^2*c^8*d*g*e^19 - 1458*b^2*c^8*f*e^20 - 5*b^3*c^7*g*e^20)*e^(-14)/
c^8)*x - (3072*c^10*d^4*g*e^16 + 13824*c^10*d^3*f*e^17 + 15504*b*c^9*d^3*g*
e^17 - 13176*b*c^9*d^2*f*e^18 - 22044*b^2*c^8*d^2*g*e^18 - 14472*b^2*c^8*d*
f*e^19 - 120*b^3*c^7*d*g*e^19 - 18*b^3*c^7*f*e^20 + 11*b^4*c^6*g*e^20)*e^(-
14)/c^8)*x + (79296*c^10*d^5*g*e^15 - 30240*c^10*d^4*f*e^16 - 232272*b*c^9*
d^4*g*e^16 - 160704*b*c^9*d^3*f*e^17 + 148416*b^2*c^8*d^3*g*e^17 + 225936*b
^2*c^8*d^2*f*e^18 + 5704*b^3*c^7*d^2*g*e^18 + 1872*b^3*c^7*d*f*e^19 - 1180*
b^4*c^6*d*g*e^19 - 162*b^4*c^6*f*e^20 + 99*b^5*c^5*g*e^20)*e^(-14)/c^8)*x +
 (106496*c^10*d^6*g*e^14 + 221184*c^10*d^5*f*e^15 - 192192*b*c^9*d^5*g*e^15
 - 643680*b*c^9*d^4*f*e^16 + 52752*b^2*c^8*d^4*g*e^16 + 402624*b^2*c^8*d^3*
f*e^17 + 46144*b^3*c^7*d^3*g*e^17 + 24624*b^3*c^7*d^2*f*e^18 - 16104*b^4*c^
6*d^2*g*e^18 - 4752*b^4*c^6*d*f*e^19 + 2988*b^5*c^5*d*g*e^19 + 378*b^5*c^5*
f*e^20 - 231*b^6*c^4*g*e^20)*e^(-14)/c^8)*x - (80640*c^10*d^7*g*e^13 - 6693
12*c^10*d^6*f*e^14 - 373568*b*c^9*d^6*g*e^14 + 1123200*b*c^9*d^5*f*e^15 + 6
63936*b^2*c^8*d^5*g*e^15 - 116640*b^2*c^8*d^4*f*e^16 - 604176*b^3*c^7*d^4*g
*e^16 - 459072*b^3*c^7*d^3*f*e^17 + 313328*b^4*c^6*d^3*g*e^17 + 147528*b^4*
c^6*d^2*f*e^18 - 95868*b^5*c^5*d^2*g*e^18 - 25704*b^5*c^5*d*f*e^19 + 16128*
b^6*c^4*d*g*e^19 + 1890*b^6*c^4*f*e^20 - 1155*b^7*c^3*g*e^20)*e^(-14)/c^8)*
x - (360448*c^10*d^8*g*e^12 + 589824*c^10*d^7*f*e^13 - 1656064*b*c^9*d^7*g*
e^13 - 2733696*b*c^9*d^6*f*e^14 + 3394752*b^2*c^8*d^6*g*e^14 + 4662144*b^2*
c^8*d^5*f*e^15 - 3950464*b^3*c^7*d^5*g*e^15 - 3924000*b^3*c^7*d^4*f*e^16 +
2808496*b^4*c^6*d^4*g*e^16 + 1847232*b^4*c^6*d^3*f*e^17 - 1245456*b^5*c^5*d
^3*g*e^17 - 524664*b^5*c^5*d^2*f*e^18 + 339108*b^6*c^4*d^2*g*e^18 + 83160*b
^6*c^4*d*f*e^19 - 52080*b^7*c^3*d*g*e^19 - 5670*b^7*c^3*f*e^20 + 3465*b^8*c
^2*g*e^20)*e^(-14)/c^8) + 5/65536*(1024*c^9*d^9*g + 4608*c^9*d^8*f*e - 6912
*b*c^8*d^8*g*e - 18432*b*c^8*d^7*f*e^2 + 18432*b^2*c^7*d^7*g*e^2 + 32256*b^
2*c^7*d^6*f*e^3 - 26880*b^3*c^6*d^6*g*e^3 - 32256*b^3*c^6*d^5*f*e^4 + 24192
*b^4*c^5*d^5*g*e^4 + 20160*b^4*c^5*d^4*f*e^5 - 14112*b^5*c^4*d^4*g*e^5 - 80
64*b^5*c^4*d^3*f*e^6 + 5376*b^6*c^3*d^3*g*e^6 + 2016*b^6*c^3*d^2*f*e^7 - 12
96*b^7*c^2*d^2*g*e^7 - 288*b^7*c^2*d*f*e^8 + 180*b^8*c*d*g*e^8 + 18*b^8*c*f
*e^9 - 11*b^9*g*e^9)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(
-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^7
```

maple [B] time = 0.07, size = 4332, normalized size = 8.90

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 5/192/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^5*g+3/128*b^3/c^3*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e^2*f-1/9*g*x^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(7/2)/c-11/224*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)-115/
512*g*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^6-1/8*x*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(7/2)/c*f+9/112*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/
2)*f+3/16*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2*f+15/128*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^4*f+15/64*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*x*d^4*f+3/32/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d^2*f+45/12
8*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6*f+45/256*c*(-c*e^2*x^2-b
*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^6*f+45/128*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8*f-2/7*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*d*f-135/256*e*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*b^2*d^5*f+15/2048*b^5/c^4*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*f+45/16384*b^7/c^5*e^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+1/24
/e*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^3*g-11/768*e^2*g*b^4/c^4*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-11/63/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(7/2)*d^2-55/12288*e^4*g*b^6/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)-55/32768*e^6*g*b^8/c^6*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-95/768*g*
b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^4-5/64*g*b^2/c^2*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-95/384*g*b*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*x*d^4+11/144*g*b/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)+945/51
2*e^3*g*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*d^5-2205/2048*e^4*g*b^5/c^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-885/4
096*e^4*g*b^5/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+115/1536*e^3
*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d+225/16384*e^7*g*b^8/c
```

```
^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))*d+625/1024*e^3*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*x*d^3-1025/1024*e^2*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^
4+105/256*e^5*g*b^6/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-405/4096*e^6*g*b^7/c^4/(c*e^2)^(1/2
)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*
d^2+85/2048*e^5*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+35/96*
e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3+1/8*e*g*b^2/c^2*x*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d-185/768*e^2*g*b^3/c^2*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+45/32*e*g*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^7-55/16384*e^6
*g*b^7/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+625/2048*e^3*g*b^5/c^3*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3+5/64/e*c^3/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^9*g+5/9
6/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^5*g+675/4096*b^5/c^3*e^4*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-5/32*g*b/c*x*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(5/2)*d^2-135/256*g*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8-115/256*g*b*c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6-525/256*e^2*g*b^3/(c*e^2)^(1/2)*ar
ctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6-
55/65536*e^8*g*b^9/c^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+97/504/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(7/2)*b*d-11/384*e^2*g*b^3/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
5/2)-1025/2048*e^2*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4-185
/1536*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+15/16*e*g*b^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^5+15/32*e*g*b^3/c*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d^5+35/192*e*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(3/2)*d^3+1/16*e*g*b^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d
+85/4096*e^5*g*b^7/c^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-885/8192*e^
4*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+115/3072*e^3*g*b^5/c
^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d-55/6144*e^4*g*b^5/c^4*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x-15/32*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3
/2)*x*b*d^3*f-15/64*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d^3*f-3/
32*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b^2*d*f-315/128*b^3*e^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2))*d^5*f-1/4*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*d*g+3/64*b^
2/c^2*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e^2*f+675/1024*b^3/c*(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*e^2*f+45/256*b^3/c^2*(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(3/2)*d^2*e^2*f-135/4096*b^6/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2)*d*f+1/48/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d^3*g
+5/64/e*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^7*g-15/256*b^4/c^3*e
^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f+15/1024*b^4/c^3*e^4*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*f+45/8192*b^6/c^4*e^6*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*x*f+675/512*b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*
d^4*e^2*f-225/512*b^4/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*f+
45/32768*b^8/c^5*e^8/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+5/128/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)*b*d^7*g+675/2048*b^4/c^2*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)*x*d^2*f-315/512*b^5/c^2*e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c
)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*f-45/32*e*c^2/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d
^7*f-135/2048*b^5/c^3*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+315/
128*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2))*d^6*e^2*f+45/128*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(3/2)*x*d^2*e^2*f+315/2048*b^6/c^3*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2*f+1575/1024*b^4/c
*e^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^4*f-225/256*b^3/c*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*x*d^3*f-15/128*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d*
```

```
f-45/2048*b^7/c^4*e^7/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-3/16*e/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(5/2)*b*d*f-135/128*e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b*d
^5*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,{\left(d+e\,x\right)}^2\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right)^{2} \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)**2*(f + g*x), x)
```

3.2197 $\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=371

$$\frac{5(2cd-be)^7(-9beg+2cdg+16cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{32768c^{11/2}e^2}+\frac{5(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x}}{16384c^5e}$$

```
[Out] 5/6144*(-b*e+2*c*d)^3*(-9*b*e*g+2*c*d*g+16*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(3/2)/c^4/e+1/384*(-b*e+2*c*d)*(-9*b*e*g+2*c*d*g+16*c*e*f
)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^3/e+1/112*(9*b*e*g-16*
c*(d*g+e*f)-14*c*e*g*x)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2+5/32
768*(-b*e+2*c*d)^7*(-9*b*e*g+2*c*d*g+16*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/
2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(11/2)/e^2+5/16384*(-b*e+2*c*d
)^5*(-9*b*e*g+2*c*d*g+16*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(1/2)/c^5/e
```

Rubi [A] time = 0.62, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.095, Rules used = {779, 612, 621, 204}

$$\frac{5(b+2cx)(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+2cdg+16cef)}{16384c^5e}+\frac{5(b+2cx)(2cd-be)^3\left(d(cd-be)-\right.}{6}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (5*(2*c*d - b*e)^5*(16*c*e*f + 2*c*d*g - 9*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(16384*c^5*e) + (5*(2*c*d - b*e)^3*(16*c*e*f
+ 2*c*d*g - 9*b*e*g)*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2
))/(6144*c^4*e) + ((2*c*d - b*e)*(16*c*e*f + 2*c*d*g - 9*b*e*g)*(b + 2*c*x)
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(384*c^3*e) + ((9*b*e*g - 16*
c*(e*f + d*g) - 14*c*e*g*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(1
12*c^2*e^2) + (5*(2*c*d - b*e)^7*(16*c*e*f + 2*c*d*g - 9*b*e*g)*ArcTan[(e*(
b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(32768*
c^(11/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (d+ex)(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = \frac{(9beg-16c(ef+dg)-14cegx)\left(d(cd-be)-be^2x-ce^2x^2\right)}{112c^2e^2}$$

$$= \frac{(2cd-be)(16cef+2cdg-9beg)(b+2cx)\left(d(cd-be)-be^2\right.}{384c^3e}$$

$$= \frac{5(2cd-be)^3(16cef+2cdg-9beg)(b+2cx)\left(d(cd-be)-b\right.}{6144c^4e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)-}}{16384c^5e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)-}}{16384c^5e}$$

$$= \frac{5(2cd-be)^5(16cef+2cdg-9beg)(b+2cx)\sqrt{d(cd-be)-}}{16384c^5e}$$

Mathematica [B] time = 6.38, size = 1422, normalized size = 3.83

$$-\frac{(cde+(cd-be)e)^2\left(-8cfe^2-\left(\frac{9}{2}e(cd-be)-\frac{7cde}{2}\right)g\right)(d+ex)^2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{45(cde+(cd-be)e)^5\left(-\frac{}{35(cde+}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] -1/8*(g*(d + e*x)^2*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^
(5/2))/(c*e^2) - ((c*d*e + e*(c*d - b*e))^2*(-8*c*e^2*f - ((-7*c*d*e)/2 + (
9*e*(c*d - b*e))/2)*g)*(d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)
*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((9*(1/(8*(1
- (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b
*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3) + 5/(12*(1 - (c*e^2*
(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e
^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))/((c*
d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))
/(c*d*e + e*(c*d - b*e)))))^(-1)))/14 + (45*(c*d*e + e*(c*d - b*e))^5*((c*d
*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^
5*((-2*c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d
 - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(d + e*
x)^2)/(3*(c*d*e + e*(c*d - b*e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^
2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^2) - (16*c^3*e^6*(d + e*x)^3)/(15*(
c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b
*e))/(c*d*e + e*(c*d - b*e)))^3) - (32*c^4*e^8*(d + e*x)^4)/(35*(c*d*e + e*
(c*d - b*e))^4*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*
e + e*(c*d - b*e)))^4) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[
d + e*x])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e
)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))]])])/(Sqrt[c*d*e + e*(c*d - b
*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2
)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))])))
/(4096*c^5*e^10*(d + e*x)^5*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))
*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b
*e)))))^3)))/(36*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d -
b*e))/(c*d*e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d -
b*e - c*e*x))/(c*d*e + e*(c*d - b*e))])
```

fricas [B] time = 16.02, size = 2345, normalized size = 6.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] [-1/1376256*(105*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*b^2*c^6*d^5*e
^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^2*e^6 + 14*b^
6*c^2*d*e^7 - b^7*c*e^8)*f + (256*c^8*d^8 - 2048*b*c^7*d^7*e + 5376*b^2*c^6
*d^6*e^2 - 7168*b^3*c^5*d^5*e^3 + 5600*b^4*c^4*d^4*e^4 - 2688*b^5*c^3*d^3*e
^5 + 784*b^6*c^2*d^2*e^6 - 128*b^7*c*d*e^7 + 9*b^8*e^8)*g)*sqrt(-c)*log(8*c
^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(43008*c^8*e^7
*g*x^7 + 3072*(16*c^8*e^7*f + (16*c^8*d*e^6 + 33*b*c^7*e^7)*g)*x^6 + 256*(1
6*(14*c^8*d*e^6 + 29*b*c^7*e^7)*f - (476*c^8*d^2*e^5 - 940*b*c^7*d*e^6 - 24
3*b^2*c^6*e^7)*g)*x^5 - 128*(16*(72*c^8*d^2*e^5 - 142*b*c^7*d*e^6 - 37*b^2*
c^6*e^7)*f + (1152*c^8*d^3*e^4 + 76*b*c^7*d^2*e^5 - 1820*b^2*c^6*d*e^6 - 3*
b^3*c^5*e^7)*g)*x^4 - 16*(16*(728*c^8*d^3*e^4 + 60*b*c^7*d^2*e^5 - 1166*b^2
*c^6*d*e^6 - 3*b^3*c^5*e^7)*f - (6608*c^8*d^4*e^3 - 25824*b*c^7*d^3*e^4 + 1
9000*b^2*c^6*d^2*e^5 + 264*b^3*c^5*d*e^6 - 27*b^4*c^4*e^7)*g)*x^3 + 8*(16*(
1152*c^8*d^4*e^3 - 4488*b*c^7*d^3*e^4 + 3276*b^2*c^6*d^2*e^5 + 74*b^3*c^5*d
*e^6 - 7*b^4*c^4*e^7)*f + (18432*c^8*d^5*e^2 - 35472*b*c^7*d^4*e^3 + 14688*
b^2*c^6*d^3*e^4 + 2920*b^3*c^5*d^2*e^5 - 680*b^4*c^4*d*e^6 + 63*b^5*c^3*e^7
)*g)*x^2 - 16*(3072*c^8*d^6*e - 16608*b*c^7*d^5*e^2 + 27696*b^2*c^6*d^4*e^3
 - 20096*b^3*c^5*d^3*e^4 + 7056*b^4*c^4*d^2*e^5 - 1330*b^5*c^3*d*e^6 + 105*
b^6*c^2*e^7)*f - (49152*c^8*d^7 - 189888*b*c^7*d^6*e + 333888*b^2*c^6*d^5*e
^2 - 332464*b^3*c^5*d^4*e^3 + 194976*b^4*c^4*d^3*e^4 - 66164*b^5*c^3*d^2*e^
5 + 12180*b^6*c^2*d*e^6 - 945*b^7*c*e^7)*g + 2*(16*(7392*c^8*d^5*e^2 - 1387
2*b*c^7*d^4*e^3 + 4896*b^2*c^6*d^3*e^4 + 1920*b^3*c^5*d^2*e^5 - 406*b^4*c^4
*d*e^6 + 35*b^5*c^3*e^7)*f - (6720*c^8*d^6*e - 34752*b*c^7*d^5*e^2 + 58896*
b^2*c^6*d^4*e^3 - 45792*b^3*c^5*d^3*e^4 + 18092*b^4*c^4*d^2*e^5 - 3724*b^5*
c^3*d*e^6 + 315*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e))/(c^6*e^2), -1/688128*(105*(16*(128*c^8*d^7*e - 448*b*c^7*d^6*e^2 + 672*
b^2*c^6*d^5*e^3 - 560*b^3*c^5*d^4*e^4 + 280*b^4*c^4*d^3*e^5 - 84*b^5*c^3*d^
2*e^6 + 14*b^6*c^2*d*e^7 - b^7*c*e^8)*f + (256*c^8*d^8 - 2048*b*c^7*d^7*e +
 5376*b^2*c^6*d^6*e^2 - 7168*b^3*c^5*d^5*e^3 + 5600*b^4*c^4*d^4*e^4 - 2688*
b^5*c^3*d^3*e^5 + 784*b^6*c^2*d^2*e^6 - 128*b^7*c*d*e^7 + 9*b^8*e^8)*g)*sqr
t(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*
sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(43008*c^8*e^7*g
*x^7 + 3072*(16*c^8*e^7*f + (16*c^8*d*e^6 + 33*b*c^7*e^7)*g)*x^6 + 256*(16*
(14*c^8*d*e^6 + 29*b*c^7*e^7)*f - (476*c^8*d^2*e^5 - 940*b*c^7*d*e^6 - 243*
b^2*c^6*e^7)*g)*x^5 - 128*(16*(72*c^8*d^2*e^5 - 142*b*c^7*d*e^6 - 37*b^2*c^
6*e^7)*f + (1152*c^8*d^3*e^4 + 76*b*c^7*d^2*e^5 - 1820*b^2*c^6*d*e^6 - 3*b^
3*c^5*e^7)*g)*x^4 - 16*(16*(728*c^8*d^3*e^4 + 60*b*c^7*d^2*e^5 - 1166*b^2*c
^6*d*e^6 - 3*b^3*c^5*e^7)*f - (6608*c^8*d^4*e^3 - 25824*b*c^7*d^3*e^4 + 190
00*b^2*c^6*d^2*e^5 + 264*b^3*c^5*d*e^6 - 27*b^4*c^4*e^7)*g)*x^3 + 8*(16*(11
52*c^8*d^4*e^3 - 4488*b*c^7*d^3*e^4 + 3276*b^2*c^6*d^2*e^5 + 74*b^3*c^5*d*e
^6 - 7*b^4*c^4*e^7)*f + (18432*c^8*d^5*e^2 - 35472*b*c^7*d^4*e^3 + 14688*b^
2*c^6*d^3*e^4 + 2920*b^3*c^5*d^2*e^5 - 680*b^4*c^4*d*e^6 + 63*b^5*c^3*e^7)*
g)*x^2 - 16*(3072*c^8*d^6*e - 16608*b*c^7*d^5*e^2 + 27696*b^2*c^6*d^4*e^3 -
 20096*b^3*c^5*d^3*e^4 + 7056*b^4*c^4*d^2*e^5 - 1330*b^5*c^3*d*e^6 + 105*b^
6*c^2*e^7)*f - (49152*c^8*d^7 - 189888*b*c^7*d^6*e + 333888*b^2*c^6*d^5*e^2
 - 332464*b^3*c^5*d^4*e^3 + 194976*b^4*c^4*d^3*e^4 - 66164*b^5*c^3*d^2*e^5
+ 12180*b^6*c^2*d*e^6 - 945*b^7*c*e^7)*g + 2*(16*(7392*c^8*d^5*e^2 - 13872*
b*c^7*d^4*e^3 + 4896*b^2*c^6*d^3*e^4 + 1920*b^3*c^5*d^2*e^5 - 406*b^4*c^4*d
*e^6 + 35*b^5*c^3*e^7)*f - (6720*c^8*d^6*e - 34752*b*c^7*d^5*e^2 + 58896*b^
2*c^6*d^4*e^3 - 45792*b^3*c^5*d^3*e^4 + 18092*b^4*c^4*d^2*e^5 - 3724*b^5*c^
3*d*e^6 + 315*b^6*c^2*e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)
)/(c^6*e^2)]
```

giac [B] time = 0.66, size = 1144, normalized size = 3.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] 1/344064*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(2*(8*(2*(12*(14*
c^2*g*x*e^5 + (16*c^9*d*g*e^16 + 16*c^9*f*e^17 + 33*b*c^8*g*e^17)*e^(-12)/c
^7)*x - (476*c^9*d^2*g*e^15 - 224*c^9*d*f*e^16 - 940*b*c^8*d*g*e^16 - 464*b
*c^8*f*e^17 - 243*b^2*c^7*g*e^17)*e^(-12)/c^7)*x - (1152*c^9*d^3*g*e^14 + 1
152*c^9*d^2*f*e^15 + 76*b*c^8*d^2*g*e^15 - 2272*b*c^8*d*f*e^16 - 1820*b^2*c
^7*d*g*e^16 - 592*b^2*c^7*f*e^17 - 3*b^3*c^6*g*e^17)*e^(-12)/c^7)*x + (6608
*c^9*d^4*g*e^13 - 11648*c^9*d^3*f*e^14 - 25824*b*c^8*d^3*g*e^14 - 960*b*c^8
*d^2*f*e^15 + 19000*b^2*c^7*d^2*g*e^15 + 18656*b^2*c^7*d*f*e^16 + 264*b^3*c
^6*d*g*e^16 + 48*b^3*c^6*f*e^17 - 27*b^4*c^5*g*e^17)*e^(-12)/c^7)*x + (1843
2*c^9*d^5*g*e^12 + 18432*c^9*d^4*f*e^13 - 35472*b*c^8*d^4*g*e^13 - 71808*b*
c^8*d^3*f*e^14 + 14688*b^2*c^7*d^3*g*e^14 + 52416*b^2*c^7*d^2*f*e^15 + 2920
*b^3*c^6*d^2*g*e^15 + 1184*b^3*c^6*d*f*e^16 - 680*b^4*c^5*d*g*e^16 - 112*b^
4*c^5*f*e^17 + 63*b^5*c^4*g*e^17)*e^(-12)/c^7)*x - (6720*c^9*d^6*g*e^11 - 1
18272*c^9*d^5*f*e^12 - 34752*b*c^8*d^5*g*e^12 + 221952*b*c^8*d^4*f*e^13 + 5
8896*b^2*c^7*d^4*g*e^13 - 78336*b^2*c^7*d^3*f*e^14 - 45792*b^3*c^6*d^3*g*e^
14 - 30720*b^3*c^6*d^2*f*e^15 + 18092*b^4*c^5*d^2*g*e^15 + 6496*b^4*c^5*d*f
*e^16 - 3724*b^5*c^4*d*g*e^16 - 560*b^5*c^4*f*e^17 + 315*b^6*c^3*g*e^17)*e^
(-12)/c^7)*x - (49152*c^9*d^7*g*e^10 + 49152*c^9*d^6*f*e^11 - 189888*b*c^8*
d^6*g*e^11 - 265728*b*c^8*d^5*f*e^12 + 333888*b^2*c^7*d^5*g*e^12 + 443136*b
^2*c^7*d^4*f*e^13 - 332464*b^3*c^6*d^4*g*e^13 - 321536*b^3*c^6*d^3*f*e^14 +
 194976*b^4*c^5*d^3*g*e^14 + 112896*b^4*c^5*d^2*f*e^15 - 66164*b^5*c^4*d^2*
g*e^15 - 21280*b^5*c^4*d*f*e^16 + 12180*b^6*c^3*d*g*e^16 + 1680*b^6*c^3*f*e
^17 - 945*b^7*c^2*g*e^17)*e^(-12)/c^7) + 5/32768*(256*c^8*d^8*g + 2048*c^8*
d^7*f*e - 2048*b*c^7*d^7*g*e - 7168*b*c^7*d^6*f*e^2 + 5376*b^2*c^6*d^6*g*e^
2 + 10752*b^2*c^6*d^5*f*e^3 - 7168*b^3*c^5*d^5*g*e^3 - 8960*b^3*c^5*d^4*f*e
^4 + 5600*b^4*c^4*d^4*g*e^4 + 4480*b^4*c^4*d^3*f*e^5 - 2688*b^5*c^3*d^3*g*e
^5 - 1344*b^5*c^3*d^2*f*e^6 + 784*b^6*c^2*d^2*g*e^6 + 224*b^6*c^2*d*f*e^7 -
 128*b^7*c*d*g*e^7 - 16*b^7*c*f*e^8 + 9*b^8*g*e^8)*sqrt(-c*e^2)*e^(-3)*log(
abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sq
rt(-c*e^2)*b))/c^6
```

maple [**B**] time = 0.07, size = 3472, normalized size = 9.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 9/112/e*g*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)+15/2048*e^3*g*b^5/c^
4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+5/48*d^3*f*(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(3/2)*b+1/6*d*f*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-1/7*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e*f-35/256*g*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*b^2*d^5-1/24*b^2/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e
*f-5/96*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b^2*d-5/32*g*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3*b+45/16384*e^5*g*b^7/c^5*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2)+5/384/e*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b
*d^4+1/48/e*g*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*d^2-1/8/e*g*x*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c+5/16*d^7*f*c^3/(c*e^2)^(1/2)*arctan((c*e
^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/24*d^3*f*c*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x+5/16*d^5*f*c^2*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*x+1/12*d*f/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b+5
/32*d^5*f*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b+3/128*e*g*b^3/c^3*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)-5/64*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*b^2*d^3-1/7*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(7/2)/c/e^2*d*g-25/64*
b^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4*e*f-5/384*b^4/c^3*e^3*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f-5/1024*b^6/c^4*e^5*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*f-25/32*b*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4*
e*f-25/64*b^3/c*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*f+25/256*b
^4/c^2*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f+105/64*b^2*c*e^2/(c
*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2))*d^5*f+5/32*b^2/c*e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d*f
-35/32*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2))*d^6*e*f-35/384*e^2*g*b^3/c^2*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*x*d+875/1024*e^3*g*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4-105/512*b^5/c^2*
e^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2))*d^2*f+35/1024*b^6/c^3*e^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f+175/256*b^4/c*e^4
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2))*d^3*f-125/256*e^2*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*x*d^3+245/2048*e^5*g*b^6/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b
/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2-5/256*e^6*g*b^7/c^4/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2))*d+475/2048*e^3*g*b^4/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+
25/128*e*g*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+105/128*e*g*b
^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^6-105/256*e^4*g*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3-115/2048*e^4*g*b
^5/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+275/512*e*g*b^2*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^4+1/96/e*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(5/2)*b*d^2+5/128/e*g*c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^6
+275/1024*e*g*b^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^4+25/256*e*g*b
^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2+3/64*e*g*b^2/c^2*x*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)+15/1024*e^3*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(3/2)*x+5/256/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d
```

```
^6+5/128/e*g*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^8+5/192/e*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(3/2)*x*d^4+45/8192*e^5*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*x-25/128*b^4/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-35/32*e^
2*g*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d^5-35/768*e^2*g*b^4/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(3/2)*d-1/12*b/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*e*f-5/48*g/c*x
*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)*b*d-5/16*g*c^2/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^7-35
/128*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^5*b+475/4096*e^3*g*b^5/
c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-125/512*e^2*g*b^4/c^2*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3+45/32768*e^7*g*b^8/c^5/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-115
/4096*e^4*g*b^6/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+25/64*b^3/c*e^
2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*f-5/2048*b^7/c^4*e^7/(c*e^2)^(
1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
))*f-5/192*b^3/c^2*e^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*f-5/16*b*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2*e*f+5/64*b^3/c^2*e^2*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(3/2)*d*f-5/512*b^5/c^3*e^5*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)*x*f+25/512*b^5/c^3*e^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
*d*f-175/128*b^3*e^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4*f+25/32*b^2*e^2*(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*d^3*f-5/32*b^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*
d^2*e*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f+g\,x\right)\,\left(d+e\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}} \left(d + e x\right) \left(f + g x\right)\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)*(f + g*x), x)
```

3.2198 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{d+ex}\,dx$

Optimal. Leaf size=346

$$-\frac{(2cd-be)^5(5beg-2c(6ef-dg))\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{1024c^{7/2}e^2}-\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce}}{512c^3e}$$

```
[Out] -1/192*(-b*e+2*c*d)*(5*b*e*g-2*c*(-d*g+6*e*f))*(2*c*x+b)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(3/2)/c^2/e+1/60*(-5*b*e*g-2*c*d*g+12*c*e*f)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(5/2)/c/e^2-1/6*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/
c/e^2/(e*x+d)-1/1024*(-b*e+2*c*d)^5*(5*b*e*g-2*c*(-d*g+6*e*f))*arctan(1/2*e
*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(7/2)/e^2-1/51
2*(-b*e+2*c*d)^3*(5*b*e*g-2*c*(-d*g+6*e*f))*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(1/2)/c^3/e
```

Rubi [A] time = 0.53, antiderivative size = 346, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {794, 664, 612, 621, 204}

$$-\frac{(b+2cx)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(5beg-2c(6ef-dg))}{512c^3e}-\frac{(b+2cx)(2cd-be)\left(d(cd-be)-be^2x\right.}{192c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x),x]
```

```
[Out] -((2*c*d - b*e)^3*(5*b*e*g - 2*c*(6*e*f - d*g))*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(512*c^3*e) - ((2*c*d - b*e)*(5*b*e*g - 2*c*(6*
e*f - d*g))*(b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(192*c
^2*e) + ((12*c*e*f - 2*c*d*g - 5*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(5/2))/(60*c*e^2) - (g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6*c
*e^2*(d + e*x)) - ((2*c*d - b*e)^5*(5*b*e*g - 2*c*(6*e*f - d*g))*ArcTan[(e*
(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(1024*
c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{d+ex}\,dx = -\frac{g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{6ce^2(d+ex)} - \frac{\big(ce^3f-\big(-cde^2+be^3\big)g+\frac{7}{2}e\big(}{}$$

$$= \frac{(12cef-2cdg-5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{60ce^2} - \frac{g\big(d(cd-b}{6}$$

$$= \frac{(2cd-be)(12cef-2cdg-5beg)(b+2cx)\big(d(cd-be)-be^2x-ce^2x}{192c^2e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{512c^3e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{512c^3e}$$

$$= \frac{(2cd-be)^3(12cef-2cdg-5beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{512c^3e}$$

Mathematica [**B**] time = 6.20, size = 1230, normalized size = 3.55

$$-\frac{(cde+(cd-be)e)^2\left(-6cfe^2-\left(\frac{5}{2}e(cd-be)-\frac{7cde}{2}\right)g\right)((d+ex)(c(d-ex)-be))^{5/2}\Bigg(\frac{15(cde+(cd-be)e)^3\Bigg(-\frac{4c^2(}{3(cde+(cd-be)e)^2\big(\frac{}{cde+}}}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
,x]
```

```
[Out] -1/6*(g*(c*d - b*e - c*e*x)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2))/(c*e^
2) - ((c*d*e + e*(c*d - b*e))^2*(-6*c*e^2*f - ((-7*c*d*e)/2 + (5*e*(c*d - b
*e))/2)*g)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(1 - (c*e^2*(d + e*x))/
((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b
*e))/(c*d*e + e*(c*d - b*e)))))^(7/2)*((5/(16*(1 - (c*e^2*(d + e*x))/((c*d*
e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(
c*d*e + e*(c*d - b*e)))))^3) + 5/(8*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d
 - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*
(c*d - b*e)))))^2) + (1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*
e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))
^(-1))/2 + (15*(c*d*e + e*(c*d - b*e))^3*((c*d*e^2)/(c*d*e + e*(c*d - b*e))
 + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))^3*((-2*c*e^2*(d + e*x))/((c*d
*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/
(c*d*e + e*(c*d - b*e)))) - (4*c^2*e^4*(d + e*x)^2)/(3*(c*d*e + e*(c*d - b*
e))^2*((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*
d - b*e)))^2) + (2*Sqrt[c]*e*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*e*Sqrt[d + e*x])
/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2
*(c*d - b*e))/(c*d*e + e*(c*d - b*e))]])/(Sqrt[c*d*e + e*(c*d - b*e)]*Sqrt
[(c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*
e))]*Sqrt[1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)/(c*d*e
+ e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e))))]))))/(512*c^3
*e^6*(d + e*x)^3*(1 - (c*e^2*(d + e*x))/((c*d*e + e*(c*d - b*e))*((c*d*e^2)
/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*e + e*(c*d - b*e)))))^3))
)/(15*c*e^5*(e/((c*d*e^2)/(c*d*e + e*(c*d - b*e)) + (e^2*(c*d - b*e))/(c*d*
e + e*(c*d - b*e))))^(5/2)*(c*d - b*e - c*e*x)^2*Sqrt[(e*(c*d - b*e - c*e*x
))/(c*d*e + e*(c*d - b*e))])
```

fricas [B] time = 3.77, size = 1457, normalized size = 4.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="fricas")
```

```
[Out] [-1/30720*(15*(12*(32*c^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 4
0*b^3*c^3*d^2*e^4 + 10*b^4*c^2*d*e^5 - b^5*c*e^6)*f - (64*c^6*d^6 - 240*b^2
*c^4*d^4*e^2 + 320*b^3*c^3*d^3*e^3 - 180*b^4*c^2*d^2*e^4 + 48*b^5*c*d*e^5 -
 5*b^6*e^6)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c
*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(-c)) - 4*(1280*c^6*e^5*g*x^5 + 128*(12*c^6*e^5*f - (12*c^6*d*e^4 -
25*b*c^5*e^5)*g)*x^4 - 16*(12*(10*c^6*d*e^4 - 21*b*c^5*e^5)*f + (140*c^6*d^
2*e^3 - 8*b*c^5*d*e^4 - 135*b^2*c^4*e^5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 2
*b*c^5*d*e^4 - 31*b^2*c^4*e^5)*f - (384*c^6*d^3*e^2 - 804*b*c^5*d^2*e^3 + 4
08*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*g)*x^2 + 12*(128*c^6*d^4*e - 56*b*c^5*d^3
*e^2 - 172*b^2*c^4*d^2*e^3 + 130*b^3*c^3*d*e^4 - 15*b^4*c^2*e^5)*f - (1536*
c^6*d^5 - 3312*b*c^5*d^4*e + 3216*b^2*c^4*d^3*e^2 - 1880*b^3*c^3*d^2*e^3 +
620*b^4*c^2*d*e^4 - 75*b^5*c*e^5)*g + 2*(12*(200*c^6*d^3*e^2 - 428*b*c^5*d^
2*e^3 + 218*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*f + (240*c^6*d^4*e - 144*b*c^5*d
^3*e^2 - 216*b^2*c^4*d^2*e^3 + 180*b^3*c^3*d*e^4 - 25*b^4*c^2*e^5)*g)*x)*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^2), -1/15360*(15*(12*(32*c
^6*d^5*e - 80*b*c^5*d^4*e^2 + 80*b^2*c^4*d^3*e^3 - 40*b^3*c^3*d^2*e^4 + 10*
b^4*c^2*d*e^5 - b^5*c*e^6)*f - (64*c^6*d^6 - 240*b^2*c^4*d^4*e^2 + 320*b^3*
c^3*d^3*e^3 - 180*b^4*c^2*d^2*e^4 + 48*b^5*c*d*e^5 - 5*b^6*e^6)*g)*sqrt(c)*
arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(
c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(1280*c^6*e^5*g*x^5 +
 128*(12*c^6*e^5*f - (12*c^6*d*e^4 - 25*b*c^5*e^5)*g)*x^4 - 16*(12*(10*c^6*
d*e^4 - 21*b*c^5*e^5)*f + (140*c^6*d^2*e^3 - 8*b*c^5*d*e^4 - 135*b^2*c^4*e^
5)*g)*x^3 - 8*(12*(32*c^6*d^2*e^3 - 2*b*c^5*d*e^4 - 31*b^2*c^4*e^5)*f - (38
4*c^6*d^3*e^2 - 804*b*c^5*d^2*e^3 + 408*b^2*c^4*d*e^4 + 5*b^3*c^3*e^5)*g)*x
^2 + 12*(128*c^6*d^4*e - 56*b*c^5*d^3*e^2 - 172*b^2*c^4*d^2*e^3 + 130*b^3*c
^3*d*e^4 - 15*b^4*c^2*e^5)*f - (1536*c^6*d^5 - 3312*b*c^5*d^4*e + 3216*b^2*
c^4*d^3*e^2 - 1880*b^3*c^3*d^2*e^3 + 620*b^4*c^2*d*e^4 - 75*b^5*c*e^5)*g +
2*(12*(200*c^6*d^3*e^2 - 428*b*c^5*d^2*e^3 + 218*b^2*c^4*d*e^4 + 5*b^3*c^3*
e^5)*f + (240*c^6*d^4*e - 144*b*c^5*d^3*e^2 - 216*b^2*c^4*d^2*e^3 + 180*b^3
*c^3*d*e^4 - 25*b^4*c^2*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e))/(c^4*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.42Error: Bad Argument Typ
e
```

maple [B] time = 0.06, size = 3533, normalized size = 10.21

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x)
```

```
[Out] -1/8/e*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*g-1/16*e*b^2
/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-3/128*e^3*b^4/c^2*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+1/4*c*d*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+1/8*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(3/2)*x*d*g+1/16*b^2/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(3/2)*d*g+3/8*c^3*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b
*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-5
/48*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b^2*d-5/24*g*(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)*x*b*d+5/192*g*e/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(3/2)*b^3+5/512*g*e^3/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^5+9/32
*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^3*g+1/8*d*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*f+1/6*g/e*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)*x-5/16*g*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b^2*d^3-1
/5/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-1/8*e*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+3/8*c^2*d^3*(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+3/16*c*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*b*f+1/12*g/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5
/2)*b+5/48*g/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d^2+5/24*g/e*c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+5/16*g/e*c^2*(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(1/2)*x*d^4+15/64*g*e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*
b^3*d^2-25/32*g*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^3*d^3-5/64*g*e^2/c^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)*b^4*d+15/32*e^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d^3*g-15/256*g*e^4/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*
b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^5*d-5/32*g*e^2/c*(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b^3*d-15/128*e^3*b^4/c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2))*d^2*g+1/5/e*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(5/2)*f-9/32*e*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d
^2*f-5/8*g*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*b*d^3+5/96*g*e/c*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*b^2+75/64*g*e*c/(c*e^2)^(1/2)*arctan((
c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^2*d^4+75
/256*g*e^3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(1/2))*b^4*d^2+5/256*g*e^3/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*x*b^4-9/64*e*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*d^2*g+9/64*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2)*d*f-3/256*e^5*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-15
/16*g*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2))*b*d^5+15/32*g*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2
)*x*b^2*d^2+9/16*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^
3*g-3/16/e*c*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-3/8/
e*c^3*d^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/
e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-15/32*e^3*b^3/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-3/8/e*c^2*d^4*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g+15/16*b*c^2/(c*e^2)^(1/2)*arctan(
(c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(1/2))*d^5*g+5/32*g/e*c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*b*d^4+5/16*g/e*c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^6+5/1024*g*e^5/c^3/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b^6-3
/64*e^3*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-9/32*e*
b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2*g+9/32*e^2*b^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+3/128*e^2*b^4/c^2*(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g-1/4/e*c*d^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-15/16*e*b^2*c/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*g-9/16*e*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*d^2*f+3/256*e^4*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e
)*(x+d/e))^(1/2))*d*g-15/16*e*b*c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d
/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2))*d^4*f+15/16*e^2*b^2*c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*
(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*
d^3*f+3/64*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*
g+15/128*e^4*b^4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*
c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{d+e\,x} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x),x)
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{d+ex}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d),x)
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x), x)
```

3.2199 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^2}\,dx$

Optimal. Leaf size=354

$$\frac{(2cd-be)^4(-3beg-4cdg+10cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{256c^{5/2}e^2}+\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-c}}{128c^2e}$$

```
[Out] 1/48*(-3*b*e*g-4*c*d*g+10*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(3/2)/c/e+1/15*(-3*b*e*g-4*c*d*g+10*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(5/2)/e^2/(-b*e+2*c*d)+2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7
/2)/e^2/(-b*e+2*c*d)/(e*x+d)^2+1/256*(-b*e+2*c*d)^4*(-3*b*e*g-4*c*d*g+10*c*
e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))
/c^(5/2)/e^2+1/128*(-b*e+2*c*d)^2*(-3*b*e*g-4*c*d*g+10*c*e*f)*(2*c*x+b)*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e
```

Rubi [A] time = 0.61, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 664, 612, 621, 204}

$$\frac{(b+2cx)(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg-4cdg+10cef)}{128c^2e}+\frac{(2cd-be)^4(-3beg-4cdg+10cef)\,\mathrm{ta}}{256c^{5/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^2,x]
```

```
[Out] ((2*c*d - b*e)^2*(10*c*e*f - 4*c*d*g - 3*b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2])/(128*c^2*e) + ((10*c*e*f - 4*c*d*g - 3*b*e*g)*(
b + 2*c*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(48*c*e) + ((10*c*e
*f - 4*c*d*g - 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(15*e^
2*(2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) + ((2*c*d - b*e)^4*(10*c*e*f - 4*c*d*
g - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])])/(256*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^2}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^2} + \frac{(10cef-4cdg-3beg)}{3e(2c}$$

$$= \frac{(10cef-4cdg-3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15e^2(2cd-be)} + \frac{2(ef-dg)}{3e}$$

$$= \frac{(10cef-4cdg-3beg)(b+2cx)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{48ce} + \frac{(1}{}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{128c^2e}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{128c^2e}$$

$$= \frac{(2cd-be)^2(10cef-4cdg-3beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce}}{128c^2e}$$

Mathematica [A] time = 4.41, size = 379, normalized size = 1.07

$$\frac{(be-cd+cex)^2((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{\sqrt{\frac{be-cd+cex}{be-2cd}}(-3beg-4cdg+10cef)\left(2c^2e^9(d+ex)^2(e(2cd-be))^{3/2}\sqrt{\frac{be-cd+cex}{be-2cd}}\left(59b^2e^2+4bce(17e\right.\right.}{}\right.}{15ce^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^2,x]
```

```
[Out] ((-(c*d) + b*e + c*e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e^3*
g + ((10*c*e*f - 4*c*d*g - 3*b*e*g)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b
*e)]*(2*c^2*e^9*(e*(2*c*d - b*e))^(3/2)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*
e*x)/(-2*c*d + b*e)]*(59*b^2*e^2 + 4*b*c*e*(-42*d + 17*e*x) + 4*c^2*(31*d^2
 - 22*d*e*x + 6*e^2*x^2)) - 15*e^8*(-2*c*d + b*e)^4*(c*e^2*Sqrt[e*(2*c*d -
b*e)]*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] + Sqrt[c]*e^(5/
2)*(-2*c*d + b*e)*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt
[e*(2*c*d - b*e)]]))))/(128*c^2*e^7*Sqrt[e*(2*c*d - b*e)]*(d + e*x)^2*(-(c*d
) + b*e + c*e*x)^4)))/(15*c*e^5)
```

fricas [A] time = 2.05, size = 1097, normalized size = 3.10

$$\Bigg[\frac{15\,\big(10\,\big(16\,c^5d^4e-32\,bc^4d^3e^2+24\,b^2c^3d^2e^3-8\,b^3c^2de^4+b^4ce^5\big)f-\big(64\,c^5d^5-80\,bc^4d^4e+40\,b^3c^2d^2e^3-20\,b^{4}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="fricas")
```

```
[Out] [1/7680*(15*(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b
^3*c^2*d*e^4 + b^4*c*e^5)*f - (64*c^5*d^5 - 80*b*c^4*d^4*e + 40*b^3*c^2*d^2
*e^3 - 20*b^4*c*d*e^4 + 3*b^5*e^5)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^
2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(384*c^5*e^4*g*x^4 + 48*(10*c^5*e^4
*f - (20*c^5*d*e^3 - 21*b*c^4*e^4)*g)*x^3 - 8*(10*(16*c^5*d*e^3 - 17*b*c^4*
e^4)*f - (64*c^5*d^2*e^2 - 164*b*c^4*d*e^3 + 93*b^2*c^3*e^4)*g)*x^2 + 10*(1
28*c^5*d^3*e - 156*b*c^4*d^2*e^2 + 28*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*f - (
896*c^5*d^4 - 1392*b*c^4*d^3*e + 796*b^2*c^3*d^2*e^2 - 240*b^3*c^2*d*e^3 +
45*b^4*c*e^4)*g + 2*(10*(36*c^5*d^2*e^2 - 100*b*c^4*d*e^3 + 59*b^2*c^3*e^4)
*f + (240*c^5*d^3*e - 284*b*c^4*d^2*e^2 + 64*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/3840*(15*
(10*(16*c^5*d^4*e - 32*b*c^4*d^3*e^2 + 24*b^2*c^3*d^2*e^3 - 8*b^3*c^2*d*e^4
 + b^4*c*e^5)*f - (64*c^5*d^5 - 80*b*c^4*d^4*e + 40*b^3*c^2*d^2*e^3 - 20*b^
4*c*d*e^4 + 3*b^5*e^5)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b
*c*d*e)) - 2*(384*c^5*e^4*g*x^4 + 48*(10*c^5*e^4*f - (20*c^5*d*e^3 - 21*b*c
^4*e^4)*g)*x^3 - 8*(10*(16*c^5*d*e^3 - 17*b*c^4*e^4)*f - (64*c^5*d^2*e^2 -
164*b*c^4*d*e^3 + 93*b^2*c^3*e^4)*g)*x^2 + 10*(128*c^5*d^3*e - 156*b*c^4*d^
2*e^2 + 28*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*f - (896*c^5*d^4 - 1392*b*c^4*d^
3*e + 796*b^2*c^3*d^2*e^2 - 240*b^3*c^2*d*e^3 + 45*b^4*c*e^4)*g + 2*(10*(36
*c^5*d^2*e^2 - 100*b*c^4*d*e^3 + 59*b^2*c^3*e^4)*f + (240*c^5*d^3*e - 284*b
*c^4*d^2*e^2 + 64*b^2*c^3*d*e^3 + 15*b^3*c^2*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b
*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 4215, normalized size = 11.91

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x)
```

```
[Out] 5/128*e^5/c/(-b*e^2+2*c*d*e)*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-
1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2))*d*g-1/16*g*b^2/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)-9/32
```

```
*g*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-1/8*g*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+2/3*c/(-b*e^2+2*c*d*e)*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-5/24*e^2/(-b*e^2+2*c*d*e)*b^2
*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+25/8*e^3*c^2/(-b*e^2+2
*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*f-15/8*e^2*c^
2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^
2*f+15/8*e*c^2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2)*x*d^3*g+15/16*e^3*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+5/12*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g+25/8*e*c^3/(-b*e^2+2*c*d*e)*b/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g+25/16*e^3*c/(-b*e^2+2*c*d*e)
*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*g-25/8*e^2*c^3/(-b*e
^2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e
)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f-25/16*e^4
*c/(-b*e^2+2*c*d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e
^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f
-25/8*e^2*c^2/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/
e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2))*d^4*g-15/16*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*x*d^2*g-15/32*e^2/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*g+15/32*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f-15/16*g*b*c^2/(c*e^2)^(1/
2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4-9/16*g*b*c*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*d^2+9/64*g*e*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*d-3/256*g*e^4*b^5/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/
2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2))-15/32*g*e^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2
*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))
*d^2-3/64*g*e^2*b^3/c*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+9
/32*g*e*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d+1/4*g/e*c
*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+3/8*g/e*c^2*d^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+5/24*e/(-b*e^2+2*c*d*e)*b^2
*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-5/64*e^4/c/(-b*e^2+2
*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f-5/32*e^4/(-
b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f+2/
3/e^2/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(7/2)*f+1/5*g/e^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+3/16*
g/e*c*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-3/128*g*e^2*b
^4/c^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+1/8*g/e*d*(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b+3/8*g/e*c^3*d^5/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2))-2/3/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g-5/4*c^4/(-b*e^2+2*c*d*e)*d^6/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-2/3/e*c/(-b*e^2+2*c*d*e)*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g-5/8*c^2/(-b*e^2+2*c*d*e)
*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g-5/6*c^2/(-b*e^2+
2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-5/4*c^3/
(-b*e^2+2*c*d*e)*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g-
5/12*c/(-b*e^2+2*c*d*e)*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/
2)*b*g+15/16*e*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2)*d^3*g+5/4*e*c^3/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*x*f+5/12*e*c/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*f+5/4*e*c^4/(-b*e^2+2*c*d*e)*d^5/(c*e^2)^
(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+25/64*e^5/(-b*e^2+2*c*d*e)*b^4/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f-5/128*e^6/c/(-b*e^2+2*c*d*e)*
b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f-25/64*e^4/(-b*e^2+2*c*d
*e)*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^
2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+15/128*g*e^3*b^
4/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(
-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-5/12*e^2*c/(-b*e^2+2*c*
d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+5/8*e*c^2/(-b*
e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f+5/6*
e*c^2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*
x*f-15/16*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(1/2)*d^2*f+5/64*e^3/c/(-b*e^2+2*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2)*d*g+5/32*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g+15/16*g*e*b^2*c/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2))*d^3
```

maxima [B] time = 1.76, size = 1751, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^2,x, algor
ithm="maxima")
```

```
[Out] 5/4*b*c^3*d^3*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2
*c*d - b*e))/(-c)^(3/2) - 5/8*c^4*d^4*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*
d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*e) - 15/16*b^2*c^2*d^2*e*f
*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-
c)^(3/2) + 5/16*b^3*c*d*e^2*f*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d -
 b*e) - b*e/(2*c*d - b*e))/(-c)^(3/2) - 5/128*b^4*e^3*f*arcsin(2*c*e*x/(2*c
*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-c)^(3/2) + 1/4*c^4*d
^5*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e)
)/((-c)^(3/2)*e^2) - 5/16*b*c^3*d^4*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/
(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*e) + 5/32*b^3*c*d^2*e*g*arcs
in(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/(-c)^(3
/2) - 5/64*b^4*d*e^2*g*arcsin(2*c*e*x/(2*c*d - b*e) + 4*c*d/(2*c*d - b*e) -
 b*e/(2*c*d - b*e))/(-c)^(3/2) + 3/256*b^5*e^3*g*arcsin(2*c*e*x/(2*c*d - b*
e) + 4*c*d/(2*c*d - b*e) - b*e/(2*c*d - b*e))/((-c)^(3/2)*c) + 5/8*sqrt(c*e
^2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^2*f*x - 5/8*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d*e*f*x + 5/32*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*e^2*f*x + 1/16*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^2*g*x - 1/4*sqrt(c*e^2
*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^3*g*x/e + 1/8*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d*e*g*x - 3/64*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*e^2*g*x/c - 25/16*sqrt(c
*e^2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^2*f + 5/4*sqrt(c*e^
2*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^3*f/e + 5/8*sqrt(c*e^2
*x^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d*e*f - 5/64*sqrt(c*e^2*x
^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*e^2*f/c + 7/32*sqrt(c*e^2*x
^2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^2*d^2*g - 1/2*sqrt(c*e^2*x^2
+ 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*c^2*d^4*g/e^2 + 1/4*sqrt(c*e^2*x^2
 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b*c*d^3*g/e - 5/32*sqrt(c*e^2*x^2
 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^3*d*e*g/c + 3/128*sqrt(c*e^2*x^
2 + 4*c*d*e*x - b*e^2*x + 3*c*d^2 - b*d*e)*b^4*e^2*g/c^2 - 1/8*(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e)^(3/2)*b*g*x + 1/4*(-c*e^2*x^2 - b*e^2*x + c*d^2
- b*d*e)^(3/2)*c*d*g*x/e - 5/24*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2
)*b*f + 5/12*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*c*d*f/e - 1/16*(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*b^2*g/c - 1/4*(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)^(5/2)*d*g/(e^3*x + d*e^2) - 5/12*(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)^(3/2)*c*d^2*g/e^2 + 1/3*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e)^(3/2)*b*d*g/e + 1/4*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*f/(e
^2*x + d*e) + 1/5*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*g/e^2
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^2,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**2,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**2, x)
```

3.2200 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^3}\,dx$

Optimal. Leaf size=354

$$\frac{5(2cd-be)^3(-beg-6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^3(2cd-be)}+5\quad+-$$

```
[Out] 5/24*(-b*e*g-6*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2+1/
4*(-b*e*g-6*c*d*g+8*c*e*f)*(-c*e*x-b*e+c*d)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(3/2)/e^2/(-b*e+2*c*d)+2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2
)/e^2/(-b*e+2*c*d)/(e*x+d)^3+5/128*(-b*e+2*c*d)^3*(-b*e*g-6*c*d*g+8*c*e*f)*
arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(3
/2)/e^2+5/64*(-b*e+2*c*d)*(-b*e*g-6*c*d*g+8*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(1/2)/c/e
```

Rubi **[A]** time = 0.75, antiderivative size = 354, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 7, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.159, Rules used = {792, 654, 670, 640, 612, 621, 204}

$$\frac{5(2cd-be)^3(-beg-6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{3/2}e^2}+\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^3(2cd-be)}+5\quad+-$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^3,x]
```

```
[Out] (5*(2*c*d - b*e)*(8*c*e*f - 6*c*d*g - b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])/(64*c*e) + (5*(8*c*e*f - 6*c*d*g - b*e*g)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*e^2) + ((8*c*e*f - 6*c*d*g - b*e*g
)*(c*d - b*e - c*e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(
2*c*d - b*e)) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))
/(e^2*(2*c*d - b*e)*(d + e*x)^3) + (5*(2*c*d - b*e)^3*(8*c*e*f - 6*c*d*g -
b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])])/(128*c^(3/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 654

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Int[(a + b*x + c*x^2)^(m + p)/(a/d + (c*x)/e)^m, x] /; FreeQ[{a, b
, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&
!IntegerQ[p] && IntegerQ[m] && RationalQ[p] && (LtQ[0, -m, p] || LtQ[p, -m,
 0]) && NeQ[m, 2] && NeQ[m, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^3}\,dx = \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^3} + \frac{(8cef-6cdg-beg)\int}{e(2cd}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^3} + \frac{(8cef-6cdg-beg)\int}{}$$

$$= \frac{(8cef-6cdg-beg)(cd-be-cex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)} +$$

$$= \frac{5(8cef-6cdg-beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2} + \frac{(8cef-6cd}{}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

$$= \frac{5(2cd-be)(8cef-6cdg-beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x}}{64ce}$$

Mathematica [**A**] time = 1.37, size = 294, normalized size = 0.83

$$\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c}\sqrt{e}\left(15b^3e^3g+2b^2ce^2(-118dg+132ef+59egx)+4bc^2e\left(173d^2g-2de(106f+\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^3,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[c]*Sqrt[e]*(15*b^3*e^3*g + 2*
b^2*c*e^2*(132*e*f - 118*d*g + 59*e*g*x) - 8*c^3*(72*d^3*g + 12*d*e^2*x*(3*
f + 2*g*x) - 2*e^3*x^2*(4*f + 3*g*x) - d^2*e*(88*f + 45*g*x)) + 4*b*c^2*e*(
173*d^2*g + 2*e^2*x*(26*f + 17*g*x) - 2*d*e*(106*f + 51*g*x))) + (15*Sqrt[e
*(2*c*d - b*e)]*(-2*c*d + b*e)^2*(8*c*e*f - 6*c*d*g - b*e*g)*ArcSin[(Sqrt[c
]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(Sqrt[d + e*x]*Sqrt[(-(c*d
) + b*e + c*e*x)/(-2*c*d + b*e)])))/(192*c^(3/2)*e^(5/2))
```

fricas [**A**] time = 1.89, size = 813, normalized size = 2.30

$$\left[-\frac{15\left(8\left(8\,c^4d^3e-12\,bc^3d^2e^2+6\,b^2c^2de^3-b^3ce^4\right)f-\left(48\,c^4d^4-64\,bc^3d^3e+24\,b^2c^2d^2e^2-b^4e^4\right)g\right)\sqrt{-c}\,\log\left(8\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algor
ithm="fricas")
```

```
[Out] [-1/768*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^
4)*f - (48*c^4*d^4 - 64*b*c^3*d^3*e + 24*b^2*c^2*d^2*e^2 - b^4*e^4)*g)*sqrt
(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*
sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(4
8*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (24*c^4*d*e^2 - 17*b*c^3*e^3)*g)*x^2 + 8
*(88*c^4*d^2*e - 106*b*c^3*d*e^2 + 33*b^2*c^2*e^3)*f - (576*c^4*d^3 - 692*b
*c^3*d^2*e + 236*b^2*c^2*d*e^2 - 15*b^3*c*e^3)*g - 2*(8*(18*c^4*d*e^2 - 13*
b*c^3*e^3)*f - (180*c^4*d^2*e - 204*b*c^3*d*e^2 + 59*b^2*c^2*e^3)*g)*x)*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^2*e^2), -1/384*(15*(8*(8*c^4*d^
3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f - (48*c^4*d^4 - 64*
b*c^3*d^3*e + 24*b^2*c^2*d^2*e^2 - b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*
c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f - (24*
c^4*d*e^2 - 17*b*c^3*e^3)*g)*x^2 + 8*(88*c^4*d^2*e - 106*b*c^3*d*e^2 + 33*b
^2*c^2*e^3)*f - (576*c^4*d^3 - 692*b*c^3*d^2*e + 236*b^2*c^2*d*e^2 - 15*b^3
*c*e^3)*g - 2*(8*(18*c^4*d*e^2 - 13*b*c^3*e^3)*f - (180*c^4*d^2*e - 204*b*c
^3*d*e^2 + 59*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)
)/(c^2*e^2)]
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*(((
96*exp(1)^5*c^5*g*1/768/exp(1)^4/c^3*x+(128*exp(1)^5*c^5*f+272*exp(1)^5*c^4
*g*b-384*exp(1)^4*c^5*g*d)*1/768/exp(1)^4/c^3)*x+(416*exp(1)^5*c^4*b*f+236*
exp(1)^5*c^3*g*b^2-576*exp(1)^4*c^5*d*f-816*exp(1)^4*c^4*g*b*d+720*exp(1)^3
*c^5*g*d^2)*1/768/exp(1)^4/c^3)*x+(528*exp(1)^5*c^3*b^2*f+30*exp(1)^5*c^2*g
*b^3-1696*exp(1)^4*c^4*b*d*f-472*exp(1)^4*c^3*g*b^2*d+1408*exp(1)^3*c^5*d^2
*f+1384*exp(1)^3*c^4*g*b*d^2-1152*exp(1)^2*c^5*g*d^3)*1/768/exp(1)^4/c^3)*s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2*(-(5*b^4*g*exp(1)^4-40*c*b
^3*exp(1)^4*f-120*c^2*b^2*g*exp(1)^2*d^2+240*c^2*b^2*exp(1)^3*f*d+320*c^3*b
*g*exp(1)*d^3-480*c^3*b*exp(1)^2*f*d^2-240*c^4*g*d^4+320*c^4*exp(1)*f*d^3)/
256/c/sqrt(-c*exp(2))/exp(1)*ln(abs(2*c*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))+(-20*exp(2)*b^3*g*exp(
1)^7*d^2+55*exp(2)^2*b^3*g*exp(1)^5*d^2-35*exp(2)^3*b^3*g*exp(1)^3*d^2-15*e
xp(2)^2*b^3*exp(1)^6*f*d+15*exp(2)^3*b^3*exp(1)^4*f*d+100*c*exp(2)*b^2*g*ex
p(1)^6*d^3-275*c*exp(2)^2*b^2*g*exp(1)^4*d^3+175*c*exp(2)^3*b^2*g*exp(1)^2*
d^3-20*c*exp(2)*b^2*exp(1)^7*f*d^2+115*c*exp(2)^2*b^2*exp(1)^5*f*d^2-95*c*e
xp(2)^3*b^2*exp(1)^3*f*d^2-140*c^2*exp(2)*b*g*exp(1)^5*d^4+400*c^2*exp(2)^2
*b*g*exp(1)^3*d^4-260*c^2*exp(2)^3*b*g*exp(1)*d^4+40*c^2*exp(2)*b*exp(1)^6*
f*d^3-200*c^2*exp(2)^2*b*exp(1)^4*f*d^3+160*c^2*exp(2)^3*b*exp(1)^2*f*d^3+6
0*c^3*exp(2)*g*exp(1)^4*d^5-180*c^3*exp(2)^2*g*exp(1)^2*d^5+120*c^3*exp(2)^
3*g*d^5-20*c^3*exp(2)*exp(1)^5*f*d^4+100*c^3*exp(2)^2*exp(1)^3*f*d^4-80*c^3
*exp(2)^3*exp(1)*f*d^4)/4/exp(1)^7/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2
*exp(2)-b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^
2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2)))-(-4*exp(2)*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^8*d^2+17*exp
(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3
*b^3*g*exp(1)^6*d^2-13*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^4*d^2-9*exp(2)^2*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^7*f*d+9*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
b^3*exp(1)^5*f*d+20*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^7*d^3-85*c*exp(2)^2*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^5*d^3+65*c
*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*b^2*g*exp(1)^3*d^3-4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^8*f*d^2+53*c*exp(2)^2*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^6*f*d^
2-49*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^3*b^2*exp(1)^4*f*d^2-28*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^6*d^4+128*c^2*exp(2)^2*(s
qrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp
(1)^4*d^4-100*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^2*d^4+8*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^7*f*d^3-88*c^2*exp(
2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*
b*exp(1)^5*f*d^3+80*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^3*f*d^3+12*c^3*exp(2)*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^5*d^5-60*c^3
*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*g*exp(1)^3*d^5+48*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)*d^5-4*c^3*exp(2)*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^6*f*d^4+44*c^3*e
xp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^3*exp(1)^4*f*d^4-40*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^2*f*d^4+8*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^9*d^3
-36*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^7*d^3+21*exp(2)^2*sqrt(-c*exp(2))*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1
)^5*d^3+7*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^3*d^3+24*exp(2)*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*e
xp(1)^8*f*d^2-21*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^6*f*d^2-3*exp(2)^3*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b^3*exp(1)^4*f*d^2-24*c*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^8*d^4+108*c*exp(2)*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*b^2*g*exp(1)^6*d^4-9*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^4*d^4-75*c*ex
p(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)^2*b^2*g*exp(1)^2*d^4-84*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^7*f*
d^3+33*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^5*f*d^3+51*c*exp(2)^3*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^
2*exp(1)^3*f*d^3+24*c^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^7*d^5-108*c^2*exp(2)*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b*g*exp(1)^5*d^5-72*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^3*d^5+156*c^2*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^2*b*g*exp(1)*d^5+96*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^6*f*d^4+2
4*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^4*f*d^4-120*c^2*exp(2)^3*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*ex
p(1)^2*f*d^4-8*c^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^6*d^6+36*c^3*exp(2)*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp
(1)^4*d^6+60*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^2*d^6-88*c^3*exp(2)^3*sqrt(-c
*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^2*g*d^6-36*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^5*f*d^5-36*c^3*exp(2)^2*sqrt(-c*e
xp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
2*exp(1)^3*f*d^5+72*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)*f*d^5-4*exp(2)*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^9*d
^3+19*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)*b^4*g*exp(1)^7*d^3-26*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^5*d^3+11*exp(2)^4*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^3*d^3-
7*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)*b^4*exp(1)^8*f*d^2+14*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^6*f*d^2-7*exp(2)^4*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^4*f*d^2+32*c*
exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*
b^3*g*exp(1)^8*d^4-174*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^6*d^4+225*c*exp(2)^3*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^4*d^4-83
*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2)
)*x)*b^3*g*exp(1)^2*d^4+4*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^9*f*d^3+78*c*exp(2)^2*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^7*f*d^3-14
1*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b^3*exp(1)^5*f*d^3+59*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^3*f*d^3-72*c^2*exp(2)*(sqrt(-b*d
*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^7*d^
```

```
5+439*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c
*exp(2))*x)*b^2*g*exp(1)^5*d^5-527*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^3*d^5+160*c^2*exp(2)^
4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g
*exp(1)*d^5-12*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)*b^2*exp(1)^8*f*d^4-235*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^6*f*d^4+371*c^2*
exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b^2*exp(1)^4*f*d^4-124*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^2*f*d^4+64*c^3*exp(2)*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^6*d^6-4
32*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)*b*g*exp(1)^4*d^6+456*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d
^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^2*d^6-88*c^3*exp(2)^4*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*d^6+12*c^
3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)*b*exp(1)^7*f*d^5+264*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^5*f*d^5-348*c^3*exp(2)^3*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^3*f*d^5+72
*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b*exp(1)*f*d^5-20*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^5*d^7+148*c^4*exp(2)^2*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^3*d^7-128*c^
4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)*g*exp(1)*d^7-4*c^4*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*exp(1)^6*f*d^6-100*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^4*f*d^6+104*c^4*exp(
2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*ex
p(1)^2*f*d^6+8*sqrt(-c*exp(2))*b^4*g*exp(1)^10*d^4-44*exp(2)*sqrt(-c*exp(2)
)*b^4*g*exp(1)^8*d^4+77*exp(2)^2*sqrt(-c*exp(2))*b^4*g*exp(1)^6*d^4-54*exp(
2)^3*sqrt(-c*exp(2))*b^4*g*exp(1)^4*d^4+13*exp(2)^4*sqrt(-c*exp(2))*b^4*g*e
xp(1)^2*d^4+16*exp(2)*sqrt(-c*exp(2))*b^4*exp(1)^9*f*d^3-41*exp(2)^2*sqrt(-
c*exp(2))*b^4*exp(1)^7*f*d^3+34*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^5*f*d^3
-9*exp(2)^4*sqrt(-c*exp(2))*b^4*exp(1)^3*f*d^3-32*c*sqrt(-c*exp(2))*b^3*g*e
xp(1)^9*d^5+184*c*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^7*d^5-298*c*exp(2)^2*
sqrt(-c*exp(2))*b^3*g*exp(1)^5*d^5+181*c*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp
(1)^3*d^5-35*c*exp(2)^4*sqrt(-c*exp(2))*b^3*g*exp(1)*d^5-84*c*exp(2)*sqrt(-
c*exp(2))*b^3*exp(1)^8*f*d^4+186*c*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^6*f*
d^4-129*c*exp(2)^3*sqrt(-c*exp(2))*b^3*exp(1)^4*f*d^4+27*c*exp(2)^4*sqrt(-c
*exp(2))*b^3*exp(1)^2*f*d^4+48*c^2*sqrt(-c*exp(2))*b^2*g*exp(1)^8*d^6-288*c
^2*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)^6*d^6+409*c^2*exp(2)^2*sqrt(-c*exp(2
))*b^2*g*exp(1)^4*d^6-191*c^2*exp(2)^3*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d^6+2
2*c^2*exp(2)^4*sqrt(-c*exp(2))*b^2*g*d^6+156*c^2*exp(2)*sqrt(-c*exp(2))*b^2
*exp(1)^7*f*d^5-285*c^2*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^5*f*d^5+147*c^2
*exp(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^3*f*d^5-18*c^2*exp(2)^4*sqrt(-c*exp(2)
)*b^2*exp(1)*f*d^5-32*c^3*sqrt(-c*exp(2))*b*g*exp(1)^7*d^7+200*c^3*exp(2)*s
qrt(-c*exp(2))*b*g*exp(1)^5*d^7-232*c^3*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)
^3*d^7+64*c^3*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)*d^7-124*c^3*exp(2)*sqrt(-
c*exp(2))*b*exp(1)^6*f*d^6+176*c^3*exp(2)^2*sqrt(-c*exp(2))*b*exp(1)^4*f*d^
6-52*c^3*exp(2)^3*sqrt(-c*exp(2))*b*exp(1)^2*f*d^6+8*c^4*sqrt(-c*exp(2))*g*
exp(1)^6*d^8-52*c^4*exp(2)*sqrt(-c*exp(2))*g*exp(1)^4*d^8+44*c^4*exp(2)^2*s
qrt(-c*exp(2))*g*exp(1)^2*d^8+36*c^4*exp(2)*sqrt(-c*exp(2))*exp(1)^5*f*d^7-
36*c^4*exp(2)^2*sqrt(-c*exp(2))*exp(1)^3*f*d^7)/8/exp(1)^7/((sqrt(-b*d*exp(
1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp
(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*d+
b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^2)
```

maple [B] time = 0.07, size = 4726, normalized size = 13.35

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x)
```

```
[Out] 2/3*g/e^3/(-b*e^2+2*c*d*e)/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(7/2)+2/3*g/e*c/(-b*e^2+2*c*d*e)*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(
x+d/e))^(5/2)-15*e^3*c^3/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*d^2*f-25*e^3*c^4/(-b*e^2+2*c*d*e)^2*b/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f-25*e^3*c^3/(-b*e^2+2*c*d*e)^2*b^2/(c*
e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e
)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*g+10/3*e^2*c^2/(-b*e^2+2*c*d
*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g+25*e^4*c^3/
(-b*e^2+2*c*d*e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^
2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3*f-
25/8*e^5*c/(-b*e^2+2*c*d*e)^2*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*d^2*g+25/2*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)
^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e
)*(x+d/e))^(1/2))*d^3*g+15/2*e^4*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f+25/8*e^6*c/(-b*e^2+2*c*d*e)^2*b^4/
(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f+25*e^2*c^4/(-b*e^2+2*c*d*
e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2
)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g-25/8*g*e*c^3/(-b
*e^2+2*c*d*e)*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d
*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4+5/4*e^4*c
/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x
*d*g-15/2*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(1/2)*x*d^2*g+25/8*g*e^2*c^2/(-b*e^2+2*c*d*e)*b^2/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3+15/16*g*e^2*c/(-b*e^2+2*c*d*e)*b^2*(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d-25/16*g*e^3*c/(-b*e^2+2*c*
d*e)*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e
^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+15*e^2*c^3/(-b*e
^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^3*g-2
5/2*e^5*c^2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/
e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2))*d^2*f-15/8*g*e*c^2/(-b*e^2+2*c*d*e)*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d
*e)*(x+d/e))^(1/2)*x*d^2-16/3*c^2/(-b*e^2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(5/2)*d*g+5/4*g*c^4/(-b*e^2+2*c*d*e)*d^5/(c*e^2)^(1/2
)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-5/24*g*e/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2
*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)+16/3*e*c^2/(-b*e^2+2*c*d*e)^2*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-5/8*e^5/(-b*e^2+2*c*d*e)^2*b^
4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f+2/e^3/(-b*e^2+2*c*d*e
)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+5/12*g*c/(-
b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b-5/64*g
*e^3/c/(-b*e^2+2*c*d*e)*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2)+5/6*g*c^2/(-b*e^2+2*c*d*e)*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(3/2)*x+5/4*g*c^3/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2)*x+5/8*g*c^2/(-b*e^2+2*c*d*e)*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2)*b+15/4*e^4*c/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f+5/16*e^6/(-b*e^2+2*c*d*e)^2*b^5/(c*e^
2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*g-16/3/e^2*c/(-b*e^2+2*c*d*e)^2/
(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g+15/2*e^2*c^
2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*
d^3*g+10*e^2*c^5/(-b*e^2+2*c*d*e)^2*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*
(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2))*f-10/3*e^3*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(3/2)*x*f+5/3*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^
2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*d*g-20/3*e*c^3/(-b*e^2+2*c*d*e)^2*d^2*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g+20/3*e^2*c^3/(-b*e^2+2*c
*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f-10/3*e*c^2/
(-b*e^2+2*c*d*e)^2*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b*
g+10/3*e^2*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*b*f-10*e*c^4/(-b*e^2+2*c*d*e)^2*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(1/2)*x*g+10*e^2*c^4/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f-5*e*c^3/(-b*e^2+2*c*d*e)^2*d^4*(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*g+5*e^2*c^3/(-b*e^2+2*c*d*e)
^2*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b*f-10*e*c^5/(-b*e
^2+2*c*d*e)^2*d^6/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c
*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-5/4*e^5*c
/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x
*f-15/4*e^3*c/(-b*e^2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(1/2)*d^2*g+25/64*g*e^4/(-b*e^2+2*c*d*e)*b^4/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2))*d-15/16*g*e*c/(-b*e^2+2*c*d*e)*b^2*(-(x+d/e)^2*c*e^2+
(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-5/12*g*e*c/(-b*e^2+2*c*d*e)*b*(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x-5/128*g*e^5/c/(-b*e^2+2*c*d*e)*b
^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))-15/2*e^3*c^2/(-b*e^2+2*c*d
*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*f+5/8*e^4/(
-b*e^2+2*c*d*e)^2*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g
-5/32*g*e^3/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e)
)^(1/2)*x+15/32*g*e^2/(-b*e^2+2*c*d*e)*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*
e)*(x+d/e))^(1/2)*d-2/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g-5/3*e^3*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f-5/16*e^7/(-b*e^2+2*c*d*e)^2*b^5/(
c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+16/3/e*c/(-b*e^2+2*c*d*e)^2/
(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^3,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^3} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^3,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**3,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**3, x)
```

3.2201 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^4}\,dx$

Optimal. Leaf size=342

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^4(2cd-be)}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(beg-8cdg+6cef)}{e^2(d+ex)^2(2cd-be)}-\frac{5c\left(d(cd-be)-\right.}{}$$

```
[Out] -5/3*c*(b*e*g-8*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(
-b*e+2*c*d)-2*(b*e*g-8*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2
)/e^2/(-b*e+2*c*d)/(e*x+d)^2-2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^4-5/16*(-b*e+2*c*d)^2*(b*e*g-8*c*d*g+6*c*e*f
)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^
2/c^(1/2)-5/8*(b*e*g-8*c*d*g+6*c*e*f)*(2*c*x+b)*(d*(-b*e+c*d)-b*e^2*x-c*e^2
*x^2)^(1/2)/e
```

Rubi [**A**] time = 0.60, antiderivative size = 342, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.136, Rules used = {792, 662, 664, 612, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^4(2cd-be)}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(beg-8cdg+6cef)}{e^2(d+ex)^2(2cd-be)}-\frac{5c\left(d(cd-be)-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^4,x]
```

```
[Out] (-5*(6*c*e*f - 8*c*d*g + b*e*g)*(b + 2*c*x)*Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2])/(8*e) - (5*c*(6*c*e*f - 8*c*d*g + b*e*g)*(d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)) - (2*(6*c*e*f - 8*c*d*g + b*e*
g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x
)^2) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(e^2*(2*
c*d - b*e)*(d + e*x)^4) - (5*(2*c*d - b*e)^2*(6*c*e*f - 8*c*d*g + b*e*g)*Ar
cTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])]
)/(16*Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^4}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^4} - \frac{(6cef-8cdg+be}{}$$

$$= -\frac{2(6cef-8cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^2} - \frac{2(ef-}{}$$

$$= -\frac{5c(6cef-8cdg+beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)} - \frac{2(6cef}{}$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} -$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} -$$

$$= -\frac{5(6cef-8cdg+beg)(b+2cx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e} -$$

Mathematica [A] time = 1.89, size = 309, normalized size = 0.90

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(e^3(ef-dg)(be-cd+cex)^3-\frac{e^{5/2}\sqrt{d+ex}\,(beg-8cdg+6cef)\left(\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}\,\sqrt{\frac{be-cd+cex}{be-2cd}}\,(33b^2e^2+2b\right.}{}\right.}{e^5(d+ex)^3(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^4,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(e^3*(e*f - d*g)*(-(c*d) + b*e
+ c*e*x)^3 - (e^(5/2)*(6*c*e*f - 8*c*d*g + b*e*g)*Sqrt[d + e*x]*(Sqrt[c]*Sq
rt[e]*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*(33*b^2*e^2
 + 2*b*c*e*(-53*d + 13*e*x) + 4*c^2*(22*d^2 - 9*d*e*x + 2*e^2*x^2)) + 15*Sq
rt[e*(2*c*d - b*e)]*(-2*c*d + b*e)^2*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])
/Sqrt[e*(2*c*d - b*e)]]))/(48*Sqrt[c]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)])))/(e^5*(2*c*d - b*e)*(d + e*x)^3*(-(c*d) + b*e + c*e*x)^2)
```

fricas [A] time = 4.39, size = 931, normalized size = 2.72

$$\left[-\frac{15\left(6\left(4\,c^{3}d^{3}e-4\,bc^{2}d^{2}e^{2}+b^{2}cde^{3}\right)f-\left(32\,c^{3}d^{4}-36\,bc^{2}d^{3}e+12\,b^{2}cd^{2}e^{2}-b^{3}de^{3}\right)g+\left(6\left(4\,c^{3}d^{2}e^{2}-4\,bc^{2}de^{3}+\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="fricas")
```

```
[Out] [-1/96*(15*(6*(4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (32*c^3*d^4
 - 36*b*c^2*d^3*e + 12*b^2*c*d^2*e^2 - b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 - 4
*b*c^2*d*e^3 + b^2*c*e^4)*f - (32*c^3*d^3*e - 36*b*c^2*d^2*e^2 + 12*b^2*c*d
*e^3 - b^3*e^4)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2
+ 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e
*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^3*g*x^3 + 2*(6*c^3*e^3*f - (20*c^3*d*e^2 -
 13*b*c^2*e^3)*g)*x^2 - 6*(48*c^3*d^2*e - 41*b*c^2*d*e^2 + 8*b^2*c*e^3)*f +
 (376*c^3*d^3 - 352*b*c^2*d^2*e + 81*b^2*c*d*e^2)*g - (6*(14*c^3*d*e^2 - 9*
b*c^2*e^3)*f - (136*c^3*d^2*e - 134*b*c^2*d*e^2 + 33*b^2*c*e^3)*g)*x)*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c*e^3*x + c*d*e^2), 1/48*(15*(6*(4*
c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (32*c^3*d^4 - 36*b*c^2*d^3*e
 + 12*b^2*c*d^2*e^2 - b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 - 4*b*c^2*d*e^3 + b^
2*c*e^4)*f - (32*c^3*d^3*e - 36*b*c^2*d^2*e^2 + 12*b^2*c*d*e^3 - b^3*e^4)*g
)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x
 + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(8*c^3*e
^3*g*x^3 + 2*(6*c^3*e^3*f - (20*c^3*d*e^2 - 13*b*c^2*e^3)*g)*x^2 - 6*(48*c^
3*d^2*e - 41*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + (376*c^3*d^3 - 352*b*c^2*d^2*e
+ 81*b^2*c*d*e^2)*g - (6*(14*c^3*d*e^2 - 9*b*c^2*e^3)*f - (136*c^3*d^2*e -
134*b*c^2*d*e^2 + 33*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e))/(c*e^3*x + c*d*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((1
6*exp(1)^4*c^4*g*1/96/exp(1)^4/c^2*x-(-24*exp(1)^4*c^4*f-52*exp(1)^4*c^3*g*
b+96*exp(1)^3*c^4*g*d)*1/96/exp(1)^4/c^2)*x-(-108*exp(1)^4*c^3*b*f-66*exp(1
)^4*c^2*g*b^2+192*exp(1)^3*c^4*d*f+320*exp(1)^3*c^3*g*b*d-368*exp(1)^2*c^4*
g*d^2)*1/96/exp(1)^4/c^2)*sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))+2
*((-5*sqrt(-c*exp(2))*b^3*g*exp(1)^3+60*c*sqrt(-c*exp(2))*b^2*g*exp(1)^2*d-
30*c*sqrt(-c*exp(2))*b^2*exp(1)^3*f-180*c^2*sqrt(-c*exp(2))*b*g*exp(1)*d^2+
120*c^2*sqrt(-c*exp(2))*b*exp(1)^2*d*f+160*c^3*sqrt(-c*exp(2))*g*d^3-120*c^
3*sqrt(-c*exp(2))*exp(1)*d^2*f)/32/c/exp(2)/exp(1)*ln(abs(2*c*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)-sqrt(-c*exp(2))*b))-
(30*exp(2)^2*b^3*g*exp(1)^5*d-35*exp(2)^3*b^3*g*exp(1)^3*d+5*exp(2)^3*b^3*e
xp(1)^4*f+40*c*exp(2)*b^2*g*exp(1)^6*d^2-290*c*exp(2)^2*b^2*g*exp(1)^4*d^2+
280*c*exp(2)^3*b^2*g*exp(1)^2*d^2+60*c*exp(2)^2*b^2*exp(1)^5*d*f-90*c*exp(2
)^3*b^2*exp(1)^3*d*f-80*c^2*exp(2)*b*g*exp(1)^5*d^3+580*c^2*exp(2)^2*b*g*ex
p(1)^3*d^3-560*c^2*exp(2)^3*b*g*exp(1)*d^3-180*c^2*exp(2)^2*b*exp(1)^4*d^2*
f+240*c^2*exp(2)^3*b*exp(1)^2*d^2*f+40*c^3*exp(2)*g*exp(1)^4*d^4-320*c^3*ex
p(2)^2*g*exp(1)^2*d^4+320*c^3*exp(2)^3*g*d^4+120*c^3*exp(2)^2*exp(1)^3*d^3*
f-160*c^3*exp(2)^3*exp(1)*d^3*f)/8/exp(1)^7/2/sqrt(b*d*exp(1)^3-c*d^2*exp(1
)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(
1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*exp(2)))-(-905969664*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*g*
exp(1)^7*d+1459617792*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^5*b^3*g*exp(1)^5*d-553648128*exp(2)^3*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^3*exp(1)^6*f-402
653184*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)^5*b^2*g*exp(1)^8*d^2+7147094016*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*g*exp(1)^6*d^2-100663296
00*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)^5*b^2*g*exp(1)^4*d^2-1811939328*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b^2*exp(1)^7*d*f+5133828096*c*
exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x
)^5*b^2*exp(1)^5*d*f+805306368*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^7*d^3-14294188032*c^2*exp(2
)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b
*g*exp(1)^5*d^3+20132659200*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*g*exp(1)^3*d^3+5435817984*c^2*exp(2)^
2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*e
xp(1)^6*d^2*f-12079595520*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*b*exp(1)^4*d^2*f-402653184*c^3*exp(2)*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)
^6*d^4+8053063680*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^4*d^4-12079595520*c^3*exp(2)^3*(sqrt(-b*
d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*g*exp(1)^2*d^4
-3623878656*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^5*exp(1)^5*d^3*f+8053063680*c^3*exp(2)^3*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^5*exp(1)^3*d^3*f+241591
9104*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^8*d^2-2717908992*exp(2)^2*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^
3*g*exp(1)^6*d^2-2466250752*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*g*exp(1)^4*d^2+24159191
04*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)^4*b^3*exp(1)^7*d*f+352321536*exp(2)^3*sqrt(-c*exp(2))*
(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^3*e
xp(1)^5*d*f-10066329600*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(
2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*g*exp(1)^7*d^3+503316480*c*
exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^4*b^2*g*exp(1)^5*d^3+26172456960*c*exp(2)^3*sqrt(-c*exp(2
))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^
2*g*exp(1)^3*d^3+2415919104*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*
exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^8*d^2*f-78517370
88*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^4*b^2*exp(1)^6*d^2*f-11173625856*c*exp(2)^3*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^4*b^2*exp(1)^4*d^2*f+12884901888*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^6*d^4+18
320719872*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*g*exp(1)^4*d^4-64424509440*c^2*exp(2)^3
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^4*b*g*exp(1)^2*d^4-4831838208*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^7*d^
3*f+1811939328*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*b*exp(1)^5*d^3*f+36238786560*c^2*exp
(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt
(-c*exp(2))*x)^4*b*exp(1)^3*d^3*f-5234491392*c^3*exp(2)*sqrt(-c*exp(2))*(sq
rt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)
^5*d^5-16106127360*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*g*exp(1)^3*d^5+43486543872*c^3*e
xp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)^4*g*exp(1)*d^5+2415919104*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^6*d
^4*f+3623878656*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c
*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^4*exp(1)^4*d^4*f-28185722880*c^3*exp(
2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^4*exp(1)^2*d^4*f-1610612736*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^8*d^2+3892314112
*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*b^4*g*exp(1)^6*d^2-2281701376*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*
d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4*g*exp(1)^4*d^2-671088640*exp(2)^
3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^4
*exp(1)^7*d*f+671088640*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*e
xp(2))-sqrt(-c*exp(2))*x)^3*b^4*exp(1)^5*d*f+20132659200*c*exp(2)^2*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)
^7*d^3-45566918656*c*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^5*d^3+19897778176*c*exp(2)^4*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*g*exp(1)^
3*d^3-805306368*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^8*d^2*f+15971909632*c*exp(2)^3*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^3*exp(1)^6*d^2
*f-9630121984*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-s
qrt(-c*exp(2))*x)^3*b^3*exp(1)^4*d^2*f-68451041280*c^2*exp(2)^2*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^6*d
^4+133882183680*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)^4*d^4-32212254720*c^2*exp(2)^4*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*g*exp(1)
^2*d^4+12884901888*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^7*d^3*f-68048388096*c^2*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1
)^5*d^3*f+21944598528*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^3*b^2*exp(1)^3*d^3*f+82946555904*c^3*exp(2)^2*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*ex
p(1)^5*d^5-129788542976*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x
^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*exp(1)^3*d^5-19595788288*c^3*exp(2)^4*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*g*ex
p(1)*d^5-23353884672*c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^6*d^4*f+83080773632*c^3*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^
4*d^4*f+6710886400*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^3*b*exp(1)^2*d^4*f-33017561088*c^4*exp(2)^2*(sqrt(
-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*exp(1)^4*
d^6+37580963840*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2
))-sqrt(-c*exp(2))*x)^3*g*exp(1)^2*d^6+39728447488*c^4*exp(2)^4*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*g*d^6+1127428915
2*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)^3*exp(1)^5*d^5*f-30333206528*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^3*exp(1)^3*d^5*f-25232932864*c^4
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*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^3*exp(1)*d^5*f+4026531840*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*e
xp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^9*d^3-966367641
6*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^7*d^3+5234491392*exp(2)^3*sqrt(-c*exp(2)
)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4
*g*exp(1)^5*d^3+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*g*exp(1)^3*d^3+2415919104
*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^2*b^4*exp(1)^8*d^2*f-2818572288*exp(2)^3*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*
exp(1)^6*d^2*f+402653184*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^4*exp(1)^4*d^2*f-23353884672
*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-
sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^8*d^4+38654705664*c*exp(2)^2*sqrt(-c*exp(
2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b
^3*g*exp(1)^6*d^4+12280922112*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-
b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^4*d^4-2204
5261824*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2
*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*g*exp(1)^2*d^4+3221225472*c*exp(2)*sqrt(-
c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)^2*b^3*exp(1)^9*d^3*f-21743271936*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^7*d^3*
f+5234491392*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^3*exp(1)^5*d^3*f+7751073792*c*exp(2)^4
*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)^2*b^3*exp(1)^3*d^3*f+45902462976*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(
1)^7*d^5-28185722880*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^5*d^5-12663442636
8*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp
(2))-sqrt(-c*exp(2))*x)^2*b^2*g*exp(1)^3*d^5+75698798592*c^2*exp(2)^4*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*b^2*g*exp(1)*d^5-9663676416*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^8*d^4*f+
36238786560*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*exp(1)^6*d^4*f+47110422528*c^2*exp(
2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)^2*b^2*exp(1)^4*d^4*f-40466644992*c^2*exp(2)^4*sqrt(-c*exp(2))
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b^2*
exp(1)^2*d^4*f-37849399296*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^6*d^6-209379655
68*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*ex
p(2))-sqrt(-c*exp(2))*x)^2*b*g*exp(1)^4*d^6+184817811456*c^3*exp(2)^3*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*b*g*exp(1)^2*d^6-59592671232*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*g*d^6+96636764
16*c^3*exp(2)*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^7*d^5*f-16911433728*c^3*exp(2)^2*sqrt(-c*
exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)
^2*b*exp(1)^5*d^5*f-97039417344*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp
(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)^3*d^5*f+37
849399296*c^3*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c
*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*b*exp(1)*d^5*f+11274289152*c^4*exp(2)*sqr
t(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)^2*g*exp(1)^5*d^7+20132659200*c^4*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-b*d*
exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)^3*d^7-7
5698798592*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-
c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*g*exp(1)*d^7-3221225472*c^4*exp(2)*sqrt(
-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))
*x)^2*exp(1)^6*d^6*f+47513075712*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^2*exp(1)^2*d^6*f-704
643072*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)*b^5*g*exp(1)^9*d^3+2365587456*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^7*d^3-2617245696*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
5*g*exp(1)^5*d^3+956301312*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^
2*exp(2))-sqrt(-c*exp(2))*x)*b^5*g*exp(1)^3*d^3-251658240*exp(2)^3*(sqrt(-b
*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^8*d^
2*f+503316480*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqr
t(-c*exp(2))*x)*b^5*exp(1)^6*d^2*f-251658240*exp(2)^5*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^5*exp(1)^4*d^2*f+402653184
*c*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*
x)*b^4*g*exp(1)^10*d^4+11978932224*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+
c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^8*d^4-40365981696*c*exp
(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b
^4*g*exp(1)^6*d^4+41171288064*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2
-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*exp(1)^4*d^4-13186891776*c*exp(2)^5
*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*g*
exp(1)^2*d^4-603979776*c*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^9*d^3*f+8657043456*c*exp(2)^3*(sqrt(-
b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^7*d
^3*f-13488881664*c*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2)
)-sqrt(-c*exp(2))*x)*b^4*exp(1)^5*d^3*f+5435817984*c*exp(2)^5*(sqrt(-b*d*ex
p(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^4*exp(1)^3*d^3*f-1
610612736*c^2*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*b^3*g*exp(1)^9*d^5-56673435648*c^2*exp(2)^2*(sqrt(-b*d*exp(1)
-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^7*d^5+17389
5843840*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*b^3*g*exp(1)^5*d^5-152102240256*c^2*exp(2)^4*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*g*exp(1)^3*d^5+3925
8685440*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(
-c*exp(2))*x)*b^3*g*exp(1)*d^5+9462349824*c^2*exp(2)^2*(sqrt(-b*d*exp(1)-b*
x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^8*d^4*f-61253615
616*c^2*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*e
xp(2))*x)*b^3*exp(1)^6*d^4*f+70363643904*c^2*exp(2)^4*(sqrt(-b*d*exp(1)-b*x
*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^3*exp(1)^4*d^4*f-213406187
52*c^2*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*ex
p(2))*x)*b^3*exp(1)^2*d^4*f+2415919104*c^3*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp
(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^8*d^6+105193144320*
c^3*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2
))*x)*b^2*g*exp(1)^6*d^6-283669168128*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*exp(1)^4*d^6+189246996480
*c^3*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(
2))*x)*b^2*g*exp(1)^2*d^6-29796335616*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*ex
p(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*g*d^6-24763170816*c^3*exp(2
)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2
*exp(1)^7*d^5*f+127339069440*c^3*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)^5*d^5*f-104891154432*c^3*exp(
2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^
2*exp(1)^3*d^5*f+18924699648*c^3*exp(2)^5*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^
2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b^2*exp(1)*d^5*f-1610612736*c^4*exp(2)*(
sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(
1)^7*d^7-84758495232*c^4*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*
exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^5*d^7+195286794240*c^4*exp(2)^3*(sqrt
(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*g*exp(1)^3
*d^7-75698798592*c^4*exp(2)^4*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(
2))-sqrt(-c*exp(2))*x)*b*g*exp(1)*d^7+23555211264*c^4*exp(2)^2*(sqrt(-b*d*e
xp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^6*d^6*f-10
4287174656*c^4*exp(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sq
rt(-c*exp(2))*x)*b*exp(1)^4*d^6*f+47513075712*c^4*exp(2)^4*(sqrt(-b*d*exp(1
)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*b*exp(1)^2*d^6*f+402653
184*c^5*exp(2)*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp
(2))*x)*g*exp(1)^6*d^8+24964497408*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2
)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g*exp(1)^4*d^8-47513075712*c^5*exp
(2)^3*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*g
*exp(1)^2*d^8-7650410496*c^5*exp(2)^2*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*
x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^5*d^7*f+29796335616*c^5*exp(2)^3*(sqr
t(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)*exp(1)^3*d^
7*f+1610612736*exp(2)*sqrt(-c*exp(2))*b^5*g*exp(1)^10*d^4-6543114240*exp(2)
^2*sqrt(-c*exp(2))*b^5*g*exp(1)^8*d^4+9714008064*exp(2)^3*sqrt(-c*exp(2))*b
^5*g*exp(1)^6*d^4-6241124352*exp(2)^4*sqrt(-c*exp(2))*b^5*g*exp(1)^4*d^4+14
59617792*exp(2)^5*sqrt(-c*exp(2))*b^5*g*exp(1)^2*d^4+805306368*exp(2)^2*sqr
t(-c*exp(2))*b^5*exp(1)^9*d^3*f-2164260864*exp(2)^3*sqrt(-c*exp(2))*b^5*exp
(1)^7*d^3*f+1912602624*exp(2)^4*sqrt(-c*exp(2))*b^5*exp(1)^5*d^3*f-55364812
8*exp(2)^5*sqrt(-c*exp(2))*b^5*exp(1)^3*d^3*f-11945377792*c*exp(2)*sqrt(-c*
exp(2))*b^4*g*exp(1)^9*d^5+43855642624*c*exp(2)^2*sqrt(-c*exp(2))*b^4*g*exp
(1)^7*d^5-57076088832*c*exp(2)^3*sqrt(-c*exp(2))*b^4*g*exp(1)^5*d^5+3103784
9600*c*exp(2)^4*sqrt(-c*exp(2))*b^4*g*exp(1)^3*d^5-5872025600*c*exp(2)^5*sq
rt(-c*exp(2))*b^4*g*exp(1)*d^5+1879048192*c*exp(2)*sqrt(-c*exp(2))*b^4*exp(
1)^10*d^4*f-12549357568*c*exp(2)^2*sqrt(-c*exp(2))*b^4*exp(1)^8*d^4*f+21944
598528*c*exp(2)^3*sqrt(-c*exp(2))*b^4*exp(1)^6*d^4*f-14428405760*c*exp(2)^4
*sqrt(-c*exp(2))*b^4*exp(1)^4*d^4*f+3154116608*c*exp(2)^5*sqrt(-c*exp(2))*b
^4*exp(1)^2*d^4*f+31675383808*c^2*exp(2)*sqrt(-c*exp(2))*b^3*g*exp(1)^8*d^6
-102240354304*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*g*exp(1)^6*d^6+108766691328*
c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*g*exp(1)^4*d^6-43721424896*c^2*exp(2)^4*sq
rt(-c*exp(2))*b^3*g*exp(1)^2*d^6+4966055936*c^2*exp(2)^5*sqrt(-c*exp(2))*b^
3*g*d^6-7516192768*c^2*exp(2)*sqrt(-c*exp(2))*b^3*exp(1)^9*d^5*f+3912446771
2*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*exp(1)^7*d^5*f-52294582272*c^2*exp(2)^3*
sqrt(-c*exp(2))*b^3*exp(1)^5*d^5*f+24394072064*c^2*exp(2)^4*sqrt(-c*exp(2))
*b^3*exp(1)^3*d^5*f-3154116608*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3*exp(1)*d^5*
f-39460012032*c^3*exp(2)*sqrt(-c*exp(2))*b^2*g*exp(1)^7*d^7+109018349568*c^
3*exp(2)^2*sqrt(-c*exp(2))*b^2*g*exp(1)^5*d^7-85161148416*c^3*exp(2)^3*sqrt
(-c*exp(2))*b^2*g*exp(1)^3*d^7+18924699648*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2
*g*exp(1)*d^7+11274289152*c^3*exp(2)*sqrt(-c*exp(2))*b^2*exp(1)^8*d^6*f-501
30321408*c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*exp(1)^6*d^6*f+47412412416*c^3*ex
p(2)^3*sqrt(-c*exp(2))*b^2*exp(1)^4*d^6*f-11878268928*c^3*exp(2)^4*sqrt(-c*
exp(2))*b^2*exp(1)^2*d^6*f+23622320128*c^4*exp(2)*sqrt(-c*exp(2))*b*g*exp(1
)^6*d^8-54022635520*c^4*exp(2)^2*sqrt(-c*exp(2))*b*g*exp(1)^4*d^8+237565378
56*c^4*exp(2)^3*sqrt(-c*exp(2))*b*g*exp(1)^2*d^8-7516192768*c^4*exp(2)*sqrt
(-c*exp(2))*b*exp(1)^7*d^7*f+29058138112*c^4*exp(2)^2*sqrt(-c*exp(2))*b*exp
(1)^5*d^7*f-14898167808*c^4*exp(2)^3*sqrt(-c*exp(2))*b*exp(1)^3*d^7*f-55029
26848*c^5*exp(2)*sqrt(-c*exp(2))*g*exp(1)^5*d^9+9932111872*c^5*exp(2)^2*sqr
t(-c*exp(2))*g*exp(1)^3*d^9+1879048192*c^5*exp(2)*sqrt(-c*exp(2))*exp(1)^6*
d^8*f-6308233216*c^5*exp(2)^2*sqrt(-c*exp(2))*exp(1)^4*d^8*f)/805306368/exp
(1)^7/((sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))-sqrt(-c*exp(2))*x)^
2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-b*d*exp(1)-b*x*exp(2)+c*d^2-c*x^2*exp(2))
-sqrt(-c*exp(2))*x)*d+b*exp(1)^2*d-exp(2)*b*d-c*exp(1)*d^2)^3)
```

maple [B] time = 0.07, size = 4987, normalized size = 14.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x)
```

```
[Out] -15/8*e^7*c/(-b*e^2+2*c*d*e)^3*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/
e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(
1/2))*d*g+45*e^4*c^3/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d
*e)*(x+d/e))^(1/2)*x*d^2*g-15/2*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*g-75/4*e^7*c^2/(-b*e^2+2*c*d*e)^3
*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d*f-20*e^3*c^3/(-b*e^2+2
*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*d*g-75*e^5*
c^3/(-b*e^2+2*c*d*e)^3*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-
b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^
3*g+150*e^4*c^4/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(
x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e
))^(1/2))*d^4*g-150*e^5*c^4/(-b*e^2+2*c*d*e)^3*b^2/(c*e^2)^(1/2)*arctan((c*
e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2))*d^3*f-150*e^3*c^5/(-b*e^2+2*c*d*e)^3*b/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^5*g+150*e^4*c^5/(-b*e^2+2*c*d*e)^3*b/(c*e
^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)
^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4*f+25*g*e^3*c^3/(-b*e^2+2*c*d*
e)^2*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e
^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3-45*e^5*c^3/(-b*e
^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d*f-9
0*e^3*c^4/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(1/2)*x*d^3*g+90*e^4*c^4/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c
*d*e)*(x+d/e))^(1/2)*x*d^2*f+75/4*e^6*c^2/(-b*e^2+2*c*d*e)^3*b^4/(c*e^2)^(1
/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e
^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*g+75*e^6*c^3/(-b*e^2+2*c*d*e)^3*b^3
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2*f-25*g*e^2*c^4/(-b*e^2+2
*c*d*e)^2*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/
c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^4-25/2*g*e^4*c^
2/(-b*e^2+2*c*d*e)^2*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*
e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^2+
15/2*g*e^3*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(1/2)*x*d-15*g*e^2*c^3/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^
2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2+25/8*g*e^5*c/(-b*e^2+2*c*d*e)^2*b^4/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-32*e^2*c^3/(-b*e^2+2*c*d*e)^3*(-(x
+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)*f-2/e^4/(-b*e^2+2*c*d*e)/(x+d
/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+16/3*g*c^2/(-b*e^
2+2*c*d*e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)-60*e^3*c^5/(
-b*e^2+2*c*d*e)^3*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*f
+30*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(1/2)*b*g-30*e^3*c^4/(-b*e^2+2*c*d*e)^3*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2
*c*d*e)*(x+d/e))^(1/2)*b*f+60*e^2*c^6/(-b*e^2+2*c*d*e)^3*d^6/(c*e^2)^(1/2)*
arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*g-60*e^3*c^6/(-b*e^2+2*c*d*e)^3*d^5/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*
c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*f+40*e^2*c^4/(-b*e^2+2*c*d*e)^3*d^2*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*g-40*e^3*c^4/(-b*e^2+2*
c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x*f+20*e^2*c^3
/(-b*e^2+2*c*d*e)^3*d^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b
*g-20*e^3*c^3/(-b*e^2+2*c*d*e)^3*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/
e))^(3/2)*b*f-10/3*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(3/2)*x-15/2*g*e^2*c^2/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^
2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-5/4*g*e^4*c/(-b*e^2+2*c*d*e)^2*
b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x+15/4*g*e^3*c/(-b*e^
2+2*c*d*e)^2*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d+10*g*e
*c^4/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/
2)*x+20*e^4*c^3/(-b*e^2+2*c*d*e)^3*b*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(3/2)*x*f-10*e^3*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2
```

```
+2*c*d*e)*(x+d/e))^(3/2)*d*g+5*g*e*c^3/(-b*e^2+2*c*d*e)^2*d^3*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-15/4*e^5*c/(-b*e^2+2*c*d*e)^3*b^4*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*g-45*e^3*c^3/(-b*e^2+2*c*
d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^3*g+45*e^4*c
^3/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
*d^2*f+15/8*e^8*c/(-b*e^2+2*c*d*e)^3*b^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(1/2))*f-32*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(7/2)*f+2*g/e^4/(-b*e^2+2*c*d*e)/(x+d/e)^3*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)-5/8*g*e^4/(-b*e^2+2*c*d*e)^2*b^4*(-(x+
d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+32/e*c^2/(-b*e^2+2*c*d*e)^3/(x
+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*g+12/e^3*c/(-b*
e^2+2*c*d*e)^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*
d*g+15/2*e^6*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2)*x*f+45/2*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(x+d/e)^2*c*e^2+(-
b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2*g-45/2*e^5*c^2/(-b*e^2+2*c*d*e)^3*b^3*(-(
x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d*f+60*e^2*c^5/(-b*e^2+2*c*d
*e)^3*d^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*g+16/3*g/e^2*
c/(-b*e^2+2*c*d*e)^2/(x+d/e)^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^
(7/2)-5/3*g*e^2*c/(-b*e^2+2*c*d*e)^2*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(3/2)-5/16*g*e^6/(-b*e^2+2*c*d*e)^2*b^5/(c*e^2)^(1/2)*arctan((c*e
^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2))+32*e*c^3/(-b*e^2+2*c*d*e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(5/2)*d*g+10*e^4*c^2/(-b*e^2+2*c*d*e)^3*b^2*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*f+15/4*e^6*c/(-b*e^2+2*c*d*e)^3*b^4*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*f-12/e^2*c/(-b*e^2+2*c*d*e)
^2/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*f+2/e^5/(-b*
e^2+2*c*d*e)/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)*d*
g+20/3*g*e*c^3/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d
/e))^(3/2)*x+10/3*g*e*c^2/(-b*e^2+2*c*d*e)^2*d*(-(x+d/e)^2*c*e^2+(-b*e^2+2*
c*d*e)*(x+d/e))^(3/2)*b+10*g*e*c^5/(-b*e^2+2*c*d*e)^2*d^5/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^4,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^4} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^4,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**4,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**4, x)
```

3.2202 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^5}\,dx$

Optimal. Leaf size=350

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^5(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(3beg-10cdg+4cef)}{3e^2(d+ex)^3(2cd-be)}+\frac{5c\left(d(cd-\right.}{}$$

```
[Out] 5/6*c*(3*b*e*g-10*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2
/(-b*e+2*c*d)/(e*x+d)+2/3*(3*b*e*g-10*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^3-2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^5+5/8*(-b*e+2*c*d)*(3*b*e*g
-10*c*d*g+4*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(1/2))*c^(1/2)/e^2+5/4*c*(3*b*e*g-10*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(1/2)/e^2
```

Rubi [A] time = 0.63, antiderivative size = 350, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {792, 662, 664, 621, 204}

$$-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(d+ex)^5(2cd-be)}+\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(3beg-10cdg+4cef)}{3e^2(d+ex)^3(2cd-be)}+\frac{5c\left(d(cd-\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^5,x]
```

```
[Out] (5*c*(4*c*e*f - 10*c*d*g + 3*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*e^2) + (5*c*(4*c*e*f - 10*c*d*g + 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(3/2))/(6*e^2*(2*c*d - b*e)*(d + e*x)) + (2*(4*c*e*f - 10*c*d*
g + 3*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c*d - b
*e)*(d + e*x)^3) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^5) + (5*Sqrt[c]*(2*c*d - b*e)*(4*c*e*f -
 10*c*d*g + 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])])/(8*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^5}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^5} - \frac{(4cef-10cdg+3beg}{3e(2}$$

$$= \frac{2(4cef-10cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^3} - \frac{2(ef-dg}{3}$$

$$= \frac{5c(4cef-10cdg+3beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{6e^2(2cd-be)(d+ex)} + \frac{2(4cef-}{}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef-1}{}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef-1}{}$$

$$= \frac{5c(4cef-10cdg+3beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2} + \frac{5c(4cef-1}{}$$

Mathematica [C] time = 0.20, size = 173, normalized size = 0.49

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{(d+ex)(be-2cd)^2(3beg-10cdg+4cef)\,{}_2F_1\left(-\frac{5}{2},-\frac{1}{2};\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+(ef-dg)(be-cd+cex)^3\right)}{3e^2(d+ex)^4(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^5,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((e*f - d*g)*(-(c*d) + b*e + c*
e*x)^3 + ((-2*c*d + b*e)^2*(4*c*e*f - 10*c*d*g + 3*b*e*g)*(d + e*x)*Hyperge
ometric2F1[-5/2, -1/2, 1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*
e + c*e*x)/(-2*c*d + b*e)]))/(3*e^2*(2*c*d - b*e)*(d + e*x)^4*(-(c*d) + b*e
 + c*e*x)^2)
```

fricas [A] time = 7.44, size = 951, normalized size = 2.72

$$\left[-\frac{15\left(\left(4\left(2c^2de^3-bce^4\right)f-\left(20c^2d^2e^2-16bcde^3+3b^2e^4\right)g\right)x^2+4\left(2c^2d^3e-bcd^2e^2\right)f-\left(20c^2d^4-16bcd^3e\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="fricas")
```

```
[Out] [-1/48*(15*((4*(2*c^2*d*e^3 - b*c*e^4)*f - (20*c^2*d^2*e^2 - 16*b*c*d*e^3 +
 3*b^2*e^4)*g)*x^2 + 4*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (20*c^2*d^4 - 16*b*c
*d^3*e + 3*b^2*d^2*e^2)*g + 2*(4*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (20*c^2*d^
3*e - 16*b*c*d^2*e^2 + 3*b^2*d*e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*
c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(6*c^2*e^3*g*x^3 + 3*(4*c^2*e^3
*f - (16*c^2*d*e^2 - 9*b*c*e^3)*g)*x^2 + 4*(23*c^2*d^2*e - 6*b*c*d*e^2 - 2*
b^2*e^3)*f - (236*c^2*d^3 - 147*b*c*d^2*e + 16*b^2*d*e^2)*g + 2*(4*(17*c^2*
d*e^2 - 7*b*c*e^3)*f - (161*c^2*d^2*e - 103*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2),
 -1/24*(15*((4*(2*c^2*d*e^3 - b*c*e^4)*f - (20*c^2*d^2*e^2 - 16*b*c*d*e^3 +
 3*b^2*e^4)*g)*x^2 + 4*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (20*c^2*d^4 - 16*b*c
*d^3*e + 3*b^2*d^2*e^2)*g + 2*(4*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (20*c^2*d^
3*e - 16*b*c*d^2*e^2 + 3*b^2*d*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^
2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2
*x - c^2*d^2 + b*c*d*e)) - 2*(6*c^2*e^3*g*x^3 + 3*(4*c^2*e^3*f - (16*c^2*d*
e^2 - 9*b*c*e^3)*g)*x^2 + 4*(23*c^2*d^2*e - 6*b*c*d*e^2 - 2*b^2*e^3)*f - (2
36*c^2*d^3 - 147*b*c*d^2*e + 16*b^2*d*e^2)*g + 2*(4*(17*c^2*d*e^2 - 7*b*c*e
^3)*f - (161*c^2*d^2*e - 103*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 5227, normalized size = 14.93

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^5,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(f+gx)\left(c d^2-b d e-c e^2 x^2-b e^2 x\right)^{5/2}}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^5,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-(d+ex)(be-cd+cex))^{\frac{5}{2}}(f+gx)}{(d+ex)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**5,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**5, x)
```

3.2203 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^6}\,dx$

Optimal. Leaf size=352

$$-\frac{c^{3/2}(5beg-12cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2e^2}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(5beg-12cdg+2cef}{e^2(2cd-be)}$$

```
[Out] -2/3*c*(5*b*e*g-12*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^
2/(-b*e+2*c*d)/(e*x+d)^2+2/15*(5*b*e*g-12*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^4-2/5*(-d*g+e*f)*(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^6-1/2*c^(3/2)*(5*b*e*g-
12*c*d*g+2*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^
2*x^2)^(1/2))/e^2-c^2*(5*b*e*g-12*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^
2*x^2)^(1/2)/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.57, antiderivative size = 352, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {792, 662, 664, 621, 204}

$$-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(5beg-12cdg+2cef)}{e^2(2cd-be)}-\frac{c^{3/2}(5beg-12cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right.}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^6,x]
```

```
[Out] -((c^2*(2*c*e*f - 12*c*d*g + 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2])/(e^2*(2*c*d - b*e))) - (2*c*(2*c*e*f - 12*c*d*g + 5*b*e*g)*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^2) + (2*(
2*c*e*f - 12*c*d*g + 5*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/
(15*e^2*(2*c*d - b*e)*(d + e*x)^4) - (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(7/2))/(5*e^2*(2*c*d - b*e)*(d + e*x)^6) - (c^(3/2)*(2*c*e*f
 - 12*c*d*g + 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2])])/(2*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^6}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(2cd-be)(d+ex)^6} - \frac{(2cef-12cdg+5beg}{5e(2}$$

$$= \frac{2(2cef-12cdg+5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15e^2(2cd-be)(d+ex)^4} - \frac{2(ef-dg}{5}$$

$$= -\frac{2c(2cef-12cdg+5beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^2} + \frac{2(2cef}{}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2cef-}{}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2cef-}{}$$

$$= -\frac{c^2(2cef-12cdg+5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)} - \frac{2c(2cef-}{}$$

Mathematica [C] time = 0.20, size = 175, normalized size = 0.50

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{(d+ex)(be-2cd)^2(5beg+2c(ef-6dg))\,{}_2F_1\left(-\frac{5}{2},-\frac{3}{2};-\frac{1}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}+3(ef-dg)(be-cd+cex)^3\right)}{15e^2(d+ex)^5(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^6,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(3*(e*f - d*g)*(-(c*d) + b*e +
c*e*x)^3 + ((-2*c*d + b*e)^2*(5*b*e*g + 2*c*(e*f - 6*d*g))*(d + e*x)*Hyperg
eometric2F1[-5/2, -3/2, -1/2, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) +
b*e + c*e*x)/(-2*c*d + b*e)]))/(15*e^2*(2*c*d - b*e)*(d + e*x)^5*(-(c*d) +
b*e + c*e*x)^2)
```

fricas [A] time = 26.76, size = 917, normalized size = 2.61

$$\Bigg[\frac{15\big(2c^{2}d^{3}ef+\big(2c^{2}e^{4}f-\big(12c^{2}de^{3}-5bce^{4}\big)g\big)x^{3}+3\big(2c^{2}de^{3}f-\big(12c^{2}d^{2}e^{2}-5bcde^{3}\big)g\big)x^{2}-\big(12c^{2}d^{4}-5bcd}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="fricas")
```

```
[Out] [1/60*(15*(2*c^2*d^3*e*f + (2*c^2*e^4*f - (12*c^2*d*e^3 - 5*b*c*e^4)*g)*x^3
 + 3*(2*c^2*d*e^3*f - (12*c^2*d^2*e^2 - 5*b*c*d*e^3)*g)*x^2 - (12*c^2*d^4 -
 5*b*c*d^3*e)*g + 3*(2*c^2*d^2*e^2*f - (12*c^2*d^3*e - 5*b*c*d^2*e^2)*g)*x)
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) +
 4*(15*c^2*e^3*g*x^3 - (46*c^2*e^3*f - 7*(33*c^2*d*e^2 - 10*b*c*e^3)*g)*x^2
 - 2*(13*c^2*d^2*e - b*c*d*e^2 + 3*b^2*e^3)*f + (141*c^2*d^3 - 32*b*c*d^2*e
 - 4*b^2*d*e^2)*g - (2*(24*c^2*d*e^2 + 11*b*c*e^3)*f - (333*c^2*d^2*e - 78*
b*c*d*e^2 - 10*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2), 1/30*(15*(2*c^2*d^3*e*f + (
2*c^2*e^4*f - (12*c^2*d*e^3 - 5*b*c*e^4)*g)*x^3 + 3*(2*c^2*d*e^3*f - (12*c^
2*d^2*e^2 - 5*b*c*d*e^3)*g)*x^2 - (12*c^2*d^4 - 5*b*c*d^3*e)*g + 3*(2*c^2*d
^2*e^2*f - (12*c^2*d^3*e - 5*b*c*d^2*e^2)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b
*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(15*c^2*e^3*g*x^3 - (46*c^2*e^3*f - 7*(3
3*c^2*d*e^2 - 10*b*c*e^3)*g)*x^2 - 2*(13*c^2*d^2*e - b*c*d*e^2 + 3*b^2*e^3)
*f + (141*c^2*d^3 - 32*b*c*d^2*e - 4*b^2*d*e^2)*g - (2*(24*c^2*d*e^2 + 11*b
*c*e^3)*f - (333*c^2*d^2*e - 78*b*c*d*e^2 - 10*b^2*e^3)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e
^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.12, size = 5440, normalized size = 15.45

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^6,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^6} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^6,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(f+gx\right)}{\left(d+ex\right)^{6}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**6,x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(f + g*x)/(d + e*x)**6, x)
```

3.2204 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^7}\,dx$

Optimal. Leaf size=264

$$-\frac{c^{5/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)}{7e^2(d+ex)^7(2cd-be)}$$

```
[Out] 2/3*c*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(e*x+d)^3-2/5*g*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(e*x+d)^5-2/7*(-d*g+e*f)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^7-c^(5/2)*g*arctan(1/2*e*(
2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^2-2*c^2*g*(d*(-b
*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)
```

Rubi [A] time = 0.57, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 662, 621, 204}

$$-\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}-\frac{c^{5/2}g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{e^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)}{7e^2(d+ex)^7(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^7,x]
```

```
[Out] (-2*c^2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(d + e*x)) + (2*c
*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^3) - (2*g*
(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(d + e*x)^5) - (2*(e*f
- d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(7*e^2*(2*c*d - b*e)*(d
 + e*x)^7) - (c^(5/2)*g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2])])/e^2
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^7}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7e^2(2cd-be)(d+ex)^7}+\frac{g\int\frac{\left(cd^2-bde-be^2x-ce^2x^2\right)}{(d+ex)^6}}{e}$$

$$= -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^5}-\frac{2(ef-dg)\Big(d(cd-be)-be^2x}{7e^2(2cd-be)(d+ex}$$

$$= \frac{2cg\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^3}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)}{5e^2(d+ex)^5}$$

$$= -\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\Big(d(cd-be)-be^2x-ce^2x^2}{3e^2(d+ex)^3}$$

$$= -\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\Big(d(cd-be)-be^2x-ce^2x^2}{3e^2(d+ex)^3}$$

$$= -\frac{2c^2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)}+\frac{2cg\Big(d(cd-be)-be^2x-ce^2x^2}{3e^2(d+ex)^3}$$

Mathematica [C] time = 0.38, size = 162, normalized size = 0.61

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left((be-cd+cex)^3(-beg+cdg+cef)+\frac{g(be-2cd)^4\,{}_2F_1\left(-\frac{7}{2},-\frac{7}{2};-\frac{5}{2};\frac{c(d+ex)}{2cd-be}\right)}{\sqrt{\frac{be-cd+cex}{be-2cd}}}\right)}{7ce^2(d+ex)^6(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^7,x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((c*e*f + c*d*g - b*e*g)*(-(c*d
) + b*e + c*e*x)^3 + ((-2*c*d + b*e)^4*g*Hypergeometric2F1[-7/2, -7/2, -5/2
, (c*(d + e*x))/(2*c*d - b*e)])/Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]
))/(7*c*e^2*(2*c*d - b*e)*(d + e*x)^6*(-(c*d) + b*e + c*e*x)^2)
```

fricas [B] time = 127.46, size = 1239, normalized size = 4.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="fricas")
```

```
[Out] [1/210*(105*((2*c^3*d*e^4 - b*c^2*e^5)*g*x^4 + 4*(2*c^3*d^2*e^3 - b*c^2*d*e
^4)*g*x^3 + 6*(2*c^3*d^3*e^2 - b*c^2*d^2*e^3)*g*x^2 + 4*(2*c^3*d^4*e - b*c^
2*d^3*e^2)*g*x + (2*c^3*d^5 - b*c^2*d^4*e)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 +
8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*sqrt(-c*e^2*x^2 - b*e^2*x +
 c*d^2 - b*d*e)*((15*c^3*e^4*f - (337*c^3*d*e^3 - 161*b*c^2*e^4)*g)*x^3 - (
45*(c^3*d*e^3 - b*c^2*e^4)*f + (613*c^3*d^2*e^2 - 130*b*c^2*d*e^3 - 77*b^2*
c*e^4)*g)*x^2 - 15*(c^3*d^3*e - 3*b*c^2*d^2*e^2 + 3*b^2*c*d*e^3 - b^3*e^4)*
f - (167*c^3*d^4 - 60*b*c^2*d^3*e + 4*b^2*c*d^2*e^2 - 6*b^3*d*e^3)*g + (45*
(c^3*d^2*e^2 - 2*b*c^2*d*e^3 + b^2*c*e^4)*f - (563*c^3*d^3*e - 209*b*c^2*d^
2*e^2 + 17*b^2*c*d*e^3 - 21*b^3*e^4)*g)*x))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c
*d*e^6 - b*e^7)*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^
2*e^5)*x^2 + 4*(2*c*d^4*e^3 - b*d^3*e^4)*x), 1/105*(105*((2*c^3*d*e^4 - b*c
^2*e^5)*g*x^4 + 4*(2*c^3*d^2*e^3 - b*c^2*d*e^4)*g*x^3 + 6*(2*c^3*d^3*e^2 -
b*c^2*d^2*e^3)*g*x^2 + 4*(2*c^3*d^4*e - b*c^2*d^3*e^2)*g*x + (2*c^3*d^5 - b
*c^2*d^4*e)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) +
2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((15*c^3*e^4*f - (337*c^3*d*e^
3 - 161*b*c^2*e^4)*g)*x^3 - (45*(c^3*d*e^3 - b*c^2*e^4)*f + (613*c^3*d^2*e^
2 - 130*b*c^2*d*e^3 - 77*b^2*c*e^4)*g)*x^2 - 15*(c^3*d^3*e - 3*b*c^2*d^2*e^
2 + 3*b^2*c*d*e^3 - b^3*e^4)*f - (167*c^3*d^4 - 60*b*c^2*d^3*e + 4*b^2*c*d^
2*e^2 - 6*b^3*d*e^3)*g + (45*(c^3*d^2*e^2 - 2*b*c^2*d*e^3 + b^2*c*e^4)*f -
(563*c^3*d^3*e - 209*b*c^2*d^2*e^2 + 17*b^2*c*d*e^3 - 21*b^3*e^4)*g)*x))/(2
*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6
)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*(2*c*d^4*e^3 - b*d^3*e^4)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 1905, normalized size = 7.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x)
```

```
[Out] 80*g*e^5*c^7/(-b*e^2+2*c*d*e)^5*b/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e
-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1
/2))*d^4+40*g*e^7*c^5/(-b*e^2+2*c*d*e)^5*b^3/(c*e^2)^(1/2)*arctan((c*e^2)^(
1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*
(x+d/e))^(1/2))*d^2-24*g*e^6*c^5/(-b*e^2+2*c*d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(
-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d+48*g*e^5*c^6/(-b*e^2+2*c*d*e)^5*b*(-(x+d
/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x*d^2-80*g*e^6*c^6/(-b*e^2+2*c*
d*e)^5*b^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c
/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d^3-10*g*e^8*c^4/(
-b*e^2+2*c*d*e)^5*b^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2
+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))*d-2/7*(
-d*g+e*f)/e^8/(-b*e^2+2*c*d*e)/(x+d/e)^7*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)
*(x+d/e))^(7/2)-2/5*g/e^7/(-b*e^2+2*c*d*e)/(x+d/e)^6*(-(x+d/e)^2*c*e^2+(-b*
e^2+2*c*d*e)*(x+d/e))^(7/2)-256/15*g*e^3*c^5/(-b*e^2+2*c*d*e)^5*(-(x+d/e)^2
*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(5/2)+32/3*g*e^5*c^5/(-b*e^2+2*c*d*e)^5*b*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*x+24*g*e^5*c^5/(-b*e^2+2*
c*d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*d^2-16/15*g/
e^3*c^2/(-b*e^2+2*c*d*e)^3/(x+d/e)^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+
d/e))^(7/2)-32/5*g/e*c^3/(-b*e^2+2*c*d*e)^4/(x+d/e)^3*(-(x+d/e)^2*c*e^2+(-b
*e^2+2*c*d*e)*(x+d/e))^(7/2)-256/15*g*e*c^4/(-b*e^2+2*c*d*e)^5/(x+d/e)^2*(-
(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(7/2)+16/3*g*e^5*c^4/(-b*e^2+2*c*
d*e)^5*b^2*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)+2*g*e^7*c^3/(-
b*e^2+2*c*d*e)^5*b^4*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)+4/15
*g/e^5*c/(-b*e^2+2*c*d*e)^2/(x+d/e)^5*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x
+d/e))^(7/2)-64/3*g*e^4*c^6/(-b*e^2+2*c*d*e)^5*d*(-(x+d/e)^2*c*e^2+(-b*e^2+
2*c*d*e)*(x+d/e))^(3/2)*x-32/3*g*e^4*c^5/(-b*e^2+2*c*d*e)^5*d*(-(x+d/e)^2*c
*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(3/2)*b-32*g*e^4*c^7/(-b*e^2+2*c*d*e)^5*d^3*
(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*x-16*g*e^4*c^6/(-b*e^2+2*
c*d*e)^5*d^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)*b-32*g*e^4*c
^8/(-b*e^2+2*c*d*e)^5*d^5/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+d/e-1/2*(-b
*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2))+4*g
*e^7*c^4/(-b*e^2+2*c*d*e)^5*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*d*e)*(x+d/e))
^(1/2)*x-12*g*e^6*c^4/(-b*e^2+2*c*d*e)^5*b^3*(-(x+d/e)^2*c*e^2+(-b*e^2+2*c*
d*e)*(x+d/e))^(1/2)*d+g*e^9*c^3/(-b*e^2+2*c*d*e)^5*b^5/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+d/e-1/2*(-b*e^2+2*c*d*e)/c/e^2)/(-(x+d/e)^2*c*e^2+(-b*e^2
+2*c*d*e)*(x+d/e))^(1/2))
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^7} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^7,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^7, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2205 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^8}\,dx$

Optimal. Leaf size=138

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(9beg-2c(8dg+ef))}{63e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(d+ex)^8(2cd-be)}$$

```
[Out] -2/9*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^8+2/63*(9*b*e*g-2*c*(8*d*g+e*f))*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2
)/e^2/(-b*e+2*c*d)^2/(e*x+d)^7
```

Rubi [A] time = 0.22, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(9beg-2c(8dg+ef))}{63e^2(d+ex)^7(2cd-be)^2}-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(d+ex)^8(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^8,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^8) + (2*(9*b*e*g - 2*c*(e*f + 8*d*g))*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^8}\,dx=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(2cd-be)(d+ex)^8}-\frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+b\right.\right.\right.}{}$$

$$=-\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9e^2(2cd-be)(d+ex)^8}+\frac{2(9beg-2c(ef+8}{63e}$$

Mathematica [A] time = 0.10, size = 104, normalized size = 0.75

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(2c\left(d^2g+8de(f+gx)+e^2fx\right)-be(2dg+7ef+9egx)\right)}{63e^2(d+ex)^5(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^8,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-(b*e*(
7*e*f + 2*d*g + 9*e*g*x)) + 2*c*(d^2*g + e^2*f*x + 8*d*e*(f + g*x))))/(63*e
^2*(-2*c*d + b*e)^2*(d + e*x)^5)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 128, normalized size = 0.93

$$-\frac{2\,(cex+be-cd)\,\big(9b\,e^{2}gx-16cdegx-2c\,e^{2}fx+2bdeg+7b\,e^{2}f-2c\,d^{2}g-16cdef\big)\,\big(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}{63\,(ex+d)^{7}\,\big(b^{2}e^{2}-4bcde+4c^{2}d^{2}\big)\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x)
```

```
[Out] -2/63*(c*e*x+b*e-c*d)*(9*b*e^2*g*x-16*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+7*b*e
^2*f-2*c*d^2*g-16*c*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^7
/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 26.34, size = 12294, normalized size = 89.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^8,x)

[Out] (((d*((336*b^2*c^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7*d^2
*e*f - 1024*b*c^6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/(945
*e*(b*e - 2*c*d)^5) - (d*((16*c^5*(21*b^2*e^2*g + 50*c^2*d^2*g + 10*b*c*e^2
*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(5
*b*e*g - 7*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
 - 2*c*d)^5)))/e))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^3*e^3*g - 1008*b*
c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512*b^2*c^5*d^2*e*g
- 756*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e
- b*e^2*x)^(1/2))/(d + e*x) - (((d*((696*b^2*c^5*e^3*f - 6016*c^7*d^3*g + 1
044*b^3*c^4*e^3*g + 1920*c^7*d^2*e*f - 2304*b*c^6*d*e^2*f + 9984*b*c^6*d^2*
e*g - 5568*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(29*b^2*e^
2*g + 80*c^2*d^2*g + 10*b*c*e^2*f - 16*c^2*d*e*f - 96*b*c*d*e*g))/(315*(b*e
 - 2*c*d)^5) - (d*((16*c^6*e*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(945*(b*e - 2
*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (292*b^3*c^4*
e^3*f + 376*b^4*c^3*e^3*g - 3008*b*c^6*d^3*g + 960*b*c^6*d^2*e*f - 1056*b^2
*c^5*d*e^2*f + 4512*b^2*c^5*d^2*e*g - 2256*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2
*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((8
40*b^2*c^5*e^3*f - 7616*c^7*d^3*g + 1308*b^3*c^4*e^3*g + 2368*c^7*d^2*e*f -
 2816*b*c^6*d*e^2*f + 12608*b*c^6*d^2*e*g - 7008*b^2*c^5*d*e^2*g)/(945*e*(b
*e - 2*c*d)^5) - (d*((8*c^5*(105*b^2*e^2*g + 296*c^2*d^2*g + 34*b*c*e^2*f -
 56*c^2*d*e*f - 352*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(17*b
*e*g - 28*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*
e - 2*c*d)^5)))/e))/e))/e - (356*b^3*c^4*e^3*f + 476*b^4*c^3*e^3*g - 3808*b
*c^6*d^3*g + 1184*b*c^6*d^2*e*f - 1296*b^2*c^5*d*e^2*f + 5712*b^2*c^5*d^2*e
*g - 2856*b^3*c^4*d*e^2*g)/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((984*b^2*c^5*e^3*f - 9216*c^7*d^3*g
 + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f - 3328*b*c^6*d*e^2*f + 15232*b*c^6
*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(123*
b^2*e^2*g + 352*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(
945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(19*b*e*g - 32*c*d*g + 2*c*e*f))/(945*
(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (420*
b^3*c^4*e^3*f + 576*b^4*c^3*e^3*g - 4608*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f -
 1536*b^2*c^5*d*e^2*f + 6912*b^2*c^5*d^2*e*g - 3456*b^3*c^4*d*e^2*g)/(945*e
*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((d*((d*((4*c^4*e^2*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(63*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^2)))/e - (4*c^3*e*(37*b^2*e^2*g + 94*c^2*d^2*g + 15*b*c*e^2*f - 24*
c^2*d*e*f - 118*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e +
 (148*b^2*c^3*e^4*f + 164*b^3*c^2*e^4*g + 376*c^5*d^2*e^2*f - 832*c^5*d^3*e
*g - 472*b*c^4*d*e^3*f + 1436*b*c^4*d^2*e^2*g - 836*b^2*c^3*d*e^3*g)/(63*e*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (640*c^5*d^4*g + 108*b^3*c^2*e^
4*f + 68*b^4*c*e^4*g - 384*c^5*d^3*e*f - 1504*b*c^4*d^3*e*g + 764*b*c^4*d^2
*e^2*f - 500*b^2*c^3*d*e^3*f - 488*b^3*c^2*d*e^3*g + 1296*b^2*c^3*d^2*e^2*g
)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((1480*b^2*c^5*e^3*f - 19456*c^7*d^3*g
+ 3088*b^3*c^4*e^3*g + 4608*c^7*d^2*e*f - 5216*b*c^6*d*e^2*f + 31488*b*c^6*
d^2*e*g - 17048*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((8*c^5*(185*
b^2*e^2*g + 576*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*f - 652*b*c*d*e*g))/(
945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(11*b*e*g - 19*c*d*g + c*e*f))/(945*(b
*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (8*b*c^
3*(152*b^3*e^3*g - 1216*c^3*d^3*g + 82*b^2*c*e^3*f + 288*c^3*d^2*e*f - 307*
b*c^2*d*e^2*f + 1824*b*c^2*d^2*e*g - 912*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*
d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1704
*b^2*c^5*e^3*f - 23296*c^7*d^3*g + 3672*b^3*c^4*e^3*g + 5376*c^7*d^2*e*f -
6048*b*c^6*d*e^2*f + 37632*b*c^6*d^2*e*g - 20328*b^2*c^5*d*e^2*g)/(945*e*(b
*e - 2*c*d)^5) - (d*((8*c^5*(71*b^2*e^2*g + 224*c^2*d^2*g + 16*b*c*e^2*f -
28*c^2*d*e*f - 252*b*c*d*e*g))/(315*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(12*b*
e*g - 21*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e -
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 2*c*d)^5)))/e))/e))/e - (8*b*c^3*(182*b^3*e^3*g - 1456*c^3*d^3*g + 95*b^2*
c*e^3*f + 336*c^3*d^2*e*f - 357*b*c^2*d*e^2*f + 2184*b*c^2*d^2*e*g - 1092*b
^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((2992*b^2*c^5*e^3*f - 60928*c^7*d^3*g + 8992*b^
3*c^4*e^3*g + 10080*c^7*d^2*e*f - 10976*b*c^6*d*e^2*f + 96432*b*c^6*d^2*e*g
 - 50960*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((16*c^5*(187*b^2*e^
2*g + 630*c^2*d^2*g + 31*b*c*e^2*f - 56*c^2*d*e*f - 686*b*c*d*e*g))/(945*(b
*e - 2*c*d)^5) - (d*((16*c^6*e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(945*(b*e -
 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (16*b*c^3*(
238*b^3*e^3*g - 1904*c^3*d^3*g + 86*b^2*c*e^3*f + 315*c^3*d^2*e*f - 329*b*c
^2*d*e^2*f + 2856*b*c^2*d^2*e*g - 1428*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((356*b^
2*c^4*e^3*f - 2624*c^6*d^3*g + 476*b^3*c^3*e^3*g + 960*c^6*d^2*e*f - 1168*b
*c^5*d*e^2*f + 4416*b*c^5*d^2*e*g - 2500*b^2*c^4*d*e^2*g)/(315*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(8*b*e*g - 13*c*d*g + c*e*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (356*b^2*c^4*e^3*g + 128*b*c^5*e^3*f -
208*c^6*d*e^2*f + 960*c^6*d^2*e*g - 1168*b*c^5*d*e^2*g)/(315*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^3)))/e))/e - (148*b^3*c^3*e^3*f + 164*b^4*c^2*e^3*g - 1
312*b*c^5*d^3*g + 480*b*c^5*d^2*e*f - 532*b^2*c^4*d*e^2*f + 1968*b^2*c^4*d^
2*e*g - 984*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((552*b^2*c^5*
e^4*f + 780*b^3*c^4*e^4*g + 1472*c^7*d^2*e^2*f - 4416*c^7*d^3*e*g - 1792*b*
c^6*d*e^3*f + 7360*b*c^6*d^2*e^2*g - 4128*b^2*c^5*d*e^3*g)/(945*e^2*(b*e -
2*c*d)^5) - (d*((8*c^5*(69*b^2*e^2*g + 184*c^2*d^2*g + 26*b*c*e^2*f - 40*c^
2*d*e*f - 224*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(13*b*e*g -
 20*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*
c*d)^5)))/e))/e))/e - (4032*c^7*d^4*g + 428*b^3*c^4*e^4*f + 428*b^4*c^3*e^4
*g - 1600*c^7*d^3*e*f - 9472*b*c^6*d^3*e*g + 3136*b*c^6*d^2*e^2*f - 2016*b^
2*c^5*d*e^3*f - 3072*b^3*c^4*d*e^3*g + 8160*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*
e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((
d*((1032*b^2*c^5*e^4*f + 1920*b^3*c^4*e^4*g + 3072*c^7*d^2*e^2*f - 11776*c^
7*d^3*e*g - 3552*b*c^6*d*e^3*f + 19200*b*c^6*d^2*e^2*g - 10488*b^2*c^5*d*e^
3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((8*c^5*(43*b^2*e^2*g + 128*c^2*d^2*g +
 12*b*c*e^2*f - 20*c^2*d*e*f - 148*b*c*d*e*g))/(315*(b*e - 2*c*d)^5) - (d*(
(32*c^6*e*(9*b*e*g - 15*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e
*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (8384*c^7*d^4*g + 712*b^3*c^4*e^4*f
 + 1128*b^4*c^3*e^4*g - 2112*c^7*d^3*e*f - 21600*b*c^6*d^3*e*g + 4704*b*c^6
*d^2*e^2*f - 3240*b^2*c^5*d*e^3*f - 7816*b^3*c^4*d*e^3*g + 19824*b^2*c^5*d^
2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) + (((d*((1224*b^2*c^5*e^4*f + 2376*b^3*c^4*e^4*g + 3712*c^7
*d^2*e^2*f - 14720*c^7*d^3*e*g - 4256*b*c^6*d*e^3*f + 23936*b*c^6*d^2*e^2*g
 - 13032*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((8*c^5*(153*b^2*e
^2*g + 464*c^2*d^2*g + 40*b*c*e^2*f - 68*c^2*d*e*f - 532*b*c*d*e*g))/(945*(
b*e - 2*c*d)^5) - (d*((32*c^6*e*(10*b*e*g - 17*c*d*g + c*e*f))/(945*(b*e -
2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (15232*c^7*d
^4*g + 1128*b^3*c^4*e^4*f + 1576*b^4*c^3*e^4*g - 4736*c^7*d^3*e*f - 35456*b
*c^6*d^3*e*g + 8960*b*c^6*d^2*e^2*f - 5544*b^2*c^5*d*e^3*f - 11360*b^3*c^4*
d*e^3*g + 30336*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1416*b^2*c^5*e^4*f + 283
2*b^3*c^4*e^4*g + 4352*c^7*d^2*e^2*f - 17664*c^7*d^3*e*g - 4960*b*c^6*d*e^3
*f + 28672*b*c^6*d^2*e^2*g - 15576*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^
5) - (d*((8*c^5*(177*b^2*e^2*g + 544*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*
f - 620*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(11*b*e*g - 19*c*
d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5))
)/e))/e))/e - (18432*c^7*d^4*g + 1328*b^3*c^4*e^4*f + 1904*b^4*c^3*e^4*g -
5632*c^7*d^3*e*f - 42880*b*c^6*d^3*e*g + 10624*b*c^6*d^2*e^2*f - 6552*b^2*c
^5*d*e^3*f - 13728*b^3*c^4*d*e^3*g + 36672*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e
 - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d
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*((1984*b^2*c^5*e^4*f + 5056*b^3*c^4*e^4*g + 6432*c^7*d^2*e^2*f - 33280*c^7
*d^3*e*g - 7136*b*c^6*d*e^3*f + 53136*b*c^6*d^2*e^2*g - 28352*b^2*c^5*d*e^3
*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^5*(124*b^2*e^2*g + 402*c^2*d^2*g
+ 25*b*c*e^2*f - 44*c^2*d*e*f - 446*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*
((16*c^6*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7
*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (28288*c^7*d^4*g + 1712*b^3*c^4
*e^4*f + 3440*b^4*c^3*e^4*g - 6528*c^7*d^3*e*f - 69952*b*c^6*d^3*e*g + 1300
8*b*c^6*d^2*e^2*f - 8288*b^2*c^5*d*e^3*f - 24176*b^3*c^4*d*e^3*g + 62496*b^
2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((2256*b^2*c^5*e^4*f + 5952*b^3*c^4*e^4*g +
7392*c^7*d^2*e^2*f - 39424*c^7*d^3*e*g - 8160*b*c^6*d*e^3*f + 62832*b*c^6*d
^2*e^2*g - 33456*b^2*c^5*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((16*c^5*(
47*b^2*e^2*g + 154*c^2*d^2*g + 9*b*c*e^2*f - 16*c^2*d*e*f - 170*b*c*d*e*g))
/(315*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(94
5*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (27
392*c^7*d^4*g + 1504*b^3*c^4*e^4*f + 3936*b^4*c^3*e^4*g - 3840*c^7*d^3*e*f
- 72576*b*c^6*d^3*e*g + 9456*b*c^6*d^2*e^2*f - 6768*b^2*c^5*d*e^3*f - 27040
*b^3*c^4*d*e^3*g + 67776*b^2*c^5*d^2*e^2*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((2592*b^2*c^5*e^
4*f + 7200*b^3*c^4*e^4*g + 8608*c^7*d^2*e^2*f - 48128*c^7*d^3*e*g - 9440*b*
c^6*d*e^3*f + 76496*b*c^6*d^2*e^2*g - 40608*b^2*c^5*d*e^3*g)/(945*e^2*(b*e
- 2*c*d)^5) - (d*((16*c^5*(162*b^2*e^2*g + 538*c^2*d^2*g + 29*b*c*e^2*f - 5
2*c^2*d*e*f - 590*b*c*d*e*g))/(945*(b*e - 2*c*d)^5) - (d*((16*c^6*e*(29*b*e
*g - 52*c*d*g + 2*c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
- 2*c*d)^5)))/e))/e))/e - (57856*c^7*d^4*g + 2784*b^3*c^4*e^4*f + 5824*b^4*
c^3*e^4*g - 12800*c^7*d^3*e*f - 133376*b*c^6*d^3*e*g + 23504*b*c^6*d^2*e^2*
f - 14112*b^2*c^5*d*e^3*f - 42176*b^3*c^4*d*e^3*g + 113280*b^2*c^5*d^2*e^2*
g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/
(d + e*x) + (((2*b^4*e^3*g - 16*b*c^3*d^3*g + 6*b^3*c*e^3*f + 14*b*c^3*d^2*
e*f - 12*b^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f + 24*b^2*c^2*d^2*e*g)/(9*(7*b*e
^2 - 14*c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c^2*e^3*f - 32*c^4*d^3*g + 10*b
^3*c*e^3*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*f + 62*b*c^3*d^2*e*g - 42*b^2*
c^2*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) + (d*((d*((2*c^3*e^2*(7
*b*e*g - 8*c*d*g + 2*c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c^
4*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (18*b^2*c^2*e^3*g +
 14*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*d^2*e*g - 44*b*c^3*d*e^2*g)/(9*(7
*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^4 - (((d*((896*b^2*c^4*e^3*f - 11264*c^6*d^3*g + 180
8*b^3*c^3*e^3*g + 2832*c^6*d^2*e*f - 3184*b*c^5*d*e^2*f + 18312*b*c^5*d^2*e
*g - 9952*b^2*c^4*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*(
(d*((8*c^5*e^2*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)
))/e - (896*b^2*c^4*e^3*g + 200*b*c^5*e^3*f - 352*c^6*d*e^2*f + 2832*c^6*d^
2*e*g - 3184*b*c^5*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e))
/e - (8*b*c^2*(88*b^3*e^3*g - 704*c^3*d^3*g + 50*b^2*c*e^3*f + 177*c^3*d^2*
e*f - 188*b*c^2*d*e^2*f + 1056*b*c^2*d^2*e*g - 528*b^2*c*d*e^2*g))/(315*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^2 + (((d*((d*((d*((8*c^4*e^2*(12*b*e*g - 21*c*d*g + c*e*f))/
(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c^3*e*(50*b^2*e^2*g + 155*c^2*d^2*g + 1
2*b*c*e^2*f - 21*c^2*d*e*f - 176*b*c*d*e*g))/(63*(5*b*e^2 - 10*c*d*e)*(b*e
- 2*c*d)^2)))/e + (400*b^2*c^3*e^4*f + 704*b^3*c^2*e^4*g + 1240*c^5*d^2*e^2
*f - 4216*c^5*d^3*e*g - 1408*b*c^4*d*e^3*f + 6944*b*c^4*d^2*e^2*g - 3824*b^
2*c^3*d*e^3*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e
- c*d)*(49*b^3*e^3*g - 392*c^3*d^3*g + 39*b^2*c*e^3*f + 135*c^3*d^2*e*f - 1
45*b*c^2*d*e^2*f + 588*b*c^2*d^2*e*g - 294*b^2*c*d*e^2*g))/(63*e*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^3 + (((d*((d*((d*((16*c^5*e^2*(7*b*e*g - 11*c*d*g + c*e*f))/(315*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(73*b^2*e^2*g + 192*c^2*d^2*g + 28*b*c
*e^2*f - 44*c^2*d*e*f - 236*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c
*d)^3)))/e + (292*b^2*c^4*e^4*f + 376*b^3*c^3*e^4*g + 768*c^6*d^2*e^2*f - 2
048*c^6*d^3*e*g - 944*b*c^5*d*e^3*f + 3456*b*c^5*d^2*e^2*g - 1964*b^2*c^4*d
*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (1824*c^6*d^4*g +
 228*b^3*c^3*e^4*f + 188*b^4*c^2*e^4*g - 864*c^6*d^3*e*f - 4240*b*c^5*d^3*e
*g + 1680*b*c^5*d^2*e^2*f - 1076*b^2*c^4*d*e^3*f - 1356*b^3*c^3*d*e^3*g + 3
624*b^2*c^4*d^2*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((8*c^5*e^
2*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3
) - (16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4
*e*(82*b^2*e^2*g + 250*c^2*d^2*g + 21*b*c*e^2*f - 36*c^2*d*e*f - 286*b*c*d*
e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (656*b^2*c^4*e^4*f +
1216*b^3*c^3*e^4*g + 2000*c^6*d^2*e^2*f - 7424*c^6*d^3*e*g - 2288*b*c^5*d*e
^3*f + 12136*b*c^5*d^2*e^2*g - 6640*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^3)))/e - (5312*c^6*d^4*g + 456*b^3*c^3*e^4*f + 712*b^4*c
^2*e^4*g - 1344*c^6*d^3*e*f - 13664*b*c^5*d^3*e*g + 3016*b*c^5*d^2*e^2*f -
2080*b^2*c^4*d*e^3*f - 4936*b^3*c^3*d*e^3*g + 12528*b^2*c^4*d^2*e^2*g)/(315
*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((8*c^5*e^2*(23*b*e*g - 40*c*d*g + 2*
c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(95*b^2*e^2*g + 294*c^2*
d^2*g + 23*b*c*e^2*f - 40*c^2*d*e*f - 334*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^3)))/e + (760*b^2*c^4*e^4*f + 1456*b^3*c^3*e^4*g + 2352*c
^6*d^2*e^2*f - 8960*c^6*d^3*e*g - 2672*b*c^5*d*e^3*f + 14616*b*c^5*d^2*e^2*
g - 7976*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e -
 (9600*c^6*d^4*g + 768*b^3*c^3*e^4*f + 944*b^4*c^2*e^4*g - 3456*c^6*d^3*e*f
 - 21952*b*c^5*d^3*e*g + 6360*b*c^5*d^2*e^2*f - 3848*b^2*c^4*d*e^3*f - 6864
*b^3*c^3*d*e^3*g + 18528*b^2*c^4*d^2*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((
(d*((3712*b^2*c^5*e^4*f + 13120*b^3*c^4*e^4*g + 12768*c^7*d^2*e^2*f - 91168
*c^7*d^3*e*g - 13760*b*c^6*d*e^3*f + 143136*b*c^6*d^2*e^2*g - 75008*b^2*c^5
*d*e^3*g)/(945*e^2*(b*e - 2*c*d)^5) - (d*((32*c^5*(116*b^2*e^2*g + 399*c^2*
d^2*g + 17*b*c*e^2*f - 31*c^2*d*e*f - 430*b*c*d*e*g))/(945*(b*e - 2*c*d)^5)
 - (d*((32*c^6*e*(17*b*e*g - 31*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32
*c^7*d*e*g)/(945*(b*e - 2*c*d)^5)))/e))/e))/e - (32*c^3*(b*e - c*d)*(310*b^
3*e^3*g - 2480*c^3*d^3*g + 100*b^2*c*e^3*f + 369*c^3*d^2*e*f - 384*b*c^2*d*
e^2*f + 3720*b*c^2*d^2*e*g - 1860*b^2*c*d*e^2*g))/(945*e^2*(b*e - 2*c*d)^5)
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((d*((4
*c^3*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d
)) - (4*c^4*d*e^2*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e - (4*c^2*e*
(18*b^2*e^2*g + 43*c^2*d^2*g + 8*b*c*e^2*f - 13*c^2*d*e*f - 56*b*c*d*e*g))/
(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))/e + (72*b^2*c^2*e^4*f + 172*c^4*d^
2*e^2*f + 64*b^3*c*e^4*g - 284*c^4*d^3*e*g - 224*b*c^3*d*e^3*f + 512*b*c^3*
d^2*e^2*g - 312*b^2*c^2*d*e^3*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d))))
/e - (4*(b*e - c*d)*(5*b^3*e^3*g - 40*c^3*d^3*g + 11*b^2*c*e^3*f + 31*c^3*d
^2*e*f - 37*b*c^2*d*e^2*f + 60*b*c^2*d^2*e*g - 30*b^2*c*d*e^2*g))/(9*e*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^4 - (((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 126*b^3*c^3*e^3
*g + 288*c^6*d^2*e*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g - 624*b^2*c^4
*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(9
*b*e*g - 12*c*d*g + 2*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (
16*c^6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(1
1*b^2*e^2*g + 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 32*b*c*d*e*g))/(10
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*c^3*e^3*f + 38*b^4
*c^2*e^3*g - 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^2*c^4*d*e^2*f + 45
6*b^2*c^4*d^2*e*g - 228*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((
420*b^2*c^4*e^3*f - 3200*c^6*d^3*g + 576*b^3*c^3*e^3*g + 1152*c^6*d^2*e*f -
```

```
 1392*b*c^5*d*e^2*f + 5376*b*c^5*d^2*e*g - 3036*b^2*c^4*d*e^2*g)/(315*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(9*b*e*g - 15*c*d*g +
 c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(315*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(35*b^2*e^2*g + 96*c^2*
d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116*b*c*d*e*g))/(105*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^3)))/e))/e - (176*b^3*c^3*e^3*f + 200*b^4*c^2*e^3*g - 160
0*b*c^5*d^3*g + 576*b*c^5*d^2*e*f - 636*b^2*c^4*d*e^2*f + 2400*b^2*c^4*d^2*
e*g - 1200*b^3*c^3*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((2*f*(b*e - c*d)^3
)/(9*b*e^2 - 18*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*d*g + 3*c*e*f))/(9
*b*e^2 - 18*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d*g + c*e*f))/(9*b*e
^2 - 18*c*d*e) - (2*c^3*d*e^2*g)/(9*b*e^2 - 18*c*d*e)))/e - (6*c*e*(b*e - c
*d)*(b*e*g - c*d*g + c*e*f))/(9*b*e^2 - 18*c*d*e)))/e))/e)*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((d*((16*c^5*e^2*(15*b*
e*g - 27*c*d*g + c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (16*c^
6*d*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^4*e*(86*b^
2*e^2*g + 287*c^2*d^2*g + 15*b*c*e^2*f - 27*c^2*d*e*f - 314*b*c*d*e*g))/(31
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3)))/e + (1376*b^2*c^4*e^4*f + 3808*b^3
*c^3*e^4*g + 4592*c^6*d^2*e^2*f - 25424*c^6*d^3*e*g - 5024*b*c^5*d*e^3*f +
40432*b*c^5*d^2*e^2*g - 21472*b^2*c^4*d*e^3*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(166*b^3*e^3*g - 1328*c^3*d^3*g +
 72*b^2*c*e^3*f + 261*c^3*d^2*e*f - 274*b*c^2*d*e^2*f + 1992*b*c^2*d^2*e*g
- 996*b^2*c*d*e^2*g))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((1992*b^2*c^5*e^3*
f - 28928*c^7*d^3*g + 4512*b^3*c^4*e^3*g + 6400*c^7*d^2*e*f - 7136*b*c^6*d*
e^2*f + 46592*b*c^6*d^2*e*g - 25080*b^2*c^5*d*e^2*g)/(945*e*(b*e - 2*c*d)^5
) - (d*((1992*b^2*c^5*e^3*g + 416*b*c^6*e^3*f - 736*c^7*d*e^2*f + 6400*c^7*
d^2*e*g - 7136*b*c^6*d*e^2*g)/(945*e*(b*e - 2*c*d)^5) - (d*((32*c^6*e*(13*b
*e*g - 23*c*d*g + c*e*f))/(945*(b*e - 2*c*d)^5) - (32*c^7*d*e*g)/(945*(b*e
- 2*c*d)^5)))/e))/e))/e - (8*b*c^3*(226*b^3*e^3*g - 1808*c^3*d^3*g + 112*b^
2*c*e^3*f + 400*c^3*d^2*e*f - 423*b*c^2*d*e^2*f + 2712*b*c^2*d^2*e*g - 1356
*b^2*c*d*e^2*g))/(945*e*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((50*b^2*c^3*e^3*f - 160*c^5*d^3*g + 38*b^3*c^
2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 288*b*c^4*d^2*e*g - 178*b^2*
c^3*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((8*c^4*e^2
*(4*b*e*g - 5*c*d*g + c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (
8*c^5*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (50*b^2*c^3*
e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*c^5*d^2*e*g - 136*b*c^4*d*e^2*
g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (18*b^3*c^2*e^3*f -
80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d^2*e*f - 58*b^2*c^3*d*e^2*f + 1
20*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*
c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((
176*b^2*c^3*e^3*f - 1024*c^5*d^3*g + 200*b^3*c^2*e^3*g + 456*c^5*d^2*e*f -
568*b*c^4*d*e^2*f + 1764*b*c^4*d^2*e*g - 1024*b^2*c^3*d*e^2*g)/(63*(5*b*e^2
 - 10*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4*c^4*e^2*(17*b*e*g - 28*c*d*g + 2
*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(63*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2)))/e - (176*b^2*c^3*e^3*g + 68*b*c^4*e^3
*f - 112*c^5*d*e^2*f + 456*c^5*d^2*e*g - 568*b*c^4*d*e^2*g)/(63*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (72*b^3*c^2*e^3*f - 512*b*c^4*d^3*g +
64*b^4*c*e^3*g + 228*b*c^4*d^2*e*f - 256*b^2*c^3*d*e^2*f + 768*b^2*c^3*d^2*
e*g - 384*b^3*c^2*d*e^2*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.2206 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^9}\,dx$

Optimal. Leaf size=210

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4cef)}{693e^2(d+ex)^7(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg}{99e^2(d+ex)^8(2cd-be)^2}$$

```
[Out] -2/11*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^9-2/99*(-11*b*e*g+18*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(7/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^8-4/693*c*(-11*b*e*g+18*c*d*g+4*c*e*f)*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^7
```

Rubi [A] time = 0.33, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{4c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg+4cef)}{693e^2(d+ex)^7(2cd-be)^3}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-11beg+18cdg}{99e^2(d+ex)^8(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^9,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(11*e^2*(2*c*d
 - b*e)*(d + e*x)^9) - (2*(4*c*e*f + 18*c*d*g - 11*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(7/2))/(99*e^2*(2*c*d - b*e)^2*(d + e*x)^8) - (4*c*(4*
c*e*f + 18*c*d*g - 11*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(
693*e^2*(2*c*d - b*e)^3*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^9}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} + \frac{(4cef+18cdg-11be}{11e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} - \frac{2(4cef+18cdg-11b}{99e^2(2}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11e^2(2cd-be)(d+ex)^9} - \frac{2(4cef+18cdg-11b}{99e^2(2}$$

Mathematica [A] time = 0.15, size = 169, normalized size = 0.80

$$-\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(7b^2e^2(2dg+9ef+11egx)-2bce\left(25d^2g+2de(70f+81gx)+e^2x(1\right.\right.}{693e^2(d+ex)^6(be-2cd)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^9,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(7*b^2*
e^2*(9*e*f + 2*d*g + 11*e*g*x) - 2*b*c*e*(25*d^2*g + e^2*x*(14*f + 11*g*x)
+ 2*d*e*(70*f + 81*g*x)) + 4*c^2*(9*d^3*g + 2*e^3*f*x^2 + 9*d*e^2*x*(2*f +
g*x) + d^2*e*(79*f + 81*g*x))))/(693*e^2*(-2*c*d + b*e)^3*(d + e*x)^6)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 236, normalized size = 1.12

$$-\frac{2\,(cex+be-cd)\left(-22bc\,e^3g\,x^2+36c^2d\,e^2g\,x^2+8c^2e^3f\,x^2+77b^2e^3gx-324bcd\,e^2gx-28bc\,e^3fx+324c^2d^2egx\right.}{693\,(ex+d)^8\left(b^3e^3-6b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x)
```

```
[Out] -2/693*(c*e*x+b*e-c*d)*(-22*b*c*e^3*g*x^2+36*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^
2+77*b^2*e^3*g*x-324*b*c*d*e^2*g*x-28*b*c*e^3*f*x+324*c^2*d^2*e*g*x+72*c^2*
d*e^2*f*x+14*b^2*d*e^2*g+63*b^2*e^3*f-50*b*c*d^2*e*g-280*b*c*d*e^2*f+36*c^2
*d^3*g+316*c^2*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^8/(b
^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9,x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 53.40, size = 25236, normalized size = 120.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^9,x)
```

```
[Out] (((d*((1632*b^2*c^6*e^3*f - 16704*c^8*d^3*g + 2784*b^3*c^5*e^3*g + 4672*c^8
*d^2*e*f - 5504*b*c^7*d*e^2*f + 27392*b*c^7*d^2*e*g - 15072*b^2*c^6*d*e^2*g
)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(51*b^2*e^2*g + 146*c^2*d^2*g + 1
6*b*c*e^2*f - 26*c^2*d*e*f - 172*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*(
(64*c^7*e*(8*b*e*g - 13*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (696*b^3*c^5*e^3*f + 1044*b^4*c
^4*e^3*g - 8352*b*c^7*d^3*g + 2336*b*c^7*d^2*e*f - 2544*b^2*c^6*d*e^2*f + 1
2528*b^2*c^6*d^2*e*g - 6264*b^3*c^5*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((1952*b^2*c^6*e
^3*f - 20928*c^8*d^3*g + 3456*b^3*c^5*e^3*g + 5696*c^8*d^2*e*f - 6656*b*c^7
*d*e^2*f + 34240*b*c^7*d^2*e*g - 18784*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c
*d)^6) - (d*((32*c^6*(61*b^2*e^2*g + 178*c^2*d^2*g + 18*b*c*e^2*f - 30*c^2*
d*e*f - 208*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(9*b*e*g -
15*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2
*c*d)^6)))/e))/e))/e - (840*b^3*c^5*e^3*f + 1308*b^4*c^4*e^3*g - 10464*b*c^
7*d^3*g + 2848*b*c^7*d^2*e*f - 3088*b^2*c^6*d*e^2*f + 15696*b^2*c^6*d^2*e*g
 - 7848*b^3*c^5*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((2272*b^2*c^6*e^3*f - 25152*c^8*d^3
*g + 4128*b^3*c^5*e^3*g + 6720*c^8*d^2*e*f - 7808*b*c^7*d*e^2*f + 41088*b*c
^7*d^2*e*g - 22496*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6
*(71*b^2*e^2*g + 210*c^2*d^2*g + 20*b*c*e^2*f - 34*c^2*d*e*f - 244*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(10*b*e*g - 17*c*d*g + c*e*f))/
(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/
e - (984*b^3*c^5*e^3*f + 1572*b^4*c^4*e^3*g - 12576*b*c^7*d^3*g + 3360*b*c^
7*d^2*e*f - 3632*b^2*c^6*d*e^2*f + 18864*b^2*c^6*d^2*e*g - 9432*b^3*c^5*d*e
^2*g)/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((d*((2592*b^2*c^6*e^3*f - 29376*c^8*d^3*g + 4800*b^3*c^5*e
^3*g + 7744*c^8*d^2*e*f - 8960*b*c^7*d*e^2*f + 47936*b*c^7*d^2*e*g - 26208*
b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(81*b^2*e^2*g + 24
2*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f - 280*b*c*d*e*g))/(10395*(b*e - 2
*c*d)^6) - (d*((64*c^7*e*(11*b*e*g - 19*c*d*g + c*e*f))/(10395*(b*e - 2*c*d
)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (1128*b^3*c^5*e
^3*f + 1836*b^4*c^4*e^3*g - 14688*b*c^7*d^3*g + 3872*b*c^7*d^2*e*f - 4176*b
^2*c^6*d*e^2*f + 22032*b^2*c^6*d^2*e*g - 11016*b^3*c^5*d*e^2*g)/(10395*e*(b
*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - ((
(d*((d*((d*((4*c^4*e^2*(17*b*e*g - 28*c*d*g + 2*c*e*f))/(99*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*
c*d)^2)))/e - (4*c^3*e*(44*b^2*e^2*g + 114*c^2*d^2*g + 17*b*c*e^2*f - 28*c^
2*d*e*f - 142*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (
176*b^2*c^3*e^4*f + 200*b^3*c^2*e^4*g + 456*c^5*d^2*e^2*f - 1024*c^5*d^3*e*
g - 568*b*c^4*d*e^3*f + 1764*b*c^4*d^2*e^2*g - 1024*b^2*c^3*d*e^3*g)/(99*e*
(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (800*c^5*d^4*g + 132*b^3*c^2*e^
4*f + 84*b^4*c*e^4*g - 480*c^5*d^3*e*f - 1872*b*c^4*d^3*e*g + 948*b*c^4*d^2
*e^2*f - 616*b^2*c^3*d*e^3*f - 604*b^3*c^2*d*e^3*g + 1608*b^2*c^3*d^2*e^2*g
)/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((832*b^2*c^6*e^3*f - 6144*c^8*d^3*g +
1104*b^3*c^5*e^3*g + 2112*c^8*d^2*e*f - 2624*b*c^7*d*e^2*f + 10272*b*c^7*d^
2*e*g - 5792*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(26*b
^2*e^2*g + 66*c^2*d^2*g + 11*b*c*e^2*f - 16*c^2*d*e*f - 82*b*c*d*e*g))/(103
95*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(11*b*e*g - 16*c*d*g + 2*c*e*f))/(10395
*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (1
6*b*c^4*(24*b^3*e^3*g - 192*c^3*d^3*g + 21*b^2*c*e^3*f + 66*c^3*d^2*e*f - 7
4*b*c^2*d*e^2*f + 288*b*c^2*d^2*e*g - 144*b^2*c*d*e^2*g))/(10395*e*(b*e - 2
*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3
312*b^2*c^6*e^3*f - 49408*c^8*d^3*g + 7656*b^3*c^5*e^3*g + 10496*c^8*d^2*e*
f - 11776*b*c^7*d*e^2*f + 79360*b*c^7*d^2*e*g - 42624*b^2*c^6*d*e^2*g)/(103
95*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(207*b^2*e^2*g + 656*c^2*d^2*g + 46*b*c
*e^2*f - 80*c^2*d*e*f - 736*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c
^7*e*(23*b*e*g - 40*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e
*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4*(386*b^3*e^3*g - 3088*c^
3*d^3*g + 185*b^2*c*e^3*f + 656*c^3*d^2*e*f - 696*b*c^2*d*e^2*f + 4632*b*c^
2*d^2*e*g - 2316*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3792*b^2*c^6*e^3*f - 58752
*c^8*d^3*g + 9048*b^3*c^5*e^3*g + 12160*c^8*d^2*e*f - 13568*b*c^7*d*e^2*f +
 94208*b*c^7*d^2*e*g - 50496*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (
d*((16*c^6*(237*b^2*e^2*g + 760*c^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 8
48*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(25*b*e*g - 44*c*d*g
 + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^
6)))/e))/e))/e - (8*b*c^4*(459*b^3*e^3*g - 3672*c^3*d^3*g + 213*b^2*c*e^3*f
 + 760*c^3*d^2*e*f - 804*b*c^2*d*e^2*f + 5508*b*c^2*d^2*e*g - 2754*b^2*c*d*
e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((d*((4272*b^2*c^6*e^3*f - 68096*c^8*d^3*g + 10440*b^3*c^
5*e^3*g + 13824*c^8*d^2*e*f - 15360*b*c^7*d*e^2*f + 109056*b*c^7*d^2*e*g -
58368*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(89*b^2*e^2*
g + 288*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 320*b*c*d*e*g))/(3465*(b*
e - 2*c*d)^6) - (d*((32*c^7*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(10395*(b*e
- 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4
*(532*b^3*e^3*g - 4256*c^3*d^3*g + 241*b^2*c*e^3*f + 864*c^3*d^2*e*f - 912*
b*c^2*d*e^2*f + 6384*b*c^2*d^2*e*g - 3192*b^2*c*d*e^2*g))/(10395*e*(b*e - 2
*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4
400*b^2*c^6*e^3*f - 72192*c^8*d^3*g + 11016*b^3*c^5*e^3*g + 14336*c^8*d^2*e
*f - 15872*b*c^7*d*e^2*f + 115456*b*c^7*d^2*e*g - 61696*b^2*c^6*d*e^2*g)/(1
0395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(275*b^2*e^2*g + 896*c^2*d^2*g + 54*b
*c*e^2*f - 96*c^2*d*e*f - 992*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32
*c^7*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (8*b*c^4*(564*b^3*e^3*g - 4512*
c^3*d^3*g + 249*b^2*c*e^3*f + 896*c^3*d^2*e*f - 944*b*c^2*d*e^2*f + 6768*b*
c^2*d^2*e*g - 3384*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4944*b^2*c^6*e^3*f - 835
84*c^8*d^3*g + 12696*b^3*c^5*e^3*g + 16256*c^8*d^2*e*f - 17920*b*c^7*d*e^2*
f + 133504*b*c^7*d^2*e*g - 71232*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6)
 - (d*((16*c^6*(309*b^2*e^2*g + 1016*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e
*f - 1120*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(29*b*e*g - 5
2*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e -
2*c*d)^6)))/e))/e))/e - (8*b*c^4*(653*b^3*e^3*g - 5224*c^3*d^3*g + 281*b^2*
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c*e^3*f + 1016*c^3*d^2*e*f - 1068*b*c^2*d*e^2*f + 7836*b*c^2*d^2*e*g - 3918
*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((5616*b^2*c^6*e^3*f - 99072*c^8*d^3*g + 149
52*b^3*c^5*e^3*g + 18688*c^8*d^2*e*f - 20480*b*c^7*d*e^2*f + 157952*b*c^7*d
^2*e*g - 84096*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(35
1*b^2*e^2*g + 1168*c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1280*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(31*b*e*g - 56*c*d*g + 2*c*e*f)
)/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e)
)/e - (8*b*c^4*(774*b^3*e^3*g - 6192*c^3*d^3*g + 321*b^2*c*e^3*f + 1168*c^3
*d^2*e*f - 1224*b*c^2*d*e^2*f + 9288*b*c^2*d^2*e*g - 4644*b^2*c*d*e^2*g))/(
10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x) + (((d*((6480*b^2*c^6*e^3*f - 143872*c^8*d^3*g + 20976*b^3*c^5*e^3*g
+ 22016*c^8*d^2*e*f - 23872*b*c^7*d*e^2*f + 226816*b*c^7*d^2*e*g - 119376*b
^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(405*b^2*e^2*g + 13
76*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2*d*e*f - 1492*b*c*d*e*g))/(10395*(b*e
- 2*c*d)^6) - (d*((64*c^7*e*(16*b*e*g - 29*c*d*g + c*e*f))/(10395*(b*e - 2*
c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (16*b*c^4*(5
62*b^3*e^3*g - 4496*c^3*d^3*g + 187*b^2*c*e^3*f + 688*c^3*d^2*e*f - 717*b*c
^2*d*e^2*f + 6744*b*c^2*d^2*e*g - 3372*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*
d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((7184
*b^2*c^6*e^3*f - 164864*c^8*d^3*g + 23936*b^3*c^5*e^3*g + 24576*c^8*d^2*e*f
 - 26560*b*c^7*d*e^2*f + 259584*b*c^7*d^2*e*g - 136432*b^2*c^6*d*e^2*g)/(10
395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(449*b^2*e^2*g + 1536*c^2*d^2*g + 68*b
*c*e^2*f - 124*c^2*d*e*f - 1660*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
64*c^7*e*(17*b*e*g - 31*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d
*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (16*b*c^4*(644*b^3*e^3*g - 5152
*c^3*d^3*g + 208*b^2*c*e^3*f + 768*c^3*d^2*e*f - 799*b*c^2*d*e^2*f + 7728*b
*c^2*d^2*e*g - 3864*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8016*b^2*c^6*e^3*f - 19
2512*c^8*d^3*g + 27792*b^3*c^5*e^3*g + 27648*c^8*d^2*e*f - 29760*b*c^7*d*e^
2*f + 302592*b*c^7*d^2*e*g - 158736*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)
^6) - (d*((16*c^6*(167*b^2*e^2*g + 576*c^2*d^2*g + 24*b*c*e^2*f - 44*c^2*d*
e*f - 620*b*c*d*e*g))/(3465*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(18*b*e*g - 33
*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c
*d)^6)))/e))/e))/e - (16*b*c^4*(752*b^3*e^3*g - 6016*c^3*d^3*g + 233*b^2*c*
e^3*f + 864*c^3*d^2*e*f - 897*b*c^2*d*e^2*f + 9024*b*c^2*d^2*e*g - 4512*b^2
*c*d*e^2*g))/(10395*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) + (((d*((8976*b^2*c^6*e^3*f - 229888*c^8*d^3*g + 32928*
b^3*c^5*e^3*g + 31232*c^8*d^2*e*f - 33472*b*c^7*d*e^2*f + 360448*b*c^7*d^2*
e*g - 188592*b^2*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((16*c^6*(561*
b^2*e^2*g + 1952*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 2092*b*c*d*e*g)
)/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(19*b*e*g - 35*c*d*g + c*e*f))/(1
0395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e
- (16*b*c^4*(898*b^3*e^3*g - 7184*c^3*d^3*g + 262*b^2*c*e^3*f + 976*c^3*d^2
*e*f - 1011*b*c^2*d*e^2*f + 10776*b*c^2*d^2*e*g - 5388*b^2*c*d*e^2*g))/(103
95*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x) - (((d*((11936*b^2*c^6*e^3*f - 386048*c^8*d^3*g + 53888*b^3*c^5*e^3*g +
42432*c^8*d^2*e*f - 44992*b*c^7*d*e^2*f + 600288*b*c^7*d^2*e*g - 311392*b^2
*c^6*d*e^2*g)/(10395*e*(b*e - 2*c*d)^6) - (d*((32*c^6*(373*b^2*e^2*g + 1326
*c^2*d^2*g + 43*b*c*e^2*f - 80*c^2*d*e*f - 1406*b*c*d*e*g))/(10395*(b*e - 2
*c*d)^6) - (d*((32*c^7*e*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c
*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (32*b*c^4*(75
4*b^3*e^3*g - 6032*c^3*d^3*g + 176*b^2*c*e^3*f + 663*c^3*d^2*e*f - 683*b*c^
2*d*e^2*f + 9048*b*c^2*d^2*e*g - 4524*b^2*c*d*e^2*g))/(10395*e*(b*e - 2*c*d
)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((484*b
^2*c^4*e^3*f - 3776*c^6*d^3*g + 676*b^3*c^3*e^3*g + 1344*c^6*d^2*e*f - 1616
*b*c^5*d*e^2*f + 6336*b*c^5*d^2*e*g - 3572*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(10*b*e*g - 17*c*d*g + c*
e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (484*b^2*c^4*e^3*g + 160*b*c^5*e^
3*f - 272*c^6*d*e^2*f + 1344*c^6*d^2*e*g - 1616*b*c^5*d*e^2*g)/(693*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^3))))/e))/e - (204*b^3*c^3*e^3*f + 236*b^4*c^2*e
^3*g - 1888*b*c^5*d^3*g + 672*b*c^5*d^2*e*f - 740*b^2*c^4*d*e^2*f + 2832*b^
2*c^4*d^2*e*g - 1416*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((13
12*b^2*c^6*e^4*f + 2112*b^3*c^5*e^4*g + 3648*c^8*d^2*e^2*f - 12480*c^8*d^3*
e*g - 4352*b*c^7*d*e^3*f + 20544*b*c^7*d^2*e^2*g - 11360*b^2*c^6*d*e^3*g)/(
10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(41*b^2*e^2*g + 114*c^2*d^2*g + 14
*b*c*e^2*f - 22*c^2*d*e*f - 136*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
64*c^7*e*(7*b*e*g - 11*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*
e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (12288*c^8*d^4*g + 1080*b^3*c^5*
e^4*f + 1284*b^4*c^4*e^4*g - 4224*c^8*d^3*e*f - 28704*b*c^7*d^3*e*g + 8160*
b*c^7*d^2*e^2*f - 5168*b^2*c^6*d*e^3*f - 9240*b^3*c^5*d*e^3*g + 24624*b^2*c
^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x) - (((d*((2352*b^2*c^6*e^4*f + 4872*b^3*c^5*e^4*g + 7
168*c^8*d^2*e^2*f - 30720*c^8*d^3*e*g - 8192*b*c^7*d*e^3*f + 49664*b*c^7*d^
2*e^2*g - 26880*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*
(147*b^2*e^2*g + 448*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 512*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(19*b*e*g - 32*c*d*g + 2*c*e*f)
)/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e)
)/e - (21312*c^8*d^4*g + 1600*b^3*c^5*e^4*f + 2968*b^4*c^4*e^4*g - 4544*c^8
*d^3*e*f - 55712*b*c^7*d^3*e*g + 10400*b*c^7*d^2*e^2*f - 7248*b^2*c^6*d*e^3
*f - 20472*b^3*c^5*d*e^3*g + 51600*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c
*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((276
8*b^2*c^6*e^4*f + 5976*b^3*c^5*e^4*g + 8576*c^8*d^2*e^2*f - 38016*c^8*d^3*e
*g - 9728*b*c^7*d*e^3*f + 61312*b*c^7*d^2*e^2*g - 33088*b^2*c^6*d*e^3*g)/(1
0395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(173*b^2*e^2*g + 536*c^2*d^2*g + 42
*b*c*e^2*f - 72*c^2*d*e*f - 608*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((
32*c^7*e*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8
*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (41856*c^8*d^4*g + 2648*b^3*c
^5*e^4*f + 4280*b^4*c^4*e^4*g - 11392*c^8*d^3*e*f - 97024*b*c^7*d^3*e*g + 2
1376*b*c^7*d^2*e^2*f - 13120*b^2*c^6*d*e^3*f - 30912*b^3*c^5*d*e^3*g + 8275
2*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((3184*b^2*c^6*e^4*f + 7080*b^3*c^5*e^
4*g + 9984*c^8*d^2*e^2*f - 45312*c^8*d^3*e*g - 11264*b*c^7*d*e^3*f + 72960*
b*c^7*d^2*e^2*g - 39296*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*(
(16*c^6*(199*b^2*e^2*g + 624*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 704*
b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(23*b*e*g - 40*c*d*g +
2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6))
)/e))/e))/e - (50304*c^8*d^4*g + 3096*b^3*c^5*e^4*f + 5136*b^4*c^4*e^4*g -
13440*c^8*d^3*e*f - 116544*b*c^7*d^3*e*g + 25152*b*c^7*d^2*e^2*f - 15392*b^
2*c^6*d*e^3*f - 37104*b^3*c^5*d*e^3*g + 99360*b^2*c^6*d^2*e^2*g)/(10395*e^2
*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) -
 (((d*((3600*b^2*c^6*e^4*f + 8184*b^3*c^5*e^4*g + 11392*c^8*d^2*e^2*f - 526
08*c^8*d^3*e*g - 12800*b*c^7*d*e^3*f + 84608*b*c^7*d^2*e^2*g - 45504*b^2*c^
6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(225*b^2*e^2*g + 712*c
^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 800*b*c*d*e*g))/(10395*(b*e - 2*c*
d)^6) - (d*((32*c^7*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)
^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (58752*c^8*d^4*g
 + 3544*b^3*c^5*e^4*f + 5992*b^4*c^4*e^4*g - 15488*c^8*d^3*e*f - 136064*b*c
^7*d^3*e*g + 28928*b*c^7*d^2*e^2*f - 17664*b^2*c^6*d*e^3*f - 43296*b^3*c^5*
d*e^3*g + 115968*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((4368*b^2*c^6*e^4*f +
12096*b^3*c^5*e^4*g + 14336*c^8*d^2*e^2*f - 80896*c^8*d^3*e*g - 15808*b*c^7
*d*e^3*f + 128512*b*c^7*d^2*e^2*g - 68208*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e
- 2*c*d)^6) - (d*((16*c^6*(273*b^2*e^2*g + 896*c^2*d^2*g + 52*b*c*e^2*f - 9
2*c^2*d*e*f - 988*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(13*b
*e*g - 23*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(
b*e - 2*c*d)^6)))/e))/e))/e - (72576*c^8*d^4*g + 3984*b^3*c^5*e^4*f + 8592*
b^4*c^4*e^4*g - 16000*c^8*d^3*e*f - 177600*b*c^7*d^3*e*g + 31168*b*c^7*d^2*
e^2*f - 19536*b^2*c^6*d*e^3*f - 60624*b^3*c^5*d*e^3*g + 157536*b^2*c^6*d^2*
e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x) + (((d*((4944*b^2*c^6*e^4*f + 14160*b^3*c^5*e^4*g + 16384*c
^8*d^2*e^2*f - 95232*c^8*d^3*e*g - 17984*b*c^7*d*e^3*f + 151040*b*c^7*d^2*e
^2*g - 80016*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(30
9*b^2*e^2*g + 1024*c^2*d^2*g + 56*b*c*e^2*f - 100*c^2*d*e*f - 1124*b*c*d*e*
g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(14*b*e*g - 25*c*d*g + c*e*f))/
(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/
e - (62208*c^8*d^4*g + 3184*b^3*c^5*e^4*f + 9376*b^4*c^4*e^4*g - 7424*c^8*d
^3*e*f - 168320*b*c^7*d^3*e*g + 19328*b*c^7*d^2*e^2*f - 14160*b^2*c^6*d*e^3
*f - 64032*b^3*c^5*d*e^3*g + 159168*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*
c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((55
20*b^2*c^6*e^4*f + 16224*b^3*c^5*e^4*g + 18432*c^8*d^2*e^2*f - 109568*c^8*d
^3*e*g - 20160*b*c^7*d*e^3*f + 173568*b*c^7*d^2*e^2*g - 91824*b^2*c^6*d*e^3
*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(115*b^2*e^2*g + 384*c^2*d^2*
g + 20*b*c*e^2*f - 36*c^2*d*e*f - 420*b*c*d*e*g))/(3465*(b*e - 2*c*d)^6) -
(d*((64*c^7*e*(15*b*e*g - 27*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*
c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (71296*c^8*d^4*g + 3536*b^
3*c^5*e^4*f + 10800*b^4*c^4*e^4*g - 8064*c^8*d^3*e*f - 193344*b*c^7*d^3*e*g
 + 21312*b*c^7*d^2*e^2*f - 15696*b^2*c^6*d*e^3*f - 73712*b^3*c^5*d*e^3*g +
183072*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((5648*b^2*c^6*e^4*f + 16992*b^3*
c^5*e^4*g + 18944*c^8*d^2*e^2*f - 115200*c^8*d^3*e*g - 20672*b*c^7*d*e^3*f
+ 182272*b*c^7*d^2*e^2*g - 96304*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^
6) - (d*((16*c^6*(353*b^2*e^2*g + 1184*c^2*d^2*g + 60*b*c*e^2*f - 108*c^2*d
*e*f - 1292*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(15*b*e*g -
 27*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e -
2*c*d)^6)))/e))/e))/e - (144384*c^8*d^4*g + 6176*b^3*c^5*e^4*f + 14432*b^4*
c^4*e^4*g - 28672*c^8*d^3*e*f - 332032*b*c^7*d^3*e*g + 52480*b*c^7*d^2*e^2*
f - 31408*b^2*c^6*d*e^3*f - 104640*b^3*c^5*d*e^3*g + 281472*b^2*c^6*d^2*e^2
*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((d*((6288*b^2*c^6*e^4*f + 19440*b^3*c^5*e^4*g + 21248*c^8*
d^2*e^2*f - 132352*c^8*d^3*e*g - 23104*b*c^7*d*e^3*f + 209152*b*c^7*d^2*e^2
*g - 110352*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(393
*b^2*e^2*g + 1328*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2*d*e*f - 1444*b*c*d*e*g
))/(10395*(b*e - 2*c*d)^6) - (d*((64*c^7*e*(16*b*e*g - 29*c*d*g + c*e*f))/(
10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e
 - (167168*c^8*d^4*g + 6960*b^3*c^5*e^4*f + 16688*b^4*c^4*e^4*g - 32512*c^8
*d^3*e*f - 384256*b*c^7*d^3*e*g + 59392*b*c^7*d^2*e^2*f - 35472*b^2*c^6*d*e
^3*f - 121024*b^3*c^5*d*e^3*g + 325632*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*(
(7056*b^2*c^6*e^4*f + 22656*b^3*c^5*e^4*g + 24064*c^8*d^2*e^2*f - 155136*c^
8*d^3*e*g - 26048*b*c^7*d*e^3*f + 244736*b*c^7*d^2*e^2*g - 128880*b^2*c^6*d
*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((16*c^6*(441*b^2*e^2*g + 1504*c^2
*d^2*g + 68*b*c*e^2*f - 124*c^2*d*e*f - 1628*b*c*d*e*g))/(10395*(b*e - 2*c*
d)^6) - (d*((64*c^7*e*(17*b*e*g - 31*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6
) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (198144*c^8*d^4*g
+ 7936*b^3*c^5*e^4*f + 19744*b^4*c^4*e^4*g - 37376*c^8*d^3*e*f - 455168*b*c
^7*d^3*e*g + 68096*b*c^7*d^2*e^2*f - 40560*b^2*c^6*d*e^3*f - 143232*b^3*c^5
*d*e^3*g + 385536*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((7968*b^2*c^6*e^4*f +
 29952*b^3*c^5*e^4*g + 27584*c^8*d^2*e^2*f - 209920*c^8*d^3*e*g - 29632*b*c
^7*d*e^3*f + 328672*b*c^7*d^2*e^2*g - 171744*b^2*c^6*d*e^3*g)/(10395*e^2*(b
*e - 2*c*d)^6) - (d*((32*c^6*(249*b^2*e^2*g + 862*c^2*d^2*g + 35*b*c*e^2*f
- 64*c^2*d*e*f - 926*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(3
5*b*e*g - 64*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10
395*(b*e - 2*c*d)^6)))/e))/e))/e - (178176*c^8*d^4*g + 6144*b^3*c^5*e^4*f +
 23040*b^4*c^4*e^4*g - 19456*c^8*d^3*e*f - 451584*b*c^7*d^3*e*g + 42976*b*c
^7*d^2*e^2*f - 28896*b^2*c^6*d*e^3*f - 160512*b^3*c^5*d*e^3*g + 410112*b^2*
c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((9696*b^2*c^6*e^4*f + 38976*b^3*c^5*e^4*g +
 33984*c^8*d^2*e^2*f - 275456*c^8*d^3*e*g - 36288*b*c^7*d*e^3*f + 430176*b*
c^7*d^2*e^2*g - 224160*b^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((
32*c^6*(101*b^2*e^2*g + 354*c^2*d^2*g + 13*b*c*e^2*f - 24*c^2*d*e*f - 378*b
*c*d*e*g))/(3465*(b*e - 2*c*d)^6) - (d*((32*c^7*e*(39*b*e*g - 72*c*d*g + 2*
c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/
e))/e))/e - (143872*c^8*d^4*g + 5120*b^3*c^5*e^4*f + 25920*b^4*c^4*e^4*g -
4608*c^8*d^3*e*f - 423168*b*c^7*d^3*e*g + 23904*b*c^7*d^2*e^2*f - 21024*b^2
*c^6*d*e^3*f - 173504*b^3*c^5*d*e^3*g + 418944*b^2*c^6*d^2*e^2*g)/(10395*e^
2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
- (((d*((8768*b^2*c^6*e^4*f + 33920*b^3*c^5*e^4*g + 30528*c^8*d^2*e^2*f - 2
38592*c^8*d^3*e*g - 32704*b*c^7*d*e^3*f + 373152*b*c^7*d^2*e^2*g - 194752*b
^2*c^6*d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(274*b^2*e^2*g +
954*c^2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 1022*b*c*d*e*g))/(10395*(b*e
- 2*c*d)^6) - (d*((32*c^7*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(10395*(b*e -
2*c*d)^6) - (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (248576*c^
8*d^4*g + 10144*b^3*c^5*e^4*f + 27424*b^4*c^4*e^4*g - 48384*c^8*d^3*e*f - 5
92256*b*c^7*d^3*e*g + 87840*b*c^7*d^2*e^2*f - 52096*b^2*c^6*d*e^3*f - 19561
6*b^3*c^5*d*e^3*g + 515520*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((10752*b^2*c
^6*e^4*f + 45504*b^3*c^5*e^4*g + 37952*c^8*d^2*e^2*f - 323584*c^8*d^3*e*g -
 40384*b*c^7*d*e^3*f + 504352*b*c^7*d^2*e^2*g - 262272*b^2*c^6*d*e^3*g)/(10
395*e^2*(b*e - 2*c*d)^6) - (d*((32*c^6*(336*b^2*e^2*g + 1186*c^2*d^2*g + 41
*b*c*e^2*f - 76*c^2*d*e*f - 1262*b*c*d*e*g))/(10395*(b*e - 2*c*d)^6) - (d*(
(32*c^7*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(10395*(b*e - 2*c*d)^6) - (64*c^
8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (459776*c^8*d^4*g + 12864*b^
3*c^5*e^4*f + 45056*b^4*c^4*e^4*g - 62464*c^8*d^3*e*f - 1050112*b*c^7*d^3*e
*g + 112672*b*c^7*d^2*e^2*f - 66432*b^2*c^6*d*e^3*f - 327808*b^3*c^5*d*e^3*
g + 885504*b^2*c^6*d^2*e^2*g)/(10395*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*b^4*e^3*g - 16*b*c^3*d^3*g +
6*b^3*c*e^3*f + 14*b*c^3*d^2*e*f - 12*b^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f +
24*b^2*c^2*d^2*e*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c
^2*e^3*f - 32*c^4*d^3*g + 10*b^3*c*e^3*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*
f + 62*b*c^3*d^2*e*g - 42*b^2*c^2*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)) + (d*((d*((2*c^3*e^2*(7*b*e*g - 8*c*d*g + 2*c*e*f))/(11*(9*b*e^2 -
18*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d))))/e - (18*b^2*c^2*e^3*g + 14*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*
d^2*e*g - 44*b*c^3*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e))/e
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((1168*b^
2*c^4*e^3*f - 15872*c^6*d^3*g + 2512*b^3*c^3*e^3*g + 3792*c^6*d^2*e*f - 420
8*b*c^5*d*e^2*f + 25704*b*c^5*d^2*e*g - 13904*b^2*c^4*d*e^2*g)/(693*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(29*b*e*g - 52*c*d*g +
2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(69
3*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (1168*b^2*c^4*e^3*g + 232*b*c
^5*e^3*f - 416*c^6*d*e^2*f + 3792*c^6*d^2*e*g - 4208*b*c^5*d*e^2*g)/(693*(5
*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (8*b*c^2*(124*b^3*e^3*g - 992
*c^3*d^3*g + 66*b^2*c*e^3*f + 237*c^3*d^2*e*f - 250*b*c^2*d*e^2*f + 1488*b*
c^2*d^2*e*g - 744*b^2*c*d*e^2*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((1992*b
^2*c^5*e^3*f - 28928*c^7*d^3*g + 4512*b^3*c^4*e^3*g + 6400*c^7*d^2*e*f - 71
36*b*c^6*d*e^2*f + 46592*b*c^6*d^2*e*g - 25080*b^2*c^5*d*e^2*g)/(3465*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g
+ c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(34
65*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (1992*b^2*c^5*e^3*g + 416*b*c
^6*e^3*f - 736*c^7*d*e^2*f + 6400*c^7*d^2*e*g - 7136*b*c^6*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(226*b^3*e^3*g - 180
```

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8*c^3*d^3*g + 112*b^2*c*e^3*f + 400*c^3*d^2*e*f - 423*b*c^2*d*e^2*f + 2712*
b*c^2*d^2*e*g - 1356*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((224
8*b^2*c^5*e^3*f - 33664*c^7*d^3*g + 5224*b^3*c^4*e^3*g + 7296*c^7*d^2*e*f -
 8096*b*c^6*d*e^2*f + 54144*b*c^6*d^2*e*g - 29096*b^2*c^5*d*e^2*g)/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(14*b*e*g - 25*c*d
*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/
(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (2248*b^2*c^5*e^3*g + 448*
b*c^6*e^3*f - 800*c^7*d*e^2*f + 7296*c^7*d^2*e*g - 8096*b*c^6*d*e^2*g)/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(263*b^3*e^3*g -
2104*c^3*d^3*g + 127*b^2*c*e^3*f + 456*c^3*d^2*e*f - 481*b*c^2*d*e^2*f + 31
56*b*c^2*d^2*e*g - 1578*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((
d*((d*((8*c^4*e^2*(14*b*e*g - 25*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(
b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)
))/e - (8*c^3*e*(66*b^2*e^2*g + 211*c^2*d^2*g + 14*b*c*e^2*f - 25*c^2*d*e*f
 - 236*b*c*d*e*g))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e + (528*b^2
*c^3*e^4*f + 992*b^3*c^2*e^4*g + 1688*c^5*d^2*e^2*f - 6040*c^5*d^3*e*g - 18
88*b*c^4*d*e^3*f + 9904*b*c^4*d^2*e^2*g - 5424*b^2*c^3*d*e^3*g)/(99*e*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(71*b^3*e^3*g - 568
*c^3*d^3*g + 53*b^2*c*e^3*f + 187*c^3*d^2*e*f - 199*b*c^2*d*e^2*f + 852*b*c
^2*d^2*e*g - 426*b^2*c*d*e^2*g))/(99*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((d*
((16*c^5*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/
e - (4*c^4*e*(89*b^2*e^2*g + 240*c^2*d^2*g + 32*b*c*e^2*f - 52*c^2*d*e*f -
292*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (356*b^2*c
^4*e^4*f + 476*b^3*c^3*e^4*g + 960*c^6*d^2*e^2*f - 2624*c^6*d^3*e*g - 1168*
b*c^5*d*e^3*f + 4416*b*c^5*d^2*e^2*g - 2500*b^2*c^4*d*e^3*g)/(693*e*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (2432*c^6*d^4*g + 292*b^3*c^3*e^4*f +
244*b^4*c^2*e^4*g - 1152*c^6*d^3*e*f - 5600*b*c^5*d^3*e*g + 2208*b*c^5*d^2*
e^2*f - 1396*b^2*c^4*d*e^3*f - 1768*b^3*c^3*d*e^3*g + 4752*b^2*c^4*d^2*e^2*
g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((16*c^6*e^2*(15*b*e*g - 24*c
*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2
*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(29*b^2*e^2*g
 + 80*c^2*d^2*g + 10*b*c*e^2*f - 16*c^2*d*e*f - 96*b*c*d*e*g))/(1155*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (696*b^2*c^5*e^4*f + 1044*b^3*c^4*e^4*
g + 1920*c^7*d^2*e^2*f - 6016*c^7*d^3*e*g - 2304*b*c^6*d*e^3*f + 9984*b*c^6
*d^2*e^2*g - 5568*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^4)))/e - (6048*c^7*d^4*g + 592*b^3*c^4*e^4*f + 604*b^4*c^3*e^4*g - 2400*c
^7*d^3*e*f - 13904*b*c^6*d^3*e*g + 4560*b*c^6*d^2*e^2*f - 2856*b^2*c^5*d*e^
3*f - 4380*b^3*c^4*d*e^3*g + 11784*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^2 - (((d*((d*((d*((8*c^5*e^2*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(693*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*
d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(112*b^2*e^2*g + 354*c^2*d^2*g + 25*b*
c*e^2*f - 44*c^2*d*e*f - 398*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2
*c*d)^3)))/e + (896*b^2*c^4*e^4*f + 1808*b^3*c^3*e^4*g + 2832*c^6*d^2*e^2*f
 - 11264*c^6*d^3*e*g - 3184*b*c^5*d*e^3*f + 18312*b*c^5*d^2*e^2*g - 9952*b^
2*c^4*d*e^3*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (8000*c^6
*d^4*g + 616*b^3*c^3*e^4*f + 1096*b^4*c^2*e^4*g - 1728*c^6*d^3*e*f - 20768*
b*c^5*d^3*e*g + 4008*b*c^5*d^2*e^2*f - 2800*b^2*c^4*d*e^3*f - 7576*b^3*c^3*
d*e^3*g + 19152*b^2*c^4*d^2*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*(
(d*((8*c^5*e^2*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
3)))/e - (8*c^4*e*(127*b^2*e^2*g + 406*c^2*d^2*g + 27*b*c*e^2*f - 48*c^2*d*
e*f - 454*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (101
6*b^2*c^4*e^4*f + 2104*b^3*c^3*e^4*g + 3248*c^6*d^2*e^2*f - 13184*c^6*d^3*e
*g - 3632*b*c^5*d*e^3*f + 21400*b*c^5*d^2*e^2*g - 11608*b^2*c^4*d*e^3*g)/(6
93*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (15104*c^6*d^4*g + 1128*b^
3*c^3*e^4*f + 1432*b^4*c^2*e^4*g - 5376*c^6*d^3*e*f - 34112*b*c^5*d^3*e*g +
 9688*b*c^5*d^2*e^2*f - 5752*b^2*c^4*d*e^3*f - 10480*b^3*c^3*d*e^3*g + 2851
2*b^2*c^4*d^2*e^2*g)/(693*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((32*c^6*e^
2*(11*b*e*g - 19*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)
 - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5
*e*(185*b^2*e^2*g + 576*c^2*d^2*g + 44*b*c*e^2*f - 76*c^2*d*e*f - 652*b*c*d
*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1480*b^2*c^5*e^4*f
 + 3088*b^3*c^4*e^4*g + 4608*c^7*d^2*e^2*f - 19456*c^7*d^3*e*g - 5216*b*c^6
*d*e^3*f + 31488*b*c^6*d^2*e^2*g - 17048*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2
 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (13120*c^7*d^4*g + 968*b^3*c^4*e^4*f + 18
80*b^4*c^3*e^4*g - 2496*c^7*d^3*e*f - 34720*b*c^6*d^3*e*g + 6048*b*c^6*d^2*
e^2*f - 4328*b^2*c^5*d*e^3*f - 12920*b^3*c^4*d*e^3*g + 32400*b^2*c^5*d^2*e^
2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^6*e^2*(12*b*e*g - 21
*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2
*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(71*b^2*e^2*g
 + 224*c^2*d^2*g + 16*b*c*e^2*f - 28*c^2*d*e*f - 252*b*c*d*e*g))/(1155*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e + (1704*b^2*c^5*e^4*f + 3672*b^3*c^4*e
^4*g + 5376*c^7*d^2*e^2*f - 23296*c^7*d^3*e*g - 6048*b*c^6*d*e^3*f + 37632*
b*c^6*d^2*e^2*g - 20328*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^4)))/e - (27648*c^7*d^4*g + 1816*b^3*c^4*e^4*f + 2656*b^4*c^3*e^4*g
 - 8448*c^7*d^3*e*f - 62720*b*c^6*d^3*e*g + 15360*b*c^6*d^2*e^2*f - 9192*b^
2*c^5*d*e^3*f - 19392*b^3*c^4*d*e^3*g + 52608*b^2*c^5*d^2*e^2*g)/(3465*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g + c*e*f)
)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(241*b^2*e^2*g + 768*c^2*d^2
*g + 52*b*c*e^2*f - 92*c^2*d*e*f - 860*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^4)))/e + (1928*b^2*c^5*e^4*f + 4256*b^3*c^4*e^4*g + 6144*c^
7*d^2*e^2*f - 27136*c^7*d^3*e*g - 6880*b*c^6*d*e^3*f + 43776*b*c^6*d^2*e^2*
g - 23608*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e
 - (32448*c^7*d^4*g + 2088*b^3*c^4*e^4*f + 3112*b^4*c^3*e^4*g - 9792*c^7*d^
3*e*f - 73568*b*c^6*d^3*e*g + 17760*b*c^6*d^2*e^2*f - 10600*b^2*c^5*d*e^3*f
 - 22728*b^3*c^4*d*e^3*g + 61680*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^2 - (((d*((d*((d*((16*c^6*e^2*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(3465*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(208*b^2*e^2*g + 706*c^2*d^2*g + 33*b*
c*e^2*f - 60*c^2*d*e*f - 766*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4)))/e + (3328*b^2*c^5*e^4*f + 10304*b^3*c^4*e^4*g + 11296*c^7*d^2*e^
2*f - 70144*c^7*d^3*e*g - 12256*b*c^6*d*e^3*f + 110864*b*c^6*d^2*e^2*g - 58
496*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (40
576*c^7*d^4*g + 1584*b^3*c^4*e^4*f + 6896*b^4*c^3*e^4*g - 384*c^7*d^3*e*f -
 116032*b*c^6*d^3*e*g + 6224*b*c^6*d^2*e^2*f - 6176*b^2*c^5*d*e^3*f - 46448
*b^3*c^4*d*e^3*g + 113184*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
(((d*((d*((d*((16*c^6*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^4)))/e - (16*c^5*e*(187*b^2*e^2*g + 630*c^2*d^2*g + 31*b*c*e^2*f
 - 56*c^2*d*e*f - 686*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4
)))/e + (2992*b^2*c^5*e^4*f + 8992*b^3*c^4*e^4*g + 10080*c^7*d^2*e^2*f - 60
928*c^7*d^3*e*g - 10976*b*c^6*d*e^3*f + 96432*b*c^6*d^2*e^2*g - 50960*b^2*c
^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (54784*c^7*d
^4*g + 2912*b^3*c^4*e^4*f + 6464*b^4*c^3*e^4*g - 12288*c^7*d^3*e*f - 133888
*b*c^6*d^3*e*g + 23472*b*c^6*d^2*e^2*f - 14480*b^2*c^5*d*e^3*f - 45632*b^3*
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c^4*d*e^3*g + 118656*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*
((d*((d*((16*c^6*e^2*(35*b*e*g - 64*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4)))/e - (16*c^5*e*(233*b^2*e^2*g + 798*c^2*d^2*g + 35*b*c*e^2*f - 64
*c^2*d*e*f - 862*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e
 + (3728*b^2*c^5*e^4*f + 12032*b^3*c^4*e^4*g + 12768*c^7*d^2*e^2*f - 82432*
c^7*d^3*e*g - 13792*b*c^6*d*e^3*f + 130032*b*c^6*d^2*e^2*g - 68464*b^2*c^5*
d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (120576*c^7*d^4
*g + 4896*b^3*c^4*e^4*f + 11104*b^4*c^3*e^4*g - 25344*c^7*d^3*e*f - 269696*
b*c^6*d^3*e*g + 44400*b*c^6*d^2*e^2*f - 25648*b^2*c^5*d*e^3*f - 81696*b^3*c
^4*d*e^3*g + 223680*b^2*c^5*d^2*e^2*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*(
(13952*b^2*c^6*e^4*f + 70784*b^3*c^5*e^4*g + 50112*c^8*d^2*e^2*f - 513344*c
^8*d^3*e*g - 52864*b*c^7*d*e^3*f + 795072*b*c^7*d^2*e^2*g - 410752*b^2*c^6*
d*e^3*g)/(10395*e^2*(b*e - 2*c*d)^6) - (d*((64*c^6*(218*b^2*e^2*g + 783*c^2
*d^2*g + 23*b*c*e^2*f - 43*c^2*d*e*f - 826*b*c*d*e*g))/(10395*(b*e - 2*c*d)
^6) - (d*((64*c^7*e*(23*b*e*g - 43*c*d*g + c*e*f))/(10395*(b*e - 2*c*d)^6)
- (64*c^8*d*e*g)/(10395*(b*e - 2*c*d)^6)))/e))/e))/e - (64*c^4*(b*e - c*d)*
(910*b^3*e^3*g - 7280*c^3*d^3*g + 196*b^2*c*e^3*f + 741*c^3*d^2*e*f - 762*b
*c^2*d*e^2*f + 10920*b*c^2*d^2*e*g - 5460*b^2*c*d*e^2*g))/(10395*e^2*(b*e -
 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*(
(d*((d*((4*c^3*e^2*(9*b*e*g - 15*c*d*g + c*e*f))/(11*(9*b*e^2 - 18*c*d*e)*(
b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e
 - (12*c^2*e*(7*b^2*e^2*g + 17*c^2*d^2*g + 3*b*c*e^2*f - 5*c^2*d*e*f - 22*b
*c*d*e*g))/(11*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d))))/e + (84*b^2*c^2*e^4*f
+ 204*c^4*d^2*e^2*f + 76*b^3*c*e^4*g - 340*c^4*d^3*e*g - 264*b*c^3*d*e^3*f
+ 612*b*c^3*d^2*e^2*g - 372*b^2*c^2*d*e^3*g)/(11*e*(9*b*e^2 - 18*c*d*e)*(b*
e - 2*c*d))))/e - (4*(b*e - c*d)*(6*b^3*e^3*g - 48*c^3*d^3*g + 13*b^2*c*e^3
*f + 37*c^3*d^2*e*f - 44*b*c^2*d*e^2*f + 72*b*c^2*d^2*e*g - 36*b^2*c*d*e^2*
g))/(11*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^5 - (((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 1
26*b^3*c^3*e^3*g + 288*c^6*d^2*e*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g
 - 624*b^2*c^4*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d
*((8*c^5*e^2*(9*b*e*g - 12*c*d*g + 2*c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3))
)/e - (4*c^4*e*(11*b^2*e^2*g + 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 3
2*b*c*d*e*g))/(231*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*
c^3*e^3*f + 38*b^4*c^2*e^3*g - 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^
2*c^4*d*e^2*f + 456*b^2*c^4*d^2*e*g - 228*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^3 + (((d*((420*b^2*c^4*e^3*f - 3200*c^6*d^3*g + 576*b^3*c^3*e^3*g +
 1152*c^6*d^2*e*f - 1392*b*c^5*d*e^2*f + 5376*b*c^5*d^2*e*g - 3036*b^2*c^4*
d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(
9*b*e*g - 15*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3) - (
16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(
35*b^2*e^2*g + 96*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116*b*c*d*e*g))
/(231*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (176*b^3*c^3*e^3*f +
200*b^4*c^2*e^3*g - 1600*b*c^5*d^3*g + 576*b*c^5*d^2*e*f - 636*b^2*c^4*d*e^
2*f + 2400*b^2*c^4*d^2*e*g - 1200*b^3*c^3*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e
)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
3 + (((d*((336*b^2*c^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7
*d^2*e*f - 1024*b*c^6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/
(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(5*b*e*g -
 7*c*d*g + c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e
^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(21*b^2*e^
2*g + 50*c^2*d^2*g + 10*b*c*e^2*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(3465*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^
3*e^3*g - 1008*b*c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512
```

```
*b^2*c^5*d^2*e*g - 756*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((
840*b^2*c^5*e^3*f - 7616*c^7*d^3*g + 1308*b^3*c^4*e^3*g + 2368*c^7*d^2*e*f
- 2816*b*c^6*d*e^2*f + 12608*b*c^6*d^2*e*g - 7008*b^2*c^5*d*e^2*g)/(3465*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(17*b*e*g - 28*c*d
*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g
)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(105*b^2*e^2*g
+ 296*c^2*d^2*g + 34*b*c*e^2*f - 56*c^2*d*e*f - 352*b*c*d*e*g))/(3465*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (356*b^3*c^4*e^3*f + 476*b^4*c^3*
e^3*g - 3808*b*c^6*d^3*g + 1184*b*c^6*d^2*e*f - 1296*b^2*c^5*d*e^2*f + 5712
*b^2*c^5*d^2*e*g - 2856*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*(
(984*b^2*c^5*e^3*f - 9216*c^7*d^3*g + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f
 - 3328*b*c^6*d*e^2*f + 15232*b*c^6*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(19*b*e*g - 32*c*
d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*
g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(123*b^2*e^2*g
 + 352*c^2*d^2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(3465*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (420*b^3*c^4*e^3*f + 576*b^4*c^3
*e^3*g - 4608*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f - 1536*b^2*c^5*d*e^2*f + 691
2*b^2*c^5*d^2*e*g - 3456*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*
((1128*b^2*c^5*e^3*f - 10816*c^7*d^3*g + 1836*b^3*c^4*e^3*g + 3264*c^7*d^2*
e*f - 3840*b*c^6*d*e^2*f + 17856*b*c^6*d^2*e*g - 9888*b^2*c^5*d*e^2*g)/(346
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(21*b*e*g - 36
*c*d*g + 2*c*e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e
^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(47*b^2*e^2
*g + 136*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 160*b*c*d*e*g))/(1155*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (484*b^3*c^4*e^3*f + 676*b^4*c
^3*e^3*g - 5408*b*c^6*d^3*g + 1632*b*c^6*d^2*e*f - 1776*b^2*c^5*d*e^2*f + 8
112*b^2*c^5*d^2*e*g - 4056*b^3*c^4*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((
2*f*(b*e - c*d)^3)/(11*b*e^2 - 22*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*
d*g + 3*c*e*f))/(11*b*e^2 - 22*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d
*g + c*e*f))/(11*b*e^2 - 22*c*d*e) - (2*c^3*d*e^2*g)/(11*b*e^2 - 22*c*d*e))
)/e - (6*c*e*(b*e - c*d)*(b*e*g - c*d*g + c*e*f))/(11*b*e^2 - 22*c*d*e)))/e
))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 + (((d*((d*(
(d*((16*c^5*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(693*(5*b*e^2 - 10*c*d*e)*(b
*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3
)))/e - (16*c^4*e*(122*b^2*e^2*g + 419*c^2*d^2*g + 18*b*c*e^2*f - 33*c^2*d*
e*f - 452*b*c*d*e*g))/(693*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e + (195
2*b^2*c^4*e^4*f + 6208*b^3*c^3*e^4*g + 6704*c^6*d^2*e^2*f - 42416*c^6*d^3*e
*g - 7232*b*c^5*d*e^3*f + 66976*b*c^5*d^2*e^2*g - 35296*b^2*c^4*d*e^3*g)/(6
93*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(283*b
^3*e^3*g - 2264*c^3*d^3*g + 105*b^2*c*e^3*f + 387*c^3*d^2*e*f - 403*b*c^2*d
*e^2*f + 3396*b*c^2*d^2*e*g - 1698*b^2*c*d*e^2*g))/(693*e*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^3 + (((d*((d*((d*((32*c^6*e^2*(21*b*e*g - 39*c*d*g + c*e*f))/(3465*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^4)))/e - (32*c^5*e*(176*b^2*e^2*g + 623*c^2*d^2*g + 21*b*c*e
^2*f - 39*c^2*d*e*f - 662*b*c*d*e*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^4)))/e + (5632*b^2*c^5*e^4*f + 24128*b^3*c^4*e^4*g + 19936*c^7*d^2*e^2*f
 - 171808*c^7*d^3*e*g - 21184*b*c^6*d*e^3*f + 267680*b*c^6*d^2*e^2*g - 1391
36*b^2*c^5*d*e^3*g)/(3465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*
c^3*(b*e - c*d)*(598*b^3*e^3*g - 4784*c^3*d^3*g + 156*b^2*c*e^3*f + 585*c^3
*d^2*e*f - 604*b*c^2*d*e^2*f + 7176*b*c^2*d^2*e*g - 3588*b^2*c*d*e^2*g))/(3
465*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^2 + (((d*((50*b^2*c^3*e^3*f - 160*c^5*d^3*g + 38*b^
3*c^2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 288*b*c^4*d^2*e*g - 178*
b^2*c^3*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((8*c^4
*e^2*(4*b*e*g - 5*c*d*g + c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)
 - (8*c^5*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (50*b^2*
c^3*e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*c^5*d^2*e*g - 136*b*c^4*d*
e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (18*b^3*c^2*e^3*
f - 80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d^2*e*f - 58*b^2*c^3*d*e^2*f
 + 120*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e
- 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((
d*((204*b^2*c^3*e^3*f - 1216*c^5*d^3*g + 236*b^3*c^2*e^3*g + 536*c^5*d^2*e*
f - 664*b*c^4*d*e^2*f + 2092*b*c^4*d^2*e*g - 1212*b^2*c^3*d*e^2*g)/(99*(7*b
*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4*c^4*e^2*(19*b*e*g - 32*c*d*g
 + 2*c*e*f))/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(9
9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e - (204*b^2*c^3*e^3*g + 76*b*c^4
*e^3*f - 128*c^5*d*e^2*f + 536*c^5*d^2*e*g - 664*b*c^4*d*e^2*g)/(99*(7*b*e^
2 - 14*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (84*b^3*c^2*e^3*f - 608*b*c^4*d^3*
g + 76*b^4*c*e^3*g + 268*b*c^4*d^2*e*f - 300*b^2*c^3*d*e^2*f + 912*b^2*c^3*
d^2*e*g - 456*b^3*c^2*d*e^2*g)/(99*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2568*b^2*c
^5*e^3*f - 40192*c^7*d^3*g + 6192*b^3*c^4*e^3*g + 8448*c^7*d^2*e*f - 9312*b
*c^6*d*e^2*f + 64512*b*c^6*d^2*e*g - 34584*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(15*b*e*g - 27*c*d*g + c*
e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(107*b^2*e^2*g + 352*c^2
*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f - 388*b*c*d*e*g))/(1155*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(314*b^3*e^3*g - 2512*c^3*d^3*g +
 146*b^2*c*e^3*f + 528*c^3*d^2*e*f - 555*b*c^2*d*e^2*f + 3768*b*c^2*d^2*e*g
 - 1884*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((4192*b^2*c^5*e^3
*f - 99328*c^7*d^3*g + 14368*b^3*c^4*e^3*g + 14496*c^7*d^2*e*f - 15584*b*c^
6*d*e^2*f + 156240*b*c^6*d^2*e*g - 82016*b^2*c^5*d*e^2*g)/(3465*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(37*b*e*g - 68*c*d*g + 2*c*
e*f))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(3465*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(262*b^2*e^2*g + 906*c^
2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 974*b*c*d*e*g))/(3465*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (16*b*c^3*(388*b^3*e^3*g - 3104*c^3*d^3*g
 + 122*b^2*c*e^3*f + 453*c^3*d^2*e*f - 470*b*c^2*d*e^2*f + 4656*b*c^2*d^2*e
*g - 2328*b^2*c*d*e^2*g))/(3465*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2207 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{9009e^2(d+ex)^7(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg}{1287e^2(d+ex)^8(2cd-be)^3}$$

```
[Out] -2/13*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^10-2/143*(-13*b*e*g+20*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(7/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^9-8/1287*c*(-13*b*e*g+20*c*d*g+6*c*e*f)*
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^8-16/9009
*c^2*(-13*b*e*g+20*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^
2/(-b*e+2*c*d)^4/(e*x+d)^7
```

Rubi [A] time = 0.44, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg+6cef)}{9009e^2(d+ex)^7(2cd-be)^4}-\frac{8c\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-13beg+20cdg}{1287e^2(d+ex)^8(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^10,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(13*e^2*(2*c*d
 - b*e)*(d + e*x)^10) - (2*(6*c*e*f + 20*c*d*g - 13*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(143*e^2*(2*c*d - b*e)^2*(d + e*x)^9) - (8*c*(
6*c*e*f + 20*c*d*g - 13*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))
/(1287*e^2*(2*c*d - b*e)^3*(d + e*x)^8) - (16*c^2*(6*c*e*f + 20*c*d*g - 13*
b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(9009*e^2*(2*c*d - b*e)
^4*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{10}}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} + \frac{(6cef+20cdg-1}{1}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-}{143}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-}{143}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13e^2(2cd-be)(d+ex)^{10}} - \frac{2(6cef+20cdg-}{143}$$

Mathematica [A] time = 0.22, size = 250, normalized size = 0.88

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,\left(-63b^3e^3(2dg+11ef+13egx)+14b^2ce^2\left(53d^2g+4de(81f+94gx\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^10,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-63*b^3
*e^3*(11*e*f + 2*d*g + 13*e*g*x) + 14*b^2*c*e^2*(53*d^2*g + e^2*x*(27*f + 2
6*g*x) + 4*d*e*(81*f + 94*g*x)) + 8*c^3*(97*d^4*g + 6*e^4*f*x^3 + 20*d*e^3*
x^2*(3*f + g*x) + 10*d^3*e*(93*f + 97*g*x) + d^2*e^2*x*(291*f + 200*g*x)) -
 4*b*c^2*e*(348*d^3*g + 2*e^3*x^2*(21*f + 13*g*x) + 2*d*e^2*x*(231*f + 200*
g*x) + d^2*e*(2499*f + 2801*g*x))))/(9009*e^2*(-2*c*d + b*e)^4*(d + e*x)^7)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.11, size = 382, normalized size = 1.34

$$-\frac{2\,(cex+be-cd)\left(104b\,c^2e^4g\,x^3-160c^3d\,e^3g\,x^3-48c^3e^4f\,x^3-364b^2c\,e^4g\,x^2+1600b\,c^2d\,e^3g\,x^2+168b\,c^2e^4f\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x)
```

```
[Out] -2/9009*(c*e*x+b*e-c*d)*(104*b*c^2*e^4*g*x^3-160*c^3*d*e^3*g*x^3-48*c^3*e^4
*f*x^3-364*b^2*c*e^4*g*x^2+1600*b*c^2*d*e^3*g*x^2+168*b*c^2*e^4*f*x^2-1600*
c^3*d^2*e^2*g*x^2-480*c^3*d*e^3*f*x^2+819*b^3*e^4*g*x-5264*b^2*c*d*e^3*g*x-
378*b^2*c*e^4*f*x+11204*b*c^2*d^2*e^2*g*x+1848*b*c^2*d*e^3*f*x-7760*c^3*d^3
*e*g*x-2328*c^3*d^2*e^2*f*x+126*b^3*d*e^3*g+693*b^3*e^4*f-742*b^2*c*d^2*e^2
*g-4536*b^2*c*d*e^3*f+1392*b*c^2*d^3*e*g+9996*b*c^2*d^2*e^2*f-776*c^3*d^4*g
-7440*c^3*d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^9/e^2/(b^
4*e^4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10,x, algo
rithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[B]** time = 105.18, size = 51074, normalized size = 179.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^10,x)
```

```
[Out] (((d*((2016*b^2*c^7*e^3*f - 17664*c^9*d^3*g + 3040*b^3*c^6*e^3*g + 5376*c^9
*d^2*e*f - 6528*b*c^8*d*e^2*f + 29184*b*c^8*d^2*e*g - 16224*b^2*c^7*d*e^2*g
)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(21*b^2*e^2*g + 56*c^2*d^2*g + 8
*b*c*e^2*f - 12*c^2*d*e*f - 68*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((1
28*c^8*e*(6*b*e*g - 9*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d
*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(69*b^3*e^3*g - 552*
c^3*d^3*g + 52*b^2*c*e^3*f + 168*c^3*d^2*e*f - 186*b*c^2*d*e^2*f + 828*b*c^
2*d^2*e*g - 414*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((d*((d*((4*c^4*e^2*(19*b*e*
g - 32*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) - (8*c^
5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (4*c^3*e*(51*b^
2*e^2*g + 134*c^2*d^2*g + 19*b*c*e^2*f - 32*c^2*d*e*f - 166*b*c*d*e*g))/(14
3*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (204*b^2*c^3*e^4*f + 236*b^3*
c^2*e^4*g + 536*c^5*d^2*e^2*f - 1216*c^5*d^3*e*g - 664*b*c^4*d*e^3*f + 2092
*b*c^4*d^2*e^2*g - 1212*b^2*c^3*d*e^3*g)/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e -
 2*c*d)^2)))/e - (960*c^5*d^4*g + 156*b^3*c^2*e^4*f + 100*b^4*c*e^4*g - 576
*c^5*d^3*e*f - 2240*b*c^4*d^3*e*g + 1132*b*c^4*d^2*e^2*f - 732*b^2*c^3*d*e^
3*f - 720*b^3*c^2*d*e^3*g + 1920*b^2*c^3*d^2*e^2*g)/(143*e*(9*b*e^2 - 18*c*
d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^5 - (((d*((3776*b^2*c^7*e^3*f - 44544*c^9*d^3*g + 7200*b^3*c^6*e^3*g + 1
1136*c^9*d^2*e*f - 12928*b*c^8*d*e^2*f + 72384*b*c^8*d^2*e*g - 39424*b^2*c^
7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(59*b^2*e^2*g + 174*c^2
*d^2*g + 17*b*c*e^2*f - 28*c^2*d*e*f - 202*b*c*d*e*g))/(135135*(b*e - 2*c*d
)^7) - (d*((64*c^8*e*(17*b*e*g - 28*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(87*
b^3*e^3*g - 696*c^3*d^3*g + 51*b^2*c*e^3*f + 174*c^3*d^2*e*f - 188*b*c^2*d*
e^2*f + 1044*b*c^2*d^2*e*g - 522*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7)
```

```
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((5184*b^2*
c^7*e^3*f - 66048*c^9*d^3*g + 10528*b^3*c^6*e^3*g + 15744*c^9*d^2*e*f - 180
48*b*c^8*d*e^2*f + 106944*b*c^8*d^2*e*g - 57984*b^2*c^7*d*e^2*g)/(135135*e*
(b*e - 2*c*d)^7) - (d*((64*c^7*(27*b^2*e^2*g + 82*c^2*d^2*g + 7*b*c*e^2*f -
 12*c^2*d*e*f - 94*b*c*d*e*g))/(45045*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(21*
b*e*g - 36*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(129*b^3*e^3*g - 1032*c^3*d^3
*g + 71*b^2*c*e^3*f + 246*c^3*d^2*e*f - 264*b*c^2*d*e^2*f + 1548*b*c^2*d^2*
e*g - 774*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((4480*b^2*c^7*e^3*f - 55296*c^9*d
^3*g + 8864*b^3*c^6*e^3*g + 13440*c^9*d^2*e*f - 15488*b*c^8*d*e^2*f + 89664
*b*c^8*d^2*e*g - 48704*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((6
4*c^7*(70*b^2*e^2*g + 210*c^2*d^2*g + 19*b*c*e^2*f - 32*c^2*d*e*f - 242*b*c
*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(19*b*e*g - 32*c*d*g + 2*
c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)
))/e))/e))/e - (32*b*c^5*(108*b^3*e^3*g - 864*c^3*d^3*g + 61*b^2*c*e^3*f +
210*c^3*d^2*e*f - 226*b*c^2*d*e^2*f + 1296*b*c^2*d^2*e*g - 648*b^2*c*d*e^2*
g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((d*((5888*b^2*c^7*e^3*f - 76800*c^9*d^3*g + 12192*b^3*c^6*e
^3*g + 18048*c^9*d^2*e*f - 20608*b*c^8*d*e^2*f + 124224*b*c^8*d^2*e*g - 672
64*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(92*b^2*e^2*g
+ 282*c^2*d^2*g + 23*b*c*e^2*f - 40*c^2*d*e*f - 322*b*c*d*e*g))/(135135*(b*
e - 2*c*d)^7) - (d*((64*c^8*e*(23*b*e*g - 40*c*d*g + 2*c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b
*c^5*(150*b^3*e^3*g - 1200*c^3*d^3*g + 81*b^2*c*e^3*f + 282*c^3*d^2*e*f - 3
02*b*c^2*d*e^2*f + 1800*b*c^2*d^2*e*g - 900*b^2*c*d*e^2*g))/(135135*e*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((6592*b^2*c^7*e^3*f - 87552*c^9*d^3*g + 13856*b^3*c^6*e^3*g + 20352*c^9*d^
2*e*f - 23168*b*c^8*d*e^2*f + 141504*b*c^8*d^2*e*g - 76544*b^2*c^7*d*e^2*g)
/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(103*b^2*e^2*g + 318*c^2*d^2*g +
25*b*c*e^2*f - 44*c^2*d*e*f - 362*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d
*((64*c^8*e*(25*b*e*g - 44*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (12
8*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(171*b^3*e^3*
g - 1368*c^3*d^3*g + 91*b^2*c*e^3*f + 318*c^3*d^2*e*f - 340*b*c^2*d*e^2*f +
 2052*b*c^2*d^2*e*g - 1026*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((7360*b^2*c^7*e^
3*f - 122496*c^9*d^3*g + 18624*b^3*c^6*e^3*g + 23680*c^9*d^2*e*f - 26368*b*
c^8*d*e^2*f + 195584*b*c^8*d^2*e*g - 104384*b^2*c^7*d*e^2*g)/(135135*e*(b*e
 - 2*c*d)^7) - (d*((64*c^7*(115*b^2*e^2*g + 370*c^2*d^2*g + 24*b*c*e^2*f -
42*c^2*d*e*f - 412*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(1
2*b*e*g - 21*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(957*b^3*e^3*g - 7656*c^3*d^3*
g + 414*b^2*c*e^3*f + 1480*c^3*d^2*e*f - 1564*b*c^2*d*e^2*f + 11484*b*c^2*d
^2*e*g - 5742*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^
2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8384*b^2*c^7*e^3*f - 144768*
c^9*d^3*g + 21888*b^3*c^6*e^3*g + 27264*c^9*d^2*e*f - 30208*b*c^8*d*e^2*f +
 230784*b*c^8*d^2*e*g - 122944*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7)
- (d*((64*c^7*(131*b^2*e^2*g + 426*c^2*d^2*g + 26*b*c*e^2*f - 46*c^2*d*e*f
- 472*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(13*b*e*g - 23*
c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2
*c*d)^7)))/e))/e))/e - (8*b*c^5*(1131*b^3*e^3*g - 9048*c^3*d^3*g + 474*b^2*
c*e^3*f + 1704*c^3*d^2*e*f - 1796*b*c^2*d*e^2*f + 13572*b*c^2*d^2*e*g - 678
6*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x) + (((d*((9408*b^2*c^7*e^3*f - 167040*c^9*d^3*g +
25152*b^3*c^6*e^3*g + 30848*c^9*d^2*e*f - 34048*b*c^8*d*e^2*f + 265984*b*c^
8*d^2*e*g - 141504*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^
7*(147*b^2*e^2*g + 482*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2*d*e*f - 532*b*c*d*
e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*g - 25*c*d*g + c*e*
f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e
))/e))/e - (8*b*c^5*(1305*b^3*e^3*g - 10440*c^3*d^3*g + 534*b^2*c*e^3*f + 1
928*c^3*d^2*e*f - 2028*b*c^2*d*e^2*f + 15660*b*c^2*d^2*e*g - 7830*b^2*c*d*e
^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) + (((d*((9664*b^2*c^7*e^3*f - 176256*c^9*d^3*g + 26432*b^3*c
^6*e^3*g + 31872*c^9*d^2*e*f - 35072*b*c^8*d*e^2*f + 280320*b*c^8*d^2*e*g -
 148928*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(151*b^2*
e^2*g + 498*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2*d*e*f - 548*b*c*d*e*g))/(1351
35*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*g - 25*c*d*g + c*e*f))/(135135
*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e -
(8*b*c^5*(1377*b^3*e^3*g - 11016*c^3*d^3*g + 550*b^2*c*e^3*f + 1992*c^3*d^2
*e*f - 2092*b*c^2*d*e^2*f + 16524*b*c^2*d^2*e*g - 8262*b^2*c*d*e^2*g))/(135
135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((10432*b^2*c^7*e^3*f - 189312*c^9*d^3*g + 28416*b^3*c^6*e^3*g +
 34432*c^9*d^2*e*f - 37888*b*c^8*d*e^2*f + 301184*b*c^8*d^2*e*g - 160064*b^
2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(163*b^2*e^2*g + 53
8*c^2*d^2*g + 30*b*c*e^2*f - 54*c^2*d*e*f - 592*b*c*d*e*g))/(135135*(b*e -
2*c*d)^7) - (d*((128*c^8*e*(15*b*e*g - 27*c*d*g + c*e*f))/(135135*(b*e - 2*
c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(
1479*b^3*e^3*g - 11832*c^3*d^3*g + 594*b^2*c*e^3*f + 2152*c^3*d^2*e*f - 226
0*b*c^2*d*e^2*f + 17748*b*c^2*d^2*e*g - 8874*b^2*c*d*e^2*g))/(135135*e*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((10816*b^2*c^7*e^3*f - 203136*c^9*d^3*g + 30336*b^3*c^6*e^3*g + 35968*c^9
*d^2*e*f - 39424*b*c^8*d*e^2*f + 322688*b*c^8*d^2*e*g - 171200*b^2*c^7*d*e^
2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(169*b^2*e^2*g + 562*c^2*d^2*
g + 30*b*c*e^2*f - 54*c^2*d*e*f - 616*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7)
- (d*((128*c^8*e*(15*b*e*g - 27*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) -
(128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1587*b^3*e
^3*g - 12696*c^3*d^3*g + 618*b^2*c*e^3*f + 2248*c^3*d^2*e*f - 2356*b*c^2*d*
e^2*f + 19044*b*c^2*d^2*e*g - 9522*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((11968*b
^2*c^7*e^3*f - 230016*c^9*d^3*g + 34240*b^3*c^6*e^3*g + 40064*c^9*d^2*e*f -
 43776*b*c^8*d*e^2*f + 365056*b*c^8*d^2*e*g - 193472*b^2*c^7*d*e^2*g)/(1351
35*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(187*b^2*e^2*g + 626*c^2*d^2*g + 32*b*c
*e^2*f - 58*c^2*d*e*f - 684*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128
*c^8*e*(16*b*e*g - 29*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d
*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1797*b^3*e^3*g - 143
76*c^3*d^3*g + 686*b^2*c*e^3*f + 2504*c^3*d^2*e*f - 2620*b*c^2*d*e^2*f + 21
564*b*c^2*d^2*e*g - 10782*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((12224*b^2*c^7*e^
3*f - 239232*c^9*d^3*g + 35520*b^3*c^6*e^3*g + 41088*c^9*d^2*e*f - 44800*b*
c^8*d*e^2*f + 379392*b*c^8*d^2*e*g - 200896*b^2*c^7*d*e^2*g)/(135135*e*(b*e
 - 2*c*d)^7) - (d*((64*c^7*(191*b^2*e^2*g + 642*c^2*d^2*g + 32*b*c*e^2*f -
58*c^2*d*e*f - 700*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(1
6*b*e*g - 29*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(1869*b^3*e^3*g - 14952*c^3*d^
3*g + 702*b^2*c*e^3*f + 2568*c^3*d^2*e*f - 2684*b*c^2*d*e^2*f + 22428*b*c^2
*d^2*e*g - 11214*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((13504*b^2*c^7*e^3*f - 270
720*c^9*d^3*g + 40064*b^3*c^6*e^3*g + 45696*c^9*d^2*e*f - 49664*b*c^8*d*e^2
*f + 428928*b*c^8*d^2*e*g - 226880*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)
^7) - (d*((64*c^7*(211*b^2*e^2*g + 714*c^2*d^2*g + 34*b*c*e^2*f - 62*c^2*d*
e*f - 776*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(17*b*e*g -
 31*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e
 - 2*c*d)^7)))/e))/e))/e - (8*b*c^5*(2115*b^3*e^3*g - 16920*c^3*d^3*g + 778
*b^2*c*e^3*f + 2856*c^3*d^2*e*f - 2980*b*c^2*d*e^2*f + 25380*b*c^2*d^2*e*g
- 12690*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((15040*b^2*c^7*e^3*f - 311424*c^9*d
^3*g + 45888*b^3*c^6*e^3*g + 51328*c^9*d^2*e*f - 55552*b*c^8*d*e^2*f + 4928
00*b*c^8*d^2*e*g - 260288*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*
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((64*c^7*(235*b^2*e^2*g + 802*c^2*d^2*g + 36*b*c*e^2*f - 66*c^2*d*e*f - 868
*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(18*b*e*g - 33*c*d*g
 + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)
^7)))/e))/e))/e - (8*b*c^5*(2433*b^3*e^3*g - 19464*c^3*d^3*g + 870*b^2*c*e^
3*f + 3208*c^3*d^2*e*f - 3340*b*c^2*d*e^2*f + 29196*b*c^2*d^2*e*g - 14598*b
^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x) - (((d*((13984*b^2*c^7*e^3*f - 335616*c^9*d^3*g + 48
432*b^3*c^6*e^3*g + 47872*c^9*d^2*e*f - 51712*b*c^8*d*e^2*f + 527360*b*c^8*
d^2*e*g - 276608*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*
(437*b^2*e^2*g + 1496*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2*d*e*f - 1616*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(33*b*e*g - 60*c*d*g + 2*c*
e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))
/e))/e))/e - (16*b*c^5*(1311*b^3*e^3*g - 10488*c^3*d^3*g + 405*b^2*c*e^3*f
+ 1496*c^3*d^2*e*f - 1556*b*c^2*d*e^2*f + 15732*b*c^2*d^2*e*g - 7866*b^2*c*
d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(d + e*x) - (((d*((15456*b^2*c^7*e^3*f - 382976*c^9*d^3*g + 55056*b
^3*c^6*e^3*g + 53248*c^9*d^2*e*f - 57344*b*c^8*d*e^2*f + 601088*b*c^8*d^2*e
*g - 314880*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(483*
b^2*e^2*g + 1664*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1792*b*c*d*e*g)
)/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d*g + 2*c*e*f))
/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/
e))/e - (16*b*c^5*(1496*b^3*e^3*g - 11968*c^3*d^3*g + 449*b^2*c*e^3*f + 166
4*c^3*d^2*e*f - 1728*b*c^2*d*e^2*f + 17952*b*c^2*d^2*e*g - 8976*b^2*c*d*e^2
*g))/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) - (((d*((16928*b^2*c^7*e^3*f - 430336*c^9*d^3*g + 61680*b^3*c^
6*e^3*g + 58624*c^9*d^2*e*f - 62976*b*c^8*d*e^2*f + 674816*b*c^8*d^2*e*g -
353152*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(529*b^2*e
^2*g + 1832*c^2*d^2*g + 74*b*c*e^2*f - 136*c^2*d*e*f - 1968*b*c*d*e*g))/(13
5135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (16*b*c^5*(1681*b^3*e^3*g - 13448*c^3*d^3*g + 493*b^2*c*e^3*f + 1832*c^3
*d^2*e*f - 1900*b*c^2*d*e^2*f + 20172*b*c^2*d^2*e*g - 10086*b^2*c*d*e^2*g))
/(135135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) - (((d*((17184*b^2*c^7*e^3*f - 444672*c^9*d^3*g + 63600*b^3*c^6*e^
3*g + 59648*c^9*d^2*e*f - 64000*b*c^8*d*e^2*f + 696832*b*c^8*d^2*e*g - 3644
16*b^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(537*b^2*e^2*g
 + 1864*c^2*d^2*g + 74*b*c*e^2*f - 136*c^2*d*e*f - 2000*b*c*d*e*g))/(135135
*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135135*
(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (
16*b*c^5*(1737*b^3*e^3*g - 13896*c^3*d^3*g + 501*b^2*c*e^3*f + 1864*c^3*d^2
*e*f - 1932*b*c^2*d*e^2*f + 20844*b*c^2*d^2*e*g - 10422*b^2*c*d*e^2*g))/(13
5135*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) - (((d*((18784*b^2*c^7*e^3*f - 499200*c^9*d^3*g + 71184*b^3*c^6*e^3*g
+ 65536*c^9*d^2*e*f - 70144*b*c^8*d*e^2*f + 781568*b*c^8*d^2*e*g - 408320*b
^2*c^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(587*b^2*e^2*g + 2
048*c^2*d^2*g + 78*b*c*e^2*f - 144*c^2*d*e*f - 2192*b*c*d*e*g))/(135135*(b*
e - 2*c*d)^7) - (d*((64*c^8*e*(39*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b
*c^5*(1950*b^3*e^3*g - 15600*c^3*d^3*g + 549*b^2*c*e^3*f + 2048*c^3*d^2*e*f
 - 2120*b*c^2*d*e^2*f + 23400*b*c^2*d^2*e*g - 11700*b^2*c*d*e^2*g))/(135135
*e*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
 - (((d*((19168*b^2*c^7*e^3*f - 526848*c^9*d^3*g + 74832*b^3*c^6*e^3*g + 67
072*c^9*d^2*e*f - 71680*b*c^8*d*e^2*f + 823808*b*c^8*d^2*e*g - 429824*b^2*c
^7*d*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(599*b^2*e^2*g + 2096*
c^2*d^2*g + 78*b*c*e^2*f - 144*c^2*d*e*f - 2240*b*c*d*e*g))/(135135*(b*e -
2*c*d)^7) - (d*((64*c^8*e*(39*b*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5
*(2058*b^3*e^3*g - 16464*c^3*d^3*g + 561*b^2*c*e^3*f + 2096*c^3*d^2*e*f - 2
168*b*c^2*d*e^2*f + 24696*b*c^2*d^2*e*g - 12348*b^2*c*d*e^2*g))/(135135*e*(
b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (
((d*((20640*b^2*c^7*e^3*f - 568064*c^9*d^3*g + 80688*b^3*c^6*e^3*g + 72448*
c^9*d^2*e*f - 77312*b*c^8*d*e^2*f + 888320*b*c^8*d^2*e*g - 463488*b^2*c^7*d
*e^2*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(645*b^2*e^2*g + 2264*c^2*
d^2*g + 82*b*c*e^2*f - 152*c^2*d*e*f - 2416*b*c*d*e*g))/(135135*(b*e - 2*c*
d)^7) - (d*((64*c^8*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d
)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(22
19*b^3*e^3*g - 17752*c^3*d^3*g + 605*b^2*c*e^3*f + 2264*c^3*d^2*e*f - 2340*
b*c^2*d*e^2*f + 26628*b*c^2*d^2*e*g - 13314*b^2*c*d*e^2*g))/(135135*e*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((20896*b^2*c^7*e^3*f - 590592*c^9*d^3*g + 83632*b^3*c^6*e^3*g + 73472*c^9*
d^2*e*f - 78336*b*c^8*d*e^2*f + 922624*b*c^8*d^2*e*g - 480896*b^2*c^7*d*e^2
*g)/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(653*b^2*e^2*g + 2296*c^2*d^2*
g + 82*b*c*e^2*f - 152*c^2*d*e*f - 2448*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7
) - (d*((64*c^8*e*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7)
 - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(2307*b
^3*e^3*g - 18456*c^3*d^3*g + 613*b^2*c*e^3*f + 2296*c^3*d^2*e*f - 2372*b*c^
2*d*e^2*f + 27684*b*c^2*d^2*e*g - 13842*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*
c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((22
880*b^2*c^7*e^3*f - 670720*c^9*d^3*g + 94608*b^3*c^6*e^3*g + 80896*c^9*d^2*
e*f - 86016*b*c^8*d*e^2*f + 1046528*b*c^8*d^2*e*g - 544768*b^2*c^7*d*e^2*g)
/(135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(715*b^2*e^2*g + 2528*c^2*d^2*g +
 86*b*c*e^2*f - 160*c^2*d*e*f - 2688*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
 (d*((64*c^8*e*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) -
(128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(2620*b^3*
e^3*g - 20960*c^3*d^3*g + 673*b^2*c*e^3*f + 2528*c^3*d^2*e*f - 2608*b*c^2*d
*e^2*f + 31440*b*c^2*d^2*e*g - 15720*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d
)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((25120
*b^2*c^7*e^3*f - 773376*c^9*d^3*g + 108528*b^3*c^6*e^3*g + 89344*c^9*d^2*e*
f - 94720*b*c^8*d*e^2*f + 1204736*b*c^8*d^2*e*g - 626048*b^2*c^7*d*e^2*g)/(
135135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(785*b^2*e^2*g + 2792*c^2*d^2*g + 9
0*b*c*e^2*f - 168*c^2*d*e*f - 2960*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (
d*((64*c^8*e*(45*b*e*g - 84*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (1
28*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (16*b*c^5*(3021*b^3*e^
3*g - 24168*c^3*d^3*g + 741*b^2*c*e^3*f + 2792*c^3*d^2*e*f - 2876*b*c^2*d*e
^2*f + 36252*b*c^2*d^2*e*g - 18126*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((25248*b
^2*c^7*e^3*f - 862208*c^9*d^3*g + 119712*b^3*c^6*e^3*g + 90112*c^9*d^2*e*f
 - 95360*b*c^8*d*e^2*f + 1338368*b*c^8*d^2*e*g - 693024*b^2*c^7*d*e^2*g)/(13
5135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(789*b^2*e^2*g + 2816*c^2*d^2*g + 88*
b*c*e^2*f - 164*c^2*d*e*f - 2980*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*
((128*c^8*e*(22*b*e*g - 41*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*
c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(1684*b^3*e^3*g
 - 13472*c^3*d^3*g + 373*b^2*c*e^3*f + 1408*c^3*d^2*e*f - 1449*b*c^2*d*e^2*
f + 20208*b*c^2*d^2*e*g - 10104*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((27296*b^2*
c^7*e^3*f - 957952*c^9*d^3*g + 132672*b^3*c^6*e^3*g + 97792*c^9*d^2*e*f - 1
03296*b*c^8*d*e^2*f + 1485824*b*c^8*d^2*e*g - 768736*b^2*c^7*d*e^2*g)/(1351
35*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(853*b^2*e^2*g + 3056*c^2*d^2*g + 92*b*
c*e^2*f - 172*c^2*d*e*f - 3228*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((
128*c^8*e*(23*b*e*g - 43*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(1871*b^3*e^3*g -
 14968*c^3*d^3*g + 404*b^2*c*e^3*f + 1528*c^3*d^2*e*f - 1571*b*c^2*d*e^2*f
+ 22452*b*c^2*d^2*e*g - 11226*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((29600*b^2*c^
7*e^3*f - 1075200*c^9*d^3*g + 148448*b^3*c^6*e^3*g + 106496*c^9*d^2*e*f - 1
12256*b*c^8*d*e^2*f + 1666048*b*c^8*d^2*e*g - 861088*b^2*c^7*d*e^2*g)/(1351
35*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(925*b^2*e^2*g + 3328*c^2*d^2*g + 96*b*
c*e^2*f - 180*c^2*d*e*f - 3508*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((
128*c^8*e*(24*b*e*g - 45*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^
9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2100*b^3*e^3*g -
 16800*c^3*d^3*g + 439*b^2*c*e^3*f + 1664*c^3*d^2*e*f - 1709*b*c^2*d*e^2*f
+ 25200*b*c^2*d^2*e*g - 12600*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((32160*b^2*c^
7*e^3*f - 1220096*c^9*d^3*g + 167808*b^3*c^6*e^3*g + 116224*c^9*d^2*e*f - 1
22240*b*c^8*d*e^2*f + 1888256*b*c^8*d^2*e*g - 974688*b^2*c^7*d*e^2*g)/(1351
35*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(1005*b^2*e^2*g + 3632*c^2*d^2*g + 100*
b*c*e^2*f - 188*c^2*d*e*f - 3820*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*
((128*c^8*e*(25*b*e*g - 47*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*
c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2383*b^3*e^3*g
 - 19064*c^3*d^3*g + 478*b^2*c*e^3*f + 1816*c^3*d^2*e*f - 1863*b*c^2*d*e^2*
f + 28596*b*c^2*d^2*e*g - 14298*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((34976*b^2*
c^7*e^3*f - 1398784*c^9*d^3*g + 191520*b^3*c^6*e^3*g + 126976*c^9*d^2*e*f -
 133248*b*c^8*d*e^2*f + 2161664*b*c^8*d^2*e*g - 1114144*b^2*c^7*d*e^2*g)/(1
35135*e*(b*e - 2*c*d)^7) - (d*((32*c^7*(1093*b^2*e^2*g + 3968*c^2*d^2*g + 1
04*b*c*e^2*f - 196*c^2*d*e*f - 4164*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
(d*((128*c^8*e*(26*b*e*g - 49*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (1
28*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (32*b*c^5*(2732*b^3*e^
3*g - 21856*c^3*d^3*g + 521*b^2*c*e^3*f + 1984*c^3*d^2*e*f - 2033*b*c^2*d*e
^2*f + 32784*b*c^2*d^2*e*g - 16392*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*d)^
7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((43136*b
^2*c^7*e^3*f - 2033664*c^9*d^3*g + 274880*b^3*c^6*e^3*g + 158336*c^9*d^2*e*
f - 165248*b*c^8*d*e^2*f + 3129664*b*c^8*d^2*e*g - 1606144*b^2*c^7*d*e^2*g)
/(135135*e*(b*e - 2*c*d)^7) - (d*((64*c^7*(674*b^2*e^2*g + 2474*c^2*d^2*g +
 57*b*c*e^2*f - 108*c^2*d*e*f - 2582*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
 (d*((64*c^8*e*(57*b*e*g - 108*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) -
 (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (64*b*c^5*(1986*b^3
*e^3*g - 15888*c^3*d^3*g + 323*b^2*c*e^3*f + 1237*c^3*d^2*e*f - 1264*b*c^2*
d*e^2*f + 23832*b*c^2*d^2*e*g - 11916*b^2*c*d*e^2*g))/(135135*e*(b*e - 2*c*
d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((484*
b^2*c^4*e^3*f - 3776*c^6*d^3*g + 676*b^3*c^3*e^3*g + 1344*c^6*d^2*e*f - 161
6*b*c^5*d*e^2*f + 6336*b*c^5*d^2*e*g - 3572*b^2*c^4*d*e^2*g)/(1287*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(10*b*e*g - 17*c*d*g +
c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(128
7*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (484*b^2*c^4*e^3*g + 160*b*c^
5*e^3*f - 272*c^6*d*e^2*f + 1344*c^6*d^2*e*g - 1616*b*c^5*d*e^2*g)/(1287*(7
*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (204*b^3*c^3*e^3*f + 236*b^4*
c^2*e^3*g - 1888*b*c^5*d^3*g + 672*b*c^5*d^2*e*f - 740*b^2*c^4*d*e^2*f + 28
32*b^2*c^4*d^2*e*g - 1416*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e
- 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((
d*((548*b^2*c^4*e^3*f - 4352*c^6*d^3*g + 776*b^3*c^3*e^3*g + 1536*c^6*d^2*e
*f - 1840*b*c^5*d*e^2*f + 7296*b*c^5*d^2*e*g - 4108*b^2*c^4*d*e^2*g)/(1287*
(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((16*c^5*e^2*(11*b*e*g - 19*
c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2
*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (548*b^2*c^4*e^3*g +
176*b*c^5*e^3*f - 304*c^6*d*e^2*f + 1536*c^6*d^2*e*g - 1840*b*c^5*d*e^2*g)/
(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (232*b^3*c^3*e^3*f +
272*b^4*c^2*e^3*g - 2176*b*c^5*d^3*g + 768*b*c^5*d^2*e*f - 844*b^2*c^4*d*e^
2*f + 3264*b^2*c^4*d^2*e*g - 1632*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*
e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^4 - (((d*((3072*b^2*c^7*e^4*f + 5536*b^3*c^6*e^4*g + 8832*c^9*d^2*e^2*f -
33792*c^9*d^3*e*g - 10368*b*c^8*d*e^3*f + 55104*b*c^8*d^2*e^2*g - 30144*b^2
*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(16*b^2*e^2*g + 46
*c^2*d^2*g + 5*b*c*e^2*f - 8*c^2*d*e*f - 54*b*c*d*e*g))/(45045*(b*e - 2*c*d
)^7) - (d*((64*c^8*e*(15*b*e*g - 24*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)
^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (35328*c^9*d^4
*g + 2656*b^3*c^6*e^4*f + 3648*b^4*c^5*e^4*g - 10752*c^9*d^3*e*f - 82176*b*
```

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c^8*d^3*e*g + 20544*b*c^8*d^2*e^2*f - 12864*b^2*c^7*d*e^3*f - 26304*b^3*c^6
*d*e^3*g + 70272*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((5312*b^2*c^7*e^4*f +
 12096*b^3*c^6*e^4*g + 16512*c^9*d^2*e^2*f - 77952*c^9*d^3*e*g - 18688*b*c^
8*d*e^3*f + 125184*b*c^8*d^2*e^2*g - 67264*b^2*c^7*d*e^3*g)/(135135*e^2*(b*
e - 2*c*d)^7) - (d*((64*c^7*(83*b^2*e^2*g + 258*c^2*d^2*g + 20*b*c*e^2*f -
34*c^2*d*e*f - 292*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(1
0*b*e*g - 17*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(13
5135*(b*e - 2*c*d)^7)))/e))/e))/e - (52224*c^9*d^4*g + 3552*b^3*c^6*e^4*f +
 7536*b^4*c^5*e^4*g - 9600*c^9*d^3*e*f - 138624*b*c^8*d^3*e*g + 22656*b*c^8
*d^2*e^2*f - 16000*b^2*c^7*d*e^3*f - 51744*b^3*c^6*d*e^3*g + 129600*b^2*c^7
*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((6208*b^2*c^7*e^4*f + 14720*b^3*c^6*e^4*g + 1
9584*c^9*d^2*e^2*f - 95616*c^9*d^3*e*g - 22016*b*c^8*d*e^3*f + 153216*b*c^8
*d^2*e^2*g - 82112*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*
c^7*(97*b^2*e^2*g + 306*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f - 344*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(11*b*e*g - 19*c*d*g + c*e
*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/
e))/e))/e - (110592*c^9*d^4*g + 6128*b^3*c^6*e^4*f + 11208*b^4*c^5*e^4*g -
26880*c^9*d^3*e*f - 255552*b*c^8*d^3*e*g + 50112*b*c^8*d^2*e^2*f - 30560*b^
2*c^7*d*e^3*f - 81072*b^3*c^6*d*e^3*g + 217440*b^2*c^7*d^2*e^2*g)/(135135*e
^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
 + (((d*((7104*b^2*c^7*e^4*f + 17344*b^3*c^6*e^4*g + 22656*c^9*d^2*e^2*f -
113280*c^9*d^3*e*g - 25344*b*c^8*d*e^3*f + 181248*b*c^8*d^2*e^2*g - 96960*b
^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(37*b^2*e^2*g +
118*c^2*d^2*g + 8*b*c*e^2*f - 14*c^2*d*e*f - 132*b*c*d*e*g))/(45045*(b*e -
2*c*d)^7) - (d*((128*c^8*e*(12*b*e*g - 21*c*d*g + c*e*f))/(135135*(b*e - 2*
c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (132096*c^
9*d^4*g + 7120*b^3*c^6*e^4*f + 13368*b^4*c^5*e^4*g - 31488*c^9*d^3*e*f - 30
5088*b*c^8*d^3*e*g + 58560*b*c^8*d^2*e^2*f - 35616*b^2*c^7*d*e^3*f - 96720*
b^3*c^6*d*e^3*g + 259488*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8000*b^2*c^7
*e^4*f + 19968*b^3*c^6*e^4*g + 25728*c^9*d^2*e^2*f - 130944*c^9*d^3*e*g - 2
8672*b*c^8*d*e^3*f + 209280*b*c^8*d^2*e^2*g - 111808*b^2*c^7*d*e^3*g)/(1351
35*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(125*b^2*e^2*g + 402*c^2*d^2*g + 26*b
*c*e^2*f - 46*c^2*d*e*f - 448*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((1
28*c^8*e*(13*b*e*g - 23*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9
*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (153600*c^9*d^4*g + 8112*b^3
*c^6*e^4*f + 15528*b^4*c^5*e^4*g - 36096*c^9*d^3*e*f - 354624*b*c^8*d^3*e*g
 + 67008*b*c^8*d^2*e^2*f - 40672*b^2*c^7*d*e^3*f - 112368*b^3*c^6*d*e^3*g +
 301536*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((8896*b^2*c^7*e^4*f + 22592*b^
3*c^6*e^4*g + 28800*c^9*d^2*e^2*f - 148608*c^9*d^3*e*g - 32000*b*c^8*d*e^3*
f + 237312*b*c^8*d^2*e^2*g - 126656*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c
*d)^7) - (d*((64*c^7*(139*b^2*e^2*g + 450*c^2*d^2*g + 28*b*c*e^2*f - 50*c^2
*d*e*f - 500*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(14*b*e*
g - 25*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(
b*e - 2*c*d)^7)))/e))/e))/e - (175104*c^9*d^4*g + 9104*b^3*c^6*e^4*f + 1768
8*b^4*c^5*e^4*g - 40704*c^9*d^3*e*f - 404160*b*c^8*d^3*e*g + 75456*b*c^8*d^
2*e^2*f - 45728*b^2*c^7*d*e^3*f - 128016*b^3*c^6*d*e^3*g + 343584*b^2*c^7*d
^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x) - (((d*((10784*b^2*c^7*e^4*f + 33264*b^3*c^6*e^4*g + 36
096*c^9*d^2*e^2*f - 226560*c^9*d^3*e*g - 39424*b*c^8*d*e^3*f + 357888*b*c^8
*d^2*e^2*g - 188800*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32
*c^7*(337*b^2*e^2*g + 1128*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e*f - 1232*
b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(29*b*e*g - 52*c*d*g +
 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)
^7)))/e))/e))/e - (138624*c^9*d^4*g + 6720*b^3*c^6*e^4*f + 21936*b^4*c^5*e^
4*g - 14208*c^9*d^3*e*f - 383424*b*c^8*d^3*e*g + 39360*b*c^8*d^2*e^2*f - 29
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536*b^2*c^7*d*e^3*f - 148944*b^3*c^6*d*e^3*g + 367200*b^2*c^7*d^2*e^2*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) - (((d*((9568*b^2*c^7*e^4*f + 28560*b^3*c^6*e^4*g + 31744*c^9*d^2*e
^2*f - 193536*c^9*d^3*e*g - 34816*b*c^8*d*e^3*f + 306176*b*c^8*d^2*e^2*g -
161792*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(299*b^2
*e^2*g + 992*c^2*d^2*g + 54*b*c*e^2*f - 96*c^2*d*e*f - 1088*b*c*d*e*g))/(13
5135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (183936*c^9*d^4*g + 9216*b^3*c^6*e^4*f + 21168*b^4*c^5*e^4*g - 38784*c^9
*d^3*e*f - 445248*b*c^8*d^3*e*g + 74048*b*c^8*d^2*e^2*f - 45728*b^2*c^7*d*e
^3*f - 150000*b^3*c^6*d*e^3*g + 391968*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
- 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*
((12000*b^2*c^7*e^4*f + 37968*b^3*c^6*e^4*g + 40448*c^9*d^2*e^2*f - 259584*
c^9*d^3*e*g - 44032*b*c^8*d*e^3*f + 409600*b*c^8*d^2*e^2*g - 215808*b^2*c^7
*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(375*b^2*e^2*g + 1264*
c^2*d^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1376*b*c*d*e*g))/(135135*(b*e -
2*c*d)^7) - (d*((64*c^8*e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (157824*c
^9*d^4*g + 7424*b^3*c^6*e^4*f + 25136*b^4*c^5*e^4*g - 15232*c^9*d^3*e*f - 4
37824*b*c^8*d^3*e*g + 43072*b*c^8*d^2*e^2*f - 32544*b^2*c^7*d*e^3*f - 17054
4*b^3*c^6*d*e^3*g + 420000*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((13216*b^2*
c^7*e^4*f + 42672*b^3*c^6*e^4*g + 44800*c^9*d^2*e^2*f - 292608*c^9*d^3*e*g
- 48640*b*c^8*d*e^3*f + 461312*b*c^8*d^2*e^2*g - 242816*b^2*c^7*d*e^3*g)/(1
35135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(413*b^2*e^2*g + 1400*c^2*d^2*g +
66*b*c*e^2*f - 120*c^2*d*e*f - 1520*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
(d*((64*c^8*e*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (
128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (177024*c^9*d^4*g + 8
128*b^3*c^6*e^4*f + 28336*b^4*c^5*e^4*g - 16256*c^9*d^3*e*f - 492224*b*c^8*
d^3*e*g + 46784*b*c^8*d^2*e^2*f - 35552*b^2*c^7*d*e^3*f - 192144*b^3*c^6*d*
e^3*g + 472800*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((12256*b^2*c^7*e^4*f +
39632*b^3*c^6*e^4*g + 41472*c^9*d^2*e^2*f - 271872*c^9*d^3*e*g - 45056*b*c^
8*d*e^3*f + 428544*b*c^8*d^2*e^2*g - 225536*b^2*c^7*d*e^3*g)/(135135*e^2*(b
*e - 2*c*d)^7) - (d*((32*c^7*(383*b^2*e^2*g + 1296*c^2*d^2*g + 62*b*c*e^2*f
 - 112*c^2*d*e*f - 1408*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*
e*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*
g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (352512*c^9*d^4*g + 13616*b^3*c^6
*e^4*f + 35040*b^4*c^5*e^4*g - 63744*c^9*d^3*e*f - 809088*b*c^8*d^3*e*g + 1
16352*b*c^8*d^2*e^2*f - 69440*b^2*c^7*d*e^3*f - 254304*b^3*c^6*d*e^3*g + 68
4864*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 -
b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((13600*b^2*c^7*e^4*f + 45168*b^3*
c^6*e^4*g + 46336*c^9*d^2*e^2*f - 311040*c^9*d^3*e*g - 50176*b*c^8*d*e^3*f
+ 489728*b*c^8*d^2*e^2*g - 257408*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d
)^7) - (d*((32*c^7*(425*b^2*e^2*g + 1448*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2
*d*e*f - 1568*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(33*b*e*
g - 60*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135
*(b*e - 2*c*d)^7)))/e))/e))/e - (406272*c^9*d^4*g + 15280*b^3*c^6*e^4*f + 4
0336*b^4*c^5*e^4*g - 71936*c^9*d^3*e*f - 932096*b*c^8*d^3*e*g + 131072*b*c^
8*d^2*e^2*f - 78080*b^2*c^7*d*e^3*f - 292800*b^3*c^6*d*e^3*g + 788736*b^2*c
^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x) - (((d*((14944*b^2*c^7*e^4*f + 50704*b^3*c^6*e^4*g
+ 51200*c^9*d^2*e^2*f - 350208*c^9*d^3*e*g - 55296*b*c^8*d*e^3*f + 550912*b
*c^8*d^2*e^2*g - 289280*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*
((32*c^7*(467*b^2*e^2*g + 1600*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1
728*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d
*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*
c*d)^7)))/e))/e))/e - (460032*c^9*d^4*g + 16944*b^3*c^6*e^4*f + 45632*b^4*c
^5*e^4*g - 80128*c^9*d^3*e*f - 1055104*b*c^8*d^3*e*g + 145792*b*c^8*d^2*e^2
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*f - 86720*b^2*c^7*d*e^3*f - 331296*b^3*c^6*d*e^3*g + 892608*b^2*c^7*d^2*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) - (((d*((15200*b^2*c^7*e^4*f + 52368*b^3*c^6*e^4*g + 52224*c
^9*d^2*e^2*f - 362496*c^9*d^3*e*g - 56320*b*c^8*d*e^3*f + 569856*b*c^8*d^2*
e^2*g - 299008*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*
(475*b^2*e^2*g + 1632*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1760*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(35*b*e*g - 64*c*d*g + 2*c*
e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))
/e))/e))/e - (478464*c^9*d^4*g + 17328*b^3*c^6*e^4*f + 47424*b^4*c^5*e^4*g
- 82176*c^9*d^3*e*f - 1097088*b*c^8*d^3*e*g + 149376*b*c^8*d^2*e^2*f - 8876
8*b^2*c^7*d*e^3*f - 344352*b^3*c^6*d*e^3*g + 927936*b^2*c^7*d^2*e^2*g)/(135
135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
 e*x) + (((d*((17056*b^2*c^7*e^4*f + 67872*b^3*c^6*e^4*g + 59392*c^9*d^2*e^
2*f - 479232*c^9*d^3*e*g - 63616*b*c^8*d*e^3*f + 748544*b*c^8*d^2*e^2*g - 3
90176*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(533*b^2*
e^2*g + 1856*c^2*d^2*g + 72*b*c*e^2*f - 132*c^2*d*e*f - 1988*b*c*d*e*g))/(1
35135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(18*b*e*g - 33*c*d*g + c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (387072*c^9*d^4*g + 11808*b^3*c^6*e^4*f + 52224*b^4*c^5*e^4*g - 30720*c^
9*d^3*e*f - 998400*b*c^8*d^3*e*g + 75776*b*c^8*d^2*e^2*f - 53792*b^2*c^7*d*
e^3*f - 361728*b^3*c^6*d*e^3*g + 916992*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d
*((20640*b^2*c^7*e^4*f + 87648*b^3*c^6*e^4*g + 72704*c^9*d^2*e^2*f - 623616
*c^9*d^3*e*g - 77440*b*c^8*d*e^3*f + 971776*b*c^8*d^2*e^2*g - 505248*b^2*c^
7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(645*b^2*e^2*g + 2272
*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2420*b*c*d*e*g))/(135135*(b*e -
 2*c*d)^7) - (d*((128*c^8*e*(20*b*e*g - 37*c*d*g + c*e*f))/(135135*(b*e - 2
*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (294912*c
^9*d^4*g + 10592*b^3*c^6*e^4*f + 56960*b^4*c^5*e^4*g - 7168*c^9*d^3*e*f - 8
98048*b*c^8*d^3*e*g + 47104*b*c^8*d^2*e^2*f - 42912*b^2*c^7*d*e^3*f - 37862
4*b^3*c^6*d*e^3*g + 904704*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((16672*b^2*
c^7*e^4*f + 58736*b^3*c^6*e^4*g + 57600*c^9*d^2*e^2*f - 407808*c^9*d^3*e*g
- 61952*b*c^8*d*e^3*f + 640512*b*c^8*d^2*e^2*g - 335744*b^2*c^7*d*e^3*g)/(1
35135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(521*b^2*e^2*g + 1800*c^2*d^2*g +
74*b*c*e^2*f - 136*c^2*d*e*f - 1936*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) -
(d*((64*c^8*e*(37*b*e*g - 68*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (
128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (541440*c^9*d^4*g + 1
9184*b^3*c^6*e^4*f + 53616*b^4*c^5*e^4*g - 91392*c^9*d^3*e*f - 1241088*b*c^
8*d^3*e*g + 165888*b*c^8*d^2*e^2*f - 98432*b^2*c^7*d*e^3*f - 389376*b^3*c^6
*d*e^3*g + 1049472*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2
- c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((22432*b^2*c^7*e^4*
f + 97536*b^3*c^6*e^4*g + 79360*c^9*d^2*e^2*f - 695808*c^9*d^3*e*g - 84352*
b*c^8*d*e^3*f + 1083392*b*c^8*d^2*e^2*g - 562784*b^2*c^7*d*e^3*g)/(135135*e
^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(701*b^2*e^2*g + 2480*c^2*d^2*g + 84*b*c*
e^2*f - 156*c^2*d*e*f - 2636*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((12
8*c^8*e*(21*b*e*g - 39*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*
d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (323328*c^9*d^4*g + 11296*b^3
*c^6*e^4*f + 63328*b^4*c^5*e^4*g - 5888*c^9*d^3*e*f - 991616*b*c^8*d^3*e*g
+ 48512*b*c^8*d^2*e^2*f - 45344*b^2*c^7*d*e^3*f - 420384*b^3*c^6*d*e^3*g +
1002432*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d*((18400*b^2*c^7*e^4*f + 66768*b
^3*c^6*e^4*g + 64000*c^9*d^2*e^2*f - 465408*c^9*d^3*e*g - 68608*b*c^8*d*e^3
*f + 730112*b*c^8*d^2*e^2*g - 382208*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*
c*d)^7) - (d*((32*c^7*(575*b^2*e^2*g + 2000*c^2*d^2*g + 78*b*c*e^2*f - 144*
c^2*d*e*f - 2144*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(39*b
*e*g - 72*c*d*g + 2*c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135
135*(b*e - 2*c*d)^7)))/e))/e))/e - (622848*c^9*d^4*g + 21424*b^3*c^6*e^4*f
+ 61600*b^4*c^5*e^4*g - 102656*c^9*d^3*e*f - 1427072*b*c^8*d^3*e*g + 185984
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*b*c^8*d^2*e^2*f - 110144*b^2*c^7*d*e^3*f - 447456*b^3*c^6*d*e^3*g + 120633
6*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((24480*b^2*c^7*e^4*f + 109728*b^3*c^
6*e^4*g + 87040*c^9*d^2*e^2*f - 785408*c^9*d^3*e*g - 92288*b*c^8*d*e^3*f +
1221632*b*c^8*d^2*e^2*g - 633888*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)
^7) - (d*((32*c^7*(765*b^2*e^2*g + 2720*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*
d*e*f - 2884*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(22*b*e*
g - 41*c*d*g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(
b*e - 2*c*d)^7)))/e))/e))/e - (355840*c^9*d^4*g + 12000*b^3*c^6*e^4*f + 711
04*b^4*c^5*e^4*g - 3584*c^9*d^3*e*f - 1102592*b*c^8*d^3*e*g + 48896*b*c^8*d
^2*e^2*f - 47520*b^2*c^7*d*e^3*f - 471104*b^3*c^6*d*e^3*g + 1120128*b^2*c^7
*d^2*e^2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) + (((d*((18720*b^2*c^7*e^4*f + 76608*b^3*c^6*e^4*g +
65536*c^9*d^2*e^2*f - 542720*c^9*d^3*e*g - 70016*b*c^8*d*e^3*f + 846848*b*c
^8*d^2*e^2*g - 440928*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((
32*c^7*(585*b^2*e^2*g + 2048*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 218
8*b*c*d*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(19*b*e*g - 35*c*d*
g + c*e*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d
)^7)))/e))/e))/e - (610560*c^9*d^4*g + 22944*b^3*c^6*e^4*f + 64992*b^4*c^5*
e^4*g - 113408*c^9*d^3*e*f - 1435776*b*c^8*d^3*e*g + 202880*b*c^8*d^2*e^2*f
 - 118944*b^2*c^7*d*e^3*f - 466272*b^3*c^6*d*e^3*g + 1237824*b^2*c^7*d^2*e^
2*g)/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x) + (((d*((20384*b^2*c^7*e^4*f + 85344*b^3*c^6*e^4*g + 71680*c
^9*d^2*e^2*f - 606208*c^9*d^3*e*g - 76416*b*c^8*d*e^3*f + 945152*b*c^8*d^2*
e^2*g - 491680*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*
(637*b^2*e^2*g + 2240*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2388*b*c*d
*e*g))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(20*b*e*g - 37*c*d*g + c*e
*f))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/
e))/e))/e - (688128*c^9*d^4*g + 25440*b^3*c^6*e^4*f + 72960*b^4*c^5*e^4*g -
 126976*c^9*d^3*e*f - 1615872*b*c^8*d^3*e*g + 226304*b*c^8*d^2*e^2*f - 1322
56*b^2*c^7*d*e^3*f - 523776*b^3*c^6*d*e^3*g + 1391616*b^2*c^7*d^2*e^2*g)/(1
35135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x) + (((d*((22816*b^2*c^7*e^4*f + 101760*b^3*c^6*e^4*g + 80896*c^9*d^2
*e^2*f - 728064*c^9*d^3*e*g - 85888*b*c^8*d*e^3*f + 1132544*b*c^8*d^2*e^2*g
 - 587744*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(713*
b^2*e^2*g + 2528*c^2*d^2*g + 84*b*c*e^2*f - 156*c^2*d*e*f - 2684*b*c*d*e*g)
)/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(21*b*e*g - 39*c*d*g + c*e*f))/
(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e
))/e - (1053696*c^9*d^4*g + 27520*b^3*c^6*e^4*f + 102976*b^4*c^5*e^4*g - 13
4144*c^9*d^3*e*f - 2404352*b*c^8*d^3*e*g + 241664*b*c^8*d^2*e^2*f - 142304*
b^2*c^7*d*e^3*f - 749568*b^3*c^6*d*e^3*g + 2025984*b^2*c^7*d^2*e^2*g)/(1351
35*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x) - (((d*((36864*b^2*c^7*e^4*f + 213696*b^3*c^6*e^4*g + 134272*c^9*d^2*e
^2*f - 1568768*c^9*d^3*e*g - 140672*b*c^8*d*e^3*f + 2420288*b*c^8*d^2*e^2*g
 - 1245312*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(576
*b^2*e^2*g + 2098*c^2*d^2*g + 53*b*c*e^2*f - 100*c^2*d*e*f - 2198*b*c*d*e*g
))/(135135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(53*b*e*g - 100*c*d*g + 2*c*e*f
))/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e)
)/e))/e - (388096*c^9*d^4*g + 15168*b^3*c^6*e^4*f + 123520*b^4*c^5*e^4*g +
19456*c^9*d^3*e*f - 1570304*b*c^8*d^3*e*g + 37952*b*c^8*d^2*e^2*f - 54144*b
^2*c^7*d*e^3*f - 789632*b^3*c^6*d*e^3*g + 1773312*b^2*c^7*d^2*e^2*g)/(13513
5*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x) + (((d*((24736*b^2*c^7*e^4*f + 113056*b^3*c^6*e^4*g + 88064*c^9*d^2*e^2
*f - 811008*c^9*d^3*e*g - 93312*b*c^8*d*e^3*f + 1260544*b*c^8*d^2*e^2*g - 6
53600*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(773*b^2*
e^2*g + 2752*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*d*e*f - 2916*b*c*d*e*g))/(1
35135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(22*b*e*g - 41*c*d*g + c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (1181184*c^9*d^4*g + 30048*b^3*c^6*e^4*f + 115328*b^4*c^5*e^4*g - 146944
*c^9*d^3*e*f - 2694400*b*c^8*d^3*e*g + 264448*b*c^8*d^2*e^2*f - 155552*b^2*
c^7*d*e^3*f - 839616*b^3*c^6*d*e^3*g + 2269824*b^2*c^7*d^2*e^2*g)/(135135*e
^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
 - (((d*((31616*b^2*c^7*e^4*f + 171456*b^3*c^6*e^4*g + 114304*c^9*d^2*e^2*f
 - 1251328*c^9*d^3*e*g - 120192*b*c^8*d*e^3*f + 1934144*b*c^8*d^2*e^2*g - 9
97120*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(494*b^2*
e^2*g + 1786*c^2*d^2*g + 49*b*c*e^2*f - 92*c^2*d*e*f - 1878*b*c*d*e*g))/(13
5135*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(49*b*e*g - 92*c*d*g + 2*c*e*f))/(135
135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e
 - (786432*c^9*d^4*g + 5568*b^3*c^6*e^4*f + 132096*b^4*c^5*e^4*g + 75776*c^
9*d^3*e*f - 2236416*b*c^8*d^3*e*g - 56512*b*c^8*d^2*e^2*f - 1792*b^2*c^7*d*
e^3*f - 890880*b^3*c^6*d*e^3*g + 2174976*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((
d*((29376*b^2*c^7*e^4*f + 155520*b^3*c^6*e^4*g + 105856*c^9*d^2*e^2*f - 113
2544*c^9*d^3*e*g - 111488*b*c^8*d*e^3*f + 1751744*b*c^8*d^2*e^2*g - 903744*
b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(459*b^2*e^2*g
 + 1654*c^2*d^2*g + 47*b*c*e^2*f - 88*c^2*d*e*f - 1742*b*c*d*e*g))/(135135*(
b*e - 2*c*d)^7) - (d*((64*c^8*e*(47*b*e*g - 88*c*d*g + 2*c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (10
93632*c^9*d^4*g + 34176*b^3*c^6*e^4*f + 129024*b^4*c^5*e^4*g - 161792*c^9*d
^3*e*f - 2672640*b*c^8*d^3*e*g + 295616*b*c^8*d^2*e^2*f - 175680*b^2*c^7*d*
e^3*f - 910848*b^3*c^6*d*e^3*g + 2368512*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*
e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((
d*((26912*b^2*c^7*e^4*f + 126912*b^3*c^6*e^4*g + 96256*c^9*d^2*e^2*f - 9134
08*c^9*d^3*e*g - 101760*b*c^8*d*e^3*f + 1418240*b*c^8*d^2*e^2*g - 734560*b^
2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(841*b^2*e^2*g +
3008*c^2*d^2*g + 92*b*c*e^2*f - 172*c^2*d*e*f - 3180*b*c*d*e*g))/(135135*(b
*e - 2*c*d)^7) - (d*((128*c^8*e*(23*b*e*g - 43*c*d*g + c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (1341
440*c^9*d^4*g + 32960*b^3*c^6*e^4*f + 130816*b^4*c^5*e^4*g - 161792*c^9*d^3
*e*f - 3058688*b*c^8*d^3*e*g + 290816*b*c^8*d^2*e^2*f - 170848*b^2*c^7*d*e^
3*f - 952576*b^3*c^6*d*e^3*g + 2575872*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*
((29344*b^2*c^7*e^4*f + 144096*b^3*c^6*e^4*g + 105472*c^9*d^2*e^2*f - 10414
08*c^9*d^3*e*g - 111232*b*c^8*d*e^3*f + 1614848*b*c^8*d^2*e^2*g - 835232*b^
2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((32*c^7*(917*b^2*e^2*g +
3296*c^2*d^2*g + 96*b*c*e^2*f - 180*c^2*d*e*f - 3476*b*c*d*e*g))/(135135*(b
*e - 2*c*d)^7) - (d*((128*c^8*e*(24*b*e*g - 45*c*d*g + c*e*f))/(135135*(b*e
 - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (1546
752*c^9*d^4*g + 36256*b^3*c^6*e^4*f + 150592*b^4*c^5*e^4*g - 178688*c^9*d^3
*e*f - 3524864*b*c^8*d^3*e*g + 320768*b*c^8*d^2*e^2*f - 188192*b^2*c^7*d*e^
3*f - 1096896*b^3*c^6*d*e^3*g + 2967168*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b*e
 - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((d
*((34112*b^2*c^7*e^4*f + 190592*b^3*c^6*e^4*g + 123776*c^9*d^2*e^2*f - 1394
688*c^9*d^3*e*g - 129920*b*c^8*d*e^3*f + 2153920*b*c^8*d^2*e^2*g - 1109440*
b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(533*b^2*e^2*g
 + 1934*c^2*d^2*g + 51*b*c*e^2*f - 96*c^2*d*e*f - 2030*b*c*d*e*g))/(135135*(
b*e - 2*c*d)^7) - (d*((64*c^8*e*(51*b*e*g - 96*c*d*g + 2*c*e*f))/(135135*(b
*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e - (20
84864*c^9*d^4*g + 57472*b^3*c^6*e^4*f + 196864*b^4*c^5*e^4*g - 329728*c^9*d
^3*e*f - 4702208*b*c^8*d^3*e*g + 556480*b*c^8*d^2*e^2*f - 310720*b^2*c^7*d*
e^3*f - 1441792*b^3*c^6*d*e^3*g + 3926016*b^2*c^7*d^2*e^2*g)/(135135*e^2*(b
*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - ((
(d*((39872*b^2*c^7*e^4*f + 241536*b^3*c^6*e^4*g + 145792*c^9*d^2*e^2*f - 17
79712*c^9*d^3*e*g - 152448*b*c^8*d*e^3*f + 2742464*b*c^8*d^2*e^2*g - 140934
4*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((64*c^7*(623*b^2*e^2*
g + 2278*c^2*d^2*g + 55*b*c*e^2*f - 104*c^2*d*e*f - 2382*b*c*d*e*g))/(13513
5*(b*e - 2*c*d)^7) - (d*((64*c^8*e*(55*b*e*g - 104*c*d*g + 2*c*e*f))/(13513
5*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/e))/e -
```

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 (2797568*c^9*d^4*g + 50816*b^3*c^6*e^4*f + 270208*b^4*c^5*e^4*g - 253952*c
^9*d^3*e*f - 6358016*b*c^8*d^3*e*g + 453824*b*c^8*d^2*e^2*f - 265024*b^2*c^
7*d*e^3*f - 1970944*b^3*c^6*d*e^3*g + 5340672*b^2*c^7*d^2*e^2*g)/(135135*e^
2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
+ (((2*b^4*e^3*g - 16*b*c^3*d^3*g + 6*b^3*c*e^3*f + 14*b*c^3*d^2*e*f - 12*b
^3*c*d*e^2*g - 18*b^2*c^2*d*e^2*f + 24*b^2*c^2*d^2*e*g)/(13*(11*b*e^2 - 22*
c*d*e)*(b*e - 2*c*d)) - (d*((18*b^2*c^2*e^3*f - 32*c^4*d^3*g + 10*b^3*c*e^3
*g + 28*c^4*d^2*e*f - 44*b*c^3*d*e^2*f + 62*b*c^3*d^2*e*g - 42*b^2*c^2*d*e^
2*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) + (d*((d*((2*c^3*e^2*(7*b*e*g
 - 8*c*d*g + 2*c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*
e^2*g)/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (18*b^2*c^2*e^3*g + 1
4*b*c^3*e^3*f - 16*c^4*d*e^2*f + 28*c^4*d^2*e*g - 44*b*c^3*d*e^2*g)/(13*(11
*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x)^6 - (((d*((1472*b^2*c^4*e^3*f - 21248*c^6*d^3*g + 33
28*b^3*c^3*e^3*g + 4880*c^6*d^2*e*f - 5360*b*c^5*d*e^2*f + 34312*b*c^5*d^2*
e*g - 18496*b^2*c^4*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) +
(d*((d*((8*c^5*e^2*(33*b*e*g - 60*c*d*g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d
*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2
*c*d)^3)))/e - (1472*b^2*c^4*e^3*g + 264*b*c^5*e^3*f - 480*c^6*d*e^2*f + 48
80*c^6*d^2*e*g - 5360*b*c^5*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*
d)^3)))/e))/e - (8*b*c^2*(166*b^3*e^3*g - 1328*c^3*d^3*g + 84*b^2*c*e^3*f +
 305*c^3*d^2*e*f - 320*b*c^2*d*e^2*f + 1992*b*c^2*d^2*e*g - 996*b^2*c*d*e^2
*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2856*b^2*c^5*e^3*f - 45824*c^7*d^3
*g + 7032*b^3*c^4*e^3*g + 9472*c^7*d^2*e*f - 10400*b*c^6*d*e^2*f + 73472*b*
c^6*d^2*e*g - 39336*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4) + (d*((d*((32*c^6*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(9009*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^4)))/e - (2856*b^2*c^5*e^3*g + 512*b*c^6*e^3*f - 928*c^7*d*e^2
*f + 9472*c^7*d^2*e*g - 10400*b*c^6*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*
e - 2*c*d)^4)))/e))/e - (8*b*c^3*(358*b^3*e^3*g - 2864*c^3*d^3*g + 163*b^2*
c*e^3*f + 592*c^3*d^2*e*f - 621*b*c^2*d*e^2*f + 4296*b*c^2*d^2*e*g - 2148*b
^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((3208*b^2*c^5*e^3*f - 532
48*c^7*d^3*g + 8128*b^3*c^4*e^3*g + 10752*c^7*d^2*e*f - 11744*b*c^6*d*e^2*f
 + 85248*b*c^6*d^2*e*g - 45560*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*
(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(17*b*e*g - 31*c*d*g + c*e*f))/(9009
*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)^4)))/e - (3208*b^2*c^5*e^3*g + 544*b*c^6*e^3*f - 99
2*c^7*d*e^2*f + 10752*c^7*d^2*e*g - 11744*b*c^6*d*e^2*g)/(9009*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b*c^3*(416*b^3*e^3*g - 3328*c^3*d^3*
g + 184*b^2*c*e^3*f + 672*c^3*d^2*e*f - 703*b*c^2*d*e^2*f + 4992*b*c^2*d^2*
e*g - 2496*b^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((8*c^
4*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d
)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*
c^3*e*(84*b^2*e^2*g + 275*c^2*d^2*g + 16*b*c*e^2*f - 29*c^2*d*e*f - 304*b*c
*d*e*g))/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e + (672*b^2*c^3*e^4*
f + 1328*b^3*c^2*e^4*g + 2200*c^5*d^2*e^2*f - 8184*c^5*d^3*e*g - 2432*b*c^4
*d*e^3*f + 13376*b*c^4*d^2*e^2*g - 7296*b^2*c^3*d*e^3*g)/(143*e*(9*b*e^2 -
18*c*d*e)*(b*e - 2*c*d)^2)))/e - (8*c*(b*e - c*d)*(97*b^3*e^3*g - 776*c^3*d
^3*g + 69*b^2*c*e^3*f + 247*c^3*d^2*e*f - 261*b*c^2*d*e^2*f + 1164*b*c^2*d^
2*e*g - 582*b^2*c*d*e^2*g))/(143*e*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 + (((d*((d*((d*((16
*c^5*e^2*(9*b*e*g - 15*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*
c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e
- (4*c^4*e*(35*b^2*e^2*g + 96*c^2*d^2*g + 12*b*c*e^2*f - 20*c^2*d*e*f - 116
*b*c*d*e*g))/(429*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (420*b^2*c^4*
e^4*f + 576*b^3*c^3*e^4*g + 1152*c^6*d^2*e^2*f - 3200*c^6*d^3*e*g - 1392*b*
c^5*d*e^3*f + 5376*b*c^5*d^2*e^2*g - 3036*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2
 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (3040*c^6*d^4*g + 356*b^3*c^3*e^4*f + 3
00*b^4*c^2*e^4*g - 1440*c^6*d^3*e*f - 6960*b*c^5*d^3*e*g + 2736*b*c^5*d^2*e
^2*f - 1716*b^2*c^4*d*e^3*f - 2180*b^3*c^3*d*e^3*g + 5880*b^2*c^4*d^2*e^2*g
)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))/(d + e*x)^4 - (((d*((d*((d*((16*c^6*e^2*(17*b*e*g - 28*c
*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^
2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(105*b^2*e^
2*g + 296*c^2*d^2*g + 34*b*c*e^2*f - 56*c^2*d*e*f - 352*b*c*d*e*g))/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (840*b^2*c^5*e^4*f + 1308*b^3*c^
4*e^4*g + 2368*c^7*d^2*e^2*f - 7616*c^7*d^3*e*g - 2816*b*c^6*d*e^3*f + 1260
8*b*c^6*d^2*e^2*g - 7008*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^4)))/e - (8064*c^7*d^4*g + 756*b^3*c^4*e^4*f + 780*b^4*c^3*e^4*g
- 3200*c^7*d^3*e*f - 18336*b*c^6*d^3*e*g + 5984*b*c^6*d^2*e^2*f - 3696*b^2*
c^5*d*e^3*f - 5688*b^3*c^4*d*e^3*g + 15408*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^3 - (((d*((d*((d*((8*c^5*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))
/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(146*b^2*e^2*g + 474*c^2*d^
2*g + 29*b*c*e^2*f - 52*c^2*d*e*f - 526*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d
*e)*(b*e - 2*c*d)^3)))/e + (1168*b^2*c^4*e^4*f + 2512*b^3*c^3*e^4*g + 3792*
c^6*d^2*e^2*f - 15872*c^6*d^3*e*g - 4208*b*c^5*d*e^3*f + 25704*b*c^5*d^2*e^
2*g - 13904*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))
)/e - (11200*c^6*d^4*g + 792*b^3*c^3*e^4*f + 1560*b^4*c^2*e^4*g - 2112*c^6*
d^3*e*f - 29280*b*c^5*d^3*e*g + 5064*b*c^5*d^2*e^2*f - 3584*b^2*c^4*d*e^3*f
 - 10760*b^3*c^3*d*e^3*g + 27120*b^2*c^4*d^2*e^2*g)/(1287*e*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e
*x)^4 - (((d*((d*((d*((8*c^5*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(1287*(7*
b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g)/(1287*(7*b*e^2 - 14*c
*d*e)*(b*e - 2*c*d)^3)))/e - (8*c^4*e*(163*b^2*e^2*g + 534*c^2*d^2*g + 31*b
*c*e^2*f - 56*c^2*d*e*f - 590*b*c*d*e*g))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e -
 2*c*d)^3)))/e + (1304*b^2*c^4*e^4*f + 2864*b^3*c^3*e^4*g + 4272*c^6*d^2*e^
2*f - 18176*c^6*d^3*e*g - 4720*b*c^5*d*e^3*f + 29400*b*c^5*d^2*e^2*g - 1588
0*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (217
60*c^6*d^4*g + 1552*b^3*c^3*e^4*f + 2016*b^4*c^2*e^4*g - 7680*c^6*d^3*e*f -
 48768*b*c^5*d^3*e*g + 13656*b*c^5*d^2*e^2*f - 8008*b^2*c^4*d*e^3*f - 14816
*b^3*c^3*d*e^3*g + 40512*b^2*c^4*d^2*e^2*g)/(1287*e*(7*b*e^2 - 14*c*d*e)*(b
*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 +
(((d*((d*((d*((32*c^6*e^2*(13*b*e*g - 23*c*d*g + c*e*f))/(9009*(5*b*e^2 - 1
0*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*
e - 2*c*d)^4)))/e - (8*c^5*e*(249*b^2*e^2*g + 800*c^2*d^2*g + 52*b*c*e^2*f
- 92*c^2*d*e*f - 892*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4
)))/e + (1992*b^2*c^5*e^4*f + 4512*b^3*c^4*e^4*g + 6400*c^7*d^2*e^2*f - 289
28*c^7*d^3*e*g - 7136*b*c^6*d*e^3*f + 46592*b*c^6*d^2*e^2*g - 25080*b^2*c^5
*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (18624*c^7*d^
4*g + 1224*b^3*c^4*e^4*f + 2808*b^4*c^3*e^4*g - 2624*c^7*d^3*e*f - 50400*b*
c^6*d^3*e*g + 7136*b*c^6*d^2*e^2*f - 5352*b^2*c^5*d*e^3*f - 19176*b^3*c^4*d
*e^3*g + 47664*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*(
(d*((64*c^7*e^2*(8*b*e*g - 13*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5)))/e - (32*c^6*e*(51*b^2*e^2*g + 146*c^2*d^2*g + 16*b*c*e^2*f - 26*c^2*d*
e*f - 172*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (16
32*b^2*c^6*e^4*f + 2784*b^3*c^5*e^4*g + 4672*c^8*d^2*e^2*f - 16704*c^8*d^3*
e*g - 5504*b*c^7*d*e^3*f + 27392*b*c^7*d^2*e^2*g - 15072*b^2*c^6*d*e^3*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (18432*c^8*d^4*g + 1488*
b^3*c^5*e^4*f + 1800*b^4*c^4*e^4*g - 6336*c^8*d^3*e*f - 42048*b*c^7*d^3*e*g
 + 11840*b*c^7*d^2*e^2*f - 7296*b^2*c^6*d*e^3*f - 13104*b^3*c^5*d*e^3*g + 3
5424*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d
```

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^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((32*c^
6*e^2*(14*b*e*g - 25*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e -
(8*c^5*e*(281*b^2*e^2*g + 912*c^2*d^2*g + 56*b*c*e^2*f - 100*c^2*d*e*f - 10
12*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (2248*b^2*
c^5*e^4*f + 5224*b^3*c^4*e^4*g + 7296*c^7*d^2*e^2*f - 33664*c^7*d^3*e*g - 8
096*b*c^6*d*e^3*f + 54144*b*c^6*d^2*e^2*g - 29096*b^2*c^5*d*e^3*g)/(9009*e*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (43264*c^7*d^4*g + 2648*b^3*c^4
*e^4*f + 3992*b^4*c^3*e^4*g - 13056*c^7*d^3*e*f - 96832*b*c^6*d^3*e*g + 232
32*b*c^6*d^2*e^2*f - 13640*b^2*c^5*d*e^3*f - 29360*b^3*c^4*d*e^3*g + 80352*
b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((d*((32*c^6*e^2
*(15*b*e*g - 27*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)
 - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^
5*e*(313*b^2*e^2*g + 1024*c^2*d^2*g + 60*b*c*e^2*f - 108*c^2*d*e*f - 1132*b
*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (2504*b^2*c^5*
e^4*f + 5936*b^3*c^4*e^4*g + 8192*c^7*d^2*e^2*f - 38400*c^7*d^3*e*g - 9056*
b*c^6*d*e^3*f + 61696*b*c^6*d^2*e^2*g - 33112*b^2*c^5*d*e^3*g)/(9009*e*(5*b
*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (49664*c^7*d^4*g + 2992*b^3*c^4*e^4
*f + 4576*b^4*c^3*e^4*g - 14848*c^7*d^3*e*f - 111104*b*c^6*d^3*e*g + 26368*
b*c^6*d^2*e^2*f - 15448*b^2*c^5*d*e^3*f - 33664*b^3*c^4*d*e^3*g + 92160*b^2
*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*(2
3*b*e*g - 40*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
- (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^
6*e*(207*b^2*e^2*g + 656*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 736*b*c*
d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (3312*b^2*c^6*e^4
*f + 7656*b^3*c^5*e^4*g + 10496*c^8*d^2*e^2*f - 49408*c^8*d^3*e*g - 11776*b
*c^7*d*e^3*f + 79360*b*c^7*d^2*e^2*g - 42624*b^2*c^6*d*e^3*g)/(45045*e*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (30528*c^8*d^4*g + 2016*b^3*c^5*e^4*
f + 4728*b^4*c^4*e^4*g - 4288*c^8*d^3*e*f - 83616*b*c^7*d^3*e*g + 11680*b*c
^7*d^2*e^2*f - 8784*b^2*c^6*d*e^3*f - 32184*b^3*c^5*d*e^3*g + 79632*b^2*c^6
*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((16*c^6*e^2*(39*b*
e*g - 72*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (3
2*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*
(287*b^2*e^2*g + 998*c^2*d^2*g + 39*b*c*e^2*f - 72*c^2*d*e*f - 1070*b*c*d*e
*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4592*b^2*c^5*e^4*f
+ 16160*b^3*c^4*e^4*g + 15968*c^7*d^2*e^2*f - 112128*c^7*d^3*e*g - 17120*b*
c^6*d*e^3*f + 176176*b*c^6*d^2*e^2*g - 92368*b^2*c^5*d*e^3*g)/(9009*e*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (52736*c^7*d^4*g + 1120*b^3*c^4*e^4*
f + 10816*b^4*c^3*e^4*g + 8192*c^7*d^3*e*f - 165632*b*c^6*d^3*e*g - 4304*b*
c^6*d^2*e^2*f - 2128*b^2*c^5*d*e^3*f - 71488*b^3*c^4*d*e^3*g + 169344*b^2*c
^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*(25*
b*e*g - 44*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) -
(64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*
e*(237*b^2*e^2*g + 760*c^2*d^2*g + 50*b*c*e^2*f - 88*c^2*d*e*f - 848*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (3792*b^2*c^6*e^4*f
 + 9048*b^3*c^5*e^4*g + 12160*c^8*d^2*e^2*f - 58752*c^8*d^3*e*g - 13568*b*c
^7*d*e^3*f + 94208*b*c^7*d^2*e^2*g - 50496*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e
^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (75456*c^8*d^4*g + 4224*b^3*c^5*e^4*f
+ 7128*b^4*c^4*e^4*g - 20160*c^8*d^3*e*f - 170208*b*c^7*d^3*e*g + 36320*b*c
^7*d^2*e^2*f - 21552*b^2*c^6*d*e^3*f - 52200*b^3*c^5*d*e^3*g + 142128*b^2*c
^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(27*
b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) -
(64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*
e*(89*b^2*e^2*g + 288*c^2*d^2*g + 18*b*c*e^2*f - 32*c^2*d*e*f - 320*b*c*d*e
*g))/(15015*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4272*b^2*c^6*e^4*f
+ 10440*b^3*c^5*e^4*g + 13824*c^8*d^2*e^2*f - 68096*c^8*d^3*e*g - 15360*b*c
^7*d*e^3*f + 109056*b*c^7*d^2*e^2*g - 58368*b^2*c^6*d*e^3*g)/(45045*e*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (88128*c^8*d^4*g + 4832*b^3*c^5*e^4*f
 + 8312*b^4*c^4*e^4*g - 23232*c^8*d^3*e*f - 198688*b*c^7*d^3*e*g + 41760*b*
c^7*d^2*e^2*f - 24720*b^2*c^6*d*e^3*f - 60888*b^3*c^5*d*e^3*g + 165840*b^2*
c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((16*c^6*e^2*(37
*b*e*g - 68*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) -
 (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5
*e*(262*b^2*e^2*g + 906*c^2*d^2*g + 37*b*c*e^2*f - 68*c^2*d*e*f - 974*b*c*d
*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (4192*b^2*c^5*e^4*
f + 14368*b^3*c^4*e^4*g + 14496*c^7*d^2*e^2*f - 99328*c^7*d^3*e*g - 15584*b
*c^6*d*e^3*f + 156240*b*c^6*d^2*e^2*g - 82016*b^2*c^5*d*e^3*g)/(9009*e*(5*b
*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (93568*c^7*d^4*g + 4592*b^3*c^4*e^4
*f + 10736*b^4*c^3*e^4*g - 21120*c^7*d^3*e*f - 226240*b*c^6*d^3*e*g + 38928
*b*c^6*d^2*e^2*f - 23360*b^2*c^5*d*e^3*f - 76112*b^3*c^4*d*e^3*g + 199008*b
^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((d*((d*((32*c^7*e^2*
(29*b*e*g - 52*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*
c^6*e*(297*b^2*e^2*g + 968*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e*f - 1072*
b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (4752*b^2*c^6
*e^4*f + 11832*b^3*c^5*e^4*g + 15488*c^8*d^2*e^2*f - 77440*c^8*d^3*e*g - 17
152*b*c^7*d*e^3*f + 123904*b*c^7*d^2*e^2*g - 66240*b^2*c^6*d*e^3*g)/(45045*
e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (100800*c^8*d^4*g + 5440*b^3*c
^5*e^4*f + 9496*b^4*c^4*e^4*g - 26304*c^8*d^3*e*f - 227168*b*c^7*d^3*e*g +
47200*b*c^7*d^2*e^2*f - 27888*b^2*c^6*d*e^3*f - 69576*b^3*c^5*d*e^3*g + 189
552*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7
*e^2*(17*b*e*g - 31*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (
16*c^6*e*(449*b^2*e^2*g + 1536*c^2*d^2*g + 68*b*c*e^2*f - 124*c^2*d*e*f - 1
660*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (7184*b^2
*c^6*e^4*f + 23936*b^3*c^5*e^4*g + 24576*c^8*d^2*e^2*f - 164864*c^8*d^3*e*g
 - 26560*b*c^7*d*e^3*f + 259584*b*c^7*d^2*e^2*g - 136432*b^2*c^6*d*e^3*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (77696*c^8*d^4*g + 2896*
b^3*c^5*e^4*f + 15376*b^4*c^4*e^4*g + 3456*c^8*d^3*e*f - 239552*b*c^7*d^3*e
*g + 7104*b*c^7*d^2*e^2*f - 10192*b^2*c^6*d*e^3*f - 101968*b^3*c^5*d*e^3*g
+ 242784*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((6
4*c^7*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/
e - (16*c^6*e*(493*b^2*e^2*g + 1696*c^2*d^2*g + 72*b*c*e^2*f - 132*c^2*d*e*
f - 1828*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (788
8*b^2*c^6*e^4*f + 26896*b^3*c^5*e^4*g + 27136*c^8*d^2*e^2*f - 185856*c^8*d^
3*e*g - 29248*b*c^7*d*e^3*f + 292352*b*c^7*d^2*e^2*g - 153488*b^2*c^6*d*e^3
*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (86272*c^8*d^4*g +
3056*b^3*c^5*e^4*f + 17312*b^4*c^4*e^4*g + 4864*c^8*d^3*e*f - 267904*b*c^7*
d^3*e*g + 6272*b*c^7*d^2*e^2*f - 10448*b^2*c^6*d*e^3*f - 114656*b^3*c^5*d*e
^3*g + 272448*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((
d*((64*c^7*e^2*(16*b*e*g - 29*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5)))/e - (16*c^6*e*(405*b^2*e^2*g + 1376*c^2*d^2*g + 64*b*c*e^2*f - 116*c^2
*d*e*f - 1492*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e +
 (6480*b^2*c^6*e^4*f + 20976*b^3*c^5*e^4*g + 22016*c^8*d^2*e^2*f - 143872*c
^8*d^3*e*g - 23872*b*c^7*d*e^3*f + 226816*b*c^7*d^2*e^2*g - 119376*b^2*c^6*
d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (142080*c^8*d^
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4*g + 7056*b^3*c^5*e^4*f + 15840*b^4*c^4*e^4*g - 32512*c^8*d^3*e*f - 339840
*b*c^7*d^3*e*g + 59776*b*c^7*d^2*e^2*f - 35856*b^2*c^6*d*e^3*f - 112800*b^3
*c^5*d*e^3*g + 296640*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((
d*((d*((d*((16*c^6*e^2*(41*b*e*g - 76*c*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10
*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e
 - 2*c*d)^4)))/e - (16*c^5*e*(316*b^2*e^2*g + 1106*c^2*d^2*g + 41*b*c*e^2*f
 - 76*c^2*d*e*f - 1182*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)
^4)))/e + (5056*b^2*c^5*e^4*f + 18432*b^3*c^4*e^4*g + 17696*c^7*d^2*e^2*f -
 128512*c^7*d^3*e*g - 18912*b*c^6*d*e^3*f + 201616*b*c^6*d^2*e^2*g - 105536
*b^2*c^5*d*e^3*g)/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (2129
92*c^7*d^4*g + 7744*b^3*c^4*e^4*f + 18656*b^4*c^3*e^4*g - 43008*c^7*d^3*e*f
 - 468736*b*c^6*d^3*e*g + 73360*b*c^6*d^2*e^2*f - 41408*b^2*c^5*d*e^3*f - 1
38560*b^3*c^4*d*e^3*g + 383616*b^2*c^5*d^2*e^2*g)/(9009*e*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^3 + (((d*((d*((d*((64*c^7*e^2*(18*b*e*g - 33*c*d*g + c*e*f))/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(167*b^2*e^2*g + 576*c^2*d^2*g + 24*b*c
*e^2*f - 44*c^2*d*e*f - 620*b*c*d*e*g))/(15015*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5)))/e + (8016*b^2*c^6*e^4*f + 27792*b^3*c^5*e^4*g + 27648*c^8*d^2*e^
2*f - 192512*c^8*d^3*e*g - 29760*b*c^7*d*e^3*f + 302592*b*c^7*d^2*e^2*g - 1
58736*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e -
(297216*c^8*d^4*g + 10736*b^3*c^5*e^4*f + 27104*b^4*c^4*e^4*g - 56064*c^8*d
^3*e*f - 662656*b*c^7*d^3*e*g + 97920*b*c^7*d^2*e^2*f - 56400*b^2*c^6*d*e^3
*f - 199776*b^3*c^5*d*e^3*g + 548160*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(47*b*e*g - 88*c*d*g + 2*c*e*f))/(450
45*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(439*b^2*e^2*g + 1574*c^2*d^2*g
 + 47*b*c*e^2*f - 88*c^2*d*e*f - 1662*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^5)))/e + (14048*b^2*c^6*e^4*f + 67200*b^3*c^5*e^4*g + 50368
*c^8*d^2*e^2*f - 484352*c^8*d^3*e*g - 53184*b*c^7*d*e^3*f + 751712*b*c^7*d^
2*e^2*g - 389152*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5)))/e - (32768*c^8*d^4*g - 640*b^3*c^5*e^4*f + 35968*b^4*c^4*e^4*g + 583
68*c^8*d^3*e*f - 336896*b*c^7*d^3*e*g - 62368*b*c^7*d^2*e^2*f + 17888*b^2*c
^6*d*e^3*f - 219904*b^3*c^5*d*e^3*g + 456192*b^2*c^6*d^2*e^2*g)/(45045*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(19*b*e*g - 35*c*d*g + c*e*f)
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(549*b^2*e^2*g + 1904*c^2
*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f - 2044*b*c*d*e*g))/(45045*(3*b*e^2 -
6*c*d*e)*(b*e - 2*c*d)^5)))/e + (8784*b^2*c^6*e^4*f + 31200*b^3*c^5*e^4*g +
 30464*c^8*d^2*e^2*f - 216832*c^8*d^3*e*g - 32704*b*c^7*d*e^3*f + 340480*b*
c^7*d^2*e^2*g - 178416*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5)))/e - (337536*c^8*d^4*g + 11920*b^3*c^5*e^4*f + 30736*b^4*c^4*e^
4*g - 62592*c^8*d^3*e*f - 752192*b*c^7*d^3*e*g + 109120*b*c^7*d^2*e^2*f - 6
2736*b^2*c^6*d*e^3*f - 226608*b^3*c^5*d*e^3*g + 621984*b^2*c^6*d^2*e^2*g)/(
45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((d*((64*c^7*e^2*(20*b*e*g - 37*c*d*
g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(605*b^2*e^2*g
+ 2112*c^2*d^2*g + 80*b*c*e^2*f - 148*c^2*d*e*f - 2260*b*c*d*e*g))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (9680*b^2*c^6*e^4*f + 35504*b^3*c
^5*e^4*g + 33792*c^8*d^2*e^2*f - 247808*c^8*d^3*e*g - 36160*b*c^7*d*e^3*f +
 388608*b*c^7*d^2*e^2*g - 203344*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5)))/e - (390144*c^8*d^4*g + 13360*b^3*c^5*e^4*f + 35456*
b^4*c^4*e^4*g - 70656*c^8*d^3*e*f - 868864*b*c^7*d^3*e*g + 122880*b*c^7*d^2
*e^2*f - 70480*b^2*c^6*d*e^3*f - 261504*b^3*c^5*d*e^3*g + 718080*b^2*c^6*d^
2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2
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- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*(43*b*e*g
 - 80*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c
^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(37
3*b^2*e^2*g + 1326*c^2*d^2*g + 43*b*c*e^2*f - 80*c^2*d*e*f - 1406*b*c*d*e*g
))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (11936*b^2*c^6*e^4*f +
 53888*b^3*c^5*e^4*g + 42432*c^8*d^2*e^2*f - 386048*c^8*d^3*e*g - 44992*b*c
^7*d*e^3*f + 600288*b*c^7*d^2*e^2*g - 311392*b^2*c^6*d*e^3*g)/(45045*e*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (315392*c^8*d^4*g + 6784*b^3*c^5*e^4
*f + 43264*b^4*c^4*e^4*g - 9216*c^8*d^3*e*f - 819200*b*c^7*d^3*e*g + 35040*
b*c^7*d^2*e^2*f - 28768*b^2*c^6*d*e^3*f - 299008*b^3*c^5*d*e^3*g + 755712*b
^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((32*c^7*e^2*
(45*b*e*g - 84*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*
c^6*e*(404*b^2*e^2*g + 1442*c^2*d^2*g + 45*b*c*e^2*f - 84*c^2*d*e*f - 1526*
b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e + (12928*b^2*c^
6*e^4*f + 59872*b^3*c^5*e^4*g + 46144*c^8*d^2*e^2*f - 430080*c^8*d^3*e*g -
48832*b*c^7*d*e^3*f + 668192*b*c^7*d^2*e^2*g - 346304*b^2*c^6*d*e^3*g)/(450
45*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (564736*c^8*d^4*g + 23072*b
^3*c^5*e^4*f + 53696*b^4*c^4*e^4*g - 135680*c^8*d^3*e*f - 1276672*b*c^7*d^3
*e*g + 226592*b*c^7*d^2*e^2*f - 125504*b^2*c^6*d*e^3*f - 392768*b^3*c^5*d*e
^3*g + 1067904*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*(
(d*((32*c^7*e^2*(49*b*e*g - 92*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5)))/e - (32*c^6*e*(478*b^2*e^2*g + 1722*c^2*d^2*g + 49*b*c*e^2*f - 92*c
^2*d*e*f - 1814*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
 + (15296*b^2*c^6*e^4*f + 76256*b^3*c^5*e^4*g + 55104*c^8*d^2*e^2*f - 55193
6*c^8*d^3*e*g - 58048*b*c^7*d*e^3*f + 855456*b*c^7*d^2*e^2*g - 442240*b^2*c
^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (1026048*c^
8*d^4*g + 23008*b^3*c^5*e^4*f + 90752*b^4*c^4*e^4*g - 125952*c^8*d^3*e*f -
2265088*b*c^7*d^3*e*g + 216480*b*c^7*d^2*e^2*f - 122752*b^2*c^6*d*e^3*f - 6
72768*b^3*c^5*d*e^3*g + 1858560*b^2*c^6*d^2*e^2*g)/(45045*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*
x)^2 + (((d*((48512*b^2*c^7*e^4*f + 336896*b^3*c^6*e^4*g + 179072*c^9*d^2*e
^2*f - 2508672*c^9*d^3*e*g - 186368*b*c^8*d*e^3*f + 3852544*b*c^8*d^2*e^2*g
 - 1972864*b^2*c^7*d*e^3*g)/(135135*e^2*(b*e - 2*c*d)^7) - (d*((128*c^7*(37
9*b^2*e^2*g + 1399*c^2*d^2*g + 30*b*c*e^2*f - 57*c^2*d*e*f - 1456*b*c*d*e*g
))/(135135*(b*e - 2*c*d)^7) - (d*((128*c^8*e*(30*b*e*g - 57*c*d*g + c*e*f))
/(135135*(b*e - 2*c*d)^7) - (128*c^9*d*e*g)/(135135*(b*e - 2*c*d)^7)))/e))/
e))/e - (128*c^5*(b*e - c*d)*(2282*b^3*e^3*g - 18256*c^3*d^3*g + 350*b^2*c*
e^3*f + 1343*c^3*d^2*e*f - 1371*b*c^2*d*e^2*f + 27384*b*c^2*d^2*e*g - 13692
*b^2*c*d*e^2*g))/(135135*e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((d*((4*c^3*e^2*(10*b*e*g - 17*c*d*g
 + c*e*f))/(13*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d)) - (4*c^4*d*e^2*g)/(13*(1
1*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (4*c^2*e*(24*b^2*e^2*g + 59*c^2*d^
2*g + 10*b*c*e^2*f - 17*c^2*d*e*f - 76*b*c*d*e*g))/(13*(11*b*e^2 - 22*c*d*e
)*(b*e - 2*c*d))))/e + (96*b^2*c^2*e^4*f + 236*c^4*d^2*e^2*f + 88*b^3*c*e^4
*g - 396*c^4*d^3*e*g - 304*b*c^3*d*e^3*f + 712*b*c^3*d^2*e^2*g - 432*b^2*c^
2*d*e^3*g)/(13*e*(11*b*e^2 - 22*c*d*e)*(b*e - 2*c*d))))/e - (4*(b*e - c*d)*
(7*b^3*e^3*g - 56*c^3*d^3*g + 15*b^2*c*e^3*f + 43*c^3*d^2*e*f - 51*b*c^2*d*
e^2*f + 84*b*c^2*d^2*e*g - 42*b^2*c*d*e^2*g))/(13*e*(11*b*e^2 - 22*c*d*e)*(
b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^6 - (
((d*((132*b^2*c^4*e^3*f - 608*c^6*d^3*g + 126*b^3*c^3*e^3*g + 288*c^6*d^2*e
*f - 384*b*c^5*d*e^2*f + 1056*b*c^5*d^2*e*g - 624*b^2*c^4*d*e^2*g)/(1287*(7
*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) + (d*((d*((8*c^5*e^2*(9*b*e*g - 12*c*d*
g + 2*c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*e^2*g
)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (4*c^4*e*(11*b^2*e^2*g
 + 24*c^2*d^2*g + 6*b*c*e^2*f - 8*c^2*d*e*f - 32*b*c*d*e*g))/(429*(7*b*e^2 -
 14*c*d*e)*(b*e - 2*c*d)^3)))/e))/e - (50*b^3*c^3*e^3*f + 38*b^4*c^2*e^3*g
- 304*b*c^5*d^3*g + 144*b*c^5*d^2*e*f - 168*b^2*c^4*d*e^2*f + 456*b^2*c^4*d
^2*e*g - 228*b^3*c^3*d*e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((336*b^2*c
^5*e^3*f - 2016*c^7*d^3*g + 384*b^3*c^4*e^3*g + 800*c^7*d^2*e*f - 1024*b*c^
6*d*e^2*f + 3424*b*c^6*d^2*e*g - 1968*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*
c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((32*c^6*e^2*(5*b*e*g - 7*c*d*g + c*e*f))/
(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e
^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(21*b^2*e^2*g + 50*c^2*d^2*
g + 10*b*c*e^2*f - 14*c^2*d*e*f - 64*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)
*(b*e - 2*c*d)^4)))/e))/e - (132*b^3*c^4*e^3*f + 126*b^4*c^3*e^3*g - 1008*b
*c^6*d^3*g + 400*b*c^6*d^2*e*f - 456*b^2*c^5*d*e^2*f + 1512*b^2*c^5*d^2*e*g
 - 756*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((984*b^2*c^5*e^3
*f - 9216*c^7*d^3*g + 1572*b^3*c^4*e^3*g + 2816*c^7*d^2*e*f - 3328*b*c^6*d*
e^2*f + 15232*b*c^6*d^2*e*g - 8448*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(19*b*e*g - 32*c*d*g + 2*c*e*f))
/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(123*b^2*e^2*g + 352*c^2*d^
2*g + 38*b*c*e^2*f - 64*c^2*d*e*f - 416*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d
*e)*(b*e - 2*c*d)^4)))/e))/e - (420*b^3*c^4*e^3*f + 576*b^4*c^3*e^3*g - 460
8*b*c^6*d^3*g + 1408*b*c^6*d^2*e*f - 1536*b^2*c^5*d*e^2*f + 6912*b^2*c^5*d^
2*e*g - 3456*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((1128*b^2*
c^5*e^3*f - 10816*c^7*d^3*g + 1836*b^3*c^4*e^3*g + 3264*c^7*d^2*e*f - 3840*
b*c^6*d*e^2*f + 17856*b*c^6*d^2*e*g - 9888*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2
- 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(21*b*e*g - 36*c*d*g + 2
*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(90
09*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(47*b^2*e^2*g + 136
*c^2*d^2*g + 14*b*c*e^2*f - 24*c^2*d*e*f - 160*b*c*d*e*g))/(3003*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (484*b^3*c^4*e^3*f + 676*b^4*c^3*e^3*
g - 5408*b*c^6*d^3*g + 1632*b*c^6*d^2*e*f - 1776*b^2*c^5*d*e^2*f + 8112*b^2
*c^5*d^2*e*g - 4056*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*
d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((12
72*b^2*c^5*e^3*f - 12416*c^7*d^3*g + 2100*b^3*c^4*e^3*g + 3712*c^7*d^2*e*f
- 4352*b*c^6*d*e^2*f + 20480*b*c^6*d^2*e*g - 11328*b^2*c^5*d*e^2*g)/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((16*c^6*e^2*(23*b*e*g - 40*c
*d*g + 2*c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^
2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (8*c^5*e*(159*b^2*e^
2*g + 464*c^2*d^2*g + 46*b*c*e^2*f - 80*c^2*d*e*f - 544*b*c*d*e*g))/(9009*(
5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (548*b^3*c^4*e^3*f + 776*b^4
*c^3*e^3*g - 6208*b*c^6*d^3*g + 1856*b*c^6*d^2*e*f - 2016*b^2*c^5*d*e^2*f +
 9312*b^2*c^5*d^2*e*g - 4656*b^3*c^4*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b
*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 +
(((d*((1952*b^2*c^6*e^3*f - 20928*c^8*d^3*g + 3456*b^3*c^5*e^3*g + 5696*c^8
*d^2*e*f - 6656*b*c^7*d*e^2*f + 34240*b*c^7*d^2*e*g - 18784*b^2*c^6*d*e^2*g
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(9*b*e*
g - 15*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^
8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(61*
b^2*e^2*g + 178*c^2*d^2*g + 18*b*c*e^2*f - 30*c^2*d*e*f - 208*b*c*d*e*g))/(
45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (840*b^3*c^5*e^3*f + 1
308*b^4*c^4*e^3*g - 10464*b*c^7*d^3*g + 2848*b*c^7*d^2*e*f - 3088*b^2*c^6*d
*e^2*f + 15696*b^2*c^6*d^2*e*g - 7848*b^3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^2 + (((d*((2272*b^2*c^6*e^3*f - 25152*c^8*d^3*g + 4128*b^3*c^5*e^3*g +
 6720*c^8*d^2*e*f - 7808*b*c^7*d*e^2*f + 41088*b*c^7*d^2*e*g - 22496*b^2*c^
6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^
2*(10*b*e*g - 17*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*
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c^6*e*(71*b^2*e^2*g + 210*c^2*d^2*g + 20*b*c*e^2*f - 34*c^2*d*e*f - 244*b*c
*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (984*b^3*c^5
*e^3*f + 1572*b^4*c^4*e^3*g - 12576*b*c^7*d^3*g + 3360*b*c^7*d^2*e*f - 3632
*b^2*c^6*d*e^2*f + 18864*b^2*c^6*d^2*e*g - 9432*b^3*c^5*d*e^2*g)/(45045*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)^2 + (((d*((2592*b^2*c^6*e^3*f - 29376*c^8*d^3*g + 4800*b^3*c
^5*e^3*g + 7744*c^8*d^2*e*f - 8960*b*c^7*d*e^2*f + 47936*b*c^7*d^2*e*g - 26
208*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*(
(64*c^7*e^2*(11*b*e*g - 19*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))
)/e - (32*c^6*e*(81*b^2*e^2*g + 242*c^2*d^2*g + 22*b*c*e^2*f - 38*c^2*d*e*f
 - 280*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (1
128*b^3*c^5*e^3*f + 1836*b^4*c^4*e^3*g - 14688*b*c^7*d^3*g + 3872*b*c^7*d^2
*e*f - 4176*b^2*c^6*d*e^2*f + 22032*b^2*c^6*d^2*e*g - 11016*b^3*c^5*d*e^2*g
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((2912*b^2*c^6*e^3*f - 33600*c^8*d^3*g
+ 5472*b^3*c^5*e^3*g + 8768*c^8*d^2*e*f - 10112*b*c^7*d*e^2*f + 54784*b*c^7
*d^2*e*g - 29920*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
5) + (d*((d*((64*c^7*e^2*(12*b*e*g - 21*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6
*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5)))/e - (32*c^6*e*(91*b^2*e^2*g + 274*c^2*d^2*g + 24*b*c*e^2*f -
 42*c^2*d*e*f - 316*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)
))/e))/e - (1272*b^3*c^5*e^3*f + 2100*b^4*c^4*e^3*g - 16800*b*c^7*d^3*g + 4
384*b*c^7*d^2*e*f - 4720*b^2*c^6*d*e^2*f + 25200*b^2*c^6*d^2*e*g - 12600*b^
3*c^5*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((2*f*(b*e - c*d)^3)/(13*b*e^2
 - 26*c*d*e) - (d*((2*(b*e - c*d)^2*(b*e*g - c*d*g + 3*c*e*f))/(13*b*e^2 -
26*c*d*e) + (d*((d*((2*c^2*e^2*(3*b*e*g - 3*c*d*g + c*e*f))/(13*b*e^2 - 26*
c*d*e) - (2*c^3*d*e^2*g)/(13*b*e^2 - 26*c*d*e)))/e - (6*c*e*(b*e - c*d)*(b*
e*g - c*d*g + c*e*f))/(13*b*e^2 - 26*c*d*e)))/e))/e)*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^7 + (((d*((d*((d*((16*c^5*e^2*(21*b*e*g -
39*c*d*g + c*e*f))/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (16*c^6*d*
e^2*g)/(1287*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e - (16*c^4*e*(164*b^2
*e^2*g + 575*c^2*d^2*g + 21*b*c*e^2*f - 39*c^2*d*e*f - 614*b*c*d*e*g))/(128
7*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3)))/e + (2624*b^2*c^4*e^4*f + 9376*b^
3*c^3*e^4*g + 9200*c^6*d^2*e^2*f - 65168*c^6*d^3*e*g - 9824*b*c^5*d*e^3*f +
 102352*b*c^5*d^2*e^2*g - 53632*b^2*c^4*d*e^3*g)/(1287*e*(7*b*e^2 - 14*c*d*
e)*(b*e - 2*c*d)^3)))/e - (16*c^2*(b*e - c*d)*(442*b^3*e^3*g - 3536*c^3*d^3
*g + 144*b^2*c*e^3*f + 537*c^3*d^2*e*f - 556*b*c^2*d*e^2*f + 5304*b*c^2*d^2
*e*g - 2652*b^2*c*d*e^2*g))/(1287*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((d*((d*((3
2*c^6*e^2*(25*b*e*g - 47*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/
e - (32*c^5*e*(248*b^2*e^2*g + 895*c^2*d^2*g + 25*b*c*e^2*f - 47*c^2*d*e*f
- 942*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e + (7936*b
^2*c^5*e^4*f + 39744*b^3*c^4*e^4*g + 28640*c^7*d^2*e^2*f - 287776*c^7*d^3*e
*g - 30144*b*c^6*d*e^3*f + 445984*b*c^6*d^2*e^2*g - 230528*b^2*c^5*d*e^3*g)
/(9009*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e - (32*c^3*(b*e - c*d)*(1
018*b^3*e^3*g - 8144*c^3*d^3*g + 224*b^2*c*e^3*f + 849*c^3*d^2*e*f - 872*b*
c^2*d*e^2*f + 12216*b*c^2*d^2*e*g - 6108*b^2*c*d*e^2*g))/(9009*e*(5*b*e^2 -
 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x)^3 + (((d*((d*((d*((64*c^7*e^2*(28*b*e*g - 53*c*d*g + c*e*f))/(4504
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (64*c^6*e*(323*b^2*e^2*g + 1183*c^2*d^2*g
+ 28*b*c*e^2*f - 53*c^2*d*e*f - 1236*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)
*(b*e - 2*c*d)^5)))/e + (20672*b^2*c^6*e^4*f + 127104*b^3*c^5*e^4*g + 75712
*c^8*d^2*e^2*f - 937664*c^8*d^3*e*g - 79104*b*c^7*d*e^3*f + 1444352*b*c^7*d
^2*e^2*g - 741952*b^2*c^6*d*e^3*g)/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5)))/e - (64*c^4*(b*e - c*d)*(1690*b^3*e^3*g - 13520*c^3*d^3*g + 296*b^2
```

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*c*e^3*f + 1131*c^3*d^2*e*f - 1157*b*c^2*d*e^2*f + 20280*b*c^2*d^2*e*g - 10
140*b^2*c*d*e^2*g))/(45045*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((50*b^2*c^3*e^3*f
- 160*c^5*d^3*g + 38*b^3*c^2*e^3*g + 96*c^5*d^2*e*f - 136*b*c^4*d*e^2*f + 2
88*b*c^4*d^2*e*g - 178*b^2*c^3*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*
c*d)^2) + (d*((d*((8*c^4*e^2*(4*b*e*g - 5*c*d*g + c*e*f))/(143*(9*b*e^2 - 1
8*c*d*e)*(b*e - 2*c*d)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e
- 2*c*d)^2)))/e - (50*b^2*c^3*e^3*g + 32*b*c^4*e^3*f - 40*c^5*d*e^2*f + 96*
c^5*d^2*e*g - 136*b*c^4*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)
))/e))/e - (18*b^3*c^2*e^3*f - 80*b*c^4*d^3*g + 10*b^4*c*e^3*g + 48*b*c^4*d
^2*e*f - 58*b^2*c^3*d*e^2*f + 120*b^2*c^3*d^2*e*g - 60*b^3*c^2*d*e^2*g)/(14
3*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^5 - (((d*((232*b^2*c^3*e^3*f - 1408*c^5*d^3*g + 272*b^
3*c^2*e^3*g + 616*c^5*d^2*e*f - 760*b*c^4*d*e^2*f + 2420*b*c^4*d^2*e*g - 14
00*b^2*c^3*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2) + (d*((d*((4
*c^4*e^2*(21*b*e*g - 36*c*d*g + 2*c*e*f))/(143*(9*b*e^2 - 18*c*d*e)*(b*e -
2*c*d)^2) - (8*c^5*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e
- (232*b^2*c^3*e^3*g + 84*b*c^4*e^3*f - 144*c^5*d*e^2*f + 616*c^5*d^2*e*g -
 760*b*c^4*d*e^2*g)/(143*(9*b*e^2 - 18*c*d*e)*(b*e - 2*c*d)^2)))/e))/e - (9
6*b^3*c^2*e^3*f - 704*b*c^4*d^3*g + 88*b^4*c*e^3*g + 308*b*c^4*d^2*e*f - 34
4*b^2*c^3*d*e^2*f + 1056*b^2*c^3*d^2*e*g - 528*b^3*c^2*d*e^2*g)/(143*(9*b*e
^2 - 18*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x)^5 + (((d*((2568*b^2*c^5*e^3*f - 40192*c^7*d^3*g + 6192*b^3*c^4
*e^3*g + 8448*c^7*d^2*e*f - 9312*b*c^6*d*e^2*f + 64512*b*c^6*d^2*e*g - 3458
4*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) + (d*((d*((3
2*c^6*e^2*(15*b*e*g - 27*c*d*g + c*e*f))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/
e - (8*c^5*e*(107*b^2*e^2*g + 352*c^2*d^2*g + 20*b*c*e^2*f - 36*c^2*d*e*f -
 388*b*c*d*e*g))/(3003*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4)))/e))/e - (8*b
*c^3*(314*b^3*e^3*g - 2512*c^3*d^3*g + 146*b^2*c*e^3*f + 528*c^3*d^2*e*f -
555*b*c^2*d*e^2*f + 3768*b*c^2*d^2*e*g - 1884*b^2*c*d*e^2*g))/(9009*(5*b*e^
2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^3 - (((d*((832*b^2*c^6*e^3*f - 6144*c^8*d^3*g + 1104*b^3*c^5*e^
3*g + 2112*c^8*d^2*e*f - 2624*b*c^7*d*e^2*f + 10272*b*c^7*d^2*e*g - 5792*b^
2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^
7*e^2*(11*b*e*g - 16*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
- (32*c^6*e*(26*b^2*e^2*g + 66*c^2*d^2*g + 11*b*c*e^2*f - 16*c^2*d*e*f - 82
*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (16*b*c^
4*(24*b^3*e^3*g - 192*c^3*d^3*g + 21*b^2*c*e^3*f + 66*c^3*d^2*e*f - 74*b*c^
2*d*e^2*f + 288*b*c^2*d^2*e*g - 144*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
)^2 - (((d*((4400*b^2*c^6*e^3*f - 72192*c^8*d^3*g + 11016*b^3*c^5*e^3*g + 1
4336*c^8*d^2*e*f - 15872*b*c^7*d*e^2*f + 115456*b*c^7*d^2*e*g - 61696*b^2*c
^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e
^2*(27*b*e*g - 48*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d
)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (
16*c^6*e*(275*b^2*e^2*g + 896*c^2*d^2*g + 54*b*c*e^2*f - 96*c^2*d*e*f - 992
*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4
*(564*b^3*e^3*g - 4512*c^3*d^3*g + 249*b^2*c*e^3*f + 896*c^3*d^2*e*f - 944*
b*c^2*d*e^2*f + 6768*b*c^2*d^2*e*g - 3384*b^2*c*d*e^2*g))/(45045*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((d*((4944*b^2*c^6*e^3*f - 83584*c^8*d^3*g + 12696*b^3*c^5*e^3
*g + 16256*c^8*d^2*e*f - 17920*b*c^7*d*e^2*f + 133504*b*c^7*d^2*e*g - 71232
*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32
*c^7*e^2*(29*b*e*g - 52*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))
/e - (16*c^6*e*(309*b^2*e^2*g + 1016*c^2*d^2*g + 58*b*c*e^2*f - 104*c^2*d*e
*f - 1120*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e -
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 (8*b*c^4*(653*b^3*e^3*g - 5224*c^3*d^3*g + 281*b^2*c*e^3*f + 1016*c^3*d^2*
e*f - 1068*b*c^2*d*e^2*f + 7836*b*c^2*d^2*e*g - 3918*b^2*c*d*e^2*g))/(45045
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^2 - (((d*((5488*b^2*c^6*e^3*f - 94976*c^8*d^3*g + 14376*
b^3*c^5*e^3*g + 18176*c^8*d^2*e*f - 19968*b*c^7*d*e^2*f + 151552*b*c^7*d^2*
e*g - 80768*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) +
(d*((d*((32*c^7*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e -
2*c*d)^5)))/e - (16*c^6*e*(343*b^2*e^2*g + 1136*c^2*d^2*g + 62*b*c*e^2*f -
112*c^2*d*e*f - 1248*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5
)))/e))/e - (8*b*c^4*(742*b^3*e^3*g - 5936*c^3*d^3*g + 313*b^2*c*e^3*f + 11
36*c^3*d^2*e*f - 1192*b*c^2*d*e^2*f + 8904*b*c^2*d^2*e*g - 4452*b^2*c*d*e^2
*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((5584*b^2*c^5*e^3*f - 150016*c^7*d^
3*g + 21376*b^3*c^4*e^3*g + 19680*c^7*d^2*e*f - 20960*b*c^6*d*e^2*f + 23486
4*b*c^6*d^2*e*g - 122672*b^2*c^5*d*e^2*g)/(9009*(5*b*e^2 - 10*c*d*e)*(b*e -
 2*c*d)^4) + (d*((d*((16*c^6*e^2*(43*b*e*g - 80*c*d*g + 2*c*e*f))/(9009*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (32*c^7*d*e^2*g)/(9009*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^4)))/e - (16*c^5*e*(349*b^2*e^2*g + 1230*c^2*d^2*g + 43
*b*c*e^2*f - 80*c^2*d*e*f - 1310*b*c*d*e*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*
e - 2*c*d)^4)))/e))/e - (16*b*c^3*(586*b^3*e^3*g - 4688*c^3*d^3*g + 164*b^2
*c*e^3*f + 615*c^3*d^2*e*f - 635*b*c^2*d*e^2*f + 7032*b*c^2*d^2*e*g - 3516*
b^2*c*d*e^2*g))/(9009*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((5616*b^2*c^6*e^3*f - 99
072*c^8*d^3*g + 14952*b^3*c^5*e^3*g + 18688*c^8*d^2*e*f - 20480*b*c^7*d*e^2
*f + 157952*b*c^7*d^2*e*g - 84096*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(31*b*e*g - 56*c*d*g + 2*c*e*f))/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(351*b^2*e^2*g + 1168*c^2*d
^2*g + 62*b*c*e^2*f - 112*c^2*d*e*f - 1280*b*c*d*e*g))/(45045*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(774*b^3*e^3*g - 6192*c^3*d^3*g
+ 321*b^2*c*e^3*f + 1168*c^3*d^2*e*f - 1224*b*c^2*d*e^2*f + 9288*b*c^2*d^2*
e*g - 4644*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((6224*b^2*c^6
*e^3*f - 112512*c^8*d^3*g + 16920*b^3*c^5*e^3*g + 20864*c^8*d^2*e*f - 22784
*b*c^7*d*e^2*f + 179200*b*c^7*d^2*e*g - 95296*b^2*c^6*d*e^2*g)/(45045*(3*b*
e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(33*b*e*g - 60*c*d*g
+ 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(389*b^2*e^2*g
+ 1304*c^2*d^2*g + 66*b*c*e^2*f - 120*c^2*d*e*f - 1424*b*c*d*e*g))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(879*b^3*e^3*g - 703
2*c^3*d^3*g + 357*b^2*c*e^3*f + 1304*c^3*d^2*e*f - 1364*b*c^2*d*e^2*f + 105
48*b*c^2*d^2*e*g - 5274*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*(
(6960*b^2*c^6*e^3*f - 130048*c^8*d^3*g + 19464*b^3*c^5*e^3*g + 23552*c^8*d^
2*e*f - 25600*b*c^7*d*e^2*f + 206848*b*c^7*d^2*e*g - 109824*b^2*c^6*d*e^2*g
)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(35*b*e
*g - 64*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64
*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(
435*b^2*e^2*g + 1472*c^2*d^2*g + 70*b*c*e^2*f - 128*c^2*d*e*f - 1600*b*c*d*
e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (8*b*c^4*(1016*
b^3*e^3*g - 8128*c^3*d^3*g + 401*b^2*c*e^3*f + 1472*c^3*d^2*e*f - 1536*b*c^
2*d*e^2*f + 12192*b*c^2*d^2*e*g - 6096*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d +
e*x)^2 + (((d*((8976*b^2*c^6*e^3*f - 229888*c^8*d^3*g + 32928*b^3*c^5*e^3*g
 + 31232*c^8*d^2*e*f - 33472*b*c^7*d*e^2*f + 360448*b*c^7*d^2*e*g - 188592*
b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*
c^7*e^2*(19*b*e*g - 35*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e
- (16*c^6*e*(561*b^2*e^2*g + 1952*c^2*d^2*g + 76*b*c*e^2*f - 140*c^2*d*e*f
- 2092*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (1
6*b*c^4*(898*b^3*e^3*g - 7184*c^3*d^3*g + 262*b^2*c*e^3*f + 976*c^3*d^2*e*f
 - 1011*b*c^2*d*e^2*f + 10776*b*c^2*d^2*e*g - 5388*b^2*c*d*e^2*g))/(45045*(
3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x)^2 + (((d*((9808*b^2*c^6*e^3*f - 258560*c^8*d^3*g + 36912*b
^3*c^5*e^3*g + 34304*c^8*d^2*e*f - 36672*b*c^7*d*e^2*f + 404992*b*c^7*d^2*e
*g - 211664*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) +
(d*((d*((64*c^7*e^2*(20*b*e*g - 37*c*d*g + c*e*f))/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*
c*d)^5)))/e - (16*c^6*e*(613*b^2*e^2*g + 2144*c^2*d^2*g + 80*b*c*e^2*f - 14
8*c^2*d*e*f - 2292*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))
)/e))/e - (16*b*c^4*(1010*b^3*e^3*g - 8080*c^3*d^3*g + 287*b^2*c*e^3*f + 10
72*c^3*d^2*e*f - 1109*b*c^2*d*e^2*f + 12120*b*c^2*d^2*e*g - 6060*b^2*c*d*e^
2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((10768*b^2*c^6*e^3*f - 294912*c^8*
d^3*g + 41920*b^3*c^5*e^3*g + 37888*c^8*d^2*e*f - 40384*b*c^7*d*e^2*f + 461
312*b*c^7*d^2*e*g - 240752*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(21*b*e*g - 39*c*d*g + c*e*f))/(45045*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(673*b^2*e^2*g + 2368*c^2*d^2*g + 84
*b*c*e^2*f - 156*c^2*d*e*f - 2524*b*c*d*e*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b
*e - 2*c*d)^5)))/e))/e - (16*b*c^4*(1152*b^3*e^3*g - 9216*c^3*d^3*g + 316*b
^2*c*e^3*f + 1184*c^3*d^2*e*f - 1223*b*c^2*d*e^2*f + 13824*b*c^2*d^2*e*g -
6912*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((11856*b^2*c^6*e^3*
f - 342016*c^8*d^3*g + 48336*b^3*c^5*e^3*g + 41984*c^8*d^2*e*f - 44608*b*c^
7*d*e^2*f + 534016*b*c^7*d^2*e*g - 278160*b^2*c^6*d*e^2*g)/(45045*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((64*c^7*e^2*(22*b*e*g - 41*c*d*g + c*
e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c^8*d*e^2*g)/(45045
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (16*c^6*e*(741*b^2*e^2*g + 2624
*c^2*d^2*g + 88*b*c*e^2*f - 164*c^2*d*e*f - 2788*b*c*d*e*g))/(45045*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (16*b*c^4*(1336*b^3*e^3*g - 10688*c
^3*d^3*g + 349*b^2*c*e^3*f + 1312*c^3*d^2*e*f - 1353*b*c^2*d*e^2*f + 16032*
b*c^2*d^2*e*g - 8016*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*
d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((16
672*b^2*c^6*e^3*f - 635904*c^8*d^3*g + 87424*b^3*c^5*e^3*g + 60352*c^8*d^2*
e*f - 63424*b*c^7*d*e^2*f + 984032*b*c^7*d^2*e*g - 507872*b^2*c^6*d*e^2*g)/
(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (d*((d*((32*c^7*e^2*(51*b*e*g
 - 96*c*d*g + 2*c*e*f))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) - (64*c
^8*d*e^2*g)/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e - (32*c^6*e*(52
1*b^2*e^2*g + 1886*c^2*d^2*g + 51*b*c*e^2*f - 96*c^2*d*e*f - 1982*b*c*d*e*g
))/(45045*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5)))/e))/e - (32*b*c^4*(1242*b^
3*e^3*g - 9936*c^3*d^3*g + 248*b^2*c*e^3*f + 943*c^3*d^2*e*f - 967*b*c^2*d*
e^2*f + 14904*b*c^2*d^2*e*g - 7452*b^2*c*d*e^2*g))/(45045*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
^2
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**10,x
)
```

```
[Out] Timed out
```

3.2208 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{45045e^2(d+ex)^7(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22c}{6435e^2(d+ex)^8(2cd-be)^4}$$

```
[Out] -2/15*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e
*x+d)^11-2/195*(-15*b*e*g+22*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(7/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^10-4/715*c*(-15*b*e*g+22*c*d*g+8*c*e*f)*
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^9-16/6435
*c^2*(-15*b*e*g+22*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^
2/(-b*e+2*c*d)^4/(e*x+d)^8-32/45045*c^3*(-15*b*e*g+22*c*d*g+8*c*e*f)*(d*(-b
*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)^5/(e*x+d)^7
```

Rubi [**A**] time = 0.58, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = $\{792, 658, 650\}$

$$-\frac{32c^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22cdg+8cef)}{45045e^2(d+ex)^7(2cd-be)^5}-\frac{16c^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-15beg+22c}{6435e^2(d+ex)^8(2cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^11,x]
```

```
[Out] (-2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(15*e^2*(2*c*d
 - b*e)*(d + e*x)^11) - (2*(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(195*e^2*(2*c*d - b*e)^2*(d + e*x)^10) - (4*c*
(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2)
)/(715*e^2*(2*c*d - b*e)^3*(d + e*x)^9) - (16*c^2*(8*c*e*f + 22*c*d*g - 15*
b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6435*e^2*(2*c*d - b*e)
^4*(d + e*x)^8) - (32*c^3*(8*c*e*f + 22*c*d*g - 15*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(7/2))/(45045*e^2*(2*c*d - b*e)^5*(d + e*x)^7)
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11}}\,dx = -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} + \frac{(8cef+22cdg-1}{1}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

$$= -\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15e^2(2cd-be)(d+ex)^{11}} - \frac{2(8cef+22cdg-}{195e}$$

Mathematica [A] time = 0.30, size = 351, normalized size = 0.98

$$-\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,\left(231b^4e^4(2dg+13ef+15egx)-42b^3ce^3\left(89d^2g+de(616f+706\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^11,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(231*b^
4*e^4*(13*e*f + 2*d*g + 15*e*g*x) + 84*b^2*c^2*e^2*(133*d^3*g + 2*e^3*x^2*(
6*f + 5*g*x) + 3*d*e^2*x*(52*f + 51*g*x) + 6*d^2*e*(167*f + 189*g*x)) - 42*
b^3*c*e^3*(89*d^2*g + e^2*x*(44*f + 45*g*x) + d*e*(616*f + 706*g*x)) + 16*c
^4*(407*d^5*g + 8*e^5*f*x^4 + 22*d*e^4*x^3*(4*f + g*x) + 11*d^3*e^2*x*(148*
f + 117*g*x) + 2*d^2*e^3*x^2*(234*f + 121*g*x) + d^4*e*(4243*f + 4477*g*x))
 - 8*b*c^3*e*(1801*d^4*g + 2*e^4*x^3*(28*f + 15*g*x) + 4*d*e^3*x^2*(168*f +
 121*g*x) + 3*d^2*e^2*x*(1316*f + 1201*g*x) + 2*d^3*e*(7672*f + 8481*g*x)))
)/(45045*e^2*(-2*c*d + b*e)^5*(d + e*x)^8)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="fricas")
```

```
[Out] Timed out
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.06, size = 564, normalized size = 1.57

$$-\frac{2\,(cex+be-cd)\,\big(-240b\,c^3e^5g\,x^4+352c^4d\,e^4g\,x^4+128c^4e^5f\,x^4+840b^2c^2e^5g\,x^3-3872b\,c^3d\,e^4g\,x^3-448b\,c^3e^5}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(-240*b*c^3*e^5*g*x^4+352*c^4*d*e^4*g*x^4+128*c^4*
e^5*f*x^4+840*b^2*c^2*e^5*g*x^3-3872*b*c^3*d*e^4*g*x^3-448*b*c^3*e^5*f*x^3+
3872*c^4*d^2*e^3*g*x^3+1408*c^4*d*e^4*f*x^3-1890*b^3*c*e^5*g*x^2+12852*b^2*
c^2*d*e^4*g*x^2+1008*b^2*c^2*e^5*f*x^2-28824*b*c^3*d^2*e^3*g*x^2-5376*b*c^3
*d*e^4*f*x^2+20592*c^4*d^3*e^2*g*x^2+7488*c^4*d^2*e^3*f*x^2+3465*b^4*e^5*g*
x-29652*b^3*c*d*e^4*g*x-1848*b^3*c*e^5*f*x+95256*b^2*c^2*d^2*e^3*g*x+13104*
b^2*c^2*d*e^4*f*x-135696*b*c^3*d^3*e^2*g*x-31584*b*c^3*d^2*e^3*f*x+71632*c^
4*d^4*e*g*x+26048*c^4*d^3*e^2*f*x+462*b^4*d*e^4*g+3003*b^4*e^5*f-3738*b^3*c
*d^2*e^3*g-25872*b^3*c*d*e^4*f+11172*b^2*c^2*d^3*e^2*g+84168*b^2*c^2*d^2*e^
3*f-14408*b*c^3*d^4*e*g-122752*b*c^3*d^3*e^2*f+6512*c^4*d^5*g+67888*c^4*d^4
*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^10/e^2/(b^5*e^5-10*b^4
*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^11,x, algo
rithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F(-1)] time = 0.00, size = -1, normalized size = -0.00

Hanged

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^11,x)
```

```
[Out] \text{Hanged}
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**11,x
)
```

```
[Out] Timed out
```

3.2209 $\int \frac{(d+ex)^3(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=340

$$\frac{5(2cd-be)^3(-7beg+6cdg+8cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{128c^{9/2}e^2}-\frac{5(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-}{64c^4e^2}$$

```
[Out] 5/128*(-b*e+2*c*d)^3*(-7*b*e*g+6*c*d*g+8*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1
/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(9/2)/e^2-5/64*(-b*e+2*c*d)^2
*(-7*b*e*g+6*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^4/e^2-
5/96*(-b*e+2*c*d)*(-7*b*e*g+6*c*d*g+8*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(1/2)/c^3/e^2-1/24*(-7*b*e*g+6*c*d*g+8*c*e*f)*(e*x+d)^2*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2-1/4*g*(e*x+d)^3*(d*(-b*e+c*d)-b*e^2*
x-c*e^2*x^2)^(1/2)/c/e^2
```

Rubi [A] time = 0.61, antiderivative size = 340, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {794, 670, 640, 621, 204}

$$-\frac{5(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+6cdg+8cef)}{64c^4e^2}-\frac{5(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2}}{96c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-5*(2*c*d - b*e)^2*(8*c*e*f + 6*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2])/(64*c^4*e^2) - (5*(2*c*d - b*e)*(8*c*e*f + 6*c*d*g - 7*b*
e*g)*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(96*c^3*e^2) - ((
8*c*e*f + 6*c*d*g - 7*b*e*g)*(d + e*x)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(24*c^2*e^2) - (g*(d + e*x)^3*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2
*x^2])/(4*c*e^2) + (5*(2*c*d - b*e)^3*(8*c*e*f + 6*c*d*g - 7*b*e*g)*ArcTan[
(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(12
8*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{g(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4ce^2} - \Big(\tfrac{1}{2}e\left(-2ce^2f+be^2g\right)+3\big(-ce^3f+($$

$$= -\frac{(8cef+6cdg-7beg)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24c^2e^2} - g(d+ex)^3\sqrt{d(c$$

$$= -\frac{5(2cd-be)(8cef+6cdg-7beg)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{96c^3e^2} - (8ce$$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - 5(2cd-be)($$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - 5(2cd-be)($$

$$= -\frac{5(2cd-be)^2(8cef+6cdg-7beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64c^4e^2} - 5(2cd-be)($$

Mathematica [A] time = 1.74, size = 375, normalized size = 1.10

$$\sqrt{(d+ex)(c(d-ex)-be)}\Bigg(-\frac{e^3(-7beg+6cdg+8cef)\Big(8c^3e^6(d+ex)^3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+cex}{be-2cd}}-10c^2e^6(d+ex)^2\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}+15}{3\sqrt{e(2cd-be)}\sqrt{\frac{be-cd+}{be-2}}} \over 64c^5e^{11}(d+ex)$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-16*c^4*e^9*g*(d + e*x)^4 - (e^3*(
8*c*e*f + 6*c*d*g - 7*b*e*g)*(15*c*e^6*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)
^2*(d + e*x)*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)] - 10*c^2*e^6*Sqrt[
e*(2*c*d - b*e)]*(-2*c*d + b*e)*(d + e*x)^2*Sqrt[(-(c*d) + b*e + c*e*x)/(-2
*c*d + b*e)] + 8*c^3*e^6*Sqrt[e*(2*c*d - b*e)]*(d + e*x)^3*Sqrt[(-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)] + 15*Sqrt[c]*e^(13/2)*(-2*c*d + b*e)^3*Sqrt[d +
 e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(3*Sq
rt[e*(2*c*d - b*e)]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])))/(64*c^5*
e^11*(d + e*x))
```

fricas [**A**] time = 2.24, size = 825, normalized size = 2.43

$$\left[-\frac{15\left(8\left(8c^4d^3e-12bc^3d^2e^2+6b^2c^2de^3-b^3ce^4\right)f+\left(48c^4d^4-128bc^3d^3e+120b^2c^2d^2e^2-48b^3cde^3+7b^4e\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [-1/768*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^
4)*f + (48*c^4*d^4 - 128*b*c^3*d^3*e + 120*b^2*c^2*d^2*e^2 - 48*b^3*c*d*e^3
 + 7*b^4*e^4)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b
*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x +
b*e)*sqrt(-c)) + 4*(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (24*c^4*d*e^2 - 7*b
*c^3*e^3)*g)*x^2 + 8*(88*c^4*d^2*e - 70*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (
576*c^4*d^3 - 1036*b*c^3*d^2*e + 580*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g + 2*(
8*(18*c^4*d*e^2 - 5*b*c^3*e^3)*f + (180*c^4*d^2*e - 156*b*c^3*d*e^2 + 35*b^
2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2), -1/
384*(15*(8*(8*c^4*d^3*e - 12*b*c^3*d^2*e^2 + 6*b^2*c^2*d*e^3 - b^3*c*e^4)*f
 + (48*c^4*d^4 - 128*b*c^3*d^3*e + 120*b^2*c^2*d^2*e^2 - 48*b^3*c*d*e^3 + 7
*b^4*e^4)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*
(48*c^4*e^3*g*x^3 + 8*(8*c^4*e^3*f + (24*c^4*d*e^2 - 7*b*c^3*e^3)*g)*x^2 +
8*(88*c^4*d^2*e - 70*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (576*c^4*d^3 - 1036*
b*c^3*d^2*e + 580*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g + 2*(8*(18*c^4*d*e^2 - 5
*b*c^3*e^3)*f + (180*c^4*d^2*e - 156*b*c^3*d*e^2 + 35*b^2*c^2*e^3)*g)*x)*sq
rt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^2)]
```

giac [**A**] time = 1.13, size = 383, normalized size = 1.13

$$-\frac{1}{192}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(2\left(4\left(\frac{6gxe}{c}+\frac{\left(24c^3dge^4+8c^3fe^5-7bc^2ge^5\right)e^{(-4)}}{c^4}\right)x+\frac{\left(180c^3d^2ge^3+144\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] -1/192*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*(6*g*x*e/c + (24*c^
3*d*g*e^4 + 8*c^3*f*e^5 - 7*b*c^2*g*e^5)*e^(-4)/c^4)*x + (180*c^3*d^2*g*e^3
 + 144*c^3*d*f*e^4 - 156*b*c^2*d*g*e^4 - 40*b*c^2*f*e^5 + 35*b^2*c*g*e^5)*e
^(-4)/c^4)*x + (576*c^3*d^3*g*e^2 + 704*c^3*d^2*f*e^3 - 1036*b*c^2*d^2*g*e^
3 - 560*b*c^2*d*f*e^4 + 580*b^2*c*d*g*e^4 + 120*b^2*c*f*e^5 - 105*b^3*g*e^5
)*e^(-4)/c^4) + 5/128*(48*c^4*d^4*g + 64*c^4*d^3*f*e - 128*b*c^3*d^3*g*e -
96*b*c^3*d^2*f*e^2 + 120*b^2*c^2*d^2*g*e^2 + 48*b^2*c^2*d*f*e^3 - 48*b^3*c*
d*g*e^3 - 8*b^3*c*f*e^4 + 7*b^4*g*e^4)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt
(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b
))/c^5
```

maple [**B**] time = 0.07, size = 1208, normalized size = 3.55

$$\frac{35b^4e^3g\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{128\sqrt{c\,e^2}\;c^4}-\frac{15b^3d\,e^2g\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\right)}{8\sqrt{c\,e^2}\;c^3}-\frac{5b^3e^3f\arctan\left(\frac{\sqrt{c\,e^2}\left(x+\right.}{\sqrt{-c\,e^2x^2-b\,e^2x-}}\right.}{16\sqrt{c\,e^2}\;c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -5/16*b^3/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2))*e^3*f+5/2*d^3*f/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+5/12*b/c^2*x*e*(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-3/2*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)*d*f-5/8*b^2/c^3*e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+15/8*b^2/
c^2*e^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d*f+75/16*e*g*b^2/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2
)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^2+35/12/c^2*(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f-3/e^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(1/2)*d^3*g-11/3/e/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f-x^2/c
*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/3*x^2/c*e*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*f-1/4*e*g*x^3/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+
35/64*e*g*b^3/c^4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-145/48*g*b^2/c^3*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+15/8/e*g/(c*e^2)^(1/2)*arctan((c*e^
2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^4+259/48/e*g
*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+13/8*g/c^2*x*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d-15/8/e*g/c*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)*d^2-5*g/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d^3+7/24*e*g*b/c^2*x^2*(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2)-35/96*e*g*b^2/c^3*x*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)+35/128*e^3*g*b^4/c^4/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-15/8*e^2*g*b^3/c^3/(c*e^2)^(1/2)*arctan
((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d-15/4*b
/c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^2*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{3} \left(f + g x\right)}{\sqrt{- \left(d + e x\right) \left(b e - c d + c e x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2210 $\int \frac{(d+ex)^2(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=265

$$\frac{(2cd-be)^2(-5beg+4cdg+6cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{16c^{7/2}e^2}-\frac{(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg}{8c^3e^2}$$

```
[Out] 1/16*(-b*e+2*c*d)^2*(-5*b*e*g+4*c*d*g+6*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/
2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(7/2)/e^2-1/8*(-b*e+2*c*d)*(-5
*b*e*g+4*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2-1/12
*(-5*b*e*g+4*c*d*g+6*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/
c^2/e^2-1/3*g*(e*x+d)^2*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c/e^2
```

Rubi [A] time = 0.35, antiderivative size = 265, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {1638, 12, 670, 640, 621, 204}

$$-\frac{(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+4cdg+6cef)}{8c^3e^2}-\frac{(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+4}{12c^2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] -((2*c*d - b*e)*(6*c*e*f + 4*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])/(8*c^3*e^2) - ((6*c*e*f + 4*c*d*g - 5*b*e*g)*(d + e*x)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(12*c^2*e^2) - (g*(d + e*x)^2*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*c*e^2) + ((2*c*d - b*e)^2*(6*c*e*f +
4*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(16*c^(7/2)*e^2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 1638

```
Int[(Pq_)*((d_.) + (e_.)*(x_))^(m_.)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p
_), x_Symbol] :> With[{q = Expon[Pq, x], f = Coeff[Pq, x, Expon[Pq, x]]}, S
imp[(f*(d + e*x)^(m + q - 1)*(a + b*x + c*x^2)^(p + 1))/(c*e^(q - 1)*(m + q
 + 2*p + 1)), x] + Dist[1/(c*e^q*(m + q + 2*p + 1)), Int[(d + e*x)^m*(a + b
*x + c*x^2)^p*ExpandToSum[c*e^q*(m + q + 2*p + 1)*Pq - c*f*(m + q + 2*p + 1
)*(d + e*x)^q + e*f*(m + p + q)*(d + e*x)^(q - 2)*(b*d - 2*a*e + (2*c*d - b
*e)*x), x], x], x] /; NeQ[m + q + 2*p + 1, 0]] /; FreeQ[{a, b, c, d, e, m,
p}, x] && PolyQ[Pq, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
 0]
```

Rubi steps

$$\int \frac{(d+ex)^2(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{g(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2} - \frac{\int -\frac{e^2(6cef+4cdg-5beg)(d+ex)^2}{2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx}{3ce^3}$$

$$= -\frac{g(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2} + \frac{(6cef+4cdg-5beg)\int \frac{(d+ex)}{\sqrt{cd^2-bde-be^2}}}{6ce}$$

$$= -\frac{(6cef+4cdg-5beg)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{12c^2e^2} - \frac{g(d+ex)^2\sqrt{d(cd}}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg}{}$$

$$= -\frac{(2cd-be)(6cef+4cdg-5beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8c^3e^2} - \frac{(6cef+4cdg}{}$$

Mathematica [A] time = 1.28, size = 251, normalized size = 0.95

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{e^7(-5beg+4cdg+6cef)\left(3\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}\,(be-2cd)^2\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)-c(d+ex)\sqrt{e(2cd-be)}\,\sqrt{\frac{be-cd+cex}{be-2cd}}\,(-3be+8cd+}{\sqrt{e(2cd-be)}\,\sqrt{\frac{be-cd+cex}{be-2cd}}}\right.}{24c^4e^9(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-8*c^3*e^7*g*(d + e*x)^3 + (e^7*(6
*c*e*f + 4*c*d*g - 5*b*e*g)*(-(c*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*Sqrt[(-(c*
d) + b*e + c*e*x)/(-2*c*d + b*e)]*(8*c*d - 3*b*e + 2*c*e*x)) + 3*Sqrt[c]*Sq
rt[e]*(-2*c*d + b*e)^2*Sqrt[d + e*x]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])
/Sqrt[e*(2*c*d - b*e)]]))/(Sqrt[e*(2*c*d - b*e)]*Sqrt[(-(c*d) + b*e + c*e*x
)/(-2*c*d + b*e)])))/(24*c^4*e^9*(d + e*x))
```

fricas [A] time = 1.51, size = 585, normalized size = 2.21

$$\left[\frac{3\left(6\left(4c^{3}d^{2}e-4bc^{2}de^{2}+b^{2}ce^{3}\right)f+\left(16c^{3}d^{3}-36bc^{2}d^{2}e+24b^{2}cde^{2}-5b^{3}e^{3}\right)g\right)\sqrt{-c}\,\log\left(8c^{2}e^{2}x^{2}+8bce^{2}x\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] [1/96*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e^3)*f + (16*c^3*d^3 - 36*
b*c^2*d^2*e + 24*b^2*c*d*e^2 - 5*b^3*e^3)*g)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8
*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(8*c^3*e^2*g*x^2 + 6*(8*c^3*
d*e - 3*b*c^2*e^2)*f + (40*c^3*d^2 - 52*b*c^2*d*e + 15*b^2*c*e^2)*g + 2*(6*
c^3*e^2*f + (12*c^3*d*e - 5*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*
d^2 - b*d*e))/(c^4*e^2), -1/48*(3*(6*(4*c^3*d^2*e - 4*b*c^2*d*e^2 + b^2*c*e
^3)*f + (16*c^3*d^3 - 36*b*c^2*d^2*e + 24*b^2*c*d*e^2 - 5*b^3*e^3)*g)*sqrt(
c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sq
rt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(8*c^3*e^2*g*x^2 +
 6*(8*c^3*d*e - 3*b*c^2*e^2)*f + (40*c^3*d^2 - 52*b*c^2*d*e + 15*b^2*c*e^2)
*g + 2*(6*c^3*e^2*f + (12*c^3*d*e - 5*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e))/(c^4*e^2)]
```

giac [A] time = 0.55, size = 264, normalized size = 1.00

$$-\frac{1}{24}\sqrt{-cx^{2}e^{2}+cd^{2}-bxe^{2}-bde}\left(2\left(\frac{4gx}{c}+\frac{\left(12c^{2}dge^{2}+6c^{2}fe^{3}-5bcge^{3}\right)e^{(-3)}}{c^{3}}\right)x+\frac{\left(40c^{2}d^{2}ge+48c^{2}dfe^{2}-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] -1/24*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*(4*g*x/c + (12*c^2*d*g*
e^2 + 6*c^2*f*e^3 - 5*b*c*g*e^3)*e^(-3)/c^3)*x + (40*c^2*d^2*g*e + 48*c^2*d
*f*e^2 - 52*b*c*d*g*e^2 - 18*b*c*f*e^3 + 15*b^2*g*e^3)*e^(-3)/c^3) + 1/16*(
16*c^3*d^3*g + 24*c^3*d^2*f*e - 36*b*c^2*d^2*g*e - 24*b*c^2*d*f*e^2 + 24*b^
2*c*d*g*e^2 + 6*b^2*c*f*e^3 - 5*b^3*g*e^3)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(
sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^
2)*b))/c^4
```

maple [B] time = 0.06, size = 786, normalized size = 2.97

$$-\frac{5b^{3}e^{2}g\arctan\left(\frac{\sqrt{c\,e^{2}}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{16\sqrt{c\,e^{2}}\;c^{3}}+\frac{3b^{2}deg\arctan\left(\frac{\sqrt{c\,e^{2}}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{2\sqrt{c\,e^{2}}\;c^{2}}+\frac{3b^{2}e^{2}f\arctan\left(\frac{\sqrt{c\,e^{2}}\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde}}\right.}{8\sqrt{c\,e^{2}}\;c^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/3*g*x^2/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+5/12*g*b/c^2*x*(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-5/8*g*b^2/c^3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^
2)^(1/2)-5/16*e^2*g*b^3/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/2*e*g*b^2/c^2/(c*e^2)^(1/2)*arcta
n((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d-9/4*g
```

```
*b/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(1/2))*d^2+13/6/e*g/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*
d-5/3/e^2*g/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-x/c/e*(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/2*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+3/4*b/c^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+3/8*b^2/c^2/(c*e^2)
^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2))*e^2*f-3/2/c*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d*f+1/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)
*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d^3*g+3/2*d^2*f/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))-2/c/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^2}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{2} \left(f + g x\right)}{\sqrt{- \left(d + e x\right) \left(b e - c d + c e x\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)**2*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2211 $\int \frac{(d+ex)(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=149

$$\frac{(2cd-be)(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{5/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-4c(dg+e}{4c^2e^2}$$

```
[Out] 1/8*(-b*e+2*c*d)*(-3*b*e*g+2*c*d*g+4*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(5/2)/e^2+1/4*(3*b*e*g-4*c*(d*g+e
*f)-2*c*e*g*x)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.16, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$, Rules used = {779, 621, 204}

$$\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(3beg-4c(dg+ef)-2cegx)}{4c^2e^2}+\frac{(2cd-be)(-3beg+2cdg+4cef)\tan^{-1}\left(\frac{e(b+}{2\sqrt{c}\,\sqrt{d(cd-be}}\right.}{8c^{5/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] ((3*b*e*g - 4*c*(e*f + d*g) - 2*c*e*g*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(4*c^2*e^2) + ((2*c*d - b*e)*(4*c*e*f + 2*c*d*g - 3*b*e*g)*ArcTan[
(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*
c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2} + \frac{((2cd-be)(4cef-}{}$$

$$= \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2} + \frac{((2cd-be)(4cef-}{}$$

$$= \frac{(3beg-4c(ef+dg)-2cegx)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4c^2e^2} + \frac{(2cd-be)(4cef+}{}$$

Mathematica [A] time = 0.79, size = 218, normalized size = 1.46

$$\frac{\sqrt{c}\,\sqrt{e}\,(d+ex)\sqrt{e(2cd-be)}\,(be-cd+cex)(2c(2dg+2ef+egx)-3beg)+e\sqrt{d+ex}\,(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\,(-3beg}{4c^{5/2}e^{5/2}\sqrt{e(2cd-be)}\,\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(-(c*d) + b*e + c*e*x)*(-3
*b*e*g + 2*c*(2*e*f + 2*d*g + e*g*x)) + e*(-2*c*d + b*e)^2*(4*c*e*f + 2*c*d
*g - 3*b*e*g)*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*Arc
Sin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(4*c^(5/2)*e^(5
/2)*Sqrt[e*(2*c*d - b*e)]*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 1.26, size = 403, normalized size = 2.70

$$\left[-\frac{\left(4\left(2c^2de-bce^2\right)f+\left(4c^2d^2-8bcde+3b^2e^2\right)g\right)\sqrt{-c}\,\log\left(8c^2e^2x^2+8bce^2x-4c^2d^2+4bcde+b^2e^2-4\sqrt{-c}\right.}{16}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/16*((4*(2*c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 8*b*c*d*e + 3*b^2*e^2)*g)
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) +
 4*(2*c^2*e*g*x + 4*c^2*e*f + (4*c^2*d - 3*b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e))/(c^3*e^2), -1/8*((4*(2*c^2*d*e - b*c*e^2)*f + (4*c^2*
d^2 - 8*b*c*d*e + 3*b^2*e^2)*g)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*
x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d
^2 + b*c*d*e)) + 2*(2*c^2*e*g*x + 4*c^2*e*f + (4*c^2*d - 3*b*c*e)*g)*sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^3*e^2)]
```

giac [A] time = 0.54, size = 179, normalized size = 1.20

$$-\frac{1}{4}\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\frac{2gxe^{(-1)}}{c}+\frac{\left(4cdge+4cfe^2-3bge^2\right)e^{(-3)}}{c^2}\right)+\frac{\left(4c^2d^2g+8c^2dfe-8bcdge-4bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] -1/4*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(2*g*x*e^(-1)/c + (4*c*d*g*
e + 4*c*f*e^2 - 3*b*g*e^2)*e^(-3)/c^2) + 1/8*(4*c^2*d^2*g + 8*c^2*d*f*e - 8
*b*c*d*g*e - 4*b*c*f*e^2 + 3*b^2*g*e^2)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqr
t(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*
b))/c^3
```

maple [**B**] time = 0.06, size = 460, normalized size = 3.09

$$\frac{3b^2eg\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-ce^2x^2-be^2x-bde+cd^2}}\right)}{8\sqrt{ce^2}\,c^2}-\frac{bdg\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-ce^2x^2-be^2x-bde+cd^2}}\right)}{\sqrt{ce^2}\,c}-\frac{bef\arctan\left(\frac{\sqrt{ce^2}\left(x+\frac{b}{2c}\right)}{\sqrt{-ce^2x^2-be^2x-bde+cd^2}}\right)}{2\sqrt{ce^2}\,c}+-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/2/e*g*x/c*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/4/e*g*b/c^2*(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/8*e*g*b^2/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^
(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-g/c/(c*e^2)^(1/2)
*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b
*d+1/2/e*g/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2
*x-b*d*e+c*d^2)^(1/2))*d^2-1/c/e^2*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d
*g-1/c/e*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/2*b/c/(c*e^2)^(1/2)*arc
tan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*e*f+d
*f/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2))
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\left(d+e\,x\right)}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(f+gx\right)}{\sqrt{-(d+ex)\,(be-cd+cex)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2212 $\int \frac{f+gx}{(d+ex)\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=121

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{\sqrt{c}\,e^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)(2cd-be)}$$

```
[Out] g*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/e^
2/c^(1/2)-2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c
*d)/(e*x+d)
```

Rubi [A] time = 0.16, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 621, 204}

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{\sqrt{c}\,e^2}-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(2*c*d - b*
e)*(d + e*x)) + (g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])])/(Sqrt[c]*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int\frac{f+gx}{(d+ex)\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{g\int\frac{1}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,d}{e}$$

$$=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{(2g)\,\text{Subst}\Bigl(\int\frac{1}{-4ce^2-x^2}\,d}{e}$$

$$=-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)}+\frac{g\tan^{-1}\Bigl(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2}}}{\sqrt{c}\,e^2}$$

Mathematica [A] time = 0.47, size = 189, normalized size = 1.56

$$-\frac{2\left(\sqrt{c}\,\sqrt{e(2cd-be)}\,(ef-dg)(be-cd+cex)+\sqrt{e}\,g\sqrt{d+ex}\,(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\,\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)\right)}{\sqrt{c}\,e^2\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] (-2*(Sqrt[c]*Sqrt[e*(2*c*d - b*e)]*(e*f - d*g)*(-(c*d) + b*e + c*e*x) + Sqr
t[e]*(-2*c*d + b*e)^2*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d +
 b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(Sqr
t[c]*e^2*Sqrt[e*(2*c*d - b*e)]*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d
 - e*x))])
```

fricas [A] time = 2.09, size = 405, normalized size = 3.35

$$\Biggl[-\frac{\left(\left(2\,cde-be^2\right)gx+\left(2\,cd^2-bde\right)g\right)\sqrt{-c}\,\log\Bigl(8\,c^2e^2x^2+8\,bce^2x-4\,c^2d^2+4\,bcde+b^2e^2-4\,\sqrt{-ce^2x^2-be^2x}}{2\left(2\,c^2d^2e^2-bcde^3+\left(2\,c^2de^3-bce^4\right)\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="fricas")
```

```
[Out] [-1/2*(((2*c*d*e - b*e^2)*g*x + (2*c*d^2 - b*d*e)*g)*sqrt(-c)*log(8*c^2*e^2
*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*(c*e*f - c*d*g))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2
*d*e^3 - b*c*e^4)*x), -(((2*c*d*e - b*e^2)*g*x + (2*c*d^2 - b*d*e)*g)*sqrt(
c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sq
rt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*sqrt(-c*e^2*x^2 -
b*e^2*x + c*d^2 - b*d*e)*(c*e*f - c*d*g))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c
^2*d*e^3 - b*c*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [A] time = 0.06, size = 134, normalized size = 1.11

$$\frac{g\arctan\left(\frac{\sqrt{c\,e^{2}}\,\left(x+\frac{b}{2c}\right)}{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}}\right)}{\sqrt{c\,e^{2}}\;e}-\frac{2\left(-dg+ef\right)\sqrt{-\left(x+\frac{d}{e}\right)^{2}c\,e^{2}+\left(-b\,e^{2}+2cde\right)\left(x+\frac{d}{e}\right)}}{\left(-b\,e^{2}+2cde\right)\left(x+\frac{d}{e}\right)e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] g/e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2))-2*(-d*g+e*f)/e^2/(-b*e^2+2*c*d*e)/(x+d/e)*(-(x+d/e)^2*c*e^2
+(-b*e^2+2*c*d*e)*(x+d/e))^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\left(d+e\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)), x)
```

3.2213 $\int \frac{f+gx}{(d+ex)^2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=137

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(d+ex)^2(2cd-be)}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{3e^2(d+ex)(2cd-be)^2}$$

```
[Out] -2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^2-2/3*(-3*b*e*g+4*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2
)/e^2/(-b*e+2*c*d)^2/(e*x+d)
```

Rubi [A] time = 0.20, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 650}

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(d+ex)^2(2cd-be)}-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{3e^2(d+ex)(2cd-be)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*e^2*(2*c*d -
b*e)*(d + e*x)^2) - (2*(2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(3*e^2*(2*c*d - b*e)^2*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{f+gx}{(d+ex)^2\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(2cd-be)(d+ex)^2}+\frac{(2cef+4cdg-3beg)\int}{3e(2}\\ &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3e^2(2cd-be)(d+ex)^2}-\frac{2(2cef+4cdg-3beg)}{3e^2(2cd-}\end{aligned}$$

Mathematica [A] time = 0.07, size = 89, normalized size = 0.65

$$-\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\,\left(2c\left(d^2g+2de(f+gx)+e^2fx\right)-be(2dg+e(f+3gx))\right)}{3e^2(d+ex)^2(be-2cd)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(2*c*(d^2*g + e^2*f*x + 2*d*e*(f
 + g*x)) - b*e*(2*d*g + e*(f + 3*g*x))))/(3*e^2*(-2*c*d + b*e)^2*(d + e*x)^
2)
```

fricas [A] time = 5.07, size = 182, normalized size = 1.33

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(\left(4\,cde-be^2\right)f+2\left(cd^2-bde\right)g+\left(2\,ce^2f+\left(4\,cde-3\,be^2\right)g\right)x\right)}{3\left(4\,c^2d^4e^2-4\,bcd^3e^3+b^2d^2e^4+\left(4\,c^2d^2e^4-4\,bcde^5+b^2e^6\right)x^2+2\left(4\,c^2d^3e^3-4\,bcd^2e^4+b^2de^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((4*c*d*e - b*e^2)*f + 2*(c
*d^2 - b*d*e)*g + (2*c*e^2*f + (4*c*d*e - 3*b*e^2)*g)*x)/(4*c^2*d^4*e^2 - 4
*b*c*d^3*e^3 + b^2*d^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 +
2*(4*c^2*d^3*e^3 - 4*b*c*d^2*e^4 + b^2*d*e^5)*x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 127, normalized size = 0.93

$$-\frac{2\left(cex+be-cd\right)\left(3be^2gx-4cdegx-2ce^2fx+2bdeg+be^2f-2cd^2g-4cdef\right)}{3\left(ex+d\right)\left(b^2e^2-4bcde+4c^2d^2\right)\sqrt{-ce^2x^2-be^2x-bde+cd^2}\;e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(3*b*e^2*g*x-4*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*g+b*e^2*f
-2*c*d^2*g-4*c*d*e*f)/(e*x+d)/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)/(-c*e^2*x^2
-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 2.79, size = 101, normalized size = 0.74

$$-\frac{2\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(2\,c\,d^2\,g-b\,e^2\,f-3\,b\,e^2\,g\,x+2\,c\,e^2\,f\,x-2\,b\,d\,e\,g+4\,c\,d\,e\,f+4\,c\,d\,e\,g\,x\right)}{3\,e^2\,{\left(b\,e-2\,c\,d\right)}^2\,{\left(d+e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] -(2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(2*c*d^2*g - b*e^2*f - 3*b*
e^2*g*x + 2*c*e^2*f*x - 2*b*d*e*g + 4*c*d*e*f + 4*c*d*e*g*x))/(3*e^2*(b*e -
 2*c*d)^2*(d + e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**2), x)
```

3.2214 $\int \frac{f+gx}{(d+ex)^3\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=210

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(d+ex)^3(2cd-be)}-\frac{4c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{15e^2(d+ex)(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be}}{15e^2}$$

```
[Out] -2/5*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^3-2/15*(-5*b*e*g+6*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/
2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^2-4/15*c*(-5*b*e*g+6*c*d*g+4*c*e*f)*(d*(-b*e+
c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)
```

Rubi [A] time = 0.33, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(d+ex)^3(2cd-be)}-\frac{4c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{15e^2(d+ex)(2cd-be)^3}-\frac{2\sqrt{d(cd-be)-be}}{15e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*e^2*(2*c*d -
b*e)*(d + e*x)^3) - (2*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(15*e^2*(2*c*d - b*e)^2*(d + e*x)^2) - (4*c*(4*c*e*f +
 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*e^2*(2*c
*d - b*e)^3*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} + \frac{(4cef+6cdg-5beg)\int}{5e(2}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} - \frac{2(4cef+6cdg-5beg)}{15e^2(2cd-}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5e^2(2cd-be)(d+ex)^3} - \frac{2(4cef+6cdg-5beg)}{15e^2(2cd-}$$

Mathematica [A] time = 0.10, size = 166, normalized size = 0.79

$$-\frac{2(be-cd+cex)\bigl(b^2e^2(2dg+3ef+5egx)-2bce\bigl(7d^2g+2de(4f+9gx)+e^2x(2f+5gx)\bigr)+4c^2\bigl(3d^3g+d^2e(}{15e^2(d+ex)^2(be-2cd)^3\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)*(b^2*e^2*(3*e*f + 2*d*g + 5*e*g*x) - 2*b*c*e*(7*
d^2*g + e^2*x*(2*f + 5*g*x) + 2*d*e*(4*f + 9*g*x)) + 4*c^2*(3*d^3*g + 2*e^3
*f*x^2 + 3*d*e^2*x*(2*f + g*x) + d^2*e*(7*f + 9*g*x))))/(15*e^2*(-2*c*d + b
*e)^3*(d + e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 21.21, size = 368, normalized size = 1.75

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\bigl(2\bigl(4c^2e^3f+\bigl(6c^2de^2-5bce^3\bigr)g\bigr)x^2+\bigl(28c^2d^2e-16bcde^2+3b^2e^3\bigr)f+2\bigl(6c^2}{15\bigl(8c^3d^6e^2-12bc^2d^5e^3+6b^2cd^4e^4-b^3d^3e^5+\bigl(8c^3d^3e^5-12bc^2d^2e^6+6b^2cde^7-b^3e^8\bigr)x^3+3\bigl(8c^3d^4e^4-1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f + (6*c^2*d
*e^2 - 5*b*c*e^3)*g)*x^2 + (28*c^2*d^2*e - 16*b*c*d*e^2 + 3*b^2*e^3)*f + 2*
(6*c^2*d^3 - 7*b*c*d^2*e + b^2*d*e^2)*g + (4*(6*c^2*d*e^2 - b*c*e^3)*f + (3
6*c^2*d^2*e - 36*b*c*d*e^2 + 5*b^2*e^3)*g)*x)/(8*c^3*d^6*e^2 - 12*b*c^2*d^5
*e^3 + 6*b^2*c*d^4*e^4 - b^3*d^3*e^5 + (8*c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 +
6*b^2*c*d*e^7 - b^3*e^8)*x^3 + 3*(8*c^3*d^4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*
c*d^2*e^6 - b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*
d^3*e^5 - b^3*d^2*e^6)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((-
1024*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)^3*g*b^2*d*exp(1)^5+256*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b
*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^2*d*exp(1)^3+4096*c*exp(2)*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d^2*exp(1)^4-
```

```
1024*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^3*g*b*d^2*exp(1)^2-3072*c^2*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^3*exp(1)^3+768*exp(2)^2*(sqrt(-c
*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*exp(1)^
4-1024*c*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^3*b*f*d*exp(1)^5-2048*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b*f*d*exp(1)^3+1024*c^2*exp(2)*(sqrt(-
c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^2*exp(1)
^4+2048*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)^3*f*d^2*exp(1)^2+2048*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*e
xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^2*exp(1)^6-1024*exp(
2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c
*exp(2))*x)^2*g*b^2*d^2*exp(1)^4+1280*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^2*exp(1)^
2-4096*c*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)^2*g*b*d^3*exp(1)^5-4096*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c
*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^3*exp(1
)^3-1024*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^3*exp(1)+2048*c^2*sqrt(-c*exp(2))*(sqr
t(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^4*exp
(1)^4+5120*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^4*exp(1)^2+2048*c^2*exp(2)^2*sqrt(-c*e
xp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
2*g*d^4-2304*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d*exp(1)^3+3072*c*exp(2)*sqrt(-c*exp
(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*
b*f*d^2*exp(1)^4+6144*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^2*exp(1)^2-3072*c^2*exp(2
)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^2*f*d^3*exp(1)^3-6144*c^2*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^3*exp(1)-1024*
exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
g*b^3*d^2*exp(1)^6+768*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)*g*b^3*d^2*exp(1)^4+256*exp(2)^3*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^2*exp(1)^2+7168*c
*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
*g*b^2*d^3*exp(1)^5-4864*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^3*exp(1)^3-11264*c^2*exp(2)*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^4*exp(1)^4+
2048*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)*g*b*d^4+5120*c^3*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*g*d^5*exp(1)^3+4096*c^3*exp(2)^2*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*d^5*exp(1)+1280*exp
(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b
^3*f*d*exp(1)^5-1280*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)*b^3*f*d*exp(1)^3+1024*c*exp(2)*(sqrt(-c*exp(2)*x^2-b
*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^2*exp(1)^6-8448*c*ex
p(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
b^2*f*d^2*exp(1)^4+5120*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^2*exp(1)^2-2048*c^2*exp(2)*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^3*exp(1)^5+17
408*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)*b*f*d^3*exp(1)^3-6144*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^3*exp(1)+1024*c^3*exp(2)*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*f*d^4*exp(1)^
4-10240*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)*f*d^4*exp(1)^2+2048*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)^7-3072*e
xp(2)*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)^5+1280*exp(2)^2*sqrt(-c*exp(2))*g*b^
3*d^3*exp(1)^3-256*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^3*exp(1)-6144*c*sqrt(-c
*exp(2))*g*b^2*d^4*exp(1)^6+5120*c*exp(2)*sqrt(-c*exp(2))*g*b^2*d^4*exp(1)^
4+768*c*exp(2)^2*sqrt(-c*exp(2))*g*b^2*d^4*exp(1)^2-512*c*exp(2)^3*sqrt(-c*
exp(2))*g*b^2*d^4+6144*c^2*sqrt(-c*exp(2))*g*b*d^5*exp(1)^5-1024*c^2*exp(2)
*sqrt(-c*exp(2))*g*b*d^5*exp(1)^3-2048*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b*d^5
*exp(1)-2048*c^3*sqrt(-c*exp(2))*g*d^6*exp(1)^4-1024*c^3*exp(2)*sqrt(-c*exp
(2))*g*d^6*exp(1)^2-2048*exp(2)*sqrt(-c*exp(2))*b^3*f*d^2*exp(1)^6+2816*exp
(2)^2*sqrt(-c*exp(2))*b^3*f*d^2*exp(1)^4-768*exp(2)^3*sqrt(-c*exp(2))*b^3*f
*d^2*exp(1)^2+7168*c*exp(2)*sqrt(-c*exp(2))*b^2*f*d^3*exp(1)^5-7936*c*exp(2
)^2*sqrt(-c*exp(2))*b^2*f*d^3*exp(1)^3+1536*c*exp(2)^3*sqrt(-c*exp(2))*b^2*
f*d^3*exp(1)-8192*c^2*exp(2)*sqrt(-c*exp(2))*b*f*d^4*exp(1)^4+5120*c^2*exp(
2)^2*sqrt(-c*exp(2))*b*f*d^4*exp(1)^2+3072*c^3*exp(2)*sqrt(-c*exp(2))*f*d^5
*exp(1)^3)/(2048*b^2*d^2*exp(1)^7-4096*exp(2)*b^2*d^2*exp(1)^5+2048*exp(2)^
2*b^2*d^2*exp(1)^3-4096*c*b*d^3*exp(1)^6+8192*c*exp(2)*b*d^3*exp(1)^4-4096*
c*exp(2)^2*b*d^3*exp(1)^2+2048*c^2*d^4*exp(1)^5-4096*c^2*exp(2)*d^4*exp(1)^
3+2048*c^2*exp(2)^2*d^4*exp(1))/((sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*
exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*d-c*d
^2*exp(1))^2+(-8*exp(2)*g*b^2*d*exp(1)^3+2*exp(2)^2*g*b^2*d*exp(1)+32*c*exp
(2)*g*b*d^2*exp(1)^2-8*c*exp(2)^2*g*b*d^2-24*c^2*exp(2)*g*d^3*exp(1)+6*exp(
2)^2*b^2*f*exp(1)^2-8*c*exp(2)*b*f*d*exp(1)^3-16*c*exp(2)^2*b*f*d*exp(1)+8*
c^2*exp(2)*f*d^2*exp(1)^2+16*c^2*exp(2)^2*f*d^2)/16/(b^2*d^2*exp(1)^6-2*exp
(2)*b^2*d^2*exp(1)^4+exp(2)^2*b^2*d^2*exp(1)^2-2*c*b*d^3*exp(1)^5+4*c*exp(2
)*b*d^3*exp(1)^3-2*c*exp(2)^2*b*d^3*exp(1)+c^2*d^4*exp(1)^4-2*c^2*exp(2)*d^
4*exp(1)^2+c^2*exp(2)^2*d^4)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-
b*d*exp(1)*exp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)
^2+c*d^2*exp(2)-b*d*exp(1)*exp(2))))
```

maple [A] time = 0.06, size = 236, normalized size = 1.12

$$-\frac{2 (cex + be - cd) \left(-10bc e^3 g x^2 + 12c^2 d e^2 g x^2 + 8c^2 e^3 f x^2 + 5b^2 e^3 gx - 36bcd e^2 gx - 4bc e^3 f x + 36c^2 d^2 egx +}{15 (ex + d)^2 \left(b^3 e^3 - 6b^2 cd e^2 + 12b c^2 d^2 e - 8c^3 d^3\right) \sqrt{-c e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-10*b*c*e^3*g*x^2+12*c^2*d*e^2*g*x^2+8*c^2*e^3*f*x^2
+5*b^2*e^3*g*x-36*b*c*d*e^2*g*x-4*b*c*e^3*f*x+36*c^2*d^2*e*g*x+24*c^2*d*e^2
*f*x+2*b^2*d*e^2*g+3*b^2*e^3*f-14*b*c*d^2*e*g-16*b*c*d*e^2*f+12*c^2*d^3*g+2
8*c^2*d^2*e*f)/(e*x+d)^2/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e
^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.32, size = 471, normalized size = 2.24

$$\frac{\left(\frac{8 c^2 d g+16 c^2 e f-8 b c e g}{15 e^2 (b e-2 c d)^3} - \frac{8 c^2 d g}{15 e^2 (b e-2 c d)^3}\right) \sqrt{c d^2 - b d e - c e^2 x^2 - b e^2 x}}{d + e x} - \frac{\left(\frac{2 b g}{5 \left(3 b e^2-6 c d e\right) (b e-2 c d)} - \frac{4 c d g}{5 e \left(3 b e^2-6 c d e\right) (b e-}\right.}{(d + e x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((8*c^2*d*g + 16*c^2*e*f - 8*b*c*e*g)/(15*e^2*(b*e - 2*c*d)^3) - (8*c^2*d*
g)/(15*e^2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
d + e*x) - (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(5*e
*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^
(1/2))/(d + e*x)^2 - (((12*c*d*g - 12*b*e*g + 8*c*e*f)/(5*e*(3*b*e^2 - 6*c*
d*e)*(b*e - 2*c*d)) + (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((2*f)/(5*b*e^2 -
 10*c*d*e) - (2*d*g)/(e*(5*b*e^2 - 10*c*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 - (((4*c*g*(3*b*e - 4*c*d))/(15*e^2*(b*e - 2*c
*d)^3) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{-\left(d + ex\right)\left(be - cd + cex\right)}\left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**3), x)
```

3.2215 $\int \frac{f+gx}{(d+ex)^4\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=285

$$-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)(2cd-be)^4}-\frac{8c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)^2(2cd-be)^3}$$

```
[Out] -2/7*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^4-2/35*(-7*b*e*g+8*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/
2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^3-8/105*c*(-7*b*e*g+8*c*d*g+6*c*e*f)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^2-16/105*c^2*(-7*
b*e*g+8*c*d*g+6*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c
*d)^4/(e*x+d)
```

Rubi [A] time = 0.44, antiderivative size = 285, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 650}

$$-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)(2cd-be)^4}-\frac{8c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+8cdg+6cef)}{105e^2(d+ex)^2(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^4*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(7*e^2*(2*c*d -
b*e)*(d + e*x)^4) - (2*(6*c*e*f + 8*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^3) - (8*c*(6*c*e*f +
 8*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(2*
c*d - b*e)^3*(d + e*x)^2) - (16*c^2*(6*c*e*f + 8*c*d*g - 7*b*e*g)*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(2*c*d - b*e)^4*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^4\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} + \frac{(6cef+8cdg-7beg)\int \frac{}{(d}}{7e(2cd}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

$$= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7e^2(2cd-be)(d+ex)^4} - \frac{2(6cef+8cdg-7beg)\sqrt{d}}{35e^2(2cd-be}$$

Mathematica [**A**] time = 0.14, size = 247, normalized size = 0.87

$$\frac{2(be-cd+cex)\Big(-3b^3e^3(2dg+5ef+7egx)+2b^2ce^2\big(23d^2g+de(54f+82gx)+e^2x(9f+14gx)\big)-4bc^2e\big(36d^3g}{105e^2(d}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^4*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*(-3*b^3*e^3*(5*e*f + 2*d*g + 7*e*g*x) + 8*c^3*(13
*d^4*g + 6*e^4*f*x^3 + 8*d*e^3*x^2*(3*f + g*x) + 4*d^3*e*(9*f + 13*g*x) + d
^2*e^2*x*(39*f + 32*g*x)) + 2*b^2*c*e^2*(23*d^2*g + e^2*x*(9*f + 14*g*x) +
d*e*(54*f + 82*g*x)) - 4*b*c^2*e*(36*d^3*g + 2*e^3*x^2*(3*f + 7*g*x) + 2*d*
e^2*x*(15*f + 32*g*x) + d^2*e*(69*f + 131*g*x))))/(105*e^2*(-2*c*d + b*e)^4
*(d + e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**B**] time = 122.55, size = 606, normalized size = 2.13

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\Big(8\left(6\,c^3e^4f+\left(8\,c^3de^3-7\,bc^2e^4\right)g\right)x^3+4\Big(6\left(8\,c^3de^3-bc^2e^4\right)f+\Big(64\,c^3d^2e^2-64\,b}{105\Big(16\,c^4d^8e^2-32\,bc^3d^7e^3+24\,b^2c^2d^6e^4-8\,b^3cd^5e^5+b^4d^4e^6+\Big(16\,c^4d^4e^6-32\,bc^3d^3e^7+24\,b^2c^2d^2e^8-8\,b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] -2/105*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(6*c^3*e^4*f + (8*c^3*
d*e^3 - 7*b*c^2*e^4)*g)*x^3 + 4*(6*(8*c^3*d*e^3 - b*c^2*e^4)*f + (64*c^3*d^
2*e^2 - 64*b*c^2*d*e^3 + 7*b^2*c*e^4)*g)*x^2 + 3*(96*c^3*d^3*e - 92*b*c^2*d
^2*e^2 + 36*b^2*c*d*e^3 - 5*b^3*e^4)*f + 2*(52*c^3*d^4 - 72*b*c^2*d^3*e + 2
3*b^2*c*d^2*e^2 - 3*b^3*d*e^3)*g + (6*(52*c^3*d^2*e^2 - 20*b*c^2*d*e^3 + 3*
b^2*c*e^4)*f + (416*c^3*d^3*e - 524*b*c^2*d^2*e^2 + 164*b^2*c*d*e^3 - 21*b^
3*e^4)*g)*x)/(16*c^4*d^8*e^2 - 32*b*c^3*d^7*e^3 + 24*b^2*c^2*d^6*e^4 - 8*b^
3*c*d^5*e^5 + b^4*d^4*e^6 + (16*c^4*d^4*e^6 - 32*b*c^3*d^3*e^7 + 24*b^2*c^2
*d^2*e^8 - 8*b^3*c*d*e^9 + b^4*e^10)*x^4 + 4*(16*c^4*d^5*e^5 - 32*b*c^3*d^4
*e^6 + 24*b^2*c^2*d^3*e^7 - 8*b^3*c*d^2*e^8 + b^4*d*e^9)*x^3 + 6*(16*c^4*d^
6*e^4 - 32*b*c^3*d^5*e^5 + 24*b^2*c^2*d^4*e^6 - 8*b^3*c*d^3*e^7 + b^4*d^2*e
^8)*x^2 + 4*(16*c^4*d^7*e^3 - 32*b*c^3*d^6*e^4 + 24*b^2*c^2*d^5*e^5 - 8*b^3
*c*d^4*e^6 + b^4*d^3*e^7)*x)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: NotImplementedError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: NotImplementedError >> Unable to parse Giac output: 2*((-
73728*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)^5*g*b^3*d*exp(1)^7+12288*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^3*d*exp(1)^5+98304*c*exp(2)*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*e
xp(1)^8+319488*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^6-49152*c*exp(2)^3*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b^2*d^2*exp(1)^4-1966
08*c^2*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(
2))*x)^5*g*b*d^3*exp(1)^7-638976*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*
x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b*d^3*exp(1)^5+98304*c^2*exp(2)^
3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*b
*d^3*exp(1)^3+98304*c^3*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^6+393216*c^3*exp(2)^2*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*g*d^4*exp(1)^4+6144
0*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))
*x)^5*b^3*f*exp(1)^6-147456*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2
-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp(1)^7-221184*c*exp(2)^3*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b^2*f*d*exp
(1)^5+442368*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^6+294912*c^2*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*b*f*d^2*exp(1)^4-29491
2*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)^5*f*d^3*exp(1)^5-196608*c^3*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^5*f*d^3*exp(1)^3+368640*exp(2)^2*sqrt
(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)^4*g*b^3*d^2*exp(1)^6-61440*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b^3*d^2*exp(1)^4-4915
20*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1)
)-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^7-1597440*c*exp(2)^2*sqrt(-c*exp(2)
)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b
^2*d^3*exp(1)^5+245760*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp
(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b^2*d^3*exp(1)^3+983040*c^2*
exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqr
t(-c*exp(2))*x)^4*g*b*d^4*exp(1)^6+3194880*c^2*exp(2)^2*sqrt(-c*exp(2))*(sq
rt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b*d^4*
exp(1)^4-491520*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*b*d^4*exp(1)^2-491520*c^3*exp(2)*
sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)^4*g*d^5*exp(1)^5-1966080*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*g*d^5*exp(1)^3-30
7200*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^4*b^3*f*d*exp(1)^5+737280*c*exp(2)^2*sqrt(-c*exp(2))
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b^2*
f*d^2*exp(1)^6+1105920*c*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp
(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b^2*f*d^2*exp(1)^4-2211840*c^2
*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^4*b*f*d^3*exp(1)^5-1474560*c^2*exp(2)^3*sqrt(-c*exp(2))*
(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*b*f*d
^3*exp(1)^3+1474560*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^4*f*d^4*exp(1)^4+983040*c^3*exp(2
)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-
c*exp(2))*x)^4*f*d^4*exp(1)^2-196608*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*
x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^8+229376*exp(2)^3
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^
```

```
4*d^2*exp(1)^6-32768*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^3*g*b^4*d^2*exp(1)^4+1572864*c*exp(2)^2*(sqrt(-c*exp
(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^
7-1261568*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^5+303104*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*
exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^3*d^3*exp(1)^3-5111808*
c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2
))*x)^3*g*b^2*d^4*exp(1)^6+2113536*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b^2*d^4*exp(1)^4-688128*c^2*ex
p(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
3*g*b^2*d^4*exp(1)^2+6291456*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*
d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)^5+1015808*c^3*exp(2)^3*
(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*b*d
^5*exp(1)^3+65536*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^3*g*b*d^5*exp(1)-2555904*c^4*exp(2)^2*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^6*exp(1)^4-209
7152*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^3*g*d^6*exp(1)^2-262144*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*g*d^6+163840*exp(2)^3*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^4*f*d*exp(1)^
7-163840*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)^3*b^4*f*d*exp(1)^5-393216*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^8-360448*c*exp(
2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*
b^3*f*d^2*exp(1)^6+139264*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b
*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^3*f*d^2*exp(1)^4+1572864*c^2*exp(2)^2*(sq
rt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^
3*exp(1)^7+1277952*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(1)^5+835584*c^2*exp(2)^4*(sqrt(-c*
exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b^2*f*d^3*exp(
1)^3-1966080*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^6-3768320*c^3*exp(2)^3*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*b*f*d^4*exp(1)^4-1638
400*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)^3*b*f*d^4*exp(1)^2+786432*c^4*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)^5+2686976*c^4*exp(
2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^3*
f*d^5*exp(1)^3+1441792*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^3*f*d^5*exp(1)+196608*exp(2)*sqrt(-c*exp(2))*(
sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^4*
d^3*exp(1)^9-98304*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+
c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^4*d^3*exp(1)^5-98304*exp(2)^4*sq
rt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(
2))*x)^2*g*b^4*d^3*exp(1)^3-1376256*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2
)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^8-
589824*c*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*
exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^6+1130496*c*exp(2)^3*sqrt(-c*
exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
^2*g*b^3*d^4*exp(1)^4+221184*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2
-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^3*d^4*exp(1)^2+29491
20*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(
1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^7+4521984*c^2*exp(2)^2*sqrt(-c*ex
p(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2
*g*b^2*d^5*exp(1)^5-3883008*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)^3+9830
4*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)^2*g*b^2*d^5*exp(1)-2555904*c^3*exp(2)*sqrt(-c*exp(2
))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*
b*d^6*exp(1)^6-7274496*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*e
xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^4+2064384*c^3
*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-
sqrt(-c*exp(2))*x)^2*g*b*d^6*exp(1)^2+393216*c^3*exp(2)^4*sqrt(-c*exp(2))*(
sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*b*d^
6+786432*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)^5+3342336*c^4*exp(2)^2*sqrt(-c*
exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
^2*g*d^7*exp(1)^3+786432*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b
*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*g*d^7*exp(1)-491520*exp(2)
^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c
*exp(2))*x)^2*b^4*f*d^2*exp(1)^6+491520*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*e
xp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^4*f*d^2*exp(1
)^4+393216*c*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^9+2260992*c*exp(2)^3*sqrt(-
c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)^2*b^3*f*d^3*exp(1)^5-2039808*c*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^3*f*d^3*exp(1)^3-11
79648*c^2*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^8-1179648*c^2*exp(2)^2*sqrt(-c
*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x
)^2*b^2*f*d^4*exp(1)^6-4423680*c^2*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)
*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^4+3
096576*c^2*exp(2)^4*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*
d*exp(1))-sqrt(-c*exp(2))*x)^2*b^2*f*d^4*exp(1)^2+1179648*c^3*exp(2)*sqrt(-
c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)^2*b*f*d^5*exp(1)^7+2359296*c^3*exp(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*
x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^5+5996
544*c^3*exp(2)^3*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)^2*b*f*d^5*exp(1)^3-2162688*c^3*exp(2)^4*sqrt(-c*e
xp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^
2*b*f*d^5*exp(1)-393216*c^4*exp(2)*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*ex
p(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(1)^6-1179648*c^4*ex
p(2)^2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqr
t(-c*exp(2))*x)^2*f*d^6*exp(1)^4-3342336*c^4*exp(2)^3*sqrt(-c*exp(2))*(sqrt
(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)^2*f*d^6*exp(
1)^2-122880*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(
-c*exp(2))*x)*g*b^5*d^3*exp(1)^9+233472*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^7-98304*exp(2)^4
*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^5*
d^3*exp(1)^5-12288*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1)
)-sqrt(-c*exp(2))*x)*g*b^5*d^3*exp(1)^3-98304*c*exp(2)*(sqrt(-c*exp(2)*x^2-
b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^10+1499136
*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2)
)*x)*g*b^4*d^4*exp(1)^8-2236416*c*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c
*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^6+860160*c*exp(2)^4*(s
qrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^4*d^4
*exp(1)^4-24576*c*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))
-sqrt(-c*exp(2))*x)*g*b^4*d^4*exp(1)^2+393216*c^2*exp(2)*(sqrt(-c*exp(2)*x^
2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^9-592281
6*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)*g*b^3*d^5*exp(1)^7+7311360*c^2*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2
)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)^5-2236416*c^2*exp
(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g
*b^3*d^5*exp(1)^3+147456*c^2*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-
b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^3*d^5*exp(1)-589824*c^3*exp(2)*(sqrt(-c*
exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)
^8+10002432*c^3*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^6-8454144*c^3*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6*exp(1)^4+68812
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8*c^3*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp
(2))*x)*g*b^2*d^6*exp(1)^2+196608*c^3*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)
*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b^2*d^6+393216*c^4*exp(2)*(sqrt(-
c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)
^7-7618560*c^4*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sq
rt(-c*exp(2))*x)*g*b*d^7*exp(1)^5+2752512*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-
b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*b*d^7*exp(1)^3+786432*c^4
*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*
x)*g*b*d^7*exp(1)-98304*c^5*exp(2)*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d
*exp(1))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^6+2162688*c^5*exp(2)^2*(sqrt(-c*ex
p(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*g*d^8*exp(1)^4+393
216*c^5*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*e
xp(2))*x)*g*d^8*exp(1)^2+135168*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d
^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp(1)^8-270336*exp(2)^4*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^5*f*d^2*exp
(1)^6+135168*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt
(-c*exp(2))*x)*b^5*f*d^2*exp(1)^4+147456*c*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*e
xp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^9-1523712*c*e
xp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)
*b^4*f*d^3*exp(1)^7+2113536*c*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2
-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp(1)^5-737280*c*exp(2)^5*(sqrt(
-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^4*f*d^3*exp
(1)^3+49152*c^2*exp(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^8+4411392*c^2*exp(2)^3*(sqrt(-c*exp(2)*x
^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^6-55296
00*c^2*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*ex
p(2))*x)*b^3*f*d^4*exp(1)^4+1376256*c^2*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^3*f*d^4*exp(1)^2-1032192*c^3*ex
p(2)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*
b^2*f*d^5*exp(1)^7-6758400*c^3*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^
2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)^5+7028736*c^3*exp(2)^4*(s
qrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5
*exp(1)^3-1081344*c^3*exp(2)^5*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp
(1))-sqrt(-c*exp(2))*x)*b^2*f*d^5*exp(1)+1327104*c^4*exp(2)^2*(sqrt(-c*exp(
2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^6+570
1632*c^4*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*
exp(2))*x)*b*f*d^6*exp(1)^4-3342336*c^4*exp(2)^4*(sqrt(-c*exp(2)*x^2-b*exp(
2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*b*f*d^6*exp(1)^2-491520*c^5*exp(2
)^2*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*f*d
^7*exp(1)^5-1966080*c^5*exp(2)^3*(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*e
xp(1))-sqrt(-c*exp(2))*x)*f*d^7*exp(1)^3+196608*exp(2)*sqrt(-c*exp(2))*g*b^
5*d^4*exp(1)^10-466944*exp(2)^2*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^8+356352*e
xp(2)^3*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^6-98304*exp(2)^4*sqrt(-c*exp(2))*g
*b^5*d^4*exp(1)^4+12288*exp(2)^5*sqrt(-c*exp(2))*g*b^5*d^4*exp(1)^2-1212416
*c*exp(2)*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^9+2564096*c*exp(2)^2*sqrt(-c*exp
(2))*g*b^4*d^5*exp(1)^7-1695744*c*exp(2)^3*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)
^5+385024*c*exp(2)^4*sqrt(-c*exp(2))*g*b^4*d^5*exp(1)^3-40960*c*exp(2)^5*sq
rt(-c*exp(2))*g*b^4*d^5*exp(1)+2883584*c^2*exp(2)*sqrt(-c*exp(2))*g*b^3*d^6
*exp(1)^8-4825088*c^2*exp(2)^2*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^6+2125824*c
^2*exp(2)^3*sqrt(-c*exp(2))*g*b^3*d^6*exp(1)^4-90112*c^2*exp(2)^4*sqrt(-c*e
xp(2))*g*b^3*d^6*exp(1)^2-32768*c^2*exp(2)^5*sqrt(-c*exp(2))*g*b^3*d^6-3342
336*c^3*exp(2)*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)^7+3760128*c^3*exp(2)^2*sqrt
(-c*exp(2))*g*b^2*d^7*exp(1)^5-589824*c^3*exp(2)^3*sqrt(-c*exp(2))*g*b^2*d^
7*exp(1)^3-196608*c^3*exp(2)^4*sqrt(-c*exp(2))*g*b^2*d^7*exp(1)+1900544*c^4
*exp(2)*sqrt(-c*exp(2))*g*b*d^8*exp(1)^6-966656*c^4*exp(2)^2*sqrt(-c*exp(2)
)*g*b*d^8*exp(1)^4-196608*c^4*exp(2)^3*sqrt(-c*exp(2))*g*b*d^8*exp(1)^2-425
984*c^5*exp(2)*sqrt(-c*exp(2))*g*d^9*exp(1)^5-65536*c^5*exp(2)^2*sqrt(-c*ex
p(2))*g*d^9*exp(1)^3-196608*exp(2)^2*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^9+454
656*exp(2)^3*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^7-319488*exp(2)^4*sqrt(-c*exp
(2))*b^5*f*d^3*exp(1)^5+61440*exp(2)^5*sqrt(-c*exp(2))*b^5*f*d^3*exp(1)^3+1
31072*c*exp(2)*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^10+704512*c*exp(2)^2*sqrt(-
c*exp(2))*b^4*f*d^4*exp(1)^8-1818624*c*exp(2)^3*sqrt(-c*exp(2))*b^4*f*d^4*e
xp(1)^6+1163264*c*exp(2)^4*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^4-180224*c*exp(
2)^5*sqrt(-c*exp(2))*b^4*f*d^4*exp(1)^2-524288*c^2*exp(2)*sqrt(-c*exp(2))*b
^3*f*d^5*exp(1)^9-1294336*c^2*exp(2)^2*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^7+3
256320*c^2*exp(2)^3*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^5-1679360*c^2*exp(2)^4
*sqrt(-c*exp(2))*b^3*f*d^5*exp(1)^3+180224*c^2*exp(2)^5*sqrt(-c*exp(2))*b^3
*f*d^5*exp(1)+786432*c^3*exp(2)*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^8+1622016*
c^3*exp(2)^2*sqrt(-c*exp(2))*b^2*f*d^6*exp(1)^6-2875392*c^3*exp(2)^3*sqrt(-
c*exp(2))*b^2*f*d^6*exp(1)^4+835584*c^3*exp(2)^4*sqrt(-c*exp(2))*b^2*f*d^6*
exp(1)^2-524288*c^4*exp(2)*sqrt(-c*exp(2))*b*f*d^7*exp(1)^7-1196032*c^4*exp
(2)^2*sqrt(-c*exp(2))*b*f*d^7*exp(1)^5+983040*c^4*exp(2)^3*sqrt(-c*exp(2))*
b*f*d^7*exp(1)^3+131072*c^5*exp(2)*sqrt(-c*exp(2))*f*d^8*exp(1)^6+360448*c^
5*exp(2)^2*sqrt(-c*exp(2))*f*d^8*exp(1)^4)/(-196608*b^3*d^3*exp(1)^10+58982
4*exp(2)*b^3*d^3*exp(1)^8-589824*exp(2)^2*b^3*d^3*exp(1)^6+196608*exp(2)^3*
b^3*d^3*exp(1)^4+589824*c*b^2*d^4*exp(1)^9-1769472*c*exp(2)*b^2*d^4*exp(1)^
7+1769472*c*exp(2)^2*b^2*d^4*exp(1)^5-589824*c*exp(2)^3*b^2*d^4*exp(1)^3-58
9824*c^2*b*d^5*exp(1)^8+1769472*c^2*exp(2)*b*d^5*exp(1)^6-1769472*c^2*exp(2
)^2*b*d^5*exp(1)^4+589824*c^2*exp(2)^3*b*d^5*exp(1)^2+196608*c^3*d^6*exp(1)
^7-589824*c^3*exp(2)*d^6*exp(1)^5+589824*c^3*exp(2)^2*d^6*exp(1)^3-196608*c
^3*exp(2)^3*d^6*exp(1))/((sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*exp(1))-s
qrt(-c*exp(2))*x)^2*exp(1)-2*sqrt(-c*exp(2))*(sqrt(-c*exp(2)*x^2-b*exp(2)*x
+c*d^2-b*d*exp(1))-sqrt(-c*exp(2))*x)*d+b*d*exp(1)^2-exp(2)*b*d-c*d^2*exp(1
))^3+(12*exp(2)^2*g*b^3*d*exp(1)^4-2*exp(2)^3*g*b^3*d*exp(1)^2-16*c*exp(2)*
g*b^2*d^2*exp(1)^5-52*c*exp(2)^2*g*b^2*d^2*exp(1)^3+8*c*exp(2)^3*g*b^2*d^2*
exp(1)+32*c^2*exp(2)*g*b*d^3*exp(1)^4+104*c^2*exp(2)^2*g*b*d^3*exp(1)^2-16*
c^2*exp(2)^3*g*b*d^3-16*c^3*exp(2)*g*d^4*exp(1)^3-64*c^3*exp(2)^2*g*d^4*exp
(1)-10*exp(2)^3*b^3*f*exp(1)^3+24*c*exp(2)^2*b^2*f*d*exp(1)^4+36*c*exp(2)^3
*b^2*f*d*exp(1)^2-72*c^2*exp(2)^2*b*f*d^2*exp(1)^3-48*c^2*exp(2)^3*b*f*d^2*
exp(1)+48*c^3*exp(2)^2*f*d^3*exp(1)^2+32*c^3*exp(2)^3*f*d^3)/32/(b^3*d^3*ex
p(1)^9-3*exp(2)*b^3*d^3*exp(1)^7+3*exp(2)^2*b^3*d^3*exp(1)^5-exp(2)^3*b^3*d
^3*exp(1)^3-3*c*b^2*d^4*exp(1)^8+9*c*exp(2)*b^2*d^4*exp(1)^6-9*c*exp(2)^2*b
^2*d^4*exp(1)^4+3*c*exp(2)^3*b^2*d^4*exp(1)^2+3*c^2*b*d^5*exp(1)^7-9*c^2*ex
p(2)*b*d^5*exp(1)^5+9*c^2*exp(2)^2*b*d^5*exp(1)^3-3*c^2*exp(2)^3*b*d^5*exp(
1)-c^3*d^6*exp(1)^6+3*c^3*exp(2)*d^6*exp(1)^4-3*c^3*exp(2)^2*d^6*exp(1)^2+c
^3*exp(2)^3*d^6)/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp(2)-b*d*exp(1)*e
xp(2))*atan((-d*sqrt(-c*exp(2))+(sqrt(-c*exp(2)*x^2-b*exp(2)*x+c*d^2-b*d*ex
p(1))-sqrt(-c*exp(2))*x)*exp(1))/sqrt(b*d*exp(1)^3-c*d^2*exp(1)^2+c*d^2*exp
(2)-b*d*exp(1)*exp(2))))
```

maple [A] time = 0.05, size = 382, normalized size = 1.34

$$-\frac{2\left(c e x+b e-c d\right)\left(56 b\,c^{2} e^{4} g\,x^{3}-64 c^{3} d\,e^{3} g\,x^{3}-48 c^{3} e^{4} f\,x^{3}-28 b^{2} c\,e^{4} g\,x^{2}+256 b\,c^{2} d\,e^{3} g\,x^{2}+24 b\,c^{2} e^{4} f\,x^{2}-\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(56*b*c^2*e^4*g*x^3-64*c^3*d*e^3*g*x^3-48*c^3*e^4*f*
x^3-28*b^2*c*e^4*g*x^2+256*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2-256*c^3*d^2
*e^2*g*x^2-192*c^3*d*e^3*f*x^2+21*b^3*e^4*g*x-164*b^2*c*d*e^3*g*x-18*b^2*c*
e^4*f*x+524*b*c^2*d^2*e^2*g*x+120*b*c^2*d*e^3*f*x-416*c^3*d^3*e*g*x-312*c^3
*d^2*e^2*f*x+6*b^3*d*e^3*g+15*b^3*e^4*f-46*b^2*c*d^2*e^2*g-108*b^2*c*d*e^3*
f+144*b*c^2*d^3*e*g+276*b*c^2*d^2*e^2*f-104*c^3*d^4*g-288*c^3*d^3*e*f)/(e*x
+d)^3/e^2/(b^4*e^4-8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d
^4)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.75, size = 624, normalized size = 2.19

$$\frac{\left(\frac{40\,c^2\,d\,g+48\,c^2\,e\,f-40\,b\,c\,e\,g}{35\,e\,\left(3\,b\,e^2-6\,c\,d\,e\right)\,{\left(b\,e-2\,c\,d\right)}^2}-\frac{8\,c^2\,d\,g}{35\,e\,\left(3\,b\,e^2-6\,c\,d\,e\right)\,{\left(b\,e-2\,c\,d\right)}^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^2}-\frac{\left(\frac{8\,c\,g\,\left(2\,b\,e-3\,c\,d\right)}{35\,e\,\left(3\,b\,e^2-6\,c\,d\,e\right)\,{\left(b\,e-2\,c\,d\right)}^2}-\frac{}{35\,e}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^4*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((40*c^2*d*g + 48*c^2*e*f - 40*b*c*e*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2
*c*d)^2) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 -
 c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((8*c*g*(2*b*e - 3*c*d)
)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2) - (8*c^2*d*g)/(35*e*(3*b*e^2 -
 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d
 + e*x)^2 - (((2*b*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(7
*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*
x)^(1/2))/(d + e*x)^3 - (((16*c*d*g - 16*b*e*g + 12*c*e*f)/(7*e*(5*b*e^2 -
10*c*d*e)*(b*e - 2*c*d)) + (4*c*d*g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d
)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((2*f)/(7*b
*e^2 - 14*c*d*e) - (2*d*g)/(e*(7*b*e^2 - 14*c*d*e)))*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((112*c^3*d*g + 96*c^3*e*f - 112*b*c^
2*e*g)/(105*e^2*(b*e - 2*c*d)^4) + (16*c^3*d*g)/(105*e^2*(b*e - 2*c*d)^4))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\sqrt{- \left(d + ex\right) \left(be - cd + cex\right)} \left(d + ex\right)^{4}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**4/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**4), x)
```

3.2216 $\int \frac{f+gx}{(d+ex)^5\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=360

$$-\frac{32c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{315e^2(d+ex)(2cd-be)^5}-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8}{315e^2(d+ex)^2(2cd-be)^4}$$

```
[Out] -2/9*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^5-2/63*(-9*b*e*g+10*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1
/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^4-4/105*c*(-9*b*e*g+10*c*d*g+8*c*e*f)*(d*(-b
*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^3/(e*x+d)^3-16/315*c^2*(-
9*b*e*g+10*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+
2*c*d)^4/(e*x+d)^2-32/315*c^3*(-9*b*e*g+10*c*d*g+8*c*e*f)*(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^5/(e*x+d)
```

Rubi [A] time = 0.56, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 650}

$$-\frac{32c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8cef)}{315e^2(d+ex)(2cd-be)^5}-\frac{16c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-9beg+10cdg+8}{315e^2(d+ex)^2(2cd-be)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^5*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(9*e^2*(2*c*d -
b*e)*(d + e*x)^5) - (2*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2])/(63*e^2*(2*c*d - b*e)^2*(d + e*x)^4) - (4*c*(8*c*e*f
+ 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(105*e^2*(
2*c*d - b*e)^3*(d + e*x)^3) - (16*c^2*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(315*e^2*(2*c*d - b*e)^4*(d + e*x)^2)
- (32*c^3*(8*c*e*f + 10*c*d*g - 9*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e
^2*x^2])/(315*e^2*(2*c*d - b*e)^5*(d + e*x))
```

Rule 650

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(2*c*d -
b*e)), x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[
c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{f+gx}{(d+ex)^5\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5}+\frac{(8cef+10cdg-9beg)\int}{9e(2c}\\ &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5}-\frac{2(8cef+10cdg-9beg)\sqrt{}}{63e^2(2cd-b}\\ &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5}-\frac{2(8cef+10cdg-9beg)\sqrt{}}{63e^2(2cd-b}\\ &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5}-\frac{2(8cef+10cdg-9beg)\sqrt{}}{63e^2(2cd-b}\\ &= -\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{9e^2(2cd-be)(d+ex)^5}-\frac{2(8cef+10cdg-9beg)\sqrt{}}{63e^2(2cd-b}\end{aligned}$$

Mathematica [A] time = 0.21, size = 348, normalized size = 0.97

$$-\frac{2(be-cd+cex)\left(5b^4e^4(2dg+7ef+9egx)-2b^3ce^3\left(47d^2g+2de(80f+107gx)+e^2x(20f+27gx)\right)+12b^2c^2e^2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^5*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])
,x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)*(5*b^4*e^4*(7*e*f + 2*d*g + 9*e*g*x) + 12*b^2*c^
2*e^2*(29*d^3*g + 2*e^3*x^2*(2*f + 3*g*x) + d*e^2*x*(28*f + 41*g*x) + 2*d^2
*e*(47*f + 67*g*x)) - 2*b^3*c*e^3*(47*d^2*g + e^2*x*(20*f + 27*g*x) + 2*d*e
*(80*f + 107*g*x)) + 16*c^4*(25*d^5*g + 8*e^5*f*x^4 + 10*d*e^4*x^3*(4*f + g
*x) + 5*d^3*e^2*x*(20*f + 21*g*x) + 2*d^2*e^3*x^2*(42*f + 25*g*x) + d^4*e*(
83*f + 125*g*x)) - 8*b*c^3*e*(83*d^4*g + 2*e^4*x^3*(4*f + 9*g*x) + 4*d*e^3*
x^2*(12*f + 25*g*x) + 3*d^2*e^2*x*(44*f + 83*g*x) + d^3*e*(232*f + 390*g*x)
)))/(315*e^2*(-2*c*d + b*e)^5*(d + e*x)^4*Sqrt[(d + e*x)*(-(b*e) + c*(d - e
*x))])
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [A] time = 0.05, size = 564, normalized size = 1.57

$$-\frac{2\,(cex+be-cd)\,\bigl(-144b\,c^3e^5g\,x^4+160c^4d\,e^4g\,x^4+128c^4e^5f\,x^4+72b^2c^2e^5g\,x^3-800b\,c^3d\,e^4g\,x^3-64b\,c^3e^5f}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-144*b*c^3*e^5*g*x^4+160*c^4*d*e^4*g*x^4+128*c^4*e^
5*f*x^4+72*b^2*c^2*e^5*g*x^3-800*b*c^3*d*e^4*g*x^3-64*b*c^3*e^5*f*x^3+800*c
^4*d^2*e^3*g*x^3+640*c^4*d*e^4*f*x^3-54*b^3*c*e^5*g*x^2+492*b^2*c^2*d*e^4*g
*x^2+48*b^2*c^2*e^5*f*x^2-1992*b*c^3*d^2*e^3*g*x^2-384*b*c^3*d*e^4*f*x^2+16
80*c^4*d^3*e^2*g*x^2+1344*c^4*d^2*e^3*f*x^2+45*b^4*e^5*g*x-428*b^3*c*d*e^4*
g*x-40*b^3*c*e^5*f*x+1608*b^2*c^2*d^2*e^3*g*x+336*b^2*c^2*d*e^4*f*x-3120*b*
c^3*d^3*e^2*g*x-1056*b*c^3*d^2*e^3*f*x+2000*c^4*d^4*e*g*x+1600*c^4*d^3*e^2*
f*x+10*b^4*d*e^4*g+35*b^4*e^5*f-94*b^3*c*d^2*e^3*g-320*b^3*c*d*e^4*f+348*b^
2*c^2*d^3*e^2*g+1128*b^2*c^2*d^2*e^3*f-664*b*c^3*d^4*e*g-1856*b*c^3*d^3*e^2
*f+400*c^4*d^5*g+1328*c^4*d^4*e*f)/(e*x+d)^4/e^2/(b^5*e^5-10*b^4*c*d*e^4+40
*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^5/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 8.01, size = 949, normalized size = 2.64

$$\frac{\left(\frac{88\,c^2\,d\,g+96\,c^2\,e\,f-88\,b\,c\,e\,g}{63\,e\,\left(5\,b\,e^2-10\,c\,d\,e\right)\,{\left(b\,e-2\,c\,d\right)}^2}-\frac{8\,c^2\,d\,g}{63\,e\,\left(5\,b\,e^2-10\,c\,d\,e\right)\,{\left(b\,e-2\,c\,d\right)}^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^3}-\frac{\left(\frac{32\,c^3\,g\,\left(4\,b\,e-7\,c\,d\right)}{945\,e^2\,{\left(b\,e-2\,c\,d\right)}^5}-\frac{32\,c^4}{945\,e^2\,(b\,e}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^5*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)),x)
```

```
[Out] (((88*c^2*d*g + 96*c^2*e*f - 88*b*c*e*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e -
2*c*d)^2) - (8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((32*c^3*g*(4*b*e - 7
*c*d))/(945*e^2*(b*e - 2*c*d)^5) - (32*c^4*d*g)/(945*e^2*(b*e - 2*c*d)^5))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*c*g*(5*b*e -
8*c*d))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (8*c^2*d*g)/(63*e*(5*
b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^3 - (((400*c^3*d*g + 384*c^3*e*f - 400*b*c^2*e*g)/(315*e*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) + (16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e
)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^
2 - (((2*b*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)) - (4*c*d*g)/(9*e*(7*b*
e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x)^4 - (((20*c*d*g - 20*b*e*g + 16*c*e*f)/(9*e*(7*b*e^2 - 14*c*d*e
)*(b*e - 2*c*d)) + (4*c*d*g)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)))*(c*d
^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((2*f)/(9*b*e^2 - 1
8*c*d*e) - (2*d*g)/(e*(9*b*e^2 - 18*c*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b
*e^2*x)^(1/2))/(d + e*x)^5 + (((16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
 - 2*c*d)^3) + (16*c^2*g*(2*b*e - 5*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((7
36*c^4*d*g + 768*c^4*e*f - 736*b*c^3*e*g)/(945*e^2*(b*e - 2*c*d)^5) - (32*c
^4*d*g)/(945*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2))/(d + e*x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)^{5}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**5/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**5), x)
```

3.2217 $\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=287

$$-\frac{3(2cd-be)(-5beg+6cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{7/2}e^2}+\frac{3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cd}{4c^3e^2}$$

```
[Out] -3/8*(-b*e+2*c*d)*(-5*b*e*g+6*c*d*g+4*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)
/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(7/2)/e^2+2*(-b*e*g+c*d*g+c*e*f)
*(e*x+d)^3/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+3/4*(-
5*b*e*g+6*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2+1/2
*(-5*b*e*g+6*c*d*g+4*c*e*f)*(e*x+d)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/
c^2/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.44, antiderivative size = 287, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {788, 670, 640, 621, 204}

$$\frac{(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4cef)}{2c^2e^2(2cd-be)}+\frac{3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+6cdg+4ce}{4c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^3)/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2]) + (3*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])/(4*c^3*e^2) + ((4*c*e*f + 6*c*d*g - 5*b*e*g
)*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(2*c^2*e^2*(2*c*d -
b*e)) - (3*(2*c*d - b*e)*(4*c*e*f + 6*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c*x
))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(7/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(4cef+6cdg-5beg)\int \frac{(d}{\sqrt{cd^2-bde}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(4cef+6cdg-5beg)(d+ex)\sqrt{}}{2c^2e^2(2cd}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-}}{4c^3e^2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-}}{4c^3e^2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{3(4cef+6cdg-5beg)\sqrt{d(cd-}}{4c^3e^2}$$

Mathematica [A] time = 0.90, size = 250, normalized size = 0.87

$$\frac{\sqrt{c}\,\sqrt{e}\,(d+ex)\sqrt{e(2cd-be)}\,\left(15b^2e^2g+bce(-43dg-12ef+5egx)+2c^2\left(14d^2g+5de(2f-gx)-e^2x(2f+gx)\right)\right)}{4c^{7/2}e^{5/2}\sqrt{e(2cd-be)}\,\sqrt{(d+ex)(c(d-ex)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(15*b^2*e^2*g + b*c*e*(-12
*e*f - 43*d*g + 5*e*g*x) + 2*c^2*(14*d^2*g + 5*d*e*(2*f - g*x) - e^2*x*(2*f
 + g*x))) - 3*e*(-2*c*d + b*e)^2*(4*c*e*f + 6*c*d*g - 5*b*e*g)*Sqrt[d + e*x
]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[
d + e*x])/Sqrt[e*(2*c*d - b*e)]])/(4*c^(7/2)*e^(5/2)*Sqrt[e*(2*c*d - b*e)]*
Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 3.50, size = 745, normalized size = 2.60

$$\left[\frac{3\left(4\left(2\,c^3d^2e-3\,bc^2de^2+b^2ce^3\right)f+\left(12\,c^3d^3-28\,bc^2d^2e+21\,b^2cde^2-5\,b^3e^3\right)g-\left(4\left(2\,c^3de^2-bc^2e^3\right)f+\left(12\,c^3d\right.\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [1/16*(3*(4*(2*c^3*d^2*e - 3*b*c^2*d*e^2 + b^2*c*e^3)*f + (12*c^3*d^3 - 28*
b*c^2*d^2*e + 21*b^2*c*d*e^2 - 5*b^3*e^3)*g - (4*(2*c^3*d*e^2 - b*c^2*e^3)*
f + (12*c^3*d^2*e - 16*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(-c)*log(8*c^2*
e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*(2*c^3*e^2*g*x^2
- 4*(5*c^3*d*e - 3*b*c^2*e^2)*f - (28*c^3*d^2 - 43*b*c^2*d*e + 15*b^2*c*e^2
)*g + (4*c^3*e^2*f + 5*(2*c^3*d*e - b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e))/(c^5*e^3*x - c^5*d*e^2 + b*c^4*e^3), -1/8*(3*(4*(2*c^
3*d^2*e - 3*b*c^2*d*e^2 + b^2*c*e^3)*f + (12*c^3*d^3 - 28*b*c^2*d^2*e + 21*
b^2*c*d*e^2 - 5*b^3*e^3)*g - (4*(2*c^3*d*e^2 - b*c^2*e^3)*f + (12*c^3*d^2*e
 - 16*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x
- c^2*d^2 + b*c*d*e)) - 2*(2*c^3*e^2*g*x^2 - 4*(5*c^3*d*e - 3*b*c^2*e^2)*f
- (28*c^3*d^2 - 43*b*c^2*d*e + 15*b^2*c*e^2)*g + (4*c^3*e^2*f + 5*(2*c^3*d*
e - b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^5*e^3*x
 - c^5*d*e^2 + b*c^4*e^3)]
```

giac [**B**]   time = 0.60, size = 623, normalized size = 2.17

$$\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\,((((\frac{2(4c^4d^2ge^5-4bc^3dge^6+b^2c^2ge^7)x}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}+\frac{48c^4d^3ge^4+16c^4d^2fe^5-68bc^3d^2ge^5-16bc^3dfe^6+32b^2c^2dge^6+4b}{4c^5d^2e^4-4bc^4de^5+b^2c^3e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] 1/4*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((2*(4*c^4*d^2*g*e^5 - 4*b*
c^3*d*g*e^6 + b^2*c^2*g*e^7)*x/(4*c^5*d^2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6
) + (48*c^4*d^3*g*e^4 + 16*c^4*d^2*f*e^5 - 68*b*c^3*d^2*g*e^5 - 16*b*c^3*d*
f*e^6 + 32*b^2*c^2*d*g*e^6 + 4*b^2*c^2*f*e^7 - 5*b^3*c*g*e^7)/(4*c^5*d^2*e^
4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))*x - (72*c^4*d^4*g*e^3 + 64*c^4*d^3*f*e^4
- 224*b*c^3*d^3*g*e^4 - 112*b*c^3*d^2*f*e^5 + 230*b^2*c^2*d^2*g*e^5 + 64*b^
2*c^2*d*f*e^6 - 98*b^3*c*d*g*e^6 - 12*b^3*c*f*e^7 + 15*b^4*g*e^7)/(4*c^5*d^
2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))*x - (112*c^4*d^5*g*e^2 + 80*c^4*d^4*f
*e^3 - 284*b*c^3*d^4*g*e^3 - 128*b*c^3*d^3*f*e^4 + 260*b^2*c^2*d^3*g*e^4 +
68*b^2*c^2*d^2*f*e^5 - 103*b^3*c*d^2*g*e^5 - 12*b^3*c*d*f*e^6 + 15*b^4*d*g*
e^6)/(4*c^5*d^2*e^4 - 4*b*c^4*d*e^5 + b^2*c^3*e^6))/(c*x^2*e^2 - c*d^2 + b*
x*e^2 + b*d*e) - 3/8*(12*c^2*d^2*g + 8*c^2*d*f*e - 16*b*c*d*g*e - 4*b*c*f*e
^2 + 5*b^2*g*e^2)*sqrt(-c*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*
x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^4
```

maple [**B**]   time = 0.06, size = 2032, normalized size = 7.08

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 15/8*e*g*b^2/c^3*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-15/16*e^5*g*b^5/c
^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)-15/8*e*g*b^2/c^3/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))-43/4/e*g*b/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d^2-6*g/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+9/2/e*
```

```
g/c*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+6*g/c^2/(c*e^2)^(1/2)*arct
an((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*b*d-9/
2/e*g/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(1/2))*d^2+5/4*e*g*b/c^2*x^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)+3/2*b/c^2*e/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f+3/4*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2
*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^5*f-3/2*b/c^2*x*e/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f+11*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d-7*e^4/c*b^2/(-b^2*e^4+
4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-43/
2*e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*
e+c*d^2)^(1/2)*x*d^2+7/e^2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*g+5
/e/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*f+3*x/c/(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^(1/2)*d*f-3/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*d*f-43/4*e^3*g*b^3/c^2/(-b^2*e^4+4*
b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+3/2*b^3
/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^
(1/2)*e^5*x*f+2*d^3*f*(-2*c*e^2*x-b*e^2)/(-4*c*e^2*(-b*d*e+c*d^2)-b^2*e^4)/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2*e*g*x^3/c/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)-15/16*e*g*b^3/c^4/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+1
1/2*g*b^2/c^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d-3*x^2/c/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-x^2/c*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/
2)*f+3/4*b^2/c^3*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-7/2/c^2/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d*f+5/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d
^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2*e^3*f-7/2*e^4/c^2*b^3/(-
b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d
*f+7/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2)*d^3*e^2*g-15/8*e^5*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^
2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+14*b/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*e^2*g+10*b/(-b^2*e^
4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2*e
^3*f+11/2*e^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(1/2)*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^3 \left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.2218 $\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=213

$$-\frac{(-3beg+4cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{5/2}e^2}+\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{c^2e^2(2cd-be)}+\frac{}{ce^2(}$$

```
[Out] -1/2*(-3*b*e*g+4*c*d*g+2*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(5/2)/e^2+2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^2/c/
e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+(-3*b*e*g+4*c*d*g+2
*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.28, antiderivative size = 213, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {788, 640, 621, 204}

$$\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-3beg+4cdg+2cef)}{c^2e^2(2cd-be)}-\frac{(-3beg+4cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{5/2}e^2}+\frac{}{ce^2(2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^2)/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2]) + ((2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(c^2*e^2*(2*c*d - b*e)) - ((2*c*e*f + 4*c*d*g
 - 3*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2])])/(2*c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx &= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(2cef+4cdg-3beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)} \\
&= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd}}{c^2e^2(2cd-} \\
&= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd}}{c^2e^2(2cd-} \\
&= \frac{2(cef+cdg-beg)(d+ex)^2}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2cef+4cdg-3beg)\sqrt{d(cd}}{c^2e^2(2cd-}
\end{aligned}
$$

Mathematica [A] time = 0.58, size = 201, normalized size = 0.94

$$
\frac{\sqrt{c}\sqrt{e}\,(d+ex)\sqrt{e(2cd-be)}\,(c(3dg+2ef-egx)-3beg)+e\sqrt{d+ex}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,(-3beg+4cdg+2ce}{c^{5/2}e^{5/2}\sqrt{e(2cd-be)}\,\sqrt{(d+ex)(c(d-ex)-be)}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (Sqrt[c]*Sqrt[e]*Sqrt[e*(2*c*d - b*e)]*(d + e*x)*(-3*b*e*g + c*(2*e*f + 3*d
*g - e*g*x)) + e*(-2*c*d + b*e)*(2*c*e*f + 4*c*d*g - 3*b*e*g)*Sqrt[d + e*x]
*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d
 + e*x])/Sqrt[e*(2*c*d - b*e)]])/(c^(5/2)*e^(5/2)*Sqrt[e*(2*c*d - b*e)]*Sqr
t[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 2.17, size = 503, normalized size = 2.36

$$
\left[-\frac{\left(2\left(c^2de-bce^2\right)f+\left(4c^2d^2-7bcde+3b^2e^2\right)g-\left(2c^2e^2f+\left(4c^2de-3bce^2\right)g\right)x\right)\sqrt{-c}\,\log\left(8c^2e^2x^2+8bce^2\right.}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] [-1/4*((2*(c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 7*b*c*d*e + 3*b^2*e^2)*g - (
2*c^2*e^2*f + (4*c^2*d*e - 3*b*c*e^2)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*
b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x +
 c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) - 4*(c^2*e*g*x - 2*c^2*e*f - 3*(c
^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^3*x - c
^4*d*e^2 + b*c^3*e^3), -1/2*((2*(c^2*d*e - b*c*e^2)*f + (4*c^2*d^2 - 7*b*c*
d*e + 3*b^2*e^2)*g - (2*c^2*e^2*f + (4*c^2*d*e - 3*b*c*e^2)*g)*x)*sqrt(c)*a
rctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c
)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(c^2*e*g*x - 2*c^2*e*f
 - 3*(c^2*d - b*c*e)*g)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^4*e^
3*x - c^4*d*e^2 + b*c^3*e^3)]
```

giac [B] time = 0.62, size = 427, normalized size = 2.00

$$\frac{\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\bigg(\bigg(\frac{\left(4\,c^3d^2ge^3-4\,bc^2dge^4+b^2cge^5\right)x}{4\,c^4d^2e^3-4\,bc^3de^4+b^2c^2e^5}-\frac{8\,c^3d^3ge^2+8\,c^3d^2fe^3-20\,bc^2d^2ge^3-8\,bc^2dfe^4+14\,b^2cdge^4+2\,b^2cfe^5-3\,b^3ge}{4\,c^4d^2e^3-4\,bc^3de^4+b^2c^2e^5}}{cx^2e^2-cd^2+bxe^2+bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((4*c^3*d^2*g*e^3 - 4*b*c^2*d*g
*e^4 + b^2*c*g*e^5)*x/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4 + b^2*c^2*e^5) - (8*c^
3*d^3*g*e^2 + 8*c^3*d^2*f*e^3 - 20*b*c^2*d^2*g*e^3 - 8*b*c^2*d*f*e^4 + 14*b
^2*c*d*g*e^4 + 2*b^2*c*f*e^5 - 3*b^3*g*e^5)/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4
+ b^2*c^2*e^5))*x - (12*c^3*d^4*g*e + 8*c^3*d^3*f*e^2 - 24*b*c^2*d^3*g*e^2
- 8*b*c^2*d^2*f*e^3 + 15*b^2*c*d^2*g*e^3 + 2*b^2*c*d*f*e^4 - 3*b^3*d*g*e^4)
/(4*c^4*d^2*e^3 - 4*b*c^3*d*e^4 + b^2*c^2*e^5))/(c*x^2*e^2 - c*d^2 + b*x*e^
2 + b*d*e) - 1/2*(4*c*d*g + 2*c*f*e - 3*b*g*e)*sqrt(-c*e^2)*e^(-3)*log(abs(
-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-
c*e^2)*b))/c^3
```

maple [B] time = 0.06, size = 1320, normalized size = 6.20

$$\frac{3b^3e^4gx}{2\left(-b^2e^4+4bcd\,e^3-4d^2e^2c^2\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;c^2}-\frac{6b^2d\,e^3gx}{\left(-b^2e^4+4bcd\,e^3-4d^2e^2c^2\right)\sqrt{-c\,e^2x^2-b\,e^2x-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2*x/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g-1/2*b^3/c^2/(-b^2*e^4+4*
b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^4*f-2/c/e
/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c
*d^2)^(1/2))*d*g-3/e*g/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d+3/4*e
^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^(1/2)-6*e^3*g/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+3/2*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*
c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+6*e^2*g*b/(-b^2*e^4+4
*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2-g*x^
2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/4*g*b^2/c^3/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(1/2)+2/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-3/2*g
*b/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/2*g*b/c^2/(c*e^2)^(1/2)*a
rctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/e
^2*g/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2+2*b^2/c/(-b^2*e^4+4*b*c*d
*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*d*f+2*d^2*f*
(-2*c*e^2*x-b*e^2)/(-b^2*e^4-4*(-b*d*e+c*d^2)*c*e^2)/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)-3*e^3*g/c^2*b^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+3*e^2*g/c*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c
^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^2-b^2/c/(-b^2*e^4+4*b*
c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^4*x*f+4*b/(
-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*
e^3*x*d*f+x/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/2*b/c^2/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/c/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^2}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{2} \left(f + g x\right)}{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)**2*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.2219 $\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=129

$$\frac{2(d+ex)(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{3/2}e^2}$$

```
[Out] -g*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c
^(3/2)/e^2+2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 148, normalized size of antiderivative = 1.15, number of steps used = 3, number of rules used = 3, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}} = 0.071$, Rules used = $\{777, 621, 204\}$

$$\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{3/2}e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d*(2*c*d - b*e) + e*(2*c*d - b*e)*x))/(c*e^2*(2
*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (g*ArcTan[(e*(b
+ 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(c^(3/2)*
e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d(2cd-be)+e(2cd-be)x)}{ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{g\int \frac{1}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}}{ce}$$

$$= \frac{2(cef+cdg-beg)(d(2cd-be)+e(2cd-be)x)}{ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(2g)\operatorname{Subst}(\int \frac{1}{-4ce^2-x^2}}{}$$

$$= \frac{2(cef+cdg-beg)(d(2cd-be)+e(2cd-be)x)}{ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{g\tan^{-1}(\frac{e(b+2cx}{2\sqrt{c}\,\sqrt{d(cd-be)-b}}}{c^{3/2}e^2}$$

Mathematica [**A**] time = 0.44, size = 173, normalized size = 1.34

$$-\frac{2\left(\sqrt{c}\,\sqrt{e}\,(d+ex)(-beg+cdg+cef)+g\sqrt{d+ex}\,\sqrt{e(2cd-be)}\,(be-2cd)\sqrt{\frac{be-cd+cex}{be-2cd}}\,\sin^{-1}\left(\frac{\sqrt{c}\,\sqrt{e}\,\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)\right)}{c^{3/2}e^{5/2}(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (-2*(Sqrt[c]*Sqrt[e]*(c*e*f + c*d*g - b*e*g)*(d + e*x) + Sqrt[e*(2*c*d - b*
e)]*(-2*c*d + b*e)*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*
e)]*ArcSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]))/(c^(3/2
)*e^(5/2)*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**A**] time = 1.48, size = 483, normalized size = 3.74

$$\Bigg[\frac{\left(\left(2\,c^2de-bce^2\right)gx-\left(2\,c^2d^2-3\,bcde+b^2e^2\right)g\right)\sqrt{-c}\,\log(8\,c^2e^2x^2+8\,bce^2x-4\,c^2d^2+4\,bcde+b^2e^2+4\,\sqrt{-ce}}{2\,(2\,c^4d^2e^2-3\,bc^3de^3+b^2c^2e^4-}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] [1/2*(((2*c^2*d*e - b*c*e^2)*g*x - (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqr
t(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4
*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) + 4*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c^2*e*f + (c^2*d - b*c*e)*g))/(2
*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^2*e^4 - (2*c^4*d*e^3 - b*c^3*e^4)*x),
-(((2*c^2*d*e - b*c*e^2)*g*x - (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(c)
*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt
(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*sqrt(-c*e^2*x^2 - b*
e^2*x + c*d^2 - b*d*e)*(c^2*e*f + (c^2*d - b*c*e)*g))/(2*c^4*d^2*e^2 - 3*b*
c^3*d*e^3 + b^2*c^2*e^4 - (2*c^4*d*e^3 - b*c^3*e^4)*x)]
```

giac [**B**] time = 0.56, size = 282, normalized size = 2.19

$$-\frac{\sqrt{-ce^2}\,ge^{(-3)}\log\left(\left|-2\left(\sqrt{-ce^2}\,x-\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\right)c-\sqrt{-ce^2}\,b\right|\right)}{c^2}-\frac{2\sqrt{-cx^2e^2+cd^2-bxe^2-bde}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] -sqrt(-c*e^2)*g*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2
 - b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^2 - 2*sqrt(-c*x^2*e^2 + c*d^2 -
 b*x*e^2 - b*d*e)*((2*c^2*d^2*g*e^2 + 2*c^2*d*f*e^3 - 3*b*c*d*g*e^3 - b*c*f
*e^4 + b^2*g*e^4)*x/(4*c^3*d^2*e^3 - 4*b*c^2*d*e^4 + b^2*c*e^5) + (2*c^2*d^
3*g*e + 2*c^2*d^2*f*e^2 - 3*b*c*d^2*g*e^2 - b*c*d*f*e^3 + b^2*d*g*e^3)/(4*c
^3*d^2*e^3 - 4*b*c^2*d*e^4 + b^2*c*e^5))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d
*e)
```

maple [B] time = 0.06, size = 710, normalized size = 5.50

$$-\frac{b^2e^3gx}{\left(-b^2e^4+4bcd\,e^3-4d^2e^2c^2\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;c}+\frac{2bd\,e^2gx}{\left(-b^2e^4+4bcd\,e^3-4d^2e^2c^2\right)\sqrt{-c\,e^2x^2-b\,e^2x-bd}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/e*g*x/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2/e*g*b/c^2/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)-e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-1/2*e^3*g*b^3/c^2/(-b^2*e^4+4*b*c
*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/e*g/c/(c*e^2
)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2))+1/c/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*g+1/c/e/(-c*e^2*x^2-
b*e^2*x-b*d*e+c*d^2)^(1/2)*f+2*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*x*d*g+2*b/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^3*x*f+b^2/c/(-b^2*e^4+4*
b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*e^2*d*g+b^2
/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*e^3*f+2*d*f*(-2*c*e^2*x-b*e^2)/(-b^2*e^4-4*(-b*d*e+c*d^2)*c*e^2)/(-c*e^
2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 4.04, size = 344, normalized size = 2.67

$$\frac{4\,c\,d^3\,g+2\,b\,d\,e^2\,f-4\,b\,d^2\,e\,g-2\,b\,d\,e^2\,g\,x+4\,c\,d\,e^2\,f\,x}{\left(b^2\,e^4+4\,c\,e^2\,\left(c\,d^2-b\,d\,e\right)\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}+\frac{e\,g\,\ln\left(b\,e^2-2\,\sqrt{-c\,e^2}\,\sqrt{-\left(d+e\,x\right)\,\left(b\,e-c\,d+c\,e\,x\right)}\right.}{{\left(-c\,e^2\right)}^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] (4*c*d^3*g + 2*b*d*e^2*f - 4*b*d^2*e*g - 2*b*d*e^2*g*x + 4*c*d*e^2*f*x)/((b
^2*e^4 + 4*c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2)) + (e*g*log(b*e^2 - 2*(-c*e^2)^(1/2)*(-(d + e*x)*(b*e - c*d + c*e*x))^(1
/2) + 2*c*e^2*x))/(-c*e^2)^(3/2) - (e*f*(4*b*d*e - 4*c*d^2 + 2*b*e^2*x))/((
b^2*e^4 + 4*c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1
/2)) + (g*(x*((b^2*e^4)/2 + c*e^2*(c*d^2 - b*d*e)) - (b*e^2*(c*d^2 - b*d*e)
)/2))/(c*e*((b^2*e^4)/4 + c*e^2*(c*d^2 - b*d*e))*(c*d^2 - c*e^2*x^2 - b*d*e
 - b*e^2*x)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.2220 $\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=136

$$\frac{2(b+2cx)(-3beg+2cdg+4cef)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)}{3e^2(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

```
[Out] 2/3*(-3*b*e*g+2*c*d*g+4*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^3/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(1/2)-2/3*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)/(d*(-b*e+c*d)
-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {792, 613}

$$\frac{2(b+2cx)(-3beg+2cdg+4cef)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)}{3e^2(d+ex)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (2*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(3*e*(2*c*d - b*e)^3*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(3*e^2*(2*c*d - b*e)*(
d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx &= -\frac{2(ef-dg)}{3e^2(2cd-be)(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{(4cef+2cdg}{}\\ &= \frac{2(4cef+2cdg-3beg)(b+2cx)}{3e(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef}{3e^2(2cd-be)(d+ex)\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 149, normalized size = 1.10

$$\frac{2b^2e^2(2dg+e(f+3gx))+4bce\left(d^2g+de(2gx-4f)+e^2x(3gx-2f)\right)-8c^2\left(d^3g+d^2e(gx-f)+de^2x(2f+gx)\right.}{3e^2(d+ex)(be-2cd)^3\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] (-8*c^2*(d^3*g + 2*e^3*f*x^2 + d^2*e*(-f + g*x) + d*e^2*x*(2*f + g*x)) + 4*
b*c*e*(d^2*g + d*e*(-4*f + 2*g*x) + e^2*x*(-2*f + 3*g*x)) + 2*b^2*e^2*(2*d*
g + e*(f + 3*g*x)))/(3*e^2*(-2*c*d + b*e)^3*(d + e*x)*Sqrt[(d + e*x)*(-(b*e
) + c*(d - e*x))])
```

fricas [B] time = 14.81, size = 407, normalized size = 2.99

$$\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\bigl(2\bigl(4c^2e^3f + \bigl(2c^2de^2 - 3bce^3\bigr)g\bigr)x^2 - \bigl(4c^2d^2e - 8bcde^2}{3\bigl(8c^4d^6e^2 - 20bc^3d^5e^3 + 18b^2c^2d^4e^4 - 7b^3cd^3e^5 + b^4d^2e^6 - \bigl(8c^4d^3e^5 - 12bc^3d^2e^6 + 6b^2c^2de^7 - b^3ce^8\bigr)x^3 - \bigl(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f + (2*c^2*d*e
^2 - 3*b*c*e^3)*g)*x^2 - (4*c^2*d^2*e - 8*b*c*d*e^2 + b^2*e^3)*f + 2*(2*c^2
*d^3 - b*c*d^2*e - b^2*d*e^2)*g + (4*(2*c^2*d*e^2 + b*c*e^3)*f + (4*c^2*d^2
*e - 4*b*c*d*e^2 - 3*b^2*e^3)*g)*x)/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*
b^2*c^2*d^4*e^4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3
*d^2*e^6 + 6*b^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*
e^5 - 6*b^2*c^2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 2
8*b*c^3*d^4*e^4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Unable to transpose Error: Bad Argument Valu
e
```

maple [A] time = 0.05, size = 228, normalized size = 1.68

$$-\frac{2(cex + be - cd)\bigl(6bce^3gx^2 - 4c^2de^2gx^2 - 8c^2e^3fx^2 + 3b^2e^3gx + 4bcde^2gx - 4bce^3fx - 4c^2d^2egx - 8c^2de^2}{3\bigl(b^3e^3 - 6b^2cde^2 + 12bc^2d^2e - 8c^3d^3\bigr)\bigl(-ce^2x^2 - be^2x -}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(6*b*c*e^3*g*x^2-4*c^2*d*e^2*g*x^2-8*c^2*e^3*f*x^2+3*b
^2*e^3*g*x+4*b*c*d*e^2*g*x-4*b*c*e^3*f*x-4*c^2*d^2*e*g*x-8*c^2*d*e^2*f*x+2*
b^2*d*e^2*g+b^2*e^3*f+2*b*c*d^2*e*g-8*b*c*d*e^2*f-4*c^2*d^3*g+4*c^2*d^2*e*f
)/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(3/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.20, size = 872, normalized size = 6.41

$$\frac{\left(\frac{2\,b\,g}{3\,e\,{\left(b\,e-2\,c\,d\right)}^3}-\frac{4\,c\,d\,g}{3\,e^2\,{\left(b\,e-2\,c\,d\right)}^3}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{d+e\,x}+\frac{\left(\frac{2\,d\,g}{3\,b^2\,e^4-12\,b\,c\,d\,e^3+12\,c^2\,d^2\,e^2}-\frac{2\,e\,f}{3\,b^2\,e^4-12\,b\,c\,d\,e^3+12\,c^2\,d^2\,e^2}\right)\,\sqrt{c}}{{\left(d+e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((2*b*g)/(3*e*(b*e - 2*c*d)^3) - (4*c*d*g)/(3*e^2*(b*e - 2*c*d)^3))*(c*d^2
 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*d*g)/(3*b^2*e^4 + 1
2*c^2*d^2*e^2 - 12*b*c*d*e^3) - (2*e*f)/(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*
c*d*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + ((x*((
(e*(b*e - c*d) + c*d*e)*((4*c^3*e*(3*b*g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^3*e*g)/(3*(b*e - 2*c*d)^2*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^3*g*(e*(b*e - c*d) + c*d*e))/(3*e*(
b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(8
*b^2*e^2*g + 8*c^2*d^2*g - 10*b*c*e^2*f + 16*c^2*d*e*f - 16*b*c*d*e*g))/(3*
e*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (2*b*c^2*e*(3*b*
g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (8*
c^3*d*g*(b*e - c*d))/(3*e*(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e))) + (d*(b*e - c*d)*((4*c^3*e*(3*b*g - 2*c*f))/(3*(b*e - 2*c*d)^2*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^3*e*g)/(3*(b*e - 2*c*d)^2*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^3*g*(e*(b*e - c*d) + c*d*e))/(3*e*(
b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(8*b
^2*e^2*g + 8*c^2*d^2*g - 10*b*c*e^2*f + 16*c^2*d*e*f - 16*b*c*d*e*g))/(3*e*
(b*e - 2*c*d)^2*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(- \left(d + ex\right) \left(be - cd + cex\right)\right)^{\frac{3}{2}} \left(d + ex\right)}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)), x)
```

3.2221 $\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=209

$$-\frac{2(ef-dg)}{5e^2(d+ex)^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8c(b+2cx)(-5beg+4cdg+6cef)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{\;}{15e^2(d+ex)(}$$

```
[Out] 8/15*c*(-5*b*e*g+4*c*d*g+6*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^4/(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(1/2)-2/5*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)^2/(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-2/15*(-5*b*e*g+4*c*d*g+6*c*e*f)/e^2/(-b*e+2*
c*d)^2/(e*x+d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.28, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.068, Rules used = {792, 658, 613}

$$-\frac{2(ef-dg)}{5e^2(d+ex)^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8c(b+2cx)(-5beg+4cdg+6cef)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{\;}{15e^2(d+ex)(}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (8*c*(6*c*e*f + 4*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^4*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(5*e^2*(2*c*d - b*e
)*(d + e*x)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(6*c*e*f + 4*
c*d*g - 5*b*e*g))/(15*e^2*(2*c*d - b*e)^2*(d + e*x)*Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(6cef+4cd}{}$$

$$= -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{15e^2(2cd-}$$

$$= \frac{8c(6cef+4cdg-5beg)(b+2cx)}{15e(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{2}{5e^2(2cd-be)(d+ex)}$$

Mathematica [**A**] time = 0.13, size = 233, normalized size = 1.11

$$\frac{2\left(b^3e^3(2dg+3ef+5egx)-2b^2ce^2\left(13d^2g+4de(3f+8gx)+e^2x(3f+10gx)\right)+4bc^2e\left(4d^3g+7d^2e(3f+gx)+\right.\right.}{15e^2(d+ex)^2(be-2cd)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2
)),x]
```

```
[Out] (2*(b^3*e^3*(3*e*f + 2*d*g + 5*e*g*x) + 4*b*c^2*e*(4*d^3*g + 2*d*e^2*x*(9*f
 - 8*g*x) + 2*e^3*x^2*(3*f - 5*g*x) + 7*d^2*e*(3*f + g*x)) + 8*c^3*(d^4*g +
 6*e^4*f*x^3 + 4*d*e^3*x^2*(3*f + g*x) + d^3*e*(-6*f + 2*g*x) + d^2*e^2*x*(
3*f + 8*g*x)) - 2*b^2*c*e^2*(13*d^2*g + 4*d*e*(3*f + 8*g*x) + e^2*x*(3*f +
10*g*x))))/(15*e^2*(-2*c*d + b*e)^4*(d + e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*
(d - e*x))])
```

fricas [**B**] time = 64.42, size = 649, normalized size = 3.11

$$\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(8\left(6c^3e^4f+\left(4c^3de^3-5bc^2e^4\right)g\right)x^3+4\left(6\left(4c^3de^3+bc^2\right.\right.\right.}{15\left(16c^5d^8e^2-48bc^4d^7e^3+56b^2c^3d^6e^4-32b^3c^2d^5e^5+9b^4cd^4e^6-b^5d^3e^7-\left(16c^5d^4e^6-32bc^4d^3e^7+24b^2c^3d^2\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] 2/15*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(6*c^3*e^4*f + (4*c^3*d*
e^3 - 5*b*c^2*e^4)*g)*x^3 + 4*(6*(4*c^3*d*e^3 + b*c^2*e^4)*f + (16*c^3*d^2*
e^2 - 16*b*c^2*d*e^3 - 5*b^2*c*e^4)*g)*x^2 - 3*(16*c^3*d^3*e - 28*b*c^2*d^2
*e^2 + 8*b^2*c*d*e^3 - b^3*e^4)*f + 2*(4*c^3*d^4 + 8*b*c^2*d^3*e - 13*b^2*c
*d^2*e^2 + b^3*d*e^3)*g + (6*(4*c^3*d^2*e^2 + 12*b*c^2*d*e^3 - b^2*c*e^4)*f
 + (16*c^3*d^3*e + 28*b*c^2*d^2*e^2 - 64*b^2*c*d*e^3 + 5*b^3*e^4)*g)*x)/(16
*c^5*d^8*e^2 - 48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*c^2*d^5*e^5 +
 9*b^4*c*d^4*e^6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^3*e^7 + 24*b^
2*c^3*d^2*e^8 - 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^5*e^5 - 48*b*
c^4*d^4*e^6 + 16*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c*d*e^9 + b^5*
e^10)*x^3 - 3*(16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*c^2*d^3*e^7 -
 8*b^4*c*d^2*e^8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^4*d^6*e^4 + 1
44*b^2*c^3*d^5*e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3*b^5*d^2*e^8)
*x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [**A**] time = 0.06, size = 382, normalized size = 1.83

$$-\frac{2\left(cex+be-cd\right)\left(-40b\,c^{2}e^{4}g\,x^{3}+32c^{3}d\,e^{3}g\,x^{3}+48c^{3}e^{4}f\,x^{3}-20b^{2}c\,e^{4}g\,x^{2}-64b\,c^{2}d\,e^{3}g\,x^{2}+24b\,c^{2}e^{4}f\,x^{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-40*b*c^2*e^4*g*x^3+32*c^3*d*e^3*g*x^3+48*c^3*e^4*f*
x^3-20*b^2*c*e^4*g*x^2-64*b*c^2*d*e^3*g*x^2+24*b*c^2*e^4*f*x^2+64*c^3*d^2*e
^2*g*x^2+96*c^3*d*e^3*f*x^2+5*b^3*e^4*g*x-64*b^2*c*d*e^3*g*x-6*b^2*c*e^4*f*
x+28*b*c^2*d^2*e^2*g*x+72*b*c^2*d*e^3*f*x+16*c^3*d^3*e*g*x+24*c^3*d^2*e^2*f
*x+2*b^3*d*e^3*g+3*b^3*e^4*f-26*b^2*c*d^2*e^2*g-24*b^2*c*d*e^3*f+16*b*c^2*d
^3*e*g+84*b*c^2*d^2*e^2*f+8*c^3*d^4*g-48*c^3*d^3*e*f)/(e*x+d)/e^2/(b^4*e^4-
8*b^3*c*d*e^3+24*b^2*c^2*d^2*e^2-32*b*c^3*d^3*e+16*c^4*d^4)/(-c*e^2*x^2-b*e
^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 4.59, size = 2126, normalized size = 10.17

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((d*((16*c^3*f - 16*b*c^2*g)/(15*(b*e - 2*c*d)^5) + (8*c^3*d*g)/(15*e*(b*e
 - 2*c*d)^5)))/e + (2*b*c*(3*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*b*c*g)/(15*e*(b*e - 2*c
*d)^4) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x) + (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)
^2) - (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((4*c*g*(3*b*e - 4*c*d))/(15*e^
2*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x
^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*d*g)/(5*b^2*e^4 + 20*c^2*d^2*
e^2 - 20*b*c*d*e^3) - (2*e*f)/(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((2*c*e*(3*
b*e*g + 2*c*d*g - 4*c*e*f))/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2*e^2
- 12*b*c*d*e^3)) - (4*c^2*d*e*g)/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2
*e^2 - 12*b*c*d*e^3))))/e - (12*b^2*e^2*g + 12*c^2*d^2*g - 18*b*c*e^2*f + 2
8*c^2*d*e*f - 24*b*c*d*e*g)/(5*(b*e - 2*c*d)^2*(3*b^2*e^4 + 12*c^2*d^2*e^2
- 12*b*c*d*e^3)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2
- ((x*((d*(b*e - c*d)*((16*c^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)
^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^5*e*(c*d*g - 3*b*e*g + 2*
c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c
^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e
^2) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*g*(e*(b*e
 - c*d) + c*d*e))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (16*c^5*e*(c*d*g - 3*b*e*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(10*b^2*c^2*e^3*g + 12*b*c^
3*e^3*f - 56*c^4*d*e^2*f + 24*c^4*d^2*e*g - 4*b*c^3*d*e^2*g))/(15*e*(b*e -
2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e*(c*d*g - 3*b*e
*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
 (16*c^5*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))))/(c*e^2) + (2*c^2*(96*c^4*d^3*g + 58*b^2*c^2*e^3*f - 36*b^3*c*e^
3*g + 192*c^4*d^2*e*f - 220*b*c^3*d*e^2*f - 228*b*c^3*d^2*e*g + 168*b^2*c^2
*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (
b*c*(10*b^2*c^2*e^3*g + 12*b*c^3*e^3*f - 56*c^4*d*e^2*f + 24*c^4*d^2*e*g -
4*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e))) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*g*(e*(b*e - c*d) +
 c*d*e))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c
^5*e*(c*d*g - 3*b*e*g + 2*c*e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) - (8*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(10*b^2*c^2*e^3*g + 12*b*c^3*e^3*f -
 56*c^4*d*e^2*f + 24*c^4*d^2*e*g - 4*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^4*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e*(c*d*g - 3*b*e*g + 2*c*
e*f))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*c^5*
d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
))/(c*e^2) + (b*c*(96*c^4*d^3*g + 58*b^2*c^2*e^3*f - 36*b^3*c*e^3*g + 192*c
^4*d^2*e*f - 220*b*c^3*d*e^2*f - 228*b*c^3*d^2*e*g + 168*b^2*c^2*d*e^2*g))/
(15*e*(b*e - 2*c*d)^4*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^
2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**2),
x)
```

3.2222 $\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=284

$$\frac{16c^2(b+2cx)(-7beg+6cdg+8cef)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4c(-7beg+6cdg+8cef)}{35e^2(d+ex)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{35e^2(d+ex)^2}$$

```
[Out] 16/35*c^2*(-7*b*e*g+6*c*d*g+8*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^5/(d*(-b*e+c*
d)-b*e^2*x-c*e^2*x^2)^(1/2)-2/7*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)^3/(d*(-
b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-2/35*(-7*b*e*g+6*c*d*g+8*c*e*f)/e^2/(-b*e
+2*c*d)^2/(e*x+d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-4/35*c*(-7*b*e*g
+6*c*d*g+8*c*e*f)/e^2/(-b*e+2*c*d)^3/(e*x+d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 284, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 658, 613}

$$\frac{16c^2(b+2cx)(-7beg+6cdg+8cef)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4c(-7beg+6cdg+8cef)}{35e^2(d+ex)(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{35e^2(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x]
```

```
[Out] (16*c^2*(8*c*e*f + 6*c*d*g - 7*b*e*g)*(b + 2*c*x))/(35*e*(2*c*d - b*e)^5*Sq
rt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g))/(7*e^2*(2*c*d -
b*e)*(d + e*x)^3*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(8*c*e*f +
 6*c*d*g - 7*b*e*g))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)^2*Sqrt[d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2]) - (4*c*(8*c*e*f + 6*c*d*g - 7*b*e*g))/(35*e^2*(2*c
*d - b*e)^3*(d + e*x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(8cef+6c}{}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{35e^2(2cd-}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{35e^2(2cd-}$$

$$= \frac{16c^2(8cef+6cdg-7beg)(b+2cx)}{35e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{2}{7e^2(2cd-be)(d+ex}$$

Mathematica [A] time = 0.20, size = 331, normalized size = 1.17

$$\frac{2\left(b^4e^4(2dg+5ef+7egx)-2b^3ce^3\left(11d^2g+de(24f+38gx)+e^2x(4f+7gx)\right)+4b^2c^2e^2\left(31d^3g+2d^2e(23f+5\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2
)),x]
```

```
[Out] (2*(b^4*e^4*(5*e*f + 2*d*g + 7*e*g*x) + 16*c^4*(d^5*g - 8*e^5*f*x^4 + d^3*e
^2*x*(4*f - 15*g*x) - 6*d*e^4*x^3*(4*f + g*x) + d^4*e*(13*f + 3*g*x) - 2*d^
2*e^3*x^2*(10*f + 9*g*x)) - 2*b^3*c*e^3*(11*d^2*g + e^2*x*(4*f + 7*g*x) + d
*e*(24*f + 38*g*x)) - 8*b*c^3*e*(15*d^4*g + d^2*e^2*x*(52*f - 11*g*x) + 4*d
*e^3*x^2*(8*f - 9*g*x) + 2*e^4*x^3*(4*f - 7*g*x) + d^3*e*(48*f + 46*g*x)) +
 4*b^2*c^2*e^2*(31*d^3*g + 2*e^3*x^2*(2*f + 7*g*x) + 2*d^2*e*(23*f + 53*g*x
) + d*e^2*x*(20*f + 59*g*x))))/(35*e^2*(-2*c*d + b*e)^5*(d + e*x)^3*Sqrt[(d
 + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Unable to transpose Error: Bad Argument Valu
e
```

maple [**B**] time = 0.06, size = 564, normalized size = 1.99

$$-\frac{2\,(cex+be-cd)\,\bigl(112b\,c^3e^5g\,x^4-96c^4d\,e^4g\,x^4-128c^4e^5f\,x^4+56b^2c^2e^5g\,x^3+288b\,c^3d\,e^4g\,x^3-64b\,c^3e^5f\,x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(112*b*c^3*e^5*g*x^4-96*c^4*d*e^4*g*x^4-128*c^4*e^5*f
*x^4+56*b^2*c^2*e^5*g*x^3+288*b*c^3*d*e^4*g*x^3-64*b*c^3*e^5*f*x^3-288*c^4*
d^2*e^3*g*x^3-384*c^4*d*e^4*f*x^3-14*b^3*c*e^5*g*x^2+236*b^2*c^2*d*e^4*g*x^
2+16*b^2*c^2*e^5*f*x^2+88*b*c^3*d^2*e^3*g*x^2-256*b*c^3*d*e^4*f*x^2-240*c^4
*d^3*e^2*g*x^2-320*c^4*d^2*e^3*f*x^2+7*b^4*e^5*g*x-76*b^3*c*d*e^4*g*x-8*b^3
*c*e^5*f*x+424*b^2*c^2*d^2*e^3*g*x+80*b^2*c^2*d*e^4*f*x-368*b*c^3*d^3*e^2*g
*x-416*b*c^3*d^2*e^3*f*x+48*c^4*d^4*e*g*x+64*c^4*d^3*e^2*f*x+2*b^4*d*e^4*g+
5*b^4*e^5*f-22*b^3*c*d^2*e^3*g-48*b^3*c*d*e^4*f+124*b^2*c^2*d^3*e^2*g+184*b
^2*c^2*d^2*e^3*f-120*b*c^3*d^4*e*g-384*b*c^3*d^3*e^2*f+16*c^4*d^5*g+208*c^4
*d^4*e*f)/(e*x+d)^2/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d
^3*e^2+80*b*c^4*d^4*e-32*c^5*d^5)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2
)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 7.86, size = 4339, normalized size = 15.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)),x)
```

```
[Out] (((8*c*g*(2*b*e - 3*c*d))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (8*c
^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((8*c^4*(2*c*d*g - 7*b*e*g + 6
*c*e*f))/(105*(b*e - 2*c*d)^7) + (16*c^5*d*g)/(105*(b*e - 2*c*d)^7)))/e + (
64*c^5*d^2*g - 20*b^2*c^3*e^2*g - 320*c^5*d*e*f + 112*b*c^4*e^2*f + 80*b*c^
4*d*e*g)/(105*e*(b*e - 2*c*d)^7)))/e - (2*b*c^2*(16*c^2*d^2*g - 11*b^2*e^2*
g + 34*b*c*e^2*f - 80*c^2*d*e*f + 22*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^7))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) - (((4*b*c*g)/(35*(3*
b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 -
 (((8*c^2*g*(3*b*e - 4*c*d))/(105*e^2*(b*e - 2*c*d)^5) - (16*c^3*d*g)/(105*
e^2*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) - (((d*((48*c^4*f - 40*b*c^3*g)/(105*(b*e - 2*c*d)^6) + (16*c^4*d*g)/(105
*e*(b*e - 2*c*d)^6)))/e + (8*b*c^2*(2*b*g - 3*c*f))/(105*(b*e - 2*c*d)^6))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((48*c^4*d*g
+ 48*c^4*e*f - 64*b*c^3*e*g)/(105*e*(b*e - 2*c*d)^6) + (16*c^4*d*g)/(105*e*
(b*e - 2*c*d)^6)))/e + (96*c^4*d*f - 72*b*c^3*d*g - 72*b*c^3*e*f + 52*b^2*c
```

```
^2*e*g)/(105*e*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2
))/(d + e*x) + (((2*b*g)/(7*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2) - (4*c*d*
g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^2))*(c*d^2 - c*e^2*x^2 - b*d*e -
 b*e^2*x)^(1/2))/(d + e*x)^3 - (((d*((8*c^3*d*g - 24*c^3*e*f + 16*b*c^2*e*g
)/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4) - (8*c^3*d*g)/(35*(3*b*e^2 - 6*c
*d*e)*(b*e - 2*c*d)^4)))/e - (2*b*c*(3*b*e*g + 2*c*d*g - 6*c*e*f))/(35*(3*b
*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/
2))/(d + e*x)^2 + (((2*d*g)/(7*b^2*e^4 + 28*c^2*d^2*e^2 - 28*b*c*d*e^3) - (
2*e*f)/(7*b^2*e^4 + 28*c^2*d^2*e^2 - 28*b*c*d*e^3))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^4 + (((d*((2*c*e*(3*b*e*g + 4*c*d*g - 6*c*e
*f))/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3)) - (4*c
^2*d*e*g)/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3))))
/e - (16*b^2*e^2*g + 16*c^2*d^2*g - 26*b*c*e^2*f + 40*c^2*d*e*f - 32*b*c*d*
e*g)/(7*(b*e - 2*c*d)^2*(5*b^2*e^4 + 20*c^2*d^2*e^2 - 20*b*c*d*e^3)))*(c*d^
2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((248*c^4*d^3*g + 16
2*b^2*c^2*e^3*f - 108*b^3*c*e^3*g + 488*c^4*d^2*e*f - 580*b*c^3*d*e^2*f - 6
04*b*c^3*d^2*e*g + 464*b^2*c^2*d*e^2*g)/(35*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12
*c^2*d^2*e^2 - 12*b*c*d*e^3)) + (d*((d*((24*c^3*e^3*(b*g - c*f))/(35*(b*e -
 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3)) - (8*c^4*d*e^2*g)/(3
5*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3))))/e - (68*b*
c^3*e^3*f - 22*b^2*c^2*e^3*g - 184*c^4*d*e^2*f + 24*c^4*d^2*e*g + 68*b*c^3*
d*e^2*g)/(35*(b*e - 2*c*d)^4*(3*b^2*e^4 + 12*c^2*d^2*e^2 - 12*b*c*d*e^3))))
/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - ((x*(((e*(b*
e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*
c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e -
2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*
e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*c^6*e*(1
5*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(
105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(
4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*c^7*e^2*(4*c*d
*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*e - 2*c*d)^6*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(216*b^2*c^4*e^4*f
 - 246*b^3*c^3*e^4*g + 1264*c^6*d^2*e^2*f + 592*c^6*d^3*e*g - 992*b*c^5*d*e
^3*f - 1696*b*c^5*d^2*e^2*g + 1140*b^2*c^4*d*e^3*g))/(105*e*(b*e - 2*c*d)^6
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^5*e*(15*b^2*e^2*g + 44*c^2
*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*(((e*(b*e
 - c*d) + c*d*e)*((16*c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*
c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d)
+ c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16
*b*c^7*e^3*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (8*c^6*e*(15*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*
e*f - 22*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (8*b*c^6*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e
 - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(2112
*c^6*d^4*g - 538*b^3*c^3*e^4*f + 452*b^4*c^2*e^4*g + 3264*c^6*d^3*e*f - 615
2*b*c^5*d^3*e*g - 5528*b*c^5*d^2*e^2*f + 3012*b^2*c^4*d*e^3*f - 2832*b^3*c^
3*d*e^3*g + 6420*b^2*c^4*d^2*e^2*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) - (b*c*(216*b^2*c^4*e^4*f - 246*b^3*c^3*e^4*g + 126
4*c^6*d^2*e^2*f + 592*c^6*d^3*e*g - 992*b*c^5*d*e^3*f - 1696*b*c^5*d^2*e^2*
g + 1140*b^2*c^4*d*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d)
+ c*d*e)*((16*c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e)
)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e
^3*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (8*c^6*e*(15*b^2*e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22
*b*c*d*e*g))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
(8*b*c^6*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^7*d*e*g*(b*e - c*d))/(105*(b*e - 2*c*d
)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*
c^7*e^2*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (32*c^7*e*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e -
2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^7*e^3*g)/(105*(b*
e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(216
*b^2*c^4*e^4*f - 246*b^3*c^3*e^4*g + 1264*c^6*d^2*e^2*f + 592*c^6*d^3*e*g -
 992*b*c^5*d*e^3*f - 1696*b*c^5*d^2*e^2*g + 1140*b^2*c^4*d*e^3*g))/(105*e*(
b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^5*e*(15*b^2*
e^2*g + 44*c^2*d^2*g + 16*b*c*e^2*f - 68*c^2*d*e*f - 22*b*c*d*e*g))/(105*(b
*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(2112
*c^6*d^4*g - 538*b^3*c^3*e^4*f + 452*b^4*c^2*e^4*g + 3264*c^6*d^3*e*f - 615
2*b*c^5*d^3*e*g - 5528*b*c^5*d^2*e^2*f + 3012*b^2*c^4*d*e^3*f - 2832*b^3*c^
3*d*e^3*g + 6420*b^2*c^4*d^2*e^2*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d +
 e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f + gx}{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}\left(d + ex\right)^{3}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**3),
x)
```

3.2223 $\int \frac{(d+ex)^5(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=364

$$\frac{5(2cd-be)(-7beg+10cdg+4cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{8c^{9/2}e^2}-\frac{5\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+10cdg\,-}{4c^4e^2}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^5/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(3/2)+5/8*(-b*e+2*c*d)*(-7*b*e*g+10*c*d*g+4*c*e*f)*arctan(1/2*e
*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(9/2)/e^2-2/3*
(-7*b*e*g+10*c*d*g+4*c*e*f)*(e*x+d)^3/c^2/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(1/2)-5/4*(-7*b*e*g+10*c*d*g+4*c*e*f)*(d*(-b*e+c*d)-b*e^2*
x-c*e^2*x^2)^(1/2)/c^4/e^2-5/6*(-7*b*e*g+10*c*d*g+4*c*e*f)*(e*x+d)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.56, antiderivative size = 364, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 6, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.136$, Rules used = {788, 668, 670, 640, 621, 204}

$$-\frac{2(d+ex)^3(-7beg+10cdg+4cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5(d+ex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-7beg+10cdg+4cef)}{6c^3e^2(2cd-be)}-5\sqrt{d}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^5*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^5)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d + e
*x)^3)/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
- (5*(4*c*e*f + 10*c*d*g - 7*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*c^4*e^2) - (5*(4*c*e*f + 10*c*d*g - 7*b*e*g)*(d + e*x)*Sqrt[d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2])/(6*c^3*e^2*(2*c*d - b*e)) + (5*(2*c*d - b*e)*
(4*c*e*f + 10*c*d*g - 7*b*e*g)*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2])])/(8*c^(9/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 670

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[((m + p)*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d + e*x)^(
m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x] && NeQ[b
^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[m, 1] && NeQ[m + 2*p
 + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^5(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(4cef+10cdg-7beg)\int}{3ce(2cd}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^5}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(4cef+10cdg-7b}{3c^2e^2(2cd-be)\sqrt{d(cd-b}}$$

Mathematica [C] time = 0.29, size = 139, normalized size = 0.38

$$\frac{2(d+ex)^5\left(\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-7beg+10cdg+4cef)\,{}_2F_1\left(\frac{3}{2},\frac{7}{2};\frac{9}{2};\frac{c(d+ex)}{2cd-be}\right)-7(-beg+cdg+cef)\right)}{21ce^2(be-2cd)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^5*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)^5*(-7*(c*e*f + c*d*g - b*e*g) + (4*c*e*f + 10*c*d*g - 7*b*e*g)
*((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*Hypergeometric2F1[3/2, 7/2,
9/2, (c*(d + e*x))/(2*c*d - b*e)]))/(21*c*e^2*(-2*c*d + b*e)*((d + e*x)*(-(
b*e) + c*(d - e*x)))^(3/2))
```

fricas [A] time = 17.53, size = 1233, normalized size = 3.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [-1/48*(15*((4*(2*c^4*d*e^3 - b*c^3*e^4)*f + (20*c^4*d^2*e^2 - 24*b*c^3*d*e
^3 + 7*b^2*c^2*e^4)*g)*x^2 + 4*(2*c^4*d^3*e - 5*b*c^3*d^2*e^2 + 4*b^2*c^2*d
*e^3 - b^3*c*e^4)*f + (20*c^4*d^4 - 64*b*c^3*d^3*e + 75*b^2*c^2*d^2*e^2 - 3
8*b^3*c*d*e^3 + 7*b^4*e^4)*g - 2*(4*(2*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^
2*e^4)*f + (20*c^4*d^3*e - 44*b*c^3*d^2*e^2 + 31*b^2*c^2*d*e^3 - 7*b^3*c*e^
4)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e +
 b^2*e^2 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqr
t(-c)) + 4*(6*c^4*e^3*g*x^3 + 3*(4*c^4*e^3*f + (16*c^4*d*e^2 - 7*b*c^3*e^3)
*g)*x^2 + 4*(23*c^4*d^2*e - 40*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (236*c^4*d
^3 - 561*b*c^3*d^2*e + 430*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g - 2*(4*(17*c^4*
d*e^2 - 10*b*c^3*e^3)*f + (161*c^4*d^2*e - 219*b*c^3*d*e^2 + 70*b^2*c^2*e^3
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^7*e^4*x^2 + c^7*d^2*
e^2 - 2*b*c^6*d*e^3 + b^2*c^5*e^4 - 2*(c^7*d*e^3 - b*c^6*e^4)*x), -1/24*(15
*((4*(2*c^4*d*e^3 - b*c^3*e^4)*f + (20*c^4*d^2*e^2 - 24*b*c^3*d*e^3 + 7*b^2
*c^2*e^4)*g)*x^2 + 4*(2*c^4*d^3*e - 5*b*c^3*d^2*e^2 + 4*b^2*c^2*d*e^3 - b^3
*c*e^4)*f + (20*c^4*d^4 - 64*b*c^3*d^3*e + 75*b^2*c^2*d^2*e^2 - 38*b^3*c*d*
e^3 + 7*b^4*e^4)*g - 2*(4*(2*c^4*d^2*e^2 - 3*b*c^3*d*e^3 + b^2*c^2*e^4)*f +
 (20*c^4*d^3*e - 44*b*c^3*d^2*e^2 + 31*b^2*c^2*d*e^3 - 7*b^3*c*e^4)*g)*x)*s
qrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e
)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) + 2*(6*c^4*e^3*g*x
^3 + 3*(4*c^4*e^3*f + (16*c^4*d*e^2 - 7*b*c^3*e^3)*g)*x^2 + 4*(23*c^4*d^2*e
 - 40*b*c^3*d*e^2 + 15*b^2*c^2*e^3)*f + (236*c^4*d^3 - 561*b*c^3*d^2*e + 43
0*b^2*c^2*d*e^2 - 105*b^3*c*e^3)*g - 2*(4*(17*c^4*d*e^2 - 10*b*c^3*e^3)*f +
 (161*c^4*d^2*e - 219*b*c^3*d*e^2 + 70*b^2*c^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e))/(c^7*e^4*x^2 + c^7*d^2*e^2 - 2*b*c^6*d*e^3 + b^2
*c^5*e^4 - 2*(c^7*d*e^3 - b*c^6*e^4)*x)]
```

giac [B] time = 0.94, size = 1460, normalized size = 4.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] -1/12*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((3*(2*(16*c^7*d^4*g*e^1
1 - 32*b*c^6*d^3*g*e^12 + 24*b^2*c^5*d^2*g*e^13 - 8*b^3*c^4*d*g*e^14 + b^4*
c^3*g*e^15)*x/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*
b^3*c^5*d*e^11 + b^4*c^4*e^12) + (320*c^7*d^5*g*e^10 + 64*c^7*d^4*f*e^11 -
752*b*c^6*d^4*g*e^11 - 128*b*c^6*d^3*f*e^12 + 704*b^2*c^5*d^3*g*e^12 + 96*b
^2*c^5*d^2*f*e^13 - 328*b^3*c^4*d^2*g*e^13 - 32*b^3*c^4*d*f*e^14 + 76*b^4*c
^3*d*g*e^14 + 4*b^4*c^3*f*e^15 - 7*b^5*c^2*g*e^15)/(16*c^8*d^4*e^8 - 32*b*c
^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 + b^4*c^4*e^12))*x - 4*
(880*c^7*d^6*g*e^9 + 448*c^7*d^5*f*e^10 - 3344*b*c^6*d^5*g*e^10 - 1216*b*c^
6*d^4*f*e^11 + 5048*b^2*c^5*d^4*g*e^11 + 1312*b^2*c^5*d^3*f*e^12 - 3936*b^3
*c^4*d^3*g*e^12 - 704*b^3*c^4*d^2*f*e^13 + 1687*b^4*c^3*d^2*g*e^13 + 188*b^
4*c^3*d*f*e^14 - 379*b^5*c^2*d*g*e^14 - 20*b^5*c^2*f*e^15 + 35*b^6*c*g*e^15
)/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^
11 + b^4*c^4*e^12))*x - 3*(1920*c^7*d^7*g*e^8 + 896*c^7*d^6*f*e^9 - 5408*b*
c^6*d^6*g*e^9 - 1792*b*c^6*d^5*f*e^10 + 5216*b^2*c^5*d^5*g*e^10 + 1024*b^2*
c^5*d^4*f*e^11 - 1152*b^3*c^4*d^4*g*e^11 + 192*b^3*c^4*d^3*f*e^12 - 1416*b^
4*c^3*d^3*g*e^12 - 424*b^4*c^3*d^2*f*e^13 + 1142*b^5*c^2*d^2*g*e^13 + 160*b
^5*c^2*d*f*e^14 - 330*b^6*c*d*g*e^14 - 20*b^6*c*f*e^15 + 35*b^7*g*e^15)/(16
*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 +
b^4*c^4*e^12))*x + 6*(400*c^7*d^8*g*e^7 + 128*c^7*d^7*f*e^8 - 2624*b*c^6*d^
7*g*e^8 - 896*b*c^6*d^6*f*e^9 + 6168*b^2*c^5*d^6*g*e^9 + 1792*b^2*c^5*d^5*f
*e^10 - 7336*b^3*c^4*d^5*g*e^10 - 1664*b^3*c^4*d^4*f*e^11 + 4937*b^4*c^3*d^
4*g*e^11 + 808*b^4*c^3*d^3*f*e^12 - 1914*b^5*c^2*d^3*g*e^12 - 200*b^5*c^2*d
^2*f*e^13 + 400*b^6*c*d^2*g*e^13 + 20*b^6*c*d*f*e^14 - 35*b^7*d*g*e^14)/(16
*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5*d*e^11 +
b^4*c^4*e^12))*x + (3776*c^7*d^9*g*e^6 + 1472*c^7*d^8*f*e^7 - 16528*b*c^6*d
^8*g*e^7 - 5504*b*c^6*d^7*f*e^8 + 30496*b^2*c^5*d^7*g*e^8 + 8288*b^2*c^5*d^
6*f*e^9 - 30792*b^3*c^4*d^6*g*e^9 - 6496*b^3*c^4*d^5*f*e^10 + 18404*b^4*c^3
*d^5*g*e^10 + 2812*b^4*c^3*d^4*f*e^11 - 6521*b^5*c^2*d^4*g*e^11 - 640*b^5*c
^2*d^3*f*e^12 + 1270*b^6*c*d^3*g*e^12 + 60*b^6*c*d^2*f*e^13 - 105*b^7*d^2*g
*e^13)/(16*c^8*d^4*e^8 - 32*b*c^7*d^3*e^9 + 24*b^2*c^6*d^2*e^10 - 8*b^3*c^5
*d*e^11 + b^4*c^4*e^12))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d*e)^2 + 5/8*(20*
c^2*d^2*g + 8*c^2*d*f*e - 24*b*c*d*g*e - 4*b*c*f*e^2 + 7*b^2*g*e^2)*sqrt(-c
*e^2)*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2
 - b*d*e))*c - sqrt(-c*e^2)*b))/c^5
```

maple [B] time = 0.09, size = 6704, normalized size = 18.42

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^5*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^5}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^5)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^5)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^5\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**5*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**5*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.2224 $\int \frac{(d+ex)^4(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$\frac{(-5beg+8cdg+2cef)\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{2c^{7/2}e^2}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+8cdg+2cef)}{c^3e^2(2cd-be)}-3c$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^4/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(3/2)+1/2*(-5*b*e*g+8*c*d*g+2*c*e*f)*arctan(1/2*e*(2*c*x+b)/c^(
1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2))/c^(7/2)/e^2-2/3*(-5*b*e*g+8*c*
d*g+2*c*e*f)*(e*x+d)^2/c^2/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(1/2)-(-5*b*e*g+8*c*d*g+2*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c
^3/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.43, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {788, 668, 640, 621, 204}

$$-\frac{2(d+ex)^2(-5beg+8cdg+2cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-5beg+8cdg+2cef)}{c^3e^2(2cd-be)}+\frac{(-5beg+8c}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^4*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^4)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(2*c*e*f + 8*c*d*g - 5*b*e*g)*(d + e*
x)^2)/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) -
 ((2*c*e*f + 8*c*d*g - 5*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(c^3*e^2*(2*c*d - b*e)) + ((2*c*e*f + 8*c*d*g - 5*b*e*g)*ArcTan[(e*(b + 2*c
*x))/(2*Sqrt[c]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(2*c^(7/2)*e^2
)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 668

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] - Dist[(e^2*(m + p))/(c*(p + 1)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^
2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && E
qQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^4(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(2cef+8cdg-5beg)\int \frac{}{(cd^2-}}{3ce(2cd-b}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5beg)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5beg)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5beg)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^4}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2(2cef+8cdg-5beg)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)}}$$

Mathematica [C] time = 0.25, size = 139, normalized size = 0.48

$$\frac{2(d+ex)^4\left(\left(\frac{be-cd+cex}{be-2cd}\right)^{3/2}(-5beg+8cdg+2cef)\,{}_2F_1\left(\frac{3}{2},\frac{5}{2};\frac{7}{2};\frac{c(d+ex)}{2cd-be}\right)-5(-beg+cdg+cef)\right)}{15ce^2(be-2cd)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^4*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)^4*(-5*(c*e*f + c*d*g - b*e*g) + (2*c*e*f + 8*c*d*g - 5*b*e*g)*
((-(c*d) + b*e + c*e*x)/(-2*c*d + b*e))^(3/2)*Hypergeometric2F1[3/2, 5/2, 7
/2, (c*(d + e*x))/(2*c*d - b*e)]))/(15*c*e^2*(-2*c*d + b*e)*((d + e*x)*(-(b
*e) + c*(d - e*x)))^(3/2))
```

fricas [A] time = 10.43, size = 881, normalized size = 3.03

$$\left[\frac{3\left(\left(2c^3e^3f+\left(8c^3de^2-5bc^2e^3\right)g\right)x^2+2\left(c^3d^2e-2bc^2de^2+b^2ce^3\right)f+\left(8c^3d^3-21bc^2d^2e+18b^2cde^2-5b^3e^3\right)g}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [1/12*(3*((2*c^3*e^3*f + (8*c^3*d*e^2 - 5*b*c^2*e^3)*g)*x^2 + 2*(c^3*d^2*e
- 2*b*c^2*d*e^2 + b^2*c*e^3)*f + (8*c^3*d^3 - 21*b*c^2*d^2*e + 18*b^2*c*d*e
^2 - 5*b^3*e^3)*g - 2*(2*(c^3*d*e^2 - b*c^2*e^3)*f + (8*c^3*d^2*e - 13*b*c^
2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c
^2*d^2 + 4*b*c*d*e + b^2*e^2 + 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)
*(2*c*e*x + b*e)*sqrt(-c)) - 4*(3*c^3*e^2*g*x^2 + 2*(2*c^3*d*e - 3*b*c^2*e^
2)*f + (19*c^3*d^2 - 34*b*c^2*d*e + 15*b^2*c*e^2)*g - 2*(4*c^3*e^2*f + (13*
c^3*d*e - 10*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
c^6*e^4*x^2 + c^6*d^2*e^2 - 2*b*c^5*d*e^3 + b^2*c^4*e^4 - 2*(c^6*d*e^3 - b*
c^5*e^4)*x), -1/6*(3*((2*c^3*e^3*f + (8*c^3*d*e^2 - 5*b*c^2*e^3)*g)*x^2 + 2
*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*f + (8*c^3*d^3 - 21*b*c^2*d^2*e +
18*b^2*c*d*e^2 - 5*b^3*e^3)*g - 2*(2*(c^3*d*e^2 - b*c^2*e^3)*f + (8*c^3*d^2
*e - 13*b*c^2*d*e^2 + 5*b^2*c*e^3)*g)*x)*sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*
x - c^2*d^2 + b*c*d*e)) + 2*(3*c^3*e^2*g*x^2 + 2*(2*c^3*d*e - 3*b*c^2*e^2)*
f + (19*c^3*d^2 - 34*b*c^2*d*e + 15*b^2*c*e^2)*g - 2*(4*c^3*e^2*f + (13*c^3
*d*e - 10*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(c^6
*e^4*x^2 + c^6*d^2*e^2 - 2*b*c^5*d*e^3 + b^2*c^4*e^4 - 2*(c^6*d*e^3 - b*c^5
*e^4)*x)]
```

giac [B] time = 0.87, size = 1116, normalized size = 3.84

$$-\frac{\sqrt{-cx^2e^2+cd^2-bxe^2-bde}\left(\left(\left(\left(\frac{3\left(16\,c^6d^4ge^8-32\,bc^5d^3ge^9+24\,b^2c^4d^2ge^{10}-8\,b^3c^3dge^{11}+b^4c^2ge^{12}\right)x}{16\,c^7d^4e^6-32\,bc^6d^3e^7+24\,b^2c^5d^2e^8-8\,b^3c^4de^9+b^4c^3e^{10}}-\frac{4\left(80\,c^6d^5ge^7+32\,c^6d^4fe^8-24\right.}{}\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] -1/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((3*(16*c^6*d^4*g*e^8 - 3
2*b*c^5*d^3*g*e^9 + 24*b^2*c^4*d^2*g*e^10 - 8*b^3*c^3*d*g*e^11 + b^4*c^2*g*
e^12)*x/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5*d^2*e^8 - 8*b^3*c^4
*d*e^9 + b^4*c^3*e^10) - 4*(80*c^6*d^5*g*e^7 + 32*c^6*d^4*f*e^8 - 240*b*c^5
*d^4*g*e^8 - 64*b*c^5*d^3*f*e^9 + 280*b^2*c^4*d^3*g*e^9 + 48*b^2*c^4*d^2*f*
e^10 - 160*b^3*c^3*d^2*g*e^10 - 16*b^3*c^3*d*f*e^11 + 45*b^4*c^2*d*g*e^11 +
 2*b^4*c^2*f*e^12 - 5*b^5*c*g*e^12)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24
*b^2*c^5*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x - 3*(160*c^6*d^6*g*e^
6 + 64*c^6*d^5*f*e^7 - 352*b*c^5*d^5*g*e^7 - 96*b*c^5*d^4*f*e^8 + 224*b^2*c
^4*d^4*g*e^8 + 32*b^2*c^4*d^3*f*e^9 + 32*b^3*c^3*d^3*g*e^9 + 16*b^3*c^3*d^2
*f*e^10 - 94*b^4*c^2*d^2*g*e^10 - 12*b^4*c^2*d*f*e^11 + 38*b^5*c*d*g*e^11 +
 2*b^5*c*f*e^12 - 5*b^6*g*e^12)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2
*c^5*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x + 6*(32*c^6*d^7*g*e^5 - 1
92*b*c^5*d^6*g*e^6 - 32*b*c^5*d^5*f*e^7 + 384*b^2*c^4*d^5*g*e^7 + 64*b^2*c^
4*d^4*f*e^8 - 368*b^3*c^3*d^4*g*e^8 - 48*b^3*c^3*d^3*f*e^9 + 186*b^4*c^2*d^
3*g*e^9 + 16*b^4*c^2*d^2*f*e^10 - 48*b^5*c*d^2*g*e^10 - 2*b^5*c*d*f*e^11 +
5*b^6*d*g*e^11)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5*d^2*e^8 - 8
*b^3*c^4*d*e^9 + b^4*c^3*e^10))*x + (304*c^6*d^8*g*e^4 + 64*c^6*d^7*f*e^5 -
 1152*b*c^5*d^7*g*e^5 - 224*b*c^5*d^6*f*e^6 + 1784*b^2*c^4*d^6*g*e^6 + 288*
b^2*c^4*d^5*f*e^7 - 1448*b^3*c^3*d^5*g*e^7 - 176*b^3*c^3*d^4*f*e^8 + 651*b^
4*c^2*d^4*g*e^8 + 52*b^4*c^2*d^3*f*e^9 - 154*b^5*c*d^3*g*e^9 - 6*b^5*c*d^2*
f*e^10 + 15*b^6*d^2*g*e^10)/(16*c^7*d^4*e^6 - 32*b*c^6*d^3*e^7 + 24*b^2*c^5
*d^2*e^8 - 8*b^3*c^4*d*e^9 + b^4*c^3*e^10))/(c*x^2*e^2 - c*d^2 + b*x*e^2 +
b*d*e)^2 + 1/2*(8*c*d*g + 2*c*f*e - 5*b*g*e)*sqrt(-c*e^2)*e^(-3)*log(abs(-2
*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e))*c - sqrt(-c*
e^2)*b))/c^4
```

maple [B] time = 0.08, size = 5032, normalized size = 17.29

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^4}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^4)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^4)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{4} \left(f + g x\right)}{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**4*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**4*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.2225 $\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=177

$$\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{5/2}e^2}-\frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^3(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^3/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(3/2)+g*arctan(1/2*e*(2*c*x+b)/c^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(1/2))/c^(5/2)/e^2-2*g*(e*x+d)/c^2/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2
*x^2)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 177, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {788, 652, 621, 204}

$$-\frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{g\tan^{-1}\left(\frac{e(b+2cx)}{2\sqrt{c}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}\right)}{c^{5/2}e^2}+\frac{2(d+ex)^3(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^3)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*g*(d + e*x))/(c^2*e^2*Sqrt[d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2]) + (g*ArcTan[(e*(b + 2*c*x))/(2*Sqrt[c]*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2])])/(c^(5/2)*e^2)
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 652

```
Int[((d_.) + (e_.)*(x_))^2*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symb
ol] :> Simp[(e*(d + e*x)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)), x] - Dist[
(e^2*(p + 2))/(c*(p + 1)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{
a, b, c, d, e, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2,
0] &&  !IntegerQ[p] && LtQ[p, -1]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{g\int \frac{(d+ex)^2}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx}{ce}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^3}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{2g(d+ex)}{c^2e^2\sqrt{d(cd-be)-be^2x-ce}}$$

Mathematica [A] time = 1.23, size = 228, normalized size = 1.29

$$\frac{2\left(-\frac{\sqrt{c}(d+ex)\left(3b^2e^2g+4bceg(ex-2d)+c^2\left(5d^2g-de(f+7gx)-e^2fx\right)\right)}{be-cd+cex}-\frac{3\sqrt{e}g\sqrt{d+ex}(be-2cd)^2\sqrt{\frac{be-cd+cex}{be-2cd}}\sin^{-1}\left(\frac{\sqrt{c}\sqrt{e}\sqrt{d+ex}}{\sqrt{e(2cd-be)}}\right)}{\sqrt{e(2cd-be)}}\right)}{3c^{5/2}e^2(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(-((Sqrt[c]*(d + e*x)*(3*b^2*e^2*g + 4*b*c*e*g*(-2*d + e*x) + c^2*(5*d^2
*g - e^2*f*x - d*e*(f + 7*g*x))))/(-(c*d) + b*e + c*e*x)) - (3*Sqrt[e]*(-2*
c*d + b*e)^2*g*Sqrt[d + e*x]*Sqrt[(-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]*Ar
cSin[(Sqrt[c]*Sqrt[e]*Sqrt[d + e*x])/Sqrt[e*(2*c*d - b*e)]]])/Sqrt[e*(2*c*d
 - b*e)]))/(3*c^(5/2)*e^2*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

fricas [B] time = 5.97, size = 785, normalized size = 4.44

$$\left[-\frac{3\left(\left(2c^3de^2-bc^2e^3\right)gx^2-2\left(2c^3d^2e-3bc^2de^2+b^2ce^3\right)gx+\left(2c^3d^3-5bc^2d^2e+4b^2cde^2-b^3e^3\right)g\right)\sqrt{-c}\log\left(8\right.}{6\left(2c^6d^3\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] [-1/6*(3*((2*c^3*d*e^2 - b*c^2*e^3)*g*x^2 - 2*(2*c^3*d^2*e - 3*b*c^2*d*e^2
+ b^2*c*e^3)*g*x + (2*c^3*d^3 - 5*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)*g)
*sqrt(-c)*log(8*c^2*e^2*x^2 + 8*b*c*e^2*x - 4*c^2*d^2 + 4*b*c*d*e + b^2*e^2
 - 4*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*e)*sqrt(-c)) -
 4*(c^3*d*e*f - (5*c^3*d^2 - 8*b*c^2*d*e + 3*b^2*c*e^2)*g + (c^3*e^2*f + (7
*c^3*d*e - 4*b*c^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(
2*c^6*d^3*e^2 - 5*b*c^5*d^2*e^3 + 4*b^2*c^4*d*e^4 - b^3*c^3*e^5 + (2*c^6*d*
e^4 - b*c^5*e^5)*x^2 - 2*(2*c^6*d^2*e^3 - 3*b*c^5*d*e^4 + b^2*c^4*e^5)*x),
-1/3*(3*((2*c^3*d*e^2 - b*c^2*e^3)*g*x^2 - 2*(2*c^3*d^2*e - 3*b*c^2*d*e^2 +
 b^2*c*e^3)*g*x + (2*c^3*d^3 - 5*b*c^2*d^2*e + 4*b^2*c*d*e^2 - b^3*e^3)*g)*
sqrt(c)*arctan(1/2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*e*x + b*
e)*sqrt(c)/(c^2*e^2*x^2 + b*c*e^2*x - c^2*d^2 + b*c*d*e)) - 2*(c^3*d*e*f -
(5*c^3*d^2 - 8*b*c^2*d*e + 3*b^2*c*e^2)*g + (c^3*e^2*f + (7*c^3*d*e - 4*b*c
^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e))/(2*c^6*d^3*e^2 -
5*b*c^5*d^2*e^3 + 4*b^2*c^4*d*e^4 - b^3*c^3*e^5 + (2*c^6*d*e^4 - b*c^5*e^5)
*x^2 - 2*(2*c^6*d^2*e^3 - 3*b*c^5*d*e^4 + b^2*c^4*e^5)*x)]
```

giac [B] time = 0.89, size = 841, normalized size = 4.75

$$\frac{\sqrt{-ce^2}\, ge^{(-3)} \log\left(\left|-2\left(\sqrt{-ce^2}\,x - \sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\right)c - \sqrt{-ce^2}\,b\right|\right)}{c^3} + \frac{2\sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\,\Bigl(\Bigl(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] sqrt(-c*e^2)*g*e^(-3)*log(abs(-2*(sqrt(-c*e^2)*x - sqrt(-c*x^2*e^2 + c*d^2
- b*x*e^2 - b*d*e))*c - sqrt(-c*e^2)*b))/c^3 + 2/3*sqrt(-c*x^2*e^2 + c*d^2
- b*x*e^2 - b*d*e)*((((56*c^5*d^4*g*e^4 + 8*c^5*d^3*f*e^5 - 116*b*c^4*d^3*g
*e^5 - 12*b*c^4*d^2*f*e^6 + 90*b^2*c^3*d^2*g*e^6 + 6*b^2*c^3*d*f*e^7 - 31*b
^3*c^2*d*g*e^7 - b^3*c^2*f*e^8 + 4*b^4*c*g*e^8)*x/(16*c^6*d^4*e^3 - 32*b*c^
5*d^3*e^4 + 24*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7) + 3*(24*c^5
*d^5*g*e^3 + 8*c^5*d^4*f*e^4 - 36*b*c^4*d^4*g*e^4 - 12*b*c^4*d^3*f*e^5 + 10
*b^2*c^3*d^3*g*e^5 + 6*b^2*c^3*d^2*f*e^6 + 9*b^3*c^2*d^2*g*e^6 - b^3*c^2*d*
f*e^7 - 6*b^4*c*d*g*e^7 + b^5*g*e^8)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 2
4*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))*x - 3*(8*c^5*d^6*g*e^2
- 8*c^5*d^5*f*e^3 - 44*b*c^4*d^5*g*e^3 + 12*b*c^4*d^4*f*e^4 + 70*b^2*c^3*d^
4*g*e^4 - 6*b^2*c^3*d^3*f*e^5 - 49*b^3*c^2*d^3*g*e^5 + b^3*c^2*d^2*f*e^6 +
16*b^4*c*d^2*g*e^6 - 2*b^5*d*g*e^7)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 24
*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))*x - (40*c^5*d^7*g*e - 8*
c^5*d^6*f*e^2 - 124*b*c^4*d^6*g*e^2 + 12*b*c^4*d^5*f*e^3 + 150*b^2*c^3*d^5*
g*e^3 - 6*b^2*c^3*d^4*f*e^4 - 89*b^3*c^2*d^4*g*e^4 + b^3*c^2*d^3*f*e^5 + 26
*b^4*c*d^3*g*e^5 - 3*b^5*d^2*g*e^6)/(16*c^6*d^4*e^3 - 32*b*c^5*d^3*e^4 + 24
*b^2*c^4*d^2*e^5 - 8*b^3*c^3*d*e^6 + b^4*c^2*e^7))/(c*x^2*e^2 - c*d^2 + b*x
*e^2 + b*d*e)^2
```

maple [B] time = 0.08, size = 3485, normalized size = 19.69

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 8*b*c*e^5/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(1/2)*x*d^2*f+104/3*b*c*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*g+6*e^6*g*b^3/c/(-b^2*e^4+4*b*c
*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d+1/2*b^2/
c*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(3/2)*x*d*f-3/4*e^4*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d+3*e^3*g*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c
^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^2+1/3*e*g*x^3/c/(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+1/48*e*g*b^3/c^4/(-c*e^2*x^2-b*e^2*x-b*d
*e+c*d^2)^(3/2)-1/12*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*e^5*x*f-11/24*g*b^2/c^3/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d-1/e*g/c^2*x/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+1/2/
e*g/c^3*b/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+3/2*x/c/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(3/2)*d*f+1/e*g/c^2/(c*e^2)^(1/2)*arctan((c*e^2)^(1/2)*(x+1/
2*b/c)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2))+3/4*b/c^2*x/(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)*d*g+3/2*x/c/e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
*d^2*g+1/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d
^2)^(3/2)*b*d^4*e*g+1/3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)*b*d^3*e^2*f-1/6*e^7*g*b^5/c^3/(-b^2*e^4+4*b*c*d*e^
3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)-1/2*e*g*b/c^2*x^2
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+1/2*e^3*g/c^3*b^3/(-b^2*e^4+4*b*c*d
*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)+25/12/e*g*b/c^2/
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2-1/8*e*g*b^2/c^3*x/(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)+1/48*e^5*g*b^5/c^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2
*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)+52/3*b^2*e^4/(-b^2*e^4+4*b*c*d
*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d^3*g+4*b^2*e^
5/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
1/2)*d^2*f+1/4*b/c^2*x*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f-1/24*b^4/
c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(
3/2)*e^5*f+1/3*b^4/c^2*e^7/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*f-1/24*b^2/c^3*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*f-5/3/e^2/c/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*g+1/3/e/c
/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*f+3*x^2/c/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*d*g+5/12/c^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*b*d*f
+x^2/c*e/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*f+2/3*b^3/c*e^7/(-b^2*e^4+4
*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*f+1/4*
b^3/c^2*e^4/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+
c*d^2)^(3/2)*d*f-4*b^2*e^6/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d*f-24*e^5*g*b^2/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^2+e^3*g/c^2*b^2/(-b
^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x+
3/2*e^3*g*b^3/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-
b*d*e+c*d^2)^(3/2)*d^2-8*e^3*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e
^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^4*g-2*b^3/c*e^6/(-b^2*e^4+4*b*c*d*e^3
-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d*f-12*e^5*g*b^3/c
/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1
/2)*d^2-1/3*e^7*g*b^4/c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^
2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x-3/8*e^4*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^
2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d+3*e^6*g*b^4/c^2/(-b^2*e
^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*d+1/
24*e^5*g*b^4/c^3/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(3/2)*x-13/6*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2
*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^3*e^2*g-1/2*b^2/c/(-b^2*e^4+4*b*c*d*e^3-4
*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*d^2*e^3*f-13/3*b/(-b^2
*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^
3*e^2*g-b/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*
d^2)^(3/2)*x*d^2*e^3*f-8/3*e^4*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*b*d^3*f+2*c/(-b^2*e^4+4*b*c*d*e^3-4*c^2
*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^4*e*g+2/3*c/(-b^2*e^4+
4*b*c*d*e^3-4*c^2*d^2*e^2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)*x*d^3*e^2
*f-16*e^3*c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^2/(-c*e^2*x^2-b*e^2*x-b*
d*e+c*d^2)^(1/2)*x*d^4*g-16/3*e^4*c^2/(-b^2*e^4+4*b*c*d*e^3-4*c^2*d^2*e^2)^
2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*x*d^3*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^3}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^3)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d + e x\right)^{3} \left(f + g x\right)}{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**3*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.2226 $\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=146

$$\frac{2(d+ex)^2(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(d+ex)(beg-4cdg+2cef)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^2/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(3/2)+2/3*(b*e*g-4*c*d*g+2*c*e*f)*(e*x+d)/c/e^2/(-b*e+2*c*d)^2/
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.045, Rules used = {788, 636}

$$\frac{2(d+ex)^2(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(d+ex)(beg-4cdg+2cef)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^2)/(3*c*e^2*(2*c*d - b*e)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(2*c*e*f - 4*c*d*g + b*e*g)*(d + e*x)
)/(3*c*e^2*(2*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)^2(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx &= \frac{2(cef+cdg-beg)(d+ex)^2}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(2cef-4cdg+beg)\int \frac{}{\left(cd^2-b\right.}}{3ce(2cd-b}\\ &= \frac{2(cef+cdg-beg)(d+ex)^2}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(2cef-4cdg+beg)}{3ce^2(2cd-be)^2\sqrt{d(cd-be)}}\end{aligned}$$

Mathematica [A] time = 0.07, size = 100, normalized size = 0.68

$$\frac{2(d+ex)\left(be(-2dg+3ef+egx)+2c\left(d^2g-2de(f+gx)+e^2fx\right)\right)}{3e^2(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)*(b*e*(3*e*f - 2*d*g + e*g*x) + 2*c*(d^2*g + e^2*f*x - 2*d*e*(f
 + g*x))))/(3*e^2*(-2*c*d + b*e)^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

fricas [**A**] time = 6.03, size = 227, normalized size = 1.55

$$\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,((4\,cde - 3\,be^2)f - 2\,(cd^2 - bde)g - (2\,ce^2f - (4\,cde - be^2}{3\,(4\,c^4d^4e^2 - 12\,bc^3d^3e^3 + 13\,b^2c^2d^2e^4 - 6\,b^3cde^5 + b^4e^6 + (4\,c^4d^2e^4 - 4\,bc^3de^5 + b^2c^2e^6)x^2 - 2\,(4\,c^4d^3e^3 - 8\,bc}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((4*c*d*e - 3*b*e^2)*f - 2*(
c*d^2 - b*d*e)*g - (2*c*e^2*f - (4*c*d*e - b*e^2)*g)*x)/(4*c^4*d^4*e^2 - 12
*b*c^3*d^3*e^3 + 13*b^2*c^2*d^2*e^4 - 6*b^3*c*d*e^5 + b^4*e^6 + (4*c^4*d^2*
e^4 - 4*b*c^3*d*e^5 + b^2*c^2*e^6)*x^2 - 2*(4*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4
 + 5*b^2*c^2*d*e^5 - b^3*c*e^6)*x)
```

giac [**B**] time = 0.73, size = 587, normalized size = 4.02

$$\frac{2\sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\,(((\frac{(16\,c^3d^3ge^3 - 8\,c^3d^2fe^4 - 20\,bc^2d^2ge^4 + 8\,bc^2dfe^5 + 8\,b^2cdge^5 - 2\,b^2cfe^6 - b^3ge^6)x}{16\,c^4d^4e^2 - 32\,bc^3d^3e^3 + 24\,b^2c^2d^2e^4 - 8\,b^3cde^5 + b^4e^6} + \frac{3\,(8\,c^3d^4ge^2 - 8\,bc^2d^3}{16\,c^4d^4e^2 - 3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] 2/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*((((16*c^3*d^3*g*e^3 - 8*c^3
*d^2*f*e^4 - 20*b*c^2*d^2*g*e^4 + 8*b*c^2*d*f*e^5 + 8*b^2*c*d*g*e^5 - 2*b^2
*c*f*e^6 - b^3*g*e^6)*x/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2
*e^4 - 8*b^3*c*d*e^5 + b^4*e^6) + 3*(8*c^3*d^4*g*e^2 - 8*b*c^2*d^3*g*e^3 -
4*b*c^2*d^2*f*e^4 + 2*b^2*c*d^2*g*e^4 + 4*b^2*c*d*f*e^5 - b^3*f*e^6)/(16*c^
4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6
))*x + 3*(8*c^3*d^4*f*e^2 + 4*b*c^2*d^4*g*e^2 - 16*b*c^2*d^3*f*e^3 - 4*b^2*
c*d^3*g*e^3 + 10*b^2*c*d^2*f*e^4 + b^3*d^2*g*e^4 - 2*b^3*d*f*e^5)/(16*c^4*d
^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*
x - (8*c^3*d^6*g - 16*c^3*d^5*f*e - 16*b*c^2*d^5*g*e + 28*b*c^2*d^4*f*e^2 +
 10*b^2*c*d^4*g*e^2 - 16*b^2*c*d^3*f*e^3 - 2*b^3*d^3*g*e^3 + 3*b^3*d^2*f*e^
4)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5
+ b^4*e^6))/(c*x^2*e^2 - c*d^2 + b*x*e^2 + b*d*e)^2
```

maple [**A**] time = 0.05, size = 128, normalized size = 0.88

$$-\frac{2\,(ex+d)^3\,(cex+be-cd)\left(-b\,e^2gx + 4cdegx - 2c\,e^2fx + 2bdeg - 3b\,e^2f - 2c\,d^2g + 4cdef\right)}{3\left(b^2e^2 - 4bcde + 4c^2d^2\right)\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{5}{2}}\,e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(e*x+d)^3*(c*e*x+b*e-c*d)*(-b*e^2*g*x+4*c*d*e*g*x-2*c*e^2*f*x+2*b*d*e*
g-3*b*e^2*f-2*c*d^2*g+4*c*d*e*f)/e^2/(b^2*e^2-4*b*c*d*e+4*c^2*d^2)/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 3.30, size = 107, normalized size = 0.73

$$-\frac{2\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(3\,b\,e^2\,f+2\,c\,d^2\,g+b\,e^2\,g\,x+2\,c\,e^2\,f\,x-2\,b\,d\,e\,g-4\,c\,d\,e\,f-4\,c\,d\,e\,g\,x\right)}{3\,e^2\,{\left(b\,e-2\,c\,d\right)}^2\,{\left(b\,e-c\,d+c\,e\,x\right)}^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] -(2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(3*b*e^2*f + 2*c*d^2*g + b*
e^2*g*x + 2*c*e^2*f*x - 2*b*d*e*g - 4*c*d*e*f - 4*c*d*e*g*x))/(3*e^2*(b*e -
 2*c*d)^2*(b*e - c*d + c*e*x)^2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^2\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)**2*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.2227 $\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=165

$$\frac{2(b+2cx)(-beg-2cdg+4cef)}{3ce(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(d*(-b*e+2*c*d)+e*(-b*e+2*c*d)*x)/c/e^2/(-b*e+2*c*
d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)+2/3*(-b*e*g-2*c*d*g+4*c*e*f)*(2
*c*x+b)/c/e/(-b*e+2*c*d)^3/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {777, 613}

$$\frac{2(b+2cx)(-beg-2cdg+4cef)}{3ce(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(ex(2cd-be)+d(2cd-be))(-beg+cdg+cef)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d*(2*c*d - b*e) + e*(2*c*d - b*e)*x))/(3*c*e^2*
(2*c*d - b*e)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(4*c*e*f
- 2*c*d*g - b*e*g)*(b + 2*c*x))/(3*c*e*(2*c*d - b*e)^3*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx &= \frac{2(cef+cdg-beg)(d(2cd-be)+e(2cd-be)x)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(4cef-2cdg-beg)\int}{3ce(2c}\\ &= \frac{2(cef+cdg-beg)(d(2cd-be)+e(2cd-be)x)}{3ce^2(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(4cef-2cdg-}{3ce(2cd-be)^3\sqrt{d(cd-}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 151, normalized size = 0.92

$$\frac{6b^2e^2(2dg-ef+egx)-4bce\left(5d^2g-2degx+e^2x(6f-gx)\right)+8c^2\left(d^3g+d^2e(f-gx)+de^2x(2f+gx)-2e^3f\right.}{3e^2(be-2cd)^3(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (6*b^2*e^2*(-(e*f) + 2*d*g + e*g*x) - 4*b*c*e*(5*d^2*g - 2*d*e*g*x + e^2*x*
(6*f - g*x)) + 8*c^2*(d^3*g - 2*e^3*f*x^2 + d^2*e*(f - g*x) + d*e^2*x*(2*f
+ g*x)))/(3*e^2*(-2*c*d + b*e)^3*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b
*e) + c*(d - e*x))])
```

fricas [**B**] time = 23.75, size = 431, normalized size = 2.61

$$-\frac{2\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(2\,(4\,c^2e^3f - (2\,c^2de^2 + bce^3)g)x^2 - (4\,c^2}{3\,(8\,c^5d^6e^2 - 28\,bc^4d^5e^3 + 38\,b^2c^3d^4e^4 - 25\,b^3c^2d^3e^5 + 8\,b^4cd^2e^6 - b^5de^7 + (8\,c^5d^3e^5 - 12\,bc^4d^2e^6 + 6\,b^2c^3de^7 -}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(4*c^2*e^3*f - (2*c^2*d*
e^2 + b*c*e^3)*g)*x^2 - (4*c^2*d^2*e - 3*b^2*e^3)*f - 2*(2*c^2*d^3 - 5*b*c*
d^2*e + 3*b^2*d*e^2)*g - (4*(2*c^2*d*e^2 - 3*b*c*e^3)*f - (4*c^2*d^2*e - 4*
b*c*d*e^2 - 3*b^2*e^3)*g)*x)/(8*c^5*d^6*e^2 - 28*b*c^4*d^5*e^3 + 38*b^2*c^3
*d^4*e^4 - 25*b^3*c^2*d^3*e^5 + 8*b^4*c*d^2*e^6 - b^5*d*e^7 + (8*c^5*d^3*e^
5 - 12*b*c^4*d^2*e^6 + 6*b^2*c^3*d*e^7 - b^3*c^2*e^8)*x^3 - (8*c^5*d^4*e^4
- 28*b*c^4*d^3*e^5 + 30*b^2*c^3*d^2*e^6 - 13*b^3*c^2*d*e^7 + 2*b^4*c*e^8)*x
^2 - (8*c^5*d^5*e^3 - 12*b*c^4*d^4*e^4 - 2*b^2*c^3*d^3*e^5 + 11*b^3*c^2*d^2
*e^6 - 6*b^4*c*d*e^7 + b^5*e^8)*x)
```

giac [**B**] time = 0.67, size = 521, normalized size = 3.16

$$\frac{2\sqrt{-cx^2e^2 + cd^2 - bxe^2 - bde}\,(((\frac{2\,(4\,c^3d^2ge^3 - 8\,c^3dfe^4 + 4\,bc^2fe^5 - b^2cge^5)x}{16\,c^4d^4e^2 - 32\,bc^3d^3e^3 + 24\,b^2c^2d^2e^4 - 8\,b^3cde^5 + b^4e^6} + \frac{3\,(4\,bc^2d^2ge^3 - 8\,bc^2dfe^4 + 4\,b^2cfe^5 - b^3ge^5)}{16\,c^4d^4e^2 - 32\,bc^3d^3e^3 + 24\,b^2c^2d^2e^4 - 8\,b^3cde^5 + b^4e^6})}{3\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] 2/3*sqrt(-c*x^2*e^2 + c*d^2 - b*x*e^2 - b*d*e)*(((2*(4*c^3*d^2*g*e^3 - 8*c^
3*d*f*e^4 + 4*b*c^2*f*e^5 - b^2*c*g*e^5)*x/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e
^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6) + 3*(4*b*c^2*d^2*g*e^3 -
 8*b*c^2*d*f*e^4 + 4*b^2*c*f*e^5 - b^3*g*e^5)/(16*c^4*d^4*e^2 - 32*b*c^3*d^
3*e^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*x + 3*(8*c^3*d^3*f*e
^2 - 4*b*c^2*d^3*g*e^2 - 12*b*c^2*d^2*f*e^3 + 8*b^2*c*d^2*g*e^3 + 2*b^2*c*d
*f*e^4 - 3*b^3*d*g*e^4 + b^3*f*e^5)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e^3 + 24
*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))*x + (8*c^3*d^5*g + 8*c^3*d^4*f
*e - 24*b*c^2*d^4*g*e - 4*b*c^2*d^3*f*e^2 + 22*b^2*c*d^3*g*e^2 - 6*b^2*c*d^
2*f*e^3 - 6*b^3*d^2*g*e^3 + 3*b^3*d*f*e^4)/(16*c^4*d^4*e^2 - 32*b*c^3*d^3*e
^3 + 24*b^2*c^2*d^2*e^4 - 8*b^3*c*d*e^5 + b^4*e^6))/(c*x^2*e^2 - c*d^2 + b*
x*e^2 + b*d*e)^2
```

maple [**A**] time = 0.06, size = 227, normalized size = 1.38

$$\frac{2\,(ex + d)^2\,(cex + be - cd)\,(2bc\,e^3g\,x^2 + 4c^2d\,e^2g\,x^2 - 8c^2e^3f\,x^2 + 3b^2e^3gx + 4bcd\,e^2gx - 12bc\,e^3fx - 4c^2d^2egx +}{3\,(b^3e^3 - 6b^2cd\,e^2 + 12b\,c^2d^2e - 8c^3d^3)\,(-c\,e^2x^2 - b\,e^2x - bde}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(e*x+d)^2*(c*e*x+b*e-c*d)*(2*b*c*e^3*g*x^2+4*c^2*d*e^2*g*x^2-8*c^2*e^3*
f*x^2+3*b^2*e^3*g*x+4*b*c*d*e^2*g*x-12*b*c*e^3*f*x-4*c^2*d^2*e*g*x+8*c^2*d*
e^2*f*x+6*b^2*d*e^2*g-3*b^2*e^3*f-10*b*c*d^2*e*g+4*c^2*d^3*g+4*c^2*d^2*e*f)
/(b^3*e^3-6*b^2*c*d*e^2+12*b*c^2*d^2*e-8*c^3*d^3)/e^2/(-c*e^2*x^2-b*e^2*x-b
*d*e+c*d^2)^(5/2)
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**]   time = 3.44, size = 795, normalized size = 4.82

$$-\frac{8\,c^2\,d^3\,g\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}-6\,b^2\,e^3\,f\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}-16\,c^2\,e^3\,f\,x^2\,\sqrt{c\,d^2-b\,d\,e-}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] -(8*c^2*d^3*g*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 6*b^2*e^3*f*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 16*c^2*e^3*f*x^2*(c*d^2 - c*e^2*
x^2 - b*d*e - b*e^2*x)^(1/2) + 12*b^2*d*e^2*g*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2) + 8*c^2*d^2*e*f*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
+ 6*b^2*e^3*g*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 4*b*c*e^3*g*x
^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 16*c^2*d*e^2*f*x*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 8*c^2*d^2*e*g*x*(c*d^2 - c*e^2*x^2 - b
*d*e - b*e^2*x)^(1/2) + 8*c^2*d*e^2*g*x^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2) - 20*b*c*d^2*e*g*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) - 2
4*b*c*e^3*f*x*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + 8*b*c*d*e^2*g*x
*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(3*b^5*d*e^7 + 3*b^5*e^8*x -
24*c^5*d^6*e^2 + 84*b*c^4*d^5*e^3 - 24*b^4*c*d^2*e^6 + 6*b^4*c*e^8*x^2 + 24
*c^5*d^5*e^3*x - 114*b^2*c^3*d^4*e^4 + 75*b^3*c^2*d^3*e^5 + 3*b^3*c^2*e^8*x
^3 + 24*c^5*d^4*e^4*x^2 - 24*c^5*d^3*e^5*x^3 - 18*b^4*c*d*e^7*x + 90*b^2*c^
3*d^2*e^6*x^2 - 36*b*c^4*d^4*e^4*x - 6*b^2*c^3*d^3*e^5*x + 33*b^3*c^2*d^2*e
^6*x - 84*b*c^4*d^3*e^5*x^2 - 39*b^3*c^2*d*e^7*x^2 + 36*b*c^4*d^2*e^6*x^3 -
 18*b^2*c^3*d*e^7*x^3)
```

sympy [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x)
```

3.2228 $\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=208

$$-\frac{2(ef-dg)}{5e^2(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{16c(b+2cx)(-5beg+2cdg+8cef)}{15e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(b+2cx}{15e(2cd-be)^3}$$

```
[Out] 2/15*(-5*b*e*g+2*c*d*g+8*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^3/(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(3/2)-2/5*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)/(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(3/2)+16/15*c*(-5*b*e*g+2*c*d*g+8*c*e*f)*(2*c*x+b)/e/(
-b*e+2*c*d)^5/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.068$, Rules used = {792, 614, 613}

$$-\frac{2(ef-dg)}{5e^2(d+ex)(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{16c(b+2cx)(-5beg+2cdg+8cef)}{15e(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(b+2cx}{15e(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (2*(8*c*e*f + 2*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^3*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(5*e^2*(2*c*d - b*e
)*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (16*c*(8*c*e*f +
 2*c*d*g - 5*b*e*g)*(b + 2*c*x))/(15*e*(2*c*d - b*e)^5*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}dx = -\frac{2(ef-dg)}{5e^2(2cd-be)(d+ex)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(8cef +}{}$$

$$= \frac{2(8cef+2cdg-5beg)(b+2cx)}{15e(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{5e^2(2cd-be)(d}$$

$$= \frac{2(8cef+2cdg-5beg)(b+2cx)}{15e(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{5e^2(2cd-be)(d}$$

Mathematica [**A**] time = 0.19, size = 345, normalized size = 1.66

$$-\frac{2 (b^4e^4(2dg+3ef+5egx)-2b^3ce^3 (19d^2g+2de(8f+23gx)+e^2x(4f+15gx))+12b^2c^2e^2 (d^3g+2d^2e(7f-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))
,x]
```

```
[Out] (-2*(b^4*e^4*(3*e*f + 2*d*g + 5*e*g*x) + 12*b^2*c^2*e^2*(d^3*g + d*e^2*x*(1
2*f - 19*g*x) + 2*e^3*x^2*(2*f - 5*g*x) + 2*d^2*e*(7*f - g*x)) - 16*c^4*(3*
d^5*g - 8*e^5*f*x^4 - 3*d^4*e*(f - g*x) - 2*d^2*e^3*x^2*(-6*f + g*x) + 3*d^
3*e^2*x*(4*f + g*x) - 2*d*e^4*x^3*(4*f + g*x)) + 8*b*c^3*e*(9*d^4*g + 2*e^4
*x^3*(12*f - 5*g*x) - 6*d^3*e*(4*f - 3*g*x) - 4*d*e^3*x^2*(-12*f + g*x) + 3
*d^2*e^2*x*(4*f + 9*g*x)) - 2*b^3*c*e^3*(19*d^2*g + e^2*x*(4*f + 15*g*x) +
2*d*e*(8*f + 23*g*x))))/(15*e^2*(-2*c*d + b*e)^5*(d + e*x)^2*(-(c*d) + b*e
+ c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="fricas")
```

```
[Out] Timed out
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.55Unable to transpose Err
or: Bad Argument Value
```

maple [**B**] time = 0.06, size = 557, normalized size = 2.68

$$-\frac{2\,(cex+be-cd)\,(-80bc^3e^5gx^4+32c^4de^4gx^4+128c^4e^5fx^4-120b^2c^2e^5gx^3-32bc^3de^4gx^3+192bc^3e^5fx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-80*b*c^3*e^5*g*x^4+32*c^4*d*e^4*g*x^4+128*c^4*e^5*f
*x^4-120*b^2*c^2*e^5*g*x^3-32*b*c^3*d*e^4*g*x^3+192*b*c^3*e^5*f*x^3+32*c^4*
d^2*e^3*g*x^3+128*c^4*d*e^4*f*x^3-30*b^3*c*e^5*g*x^2-228*b^2*c^2*d*e^4*g*x^
2+48*b^2*c^2*e^5*f*x^2+216*b*c^3*d^2*e^3*g*x^2+384*b*c^3*d*e^4*f*x^2-48*c^4
*d^3*e^2*g*x^2-192*c^4*d^2*e^3*f*x^2+5*b^4*e^5*g*x-92*b^3*c*d*e^4*g*x-8*b^3
*c*e^5*f*x-24*b^2*c^2*d^2*e^3*g*x+144*b^2*c^2*d*e^4*f*x+144*b*c^3*d^3*e^2*g
*x+96*b*c^3*d^2*e^3*f*x-48*c^4*d^4*e*g*x-192*c^4*d^3*e^2*f*x+2*b^4*d*e^4*g+
3*b^4*e^5*f-38*b^3*c*d^2*e^3*g-32*b^3*c*d*e^4*f+12*b^2*c^2*d^3*e^2*g+168*b^
2*c^2*d^2*e^3*f+72*b*c^3*d^4*e*g-192*b*c^3*d^3*e^2*f-48*c^4*d^5*g+48*c^4*d^
4*e*f)/(b^5*e^5-10*b^4*c*d*e^4+40*b^3*c^2*d^2*e^3-80*b^2*c^3*d^3*e^2+80*b*c
^4*d^4*e-32*c^5*d^5)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algorit
hm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 5.13, size = 3326, normalized size = 15.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] (x*((16*c^2*(b*g - c*f))/(15*(b*e - 2*c*d)^5) - (8*b*c^2*g)/(15*(b*e - 2*c*
d)^5)) + (72*c^3*d*e*f - 56*c^3*d^2*g - 44*b*c^2*e^2*f + 10*b^2*c*e^2*g + 2
0*b*c^2*d*e*g)/(15*e^2*(b*e - 2*c*d)^5) + (8*c^2*g*(c*d^2 - b*d*e))/(15*e^2
*(b*e - 2*c*d)^5))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) + (((4*b*c*g
)/(15*e*(b*e - 2*c*d)^5) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^5))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((2*e^2*f)/(5*b^3*e^6 - 40*
c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5) - (2*d*e*g)/(5*b^3*e^6 - 4
0*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))*(c*d^2 - c*e^2*x^2 - b*
d*e - b*e^2*x)^(1/2))/(d + e*x)^3 - (((2*b*g)/(5*(3*b*e^2 - 6*c*d*e)*(b*e -
 2*c*d)^3) - (4*c*d*g)/(5*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((4*c*g*(3*b*e - 4*c*d))
/(15*e^2*(b*e - 2*c*d)^5) - (8*c^2*d*g)/(15*e^2*(b*e - 2*c*d)^5))*(c*d^2 -
c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + ((x*(((e*(b*e - c*d) + c*d*
e)*(((e*(b*e - c*d) + c*d*e)*((4*c^4*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)
^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^4*g*(e*(b*e - c*d) + c*d*e
))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (4*b*c^4*e^
2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) -
 (2*c^2*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f - 32*c^3*d^2*e*g +
 14*b*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (2*b*c^3*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) + (8*c^4*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^3*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((4*c^4*e^2*(5*b
*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
8*c^4*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e)) + (4*b*c^4*e^2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(12*c^3*d^3*g - 12*b^3*e^3*g + 28*b^2
*c*e^3*f + 68*c^3*d^2*e*f - 86*b*c^2*d*e^2*f - 36*b*c^2*d^2*e*g + 36*b^2*c*
d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b
*c*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f - 32*c^3*d^2*e*g + 14*b
*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((4*c^4*e^2*(5*b*g - 4*c*f))/(
15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*c^4*g*(e*(b*
e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
)) + (4*b*c^4*e^2*g)/(15*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) - (2*c^2*(8*b^2*c*e^3*g - 26*b*c^2*e^3*f + 36*c^3*d*e^2*f -
32*c^3*d^2*e*g + 14*b*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) - (2*b*c^3*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^3*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (8*c^4*d*g*(b*e - c*d))/(15*(b*e -
2*c*d)^3*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(12*c^3*d^
3*g - 12*b^3*e^3*g + 28*b^2*c*e^3*f + 68*c^3*d^2*e*f - 86*b*c^2*d*e^2*f - 3
6*b*c^2*d^2*e*g + 36*b^2*c*d*e^2*g))/(15*e*(b*e - 2*c*d)^3*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d +
e*x)^2*(b*e - c*d + c*e*x)^2) + ((x*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c
*d) + c*d*e)*((16*c^5*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e -
2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e
 - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(104*
b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 144*c^4*d*e^2*f + 64*c^4*d^2*e*g + 8*b*c^3
*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
8*b*c^4*e^2*(5*b*g - 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) + (32*c^5*d*g*(b*e - c*d))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((16*c^5*e^2*(5*b*g - 4*
c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c^5*
g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b
*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(96*c^4*d^3*g + 84*b^2*c^2*e^3*f - 60*b^3*
c*e^3*g + 512*c^4*d^2*e*f - 440*b*c^3*d*e^2*f - 432*b*c^3*d^2*e*g + 324*b^2
*c^2*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (b*c*(104*b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 144*c^4*d*e^2*f + 64*c^4*d^2*
e*g + 8*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*c^5*e^2*(5*b*g -
 4*c*f))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*c
^5*g*(e*(b*e - c*d) + c*d*e))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) + (16*b*c^5*e^2*g)/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(104*b*c^3*e^3*f - 48*b^2*c^2*e^3*g - 1
44*c^4*d*e^2*f + 64*c^4*d^2*e*g + 8*b*c^3*d*e^2*g))/(15*e*(b*e - 2*c*d)^5*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^4*e^2*(5*b*g - 4*c*f))/(15*(
b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^5*d*g*(b*e -
c*d))/(15*(b*e - 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
+ (b*c*(96*c^4*d^3*g + 84*b^2*c^2*e^3*f - 60*b^3*c*e^3*g + 512*c^4*d^2*e*f
- 440*b*c^3*d*e^2*f - 432*b*c^3*d^2*e*g + 324*b^2*c^2*d*e^2*g))/(15*e*(b*e
- 2*c*d)^5*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d
*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\left(d+ex\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*(d + e*x)), x)
```

3.2229 $\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=283

$$\frac{128c^2(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16c(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(-7be}{35e^2(d+ex)(2cd-b}$$

```
[Out] 16/105*c*(-7*b*e*g+4*c*d*g+10*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^4/(d*(-b*e+c*
d)-b*e^2*x-c*e^2*x^2)^(3/2)-2/7*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)^2/(d*(-
b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)-2/35*(-7*b*e*g+4*c*d*g+10*c*e*f)/e^2/(-b*
e+2*c*d)^2/(e*x+d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)+128/105*c^2*(-7*b
*e*g+4*c*d*g+10*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^6/(d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 283, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.091$, Rules used = {792, 658, 614, 613}

$$\frac{128c^2(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^6\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16c(b+2cx)(-7beg+4cdg+10cef)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{2(-7be}{35e^2(d+ex)(2cd-b}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (16*c*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b + 2*c*x))/(105*e*(2*c*d - b*e)^4*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(7*e^2*(2*c*d
- b*e)*(d + e*x)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(10*c*
e*f + 4*c*d*g - 7*b*e*g))/(35*e^2*(2*c*d - b*e)^2*(d + e*x)*(d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2)^(3/2)) + (128*c^2*(10*c*e*f + 4*c*d*g - 7*b*e*g)*(b
+ 2*c*x))/(105*e*(2*c*d - b*e)^6*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(10ce}{}$$

$$= -\frac{2(ef-dg)}{7e^2(2cd-be)(d+ex)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{35e^2(2}$$

$$= \frac{16c(10cef+4cdg-7beg)(b+2cx)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{7e^2(2cd-be)(}$$

$$= \frac{16c(10cef+4cdg-7beg)(b+2cx)}{105e(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{7e^2(2cd-be)(}$$

Mathematica [A] time = 0.30, size = 468, normalized size = 1.65

$$\frac{-6b^5e^5(2dg+5ef+7egx)+4b^4ce^4\left(43d^2g+2de(45f+73gx)+e^2x(15f+28gx)\right)-16b^3c^2e^3\left(88d^3g+d^2e(11\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
)),x]
```

```
[Out] (-6*b^5*e^5*(5*e*f + 2*d*g + 7*e*g*x) + 96*b^2*c^3*e^2*(17*d^4*g + d^2*e^2*
x*(65*f - 54*g*x) + 2*e^4*x^3*(5*f - 14*g*x) + 40*d*e^3*x^2*(f - 2*g*x) + 2
0*d^3*e*(3*f + 2*g*x)) - 64*c^5*(9*d^6*g - 40*e^6*f*x^5 + 4*d^2*e^4*x^3*(5*
f - 8*g*x) - 6*d^5*e*(5*f - 3*g*x) - 16*d*e^5*x^4*(5*f + g*x) + 8*d^3*e^3*x
^2*(15*f + g*x) + 3*d^4*e^2*x*(15*f + 16*g*x)) + 32*b*c^4*e*(6*d^5*g + 8*d*
e^4*x^3*(45*f - 8*g*x) + 8*e^5*x^4*(15*f - 7*g*x) - 39*d^4*e*(5*f - g*x) +
12*d^3*e^2*x*(-5*f + 24*g*x) + 4*d^2*e^3*x^2*(75*f + 43*g*x)) + 4*b^4*c*e^4
*(43*d^2*g + e^2*x*(15*f + 28*g*x) + 2*d*e*(45*f + 73*g*x)) - 16*b^3*c^2*e^
3*(88*d^3*g + 2*e^3*x^2*(5*f + 21*g*x) + 2*d*e^2*x*(25*f + 86*g*x) + d^2*e*
(115*f + 293*g*x)))/(105*e^2*(-2*c*d + b*e)^6*(d + e*x)^3*(-(c*d) + b*e + c
*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.05, size = 782, normalized size = 2.76

$$-\frac{2\left(cex+be-cd\right)\left(896b\,c^{4}e^{6}g\,x^{5}-512c^{5}d\,e^{5}g\,x^{5}-1280c^{5}e^{6}f\,x^{5}+1344b^{2}c^{3}e^{6}g\,x^{4}+1024b\,c^{4}d\,e^{5}g\,x^{4}-1920b\,c^{4}e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(896*b*c^4*e^6*g*x^5-512*c^5*d*e^5*g*x^5-1280*c^5*e^
6*f*x^5+1344*b^2*c^3*e^6*g*x^4+1024*b*c^4*d*e^5*g*x^4-1920*b*c^4*e^6*f*x^4-
1024*c^5*d^2*e^4*g*x^4-2560*c^5*d*e^5*f*x^4+336*b^3*c^2*e^6*g*x^3+3840*b^2*
c^3*d*e^5*g*x^3-480*b^2*c^3*e^6*f*x^3-2752*b*c^4*d^2*e^4*g*x^3-5760*b*c^4*d
*e^5*f*x^3+256*c^5*d^3*e^3*g*x^3+640*c^5*d^2*e^4*f*x^3-56*b^4*c*e^6*g*x^2+1
376*b^3*c^2*d*e^5*g*x^2+80*b^3*c^2*e^6*f*x^2+2592*b^2*c^3*d^2*e^4*g*x^2-192
0*b^2*c^3*d*e^5*f*x^2-4608*b*c^4*d^3*e^3*g*x^2-4800*b*c^4*d^2*e^4*f*x^2+153
6*c^5*d^4*e^2*g*x^2+3840*c^5*d^3*e^3*f*x^2+21*b^5*e^6*g*x-292*b^4*c*d*e^5*g
*x-30*b^4*c*e^6*f*x+2344*b^3*c^2*d^2*e^4*g*x+400*b^3*c^2*d*e^5*f*x-1920*b^2
*c^3*d^3*e^3*g*x-3120*b^2*c^3*d^2*e^4*f*x-624*b*c^4*d^4*e^2*g*x+960*b*c^4*d
^3*e^3*f*x+576*c^5*d^5*e*g*x+1440*c^5*d^4*e^2*f*x+6*b^5*d*e^5*g+15*b^5*e^6*
f-86*b^4*c*d^2*e^4*g-180*b^4*c*d*e^5*f+704*b^3*c^2*d^3*e^3*g+920*b^3*c^2*d^
2*e^4*f-816*b^2*c^3*d^4*e^2*g-2880*b^2*c^3*d^3*e^3*f-96*b*c^4*d^5*e*g+3120*
b*c^4*d^4*e^2*f+288*c^5*d^6*g-960*c^5*d^5*e*f)/(e*x+d)/(b^6*e^6-12*b^5*c*d*
e^5+60*b^4*c^2*d^2*e^4-160*b^3*c^3*d^3*e^3+240*b^2*c^4*d^4*e^2-192*b*c^5*d^
5*e+64*c^6*d^6)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [B] time = 10.35, size = 11539, normalized size = 40.77

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] ((800*c^6*d^4*g + 558*b^3*c^3*e^4*f - 222*b^4*c^2*e^4*g - 4192*c^6*d^3*e*f
+ 384*b*c^5*d^3*e*g + 6624*b*c^5*d^2*e^2*f - 3392*b^2*c^4*d*e^3*f + 1248*b^
3*c^3*d*e^3*g - 1984*b^2*c^4*d^2*e^2*g)/(105*e^2*(b*e - 2*c*d)^8) - x*((b*(
(b*((8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*b*c
^5*e^2*g)/(105*(b*e - 2*c*d)^8)))/c - (4*c^4*(40*c^2*d^2*g - 33*b^2*e^2*g +
 62*b*c*e^2*f - 88*c^2*d*e*f + 16*b*c*d*e*g))/(105*(b*e - 2*c*d)^8) + (16*c
^5*g*(c*d^2 - b*d*e))/(105*(b*e - 2*c*d)^8)))/c + (44*b^2*c^4*e^4*f - 30*b^
3*c^3*e^4*g - 672*c^6*d^2*e^2*f + 224*c^6*d^3*e*g + 320*b*c^5*d*e^3*f + 160
*b*c^5*d^2*e^2*g - 128*b^2*c^4*d*e^3*g)/(105*e^2*(b*e - 2*c*d)^8) + ((c*d^2
 - b*d*e)*((8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) +
(16*b*c^5*e^2*g)/(105*(b*e - 2*c*d)^8)))/(c*e^2)) + ((c*d^2 - b*d*e)*((b*((
8*c^5*e*(4*c*d*g - 9*b*e*g + 6*c*e*f))/(105*(b*e - 2*c*d)^8) + (16*b*c^5*e^
2*g)/(105*(b*e - 2*c*d)^8)))/c - (4*c^4*(40*c^2*d^2*g - 33*b^2*e^2*g + 62*b
*c*e^2*f - 88*c^2*d*e*f + 16*b*c*d*e*g))/(105*(b*e - 2*c*d)^8) + (16*c^5*g*
(c*d^2 - b*d*e))/(105*(b*e - 2*c*d)^8)))/(c*e^2))/(c*d^2 - c*e^2*x^2 - b*d*
e - b*e^2*x)^(1/2) + (((8*c^2*g*(3*b*e - 4*c*d))/(105*e^2*(b*e - 2*c*d)^6)
- (16*c^3*d*g)/(105*e^2*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^
2*x)^(1/2))/(d + e*x) - (((d*((d*((8*c^4*(2*c*d*g - 7*b*e*g + 6*c*e*f))/(10
5*(b*e - 2*c*d)^8) + (16*c^5*d*g)/(105*(b*e - 2*c*d)^8)))/e + (76*b^2*c^3*e
^2*g - 176*c^5*d^2*g + 304*c^5*d*e*f - 200*b*c^4*e^2*f + 8*b*c^4*d*e*g)/(10
5*e*(b*e - 2*c*d)^8)))/e - (2*b*c^2*(13*b^2*e^2*g - 44*c^2*d^2*g - 44*b*c*e
^2*f + 76*c^2*d*e*f + 4*b*c*d*e*g))/(105*e*(b*e - 2*c*d)^8))*(c*d^2 - c*e^2
*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4*b*c*g)/(35*(3*b*e^2 - 6*c*d
*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^
4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((276*b^2*c
^3*e^3*f - 352*c^5*d^3*g - 88*b^3*c^2*e^3*g + 608*c^5*d^2*e*f - 832*b*c^4*d
*e^2*f + 288*b*c^4*d^2*e*g + 104*b^2*c^3*d*e^2*g)/(105*e^2*(b*e - 2*c*d)^8)
 + (d*((d*((16*c^4*(4*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8) + (
16*c^5*d*g)/(105*(b*e - 2*c*d)^8)))/e - (272*b*c^4*e^3*f - 148*b^2*c^3*e^3*
g - 448*c^5*d*e^2*f + 128*c^5*d^2*e*g + 160*b*c^4*d*e^2*g)/(105*e^2*(b*e -
2*c*d)^8)))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((
d*((d*((2*c^2*e^3*(5*b*e*g + 2*c*d*g - 6*c*e*f))/(7*(b*e - 2*c*d)^3*(5*b^3*
e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)) - (4*c^3*d*e^3*g
)/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^
2*c*d*e^5))))/e - (e*(8*b^2*c*e^3*g - 38*b*c^2*e^3*f + 52*c^3*d*e^2*f - 48*
c^3*d^2*e*g + 26*b*c^2*d*e^2*g))/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3
*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e - (e*(16*c^3*d^3*g - 16*b^3*
e^3*g + 40*b^2*c*e^3*f + 96*c^3*d^2*e*f - 122*b*c^2*d*e^2*f - 48*b*c^2*d^2*
e*g + 48*b^2*c*d*e^2*g))/(7*(b*e - 2*c*d)^3*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 6
0*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(
1/2))/(d + e*x)^3 - (((8*c*g*(2*b*e - 3*c*d))/(35*e*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^4) - (8*c^2*d*g)/(35*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^4))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((24*c^3*e
^2*(b*g - c*f))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6) - (8*c^4*d*e*g)/(3
5*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6)))/e - (26*b^2*c^2*e^2*g - 96*c^4*d^2
*g + 128*c^4*d*e*f - 88*b*c^3*e^2*f + 32*b*c^3*d*e*g)/(35*(3*b*e^2 - 6*c*d*
e)*(b*e - 2*c*d)^6)))/e + (2*b*c*(4*b^2*e^2*g - 24*c^2*d^2*g - 19*b*c*e^2*f
 + 32*c^2*d*e*f + 8*b*c*d*e*g))/(35*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^6))*(
c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((2*e^2*f)/(7*b^
3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5) - (2*d*e*g)/(7*
b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4 - (((2*b*g)/(7*(5*b*e^2 - 10*c
*d*e)*(b*e - 2*c*d)^3) - (4*c*d*g)/(7*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^
3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + ((x*(((e*(b*
e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c
^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*e^4*f
 + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e
*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*
e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/
```

```
(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*d*e^2
*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
))/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(10
5*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2*g*(e
*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b
*c^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360*c^
6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g - 8
4*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*
c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(296*b^3*c^3*e^5*f - 116*b^4*c^2*e^5
*g - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*b^2
*c^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d^2*
e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*
(b*e - c*d)*((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f
- 176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g
- 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) + (16*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b
*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (16*c^7*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 3
60*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*
g - 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e))))/(c*e^2) + (2*c^2*(832*c^6*d^5*g + 332*b^4*c^2*e^5*f - 176*b^5
*c*e^5*g + 2880*c^6*d^4*e*f - 3280*b*c^5*d^4*e*g - 6896*b*c^5*d^3*e^2*f - 2
360*b^3*c^3*d*e^4*f + 1312*b^4*c^2*d*e^4*g + 6114*b^2*c^4*d^2*e^3*f + 5024*
b^2*c^4*d^3*e^2*g - 3712*b^3*c^3*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*
((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*
e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g +
3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16
*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e
*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*
d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f)
)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2
*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 3
60*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*
g - 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f -
 176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(296*b^3*c^3*e^5*f - 116*b^4*c^2*
e^5*g - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*
b^2*c^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d
^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))) +
 (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c^2
*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^6*d*e^4*f +
 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f
))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^
2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(1
05*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*d*e^2*g
*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (d*(b*e - c*d)*((16*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*
(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (16*c^7*e^2*g*(e*(
b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) - (2*c^2*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360*c^6*
d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g - 84*
b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) - (b*c*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f - 176*c^
6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(296*b^3*c^3*e^5*f - 116*b^4*c^2*e^5*g
 - 2272*c^6*d^3*e^2*f + 480*c^6*d^4*e*g + 3768*b*c^5*d^2*e^3*f - 1932*b^2*c
^4*d*e^4*f + 80*b*c^5*d^3*e^2*g + 712*b^3*c^3*d*e^4*g - 1086*b^2*c^4*d^2*e^
3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b
*e - c*d)*((2*c^2*(88*c^6*d^2*e^3*g - 82*b^2*c^4*e^5*g + 136*b*c^5*e^5*f -
176*c^6*d*e^4*f + 32*b*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^7*e^3*(2*c*d*g -
5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) + (16*c^7*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^6*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^7*e^4*g)/(105*(b*e - 2*c*d)^6*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^6*e^3*(2*c*d*g - 5*b*e
*g + 3*c*e*f))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 + (16*c^7*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(78*b^2*c^4*e^5*f - 40*b^3*c^3*e^5*g - 360
*c^6*d^2*e^3*f + 96*c^6*d^3*e^2*g + 96*b*c^5*d*e^4*f + 168*b*c^5*d^2*e^3*g
 - 84*b^2*c^4*d*e^4*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))))/(c*e^2) + (b*c*(832*c^6*d^5*g + 332*b^4*c^2*e^5*f - 176*b^5*c*e
^5*g + 2880*c^6*d^4*e*f - 3280*b*c^5*d^4*e*g - 6896*b*c^5*d^3*e^2*f - 2360*
b^3*c^3*d*e^4*f + 1312*b^4*c^2*d*e^4*g + 6114*b^2*c^4*d^2*e^3*f + 5024*b^2*
c^4*d^3*e^2*g - 3712*b^3*c^3*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^6*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
(d + e*x)^2*(b*e - c*d + c*e*x)^2) + ((x*(((e*(b*e - c*d) + c*d*e)*(((e*(b*
e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((16*c^7*e^2*(28*c^2*d^2*g - 45
*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d
)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*
c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e
- 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(
b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7
*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^8*e^
3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*
d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e -
2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(408*b^2
*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 9
6*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g +
68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^
2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(736*b^3*c^4*e^5*f - 264*b
^4*c^3*e^5*g - 6272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g + 10464*b*c^6*d^2*e^3*f
 - 5232*b^2*c^5*d*e^4*f + 1216*b*c^6*d^3*e^2*g + 1952*b^3*c^4*d*e^4*g - 348
0*b^2*c^5*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - (d*(b*e - c*d)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*
c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g -
 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*
b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g
 - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5
*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/
(c*e^2) - (2*c^2*(7104*c^7*d^5*g + 948*b^4*c^3*e^5*f - 732*b^5*c^2*e^5*g +
21696*c^7*d^4*e*f - 28928*b*c^6*d^4*e*g - 40256*b*c^6*d^3*e^2*f - 8320*b^3*
c^4*d*e^4*f + 6636*b^4*c^3*d*e^4*g + 27576*b^2*c^5*d^2*e^3*f + 38688*b^2*c^
5*d^3*e^2*g - 23360*b^3*c^4*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((16*
c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c
*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*
(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e
 - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e -
 c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2
*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e^2*g*(b*e - c*d
))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(d*(b*e - c*d)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*
d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d)
+ c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32
*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) - (2*c^2*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3
*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*e*
(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c
^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105
*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(7
36*b^3*c^4*e^5*f - 264*b^4*c^3*e^5*g - 6272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g
 + 10464*b*c^6*d^2*e^3*f - 5232*b^2*c^5*d*e^4*f + 1216*b*c^6*d^3*e^2*g + 19
52*b^3*c^4*d*e^4*g - 3480*b^2*c^5*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e
)*(((e*(b*e - c*d) + c*d*e)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*
b*c*e^2*f - 88*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g
 - 5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(
4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g -
5*b*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) + (64*c^8*d*e^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^8*e^3*(2*c*d*g - 5*b
*e*g + 3*c*e*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (64*c^8*e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(408*b^2*c^5*e^5*f - 288
*b^3*c^4*e^5*g - 1056*c^7*d^2*e^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*
g + 240*b^2*c^5*d*e^4*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) - (8*b*c^6*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 8
8*c^2*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(736*b^3*c^4*e^5*f - 264*b^4*c^3*e^5*g - 6
272*c^7*d^3*e^2*f + 640*c^7*d^4*e*g + 10464*b*c^6*d^2*e^3*f - 5232*b^2*c^5*
d*e^4*f + 1216*b*c^6*d^3*e^2*g + 1952*b^3*c^4*d*e^4*g - 3480*b^2*c^5*d^2*e^
```

```
3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (d*(b
*e - c*d)*((16*c^7*e^2*(28*c^2*d^2*g - 45*b^2*e^2*g + 68*b*c*e^2*f - 88*c^2
*d*e*f + 32*b*c*d*e*g))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^8*e^3*(2*c*d*g - 5*b*e*g + 3*c*e
*f))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*
e^2*g*(e*(b*e - c*d) + c*d*e))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e)) - (32*b*c^8*e^4*g)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^7*e^3*(2*c*d*g - 5*b*e*g + 3*c*e*f)
)/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (64*c^8*d*e
^2*g*(b*e - c*d))/(105*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
))))/(c*e^2) + (b*c*(408*b^2*c^5*e^5*f - 288*b^3*c^4*e^5*g - 1056*c^7*d^2*e
^3*f + 640*c^7*d^3*e^2*g - 96*b*c^6*d^2*e^3*g + 240*b^2*c^5*d*e^4*g))/(105*
e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(
7104*c^7*d^5*g + 948*b^4*c^3*e^5*f - 732*b^5*c^2*e^5*g + 21696*c^7*d^4*e*f
- 28928*b*c^6*d^4*e*g - 40256*b*c^6*d^3*e^2*f - 8320*b^3*c^4*d*e^4*f + 6636
*b^4*c^3*d*e^4*g + 27576*b^2*c^5*d^2*e^3*f + 38688*b^2*c^5*d^3*e^2*g - 2336
0*b^3*c^4*d^2*e^3*g))/(105*e*(b*e - 2*c*d)^8*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)*(b*e - c*
d + c*e*x))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2230 $\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=358

$$\frac{256c^3(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32c^2(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{4c(-3beg}{21e^2(d+ex)(2cd-be)^3}$$

```
[Out] 32/63*c^2*(-3*b*e*g+2*c*d*g+4*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^5/(d*(-b*e+c*
d)-b*e^2*x-c*e^2*x^2)^(3/2)-2/9*(-d*g+e*f)/e^2/(-b*e+2*c*d)/(e*x+d)^3/(d*(-
b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)-2/21*(-3*b*e*g+2*c*d*g+4*c*e*f)/e^2/(-b*e
+2*c*d)^2/(e*x+d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)-4/21*c*(-3*b*e*g
+2*c*d*g+4*c*e*f)/e^2/(-b*e+2*c*d)^3/(e*x+d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(3/2)+256/63*c^3*(-3*b*e*g+2*c*d*g+4*c*e*f)*(2*c*x+b)/e/(-b*e+2*c*d)^7/(
d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [**A**] time = 0.51, antiderivative size = 358, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.091, Rules used = {792, 658, 614, 613}

$$\frac{256c^3(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^7\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32c^2(b+2cx)(-3beg+2cdg+4cef)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{4c(-3beg}{21e^2(d+ex)(2cd-be)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x]
```

```
[Out] (32*c^2*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(63*e*(2*c*d - b*e)^5*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(e*f - d*g))/(9*e^2*(2*c*d
- b*e)*(d + e*x)^3*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (2*(4*c*e
*f + 2*c*d*g - 3*b*e*g))/(21*e^2*(2*c*d - b*e)^2*(d + e*x)^2*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(3/2)) - (4*c*(4*c*e*f + 2*c*d*g - 3*b*e*g))/(21*e^
2*(2*c*d - b*e)^3*(d + e*x)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) +
(256*c^3*(4*c*e*f + 2*c*d*g - 3*b*e*g)*(b + 2*c*x))/(63*e*(2*c*d - b*e)^7*S
qrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 658

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*Simplify[m + 2*p + 2])/((m + p + 1)*(2*c*d - b*e))
, Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e
, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !In
tegerQ[p] && ILtQ[Simplify[m + 2*p + 2], 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^3\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(4cef}{}$$

$$= -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{21e^2(2}$$

$$= -\frac{2(ef-dg)}{9e^2(2cd-be)(d+ex)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{21e^2(2}$$

$$= \frac{32c^2(4cef+2cdg-3beg)(b+2cx)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{9e^2(2cd-be)(d}$$

$$= \frac{32c^2(4cef+2cdg-3beg)(b+2cx)}{63e(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{}{9e^2(2cd-be)(d}$$

Mathematica [A] time = 0.36, size = 598, normalized size = 1.67

$$\frac{2(-be+cd-cex)(-g(cd-be)-cef)}{3ce(d+ex)^2(-e(cd-be)-cde)((d+ex)(c(d-ex)-be))^{5/2}} - \frac{2(d+ex)^{5/2}(-be+cd-cex)^{5/2}\left(10ce\frac{\left(8ce\frac{\left(6ce\frac{\left(4ce\left(\frac{}{\sqrt{d+ex}(}\right.\right.}{}\right.}{}\right)}{}\right)}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^3*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
)),x]
```

```
[Out] (2*(-(c*e*f) - (c*d - b*e)*g)*(c*d - b*e - c*e*x))/(3*c*e*(-(c*d*e) - e*(c*
d - b*e))*(d + e*x)^2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)) - (2*(6*c*e
^2*f - ((3*c*d*e)/2 - (9*e*(c*d - b*e))/2)*g)*(d + e*x)^(5/2)*(c*d - b*e -
c*e*x)^(5/2)*(-2/(9*(c*d*e + e*(c*d - b*e))*(d + e*x)^(9/2)*Sqrt[c*d - b*e
- c*e*x]) + (10*c*e*(-2/(7*(c*d*e + e*(c*d - b*e))*(d + e*x)^(7/2)*Sqrt[c*d
 - b*e - c*e*x]) + (8*c*e*(-2/(5*(c*d*e + e*(c*d - b*e))*(d + e*x)^(5/2)*Sq
rt[c*d - b*e - c*e*x]) + (6*c*e*(-2/(3*(c*d*e + e*(c*d - b*e))*(d + e*x)^(3
/2)*Sqrt[c*d - b*e - c*e*x]) + (4*c*e*(2/((-(c*d*e) - e*(c*d - b*e))*Sqrt[d
 + e*x]*Sqrt[c*d - b*e - c*e*x]) - (4*c*e*Sqrt[d + e*x])/((-(c*d*e) - e*(c*
d - b*e))*(c*d*e + e*(c*d - b*e))*Sqrt[c*d - b*e - c*e*x])))/(3*(c*d*e + e*
(c*d - b*e)))))/(5*(c*d*e + e*(c*d - b*e)))))/(7*(c*d*e + e*(c*d - b*e))))
/(9*(c*d*e + e*(c*d - b*e)))))/(3*c*e*(-(c*d*e) - e*(c*d - b*e))*((d + e*x)
*(-(b*e) + c*(d - e*x)))^(5/2))
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] Timed out
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 0.74Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.06, size = 1036, normalized size = 2.89

$$-\frac{2\left(cex+be-cd\right)\left(-768b\,c^{5}e^{7}g\,x^{6}+512c^{6}d\,e^{6}g\,x^{6}+1024c^{6}e^{7}f\,x^{6}-1152b^{2}c^{4}e^{7}g\,x^{5}-1536b\,c^{5}d\,e^{6}g\,x^{5}+1536b\,c^{5}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/63*(c*e*x+b*e-c*d)*(-768*b*c^5*e^7*g*x^6+512*c^6*d*e^6*g*x^6+1024*c^6*e^
7*f*x^6-1152*b^2*c^4*e^7*g*x^5-1536*b*c^5*d*e^6*g*x^5+1536*b*c^5*e^7*f*x^5+
1536*c^6*d^2*e^5*g*x^5+3072*c^6*d*e^6*f*x^5-288*b^3*c^3*e^7*g*x^4-4416*b^2*
c^4*d*e^6*g*x^4+384*b^2*c^4*e^7*f*x^4+1920*b*c^5*d^2*e^5*g*x^4+6144*b*c^5*d
*e^6*f*x^4+768*c^6*d^3*e^4*g*x^4+1536*c^6*d^2*e^5*f*x^4+48*b^4*c^2*e^7*g*x^
3-1472*b^3*c^3*d*e^6*g*x^3-64*b^3*c^3*e^7*f*x^3-5376*b^2*c^4*d^2*e^5*g*x^3+
1920*b^2*c^4*d*e^6*f*x^3+6912*b*c^5*d^3*e^4*g*x^3+8448*b*c^5*d^2*e^5*f*x^3-
1792*c^6*d^4*e^3*g*x^3-3584*c^6*d^3*e^4*f*x^3-18*b^5*c*e^7*g*x^2+300*b^4*c^
2*d*e^6*g*x^2+24*b^4*c^2*e^7*f*x^2-3216*b^3*c^3*d^2*e^5*g*x^2-384*b^3*c^3*d
*e^6*f*x^2-288*b^2*c^4*d^3*e^4*g*x^2+4032*b^2*c^4*d^2*e^5*f*x^2+4704*b*c^5*
d^4*e^3*g*x^2+3072*b*c^5*d^3*e^4*f*x^2-2112*c^6*d^5*e^2*g*x^2-4224*c^6*d^4*
e^3*f*x^2+9*b^6*e^7*g*x-132*b^5*c*d*e^6*g*x-12*b^5*c*e^7*f*x+876*b^4*c^2*d^
2*e^5*g*x+168*b^4*c^2*d*e^6*f*x-4128*b^3*c^3*d^3*e^4*g*x-1056*b^3*c^3*d^2*e
^5*f*x+4848*b^2*c^4*d^4*e^3*g*x+4800*b^2*c^4*d^3*e^4*f*x-1344*b*c^5*d^5*e^2
*g*x-3264*b*c^5*d^4*e^3*f*x-192*c^6*d^6*e*g*x-384*c^6*d^5*e^2*f*x+2*b^6*d*e
^6*g+7*b^6*e^7*f-30*b^5*c*d^2*e^5*g-96*b^5*c*d*e^6*f+204*b^4*c^2*d^3*e^4*g+
564*b^4*c^2*d^2*e^5*f-976*b^3*c^3*d^4*e^3*g-1856*b^3*c^3*d^3*e^4*f+1344*b^2
*c^4*d^5*e^2*g+3984*b^2*c^4*d^4*e^3*f-480*b*c^5*d^6*e*g-3840*b*c^5*d^5*e^2*
f-64*c^6*d^7*g+1216*c^6*d^6*e*f)/(e*x+d)^2/(b^7*e^7-14*b^6*c*d*e^6+84*b^5*c
^2*d^2*e^5-280*b^4*c^3*d^3*e^4+560*b^3*c^4*d^4*e^3-672*b^2*c^5*d^5*e^2+448*
b*c^6*d^6*e-128*c^7*d^7)/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^3/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(b*e-2*c*d>0)', see `assume?` for mo
re details)Is b*e-2*c*d zero or nonzero?
```

mupad [**B**] time = 22.91, size = 33819, normalized size = 94.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^3*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)),x)
```

```
[Out] ((35968*c^9*d^6*g - 10062*b^5*c^4*e^6*f + 5714*b^6*c^3*e^6*g + 279680*c^9*d
^5*e*f - 248960*b*c^8*d^5*e*g - 729600*b*c^8*d^4*e^2*f + 98950*b^4*c^5*d*e^
5*f - 57260*b^5*c^4*d*e^5*g + 755040*b^2*c^7*d^3*e^3*f - 387748*b^3*c^6*d^2
*e^4*f + 504032*b^2*c^7*d^4*e^2*g - 473132*b^3*c^6*d^3*e^3*g + 231104*b^4*c
^5*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11) - x*((b*((b*((b*((b*((32*c^8*e^3*(
4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(94
5*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c
*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2
*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11)))/c + (1608*b^2*c^7*e^6*f - 912*
b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f + 224*c^9*d^3*e^3*g - 2528*b*c^8*d*e^5*f +
 352*b*c^8*d^2*e^4*g + 1112*b^2*c^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)^11) + (
((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*
c^8*e^4*g)/(945*(b*e - 2*c*d)^11))*(c*d^2 - b*d*e))/(c*e^2)))/c - (326*b^4*
c^5*e^6*g - 1372*b^3*c^6*e^6*f + 19840*c^9*d^3*e^3*f - 5248*c^9*d^4*e^2*g -
 29904*b*c^8*d^2*e^4*f + 13056*b^2*c^7*d*e^5*f + 912*b*c^8*d^3*e^3*g - 3972
*b^3*c^6*d*e^5*g + 7056*b^2*c^7*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11) + ((c
*d^2 - b*d*e)*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2
*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c
^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945
*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11))
)/(c*e^2)))/c + (1670*b^4*c^5*e^6*f - 1246*b^5*c^4*e^6*g + 60800*c^9*d^4*e^
2*f + 2432*c^9*d^5*e*g - 101760*b*c^8*d^3*e^3*f - 16104*b^3*c^6*d*e^5*f - 4
1728*b*c^8*d^4*e^2*g + 11442*b^4*c^5*d*e^5*g + 61368*b^2*c^7*d^2*e^4*f + 67
624*b^2*c^7*d^3*e^3*g - 41688*b^3*c^6*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^11)
 + ((c*d^2 - b*d*e)*((b*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(94
5*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7
*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*
e*g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2
*c*d)^11)))/c + (1608*b^2*c^7*e^6*f - 912*b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f
+ 224*c^9*d^3*e^3*g - 2528*b*c^8*d*e^5*f + 352*b*c^8*d^2*e^4*g + 1112*b^2*c
^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)^11) + (((32*c^8*e^3*(4*c*d*g - 7*b*e*g +
 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)
)*(c*d^2 - b*d*e))/(c*e^2)))/(c*e^2)) + ((c*d^2 - b*d*e)*((b*((b*((b*((32*c
^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*b*c^8*e^
4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e^2*(20*c^2*d^2*g - 43*b^2*e^2*g
+ 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*g))/(945*(b*e - 2*c*d)^11) + (32
*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c*d)^11)))/c + (1608*b^2*c^7*e^6*
f - 912*b^3*c^6*e^6*g - 96*c^9*d^2*e^4*f + 224*c^9*d^3*e^3*g - 2528*b*c^8*d
*e^5*f + 352*b*c^8*d^2*e^4*g + 1112*b^2*c^7*d*e^5*g)/(945*e^2*(b*e - 2*c*d)
^11) + (((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11)
+ (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11))*(c*d^2 - b*d*e))/(c*e^2)))/c - (
326*b^4*c^5*e^6*g - 1372*b^3*c^6*e^6*f + 19840*c^9*d^3*e^3*f - 5248*c^9*d^4
*e^2*g - 29904*b*c^8*d^2*e^4*f + 13056*b^2*c^7*d*e^5*f + 912*b*c^8*d^3*e^3*
g - 3972*b^3*c^6*d*e^5*g + 7056*b^2*c^7*d^2*e^4*g)/(945*e^2*(b*e - 2*c*d)^1
1) + ((c*d^2 - b*d*e)*((b*((32*c^8*e^3*(4*c*d*g - 7*b*e*g + 4*c*e*f))/(945*
(b*e - 2*c*d)^11) + (32*b*c^8*e^4*g)/(945*(b*e - 2*c*d)^11)))/c - (16*c^7*e
^2*(20*c^2*d^2*g - 43*b^2*e^2*g + 61*b*c*e^2*f - 82*c^2*d*e*f + 41*b*c*d*e*
g))/(945*(b*e - 2*c*d)^11) + (32*c^8*e^2*g*(c*d^2 - b*d*e))/(945*(b*e - 2*c
*d)^11)))/(c*e^2)))/(c*e^2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2) -
(((32*c^3*g*(4*b*e - 7*c*d))/(945*e^2*(b*e - 2*c*d)^7) - (32*c^4*d*g)/(945*
e^2*(b*e - 2*c*d)^7))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x
) + (((d*((d*((32*c^5*(c*d*g - 4*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^9) +
(32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e + (208*b^2*c^4*e^2*g - 512*c^6*d^2*g
 + 928*c^6*d*e*f - 592*b*c^5*e^2*f + 16*b*c^5*d*e*g)/(945*e*(b*e - 2*c*d)^9
)))/e - (4*b*c^3*(19*b^2*e^2*g - 64*c^2*d^2*g - 66*b*c*e^2*f + 116*c^2*d*e*
f + 4*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^9))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e
^2*x)^(1/2))/(d + e*x) - (((d*((d*((16*c^5*(12*c*d*g - 13*b*e*g + 8*c*e*f))
/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))/e - (352*c^6*
d^2*g - 488*b^2*c^4*e^2*g - 1568*c^6*d*e*f + 912*b*c^5*e^2*f + 624*b*c^5*d*
e*g)/(945*e*(b*e - 2*c*d)^9)))/e + (4*b*c^3*(44*c^2*d^2*g - 49*b^2*e^2*g +
106*b*c*e^2*f - 196*c^2*d*e*f + 66*b*c*d*e*g))/(945*e*(b*e - 2*c*d)^9))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((4*b*c*g)/(63*(5*b*
e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) - (8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 -
 (((d*((d*((8*c^3*e*(3*b*e*g + c*d*g - 4*c*e*f))/(63*(5*b*e^2 - 10*c*d*e)*(
b*e - 2*c*d)^6) - (8*c^4*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6)))
/e - (26*b^2*c^2*e^2*g - 136*c^4*d^2*g + 168*c^4*d*e*f - 116*b*c^3*e^2*f +
60*b*c^3*d*e*g)/(63*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6)))/e + (2*b*c*(4*b
^2*e^2*g - 34*c^2*d^2*g - 25*b*c*e^2*f + 42*c^2*d*e*f + 14*b*c*d*e*g))/(63*
(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^6))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x
)^(1/2))/(d + e*x)^3 - (((824*b^2*c^4*e^3*f - 1024*c^6*d^3*g - 252*b^3*c^3*
e^3*g + 1856*c^6*d^2*e*f - 2512*b*c^5*d*e^2*f + 816*b*c^5*d^2*e*g + 312*b^2
*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9) + (d*((d*((16*c^5*(8*c*d*g - 11*b*e
*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e - 2*c*d)^9)))
/e - (784*b*c^5*e^3*f - 376*b^2*c^4*e^3*g - 1312*c^6*d*e^2*f + 416*c^6*d^2*
e*g + 368*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9)))/e)*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((928*c^6*d^3*g + 704*b^2*c^4*e^3*f
- 536*b^3*c^3*e^3*g + 736*c^6*d^2*e*f - 1712*b*c^5*d*e^2*f - 1872*b*c^5*d^2
*e*g + 1736*b^2*c^4*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9) + (d*((d*((32*c^5*(9
*c*d*g - 8*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^9) + (32*c^6*d*g)/(945*(b*e
 - 2*c*d)^9)))/e + (776*b^2*c^4*e^3*g - 1104*b*c^5*e^3*f + 1952*c^6*d*e^2*f
 + 224*c^6*d^2*e*g - 1488*b*c^5*d*e^2*g)/(945*e^2*(b*e - 2*c*d)^9)))/e)*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((2*c^2*e^3*
(5*b*e*g + 4*c*d*g - 8*c*e*f))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e
^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5)) - (4*c^3*d*e^3*g)/(9*(b*e - 2*c*d)
^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 - 42*b^2*c*d*e^5))))/e -
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(e*(8*b^2*c*e^3*g - 50*b*c^2*e^3*f + 68*c^3*d*e^2*f - 64*c^3*d^2*e*g + 38*b
*c^2*d*e^2*g))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^
2*e^4 - 42*b^2*c*d*e^5))))/e - (e*(20*c^3*d^3*g - 20*b^3*e^3*g + 52*b^2*c*e
^3*f + 124*c^3*d^2*e*f - 158*b*c^2*d*e^2*f - 60*b*c^2*d^2*e*g + 60*b^2*c*d*
e^2*g))/(9*(b*e - 2*c*d)^3*(7*b^3*e^6 - 56*c^3*d^3*e^3 + 84*b*c^2*d^2*e^4 -
 42*b^2*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^4
 - (((4*c*g*(5*b*e - 8*c*d))/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4) -
(8*c^2*d*g)/(63*e*(5*b*e^2 - 10*c*d*e)*(b*e - 2*c*d)^4))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((d*((d*((16*c^4*e*(5*c*d*g - 6*b
*e*g + 4*c*e*f))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7) + (16*c^5*d*e*g)
/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7)))/e - (424*b*c^4*e^3*f - 196*b^2
*c^3*e^3*g - 720*c^5*d*e^2*f + 272*c^5*d^2*e*g + 168*b*c^4*d*e^2*g)/(315*e*
(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7)))/e + (496*b^2*c^3*e^3*f - 816*c^5*d^3
*g - 124*b^3*c^2*e^3*g + 1200*c^5*d^2*e*f - 1560*b*c^4*d*e^2*f + 760*b*c^4*
d^2*e*g + 52*b^2*c^3*d*e^2*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7))*
(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((d
*((8*c^5*e^5*(c*d*g - 5*b*e*g + 4*c*e*f))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 -
40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5)) + (8*c^6*d*e^5*g)/(63*
(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d
*e^5))))/e + (e*(82*b^2*c^4*e^5*g - 144*c^6*d^2*e^3*g - 180*b*c^5*e^5*f + 2
32*c^6*d*e^4*f + 12*b*c^5*d*e^4*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3
*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e + (e*(2*b^2*c^4*e^5*f +
8*b^3*c^3*e^5*g - 880*c^6*d^2*e^3*f + 232*c^6*d^3*e^2*g + 532*b*c^5*d*e^4*f
 + 308*b*c^5*d^2*e^3*g - 296*b^2*c^4*d*e^4*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e
^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e + (e*(660*b^3
*c^3*e^5*f - 268*b^4*c^2*e^5*g - 4344*c^6*d^3*e^2*f + 888*c^6*d^4*e*g + 739
6*b*c^5*d^2*e^3*f - 3964*b^2*c^4*d*e^4*f + 164*b*c^5*d^3*e^2*g + 1468*b^3*c
^3*d*e^4*g - 2126*b^2*c^4*d^2*e^3*g))/(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c
^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2*c*d*e^5))))/e - (e*(1504*c^6*d^5*g +
 640*b^4*c^2*e^5*f - 336*b^5*c*e^5*g + 5280*c^6*d^4*e*f - 5956*b*c^5*d^4*e*
g - 12732*b*c^5*d^3*e^2*f - 4460*b^3*c^3*d*e^4*f + 2452*b^4*c^2*d*e^4*g + 1
1398*b^2*c^4*d^2*e^3*f + 9180*b^2*c^4*d^3*e^2*g - 6844*b^3*c^3*d^2*e^3*g))/
(63*(b*e - 2*c*d)^6*(5*b^3*e^6 - 40*c^3*d^3*e^3 + 60*b*c^2*d^2*e^4 - 30*b^2
*c*d*e^5)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^3 + (((2
*e^2*f)/(9*b^3*e^6 - 72*c^3*d^3*e^3 + 108*b*c^2*d^2*e^4 - 54*b^2*c*d*e^5) -
 (2*d*e*g)/(9*b^3*e^6 - 72*c^3*d^3*e^3 + 108*b*c^2*d^2*e^4 - 54*b^2*c*d*e^5
))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^5 - (((3952*b^4*c
^4*e^5*f - 7936*c^8*d^5*g - 1640*b^5*c^3*e^5*g + 42240*c^8*d^4*e*f + 704*b*
c^7*d^4*e*g - 96960*b*c^7*d^3*e^2*f - 29716*b^3*c^5*d*e^4*f + 11624*b^4*c^4
*d*e^4*g + 81512*b^2*c^6*d^2*e^3*f + 24984*b^2*c^6*d^3*e^2*g - 28344*b^3*c^
5*d^2*e^3*g)/(945*e^2*(b*e - 2*c*d)^11) - (d*((1900*b^3*c^5*e^5*f - 824*b^4
*c^4*e^5*g - 24960*c^8*d^3*e^2*f + 3968*c^8*d^4*e*g + 35168*b*c^7*d^2*e^3*f
 - 15272*b^2*c^6*d*e^4*f + 5792*b*c^7*d^3*e^2*g + 6588*b^3*c^5*d*e^4*g - 13
600*b^2*c^6*d^2*e^3*g)/(945*e^2*(b*e - 2*c*d)^11) + (d*((d*((d*((16*c^7*e^2
*(12*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*c^8*d*e^2*g)
/(945*(b*e - 2*c*d)^11)))/e - (8*c^6*e*(16*c^2*d^2*g - 95*b^2*e^2*g + 130*b
*c*e^2*f - 196*c^2*d*e*f + 130*b*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e + (19
36*b^2*c^6*e^5*f - 948*b^3*c^5*e^5*g + 2272*c^8*d^2*e^3*f - 1248*c^8*d^3*e^
2*g - 4624*b*c^7*d*e^4*f + 928*b*c^7*d^2*e^3*g + 1472*b^2*c^6*d*e^4*g)/(945
*e^2*(b*e - 2*c*d)^11)))/e))/e)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
)/(d + e*x) - (((2*b*g)/(9*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3) - (4*c*d*g
)/(9*e*(7*b*e^2 - 14*c*d*e)*(b*e - 2*c*d)^3))*(c*d^2 - c*e^2*x^2 - b*d*e -
b*e^2*x)^(1/2))/(d + e*x)^4 - (((16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*
e - 2*c*d)^5) - (16*c^2*g*(2*b*e - 3*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^5))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((
16*c^3*d*g)/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5) + (16*c^2*g*(2*b*e
- 5*c*d))/(315*e*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^5))*(c*d^2 - c*e^2*x^2 -
 b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 + (((d*((d*((8*c^4*e^2*(7*b*g - 8*c*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7) - (16*c^5*d*e*g)/(315*(3*b*e^2
- 6*c*d*e)*(b*e - 2*c*d)^7)))/e - (76*b^2*c^3*e^2*g - 272*c^5*d^2*g + 400*c
^5*d*e*f - 264*b*c^4*e^2*f + 72*b*c^4*d*e*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e
- 2*c*d)^7)))/e + (2*b*c^2*(13*b^2*e^2*g - 68*c^2*d^2*g - 58*b*c*e^2*f + 10
0*c^2*d*e*f + 18*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^7))*(c*
d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - (((d*((d*((d*((d*((
32*c^7*e^2*(3*c*d*g - 6*b*e*g + 4*c*e*f))/(945*(b*e - 2*c*d)^11) + (32*c^8*
d*e^2*g)/(945*(b*e - 2*c*d)^11)))/e - (16*c^6*e*(26*c^2*d^2*g - 31*b^2*e^2*
g + 53*b*c*e^2*f - 74*c^2*d*e*f + 23*b*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e
 - (8*c^5*e*(160*c^3*d^2*f + 42*b^3*e^2*g - 158*b*c^2*d^2*g - 95*b^2*c*e^2*
f + 62*b*c^2*d*e*f + 29*b^2*c*d*e*g))/(945*(b*e - 2*c*d)^11)))/e + (3968*c^
8*d^4*g + 2452*b^3*c^5*e^4*f - 1022*b^4*c^4*e^4*g - 21120*c^8*d^3*e*f + 262
4*b*c^7*d^3*e*g + 32960*b*c^7*d^2*e^2*f - 16232*b^2*c^6*d*e^3*f + 6396*b^3*
c^5*d*e^3*g - 10840*b^2*c^6*d^2*e^2*g)/(945*e*(b*e - 2*c*d)^11)))/e - (1318
*b^4*c^4*e^4*f - 544*b^5*c^3*e^4*g + 1984*b*c^7*d^4*g - 10560*b*c^7*d^3*e*f
 - 8092*b^3*c^5*d*e^3*f + 1312*b^2*c^6*d^3*e*g + 3100*b^4*c^4*d*e^3*g + 161
60*b^2*c^6*d^2*e^2*f - 5156*b^3*c^5*d^2*e^2*g)/(945*e*(b*e - 2*c*d)^11))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x) + (((d*((d*((184*b^2*c
^5*e^4*f - 66*b^3*c^4*e^4*g - 1232*c^7*d^2*e^2*f + 208*c^7*d^3*e*g + 440*b*
c^6*d*e^3*f + 688*b*c^6*d^2*e^2*g - 400*b^2*c^5*d*e^3*g)/(315*(3*b*e^2 - 6*
c*d*e)*(b*e - 2*c*d)^9) + (d*((d*((8*c^6*e^3*(4*c*d*g - 11*b*e*g + 8*c*e*f)
)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9) + (16*c^7*d*e^3*g)/(315*(3*b*e^
2 - 6*c*d*e)*(b*e - 2*c*d)^9)))/e - (4*c^5*e^2*(64*c^2*d^2*g - 51*b^2*e^2*g
 + 98*b*c*e^2*f - 132*c^2*d*e*f + 18*b*c*d*e*g))/(315*(3*b*e^2 - 6*c*d*e)*(
b*e - 2*c*d)^9)))/e))/e + (1984*c^7*d^4*g + 1318*b^3*c^4*e^4*f - 544*b^4*c^
3*e^4*g - 9920*c^7*d^3*e*f + 784*b*c^6*d^3*e*g + 16112*b*c^6*d^2*e^2*f - 82
76*b^2*c^5*d*e^3*f + 3166*b^3*c^4*d*e^3*g - 4960*b^2*c^5*d^2*e^2*g)/(315*(3
*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9)))/e - (660*b^4*c^3*e^4*f - 268*b^5*c^2*e
^4*g + 992*b*c^6*d^4*g - 4960*b*c^6*d^3*e*f - 3962*b^3*c^4*d*e^3*f + 444*b^
2*c^5*d^3*e*g + 1476*b^4*c^3*d*e^3*g + 7748*b^2*c^5*d^2*e^2*f - 2340*b^3*c^
4*d^2*e^2*g)/(315*(3*b*e^2 - 6*c*d*e)*(b*e - 2*c*d)^9))*(c*d^2 - c*e^2*x^2
- b*d*e - b*e^2*x)^(1/2))/(d + e*x)^2 - ((x*(((e*(b*e - c*d) + c*d*e)*(((e*
(b*e - c*d) + c*d*e)*((2*c^2*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448
*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*
d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*
e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2
*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(
((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*
g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e
 - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*
e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))
/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e
^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e
- 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d
)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/
(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^
6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
- (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c
^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6
*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c
^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*
c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*
e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^
2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 1
5*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15
*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c
*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*
f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516
*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^
7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^
9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*
g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*
b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*
d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16
*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(
b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(
945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b
*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*
c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b
*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(9
45*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^
2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*
e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(9
45*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*
(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g
))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*
d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^
4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(3248*b^6*c^3*e
^7*g - 5692*b^5*c^4*e^7*f + 149760*c^9*d^5*e^2*f + 15360*c^9*d^6*e*g - 4048
48*b*c^8*d^4*e^3*f + 56224*b^4*c^5*d*e^6*f - 122064*b*c^8*d^5*e^2*g - 32356
*b^5*c^4*d*e^6*g + 427364*b^2*c^7*d^3*e^4*f - 220918*b^3*c^6*d^2*e^5*f + 26
4872*b^2*c^7*d^4*e^3*g - 259042*b^3*c^6*d^3*e^4*g + 129352*b^4*c^5*d^2*e^5*
g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e
 - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44
*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/
(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*
d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d
)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d)
+ c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16
*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(
945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(
b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) +
 c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*
b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5
*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*
c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*
f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
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e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 1
30*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*
c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*
c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c
*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^
2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3
*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5
*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 41
64*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*
f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c
^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) - (b*c*(348*b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3
*f + 1104*c^9*d^5*e^2*g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22
160*b*c^8*d^4*e^3*g + 4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 3370
0*b^2*c^7*d^3*e^4*g - 18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c
^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((2*c^2*(348*
b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*
g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g +
4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g -
18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e
 - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f -
 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e
*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*
g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*
g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602
*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f
+ 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*
g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*
(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g
))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e -
 c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*
c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*
d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
(16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c
*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d)
)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (
2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9
*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e
^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*
b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f +
 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d)
 + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^
2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*
c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c
^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^
6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b
*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130
*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^
6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f
+ 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*
b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e))))/(c*e^2) + (2*c^2*(57088*c^9*d^7*g + 5000*b^6*c^3*e^7*f - 3096*b^7*
c^2*e^7*g + 149760*c^9*d^6*e*f - 282368*b*c^8*d^6*e*g - 524160*b*c^8*d^5*e^
2*f - 54308*b^5*c^4*d*e^6*f + 35096*b^6*c^3*d*e^6*g + 756412*b^2*c^7*d^4*e^
3*f - 575502*b^3*c^6*d^3*e^4*f + 243428*b^4*c^5*d^2*e^5*f + 585108*b^2*c^7*
d^5*e^2*g - 657804*b^3*c^6*d^4*e^3*g + 433220*b^4*c^5*d^3*e^4*g - 167244*b^
5*c^4*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e)) - (b*c*(3248*b^6*c^3*e^7*g - 5692*b^5*c^4*e^7*f + 149760*c^9*d^5*e^2*f
 + 15360*c^9*d^6*e*g - 404848*b*c^8*d^4*e^3*f + 56224*b^4*c^5*d*e^6*f - 122
064*b*c^8*d^5*e^2*g - 32356*b^5*c^4*d*e^6*g + 427364*b^2*c^7*d^3*e^4*f - 22
0918*b^3*c^6*d^2*e^5*f + 264872*b^2*c^7*d^4*e^3*g - 259042*b^3*c^6*d^3*e^4*
g + 129352*b^4*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(348*
b^4*c^5*e^7*f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*
g - 45032*b*c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g +
4316*b^4*c^5*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g -
18386*b^3*c^6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4
*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e
 - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f -
 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e
*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
+ (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*
g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2
- 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*
g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602
*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f
+ 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*
g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8*c^9*e^4*
(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g
))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e -
 c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*
c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*
d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) -
(16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e
))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c
*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d)
)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (
2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9
*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e
^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7*f - 602*
b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f +
 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d)
 + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^
2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*
c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c
^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c
*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^
10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^7*f - 602*b^3*c^
6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*d*e^6*f + 424*b
*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130
*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(8*b^4*c^5*e^7*g - 398*b^3*c^
6*e^7*f + 10576*c^9*d^3*e^4*f - 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f
+ 6516*b^2*c^7*d*e^6*f + 376*b*c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*
b^2*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e))))/(c*e^2) + (2*c^2*(3248*b^6*c^3*e^7*g - 5692*b^5*c^4*e^7*f + 149760
*c^9*d^5*e^2*f + 15360*c^9*d^6*e*g - 404848*b*c^8*d^4*e^3*f + 56224*b^4*c^5
*d*e^6*f - 122064*b*c^8*d^5*e^2*g - 32356*b^5*c^4*d*e^6*g + 427364*b^2*c^7*
d^3*e^4*f - 220918*b^3*c^6*d^2*e^5*f + 264872*b^2*c^7*d^4*e^3*g - 259042*b^
3*c^6*d^3*e^4*g + 129352*b^4*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*
(((e*(b*e - c*d) + c*d*e)*((8*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*
c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 +
b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) + (32*c^10*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((16*c^10*e^5*(8*c*d*g
 - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e)) + (32*c^10*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c
^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(1032*b^2*c^7*e^
```

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7*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8
*d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)
^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (4*b*c^8*e^4*(44*c^2*d^2*g - 99
*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*b*c*d*e*g))/(945*(b*e - 2*c
*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((8
*c^9*e^4*(44*c^2*d^2*g - 99*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 86*
b*c*d*e*g))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((16*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*e^4*g*(e*
(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) - (16*b*c^10*e^6*g)/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e))))/(c*e^2) + (8*b*c^9*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(
b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (32*c^10*d*e^4*g*(b
*e - c*d))/(945*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c
*e^2) + (2*c^2*(8*b^4*c^5*e^7*g - 398*b^3*c^6*e^7*f + 10576*c^9*d^3*e^4*f -
 2784*c^9*d^4*e^3*g - 16088*b*c^8*d^2*e^5*f + 6516*b^2*c^7*d*e^6*f + 376*b*
c^8*d^3*e^4*g - 2074*b^3*c^6*d*e^6*g + 4164*b^2*c^7*d^2*e^5*g))/(945*e*(b*e
 - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(1032*b^2*c^7*e^7
*f - 602*b^3*c^6*e^7*g - 112*c^9*d^2*e^5*f + 48*c^9*d^3*e^4*g - 1528*b*c^8*
d*e^6*f + 424*b*c^8*d^2*e^5*g + 600*b^2*c^7*d*e^6*g))/(945*e*(b*e - 2*c*d)^
9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(348*b^4*c^5*e^7*
f - 464*b^5*c^4*e^7*g + 30448*c^9*d^4*e^3*f + 1104*c^9*d^5*e^2*g - 45032*b*
c^8*d^3*e^4*f - 3978*b^3*c^6*d*e^6*f - 22160*b*c^8*d^4*e^3*g + 4316*b^4*c^5
*d*e^6*g + 21708*b^2*c^7*d^2*e^5*f + 33700*b^2*c^7*d^3*e^4*g - 18386*b^3*c^
6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
))/(c*e^2) + (b*c*(57088*c^9*d^7*g + 5000*b^6*c^3*e^7*f - 3096*b^7*c^2*e^7*
g + 149760*c^9*d^6*e*f - 282368*b*c^8*d^6*e*g - 524160*b*c^8*d^5*e^2*f - 54
308*b^5*c^4*d*e^6*f + 35096*b^6*c^3*d*e^6*g + 756412*b^2*c^7*d^4*e^3*f - 57
5502*b^3*c^6*d^3*e^4*f + 243428*b^4*c^5*d^2*e^5*f + 585108*b^2*c^7*d^5*e^2*
g - 657804*b^3*c^6*d^4*e^3*g + 433220*b^4*c^5*d^3*e^4*g - 167244*b^5*c^4*d^
2*e^5*g))/(945*e*(b*e - 2*c*d)^9*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c
*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/((d + e*x)^2*(b*e - c*d + c*e*x)
^2) + ((x*((d*(b*e - c*d)*((2*c^2*(3696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g
+ 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28
872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g + 23856*b^4*c^6*d*e^6*g + 11083
2*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/
(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e -
 c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^1
0*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b
*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(
e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/
(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*
e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f
))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11
*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^
2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c
^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f -
992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^
2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^1
0*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b
*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
(e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(
e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/
(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*
e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d
*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^1
0*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d
*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5
*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*
(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d
^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g)
)/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2)
 + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 10
3*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2
*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*
((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/
(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e
^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2
) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e
 - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) +
c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*
b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
)/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*
e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 43
20*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 16
4*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g +
31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*
b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^
8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
)))/(c*e^2) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(3
696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*
d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^
4*e^3*g + 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8
*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*
d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g
 + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^
5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e -
2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^
10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64
*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945
*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g
)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) -
(2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216
*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d
```

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*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (
16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f
+ 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g
+ 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^
5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e -
2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^
10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7
*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g -
46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440
*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*
d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e
^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*
b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) +
c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^
2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g +
8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (1
28*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b
^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d
^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e
*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*
b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3
*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7
*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b
*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2
*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2
*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(23
2*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4
*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4
*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^1
1*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(11720*b^6*c^4*
e^7*g - 18872*b^5*c^5*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g -
 1221824*b*c^9*d^4*e^3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g
- 115576*b^5*c^5*d*e^6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e
^5*f + 1020704*b^2*c^8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^
6*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)
) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32
*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 1
02*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(
945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4
*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*
f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^1
1*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c
```

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*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*
c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*
c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b
^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*
f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4
*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^
2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32
*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 1
02*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(
945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4
*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*
f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^1
1*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c
^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808
*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c
^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2
*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (
b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^
10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^
6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e
^2) - (b*c*(3696*b^4*c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f
 + 6208*c^10*d^5*e^2*g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 8
8896*b*c^9*d^4*e^3*g + 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 1
40240*b^2*c^8*d^3*e^4*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11
*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(451840*c^10*d^7
*g + 8492*b^6*c^4*e^7*f - 6844*b^7*c^3*e^7*g + 1076480*c^10*d^6*e*f - 20679
68*b*c^9*d^6*e*g - 3009280*b*c^9*d^5*e^2*f - 120776*b^5*c^5*d*e^6*f + 99044
*b^6*c^4*d*e^6*g + 3456144*b^2*c^8*d^4*e^3*f - 2084264*b^3*c^7*d^3*e^4*f +
694544*b^4*c^6*d^2*e^5*f + 3720112*b^2*c^8*d^5*e^2*g - 3506000*b^3*c^7*d^4*
e^3*g + 1895152*b^4*c^6*d^3*e^4*g - 591664*b^5*c^5*d^2*e^5*g))/(945*e*(b*e
 - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(11720*b^6*c^4*e^
7*g - 18872*b^5*c^5*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g - 1
221824*b*c^9*d^4*e^3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g -
115576*b^5*c^5*d*e^6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e^5
*f + 1020704*b^2*c^8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^6*
d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)))
 - (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((2*c^2*(3696*b^4*c^6*e^7*f - 3
096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*g - 194336*b*
c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g + 23856*b^4*c
^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4*g - 84648*b^
3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*
d*e)) - ((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d)
 + c*d*e)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164
*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g
 + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*
b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g -
15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*
c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^
11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*
e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 713
6*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e
- 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*
d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(94
5*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b
*e - c*d)*((32*c^10*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164
*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 -
 4*b*c^2*d*e)) - ((e*(b*e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g
 + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) +
 (128*c^11*e^4*g*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2
+ b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*
b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) + (128*c^11*d*e^4*g*(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6
*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f
 + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 78
88*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b
*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e
^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 432
0*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^
2*d*e))))/(c*e^2) + (d*(b*e - c*d)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*
(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e
*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*
e - c*d) + c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e -
 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e
 - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*
e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*
c^2*d*e))))/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*
(b*e - c*d))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(94
5*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g
*(e*(b*e - c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*
b*c^2*d*e)) - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^
2 - 4*b*c^2*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7
*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*
c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 +
 b^2*c*e^2 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g +
130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^
3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(232*b^3*c^7*e^7*f - 113
6*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 8576*c^10*d^4*e^3*g - 46560*b*c^9*
d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c^9*d^3*e^4*g - 2440*b^3*c^7*d*e
^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*
e^2 - 4*b*c^2*d*e))))/(c*e^2) + (2*c^2*(11720*b^6*c^4*e^7*g - 18872*b^5*c^5
*e^7*f + 440320*c^10*d^5*e^2*f + 103424*c^10*d^6*e*g - 1221824*b*c^9*d^4*e^
3*f + 181328*b^4*c^6*d*e^6*f - 536640*b*c^9*d^5*e^2*g - 115576*b^5*c^5*d*e^
6*g + 1318992*b^2*c^8*d^3*e^4*f - 696440*b^3*c^7*d^2*e^5*f + 1020704*b^2*c^
8*d^4*e^3*g - 947048*b^3*c^7*d^3*e^4*g + 463360*b^4*c^6*d^2*e^5*g))/(945*e*
(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (d*(b*e - c*d)*((
(e*(b*e - c*d) + c*d*e)*(((e*(b*e - c*d) + c*d*e)*((32*c^10*e^4*(28*c^2*d^2
*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) +
c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c
*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b
*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
```

```
/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d)
)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(d*(b*e - c*d)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*
c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e -
c*d) + c*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))
 - (64*b*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2
*d*e))))/(c*e^2) - (2*c^2*(4384*b^2*c^8*e^7*f - 2824*b^3*c^7*e^7*g + 576*c^
10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b*c^9*d*e^6*f - 992*b*c^9*d^2*e^5
*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2
 - 4*b*c^2*d*e)) - (16*b*c^9*e^4*(28*c^2*d^2*g - 103*b^2*e^2*g + 130*b*c*e^2
*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2
*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (d*(b*e - c*d)*((32*c^10*e^4*(28*c^2*d^2
*g - 103*b^2*e^2*g + 130*b*c*e^2*f - 164*c^2*d*e*f + 102*b*c*d*e*g))/(945*(
b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - ((e*(b*e - c*d) +
c*d*e)*((64*c^11*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d)^11*
(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*e^4*g*(e*(b*e - c*d) + c
*d*e))/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) - (64*b
*c^11*e^6*g)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))
/(c*e^2) + (32*b*c^10*e^5*(8*c*d*g - 15*b*e*g + 8*c*e*f))/(945*(b*e - 2*c*d
)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (128*c^11*d*e^4*g*(b*e - c*d)
)/(945*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) +
(2*c^2*(232*b^3*c^7*e^7*f - 1136*b^4*c^6*e^7*g + 31808*c^10*d^3*e^4*f - 857
6*c^10*d^4*e^3*g - 46560*b*c^9*d^2*e^5*f + 16144*b^2*c^8*d*e^6*f + 3680*b*c
^9*d^3*e^4*g - 2440*b^3*c^7*d*e^6*g + 7888*b^2*c^8*d^2*e^5*g))/(945*e*(b*e
 - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e)) + (b*c*(4384*b^2*c^8*e^7
*f - 2824*b^3*c^7*e^7*g + 576*c^10*d^2*e^5*f + 1216*c^10*d^3*e^4*g - 7136*b
*c^9*d*e^6*f - 992*b*c^9*d^2*e^5*g + 4320*b^2*c^8*d*e^6*g))/(945*e*(b*e - 2
*c*d)^11*(4*c^3*d^2 + b^2*c*e^2 - 4*b*c^2*d*e))))/(c*e^2) - (b*c*(3696*b^4*
c^6*e^7*f - 3096*b^5*c^5*e^7*g + 121024*c^10*d^4*e^3*f + 6208*c^10*d^5*e^2*
g - 194336*b*c^9*d^3*e^4*f - 28872*b^3*c^7*d*e^6*f - 88896*b*c^9*d^4*e^3*g
 + 23856*b^4*c^6*d*e^6*g + 110832*b^2*c^8*d^2*e^5*f + 140240*b^2*c^8*d^3*e^4
*g - 84648*b^3*c^7*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2 + b^2*c*e
^2 - 4*b*c^2*d*e))))/(c*e^2) + (b*c*(451840*c^10*d^7*g + 8492*b^6*c^4*e^7*f
 - 6844*b^7*c^3*e^7*g + 1076480*c^10*d^6*e*f - 2067968*b*c^9*d^6*e*g - 3009
280*b*c^9*d^5*e^2*f - 120776*b^5*c^5*d*e^6*f + 99044*b^6*c^4*d*e^6*g + 3456
144*b^2*c^8*d^4*e^3*f - 2084264*b^3*c^7*d^3*e^4*f + 694544*b^4*c^6*d^2*e^5*
f + 3720112*b^2*c^8*d^5*e^2*g - 3506000*b^3*c^7*d^4*e^3*g + 1895152*b^4*c^6
*d^3*e^4*g - 591664*b^5*c^5*d^2*e^5*g))/(945*e*(b*e - 2*c*d)^11*(4*c^3*d^2
 + b^2*c*e^2 - 4*b*c^2*d*e)))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(
(d + e*x)*(b*e - c*d + c*e*x))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**3/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Timed out
```

3.2231 $\int (d+ex)^{5/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=347

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{3465c^5e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{1155c^4e^2\sqrt{d+}}$$

```
[Out] -32/3465*(-b*e+2*c*d)^3*(-8*b*e*g+5*c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c
*e^2*x^2)^(3/2)/c^5/e^2/(e*x+d)^(3/2)-2/99*(-8*b*e*g+5*c*d*g+11*c*e*f)*(e*x
+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^2/e^2-2/11*g*(e*x+d)^(5/
2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2-16/1155*(-b*e+2*c*d)^2*(-8*
b*e*g+5*c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^4/e^2/(e*x
+d)^(1/2)-4/231*(-b*e+2*c*d)*(-8*b*e*g+5*c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(3/2)*(e*x+d)^(1/2)/c^3/e^2
```

Rubi [A] time = 0.62, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-8beg+5cdg+11cef)}{3465c^5e^2(d+ex)^{3/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right.}{1155c^4e^2\sqrt{d+}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-32*(2*c*d - b*e)^3*(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(3/2))/(3465*c^5*e^2*(d + e*x)^(3/2)) - (16*(2*c*d - b*e)^2*
(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))
/(1155*c^4*e^2*Sqrt[d + e*x]) - (4*(2*c*d - b*e)*(11*c*e*f + 5*c*d*g - 8*b*
e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(231*c^3*e^
2) - (2*(11*c*e*f + 5*c*d*g - 8*b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(99*c^2*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(3/2))/(11*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{11ce^2} - \Big(2\Big(\frac{3}{2}e\Big(-2c$$

$$= -\frac{2(11cef+5cdg-8beg)(d+ex)^{3/2}\Big(d(cd-be)-be^2x-ce^2}{99c^2e^2}$$

$$= -\frac{4(2cd-be)(11cef+5cdg-8beg)\sqrt{d+ex}\,\Big(d(cd-be)-be}{231c^3e^2}$$

$$= -\frac{16(2cd-be)^2(11cef+5cdg-8beg)\Big(d(cd-be)-be^2x-c}{1155c^4e^2\sqrt{d+ex}}$$

$$= -\frac{32(2cd-be)^3(11cef+5cdg-8beg)\Big(d(cd-be)-be^2x-c}{3465c^5e^2(d+ex)^{3/2}}$$

Mathematica [**A**] time = 0.23, size = 262, normalized size = 0.76

$$2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\,\Big(128b^4e^4g-16b^3ce^3(65dg+11ef+12egx)+24b^2c^2e^2\Big(131d^2g+de(55$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^4*e
^4*g - 16*b^3*c*e^3*(11*e*f + 65*d*g + 12*e*g*x) + 24*b^2*c^2*e^2*(131*d^2*
g + e^2*x*(11*f + 10*g*x) + d*e*(55*f + 57*g*x)) - 2*b*c^3*e*(2071*d^3*g +
5*e^3*x^2*(33*f + 28*g*x) + 3*d*e^2*x*(286*f + 245*g*x) + 3*d^2*e*(583*f +
558*g*x)) + c^4*(1910*d^4*g + 35*e^4*x^3*(11*f + 9*g*x) + 5*d*e^3*x^2*(363*
f + 287*g*x) + 3*d^2*e^2*x*(1177*f + 905*g*x) + d^3*e*(3509*f + 2865*g*x)))
)/(3465*c^5*e^2*Sqrt[d + e*x])
```

fricas [**A**] time = 1.52, size = 499, normalized size = 1.44

$$2\Big(315\,c^5e^5gx^5+35\Big(11\,c^5e^5f+\big(32\,c^5de^4+bc^4e^5\big)g\Big)x^4+5\Big(11\big(26\,c^5de^4+bc^4e^5\big)f+\big(256\,c^5d^2e^3+49\,bc^4de^4-8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3465*(315*c^5*e^5*g*x^5 + 35*(11*c^5*e^5*f + (32*c^5*d*e^4 + b*c^4*e^5)*g
)*x^4 + 5*(11*(26*c^5*d*e^4 + b*c^4*e^5)*f + (256*c^5*d^2*e^3 + 49*b*c^4*d*
e^4 - 8*b^2*c^3*e^5)*g)*x^3 + 3*(11*(52*c^5*d^2*e^3 + 13*b*c^4*d*e^4 - 2*b^
2*c^3*e^5)*f + (50*c^5*d^3*e^2 + 279*b*c^4*d^2*e^3 - 114*b^2*c^3*d*e^4 + 16
*b^3*c^2*e^5)*g)*x^2 - 11*(319*c^5*d^4*e - 637*b*c^4*d^3*e^2 + 438*b^2*c^3*
d^2*e^3 - 136*b^3*c^2*d*e^4 + 16*b^4*c*e^5)*f - 2*(955*c^5*d^5 - 3026*b*c^4
*d^4*e + 3643*b^2*c^3*d^3*e^2 - 2092*b^3*c^2*d^2*e^3 + 584*b^4*c*d*e^4 - 64
*b^5*e^5)*g - (11*(2*c^5*d^3*e^2 - 159*b*c^4*d^2*e^3 + 60*b^2*c^3*d*e^4 - 8
*b^3*c^2*e^5)*f + (955*c^5*d^4*e - 2071*b*c^4*d^3*e^2 + 1572*b^2*c^3*d^2*e^
3 - 520*b^3*c^2*d*e^4 + 64*b^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d
^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,(ex + d)^{\frac{5}{2}}\left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(5/2)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 367, normalized size = 1.06

$$2\,(cex + be - cd)\left(315g\,e^4x^4c^4 - 280b\,c^3e^4g\,x^3 + 1435c^4d\,e^3g\,x^3 + 385c^4e^4f\,x^3 + 240b^2c^2e^4g\,x^2 - 1470b\,c^3d\,e^3g\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/3465*(c*e*x+b*e-c*d)*(315*c^4*e^4*g*x^4-280*b*c^3*e^4*g*x^3+1435*c^4*d*e^
3*g*x^3+385*c^4*e^4*f*x^3+240*b^2*c^2*e^4*g*x^2-1470*b*c^3*d*e^3*g*x^2-330*
b*c^3*e^4*f*x^2+2715*c^4*d^2*e^2*g*x^2+1815*c^4*d*e^3*f*x^2-192*b^3*c*e^4*g
*x+1368*b^2*c^2*d*e^3*g*x+264*b^2*c^2*e^4*f*x-3348*b*c^3*d^2*e^2*g*x-1716*b
*c^3*d*e^3*f*x+2865*c^4*d^3*e*g*x+3531*c^4*d^2*e^2*f*x+128*b^4*e^4*g-1040*b
^3*c*d*e^3*g-176*b^3*c*e^4*f+3144*b^2*c^2*d^2*e^2*g+1320*b^2*c^2*d*e^3*f-41
42*b*c^3*d^3*e*g-3498*b*c^3*d^2*e^2*f+1910*c^4*d^4*g+3509*c^4*d^3*e*f)*(-c*
e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^5/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 1.02, size = 501, normalized size = 1.44

$$\frac{2\left(35\,c^4e^4x^4 - 319\,c^4d^4 + 637\,bc^3d^3e - 438\,b^2c^2d^2e^2 + 136\,b^3cde^3 - 16\,b^4e^4 + 5\left(26\,c^4de^3 + bc^3e^4\right)x^3 + 3\left(52\,c^4\right.\right.}{315\left(c^4e^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/315*(35*c^4*e^4*x^4 - 319*c^4*d^4 + 637*b*c^3*d^3*e - 438*b^2*c^2*d^2*e^2
 + 136*b^3*c*d*e^3 - 16*b^4*e^4 + 5*(26*c^4*d*e^3 + b*c^3*e^4)*x^3 + 3*(52*
c^4*d^2*e^2 + 13*b*c^3*d*e^3 - 2*b^2*c^2*e^4)*x^2 - (2*c^4*d^3*e - 159*b*c^
3*d^2*e^2 + 60*b^2*c^2*d*e^3 - 8*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*(e*
x + d)*f/(c^4*e^2*x + c^4*d*e) + 2/3465*(315*c^5*e^5*x^5 - 1910*c^5*d^5 + 6
052*b*c^4*d^4*e - 7286*b^2*c^3*d^3*e^2 + 4184*b^3*c^2*d^2*e^3 - 1168*b^4*c*
d*e^4 + 128*b^5*e^5 + 35*(32*c^5*d*e^4 + b*c^4*e^5)*x^4 + 5*(256*c^5*d^2*e^
3 + 49*b*c^4*d*e^4 - 8*b^2*c^3*e^5)*x^3 + 3*(50*c^5*d^3*e^2 + 279*b*c^4*d^2
*e^3 - 114*b^2*c^3*d*e^4 + 16*b^3*c^2*e^5)*x^2 - (955*c^5*d^4*e - 2071*b*c^
4*d^3*e^2 + 1572*b^2*c^3*d^2*e^3 - 520*b^3*c^2*d*e^4 + 64*b^4*c*e^5)*x)*sqr
t(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x + c^5*d*e^2)
```

mupad [B] time = 3.09, size = 501, normalized size = 1.44

$$\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,\left(\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(-8\,g\,b^2\,e^2+49\,g\,b\,c\,d\,e+11\,f\,b\,c\,e^2+256\,g\,c^2\,d^2+286\,f\,c^2\,d\,e\right)}{693\,c^2} + \frac{2\,e^2\,g\,x^5\,\sqrt{d+e\,x}}{11} + \frac{2\,(b\,e-c\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^3*(d + e*x)^(1/2)*(256*c
^2*d^2*g - 8*b^2*e^2*g + 11*b*c*e^2*f + 286*c^2*d*e*f + 49*b*c*d*e*g))/(693
*c^2) + (2*e^2*g*x^5*(d + e*x)^(1/2))/11 + (2*(b*e - c*d)*(d + e*x)^(1/2)*(
128*b^4*e^4*g + 1910*c^4*d^4*g - 176*b^3*c*e^4*f + 3509*c^4*d^3*e*f - 4142*
b*c^3*d^3*e*g - 1040*b^3*c*d*e^3*g - 3498*b*c^3*d^2*e^2*f + 1320*b^2*c^2*d*
e^3*f + 3144*b^2*c^2*d^2*e^2*g))/(3465*c^5*e^3) - (x*(d + e*x)^(1/2)*(44*c^
5*d^3*e^2*f - 176*b^3*c^2*e^5*f + 128*b^4*c*e^5*g + 1910*c^5*d^4*e*g - 3498
*b*c^4*d^2*e^3*f + 1320*b^2*c^3*d*e^4*f - 4142*b*c^4*d^3*e^2*g - 1040*b^3*c
^2*d*e^4*g + 3144*b^2*c^3*d^2*e^3*g))/(3465*c^5*e^3) + (x^2*(d + e*x)^(1/2)
*(96*b^3*c^2*e^5*g - 132*b^2*c^3*e^5*f + 3432*c^5*d^2*e^3*f + 300*c^5*d^3*e
^2*g + 858*b*c^4*d*e^4*f + 1674*b*c^4*d^2*e^3*g - 684*b^2*c^3*d*e^4*g))/(34
65*c^5*e^3) + (2*e*x^4*(d + e*x)^(1/2)*(b*e*g + 32*c*d*g + 11*c*e*f))/(99*c
)))/(x + d/e)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)^{\frac{5}{2}}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(5/2)*(f + g*x), x
)
```

3.2232 $\int (d+ex)^{3/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=267

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{315c^4e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{105c^3e^2\sqrt{d+ex}}$$

```
[Out] -16/315*(-b*e+2*c*d)^2*(-2*b*e*g+c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2
*x^2)^(3/2)/c^4/e^2/(e*x+d)^(3/2)-2/9*g*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x
-c*e^2*x^2)^(3/2)/c/e^2-8/105*(-b*e+2*c*d)*(-2*b*e*g+c*d*g+3*c*e*f)*(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^3/e^2/(e*x+d)^(1/2)-2/21*(-2*b*e*g+c*d*g+
3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)*(e*x+d)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.44, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg+cdg+3cef)}{315c^4e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{105c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-16*(2*c*d - b*e)^2*(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(3/2))/(315*c^4*e^2*(d + e*x)^(3/2)) - (8*(2*c*d - b*e)*(3*c*e*
f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(105*c^3*
e^2*Sqrt[d + e*x]) - (2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(21*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(9*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{9ce^2} - \frac{(2(\frac{3}{2}e(-2ce}{}$$

$$= -\frac{2(3cef+cdg-2beg)\sqrt{d+ex}\,(d(cd-be)-be^2x-ce^2x^2)^{3}}{21c^2e^2}$$

$$= -\frac{8(2cd-be)(3cef+cdg-2beg)\,(d(cd-be)-be^2x-ce^2x^2}{105c^3e^2\sqrt{d+ex}}$$

$$= -\frac{16(2cd-be)^2(3cef+cdg-2beg)\,(d(cd-be)-be^2x-ce^2}{315c^4e^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.16, size = 179, normalized size = 0.67

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\,(-16b^3e^3g+24b^2ce^2(4dg+e(f+gx))-6bc^2e(31d^2g+de(22f+20gx}{315c^4e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-16*b^3*e
^3*g + 24*b^2*c*e^2*(4*d*g + e*(f + g*x)) - 6*b*c^2*e*(31*d^2*g + e^2*x*(6*
f + 5*g*x) + d*e*(22*f + 20*g*x)) + c^3*(106*d^3*g + 5*e^3*x^2*(9*f + 7*g*x
) + 6*d*e^2*x*(27*f + 20*g*x) + 3*d^2*e*(71*f + 53*g*x))))/(315*c^4*e^2*Sqr
t[d + e*x])
```

fricas [A] time = 1.50, size = 352, normalized size = 1.32

$$\frac{2(35c^4e^4gx^4+5(9c^4e^4f+(17c^4de^3+bc^3e^4)g)x^3+3(3(13c^4de^3+bc^3e^4)f+(13c^4d^2e^2+10bc^3de^3-2b^2c^2e^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/315*(35*c^4*e^4*g*x^4 + 5*(9*c^4*e^4*f + (17*c^4*d*e^3 + b*c^3*e^4)*g)*x^
3 + 3*(3*(13*c^4*d*e^3 + b*c^3*e^4)*f + (13*c^4*d^2*e^2 + 10*b*c^3*d*e^3 -
2*b^2*c^2*e^4)*g)*x^2 - 3*(71*c^4*d^3*e - 115*b*c^3*d^2*e^2 + 52*b^2*c^2*d*
e^3 - 8*b^3*c*e^4)*f - 2*(53*c^4*d^4 - 146*b*c^3*d^3*e + 141*b^2*c^2*d^2*e^
2 - 56*b^3*c*d*e^3 + 8*b^4*e^4)*g + (3*(17*c^4*d^2*e^2 + 22*b*c^3*d*e^3 - 4
*b^2*c^2*e^4)*f - (53*c^4*d^3*e - 93*b*c^3*d^2*e^2 + 48*b^2*c^2*d*e^3 - 8*b
^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c
^4*e^3*x + c^4*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(ex+d)^{\frac{3}{2}}\left(gx+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(3/2)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 235, normalized size = 0.88

$$-\frac{2\,(cex+be-cd)\left(-35g\,e^3x^3c^3+30b\,c^2e^3g\,x^2-120c^3d\,e^2g\,x^2-45c^3e^3f\,x^2-24b^2c\,e^3gx+120b\,c^2d\,e^2gx+36\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/315*(c*e*x+b*e-c*d)*(-35*c^3*e^3*g*x^3+30*b*c^2*e^3*g*x^2-120*c^3*d*e^2*
g*x^2-45*c^3*e^3*f*x^2-24*b^2*c*e^3*g*x+120*b*c^2*d*e^2*g*x+36*b*c^2*e^3*f*
x-159*c^3*d^2*e*g*x-162*c^3*d*e^2*f*x+16*b^3*e^3*g-96*b^2*c*d*e^2*g-24*b^2*
c*e^3*f+186*b*c^2*d^2*e*g+132*b*c^2*d*e^2*f-106*c^3*d^3*g-213*c^3*d^2*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^4/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 0.82, size = 354, normalized size = 1.33

$$\frac{2\left(15\,c^3e^3x^3-71\,c^3d^3+115\,bc^2d^2e-52\,b^2cde^2+8\,b^3e^3+3\left(13\,c^3de^2+bc^2e^3\right)x^2+\left(17\,c^3d^2e+22\,bc^2de^2-4\,b^2\right.\right.}{105\left(c^3e^2x+c^3de\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/105*(15*c^3*e^3*x^3 - 71*c^3*d^3 + 115*b*c^2*d^2*e - 52*b^2*c*d*e^2 + 8*b
^3*e^3 + 3*(13*c^3*d*e^2 + b*c^2*e^3)*x^2 + (17*c^3*d^2*e + 22*b*c^2*d*e^2
- 4*b^2*c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^3*e^2*x + c^3*d*e
) + 2/315*(35*c^4*e^4*x^4 - 106*c^4*d^4 + 292*b*c^3*d^3*e - 282*b^2*c^2*d^2
*e^2 + 112*b^3*c*d*e^3 - 16*b^4*e^4 + 5*(17*c^4*d*e^3 + b*c^3*e^4)*x^3 + 3*
(13*c^4*d^2*e^2 + 10*b*c^3*d*e^3 - 2*b^2*c^2*e^4)*x^2 - (53*c^4*d^3*e - 93*
b*c^3*d^2*e^2 + 48*b^2*c^2*d*e^3 - 8*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)
*(e*x + d)*g/(c^4*e^3*x + c^4*d*e^2)
```

mupad [B] time = 2.89, size = 337, normalized size = 1.26

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(b\,e\,g+17\,c\,d\,g+9\,c\,e\,f\right)}{63\,c}+\frac{2\,e\,g\,x^4\,\sqrt{d+e\,x}}{9}+\frac{2\,x^2\,\sqrt{d+e\,x}\,\left(-2\,g\,b^2\,e^2+10\,g\,b\,c\,d\,e+3\,f\,b\,c\,e^2+\right.}{105\,c^2\,e}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^3*(d + e*x)^(1/2)*(b*e*g
 + 17*c*d*g + 9*c*e*f))/(63*c) + (2*e*g*x^4*(d + e*x)^(1/2))/9 + (2*x^2*(d
+ e*x)^(1/2)*(13*c^2*d^2*g - 2*b^2*e^2*g + 3*b*c*e^2*f + 39*c^2*d*e*f + 10*
b*c*d*e*g))/(105*c^2*e) + (2*(b*e - c*d)*(d + e*x)^(1/2)*(106*c^3*d^3*g - 1
6*b^3*e^3*g + 24*b^2*c*e^3*f + 213*c^3*d^2*e*f - 132*b*c^2*d*e^2*f - 186*b*
c^2*d^2*e*g + 96*b^2*c*d*e^2*g))/(315*c^4*e^3) + (x*(d + e*x)^(1/2)*(102*c^
4*d^2*e^2*f - 24*b^2*c^2*e^4*f + 16*b^3*c*e^4*g - 106*c^4*d^3*e*g + 132*b*c
^3*d*e^3*f + 186*b*c^3*d^2*e^2*g - 96*b^2*c^2*d*e^3*g))/(315*c^4*e^3)))/(x
+ d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)^{\frac{3}{2}}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(3/2)*(f + g*x), x
)
```

3.2233 $\int \sqrt{d+ex}\,(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=191

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cdg+7cef)}{105c^3e^2(d+ex)^{3/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cd}{35c^2e^2\sqrt{d+ex}}$$

```
[Out] -4/105*(-b*e+2*c*d)*(-4*b*e*g+c*d*g+7*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(3/2)/c^3/e^2/(e*x+d)^(3/2)-2/35*(-4*b*e*g+c*d*g+7*c*e*f)*(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(3/2)/c^2/e^2/(e*x+d)^(1/2)-2/7*g*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(3/2)*(e*x+d)^(1/2)/c/e^2
```

Rubi [A] time = 0.30, antiderivative size = 191, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cdg+7cef)}{35c^2e^2\sqrt{d+ex}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-4beg+cd}{105c^3e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-4*(2*c*d - b*e)*(7*c*e*f + c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(3/2))/(105*c^3*e^2*(d + e*x)^(3/2)) - (2*(7*c*e*f + c*d*g - 4*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(35*c^2*e^2*Sqrt[d + e*x])
 - (2*g*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(7*c*e^2
)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{2g\sqrt{d+ex}\,\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{7ce^2} - \frac{(2(\frac{3}{2}e(-2ce^2f}{}$$

$$= -\frac{2(7cef+cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{35c^2e^2\sqrt{d+ex}} - \frac{2g\sqrt{d}}{}$$

$$= -\frac{4(2cd-be)(7cef+cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3}}{105c^3e^2(d+ex)^{3/2}}$$

Mathematica [**A**] time = 0.10, size = 119, normalized size = 0.62

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\,(8b^2e^2g-2bce(15dg+7ef+6egx)+c^2(22d^2g+de(49f+33gx)+3e}{105c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*e^2
*g - 2*b*c*e*(7*e*f + 15*d*g + 6*e*g*x) + c^2*(22*d^2*g + 3*e^2*x*(7*f + 5*
g*x) + d*e*(49*f + 33*g*x))))/(105*c^3*e^2*Sqrt[d + e*x])
```

fricas [**A**] time = 1.02, size = 233, normalized size = 1.22

$$\frac{2\,(15\,c^3e^3gx^3+3\,(7\,c^3e^3f+(6\,c^3de^2+bc^2e^3)g)x^2-7\,(7\,c^3d^2e-9\,bc^2de^2+2\,b^2ce^3)f-2\,(11\,c^3d^3-26\,bc^2d^2e+1}{105\,(c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/105*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f + (6*c^3*d*e^2 + b*c^2*e^3)*g)*x^2
 - 7*(7*c^3*d^2*e - 9*b*c^2*d*e^2 + 2*b^2*c*e^3)*f - 2*(11*c^3*d^3 - 26*b*c
^2*d^2*e + 19*b^2*c*d*e^2 - 4*b^3*e^3)*g + (7*(4*c^3*d*e^2 + b*c^2*e^3)*f -
 (11*c^3*d^2*e - 15*b*c^2*d*e^2 + 4*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x + c^3*d*e^2)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.04, size = 139, normalized size = 0.73

$$\frac{2\,(cex+be-cd)\,(15g\,x^2c^2e^2-12bc\,e^2gx+33c^2degx+21c^2e^2fx+8b^2e^2g-30bcdeg-14bc\,e^2f+22c^2d^2g+49c^2}{105\sqrt{ex+d}\;c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/105*(c*e*x+b*e-c*d)*(15*c^2*e^2*g*x^2-12*b*c*e^2*g*x+33*c^2*d*e*g*x+21*c^
2*e^2*f*x+8*b^2*e^2*g-30*b*c*d*e*g-14*b*c*e^2*f+22*c^2*d^2*g+49*c^2*d*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/c^3/e^2/(e*x+d)^(1/2)
```

maxima [A] time = 0.79, size = 236, normalized size = 1.24

$$\frac{2\left(3\,c^2e^2x^2 - 7\,c^2d^2 + 9\,bcde - 2\,b^2e^2 + \left(4\,c^2de + bce^2\right)x\right)\sqrt{-cex + cd - be}\,(ex + d)f}{15\left(c^2e^2x + c^2de\right)} + \frac{2\left(15\,c^3e^3x^3 - 22\,c^3d^3 + 5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/15*(3*c^2*e^2*x^2 - 7*c^2*d^2 + 9*b*c*d*e - 2*b^2*e^2 + (4*c^2*d*e + b*c*
e^2)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^2*e^2*x + c^2*d*e) + 2/105*
(15*c^3*e^3*x^3 - 22*c^3*d^3 + 52*b*c^2*d^2*e - 38*b^2*c*d*e^2 + 8*b^3*e^3
+ 3*(6*c^3*d*e^2 + b*c^2*e^3)*x^2 - (11*c^3*d^2*e - 15*b*c^2*d*e^2 + 4*b^2*
c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^3*e^3*x + c^3*d*e^2)
```

mupad [B] time = 2.65, size = 219, normalized size = 1.15

$$\frac{\left(\frac{2\,g\,x^3\,\sqrt{d+e\,x}}{7} + \frac{2\,x^2\,\sqrt{d+e\,x}\,\left(b\,e\,g+6\,c\,d\,g+7\,c\,e\,f\right)}{35\,c\,e} + \frac{2\,(b\,e-c\,d)\,\sqrt{d+e\,x}\,\left(8\,g\,b^2\,e^2-30\,g\,b\,c\,d\,e-14\,f\,b\,c\,e^2+22\,g\,c^2\,d^2+49\,f\,c^2\,d\,e\right)}{105\,c^3\,e^3} + \frac{x\,\sqrt{d+e\,x}\,\left(\right.}{}\right.}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x
)
```

```
[Out] (((2*g*x^3*(d + e*x)^(1/2))/7 + (2*x^2*(d + e*x)^(1/2)*(b*e*g + 6*c*d*g + 7
*c*e*f))/(35*c*e) + (2*(b*e - c*d)*(d + e*x)^(1/2)*(8*b^2*e^2*g + 22*c^2*d^
2*g - 14*b*c*e^2*f + 49*c^2*d*e*f - 30*b*c*d*e*g))/(105*c^3*e^3) + (x*(d +
e*x)^(1/2)*(14*b*c^2*e^3*f - 8*b^2*c*e^3*g + 56*c^3*d*e^2*f - 22*c^3*d^2*e*
g + 30*b*c^2*d*e^2*g))/(105*c^3*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)
^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{- (d + ex) (be - cd + cex)}\,\sqrt{d + ex}\,\left(f + gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*sqrt(d + e*x)*(f + g*x), x)
```

3.2234 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg-cdg+5cef)}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}$$

```
[Out] -2/15*(-2*b*e*g-c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c^2/e
^2/(e*x+d)^(3/2)-2/5*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2/(e*x+d)
^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(-2beg-cdg+5cef)}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/Sqrt[d + e*x],x]
```

```
[Out] (-2*(5*c*e*f - c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)
)/(15*c^2*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(3/2))/(5*c*e^2*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{\sqrt{d+ex}}\,dx &= -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{5ce^2\sqrt{d+ex}}-\frac{\Bigg(2\bigg(\frac{3}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\big(ce^3}{}\\ &= -\frac{2(5cef-cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{15c^2e^2(d+ex)^{3/2}}-\frac{2g\big(d(cd-be}{5ce}\end{aligned}$$

Mathematica [A] time = 0.06, size = 76, normalized size = 0.64

$$\frac{2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+5ef+3egx)-2beg)}{15c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/Sqrt[d + e*
x],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*g
+ c*(5*e*f + 2*d*g + 3*e*g*x)))/(15*c^2*e^2*Sqrt[d + e*x])
```

fricas [**A**] time = 1.31, size = 140, normalized size = 1.19

$$\frac{2\left(3\,c^2e^2gx^2-5\left(c^2de-bce^2\right)f-2\left(c^2d^2-2\,bcde+b^2e^2\right)g+\left(5\,c^2e^2f-\left(c^2de-bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd}}{15\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/15*(3*c^2*e^2*g*x^2 - 5*(c^2*d*e - b*c*e^2)*f - 2*(c^2*d^2 - 2*b*c*d*e +
b^2*e^2)*g + (5*c^2*e^2*f - (c^2*d*e - b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(gx+f\right)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/sqrt(e*x + d
), x)
```

maple [**A**] time = 0.04, size = 79, normalized size = 0.67

$$-\frac{2\left(cex+be-cd\right)\left(-3cegx+2beg-2cdg-5cef\right)\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}{15\sqrt{ex+d}\;c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/15*(c*e*x+b*e-c*d)*(-3*c*e*g*x+2*b*e*g-2*c*d*g-5*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(1/2)/c^2/e^2/(e*x+d)^(1/2)
```

maxima [**A**] time = 0.67, size = 112, normalized size = 0.95

$$\frac{2\left(cex-cd+be\right)\sqrt{-cex+cd-be}\,f}{3\,ce}+\frac{2\left(3\,c^2e^2x^2-2\,c^2d^2+4\,bcde-2\,b^2e^2-\left(c^2de-bce^2\right)x\right)\sqrt{-cex+cd-be}\,g}{15\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(c*e*x - c*d + b*e)*sqrt(-c*e*x + c*d - b*e)*f/(c*e) + 2/15*(3*c^2*e^2*
x^2 - 2*c^2*d^2 + 4*b*c*d*e - 2*b^2*e^2 - (c^2*d*e - b*c*e^2)*x)*sqrt(-c*e*
x + c*d - b*e)*g/(c^2*e^2)
```

mupad [B] time = 2.50, size = 100, normalized size = 0.85

$$\frac{\left(\frac{2\,g\,x^2}{5}+\frac{2\,x\,\left(b\,e\,g-c\,d\,g+5\,c\,e\,f\right)}{15\,c\,e}+\frac{2\,\left(b\,e-c\,d\right)\,\left(2\,c\,d\,g-2\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^2\,e^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] (((2*g*x^2)/5 + (2*x*(b*e*g - c*d*g + 5*c*e*f))/(15*c*e) + (2*(b*e - c*d)*(
2*c*d*g - 2*b*e*g + 5*c*e*f))/(15*c^2*e^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*
e^2*x)^(1/2))/(d + e*x)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\left(f+gx\right)}{\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/sqrt(d + e*x), x)
```

3.2235 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=186

$$\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2\sqrt{2cd-be}\,(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be\right.}{3ce^2(d+e}$$

```
[Out] -2/3*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2/(e*x+d)^(3/2)-2*(-d*g+e
*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+
d)^(1/2))*(-b*e+2*c*d)^(1/2)/e^2+2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x
^2)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.35, antiderivative size = 186, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2\sqrt{2cd-be}\,(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2}-\frac{2g\left(d(cd-be)-be\right.}{3ce^2(d+e}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(3/2),x
]
```

```
[Out] (2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*Sqrt[d + e*x
]) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*c*e^2*(d + e*x)^(
3/2)) - (2*Sqrt[2*c*d - b*e]*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{3/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3ce^2(d+ex)^{3/2}} - \frac{\left(2\left(\frac{3}{2}e\left(-2ce^2f+be^2g\right)-\frac{3}{2}\right.\right.(-ce}{}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

$$= \frac{2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{2g\left(d(cd-be)-be^2x-ce^2x\right.}{3ce^2(d+ex)^{3/2}}$$

Mathematica [A] time = 0.19, size = 154, normalized size = 0.83

$$\frac{2\sqrt{d+ex}\,\sqrt{c(d-ex)-be}\,\left(\sqrt{c(d-ex)-be}\,(beg+c(-4dg+3ef+egx))+3c\sqrt{2cd-be}\,(dg-ef)\tanh^{-1}\left(\frac{\sqrt{-be+cd}}{\sqrt{2cd-}}\right.\right.}{3ce^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*Sqrt[-(b*e) + c*(d - e*x)]*(Sqrt[-(b*e) + c*(d - e*x)]*(b*
e*g + c*(3*e*f - 4*d*g + e*g*x)) + 3*c*Sqrt[2*c*d - b*e]*(-(e*f) + d*g)*Arc
Tanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(3*c*e^2*Sqrt[(d + e*x)*(
-(b*e) + c*(d - e*x))])
```

fricas [A] time = 1.20, size = 419, normalized size = 2.25

$$\left[-\frac{3\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{2\,cd-be}\,\log\left(-\frac{ce^2x^2-3\,cd^2+2\,bde-2\left(cde-be^2\right)x-2\,\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{2\,cd-be}\,\sqrt{ex+d}}{e^2x^2+2\,dex+d^2}\right)}{3\left(ce^3x+cde^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/3*(3*(c*d*e*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(2*c*d - b*e)*log(
-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e
*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x + 3*c*e*
f - (4*c*d - b*e)*g)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2), -2/3*(3*(c*d*e*f -
 c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b
*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*
g*x + 3*c*e*f - (4*c*d - b*e)*g)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\left(gx+f\right)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(3
/2), x)
```

maple [A] time = 0.09, size = 330, normalized size = 1.77

$$\frac{2\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(3bcdeg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3bc\,e^{2}f\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-6c^{2}d^{2}g\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(3*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*b*c*d*e*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))*b*c*e^2*f-6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*
g+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d*e*f+x*c*e*g*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+b*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)-4*c*d*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+3*c*e*f*(-c*e*x-b
*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2
/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\,\left(gx+f\right)}{\left(ex+d\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(3
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}{{\left(d+e\,x\right)}^{3/2}} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(3/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(3/2), x
)
```

3.2236 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-5cdg+cef)}{e^2\sqrt{d+ex}\,(2cd-be)}+\frac{(2beg-5cdg+ce}{}$$

```
[Out] -(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*x+d)
^(5/2)+(2*b*e*g-5*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/
2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(1/2)-(2*b*e*g-5*c*d*
g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(1
/2)
```

Rubi [A] time = 0.36, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(2beg-5cdg+cef)}{e^2\sqrt{d+ex}\,(2cd-be)}+\frac{(2beg-5cdg+ce}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(5/2),x
]
```

```
[Out] -(((c*e*f - 5*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*(2*c*d - b*e)*Sqrt[d + e*x])) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(3/2))/(e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + ((c*e*f - 5*c*d*g
+ 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d -
b*e]*Sqrt[d + e*x])])/(e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{5/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{e^2(2cd-be)(d+ex)^{5/2}} - \frac{(cef-5cdg+2beg)\int \frac{\sqrt{c}}{}}{2e(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

$$= -\frac{(cef-5cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)\sqrt{d+ex}} - \frac{(ef-dg)\left(d(cd-\right.}{e^2(2cd-}$$

Mathematica [A] time = 0.23, size = 173, normalized size = 0.78

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left((d+ex)\sqrt{2cd-be}\,(-2beg+5cdg-cef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)-(2cd-be)\sqrt{c(d-ex)-}\right.}{e^2(d+ex)^{3/2}(be-2cd)\sqrt{c(d-ex)-be}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
5/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-((2*c*d - b*e)*(-(e*f) + 3*d*g +
2*e*g*x)*Sqrt[-(b*e) + c*(d - e*x)]) + Sqrt[2*c*d - b*e]*(-(c*e*f) + 5*c*d*
g - 2*b*e*g)*(d + e*x)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))
/(e^2*(-2*c*d + b*e)*(d + e*x)^(3/2)*Sqrt[-(b*e) + c*(d - e*x)])
```

fricas [A] time = 0.84, size = 659, normalized size = 2.96

$$\left[\frac{\left(cd^2ef+\left(ce^3f-\left(5\,cde^2-2\,be^3\right)g\right)x^2-\left(5\,cd^3-2\,bd^2e\right)g+2\left(cde^2f-\left(5\,cd^2e-2\,bde^2\right)g\right)x\right)\sqrt{2\,cd-be}\,\log\left(-\frac{ce^2}{}\right.}{2\left(2\,cd^3e^2\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*((c*d^2*e*f + (c*e^3*f - (5*c*d*e^2 - 2*b*e^3)*g)*x^2 - (5*c*d^3 - 2*b
*d^2*e)*g + 2*(c*d*e^2*f - (5*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d - b*e)*
log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2
*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*(2*c*d*e -
 b*e^2)*g*x - (2*c*d*e - b*e^2)*f + 3*(2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(
2*c*d^3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^
4)*x), ((c*d^2*e*f + (c*e^3*f - (5*c*d*e^2 - 2*b*e^3)*g)*x^2 - (5*c*d^3 - 2
*b*d^2*e)*g + 2*(c*d*e^2*f - (5*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(-2*c*d + b*
e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqr
t(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2
*x + c*d^2 - b*d*e)*(2*(2*c*d*e - b*e^2)*g*x - (2*c*d*e - b*e^2)*f + 3*(2*c
*d^2 - b*d*e)*g)*sqrt(e*x + d))/(2*c*d^3*e^2 - b*d^2*e^3 + (2*c*d*e^4 - b*e
^5)*x^2 + 2*(2*c*d^2*e^3 - b*d*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: AttributeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: AttributeError >> type
```

maple [A] time = 0.07, size = 359, normalized size = 1.61

$$\frac{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;\left(-2b\,e^2gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+5cdegx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c\,e^2fx\arctan\left(\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x)
```

```
[Out] (-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(3/2)*(-2*arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*e^2*g+5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))*x*c*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*x*c*e^2*f+2*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*x*e*g-2*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*d*e*g+5*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*c*d^2*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*c*d*e*f+3*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*d*g-(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*e*f)/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\left(gx+f\right)}{\left(ex+d\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(5
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(5/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(5/2), x
)
```

3.2237 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=231

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(d+ex)^{7/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+7cdg+cef)}{4e^2(d+ex)^{3/2}(2cd-be)}+\frac{c(-4beg+7cdg}{}$$

```
[Out] -1/2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^(7/2)+1/4*c*(-4*b*e*g+7*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(3/2)-1/4*
(-4*b*e*g+7*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2
*c*d)/(e*x+d)^(3/2)
```

Rubi [A] time = 0.37, antiderivative size = 231, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = $\{792, 662, 660, 208\}$

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{2e^2(d+ex)^{7/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+7cdg+cef)}{4e^2(d+ex)^{3/2}(2cd-be)}+\frac{c(-4beg+7cdg}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(7/2),x
]
```

```
[Out] -((c*e*f + 7*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4
*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(3/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) + (c*(c*e*f + 7*
c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*
c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{7/2}}\,dx = -\frac{(ef-dg)\big(d(cd-be)-be^2x-ce^2x^2\big)^{3/2}}{2e^2(2cd-be)(d+ex)^{7/2}} + \frac{(cef+7cdg-4beg)\int \sqrt{c}}{4e(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\big(d(cd-}{2e^2(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\big(d(cd-}{2e^2(2cd-}$$

$$= -\frac{(cef+7cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\big(d(cd-}{2e^2(2cd-}$$

Mathematica [A]   time = 0.60, size = 222, normalized size = 0.96

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\,\Bigg(-2e(ef-dg)(be-cd+cex)^2-\frac{e(d+ex)(-4beg+7cdg+cef)\Big(c\sqrt{e}\,(d+ex)\sqrt{c(d-ex)-be}\,\tan^{-1}\Big(\frac{\sqrt{e}\,\sqrt{c(d-ex)-b}}{\sqrt{e(be-2cd)}}}{\sqrt{e(be-2cd)}}}{4e^3(d+ex)^{5/2}(be-2cd)(be-cd+cex)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
7/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*e*(e*f - d*g)*(-(c*d) + b*e + c
*e*x)^2 - (e*(c*e*f + 7*c*d*g - 4*b*e*g)*(d + e*x)*(-(Sqrt[e*(-2*c*d + b*e)
]*(-(c*d) + b*e + c*e*x)) + c*Sqrt[e]*(d + e*x)*Sqrt[-(b*e) + c*(d - e*x)]*
ArcTan[(Sqrt[e]*Sqrt[-(b*e) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/Sqrt[
e*(-2*c*d + b*e)]))/(4*e^3*(-2*c*d + b*e)*(d + e*x)^(5/2)*(-(c*d) + b*e + c
*e*x))
```

fricas [B]   time = 1.20, size = 1043, normalized size = 4.52

$$\Bigg[\frac{\big(c^2d^3ef+\big(c^2e^4f+\big(7\,c^2de^3-4\,bce^4\big)g\big)x^3+3\,\big(c^2de^3f+\big(7\,c^2d^2e^2-4\,bcde^3\big)g\big)x^2+\big(7\,c^2d^4-4\,bcd^3e\big)g+3\,\big(c^2d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [1/8*((c^2*d^3*e*f + (c^2*e^4*f + (7*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2
*d*e^3*f + (7*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (7*c^2*d^4 - 4*b*c*d^3*e)
*g + 3*(c^2*d^2*e^2*f + (7*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2*c*d - b*
e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2
+ 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((6*c^2*d^
2*e - 7*b*c*d*e^2 + 2*b^2*e^3)*f + (10*c^2*d^3 - 9*b*c*d^2*e + 2*b^2*d*e^2)
*g - ((2*c^2*d*e^2 - b*c*e^3)*f - (18*c^2*d^2*e - 17*b*c*d*e^2 + 4*b^2*e^3)
*g)*x)*sqrt(e*x + d))/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^3 + b^2*d^3*e^4 + (4*c^2
*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^3*e^4 - 4*b*c*d^2*e^5 +
b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 + b^2*d^2*e^5)*x), 1/4*((
c^2*d^3*e*f + (c^2*e^4*f + (7*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2*d*e^3*
f + (7*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (7*c^2*d^4 - 4*b*c*d^3*e)*g + 3*
(c^2*d^2*e^2*f + (7*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arc
tan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x
+ d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*((6*c^2*d^2*e - 7*b*c*d*e^2 + 2*b^2*e^3)*f + (10*c^2*d^3 - 9*
b*c*d^2*e + 2*b^2*d*e^2)*g - ((2*c^2*d*e^2 - b*c*e^3)*f - (18*c^2*d^2*e - 1
7*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(4*c^2*d^5*e^2 - 4*b*c*d^4*e^
3 + b^2*d^3*e^4 + (4*c^2*d^2*e^5 - 4*b*c*d*e^6 + b^2*e^7)*x^3 + 3*(4*c^2*d^
3*e^4 - 4*b*c*d^2*e^5 + b^2*d*e^6)*x^2 + 3*(4*c^2*d^4*e^3 - 4*b*c*d^3*e^4 +
 b^2*d^2*e^5)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(7
/2), x)
```

maple [B] time = 0.08, size = 630, normalized size = 2.73

$$-\frac{\left(4bc\,e^{3}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - 7c^{2}d\,e^{2}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - c^{2}e^{3}f\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) + 8bcd\,e^{2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x)
```

```
[Out] -1/4*(4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c*e^3*g-7*ar
ctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*d*e^2*g-arctan((-c*e
*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^2*e^3*f+8*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c*d*e^2*g-14*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))*x*c^2*d^2*e*g-2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*x*c^2*d*e^2*f+4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*
c*d^2*e*g-7*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^3*g-arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*e*f+4*x*b*e^2*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-9*x*c*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-
2*c*d)^(1/2)+x*c*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2*b*d*e*g*(
-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2*b*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b
*e-2*c*d)^(1/2)-5*c*d^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-3*c*d*e*
f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2
)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)/(e*x+d)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(7
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(7/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(f+gx\right)}{\left(d+ex\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(7/2), x
)
```

3.2238 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=307

$$\frac{c^2(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{5/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{8e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{(ef}{}$$

```
[Out] -1/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^(9/2)+1/8*c^2*(-2*b*e*g+3*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c
*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(5/2)-1/
4*(-2*b*e*g+3*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e
+2*c*d)/(e*x+d)^(5/2)+1/8*c*(-2*b*e*g+3*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^(3/2)
```

Rubi [A] time = 0.53, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^2(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{5/2}}+\frac{c\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{8e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{(ef}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(9/2),x
]
```

```
[Out] -((c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(4
*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + (c*(c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(8*e^2*(2*c*d - b*e)^2*(d + e*x)^(3/2)
) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d
 - b*e)*(d + e*x)^(9/2)) + (c^2*(c*e*f + 3*c*d*g - 2*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e
^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^{9/2}} + \frac{(cef+3cdg-2beg)\int \sqrt{c}}{2e(2cd-}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg)\left(d(cd-\right.}{3e^2(2cd-}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

$$= -\frac{(cef+3cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(cef+3cdg-2}{8e^2(2}$$

Mathematica [C] time = 0.13, size = 128, normalized size = 0.42

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(-\frac{3c^2(d+ex)^3(-2beg+3cdg+cef)\,{}_2F_1\left(\frac{3}{2},3;\frac{5}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+3dg-3ef\right)}{9e^2(d+ex)^{9/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e*f + 3*d*g - (3*c^2*(c*e*f +
 3*c*d*g - 2*b*e*g)*(d + e*x)^3*Hypergeometric2F1[3/2, 3, 5/2, (-(c*d) + b*
e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3))/(9*e^2*(2*c*d - b*e)*(d + e*x
)^(9/2))
```

fricas [B] time = 1.00, size = 1604, normalized size = 5.22

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/48*(3*(c^3*d^4*e*f + (c^3*e^5*f + (3*c^3*d*e^4 - 2*b*c^2*e^5)*g)*x^4 +
4*(c^3*d*e^4*f + (3*c^3*d^2*e^3 - 2*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f
+ (3*c^3*d^3*e^2 - 2*b*c^2*d^2*e^3)*g)*x^2 + (3*c^3*d^5 - 2*b*c^2*d^4*e)*g
+ 4*(c^3*d^3*e^2*f + (3*c^3*d^4*e - 2*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d - b*e
)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 +
 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*
d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e^2 - 7*b*c^2*d*e^3 + 2*b^2*c*e^4)*g)*x^2
 - (50*c^3*d^3*e - 85*b*c^2*d^2*e^2 + 46*b^2*c*d*e^3 - 8*b^3*e^4)*f - (22*c
^3*d^4 - 35*b*c^2*d^3*e + 20*b^2*c*d^2*e^2 - 4*b^3*d*e^3)*g + 2*((10*c^3*d^
2*e^2 - 7*b*c^2*d*e^3 + b^2*c*e^4)*f - (34*c^3*d^3*e - 55*b*c^2*d^2*e^2 + 3
1*b^2*c*d*e^3 - 6*b^3*e^4)*g)*x)*sqrt(e*x + d))/(8*c^3*d^7*e^2 - 12*b*c^2*d
^6*e^3 + 6*b^2*c*d^5*e^4 - b^3*d^4*e^5 + (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7
+ 6*b^2*c*d*e^8 - b^3*e^9)*x^4 + 4*(8*c^3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^
2*c*d^2*e^7 - b^3*d*e^8)*x^3 + 6*(8*c^3*d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*
c*d^3*e^6 - b^3*d^2*e^7)*x^2 + 4*(8*c^3*d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*
c*d^4*e^5 - b^3*d^3*e^6)*x), 1/24*(3*(c^3*d^4*e*f + (c^3*e^5*f + (3*c^3*d*e
^4 - 2*b*c^2*e^5)*g)*x^4 + 4*(c^3*d*e^4*f + (3*c^3*d^2*e^3 - 2*b*c^2*d*e^4)
*g)*x^3 + 6*(c^3*d^2*e^3*f + (3*c^3*d^3*e^2 - 2*b*c^2*d^2*e^3)*g)*x^2 + (3*
c^3*d^5 - 2*b*c^2*d^4*e)*g + 4*(c^3*d^3*e^2*f + (3*c^3*d^4*e - 2*b*c^2*d^3*
e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)
) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*d*e^3 - b*c^2*e^4
)*f + (6*c^3*d^2*e^2 - 7*b*c^2*d*e^3 + 2*b^2*c*e^4)*g)*x^2 - (50*c^3*d^3*e
- 85*b*c^2*d^2*e^2 + 46*b^2*c*d*e^3 - 8*b^3*e^4)*f - (22*c^3*d^4 - 35*b*c^2
*d^3*e + 20*b^2*c*d^2*e^2 - 4*b^3*d*e^3)*g + 2*((10*c^3*d^2*e^2 - 7*b*c^2*d
*e^3 + b^2*c*e^4)*f - (34*c^3*d^3*e - 55*b*c^2*d^2*e^2 + 31*b^2*c*d*e^3 - 6
*b^3*e^4)*g)*x)*sqrt(e*x + d))/(8*c^3*d^7*e^2 - 12*b*c^2*d^6*e^3 + 6*b^2*c*
d^5*e^4 - b^3*d^4*e^5 + (8*c^3*d^3*e^6 - 12*b*c^2*d^2*e^7 + 6*b^2*c*d*e^8 -
 b^3*e^9)*x^4 + 4*(8*c^3*d^4*e^5 - 12*b*c^2*d^3*e^6 + 6*b^2*c*d^2*e^7 - b^3
*d*e^8)*x^3 + 6*(8*c^3*d^5*e^4 - 12*b*c^2*d^4*e^5 + 6*b^2*c*d^3*e^6 - b^3*d
^2*e^7)*x^2 + 4*(8*c^3*d^6*e^3 - 12*b*c^2*d^5*e^4 + 6*b^2*c*d^4*e^5 - b^3*d
^3*e^6)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(9
/2), x)
```

maple [B] time = 0.11, size = 1033, normalized size = 3.36

$$\frac{\sqrt{-c\,e^2x^2 - b\,e^2x - bde + c\,d^2}\,\left(6b\,c^2e^4g\,x^3\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - 9c^3d\,e^3g\,x^3\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right) - 3c^3e^4f\,x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x)
```

```
[Out] 1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-9*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*c^3*d^4*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*x^3*c^3*e^4*f+38*x*b*c*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^3*e*f-8*b^2*e
^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-11*c^2*d^3*g*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)-6*x^2*b*c*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)
^(1/2)+9*x^2*c^2*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-2*x*b*c*e
^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-34*x*c^2*d^2*e*g*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)+10*x*c^2*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2
*c*d)^(1/2)+12*b*c*d^2*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+30*b*c*
d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+18*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^2*d*e^3*g+18*arctan((-c*e*x-b*e+c*d)^(1/2
)/(b*e-2*c*d)^(1/2))*x*b*c^2*d^2*e^2*g-27*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*
e-2*c*d)^(1/2))*x^2*c^3*d^2*e^2*g-9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x^2*c^3*d*e^3*f-27*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2
))*x*c^3*d^3*e*g-9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^3*d
^2*e^2*f+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^3*e*g+3
*x^2*c^2*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-12*x*b^2*e^3*g*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-4*b^2*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(
b*e-2*c*d)^(1/2)-25*c^2*d^2*e*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+6*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^2*e^4*g-9*arctan((
-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^3*d*e^3*g)/(e*x+d)^(7/2)/(b*
e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\,\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(9
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}}{{\left(d + e\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(9/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{- \left(d + ex\right) \left(be - cd + cex\right)}\,\left(f + gx\right)}{\left(d + ex\right)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(f + g*x)/(d + e*x)**(9/2), x
)
```

3.2239 $\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=387

$$\frac{c^3(-8beg+11cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{7/2}}+\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{64e^2(d+ex)^{3/2}(2cd-be)^3}$$

```
[Out] -1/4*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*e+2*c*d)/(e*
x+d)^(11/2)+1/64*c^3*(-8*b*e*g+11*c*d*g+5*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(7/
2)-1/24*(-8*b*e*g+11*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/
e^2/(-b*e+2*c*d)/(e*x+d)^(7/2)+1/96*c*(-8*b*e*g+11*c*d*g+5*c*e*f)*(d*(-b*e+
c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^(5/2)+1/64*c^2*(-8
*b*e*g+11*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2
*c*d)^3/(e*x+d)^(3/2)
```

Rubi [A] time = 0.76, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+11cdg+5cef)}{64e^2(d+ex)^{3/2}(2cd-be)^3}+\frac{c^3(-8beg+11cdg+5cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(11/2),
x]
```

```
[Out] -((5*c*e*f + 11*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(24*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) + (c*(5*c*e*f + 11*c*d*g - 8*b*e*g)
*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(96*e^2*(2*c*d - b*e)^2*(d + e*
x)^(5/2)) + (c^2*(5*c*e*f + 11*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2])/(64*e^2*(2*c*d - b*e)^3*(d + e*x)^(3/2)) - ((e*f - d*g)*(d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(1
1/2)) + (c^3*(5*c*e*f + 11*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e
)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
```

```
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}}{(d+ex)^{11/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)(d+ex)^{11/2}} + \frac{(5cef+11cdg-8beg)\int}{8e(2cd -}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} - \frac{(ef-dg)\big(d(cd}{4e^2(2cd}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11cdg}{96}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11cdg}{96}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11cdg}{96}$$

$$= -\frac{(5cef+11cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{24e^2(2cd-be)(d+ex)^{7/2}} + \frac{c(5cef+11cdg}{96}$$

Mathematica [C] time = 0.15, size = 128, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(-\frac{c^3(d+ex)^4(-8beg+11cdg+5cef)\,{}_2F_1\left(\frac{3}{2},4;\frac{5}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(be-2cd)^4}+3dg-3ef\right)}{12e^2(d+ex)^{11/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2])/(d + e*x)^(
11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*e*f + 3*d*g - (c^3*(5*c*e*f +
 11*c*d*g - 8*b*e*g)*(d + e*x)^4*Hypergeometric2F1[3/2, 4, 5/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(-2*c*d + b*e)^4))/(12*e^2*(2*c*d - b*e)*(d +
e*x)^(11/2))
```

fricas [B] time = 1.17, size = 2256, normalized size = 5.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/384*(3*(5*c^4*d^5*e*f + (5*c^4*e^6*f + (11*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x
^5 + 5*(5*c^4*d*e^5*f + (11*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(5*c^4
*d^2*e^4*f + (11*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(5*c^4*d^3*e^3*
f + (11*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (11*c^4*d^6 - 8*b*c^3*d^5*e
)*g + 5*(5*c^4*d^4*e^2*f + (11*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c*
d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^
2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(
5*(2*c^4*d*e^4 - b*c^3*e^5)*f + (22*c^4*d^2*e^3 - 27*b*c^3*d*e^4 + 8*b^2*c^
2*e^5)*g)*x^3 + (5*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f + (2
86*c^4*d^3*e^2 - 395*b*c^3*d^2*e^3 + 158*b^2*c^2*d*e^4 - 16*b^3*c*e^5)*g)*x
^2 - (634*c^4*d^4*e - 1385*b*c^3*d^3*e^2 + 1094*b^2*c^2*d^2*e^3 - 376*b^3*c
*d*e^4 + 48*b^4*e^5)*f - (166*c^4*d^5 - 375*b*c^3*d^4*e + 322*b^2*c^2*d^3*e
^2 - 120*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 221*b*c^3*d^
2*e^3 + 68*b^2*c^2*d*e^4 - 8*b^3*c*e^5)*f - (714*c^4*d^4*e - 1597*b*c^3*d^3
*e^2 + 1340*b^2*c^2*d^2*e^3 - 488*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(e*x
+ d))/(16*c^4*d^9*e^2 - 32*b*c^3*d^8*e^3 + 24*b^2*c^2*d^7*e^4 - 8*b^3*c*d^6
*e^5 + b^4*d^5*e^6 + (16*c^4*d^4*e^7 - 32*b*c^3*d^3*e^8 + 24*b^2*c^2*d^2*e^
9 - 8*b^3*c*d*e^10 + b^4*e^11)*x^5 + 5*(16*c^4*d^5*e^6 - 32*b*c^3*d^4*e^7 +
 24*b^2*c^2*d^3*e^8 - 8*b^3*c*d^2*e^9 + b^4*d*e^10)*x^4 + 10*(16*c^4*d^6*e^
5 - 32*b*c^3*d^5*e^6 + 24*b^2*c^2*d^4*e^7 - 8*b^3*c*d^3*e^8 + b^4*d^2*e^9)*
x^3 + 10*(16*c^4*d^7*e^4 - 32*b*c^3*d^6*e^5 + 24*b^2*c^2*d^5*e^6 - 8*b^3*c*
d^4*e^7 + b^4*d^3*e^8)*x^2 + 5*(16*c^4*d^8*e^3 - 32*b*c^3*d^7*e^4 + 24*b^2*
c^2*d^6*e^5 - 8*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x), 1/192*(3*(5*c^4*d^5*e*f +
(5*c^4*e^6*f + (11*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5 + 5*(5*c^4*d*e^5*f + (11
*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(5*c^4*d^2*e^4*f + (11*c^4*d^3*e^
3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(5*c^4*d^3*e^3*f + (11*c^4*d^4*e^2 - 8*b*c
^3*d^3*e^3)*g)*x^2 + (11*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(5*c^4*d^4*e^2*f +
(11*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^
2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
(3*(5*(2*c^4*d*e^4 - b*c^3*e^5)*f + (22*c^4*d^2*e^3 - 27*b*c^3*d*e^4 + 8*b^
2*c^2*e^5)*g)*x^3 + (5*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f
+ (286*c^4*d^3*e^2 - 395*b*c^3*d^2*e^3 + 158*b^2*c^2*d*e^4 - 16*b^3*c*e^5)*
g)*x^2 - (634*c^4*d^4*e - 1385*b*c^3*d^3*e^2 + 1094*b^2*c^2*d^2*e^3 - 376*b
^3*c*d*e^4 + 48*b^4*e^5)*f - (166*c^4*d^5 - 375*b*c^3*d^4*e + 322*b^2*c^2*d
^3*e^2 - 120*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 221*b*c^
3*d^2*e^3 + 68*b^2*c^2*d*e^4 - 8*b^3*c*e^5)*f - (714*c^4*d^4*e - 1597*b*c^3
*d^3*e^2 + 1340*b^2*c^2*d^2*e^3 - 488*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(
e*x + d))/(16*c^4*d^9*e^2 - 32*b*c^3*d^8*e^3 + 24*b^2*c^2*d^7*e^4 - 8*b^3*c
*d^6*e^5 + b^4*d^5*e^6 + (16*c^4*d^4*e^7 - 32*b*c^3*d^3*e^8 + 24*b^2*c^2*d^
2*e^9 - 8*b^3*c*d*e^10 + b^4*e^11)*x^5 + 5*(16*c^4*d^5*e^6 - 32*b*c^3*d^4*e
^7 + 24*b^2*c^2*d^3*e^8 - 8*b^3*c*d^2*e^9 + b^4*d*e^10)*x^4 + 10*(16*c^4*d^
6*e^5 - 32*b*c^3*d^5*e^6 + 24*b^2*c^2*d^4*e^7 - 8*b^3*c*d^3*e^8 + b^4*d^2*e
^9)*x^3 + 10*(16*c^4*d^7*e^4 - 32*b*c^3*d^6*e^5 + 24*b^2*c^2*d^5*e^6 - 8*b^
3*c*d^4*e^7 + b^4*d^3*e^8)*x^2 + 5*(16*c^4*d^8*e^3 - 32*b*c^3*d^7*e^4 + 24*
b^2*c^2*d^6*e^5 - 8*b^3*c*d^5*e^6 + b^4*d^4*e^7)*x)]
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)}{\left(ex + d\right)^{\frac{11}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(1
1/2), x)
```

maple [**B**] time = 0.09, size = 1541, normalized size = 3.98

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x)
```

```
[Out] -1/192*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-33*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^5*g+15*x^3*c^3*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*
(b*e-2*c*d)^(1/2)-126*x^2*b*c^2*d*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)+48*b^3*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-360*x*b^2*c*d*e
^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+620*x*b*c^2*d^2*e^2*g*(-c*e*x
-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-52*x*b*c^2*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)-83*c^3*d^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-15
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*e^5*f-15*arctan((
-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^4*e*f+16*b^3*d*e^3*g*(-c*e*x
-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-317*c^3*d^3*e*f*(-c*e*x-b*e+c*d)^(1/2)*(b
*e-2*c*d)^(1/2)+24*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*b*c
^3*e^5*g-33*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*d*e^4*
g-132*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^4*d^2*e^3*g-60
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^4*d*e^4*f-198*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^4*d^3*e^2*g-90*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^4*d^2*e^3*f-132*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^4*e*g-60*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^3*e^2*f+24*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*b*c^3*d^4*e*g+64*x*b^3*e^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)+96*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^3*d
^3*e^2*g+65*x^2*c^3*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+8*x*b^
2*c*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-357*x*c^3*d^3*e*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+117*x*c^3*d^2*e^2*f*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)-88*b^2*c*d^2*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)-280*b^2*c*d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+146*b*c^2*
d^3*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+534*b*c^2*d^2*e^2*f*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-24*x^3*b*c^2*e^4*g*(-c*e*x-b*e+c*d)^(1/2
)*(b*e-2*c*d)^(1/2)+33*x^3*c^3*d*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)+16*x^2*b^2*c*e^4*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-10*x^2*b*c
^2*e^4*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+143*x^2*c^3*d^2*e^2*g*(-c
*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+96*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))*x^3*b*c^3*d*e^4*g+144*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))*x^2*b*c^3*d^2*e^3*g)/(e*x+d)^(9/2)/(b*e-2*c*d)^(3/2)/(b^2*e^2-4*
b*c*d*e+4*c^2*d^2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)}{\left(ex + d\right)^{\frac{11}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)/(e*x + d)^(1
1/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{{\left(d+e\,x\right)}^{11/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(d + e*x)^(11/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2240 $\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=419

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{45045c^6e^2(d+ex)^{5/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/}}{9009c^5e^2(d+ex)^{3/2}}$$

```
[Out] -256/45045*(-b*e+2*c*d)^4*(-2*b*e*g+c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(5/2)/c^6/e^2/(e*x+d)^(5/2)-128/9009*(-b*e+2*c*d)^3*(-2*b*e*g+c*d*
g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^5/e^2/(e*x+d)^(3/2)-2/3
9*(-2*b*e*g+c*d*g+3*c*e*f)*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(
5/2)/c^2/e^2-2/15*g*(e*x+d)^(5/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/
e^2-32/1287*(-b*e+2*c*d)^2*(-2*b*e*g+c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c
*e^2*x^2)^(5/2)/c^4/e^2/(e*x+d)^(1/2)-16/429*(-b*e+2*c*d)*(-2*b*e*g+c*d*g+3
*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)*(e*x+d)^(1/2)/c^3/e^2
```

Rubi [A] time = 0.73, antiderivative size = 419, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg+cdg+3cef)}{45045c^6e^2(d+ex)^{5/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/}}{9009c^5e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (-256*(2*c*d - b*e)^4*(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(5/2))/(45045*c^6*e^2*(d + e*x)^(5/2)) - (128*(2*c*d - b*e)^3*
(3*c*e*f + c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9
009*c^5*e^2*(d + e*x)^(3/2)) - (32*(2*c*d - b*e)^2*(3*c*e*f + c*d*g - 2*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(1287*c^4*e^2*Sqrt[d + e*x
]) - (16*(2*c*d - b*e)*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(429*c^3*e^2) - (2*(3*c*e*f + c*d*g - 2*
b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(39*c^2
*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(
15*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{15ce^2} - \Big(2\Big(\frac{5}{2}e$$

$$= -\frac{2(3cef+cdg-2beg)(d+ex)^{3/2}\Big(d(cd-be)-be^2x-}{39c^2e^2}$$

$$= -\frac{16(2cd-be)(3cef+cdg-2beg)\sqrt{d+ex}\,\Big(d(cd-be}{429c^3e^2}$$

$$= -\frac{32(2cd-be)^2(3cef+cdg-2beg)\Big(d(cd-be)-be^2x}{1287c^4e^2\sqrt{d+ex}}$$

$$= -\frac{128(2cd-be)^3(3cef+cdg-2beg)\Big(d(cd-be)-be^2}{9009c^5e^2(d+ex)^{3/2}}$$

$$= -\frac{256(2cd-be)^4(3cef+cdg-2beg)\Big(d(cd-be)-be^2}{45045c^6e^2(d+ex)^{5/2}}$$

Mathematica [**A**] time = 0.35, size = 364, normalized size = 0.87

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\Big(-256b^5e^5g+128b^4ce^4(22dg+3ef+5egx)-32b^3c^2e^3\Big(389d^2g+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-256*b
^5*e^5*g + 128*b^4*c*e^4*(3*e*f + 22*d*g + 5*e*g*x) - 32*b^3*c^2*e^3*(389*d
^2*g + 5*e^2*x*(6*f + 7*g*x) + 2*d*e*(63*f + 100*g*x)) + 16*b^2*c^3*e^2*(17
24*d^3*g + 105*e^3*x^2*(f + g*x) + 30*d*e^2*x*(19*f + 21*g*x) + 3*d^2*e*(34
7*f + 515*g*x)) - 2*b*c^4*e*(15191*d^4*g + 105*e^4*x^3*(12*f + 11*g*x) + 42
0*d*e^3*x^2*(17*f + 16*g*x) + 30*d^2*e^2*x*(542*f + 553*g*x) + 4*d^3*e*(413
1*f + 5530*g*x)) + c^5*(12686*d^5*g + 231*e^5*x^4*(15*f + 13*g*x) + 210*d*e
^4*x^3*(90*f + 77*g*x) + 210*d^2*e^3*x^2*(203*f + 173*g*x) + 20*d^3*e^2*x*(
2505*f + 2212*g*x) + d^4*e*(29049*f + 31715*g*x))))/(45045*c^6*e^2*Sqrt[d +
 e*x])
```

fricas [**B**] time = 0.99, size = 880, normalized size = 2.10

$$-\frac{2\Big(3003\,c^7e^7gx^7+231\left(15\,c^7e^7f+4\left(11\,c^7de^6+4\,bc^6e^7\right)g\right)x^6+63\Big(10\left(19\,c^7de^6+7\,bc^6e^7\right)f+\Big(111\,c^7d^2e^5+2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/45045*(3003*c^7*e^7*g*x^7 + 231*(15*c^7*e^7*f + 4*(11*c^7*d*e^6 + 4*b*c^
6*e^7)*g)*x^6 + 63*(10*(19*c^7*d*e^6 + 7*b*c^6*e^7)*f + (111*c^7*d^2*e^5 +
278*b*c^6*d*e^6 + b^2*c^5*e^7)*g)*x^5 + 35*(3*(79*c^7*d^2*e^5 + 206*b*c^6*d
*e^6 + b^2*c^5*e^7)*f - 2*(175*c^7*d^3*e^4 - 453*b*c^6*d^2*e^5 - 9*b^2*c^5*
d*e^6 + b^3*c^4*e^7)*g)*x^4 - 5*(12*(271*c^7*d^3*e^4 - 683*b*c^6*d^2*e^5 -
19*b^2*c^5*d*e^6 + 2*b^3*c^4*e^7)*f + (4087*c^7*d^4*e^3 - 4900*b*c^6*d^3*e^
4 - 618*b^2*c^5*d^2*e^5 + 160*b^3*c^4*d*e^6 - 16*b^4*c^3*e^7)*g)*x^3 - 3*(3
*(3169*c^7*d^4*e^3 - 3628*b*c^6*d^3*e^4 - 694*b^2*c^5*d^2*e^5 + 168*b^3*c^4
*d*e^6 - 16*b^4*c^3*e^7)*f + 4*(542*c^7*d^5*e^2 + 11*b*c^6*d^4*e^3 - 862*b^
2*c^5*d^3*e^4 + 389*b^3*c^4*d^2*e^5 - 88*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*g)*
x^2 + 3*(9683*c^7*d^6*e - 30382*b*c^6*d^5*e^2 + 37267*b^2*c^5*d^4*e^3 - 234
64*b^3*c^4*d^3*e^4 + 8368*b^4*c^3*d^2*e^5 - 1600*b^5*c^2*d*e^6 + 128*b^6*c*
e^7)*f + 2*(6343*c^7*d^7 - 27877*b*c^6*d^6*e + 50517*b^2*c^5*d^5*e^2 - 4899
9*b^3*c^4*d^4*e^3 + 27648*b^4*c^3*d^3*e^4 - 9168*b^5*c^2*d^2*e^5 + 1664*b^6
*c*d*e^6 - 128*b^7*e^7)*g - (6*(1333*c^7*d^5*e^2 + 1421*b*c^6*d^4*e^3 - 414
2*b^2*c^5*d^3*e^4 + 1724*b^3*c^4*d^2*e^5 - 368*b^4*c^3*d*e^6 + 32*b^5*c^2*e
^7)*f - (6343*c^7*d^6*e - 21534*b*c^6*d^5*e^2 + 28983*b^2*c^5*d^4*e^3 - 200
16*b^3*c^4*d^3*e^4 + 7632*b^4*c^3*d^2*e^5 - 1536*b^5*c^2*d*e^6 + 128*b^6*c*
e^7)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^
3*x + c^6*d*e^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 535, normalized size = 1.28

$$-\frac{2\left(cex+be-cd\right)\left(-3003 g e^{5} x^{5} c^{5}+2310 b c^{4} e^{5} g x^{4}-16170 c^{5} d e^{4} g x^{4}-3465 c^{5} e^{5} f x^{4}-1680 b^{2} c^{3} e^{5} g x^{3}+13440 b\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/45045*(c*e*x+b*e-c*d)*(-3003*c^5*e^5*g*x^5+2310*b*c^4*e^5*g*x^4-16170*c^
5*d*e^4*g*x^4-3465*c^5*e^5*f*x^4-1680*b^2*c^3*e^5*g*x^3+13440*b*c^4*d*e^4*g
*x^3+2520*b*c^4*e^5*f*x^3-36330*c^5*d^2*e^3*g*x^3-18900*c^5*d*e^4*f*x^3+112
0*b^3*c^2*e^5*g*x^2-10080*b^2*c^3*d*e^4*g*x^2-1680*b^2*c^3*e^5*f*x^2+33180*
b*c^4*d^2*e^3*g*x^2+14280*b*c^4*d*e^4*f*x^2-44240*c^5*d^3*e^2*g*x^2-42630*c
^5*d^2*e^3*f*x^2-640*b^4*c*e^5*g*x+6400*b^3*c^2*d*e^4*g*x+960*b^3*c^2*e^5*f
*x-24720*b^2*c^3*d^2*e^3*g*x-9120*b^2*c^3*d*e^4*f*x+44240*b*c^4*d^3*e^2*g*x
+32520*b*c^4*d^2*e^3*f*x-31715*c^5*d^4*e*g*x-50100*c^5*d^3*e^2*f*x+256*b^5*
e^5*g-2816*b^4*c*d*e^4*g-384*b^4*c*e^5*f+12448*b^3*c^2*d^2*e^3*g+4032*b^3*c
^2*d*e^4*f-27584*b^2*c^3*d^3*e^2*g-16656*b^2*c^3*d^2*e^3*f+30382*b*c^4*d^4*
e*g+33048*b*c^4*d^3*e^2*f-12686*c^5*d^5*g-29049*c^5*d^4*e*f)*(-c*e^2*x^2-b*
e^2*x-b*d*e+c*d^2)^(3/2)/c^6/e^2/(e*x+d)^(3/2)
```

maxima [B] time = 1.10, size = 875, normalized size = 2.09

$$-\frac{2\left(1155\, c^{6} e^{6} x^{6}+9683\, c^{6} d^{6}-30382\, b c^{5} d^{5} e+37267\, b^{2} c^{4} d^{4} e^{2}-23464\, b^{3} c^{3} d^{3} e^{3}+8368\, b^{4} c^{2} d^{2} e^{4}-1600\, b^{5} c d e^{5}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/15015*(1155*c^6*e^6*x^6 + 9683*c^6*d^6 - 30382*b*c^5*d^5*e + 37267*b^2*c
^4*d^4*e^2 - 23464*b^3*c^3*d^3*e^3 + 8368*b^4*c^2*d^2*e^4 - 1600*b^5*c*d*e^
5 + 128*b^6*e^6 + 210*(19*c^6*d*e^5 + 7*b*c^5*e^6)*x^5 + 35*(79*c^6*d^2*e^4
 + 206*b*c^5*d*e^5 + b^2*c^4*e^6)*x^4 - 20*(271*c^6*d^3*e^3 - 683*b*c^5*d^2
*e^4 - 19*b^2*c^4*d*e^5 + 2*b^3*c^3*e^6)*x^3 - 3*(3169*c^6*d^4*e^2 - 3628*b
*c^5*d^3*e^3 - 694*b^2*c^4*d^2*e^4 + 168*b^3*c^3*d*e^5 - 16*b^4*c^2*e^6)*x^
2 - 2*(1333*c^6*d^5*e + 1421*b*c^5*d^4*e^2 - 4142*b^2*c^4*d^3*e^3 + 1724*b^
3*c^3*d^2*e^4 - 368*b^4*c^2*d*e^5 + 32*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*
e)*(e*x + d)*f/(c^5*e^2*x + c^5*d*e) - 2/45045*(3003*c^7*e^7*x^7 + 12686*c^
7*d^7 - 55754*b*c^6*d^6*e + 101034*b^2*c^5*d^5*e^2 - 97998*b^3*c^4*d^4*e^3
+ 55296*b^4*c^3*d^3*e^4 - 18336*b^5*c^2*d^2*e^5 + 3328*b^6*c*d*e^6 - 256*b^
7*e^7 + 924*(11*c^7*d*e^6 + 4*b*c^6*e^7)*x^6 + 63*(111*c^7*d^2*e^5 + 278*b*
c^6*d*e^6 + b^2*c^5*e^7)*x^5 - 70*(175*c^7*d^3*e^4 - 453*b*c^6*d^2*e^5 - 9*
b^2*c^5*d*e^6 + b^3*c^4*e^7)*x^4 - 5*(4087*c^7*d^4*e^3 - 4900*b*c^6*d^3*e^4
 - 618*b^2*c^5*d^2*e^5 + 160*b^3*c^4*d*e^6 - 16*b^4*c^3*e^7)*x^3 - 12*(542*
c^7*d^5*e^2 + 11*b*c^6*d^4*e^3 - 862*b^2*c^5*d^3*e^4 + 389*b^3*c^4*d^2*e^5
- 88*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*x^2 + (6343*c^7*d^6*e - 21534*b*c^6*d^5
*e^2 + 28983*b^2*c^5*d^4*e^3 - 20016*b^3*c^4*d^3*e^4 + 7632*b^4*c^3*d^2*e^5
 - 1536*b^5*c^2*d*e^6 + 128*b^6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d
)*g/(c^6*e^3*x + c^6*d*e^2)
```

mupad **[B]**   time = 3.93, size = 863, normalized size = 2.06

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^3\,x^6\,\sqrt{d+e\,x}\,\left(16\,b\,e\,g+44\,c\,d\,g+15\,c\,e\,f\right)}{195}+\frac{2\,e^2\,x^5\,\sqrt{d+e\,x}\,\left(g\,b^2\,e^2+278\,g\,b\,c\,d\,e+70\,f\,b\,c\,e^2+111\,g\,c^2}{715\,c}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^3*x^6*(d + e*x)^(1/2)*(
16*b*e*g + 44*c*d*g + 15*c*e*f))/195 + (2*e^2*x^5*(d + e*x)^(1/2)*(b^2*e^2*
g + 111*c^2*d^2*g + 70*b*c*e^2*f + 190*c^2*d*e*f + 278*b*c*d*e*g))/(715*c)
+ (2*c*e^4*g*x^7*(d + e*x)^(1/2))/15 + (2*(b*e - c*d)^2*(d + e*x)^(1/2)*(12
686*c^5*d^5*g - 256*b^5*e^5*g + 384*b^4*c*e^5*f + 29049*c^5*d^4*e*f - 30382
*b*c^4*d^4*e*g + 2816*b^4*c*d*e^4*g - 33048*b*c^4*d^3*e^2*f - 4032*b^3*c^2*
d*e^4*f + 16656*b^2*c^3*d^2*e^3*f + 27584*b^2*c^3*d^3*e^2*g - 12448*b^3*c^2
*d^2*e^3*g))/(45045*c^6*e^3) + (x^3*(d + e*x)^(1/2)*(160*b^4*c^3*e^7*g - 24
0*b^3*c^4*e^7*f - 32520*c^7*d^3*e^4*f - 40870*c^7*d^4*e^3*g + 81960*b*c^6*d
^2*e^5*f + 2280*b^2*c^5*d*e^6*f + 49000*b*c^6*d^3*e^4*g - 1600*b^3*c^4*d*e^
6*g + 6180*b^2*c^5*d^2*e^5*g))/(45045*c^6*e^3) + (x^4*(d + e*x)^(1/2)*(210*
b^2*c^5*e^7*f - 140*b^3*c^4*e^7*g + 16590*c^7*d^2*e^5*f - 24500*c^7*d^3*e^4
*g + 43260*b*c^6*d*e^6*f + 63420*b*c^6*d^2*e^5*g + 1260*b^2*c^5*d*e^6*g))/(
45045*c^6*e^3) - (x^2*(d + e*x)^(1/2)*(192*b^5*c^2*e^7*g - 288*b^4*c^3*e^7*
f + 57042*c^7*d^4*e^3*f + 13008*c^7*d^5*e^2*g - 65304*b*c^6*d^3*e^4*f + 302
4*b^3*c^4*d*e^6*f + 264*b*c^6*d^4*e^3*g - 2112*b^4*c^3*d*e^6*g - 12492*b^2*
c^5*d^2*e^5*f - 20688*b^2*c^5*d^3*e^4*g + 9336*b^3*c^4*d^2*e^5*g))/(45045*c
^6*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(128*b^5*e^5*g - 6343*c^5*d^5*g
- 192*b^4*c*e^5*f + 7998*c^5*d^4*e*f + 15191*b*c^4*d^4*e*g - 1408*b^4*c*d*e
^4*g + 16524*b*c^4*d^3*e^2*f + 2016*b^3*c^2*d*e^4*f - 8328*b^2*c^3*d^2*e^3*
f - 13792*b^2*c^3*d^3*e^2*g + 6224*b^3*c^2*d^2*e^3*g))/(45045*c^5*e^2)))/(x
 + d/e)
```

sympy **[F(-1)]**   time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2241 $\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=347

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{15015c^5e^2(d+ex)^{5/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x\right.}{3003c^4e^2(d+e}$$

```
[Out] -32/15015*(-b*e+2*c*d)^3*(-8*b*e*g+3*c*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(5/2)/c^5/e^2/(e*x+d)^(5/2)-16/3003*(-b*e+2*c*d)^2*(-8*b*e*g+3*c
*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^4/e^2/(e*x+d)^(3/2)
-2/13*g*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2-4/429*(-
b*e+2*c*d)*(-8*b*e*g+3*c*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/
2)/c^3/e^2/(e*x+d)^(1/2)-2/143*(-8*b*e*g+3*c*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(5/2)*(e*x+d)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.60, antiderivative size = 347, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-8beg+3cdg+13cef)}{15015c^5e^2(d+ex)^{5/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x\right.}{3003c^4e^2(d+e}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (-32*(2*c*d - b*e)^3*(13*c*e*f + 3*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2)^(5/2))/(15015*c^5*e^2*(d + e*x)^(5/2)) - (16*(2*c*d - b*e)^2
*(13*c*e*f + 3*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2)
)/(3003*c^4*e^2*(d + e*x)^(3/2)) - (4*(2*c*d - b*e)*(13*c*e*f + 3*c*d*g - 8
*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(429*c^3*e^2*Sqrt[d +
e*x]) - (2*(13*c*e*f + 3*c*d*g - 8*b*e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(5/2))/(143*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2)^(5/2))/(13*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{13ce^2} - \Big(2\Big(\tfrac{5}{2}e\Big(-$$

$$= -\frac{2(13cef+3cdg-8beg)\sqrt{d+ex}\,\big(d(cd-be)-be^2x-ce}{143c^2e^2}$$

$$= -\frac{4(2cd-be)(13cef+3cdg-8beg)\big(d(cd-be)-be^2x-}{429c^3e^2\sqrt{d+ex}}$$

$$= -\frac{16(2cd-be)^2(13cef+3cdg-8beg)\big(d(cd-be)-be^2x}{3003c^4e^2(d+ex)^{3/2}}$$

$$= -\frac{32(2cd-be)^3(13cef+3cdg-8beg)\big(d(cd-be)-be^2x}{15015c^5e^2(d+ex)^{5/2}}$$

Mathematica [A] time = 0.26, size = 264, normalized size = 0.76

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\big(128b^4e^4g-16b^3ce^3(71dg+13ef+20egx)+8b^2c^2e^2\big(473d^2g+de(2}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^
4*e^4*g - 16*b^3*c*e^3*(13*e*f + 71*d*g + 20*e*g*x) + 8*b^2*c^2*e^2*(473*d^
2*g + 5*e^2*x*(13*f + 14*g*x) + d*e*(221*f + 315*g*x)) - 2*b*c^3*e*(2765*d^
3*g + 35*e^3*x^2*(13*f + 12*g*x) + 25*d*e^2*x*(78*f + 77*g*x) + d^2*e*(2743
*f + 3470*g*x)) + c^4*(2754*d^4*g + 105*e^4*x^3*(13*f + 11*g*x) + 35*d*e^3*
x^2*(169*f + 141*g*x) + 5*d^2*e^2*x*(1963*f + 1659*g*x) + d^3*e*(6929*f + 6
885*g*x))))/(15015*c^5*e^2*Sqrt[d + e*x])
```

fricas [B] time = 1.09, size = 678, normalized size = 1.95

$$-\frac{2\left(1155\,c^6e^6gx^6+105\left(13\,c^6e^6f+\left(25\,c^6de^5+14\,bc^5e^6\right)g\right)x^5+35\left(13\left(7\,c^6de^5+4\,bc^5e^6\right)f-\left(12\,c^6d^2e^4-154\,bc^5\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/15015*(1155*c^6*e^6*g*x^6 + 105*(13*c^6*e^6*f + (25*c^6*d*e^5 + 14*b*c^5
*e^6)*g)*x^5 + 35*(13*(7*c^6*d*e^5 + 4*b*c^5*e^6)*f - (12*c^6*d^2*e^4 - 154
*b*c^5*d*e^5 - b^2*c^4*e^6)*g)*x^4 - 5*(13*(10*c^6*d^2*e^4 - 108*b*c^5*d*e^
5 - b^2*c^4*e^6)*f + (954*c^6*d^3*e^3 - 1328*b*c^5*d^2*e^4 - 63*b^2*c^4*d*e
^5 + 8*b^3*c^3*e^6)*g)*x^3 - 3*(13*(174*c^6*d^3*e^3 - 236*b*c^5*d^2*e^4 - 1
7*b^2*c^4*d*e^5 + 2*b^3*c^3*e^6)*f + (907*c^6*d^4*e^2 - 560*b*c^5*d^3*e^3 -
 473*b^2*c^4*d^2*e^4 + 142*b^3*c^3*d*e^5 - 16*b^4*c^2*e^6)*g)*x^2 + 13*(533
*c^6*d^5*e - 1488*b*c^5*d^4*e^2 + 1513*b^2*c^4*d^3*e^3 - 710*b^3*c^3*d^2*e^
4 + 168*b^4*c^2*d*e^5 - 16*b^5*c*e^6)*f + 2*(1377*c^6*d^6 - 5519*b*c^5*d^5*
e + 8799*b^2*c^4*d^4*e^2 - 7117*b^3*c^3*d^3*e^3 + 3092*b^4*c^2*d^2*e^4 - 69
6*b^5*c*d*e^5 + 64*b^6*e^6)*g - (13*(311*c^6*d^4*e^2 - 100*b*c^5*d^3*e^3 -
279*b^2*c^4*d^2*e^4 + 76*b^3*c^3*d*e^5 - 8*b^4*c^2*e^6)*f - (1377*c^6*d^5*e
 - 4142*b*c^5*d^4*e^2 + 4657*b^2*c^4*d^3*e^3 - 2460*b^3*c^3*d^2*e^4 + 632*b
^4*c^2*d*e^5 - 64*b^5*c*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^{2}x^{2} - be^{2}x + cd^{2} - bde\right)^{\frac{3}{2}} (ex + d)^{\frac{3}{2}} \left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)^(3/2)*(g*x
 + f), x)
```

maple [A] time = 0.05, size = 367, normalized size = 1.06

$$\frac{2\,(cex + be - cd)\,\big(1155g\,e^{4}x^{4}c^{4} - 840b\,c^{3}e^{4}g\,x^{3} + 4935c^{4}d\,e^{3}g\,x^{3} + 1365c^{4}e^{4}f\,x^{3} + 560b^{2}c^{2}e^{4}g\,x^{2} - 3850b\,c^{3}d\,e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2/15015*(c*e*x+b*e-c*d)*(1155*c^4*e^4*g*x^4-840*b*c^3*e^4*g*x^3+4935*c^4*d*
e^3*g*x^3+1365*c^4*e^4*f*x^3+560*b^2*c^2*e^4*g*x^2-3850*b*c^3*d*e^3*g*x^2-9
10*b*c^3*e^4*f*x^2+8295*c^4*d^2*e^2*g*x^2+5915*c^4*d*e^3*f*x^2-320*b^3*c*e^
4*g*x+2520*b^2*c^2*d*e^3*g*x+520*b^2*c^2*e^4*f*x-6940*b*c^3*d^2*e^2*g*x-390
0*b*c^3*d*e^3*f*x+6885*c^4*d^3*e*g*x+9815*c^4*d^2*e^2*f*x+128*b^4*e^4*g-113
6*b^3*c*d*e^3*g-208*b^3*c*e^4*f+3784*b^2*c^2*d^2*e^2*g+1768*b^2*c^2*d*e^3*f
-5530*b*c^3*d^3*e*g-5486*b*c^3*d^2*e^2*f+2754*c^4*d^4*g+6929*c^4*d^3*e*f)*(
-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^5/e^2/(e*x+d)^(3/2)
```

maxima [B] time = 0.99, size = 676, normalized size = 1.95

$$-\frac{2\,\big(105\,c^{5}e^{5}x^{5} + 533\,c^{5}d^{5} - 1488\,bc^{4}d^{4}e + 1513\,b^{2}c^{3}d^{3}e^{2} - 710\,b^{3}c^{2}d^{2}e^{3} + 168\,b^{4}cde^{4} - 16\,b^{5}e^{5} + 35\,\big(7\,c^{5}de^{4} +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/1155*(105*c^5*e^5*x^5 + 533*c^5*d^5 - 1488*b*c^4*d^4*e + 1513*b^2*c^3*d^
3*e^2 - 710*b^3*c^2*d^2*e^3 + 168*b^4*c*d*e^4 - 16*b^5*e^5 + 35*(7*c^5*d*e^
4 + 4*b*c^4*e^5)*x^4 - 5*(10*c^5*d^2*e^3 - 108*b*c^4*d*e^4 - b^2*c^3*e^5)*x
^3 - 3*(174*c^5*d^3*e^2 - 236*b*c^4*d^2*e^3 - 17*b^2*c^3*d*e^4 + 2*b^3*c^2*
e^5)*x^2 - (311*c^5*d^4*e - 100*b*c^4*d^3*e^2 - 279*b^2*c^3*d^2*e^3 + 76*b^
3*c^2*d*e^4 - 8*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^4*e^2
*x + c^4*d*e) - 2/15015*(1155*c^6*e^6*x^6 + 2754*c^6*d^6 - 11038*b*c^5*d^5*
e + 17598*b^2*c^4*d^4*e^2 - 14234*b^3*c^3*d^3*e^3 + 6184*b^4*c^2*d^2*e^4 -
1392*b^5*c*d*e^5 + 128*b^6*e^6 + 105*(25*c^6*d*e^5 + 14*b*c^5*e^6)*x^5 - 35
*(12*c^6*d^2*e^4 - 154*b*c^5*d*e^5 - b^2*c^4*e^6)*x^4 - 5*(954*c^6*d^3*e^3
- 1328*b*c^5*d^2*e^4 - 63*b^2*c^4*d*e^5 + 8*b^3*c^3*e^6)*x^3 - 3*(907*c^6*d
^4*e^2 - 560*b*c^5*d^3*e^3 - 473*b^2*c^4*d^2*e^4 + 142*b^3*c^3*d*e^5 - 16*b
^4*c^2*e^6)*x^2 + (1377*c^6*d^5*e - 4142*b*c^5*d^4*e^2 + 4657*b^2*c^4*d^3*e
^3 - 2460*b^3*c^3*d^2*e^4 + 632*b^4*c^2*d*e^5 - 64*b^5*c*e^6)*x)*sqrt(-c*e*
x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x + c^5*d*e^2)
```

mupad [**B**] time = 3.63, size = 637, normalized size = 1.84

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^2\,x^5\,\sqrt{d+e\,x}\,\left(14\,b\,e\,g+25\,c\,d\,g+13\,c\,e\,f\right)}{143}+\frac{2\,c\,e^3\,g\,x^6\,\sqrt{d+e\,x}}{13}+\frac{x^2\,\sqrt{d+e\,x}\,\left(96\,g\,b^4\,c^2\,e^6-852\,g\,b^3\,c^3\,d\,e}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^5*(d + e*x)^(1/2)*(
14*b*e*g + 25*c*d*g + 13*c*e*f))/143 + (2*c*e^3*g*x^6*(d + e*x)^(1/2))/13 +
 (x^2*(d + e*x)^(1/2)*(96*b^4*c^2*e^6*g - 156*b^3*c^3*e^6*f - 13572*c^6*d^3
*e^3*f - 5442*c^6*d^4*e^2*g + 18408*b*c^5*d^2*e^4*f + 1326*b^2*c^4*d*e^5*f
+ 3360*b*c^5*d^3*e^3*g - 852*b^3*c^3*d*e^5*g + 2838*b^2*c^4*d^2*e^4*g))/(15
015*c^5*e^3) + (2*(b*e - c*d)^2*(d + e*x)^(1/2)*(128*b^4*e^4*g + 2754*c^4*d
^4*g - 208*b^3*c*e^4*f + 6929*c^4*d^3*e*f - 5530*b*c^3*d^3*e*g - 1136*b^3*c
*d*e^3*g - 5486*b*c^3*d^2*e^2*f + 1768*b^2*c^2*d*e^3*f + 3784*b^2*c^2*d^2*e
^2*g))/(15015*c^5*e^3) + (2*e*x^4*(d + e*x)^(1/2)*(b^2*e^2*g - 12*c^2*d^2*g
 + 52*b*c*e^2*f + 91*c^2*d*e*f + 154*b*c*d*e*g))/(429*c) + (x^3*(d + e*x)^(
1/2)*(130*b^2*c^4*e^6*f - 80*b^3*c^3*e^6*g - 1300*c^6*d^2*e^4*f - 9540*c^6*
d^3*e^3*g + 14040*b*c^5*d*e^5*f + 13280*b*c^5*d^2*e^4*g + 630*b^2*c^4*d*e^5
*g))/(15015*c^5*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(104*b^3*c*e^4*f -
1377*c^4*d^4*g - 64*b^4*e^4*g + 4043*c^4*d^3*e*f + 2765*b*c^3*d^3*e*g + 568
*b^3*c*d*e^3*g + 2743*b*c^3*d^2*e^2*f - 884*b^2*c^2*d*e^3*f - 1892*b^2*c^2*
d^2*e^2*g))/(15015*c^4*e^2)))/(x + d/e)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{\frac{3}{2}}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**(3/2)*(f + g*x)
, x)
```

3.2242 $\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=267

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{3465c^4e^2(d+ex)^{5/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/}}{693c^3e^2(d+ex)^{3/}}$$

```
[Out] -16/3465*(-b*e+2*c*d)^2*(-6*b*e*g+c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(5/2)/c^4/e^2/(e*x+d)^(5/2)-8/693*(-b*e+2*c*d)*(-6*b*e*g+c*d*g+11*c
*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^3/e^2/(e*x+d)^(3/2)-2/99*(-6
*b*e*g+c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^2/e^2/(e*x+
d)^(1/2)-2/11*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)*(e*x+d)^(1/2)/c/e^2
```

Rubi [A] time = 0.43, antiderivative size = 267, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+cdg+11cef)}{99c^2e^2\sqrt{d+ex}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-6beg+c}{693c^3e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (-16*(2*c*d - b*e)^2*(11*c*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(5/2))/(3465*c^4*e^2*(d + e*x)^(5/2)) - (8*(2*c*d - b*e)*(11*c
*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(693*c
^3*e^2*(d + e*x)^(3/2)) - (2*(11*c*e*f + c*d*g - 6*b*e*g)*(d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2)^(5/2))/(99*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(11*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{2g\sqrt{d+ex}\,\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{11ce^2} - \frac{\Bigl(2\Bigl(\frac{5}{2}e\Bigl(-2ce}{}$$

$$= -\frac{2(11cef+cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{99c^2e^2\sqrt{d+ex}} - \frac{2}{}$$

$$= -\frac{8(2cd-be)(11cef+cdg-6beg)\bigl(d(cd-be)-be^2x-ce^2}{693c^3e^2(d+ex)^{3/2}}$$

$$= -\frac{16(2cd-be)^2(11cef+cdg-6beg)\bigl(d(cd-be)-be^2x-c}{3465c^4e^2(d+ex)^{5/2}}$$

Mathematica [**A**] time = 0.17, size = 183, normalized size = 0.69

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\bigl(-48b^3e^3g+8b^2ce^2(40dg+11ef+15egx)-2bc^2e\bigl(347d^2g+de(286}{3465c}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-48*b^
3*e^3*g + 8*b^2*c*e^2*(11*e*f + 40*d*g + 15*e*g*x) - 2*b*c^2*e*(347*d^2*g +
 5*e^2*x*(22*f + 21*g*x) + d*e*(286*f + 340*g*x)) + c^3*(422*d^3*g + 35*e^3
*x^2*(11*f + 9*g*x) + 10*d*e^2*x*(121*f + 98*g*x) + d^2*e*(1177*f + 1055*g*
x))))/(3465*c^4*e^2*Sqrt[d + e*x])
```

fricas [**B**] time = 1.01, size = 505, normalized size = 1.89

$$-\frac{2\bigl(315\,c^5e^5gx^5+35\bigl(11\,c^5e^5f+2\bigl(5\,c^5de^4+6\,bc^4e^5\bigr)g\bigr)x^4+5\bigl(22\bigl(4\,c^5de^4+5\,bc^4e^5\bigr)f-\bigl(118\,c^5d^2e^3-214\,bc^4de^4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3465*(315*c^5*e^5*g*x^5 + 35*(11*c^5*e^5*f + 2*(5*c^5*d*e^4 + 6*b*c^4*e^
5)*g)*x^4 + 5*(22*(4*c^5*d*e^4 + 5*b*c^4*e^5)*f - (118*c^5*d^2*e^3 - 214*b*
c^4*d*e^4 - 3*b^2*c^3*e^5)*g)*x^3 - 3*(11*(26*c^5*d^2*e^3 - 46*b*c^4*d*e^4
- b^2*c^3*e^5)*f + 2*(118*c^5*d^3*e^2 - 101*b*c^4*d^2*e^3 - 20*b^2*c^3*d*e^
4 + 3*b^3*c^2*e^5)*g)*x^2 + 11*(107*c^5*d^4*e - 266*b*c^4*d^3*e^2 + 219*b^2
*c^3*d^2*e^3 - 68*b^3*c^2*d*e^4 + 8*b^4*c*e^5)*f + 2*(211*c^5*d^5 - 769*b*c
^4*d^4*e + 1065*b^2*c^3*d^3*e^2 - 691*b^3*c^2*d^2*e^3 + 208*b^4*c*d*e^4 - 2
4*b^5*e^5)*g - (22*(52*c^5*d^3*e^2 - 39*b*c^4*d^2*e^3 - 15*b^2*c^3*d*e^4 +
2*b^3*c^2*e^5)*f - (211*c^5*d^4*e - 558*b*c^4*d^3*e^2 + 507*b^2*c^3*d^2*e^3
 - 184*b^3*c^2*d*e^4 + 24*b^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(e*x + d)/(c^4*e^3*x + c^4*d*e^2)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}\sqrt{ex+d}\,\left(gx+f\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*sqrt(e*x + d)*(g*x +
 f), x)
```

maple [**A**] time = 0.05, size = 235, normalized size = 0.88

$$-\frac{2\,(cex+be-cd)\left(-315g\,e^3x^3c^3+210b\,c^2e^3g\,x^2-980c^3d\,e^2g\,x^2-385c^3e^3f\,x^2-120b^2c\,e^3gx+680b\,c^2d\,e^2gx}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3465*(c*e*x+b*e-c*d)*(-315*c^3*e^3*g*x^3+210*b*c^2*e^3*g*x^2-980*c^3*d*e
^2*g*x^2-385*c^3*e^3*f*x^2-120*b^2*c*e^3*g*x+680*b*c^2*d*e^2*g*x+220*b*c^2*
e^3*f*x-1055*c^3*d^2*e*g*x-1210*c^3*d*e^2*f*x+48*b^3*e^3*g-320*b^2*c*d*e^2*
g-88*b^2*c*e^3*f+694*b*c^2*d^2*e*g+572*b*c^2*d*e^2*f-422*c^3*d^3*g-1177*c^3
*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^4/e^2/(e*x+d)^(3/2)
```

maxima [**B**] time = 0.94, size = 502, normalized size = 1.88

$$-\frac{2\left(35\,c^4e^4x^4+107\,c^4d^4-266\,bc^3d^3e+219\,b^2c^2d^2e^2-68\,b^3cde^3+8\,b^4e^4+10\left(4\,c^4de^3+5\,bc^3e^4\right)x^3-3\left(26\,c^4\right.\right.}{315\left(c^3e^2x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/315*(35*c^4*e^4*x^4 + 107*c^4*d^4 - 266*b*c^3*d^3*e + 219*b^2*c^2*d^2*e^
2 - 68*b^3*c*d*e^3 + 8*b^4*e^4 + 10*(4*c^4*d*e^3 + 5*b*c^3*e^4)*x^3 - 3*(26
*c^4*d^2*e^2 - 46*b*c^3*d*e^3 - b^2*c^2*e^4)*x^2 - 2*(52*c^4*d^3*e - 39*b*c
^3*d^2*e^2 - 15*b^2*c^2*d*e^3 + 2*b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*(e
*x + d)*f/(c^3*e^2*x + c^3*d*e) - 2/3465*(315*c^5*e^5*x^5 + 422*c^5*d^5 - 1
538*b*c^4*d^4*e + 2130*b^2*c^3*d^3*e^2 - 1382*b^3*c^2*d^2*e^3 + 416*b^4*c*d
*e^4 - 48*b^5*e^5 + 70*(5*c^5*d*e^4 + 6*b*c^4*e^5)*x^4 - 5*(118*c^5*d^2*e^3
 - 214*b*c^4*d*e^4 - 3*b^2*c^3*e^5)*x^3 - 6*(118*c^5*d^3*e^2 - 101*b*c^4*d^
2*e^3 - 20*b^2*c^3*d*e^4 + 3*b^3*c^2*e^5)*x^2 + (211*c^5*d^4*e - 558*b*c^4*
d^3*e^2 + 507*b^2*c^3*d^2*e^3 - 184*b^3*c^2*d*e^4 + 24*b^4*c*e^5)*x)*sqrt(-
c*e*x + c*d - b*e)*(e*x + d)*g/(c^4*e^3*x + c^4*d*e^2)
```

mupad [**B**] time = 3.34, size = 441, normalized size = 1.65

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e\,x^4\,\sqrt{d+e\,x}\,\left(12\,b\,e\,g+10\,c\,d\,g+11\,c\,e\,f\right)}{99}+\frac{2\,x^3\,\sqrt{d+e\,x}\,\left(3\,g\,b^2\,e^2+214\,g\,b\,c\,d\,e+110\,f\,b\,c\,e^2-118\,g\,c^2\,d\right.}{693\,c}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x
)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e*x^4*(d + e*x)^(1/2)*(12
*b*e*g + 10*c*d*g + 11*c*e*f))/99 + (2*x^3*(d + e*x)^(1/2)*(3*b^2*e^2*g - 1
18*c^2*d^2*g + 110*b*c*e^2*f + 88*c^2*d*e*f + 214*b*c*d*e*g))/(693*c) + (2*
c*e^2*g*x^5*(d + e*x)^(1/2))/11 + (x^2*(d + e*x)^(1/2)*(66*b^2*c^3*e^5*f -
36*b^3*c^2*e^5*g - 1716*c^5*d^2*e^3*f - 1416*c^5*d^3*e^2*g + 3036*b*c^4*d*e
^4*f + 1212*b*c^4*d^2*e^3*g + 240*b^2*c^3*d*e^4*g))/(3465*c^4*e^3) + (2*(b*
e - c*d)^2*(d + e*x)^(1/2)*(422*c^3*d^3*g - 48*b^3*e^3*g + 88*b^2*c*e^3*f +
 1177*c^3*d^2*e*f - 572*b*c^2*d*e^2*f - 694*b*c^2*d^2*e*g + 320*b^2*c*d*e^2
*g))/(3465*c^4*e^3) + (2*x*(b*e - c*d)*(d + e*x)^(1/2)*(24*b^3*e^3*g - 211*
c^3*d^3*g - 44*b^2*c*e^3*f + 1144*c^3*d^2*e*f + 286*b*c^2*d*e^2*f + 347*b*c
^2*d^2*e*g - 160*b^2*c*d*e^2*g))/(3465*c^3*e^2)))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (-(d+ex)(be-cd+cex))^{\frac{3}{2}}\sqrt{d+ex}\left(f+gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*sqrt(d + e*x)*(f + g*x), x
)
```

3.2243 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+9cef)}{315c^3e^2(d+ex)^{5/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cd}{63c^2e^2(d+ex)^{3/2}}$$

```
[Out] -4/315*(-b*e+2*c*d)*(-4*b*e*g-c*d*g+9*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(5/2)/c^3/e^2/(e*x+d)^(5/2)-2/63*(-4*b*e*g-c*d*g+9*c*e*f)*(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(5/2)/c^2/e^2/(e*x+d)^(3/2)-2/9*g*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(5/2)/c/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.31, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cdg+9cef)}{63c^2e^2(d+ex)^{3/2}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-4beg-cd}{315c^3e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/Sqrt[d + e*x],x
]
```

```
[Out] (-4*(2*c*d - b*e)*(9*c*e*f - c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(5/2))/(315*c^3*e^2*(d + e*x)^(5/2)) - (2*(9*c*e*f - c*d*g - 4*b*e
*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(63*c^2*e^2*(d + e*x)^(3/2
)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(9*c*e^2*Sqrt[d + e*
x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{\sqrt{d+ex}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{9ce^2\sqrt{d+ex}} - \frac{\Big(2\Big(\frac{5}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\Big(}{}$$

$$= -\frac{2(9cef-cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{63c^2e^2(d+ex)^{3/2}} - \frac{2g\Big(d(cd-}{9}$$

$$= -\frac{4(2cd-be)(9cef-cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{315c^3e^2(d+ex)^{5/2}} - \frac{2}{}$$

Mathematica [A] time = 0.12, size = 121, normalized size = 0.63

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,\Big(8b^2e^2g-2bce(17dg+9ef+10egx)+c^2\Big(26d^2g+de(81f+65gx)+}{315c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/Sqrt[d +
e*x],x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*
e^2*g - 2*b*c*e*(9*e*f + 17*d*g + 10*e*g*x) + c^2*(26*d^2*g + 5*e^2*x*(9*f
+ 7*g*x) + d*e*(81*f + 65*g*x))))/(315*c^3*e^2*Sqrt[d + e*x])
```

fricas [B] time = 1.24, size = 354, normalized size = 1.83

$$-\frac{2\Big(35\,c^4e^4gx^4+5\left(9\,c^4e^4f-\left(c^4de^3-10\,bc^3e^4\right)g\right)x^3-3\Big(3\left(c^4de^3-8\,bc^3e^4\right)f+\Big(23\,c^4d^2e^2-22\,bc^3de^3-b^2c^2e^4\Big)g}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/315*(35*c^4*e^4*g*x^4 + 5*(9*c^4*e^4*f - (c^4*d*e^3 - 10*b*c^3*e^4)*g)*x
^3 - 3*(3*(c^4*d*e^3 - 8*b*c^3*e^4)*f + (23*c^4*d^2*e^2 - 22*b*c^3*d*e^3 -
b^2*c^2*e^4)*g)*x^2 + 9*(9*c^4*d^3*e - 20*b*c^3*d^2*e^2 + 13*b^2*c^2*d*e^3
- 2*b^3*c*e^4)*f + 2*(13*c^4*d^4 - 43*b*c^3*d^3*e + 51*b^2*c^2*d^2*e^2 - 25
*b^3*c*d*e^3 + 4*b^4*e^4)*g - (9*(13*c^4*d^2*e^2 - 12*b*c^3*d*e^3 - b^2*c^2
*e^4)*f - (13*c^4*d^3*e - 30*b*c^3*d^2*e^2 + 21*b^2*c^2*d*e^3 - 4*b^3*c*e^4
)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x
 + c^3*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}(gx+f)}{\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/sqrt(e*x +
 d), x)
```

maple [A] time = 0.05, size = 139, normalized size = 0.72

$$\frac{2\,(cex+be-cd)\left(35g\,x^{2}c^{2}e^{2}-20bc\,e^{2}gx+65c^{2}degx+45c^{2}e^{2}f\,x+8b^{2}e^{2}g-34bcdeg-18bc\,e^{2}f+26c^{2}d^{2}g+8\right.}{315\,(ex+d)^{\frac{3}{2}}\,c^{3}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x)
```

```
[Out] 2/315*(c*e*x+b*e-c*d)*(35*c^2*e^2*g*x^2-20*b*c*e^2*g*x+65*c^2*d*e*g*x+45*c^
2*e^2*f*x+8*b^2*e^2*g-34*b*c*d*e*g-18*b*c*e^2*f+26*c^2*d^2*g+81*c^2*d*e*f)*
(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/c^3/e^2/(e*x+d)^(3/2)
```

maxima [A] time = 0.84, size = 320, normalized size = 1.66

$$-\frac{2\left(5\,c^{3}e^{3}x^{3}+9\,c^{3}d^{3}-20\,bc^{2}d^{2}e+13\,b^{2}cde^{2}-2\,b^{3}e^{3}-\left(c^{3}de^{2}-8\,bc^{2}e^{3}\right)x^{2}-\left(13\,c^{3}d^{2}e-12\,bc^{2}de^{2}-b^{2}ce^{3}\right)x\right)}{35\,c^{2}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] -2/35*(5*c^3*e^3*x^3 + 9*c^3*d^3 - 20*b*c^2*d^2*e + 13*b^2*c*d*e^2 - 2*b^3*
e^3 - (c^3*d*e^2 - 8*b*c^2*e^3)*x^2 - (13*c^3*d^2*e - 12*b*c^2*d*e^2 - b^2*
c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^2*e) - 2/315*(35*c^4*e^4*x^4 + 26*c
^4*d^4 - 86*b*c^3*d^3*e + 102*b^2*c^2*d^2*e^2 - 50*b^3*c*d*e^3 + 8*b^4*e^4
- 5*(c^4*d*e^3 - 10*b*c^3*e^4)*x^3 - 3*(23*c^4*d^2*e^2 - 22*b*c^3*d*e^3 - b
^2*c^2*e^4)*x^2 + (13*c^4*d^3*e - 30*b*c^3*d^2*e^2 + 21*b^2*c^2*d*e^3 - 4*b
^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^3*e^2)
```

mupad [B] time = 3.05, size = 239, normalized size = 1.24

$$-\frac{\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}\,\left(\frac{2\,e\,x^{3}\,\left(10\,b\,e\,g-c\,d\,g+9\,c\,e\,f\right)}{63}+\frac{2\,x^{2}\,\left(g\,b^{2}\,e^{2}+22\,g\,b\,c\,d\,e+24\,f\,b\,c\,e^{2}-23\,g\,c^{2}\,d^{2}-3\,f\,c^{2}\,d\,e\right)}{105\,c}+\frac{2\,c\,e^{2}\,g\,x^{4}}{9}\right.}{\sqrt{d+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e*x^3*(10*b*e*g - c*d*g +
 9*c*e*f))/63 + (2*x^2*(b^2*e^2*g - 23*c^2*d^2*g + 24*b*c*e^2*f - 3*c^2*d*e
*f + 22*b*c*d*e*g))/(105*c) + (2*c*e^2*g*x^4)/9 + (2*(b*e - c*d)^2*(8*b^2*e
^2*g + 26*c^2*d^2*g - 18*b*c*e^2*f + 81*c^2*d*e*f - 34*b*c*d*e*g))/(315*c^3
*e^2) + (2*x*(b*e - c*d)*(9*b*c*e^2*f - 13*c^2*d^2*g - 4*b^2*e^2*g + 117*c^
2*d*e*f + 17*b*c*d*e*g))/(315*c^2*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Timed out
```

3.2244 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg-3cdg+7cef)}{35c^2e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}$$

```
[Out] -2/35*(-2*b*e*g-3*c*d*g+7*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c^2
/e^2/(e*x+d)^(5/2)-2/7*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2/(e*x+
d)^(3/2)
```

Rubi [A] time = 0.19, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(-2beg-3cdg+7cef)}{35c^2e^2(d+ex)^{5/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(3/2)
,x]
```

```
[Out] (-2*(7*c*e*f - 3*c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/
2))/(35*c^2*e^2*(d + e*x)^(5/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(5/2))/(7*c*e^2*(d + e*x)^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{3/2}}\,dx&=-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{7ce^2(d+ex)^{3/2}}-\Big(2\Big(\tfrac{5}{2}e\left(-2ce^2f+be^2g\right)-\tfrac{3}{2}\Big(-\\&=-\frac{2(7cef-3cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{35c^2e^2(d+ex)^{5/2}}-2g\Big(d(cd-\end{aligned}$$

Mathematica [A] time = 0.08, size = 78, normalized size = 0.66

$$-\frac{2(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+7ef+5egx)-2beg)}{35c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(3/2),x]
```

```
[Out] (-2*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e
*g + c*(7*e*f + 2*d*g + 5*e*g*x)))/(35*c^2*e^2*Sqrt[d + e*x])
```

fricas [**B**] time = 0.75, size = 229, normalized size = 1.94

$$-\frac{2(5c^3e^3gx^3 + (7c^3e^3f - 8(c^3de^2 - bc^2e^3)g)x^2 + 7(c^3d^2e - 2bc^2de^2 + b^2ce^3)f + 2(c^3d^3 - 3bc^2d^2e + 3b^2cd}{35(c^2e^3x +}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] -2/35*(5*c^3*e^3*g*x^3 + (7*c^3*e^3*f - 8*(c^3*d*e^2 - b*c^2*e^3)*g)*x^2 +
7*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*f + 2*(c^3*d^3 - 3*b*c^2*d^2*e +
3*b^2*c*d*e^2 - b^3*e^3)*g - (14*(c^3*d*e^2 - b*c^2*e^3)*f - (c^3*d^2*e - 2
*b*c^2*d*e^2 + b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*
sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(-ce^2x^2 - be^2x + cd^2 - bde)^{\frac{3}{2}}(gx + f)}{(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(3/2), x)
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.67

$$-\frac{2(cex + be - cd)(-5cegx + 2beg - 2cdg - 7cef)(-ce^2x^2 - be^2x - bde + cd^2)^{\frac{3}{2}}}{35(ex + d)^{\frac{3}{2}}c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(-5*c*e*g*x+2*b*e*g-2*c*d*g-7*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(3/2)/c^2/e^2/(e*x+d)^(3/2)
```

maxima [**A**] time = 0.75, size = 197, normalized size = 1.67

$$-\frac{2(c^2e^2x^2 + c^2d^2 - 2bcde + b^2e^2 - 2(c^2de - bce^2)x)\sqrt{-cex + cd - be}\,f}{5ce} - \frac{2(5c^3e^3x^3 + 2c^3d^3 - 6bc^2d^2e + 6b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/5*(c^2*e^2*x^2 + c^2*d^2 - 2*b*c*d*e + b^2*e^2 - 2*(c^2*d*e - b*c*e^2)*x
)*sqrt(-c*e*x + c*d - b*e)*f/(c*e) - 2/35*(5*c^3*e^3*x^3 + 2*c^3*d^3 - 6*b*
c^2*d^2*e + 6*b^2*c*d*e^2 - 2*b^3*e^3 - 8*(c^3*d*e^2 - b*c^2*e^3)*x^2 + (c^
3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^2*e^2
)
```

mupad [B] time = 2.81, size = 133, normalized size = 1.13

$$-\frac{\left(x^2\left(\frac{16\,b\,e\,g}{35}-\frac{16\,c\,d\,g}{35}+\frac{2\,c\,e\,f}{5}\right)+\frac{2\,c\,e\,g\,x^3}{7}+\frac{2\,{\left(b\,e-c\,d\right)}^2\,\left(2\,c\,d\,g-2\,b\,e\,g+7\,c\,e\,f\right)}{35\,c^2\,e^2}+\frac{2\,x\,\left(b\,e-c\,d\right)\,\left(b\,e\,g-c\,d\,g+14\,c\,e\,f\right)}{35\,c\,e}\right)\,\sqrt{c\,d^2-b\,d\,e-c}}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] -((x^2*((16*b*e*g)/35 - (16*c*d*g)/35 + (2*c*e*f)/5) + (2*c*e*g*x^3)/7 + (2
*(b*e - c*d)^2*(2*c*d*g - 2*b*e*g + 7*c*e*f))/(35*c^2*e^2) + (2*x*(b*e - c*
d)*(b*e*g - c*d*g + 14*c*e*f))/(35*c*e))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2
*x)^(1/2))/(d + e*x)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(f+gx\right)}{\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(3/2)
, x)
```

3.2245 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=250

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2(2cd-be)^{3/2}(ef}{}$$

```
[Out] 2/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(e*x+d)^(3/2)-2/5
*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2/(e*x+d)^(5/2)-2*(-b*e+2*c*d
)^(3/2)*(-d*g+e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c
*d)^(1/2)/(e*x+d)^(1/2))/e^2+2*(-b*e+2*c*d)*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*
x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.45, antiderivative size = 250, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}}-\frac{2(2cd-be)^{3/2}(ef}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(5/2)
,x]
```

```
[Out] (2*(2*c*d - b*e)*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^
2*Sqrt[d + e*x]) + (2*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/
2))/(3*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5
/2))/(5*c*e^2*(d + e*x)^(5/2)) - (2*(2*c*d - b*e)^(3/2)*(e*f - d*g)*ArcTanh
[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x]
)])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{5/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5ce^2(d+ex)^{5/2}} - \frac{\left(2\left(\frac{5}{2}e\left(-2ce^2f+be^2g\right)-\frac{5}{2}\right.\right.}{}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} - \frac{2g\left(d(cd-be)-be^2x-\right.}{5ce^2(d+ex)^{5/2}}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

$$= \frac{2(2cd-be)(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(ef-dg)\left(d(c\right.}{3e}$$

Mathematica [**A**] time = 0.28, size = 199, normalized size = 0.80

$$-\frac{2\sqrt{d+ex}\sqrt{c(d-ex)-be}\left(\sqrt{c(d-ex)-be}\left(3b^2e^2g+2bce(-13dg+10ef+3egx)+c^2\left(38d^2g-de(35f+11gx)\right.\right.\right.}{15ce^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*Sqrt[-(b*e) + c*(d - e*x)]*(Sqrt[-(b*e) + c*(d - e*x)]*(3
*b^2*e^2*g + 2*b*c*e*(10*e*f - 13*d*g + 3*e*g*x) + c^2*(38*d^2*g + e^2*x*(5
*f + 3*g*x) - d*e*(35*f + 11*g*x))) - 15*c*(2*c*d - b*e)^(3/2)*(-(e*f) + d*
g)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(15*c*e^2*Sqrt[(d +
 e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**A**] time = 1.43, size = 656, normalized size = 2.62

$$\left[\frac{15\sqrt{2\,cd-be}\left(\left(2\,c^2d^2e-bcde^2\right)f-\left(2\,c^2d^3-bcd^2e\right)g+\left(\left(2\,c^2de^2-bce^3\right)f-\left(2\,c^2d^2e-bcde^2\right)g\right)x\right)\log\left(-\frac{ce^2x^2-3\,c}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/15*(15*sqrt(2*c*d - b*e)*((2*c^2*d^2*e - b*c*d*e^2)*f - (2*c^2*d^3 - b*c
*d^2*e)*g + ((2*c^2*d*e^2 - b*c*e^3)*f - (2*c^2*d^2*e - b*c*d*e^2)*g)*x)*lo
g(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d
*e*x + d^2)) - 2*(3*c^2*e^2*g*x^2 - 5*(7*c^2*d*e - 4*b*c*e^2)*f + (38*c^2*d
^2 - 26*b*c*d*e + 3*b^2*e^2)*g + (5*c^2*e^2*f - (11*c^2*d*e - 6*b*c*e^2)*g)
*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*
d*e^2), -2/15*(15*sqrt(-2*c*d + b*e)*((2*c^2*d^2*e - b*c*d*e^2)*f - (2*c^2*
d^3 - b*c*d^2*e)*g + ((2*c^2*d*e^2 - b*c*e^3)*f - (2*c^2*d^2*e - b*c*d*e^2)
*g)*x)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)
*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + (3*c^2*e^2*g*x^2 -
5*(7*c^2*d*e - 4*b*c*e^2)*f + (38*c^2*d^2 - 26*b*c*d*e + 3*b^2*e^2)*g + (5*
c^2*e^2*f - (11*c^2*d*e - 6*b*c*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Valueindex.cc index_m operator + Error: Bad Argument Valueindex.cc inde
x_m operator + Error: Bad Argument ValueEvaluation time: 2.99Done
```

maple [B] time = 0.08, size = 601, normalized size = 2.40

$$-\frac{2\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\,\bigg(15b^2cd\,e^2g\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-15b^2c\,e^3f\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-60b\,c^2d^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/15*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(3*x^2*c^2*e^2*g*(-c*e*x-b*e+c
*d)^(1/2)*(b*e-2*c*d)^(1/2)+15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))*b^2*c*d*e^2*g-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*
c*e^3*f-60*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e*g+6
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d*e^2*f+60*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^3*g-60*arctan((-c*e*x-b*e+c
*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^3*d^2*e*f+6*x*b*c*e^2*g*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)-11*x*c^2*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2
)+5*x*c^2*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+3*b^2*e^2*g*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-26*b*c*d*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)+20*b*c*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+38*c^2*
d^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-35*c^2*d*e*f*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2/(b*e-
2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{(ex + d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(5/2)
, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(f + g x\right)}{\left(d + e x\right)^{\frac{5}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(5/2)
, x)
```

3.2246 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=288

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^{7/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(2beg-7cdg+3cef)}{3e^2(d+ex)^{3/2}(2cd-be)}-\sqrt{d(cd-be)-}$$

```
[Out] -1/3*(2*b*e*g-7*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(
-b*e+2*c*d)/(e*x+d)^(3/2)-(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)
/e^2/(-b*e+2*c*d)/(e*x+d)^(7/2)+(2*b*e*g-7*c*d*g+3*c*e*f)*arctanh((d*(-b*e+
c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))*(-b*e+2*c*d
)^(1/2)/e^2-(2*b*e*g-7*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2
)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.48, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(d+ex)^{7/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(2beg-7cdg+3cef)}{3e^2(d+ex)^{3/2}(2cd-be)}-\sqrt{d(cd-be)-}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(7/2)
,x]
```

```
[Out] -(((3*c*e*f - 7*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(e^2*Sqrt[d + e*x])) - ((3*c*e*f - 7*c*d*g + 2*b*e*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((e*f - d*
g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(e^2*(2*c*d - b*e)*(d + e*x
)^(7/2)) + (Sqrt[2*c*d - b*e]*(3*c*e*f - 7*c*d*g + 2*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{7/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{e^2(2cd-be)(d+ex)^{7/2}} - \frac{(3cef-7cdg+2beg)\int}{2e(2c}$$

$$= -\frac{(3cef-7cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(2cd-be)(d+ex)^{3/2}} - \frac{(ef-dg)\left(}{e^2}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

$$= -\frac{(3cef-7cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(3cef-7cdg}{}$$

Mathematica [A] time = 0.26, size = 195, normalized size = 0.68

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(\sqrt{c(d-ex)-be}\left(be(-11dg+3ef-8egx)+2c\left(13d^2g+de(9gx-6f)-e^2x(3f+gx)\right)\right.\right.}{3e^2(d+ex)^{3/2}\sqrt{c(d-ex)-be}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(7/2),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(Sqrt[-(b*e) + c*(d - e*x)]*(b*e*(3
*e*f - 11*d*g - 8*e*g*x) + 2*c*(13*d^2*g - e^2*x*(3*f + g*x) + d*e*(-6*f +
9*g*x))) - 3*Sqrt[2*c*d - b*e]*(-3*c*e*f + 7*c*d*g - 2*b*e*g)*(d + e*x)*Arc
Tanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(3*e^2*(d + e*x)^(3/2)*Sq
rt[-(b*e) + c*(d - e*x)])
```

fricas [A] time = 1.30, size = 639, normalized size = 2.22

$$\left[\frac{3\left(3cd^2ef+\left(3ce^3f-\left(7cde^2-2be^3\right)g\right)x^2-\left(7cd^3-2bd^2e\right)g+2\left(3cde^2f-\left(7cd^2e-2bde^2\right)g\right)x\right)\sqrt{2cd-be}\,\mathrm{lo}}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [1/6*(3*(3*c*d^2*e*f + (3*c*e^3*f - (7*c*d*e^2 - 2*b*e^3)*g)*x^2 - (7*c*d^3
 - 2*b*d^2*e)*g + 2*(3*c*d*e^2*f - (7*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d
 - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2
*x^2 + 2*d*e*x + d^2)) - 2*(2*c*e^2*g*x^2 + 3*(4*c*d*e - b*e^2)*f - (26*c*d
^2 - 11*b*d*e)*g + 2*(3*c*e^2*f - (9*c*d*e - 4*b*e^2)*g)*x)*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2),
 1/3*(3*(3*c*d^2*e*f + (3*c*e^3*f - (7*c*d*e^2 - 2*b*e^3)*g)*x^2 - (7*c*d^3
 - 2*b*d^2*e)*g + 2*(3*c*d*e^2*f - (7*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(-2*c*
d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*
e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - (2*c*e^2*g*x^2 +
3*(4*c*d*e - b*e^2)*f - (26*c*d^2 - 11*b*d*e)*g + 2*(3*c*e^2*f - (9*c*d*e -
 4*b*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(
e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 695, normalized size = 2.41

$$\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(6b^{2}e^{3}gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-33bcd\,e^{2}gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+9bc\,e^{3}f\,x\,\mathrm{arc}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x)
```

```
[Out] 1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(6*arctan((-c*e*x-b*e+c*d)^(1/2)
/(b*e-2*c*d)^(1/2))*x*b^2*e^3*g-33*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x
*b*c*e^3*f+42*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)-18*c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-2*x^2*c
*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+6*arctan((-c*e*x-b*e+c*d)^(
1/2)/(b*e-2*c*d)^(1/2))*b^2*d*e^2*g-33*b*c*d^2*e*g*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))+9*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*b*c*d*e^2*f+42*c^2*d^3*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-
18*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-b
*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g*x+18*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*
c*d)^(1/2)*c*d*e*g*x-6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*f*x-1
1*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*d*e*g+3*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*b*e^2*f+26*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d^
2*g-12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*f)/(e*x+d)^(3/2)/(-c*
e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{\frac{3}{2}}\left(gx+f\right)}{\left(ex+d\right)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(7/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(7/2)
, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(- \left(d + e x\right) \left(b e - c d + c e x\right)\right)^{\frac{3}{2}} \left(f + g x\right)}{\left(d + e x\right)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(7/2)
, x)
```

3.2247 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=305

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(d+ex)^{9/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(4beg-9cdg+cef)}{4e^2(d+ex)^{5/2}(2cd-be)}+\frac{3c\sqrt{d(cd-be)-}}{4}$$

```
[Out] 1/4*(4*b*e*g-9*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(-b*
e+2*c*d)/(e*x+d)^(5/2)-1/2*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2
)/e^2/(-b*e+2*c*d)/(e*x+d)^(9/2)-3/4*c*(4*b*e*g-9*c*d*g+c*e*f)*arctanh((d*(
-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-
b*e+2*c*d)^(1/2)+3/4*c*(4*b*e*g-9*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.48, antiderivative size = 305, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(d+ex)^{9/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}(4beg-9cdg+cef)}{4e^2(d+ex)^{5/2}(2cd-be)}+\frac{3c\sqrt{d(cd-be)-}}{4}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(9/2)
,x]
```

```
[Out] (3*c*(c*e*f - 9*c*d*g + 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
/(4*e^2*(2*c*d - b*e)*Sqrt[d + e*x]) + ((c*e*f - 9*c*d*g + 4*b*e*g)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(5/2))
 - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(2*e^2*(2*c*d
- b*e)*(d + e*x)^(9/2)) - (3*c*(c*e*f - 9*c*d*g + 4*b*e*g)*ArcTanh[Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^
2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{2e^2(2cd-be)(d+ex)^{9/2}} - \frac{(cef-9cdg+4beg)\int}{4e(2c}$$

$$= \frac{(cef-9cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{4e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg)\left(d(\right.}{2e^2(2}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

$$= \frac{3c(cef-9cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2(2cd-be)\sqrt{d+ex}} + \frac{(cef-9cdg+}{}$$

Mathematica [C] time = 0.18, size = 129, normalized size = 0.42

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{c(d+ex)^2(4beg-9cdg+cef)\,{}_2F_1\left(2,\frac{5}{2};\frac{7}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{5dg}{e}-5f\right)}{10e(d+ex)^{9/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-5*f + (5*d*g)/e + (c*(c*e*f - 9
*c*d*g + 4*b*e*g)*(d + e*x)^2*Hypergeometric2F1[2, 5/2, 7/2, (-(c*d) + b*e
+ c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)^2)))/(10*e*(2*c*d - b*e)*(d + e
*x)^(9/2))
```

fricas [A] time = 1.15, size = 998, normalized size = 3.27

$$\left[\frac{3\left(c^2d^3ef+\left(c^2e^4f-\left(9\,c^2de^3-4\,bce^4\right)g\right)x^3+3\left(c^2de^3f-\left(9\,c^2d^2e^2-4\,bcde^3\right)g\right)x^2-\left(9\,c^2d^4-4\,bcd^3e\right)g+3\left(c^2\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [1/8*(3*(c^2*d^3*e*f + (c^2*e^4*f - (9*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3*(c
^2*d*e^3*f - (9*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 - (9*c^2*d^4 - 4*b*c*d^3*
e)*g + 3*(c^2*d^2*e^2*f - (9*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2*c*d -
b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^
2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(2*c^
2*d*e^2 - b*c*e^3)*g*x^2 - (2*c^2*d^2*e + 3*b*c*d*e^2 - 2*b^2*e^3)*f + (34*
c^2*d^3 - 21*b*c*d^2*e + 2*b^2*d*e^2)*g - (5*(2*c^2*d*e^2 - b*c*e^3)*f - (5
8*c^2*d^2*e - 37*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(2*c*d^4*e^2 -
 b*d^3*e^3 + (2*c*d*e^5 - b*e^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2
*c*d^3*e^3 - b*d^2*e^4)*x), -1/4*(3*(c^2*d^3*e*f + (c^2*e^4*f - (9*c^2*d*e^
3 - 4*b*c*e^4)*g)*x^3 + 3*(c^2*d*e^3*f - (9*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x
^2 - (9*c^2*d^4 - 4*b*c*d^3*e)*g + 3*(c^2*d^2*e^2*f - (9*c^2*d^3*e - 4*b*c*
d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
- b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*
d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(8*(2*c^2*d*e^2 - b*c*e^
3)*g*x^2 - (2*c^2*d^2*e + 3*b*c*d*e^2 - 2*b^2*e^3)*f + (34*c^2*d^3 - 21*b*c
*d^2*e + 2*b^2*d*e^2)*g - (5*(2*c^2*d*e^2 - b*c*e^3)*f - (58*c^2*d^2*e - 37
*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(2*c*d^4*e^2 - b*d^3*e^3 + (2*
c*d*e^5 - b*e^6)*x^3 + 3*(2*c*d^2*e^4 - b*d*e^5)*x^2 + 3*(2*c*d^3*e^3 - b*d
^2*e^4)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Warning, integration of abs or sign assumes constant sign
 by intervals (correct if the argument is real):Check [abs(-d*exp(1)-x*exp(
1)^2)]Evaluation time: 121.53Unable to transpose Error: Bad Argument Value
```

maple [B] time = 0.08, size = 665, normalized size = 2.18

$$\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(12bc\,e^{3}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-27c^{2}d\,e^{2}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3c^{2}e^{3}f\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x)
```

```
[Out] 1/4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(12*b*c*e^3*g*x^2*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-27*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))+3*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))+24*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-54*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+
6*c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*g*x^2+12*b*c*d^2*e*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-27*c^2*d^3*g*arctan((-c*e*x-b*e+c*d)^(1/2
)/(b*e-2*c*d)^(1/2))+3*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))+4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g*x-29*(-c*e*x-b*
e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*g*x+5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*c*e^2*f*x+2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*d*e*g+2*(-c
*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*f-17*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c*d^2*g+(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*f)/(e
*x+d)^(5/2)/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{3/2}}{{\left(d + e\,x\right)}^{9/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(9/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}\left(f + gx\right)}{\left(d + ex\right)^{\frac{9}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(f + g*x)/(d + e*x)**(9/2)
, x)
```

3.2248 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=307

$$-\frac{c^2(-6beg+11cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{3/2}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^{11/2}(2cd-be)}-\left(d(cd-be)-\right.$$

```
[Out] -1/12*(-6*b*e*g+11*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/
(-b*e+2*c*d)/(e*x+d)^(7/2)-1/3*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(11/2)-1/8*c^2*(-6*b*e*g+11*c*d*g+c*e*f)*arc
tanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2
))/e^2/(-b*e+2*c*d)^(3/2)+1/8*c*(-6*b*e*g+11*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(3/2)
```

Rubi [A] time = 0.48, antiderivative size = 307, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 662, 660, 208}

$$-\frac{c^2(-6beg+11cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{3/2}}-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(d+ex)^{11/2}(2cd-be)}-\left(d(cd-be)-\right.$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(11/2
),x]
```

```
[Out] (c*(c*e*f + 11*c*d*g - 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(8*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) - ((c*e*f + 11*c*d*g - 6*b*e*g)*(d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(7/
2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(3*e^2*(2*c
*d - b*e)*(d + e*x)^(11/2)) - (c^2*(c*e*f + 11*c*d*g - 6*b*e*g)*ArcTanh[Sqr
t[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/
(8*e^2*(2*c*d - b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{11/2}}\,dx &= -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{3e^2(2cd-be)(d+ex)^{11/2}}+\frac{(cef+11cdg-6beg)\int}{6e(2c}\\ &= -\frac{(cef+11cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{12e^2(2cd-be)(d+ex)^{7/2}}-\frac{(ef-dg)\left(\right.}{3e^2}\\ &= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}}-\frac{(cef+11cdg}{1}\\ &= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}}-\frac{(cef+11cdg}{1}\\ &= \frac{c(cef+11cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)(d+ex)^{3/2}}-\frac{(cef+11cdg}{1}\end{aligned}$$

Mathematica [**A**] time = 1.28, size = 254, normalized size = 0.83

$$\frac{((d+ex)(c(d-ex)-be))^{3/2}\left(\frac{e(d+ex)(-6beg+11cdg+cef)\left(\sqrt{e(be-2cd)}\left(-2b^2e^2+bce(d-7ex)+c^2\left(d^2+4dex-5e^2x^2\right)\right)+3c^2\sqrt{e}\,(d+ex)^2\sqrt{c(d-ex)-be}\right.}{\sqrt{e(be-2cd)}}\right.}{24e^3(d+ex)^{9/2}(2cd-be)(be-cd+cex)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(8*e*(e*f - d*g)*(-(c*d) + b*e +
c*e*x)^3 + (e*(c*e*f + 11*c*d*g - 6*b*e*g)*(d + e*x)*(Sqrt[e*(-2*c*d + b*e)
]*(-2*b^2*e^2 + b*c*e*(d - 7*e*x) + c^2*(d^2 + 4*d*e*x - 5*e^2*x^2)) + 3*c^
2*Sqrt[e]*(d + e*x)^2*Sqrt[-(b*e) + c*(d - e*x)]*ArcTan[(Sqrt[e]*Sqrt[-(b*e
) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/Sqrt[e*(-2*c*d + b*e)]))/(24*e^
3*(2*c*d - b*e)*(d + e*x)^(9/2)*(-(c*d) + b*e + c*e*x)^2)
```

fricas [**B**] time = 1.21, size = 1454, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/48*(3*(c^3*d^4*e*f + (c^3*e^5*f + (11*c^3*d*e^4 - 6*b*c^2*e^5)*g)*x^4 +
4*(c^3*d*e^4*f + (11*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f
 + (11*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 + (11*c^3*d^5 - 6*b*c^2*d^4*e)
*g + 4*(c^3*d^3*e^2*f + (11*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d -
 b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x
^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*
c^3*d*e^3 - b*c^2*e^4)*f - (42*c^3*d^2*e^2 - 41*b*c^2*d*e^3 + 10*b^2*c*e^4)
*g)*x^2 + (14*c^3*d^3*e - 43*b*c^2*d^2*e^2 + 34*b^2*c*d*e^3 - 8*b^3*e^4)*f
- (38*c^3*d^4 - 19*b*c^2*d^3*e - 8*b^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((22*
c^3*d^2*e^2 - 25*b*c^2*d*e^3 + 7*b^2*c*e^4)*f + (50*c^3*d^3*e - 23*b*c^2*d^
2*e^2 - 13*b^2*c*d*e^3 + 6*b^3*e^4)*g)*x)*sqrt(e*x + d))/(4*c^2*d^6*e^2 - 4
*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*d^2*e^6 - 4*b*c*d*e^7 + b^2*e^8)*x^4 +
4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b^2*d*e^7)*x^3 + 6*(4*c^2*d^4*e^4 - 4*b*
c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*c^2*d^5*e^3 - 4*b*c*d^4*e^4 + b^2*d^3*e
^5)*x), -1/24*(3*(c^3*d^4*e*f + (c^3*e^5*f + (11*c^3*d*e^4 - 6*b*c^2*e^5)*g
)*x^4 + 4*(c^3*d*e^4*f + (11*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d
^2*e^3*f + (11*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 + (11*c^3*d^5 - 6*b*c^
2*d^4*e)*g + 4*(c^3*d^3*e^2*f + (11*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt
(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*
d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*((2*c^3*d*e^3 - b*c^2*e^4)*f - (42*c^3*d
^2*e^2 - 41*b*c^2*d*e^3 + 10*b^2*c*e^4)*g)*x^2 + (14*c^3*d^3*e - 43*b*c^2*d
^2*e^2 + 34*b^2*c*d*e^3 - 8*b^3*e^4)*f - (38*c^3*d^4 - 19*b*c^2*d^3*e - 8*b
^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((22*c^3*d^2*e^2 - 25*b*c^2*d*e^3 + 7*b^2
*c*e^4)*f + (50*c^3*d^3*e - 23*b*c^2*d^2*e^2 - 13*b^2*c*d*e^3 + 6*b^3*e^4)*
g)*x)*sqrt(e*x + d))/(4*c^2*d^6*e^2 - 4*b*c*d^5*e^3 + b^2*d^4*e^4 + (4*c^2*
d^2*e^6 - 4*b*c*d*e^7 + b^2*e^8)*x^4 + 4*(4*c^2*d^3*e^5 - 4*b*c*d^2*e^6 + b
^2*d*e^7)*x^3 + 6*(4*c^2*d^4*e^4 - 4*b*c*d^3*e^5 + b^2*d^2*e^6)*x^2 + 4*(4*
c^2*d^5*e^3 - 4*b*c*d^4*e^4 + b^2*d^3*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.09, size = 999, normalized size = 3.25

$$\frac{\left(18 b\,c^{2} e^{4} g\,x^{3} \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-33 c^{3} d\,e^{3} g\,x^{3} \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-3 c^{3} e^{4} f\,x^{3} \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+54 b}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x)
```

```
[Out] 1/24*(-33*c^3*d^4*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^3*
e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-2*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*g*x-3*c^3*d^3*e*f*arctan((-c*e*x-b*e+c
*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2
*e^3*f-19*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+30*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*g*x^2-63*(-c*e*x-b*e+c*d)^(1/2)*(b*e-
2*c*d)^(1/2)*c^2*d*e^2*g*x^2+14*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*
c*e^3*f*x-50*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x-22*(-c*
e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x-18*(-c*e*x-b*e+c*d)^(1/2
)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f+54*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))+54*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))-99*c^3*d^2*e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))-9*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-99*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-
9*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+18*b*c^2
*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+3*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*b^2*e^3*g*x+4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g
+7*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f+18*b*c^2*e^4*g*x^3*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-33*c^3*d*e^3*g*x^3*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)
^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)/(e*x+d)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{11}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{3/2}}{{\left(d + e\,x\right)}^{11/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(11/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2249 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=387

$$-\frac{c^3(-8beg+13cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{5/2}}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+13cdg+3cef}{64e^2(d+ex)^{3/2}(2cd-be)^2}$$

```
[Out] -1/24*(-8*b*e*g+13*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^
2/(-b*e+2*c*d)/(e*x+d)^(9/2)-1/4*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(13/2)-1/64*c^3*(-8*b*e*g+13*c*d*g+3*c*e*f
)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)
^(1/2))/e^2/(-b*e+2*c*d)^(5/2)+1/32*c*(-8*b*e*g+13*c*d*g+3*c*e*f)*(d*(-b*e+
c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(5/2)-1/64*c^2*(-8*b
*e*g+13*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c
*d)^2/(e*x+d)^(3/2)
```

Rubi [A] time = 0.65, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+13cdg+3cef)}{64e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c^3(-8beg+13cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right.}{64e^2(2cd-be)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)^(13/2
),x]
```

```
[Out] (c*(3*c*e*f + 13*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]
)/(32*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) - (c^2*(3*c*e*f + 13*c*d*g - 8*b*e
*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(64*e^2*(2*c*d - b*e)^2*(d +
 e*x)^(3/2)) - ((3*c*e*f + 13*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c
*e^2*x^2)^(3/2))/(24*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((e*f - d*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(13
/2)) - (c^3*(3*c*e*f + 13*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e)
^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
```

```
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}{(d+ex)^{13/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4e^2(2cd-be)(d+ex)^{13/2}} + \frac{(3cef+13cdg-8beg)}{8e(2c}$$

$$= -\frac{(3cef+13cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2(2cd-be)(d+ex)^{9/2}} - \frac{(ef-dg)}{4e}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{(3cef+13cd}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

$$= \frac{c(3cef+13cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{32e^2(2cd-be)(d+ex)^{5/2}} - \frac{c^2(3cef+13}{}$$

Mathematica [C] time = 0.21, size = 128, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(-\frac{c^3(d+ex)^4(-8beg+13cdg+3cef)\,{}_2F_1\left(\frac{5}{2},4;\frac{7}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(be-2cd)^4}+5dg-5ef\right)}{20e^2(d+ex)^{13/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))/(d + e*x)
^(13/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-5*e*f + 5*d*g - (c^3*(3*c*e*f +
 13*c*d*g - 8*b*e*g)*(d + e*x)^4*Hypergeometric2F1[5/2, 4, 7/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(-2*c*d + b*e)^4))/(20*e^2*(2*c*d - b*e)*(d +
e*x)^(13/2))
```

fricas [B] time = 1.03, size = 2104, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="fricas")
```

```
[Out] [-1/384*(3*(3*c^4*d^5*e*f + (3*c^4*e^6*f + (13*c^4*d*e^5 - 8*b*c^3*e^6)*g)*
x^5 + 5*(3*c^4*d*e^5*f + (13*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(3*c^
4*d^2*e^4*f + (13*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(3*c^4*d^3*e^3
*f + (13*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (13*c^4*d^6 - 8*b*c^3*d^5*
e)*g + 5*(3*c^4*d^4*e^2*f + (13*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c
*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e
^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*
(3*(2*c^4*d*e^4 - b*c^3*e^5)*f + (26*c^4*d^2*e^3 - 29*b*c^3*d*e^4 + 8*b^2*c
^2*e^5)*g)*x^3 + (3*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2*b^2*c^2*e^5)*f - (
686*c^4*d^3*e^2 - 1107*b*c^3*d^2*e^3 + 606*b^2*c^2*d*e^4 - 112*b^3*c*e^5)*g
)*x^2 + 3*(78*c^4*d^4*e - 235*b*c^3*d^3*e^2 + 242*b^2*c^2*d^2*e^3 - 104*b^3
*c*d*e^4 + 16*b^4*e^5)*f - (10*c^4*d^5 + 95*b*c^3*d^4*e - 162*b^2*c^2*d^3*e
^2 + 88*b^3*c*d^2*e^3 - 16*b^4*d*e^4)*g - (3*(158*c^4*d^3*e^2 - 263*b*c^3*d
^2*e^3 + 140*b^2*c^2*d*e^4 - 24*b^3*c*e^5)*f + (6*c^4*d^4*e + 437*b*c^3*d^3
*e^2 - 684*b^2*c^2*d^2*e^3 + 360*b^3*c*d*e^4 - 64*b^4*e^5)*g)*x)*sqrt(e*x +
 d))/(8*c^3*d^8*e^2 - 12*b*c^2*d^7*e^3 + 6*b^2*c*d^6*e^4 - b^3*d^5*e^5 + (8
*c^3*d^3*e^7 - 12*b*c^2*d^2*e^8 + 6*b^2*c*d*e^9 - b^3*e^10)*x^5 + 5*(8*c^3*
d^4*e^6 - 12*b*c^2*d^3*e^7 + 6*b^2*c*d^2*e^8 - b^3*d*e^9)*x^4 + 10*(8*c^3*d
^5*e^5 - 12*b*c^2*d^4*e^6 + 6*b^2*c*d^3*e^7 - b^3*d^2*e^8)*x^3 + 10*(8*c^3*
d^6*e^4 - 12*b*c^2*d^5*e^5 + 6*b^2*c*d^4*e^6 - b^3*d^3*e^7)*x^2 + 5*(8*c^3*
d^7*e^3 - 12*b*c^2*d^6*e^4 + 6*b^2*c*d^5*e^5 - b^3*d^4*e^6)*x), -1/192*(3*(
3*c^4*d^5*e*f + (3*c^4*e^6*f + (13*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5 + 5*(3*c
^4*d*e^5*f + (13*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(3*c^4*d^2*e^4*f
+ (13*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(3*c^4*d^3*e^3*f + (13*c^4
*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (13*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(3*
c^4*d^4*e^2*f + (13*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d + b*e)*a
rctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*
x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x +
 c*d^2 - b*d*e)*(3*(3*(2*c^4*d*e^4 - b*c^3*e^5)*f + (26*c^4*d^2*e^3 - 29*b*
c^3*d*e^4 + 8*b^2*c^2*e^5)*g)*x^3 + (3*(26*c^4*d^2*e^3 - 17*b*c^3*d*e^4 + 2
*b^2*c^2*e^5)*f - (686*c^4*d^3*e^2 - 1107*b*c^3*d^2*e^3 + 606*b^2*c^2*d*e^4
 - 112*b^3*c*e^5)*g)*x^2 + 3*(78*c^4*d^4*e - 235*b*c^3*d^3*e^2 + 242*b^2*c^
2*d^2*e^3 - 104*b^3*c*d*e^4 + 16*b^4*e^5)*f - (10*c^4*d^5 + 95*b*c^3*d^4*e
- 162*b^2*c^2*d^3*e^2 + 88*b^3*c*d^2*e^3 - 16*b^4*d*e^4)*g - (3*(158*c^4*d^
3*e^2 - 263*b*c^3*d^2*e^3 + 140*b^2*c^2*d*e^4 - 24*b^3*c*e^5)*f + (6*c^4*d^
4*e + 437*b*c^3*d^3*e^2 - 684*b^2*c^2*d^2*e^3 + 360*b^3*c*d*e^4 - 64*b^4*e^
5)*g)*x)*sqrt(e*x + d))/(8*c^3*d^8*e^2 - 12*b*c^2*d^7*e^3 + 6*b^2*c*d^6*e^4
 - b^3*d^5*e^5 + (8*c^3*d^3*e^7 - 12*b*c^2*d^2*e^8 + 6*b^2*c*d*e^9 - b^3*e^
10)*x^5 + 5*(8*c^3*d^4*e^6 - 12*b*c^2*d^3*e^7 + 6*b^2*c*d^2*e^8 - b^3*d*e^9
)*x^4 + 10*(8*c^3*d^5*e^5 - 12*b*c^2*d^4*e^6 + 6*b^2*c*d^3*e^7 - b^3*d^2*e^
8)*x^3 + 10*(8*c^3*d^6*e^4 - 12*b*c^2*d^5*e^5 + 6*b^2*c*d^4*e^6 - b^3*d^3*e
^7)*x^2 + 5*(8*c^3*d^7*e^3 - 12*b*c^2*d^6*e^4 + 6*b^2*c*d^5*e^5 - b^3*d^4*e
^6)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.08, size = 1517, normalized size = 3.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x)
```

```
[Out] -1/192*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-39*c^4*d^5*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+9*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*c^3*e^4*f*x^3+382*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*g
*x^2-48*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*e^4*f+232*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*g*x-220*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*b*c^2*d^2*e^2*g*x+276*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*b*c^2*d*e^3*f*x-5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^4*g-9*c
^4*e^5*f*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-9*c^4*d^4*e*f
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-16*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+117*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*c^3*d^3*e*f+24*b*c^3*e^5*g*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))-39*c^4*d*e^4*g*x^4*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-1
56*c^4*d^2*e^3*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-36*c^
4*d*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-234*c^4*d^3*
e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-54*c^4*d^2*e^3*f
*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-156*c^4*d^4*e*g*x*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-36*c^4*d^3*e^2*f*x*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+24*b*c^3*d^4*e*g*arctan((-c*e*x-b*e+
c*d)^(1/2)/(b*e-2*c*d)^(1/2))-64*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b
^3*e^4*g*x+96*b*c^3*d^3*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))+39*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*f*x^2-72*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*f*x-3*(-c*e*x-b*e+c*d)^(1/2)*(
b*e-2*c*d)^(1/2)*c^3*d^3*e*g*x-237*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*c^3*d^2*e^2*f*x+56*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*
g+216*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*f-50*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g-294*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)*b*c^2*d^2*e^2*f-24*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b
*c^2*e^4*g*x^3+39*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*g*x^3-
112*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2-6*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*e^4*f*x^2-343*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c^3*d^2*e^2*g*x^2+96*b*c^3*d*e^4*g*x^3*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))+144*b*c^3*d^2*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2)))/(e*x+d)^(9/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+
c*d)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)/(e*x+d)^(13/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)/(e*x + d)^
(13/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}{{\left(d+e\,x\right)}^{13/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(13/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))/(d + e*x)^(13/2
), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2)/(e*x+d)**(13/
2),x)
```

```
[Out] Timed out
```

3.2250 $\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=501

$$-\frac{512(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{2909907c^7e^2(d+ex)^{7/2}}-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x}{415701c^6e^2(d+}$$

```
[Out] -512/2909907*(-b*e+2*c*d)^5*(-12*b*e*g+5*c*d*g+19*c*e*f)*(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(7/2)/c^7/e^2/(e*x+d)^(7/2)-256/415701*(-b*e+2*c*d)^4*(-12*b
*e*g+5*c*d*g+19*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^6/e^2/(e*x+
d)^(5/2)-64/46189*(-b*e+2*c*d)^3*(-12*b*e*g+5*c*d*g+19*c*e*f)*(d*(-b*e+c*d)
-b*e^2*x-c*e^2*x^2)^(7/2)/c^5/e^2/(e*x+d)^(3/2)-2/323*(-12*b*e*g+5*c*d*g+19
*c*e*f)*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2-2/19*g
*(e*x+d)^(5/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2-32/12597*(-b*e+
2*c*d)^2*(-12*b*e*g+5*c*d*g+19*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2
)/c^4/e^2/(e*x+d)^(1/2)-4/969*(-b*e+2*c*d)*(-12*b*e*g+5*c*d*g+19*c*e*f)*(d*
(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)*(e*x+d)^(1/2)/c^3/e^2
```

Rubi [A] time = 0.96, antiderivative size = 501, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{512(2cd-be)^5\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-12beg+5cdg+19cef)}{2909907c^7e^2(d+ex)^{7/2}}-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x}{415701c^6e^2(d+}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (-512*(2*c*d - b*e)^5*(19*c*e*f + 5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2)^(7/2))/(2909907*c^7*e^2*(d + e*x)^(7/2)) - (256*(2*c*d - b
*e)^4*(19*c*e*f + 5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)
^(7/2))/(415701*c^6*e^2*(d + e*x)^(5/2)) - (64*(2*c*d - b*e)^3*(19*c*e*f +
5*c*d*g - 12*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(46189*c^5
*e^2*(d + e*x)^(3/2)) - (32*(2*c*d - b*e)^2*(19*c*e*f + 5*c*d*g - 12*b*e*g)
*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(12597*c^4*e^2*Sqrt[d + e*x])
 - (4*(2*c*d - b*e)*(19*c*e*f + 5*c*d*g - 12*b*e*g)*Sqrt[d + e*x]*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(969*c^3*e^2) - (2*(19*c*e*f + 5*c*d*g
- 12*b*e*g)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3
23*c^2*e^2) - (2*g*(d + e*x)^(5/2)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7
/2))/(19*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{5/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g(d+ex)^{5/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{19ce^2} - \frac{(2(\tfrac{7}{2}e}{}$$

$$= -\frac{2(19cef+5cdg-12beg)(d+ex)^{3/2}(d(cd-be)-be^2}{323c^2e^2}$$

$$= -\frac{4(2cd-be)(19cef+5cdg-12beg)\sqrt{d+ex}\,(d(cd-}{969c^3e^2}$$

$$= -\frac{32(2cd-be)^2(19cef+5cdg-12beg)(d(cd-be)-b}{12597c^4e^2\sqrt{d+ex}}$$

$$= -\frac{64(2cd-be)^3(19cef+5cdg-12beg)(d(cd-be)-b}{46189c^5e^2(d+ex)^{3/2}}$$

$$= -\frac{256(2cd-be)^4(19cef+5cdg-12beg)(d(cd-be)-}{415701c^6e^2(d+ex)^{5/2}}$$

$$= -\frac{512(2cd-be)^5(19cef+5cdg-12beg)(d(cd-be)-}{2909907c^7e^2(d+ex)^{7/2}}$$

Mathematica [A] time = 0.70, size = 284, normalized size = 0.57

$$\frac{2((d+ex)(c(d-ex)-be))^{7/2}(-171171(be-cd+cex)^5(-6beg+11cdg+cef)-969969(2cd-be)(be-cd+ce}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(5/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-415701*(2*c*d - b*e)^5*(c*e*f
 + c*d*g - b*e*g) - 1322685*(2*c*d - b*e)^3*(2*c*e*f + 4*c*d*g - 3*b*e*g)*(
-(c*d) + b*e + c*e*x)^2 - 969969*(2*c*d - b*e)*(c*e*f + 5*c*d*g - 3*b*e*g)*
(-(c*d) + b*e + c*e*x)^4 - 171171*(c*e*f + 11*c*d*g - 6*b*e*g)*(-(c*d) + b*
e + c*e*x)^5 - 153153*g*(-(c*d) + b*e + c*e*x)^6 + 323323*(-2*c*d + b*e)^4*
(5*c*e*f + 7*c*d*g - 6*b*e*g)*(-(b*e) + c*(d - e*x)) + 2238390*(-2*c*d + b*
e)^2*(c*e*f + 3*c*d*g - 2*b*e*g)*(-(b*e) + c*(d - e*x))^3))/(2909907*c^7*e^
2*(d + e*x)^(7/2))
```

fricas [B] time = 1.05, size = 1370, normalized size = 2.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/2909907*(153153*c^9*e^9*g*x^9 + 9009*(19*c^9*e^9*f + (56*c^9*d*e^8 + 39*b
*c^8*e^9)*g)*x^8 + 3003*(19*(10*c^9*d*e^8 + 7*b*c^8*e^9)*f + (50*c^9*d^2*e^
7 + 527*b*c^8*d*e^8 + 69*b^2*c^7*e^9)*g)*x^7 + 231*(19*(38*c^9*d^2*e^7 + 41
7*b*c^8*d*e^8 + 55*b^2*c^7*e^9)*f - (5114*c^9*d^3*e^6 - 9585*b*c^8*d^2*e^7
- 5216*b^2*c^7*d*e^8 - 3*b^3*c^6*e^9)*g)*x^6 - 63*(19*(1174*c^9*d^3*e^6 - 2
179*b*c^8*d^2*e^7 - 1204*b^2*c^7*d*e^8 - b^3*c^6*e^9)*f + (20456*c^9*d^4*e^
5 + 4189*b*c^8*d^3*e^6 - 45509*b^2*c^7*d^2*e^7 - 143*b^3*c^6*d*e^8 + 12*b^4
*c^5*e^9)*g)*x^5 - 7*(95*(2348*c^9*d^4*e^5 + 587*b*c^8*d^3*e^6 - 5343*b^2*c
^7*d^2*e^7 - 25*b^3*c^6*d*e^8 + 2*b^4*c^5*e^9)*f - (72574*c^9*d^5*e^4 - 530
165*b*c^8*d^4*e^5 + 496980*b^2*c^7*d^3*e^6 + 8230*b^3*c^6*d^2*e^7 - 1550*b^
4*c^5*d*e^8 + 120*b^5*c^4*e^9)*g)*x^4 + (19*(37354*c^9*d^5*e^4 - 257745*b*c
^8*d^4*e^5 + 237200*b^2*c^7*d^3*e^6 + 6070*b^3*c^6*d^2*e^7 - 1080*b^4*c^5*d
*e^8 + 80*b^5*c^4*e^9)*f + (1411994*c^9*d^6*e^3 - 3574809*b*c^8*d^5*e^4 + 1
981645*b^2*c^7*d^4*e^5 + 247010*b^3*c^6*d^3*e^6 - 78240*b^4*c^5*d^2*e^7 + 1
3360*b^5*c^4*d*e^8 - 960*b^6*c^3*e^9)*g)*x^3 + 3*(19*(35362*c^9*d^6*e^3 - 8
7409*b*c^8*d^5*e^4 + 44825*b^2*c^7*d^4*e^5 + 9650*b^3*c^6*d^3*e^6 - 2860*b^
4*c^5*d^2*e^7 + 464*b^5*c^4*d*e^8 - 32*b^6*c^3*e^9)*f + (176810*c^9*d^7*e^2
 - 248777*b*c^8*d^6*e^3 - 105344*b^2*c^7*d^5*e^4 + 276115*b^3*c^6*d^4*e^5 -
 130100*b^4*c^5*d^3*e^6 + 36640*b^5*c^4*d^2*e^7 - 5728*b^6*c^3*d*e^8 + 384*
b^7*c^2*e^9)*g)*x^2 - 19*(74461*c^9*d^8*e - 317517*b*c^8*d^7*e^2 + 563561*b
^2*c^7*d^6*e^3 - 549615*b^3*c^6*d^5*e^4 + 329190*b^4*c^5*d^4*e^5 - 126672*b
^5*c^4*d^3*e^6 + 30560*b^6*c^3*d^2*e^7 - 4224*b^7*c^2*d*e^8 + 256*b^8*c*e^9
)*f - 2*(262729*c^9*d^9 - 1470288*b*c^8*d^8*e + 3543734*b^2*c^7*d^7*e^2 - 4
831980*b^3*c^6*d^6*e^3 + 4120665*b^4*c^5*d^5*e^4 - 2291820*b^5*c^4*d^4*e^5
+ 836432*b^6*c^3*d^3*e^6 - 193920*b^7*c^2*d^2*e^7 + 25984*b^8*c*d*e^8 - 153
6*b^9*e^9)*g + (19*(39346*c^9*d^7*e^2 - 31625*b*c^8*d^6*e^3 - 83676*b^2*c^7
*d^5*e^4 + 114555*b^3*c^6*d^4*e^5 - 50040*b^4*c^5*d^3*e^6 + 13296*b^5*c^4*d
^2*e^7 - 1984*b^6*c^3*d*e^8 + 128*b^7*c^2*e^9)*f - (262729*c^9*d^8*e - 1207
559*b*c^8*d^7*e^2 + 2336175*b^2*c^7*d^6*e^3 - 2495805*b^3*c^6*d^5*e^4 + 162
4860*b^4*c^5*d^4*e^5 - 666960*b^5*c^4*d^3*e^6 + 169472*b^6*c^3*d^2*e^7 - 24
448*b^7*c^2*d*e^8 + 1536*b^8*c*e^9)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*sqrt(e*x + d)/(c^7*e^3*x + c^7*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} (ex + d)^{\frac{5}{2}} \left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)^(5/2)*(g*x
 + f), x)
```

maple [A] time = 0.05, size = 739, normalized size = 1.48

$$2 (cex + be - cd) \left(153153g e^6x^6c^6 - 108108b c^5e^6g x^5 + 963963c^6d e^5g x^5 + 171171c^6e^6f x^5 + 72072b^2c^4e^6g x^4 - 7\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/2909907*(c*e*x+b*e-c*d)*(153153*c^6*e^6*g*x^6-108108*b*c^5*e^6*g*x^5+9639
63*c^6*d*e^5*g*x^5+171171*c^6*e^6*f*x^5+72072*b^2*c^4*e^6*g*x^4-714714*b*c^
5*d*e^5*g*x^4-114114*b*c^5*e^6*f*x^4+2582580*c^6*d^2*e^4*g*x^4+1084083*c^6*
d*e^5*f*x^4-44352*b^3*c^3*e^6*g*x^3+484176*b^2*c^4*d*e^5*g*x^3+70224*b^2*c^
4*e^6*f*x^3-2029104*b*c^5*d^2*e^4*g*x^3-737352*b*c^5*d*e^5*f*x^3+3827670*c^
6*d^3*e^3*g*x^3+2905518*c^6*d^2*e^4*f*x^3+24192*b^4*c^2*e^6*g*x^2-288288*b^
3*c^3*d*e^5*g*x^2-38304*b^3*c^3*e^6*f*x^2+1370880*b^2*c^4*d^2*e^4*g*x^2+440
496*b^2*c^4*d*e^5*f*x^2-3194604*b*c^5*d^3*e^3*g*x^2-1987020*b*c^5*d^2*e^4*f
*x^2+3410505*c^6*d^4*e^2*g*x^2+4230198*c^6*d^3*e^3*f*x^2-10752*b^5*c*e^6*g*
x+138880*b^4*c^2*d*e^5*g*x+17024*b^4*c^2*e^6*f*x-737408*b^3*c^3*d^2*e^4*g*x
-212800*b^3*c^3*d*e^5*f*x+2029104*b^2*c^4*d^3*e^3*g*x+1078896*b^2*c^4*d^2*e
^4*f*x-2935604*b*c^5*d^4*e^2*g*x-2763208*b*c^5*d^3*e^3*f*x+1839103*c^6*d^5*
e*g*x+3496703*c^6*d^4*e^2*f*x+3072*b^6*e^6*g-42752*b^5*c*d*e^5*g-4864*b^5*c
*e^6*f+250368*b^4*c^2*d^2*e^4*g+65664*b^4*c^2*d*e^5*f-790432*b^3*c^3*d^3*e^
3*g-369056*b^3*c^3*d^2*e^4*f+1418488*b^2*c^4*d^4*e^2*g+1097744*b^2*c^4*d^3*
e^3*f-1364202*b*c^5*d^5*e*g-1788546*b*c^5*d^4*e^2*f+525458*c^6*d^6*g+141475
9*c^6*d^5*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^7/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 1.03, size = 1364, normalized size = 2.72

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/153153*(9009*c^8*e^8*x^8 - 74461*c^8*d^8 + 317517*b*c^7*d^7*e - 563561*b^
2*c^6*d^6*e^2 + 549615*b^3*c^5*d^5*e^3 - 329190*b^4*c^4*d^4*e^4 + 126672*b^
5*c^3*d^3*e^5 - 30560*b^6*c^2*d^2*e^6 + 4224*b^7*c*d*e^7 - 256*b^8*e^8 + 30
03*(10*c^8*d*e^7 + 7*b*c^7*e^8)*x^7 + 231*(38*c^8*d^2*e^6 + 417*b*c^7*d*e^7
 + 55*b^2*c^6*e^8)*x^6 - 63*(1174*c^8*d^3*e^5 - 2179*b*c^7*d^2*e^6 - 1204*b
^2*c^6*d*e^7 - b^3*c^5*e^8)*x^5 - 35*(2348*c^8*d^4*e^4 + 587*b*c^7*d^3*e^5
- 5343*b^2*c^6*d^2*e^6 - 25*b^3*c^5*d*e^7 + 2*b^4*c^4*e^8)*x^4 + (37354*c^8
*d^5*e^3 - 257745*b*c^7*d^4*e^4 + 237200*b^2*c^6*d^3*e^5 + 6070*b^3*c^5*d^2
*e^6 - 1080*b^4*c^4*d*e^7 + 80*b^5*c^3*e^8)*x^3 + 3*(35362*c^8*d^6*e^2 - 87
409*b*c^7*d^5*e^3 + 44825*b^2*c^6*d^4*e^4 + 9650*b^3*c^5*d^3*e^5 - 2860*b^4
*c^4*d^2*e^6 + 464*b^5*c^3*d*e^7 - 32*b^6*c^2*e^8)*x^2 + (39346*c^8*d^7*e -
 31625*b*c^7*d^6*e^2 - 83676*b^2*c^6*d^5*e^3 + 114555*b^3*c^5*d^4*e^4 - 500
40*b^4*c^4*d^3*e^5 + 13296*b^5*c^3*d^2*e^6 - 1984*b^6*c^2*d*e^7 + 128*b^7*c
*e^8)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^6*e^2*x + c^6*d*e) + 2/290
9907*(153153*c^9*e^9*x^9 - 525458*c^9*d^9 + 2940576*b*c^8*d^8*e - 7087468*b
^2*c^7*d^7*e^2 + 9663960*b^3*c^6*d^6*e^3 - 8241330*b^4*c^5*d^5*e^4 + 458364
0*b^5*c^4*d^4*e^5 - 1672864*b^6*c^3*d^3*e^6 + 387840*b^7*c^2*d^2*e^7 - 5196
8*b^8*c*d*e^8 + 3072*b^9*e^9 + 9009*(56*c^9*d*e^8 + 39*b*c^8*e^9)*x^8 + 300
3*(50*c^9*d^2*e^7 + 527*b*c^8*d*e^8 + 69*b^2*c^7*e^9)*x^7 - 231*(5114*c^9*d
^3*e^6 - 9585*b*c^8*d^2*e^7 - 5216*b^2*c^7*d*e^8 - 3*b^3*c^6*e^9)*x^6 - 63*
(20456*c^9*d^4*e^5 + 4189*b*c^8*d^3*e^6 - 45509*b^2*c^7*d^2*e^7 - 143*b^3*c
^6*d*e^8 + 12*b^4*c^5*e^9)*x^5 + 7*(72574*c^9*d^5*e^4 - 530165*b*c^8*d^4*e^
5 + 496980*b^2*c^7*d^3*e^6 + 8230*b^3*c^6*d^2*e^7 - 1550*b^4*c^5*d*e^8 + 12
0*b^5*c^4*e^9)*x^4 + (1411994*c^9*d^6*e^3 - 3574809*b*c^8*d^5*e^4 + 1981645
*b^2*c^7*d^4*e^5 + 247010*b^3*c^6*d^3*e^6 - 78240*b^4*c^5*d^2*e^7 + 13360*b
^5*c^4*d*e^8 - 960*b^6*c^3*e^9)*x^3 + 3*(176810*c^9*d^7*e^2 - 248777*b*c^8*
d^6*e^3 - 105344*b^2*c^7*d^5*e^4 + 276115*b^3*c^6*d^4*e^5 - 130100*b^4*c^5*
d^3*e^6 + 36640*b^5*c^4*d^2*e^7 - 5728*b^6*c^3*d*e^8 + 384*b^7*c^2*e^9)*x^2
 - (262729*c^9*d^8*e - 1207559*b*c^8*d^7*e^2 + 2336175*b^2*c^7*d^6*e^3 - 24
95805*b^3*c^6*d^5*e^4 + 1624860*b^4*c^5*d^4*e^5 - 666960*b^5*c^4*d^3*e^6 +
169472*b^6*c^3*d^2*e^7 - 24448*b^7*c^2*d*e^8 + 1536*b^8*c*e^9)*x)*sqrt(-c*e
*x + c*d - b*e)*(e*x + d)*g/(c^7*e^3*x + c^7*d*e^2)
```

mupad [B] time = 5.39, size = 1307, normalized size = 2.61

$$\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^4\,x^7\,\sqrt{d+e\,x}\,\left(69\,g\,b^2\,e^2+527\,g\,b\,c\,d\,e+133\,f\,b\,c\,e^2+50\,g\,c^2\,d^2+190\,f\,c^2\,d\,e\right)}{969}+\frac{x^5\,\sqrt{d+e\,x}\,\left(-1512\,g\,b^4\,c^5\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^4*x^7*(d + e*x)^(1/2)*(6
9*b^2*e^2*g + 50*c^2*d^2*g + 133*b*c*e^2*f + 190*c^2*d*e*f + 527*b*c*d*e*g)
)/969 + (x^5*(d + e*x)^(1/2)*(2394*b^3*c^6*e^9*f - 1512*b^4*c^5*e^9*g - 281
0556*c^9*d^3*e^6*f - 2577456*c^9*d^4*e^5*g + 5216526*b*c^8*d^2*e^7*f + 2882
376*b^2*c^7*d*e^8*f - 527814*b*c^8*d^3*e^6*g + 18018*b^3*c^6*d*e^8*g + 5734
134*b^2*c^7*d^2*e^7*g))/(2909907*c^7*e^3) + (2*c^2*e^6*g*x^9*(d + e*x)^(1/2
))/19 + (x^3*(d + e*x)^(1/2)*(3040*b^5*c^4*e^9*f - 1920*b^6*c^3*e^9*g + 141
9452*c^9*d^5*e^4*f + 2823988*c^9*d^6*e^3*g - 9794310*b*c^8*d^4*e^5*f - 4104
0*b^4*c^5*d*e^8*f - 7149618*b*c^8*d^5*e^4*g + 26720*b^5*c^4*d*e^8*g + 90136
00*b^2*c^7*d^3*e^6*f + 230660*b^3*c^6*d^2*e^7*f + 3963290*b^2*c^7*d^4*e^5*g
 + 494020*b^3*c^6*d^3*e^6*g - 156480*b^4*c^5*d^2*e^7*g))/(2909907*c^7*e^3)
+ (x^6*(d + e*x)^(1/2)*(482790*b^2*c^7*e^9*f + 1386*b^3*c^6*e^9*g + 333564*
c^9*d^2*e^7*f - 2362668*c^9*d^3*e^6*g + 3660426*b*c^8*d*e^8*f + 4428270*b*c
^8*d^2*e^7*g + 2409792*b^2*c^7*d*e^8*g))/(2909907*c^7*e^3) + (2*c*e^5*x^8*(
d + e*x)^(1/2)*(39*b*e*g + 56*c*d*g + 19*c*e*f))/323 + (2*(b*e - c*d)^3*(d
+ e*x)^(1/2)*(3072*b^6*e^6*g + 525458*c^6*d^6*g - 4864*b^5*c*e^6*f + 141475
9*c^6*d^5*e*f - 1364202*b*c^5*d^5*e*g - 42752*b^5*c*d*e^5*g - 1788546*b*c^5
*d^4*e^2*f + 65664*b^4*c^2*d*e^5*f + 1097744*b^2*c^4*d^3*e^3*f - 369056*b^3
*c^3*d^2*e^4*f + 1418488*b^2*c^4*d^4*e^2*g - 790432*b^3*c^3*d^3*e^3*g + 250
368*b^4*c^2*d^2*e^4*g))/(2909907*c^7*e^3) + (x^4*(d + e*x)^(1/2)*(1680*b^5*
c^4*e^9*g - 2660*b^4*c^5*e^9*f - 3122840*c^9*d^4*e^5*f + 1016036*c^9*d^5*e^
4*g - 780710*b*c^8*d^3*e^6*f + 33250*b^3*c^6*d*e^8*f - 7422310*b*c^8*d^4*e^
5*g - 21700*b^4*c^5*d*e^8*g + 7106190*b^2*c^7*d^2*e^7*f + 6957720*b^2*c^7*d
^3*e^6*g + 115220*b^3*c^6*d^2*e^7*g))/(2909907*c^7*e^3) + (2*x^2*(b*e - c*d
)*(d + e*x)^(1/2)*(384*b^6*e^6*g - 176810*c^6*d^6*g - 608*b^5*c*e^6*f - 671
878*c^6*d^5*e*f + 71967*b*c^5*d^5*e*g - 5344*b^5*c*d*e^5*g + 988893*b*c^5*d
^4*e^2*f + 8208*b^4*c^2*d*e^5*f + 137218*b^2*c^4*d^3*e^3*f - 46132*b^3*c^3*
d^2*e^4*f + 177311*b^2*c^4*d^4*e^2*g - 98804*b^3*c^3*d^3*e^3*g + 31296*b^4*
c^2*d^2*e^4*g))/(969969*c^5*e) + (2*x*(b*e - c*d)^2*(d + e*x)^(1/2)*(2432*b
^5*c*e^6*f - 262729*c^6*d^6*g - 1536*b^6*e^6*g + 747574*c^6*d^5*e*f + 68210
1*b*c^5*d^5*e*g + 21376*b^5*c*d*e^5*g + 894273*b*c^5*d^4*e^2*f - 32832*b^4*
c^2*d*e^5*f - 548872*b^2*c^4*d^3*e^3*f + 184528*b^3*c^3*d^2*e^4*f - 709244*
b^2*c^4*d^4*e^2*g + 395216*b^3*c^3*d^3*e^3*g - 125184*b^4*c^2*d^2*e^4*g))/(
2909907*c^6*e^2)))/(x + d/e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2251 $\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=424

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{765765c^6e^2(d+ex)^{7/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-c\right.}{109395c^5e^2(}$$

```
[Out] -256/765765*(-b*e+2*c*d)^4*(-10*b*e*g+3*c*d*g+17*c*e*f)*(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(7/2)/c^6/e^2/(e*x+d)^(7/2)-128/109395*(-b*e+2*c*d)^3*(-10*b*
e*g+3*c*d*g+17*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^5/e^2/(e*x+d
)^(5/2)-32/12155*(-b*e+2*c*d)^2*(-10*b*e*g+3*c*d*g+17*c*e*f)*(d*(-b*e+c*d)-
b*e^2*x-c*e^2*x^2)^(7/2)/c^4/e^2/(e*x+d)^(3/2)-2/17*g*(e*x+d)^(3/2)*(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2-16/3315*(-b*e+2*c*d)*(-10*b*e*g+3*c*d
*g+17*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^3/e^2/(e*x+d)^(1/2)-2
/255*(-10*b*e*g+3*c*d*g+17*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)*(e
*x+d)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.76, antiderivative size = 424, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{256(2cd-be)^4\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-10beg+3cdg+17cef)}{765765c^6e^2(d+ex)^{7/2}}-\frac{128(2cd-be)^3\left(d(cd-be)-be^2x-c\right.}{109395c^5e^2(}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (-256*(2*c*d - b*e)^4*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2)^(7/2))/(765765*c^6*e^2*(d + e*x)^(7/2)) - (128*(2*c*d - b*
e)^3*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^
(7/2))/(109395*c^5*e^2*(d + e*x)^(5/2)) - (32*(2*c*d - b*e)^2*(17*c*e*f + 3
*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(12155*c^4*
e^2*(d + e*x)^(3/2)) - (16*(2*c*d - b*e)*(17*c*e*f + 3*c*d*g - 10*b*e*g)*(d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3315*c^3*e^2*Sqrt[d + e*x]) - (
2*(17*c*e*f + 3*c*d*g - 10*b*e*g)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(7/2))/(255*c^2*e^2) - (2*g*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(17*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^{3/2}(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{17ce^2} - \frac{\left(2\left(\frac{7}{2}e\left(-\right.\right.\right.}{}$$

$$= -\frac{2(17cef+3cdg-10beg)\sqrt{d+ex}\left(d(cd-be)-be^2x-\right.}{255c^2e^2}$$

$$= -\frac{16(2cd-be)(17cef+3cdg-10beg)\left(d(cd-be)-be^2x\right.}{3315c^3e^2\sqrt{d+ex}}$$

$$= -\frac{32(2cd-be)^2(17cef+3cdg-10beg)\left(d(cd-be)-be^2\right.}{12155c^4e^2(d+ex)^{3/2}}$$

$$= -\frac{128(2cd-be)^3(17cef+3cdg-10beg)\left(d(cd-be)-be\right.}{109395c^5e^2(d+ex)^{5/2}}$$

$$= -\frac{256(2cd-be)^4(17cef+3cdg-10beg)\left(d(cd-be)-be\right.}{765765c^6e^2(d+ex)^{7/2}}$$

Mathematica [A] time = 0.38, size = 367, normalized size = 0.87

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(-1280b^5e^5g+128b^4ce^4(118dg+17ef+35egx)-32b^3c^2e^3\left(2253d^2g\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(3/2)*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-1280*b
^5*e^5*g + 128*b^4*c*e^4*(17*e*f + 118*d*g + 35*e*g*x) - 32*b^3*c^2*e^3*(22
53*d^2*g + 7*e^2*x*(34*f + 45*g*x) + 2*d*e*(391*f + 756*g*x)) + 16*b^2*c^3*
e^2*(10864*d^3*g + 294*d*e^2*x*(17*f + 21*g*x) + 21*e^3*x^2*(51*f + 55*g*x)
 + 3*d^2*e*(2397*f + 4249*g*x)) - 2*b*c^4*e*(104843*d^4*g + 231*e^4*x^3*(68
*f + 65*g*x) + 84*d*e^3*x^2*(969*f + 968*g*x) + 42*d^2*e^2*x*(3842*f + 4287
*g*x) + 4*d^3*e*(32623*f + 50554*g*x)) + c^5*(94134*d^5*g + 3003*e^5*x^4*(1
7*f + 15*g*x) + 462*d*e^4*x^3*(578*f + 507*g*x) + 126*d^2*e^3*x^2*(4471*f +
 3949*g*x) + 28*d^3*e^2*x*(21097*f + 19638*g*x) + d^4*e*(278171*f + 329469*
g*x))))/(765765*c^6*e^2*Sqrt[d + e*x])
```

fricas [B] time = 1.33, size = 1112, normalized size = 2.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/765765*(45045*c^8*e^8*g*x^8 + 3003*(17*c^8*e^8*f + (33*c^8*d*e^7 + 35*b*c
^7*e^8)*g)*x^7 + 231*(17*(29*c^8*d*e^7 + 31*b*c^7*e^8)*f - (303*c^8*d^2*e^6
 - 1558*b*c^7*d*e^7 - 275*b^2*c^6*e^8)*g)*x^6 - 63*(17*(79*c^8*d^2*e^6 - 39
8*b*c^7*d*e^7 - 71*b^2*c^6*e^8)*f + (4527*c^8*d^3*e^5 - 4129*b*c^7*d^2*e^6
- 4813*b^2*c^6*d*e^7 - 5*b^3*c^5*e^8)*g)*x^5 - 35*(17*(587*c^8*d^3*e^5 - 52
5*b*c^7*d^2*e^6 - 633*b^2*c^6*d*e^7 - b^3*c^5*e^8)*f + (1761*c^8*d^4*e^4 +
11860*b*c^7*d^3*e^5 - 15954*b^2*c^6*d^2*e^6 - 108*b^3*c^5*d*e^7 + 10*b^4*c^
4*e^8)*g)*x^4 - 5*(17*(835*c^8*d^4*e^4 + 6548*b*c^7*d^3*e^5 - 8586*b^2*c^6*
d^2*e^6 - 92*b^3*c^5*d*e^7 + 8*b^4*c^4*e^8)*f - (51549*c^8*d^5*e^3 - 146429
*b*c^7*d^4*e^4 + 91238*b^2*c^6*d^3*e^5 + 4506*b^3*c^5*d^2*e^6 - 944*b^4*c^4
*d*e^7 + 80*b^5*c^3*e^8)*g)*x^3 + 3*(17*(7339*c^8*d^5*e^3 - 20435*b*c^7*d^4
*e^4 + 12250*b^2*c^6*d^3*e^5 + 1030*b^3*c^5*d^2*e^6 - 200*b^4*c^4*d*e^7 + 1
6*b^5*c^3*e^8)*f + (52047*c^8*d^6*e^2 - 89650*b*c^7*d^5*e^3 + 15875*b^2*c^6
*d^4*e^4 + 30740*b^3*c^5*d^3*e^5 - 10900*b^4*c^4*d^2*e^6 + 2048*b^5*c^3*d*e
^7 - 160*b^6*c^2*e^8)*g)*x^2 - 17*(16363*c^8*d^7*e - 64441*b*c^7*d^6*e^2 +
101913*b^2*c^6*d^5*e^3 - 84195*b^3*c^5*d^4*e^4 + 40200*b^4*c^4*d^3*e^5 - 11
568*b^5*c^3*d^2*e^6 + 1856*b^6*c^2*d*e^7 - 128*b^7*c*e^8)*f - 2*(47067*c^8*
d^8 - 246044*b*c^7*d^7*e + 542642*b^2*c^6*d^6*e^2 - 658380*b^3*c^5*d^5*e^3
+ 481275*b^4*c^4*d^4*e^4 - 218352*b^5*c^3*d^3*e^5 + 60624*b^6*c^2*d^2*e^6 -
 9472*b^7*c*d*e^7 + 640*b^8*e^8)*g + (17*(14341*c^8*d^6*e^2 - 21006*b*c^7*d
^5*e^3 - 4395*b^2*c^6*d^4*e^4 + 15180*b^3*c^5*d^3*e^5 - 4920*b^4*c^4*d^2*e^
6 + 864*b^5*c^3*d*e^7 - 64*b^6*c^2*e^8)*f - (47067*c^8*d^7*e - 198977*b*c^7
*d^6*e^2 + 343665*b^2*c^6*d^5*e^3 - 314715*b^3*c^5*d^4*e^4 + 166560*b^4*c^4
*d^3*e^5 - 51792*b^5*c^3*d^2*e^6 + 8832*b^6*c^2*d*e^7 - 640*b^7*c*e^8)*g)*x
)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^3*x + c^6
*d*e^2)
```

giac [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} (ex + d)^{\frac{3}{2}} \left(gx + f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)^(3/2)*(g*x
 + f), x)
```

maple [**A**]   time = 0.05, size = 535, normalized size = 1.26

$$-\frac{2 (cex + be - cd) \big(-45045 g e^5 x^5 c^5 + 30030 b c^4 e^5 g x^4 - 234234 c^5 d e^4 g x^4 - 51051 c^5 e^5 f x^4 - 18480 b^2 c^3 e^5 g x^3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/765765*(c*e*x+b*e-c*d)*(-45045*c^5*e^5*g*x^5+30030*b*c^4*e^5*g*x^4-23423
4*c^5*d*e^4*g*x^4-51051*c^5*e^5*f*x^4-18480*b^2*c^3*e^5*g*x^3+162624*b*c^4*
d*e^4*g*x^3+31416*b*c^4*e^5*f*x^3-497574*c^5*d^2*e^3*g*x^3-267036*c^5*d*e^4
*f*x^3+10080*b^3*c^2*e^5*g*x^2-98784*b^2*c^3*d*e^4*g*x^2-17136*b^2*c^3*e^5*
f*x^2+360108*b*c^4*d^2*e^3*g*x^2+162792*b*c^4*d*e^4*f*x^2-549864*c^5*d^3*e^
2*g*x^2-563346*c^5*d^2*e^3*f*x^2-4480*b^4*c*e^5*g*x+48384*b^3*c^2*d*e^4*g*x
+7616*b^3*c^2*e^5*f*x-203952*b^2*c^3*d^2*e^3*g*x-79968*b^2*c^3*d*e^4*f*x+40
4432*b*c^4*d^3*e^2*g*x+322728*b*c^4*d^2*e^3*f*x-329469*c^5*d^4*e*g*x-590716
*c^5*d^3*e^2*f*x+1280*b^5*e^5*g-15104*b^4*c*d*e^4*g-2176*b^4*c*e^5*f+72096*
b^3*c^2*d^2*e^3*g+25024*b^3*c^2*d*e^4*f-173824*b^2*c^3*d^3*e^2*g-115056*b^2
*c^3*d^2*e^3*f+209686*b*c^4*d^4*e*g+260984*b*c^4*d^3*e^2*f-94134*c^5*d^5*g-
278171*c^5*d^4*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^6/e^2/(e*x+d)^
(5/2)
```

maxima [**B**] time = 1.03, size = 1108, normalized size = 2.61

$$\frac{2\left(3003\,c^7e^7x^7 - 16363\,c^7d^7 + 64441\,bc^6d^6e - 101913\,b^2c^5d^5e^2 + 84195\,b^3c^4d^4e^3 - 40200\,b^4c^3d^3e^4 + 11568\,b^5c^2d^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/45045*(3003*c^7*e^7*x^7 - 16363*c^7*d^7 + 64441*b*c^6*d^6*e - 101913*b^2*
c^5*d^5*e^2 + 84195*b^3*c^4*d^4*e^3 - 40200*b^4*c^3*d^3*e^4 + 11568*b^5*c^2
*d^2*e^5 - 1856*b^6*c*d*e^6 + 128*b^7*e^7 + 231*(29*c^7*d*e^6 + 31*b*c^6*e^
7)*x^6 - 63*(79*c^7*d^2*e^5 - 398*b*c^6*d*e^6 - 71*b^2*c^5*e^7)*x^5 - 35*(5
87*c^7*d^3*e^4 - 525*b*c^6*d^2*e^5 - 633*b^2*c^5*d*e^6 - b^3*c^4*e^7)*x^4 -
 5*(835*c^7*d^4*e^3 + 6548*b*c^6*d^3*e^4 - 8586*b^2*c^5*d^2*e^5 - 92*b^3*c^
4*d*e^6 + 8*b^4*c^3*e^7)*x^3 + 3*(7339*c^7*d^5*e^2 - 20435*b*c^6*d^4*e^3 +
12250*b^2*c^5*d^3*e^4 + 1030*b^3*c^4*d^2*e^5 - 200*b^4*c^3*d*e^6 + 16*b^5*c
^2*e^7)*x^2 + (14341*c^7*d^6*e - 21006*b*c^6*d^5*e^2 - 4395*b^2*c^5*d^4*e^3
 + 15180*b^3*c^4*d^3*e^4 - 4920*b^4*c^3*d^2*e^5 + 864*b^5*c^2*d*e^6 - 64*b^
6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^5*e^2*x + c^5*d*e) + 2/
765765*(45045*c^8*e^8*x^8 - 94134*c^8*d^8 + 492088*b*c^7*d^7*e - 1085284*b^
2*c^6*d^6*e^2 + 1316760*b^3*c^5*d^5*e^3 - 962550*b^4*c^4*d^4*e^4 + 436704*b
^5*c^3*d^3*e^5 - 121248*b^6*c^2*d^2*e^6 + 18944*b^7*c*d*e^7 - 1280*b^8*e^8
+ 3003*(33*c^8*d*e^7 + 35*b*c^7*e^8)*x^7 - 231*(303*c^8*d^2*e^6 - 1558*b*c^
7*d*e^7 - 275*b^2*c^6*e^8)*x^6 - 63*(4527*c^8*d^3*e^5 - 4129*b*c^7*d^2*e^6
- 4813*b^2*c^6*d*e^7 - 5*b^3*c^5*e^8)*x^5 - 35*(1761*c^8*d^4*e^4 + 11860*b*
c^7*d^3*e^5 - 15954*b^2*c^6*d^2*e^6 - 108*b^3*c^5*d*e^7 + 10*b^4*c^4*e^8)*x
^4 + 5*(51549*c^8*d^5*e^3 - 146429*b*c^7*d^4*e^4 + 91238*b^2*c^6*d^3*e^5 +
4506*b^3*c^5*d^2*e^6 - 944*b^4*c^4*d*e^7 + 80*b^5*c^3*e^8)*x^3 + 3*(52047*c
^8*d^6*e^2 - 89650*b*c^7*d^5*e^3 + 15875*b^2*c^6*d^4*e^4 + 30740*b^3*c^5*d^
3*e^5 - 10900*b^4*c^4*d^2*e^6 + 2048*b^5*c^3*d*e^7 - 160*b^6*c^2*e^8)*x^2 -
 (47067*c^8*d^7*e - 198977*b*c^7*d^6*e^2 + 343665*b^2*c^6*d^5*e^3 - 314715*
b^3*c^5*d^4*e^4 + 166560*b^4*c^4*d^3*e^5 - 51792*b^5*c^3*d^2*e^6 + 8832*b^6
*c^2*d*e^7 - 640*b^7*c*e^8)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^6*e^
3*x + c^6*d*e^2)
```

mupad [**B**] time = 4.64, size = 1023, normalized size = 2.41

$$\frac{\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,\left(\frac{2\,e^3\,x^6\,\sqrt{d+e\,x}\,\left(275\,g\,b^2\,e^2+1558\,g\,b\,c\,d\,e+527\,f\,b\,c\,e^2-303\,g\,c^2\,d^2+493\,f\,c^2\,d\,e\right)}{3315} + \frac{2\,(b\,e-c\,d)^3\,\sqrt{d+e\,x}\,\left(-128\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^3*x^6*(d + e*x)^(1/2)*(2
75*b^2*e^2*g - 303*c^2*d^2*g + 527*b*c*e^2*f + 493*c^2*d*e*f + 1558*b*c*d*e
*g))/3315 + (2*(b*e - c*d)^3*(d + e*x)^(1/2)*(94134*c^5*d^5*g - 1280*b^5*e^
5*g + 2176*b^4*c*e^5*f + 278171*c^5*d^4*e*f - 209686*b*c^4*d^4*e*g + 15104*
b^4*c*d*e^4*g - 260984*b*c^4*d^3*e^2*f - 25024*b^3*c^2*d*e^4*f + 115056*b^2
*c^3*d^2*e^3*f + 173824*b^2*c^3*d^3*e^2*g - 72096*b^3*c^2*d^2*e^3*g))/(7657
65*c^6*e^3) + (x^4*(d + e*x)^(1/2)*(1190*b^3*c^5*e^8*f - 700*b^4*c^4*e^8*g
- 698530*c^8*d^3*e^5*f - 123270*c^8*d^4*e^4*g + 624750*b*c^7*d^2*e^6*f + 75
3270*b^2*c^6*d*e^7*f - 830200*b*c^7*d^3*e^5*g + 7560*b^3*c^5*d*e^7*g + 1116
780*b^2*c^6*d^2*e^6*g))/(765765*c^6*e^3) + (2*c^2*e^5*g*x^8*(d + e*x)^(1/2)
)/17 + (x^5*(d + e*x)^(1/2)*(152082*b^2*c^6*e^8*f + 630*b^3*c^5*e^8*g - 169
218*c^8*d^2*e^6*f - 570402*c^8*d^3*e^5*g + 852516*b*c^7*d*e^7*f + 520254*b*
c^7*d^2*e^6*g + 606438*b^2*c^6*d*e^7*g))/(765765*c^6*e^3) + (2*c*e^4*x^7*(d
 + e*x)^(1/2)*(35*b*e*g + 33*c*d*g + 17*c*e*f))/255 + (x^3*(d + e*x)^(1/2)*
(800*b^5*c^3*e^8*g - 1360*b^4*c^4*e^8*f - 141950*c^8*d^4*e^4*f + 515490*c^8
*d^5*e^3*g - 1113160*b*c^7*d^3*e^5*f + 15640*b^3*c^5*d*e^7*f - 1464290*b*c^
7*d^4*e^4*g - 9440*b^4*c^4*d*e^7*g + 1459620*b^2*c^6*d^2*e^6*f + 912380*b^2
*c^6*d^3*e^5*g + 45060*b^3*c^5*d^2*e^6*g))/(765765*c^6*e^3) + (2*x^2*(b*e -
 c*d)*(d + e*x)^(1/2)*(272*b^4*c*e^5*f - 52047*c^5*d^5*g - 160*b^5*e^5*g -
124763*c^5*d^4*e*f + 37603*b*c^4*d^4*e*g + 1888*b^4*c*d*e^4*g + 222632*b*c^
4*d^3*e^2*f - 3128*b^3*c^2*d*e^4*f + 14382*b^2*c^3*d^2*e^3*f + 21728*b^2*c^
3*d^3*e^2*g - 9012*b^3*c^2*d^2*e^3*g))/(255255*c^4*e) + (2*x*(b*e - c*d)^2*
(d + e*x)^(1/2)*(640*b^5*e^5*g - 47067*c^5*d^5*g - 1088*b^4*c*e^5*f + 24379
7*c^5*d^4*e*f + 104843*b*c^4*d^4*e*g - 7552*b^4*c*d*e^4*g + 130492*b*c^4*d^
3*e^2*f + 12512*b^3*c^2*d*e^4*f - 57528*b^2*c^3*d^2*e^3*f - 86912*b^2*c^3*d
^3*e^2*g + 36048*b^3*c^2*d^2*e^3*g))/(765765*c^5*e^2)))/(x + d/e)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2252 $\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=343

$$-\frac{32(2cd-be)^3\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{45045c^5e^2(d+ex)^{7/2}}-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{6435c^4e^2(d+ex)^{5/2}}$$

```
[Out] -32/45045*(-b*e+2*c*d)^3*(-8*b*e*g+c*d*g+15*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(7/2)/c^5/e^2/(e*x+d)^(7/2)-16/6435*(-b*e+2*c*d)^2*(-8*b*e*g+c*d*g
+15*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^4/e^2/(e*x+d)^(5/2)-4/7
15*(-b*e+2*c*d)*(-8*b*e*g+c*d*g+15*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(7/2)/c^3/e^2/(e*x+d)^(3/2)-2/195*(-8*b*e*g+c*d*g+15*c*e*f)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2/(e*x+d)^(1/2)-2/15*g*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(7/2)*(e*x+d)^(1/2)/c/e^2
```

Rubi [A] time = 0.57, antiderivative size = 343, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg+15cef)}{195c^2e^2\sqrt{d+ex}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-8beg+cdg}{715c^3e^2(d+ex)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (-32*(2*c*d - b*e)^3*(15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(7/2))/(45045*c^5*e^2*(d + e*x)^(7/2)) - (16*(2*c*d - b*e)^2*(
15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(6
435*c^4*e^2*(d + e*x)^(5/2)) - (4*(2*c*d - b*e)*(15*c*e*f + c*d*g - 8*b*e*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(715*c^3*e^2*(d + e*x)^(3/2)
) - (2*(15*c*e*f + c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(
7/2))/(195*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(15*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \sqrt{d+ex}\,(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{2g\sqrt{d+ex}\,\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{15ce^2} - \Big(2\Big(\tfrac{7}{2}e\Big(-$$

$$= -\frac{2(15cef+cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{195c^2e^2\sqrt{d+ex}}$$

$$= -\frac{4(2cd-be)(15cef+cdg-8beg)\Big(d(cd-be)-be^2x-}{715c^3e^2(d+ex)^{3/2}}$$

$$= -\frac{16(2cd-be)^2(15cef+cdg-8beg)\Big(d(cd-be)-be^2x}{6435c^4e^2(d+ex)^{5/2}}$$

$$= -\frac{32(2cd-be)^3(15cef+cdg-8beg)\Big(d(cd-be)-be^2x}{45045c^5e^2(d+ex)^{7/2}}$$

Mathematica [**A**] time = 0.29, size = 264, normalized size = 0.77

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,\Big(128b^4e^4g-16b^3ce^3(77dg+15ef+28egx)+24b^2c^2e^2\Big(187d^2g+d}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[d + e*x]*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(128*b^4
*e^4*g - 16*b^3*c*e^3*(15*e*f + 77*d*g + 28*e*g*x) + 24*b^2*c^2*e^2*(187*d^
2*g + 7*e^2*x*(5*f + 6*g*x) + d*e*(95*f + 161*g*x)) - 2*b*c^3*e*(3611*d^3*g
 + 21*e^3*x^2*(45*f + 44*g*x) + 21*d*e^2*x*(170*f + 183*g*x) + d^2*e*(4065*
f + 5922*g*x)) + c^4*(3838*d^4*g + 231*e^4*x^3*(15*f + 13*g*x) + 147*d^2*e^
2*x*(145*f + 129*g*x) + 21*d*e^3*x^2*(675*f + 583*g*x) + d^3*e*(12525*f + 1
3433*g*x))))/(45045*c^5*e^2*Sqrt[d + e*x])
```

fricas [**B**] time = 0.71, size = 881, normalized size = 2.57

$$\frac{2\Big(3003\,c^7e^7gx^7+231\left(15\,c^7e^7f+\left(14\,c^7de^6+31\,bc^6e^7\right)g\right)x^6+63\Big(15\left(4\,c^7de^6+9\,bc^6e^7\right)f-\Big(139\,c^7d^2e^5-263}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/45045*(3003*c^7*e^7*g*x^7 + 231*(15*c^7*e^7*f + (14*c^7*d*e^6 + 31*b*c^6*
e^7)*g)*x^6 + 63*(15*(4*c^7*d*e^6 + 9*b*c^6*e^7)*f - (139*c^7*d^2*e^5 - 263
*b*c^6*d*e^6 - 71*b^2*c^5*e^7)*g)*x^5 - 35*(3*(103*c^7*d^2*e^5 - 193*b*c^6*
d*e^6 - 53*b^2*c^5*e^7)*f + (278*c^7*d^3*e^4 + 54*b*c^6*d^2*e^5 - 474*b^2*c
^5*d*e^6 - b^3*c^4*e^7)*g)*x^4 - 5*(3*(824*c^7*d^3*e^4 + 206*b*c^6*d^2*e^5
- 1454*b^2*c^5*d*e^6 - 5*b^3*c^4*e^7)*f - (1637*c^7*d^4*e^3 - 5930*b*c^6*d^
3*e^4 + 4224*b^2*c^5*d^2*e^5 + 77*b^3*c^4*d*e^6 - 8*b^4*c^3*e^7)*g)*x^3 + 3
*(15*(271*c^7*d^4*e^3 - 954*b*c^6*d^3*e^4 + 664*b^2*c^5*d^2*e^5 + 21*b^3*c^
4*d*e^6 - 2*b^4*c^3*e^7)*f + (3274*c^7*d^5*e^2 - 6125*b*c^6*d^4*e^3 + 2290*
b^2*c^5*d^3*e^4 + 715*b^3*c^4*d^2*e^5 - 170*b^4*c^3*d*e^6 + 16*b^5*c^2*e^7)
*g)*x^2 - 15*(835*c^7*d^6*e - 3047*b*c^6*d^5*e^2 + 4283*b^2*c^5*d^4*e^3 - 2
933*b^3*c^4*d^3*e^4 + 1046*b^4*c^3*d^2*e^5 - 200*b^5*c^2*d*e^6 + 16*b^6*c*e
^7)*f - 2*(1919*c^7*d^7 - 9368*b*c^6*d^6*e + 18834*b^2*c^5*d^5*e^2 - 20100*
b^3*c^4*d^4*e^3 + 12255*b^4*c^3*d^3*e^4 - 4284*b^5*c^2*d^2*e^5 + 808*b^6*c*
d*e^6 - 64*b^7*e^7)*g + (15*(1084*c^7*d^5*e^2 - 1897*b*c^6*d^4*e^3 + 466*b^
2*c^5*d^3*e^4 + 431*b^3*c^4*d^2*e^5 - 92*b^4*c^3*d*e^6 + 8*b^5*c^2*e^7)*f -
 (1919*c^7*d^6*e - 7449*b*c^6*d^5*e^2 + 11385*b^2*c^5*d^4*e^3 - 8715*b^3*c^
4*d^3*e^4 + 3540*b^4*c^3*d^2*e^5 - 744*b^5*c^2*d*e^6 + 64*b^6*c*e^7)*g)*x)*
sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^3*x + c^5*d
*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}} \sqrt{ex+d} \left(gx+f\right) dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*sqrt(e*x + d)*(g*x +
 f), x)
```

maple [A] time = 0.05, size = 367, normalized size = 1.07

$$2\,(cex + be - cd)\,(3003 g\,e^4 x^4 c^4 - 1848 b\,c^3 e^4 g\,x^3 + 12243 c^4 d\,e^3 g\,x^3 + 3465 c^4 e^4 f\,x^3 + 1008 b^2 c^2 e^4 g\,x^2 - 7686 b\,c^3 d$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/45045*(c*e*x+b*e-c*d)*(3003*c^4*e^4*g*x^4-1848*b*c^3*e^4*g*x^3+12243*c^4*
d*e^3*g*x^3+3465*c^4*e^4*f*x^3+1008*b^2*c^2*e^4*g*x^2-7686*b*c^3*d*e^3*g*x^
2-1890*b*c^3*e^4*f*x^2+18963*c^4*d^2*e^2*g*x^2+14175*c^4*d*e^3*f*x^2-448*b^
3*c*e^4*g*x+3864*b^2*c^2*d*e^3*g*x+840*b^2*c^2*e^4*f*x-11844*b*c^3*d^2*e^2*
g*x-7140*b*c^3*d*e^3*f*x+13433*c^4*d^3*e*g*x+21315*c^4*d^2*e^2*f*x+128*b^4*
e^4*g-1232*b^3*c*d*e^3*g-240*b^3*c*e^4*f+4488*b^2*c^2*d^2*e^2*g+2280*b^2*c^
2*d*e^3*f-7222*b*c^3*d^3*e*g-8130*b*c^3*d^2*e^2*f+3838*c^4*d^4*g+12525*c^4*
d^3*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^5/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 1.00, size = 878, normalized size = 2.56

$$2\,(231\,c^6e^6x^6 - 835\,c^6d^6 + 3047\,bc^5d^5e - 4283\,b^2c^4d^4e^2 + 2933\,b^3c^3d^3e^3 - 1046\,b^4c^2d^2e^4 + 200\,b^5cde^5 - 16\,b^6e^6 +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3003*(231*c^6*e^6*x^6 - 835*c^6*d^6 + 3047*b*c^5*d^5*e - 4283*b^2*c^4*d^4
*e^2 + 2933*b^3*c^3*d^3*e^3 - 1046*b^4*c^2*d^2*e^4 + 200*b^5*c*d*e^5 - 16*b
^6*e^6 + 63*(4*c^6*d*e^5 + 9*b*c^5*e^6)*x^5 - 7*(103*c^6*d^2*e^4 - 193*b*c^
5*d*e^5 - 53*b^2*c^4*e^6)*x^4 - (824*c^6*d^3*e^3 + 206*b*c^5*d^2*e^4 - 1454
*b^2*c^4*d*e^5 - 5*b^3*c^3*e^6)*x^3 + 3*(271*c^6*d^4*e^2 - 954*b*c^5*d^3*e^
3 + 664*b^2*c^4*d^2*e^4 + 21*b^3*c^3*d*e^5 - 2*b^4*c^2*e^6)*x^2 + (1084*c^6
*d^5*e - 1897*b*c^5*d^4*e^2 + 466*b^2*c^4*d^3*e^3 + 431*b^3*c^3*d^2*e^4 - 9
2*b^4*c^2*d*e^5 + 8*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*f/(c^4
*e^2*x + c^4*d*e) + 2/45045*(3003*c^7*e^7*x^7 - 3838*c^7*d^7 + 18736*b*c^6*
d^6*e - 37668*b^2*c^5*d^5*e^2 + 40200*b^3*c^4*d^4*e^3 - 24510*b^4*c^3*d^3*e
^4 + 8568*b^5*c^2*d^2*e^5 - 1616*b^6*c*d*e^6 + 128*b^7*e^7 + 231*(14*c^7*d*
e^6 + 31*b*c^6*e^7)*x^6 - 63*(139*c^7*d^2*e^5 - 263*b*c^6*d*e^6 - 71*b^2*c^
5*e^7)*x^5 - 35*(278*c^7*d^3*e^4 + 54*b*c^6*d^2*e^5 - 474*b^2*c^5*d*e^6 - b
^3*c^4*e^7)*x^4 + 5*(1637*c^7*d^4*e^3 - 5930*b*c^6*d^3*e^4 + 4224*b^2*c^5*d
^2*e^5 + 77*b^3*c^4*d*e^6 - 8*b^4*c^3*e^7)*x^3 + 3*(3274*c^7*d^5*e^2 - 6125
*b*c^6*d^4*e^3 + 2290*b^2*c^5*d^3*e^4 + 715*b^3*c^4*d^2*e^5 - 170*b^4*c^3*d
*e^6 + 16*b^5*c^2*e^7)*x^2 - (1919*c^7*d^6*e - 7449*b*c^6*d^5*e^2 + 11385*b
^2*c^5*d^4*e^3 - 8715*b^3*c^4*d^3*e^4 + 3540*b^4*c^3*d^2*e^5 - 744*b^5*c^2*
d*e^6 + 64*b^6*c*e^7)*x)*sqrt(-c*e*x + c*d - b*e)*(e*x + d)*g/(c^5*e^3*x +
c^5*d*e^2)
```

mupad [**B**] time = 4.03, size = 769, normalized size = 2.24

$$\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,e^2\,x^5\,\sqrt{d+e\,x}\,\left(71\,g\,b^2\,e^2+263\,g\,b\,c\,d\,e+135\,f\,b\,c\,e^2-139\,g\,c^2\,d^2+60\,f\,c^2\,d\,e\right)}{715}+\frac{x^3\,\sqrt{d+e\,x}\,\left(-80\,g\,b^4\,c^3\,e^7\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x
)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^5*(d + e*x)^(1/2)*(7
1*b^2*e^2*g - 139*c^2*d^2*g + 135*b*c*e^2*f + 60*c^2*d*e*f + 263*b*c*d*e*g)
)/715 + (x^3*(d + e*x)^(1/2)*(150*b^3*c^4*e^7*f - 80*b^4*c^3*e^7*g - 24720*
c^7*d^3*e^4*f + 16370*c^7*d^4*e^3*g - 6180*b*c^6*d^2*e^5*f + 43620*b^2*c^5*
d*e^6*f - 59300*b*c^6*d^3*e^4*g + 770*b^3*c^4*d*e^6*g + 42240*b^2*c^5*d^2*e
^5*g))/(45045*c^5*e^3) + (2*c^2*e^4*g*x^7*(d + e*x)^(1/2))/15 + (2*(b*e - c
*d)^3*(d + e*x)^(1/2)*(128*b^4*e^4*g + 3838*c^4*d^4*g - 240*b^3*c*e^4*f + 1
2525*c^4*d^3*e*f - 7222*b*c^3*d^3*e*g - 1232*b^3*c*d*e^3*g - 8130*b*c^3*d^2
*e^2*f + 2280*b^2*c^2*d*e^3*f + 4488*b^2*c^2*d^2*e^2*g))/(45045*c^5*e^3) +
(x^4*(d + e*x)^(1/2)*(11130*b^2*c^5*e^7*f + 70*b^3*c^4*e^7*g - 21630*c^7*d^
2*e^5*f - 19460*c^7*d^3*e^4*g + 40530*b*c^6*d*e^6*f - 3780*b*c^6*d^2*e^5*g
+ 33180*b^2*c^5*d*e^6*g))/(45045*c^5*e^3) + (2*c*e^3*x^6*(d + e*x)^(1/2)*(3
1*b*e*g + 14*c*d*g + 15*c*e*f))/195 + (2*x^2*(b*e - c*d)*(d + e*x)^(1/2)*(1
6*b^4*e^4*g - 3274*c^4*d^4*g - 30*b^3*c*e^4*f - 4065*c^4*d^3*e*f + 2851*b*c
^3*d^3*e*g - 154*b^3*c*d*e^3*g + 10245*b*c^3*d^2*e^2*f + 285*b^2*c^2*d*e^3*
f + 561*b^2*c^2*d^2*e^2*g))/(15015*c^3*e) + (2*x*(b*e - c*d)^2*(d + e*x)^(1
/2)*(120*b^3*c*e^4*f - 1919*c^4*d^4*g - 64*b^4*e^4*g + 16260*c^4*d^3*e*f +
3611*b*c^3*d^3*e*g + 616*b^3*c*d*e^3*g + 4065*b*c^3*d^2*e^2*f - 1140*b^2*c^
2*d*e^3*f - 2244*b^2*c^2*d^2*e^2*g))/(45045*c^4*e^2)))/(x + d/e)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}\sqrt{d+ex}\left(f+gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(5/2)*sqrt(d + e*x)*(f + g*x), x
)
```

3.2253 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx$

Optimal. Leaf size=270

$$-\frac{16(2cd-be)^2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{9009c^4e^2(d+ex)^{7/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-}{1287c^3e^2(d+ex)^{5/2}}$$

```
[Out] -16/9009*(-b*e+2*c*d)^2*(-6*b*e*g-c*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e
^2*x^2)^(7/2)/c^4/e^2/(e*x+d)^(7/2)-8/1287*(-b*e+2*c*d)*(-6*b*e*g-c*d*g+13*
c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^3/e^2/(e*x+d)^(5/2)-2/143*(
-6*b*e*g-c*d*g+13*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2/(e*
x+d)^(3/2)-2/13*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2/(e*x+d)^(1/2
)
```

Rubi [A] time = 0.44, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg+13cef)}{143c^2e^2(d+ex)^{3/2}}-\frac{8(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-6beg-cdg}{1287c^3e^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/Sqrt[d + e*x],x
]
```

```
[Out] (-16*(2*c*d - b*e)^2*(13*c*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(7/2))/(9009*c^4*e^2*(d + e*x)^(7/2)) - (8*(2*c*d - b*e)*(13*c
*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(1287*
c^3*e^2*(d + e*x)^(5/2)) - (2*(13*c*e*f - c*d*g - 6*b*e*g)*(d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2)^(7/2))/(143*c^2*e^2*(d + e*x)^(3/2)) - (2*g*(d*(c*d -
 b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(13*c*e^2*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{\sqrt{d+ex}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{13ce^2\sqrt{d+ex}} - \Big(2\Big(\tfrac{7}{2}e\left(-2ce^2f+be^2g\right)+$$

$$= -\frac{2(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{143c^2e^2(d+ex)^{3/2}} - 2g\,\big(d($$

$$= -\frac{8(2cd-be)(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{1287c^3e^2(d+ex)^{5/2}}$$

$$= -\frac{16(2cd-be)^2(13cef-cdg-6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)}{9009c^4e^2(d+ex)^{7/2}}$$

Mathematica **[A]** time = 0.21, size = 183, normalized size = 0.68

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,\big(-48b^3e^3g+8b^2ce^2(44dg+13ef+21egx)-2bc^2e\big(423d^2g+de(39}{90}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/Sqrt[d +
e*x],x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-48*b^3
*e^3*g + 8*b^2*c*e^2*(13*e*f + 44*d*g + 21*e*g*x) - 2*b*c^2*e*(423*d^2*g +
7*e^2*x*(26*f + 27*g*x) + d*e*(390*f + 532*g*x)) + c^3*(542*d^3*g + 63*e^3*
x^2*(13*f + 11*g*x) + 14*d*e^2*x*(169*f + 144*g*x) + d^2*e*(1963*f + 1897*g
*x))))/(9009*c^4*e^2*Sqrt[d + e*x])
```

fricas **[B]** time = 0.69, size = 675, normalized size = 2.50

$$2\,\big(693\,c^6e^6gx^6+63\left(13\,c^6e^6f-\left(c^6de^5-27\,bc^5e^6\right)g\right)x^5-7\,\big(13\left(c^6de^5-23\,bc^5e^6\right)f+\big(296\,c^6d^2e^4-280\,bc^5de^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] 2/9009*(693*c^6*e^6*g*x^6 + 63*(13*c^6*e^6*f - (c^6*d*e^5 - 27*b*c^5*e^6)*g
)*x^5 - 7*(13*(c^6*d*e^5 - 23*b*c^5*e^6)*f + (296*c^6*d^2*e^4 - 280*b*c^5*d
*e^5 - 159*b^2*c^4*e^6)*g)*x^4 - (13*(206*c^6*d^2*e^4 - 192*b*c^5*d*e^5 - 1
13*b^2*c^4*e^6)*f - (206*c^6*d^3*e^3 - 3114*b*c^5*d^2*e^4 + 2893*b^2*c^4*d*
e^5 + 15*b^3*c^3*e^6)*g)*x^3 + 3*(13*(10*c^6*d^3*e^3 - 118*b*c^5*d^2*e^4 +
107*b^2*c^4*d*e^5 + b^3*c^3*e^6)*f + (683*c^6*d^4*e^2 - 1328*b*c^5*d^3*e^3
+ 601*b^2*c^4*d^2*e^4 + 50*b^3*c^3*d*e^5 - 6*b^4*c^2*e^6)*g)*x^2 - 13*(151*
c^6*d^5*e - 513*b*c^5*d^4*e^2 + 641*b^2*c^4*d^3*e^3 - 355*b^3*c^3*d^2*e^4 +
 84*b^4*c^2*d*e^5 - 8*b^5*c*e^6)*f - 2*(271*c^6*d^6 - 1236*b*c^5*d^5*e + 22
58*b^2*c^4*d^4*e^2 - 2092*b^3*c^3*d^3*e^3 + 1023*b^4*c^2*d^2*e^4 - 248*b^5*
c*d*e^5 + 24*b^6*e^6)*g + (13*(271*c^6*d^4*e^2 - 512*b*c^5*d^3*e^3 + 207*b^
2*c^4*d^2*e^4 + 38*b^3*c^3*d*e^5 - 4*b^4*c^2*e^6)*f - (271*c^6*d^5*e - 965*
b*c^5*d^4*e^2 + 1293*b^2*c^4*d^3*e^3 - 799*b^3*c^3*d^2*e^4 + 224*b^4*c^2*d*
e^5 - 24*b^5*c*e^6)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e
*x + d)/(c^4*e^3*x + c^4*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/sqrt(e*x +
 d), x)
```

maple [A] time = 0.05, size = 235, normalized size = 0.87

$$-\frac{2\,(cex + be - cd)\big(-693g\,e^3x^3c^3 + 378b\,c^2e^3g\,x^2 - 2016c^3d\,e^2g\,x^2 - 819c^3e^3f\,x^2 - 168b^2c\,e^3gx + 1064b\,c^2d\,e^2gx -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x)
```

```
[Out] -2/9009*(c*e*x+b*e-c*d)*(-693*c^3*e^3*g*x^3+378*b*c^2*e^3*g*x^2-2016*c^3*d*
e^2*g*x^2-819*c^3*e^3*f*x^2-168*b^2*c*e^3*g*x+1064*b*c^2*d*e^2*g*x+364*b*c^
2*e^3*f*x-1897*c^3*d^2*e*g*x-2366*c^3*d*e^2*f*x+48*b^3*e^3*g-352*b^2*c*d*e^
2*g-104*b^2*c*e^3*f+846*b*c^2*d^2*e*g+780*b*c^2*d*e^2*f-542*c^3*d^3*g-1963*
c^3*d^2*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^4/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 0.75, size = 638, normalized size = 2.36

$$\frac{2\big(63\,c^5e^5x^5 - 151\,c^5d^5 + 513\,bc^4d^4e - 641\,b^2c^3d^3e^2 + 355\,b^3c^2d^2e^3 - 84\,b^4cde^4 + 8\,b^5e^5 - 7\left(c^5de^4 - 23\,bc^4e^5\right)x^4 -}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/693*(63*c^5*e^5*x^5 - 151*c^5*d^5 + 513*b*c^4*d^4*e - 641*b^2*c^3*d^3*e^2
 + 355*b^3*c^2*d^2*e^3 - 84*b^4*c*d*e^4 + 8*b^5*e^5 - 7*(c^5*d*e^4 - 23*b*c
^4*e^5)*x^4 - (206*c^5*d^2*e^3 - 192*b*c^4*d*e^4 - 113*b^2*c^3*e^5)*x^3 + 3
*(10*c^5*d^3*e^2 - 118*b*c^4*d^2*e^3 + 107*b^2*c^3*d*e^4 + b^3*c^2*e^5)*x^2
 + (271*c^5*d^4*e - 512*b*c^4*d^3*e^2 + 207*b^2*c^3*d^2*e^3 + 38*b^3*c^2*d*
e^4 - 4*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^3*e) + 2/9009*(693*c^6*
e^6*x^6 - 542*c^6*d^6 + 2472*b*c^5*d^5*e - 4516*b^2*c^4*d^4*e^2 + 4184*b^3*
c^3*d^3*e^3 - 2046*b^4*c^2*d^2*e^4 + 496*b^5*c*d*e^5 - 48*b^6*e^6 - 63*(c^6
*d*e^5 - 27*b*c^5*e^6)*x^5 - 7*(296*c^6*d^2*e^4 - 280*b*c^5*d*e^5 - 159*b^2
*c^4*e^6)*x^4 + (206*c^6*d^3*e^3 - 3114*b*c^5*d^2*e^4 + 2893*b^2*c^4*d*e^5
+ 15*b^3*c^3*e^6)*x^3 + 3*(683*c^6*d^4*e^2 - 1328*b*c^5*d^3*e^3 + 601*b^2*c
^4*d^2*e^4 + 50*b^3*c^3*d*e^5 - 6*b^4*c^2*e^6)*x^2 - (271*c^6*d^5*e - 965*b
*c^5*d^4*e^2 + 1293*b^2*c^4*d^3*e^3 - 799*b^3*c^3*d^2*e^4 + 224*b^4*c^2*d*e
^5 - 24*b^5*c*e^6)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^4*e^2)
```

mupad [B] time = 3.72, size = 491, normalized size = 1.82

$$\frac{\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,\Bigg(\frac{2\,e^2\,x^4\left(159\,g\,b^2\,e^2+280\,g\,b\,c\,d\,e+299\,f\,b\,c\,e^2-296\,g\,c^2\,d^2-13\,f\,c^2\,d\,e\right)}{1287} + \frac{2\,c^2\,e^4\,g\,x^6}{13} + \frac{2\,x^2\,(b\,e-c\,d)\big(-6\,g\,b^3}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(1/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*e^2*x^4*(159*b^2*e^2*g - 2
96*c^2*d^2*g + 299*b*c*e^2*f - 13*c^2*d*e*f + 280*b*c*d*e*g))/1287 + (2*c^2
*e^4*g*x^6)/13 + (2*x^2*(b*e - c*d)*(13*b^2*c*e^3*f - 683*c^3*d^3*g - 6*b^3
*e^3*g - 130*c^3*d^2*e*f + 1404*b*c^2*d*e^2*f + 645*b*c^2*d^2*e*g + 44*b^2*
c*d*e^2*g))/(3003*c^2) + (x^3*(2938*b^2*c^4*e^6*f + 30*b^3*c^3*e^6*g - 5356
*c^6*d^2*e^4*f + 412*c^6*d^3*e^3*g + 4992*b*c^5*d*e^5*f - 6228*b*c^5*d^2*e^
4*g + 5786*b^2*c^4*d*e^5*g))/(9009*c^4*e^2) + (2*c*e^3*x^5*(27*b*e*g - c*d*
g + 13*c*e*f))/143 + (2*(b*e - c*d)^3*(542*c^3*d^3*g - 48*b^3*e^3*g + 104*b
^2*c*e^3*f + 1963*c^3*d^2*e*f - 780*b*c^2*d*e^2*f - 846*b*c^2*d^2*e*g + 352
*b^2*c*d*e^2*g))/(9009*c^4*e^2) + (2*x*(b*e - c*d)^2*(24*b^3*e^3*g - 271*c^
3*d^3*g - 52*b^2*c*e^3*f + 3523*c^3*d^2*e*f + 390*b*c^2*d*e^2*f + 423*b*c^2
*d^2*e*g - 176*b^2*c*d*e^2*g))/(9009*c^3*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(1/2
),x)
```

```
[Out] Timed out
```

3.2254 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cdg+11cef)}{693c^3e^2(d+ex)^{7/2}}-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cd}{99c^2e^2(d+ex)^{5/2}}$$

```
[Out] -4/693*(-b*e+2*c*d)*(-4*b*e*g-3*c*d*g+11*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2
*x^2)^(7/2)/c^3/e^2/(e*x+d)^(7/2)-2/99*(-4*b*e*g-3*c*d*g+11*c*e*f)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2/e^2/(e*x+d)^(5/2)-2/11*g*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(7/2)/c/e^2/(e*x+d)^(3/2)
```

Rubi **[A]** time = 0.34, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cdg+11cef)}{99c^2e^2(d+ex)^{5/2}}-\frac{4(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-4beg-3cd}{693c^3e^2(d+ex)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(3/2)
,x]
```

```
[Out] (-4*(2*c*d - b*e)*(11*c*e*f - 3*c*d*g - 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x -
 c*e^2*x^2)^(7/2))/(693*c^3*e^2*(d + e*x)^(7/2)) - (2*(11*c*e*f - 3*c*d*g -
 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(99*c^2*e^2*(d + e*x
)^(5/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(11*c*e^2*(d +
 e*x)^(3/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{3/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{11ce^2(d+ex)^{3/2}} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)-\right.\right.}{}$$

$$= -\frac{2(11cef-3cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{99c^2e^2(d+ex)^{5/2}} - \frac{2g\left(d\right.}{}$$

$$= -\frac{4(2cd-be)(11cef-3cdg-4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/}}{693c^3e^2(d+ex)^{7/2}}$$

Mathematica [A] time = 0.15, size = 121, normalized size = 0.63

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\left(8b^2e^2g-2bce(19dg+11ef+14egx)+c^2\left(30d^2g+de(121f+105\right.\right.}{693c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(3/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(8*b^2*e
^2*g - 2*b*c*e*(11*e*f + 19*d*g + 14*e*g*x) + c^2*(30*d^2*g + 7*e^2*x*(11*f
 + 9*g*x) + d*e*(121*f + 105*g*x))))/(693*c^3*e^2*Sqrt[d + e*x])
```

fricas [B] time = 1.37, size = 500, normalized size = 2.59

$$\frac{2\left(63\,c^5e^5gx^5+7\left(11\,c^5e^5f-\left(12\,c^5de^4-23\,bc^4e^5\right)g\right)x^4-\left(11\left(10\,c^5de^4-19\,bc^4e^5\right)f+\left(96\,c^5d^2e^3+17\,bc^4de^4-\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/693*(63*c^5*e^5*g*x^5 + 7*(11*c^5*e^5*f - (12*c^5*d*e^4 - 23*b*c^4*e^5)*g
)*x^4 - (11*(10*c^5*d*e^4 - 19*b*c^4*e^5)*f + (96*c^5*d^2*e^3 + 17*b*c^4*d*
e^4 - 113*b^2*c^3*e^5)*g)*x^3 - 3*(11*(4*c^5*d^2*e^3 + b*c^4*d*e^4 - 5*b^2*
c^3*e^5)*f - (54*c^5*d^3*e^2 - 107*b*c^4*d^2*e^3 + 52*b^2*c^3*d*e^4 + b^3*c
^2*e^5)*g)*x^2 - 11*(11*c^5*d^4*e - 35*b*c^4*d^3*e^2 + 39*b^2*c^3*d^2*e^3 -
 17*b^3*c^2*d*e^4 + 2*b^4*c*e^5)*f - 2*(15*c^5*d^5 - 64*b*c^4*d^4*e + 106*b
^2*c^3*d^3*e^2 - 84*b^3*c^2*d^2*e^3 + 31*b^4*c*d*e^4 - 4*b^5*e^5)*g + (11*(
26*c^5*d^3*e^2 - 51*b*c^4*d^2*e^3 + 24*b^2*c^3*d*e^4 + b^3*c^2*e^5)*f - (15
*c^5*d^4*e - 49*b*c^4*d^3*e^2 + 57*b^2*c^3*d^2*e^3 - 27*b^3*c^2*d*e^4 + 4*b
^4*c*e^5)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c
^3*e^3*x + c^3*d*e^2)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}\left(gx+f\right)}{(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(3/2), x)
```

maple [A] time = 0.04, size = 139, normalized size = 0.72

$$\frac{2\left(cex+be-cd\right)\Big(63g\,x^{2}c^{2}e^{2}-28bc\,e^{2}gx+105c^{2}degx+77c^{2}e^{2}fx+8b^{2}e^{2}g-38bcdeg-22bc\,e^{2}f+30c^{2}d^{2}g+12}{693\left(ex+d\right)^{\frac{5}{2}}c^{3}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x)
```

```
[Out] 2/693*(c*e*x+b*e-c*d)*(63*c^2*e^2*g*x^2-28*b*c*e^2*g*x+105*c^2*d*e*g*x+77*c
^2*e^2*f*x+8*b^2*e^2*g-38*b*c*d*e*g-22*b*c*e^2*f+30*c^2*d^2*g+121*c^2*d*e*f
)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/c^3/e^2/(e*x+d)^(5/2)
```

maxima [B] time = 0.89, size = 465, normalized size = 2.41

$$\frac{2\Big(7\,c^{4}e^{4}x^{4}-11\,c^{4}d^{4}+35\,bc^{3}d^{3}e-39\,b^{2}c^{2}d^{2}e^{2}+17\,b^{3}cde^{3}-2\,b^{4}e^{4}-\left(10\,c^{4}de^{3}-19\,bc^{3}e^{4}\right)x^{3}-3\,\Big(4\,c^{4}d^{2}e^{2}+bc^{3}d}{63\,c^{2}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] 2/63*(7*c^4*e^4*x^4 - 11*c^4*d^4 + 35*b*c^3*d^3*e - 39*b^2*c^2*d^2*e^2 + 17
*b^3*c*d*e^3 - 2*b^4*e^4 - (10*c^4*d*e^3 - 19*b*c^3*e^4)*x^3 - 3*(4*c^4*d^2
*e^2 + b*c^3*d*e^3 - 5*b^2*c^2*e^4)*x^2 + (26*c^4*d^3*e - 51*b*c^3*d^2*e^2
+ 24*b^2*c^2*d*e^3 + b^3*c*e^4)*x)*sqrt(-c*e*x + c*d - b*e)*f/(c^2*e) + 2/6
93*(63*c^5*e^5*x^5 - 30*c^5*d^5 + 128*b*c^4*d^4*e - 212*b^2*c^3*d^3*e^2 + 1
68*b^3*c^2*d^2*e^3 - 62*b^4*c*d*e^4 + 8*b^5*e^5 - 7*(12*c^5*d*e^4 - 23*b*c^
4*e^5)*x^4 - (96*c^5*d^2*e^3 + 17*b*c^4*d*e^4 - 113*b^2*c^3*e^5)*x^3 + 3*(5
4*c^5*d^3*e^2 - 107*b*c^4*d^2*e^3 + 52*b^2*c^3*d*e^4 + b^3*c^2*e^5)*x^2 - (
15*c^5*d^4*e - 49*b*c^4*d^3*e^2 + 57*b^2*c^3*d^2*e^3 - 27*b^3*c^2*d*e^4 + 4
*b^4*c*e^5)*x)*sqrt(-c*e*x + c*d - b*e)*g/(c^3*e^2)
```

mupad [B] time = 3.23, size = 320, normalized size = 1.66

$$\frac{\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}\;\Bigg(\frac{2\,c^{2}\,e^{3}\,g\,x^{5}}{11}+\frac{2\,c\,e^{2}\,x^{4}\left(23\,b\,e\,g-12\,c\,d\,g+11\,c\,e\,f\right)}{99}+\frac{2\,x^{2}\,(b\,e-c\,d)\,\Big(g\,b^{2}\,e^{2}+53\,g\,b\,c\,d\,e+55\,f\,b\,c\,e^{2}-54\,g\,c^{2}\,d^{2}+}{231\,c}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*c^2*e^3*g*x^5)/11 + (2*c*e
^2*x^4*(23*b*e*g - 12*c*d*g + 11*c*e*f))/99 + (2*x^2*(b*e - c*d)*(b^2*e^2*g
 - 54*c^2*d^2*g + 55*b*c*e^2*f + 44*c^2*d*e*f + 53*b*c*d*e*g))/(231*c) - (x
^3*(192*c^5*d^2*e^3*g - 226*b^2*c^3*e^5*g - 418*b*c^4*e^5*f + 220*c^5*d*e^4
*f + 34*b*c^4*d*e^4*g))/(693*c^3*e^2) + (2*(b*e - c*d)^3*(8*b^2*e^2*g + 30*
c^2*d^2*g - 22*b*c*e^2*f + 121*c^2*d*e*f - 38*b*c*d*e*g))/(693*c^3*e^2) + (
2*x*(b*e - c*d)^2*(11*b*c*e^2*f - 15*c^2*d^2*g - 4*b^2*e^2*g + 286*c^2*d*e*
f + 19*b*c*d*e*g))/(693*c^2*e)))/(d + e*x)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(3/2
),x)
```

```
[Out] Timed out
```

3.2255 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx$

Optimal. Leaf size=118

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-2beg-5cdg+9cef)}{63c^2e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}}$$

```
[Out] -2/63*(-2*b*e*g-5*c*d*g+9*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c^2
/e^2/(e*x+d)^(7/2)-2/9*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2/(e*x+
d)^(5/2)
```

Rubi [A] time = 0.19, antiderivative size = 118, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {794, 648}

$$-\frac{2\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}(-2beg-5cdg+9cef)}{63c^2e^2(d+ex)^{7/2}}-\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(5/2)
,x]
```

```
[Out] (-2*(9*c*e*f - 5*c*d*g - 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/
2))/(63*c^2*e^2*(d + e*x)^(7/2)) - (2*g*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2)^(7/2))/(9*c*e^2*(d + e*x)^(5/2))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{5/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{9ce^2(d+ex)^{5/2}} - \frac{\left(2\left(\frac{7}{2}e\left(-2ce^2f+be^2g\right)-\frac{5}{2}\right.\right.(-}{}$$

$$= -\frac{2(9cef-5cdg-2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{63c^2e^2(d+ex)^{7/2}} - \frac{2g\left(d(cd-\right.}{9}$$

Mathematica [A] time = 0.11, size = 78, normalized size = 0.66

$$\frac{2(be-cd+cex)^3\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+9ef+7egx)-2beg)}{63c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(5/2),x]
```

```
[Out] (2*(-(c*d) + b*e + c*e*x)^3*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*
g + c*(9*e*f + 2*d*g + 7*e*g*x)))/(63*c^2*e^2*Sqrt[d + e*x])
```

fricas [**B**] time = 1.05, size = 345, normalized size = 2.92

$$2\left(7\,c^4e^4gx^4+\left(9\,c^4e^4f-19\left(c^4de^3-bc^3e^4\right)g\right)x^3-3\left(9\left(c^4de^3-bc^3e^4\right)f-5\left(c^4d^2e^2-2\,bc^3de^3+b^2c^2e^4\right)g\right)x^2-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/63*(7*c^4*e^4*g*x^4 + (9*c^4*e^4*f - 19*(c^4*d*e^3 - b*c^3*e^4)*g)*x^3 -
3*(9*(c^4*d*e^3 - b*c^3*e^4)*f - 5*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e
^4)*g)*x^2 - 9*(c^4*d^3*e - 3*b*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*
f - 2*(c^4*d^4 - 4*b*c^3*d^3*e + 6*b^2*c^2*d^2*e^2 - 4*b^3*c*d*e^3 + b^4*e^
4)*g + (27*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e^4)*f - (c^4*d^3*e - 3*b
*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:index.cc index_m operator + Error: Bad Argum
ent Valueindex.cc index_m operator + Error: Bad Argument Valueindex.cc inde
x_m operator + Error: Bad Argument ValueEvaluation time: 6.36Done
```

maple [**A**] time = 0.05, size = 79, normalized size = 0.67

$$-\frac{2\,(cex+be-cd)\left(-7cegx+2beg-2cdg-9cef\right)\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}}{63\,(ex+d)^{\frac{5}{2}}\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x)
```

```
[Out] -2/63*(c*e*x+b*e-c*d)*(-7*c*e*g*x+2*b*e*g-2*c*d*g-9*c*e*f)*(-c*e^2*x^2-b*e^
2*x-b*d*e+c*d^2)^(5/2)/c^2/e^2/(e*x+d)^(5/2)
```

maxima [**B**] time = 0.74, size = 314, normalized size = 2.66

$$\frac{2\left(c^3e^3x^3-c^3d^3+3\,bc^2d^2e-3\,b^2cde^2+b^3e^3-3\left(c^3de^2-bc^2e^3\right)x^2+3\left(c^3d^2e-2\,bc^2de^2+b^2ce^3\right)x\right)\sqrt{-cex+c}}{7\,ce}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/7*(c^3*e^3*x^3 - c^3*d^3 + 3*b*c^2*d^2*e - 3*b^2*c*d*e^2 + b^3*e^3 - 3*(c
^3*d*e^2 - b*c^2*e^3)*x^2 + 3*(c^3*d^2*e - 2*b*c^2*d*e^2 + b^2*c*e^3)*x)*sq
rt(-c*e*x + c*d - b*e)*f/(c*e) + 2/63*(7*c^4*e^4*x^4 - 2*c^4*d^4 + 8*b*c^3*
d^3*e - 12*b^2*c^2*d^2*e^2 + 8*b^3*c*d*e^3 - 2*b^4*e^4 - 19*(c^4*d*e^3 - b*
c^3*e^4)*x^3 + 15*(c^4*d^2*e^2 - 2*b*c^3*d*e^3 + b^2*c^2*e^4)*x^2 - (c^4*d^
3*e - 3*b*c^3*d^2*e^2 + 3*b^2*c^2*d*e^3 - b^3*c*e^4)*x)*sqrt(-c*e*x + c*d -
 b*e)*g/(c^2*e^2)
```

mupad **[B]** time = 2.90, size = 170, normalized size = 1.44

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,x^2\,(b\,e-c\,d)\,\left(5\,b\,e\,g-5\,c\,d\,g+9\,c\,e\,f\right)}{21}+\frac{2\,c\,e\,x^3\,\left(19\,b\,e\,g-19\,c\,d\,g+9\,c\,e\,f\right)}{63}+\frac{2\,c^2\,e^2\,g\,x^4}{9}+\frac{2\,(b\,e-c\,d)^3\,\left(2\,c\,d\right.}{63\,c}\right.}{\sqrt{d+e\,x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(5/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^2*(b*e - c*d)*(5*b*e*g -
 5*c*d*g + 9*c*e*f))/21 + (2*c*e*x^3*(19*b*e*g - 19*c*d*g + 9*c*e*f))/63 +
(2*c^2*e^2*g*x^4)/9 + (2*(b*e - c*d)^3*(2*c*d*g - 2*b*e*g + 9*c*e*f))/(63*c
^2*e^2) + (2*x*(b*e - c*d)^2*(b*e*g - c*d*g + 27*c*e*f))/(63*c*e)))/(d + e*
x)^(1/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(5/2
),x)
```

```
[Out] Timed out
```

3.2256 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx$

Optimal. Leaf size=316

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}}+\frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)^2(ef}{}$$

```
[Out] 2/3*(-b*e+2*c*d)*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(e*x
+d)^(3/2)+2/5*(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(e*x+d)
^(5/2)-2/7*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2/(e*x+d)^(7/2)-2*(
-b*e+2*c*d)^(5/2)*(-d*g+e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2+2*(-b*e+2*c*d)^2*(-d*g+e*f)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 316, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {794, 664, 660, 208}

$$\frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}}+\frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}}+\frac{2(2cd-be)^2(ef}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(7/2)
,x]
```

```
[Out] (2*(2*c*d - b*e)^2*(e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(
e^2*Sqrt[d + e*x]) + (2*(2*c*d - b*e)*(e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^(3/2)) + (2*(e*f - d*g)*(d*(c*d - b*e)
 - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(d + e*x)^(5/2)) - (2*g*(d*(c*d - b*e
) - b*e^2*x - c*e^2*x^2)^(7/2))/(7*c*e^2*(d + e*x)^(7/2)) - (2*(2*c*d - b*e
)^(5/2)*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt
[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{7/2}}\,dx = -\frac{2g\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{7ce^2(d+ex)^{7/2}} - \frac{(2(\frac{7}{2}e(-2ce^2f+be^2g)-\frac{7}{2}(-}{}$$

$$= \frac{2(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(d+ex)^{5/2}} - \frac{2g(d(cd-be)-be^2x-}{7ce^2(d+ex)^{7/}}$$

$$= \frac{2(2cd-be)(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} + \frac{2(ef-dg)(}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)(ef}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)(ef}{}$$

$$= \frac{2(2cd-be)^2(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} + \frac{2(2cd-be)(ef}{}$$

Mathematica [A] time = 0.57, size = 197, normalized size = 0.62

$$\frac{2((d+ex)(c(d-ex)-be))^{5/2}\left(\frac{7c(ef-dg)\left(\sqrt{c(d-ex)-be}\left(23b^2e^2+bce(11ex-81d)+c^2\left(73d^2-16dex+3e^2x^2\right)\right)-15(2cd-be)^{5/2}\tanh^{-1}(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right.}{15(c(d-ex)-be)^{5/2}}\right.}{7ce^2(d+ex)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(7/2),x]
```

```
[Out] (2*((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(g*(-(c*d) + b*e + c*e*x) + (7*
c*(e*f - d*g)*(Sqrt[-(b*e) + c*(d - e*x)]*(23*b^2*e^2 + b*c*e*(-81*d + 11*e
*x) + c^2*(73*d^2 - 16*d*e*x + 3*e^2*x^2)) - 15*(2*c*d - b*e)^(5/2)*ArcTanh
[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]))/(15*(-(b*e) + c*(d - e*x))^(5
/2))))/(7*c*e^2*(d + e*x)^(5/2))
```

fricas [A] time = 0.96, size = 949, normalized size = 3.00

$$\left[-\frac{105\sqrt{2cd-be}\,((4c^3d^3e-4bc^2d^2e^2+b^2cde^3)f-(4c^3d^4-4bc^2d^3e+b^2cd^2e^2)g+((4c^3d^2e^2-4bc^2de^3+b^2ce}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/105*(105*sqrt(2*c*d - b*e)*((4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^
3)*f - (4*c^3*d^4 - 4*b*c^2*d^3*e + b^2*c*d^2*e^2)*g + ((4*c^3*d^2*e^2 - 4*
b*c^2*d*e^3 + b^2*c*e^4)*f - (4*c^3*d^3*e - 4*b*c^2*d^2*e^2 + b^2*c*d*e^3)*
g)*x)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x
^2 + 2*d*e*x + d^2)) - 2*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f - (22*c^3*d*e^2
 - 15*b*c^2*e^3)*g)*x^2 + 7*(73*c^3*d^2*e - 81*b*c^2*d*e^2 + 23*b^2*c*e^3)*
f - (526*c^3*d^3 - 612*b*c^2*d^2*e + 206*b^2*c*d*e^2 - 15*b^3*e^3)*g - (7*(
16*c^3*d*e^2 - 11*b*c^2*e^3)*f - (157*c^3*d^2*e - 167*b*c^2*d*e^2 + 45*b^2*
c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e
^3*x + c*d*e^2), -2/105*(105*sqrt(-2*c*d + b*e)*((4*c^3*d^3*e - 4*b*c^2*d^2
*e^2 + b^2*c*d*e^3)*f - (4*c^3*d^4 - 4*b*c^2*d^3*e + b^2*c*d^2*e^2)*g + ((4
*c^3*d^2*e^2 - 4*b*c^2*d*e^3 + b^2*c*e^4)*f - (4*c^3*d^3*e - 4*b*c^2*d^2*e^
2 + b^2*c*d*e^3)*g)*x)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sq
rt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - (15
*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f - (22*c^3*d*e^2 - 15*b*c^2*e^3)*g)*x^2 + 7*
(73*c^3*d^2*e - 81*b*c^2*d*e^2 + 23*b^2*c*e^3)*f - (526*c^3*d^3 - 612*b*c^2
*d^2*e + 206*b^2*c*d*e^2 - 15*b^3*e^3)*g - (7*(16*c^3*d*e^2 - 11*b*c^2*e^3)
*f - (157*c^3*d^2*e - 167*b*c^2*d*e^2 + 45*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(c*e^3*x + c*d*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 956, normalized size = 3.03

$$\frac{2\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(105 b^{3} c d\,e^{3} g \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-105 b^{3} c\,e^{4} f \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-630 b^{2} c\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x)
```

```
[Out] 2/105*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(15*x^3*c^3*e^3*g*(-c*e*x-b*e+
c*d)^(1/2)*(b*e-2*c*d)^(1/2)+45*x^2*b*c^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e
-2*c*d)^(1/2)-66*x^2*c^3*d*e^2*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+2
1*x^2*c^3*e^3*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+105*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^3*c*d*e^3*g-105*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*b^3*c*e^4*f-630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))*b^2*c^2*d^2*e^2*g+630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2
*c*d)^(1/2))*b^2*c^2*d*e^3*f+1260*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*b*c^3*d^3*e*g-1260*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
*b*c^3*d^2*e^2*f-840*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d
^4*g+840*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^3*e*f+45*x*
b^2*c*e^3*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)-167*x*b*c^2*d*e^2*g*(-
c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+77*x*b*c^2*e^3*f*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)+157*x*c^3*d^2*e*g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)-112*x*c^3*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+15*(b*e-2*
c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b^3*e^3*g-206*(b*e-2*c*d)^(1/2)*(-c*e*x-b
*e+c*d)^(1/2)*b^2*c*d*e^2*g+161*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b^
2*c*e^3*f+612*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d^2*e*g-567*(b
*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d*e^2*f-526*(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*c^3*d^3*g+511*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/
2)*c^3*d^2*e*f)/(e*x+d)^(1/2)/(-c*e*x-b*e+c*d)^(1/2)/c/e^2/(b*e-2*c*d)^(1/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^{2}x^{2} - be^{2}x + cd^{2} - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{(ex + d)^{\frac{7}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(7/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}{{\left(d + e\,x\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(7/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(7/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(7/2
),x)
```

```
[Out] Timed out
```

3.2257 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx$

Optimal. Leaf size=360

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^{9/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(2beg-9cdg+5cef)}{5e^2(d+ex)^{5/2}(2cd-be)}-\left(d(cd-be)-b\right.$$

```
[Out] -1/3*(2*b*e*g-9*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2/(
e*x+d)^(3/2)-1/5*(2*b*e*g-9*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(5/2)-(-d*g+e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^
2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(9/2)+(-b*e+2*c*d)^(3/2)*(2*b*e*g-9*c
*d*g+5*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(
1/2)/(e*x+d)^(1/2))/e^2-(-b*e+2*c*d)*(2*b*e*g-9*c*d*g+5*c*e*f)*(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.61, antiderivative size = 360, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(d+ex)^{9/2}(2cd-be)}-\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(2beg-9cdg+5cef)}{5e^2(d+ex)^{5/2}(2cd-be)}-\left(d(cd-be)-b\right.$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(9/2)
,x]
```

```
[Out] -(((2*c*d - b*e)*(5*c*e*f - 9*c*d*g + 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])/(e^2*Sqrt[d + e*x])) - ((5*c*e*f - 9*c*d*g + 2*b*e*g)*(d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(3*e^2*(d + e*x)^(3/2)) - ((5*c*e*f
- 9*c*d*g + 2*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(5*e^2*(2
*c*d - b*e)*(d + e*x)^(5/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x - c*e^
2*x^2)^(7/2))/(e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) + ((2*c*d - b*e)^(3/2)*(5
*c*e*f - 9*c*d*g + 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/e^2
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{9/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{e^2(2cd-be)(d+ex)^{9/2}} - \frac{(5cef-9cdg+2beg)\int}{2e(2c}$$

$$= -\frac{(5cef-9cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{5e^2(2cd-be)(d+ex)^{5/2}} - \frac{(ef-dg)\Big(}{e^2}$$

$$= -\frac{(5cef-9cdg+2beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{3e^2(d+ex)^{3/2}} - \frac{(5cef-9c}{}$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(5c}{}$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(5c}{}$$

$$= -\frac{(2cd-be)(5cef-9cdg+2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2\sqrt{d+ex}} - \frac{(5c}{}$$

Mathematica [A] time = 0.66, size = 221, normalized size = 0.61

$$\frac{((d+ex)(c(d-ex)-be))^{5/2}\left((ef-dg)(be-cd+cex)-\frac{(d+ex)(2beg-9cdg+5cef)\left(\sqrt{c(d-ex)-be}\left(23b^2e^2+bce(11ex-81d)+c^2\left(73d^2-16\right.\right.\right.}{15(c(d-ex)-be)^{5/2}}\right.}{e^2(d+ex)^{7/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(9/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*((e*f - d*g)*(-(c*d) + b*e + c*e*
x) - ((5*c*e*f - 9*c*d*g + 2*b*e*g)*(d + e*x)*(Sqrt[-(b*e) + c*(d - e*x)]*(
23*b^2*e^2 + b*c*e*(-81*d + 11*e*x) + c^2*(73*d^2 - 16*d*e*x + 3*e^2*x^2))
- 15*(2*c*d - b*e)^(5/2)*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b*e]]
))/(15*(-(b*e) + c*(d - e*x))^(5/2))))/(e^2*(2*c*d - b*e)*(d + e*x)^(7/2))
```

fricas [A] time = 0.98, size = 990, normalized size = 2.75

$$\left[-\frac{15\left(\left(5\left(2c^2de^3-bce^4\right)f-\left(18c^2d^2e^2-13bcde^3+2b^2e^4\right)g\right)x^2+5\left(2c^2d^3e-bcd^2e^2\right)f-\left(18c^2d^4-13bcd^3e+2\right.\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/30*(15*((5*(2*c^2*d*e^3 - b*c*e^4)*f - (18*c^2*d^2*e^2 - 13*b*c*d*e^3 +
 2*b^2*e^4)*g)*x^2 + 5*(2*c^2*d^3*e - b*c*d^2*e^2)*f - (18*c^2*d^4 - 13*b*c
*d^3*e + 2*b^2*d^2*e^2)*g + 2*(5*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (18*c^2*d^
3*e - 13*b*c*d^2*e^2 + 2*b^2*d*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2
 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x +
c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2))
- 2*(6*c^2*e^3*g*x^3 + 2*(5*c^2*e^3*f - (18*c^2*d*e^2 - 11*b*c*e^3)*g)*x^2
- 5*(38*c^2*d^2*e - 26*b*c*d*e^2 + 3*b^2*e^3)*f + (336*c^2*d^3 - 292*b*c*d^
2*e + 61*b^2*d*e^2)*g - 2*(5*(12*c^2*d*e^2 - 7*b*c*e^3)*f - (117*c^2*d^2*e
- 105*b*c*d*e^2 + 23*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d
*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2), 1/15*(15*((5*(2*c^2*d*e
^3 - b*c*e^4)*f - (18*c^2*d^2*e^2 - 13*b*c*d*e^3 + 2*b^2*e^4)*g)*x^2 + 5*(2
*c^2*d^3*e - b*c*d^2*e^2)*f - (18*c^2*d^4 - 13*b*c*d^3*e + 2*b^2*d^2*e^2)*g
 + 2*(5*(2*c^2*d^2*e^2 - b*c*d*e^3)*f - (18*c^2*d^3*e - 13*b*c*d^2*e^2 + 2*
b^2*d*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
b*d*e)) + (6*c^2*e^3*g*x^3 + 2*(5*c^2*e^3*f - (18*c^2*d*e^2 - 11*b*c*e^3)*g
)*x^2 - 5*(38*c^2*d^2*e - 26*b*c*d*e^2 + 3*b^2*e^3)*f + (336*c^2*d^3 - 292*
b*c*d^2*e + 61*b^2*d*e^2)*g - 2*(5*(12*c^2*d*e^2 - 7*b*c*e^3)*f - (117*c^2*
d^2*e - 105*b*c*d*e^2 + 23*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2
 - b*d*e)*sqrt(e*x + d))/(e^4*x^2 + 2*d*e^3*x + d^2*e^2)]
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple **[B]** time = 0.08, size = 1136, normalized size = 3.16

$$-\frac{\sqrt{-c e^{2} x^{2}-b e^{2} x-b d e+c d^{2}}\,\left(30 b^{3} e^{4} g x \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)-255 b^{2} c d e^{3} g x \arctan\left(\frac{\sqrt{-c e x-b e+c d}}{\sqrt{b e-2 c d}}\right)+75 b^{2} c e\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x)
```

```
[Out] -1/15*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-540*c^3*d^4*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+30*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))*x*b^3*e^4*g+210*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*
e^2*g*x+300*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15
*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f-336*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+30*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))*b^3*d*e^3*g-22*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*g*
x^2+36*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2-70*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-234*(-c*e*x-b*e+c*d)^(1/2)*(b*
e-2*c*d)^(1/2)*c^2*d^2*e*g*x+120*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c
^2*d*e^2*f*x-130*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f+660*b
*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+75*arctan
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c*d*e^3*f-300*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e^2*f-6*x^3*c^2*e^3*g*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)+75*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x*b^2*c*e^4*f-255*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*b^2*c*d^2*e^2*g-540*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))+300*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/
2))+660*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-10*(
-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2-46*(-c*e*x-b*e+c*d)^(
1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x-61*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1
/2)*b^2*d*e^2*g+190*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f-30
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^2*d*e^3*f-255*arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c*d*e^3*g+292*b*c*d^2*e*
g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(e*x+d)^(3/2)/(-c*e*x-b*e+c*d)^
(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{(ex + d)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(9/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}{{\left(d + e\,x\right)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(9/2)
,x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(9/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(9/2
),x)
```

```
[Out] Timed out
```

3.2258 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx$

Optimal. Leaf size=372

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(d+ex)^{11/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(4beg-11cdg+3cef)}{4e^2(d+ex)^{7/2}(2cd-be)}+\frac{5c\left(d(cd-be\right.}{}$$

```
[Out] 5/12*c*(4*b*e*g-11*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^
2/(-b*e+2*c*d)/(e*x+d)^(3/2)+1/4*(4*b*e*g-11*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(7/2)-1/2*(-d*g+e*f)*(d*(-
b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(11/2)-5/4*c*(4*
b*e*g-11*c*d*g+3*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*
e+2*c*d)^(1/2)/(e*x+d)^(1/2))*(-b*e+2*c*d)^(1/2)/e^2+5/4*c*(4*b*e*g-11*c*d*
g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.60, antiderivative size = 372, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 664, 660, 208}

$$-\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(d+ex)^{11/2}(2cd-be)}+\frac{\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}(4beg-11cdg+3cef)}{4e^2(d+ex)^{7/2}(2cd-be)}+\frac{5c\left(d(cd-be\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(11/2
),x]
```

```
[Out] (5*c*(3*c*e*f - 11*c*d*g + 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(4*e^2*Sqrt[d + e*x]) + (5*c*(3*c*e*f - 11*c*d*g + 4*b*e*g)*(d*(c*d - b
*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) +
((3*c*e*f - 11*c*d*g + 4*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2)
)/(4*e^2*(2*c*d - b*e)*(d + e*x)^(7/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2)^(7/2))/(2*e^2*(2*c*d - b*e)*(d + e*x)^(11/2)) - (5*c*Sqrt
[2*c*d - b*e]*(3*c*e*f - 11*c*d*g + 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2)
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{11/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{2e^2(2cd-be)(d+ex)^{11/2}} - \frac{(3cef-11cdg+4beg)}{4e(2c}$$

$$= \frac{(3cef-11cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{4e^2(2cd-be)(d+ex)^{7/2}} - \frac{(ef-dg)\,(}{2e^2(}$$

$$= \frac{5c(3cef-11cdg+4beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{12e^2(2cd-be)(d+ex)^{3/2}} + \frac{(3cef-1}{}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef-1}{}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef-1}{}$$

$$= \frac{5c(3cef-11cdg+4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{4e^2\sqrt{d+ex}} + \frac{5c(3cef-1}{}$$

Mathematica [C] time = 0.25, size = 130, normalized size = 0.35

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(\frac{c(d+ex)^2(4beg-11cdg+3cef)\,{}_2F_1\left(2,\frac{7}{2};\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{7dg}{e}-7f\right)}{14e(d+ex)^{11/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(11/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*f + (7*d*g)/e + (c*(3*c*e*f -
 11*c*d*g + 4*b*e*g)*(d + e*x)^2*Hypergeometric2F1[2, 7/2, 9/2, (-(c*d) + b
*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)^2)))/(14*e*(2*c*d - b*e)*(d
+ e*x)^(11/2))
```

fricas [A] time = 1.14, size = 959, normalized size = 2.58

$$\left[\frac{15\left(3\,c^{2}d^{3}ef+\left(3\,c^{2}e^{4}f-\left(11\,c^{2}de^{3}-4\,bce^{4}\right)g\right)x^{3}+3\left(3\,c^{2}de^{3}f-\left(11\,c^{2}d^{2}e^{2}-4\,bcde^{3}\right)g\right)x^{2}-\left(11\,c^{2}d^{4}-4\,bcd^{3}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="fricas")
```

```
[Out] [1/24*(15*(3*c^2*d^3*e*f + (3*c^2*e^4*f - (11*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3
 + 3*(3*c^2*d*e^3*f - (11*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 - (11*c^2*d^4 -
 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f - (11*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)
*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*
x + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x
 + d))/(e^2*x^2 + 2*d*e*x + d^2)) + 2*(8*c^2*e^3*g*x^3 + 8*(3*c^2*e^3*f - 7
*(2*c^2*d*e^2 - b*c*e^3)*g)*x^2 + 3*(18*c^2*d^2*e - b*c*d*e^2 - 2*b^2*e^3)*
f - (206*c^2*d^3 - 107*b*c*d^2*e + 6*b^2*d*e^2)*g + (3*(34*c^2*d*e^2 - 9*b*
c*e^3)*f - (350*c^2*d^2*e - 187*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2
*e^3*x + d^3*e^2), -1/12*(15*(3*c^2*d^3*e*f + (3*c^2*e^4*f - (11*c^2*d*e^3
- 4*b*c*e^4)*g)*x^3 + 3*(3*c^2*d*e^3*f - (11*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*
x^2 - (11*c^2*d^4 - 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f - (11*c^2*d^3*e - 4
*b*c*d^2*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c
*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2
 + b*d*e)) - (8*c^2*e^3*g*x^3 + 8*(3*c^2*e^3*f - 7*(2*c^2*d*e^2 - b*c*e^3)*
g)*x^2 + 3*(18*c^2*d^2*e - b*c*d*e^2 - 2*b^2*e^3)*f - (206*c^2*d^3 - 107*b*
c*d^2*e + 6*b^2*d*e^2)*g + (3*(34*c^2*d*e^2 - 9*b*c*e^3)*f - (350*c^2*d^2*e
 - 187*b*c*d*e^2 + 12*b^2*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*sqrt(e*x + d))/(e^5*x^3 + 3*d*e^4*x^2 + 3*d^2*e^3*x + d^3*e^2)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1189, normalized size = 3.20

$$-\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(60b^{2}c\,e^{4}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-285b\,c^{2}d\,e^{3}g\,x^{2}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+45\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x)
```

```
[Out] -1/12*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(330*c^3*d^4*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-187*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1
/2)*b*c*d*e^2*g*x-90*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))+6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f+206*(-c*e*x-b*e
+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g-56*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*b*c*e^3*g*x^2+112*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e
^2*g*x^2+27*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x+350*(-c*e*
x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x-102*(-c*e*x-b*e+c*d)^(1/2)
*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x+3*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)
*b*c*d*e^2*f-285*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-570*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))+45*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^2*e^4*f+60
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b^2*c*e^4*g+45*b*c^2*
d^2*e^2*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-8*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*g*x^3+60*b^2*c*d^2*e^2*g*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+330*c^3*d^2*e^2*g*x^2*arctan((-c*e*x-b*e+
c*d)^(1/2)/(b*e-2*c*d)^(1/2))-90*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+660*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))-180*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))-285*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))
-24*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2+12*(-c*e*x-b*e+c
*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x+6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b^2*d*e^2*g-54*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f
+90*b*c^2*d*e^3*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+120*b^
2*c*d*e^3*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-107*(-c*e*x-
b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g)/(e*x+d)^(5/2)/(-c*e*x-b*e+c*d
)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(11/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(11/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}{{\left(d + e\,x\right)}^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(11/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(11/2
), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(11/
2),x)
```

```
[Out] Timed out
```

3.2259 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx$

Optimal. Leaf size=383

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(6beg-13cdg+cef)}{8e^2\sqrt{d+ex}\,(2cd-be)}+\frac{5c^2(6beg-13cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2\sqrt{2cd-be}}-$$

```
[Out] -5/24*c*(6*b*e*g-13*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2
/(-b*e+2*c*d)/(e*x+d)^(5/2)+1/12*(6*b*e*g-13*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(9/2)-1/3*(-d*g+e*f)*(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(13/2)+5/8*c^2*(6*
b*e*g-13*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+
2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(1/2)-5/8*c^2*(6*b*e*g-13*c*d*
g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(1
/2)
```

Rubi [A] time = 0.59, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 662, 664, 660, 208}

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(6beg-13cdg+cef)}{8e^2\sqrt{d+ex}\,(2cd-be)}+\frac{5c^2(6beg-13cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2\sqrt{2cd-be}}-$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(13/2
),x]
```

```
[Out] (-5*c^2*(c*e*f - 13*c*d*g + 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2])/(8*e^2*(2*c*d - b*e)*Sqrt[d + e*x]) - (5*c*(c*e*f - 13*c*d*g + 6*b*e*g
)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(24*e^2*(2*c*d - b*e)*(d + e
*x)^(5/2)) + ((c*e*f - 13*c*d*g + 6*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2
*x^2)^(5/2))/(12*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((e*f - d*g)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(3*e^2*(2*c*d - b*e)*(d + e*x)^(13/2))
 + (5*c^2*(c*e*f - 13*c*d*g + 6*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 664

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + 2*p + 1)), x
] - Dist[(p*(2*c*d - b*e))/(e^2*(m + 2*p + 1)), Int[(d + e*x)^(m + 1)*(a +
b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*
c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LeQ[-2, m, 0] || Eq
Q[m + p + 1, 0]) && NeQ[m + 2*p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{13/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{3e^2(2cd-be)(d+ex)^{13/2}} - \frac{(cef-13cdg+6beg)\int}{6e(2c}$$

$$= \frac{(cef-13cdg+6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{12e^2(2cd-be)(d+ex)^{9/2}} - \frac{(ef-dg)\big(d}{3e^2(2}$$

$$= -\frac{5c(cef-13cdg+6beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{24e^2(2cd-be)(d+ex)^{5/2}} + \frac{(cef-1}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef-1}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef-1}{}$$

$$= -\frac{5c^2(cef-13cdg+6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{8e^2(2cd-be)\sqrt{d+ex}} - \frac{5c(cef-1}{}$$

Mathematica [C] time = 0.14, size = 127, normalized size = 0.33

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(\frac{c^2(d+ex)^3(6beg-13cdg+cef)\,{}_2F_1\left(3,\frac{7}{2};\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+7dg-7ef\right)}{21e^2(d+ex)^{13/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(13/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*e*f + 7*d*g + (c^2*(c*e*f - 1
3*c*d*g + 6*b*e*g)*(d + e*x)^3*Hypergeometric2F1[3, 7/2, 9/2, (-(c*d) + b*e
 + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3))/(21*e^2*(2*c*d - b*e)*(d + e*x
)^(13/2))
```

fricas [A] time = 1.28, size = 1388, normalized size = 3.62

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="fricas")
```

```
[Out] [1/48*(15*(c^3*d^4*e*f + (c^3*e^5*f - (13*c^3*d*e^4 - 6*b*c^2*e^5)*g)*x^4 +
 4*(c^3*d*e^4*f - (13*c^3*d^2*e^3 - 6*b*c^2*d*e^4)*g)*x^3 + 6*(c^3*d^2*e^3*
f - (13*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2 - (13*c^3*d^5 - 6*b*c^2*d^4*e
)*g + 4*(c^3*d^3*e^2*f - (13*c^3*d^4*e - 6*b*c^2*d^3*e^2)*g)*x)*sqrt(2*c*d
- b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*
x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(48*(2
*c^3*d*e^3 - b*c^2*e^4)*g*x^3 - 3*(11*(2*c^3*d*e^3 - b*c^2*e^4)*f - (190*c^
3*d^2*e^2 - 131*b*c^2*d*e^3 + 18*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 25*b*c
^2*d^2*e^2 + 22*b^2*c*d*e^3 - 8*b^3*e^4)*f + (242*c^3*d^4 - 145*b*c^2*d^3*e
 + 4*b^2*c*d^2*e^2 + 4*b^3*d*e^3)*g - 2*((14*c^3*d^2*e^2 + 19*b*c^2*d*e^3 -
 13*b^2*c*e^4)*f - (326*c^3*d^3*e - 197*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 6*b
^3*e^4)*g)*x)*sqrt(e*x + d))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)
*x^4 + 4*(2*c*d^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*
(2*c*d^4*e^3 - b*d^3*e^4)*x), 1/24*(15*(c^3*d^4*e*f + (c^3*e^5*f - (13*c^3*
d*e^4 - 6*b*c^2*e^5)*g)*x^4 + 4*(c^3*d*e^4*f - (13*c^3*d^2*e^3 - 6*b*c^2*d*
e^4)*g)*x^3 + 6*(c^3*d^2*e^3*f - (13*c^3*d^3*e^2 - 6*b*c^2*d^2*e^3)*g)*x^2
- (13*c^3*d^5 - 6*b*c^2*d^4*e)*g + 4*(c^3*d^3*e^2*f - (13*c^3*d^4*e - 6*b*c
^2*d^3*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d
^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
 b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(48*(2*c^3*d*e^3 - b*
c^2*e^4)*g*x^3 - 3*(11*(2*c^3*d*e^3 - b*c^2*e^4)*f - (190*c^3*d^2*e^2 - 131
*b*c^2*d*e^3 + 18*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 25*b*c^2*d^2*e^2 + 22
*b^2*c*d*e^3 - 8*b^3*e^4)*f + (242*c^3*d^4 - 145*b*c^2*d^3*e + 4*b^2*c*d^2*
e^2 + 4*b^3*d*e^3)*g - 2*((14*c^3*d^2*e^2 + 19*b*c^2*d*e^3 - 13*b^2*c*e^4)*
f - (326*c^3*d^3*e - 197*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 6*b^3*e^4)*g)*x)*s
qrt(e*x + d))/(2*c*d^5*e^2 - b*d^4*e^3 + (2*c*d*e^6 - b*e^7)*x^4 + 4*(2*c*d
^2*e^5 - b*d*e^6)*x^3 + 6*(2*c*d^3*e^4 - b*d^2*e^5)*x^2 + 4*(2*c*d^4*e^3 -
b*d^3*e^4)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.09, size = 1070, normalized size = 2.79

$$-\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(90b\,c^{2}e^{4}g\,x^{3}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-195c^{3}d\,e^{3}g\,x^{3}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+15c^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x)
```

```
[Out] -1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-195*c^3*d^4*g*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*c^3*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))+34*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d
*e^2*g*x+15*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*f-121*(-c*e*x-b*e+c*d)^(1/
2)*(b*e-2*c*d)^(1/2)*c^2*d^3*g+54*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*
b*c*e^3*g*x^2-285*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2+
26*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-326*(-c*e*x-b*e+c*d
)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*d^2*e*g*x+14*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*
d)^(1/2)*c^2*d*e^2*f*x-6*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d*e^2
*f+270*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+2
70*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-48*(-
c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*g*x^3-585*c^3*d^2*e^2*g*x^2*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+45*c^3*d*e^3*f*x^2*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-585*c^3*d^3*e*g*x*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+45*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))+90*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(
b*e-2*c*d)^(1/2))+33*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x^2
+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*e^3*g*x+4*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g+13*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^
(1/2)*c^2*d^2*e*f+90*b*c^2*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))-195*c^3*d*e^3*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))+12*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g)/(e*x+d)^(7/2)
/(-c*e*x-b*e+c*d)^(1/2)/e^2/(b*e-2*c*d)^(1/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(13/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(13/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}{{\left(d + e\,x\right)}^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(13/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(13/2
), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(13/
2),x)
```

```
[Out] Timed out
```

3.2260 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx$

Optimal. Leaf size=383

$$\frac{5c^3(-8beg+15cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{64e^2(2cd-be)^{3/2}}-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+15cdg+cef)}{64e^2(d+ex)^{3/2}(2cd-be)}$$

```
[Out] 5/96*c*(-8*b*e*g+15*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/e^2
/(-b*e+2*c*d)/(e*x+d)^(7/2)-1/24*(-8*b*e*g+15*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(11/2)-1/4*(-d*g+e*f)*(d*(-
b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(15/2)+5/64*c^3*
(-8*b*e*g+15*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-
b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(3/2)-5/64*c^2*(-8*b*e*g+1
5*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x
+d)^(3/2)
```

Rubi [A] time = 0.59, antiderivative size = 383, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 662, 660, 208}

$$-\frac{5c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+15cdg+cef)}{64e^2(d+ex)^{3/2}(2cd-be)}+\frac{5c^3(-8beg+15cdg+cef)\tanh^{-1}\Bigg(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}}{64e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(15/2
),x]
```

```
[Out] (-5*c^2*(c*e*f + 15*c*d*g - 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x
^2])/(64*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)) + (5*c*(c*e*f + 15*c*d*g - 8*b*
e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(96*e^2*(2*c*d - b*e)*(d
+ e*x)^(7/2)) - ((c*e*f + 15*c*d*g - 8*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*
e^2*x^2)^(5/2))/(24*e^2*(2*c*d - b*e)*(d + e*x)^(11/2)) - ((e*f - d*g)*(d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(4*e^2*(2*c*d - b*e)*(d + e*x)^(15
/2)) + (5*c^3*(c*e*f + 15*c*d*g - 8*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(64*e^2*(2*c*d - b*e)
^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
```

```
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{15/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{4e^2(2cd-be)(d+ex)^{15/2}} + \frac{(cef+15cdg-8beg)\int}{8e(2c}$$

$$= -\frac{(cef+15cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{24e^2(2cd-be)(d+ex)^{11/2}} - \frac{(ef-dg)\big(}{4e^2}$$

$$= \frac{5c(cef+15cdg-8beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{96e^2(2cd-be)(d+ex)^{7/2}} - \frac{(cef+15c}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}} + \frac{5c(cef+1}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}} + \frac{5c(cef+1}{}$$

$$= -\frac{5c^2(cef+15cdg-8beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{3/2}} + \frac{5c(cef+1}{}$$

Mathematica [**A**] time = 3.53, size = 303, normalized size = 0.79

$$-\frac{((d+ex)(c(d-ex)-be))^{5/2}\left(-\frac{e(d+ex)(-8beg+15cdg+cef)\left(15c^3\sqrt{e}\,(d+ex)^3\sqrt{c(d-ex)-be}\,\tan^{-1}\left(\frac{\sqrt{e}\,\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)-\sqrt{e(be-2cd)}\,\left(8b^3e^3+2b^2ce\right.\right.}{3\sqrt{e(be-2cd)}}\right.}{64e^3(d+ex)^{13/2}(2cd-be)(be-}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(15/2),x]
```

```
[Out] -1/64*(((d + e*x)*(-(b*e) + c*(d - e*x)))^(5/2)*(-16*e*(e*f - d*g)*(-(c*d)
+ b*e + c*e*x)^4 - (e*(c*e*f + 15*c*d*g - 8*b*e*g)*(d + e*x)*(-(Sqrt[e*(-2*
c*d + b*e)]*(8*b^3*e^3 + 2*b^2*c*e^2*(-7*d + 17*e*x) + b*c^2*e*(19*d^2 - 18
*d*e*x + 59*e^2*x^2) - c^3*(13*d^3 + d^2*e*x + 19*d*e^2*x^2 - 33*e^3*x^3)))
 + 15*c^3*Sqrt[e]*(d + e*x)^3*Sqrt[-(b*e) + c*(d - e*x)]*ArcTan[(Sqrt[e]*Sq
rt[-(b*e) + c*(d - e*x)])/Sqrt[e*(-2*c*d + b*e)]]))/(3*Sqrt[e*(-2*c*d + b*e
)])))/(e^3*(2*c*d - b*e)*(d + e*x)^(13/2)*(-(c*d) + b*e + c*e*x)^3)
```

fricas [**B**] time = 0.98, size = 1910, normalized size = 4.99

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="fricas")
```

```
[Out] [1/384*(15*(c^4*d^5*e*f + (c^4*e^6*f + (15*c^4*d*e^5 - 8*b*c^3*e^6)*g)*x^5
+ 5*(c^4*d*e^5*f + (15*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(c^4*d^2*e^
4*f + (15*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(c^4*d^3*e^3*f + (15*c
^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (15*c^4*d^6 - 8*b*c^3*d^5*e)*g + 5*(
c^4*d^4*e^2*f + (15*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(2*c*d - b*e)*lo
g(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2
 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d
*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^4*d*
e^4 - b*c^3*e^5)*f - (362*c^4*d^2*e^3 - 357*b*c^3*d*e^4 + 88*b^2*c^2*e^5)*g
)*x^3 - ((382*c^4*d^2*e^3 - 427*b*c^3*d*e^4 + 118*b^2*c^2*e^5)*f + (1122*c^
4*d^3*e^2 - 245*b*c^3*d^2*e^3 - 574*b^2*c^2*d*e^4 + 208*b^3*c*e^5)*g)*x^2 -
 (122*c^4*d^4*e - 361*b*c^3*d^3*e^2 + 454*b^2*c^2*d^2*e^3 - 248*b^3*c*d*e^4
 + 48*b^4*e^5)*f - (294*c^4*d^5 - 247*b*c^3*d^4*e + 98*b^2*c^2*d^3*e^2 - 56
*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((234*c^4*d^3*e^2 - 733*b*c^3*d^2*e^3 +
580*b^2*c^2*d*e^4 - 136*b^3*c*e^5)*f - (1098*c^4*d^4*e - 957*b*c^3*d^3*e^2
+ 412*b^2*c^2*d^2*e^3 - 232*b^3*c*d*e^4 + 64*b^4*e^5)*g)*x)*sqrt(e*x + d))/
(4*c^2*d^7*e^2 - 4*b*c*d^6*e^3 + b^2*d^5*e^4 + (4*c^2*d^2*e^7 - 4*b*c*d*e^8
 + b^2*e^9)*x^5 + 5*(4*c^2*d^3*e^6 - 4*b*c*d^2*e^7 + b^2*d*e^8)*x^4 + 10*(4
*c^2*d^4*e^5 - 4*b*c*d^3*e^6 + b^2*d^2*e^7)*x^3 + 10*(4*c^2*d^5*e^4 - 4*b*c
*d^4*e^5 + b^2*d^3*e^6)*x^2 + 5*(4*c^2*d^6*e^3 - 4*b*c*d^5*e^4 + b^2*d^4*e^
5)*x), 1/192*(15*(c^4*d^5*e*f + (c^4*e^6*f + (15*c^4*d*e^5 - 8*b*c^3*e^6)*g
)*x^5 + 5*(c^4*d*e^5*f + (15*c^4*d^2*e^4 - 8*b*c^3*d*e^5)*g)*x^4 + 10*(c^4*
d^2*e^4*f + (15*c^4*d^3*e^3 - 8*b*c^3*d^2*e^4)*g)*x^3 + 10*(c^4*d^3*e^3*f +
 (15*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3)*g)*x^2 + (15*c^4*d^6 - 8*b*c^3*d^5*e)*g
 + 5*(c^4*d^4*e^2*f + (15*c^4*d^5*e - 8*b*c^3*d^4*e^2)*g)*x)*sqrt(-2*c*d +
b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*s
qrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^4*d*e^4 - b*c^3*e^5)*f - (362*c^4*d^2*e^3
- 357*b*c^3*d*e^4 + 88*b^2*c^2*e^5)*g)*x^3 - ((382*c^4*d^2*e^3 - 427*b*c^3*
d*e^4 + 118*b^2*c^2*e^5)*f + (1122*c^4*d^3*e^2 - 245*b*c^3*d^2*e^3 - 574*b^
2*c^2*d*e^4 + 208*b^3*c*e^5)*g)*x^2 - (122*c^4*d^4*e - 361*b*c^3*d^3*e^2 +
454*b^2*c^2*d^2*e^3 - 248*b^3*c*d*e^4 + 48*b^4*e^5)*f - (294*c^4*d^5 - 247*
b*c^3*d^4*e + 98*b^2*c^2*d^3*e^2 - 56*b^3*c*d^2*e^3 + 16*b^4*d*e^4)*g + ((2
34*c^4*d^3*e^2 - 733*b*c^3*d^2*e^3 + 580*b^2*c^2*d*e^4 - 136*b^3*c*e^5)*f -
 (1098*c^4*d^4*e - 957*b*c^3*d^3*e^2 + 412*b^2*c^2*d^2*e^3 - 232*b^3*c*d*e^
4 + 64*b^4*e^5)*g)*x)*sqrt(e*x + d))/(4*c^2*d^7*e^2 - 4*b*c*d^6*e^3 + b^2*d
^5*e^4 + (4*c^2*d^2*e^7 - 4*b*c*d*e^8 + b^2*e^9)*x^5 + 5*(4*c^2*d^3*e^6 - 4
*b*c*d^2*e^7 + b^2*d*e^8)*x^4 + 10*(4*c^2*d^4*e^5 - 4*b*c*d^3*e^6 + b^2*d^2
*e^7)*x^3 + 10*(4*c^2*d^5*e^4 - 4*b*c*d^4*e^5 + b^2*d^3*e^6)*x^2 + 5*(4*c^2
*d^6*e^3 - 4*b*c*d^5*e^4 + b^2*d^4*e^5)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.11, size = 1517, normalized size = 3.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x)
```

```
[Out] -1/192*(-225*c^4*d^5*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*e^4*f*x^3-158*(-c*e*x-b*e+c*d)
^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*g*x^2+48*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2
*c*d)^(1/2)*b^3*e^4*f-104*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*
e^3*g*x+204*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^2*e^2*g*x-308*
(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*f*x-147*(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^4*g-15*c^4*e^5*f*x^4*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))-15*c^4*d^4*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))+16*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g-61
*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^3*e*f+120*b*c^3*e^5*g*x^4*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-225*c^4*d*e^4*g*x^4*arctan(
(-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-900*c^4*d^2*e^3*g*x^3*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-60*c^4*d*e^4*f*x^3*arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-1350*c^4*d^3*e^2*g*x^2*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))-90*c^4*d^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))-900*c^4*d^4*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e
-2*c*d)^(1/2))-60*c^4*d^3*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))+120*b*c^3*d^4*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+
64*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^3*e^4*g*x+480*b*c^3*d^3*e^2*g
*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-191*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*f*x^2+136*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b^2*c*e^4*f*x-549*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^3*
e*g*x+117*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*f*x-24*(-c*e
*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g-152*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*f+50*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(
1/2)*b*c^2*d^3*e*g+150*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*d^2*e
^2*f+264*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*c^2*e^4*g*x^3-543*(-c*e
*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d*e^3*g*x^3+208*(-c*e*x-b*e+c*d)^(1
/2)*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2+118*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d
)^(1/2)*b*c^2*e^4*f*x^2-561*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c^3*d^
2*e^2*g*x^2+480*b*c^3*d*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))+720*b*c^3*d^2*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2)))*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x
-b*e+c*d)^(1/2)/(e*x+d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{(ex + d)^{\frac{15}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(15/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}{{\left(d + e\,x\right)}^{15/2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(15/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(15/2
), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(15/
2),x)
```

```
[Out] Timed out
```

3.2261 $\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx$

Optimal. Leaf size=464

$$\frac{c^4(-10beg+17cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{128e^2(2cd-be)^{5/2}}+\frac{c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3cef)}{128e^2(d+ex)^{3/2}(2cd-be)^2}-$$

```
[Out] 1/48*c*(-10*b*e*g+17*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/
e^2/(-b*e+2*c*d)/(e*x+d)^(9/2)-1/40*(-10*b*e*g+17*c*d*g+3*c*e*f)*(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(5/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(13/2)-1/5*(-d*g+e*f)
*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(17/2)+1/1
28*c^4*(-10*b*e*g+17*c*d*g+3*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(5/2)-1/64*c^2*(
-10*b*e*g+17*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*
e+2*c*d)/(e*x+d)^(5/2)+1/128*c^3*(-10*b*e*g+17*c*d*g+3*c*e*f)*(d*(-b*e+c*d)
-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)^2/(e*x+d)^(3/2)
```

Rubi [A] time = 0.75, antiderivative size = 464, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 662, 672, 660, 208}

$$\frac{c^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3cef)}{128e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-10beg+17cdg+3cef)}{64e^2(d+ex)^{5/2}(2cd-be)}+$$

Antiderivative was successfully verified.

```
[In] Int[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)^(17/2
),x]
```

```
[Out] -(c^2*(3*c*e*f + 17*c*d*g - 10*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*
x^2])/(64*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)) + (c^3*(3*c*e*f + 17*c*d*g - 1
0*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(128*e^2*(2*c*d - b*e)^
2*(d + e*x)^(3/2)) + (c*(3*c*e*f + 17*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2))/(48*e^2*(2*c*d - b*e)*(d + e*x)^(9/2)) - ((3*c*e*
f + 17*c*d*g - 10*b*e*g)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(40*e
^2*(2*c*d - b*e)*(d + e*x)^(13/2)) - ((e*f - d*g)*(d*(c*d - b*e) - b*e^2*x
- c*e^2*x^2)^(7/2))/(5*e^2*(2*c*d - b*e)*(d + e*x)^(17/2)) + (c^4*(3*c*e*f
+ 17*c*d*g - 10*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(S
qrt[2*c*d - b*e]*Sqrt[d + e*x])])/(128*e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 662

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^p)/(e*(m + p + 1)), x]
- Dist[(c*p)/(e^2*(m + p + 1)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(p
- 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] && (LtQ[m, -2] || EqQ[m + 2*p + 1, 0])
&& NeQ[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}{(d+ex)^{17/2}}\,dx = -\frac{(ef-dg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{5e^2(2cd-be)(d+ex)^{17/2}} + \frac{(3cef+17cdg-10}{10}$$

$$= -\frac{(3cef+17cdg-10beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{40e^2(2cd-be)(d+ex)^{13/2}} - \frac{(ef-}{}$$

$$= \frac{c(3cef+17cdg-10beg)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{48e^2(2cd-be)(d+ex)^{9/2}} - \frac{(3cef}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c(3ce}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3ce}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3ce}{}$$

$$= -\frac{c^2(3cef+17cdg-10beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{64e^2(2cd-be)(d+ex)^{5/2}} + \frac{c^3(3ce}{}$$

Mathematica [C] time = 0.16, size = 129, normalized size = 0.28

$$\frac{((d+ex)(c(d-ex)-be))^{7/2}\left(-\frac{c^4(d+ex)^5(-10beg+17cdg+3cef)\,{}_2F_1\left(\frac{7}{2},5;\frac{9}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^5}+7dg-7ef\right)}{35e^2(d+ex)^{17/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))/(d + e*x)
^(17/2),x]
```

```
[Out] (((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*e*f + 7*d*g - (c^4*(3*c*e*f +
 17*c*d*g - 10*b*e*g)*(d + e*x)^5*Hypergeometric2F1[7/2, 5, 9/2, (-(c*d) +
b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^5))/(35*e^2*(2*c*d - b*e)*(d +
e*x)^(17/2))
```

fricas [B] time = 1.03, size = 2650, normalized size = 5.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="fricas")
```

```
[Out] [-1/3840*(15*(3*c^5*d^6*e*f + (3*c^5*e^7*f + (17*c^5*d*e^6 - 10*b*c^4*e^7)*
g)*x^6 + 6*(3*c^5*d*e^6*f + (17*c^5*d^2*e^5 - 10*b*c^4*d*e^6)*g)*x^5 + 15*(
3*c^5*d^2*e^5*f + (17*c^5*d^3*e^4 - 10*b*c^4*d^2*e^5)*g)*x^4 + 20*(3*c^5*d^
3*e^4*f + (17*c^5*d^4*e^3 - 10*b*c^4*d^3*e^4)*g)*x^3 + 15*(3*c^5*d^4*e^3*f
+ (17*c^5*d^5*e^2 - 10*b*c^4*d^4*e^3)*g)*x^2 + (17*c^5*d^7 - 10*b*c^4*d^6*e
)*g + 6*(3*c^5*d^5*e^2*f + (17*c^5*d^6*e - 10*b*c^4*d^5*e^2)*g)*x)*sqrt(2*c
*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e
^2*x^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(15
*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (34*c^5*d^2*e^4 - 37*b*c^4*d*e^5 + 10*b^2
*c^3*e^6)*g)*x^4 + 10*(3*(16*c^5*d^2*e^4 - 10*b*c^4*d*e^5 + b^2*c^3*e^6)*f
- (752*c^5*d^3*e^3 - 1206*b*c^4*d^2*e^4 + 651*b^2*c^3*d*e^5 - 118*b^3*c^2*e
^6)*g)*x^3 - 2*(3*(842*c^5*d^3*e^3 - 1383*b*c^4*d^2*e^4 + 729*b^2*c^3*d*e^5
 - 124*b^3*c^2*e^6)*f - (1046*c^5*d^4*e^2 - 6469*b*c^4*d^3*e^3 + 8337*b^2*c
^3*d^2*e^4 - 4042*b^3*c^2*d*e^5 + 680*b^4*c*e^6)*g)*x^2 - 3*(634*c^5*d^5*e
- 2409*b*c^4*d^4*e^2 + 3654*b^2*c^3*d^3*e^3 - 2680*b^3*c^2*d^2*e^4 + 944*b^
4*c*d*e^5 - 128*b^5*e^6)*f - (538*c^5*d^6 - 1213*b*c^4*d^5*e + 1728*b^2*c^3
*d^4*e^2 - 1460*b^3*c^2*d^3*e^3 + 608*b^4*c*d^2*e^4 - 96*b^5*d*e^5)*g + 2*(
3*(824*c^5*d^4*e^2 - 2490*b*c^4*d^3*e^3 + 2559*b^2*c^3*d^2*e^4 - 1096*b^3*c
^2*d*e^5 + 168*b^4*c*e^6)*f - (1352*c^5*d^5*e - 3190*b*c^4*d^4*e^2 + 4557*b
^2*c^3*d^3*e^3 - 3778*b^3*c^2*d^2*e^4 + 1544*b^4*c*d*e^5 - 240*b^5*e^6)*g)*
x)*sqrt(e*x + d))/(8*c^3*d^9*e^2 - 12*b*c^2*d^8*e^3 + 6*b^2*c*d^7*e^4 - b^3
*d^6*e^5 + (8*c^3*d^3*e^8 - 12*b*c^2*d^2*e^9 + 6*b^2*c*d*e^10 - b^3*e^11)*x
^6 + 6*(8*c^3*d^4*e^7 - 12*b*c^2*d^3*e^8 + 6*b^2*c*d^2*e^9 - b^3*d*e^10)*x^
5 + 15*(8*c^3*d^5*e^6 - 12*b*c^2*d^4*e^7 + 6*b^2*c*d^3*e^8 - b^3*d^2*e^9)*x
^4 + 20*(8*c^3*d^6*e^5 - 12*b*c^2*d^5*e^6 + 6*b^2*c*d^4*e^7 - b^3*d^3*e^8)*
x^3 + 15*(8*c^3*d^7*e^4 - 12*b*c^2*d^6*e^5 + 6*b^2*c*d^5*e^6 - b^3*d^4*e^7)
*x^2 + 6*(8*c^3*d^8*e^3 - 12*b*c^2*d^7*e^4 + 6*b^2*c*d^6*e^5 - b^3*d^5*e^6)
*x), 1/1920*(15*(3*c^5*d^6*e*f + (3*c^5*e^7*f + (17*c^5*d*e^6 - 10*b*c^4*e^
7)*g)*x^6 + 6*(3*c^5*d*e^6*f + (17*c^5*d^2*e^5 - 10*b*c^4*d*e^6)*g)*x^5 + 1
5*(3*c^5*d^2*e^5*f + (17*c^5*d^3*e^4 - 10*b*c^4*d^2*e^5)*g)*x^4 + 20*(3*c^5
*d^3*e^4*f + (17*c^5*d^4*e^3 - 10*b*c^4*d^3*e^4)*g)*x^3 + 15*(3*c^5*d^4*e^3
*f + (17*c^5*d^5*e^2 - 10*b*c^4*d^4*e^3)*g)*x^2 + (17*c^5*d^7 - 10*b*c^4*d^
6*e)*g + 6*(3*c^5*d^5*e^2*f + (17*c^5*d^6*e - 10*b*c^4*d^5*e^2)*g)*x)*sqrt(
-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d
 + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (34*c^5
*d^2*e^4 - 37*b*c^4*d*e^5 + 10*b^2*c^3*e^6)*g)*x^4 + 10*(3*(16*c^5*d^2*e^4
- 10*b*c^4*d*e^5 + b^2*c^3*e^6)*f - (752*c^5*d^3*e^3 - 1206*b*c^4*d^2*e^4 +
 651*b^2*c^3*d*e^5 - 118*b^3*c^2*e^6)*g)*x^3 - 2*(3*(842*c^5*d^3*e^3 - 1383
*b*c^4*d^2*e^4 + 729*b^2*c^3*d*e^5 - 124*b^3*c^2*e^6)*f - (1046*c^5*d^4*e^2
 - 6469*b*c^4*d^3*e^3 + 8337*b^2*c^3*d^2*e^4 - 4042*b^3*c^2*d*e^5 + 680*b^4
*c*e^6)*g)*x^2 - 3*(634*c^5*d^5*e - 2409*b*c^4*d^4*e^2 + 3654*b^2*c^3*d^3*e
^3 - 2680*b^3*c^2*d^2*e^4 + 944*b^4*c*d*e^5 - 128*b^5*e^6)*f - (538*c^5*d^6
```

```
 - 1213*b*c^4*d^5*e + 1728*b^2*c^3*d^4*e^2 - 1460*b^3*c^2*d^3*e^3 + 608*b^4
*c*d^2*e^4 - 96*b^5*d*e^5)*g + 2*(3*(824*c^5*d^4*e^2 - 2490*b*c^4*d^3*e^3 +
 2559*b^2*c^3*d^2*e^4 - 1096*b^3*c^2*d*e^5 + 168*b^4*c*e^6)*f - (1352*c^5*d
^5*e - 3190*b*c^4*d^4*e^2 + 4557*b^2*c^3*d^3*e^3 - 3778*b^3*c^2*d^2*e^4 + 1
544*b^4*c*d*e^5 - 240*b^5*e^6)*g)*x)*sqrt(e*x + d))/(8*c^3*d^9*e^2 - 12*b*c
^2*d^8*e^3 + 6*b^2*c*d^7*e^4 - b^3*d^6*e^5 + (8*c^3*d^3*e^8 - 12*b*c^2*d^2*
e^9 + 6*b^2*c*d*e^10 - b^3*e^11)*x^6 + 6*(8*c^3*d^4*e^7 - 12*b*c^2*d^3*e^8
+ 6*b^2*c*d^2*e^9 - b^3*d*e^10)*x^5 + 15*(8*c^3*d^5*e^6 - 12*b*c^2*d^4*e^7
+ 6*b^2*c*d^3*e^8 - b^3*d^2*e^9)*x^4 + 20*(8*c^3*d^6*e^5 - 12*b*c^2*d^5*e^6
 + 6*b^2*c*d^4*e^7 - b^3*d^3*e^8)*x^3 + 15*(8*c^3*d^7*e^4 - 12*b*c^2*d^6*e^
5 + 6*b^2*c*d^5*e^6 - b^3*d^4*e^7)*x^2 + 6*(8*c^3*d^8*e^3 - 12*b*c^2*d^7*e^
4 + 6*b^2*c*d^6*e^5 - b^3*d^5*e^6)*x)]
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple **[B]** time = 0.09, size = 2087, normalized size = 4.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x)
```

```
[Out] 1/1920*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-5946*x^2*b*c^3*d^2*e^3*g*(b
*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2886*x^2*b*c^3*d*e^4*f*(b*e-2*c*d)^(
1/2)*(-c*e*x-b*e+c*d)^(1/2)-384*b^4*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d
)^(1/2)+2128*x*b^3*c*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-255*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^5*d^6*g-3300*x*b^2*c^2*d^
2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+4560*x*b^2*c^2*d*e^4*f*(b*
e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2514*x*b*c^3*d^3*e^2*g*(b*e-2*c*d)^(1
/2)*(-c*e*x-b*e+c*d)^(1/2)-6234*x*b*c^3*d^2*e^3*f*(b*e-2*c*d)^(1/2)*(-c*e*x
-b*e+c*d)^(1/2)+4150*x^3*b*c^3*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(
1/2)+5364*x^2*b^2*c^2*d*e^4*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-269*
c^4*d^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-45*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))*x^5*c^5*e^6*f-45*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*c^5*d^5*e*f+240*x^3*c^4*d*e^4*f*(b*e-2*c*d)^(1/2)*(-c*e*
x-b*e+c*d)^(1/2)-1360*x^2*b^3*c*e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1
/2)-744*x^2*b^2*c^2*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+1046*x^2
*c^4*d^3*e^2*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-2526*x^2*c^4*d^2*e^
3*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1008*x*b^3*c*e^5*f*(b*e-2*c*d)
^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1352*x*c^4*d^4*e*g*(b*e-2*c*d)^(1/2)*(-c*e*x-
b*e+c*d)^(1/2)+2472*x*c^4*d^3*e^2*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2
)+416*b^3*c*d^2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+2064*b^3*c*d
*e^4*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-628*b^2*c^2*d^3*e^2*g*(b*e-
2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-3912*b^2*c^2*d^2*e^3*f*(b*e-2*c*d)^(1/2
)*(-c*e*x-b*e+c*d)^(1/2)+472*b*c^3*d^4*e*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*
d)^(1/2)+3138*b*c^3*d^3*e^2*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+750*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*b*c^4*d*e^5*g+1500*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^4*d^2*e^4*g+1500*arct
an((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^4*d^3*e^3*g+750*arctan
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^4*d^4*e^2*g-150*x^4*b*c^3*
e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)+255*x^4*c^4*d*e^4*g*(b*e-2*c
*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-1180*x^3*b^2*c^2*e^5*g*(b*e-2*c*d)^(1/2)*(
-c*e*x-b*e+c*d)^(1/2)-30*x^3*b*c^3*e^5*f*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)
^(1/2)-3760*x^3*c^4*d^2*e^3*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-255*
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^5*c^5*d*e^5*g-1275*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^5*d^2*e^4*g-225*arctan((-
c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^5*d*e^5*f-225*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^5*d^4*e^2*f+150*arctan((-c*e*x-b*e+c*
d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^4*d^5*e*g+45*x^4*c^4*e^5*f*(b*e-2*c*d)^(1/2
)*(-c*e*x-b*e+c*d)^(1/2)-480*x*b^4*e^5*g*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)
^(1/2)-2550*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^5*d^3*e^
3*g-450*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*c^5*d^2*e^4*f-
2550*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^5*d^4*e^2*g-450
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*c^5*d^3*e^3*f-1275*ar
ctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^5*d^5*e*g-96*b^4*d*e^4*g
*(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)-951*c^4*d^4*e*f*(b*e-2*c*d)^(1/2)
*(-c*e*x-b*e+c*d)^(1/2)+150*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*x^5*b*c^4*e^6*g)/(e*x+d)^(11/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1
/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)}{\left(ex + d\right)^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)/(e*x+d)^(17/2),x,
algorithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)/(e*x + d)^
(17/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}{{\left(d+e\,x\right)}^{17/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(17/2
),x)
```

```
[Out] int(((f + g*x)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))/(d + e*x)^(17/2
), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2)/(e*x+d)**(17/
2),x)
```

```
[Out] Timed out
```

3.2262 $\int \frac{(d+ex)^{5/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=270

$$-\frac{16(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{105c^4e^2\sqrt{d+ex}}-\frac{8\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce}}{105c^3e^2}$$

```
[Out] -2/35*(-6*b*e*g+5*c*d*g+7*c*e*f)*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(1/2)/c^2/e^2-2/7*g*(e*x+d)^(5/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/
2)/c/e^2-16/105*(-b*e+2*c*d)^2*(-6*b*e*g+5*c*d*g+7*c*e*f)*(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(1/2)/c^4/e^2/(e*x+d)^(1/2)-8/105*(-b*e+2*c*d)*(-6*b*e*g+5*
c*d*g+7*c*e*f)*(e*x+d)^(1/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2
```

Rubi [A] time = 0.46, antiderivative size = 270, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+5cdg+7cef)}{35c^2e^2}-\frac{8\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2}}{105c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (-16*(2*c*d - b*e)^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2])/(105*c^4*e^2*Sqrt[d + e*x]) - (8*(2*c*d - b*e)*(7*c*e*f
+ 5*c*d*g - 6*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
])/(105*c^3*e^2) - (2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*(d + e*x)^(3/2)*Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^2*e^2) - (2*g*(d + e*x)^(5/2)*Sqr
t[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(7*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^{5/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2g(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{7ce^2} - \Big(2\Big(\tfrac{1}{2}e\left(-2ce^2f+be^2g\right)+\tfrac{5}{2}(-ce$$

$$= -\frac{2(7cef+5cdg-6beg)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{35c^2e^2} - \frac{2g(d+ex)^{5/2}}{}$$

$$= -\frac{8(2cd-be)(7cef+5cdg-6beg)\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{105c^3e^2} - \frac{2(7c}{}$$

$$= -\frac{16(2cd-be)^2(7cef+5cdg-6beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{105c^4e^2\sqrt{d+ex}} - \frac{8(2cd-be}{}$$

Mathematica [**A**] time = 0.15, size = 181, normalized size = 0.67

$$\frac{2\sqrt{d+ex}\,(be-cd+cex)\Big(-48b^3e^3g+8b^2ce^2(32dg+7ef+3egx)-2bc^2e\Big(219d^2g+2de(63f+26gx)+e^2x(14f}{105c^4e^2\sqrt{(d+ex)(c(d-ex)-b}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*(-48*b^3*e^3*g + 8*b^2*c*e^2*(7*e*f
 + 32*d*g + 3*e*g*x) - 2*b*c^2*e*(219*d^2*g + e^2*x*(14*f + 9*g*x) + 2*d*e*
(63*f + 26*g*x)) + c^3*(230*d^3*g + 3*e^3*x^2*(7*f + 5*g*x) + 2*d*e^2*x*(49
*f + 30*g*x) + d^2*e*(301*f + 115*g*x))))/(105*c^4*e^2*Sqrt[(d + e*x)*(-(b*
e) + c*(d - e*x))])
```

fricas [**A**] time = 0.87, size = 235, normalized size = 0.87

$$-\frac{2\Big(15\,c^3e^3gx^3+3\left(7\,c^3e^3f+2\left(10\,c^3de^2-3\,bc^2e^3\right)g\right)x^2+7\left(43\,c^3d^2e-36\,bc^2de^2+8\,b^2ce^3\right)f+2\Big(115\,c^3d^3-219}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/105*(15*c^3*e^3*g*x^3 + 3*(7*c^3*e^3*f + 2*(10*c^3*d*e^2 - 3*b*c^2*e^3)*
g)*x^2 + 7*(43*c^3*d^2*e - 36*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + 2*(115*c^3*d^3
 - 219*b*c^2*d^2*e + 128*b^2*c*d*e^2 - 24*b^3*e^3)*g + (14*(7*c^3*d*e^2 - 2
*b*c^2*e^3)*f + (115*c^3*d^2*e - 104*b*c^2*d*e^2 + 24*b^2*c*e^3)*g)*x)*sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^4*e^3*x + c^4*d*e^2
)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 235, normalized size = 0.87

$$-\frac{2\left(cex+be-cd\right)\left(-15g\,e^{3}x^{3}c^{3}+18b\,c^{2}e^{3}g\,x^{2}-60c^{3}d\,e^{2}g\,x^{2}-21c^{3}e^{3}f\,x^{2}-24b^{2}c\,e^{3}gx+104b\,c^{2}d\,e^{2}gx+28b\right.}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-15*c^3*e^3*g*x^3+18*b*c^2*e^3*g*x^2-60*c^3*d*e^2*g
*x^2-21*c^3*e^3*f*x^2-24*b^2*c*e^3*g*x+104*b*c^2*d*e^2*g*x+28*b*c^2*e^3*f*x
-115*c^3*d^2*e*g*x-98*c^3*d*e^2*f*x+48*b^3*e^3*g-256*b^2*c*d*e^2*g-56*b^2*c
*e^3*f+438*b*c^2*d^2*e*g+252*b*c^2*d*e^2*f-230*c^3*d^3*g-301*c^3*d^2*e*f)*(
e*x+d)^(1/2)/c^4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [A] time = 0.72, size = 319, normalized size = 1.18

$$\frac{2\left(3\,c^{3}e^{3}x^{3}-43\,c^{3}d^{3}+79\,bc^{2}d^{2}e-44\,b^{2}cde^{2}+8\,b^{3}e^{3}+\left(11\,c^{3}de^{2}-bc^{2}e^{3}\right)x^{2}+\left(29\,c^{3}d^{2}e-18\,bc^{2}de^{2}+4\,b^{2}ce^{3}\right)\right.}{15\,\sqrt{-cex+cd-be}\,c^{3}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/15*(3*c^3*e^3*x^3 - 43*c^3*d^3 + 79*b*c^2*d^2*e - 44*b^2*c*d*e^2 + 8*b^3*
e^3 + (11*c^3*d*e^2 - b*c^2*e^3)*x^2 + (29*c^3*d^2*e - 18*b*c^2*d*e^2 + 4*b
^2*c*e^3)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^3*e) + 2/105*(15*c^4*e^4*x^4 - 2
30*c^4*d^4 + 668*b*c^3*d^3*e - 694*b^2*c^2*d^2*e^2 + 304*b^3*c*d*e^3 - 48*b
^4*e^4 + 3*(15*c^4*d*e^3 - b*c^3*e^4)*x^3 + (55*c^4*d^2*e^2 - 26*b*c^3*d*e^
3 + 6*b^2*c^2*e^4)*x^2 + (115*c^4*d^3*e - 219*b*c^3*d^2*e^2 + 128*b^2*c^2*d
*e^3 - 24*b^3*c*e^4)*x)*g/(sqrt(-c*e*x + c*d - b*e)*c^4*e^2)
```

mupad [B] time = 2.77, size = 246, normalized size = 0.91

$$-\frac{\left(\frac{2\,g\,x^{3}\,\sqrt{d+e\,x}}{7\,c}+\frac{\sqrt{d+e\,x}\,\left(-96\,g\,b^{3}\,e^{3}+512\,g\,b^{2}\,c\,d\,e^{2}+112\,f\,b^{2}\,c\,e^{3}-876\,g\,b\,c^{2}\,d^{2}\,e-504\,f\,b\,c^{2}\,d\,e^{2}+460\,g\,c^{3}\,d^{3}+602\,f\,c^{3}\,d^{2}\,e\right)}{105\,c^{4}\,e^{3}}+\frac{2\,x^{2}\,\sqrt{d+e\,x}\,\left(2\right.}{}\right.}{x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -(((2*g*x^3*(d + e*x)^(1/2))/(7*c) + ((d + e*x)^(1/2)*(460*c^3*d^3*g - 96*b
^3*e^3*g + 112*b^2*c*e^3*f + 602*c^3*d^2*e*f - 504*b*c^2*d*e^2*f - 876*b*c^
2*d^2*e*g + 512*b^2*c*d*e^2*g))/(105*c^4*e^3) + (2*x^2*(d + e*x)^(1/2)*(20*
c*d*g - 6*b*e*g + 7*c*e*f))/(35*c^2*e) + (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g
 - 56*b*c^2*e^3*f + 196*c^3*d*e^2*f + 230*c^3*d^2*e*g - 208*b*c^2*d*e^2*g))
/(105*c^4*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(d+ex\right)^{\frac{5}{2}}\left(f+gx\right)}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((d + e*x)**(5/2)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x
)
```

3.2263 $\int \frac{(d+ex)^{3/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=193

$$-\frac{4(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3cdg+5cef)}{15c^3e^2\sqrt{d+ex}}-\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3}{15c^2e^2}$$

```
[Out] -2/5*g*(e*x+d)^(3/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c/e^2-4/15*(-b*
e+2*c*d)*(-4*b*e*g+3*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/
c^3/e^2/(e*x+d)^(1/2)-2/15*(-4*b*e*g+3*c*d*g+5*c*e*f)*(e*x+d)^(1/2)*(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2
```

Rubi [A] time = 0.32, antiderivative size = 193, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 656, 648}

$$-\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3cdg+5cef)}{15c^2e^2}-\frac{4(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+3}{15c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] (-4*(2*c*d - b*e)*(5*c*e*f + 3*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*
x - c*e^2*x^2])/(15*c^3*e^2*Sqrt[d + e*x]) - (2*(5*c*e*f + 3*c*d*g - 4*b*e*
g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*c^2*e^2) -
(2*g*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2g(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}{5ce^2} - \frac{(2(\frac{1}{2}e(-2ce^2f+be^2g)+\frac{3}{2}(-}{}$$

$$= -\frac{2(5cef+3cdg-4beg)\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{15c^2e^2} - \frac{2g(d+ex)^3}{}$$

$$= -\frac{4(2cd-be)(5cef+3cdg-4beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{15c^3e^2\sqrt{d+ex}} - \frac{2(5cef+}{}$$

Mathematica [**A**] time = 0.09, size = 118, normalized size = 0.61

$$\frac{2\sqrt{d+ex}\,(be-cd+cex)\left(8b^2e^2g-2bce(13dg+5ef+2egx)+c^2\left(18d^2g+de(25f+9gx)+e^2x(5f+3gx)\right)\right)}{15c^3e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*
x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*(8*b^2*e^2*g - 2*b*c*e*(5*e*f + 13*
d*g + 2*e*g*x) + c^2*(18*d^2*g + e^2*x*(5*f + 3*g*x) + d*e*(25*f + 9*g*x)))
)/(15*c^3*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**A**] time = 1.19, size = 143, normalized size = 0.74

$$-\frac{2\left(3\,c^2e^2gx^2+5\left(5\,c^2de-2\,bce^2\right)f+2\left(9\,c^2d^2-13\,bcde+4\,b^2e^2\right)g+\left(5\,c^2e^2f+\left(9\,c^2de-4\,bce^2\right)g\right)x\right)\sqrt{-ce^2x}}{15\left(c^3e^3x+c^3de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/15*(3*c^2*e^2*g*x^2 + 5*(5*c^2*d*e - 2*b*c*e^2)*f + 2*(9*c^2*d^2 - 13*b*
c*d*e + 4*b^2*e^2)*g + (5*c^2*e^2*f + (9*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c
*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^3*e^3*x + c^3*d*e^2)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 139, normalized size = 0.72

$$\frac{2\,(cex+be-cd)\,(3g\,x^2c^2e^2-4bc\,e^2gx+9c^2degx+5c^2e^2fx+8b^2e^2g-26bcdeg-10bc\,e^2f+18c^2d^2g+25c^2d}{15\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^2*e^2*g*x^2-4*b*c*e^2*g*x+9*c^2*d*e*g*x+5*c^2*e^2
*f*x+8*b^2*e^2*g-26*b*c*d*e*g-10*b*c*e^2*f+18*c^2*d^2*g+25*c^2*d*e*f)*(e*x+
d)^(1/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [A] time = 0.87, size = 201, normalized size = 1.04

$$\frac{2\left(c^2e^2x^2 - 5\,c^2d^2 + 7\,bcde - 2\,b^2e^2 + \left(4\,c^2de - bce^2\right)x\right)f}{3\,\sqrt{-cex + cd - be}\,c^2e} + \frac{2\left(3\,c^3e^3x^3 - 18\,c^3d^3 + 44\,bc^2d^2e - 34\,b^2cde^2 + 8\,b^3e^3 +\right.}{15\,\sqrt{-cex +}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(c^2*e^2*x^2 - 5*c^2*d^2 + 7*b*c*d*e - 2*b^2*e^2 + (4*c^2*d*e - b*c*e^2
)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^2*e) + 2/15*(3*c^3*e^3*x^3 - 18*c^3*d^3
+ 44*b*c^2*d^2*e - 34*b^2*c*d*e^2 + 8*b^3*e^3 + (6*c^3*d*e^2 - b*c^2*e^3)*x
^2 + (9*c^3*d^2*e - 13*b*c^2*d*e^2 + 4*b^2*c*e^3)*x)*g/(sqrt(-c*e*x + c*d -
 b*e)*c^3*e^2)
```

mupad [B] time = 2.55, size = 149, normalized size = 0.77

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(16\,g\,b^2\,e^2-52\,g\,b\,c\,d\,e-20\,f\,b\,c\,e^2+36\,g\,c^2\,d^2+50\,f\,c^2\,d\,e\right)}{15\,c^3\,e^3}+\frac{2\,g\,x^2\,\sqrt{d+e\,x}}{5\,c\,e}+\frac{2\,x\,\sqrt{d+e\,x}\,\left(9\,c\,d\,g-4\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^2\,e^2}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e}}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(16*b^2*e^2*g + 36*c^2*d^2*g - 20*b*c*e^2*f + 50*c^2*d*
e*f - 52*b*c*d*e*g))/(15*c^3*e^3) + (2*g*x^2*(d + e*x)^(1/2))/(5*c*e) + (2*
x*(d + e*x)^(1/2)*(9*c*d*g - 4*b*e*g + 5*c*e*f))/(15*c^2*e^2))*(c*d^2 - c*e
^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x + d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d + ex)^{\frac{3}{2}}\left(f + gx\right)}{\sqrt{-\left(d + ex\right)\left(be - cd + cex\right)}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((d + e*x)**(3/2)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x
)
```

3.2264 $\int \frac{\sqrt{d+ex}\,(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=117

$$-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+cdg+3cef)}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}$$

```
[Out] -2/3*(-2*b*e*g+c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^
2/(e*x+d)^(1/2)-2/3*g*(e*x+d)^(1/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/
c/e^2
```

Rubi [A] time = 0.18, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {794, 648}

$$-\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+cdg+3cef)}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] (-2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/
(3*c^2*e^2*Sqrt[d + e*x]) - (2*g*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])/(3*c*e^2)
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\begin{aligned}\int \frac{\sqrt{d+ex}\,(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx &= -\frac{2g\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3ce^2}-\frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\left(-c\right.\right.\right.}{}\\ &= -\frac{2(3cef+cdg-2beg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{3c^2e^2\sqrt{d+ex}}-\frac{2g\sqrt{d+ex}\,\sqrt{d(cd-b}}{3ce^2}\end{aligned}$$

Mathematica [A] time = 0.07, size = 63, normalized size = 0.54

$$-\frac{2\sqrt{(d+ex)(c(d-ex)-be)}\,(c(2dg+3ef+egx)-2beg)}{3c^2e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^
2],x]
```

```
[Out] (-2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-2*b*e*g + c*(3*e*f + 2*d*g + e
*g*x)))/(3*c^2*e^2*Sqrt[d + e*x])
```

fricas [A] time = 1.06, size = 79, normalized size = 0.68

$$-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\left(cegx+3cef+2(cd-be)g\right)\sqrt{ex+d}}{3\left(c^2e^3x+c^2de^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x + 3*c*e*f + 2*(c*d
 - b*e)*g)*sqrt(e*x + d)/(c^2*e^3*x + c^2*d*e^2)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 79, normalized size = 0.68

$$-\frac{2\left(cex+be-cd\right)\left(-cegx+2beg-2cdg-3cef\right)\sqrt{ex+d}}{3\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\;c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(-c*e*g*x+2*b*e*g-2*c*d*g-3*c*e*f)*(e*x+d)^(1/2)/c^2/e
^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)
```

maxima [A] time = 0.74, size = 110, normalized size = 0.94

$$\frac{2\left(cex-cd+be\right)f}{\sqrt{-cex+cd-be}\,ce}+\frac{2\left(c^2e^2x^2-2\,c^2d^2+4\,bcde-2\,b^2e^2+\left(c^2de-bce^2\right)x\right)g}{3\sqrt{-cex+cd-be}\,c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] 2*(c*e*x - c*d + b*e)*f/(sqrt(-c*e*x + c*d - b*e)*c*e) + 2/3*(c^2*e^2*x^2 -
 2*c^2*d^2 + 4*b*c*d*e - 2*b^2*e^2 + (c^2*d*e - b*c*e^2)*x)*g/(sqrt(-c*e*x
+ c*d - b*e)*c^2*e^2)
```

mupad [B] time = 2.52, size = 89, normalized size = 0.76

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,c\,d\,g-4\,b\,e\,g+6\,c\,e\,f\right)}{3\,c^2\,e^3}+\frac{2\,g\,x\,\sqrt{d+e\,x}}{3\,c\,e^2}\right)\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x+\frac{d}{e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(4*c*d*g - 4*b*e*g + 6*c*e*f))/(3*c^2*e^3) + (2*g*x*(d
+ e*x)^(1/2))/(3*c*e^2))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x +
d/e)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,\left(f+gx\right)}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2265 $\int \frac{f+gx}{\sqrt{d+ex}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=131

$$-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2\sqrt{2cd-be}}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}$$

```
[Out] -2*(-d*g+e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(
1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(1/2)-2*g*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(1/2)/c/e^2/(e*x+d)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {794, 660, 208}

$$-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\sqrt{2cd-be}}\right)}{e^2\sqrt{2cd-be}}-\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x]
```

```
[Out] (-2*g*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(c*e^2*Sqrt[d + e*x]) - (2
*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d
- b*e]*Sqrt[d + e*x])])/(e^2*Sqrt[2*c*d - b*e])
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\,\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}} - \frac{\left(2\left(\frac{1}{2}e\left(-2ce^2f+be^2g\right)+\frac{1}{2}\left(ce^3\right.\right.\right.}{}$$

$$= -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}} + (2(ef-dg))\,\mathrm{Subst}\left(\int \frac{}{-2cde^2}\right.$$

$$= -\frac{2g\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2\sqrt{d+ex}} - \frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2}}{\sqrt{2cd-be}\,\sqrt{}}\right.}{e^2\sqrt{2cd-be}}$$

Mathematica [A] time = 0.14, size = 148, normalized size = 1.13

$$\frac{2\sqrt{d+ex}\left(g(2cd-be)(c(d-ex)-be)-c\sqrt{2cd-be}\,(dg-ef)\sqrt{c(d-ex)-be}\,\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)\right)}{ce^2(be-2cd)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
]),x]
```

```
[Out] (2*Sqrt[d + e*x]*((2*c*d - b*e)*g*(-(b*e) + c*(d - e*x)) - c*Sqrt[2*c*d - b
*e]*(-(e*f) + d*g)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*
x]/Sqrt[2*c*d - b*e]]))/(c*e^2*(-2*c*d + b*e)*Sqrt[(d + e*x)*(-(b*e) + c*(d
 - e*x))])
```

fricas [A] time = 1.12, size = 442, normalized size = 3.37

$$\left[-\frac{2\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(2\,cd-be)\sqrt{ex+d}\,g+\left(cdef-cd^2g+\left(ce^2f-cdeg\right)x\right)\sqrt{2\,cd-be}\,\log\left(-\frac{ce^2x^2-}{}\right.}{2\,c^2d^2e^2-bcde^3+\left(2\,c^2de^3-bce^4\right)x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [-(2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*d - b*e)*sqrt(e*x + d)
*g + (c*d*e*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(2*c*d - b*e)*log(-(c*
e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e
^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x +
 d^2)))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2*d*e^3 - b*c*e^4)*x), -2*(sqrt(-
c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(2*c*d - b*e)*sqrt(e*x + d)*g + (c*d*e
*f - c*d^2*g + (c*e^2*f - c*d*e*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2
 + b*e^2*x - c*d^2 + b*d*e)))/(2*c^2*d^2*e^2 - b*c*d*e^3 + (2*c^2*d*e^3 - b
*c*e^4)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x +
d)), x)
```

maple [A] time = 0.06, size = 161, normalized size = 1.23

$$-\frac{2\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\,\left(cdg\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-cef\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+\sqrt{-cex-be+cd}\,\sqrt{be-}\right.}{\sqrt{ex+d}\,\sqrt{-cex-be+cd}\,\sqrt{be-2cd}\,c\,e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -2/(e*x+d)^(1/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(arctan((-c*e*x-b*e
+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))*c*e*f+g*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2))/(-c*e*x-b*e+c*
d)^(1/2)/c/e^2/(b*e-2*c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x +
d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{\sqrt{d+e\,x}\,\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*sqrt(d + e*x)), x)
```

3.2266 $\int \frac{f+gx}{(d+ex)^{3/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=153

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)^{3/2}(2cd-be)}-\frac{(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

```
[Out] -(-2*b*e*g+3*c*d*g+c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-
b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(3/2)-(-d*g+e*f)*(d*(-b*e+
c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(3/2)
```

Rubi [A] time = 0.23, antiderivative size = 153, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {792, 660, 208}

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(d+ex)^{3/2}(2cd-be)}-\frac{(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] -(((e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(e^2*(2*c*d - b*e
)*(d + e*x)^(3/2))) - ((c*e*f + 3*c*d*g - 2*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(e^2*(2*c*d -
 b*e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} + \frac{(cef+3cdg-2beg)\int}{2e(2cd}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} + \frac{(cef+3cdg-2beg)\,\mathrm{Subs}}{}$$

$$= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{e^2(2cd-be)(d+ex)^{3/2}} - \frac{(cef+3cdg-2beg)\tanh}{e^2(2cd-}$$

Mathematica [A] time = 0.16, size = 153, normalized size = 1.00

$$\frac{(ef-dg)(be-cd+cex)-\frac{(d+ex)\sqrt{c(d-ex)-be}\,(-2beg+3cdg+cef)\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)}{\sqrt{2cd-be}}}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2]),x]
```

```
[Out] ((e*f - d*g)*(-(c*d) + b*e + c*e*x) - ((c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x
)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*x]/Sqrt[2*c*d - b
*e]])/Sqrt[2*c*d - b*e])/(e^2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

fricas [B] time = 1.16, size = 698, normalized size = 4.56

$$\left[\frac{\left(cd^2ef+\left(ce^3f+\left(3\,cde^2-2\,be^3\right)g\right)x^2+\left(3\,cd^3-2\,bd^2e\right)g+2\left(cde^2f+\left(3\,cd^2e-2\,bde^2\right)g\right)x\right)\sqrt{2\,cd-be}\,\log\left(-\frac{ce}{}\right.}{2\left(4\,c^2d^4e^2-4\,bcd^3e^3+b^2d^2e^4+\left(4\,c^2\right.\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*((c*d^2*e*f + (c*e^3*f + (3*c*d*e^2 - 2*b*e^3)*g)*x^2 + (3*c*d^3 - 2*b
*d^2*e)*g + 2*(c*d*e^2*f + (3*c*d^2*e - 2*b*d*e^2)*g)*x)*sqrt(2*c*d - b*e)*
log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2
*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c*d*e - b
*e^2)*f - (2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(4*c^2*d^4*e^2 - 4*b*c*d^3*e^
3 + b^2*d^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 + 2*(4*c^2*d^
3*e^3 - 4*b*c*d^2*e^4 + b^2*d*e^5)*x), -((c*d^2*e*f + (c*e^3*f + (3*c*d*e^2
 - 2*b*e^3)*g)*x^2 + (3*c*d^3 - 2*b*d^2*e)*g + 2*(c*d*e^2*f + (3*c*d^2*e -
2*b*d*e^2)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 +
b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c*d*e - b*e^2)*f -
 (2*c*d^2 - b*d*e)*g)*sqrt(e*x + d))/(4*c^2*d^4*e^2 - 4*b*c*d^3*e^3 + b^2*d
^2*e^4 + (4*c^2*d^2*e^4 - 4*b*c*d*e^5 + b^2*e^6)*x^2 + 2*(4*c^2*d^3*e^3 - 4
*b*c*d^2*e^4 + b^2*d*e^5)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
3/2)), x)
```

maple [B] time = 0.08, size = 328, normalized size = 2.14

$$\left(2b\,e^{2}gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3cdegx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-c\,e^{2}f\,x\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+2bdeg\arctan\left(\frac{\sqrt{-}}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] (2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*e^2*g-3*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*x*c*e^2*f+2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)
^(1/2))*b*d*e*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d^2*g-
arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*e*f-(b*e-2*c*d)^(1/2)*
(-c*e*x-b*e+c*d)^(1/2)*d*g+(b*e-2*c*d)^(1/2)*(-c*e*x-b*e+c*d)^(1/2)*e*f)*(-
c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/(-c*e*x-b*e+c*d)
^(1/2)/(e*x+d)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{3/2}\,\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-\left(d+ex\right)\left(be-cd+cex\right)}\,\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(3/2)),
 x)
```

3.2267 $\int \frac{f+gx}{(d+ex)^{5/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=233

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{4e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c(-4beg+5cdg+3c}{4e^2}$$

```
[Out] -1/4*c*(-4*b*e*g+5*c*d*g+3*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(5/2)-1/2*(-d*g+e*
f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b*e+2*c*d)/(e*x+d)^(5/2)-1/
4*(-4*b*e*g+5*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/e^2/(-b
*e+2*c*d)^2/(e*x+d)^(3/2)
```

Rubi [A] time = 0.37, antiderivative size = 233, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.087$, Rules used = {792, 672, 660, 208}

$$-\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(d+ex)^{5/2}(2cd-be)}-\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{4e^2(d+ex)^{3/2}(2cd-be)^2}-\frac{c(-4beg+5cdg+3c}{4e}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(5/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]),x
]
```

```
[Out] -((e*f - d*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(2*e^2*(2*c*d - b*
e)*(d + e*x)^(5/2)) - ((3*c*e*f + 5*c*d*g - 4*b*e*g)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])/(4*e^2*(2*c*d - b*e)^2*(d + e*x)^(3/2)) - (c*(3*c*e*f
+ 5*c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqr
t[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{f+gx}{(d+ex)^{5/2}\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx &= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}}+\frac{(3cef+5cdg-4beg)}{4e(}\\ &= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}}-\frac{(3cef+5cdg-4beg)}{4e^2(2cd-}\\ &= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}}-\frac{(3cef+5cdg-4beg)}{4e^2(2cd-}\\ &= -\frac{(ef-dg)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{2e^2(2cd-be)(d+ex)^{5/2}}-\frac{(3cef+5cdg-4beg)}{4e^2(2cd-}\end{aligned}$$

Mathematica [A] time = 0.54, size = 209, normalized size = 0.90

$$\frac{\sqrt{(d+ex)(c(d-ex)-be)}\left(-\frac{(d+ex)(-4beg+5cdg+3cef)\left(\sqrt{e}\,(2cd-be)\sqrt{c(d-ex)-be}+c(d+ex)\sqrt{e(be-2cd)}\tan^{-1}\left(\frac{\sqrt{e}\sqrt{c(d-ex)-be}}{\sqrt{e(be-2cd)}}\right)\right)}{2e^{3/2}(be-2cd)^2\sqrt{c(d-ex)-be}}+\frac{dg}{e}-\right.}{2e(d+ex)^{5/2}(2cd-be)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(5/2)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x
^2]),x]
```

```
[Out] (Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(-f + (d*g)/e - ((3*c*e*f + 5*c*d*g
 - 4*b*e*g)*(d + e*x)*(Sqrt[e]*(2*c*d - b*e)*Sqrt[-(b*e) + c*(d - e*x)] + c
*Sqrt[e*(-2*c*d + b*e)]*(d + e*x)*ArcTan[(Sqrt[e]*Sqrt[-(b*e) + c*(d - e*x)
])/Sqrt[e*(-2*c*d + b*e)]]))/(2*e^(3/2)*(-2*c*d + b*e)^2*Sqrt[-(b*e) + c*(d
 - e*x)])))/(2*e*(2*c*d - b*e)*(d + e*x)^(5/2))
```

fricas [B] time = 1.18, size = 1168, normalized size = 5.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/8*((3*c^2*d^3*e*f + (3*c^2*e^4*f + (5*c^2*d*e^3 - 4*b*c*e^4)*g)*x^3 + 3
*(3*c^2*d*e^3*f + (5*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (5*c^2*d^4 - 4*b*c
*d^3*e)*g + 3*(3*c^2*d^2*e^2*f + (5*c^2*d^3*e - 4*b*c*d^2*e^2)*g)*x)*sqrt(2
*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*s
qrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/
(e^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(
(14*c^2*d^2*e - 11*b*c*d*e^2 + 2*b^2*e^3)*f + (2*c^2*d^3 - 5*b*c*d^2*e + 2*
b^2*d*e^2)*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (10*c^2*d^2*e - 13*b*c*d*e^2
+ 4*b^2*e^3)*g)*x)*sqrt(e*x + d))/(8*c^3*d^6*e^2 - 12*b*c^2*d^5*e^3 + 6*b^2
*c*d^4*e^4 - b^3*d^3*e^5 + (8*c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 + 6*b^2*c*d*e^
7 - b^3*e^8)*x^3 + 3*(8*c^3*d^4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*c*d^2*e^6 -
b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*d^3*e^5 - b^
3*d^2*e^6)*x), -1/4*((3*c^2*d^3*e*f + (3*c^2*e^4*f + (5*c^2*d*e^3 - 4*b*c*e
^4)*g)*x^3 + 3*(3*c^2*d*e^3*f + (5*c^2*d^2*e^2 - 4*b*c*d*e^3)*g)*x^2 + (5*c
^2*d^4 - 4*b*c*d^3*e)*g + 3*(3*c^2*d^2*e^2*f + (5*c^2*d^3*e - 4*b*c*d^2*e^2
)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e
)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) +
 sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((14*c^2*d^2*e - 11*b*c*d*e^2 +
 2*b^2*e^3)*f + (2*c^2*d^3 - 5*b*c*d^2*e + 2*b^2*d*e^2)*g + (3*(2*c^2*d*e^2
 - b*c*e^3)*f + (10*c^2*d^2*e - 13*b*c*d*e^2 + 4*b^2*e^3)*g)*x)*sqrt(e*x +
d))/(8*c^3*d^6*e^2 - 12*b*c^2*d^5*e^3 + 6*b^2*c*d^4*e^4 - b^3*d^3*e^5 + (8*
c^3*d^3*e^5 - 12*b*c^2*d^2*e^6 + 6*b^2*c*d*e^7 - b^3*e^8)*x^3 + 3*(8*c^3*d^
4*e^4 - 12*b*c^2*d^3*e^5 + 6*b^2*c*d^2*e^6 - b^3*d*e^7)*x^2 + 3*(8*c^3*d^5*
e^3 - 12*b*c^2*d^4*e^4 + 6*b^2*c*d^3*e^5 - b^3*d^2*e^6)*x)]
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$sage_0 x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="giac")
```

```
[Out] sage0*x
```

maple [B] time = 0.09, size = 630, normalized size = 2.70

$$-\frac{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\,\left(4bc\,e^3g\,x^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-5c^2d\,e^2g\,x^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3c^2e^3f\,x^2\,\mathrm{ar}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] -1/4*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(4*b*c*e^3*g*x^2*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-5*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b
*e-2*c*d)^(1/2))+8*b*c*d*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))-10*c^2*d^2*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-6*
c^2*d*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+4*b*c*d^2*e*
g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-5*c^2*d^3*g*arctan((-c*e
*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-3*c^2*d^2*e*f*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))-4*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*g
*x+5*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d*e*g*x+3*(-c*e*x-b*e+c*d)^
(1/2)*(b*e-2*c*d)^(1/2)*c*e^2*f*x-2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2
)*b*d*e*g-2*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/2)*b*e^2*f+(-c*e*x-b*e+c*
d)^(1/2)*(b*e-2*c*d)^(1/2)*c*d^2*g+7*(-c*e*x-b*e+c*d)^(1/2)*(b*e-2*c*d)^(1/
2)*c*d*e*f)/(e*x+d)^(5/2)/(b*e-2*c*d)^(5/2)/e^2/(-c*e*x-b*e+c*d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)^(
5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+gx}{(d+ex)^{5/2}\sqrt{cd^2-bde-ce^2x^2-be^2x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\sqrt{-(d+ex)(be-cd+cex)}\,(d+ex)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(5/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2
),x)
```

```
[Out] Integral((f + g*x)/(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**(5/2)),
 x)
```

3.2268 $\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=369

$$\frac{32(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{35c^5e^2\sqrt{d+ex}}+\frac{16\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}{35c^4e^2}$$

```
[Out] 2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(9/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(1/2)+12/35*(-8*b*e*g+9*c*d*g+7*c*e*f)*(e*x+d)^(3/2)*(d*(-b*e
+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2+2/7*(-8*b*e*g+9*c*d*g+7*c*e*f)*(e*x+
d)^(5/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2/(-b*e+2*c*d)+32/35*
(-b*e+2*c*d)^2*(-8*b*e*g+9*c*d*g+7*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(1/2)/c^5/e^2/(e*x+d)^(1/2)+16/35*(-b*e+2*c*d)*(-8*b*e*g+9*c*d*g+7*c*e*f)*(
e*x+d)^(1/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^4/e^2
```

Rubi [A] time = 0.55, antiderivative size = 369, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+9cdg+7cef)}{7c^2e^2(2cd-be)}+\frac{12(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-8beg+}{35c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(9/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (32*(2*c*d - b*e)^2*(7*c*e*f + 9*c*d*g -
 8*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^5*e^2*Sqrt[d + e
*x]) + (16*(2*c*d - b*e)*(7*c*e*f + 9*c*d*g - 8*b*e*g)*Sqrt[d + e*x]*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c^4*e^2) + (12*(7*c*e*f + 9*c*d*g
- 8*b*e*g)*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(35*c
^3*e^2) + (2*(7*c*e*f + 9*c*d*g - 8*b*e*g)*(d + e*x)^(5/2)*Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2])/(7*c^2*e^2*(2*c*d - b*e))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(7cef+9cdg-8beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(7cef+9cdg-8beg)(d+e}{7c^2e^2(}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{12(7cef+9cdg-8beg)(d+}{3}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{16(2cd-be)(7cef+9cdg-}{}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{32(2cd-be)^2(7cef+9cdg-}{35c^5}$$

Mathematica [A] time = 0.22, size = 245, normalized size = 0.66

$$-\frac{2\sqrt{d+ex}\left(-128b^4e^4g+16b^3ce^3(53dg+7ef-4egx)-8b^2c^2e^2\left(257d^2g+de(77f-45gx)-e^2x(7f+2gx)\right)-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-128*b^4*e^4*g + 16*b^3*c*e^3*(7*e*f + 53*d*g - 4*e*g*x)
 - 8*b^2*c^2*e^2*(257*d^2*g + d*e*(77*f - 45*g*x) - e^2*x*(7*f + 2*g*x)) -
2*b*c^3*e*(-1075*d^3*g + e^3*x^2*(7*f + 4*g*x) + d*e^2*x*(126*f + 37*g*x) +
 d^2*e*(-553*f + 334*g*x)) + c^4*(-814*d^4*g + e^4*x^3*(7*f + 5*g*x) + d*e^
3*x^2*(49*f + 29*g*x) + d^2*e^2*x*(301*f + 93*g*x) + d^3*e*(-637*f + 407*g*
x))))/(35*c^5*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 1.20, size = 374, normalized size = 1.01

$$\frac{2\left(5\,c^4e^4gx^4+\left(7\,c^4e^4f+\left(29\,c^4de^3-8\,bc^3e^4\right)g\right)x^3+\left(7\left(7\,c^4de^3-2\,bc^3e^4\right)f+\left(93\,c^4d^2e^2-74\,bc^3de^3+16\,b^2c^2\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/35*(5*c^4*e^4*g*x^4 + (7*c^4*e^4*f + (29*c^4*d*e^3 - 8*b*c^3*e^4)*g)*x^3
+ (7*(7*c^4*d*e^3 - 2*b*c^3*e^4)*f + (93*c^4*d^2*e^2 - 74*b*c^3*d*e^3 + 16*
b^2*c^2*e^4)*g)*x^2 - 7*(91*c^4*d^3*e - 158*b*c^3*d^2*e^2 + 88*b^2*c^2*d*e^
3 - 16*b^3*c*e^4)*f - 2*(407*c^4*d^4 - 1075*b*c^3*d^3*e + 1028*b^2*c^2*d^2*
e^2 - 424*b^3*c*d*e^3 + 64*b^4*e^4)*g + (7*(43*c^4*d^2*e^2 - 36*b*c^3*d*e^3
 + 8*b^2*c^2*e^4)*f + (407*c^4*d^3*e - 668*b*c^3*d^2*e^2 + 360*b^2*c^2*d*e^
3 - 64*b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x
 + d)/(c^6*e^4*x^2 + b*c^5*e^4*x - c^6*d^2*e^2 + b*c^5*d*e^3)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[-80,76,14,-33,-32]Warning, need to choose a
 branch for the root of a polynomial with parameters. This might be wrong.T
he choice was done assuming [b,c,d,exp(1),exp(2)]=[-69,66,23,-29,45]Warning
, need to choose a branch for the root of a polynomial with parameters. Thi
s might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[66,44,
20,6,-14]Warning, need to choose a branch for the root of a polynomial with
 parameters. This might be wrong.The choice was done assuming [b,c,d,exp(1)
,exp(2)]=[87,21,9,-14,37]Evaluation time: 119.18Unable to transpose Error:
Bad Argument Value
```

maple [A] time = 0.05, size = 367, normalized size = 0.99

$$-\frac{2\left(cex+be-cd\right)\left(-5g\,e^{4}x^{4}c^{4}+8b\,c^{3}e^{4}g\,x^{3}-29c^{4}d\,e^{3}g\,x^{3}-7c^{4}e^{4}f\,x^{3}-16b^{2}c^{2}e^{4}g\,x^{2}+74b\,c^{3}d\,e^{3}g\,x^{2}+14b\,c^{3}e^{4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/35*(c*e*x+b*e-c*d)*(-5*c^4*e^4*g*x^4+8*b*c^3*e^4*g*x^3-29*c^4*d*e^3*g*x^
3-7*c^4*e^4*f*x^3-16*b^2*c^2*e^4*g*x^2+74*b*c^3*d*e^3*g*x^2+14*b*c^3*e^4*f*
x^2-93*c^4*d^2*e^2*g*x^2-49*c^4*d*e^3*f*x^2+64*b^3*c*e^4*g*x-360*b^2*c^2*d*
e^3*g*x-56*b^2*c^2*e^4*f*x+668*b*c^3*d^2*e^2*g*x+252*b*c^3*d*e^3*f*x-407*c^
4*d^3*e*g*x-301*c^4*d^2*e^2*f*x+128*b^4*e^4*g-848*b^3*c*d*e^3*g-112*b^3*c*e
^4*f+2056*b^2*c^2*d^2*e^2*g+616*b^2*c^2*d*e^3*f-2150*b*c^3*d^3*e*g-1106*b*c
^3*d^2*e^2*f+814*c^4*d^4*g+637*c^4*d^3*e*f)*(e*x+d)^(3/2)/c^5/e^2/(-c*e^2*x
^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.74, size = 317, normalized size = 0.86

$$-\frac{2\left(c^{3}e^{3}x^{3}-91\,c^{3}d^{3}+158\,bc^{2}d^{2}e-88\,b^{2}cde^{2}+16\,b^{3}e^{3}+\left(7\,c^{3}de^{2}-2\,bc^{2}e^{3}\right)x^{2}+\left(43\,c^{3}d^{2}e-36\,bc^{2}de^{2}+8\,b^{2}ce^{3}\right)\right.}{5\,\sqrt{-cex+cd-be}\,c^{4}e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/5*(c^3*e^3*x^3 - 91*c^3*d^3 + 158*b*c^2*d^2*e - 88*b^2*c*d*e^2 + 16*b^3*
e^3 + (7*c^3*d*e^2 - 2*b*c^2*e^3)*x^2 + (43*c^3*d^2*e - 36*b*c^2*d*e^2 + 8*
b^2*c*e^3)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^4*e) - 2/35*(5*c^4*e^4*x^4 - 81
4*c^4*d^4 + 2150*b*c^3*d^3*e - 2056*b^2*c^2*d^2*e^2 + 848*b^3*c*d*e^3 - 128
*b^4*e^4 + (29*c^4*d*e^3 - 8*b*c^3*e^4)*x^3 + (93*c^4*d^2*e^2 - 74*b*c^3*d*
e^3 + 16*b^2*c^2*e^4)*x^2 + (407*c^4*d^3*e - 668*b*c^3*d^2*e^2 + 360*b^2*c^
2*d*e^3 - 64*b^3*c*e^4)*x)*g/(sqrt(-c*e*x + c*d - b*e)*c^5*e^2)
```

mupad [**B**] time = 3.09, size = 398, normalized size = 1.08

$$\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{2\,g\,x^4\,\sqrt{d+e\,x}}{7\,c^2}-\frac{\sqrt{d+e\,x}\,\left(256\,g\,b^4\,e^4-1696\,g\,b^3\,c\,d\,e^3-224\,f\,b^3\,c\,e^4+4112\,g\,b^2\,c^2\,d^2\,e^2+1232\,f\,b^2\,c^2\,d\,e^3-\right.}{35\,c^6\,e^4}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(9/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*g*x^4*(d + e*x)^(1/2))/(7*
c^2) - ((d + e*x)^(1/2)*(256*b^4*e^4*g + 1628*c^4*d^4*g - 224*b^3*c*e^4*f +
 1274*c^4*d^3*e*f - 4300*b*c^3*d^3*e*g - 1696*b^3*c*d*e^3*g - 2212*b*c^3*d^
2*e^2*f + 1232*b^2*c^2*d*e^3*f + 4112*b^2*c^2*d^2*e^2*g))/(35*c^6*e^4) + (x
^2*(d + e*x)^(1/2)*(32*b^2*c^2*e^4*g + 186*c^4*d^2*e^2*g - 28*b*c^3*e^4*f +
 98*c^4*d*e^3*f - 148*b*c^3*d*e^3*g))/(35*c^6*e^4) + (2*x^3*(d + e*x)^(1/2)
*(29*c*d*g - 8*b*e*g + 7*c*e*f))/(35*c^3*e) + (x*(d + e*x)^(1/2)*(112*b^2*c
^2*e^4*f + 602*c^4*d^2*e^2*f - 128*b^3*c*e^4*g + 814*c^4*d^3*e*g - 504*b*c^
3*d*e^3*f - 1336*b*c^3*d^2*e^2*g + 720*b^2*c^2*d*e^3*g))/(35*c^6*e^4)))/(x^
2 + (b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(9/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2269 $\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=292

$$\frac{16(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{15c^4e^2\sqrt{d+ex}}+\frac{8\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7}{15c^3e^2}$$

```
[Out] 2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(7/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(1/2)+2/5*(-6*b*e*g+7*c*d*g+5*c*e*f)*(e*x+d)^(3/2)*(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2/(-b*e+2*c*d)+16/15*(-b*e+2*c*d)*(-6*b*
e*g+7*c*d*g+5*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^4/e^2/(e*x+d)
^(1/2)+8/15*(-6*b*e*g+7*c*d*g+5*c*e*f)*(e*x+d)^(1/2)*(d*(-b*e+c*d)-b*e^2*x-
c*e^2*x^2)^(1/2)/c^3/e^2
```

Rubi [A] time = 0.41, antiderivative size = 292, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7cdg+5cef)}{5c^2e^2(2cd-be)}+\frac{8\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-6beg+7c}{15c^3e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(7/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (16*(2*c*d - b*e)*(5*c*e*f + 7*c*d*g - 6
*b*e*g)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(15*c^4*e^2*Sqrt[d + e*x
]) + (8*(5*c*e*f + 7*c*d*g - 6*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2])/(15*c^3*e^2) + (2*(5*c*e*f + 7*c*d*g - 6*b*e*g)*(d + e*
x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(5*c^2*e^2*(2*c*d - b*e
))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(5cef+7cdg-6beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(5cef+7cdg-6beg)(d+e}{5c^2e^2(}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{8(5cef+7cdg-6beg)\sqrt{d+}}{15}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{16(2cd-be)(5cef+7cdg-}{15c^4e}$$

Mathematica [A] time = 0.13, size = 168, normalized size = 0.58

$$-\frac{2\sqrt{d+ex}\,\left(48b^3e^3g-8b^2ce^2(28dg+5ef-3egx)+2bc^2e\left(167d^2g+de(70f-44gx)-e^2x(10f+3gx)\right)+c^3\left(\right.}{15c^4e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(48*b^3*e^3*g - 8*b^2*c*e^2*(5*e*f + 28*d*g - 3*e*g*x) +
2*b*c^2*e*(167*d^2*g + d*e*(70*f - 44*g*x) - e^2*x*(10*f + 3*g*x)) + c^3*(-
158*d^3*g + e^3*x^2*(5*f + 3*g*x) + 2*d*e^2*x*(25*f + 8*g*x) + d^2*e*(-115*
f + 79*g*x))))/(15*c^4*e^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 0.91, size = 257, normalized size = 0.88

$$\frac{2\left(3\,c^3e^3gx^3+\left(5\,c^3e^3f+2\left(8\,c^3de^2-3\,bc^2e^3\right)g\right)x^2-5\left(23\,c^3d^2e-28\,bc^2de^2+8\,b^2ce^3\right)f-2\left(79\,c^3d^3-167\,bc^2\right.\right.}{15\left(c^5e^4\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/15*(3*c^3*e^3*g*x^3 + (5*c^3*e^3*f + 2*(8*c^3*d*e^2 - 3*b*c^2*e^3)*g)*x^2
 - 5*(23*c^3*d^2*e - 28*b*c^2*d*e^2 + 8*b^2*c*e^3)*f - 2*(79*c^3*d^3 - 167*
b*c^2*d^2*e + 112*b^2*c*d*e^2 - 24*b^3*e^3)*g + (10*(5*c^3*d*e^2 - 2*b*c^2*
e^3)*f + (79*c^3*d^2*e - 88*b*c^2*d*e^2 + 24*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^4*x^2 + b*c^4*e^4*x - c^
5*d^2*e^2 + b*c^4*d*e^3)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[-8,-96,87,35,14]Warning, need to choose a b
ranch for the root of a polynomial with parameters. This might be wrong.The
 choice was done assuming [b,c,d,exp(1),exp(2)]=[57,18,-10,85,-42]Warning,
need to choose a branch for the root of a polynomial with parameters. This
might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-23,67,9
7,57,86]Warning, need to choose a branch for the root of a polynomial with
parameters. This might be wrong.The choice was done assuming [b,c,d,exp(1),
exp(2)]=[45,19,-66,-61,-5]Evaluation time: 121.97Unable to transpose Error:
 Bad Argument Value
```

maple [A] time = 0.05, size = 235, normalized size = 0.80

$$\frac{2\left(cex+be-cd\right)\left(3ge^{3}x^{3}c^{3}-6bc^{2}e^{3}gx^{2}+16c^{3}de^{2}gx^{2}+5c^{3}e^{3}fx^{2}+24b^{2}ce^{3}gx-88bc^{2}de^{2}gx-20bc^{2}e^{3}fx+7\right.}{15\left(-ce^{2}x^{2}-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^3*e^3*g*x^3-6*b*c^2*e^3*g*x^2+16*c^3*d*e^2*g*x^2+
5*c^3*e^3*f*x^2+24*b^2*c*e^3*g*x-88*b*c^2*d*e^2*g*x-20*b*c^2*e^3*f*x+79*c^3
*d^2*e*g*x+50*c^3*d*e^2*f*x+48*b^3*e^3*g-224*b^2*c*d*e^2*g-40*b^2*c*e^3*f+3
34*b*c^2*d^2*e*g+140*b*c^2*d*e^2*f-158*c^3*d^3*g-115*c^3*d^2*e*f)*(e*x+d)^(
3/2)/c^4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.73, size = 203, normalized size = 0.70

$$-\frac{2\left(c^{2}e^{2}x^{2}-23\,c^{2}d^{2}+28\,bcde-8\,b^{2}e^{2}+2\left(5\,c^{2}de-2\,bce^{2}\right)x\right)f}{3\sqrt{-cex+cd-be}\,c^{3}e}-\frac{2\left(3\,c^{3}e^{3}x^{3}-158\,c^{3}d^{3}+334\,bc^{2}d^{2}e-224\,b^{2}cde^{2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(c^2*e^2*x^2 - 23*c^2*d^2 + 28*b*c*d*e - 8*b^2*e^2 + 2*(5*c^2*d*e - 2*
b*c*e^2)*x)*f/(sqrt(-c*e*x + c*d - b*e)*c^3*e) - 2/15*(3*c^3*e^3*x^3 - 158*
c^3*d^3 + 334*b*c^2*d^2*e - 224*b^2*c*d*e^2 + 48*b^3*e^3 + 2*(8*c^3*d*e^2 -
 3*b*c^2*e^3)*x^2 + (79*c^3*d^2*e - 88*b*c^2*d*e^2 + 24*b^2*c*e^3)*x)*g/(sq
rt(-c*e*x + c*d - b*e)*c^4*e^2)
```

mupad [B] time = 2.95, size = 267, normalized size = 0.91

$$\frac{\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}\,\left(\frac{2\,x^{2}\,\sqrt{d+e\,x}\,\left(16\,c\,d\,g-6\,b\,e\,g+5\,c\,e\,f\right)}{15\,c^{3}\,e^{2}}-\frac{\sqrt{d+e\,x}\,\left(-96\,g\,b^{3}\,e^{3}+448\,g\,b^{2}\,c\,d\,e^{2}+80\,f\,b^{2}\,c\,e^{3}-668\,g\,b\,c^{2}\,d^{2}\,e-280\right.}{15\,c^{5}\,e^{4}}\right.}{x^{2}+\frac{b\,x}{c}+\frac{d\,(b\,e}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(7/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] ((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*((2*x^2*(d + e*x)^(1/2)*(16*c*
d*g - 6*b*e*g + 5*c*e*f))/(15*c^3*e^2) - ((d + e*x)^(1/2)*(316*c^3*d^3*g -
96*b^3*e^3*g + 80*b^2*c*e^3*f + 230*c^3*d^2*e*f - 280*b*c^2*d*e^2*f - 668*b
*c^2*d^2*e*g + 448*b^2*c*d*e^2*g))/(15*c^5*e^4) + (2*g*x^3*(d + e*x)^(1/2))
/(5*c^2*e) + (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g - 40*b*c^2*e^3*f + 100*c^3*
d*e^2*f + 158*c^3*d^2*e*g - 176*b*c^2*d*e^2*g))/(15*c^5*e^4)))/(x^2 + (b*x)
/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(7/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2270 $\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=217

$$\frac{4\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{3c^3e^2\sqrt{d+ex}}+\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef}{3c^2e^2(2cd-be)}$$

```
[Out] 2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(5/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(1/2)+4/3*(-4*b*e*g+5*c*d*g+3*c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(1/2)/c^3/e^2/(e*x+d)^(1/2)+2/3*(-4*b*e*g+5*c*d*g+3*c*e*f)*(e*x+d)
^(1/2)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2/(-b*e+2*c*d)
```

Rubi [A] time = 0.29, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {788, 656, 648}

$$\frac{2\sqrt{d+ex}\,\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef)}{3c^2e^2(2cd-be)}+\frac{4\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-4beg+5cdg+3cef}{3c^3e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(5/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (4*(3*c*e*f + 5*c*d*g - 4*b*e*g)*Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(3*c^3*e^2*Sqrt[d + e*x]) + (2*(3*c*e*f
 + 5*c*d*g - 4*b*e*g)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2])/(3*c^2*e^2*(2*c*d - b*e))
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(3cef+5cdg-4beg)\int \frac{}{\sqrt{cd^2-}}}{ce(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{2(3cef+5cdg-4beg)\sqrt{d+}}{3c^2e^2(2}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{4(3cef+5cdg-4beg)\sqrt{d(cd}}{3c^3e^2\sqrt{d+}}$$

Mathematica [A] time = 0.08, size = 105, normalized size = 0.48

$$-\frac{2\sqrt{d+ex}\left(-8b^2e^2g+2bce(11dg+3ef-2egx)+c^2\left(-14d^2g+de(7gx-9f)+e^2x(3f+gx)\right)\right)}{3c^3e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-8*b^2*e^2*g + 2*b*c*e*(3*e*f + 11*d*g - 2*e*g*x) + c^2*
(-14*d^2*g + e^2*x*(3*f + g*x) + d*e*(-9*f + 7*g*x))))/(3*c^3*e^2*Sqrt[(d +
 e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 1.01, size = 165, normalized size = 0.76

$$\frac{2\left(c^2e^2gx^2-3\left(3c^2de-2bce^2\right)f-2\left(7c^2d^2-11bcde+4b^2e^2\right)g+\left(3c^2e^2f+\left(7c^2de-4bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-}}{3\left(c^4e^4x^2+bc^3e^4x-c^4d^2e^2+bc^3de^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3*(c^2*e^2*g*x^2 - 3*(3*c^2*d*e - 2*b*c*e^2)*f - 2*(7*c^2*d^2 - 11*b*c*d*
e + 4*b^2*e^2)*g + (3*c^2*e^2*f + (7*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^4*e^4*x^2 + b*c^3*e^4*x -
c^4*d^2*e^2 + b*c^3*d*e^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 139, normalized size = 0.64

$$-\frac{2(cex+be-cd)\left(-gx^2c^2e^2+4bce^2gx-7c^2degx-3c^2e^2fx+8b^2e^2g-22bcdeg-6bce^2f+14c^2d^2g+9c^2de\right.}{3\left(-ce^2x^2-be^2x-bde+cd^2\right)^{\frac{3}{2}}c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(-c^2*e^2*g*x^2+4*b*c*e^2*g*x-7*c^2*d*e*g*x-3*c^2*e^2*
f*x+8*b^2*e^2*g-22*b*c*d*e*g-6*b*c*e^2*f+14*c^2*d^2*g+9*c^2*d*e*f)*(e*x+d)^
(3/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.72, size = 112, normalized size = 0.52

$$-\frac{2\,(cex-3\,cd+2\,be)f}{\sqrt{-cex+cd-be}\,c^2e}-\frac{2\left(c^2e^2x^2-14\,c^2d^2+22\,bcde-8\,b^2e^2+\left(7\,c^2de-4\,bce^2\right)x\right)g}{3\,\sqrt{-cex+cd-be}\,c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] -2*(c*e*x - 3*c*d + 2*b*e)*f/(sqrt(-c*e*x + c*d - b*e)*c^2*e) - 2/3*(c^2*e^
2*x^2 - 14*c^2*d^2 + 22*b*c*d*e - 8*b^2*e^2 + (7*c^2*d*e - 4*b*c*e^2)*x)*g/
(sqrt(-c*e*x + c*d - b*e)*c^3*e^2)
```

mupad [B] time = 2.76, size = 167, normalized size = 0.77

$$\frac{\left(\frac{2\,g\,x^2\,\sqrt{d+e\,x}}{3\,c^2\,e^2}-\frac{\sqrt{d+e\,x}\,\left(16\,g\,b^2\,e^2-44\,g\,b\,c\,d\,e-12\,f\,b\,c\,e^2+28\,g\,c^2\,d^2+18\,f\,c^2\,d\,e\right)}{3\,c^4\,e^4}+\frac{2\,x\,\sqrt{d+e\,x}\,\left(7\,c\,d\,g-4\,b\,e\,g+3\,c\,e\,f\right)}{3\,c^3\,e^3}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2}}{x^2+\frac{b\,x}{c}+\frac{d\,\left(b\,e-c\,d\right)}{c\,e^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] (((2*g*x^2*(d + e*x)^(1/2))/(3*c^2*e^2) - ((d + e*x)^(1/2)*(16*b^2*e^2*g +
28*c^2*d^2*g - 12*b*c*e^2*f + 18*c^2*d*e*f - 44*b*c*d*e*g))/(3*c^4*e^4) + (
2*x*(d + e*x)^(1/2)*(7*c*d*g - 4*b*e*g + 3*c*e*f))/(3*c^3*e^3))*(c*d^2 - c*
e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^2 + (b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2271 $\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=148

$$\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{c^2e^2\sqrt{d+ex}\,(2cd-be)}+\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

```
[Out] 2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(3/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2
*x-c*e^2*x^2)^(1/2)+2*(-2*b*e*g+3*c*d*g+c*e*f)*(d*(-b*e+c*d)-b*e^2*x-c*e^2*
x^2)^(1/2)/c^2/e^2/(-b*e+2*c*d)/(e*x+d)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 148, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {788, 648}

$$\frac{2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,(-2beg+3cdg+cef)}{c^2e^2\sqrt{d+ex}\,(2cd-be)}+\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(3/2))/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f + 3*c*d*g - 2*b*e*g)*Sqrt[d*(c
*d - b*e) - b*e^2*x - c*e^2*x^2])/(c^2*e^2*(2*c*d - b*e)*Sqrt[d + e*x])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx &= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(cef+3cdg-2beg)\int \frac{}{\sqrt{cd^2-b}}}{ce(2cd-be)}\\ &= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(cef+3cdg-2beg)\sqrt{d(cd}}{c^2e^2(2cd-be)\sqrt{}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 60, normalized size = 0.41

$$\frac{2\sqrt{d+ex}\,(-2beg+2cdg+ce(f-gx))}{c^2e^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(2*c*d*g - 2*b*e*g + c*e*(f - g*x)))/(c^2*e^2*Sqrt[(d + e*
x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 0.78, size = 102, normalized size = 0.69

$$\frac{2\,\sqrt{-ce^{2}x^{2}-be^{2}x+cd^{2}-bde}\,\left(cegx-cef-2\,(cd-be)g\right)\sqrt{ex+d}}{c^{3}e^{4}x^{2}+bc^{2}e^{4}x-c^{3}d^{2}e^{2}+bc^{2}de^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(c*e*g*x - c*e*f - 2*(c*d - b*
e)*g)*sqrt(e*x + d)/(c^3*e^4*x^2 + b*c^2*e^4*x - c^3*d^2*e^2 + b*c^2*d*e^3)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.05, size = 78, normalized size = 0.53

$$\frac{2\,(cex+be-cd)\left(cegx+2beg-2cdg-cef\right)(ex+d)^{\frac{3}{2}}}{\left(-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}\right)^{\frac{3}{2}}c^{2}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 2*(c*e*x+b*e-c*d)*(c*e*g*x+2*b*e*g-2*c*d*g-c*e*f)*(e*x+d)^(3/2)/c^2/e^2/(-c
*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2)
```

maxima [A] time = 0.74, size = 62, normalized size = 0.42

$$\frac{2\,f}{\sqrt{-cex+cd-be}\,ce}-\frac{2\,(cex-2\,cd+2\,be)g}{\sqrt{-cex+cd-be}\,c^{2}e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] 2*f/(sqrt(-c*e*x + c*d - b*e)*c*e) - 2*(c*e*x - 2*c*d + 2*b*e)*g/(sqrt(-c*e
*x + c*d - b*e)*c^2*e^2)
```

mupad [B] time = 2.78, size = 107, normalized size = 0.72

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,c\,d\,g-4\,b\,e\,g+2\,c\,e\,f\right)}{c^{3}\,e^{4}}-\frac{2\,g\,x\,\sqrt{d+e\,x}}{c^{2}\,e^{3}}\right)\sqrt{c\,d^{2}-b\,d\,e-c\,e^{2}\,x^{2}-b\,e^{2}\,x}}{x^{2}+\frac{b\,x}{c}+\frac{d\,(b\,e-c\,d)}{c\,e^{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(4*c*d*g - 4*b*e*g + 2*c*e*f))/(c^3*e^4) - (2*g*x*(d +
e*x)^(1/2))/(c^2*e^3))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^2 +
(b*x)/c + (d*(b*e - c*d))/(c*e^2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^{\frac{3}{2}}\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((d + e*x)**(3/2)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)
, x)
```

3.2272 $\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=155

$$\frac{2\sqrt{d+ex}\,(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

```
[Out] -2*(-d*g+e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-b*e+2*c*d)^(
1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(3/2)+2*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(
1/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.17, antiderivative size = 155, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {788, 660, 208}

$$\frac{2\sqrt{d+ex}\,(-beg+cdg+cef)}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{e^2(2cd-be)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x
]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[d + e*x])/(c*e^2*(2*c*d - b*e)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g)*ArcTanh[Sqrt[d*(c*d - b*e)
- b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(e^2*(2*c*d - b*
e)^(3/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(ef-dg)\int \frac{1}{\sqrt{d+ex}\,\sqrt{cd^2-bde-be^2}}}{e(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(2(ef-dg))\,\mathrm{Subst}\left(\int \frac{}{-2cde^2+}\right.}{2c}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{ce^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-}}{\sqrt{2cd-be}}\right.}{e^2(2cd-be)^{3/2}}$$

Mathematica [**A**]   time = 0.14, size = 147, normalized size = 0.95

$$\frac{2\sqrt{d+ex}\left(c\sqrt{2cd-be}\,(dg-ef)\sqrt{c(d-ex)-be}\,\tanh^{-1}\left(\frac{\sqrt{-be+cd-cex}}{\sqrt{2cd-be}}\right)+(2cd-be)(-beg+cdg+cef)\right)}{ce^2(be-2cd)^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*((2*c*d - b*e)*(c*e*f + c*d*g - b*e*g) + c*Sqrt[2*c*d - b*
e]*(-(e*f) + d*g)*Sqrt[-(b*e) + c*(d - e*x)]*ArcTanh[Sqrt[c*d - b*e - c*e*x
]/Sqrt[2*c*d - b*e]]))/(c*e^2*(-2*c*d + b*e)^2*Sqrt[(d + e*x)*(-(b*e) + c*(
d - e*x))])
```

fricas [**B**]   time = 0.76, size = 776, normalized size = 5.01

$$\left[-\frac{\left(\left(c^2e^3f-c^2de^2g\right)x^2-\left(c^2d^2e-bcde^2\right)f+\left(c^2d^3-bcd^2e\right)g+\left(bce^3f-bcde^2g\right)x\right)\sqrt{2\,cd-be}\,\log\left(-\frac{ce^2x^2-3\,cd^2+}{}\right.}{4\,c^4d^4e^2-8\,bc^3d^3e^3+5\,b^2c^2d^2e^4-b^3cde}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-(((c^2*e^3*f - c^2*d*e^2*g)*x^2 - (c^2*d^2*e - b*c*d*e^2)*f + (c^2*d^3 -
b*c*d^2*e)*g + (b*c*e^3*f - b*c*d*e^2*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x
^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)
) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c^2*d*e - b*c*e^2)*f +
 (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(e*x + d))/(4*c^4*d^4*e^2 - 8*b*c
^3*d^3*e^3 + 5*b^2*c^2*d^2*e^4 - b^3*c*d*e^5 - (4*c^4*d^2*e^4 - 4*b*c^3*d*e
^5 + b^2*c^2*e^6)*x^2 - (4*b*c^3*d^2*e^4 - 4*b^2*c^2*d*e^5 + b^3*c*e^6)*x),
 2*(((c^2*e^3*f - c^2*d*e^2*g)*x^2 - (c^2*d^2*e - b*c*d*e^2)*f + (c^2*d^3 -
 b*c*d^2*e)*g + (b*c*e^3*f - b*c*d*e^2*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt
(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*
e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b
*d*e)*((2*c^2*d*e - b*c*e^2)*f + (2*c^2*d^2 - 3*b*c*d*e + b^2*e^2)*g)*sqrt(
e*x + d))/(4*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 + 5*b^2*c^2*d^2*e^4 - b^3*c*d*e^
5 - (4*c^4*d^2*e^4 - 4*b*c^3*d*e^5 + b^2*c^2*e^6)*x^2 - (4*b*c^3*d^2*e^4 -
4*b^2*c^2*d*e^5 + b^3*c*e^6)*x)]
```

giac [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[72,91,-18,-31,46]Warning, need to choose a
branch for the root of a polynomial with parameters. This might be wrong.Th
e choice was done assuming [b,c,d,exp(1),exp(2)]=[-76,-17,63,68,98]Warning,
 need to choose a branch for the root of a polynomial with parameters. This
 might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-95,-95
,-57,19,-77]Warning, need to choose a branch for the root of a polynomial w
ith parameters. This might be wrong.The choice was done assuming [b,c,d,exp
(1),exp(2)]=[-29,-98,-9,8,96]Evaluation time: 111.17Unable to transpose Err
or: Bad Argument Value
```

maple [A] time = 0.07, size = 207, normalized size = 1.34

$$-\frac{2\Big(\sqrt{-cex-be+cd}\; cdg \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-\sqrt{-cex-be+cd}\; cef \arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+\sqrt{be-2cd}\; beg-}{(be-2cd)^{\frac{3}{2}}\,(cex+be-cd)\,\sqrt{ex+d}\; c\, e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -2*(arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*d*g*(-c*e*x-b*e+c*d)
^(1/2)-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c*e*f*(-c*e*x-b*e+c
*d)^(1/2)+(b*e-2*c*d)^(1/2)*b*e*g-(b*e-2*c*d)^(1/2)*c*d*g-(b*e-2*c*d)^(1/2)
*c*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(3/2)/e^2/c/(c*e
*x+b*e-c*d)/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\left(gx+f\right)}{\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(e*x + d)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{\left(f+g\,x\right)\,\sqrt{d+e\,x}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2)
, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x
)
```

3.2273 $\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=223

$$-\frac{ef-dg}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{\sqrt{d+ex}\,(-2beg+cdg+3cef)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(-2beg+cdg+3ce}{e^2}$$

```
[Out] -(-2*b*e*g+c*d*g+3*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-
b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(5/2)+(d*g-e*f)/e^2/(-b*e+
2*c*d)/(e*x+d)^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+(-2*b*e*g+c*d*g
+3*c*e*f)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(1/2)
```

Rubi **[A]** time = 0.35, antiderivative size = 223, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {792, 666, 660, 208}

$$-\frac{ef-dg}{e^2\sqrt{d+ex}\,(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{\sqrt{d+ex}\,(-2beg+cdg+3cef)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(-2beg+cdg+3ce}{e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)),x
]
```

```
[Out] -((e*f - d*g)/(e^2*(2*c*d - b*e)*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2])) + ((3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(e^2*(2*c*d -
 b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - ((3*c*e*f + c*d*g - 2*
b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]
*Sqrt[d + e*x])])/(e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3cef+cd}{}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

$$= -\frac{ef-dg}{e^2(2cd-be)\sqrt{d+ex}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(3ce}{e^2(2cd-b}$$

Mathematica [C] time = 0.07, size = 117, normalized size = 0.52

$$\frac{(d+ex)(-2beg+cdg+3cef)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)+(2cd-be)(dg-ef)}{e^2\sqrt{d+ex}\,(be-2cd)^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3
/2)),x]
```

```
[Out] ((2*c*d - b*e)*(-(e*f) + d*g) + (3*c*e*f + c*d*g - 2*b*e*g)*(d + e*x)*Hyper
geometric2F1[-1/2, 1, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e^2*(-2
*c*d + b*e)^2*Sqrt[d + e*x]*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [B] time = 1.26, size = 1351, normalized size = 6.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [1/2*(((3*c^2*e^4*f + (c^2*d*e^3 - 2*b*c*e^4)*g)*x^3 + (3*(c^2*d*e^3 + b*c*
e^4)*f + (c^2*d^2*e^2 - b*c*d*e^3 - 2*b^2*e^4)*g)*x^2 - 3*(c^2*d^3*e - b*c*
d^2*e^2)*f - (c^2*d^4 - 3*b*c*d^3*e + 2*b^2*d^2*e^2)*g - (3*(c^2*d^2*e^2 -
2*b*c*d*e^3)*f + (c^2*d^3*e - 4*b*c*d^2*e^2 + 4*b^2*d*e^3)*g)*x)*sqrt(2*c*d
 - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2
*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((2*c
^2*d^2*e + b*c*d*e^2 - b^2*e^3)*f + 3*(2*c^2*d^3 - 3*b*c*d^2*e + b^2*d*e^2)
*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (2*c^2*d^2*e - 5*b*c*d*e^2 + 2*b^2*e^3)
*g)*x)*sqrt(e*x + d))/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*b^2*c^2*d^4*e^
4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3*d^2*e^6 + 6*b
^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*e^5 - 6*b^2*c^
2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 28*b*c^3*d^4*e^
4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x), (((3*c^2*e^4*f
 + (c^2*d*e^3 - 2*b*c*e^4)*g)*x^3 + (3*(c^2*d*e^3 + b*c*e^4)*f + (c^2*d^2*e
^2 - b*c*d*e^3 - 2*b^2*e^4)*g)*x^2 - 3*(c^2*d^3*e - b*c*d^2*e^2)*f - (c^2*d
^4 - 3*b*c*d^3*e + 2*b^2*d^2*e^2)*g - (3*(c^2*d^2*e^2 - 2*b*c*d*e^3)*f + (c
^2*d^3*e - 4*b*c*d^2*e^2 + 4*b^2*d*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqr
t(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c
*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 -
b*d*e)*((2*c^2*d^2*e + b*c*d*e^2 - b^2*e^3)*f + 3*(2*c^2*d^3 - 3*b*c*d^2*e
+ b^2*d*e^2)*g + (3*(2*c^2*d*e^2 - b*c*e^3)*f + (2*c^2*d^2*e - 5*b*c*d*e^2
+ 2*b^2*e^3)*g)*x)*sqrt(e*x + d))/(8*c^4*d^6*e^2 - 20*b*c^3*d^5*e^3 + 18*b^
2*c^2*d^4*e^4 - 7*b^3*c*d^3*e^5 + b^4*d^2*e^6 - (8*c^4*d^3*e^5 - 12*b*c^3*d
^2*e^6 + 6*b^2*c^2*d*e^7 - b^3*c*e^8)*x^3 - (8*c^4*d^4*e^4 - 4*b*c^3*d^3*e^
5 - 6*b^2*c^2*d^2*e^6 + 5*b^3*c*d*e^7 - b^4*e^8)*x^2 + (8*c^4*d^5*e^3 - 28*
b*c^3*d^4*e^4 + 30*b^2*c^2*d^3*e^5 - 13*b^3*c*d^2*e^6 + 2*b^4*d*e^7)*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Warning, need to choose a branch for the roo
t of a polynomial with parameters. This might be wrong.The choice was done
assuming [b,c,d,exp(1),exp(2)]=[72,91,-18,-31,46]Warning, need to choose a
branch for the root of a polynomial with parameters. This might be wrong.Th
e choice was done assuming [b,c,d,exp(1),exp(2)]=[-76,-17,63,68,98]Warning,
 need to choose a branch for the root of a polynomial with parameters. This
 might be wrong.The choice was done assuming [b,c,d,exp(1),exp(2)]=[-95,-95
,-57,19,-77]Warning, need to choose a branch for the root of a polynomial w
ith parameters. This might be wrong.The choice was done assuming [b,c,d,exp
(1),exp(2)]=[-29,-98,-9,8,96]Evaluation time: 119.66Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.07, size = 479, normalized size = 2.15

$$\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\;\Bigg(2\sqrt{-cex-be+cd}\;b\,e^{2}gx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-\sqrt{-cex-be+cd}\;cdegx\arctan\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/(e*x+d)^(3/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(2*arctan((-c*e*x-b*
e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*b*e^2*g-arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c*d*e*g-3*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c*
e^2*f+2*(b*e-2*c*d)^(1/2)*x*b*e^2*g-(b*e-2*c*d)^(1/2)*x*c*d*e*g-3*(b*e-2*c*
d)^(1/2)*x*c*e^2*f+2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e
*x-b*e+c*d)^(1/2)*b*d*e*g-arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*
(-c*e*x-b*e+c*d)^(1/2)*c*d^2*g-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^
(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c*d*e*f+3*(b*e-2*c*d)^(1/2)*b*d*e*g-(b*e-2*c*
d)^(1/2)*b*e^2*f-3*(b*e-2*c*d)^(1/2)*c*d^2*g-(b*e-2*c*d)^(1/2)*c*d*e*f)/(c*
e*x+b*e-c*d)/e^2/(b*e-2*c*d)^(5/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*sqrt(e*x
+ d)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{\sqrt{d+e\,x}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\sqrt{d+ex}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*sqrt(d + e*x)),
 x)
```

3.2274 $\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=308

$$\frac{dg-ef}{2e^2(d+ex)^{3/2}(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{3c\sqrt{d+ex}\,(-4beg+3cdg+5cef)}{4e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-4}{4e^2\sqrt{d+ex}\,(2cd}$$

```
[Out] -3/4*c*(-4*b*e*g+3*c*d*g+5*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^
(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(7/2)+1/2*(d*g-e*f
)/e^2/(-b*e+2*c*d)/(e*x+d)^(3/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+1/4
*(4*b*e*g-3*c*d*g-5*c*e*f)/e^2/(-b*e+2*c*d)^2/(e*x+d)^(1/2)/(d*(-b*e+c*d)-b
*e^2*x-c*e^2*x^2)^(1/2)+3/4*c*(-4*b*e*g+3*c*d*g+5*c*e*f)*(e*x+d)^(1/2)/e^2/
(-b*e+2*c*d)^3/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi **[A]** time = 0.47, antiderivative size = 308, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 672, 666, 660, 208}

$$-\frac{ef-dg}{2e^2(d+ex)^{3/2}(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{3c\sqrt{d+ex}\,(-4beg+3cdg+5cef)}{4e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{4e^2\sqrt{d+ex}\,(2c}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] -(e*f - d*g)/(2*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2]) - (5*c*e*f + 3*c*d*g - 4*b*e*g)/(4*e^2*(2*c*d - b*e)^2*Sq
rt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (3*c*(5*c*e*f + 3*
c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(4*e^2*(2*c*d - b*e)^3*Sqrt[d*(c*d - b*e) -
 b*e^2*x - c*e^2*x^2]) - (3*c*(5*c*e*f + 3*c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*
(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e
^2*(2*c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{(5cef}{}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)(d+ex)^{3/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{}{4e^2(2}$$

Mathematica [C] time = 0.10, size = 129, normalized size = 0.42

$$\frac{\frac{c(d+ex)^2(-4beg+3cdg+5cef)\,{}_2F_1\left(-\frac{1}{2},2;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{dg}{e}-f}{2e(d+ex)^{3/2}(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(3/2)),x]
```

```
[Out] (-f + (d*g)/e + (c*(5*c*e*f + 3*c*d*g - 4*b*e*g)*(d + e*x)^2*Hypergeometric
2F1[-1/2, 2, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b*e)
^2))/(2*e*(2*c*d - b*e)*(d + e*x)^(3/2)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

fricas [B] time = 1.04, size = 1976, normalized size = 6.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/8*(3*((5*c^3*e^5*f + (3*c^3*d*e^4 - 4*b*c^2*e^5)*g)*x^4 + (5*(2*c^3*d*e
^4 + b*c^2*e^5)*f + (6*c^3*d^2*e^3 - 5*b*c^2*d*e^4 - 4*b^2*c*e^5)*g)*x^3 +
3*(5*b*c^2*d*e^4*f + (3*b*c^2*d^2*e^3 - 4*b^2*c*d*e^4)*g)*x^2 - 5*(c^3*d^4*
e - b*c^2*d^3*e^2)*f - (3*c^3*d^5 - 7*b*c^2*d^4*e + 4*b^2*c*d^3*e^2)*g - (5
*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3)*f + (6*c^3*d^4*e - 17*b*c^2*d^3*e^2 + 12
*b^2*c*d^2*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e
 - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(
2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2
- b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e
^2 - 11*b*c^2*d*e^3 + 4*b^2*c*e^4)*g)*x^2 - (6*c^3*d^3*e - 29*b*c^2*d^2*e^2
 + 17*b^2*c*d*e^3 - 2*b^3*e^4)*f + (22*c^3*d^4 - 29*b*c^2*d^3*e + 5*b^2*c*d
^2*e^2 + 2*b^3*d*e^3)*g + (5*(8*c^3*d^2*e^2 - 2*b*c^2*d*e^3 - b^2*c*e^4)*f
+ (24*c^3*d^3*e - 38*b*c^2*d^2*e^2 + 5*b^2*c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(
e*x + d))/(16*c^5*d^8*e^2 - 48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*
c^2*d^5*e^5 + 9*b^4*c*d^4*e^6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^
3*e^7 + 24*b^2*c^3*d^2*e^8 - 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^
5*e^5 - 48*b*c^4*d^4*e^6 + 16*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c
*d*e^9 + b^5*e^10)*x^3 - 3*(16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*
c^2*d^3*e^7 - 8*b^4*c*d^2*e^8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^
4*d^6*e^4 + 144*b^2*c^3*d^5*e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3
*b^5*d^2*e^8)*x), 1/4*(3*((5*c^3*e^5*f + (3*c^3*d*e^4 - 4*b*c^2*e^5)*g)*x^4
 + (5*(2*c^3*d*e^4 + b*c^2*e^5)*f + (6*c^3*d^2*e^3 - 5*b*c^2*d*e^4 - 4*b^2*
c*e^5)*g)*x^3 + 3*(5*b*c^2*d*e^4*f + (3*b*c^2*d^2*e^3 - 4*b^2*c*d*e^4)*g)*x
^2 - 5*(c^3*d^4*e - b*c^2*d^3*e^2)*f - (3*c^3*d^5 - 7*b*c^2*d^4*e + 4*b^2*c
*d^3*e^2)*g - (5*(2*c^3*d^3*e^2 - 3*b*c^2*d^2*e^3)*f + (6*c^3*d^4*e - 17*b*
c^2*d^3*e^2 + 12*b^2*c*d^2*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2
*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2
 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(
3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f + (6*c^3*d^2*e^2 - 11*b*c^2*d*e^3 + 4*b^2*
c*e^4)*g)*x^2 - (6*c^3*d^3*e - 29*b*c^2*d^2*e^2 + 17*b^2*c*d*e^3 - 2*b^3*e^
4)*f + (22*c^3*d^4 - 29*b*c^2*d^3*e + 5*b^2*c*d^2*e^2 + 2*b^3*d*e^3)*g + (5
*(8*c^3*d^2*e^2 - 2*b*c^2*d*e^3 - b^2*c*e^4)*f + (24*c^3*d^3*e - 38*b*c^2*d
^2*e^2 + 5*b^2*c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(e*x + d))/(16*c^5*d^8*e^2 -
48*b*c^4*d^7*e^3 + 56*b^2*c^3*d^6*e^4 - 32*b^3*c^2*d^5*e^5 + 9*b^4*c*d^4*e^
6 - b^5*d^3*e^7 - (16*c^5*d^4*e^6 - 32*b*c^4*d^3*e^7 + 24*b^2*c^3*d^2*e^8 -
 8*b^3*c^2*d*e^9 + b^4*c*e^10)*x^4 - (32*c^5*d^5*e^5 - 48*b*c^4*d^4*e^6 + 1
6*b^2*c^3*d^3*e^7 + 8*b^3*c^2*d^2*e^8 - 6*b^4*c*d*e^9 + b^5*e^10)*x^3 - 3*(
16*b*c^4*d^5*e^5 - 32*b^2*c^3*d^4*e^6 + 24*b^3*c^2*d^3*e^7 - 8*b^4*c*d^2*e^
8 + b^5*d*e^9)*x^2 + (32*c^5*d^7*e^3 - 112*b*c^4*d^6*e^4 + 144*b^2*c^3*d^5*
e^5 - 88*b^3*c^2*d^4*e^6 + 26*b^4*c*d^3*e^7 - 3*b^5*d^2*e^8)*x)]
```

giac **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 1.47Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.09, size = 824, normalized size = 2.68

$$-\frac{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\,\Big(12\sqrt{-cex-be+cd}\;bc\,e^3 g\,x^2\arctan\Big(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\Big)-9\sqrt{-cex-be+cd}\;c^2d\,e^2 g}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] -1/4/(e*x+d)^(5/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(12*(-c*e*x-b*e+c
*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c*e^3*g-9*
(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2
*c^2*d*e^2*g-15*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2
*c*d)^(1/2))*x^2*c^2*e^3*f+24*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c*d*e^2*g-18*(-c*e*x-b*e+c*d)^(1/2)*arctan((
-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d^2*e*g-30*(-c*e*x-b*e+c*d)^
(1/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d*e^2*f+12*(b*
e-2*c*d)^(1/2)*x^2*b*c*e^3*g-9*(b*e-2*c*d)^(1/2)*x^2*c^2*d*e^2*g-15*(b*e-2*
c*d)^(1/2)*x^2*c^2*e^3*f+12*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*b*c*d^2*e*g-9*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^3*g-15*(-c*e*x-b*e+c*d)^(1/2)*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*e*f+4*(b*e-2*c*d)^(1/
2)*x*b^2*e^3*g+13*(b*e-2*c*d)^(1/2)*x*b*c*d*e^2*g-5*(b*e-2*c*d)^(1/2)*x*b*c
*e^3*f-12*(b*e-2*c*d)^(1/2)*x*c^2*d^2*e*g-20*(b*e-2*c*d)^(1/2)*x*c^2*d*e^2*
f+2*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g+2*(b*e-2*c*d)^(1/2)*b^2*e^3*f+9*(b*e-2*c*
d)^(1/2)*b*c*d^2*e*g-13*(b*e-2*c*d)^(1/2)*b*c*d*e^2*f-11*(b*e-2*c*d)^(1/2)*
c^2*d^3*g+3*(b*e-2*c*d)^(1/2)*c^2*d^2*e*f)/(c*e*x+b*e-c*d)/e^2/(b*e-2*c*d)^
(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)
^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{(d+e\,x)^{3/2}\,\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{f+gx}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}\left(d+ex\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Integral((f + g*x)/((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**(3/2
)), x)
```

3.2275 $\int \frac{f+gx}{(d+ex)^{5/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=387

$$\frac{5c^2\sqrt{d+ex}\,(-6beg+5cdg+7cef)}{8e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5c^2(-6beg+5cdg+7cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{9/2}}-\frac{}{24e^2\sqrt{d+}}$$

```
[Out] -5/8*c^2*(-6*b*e*g+5*c*d*g+7*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2
)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(9/2)+1/3*(d*g-e
*f)/e^2/(-b*e+2*c*d)/(e*x+d)^(5/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+1
/12*(6*b*e*g-5*c*d*g-7*c*e*f)/e^2/(-b*e+2*c*d)^2/(e*x+d)^(3/2)/(d*(-b*e+c*d
)-b*e^2*x-c*e^2*x^2)^(1/2)-5/24*c*(-6*b*e*g+5*c*d*g+7*c*e*f)/e^2/(-b*e+2*c*
d)^3/(e*x+d)^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+5/8*c^2*(-6*b*e*g
+5*c*d*g+7*c*e*f)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^4/(d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(1/2)
```

Rubi [A] time = 0.63, antiderivative size = 387, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 672, 666, 660, 208}

$$\frac{5c^2\sqrt{d+ex}\,(-6beg+5cdg+7cef)}{8e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{5c^2(-6beg+5cdg+7cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{9/2}}-\frac{}{24e^2\sqrt{d+}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(5/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2))
,x]
```

```
[Out] -(e*f - d*g)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)*Sqrt[d*(c*d - b*e) - b*e^
2*x - c*e^2*x^2]) - (7*c*e*f + 5*c*d*g - 6*b*e*g)/(12*e^2*(2*c*d - b*e)^2*(
d + e*x)^(3/2)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (5*c*(7*c*e*f +
 5*c*d*g - 6*b*e*g))/(24*e^2*(2*c*d - b*e)^3*Sqrt[d + e*x]*Sqrt[d*(c*d - b*
e) - b*e^2*x - c*e^2*x^2]) + (5*c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*Sqrt[d +
e*x])/(8*e^2*(2*c*d - b*e)^4*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (
5*c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(8*e^2*(2*c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{5/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{(7cef+}{}$$

$$=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2(2cd}$$

$$=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2(2cd}$$

$$=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2(2cd}$$

$$=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2(2cd}$$

$$=-\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{5/2}\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2(2cd}$$

Mathematica [C] time = 0.11, size = 127, normalized size = 0.33

$$\frac{\frac{c^2(d+ex)^3(-6beg+5cdg+7cef)\,{}_2F_1\left(-\frac{1}{2},3;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+dg-ef}{3e^2(d+ex)^{5/2}(2cd-be)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(5/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(3/2)),x]
```

```
[Out] (-(e*f) + d*g + (c^2*(7*c*e*f + 5*c*d*g - 6*b*e*g)*(d + e*x)^3*Hypergeometr
ic2F1[-1/2, 3, 1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e)^3
)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(5/2)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x)
)])
```

fricas [B] time = 1.02, size = 2832, normalized size = 7.32

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="fricas")
```

```
[Out] [1/48*(15*((7*c^4*e^6*f + (5*c^4*d*e^5 - 6*b*c^3*e^6)*g)*x^5 + (7*(3*c^4*d*
e^5 + b*c^3*e^6)*f + (15*c^4*d^2*e^4 - 13*b*c^3*d*e^5 - 6*b^2*c^2*e^6)*g)*x
^4 + 2*(7*(c^4*d^2*e^4 + 2*b*c^3*d*e^5)*f + (5*c^4*d^3*e^3 + 4*b*c^3*d^2*e^
4 - 12*b^2*c^2*d*e^5)*g)*x^3 - 2*(7*(c^4*d^3*e^3 - 3*b*c^3*d^2*e^4)*f + (5*
c^4*d^4*e^2 - 21*b*c^3*d^3*e^3 + 18*b^2*c^2*d^2*e^4)*g)*x^2 - 7*(c^4*d^5*e
- b*c^3*d^4*e^2)*f - (5*c^4*d^6 - 11*b*c^3*d^5*e + 6*b^2*c^2*d^4*e^2)*g - (
7*(3*c^4*d^4*e^2 - 4*b*c^3*d^3*e^3)*f + (15*c^4*d^5*e - 38*b*c^3*d^4*e^2 +
24*b^2*c^2*d^3*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b
*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*s
qrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)) + 2*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (10*c^4
*d^2*e^3 - 17*b*c^3*d*e^4 + 6*b^2*c^2*e^5)*g)*x^3 + 5*(7*(14*c^4*d^2*e^3 -
5*b*c^3*d*e^4 - b^2*c^2*e^5)*f + (70*c^4*d^3*e^2 - 109*b*c^3*d^2*e^3 + 25*b
^2*c^2*d*e^4 + 6*b^3*c*e^5)*g)*x^2 - (170*c^4*d^4*e - 459*b*c^3*d^3*e^2 + 3
11*b^2*c^2*d^2*e^3 - 78*b^3*c*d*e^4 + 8*b^4*e^5)*f + (98*c^4*d^5 - 75*b*c^3
*d^4*e - 67*b^2*c^2*d^3*e^2 + 48*b^3*c*d^2*e^3 - 4*b^4*d*e^4)*g + (7*(34*c^
4*d^3*e^2 + 19*b*c^3*d^2*e^3 - 22*b^2*c^2*d*e^4 + 2*b^3*c*e^5)*f + (170*c^4
*d^4*e - 109*b*c^3*d^3*e^2 - 224*b^2*c^2*d^2*e^3 + 142*b^3*c*d*e^4 - 12*b^4
*e^5)*g)*x)*sqrt(e*x + d))/(32*c^6*d^10*e^2 - 112*b*c^5*d^9*e^3 + 160*b^2*c
^4*d^8*e^4 - 120*b^3*c^3*d^7*e^5 + 50*b^4*c^2*d^6*e^6 - 11*b^5*c*d^5*e^7 +
b^6*d^4*e^8 - (32*c^6*d^5*e^7 - 80*b*c^5*d^4*e^8 + 80*b^2*c^4*d^3*e^9 - 40*
b^3*c^3*d^2*e^10 + 10*b^4*c^2*d*e^11 - b^5*c*e^12)*x^5 - (96*c^6*d^6*e^6 -
208*b*c^5*d^5*e^7 + 160*b^2*c^4*d^4*e^8 - 40*b^3*c^3*d^3*e^9 - 10*b^4*c^2*d
^2*e^10 + 7*b^5*c*d*e^11 - b^6*e^12)*x^4 - 2*(32*c^6*d^7*e^5 - 16*b*c^5*d^6
*e^6 - 80*b^2*c^4*d^5*e^7 + 120*b^3*c^3*d^4*e^8 - 70*b^4*c^2*d^3*e^9 + 19*b
^5*c*d^2*e^10 - 2*b^6*d*e^11)*x^3 + 2*(32*c^6*d^8*e^4 - 176*b*c^5*d^7*e^5 +
 320*b^2*c^4*d^6*e^6 - 280*b^3*c^3*d^5*e^7 + 130*b^4*c^2*d^4*e^8 - 31*b^5*c
*d^3*e^9 + 3*b^6*d^2*e^10)*x^2 + (96*c^6*d^9*e^3 - 368*b*c^5*d^8*e^4 + 560*
b^2*c^4*d^7*e^5 - 440*b^3*c^3*d^6*e^6 + 190*b^4*c^2*d^5*e^7 - 43*b^5*c*d^4*
e^8 + 4*b^6*d^3*e^9)*x), 1/24*(15*((7*c^4*e^6*f + (5*c^4*d*e^5 - 6*b*c^3*e^
6)*g)*x^5 + (7*(3*c^4*d*e^5 + b*c^3*e^6)*f + (15*c^4*d^2*e^4 - 13*b*c^3*d*e
^5 - 6*b^2*c^2*e^6)*g)*x^4 + 2*(7*(c^4*d^2*e^4 + 2*b*c^3*d*e^5)*f + (5*c^4*
d^3*e^3 + 4*b*c^3*d^2*e^4 - 12*b^2*c^2*d*e^5)*g)*x^3 - 2*(7*(c^4*d^3*e^3 -
3*b*c^3*d^2*e^4)*f + (5*c^4*d^4*e^2 - 21*b*c^3*d^3*e^3 + 18*b^2*c^2*d^2*e^4
)*g)*x^2 - 7*(c^4*d^5*e - b*c^3*d^4*e^2)*f - (5*c^4*d^6 - 11*b*c^3*d^5*e +
6*b^2*c^2*d^4*e^2)*g - (7*(3*c^4*d^4*e^2 - 4*b*c^3*d^3*e^3)*f + (15*c^4*d^5
*e - 38*b*c^3*d^4*e^2 + 24*b^2*c^2*d^3*e^3)*g)*x)*sqrt(-2*c*d + b*e)*arctan
(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d
)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^
2 - b*d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (10*c^4*d^2*e^3 - 17*b*c^3*
d*e^4 + 6*b^2*c^2*e^5)*g)*x^3 + 5*(7*(14*c^4*d^2*e^3 - 5*b*c^3*d*e^4 - b^2*
c^2*e^5)*f + (70*c^4*d^3*e^2 - 109*b*c^3*d^2*e^3 + 25*b^2*c^2*d*e^4 + 6*b^3
*c*e^5)*g)*x^2 - (170*c^4*d^4*e - 459*b*c^3*d^3*e^2 + 311*b^2*c^2*d^2*e^3 -
 78*b^3*c*d*e^4 + 8*b^4*e^5)*f + (98*c^4*d^5 - 75*b*c^3*d^4*e - 67*b^2*c^2*
d^3*e^2 + 48*b^3*c*d^2*e^3 - 4*b^4*d*e^4)*g + (7*(34*c^4*d^3*e^2 + 19*b*c^3
*d^2*e^3 - 22*b^2*c^2*d*e^4 + 2*b^3*c*e^5)*f + (170*c^4*d^4*e - 109*b*c^3*d
^3*e^2 - 224*b^2*c^2*d^2*e^3 + 142*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x
 + d))/(32*c^6*d^10*e^2 - 112*b*c^5*d^9*e^3 + 160*b^2*c^4*d^8*e^4 - 120*b^3
*c^3*d^7*e^5 + 50*b^4*c^2*d^6*e^6 - 11*b^5*c*d^5*e^7 + b^6*d^4*e^8 - (32*c^
6*d^5*e^7 - 80*b*c^5*d^4*e^8 + 80*b^2*c^4*d^3*e^9 - 40*b^3*c^3*d^2*e^10 + 1
0*b^4*c^2*d*e^11 - b^5*c*e^12)*x^5 - (96*c^6*d^6*e^6 - 208*b*c^5*d^5*e^7 +
160*b^2*c^4*d^4*e^8 - 40*b^3*c^3*d^3*e^9 - 10*b^4*c^2*d^2*e^10 + 7*b^5*c*d*
e^11 - b^6*e^12)*x^4 - 2*(32*c^6*d^7*e^5 - 16*b*c^5*d^6*e^6 - 80*b^2*c^4*d^
5*e^7 + 120*b^3*c^3*d^4*e^8 - 70*b^4*c^2*d^3*e^9 + 19*b^5*c*d^2*e^10 - 2*b^
6*d*e^11)*x^3 + 2*(32*c^6*d^8*e^4 - 176*b*c^5*d^7*e^5 + 320*b^2*c^4*d^6*e^6
 - 280*b^3*c^3*d^5*e^7 + 130*b^4*c^2*d^4*e^8 - 31*b^5*c*d^3*e^9 + 3*b^6*d^2
*e^10)*x^2 + (96*c^6*d^9*e^3 - 368*b*c^5*d^8*e^4 + 560*b^2*c^4*d^7*e^5 - 44
0*b^3*c^3*d^6*e^6 + 190*b^4*c^2*d^5*e^7 - 43*b^5*c*d^4*e^8 + 4*b^6*d^3*e^9)
*x)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x):;OUTPUT:Evaluation time: 2.24Unable to transpose Err
or: Bad Argument Value
```

maple [B] time = 0.09, size = 1224, normalized size = 3.16

$$\frac{\sqrt{-c\,e^{2}x^{2}-b\,e^{2}x-bde+c\,d^{2}}\;\left(90\sqrt{-cex-be+cd}\;b\,c^{2}e^{4}g\,x^{3}\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-75\sqrt{-cex-be+cd}\;c^{3}d\,e^{3}g\,x}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] 1/24/(e*x+d)^(7/2)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-105*(b*e-2*c*d)
^(1/2)*x^3*c^3*e^4*f+270*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(
-c*e*x-b*e+c*d)^(1/2)*x^2*b*c^2*d*e^3*g-12*(b*e-2*c*d)^(1/2)*x*b^3*e^4*g-75
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c^
3*d^4*g+270*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*
d)^(1/2)*x*b*c^2*d^2*e^2*g-8*(b*e-2*c*d)^(1/2)*b^3*e^4*f-49*(b*e-2*c*d)^(1/
2)*c^3*d^4*g+40*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g+62*(b*e-2*c*d)^(1/2)*b^2*
c*d*e^3*f+13*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g-187*(b*e-2*c*d)^(1/2)*b*c^2*d^
2*e^2*f-4*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+85*(b*e-2*c*d)^(1/2)*c^3*d^3*e*f-10
5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x
^3*c^3*e^4*f+90*(b*e-2*c*d)^(1/2)*x^3*b*c^2*e^4*g-75*(b*e-2*c*d)^(1/2)*x^3*
c^3*d*e^3*g+30*(b*e-2*c*d)^(1/2)*x^2*b^2*c*e^4*g-35*(b*e-2*c*d)^(1/2)*x^2*b
*c^2*e^4*f-175*(b*e-2*c*d)^(1/2)*x^2*c^3*d^2*e^2*g-245*(b*e-2*c*d)^(1/2)*x^
2*c^3*d*e^3*f+14*(b*e-2*c*d)^(1/2)*x*b^2*c*e^4*f-85*(b*e-2*c*d)^(1/2)*x*c^3
*d^3*e*g-119*(b*e-2*c*d)^(1/2)*x*c^3*d^2*e^2*f-105*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^3*e*f-225*arctan((-c*
e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x*c^3*d^3*e*g-
315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)
*x*c^3*d^2*e^2*f+118*(b*e-2*c*d)^(1/2)*x*b^2*c*d*e^3*g+12*(b*e-2*c*d)^(1/2)
*x*b*c^2*d^2*e^2*g-126*(b*e-2*c*d)^(1/2)*x*b*c^2*d*e^3*f+90*arctan((-c*e*x-
b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d^3*e*g+90*a
rctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^3*
b*c^2*e^4*g-75*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e
+c*d)^(1/2)*x^3*c^3*d*e^3*g-225*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^2*c^3*d^2*e^2*g-315*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*(-c*e*x-b*e+c*d)^(1/2)*x^2*c^3*d*e^3*f+185*(b*e-2*
c*d)^(1/2)*x^2*b*c^2*d*e^3*g)/(c*e*x+b*e-c*d)/e^2/(b*e-2*c*d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{3}{2}}(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(5/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(e*x + d)
^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{5/2}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(5/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(5/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2
),x)
```

```
[Out] Timed out
```

3.2276 $\int \frac{(d+ex)^{13/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=448

$$-\frac{256\sqrt{d+ex}\,(2cd-be)^3(-10beg+13cdg+7cef)}{105c^6e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{128(d+ex)^{3/2}(2cd-be)^2(-10beg+13cdg+7cef)}{105c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32(d+e}{10}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(13/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(3/2)+128/105*(-b*e+2*c*d)^2*(-10*b*e*g+13*c*d*g+7*c*e*f)*
(e*x+d)^(3/2)/c^5/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+32/105*(-b*e+2
*c*d)*(-10*b*e*g+13*c*d*g+7*c*e*f)*(e*x+d)^(5/2)/c^4/e^2/(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(1/2)+16/105*(-10*b*e*g+13*c*d*g+7*c*e*f)*(e*x+d)^(7/2)/c^3/
e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+2/21*(-10*b*e*g+13*c*d*g+7*c*e*f
)*(e*x+d)^(9/2)/c^2/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
-256/105*(-b*e+2*c*d)^3*(-10*b*e*g+13*c*d*g+7*c*e*f)*(e*x+d)^(1/2)/c^6/e^2/
(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.71, antiderivative size = 448, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{9/2}(-10beg+13cdg+7cef)}{21c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{7/2}(-10beg+13cdg+7cef)}{105c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{32(d+ex)^{5/2}(2cd-be)(-10}{105c^4e^2\sqrt{d(cd-be)-}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(13/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(13/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (256*(2*c*d - b*e)^3*(7*c*e*f + 13*
c*d*g - 10*b*e*g)*Sqrt[d + e*x])/(105*c^6*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2]) + (128*(2*c*d - b*e)^2*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e
*x)^(3/2))/(105*c^5*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (32*(2
*c*d - b*e)*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e*x)^(5/2))/(105*c^4*e^2*S
qrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (16*(7*c*e*f + 13*c*d*g - 10*b*
e*g)*(d + e*x)^(7/2))/(105*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
]) + (2*(7*c*e*f + 13*c*d*g - 10*b*e*g)*(d + e*x)^(9/2))/(21*c^2*e^2*(2*c*d
 - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{13/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(7cef+13cdg-10beg)\int}{3ce(2c}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(7cef+13cdg-10}{21c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{16(7cef+13cdg-10beg}{105c^3e^2\sqrt{d(cd-be)-be}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{32(2cd-be)(7cef+13c}{105c^4e^2\sqrt{d(cd-be}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{128(2cd-be)^2(7cef+1}{105c^5e^2\sqrt{d(cd-b}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{13/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{256(2cd-be)^3(7cef+1}{105c^6e^2\sqrt{d(cd-be}}$$

Mathematica [A] time = 0.31, size = 366, normalized size = 0.82

$$\frac{2\sqrt{d+ex}\,\left(-1280b^5e^5g+128b^4ce^4(78dg+7ef-15egx)-32b^3c^2e^3\left(953d^2g+2de(91f-204gx)+3e^2x(5gx\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(13/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-1280*b^5*e^5*g + 128*b^4*c*e^4*(7*e*f + 78*d*g - 15*e*g*
x) - 32*b^3*c^2*e^3*(953*d^2*g + 2*d*e*(91*f - 204*g*x) + 3*e^2*x*(-14*f +
5*g*x)) + 16*b^2*c^3*e^2*(2844*d^3*g + 3*d^2*e*(287*f - 681*g*x) + e^3*x^2*
(21*f + 5*g*x) + 6*d*e^2*x*(-77*f + 29*g*x)) + c^5*(9414*d^5*g + 3*d^4*e*(1
687*f - 4707*g*x) + 3*e^5*x^4*(7*f + 5*g*x) + 2*d*e^4*x^3*(98*f + 57*g*x) +
 2*d^2*e^3*x^2*(903*f + 257*g*x) + 12*d^3*e^2*x*(-637*f + 292*g*x)) - 2*b*c
^4*e*(16563*d^4*g + 12*d^3*e*(581*f - 1482*g*x) + e^4*x^3*(28*f + 15*g*x) +
 12*d*e^3*x^2*(63*f + 16*g*x) + 6*d^2*e^2*x*(-1106*f + 449*g*x))))/(105*c^6
*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 0.74, size = 578, normalized size = 1.29

$$-\frac{2\left(15\,c^5e^5gx^5+3\left(7\,c^5e^5f+2\left(19\,c^5de^4-5\,bc^4e^5\right)g\right)x^4+2\left(14\left(7\,c^5de^4-2\,bc^4e^5\right)f+\left(257\,c^5d^2e^3-192\,bc^4de\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="fricas")
```

```
[Out] -2/105*(15*c^5*e^5*g*x^5 + 3*(7*c^5*e^5*f + 2*(19*c^5*d*e^4 - 5*b*c^4*e^5)*
g)*x^4 + 2*(14*(7*c^5*d*e^4 - 2*b*c^4*e^5)*f + (257*c^5*d^2*e^3 - 192*b*c^4
*d*e^4 + 40*b^2*c^3*e^5)*g)*x^3 + 6*(7*(43*c^5*d^2*e^3 - 36*b*c^4*d*e^4 + 8
*b^2*c^3*e^5)*f + 2*(292*c^5*d^3*e^2 - 449*b*c^4*d^2*e^3 + 232*b^2*c^3*d*e^
4 - 40*b^3*c^2*e^5)*g)*x^2 + 7*(723*c^5*d^4*e - 1992*b*c^4*d^3*e^2 + 1968*b
^2*c^3*d^2*e^3 - 832*b^3*c^2*d*e^4 + 128*b^4*c*e^5)*f + 2*(4707*c^5*d^5 - 1
6563*b*c^4*d^4*e + 22752*b^2*c^3*d^3*e^2 - 15248*b^3*c^2*d^2*e^3 + 4992*b^4
*c*d*e^4 - 640*b^5*e^5)*g - 3*(28*(91*c^5*d^3*e^2 - 158*b*c^4*d^2*e^3 + 88*
b^2*c^3*d*e^4 - 16*b^3*c^2*e^5)*f + (4707*c^5*d^4*e - 11856*b*c^4*d^3*e^2 +
 10896*b^2*c^3*d^2*e^3 - 4352*b^3*c^2*d*e^4 + 640*b^4*c*e^5)*g)*x)*sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^8*e^5*x^3 + c^8*d^3*e^2
 - 2*b*c^7*d^2*e^3 + b^2*c^6*d*e^4 - (c^8*d*e^4 - 2*b*c^7*e^5)*x^2 - (c^8*d
^2*e^3 - b^2*c^6*e^5)*x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.05, size = 535, normalized size = 1.19

$$-\frac{2\left(cex+be-cd\right)\left(-15g\,e^{5}x^{5}c^{5}+30b\,c^{4}e^{5}g\,x^{4}-114c^{5}d\,e^{4}g\,x^{4}-21c^{5}e^{5}f\,x^{4}-80b^{2}c^{3}e^{5}g\,x^{3}+384b\,c^{4}d\,e^{4}g\,x^{3}+56\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/105*(c*e*x+b*e-c*d)*(-15*c^5*e^5*g*x^5+30*b*c^4*e^5*g*x^4-114*c^5*d*e^4*
g*x^4-21*c^5*e^5*f*x^4-80*b^2*c^3*e^5*g*x^3+384*b*c^4*d*e^4*g*x^3+56*b*c^4*
e^5*f*x^3-514*c^5*d^2*e^3*g*x^3-196*c^5*d*e^4*f*x^3+480*b^3*c^2*e^5*g*x^2-2
784*b^2*c^3*d*e^4*g*x^2-336*b^2*c^3*e^5*f*x^2+5388*b*c^4*d^2*e^3*g*x^2+1512
*b*c^4*d*e^4*f*x^2-3504*c^5*d^3*e^2*g*x^2-1806*c^5*d^2*e^3*f*x^2+1920*b^4*c
*e^5*g*x-13056*b^3*c^2*d*e^4*g*x-1344*b^3*c^2*e^5*f*x+32688*b^2*c^3*d^2*e^3
*g*x+7392*b^2*c^3*d*e^4*f*x-35568*b*c^4*d^3*e^2*g*x-13272*b*c^4*d^2*e^3*f*x
+14121*c^5*d^4*e*g*x+7644*c^5*d^3*e^2*f*x+1280*b^5*e^5*g-9984*b^4*c*d*e^4*g
-896*b^4*c*e^5*f+30496*b^3*c^2*d^2*e^3*g+5824*b^3*c^2*d*e^4*f-45504*b^2*c^3
*d^3*e^2*g-13776*b^2*c^3*d^2*e^3*f+33126*b*c^4*d^4*e*g+13944*b*c^4*d^3*e^2*
f-9414*c^5*d^5*g-5061*c^5*d^4*e*f)*(e*x+d)^(5/2)/c^6/e^2/(-c*e^2*x^2-b*e^2*
x-b*d*e+c*d^2)^(5/2)
```

maxima [**A**] time = 1.10, size = 511, normalized size = 1.14

$$\frac{2\left(3\,c^{4}e^{4}x^{4}+723\,c^{4}d^{4}-1992\,bc^{3}d^{3}e+1968\,b^{2}c^{2}d^{2}e^{2}-832\,b^{3}cde^{3}+128\,b^{4}e^{4}+4\left(7\,c^{4}de^{3}-2\,bc^{3}e^{4}\right)x^{3}+6\left(43\,c^{4}\right.\right.}{15\left(c^{6}e^{2}x-c^{6}de+bc^{5}e^{2}\right)\sqrt{-cex+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(13/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="maxima")
```

```
[Out] 2/15*(3*c^4*e^4*x^4 + 723*c^4*d^4 - 1992*b*c^3*d^3*e + 1968*b^2*c^2*d^2*e^2
 - 832*b^3*c*d*e^3 + 128*b^4*e^4 + 4*(7*c^4*d*e^3 - 2*b*c^3*e^4)*x^3 + 6*(4
3*c^4*d^2*e^2 - 36*b*c^3*d*e^3 + 8*b^2*c^2*e^4)*x^2 - 12*(91*c^4*d^3*e - 15
8*b*c^3*d^2*e^2 + 88*b^2*c^2*d*e^3 - 16*b^3*c*e^4)*x)*f/((c^6*e^2*x - c^6*d
*e + b*c^5*e^2)*sqrt(-c*e*x + c*d - b*e)) + 2/105*(15*c^5*e^5*x^5 + 9414*c^
5*d^5 - 33126*b*c^4*d^4*e + 45504*b^2*c^3*d^3*e^2 - 30496*b^3*c^2*d^2*e^3 +
 9984*b^4*c*d*e^4 - 1280*b^5*e^5 + 6*(19*c^5*d*e^4 - 5*b*c^4*e^5)*x^4 + 2*(
257*c^5*d^2*e^3 - 192*b*c^4*d*e^4 + 40*b^2*c^3*e^5)*x^3 + 12*(292*c^5*d^3*e
^2 - 449*b*c^4*d^2*e^3 + 232*b^2*c^3*d*e^4 - 40*b^3*c^2*e^5)*x^2 - 3*(4707*
c^5*d^4*e - 11856*b*c^4*d^3*e^2 + 10896*b^2*c^3*d^2*e^3 - 4352*b^3*c^2*d*e^
4 + 640*b^4*c*e^5)*x)*g/((c^7*e^3*x - c^7*d*e^2 + b*c^6*e^3)*sqrt(-c*e*x +
c*d - b*e))
```

mupad [**B**] time = 3.50, size = 596, normalized size = 1.33

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{\sqrt{d+e\,x}\,\left(-2560\,g\,b^5\,e^5+19968\,g\,b^4\,c\,d\,e^4+1792\,f\,b^4\,c\,e^5-60992\,g\,b^3\,c^2\,d^2\,e^3-11648\,f\,b^3\,c^2\,d\,e^4+91008\,g\right.}{105\,c^8}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(13/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2
),x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(18828*c^5*
d^5*g - 2560*b^5*e^5*g + 1792*b^4*c*e^5*f + 10122*c^5*d^4*e*f - 66252*b*c^4
*d^4*e*g + 19968*b^4*c*d*e^4*g - 27888*b*c^4*d^3*e^2*f - 11648*b^3*c^2*d*e^
4*f + 27552*b^2*c^3*d^2*e^3*f + 91008*b^2*c^3*d^3*e^2*g - 60992*b^3*c^2*d^2
*e^3*g))/(105*c^8*e^5) + (2*g*x^5*(d + e*x)^(1/2))/(7*c^3) + (4*x^3*(d + e*
x)^(1/2)*(40*b^2*e^2*g + 257*c^2*d^2*g - 28*b*c*e^2*f + 98*c^2*d*e*f - 192*
b*c*d*e*g))/(105*c^5*e^2) + (2*x^4*(d + e*x)^(1/2)*(38*c*d*g - 10*b*e*g + 7
*c*e*f))/(35*c^4*e) - (x*(d + e*x)^(1/2)*(15288*c^5*d^3*e^2*f - 2688*b^3*c^
2*e^5*f + 3840*b^4*c*e^5*g + 28242*c^5*d^4*e*g - 26544*b*c^4*d^2*e^3*f + 14
784*b^2*c^3*d*e^4*f - 71136*b*c^4*d^3*e^2*g - 26112*b^3*c^2*d*e^4*g + 65376
*b^2*c^3*d^2*e^3*g))/(105*c^8*e^5) + (x^2*(d + e*x)^(1/2)*(672*b^2*c^3*e^5*
f - 960*b^3*c^2*e^5*g + 3612*c^5*d^2*e^3*f + 7008*c^5*d^3*e^2*g - 3024*b*c^
4*d*e^4*f - 10776*b*c^4*d^2*e^3*g + 5568*b^2*c^3*d*e^4*g))/(105*c^8*e^5)))/
(x^3 + (x*(105*b^2*c^6*e^5 - 105*c^8*d^2*e^3))/(105*c^8*e^5) + (d*(b*e - c*
d)^2)/(c^2*e^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(13/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/
2),x)
```

```
[Out] Timed out
```

3.2277 $\int \frac{(d+ex)^{11/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=371

$$-\frac{32\sqrt{d+ex}\,(2cd-be)^2(-8beg+11cdg+5cef)}{15c^5e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{3/2}(2cd-be)(-8beg+11cdg+5cef)}{15c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{4(d+ex)^{5/2}(-8}{15c^3e^2\sqrt{d(cd-}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(11/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*
e^2*x-c*e^2*x^2)^(3/2)+16/15*(-b*e+2*c*d)*(-8*b*e*g+11*c*d*g+5*c*e*f)*(e*x+
d)^(3/2)/c^4/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+4/15*(-8*b*e*g+11*c
*d*g+5*c*e*f)*(e*x+d)^(5/2)/c^3/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+
2/15*(-8*b*e*g+11*c*d*g+5*c*e*f)*(e*x+d)^(7/2)/c^2/e^2/(-b*e+2*c*d)/(d*(-b*
e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-32/15*(-b*e+2*c*d)^2*(-8*b*e*g+11*c*d*g+5*c
*e*f)*(e*x+d)^(1/2)/c^5/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.55, antiderivative size = 371, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.065$, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{7/2}(-8beg+11cdg+5cef)}{15c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{4(d+ex)^{5/2}(-8beg+11cdg+5cef)}{15c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{16(d+ex)^{3/2}(2cd-be)(-8beg}{15c^4e^2\sqrt{d(cd-be)-be}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(11/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2
),x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(11/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (32*(2*c*d - b*e)^2*(5*c*e*f + 11*c
*d*g - 8*b*e*g)*Sqrt[d + e*x])/(15*c^5*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c
*e^2*x^2]) + (16*(2*c*d - b*e)*(5*c*e*f + 11*c*d*g - 8*b*e*g)*(d + e*x)^(3/
2))/(15*c^4*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (4*(5*c*e*f +
11*c*d*g - 8*b*e*g)*(d + e*x)^(5/2))/(15*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2
*x - c*e^2*x^2]) + (2*(5*c*e*f + 11*c*d*g - 8*b*e*g)*(d + e*x)^(7/2))/(15*c
^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{11/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(5cef+11cdg-8beg)\int}{3ce(2cd}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(5cef+11cdg-8b}{15c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{4(5cef+11cdg-8beg)(}{15c^3e^2\sqrt{d(cd-be)-be^2}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{16(2cd-be)(5cef+11c}{15c^4e^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{11/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{32(2cd-be)^2(5cef+11c}{15c^5e^2\sqrt{d(cd-be)}}$$

Mathematica [A] time = 0.20, size = 263, normalized size = 0.71

$$\frac{2\sqrt{d+ex}\left(128b^4e^4g-16b^3ce^3(47dg+5ef-12egx)+24b^2c^2e^2\left(67d^2g+3de(5f-13gx)+e^2x(2gx-5f)\right)-2\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(11/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2
)^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(128*b^4*e^4*g - 16*b^3*c*e^3*(5*e*f + 47*d*g - 12*e*g*x)
+ 24*b^2*c^2*e^2*(67*d^2*g + 3*d*e*(5*f - 13*g*x) + e^2*x*(-5*f + 2*g*x)) -
 2*b*c^3*e*(741*d^3*g + 3*d^2*e*(85*f - 246*g*x) + e^3*x^2*(15*f + 4*g*x) +
 3*d*e^2*x*(-70*f + 31*g*x)) + c^4*(498*d^4*g + 9*d^3*e*(25*f - 83*g*x) + e
^4*x^3*(5*f + 3*g*x) + d*e^3*x^2*(75*f + 23*g*x) + 3*d^2*e^2*x*(-115*f + 61
*g*x))))/(15*c^5*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d -
 e*x))])
```

fricas [A] time = 1.00, size = 428, normalized size = 1.15

$$-\frac{2\left(3c^4e^4gx^4+\left(5c^4e^4f+\left(23c^4de^3-8bc^3e^4\right)g\right)x^3+3\left(5\left(5c^4de^3-2bc^3e^4\right)f+\left(61c^4d^2e^2-62bc^3de^3+16b\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="fricas")
```

```
[Out] -2/15*(3*c^4*e^4*g*x^4 + (5*c^4*e^4*f + (23*c^4*d*e^3 - 8*b*c^3*e^4)*g)*x^3
 + 3*(5*(5*c^4*d*e^3 - 2*b*c^3*e^4)*f + (61*c^4*d^2*e^2 - 62*b*c^3*d*e^3 +
16*b^2*c^2*e^4)*g)*x^2 + 5*(45*c^4*d^3*e - 102*b*c^3*d^2*e^2 + 72*b^2*c^2*d
*e^3 - 16*b^3*c*e^4)*f + 2*(249*c^4*d^4 - 741*b*c^3*d^3*e + 804*b^2*c^2*d^2
*e^2 - 376*b^3*c*d*e^3 + 64*b^4*e^4)*g - 3*(5*(23*c^4*d^2*e^2 - 28*b*c^3*d*
e^3 + 8*b^2*c^2*e^4)*f + (249*c^4*d^3*e - 492*b*c^3*d^2*e^2 + 312*b^2*c^2*d
*e^3 - 64*b^3*c*e^4)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(
e*x + d)/(c^7*e^5*x^3 + c^7*d^3*e^2 - 2*b*c^6*d^2*e^3 + b^2*c^5*d*e^4 - (c^
7*d*e^4 - 2*b*c^6*e^5)*x^2 - (c^7*d^2*e^3 - b^2*c^5*e^5)*x)
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="giac")
```

```
[Out] Timed out
```

maple **[A]** time = 0.05, size = 367, normalized size = 0.99

$$\frac{2\,(cex+be-cd)\,(3g\,e^4x^4c^4-8b\,c^3e^4g\,x^3+23c^4d\,e^3g\,x^3+5c^4e^4f\,x^3+48b^2c^2e^4g\,x^2-186b\,c^3d\,e^3g\,x^2-30b\,c^3e^4f}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/15*(c*e*x+b*e-c*d)*(3*c^4*e^4*g*x^4-8*b*c^3*e^4*g*x^3+23*c^4*d*e^3*g*x^3+
5*c^4*e^4*f*x^3+48*b^2*c^2*e^4*g*x^2-186*b*c^3*d*e^3*g*x^2-30*b*c^3*e^4*f*x
^2+183*c^4*d^2*e^2*g*x^2+75*c^4*d*e^3*f*x^2+192*b^3*c*e^4*g*x-936*b^2*c^2*d
*e^3*g*x-120*b^2*c^2*e^4*f*x+1476*b*c^3*d^2*e^2*g*x+420*b*c^3*d*e^3*f*x-747
*c^4*d^3*e*g*x-345*c^4*d^2*e^2*f*x+128*b^4*e^4*g-752*b^3*c*d*e^3*g-80*b^3*c
*e^4*f+1608*b^2*c^2*d^2*e^2*g+360*b^2*c^2*d*e^3*f-1482*b*c^3*d^3*e*g-510*b*
c^3*d^2*e^2*f+498*c^4*d^4*g+225*c^4*d^3*e*f)*(e*x+d)^(5/2)/c^5/e^2/(-c*e^2*
x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima **[A]** time = 0.97, size = 363, normalized size = 0.98

$$\frac{2\,(c^3e^3x^3+45\,c^3d^3-102\,bc^2d^2e+72\,b^2cde^2-16\,b^3e^3+3\,(5\,c^3de^2-2\,bc^2e^3)x^2-3\,(23\,c^3d^2e-28\,bc^2de^2+8\,b^2ce}{3\,(c^5e^2x-c^5de+bc^4e^2)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(11/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x,
algorithm="maxima")
```

```
[Out] 2/3*(c^3*e^3*x^3 + 45*c^3*d^3 - 102*b*c^2*d^2*e + 72*b^2*c*d*e^2 - 16*b^3*e
^3 + 3*(5*c^3*d*e^2 - 2*b*c^2*e^3)*x^2 - 3*(23*c^3*d^2*e - 28*b*c^2*d*e^2 +
 8*b^2*c*e^3)*x)*f/((c^5*e^2*x - c^5*d*e + b*c^4*e^2)*sqrt(-c*e*x + c*d - b
*e)) + 2/15*(3*c^4*e^4*x^4 + 498*c^4*d^4 - 1482*b*c^3*d^3*e + 1608*b^2*c^2*
d^2*e^2 - 752*b^3*c*d*e^3 + 128*b^4*e^4 + (23*c^4*d*e^3 - 8*b*c^3*e^4)*x^3
+ 3*(61*c^4*d^2*e^2 - 62*b*c^3*d*e^3 + 16*b^2*c^2*e^4)*x^2 - 3*(249*c^4*d^3
*e - 492*b*c^3*d^2*e^2 + 312*b^2*c^2*d*e^3 - 64*b^3*c*e^4)*x)*g/((c^6*e^3*x
 - c^6*d*e^2 + b*c^5*e^3)*sqrt(-c*e*x + c*d - b*e))
```

mupad **[B]** time = 3.29, size = 435, normalized size = 1.17

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\;\left(\frac{\sqrt{d+e\,x}\,(256\,g\,b^4\,e^4-1504\,g\,b^3\,c\,d\,e^3-160\,f\,b^3\,c\,e^4+3216\,g\,b^2\,c^2\,d^2\,e^2+720\,f\,b^2\,c^2\,d\,e^3-2964\,g\,b\,c^3\,d^3\,e-1020}{15\,c^7\,e^5}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(11/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2
),x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(256*b^4*e^
4*g + 996*c^4*d^4*g - 160*b^3*c*e^4*f + 450*c^4*d^3*e*f - 2964*b*c^3*d^3*e*
g - 1504*b^3*c*d*e^3*g - 1020*b*c^3*d^2*e^2*f + 720*b^2*c^2*d*e^3*f + 3216*
b^2*c^2*d^2*e^2*g))/(15*c^7*e^5) + (2*x^2*(d + e*x)^(1/2)*(16*b^2*e^2*g + 6
1*c^2*d^2*g - 10*b*c*e^2*f + 25*c^2*d*e*f - 62*b*c*d*e*g))/(5*c^5*e^3) + (2
*x^3*(d + e*x)^(1/2)*(23*c*d*g - 8*b*e*g + 5*c*e*f))/(15*c^4*e^2) + (2*g*x^
4*(d + e*x)^(1/2))/(5*c^3*e) - (x*(d + e*x)^(1/2)*(240*b^2*c^2*e^4*f + 690*
c^4*d^2*e^2*f - 384*b^3*c*e^4*g + 1494*c^4*d^3*e*g - 840*b*c^3*d*e^3*f - 29
52*b*c^3*d^2*e^2*g + 1872*b^2*c^2*d*e^3*g))/(15*c^7*e^5)))/(x^3 + (x*(15*b^
2*c^5*e^5 - 15*c^7*d^2*e^3))/(15*c^7*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (
x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(11/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/
2),x)
```

```
[Out] Timed out
```

3.2278 $\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=291

$$-\frac{16\sqrt{d+ex}\,(2cd-be)(-2beg+3cdg+cef)}{3c^4e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8(d+ex)^{3/2}(-2beg+3cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-2beg+3cdg}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(9/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(3/2)+8/3*(-2*b*e*g+3*c*d*g+c*e*f)*(e*x+d)^(3/2)/c^3/e^2/(d
*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+2/3*(-2*b*e*g+3*c*d*g+c*e*f)*(e*x+d)^(
5/2)/c^2/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-16/3*(-b*e
+2*c*d)*(-2*b*e*g+3*c*d*g+c*e*f)*(e*x+d)^(1/2)/c^4/e^2/(d*(-b*e+c*d)-b*e^2*
x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.41, antiderivative size = 291, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{5/2}(-2beg+3cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{8(d+ex)^{3/2}(-2beg+3cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{16\sqrt{d+ex}\,(2cd-be)(-2beg+3c}{3c^4e^2\sqrt{d(cd-be)-be^2x-c}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(9/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (16*(2*c*d - b*e)*(c*e*f + 3*c*d*g -
 2*b*e*g)*Sqrt[d + e*x])/(3*c^4*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^
2]) + (8*(c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x)^(3/2))/(3*c^3*e^2*Sqrt[d*(c*
d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f + 3*c*d*g - 2*b*e*g)*(d + e*x)
^(5/2))/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
```

```
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{9/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(cef+3cdg-2beg)\int}{ce(2cd-}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(cef+3cdg-2be}{3c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{8(cef+3cdg-2beg)(d}{3c^3e^2\sqrt{d(cd-be)-be^2x}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{9/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{16(2cd-be)(cef+3cdg}{3c^4e^2\sqrt{d(cd-be)-}}$$

Mathematica [A] time = 0.15, size = 180, normalized size = 0.62

$$\frac{2\sqrt{d+ex}\left(-16b^3e^3g+8b^2ce^2(8dg+e(f-3gx))-2bc^2e\left(41d^2g+2de(5f-18gx)+3e^2x(gx-2f)\right)+c^3\left(34d\right.\right.}{3c^4e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(9/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-16*b^3*e^3*g + 8*b^2*c*e^2*(8*d*g + e*(f - 3*g*x)) - 2*b
*c^2*e*(41*d^2*g + 2*d*e*(5*f - 18*g*x) + 3*e^2*x*(-2*f + g*x)) + c^3*(34*d
^3*g + d^2*e*(11*f - 51*g*x) + e^3*x^2*(3*f + g*x) + 6*d*e^2*x*(-3*f + 2*g*
x))))/(3*c^4*e^2*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x
))])
```

fricas [A] time = 0.98, size = 308, normalized size = 1.06

$$-\frac{2\left(c^3e^3gx^3+3\left(c^3e^3f+2\left(2c^3de^2-bc^2e^3\right)g\right)x^2+\left(11c^3d^2e-20bc^2de^2+8b^2ce^3\right)f+2\left(17c^3d^3-41bc^2d^2e\right.\right.}{3\left(c^6e^5x^3+c^6d^3e^2-2bc^5d^2e^3+b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3*(c^3*e^3*g*x^3 + 3*(c^3*e^3*f + 2*(2*c^3*d*e^2 - b*c^2*e^3)*g)*x^2 + (
11*c^3*d^2*e - 20*b*c^2*d*e^2 + 8*b^2*c*e^3)*f + 2*(17*c^3*d^3 - 41*b*c^2*d
^2*e + 32*b^2*c*d*e^2 - 8*b^3*e^3)*g - 3*(2*(3*c^3*d*e^2 - 2*b*c^2*e^3)*f +
 (17*c^3*d^2*e - 24*b*c^2*d*e^2 + 8*b^2*c*e^3)*g)*x)*sqrt(-c*e^2*x^2 - b*e^
2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^6*e^5*x^3 + c^6*d^3*e^2 - 2*b*c^5*d^2
*e^3 + b^2*c^4*d*e^4 - (c^6*d*e^4 - 2*b*c^5*e^5)*x^2 - (c^6*d^2*e^3 - b^2*c
^4*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A]   time = 0.05, size = 235, normalized size = 0.81

$$-\frac{2(cex+be-cd)\left(-g e^3x^3c^3+6bc^2e^3gx^2-12c^3de^2gx^2-3c^3e^3fx^2+24b^2ce^3gx-72bc^2de^2gx-12bc^2e^3fx+\right.}{3\left(-ce^2x^2-b\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(-c^3*e^3*g*x^3+6*b*c^2*e^3*g*x^2-12*c^3*d*e^2*g*x^2-3
*c^3*e^3*f*x^2+24*b^2*c*e^3*g*x-72*b*c^2*d*e^2*g*x-12*b*c^2*e^3*f*x+51*c^3*
d^2*e*g*x+18*c^3*d*e^2*f*x+16*b^3*e^3*g-64*b^2*c*d*e^2*g-8*b^2*c*e^3*f+82*b
*c^2*d^2*e*g+20*b*c^2*d*e^2*f-34*c^3*d^3*g-11*c^3*d^2*e*f)*(e*x+d)^(5/2)/c^
4/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A]   time = 0.96, size = 246, normalized size = 0.85

$$\frac{2\left(3c^2e^2x^2+11c^2d^2-20bcde+8b^2e^2-6\left(3c^2de-2bce^2\right)x\right)f}{3\left(c^4e^2x-c^4de+bc^3e^2\right)\sqrt{-cex+cd-be}}+\frac{2\left(c^3e^3x^3+34c^3d^3-82bc^2d^2e+64b^2cde^2-16\right.}{3\left(c^5e^3x-\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(9/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] 2/3*(3*c^2*e^2*x^2 + 11*c^2*d^2 - 20*b*c*d*e + 8*b^2*e^2 - 6*(3*c^2*d*e - 2
*b*c*e^2)*x)*f/((c^4*e^2*x - c^4*d*e + b*c^3*e^2)*sqrt(-c*e*x + c*d - b*e))
 + 2/3*(c^3*e^3*x^3 + 34*c^3*d^3 - 82*b*c^2*d^2*e + 64*b^2*c*d*e^2 - 16*b^3
*e^3 + 6*(2*c^3*d*e^2 - b*c^2*e^3)*x^2 - 3*(17*c^3*d^2*e - 24*b*c^2*d*e^2 +
 8*b^2*c*e^3)*x)*g/((c^5*e^3*x - c^5*d*e^2 + b*c^4*e^3)*sqrt(-c*e*x + c*d -
 b*e))
```

mupad [B]   time = 3.21, size = 314, normalized size = 1.08

$$-\frac{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}\,\left(\frac{\sqrt{d+e\,x}\,\left(-32\,g\,b^3\,e^3+128\,g\,b^2\,c\,d\,e^2+16\,f\,b^2\,c\,e^3-164\,g\,b\,c^2\,d^2\,e-40\,f\,b\,c^2\,d\,e^2+68\,g\,c^3\,d^3+22\,f\,c^3\,d^2\,e\right)}{3\,c^6\,e^5}+\right.}{x^3+\frac{x\,\left(3\,b^2\,c^4\,e^5-3\,c^6\,d^2\,e^3\right)}{3\,c^6\,e^5}+\frac{d\,(b\,e-}{c^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(9/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] -((c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2)*(((d + e*x)^(1/2)*(68*c^3*d^3
*g - 32*b^3*e^3*g + 16*b^2*c*e^3*f + 22*c^3*d^2*e*f - 40*b*c^2*d*e^2*f - 16
4*b*c^2*d^2*e*g + 128*b^2*c*d*e^2*g))/(3*c^6*e^5) + (2*x^2*(d + e*x)^(1/2)*
(4*c*d*g - 2*b*e*g + c*e*f))/(c^4*e^3) + (2*g*x^3*(d + e*x)^(1/2))/(3*c^3*e
^2) - (x*(d + e*x)^(1/2)*(48*b^2*c*e^3*g - 24*b*c^2*e^3*f + 36*c^3*d*e^2*f
+ 102*c^3*d^2*e*g - 144*b*c^2*d*e^2*g))/(3*c^6*e^5)))/(x^3 + (x*(3*b^2*c^4*
e^5 - 3*c^6*d^2*e^3))/(3*c^6*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (x^2*(2*b
*e - c*d))/(c*e))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(9/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2279 $\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=217

$$-\frac{4\sqrt{d+ex}\,(-4beg+7cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{3/2}(-4beg+7cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{7/2}(-beg+cdg+}{3ce^2(2cd-be)\Big(d(cd-be)-be^2x}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(7/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(3/2)+2/3*(-4*b*e*g+7*c*d*g+c*e*f)*(e*x+d)^(3/2)/c^2/e^2/(-
b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-4/3*(-4*b*e*g+7*c*d*g+c*e
*f)*(e*x+d)^(1/2)/c^3/e^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.29, antiderivative size = 217, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.065, Rules used = {788, 656, 648}

$$\frac{2(d+ex)^{3/2}(-4beg+7cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{4\sqrt{d+ex}\,(-4beg+7cdg+cef)}{3c^3e^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{7/2}(-beg+cdg+c}{3ce^2(2cd-be)\Big(d(cd-be)-be^2x-}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(7/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (4*(c*e*f + 7*c*d*g - 4*b*e*g)*Sqrt[
d + e*x])/(3*c^3*e^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (2*(c*e*f
 + 7*c*d*g - 4*b*e*g)*(d + e*x)^(3/2))/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 656

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(m + 2*p
+ 1)), x] + Dist[(Simplify[m + p]*(2*c*d - b*e))/(c*(m + 2*p + 1)), Int[(d
+ e*x)^(m - 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p]
 && IGtQ[Simplify[m + p], 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{7/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(cef+7cdg-4beg)\int}{3ce(2cd-}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(cef+7cdg-4be}{3c^2e^2(2cd-be)\sqrt{d(cd-}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{7/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{4(cef+7cdg-4beg)\sqrt{}}{3c^3e^2\sqrt{d(cd-be)-be^2x}}$$

Mathematica [**A**] time = 0.09, size = 117, normalized size = 0.54

$$\frac{2\sqrt{d+ex}\left(8b^2e^2g-2bce(9dg+e(f-6gx))+c^2\left(10d^2g+de(f-15gx)+3e^2x(gx-f)\right)\right)}{3c^3e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(7/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(8*b^2*e^2*g - 2*b*c*e*(9*d*g + e*(f - 6*g*x)) + c^2*(10*d
^2*g + d*e*(f - 15*g*x) + 3*e^2*x*(-f + g*x))))/(3*c^3*e^2*(-(c*d) + b*e +
c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [**A**] time = 1.09, size = 216, normalized size = 1.00

$$-\frac{2\left(3\,c^2e^2gx^2+\left(c^2de-2\,bce^2\right)f+2\left(5\,c^2d^2-9\,bcde+4\,b^2e^2\right)g-3\left(c^2e^2f+\left(5\,c^2de-4\,bce^2\right)g\right)x\right)\sqrt{-ce^2x^2-b}}{3\left(c^5e^5x^3+c^5d^3e^2-2\,bc^4d^2e^3+b^2c^3de^4-\left(c^5de^4-2\,bc^4e^5\right)x^2-\left(c^5d^2e^3-b^2c^3e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] -2/3*(3*c^2*e^2*g*x^2 + (c^2*d*e - 2*b*c*e^2)*f + 2*(5*c^2*d^2 - 9*b*c*d*e
+ 4*b^2*e^2)*g - 3*(c^2*e^2*f + (5*c^2*d*e - 4*b*c*e^2)*g)*x)*sqrt(-c*e^2*x
^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(e*x + d)/(c^5*e^5*x^3 + c^5*d^3*e^2 - 2*
b*c^4*d^2*e^3 + b^2*c^3*d*e^4 - (c^5*d*e^4 - 2*b*c^4*e^5)*x^2 - (c^5*d^2*e^
3 - b^2*c^3*e^5)*x)
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**A**] time = 0.04, size = 138, normalized size = 0.64

$$\frac{2\,(cex+be-cd)\left(3g\,x^2c^2e^2+12bc\,e^2gx-15c^2degx-3c^2e^2fx+8b^2e^2g-18bcdeg-2bc\,e^2f+10c^2d^2g+c^2de\right.}{3\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}c^3e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(c*e*x+b*e-c*d)*(3*c^2*e^2*g*x^2+12*b*c*e^2*g*x-15*c^2*d*e*g*x-3*c^2*e^
2*f*x+8*b^2*e^2*g-18*b*c*d*e*g-2*b*c*e^2*f+10*c^2*d^2*g+c^2*d*e*f)*(e*x+d)^
(5/2)/c^3/e^2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 0.93, size = 157, normalized size = 0.72

$$-\frac{2\,(3\,cex-cd+2\,be)f}{3\left(c^3e^2x-c^3de+bc^2e^2\right)\sqrt{-cex+cd-be}}+\frac{2\left(3\,c^2e^2x^2+10\,c^2d^2-18\,bcde+8\,b^2e^2-3\left(5\,c^2de-4\,bce^2\right)x\right)g}{3\left(c^4e^3x-c^4de^2+bc^3e^3\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(7/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(3*c*e*x - c*d + 2*b*e)*f/((c^3*e^2*x - c^3*d*e + b*c^2*e^2)*sqrt(-c*e
*x + c*d - b*e)) + 2/3*(3*c^2*e^2*x^2 + 10*c^2*d^2 - 18*b*c*d*e + 8*b^2*e^2
 - 3*(5*c^2*d*e - 4*b*c*e^2)*x)*g/((c^4*e^3*x - c^4*d*e^2 + b*c^3*e^3)*sqrt
(-c*e*x + c*d - b*e))
```

mupad [B] time = 2.89, size = 214, normalized size = 0.99

$$-\frac{\left(\frac{\sqrt{d+e\,x}\,\left(16\,g\,b^2\,e^2-36\,g\,b\,c\,d\,e-4\,f\,b\,c\,e^2+20\,g\,c^2\,d^2+2\,f\,c^2\,d\,e\right)}{3\,c^5\,e^5}+\frac{2\,g\,x^2\,\sqrt{d+e\,x}}{c^3\,e^3}-\frac{2\,x\,\sqrt{d+e\,x}\,\left(5\,c\,d\,g-4\,b\,e\,g+c\,e\,f\right)}{c^4\,e^4}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2}}{x^3+\frac{x\,\left(3\,b^2\,c^3\,e^5-3\,c^5\,d^2\,e^3\right)}{3\,c^5\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^3}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(7/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] -((((d + e*x)^(1/2)*(16*b^2*e^2*g + 20*c^2*d^2*g - 4*b*c*e^2*f + 2*c^2*d*e*
f - 36*b*c*d*e*g))/(3*c^5*e^5) + (2*g*x^2*(d + e*x)^(1/2))/(c^3*e^3) - (2*x
*(d + e*x)^(1/2)*(5*c*d*g - 4*b*e*g + c*e*f))/(c^4*e^4))*(c*d^2 - c*e^2*x^2
 - b*d*e - b*e^2*x)^(1/2))/(x^3 + (x*(3*b^2*c^3*e^5 - 3*c^5*d^2*e^3))/(3*c^
5*e^5) + (d*(b*e - c*d)^2)/(c^2*e^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(7/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2280 $\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=152

$$\frac{2\sqrt{d+ex}\,(2beg-5cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(5/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(3/2)+2/3*(2*b*e*g-5*c*d*g+c*e*f)*(e*x+d)^(1/2)/c^2/e^2/(-b
*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 152, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {788, 648}

$$\frac{2\sqrt{d+ex}\,(2beg-5cdg+cef)}{3c^2e^2(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2(d+ex)^{5/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(5/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(c*e*f - 5*c*d*g + 2*b*e*g)*Sqrt[
d + e*x])/(3*c^2*e^2*(2*c*d - b*e)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2
])
```

Rule 648

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[(e*(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1))/(c*(p + 1)),
 x] /; FreeQ[{a, b, c, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2
- b*d*e + a*e^2, 0] &&  !IntegerQ[p] && EqQ[m + p, 0]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)^{5/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx &= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{(cef-5cdg+2beg)\int}{3ce(2cd}\\ &= \frac{2(cef+cdg-beg)(d+ex)^{5/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2(cef-5cdg+2b}{3c^2e^2(2cd-be)\sqrt{d(cd-}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 76, normalized size = 0.50

$$-\frac{2\sqrt{d+ex}\,(2beg-2cdg+ce(f+3gx))}{3c^2e^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(5/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (-2*Sqrt[d + e*x]*(-2*c*d*g + 2*b*e*g + c*e*(f + 3*g*x)))/(3*c^2*e^2*(-(c*d
) + b*e + c*e*x)*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [A] time = 1.00, size = 154, normalized size = 1.01

$$\frac{2\,\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\left(3\,cegx+cef-2\,(cd-be)g\right)\sqrt{ex+d}}{3\,\left(c^4e^5x^3+c^4d^3e^2-2\,bc^3d^2e^3+b^2c^2de^4-\left(c^4de^4-2\,bc^3e^5\right)x^2-\left(c^4d^2e^3-b^2c^2e^5\right)x\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] 2/3*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*c*e*g*x + c*e*f - 2*(c*d
- b*e)*g)*sqrt(e*x + d)/(c^4*e^5*x^3 + c^4*d^3*e^2 - 2*b*c^3*d^2*e^3 + b^2*
c^2*d*e^4 - (c^4*d*e^4 - 2*b*c^3*e^5)*x^2 - (c^4*d^2*e^3 - b^2*c^2*e^5)*x)
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [A] time = 0.04, size = 78, normalized size = 0.51

$$-\frac{2\,(cex+be-cd)\left(3cegx+2beg-2cdg+cef\right)(ex+d)^{\frac{5}{2}}}{3\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^{\frac{5}{2}}c^2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -2/3*(c*e*x+b*e-c*d)*(3*c*e*g*x+2*b*e*g-2*c*d*g+c*e*f)*(e*x+d)^(5/2)/c^2/e^
2/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2)
```

maxima [A] time = 0.97, size = 103, normalized size = 0.68

$$-\frac{2\,(3\,cex-2\,cd+2\,be)g}{3\left(c^3e^3x-c^3de^2+bc^2e^3\right)\sqrt{-cex+cd-be}}-\frac{2\,f}{3\left(c^2e^2x-c^2de+bce^2\right)\sqrt{-cex+cd-be}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(5/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] -2/3*(3*c*e*x - 2*c*d + 2*b*e)*g/((c^3*e^3*x - c^3*d*e^2 + b*c^2*e^3)*sqrt(
-c*e*x + c*d - b*e)) - 2/3*f/((c^2*e^2*x - c^2*d*e + b*c*e^2)*sqrt(-c*e*x +
 c*d - b*e))
```

mupad [B] time = 2.85, size = 154, normalized size = 1.01

$$\frac{\left(\frac{\sqrt{d+e\,x}\,\left(4\,b\,e\,g-4\,c\,d\,g+2\,c\,e\,f\right)}{3\,c^4\,e^5}+\frac{2\,g\,x\,\sqrt{d+e\,x}}{c^3\,e^4}\right)\,\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}{x^3+\frac{x\,\left(3\,b^2\,c^2\,e^5-3\,c^4\,d^2\,e^3\right)}{3\,c^4\,e^5}+\frac{d\,{\left(b\,e-c\,d\right)}^2}{c^2\,e^3}+\frac{x^2\,\left(2\,b\,e-c\,d\right)}{c\,e}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(5/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] ((((d + e*x)^(1/2)*(4*b*e*g - 4*c*d*g + 2*c*e*f))/(3*c^4*e^5) + (2*g*x*(d +
 e*x)^(1/2))/(c^3*e^4))*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2))/(x^3 +
 (x*(3*b^2*c^2*e^5 - 3*c^4*d^2*e^3))/(3*c^4*e^5) + (d*(b*e - c*d)^2)/(c^2*e
^3) + (x^2*(2*b*e - c*d))/(c*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(5/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2281 $\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=221

$$\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,(ef-dg)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd}}{\sqrt{d}}\right.}{e^2(2cd-be)^5}$$

```
[Out] 2/3*(-b*e*g+c*d*g+c*e*f)*(e*x+d)^(3/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e
^2*x-c*e^2*x^2)^(3/2)-2*(-d*g+e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(5/2)+2*(-d*g+e*f
)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.30, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.087, Rules used = {788, 666, 660, 208}

$$\frac{2(d+ex)^{3/2}(-beg+cdg+cef)}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{2\sqrt{d+ex}\,(ef-dg)}{e^2(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{2(ef-dg)\tanh^{-1}\left(\frac{\sqrt{d(cd}}{\sqrt{d}}\right.}{e^2(2cd-be)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*(d + e*x)^(3/2))/(3*c*e^2*(2*c*d - b*e)*(d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (2*(e*f - d*g)*Sqrt[d + e*x])/(e^2*(
2*c*d - b*e)^2*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (2*(e*f - d*g)*
ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d
 + e*x])])/(e^2*(2*c*d - b*e)^(5/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{(d+ex)^{3/2}(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(ef-dg)\int \frac{\sqrt{d+ex}}{\left(cd^2-bde-be^2x-\right.}}{e(2cd-be)}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

$$= \frac{2(cef+cdg-beg)(d+ex)^{3/2}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{2(ef-dg)\sqrt{d}}{e^2(2cd-be)^2\sqrt{d(cd-be)}}$$

Mathematica [C] time = 0.08, size = 146, normalized size = 0.66

$$\frac{2\sqrt{d+ex}\left(3c(ef-dg)(be-cd+cex)\,{}_2F_1\left(-\frac{1}{2},1;\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)-(2cd-be)(-beg+cdg+cef)\right)}{3ce^2(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^(3/2)*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)
^(5/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(-((2*c*d - b*e)*(c*e*f + c*d*g - b*e*g)) + 3*c*(e*f - d*g
)*(-(c*d) + b*e + c*e*x)*Hypergeometric2F1[-1/2, 1, 1/2, (-(c*d) + b*e + c*
e*x)/(-2*c*d + b*e)]))/(3*c*e^2*(-2*c*d + b*e)^2*(-(c*d) + b*e + c*e*x)*Sqr
t[(d + e*x)*(-(b*e) + c*(d - e*x))])
```

fricas [B] time = 1.35, size = 1437, normalized size = 6.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/3*(3*((c^3*e^4*f - c^3*d*e^3*g)*x^3 - ((c^3*d*e^3 - 2*b*c^2*e^4)*f - (c
^3*d^2*e^2 - 2*b*c^2*d*e^3)*g)*x^2 + (c^3*d^3*e - 2*b*c^2*d^2*e^2 + b^2*c*d
*e^3)*f - (c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2*e^2)*g - ((c^3*d^2*e^2 - b^2
*c*e^4)*f - (c^3*d^3*e - b^2*c*d*e^3)*g)*x)*sqrt(2*c*d - b*e)*log(-(c*e^2*x
^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*x^2 - b*e^2*x
+ c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e*x + d^2)
) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((10*c^3*d^2*e - 13*b*c^2*
d*e^2 + 4*b^2*c*e^3)*f - (2*c^3*d^3 - b*c^2*d^2*e - 2*b^2*c*d*e^2 + b^3*e^3
)*g - 3*((2*c^3*d*e^2 - b*c^2*e^3)*f - (2*c^3*d^2*e - b*c^2*d*e^2)*g)*x)*sq
rt(e*x + d))/(8*c^6*d^6*e^2 - 28*b*c^5*d^5*e^3 + 38*b^2*c^4*d^4*e^4 - 25*b^
3*c^3*d^3*e^5 + 8*b^4*c^2*d^2*e^6 - b^5*c*d*e^7 + (8*c^6*d^3*e^5 - 12*b*c^5
*d^2*e^6 + 6*b^2*c^4*d*e^7 - b^3*c^3*e^8)*x^3 - (8*c^6*d^4*e^4 - 28*b*c^5*d
^3*e^5 + 30*b^2*c^4*d^2*e^6 - 13*b^3*c^3*d*e^7 + 2*b^4*c^2*e^8)*x^2 - (8*c^
6*d^5*e^3 - 12*b*c^5*d^4*e^4 - 2*b^2*c^4*d^3*e^5 + 11*b^3*c^3*d^2*e^6 - 6*b
^4*c^2*d*e^7 + b^5*c*e^8)*x), -2/3*(3*((c^3*e^4*f - c^3*d*e^3*g)*x^3 - ((c^
3*d*e^3 - 2*b*c^2*e^4)*f - (c^3*d^2*e^2 - 2*b*c^2*d*e^3)*g)*x^2 + (c^3*d^3*
e - 2*b*c^2*d^2*e^2 + b^2*c*d*e^3)*f - (c^3*d^4 - 2*b*c^2*d^3*e + b^2*c*d^2
*e^2)*g - ((c^3*d^2*e^2 - b^2*c*e^4)*f - (c^3*d^3*e - b^2*c*d*e^3)*g)*x)*sq
rt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*
c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) - sqrt(-c*e
^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*((10*c^3*d^2*e - 13*b*c^2*d*e^2 + 4*b^2*c
*e^3)*f - (2*c^3*d^3 - b*c^2*d^2*e - 2*b^2*c*d*e^2 + b^3*e^3)*g - 3*((2*c^3
*d*e^2 - b*c^2*e^3)*f - (2*c^3*d^2*e - b*c^2*d*e^2)*g)*x)*sqrt(e*x + d))/(8
*c^6*d^6*e^2 - 28*b*c^5*d^5*e^3 + 38*b^2*c^4*d^4*e^4 - 25*b^3*c^3*d^3*e^5 +
 8*b^4*c^2*d^2*e^6 - b^5*c*d*e^7 + (8*c^6*d^3*e^5 - 12*b*c^5*d^2*e^6 + 6*b^
2*c^4*d*e^7 - b^3*c^3*e^8)*x^3 - (8*c^6*d^4*e^4 - 28*b*c^5*d^3*e^5 + 30*b^2
*c^4*d^2*e^6 - 13*b^3*c^3*d*e^7 + 2*b^4*c^2*e^8)*x^2 - (8*c^6*d^5*e^3 - 12*
b*c^5*d^4*e^4 - 2*b^2*c^4*d^3*e^5 + 11*b^3*c^3*d^2*e^6 - 6*b^4*c^2*d*e^7 +
b^5*c*e^8)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.07, size = 485, normalized size = 2.19

$$2\left(3\sqrt{-cex-be+cd}\;c^{2}degx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)-3\sqrt{-cex-be+cd}\;c^{2}e^{2}fx\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{-cex-b$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 2/3*(3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*d*e*g*(-c*e*x
-b*e+c*d)^(1/2)-3*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^2*e^
2*f*(-c*e*x-b*e+c*d)^(1/2)+3*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*b*c*d*e*g-3*(-c*e*x-b*e+c*d)^(1/2)*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c*e^2*f-3*(-c*e*x-b*e+c*d)^(1/2)*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d^2*g+3*(-c*e*x-b*e+c*d)^(1
/2)*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^2*d*e*f+3*(b*e-2*c*d
)^(1/2)*x*c^2*d*e*g-3*(b*e-2*c*d)^(1/2)*x*c^2*e^2*f+(b*e-2*c*d)^(1/2)*b^2*e
^2*g-4*(b*e-2*c*d)^(1/2)*b*c*e^2*f-(b*e-2*c*d)^(1/2)*c^2*d^2*g+5*(b*e-2*c*d
)^(1/2)*c^2*d*e*f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)/(b*e-2*c*d)^(5/2)
/e^2/c/(c*e*x+b*e-c*d)^2/(e*x+d)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(ex+d)^{\frac{3}{2}}\left(gx+f\right)}{\left(-ce^{2}x^{2}-be^{2}x+cd^{2}-bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(3/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((e*x + d)^(3/2)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^
(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^{3/2}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(3/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(3/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2282 $\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=313

$$\frac{\sqrt{d+ex}\,(-2beg-cdg+5cef)}{e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-2beg-cdg+5cef}{3ce^2\sqrt{d+ex}\,(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(\right.}$$

```
[Out] -(-2*b*e*g-c*d*g+5*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/(-
b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(7/2)+2/3*(-b*e*g+c*d*g+c*
e*f)*(e*x+d)^(1/2)/c/e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2
)+1/3*(2*b*e*g+c*d*g-5*c*e*f)/c/e^2/(-b*e+2*c*d)^2/(e*x+d)^(1/2)/(d*(-b*e+c
*d)-b*e^2*x-c*e^2*x^2)^(1/2)+(-2*b*e*g-c*d*g+5*c*e*f)*(e*x+d)^(1/2)/e^2/(-b
*e+2*c*d)^3/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 313, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {788, 672, 666, 660, 208}

$$\frac{\sqrt{d+ex}\,(-2beg-cdg+5cef)}{e^2(2cd-be)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{-2beg-cdg+5cef}{3ce^2\sqrt{d+ex}\,(2cd-be)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}}+\frac{2\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x
]
```

```
[Out] (2*(c*e*f + c*d*g - b*e*g)*Sqrt[d + e*x])/(3*c*e^2*(2*c*d - b*e)*(d*(c*d -
b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (5*c*e*f - c*d*g - 2*b*e*g)/(3*c*e^2*(
2*c*d - b*e)^2*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (
(5*c*e*f - c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(e^2*(2*c*d - b*e)^3*Sqrt[d*(c*d
 - b*e) - b*e^2*x - c*e^2*x^2]) - ((5*c*e*f - c*d*g - 2*b*e*g)*ArcTanh[Sqrt
[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[d + e*x])])/(
e^2*(2*c*d - b*e)^(7/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 788

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((g*(c*d - b*e) + c*e*f)*(d + e*x)^m*(a
 + b*x + c*x^2)^(p + 1))/(c*(p + 1)*(2*c*d - b*e)), x] - Dist[(e*(m*(g*(c*d
 - b*e) + c*e*f) + e*(p + 1)*(2*c*f - b*g)))/(c*(p + 1)*(2*c*d - b*e)), Int
[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d,
e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ
[p, -1] && GtQ[m, 0]
```

Rubi steps

$$\int \frac{\sqrt{d+ex}\,(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(5cef-cdg-2beg)\int}{3ce(2c}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}}$$

$$= \frac{2(cef+cdg-beg)\sqrt{d+ex}}{3ce^2(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{5cef-c}{3ce^2(2cd-be)^2\sqrt{d+ex}}$$

Mathematica [C] time = 0.08, size = 135, normalized size = 0.43

$$\frac{(d+ex)(2beg+cdg-5cef)\,{}_2F_1\left(-\frac{3}{2},1;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)-3(2cd-be)(dg-ef)}{3e^2\sqrt{d+ex}\,(be-2cd)^2(be-cd+cex)\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(Sqrt[d + e*x]*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(
5/2),x]
```

```
[Out] (-3*(2*c*d - b*e)*(-(e*f) + d*g) + (-5*c*e*f + c*d*g + 2*b*e*g)*(d + e*x)*H
ypergeometric2F1[-3/2, 1, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(3*
e^2*(-2*c*d + b*e)^2*Sqrt[d + e*x]*(-(c*d) + b*e + c*e*x)*Sqrt[(d + e*x)*(-
(b*e) + c*(d - e*x))])
```

fricas [B] time = 1.09, size = 2106, normalized size = 6.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/6*(3*((5*c^3*e^5*f - (c^3*d*e^4 + 2*b*c^2*e^5)*g)*x^4 + 2*(5*b*c^2*e^5*f
 - (b*c^2*d*e^4 + 2*b^2*c*e^5)*g)*x^3 - (5*(2*c^3*d^2*e^3 - 2*b*c^2*d*e^4 -
 b^2*c*e^5)*f - (2*c^3*d^3*e^2 + 2*b*c^2*d^2*e^3 - 5*b^2*c*d*e^4 - 2*b^3*e^
5)*g)*x^2 + 5*(c^3*d^4*e - 2*b*c^2*d^3*e^2 + b^2*c*d^2*e^3)*f - (c^3*d^5 -
3*b^2*c*d^3*e^2 + 2*b^3*d^2*e^3)*g - 2*(5*(b*c^2*d^2*e^3 - b^2*c*d*e^4)*f -
 (b*c^2*d^3*e^2 + b^2*c*d^2*e^3 - 2*b^3*d*e^4)*g)*x)*sqrt(2*c*d - b*e)*log(
-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^2*x^2 -
 b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 + 2*d*e
*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^
3 - b*c^2*e^4)*f - (2*c^3*d^2*e^2 + 3*b*c^2*d*e^3 - 2*b^2*c*e^4)*g)*x^2 - (
26*c^3*d^3*e - 29*b*c^2*d^2*e^2 + 2*b^2*c*d*e^3 + 3*b^3*e^4)*f - (14*c^3*d^
4 - 43*b*c^2*d^3*e + 40*b^2*c*d^2*e^2 - 11*b^3*d*e^3)*g - 2*(5*(2*c^3*d^2*e
^2 - 5*b*c^2*d*e^3 + 2*b^2*c*e^4)*f - (2*c^3*d^3*e - b*c^2*d^2*e^2 - 8*b^2*
c*d*e^3 + 4*b^3*e^4)*g)*x)*sqrt(e*x + d))/(16*c^6*d^8*e^2 - 64*b*c^5*d^7*e^
3 + 104*b^2*c^4*d^6*e^4 - 88*b^3*c^3*d^5*e^5 + 41*b^4*c^2*d^4*e^6 - 10*b^5*
c*d^3*e^7 + b^6*d^2*e^8 + (16*c^6*d^4*e^6 - 32*b*c^5*d^3*e^7 + 24*b^2*c^4*d
^2*e^8 - 8*b^3*c^3*d*e^9 + b^4*c^2*e^10)*x^4 + 2*(16*b*c^5*d^4*e^6 - 32*b^2
*c^4*d^3*e^7 + 24*b^3*c^3*d^2*e^8 - 8*b^4*c^2*d*e^9 + b^5*c*e^10)*x^3 - (32
*c^6*d^6*e^4 - 96*b*c^5*d^5*e^5 + 96*b^2*c^4*d^4*e^6 - 32*b^3*c^3*d^3*e^7 -
 6*b^4*c^2*d^2*e^8 + 6*b^5*c*d*e^9 - b^6*e^10)*x^2 - 2*(16*b*c^5*d^6*e^4 -
48*b^2*c^4*d^5*e^5 + 56*b^3*c^3*d^4*e^6 - 32*b^4*c^2*d^3*e^7 + 9*b^5*c*d^2*
e^8 - b^6*d*e^9)*x), -1/3*(3*((5*c^3*e^5*f - (c^3*d*e^4 + 2*b*c^2*e^5)*g)*x
^4 + 2*(5*b*c^2*e^5*f - (b*c^2*d*e^4 + 2*b^2*c*e^5)*g)*x^3 - (5*(2*c^3*d^2*
e^3 - 2*b*c^2*d*e^4 - b^2*c*e^5)*f - (2*c^3*d^3*e^2 + 2*b*c^2*d^2*e^3 - 5*b
^2*c*d*e^4 - 2*b^3*e^5)*g)*x^2 + 5*(c^3*d^4*e - 2*b*c^2*d^3*e^2 + b^2*c*d^2
*e^3)*f - (c^3*d^5 - 3*b^2*c*d^3*e^2 + 2*b^3*d^2*e^3)*g - 2*(5*(b*c^2*d^2*e
^3 - b^2*c*d*e^4)*f - (b*c^2*d^3*e^2 + b^2*c*d^2*e^3 - 2*b^3*d*e^4)*g)*x)*s
qrt(-2*c*d + b*e)*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2
*c*d + b*e)*sqrt(e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*
e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(3*(5*(2*c^3*d*e^3 - b*c^2*e^4)*f - (2*c
^3*d^2*e^2 + 3*b*c^2*d*e^3 - 2*b^2*c*e^4)*g)*x^2 - (26*c^3*d^3*e - 29*b*c^2
*d^2*e^2 + 2*b^2*c*d*e^3 + 3*b^3*e^4)*f - (14*c^3*d^4 - 43*b*c^2*d^3*e + 40
*b^2*c*d^2*e^2 - 11*b^3*d*e^3)*g - 2*(5*(2*c^3*d^2*e^2 - 5*b*c^2*d*e^3 + 2*
b^2*c*e^4)*f - (2*c^3*d^3*e - b*c^2*d^2*e^2 - 8*b^2*c*d*e^3 + 4*b^3*e^4)*g)
*x)*sqrt(e*x + d))/(16*c^6*d^8*e^2 - 64*b*c^5*d^7*e^3 + 104*b^2*c^4*d^6*e^4
 - 88*b^3*c^3*d^5*e^5 + 41*b^4*c^2*d^4*e^6 - 10*b^5*c*d^3*e^7 + b^6*d^2*e^8
 + (16*c^6*d^4*e^6 - 32*b*c^5*d^3*e^7 + 24*b^2*c^4*d^2*e^8 - 8*b^3*c^3*d*e^
9 + b^4*c^2*e^10)*x^4 + 2*(16*b*c^5*d^4*e^6 - 32*b^2*c^4*d^3*e^7 + 24*b^3*c
^3*d^2*e^8 - 8*b^4*c^2*d*e^9 + b^5*c*e^10)*x^3 - (32*c^6*d^6*e^4 - 96*b*c^5
*d^5*e^5 + 96*b^2*c^4*d^4*e^6 - 32*b^3*c^3*d^3*e^7 - 6*b^4*c^2*d^2*e^8 + 6*
b^5*c*d*e^9 - b^6*e^10)*x^2 - 2*(16*b*c^5*d^6*e^4 - 48*b^2*c^4*d^5*e^5 + 56
*b^3*c^3*d^4*e^6 - 32*b^4*c^2*d^3*e^7 + 9*b^5*c*d^2*e^8 - b^6*d*e^9)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 904, normalized size = 2.89

$$-\frac{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}\,\left(6\sqrt{-cex-be+cd}\;bc\,e^3g\,x^2\arctan\left(\frac{\sqrt{-cex-be+cd}}{\sqrt{be-2cd}}\right)+3\sqrt{-cex-be+cd}\;c^2d\,e^2g\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -1/3*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(6*(-c*e*x-b*e+c*d)^(1/2)*b*c*e
^3*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+3*(-c*e*x-b*e+c*d
)^(1/2)*c^2*d*e^2*g*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15
*(-c*e*x-b*e+c*d)^(1/2)*c^2*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*e^3*g*
(-c*e*x-b*e+c*d)^(1/2)+3*(-c*e*x-b*e+c*d)^(1/2)*b*c*d*e^2*g*x*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2
*c*d)^(1/2))*x*b*c*e^3*f*(-c*e*x-b*e+c*d)^(1/2)+6*(b*e-2*c*d)^(1/2)*b*c*e^3
*g*x^2+3*(b*e-2*c*d)^(1/2)*c^2*d*e^2*g*x^2-15*(b*e-2*c*d)^(1/2)*c^2*e^3*f*x
^2+6*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*d*e^2*g*(-c*e*x-b
*e+c*d)^(1/2)-3*(-c*e*x-b*e+c*d)^(1/2)*b*c*d^2*e*g*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))-15*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)
)*b*c*d*e^2*f*(-c*e*x-b*e+c*d)^(1/2)-3*(-c*e*x-b*e+c*d)^(1/2)*c^2*d^3*g*arc
tan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*(-c*e*x-b*e+c*d)^(1/2)*c^2
*d^2*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+8*(b*e-2*c*d)^(1/
2)*b^2*e^3*g*x-20*(b*e-2*c*d)^(1/2)*b*c*e^3*f*x-2*(b*e-2*c*d)^(1/2)*c^2*d^2
*e*g*x+10*(b*e-2*c*d)^(1/2)*c^2*d*e^2*f*x+11*(b*e-2*c*d)^(1/2)*b^2*d*e^2*g-
3*(b*e-2*c*d)^(1/2)*b^2*e^3*f-18*(b*e-2*c*d)^(1/2)*b*c*d^2*e*g-8*(b*e-2*c*d
)^(1/2)*b*c*d*e^2*f+7*(b*e-2*c*d)^(1/2)*c^2*d^3*g+13*(b*e-2*c*d)^(1/2)*c^2*
d^2*e*f)/(e*x+d)^(3/2)/(c*e*x+b*e-c*d)^2/e^2/(b*e-2*c*d)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{ex+d}\left(gx+f\right)}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(1/2)*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate(sqrt(e*x + d)*(g*x + f)/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5
/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,\sqrt{d+e\,x}}{{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
,x)
```

```
[Out] int(((f + g*x)*(d + e*x)^(1/2))/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2)
, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\sqrt{d+ex}\,\left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(1/2)*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Integral(sqrt(d + e*x)*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(5/2), x
)
```

3.2283 $\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=378

$$-\frac{ef-dg}{2e^2\sqrt{d+ex}\,(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{5c\sqrt{d+ex}\,(-4beg+cdg+7cef)}{4e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2\sqrt{d+e}}$$

```
[Out] -5/4*c*(-4*b*e*g+c*d*g+7*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1
/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(9/2)+1/2*(d*g-e*f)/
e^2/(-b*e+2*c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/(e*x+d)^(1/2)+1/6*(
-4*b*e*g+c*d*g+7*c*e*f)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^2/(d*(-b*e+c*d)-b*e^
2*x-c*e^2*x^2)^(3/2)-5/12*(-4*b*e*g+c*d*g+7*c*e*f)/e^2/(-b*e+2*c*d)^3/(e*x+
d)^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)+5/4*c*(-4*b*e*g+c*d*g+7*c*e
*f)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^4/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.59, antiderivative size = 378, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.109, Rules used = {792, 666, 672, 660, 208}

$$-\frac{ef-dg}{2e^2\sqrt{d+ex}\,(2cd-be)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}+\frac{5c\sqrt{d+ex}\,(-4beg+cdg+7cef)}{4e^2(2cd-be)^4\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{}{12e^2\sqrt{d+e}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)),x
]
```

```
[Out] -(e*f - d*g)/(2*e^2*(2*c*d - b*e)*Sqrt[d + e*x]*(d*(c*d - b*e) - b*e^2*x -
c*e^2*x^2)^(3/2)) + ((7*c*e*f + c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(6*e^2*(2*c
*d - b*e)^2*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) - (5*(7*c*e*f + c*
d*g - 4*b*e*g))/(12*e^2*(2*c*d - b*e)^3*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) -
b*e^2*x - c*e^2*x^2]) + (5*c*(7*c*e*f + c*d*g - 4*b*e*g)*Sqrt[d + e*x])/(4*
e^2*(2*c*d - b*e)^4*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (5*c*(7*c*
e*f + c*d*g - 4*b*e*g)*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(S
qrt[2*c*d - b*e]*Sqrt[d + e*x])])/(4*e^2*(2*c*d - b*e)^(9/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{\sqrt{d+ex}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7cef+c}{}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7}{6e^2(2cd-}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7}{6e^2(2cd-}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7}{6e^2(2cd-}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7}{6e^2(2cd-}$$

$$= -\frac{ef-dg}{2e^2(2cd-be)\sqrt{d+ex}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} + \frac{(7}{6e^2(2cd-}$$

Mathematica [C] time = 0.11, size = 129, normalized size = 0.34

$$\frac{\frac{c(d+ex)^2(-4beg+cdg+7cef)\,{}_2F_1\left(-\frac{3}{2},2;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{e(be-2cd)^2}+\frac{3dg}{e}-3f}{6e\sqrt{d+ex}\,(2cd-be)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(Sqrt[d + e*x]*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5
/2)),x]
```

```
[Out] (-3*f + (3*d*g)/e + (c*(7*c*e*f + c*d*g - 4*b*e*g)*(d + e*x)^2*Hypergeometr
ic2F1[-3/2, 2, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(e*(-2*c*d + b
*e)^2))/(6*e*(2*c*d - b*e)*Sqrt[d + e*x]*((d + e*x)*(-(b*e) + c*(d - e*x)))
^(3/2))
```

fricas [**B**] time = 1.21, size = 3096, normalized size = 8.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [-1/24*(15*((7*c^4*e^6*f + (c^4*d*e^5 - 4*b*c^3*e^6)*g)*x^5 + (7*(c^4*d*e^5
 + 2*b*c^3*e^6)*f + (c^4*d^2*e^4 - 2*b*c^3*d*e^5 - 8*b^2*c^2*e^6)*g)*x^4 -
(7*(2*c^4*d^2*e^4 - 4*b*c^3*d*e^5 - b^2*c^2*e^6)*f + (2*c^4*d^3*e^3 - 12*b*
c^3*d^2*e^4 + 15*b^2*c^2*d*e^5 + 4*b^3*c*e^6)*g)*x^3 - (7*(2*c^4*d^3*e^3 -
3*b^2*c^2*d*e^5)*f + (2*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 - 3*b^2*c^2*d^2*e^4 +
 12*b^3*c*d*e^5)*g)*x^2 + 7*(c^4*d^5*e - 2*b*c^3*d^4*e^2 + b^2*c^2*d^3*e^3)
*f + (c^4*d^6 - 6*b*c^3*d^5*e + 9*b^2*c^2*d^4*e^2 - 4*b^3*c*d^3*e^3)*g + (7
*(c^4*d^4*e^2 - 4*b*c^3*d^3*e^3 + 3*b^2*c^2*d^2*e^4)*f + (c^4*d^5*e - 8*b*c
^3*d^4*e^2 + 19*b^2*c^2*d^3*e^3 - 12*b^3*c*d^2*e^4)*g)*x)*sqrt(2*c*d - b*e)
*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x - 2*sqrt(-c*e^2*
x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2 +
2*d*e*x + d^2)) + 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(15*(7*(2*c^
4*d*e^4 - b*c^3*e^5)*f + (2*c^4*d^2*e^3 - 9*b*c^3*d*e^4 + 4*b^2*c^2*e^5)*g)
*x^3 + 5*(7*(2*c^4*d^2*e^3 + 7*b*c^3*d*e^4 - 4*b^2*c^2*e^5)*f + (2*c^4*d^3*
e^2 - b*c^3*d^2*e^3 - 32*b^2*c^2*d*e^4 + 16*b^3*c*e^5)*g)*x^2 - (86*c^4*d^4
*e - 11*b*c^3*d^3*e^2 - 130*b^2*c^2*d^2*e^3 + 69*b^3*c*d*e^4 - 6*b^4*e^5)*f
 - (122*c^4*d^5 - 325*b*c^3*d^4*e + 262*b^2*c^2*d^3*e^2 - 53*b^3*c*d^2*e^3
- 6*b^4*d*e^4)*g - (7*(46*c^4*d^3*e^2 - 79*b*c^3*d^2*e^3 + 22*b^2*c^2*d*e^4
 + 3*b^3*c*e^5)*f + (46*c^4*d^4*e - 263*b*c^3*d^3*e^2 + 338*b^2*c^2*d^2*e^3
 - 85*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x + d))/(32*c^7*d^10*e^2 - 144
*b*c^6*d^9*e^3 + 272*b^2*c^5*d^8*e^4 - 280*b^3*c^4*d^7*e^5 + 170*b^4*c^3*d^
6*e^6 - 61*b^5*c^2*d^5*e^7 + 12*b^6*c*d^4*e^8 - b^7*d^3*e^9 + (32*c^7*d^5*e
^7 - 80*b*c^6*d^4*e^8 + 80*b^2*c^5*d^3*e^9 - 40*b^3*c^4*d^2*e^10 + 10*b^4*c
^3*d*e^11 - b^5*c^2*e^12)*x^5 + (32*c^7*d^6*e^6 - 16*b*c^6*d^5*e^7 - 80*b^2
*c^5*d^4*e^8 + 120*b^3*c^4*d^3*e^9 - 70*b^4*c^3*d^2*e^10 + 19*b^5*c^2*d*e^1
1 - 2*b^6*c*e^12)*x^4 - (64*c^7*d^7*e^5 - 288*b*c^6*d^6*e^6 + 448*b^2*c^5*d
^5*e^7 - 320*b^3*c^4*d^4*e^8 + 100*b^4*c^3*d^3*e^9 - 2*b^5*c^2*d^2*e^10 - 6
*b^6*c*d*e^11 + b^7*e^12)*x^3 - (64*c^7*d^8*e^4 - 160*b*c^6*d^7*e^5 + 64*b^
2*c^5*d^6*e^6 + 160*b^3*c^4*d^5*e^7 - 220*b^4*c^3*d^4*e^8 + 118*b^5*c^2*d^3
*e^9 - 30*b^6*c*d^2*e^10 + 3*b^7*d*e^11)*x^2 + (32*c^7*d^9*e^3 - 208*b*c^6*
d^8*e^4 + 496*b^2*c^5*d^7*e^5 - 600*b^3*c^4*d^6*e^6 + 410*b^4*c^3*d^5*e^7 -
 161*b^5*c^2*d^4*e^8 + 34*b^6*c*d^3*e^9 - 3*b^7*d^2*e^10)*x), -1/12*(15*((7
*c^4*e^6*f + (c^4*d*e^5 - 4*b*c^3*e^6)*g)*x^5 + (7*(c^4*d*e^5 + 2*b*c^3*e^6
)*f + (c^4*d^2*e^4 - 2*b*c^3*d*e^5 - 8*b^2*c^2*e^6)*g)*x^4 - (7*(2*c^4*d^2*
e^4 - 4*b*c^3*d*e^5 - b^2*c^2*e^6)*f + (2*c^4*d^3*e^3 - 12*b*c^3*d^2*e^4 +
15*b^2*c^2*d*e^5 + 4*b^3*c*e^6)*g)*x^3 - (7*(2*c^4*d^3*e^3 - 3*b^2*c^2*d*e^
5)*f + (2*c^4*d^4*e^2 - 8*b*c^3*d^3*e^3 - 3*b^2*c^2*d^2*e^4 + 12*b^3*c*d*e^
5)*g)*x^2 + 7*(c^4*d^5*e - 2*b*c^3*d^4*e^2 + b^2*c^2*d^3*e^3)*f + (c^4*d^6
- 6*b*c^3*d^5*e + 9*b^2*c^2*d^4*e^2 - 4*b^3*c*d^3*e^3)*g + (7*(c^4*d^4*e^2
- 4*b*c^3*d^3*e^3 + 3*b^2*c^2*d^2*e^4)*f + (c^4*d^5*e - 8*b*c^3*d^4*e^2 + 1
9*b^2*c^2*d^3*e^3 - 12*b^3*c*d^2*e^4)*g)*x)*sqrt(-2*c*d + b*e)*arctan(sqrt(
-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(e*x + d)/(c*e
^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*
d*e)*(15*(7*(2*c^4*d*e^4 - b*c^3*e^5)*f + (2*c^4*d^2*e^3 - 9*b*c^3*d*e^4 +
4*b^2*c^2*e^5)*g)*x^3 + 5*(7*(2*c^4*d^2*e^3 + 7*b*c^3*d*e^4 - 4*b^2*c^2*e^5
)*f + (2*c^4*d^3*e^2 - b*c^3*d^2*e^3 - 32*b^2*c^2*d*e^4 + 16*b^3*c*e^5)*g)*
x^2 - (86*c^4*d^4*e - 11*b*c^3*d^3*e^2 - 130*b^2*c^2*d^2*e^3 + 69*b^3*c*d*e
^4 - 6*b^4*e^5)*f - (122*c^4*d^5 - 325*b*c^3*d^4*e + 262*b^2*c^2*d^3*e^2 -
53*b^3*c*d^2*e^3 - 6*b^4*d*e^4)*g - (7*(46*c^4*d^3*e^2 - 79*b*c^3*d^2*e^3 +
 22*b^2*c^2*d*e^4 + 3*b^3*c*e^5)*f + (46*c^4*d^4*e - 263*b*c^3*d^3*e^2 + 33
8*b^2*c^2*d^2*e^3 - 85*b^3*c*d*e^4 - 12*b^4*e^5)*g)*x)*sqrt(e*x + d))/(32*c
^7*d^10*e^2 - 144*b*c^6*d^9*e^3 + 272*b^2*c^5*d^8*e^4 - 280*b^3*c^4*d^7*e^5
 + 170*b^4*c^3*d^6*e^6 - 61*b^5*c^2*d^5*e^7 + 12*b^6*c*d^4*e^8 - b^7*d^3*e^
9 + (32*c^7*d^5*e^7 - 80*b*c^6*d^4*e^8 + 80*b^2*c^5*d^3*e^9 - 40*b^3*c^4*d^
2*e^10 + 10*b^4*c^3*d*e^11 - b^5*c^2*e^12)*x^5 + (32*c^7*d^6*e^6 - 16*b*c^6
*d^5*e^7 - 80*b^2*c^5*d^4*e^8 + 120*b^3*c^4*d^3*e^9 - 70*b^4*c^3*d^2*e^10 +
 19*b^5*c^2*d*e^11 - 2*b^6*c*e^12)*x^4 - (64*c^7*d^7*e^5 - 288*b*c^6*d^6*e^
6 + 448*b^2*c^5*d^5*e^7 - 320*b^3*c^4*d^4*e^8 + 100*b^4*c^3*d^3*e^9 - 2*b^5
*c^2*d^2*e^10 - 6*b^6*c*d*e^11 + b^7*e^12)*x^3 - (64*c^7*d^8*e^4 - 160*b*c^
6*d^7*e^5 + 64*b^2*c^5*d^6*e^6 + 160*b^3*c^4*d^5*e^7 - 220*b^4*c^3*d^4*e^8
+ 118*b^5*c^2*d^3*e^9 - 30*b^6*c*d^2*e^10 + 3*b^7*d*e^11)*x^2 + (32*c^7*d^9
*e^3 - 208*b*c^6*d^8*e^4 + 496*b^2*c^5*d^7*e^5 - 600*b^3*c^4*d^6*e^6 + 410*
b^4*c^3*d^5*e^7 - 161*b^5*c^2*d^4*e^8 + 34*b^6*c*d^3*e^9 - 3*b^7*d^2*e^10)*
x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.08, size = 1528, normalized size = 4.04

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] 1/12*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-105*(b*e-2*c*d)^(1/2)*c^3*e^4
*f*x^3+45*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*d*e^3*g*x^2*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))+12*(b*e-2*c*d)^(1/2)*b^3*e^4*g*x+15*(-c*e*x-b*e+c*
d)^(1/2)*c^3*d^4*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-90*(-c*
e*x-b*e+c*d)^(1/2)*b*c^2*d^2*e^2*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c
*d)^(1/2))+6*(b*e-2*c*d)^(1/2)*b^3*e^4*f+61*(b*e-2*c*d)^(1/2)*c^3*d^4*g+120
*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c*d*e^3*g*(-c*e*x-b
*e+c*d)^(1/2)-210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^2*
d*e^3*f*(-c*e*x-b*e+c*d)^(1/2)+65*(b*e-2*c*d)^(1/2)*b^2*c*d^2*e^2*g-57*(b*e
-2*c*d)^(1/2)*b^2*c*d*e^3*f-132*(b*e-2*c*d)^(1/2)*b*c^2*d^3*e*g+16*(b*e-2*c
*d)^(1/2)*b*c^2*d^2*e^2*f+6*(b*e-2*c*d)^(1/2)*b^3*d*e^3*g+43*(b*e-2*c*d)^(1
/2)*c^3*d^3*e*f+60*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b^2
*c*e^4*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*
d)^(1/2))*x^2*b*c^2*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+60*arctan((-c*e*x-b*e+c*d)
^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c*d^2*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan
((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^2*d^2*e^2*f*(-c*e*x-b*e+c*d)
^(1/2)-105*(-c*e*x-b*e+c*d)^(1/2)*c^3*e^4*f*x^3*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))+60*(b*e-2*c*d)^(1/2)*b*c^2*e^4*g*x^3-15*(b*e-2*c*d)^(
1/2)*c^3*d*e^3*g*x^3+80*(b*e-2*c*d)^(1/2)*b^2*c*e^4*g*x^2-140*(b*e-2*c*d)^(
1/2)*b*c^2*e^4*f*x^2-5*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*g*x^2-35*(b*e-2*c*d)^(
1/2)*c^3*d*e^3*f*x^2-21*(b*e-2*c*d)^(1/2)*b^2*c*e^4*f*x+23*(b*e-2*c*d)^(1/2
)*c^3*d^3*e*g*x+161*(b*e-2*c*d)^(1/2)*c^3*d^2*e^2*f*x+105*(-c*e*x-b*e+c*d)^
(1/2)*c^3*d^3*e*f*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))+15*(-c*e
*x-b*e+c*d)^(1/2)*c^3*d^3*e*g*x*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(
1/2))+105*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^2*e^2*f*x*arctan((-c*e*x-b*e+c*d)^(1
/2)/(b*e-2*c*d)^(1/2))+109*(b*e-2*c*d)^(1/2)*b^2*c*d*e^3*g*x-120*(b*e-2*c*d
)^(1/2)*b*c^2*d^2*e^2*g*x-196*(b*e-2*c*d)^(1/2)*b*c^2*d*e^3*f*x-75*(-c*e*x-
b*e+c*d)^(1/2)*b*c^2*d^3*e*g*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2
))+60*(-c*e*x-b*e+c*d)^(1/2)*b*c^2*e^4*g*x^3*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))-15*(-c*e*x-b*e+c*d)^(1/2)*c^3*d*e^3*g*x^3*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-15*(-c*e*x-b*e+c*d)^(1/2)*c^3*d^2*e^2*g*
x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))-105*(-c*e*x-b*e+c*d)^(
1/2)*c^3*d*e^3*f*x^2*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2)))/(e*x
+d)^(5/2)/(c*e*x+b*e-c*d)^2/e^2/(b*e-2*c*d)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(1/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*sqrt(e*x
+ d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{\sqrt{d+e\,x}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(1/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(1/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2284 $\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=457

$$\frac{35c^2\sqrt{d+ex}\,(-2beg+cdg+3cef)}{8e^2(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{35c^2(-2beg+cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{11/2}}-\frac{}{24e^2\sqrt{d+ex}}$$

```
[Out] 1/3*(d*g-e*f)/e^2/(-b*e+2*c*d)/(e*x+d)^(3/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(3/2)-35/8*c^2*(-2*b*e*g+c*d*g+3*c*e*f)*arctanh((d*(-b*e+c*d)-b*e^2*x-c*
e^2*x^2)^(1/2)/(-b*e+2*c*d)^(1/2)/(e*x+d)^(1/2))/e^2/(-b*e+2*c*d)^(11/2)+1/
4*(2*b*e*g-c*d*g-3*c*e*f)/e^2/(-b*e+2*c*d)^2/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^
2)^(3/2)/(e*x+d)^(1/2)+7/12*c*(-2*b*e*g+c*d*g+3*c*e*f)*(e*x+d)^(1/2)/e^2/(-
b*e+2*c*d)^3/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)-35/24*c*(-2*b*e*g+c*d*g
+3*c*e*f)/e^2/(-b*e+2*c*d)^4/(e*x+d)^(1/2)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)
^(1/2)+35/8*c^2*(-2*b*e*g+c*d*g+3*c*e*f)*(e*x+d)^(1/2)/e^2/(-b*e+2*c*d)^5/(
d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.75, antiderivative size = 457, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 46, $\frac{\text{number of rules}}{\text{integrand size}} = 0.109$, Rules used = {792, 672, 666, 660, 208}

$$\frac{35c^2\sqrt{d+ex}\,(-2beg+cdg+3cef)}{8e^2(2cd-be)^5\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{35c^2(-2beg+cdg+3cef)\tanh^{-1}\left(\frac{\sqrt{d(cd-be)-be^2x-ce^2x^2}}{\sqrt{d+ex}\,\sqrt{2cd-be}}\right)}{8e^2(2cd-be)^{11/2}}-\frac{}{24e^2\sqrt{d+ex}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2))
,x]
```

```
[Out] -(e*f - d*g)/(3*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*(d*(c*d - b*e) - b*e^2*x
 - c*e^2*x^2)^(3/2)) - (3*c*e*f + c*d*g - 2*b*e*g)/(4*e^2*(2*c*d - b*e)^2*Sq
rt[d + e*x]*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2)) + (7*c*(3*c*e*f +
c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(12*e^2*(2*c*d - b*e)^3*(d*(c*d - b*e) - b*
e^2*x - c*e^2*x^2)^(3/2)) - (35*c*(3*c*e*f + c*d*g - 2*b*e*g))/(24*e^2*(2*c
*d - b*e)^4*Sqrt[d + e*x]*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) + (35*
c^2*(3*c*e*f + c*d*g - 2*b*e*g)*Sqrt[d + e*x])/(8*e^2*(2*c*d - b*e)^5*Sqrt[
d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) - (35*c^2*(3*c*e*f + c*d*g - 2*b*e*g)
*ArcTanh[Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]/(Sqrt[2*c*d - b*e]*Sqrt[
d + e*x])])/(8*e^2*(2*c*d - b*e)^(11/2))
```

Rule 208

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(Rt[-(a/b), 2]*ArcTanh[x/
Rt[-(a/b), 2]])/a, x] /; FreeQ[{a, b}, x] && NegQ[a/b]
```

Rule 660

```
Int[1/(Sqrt[(d_.) + (e_.)*(x_)]*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x
_Symbol] :> Dist[2*e, Subst[Int[1/(2*c*d - b*e + e^2*x^2), x], x, Sqrt[a +
b*x + c*x^2]/Sqrt[d + e*x]], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4
*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0]
```

Rule 666

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((2*c*d - b*e)*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/(e*(p
+ 1)*(b^2 - 4*a*c)), x] - Dist[((2*c*d - b*e)*(m + 2*p + 2))/((p + 1)*(b^2
- 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ
[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0
] && LtQ[p, -1] && LtQ[0, m, 1] && IntegerQ[2*p]
```

Rule 672

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[(e*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1))/((m + p + 1)*(2*c
*d - b*e)), x] + Dist[(c*(m + 2*p + 2))/((m + p + 1)*(2*c*d - b*e)), Int[(d
 + e*x)^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
 && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, 0] && Ne
Q[m + p + 1, 0] && IntegerQ[2*p]
```

Rule 792

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d*g - e*f)*(d + e*x)^m*(a + b*x + c*x
^2)^(p + 1))/((2*c*d - b*e)*(m + p + 1)), x] + Dist[(m*(g*(c*d - b*e) + c*e
*f) + e*(p + 1)*(2*c*f - b*g))/(e*(2*c*d - b*e)*(m + p + 1)), Int[(d + e*x)
^(m + 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p},
x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && ((LtQ[m, -1]
&&  !IGtQ[m + p + 1, 0]) || (LtQ[m, 0] && LtQ[p, -1]) || EqQ[m + 2*p + 2, 0
]) && NeQ[m + p + 1, 0]
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^{3/2}\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} +$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

$$= -\frac{ef-dg}{3e^2(2cd-be)(d+ex)^{3/2}\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} -$$

Mathematica [C] time = 0.11, size = 128, normalized size = 0.28

$$\frac{\frac{3c^2(d+ex)^3(-2beg+cdg+3cef)\,{}_2F_1\left(-\frac{3}{2},3;-\frac{1}{2};\frac{-cd+be+cex}{be-2cd}\right)}{(2cd-be)^3}+3dg-3ef}{9e^2(d+ex)^{3/2}(2cd-be)((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^(3/2)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^
(5/2)),x]
```

```
[Out] (-3*e*f + 3*d*g + (3*c^2*(3*c*e*f + c*d*g - 2*b*e*g)*(d + e*x)^3*Hypergeome
tric2F1[-3/2, 3, -1/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)])/(2*c*d - b*e
)^3)/(9*e^2*(2*c*d - b*e)*(d + e*x)^(3/2)*((d + e*x)*(-(b*e) + c*(d - e*x))
)^(3/2))
```

fricas [B] time = 1.84, size = 4084, normalized size = 8.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="fricas")
```

```
[Out] [1/48*(105*((3*c^5*e^7*f + (c^5*d*e^6 - 2*b*c^4*e^7)*g)*x^6 + 2*(3*(c^5*d*e
^6 + b*c^4*e^7)*f + (c^5*d^2*e^5 - b*c^4*d*e^6 - 2*b^2*c^3*e^7)*g)*x^5 - (3
*(c^5*d^2*e^5 - 6*b*c^4*d*e^6 - b^2*c^3*e^7)*f + (c^5*d^3*e^4 - 8*b*c^4*d^2
*e^5 + 11*b^2*c^3*d*e^6 + 2*b^3*c^2*e^7)*g)*x^4 - 4*(3*(c^5*d^3*e^4 - b*c^4
*d^2*e^5 - b^2*c^3*d*e^6)*f + (c^5*d^4*e^3 - 3*b*c^4*d^3*e^4 + b^2*c^3*d^2*
e^5 + 2*b^3*c^2*d*e^6)*g)*x^3 - (3*(c^5*d^4*e^3 + 4*b*c^4*d^3*e^4 - 6*b^2*c
^3*d^2*e^5)*f + (c^5*d^5*e^2 + 2*b*c^4*d^4*e^3 - 14*b^2*c^3*d^3*e^4 + 12*b^
3*c^2*d^2*e^5)*g)*x^2 + 3*(c^5*d^6*e - 2*b*c^4*d^5*e^2 + b^2*c^3*d^4*e^3)*f
 + (c^5*d^7 - 4*b*c^4*d^6*e + 5*b^2*c^3*d^5*e^2 - 2*b^3*c^2*d^4*e^3)*g + 2*
(3*(c^5*d^5*e^2 - 3*b*c^4*d^4*e^3 + 2*b^2*c^3*d^3*e^4)*f + (c^5*d^6*e - 5*b
*c^4*d^5*e^2 + 8*b^2*c^3*d^4*e^3 - 4*b^3*c^2*d^3*e^4)*g)*x)*sqrt(2*c*d - b*
e)*log(-(c*e^2*x^2 - 3*c*d^2 + 2*b*d*e - 2*(c*d*e - b*e^2)*x + 2*sqrt(-c*e^
2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(2*c*d - b*e)*sqrt(e*x + d))/(e^2*x^2
+ 2*d*e*x + d^2)) - 2*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(105*(3*(2
*c^5*d*e^5 - b*c^4*e^6)*f + (2*c^5*d^2*e^4 - 5*b*c^4*d*e^5 + 2*b^2*c^3*e^6)
*g)*x^4 + 140*(3*(2*c^5*d^2*e^4 + b*c^4*d*e^5 - b^2*c^3*e^6)*f + (2*c^5*d^3
*e^3 - 3*b*c^4*d^2*e^4 - 3*b^2*c^3*d*e^5 + 2*b^3*c^2*e^6)*g)*x^3 - 21*(3*(1
2*c^5*d^3*e^3 - 38*b*c^4*d^2*e^4 + 14*b^2*c^3*d*e^5 + b^3*c^2*e^6)*f + (12*
c^5*d^4*e^2 - 62*b*c^4*d^3*e^3 + 90*b^2*c^3*d^2*e^4 - 27*b^3*c^2*d*e^5 - 2*
b^4*c*e^6)*g)*x^2 - (2*c^5*d^5*e + 607*b*c^4*d^4*e^2 - 1030*b^2*c^3*d^3*e^3
 + 527*b^3*c^2*d^2*e^4 - 98*b^4*c*d*e^5 + 8*b^5*e^6)*f - (342*c^5*d^6 - 823
*b*c^4*d^5*e + 532*b^2*c^3*d^4*e^2 + 9*b^3*c^2*d^3*e^3 - 64*b^4*c*d^2*e^4 +
 4*b^5*d*e^5)*g - 6*(3*(68*c^5*d^4*e^2 - 94*b*c^4*d^3*e^3 + 4*b^2*c^3*d^2*e
^4 + 15*b^3*c^2*d*e^5 - b^4*c*e^6)*f + (68*c^5*d^5*e - 230*b*c^4*d^4*e^2 +
192*b^2*c^3*d^3*e^3 + 7*b^3*c^2*d^2*e^4 - 31*b^4*c*d*e^5 + 2*b^5*e^6)*g)*x)
*sqrt(e*x + d))/(64*c^8*d^12*e^2 - 320*b*c^7*d^11*e^3 + 688*b^2*c^6*d^10*e^
4 - 832*b^3*c^5*d^9*e^5 + 620*b^4*c^4*d^8*e^6 - 292*b^5*c^3*d^7*e^7 + 85*b^
6*c^2*d^6*e^8 - 14*b^7*c*d^5*e^9 + b^8*d^4*e^10 + (64*c^8*d^6*e^8 - 192*b*c
^7*d^5*e^9 + 240*b^2*c^6*d^4*e^10 - 160*b^3*c^5*d^3*e^11 + 60*b^4*c^4*d^2*e
^12 - 12*b^5*c^3*d*e^13 + b^6*c^2*e^14)*x^6 + 2*(64*c^8*d^7*e^7 - 128*b*c^7
*d^6*e^8 + 48*b^2*c^6*d^5*e^9 + 80*b^3*c^5*d^4*e^10 - 100*b^4*c^4*d^3*e^11
+ 48*b^5*c^3*d^2*e^12 - 11*b^6*c^2*d*e^13 + b^7*c*e^14)*x^5 - (64*c^8*d^8*e
^6 - 576*b*c^7*d^7*e^7 + 1328*b^2*c^6*d^6*e^8 - 1408*b^3*c^5*d^5*e^9 + 780*
b^4*c^4*d^4*e^10 - 212*b^5*c^3*d^3*e^11 + 13*b^6*c^2*d^2*e^12 + 6*b^7*c*d*e
^13 - b^8*e^14)*x^4 - 4*(64*c^8*d^9*e^5 - 256*b*c^7*d^8*e^6 + 368*b^2*c^6*d
^7*e^7 - 208*b^3*c^5*d^6*e^8 - 20*b^4*c^4*d^5*e^9 + 88*b^5*c^3*d^4*e^10 - 4
7*b^6*c^2*d^3*e^11 + 11*b^7*c*d^2*e^12 - b^8*d*e^13)*x^3 - (64*c^8*d^10*e^4
 + 64*b*c^7*d^9*e^5 - 912*b^2*c^6*d^8*e^6 + 1952*b^3*c^5*d^7*e^7 - 2020*b^4
*c^4*d^6*e^8 + 1188*b^5*c^3*d^5*e^9 - 407*b^6*c^2*d^4*e^10 + 76*b^7*c*d^3*e
^11 - 6*b^8*d^2*e^12)*x^2 + 2*(64*c^8*d^11*e^3 - 384*b*c^7*d^10*e^4 + 944*b
^2*c^6*d^9*e^5 - 1264*b^3*c^5*d^8*e^6 + 1020*b^4*c^4*d^7*e^7 - 512*b^5*c^3*
d^6*e^8 + 157*b^6*c^2*d^5*e^9 - 27*b^7*c*d^4*e^10 + 2*b^8*d^3*e^11)*x), -1/
24*(105*((3*c^5*e^7*f + (c^5*d*e^6 - 2*b*c^4*e^7)*g)*x^6 + 2*(3*(c^5*d*e^6
 + b*c^4*e^7)*f + (c^5*d^2*e^5 - b*c^4*d*e^6 - 2*b^2*c^3*e^7)*g)*x^5 - (3*(c
^5*d^2*e^5 - 6*b*c^4*d*e^6 - b^2*c^3*e^7)*f + (c^5*d^3*e^4 - 8*b*c^4*d^2*e^
5 + 11*b^2*c^3*d*e^6 + 2*b^3*c^2*e^7)*g)*x^4 - 4*(3*(c^5*d^3*e^4 - b*c^4*d^
2*e^5 - b^2*c^3*d*e^6)*f + (c^5*d^4*e^3 - 3*b*c^4*d^3*e^4 + b^2*c^3*d^2*e^5
 + 2*b^3*c^2*d*e^6)*g)*x^3 - (3*(c^5*d^4*e^3 + 4*b*c^4*d^3*e^4 - 6*b^2*c^3*
d^2*e^5)*f + (c^5*d^5*e^2 + 2*b*c^4*d^4*e^3 - 14*b^2*c^3*d^3*e^4 + 12*b^3*c
^2*d^2*e^5)*g)*x^2 + 3*(c^5*d^6*e - 2*b*c^4*d^5*e^2 + b^2*c^3*d^4*e^3)*f +
(c^5*d^7 - 4*b*c^4*d^6*e + 5*b^2*c^3*d^5*e^2 - 2*b^3*c^2*d^4*e^3)*g + 2*(3*
(c^5*d^5*e^2 - 3*b*c^4*d^4*e^3 + 2*b^2*c^3*d^3*e^4)*f + (c^5*d^6*e - 5*b*c^
4*d^5*e^2 + 8*b^2*c^3*d^4*e^3 - 4*b^3*c^2*d^3*e^4)*g)*x)*sqrt(-2*c*d + b*e)
*arctan(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*sqrt(-2*c*d + b*e)*sqrt(
e*x + d)/(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)) + sqrt(-c*e^2*x^2 - b*e^2*x
 + c*d^2 - b*d*e)*(105*(3*(2*c^5*d*e^5 - b*c^4*e^6)*f + (2*c^5*d^2*e^4 - 5*
b*c^4*d*e^5 + 2*b^2*c^3*e^6)*g)*x^4 + 140*(3*(2*c^5*d^2*e^4 + b*c^4*d*e^5 -
 b^2*c^3*e^6)*f + (2*c^5*d^3*e^3 - 3*b*c^4*d^2*e^4 - 3*b^2*c^3*d*e^5 + 2*b^
3*c^2*e^6)*g)*x^3 - 21*(3*(12*c^5*d^3*e^3 - 38*b*c^4*d^2*e^4 + 14*b^2*c^3*d
*e^5 + b^3*c^2*e^6)*f + (12*c^5*d^4*e^2 - 62*b*c^4*d^3*e^3 + 90*b^2*c^3*d^2
*e^4 - 27*b^3*c^2*d*e^5 - 2*b^4*c*e^6)*g)*x^2 - (2*c^5*d^5*e + 607*b*c^4*d^
4*e^2 - 1030*b^2*c^3*d^3*e^3 + 527*b^3*c^2*d^2*e^4 - 98*b^4*c*d*e^5 + 8*b^5
*e^6)*f - (342*c^5*d^6 - 823*b*c^4*d^5*e + 532*b^2*c^3*d^4*e^2 + 9*b^3*c^2*
d^3*e^3 - 64*b^4*c*d^2*e^4 + 4*b^5*d*e^5)*g - 6*(3*(68*c^5*d^4*e^2 - 94*b*c
^4*d^3*e^3 + 4*b^2*c^3*d^2*e^4 + 15*b^3*c^2*d*e^5 - b^4*c*e^6)*f + (68*c^5*
d^5*e - 230*b*c^4*d^4*e^2 + 192*b^2*c^3*d^3*e^3 + 7*b^3*c^2*d^2*e^4 - 31*b^
4*c*d*e^5 + 2*b^5*e^6)*g)*x)*sqrt(e*x + d))/(64*c^8*d^12*e^2 - 320*b*c^7*d^
11*e^3 + 688*b^2*c^6*d^10*e^4 - 832*b^3*c^5*d^9*e^5 + 620*b^4*c^4*d^8*e^6 -
 292*b^5*c^3*d^7*e^7 + 85*b^6*c^2*d^6*e^8 - 14*b^7*c*d^5*e^9 + b^8*d^4*e^10
 + (64*c^8*d^6*e^8 - 192*b*c^7*d^5*e^9 + 240*b^2*c^6*d^4*e^10 - 160*b^3*c^5
*d^3*e^11 + 60*b^4*c^4*d^2*e^12 - 12*b^5*c^3*d*e^13 + b^6*c^2*e^14)*x^6 + 2
*(64*c^8*d^7*e^7 - 128*b*c^7*d^6*e^8 + 48*b^2*c^6*d^5*e^9 + 80*b^3*c^5*d^4*
e^10 - 100*b^4*c^4*d^3*e^11 + 48*b^5*c^3*d^2*e^12 - 11*b^6*c^2*d*e^13 + b^7
*c*e^14)*x^5 - (64*c^8*d^8*e^6 - 576*b*c^7*d^7*e^7 + 1328*b^2*c^6*d^6*e^8 -
 1408*b^3*c^5*d^5*e^9 + 780*b^4*c^4*d^4*e^10 - 212*b^5*c^3*d^3*e^11 + 13*b^
6*c^2*d^2*e^12 + 6*b^7*c*d*e^13 - b^8*e^14)*x^4 - 4*(64*c^8*d^9*e^5 - 256*b
*c^7*d^8*e^6 + 368*b^2*c^6*d^7*e^7 - 208*b^3*c^5*d^6*e^8 - 20*b^4*c^4*d^5*e
^9 + 88*b^5*c^3*d^4*e^10 - 47*b^6*c^2*d^3*e^11 + 11*b^7*c*d^2*e^12 - b^8*d*
e^13)*x^3 - (64*c^8*d^10*e^4 + 64*b*c^7*d^9*e^5 - 912*b^2*c^6*d^8*e^6 + 195
2*b^3*c^5*d^7*e^7 - 2020*b^4*c^4*d^6*e^8 + 1188*b^5*c^3*d^5*e^9 - 407*b^6*c
^2*d^4*e^10 + 76*b^7*c*d^3*e^11 - 6*b^8*d^2*e^12)*x^2 + 2*(64*c^8*d^11*e^3
- 384*b*c^7*d^10*e^4 + 944*b^2*c^6*d^9*e^5 - 1264*b^3*c^5*d^8*e^6 + 1020*b^
4*c^4*d^7*e^7 - 512*b^5*c^3*d^6*e^8 + 157*b^6*c^2*d^5*e^9 - 27*b^7*c*d^4*e^
10 + 2*b^8*d^3*e^11)*x)]
```

giac **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="giac")
```

```
[Out] Timed out
```

maple [**B**]   time = 0.11, size = 2011, normalized size = 4.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] -1/24*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2)*(-945*arctan((-c*e*x-b*e+c*d)^
(1/2)/(b*e-2*c*d)^(1/2))*x^2*b*c^3*d*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+630*arcta
n((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b^2*c^2*d^2*e^3*g*(-c*e*x-b*e
+c*d)^(1/2)-735*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*b*c^3*d^
3*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-945*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d
)^(1/2))*x*b*c^3*d^2*e^3*f*(-c*e*x-b*e+c*d)^(1/2)-315*(b*e-2*c*d)^(1/2)*x^4
*c^4*e^5*f-8*(b*e-2*c*d)^(1/2)*b^4*e^5*f+171*(b*e-2*c*d)^(1/2)*c^4*d^5*g+31
5*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^3*d*e^4*g*(-c*e*
x-b*e+c*d)^(1/2)+630*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^2*b
^2*c^2*d*e^4*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*
e-2*c*d)^(1/2))*x^2*b*c^3*d^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)-4*(b*e-2*c*d)^(1
/2)*b^4*d*e^4*g+(b*e-2*c*d)^(1/2)*c^4*d^4*e*f-12*(b*e-2*c*d)^(1/2)*x*b^4*e^
5*g+105*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*c^4*d^5*g*(-c*e*x-
b*e+c*d)^(1/2)+282*(b*e-2*c*d)^(1/2)*x*b^2*c^2*d^2*e^3*g-234*(b*e-2*c*d)^(1
/2)*x*b^2*c^2*d*e^4*f-588*(b*e-2*c*d)^(1/2)*x*b*c^3*d^3*e^2*g-540*(b*e-2*c*
d)^(1/2)*x*b*c^3*d^2*e^3*f+210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1
/2))*x^4*b*c^3*e^5*g*(-c*e*x-b*e+c*d)^(1/2)-105*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*x^4*c^4*d*e^4*g*(-c*e*x-b*e+c*d)^(1/2)+210*arctan((-c
*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b^2*c^2*e^5*g*(-c*e*x-b*e+c*d)^(
1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^3*b*c^3*e^5*f*(
-c*e*x-b*e+c*d)^(1/2)-210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*
x^3*c^4*d^2*e^3*g*(-c*e*x-b*e+c*d)^(1/2)-630*arctan((-c*e*x-b*e+c*d)^(1/2)/
(b*e-2*c*d)^(1/2))*x^3*c^4*d*e^4*f*(-c*e*x-b*e+c*d)^(1/2)+210*arctan((-c*e*
x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^4*e*g*(-c*e*x-b*e+c*d)^(1/2)+63
0*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x*c^4*d^3*e^2*f*(-c*e*x-
b*e+c*d)^(1/2)+210*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*b^2*c^2
*d^3*e^2*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d)^(1/2)/(b*e-2*
c*d)^(1/2))*b*c^3*d^4*e*g*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x-b*e+c*d
)^(1/2)/(b*e-2*c*d)^(1/2))*b*c^3*d^3*e^2*f*(-c*e*x-b*e+c*d)^(1/2)+140*(b*e-
2*c*d)^(1/2)*x^3*b*c^3*d*e^4*g+651*(b*e-2*c*d)^(1/2)*x^2*b^2*c^2*d*e^4*g-58
8*(b*e-2*c*d)^(1/2)*x^2*b*c^3*d^2*e^3*g-1008*(b*e-2*c*d)^(1/2)*x^2*b*c^3*d*
e^4*f+162*(b*e-2*c*d)^(1/2)*x*b^3*c*d*e^4*g+204*(b*e-2*c*d)^(1/2)*x*c^4*d^4
*e*g+612*(b*e-2*c*d)^(1/2)*x*c^4*d^3*e^2*f+210*(b*e-2*c*d)^(1/2)*x^4*b*c^3*
e^5*g-105*(b*e-2*c*d)^(1/2)*x^4*c^4*d*e^4*g+315*arctan((-c*e*x-b*e+c*d)^(1/
2)/(b*e-2*c*d)^(1/2))*c^4*d^4*e*f*(-c*e*x-b*e+c*d)^(1/2)-315*arctan((-c*e*x
-b*e+c*d)^(1/2)/(b*e-2*c*d)^(1/2))*x^4*c^4*e^5*f*(-c*e*x-b*e+c*d)^(1/2)-420
*(b*e-2*c*d)^(1/2)*x^3*c^4*d*e^4*f+42*(b*e-2*c*d)^(1/2)*x^2*b^3*c*e^5*g-63*
(b*e-2*c*d)^(1/2)*x^2*b^2*c^2*e^5*f+126*(b*e-2*c*d)^(1/2)*x^2*c^4*d^3*e^2*g
+378*(b*e-2*c*d)^(1/2)*x^2*c^4*d^2*e^3*f+18*(b*e-2*c*d)^(1/2)*x*b^3*c*e^5*f
-140*(b*e-2*c*d)^(1/2)*x^3*c^4*d^2*e^3*g+280*(b*e-2*c*d)^(1/2)*x^3*b^2*c^2*
e^5*g-420*(b*e-2*c*d)^(1/2)*x^3*b*c^3*e^5*f+56*(b*e-2*c*d)^(1/2)*b^3*c*d^2*
e^3*g+82*(b*e-2*c*d)^(1/2)*b^3*c*d*e^4*f+103*(b*e-2*c*d)^(1/2)*b^2*c^2*d^3*
e^2*g-363*(b*e-2*c*d)^(1/2)*b^2*c^2*d^2*e^3*f-326*(b*e-2*c*d)^(1/2)*b*c^3*d
^4*e*g+304*(b*e-2*c*d)^(1/2)*b*c^3*d^3*e^2*f)/(e*x+d)^(7/2)/(c*e*x+b*e-c*d)
^2/e^2/(b*e-2*c*d)^(11/2)
```

maxima [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{gx+f}{\left(-ce^2x^2-be^2x+cd^2-bde\right)^{\frac{5}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^(3/2)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, a
lgorithm="maxima")
```

```
[Out] integrate((g*x + f)/((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(e*x + d)
^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{f+g\,x}{{\left(d+e\,x\right)}^{3/2}\,{\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
,x)
```

```
[Out] int((f + g*x)/((d + e*x)^(3/2)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2))
, x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**(3/2)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2
),x)
```

```
[Out] Timed out
```

3.2285 $\int (d+ex)^m(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx$

Optimal. Leaf size=221

$$\frac{(2cd-be)^2(d+ex)^m(-be+cd-cex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+7)-2c(dgm+ef(m+}{7c^4e^2(m+7)}$$

```
[Out] -g*(e*x+d)^m*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(7/2)/c/e^2/(7+m)+1/7*(-b*e+2
*c*d)^2*(b*e*g*(7+2*m)-2*c*(d*g*m+e*f*(7+m)))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*
c*d))^(-1/2-m)*(-c*e*x-b*e+c*d)^3*hypergeom([7/2, -5/2-m],[9/2],(-c*e*x-b*e
+c*d)/(-b*e+2*c*d))*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^4/e^2/(7+m)
```

Rubi [A] time = 0.35, antiderivative size = 221, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {794, 679, 677, 70, 69}

$$\frac{(2cd-be)^2(d+ex)^m(-be+cd-cex)^3\sqrt{d(cd-be)-be^2x-ce^2x^2}\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+7)-2c(dgm+ef(m+}{7c^4e^2(m+7)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] -((g*(d + e*x)^m*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(7/2))/(c*e^2*(7 + m
))) + ((2*c*d - b*e)^2*(b*e*g*(7 + 2*m) - 2*c*(d*g*m + e*f*(7 + m)))*(d + e
*x)^m*((c*(d + e*x))/(2*c*d - b*e))^(-1/2 - m)*(c*d - b*e - c*e*x)^3*Sqrt[d
*(c*d - b*e) - b*e^2*x - c*e^2*x^2]*Hypergeometric2F1[7/2, -5/2 - m, 9/2, (
c*d - b*e - c*e*x)/(2*c*d - b*e)])/(7*c^4*e^2*(7 + m))
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^m(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}\,dx = -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{ce^2(7+m)} - \frac{(beg(7+}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{ce^2(7+m)} - \frac{\Big((beg(7+}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{ce^2(7+m)} - \frac{\Big((beg(7+}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{ce^2(7+m)} - \frac{\Bigg(\Big(-cde-}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{7/2}}{ce^2(7+m)} + \frac{(2cd-be}{}$$

Mathematica [A] time = 0.66, size = 161, normalized size = 0.73

$$\frac{(d+ex)^{m-3}((d+ex)(c(d-ex)-be))^{7/2}\left(-(be-2cd)^2\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(2c(dgm+ef(m+7))-beg(2m+7))\,{}_2F_1\Big(\right.}{7c^4e^2(m+7)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^m*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2)
,x]
```

```
[Out] ((d + e*x)^(-3 + m)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(7/2)*(-7*c^3*g*(d +
 e*x)^3 - (-2*c*d + b*e)^2*(-(b*e*g*(7 + 2*m)) + 2*c*(d*g*m + e*f*(7 + m)))
*((c*(d + e*x))/(2*c*d - b*e))^(-1/2 - m)*Hypergeometric2F1[7/2, -5/2 - m,
9/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]))/(7*c^4*e^2*(7 + m))
```

fricas [F] time = 1.33, size = 0, normalized size = 0.00

$$\text{integral}\Big(\Big(c^2e^4gx^5+\left(c^2e^4f+2\,bce^4g\right)x^4+\left(2\,bce^4f-\left(2\,c^2d^2e^2-2\,bcde^3-b^2e^4\right)g\right)x^3-\Big(\Big(2\,c^2d^2e^2-2\,bcde^3-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] integral((c^2*e^4*g*x^5 + (c^2*e^4*f + 2*b*c*e^4*g)*x^4 + (2*b*c*e^4*f - (2
*c^2*d^2*e^2 - 2*b*c*d*e^3 - b^2*e^4)*g)*x^3 - ((2*c^2*d^2*e^2 - 2*b*c*d*e^
3 - b^2*e^4)*f + 2*(b*c*d^2*e^2 - b^2*d*e^3)*g)*x^2 + (c^2*d^4 - 2*b*c*d^3*
e + b^2*d^2*e^2)*f - (2*(b*c*d^2*e^2 - b^2*d*e^3)*f - (c^2*d^4 - 2*b*c*d^3*
e + b^2*d^2*e^2)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*x + d)
^m, x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)(ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)*(e*x + d)^
m, x)
```

maple [F] time = 1.49, size = 0, normalized size = 0.00

$$\int \left(gx + f\right)\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{5}{2}} (ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}\left(gx + f\right)(ex + d)^m \, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2)*(g*x + f)*(e*x + d)^
m, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f + g\,x\right)\,{\left(d + e\,x\right)}^m\,{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2} \,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2286 $\int (d+ex)^m(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx$

Optimal. Leaf size=219

$$\frac{(2cd-be)(d+ex)^m(-be+cd-cex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+5)-2c(dgm+ef(m}{5c^3e^2(m+5)}$$

```
[Out] -g*(e*x+d)^m*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(5/2)/c/e^2/(5+m)+1/5*(-b*e+2
*c*d)*(b*e*g*(5+2*m)-2*c*(d*g*m+e*f*(5+m)))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*c*
d))^(-1/2-m)*(-c*e*x-b*e+c*d)^2*hypergeom([5/2, -3/2-m],[7/2],(-c*e*x-b*e+c
*d)/(-b*e+2*c*d))*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^3/e^2/(5+m)
```

Rubi [A] time = 0.34, antiderivative size = 219, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {794, 679, 677, 70, 69}

$$\frac{(2cd-be)(d+ex)^m(-be+cd-cex)^2\sqrt{d(cd-be)-be^2x-ce^2x^2}\,\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+5)-2c(dgm+ef(m}{5c^3e^2(m+5)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] -((g*(d + e*x)^m*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(5/2))/(c*e^2*(5 + m
))) + ((2*c*d - b*e)*(b*e*g*(5 + 2*m) - 2*c*(d*g*m + e*f*(5 + m)))*(d + e*x
)^m*((c*(d + e*x))/(2*c*d - b*e))^(-1/2 - m)*(c*d - b*e - c*e*x)^2*Sqrt[d*(
c*d - b*e) - b*e^2*x - c*e^2*x^2]*Hypergeometric2F1[5/2, -3/2 - m, 7/2, (c*
d - b*e - c*e*x)/(2*c*d - b*e)])/(5*c^3*e^2*(5 + m))
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^m(f+gx)\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}\,dx = -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{ce^2(5+m)} - \frac{(beg(5+2m}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{ce^2(5+m)} - \frac{\left((beg(5+2\right.}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{ce^2(5+m)} - \frac{\left((beg(5+2\right.}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{ce^2(5+m)} - -\frac{\left(\left(-cde-\frac{e}{}\right.\right.}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{5/2}}{ce^2(5+m)} + \frac{(2cd-be)(b}{}$$

Mathematica [A] time = 0.57, size = 170, normalized size = 0.78

$$\frac{(d+ex)^m(be-cd+cex)^2\sqrt{(d+ex)(c(d-ex)-be)}\left((be-2cd)\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(2c(dgm+ef(m+5))-beg(2m+5)\right.}{5c^3e^2(m+5)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^m*(f + g*x)*(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2)
,x]
```

```
[Out] ((d + e*x)^m*(-(c*d) + b*e + c*e*x)^2*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))
]*(-5*c^2*g*(d + e*x)^2 + (-2*c*d + b*e)*(-(b*e*g*(5 + 2*m)) + 2*c*(d*g*m +
 e*f*(5 + m)))*((c*(d + e*x))/(2*c*d - b*e))^(-1/2 - m)*Hypergeometric2F1[5
/2, -3/2 - m, 7/2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]))/(5*c^3*e^2*(5 +
 m))
```

fricas [F] time = 1.19, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(ce^2gx^3+\left(ce^2f+be^2g\right)x^2-\left(cd^2-bde\right)f+\left(be^2f-\left(cd^2-bde\right)g\right)x\right)\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,(ex+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] integral(-(c*e^2*g*x^3 + (c*e^2*f + b*e^2*g)*x^2 - (c*d^2 - b*d*e)*f + (b*e
^2*f - (c*d^2 - b*d*e)*g)*x)*sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(e*
x + d)^m, x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)*(e*x + d)^
m, x)
```

maple **[F]** time = 2.21, size = 0, normalized size = 0.00

$$\int \left(gx + f\right)\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{3}{2}}(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}\left(gx + f\right)(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2)*(g*x + f)*(e*x + d)^
m, x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f + g\,x\right)\,(d + e\,x)^m\,\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \left(-\left(d + ex\right)\left(be - cd + cex\right)\right)^{\frac{3}{2}}\left(d + ex\right)^m\left(f + gx\right)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
```

```
[Out] Integral((-(d + e*x)*(b*e - c*d + c*e*x))**(3/2)*(d + e*x)**m*(f + g*x), x)
```

3.2287 $\int (d+ex)^m (f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx$

Optimal. Leaf size=208

$$\frac{(d+ex)^m(-be+cd-cex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+3)-2c(dgm+ef(m+3)))\,{}_2F_1\left(\frac{3}{2},\right.}{3c^2e^2(m+3)}$$

```
[Out] -g*(e*x+d)^m*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)/c/e^2/(3+m)+1/3*(b*e*g*
(3+2*m)-2*c*(d*g*m+e*f*(3+m)))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*c*d))^(-1/2-m)*
(-c*e*x-b*e+c*d)*hypergeom([3/2, -1/2-m],[5/2],(-c*e*x-b*e+c*d)/(-b*e+2*c*d
))*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c^2/e^2/(3+m)
```

Rubi **[A]** time = 0.31, antiderivative size = 208, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.114, Rules used = {794, 679, 677, 70, 69}

$$\frac{(d+ex)^m(-be+cd-cex)\sqrt{d(cd-be)-be^2x-ce^2x^2}\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+3)-2c(dgm+ef(m+3)))\,{}_2F_1\left(\frac{3}{2},\right.}{3c^2e^2(m+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] -((g*(d + e*x)^m*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))/(c*e^2*(3 + m
))) + ((b*e*g*(3 + 2*m) - 2*c*(d*g*m + e*f*(3 + m)))*(d + e*x)^m*((c*(d + e
*x))/(2*c*d - b*e))^(-1/2 - m)*(c*d - b*e - c*e*x)*Sqrt[d*(c*d - b*e) - b*e
^2*x - c*e^2*x^2]*Hypergeometric2F1[3/2, -1/2 - m, 5/2, (c*d - b*e - c*e*x)
/(2*c*d - b*e)])/(3*c^2*e^2*(3 + m))
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int (d+ex)^m(f+gx)\sqrt{cd^2-bde-be^2x-ce^2x^2}\,dx = -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{ce^2(3+m)} - \frac{(beg(3+2m}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{ce^2(3+m)} - \frac{\Big((beg(3+2}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{ce^2(3+m)} - \frac{\Big((beg(3+2}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{ce^2(3+m)} - \frac{\Bigg((beg(3+2}{}$$

$$= -\frac{g(d+ex)^m\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}{ce^2(3+m)} + \frac{(beg(3+2m}{}$$

Mathematica [A] time = 0.31, size = 149, normalized size = 0.72

$$\frac{(d+ex)^{m-1}((d+ex)(c(d-ex)-be))^{3/2}\left(-e\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(2c(dgm+ef(m+3))-beg(2m+3))\,{}_2F_1\left(\frac{3}{2},-m-\frac{1}{2}\right.\right.}{3c^2e^3(m+3)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^m*(f + g*x)*Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x
]
```

```
[Out] ((d + e*x)^(-1 + m)*((d + e*x)*(-(b*e) + c*(d - e*x)))^(3/2)*(-3*c*e*g*(d +
 e*x) - e*(-(b*e*g*(3 + 2*m)) + 2*c*(d*g*m + e*f*(3 + m)))*((c*(d + e*x))/(
2*c*d - b*e))^(-1/2 - m)*Hypergeometric2F1[3/2, -1/2 - m, 5/2, (-(c*d) + b*
e + c*e*x)/(-2*c*d + b*e)]))/(3*c^2*e^3*(3 + m))
```

fricas [F] time = 1.42, size = 0, normalized size = 0.00

$$\text{integral}\left(\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\left(gx+f\right)(ex+d)^m, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] integral(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m,
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m,
 x)
```

maple [F] time = 1.37, size = 0, normalized size = 0.00

$$\int \left(gx + f\right)\sqrt{-c\,e^2x^2 - b\,e^2x - bde + c\,d^2}\,\,(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)(ex + d)^m\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)*(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m,
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \left(f + g\,x\right)\,(d + e\,x)^m\,\sqrt{c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int((f + g*x)*(d + e*x)^m*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \sqrt{-\left(d + ex\right)\left(be - cd + cex\right)}\,\left(d + ex\right)^m\left(f + gx\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)*(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral(sqrt(-(d + e*x)*(b*e - c*d + c*e*x))*(d + e*x)**m*(f + g*x), x)
```

3.2288 $\int \frac{(d+ex)^m(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx$

Optimal. Leaf size=205

$$\frac{(d+ex)^m(-be+cd-cex)\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(2m+1)-2c(dgm+ef(m+1)))\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}-m;\frac{3}{2};\frac{cd-be-cex}{2cd-be}\right)}{c^2e^2(m+1)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-g(d+$$

```
[Out] (b*e*g*(1+2*m)-2*c*(d*g*m+e*f*(1+m)))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*c*d))^(1
/2-m)*(-c*e*x-b*e+c*d)*hypergeom([1/2, 1/2-m],[3/2],(-c*e*x-b*e+c*d)/(-b*e+
2*c*d))/c^2/e^2/(1+m)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-g*(e*x+d)^m*(d
*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)/c/e^2/(1+m)
```

Rubi [A] time = 0.31, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = $\{794, 679, 677, 70, 69\}$

$$\frac{(d+ex)^m(-be+cd-cex)\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(2m+1)-2c(dgm+ef(m+1)))\,{}_2F_1\left(\frac{1}{2},\frac{1}{2}-m;\frac{3}{2};\frac{cd-be-cex}{2cd-be}\right)}{c^2e^2(m+1)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-g(d+$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^m*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2],x]
```

```
[Out] -((g*(d + e*x)^m*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])/(c*e^2*(1 + m))
) + ((b*e*g*(1 + 2*m) - 2*c*(d*g*m + e*f*(1 + m)))*(d + e*x)^m*((c*(d + e*x
))/(2*c*d - b*e))^(1/2 - m)*(c*d - b*e - c*e*x)*Hypergeometric2F1[1/2, 1/2
- m, 3/2, (c*d - b*e - c*e*x)/(2*c*d - b*e)])/(c^2*e^2*(1 + m)*Sqrt[d*(c*d
- b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^m(f+gx)}{\sqrt{cd^2-bde-be^2x-ce^2x^2}}\,dx = -\frac{g(d+ex)^m\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2(1+m)} - \frac{(beg(1+2m)-2c(dgm+ef(1+m}{2ce(1+m}$$

$$= -\frac{g(d+ex)^m\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2(1+m)} - \frac{((beg(1+2m)-2c(dgm+ef(1+}{}$$

$$= -\frac{g(d+ex)^m\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2(1+m)} - \frac{((beg(1+2m)-2c(dgm+ef(1+}{2ce}$$

$$= -\frac{g(d+ex)^m\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2(1+m)} - \frac{((beg(1+2m)-2c(dgm+ef(1+}{}$$

$$= -\frac{g(d+ex)^m\sqrt{d(cd-be)-be^2x-ce^2x^2}}{ce^2(1+m)} + \frac{(beg(1+2m)-2c(dgm+ef(1+m}{c^2e}$$

Mathematica [A]   time = 0.30, size = 155, normalized size = 0.76

$$-\frac{2(d+ex)^m\sqrt{(d+ex)(c(d-ex)-be)}\left(\frac{e\left(\frac{c(d+ex)}{2cd-be}\right)^{-m-\frac{1}{2}}(beg(2m+1)-2c(dgm+ef(m+1)))\,{}_2F_1\left(\frac{1}{2},-m-\frac{1}{2};\frac{3}{2};\frac{-cd+be+cex}{be-2cd}\right)}{c}+e(ef-dg)\right)}{e^3(2m+1)(be-2cd)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^m*(f + g*x))/Sqrt[c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2]
,x]
```

```
[Out] (-2*(d + e*x)^m*Sqrt[(d + e*x)*(-(b*e) + c*(d - e*x))]*(e*(e*f - d*g) + (e*
(b*e*g*(1 + 2*m) - 2*c*(d*g*m + e*f*(1 + m)))*((c*(d + e*x))/(2*c*d - b*e))
^(-1/2 - m)*Hypergeometric2F1[1/2, -1/2 - m, 3/2, (-(c*d) + b*e + c*e*x)/(-
2*c*d + b*e)])/c))/(e^3*(-2*c*d + b*e)*(1 + 2*m))
```

fricas [F]   time = 1.53, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-ce^2x^2-be^2x+cd^2-bde}\,\left(gx+f\right)(ex+d)^m}{ce^2x^2+be^2x-cd^2+bde}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="fricas")
```

```
[Out] integral(-sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m/
(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)(ex+d)^m}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="giac")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e),
 x)
```

maple [F] time = 1.38, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)\left(ex+d\right)^m}{\sqrt{-c\,e^2x^2-b\,e^2x-bde+c\,d^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx+f\right)(ex+d)^m}{\sqrt{-ce^2x^2-be^2x+cd^2-bde}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(1/2),x, algor
ithm="maxima")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e),
 x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f+g\,x\right)\,{\left(d+e\,x\right)}^m}{\sqrt{c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^m\left(f+gx\right)}{\sqrt{-(d+ex)\,(be-cd+cex)}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(1/2),x)
```

```
[Out] Integral((d + e*x)**m*(f + g*x)/sqrt(-(d + e*x)*(b*e - c*d + c*e*x)), x)
```

3.2289 $\int \frac{(d+ex)^m(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=210

$$\frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(d+ex)^m\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(1-2m)-2c(ef(1-m)-dgm))\,{}_2F_1\left(-\frac{1}{2},\frac{3}{2}-\right.}{ce^2(1-m)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

```
[Out] g*(e*x+d)^m/c/e^2/(1-m)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)-(b*e*g*(1-2*
m)-2*c*(e*f*(1-m)-d*g*m))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*c*d))^(1/2-m)*hyperg
eom([-1/2, 3/2-m],[1/2],(-c*e*x-b*e+c*d)/(-b*e+2*c*d))/c/e^2/(-b*e+2*c*d)/(
1-m)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi [A] time = 0.33, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = {794, 679, 677, 70, 69}

$$\frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}}-\frac{(d+ex)^m\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(1-2m)-2c(ef(1-m)-dgm))\,{}_2F_1\left(-\frac{1}{2},\frac{3}{2}-\right.}{ce^2(1-m)(2cd-be)\sqrt{d(cd-be)-be^2x-ce^2x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^m*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/2),x]
```

```
[Out] (g*(d + e*x)^m)/(c*e^2*(1 - m)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2]) -
 ((b*e*g*(1 - 2*m) - 2*c*(e*f*(1 - m) - d*g*m))*(d + e*x)^m*((c*(d + e*x))/
(2*c*d - b*e))^(1/2 - m)*Hypergeometric2F1[-1/2, 3/2 - m, 1/2, (c*d - b*e -
 c*e*x)/(2*c*d - b*e)])/(c*e^2*(2*c*d - b*e)*(1 - m)*Sqrt[d*(c*d - b*e) - b
*e^2*x - c*e^2*x^2])
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^m(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{3/2}}\,dx = \frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(beg(1-2m)-2c(ef(1-m)-}{2ce(1}$$

$$= \frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\Big((beg(1-2m)-2c(ef(1-m)-}{}$$

$$= \frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{\Big((beg(1-2m)-2c(ef(1-m)-}{}$$

$$= \frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}} + \frac{\Bigg(d(beg(1-2m)-2c(ef(1-m)}{2\Big(}$$

$$= \frac{g(d+ex)^m}{ce^2(1-m)\sqrt{d(cd-be)-be^2x-ce^2x^2}} - \frac{(beg(1-2m)-2c(ef(1-m)-}{ce^2(2cd-b}$$

Mathematica [A] time = 0.33, size = 176, normalized size = 0.84

$$\frac{2(d+ex)^m\Bigg(e(2cd-be)(-beg+cdg+cef)-e(be-cd+cex)\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(1-2m)+2c(dgm+ef(m-1))}{ce^3(be-2cd)^2\sqrt{(d+ex)(c(d-ex)-be)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^m*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(3/
2),x]
```

```
[Out] (2*(d + e*x)^m*(e*(2*c*d - b*e)*(c*e*f + c*d*g - b*e*g) - e*(b*e*g*(1 - 2*m
) + 2*c*(e*f*(-1 + m) + d*g*m))*((c*(d + e*x))/(2*c*d - b*e))^(1/2 - m)*(-(
c*d) + b*e + c*e*x)*Hypergeometric2F1[1/2, 3/2 - m, 3/2, (-(c*d) + b*e + c*
e*x)/(-2*c*d + b*e)]))/(c*e^3*(-2*c*d + b*e)^2*Sqrt[(d + e*x)*(-(b*e) + c*(
d - e*x))])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}\left(gx + f\right)(ex + d)^m}{c^2e^4x^4 + 2\,bce^4x^3 + c^2d^4 - 2\,bcd^3e + b^2d^2e^2 - \left(2\,c^2d^2e^2 - 2\,bcde^3 - b^2e^4\right)x^2 - 2\left(bcd^2e^2 - b^2de^3\right)x}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="fricas")
```

```
[Out] integral(sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m/(
c^2*e^4*x^4 + 2*b*c*e^4*x^3 + c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 - (2*c^2*
d^2*e^2 - 2*b*c*d*e^3 - b^2*e^4)*x^2 - 2*(b*c*d^2*e^2 - b^2*d*e^3)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx + f\right)(ex + d)^m}{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="giac")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2
), x)
```

maple [F] time = 1.37, size = 0, normalized size = 0.00

$$\int \frac{\left(gx + f\right)\left(ex + d\right)^m}{\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{\left(gx + f\right)(ex + d)^m}{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(3/2),x, algor
ithm="maxima")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(3/2
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,\left(d + e\,x\right)^m}{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2),x)
[Out] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(d+ex)^m \left(f+gx\right)}{\left(-\left(d+ex\right)\left(be-cd+cex\right)\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(3/2),x)
[Out] Integral((d + e*x)**m*(f + g*x)/(-(d + e*x)*(b*e - c*d + c*e*x))**(3/2), x)
```

3.2290 $\int \frac{(d+ex)^m(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=224

$$\frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{(d+ex)^m\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(3-2m)-2c(ef(3-m)-dgm))\,{}_2F_1\left(-\frac{3}{2},\frac{5}{2}\right.}{3e^2(3-m)(2cd-be)^2(-be+cd-cex)\sqrt{d(cd-be)-be^2x-}}$$

```
[Out] g*(e*x+d)^m/c/e^2/(3-m)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(3/2)-1/3*(b*e*g*(
3-2*m)-2*c*(e*f*(3-m)-d*g*m))*(e*x+d)^m*(c*(e*x+d)/(-b*e+2*c*d))^(1/2-m)*hy
pergeom([-3/2, 5/2-m],[-1/2],(-c*e*x-b*e+c*d)/(-b*e+2*c*d))/e^2/(-b*e+2*c*d
)^2/(3-m)/(-c*e*x-b*e+c*d)/(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1/2)
```

Rubi **[A]** time = 0.33, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 44, $\frac{\text{number of rules}}{\text{integrand size}} = 0.114$, Rules used = $\{794, 679, 677, 70, 69\}$

$$\frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}}-\frac{(d+ex)^m\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(3-2m)-2c(ef(3-m)-dgm))\,{}_2F_1\left(-\frac{3}{2},\frac{5}{2}\right.}{3e^2(3-m)(2cd-be)^2(-be+cd-cex)\sqrt{d(cd-be)-be^2x-}}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^m*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/2),x]
```

```
[Out] (g*(d + e*x)^m)/(c*e^2*(3 - m)*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(3/2))
 - ((b*e*g*(3 - 2*m) - 2*c*(e*f*(3 - m) - d*g*m))*(d + e*x)^m*((c*(d + e*x)
)/(2*c*d - b*e))^(1/2 - m)*Hypergeometric2F1[-3/2, 5/2 - m, -1/2, (c*d - b*
e - c*e*x)/(2*c*d - b*e)])/(3*e^2*(2*c*d - b*e)^2*(3 - m)*(c*d - b*e - c*e*
x)*Sqrt[d*(c*d - b*e) - b*e^2*x - c*e^2*x^2])
```

Rule 69

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a + b*x))/(b*c -
 a*d))])/(b*(m + 1)*(b/(b*c - a*d))^n), x] /; FreeQ[{a, b, c, d, m, n}, x]
&& NeQ[b*c - a*d, 0] &&  !IntegerQ[m] &&  !IntegerQ[n] && GtQ[b/(b*c - a*d)
, 0] && (RationalQ[m] ||  !(RationalQ[n] && GtQ[-(d/(b*c - a*d)), 0]))
```

Rule 70

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Dist[(c
 + d*x)^FracPart[n]/((b/(b*c - a*d))^IntPart[n]*((b*(c + d*x))/(b*c - a*d))
^FracPart[n]), Int[(a + b*x)^m*Simp[(b*c)/(b*c - a*d) + (b*d*x)/(b*c - a*d)
, x]^n, x], x] /; FreeQ[{a, b, c, d, m, n}, x] && NeQ[b*c - a*d, 0] &&  !In
tegerQ[m] &&  !IntegerQ[n] && (RationalQ[m] ||  !SimplerQ[n + 1, m + 1])
```

Rule 677

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^m*(a + b*x + c*x^2)^FracPart[p])/((1 + (e*x)/d)^FracPart[p
]*(a/d + (c*x)/e)^FracPart[p]), Int[(1 + (e*x)/d)^(m + p)*(a/d + (c*x)/e)^p
, x], x] /; FreeQ[{a, b, c, d, e, m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^
2 - b*d*e + a*e^2, 0] &&  !IntegerQ[p] && (IntegerQ[m] || GtQ[d, 0]) &&  !(
IGtQ[m, 0] && (IntegerQ[3*p] || IntegerQ[4*p]))
```

Rule 679

```
Int[((d_) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Sy
mbol] :> Dist[(d^IntPart[m]*(d + e*x)^FracPart[m])/(1 + (e*x)/d)^FracPart[m
], Int[(1 + (e*x)/d)^m*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e,
 m}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] &&  !Intege
rQ[p] &&  !(IntegerQ[m] || GtQ[d, 0])
```

Rule 794

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] + Dist[(m*(g*(c*d - b*e) + c*e*f) + e*(p + 1)*(2*c
*f - b*g))/(c*e*(m + 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^p, x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d
^2 - b*d*e + a*e^2, 0] && NeQ[m + 2*p + 2, 0] && (NeQ[m, 2] || EqQ[d, 0])
```

Rubi steps

$$\int \frac{(d+ex)^m(f+gx)}{\left(cd^2-bde-be^2x-ce^2x^2\right)^{5/2}}\,dx = \frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(beg(3-2m)-2c(ef(3-m)}{2c}$$

$$= \frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{\Big((beg(3-2m)-2c(ef(3-m}{}$$

$$= \frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{\Big((beg(3-2m)-2c(ef(3-m}{}$$

$$= \frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{\Bigg(cd^2e(beg(3-2m)-2c(ef(3}{}$$

$$= \frac{g(d+ex)^m}{ce^2(3-m)\left(d(cd-be)-be^2x-ce^2x^2\right)^{3/2}} - \frac{(beg(3-2m)-2c(ef(3-m)}{3e^2(2cd-be)^2(3}$$

Mathematica [A] time = 0.35, size = 185, normalized size = 0.83

$$\frac{2(d+ex)^m\left(-e(d+ex)(be-cd+cex)\left(\frac{c(d+ex)}{2cd-be}\right)^{\frac{1}{2}-m}(beg(3-2m)+2c(dgm+ef(m-3)))\,{}_2F_1\left(-\frac{1}{2},\frac{5}{2}-m;\frac{1}{2};\frac{-cd}{b}\right.\right.}{3e^3(be-2cd)^3((d+ex)(c(d-ex)-be))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^m*(f + g*x))/(c*d^2 - b*d*e - b*e^2*x - c*e^2*x^2)^(5/
2),x]
```

```
[Out] (2*(d + e*x)^m*(-((e*(-2*c*d + b*e)^2*(c*e*f + c*d*g - b*e*g))/c) - e*(b*e*
g*(3 - 2*m) + 2*c*(e*f*(-3 + m) + d*g*m))*(d + e*x)*((c*(d + e*x))/(2*c*d -
 b*e))^(1/2 - m)*(-(c*d) + b*e + c*e*x)*Hypergeometric2F1[-1/2, 5/2 - m, 1/
2, (-(c*d) + b*e + c*e*x)/(-2*c*d + b*e)]))/(3*e^3*(-2*c*d + b*e)^3*((d + e
*x)*(-(b*e) + c*(d - e*x)))^(3/2))
```

fricas [F] time = 1.30, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{-ce^2x^2 - be^2x + cd^2 - bde}}{c^3e^6x^6 + 3\,bc^2e^6x^5 - c^3d^6 + 3\,bc^2d^5e - 3\,b^2cd^4e^2 + b^3d^3e^3 - 3\left(c^3d^2e^4 - bc^2de^5 - b^2ce^6\right)x^4 - \left(6\,bc^2d^2e^4\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="fricas")
```

```
[Out] integral(-sqrt(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)*(g*x + f)*(e*x + d)^m/
(c^3*e^6*x^6 + 3*b*c^2*e^6*x^5 - c^3*d^6 + 3*b*c^2*d^5*e - 3*b^2*c*d^4*e^2
+ b^3*d^3*e^3 - 3*(c^3*d^2*e^4 - b*c^2*d*e^5 - b^2*c*e^6)*x^4 - (6*b*c^2*d^
2*e^4 - 6*b^2*c*d*e^5 - b^3*e^6)*x^3 + 3*(c^3*d^4*e^2 - 2*b*c^2*d^3*e^3 + b
^3*d*e^5)*x^2 + 3*(b*c^2*d^4*e^2 - 2*b^2*c*d^3*e^3 + b^3*d^2*e^4)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx + f)(ex + d)^m}{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="giac")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2
), x)
```

maple [F] time = 1.37, size = 0, normalized size = 0.00

$$\int \frac{(gx + f)\,(ex + d)^m}{\left(-c\,e^2x^2 - b\,e^2x - bde + c\,d^2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

```
[Out] int((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(gx + f)(ex + d)^m}{\left(-ce^2x^2 - be^2x + cd^2 - bde\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(g*x+f)/(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^(5/2),x, algor
ithm="maxima")
```

```
[Out] integrate((g*x + f)*(e*x + d)^m/(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*e)^(5/2
), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{\left(f + g\,x\right)\,{\left(d + e\,x\right)}^m}{{\left(c\,d^2 - b\,d\,e - c\,e^2\,x^2 - b\,e^2\,x\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2),x)
```

```
[Out] int(((f + g*x)*(d + e*x)^m)/(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^(5/2), x)
```

sympy **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: HeuristicGCDFailed

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(g*x+f)/(-c*e**2*x**2-b*e**2*x-b*d*e+c*d**2)**(5/2),x)
```

```
[Out] Exception raised: HeuristicGCDFailed
```

3.2291 $\int (d+ex)^m (cdm-be(1+m+p)-ce(2+m+2p)x) \left(cd^2-bde-be^2x-ce^2x^2\right)^p \, dx$

Optimal. Leaf size=42

$$\frac{(d+ex)^m \left(d(cd-be)-be^2x-ce^2x^2\right)^{p+1}}{e}$$

```
[Out] (e*x+d)^m*(d*(-b*e+c*d)-b*e^2*x-c*e^2*x^2)^(1+p)/e
```

Rubi [A] time = 0.05, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 61, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.016, Rules used = {786}

$$\frac{(d+ex)^m \left(d(cd-be)-be^2x-ce^2x^2\right)^{p+1}}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m + 2*p)*x)*(c*d^2 - b*
d*e - b*e^2*x - c*e^2*x^2)^p,x]
```

```
[Out] ((d + e*x)^m*(d*(c*d - b*e) - b*e^2*x - c*e^2*x^2)^(1 + p))/e
```

Rule 786

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[m*(g*(c*d - b*e) + c*
e*f) + e*(p + 1)*(2*c*f - b*g), 0]
```

Rubi steps

$$\int (d+ex)^m (cdm-be(1+m+p)-ce(2+m+2p)x) \left(cd^2-bde-be^2x-ce^2x^2\right)^p \, dx = \frac{(d+ex)^m \left(d(cd-be)-be\right.}{e}$$

Mathematica [A] time = 0.14, size = 34, normalized size = 0.81

$$\frac{(d+ex)^m ((d+ex)(c(d-ex)-be))^{p+1}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^m*(c*d*m - b*e*(1 + m + p) - c*e*(2 + m + 2*p)*x)*(c*d^
2 - b*d*e - b*e^2*x - c*e^2*x^2)^p,x]
```

```
[Out] ((d + e*x)^m*((d + e*x)*(-(b*e) + c*(d - e*x)))^(1 + p))/e
```

fricas [A] time = 1.02, size = 66, normalized size = 1.57

$$-\frac{\left(ce^2x^2+be^2x-cd^2+bde\right)\left(-ce^2x^2-be^2x+cd^2-bde\right)^p (ex+d)^m}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="fricas")
```

```
[Out] -(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)*(-c*e^2*x^2 - b*e^2*x + c*d^2 - b*d*
e)^p*(e*x + d)^m/e
```

giac [**B**] time = 0.46, size = 173, normalized size = 4.12

$$-\left((xe+d)^m cx^2 e^{\left(p\log(-cxe+cd-be)+p\log(xe+d)+2\right)} - (xe+d)^m cd^2 e^{\left(p\log(-cxe+cd-be)+p\log(xe+d)\right)} + (xe+d)^m bxe^{(p\log(-cxe}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="giac")
```

```
[Out] -((x*e + d)^m*c*x^2*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 2) - (x
*e + d)^m*c*d^2*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d)) + (x*e + d)^
m*b*x*e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 2) + (x*e + d)^m*b*d*
e^(p*log(-c*x*e + c*d - b*e) + p*log(x*e + d) + 1))*e^(-1)
```

maple [**A**] time = 0.06, size = 56, normalized size = 1.33

$$-\frac{(cex+be-cd)\,(ex+d)^{m+1}\left(-c\,e^2x^2-b\,e^2x-bde+c\,d^2\right)^p}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^m*(c*d*m-b*e*(m+p+1)-c*e*(m+2*p+2)*x)*(-c*e^2*x^2-b*e^2*x-b*d*e
+c*d^2)^p,x)
```

```
[Out] -(-c*e^2*x^2-b*e^2*x-b*d*e+c*d^2)^p*(e*x+d)^(m+1)*(c*e*x+b*e-c*d)/e
```

maxima [**A**] time = 0.80, size = 64, normalized size = 1.52

$$-\frac{\left(ce^2x^2+be^2x-cd^2+bde\right)e^{\left(p\log(-cex+cd-be)+m\log(ex+d)+p\log(ex+d)\right)}}{e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e^2*x^2-b*e^2*x
-b*d*e+c*d^2)^p,x, algorithm="maxima")
```

```
[Out] -(c*e^2*x^2 + b*e^2*x - c*d^2 + b*d*e)*e^(p*log(-c*e*x + c*d - b*e) + m*log
(e*x + d) + p*log(e*x + d))/e
```

mupad [**B**] time = 2.58, size = 79, normalized size = 1.88

$$-\left(b\,e\,x\,(d+e\,x)^m-\frac{\left(c\,d^2-b\,d\,e\right)\,(d+e\,x)^m}{e}+c\,e\,x^2\,(d+e\,x)^m\right)\,\left(c\,d^2-b\,d\,e-c\,e^2\,x^2-b\,e^2\,x\right)^p$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(d + e*x)^m*(b*e*(m + p + 1) - c*d*m + c*e*x*(m + 2*p + 2))*(c*d^2 - c
*e^2*x^2 - b*d*e - b*e^2*x)^p,x)
```

```
[Out] -(b*e*x*(d + e*x)^m - ((c*d^2 - b*d*e)*(d + e*x)^m)/e + c*e*x^2*(d + e*x)^m
)*(c*d^2 - c*e^2*x^2 - b*d*e - b*e^2*x)^p
```

sympy [**A**] time = 16.86, size = 173, normalized size = 4.12

$$\begin{cases} -bd\,(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p - bex\,(d+ex)^m\left(-bde-be^2x+cd^2-ce^2x^2\right)^p + \frac{cd^2(d+ex)^m(-bde-be^2x}{e} \\ cdd^m mx\left(cd^2\right)^p \end{cases}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**m*(c*d*m-b*e*(1+m+p)-c*e*(2+m+2*p)*x)*(-c*e**2*x**2-b*e*
*2*x-b*d*e+c*d**2)**p,x)
```

```
[Out] Piecewise((-b*d*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p
- b*e*x*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p + c*d**2
*(d + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p/e - c*e*x**2*(d
 + e*x)**m*(-b*d*e - b*e**2*x + c*d**2 - c*e**2*x**2)**p, Ne(e, 0)), (c*d*d
**m*m*x*(c*d**2)**p, True))
```

3.2292 $\int (d+ex)^{-3-2p}(f+gx)\left(d(ef+dg+dgp)+e(ef+3d$

Optimal. Leaf size=64

$$-\frac{(d+ex)^{-2p-3}\left(ex(dg(2p+3)+ef)+d(dg(p+1)+ef)+e^2g(p+2)x^2\right)^{p+1}}{e^2(p+2)}$$

```
[Out] -(e*x+d)^(-3-2*p)*(d*(e*f+d*g*(1+p))+e*(e*f+d*g*(3+2*p))*x+e^2*g*(2+p)*x^2)
^(1+p)/e^2/(2+p)
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 60, $\frac{\text{number of rules}}{\text{integrand size}} = 0.017$, Rules used = {786}

$$-\frac{(d+ex)^{-2p-3}\left(ex(dg(2p+3)+ef)+d(dg(p+1)+ef)+e^2g(p+2)x^2\right)^{p+1}}{e^2(p+2)}$$

Antiderivative was successfully verified.

```
[In] Int[(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*g*p) + e*(e*f + 3*d*g
+ 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p,x]
```

```
[Out] -(((d + e*x)^(-3 - 2*p)*(d*(e*f + d*g*(1 + p)) + e*(e*f + d*g*(3 + 2*p))*x
+ e^2*g*(2 + p)*x^2)^(1 + p))/(e^2*(2 + p)))
```

Rule 786

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p + 1
))/(c*(m + 2*p + 2)), x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^
2 - 4*a*c, 0] && EqQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[m*(g*(c*d - b*e) + c*
e*f) + e*(p + 1)*(2*c*f - b*g), 0]
```

Rubi steps

$$\int (d+ex)^{-3-2p}(f+gx)\left(d(ef+dg+dgp)+e(ef+3dg+2dgp)x+e^2g(2+p)x^2\right)^p\,dx = -\frac{(d+ex)^{-3-2p}\left(d(ef\right.}{}$$

Mathematica [A] time = 0.13, size = 48, normalized size = 0.75

$$-\frac{(d+ex)^{-2p-3}((d+ex)(dg(p+1)+e(f+g(p+2)x)))^{p+1}}{e^2(p+2)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(d + e*x)^(-3 - 2*p)*(f + g*x)*(d*(e*f + d*g + d*g*p) + e*(e*f +
3*d*g + 2*d*g*p)*x + e^2*g*(2 + p)*x^2)^p,x]
```

```
[Out] -(((d + e*x)^(-3 - 2*p)*((d + e*x)*(d*g*(1 + p) + e*(f + g*(2 + p)*x)))^(1
+ p))/(e^2*(2 + p)))
```

fricas [B] time = 0.97, size = 132, normalized size = 2.06

$$-\frac{\left(d^2gp+def+d^2g+\left(e^2gp+2e^2g\right)x^2+\left(2degp+e^2f+3deg\right)x\right)\left(d^2gp+def+d^2g+\left(e^2gp+2e^2g\right)x^2+\left(2\right.\right.}{e^2p+2e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="fricas")
```

```
[Out] -(d^2*g*p + d*e*f + d^2*g + (e^2*g*p + 2*e^2*g)*x^2 + (2*d*e*g*p + e^2*f +
3*d*e*g)*x)*(d^2*g*p + d*e*f + d^2*g + (e^2*g*p + 2*e^2*g)*x^2 + (2*d*e*g*p
 + e^2*f + 3*d*e*g)*x)^p*(e*x + d)^(-2*p - 3)/(e^2*p + 2*e^2)
```

giac [B] time = 0.51, size = 444, normalized size = 6.94

$$-\frac{gpx^2e^{\left(p\log\left(gpxe+dgp+2\,gxe+dg+fe\right)-p\log(xe+d)-3\,\log(xe+d)+2\right)}+2\,dgpxe^{\left(p\log\left(gpxe+dgp+2\,gxe+dg+fe\right)-p\log(xe+d)-3\,\log(xe+d)+1\right)}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="giac")
```

```
[Out] -(g*p*x^2*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d)
- 3*log(x*e + d) + 2) + 2*d*g*p*x*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g
+ f*e) - p*log(x*e + d) - 3*log(x*e + d) + 1) + d^2*g*p*e^(p*log(g*p*x*e +
d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d)) + 2*g*x^2*e
^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e
 + d) + 2) + 3*d*g*x*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*lo
g(x*e + d) - 3*log(x*e + d) + 1) + d^2*g*e^(p*log(g*p*x*e + d*g*p + 2*g*x*e
 + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d)) + f*x*e^(p*log(g*p*x*e + d
*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e + d) + 2) + d*f*e^
(p*log(g*p*x*e + d*g*p + 2*g*x*e + d*g + f*e) - p*log(x*e + d) - 3*log(x*e
+ d) + 1))/(p*e^2 + 2*e^2)
```

maple [A] time = 0.05, size = 98, normalized size = 1.53

$$-\frac{\left(egxp+dgp+2egx+dg+ef\right)(ex+d)^{-2p-2}\left(e^2g\,x^2p+2degpx+2e^2g\,x^2+d^2gp+3degx+e^2fx+d^2g+def\right)^p}{\left(p+2\right)e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^(-2*p-3)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)*x+e^2
*g*(p+2)*x^2)^p,x)
```

```
[Out] -(e*x+d)^(-2*p-2)*(e*g*p*x+d*g*p+2*e*g*x+d*g+e*f)/e^2/(p+2)*(e^2*g*p*x^2+2*
d*e*g*p*x+2*e^2*g*x^2+d^2*g*p+3*d*e*g*x+e^2*f*x+d^2*g+d*e*f)^p
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\left(gx+f\right)\left(e^2g\left(p+2\right)x^2+\left(2\,dgp+ef+3\,dg\right)ex+\left(dgp+ef+dg\right)d\right)^p(ex+d)^{-2\,p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f)
*x+e^2*g*(2+p)*x^2)^p,x, algorithm="maxima")
```

```
[Out] integrate((g*x + f)*(e^2*g*(p + 2)*x^2 + (2*d*g*p + e*f + 3*d*g)*e*x + (d*g
*p + e*f + d*g)*d)^p*(e*x + d)^(-2*p - 3), x)
```

mupad [B] time = 2.63, size = 138, normalized size = 2.16

$$-\left(d\,\left(d\,g+e\,f+d\,g\,p\right)+e\,x\,\left(3\,d\,g+e\,f+2\,d\,g\,p\right)+e^2\,g\,x^2\,\left(p+2\right)\right)^p\,\left(\frac{g\,x^2}{{\left(d+e\,x\right)}^{2\,p+3}}+\frac{d^2\,g+d\,e\,f+d^2\,g\,p}{e^2\,\left(p+2\right)\,{\left(d+e\,x\right)}^{2\,p+3}}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d*(d*g + e*f + d*g*p) + e*x*(3*d*g + e*f + 2*d*g*p) + e^2*g
*x^2*(p + 2))^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] -(d*(d*g + e*f + d*g*p) + e*x*(3*d*g + e*f + 2*d*g*p) + e^2*g*x^2*(p + 2))^
p*((g*x^2)/(d + e*x)^(2*p + 3) + (d^2*g + d*e*f + d^2*g*p)/(e^2*(p + 2)*(d
+ e*x)^(2*p + 3)) + (x*(3*d*g + e*f + 2*d*g*p))/(e*(p + 2)*(d + e*x)^(2*p +
 3)))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**(-3-2*p)*(g*x+f)*(d*(d*g*p+d*g+e*f)+e*(2*d*g*p+3*d*g+e*f
)*x+e**2*g*(2+p)*x**2)**p,x)
```

```
[Out] Timed out
```

3.2293 $\int \frac{(d+ex)^2(f+gx)}{\left(cf^2-bfg-bg^2x-cg^2x^2\right)^2}\,dx$

Optimal. Leaf size=143

$$\frac{(-beg+cdg+cef)^2}{c^2g^3(2cf-bg)(-bg+cf-cgx)}+\frac{(-beg-cdg+3cef)(-beg+cdg+cef)\log(-bg+cf-cgx)}{c^2g^3(2cf-bg)^2}+\frac{(ef-dg)^2\log(f}{g^3(2cf-bg)}$$

```
[Out] (-b*e*g+c*d*g+c*e*f)^2/c^2/g^3/(-b*g+2*c*f)/(-c*g*x-b*g+c*f)+(-d*g+e*f)^2*l
n(g*x+f)/g^3/(-b*g+2*c*f)^2+(-b*e*g-c*d*g+3*c*e*f)*(-b*e*g+c*d*g+c*e*f)*ln(
-c*g*x-b*g+c*f)/c^2/g^3/(-b*g+2*c*f)^2
```

Rubi [A] time = 0.21, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 42, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {798, 88}

$$\frac{(-beg+cdg+cef)^2}{c^2g^3(2cf-bg)(-bg+cf-cgx)}+\frac{(-beg-cdg+3cef)(-beg+cdg+cef)\log(-bg+cf-cgx)}{c^2g^3(2cf-bg)^2}+\frac{(ef-dg)^2\log(f}{g^3(2cf-bg)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2*x^2)^2,x]
```

```
[Out] (c*e*f + c*d*g - b*e*g)^2/(c^2*g^3*(2*c*f - b*g)*(c*f - b*g - c*g*x)) + ((e
*f - d*g)^2*Log[f + g*x])/(g^3*(2*c*f - b*g)^2) + ((3*c*e*f - c*d*g - b*e*g
)*(c*e*f + c*d*g - b*e*g)*Log[c*f - b*g - c*g*x])/(c^2*g^3*(2*c*f - b*g)^2)
```

Rule 88

```
Int[((a_.) + (b_.)*(x_))^(m_.)*((c_.) + (d_.)*(x_))^(n_.)*((e_.) + (f_.)*(x
_))^(p_.), x_Symbol] :> Int[ExpandIntegrand[(a + b*x)^m*(c + d*x)^n*(e + f*
x)^p, x], x] /; FreeQ[{a, b, c, d, e, f, p}, x] && IntegersQ[m, n] && (Inte
gerQ[p] || (GtQ[m, 0] && GeQ[n, -1]))
```

Rule 798

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_.), x_Symbol] :> Int[(d + e*x)^m*(f + g*x)^(p + 1)*(a/f + (c*
x)/g)^p, x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
 EqQ[c*f^2 - b*f*g + a*g^2, 0] && IntegerQ[p]
```

Rubi steps

$$\begin{aligned}\int \frac{(d+ex)^2(f+gx)}{\left(cf^2-bfg-bg^2x-cg^2x^2\right)^2}\,dx &= \int \frac{(d+ex)^2}{(f+gx)\left(\frac{cf^2-bfg}{f}-cgx\right)^2}\,dx\\ &= \int \left(\frac{(-ef+dg)^2}{g^2(-2cf+bg)^2(f+gx)}+\frac{(3cef-cdg-beg)(-cef-cdg+beg)}{cg^2(2cf-bg)^2(cf-bg-cgx)}+\frac{}{cg^2}\right.\\ &= \frac{(cef+cdg-beg)^2}{c^2g^3(2cf-bg)(cf-bg-cgx)}+\frac{(ef-dg)^2\log(f+gx)}{g^3(2cf-bg)^2}+\frac{(3cef-cdg-be}{}\end{aligned}$$

Mathematica [A] time = 0.13, size = 153, normalized size = 1.07

$$\frac{\frac{\left(b^2e^2g^2-4bce^2fg+c^2\left(-d^2g^2+2defg+3e^2f^2\right)\right)\log(-bg+cf-cgx)}{c^2(bg-2cf)^2}+\frac{(-beg+cdg+cef)^2}{c^2(2cf-bg)(c(f-gx)-bg)}+\frac{(ef-dg)^2\log(f+gx)}{(bg-2cf)^2}}{g^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(c*f^2 - b*f*g - b*g^2*x - c*g^2*x^2)^2,x
]
```

```
[Out] ((c*e*f + c*d*g - b*e*g)^2/(c^2*(2*c*f - b*g)*(-(b*g) + c*(f - g*x))) + ((e
*f - d*g)^2*Log[f + g*x])/(-2*c*f + b*g)^2 + ((-4*b*c*e^2*f*g + b^2*e^2*g^2
 + c^2*(3*e^2*f^2 + 2*d*e*f*g - d^2*g^2))*Log[c*f - b*g - c*g*x])/(c^2*(-2*
c*f + b*g)^2))/g^3
```

fricas [B] time = 1.05, size = 448, normalized size = 3.13

$$2c^3e^2f^3 + \left(4c^3de - 5bc^2e^2\right)f^2g + 2\left(c^3d^2 - 3bc^2de + 2b^2ce^2\right)fg^2 - \left(bc^2d^2 - 2b^2cde + b^3e^2\right)g^3 + \left(3c^3e^2f^3 + (\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="fricas")
```

```
[Out] (2*c^3*e^2*f^3 + (4*c^3*d*e - 5*b*c^2*e^2)*f^2*g + 2*(c^3*d^2 - 3*b*c^2*d*e
 + 2*b^2*c*e^2)*f*g^2 - (b*c^2*d^2 - 2*b^2*c*d*e + b^3*e^2)*g^3 + (3*c^3*e^
2*f^3 + (2*c^3*d*e - 7*b*c^2*e^2)*f^2*g - (c^3*d^2 + 2*b*c^2*d*e - 5*b^2*c*
e^2)*f*g^2 + (b*c^2*d^2 - b^3*e^2)*g^3 - (3*c^3*e^2*f^2*g + 2*(c^3*d*e - 2*
b*c^2*e^2)*f*g^2 - (c^3*d^2 - b^2*c*e^2)*g^3)*x)*log(c*g*x - c*f + b*g) + (
c^3*e^2*f^3 - b*c^2*d^2*g^3 - (2*c^3*d*e + b*c^2*e^2)*f^2*g + (c^3*d^2 + 2*
b*c^2*d*e)*f*g^2 - (c^3*e^2*f^2*g - 2*c^3*d*e*f*g^2 + c^3*d^2*g^3)*x)*log(g
*x + f))/(4*c^5*f^3*g^3 - 8*b*c^4*f^2*g^4 + 5*b^2*c^3*f*g^5 - b^3*c^2*g^6 -
 (4*c^5*f^2*g^4 - 4*b*c^4*f*g^5 + b^2*c^3*g^6)*x)
```

giac [B] time = 0.17, size = 297, normalized size = 2.08

$$-\frac{\left(c^2d^2g^2 - 2c^2dfge - 3c^2f^2e^2 + 4bcfge^2 - b^2g^2e^2\right)\log\left(\left|cgx - cf + bg\right|\right)}{4c^4f^2g^3 - 4bc^3fg^4 + b^2c^2g^5} + \frac{\left(d^2g^2 - 2dfge + f^2e^2\right)\log(|gx +}{4c^2f^2g^3 - 4bcfg^4 + b^2g^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="giac")
```

```
[Out] -(c^2*d^2*g^2 - 2*c^2*d*f*g*e - 3*c^2*f^2*e^2 + 4*b*c*f*g*e^2 - b^2*g^2*e^2
)*log(abs(c*g*x - c*f + b*g))/(4*c^4*f^2*g^3 - 4*b*c^3*f*g^4 + b^2*c^2*g^5)
 + (d^2*g^2 - 2*d*f*g*e + f^2*e^2)*log(abs(g*x + f))/(4*c^2*f^2*g^3 - 4*b*c
*f*g^4 + b^2*g^5) - (2*c^3*d^2*f*g^2 - b*c^2*d^2*g^3 + 4*c^3*d*f^2*g*e - 6*
b*c^2*d*f*g^2*e + 2*b^2*c*d*g^3*e + 2*c^3*f^3*e^2 - 5*b*c^2*f^2*g*e^2 + 4*b
^2*c*f*g^2*e^2 - b^3*g^3*e^2)/((c*g*x - c*f + b*g)*(2*c*f - b*g)^2*c^2*g^3)
```

maple [B] time = 0.06, size = 449, normalized size = 3.14

$$\frac{b^2e^2\ln\left(cgx + bg - cf\right)}{\left(bg - 2cf\right)^2c^2g} - \frac{4be^2f\ln\left(cgx + bg - cf\right)}{\left(bg - 2cf\right)^2cg^2} + \frac{d^2\ln\left(gx + f\right)}{\left(bg - 2cf\right)^2g} - \frac{d^2\ln\left(cgx + bg - cf\right)}{\left(bg - 2cf\right)^2g} - \frac{2def\ln\left(gx + f\right)}{\left(bg - 2cf\right)^2g^2} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x)
```

```
[Out] 1/g/(b*g-2*c*f)^2/c^2*ln(c*g*x+b*g-c*f)*b^2*e^2-4/g^2/(b*g-2*c*f)^2/c*ln(c*
g*x+b*g-c*f)*b*e^2*f-1/g/(b*g-2*c*f)^2*ln(c*g*x+b*g-c*f)*d^2+2/g^2/(b*g-2*c
*f)^2*ln(c*g*x+b*g-c*f)*d*e*f+3/g^3/(b*g-2*c*f)^2*ln(c*g*x+b*g-c*f)*e^2*f^2
+1/c^2/g/(b*g-2*c*f)/(c*g*x+b*g-c*f)*b^2*e^2-2/c/g/(b*g-2*c*f)/(c*g*x+b*g-c
*f)*b*d*e-2/c/g^2/(b*g-2*c*f)/(c*g*x+b*g-c*f)*b*e^2*f+1/g/(b*g-2*c*f)/(c*g*
x+b*g-c*f)*d^2+2/g^2/(b*g-2*c*f)/(c*g*x+b*g-c*f)*d*e*f+1/g^3/(b*g-2*c*f)/(c
*g*x+b*g-c*f)*e^2*f^2+1/g/(b*g-2*c*f)^2*ln(g*x+f)*d^2-2/g^2/(b*g-2*c*f)^2*l
n(g*x+f)*d*e*f+1/g^3/(b*g-2*c*f)^2*ln(g*x+f)*f^2*e^2
```

maxima [A] time = 0.65, size = 268, normalized size = 1.87

$$\frac{\left(3\,c^2e^2f^2+2\left(c^2de-2\,bce^2\right)fg-\left(c^2d^2-b^2e^2\right)g^2\right)\log\left(cgx-cf+bg\right)}{4\,c^4f^2g^3-4\,bc^3fg^4+b^2c^2g^5}+\frac{\left(e^2f^2-2\,defg+d^2g^2\right)\log\left(gx+f\right)}{4\,c^2f^2g^3-4\,bcfg^4+b^2g^5}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(-c*g^2*x^2-b*g^2*x-b*f*g+c*f^2)^2,x, algorithm
="maxima")
```

```
[Out] (3*c^2*e^2*f^2 + 2*(c^2*d*e - 2*b*c*e^2)*f*g - (c^2*d^2 - b^2*e^2)*g^2)*log
(c*g*x - c*f + b*g)/(4*c^4*f^2*g^3 - 4*b*c^3*f*g^4 + b^2*c^2*g^5) + (e^2*f^
2 - 2*d*e*f*g + d^2*g^2)*log(g*x + f)/(4*c^2*f^2*g^3 - 4*b*c*f*g^4 + b^2*g^
5) + (c^2*e^2*f^2 + 2*(c^2*d*e - b*c*e^2)*f*g + (c^2*d^2 - 2*b*c*d*e + b^2*
e^2)*g^2)/(2*c^4*f^2*g^3 - 3*b*c^3*f*g^4 + b^2*c^2*g^5 - (2*c^4*f*g^4 - b*c
^3*g^5)*x)
```

mupad [B] time = 2.73, size = 224, normalized size = 1.57

$$\frac{\ln\left(f+g\,x\right)\,\left(d^2\,g^2-2\,d\,e\,f\,g+e^2\,f^2\right)}{b^2\,g^5-4\,b\,c\,f\,g^4+4\,c^2\,f^2\,g^3}+\frac{b^2\,e^2\,g^2-2\,b\,c\,d\,e\,g^2-2\,b\,c\,e^2\,f\,g+c^2\,d^2\,g^2+2\,c^2\,d\,e\,f\,g+c^2\,e^2\,f^2}{c^2\,g^3\,\left(b\,g-2\,c\,f\right)\,\left(b\,g-c\,f+c\,g\,x\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(c*g^2*x^2 - c*f^2 + b*f*g + b*g^2*x)^2,x)
```

```
[Out] (log(f + g*x)*(d^2*g^2 + e^2*f^2 - 2*d*e*f*g))/(b^2*g^5 + 4*c^2*f^2*g^3 - 4
*b*c*f*g^4) + (b^2*e^2*g^2 + c^2*d^2*g^2 + c^2*e^2*f^2 - 2*b*c*d*e*g^2 - 2*
b*c*e^2*f*g + 2*c^2*d*e*f*g)/(c^2*g^3*(b*g - 2*c*f)*(b*g - c*f + c*g*x)) +
(log(b*g - c*f + c*g*x)*(c^2*(3*e^2*f^2 - d^2*g^2 + 2*d*e*f*g) + b^2*e^2*g^
2 - 4*b*c*e^2*f*g))/(c^2*g^3*(b*g - 2*c*f)^2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(-c*g**2*x**2-b*g**2*x-b*f*g+c*f**2)**2,x)
```

```
[Out] Timed out
```

3.2294 $\int (1+x)^4(a+bx)\left(1-x+x^2\right)^4\,dx$

Optimal. Leaf size=73

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

```
[Out] a*x+1/2*b*x^2+a*x^4+4/5*b*x^5+6/7*a*x^7+3/4*b*x^8+2/5*a*x^10+4/11*b*x^11+1/
13*a*x^13+1/14*b*x^14
```

Rubi [A] time = 0.05, antiderivative size = 73, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4,x]
```

```
[Out] a*x + (b*x^2)/2 + a*x^4 + (4*b*x^5)/5 + (6*a*x^7)/7 + (3*b*x^8)/4 + (2*a*x^
10)/5 + (4*b*x^11)/11 + (a*x^13)/13 + (b*x^14)/14
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)^4(a+bx)\left(1-x+x^2\right)^4\,dx &= \int \left(a+bx+4ax^3+4bx^4+6ax^6+6bx^7+4ax^9+4bx^{10}+ax^{12}+bx^{13}\right)\\ &= ax+\frac{bx^2}{2}+ax^4+\frac{4bx^5}{5}+\frac{6ax^7}{7}+\frac{3bx^8}{4}+\frac{2ax^{10}}{5}+\frac{4bx^{11}}{11}+\frac{ax^{13}}{13}+\frac{bx^{14}}{14}\end{aligned}$$

Mathematica [A] time = 0.00, size = 73, normalized size = 1.00

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^7}{7}+ax^4+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^8}{4}+\frac{4bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^4*(a + b*x)*(1 - x + x^2)^4,x]
```

```
[Out] a*x + (b*x^2)/2 + a*x^4 + (4*b*x^5)/5 + (6*a*x^7)/7 + (3*b*x^8)/4 + (2*a*x^
10)/5 + (4*b*x^11)/11 + (a*x^13)/13 + (b*x^14)/14
```

fricas [A] time = 0.86, size = 57, normalized size = 0.78

$$\frac{1}{14}x^{14}b+\frac{1}{13}x^{13}a+\frac{4}{11}x^{11}b+\frac{2}{5}x^{10}a+\frac{3}{4}x^8b+\frac{6}{7}x^7a+\frac{4}{5}x^5b+x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="fricas")
```

```
[Out] 1/14*x^14*b + 1/13*x^13*a + 4/11*x^11*b + 2/5*x^10*a + 3/4*x^8*b + 6/7*x^7*
a + 4/5*x^5*b + x^4*a + 1/2*x^2*b + x*a
```

giac [A] time = 0.24, size = 57, normalized size = 0.78

$$\frac{1}{14}\,bx^{14}+\frac{1}{13}\,ax^{13}+\frac{4}{11}\,bx^{11}+\frac{2}{5}\,ax^{10}+\frac{3}{4}\,bx^{8}+\frac{6}{7}\,ax^{7}+\frac{4}{5}\,bx^{5}+ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="giac")
```

```
[Out] 1/14*b*x^14 + 1/13*a*x^13 + 4/11*b*x^11 + 2/5*a*x^10 + 3/4*b*x^8 + 6/7*a*x^
7 + 4/5*b*x^5 + a*x^4 + 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 58, normalized size = 0.79

$$\frac{1}{14}b\,x^{14}+\frac{1}{13}a\,x^{13}+\frac{4}{11}b\,x^{11}+\frac{2}{5}a\,x^{10}+\frac{3}{4}b\,x^{8}+\frac{6}{7}a\,x^{7}+\frac{4}{5}b\,x^{5}+a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^4*(b*x+a)*(x^2-x+1)^4,x)
```

```
[Out] a*x+1/2*b*x^2+a*x^4+4/5*b*x^5+6/7*a*x^7+3/4*b*x^8+2/5*a*x^10+4/11*b*x^11+1/
13*a*x^13+1/14*b*x^14
```

maxima [A] time = 0.56, size = 57, normalized size = 0.78

$$\frac{1}{14}\,bx^{14}+\frac{1}{13}\,ax^{13}+\frac{4}{11}\,bx^{11}+\frac{2}{5}\,ax^{10}+\frac{3}{4}\,bx^{8}+\frac{6}{7}\,ax^{7}+\frac{4}{5}\,bx^{5}+ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^4*(b*x+a)*(x^2-x+1)^4,x, algorithm="maxima")
```

```
[Out] 1/14*b*x^14 + 1/13*a*x^13 + 4/11*b*x^11 + 2/5*a*x^10 + 3/4*b*x^8 + 6/7*a*x^
7 + 4/5*b*x^5 + a*x^4 + 1/2*b*x^2 + a*x
```

mupad [B] time = 0.06, size = 57, normalized size = 0.78

$$\frac{b\,x^{14}}{14}+\frac{a\,x^{13}}{13}+\frac{4\,b\,x^{11}}{11}+\frac{2\,a\,x^{10}}{5}+\frac{3\,b\,x^{8}}{4}+\frac{6\,a\,x^{7}}{7}+\frac{4\,b\,x^{5}}{5}+a\,x^{4}+\frac{b\,x^{2}}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^4*(a + b*x)*(x^2 - x + 1)^4,x)
```

```
[Out] a*x + a*x^4 + (6*a*x^7)/7 + (2*a*x^10)/5 + (a*x^13)/13 + (b*x^2)/2 + (4*b*x
^5)/5 + (3*b*x^8)/4 + (4*b*x^11)/11 + (b*x^14)/14
```

sympy [A] time = 0.08, size = 70, normalized size = 0.96

$$\frac{ax^{13}}{13}+\frac{2ax^{10}}{5}+\frac{6ax^{7}}{7}+ax^{4}+ax+\frac{bx^{14}}{14}+\frac{4bx^{11}}{11}+\frac{3bx^{8}}{4}+\frac{4bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**4*(b*x+a)*(x**2-x+1)**4,x)
```

```
[Out] a*x**13/13 + 2*a*x**10/5 + 6*a*x**7/7 + a*x**4 + a*x + b*x**14/14 + 4*b*x**
11/11 + 3*b*x**8/4 + 4*b*x**5/5 + b*x**2/2
```

3.2295 $\int (1+x)^3(a+bx)\left(1-x+x^2\right)^3\,dx$

Optimal. Leaf size=60

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

```
[Out] a*x+1/2*b*x^2+3/4*a*x^4+3/5*b*x^5+3/7*a*x^7+3/8*b*x^8+1/10*a*x^10+1/11*b*x^
11
```

Rubi [A] time = 0.04, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3,x]
```

```
[Out] a*x + (b*x^2)/2 + (3*a*x^4)/4 + (3*b*x^5)/5 + (3*a*x^7)/7 + (3*b*x^8)/8 + (
a*x^10)/10 + (b*x^11)/11
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)^3(a+bx)\left(1-x+x^2\right)^3\,dx &= \int \left(a+bx+3ax^3+3bx^4+3ax^6+3bx^7+ax^9+bx^{10}\right)dx\\ &= ax+\frac{bx^2}{2}+\frac{3ax^4}{4}+\frac{3bx^5}{5}+\frac{3ax^7}{7}+\frac{3bx^8}{8}+\frac{ax^{10}}{10}+\frac{bx^{11}}{11}\end{aligned}$$

Mathematica [A] time = 0.00, size = 60, normalized size = 1.00

$$\frac{ax^{10}}{10}+\frac{3ax^7}{7}+\frac{3ax^4}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^8}{8}+\frac{3bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^3*(a + b*x)*(1 - x + x^2)^3,x]
```

```
[Out] a*x + (b*x^2)/2 + (3*a*x^4)/4 + (3*b*x^5)/5 + (3*a*x^7)/7 + (3*b*x^8)/8 + (
a*x^10)/10 + (b*x^11)/11
```

fricas [A] time = 0.90, size = 46, normalized size = 0.77

$$\frac{1}{11}x^{11}b+\frac{1}{10}x^{10}a+\frac{3}{8}x^8b+\frac{3}{7}x^7a+\frac{3}{5}x^5b+\frac{3}{4}x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*b + 1/10*x^10*a + 3/8*x^8*b + 3/7*x^7*a + 3/5*x^5*b + 3/4*x^4*a +
 1/2*x^2*b + x*a
```

giac [A] time = 0.17, size = 46, normalized size = 0.77

$$\frac{1}{11}\,bx^{11}+\frac{1}{10}\,ax^{10}+\frac{3}{8}\,bx^{8}+\frac{3}{7}\,ax^{7}+\frac{3}{5}\,bx^{5}+\frac{3}{4}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 1/11*b*x^11 + 1/10*a*x^10 + 3/8*b*x^8 + 3/7*a*x^7 + 3/5*b*x^5 + 3/4*a*x^4 +
 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 47, normalized size = 0.78

$$\frac{1}{11}b\,x^{11}+\frac{1}{10}a\,x^{10}+\frac{3}{8}b\,x^{8}+\frac{3}{7}a\,x^{7}+\frac{3}{5}b\,x^{5}+\frac{3}{4}a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^3*(b*x+a)*(x^2-x+1)^3,x)
```

```
[Out] a*x+1/2*b*x^2+3/4*a*x^4+3/5*b*x^5+3/7*a*x^7+3/8*b*x^8+1/10*a*x^10+1/11*b*x^
11
```

maxima [A] time = 0.56, size = 46, normalized size = 0.77

$$\frac{1}{11}\,bx^{11}+\frac{1}{10}\,ax^{10}+\frac{3}{8}\,bx^{8}+\frac{3}{7}\,ax^{7}+\frac{3}{5}\,bx^{5}+\frac{3}{4}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^3*(b*x+a)*(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 1/11*b*x^11 + 1/10*a*x^10 + 3/8*b*x^8 + 3/7*a*x^7 + 3/5*b*x^5 + 3/4*a*x^4 +
 1/2*b*x^2 + a*x
```

mupad [B] time = 0.03, size = 46, normalized size = 0.77

$$\frac{b\,x^{11}}{11}+\frac{a\,x^{10}}{10}+\frac{3\,b\,x^8}{8}+\frac{3\,a\,x^7}{7}+\frac{3\,b\,x^5}{5}+\frac{3\,a\,x^4}{4}+\frac{b\,x^2}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^3*(a + b*x)*(x^2 - x + 1)^3,x)
```

```
[Out] a*x + (3*a*x^4)/4 + (3*a*x^7)/7 + (a*x^10)/10 + (b*x^2)/2 + (3*b*x^5)/5 + (
3*b*x^8)/8 + (b*x^11)/11
```

sympy [A] time = 0.08, size = 56, normalized size = 0.93

$$\frac{ax^{10}}{10}+\frac{3ax^{7}}{7}+\frac{3ax^{4}}{4}+ax+\frac{bx^{11}}{11}+\frac{3bx^{8}}{8}+\frac{3bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**3*(b*x+a)*(x**2-x+1)**3,x)
```

```
[Out] a*x**10/10 + 3*a*x**7/7 + 3*a*x**4/4 + a*x + b*x**11/11 + 3*b*x**8/8 + 3*b*
x**5/5 + b*x**2/2
```

3.2296 $\int (1+x)^2(a+bx)\left(1-x+x^2\right)^2 \, dx$

Optimal. Leaf size=44

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

```
[Out] a*x+1/2*b*x^2+1/2*a*x^4+2/5*b*x^5+1/7*a*x^7+1/8*b*x^8
```

Rubi [A] time = 0.03, antiderivative size = 44, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2,x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/2 + (2*b*x^5)/5 + (a*x^7)/7 + (b*x^8)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned} \int (1+x)^2(a+bx)\left(1-x+x^2\right)^2 \, dx &= \int \left(a+bx+2ax^3+2bx^4+ax^6+bx^7\right) \, dx \\ &= ax+\frac{bx^2}{2}+\frac{ax^4}{2}+\frac{2bx^5}{5}+\frac{ax^7}{7}+\frac{bx^8}{8} \end{aligned}$$

Mathematica [A] time = 0.00, size = 44, normalized size = 1.00

$$\frac{ax^7}{7}+\frac{ax^4}{2}+ax+\frac{bx^8}{8}+\frac{2bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^2*(a + b*x)*(1 - x + x^2)^2,x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/2 + (2*b*x^5)/5 + (a*x^7)/7 + (b*x^8)/8
```

fricas [A] time = 0.92, size = 34, normalized size = 0.77

$$\frac{1}{8}x^8b+\frac{1}{7}x^7a+\frac{2}{5}x^5b+\frac{1}{2}x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*b + 1/7*x^7*a + 2/5*x^5*b + 1/2*x^4*a + 1/2*x^2*b + x*a
```

giac [**A**] time = 0.17, size = 34, normalized size = 0.77

$$\frac{1}{8}\,bx^{8}+\frac{1}{7}\,ax^{7}+\frac{2}{5}\,bx^{5}+\frac{1}{2}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="giac")
```

```
[Out] 1/8*b*x^8 + 1/7*a*x^7 + 2/5*b*x^5 + 1/2*a*x^4 + 1/2*b*x^2 + a*x
```

maple [**A**] time = 0.04, size = 35, normalized size = 0.80

$$\frac{1}{8}b\,x^{8}+\frac{1}{7}a\,x^{7}+\frac{2}{5}b\,x^{5}+\frac{1}{2}a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^2*(b*x+a)*(x^2-x+1)^2,x)
```

```
[Out] a*x+1/2*b*x^2+1/2*a*x^4+2/5*b*x^5+1/7*a*x^7+1/8*b*x^8
```

maxima [**A**] time = 0.55, size = 34, normalized size = 0.77

$$\frac{1}{8}\,bx^{8}+\frac{1}{7}\,ax^{7}+\frac{2}{5}\,bx^{5}+\frac{1}{2}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^2*(b*x+a)*(x^2-x+1)^2,x, algorithm="maxima")
```

```
[Out] 1/8*b*x^8 + 1/7*a*x^7 + 2/5*b*x^5 + 1/2*a*x^4 + 1/2*b*x^2 + a*x
```

mupad [**B**] time = 0.02, size = 34, normalized size = 0.77

$$\frac{b\,x^8}{8}+\frac{a\,x^7}{7}+\frac{2\,b\,x^5}{5}+\frac{a\,x^4}{2}+\frac{b\,x^2}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^2*(a + b*x)*(x^2 - x + 1)^2,x)
```

```
[Out] a*x + (a*x^4)/2 + (a*x^7)/7 + (b*x^2)/2 + (2*b*x^5)/5 + (b*x^8)/8
```

sympy [**A**] time = 0.07, size = 37, normalized size = 0.84

$$\frac{ax^{7}}{7}+\frac{ax^{4}}{2}+ax+\frac{bx^{8}}{8}+\frac{2bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**2*(b*x+a)*(x**2-x+1)**2,x)
```

```
[Out] a*x**7/7 + a*x**4/2 + a*x + b*x**8/8 + 2*b*x**5/5 + b*x**2/2
```

3.2297 $\int (1+x)(a+bx)\left(1-x+x^2\right)\,dx$

Optimal. Leaf size=28

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

```
[Out] a*x+1/2*b*x^2+1/4*a*x^4+1/5*b*x^5
```

Rubi [A] time = 0.02, antiderivative size = 28, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {771}

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)*(a + b*x)*(1 - x + x^2),x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/4 + (b*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (1+x)(a+bx)\left(1-x+x^2\right)\,dx &= \int \left(a+bx+ax^3+bx^4\right)\,dx\\ &= ax+\frac{bx^2}{2}+\frac{ax^4}{4}+\frac{bx^5}{5}\end{aligned}$$

Mathematica [A] time = 0.00, size = 28, normalized size = 1.00

$$\frac{ax^4}{4}+ax+\frac{bx^5}{5}+\frac{bx^2}{2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)*(a + b*x)*(1 - x + x^2),x]
```

```
[Out] a*x + (b*x^2)/2 + (a*x^4)/4 + (b*x^5)/5
```

fricas [A] time = 0.90, size = 22, normalized size = 0.79

$$\frac{1}{5}x^5b+\frac{1}{4}x^4a+\frac{1}{2}x^2b+xa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*b + 1/4*x^4*a + 1/2*x^2*b + x*a
```

giac [A] time = 0.17, size = 22, normalized size = 0.79

$$\frac{1}{5}bx^5+\frac{1}{4}ax^4+\frac{1}{2}bx^2+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="giac")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4 + 1/2*b*x^2 + a*x
```

maple [A] time = 0.04, size = 23, normalized size = 0.82

$$\frac{1}{5}b\,x^{5}+\frac{1}{4}a\,x^{4}+\frac{1}{2}b\,x^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)*(b*x+a)*(x^2-x+1),x)
```

```
[Out] a*x+1/2*b*x^2+1/4*a*x^4+1/5*b*x^5
```

maxima [A] time = 0.52, size = 22, normalized size = 0.79

$$\frac{1}{5}\,bx^{5}+\frac{1}{4}\,ax^{4}+\frac{1}{2}\,bx^{2}+ax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x^2-x+1),x, algorithm="maxima")
```

```
[Out] 1/5*b*x^5 + 1/4*a*x^4 + 1/2*b*x^2 + a*x
```

mupad [B] time = 0.04, size = 22, normalized size = 0.79

$$\frac{b\,x^{5}}{5}+\frac{a\,x^{4}}{4}+\frac{b\,x^{2}}{2}+a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)*(a + b*x)*(x^2 - x + 1),x)
```

```
[Out] a*x + (a*x^4)/4 + (b*x^2)/2 + (b*x^5)/5
```

sympy [A] time = 0.06, size = 22, normalized size = 0.79

$$\frac{ax^{4}}{4}+ax+\frac{bx^{5}}{5}+\frac{bx^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)*(b*x+a)*(x**2-x+1),x)
```

```
[Out] a*x**4/4 + a*x + b*x**5/5 + b*x**2/2
```

3.2298 $\int \frac{a+bx}{(1+x)\left(1-x+x^2\right)}\,dx$

Optimal. Leaf size=54

$$-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)-\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

```
[Out] 1/3*(a-b)*ln(1+x)-1/6*(a-b)*ln(x^2-x+1)-1/3*(a+b)*arctan(1/3*(1-2*x)*3^(1/2
))*3^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.238, Rules used = {800, 634, 618, 204, 628}

$$-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)-\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)*(1 - x + x^2)),x]
```

```
[Out] -(((a + b)*ArcTan[(1 - 2*x)/Sqrt[3]])/Sqrt[3]) + ((a - b)*Log[1 + x])/3 - (
(a - b)*Log[1 - x + x^2])/6
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(1+x)\left(1-x+x^2\right)}\,dx &= \int \left(\frac{a-b}{3(1+x)}+\frac{2a+b-(a-b)x}{3\left(1-x+x^2\right)}\right)dx\\ &= \frac{1}{3}(a-b)\log(1+x)+\frac{1}{3}\int \frac{2a+b-(a-b)x}{1-x+x^2}\,dx\\ &= \frac{1}{3}(a-b)\log(1+x)+\frac{1}{6}(-a+b)\int \frac{-1+2x}{1-x+x^2}\,dx+\frac{1}{2}(a+b)\int \frac{1}{1-x+x^2}\,dx\\ &= \frac{1}{3}(a-b)\log(1+x)-\frac{1}{6}(a-b)\log\left(1-x+x^2\right)+(-a-b)\operatorname{Subst}\left(\int \frac{1}{-3-x^2}\,dx,x,-\right.\\ &= -\frac{(a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{\sqrt{3}}+\frac{1}{3}(a-b)\log(1+x)-\frac{1}{6}(a-b)\log\left(1-x+x^2\right)\end{aligned}$$

Mathematica [A] time = 0.03, size = 49, normalized size = 0.91

$$\frac{1}{6}(a-b)\left(2\log(x+1)-\log\left(x^2-x+1\right)\right)+\frac{(a+b)\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)}{\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)*(1 - x + x^2)),x]
```

```
[Out] ((a + b)*ArcTan[(-1 + 2*x)/Sqrt[3]])/Sqrt[3] + ((a - b)*(2*Log[1 + x] - Log
[1 - x + x^2]))/6
```

fricas [A] time = 0.87, size = 47, normalized size = 0.87

$$\frac{1}{3}\sqrt{3}(a+b)\arctan\left(\frac{1}{3}\sqrt{3}(2x-1)\right)-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="fricas")
```

```
[Out] 1/3*sqrt(3)*(a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log(x^2 - x
 + 1) + 1/3*(a - b)*log(x + 1)
```

giac [A] time = 0.15, size = 53, normalized size = 0.98

$$\frac{1}{3}\left(\sqrt{3}a+\sqrt{3}b\right)\arctan\left(\frac{1}{3}\sqrt{3}(2x-1)\right)-\frac{1}{6}(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}(a-b)\log(|x+1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="giac")
```

```
[Out] 1/3*(sqrt(3)*a + sqrt(3)*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log
(x^2 - x + 1) + 1/3*(a - b)*log(abs(x + 1))
```

maple [A] time = 0.06, size = 74, normalized size = 1.37

$$\frac{\sqrt{3}\,a\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}+\frac{a\ln(x+1)}{3}-\frac{a\ln\left(x^2-x+1\right)}{6}+\frac{\sqrt{3}\,b\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{3}-\frac{b\ln(x+1)}{3}+\frac{b\ln\left(x^2-x+1\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)/(x^2-x+1),x)
```

```
[Out] 1/3*ln(x+1)*a-1/3*ln(x+1)*b-1/6*ln(x^2-x+1)*a+1/6*ln(x^2-x+1)*b+1/3*3^(1/2)
*arctan(1/3*(2*x-1)*3^(1/2))*a+1/3*3^(1/2)*arctan(1/3*(2*x-1)*3^(1/2))*b
```

maxima [A] time = 1.32, size = 47, normalized size = 0.87

$$\frac{1}{3}\sqrt{3}\,(a+b)\arctan\left(\frac{1}{3}\sqrt{3}\,(2\,x-1)\right)-\frac{1}{6}\,(a-b)\log\left(x^2-x+1\right)+\frac{1}{3}\,(a-b)\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x^2-x+1),x, algorithm="maxima")
```

```
[Out] 1/3*sqrt(3)*(a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/6*(a - b)*log(x^2 - x
 + 1) + 1/3*(a - b)*log(x + 1)
```

mupad [B] time = 2.34, size = 78, normalized size = 1.44

$$\ln\left(x+1\right)\left(\frac{a}{3}-\frac{b}{3}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{b}{6}-\frac{a}{6}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{6}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{6}\right)-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\Bigg(\frac{a}{6}-\frac{b}{6}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)*(x^2 - x + 1)),x)
```

```
[Out] log(x + (3^(1/2)*1i)/2 - 1/2)*(b/6 - a/6 + (3^(1/2)*a*1i)/6 + (3^(1/2)*b*1i
)/6) - log(x - (3^(1/2)*1i)/2 - 1/2)*(a/6 - b/6 + (3^(1/2)*a*1i)/6 + (3^(1/
2)*b*1i)/6) + log(x + 1)*(a/3 - b/3)
```

sympy [C] time = 0.43, size = 201, normalized size = 3.72

$$\frac{(a-b)\log\left(x+\frac{a^2(a-b)+2ab^2+b(a-b)^2}{a^3+b^3}\right)}{3}+\left(-\frac{a}{6}+\frac{b}{6}-\frac{\sqrt{3}\,i\,(a+b)}{6}\right)\log\Bigg(x+\frac{3a^2\left(-\frac{a}{6}+\frac{b}{6}-\frac{\sqrt{3}\,i(a+b)}{6}\right)+2ab^2+9b\Big(-}{a^3+b^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)/(x**2-x+1),x)
```

```
[Out] (a - b)*log(x + (a**2*(a - b) + 2*a*b**2 + b*(a - b)**2)/(a**3 + b**3))/3 +
 (-a/6 + b/6 - sqrt(3)*I*(a + b)/6)*log(x + (3*a**2*(-a/6 + b/6 - sqrt(3)*I
*(a + b)/6) + 2*a*b**2 + 9*b*(-a/6 + b/6 - sqrt(3)*I*(a + b)/6)**2)/(a**3 +
 b**3)) + (-a/6 + b/6 + sqrt(3)*I*(a + b)/6)*log(x + (3*a**2*(-a/6 + b/6 +
sqrt(3)*I*(a + b)/6) + 2*a*b**2 + 9*b*(-a/6 + b/6 + sqrt(3)*I*(a + b)/6)**2
)/(a**3 + b**3))
```

3.2299 $\int \frac{a+bx}{(1+x)^2\left(1-x+x^2\right)^2}\,dx$

Optimal. Leaf size=79

$$\frac{x(a+bx)}{3\left(x^3+1\right)}-\frac{1}{18}(2a-b)\log\left(x^2-x+1\right)+\frac{1}{9}(2a-b)\log(x+1)-\frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}}$$

```
[Out] 1/3*x*(b*x+a)/(x^3+1)+1/9*(2*a-b)*ln(1+x)-1/18*(2*a-b)*ln(x^2-x+1)-1/9*(2*a
+b)*arctan(1/3*(1-2*x)*3^(1/2))*3^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {809, 1855, 1860, 31, 634, 618, 204, 628}

$$\frac{x(a+bx)}{3\left(x^3+1\right)}-\frac{1}{18}(2a-b)\log\left(x^2-x+1\right)+\frac{1}{9}(2a-b)\log(x+1)-\frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2),x]
```

```
[Out] (x*(a + b*x))/(3*(1 + x^3)) - ((2*a + b)*ArcTan[(1 - 2*x)/Sqrt[3]])/(3*Sqrt
[3]) + ((2*a - b)*Log[1 + x])/9 - ((2*a - b)*Log[1 - x + x^2])/18
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1860

```
Int[((A_) + (B_.)*(x_))/((a_) + (b_.)*(x_)^3), x_Symbol] :> With[{r = Numer
ator[Rt[a/b, 3]], s = Denominator[Rt[a/b, 3]]}, -Dist[(r*(B*r - A*s))/(3*a*
s), Int[1/(r + s*x), x], x] + Dist[r/(3*a*s), Int[(r*(B*r + 2*A*s) + s*(B*r
 - A*s)*x)/(r^2 - r*s*x + s^2*x^2), x], x]] /; FreeQ[{a, b, A, B}, x] && Ne
Q[a*B^3 - b*A^3, 0] && PosQ[a/b]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{(1+x)^2\left(1-x+x^2\right)^2}\,dx &= \int \frac{a+bx}{\left(1+x^3\right)^2}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)}-\frac{1}{3}\int \frac{-2a-bx}{1+x^3}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)}-\frac{1}{9}\int \frac{-4a-b+(2a-b)x}{1-x+x^2}\,dx-\frac{1}{9}(-2a+b)\int \frac{1}{1+x}\,dx\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)}+\frac{1}{9}(2a-b)\log(1+x)-\frac{1}{6}(-2a-b)\int \frac{1}{1-x+x^2}\,dx-\frac{1}{18}(2a-b)\int\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)}+\frac{1}{9}(2a-b)\log(1+x)-\frac{1}{18}(2a-b)\log\left(1-x+x^2\right)-\frac{1}{3}(2a+b)\,\mathrm{Sub}\\
&= \frac{x(a+bx)}{3\left(1+x^3\right)}-\frac{(2a+b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{3\sqrt{3}}+\frac{1}{9}(2a-b)\log(1+x)-\frac{1}{18}(2a-b)\log\left(1-\right.
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 72, normalized size = 0.91

$$\frac{1}{18}\left(\frac{6x(a+bx)}{x^3+1}+(b-2a)\log\left(x^2-x+1\right)+2(2a-b)\log(x+1)+2\sqrt{3}\,(2a+b)\tan^{-1}\left(\frac{2x-1}{\sqrt{3}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^2*(1 - x + x^2)^2),x]
```

```
[Out] ((6*x*(a + b*x))/(1 + x^3) + 2*Sqrt[3]*(2*a + b)*ArcTan[(-1 + 2*x)/Sqrt[3]]
 + 2*(2*a - b)*Log[1 + x] + (-2*a + b)*Log[1 - x + x^2])/18
```

fricas [A] time = 0.94, size = 103, normalized size = 1.30

$$\frac{6\,bx^2+2\,\sqrt{3}\left((2\,a+b)x^3+2\,a+b\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)+6\,ax-\left((2\,a-b)x^3+2\,a-b\right)\log\left(x^2-x+1\right)+}{18\left(x^3+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="fricas")
```

```
[Out] 1/18*(6*b*x^2 + 2*sqrt(3)*((2*a + b)*x^3 + 2*a + b)*arctan(1/3*sqrt(3)*(2*x
 - 1)) + 6*a*x - ((2*a - b)*x^3 + 2*a - b)*log(x^2 - x + 1) + 2*((2*a - b)*
x^3 + 2*a - b)*log(x + 1))/(x^3 + 1)
```

giac [**A**] time = 0.19, size = 101, normalized size = 1.28

$$\frac{1}{9}\,\sqrt{3}\,(2\,a+b)\arctan\left(-\sqrt{3}\left(\frac{2}{x+1}-1\right)\right)-\frac{1}{18}\,(2\,a-b)\log\left(-\frac{3}{x+1}+\frac{3}{(x+1)^2}+1\right)-\frac{a}{9\,(x+1)}+\frac{b}{9\,(x+1)}-\frac{b}{9\left(\frac{3}{x+1}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="giac")
```

```
[Out] 1/9*sqrt(3)*(2*a + b)*arctan(-sqrt(3)*(2/(x + 1) - 1)) - 1/18*(2*a - b)*log
(-3/(x + 1) + 3/(x + 1)^2 + 1) - 1/9*a/(x + 1) + 1/9*b/(x + 1) - 1/9*(b + (
a - b)/(x + 1))/(3/(x + 1) - 3/(x + 1)^2 - 1)
```

maple [**A**] time = 0.06, size = 116, normalized size = 1.47

$$\frac{2\sqrt{3}\,a\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{9}+\frac{2a\ln(x+1)}{9}-\frac{a\ln\left(x^2-x+1\right)}{9}+\frac{\sqrt{3}\,b\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{9}-\frac{b\ln(x+1)}{9}+\frac{b\ln\left(x^2-x+1\right.}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^2/(x^2-x+1)^2,x)
```

```
[Out] -1/9/(x+1)*a+1/9/(x+1)*b+2/9*a*ln(x+1)-1/9*b*ln(x+1)-1/9*((-a-2*b)*x-a+b)/(
x^2-x+1)-1/9*a*ln(x^2-x+1)+1/18*b*ln(x^2-x+1)+2/9*3^(1/2)*a*arctan(1/3*(2*x
-1)*3^(1/2))+1/9*3^(1/2)*b*arctan(1/3*(2*x-1)*3^(1/2))
```

maxima [**A**] time = 1.36, size = 71, normalized size = 0.90

$$\frac{1}{9}\,\sqrt{3}\,(2\,a+b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{18}\,(2\,a-b)\log\left(x^2-x+1\right)+\frac{1}{9}\,(2\,a-b)\log(x+1)+\frac{bx^2+ax}{3\left(x^3+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^2/(x^2-x+1)^2,x, algorithm="maxima")
```

```
[Out] 1/9*sqrt(3)*(2*a + b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/18*(2*a - b)*log(x^
2 - x + 1) + 1/9*(2*a - b)*log(x + 1) + 1/3*(b*x^2 + a*x)/(x^3 + 1)
```

mupad [**B**] time = 2.29, size = 97, normalized size = 1.23

$$\frac{\frac{b\,x^2}{3}+\frac{a\,x}{3}}{x^3+1}-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{a}{9}-\frac{b}{18}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{9}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{18}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1\mathrm{i}}{2}\right)\left(\frac{b}{18}-\frac{a}{9}+\frac{\sqrt{3}\,a\,1\mathrm{i}}{9}+\frac{\sqrt{3}\,b\,1\mathrm{i}}{18}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^2*(x^2 - x + 1)^2),x)
```

```
[Out] ((a*x)/3 + (b*x^2)/3)/(x^3 + 1) - log(x - (3^(1/2)*1i)/2 - 1/2)*(a/9 - b/18
 + (3^(1/2)*a*1i)/9 + (3^(1/2)*b*1i)/18) + log(x + (3^(1/2)*1i)/2 - 1/2)*(b
/18 - a/9 + (3^(1/2)*a*1i)/9 + (3^(1/2)*b*1i)/18) + log(x + 1)*((2*a)/9 - b
/9)
```

sympy [C] time = 0.59, size = 238, normalized size = 3.01

$$\frac{(2a-b)\log\left(x+\frac{4a^2(2a-b)+4ab^2+b(2a-b)^2}{8a^3+b^3}\right)}{9}+\left(-\frac{a}{9}+\frac{b}{18}-\frac{\sqrt{3}\,i\,(2a+b)}{18}\right)\log\left(x+\frac{36a^2\left(-\frac{a}{9}+\frac{b}{18}-\frac{\sqrt{3}\,i(2a+b)}{18}\right)+4a}{8a^3+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**2/(x**2-x+1)**2,x)
```

```
[Out] (2*a - b)*log(x + (4*a**2*(2*a - b) + 4*a*b**2 + b*(2*a - b)**2)/(8*a**3 +
b**3))/9 + (-a/9 + b/18 - sqrt(3)*I*(2*a + b)/18)*log(x + (36*a**2*(-a/9 +
b/18 - sqrt(3)*I*(2*a + b)/18) + 4*a*b**2 + 81*b*(-a/9 + b/18 - sqrt(3)*I*(
2*a + b)/18)**2)/(8*a**3 + b**3)) + (-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18)*
log(x + (36*a**2*(-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18) + 4*a*b**2 + 81*b*(
-a/9 + b/18 + sqrt(3)*I*(2*a + b)/18)**2)/(8*a**3 + b**3)) + (a*x + b*x**2)
/(3*x**3 + 3)
```

3.2300 $\int \frac{a+bx}{(1+x)^3\left(1-x+x^2\right)^3}\,dx$

Optimal. Leaf size=101

$$\frac{x(a+bx)}{6\left(x^3+1\right)^2}+\frac{x(5a+4bx)}{18\left(x^3+1\right)}-\frac{1}{54}(5a-2b)\log\left(x^2-x+1\right)+\frac{1}{27}(5a-2b)\log(x+1)-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}$$

```
[Out] 1/6*x*(b*x+a)/(x^3+1)^2+1/18*x*(4*b*x+5*a)/(x^3+1)+1/27*(5*a-2*b)*ln(1+x)-1
/54*(5*a-2*b)*ln(x^2-x+1)-1/27*(5*a+2*b)*arctan(1/3*(1-2*x)*3^(1/2))*3^(1/2
)
```

Rubi **[A]** time = 0.10, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 8, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.381, Rules used = {809, 1855, 1860, 31, 634, 618, 204, 628}

$$\frac{x(a+bx)}{6\left(x^3+1\right)^2}+\frac{x(5a+4bx)}{18\left(x^3+1\right)}-\frac{1}{54}(5a-2b)\log\left(x^2-x+1\right)+\frac{1}{27}(5a-2b)\log(x+1)-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3),x]
```

```
[Out] (x*(a + b*x))/(6*(1 + x^3)^2) + (x*(5*a + 4*b*x))/(18*(1 + x^3)) - ((5*a +
2*b)*ArcTan[(1 - 2*x)/Sqrt[3]])/(9*Sqrt[3]) + ((5*a - 2*b)*Log[1 + x])/27 -
 ((5*a - 2*b)*Log[1 - x + x^2])/54
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1860

```
Int[((A_) + (B_.)*(x_))/((a_) + (b_.)*(x_)^3), x_Symbol] :> With[{r = Numer
ator[Rt[a/b, 3]], s = Denominator[Rt[a/b, 3]]}, -Dist[(r*(B*r - A*s))/(3*a*
s), Int[1/(r + s*x), x], x] + Dist[r/(3*a*s), Int[(r*(B*r + 2*A*s) + s*(B*r
 - A*s)*x)/(r^2 - r*s*x + s^2*x^2), x], x]] /; FreeQ[{a, b, A, B}, x] && Ne
Q[a*B^3 - b*A^3, 0] && PosQ[a/b]
```

Rubi steps

$$\begin{aligned}\int \frac{a+bx}{(1+x)^3\left(1-x+x^2\right)^3}\,dx &= \int \frac{a+bx}{\left(1+x^3\right)^3}\,dx\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}-\frac{1}{6}\int \frac{-5a-4bx}{\left(1+x^3\right)^2}\,dx\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{18}\int \frac{10a+4bx}{1+x^3}\,dx\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{54}\int \frac{20a+4b+(-10a+4b)x}{1-x+x^2}\,dx+\frac{1}{27}(5a-2b)\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{27}(5a-2b)\log(1+x)+\frac{1}{54}(-5a+2b)\int \frac{-1+2}{1-x+}\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}+\frac{1}{27}(5a-2b)\log(1+x)-\frac{1}{54}(5a-2b)\log\left(1-x+\right.\\ &= \frac{x(a+bx)}{6\left(1+x^3\right)^2}+\frac{x(5a+4bx)}{18\left(1+x^3\right)}-\frac{(5a+2b)\tan^{-1}\left(\frac{1-2x}{\sqrt{3}}\right)}{9\sqrt{3}}+\frac{1}{27}(5a-2b)\log(1+x)-\end{aligned}$$

Mathematica [A] time = 0.06, size = 94, normalized size = 0.93

$$\frac{1}{54}\left(\frac{9x(a+bx)}{\left(x^3+1\right)^2}+\frac{3x(5a+4bx)}{x^3+1}+(2b-5a)\log\left(x^2-x+1\right)+2(5a-2b)\log(x+1)+2\sqrt{3}(5a+2b)\tan^{-1}\left(\frac{2}{}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^3*(1 - x + x^2)^3),x]
```

```
[Out] ((9*x*(a + b*x))/(1 + x^3)^2 + (3*x*(5*a + 4*b*x))/(1 + x^3) + 2*Sqrt[3]*(5
*a + 2*b)*ArcTan[(-1 + 2*x)/Sqrt[3]] + 2*(5*a - 2*b)*Log[1 + x] + (-5*a + 2
*b)*Log[1 - x + x^2])/54
```

fricas [A] time = 1.06, size = 160, normalized size = 1.58

$$\frac{12\,bx^5+15\,ax^4+21\,bx^2+2\,\sqrt{3}\left((5\,a+2\,b)x^6+2\,(5\,a+2\,b)x^3+5\,a+2\,b\right)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)+24\,ax-((5}{54\,(x^6+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(12*b*x^5 + 15*a*x^4 + 21*b*x^2 + 2*sqrt(3)*((5*a + 2*b)*x^6 + 2*(5*a
+ 2*b)*x^3 + 5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) + 24*a*x - ((5*a - 2*
b)*x^6 + 2*(5*a - 2*b)*x^3 + 5*a - 2*b)*log(x^2 - x + 1) + 2*((5*a - 2*b)*x
^6 + 2*(5*a - 2*b)*x^3 + 5*a - 2*b)*log(x + 1))/(x^6 + 2*x^3 + 1)
```

giac [A] time = 0.17, size = 88, normalized size = 0.87

$$\frac{1}{27}\,\sqrt{3}\,(5\,a+2\,b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{54}\,(5\,a-2\,b)\log\left(x^2-x+1\right)+\frac{1}{27}\,(5\,a-2\,b)\log\left(|x+1|\right)+\frac{4\,bx^5+5\,ax}{18\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="giac")
```

```
[Out] 1/27*sqrt(3)*(5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/54*(5*a - 2*b)*l
og(x^2 - x + 1) + 1/27*(5*a - 2*b)*log(abs(x + 1)) + 1/18*(4*b*x^5 + 5*a*x^
4 + 7*b*x^2 + 8*a*x)/(x^3 + 1)^2
```

maple [A] time = 0.06, size = 154, normalized size = 1.52

$$\frac{5\sqrt{3}\,a\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{27}+\frac{5a\ln(x+1)}{27}-\frac{5a\ln\left(x^2-x+1\right)}{54}+\frac{2\sqrt{3}\,b\arctan\left(\frac{(2x-1)\sqrt{3}}{3}\right)}{27}-\frac{2b\ln(x+1)}{27}+\frac{b\ln\left(x^2-x\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^3/(x^2-x+1)^3,x)
```

```
[Out] -1/54/(x+1)^2*a+1/54/(x+1)^2*b-1/9/(x+1)*a+2/27/(x+1)*b+5/27*a*ln(x+1)-2/27
*b*ln(x+1)-1/27*((-3*a-4*b)*x^3+(a+13/2*b)*x^2+(-a-8*b)*x-7/2*a+5/2*b)/(x^2
-x+1)^2-5/54*a*ln(x^2-x+1)+1/27*b*ln(x^2-x+1)+5/27*3^(1/2)*a*arctan(1/3*(2*
x-1)*3^(1/2))+2/27*3^(1/2)*b*arctan(1/3*(2*x-1)*3^(1/2))
```

maxima [A] time = 1.27, size = 92, normalized size = 0.91

$$\frac{1}{27}\,\sqrt{3}\,(5\,a+2\,b)\arctan\left(\frac{1}{3}\,\sqrt{3}\,(2\,x-1)\right)-\frac{1}{54}\,(5\,a-2\,b)\log\left(x^2-x+1\right)+\frac{1}{27}\,(5\,a-2\,b)\log(x+1)+\frac{4\,bx^5+5\,ax^4}{18\,(x^6+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^3/(x^2-x+1)^3,x, algorithm="maxima")
```

```
[Out] 1/27*sqrt(3)*(5*a + 2*b)*arctan(1/3*sqrt(3)*(2*x - 1)) - 1/54*(5*a - 2*b)*l
og(x^2 - x + 1) + 1/27*(5*a - 2*b)*log(x + 1) + 1/18*(4*b*x^5 + 5*a*x^4 + 7
*b*x^2 + 8*a*x)/(x^6 + 2*x^3 + 1)
```

mupad [B] time = 0.14, size = 114, normalized size = 1.13

$$\ln\left(x+1\right)\,\left(\frac{5\,a}{27}-\frac{2\,b}{27}\right)+\ln\left(x-\frac{1}{2}+\frac{\sqrt{3}\,1{}\mathrm{i}}{2}\right)\,\left(\frac{b}{27}-\frac{5\,a}{54}+\frac{\sqrt{3}\,a\,5{}\mathrm{i}}{54}+\frac{\sqrt{3}\,b\,1{}\mathrm{i}}{27}\right)-\ln\left(x-\frac{1}{2}-\frac{\sqrt{3}\,1{}\mathrm{i}}{2}\right)\,\left(\frac{5\,a}{54}-\frac{b}{27}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^3*(x^2 - x + 1)^3),x)
```

```
[Out] log(x + (3^(1/2)*1i)/2 - 1/2)*(b/27 - (5*a)/54 + (3^(1/2)*a*5i)/54 + (3^(1/
2)*b*1i)/27) - log(x - (3^(1/2)*1i)/2 - 1/2)*((5*a)/54 - b/27 + (3^(1/2)*a*
5i)/54 + (3^(1/2)*b*1i)/27) + log(x + 1)*((5*a)/27 - (2*b)/27) + ((4*a*x)/9
 + (5*a*x^4)/18 + (7*b*x^2)/18 + (2*b*x^5)/9)/(2*x^3 + x^6 + 1)
```

sympy [C] time = 0.71, size = 292, normalized size = 2.89

$$\frac{(5a-2b)\log\left(x+\frac{25a^{2}(5a-2b)+40ab^{2}+2b(5a-2b)^{2}}{125a^{3}+8b^{3}}\right)}{27}+\left(-\frac{5a}{54}+\frac{b}{27}-\frac{\sqrt{3}\,i\,(5a+2b)}{54}\right)\log\left(x+\frac{675a^{2}\left(-\frac{5a}{54}+\frac{b}{27}-\frac{\sqrt{3}\,i(5}{5}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**3/(x**2-x+1)**3,x)
```

```
[Out] (5*a - 2*b)*log(x + (25*a**2*(5*a - 2*b) + 40*a*b**2 + 2*b*(5*a - 2*b)**2)/
(125*a**3 + 8*b**3))/27 + (-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54)*log(x
 + (675*a**2*(-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54) + 40*a*b**2 + 1458
*b*(-5*a/54 + b/27 - sqrt(3)*I*(5*a + 2*b)/54)**2)/(125*a**3 + 8*b**3)) + (
-5*a/54 + b/27 + sqrt(3)*I*(5*a + 2*b)/54)*log(x + (675*a**2*(-5*a/54 + b/2
7 + sqrt(3)*I*(5*a + 2*b)/54) + 40*a*b**2 + 1458*b*(-5*a/54 + b/27 + sqrt(3
)*I*(5*a + 2*b)/54)**2)/(125*a**3 + 8*b**3)) + (5*a*x**4 + 8*a*x + 4*b*x**5
 + 7*b*x**2)/(18*x**6 + 36*x**3 + 18)
```

3.2301 $\int (1+x)^{3/2}(a+bx)\left(1-x+x^2\right)^{3/2}\,dx$

<u>**Optimal**</u>. Leaf size=365

$$\frac{18\sqrt{x^2-x+1}\,\sqrt{x+1}\,\left(91ax+55bx^2\right)}{5005}+\frac{2}{143}\sqrt{x^2-x+1}\,\left(x^3+1\right)\sqrt{x+1}\,\left(13ax+11bx^2\right)+\frac{18\,3^{3/4}\sqrt{2+\sqrt{3}}\,\sqrt{x^2-}}{}$$

```
[Out] 18/5005*(55*b*x^2+91*a*x)*(1+x)^(1/2)*(x^2-x+1)^(1/2)+2/143*(11*b*x^2+13*a*
x)*(x^3+1)*(1+x)^(1/2)*(x^2-x+1)^(1/2)+54/91*b*(1+x)^(1/2)*(x^2-x+1)^(1/2)/
(1+x+3^(1/2))-27/91*3^(1/4)*b*(1+x)^(3/2)*EllipticE((1+x-3^(1/2))/(1+x+3^(1
/2)),I*3^(1/2)+2*I)*(x^2-x+1)^(1/2)*(1/2*6^(1/2)-1/2*2^(1/2))*((x^2-x+1)/(1
+x+3^(1/2))^2)^(1/2)/(x^3+1)/((1+x)/(1+x+3^(1/2))^2)^(1/2)+18/5005*3^(3/4)*
(1+x)^(3/2)*EllipticF((1+x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(91*a-55*b
*(1-3^(1/2)))*(x^2-x+1)^(1/2)*(1/2*6^(1/2)+1/2*2^(1/2))*((x^2-x+1)/(1+x+3^(
1/2))^2)^(1/2)/(x^3+1)/((1+x)/(1+x+3^(1/2))^2)^(1/2)
```

<u>**Rubi**</u> [A] time = 0.21, antiderivative size = 365, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {809, 1853, 1878, 218, 1877}

$$\frac{18\sqrt{x^2-x+1}\,\sqrt{x+1}\,\left(91ax+55bx^2\right)}{5005}+\frac{2}{143}\sqrt{x^2-x+1}\,\left(x^3+1\right)\sqrt{x+1}\,\left(13ax+11bx^2\right)+\frac{18\,3^{3/4}\sqrt{2+\sqrt{3}}\,\sqrt{x^2-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(1 + x)^(3/2)*(a + b*x)*(1 - x + x^2)^(3/2),x]
```

```
[Out] (54*b*Sqrt[1 + x]*Sqrt[1 - x + x^2])/(91*(1 + Sqrt[3] + x)) + (18*Sqrt[1 +
x]*Sqrt[1 - x + x^2]*(91*a*x + 55*b*x^2))/5005 + (2*Sqrt[1 + x]*Sqrt[1 - x
+ x^2]*(13*a*x + 11*b*x^2)*(1 + x^3))/143 - (27*3^(1/4)*Sqrt[2 - Sqrt[3]]*b
*(1 + x)^(3/2)*Sqrt[1 - x + x^2]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*El
lipticE[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(91*S
qrt[(1 + x)/(1 + Sqrt[3] + x)^2]*(1 + x^3)) + (18*3^(3/4)*Sqrt[2 + Sqrt[3]]
*(91*a - 55*(1 - Sqrt[3])*b)*(1 + x)^(3/2)*Sqrt[1 - x + x^2]*Sqrt[(1 - x +
x^2)/(1 + Sqrt[3] + x)^2]*EllipticF[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] +
 x)], -7 - 4*Sqrt[3]])/(5005*Sqrt[(1 + x)/(1 + Sqrt[3] + x)^2]*(1 + x^3))
```

<u>Rule 218</u>

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = Numer[Rt[b/a, 3]],
s = Denom[Rt[b/a, 3]]}, Simp[(2*Sqrt[2 + Sqrt[3]]*(s + r*x)*Sqrt[(s^2 - r*s
*x + r^2*x^2)/((1 + Sqrt[3])*s + r*x)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*s
+ r*x)/((1 + Sqrt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(3^(1/4)*r*Sqrt[a + b*x^3
]*Sqrt[(s*(s + r*x))/((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b}, x] &
& PosQ[a]
```

<u>Rule 809</u>

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1853

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> Module[{q = Expon[Pq
, x], i}, Simp[(a + b*x^n)^p*Sum[(Coeff[Pq, x, i]*x^(i + 1))/(n*p + i + 1),
 {i, 0, q}], x] + Dist[a*n*p, Int[(a + b*x^n)^(p - 1)*Sum[(Coeff[Pq, x, i]*
x^i)/(n*p + i + 1), {i, 0, q}], x], x]] /; FreeQ[{a, b}, x] && PolyQ[Pq, x]
 && IGtQ[(n - 1)/2, 0] && GtQ[p, 0]
```

Rule 1877

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Simplify[((1 - Sqrt[3])*d)/c]], s = Denom[Simplify[((1 - Sqrt[3])*d)/c
]]}, Simp[(2*d*s^3*Sqrt[a + b*x^3])/(a*r^2*((1 + Sqrt[3])*s + r*x)), x] - S
imp[(3^(1/4)*Sqrt[2 - Sqrt[3]]*d*s*(s + r*x)*Sqrt[(s^2 - r*s*x + r^2*x^2)/(
(1 + Sqrt[3])*s + r*x)^2]*EllipticE[ArcSin[((1 - Sqrt[3])*s + r*x)/((1 + Sq
rt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(r^2*Sqrt[a + b*x^3]*Sqrt[(s*(s + r*x))/
((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && Eq
Q[b*c^3 - 2*(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rule 1878

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Rt[b/a, 3]], s = Denom[Rt[b/a, 3]]}, Dist[(c*r - (1 - Sqrt[3])*d*s)/r,
 Int[1/Sqrt[a + b*x^3], x], x] + Dist[d/r, Int[((1 - Sqrt[3])*s + r*x)/Sqrt
[a + b*x^3], x], x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && NeQ[b*c^3 - 2*
(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rubi steps

$$\int (1+x)^{3/2}(a+bx)\left(1-x+x^2\right)^{3/2}\,dx = \frac{\left(\sqrt{1+x}\,\sqrt{1-x+x^2}\right)\int (a+bx)\left(1+x^3\right)^{3/2}\,dx}{\sqrt{1+x^3}}$$

$$= \frac{2}{143}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(13ax+11bx^2\right)\left(1+x^3\right) + \frac{\left(9\sqrt{1+x}\,\sqrt{1-x\right.}{}$$

$$= \frac{18\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(91ax+55bx^2\right)}{5005} + \frac{2}{143}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(13\right.$$

$$= \frac{18\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(91ax+55bx^2\right)}{5005} + \frac{2}{143}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(13\right.$$

$$= \frac{54b\sqrt{1+x}\,\sqrt{1-x+x^2}}{91\left(1+\sqrt{3}+x\right)} + \frac{18\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(91ax+55bx^2\right)}{5005} + \frac{}{1}$$

Mathematica [C] time = 1.83, size = 437, normalized size = 1.20

$$\frac{2x\sqrt{x+1}\,\sqrt{x^2-x+1}\,\left(91a\left(5x^3+14\right)+55bx\left(7x^3+16\right)\right)}{5005} - \frac{9(x+1)^{3/2}\left(\frac{\sqrt{2}\sqrt{\frac{-\frac{6i}{x+1}+\sqrt{3}+3i}{\sqrt{3}+3i}}\sqrt{\frac{\frac{6i}{x+1}+\sqrt{3}-3i}{\sqrt{3}-3i}}\left(55\left(3-i\sqrt{3}\right)b-\right.}{\sqrt{x+1}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(1 + x)^(3/2)*(a + b*x)*(1 - x + x^2)^(3/2),x]
```

```
[Out] (2*x*Sqrt[1 + x]*Sqrt[1 - x + x^2]*(91*a*(14 + 5*x^3) + 55*b*x*(16 + 7*x^3)
))/5005 - (9*(1 + x)^(3/2)*((-660*Sqrt[(-I)/(3*I + Sqrt[3])]*b*(1 - x + x^2
))/(1 + x)^2 + ((165*I)*Sqrt[2]*(I + Sqrt[3])*b*Sqrt[(3*I + Sqrt[3] - (6*I)
/(1 + x))/(3*I + Sqrt[3])]*Sqrt[(-3*I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sq
rt[3])]*EllipticE[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I
 + Sqrt[3])/(3*I - Sqrt[3])])/Sqrt[1 + x] + (Sqrt[2]*((-182*I)*Sqrt[3]*a +
55*(3 - I*Sqrt[3])*b)*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]
*Sqrt[(-3*I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]*EllipticF[I*ArcSin
h[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3]
)])/Sqrt[1 + x]))/(10010*Sqrt[(-I)/(3*I + Sqrt[3])]*Sqrt[1 - x + x^2])
```

fricas [F] time = 0.99, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\left(bx^4+ax^3+bx+a\right)\sqrt{x^2-x+1}\,\sqrt{x+1}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(3/2)*(b*x+a)*(x^2-x+1)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x^4 + a*x^3 + b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bx+a)\left(x^2-x+1\right)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(3/2)*(b*x+a)*(x^2-x+1)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*(x^2 - x + 1)^(3/2)*(x + 1)^(3/2), x)
```

maple [B] time = 1.81, size = 608, normalized size = 1.67

$$-\frac{\sqrt{x+1}\,\sqrt{x^2-x+1}\,\left(-770b\,x^8-910a\,x^7-2530b\,x^5-3458a\,x^4-1760b\,x^2-2548ax+2457i\sqrt{3}\,\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^(3/2)*(b*x+a)*(x^2-x+1)^(3/2),x)
```

```
[Out] -1/5005*(x+1)^(1/2)*(x^2-x+1)^(1/2)*(-770*b*x^8-910*a*x^7+2457*I*3^(1/2)*(-
2*(x+1)/(I*3^(1/2)-3))^(1/2)*((I*3^(1/2)-2*x+1)/(I*3^(1/2)+3))^(1/2)*((I*3^
(1/2)+2*x-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),
(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a-1485*I*3^(1/2)*(-2*(x+1)/(I*3^(1/2)
-3))^(1/2)*((I*3^(1/2)-2*x+1)/(I*3^(1/2)+3))^(1/2)*((I*3^(1/2)+2*x-1)/(I*3^
(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I
*3^(1/2)+3))^(1/2))*b-2530*b*x^5+8910*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((I*3^
(1/2)-2*x+1)/(I*3^(1/2)+3))^(1/2)*((I*3^(1/2)+2*x-1)/(I*3^(1/2)-3))^(1/2)*E
llipticE((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2
))*b-7371*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((I*3^(1/2)-2*x+1)/(I*3^(1/2)+3))^
(1/2)*((I*3^(1/2)+2*x-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2
)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a-4455*(-2*(x+1)/(I*3^(1/
2)-3))^(1/2)*((I*3^(1/2)-2*x+1)/(I*3^(1/2)+3))^(1/2)*((I*3^(1/2)+2*x-1)/(I*
3^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/
(I*3^(1/2)+3))^(1/2))*b-3458*a*x^4-1760*b*x^2-2548*a*x)/(x^3+1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bx+a)\left(x^2-x+1\right)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(3/2)*(b*x+a)*(x^2-x+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)*(x^2 - x + 1)^(3/2)*(x + 1)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int (x+1)^{3/2}\,(a+b\,x)\,\left(x^2-x+1\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^(3/2)*(a + b*x)*(x^2 - x + 1)^(3/2),x)
```

```
[Out] int((x + 1)^(3/2)*(a + b*x)*(x^2 - x + 1)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\,(x+1)^{\frac{3}{2}}\left(x^2-x+1\right)^{\frac{3}{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**(3/2)*(b*x+a)*(x**2-x+1)**(3/2),x)
```

```
[Out] Integral((a + b*x)*(x + 1)**(3/2)*(x**2 - x + 1)**(3/2), x)
```

3.2302 $\int \sqrt{1+x}\,(a+bx)\sqrt{1-x+x^2}\,dx$

Optimal. Leaf size=326

$$\frac{2}{35}\sqrt{x^2-x+1}\,\sqrt{x+1}\,\left(7ax+5bx^2\right)+\frac{2\,3^{3/4}\sqrt{2+\sqrt{3}}\,\sqrt{x^2-x+1}\,\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\,(x+1)^{3/2}\left(7a-5\left(1-\sqrt{3}\right)b\right)F\bigl(\mathrm{si}}{35\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\left(x^3+1\right)}$$

```
[Out] 2/35*(5*b*x^2+7*a*x)*(1+x)^(1/2)*(x^2-x+1)^(1/2)+6/7*b*(1+x)^(1/2)*(x^2-x+1
)^(1/2)/(1+x+3^(1/2))-3/7*3^(1/4)*b*(1+x)^(3/2)*EllipticE((1+x-3^(1/2))/(1+
x+3^(1/2)),I*3^(1/2)+2*I)*(x^2-x+1)^(1/2)*(1/2*6^(1/2)-1/2*2^(1/2))*((x^2-x
+1)/(1+x+3^(1/2))^2)^(1/2)/(x^3+1)/((1+x)/(1+x+3^(1/2))^2)^(1/2)+2/35*3^(3/
4)*(1+x)^(3/2)*EllipticF((1+x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(7*a-5*
b*(1-3^(1/2)))*(x^2-x+1)^(1/2)*(1/2*6^(1/2)+1/2*2^(1/2))*((x^2-x+1)/(1+x+3^
(1/2))^2)^(1/2)/(x^3+1)/((1+x)/(1+x+3^(1/2))^2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 326, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {809, 1853, 1878, 218, 1877}

$$\frac{2}{35}\sqrt{x^2-x+1}\,\sqrt{x+1}\,\left(7ax+5bx^2\right)+\frac{2\,3^{3/4}\sqrt{2+\sqrt{3}}\,\sqrt{x^2-x+1}\,\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\,(x+1)^{3/2}\left(7a-5\left(1-\sqrt{3}\right)b\right)F\bigl(\mathrm{si}}{35\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\left(x^3+1\right)}$$

Antiderivative was successfully verified.

```
[In] Int[Sqrt[1 + x]*(a + b*x)*Sqrt[1 - x + x^2],x]
```

```
[Out] (6*b*Sqrt[1 + x]*Sqrt[1 - x + x^2])/(7*(1 + Sqrt[3] + x)) + (2*Sqrt[1 + x]*
Sqrt[1 - x + x^2]*(7*a*x + 5*b*x^2))/35 - (3*3^(1/4)*Sqrt[2 - Sqrt[3]]*b*(1
 + x)^(3/2)*Sqrt[1 - x + x^2]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*Ellip
ticE[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(7*Sqrt[
(1 + x)/(1 + Sqrt[3] + x)^2]*(1 + x^3)) + (2*3^(3/4)*Sqrt[2 + Sqrt[3]]*(7*a
 - 5*(1 - Sqrt[3])*b)*(1 + x)^(3/2)*Sqrt[1 - x + x^2]*Sqrt[(1 - x + x^2)/(1
 + Sqrt[3] + x)^2]*EllipticF[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] + x)], -
7 - 4*Sqrt[3]])/(35*Sqrt[(1 + x)/(1 + Sqrt[3] + x)^2]*(1 + x^3))
```

Rule 218

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = Numer[Rt[b/a, 3]],
s = Denom[Rt[b/a, 3]]}, Simp[(2*Sqrt[2 + Sqrt[3]]*(s + r*x)*Sqrt[(s^2 - r*s
*x + r^2*x^2)/((1 + Sqrt[3])*s + r*x)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*s
+ r*x)/((1 + Sqrt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(3^(1/4)*r*Sqrt[a + b*x^3
]*Sqrt[(s*(s + r*x))/((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b}, x] &
& PosQ[a]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1853

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> Module[{q = Expon[Pq
, x], i}, Simp[(a + b*x^n)^p*Sum[(Coeff[Pq, x, i]*x^(i + 1))/(n*p + i + 1),
 {i, 0, q}], x] + Dist[a*n*p, Int[(a + b*x^n)^(p - 1)*Sum[(Coeff[Pq, x, i]*
x^i)/(n*p + i + 1), {i, 0, q}], x], x]] /; FreeQ[{a, b}, x] && PolyQ[Pq, x]
 && IGtQ[(n - 1)/2, 0] && GtQ[p, 0]
```

Rule 1877

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Simplify[((1 - Sqrt[3])*d)/c]], s = Denom[Simplify[((1 - Sqrt[3])*d)/c
]]}, Simp[(2*d*s^3*Sqrt[a + b*x^3])/(a*r^2*((1 + Sqrt[3])*s + r*x)), x] - S
imp[(3^(1/4)*Sqrt[2 - Sqrt[3]]*d*s*(s + r*x)*Sqrt[(s^2 - r*s*x + r^2*x^2)/(
(1 + Sqrt[3])*s + r*x)^2]*EllipticE[ArcSin[((1 - Sqrt[3])*s + r*x)/((1 + Sq
rt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(r^2*Sqrt[a + b*x^3]*Sqrt[(s*(s + r*x))/
((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && Eq
Q[b*c^3 - 2*(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rule 1878

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Rt[b/a, 3]], s = Denom[Rt[b/a, 3]]}, Dist[(c*r - (1 - Sqrt[3])*d*s)/r,
 Int[1/Sqrt[a + b*x^3], x], x] + Dist[d/r, Int[((1 - Sqrt[3])*s + r*x)/Sqrt
[a + b*x^3], x], x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && NeQ[b*c^3 - 2*
(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rubi steps

$$
\begin{aligned}
\int \sqrt{1+x}\,(a+bx)\sqrt{1-x+x^2}\,dx &= \frac{\left(\sqrt{1+x}\,\sqrt{1-x+x^2}\right)\int (a+bx)\sqrt{1+x^3}\,dx}{\sqrt{1+x^3}}\\
&= \frac{2}{35}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(7ax+5bx^2\right)+\frac{\left(3\sqrt{1+x}\,\sqrt{1-x+x^2}\right)\int \frac{\frac{2a}{5}+\frac{2bx}{7}}{\sqrt{1+x^3}}\,d}{2\sqrt{1+x^3}}\\
&= \frac{2}{35}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(7ax+5bx^2\right)+\frac{\left(3b\sqrt{1+x}\,\sqrt{1-x+x^2}\right)\int \frac{1-\sqrt{3}+x}{\sqrt{1+x^3}}}{7\sqrt{1+x^3}}\\
&= \frac{6b\sqrt{1+x}\,\sqrt{1-x+x^2}}{7\left(1+\sqrt{3}+x\right)}+\frac{2}{35}\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(7ax+5bx^2\right)-\frac{3\sqrt[4]{3}\,\sqrt{2}}{}
\end{aligned}
$$

Mathematica [C] time = 1.60, size = 423, normalized size = 1.30

$$
\frac{2}{35}x\sqrt{x+1}\,\sqrt{x^2-x+1}\,(7a+5bx)-\frac{(x+1)^{3/2}\left(\frac{\sqrt{2}\,\sqrt{\frac{-\frac{6i}{x+1}+\sqrt{3}+3i}{\sqrt{3}+3i}}\,\sqrt{\frac{\frac{6i}{x+1}+\sqrt{3}-3i}{\sqrt{3}-3i}}\left(5\left(3-i\sqrt{3}\right)b-14i\sqrt{3}\,a\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{x+1}}\right)\middle|\frac{3i+}{3i-}\right.}{\sqrt{x+1}}\right.}{70\sqrt{-}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[Sqrt[1 + x]*(a + b*x)*Sqrt[1 - x + x^2],x]
```

```
[Out] (2*x*Sqrt[1 + x]*(7*a + 5*b*x)*Sqrt[1 - x + x^2])/35 - ((1 + x)^(3/2)*((-60
*Sqrt[(-I)/(3*I + Sqrt[3])]*b*(1 - x + x^2))/(1 + x)^2 + ((15*I)*Sqrt[2]*(I
 + Sqrt[3])*b*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]*Sqrt[(-
3*I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]*EllipticE[I*ArcSinh[Sqrt[(
-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3])])/Sqrt
[1 + x] + (Sqrt[2]*((-14*I)*Sqrt[3]*a + 5*(3 - I*Sqrt[3])*b)*Sqrt[(3*I + Sq
rt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]*Sqrt[(-3*I + Sqrt[3] + (6*I)/(1 + x
))/(-3*I + Sqrt[3])]*EllipticF[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[
1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3])])/Sqrt[1 + x]))/(70*Sqrt[(-I)/(3*I
 + Sqrt[3])]*Sqrt[1 - x + x^2])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\text{integral}\left((bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(1/2)*(b*x+a)*(x^2-x+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(1/2)*(b*x+a)*(x^2-x+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1), x)
```

maple [B] time = 0.96, size = 596, normalized size = 1.83

$$-\frac{\sqrt{x+1}\,\sqrt{x^2-x+1}\,\left(-10b\,x^5-14a\,x^4-10b\,x^2-14ax+21i\sqrt{3}\,\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}}\,\sqrt{\frac{-2x+i\sqrt{3}+1}{i\sqrt{3}+3}}\,\sqrt{\frac{2x+i\sqrt{3}-1}{i\sqrt{3}-3}}\;a\,\mathrm{EllipticF}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x+1)^(1/2)*(b*x+a)*(x^2-x+1)^(1/2),x)
```

```
[Out] -1/35*(x+1)^(1/2)*(x^2-x+1)^(1/2)*(21*I*3^(1/2)*(-2*(x+1)/(I*3^(1/2)-3))^(1
/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-
3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/
2)+3))^(1/2))*a-15*I*3^(1/2)*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2
)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticF
((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-10*
b*x^5+90*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^
(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticE((-2*(x+1)/(I*3^(1/2
)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-63*(-2*(x+1)/(I*3^(1/2)
-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3
^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(
I*3^(1/2)+3))^(1/2))*a-45*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1
)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-
2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-14*a*x
^4-10*b*x^2-14*a*x)/(x^3+1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)^(1/2)*(b*x+a)*(x^2-x+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \sqrt{x+1}\,\left(a+b\,x\right)\,\sqrt{x^2-x+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x + 1)^(1/2)*(a + b*x)*(x^2 - x + 1)^(1/2),x)
```

```
[Out] int((x + 1)^(1/2)*(a + b*x)*(x^2 - x + 1)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (a+bx)\sqrt{x+1}\sqrt{x^2-x+1}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((1+x)**(1/2)*(b*x+a)*(x**2-x+1)**(1/2),x)
```

```
[Out] Integral((a + b*x)*sqrt(x + 1)*sqrt(x**2 - x + 1), x)
```

3.2303 $\int \frac{a+bx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}\,dx$

Optimal. Leaf size=275

$$\frac{2\sqrt{2+\sqrt{3}}\,\sqrt{x+1}\,\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\left(a-\left(1-\sqrt{3}\right)b\right)F\left(\sin^{-1}\left(\frac{x-\sqrt{3}+1}{x+\sqrt{3}+1}\right)|-7-4\sqrt{3}\right)}{\sqrt[4]{3}\,\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\sqrt{x^2-x+1}}-\frac{\sqrt[4]{3}\,\sqrt{2-\sqrt{3}}\,b\sqrt{x+1}\,\sqrt{\frac{x^2-x}{(x+\sqrt{3}}}}{\sqrt{\frac{x+1}{(x+\sqrt{3}+}}}$$

```
[Out] 2*b*(x^3+1)/(1+x+3^(1/2))/(1+x)^(1/2)/(x^2-x+1)^(1/2)-3^(1/4)*b*EllipticE((
1+x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(1+x)^(1/2)*(1/2*6^(1/2)-1/2*2^(1
/2))*((x^2-x+1)/(1+x+3^(1/2))^2)^(1/2)/(x^2-x+1)^(1/2)/((1+x)/(1+x+3^(1/2))
^2)^(1/2)+2/3*EllipticF((1+x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(a-b*(1-
3^(1/2)))*(1+x)^(1/2)*(1/2*6^(1/2)+1/2*2^(1/2))*((x^2-x+1)/(1+x+3^(1/2))^2)
^(1/2)*3^(3/4)/(x^2-x+1)^(1/2)/((1+x)/(1+x+3^(1/2))^2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 275, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {809, 1878, 218, 1877}

$$\frac{2\sqrt{2+\sqrt{3}}\,\sqrt{x+1}\,\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\left(a-\left(1-\sqrt{3}\right)b\right)F\left(\sin^{-1}\left(\frac{x-\sqrt{3}+1}{x+\sqrt{3}+1}\right)|-7-4\sqrt{3}\right)}{\sqrt[4]{3}\,\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\,\sqrt{x^2-x+1}}+\frac{2b\left(x^3+1\right)}{\sqrt{x+1}\,\left(x+\sqrt{3}+1\right)\sqrt{x^2-x}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/(Sqrt[1 + x]*Sqrt[1 - x + x^2]),x]
```

```
[Out] (2*b*(1 + x^3))/(Sqrt[1 + x]*(1 + Sqrt[3] + x)*Sqrt[1 - x + x^2]) - (3^(1/4
)*Sqrt[2 - Sqrt[3]]*b*Sqrt[1 + x]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*E
llipticE[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(Sqr
t[(1 + x)/(1 + Sqrt[3] + x)^2]*Sqrt[1 - x + x^2]) + (2*Sqrt[2 + Sqrt[3]]*(a
 - (1 - Sqrt[3])*b)*Sqrt[1 + x]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*Ell
ipticF[ArcSin[(1 - Sqrt[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(3^(1/
4)*Sqrt[(1 + x)/(1 + Sqrt[3] + x)^2]*Sqrt[1 - x + x^2])
```

Rule 218

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = Numer[Rt[b/a, 3]],
s = Denom[Rt[b/a, 3]]}, Simp[(2*Sqrt[2 + Sqrt[3]]*(s + r*x)*Sqrt[(s^2 - r*s
*x + r^2*x^2)/((1 + Sqrt[3])*s + r*x)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*s
+ r*x)/((1 + Sqrt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(3^(1/4)*r*Sqrt[a + b*x^3
]*Sqrt[(s*(s + r*x))/((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b}, x] &
& PosQ[a]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1877

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Simplify[((1 - Sqrt[3])*d)/c]], s = Denom[Simplify[((1 - Sqrt[3])*d)/c
]]}, Simp[(2*d*s^3*Sqrt[a + b*x^3])/(a*r^2*((1 + Sqrt[3])*s + r*x)), x] - S
imp[(3^(1/4)*Sqrt[2 - Sqrt[3]]*d*s*(s + r*x)*Sqrt[(s^2 - r*s*x + r^2*x^2)/(
(1 + Sqrt[3])*s + r*x)^2]*EllipticE[ArcSin[((1 - Sqrt[3])*s + r*x)/((1 + Sq
rt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(r^2*Sqrt[a + b*x^3]*Sqrt[(s*(s + r*x))/
((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && Eq
Q[b*c^3 - 2*(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rule 1878

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Rt[b/a, 3]], s = Denom[Rt[b/a, 3]]}, Dist[(c*r - (1 - Sqrt[3])*d*s)/r,
 Int[1/Sqrt[a + b*x^3], x], x] + Dist[d/r, Int[((1 - Sqrt[3])*s + r*x)/Sqrt
[a + b*x^3], x], x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && NeQ[b*c^3 - 2*
(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{a+bx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}\,dx &= \frac{\sqrt{1+x^3}\,\int \frac{a+bx}{\sqrt{1+x^3}}\,dx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}\\
&= \frac{\left(b\sqrt{1+x^3}\right)\int \frac{1-\sqrt{3}+x}{\sqrt{1+x^3}}\,dx}{\sqrt{1+x}\,\sqrt{1-x+x^2}} + \frac{\left(\left(a-\left(1-\sqrt{3}\right)b\right)\sqrt{1+x^3}\right)\int \frac{1}{\sqrt{1+x^3}}\,dx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}\\
&= \frac{2b\left(1+x^3\right)}{\sqrt{1+x}\,\left(1+\sqrt{3}+x\right)\sqrt{1-x+x^2}} - \frac{\sqrt[4]{3}\,\sqrt{2-\sqrt{3}}\,b\sqrt{1+x}\,\sqrt{\frac{1-x+x^2}{\left(1+\sqrt{3}+x\right)^2}}\,E\left(\sin^{-1}\right.}{\sqrt{\frac{1+x}{\left(1+\sqrt{3}+x\right)^2}}\,\sqrt{1-x+}}
\end{aligned}
$$

Mathematica [C] time = 1.11, size = 389, normalized size = 1.41

$$
-\frac{(x+1)^{3/2}\left(\frac{\sqrt{2}\sqrt{\frac{-\frac{6i}{x+1}+\sqrt{3}+3i}{\sqrt{3}+3i}}\sqrt{\frac{\frac{6i}{x+1}+\sqrt{3}-3i}{\sqrt{3}-3i}}\left(\left(3-i\sqrt{3}\right)b-2i\sqrt{3}\,a\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{x+1}}\right)\middle|\frac{3i+\sqrt{3}}{3i-\sqrt{3}}\right)}{\sqrt{x+1}}-\frac{12\sqrt{-\frac{i}{\sqrt{3}+3i}}\,b\left(x^2-x+1\right)}{(x+1)^2}+\frac{3i\sqrt{2}\left(\sqrt{3}\right.}{}\right.}{6\sqrt{-\frac{i}{\sqrt{3}+3i}}\,\sqrt{x^2-x+1}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/(Sqrt[1 + x]*Sqrt[1 - x + x^2]),x]
```

```
[Out] -1/6*((1 + x)^(3/2)*((-12*Sqrt[(-I)/(3*I + Sqrt[3])]*b*(1 - x + x^2))/(1 +
x)^2 + ((3*I)*Sqrt[2]*(I + Sqrt[3])*b*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/
(3*I + Sqrt[3])]*Sqrt[(-3*I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]*El
lipticE[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3]
)/(3*I - Sqrt[3])])/Sqrt[1 + x] + (Sqrt[2]*((-2*I)*Sqrt[3]*a + (3 - I*Sqrt[
3])*b)*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]*Sqrt[(-3*I + S
qrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]*EllipticF[I*ArcSinh[Sqrt[(-6*I)/(
3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3])])/Sqrt[1 + x]
))/(Sqrt[(-I)/(3*I + Sqrt[3])]*Sqrt[1 - x + x^2])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$
\operatorname{integral}\left(\frac{(bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}}{x^3+1}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(1/2)/(x^2-x+1)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1)/(x^3 + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\sqrt{x^2-x+1}\,\sqrt{x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(1/2)/(x^2-x+1)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/(sqrt(x^2 - x + 1)*sqrt(x + 1)), x)
```

maple [A] time = 1.41, size = 313, normalized size = 1.14

$$\left(-i\sqrt{3}\,a\,\mathrm{EllipticF}\left(\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}},\sqrt{-\frac{i\sqrt{3}-3}{i\sqrt{3}+3}}\right)+3a\,\mathrm{EllipticF}\left(\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}},\sqrt{-\frac{i\sqrt{3}-3}{i\sqrt{3}+3}}\right)-6b\,\mathrm{EllipticE}\left(\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}},\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^(1/2)/(x^2-x+1)^(1/2),x)
```

```
[Out] (-I*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))
^(1/2))*3^(1/2)*a+I*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3
)/(I*3^(1/2)+3))^(1/2))*3^(1/2)*b+3*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2
),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a+3*EllipticF((-2*(x+1)/(I*3^(1/2)-
3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-6*EllipticE((-2*(x+1)/(I*
3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b)*(x+1)^(1/2)*(x^2
-x+1)^(1/2)*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3
))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)/(x^3+1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\sqrt{x^2-x+1}\,\sqrt{x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(1/2)/(x^2-x+1)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)/(sqrt(x^2 - x + 1)*sqrt(x + 1)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{\sqrt{x+1}\,\sqrt{x^2-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^(1/2)*(x^2 - x + 1)^(1/2)),x)
```

```
[Out] int((a + b*x)/((x + 1)^(1/2)*(x^2 - x + 1)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\sqrt{x+1}\,\sqrt{x^2-x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**(1/2)/(x**2-x+1)**(1/2),x)
```

```
[Out] Integral((a + b*x)/(sqrt(x + 1)*sqrt(x**2 - x + 1)), x)
```

3.2304 $\int \frac{a+bx}{(1+x)^{3/2}\left(1-x+x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=304

$$\frac{2x(a+bx)}{3\sqrt{x+1}\sqrt{x^2-x+1}}+\frac{2\sqrt{2+\sqrt{3}}\sqrt{x+1}\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\left(a-\sqrt{3}b+b\right)F\left(\sin^{-1}\left(\frac{x-\sqrt{3}+1}{x+\sqrt{3}+1}\right)|-7-4\sqrt{3}\right)}{3\sqrt[4]{3}\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\sqrt{x^2-x+1}}+\frac{\sqrt{2-\sqrt{3}}}{}+$$

```
[Out] 2/3*x*(b*x+a)/(1+x)^(1/2)/(x^2-x+1)^(1/2)-2/3*b*(x^3+1)/(1+x+3^(1/2))/(1+x)
^(1/2)/(x^2-x+1)^(1/2)+1/3*3^(1/4)*b*EllipticE((1+x-3^(1/2))/(1+x+3^(1/2)),
I*3^(1/2)+2*I)*(1+x)^(1/2)*(1/2*6^(1/2)-1/2*2^(1/2))*((x^2-x+1)/(1+x+3^(1/2
))^2)^(1/2)/(x^2-x+1)^(1/2)/((1+x)/(1+x+3^(1/2))^2)^(1/2)+2/9*EllipticF((1+
x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(a+b-b*3^(1/2))*(1+x)^(1/2)*(1/2*6^
(1/2)+1/2*2^(1/2))*((x^2-x+1)/(1+x+3^(1/2))^2)^(1/2)*3^(3/4)/(x^2-x+1)^(1/2
)/((1+x)/(1+x+3^(1/2))^2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 304, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {809, 1855, 1878, 218, 1877}

$$\frac{2x(a+bx)}{3\sqrt{x+1}\sqrt{x^2-x+1}}+\frac{2\sqrt{2+\sqrt{3}}\sqrt{x+1}\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\left(a-\sqrt{3}b+b\right)F\left(\sin^{-1}\left(\frac{x-\sqrt{3}+1}{x+\sqrt{3}+1}\right)|-7-4\sqrt{3}\right)}{3\sqrt[4]{3}\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\sqrt{x^2-x+1}}-\frac{}{3\sqrt{x+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^(3/2)*(1 - x + x^2)^(3/2)),x]
```

```
[Out] (2*x*(a + b*x))/(3*Sqrt[1 + x]*Sqrt[1 - x + x^2]) - (2*b*(1 + x^3))/(3*Sqrt
[1 + x]*(1 + Sqrt[3] + x)*Sqrt[1 - x + x^2]) + (Sqrt[2 - Sqrt[3]]*b*Sqrt[1
+ x]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*EllipticE[ArcSin[(1 - Sqrt[3]
+ x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(3^(3/4)*Sqrt[(1 + x)/(1 + Sqrt[3
] + x)^2]*Sqrt[1 - x + x^2]) + (2*Sqrt[2 + Sqrt[3]]*(a + b - Sqrt[3]*b)*Sqr
t[1 + x]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*EllipticF[ArcSin[(1 - Sqrt
[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(3*3^(1/4)*Sqrt[(1 + x)/(1 +
Sqrt[3] + x)^2]*Sqrt[1 - x + x^2])
```

Rule 218

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = Numer[Rt[b/a, 3]],
s = Denom[Rt[b/a, 3]]}, Simp[(2*Sqrt[2 + Sqrt[3]]*(s + r*x)*Sqrt[(s^2 - r*s
*x + r^2*x^2)/((1 + Sqrt[3])*s + r*x)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*s
+ r*x)/((1 + Sqrt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(3^(1/4)*r*Sqrt[a + b*x^3
]*Sqrt[(s*(s + r*x))/((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b}, x] &
& PosQ[a]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1877

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Simplify[((1 - Sqrt[3])*d)/c]], s = Denom[Simplify[((1 - Sqrt[3])*d)/c
]]}, Simp[(2*d*s^3*Sqrt[a + b*x^3])/(a*r^2*((1 + Sqrt[3])*s + r*x)), x] - S
imp[(3^(1/4)*Sqrt[2 - Sqrt[3]]*d*s*(s + r*x)*Sqrt[(s^2 - r*s*x + r^2*x^2)/(
(1 + Sqrt[3])*s + r*x)^2]*EllipticE[ArcSin[((1 - Sqrt[3])*s + r*x)/((1 + Sq
rt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(r^2*Sqrt[a + b*x^3]*Sqrt[(s*(s + r*x))/
((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && Eq
Q[b*c^3 - 2*(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rule 1878

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Rt[b/a, 3]], s = Denom[Rt[b/a, 3]]}, Dist[(c*r - (1 - Sqrt[3])*d*s)/r,
 Int[1/Sqrt[a + b*x^3], x], x] + Dist[d/r, Int[((1 - Sqrt[3])*s + r*x)/Sqrt
[a + b*x^3], x], x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && NeQ[b*c^3 - 2*
(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{a+bx}{(1+x)^{3/2}\left(1-x+x^2\right)^{3/2}}\,dx &= \frac{\sqrt{1+x^3}\int \frac{a+bx}{\left(1+x^3\right)^{3/2}}\,dx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}\\
&= \frac{2x(a+bx)}{3\sqrt{1+x}\,\sqrt{1-x+x^2}} - \frac{\left(2\sqrt{1+x^3}\right)\int \frac{-\frac{a}{2}+\frac{bx}{2}}{\sqrt{1+x^3}}\,dx}{3\sqrt{1+x}\,\sqrt{1-x+x^2}}\\
&= \frac{2x(a+bx)}{3\sqrt{1+x}\,\sqrt{1-x+x^2}} - \frac{\left(b\sqrt{1+x^3}\right)\int \frac{1-\sqrt{3}+x}{\sqrt{1+x^3}}\,dx}{3\sqrt{1+x}\,\sqrt{1-x+x^2}} - \frac{\left(2\left(-\frac{a}{2}-\frac{1}{2}\left(1-\sqrt{3}\right)b\right)}{3\sqrt{1+x}\,\sqrt{1}}\\
&= \frac{2x(a+bx)}{3\sqrt{1+x}\,\sqrt{1-x+x^2}} - \frac{2b\left(1+x^3\right)}{3\sqrt{1+x}\,\left(1+\sqrt{3}+x\right)\sqrt{1-x+x^2}} + \frac{\sqrt{2-\sqrt{3}}\,b}{}
\end{aligned}$$

Mathematica [C] time = 0.98, size = 417, normalized size = 1.37

$$\frac{12\sqrt{-\frac{i}{\sqrt{3}+3i}}\,x(a+bx)+\sqrt{2}\sqrt{\frac{-\frac{6i}{x+1}+\sqrt{3}+3i}{\sqrt{3}+3i}}\sqrt{-\frac{\frac{6i}{x+1}+\sqrt{3}-3i}{-\sqrt{3}+3i}}\,(x+1)^{3/2}\left(2i\sqrt{3}\,a+\left(3-i\sqrt{3}\right)b\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{x+1}}\right.\right.}{18\sqrt{-}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^(3/2)*(1 - x + x^2)^(3/2)),x]
```

```
[Out] (12*Sqrt[(-I)/(3*I + Sqrt[3])]*x*(a + b*x) - 12*Sqrt[(-I)/(3*I + Sqrt[3])]*
b*(1 - x + x^2) + (3*I)*Sqrt[2]*(I + Sqrt[3])*b*(1 + x)^(3/2)*Sqrt[(3*I + S
qrt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]*Sqrt[-((-3*I + Sqrt[3] + (6*I)/(1
+ x))/(3*I - Sqrt[3]))]*EllipticE[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sq
rt[1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3])] + Sqrt[2]*((2*I)*Sqrt[3]*a + (
3 - I*Sqrt[3])*b)*(1 + x)^(3/2)*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/(3*I +
 Sqrt[3])]*Sqrt[-((-3*I + Sqrt[3] + (6*I)/(1 + x))/(3*I - Sqrt[3]))]*Ellipt
icF[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3])/(3
*I - Sqrt[3])])/(18*Sqrt[(-I)/(3*I + Sqrt[3])]*Sqrt[1 + x]*Sqrt[1 - x + x^2
])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}}{x^6+2\,x^3+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(3/2)/(x^2-x+1)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1)/(x^6 + 2*x^3 + 1), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(x^2-x+1\right)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(3/2)/(x^2-x+1)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((x^2 - x + 1)^(3/2)*(x + 1)^(3/2)), x)
```

maple [B] time = 1.53, size = 584, normalized size = 1.92

$$-\frac{\sqrt{x+1}\,\sqrt{x^2-x+1}\,\left(-2b\,x^2-2ax+i\sqrt{3}\,\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}}\,\sqrt{\frac{-2x+i\sqrt{3}+1}{i\sqrt{3}+3}}\,\sqrt{\frac{2x+i\sqrt{3}-1}{i\sqrt{3}-3}}\,a\,\text{EllipticF}\left(\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}},\sqrt{-\frac{i\sqrt{3}-3}{i\sqrt{3}+3}}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^(3/2)/(x^2-x+1)^(3/2),x)
```

```
[Out] -1/3*(x+1)^(1/2)*(x^2-x+1)^(1/2)*(I*3^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-
3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a*(-2*(x+1)/(I*3^(1/2)-3))^
(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2
)-3))^(1/2)+I*3^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)
-3)/(I*3^(1/2)+3))^(1/2))*b*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)
+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)-3*(-2*(x+1
)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(
1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*
3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a+3*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+
I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*E
llipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2
))*b-6*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1
/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticE((-2*(x+1)/(I*3^(1/2)-
3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-2*b*x^2-2*a*x)/(x^3+1)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(x^2-x+1\right)^{\frac{3}{2}}(x+1)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(3/2)/(x^2-x+1)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)/((x^2 - x + 1)^(3/2)*(x + 1)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(x+1\right)}^{3/2}\,{\left(x^2-x+1\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^(3/2)*(x^2 - x + 1)^(3/2)),x)
```

```
[Out] int((a + b*x)/((x + 1)^(3/2)*(x^2 - x + 1)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{\left(x+1\right)^{\frac{3}{2}}\left(x^{2}-x+1\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**(3/2)/(x**2-x+1)**(3/2),x)
```

```
[Out] Integral((a + b*x)/((x + 1)**(3/2)*(x**2 - x + 1)**(3/2)), x)
```

3.2305 $\int \frac{a+bx}{(1+x)^{5/2}\left(1-x+x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=351

$$\frac{2x(7a+5bx)}{27\sqrt{x+1}\sqrt{x^2-x+1}}+\frac{2\sqrt{2+\sqrt{3}}\,\sqrt{x+1}\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\left(7a+5\left(1-\sqrt{3}\right)b\right)F\left(\sin^{-1}\left(\frac{x-\sqrt{3}+1}{x+\sqrt{3}+1}\right)|-7-4\sqrt{3}\right)}{27\sqrt[4]{3}\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\sqrt{x^2-x+1}}+\frac{}{9}$$

```
[Out] 2/27*x*(5*b*x+7*a)/(1+x)^(1/2)/(x^2-x+1)^(1/2)+2/9*x*(b*x+a)/(x^3+1)/(1+x)^
(1/2)/(x^2-x+1)^(1/2)-10/27*b*(x^3+1)/(1+x+3^(1/2))/(1+x)^(1/2)/(x^2-x+1)^(
1/2)+5/27*3^(1/4)*b*EllipticE((1+x-3^(1/2))/(1+x+3^(1/2)),I*3^(1/2)+2*I)*(1
+x)^(1/2)*(1/2*6^(1/2)-1/2*2^(1/2))*((x^2-x+1)/(1+x+3^(1/2))^2)^(1/2)/(x^2-
x+1)^(1/2)/((1+x)/(1+x+3^(1/2))^2)^(1/2)+2/81*EllipticF((1+x-3^(1/2))/(1+x+
3^(1/2)),I*3^(1/2)+2*I)*(7*a+5*b*(1-3^(1/2)))*(1+x)^(1/2)*(1/2*6^(1/2)+1/2*
2^(1/2))*((x^2-x+1)/(1+x+3^(1/2))^2)^(1/2)*3^(3/4)/(x^2-x+1)^(1/2)/((1+x)/(
1+x+3^(1/2))^2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 351, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {809, 1855, 1878, 218, 1877}

$$\frac{2x(a+bx)}{9\sqrt{x+1}\sqrt{x^2-x+1}\left(x^3+1\right)}+\frac{2x(7a+5bx)}{27\sqrt{x+1}\sqrt{x^2-x+1}}+\frac{2\sqrt{2+\sqrt{3}}\,\sqrt{x+1}\sqrt{\frac{x^2-x+1}{\left(x+\sqrt{3}+1\right)^2}}\left(7a+5\left(1-\sqrt{3}\right)b\right)F\left(\mathrm{si}\right.}{27\sqrt[4]{3}\sqrt{\frac{x+1}{\left(x+\sqrt{3}+1\right)^2}}\sqrt{x^2-x+1}}$$

Antiderivative was successfully verified.

```
[In] Int[(a + b*x)/((1 + x)^(5/2)*(1 - x + x^2)^(5/2)),x]
```

```
[Out] (2*x*(7*a + 5*b*x))/(27*Sqrt[1 + x]*Sqrt[1 - x + x^2]) + (2*x*(a + b*x))/(9
*Sqrt[1 + x]*Sqrt[1 - x + x^2]*(1 + x^3)) - (10*b*(1 + x^3))/(27*Sqrt[1 + x
]*(1 + Sqrt[3] + x)*Sqrt[1 - x + x^2]) + (5*Sqrt[2 - Sqrt[3]]*b*Sqrt[1 + x]
*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*EllipticE[ArcSin[(1 - Sqrt[3] + x)
/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(9*3^(3/4)*Sqrt[(1 + x)/(1 + Sqrt[3]
+ x)^2]*Sqrt[1 - x + x^2]) + (2*Sqrt[2 + Sqrt[3]]*(7*a + 5*(1 - Sqrt[3])*b)
*Sqrt[1 + x]*Sqrt[(1 - x + x^2)/(1 + Sqrt[3] + x)^2]*EllipticF[ArcSin[(1 -
Sqrt[3] + x)/(1 + Sqrt[3] + x)], -7 - 4*Sqrt[3]])/(27*3^(1/4)*Sqrt[(1 + x)/
(1 + Sqrt[3] + x)^2]*Sqrt[1 - x + x^2])
```

Rule 218

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = Numer[Rt[b/a, 3]],
s = Denom[Rt[b/a, 3]]}, Simp[(2*Sqrt[2 + Sqrt[3]]*(s + r*x)*Sqrt[(s^2 - r*s
*x + r^2*x^2)/((1 + Sqrt[3])*s + r*x)^2]*EllipticF[ArcSin[((1 - Sqrt[3])*s
+ r*x)/((1 + Sqrt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(3^(1/4)*r*Sqrt[a + b*x^3
]*Sqrt[(s*(s + r*x))/((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b}, x] &
& PosQ[a]
```

Rule 809

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_) + (b_.)*(x_) + (c_
.)*(x_)^2)^(p_), x_Symbol] :> Dist[((d + e*x)^FracPart[p]*(a + b*x + c*x^2)
^FracPart[p])/(a*d + c*e*x^3)^FracPart[p], Int[(f + g*x)*(a*d + c*e*x^3)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && EqQ[m, p] && EqQ[b*d +
a*e, 0] && EqQ[c*d + b*e, 0]
```

Rule 1855

```
Int[(Pq_)*((a_) + (b_.)*(x_)^(n_.))^(p_), x_Symbol] :> -Simp[(x*Pq*(a + b*x
^n)^(p + 1))/(a*n*(p + 1)), x] + Dist[1/(a*n*(p + 1)), Int[ExpandToSum[n*(p
 + 1)*Pq + D[x*Pq, x], x]*(a + b*x^n)^(p + 1), x], x] /; FreeQ[{a, b}, x] &
& PolyQ[Pq, x] && IGtQ[n, 0] && LtQ[p, -1] && LtQ[Expon[Pq, x], n - 1]
```

Rule 1877

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Simplify[((1 - Sqrt[3])*d)/c]], s = Denom[Simplify[((1 - Sqrt[3])*d)/c
]]}, Simp[(2*d*s^3*Sqrt[a + b*x^3])/(a*r^2*((1 + Sqrt[3])*s + r*x)), x] - S
imp[(3^(1/4)*Sqrt[2 - Sqrt[3]]*d*s*(s + r*x)*Sqrt[(s^2 - r*s*x + r^2*x^2)/(
(1 + Sqrt[3])*s + r*x)^2]*EllipticE[ArcSin[((1 - Sqrt[3])*s + r*x)/((1 + Sq
rt[3])*s + r*x)], -7 - 4*Sqrt[3]])/(r^2*Sqrt[a + b*x^3]*Sqrt[(s*(s + r*x))/
((1 + Sqrt[3])*s + r*x)^2]), x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && Eq
Q[b*c^3 - 2*(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rule 1878

```
Int[((c_) + (d_.)*(x_))/Sqrt[(a_) + (b_.)*(x_)^3], x_Symbol] :> With[{r = N
umer[Rt[b/a, 3]], s = Denom[Rt[b/a, 3]]}, Dist[(c*r - (1 - Sqrt[3])*d*s)/r,
 Int[1/Sqrt[a + b*x^3], x], x] + Dist[d/r, Int[((1 - Sqrt[3])*s + r*x)/Sqrt
[a + b*x^3], x], x]] /; FreeQ[{a, b, c, d}, x] && PosQ[a] && NeQ[b*c^3 - 2*
(5 - 3*Sqrt[3])*a*d^3, 0]
```

Rubi steps

$$\int \frac{a+bx}{(1+x)^{5/2}\left(1-x+x^2\right)^{5/2}}\,dx = \frac{\sqrt{1+x^3}\int \frac{a+bx}{\left(1+x^3\right)^{5/2}}\,dx}{\sqrt{1+x}\,\sqrt{1-x+x^2}}$$

$$= \frac{2x(a+bx)}{9\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(1+x^3\right)} - \frac{\left(2\sqrt{1+x^3}\right)\int \frac{-\frac{7a}{2}-\frac{5bx}{2}}{\left(1+x^3\right)^{3/2}}\,dx}{9\sqrt{1+x}\,\sqrt{1-x+x^2}}$$

$$= \frac{2x(7a+5bx)}{27\sqrt{1+x}\,\sqrt{1-x+x^2}} + \frac{2x(a+bx)}{9\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(1+x^3\right)} + \frac{\left(4\sqrt{1+x^3}\right)\int \frac{\frac{7a}{4}-}{\sqrt{1+}}}{27\sqrt{1+x}\,\sqrt{1-x}}$$

$$= \frac{2x(7a+5bx)}{27\sqrt{1+x}\,\sqrt{1-x+x^2}} + \frac{2x(a+bx)}{9\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(1+x^3\right)} - \frac{\left(5b\sqrt{1+x^3}\right)\int \frac{1-}{\sqrt{}}}{27\sqrt{1+x}\,\sqrt{1-}}$$

$$= \frac{2x(7a+5bx)}{27\sqrt{1+x}\,\sqrt{1-x+x^2}} + \frac{2x(a+bx)}{9\sqrt{1+x}\,\sqrt{1-x+x^2}\,\left(1+x^3\right)} - \frac{10b\,(1}{27\sqrt{1+x}\,(1+\sqrt{3}}$$

Mathematica [C] time = 1.70, size = 435, normalized size = 1.24

$$\frac{2x\left(a\left(7x^3+10\right)+bx\left(5x^3+8\right)\right)}{27\left(x^2-x+1\right)^{3/2}(x+1)^{3/2}}+\frac{(x+1)^{3/2}\left(\frac{\sqrt{2}\sqrt{\frac{-\frac{6i}{x+1}+\sqrt{3}+3i}{\sqrt{3}+3i}}\sqrt{\frac{\frac{6i}{x+1}+\sqrt{3}-3i}{\sqrt{3}-3i}}\left(14i\sqrt{3}a+5\left(3-i\sqrt{3}\right)b\right)F\left(i\sinh^{-1}\left(\frac{\sqrt{-\frac{6i}{3i+\sqrt{3}}}}{\sqrt{x+1}}\right)|\frac{3i+\sqrt{3}}{3i-\sqrt{3}}\right)}{\sqrt{x+1}}\right.}{162\sqrt{-\frac{}{\sqrt{3}}}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(a + b*x)/((1 + x)^(5/2)*(1 - x + x^2)^(5/2)),x]
```

```
[Out] (2*x*(b*x*(8 + 5*x^3) + a*(10 + 7*x^3)))/(27*(1 + x)^(3/2)*(1 - x + x^2)^(3
/2)) + ((1 + x)^(3/2)*((-60*Sqrt[(-I)/(3*I + Sqrt[3])]*b*(1 - x + x^2))/(1
+ x)^2 + ((15*I)*Sqrt[2]*(I + Sqrt[3])*b*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x
))/(3*I + Sqrt[3])]*Sqrt[(-3*I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]
*EllipticE[I*ArcSinh[Sqrt[(-6*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt
[3])/(3*I - Sqrt[3])])/Sqrt[1 + x] + (Sqrt[2]*((14*I)*Sqrt[3]*a + 5*(3 - I*
Sqrt[3])*b)*Sqrt[(3*I + Sqrt[3] - (6*I)/(1 + x))/(3*I + Sqrt[3])]*Sqrt[(-3*
I + Sqrt[3] + (6*I)/(1 + x))/(-3*I + Sqrt[3])]*EllipticF[I*ArcSinh[Sqrt[(-6
*I)/(3*I + Sqrt[3])]/Sqrt[1 + x]], (3*I + Sqrt[3])/(3*I - Sqrt[3])])/Sqrt[1
 + x]))/(162*Sqrt[(-I)/(3*I + Sqrt[3])]*Sqrt[1 - x + x^2])
```

fricas [F] time = 1.13, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(bx+a)\sqrt{x^2-x+1}\,\sqrt{x+1}}{x^9+3\,x^6+3\,x^3+1},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(5/2)/(x^2-x+1)^(5/2),x, algorithm="fricas")
```

```
[Out] integral((b*x + a)*sqrt(x^2 - x + 1)*sqrt(x + 1)/(x^9 + 3*x^6 + 3*x^3 + 1),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(x^2-x+1\right)^{\frac{5}{2}}(x+1)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(5/2)/(x^2-x+1)^(5/2),x, algorithm="giac")
```

```
[Out] integrate((b*x + a)/((x^2 - x + 1)^(5/2)*(x + 1)^(5/2)), x)
```

maple [B] time = 2.25, size = 1152, normalized size = 3.28

$$-\frac{-10b\,x^5-14a\,x^4+7i\sqrt{3}\,\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}}\,\sqrt{\frac{-2x+i\sqrt{3}+1}{i\sqrt{3}+3}}\,\sqrt{\frac{2x+i\sqrt{3}-1}{i\sqrt{3}-3}}\,a\,x^3\,\mathrm{EllipticF}\left(\sqrt{-\frac{2(x+1)}{i\sqrt{3}-3}},\sqrt{-\frac{i\sqrt{3}-3}{i\sqrt{3}+3}}\right)-21\sqrt{-\frac{2(x+}{i\sqrt{3}}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((b*x+a)/(x+1)^(5/2)/(x^2-x+1)^(5/2),x)
```

```
[Out] -1/27*(7*I*3^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)
/(I*3^(1/2)+3))^(1/2))*x^3*a*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2
)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)+5*I*3^(1/
2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^
(1/2))*x^3*b*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+
3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)-21*EllipticF((-2*(x+1)/(I
*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*x^3*a*(-2*(x+1)/(I
*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)
-1)/(I*3^(1/2)-3))^(1/2)+15*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3
^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*x^3*b*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x
+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)-
30*EllipticE((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^
(1/2))*x^3*b*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+
3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)+7*I*3^(1/2)*EllipticF((-2
*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a*(-2*(x+
1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^
(1/2)-1)/(I*3^(1/2)-3))^(1/2)+5*I*3^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3)
)^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b*(-2*(x+1)/(I*3^(1/2)-3))^(1
/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-
3))^(1/2)-10*b*x^5-21*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I
*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-2*(x
+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*a+15*(-2*(x+
1)/(I*3^(1/2)-3))^(1/2)*((-2*x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^
(1/2)-1)/(I*3^(1/2)-3))^(1/2)*EllipticF((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I
*3^(1/2)-3)/(I*3^(1/2)+3))^(1/2))*b-30*(-2*(x+1)/(I*3^(1/2)-3))^(1/2)*((-2*
x+I*3^(1/2)+1)/(I*3^(1/2)+3))^(1/2)*((2*x+I*3^(1/2)-1)/(I*3^(1/2)-3))^(1/2)
*EllipticE((-2*(x+1)/(I*3^(1/2)-3))^(1/2),(-(I*3^(1/2)-3)/(I*3^(1/2)+3))^(1
/2))*b-14*a*x^4-16*b*x^2-20*a*x)/(x^2-x+1)^(3/2)/(x+1)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{bx+a}{\left(x^2-x+1\right)^{\frac{5}{2}}(x+1)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)^(5/2)/(x^2-x+1)^(5/2),x, algorithm="maxima")
```

```
[Out] integrate((b*x + a)/((x^2 - x + 1)^(5/2)*(x + 1)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{a+b\,x}{{\left(x+1\right)}^{5/2}\,{\left(x^2-x+1\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((a + b*x)/((x + 1)^(5/2)*(x^2 - x + 1)^(5/2)),x)
```

```
[Out] int((a + b*x)/((x + 1)^(5/2)*(x^2 - x + 1)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{a+bx}{(x+1)^{\frac{5}{2}}\left(x^2-x+1\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((b*x+a)/(1+x)**(5/2)/(x**2-x+1)**(5/2),x)
```

```
[Out] Integral((a + b*x)/((x + 1)**(5/2)*(x**2 - x + 1)**(5/2)), x)
```

3.2306 $\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right) \, dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^6 \left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{6e^4}-\frac{(d+ex)^5(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(-Ace-bBe}{7e^4}$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^5/e^4-1/6*(A*e*(-b*e+2*c*d)-B*(
3*c*d^2-e*(-a*e+2*b*d)))*(e*x+d)^6/e^4-1/7*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^7
/e^4+1/8*B*c*(e*x+d)^8/e^4
```

Rubi [**A**] time = 0.26, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(d+ex)^6 \left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{6e^4}-\frac{(d+ex)^5(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(-Ace-bBe}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^6)/(6*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^7)/(7*e^4) + (B*c*(d + e*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right) \, dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)-\right.}{e^3}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-Ae(2\right.}{6e^4}\end{aligned}$$

Mathematica [**A**] time = 0.14, size = 251, normalized size = 1.87

$$\frac{1}{6}e^2x^6\left(Be(ae+4bd)+Ae(be+4cd)+6Bcd^2\right)+\frac{1}{4}dx^4\left(2Ae\left(e(2ae+3bd)+2cd^2\right)+Bd\left(6ae^2+4bde+cd^2\right)\right)+\frac{1}{3}d^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^4*x + (d^3*(A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(A*c*d^2 + 4*a*B*d
*e + 6*a*A*e^2 + b*d*(B*d + 4*A*e))*x^3)/3 + (d*(B*d*(c*d^2 + 4*b*d*e + 6*a
*e^2) + 2*A*e*(2*c*d^2 + e*(3*b*d + 2*a*e)))*x^4)/4 + (e*(A*e*(6*c*d^2 + e*
(4*b*d + a*e)) + B*(4*c*d^3 + 2*d*e*(3*b*d + 2*a*e)))*x^5)/5 + (e^2*(6*B*c*
d^2 + B*e*(4*b*d + a*e) + A*e*(4*c*d + b*e))*x^6)/6 + (e^3*(4*B*c*d + b*B*e
 + A*c*e)*x^7)/7 + (B*c*e^4*x^8)/8
```

fricas [B] time = 0.96, size = 324, normalized size = 2.42

$$\frac{1}{8}x^8e^4cB+\frac{4}{7}x^7e^3dcB+\frac{1}{7}x^7e^4bB+\frac{1}{7}x^7e^4cA+x^6e^2d^2cB+\frac{2}{3}x^6e^3dbB+\frac{1}{6}x^6e^4aB+\frac{2}{3}x^6e^3dcA+\frac{1}{6}x^6e^4bA+\frac{4}{5}x^5ed^3cB+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c*B + 4/7*x^7*e^3*d*c*B + 1/7*x^7*e^4*b*B + 1/7*x^7*e^4*c*A + x
^6*e^2*d^2*c*B + 2/3*x^6*e^3*d*b*B + 1/6*x^6*e^4*a*B + 2/3*x^6*e^3*d*c*A +
1/6*x^6*e^4*b*A + 4/5*x^5*e*d^3*c*B + 6/5*x^5*e^2*d^2*b*B + 4/5*x^5*e^3*d*a
*B + 6/5*x^5*e^2*d^2*c*A + 4/5*x^5*e^3*d*b*A + 1/5*x^5*e^4*a*A + 1/4*x^4*d^
4*c*B + x^4*e*d^3*b*B + 3/2*x^4*e^2*d^2*a*B + x^4*e*d^3*c*A + 3/2*x^4*e^2*d
^2*b*A + x^4*e^3*d*a*A + 1/3*x^3*d^4*b*B + 4/3*x^3*e*d^3*a*B + 1/3*x^3*d^4*
c*A + 4/3*x^3*e*d^3*b*A + 2*x^3*e^2*d^2*a*A + 1/2*x^2*d^4*a*B + 1/2*x^2*d^4
*b*A + 2*x^2*e*d^3*a*A + x*d^4*a*A
```

giac [B] time = 0.18, size = 312, normalized size = 2.33

$$\frac{1}{8}Bcx^8e^4+\frac{4}{7}Bcdx^7e^3+Bcd^2x^6e^2+\frac{4}{5}Bcd^3x^5e+\frac{1}{4}Bcd^4x^4+\frac{1}{7}Bbx^7e^4+\frac{1}{7}Acx^7e^4+\frac{2}{3}Bbdx^6e^3+\frac{2}{3}Acdx^6e^3+\frac{6}{5}Bbd^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*B*c*x^8*e^4 + 4/7*B*c*d*x^7*e^3 + B*c*d^2*x^6*e^2 + 4/5*B*c*d^3*x^5*e +
 1/4*B*c*d^4*x^4 + 1/7*B*b*x^7*e^4 + 1/7*A*c*x^7*e^4 + 2/3*B*b*d*x^6*e^3 +
2/3*A*c*d*x^6*e^3 + 6/5*B*b*d^2*x^5*e^2 + 6/5*A*c*d^2*x^5*e^2 + B*b*d^3*x^4
*e + A*c*d^3*x^4*e + 1/3*B*b*d^4*x^3 + 1/3*A*c*d^4*x^3 + 1/6*B*a*x^6*e^4 +
1/6*A*b*x^6*e^4 + 4/5*B*a*d*x^5*e^3 + 4/5*A*b*d*x^5*e^3 + 3/2*B*a*d^2*x^4*e
^2 + 3/2*A*b*d^2*x^4*e^2 + 4/3*B*a*d^3*x^3*e + 4/3*A*b*d^3*x^3*e + 1/2*B*a*
d^4*x^2 + 1/2*A*b*d^4*x^2 + 1/5*A*a*x^5*e^4 + A*a*d*x^4*e^3 + 2*A*a*d^2*x^3
*e^2 + 2*A*a*d^3*x^2*e + A*a*d^4*x
```

maple [B] time = 0.04, size = 283, normalized size = 2.11

$$\frac{Bc\,e^4x^8}{8}+Aa\,d^4x+\frac{\left(Bb\,e^4+\left(A\,e^4+4Bd\,e^3\right)c\right)x^7}{7}+\frac{\left(Ba\,e^4+\left(A\,e^4+4Bd\,e^3\right)b+\left(4Ad\,e^3+6B\,d^2e^2\right)c\right)x^6}{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/8*B*e^4*c*x^8+1/7*((A*e^4+4*B*d*e^3)*c+B*e^4*b)*x^7+1/6*((4*A*d*e^3+6*B*d
^2*e^2)*c+(A*e^4+4*B*d*e^3)*b+B*e^4*a)*x^6+1/5*((6*A*d^2*e^2+4*B*d^3*e)*c+(
4*A*d*e^3+6*B*d^2*e^2)*b+(A*e^4+4*B*d*e^3)*a)*x^5+1/4*((4*A*d^3*e+B*d^4)*c+
(6*A*d^2*e^2+4*B*d^3*e)*b+(4*A*d*e^3+6*B*d^2*e^2)*a)*x^4+1/3*(A*d^4*c+(4*A*
d^3*e+B*d^4)*b+(6*A*d^2*e^2+4*B*d^3*e)*a)*x^3+1/2*(A*d^4*b+(4*A*d^3*e+B*d^4
)*a)*x^2+A*d^4*a*x
```

maxima [A] time = 0.48, size = 244, normalized size = 1.82

$$\frac{1}{8}Bce^4x^8+\frac{1}{7}\left(4\,Bcde^3+(Bb+Ac)e^4\right)x^7+Aad^4x+\frac{1}{6}\left(6\,Bcd^2e^2+4\,(Bb+Ac)de^3+(Ba+Ab)e^4\right)x^6+\frac{1}{5}\left(4\,Bcd^3e\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/8*B*c*e^4*x^8 + 1/7*(4*B*c*d*e^3 + (B*b + A*c)*e^4)*x^7 + A*a*d^4*x + 1/6
*(6*B*c*d^2*e^2 + 4*(B*b + A*c)*d*e^3 + (B*a + A*b)*e^4)*x^6 + 1/5*(4*B*c*d
^3*e + A*a*e^4 + 6*(B*b + A*c)*d^2*e^2 + 4*(B*a + A*b)*d*e^3)*x^5 + 1/4*(B*
c*d^4 + 4*A*a*d*e^3 + 4*(B*b + A*c)*d^3*e + 6*(B*a + A*b)*d^2*e^2)*x^4 + 1/
3*(6*A*a*d^2*e^2 + (B*b + A*c)*d^4 + 4*(B*a + A*b)*d^3*e)*x^3 + 1/2*(4*A*a*
d^3*e + (B*a + A*b)*d^4)*x^2
```

mupad [B] time = 0.13, size = 270, normalized size = 2.01

$$x^3\left(\frac{A\,c\,d^4}{3}+\frac{B\,b\,d^4}{3}+\frac{4\,A\,b\,d^3\,e}{3}+\frac{4\,B\,a\,d^3\,e}{3}+2\,A\,a\,d^2\,e^2\right)+x^6\left(\frac{A\,b\,e^4}{6}+\frac{B\,a\,e^4}{6}+\frac{2\,A\,c\,d\,e^3}{3}+\frac{2\,B\,b\,d\,e^3}{3}+B\,c\,d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*c*d^4)/3 + (B*b*d^4)/3 + (4*A*b*d^3*e)/3 + (4*B*a*d^3*e)/3 + 2*A*a*
d^2*e^2) + x^6*((A*b*e^4)/6 + (B*a*e^4)/6 + (2*A*c*d*e^3)/3 + (2*B*b*d*e^3)
/3 + B*c*d^2*e^2) + x^2*((A*b*d^4)/2 + (B*a*d^4)/2 + 2*A*a*d^3*e) + x^7*((A
*c*e^4)/7 + (B*b*e^4)/7 + (4*B*c*d*e^3)/7) + x^4*((B*c*d^4)/4 + A*a*d*e^3 +
 A*c*d^3*e + B*b*d^3*e + (3*A*b*d^2*e^2)/2 + (3*B*a*d^2*e^2)/2) + x^5*((A*a
*e^4)/5 + (4*A*b*d*e^3)/5 + (4*B*a*d*e^3)/5 + (4*B*c*d^3*e)/5 + (6*A*c*d^2*
e^2)/5 + (6*B*b*d^2*e^2)/5) + A*a*d^4*x + (B*c*e^4*x^8)/8
```

sympy [B] time = 0.11, size = 332, normalized size = 2.48

$$Aad^4x+\frac{Bce^4x^8}{8}+x^7\left(\frac{Ace^4}{7}+\frac{Bbe^4}{7}+\frac{4Bcde^3}{7}\right)+x^6\left(\frac{Abe^4}{6}+\frac{2Acde^3}{3}+\frac{Bae^4}{6}+\frac{2Bbde^3}{3}+Bcd^2e^2\right)+x^5\left(\frac{Aae^4}{5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**4*x + B*c*e**4*x**8/8 + x**7*(A*c*e**4/7 + B*b*e**4/7 + 4*B*c*d*e**3
/7) + x**6*(A*b*e**4/6 + 2*A*c*d*e**3/3 + B*a*e**4/6 + 2*B*b*d*e**3/3 + B*c
*d**2*e**2) + x**5*(A*a*e**4/5 + 4*A*b*d*e**3/5 + 6*A*c*d**2*e**2/5 + 4*B*a
*d*e**3/5 + 6*B*b*d**2*e**2/5 + 4*B*c*d**3*e/5) + x**4*(A*a*d*e**3 + 3*A*b*
d**2*e**2/2 + A*c*d**3*e + 3*B*a*d**2*e**2/2 + B*b*d**3*e + B*c*d**4/4) + x
**3*(2*A*a*d**2*e**2 + 4*A*b*d**3*e/3 + A*c*d**4/3 + 4*B*a*d**3*e/3 + B*b*d
**4/3) + x**2*(2*A*a*d**3*e + A*b*d**4/2 + B*a*d**4/2)
```

3.2307 $\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^5\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{5e^4}-\frac{(d+ex)^4(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(-Ace-b}{6e^4}$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^4/e^4-1/5*(A*e*(-b*e+2*c*d)-B*(
3*c*d^2-e*(-a*e+2*b*d)))*(e*x+d)^5/e^4-1/6*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^6
/e^4+1/7*B*c*(e*x+d)^7/e^4
```

Rubi [A] time = 0.19, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {771}

$$\frac{(d+ex)^5\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{5e^4}-\frac{(d+ex)^4(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(-Ace-bl}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^5)/(5*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^6)/(6*e^4) + (B*c*(d + e*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)dx = \int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)\right.}{}$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-A\right.}{5e^4}$$

Mathematica [A] time = 0.09, size = 192, normalized size = 1.43

$$\frac{1}{3}dx^3\left(3aAe^2+3aBde+bd(3Ae+Bd)+Acd^2\right)+\frac{1}{5}ex^5\left(Be(ae+3bd)+Ae(be+3cd)+3Bcd^2\right)+\frac{1}{4}x^4\left(Ae\left(e(ae\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^3*x + (d^2*(A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(A*c*d^2 + 3*a*B*d*e
 + 3*a*A*e^2 + b*d*(B*d + 3*A*e))*x^3)/3 + ((B*(c*d^3 + 3*d*e*(b*d + a*e))
+ A*e*(3*c*d^2 + e*(3*b*d + a*e)))*x^4)/4 + (e*(3*B*c*d^2 + B*e*(3*b*d + a*
e) + A*e*(3*c*d + b*e))*x^5)/5 + (e^2*(3*B*c*d + b*B*e + A*c*e)*x^6)/6 + (B
*c*e^3*x^7)/7
```

fricas [A] time = 1.09, size = 247, normalized size = 1.84

$$\frac{1}{7}x^7e^3cB+\frac{1}{2}x^6e^2dcB+\frac{1}{6}x^6e^3bB+\frac{1}{6}x^6e^3cA+\frac{3}{5}x^5ed^2cB+\frac{3}{5}x^5e^2dbB+\frac{1}{5}x^5e^3aB+\frac{3}{5}x^5e^2dcA+\frac{1}{5}x^5e^3bA+\frac{1}{4}x^4d^3cB+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c*B + 1/2*x^6*e^2*d*c*B + 1/6*x^6*e^3*b*B + 1/6*x^6*e^3*c*A + 3
/5*x^5*e*d^2*c*B + 3/5*x^5*e^2*d*b*B + 1/5*x^5*e^3*a*B + 3/5*x^5*e^2*d*c*A
+ 1/5*x^5*e^3*b*A + 1/4*x^4*d^3*c*B + 3/4*x^4*e*d^2*b*B + 3/4*x^4*e^2*d*a*B
 + 3/4*x^4*e*d^2*c*A + 3/4*x^4*e^2*d*b*A + 1/4*x^4*e^3*a*A + 1/3*x^3*d^3*b*
B + x^3*e*d^2*a*B + 1/3*x^3*d^3*c*A + x^3*e*d^2*b*A + x^3*e^2*d*a*A + 1/2*x
^2*d^3*a*B + 1/2*x^2*d^3*b*A + 3/2*x^2*e*d^2*a*A + x*d^3*a*A
```

giac [**A**] time = 0.16, size = 241, normalized size = 1.80

$$\frac{1}{7}Bcx^7e^3+\frac{1}{2}Bcdx^6e^2+\frac{3}{5}Bcd^2x^5e+\frac{1}{4}Bcd^3x^4+\frac{1}{6}Bbx^6e^3+\frac{1}{6}Acx^6e^3+\frac{3}{5}Bbdx^5e^2+\frac{3}{5}Acdx^5e^2+\frac{3}{4}Bbd^2x^4e+\frac{3}{4}Acd^2x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*B*c*x^7*e^3 + 1/2*B*c*d*x^6*e^2 + 3/5*B*c*d^2*x^5*e + 1/4*B*c*d^3*x^4 +
 1/6*B*b*x^6*e^3 + 1/6*A*c*x^6*e^3 + 3/5*B*b*d*x^5*e^2 + 3/5*A*c*d*x^5*e^2
+ 3/4*B*b*d^2*x^4*e + 3/4*A*c*d^2*x^4*e + 1/3*B*b*d^3*x^3 + 1/3*A*c*d^3*x^3
 + 1/5*B*a*x^5*e^3 + 1/5*A*b*x^5*e^3 + 3/4*B*a*d*x^4*e^2 + 3/4*A*b*d*x^4*e^
2 + B*a*d^2*x^3*e + A*b*d^2*x^3*e + 1/2*B*a*d^3*x^2 + 1/2*A*b*d^3*x^2 + 1/4
*A*a*x^4*e^3 + A*a*d*x^3*e^2 + 3/2*A*a*d^2*x^2*e + A*a*d^3*x
```

maple [**A**] time = 0.05, size = 214, normalized size = 1.60

$$\frac{Bce^3x^7}{7}+Aad^3x+\frac{\left(Bbe^3+\left(Ae^3+3Bde^2\right)c\right)x^6}{6}+\frac{\left(Bae^3+\left(Ae^3+3Bde^2\right)b+\left(3Ade^2+3Bd^2e\right)c\right)x^5}{5}+\frac{((Ae^3+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 1/7*B*e^3*c*x^7+1/6*((A*e^3+3*B*d*e^2)*c+B*e^3*b)*x^6+1/5*((3*A*d*e^2+3*B*d
^2*e)*c+(A*e^3+3*B*d*e^2)*b+B*e^3*a)*x^5+1/4*((3*A*d^2*e+B*d^3)*c+(3*A*d*e^
2+3*B*d^2*e)*b+(A*e^3+3*B*d*e^2)*a)*x^4+1/3*(A*c*d^3+(3*A*d^2*e+B*d^3)*b+(3
*A*d*e^2+3*B*d^2*e)*a)*x^3+1/2*(A*d^3*b+(3*A*d^2*e+B*d^3)*a)*x^2+A*d^3*a*x
```

maxima [**A**] time = 0.50, size = 188, normalized size = 1.40

$$\frac{1}{7}Bce^3x^7+\frac{1}{6}\left(3Bcde^2+(Bb+Ac)e^3\right)x^6+Aad^3x+\frac{1}{5}\left(3Bcd^2e+3(Bb+Ac)de^2+(Ba+Ab)e^3\right)x^5+\frac{1}{4}\Bigl(Bcd^3+Aae^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*B*c*e^3*x^7 + 1/6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^6 + A*a*d^3*x + 1/5
*(3*B*c*d^2*e + 3*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x^5 + 1/4*(B*c*d^3 +
 A*a*e^3 + 3*(B*b + A*c)*d^2*e + 3*(B*a + A*b)*d*e^2)*x^4 + 1/3*(3*A*a*d*e^
2 + (B*b + A*c)*d^3 + 3*(B*a + A*b)*d^2*e)*x^3 + 1/2*(3*A*a*d^2*e + (B*a +
A*b)*d^3)*x^2
```

mupad [**B**] time = 2.36, size = 206, normalized size = 1.54

$$x^2\left(\frac{Abd^3}{2}+\frac{Bad^3}{2}+\frac{3Aad^2e}{2}\right)+x^6\left(\frac{Ace^3}{6}+\frac{Bbe^3}{6}+\frac{Bcde^2}{2}\right)+x^3\Biggl(\frac{Acd^3}{3}+\frac{Bbd^3}{3}+Aade^2+Abd^2e+B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*b*d^3)/2 + (B*a*d^3)/2 + (3*A*a*d^2*e)/2) + x^6*((A*c*e^3)/6 + (B*b
*e^3)/6 + (B*c*d*e^2)/2) + x^3*((A*c*d^3)/3 + (B*b*d^3)/3 + A*a*d*e^2 + A*b
*d^2*e + B*a*d^2*e) + x^5*((A*b*e^3)/5 + (B*a*e^3)/5 + (3*A*c*d*e^2)/5 + (3
*B*b*d*e^2)/5 + (3*B*c*d^2*e)/5) + x^4*((A*a*e^3)/4 + (B*c*d^3)/4 + (3*A*b*
d*e^2)/4 + (3*B*a*d*e^2)/4 + (3*A*c*d^2*e)/4 + (3*B*b*d^2*e)/4) + A*a*d^3*x
 + (B*c*e^3*x^7)/7
```

sympy [B] time = 0.10, size = 252, normalized size = 1.88

$$Aad^3x+\frac{Bce^3x^7}{7}+x^6\left(\frac{Ace^3}{6}+\frac{Bbe^3}{6}+\frac{Bcde^2}{2}\right)+x^5\left(\frac{Abe^3}{5}+\frac{3Acde^2}{5}+\frac{Bae^3}{5}+\frac{3Bbde^2}{5}+\frac{3Bcd^2e}{5}\right)+x^4\Bigg(\frac{Aae^3}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**3*x + B*c*e**3*x**7/7 + x**6*(A*c*e**3/6 + B*b*e**3/6 + B*c*d*e**2/2
) + x**5*(A*b*e**3/5 + 3*A*c*d*e**2/5 + B*a*e**3/5 + 3*B*b*d*e**2/5 + 3*B*c
*d**2*e/5) + x**4*(A*a*e**3/4 + 3*A*b*d*e**2/4 + 3*A*c*d**2*e/4 + 3*B*a*d*e
**2/4 + 3*B*b*d**2*e/4 + B*c*d**3/4) + x**3*(A*a*d*e**2 + A*b*d**2*e + A*c*
d**3/3 + B*a*d**2*e + B*b*d**3/3) + x**2*(3*A*a*d**2*e/2 + A*b*d**3/2 + B*a
*d**3/2)
```

3.2308 $\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=134

$$-\frac{(d+ex)^4\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{4e^4}-\frac{(d+ex)^3(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{(d+ex)^5(-Ace-bBe}{5e^4}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^3/e^4-1/4*(A*e*(-b*e+2*c*d)-B*(
3*c*d^2-e*(-a*e+2*b*d)))*(e*x+d)^4/e^4-1/5*(-A*c*e-B*b*e+3*B*c*d)*(e*x+d)^5
/e^4+1/6*B*c*(e*x+d)^6/e^4
```

Rubi [**A**] time = 0.14, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(d+ex)^4\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{4e^4}-\frac{(d+ex)^3(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4}-\frac{(d+ex)^5(-Ace-bBe}{5e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)/(3*e^4) + ((3*B*c*d^2 -
B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^4)/(4*e^4) - ((3*B*c*d - b
*B*e - A*c*e)*(d + e*x)^5)/(5*e^4) + (B*c*(d + e*x)^6)/(6*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)\,dx=\int\left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^2}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae)-\right.}{e^3}\right.$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^3}{3e^4}+\frac{\left(3Bcd^2-Be(2bd-ae)-Ae(\right.}{4e^4}$$

Mathematica [**A**] time = 0.06, size = 137, normalized size = 1.02

$$\frac{1}{3}x^3\left(aAe^2+2aBde+bd(2Ae+Bd)+Acd^2\right)+\frac{1}{4}x^4\left(Be(ae+2bd)+Ae(be+2cd)+Bcd^2\right)+\frac{1}{2}dx^2(2aAe+aBd+Ab$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d^2*x + (d*(A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + ((A*c*d^2 + 2*a*B*d*e + a
*A*e^2 + b*d*(B*d + 2*A*e))*x^3)/3 + ((B*c*d^2 + B*e*(2*b*d + a*e) + A*e*(2
*c*d + b*e))*x^4)/4 + (e*(2*B*c*d + b*B*e + A*c*e)*x^5)/5 + (B*c*e^2*x^6)/6
```

fricas [**A**] time = 0.93, size = 171, normalized size = 1.28

$$\frac{1}{6}x^6e^2cB+\frac{2}{5}x^5edcB+\frac{1}{5}x^5e^2bB+\frac{1}{5}x^5e^2cA+\frac{1}{4}x^4d^2cB+\frac{1}{2}x^4edbB+\frac{1}{4}x^4e^2aB+\frac{1}{2}x^4edcA+\frac{1}{4}x^4e^2bA+\frac{1}{3}x^3d^2bB+\frac{2}{3}x^3eda$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c*B + 2/5*x^5*e*d*c*B + 1/5*x^5*e^2*b*B + 1/5*x^5*e^2*c*A + 1/4
*x^4*d^2*c*B + 1/2*x^4*e*d*b*B + 1/4*x^4*e^2*a*B + 1/2*x^4*e*d*c*A + 1/4*x^
4*e^2*b*A + 1/3*x^3*d^2*b*B + 2/3*x^3*e*d*a*B + 1/3*x^3*d^2*c*A + 2/3*x^3*e
*d*b*A + 1/3*x^3*e^2*a*A + 1/2*x^2*d^2*a*B + 1/2*x^2*d^2*b*A + x^2*e*d*a*A
+ x*d^2*a*A
```

giac [A] time = 0.17, size = 171, normalized size = 1.28

$$\frac{1}{6}Bcx^6e^2+\frac{2}{5}Bcdx^5e+\frac{1}{4}Bcd^2x^4+\frac{1}{5}Bbx^5e^2+\frac{1}{5}Acx^5e^2+\frac{1}{2}Bbdx^4e+\frac{1}{2}Acdx^4e+\frac{1}{3}Bbd^2x^3+\frac{1}{3}Acd^2x^3+\frac{1}{4}Bax^4e^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*B*c*x^6*e^2 + 2/5*B*c*d*x^5*e + 1/4*B*c*d^2*x^4 + 1/5*B*b*x^5*e^2 + 1/5
*A*c*x^5*e^2 + 1/2*B*b*d*x^4*e + 1/2*A*c*d*x^4*e + 1/3*B*b*d^2*x^3 + 1/3*A*
c*d^2*x^3 + 1/4*B*a*x^4*e^2 + 1/4*A*b*x^4*e^2 + 2/3*B*a*d*x^3*e + 2/3*A*b*d
*x^3*e + 1/2*B*a*d^2*x^2 + 1/2*A*b*d^2*x^2 + 1/3*A*a*x^3*e^2 + A*a*d*x^2*e
+ A*a*d^2*x
```

maple [A] time = 0.04, size = 145, normalized size = 1.08

$$\frac{Bce^2x^6}{6}+Aad^2x+\frac{\left(Bbe^2+\left(Ae^2+2Bde\right)c\right)x^5}{5}+\frac{\left(Bae^2+\left(Ae^2+2Bde\right)b+\left(2Ade+Bd^2\right)c\right)x^4}{4}+\frac{\left(Acd^2+\left(A\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/6*B*c*e^2*x^6+1/5*((A*e^2+2*B*d*e)*c+B*e^2*b)*x^5+1/4*((2*A*d*e+B*d^2)*c+
(A*e^2+2*B*d*e)*b+B*a*e^2)*x^4+1/3*(A*c*d^2+(2*A*d*e+B*d^2)*b+(A*e^2+2*B*d*
e)*a)*x^3+1/2*(A*d^2*b+(2*A*d*e+B*d^2)*a)*x^2+A*d^2*a*x
```

maxima [A] time = 0.56, size = 132, normalized size = 0.99

$$\frac{1}{6}Bce^2x^6+\frac{1}{5}\left(2Bcde+(Bb+Ac)e^2\right)x^5+Aad^2x+\frac{1}{4}\left(Bcd^2+2(Bb+Ac)de+(Ba+Ab)e^2\right)x^4+\frac{1}{3}\left(Aae^2+(Bb+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*B*c*e^2*x^6 + 1/5*(2*B*c*d*e + (B*b + A*c)*e^2)*x^5 + A*a*d^2*x + 1/4*(
B*c*d^2 + 2*(B*b + A*c)*d*e + (B*a + A*b)*e^2)*x^4 + 1/3*(A*a*e^2 + (B*b +
A*c)*d^2 + 2*(B*a + A*b)*d*e)*x^3 + 1/2*(2*A*a*d*e + (B*a + A*b)*d^2)*x^2
```

mupad [B] time = 2.32, size = 143, normalized size = 1.07

$$x^3\left(\frac{Aae^2}{3}+\frac{Acd^2}{3}+\frac{Bbd^2}{3}+\frac{2Abde}{3}+\frac{2Bade}{3}\right)+x^4\left(\frac{Abe^2}{4}+\frac{Bae^2}{4}+\frac{Bcd^2}{4}+\frac{Acde}{2}+\frac{Bbde}{2}\right)+x^2\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*a*e^2)/3 + (A*c*d^2)/3 + (B*b*d^2)/3 + (2*A*b*d*e)/3 + (2*B*a*d*e)/
3) + x^4*((A*b*e^2)/4 + (B*a*e^2)/4 + (B*c*d^2)/4 + (A*c*d*e)/2 + (B*b*d*e)
/2) + x^2*((A*b*d^2)/2 + (B*a*d^2)/2 + A*a*d*e) + x^5*((A*c*e^2)/5 + (B*b*e
^2)/5 + (2*B*c*d*e)/5) + A*a*d^2*x + (B*c*e^2*x^6)/6
```

sympy [**A**] time = 0.09, size = 172, normalized size = 1.28

$$Aad^2x+\frac{Bce^2x^6}{6}+x^5\bigg(\frac{Ace^2}{5}+\frac{Bbe^2}{5}+\frac{2Bcde}{5}\bigg)+x^4\bigg(\frac{Abe^2}{4}+\frac{Acde}{2}+\frac{Bae^2}{4}+\frac{Bbde}{2}+\frac{Bcd^2}{4}\bigg)+x^3\bigg(\frac{Aae^2}{3}+\frac{2Abde}{3}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d**2*x + B*c*e**2*x**6/6 + x**5*(A*c*e**2/5 + B*b*e**2/5 + 2*B*c*d*e/5)
 + x**4*(A*b*e**2/4 + A*c*d*e/2 + B*a*e**2/4 + B*b*d*e/2 + B*c*d**2/4) + x*
*3*(A*a*e**2/3 + 2*A*b*d*e/3 + A*c*d**2/3 + 2*B*a*d*e/3 + B*b*d**2/3) + x**
2*(A*a*d*e + A*b*d**2/2 + B*a*d**2/2)
```

3.2309 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=80

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

```
[Out] a*A*d*x+1/2*(A*a*e+A*b*d+B*a*d)*x^2+1/3*(A*b*e+A*c*d+B*a*e+B*b*d)*x^3+1/4*(
A*c*e+B*b*e+B*c*d)*x^4+1/5*B*c*e*x^5
```

Rubi [A] time = 0.08, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 21, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.048, Rules used = {771}

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d*x + ((A*b*d + a*B*d + a*A*e)*x^2)/2 + ((b*B*d + A*c*d + A*b*e + a*B*e
)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*x^4)/4 + (B*c*e*x^5)/5
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)\,dx &= \int \left(aAd+(Abd+aBd+aAe)x+(bBd+Acd+Abe+aBe)x^2+(Bc\right.\\ &= aAdx+\frac{1}{2}(Abd+aBd+aAe)x^2+\frac{1}{3}(bBd+Acd+Abe+aBe)x^3+\frac{1}{4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 80, normalized size = 1.00

$$\frac{1}{3}x^3(aBe+Abe+Acd+bBd)+\frac{1}{2}x^2(aAe+aBd+Abd)+aAdx+\frac{1}{4}x^4(Ace+bBe+Bcd)+\frac{1}{5}Bcex^5$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*d*x + ((A*b*d + a*B*d + a*A*e)*x^2)/2 + ((b*B*d + A*c*d + A*b*e + a*B*e
)*x^3)/3 + ((B*c*d + b*B*e + A*c*e)*x^4)/4 + (B*c*e*x^5)/5
```

fricas [A] time = 0.90, size = 94, normalized size = 1.18

$$\frac{1}{5}x^5ecB+\frac{1}{4}x^4dcB+\frac{1}{4}x^4ebB+\frac{1}{4}x^4ecA+\frac{1}{3}x^3dbB+\frac{1}{3}x^3eaB+\frac{1}{3}x^3dcA+\frac{1}{3}x^3ebA+\frac{1}{2}x^2daB+\frac{1}{2}x^2dbA+\frac{1}{2}x^2eaA+xda$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c*B + 1/4*x^4*d*c*B + 1/4*x^4*e*b*B + 1/4*x^4*e*c*A + 1/3*x^3*d*b
*B + 1/3*x^3*e*a*B + 1/3*x^3*d*c*A + 1/3*x^3*e*b*A + 1/2*x^2*d*a*B + 1/2*x^
2*d*b*A + 1/2*x^2*e*a*A + x*d*a*A
```

giac [A] time = 0.15, size = 100, normalized size = 1.25

$$\frac{1}{5}Bcx^5e+\frac{1}{4}Bcdx^4+\frac{1}{4}Bbx^4e+\frac{1}{4}Acx^4e+\frac{1}{3}Bbdx^3+\frac{1}{3}Acdx^3+\frac{1}{3}Bax^3e+\frac{1}{3}Abx^3e+\frac{1}{2}Badx^2+\frac{1}{2}Abdx^2+\frac{1}{2}Aax^2e+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*B*c*x^5*e + 1/4*B*c*d*x^4 + 1/4*B*b*x^4*e + 1/4*A*c*x^4*e + 1/3*B*b*d*x
^3 + 1/3*A*c*d*x^3 + 1/3*B*a*x^3*e + 1/3*A*b*x^3*e + 1/2*B*a*d*x^2 + 1/2*A*
b*d*x^2 + 1/2*A*a*x^2*e + A*a*d*x
```

maple [A] time = 0.04, size = 76, normalized size = 0.95

$$\frac{Bce\,x^5}{5}+Aadx+\frac{(Bbe+(Ae+Bd)\,c)\,x^4}{4}+\frac{(Acd+Bae+(Ae+Bd)\,b)\,x^3}{3}+\frac{(Abd+(Ae+Bd)\,a)\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 1/5*B*c*e*x^5+1/4*((A*e+B*d)*c+B*b*e)*x^4+1/3*(A*c*d+(A*e+B*d)*b+a*B*e)*x^3
+1/2*(A*b*d+a*(A*e+B*d))*x^2+A*a*d*x
```

maxima [A] time = 0.46, size = 76, normalized size = 0.95

$$\frac{1}{5}Bcex^5+\frac{1}{4}(Bcd+(Bb+Ac)e)x^4+Aadx+\frac{1}{3}((Bb+Ac)d+(Ba+Ab)e)x^3+\frac{1}{2}(Aae+(Ba+Ab)d)x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*B*c*e*x^5 + 1/4*(B*c*d + (B*b + A*c)*e)*x^4 + A*a*d*x + 1/3*((B*b + A*c
)*d + (B*a + A*b)*e)*x^3 + 1/2*(A*a*e + (B*a + A*b)*d)*x^2
```

mupad [B] time = 0.03, size = 79, normalized size = 0.99

$$\frac{B\,c\,e\,x^5}{5}+\left(\frac{A\,c\,e}{4}+\frac{B\,b\,e}{4}+\frac{B\,c\,d}{4}\right)\,x^4+\left(\frac{A\,b\,e}{3}+\frac{A\,c\,d}{3}+\frac{B\,a\,e}{3}+\frac{B\,b\,d}{3}\right)\,x^3+\left(\frac{A\,a\,e}{2}+\frac{A\,b\,d}{2}+\frac{B\,a\,d}{2}\right)\,x^2+A\,a\,d\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((A*b*e)/3 + (A*c*d)/3 + (B*a*e)/3 + (B*b*d)/3) + x^2*((A*a*e)/2 + (A*b
*d)/2 + (B*a*d)/2) + x^4*((A*c*e)/4 + (B*b*e)/4 + (B*c*d)/4) + (B*c*e*x^5)/
5 + A*a*d*x
```

sympy [A] time = 0.08, size = 94, normalized size = 1.18

$$Aadx+\frac{Bcex^5}{5}+x^4\left(\frac{Ace}{4}+\frac{Bbe}{4}+\frac{Bcd}{4}\right)+x^3\left(\frac{Abe}{3}+\frac{Acd}{3}+\frac{Bae}{3}+\frac{Bbd}{3}\right)+x^2\left(\frac{Aae}{2}+\frac{Abd}{2}+\frac{Bad}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*d*x + B*c*e*x**5/5 + x**4*(A*c*e/4 + B*b*e/4 + B*c*d/4) + x**3*(A*b*e/3
 + A*c*d/3 + B*a*e/3 + B*b*d/3) + x**2*(A*a*e/2 + A*b*d/2 + B*a*d/2)
```

3.2310 $\int (A+Bx)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=42

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

```
[Out] a*A*x+1/2*(A*b+B*a)*x^2+1/3*(A*c+B*b)*x^3+1/4*B*c*x^4
```

Rubi [A] time = 0.04, antiderivative size = 42, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 16, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.062, Rules used = {631}

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)\,dx &= \int \left(aA+(Ab+aB)x+(bB+Ac)x^2+Bcx^3\right)\,dx\\ &= aAx+\frac{1}{2}(Ab+aB)x^2+\frac{1}{3}(bB+Ac)x^3+\frac{1}{4}Bcx^4\end{aligned}$$

Mathematica [A] time = 0.01, size = 42, normalized size = 1.00

$$\frac{1}{2}x^2(aB+Ab)+aAx+\frac{1}{3}x^3(Ac+bB)+\frac{1}{4}Bcx^4$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2),x]
```

```
[Out] a*A*x + ((A*b + a*B)*x^2)/2 + ((b*B + A*c)*x^3)/3 + (B*c*x^4)/4
```

fricas [A] time = 0.59, size = 40, normalized size = 0.95

$$\frac{1}{4}x^4cB+\frac{1}{3}x^3bB+\frac{1}{3}x^3cA+\frac{1}{2}x^2aB+\frac{1}{2}x^2bA+xaA$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c*B + 1/3*x^3*b*B + 1/3*x^3*c*A + 1/2*x^2*a*B + 1/2*x^2*b*A + x*a*A
```

giac [A] time = 0.15, size = 40, normalized size = 0.95

$$\frac{1}{4}\,Bcx^4+\frac{1}{3}\,Bbx^3+\frac{1}{3}\,Acx^3+\frac{1}{2}\,Bax^2+\frac{1}{2}\,Abx^2+Aax$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*B*c*x^4 + 1/3*B*b*x^3 + 1/3*A*c*x^3 + 1/2*B*a*x^2 + 1/2*A*b*x^2 + A*a*x
```

maple [**A**] time = 0.05, size = 37, normalized size = 0.88

$$\frac{Bc\,x^{4}}{4}+Aax+\frac{\left(Ac+bB\right)x^{3}}{3}+\frac{\left(Ab+Ba\right)x^{2}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a),x)
```

```
[Out] 1/4*B*c*x^4+A*a*x+1/3*(A*c+B*b)*x^3+1/2*(A*b+B*a)*x^2
```

maxima [**A**] time = 0.54, size = 36, normalized size = 0.86

$$\frac{1}{4}\,Bcx^{4}+\frac{1}{3}\,(Bb+Ac)x^{3}+Aax+\frac{1}{2}\,(Ba+Ab)x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*B*c*x^4 + 1/3*(B*b + A*c)*x^3 + A*a*x + 1/2*(B*a + A*b)*x^2
```

mupad [**B**] time = 0.04, size = 38, normalized size = 0.90

$$\frac{B\,c\,x^{4}}{4}+\left(\frac{A\,c}{3}+\frac{B\,b}{3}\right)\,x^{3}+\left(\frac{A\,b}{2}+\frac{B\,a}{2}\right)\,x^{2}+A\,a\,x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*b)/2 + (B*a)/2) + x^3*((A*c)/3 + (B*b)/3) + A*a*x + (B*c*x^4)/4
```

sympy [**A**] time = 0.07, size = 39, normalized size = 0.93

$$Aax+\frac{Bcx^{4}}{4}+x^{3}\left(\frac{Ac}{3}+\frac{Bb}{3}\right)+x^{2}\left(\frac{Ab}{2}+\frac{Ba}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a),x)
```

```
[Out] A*a*x + B*c*x**4/4 + x**3*(A*c/3 + B*b/3) + x**2*(A*b/2 + B*a/2)
```

3.2311 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{d+ex}\,dx$

Optimal. Leaf size=111

$$-\frac{x\left(Ae(cd-be)-B\left(cd^2-e(bd-ae)\right)\right)}{e^3}-\frac{(Bd-Ae)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bc}{3e}$$

```
[Out] -(A*e*(-b*e+c*d)-B*(c*d^2-e*(-a*e+b*d)))*x/e^3-1/2*(-A*c*e-B*b*e+B*c*d)*x^2
/e^2+1/3*B*c*x^3/e-(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)*ln(e*x+d)/e^4
```

Rubi [**A**] time = 0.13, antiderivative size = 109, normalized size of antiderivative = 0.98, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{x\left(-Be(bd-ae)-Ae(cd-be)+Bcd^2\right)}{e^3}-\frac{(Bd-Ae)\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(-Ace-bBe+Bcd)}{2e^2}+\frac{Bcx}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((B*c*d^2 - B*e*(b*d - a*e) - A*e*(c*d - b*e))*x)/e^3 - ((B*c*d - b*B*e - A
*c*e)*x^2)/(2*e^2) + (B*c*x^3)/(3*e) - ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)
*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{Bcd^2-Be(bd-ae)-Ae(cd-be)}{e^3}+\frac{(-Bcd+bBe+Ace)x}{e^2}+\frac{Bcx^2}{e}+\frac{(-B}{}\right.\\ &= \frac{\left(Bcd^2-Be(bd-ae)-Ae(cd-be)\right)x}{e^3}-\frac{(Bcd-bBe-Ace)x^2}{2e^2}+\frac{Bcx^3}{3e}-\frac{(Bd-}{}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 100, normalized size = 0.90

$$\frac{ex\left(3Be(2ae-2bd+bex)+3Ae(2be-2cd+cex)+Bc\left(6d^2-3dex+2e^2x^2\right)\right)-6(Bd-Ae)\log(d+ex)\left(e(ae-\right.}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*B*e*(-2*b*d + 2*a*e + b*e*x) + 3*A*e*(-2*c*d + 2*b*e + c*e*x) + B*c
*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) - 6*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))*
Log[d + e*x])/(6*e^4)
```

fricas [**A**] time = 0.93, size = 123, normalized size = 1.11

$$\frac{2\,Bce^3x^3-3\left(Bcde^2-(Bb+Ac)e^3\right)x^2+6\left(Bcd^2e-(Bb+Ac)de^2+(Ba+Ab)e^3\right)x-6\left(Bcd^3-Aae^3-(Bb+A\right.}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c*e^3*x^3 - 3*(B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e - (
B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x - 6*(B*c*d^3 - A*a*e^3 - (B*b + A*c)*
d^2*e + (B*a + A*b)*d*e^2)*log(e*x + d))/e^4
```

giac [A] time = 0.17, size = 136, normalized size = 1.23

$$-\left(Bcd^3-Bbd^2e-Acd^2e+Bade^2+Abde^2-Aae^3\right)e^{(-4)}\log\left(|xe+d|\right)+\frac{1}{6}\left(2\,Bcx^3e^2-3\,Bcdx^2e+6\,Bcd^2x+3\,Bbx^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c*d^3 - B*b*d^2*e - A*c*d^2*e + B*a*d*e^2 + A*b*d*e^2 - A*a*e^3)*e^(-4)
*log(abs(x*e + d)) + 1/6*(2*B*c*x^3*e^2 - 3*B*c*d*x^2*e + 6*B*c*d^2*x + 3*B
*b*x^2*e^2 + 3*A*c*x^2*e^2 - 6*B*b*d*x*e - 6*A*c*d*x*e + 6*B*a*x*e^2 + 6*A*
b*x*e^2)*e^(-3)
```

maple [A] time = 0.04, size = 171, normalized size = 1.54

$$\frac{Bc\,x^3}{3e}+\frac{Ac\,x^2}{2e}+\frac{Bb\,x^2}{2e}-\frac{Bcd\,x^2}{2e^2}+\frac{Aa\ln(ex+d)}{e}-\frac{Abd\ln(ex+d)}{e^2}+\frac{Abx}{e}+\frac{Ac\,d^2\ln(ex+d)}{e^3}-\frac{Acdx}{e^2}-\frac{Bad\ln(ex+d)}{e^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] 1/3*B*c/e*x^3+1/2/e*A*x^2*c+1/2/e*B*x^2*b-1/2/e^2*B*x^2*c*d+1/e*A*x*b-1/e^2
*A*x*c*d+1/e*B*x*a-1/e^2*B*x*b*d+1/e^3*B*x*c*d^2+1/e*ln(e*x+d)*a*A-1/e^2*ln
(e*x+d)*A*b*d+1/e^3*ln(e*x+d)*A*c*d^2-1/e^2*ln(e*x+d)*a*B*d+1/e^3*ln(e*x+d)
*B*b*d^2-1/e^4*ln(e*x+d)*B*c*d^3
```

maxima [A] time = 0.46, size = 122, normalized size = 1.10

$$\frac{2\,Bce^2x^3-3\left(Bcde-(Bb+Ac)e^2\right)x^2+6\left(Bcd^2-(Bb+Ac)de+(Ba+Ab)e^2\right)x}{6\,e^3}-\frac{\left(Bcd^3-Aae^3-(Bb+Ac)d^2e+\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*B*c*e^2*x^3 - 3*(B*c*d*e - (B*b + A*c)*e^2)*x^2 + 6*(B*c*d^2 - (B*b
+ A*c)*d*e + (B*a + A*b)*e^2)*x)/e^3 - (B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2
*e + (B*a + A*b)*d*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 2.37, size = 130, normalized size = 1.17

$$x^2\left(\frac{A\,c+B\,b}{2\,e}-\frac{B\,c\,d}{2\,e^2}\right)+x\left(\frac{A\,b+B\,a}{e}-\frac{d\left(\frac{A\,c+B\,b}{e}-\frac{B\,c\,d}{e^2}\right)}{e}\right)+\frac{\ln(d+e\,x)\left(A\,a\,e^3-B\,c\,d^3-A\,b\,d\,e^2-B\,a\,d\,e^2+A\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x),x)
```

```
[Out] x^2*((A*c + B*b)/(2*e) - (B*c*d)/(2*e^2)) + x*((A*b + B*a)/e - (d*((A*c + B
*b)/e - (B*c*d)/e^2))/e) + (log(d + e*x)*(A*a*e^3 - B*c*d^3 - A*b*d*e^2 - B
*a*d*e^2 + A*c*d^2*e + B*b*d^2*e))/e^4 + (B*c*x^3)/(3*e)
```

sympy [A] time = 0.43, size = 107, normalized size = 0.96

$$\frac{Bcx^3}{3e}+x^2\left(\frac{Ac}{2e}+\frac{Bb}{2e}-\frac{Bcd}{2e^2}\right)+x\left(\frac{Ab}{e}-\frac{Acd}{e^2}+\frac{Ba}{e}-\frac{Bbd}{e^2}+\frac{Bcd^2}{e^3}\right)-\frac{(-Ae+Bd)\left(ae^2-bde+cd^2\right)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] B*c*x**3/(3*e) + x**2*(A*c/(2*e) + B*b/(2*e) - B*c*d/(2*e**2)) + x*(A*b/e -
 A*c*d/e**2 + B*a/e - B*b*d/e**2 + B*c*d**2/e**3) - (-A*e + B*d)*(a*e**2 -
b*d*e + c*d**2)*log(d + e*x)/e**4
```

3.2312 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=116

$$-\frac{\log(d+ex)\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{e^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx}{2e^2}$$

```
[Out] -(-A*c*e-B*b*e+2*B*c*d)*x/e^3+1/2*B*c*x^2/e^2+(-A*e+B*d)*(a*e^2-b*d*e+c*d^2
)/e^4/(e*x+d)-(A*e*(-b*e+2*c*d)-B*(3*c*d^2-e*(-a*e+2*b*d)))*ln(e*x+d)/e^4
```

Rubi [A] time = 0.13, antiderivative size = 114, normalized size of antiderivative = 0.98, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}+\frac{\log(d+ex)\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{e^4}-\frac{x(-Ace-bBe+2Bcd)}{e^3}+\frac{Bcx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -((((2*B*c*d - b*B*e - A*c*e)*x)/e^3) + (B*c*x^2)/(2*e^2) + ((B*d - A*e)*(c*
d^2 - b*d*e + a*e^2))/(e^4*(d + e*x)) + ((3*B*c*d^2 - B*e*(2*b*d - a*e) - A
*e*(2*c*d - b*e))*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx&=\int \left(\frac{-2Bcd+bBe+Ace}{e^3}+\frac{Bcx}{e^2}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{3Bcd^2-Be(2\right.\\&=-\frac{(2Bcd-bBe-Ace)x}{e^3}+\frac{Bcx^2}{2e^2}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\left(3Bcd^2-Be(2b\right.}{}\end{aligned}$$

Mathematica [A] time = 0.07, size = 106, normalized size = 0.91

$$\frac{\frac{2(Bd-Ae)\left(e(ae-bd)+cd^2\right)}{d+ex}+2\log(d+ex)\left(Be(ae-2bd)+Ae(be-2cd)+3Bcd^2\right)+2ex(Ace+bBe-2Bcd)+Bce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*B*c*d + b*B*e + A*c*e)*x + B*c*e^2*x^2 + (2*(B*d - A*e)*(c*d^2 + e
*(-(b*d) + a*e)))/(d + e*x) + 2*(3*B*c*d^2 + B*e*(-2*b*d + a*e) + A*e*(-2*c
*d + b*e))*Log[d + e*x])/(2*e^4)
```

fricas [A] time = 1.07, size = 192, normalized size = 1.66

$$\frac{Bce^3x^3+2\,Bcd^3-2\,Aae^3-2\,(Bb+Ac)d^2e+2\,(Ba+Ab)de^2-\left(3\,Bcde^2-2\,(Bb+Ac)e^3\right)x^2-2\left(2\,Bcd^2e-(Bb+\right.}{2\left(e^5x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(B*c*e^3*x^3 + 2*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e + 2*(B*a + A
*b)*d*e^2 - (3*B*c*d*e^2 - 2*(B*b + A*c)*e^3)*x^2 - 2*(2*B*c*d^2*e - (B*b +
 A*c)*d*e^2)*x + 2*(3*B*c*d^3 - 2*(B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2 + (
3*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x)*log(e*x + d))/(e^5*
x + d*e^4)
```

giac [A] time = 0.17, size = 200, normalized size = 1.72

$$\frac{1}{2}\left(Bc-\frac{2\left(3\,Bcde-Bbe^{2}-Ace^{2}\right)e^{(-1)}}{xe+d}\right)(xe+d)^{2}e^{(-4)}-\left(3\,Bcd^{2}-2\,Bbde-2\,Acde+Bae^{2}+Abe^{2}\right)e^{(-4)}\log\left(\frac{|xe}{(x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*(B*c - 2*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*e^(-1)/(x*e + d))*(x*e + d)^2*
e^(-4) - (3*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e + B*a*e^2 + A*b*e^2)*e^(-4)*log
(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (B*c*d^3*e^2/(x*e + d) - B*b*d^2*e^3/(x
*e + d) - A*c*d^2*e^3/(x*e + d) + B*a*d*e^4/(x*e + d) + A*b*d*e^4/(x*e + d)
 - A*a*e^5/(x*e + d))*e^(-6)
```

maple [A] time = 0.06, size = 195, normalized size = 1.68

$$\frac{Bc\,x^{2}}{2e^{2}}-\frac{Aa}{(ex+d)\,e}+\frac{Abd}{(ex+d)\,e^{2}}+\frac{Ab\ln(ex+d)}{e^{2}}-\frac{Ac\,d^{2}}{(ex+d)\,e^{3}}-\frac{2Acd\ln(ex+d)}{e^{3}}+\frac{Acx}{e^{2}}+\frac{Bad}{(ex+d)\,e^{2}}+\frac{Ba\ln(ex+d}{e^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*B*c/e^2*x^2+1/e^2*A*c*x+1/e^2*B*b*x-2/e^3*B*c*d*x-1/e/(e*x+d)*a*A+1/e^2
/(e*x+d)*A*d*b-1/e^3/(e*x+d)*A*c*d^2+1/e^2/(e*x+d)*a*B*d-1/e^3/(e*x+d)*B*b*
d^2+1/e^4/(e*x+d)*B*c*d^3+1/e^2*ln(e*x+d)*A*b-2/e^3*ln(e*x+d)*A*c*d+1/e^2*l
n(e*x+d)*B*a-2/e^3*ln(e*x+d)*B*b*d+3/e^4*ln(e*x+d)*B*c*d^2
```

maxima [A] time = 0.54, size = 126, normalized size = 1.09

$$\frac{Bcd^{3}-Aae^{3}-(Bb+Ac)d^{2}e+(Ba+Ab)de^{2}}{e^{5}x+de^{4}}+\frac{Bcex^{2}-2\,(2\,Bcd-(Bb+Ac)e)x}{2\,e^{3}}+\frac{\left(3\,Bcd^{2}-2\,(Bb+Ac)de+(B\right.}{e^{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)/(e^5*x + d*e^4)
 + 1/2*(B*c*e*x^2 - 2*(2*B*c*d - (B*b + A*c)*e)*x)/e^3 + (3*B*c*d^2 - 2*(B*
b + A*c)*d*e + (B*a + A*b)*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 0.09, size = 137, normalized size = 1.18

$$x\left(\frac{A\,c+B\,b}{e^{2}}-\frac{2\,B\,c\,d}{e^{3}}\right)-\frac{A\,a\,e^{3}-B\,c\,d^{3}-A\,b\,d\,e^{2}-B\,a\,d\,e^{2}+A\,c\,d^{2}\,e+B\,b\,d^{2}\,e}{e\,\left(x\,e^{4}+d\,e^{3}\right)}+\frac{\ln(d+e\,x)\,\left(A\,b\,e^{2}+B\,a\,e^{2}+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] x*((A*c + B*b)/e^2 - (2*B*c*d)/e^3) - (A*a*e^3 - B*c*d^3 - A*b*d*e^2 - B*a*
d*e^2 + A*c*d^2*e + B*b*d^2*e)/(e*(d*e^3 + e^4*x)) + (log(d + e*x)*(A*b*e^2
 + B*a*e^2 + 3*B*c*d^2 - 2*A*c*d*e - 2*B*b*d*e))/e^4 + (B*c*x^2)/(2*e^2)
```

sympy [**A**] time = 1.04, size = 143, normalized size = 1.23

$$\frac{Bcx^2}{2e^2}+x\left(\frac{Ac}{e^2}+\frac{Bb}{e^2}-\frac{2Bcd}{e^3}\right)+\frac{-Aae^3+Abde^2-Acd^2e+Bade^2-Bbd^2e+Bcd^3}{de^4+e^5x}+\frac{\left(Abe^2-2Acde+Bae^2-2Bbde\right.}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] B*c*x**2/(2*e**2) + x*(A*c/e**2 + B*b/e**2 - 2*B*c*d/e**3) + (-A*a*e**3 + A
*b*d*e**2 - A*c*d**2*e + B*a*d*e**2 - B*b*d**2*e + B*c*d**3)/(d*e**4 + e**5
*x) + (A*b*e**2 - 2*A*c*d*e + B*a*e**2 - 2*B*b*d*e + 3*B*c*d**2)*log(d + e*
x)/e**4
```

3.2313 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^3} \, dx$

Optimal. Leaf size=119

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{e^4(d+ex)}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

```
[Out] B*c*x/e^3+1/2*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^2+(A*e*(-b*e+2*c*d
)-B*(3*c*d^2-e*(-a*e+2*b*d)))/e^4/(e*x+d)-(-A*c*e-B*b*e+3*B*c*d)*ln(e*x+d)/
e^4
```

Rubi [A] time = 0.13, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{e^4(d+ex)}-\frac{\log(d+ex)(-Ace-bBe+3Bcd)}{e^4}+\frac{Bcx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2) - (
3*B*c*d^2 - B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(e^4*(d + e*x)) - ((3*B*
c*d - b*B*e - A*c*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx&=\int\left(\frac{Bc}{e^3}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-b}{e^3(d+ex)^2}\right.\\&=\frac{Bcx}{e^3}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^4(d+ex)}-\end{aligned}$$

Mathematica [A] time = 0.07, size = 135, normalized size = 1.13

$$\frac{-aBe^2-Abe^2+2Acde+2bBde-3Bcd^2}{e^4(d+ex)}+\frac{-aAe^3+aBde^2+Abde^2-Acd^2e-bBd^2e+Bcd^3}{2e^4(d+ex)^2}+\frac{\log(d+ex)(Ac}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (B*c*x)/e^3 + (B*c*d^3 - b*B*d^2*e - A*c*d^2*e + A*b*d*e^2 + a*B*d*e^2 - a*
A*e^3)/(2*e^4*(d + e*x)^2) + (-3*B*c*d^2 + 2*b*B*d*e + 2*A*c*d*e - A*b*e^2
- a*B*e^2)/(e^4*(d + e*x)) + ((-3*B*c*d + b*B*e + A*c*e)*Log[d + e*x])/e^4
```

fricas [A] time = 0.83, size = 203, normalized size = 1.71

$$\frac{2\,Bce^3x^3+4\,Bcde^2x^2-5\,Bcd^3-Aae^3+3\,(Bb+Ac)d^2e-(Ba+Ab)de^2-2\left(2\,Bcd^2e-2\,(Bb+Ac)de^2+(Ba+\right.}{2\left(e^6x^2+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*B*c*e^3*x^3 + 4*B*c*d*e^2*x^2 - 5*B*c*d^3 - A*a*e^3 + 3*(B*b + A*c)*
d^2*e - (B*a + A*b)*d*e^2 - 2*(2*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A
*b)*e^3)*x - 2*(3*B*c*d^3 - (B*b + A*c)*d^2*e + (3*B*c*d*e^2 - (B*b + A*c)*
e^3)*x^2 + 2*(3*B*c*d^2*e - (B*b + A*c)*d*e^2)*x)*log(e*x + d))/(e^6*x^2 +
2*d*e^5*x + d^2*e^4)
```

giac [A] time = 0.18, size = 129, normalized size = 1.08

$$Bcxe^{(-3)} - (3\,Bcd - Bbe - Ace)e^{(-4)}\log\left(|xe + d|\right) - \frac{\left(5\,Bcd^3 - 3\,Bbd^2e - 3\,Acd^2e + Bade^2 + Abde^2 + Aae^3 + 2\left(3\,Bcd\right.\right.}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] B*c*x*e^(-3) - (3*B*c*d - B*b*e - A*c*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*
B*c*d^3 - 3*B*b*d^2*e - 3*A*c*d^2*e + B*a*d*e^2 + A*b*d*e^2 + A*a*e^3 + 2*(
3*B*c*d^2*e - 2*B*b*d*e^2 - 2*A*c*d*e^2 + B*a*e^3 + A*b*e^3)*x)*e^(-4)/(x*e
 + d)^2
```

maple [A] time = 0.05, size = 217, normalized size = 1.82

$$-\frac{Aa}{2\,(ex+d)^2\,e} + \frac{Abd}{2\,(ex+d)^2\,e^2} - \frac{Ac\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bad}{2\,(ex+d)^2\,e^2} - \frac{Bb\,d^2}{2\,(ex+d)^2\,e^3} + \frac{Bc\,d^3}{2\,(ex+d)^2\,e^4} - \frac{Ab}{(ex+d)\,e^2} + \frac{2Acd}{(ex+d)\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] B*c/e^3*x-1/e^2/(e*x+d)*A*b+2/e^3/(e*x+d)*A*c*d-1/e^2/(e*x+d)*B*a+2/e^3/(e*
x+d)*B*b*d-3/e^4/(e*x+d)*B*c*d^2-1/2/e/(e*x+d)^2*a*A+1/2/e^2/(e*x+d)^2*A*d*
b-1/2/e^3/(e*x+d)^2*A*c*d^2+1/2/e^2/(e*x+d)^2*a*B*d-1/2/e^3/(e*x+d)^2*B*d^2
*b+1/2/e^4/(e*x+d)^2*B*c*d^3+1/e^3*ln(e*x+d)*A*c+1/e^3*ln(e*x+d)*B*b-3/e^4*
ln(e*x+d)*B*c*d
```

maxima [A] time = 0.52, size = 136, normalized size = 1.14

$$-\frac{5\,Bcd^3 + Aae^3 - 3\,(Bb+Ac)d^2e + (Ba+Ab)de^2 + 2\left(3\,Bcd^2e - 2\,(Bb+Ac)de^2 + (Ba+Ab)e^3\right)x}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)} + \frac{Bcx}{e^3} - \frac{(3\,Bcd}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*B*c*d^3 + A*a*e^3 - 3*(B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2 + 2*(3*
B*c*d^2*e - 2*(B*b + A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^6*x^2 + 2*d*e^5*x
+ d^2*e^4) + B*c*x/e^3 - (3*B*c*d - (B*b + A*c)*e)*log(e*x + d)/e^4
```

mupad [B] time = 0.12, size = 142, normalized size = 1.19

$$\frac{\ln(d+e\,x)\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^4} - \frac{x\,\left(A\,b\,e^2+B\,a\,e^2+3\,B\,c\,d^2-2\,A\,c\,d\,e-2\,B\,b\,d\,e\right)+\frac{A\,a\,e^3+5\,B\,c\,d^3+A\,b\,d\,e^2+B\,a\,d\,e^2}{2\,e}}{d^2\,e^3+2\,d\,e^4\,x+e^5\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(A*c*e + B*b*e - 3*B*c*d))/e^4 - (x*(A*b*e^2 + B*a*e^2 + 3*B*
c*d^2 - 2*A*c*d*e - 2*B*b*d*e) + (A*a*e^3 + 5*B*c*d^3 + A*b*d*e^2 + B*a*d*e
^2 - 3*A*c*d^2*e - 3*B*b*d^2*e)/(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (B
*c*x)/e^3
```

sympy [A] time = 4.70, size = 162, normalized size = 1.36

$$\frac{Bcx}{e^3} + \frac{-Aae^3 - Abde^2 + 3Acd^2e - Bade^2 + 3Bbd^2e - 5Bcd^3 + x\bigl(-2Abe^3 + 4Acde^2 - 2Bae^3 + 4Bbde^2 - 6Bcd^2}{2d^2e^4 + 4de^5x + 2e^6x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] B*c*x/e**3 + (-A*a*e**3 - A*b*d*e**2 + 3*A*c*d**2*e - B*a*d*e**2 + 3*B*b*d*
*2*e - 5*B*c*d**3 + x*(-2*A*b*e**3 + 4*A*c*d*e**2 - 2*B*a*e**3 + 4*B*b*d*e*
*2 - 6*B*c*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + (A*c*e + B*b
*e - 3*B*c*d)*log(d + e*x)/e**4
```

3.2314 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx$

Optimal. Leaf size=127

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{2e^4(d+ex)^2}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

```
[Out] 1/3*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^3+1/2*(A*e*(-b*e+2*c*d)-B*(3
*c*d^2-e*(-a*e+2*b*d)))/e^4/(e*x+d)^2+(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d)+B*
c*ln(e*x+d)/e^4
```

Rubi [**A**] time = 0.12, antiderivative size = 126, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{2e^4(d+ex)^2}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{-Ace-bBe+3Bcd}{e^4(d+ex)}+\frac{Bc\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(2*e^4*(d + e*x)^2) + (3*B*c*d - b*B*e
 - A*c*e)/(e^4*(d + e*x)) + (B*c*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^4}\,dx=\int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^3}+\frac{-3}{}$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{2e^4(d+ex)^2}+\frac{3Bcd-b}{e^4(d}$$

Mathematica [**A**] time = 0.07, size = 130, normalized size = 1.02

$$\frac{-Ae\Big(e(2ae+bd+3bex)+2c\big(d^2+3dex+3e^2x^2\big)\Big)+B\Big(cd\big(11d^2+27dex+18e^2x^2\big)-e\big(ae(d+3ex)+2b\big(d^2+3}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (-(A*e*(e*(b*d + 2*a*e + 3*b*e*x) + 2*c*(d^2 + 3*d*e*x + 3*e^2*x^2))) + B*(
c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - e*(a*e*(d + 3*e*x) + 2*b*(d^2 + 3*d*
e*x + 3*e^2*x^2))) + 6*B*c*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

fricas [**A**] time = 1.10, size = 185, normalized size = 1.46

$$\frac{11\,Bcd^3-2\,Aae^3-2\,(Bb+Ac)d^2e-(Ba+Ab)de^2+6\big(3\,Bcde^2-(Bb+Ac)e^3\big)x^2+3\big(9\,Bcd^2e-2\,(Bb+Ac)de^2-}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e - (B*a + A*b)*d*e^2 + 6*(
3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 -
 (B*a + A*b)*e^3)*x + 6*(B*c*e^3*x^3 + 3*B*c*d*e^2*x^2 + 3*B*c*d^2*e*x + B*
c*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [**A**]   time = 0.20, size = 138, normalized size = 1.09

$$Bce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,Bcde-Bbe^{2}-Ace^{2}\right)x^{2}+3\left(9\,Bcd^{2}-2\,Bbde-2\,Acde-Bae^{2}-Abe^{2}\right)x+\left(11\,Bcd^{3}\right.\right.}{6\,(xe+d)^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] B*c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*B*c*d*e - B*b*e^2 - A*c*e^2)*x^2 +
 3*(9*B*c*d^2 - 2*B*b*d*e - 2*A*c*d*e - B*a*e^2 - A*b*e^2)*x + (11*B*c*d^3
- 2*B*b*d^2*e - 2*A*c*d^2*e - B*a*d*e^2 - A*b*d*e^2 - 2*A*a*e^3)*e^(-1))*e^
(-3)/(x*e + d)^3
```

maple [**A**]   time = 0.05, size = 225, normalized size = 1.77

$$-\frac{Aa}{3\,(ex+d)^{3}\,e}+\frac{Abd}{3\,(ex+d)^{3}\,e^{2}}-\frac{Ac\,d^{2}}{3\,(ex+d)^{3}\,e^{3}}+\frac{Bad}{3\,(ex+d)^{3}\,e^{2}}-\frac{Bb\,d^{2}}{3\,(ex+d)^{3}\,e^{3}}+\frac{Bc\,d^{3}}{3\,(ex+d)^{3}\,e^{4}}-\frac{Ab}{2\,(ex+d)^{2}\,e^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*A*c-1/e^3/(e*x+d)*B*b+3/e^4/(e*x+d)*B*c*d-1/2/e^2/(e*x+d)^2*
A*b+1/e^3/(e*x+d)^2*A*c*d-1/2/e^2/(e*x+d)^2*B*a+1/e^3/(e*x+d)^2*B*b*d-3/2/e
^4/(e*x+d)^2*B*c*d^2+B*c/e^4*ln(e*x+d)-1/3/e/(e*x+d)^3*a*A+1/3/e^2/(e*x+d)^
3*A*b*d-1/3/e^3/(e*x+d)^3*A*c*d^2+1/3/e^2/(e*x+d)^3*a*B*d-1/3/e^3/(e*x+d)^3
*B*d^2*b+1/3/e^4/(e*x+d)^3*B*c*d^3
```

maxima [**A**]   time = 0.46, size = 154, normalized size = 1.21

$$\frac{11\,Bcd^{3}-2\,Aae^{3}-2\,(Bb+Ac)d^{2}e-(Ba+Ab)de^{2}+6\left(3\,Bcde^{2}-(Bb+Ac)e^{3}\right)x^{2}+3\left(9\,Bcd^{2}e-2\,(Bb+Ac)d\right.}{6\left(e^{7}x^{3}+3\,de^{6}x^{2}+3\,d^{2}e^{5}x+d^{3}e^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*B*c*d^3 - 2*A*a*e^3 - 2*(B*b + A*c)*d^2*e - (B*a + A*b)*d*e^2 + 6*(
3*B*c*d*e^2 - (B*b + A*c)*e^3)*x^2 + 3*(9*B*c*d^2*e - 2*(B*b + A*c)*d*e^2 -
 (B*a + A*b)*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4) + B*c*
log(e*x + d)/e^4
```

mupad [**B**]   time = 2.37, size = 154, normalized size = 1.21

$$\frac{B\,c\,\ln\left(d+e\,x\right)}{e^{4}}-\frac{\frac{2\,A\,a\,e^{3}-11\,B\,c\,d^{3}+A\,b\,d\,e^{2}+B\,a\,d\,e^{2}+2\,A\,c\,d^{2}\,e+2\,B\,b\,d^{2}\,e}{6\,e^{4}}+\frac{x^{2}\,\left(A\,c\,e+B\,b\,e-3\,B\,c\,d\right)}{e^{2}}+\frac{x\,\left(A\,b\,e^{2}+B\,a\,e^{2}-9\,B\,c\,d^{2}+2\,A\,c\,d\,e+2\right.}{2\,e^{3}}}{d^{3}+3\,d^{2}\,e\,x+3\,d\,e^{2}\,x^{2}+e^{3}\,x^{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (B*c*log(d + e*x))/e^4 - ((2*A*a*e^3 - 11*B*c*d^3 + A*b*d*e^2 + B*a*d*e^2 +
 2*A*c*d^2*e + 2*B*b*d^2*e)/(6*e^4) + (x^2*(A*c*e + B*b*e - 3*B*c*d))/e^2 +
 (x*(A*b*e^2 + B*a*e^2 - 9*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(2*e^3))/(d^3
+ e^3*x^3 + 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [A] time = 16.20, size = 184, normalized size = 1.45

$$\frac{Bc\log(d+ex)}{e^4}+\frac{-2Aae^3-Abde^2-2Acd^2e-Bade^2-2Bbd^2e+11Bcd^3+x^2\left(-6Ace^3-6Bbe^3+18Bcde^2\right)+x\Big(-}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] B*c*log(d + e*x)/e**4 + (-2*A*a*e**3 - A*b*d*e**2 - 2*A*c*d**2*e - B*a*d*e*
*2 - 2*B*b*d**2*e + 11*B*c*d**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 + 18*B*c*d
*e**2) + x*(-3*A*b*e**3 - 6*A*c*d*e**2 - 3*B*a*e**3 - 6*B*b*d*e**2 + 27*B*c
*d**2*e))/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.2315 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx$

Optimal. Leaf size=132

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{3e^4(d+ex)^3}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

```
[Out] 1/4*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^4+1/3*(A*e*(-b*e+2*c*d)-B*(3
*c*d^2-e*(-a*e+2*b*d)))/e^4/(e*x+d)^3+1/2*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d
)^2-B*c/e^4/(e*x+d)
```

Rubi [A] time = 0.12, antiderivative size = 131, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{3e^4(d+ex)^3}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{-Ace-bBe+3Bcd}{2e^4(d+ex)^2}-\frac{Bc}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(3*e^4*(d + e*x)^3) + (3*B*c*d - b*B*e
 - A*c*e)/(2*e^4*(d + e*x)^2) - (B*c)/(e^4*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^4}+\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{3e^4(d+ex)^3}+\frac{3Bcd}{2e^4}$$

Mathematica [A] time = 0.06, size = 118, normalized size = 0.89

$$-\frac{Ae(e(3ae+bd+4bex)+c(d^2+4dex+6e^2x^2))+B(e(ae(d+4ex)+b(d^2+4dex+6e^2x^2))+3c(d^3+4d^2}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(e*(b*d + 3*a*e + 4*b*e*x) + c*(d^2 + 4*d*e*x + 6*e^2*x^2)) + B*
(3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + e*(a*e*(d + 4*e*x) + b*(
d^2 + 4*d*e*x + 6*e^2*x^2))))/(e^4*(d + e*x)^4)
```

fricas [A] time = 1.10, size = 157, normalized size = 1.19

$$-\frac{12\,Bce^3x^3+3\,Bcd^3+3\,Aae^3+(Bb+Ac)d^2e+(Ba+Ab)de^2+6\,(3\,Bcde^2+(Bb+Ac)e^3)x^2+4\,(3\,Bcd^2e+(}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*a*e^3 + (B*b + A*c)*d^2*e + (B*a +
A*b)*d*e^2 + 6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + (B*b
+ A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 +
 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.18, size = 220, normalized size = 1.67

$$-\frac{1}{12}\left(\frac{12\,Bce^{(-1)}}{xe+d} - \frac{18\,Bcde^{(-1)}}{(xe+d)^2} + \frac{12\,Bcd^2e^{(-1)}}{(xe+d)^3} - \frac{3\,Bcd^3e^{(-1)}}{(xe+d)^4} + \frac{6\,Bb}{(xe+d)^2} + \frac{6\,Ac}{(xe+d)^2} - \frac{8\,Bbd}{(xe+d)^3} - \frac{8\,Acd}{(xe+d)^3} + \frac{3}{(x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*B*c*e^(-1)/(x*e + d) - 18*B*c*d*e^(-1)/(x*e + d)^2 + 12*B*c*d^2*e
^(-1)/(x*e + d)^3 - 3*B*c*d^3*e^(-1)/(x*e + d)^4 + 6*B*b/(x*e + d)^2 + 6*A*
c/(x*e + d)^2 - 8*B*b*d/(x*e + d)^3 - 8*A*c*d/(x*e + d)^3 + 3*B*b*d^2/(x*e
+ d)^4 + 3*A*c*d^2/(x*e + d)^4 + 4*B*a*e/(x*e + d)^3 + 4*A*b*e/(x*e + d)^3
- 3*B*a*d*e/(x*e + d)^4 - 3*A*b*d*e/(x*e + d)^4 + 3*A*a*e^2/(x*e + d)^4)*e^
(-3)
```

maple [A] time = 0.05, size = 142, normalized size = 1.08

$$-\frac{Bc}{(ex+d)\,e^4} - \frac{Ace+Bbe-3Bcd}{2\,(ex+d)^2\,e^4} - \frac{aA\,e^3 - Abd\,e^2 + Ac\,d^2e - aBd\,e^2 + B\,d^2be - Bc\,d^3}{4\,(ex+d)^4\,e^4} - \frac{Ab\,e^2 - 2Acde + Ba\,e^2 - 2B}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x)
```

```
[Out] -1/(e*x+d)*B*c/e^4-1/2*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^2-1/4*(A*a*e^3-A*b
*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)/e^4/(e*x+d)^4-1/3*(A*b*e^2-2*
A*c*d*e+B*a*e^2-2*B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.65, size = 157, normalized size = 1.19

$$-\frac{12\,Bce^3x^3 + 3\,Bcd^3 + 3\,Aae^3 + (Bb+Ac)d^2e + (Ba+Ab)de^2 + 6\,(3\,Bcde^2 + (Bb+Ac)e^3)x^2 + 4\,(3\,Bcd^2e + (Bb}{12\,(e^8x^4 + 4\,de^7x^3 + 6\,d^2e^6x^2 + 4\,d^3e^5x + d^4e^4)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*B*c*e^3*x^3 + 3*B*c*d^3 + 3*A*a*e^3 + (B*b + A*c)*d^2*e + (B*a +
A*b)*d*e^2 + 6*(3*B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 4*(3*B*c*d^2*e + (B*b
+ A*c)*d*e^2 + (B*a + A*b)*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*x^2 +
 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.08, size = 158, normalized size = 1.20

$$-\frac{\frac{3\,A\,a\,e^3+3\,B\,c\,d^3+A\,b\,d\,e^2+B\,a\,d\,e^2+A\,c\,d^2\,e+B\,b\,d^2\,e}{12\,e^4}+\frac{x^2\,(A\,c\,e+B\,b\,e+3\,B\,c\,d)}{2\,e^2}+\frac{x\,\left(A\,b\,e^2+B\,a\,e^2+3\,B\,c\,d^2+A\,c\,d\,e+B\,b\,d\,e\right)}{3\,e^3}+\frac{B\,c\,x^3}{e}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((3*A*a*e^3 + 3*B*c*d^3 + A*b*d*e^2 + B*a*d*e^2 + A*c*d^2*e + B*b*d^2*e)/(
12*e^4) + (x^2*(A*c*e + B*b*e + 3*B*c*d))/(2*e^2) + (x*(A*b*e^2 + B*a*e^2 +
 3*B*c*d^2 + A*c*d*e + B*b*d*e))/(3*e^3) + (B*c*x^3)/e)/(d^4 + e^4*x^4 + 4*
d*e^3*x^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 45.73, size = 194, normalized size = 1.47

$$\frac{-3Aae^3 - Abde^2 - Acd^2e - Bade^2 - Bbd^2e - 3Bcd^3 - 12Bce^3x^3 + x^2\left(-6Ace^3 - 6Bbe^3 - 18Bcde^2\right) + x\left(-4Abe\right.}{12d^4e^4 + 48d^3e^5x + 72d^2e^6x^2 + 48de^7x^3 + 12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-3*A*a*e**3 - A*b*d*e**2 - A*c*d**2*e - B*a*d*e**2 - B*b*d**2*e - 3*B*c*d*
*3 - 12*B*c*e**3*x**3 + x**2*(-6*A*c*e**3 - 6*B*b*e**3 - 18*B*c*d*e**2) + x
*(-4*A*b*e**3 - 4*A*c*d*e**2 - 4*B*a*e**3 - 4*B*b*d*e**2 - 12*B*c*d**2*e))/
(12*d**4*e**4 + 48*d**3*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e*
*8*x**4)
```

3.2316 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=134

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{4e^4(d+ex)^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

```
[Out] 1/5*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^5+1/4*(A*e*(-b*e+2*c*d)-B*(3
*c*d^2-e*(-a*e+2*b*d)))/e^4/(e*x+d)^4+1/3*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d
)^3-1/2*B*c/e^4/(e*x+d)^2
```

Rubi [A] time = 0.11, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{4e^4(d+ex)^4}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{-Ace-bBe+3Bcd}{3e^4(d+ex)^3}-\frac{Bc}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(5*e^4*(d + e*x)^5) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(4*e^4*(d + e*x)^4) + (3*B*c*d - b*B*e
 - A*c*e)/(3*e^4*(d + e*x)^3) - (B*c)/(2*e^4*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx &= \int \Biggl(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^6}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^5}+\frac{-3}{} \\ &= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{5e^4(d+ex)^5}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{4e^4(d+ex)^4}+\frac{3Bcd-b}{3e^4(d}\end{aligned}$$

Mathematica [A] time = 0.06, size = 122, normalized size = 0.91

$$-\frac{Ae\left(3e(4ae+bd+5bex)+2c\left(d^2+5dex+10e^2x^2\right)\right)+B\Bigl(e\left(3ae(d+5ex)+2b\left(d^2+5dex+10e^2x^2\right)\right)+3c\Bigl(d^3+}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(A*e*(3*e*(b*d + 4*a*e + 5*b*e*x) + 2*c*(d^2 + 5*d*e*x + 10*e^2*x^2))
 + B*(3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + e*(3*a*e*(d + 5*e
*x) + 2*b*(d^2 + 5*d*e*x + 10*e^2*x^2))))/(e^4*(d + e*x)^5)
```

fricas [A] time = 0.67, size = 173, normalized size = 1.29

$$-\frac{30\,Bce^3x^3+3\,Bcd^3+12\,Aae^3+2\,(Bb+Ac)d^2e+3\,(Ba+Ab)de^2+10\left(3\,Bcde^2+2\,(Bb+Ac)e^3\right)x^2+5\Bigl(3\,Bcd^2}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 12*A*a*e^3 + 2*(B*b + A*c)*d^2*e + 3*(B
*a + A*b)*d*e^2 + 10*(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e
 + 2*(B*b + A*c)*d*e^2 + 3*(B*a + A*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*
d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.17, size = 135, normalized size = 1.01

$$-\frac{(30\,Bcx^3e^3 + 30\,Bcdx^2e^2 + 15\,Bcd^2xe + 3\,Bcd^3 + 20\,Bbx^2e^3 + 20\,Acx^2e^3 + 10\,Bbdxe^2 + 10\,Acdxe^2 + 2\,Bbd^2e}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*B*c*x^3*e^3 + 30*B*c*d*x^2*e^2 + 15*B*c*d^2*x*e + 3*B*c*d^3 + 20*
B*b*x^2*e^3 + 20*A*c*x^2*e^3 + 10*B*b*d*x*e^2 + 10*A*c*d*x*e^2 + 2*B*b*d^2*
e + 2*A*c*d^2*e + 15*B*a*x*e^3 + 15*A*b*x*e^3 + 3*B*a*d*e^2 + 3*A*b*d*e^2 +
 12*A*a*e^3)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 142, normalized size = 1.06

$$-\frac{Bc}{2\,(ex+d)^2\,e^4}-\frac{Ab\,e^2-2Acde+Ba\,e^2-2Bbde+3Bc\,d^2}{4\,(ex+d)^4\,e^4}-\frac{aA\,e^3-Abd\,e^2+Ac\,d^2e-aBd\,e^2+B\,d^2be-Bc\,d^3}{5\,(ex+d)^5\,e^4}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x)
```

```
[Out] -1/2/(e*x+d)^2*B*c/e^4-1/4*(A*b*e^2-2*A*c*d*e+B*a*e^2-2*B*b*d*e+3*B*c*d^2)/
e^4/(e*x+d)^4-1/5*(A*a*e^3-A*b*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)
/e^4/(e*x+d)^5-1/3*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.57, size = 173, normalized size = 1.29

$$-\frac{30\,Bce^3x^3 + 3\,Bcd^3 + 12\,Aae^3 + 2\,(Bb+Ac)d^2e + 3\,(Ba+Ab)de^2 + 10\,\left(3\,Bcde^2 + 2\,(Bb+Ac)e^3\right)x^2 + 5\,(3\,Bc}{60\,\left(e^9x^5 + 5\,de^8x^4 + 10\,d^2e^7x^3 + 10\,d^3e^6x^2 + 5\,d^4e^5x + d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*B*c*e^3*x^3 + 3*B*c*d^3 + 12*A*a*e^3 + 2*(B*b + A*c)*d^2*e + 3*(B
*a + A*b)*d*e^2 + 10*(3*B*c*d*e^2 + 2*(B*b + A*c)*e^3)*x^2 + 5*(3*B*c*d^2*e
 + 2*(B*b + A*c)*d*e^2 + 3*(B*a + A*b)*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 + 10*
d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.09, size = 180, normalized size = 1.34

$$-\frac{\frac{12\,A\,a\,e^3+3\,B\,c\,d^3+3\,A\,b\,d\,e^2+3\,B\,a\,d\,e^2+2\,A\,c\,d^2\,e+2\,B\,b\,d^2\,e}{60\,e^4}+\frac{x^2\,(2\,A\,c\,e+2\,B\,b\,e+3\,B\,c\,d)}{6\,e^2}+\frac{x\,\left(3\,A\,b\,e^2+3\,B\,a\,e^2+3\,B\,c\,d^2+2\,A\,c\,d\,e+2\,B\,b\,d\,e\right)}{12\,e^3}+}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^6,x)
```

```
[Out] -((12*A*a*e^3 + 3*B*c*d^3 + 3*A*b*d*e^2 + 3*B*a*d*e^2 + 2*A*c*d^2*e + 2*B*b
*d^2*e)/(60*e^4) + (x^2*(2*A*c*e + 2*B*b*e + 3*B*c*d))/(6*e^2) + (x*(3*A*b*
e^2 + 3*B*a*e^2 + 3*B*c*d^2 + 2*A*c*d*e + 2*B*b*d*e))/(12*e^3) + (B*c*x^3)/
(2*e))/(d^5 + e^5*x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d
^4*e*x)
```

sympy [**A**] time = 114.50, size = 212, normalized size = 1.58

$$\frac{-12Aae^3 - 3Abde^2 - 2Acd^2e - 3Bade^2 - 2Bbd^2e - 3Bcd^3 - 30Bce^3x^3 + x^2\left(-20Ace^3 - 20Bbe^3 - 30Bcde^2\right) + x\big(-}{60d^5e^4 + 300d^4e^5x + 600d^3e^6x^2 + 600d^2e^7x^3 + 300de^8x^4 + 60e^9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**6,x)
```

```
[Out] (-12*A*a*e**3 - 3*A*b*d*e**2 - 2*A*c*d**2*e - 3*B*a*d*e**2 - 2*B*b*d**2*e -
 3*B*c*d**3 - 30*B*c*e**3*x**3 + x**2*(-20*A*c*e**3 - 20*B*b*e**3 - 30*B*c*
d*e**2) + x*(-15*A*b*e**3 - 10*A*c*d*e**2 - 15*B*a*e**3 - 10*B*b*d*e**2 - 1
5*B*c*d**2*e))/(60*d**5*e**4 + 300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d
**2*e**7*x**3 + 300*d*e**8*x**4 + 60*e**9*x**5)
```

3.2317 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx$

Optimal. Leaf size=134

$$\frac{Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)}{5e^4(d+ex)^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{-Ace-bBe+3Bcd}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

```
[Out] 1/6*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^6+1/5*(A*e*(-b*e+2*c*d)-B*(3
*c*d^2-e*(-a*e+2*b*d)))/e^4/(e*x+d)^5+1/4*(-A*c*e-B*b*e+3*B*c*d)/e^4/(e*x+d
)^4-1/3*B*c/e^4/(e*x+d)^3
```

Rubi [A] time = 0.10, antiderivative size = 133, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {771}

$$-\frac{-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2}{5e^4(d+ex)^5}+\frac{(Bd-Ae)\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{-Ace-bBe+3Bcd}{4e^4(d+ex)^4}-\frac{Bc}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2))/(6*e^4*(d + e*x)^6) - (3*B*c*d^2 - B*
e*(2*b*d - a*e) - A*e*(2*c*d - b*e))/(5*e^4*(d + e*x)^5) + (3*B*c*d - b*B*e
 - A*c*e)/(4*e^4*(d + e*x)^4) - (B*c)/(3*e^4*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^7}+\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{e^3(d+ex)^6}+\right.\\ &= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)}{6e^4(d+ex)^6}-\frac{3Bcd^2-Be(2bd-ae)-Ae(2cd-be)}{5e^4(d+ex)^5}+\frac{3Bcd}{4e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 119, normalized size = 0.89

$$-\frac{Ae\left(2e(5ae+bd+6bex)+c\left(d^2+6dex+15e^2x^2\right)\right)+B\left(e\left(2ae(d+6ex)+b\left(d^2+6dex+15e^2x^2\right)\right)+c\left(d^3+\right.\right.}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(2*e*(b*d + 5*a*e + 6*b*e*x) + c*(d^2 + 6*d*e*x + 15*e^2*x^2)) +
 B*(c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + e*(2*a*e*(d + 6*e*x)
+ b*(d^2 + 6*d*e*x + 15*e^2*x^2))))/(e^4*(d + e*x)^6)
```

fricas [A] time = 0.73, size = 178, normalized size = 1.33

$$-\frac{20\,Bce^3x^3+Bcd^3+10\,Aae^3+(Bb+Ac)d^2e+2\,(Ba+Ab)de^2+15\left(Bcde^2+(Bb+Ac)e^3\right)x^2+6\left(Bcd^2e+(B\right.}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + 10*A*a*e^3 + (B*b + A*c)*d^2*e + 2*(B*a +
 A*b)*d*e^2 + 15*(B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + (B*b +
A*c)*d*e^2 + 2*(B*a + A*b)*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4
 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.16, size = 132, normalized size = 0.99

$$-\frac{\bigl(20\,Bcx^3e^3 + 15\,Bcdx^2e^2 + 6\,Bcd^2xe + Bcd^3 + 15\,Bbx^2e^3 + 15\,Acx^2e^3 + 6\,Bbdxe^2 + 6\,Acdxe^2 + Bbd^2e + Acd^2e +}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*B*c*x^3*e^3 + 15*B*c*d*x^2*e^2 + 6*B*c*d^2*x*e + B*c*d^3 + 15*B*b
*x^2*e^3 + 15*A*c*x^2*e^3 + 6*B*b*d*x*e^2 + 6*A*c*d*x*e^2 + B*b*d^2*e + A*c
*d^2*e + 12*B*a*x*e^3 + 12*A*b*x*e^3 + 2*B*a*d*e^2 + 2*A*b*d*e^2 + 10*A*a*e
^3)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 142, normalized size = 1.06

$$-\frac{Bc}{3\,(ex+d)^3\,e^4}-\frac{aA\,e^3-Abd\,e^2+Ac\,d^2e-aBd\,e^2+B\,d^2be-Bc\,d^3}{6\,(ex+d)^6\,e^4}-\frac{Ace+Bbe-3Bcd}{4\,(ex+d)^4\,e^4}-\frac{Ab\,e^2-2Acde+Ba\,e^2-}{5\,(ex+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x)
```

```
[Out] -1/6*(A*a*e^3-A*b*d*e^2+A*c*d^2*e-B*a*d*e^2+B*b*d^2*e-B*c*d^3)/e^4/(e*x+d)^
6-1/4*(A*c*e+B*b*e-3*B*c*d)/e^4/(e*x+d)^4-1/5*(A*b*e^2-2*A*c*d*e+B*a*e^2-2*
B*b*d*e+3*B*c*d^2)/e^4/(e*x+d)^5-1/3/(e*x+d)^3*B*c/e^4
```

maxima [A] time = 0.52, size = 178, normalized size = 1.33

$$-\frac{20\,Bce^3x^3 + Bcd^3 + 10\,Aae^3 + (Bb+Ac)d^2e + 2\,(Ba+Ab)de^2 + 15\,\bigl(Bcde^2 + (Bb+Ac)e^3\bigr)x^2 + 6\,\bigl(Bcd^2e + (Bb +}{60\,\left(e^{10}x^6 + 6\,de^9x^5 + 15\,d^2e^8x^4 + 20\,d^3e^7x^3 + 15\,d^4e^6x^2 + 6\,d^5e^5x + d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*B*c*e^3*x^3 + B*c*d^3 + 10*A*a*e^3 + (B*b + A*c)*d^2*e + 2*(B*a +
 A*b)*d*e^2 + 15*(B*c*d*e^2 + (B*b + A*c)*e^3)*x^2 + 6*(B*c*d^2*e + (B*b +
A*c)*d*e^2 + 2*(B*a + A*b)*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8*x^4
 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

mupad [B] time = 2.36, size = 182, normalized size = 1.36

$$-\frac{\frac{10\,A\,a\,e^3+B\,c\,d^3+2\,A\,b\,d\,e^2+2\,B\,a\,d\,e^2+A\,c\,d^2\,e+B\,b\,d^2\,e}{60\,e^4}+\frac{x^2\,\left(A\,c\,e+B\,b\,e+B\,c\,d\right)}{4\,e^2}+\frac{x\,\left(2\,A\,b\,e^2+2\,B\,a\,e^2+B\,c\,d^2+A\,c\,d\,e+B\,b\,d\,e\right)}{10\,e^3}+\frac{B\,c\,x^3}{3\,e}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2))/(d + e*x)^7,x)
```

```
[Out] -((10*A*a*e^3 + B*c*d^3 + 2*A*b*d*e^2 + 2*B*a*d*e^2 + A*c*d^2*e + B*b*d^2*e
)/(60*e^4) + (x^2*(A*c*e + B*b*e + B*c*d))/(4*e^2) + (x*(2*A*b*e^2 + 2*B*a*
e^2 + B*c*d^2 + A*c*d*e + B*b*d*e))/(10*e^3) + (B*c*x^3)/(3*e))/(d^6 + e^6*
x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^
5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2318 $\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^9\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{9e^6}-\frac{(d+ex)^8 (B (-6cde(2bd-ae)+be^2(3bd-2a}{}$$

```
[Out] -1/6*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^6/e^6-1/7*(a*e^2-b*d*e+c*d^2)
*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*(e*x+d)^7/e^6-1/8*(B*(10*c
^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*
c*e*(-a*e+3*b*d)))*(e*x+d)^8/e^6-1/9*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^
2*e^2-2*c*e*(-a*e+4*b*d)))*(e*x+d)^9/e^6-1/10*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e
*x+d)^10/e^6+1/11*B*c^2*(e*x+d)^11/e^6
```

Rubi [A] time = 0.82, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^9\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{9e^6}-\frac{(d+ex)^8 (B (-6cde(2bd-ae)+be^2(3bd-2a}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^6)/(6*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^7)/(7*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^8)/(8*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^9)/(9*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^10)/(10*
e^6) + (B*c^2*(d + e*x)^11)/(11*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^2\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^5}{e^5}+\frac{\left(cd^2-bde+ae^2\right)(5Bc}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^6}{6e^6}+\frac{\left(cd^2-bde+ae^2\right)(5Bcd^2-}{}$$

Mathematica [B] time = 0.30, size = 665, normalized size = 2.19

$$\frac{1}{7}ex^7 (B (e^2\left(a^2e^2+10abde+10b^2d^2\right)+20cd^2e(ae+bd)+5c^2d^4)+Ae(10cde(ae+2bd)+be^2(2ae+5bd)+10c^2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^5*x + (a*d^4*(2*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (d^3*(a*B*d*(2*b*
d + 5*a*e) + A*(b^2*d^2 + 10*a*b*d*e + 2*a*(c*d^2 + 5*a*e^2)))*x^3)/3 + (d^
2*(b^2*d^2*(B*d + 5*A*e) + 2*b*d*(A*c*d^2 + 5*a*B*d*e + 10*a*A*e^2) + 2*a*(
B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A*e^3))*x^4)/4 + (d*(5*b^2*d^2*e*
(B*d + 2*A*e) + 10*a*B*d*e*(c*d^2 + a*e^2) + 2*b*d*(B*c*d^3 + 5*A*c*d^2*e +
 10*a*B*d*e^2 + 10*a*A*e^3) + A*(c^2*d^4 + 20*a*c*d^2*e^2 + 5*a^2*e^4))*x^5
)/5 + ((B*(c^2*d^5 + 10*c*d^3*e*(b*d + 2*a*e) + 5*d*e^2*(2*b^2*d^2 + 4*a*b*
d*e + a^2*e^2)) + A*e*(5*c^2*d^4 + 20*c*d^2*e*(b*d + a*e) + e^2*(10*b^2*d^2
 + 10*a*b*d*e + a^2*e^2)))*x^6)/6 + (e*(A*e*(10*c^2*d^3 + 10*c*d*e*(2*b*d +
 a*e) + b*e^2*(5*b*d + 2*a*e)) + B*(5*c^2*d^4 + 20*c*d^2*e*(b*d + a*e) + e^
2*(10*b^2*d^2 + 10*a*b*d*e + a^2*e^2)))*x^7)/7 + (e^2*(A*e*(10*c^2*d^2 + b^
2*e^2 + 2*c*e*(5*b*d + a*e)) + B*(10*c^2*d^3 + 10*c*d*e*(2*b*d + a*e) + b*e
^2*(5*b*d + 2*a*e)))*x^8)/8 + (e^3*(A*c*e*(5*c*d + 2*b*e) + B*(10*c^2*d^2 +
 b^2*e^2 + 2*c*e*(5*b*d + a*e)))*x^9)/9 + (c*e^4*(5*B*c*d + 2*b*B*e + A*c*e
)*x^10)/10 + (B*c^2*e^5*x^11)/11
```

fricas [B] time = 0.58, size = 919, normalized size = 3.02

$$\frac{1}{11}x^{11}e^5c^2B+\frac{1}{2}x^{10}e^4dc^2B+\frac{1}{5}x^{10}e^5cbB+\frac{1}{10}x^{10}e^5c^2A+\frac{10}{9}x^9e^3d^2c^2B+\frac{10}{9}x^9e^4dcbB+\frac{1}{9}x^9e^5b^2B+\frac{2}{9}x^9e^5caB+\frac{5}{9}x^9e^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^5*c^2*B + 1/2*x^10*e^4*d*c^2*B + 1/5*x^10*e^5*c*b*B + 1/10*x^10
*e^5*c^2*A + 10/9*x^9*e^3*d^2*c^2*B + 10/9*x^9*e^4*d*c*b*B + 1/9*x^9*e^5*b^
2*B + 2/9*x^9*e^5*c*a*B + 5/9*x^9*e^4*d*c^2*A + 2/9*x^9*e^5*c*b*A + 5/4*x^8
*e^2*d^3*c^2*B + 5/2*x^8*e^3*d^2*c*b*B + 5/8*x^8*e^4*d*b^2*B + 5/4*x^8*e^4*
d*c*a*B + 1/4*x^8*e^5*b*a*B + 5/4*x^8*e^3*d^2*c^2*A + 5/4*x^8*e^4*d*c*b*A +
 1/8*x^8*e^5*b^2*A + 1/4*x^8*e^5*c*a*A + 5/7*x^7*e*d^4*c^2*B + 20/7*x^7*e^2
*d^3*c*b*B + 10/7*x^7*e^3*d^2*b^2*B + 20/7*x^7*e^3*d^2*c*a*B + 10/7*x^7*e^4
*d*b*a*B + 1/7*x^7*e^5*a^2*B + 10/7*x^7*e^2*d^3*c^2*A + 20/7*x^7*e^3*d^2*c*
b*A + 5/7*x^7*e^4*d*b^2*A + 10/7*x^7*e^4*d*c*a*A + 2/7*x^7*e^5*b*a*A + 1/6*
x^6*d^5*c^2*B + 5/3*x^6*e*d^4*c*b*B + 5/3*x^6*e^2*d^3*b^2*B + 10/3*x^6*e^2*
d^3*c*a*B + 10/3*x^6*e^3*d^2*b*a*B + 5/6*x^6*e^4*d*a^2*B + 5/6*x^6*e*d^4*c^
2*A + 10/3*x^6*e^2*d^3*c*b*A + 5/3*x^6*e^3*d^2*b^2*A + 10/3*x^6*e^3*d^2*c*a
*A + 5/3*x^6*e^4*d*b*a*A + 1/6*x^6*e^5*a^2*A + 2/5*x^5*d^5*c*b*B + x^5*e*d^
4*b^2*B + 2*x^5*e*d^4*c*a*B + 4*x^5*e^2*d^3*b*a*B + 2*x^5*e^3*d^2*a^2*B + 1
/5*x^5*d^5*c^2*A + 2*x^5*e*d^4*c*b*A + 2*x^5*e^2*d^3*b^2*A + 4*x^5*e^2*d^3*
c*a*A + 4*x^5*e^3*d^2*b*a*A + x^5*e^4*d*a^2*A + 1/4*x^4*d^5*b^2*B + 1/2*x^4
*d^5*c*a*B + 5/2*x^4*e*d^4*b*a*B + 5/2*x^4*e^2*d^3*a^2*B + 1/2*x^4*d^5*c*b*
A + 5/4*x^4*e*d^4*b^2*A + 5/2*x^4*e*d^4*c*a*A + 5*x^4*e^2*d^3*b*a*A + 5/2*x
^4*e^3*d^2*a^2*A + 2/3*x^3*d^5*b*a*B + 5/3*x^3*e*d^4*a^2*B + 1/3*x^3*d^5*b^
2*A + 2/3*x^3*d^5*c*a*A + 10/3*x^3*e*d^4*b*a*A + 10/3*x^3*e^2*d^3*a^2*A + 1
/2*x^2*d^5*a^2*B + x^2*d^5*b*a*A + 5/2*x^2*e*d^4*a^2*A + x*d^5*a^2*A
```

giac [B] time = 0.17, size = 883, normalized size = 2.90

$$\frac{1}{11}\,Bc^2x^{11}e^5+\frac{1}{2}\,Bc^2dx^{10}e^4+\frac{10}{9}\,Bc^2d^2x^9e^3+\frac{5}{4}\,Bc^2d^3x^8e^2+\frac{5}{7}\,Bc^2d^4x^7e+\frac{1}{6}\,Bc^2d^5x^6+\frac{1}{5}\,Bbcx^{10}e^5+\frac{1}{10}\,Ac^2x^{10}e^5+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/11*B*c^2*x^11*e^5 + 1/2*B*c^2*d*x^10*e^4 + 10/9*B*c^2*d^2*x^9*e^3 + 5/4*B
*c^2*d^3*x^8*e^2 + 5/7*B*c^2*d^4*x^7*e + 1/6*B*c^2*d^5*x^6 + 1/5*B*b*c*x^10
*e^5 + 1/10*A*c^2*x^10*e^5 + 10/9*B*b*c*d*x^9*e^4 + 5/9*A*c^2*d*x^9*e^4 + 5
/2*B*b*c*d^2*x^8*e^3 + 5/4*A*c^2*d^2*x^8*e^3 + 20/7*B*b*c*d^3*x^7*e^2 + 10/
7*A*c^2*d^3*x^7*e^2 + 5/3*B*b*c*d^4*x^6*e + 5/6*A*c^2*d^4*x^6*e + 2/5*B*b*c
*d^5*x^5 + 1/5*A*c^2*d^5*x^5 + 1/9*B*b^2*x^9*e^5 + 2/9*B*a*c*x^9*e^5 + 2/9*
```

```
A*b*c*x^9*e^5 + 5/8*B*b^2*d*x^8*e^4 + 5/4*B*a*c*d*x^8*e^4 + 5/4*A*b*c*d*x^8
*e^4 + 10/7*B*b^2*d^2*x^7*e^3 + 20/7*B*a*c*d^2*x^7*e^3 + 20/7*A*b*c*d^2*x^7
*e^3 + 5/3*B*b^2*d^3*x^6*e^2 + 10/3*B*a*c*d^3*x^6*e^2 + 10/3*A*b*c*d^3*x^6*
e^2 + B*b^2*d^4*x^5*e + 2*B*a*c*d^4*x^5*e + 2*A*b*c*d^4*x^5*e + 1/4*B*b^2*d
^5*x^4 + 1/2*B*a*c*d^5*x^4 + 1/2*A*b*c*d^5*x^4 + 1/4*B*a*b*x^8*e^5 + 1/8*A*
b^2*x^8*e^5 + 1/4*A*a*c*x^8*e^5 + 10/7*B*a*b*d*x^7*e^4 + 5/7*A*b^2*d*x^7*e^
4 + 10/7*A*a*c*d*x^7*e^4 + 10/3*B*a*b*d^2*x^6*e^3 + 5/3*A*b^2*d^2*x^6*e^3 +
 10/3*A*a*c*d^2*x^6*e^3 + 4*B*a*b*d^3*x^5*e^2 + 2*A*b^2*d^3*x^5*e^2 + 4*A*a
*c*d^3*x^5*e^2 + 5/2*B*a*b*d^4*x^4*e + 5/4*A*b^2*d^4*x^4*e + 5/2*A*a*c*d^4*
x^4*e + 2/3*B*a*b*d^5*x^3 + 1/3*A*b^2*d^5*x^3 + 2/3*A*a*c*d^5*x^3 + 1/7*B*a
^2*x^7*e^5 + 2/7*A*a*b*x^7*e^5 + 5/6*B*a^2*d*x^6*e^4 + 5/3*A*a*b*d*x^6*e^4
+ 2*B*a^2*d^2*x^5*e^3 + 4*A*a*b*d^2*x^5*e^3 + 5/2*B*a^2*d^3*x^4*e^2 + 5*A*a
*b*d^3*x^4*e^2 + 5/3*B*a^2*d^4*x^3*e + 10/3*A*a*b*d^4*x^3*e + 1/2*B*a^2*d^5
*x^2 + A*a*b*d^5*x^2 + 1/6*A*a^2*x^6*e^5 + A*a^2*d*x^5*e^4 + 5/2*A*a^2*d^2*
x^4*e^3 + 10/3*A*a^2*d^3*x^3*e^2 + 5/2*A*a^2*d^4*x^2*e + A*a^2*d^5*x
```

maple [B] time = 0.04, size = 671, normalized size = 2.21

$$\frac{B\,c^{2}e^{5}x^{11}}{11}+\frac{\left(2Bbc\,e^{5}+\left(A\,e^{5}+5Bd\,e^{4}\right)c^{2}\right)x^{10}}{10}+A\,a^{2}d^{5}x+\frac{\left(\left(2ac+b^{2}\right)B\,e^{5}+2\left(A\,e^{5}+5Bd\,e^{4}\right)bc+\left(5Ad\,e^{4}+10B\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/11*B*e^5*c^2*x^11+1/10*((A*e^5+5*B*d*e^4)*c^2+2*B*e^5*b*c)*x^10+1/9*((5*A
*d*e^4+10*B*d^2*e^3)*c^2+2*(A*e^5+5*B*d*e^4)*b*c+B*e^5*(2*a*c+b^2))*x^9+1/8
*((10*A*d^2*e^3+10*B*d^3*e^2)*c^2+2*(5*A*d*e^4+10*B*d^2*e^3)*b*c+(A*e^5+5*B
*d*e^4)*(2*a*c+b^2)+2*B*e^5*a*b)*x^8+1/7*((10*A*d^3*e^2+5*B*d^4*e)*c^2+2*(1
0*A*d^2*e^3+10*B*d^3*e^2)*b*c+(5*A*d*e^4+10*B*d^2*e^3)*(2*a*c+b^2)+2*(A*e^5
+5*B*d*e^4)*a*b+B*e^5*a^2)*x^7+1/6*((5*A*d^4*e+B*d^5)*c^2+2*(10*A*d^3*e^2+5
*B*d^4*e)*b*c+(10*A*d^2*e^3+10*B*d^3*e^2)*(2*a*c+b^2)+2*(5*A*d*e^4+10*B*d^2
*e^3)*a*b+(A*e^5+5*B*d*e^4)*a^2)*x^6+1/5*(A*d^5*c^2+2*(5*A*d^4*e+B*d^5)*b*c
+(10*A*d^3*e^2+5*B*d^4*e)*(2*a*c+b^2)+2*(10*A*d^2*e^3+10*B*d^3*e^2)*a*b+(5*
A*d*e^4+10*B*d^2*e^3)*a^2)*x^5+1/4*(2*A*d^5*b*c+(5*A*d^4*e+B*d^5)*(2*a*c+b^
2)+2*(10*A*d^3*e^2+5*B*d^4*e)*a*b+(10*A*d^2*e^3+10*B*d^3*e^2)*a^2)*x^4+1/3*
(A*d^5*(2*a*c+b^2)+2*(5*A*d^4*e+B*d^5)*a*b+(10*A*d^3*e^2+5*B*d^4*e)*a^2)*x^
3+1/2*(2*A*d^5*a*b+(5*A*d^4*e+B*d^5)*a^2)*x^2+A*d^5*a^2*x
```

maxima [B] time = 0.49, size = 648, normalized size = 2.13

$$\frac{1}{11}\,Bc^{2}e^{5}x^{11}+\frac{1}{10}\left(5\,Bc^{2}de^{4}+\left(2\,Bbc+Ac^{2}\right)e^{5}\right)x^{10}+\frac{1}{9}\left(10\,Bc^{2}d^{2}e^{3}+5\left(2\,Bbc+Ac^{2}\right)de^{4}+\left(Bb^{2}+2\left(Ba+Ab\right)c\right)e^{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^2*e^5*x^11 + 1/10*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e^5)*x^10 + 1
/9*(10*B*c^2*d^2*e^3 + 5*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c
)*e^5)*x^9 + A*a^2*d^5*x + 1/8*(10*B*c^2*d^3*e^2 + 10*(2*B*b*c + A*c^2)*d^2
*e^3 + 5*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)
*x^8 + 1/7*(5*B*c^2*d^4*e + 10*(2*B*b*c + A*c^2)*d^3*e^2 + 10*(B*b^2 + 2*(B
*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a
*b)*e^5)*x^7 + 1/6*(B*c^2*d^5 + A*a^2*e^5 + 5*(2*B*b*c + A*c^2)*d^4*e + 10*
(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 10*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3
+ 5*(B*a^2 + 2*A*a*b)*d*e^4)*x^6 + 1/5*(5*A*a^2*d*e^4 + (2*B*b*c + A*c^2)*d
^5 + 5*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e + 10*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3
*e^2 + 10*(B*a^2 + 2*A*a*b)*d^2*e^3)*x^5 + 1/4*(10*A*a^2*d^2*e^3 + (B*b^2 +
 2*(B*a + A*b)*c)*d^5 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d^4*e + 10*(B*a^2 + 2
*A*a*b)*d^3*e^2)*x^4 + 1/3*(10*A*a^2*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*
d^5 + 5*(B*a^2 + 2*A*a*b)*d^4*e)*x^3 + 1/2*(5*A*a^2*d^4*e + (B*a^2 + 2*A*a*
b)*d^5)*x^2
```

mupad [B] time = 0.27, size = 739, normalized size = 2.43

$$x^3\left(\frac{5\,B\,a^2\,d^4\,e}{3}+\frac{10\,A\,a^2\,d^3\,e^2}{3}+\frac{2\,B\,a\,b\,d^5}{3}+\frac{10\,A\,a\,b\,d^4\,e}{3}+\frac{2\,A\,c\,a\,d^5}{3}+\frac{A\,b^2\,d^5}{3}\right)+x^9\left(\frac{B\,b^2\,e^5}{9}+\frac{10\,B\,b\,c\,d\,e^4}{9}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*b^2*d^5)/3 + (2*A*a*c*d^5)/3 + (2*B*a*b*d^5)/3 + (5*B*a^2*d^4*e)/3
+ (10*A*a^2*d^3*e^2)/3 + (10*A*a*b*d^4*e)/3) + x^9*((B*b^2*e^5)/9 + (2*A*b*
c*e^5)/9 + (2*B*a*c*e^5)/9 + (5*A*c^2*d*e^4)/9 + (10*B*c^2*d^2*e^3)/9 + (10
*B*b*c*d*e^4)/9) + x^4*((B*b^2*d^5)/4 + (A*b*c*d^5)/2 + (B*a*c*d^5)/2 + (5*
A*b^2*d^4*e)/4 + (5*A*a^2*d^2*e^3)/2 + (5*B*a^2*d^3*e^2)/2 + (5*A*a*c*d^4*e
)/2 + (5*B*a*b*d^4*e)/2 + 5*A*a*b*d^3*e^2) + x^8*((A*b^2*e^5)/8 + (A*a*c*e^
5)/4 + (B*a*b*e^5)/4 + (5*B*b^2*d*e^4)/8 + (5*A*c^2*d^2*e^3)/4 + (5*B*c^2*d
^3*e^2)/4 + (5*A*b*c*d*e^4)/4 + (5*B*a*c*d*e^4)/4 + (5*B*b*c*d^2*e^3)/2) +
x^6*((A*a^2*e^5)/6 + (B*c^2*d^5)/6 + (5*B*a^2*d*e^4)/6 + (5*A*c^2*d^4*e)/6
+ (5*A*b^2*d^2*e^3)/3 + (5*B*b^2*d^3*e^2)/3 + (5*A*a*b*d*e^4)/3 + (5*B*b*c*
d^4*e)/3 + (10*A*a*c*d^2*e^3)/3 + (10*B*a*b*d^2*e^3)/3 + (10*A*b*c*d^3*e^2)
/3 + (10*B*a*c*d^3*e^2)/3) + x^5*((A*c^2*d^5)/5 + (2*B*b*c*d^5)/5 + A*a^2*d
*e^4 + B*b^2*d^4*e + 2*A*b^2*d^3*e^2 + 2*B*a^2*d^2*e^3 + 2*A*b*c*d^4*e + 2*
B*a*c*d^4*e + 4*A*a*b*d^2*e^3 + 4*A*a*c*d^3*e^2 + 4*B*a*b*d^3*e^2) + x^7*((
B*a^2*e^5)/7 + (2*A*a*b*e^5)/7 + (5*A*b^2*d*e^4)/7 + (5*B*c^2*d^4*e)/7 + (1
0*A*c^2*d^3*e^2)/7 + (10*B*b^2*d^2*e^3)/7 + (10*A*a*c*d*e^4)/7 + (10*B*a*b*
d*e^4)/7 + (20*A*b*c*d^2*e^3)/7 + (20*B*a*c*d^2*e^3)/7 + (20*B*b*c*d^3*e^2)
/7) + A*a^2*d^5*x + (a*d^4*x^2*(5*A*a*e + 2*A*b*d + B*a*d))/2 + (c*e^4*x^10
*(A*c*e + 2*B*b*e + 5*B*c*d))/10 + (B*c^2*e^5*x^11)/11
```

sympy [B] time = 0.24, size = 957, normalized size = 3.15

$$Aa^2d^5x+\frac{Bc^2e^5x^{11}}{11}+x^{10}\left(\frac{Ac^2e^5}{10}+\frac{Bbce^5}{5}+\frac{Bc^2de^4}{2}\right)+x^9\left(\frac{2Abce^5}{9}+\frac{5Ac^2de^4}{9}+\frac{2Bace^5}{9}+\frac{Bb^2e^5}{9}+\frac{10Bbcde^4}{9}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**5*x + B*c**2*e**5*x**11/11 + x**10*(A*c**2*e**5/10 + B*b*c*e**5/5
 + B*c**2*d*e**4/2) + x**9*(2*A*b*c*e**5/9 + 5*A*c**2*d*e**4/9 + 2*B*a*c*e*
*5/9 + B*b**2*e**5/9 + 10*B*b*c*d*e**4/9 + 10*B*c**2*d**2*e**3/9) + x**8*(A
*a*c*e**5/4 + A*b**2*e**5/8 + 5*A*b*c*d*e**4/4 + 5*A*c**2*d**2*e**3/4 + B*a
*b*e**5/4 + 5*B*a*c*d*e**4/4 + 5*B*b**2*d*e**4/8 + 5*B*b*c*d**2*e**3/2 + 5*
B*c**2*d**3*e**2/4) + x**7*(2*A*a*b*e**5/7 + 10*A*a*c*d*e**4/7 + 5*A*b**2*d
*e**4/7 + 20*A*b*c*d**2*e**3/7 + 10*A*c**2*d**3*e**2/7 + B*a**2*e**5/7 + 10
*B*a*b*d*e**4/7 + 20*B*a*c*d**2*e**3/7 + 10*B*b**2*d**2*e**3/7 + 20*B*b*c*d
**3*e**2/7 + 5*B*c**2*d**4*e/7) + x**6*(A*a**2*e**5/6 + 5*A*a*b*d*e**4/3 +
10*A*a*c*d**2*e**3/3 + 5*A*b**2*d**2*e**3/3 + 10*A*b*c*d**3*e**2/3 + 5*A*c*
*2*d**4*e/6 + 5*B*a**2*d*e**4/6 + 10*B*a*b*d**2*e**3/3 + 10*B*a*c*d**3*e**2
/3 + 5*B*b**2*d**3*e**2/3 + 5*B*b*c*d**4*e/3 + B*c**2*d**5/6) + x**5*(A*a**
2*d*e**4 + 4*A*a*b*d**2*e**3 + 4*A*a*c*d**3*e**2 + 2*A*b**2*d**3*e**2 + 2*A
*b*c*d**4*e + A*c**2*d**5/5 + 2*B*a**2*d**2*e**3 + 4*B*a*b*d**3*e**2 + 2*B*
a*c*d**4*e + B*b**2*d**4*e + 2*B*b*c*d**5/5) + x**4*(5*A*a**2*d**2*e**3/2 +
 5*A*a*b*d**3*e**2 + 5*A*a*c*d**4*e/2 + 5*A*b**2*d**4*e/4 + A*b*c*d**5/2 +
5*B*a**2*d**3*e**2/2 + 5*B*a*b*d**4*e/2 + B*a*c*d**5/2 + B*b**2*d**5/4) + x
**3*(10*A*a**2*d**3*e**2/3 + 10*A*a*b*d**4*e/3 + 2*A*a*c*d**5/3 + A*b**2*d*
*5/3 + 5*B*a**2*d**4*e/3 + 2*B*a*b*d**5/3) + x**2*(5*A*a**2*d**4*e/2 + A*a*
b*d**5 + B*a**2*d**5/2)
```

3.2319 $\int (A+Bx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^8\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{8e^6}-(d+ex)^7\big(B\big(-6cde(2bd-ae)+be^2(3bd-2a$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^5/e^6-1/6*(a*e^2-b*d*e+c*d^2)
*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*(e*x+d)^6/e^6-1/7*(B*(10*c
^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*
c*e*(-a*e+3*b*d)))*(e*x+d)^7/e^6-1/8*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^
2*e^2-2*c*e*(-a*e+4*b*d)))*(e*x+d)^8/e^6-1/9*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*
x+d)^9/e^6+1/10*B*c^2*(e*x+d)^10/e^6
```

Rubi [A] time = 0.63, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^8\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{8e^6}-(d+ex)^7\big(B\big(-6cde(2bd-ae)+be^2(3bd-2a$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^5)/(5*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^6)/(6*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^7)/(7*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^8)/(8*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^9)/(9*e^
6) + (B*c^2*(d + e*x)^10)/(10*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4\left(a+bx+cx^2\right)^2\,dx = \int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{e^5}+\left(cd^2-bde+ae^2\right)\big(5Bc$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^5}{5e^6}+\left(cd^2-bde+ae^2\right)\big(5Bcd^2-$$

Mathematica [A] time = 0.24, size = 550, normalized size = 1.81

$$\frac{1}{6}x^6\left(B\left(e^2\left(a^2e^2+8abde+6b^2d^2\right)+4cd^2e(3ae+2bd)+c^2d^4\right)+2Ae\left(2cde(2ae+3bd)+be^2(ae+2bd)+2c^2d^3\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^4*x + (a*d^3*(2*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (d^2*(2*a*B*d*(b*
d + 2*a*e) + A*(b^2*d^2 + 8*a*b*d*e + 2*a*(c*d^2 + 3*a*e^2)))*x^3)/3 + (d*(
b^2*d^2*(B*d + 4*A*e) + 2*b*d*(A*c*d^2 + 4*a*B*d*e + 6*a*A*e^2) + 2*a*(B*c*
d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^3))*x^4)/4 + ((2*b^2*d^2*e*(2*B*d
 + 3*A*e) + 4*a*B*d*e*(2*c*d^2 + a*e^2) + 2*b*d*(B*c*d^3 + 4*A*c*d^2*e + 6*
a*B*d*e^2 + 4*a*A*e^3) + A*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4))*x^5)/5 + (
(2*A*e*(2*c^2*d^3 + b*e^2*(2*b*d + a*e) + 2*c*d*e*(3*b*d + 2*a*e)) + B*(c^2
*d^4 + 4*c*d^2*e*(2*b*d + 3*a*e) + e^2*(6*b^2*d^2 + 8*a*b*d*e + a^2*e^2)))*
x^6)/6 + (e*(A*e*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(4*b*d + a*e)) + 2*B*(2*c^2*d
^3 + b*e^2*(2*b*d + a*e) + 2*c*d*e*(3*b*d + 2*a*e)))*x^7)/7 + (e^2*(2*A*c*e
*(2*c*d + b*e) + B*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(4*b*d + a*e)))*x^8)/8 + (c
*e^3*(4*B*c*d + 2*b*B*e + A*c*e)*x^9)/9 + (B*c^2*e^4*x^10)/10
```

fricas [**B**] time = 0.58, size = 743, normalized size = 2.44

$$\frac{1}{10}x^{10}e^4c^2B+\frac{4}{9}x^9e^3dc^2B+\frac{2}{9}x^9e^4cbB+\frac{1}{9}x^9e^4c^2A+\frac{3}{4}x^8e^2d^2c^2B+x^8e^3dcbB+\frac{1}{8}x^8e^4b^2B+\frac{1}{4}x^8e^4caB+\frac{1}{2}x^8e^3dc^2A+\frac{1}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^4*c^2*B + 4/9*x^9*e^3*d*c^2*B + 2/9*x^9*e^4*c*b*B + 1/9*x^9*e^4
*c^2*A + 3/4*x^8*e^2*d^2*c^2*B + x^8*e^3*d*c*b*B + 1/8*x^8*e^4*b^2*B + 1/4*
x^8*e^4*c*a*B + 1/2*x^8*e^3*d*c^2*A + 1/4*x^8*e^4*c*b*A + 4/7*x^7*e*d^3*c^2
*B + 12/7*x^7*e^2*d^2*c*b*B + 4/7*x^7*e^3*d*b^2*B + 8/7*x^7*e^3*d*c*a*B + 2
/7*x^7*e^4*b*a*B + 6/7*x^7*e^2*d^2*c^2*A + 8/7*x^7*e^3*d*c*b*A + 1/7*x^7*e^
4*b^2*A + 2/7*x^7*e^4*c*a*A + 1/6*x^6*d^4*c^2*B + 4/3*x^6*e*d^3*c*b*B + x^6
*e^2*d^2*b^2*B + 2*x^6*e^2*d^2*c*a*B + 4/3*x^6*e^3*d*b*a*B + 1/6*x^6*e^4*a^
2*B + 2/3*x^6*e*d^3*c^2*A + 2*x^6*e^2*d^2*c*b*A + 2/3*x^6*e^3*d*b^2*A + 4/3
*x^6*e^3*d*c*a*A + 1/3*x^6*e^4*b*a*A + 2/5*x^5*d^4*c*b*B + 4/5*x^5*e*d^3*b^
2*B + 8/5*x^5*e*d^3*c*a*B + 12/5*x^5*e^2*d^2*b*a*B + 4/5*x^5*e^3*d*a^2*B +
1/5*x^5*d^4*c^2*A + 8/5*x^5*e*d^3*c*b*A + 6/5*x^5*e^2*d^2*b^2*A + 12/5*x^5*
e^2*d^2*c*a*A + 8/5*x^5*e^3*d*b*a*A + 1/5*x^5*e^4*a^2*A + 1/4*x^4*d^4*b^2*B
 + 1/2*x^4*d^4*c*a*B + 2*x^4*e*d^3*b*a*B + 3/2*x^4*e^2*d^2*a^2*B + 1/2*x^4*
d^4*c*b*A + x^4*e*d^3*b^2*A + 2*x^4*e*d^3*c*a*A + 3*x^4*e^2*d^2*b*a*A + x^4
*e^3*d*a^2*A + 2/3*x^3*d^4*b*a*B + 4/3*x^3*e*d^3*a^2*B + 1/3*x^3*d^4*b^2*A
+ 2/3*x^3*d^4*c*a*A + 8/3*x^3*e*d^3*b*a*A + 2*x^3*e^2*d^2*a^2*A + 1/2*x^2*d
^4*a^2*B + x^2*d^4*b*a*A + 2*x^2*e*d^3*a^2*A + x*d^4*a^2*A
```

giac [**B**] time = 0.16, size = 719, normalized size = 2.37

$$\frac{1}{10}Bc^2x^{10}e^4+\frac{4}{9}Bc^2dx^9e^3+\frac{3}{4}Bc^2d^2x^8e^2+\frac{4}{7}Bc^2d^3x^7e+\frac{1}{6}Bc^2d^4x^6+\frac{2}{9}Bbcx^9e^4+\frac{1}{9}Ac^2x^9e^4+Bbcdx^8e^3+\frac{1}{2}Ac^2dx^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/10*B*c^2*x^10*e^4 + 4/9*B*c^2*d*x^9*e^3 + 3/4*B*c^2*d^2*x^8*e^2 + 4/7*B*c
^2*d^3*x^7*e + 1/6*B*c^2*d^4*x^6 + 2/9*B*b*c*x^9*e^4 + 1/9*A*c^2*x^9*e^4 +
B*b*c*d*x^8*e^3 + 1/2*A*c^2*d*x^8*e^3 + 12/7*B*b*c*d^2*x^7*e^2 + 6/7*A*c^2*
d^2*x^7*e^2 + 4/3*B*b*c*d^3*x^6*e + 2/3*A*c^2*d^3*x^6*e + 2/5*B*b*c*d^4*x^5
 + 1/5*A*c^2*d^4*x^5 + 1/8*B*b^2*x^8*e^4 + 1/4*B*a*c*x^8*e^4 + 1/4*A*b*c*x^
8*e^4 + 4/7*B*b^2*d*x^7*e^3 + 8/7*B*a*c*d*x^7*e^3 + 8/7*A*b*c*d*x^7*e^3 + B
*b^2*d^2*x^6*e^2 + 2*B*a*c*d^2*x^6*e^2 + 2*A*b*c*d^2*x^6*e^2 + 4/5*B*b^2*d^
3*x^5*e + 8/5*B*a*c*d^3*x^5*e + 8/5*A*b*c*d^3*x^5*e + 1/4*B*b^2*d^4*x^4 + 1
/2*B*a*c*d^4*x^4 + 1/2*A*b*c*d^4*x^4 + 2/7*B*a*b*x^7*e^4 + 1/7*A*b^2*x^7*e^
4 + 2/7*A*a*c*x^7*e^4 + 4/3*B*a*b*d*x^6*e^3 + 2/3*A*b^2*d*x^6*e^3 + 4/3*A*a
*c*d*x^6*e^3 + 12/5*B*a*b*d^2*x^5*e^2 + 6/5*A*b^2*d^2*x^5*e^2 + 12/5*A*a*c*
d^2*x^5*e^2 + 2*B*a*b*d^3*x^4*e + A*b^2*d^3*x^4*e + 2*A*a*c*d^3*x^4*e + 2/3
*B*a*b*d^4*x^3 + 1/3*A*b^2*d^4*x^3 + 2/3*A*a*c*d^4*x^3 + 1/6*B*a^2*x^6*e^4
```

```
+ 1/3*A*a*b*x^6*e^4 + 4/5*B*a^2*d*x^5*e^3 + 8/5*A*a*b*d*x^5*e^3 + 3/2*B*a^2
*d^2*x^4*e^2 + 3*A*a*b*d^2*x^4*e^2 + 4/3*B*a^2*d^3*x^3*e + 8/3*A*a*b*d^3*x^
3*e + 1/2*B*a^2*d^4*x^2 + A*a*b*d^4*x^2 + 1/5*A*a^2*x^5*e^4 + A*a^2*d*x^4*e
^3 + 2*A*a^2*d^2*x^3*e^2 + 2*A*a^2*d^3*x^2*e + A*a^2*d^4*x
```

maple [**A**]   time = 0.04, size = 545, normalized size = 1.79

$$\frac{B c^2 e^4 x^{10}}{10} + \frac{(2Bbc\, e^4 + (A e^4 + 4Bd\, e^3) c^2) x^9}{9} + A a^2 d^4 x + \frac{((2ac + b^2) B e^4 + 2 (A e^4 + 4Bd\, e^3) bc + (4Ad\, e^3 + 6B d^2}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/10*B*e^4*c^2*x^10+1/9*((A*e^4+4*B*d*e^3)*c^2+2*B*e^4*b*c)*x^9+1/8*((4*A*d
*e^3+6*B*d^2*e^2)*c^2+2*(A*e^4+4*B*d*e^3)*b*c+B*e^4*(2*a*c+b^2))*x^8+1/7*((
6*A*d^2*e^2+4*B*d^3*e)*c^2+2*(4*A*d*e^3+6*B*d^2*e^2)*b*c+(A*e^4+4*B*d*e^3)*
(2*a*c+b^2)+2*B*a*b*e^4)*x^7+1/6*((4*A*d^3*e+B*d^4)*c^2+2*(6*A*d^2*e^2+4*B*
d^3*e)*b*c+(4*A*d*e^3+6*B*d^2*e^2)*(2*a*c+b^2)+2*(A*e^4+4*B*d*e^3)*a*b+B*a^
2*e^4)*x^6+1/5*(A*d^4*c^2+2*(4*A*d^3*e+B*d^4)*b*c+(6*A*d^2*e^2+4*B*d^3*e)*(
2*a*c+b^2)+2*(4*A*d*e^3+6*B*d^2*e^2)*a*b+(A*e^4+4*B*d*e^3)*a^2)*x^5+1/4*(2*
A*d^4*b*c+(4*A*d^3*e+B*d^4)*(2*a*c+b^2)+2*(6*A*d^2*e^2+4*B*d^3*e)*a*b+(4*A*
d*e^3+6*B*d^2*e^2)*a^2)*x^4+1/3*(A*d^4*(2*a*c+b^2)+2*(4*A*d^3*e+B*d^4)*a*b+
(6*A*d^2*e^2+4*B*d^3*e)*a^2)*x^3+1/2*(2*A*d^4*a*b+(4*A*d^3*e+B*d^4)*a^2)*x^
2+A*d^4*a^2*x
```

maxima [**A**]   time = 0.52, size = 532, normalized size = 1.75

$$\frac{1}{10} Bc^2 e^4 x^{10} + \frac{1}{9} (4\, Bc^2 de^3 + (2\, Bbc + Ac^2) e^4) x^9 + \frac{1}{8} (6\, Bc^2 d^2 e^2 + 4 (2\, Bbc + Ac^2) de^3 + (Bb^2 + 2 (Ba + Ab)c) e^4) x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^2*e^4*x^10 + 1/9*(4*B*c^2*d*e^3 + (2*B*b*c + A*c^2)*e^4)*x^9 + 1/8
*(6*B*c^2*d^2*e^2 + 4*(2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*e
^4)*x^8 + A*a^2*d^4*x + 1/7*(4*B*c^2*d^3*e + 6*(2*B*b*c + A*c^2)*d^2*e^2 +
4*(B*b^2 + 2*(B*a + A*b)*c)*d*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^4)*x^7 +
1/6*(B*c^2*d^4 + 4*(2*B*b*c + A*c^2)*d^3*e + 6*(B*b^2 + 2*(B*a + A*b)*c)*d^
2*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*x^6 +
1/5*(A*a^2*e^4 + (2*B*b*c + A*c^2)*d^4 + 4*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e
+ 6*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^2 + 4*(B*a^2 + 2*A*a*b)*d*e^3)*x^5 +
1/4*(4*A*a^2*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*d^4 + 4*(2*B*a*b + A*b^2 + 2
*A*a*c)*d^3*e + 6*(B*a^2 + 2*A*a*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^2*d^2*e^2 + (
2*B*a*b + A*b^2 + 2*A*a*c)*d^4 + 4*(B*a^2 + 2*A*a*b)*d^3*e)*x^3 + 1/2*(4*A*
a^2*d^3*e + (B*a^2 + 2*A*a*b)*d^4)*x^2
```

mupad [**B**]   time = 2.48, size = 594, normalized size = 1.95

$$x^3 \left(\frac{4\, B\, a^2\, d^3\, e}{3} + 2\, A\, a^2\, d^2\, e^2 + \frac{2\, B\, a\, b\, d^4}{3} + \frac{8\, A\, a\, b\, d^3\, e}{3} + \frac{2\, A\, c\, a\, d^4}{3} + \frac{A\, b^2\, d^4}{3}\right) + x^4 \left(\frac{3\, B\, a^2\, d^2\, e^2}{2} + A\, a^2\, d\, e^3 + 2 \right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*b^2*d^4)/3 + (2*A*a*c*d^4)/3 + (2*B*a*b*d^4)/3 + (4*B*a^2*d^3*e)/3
+ 2*A*a^2*d^2*e^2 + (8*A*a*b*d^3*e)/3) + x^4*((B*b^2*d^4)/4 + (A*b*c*d^4)/2
 + (B*a*c*d^4)/2 + A*a^2*d*e^3 + A*b^2*d^3*e + (3*B*a^2*d^2*e^2)/2 + 2*A*a*
c*d^3*e + 2*B*a*b*d^3*e + 3*A*a*b*d^2*e^2) + x^8*((B*b^2*e^4)/8 + (A*b*c*e^
4)/4 + (B*a*c*e^4)/4 + (A*c^2*d*e^3)/2 + (3*B*c^2*d^2*e^2)/4 + B*b*c*d*e^3)
```

```
 + x^7*((A*b^2*e^4)/7 + (2*A*a*c*e^4)/7 + (2*B*a*b*e^4)/7 + (4*B*b^2*d*e^3)
/7 + (4*B*c^2*d^3*e)/7 + (6*A*c^2*d^2*e^2)/7 + (8*A*b*c*d*e^3)/7 + (8*B*a*c
*d*e^3)/7 + (12*B*b*c*d^2*e^2)/7) + x^5*((A*a^2*e^4)/5 + (A*c^2*d^4)/5 + (2
*B*b*c*d^4)/5 + (4*B*a^2*d*e^3)/5 + (4*B*b^2*d^3*e)/5 + (6*A*b^2*d^2*e^2)/5
 + (8*A*a*b*d*e^3)/5 + (8*A*b*c*d^3*e)/5 + (8*B*a*c*d^3*e)/5 + (12*A*a*c*d^
2*e^2)/5 + (12*B*a*b*d^2*e^2)/5) + x^6*((B*a^2*e^4)/6 + (B*c^2*d^4)/6 + (A*
a*b*e^4)/3 + (2*A*b^2*d*e^3)/3 + (2*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 + (4*A*a
*c*d*e^3)/3 + (4*B*a*b*d*e^3)/3 + (4*B*b*c*d^3*e)/3 + 2*A*b*c*d^2*e^2 + 2*B
*a*c*d^2*e^2) + A*a^2*d^4*x + (a*d^3*x^2*(4*A*a*e + 2*A*b*d + B*a*d))/2 + (
c*e^3*x^9*(A*c*e + 2*B*b*e + 4*B*c*d))/9 + (B*c^2*e^4*x^10)/10
```

sympy [B] time = 0.18, size = 765, normalized size = 2.52

$$Aa^2d^4x+\frac{Bc^2e^4x^{10}}{10}+x^9\left(\frac{Ac^2e^4}{9}+\frac{2Bbce^4}{9}+\frac{4Bc^2de^3}{9}\right)+x^8\left(\frac{Abce^4}{4}+\frac{Ac^2de^3}{2}+\frac{Bace^4}{4}+\frac{Bb^2e^4}{8}+Bbcde^3+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**4*x + B*c**2*e**4*x**10/10 + x**9*(A*c**2*e**4/9 + 2*B*b*c*e**4/9
 + 4*B*c**2*d*e**3/9) + x**8*(A*b*c*e**4/4 + A*c**2*d*e**3/2 + B*a*c*e**4/4
 + B*b**2*e**4/8 + B*b*c*d*e**3 + 3*B*c**2*d**2*e**2/4) + x**7*(2*A*a*c*e**
4/7 + A*b**2*e**4/7 + 8*A*b*c*d*e**3/7 + 6*A*c**2*d**2*e**2/7 + 2*B*a*b*e**
4/7 + 8*B*a*c*d*e**3/7 + 4*B*b**2*d*e**3/7 + 12*B*b*c*d**2*e**2/7 + 4*B*c**
2*d**3*e/7) + x**6*(A*a*b*e**4/3 + 4*A*a*c*d*e**3/3 + 2*A*b**2*d*e**3/3 + 2
*A*b*c*d**2*e**2 + 2*A*c**2*d**3*e/3 + B*a**2*e**4/6 + 4*B*a*b*d*e**3/3 + 2
*B*a*c*d**2*e**2 + B*b**2*d**2*e**2 + 4*B*b*c*d**3*e/3 + B*c**2*d**4/6) + x
**5*(A*a**2*e**4/5 + 8*A*a*b*d*e**3/5 + 12*A*a*c*d**2*e**2/5 + 6*A*b**2*d**
2*e**2/5 + 8*A*b*c*d**3*e/5 + A*c**2*d**4/5 + 4*B*a**2*d*e**3/5 + 12*B*a*b*
d**2*e**2/5 + 8*B*a*c*d**3*e/5 + 4*B*b**2*d**3*e/5 + 2*B*b*c*d**4/5) + x**4
*(A*a**2*d*e**3 + 3*A*a*b*d**2*e**2 + 2*A*a*c*d**3*e + A*b**2*d**3*e + A*b*
c*d**4/2 + 3*B*a**2*d**2*e**2/2 + 2*B*a*b*d**3*e + B*a*c*d**4/2 + B*b**2*d*
*4/4) + x**3*(2*A*a**2*d**2*e**2 + 8*A*a*b*d**3*e/3 + 2*A*a*c*d**4/3 + A*b*
*2*d**4/3 + 4*B*a**2*d**3*e/3 + 2*B*a*b*d**4/3) + x**2*(2*A*a**2*d**3*e + A
*a*b*d**4 + B*a**2*d**4/2)
```

3.2320 $\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^7\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{7e^6}-(d+ex)^6\left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^4/e^6-1/5*(a*e^2-b*d*e+c*d^2)
*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*(e*x+d)^5/e^6-1/6*(B*(10*c
^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*
c*e*(-a*e+3*b*d)))*(e*x+d)^6/e^6-1/7*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^
2*e^2-2*c*e*(-a*e+4*b*d)))*(e*x+d)^7/e^6-1/8*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*
x+d)^8/e^6+1/9*B*c^2*(e*x+d)^9/e^6
```

Rubi [A] time = 0.49, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{(d+ex)^7\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{7e^6}-(d+ex)^6\left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^4)/(4*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^5)/(5*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^6)/(6*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^7)/(7*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^8)/(8*e^
6) + (B*c^2*(d + e*x)^9)/(9*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^2\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{e^5}+\left(cd^2-bde+ae^2\right)\left(5Bc\right.\right.\\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^4}{4e^6}+\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.\end{aligned}$$

Mathematica [A] time = 0.19, size = 421, normalized size = 1.38

$$a^2Ad^3x+\frac{1}{7}ex^7\left(B\left(2ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(2be+3cd)\right)+\frac{1}{6}x^6\left(Ae\left(2ce(ae+3bd)+b^2e^2+3c^2d^2\right)+B\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^3*x + (a*d^2*(2*A*b*d + a*B*d + 3*a*A*e)*x^2)/2 + (d*(a*B*d*(2*b*d
+ 3*a*e) + A*(b^2*d^2 + 6*a*b*d*e + a*(2*c*d^2 + 3*a*e^2)))*x^3)/3 + ((b^2*
d^2*(B*d + 3*A*e) + 2*b*d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e^2) + a*(2*B*c*d^3
+ 6*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3))*x^4)/4 + ((3*b^2*d*e*(B*d + A*e) +
a*B*e*(6*c*d^2 + a*e^2) + A*c*d*(c*d^2 + 6*a*e^2) + 2*b*(B*c*d^3 + 3*A*c*d^
2*e + 3*a*B*d*e^2 + a*A*e^3))*x^5)/5 + ((A*e*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(
3*b*d + a*e)) + B*(c^2*d^3 + 6*c*d*e*(b*d + a*e) + b*e^2*(3*b*d + 2*a*e)))*
x^6)/6 + (e*(A*c*e*(3*c*d + 2*b*e) + B*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(3*b*d
+ a*e)))*x^7)/7 + (c*e^2*(3*B*c*d + 2*b*B*e + A*c*e)*x^8)/8 + (B*c^2*e^3*x^
9)/9
```

fricas [A] time = 0.66, size = 568, normalized size = 1.87

$$\frac{1}{9}x^9e^3c^2B+\frac{3}{8}x^8e^2dc^2B+\frac{1}{4}x^8e^3cbB+\frac{1}{8}x^8e^3c^2A+\frac{3}{7}x^7ed^2c^2B+\frac{6}{7}x^7e^2dcbB+\frac{1}{7}x^7e^3b^2B+\frac{2}{7}x^7e^3caB+\frac{3}{7}x^7e^2dc^2A+\frac{2}{7}x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^3*c^2*B + 3/8*x^8*e^2*d*c^2*B + 1/4*x^8*e^3*c*b*B + 1/8*x^8*e^3*c
^2*A + 3/7*x^7*e*d^2*c^2*B + 6/7*x^7*e^2*d*c*b*B + 1/7*x^7*e^3*b^2*B + 2/7*
x^7*e^3*c*a*B + 3/7*x^7*e^2*d*c^2*A + 2/7*x^7*e^3*c*b*A + 1/6*x^6*d^3*c^2*B
 + x^6*e*d^2*c*b*B + 1/2*x^6*e^2*d*b^2*B + x^6*e^2*d*c*a*B + 1/3*x^6*e^3*b*
a*B + 1/2*x^6*e*d^2*c^2*A + x^6*e^2*d*c*b*A + 1/6*x^6*e^3*b^2*A + 1/3*x^6*e
^3*c*a*A + 2/5*x^5*d^3*c*b*B + 3/5*x^5*e*d^2*b^2*B + 6/5*x^5*e*d^2*c*a*B +
6/5*x^5*e^2*d*b*a*B + 1/5*x^5*e^3*a^2*B + 1/5*x^5*d^3*c^2*A + 6/5*x^5*e*d^2
*c*b*A + 3/5*x^5*e^2*d*b^2*A + 6/5*x^5*e^2*d*c*a*A + 2/5*x^5*e^3*b*a*A + 1/
4*x^4*d^3*b^2*B + 1/2*x^4*d^3*c*a*B + 3/2*x^4*e*d^2*b*a*B + 3/4*x^4*e^2*d*a
^2*B + 1/2*x^4*d^3*c*b*A + 3/4*x^4*e*d^2*b^2*A + 3/2*x^4*e*d^2*c*a*A + 3/2*
x^4*e^2*d*b*a*A + 1/4*x^4*e^3*a^2*A + 2/3*x^3*d^3*b*a*B + x^3*e*d^2*a^2*B +
 1/3*x^3*d^3*b^2*A + 2/3*x^3*d^3*c*a*A + 2*x^3*e*d^2*b*a*A + x^3*e^2*d*a^2*
A + 1/2*x^2*d^3*a^2*B + x^2*d^3*b*a*A + 3/2*x^2*e*d^2*a^2*A + x*d^3*a^2*A
```

giac [A] time = 0.18, size = 556, normalized size = 1.83

$$\frac{1}{9}Bc^2x^9e^3+\frac{3}{8}Bc^2dx^8e^2+\frac{3}{7}Bc^2d^2x^7e+\frac{1}{6}Bc^2d^3x^6+\frac{1}{4}Bbcx^8e^3+\frac{1}{8}Ac^2x^8e^3+\frac{6}{7}Bbcdx^7e^2+\frac{3}{7}Ac^2dx^7e^2+Bbcd^2x^6e+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/9*B*c^2*x^9*e^3 + 3/8*B*c^2*d*x^8*e^2 + 3/7*B*c^2*d^2*x^7*e + 1/6*B*c^2*d
^3*x^6 + 1/4*B*b*c*x^8*e^3 + 1/8*A*c^2*x^8*e^3 + 6/7*B*b*c*d*x^7*e^2 + 3/7*
A*c^2*d*x^7*e^2 + B*b*c*d^2*x^6*e + 1/2*A*c^2*d^2*x^6*e + 2/5*B*b*c*d^3*x^5
 + 1/5*A*c^2*d^3*x^5 + 1/7*B*b^2*x^7*e^3 + 2/7*B*a*c*x^7*e^3 + 2/7*A*b*c*x^
7*e^3 + 1/2*B*b^2*d*x^6*e^2 + B*a*c*d*x^6*e^2 + A*b*c*d*x^6*e^2 + 3/5*B*b^2
*d^2*x^5*e + 6/5*B*a*c*d^2*x^5*e + 6/5*A*b*c*d^2*x^5*e + 1/4*B*b^2*d^3*x^4
+ 1/2*B*a*c*d^3*x^4 + 1/2*A*b*c*d^3*x^4 + 1/3*B*a*b*x^6*e^3 + 1/6*A*b^2*x^6
*e^3 + 1/3*A*a*c*x^6*e^3 + 6/5*B*a*b*d*x^5*e^2 + 3/5*A*b^2*d*x^5*e^2 + 6/5*
A*a*c*d*x^5*e^2 + 3/2*B*a*b*d^2*x^4*e + 3/4*A*b^2*d^2*x^4*e + 3/2*A*a*c*d^2
*x^4*e + 2/3*B*a*b*d^3*x^3 + 1/3*A*b^2*d^3*x^3 + 2/3*A*a*c*d^3*x^3 + 1/5*B*
a^2*x^5*e^3 + 2/5*A*a*b*x^5*e^3 + 3/4*B*a^2*d*x^4*e^2 + 3/2*A*a*b*d*x^4*e^2
 + B*a^2*d^2*x^3*e + 2*A*a*b*d^2*x^3*e + 1/2*B*a^2*d^3*x^2 + A*a*b*d^3*x^2
+ 1/4*A*a^2*x^4*e^3 + A*a^2*d*x^3*e^2 + 3/2*A*a^2*d^2*x^2*e + A*a^2*d^3*x
```

maple [A] time = 0.04, size = 419, normalized size = 1.38

$$\frac{Bc^2e^3x^9}{9}+\frac{(2Bbce^3+(Ae^3+3Bde^2)c^2)x^8}{8}+Aa^2d^3x+\frac{((2ac+b^2)Be^3+2(Ae^3+3Bde^2)bc+(3Ade^2+3B}{7}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/9*B*c^2*e^3*x^9+1/8*((A*e^3+3*B*d*e^2)*c^2+2*B*e^3*b*c)*x^8+1/7*((3*A*d*e
^2+3*B*d^2*e)*c^2+2*(A*e^3+3*B*d*e^2)*b*c+B*e^3*(2*a*c+b^2))*x^7+1/6*((3*A*
d^2*e+B*d^3)*c^2+2*(3*A*d*e^2+3*B*d^2*e)*b*c+(A*e^3+3*B*d*e^2)*(2*a*c+b^2)+
2*B*e^3*a*b)*x^6+1/5*(A*c^2*d^3+2*(3*A*d^2*e+B*d^3)*b*c+(3*A*d*e^2+3*B*d^2*
e)*(2*a*c+b^2)+2*(A*e^3+3*B*d*e^2)*a*b+B*a^2*e^3)*x^5+1/4*(2*A*d^3*b*c+(3*A
*d^2*e+B*d^3)*(2*a*c+b^2)+2*(3*A*d*e^2+3*B*d^2*e)*a*b+(A*e^3+3*B*d*e^2)*a^2
)*x^4+1/3*(A*d^3*(2*a*c+b^2)+2*(3*A*d^2*e+B*d^3)*a*b+(3*A*d*e^2+3*B*d^2*e)*
a^2)*x^3+1/2*(2*A*d^3*a*b+(3*A*d^2*e+B*d^3)*a^2)*x^2+A*d^3*a^2*x
```

maxima [**A**] time = 0.47, size = 416, normalized size = 1.37

$$\frac{1}{9}\,Bc^{2}e^{3}x^{9}+\frac{1}{8}\left(3\,Bc^{2}de^{2}+\left(2\,Bbc+Ac^{2}\right)e^{3}\right)x^{8}+\frac{1}{7}\left(3\,Bc^{2}d^{2}e+3\left(2\,Bbc+Ac^{2}\right)de^{2}+\left(Bb^{2}+2\,(Ba+Ab)c\right)e^{3}\right)x^{7}+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^2*e^3*x^9 + 1/8*(3*B*c^2*d*e^2 + (2*B*b*c + A*c^2)*e^3)*x^8 + 1/7*(
3*B*c^2*d^2*e + 3*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*e^3)*
x^7 + A*a^2*d^3*x + 1/6*(B*c^2*d^3 + 3*(2*B*b*c + A*c^2)*d^2*e + 3*(B*b^2 +
 2*(B*a + A*b)*c)*d*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^3)*x^6 + 1/5*((2*B*
b*c + A*c^2)*d^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e + 3*(2*B*a*b + A*b^2 +
 2*A*a*c)*d*e^2 + (B*a^2 + 2*A*a*b)*e^3)*x^5 + 1/4*(A*a^2*e^3 + (B*b^2 + 2*
(B*a + A*b)*c)*d^3 + 3*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e + 3*(B*a^2 + 2*A*a
*b)*d*e^2)*x^4 + 1/3*(3*A*a^2*d*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^3 + 3*(
B*a^2 + 2*A*a*b)*d^2*e)*x^3 + 1/2*(3*A*a^2*d^2*e + (B*a^2 + 2*A*a*b)*d^3)*x
^2
```

mupad [**B**] time = 0.14, size = 450, normalized size = 1.48

$$x^{5}\left(\frac{B\,a^{2}\,e^{3}}{5}+\frac{6\,B\,a\,b\,d\,e^{2}}{5}+\frac{2\,A\,a\,b\,e^{3}}{5}+\frac{6\,B\,a\,c\,d^{2}\,e}{5}+\frac{6\,A\,a\,c\,d\,e^{2}}{5}+\frac{3\,B\,b^{2}\,d^{2}\,e}{5}+\frac{3\,A\,b^{2}\,d\,e^{2}}{5}+\frac{2\,B\,b\,c\,d^{3}}{5}+\frac{6\,A\,b\,c}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^5*((A*c^2*d^3)/5 + (B*a^2*e^3)/5 + (2*A*a*b*e^3)/5 + (2*B*b*c*d^3)/5 + (3
*A*b^2*d*e^2)/5 + (3*B*b^2*d^2*e)/5 + (6*A*a*c*d*e^2)/5 + (6*B*a*b*d*e^2)/5
 + (6*A*b*c*d^2*e)/5 + (6*B*a*c*d^2*e)/5) + x^3*((A*b^2*d^3)/3 + (2*A*a*c*d
^3)/3 + (2*B*a*b*d^3)/3 + A*a^2*d*e^2 + B*a^2*d^2*e + 2*A*a*b*d^2*e) + x^7*
((B*b^2*e^3)/7 + (2*A*b*c*e^3)/7 + (2*B*a*c*e^3)/7 + (3*A*c^2*d*e^2)/7 + (3
*B*c^2*d^2*e)/7 + (6*B*b*c*d*e^2)/7) + x^4*((A*a^2*e^3)/4 + (B*b^2*d^3)/4 +
 (A*b*c*d^3)/2 + (B*a*c*d^3)/2 + (3*A*b^2*d^2*e)/4 + (3*B*a^2*d*e^2)/4 + (3
*A*a*b*d*e^2)/2 + (3*A*a*c*d^2*e)/2 + (3*B*a*b*d^2*e)/2) + x^6*((A*b^2*e^3)
/6 + (B*c^2*d^3)/6 + (A*a*c*e^3)/3 + (B*a*b*e^3)/3 + (A*c^2*d^2*e)/2 + (B*b
^2*d*e^2)/2 + A*b*c*d*e^2 + B*a*c*d*e^2 + B*b*c*d^2*e) + A*a^2*d^3*x + (a*d
^2*x^2*(3*A*a*e + 2*A*b*d + B*a*d))/2 + (c*e^2*x^8*(A*c*e + 2*B*b*e + 3*B*c
*d))/8 + (B*c^2*e^3*x^9)/9
```

sympy [**A**] time = 0.15, size = 583, normalized size = 1.92

$$Aa^{2}d^{3}x+\frac{Bc^{2}e^{3}x^{9}}{9}+x^{8}\left(\frac{Ac^{2}e^{3}}{8}+\frac{Bbce^{3}}{4}+\frac{3Bc^{2}de^{2}}{8}\right)+x^{7}\left(\frac{2Abce^{3}}{7}+\frac{3Ac^{2}de^{2}}{7}+\frac{2Bace^{3}}{7}+\frac{Bb^{2}e^{3}}{7}+\frac{6Bbcde^{2}}{7}+3Bc\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**3*x + B*c**2*e**3*x**9/9 + x**8*(A*c**2*e**3/8 + B*b*c*e**3/4 + 3
*B*c**2*d*e**2/8) + x**7*(2*A*b*c*e**3/7 + 3*A*c**2*d*e**2/7 + 2*B*a*c*e**3
/7 + B*b**2*e**3/7 + 6*B*b*c*d*e**2/7 + 3*B*c**2*d**2*e/7) + x**6*(A*a*c*e*
*3/3 + A*b**2*e**3/6 + A*b*c*d*e**2 + A*c**2*d**2*e/2 + B*a*b*e**3/3 + B*a*
c*d*e**2 + B*b**2*d*e**2/2 + B*b*c*d**2*e + B*c**2*d**3/6) + x**5*(2*A*a*b*
e**3/5 + 6*A*a*c*d*e**2/5 + 3*A*b**2*d*e**2/5 + 6*A*b*c*d**2*e/5 + A*c**2*d
**3/5 + B*a**2*e**3/5 + 6*B*a*b*d*e**2/5 + 6*B*a*c*d**2*e/5 + 3*B*b**2*d**2
*e/5 + 2*B*b*c*d**3/5) + x**4*(A*a**2*e**3/4 + 3*A*a*b*d*e**2/2 + 3*A*a*c*d
**2*e/2 + 3*A*b**2*d**2*e/4 + A*b*c*d**3/2 + 3*B*a**2*d*e**2/4 + 3*B*a*b*d*
*2*e/2 + B*a*c*d**3/2 + B*b**2*d**3/4) + x**3*(A*a**2*d*e**2 + 2*A*a*b*d**2
*e + 2*A*a*c*d**3/3 + A*b**2*d**3/3 + B*a**2*d**2*e + 2*B*a*b*d**3/3) + x**
2*(3*A*a**2*d**2*e/2 + A*a*b*d**3 + B*a**2*d**3/2)
```

3.2321 $\int (A+Bx)(d+ex)^2 \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=304

$$-\frac{(d+ex)^6 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{6e^6}-\frac{(d+ex)^5 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^3/e^6-1/4*(a*e^2-b*d*e+c*d^2)
*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*(e*x+d)^4/e^6-1/5*(B*(10*c
^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*
c*e*(-a*e+3*b*d)))*(e*x+d)^5/e^6-1/6*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^
2*e^2-2*c*e*(-a*e+4*b*d)))*(e*x+d)^6/e^6-1/7*c*(-A*c*e-2*B*b*e+5*B*c*d)*(e*
x+d)^7/e^6+1/8*B*c^2*(e*x+d)^8/e^6
```

Rubi [A] time = 0.44, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^6 \left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{6e^6}-\frac{(d+ex)^5 \left(B\left(-6cde(2bd-ae)+be^2(3bd-2a\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^3)/(3*e^6) + ((c*d^2 - b*
d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e))*(d + e*x
)^4)/(4*e^6) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a
*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*(d + e*x)^5)/(5*e^6
) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)
))*(d + e*x)^6)/(6*e^6) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^7)/(7*e^
6) + (B*c^2*(d + e*x)^8)/(8*e^6)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)^2\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^2}{e^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bc\right.}{}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2(d+ex)^3}{3e^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-\right.}{}\end{aligned}$$

Mathematica [A] time = 0.14, size = 301, normalized size = 0.99

$$a^2Ad^2x+\frac{1}{6}x^6\left(B\left(2ce(ae+2bd)+b^2e^2+c^2d^2\right)+2Ace(be+cd)\right)+\frac{1}{5}x^5\left(2b\left(aBe^2+2Acde+Bcd^2\right)+c\left(2aAe^2+4\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d^2*x + (a*d*(a*B*d + 2*A*(b*d + a*e))*x^2)/2 + ((2*a*B*d*(b*d + a*e)
 + A*(b^2*d^2 + 4*a*b*d*e + a*(2*c*d^2 + a*e^2)))*x^3)/3 + ((b^2*d*(B*d + 2
*A*e) + 2*b*(A*c*d^2 + 2*a*B*d*e + a*A*e^2) + a*(2*B*c*d^2 + 4*A*c*d*e + a*
B*e^2))*x^4)/4 + ((b^2*e*(2*B*d + A*e) + c*(A*c*d^2 + 4*a*B*d*e + 2*a*A*e^2
) + 2*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*x^5)/5 + ((2*A*c*e*(c*d + b*e) + B
*(c^2*d^2 + b^2*e^2 + 2*c*e*(2*b*d + a*e)))*x^6)/6 + (c*e*(A*c*e + 2*B*(c*d
 + b*e))*x^7)/7 + (B*c^2*e^2*x^8)/8
```

fricas [A]   time = 0.76, size = 396, normalized size = 1.30

$$\frac{1}{8}x^8e^2c^2B+\frac{2}{7}x^7edc^2B+\frac{2}{7}x^7e^2cbB+\frac{1}{7}x^7e^2c^2A+\frac{1}{6}x^6d^2c^2B+\frac{2}{3}x^6edcbB+\frac{1}{6}x^6e^2b^2B+\frac{1}{3}x^6e^2caB+\frac{1}{3}x^6edc^2A+\frac{1}{3}x^6e^2c$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^2*c^2*B + 2/7*x^7*e*d*c^2*B + 2/7*x^7*e^2*c*b*B + 1/7*x^7*e^2*c^2
*A + 1/6*x^6*d^2*c^2*B + 2/3*x^6*e*d*c*b*B + 1/6*x^6*e^2*b^2*B + 1/3*x^6*e^
2*c*a*B + 1/3*x^6*e*d*c^2*A + 1/3*x^6*e^2*c*b*A + 2/5*x^5*d^2*c*b*B + 2/5*x
^5*e*d*b^2*B + 4/5*x^5*e*d*c*a*B + 2/5*x^5*e^2*b*a*B + 1/5*x^5*d^2*c^2*A +
4/5*x^5*e*d*c*b*A + 1/5*x^5*e^2*b^2*A + 2/5*x^5*e^2*c*a*A + 1/4*x^4*d^2*b^2
*B + 1/2*x^4*d^2*c*a*B + x^4*e*d*b*a*B + 1/4*x^4*e^2*a^2*B + 1/2*x^4*d^2*c*
b*A + 1/2*x^4*e*d*b^2*A + x^4*e*d*c*a*A + 1/2*x^4*e^2*b*a*A + 2/3*x^3*d^2*b
*a*B + 2/3*x^3*e*d*a^2*B + 1/3*x^3*d^2*b^2*A + 2/3*x^3*d^2*c*a*A + 4/3*x^3*
e*d*b*a*A + 1/3*x^3*e^2*a^2*A + 1/2*x^2*d^2*a^2*B + x^2*d^2*b*a*A + x^2*e*d
*a^2*A + x*d^2*a^2*A
```

giac [A]   time = 0.16, size = 396, normalized size = 1.30

$$\frac{1}{8}\,Bc^2x^8e^2+\frac{2}{7}\,Bc^2dx^7e+\frac{1}{6}\,Bc^2d^2x^6+\frac{2}{7}\,Bbcx^7e^2+\frac{1}{7}\,Ac^2x^7e^2+\frac{2}{3}\,Bbcdx^6e+\frac{1}{3}\,Ac^2dx^6e+\frac{2}{5}\,Bbcd^2x^5+\frac{1}{5}\,Ac^2d^2x^5+\frac{1}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/8*B*c^2*x^8*e^2 + 2/7*B*c^2*d*x^7*e + 1/6*B*c^2*d^2*x^6 + 2/7*B*b*c*x^7*e
^2 + 1/7*A*c^2*x^7*e^2 + 2/3*B*b*c*d*x^6*e + 1/3*A*c^2*d*x^6*e + 2/5*B*b*c*
d^2*x^5 + 1/5*A*c^2*d^2*x^5 + 1/6*B*b^2*x^6*e^2 + 1/3*B*a*c*x^6*e^2 + 1/3*A
*b*c*x^6*e^2 + 2/5*B*b^2*d*x^5*e + 4/5*B*a*c*d*x^5*e + 4/5*A*b*c*d*x^5*e +
1/4*B*b^2*d^2*x^4 + 1/2*B*a*c*d^2*x^4 + 1/2*A*b*c*d^2*x^4 + 2/5*B*a*b*x^5*e
^2 + 1/5*A*b^2*x^5*e^2 + 2/5*A*a*c*x^5*e^2 + B*a*b*d*x^4*e + 1/2*A*b^2*d*x^
4*e + A*a*c*d*x^4*e + 2/3*B*a*b*d^2*x^3 + 1/3*A*b^2*d^2*x^3 + 2/3*A*a*c*d^2
*x^3 + 1/4*B*a^2*x^4*e^2 + 1/2*A*a*b*x^4*e^2 + 2/3*B*a^2*d*x^3*e + 4/3*A*a*
b*d*x^3*e + 1/2*B*a^2*d^2*x^2 + A*a*b*d^2*x^2 + 1/3*A*a^2*x^3*e^2 + A*a^2*d
*x^2*e + A*a^2*d^2*x
```

maple [A]   time = 0.04, size = 293, normalized size = 0.96

$$\frac{B\,c^2e^2x^8}{8}+\frac{\left(2Bbc\,e^2+\left(A\,e^2+2Bde\right)c^2\right)x^7}{7}+A\,a^2d^2x+\frac{\left(\left(2ac+b^2\right)B\,e^2+2\left(A\,e^2+2Bde\right)bc+\left(2Ade+B\,d^2\right)c^2}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/8*B*c^2*e^2*x^8+1/7*((A*e^2+2*B*d*e)*c^2+2*B*e^2*b*c)*x^7+1/6*((2*A*d*e+B
*d^2)*c^2+2*(A*e^2+2*B*d*e)*b*c+B*e^2*(2*a*c+b^2))*x^6+1/5*(A*c^2*d^2+2*(2*
A*d*e+B*d^2)*b*c+(A*e^2+2*B*d*e)*(2*a*c+b^2)+2*B*e^2*a*b)*x^5+1/4*(2*A*d^2*
b*c+(2*A*d*e+B*d^2)*(2*a*c+b^2)+2*(A*e^2+2*B*d*e)*a*b+B*a^2*e^2)*x^4+1/3*(A
*d^2*(2*a*c+b^2)+2*(2*A*d*e+B*d^2)*a*b+(A*e^2+2*B*d*e)*a^2)*x^3+1/2*(2*A*d^
2*a*b+(2*A*d*e+B*d^2)*a^2)*x^2+A*d^2*a^2*x
```

maxima [A] time = 0.47, size = 300, normalized size = 0.99

$$\frac{1}{8}Bc^2e^2x^8+\frac{1}{7}\left(2Bc^2de+\left(2Bbc+Ac^2\right)e^2\right)x^7+\frac{1}{6}\left(Bc^2d^2+2\left(2Bbc+Ac^2\right)de+\left(Bb^2+2\left(Ba+Ab\right)c\right)e^2\right)x^6+Aa^2d^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^2*e^2*x^8 + 1/7*(2*B*c^2*d*e + (2*B*b*c + A*c^2)*e^2)*x^7 + 1/6*(B*
c^2*d^2 + 2*(2*B*b*c + A*c^2)*d*e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*x^6 + A*
a^2*d^2*x + 1/5*((2*B*b*c + A*c^2)*d^2 + 2*(B*b^2 + 2*(B*a + A*b)*c)*d*e +
(2*B*a*b + A*b^2 + 2*A*a*c)*e^2)*x^5 + 1/4*((B*b^2 + 2*(B*a + A*b)*c)*d^2 +
 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e + (B*a^2 + 2*A*a*b)*e^2)*x^4 + 1/3*(A*a^
2*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^2 + 2*(B*a^2 + 2*A*a*b)*d*e)*x^3 + 1/
2*(2*A*a^2*d*e + (B*a^2 + 2*A*a*b)*d^2)*x^2
```

mupad [B] time = 2.33, size = 310, normalized size = 1.02

$$x^3\left(\frac{2\,B\,a^2\,d\,e}{3}+\frac{A\,a^2\,e^2}{3}+\frac{2\,B\,a\,b\,d^2}{3}+\frac{4\,A\,a\,b\,d\,e}{3}+\frac{2\,A\,c\,a\,d^2}{3}+\frac{A\,b^2\,d^2}{3}\right)+x^6\left(\frac{B\,b^2\,e^2}{6}+\frac{2\,B\,b\,c\,d\,e}{3}+\frac{A\,b\,c\,e^2}{3}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^3*((A*a^2*e^2)/3 + (A*b^2*d^2)/3 + (2*A*a*c*d^2)/3 + (2*B*a*b*d^2)/3 + (2
*B*a^2*d*e)/3 + (4*A*a*b*d*e)/3) + x^6*((B*b^2*e^2)/6 + (B*c^2*d^2)/6 + (A*
b*c*e^2)/3 + (B*a*c*e^2)/3 + (A*c^2*d*e)/3 + (2*B*b*c*d*e)/3) + x^4*((B*a^2
*e^2)/4 + (B*b^2*d^2)/4 + (A*a*b*e^2)/2 + (A*b*c*d^2)/2 + (B*a*c*d^2)/2 + (
A*b^2*d*e)/2 + A*a*c*d*e + B*a*b*d*e) + x^5*((A*b^2*e^2)/5 + (A*c^2*d^2)/5
+ (2*A*a*c*e^2)/5 + (2*B*a*b*e^2)/5 + (2*B*b*c*d^2)/5 + (2*B*b^2*d*e)/5 + (
4*A*b*c*d*e)/5 + (4*B*a*c*d*e)/5) + (a*d*x^2*(2*A*a*e + 2*A*b*d + B*a*d))/2
 + (c*e*x^7*(A*c*e + 2*B*b*e + 2*B*c*d))/7 + A*a^2*d^2*x + (B*c^2*e^2*x^8)/
8
```

sympy [A] time = 0.13, size = 405, normalized size = 1.33

$$Aa^2d^2x+\frac{Bc^2e^2x^8}{8}+x^7\left(\frac{Ac^2e^2}{7}+\frac{2Bbce^2}{7}+\frac{2Bc^2de}{7}\right)+x^6\left(\frac{Abce^2}{3}+\frac{Ac^2de}{3}+\frac{Bace^2}{3}+\frac{Bb^2e^2}{6}+\frac{2Bbcde}{3}+\frac{Bc^2d^2}{6}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d**2*x + B*c**2*e**2*x**8/8 + x**7*(A*c**2*e**2/7 + 2*B*b*c*e**2/7 +
 2*B*c**2*d*e/7) + x**6*(A*b*c*e**2/3 + A*c**2*d*e/3 + B*a*c*e**2/3 + B*b**
2*e**2/6 + 2*B*b*c*d*e/3 + B*c**2*d**2/6) + x**5*(2*A*a*c*e**2/5 + A*b**2*e
**2/5 + 4*A*b*c*d*e/5 + A*c**2*d**2/5 + 2*B*a*b*e**2/5 + 4*B*a*c*d*e/5 + 2*
B*b**2*d*e/5 + 2*B*b*c*d**2/5) + x**4*(A*a*b*e**2/2 + A*a*c*d*e + A*b**2*d*
e/2 + A*b*c*d**2/2 + B*a**2*e**2/4 + B*a*b*d*e + B*a*c*d**2/2 + B*b**2*d**2
/4) + x**3*(A*a**2*e**2/3 + 4*A*a*b*d*e/3 + 2*A*a*c*d**2/3 + A*b**2*d**2/3
+ 2*B*a**2*d*e/3 + 2*B*a*b*d**2/3) + x**2*(A*a**2*d*e + A*a*b*d**2 + B*a**2
*d**2/2)
```

3.2322 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=180

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}$$

```
[Out] a^2*A*d*x+1/2*a*(A*a*e+2*A*b*d+B*a*d)*x^2+1/3*(a*B*(a*e+2*b*d)+A*(2*a*b*e+2
*a*c*d+b^2*d))*x^3+1/4*(b^2*(A*e+B*d)+2*a*c*(A*e+B*d)+2*b*(A*c*d+B*a*e))*x^
4+1/5*(b^2*B*e+2*b*c*(A*e+B*d)+c*(A*c*d+2*B*a*e))*x^5+1/6*c*(A*c*e+2*B*b*e+
B*c*d)*x^6+1/7*B*c^2*e*x^7
```

Rubi [A] time = 0.30, antiderivative size = 180, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {771}

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((a*B*(2*b*d + a*e) + A*(
b^2*d + 2*a*c*d + 2*a*b*e))*x^3)/3 + ((b^2*(B*d + A*e) + 2*a*c*(B*d + A*e)
+ 2*b*(A*c*d + a*B*e))*x^4)/4 + ((b^2*B*e + 2*b*c*(B*d + A*e) + c*(A*c*d +
2*a*B*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2*e*x^7)/7
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^2\,dx &= \int \left(a^2Ad+a(2Abd+aBd+aAe)x+\left(aB(2bd+ae)+A\left(b^2d+2ac\right.\right.\right.\\ &= a^2Adx+\frac{1}{2}a(2Abd+aBd+aAe)x^2+\frac{1}{3}\left(aB(2bd+ae)+A\left(b^2d+2\right.\right.\end{aligned}$$

Mathematica [A] time = 0.08, size = 180, normalized size = 1.00

$$a^2Adx+\frac{1}{5}x^5\left(c(2aBe+Acd)+2bc(Ae+Bd)+b^2Be\right)+\frac{1}{4}x^4\left(2b(aBe+Acd)+2ac(Ae+Bd)+b^2(Ae+Bd)\right)+\frac{1}{3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*d*x + (a*(2*A*b*d + a*B*d + a*A*e)*x^2)/2 + ((a*B*(2*b*d + a*e) + A*(
b^2*d + 2*a*c*d + 2*a*b*e))*x^3)/3 + ((b^2*(B*d + A*e) + 2*a*c*(B*d + A*e)
+ 2*b*(A*c*d + a*B*e))*x^4)/4 + ((b^2*B*e + 2*b*c*(B*d + A*e) + c*(A*c*d +
2*a*B*e))*x^5)/5 + (c*(B*c*d + 2*b*B*e + A*c*e)*x^6)/6 + (B*c^2*e*x^7)/7
```

fricas [A] time = 0.78, size = 225, normalized size = 1.25

$$\frac{1}{7}x^7ec^2B+\frac{1}{6}x^6dc^2B+\frac{1}{3}x^6ecbB+\frac{1}{6}x^6ec^2A+\frac{2}{5}x^5dcbB+\frac{1}{5}x^5eb^2B+\frac{2}{5}x^5ecaB+\frac{1}{5}x^5dc^2A+\frac{2}{5}x^5ecbA+\frac{1}{4}x^4db^2B+\frac{1}{2}x^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e*c^2*B + 1/6*x^6*d*c^2*B + 1/3*x^6*e*c*b*B + 1/6*x^6*e*c^2*A + 2/5
*x^5*d*c*b*B + 1/5*x^5*e*b^2*B + 2/5*x^5*e*c*a*B + 1/5*x^5*d*c^2*A + 2/5*x^
5*e*c*b*A + 1/4*x^4*d*b^2*B + 1/2*x^4*d*c*a*B + 1/2*x^4*e*b*a*B + 1/2*x^4*d
*c*b*A + 1/4*x^4*e*b^2*A + 1/2*x^4*e*c*a*A + 2/3*x^3*d*b*a*B + 1/3*x^3*e*a^
2*B + 1/3*x^3*d*b^2*A + 2/3*x^3*d*c*a*A + 2/3*x^3*e*b*a*A + 1/2*x^2*d*a^2*B
 + x^2*d*b*a*A + 1/2*x^2*e*a^2*A + x*d*a^2*A
```

giac [A] time = 0.16, size = 237, normalized size = 1.32

$$\frac{1}{7}Bc^2x^7e+\frac{1}{6}Bc^2dx^6+\frac{1}{3}Bbcx^6e+\frac{1}{6}Ac^2x^6e+\frac{2}{5}Bbcdx^5+\frac{1}{5}Ac^2dx^5+\frac{1}{5}Bb^2x^5e+\frac{2}{5}Bacx^5e+\frac{2}{5}Abcx^5e+\frac{1}{4}Bb^2dx^4+\frac{1}{2}B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/7*B*c^2*x^7*e + 1/6*B*c^2*d*x^6 + 1/3*B*b*c*x^6*e + 1/6*A*c^2*x^6*e + 2/5
*B*b*c*d*x^5 + 1/5*A*c^2*d*x^5 + 1/5*B*b^2*x^5*e + 2/5*B*a*c*x^5*e + 2/5*A*
b*c*x^5*e + 1/4*B*b^2*d*x^4 + 1/2*B*a*c*d*x^4 + 1/2*A*b*c*d*x^4 + 1/2*B*a*b
*x^4*e + 1/4*A*b^2*x^4*e + 1/2*A*a*c*x^4*e + 2/3*B*a*b*d*x^3 + 1/3*A*b^2*d*
x^3 + 2/3*A*a*c*d*x^3 + 1/3*B*a^2*x^3*e + 2/3*A*a*b*x^3*e + 1/2*B*a^2*d*x^2
 + A*a*b*d*x^2 + 1/2*A*a^2*x^2*e + A*a^2*d*x
```

maple [A] time = 0.04, size = 167, normalized size = 0.93

$$\frac{Bc^2ex^7}{7}+\frac{\left(2Bbce+(Ae+Bd)c^2\right)x^6}{6}+Aa^2dx+\frac{\left(Ac^2d+\left(2ac+b^2\right)Be+2(Ae+Bd)bc\right)x^5}{5}+\frac{\left(2Abcd+2Babe+(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/7*B*c^2*e*x^7+1/6*((A*e+B*d)*c^2+2*B*e*b*c)*x^6+1/5*(A*c^2*d+2*(A*e+B*d)*
b*c+B*e*(2*a*c+b^2))*x^5+1/4*(2*A*b*c*d+(A*e+B*d)*(2*a*c+b^2)+2*B*a*b*e)*x^
4+1/3*(A*d*(2*a*c+b^2)+2*(A*e+B*d)*a*b+B*e*a^2)*x^3+1/2*(2*A*d*a*b+(A*e+B*d
)*a^2)*x^2+A*a^2*d*x
```

maxima [A] time = 0.48, size = 184, normalized size = 1.02

$$\frac{1}{7}Bc^2ex^7+\frac{1}{6}\left(Bc^2d+\left(2Bbc+Ac^2\right)e\right)x^6+\frac{1}{5}\left(\left(2Bbc+Ac^2\right)d+\left(Bb^2+2(Ba+Ab)c\right)e\right)x^5+Aa^2dx+\frac{1}{4}\left(\left(Bb^2+2(B\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/7*B*c^2*e*x^7 + 1/6*(B*c^2*d + (2*B*b*c + A*c^2)*e)*x^6 + 1/5*((2*B*b*c +
 A*c^2)*d + (B*b^2 + 2*(B*a + A*b)*c)*e)*x^5 + A*a^2*d*x + 1/4*((B*b^2 + 2*
(B*a + A*b)*c)*d + (2*B*a*b + A*b^2 + 2*A*a*c)*e)*x^4 + 1/3*((2*B*a*b + A*b
^2 + 2*A*a*c)*d + (B*a^2 + 2*A*a*b)*e)*x^3 + 1/2*(A*a^2*e + (B*a^2 + 2*A*a*
b)*d)*x^2
```

mupad [B] time = 2.33, size = 184, normalized size = 1.02

$$x^4\left(\frac{A\,b^2\,e}{4}+\frac{B\,b^2\,d}{4}+\frac{A\,a\,c\,e}{2}+\frac{A\,b\,c\,d}{2}+\frac{B\,a\,b\,e}{2}+\frac{B\,a\,c\,d}{2}\right)+x^3\left(\frac{A\,b^2\,d}{3}+\frac{B\,a^2\,e}{3}+\frac{2\,A\,a\,b\,e}{3}+\frac{2\,A\,a\,c\,d}{3}+\frac{2\,B\,a\,b}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^4*((A*b^2*e)/4 + (B*b^2*d)/4 + (A*a*c*e)/2 + (A*b*c*d)/2 + (B*a*b*e)/2 +
(B*a*c*d)/2) + x^3*((A*b^2*d)/3 + (B*a^2*e)/3 + (2*A*a*b*e)/3 + (2*A*a*c*d)
/3 + (2*B*a*b*d)/3) + x^5*((A*c^2*d)/5 + (B*b^2*e)/5 + (2*A*b*c*e)/5 + (2*B
*a*c*e)/5 + (2*B*b*c*d)/5) + x^2*((A*a^2*e)/2 + (B*a^2*d)/2 + A*a*b*d) + x^
6*((A*c^2*e)/6 + (B*c^2*d)/6 + (B*b*c*e)/3) + A*a^2*d*x + (B*c^2*e*x^7)/7
```

sympy [A] time = 0.10, size = 231, normalized size = 1.28

$$Aa^2dx+\frac{Bc^2ex^7}{7}+x^6\left(\frac{Ac^2e}{6}+\frac{Bbce}{3}+\frac{Bc^2d}{6}\right)+x^5\left(\frac{2Abce}{5}+\frac{Ac^2d}{5}+\frac{2Bace}{5}+\frac{Bb^2e}{5}+\frac{2Bbcd}{5}\right)+x^4\left(\frac{Aace}{2}+\frac{Ab^2}{4}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*d*x + B*c**2*e*x**7/7 + x**6*(A*c**2*e/6 + B*b*c*e/3 + B*c**2*d/6) +
 x**5*(2*A*b*c*e/5 + A*c**2*d/5 + 2*B*a*c*e/5 + B*b**2*e/5 + 2*B*b*c*d/5) +
 x**4*(A*a*c*e/2 + A*b**2*e/4 + A*b*c*d/2 + B*a*b*e/2 + B*a*c*d/2 + B*b**2*
d/4) + x**3*(2*A*a*b*e/3 + 2*A*a*c*d/3 + A*b**2*d/3 + B*a**2*e/3 + 2*B*a*b*
d/3) + x**2*(A*a**2*e/2 + A*a*b*d + B*a**2*d/2)
```

3.2323 $\int (A+Bx)\left(a+bx+cx^2\right)^2\,dx$

Optimal. Leaf size=96

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

```
[Out] a^2*A*x+1/2*a*(2*A*b+B*a)*x^2+1/3*(2*a*b*B+A*(2*a*c+b^2))*x^3+1/4*(2*A*b*c+
2*B*a*c+B*b^2)*x^4+1/5*c*(A*c+2*B*b)*x^5+1/6*B*c^2*x^6
```

Rubi [A] time = 0.09, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(A\left(2ac+b^2\right)+2abB\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((2*a*b*B + A*(b^2 + 2*a*c))*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^2\,dx &= \int \Big(a^2A+a(2Ab+aB)x+\big(2abB+A(b^2+2ac)\big)x^2+\big(b^2B+2Abc+2aBc\big)x \\ &= a^2Ax+\frac{1}{2}a(2Ab+aB)x^2+\frac{1}{3}\big(2abB+A(b^2+2ac)\big)x^3+\frac{1}{4}\big(b^2B+2Abc+2a\end{aligned}$$

Mathematica [A] time = 0.02, size = 96, normalized size = 1.00

$$a^2Ax+\frac{1}{4}x^4\left(2aBc+2Abc+b^2B\right)+\frac{1}{3}x^3\left(2aAc+2abB+Ab^2\right)+\frac{1}{2}ax^2(aB+2Ab)+\frac{1}{5}cx^5(Ac+2bB)+\frac{1}{6}Bc^2x^6$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^2,x]
```

```
[Out] a^2*A*x + (a*(2*A*b + a*B)*x^2)/2 + ((A*b^2 + 2*a*b*B + 2*a*A*c)*x^3)/3 + (
(b^2*B + 2*A*b*c + 2*a*B*c)*x^4)/4 + (c*(2*b*B + A*c)*x^5)/5 + (B*c^2*x^6)/
6
```

fricas [A] time = 0.85, size = 99, normalized size = 1.03

$$\frac{1}{6}x^6c^2B+\frac{2}{5}x^5cbB+\frac{1}{5}x^5c^2A+\frac{1}{4}x^4b^2B+\frac{1}{2}x^4caB+\frac{1}{2}x^4cbA+\frac{2}{3}x^3baB+\frac{1}{3}x^3b^2A+\frac{2}{3}x^3caA+\frac{1}{2}x^2a^2B+x^2baA+xa^2A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] 1/6*x^6*c^2*B + 2/5*x^5*c*b*B + 1/5*x^5*c^2*A + 1/4*x^4*b^2*B + 1/2*x^4*c*a
*B + 1/2*x^4*c*b*A + 2/3*x^3*b*a*B + 1/3*x^3*b^2*A + 2/3*x^3*c*a*A + 1/2*x^
2*a^2*B + x^2*b*a*A + x*a^2*A
```

giac [A] time = 0.15, size = 99, normalized size = 1.03

$$\frac{1}{6}Bc^2x^6+\frac{2}{5}Bbcx^5+\frac{1}{5}Ac^2x^5+\frac{1}{4}Bb^2x^4+\frac{1}{2}Bacx^4+\frac{1}{2}Abcx^4+\frac{2}{3}Babx^3+\frac{1}{3}Ab^2x^3+\frac{2}{3}Aacx^3+\frac{1}{2}Ba^2x^2+Aabx^2+Aa$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] 1/6*B*c^2*x^6 + 2/5*B*b*c*x^5 + 1/5*A*c^2*x^5 + 1/4*B*b^2*x^4 + 1/2*B*a*c*x
^4 + 1/2*A*b*c*x^4 + 2/3*B*a*b*x^3 + 1/3*A*b^2*x^3 + 2/3*A*a*c*x^3 + 1/2*B*
a^2*x^2 + A*a*b*x^2 + A*a^2*x
```

maple [A] time = 0.05, size = 91, normalized size = 0.95

$$\frac{Bc^2x^6}{6}+\frac{\left(Ac^2+2bBc\right)x^5}{5}+Aa^2x+\frac{\left(2Abc+\left(2ac+b^2\right)B\right)x^4}{4}+\frac{\left(2Bab+\left(2ac+b^2\right)A\right)x^3}{3}+\frac{\left(2Aab+Ba^2\right)x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2,x)
```

```
[Out] 1/6*B*c^2*x^6+1/5*(A*c^2+2*B*b*c)*x^5+1/4*(2*A*b*c+B*(2*a*c+b^2))*x^4+1/3*(
2*B*a*b+(2*a*c+b^2)*A)*x^3+1/2*(2*A*a*b+B*a^2)*x^2+A*a^2*x
```

maxima [A] time = 0.62, size = 90, normalized size = 0.94

$$\frac{1}{6}Bc^2x^6+\frac{1}{5}\left(2Bbc+Ac^2\right)x^5+\frac{1}{4}\left(Bb^2+2(Ba+Ab)c\right)x^4+Aa^2x+\frac{1}{3}\left(2Bab+Ab^2+2Aac\right)x^3+\frac{1}{2}\left(Ba^2+2Aab\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] 1/6*B*c^2*x^6 + 1/5*(2*B*b*c + A*c^2)*x^5 + 1/4*(B*b^2 + 2*(B*a + A*b)*c)*x
^4 + A*a^2*x + 1/3*(2*B*a*b + A*b^2 + 2*A*a*c)*x^3 + 1/2*(B*a^2 + 2*A*a*b)*
x^2
```

mupad [B] time = 2.24, size = 89, normalized size = 0.93

$$x^2\left(\frac{Ba^2}{2}+Aba\right)+x^5\left(\frac{Ac^2}{5}+\frac{2Bbc}{5}\right)+x^3\left(\frac{Ab^2}{3}+\frac{2Bab}{3}+\frac{2Aac}{3}\right)+x^4\left(\frac{Bb^2}{4}+\frac{Acb}{2}+\frac{Bac}{2}\right)+\frac{Bc^2x^6}{6}+A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^2,x)
```

```
[Out] x^2*((B*a^2)/2 + A*a*b) + x^5*((A*c^2)/5 + (2*B*b*c)/5) + x^3*((A*b^2)/3 +
(2*A*a*c)/3 + (2*B*a*b)/3) + x^4*((B*b^2)/4 + (A*b*c)/2 + (B*a*c)/2) + (B*c
^2*x^6)/6 + A*a^2*x
```

sympy [A] time = 0.09, size = 100, normalized size = 1.04

$$Aa^2x+\frac{Bc^2x^6}{6}+x^5\left(\frac{Ac^2}{5}+\frac{2Bbc}{5}\right)+x^4\left(\frac{Abc}{2}+\frac{Bac}{2}+\frac{Bb^2}{4}\right)+x^3\left(\frac{2Aac}{3}+\frac{Ab^2}{3}+\frac{2Bab}{3}\right)+x^2\left(Aab+\frac{Ba^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2,x)
```

```
[Out] A*a**2*x + B*c**2*x**6/6 + x**5*(A*c**2/5 + 2*B*b*c/5) + x**4*(A*b*c/2 + B*
a*c/2 + B*b**2/4) + x**3*(2*A*a*c/3 + A*b**2/3 + 2*B*a*b/3) + x**2*(A*a*b +
 B*a**2/2)
```

3.2324 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx$

Optimal. Leaf size=257

$$-\frac{x^2\left(B(cd-be)\left(cd^2-e(bd-2ae)\right)-Ae\left(-2ce(bd-ae)+b^2e^2+c^2d^2\right)\right)}{2e^4}-\frac{x^3\left(Ace(cd-2be)-B\left(-2ce(bd-ae)+\right.\right.}{3e^3}$$

```
[Out] -(A*e*(-b*e+c*d)*(c*d^2-e*(-2*a*e+b*d))-B*(c*d^2-e*(-a*e+b*d))^2)*x/e^5-1/2
*(B*(-b*e+c*d)*(c*d^2-e*(-2*a*e+b*d))-A*e*(c^2*d^2+b^2*e^2-2*c*e*(-a*e+b*d)
))*x^2/e^4-1/3*(A*c*e*(-2*b*e+c*d)-B*(c^2*d^2+b^2*e^2-2*c*e*(-a*e+b*d)))*x^
3/e^3-1/4*c*(-A*c*e-2*B*b*e+B*c*d)*x^4/e^2+1/5*B*c^2*x^5/e-(-A*e+B*d)*(a*e^
2-b*d*e+c*d^2)^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.54, antiderivative size = 257, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{x^3\left(Ace(cd-2be)-B\left(-2ce(bd-ae)+b^2e^2+c^2d^2\right)\right)}{3e^3}-\frac{x^2\left(B(cd-be)\left(cd^2-e(bd-2ae)\right)-Ae\left(-2ce(bd-ae)+\right.\right.}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] -(((A*e*(c*d - b*e)*(c*d^2 - e*(b*d - 2*a*e)) - B*(c*d^2 - e*(b*d - a*e))^2
)*x)/e^5) - ((B*(c*d - b*e)*(c*d^2 - e*(b*d - 2*a*e)) - A*e*(c^2*d^2 + b^2*
e^2 - 2*c*e*(b*d - a*e)))*x^2)/(2*e^4) - ((A*c*e*(c*d - 2*b*e) - B*(c^2*d^2
 + b^2*e^2 - 2*c*e*(b*d - a*e)))*x^3)/(3*e^3) - (c*(B*c*d - 2*b*B*e - A*c*e
)*x^4)/(4*e^2) + (B*c^2*x^5)/(5*e) - ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2
*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{d+ex}\,dx &= \int\left(\frac{-Ae(cd-be)\left(cd^2-e(bd-2ae)\right)+B\left(cd^2-e(bd-ae)\right)^2}{e^5}+\frac{\left(-B(cd-be)\left(c\right.\right.}{}\right.\\ &= -\frac{\left(Ae(cd-be)\left(cd^2-e(bd-2ae)\right)-B\left(cd^2-e(bd-ae)\right)^2\right)x}{e^5}-\frac{\left(B(cd-be)\left(cd^2\right.\right.}{}\end{aligned}$$

Mathematica [A] time = 0.18, size = 298, normalized size = 1.16

$$\frac{ex\left(B\left(10e^2\left(6a^2e^2+6abe(ex-2d)+b^2\left(6d^2-3dex+2e^2x^2\right)\right)+10ce\left(2ae\left(6d^2-3dex+2e^2x^2\right)+b\left(-12d^3+6d^2\right.\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x]
```

```
[Out] (e*x*(5*A*e*(6*b*e^2*(-2*b*d + 4*a*e + b*e*x) + c^2*(-12*d^3 + 6*d^2*e*x -
4*d*e^2*x^2 + 3*e^3*x^3) + 4*c*e*(3*a*e*(-2*d + e*x) + b*(6*d^2 - 3*d*e*x +
 2*e^2*x^2))) + B*(c^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3
 + 12*e^4*x^4) + 10*e^2*(6*a^2*e^2 + 6*a*b*e*(-2*d + e*x) + b^2*(6*d^2 - 3*
d*e*x + 2*e^2*x^2)) + 10*c*e*(2*a*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b*(-12*
d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)))) - 60*(B*d - A*e)*(c*d^2 + e*(
-(b*d) + a*e))^2*Log[d + e*x])/(60*e^6)
```

fricas [**A**]   time = 0.92, size = 379, normalized size = 1.47

$$12\,Bc^2e^5x^5-15\left(Bc^2de^4-\left(2\,Bbc+Ac^2\right)e^5\right)x^4+20\left(Bc^2d^2e^3-\left(2\,Bbc+Ac^2\right)de^4+\left(Bb^2+2\,(Ba+Ab)c\right)e^5\right)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/60*(12*B*c^2*e^5*x^5 - 15*(B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 20*
(B*c^2*d^2*e^3 - (2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x
^3 - 30*(B*c^2*d^3*e^2 - (2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*(B*a + A*b)
*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 60*(B*c^2*d^4*e - (2*B*b
*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - (2*B*a*b + A*b^2
+ 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x - 60*(B*c^2*d^5 - A*a^2*e^5 - (
2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b
^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)*log(e*x + d))/e^6
```

giac [**A**]   time = 0.16, size = 463, normalized size = 1.80

$$-\Big(Bc^2d^5-2\,Bbcd^4e-Ac^2d^4e+Bb^2d^3e^2+2\,Bacd^3e^2+2\,Abcd^3e^2-2\,Babd^2e^3-Ab^2d^2e^3-2\,Aacd^2e^3+Ba^2de$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^2*d^5 - 2*B*b*c*d^4*e - A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*B*a*c*d^3*e^2
 + 2*A*b*c*d^3*e^2 - 2*B*a*b*d^2*e^3 - A*b^2*d^2*e^3 - 2*A*a*c*d^2*e^3 + B*
a^2*d*e^4 + 2*A*a*b*d*e^4 - A*a^2*e^5)*e^(-6)*log(abs(x*e + d)) + 1/60*(12*
B*c^2*x^5*e^4 - 15*B*c^2*d*x^4*e^3 + 20*B*c^2*d^2*x^3*e^2 - 30*B*c^2*d^3*x^
2*e + 60*B*c^2*d^4*x + 30*B*b*c*x^4*e^4 + 15*A*c^2*x^4*e^4 - 40*B*b*c*d*x^3
*e^3 - 20*A*c^2*d*x^3*e^3 + 60*B*b*c*d^2*x^2*e^2 + 30*A*c^2*d^2*x^2*e^2 - 1
20*B*b*c*d^3*x*e - 60*A*c^2*d^3*x*e + 20*B*b^2*x^3*e^4 + 40*B*a*c*x^3*e^4 +
 40*A*b*c*x^3*e^4 - 30*B*b^2*d*x^2*e^3 - 60*B*a*c*d*x^2*e^3 - 60*A*b*c*d*x^
2*e^3 + 60*B*b^2*d^2*x*e^2 + 120*B*a*c*d^2*x*e^2 + 120*A*b*c*d^2*x*e^2 + 60
*B*a*b*x^2*e^4 + 30*A*b^2*x^2*e^4 + 60*A*a*c*x^2*e^4 - 120*B*a*b*d*x*e^3 -
60*A*b^2*d*x*e^3 - 120*A*a*c*d*x*e^3 + 60*B*a^2*x*e^4 + 120*A*a*b*x*e^4)*e^
(-5)
```

maple [**B**]   time = 0.05, size = 558, normalized size = 2.17

$$\frac{B\,c^2x^5}{5e}+\frac{A\,c^2x^4}{4e}+\frac{Bbc\,x^4}{2e}-\frac{B\,c^2d\,x^4}{4e^2}+\frac{2Abc\,x^3}{3e}-\frac{A\,c^2d\,x^3}{3e^2}+\frac{2Bac\,x^3}{3e}+\frac{B\,b^2x^3}{3e}-\frac{2Bbcd\,x^3}{3e^2}+\frac{B\,c^2d^2x^3}{3e^3}+\frac{Aac\,x^2}{e}+\frac{A\,b^2}{2e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x)
```

```
[Out] 2/3*B*a*c/e*x^3+1/3*B*c^2*d^2/e^3*x^3+A*a*c/e*x^2+1/2*A*c^2*d^2/e^3*x^2-1/2
*B*c^2*d^3/e^4*x^2-A*c^2*d^3/e^4*x+B*c^2*d^4/e^5*x+A*c^2*d^4/e^5*ln(e*x+d)-
B*a^2*d/e^2*ln(e*x+d)-B*c^2*d^5/e^6*ln(e*x+d)+1/e^3*B*x^2*b*c*d^2+2/e^3*A*x
*b*c*d^2-1/e^2*A*x^2*b*c*d-2/3/e^2*B*x^3*b*c*d-2/e^4*B*x*b*c*d^3-2/e^4*ln(e
*x+d)*A*b*c*d^3-2/e^2*B*x*a*b*d-2/e^2*ln(e*x+d)*A*a*b*d+2/e^5*ln(e*x+d)*B*b
```

```
*c*d^4+2/e^3*ln(e*x+d)*B*a*b*d^2-2*B*a*c*d^3/e^4*ln(e*x+d)+2*B*a*c*d^2/e^3*
x+2*A*a*c*d^2/e^3*ln(e*x+d)-B*a*c*d/e^2*x^2-2*A*a*c*d/e^2*x+1/2/e*A*x^2*b^2
+1/3/e*B*x^3*b^2+A*a^2/e*ln(e*x+d)+1/4*A*c^2/e*x^4+B*a^2/e*x+1/e*B*x^2*a*b-
1/4*B*c^2*d/e^2*x^4-1/3*A*c^2*d/e^2*x^3+1/e^3*B*x*b^2*d^2-1/2/e^2*B*x^2*b^2
*d+1/e^3*ln(e*x+d)*A*b^2*d^2+2/e*A*x*a*b-1/e^2*A*x*b^2*d-1/e^4*ln(e*x+d)*B*
b^2*d^3+1/2/e*B*x^4*b*c+2/3/e*A*x^3*b*c+1/5*B*c^2/e*x^5
```

maxima [A] time = 0.67, size = 378, normalized size = 1.47

$$12\,Bc^2e^4x^5-15\left(Bc^2de^3-\left(2\,Bbc+Ac^2\right)e^4\right)x^4+20\left(Bc^2d^2e^2-\left(2\,Bbc+Ac^2\right)de^3+\left(Bb^2+2\,(Ba+Ab)c\right)e^4\right)x^3-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/60*(12*B*c^2*e^4*x^5 - 15*(B*c^2*d*e^3 - (2*B*b*c + A*c^2)*e^4)*x^4 + 20*
(B*c^2*d^2*e^2 - (2*B*b*c + A*c^2)*d*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*e^4)*x
^3 - 30*(B*c^2*d^3*e - (2*B*b*c + A*c^2)*d^2*e^2 + (B*b^2 + 2*(B*a + A*b)*c
)*d*e^3 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^4)*x^2 + 60*(B*c^2*d^4 - (2*B*b*c +
 A*c^2)*d^3*e + (B*b^2 + 2*(B*a + A*b)*c)*d^2*e^2 - (2*B*a*b + A*b^2 + 2*A*
a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*x)/e^5 - (B*c^2*d^5 - A*a^2*e^5 - (2*B*
b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b^2 +
 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)*log(e*x + d)/e^6
```

mupad [B] time = 0.08, size = 423, normalized size = 1.65

$$x^3\left(\frac{B\,b^2+2\,A\,c\,b+2\,B\,a\,c}{3\,e}-\frac{d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e}-\frac{B\,c^2\,d}{e^2}\right)}{3\,e}\right)+x\left(\frac{B\,a^2+2\,A\,b\,a}{e}-\frac{d\left(\frac{A\,b^2+2\,B\,a\,b+2\,A\,a\,c}{e}-\frac{d\left(\frac{B\,b^2+2\,A\,c\,b+2\,B\,a\,c}{e}-\frac{d}{}\right.}{e}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x),x)
```

```
[Out] x^3*((B*b^2 + 2*A*b*c + 2*B*a*c)/(3*e) - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d
)/e^2))/(3*e)) + x*((B*a^2 + 2*A*a*b)/e - (d*((A*b^2 + 2*A*a*c + 2*B*a*b)/e
 - (d*((B*b^2 + 2*A*b*c + 2*B*a*c)/e - (d*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/
e^2))/e))/e))/e) + x^4*((A*c^2 + 2*B*b*c)/(4*e) - (B*c^2*d)/(4*e^2)) + x^2*
((A*b^2 + 2*A*a*c + 2*B*a*b)/(2*e) - (d*((B*b^2 + 2*A*b*c + 2*B*a*c)/e - (d
*((A*c^2 + 2*B*b*c)/e - (B*c^2*d)/e^2))/e))/(2*e)) + (log(d + e*x)*(A*a^2*e
^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + A*b^2*d^2*e^3 - B*b^2*d^3*e^2
- 2*A*a*b*d*e^4 + 2*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*e^3 - 2*A*b
*c*d^3*e^2 - 2*B*a*c*d^3*e^2))/e^6 + (B*c^2*x^5)/(5*e)
```

sympy [A] time = 1.14, size = 372, normalized size = 1.45

$$\frac{Bc^2x^5}{5e}+x^4\left(\frac{Ac^2}{4e}+\frac{Bbc}{2e}-\frac{Bc^2d}{4e^2}\right)+x^3\left(\frac{2Abc}{3e}-\frac{Ac^2d}{3e^2}+\frac{2Bac}{3e}+\frac{Bb^2}{3e}-\frac{2Bbcd}{3e^2}+\frac{Bc^2d^2}{3e^3}\right)+x^2\left(\frac{Aac}{e}+\frac{Ab^2}{2e}-\frac{Abcd}{e^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d),x)
```

```
[Out] B*c**2*x**5/(5*e) + x**4*(A*c**2/(4*e) + B*b*c/(2*e) - B*c**2*d/(4*e**2)) +
 x**3*(2*A*b*c/(3*e) - A*c**2*d/(3*e**2) + 2*B*a*c/(3*e) + B*b**2/(3*e) - 2
*B*b*c*d/(3*e**2) + B*c**2*d**2/(3*e**3)) + x**2*(A*a*c/e + A*b**2/(2*e) -
A*b*c*d/e**2 + A*c**2*d**2/(2*e**3) + B*a*b/e - B*a*c*d/e**2 - B*b**2*d/(2*
e**2) + B*b*c*d**2/e**3 - B*c**2*d**3/(2*e**4)) + x*(2*A*a*b/e - 2*A*a*c*d/
e**2 - A*b**2*d/e**2 + 2*A*b*c*d**2/e**3 - A*c**2*d**3/e**4 + B*a**2/e - 2*
B*a*b*d/e**2 + 2*B*a*c*d**2/e**3 + B*b**2*d**2/e**3 - 2*B*b*c*d**3/e**4 + B
*c**2*d**4/e**5) - (-A*e + B*d)*(a*e**2 - b*d*e + c*d**2)**2*log(d + e*x)/e
**6
```

3.2325 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx$

Optimal. Leaf size=267

$$-\frac{x\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(-2ce(2bd-ae)+b^2e^2+3c^2d^2\right)\right)}{e^5}-\frac{x^2\left(2Ace(cd-be)-B\left(-2ce(2bd-ae\right.\right.}{2e^4}$$

```
[Out] -(2*B*(-b*e+2*c*d)*(c*d^2-e*(-a*e+b*d))-A*e*(3*c^2*d^2+b^2*e^2-2*c*e*(-a*e+
2*b*d)))*x/e^5-1/2*(2*A*c*e*(-b*e+c*d)-B*(3*c^2*d^2+b^2*e^2-2*c*e*(-a*e+2*b
*d)))*x^2/e^4-1/3*c*(-A*c*e-2*B*b*e+2*B*c*d)*x^3/e^3+1/4*B*c^2*x^4/e^2+(-A*
e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)-(a*e^2-b*d*e+c*d^2)*(2*A*e*(-b*e+2
*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*ln(e*x+d)/e^6
```

Rubi [A] time = 0.49, antiderivative size = 264, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{x^2\left(2Ace(cd-be)-B\left(-2ce(2bd-ae)+b^2e^2+3c^2d^2\right)\right)}{2e^4}-\frac{x\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(-2ce(2bd-ae\right.\right.}{e^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] -(((2*B*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e)) - A*e*(3*c^2*d^2 + b^2*e^2 -
2*c*e*(2*b*d - a*e)))*x)/e^5) - ((2*A*c*e*(c*d - b*e) - B*(3*c^2*d^2 + b^2*
e^2 - 2*c*e*(2*b*d - a*e)))*x^2)/(2*e^4) - (c*(2*B*c*d - 2*b*B*e - A*c*e)*x
^3)/(3*e^3) + (B*c^2*x^4)/(4*e^2) + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)
/(e^6*(d + e*x)) + ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e)
- 2*A*e*(2*c*d - b*e))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^2}\,dx = \int \left(\frac{-2B(2cd-be)\left(cd^2-e(bd-ae)\right)+Ae\left(3c^2d^2+b^2e^2-2ce(2bd-ae)\right)}{e^5}+\frac{(-\right.$$

$$= -\frac{\left(2B(2cd-be)\left(cd^2-e(bd-ae)\right)-Ae\left(3c^2d^2+b^2e^2-2ce(2bd-ae)\right)\right)x}{e^5}-\frac{(2A}{}$$

Mathematica [A] time = 0.11, size = 250, normalized size = 0.94

$$\frac{6e^2x^2\left(B\left(2ce(ae-2bd)+b^2e^2+3c^2d^2\right)+2Ace(be-cd)\right)+12ex\left(Ae\left(2ce(ae-2bd)+b^2e^2+3c^2d^2\right)-2B(2cd-b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x]
```

```
[Out] (12*e*(A*e*(3*c^2*d^2 + b^2*e^2 + 2*c*e*(-2*b*d + a*e)) - 2*B*(2*c*d - b*e)
*(c*d^2 + e*(-(b*d) + a*e)))*x + 6*e^2*(2*A*c*e*(-(c*d) + b*e) + B*(3*c^2*d
^2 + b^2*e^2 + 2*c*e*(-2*b*d + a*e)))*x^2 + 4*c*e^3*(-2*B*c*d + 2*b*B*e + A
*c*e)*x^3 + 3*B*c^2*e^4*x^4 + (12*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^2)
/(d + e*x) + 12*(c*d^2 + e*(-(b*d) + a*e))*(5*B*c*d^2 + B*e*(-3*b*d + a*e)
+ 2*A*e*(-2*c*d + b*e))*Log[d + e*x])/(12*e^6)
```

fricas [B] time = 1.10, size = 567, normalized size = 2.12

$$\frac{3\,Bc^2e^5x^5 + 12\,Bc^2d^5 - 12\,Aa^2e^5 - 12\left(2\,Bbc + Ac^2\right)d^4e + 12\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 12\left(2\,Bab + Ab^2 + 2\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^2*e^5*x^5 + 12*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*
d^4*e + 12*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 12*(2*B*a*b + A*b^2 + 2*A*a*
c)*d^2*e^3 + 12*(B*a^2 + 2*A*a*b)*d*e^4 - (5*B*c^2*d*e^4 - 4*(2*B*b*c + A*c
^2)*e^5)*x^4 + 2*(5*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 +
2*(B*a + A*b)*c)*e^5)*x^3 - 6*(5*B*c^2*d^3*e^2 - 4*(2*B*b*c + A*c^2)*d^2*e^
3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*
x^2 - 12*(4*B*c^2*d^4*e - 3*(2*B*b*c + A*c^2)*d^3*e^2 + 2*(B*b^2 + 2*(B*a +
 A*b)*c)*d^2*e^3 - (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4)*x + 12*(5*B*c^2*d^5 -
 4*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a
*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4 + (5*B*c^2*d^4*e -
4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*
a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x)*log(e*x + d))/(e^7
*x + d*e^6)
```

giac [B] time = 0.17, size = 551, normalized size = 2.06

$$\frac{1}{12}\left(3\,Bc^2 - \frac{4\left(5\,Bc^2de - 2\,Bbce^2 - Ac^2e^2\right)e^{(-1)}}{xe + d} + \frac{6\left(10\,Bc^2d^2e^2 - 8\,Bbcde^3 - 4\,Ac^2de^3 + Bb^2e^4 + 2\,Bace^4 + 2\,A\right.}{(xe + d)^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/12*(3*B*c^2 - 4*(5*B*c^2*d*e - 2*B*b*c*e^2 - A*c^2*e^2)*e^(-1)/(x*e + d)
+ 6*(10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 + B*b^2*e^4 + 2*B*a*c
*e^4 + 2*A*b*c*e^4)*e^(-2)/(x*e + d)^2 - 12*(10*B*c^2*d^3*e^3 - 12*B*b*c*d^
2*e^4 - 6*A*c^2*d^2*e^4 + 3*B*b^2*d*e^5 + 6*B*a*c*d*e^5 + 6*A*b*c*d*e^5 - 2
*B*a*b*e^6 - A*b^2*e^6 - 2*A*a*c*e^6)*e^(-3)/(x*e + d)^3)*(x*e + d)^4*e^(-6
) - (5*B*c^2*d^4 - 8*B*b*c*d^3*e - 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 6*B*a*
c*d^2*e^2 + 6*A*b*c*d^2*e^2 - 4*B*a*b*d*e^3 - 2*A*b^2*d*e^3 - 4*A*a*c*d*e^3
 + B*a^2*e^4 + 2*A*a*b*e^4)*e^(-6)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + (
B*c^2*d^5*e^4/(x*e + d) - 2*B*b*c*d^4*e^5/(x*e + d) - A*c^2*d^4*e^5/(x*e +
d) + B*b^2*d^3*e^6/(x*e + d) + 2*B*a*c*d^3*e^6/(x*e + d) + 2*A*b*c*d^3*e^6/
(x*e + d) - 2*B*a*b*d^2*e^7/(x*e + d) - A*b^2*d^2*e^7/(x*e + d) - 2*A*a*c*d
^2*e^7/(x*e + d) + B*a^2*d*e^8/(x*e + d) + 2*A*a*b*d*e^8/(x*e + d) - A*a^2*
e^9/(x*e + d))*e^(-10)
```

maple [B] time = 0.06, size = 609, normalized size = 2.28

$$\frac{B\,c^2x^4}{4e^2} + \frac{A\,c^2x^3}{3e^2} + \frac{2Bbc\,x^3}{3e^2} - \frac{2B\,c^2d\,x^3}{3e^3} + \frac{Abc\,x^2}{e^2} - \frac{A\,c^2d\,x^2}{e^3} + \frac{Bac\,x^2}{e^2} + \frac{B\,b^2x^2}{2e^2} - \frac{2Bbcd\,x^2}{e^3} + \frac{3B\,c^2d^2x^2}{2e^4} - \frac{A\,a^2}{(ex + d)\,e} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x)
```

```
[Out] 1/e^2*A*b^2*x-1/e/(e*x+d)*A*a^2+1/e^2*ln(e*x+d)*B*a^2+1/3/e^2*A*x^3*c^2+2/3
/e^2*B*x^3*b*c-2/3/e^3*B*x^3*c^2*d-4/e^5*B*c^2*d^3*x-1/e^3/(e*x+d)*A*b^2*d^
2-1/e^5/(e*x+d)*A*c^2*d^4+1/e^2/(e*x+d)*B*a^2*d+1/e^4/(e*x+d)*B*b^2*d^3+1/e
^6/(e*x+d)*B*c^2*d^5+3/2/e^4*B*x^2*c^2*d^2+2/e^2*A*a*c*x+3/e^4*A*c^2*d^2*x+
2/e^2*B*a*b*x+1/e^2*A*x^2*b*c-2/e^3*B*b^2*d*x-4/e^5*ln(e*x+d)*A*c^2*d^3+3/e
^4*ln(e*x+d)*B*b^2*d^2-1/e^3*A*x^2*c^2*d+1/e^2*B*x^2*a*c+2/e^2*ln(e*x+d)*A*
a*b-4/e^3*ln(e*x+d)*B*a*b*d+6/e^4*ln(e*x+d)*B*a*c*d^2-8/e^5*ln(e*x+d)*B*b*c
*d^3-2/e^5/(e*x+d)*B*b*c*d^4+2/e^4/(e*x+d)*A*b*c*d^3-2/e^3/(e*x+d)*B*a*b*d^
2+2/e^4/(e*x+d)*B*d^3*a*c-2/e^3*B*x^2*b*c*d-2/e^3/(e*x+d)*A*d^2*a*c-4/e^3*l
n(e*x+d)*A*a*c*d+6/e^4*ln(e*x+d)*A*b*c*d^2-2/e^3*ln(e*x+d)*A*b^2*d+5/e^6*ln
(e*x+d)*B*c^2*d^4-4/e^3*A*b*c*d*x-4/e^3*B*a*c*d*x+6/e^4*B*b*c*d^2*x+2/e^2/(
e*x+d)*A*d*a*b+1/4*B*c^2/e^2*x^4+1/2*B*b^2/e^2*x^2
```

maxima [**A**] time = 0.61, size = 387, normalized size = 1.45

$$\frac{Bc^{2}d^{5} - Aa^{2}e^{5} - \left(2\,Bbc + Ac^{2}\right)d^{4}e + \left(Bb^{2} + 2\,(Ba + Ab)c\right)d^{3}e^{2} - \left(2\,Bab + Ab^{2} + 2\,Aac\right)d^{2}e^{3} + \left(Ba^{2} + 2\,Aab\right)de^{4}}{e^{7}x + de^{6}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^2*d^5 - A*a^2*e^5 - (2*B*b*c + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c
)*d^3*e^2 - (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A*a*b)*d*e^4)/
(e^7*x + d*e^6) + 1/12*(3*B*c^2*e^3*x^4 - 4*(2*B*c^2*d*e^2 - (2*B*b*c + A*c
^2)*e^3)*x^3 + 6*(3*B*c^2*d^2*e - 2*(2*B*b*c + A*c^2)*d*e^2 + (B*b^2 + 2*(B
*a + A*b)*c)*e^3)*x^2 - 12*(4*B*c^2*d^3 - 3*(2*B*b*c + A*c^2)*d^2*e + 2*(B*
b^2 + 2*(B*a + A*b)*c)*d*e^2 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^3)*x)/e^5 + (5
*B*c^2*d^4 - 4*(2*B*b*c + A*c^2)*d^3*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^
2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^3 + (B*a^2 + 2*A*a*b)*e^4)*log(e*x +
d)/e^6
```

mupad [**B**] time = 0.12, size = 499, normalized size = 1.87

$$x\left(\frac{A\,b^2+2\,B\,a\,b+2\,A\,a\,c}{e^2}-\frac{d^2\,\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e^2}+\frac{2\,d\,\left(\frac{2\,d\,\left(\frac{A\,c^2+2\,B\,b\,c}{e^2}-\frac{2\,B\,c^2\,d}{e^3}\right)}{e}-\frac{B\,b^2+2\,A\,c\,b+2\,B\,a\,c}{e^2}+\frac{B\,c^2\,d^2}{e^4}\right)}{e}\right)+x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^2,x)
```

```
[Out] x*((A*b^2 + 2*A*a*c + 2*B*a*b)/e^2 - (d^2*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2
*d)/e^3))/e^2 + (2*d*((2*d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*c^2*d)/e^3))/e - (
B*b^2 + 2*A*b*c + 2*B*a*c)/e^2 + (B*c^2*d^2)/e^4))/e) + x^3*((A*c^2 + 2*B*b
*c)/(3*e^2) - (2*B*c^2*d)/(3*e^3)) - x^2*((d*((A*c^2 + 2*B*b*c)/e^2 - (2*B*
c^2*d)/e^3))/e - (B*b^2 + 2*A*b*c + 2*B*a*c)/(2*e^2) + (B*c^2*d^2)/(2*e^4))
 - (A*a^2*e^5 - B*c^2*d^5 - B*a^2*d*e^4 + A*c^2*d^4*e + A*b^2*d^2*e^3 - B*b
^2*d^3*e^2 - 2*A*a*b*d*e^4 + 2*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*
e^3 - 2*A*b*c*d^3*e^2 - 2*B*a*c*d^3*e^2)/(e*(d*e^5 + e^6*x)) + (log(d + e*x
)*(B*a^2*e^4 + 5*B*c^2*d^4 + 2*A*a*b*e^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e +
3*B*b^2*d^2*e^2 - 4*A*a*c*d*e^3 - 4*B*a*b*d*e^3 - 8*B*b*c*d^3*e + 6*A*b*c*d
^2*e^2 + 6*B*a*c*d^2*e^2))/e^6 + (B*c^2*x^4)/(4*e^2)
```

sympy [**A**] time = 4.41, size = 442, normalized size = 1.66

$$\frac{Bc^{2}x^{4}}{4e^{2}}+x^{3}\left(\frac{Ac^{2}}{3e^{2}}+\frac{2Bbc}{3e^{2}}-\frac{2Bc^{2}d}{3e^{3}}\right)+x^{2}\left(\frac{Abc}{e^{2}}-\frac{Ac^{2}d}{e^{3}}+\frac{Bac}{e^{2}}+\frac{Bb^{2}}{2e^{2}}-\frac{2Bbcd}{e^{3}}+\frac{3Bc^{2}d^{2}}{2e^{4}}\right)+x\left(\frac{2Aac}{e^{2}}+\frac{Ab^{2}}{e^{2}}-\frac{4Ab}{e^{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**2,x)
```

```
[Out] B*c**2*x**4/(4*e**2) + x**3*(A*c**2/(3*e**2) + 2*B*b*c/(3*e**2) - 2*B*c**2*
d/(3*e**3)) + x**2*(A*b*c/e**2 - A*c**2*d/e**3 + B*a*c/e**2 + B*b**2/(2*e**
2) - 2*B*b*c*d/e**3 + 3*B*c**2*d**2/(2*e**4)) + x*(2*A*a*c/e**2 + A*b**2/e*
*2 - 4*A*b*c*d/e**3 + 3*A*c**2*d**2/e**4 + 2*B*a*b/e**2 - 4*B*a*c*d/e**3 -
2*B*b**2*d/e**3 + 6*B*b*c*d**2/e**4 - 4*B*c**2*d**3/e**5) + (-A*a**2*e**5 +
 2*A*a*b*d*e**4 - 2*A*a*c*d**2*e**3 - A*b**2*d**2*e**3 + 2*A*b*c*d**3*e**2
- A*c**2*d**4*e + B*a**2*d*e**4 - 2*B*a*b*d**2*e**3 + 2*B*a*c*d**3*e**2 + B
*b**2*d**3*e**2 - 2*B*b*c*d**4*e + B*c**2*d**5)/(d*e**6 + e**7*x) + (a*e**2
 - b*d*e + c*d**2)*(2*A*b*e**2 - 4*A*c*d*e + B*a*e**2 - 3*B*b*d*e + 5*B*c*d
**2)*log(d + e*x)/e**6
```

3.2326 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx$

Optimal. Leaf size=281

$$-\frac{x\left(Ace(3cd-2be)-B\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^5}-\frac{\log(d+ex)\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10\right.\right.}{e^6}$$

```
[Out] -(A*c*e*(-2*b*e+3*c*d)-B*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d)))*x/e^5-1/2*
c*(-A*c*e-2*B*b*e+3*B*c*d)*x^2/e^4+1/3*B*c^2*x^3/e^3+1/2*(-A*e+B*d)*(a*e^2-
b*d*e+c*d^2)^2/e^6/(e*x+d)^2+(a*e^2-b*d*e+c*d^2)*(2*A*e*(-b*e+2*c*d)-B*(5*c
*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)-(B*(10*c^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d
*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d)))*ln(e*x+d)/e^6
```

Rubi **[A]** time = 0.44, antiderivative size = 280, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{x\left(Ace(3cd-2be)-B\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^5}-\frac{\log(d+ex)\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10\right.\right.}{e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] -(((A*c*e*(3*c*d - 2*b*e) - B*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*
x)/e^5) - (c*(3*B*c*d - 2*b*B*e - A*c*e)*x^2)/(2*e^4) + (B*c^2*x^3)/(3*e^3)
 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(2*e^6*(d + e*x)^2) - ((c*d^2 -
b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(e^6*
(d + e*x)) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^3}\,dx &= \int \left(\frac{-Ace(3cd-2be)+B\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)}{e^5}+\frac{c(-3Bcd+2bBe+}{e^4}\right.\\ &= -\frac{\left(Ace(3cd-2be)-B\left(6c^2d^2+b^2e^2-2ce(3bd-ae)\right)\right)x}{e^5}-\frac{c(3Bcd-2bBe-Ac}{2e^4}\end{aligned}$$

Mathematica **[A]** time = 0.12, size = 262, normalized size = 0.93

$$\frac{6ex\left(B\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+Ace(2be-3cd)\right)+6\log(d+ex)\left(Ae\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+B\left(\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x]
```

```
[Out] (6*e*(A*c*e*(-3*c*d + 2*b*e) + B*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e
)))*x + 3*c*e^2*(-3*B*c*d + 2*b*B*e + A*c*e)*x^2 + 2*B*c^2*e^3*x^3 + (3*(B*
d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^2 - (6*(c*d^2 + e*(-(b*d)
+ a*e))*(5*B*c*d^2 + B*e*(-3*b*d + a*e) + 2*A*e*(-2*c*d + b*e)))/(d + e*x)
+ 6*(A*e*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e)) + B*(-10*c^2*d^3 + 6*
c*d*e*(2*b*d - a*e) + b*e^2*(-3*b*d + 2*a*e)))*Log[d + e*x])/(6*e^6)
```

fricas [B] time = 0.97, size = 620, normalized size = 2.21

$$\frac{2\,Bc^2e^5x^5 - 27\,Bc^2d^5 - 3\,Aa^2e^5 + 21\,(2\,Bbc + Ac^2)d^4e - 15\,(Bb^2 + 2\,(Ba + Ab)c)d^3e^2 + 9\,(2\,Bab + Ab^2 + 2\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(2*B*c^2*e^5*x^5 - 27*B*c^2*d^5 - 3*A*a^2*e^5 + 21*(2*B*b*c + A*c^2)*d^
4*e - 15*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 9*(2*B*a*b + A*b^2 + 2*A*a*c)*
d^2*e^3 - 3*(B*a^2 + 2*A*a*b)*d*e^4 - (5*B*c^2*d*e^4 - 3*(2*B*b*c + A*c^2)*
e^5)*x^4 + 2*(10*B*c^2*d^2*e^3 - 6*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b^2 + 2*(
B*a + A*b)*c)*e^5)*x^3 + 3*(21*B*c^2*d^3*e^2 - 11*(2*B*b*c + A*c^2)*d^2*e^3
 + 4*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4)*x^2 + 6*(B*c^2*d^4*e + (2*B*b*c + A*c
^2)*d^3*e^2 - 2*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 + 2*(2*B*a*b + A*b^2 + 2*
A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x - 6*(10*B*c^2*d^5 - 6*(2*B*b*c + A*
c^2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + (10*B*c^2*d^3*e^2 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 2*(10*B*c^2
*d^4*e - 6*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3
- (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4)*x)*log(e*x + d))/(e^8*x^2 + 2*d*e^7*x
+ d^2*e^6)
```

giac [A] time = 0.18, size = 430, normalized size = 1.53

$$-(10\,Bc^2d^3 - 12\,Bbcd^2e - 6\,Ac^2d^2e + 3\,Bb^2de^2 + 6\,Bacde^2 + 6\,Abcde^2 - 2\,Babe^3 - Ab^2e^3 - 2\,Aace^3)e^{(-6)}\log(|$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -(10*B*c^2*d^3 - 12*B*b*c*d^2*e - 6*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*B*a*c*d
*e^2 + 6*A*b*c*d*e^2 - 2*B*a*b*e^3 - A*b^2*e^3 - 2*A*a*c*e^3)*e^(-6)*log(ab
s(x*e + d)) + 1/6*(2*B*c^2*x^3*e^6 - 9*B*c^2*d*x^2*e^5 + 36*B*c^2*d^2*x*e^4
 + 6*B*b*c*x^2*e^6 + 3*A*c^2*x^2*e^6 - 36*B*b*c*d*x*e^5 - 18*A*c^2*d*x*e^5
+ 6*B*b^2*x*e^6 + 12*B*a*c*x*e^6 + 12*A*b*c*x*e^6)*e^(-9) - 1/2*(9*B*c^2*d^
5 - 14*B*b*c*d^4*e - 7*A*c^2*d^4*e + 5*B*b^2*d^3*e^2 + 10*B*a*c*d^3*e^2 + 1
0*A*b*c*d^3*e^2 - 6*B*a*b*d^2*e^3 - 3*A*b^2*d^2*e^3 - 6*A*a*c*d^2*e^3 + B*a
^2*d*e^4 + 2*A*a*b*d*e^4 + A*a^2*e^5 + 2*(5*B*c^2*d^4*e - 8*B*b*c*d^3*e^2 -
 4*A*c^2*d^3*e^2 + 3*B*b^2*d^2*e^3 + 6*B*a*c*d^2*e^3 + 6*A*b*c*d^2*e^3 - 4*
B*a*b*d*e^4 - 2*A*b^2*d*e^4 - 4*A*a*c*d*e^4 + B*a^2*e^5 + 2*A*a*b*e^5)*x)*e
^(-6)/(x*e + d)^2
```

maple [B] time = 0.05, size = 654, normalized size = 2.33

$$\frac{B\,c^2x^3}{3e^3} - \frac{A\,a^2}{2\,(ex+d)^2\,e} + \frac{Aabd}{(ex+d)^2\,e^2} - \frac{Aac\,d^2}{(ex+d)^2\,e^3} - \frac{A\,b^2d^2}{2\,(ex+d)^2\,e^3} + \frac{Abc\,d^3}{(ex+d)^2\,e^4} - \frac{A\,c^2d^4}{2\,(ex+d)^2\,e^5} + \frac{A\,c^2x^2}{2e^3} + \frac{B\,a^2}{2\,(ex+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x)
```

```
[Out] 12/e^5*ln(e*x+d)*B*b*c*d^2-6/e^4/(e*x+d)*A*b*c*d^2+4/e^3/(e*x+d)*B*a*b*d-1/
2/e/(e*x+d)^2*A*a^2-1/e^2/(e*x+d)*B*a^2+A*b^2/e^3*ln(e*x+d)-6/e^4*ln(e*x+d)
*A*b*c*d-6/e^4*ln(e*x+d)*B*a*c*d-1/e^3/(e*x+d)^2*A*d^2*a*c+1/2/e^3*A*x^2*c^
2-6/e^4/(e*x+d)*B*a*c*d^2+1/e^4/(e*x+d)^2*B*d^3*a*c-1/e^5/(e*x+d)^2*B*b*c*d
^4+1/e^4/(e*x+d)^2*A*b*c*d^3+1/e^2/(e*x+d)^2*A*d*a*b+8/e^5/(e*x+d)*B*b*c*d^
3-1/e^3/(e*x+d)^2*B*d^2*a*b-6/e^4*B*b*c*d*x+2/e^3/(e*x+d)*A*b^2*d+4/e^5/(e*
x+d)*A*c^2*d^3-10/e^6*ln(e*x+d)*B*c^2*d^3+4/e^3/(e*x+d)*A*a*c*d-3/e^4/(e*x+
d)*B*b^2*d^2-5/e^6/(e*x+d)*B*c^2*d^4-1/2/e^3/(e*x+d)^2*A*d^2*b^2-1/2/e^5/(e
*x+d)^2*A*c^2*d^4+1/2/e^2/(e*x+d)^2*B*a^2*d+1/2/e^4/(e*x+d)^2*B*b^2*d^3+1/2
/e^6/(e*x+d)^2*B*c^2*d^5+2/e^3*ln(e*x+d)*A*a*c+1/e^3*B*x^2*b*c-3/2/e^4*B*x^
2*c^2*d+6/e^5*ln(e*x+d)*A*c^2*d^2+2/e^3*A*b*c*x-3/e^4*A*x*c^2*d+2/e^3*B*x*a
*c+6/e^5*B*c^2*d^2*x-2/e^2/(e*x+d)*A*a*b+2/e^3*ln(e*x+d)*B*a*b-3/e^4*ln(e*x
+d)*B*b^2*d+B*b^2/e^3*x+1/3*B*c^2/e^3*x^3
```

maxima [**A**] time = 0.63, size = 397, normalized size = 1.41

$$-\frac{9\,Bc^{2}d^{5} + Aa^{2}e^{5} - 7\left(2\,Bbc + Ac^{2}\right)d^{4}e + 5\left(Bb^{2} + 2\left(Ba + Ab\right)c\right)d^{3}e^{2} - 3\left(2\,Bab + Ab^{2} + 2\,Aac\right)d^{2}e^{3} + \left(Ba^{2} + 2\right.}{2\left(e^{8}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(9*B*c^2*d^5 + A*a^2*e^5 - 7*(2*B*b*c + A*c^2)*d^4*e + 5*(B*b^2 + 2*(B
*a + A*b)*c)*d^3*e^2 - 3*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 + 2*A
*a*b)*d*e^4 + 2*(5*B*c^2*d^4*e - 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2
*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*
A*a*b)*e^5)*x)/(e^8*x^2 + 2*d*e^7*x + d^2*e^6) + 1/6*(2*B*c^2*e^2*x^3 - 3*(
3*B*c^2*d*e - (2*B*b*c + A*c^2)*e^2)*x^2 + 6*(6*B*c^2*d^2 - 3*(2*B*b*c + A*
c^2)*d*e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*x)/e^5 - (10*B*c^2*d^3 - 6*(2*B*b
*c + A*c^2)*d^2*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^2 - (2*B*a*b + A*b^2 +
2*A*a*c)*e^3)*log(e*x + d)/e^6
```

mupad [**B**] time = 2.39, size = 468, normalized size = 1.67

$$x^2\,\left(\frac{A\,c^2+2\,B\,b\,c}{2\,e^3}-\frac{3\,B\,c^2\,d}{2\,e^4}\right)-\frac{x\,\left(B\,a^2\,e^4-4\,B\,a\,b\,d\,e^3+2\,A\,a\,b\,e^4+6\,B\,a\,c\,d^2\,e^2-4\,A\,a\,c\,d\,e^3+3\,B\,b^2\,d^2\,e^2-2\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^3,x)
```

```
[Out] x^2*((A*c^2 + 2*B*b*c)/(2*e^3) - (3*B*c^2*d)/(2*e^4)) - (x*(B*a^2*e^4 + 5*B
*c^2*d^4 + 2*A*a*b*e^4 - 2*A*b^2*d*e^3 - 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 -
4*A*a*c*d*e^3 - 4*B*a*b*d*e^3 - 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d
^2*e^2) + (A*a^2*e^5 + 9*B*c^2*d^5 + B*a^2*d*e^4 - 7*A*c^2*d^4*e - 3*A*b^2*
d^2*e^3 + 5*B*b^2*d^3*e^2 + 2*A*a*b*d*e^4 - 14*B*b*c*d^4*e - 6*A*a*c*d^2*e^
3 - 6*B*a*b*d^2*e^3 + 10*A*b*c*d^3*e^2 + 10*B*a*c*d^3*e^2)/(2*e))/(d^2*e^5
+ e^7*x^2 + 2*d*e^6*x) - x*((3*d*((A*c^2 + 2*B*b*c)/e^3 - (3*B*c^2*d)/e^4))
/e - (B*b^2 + 2*A*b*c + 2*B*a*c)/e^3 + (3*B*c^2*d^2)/e^5) + (log(d + e*x)*(
A*b^2*e^3 - 10*B*c^2*d^3 + 2*A*a*c*e^3 + 2*B*a*b*e^3 + 6*A*c^2*d^2*e - 3*B*
b^2*d*e^2 - 6*A*b*c*d*e^2 - 6*B*a*c*d*e^2 + 12*B*b*c*d^2*e))/e^6 + (B*c^2*x
^3)/(3*e^3)
```

sympy [**A**] time = 28.80, size = 534, normalized size = 1.90

$$\frac{Bc^2x^3}{3e^3}+x^2\left(\frac{Ac^2}{2e^3}+\frac{Bbc}{e^3}-\frac{3Bc^2d}{2e^4}\right)+x\left(\frac{2Abc}{e^3}-\frac{3Ac^2d}{e^4}+\frac{2Bac}{e^3}+\frac{Bb^2}{e^3}-\frac{6Bbcd}{e^4}+\frac{6Bc^2d^2}{e^5}\right)+\frac{-Aa^2e^5-2Aabde^4+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**3,x)
```

```
[Out] B*c**2*x**3/(3*e**3) + x**2*(A*c**2/(2*e**3) + B*b*c/e**3 - 3*B*c**2*d/(2*e
**4)) + x*(2*A*b*c/e**3 - 3*A*c**2*d/e**4 + 2*B*a*c/e**3 + B*b**2/e**3 - 6*
B*b*c*d/e**4 + 6*B*c**2*d**2/e**5) + (-A*a**2*e**5 - 2*A*a*b*d*e**4 + 6*A*a
*c*d**2*e**3 + 3*A*b**2*d**2*e**3 - 10*A*b*c*d**3*e**2 + 7*A*c**2*d**4*e -
B*a**2*d*e**4 + 6*B*a*b*d**2*e**3 - 10*B*a*c*d**3*e**2 - 5*B*b**2*d**3*e**2
 + 14*B*b*c*d**4*e - 9*B*c**2*d**5 + x*(-4*A*a*b*e**5 + 8*A*a*c*d*e**4 + 4*
A*b**2*d*e**4 - 12*A*b*c*d**2*e**3 + 8*A*c**2*d**3*e**2 - 2*B*a**2*e**5 + 8
*B*a*b*d*e**4 - 12*B*a*c*d**2*e**3 - 6*B*b**2*d**2*e**3 + 16*B*b*c*d**3*e**
2 - 10*B*c**2*d**4*e))/(2*d**2*e**6 + 4*d*e**7*x + 2*e**8*x**2) + (2*A*a*c*
e**3 + A*b**2*e**3 - 6*A*b*c*d*e**2 + 6*A*c**2*d**2*e + 2*B*a*b*e**3 - 6*B*
a*c*d*e**2 - 3*B*b**2*d*e**2 + 12*B*b*c*d**2*e - 10*B*c**2*d**3)*log(d + e*
x)/e**6
```

3.2327 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx$

Optimal. Leaf size=286

$$-\frac{\log(d+ex)\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c}{e^6(d}$$

```
[Out] -c*(-A*c*e-2*B*b*e+4*B*c*d)*x/e^5+1/2*B*c^2*x^2/e^4+1/3*(-A*e+B*d)*(a*e^2-b
*d*e+c*d^2)^2/e^6/(e*x+d)^3+1/2*(a*e^2-b*d*e+c*d^2)*(2*A*e*(-b*e+2*c*d)-B*(
5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^2+(B*(10*c^2*d^3+b*e^2*(-2*a*e+3*b*d)-
6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c*e*(-a*e+3*b*d)))/e^6/(e*x+
d)-(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^2*e^2-2*c*e*(-a*e+4*b*d)))*ln(e*x+
d)/e^6
```

Rubi [A] time = 0.41, antiderivative size = 284, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)}{e^6(d+ex)}-\frac{\log(d+ex)\left(2Ace(2cd-b\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] -((c*(4*B*c*d - 2*b*B*e - A*c*e)*x)/e^5) + (B*c^2*x^2)/(2*e^4) + ((B*d - A*
e)*(c*d^2 - b*d*e + a*e^2)^2)/(3*e^6*(d + e*x)^3) - ((c*d^2 - b*d*e + a*e^2
)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(2*e^6*(d + e*x)^2
) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e)) - A*e*(
6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(e^6*(d + e*x)) - ((2*A*c*e*(2*
c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))*Log[d + e*x])/
e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int\frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^4}\,dx=\int\left(\frac{c(-4Bcd+2bBe+Ace)}{e^5}+\frac{Bc^2x}{e^4}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^4}+\frac{\left(cd^2-\right.}{}\right.$$

$$=-\frac{c(4Bcd-2bBe-Ace)x}{e^5}+\frac{Bc^2x^2}{2e^4}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{3e^6(d+ex)^3}-\frac{\left(cd^2-bde\right.}{}$$

Mathematica [A] time = 0.11, size = 263, normalized size = 0.92

$$\frac{6\log(d+ex)\left(B\left(2ce(ae-4bd)+b^2e^2+10c^2d^2\right)+2Ace(be-2cd)\right)-\frac{6\left(Ae\left(2ce(ae-3bd)+b^2e^2+6c^2d^2\right)+B\left(6cde(2bd-ae)+be^2(2a\right.\right.}{d+ex}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x]
```

```
[Out] (6*c*e*(-4*B*c*d + 2*b*B*e + A*c*e)*x + 3*B*c^2*e^2*x^2 + (2*(B*d - A*e)*(c
*d^2 + e*(-(b*d) + a*e))^2)/(d + e*x)^3 - (3*(c*d^2 + e*(-(b*d) + a*e))*(5*
B*c*d^2 + B*e*(-3*b*d + a*e) + 2*A*e*(-2*c*d + b*e)))/(d + e*x)^2 - (6*(A*e
*(6*c^2*d^2 + b^2*e^2 + 2*c*e*(-3*b*d + a*e)) + B*(-10*c^2*d^3 + 6*c*d*e*(2
*b*d - a*e) + b*e^2*(-3*b*d + 2*a*e))))/(d + e*x) + 6*(2*A*c*e*(-2*c*d + b*
e) + B*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-4*b*d + a*e)))*Log[d + e*x])/(6*e^6)
```

fricas [B] time = 1.07, size = 618, normalized size = 2.16

$$\frac{3\,Bc^2e^5x^5 + 47\,Bc^2d^5 - 2\,Aa^2e^5 - 26\left(2\,Bbc + Ac^2\right)d^4e + 11\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(3*B*c^2*e^5*x^5 + 47*B*c^2*d^5 - 2*A*a^2*e^5 - 26*(2*B*b*c + A*c^2)*d^
4*e + 11*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*
d^2*e^3 - (B*a^2 + 2*A*a*b)*d*e^4 - 3*(5*B*c^2*d*e^4 - 2*(2*B*b*c + A*c^2)*
e^5)*x^4 - 9*(7*B*c^2*d^2*e^3 - 2*(2*B*b*c + A*c^2)*d*e^4)*x^3 - 3*(3*B*c^2
*d^3*e^2 + 6*(2*B*b*c + A*c^2)*d^2*e^3 - 6*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4
+ 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 3*(27*B*c^2*d^4*e - 18*(2*B*b*c
+ A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 - 2*(2*B*a*b + A*b^2
 + 2*A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x + 6*(10*B*c^2*d^5 - 4*(2*B*b*c
 + A*c^2)*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (10*B*c^2*d^2*e^3 - 4
*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 3*(10*B*c^2
*d^3*e^2 - 4*(2*B*b*c + A*c^2)*d^2*e^3 + (B*b^2 + 2*(B*a + A*b)*c)*d*e^4)*x
^2 + 3*(10*B*c^2*d^4*e - 4*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*
b)*c)*d^2*e^3)*x)*log(e*x + d))/(e^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*
e^6)
```

giac [A] time = 0.16, size = 424, normalized size = 1.48

$$\left(10\,Bc^2d^2 - 8\,Bbcde - 4\,Ac^2de + Bb^2e^2 + 2\,Bace^2 + 2\,Abce^2\right)e^{(-6)}\log\left(|xe + d|\right) + \frac{1}{2}\left(Bc^2x^2e^4 - 8\,Bc^2dxe^3 + 4\,Bb\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (10*B*c^2*d^2 - 8*B*b*c*d*e - 4*A*c^2*d*e + B*b^2*e^2 + 2*B*a*c*e^2 + 2*A*b
*c*e^2)*e^(-6)*log(abs(x*e + d)) + 1/2*(B*c^2*x^2*e^4 - 8*B*c^2*d*x*e^3 + 4
*B*b*c*x*e^4 + 2*A*c^2*x*e^4)*e^(-8) + 1/6*(47*B*c^2*d^5 - 52*B*b*c*d^4*e -
 26*A*c^2*d^4*e + 11*B*b^2*d^3*e^2 + 22*B*a*c*d^3*e^2 + 22*A*b*c*d^3*e^2 -
4*B*a*b*d^2*e^3 - 2*A*b^2*d^2*e^3 - 4*A*a*c*d^2*e^3 - B*a^2*d*e^4 - 2*A*a*b
*d*e^4 - 2*A*a^2*e^5 + 6*(10*B*c^2*d^3*e^2 - 12*B*b*c*d^2*e^3 - 6*A*c^2*d^2
*e^3 + 3*B*b^2*d*e^4 + 6*B*a*c*d*e^4 + 6*A*b*c*d*e^4 - 2*B*a*b*e^5 - A*b^2*
e^5 - 2*A*a*c*e^5)*x^2 + 3*(35*B*c^2*d^4*e - 40*B*b*c*d^3*e^2 - 20*A*c^2*d^
3*e^2 + 9*B*b^2*d^2*e^3 + 18*B*a*c*d^2*e^3 + 18*A*b*c*d^2*e^3 - 4*B*a*b*d*e
^4 - 2*A*b^2*d*e^4 - 4*A*a*c*d*e^4 - B*a^2*e^5 - 2*A*a*b*e^5)*x)*e^(-6)/(x*
e + d)^3
```

maple [B] time = 0.06, size = 690, normalized size = 2.41

$$-\frac{A\,a^2}{3\,(ex+d)^3\,e}+\frac{2Aabd}{3\,(ex+d)^3\,e^2}-\frac{2Aac\,d^2}{3\,(ex+d)^3\,e^3}-\frac{A\,b^2d^2}{3\,(ex+d)^3\,e^3}+\frac{2Abc\,d^3}{3\,(ex+d)^3\,e^4}-\frac{A\,c^2d^4}{3\,(ex+d)^3\,e^5}+\frac{B\,a^2d}{3\,(ex+d)^3\,e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x)
```

```
[Out] -2/3/e^5/(e*x+d)^3*B*b*c*d^4+2/(e*x+d)^2*A*a*c*d/e^3-3/(e*x+d)^2*B*a*c*d^2/
e^4+1/3/(e*x+d)^3*B*b^2*d^3/e^4-1/(e*x+d)^2*A*a*b/e^2+1/(e*x+d)^2*A*b^2*d/e
^3+A*c^2/e^4*x-1/2/(e*x+d)^2*B*a^2/e^2-1/3/(e*x+d)^3*A*a^2/e+6/(e*x+d)*B*a*
c*d/e^4-1/(e*x+d)*A*b^2/e^3+2/(e*x+d)^2*B*a*b*d/e^3-2/3/(e*x+d)^3*B*a*b*d^2
/e^3+2/3/(e*x+d)^3*A*a*b*d/e^2+1/3/(e*x+d)^3*B*c^2*d^5/e^6-4*A*c^2*d/e^5*ln
(e*x+d)+2*B*a*c/e^4*ln(e*x+d)+10*B*c^2*d^2/e^6*ln(e*x+d)+4/e^5/(e*x+d)^2*B*
b*c*d^3-1/3/(e*x+d)^3*A*b^2*d^2/e^3-2/3/(e*x+d)^3*A*a*c*d^2/e^3+2/3/(e*x+d)
^3*B*a*c*d^3/e^4-2/(e*x+d)*B*a*b/e^3+3/(e*x+d)*B*b^2*d/e^4-6/(e*x+d)*A*c^2*
d^2/e^5+10/(e*x+d)*B*c^2*d^3/e^6-3/2/(e*x+d)^2*B*b^2*d^2/e^4-3/e^4/(e*x+d)^
2*A*b*c*d^2-12/e^5/(e*x+d)*B*b*c*d^2+6/e^4/(e*x+d)*A*b*c*d-2/(e*x+d)*A*a*c/
e^3+2/3/e^4/(e*x+d)^3*A*d^3*b*c-8/e^5*ln(e*x+d)*B*b*c*d-4*B*c^2*d/e^5*x+2/(
e*x+d)^2*A*c^2*d^3/e^5-5/2/(e*x+d)^2*B*c^2*d^4/e^6-1/3/(e*x+d)^3*A*c^2*d^4/
e^5+1/3/(e*x+d)^3*B*a^2*d/e^2+2*c/e^4*B*b*x+2/e^4*ln(e*x+d)*A*b*c+1/2*B*c^2
/e^4*x^2+B*b^2/e^4*ln(e*x+d)
```

maxima [A] time = 0.66, size = 409, normalized size = 1.43

$$\frac{47\,Bc^2d^5 - 2\,Aa^2e^5 - 26\left(2\,Bbc + Ac^2\right)d^4e + 11\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - \left(Ba^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(47*B*c^2*d^5 - 2*A*a^2*e^5 - 26*(2*B*b*c + A*c^2)*d^4*e + 11*(B*b^2 +
2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - (B*a^2 +
 2*A*a*b)*d*e^4 + 6*(10*B*c^2*d^3*e^2 - 6*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*
b^2 + 2*(B*a + A*b)*c)*d*e^4 - (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 3*(35
*B*c^2*d^4*e - 20*(2*B*b*c + A*c^2)*d^3*e^2 + 9*(B*b^2 + 2*(B*a + A*b)*c)*d
^2*e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - (B*a^2 + 2*A*a*b)*e^5)*x)/(e
^9*x^3 + 3*d*e^8*x^2 + 3*d^2*e^7*x + d^3*e^6) + 1/2*(B*c^2*e*x^2 - 2*(4*B*c
^2*d - (2*B*b*c + A*c^2)*e)*x)/e^5 + (10*B*c^2*d^2 - 4*(2*B*b*c + A*c^2)*d*
e + (B*b^2 + 2*(B*a + A*b)*c)*e^2)*log(e*x + d)/e^6
```

mupad [B] time = 2.37, size = 465, normalized size = 1.63

$$x\left(\frac{A\,c^2 + 2\,B\,b\,c}{e^4} - \frac{4\,B\,c^2\,d}{e^5}\right) - \frac{x^2\,\left(-3\,B\,b^2\,d\,e^3 + A\,b^2\,e^4 + 12\,B\,b\,c\,d^2\,e^2 - 6\,A\,b\,c\,d\,e^3 + 2\,B\,a\,b\,e^4 - 10\,B\,c^2\,d^3\,e + 6\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^4,x)
```

```
[Out] x*((A*c^2 + 2*B*b*c)/e^4 - (4*B*c^2*d)/e^5) - (x^2*(A*b^2*e^4 + 2*A*a*c*e^4
 + 2*B*a*b*e^4 - 3*B*b^2*d*e^3 - 10*B*c^2*d^3*e + 6*A*c^2*d^2*e^2 - 6*A*b*c
*d*e^3 - 6*B*a*c*d*e^3 + 12*B*b*c*d^2*e^2) + x*((B*a^2*e^4)/2 - (35*B*c^2*d
^4)/2 + A*a*b*e^4 + A*b^2*d*e^3 + 10*A*c^2*d^3*e - (9*B*b^2*d^2*e^2)/2 + 2*
A*a*c*d*e^3 + 2*B*a*b*d*e^3 + 20*B*b*c*d^3*e - 9*A*b*c*d^2*e^2 - 9*B*a*c*d^
2*e^2) + (2*A*a^2*e^5 - 47*B*c^2*d^5 + B*a^2*d*e^4 + 26*A*c^2*d^4*e + 2*A*b
^2*d^2*e^3 - 11*B*b^2*d^3*e^2 + 2*A*a*b*d*e^4 + 52*B*b*c*d^4*e + 4*A*a*c*d^
2*e^3 + 4*B*a*b*d^2*e^3 - 22*A*b*c*d^3*e^2 - 22*B*a*c*d^3*e^2)/(6*e))/(d^3*
e^5 + e^8*x^3 + 3*d^2*e^6*x + 3*d*e^7*x^2) + (log(d + e*x)*(B*b^2*e^2 + 10*
B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e^2 - 4*A*c^2*d*e - 8*B*b*c*d*e))/e^6 + (
B*c^2*x^2)/(2*e^4)
```

sympy [A] time = 152.98, size = 547, normalized size = 1.91

$$\frac{Bc^2x^2}{2e^4} + x\left(\frac{Ac^2}{e^4} + \frac{2Bbc}{e^4} - \frac{4Bc^2d}{e^5}\right) + \frac{-2Aa^2e^5 - 2Aabde^4 - 4Aacd^2e^3 - 2Ab^2d^2e^3 + 22Abcd^3e^2 - 26Ac^2d^4e - Ba^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**4,x)
```

```
[Out] B*c**2*x**2/(2*e**4) + x*(A*c**2/e**4 + 2*B*b*c/e**4 - 4*B*c**2*d/e**5) + (
-2*A*a**2*e**5 - 2*A*a*b*d*e**4 - 4*A*a*c*d**2*e**3 - 2*A*b**2*d**2*e**3 +
22*A*b*c*d**3*e**2 - 26*A*c**2*d**4*e - B*a**2*d*e**4 - 4*B*a*b*d**2*e**3 +
 22*B*a*c*d**3*e**2 + 11*B*b**2*d**3*e**2 - 52*B*b*c*d**4*e + 47*B*c**2*d**
5 + x**2*(-12*A*a*c*e**5 - 6*A*b**2*e**5 + 36*A*b*c*d*e**4 - 36*A*c**2*d**2
*e**3 - 12*B*a*b*e**5 + 36*B*a*c*d*e**4 + 18*B*b**2*d*e**4 - 72*B*b*c*d**2*
e**3 + 60*B*c**2*d**3*e**2) + x*(-6*A*a*b*e**5 - 12*A*a*c*d*e**4 - 6*A*b**2
*d*e**4 + 54*A*b*c*d**2*e**3 - 60*A*c**2*d**3*e**2 - 3*B*a**2*e**5 - 12*B*a
*b*d*e**4 + 54*B*a*c*d**2*e**3 + 27*B*b**2*d**2*e**3 - 120*B*b*c*d**3*e**2
+ 105*B*c**2*d**4*e))/(6*d**3*e**6 + 18*d**2*e**7*x + 18*d*e**8*x**2 + 6*e*
*9*x**3) + (2*A*b*c*e**2 - 4*A*c**2*d*e + 2*B*a*c*e**2 + B*b**2*e**2 - 8*B*
b*c*d*e + 10*B*c**2*d**2)*log(d + e*x)/e**6
```

3.2328 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx$

Optimal. Leaf size=289

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-2c}{2e^6(d+ex)^2}$$

```
[Out] B*c^2*x/e^5+1/4*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^4+1/3*(a*e^2-b
*d*e+c*d^2)*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^3+1
/2*(B*(10*c^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2
+b^2*e^2-2*c*e*(-a*e+3*b*d)))/e^6/(e*x+d)^2+(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2
*d^2+b^2*e^2-2*c*e*(-a*e+4*b*d)))/e^6/(e*x+d)-c*(-A*c*e-2*B*b*e+5*B*c*d)*ln
(e*x+d)/e^6
```

Rubi [A] time = 0.36, antiderivative size = 287, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{e^6(d+ex)}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-2c}{2e^6(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] (B*c^2*x)/e^5 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(4*e^6*(d + e*x)^4)
 - ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d -
 b*e)))/(3*e^6*(d + e*x)^3) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*
d*e*(2*b*d - a*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(2*e^
6*(d + e*x)^2) + (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(
4*b*d - a*e)))/(e^6*(d + e*x)) - (c*(5*B*c*d - 2*b*B*e - A*c*e)*Log[d + e*x
])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^5}\,dx &= \int \Bigg(\frac{Bc^2}{e^5}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^5}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd\right.}{e^5(d+ex)^4}\\ &= \frac{Bc^2x}{e^5}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{4e^6(d+ex)^4}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-a\right.}{3e^6(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.26, size = 391, normalized size = 1.35

$$-\frac{Ae\left(e^2\left(3a^2e^2+2abe(d+4ex)+b^2\left(d^2+4dex+6e^2x^2\right)\right)+2ce\left(ae\left(d^2+4dex+6e^2x^2\right)+3b\left(d^3+4d^2ex+6de^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x]
```

```
[Out] -1/12*(A*e*(-(c^2*d*(25*d^3 + 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3)) + e
^2*(3*a^2*e^2 + 2*a*b*e*(d + 4*e*x) + b^2*(d^2 + 4*d*e*x + 6*e^2*x^2)) + 2*
c*e*(a*e*(d^2 + 4*d*e*x + 6*e^2*x^2) + 3*b*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 +
 4*e^3*x^3))) + B*(c^2*(77*d^5 + 248*d^4*e*x + 252*d^3*e^2*x^2 + 48*d^2*e^3
*x^3 - 48*d*e^4*x^4 - 12*e^5*x^5) + e^2*(a^2*e^2*(d + 4*e*x) + 2*a*b*e*(d^2
 + 4*d*e*x + 6*e^2*x^2) + 3*b^2*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3)
) + 2*c*e*(3*a*e*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) - b*d*(25*d^3
+ 88*d^2*e*x + 108*d*e^2*x^2 + 48*e^3*x^3))) + 12*c*(5*B*c*d - 2*b*B*e - A*
c*e)*(d + e*x)^4*Log[d + e*x])/(e^6*(d + e*x)^4)
```

fricas [B] time = 1.18, size = 572, normalized size = 1.98

$$\frac{12\,Bc^2e^5x^5 + 48\,Bc^2de^4x^4 - 77\,Bc^2d^5 - 3\,Aa^2e^5 + 25\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - \left(2\,Bab\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(12*B*c^2*e^5*x^5 + 48*B*c^2*d*e^4*x^4 - 77*B*c^2*d^5 - 3*A*a^2*e^5 +
25*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 - (2*B*a*b
 + A*b^2 + 2*A*a*c)*d^2*e^3 - (B*a^2 + 2*A*a*b)*d*e^4 - 12*(4*B*c^2*d^2*e^3
 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 - 6*(42*B
*c^2*d^3*e^2 - 18*(2*B*b*c + A*c^2)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d
*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 - 4*(62*B*c^2*d^4*e - 22*(2*B*b
*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^3 + (2*B*a*b + A*b^
2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)*e^5)*x - 12*(5*B*c^2*d^5 - (2*B*b*c
+ A*c^2)*d^4*e + (5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 4*(5*B*c^2*d
^2*e^3 - (2*B*b*c + A*c^2)*d*e^4)*x^3 + 6*(5*B*c^2*d^3*e^2 - (2*B*b*c + A*c
^2)*d^2*e^3)*x^2 + 4*(5*B*c^2*d^4*e - (2*B*b*c + A*c^2)*d^3*e^2)*x)*log(e*x
 + d))/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6)
```

giac [B] time = 0.21, size = 719, normalized size = 2.49

$$(xe+d)Bc^2e^{(-6)} + \left(5\,Bc^2d - 2\,Bbce - Ac^2e\right)e^{(-6)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right) - \frac{1}{12}\left(\frac{120\,Bc^2d^2e^{22}}{xe+d} - \frac{60\,Bc^2d^3e^{22}}{(xe+d)^2} + \frac{20\,Bc^2d}{(xe+c}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] (x*e + d)*B*c^2*e^(-6) + (5*B*c^2*d - 2*B*b*c*e - A*c^2*e)*e^(-6)*log(abs(x
*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(120*B*c^2*d^2*e^22/(x*e + d) - 60*B*c^2
*d^3*e^22/(x*e + d)^2 + 20*B*c^2*d^4*e^22/(x*e + d)^3 - 3*B*c^2*d^5*e^22/(x
*e + d)^4 - 96*B*b*c*d*e^23/(x*e + d) - 48*A*c^2*d*e^23/(x*e + d) + 72*B*b*
c*d^2*e^23/(x*e + d)^2 + 36*A*c^2*d^2*e^23/(x*e + d)^2 - 32*B*b*c*d^3*e^23/
(x*e + d)^3 - 16*A*c^2*d^3*e^23/(x*e + d)^3 + 6*B*b*c*d^4*e^23/(x*e + d)^4
+ 3*A*c^2*d^4*e^23/(x*e + d)^4 + 12*B*b^2*e^24/(x*e + d) + 24*B*a*c*e^24/(x
*e + d) + 24*A*b*c*e^24/(x*e + d) - 18*B*b^2*d*e^24/(x*e + d)^2 - 36*B*a*c*
d*e^24/(x*e + d)^2 - 36*A*b*c*d*e^24/(x*e + d)^2 + 12*B*b^2*d^2*e^24/(x*e +
 d)^3 + 24*B*a*c*d^2*e^24/(x*e + d)^3 + 24*A*b*c*d^2*e^24/(x*e + d)^3 - 3*B
*b^2*d^3*e^24/(x*e + d)^4 - 6*B*a*c*d^3*e^24/(x*e + d)^4 - 6*A*b*c*d^3*e^24
/(x*e + d)^4 + 12*B*a*b*e^25/(x*e + d)^2 + 6*A*b^2*e^25/(x*e + d)^2 + 12*A*
a*c*e^25/(x*e + d)^2 - 16*B*a*b*d*e^25/(x*e + d)^3 - 8*A*b^2*d*e^25/(x*e +
d)^3 - 16*A*a*c*d*e^25/(x*e + d)^3 + 6*B*a*b*d^2*e^25/(x*e + d)^4 + 3*A*b^2
*d^2*e^25/(x*e + d)^4 + 6*A*a*c*d^2*e^25/(x*e + d)^4 + 4*B*a^2*e^26/(x*e +
d)^3 + 8*A*a*b*e^26/(x*e + d)^3 - 3*B*a^2*d*e^26/(x*e + d)^4 - 6*A*a*b*d*e^
26/(x*e + d)^4 + 3*A*a^2*e^27/(x*e + d)^4)*e^(-28)
```

maple [B] time = 0.05, size = 710, normalized size = 2.46

$$-\frac{A\,a^2}{4\,(ex+d)^4\,e}+\frac{Aabd}{2\,(ex+d)^4\,e^2}-\frac{Aac\,d^2}{2\,(ex+d)^4\,e^3}-\frac{A\,b^2d^2}{4\,(ex+d)^4\,e^3}+\frac{Abc\,d^3}{2\,(ex+d)^4\,e^4}-\frac{A\,c^2d^4}{4\,(ex+d)^4\,e^5}+\frac{B\,a^2d}{4\,(ex+d)^4\,e^2}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x)
```

```
[Out] 1/2/e^4/(e*x+d)^4*A*d^3*b*c-1/2/e^3/(e*x+d)^4*B*d^2*a*b+1/2/e^2/(e*x+d)^4*A
*d*a*b-1/2/e^3/(e*x+d)^4*A*d^2*a*c+4/3/e^3/(e*x+d)^3*A*a*c*d-1/2/e^5/(e*x+d
)^4*B*d^4*b*c+4/3/e^3/(e*x+d)^3*B*a*b*d-2/e^4/(e*x+d)^3*A*b*c*d^2+8/3/e^5/(
e*x+d)^3*B*b*c*d^3-2/e^4/(e*x+d)^3*B*a*c*d^2+1/4/e^6/(e*x+d)^4*B*c^2*d^5+2*
c/e^5*ln(e*x+d)*B*b-1/e^4/(e*x+d)*B*b^2-1/3/e^2/(e*x+d)^3*B*a^2+c^2/e^5*ln(
e*x+d)*A-1/4/e/(e*x+d)^4*A*a^2-1/2/e^3/(e*x+d)^2*A*b^2+1/4/e^2/(e*x+d)^4*B*
a^2*d+1/4/e^4/(e*x+d)^4*B*d^3*b^2-2/e^4/(e*x+d)*A*b*c+1/2/e^4/(e*x+d)^4*B*d
^3*a*c-6/e^5/(e*x+d)^2*B*b*c*d^2+8/e^5/(e*x+d)*B*b*c*d+3/e^4/(e*x+d)^2*A*b*
c*d-5*c^2/e^6*ln(e*x+d)*B*d-3/e^5/(e*x+d)^2*A*c^2*d^2-1/e^3/(e*x+d)^2*B*a*b
+3/2/e^4/(e*x+d)^2*B*b^2*d+5/e^6/(e*x+d)^2*B*c^2*d^3-1/4/e^3/(e*x+d)^4*A*d^
2*b^2-1/4/e^5/(e*x+d)^4*A*c^2*d^4+3/e^4/(e*x+d)^2*B*a*c*d-5/3/e^6/(e*x+d)^3
*B*c^2*d^4-2/3/e^2/(e*x+d)^3*A*a*b+2/3/e^3/(e*x+d)^3*A*b^2*d+4/3/e^5/(e*x+d
)^3*A*c^2*d^3+4/e^5/(e*x+d)*A*c^2*d-2/e^4/(e*x+d)*B*a*c-10/e^6/(e*x+d)*B*c^
2*d^2-1/e^3/(e*x+d)^2*A*a*c-1/e^4/(e*x+d)^3*B*b^2*d^2+B*c^2/e^5*x
```

maxima [A] time = 0.78, size = 417, normalized size = 1.44

$$-\frac{77\,Bc^2d^5+3\,Aa^2e^5-25\left(2\,Bbc+Ac^2\right)d^4e+3\left(Bb^2+2\,(Ba+Ab)c\right)d^3e^2+\left(2\,Bab+Ab^2+2\,Aac\right)d^2e^3+\left(Ba^2+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(77*B*c^2*d^5 + 3*A*a^2*e^5 - 25*(2*B*b*c + A*c^2)*d^4*e + 3*(B*b^2 +
 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 + (B*a^2 +
2*A*a*b)*d*e^4 + 12*(10*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2
+ 2*(B*a + A*b)*c)*e^5)*x^3 + 6*(50*B*c^2*d^3*e^2 - 18*(2*B*b*c + A*c^2)*d^
2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5
)*x^2 + 4*(65*B*c^2*d^4*e - 22*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(B*
a + A*b)*c)*d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + (B*a^2 + 2*A*a*b)
*e^5)*x)/(e^10*x^4 + 4*d*e^9*x^3 + 6*d^2*e^8*x^2 + 4*d^3*e^7*x + d^4*e^6) +
 B*c^2*x/e^5 - (5*B*c^2*d - (2*B*b*c + A*c^2)*e)*log(e*x + d)/e^6
```

mupad [B] time = 2.42, size = 475, normalized size = 1.64

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,c^2\,e-5\,B\,c^2\,d+2\,B\,b\,c\,e\right)}{e^6}-\frac{x^3\,\left(B\,b^2\,e^4-8\,B\,b\,c\,d\,e^3+2\,A\,b\,c\,e^4+10\,B\,c^2\,d^2\,e^2-4\,A\,c^2\,d\,e^3+2\,B\,a\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^5,x)
```

```
[Out] (log(d + e*x)*(A*c^2*e - 5*B*c^2*d + 2*B*b*c*e))/e^6 - (x^3*(B*b^2*e^4 + 2*
A*b*c*e^4 + 2*B*a*c*e^4 - 4*A*c^2*d*e^3 + 10*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3)
 + x^2*((A*b^2*e^4)/2 + A*a*c*e^4 + B*a*b*e^4 + (3*B*b^2*d*e^3)/2 + 25*B*c^
2*d^3*e - 9*A*c^2*d^2*e^2 + 3*A*b*c*d*e^3 + 3*B*a*c*d*e^3 - 18*B*b*c*d^2*e^
2) + x*((B*a^2*e^4)/3 + (65*B*c^2*d^4)/3 + (2*A*a*b*e^4)/3 + (A*b^2*d*e^3)/
3 - (22*A*c^2*d^3*e)/3 + B*b^2*d^2*e^2 + (2*A*a*c*d*e^3)/3 + (2*B*a*b*d*e^3
)/3 - (44*B*b*c*d^3*e)/3 + 2*A*b*c*d^2*e^2 + 2*B*a*c*d^2*e^2) + (3*A*a^2*e^
5 + 77*B*c^2*d^5 + B*a^2*d*e^4 - 25*A*c^2*d^4*e + A*b^2*d^2*e^3 + 3*B*b^2*d
^3*e^2 + 2*A*a*b*d*e^4 - 50*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B*a*b*d^2*e^3
 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(12*e))/(d^4*e^5 + e^9*x^4 + 4*d^3*e^
6*x + 4*d*e^8*x^3 + 6*d^2*e^7*x^2) + (B*c^2*x)/e^5
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.2329 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^6} \, dx$

Optimal. Leaf size=297

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c}{3e^6(d+ex)^3}$$

```
[Out] 1/5*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^5+1/4*(a*e^2-b*d*e+c*d^2)*
(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^4+1/3*(B*(10*c^
2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c
*e*(-a*e+3*b*d)))/e^6/(e*x+d)^3+1/2*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^2
*e^2-2*c*e*(-a*e+4*b*d)))/e^6/(e*x+d)^2+c*(-A*c*e-2*B*b*e+5*B*c*d)/e^6/(e*x
+d)+B*c^2*ln(e*x+d)/e^6
```

Rubi [A] time = 0.34, antiderivative size = 295, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{2e^6(d+ex)^2}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c}{3e^6(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(5*e^6*(d + e*x)^5) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(4*e^6*(
d + e*x)^4) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(3*e^6*(d + e*x)^3) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
2*e^6*(d + e*x)^2) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(e^6*(d + e*x)) + (B*c
^2*Log[d + e*x])/e^6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^6} \, dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^6}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)\right.}{e^5(d+ex)^5}\right.\\ &= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{5e^6(d+ex)^5}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2Ae\right.}{4e^6(d+ex)^4}\end{aligned}$$

Mathematica [A] time = 0.21, size = 386, normalized size = 1.30

$$\frac{-2Ae\left(e^2\left(6a^2e^2+3abe(d+5ex)+b^2\left(d^2+5dex+10e^2x^2\right)\right)+ce\left(2ae\left(d^2+5dex+10e^2x^2\right)+3b\left(d^3+5d^2ex+1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x]
```

```
[Out] (-2*A*e*(6*c^2*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4
) + e^2*(6*a^2*e^2 + 3*a*b*e*(d + 5*e*x) + b^2*(d^2 + 5*d*e*x + 10*e^2*x^2)
) + c*e*(2*a*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*b*(d^3 + 5*d^2*e*x + 10*d*e
^2*x^2 + 10*e^3*x^3))) + B*(c^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2
 + 900*d*e^3*x^3 + 300*e^4*x^4) - e^2*(3*a^2*e^2*(d + 5*e*x) + 4*a*b*e*(d^2
 + 5*d*e*x + 10*e^2*x^2) + 3*b^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x
^3)) - 6*c*e*(a*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 4*b*(d^4
+ 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4))) + 60*B*c^2*(d +
e*x)^5*Log[d + e*x])/(60*e^6*(d + e*x)^5)
```

fricas [**A**] time = 1.05, size = 505, normalized size = 1.70

$$\frac{137\,Bc^2d^5 - 12\,Aa^2e^5 - 12\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - 3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2
+ 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - 3*(B*a
^2 + 2*A*a*b)*d*e^4 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30*(
30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*(B*a + A*b)*c)*e^
5)*x^3 + 10*(110*B*c^2*d^3*e^2 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 5*(125*B*
c^2*d^4*e - 12*(2*B*b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*
e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - 3*(B*a^2 + 2*A*a*b)*e^5)*x + 60
*(B*c^2*e^5*x^5 + 5*B*c^2*d*e^4*x^4 + 10*B*c^2*d^2*e^3*x^3 + 10*B*c^2*d^3*e
^2*x^2 + 5*B*c^2*d^4*e*x + B*c^2*d^5)*log(e*x + d))/(e^11*x^5 + 5*d*e^10*x^
4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5*e^6)
```

giac [**A**] time = 0.19, size = 426, normalized size = 1.43

$$Bc^2e^{(-6)}\log\left(|xe + d|\right) + \frac{\left(60\left(5\,Bc^2de^3 - 2\,Bbce^4 - Ac^2e^4\right)x^4 + 30\left(30\,Bc^2d^2e^2 - 8\,Bbcde^3 - 4\,Ac^2de^3 - Bb^2e^4 - 2\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] B*c^2*e^(-6)*log(abs(x*e + d)) + 1/60*(60*(5*B*c^2*d*e^3 - 2*B*b*c*e^4 - A*
c^2*e^4)*x^4 + 30*(30*B*c^2*d^2*e^2 - 8*B*b*c*d*e^3 - 4*A*c^2*d*e^3 - B*b^2
*e^4 - 2*B*a*c*e^4 - 2*A*b*c*e^4)*x^3 + 10*(110*B*c^2*d^3*e - 24*B*b*c*d^2*
e^2 - 12*A*c^2*d^2*e^2 - 3*B*b^2*d*e^3 - 6*B*a*c*d*e^3 - 6*A*b*c*d*e^3 - 4*
B*a*b*e^4 - 2*A*b^2*e^4 - 4*A*a*c*e^4)*x^2 + 5*(125*B*c^2*d^4 - 24*B*b*c*d^
3*e - 12*A*c^2*d^3*e - 3*B*b^2*d^2*e^2 - 6*B*a*c*d^2*e^2 - 6*A*b*c*d^2*e^2
- 4*B*a*b*d*e^3 - 2*A*b^2*d*e^3 - 4*A*a*c*d*e^3 - 3*B*a^2*e^4 - 6*A*a*b*e^4
)*x + (137*B*c^2*d^5 - 24*B*b*c*d^4*e - 12*A*c^2*d^4*e - 3*B*b^2*d^3*e^2 -
6*B*a*c*d^3*e^2 - 6*A*b*c*d^3*e^2 - 4*B*a*b*d^2*e^3 - 2*A*b^2*d^2*e^3 - 4*A
*a*c*d^2*e^3 - 3*B*a^2*d*e^4 - 6*A*a*b*d*e^4 - 12*A*a^2*e^5)*e^(-1))*e^(-5)
/(x*e + d)^5
```

maple [**B**] time = 0.06, size = 715, normalized size = 2.41

$$-\frac{A\,a^2}{5\,(ex+d)^5\,e} + \frac{2Aabd}{5\,(ex+d)^5\,e^2} - \frac{2Aac\,d^2}{5\,(ex+d)^5\,e^3} - \frac{A\,b^2d^2}{5\,(ex+d)^5\,e^3} + \frac{2Abc\,d^3}{5\,(ex+d)^5\,e^4} - \frac{A\,c^2d^4}{5\,(ex+d)^5\,e^5} + \frac{B\,a^2d}{5\,(ex+d)^5\,e^2} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x)
```

```
[Out] -1/3/e^3/(e*x+d)^3*A*b^2-1/5/e/(e*x+d)^5*A*a^2-1/4/e^2/(e*x+d)^4*B*a^2-c^2/
e^5/(e*x+d)*A+1/e^3/(e*x+d)^4*A*a*c*d+1/e^3/(e*x+d)^4*B*d*a*b+4/e^5/(e*x+d)
^2*B*b*c*d-3/2/e^4/(e*x+d)^4*A*b*c*d^2-2/5/e^3/(e*x+d)^5*B*d^2*a*b+2/5/e^2/
(e*x+d)^5*A*a*b*d-3/2/e^4/(e*x+d)^4*B*a*c*d^2+2/e^5/(e*x+d)^4*B*d^3*b*c-2/5
/e^3/(e*x+d)^5*A*d^2*a*c+2/5/e^4/(e*x+d)^5*A*b*c*d^3+2/e^4/(e*x+d)^3*B*a*c*
d-4/e^5/(e*x+d)^3*B*b*c*d^2+2/5/e^4/(e*x+d)^5*B*d^3*a*c-2/5/e^5/(e*x+d)^5*B
*d^4*b*c+2/e^4/(e*x+d)^3*A*b*c*d+5*c^2/e^6/(e*x+d)*B*d-1/e^4/(e*x+d)^2*A*b*
c+2/e^5/(e*x+d)^2*A*c^2*d-1/e^4/(e*x+d)^2*a*B*c-2*c/e^5/(e*x+d)*B*b+10/3/e^
6/(e*x+d)^3*B*c^2*d^3+1/e^4/(e*x+d)^3*B*b^2*d+1/5/e^2/(e*x+d)^5*B*a^2*d+1/e
^5/(e*x+d)^4*A*c^2*d^3-5/e^6/(e*x+d)^2*B*d^2*c^2+1/5/e^6/(e*x+d)^5*B*c^2*d^
5-2/3/e^3/(e*x+d)^3*A*a*c+1/2/e^3/(e*x+d)^4*A*d*b^2+1/5/e^4/(e*x+d)^5*B*d^3
*b^2-2/e^5/(e*x+d)^3*A*c^2*d^2-1/5/e^3/(e*x+d)^5*A*d^2*b^2-1/5/e^5/(e*x+d)^
5*A*c^2*d^4-1/2/e^2/(e*x+d)^4*A*a*b-3/4/e^4/(e*x+d)^4*B*b^2*d^2-5/4/e^6/(e*
x+d)^4*B*d^4*c^2-2/3/e^3/(e*x+d)^3*B*a*b+B*c^2/e^6*ln(e*x+d)-1/2/(e*x+d)^2*
B*b^2/e^4
```

maxima [A] time = 0.69, size = 438, normalized size = 1.47

$$\frac{137\,Bc^2d^5 - 12\,Aa^2e^5 - 12\left(2\,Bbc + Ac^2\right)d^4e - 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 - 2\left(2\,Bab + Ab^2 + 2\,Aac\right)d^2e^3 - 3\,\bigl(Ba}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/60*(137*B*c^2*d^5 - 12*A*a^2*e^5 - 12*(2*B*b*c + A*c^2)*d^4*e - 3*(B*b^2
+ 2*(B*a + A*b)*c)*d^3*e^2 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^3 - 3*(B*a
^2 + 2*A*a*b)*d*e^4 + 60*(5*B*c^2*d*e^4 - (2*B*b*c + A*c^2)*e^5)*x^4 + 30*(
30*B*c^2*d^2*e^3 - 4*(2*B*b*c + A*c^2)*d*e^4 - (B*b^2 + 2*(B*a + A*b)*c)*e^
5)*x^3 + 10*(110*B*c^2*d^3*e^2 - 12*(2*B*b*c + A*c^2)*d^2*e^3 - 3*(B*b^2 +
2*(B*a + A*b)*c)*d*e^4 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 5*(125*B*
c^2*d^4*e - 12*(2*B*b*c + A*c^2)*d^3*e^2 - 3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*
e^3 - 2*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 - 3*(B*a^2 + 2*A*a*b)*e^5)*x)/(e^
11*x^5 + 5*d*e^10*x^4 + 10*d^2*e^9*x^3 + 10*d^3*e^8*x^2 + 5*d^4*e^7*x + d^5
*e^6) + B*c^2*log(e*x + d)/e^6
```

mupad [B] time = 2.50, size = 483, normalized size = 1.63

$$\frac{B\,c^2\,\ln(d+e\,x)}{e^6} - \frac{\frac{3\,B\,a^2\,d\,e^4+12\,A\,a^2\,e^5+4\,B\,a\,b\,d^2\,e^3+6\,A\,a\,b\,d\,e^4+6\,B\,a\,c\,d^3\,e^2+4\,A\,a\,c\,d^2\,e^3+3\,B\,b^2\,d^3\,e^2+2\,A\,b^2\,d^2\,e^3+24\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2-1}{60\,e^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^6,x)
```

```
[Out] (B*c^2*log(d + e*x))/e^6 - ((12*A*a^2*e^5 - 137*B*c^2*d^5 + 3*B*a^2*d*e^4 +
 12*A*c^2*d^4*e + 2*A*b^2*d^2*e^3 + 3*B*b^2*d^3*e^2 + 6*A*a*b*d*e^4 + 24*B*
b*c*d^4*e + 4*A*a*c*d^2*e^3 + 4*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d
^3*e^2)/(60*e^6) + (x^3*(B*b^2*e^2 - 30*B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e
^2 + 4*A*c^2*d*e + 8*B*b*c*d*e))/(2*e^3) + (x^2*(2*A*b^2*e^3 - 110*B*c^2*d^
3 + 4*A*a*c*e^3 + 4*B*a*b*e^3 + 12*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*
e^2 + 6*B*a*c*d*e^2 + 24*B*b*c*d^2*e))/(6*e^4) + (x*(3*B*a^2*e^4 - 125*B*c^
2*d^4 + 6*A*a*b*e^4 + 2*A*b^2*d*e^3 + 12*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 4*
A*a*c*d*e^3 + 4*B*a*b*d*e^3 + 24*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^
2*e^2))/(12*e^5) + (c*x^4*(A*c*e + 2*B*b*e - 5*B*c*d))/e^2)/(d^5 + e^5*x^5
+ 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.2330 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^7}\,dx$

Optimal. Leaf size=302

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c\right.}{4e^6(d+ex)^4}$$

```
[Out] 1/6*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^6+1/5*(a*e^2-b*d*e+c*d^2)*
(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^5+1/4*(B*(10*c^
2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c
*e*(-a*e+3*b*d)))/e^6/(e*x+d)^4+1/3*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^2
*e^2-2*c*e*(-a*e+4*b*d)))/e^6/(e*x+d)^3+1/2*c*(-A*c*e-2*B*b*e+5*B*c*d)/e^6/
(e*x+d)^2-B*c^2/e^6/(e*x+d)
```

Rubi [A] time = 0.32, antiderivative size = 300, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{3e^6(d+ex)^3}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2c\right.}{4e^6(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(6*e^6*(d + e*x)^6) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(5*e^6*(
d + e*x)^5) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(4*e^6*(d + e*x)^4) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
3*e^6*(d + e*x)^3) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(2*e^6*(d + e*x)^2) -
(B*c^2)/(e^6*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^7}\,dx &= \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^7}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)\right.}{e^5(d+ex)^6}\right.\\ &= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{6e^6(d+ex)^6}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2Ae\right.}{5e^6(d+ex)^5}\end{aligned}$$

Mathematica [A] time = 0.18, size = 372, normalized size = 1.23

$$-\frac{Ae\left(e^2\left(10a^2e^2+4abe(d+6ex)+b^2\left(d^2+6dex+15e^2x^2\right)\right)+2ce\left(ae\left(d^2+6dex+15e^2x^2\right)+b\left(d^3+6d^2ex+15\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(2*c^2*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4
*x^4) + e^2*(10*a^2*e^2 + 4*a*b*e*(d + 6*e*x) + b^2*(d^2 + 6*d*e*x + 15*e^2
*x^2)) + 2*c*e*(a*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b*(d^3 + 6*d^2*e*x + 15*
d*e^2*x^2 + 20*e^3*x^3))) + B*(10*c^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 2
0*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) + e^2*(2*a^2*e^2*(d + 6*e*x) + 2*
a*b*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b^2*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 +
20*e^3*x^3)) + 2*c*e*(a*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2
*b*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)))))/(e^6*(
d + e*x)^6)
```

fricas [**A**] time = 0.84, size = 438, normalized size = 1.45

$$-\frac{60\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 10\,Aa^2e^5 + 2\,(2\,Bbc + Ac^2)d^4e + (Bb^2 + 2\,(Ba + Ab)c)d^3e^2 + (2\,Bab + Ab^2 + 2\,Aac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 10*A*a^2*e^5 + 2*(2*B*b*c + A*c^2)
*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^
2*e^3 + 2*(B*a^2 + 2*A*a*b)*d*e^4 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e
^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*
a + A*b)*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + 2*(2*B*b*c + A*c^2)*d^2*e^3 +
 (B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 6
*(10*B*c^2*d^4*e + 2*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*
d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 2*(B*a^2 + 2*A*a*b)*e^5)*x)/(
e^12*x^6 + 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2
 + 6*d^5*e^7*x + d^6*e^6)
```

giac [**A**] time = 0.22, size = 460, normalized size = 1.52

$$-\frac{(60\,Bc^2x^5e^5 + 150\,Bc^2dx^4e^4 + 200\,Bc^2d^2x^3e^3 + 150\,Bc^2d^3x^2e^2 + 60\,Bc^2d^4xe + 10\,Bc^2d^5 + 60\,Bbcx^4e^5 + 30\,Ac}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(60*B*c^2*x^5*e^5 + 150*B*c^2*d*x^4*e^4 + 200*B*c^2*d^2*x^3*e^3 + 150
*B*c^2*d^3*x^2*e^2 + 60*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 60*B*b*c*x^4*e^5 + 3
0*A*c^2*x^4*e^5 + 80*B*b*c*d*x^3*e^4 + 40*A*c^2*d*x^3*e^4 + 60*B*b*c*d^2*x^
2*e^3 + 30*A*c^2*d^2*x^2*e^3 + 24*B*b*c*d^3*x*e^2 + 12*A*c^2*d^3*x*e^2 + 4*
B*b*c*d^4*e + 2*A*c^2*d^4*e + 20*B*b^2*x^3*e^5 + 40*B*a*c*x^3*e^5 + 40*A*b*
c*x^3*e^5 + 15*B*b^2*d*x^2*e^4 + 30*B*a*c*d*x^2*e^4 + 30*A*b*c*d*x^2*e^4 +
6*B*b^2*d^2*x*e^3 + 12*B*a*c*d^2*x*e^3 + 12*A*b*c*d^2*x*e^3 + B*b^2*d^3*e^2
 + 2*B*a*c*d^3*e^2 + 2*A*b*c*d^3*e^2 + 30*B*a*b*x^2*e^5 + 15*A*b^2*x^2*e^5
+ 30*A*a*c*x^2*e^5 + 12*B*a*b*d*x*e^4 + 6*A*b^2*d*x*e^4 + 12*A*a*c*d*x*e^4
+ 2*B*a*b*d^2*e^3 + A*b^2*d^2*e^3 + 2*A*a*c*d^2*e^3 + 12*B*a^2*x*e^5 + 24*A
*a*b*x*e^5 + 2*B*a^2*d*e^4 + 4*A*a*b*d*e^4 + 10*A*a^2*e^5)*e^(-6)/(x*e + d)
^6
```

maple [**A**] time = 0.05, size = 453, normalized size = 1.50

$$-\frac{B\,c^2}{(ex+d)\,e^6}-\frac{(Ace+2Bbe-5Bcd)\,c}{2\,(ex+d)^2\,e^6}-\frac{A\,a^2e^5-2Aabd\,e^4+2A\,d^2ac\,e^3+A\,d^2b^2e^3-2Abc\,d^3e^2+A\,c^2d^4e-B\,a}{6\,(ex+d)^6\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x)
```

```
[Out] -1/(e*x+d)*B*c^2/e^6-1/2*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^2-1/6*(A*a^2
*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*e^3-2*A*b*c*d^3*e^2+A*c^2*d^4*
e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2-B*b^2*d^3*e^2+2*B*b*c*d^4*e-B
*c^2*d^5)/e^6/(e*x+d)^6-1/4*(2*A*a*c*e^3+A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^
2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^2*d*e^2+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^
6/(e*x+d)^4-1/5*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^3+6*A*b*c*d^2*e^2-4*
A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B*b^2*d^2*e^2-8*B*b*c
*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^5-1/3*(2*A*b*c*e^2-4*A*c^2*d*e+2*B*a*c*e^2+
B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^3
```

maxima [A] time = 0.63, size = 438, normalized size = 1.45

$$-\frac{60\,Bc^2e^5x^5+10\,Bc^2d^5+10\,Aa^2e^5+2\left(2\,Bbc+Ac^2\right)d^4e+\left(Bb^2+2\,(Ba+Ab)c\right)d^3e^2+\left(2\,Bab+Ab^2+2\,Aac\right)d}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(60*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 10*A*a^2*e^5 + 2*(2*B*b*c + A*c^2)
*d^4*e + (B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + (2*B*a*b + A*b^2 + 2*A*a*c)*d^
2*e^3 + 2*(B*a^2 + 2*A*a*b)*d*e^4 + 30*(5*B*c^2*d*e^4 + (2*B*b*c + A*c^2)*e
^5)*x^4 + 20*(10*B*c^2*d^2*e^3 + 2*(2*B*b*c + A*c^2)*d*e^4 + (B*b^2 + 2*(B*
a + A*b)*c)*e^5)*x^3 + 15*(10*B*c^2*d^3*e^2 + 2*(2*B*b*c + A*c^2)*d^2*e^3 +
 (B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + (2*B*a*b + A*b^2 + 2*A*a*c)*e^5)*x^2 + 6
*(10*B*c^2*d^4*e + 2*(2*B*b*c + A*c^2)*d^3*e^2 + (B*b^2 + 2*(B*a + A*b)*c)*
d^2*e^3 + (2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 2*(B*a^2 + 2*A*a*b)*e^5)*x)/(
e^12*x^6 + 6*d*e^11*x^5 + 15*d^2*e^10*x^4 + 20*d^3*e^9*x^3 + 15*d^4*e^8*x^2
 + 6*d^5*e^7*x + d^6*e^6)
```

mupad [B] time = 0.16, size = 485, normalized size = 1.61

$$-\frac{\frac{2\,B\,a^2\,d\,e^4+10\,A\,a^2\,e^5+2\,B\,a\,b\,d^2\,e^3+4\,A\,a\,b\,d\,e^4+2\,B\,a\,c\,d^3\,e^2+2\,A\,a\,c\,d^2\,e^3+B\,b^2\,d^3\,e^2+A\,b^2\,d^2\,e^3+4\,B\,b\,c\,d^4\,e+2\,A\,b\,c\,d^3\,e^2+10\,B\,c^2\,d^5+2\,A\,c^2\,d^4\,e}{60\,e^6}+\frac{x}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^7,x)
```

```
[Out] -((10*A*a^2*e^5 + 10*B*c^2*d^5 + 2*B*a^2*d*e^4 + 2*A*c^2*d^4*e + A*b^2*d^2*
e^3 + B*b^2*d^3*e^2 + 4*A*a*b*d*e^4 + 4*B*b*c*d^4*e + 2*A*a*c*d^2*e^3 + 2*B
*a*b*d^2*e^3 + 2*A*b*c*d^3*e^2 + 2*B*a*c*d^3*e^2)/(60*e^6) + (x^3*(B*b^2*e^
2 + 10*B*c^2*d^2 + 2*A*b*c*e^2 + 2*B*a*c*e^2 + 2*A*c^2*d*e + 4*B*b*c*d*e))/
(3*e^3) + (x^2*(A*b^2*e^3 + 10*B*c^2*d^3 + 2*A*a*c*e^3 + 2*B*a*b*e^3 + 2*A*
c^2*d^2*e + B*b^2*d*e^2 + 2*A*b*c*d*e^2 + 2*B*a*c*d*e^2 + 4*B*b*c*d^2*e))/(
4*e^4) + (x*(2*B*a^2*e^4 + 10*B*c^2*d^4 + 4*A*a*b*e^4 + A*b^2*d*e^3 + 2*A*c
^2*d^3*e + B*b^2*d^2*e^2 + 2*A*a*c*d*e^3 + 2*B*a*b*d*e^3 + 4*B*b*c*d^3*e +
2*A*b*c*d^2*e^2 + 2*B*a*c*d^2*e^2))/(10*e^5) + (c*x^4*(A*c*e + 2*B*b*e + 5*
B*c*d))/(2*e^2) + (B*c^2*x^5)/e)/(d^6 + e^6*x^6 + 6*d*e^5*x^5 + 15*d^4*e^2*
x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2331 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^8}\,dx$

Optimal. Leaf size=304

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-}{5e^6(d+ex)^5}$$

```
[Out] 1/7*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^7+1/6*(a*e^2-b*d*e+c*d^2)*
(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^6+1/5*(B*(10*c^
2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c
*e*(-a*e+3*b*d)))/e^6/(e*x+d)^5+1/4*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^2
*e^2-2*c*e*(-a*e+4*b*d)))/e^6/(e*x+d)^4+1/3*c*(-A*c*e-2*B*b*e+5*B*c*d)/e^6/
(e*x+d)^3-1/2*B*c^2/e^6/(e*x+d)^2
```

Rubi [A] time = 0.32, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{4e^6(d+ex)^4}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-}{5e^6(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(7*e^6*(d + e*x)^7) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(6*e^6*(
d + e*x)^6) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(5*e^6*(d + e*x)^5) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
4*e^6*(d + e*x)^4) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(3*e^6*(d + e*x)^3) -
(B*c^2)/(2*e^6*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^8}\,dx=\int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^8}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-a\right.}{e^5(d+ex)^7}$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{7e^6(d+ex)^7}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2\right.}{6e^6(d+ex)^6}$$

Mathematica [A] time = 0.20, size = 377, normalized size = 1.24

$$-\frac{2Ae\left(2e^2\left(15a^2e^2+5abe(d+7ex)+b^2\left(d^2+7dex+21e^2x^2\right)\right)+ce\left(4ae\left(d^2+7dex+21e^2x^2\right)+3b\left(d^3+7d^2e\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x]
```

```
[Out] -1/420*(2*A*e*(2*c^2*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*
e^4*x^4) + 2*e^2*(15*a^2*e^2 + 5*a*b*e*(d + 7*e*x) + b^2*(d^2 + 7*d*e*x + 2
1*e^2*x^2)) + c*e*(4*a*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b*(d^3 + 7*d^2*e*
x + 21*d*e^2*x^2 + 35*e^3*x^3))) + B*(10*c^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*
x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + e^2*(10*a^2*e^2*(d + 7*
e*x) + 8*a*b*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + 3*b^2*(d^3 + 7*d^2*e*x + 21*d
*e^2*x^2 + 35*e^3*x^3)) + 2*c*e*(3*a*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35
*e^3*x^3) + 4*b*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x
^4))))/(e^6*(d + e*x)^7)
```

fricas [**A**] time = 0.87, size = 457, normalized size = 1.50

$$-\frac{210\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 60\,Aa^2e^5 + 4\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 + 4\left(2\,Bab + Ab^2 + 2\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 60*A*a^2*e^5 + 4*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 10*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*
b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 4*(2*B*a*b + A*b^2 + 2*A*a*
c)*e^5)*x^2 + 7*(10*B*c^2*d^4*e + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d^2*e^3 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 10*(B*a^2
+ 2*A*a*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10
*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

giac [**A**] time = 0.17, size = 462, normalized size = 1.52

$$-\frac{\left(210\,Bc^2x^5e^5 + 350\,Bc^2dx^4e^4 + 350\,Bc^2d^2x^3e^3 + 210\,Bc^2d^3x^2e^2 + 70\,Bc^2d^4xe + 10\,Bc^2d^5 + 280\,Bbcx^4e^5 + 140\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] -1/420*(210*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 350*B*c^2*d^2*x^3*e^3 + 2
10*B*c^2*d^3*x^2*e^2 + 70*B*c^2*d^4*x*e + 10*B*c^2*d^5 + 280*B*b*c*x^4*e^5
+ 140*A*c^2*x^4*e^5 + 280*B*b*c*d*x^3*e^4 + 140*A*c^2*d*x^3*e^4 + 168*B*b*c
*d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 56*B*b*c*d^3*x*e^2 + 28*A*c^2*d^3*x*e
^2 + 8*B*b*c*d^4*e + 4*A*c^2*d^4*e + 105*B*b^2*x^3*e^5 + 210*B*a*c*x^3*e^5
+ 210*A*b*c*x^3*e^5 + 63*B*b^2*d*x^2*e^4 + 126*B*a*c*d*x^2*e^4 + 126*A*b*c*
d*x^2*e^4 + 21*B*b^2*d^2*x*e^3 + 42*B*a*c*d^2*x*e^3 + 42*A*b*c*d^2*x*e^3 +
3*B*b^2*d^3*e^2 + 6*B*a*c*d^3*e^2 + 6*A*b*c*d^3*e^2 + 168*B*a*b*x^2*e^5 + 8
4*A*b^2*x^2*e^5 + 168*A*a*c*x^2*e^5 + 56*B*a*b*d*x*e^4 + 28*A*b^2*d*x*e^4 +
 56*A*a*c*d*x*e^4 + 8*B*a*b*d^2*e^3 + 4*A*b^2*d^2*e^3 + 8*A*a*c*d^2*e^3 + 7
0*B*a^2*x*e^5 + 140*A*a*b*x*e^5 + 10*B*a^2*d*e^4 + 20*A*a*b*d*e^4 + 60*A*a^
2*e^5)*e^(-6)/(x*e + d)^7
```

maple [**A**] time = 0.05, size = 453, normalized size = 1.49

$$-\frac{B\,c^2}{2\,(ex+d)^2\,e^6}-\frac{(Ace+2Bbe-5Bcd)\,c}{3\,(ex+d)^3\,e^6}-\frac{2Aab\,e^4-4Aacd\,e^3-2Ad\,b^2e^3+6Abc\,d^2e^2-4A\,c^2d^3e+B\,a^2e^4-4Bda}{6\,(ex+d)^6\,e^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x)
```

```
[Out] -1/2/(e*x+d)^2*B*c^2/e^6-1/6*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^3+6*A*b
*c*d^2*e^2-4*A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B*b^2*d^
2*e^2-8*B*b*c*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^6-1/4*(2*A*b*c*e^2-4*A*c^2*d*e
+2*B*a*c*e^2+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e*x+d)^4-1/5*(2*A*a*c
*e^3+A*b^2*e^3-6*A*b*c*d*e^2+6*A*c^2*d^2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^
2*d*e^2+12*B*b*c*d^2*e-10*B*c^2*d^3)/e^6/(e*x+d)^5-1/3*c*(A*c*e+2*B*b*e-5*B
*c*d)/e^6/(e*x+d)^3-1/7*(A*a^2*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*
e^3-2*A*b*c*d^3*e^2+A*c^2*d^4*e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2
-B*b^2*d^3*e^2+2*B*b*c*d^4*e-B*c^2*d^5)/e^6/(e*x+d)^7
```

maxima [A] time = 0.68, size = 457, normalized size = 1.50

$$-\frac{210\,Bc^2e^5x^5 + 10\,Bc^2d^5 + 60\,Aa^2e^5 + 4\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 + 4\,(2\,Bab + Ab^2 + 2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] -1/420*(210*B*c^2*e^5*x^5 + 10*B*c^2*d^5 + 60*A*a^2*e^5 + 4*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 4*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 10*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 2*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 35*(10*B*c^2*d^2*e^3 + 4*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*
b^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 21*(10*B*c^2*d^3*e^2 + 4*(2*B*b*c + A*c^2
)*d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 4*(2*B*a*b + A*b^2 + 2*A*a*
c)*e^5)*x^2 + 7*(10*B*c^2*d^4*e + 4*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 +
2*(B*a + A*b)*c)*d^2*e^3 + 4*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 10*(B*a^2
+ 2*A*a*b)*e^5)*x)/(e^13*x^7 + 7*d*e^12*x^6 + 21*d^2*e^11*x^5 + 35*d^3*e^10
*x^4 + 35*d^4*e^9*x^3 + 21*d^5*e^8*x^2 + 7*d^6*e^7*x + d^7*e^6)
```

mupad [B] time = 0.17, size = 505, normalized size = 1.66

$$-\frac{\frac{10\,B\,a^2\,d\,e^4+60\,A\,a^2\,e^5+8\,B\,a\,b\,d^2\,e^3+20\,A\,a\,b\,d\,e^4+6\,B\,a\,c\,d^3\,e^2+8\,A\,a\,c\,d^2\,e^3+3\,B\,b^2\,d^3\,e^2+4\,A\,b^2\,d^2\,e^3+8\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2+10\,B\,c^2\,d^5+4\,A\,c^2}{420\,e^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^8,x)
```

```
[Out] -((60*A*a^2*e^5 + 10*B*c^2*d^5 + 10*B*a^2*d*e^4 + 4*A*c^2*d^4*e + 4*A*b^2*d
^2*e^3 + 3*B*b^2*d^3*e^2 + 20*A*a*b*d*e^4 + 8*B*b*c*d^4*e + 8*A*a*c*d^2*e^3
 + 8*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(420*e^6) + (x^3*(3
*B*b^2*e^2 + 10*B*c^2*d^2 + 6*A*b*c*e^2 + 6*B*a*c*e^2 + 4*A*c^2*d*e + 8*B*b
*c*d*e))/(12*e^3) + (x^2*(4*A*b^2*e^3 + 10*B*c^2*d^3 + 8*A*a*c*e^3 + 8*B*a*
b*e^3 + 4*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 6*B*a*c*d*e^2 + 8*B
*b*c*d^2*e))/(20*e^4) + (x*(10*B*a^2*e^4 + 10*B*c^2*d^4 + 20*A*a*b*e^4 + 4*
A*b^2*d*e^3 + 4*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 8*A*a*c*d*e^3 + 8*B*a*b*d*e
^3 + 8*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^2*e^2))/(60*e^5) + (c*x^4*
(2*A*c*e + 4*B*b*e + 5*B*c*d))/(6*e^2) + (B*c^2*x^5)/(2*e))/(d^7 + e^7*x^7
+ 7*d*e^6*x^6 + 21*d^5*e^2*x^2 + 35*d^4*e^3*x^3 + 35*d^3*e^4*x^4 + 21*d^2*e
^5*x^5 + 7*d^6*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.2332 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^9}\,dx$

Optimal. Leaf size=304

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-2c}{6e^6(d+ex)^6}$$

```
[Out] 1/8*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2/e^6/(e*x+d)^8+1/7*(a*e^2-b*d*e+c*d^2)*
(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))/e^6/(e*x+d)^7+1/6*(B*(10*c^
2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^2*e^2-2*c
*e*(-a*e+3*b*d)))/e^6/(e*x+d)^6+1/5*(2*A*c*e*(-b*e+2*c*d)-B*(10*c^2*d^2+b^2
*e^2-2*c*e*(-a*e+4*b*d)))/e^6/(e*x+d)^5+1/4*c*(-A*c*e-2*B*b*e+5*B*c*d)/e^6/
(e*x+d)^4-1/3*B*c^2/e^6/(e*x+d)^3
```

Rubi [A] time = 0.32, antiderivative size = 302, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)}{5e^6(d+ex)^5}+\frac{B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\,(-2c}{6e^6(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2)/(8*e^6*(d + e*x)^8) - ((c*d^2 - b*d
*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d - b*e)))/(7*e^6*(
d + e*x)^7) + (B*(10*c^2*d^3 + b*e^2*(3*b*d - 2*a*e) - 6*c*d*e*(2*b*d - a*e
)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d - a*e)))/(6*e^6*(d + e*x)^6) +
 (2*A*c*e*(2*c*d - b*e) - B*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))/(
5*e^6*(d + e*x)^5) + (c*(5*B*c*d - 2*b*B*e - A*c*e))/(4*e^6*(d + e*x)^4) -
(B*c^2)/(3*e^6*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^2}{(d+ex)^9}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2}{e^5(d+ex)^9}+\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)\right.}{e^5(d+ex)^8}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2}{8e^6(d+ex)^8}-\frac{\left(cd^2-bde+ae^2\right)\left(5Bcd^2-Be(3bd-ae)-2Ae\right.}{7e^6(d+ex)^7}$$

Mathematica [A] time = 0.19, size = 375, normalized size = 1.23

$$-\frac{Ae\left(5e^2\left(21a^2e^2+6abe(d+8ex)+b^2\left(d^2+8dex+28e^2x^2\right)\right)+2ce\left(5ae\left(d^2+8dex+28e^2x^2\right)+3b\left(d^3+8d^2ex+\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x]
```

```
[Out] -1/840*(A*e*(3*c^2*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^
4*x^4) + 5*e^2*(21*a^2*e^2 + 6*a*b*e*(d + 8*e*x) + b^2*(d^2 + 8*d*e*x + 28*
e^2*x^2)) + 2*c*e*(5*a*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*b*(d^3 + 8*d^2*e*
x + 28*d*e^2*x^2 + 56*e^3*x^3))) + B*(5*c^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x
^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + e^2*(15*a^2*e^2*(d + 8*e
*x) + 10*a*b*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*b^2*(d^3 + 8*d^2*e*x + 28*d
*e^2*x^2 + 56*e^3*x^3)) + 6*c*e*(a*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e
^3*x^3) + b*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4))
))/(e^6*(d + e*x)^8)
```

fricas [**A**] time = 1.10, size = 468, normalized size = 1.54

$$-\frac{280\,Bc^2e^5x^5+5\,Bc^2d^5+105\,Aa^2e^5+3\left(2\,Bbc+Ac^2\right)d^4e+3\left(Bb^2+2\,(Ba+Ab)c\right)d^3e^2+5\left(2\,Bab+Ab^2+2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 105*A*a^2*e^5 + 3*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 5*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 15*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 3*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b
^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 28*(5*B*c^2*d^3*e^2 + 3*(2*B*b*c + A*c^2)*
d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)
*e^5)*x^2 + 8*(5*B*c^2*d^4*e + 3*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(
B*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 15*(B*a^2 + 2
*A*a*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^
5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e
^6)
```

giac [**A**] time = 0.16, size = 462, normalized size = 1.52

$$-\frac{\left(280\,Bc^2x^5e^5+350\,Bc^2dx^4e^4+280\,Bc^2d^2x^3e^3+140\,Bc^2d^3x^2e^2+40\,Bc^2d^4xe+5\,Bc^2d^5+420\,Bbcx^4e^5+210\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/840*(280*B*c^2*x^5*e^5 + 350*B*c^2*d*x^4*e^4 + 280*B*c^2*d^2*x^3*e^3 + 1
40*B*c^2*d^3*x^2*e^2 + 40*B*c^2*d^4*x*e + 5*B*c^2*d^5 + 420*B*b*c*x^4*e^5 +
 210*A*c^2*x^4*e^5 + 336*B*b*c*d*x^3*e^4 + 168*A*c^2*d*x^3*e^4 + 168*B*b*c*
d^2*x^2*e^3 + 84*A*c^2*d^2*x^2*e^3 + 48*B*b*c*d^3*x*e^2 + 24*A*c^2*d^3*x*e^
2 + 6*B*b*c*d^4*e + 3*A*c^2*d^4*e + 168*B*b^2*x^3*e^5 + 336*B*a*c*x^3*e^5 +
 336*A*b*c*x^3*e^5 + 84*B*b^2*d*x^2*e^4 + 168*B*a*c*d*x^2*e^4 + 168*A*b*c*d
*x^2*e^4 + 24*B*b^2*d^2*x*e^3 + 48*B*a*c*d^2*x*e^3 + 48*A*b*c*d^2*x*e^3 + 3
*B*b^2*d^3*e^2 + 6*B*a*c*d^3*e^2 + 6*A*b*c*d^3*e^2 + 280*B*a*b*x^2*e^5 + 14
0*A*b^2*x^2*e^5 + 280*A*a*c*x^2*e^5 + 80*B*a*b*d*x*e^4 + 40*A*b^2*d*x*e^4 +
 80*A*a*c*d*x*e^4 + 10*B*a*b*d^2*e^3 + 5*A*b^2*d^2*e^3 + 10*A*a*c*d^2*e^3 +
 120*B*a^2*x*e^5 + 240*A*a*b*x*e^5 + 15*B*a^2*d*e^4 + 30*A*a*b*d*e^4 + 105*
A*a^2*e^5)*e^(-6)/(x*e + d)^8
```

maple [**A**] time = 0.05, size = 453, normalized size = 1.49

$$-\frac{B\,c^2}{3\,(ex+d)^3\,e^6}-\frac{(Ace+2Bbe-5Bcd)\,c}{4\,(ex+d)^4\,e^6}-\frac{A\,a^2e^5-2Aabd\,e^4+2A\,d^2ac\,e^3+A\,d^2b^2e^3-2Abc\,d^3e^2+A\,c^2d^4e-}{8\,(ex+d}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x)
```

```
[Out] -1/8*(A*a^2*e^5-2*A*a*b*d*e^4+2*A*a*c*d^2*e^3+A*b^2*d^2*e^3-2*A*b*c*d^3*e^2
+A*c^2*d^4*e-B*a^2*d*e^4+2*B*a*b*d^2*e^3-2*B*a*c*d^3*e^2-B*b^2*d^3*e^2+2*B*
b*c*d^4*e-B*c^2*d^5)/e^6/(e*x+d)^8-1/6*(2*A*a*c*e^3+A*b^2*e^3-6*A*b*c*d*e^2
+6*A*c^2*d^2*e+2*B*a*b*e^3-6*B*a*c*d*e^2-3*B*b^2*d*e^2+12*B*b*c*d^2*e-10*B*
c^2*d^3)/e^6/(e*x+d)^6-1/4*c*(A*c*e+2*B*b*e-5*B*c*d)/e^6/(e*x+d)^4-1/5*(2*A
*b*c*e^2-4*A*c^2*d*e+2*B*a*c*e^2+B*b^2*e^2-8*B*b*c*d*e+10*B*c^2*d^2)/e^6/(e
*x+d)^5-1/3/(e*x+d)^3*B*c^2/e^6-1/7*(2*A*a*b*e^4-4*A*a*c*d*e^3-2*A*b^2*d*e^
3+6*A*b*c*d^2*e^2-4*A*c^2*d^3*e+B*a^2*e^4-4*B*a*b*d*e^3+6*B*a*c*d^2*e^2+3*B
*b^2*d^2*e^2-8*B*b*c*d^3*e+5*B*c^2*d^4)/e^6/(e*x+d)^7
```

maxima [**A**] time = 0.95, size = 468, normalized size = 1.54

$$-\frac{280\,Bc^2e^5x^5 + 5\,Bc^2d^5 + 105\,Aa^2e^5 + 3\left(2\,Bbc + Ac^2\right)d^4e + 3\left(Bb^2 + 2\,(Ba + Ab)c\right)d^3e^2 + 5\left(2\,Bab + Ab^2 + 2\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^2/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/840*(280*B*c^2*e^5*x^5 + 5*B*c^2*d^5 + 105*A*a^2*e^5 + 3*(2*B*b*c + A*c^
2)*d^4*e + 3*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^2 + 5*(2*B*a*b + A*b^2 + 2*A*a
*c)*d^2*e^3 + 15*(B*a^2 + 2*A*a*b)*d*e^4 + 70*(5*B*c^2*d*e^4 + 3*(2*B*b*c +
 A*c^2)*e^5)*x^4 + 56*(5*B*c^2*d^2*e^3 + 3*(2*B*b*c + A*c^2)*d*e^4 + 3*(B*b
^2 + 2*(B*a + A*b)*c)*e^5)*x^3 + 28*(5*B*c^2*d^3*e^2 + 3*(2*B*b*c + A*c^2)*
d^2*e^3 + 3*(B*b^2 + 2*(B*a + A*b)*c)*d*e^4 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)
*e^5)*x^2 + 8*(5*B*c^2*d^4*e + 3*(2*B*b*c + A*c^2)*d^3*e^2 + 3*(B*b^2 + 2*(
B*a + A*b)*c)*d^2*e^3 + 5*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^4 + 15*(B*a^2 + 2
*A*a*b)*e^5)*x)/(e^14*x^8 + 8*d*e^13*x^7 + 28*d^2*e^12*x^6 + 56*d^3*e^11*x^
5 + 70*d^4*e^10*x^4 + 56*d^5*e^9*x^3 + 28*d^6*e^8*x^2 + 8*d^7*e^7*x + d^8*e
^6)
```

mupad [**B**] time = 2.43, size = 516, normalized size = 1.70

$$-\frac{\frac{15\,B\,a^2\,d\,e^4+105\,A\,a^2\,e^5+10\,B\,a\,b\,d^2\,e^3+30\,A\,a\,b\,d\,e^4+6\,B\,a\,c\,d^3\,e^2+10\,A\,a\,c\,d^2\,e^3+3\,B\,b^2\,d^3\,e^2+5\,A\,b^2\,d^2\,e^3+6\,B\,b\,c\,d^4\,e+6\,A\,b\,c\,d^3\,e^2+5\,B\,c^2\,d^5+3\,A\,c^2\,d}{840\,e^6}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^2)/(d + e*x)^9,x)
```

```
[Out] -((105*A*a^2*e^5 + 5*B*c^2*d^5 + 15*B*a^2*d*e^4 + 3*A*c^2*d^4*e + 5*A*b^2*d
^2*e^3 + 3*B*b^2*d^3*e^2 + 30*A*a*b*d*e^4 + 6*B*b*c*d^4*e + 10*A*a*c*d^2*e^
3 + 10*B*a*b*d^2*e^3 + 6*A*b*c*d^3*e^2 + 6*B*a*c*d^3*e^2)/(840*e^6) + (x^3*
(3*B*b^2*e^2 + 5*B*c^2*d^2 + 6*A*b*c*e^2 + 6*B*a*c*e^2 + 3*A*c^2*d*e + 6*B*
b*c*d*e))/(15*e^3) + (x^2*(5*A*b^2*e^3 + 5*B*c^2*d^3 + 10*A*a*c*e^3 + 10*B*
a*b*e^3 + 3*A*c^2*d^2*e + 3*B*b^2*d*e^2 + 6*A*b*c*d*e^2 + 6*B*a*c*d*e^2 + 6
*B*b*c*d^2*e))/(30*e^4) + (x*(15*B*a^2*e^4 + 5*B*c^2*d^4 + 30*A*a*b*e^4 + 5
*A*b^2*d*e^3 + 3*A*c^2*d^3*e + 3*B*b^2*d^2*e^2 + 10*A*a*c*d*e^3 + 10*B*a*b*
d*e^3 + 6*B*b*c*d^3*e + 6*A*b*c*d^2*e^2 + 6*B*a*c*d^2*e^2))/(105*e^5) + (c*
x^4*(3*A*c*e + 6*B*b*e + 5*B*c*d))/(12*e^2) + (B*c^2*x^5)/(3*e))/(d^8 + e^8
*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3 + 70*d^4*e^4*x^4 + 56*
d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**2/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2333 $\int (A+Bx)(d+ex)^5 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^9 \Big(Ae(2cd-be)\Big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\Big)-B\Big(3ce^2\Big(a^2e^2-8abde+10b^2d^2\Big)-b^2e^3(4bd-3a}{9e^8}$$

```
[Out] -1/6*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^6/e^8-1/7*(a*e^2-b*d*e+c*d^2)
^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*(e*x+d)^7/e^8-3/8*(a*e^2
-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5
*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^8/e^8-1/9*(A*e*(-b*e+2*c*d)*(10
*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)
-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))*(e*x+d)
^9/e^8-1/10*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*
e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^10/e^8-3/11
*c*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))*(e*x+d)^11/e
^8-1/12*c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)^12/e^8+1/13*B*c^3*(e*x+d)^13/e
^8
```

Rubi [A] time = 1.75, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^9 \Big(Ae(2cd-be)\Big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\Big)-B\Big(3ce^2\Big(a^2e^2-8abde+10b^2d^2\Big)-b^2e^3(4bd-3a}{9e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^6)/(6*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^7)/(7*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^8)/(8*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^9)/
(9*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^10)/(10*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*
e*(6*b*d - a*e)))*(d + e*x)^11)/(11*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)
*(d + e*x)^12)/(12*e^8) + (B*c^3*(d + e*x)^13)/(13*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^5\left(a+bx+cx^2\right)^3\,dx &= \int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^5}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(}{} \\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^6}{6e^8}+\frac{\left(cd^2-bde+ae^2\right)^2(7Bc}{}\end{aligned}$$

Mathematica [B] time = 0.60, size = 1178, normalized size = 2.12

$$\frac{1}{13}Bc^3e^5x^{13}+\frac{1}{12}c^2e^4(5Bcd+3bBe+Ace)x^{12}+\frac{1}{11}ce^3\left(Ace(5cd+3be)+B\left(10c^2d^2+3b^2e^2+3ce(5bd+ae)\right)\right)x^{11}+\frac{1}{10}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^5*x + (a^2*d^4*(3*A*b*d + a*B*d + 5*a*A*e)*x^2)/2 + (a*d^3*(a*B*d*(
3*b*d + 5*a*e) + A*(3*b^2*d^2 + 15*a*b*d*e + a*(3*c*d^2 + 10*a*e^2)))*x^3)/
3 + (d^2*(A*(b^3*d^3 + 15*a*b^2*d^2*e + 5*a^2*e*(3*c*d^2 + 2*a*e^2) + 6*a*b
*d*(c*d^2 + 5*a*e^2)) + a*B*d*(3*b^2*d^2 + 15*a*b*d*e + a*(3*c*d^2 + 10*a*e
^2)))*x^4)/4 + (d*(b^3*d^3*(B*d + 5*A*e) + 3*b^2*d^2*(A*c*d^2 + 5*a*B*d*e +
 10*a*A*e^2) + 6*a*b*d*(B*c*d^3 + 5*A*c*d^2*e + 5*a*B*d*e^2 + 5*a*A*e^3) +
a*(5*a*B*d*e*(3*c*d^2 + 2*a*e^2) + A*(3*c^2*d^4 + 30*a*c*d^2*e^2 + 5*a^2*e^
4)))*x^5)/5 + ((5*b^3*d^3*e*(B*d + 2*A*e) + 3*b^2*d^2*(B*c*d^3 + 5*A*c*d^2*
e + 10*a*B*d*e^2 + 10*a*A*e^3) + 3*b*d*(10*a*B*d*e*(c*d^2 + a*e^2) + A*(c^2
*d^4 + 20*a*c*d^2*e^2 + 5*a^2*e^4)) + a*(A*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 +
 a^2*e^4) + B*(3*c^2*d^5 + 30*a*c*d^3*e^2 + 5*a^2*d*e^4)))*x^6)/6 + ((10*b^
3*d^2*e^2*(B*d + A*e) + 15*b^2*d*e*(B*c*d^3 + 2*A*c*d^2*e + 2*a*B*d*e^2 + a
*A*e^3) + a*B*e*(15*c^2*d^4 + 30*a*c*d^2*e^2 + a^2*e^4) + A*c*d*(c^2*d^4 +
30*a*c*d^2*e^2 + 15*a^2*e^4) + 3*b*(A*e*(5*c^2*d^4 + 20*a*c*d^2*e^2 + a^2*e
^4) + B*(c^2*d^5 + 20*a*c*d^3*e^2 + 5*a^2*d*e^4)))*x^7)/7 + ((A*e*(5*c^3*d^
4 + 30*c^2*d^2*e*(b*d + a*e) + b^2*e^3*(5*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^
2 + 10*a*b*d*e + a^2*e^2)) + B*(c^3*d^5 + 15*c^2*d^3*e*(b*d + 2*a*e) + 15*c
*d*e^2*(2*b^2*d^2 + 4*a*b*d*e + a^2*e^2) + b*e^3*(10*b^2*d^2 + 15*a*b*d*e +
 3*a^2*e^2)))*x^8)/8 + (e*(A*e*(10*c^3*d^3 + b^3*e^3 + 15*c^2*d*e*(2*b*d +
a*e) + 3*b*c*e^2*(5*b*d + 2*a*e)) + B*(5*c^3*d^4 + 30*c^2*d^2*e*(b*d + a*e)
 + b^2*e^3*(5*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^2 + 10*a*b*d*e + a^2*e^2)))*
x^9)/9 + (e^2*(A*c*e*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(5*b*d + a*e)) + B*(10
*c^3*d^3 + b^3*e^3 + 15*c^2*d*e*(2*b*d + a*e) + 3*b*c*e^2*(5*b*d + 2*a*e)))
*x^10)/10 + (c*e^3*(A*c*e*(5*c*d + 3*b*e) + B*(10*c^2*d^2 + 3*b^2*e^2 + 3*c
*e*(5*b*d + a*e)))*x^11)/11 + (c^2*e^4*(5*B*c*d + 3*b*B*e + A*c*e)*x^12)/12
 + (B*c^3*e^5*x^13)/13
```

fricas [B] time = 0.89, size = 1663, normalized size = 3.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/13*x^13*e^5*c^3*B + 5/12*x^12*e^4*d*c^3*B + 1/4*x^12*e^5*c^2*b*B + 1/12*x
^12*e^5*c^3*A + 10/11*x^11*e^3*d^2*c^3*B + 15/11*x^11*e^4*d*c^2*b*B + 3/11*
x^11*e^5*c*b^2*B + 3/11*x^11*e^5*c^2*a*B + 5/11*x^11*e^4*d*c^3*A + 3/11*x^1
1*e^5*c^2*b*A + x^10*e^2*d^3*c^3*B + 3*x^10*e^3*d^2*c^2*b*B + 3/2*x^10*e^4*
d*c*b^2*B + 1/10*x^10*e^5*b^3*B + 3/2*x^10*e^4*d*c^2*a*B + 3/5*x^10*e^5*c*b
*a*B + x^10*e^3*d^2*c^3*A + 3/2*x^10*e^4*d*c^2*b*A + 3/10*x^10*e^5*c*b^2*A
+ 3/10*x^10*e^5*c^2*a*A + 5/9*x^9*e*d^4*c^3*B + 10/3*x^9*e^2*d^3*c^2*b*B +
10/3*x^9*e^3*d^2*c*b^2*B + 5/9*x^9*e^4*d*b^3*B + 10/3*x^9*e^3*d^2*c^2*a*B +
 10/3*x^9*e^4*d*c*b*a*B + 1/3*x^9*e^5*b^2*a*B + 1/3*x^9*e^5*c*a^2*B + 10/9*
x^9*e^2*d^3*c^3*A + 10/3*x^9*e^3*d^2*c^2*b*A + 5/3*x^9*e^4*d*c*b^2*A + 1/9*
x^9*e^5*b^3*A + 5/3*x^9*e^4*d*c^2*a*A + 2/3*x^9*e^5*c*b*a*A + 1/8*x^8*d^5*c
^3*B + 15/8*x^8*e*d^4*c^2*b*B + 15/4*x^8*e^2*d^3*c*b^2*B + 5/4*x^8*e^3*d^2*
b^3*B + 15/4*x^8*e^2*d^3*c^2*a*B + 15/2*x^8*e^3*d^2*c*b*a*B + 15/8*x^8*e^4*
d*b^2*a*B + 15/8*x^8*e^4*d*c*a^2*B + 3/8*x^8*e^5*b*a^2*B + 5/8*x^8*e*d^4*c^
3*A + 15/4*x^8*e^2*d^3*c^2*b*A + 15/4*x^8*e^3*d^2*c*b^2*A + 5/8*x^8*e^4*d*b
^3*A + 15/4*x^8*e^3*d^2*c^2*a*A + 15/4*x^8*e^4*d*c*b*a*A + 3/8*x^8*e^5*b^2*
a*A + 3/8*x^8*e^5*c*a^2*A + 3/7*x^7*d^5*c^2*b*B + 15/7*x^7*e*d^4*c*b^2*B +
10/7*x^7*e^2*d^3*b^3*B + 15/7*x^7*e*d^4*c^2*a*B + 60/7*x^7*e^2*d^3*c*b*a*B
+ 30/7*x^7*e^3*d^2*b^2*a*B + 30/7*x^7*e^3*d^2*c*a^2*B + 15/7*x^7*e^4*d*b*a^
2*B + 1/7*x^7*e^5*a^3*B + 1/7*x^7*d^5*c^3*A + 15/7*x^7*e*d^4*c^2*b*A + 30/7
*x^7*e^2*d^3*c*b^2*A + 10/7*x^7*e^3*d^2*b^3*A + 30/7*x^7*e^2*d^3*c^2*a*A +
60/7*x^7*e^3*d^2*c*b*a*A + 15/7*x^7*e^4*d*b^2*a*A + 15/7*x^7*e^4*d*c*a^2*A
+ 3/7*x^7*e^5*b*a^2*A + 1/2*x^6*d^5*c*b^2*B + 5/6*x^6*e*d^4*b^3*B + 1/2*x^6
*d^5*c^2*a*B + 5*x^6*e*d^4*c*b*a*B + 5*x^6*e^2*d^3*b^2*a*B + 5*x^6*e^2*d^3*
c*a^2*B + 5*x^6*e^3*d^2*b*a^2*B + 5/6*x^6*e^4*d*a^3*B + 1/2*x^6*d^5*c^2*b*A
 + 5/2*x^6*e*d^4*c*b^2*A + 5/3*x^6*e^2*d^3*b^3*A + 5/2*x^6*e*d^4*c^2*a*A +
10*x^6*e^2*d^3*c*b*a*A + 5*x^6*e^3*d^2*b^2*a*A + 5*x^6*e^3*d^2*c*a^2*A + 5/
2*x^6*e^4*d*b*a^2*A + 1/6*x^6*e^5*a^3*A + 1/5*x^5*d^5*b^3*B + 6/5*x^5*d^5*c
*b*a*B + 3*x^5*e*d^4*b^2*a*B + 3*x^5*e*d^4*c*a^2*B + 6*x^5*e^2*d^3*b*a^2*B
+ 2*x^5*e^3*d^2*a^3*B + 3/5*x^5*d^5*c*b^2*A + x^5*e*d^4*b^3*A + 3/5*x^5*d^5
*c^2*a*A + 6*x^5*e*d^4*c*b*a*A + 6*x^5*e^2*d^3*b^2*a*A + 6*x^5*e^2*d^3*c*a^
2*A + 6*x^5*e^3*d^2*b*a^2*A + x^5*e^4*d*a^3*A + 3/4*x^4*d^5*b^2*a*B + 3/4*x
^4*d^5*c*a^2*B + 15/4*x^4*e*d^4*b*a^2*B + 5/2*x^4*e^2*d^3*a^3*B + 1/4*x^4*d
^5*b^3*A + 3/2*x^4*d^5*c*b*a*A + 15/4*x^4*e*d^4*b^2*a*A + 15/4*x^4*e*d^4*c*
a^2*A + 15/2*x^4*e^2*d^3*b*a^2*A + 5/2*x^4*e^3*d^2*a^3*A + x^3*d^5*b*a^2*B
+ 5/3*x^3*e*d^4*a^3*B + x^3*d^5*b^2*a*A + x^3*d^5*c*a^2*A + 5*x^3*e*d^4*b*a
^2*A + 10/3*x^3*e^2*d^3*a^3*A + 1/2*x^2*d^5*a^3*B + 3/2*x^2*d^5*b*a^2*A + 5
/2*x^2*e*d^4*a^3*A + x*d^5*a^3*A
```

giac [B] time = 0.18, size = 1603, normalized size = 2.89

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/13*B*c^3*x^13*e^5 + 5/12*B*c^3*d*x^12*e^4 + 10/11*B*c^3*d^2*x^11*e^3 + B*
c^3*d^3*x^10*e^2 + 5/9*B*c^3*d^4*x^9*e + 1/8*B*c^3*d^5*x^8 + 1/4*B*b*c^2*x^
12*e^5 + 1/12*A*c^3*x^12*e^5 + 15/11*B*b*c^2*d*x^11*e^4 + 5/11*A*c^3*d*x^11
*e^4 + 3*B*b*c^2*d^2*x^10*e^3 + A*c^3*d^2*x^10*e^3 + 10/3*B*b*c^2*d^3*x^9*e
^2 + 10/9*A*c^3*d^3*x^9*e^2 + 15/8*B*b*c^2*d^4*x^8*e + 5/8*A*c^3*d^4*x^8*e
+ 3/7*B*b*c^2*d^5*x^7 + 1/7*A*c^3*d^5*x^7 + 3/11*B*b^2*c*x^11*e^5 + 3/11*B*
a*c^2*x^11*e^5 + 3/11*A*b*c^2*x^11*e^5 + 3/2*B*b^2*c*d*x^10*e^4 + 3/2*B*a*c
^2*d*x^10*e^4 + 3/2*A*b*c^2*d*x^10*e^4 + 10/3*B*b^2*c*d^2*x^9*e^3 + 10/3*B*
a*c^2*d^2*x^9*e^3 + 10/3*A*b*c^2*d^2*x^9*e^3 + 15/4*B*b^2*c*d^3*x^8*e^2 + 1
5/4*B*a*c^2*d^3*x^8*e^2 + 15/4*A*b*c^2*d^3*x^8*e^2 + 15/7*B*b^2*c*d^4*x^7*e
 + 15/7*B*a*c^2*d^4*x^7*e + 15/7*A*b*c^2*d^4*x^7*e + 1/2*B*b^2*c*d^5*x^6 +
1/2*B*a*c^2*d^5*x^6 + 1/2*A*b*c^2*d^5*x^6 + 1/10*B*b^3*x^10*e^5 + 3/5*B*a*b
*c*x^10*e^5 + 3/10*A*b^2*c*x^10*e^5 + 3/10*A*a*c^2*x^10*e^5 + 5/9*B*b^3*d*x
^9*e^4 + 10/3*B*a*b*c*d*x^9*e^4 + 5/3*A*b^2*c*d*x^9*e^4 + 5/3*A*a*c^2*d*x^9
*e^4 + 5/4*B*b^3*d^2*x^8*e^3 + 15/2*B*a*b*c*d^2*x^8*e^3 + 15/4*A*b^2*c*d^2*
x^8*e^3 + 15/4*A*a*c^2*d^2*x^8*e^3 + 10/7*B*b^3*d^3*x^7*e^2 + 60/7*B*a*b*c*
d^3*x^7*e^2 + 30/7*A*b^2*c*d^3*x^7*e^2 + 30/7*A*a*c^2*d^3*x^7*e^2 + 5/6*B*b
^3*d^4*x^6*e + 5*B*a*b*c*d^4*x^6*e + 5/2*A*b^2*c*d^4*x^6*e + 5/2*A*a*c^2*d^
4*x^6*e + 1/5*B*b^3*d^5*x^5 + 6/5*B*a*b*c*d^5*x^5 + 3/5*A*b^2*c*d^5*x^5 + 3
/5*A*a*c^2*d^5*x^5 + 1/3*B*a*b^2*x^9*e^5 + 1/9*A*b^3*x^9*e^5 + 1/3*B*a^2*c*
x^9*e^5 + 2/3*A*a*b*c*x^9*e^5 + 15/8*B*a*b^2*d*x^8*e^4 + 5/8*A*b^3*d*x^8*e^
4 + 15/8*B*a^2*c*d*x^8*e^4 + 15/4*A*a*b*c*d*x^8*e^4 + 30/7*B*a*b^2*d^2*x^7*
e^3 + 10/7*A*b^3*d^2*x^7*e^3 + 30/7*B*a^2*c*d^2*x^7*e^3 + 60/7*A*a*b*c*d^2*
x^7*e^3 + 5*B*a*b^2*d^3*x^6*e^2 + 5/3*A*b^3*d^3*x^6*e^2 + 5*B*a^2*c*d^3*x^6
*e^2 + 10*A*a*b*c*d^3*x^6*e^2 + 3*B*a*b^2*d^4*x^5*e + A*b^3*d^4*x^5*e + 3*B
*a^2*c*d^4*x^5*e + 6*A*a*b*c*d^4*x^5*e + 3/4*B*a*b^2*d^5*x^4 + 1/4*A*b^3*d^
5*x^4 + 3/4*B*a^2*c*d^5*x^4 + 3/2*A*a*b*c*d^5*x^4 + 3/8*B*a^2*b*x^8*e^5 + 3
/8*A*a*b^2*x^8*e^5 + 3/8*A*a^2*c*x^8*e^5 + 15/7*B*a^2*b*d*x^7*e^4 + 15/7*A*
a*b^2*d*x^7*e^4 + 15/7*A*a^2*c*d*x^7*e^4 + 5*B*a^2*b*d^2*x^6*e^3 + 5*A*a*b^
2*d^2*x^6*e^3 + 5*A*a^2*c*d^2*x^6*e^3 + 6*B*a^2*b*d^3*x^5*e^2 + 6*A*a*b^2*d
^3*x^5*e^2 + 6*A*a^2*c*d^3*x^5*e^2 + 15/4*B*a^2*b*d^4*x^4*e + 15/4*A*a*b^2*
```

```
d^4*x^4*e + 15/4*A*a^2*c*d^4*x^4*e + B*a^2*b*d^5*x^3 + A*a*b^2*d^5*x^3 + A*
a^2*c*d^5*x^3 + 1/7*B*a^3*x^7*e^5 + 3/7*A*a^2*b*x^7*e^5 + 5/6*B*a^3*d*x^6*e
^4 + 5/2*A*a^2*b*d*x^6*e^4 + 2*B*a^3*d^2*x^5*e^3 + 6*A*a^2*b*d^2*x^5*e^3 +
5/2*B*a^3*d^3*x^4*e^2 + 15/2*A*a^2*b*d^3*x^4*e^2 + 5/3*B*a^3*d^4*x^3*e + 5*
A*a^2*b*d^4*x^3*e + 1/2*B*a^3*d^5*x^2 + 3/2*A*a^2*b*d^5*x^2 + 1/6*A*a^3*x^6
*e^5 + A*a^3*d*x^5*e^4 + 5/2*A*a^3*d^2*x^4*e^3 + 10/3*A*a^3*d^3*x^3*e^2 + 5
/2*A*a^3*d^4*x^2*e + A*a^3*d^5*x
```

maple **[B]** time = 0.04, size = 1263, normalized size = 2.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/13*B*e^5*c^3*x^13+1/12*((A*e^5+5*B*d*e^4)*c^3+3*B*e^5*b*c^2)*x^12+1/11*((
5*A*d*e^4+10*B*d^2*e^3)*c^3+3*(A*e^5+5*B*d*e^4)*b*c^2+B*e^5*(a*c^2+2*b^2*c+
c*(2*a*c+b^2)))*x^11+1/10*((10*A*d^2*e^3+10*B*d^3*e^2)*c^3+3*(5*A*d*e^4+10*
B*d^2*e^3)*b*c^2+(A*e^5+5*B*d*e^4)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+B*e^5*(4*a
*b*c+b*(2*a*c+b^2)))*x^10+1/9*((10*A*d^3*e^2+5*B*d^4*e)*c^3+3*(10*A*d^2*e^3
+10*B*d^3*e^2)*b*c^2+(5*A*d*e^4+10*B*d^2*e^3)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))
+(A*e^5+5*B*d*e^4)*(4*a*b*c+b*(2*a*c+b^2))+B*e^5*(a*(2*a*c+b^2)+2*a*b^2+c*a
^2))*x^9+1/8*((5*A*d^4*e+B*d^5)*c^3+3*(10*A*d^3*e^2+5*B*d^4*e)*b*c^2+(10*A*
d^2*e^3+10*B*d^3*e^2)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+(5*A*d*e^4+10*B*d^2*e^3
)*(4*a*b*c+b*(2*a*c+b^2))+(A*e^5+5*B*d*e^4)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3
*B*e^5*a^2*b)*x^8+1/7*(A*d^5*c^3+3*(5*A*d^4*e+B*d^5)*b*c^2+(10*A*d^3*e^2+5*
B*d^4*e)*(a*c^2+2*b^2*c+c*(2*a*c+b^2))+(10*A*d^2*e^3+10*B*d^3*e^2)*(4*a*b*c
+b*(2*a*c+b^2))+(5*A*d*e^4+10*B*d^2*e^3)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(A
*e^5+5*B*d*e^4)*a^2*b+B*e^5*a^3)*x^7+1/6*(3*A*d^5*b*c^2+(5*A*d^4*e+B*d^5)*(
a*c^2+2*b^2*c+c*(2*a*c+b^2))+(10*A*d^3*e^2+5*B*d^4*e)*(4*a*b*c+b*(2*a*c+b^2
))+(10*A*d^2*e^3+10*B*d^3*e^2)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(5*A*d*e^4+1
0*B*d^2*e^3)*a^2*b+(A*e^5+5*B*d*e^4)*a^3)*x^6+1/5*(A*d^5*(a*c^2+2*b^2*c+c*(
2*a*c+b^2))+(5*A*d^4*e+B*d^5)*(4*a*b*c+b*(2*a*c+b^2))+(10*A*d^3*e^2+5*B*d^4
*e)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(10*A*d^2*e^3+10*B*d^3*e^2)*a^2*b+(5*A*
d*e^4+10*B*d^2*e^3)*a^3)*x^5+1/4*(A*d^5*(4*a*b*c+b*(2*a*c+b^2))+(5*A*d^4*e+
B*d^5)*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*(10*A*d^3*e^2+5*B*d^4*e)*a^2*b+(10*A
*d^2*e^3+10*B*d^3*e^2)*a^3)*x^4+1/3*(A*d^5*(a*(2*a*c+b^2)+2*a*b^2+c*a^2)+3*
(5*A*d^4*e+B*d^5)*a^2*b+(10*A*d^3*e^2+5*B*d^4*e)*a^3)*x^3+1/2*(3*A*d^5*a^2*
b+(5*A*d^4*e+B*d^5)*a^3)*x^2+A*d^5*a^3*x
```

maxima **[B]** time = 0.74, size = 1114, normalized size = 2.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/13*B*c^3*e^5*x^13 + 1/12*(5*B*c^3*d*e^4 + (3*B*b*c^2 + A*c^3)*e^5)*x^12 +
 1/11*(10*B*c^3*d^2*e^3 + 5*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + (B*a +
 A*b)*c^2)*e^5)*x^11 + 1/10*(10*B*c^3*d^3*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^2*
e^3 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*
b + A*b^2)*c)*e^5)*x^10 + A*a^3*d^5*x + 1/9*(5*B*c^3*d^4*e + 10*(3*B*b*c^2
+ A*c^3)*d^3*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^3 + 5*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*e^5)*x^9 + 1/8*(B*c^3*d^5 + 5*(3*B*b*c^2 + A*c^3)*d^4*e + 30*(B*b^2
*c + (B*a + A*b)*c^2)*d^3*e^2 + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d^2*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^4 + 3*(B*a^
2*b + A*a*b^2 + A*a^2*c)*e^5)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^5 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d^4*e + 10*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^3*e^2 + 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^3 + 15*(B
*a^2*b + A*a*b^2 + A*a^2*c)*d*e^4 + (B*a^3 + 3*A*a^2*b)*e^5)*x^7 + 1/6*(A*a
^3*e^5 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5 + 5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*
a*b + A*b^2)*c)*d^4*e + 10*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*
e^2 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^3 + 5*(B*a^3 + 3*A*a^2*b)*d*e^
4)*x^6 + 1/5*(5*A*a^3*d*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d
^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e + 30*(B*a^2*b + A*
a*b^2 + A*a^2*c)*d^3*e^2 + 10*(B*a^3 + 3*A*a^2*b)*d^2*e^3)*x^5 + 1/4*(10*A*
a^3*d^2*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^5 + 15*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d^4*e + 10*(B*a^3 + 3*A*a^2*b)*d^3*e^2)*x^4 + 1/3*(10
*A*a^3*d^3*e^2 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^5 + 5*(B*a^3 + 3*A*a^2*b
)*d^4*e)*x^3 + 1/2*(5*A*a^3*d^4*e + (B*a^3 + 3*A*a^2*b)*d^5)*x^2
```

mupad [B] time = 2.66, size = 1348, normalized size = 2.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^5*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^7*((A*c^3*d^5)/7 + (B*a^3*e^5)/7 + (3*A*a^2*b*e^5)/7 + (3*B*b*c^2*d^5)/7
+ (10*A*b^3*d^2*e^3)/7 + (10*B*b^3*d^3*e^2)/7 + (30*A*a*c^2*d^3*e^2)/7 + (3
0*B*a*b^2*d^2*e^3)/7 + (30*A*b^2*c*d^3*e^2)/7 + (30*B*a^2*c*d^2*e^3)/7 + (1
5*A*a*b^2*d*e^4)/7 + (15*A*a^2*c*d*e^4)/7 + (15*B*a^2*b*d*e^4)/7 + (15*A*b*
c^2*d^4*e)/7 + (15*B*a*c^2*d^4*e)/7 + (15*B*b^2*c*d^4*e)/7 + (60*A*a*b*c*d^
2*e^3)/7 + (60*B*a*b*c*d^3*e^2)/7) + x^4*((A*b^3*d^5)/4 + (3*B*a*b^2*d^5)/4
 + (3*B*a^2*c*d^5)/4 + (5*A*a^3*d^2*e^3)/2 + (5*B*a^3*d^3*e^2)/2 + (15*A*a^
2*b*d^3*e^2)/2 + (3*A*a*b*c*d^5)/2 + (15*A*a*b^2*d^4*e)/4 + (15*A*a^2*c*d^4
*e)/4 + (15*B*a^2*b*d^4*e)/4) + x^10*((B*b^3*e^5)/10 + (3*A*a*c^2*e^5)/10 +
 (3*A*b^2*c*e^5)/10 + A*c^3*d^2*e^3 + B*c^3*d^3*e^2 + 3*B*b*c^2*d^2*e^3 + (
3*B*a*b*c*e^5)/5 + (3*A*b*c^2*d*e^4)/2 + (3*B*a*c^2*d*e^4)/2 + (3*B*b^2*c*d
*e^4)/2) + x^5*((B*b^3*d^5)/5 + (3*A*a*c^2*d^5)/5 + (3*A*b^2*c*d^5)/5 + A*a
^3*d*e^4 + A*b^3*d^4*e + 2*B*a^3*d^2*e^3 + 6*A*a*b^2*d^3*e^2 + 6*A*a^2*b*d^
2*e^3 + 6*A*a^2*c*d^3*e^2 + 6*B*a^2*b*d^3*e^2 + (6*B*a*b*c*d^5)/5 + 3*B*a*b
^2*d^4*e + 3*B*a^2*c*d^4*e + 6*A*a*b*c*d^4*e) + x^9*((A*b^3*e^5)/9 + (B*a*b
^2*e^5)/3 + (B*a^2*c*e^5)/3 + (5*B*b^3*d*e^4)/9 + (5*B*c^3*d^4*e)/9 + (10*A
*c^3*d^3*e^2)/9 + (10*A*b*c^2*d^2*e^3)/3 + (10*B*a*c^2*d^2*e^3)/3 + (10*B*b
*c^2*d^3*e^2)/3 + (10*B*b^2*c*d^2*e^3)/3 + (2*A*a*b*c*e^5)/3 + (5*A*a*c^2*d
*e^4)/3 + (5*A*b^2*c*d*e^4)/3 + (10*B*a*b*c*d*e^4)/3) + x^3*(A*a*b^2*d^5 +
A*a^2*c*d^5 + B*a^2*b*d^5 + (5*B*a^3*d^4*e)/3 + (10*A*a^3*d^3*e^2)/3 + 5*A*
a^2*b*d^4*e) + x^11*((3*A*b*c^2*e^5)/11 + (3*B*a*c^2*e^5)/11 + (3*B*b^2*c*e
^5)/11 + (5*A*c^3*d*e^4)/11 + (10*B*c^3*d^2*e^3)/11 + (15*B*b*c^2*d*e^4)/11
) + x^6*((A*a^3*e^5)/6 + (A*b*c^2*d^5)/2 + (B*a*c^2*d^5)/2 + (B*b^2*c*d^5)/
2 + (5*B*a^3*d*e^4)/6 + (5*B*b^3*d^4*e)/6 + (5*A*b^3*d^3*e^2)/3 + 5*A*a*b^2
*d^2*e^3 + 5*A*a^2*c*d^2*e^3 + 5*B*a*b^2*d^3*e^2 + 5*B*a^2*b*d^2*e^3 + 5*B*
a^2*c*d^3*e^2 + (5*A*a^2*b*d*e^4)/2 + (5*A*a*c^2*d^4*e)/2 + (5*A*b^2*c*d^4*
e)/2 + 10*A*a*b*c*d^3*e^2 + 5*B*a*b*c*d^4*e) + x^8*((B*c^3*d^5)/8 + (3*A*a*
b^2*e^5)/8 + (3*A*a^2*c*e^5)/8 + (3*B*a^2*b*e^5)/8 + (5*A*b^3*d*e^4)/8 + (5
*A*c^3*d^4*e)/8 + (5*B*b^3*d^2*e^3)/4 + (15*A*a*c^2*d^2*e^3)/4 + (15*A*b*c^
2*d^3*e^2)/4 + (15*A*b^2*c*d^2*e^3)/4 + (15*B*a*c^2*d^3*e^2)/4 + (15*B*b^2*
c*d^3*e^2)/4 + (15*B*a*b^2*d*e^4)/8 + (15*B*a^2*c*d*e^4)/8 + (15*B*b*c^2*d^
4*e)/8 + (15*B*a*b*c*d^2*e^3)/2 + (15*A*a*b*c*d*e^4)/4) + (a^2*d^4*x^2*(5*A
*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^4*x^12*(A*c*e + 3*B*b*e + 5*B*c*d))/12
+ A*a^3*d^5*x + (B*c^3*e^5*x^13)/13
```

sympy [B] time = 0.28, size = 1731, normalized size = 3.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**5*x + B*c**3*e**5*x**13/13 + x**12*(A*c**3*e**5/12 + B*b*c**2*e**
5/4 + 5*B*c**3*d*e**4/12) + x**11*(3*A*b*c**2*e**5/11 + 5*A*c**3*d*e**4/11
+ 3*B*a*c**2*e**5/11 + 3*B*b**2*c*e**5/11 + 15*B*b*c**2*d*e**4/11 + 10*B*c*
*3*d**2*e**3/11) + x**10*(3*A*a*c**2*e**5/10 + 3*A*b**2*c*e**5/10 + 3*A*b*c
**2*d*e**4/2 + A*c**3*d**2*e**3 + 3*B*a*b*c*e**5/5 + 3*B*a*c**2*d*e**4/2 +
B*b**3*e**5/10 + 3*B*b**2*c*d*e**4/2 + 3*B*b*c**2*d**2*e**3 + B*c**3*d**3*e
**2) + x**9*(2*A*a*b*c*e**5/3 + 5*A*a*c**2*d*e**4/3 + A*b**3*e**5/9 + 5*A*b
**2*c*d*e**4/3 + 10*A*b*c**2*d**2*e**3/3 + 10*A*c**3*d**3*e**2/9 + B*a**2*c
*e**5/3 + B*a*b**2*e**5/3 + 10*B*a*b*c*d*e**4/3 + 10*B*a*c**2*d**2*e**3/3 +
 5*B*b**3*d*e**4/9 + 10*B*b**2*c*d**2*e**3/3 + 10*B*b*c**2*d**3*e**2/3 + 5*
B*c**3*d**4*e/9) + x**8*(3*A*a**2*c*e**5/8 + 3*A*a*b**2*e**5/8 + 15*A*a*b*c
*d*e**4/4 + 15*A*a*c**2*d**2*e**3/4 + 5*A*b**3*d*e**4/8 + 15*A*b**2*c*d**2*
e**3/4 + 15*A*b*c**2*d**3*e**2/4 + 5*A*c**3*d**4*e/8 + 3*B*a**2*b*e**5/8 +
15*B*a**2*c*d*e**4/8 + 15*B*a*b**2*d*e**4/8 + 15*B*a*b*c*d**2*e**3/2 + 15*B
*a*c**2*d**3*e**2/4 + 5*B*b**3*d**2*e**3/4 + 15*B*b**2*c*d**3*e**2/4 + 15*B
*b*c**2*d**4*e/8 + B*c**3*d**5/8) + x**7*(3*A*a**2*b*e**5/7 + 15*A*a**2*c*d
*e**4/7 + 15*A*a*b**2*d*e**4/7 + 60*A*a*b*c*d**2*e**3/7 + 30*A*a*c**2*d**3*
e**2/7 + 10*A*b**3*d**2*e**3/7 + 30*A*b**2*c*d**3*e**2/7 + 15*A*b*c**2*d**4
*e/7 + A*c**3*d**5/7 + B*a**3*e**5/7 + 15*B*a**2*b*d*e**4/7 + 30*B*a**2*c*d
**2*e**3/7 + 30*B*a*b**2*d**2*e**3/7 + 60*B*a*b*c*d**3*e**2/7 + 15*B*a*c**2
*d**4*e/7 + 10*B*b**3*d**3*e**2/7 + 15*B*b**2*c*d**4*e/7 + 3*B*b*c**2*d**5/
7) + x**6*(A*a**3*e**5/6 + 5*A*a**2*b*d*e**4/2 + 5*A*a**2*c*d**2*e**3 + 5*A
*a*b**2*d**2*e**3 + 10*A*a*b*c*d**3*e**2 + 5*A*a*c**2*d**4*e/2 + 5*A*b**3*d
**3*e**2/3 + 5*A*b**2*c*d**4*e/2 + A*b*c**2*d**5/2 + 5*B*a**3*d*e**4/6 + 5*
B*a**2*b*d**2*e**3 + 5*B*a**2*c*d**3*e**2 + 5*B*a*b**2*d**3*e**2 + 5*B*a*b*
c*d**4*e + B*a*c**2*d**5/2 + 5*B*b**3*d**4*e/6 + B*b**2*c*d**5/2) + x**5*(A
*a**3*d*e**4 + 6*A*a**2*b*d**2*e**3 + 6*A*a**2*c*d**3*e**2 + 6*A*a*b**2*d**
3*e**2 + 6*A*a*b*c*d**4*e + 3*A*a*c**2*d**5/5 + A*b**3*d**4*e + 3*A*b**2*c*
d**5/5 + 2*B*a**3*d**2*e**3 + 6*B*a**2*b*d**3*e**2 + 3*B*a**2*c*d**4*e + 3*
B*a*b**2*d**4*e + 6*B*a*b*c*d**5/5 + B*b**3*d**5/5) + x**4*(5*A*a**3*d**2*e
**3/2 + 15*A*a**2*b*d**3*e**2/2 + 15*A*a**2*c*d**4*e/4 + 15*A*a*b**2*d**4*e
/4 + 3*A*a*b*c*d**5/2 + A*b**3*d**5/4 + 5*B*a**3*d**3*e**2/2 + 15*B*a**2*b*
d**4*e/4 + 3*B*a**2*c*d**5/4 + 3*B*a*b**2*d**5/4) + x**3*(10*A*a**3*d**3*e*
*2/3 + 5*A*a**2*b*d**4*e + A*a**2*c*d**5 + A*a*b**2*d**5 + 5*B*a**3*d**4*e/
3 + B*a**2*b*d**5) + x**2*(5*A*a**3*d**4*e/2 + 3*A*a**2*b*d**5/2 + B*a**3*d
**5/2)
```

3.2334 $\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^8 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{8e^8}$$

```
[Out] -1/5*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^5/e^8-1/6*(a*e^2-b*d*e+c*d^2)
^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*(e*x+d)^6/e^8-3/7*(a*e^2
-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5
*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^7/e^8-1/8*(A*e*(-b*e+2*c*d)*(10
*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)
-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))*(e*x+d)
^8/e^8-1/9*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e
+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^9/e^8-3/10*c
*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))*(e*x+d)^10/e^8
-1/11*c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)^11/e^8+1/12*B*c^3*(e*x+d)^12/e^8
```

Rubi [A] time = 1.38, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^8 \left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{8e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^5)/(5*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^6)/(6*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^7)/(7*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^8)/
(8*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^9)/(9*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*
(6*b*d - a*e)))*(d + e*x)^10)/(10*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(
d + e*x)^11)/(11*e^8) + (B*c^3*(d + e*x)^12)/(12*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^4 \left(a+bx+cx^2\right)^3 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^4}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2 (\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^5}{5e^8} + \frac{\left(cd^2-bde+ae^2\right)^2 (7Bc}{}$$

Mathematica [**A**] time = 0.47, size = 957, normalized size = 1.72

$$\frac{1}{12}Bc^3e^4x^{12}+\frac{1}{11}c^2e^3(4Bcd+3bBe+Ace)x^{11}+\frac{1}{10}ce^2\left(Ace(4cd+3be)+3B\left(2c^2d^2+b^2e^2+ce(4bd+ae)\right)\right)x^{10}+\frac{1}{9}e\big(3$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^4*x + (a^2*d^3*(3*A*b*d + a*B*d + 4*a*A*e)*x^2)/2 + (a*d^2*(a*B*d*(
3*b*d + 4*a*e) + 3*A*(b^2*d^2 + 4*a*b*d*e + a*(c*d^2 + 2*a*e^2)))*x^3)/3 +
(d*(3*a*B*d*(b^2*d^2 + 4*a*b*d*e + a*(c*d^2 + 2*a*e^2)) + A*(b^3*d^3 + 12*a
*b^2*d^2*e + 4*a^2*e*(3*c*d^2 + a*e^2) + 6*a*b*d*(c*d^2 + 3*a*e^2)))*x^4)/4
 + ((b^3*d^3*(B*d + 4*A*e) + 3*b^2*d^2*(A*c*d^2 + 4*a*B*d*e + 6*a*A*e^2) +
6*a*b*d*(B*c*d^3 + 4*A*c*d^2*e + 3*a*B*d*e^2 + 2*a*A*e^3) + a*(4*a*B*d*e*(3
*c*d^2 + a*e^2) + A*(3*c^2*d^4 + 18*a*c*d^2*e^2 + a^2*e^4)))*x^5)/5 + ((2*b
^3*d^2*e*(2*B*d + 3*A*e) + 12*a*A*c*d*e*(c*d^2 + a*e^2) + 12*a*b*B*d*e*(2*c
*d^2 + a*e^2) + 3*b^2*d*(B*c*d^3 + 4*A*c*d^2*e + 6*a*B*d*e^2 + 4*a*A*e^3) +
 3*A*b*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4) + a*B*(3*c^2*d^4 + 18*a*c*d^2*e
^2 + a^2*e^4))*x^6)/6 + ((2*b^3*d*e^2*(3*B*d + 2*A*e) + 12*a*B*c*d*e*(c*d^2
 + a*e^2) + 12*A*b*c*d*e*(c*d^2 + 2*a*e^2) + 3*b^2*e*(4*B*c*d^3 + 6*A*c*d^2
*e + 4*a*B*d*e^2 + a*A*e^3) + 3*b*B*(c^2*d^4 + 12*a*c*d^2*e^2 + a^2*e^4) +
A*c*(c^2*d^4 + 18*a*c*d^2*e^2 + 3*a^2*e^4))*x^7)/7 + ((A*e*(4*c^3*d^3 + b^3
*e^3 + 6*b*c*e^2*(2*b*d + a*e) + 6*c^2*d*e*(3*b*d + 2*a*e)) + B*(c^3*d^4 +
6*c^2*d^2*e*(2*b*d + 3*a*e) + b^2*e^3*(4*b*d + 3*a*e) + 3*c*e^2*(6*b^2*d^2
+ 8*a*b*d*e + a^2*e^2)))*x^8)/8 + (e*(3*A*c*e*(2*c^2*d^2 + b^2*e^2 + c*e*(4
*b*d + a*e)) + B*(4*c^3*d^3 + b^3*e^3 + 6*b*c*e^2*(2*b*d + a*e) + 6*c^2*d*e
*(3*b*d + 2*a*e)))*x^9)/9 + (c*e^2*(A*c*e*(4*c*d + 3*b*e) + 3*B*(2*c^2*d^2
+ b^2*e^2 + c*e*(4*b*d + a*e)))*x^10)/10 + (c^2*e^3*(4*B*c*d + 3*b*B*e + A*
c*e)*x^11)/11 + (B*c^3*e^4*x^12)/12
```

fricas [**B**] time = 0.67, size = 1353, normalized size = 2.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/12*x^12*e^4*c^3*B + 4/11*x^11*e^3*d*c^3*B + 3/11*x^11*e^4*c^2*b*B + 1/11*
x^11*e^4*c^3*A + 3/5*x^10*e^2*d^2*c^3*B + 6/5*x^10*e^3*d*c^2*b*B + 3/10*x^1
0*e^4*c*b^2*B + 3/10*x^10*e^4*c^2*a*B + 2/5*x^10*e^3*d*c^3*A + 3/10*x^10*e^
4*c^2*b*A + 4/9*x^9*e*d^3*c^3*B + 2*x^9*e^2*d^2*c^2*b*B + 4/3*x^9*e^3*d*c*b
^2*B + 1/9*x^9*e^4*b^3*B + 4/3*x^9*e^3*d*c^2*a*B + 2/3*x^9*e^4*c*b*a*B + 2/
3*x^9*e^2*d^2*c^3*A + 4/3*x^9*e^3*d*c^2*b*A + 1/3*x^9*e^4*c*b^2*A + 1/3*x^9
*e^4*c^2*a*A + 1/8*x^8*d^4*c^3*B + 3/2*x^8*e*d^3*c^2*b*B + 9/4*x^8*e^2*d^2*
c*b^2*B + 1/2*x^8*e^3*d*b^3*B + 9/4*x^8*e^2*d^2*c^2*a*B + 3*x^8*e^3*d*c*b*a
*B + 3/8*x^8*e^4*b^2*a*B + 3/8*x^8*e^4*c*a^2*B + 1/2*x^8*e*d^3*c^3*A + 9/4*
x^8*e^2*d^2*c^2*b*A + 3/2*x^8*e^3*d*c*b^2*A + 1/8*x^8*e^4*b^3*A + 3/2*x^8*e
^3*d*c^2*a*A + 3/4*x^8*e^4*c*b*a*A + 3/7*x^7*d^4*c^2*b*B + 12/7*x^7*e*d^3*c
*b^2*B + 6/7*x^7*e^2*d^2*b^3*B + 12/7*x^7*e*d^3*c^2*a*B + 36/7*x^7*e^2*d^2*
c*b*a*B + 12/7*x^7*e^3*d*b^2*a*B + 12/7*x^7*e^3*d*c*a^2*B + 3/7*x^7*e^4*b*a
^2*B + 1/7*x^7*d^4*c^3*A + 12/7*x^7*e*d^3*c^2*b*A + 18/7*x^7*e^2*d^2*c*b^2*
A + 4/7*x^7*e^3*d*b^3*A + 18/7*x^7*e^2*d^2*c^2*a*A + 24/7*x^7*e^3*d*c*b*a*A
 + 3/7*x^7*e^4*b^2*a*A + 3/7*x^7*e^4*c*a^2*A + 1/2*x^6*d^4*c*b^2*B + 2/3*x^
6*e*d^3*b^3*B + 1/2*x^6*d^4*c^2*a*B + 4*x^6*e*d^3*c*b*a*B + 3*x^6*e^2*d^2*b
^2*a*B + 3*x^6*e^2*d^2*c*a^2*B + 2*x^6*e^3*d*b*a^2*B + 1/6*x^6*e^4*a^3*B +
1/2*x^6*d^4*c^2*b*A + 2*x^6*e*d^3*c*b^2*A + x^6*e^2*d^2*b^3*A + 2*x^6*e*d^3
*c^2*a*A + 6*x^6*e^2*d^2*c*b*a*A + 2*x^6*e^3*d*b^2*a*A + 2*x^6*e^3*d*c*a^2*
A + 1/2*x^6*e^4*b*a^2*A + 1/5*x^5*d^4*b^3*B + 6/5*x^5*d^4*c*b*a*B + 12/5*x^
5*e*d^3*b^2*a*B + 12/5*x^5*e*d^3*c*a^2*B + 18/5*x^5*e^2*d^2*b*a^2*B + 4/5*x
```

```
^5*e^3*d*a^3*B + 3/5*x^5*d^4*c*b^2*A + 4/5*x^5*e*d^3*b^3*A + 3/5*x^5*d^4*c^
2*a*A + 24/5*x^5*e*d^3*c*b*a*A + 18/5*x^5*e^2*d^2*b^2*a*A + 18/5*x^5*e^2*d^
2*c*a^2*A + 12/5*x^5*e^3*d*b*a^2*A + 1/5*x^5*e^4*a^3*A + 3/4*x^4*d^4*b^2*a*
B + 3/4*x^4*d^4*c*a^2*B + 3*x^4*e*d^3*b*a^2*B + 3/2*x^4*e^2*d^2*a^3*B + 1/4
*x^4*d^4*b^3*A + 3/2*x^4*d^4*c*b*a*A + 3*x^4*e*d^3*b^2*a*A + 3*x^4*e*d^3*c*
a^2*A + 9/2*x^4*e^2*d^2*b*a^2*A + x^4*e^3*d*a^3*A + x^3*d^4*b*a^2*B + 4/3*x
^3*e*d^3*a^3*B + x^3*d^4*b^2*a*A + x^3*d^4*c*a^2*A + 4*x^3*e*d^3*b*a^2*A +
2*x^3*e^2*d^2*a^3*A + 1/2*x^2*d^4*a^3*B + 3/2*x^2*d^4*b*a^2*A + 2*x^2*e*d^3
*a^3*A + x*d^4*a^3*A
```

giac [B] time = 0.20, size = 1313, normalized size = 2.37

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/12*B*c^3*x^12*e^4 + 4/11*B*c^3*d*x^11*e^3 + 3/5*B*c^3*d^2*x^10*e^2 + 4/9*
B*c^3*d^3*x^9*e + 1/8*B*c^3*d^4*x^8 + 3/11*B*b*c^2*x^11*e^4 + 1/11*A*c^3*x^
11*e^4 + 6/5*B*b*c^2*d*x^10*e^3 + 2/5*A*c^3*d*x^10*e^3 + 2*B*b*c^2*d^2*x^9*
e^2 + 2/3*A*c^3*d^2*x^9*e^2 + 3/2*B*b*c^2*d^3*x^8*e + 1/2*A*c^3*d^3*x^8*e +
 3/7*B*b*c^2*d^4*x^7 + 1/7*A*c^3*d^4*x^7 + 3/10*B*b^2*c*x^10*e^4 + 3/10*B*a
*c^2*x^10*e^4 + 3/10*A*b*c^2*x^10*e^4 + 4/3*B*b^2*c*d*x^9*e^3 + 4/3*B*a*c^2
*d*x^9*e^3 + 4/3*A*b*c^2*d*x^9*e^3 + 9/4*B*b^2*c*d^2*x^8*e^2 + 9/4*B*a*c^2*
d^2*x^8*e^2 + 9/4*A*b*c^2*d^2*x^8*e^2 + 12/7*B*b^2*c*d^3*x^7*e + 12/7*B*a*c
^2*d^3*x^7*e + 12/7*A*b*c^2*d^3*x^7*e + 1/2*B*b^2*c*d^4*x^6 + 1/2*B*a*c^2*d
^4*x^6 + 1/2*A*b*c^2*d^4*x^6 + 1/9*B*b^3*x^9*e^4 + 2/3*B*a*b*c*x^9*e^4 + 1/
3*A*b^2*c*x^9*e^4 + 1/3*A*a*c^2*x^9*e^4 + 1/2*B*b^3*d*x^8*e^3 + 3*B*a*b*c*d
*x^8*e^3 + 3/2*A*b^2*c*d*x^8*e^3 + 3/2*A*a*c^2*d*x^8*e^3 + 6/7*B*b^3*d^2*x^
7*e^2 + 36/7*B*a*b*c*d^2*x^7*e^2 + 18/7*A*b^2*c*d^2*x^7*e^2 + 18/7*A*a*c^2*
d^2*x^7*e^2 + 2/3*B*b^3*d^3*x^6*e + 4*B*a*b*c*d^3*x^6*e + 2*A*b^2*c*d^3*x^6
*e + 2*A*a*c^2*d^3*x^6*e + 1/5*B*b^3*d^4*x^5 + 6/5*B*a*b*c*d^4*x^5 + 3/5*A*
b^2*c*d^4*x^5 + 3/5*A*a*c^2*d^4*x^5 + 3/8*B*a*b^2*x^8*e^4 + 1/8*A*b^3*x^8*e
^4 + 3/8*B*a^2*c*x^8*e^4 + 3/4*A*a*b*c*x^8*e^4 + 12/7*B*a*b^2*d*x^7*e^3 + 4
/7*A*b^3*d*x^7*e^3 + 12/7*B*a^2*c*d*x^7*e^3 + 24/7*A*a*b*c*d*x^7*e^3 + 3*B*
a*b^2*d^2*x^6*e^2 + A*b^3*d^2*x^6*e^2 + 3*B*a^2*c*d^2*x^6*e^2 + 6*A*a*b*c*d
^2*x^6*e^2 + 12/5*B*a*b^2*d^3*x^5*e + 4/5*A*b^3*d^3*x^5*e + 12/5*B*a^2*c*d^
3*x^5*e + 24/5*A*a*b*c*d^3*x^5*e + 3/4*B*a*b^2*d^4*x^4 + 1/4*A*b^3*d^4*x^4
+ 3/4*B*a^2*c*d^4*x^4 + 3/2*A*a*b*c*d^4*x^4 + 3/7*B*a^2*b*x^7*e^4 + 3/7*A*a
*b^2*x^7*e^4 + 3/7*A*a^2*c*x^7*e^4 + 2*B*a^2*b*d*x^6*e^3 + 2*A*a*b^2*d*x^6*
e^3 + 2*A*a^2*c*d*x^6*e^3 + 18/5*B*a^2*b*d^2*x^5*e^2 + 18/5*A*a*b^2*d^2*x^5
*e^2 + 18/5*A*a^2*c*d^2*x^5*e^2 + 3*B*a^2*b*d^3*x^4*e + 3*A*a*b^2*d^3*x^4*e
 + 3*A*a^2*c*d^3*x^4*e + B*a^2*b*d^4*x^3 + A*a*b^2*d^4*x^3 + A*a^2*c*d^4*x^
3 + 1/6*B*a^3*x^6*e^4 + 1/2*A*a^2*b*x^6*e^4 + 4/5*B*a^3*d*x^5*e^3 + 12/5*A*
a^2*b*d*x^5*e^3 + 3/2*B*a^3*d^2*x^4*e^2 + 9/2*A*a^2*b*d^2*x^4*e^2 + 4/3*B*a
^3*d^3*x^3*e + 4*A*a^2*b*d^3*x^3*e + 1/2*B*a^3*d^4*x^2 + 3/2*A*a^2*b*d^4*x^
2 + 1/5*A*a^3*x^5*e^4 + A*a^3*d*x^4*e^3 + 2*A*a^3*d^2*x^3*e^2 + 2*A*a^3*d^3
*x^2*e + A*a^3*d^4*x
```

maple [A] time = 0.05, size = 1041, normalized size = 1.88

$$\frac{B c^3 e^4 x^{12}}{12}+\frac{\left(3Bb c^2 e^4+\left(A e^4+4Bd e^3\right)c^3\right)x^{11}}{11}+\frac{\left(\left(a c^2+2b^2c+\left(2ac+b^2\right)c\right)B e^4+3\left(A e^4+4Bd e^3\right)b c^2+\left(4\right.}{10}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/12*B*c^3*e^4*x^12+1/11*((A*e^4+4*B*d*e^3)*c^3+3*B*e^4*b*c^2)*x^11+1/10*((
4*A*d*e^3+6*B*d^2*e^2)*c^3+3*(A*e^4+4*B*d*e^3)*b*c^2+B*e^4*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c))*x^10+1/9*((6*A*d^2*e^2+4*B*d^3*e)*c^3+3*(4*A*d*e^3+6*B*d^2*e
^2)*b*c^2+(A*e^4+4*B*d*e^3)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e^4*(4*a*b*c+(2
*a*c+b^2)*b))*x^9+1/8*((4*A*d^3*e+B*d^4)*c^3+3*(6*A*d^2*e^2+4*B*d^3*e)*b*c^
2+(4*A*d*e^3+6*B*d^2*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e^4+4*B*d*e^3)*(
4*a*b*c+(2*a*c+b^2)*b)+B*e^4*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^8+1/7*(A*c^3*
d^4+3*(4*A*d^3*e+B*d^4)*b*c^2+(6*A*d^2*e^2+4*B*d^3*e)*(a*c^2+2*b^2*c+(2*a*c
+b^2)*c)+(4*A*d*e^3+6*B*d^2*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^4+4*B*d*e^3)*
(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*e^4*a^2*b)*x^7+1/6*(3*A*d^4*b*c^2+(4*A*d^
3*e+B*d^4)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(6*A*d^2*e^2+4*B*d^3*e)*(4*a*b*c+(
2*a*c+b^2)*b)+(4*A*d*e^3+6*B*d^2*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^
4+4*B*d*e^3)*a^2*b+B*e^4*a^3)*x^6+1/5*(A*d^4*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+
(4*A*d^3*e+B*d^4)*(4*a*b*c+(2*a*c+b^2)*b)+(6*A*d^2*e^2+4*B*d^3*e)*(a^2*c+2*
a*b^2+(2*a*c+b^2)*a)+3*(4*A*d*e^3+6*B*d^2*e^2)*a^2*b+(A*e^4+4*B*d*e^3)*a^3)
*x^5+1/4*(A*d^4*(4*a*b*c+(2*a*c+b^2)*b)+(4*A*d^3*e+B*d^4)*(a^2*c+2*a*b^2+(2
*a*c+b^2)*a)+3*(6*A*d^2*e^2+4*B*d^3*e)*a^2*b+(4*A*d*e^3+6*B*d^2*e^2)*a^3)*x
^4+1/3*(A*d^4*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(4*A*d^3*e+B*d^4)*a^2*b+(6*A*
d^2*e^2+4*B*d^3*e)*a^3)*x^3+1/2*(3*A*d^4*a^2*b+(4*A*d^3*e+B*d^4)*a^3)*x^2+A
*d^4*a^3*x
```

maxima [**A**] time = 0.57, size = 919, normalized size = 1.66

$$\frac{1}{12}Bc^3e^4x^{12}+\frac{1}{11}\left(4Bc^3de^3+\left(3Bbc^2+Ac^3\right)e^4\right)x^{11}+\frac{1}{10}\left(6Bc^3d^2e^2+4\left(3Bbc^2+Ac^3\right)de^3+3\left(Bb^2c+(Ba+Ab)c\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/12*B*c^3*e^4*x^12 + 1/11*(4*B*c^3*d*e^3 + (3*B*b*c^2 + A*c^3)*e^4)*x^11 +
 1/10*(6*B*c^3*d^2*e^2 + 4*(3*B*b*c^2 + A*c^3)*d*e^3 + 3*(B*b^2*c + (B*a +
A*b)*c^2)*e^4)*x^10 + 1/9*(4*B*c^3*d^3*e + 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 +
12*(B*b^2*c + (B*a + A*b)*c^2)*d*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*e^4)*x^9 + A*a^3*d^4*x + 1/8*(B*c^3*d^4 + 4*(3*B*b*c^2 + A*c^3)*d^3
*e + 18*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^2 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B
*a*b + A*b^2)*c)*d*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^4)*x
^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^4 + 12*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e +
6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^2 + 4*(3*B*a*b^2 + A*b^
3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^3 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^4)*x^7
 + 1/6*(3*(B*b^2*c + (B*a + A*b)*c^2)*d^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a
*b + A*b^2)*c)*d^3*e + 6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^
2 + 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^3 + (B*a^3 + 3*A*a^2*b)*e^4)*x^6 +
 1/5*(A*a^3*e^4 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4 + 4*(3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e + 18*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d^2*e^2 + 4*(B*a^3 + 3*A*a^2*b)*d*e^3)*x^5 + 1/4*(4*A*a^3*d*e^3 + (3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4 + 12*(B*a^2*b + A*a*b^2 + A*a^2
*c)*d^3*e + 6*(B*a^3 + 3*A*a^2*b)*d^2*e^2)*x^4 + 1/3*(6*A*a^3*d^2*e^2 + 3*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^4 + 4*(B*a^3 + 3*A*a^2*b)*d^3*e)*x^3 + 1/2*(
4*A*a^3*d^3*e + (B*a^3 + 3*A*a^2*b)*d^4)*x^2
```

mupad [**B**] time = 0.29, size = 1093, normalized size = 1.97

$$x^5\left(\frac{4\,B\,a^3\,d\,e^3}{5}+\frac{A\,a^3\,e^4}{5}+\frac{18\,B\,a^2\,b\,d^2\,e^2}{5}+\frac{12\,A\,a^2\,b\,d\,e^3}{5}+\frac{12\,B\,a^2\,c\,d^3\,e}{5}+\frac{18\,A\,a^2\,c\,d^2\,e^2}{5}+\frac{12\,B\,a\,b^2\,d^3\,e}{5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^4*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((A*a^3*e^4)/5 + (B*b^3*d^4)/5 + (3*A*a*c^2*d^4)/5 + (3*A*b^2*c*d^4)/5
+ (4*A*b^3*d^3*e)/5 + (4*B*a^3*d*e^3)/5 + (18*A*a*b^2*d^2*e^2)/5 + (18*A*a^
2*c*d^2*e^2)/5 + (18*B*a^2*b*d^2*e^2)/5 + (6*B*a*b*c*d^4)/5 + (12*A*a^2*b*d
*e^3)/5 + (12*B*a*b^2*d^3*e)/5 + (12*B*a^2*c*d^3*e)/5 + (24*A*a*b*c*d^3*e)/
5) + x^8*((A*b^3*e^4)/8 + (B*c^3*d^4)/8 + (3*B*a*b^2*e^4)/8 + (3*B*a^2*c*e^
4)/8 + (A*c^3*d^3*e)/2 + (B*b^3*d*e^3)/2 + (9*A*b*c^2*d^2*e^2)/4 + (9*B*a*c
^2*d^2*e^2)/4 + (9*B*b^2*c*d^2*e^2)/4 + (3*A*a*b*c*e^4)/4 + (3*A*a*c^2*d*e^
3)/2 + (3*A*b^2*c*d*e^3)/2 + (3*B*b*c^2*d^3*e)/2 + 3*B*a*b*c*d*e^3) + x^3*(
A*a*b^2*d^4 + A*a^2*c*d^4 + B*a^2*b*d^4 + (4*B*a^3*d^3*e)/3 + 2*A*a^3*d^2*e
^2 + 4*A*a^2*b*d^3*e) + x^10*((3*A*b*c^2*e^4)/10 + (3*B*a*c^2*e^4)/10 + (3*
B*b^2*c*e^4)/10 + (2*A*c^3*d*e^3)/5 + (3*B*c^3*d^2*e^2)/5 + (6*B*b*c^2*d*e^
3)/5) + x^6*((B*a^3*e^4)/6 + (A*a^2*b*e^4)/2 + (A*b*c^2*d^4)/2 + (B*a*c^2*d
^4)/2 + (B*b^2*c*d^4)/2 + (2*B*b^3*d^3*e)/3 + A*b^3*d^2*e^2 + 3*B*a*b^2*d^2
*e^2 + 3*B*a^2*c*d^2*e^2 + 2*A*a*b^2*d*e^3 + 2*A*a*c^2*d^3*e + 2*A*a^2*c*d*
e^3 + 2*B*a^2*b*d*e^3 + 2*A*b^2*c*d^3*e + 6*A*a*b*c*d^2*e^2 + 4*B*a*b*c*d^3
*e) + x^7*((A*c^3*d^4)/7 + (3*A*a*b^2*e^4)/7 + (3*A*a^2*c*e^4)/7 + (3*B*a^2
*b*e^4)/7 + (3*B*b*c^2*d^4)/7 + (4*A*b^3*d*e^3)/7 + (6*B*b^3*d^2*e^2)/7 + (
18*A*a*c^2*d^2*e^2)/7 + (18*A*b^2*c*d^2*e^2)/7 + (12*B*a*b^2*d*e^3)/7 + (12
*A*b*c^2*d^3*e)/7 + (12*B*a*c^2*d^3*e)/7 + (12*B*a^2*c*d*e^3)/7 + (12*B*b^2
*c*d^3*e)/7 + (36*B*a*b*c*d^2*e^2)/7 + (24*A*a*b*c*d*e^3)/7) + x^4*((A*b^3*
d^4)/4 + (3*B*a*b^2*d^4)/4 + (3*B*a^2*c*d^4)/4 + A*a^3*d*e^3 + (3*B*a^3*d^2
*e^2)/2 + (9*A*a^2*b*d^2*e^2)/2 + (3*A*a*b*c*d^4)/2 + 3*A*a*b^2*d^3*e + 3*A
*a^2*c*d^3*e + 3*B*a^2*b*d^3*e) + x^9*((B*b^3*e^4)/9 + (A*a*c^2*e^4)/3 + (A
*b^2*c*e^4)/3 + (4*B*c^3*d^3*e)/9 + (2*A*c^3*d^2*e^2)/3 + 2*B*b*c^2*d^2*e^2
 + (2*B*a*b*c*e^4)/3 + (4*A*b*c^2*d*e^3)/3 + (4*B*a*c^2*d*e^3)/3 + (4*B*b^2
*c*d*e^3)/3) + (a^2*d^3*x^2*(4*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^3*x^11*
(A*c*e + 3*B*b*e + 4*B*c*d))/11 + A*a^3*d^4*x + (B*c^3*e^4*x^12)/12
```

sympy [B] time = 0.24, size = 1401, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**4*x + B*c**3*e**4*x**12/12 + x**11*(A*c**3*e**4/11 + 3*B*b*c**2*e
**4/11 + 4*B*c**3*d*e**3/11) + x**10*(3*A*b*c**2*e**4/10 + 2*A*c**3*d*e**3/
5 + 3*B*a*c**2*e**4/10 + 3*B*b**2*c*e**4/10 + 6*B*b*c**2*d*e**3/5 + 3*B*c**
3*d**2*e**2/5) + x**9*(A*a*c**2*e**4/3 + A*b**2*c*e**4/3 + 4*A*b*c**2*d*e**
3/3 + 2*A*c**3*d**2*e**2/3 + 2*B*a*b*c*e**4/3 + 4*B*a*c**2*d*e**3/3 + B*b**
3*e**4/9 + 4*B*b**2*c*d*e**3/3 + 2*B*b*c**2*d**2*e**2 + 4*B*c**3*d**3*e/9)
+ x**8*(3*A*a*b*c*e**4/4 + 3*A*a*c**2*d*e**3/2 + A*b**3*e**4/8 + 3*A*b**2*c
*d*e**3/2 + 9*A*b*c**2*d**2*e**2/4 + A*c**3*d**3*e/2 + 3*B*a**2*c*e**4/8 +
3*B*a*b**2*e**4/8 + 3*B*a*b*c*d*e**3 + 9*B*a*c**2*d**2*e**2/4 + B*b**3*d*e*
*3/2 + 9*B*b**2*c*d**2*e**2/4 + 3*B*b*c**2*d**3*e/2 + B*c**3*d**4/8) + x**7
*(3*A*a**2*c*e**4/7 + 3*A*a*b**2*e**4/7 + 24*A*a*b*c*d*e**3/7 + 18*A*a*c**2
*d**2*e**2/7 + 4*A*b**3*d*e**3/7 + 18*A*b**2*c*d**2*e**2/7 + 12*A*b*c**2*d*
*3*e/7 + A*c**3*d**4/7 + 3*B*a**2*b*e**4/7 + 12*B*a**2*c*d*e**3/7 + 12*B*a*
b**2*d*e**3/7 + 36*B*a*b*c*d**2*e**2/7 + 12*B*a*c**2*d**3*e/7 + 6*B*b**3*d*
*2*e**2/7 + 12*B*b**2*c*d**3*e/7 + 3*B*b*c**2*d**4/7) + x**6*(A*a**2*b*e**4
/2 + 2*A*a**2*c*d*e**3 + 2*A*a*b**2*d*e**3 + 6*A*a*b*c*d**2*e**2 + 2*A*a*c*
*2*d**3*e + A*b**3*d**2*e**2 + 2*A*b**2*c*d**3*e + A*b*c**2*d**4/2 + B*a**3
*e**4/6 + 2*B*a**2*b*d*e**3 + 3*B*a**2*c*d**2*e**2 + 3*B*a*b**2*d**2*e**2 +
 4*B*a*b*c*d**3*e + B*a*c**2*d**4/2 + 2*B*b**3*d**3*e/3 + B*b**2*c*d**4/2)
+ x**5*(A*a**3*e**4/5 + 12*A*a**2*b*d*e**3/5 + 18*A*a**2*c*d**2*e**2/5 + 18
*A*a*b**2*d**2*e**2/5 + 24*A*a*b*c*d**3*e/5 + 3*A*a*c**2*d**4/5 + 4*A*b**3*
d**3*e/5 + 3*A*b**2*c*d**4/5 + 4*B*a**3*d*e**3/5 + 18*B*a**2*b*d**2*e**2/5
+ 12*B*a**2*c*d**3*e/5 + 12*B*a*b**2*d**3*e/5 + 6*B*a*b*c*d**4/5 + B*b**3*d
**4/5) + x**4*(A*a**3*d*e**3 + 9*A*a**2*b*d**2*e**2/2 + 3*A*a**2*c*d**3*e +
 3*A*a*b**2*d**3*e + 3*A*a*b*c*d**4/2 + A*b**3*d**4/4 + 3*B*a**3*d**2*e**2/
2 + 3*B*a**2*b*d**3*e + 3*B*a**2*c*d**4/4 + 3*B*a*b**2*d**4/4) + x**3*(2*A*
a**3*d**2*e**2 + 4*A*a**2*b*d**3*e + A*a**2*c*d**4 + A*a*b**2*d**4 + 4*B*a*
*3*d**3*e/3 + B*a**2*b*d**4) + x**2*(2*A*a**3*d**3*e + 3*A*a**2*b*d**4/2 +
B*a**3*d**4/2)
```

3.2335 $\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^7\Big(Ae(2cd-be)\big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\big)-B\big(3ce^2\big(a^2e^2-8abde+10b^2d^2\big)-b^2e^3(4bd-3ae)}{7e^8}$$

```
[Out] -1/4*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^4/e^8-1/5*(a*e^2-b*d*e+c*d^2)
^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*(e*x+d)^5/e^8-1/2*(a*e^2
-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5
*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^6/e^8-1/7*(A*e*(-b*e+2*c*d)*(10
*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)
-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))*(e*x+d)
^7/e^8-1/8*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e
+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^8/e^8-1/3*c*
(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))*(e*x+d)^9/e^8-1
/10*c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)^10/e^8+1/11*B*c^3*(e*x+d)^11/e^8
```

Rubi [A] time = 1.11, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^7\Big(Ae(2cd-be)\big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\big)-B\big(3ce^2\big(a^2e^2-8abde+10b^2d^2\big)-b^2e^3(4bd-3ae)}{7e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^4)/(4*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^5)/(5*e^8) - ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*
a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*(d + e*x)^6)/(2*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^7)/(7
*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*
x)^8)/(8*e^8) - (c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b
*d - a*e)))*(d + e*x)^9)/(3*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*
x)^10)/(10*e^8) + (B*c^3*(d + e*x)^11)/(11*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^3\left(a+bx+cx^2\right)^3\,dx=\int\Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2\big(7Bc}{}$$

$$=-\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^4}{4e^8}+\frac{\left(cd^2-bde+ae^2\right)^2\big(7Bcd^2-}{}$$

Mathematica [A] time = 0.35, size = 715, normalized size = 1.29

$$a^3Ad^3x+\frac{1}{4}x^4\left(A\left(a^2e\left(ae^2+9cd^2\right)+9ab^2d^2e+3abd\left(3ae^2+2cd^2\right)+b^3d^3\right)+3aBd\left(3abde+a\left(ae^2+cd^2\right)+b\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^3*x + (a^2*d^2*(a*B*d + 3*A*(b*d + a*e))*x^2)/2 + a*d*(a*B*d*(b*d +
 a*e) + A*(b^2*d^2 + 3*a*b*d*e + a*(c*d^2 + a*e^2)))*x^3 + ((3*a*B*d*(b^2*d
^2 + 3*a*b*d*e + a*(c*d^2 + a*e^2)) + A*(b^3*d^3 + 9*a*b^2*d^2*e + a^2*e*(9
*c*d^2 + a*e^2) + 3*a*b*d*(2*c*d^2 + 3*a*e^2)))*x^4)/4 + ((b^3*d^2*(B*d + 3
*A*e) + 3*b^2*d*(A*c*d^2 + 3*a*B*d*e + 3*a*A*e^2) + 3*a*b*(2*B*c*d^3 + 6*A*
c*d^2*e + 3*a*B*d*e^2 + a*A*e^3) + a*(a*B*e*(9*c*d^2 + a*e^2) + 3*A*c*d*(c*
d^2 + 3*a*e^2)))*x^5)/5 + ((b^3*d*e*(B*d + A*e) + a*b*B*e*(6*c*d^2 + a*e^2)
 + A*b*c*d*(c*d^2 + 6*a*e^2) + b^2*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a
*A*e^3) + a*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 + a*A*e^3))*x^6)/2 + ((b
^3*e^2*(3*B*d + A*e) + 3*b^2*e*(3*B*c*d^2 + 3*A*c*d*e + a*B*e^2) + 3*b*c*(B
*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3) + c*(3*a*B*e*(3*c*d^2 + a*e
^2) + A*c*d*(c*d^2 + 9*a*e^2)))*x^7)/7 + ((3*A*c*e*(c^2*d^2 + b^2*e^2 + c*e
*(3*b*d + a*e)) + B*(c^3*d^3 + b^3*e^3 + 9*c^2*d*e*(b*d + a*e) + 3*b*c*e^2*
(3*b*d + 2*a*e)))*x^8)/8 + (c*e*(A*c*e*(c*d + b*e) + B*(c^2*d^2 + b^2*e^2 +
 c*e*(3*b*d + a*e)))*x^9)/3 + (c^2*e^2*(A*c*e + 3*B*(c*d + b*e))*x^10)/10 +
 (B*c^3*e^3*x^11)/11
```

fricas [A] time = 1.04, size = 1040, normalized size = 1.87

$$\frac{1}{11}x^{11}e^3c^3B+\frac{3}{10}x^{10}e^2dc^3B+\frac{3}{10}x^{10}e^3c^2bB+\frac{1}{10}x^{10}e^3c^3A+\frac{1}{3}x^9ed^2c^3B+x^9e^2dc^2bB+\frac{1}{3}x^9e^3cb^2B+\frac{1}{3}x^9e^3c^2aB+\frac{1}{3}x^9e$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/11*x^11*e^3*c^3*B + 3/10*x^10*e^2*d*c^3*B + 3/10*x^10*e^3*c^2*b*B + 1/10*
x^10*e^3*c^3*A + 1/3*x^9*e*d^2*c^3*B + x^9*e^2*d*c^2*b*B + 1/3*x^9*e^3*c*b^
2*B + 1/3*x^9*e^3*c^2*a*B + 1/3*x^9*e^2*d*c^3*A + 1/3*x^9*e^3*c^2*b*A + 1/8
*x^8*d^3*c^3*B + 9/8*x^8*e*d^2*c^2*b*B + 9/8*x^8*e^2*d*c*b^2*B + 1/8*x^8*e^
3*b^3*B + 9/8*x^8*e^2*d*c^2*a*B + 3/4*x^8*e^3*c*b*a*B + 3/8*x^8*e*d^2*c^3*A
 + 9/8*x^8*e^2*d*c^2*b*A + 3/8*x^8*e^3*c*b^2*A + 3/8*x^8*e^3*c^2*a*A + 3/7*
x^7*d^3*c^2*b*B + 9/7*x^7*e*d^2*c*b^2*B + 3/7*x^7*e^2*d*b^3*B + 9/7*x^7*e*d
^2*c^2*a*B + 18/7*x^7*e^2*d*c*b*a*B + 3/7*x^7*e^3*b^2*a*B + 3/7*x^7*e^3*c*a
^2*B + 1/7*x^7*d^3*c^3*A + 9/7*x^7*e*d^2*c^2*b*A + 9/7*x^7*e^2*d*c*b^2*A +
1/7*x^7*e^3*b^3*A + 9/7*x^7*e^2*d*c^2*a*A + 6/7*x^7*e^3*c*b*a*A + 1/2*x^6*d
^3*c*b^2*B + 1/2*x^6*e*d^2*b^3*B + 1/2*x^6*d^3*c^2*a*B + 3*x^6*e*d^2*c*b*a*
B + 3/2*x^6*e^2*d*b^2*a*B + 3/2*x^6*e^2*d*c*a^2*B + 1/2*x^6*e^3*b*a^2*B + 1
/2*x^6*d^3*c^2*b*A + 3/2*x^6*e*d^2*c*b^2*A + 1/2*x^6*e^2*d*b^3*A + 3/2*x^6*
e*d^2*c^2*a*A + 3*x^6*e^2*d*c*b*a*A + 1/2*x^6*e^3*b^2*a*A + 1/2*x^6*e^3*c*a
^2*A + 1/5*x^5*d^3*b^3*B + 6/5*x^5*d^3*c*b*a*B + 9/5*x^5*e*d^2*b^2*a*B + 9/
5*x^5*e*d^2*c*a^2*B + 9/5*x^5*e^2*d*b*a^2*B + 1/5*x^5*e^3*a^3*B + 3/5*x^5*d
^3*c*b^2*A + 3/5*x^5*e*d^2*b^3*A + 3/5*x^5*d^3*c^2*a*A + 18/5*x^5*e*d^2*c*b
*a*A + 9/5*x^5*e^2*d*b^2*a*A + 9/5*x^5*e^2*d*c*a^2*A + 3/5*x^5*e^3*b*a^2*A
+ 3/4*x^4*d^3*b^2*a*B + 3/4*x^4*d^3*c*a^2*B + 9/4*x^4*e*d^2*b*a^2*B + 3/4*x
^4*e^2*d*a^3*B + 1/4*x^4*d^3*b^3*A + 3/2*x^4*d^3*c*b*a*A + 9/4*x^4*e*d^2*b^
2*a*A + 9/4*x^4*e*d^2*c*a^2*A + 9/4*x^4*e^2*d*b*a^2*A + 1/4*x^4*e^3*a^3*A +
 x^3*d^3*b*a^2*B + x^3*e*d^2*a^3*B + x^3*d^3*b^2*a*A + x^3*d^3*c*a^2*A + 3*
x^3*e*d^2*b*a^2*A + x^3*e^2*d*a^3*A + 1/2*x^2*d^3*a^3*B + 3/2*x^2*d^3*b*a^2
*A + 3/2*x^2*e*d^2*a^3*A + x*d^3*a^3*A
```

giac [A] time = 0.17, size = 1020, normalized size = 1.84

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/11*B*c^3*x^11*e^3 + 3/10*B*c^3*d*x^10*e^2 + 1/3*B*c^3*d^2*x^9*e + 1/8*B*c
^3*d^3*x^8 + 3/10*B*b*c^2*x^10*e^3 + 1/10*A*c^3*x^10*e^3 + B*b*c^2*d*x^9*e^
2 + 1/3*A*c^3*d*x^9*e^2 + 9/8*B*b*c^2*d^2*x^8*e + 3/8*A*c^3*d^2*x^8*e + 3/7
*B*b*c^2*d^3*x^7 + 1/7*A*c^3*d^3*x^7 + 1/3*B*b^2*c*x^9*e^3 + 1/3*B*a*c^2*x^
9*e^3 + 1/3*A*b*c^2*x^9*e^3 + 9/8*B*b^2*c*d*x^8*e^2 + 9/8*B*a*c^2*d*x^8*e^2
 + 9/8*A*b*c^2*d*x^8*e^2 + 9/7*B*b^2*c*d^2*x^7*e + 9/7*B*a*c^2*d^2*x^7*e +
9/7*A*b*c^2*d^2*x^7*e + 1/2*B*b^2*c*d^3*x^6 + 1/2*B*a*c^2*d^3*x^6 + 1/2*A*b
*c^2*d^3*x^6 + 1/8*B*b^3*x^8*e^3 + 3/4*B*a*b*c*x^8*e^3 + 3/8*A*b^2*c*x^8*e^
3 + 3/8*A*a*c^2*x^8*e^3 + 3/7*B*b^3*d*x^7*e^2 + 18/7*B*a*b*c*d*x^7*e^2 + 9/
7*A*b^2*c*d*x^7*e^2 + 9/7*A*a*c^2*d*x^7*e^2 + 1/2*B*b^3*d^2*x^6*e + 3*B*a*b
*c*d^2*x^6*e + 3/2*A*b^2*c*d^2*x^6*e + 3/2*A*a*c^2*d^2*x^6*e + 1/5*B*b^3*d^
3*x^5 + 6/5*B*a*b*c*d^3*x^5 + 3/5*A*b^2*c*d^3*x^5 + 3/5*A*a*c^2*d^3*x^5 + 3
/7*B*a*b^2*x^7*e^3 + 1/7*A*b^3*x^7*e^3 + 3/7*B*a^2*c*x^7*e^3 + 6/7*A*a*b*c*
x^7*e^3 + 3/2*B*a*b^2*d*x^6*e^2 + 1/2*A*b^3*d*x^6*e^2 + 3/2*B*a^2*c*d*x^6*e
^2 + 3*A*a*b*c*d*x^6*e^2 + 9/5*B*a*b^2*d^2*x^5*e + 3/5*A*b^3*d^2*x^5*e + 9/
5*B*a^2*c*d^2*x^5*e + 18/5*A*a*b*c*d^2*x^5*e + 3/4*B*a*b^2*d^3*x^4 + 1/4*A*
b^3*d^3*x^4 + 3/4*B*a^2*c*d^3*x^4 + 3/2*A*a*b*c*d^3*x^4 + 1/2*B*a^2*b*x^6*e
^3 + 1/2*A*a*b^2*x^6*e^3 + 1/2*A*a^2*c*x^6*e^3 + 9/5*B*a^2*b*d*x^5*e^2 + 9/
5*A*a*b^2*d*x^5*e^2 + 9/5*A*a^2*c*d*x^5*e^2 + 9/4*B*a^2*b*d^2*x^4*e + 9/4*A
*a*b^2*d^2*x^4*e + 9/4*A*a^2*c*d^2*x^4*e + B*a^2*b*d^3*x^3 + A*a*b^2*d^3*x^
3 + A*a^2*c*d^3*x^3 + 1/5*B*a^3*x^5*e^3 + 3/5*A*a^2*b*x^5*e^3 + 3/4*B*a^3*d
*x^4*e^2 + 9/4*A*a^2*b*d*x^4*e^2 + B*a^3*d^2*x^3*e + 3*A*a^2*b*d^2*x^3*e +
1/2*B*a^3*d^3*x^2 + 3/2*A*a^2*b*d^3*x^2 + 1/4*A*a^3*x^4*e^3 + A*a^3*d*x^3*e
^2 + 3/2*A*a^3*d^2*x^2*e + A*a^3*d^3*x
```

maple [A] time = 0.04, size = 819, normalized size = 1.48

$$\frac{B\,c^3e^3x^{11}}{11}+\frac{\left(3Bb\,c^2e^3+\left(A\,e^3+3Bd\,e^2\right)c^3\right)x^{10}}{10}+\frac{\left(\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)B\,e^3+3\left(A\,e^3+3Bd\,e^2\right)b\,c^2+\left(3Ad\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/11*B*c^3*e^3*x^11+1/10*((A*e^3+3*B*d*e^2)*c^3+3*B*e^3*b*c^2)*x^10+1/9*((3
*A*d*e^2+3*B*d^2*e)*c^3+3*(A*e^3+3*B*d*e^2)*b*c^2+B*e^3*(a*c^2+2*b^2*c+(2*a
*c+b^2)*c))*x^9+1/8*((3*A*d^2*e+B*d^3)*c^3+3*(3*A*d*e^2+3*B*d^2*e)*b*c^2+(A
*e^3+3*B*d*e^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e^3*(4*a*b*c+(2*a*c+b^2)*b)
)*x^8+1/7*(A*c^3*d^3+3*(3*A*d^2*e+B*d^3)*b*c^2+(3*A*d*e^2+3*B*d^2*e)*(a*c^2
+2*b^2*c+(2*a*c+b^2)*c)+(A*e^3+3*B*d*e^2)*(4*a*b*c+(2*a*c+b^2)*b)+B*e^3*(a^
2*c+2*a*b^2+(2*a*c+b^2)*a))*x^7+1/6*(3*A*d^3*b*c^2+(3*A*d^2*e+B*d^3)*(a*c^2
+2*b^2*c+(2*a*c+b^2)*c)+(3*A*d*e^2+3*B*d^2*e)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^
3+3*B*d*e^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*e^3*a^2*b)*x^6+1/5*(A*d^3*(a
*c^2+2*b^2*c+(2*a*c+b^2)*c)+(3*A*d^2*e+B*d^3)*(4*a*b*c+(2*a*c+b^2)*b)+(3*A*
d*e^2+3*B*d^2*e)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^3+3*B*d*e^2)*a^2*b+B*
a^3*e^3)*x^5+1/4*(A*d^3*(4*a*b*c+(2*a*c+b^2)*b)+(3*A*d^2*e+B*d^3)*(a^2*c+2*
a*b^2+(2*a*c+b^2)*a)+3*(3*A*d*e^2+3*B*d^2*e)*a^2*b+(A*e^3+3*B*d*e^2)*a^3)*x
^4+1/3*(A*d^3*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(3*A*d^2*e+B*d^3)*a^2*b+(3*A*
d*e^2+3*B*d^2*e)*a^3)*x^3+1/2*(3*A*d^3*a^2*b+(3*A*d^2*e+B*d^3)*a^3)*x^2+A*d
^3*a^3*x
```

maxima [A] time = 0.73, size = 713, normalized size = 1.28

$$\frac{1}{11}\,Bc^3e^3x^{11}+\frac{1}{10}\left(3\,Bc^3de^2+\left(3\,Bbc^2+Ac^3\right)e^3\right)x^{10}+\frac{1}{3}\left(Bc^3d^2e+\left(3\,Bbc^2+Ac^3\right)de^2+\left(Bb^2c+(Ba+Ab)c^2\right)e^3\right)x^9$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/11*B*c^3*e^3*x^11 + 1/10*(3*B*c^3*d*e^2 + (3*B*b*c^2 + A*c^3)*e^3)*x^10 +
 1/3*(B*c^3*d^2*e + (3*B*b*c^2 + A*c^3)*d*e^2 + (B*b^2*c + (B*a + A*b)*c^2)
*e^3)*x^9 + 1/8*(B*c^3*d^3 + 3*(3*B*b*c^2 + A*c^3)*d^2*e + 9*(B*b^2*c + (B*
a + A*b)*c^2)*d*e^2 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*x^8
+ A*a^3*d^3*x + 1/7*((3*B*b*c^2 + A*c^3)*d^3 + 9*(B*b^2*c + (B*a + A*b)*c^2
)*d^2*e + 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^2 + (3*B*a*b^2
+ A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^3)*x^7 + 1/2*((B*b^2*c + (B*a + A*b)*c^2
)*d^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e + (3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^2 + (B*a^2*b + A*a*b^2 + A*a^2*c)*e^3)*x^6
 + 1/5*((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3 + 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e + 9*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^2
+ (B*a^3 + 3*A*a^2*b)*e^3)*x^5 + 1/4*(A*a^3*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d^3 + 9*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e + 3*(B*a^3 +
 3*A*a^2*b)*d*e^2)*x^4 + (A*a^3*d*e^2 + (B*a^2*b + A*a*b^2 + A*a^2*c)*d^3 +
 (B*a^3 + 3*A*a^2*b)*d^2*e)*x^3 + 1/2*(3*A*a^3*d^2*e + (B*a^3 + 3*A*a^2*b)*
d^3)*x^2
```

mupad [B] time = 0.22, size = 835, normalized size = 1.50

$$x^5\left(\frac{B\,a^3\,e^3}{5}+\frac{9\,B\,a^2\,b\,d\,e^2}{5}+\frac{3\,A\,a^2\,b\,e^3}{5}+\frac{9\,B\,a^2\,c\,d^2\,e}{5}+\frac{9\,A\,a^2\,c\,d\,e^2}{5}+\frac{9\,B\,a\,b^2\,d^2\,e}{5}+\frac{9\,A\,a\,b^2\,d\,e^2}{5}+\frac{6\,B\,a\,b\,c}{5}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^3*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^5*((B*a^3*e^3)/5 + (B*b^3*d^3)/5 + (3*A*a*c^2*d^3)/5 + (3*A*a^2*b*e^3)/5
+ (3*A*b^2*c*d^3)/5 + (3*A*b^3*d^2*e)/5 + (6*B*a*b*c*d^3)/5 + (9*A*a*b^2*d*
e^2)/5 + (9*A*a^2*c*d*e^2)/5 + (9*B*a*b^2*d^2*e)/5 + (9*B*a^2*b*d*e^2)/5 +
(9*B*a^2*c*d^2*e)/5 + (18*A*a*b*c*d^2*e)/5) + x^7*((A*b^3*e^3)/7 + (A*c^3*d
^3)/7 + (3*B*a*b^2*e^3)/7 + (3*B*b*c^2*d^3)/7 + (3*B*a^2*c*e^3)/7 + (3*B*b^
3*d*e^2)/7 + (6*A*a*b*c*e^3)/7 + (9*A*a*c^2*d*e^2)/7 + (9*A*b*c^2*d^2*e)/7
+ (9*A*b^2*c*d*e^2)/7 + (9*B*a*c^2*d^2*e)/7 + (9*B*b^2*c*d^2*e)/7 + (18*B*a
*b*c*d*e^2)/7) + x^3*(A*a*b^2*d^3 + A*a^2*c*d^3 + B*a^2*b*d^3 + A*a^3*d*e^2
 + B*a^3*d^2*e + 3*A*a^2*b*d^2*e) + x^9*((A*b*c^2*e^3)/3 + (B*a*c^2*e^3)/3
+ (B*b^2*c*e^3)/3 + (A*c^3*d*e^2)/3 + (B*c^3*d^2*e)/3 + B*b*c^2*d*e^2) + x^
6*((A*a*b^2*e^3)/2 + (A*b*c^2*d^3)/2 + (A*a^2*c*e^3)/2 + (B*a*c^2*d^3)/2 +
(B*a^2*b*e^3)/2 + (B*b^2*c*d^3)/2 + (A*b^3*d*e^2)/2 + (B*b^3*d^2*e)/2 + (3*
A*a*c^2*d^2*e)/2 + (3*B*a*b^2*d*e^2)/2 + (3*A*b^2*c*d^2*e)/2 + (3*B*a^2*c*d
*e^2)/2 + 3*A*a*b*c*d*e^2 + 3*B*a*b*c*d^2*e) + x^4*((A*a^3*e^3)/4 + (A*b^3*
d^3)/4 + (3*B*a*b^2*d^3)/4 + (3*B*a^2*c*d^3)/4 + (3*B*a^3*d*e^2)/4 + (3*A*a
*b*c*d^3)/2 + (9*A*a*b^2*d^2*e)/4 + (9*A*a^2*b*d*e^2)/4 + (9*A*a^2*c*d^2*e)
/4 + (9*B*a^2*b*d^2*e)/4) + x^8*((B*b^3*e^3)/8 + (B*c^3*d^3)/8 + (3*A*a*c^2
*e^3)/8 + (3*A*b^2*c*e^3)/8 + (3*A*c^3*d^2*e)/8 + (3*B*a*b*c*e^3)/4 + (9*A*
b*c^2*d*e^2)/8 + (9*B*a*c^2*d*e^2)/8 + (9*B*b*c^2*d^2*e)/8 + (9*B*b^2*c*d*e
^2)/8) + (a^2*d^2*x^2*(3*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e^2*x^10*(A*c*e
 + 3*B*b*e + 3*B*c*d))/10 + A*a^3*d^3*x + (B*c^3*e^3*x^11)/11
```

sympy [B] time = 0.20, size = 1080, normalized size = 1.95

$$Aa^3d^3x+\frac{Bc^3e^3x^{11}}{11}+x^{10}\left(\frac{Ac^3e^3}{10}+\frac{3Bbc^2e^3}{10}+\frac{3Bc^3de^2}{10}\right)+x^9\left(\frac{Abc^2e^3}{3}+\frac{Ac^3de^2}{3}+\frac{Bac^2e^3}{3}+\frac{Bb^2ce^3}{3}+Bbc^2de^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**3*x + B*c**3*e**3*x**11/11 + x**10*(A*c**3*e**3/10 + 3*B*b*c**2*e
**3/10 + 3*B*c**3*d*e**2/10) + x**9*(A*b*c**2*e**3/3 + A*c**3*d*e**2/3 + B*
a*c**2*e**3/3 + B*b**2*c*e**3/3 + B*b*c**2*d*e**2 + B*c**3*d**2*e/3) + x**8
*(3*A*a*c**2*e**3/8 + 3*A*b**2*c*e**3/8 + 9*A*b*c**2*d*e**2/8 + 3*A*c**3*d*
*2*e/8 + 3*B*a*b*c*e**3/4 + 9*B*a*c**2*d*e**2/8 + B*b**3*e**3/8 + 9*B*b**2*
c*d*e**2/8 + 9*B*b*c**2*d**2*e/8 + B*c**3*d**3/8) + x**7*(6*A*a*b*c*e**3/7
+ 9*A*a*c**2*d*e**2/7 + A*b**3*e**3/7 + 9*A*b**2*c*d*e**2/7 + 9*A*b*c**2*d*
*2*e/7 + A*c**3*d**3/7 + 3*B*a**2*c*e**3/7 + 3*B*a*b**2*e**3/7 + 18*B*a*b*c
*d*e**2/7 + 9*B*a*c**2*d**2*e/7 + 3*B*b**3*d*e**2/7 + 9*B*b**2*c*d**2*e/7 +
 3*B*b*c**2*d**3/7) + x**6*(A*a**2*c*e**3/2 + A*a*b**2*e**3/2 + 3*A*a*b*c*d
*e**2 + 3*A*a*c**2*d**2*e/2 + A*b**3*d*e**2/2 + 3*A*b**2*c*d**2*e/2 + A*b*c
**2*d**3/2 + B*a**2*b*e**3/2 + 3*B*a**2*c*d*e**2/2 + 3*B*a*b**2*d*e**2/2 +
3*B*a*b*c*d**2*e + B*a*c**2*d**3/2 + B*b**3*d**2*e/2 + B*b**2*c*d**3/2) + x
**5*(3*A*a**2*b*e**3/5 + 9*A*a**2*c*d*e**2/5 + 9*A*a*b**2*d*e**2/5 + 18*A*a
*b*c*d**2*e/5 + 3*A*a*c**2*d**3/5 + 3*A*b**3*d**2*e/5 + 3*A*b**2*c*d**3/5 +
 B*a**3*e**3/5 + 9*B*a**2*b*d*e**2/5 + 9*B*a**2*c*d**2*e/5 + 9*B*a*b**2*d**
2*e/5 + 6*B*a*b*c*d**3/5 + B*b**3*d**3/5) + x**4*(A*a**3*e**3/4 + 9*A*a**2*
b*d*e**2/4 + 9*A*a**2*c*d**2*e/4 + 9*A*a*b**2*d**2*e/4 + 3*A*a*b*c*d**3/2 +
 A*b**3*d**3/4 + 3*B*a**3*d*e**2/4 + 9*B*a**2*b*d**2*e/4 + 3*B*a**2*c*d**3/
4 + 3*B*a*b**2*d**3/4) + x**3*(A*a**3*d*e**2 + 3*A*a**2*b*d**2*e + A*a**2*c
*d**3 + A*a*b**2*d**3 + B*a**3*d**2*e + B*a**2*b*d**3) + x**2*(3*A*a**3*d**
2*e/2 + 3*A*a**2*b*d**3/2 + B*a**3*d**3/2)
```

3.2336 $\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=555

$$-\frac{(d+ex)^6\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{6e^8}$$

```
[Out] -1/3*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^3/e^8-1/4*(a*e^2-b*d*e+c*d^2)
^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*(e*x+d)^4/e^8-3/5*(a*e^2
-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5
*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^5/e^8-1/6*(A*e*(-b*e+2*c*d)*(10
*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)
-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))*(e*x+d)
^6/e^8-1/7*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e
+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^7/e^8-3/8*c*
(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))*(e*x+d)^8/e^8-1
/9*c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)^9/e^8+1/10*B*c^3*(e*x+d)^10/e^8
```

Rubi [A] time = 0.86, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^6\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{6e^8}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] -((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^3)/(3*e^8) + ((c*d^2 - b*
d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*(d + e
*x)^4)/(4*e^8) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e
)))*(d + e*x)^5)/(5*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^6)/
(6*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d +
e*x)^7)/(7*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*
(6*b*d - a*e)))*(d + e*x)^8)/(8*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d
+ e*x)^9)/(9*e^8) + (B*c^3*(d + e*x)^10)/(10*e^8)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^2\left(a+bx+cx^2\right)^3\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^2}{e^7}+\frac{\left(cd^2-bde+ae^2\right)^2(}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3(d+ex)^3}{3e^8}+\frac{\left(cd^2-bde+ae^2\right)^2(7Bcd}{}$$

Mathematica [**A**] time = 0.27, size = 526, normalized size = 0.95

$$a^3Ad^2x+\frac{1}{4}x^4\left(A\left(6a^2cde+6ab^2de+3ab\left(ae^2+2cd^2\right)+b^3d^2\right)+aB\left(6abde+a\left(ae^2+3cd^2\right)+3b^2d^2\right)\right)+\frac{1}{2}a^2dx^2(2$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d^2*x + (a^2*d*(3*A*b*d + a*B*d + 2*a*A*e)*x^2)/2 + (a*(a*B*d*(3*b*d
+ 2*a*e) + A*(3*b^2*d^2 + 6*a*b*d*e + a*(3*c*d^2 + a*e^2)))*x^3)/3 + ((A*(b
^3*d^2 + 6*a*b^2*d*e + 6*a^2*c*d*e + 3*a*b*(2*c*d^2 + a*e^2)) + a*B*(3*b^2*
d^2 + 6*a*b*d*e + a*(3*c*d^2 + a*e^2)))*x^4)/4 + ((b^3*d*(B*d + 2*A*e) + 3*
b^2*(A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 3*a*c*(A*c*d^2 + 2*a*B*d*e + a*A*e^2)
 + 3*a*b*(2*B*c*d^2 + 4*A*c*d*e + a*B*e^2))*x^5)/5 + ((b^3*e*(2*B*d + A*e)
+ 3*b*c*(A*c*d^2 + 4*a*B*d*e + 2*a*A*e^2) + 3*b^2*(B*c*d^2 + 2*A*c*d*e + a*
B*e^2) + 3*a*c*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*x^6)/6 + ((b^3*B*e^2 + 3*b^
2*c*e*(2*B*d + A*e) + c^2*(A*c*d^2 + 6*a*B*d*e + 3*a*A*e^2) + 3*b*c*(B*c*d^
2 + 2*A*c*d*e + 2*a*B*e^2))*x^7)/7 + (c*(A*c*e*(2*c*d + 3*b*e) + B*(c^2*d^2
 + 3*b^2*e^2 + 3*c*e*(2*b*d + a*e)))*x^8)/8 + (c^2*e*(2*B*c*d + 3*b*B*e + A
*c*e)*x^9)/9 + (B*c^3*e^2*x^10)/10
```

fricas [**A**] time = 0.89, size = 727, normalized size = 1.31

$$\frac{1}{10}x^{10}e^2c^3B+\frac{2}{9}x^9edc^3B+\frac{1}{3}x^9e^2c^2bB+\frac{1}{9}x^9e^2c^3A+\frac{1}{8}x^8d^2c^3B+\frac{3}{4}x^8edc^2bB+\frac{3}{8}x^8e^2cb^2B+\frac{3}{8}x^8e^2c^2aB+\frac{1}{4}x^8edc^3A+\frac{3}{8}x^8$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/10*x^10*e^2*c^3*B + 2/9*x^9*e*d*c^3*B + 1/3*x^9*e^2*c^2*b*B + 1/9*x^9*e^2
*c^3*A + 1/8*x^8*d^2*c^3*B + 3/4*x^8*e*d*c^2*b*B + 3/8*x^8*e^2*c*b^2*B + 3/
8*x^8*e^2*c^2*a*B + 1/4*x^8*e*d*c^3*A + 3/8*x^8*e^2*c^2*b*A + 3/7*x^7*d^2*c
^2*b*B + 6/7*x^7*e*d*c*b^2*B + 1/7*x^7*e^2*b^3*B + 6/7*x^7*e*d*c^2*a*B + 6/
7*x^7*e^2*c*b*a*B + 1/7*x^7*d^2*c^3*A + 6/7*x^7*e*d*c^2*b*A + 3/7*x^7*e^2*c
*b^2*A + 3/7*x^7*e^2*c^2*a*A + 1/2*x^6*d^2*c*b^2*B + 1/3*x^6*e*d*b^3*B + 1/
2*x^6*d^2*c^2*a*B + 2*x^6*e*d*c*b*a*B + 1/2*x^6*e^2*b^2*a*B + 1/2*x^6*e^2*c
*a^2*B + 1/2*x^6*d^2*c^2*b*A + x^6*e*d*c*b^2*A + 1/6*x^6*e^2*b^3*A + x^6*e*
d*c^2*a*A + x^6*e^2*c*b*a*A + 1/5*x^5*d^2*b^3*B + 6/5*x^5*d^2*c*b*a*B + 6/5
*x^5*e*d*b^2*a*B + 6/5*x^5*e*d*c*a^2*B + 3/5*x^5*e^2*b*a^2*B + 3/5*x^5*d^2*
c*b^2*A + 2/5*x^5*e*d*b^3*A + 3/5*x^5*d^2*c^2*a*A + 12/5*x^5*e*d*c*b*a*A +
3/5*x^5*e^2*b^2*a*A + 3/5*x^5*e^2*c*a^2*A + 3/4*x^4*d^2*b^2*a*B + 3/4*x^4*d
^2*c*a^2*B + 3/2*x^4*e*d*b*a^2*B + 1/4*x^4*e^2*a^3*B + 1/4*x^4*d^2*b^3*A +
3/2*x^4*d^2*c*b*a*A + 3/2*x^4*e*d*b^2*a*A + 3/2*x^4*e*d*c*a^2*A + 3/4*x^4*e
^2*b*a^2*A + x^3*d^2*b*a^2*B + 2/3*x^3*e*d*a^3*B + x^3*d^2*b^2*a*A + x^3*d^
2*c*a^2*A + 2*x^3*e*d*b*a^2*A + 1/3*x^3*e^2*a^3*A + 1/2*x^2*d^2*a^3*B + 3/2
*x^2*d^2*b*a^2*A + x^2*e*d*a^3*A + x*d^2*a^3*A
```

giac [**A**] time = 0.16, size = 727, normalized size = 1.31

$$\frac{1}{10}Bc^3x^{10}e^2+\frac{2}{9}Bc^3dx^9e+\frac{1}{8}Bc^3d^2x^8+\frac{1}{3}Bbc^2x^9e^2+\frac{1}{9}Ac^3x^9e^2+\frac{3}{4}Bbc^2dx^8e+\frac{1}{4}Ac^3dx^8e+\frac{3}{7}Bbc^2d^2x^7+\frac{1}{7}Ac^3d^2x^7+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/10*B*c^3*x^10*e^2 + 2/9*B*c^3*d*x^9*e + 1/8*B*c^3*d^2*x^8 + 1/3*B*b*c^2*x
^9*e^2 + 1/9*A*c^3*x^9*e^2 + 3/4*B*b*c^2*d*x^8*e + 1/4*A*c^3*d*x^8*e + 3/7*
B*b*c^2*d^2*x^7 + 1/7*A*c^3*d^2*x^7 + 3/8*B*b^2*c*x^8*e^2 + 3/8*B*a*c^2*x^8
*e^2 + 3/8*A*b*c^2*x^8*e^2 + 6/7*B*b^2*c*d*x^7*e + 6/7*B*a*c^2*d*x^7*e + 6/
```

```
7*A*b*c^2*d*x^7*e + 1/2*B*b^2*c*d^2*x^6 + 1/2*B*a*c^2*d^2*x^6 + 1/2*A*b*c^2
*d^2*x^6 + 1/7*B*b^3*x^7*e^2 + 6/7*B*a*b*c*x^7*e^2 + 3/7*A*b^2*c*x^7*e^2 +
3/7*A*a*c^2*x^7*e^2 + 1/3*B*b^3*d*x^6*e + 2*B*a*b*c*d*x^6*e + A*b^2*c*d*x^6
*e + A*a*c^2*d*x^6*e + 1/5*B*b^3*d^2*x^5 + 6/5*B*a*b*c*d^2*x^5 + 3/5*A*b^2*
c*d^2*x^5 + 3/5*A*a*c^2*d^2*x^5 + 1/2*B*a*b^2*x^6*e^2 + 1/6*A*b^3*x^6*e^2 +
 1/2*B*a^2*c*x^6*e^2 + A*a*b*c*x^6*e^2 + 6/5*B*a*b^2*d*x^5*e + 2/5*A*b^3*d*
x^5*e + 6/5*B*a^2*c*d*x^5*e + 12/5*A*a*b*c*d*x^5*e + 3/4*B*a*b^2*d^2*x^4 +
1/4*A*b^3*d^2*x^4 + 3/4*B*a^2*c*d^2*x^4 + 3/2*A*a*b*c*d^2*x^4 + 3/5*B*a^2*b
*x^5*e^2 + 3/5*A*a*b^2*x^5*e^2 + 3/5*A*a^2*c*x^5*e^2 + 3/2*B*a^2*b*d*x^4*e
+ 3/2*A*a*b^2*d*x^4*e + 3/2*A*a^2*c*d*x^4*e + B*a^2*b*d^2*x^3 + A*a*b^2*d^2
*x^3 + A*a^2*c*d^2*x^3 + 1/4*B*a^3*x^4*e^2 + 3/4*A*a^2*b*x^4*e^2 + 2/3*B*a^
3*d*x^3*e + 2*A*a^2*b*d*x^3*e + 1/2*B*a^3*d^2*x^2 + 3/2*A*a^2*b*d^2*x^2 + 1
/3*A*a^3*x^3*e^2 + A*a^3*d*x^2*e + A*a^3*d^2*x
```

maple [**A**]   time = 0.05, size = 597, normalized size = 1.08

$$\frac{B c^3 e^2 x^{10}}{10}+\frac{\left(3Bb c^2 e^2+\left(A e^2+2Bde\right)c^3\right)x^9}{9}+\frac{\left(\left(a c^2+2b^2 c+\left(2ac+b^2\right)c\right)B e^2+3\left(A e^2+2Bde\right)b c^2+(2Ad}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/10*B*c^3*e^2*x^10+1/9*(3*B*b*c^2*e^2+(A*e^2+2*B*d*e)*c^3)*x^9+1/8*((2*A*d
*e+B*d^2)*c^3+3*(A*e^2+2*B*d*e)*b*c^2+B*e^2*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*
x^8+1/7*(A*c^3*d^2+3*(2*A*d*e+B*d^2)*b*c^2+(A*e^2+2*B*d*e)*(a*c^2+2*b^2*c+(
2*a*c+b^2)*c)+B*e^2*(4*a*b*c+(2*a*c+b^2)*b))*x^7+1/6*(3*A*b*c^2*d^2+(2*A*d*
e+B*d^2)*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e^2+2*B*d*e)*(4*a*b*c+(2*a*c+b^2)
*b)+B*e^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x^6+1/5*(A*d^2*(a*c^2+2*b^2*c+(2*a
*c+b^2)*c)+(2*A*d*e+B*d^2)*(4*a*b*c+(2*a*c+b^2)*b)+(A*e^2+2*B*d*e)*(a^2*c+2
*a*b^2+(2*a*c+b^2)*a)+3*B*e^2*a^2*b)*x^5+1/4*(A*d^2*(4*a*b*c+(2*a*c+b^2)*b)
+(2*A*d*e+B*d^2)*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(A*e^2+2*B*d*e)*a^2*b+B*e^
2*a^3)*x^4+1/3*(A*d^2*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*(2*A*d*e+B*d^2)*a^2*b
+(A*e^2+2*B*d*e)*a^3)*x^3+1/2*(3*A*d^2*a^2*b+(2*A*d*e+B*d^2)*a^3)*x^2+A*d^2
*a^3*x
```

maxima [**A**]   time = 0.65, size = 529, normalized size = 0.95

$$\frac{1}{10}\,Bc^3e^2x^{10}+\frac{1}{9}\left(2\,Bc^3de+\left(3\,Bbc^2+Ac^3\right)e^2\right)x^9+\frac{1}{8}\left(Bc^3d^2+2\left(3\,Bbc^2+Ac^3\right)de+3\left(Bb^2c+(Ba+Ab)c^2\right)e^2\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/10*B*c^3*e^2*x^10 + 1/9*(2*B*c^3*d*e + (3*B*b*c^2 + A*c^3)*e^2)*x^9 + 1/8
*(B*c^3*d^2 + 2*(3*B*b*c^2 + A*c^3)*d*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^2
)*x^8 + 1/7*((3*B*b*c^2 + A*c^3)*d^2 + 6*(B*b^2*c + (B*a + A*b)*c^2)*d*e +
(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^2)*x^7 + A*a^3*d^2*x + 1/6*(3
*(B*b^2*c + (B*a + A*b)*c^2)*d^2 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^2)*x^6 + 1/5*((B*
b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2 + 2*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^2)*x^5 + 1/4*((3*
B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2 + 6*(B*a^2*b + A*a*b^2 + A*a^2
*c)*d*e + (B*a^3 + 3*A*a^2*b)*e^2)*x^4 + 1/3*(A*a^3*e^2 + 3*(B*a^2*b + A*a*
b^2 + A*a^2*c)*d^2 + 2*(B*a^3 + 3*A*a^2*b)*d*e)*x^3 + 1/2*(2*A*a^3*d*e + (B
*a^3 + 3*A*a^2*b)*d^2)*x^2
```

mupad [**B**]   time = 2.49, size = 578, normalized size = 1.04

$$x^3\left(\frac{2\,B\,a^3\,d\,e}{3}+\frac{A\,a^3\,e^2}{3}+B\,a^2\,b\,d^2+2\,A\,a^2\,b\,d\,e+A\,c\,a^2\,d^2+A\,a\,b^2\,d^2\right)+x^8\,\left(\frac{3\,B\,b^2\,c\,e^2}{8}+\frac{3\,B\,b\,c^2\,d\,e}{4}+\frac{3\,A\,b}{8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^2*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^3*((A*a^3*e^2)/3 + (2*B*a^3*d*e)/3 + A*a*b^2*d^2 + A*a^2*c*d^2 + B*a^2*b*
d^2 + 2*A*a^2*b*d*e) + x^8*((B*c^3*d^2)/8 + (A*c^3*d*e)/4 + (3*A*b*c^2*e^2)
/8 + (3*B*a*c^2*e^2)/8 + (3*B*b^2*c*e^2)/8 + (3*B*b*c^2*d*e)/4) + x^4*((A*b
^3*d^2)/4 + (B*a^3*e^2)/4 + (3*A*a^2*b*e^2)/4 + (3*B*a*b^2*d^2)/4 + (3*B*a^
2*c*d^2)/4 + (3*A*a*b*c*d^2)/2 + (3*A*a*b^2*d*e)/2 + (3*A*a^2*c*d*e)/2 + (3
*B*a^2*b*d*e)/2) + x^7*((A*c^3*d^2)/7 + (B*b^3*e^2)/7 + (3*A*a*c^2*e^2)/7 +
 (3*A*b^2*c*e^2)/7 + (3*B*b*c^2*d^2)/7 + (6*B*a*b*c*e^2)/7 + (6*A*b*c^2*d*e
)/7 + (6*B*a*c^2*d*e)/7 + (6*B*b^2*c*d*e)/7) + x^5*((B*b^3*d^2)/5 + (2*A*b^
3*d*e)/5 + (3*A*a*b^2*e^2)/5 + (3*A*a*c^2*d^2)/5 + (3*A*a^2*c*e^2)/5 + (3*A
*b^2*c*d^2)/5 + (3*B*a^2*b*e^2)/5 + (6*B*a*b*c*d^2)/5 + (6*B*a*b^2*d*e)/5 +
 (6*B*a^2*c*d*e)/5 + (12*A*a*b*c*d*e)/5) + x^6*((A*b^3*e^2)/6 + (B*b^3*d*e)
/3 + (A*b*c^2*d^2)/2 + (B*a*b^2*e^2)/2 + (B*a*c^2*d^2)/2 + (B*a^2*c*e^2)/2
+ (B*b^2*c*d^2)/2 + A*a*b*c*e^2 + A*a*c^2*d*e + A*b^2*c*d*e + 2*B*a*b*c*d*e
) + A*a^3*d^2*x + (a^2*d*x^2*(2*A*a*e + 3*A*b*d + B*a*d))/2 + (c^2*e*x^9*(A
*c*e + 3*B*b*e + 2*B*c*d))/9 + (B*c^3*e^2*x^10)/10
```

sympy [**A**] time = 0.17, size = 753, normalized size = 1.36

$$Aa^3d^2x+\frac{Bc^3e^2x^{10}}{10}+x^9\left(\frac{Ac^3e^2}{9}+\frac{Bbc^2e^2}{3}+\frac{2Bc^3de}{9}\right)+x^8\left(\frac{3Abc^2e^2}{8}+\frac{Ac^3de}{4}+\frac{3Bac^2e^2}{8}+\frac{3Bb^2ce^2}{8}+\frac{3Bbc^2de}{4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d**2*x + B*c**3*e**2*x**10/10 + x**9*(A*c**3*e**2/9 + B*b*c**2*e**2/
3 + 2*B*c**3*d*e/9) + x**8*(3*A*b*c**2*e**2/8 + A*c**3*d*e/4 + 3*B*a*c**2*e
**2/8 + 3*B*b**2*c*e**2/8 + 3*B*b*c**2*d*e/4 + B*c**3*d**2/8) + x**7*(3*A*a
*c**2*e**2/7 + 3*A*b**2*c*e**2/7 + 6*A*b*c**2*d*e/7 + A*c**3*d**2/7 + 6*B*a
*b*c*e**2/7 + 6*B*a*c**2*d*e/7 + B*b**3*e**2/7 + 6*B*b**2*c*d*e/7 + 3*B*b*c
**2*d**2/7) + x**6*(A*a*b*c*e**2 + A*a*c**2*d*e + A*b**3*e**2/6 + A*b**2*c*
d*e + A*b*c**2*d**2/2 + B*a**2*c*e**2/2 + B*a*b**2*e**2/2 + 2*B*a*b*c*d*e +
 B*a*c**2*d**2/2 + B*b**3*d*e/3 + B*b**2*c*d**2/2) + x**5*(3*A*a**2*c*e**2/
5 + 3*A*a*b**2*e**2/5 + 12*A*a*b*c*d*e/5 + 3*A*a*c**2*d**2/5 + 2*A*b**3*d*e
/5 + 3*A*b**2*c*d**2/5 + 3*B*a**2*b*e**2/5 + 6*B*a**2*c*d*e/5 + 6*B*a*b**2*
d*e/5 + 6*B*a*b*c*d**2/5 + B*b**3*d**2/5) + x**4*(3*A*a**2*b*e**2/4 + 3*A*a
**2*c*d*e/2 + 3*A*a*b**2*d*e/2 + 3*A*a*b*c*d**2/2 + A*b**3*d**2/4 + B*a**3*
e**2/4 + 3*B*a**2*b*d*e/2 + 3*B*a**2*c*d**2/4 + 3*B*a*b**2*d**2/4) + x**3*(
A*a**3*e**2/3 + 2*A*a**2*b*d*e + A*a**2*c*d**2 + A*a*b**2*d**2 + 2*B*a**3*d
*e/3 + B*a**2*b*d**2) + x**2*(A*a**3*d*e + 3*A*a**2*b*d**2/2 + B*a**3*d**2/
2)
```

3.2337 $\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=310

$$a^3Adx+\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+\frac{1}{7}cx^7\,\big(c(3$$

```
[Out] a^3*A*d*x+1/2*a^2*(A*a*e+3*A*b*d+B*a*d)*x^2+1/3*a*(a*B*(a*e+3*b*d)+3*A*(a*b
*e+a*c*d+b^2*d))*x^3+1/4*(3*a*B*(a*b*e+a*c*d+b^2*d)+A*(3*a^2*c*e+3*a*b^2*e+
6*a*b*c*d+b^3*d))*x^4+1/5*(b^3*(A*e+B*d)+6*a*b*c*(A*e+B*d)+3*b^2*(A*c*d+B*a
*e)+3*a*c*(A*c*d+B*a*e))*x^5+1/6*(b^3*B*e+3*b^2*c*(A*e+B*d)+3*a*c^2*(A*e+B*
d)+3*b*c*(A*c*d+2*B*a*e))*x^6+1/7*c*(3*b^2*B*e+3*b*c*(A*e+B*d)+c*(A*c*d+3*B
*a*e))*x^7+1/8*c^2*(A*c*e+3*B*b*e+B*c*d)*x^8+1/9*B*c^3*e*x^9
```

Rubi [A] time = 0.64, antiderivative size = 310, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.043$, Rules used = {771}

$$\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+a^3Adx+\frac{1}{6}x^6\,\big(3bc($$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^2*(3*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a*(a*B*(3*b*d + a*e) +
 3*A*(b^2*d + a*c*d + a*b*e))*x^3)/3 + ((3*a*B*(b^2*d + a*c*d + a*b*e) + A*
(b^3*d + 6*a*b*c*d + 3*a*b^2*e + 3*a^2*c*e))*x^4)/4 + ((b^3*(B*d + A*e) + 6
*a*b*c*(B*d + A*e) + 3*b^2*(A*c*d + a*B*e) + 3*a*c*(A*c*d + a*B*e))*x^5)/5
+ ((b^3*B*e + 3*b^2*c*(B*d + A*e) + 3*a*c^2*(B*d + A*e) + 3*b*c*(A*c*d + 2*
a*B*e))*x^6)/6 + (c*(3*b^2*B*e + 3*b*c*(B*d + A*e) + c*(A*c*d + 3*a*B*e))*x
^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)\left(a+bx+cx^2\right)^3\,dx &= \int \big(a^3Ad+a^2(3Abd+aBd+aAe)x+a\,\big(aB(3bd+ae)+3A\,\big(b^2d+\\ &= a^3Adx+\frac{1}{2}a^2(3Abd+aBd+aAe)x^2+\frac{1}{3}a\,\big(aB(3bd+ae)+3A\,\big(b^2d\end{aligned}$$

Mathematica [A] time = 0.16, size = 310, normalized size = 1.00

$$a^3Adx+\frac{1}{4}x^4\left(A\left(3a^2ce+3ab^2e+6abcd+b^3d\right)+3aB\left(abe+acd+b^2d\right)\right)+\frac{1}{2}a^2x^2(aAe+aBd+3Abd)+\frac{1}{7}cx^7\,\big(c(3$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*d*x + (a^2*(3*A*b*d + a*B*d + a*A*e)*x^2)/2 + (a*(a*B*(3*b*d + a*e) +
 3*A*(b^2*d + a*c*d + a*b*e))*x^3)/3 + ((3*a*B*(b^2*d + a*c*d + a*b*e) + A*
(b^3*d + 6*a*b*c*d + 3*a*b^2*e + 3*a^2*c*e))*x^4)/4 + ((b^3*(B*d + A*e) + 6
*a*b*c*(B*d + A*e) + 3*b^2*(A*c*d + a*B*e) + 3*a*c*(A*c*d + a*B*e))*x^5)/5
+ ((b^3*B*e + 3*b^2*c*(B*d + A*e) + 3*a*c^2*(B*d + A*e) + 3*b*c*(A*c*d + 2*
a*B*e))*x^6)/6 + (c*(3*b^2*B*e + 3*b*c*(B*d + A*e) + c*(A*c*d + 3*a*B*e))*x
^7)/7 + (c^2*(B*c*d + 3*b*B*e + A*c*e)*x^8)/8 + (B*c^3*e*x^9)/9
```

fricas [A] time = 0.65, size = 417, normalized size = 1.35

$$\frac{1}{9}x^9ec^3B+\frac{1}{8}x^8dc^3B+\frac{3}{8}x^8ec^2bB+\frac{1}{8}x^8ec^3A+\frac{3}{7}x^7dc^2bB+\frac{3}{7}x^7ecb^2B+\frac{3}{7}x^7ec^2aB+\frac{1}{7}x^7dc^3A+\frac{3}{7}x^7ec^2bA+\frac{1}{2}x^6dcb^2B+\frac{1}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e*c^3*B + 1/8*x^8*d*c^3*B + 3/8*x^8*e*c^2*b*B + 1/8*x^8*e*c^3*A + 3
/7*x^7*d*c^2*b*B + 3/7*x^7*e*c*b^2*B + 3/7*x^7*e*c^2*a*B + 1/7*x^7*d*c^3*A
+ 3/7*x^7*e*c^2*b*A + 1/2*x^6*d*c*b^2*B + 1/6*x^6*e*b^3*B + 1/2*x^6*d*c^2*a
*B + x^6*e*c*b*a*B + 1/2*x^6*d*c^2*b*A + 1/2*x^6*e*c*b^2*A + 1/2*x^6*e*c^2*
a*A + 1/5*x^5*d*b^3*B + 6/5*x^5*d*c*b*a*B + 3/5*x^5*e*b^2*a*B + 3/5*x^5*e*c
*a^2*B + 3/5*x^5*d*c*b^2*A + 1/5*x^5*e*b^3*A + 3/5*x^5*d*c^2*a*A + 6/5*x^5*
e*c*b*a*A + 3/4*x^4*d*b^2*a*B + 3/4*x^4*d*c*a^2*B + 3/4*x^4*e*b*a^2*B + 1/4
*x^4*d*b^3*A + 3/2*x^4*d*c*b*a*A + 3/4*x^4*e*b^2*a*A + 3/4*x^4*e*c*a^2*A +
x^3*d*b*a^2*B + 1/3*x^3*e*a^3*B + x^3*d*b^2*a*A + x^3*d*c*a^2*A + x^3*e*b*a
^2*A + 1/2*x^2*d*a^3*B + 3/2*x^2*d*b*a^2*A + 1/2*x^2*e*a^3*A + x*d*a^3*A
```

giac [A] time = 0.16, size = 437, normalized size = 1.41

$$\frac{1}{9}Bc^3x^9e+\frac{1}{8}Bc^3dx^8+\frac{3}{8}Bbc^2x^8e+\frac{1}{8}Ac^3x^8e+\frac{3}{7}Bbc^2dx^7+\frac{1}{7}Ac^3dx^7+\frac{3}{7}Bb^2cx^7e+\frac{3}{7}Bac^2x^7e+\frac{3}{7}Abc^2x^7e+\frac{1}{2}Bb^2cdx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/9*B*c^3*x^9*e + 1/8*B*c^3*d*x^8 + 3/8*B*b*c^2*x^8*e + 1/8*A*c^3*x^8*e + 3
/7*B*b*c^2*d*x^7 + 1/7*A*c^3*d*x^7 + 3/7*B*b^2*c*x^7*e + 3/7*B*a*c^2*x^7*e
+ 3/7*A*b*c^2*x^7*e + 1/2*B*b^2*c*d*x^6 + 1/2*B*a*c^2*d*x^6 + 1/2*A*b*c^2*d
*x^6 + 1/6*B*b^3*x^6*e + B*a*b*c*x^6*e + 1/2*A*b^2*c*x^6*e + 1/2*A*a*c^2*x^
6*e + 1/5*B*b^3*d*x^5 + 6/5*B*a*b*c*d*x^5 + 3/5*A*b^2*c*d*x^5 + 3/5*A*a*c^2
*d*x^5 + 3/5*B*a*b^2*x^5*e + 1/5*A*b^3*x^5*e + 3/5*B*a^2*c*x^5*e + 6/5*A*a*
b*c*x^5*e + 3/4*B*a*b^2*d*x^4 + 1/4*A*b^3*d*x^4 + 3/4*B*a^2*c*d*x^4 + 3/2*A
*a*b*c*d*x^4 + 3/4*B*a^2*b*x^4*e + 3/4*A*a*b^2*x^4*e + 3/4*A*a^2*c*x^4*e +
B*a^2*b*d*x^3 + A*a*b^2*d*x^3 + A*a^2*c*d*x^3 + 1/3*B*a^3*x^3*e + A*a^2*b*x
^3*e + 1/2*B*a^3*d*x^2 + 3/2*A*a^2*b*d*x^2 + 1/2*A*a^3*x^2*e + A*a^3*d*x
```

maple [A] time = 0.04, size = 375, normalized size = 1.21

$$\frac{B\,c^3e\,x^9}{9}+\frac{\left(3Bb\,c^2e+(Ae+Bd)\,c^3\right)x^8}{8}+\frac{\left(A\,c^3d+3\,(Ae+Bd)\,b\,c^2+\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)Be\right)x^7}{7}+A\,a^3dx+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/9*B*c^3*e*x^9+1/8*((A*e+B*d)*c^3+3*B*e*b*c^2)*x^8+1/7*(A*d*c^3+3*(A*e+B*d
)*b*c^2+B*e*(a*c^2+2*b^2*c+(2*a*c+b^2)*c))*x^7+1/6*(3*A*d*b*c^2+(A*e+B*d)*(
a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*e*(4*a*b*c+(2*a*c+b^2)*b))*x^6+1/5*(A*d*(a*c
^2+2*b^2*c+(2*a*c+b^2)*c)+(A*e+B*d)*(4*a*b*c+(2*a*c+b^2)*b)+B*e*(a^2*c+2*a*
b^2+(2*a*c+b^2)*a))*x^5+1/4*(A*d*(4*a*b*c+(2*a*c+b^2)*b)+(A*e+B*d)*(a^2*c+2
*a*b^2+(2*a*c+b^2)*a)+3*B*e*a^2*b)*x^4+1/3*(A*d*(a^2*c+2*a*b^2+(2*a*c+b^2)*
a)+3*(A*e+B*d)*a^2*b+B*e*a^3)*x^3+1/2*(3*A*d*a^2*b+(A*e+B*d)*a^3)*x^2+A*a^3
*d*x
```

maxima [A] time = 0.60, size = 334, normalized size = 1.08

$$\frac{1}{9}Bc^3ex^9+\frac{1}{8}\left(Bc^3d+\left(3Bbc^2+Ac^3\right)e\right)x^8+\frac{1}{7}\left(\left(3Bbc^2+Ac^3\right)d+3\left(Bb^2c+(Ba+Ab)c^2\right)e\right)x^7+\frac{1}{6}\left(3\left(Bb^2c+(B\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/9*B*c^3*e*x^9 + 1/8*(B*c^3*d + (3*B*b*c^2 + A*c^3)*e)*x^8 + 1/7*((3*B*b*c
^2 + A*c^3)*d + 3*(B*b^2*c + (B*a + A*b)*c^2)*e)*x^7 + 1/6*(3*(B*b^2*c + (B
*a + A*b)*c^2)*d + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e)*x^6 + A*a
^3*d*x + 1/5*((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d + (3*B*a*b^2 +
A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e)*x^5 + 1/4*((3*B*a*b^2 + A*b^3 + 3*(B*a^2
+ 2*A*a*b)*c)*d + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e)*x^4 + 1/3*(3*(B*a^2*b
+ A*a*b^2 + A*a^2*c)*d + (B*a^3 + 3*A*a^2*b)*e)*x^3 + 1/2*(A*a^3*e + (B*a^3
 + 3*A*a^2*b)*d)*x^2
```

mupad [B] time = 0.13, size = 338, normalized size = 1.09

$$x^7\left(\frac{A\,c^3\,d}{7}+\frac{3\,A\,b\,c^2\,e}{7}+\frac{3\,B\,a\,c^2\,e}{7}+\frac{3\,B\,b\,c^2\,d}{7}+\frac{3\,B\,b^2\,c\,e}{7}\right)+x^5\left(\frac{A\,b^3\,e}{5}+\frac{B\,b^3\,d}{5}+\frac{3\,A\,a\,c^2\,d}{5}+\frac{3\,A\,b^2\,c\,d}{5}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^7*((A*c^3*d)/7 + (3*A*b*c^2*e)/7 + (3*B*a*c^2*e)/7 + (3*B*b*c^2*d)/7 + (3
*B*b^2*c*e)/7) + x^5*((A*b^3*e)/5 + (B*b^3*d)/5 + (3*A*a*c^2*d)/5 + (3*A*b^
2*c*d)/5 + (3*B*a*b^2*e)/5 + (3*B*a^2*c*e)/5 + (6*A*a*b*c*e)/5 + (6*B*a*b*c
*d)/5) + x^2*((A*a^3*e)/2 + (B*a^3*d)/2 + (3*A*a^2*b*d)/2) + x^8*((A*c^3*e)
/8 + (B*c^3*d)/8 + (3*B*b*c^2*e)/8) + x^4*((A*b^3*d)/4 + (3*A*a*b^2*e)/4 +
(3*B*a*b^2*d)/4 + (3*A*a^2*c*e)/4 + (3*B*a^2*b*e)/4 + (3*B*a^2*c*d)/4 + (3*
A*a*b*c*d)/2) + x^6*((B*b^3*e)/6 + (A*a*c^2*e)/2 + (A*b*c^2*d)/2 + (B*a*c^2
*d)/2 + (A*b^2*c*e)/2 + (B*b^2*c*d)/2 + B*a*b*c*e) + x^3*((B*a^3*e)/3 + A*a
*b^2*d + A*a^2*b*e + A*a^2*c*d + B*a^2*b*d) + A*a^3*d*x + (B*c^3*e*x^9)/9
```

sympy [A] time = 0.13, size = 435, normalized size = 1.40

$$Aa^3dx+\frac{Bc^3ex^9}{9}+x^8\left(\frac{Ac^3e}{8}+\frac{3Bbc^2e}{8}+\frac{Bc^3d}{8}\right)+x^7\left(\frac{3Abc^2e}{7}+\frac{Ac^3d}{7}+\frac{3Bac^2e}{7}+\frac{3Bb^2ce}{7}+\frac{3Bbc^2d}{7}\right)+x^6\left(\frac{Aac^2}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*d*x + B*c**3*e*x**9/9 + x**8*(A*c**3*e/8 + 3*B*b*c**2*e/8 + B*c**3*d
/8) + x**7*(3*A*b*c**2*e/7 + A*c**3*d/7 + 3*B*a*c**2*e/7 + 3*B*b**2*c*e/7 +
 3*B*b*c**2*d/7) + x**6*(A*a*c**2*e/2 + A*b**2*c*e/2 + A*b*c**2*d/2 + B*a*b
*c*e + B*a*c**2*d/2 + B*b**3*e/6 + B*b**2*c*d/2) + x**5*(6*A*a*b*c*e/5 + 3*
A*a*c**2*d/5 + A*b**3*e/5 + 3*A*b**2*c*d/5 + 3*B*a**2*c*e/5 + 3*B*a*b**2*e/
5 + 6*B*a*b*c*d/5 + B*b**3*d/5) + x**4*(3*A*a**2*c*e/4 + 3*A*a*b**2*e/4 + 3
*A*a*b*c*d/2 + A*b**3*d/4 + 3*B*a**2*b*e/4 + 3*B*a**2*c*d/4 + 3*B*a*b**2*d/
4) + x**3*(A*a**2*b*e + A*a**2*c*d + A*a*b**2*d + B*a**3*e/3 + B*a**2*b*d)
+ x**2*(A*a**3*e/2 + 3*A*a**2*b*d/2 + B*a**3*d/2)
```

3.2338 $\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx$

Optimal. Leaf size=158

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right.$$

```
[Out] a^3*A*x+1/2*a^2*(3*A*b+B*a)*x^2+a*(a*b*B+A*(a*c+b^2))*x^3+1/4*(3*a*B*(a*c+b
^2)+A*(6*a*b*c+b^3))*x^4+1/5*(3*A*a*c^2+3*A*b^2*c+6*B*a*b*c+B*b^3)*x^5+1/2*
c*(A*b*c+B*a*c+B*b^2)*x^6+1/7*c^2*(A*c+3*B*b)*x^7+1/8*B*c^3*x^8
```

Rubi [A] time = 0.21, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.056, Rules used = {631}

$$\frac{1}{2}a^2x^2(aB+3Ab)+a^3Ax+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+\frac{1}{4}x^4\left(A\left(6abc+b^3\right)+\right.$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

Rule 631

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbo
l] :> Int[ExpandIntegrand[(d + e*x)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a
, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && IntegerQ[p] && (GtQ[p, 0] || Eq
Q[a, 0])
```

Rubi steps

$$\begin{aligned}\int (A+Bx)\left(a+bx+cx^2\right)^3\,dx&=\int \left(a^3A+a^2(3Ab+aB)x+3a\left(abB+A\left(b^2+ac\right)\right)x^2+\left(3aB\left(b^2+ac\right)+A\left(b\right.\right.\right.\\&=a^3Ax+\frac{1}{2}a^2(3Ab+aB)x^2+a\left(abB+A\left(b^2+ac\right)\right)x^3+\frac{1}{4}\left(3aB\left(b^2+ac\right)+A\left(\right.\right.\end{aligned}$$

Mathematica [A] time = 0.04, size = 158, normalized size = 1.00

$$a^3Ax+\frac{1}{2}a^2x^2(aB+3Ab)+\frac{1}{2}cx^6\left(aBc+Abc+b^2B\right)+ax^3\left(A\left(ac+b^2\right)+abB\right)+\frac{1}{5}x^5\left(3aAc^2+6abBc+3Ab^2c+b^3B\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(a + b*x + c*x^2)^3,x]
```

```
[Out] a^3*A*x + (a^2*(3*A*b + a*B)*x^2)/2 + a*(a*b*B + A*(b^2 + a*c))*x^3 + ((3*a
*B*(b^2 + a*c) + A*(b^3 + 6*a*b*c))*x^4)/4 + ((b^3*B + 3*A*b^2*c + 6*a*b*B*
c + 3*a*A*c^2)*x^5)/5 + (c*(b^2*B + A*b*c + a*B*c)*x^6)/2 + (c^2*(3*b*B + A
*c)*x^7)/7 + (B*c^3*x^8)/8
```

fricas [A] time = 0.89, size = 187, normalized size = 1.18

$$\frac{1}{8}x^8c^3B+\frac{3}{7}x^7c^2bB+\frac{1}{7}x^7c^3A+\frac{1}{2}x^6cb^2B+\frac{1}{2}x^6c^2aB+\frac{1}{2}x^6c^2bA+\frac{1}{5}x^5b^3B+\frac{6}{5}x^5cbaB+\frac{3}{5}x^5cb^2A+\frac{3}{5}x^5c^2aA+\frac{3}{4}x^4b^2aB+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] 1/8*x^8*c^3*B + 3/7*x^7*c^2*b*B + 1/7*x^7*c^3*A + 1/2*x^6*c*b^2*B + 1/2*x^6
*c^2*a*B + 1/2*x^6*c^2*b*A + 1/5*x^5*b^3*B + 6/5*x^5*c*b*a*B + 3/5*x^5*c*b^
2*A + 3/5*x^5*c^2*a*A + 3/4*x^4*b^2*a*B + 3/4*x^4*c*a^2*B + 1/4*x^4*b^3*A +
 3/2*x^4*c*b*a*A + x^3*b*a^2*B + x^3*b^2*a*A + x^3*c*a^2*A + 1/2*x^2*a^3*B
+ 3/2*x^2*b*a^2*A + x*a^3*A
```

giac [A] time = 0.15, size = 187, normalized size = 1.18

$$\frac{1}{8}Bc^3x^8+\frac{3}{7}Bbc^2x^7+\frac{1}{7}Ac^3x^7+\frac{1}{2}Bb^2cx^6+\frac{1}{2}Bac^2x^6+\frac{1}{2}Abc^2x^6+\frac{1}{5}Bb^3x^5+\frac{6}{5}Babcx^5+\frac{3}{5}Ab^2cx^5+\frac{3}{5}Aac^2x^5+\frac{3}{4}B$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/8*B*c^3*x^8 + 3/7*B*b*c^2*x^7 + 1/7*A*c^3*x^7 + 1/2*B*b^2*c*x^6 + 1/2*B*a
*c^2*x^6 + 1/2*A*b*c^2*x^6 + 1/5*B*b^3*x^5 + 6/5*B*a*b*c*x^5 + 3/5*A*b^2*c*
x^5 + 3/5*A*a*c^2*x^5 + 3/4*B*a*b^2*x^4 + 1/4*A*b^3*x^4 + 3/4*B*a^2*c*x^4 +
 3/2*A*a*b*c*x^4 + B*a^2*b*x^3 + A*a*b^2*x^3 + A*a^2*c*x^3 + 1/2*B*a^3*x^2
+ 3/2*A*a^2*b*x^2 + A*a^3*x
```

maple [A] time = 0.04, size = 223, normalized size = 1.41

$$\frac{B\,c^3x^8}{8}+\frac{\left(A\,c^3+3Bb\,c^2\right)x^7}{7}+\frac{\left(3Ab\,c^2+\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right)B\right)x^6}{6}+A\,a^3x+\frac{\left(\left(a\,c^2+2b^2c+\left(2ac+b^2\right)c\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/8*B*c^3*x^8+1/7*(A*c^3+3*B*b*c^2)*x^7+1/6*(3*A*b*c^2+B*(a*c^2+2*b^2*c+(2*
a*c+b^2)*c))*x^6+1/5*(A*(a*c^2+2*b^2*c+(2*a*c+b^2)*c)+B*(4*a*b*c+(2*a*c+b^2
)*b))*x^5+1/4*(A*(4*a*b*c+(2*a*c+b^2)*b)+B*(a^2*c+2*a*b^2+(2*a*c+b^2)*a))*x
^4+1/3*(A*(a^2*c+2*a*b^2+(2*a*c+b^2)*a)+3*B*a^2*b)*x^3+1/2*(3*A*a^2*b+B*a^3
)*x^2+A*a^3*x
```

maxima [A] time = 0.53, size = 162, normalized size = 1.03

$$\frac{1}{8}Bc^3x^8+\frac{1}{7}\left(3\,Bbc^2+Ac^3\right)x^7+\frac{1}{2}\left(Bb^2c+(Ba+Ab)c^2\right)x^6+\frac{1}{5}\left(Bb^3+3\,Aac^2+3\left(2\,Bab+Ab^2\right)c\right)x^5+Aa^3x+\frac{1}{4}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] 1/8*B*c^3*x^8 + 1/7*(3*B*b*c^2 + A*c^3)*x^7 + 1/2*(B*b^2*c + (B*a + A*b)*c^
2)*x^6 + 1/5*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*x^5 + A*a^3*x + 1/
4*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*x^4 + (B*a^2*b + A*a*b^2 + A*
a^2*c)*x^3 + 1/2*(B*a^3 + 3*A*a^2*b)*x^2
```

mupad [B] time = 0.07, size = 163, normalized size = 1.03

$$x^4\left(\frac{3\,B\,c\,a^2}{4}+\frac{3\,B\,a\,b^2}{4}+\frac{3\,A\,c\,a\,b}{2}+\frac{A\,b^3}{4}\right)+x^5\left(\frac{B\,b^3}{5}+\frac{3\,A\,b^2\,c}{5}+\frac{6\,B\,a\,b\,c}{5}+\frac{3\,A\,a\,c^2}{5}\right)+x^2\left(\frac{B\,a^3}{2}+\frac{3\,A\,b\,a^2}{2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(a + b*x + c*x^2)^3,x)
```

```
[Out] x^4*((A*b^3)/4 + (3*B*a*b^2)/4 + (3*B*a^2*c)/4 + (3*A*a*b*c)/2) + x^5*((B*b
^3)/5 + (3*A*a*c^2)/5 + (3*A*b^2*c)/5 + (6*B*a*b*c)/5) + x^2*((B*a^3)/2 + (
3*A*a^2*b)/2) + x^7*((A*c^3)/7 + (3*B*b*c^2)/7) + x^3*(A*a*b^2 + A*a^2*c +
B*a^2*b) + x^6*((A*b*c^2)/2 + (B*a*c^2)/2 + (B*b^2*c)/2) + (B*c^3*x^8)/8 +
A*a^3*x
```

sympy [A] time = 0.10, size = 190, normalized size = 1.20

$$Aa^3x+\frac{Bc^3x^8}{8}+x^7\left(\frac{Ac^3}{7}+\frac{3Bbc^2}{7}\right)+x^6\left(\frac{Abc^2}{2}+\frac{Bac^2}{2}+\frac{Bb^2c}{2}\right)+x^5\left(\frac{3Aac^2}{5}+\frac{3Ab^2c}{5}+\frac{6Babc}{5}+\frac{Bb^3}{5}\right)+x^4\left(\frac{3Aabc}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3,x)
```

```
[Out] A*a**3*x + B*c**3*x**8/8 + x**7*(A*c**3/7 + 3*B*b*c**2/7) + x**6*(A*b*c**2/
2 + B*a*c**2/2 + B*b**2*c/2) + x**5*(3*A*a*c**2/5 + 3*A*b**2*c/5 + 6*B*a*b*
c/5 + B*b**3/5) + x**4*(3*A*a*b*c/2 + A*b**3/4 + 3*B*a**2*c/4 + 3*B*a*b**2/
4) + x**3*(A*a**2*c + A*a*b**2 + B*a**2*b) + x**2*(3*A*a**2*b/2 + B*a**3/2)
```

3.2339 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx$

Optimal. Leaf size=544

$$-\frac{(d+ex)^3\Big(Ae(2cd-be)\Big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\Big)-B\Big(3ce^2\Big(a^2e^2-8abde+10b^2d^2\Big)-b^2e^3(4bd-3a}{3e^8}$$

```
[Out] -(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*x/e^
7-3/2*(a*e^2-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*
b*d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^2/e^8-1/3*(A*e*(-b*
e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-
3*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^
2)))*(e*x+d)^3/e^8-1/4*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c
^2*d*e*(-a*e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^
4/e^8-3/5*c*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))*(e*
x+d)^5/e^8-1/6*c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)^6/e^8+1/7*B*c^3*(e*x+d)
^7/e^8-(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)/e^8
```

Rubi [A] time = 1.19, antiderivative size = 541, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{(d+ex)^3\Big(Ae(2cd-be)\Big(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\Big)-B\Big(3ce^2\Big(a^2e^2-8abde+10b^2d^2\Big)-b^2e^3(4bd-3a}{3e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d -
b*e))*x)/e^7 - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*
a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*(d + e*x)^2)/(2*e^8) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*(d + e*x)^3)/(3
*e^8) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*
x)^4)/(4*e^8) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6
*b*d - a*e)))*(d + e*x)^5)/(5*e^8) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d +
e*x)^6)/(6*e^8) + (B*c^3*(d + e*x)^7)/(7*e^8) - ((B*d - A*e)*(c*d^2 - b*d*e
 + a*e^2)^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int\frac{(A+Bx)\left(a+bx+cx^2\right)^3}{d+ex}\,dx=\int\Bigg(\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3Ae(2cd-be)\right)}{e^7}+\frac{(-Bd+A}{}$$

$$=\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3Ae(2cd-be)\right)x}{e^7}-\frac{3\Big(cd^2-bde}{}$$

Mathematica [A] time = 0.46, size = 700, normalized size = 1.29

$$ex\left(7Ae\left(15ce^2\left(6a^2e^2(ex-2d)+4abe\left(6d^2-3dex+2e^2x^2\right)+b^2\left(-12d^3+6d^2ex-4de^2x^2+3e^3x^3\right)\right)+10be^3\left(18\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x]
```

```
[Out] (e*x*(7*A*e*(c^3*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 -
12*d*e^4*x^4 + 10*e^5*x^5) + 10*b*e^3*(18*a^2*e^2 + 9*a*b*e*(-2*d + e*x) +
b^2*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) + 15*c*e^2*(6*a^2*e^2*(-2*d + e*x) + 4*a
*b*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^2*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2
 + 3*e^3*x^3)) + 3*c^2*e*(5*a*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*
x^3) + b*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)
)) + B*(c^3*(420*d^6 - 210*d^5*e*x + 140*d^4*e^2*x^2 - 105*d^3*e^3*x^3 + 84
*d^2*e^4*x^4 - 70*d*e^5*x^5 + 60*e^6*x^6) + 35*e^3*(12*a^3*e^3 + 18*a^2*b*e
^2*(-2*d + e*x) + 6*a*b^2*e*(6*d^2 - 3*d*e*x + 2*e^2*x^2) + b^3*(-12*d^3 +
6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)) + 21*c*e^2*(10*a^2*e^2*(6*d^2 - 3*d*e
*x + 2*e^2*x^2) + 10*a*b*e*(-12*d^3 + 6*d^2*e*x - 4*d*e^2*x^2 + 3*e^3*x^3)
+ b^2*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^4*x^4)) +
 21*c^2*e*(a*e*(60*d^4 - 30*d^3*e*x + 20*d^2*e^2*x^2 - 15*d*e^3*x^3 + 12*e^
4*x^4) + b*(-60*d^5 + 30*d^4*e*x - 20*d^3*e^2*x^2 + 15*d^2*e^3*x^3 - 12*d*e
^4*x^4 + 10*e^5*x^5)))) - 420*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^3*Log[
d + e*x])/(420*e^8)
```

fricas [A] time = 1.05, size = 843, normalized size = 1.55

$$60\,Bc^3e^7x^7-70\left(Bc^3de^6-\left(3\,Bbc^2+Ac^3\right)e^7\right)x^6+84\left(Bc^3d^2e^5-\left(3\,Bbc^2+Ac^3\right)de^6+3\left(Bb^2c+(Ba+Ab)c^2\right)e^7\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/420*(60*B*c^3*e^7*x^7 - 70*(B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 +
84*(B*c^3*d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)*c^
2)*e^7)*x^5 - 105*(B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)*d^2*e^5 + 3*(B*b^2*c
 + (B*a + A*b)*c^2)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7
)*x^4 + 140*(B*c^3*d^4*e^3 - (3*B*b*c^2 + A*c^3)*d^3*e^4 + 3*(B*b^2*c + (B*
a + A*b)*c^2)*d^2*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 +
 (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 210*(B*c^3*d^5*e^2
- (3*B*b*c^2 + A*c^3)*d^4*e^3 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - (B*
b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(
B*a^2 + 2*A*a*b)*c)*d*e^6 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 420*
(B*c^3*d^6*e - (3*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*
d^4*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
+ A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*
d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x - 420*(B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^
2 + A*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c
^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2
*b)*d*e^6)*log(e*x + d))/e^8
```

giac [B] time = 0.20, size = 1130, normalized size = 2.08

$$-\left(Bc^3d^7-3\,Bbc^2d^6e-Ac^3d^6e+3\,Bb^2cd^5e^2+3\,Bac^2d^5e^2+3\,Abc^2d^5e^2-Bb^3d^4e^3-6\,Babcd^4e^3-3\,Ab^2cd^4e^3-3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="giac")
```

```
[Out] -(B*c^3*d^7 - 3*B*b*c^2*d^6*e - A*c^3*d^6*e + 3*B*b^2*c*d^5*e^2 + 3*B*a*c^2
*d^5*e^2 + 3*A*b*c^2*d^5*e^2 - B*b^3*d^4*e^3 - 6*B*a*b*c*d^4*e^3 - 3*A*b^2*
c*d^4*e^3 - 3*A*a*c^2*d^4*e^3 + 3*B*a*b^2*d^3*e^4 + A*b^3*d^3*e^4 + 3*B*a^2
*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 - 3*B*a^2*b*d^2*e^5 - 3*A*a*b^2*d^2*e^5 - 3*
A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^2*b*d*e^6 - A*a^3*e^7)*e^(-8)*log(abs
(x*e + d)) + 1/420*(60*B*c^3*x^7*e^6 - 70*B*c^3*d*x^6*e^5 + 84*B*c^3*d^2*x^
5*e^4 - 105*B*c^3*d^3*x^4*e^3 + 140*B*c^3*d^4*x^3*e^2 - 210*B*c^3*d^5*x^2*e
 + 420*B*c^3*d^6*x + 210*B*b*c^2*x^6*e^6 + 70*A*c^3*x^6*e^6 - 252*B*b*c^2*d
*x^5*e^5 - 84*A*c^3*d*x^5*e^5 + 315*B*b*c^2*d^2*x^4*e^4 + 105*A*c^3*d^2*x^4
*e^4 - 420*B*b*c^2*d^3*x^3*e^3 - 140*A*c^3*d^3*x^3*e^3 + 630*B*b*c^2*d^4*x^
2*e^2 + 210*A*c^3*d^4*x^2*e^2 - 1260*B*b*c^2*d^5*x*e - 420*A*c^3*d^5*x*e +
252*B*b^2*c*x^5*e^6 + 252*B*a*c^2*x^5*e^6 + 252*A*b*c^2*x^5*e^6 - 315*B*b^2
*c*d*x^4*e^5 - 315*B*a*c^2*d*x^4*e^5 - 315*A*b*c^2*d*x^4*e^5 + 420*B*b^2*c*
d^2*x^3*e^4 + 420*B*a*c^2*d^2*x^3*e^4 + 420*A*b*c^2*d^2*x^3*e^4 - 630*B*b^2
*c*d^3*x^2*e^3 - 630*B*a*c^2*d^3*x^2*e^3 - 630*A*b*c^2*d^3*x^2*e^3 + 1260*B
*b^2*c*d^4*x*e^2 + 1260*B*a*c^2*d^4*x*e^2 + 1260*A*b*c^2*d^4*x*e^2 + 105*B*
b^3*x^4*e^6 + 630*B*a*b*c*x^4*e^6 + 315*A*b^2*c*x^4*e^6 + 315*A*a*c^2*x^4*e
^6 - 140*B*b^3*d*x^3*e^5 - 840*B*a*b*c*d*x^3*e^5 - 420*A*b^2*c*d*x^3*e^5 -
420*A*a*c^2*d*x^3*e^5 + 210*B*b^3*d^2*x^2*e^4 + 1260*B*a*b*c*d^2*x^2*e^4 +
630*A*b^2*c*d^2*x^2*e^4 + 630*A*a*c^2*d^2*x^2*e^4 - 420*B*b^3*d^3*x*e^3 - 2
520*B*a*b*c*d^3*x*e^3 - 1260*A*b^2*c*d^3*x*e^3 - 1260*A*a*c^2*d^3*x*e^3 + 4
20*B*a*b^2*x^3*e^6 + 140*A*b^3*x^3*e^6 + 420*B*a^2*c*x^3*e^6 + 840*A*a*b*c*
x^3*e^6 - 630*B*a*b^2*d*x^2*e^5 - 210*A*b^3*d*x^2*e^5 - 630*B*a^2*c*d*x^2*e
^5 - 1260*A*a*b*c*d*x^2*e^5 + 1260*B*a*b^2*d^2*x*e^4 + 420*A*b^3*d^2*x*e^4
+ 1260*B*a^2*c*d^2*x*e^4 + 2520*A*a*b*c*d^2*x*e^4 + 630*B*a^2*b*x^2*e^6 + 6
30*A*a*b^2*x^2*e^6 + 630*A*a^2*c*x^2*e^6 - 1260*B*a^2*b*d*x*e^5 - 1260*A*a*
b^2*d*x*e^5 - 1260*A*a^2*c*d*x*e^5 + 420*B*a^3*x*e^6 + 1260*A*a^2*b*x*e^6)*
e^(-7)
```

maple [B] time = 0.05, size = 1319, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x)
```

```
[Out] 1/6/e*A*x^6*c^3+1/e*B*x*a^3+1/3/e*A*x^3*b^3+1/e*ln(e*x+d)*A*a^3+1/4/e*B*x^4
*b^3-1/e^8*ln(e*x+d)*B*c^3*d^7+1/e^7*B*x*c^3*d^6-1/e^4*B*x*b^3*d^3-2/e^2*B*
x^3*a*b*c*d+6/e^3*A*x*a*b*c*d^2-6/e^4*B*x*a*b*c*d^3+6/e^5*ln(e*x+d)*B*a*b*c
*d^4-1/2/e^6*B*x^2*c^3*d^5-1/6/e^2*B*x^6*c^3*d+3/2/e*A*x^2*a*b^2+1/2/e^3*B*
x^2*b^3*d^2-1/5/e^2*A*x^5*c^3*d+3/5/e*B*x^5*a*c^2+3/5/e*B*x^5*b^2*c+1/2/e^5
*A*x^2*c^3*d^4+1/e^3*A*x*b^3*d^2-1/e^6*A*x*c^3*d^5+3/e*A*x*a^2*b-1/3/e^4*A*
x^3*c^3*d^3-1/3/e^2*B*x^3*b^3*d+1/3/e^5*B*x^3*c^3*d^4+1/e*B*x^3*a^2*c+1/e*B
*x^3*a*b^2+1/e^7*ln(e*x+d)*A*c^3*d^6-1/e^2*ln(e*x+d)*B*a^3*d+1/e^5*ln(e*x+d
)*B*b^3*d^4+1/5/e^3*B*x^5*c^3*d^2+3/4/e*A*x^4*a*c^2+1/2/e*B*x^6*b*c^2-1/4/e
^4*B*x^4*c^3*d^3+3/5/e*A*x^5*b*c^2-1/e^4*ln(e*x+d)*A*b^3*d^3+3/2/e*A*x^2*a^
2*c+3/e^3*B*x^2*a*b*c*d^2-3/e^2*A*x^2*a*b*c*d+3/4/e*A*x^4*b^2*c+1/4/e^3*A*x
^4*c^3*d^2-1/2/e^2*A*x^2*b^3*d+3/2/e*B*x^2*a^2*b-6/e^4*ln(e*x+d)*A*a*b*c*d^
3+1/7*B*c^3/e*x^7-1/e^2*A*x^3*b^2*c*d-3/5/e^2*B*x^5*b*c^2*d-3/e^6*B*x*b*c^2
*d^5+3/e^5*B*x*b^2*c*d^4+3/e^5*B*x*a*c^2*d^4+3/e^3*B*x*a*b^2*d^2-3/4/e^2*B*
x^4*b^2*c*d-3/e^4*A*x*a*c^2*d^3-3/e^2*A*x*a^2*c*d-3/4/e^2*B*x^4*a*c^2*d+1/e
^3*A*x^3*b*c^2*d^2+1/e^3*B*x^3*a*c^2*d^2+1/e^3*B*x^3*b^2*c*d^2-3/e^2*B*x*a^
2*b*d+3/e^3*B*x*a^2*c*d^2-3/e^2*A*x*a*b^2*d+3/e^3*ln(e*x+d)*B*a^2*b*d^2-3/e
^4*ln(e*x+d)*B*d^3*a^2*c-3/e^4*ln(e*x+d)*B*a*b^2*d^3-3/e^6*ln(e*x+d)*B*a*c^
2*d^5-3/e^6*ln(e*x+d)*B*b^2*c*d^5+3/e^7*ln(e*x+d)*B*b*c^2*d^6-3/e^2*ln(e*x+
d)*A*a^2*b*d+3/e^3*ln(e*x+d)*A*d^2*a^2*c+3/e^3*ln(e*x+d)*A*a*b^2*d^2-3/2/e^
2*B*x^2*a^2*c*d+3/e^5*ln(e*x+d)*A*a*c^2*d^4-3/2/e^4*B*x^2*b^2*c*d^3+3/2/e^5
*B*x^2*b*c^2*d^4+2/e*A*x^3*a*b*c-1/e^2*A*x^3*a*c^2*d-3/2/e^4*A*x^2*b*c^2*d^
3-1/e^4*B*x^3*b*c^2*d^3+3/2/e^3*A*x^2*a*c^2*d^2+3/2/e^3*A*x^2*b^2*c*d^2+3/4
/e^3*B*x^4*b*c^2*d^2-3/4/e^2*A*x^4*b*c^2*d+3/2/e*B*x^4*a*b*c-3/e^4*A*x*b^2*
```

```
c*d^3+3/e^5*A*x*b*c^2*d^4-3/2/e^2*B*x^2*a*b^2*d-3/2/e^4*B*x^2*a*c^2*d^3+3/e
^5*ln(e*x+d)*A*b^2*c*d^4-3/e^6*ln(e*x+d)*A*b*c^2*d^5
```

maxima [A] time = 0.55, size = 842, normalized size = 1.55

$$60\,Bc^3e^6x^7 - 70\left(Bc^3de^5 - \left(3\,Bbc^2 + Ac^3\right)e^6\right)x^6 + 84\left(Bc^3d^2e^4 - \left(3\,Bbc^2 + Ac^3\right)de^5 + 3\left(Bb^2c + (Ba + Ab)c^2\right)e^6\right)x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/420*(60*B*c^3*e^6*x^7 - 70*(B*c^3*d*e^5 - (3*B*b*c^2 + A*c^3)*e^6)*x^6 +
84*(B*c^3*d^2*e^4 - (3*B*b*c^2 + A*c^3)*d*e^5 + 3*(B*b^2*c + (B*a + A*b)*c^
2)*e^6)*x^5 - 105*(B*c^3*d^3*e^3 - (3*B*b*c^2 + A*c^3)*d^2*e^4 + 3*(B*b^2*c
 + (B*a + A*b)*c^2)*d*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^6
)*x^4 + 140*(B*c^3*d^4*e^2 - (3*B*b*c^2 + A*c^3)*d^3*e^3 + 3*(B*b^2*c + (B*
a + A*b)*c^2)*d^2*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^5 +
 (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^6)*x^3 - 210*(B*c^3*d^5*e -
(3*B*b*c^2 + A*c^3)*d^4*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^3 - (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^5 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^6)*x^2 + 420*(B
*c^3*d^6 - (3*B*b*c^2 + A*c^3)*d^5*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^
2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^3 + (3*B*a*b^2 + A*b^
3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^5
+ (B*a^3 + 3*A*a^2*b)*e^6)*x)/e^7 - (B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^2 + A
*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c
)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d
*e^6)*log(e*x + d)/e^8
```

mupad [B] time = 2.37, size = 968, normalized size = 1.78

$$x^2\left(\frac{3\,B\,a^2\,b+3\,A\,c\,a^2+3\,A\,a\,b^2}{2\,e}-\frac{d\left(\frac{3\,B\,c\,a^2+3\,B\,a\,b^2+6\,A\,c\,a\,b+A\,b^3}{e}-\frac{d\left(\frac{B\,b^3+3\,A\,b^2\,c+6\,B\,a\,b\,c+3\,A\,a\,c^2}{e}-\frac{d\left(\frac{3\,B\,b^2\,c+3\,A\,b\,c^2+3\,B\,a\,c^2}{e}-\frac{d}{}\right.}{e}\right.}{e}\right.}{2\,e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x),x)
```

```
[Out] x^2*((3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)/(2*e) - (d*((A*b^3 + 3*B*a*b^2 + 3
*B*a^2*c + 6*A*a*b*c)/e - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e
 - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^3 + 3*B*b*c^2)/e -
(B*c^3*d)/e^2))/e))/e))/e))/(2*e)) + x^5*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*
c)/(5*e) - (d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/(5*e)) + x^4*((B*b^3
 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/(4*e) - (d*((3*A*b*c^2 + 3*B*a*c^2 +
3*B*b^2*c)/e - (d*((A*c^3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e))/(4*e)) + x*(
(B*a^3 + 3*A*a^2*b)/e - (d*((3*A*a*b^2 + 3*A*a^2*c + 3*B*a^2*b)/e - (d*((A*
b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b
^2*c + 6*B*a*b*c)/e - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^
3 + 3*B*b*c^2)/e - (B*c^3*d)/e^2))/e))/e))/e))/e))/e) + x^3*((A*b^3 + 3*B*a
*b^2 + 3*B*a^2*c + 6*A*a*b*c)/(3*e) - (d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
6*B*a*b*c)/e - (d*((3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e - (d*((A*c^3 + 3*B
*b*c^2)/e - (B*c^3*d)/e^2))/e))/e))/(3*e)) + x^6*((A*c^3 + 3*B*b*c^2)/(6*e)
 - (B*c^3*d)/(6*e^2)) + (log(d + e*x)*(A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6
+ A*c^3*d^6*e - A*b^3*d^3*e^4 + B*b^3*d^4*e^3 + 3*A*a*b^2*d^2*e^5 + 3*A*a*c
^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 - 3*B*a*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 - 3*
A*b*c^2*d^5*e^2 + 3*A*b^2*c*d^4*e^3 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4
 - 3*B*b^2*c*d^5*e^2 - 3*A*a^2*b*d*e^6 + 3*B*b*c^2*d^6*e - 6*A*a*b*c*d^3*e^
4 + 6*B*a*b*c*d^4*e^3))/e^8 + (B*c^3*x^7)/(7*e)
```

sympy [A]   time = 2.13, size = 979, normalized size = 1.80

$$\frac{Bc^3x^7}{7e}+x^6\left(\frac{Ac^3}{6e}+\frac{Bbc^2}{2e}-\frac{Bc^3d}{6e^2}\right)+x^5\left(\frac{3Abc^2}{5e}-\frac{Ac^3d}{5e^2}+\frac{3Bac^2}{5e}+\frac{3Bb^2c}{5e}-\frac{3Bbc^2d}{5e^2}+\frac{Bc^3d^2}{5e^3}\right)+x^4\left(\frac{3Aac^2}{4e}+\frac{3Ab^2}{4e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d),x)
```

```
[Out] B*c**3*x**7/(7*e) + x**6*(A*c**3/(6*e) + B*b*c**2/(2*e) - B*c**3*d/(6*e**2)
) + x**5*(3*A*b*c**2/(5*e) - A*c**3*d/(5*e**2) + 3*B*a*c**2/(5*e) + 3*B*b**
2*c/(5*e) - 3*B*b*c**2*d/(5*e**2) + B*c**3*d**2/(5*e**3)) + x**4*(3*A*a*c**
2/(4*e) + 3*A*b**2*c/(4*e) - 3*A*b*c**2*d/(4*e**2) + A*c**3*d**2/(4*e**3) +
 3*B*a*b*c/(2*e) - 3*B*a*c**2*d/(4*e**2) + B*b**3/(4*e) - 3*B*b**2*c*d/(4*e
**2) + 3*B*b*c**2*d**2/(4*e**3) - B*c**3*d**3/(4*e**4)) + x**3*(2*A*a*b*c/e
 - A*a*c**2*d/e**2 + A*b**3/(3*e) - A*b**2*c*d/e**2 + A*b*c**2*d**2/e**3 -
A*c**3*d**3/(3*e**4) + B*a**2*c/e + B*a*b**2/e - 2*B*a*b*c*d/e**2 + B*a*c**
2*d**2/e**3 - B*b**3*d/(3*e**2) + B*b**2*c*d**2/e**3 - B*b*c**2*d**3/e**4 +
 B*c**3*d**4/(3*e**5)) + x**2*(3*A*a**2*c/(2*e) + 3*A*a*b**2/(2*e) - 3*A*a*
b*c*d/e**2 + 3*A*a*c**2*d**2/(2*e**3) - A*b**3*d/(2*e**2) + 3*A*b**2*c*d**2
/(2*e**3) - 3*A*b*c**2*d**3/(2*e**4) + A*c**3*d**4/(2*e**5) + 3*B*a**2*b/(2
*e) - 3*B*a**2*c*d/(2*e**2) - 3*B*a*b**2*d/(2*e**2) + 3*B*a*b*c*d**2/e**3 -
 3*B*a*c**2*d**3/(2*e**4) + B*b**3*d**2/(2*e**3) - 3*B*b**2*c*d**3/(2*e**4)
 + 3*B*b*c**2*d**4/(2*e**5) - B*c**3*d**5/(2*e**6)) + x*(3*A*a**2*b/e - 3*A
*a**2*c*d/e**2 - 3*A*a*b**2*d/e**2 + 6*A*a*b*c*d**2/e**3 - 3*A*a*c**2*d**3/
e**4 + A*b**3*d**2/e**3 - 3*A*b**2*c*d**3/e**4 + 3*A*b*c**2*d**4/e**5 - A*c
**3*d**5/e**6 + B*a**3/e - 3*B*a**2*b*d/e**2 + 3*B*a**2*c*d**2/e**3 + 3*B*a
*b**2*d**2/e**3 - 6*B*a*b*c*d**3/e**4 + 3*B*a*c**2*d**4/e**5 - B*b**3*d**3/
e**4 + 3*B*b**2*c*d**4/e**5 - 3*B*b*c**2*d**5/e**6 + B*c**3*d**6/e**7) - (-
A*e + B*d)*(a*e**2 - b*d*e + c*d**2)**3*log(d + e*x)/e**8
```

3.2340 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx$

Optimal. Leaf size=525

$$-\frac{x\left(3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2-Ae\left(3ce^2\left(a^2e^2-4abde+3b^2d^2\right)-b^2e^3(2bd-3ae)-3c^2d^2e(4bd-3ae)\right.\right.}{e^7}$$

```
[Out] -(3*B*(-b*e+2*c*d)*(c*d^2-e*(-a*e+b*d))^2-A*e*(5*c^3*d^4-b^2*e^3*(-3*a*e+2*
b*d)-3*c^2*d^2*e*(-3*a*e+4*b*d)+3*c*e^2*(a^2*e^2-4*a*b*d*e+3*b^2*d^2)))*x/e
^7-1/2*(A*e*(-b*e+c*d)*(4*c^2*d^2+b^2*e^2-c*e*(-6*a*e+5*b*d))-B*(5*c^3*d^4-
b^2*e^3*(-3*a*e+2*b*d)-3*c^2*d^2*e*(-3*a*e+4*b*d)+3*c*e^2*(a^2*e^2-4*a*b*d*
e+3*b^2*d^2)))*x^2/e^6-1/3*(B*(-b*e+c*d)*(4*c^2*d^2+b^2*e^2-c*e*(-6*a*e+5*b
*d))-3*A*c*e*(c^2*d^2+b^2*e^2-c*e*(-a*e+2*b*d)))*x^3/e^5-1/4*c*(A*c*e*(-3*b
*e+2*c*d)-3*B*(c^2*d^2+b^2*e^2-c*e*(-a*e+2*b*d)))*x^4/e^4-1/5*c^2*(-A*c*e-3
*B*b*e+2*B*c*d)*x^5/e^3+1/6*B*c^3*x^6/e^2+(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/
e^8/(e*x+d)-(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*
b*d)))*ln(e*x+d)/e^8
```

Rubi [A] time = 1.09, antiderivative size = 522, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{x^2\left(Ae(cd-be)\left(-ce(5bd-6ae)+b^2e^2+4c^2d^2\right)-B\left(3ce^2\left(a^2e^2-4abde+3b^2d^2\right)-b^2e^3(2bd-3ae)-3c^2d^2e\right.\right.}{2e^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] -(((3*B*(2*c*d - b*e)*(c*d^2 - e*(b*d - a*e))^2 - A*e*(5*c^3*d^4 - b^2*e^3*
(2*b*d - 3*a*e) - 3*c^2*d^2*e*(4*b*d - 3*a*e) + 3*c*e^2*(3*b^2*d^2 - 4*a*b*
d*e + a^2*e^2)))*x)/e^7) - ((A*e*(c*d - b*e)*(4*c^2*d^2 + b^2*e^2 - c*e*(5*
b*d - 6*a*e)) - B*(5*c^3*d^4 - b^2*e^3*(2*b*d - 3*a*e) - 3*c^2*d^2*e*(4*b*d
 - 3*a*e) + 3*c*e^2*(3*b^2*d^2 - 4*a*b*d*e + a^2*e^2)))*x^2)/(2*e^6) - ((B*
(c*d - b*e)*(4*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - 6*a*e)) - 3*A*c*e*(c^2*d^2
+ b^2*e^2 - c*e*(2*b*d - a*e)))*x^3)/(3*e^5) - (c*(A*c*e*(2*c*d - 3*b*e) -
3*B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d - a*e)))*x^4)/(4*e^4) - (c^2*(2*B*c*d -
 3*b*B*e - A*c*e)*x^5)/(5*e^3) + (B*c^3*x^6)/(6*e^2) + ((B*d - A*e)*(c*d^2
- b*d*e + a*e^2)^3)/(e^8*(d + e*x)) + ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2
 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^2}\,dx=\int \left(\frac{-3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2+Ae\left(5c^3d^4-b^2e^3(2bd-3ae)-3c^2d\right.}{e^7}\right.$$

$$=-\frac{\left(3B(2cd-be)\left(cd^2-e(bd-ae)\right)^2-Ae\left(5c^3d^4-b^2e^3(2bd-3ae)-3c^2d^2e(\right.\right.}{e^7}$$

Mathematica [A] time = 0.57, size = 922, normalized size = 1.76

$$60\left(7Bcd^2+Be(ae-4bd)+3Ae(be-2cd)\right)(d+ex)\log(d+ex)\left(cd^2+e(ae-bd)\right)^2+3Ae\left(\left(-20d^6+100exd^5+6\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x]
```

```
[Out] (3*A*e*(c^3*(-20*d^6 + 100*d^5*e*x + 60*d^4*e^2*x^2 - 20*d^3*e^3*x^3 + 10*d
^2*e^4*x^4 - 6*d*e^5*x^5 + 4*e^6*x^6) + 10*e^3*(6*a^2*b*d*e^2 - 2*a^3*e^3 +
 6*a*b^2*e*(-d^2 + d*e*x + e^2*x^2) + b^3*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2
+ e^3*x^3)) + 20*c*e^2*(3*a^2*e^2*(-d^2 + d*e*x + e^2*x^2) + 3*a*b*e*(2*d^3
 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + b^2*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2
*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 5*c^2*e*(4*a*e*(-3*d^4 + 9*d^3*e*x + 6*d^2
*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2
 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5))) + B*(c^3*(60*d^7 - 360*d^6*e
*x - 210*d^5*e^2*x^2 + 70*d^4*e^3*x^3 - 35*d^3*e^4*x^4 + 21*d^2*e^5*x^5 - 1
4*d*e^6*x^6 + 10*e^7*x^7) + 10*e^3*(6*a^3*d*e^3 + 18*a^2*b*e^2*(-d^2 + d*e*
x + e^2*x^2) + 9*a*b^2*e*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 2*b^
3*(-3*d^4 + 9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4)) + 15*c*e^2*
(6*a^2*e^2*(2*d^3 - 4*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3) + 8*a*b*e*(-3*d^4 +
9*d^3*e*x + 6*d^2*e^2*x^2 - 2*d*e^3*x^3 + e^4*x^4) + b^2*(12*d^5 - 48*d^4*e
*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4 + 3*e^5*x^5)) + 3*c^2*e*
(5*a*e*(12*d^5 - 48*d^4*e*x - 30*d^3*e^2*x^2 + 10*d^2*e^3*x^3 - 5*d*e^4*x^4
 + 3*e^5*x^5) - 6*b*(10*d^6 - 50*d^5*e*x - 30*d^4*e^2*x^2 + 10*d^3*e^3*x^3
- 5*d^2*e^4*x^4 + 3*d*e^5*x^5 - 2*e^6*x^6))) + 60*(c*d^2 + e*(-(b*d) + a*e)
)^2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e))*(d + e*x)*Log[d
 + e*x])/(60*e^8*(d + e*x))
```

fricas [B] time = 0.82, size = 1189, normalized size = 2.26

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/60*(10*B*c^3*e^7*x^7 + 60*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^
3)*d^6*e + 180*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 60*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 60*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 180*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 60*(B*a^3 + 3*
A*a^2*b)*d*e^6 - 2*(7*B*c^3*d*e^6 - 6*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B
*c^3*d^2*e^5 - 6*(3*B*b*c^2 + A*c^3)*d*e^6 + 15*(B*b^2*c + (B*a + A*b)*c^2)
*e^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 6*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*
c + (B*a + A*b)*c^2)*d*e^6 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
e^7)*x^4 + 10*(7*B*c^3*d^4*e^3 - 6*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^2*
c + (B*a + A*b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 30*(7*B*
c^3*d^5*e^2 - 6*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B*a + A*b)*c^2
)*d^3*e^4 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 6*(B*a^2*b + A*a*b^2 + A*a^2
*c)*e^7)*x^2 - 60*(6*B*c^3*d^6*e - 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 12*(B*b^
2*c + (B*a + A*b)*c^2)*d^4*e^3 - 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d^3*e^4 + 2*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 3*(B*
a^2*b + A*a*b^2 + A*a^2*c)*d*e^6)*x + 60*(7*B*c^3*d^7 - 6*(3*B*b*c^2 + A*c^
3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*d^3*e^4 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)
*d*e^6 + (7*B*c^3*d^6*e - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + (B*
a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e
^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A
*a*b^2 + A*a^2*c)*d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)*log(e*x + d))/(e^9*x
+ d*e^8)
```

giac [B] time = 0.25, size = 1200, normalized size = 2.29

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/60*(10*B*c^3 - 12*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e +
 d) + 45*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 +
 B*a*c^2*e^4 + A*b*c^2*e^4)*e^(-2)/(x*e + d)^2 - 20*(35*B*c^3*d^3*e^3 - 45*
B*b*c^2*d^2*e^4 - 15*A*c^3*d^2*e^4 + 15*B*b^2*c*d*e^5 + 15*B*a*c^2*d*e^5 +
15*A*b*c^2*d*e^5 - B*b^3*e^6 - 6*B*a*b*c*e^6 - 3*A*b^2*c*e^6 - 3*A*a*c^2*e^
6)*e^(-3)/(x*e + d)^3 + 30*(35*B*c^3*d^4*e^4 - 60*B*b*c^2*d^3*e^5 - 20*A*c^
3*d^3*e^5 + 30*B*b^2*c*d^2*e^6 + 30*B*a*c^2*d^2*e^6 + 30*A*b*c^2*d^2*e^6 -
4*B*b^3*d*e^7 - 24*B*a*b*c*d*e^7 - 12*A*b^2*c*d*e^7 - 12*A*a*c^2*d*e^7 + 3*
B*a*b^2*e^8 + A*b^3*e^8 + 3*B*a^2*c*e^8 + 6*A*a*b*c*e^8)*e^(-4)/(x*e + d)^4
 - 180*(7*B*c^3*d^5*e^5 - 15*B*b*c^2*d^4*e^6 - 5*A*c^3*d^4*e^6 + 10*B*b^2*c
*d^3*e^7 + 10*B*a*c^2*d^3*e^7 + 10*A*b*c^2*d^3*e^7 - 2*B*b^3*d^2*e^8 - 12*B
*a*b*c*d^2*e^8 - 6*A*b^2*c*d^2*e^8 - 6*A*a*c^2*d^2*e^8 + 3*B*a*b^2*d*e^9 +
A*b^3*d*e^9 + 3*B*a^2*c*d*e^9 + 6*A*a*b*c*d*e^9 - B*a^2*b*e^10 - A*a*b^2*e^
10 - A*a^2*c*e^10)*e^(-5)/(x*e + d)^5)*(x*e + d)^6*e^(-8) - (7*B*c^3*d^6 -
18*B*b*c^2*d^5*e - 6*A*c^3*d^5*e + 15*B*b^2*c*d^4*e^2 + 15*B*a*c^2*d^4*e^2
+ 15*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^3 - 24*B*a*b*c*d^3*e^3 - 12*A*b^2*c*d^
3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 3*A*b^3*d^2*e^4 + 9*B*a^2*
c*d^2*e^4 + 18*A*a*b*c*d^2*e^4 - 6*B*a^2*b*d*e^5 - 6*A*a*b^2*d*e^5 - 6*A*a^
2*c*d*e^5 + B*a^3*e^6 + 3*A*a^2*b*e^6)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e
+ d)^2) + (B*c^3*d^7*e^6/(x*e + d) - 3*B*b*c^2*d^6*e^7/(x*e + d) - A*c^3*d^
6*e^7/(x*e + d) + 3*B*b^2*c*d^5*e^8/(x*e + d) + 3*B*a*c^2*d^5*e^8/(x*e + d)
 + 3*A*b*c^2*d^5*e^8/(x*e + d) - B*b^3*d^4*e^9/(x*e + d) - 6*B*a*b*c*d^4*e^
9/(x*e + d) - 3*A*b^2*c*d^4*e^9/(x*e + d) - 3*A*a*c^2*d^4*e^9/(x*e + d) + 3
*B*a*b^2*d^3*e^10/(x*e + d) + A*b^3*d^3*e^10/(x*e + d) + 3*B*a^2*c*d^3*e^10
/(x*e + d) + 6*A*a*b*c*d^3*e^10/(x*e + d) - 3*B*a^2*b*d^2*e^11/(x*e + d) -
3*A*a*b^2*d^2*e^11/(x*e + d) - 3*A*a^2*c*d^2*e^11/(x*e + d) + B*a^3*d*e^12/
(x*e + d) + 3*A*a^2*b*d*e^12/(x*e + d) - A*a^3*e^13/(x*e + d))*e^(-14)
```

maple [B] time = 0.06, size = 1404, normalized size = 2.67

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x)
```

```
[Out] -1/e/(e*x+d)*A*a^3+1/e^2*ln(e*x+d)*B*a^3+1/2/e^2*A*x^2*b^3+1/3/e^2*B*x^3*b^
3+1/5/e^2*A*x^5*c^3-4/e^5*ln(e*x+d)*B*b^3*d^3+7/e^8*ln(e*x+d)*B*c^3*d^6-2/e
^3*A*b^3*d*x+5/e^6*A*c^3*d^4*x-2/5/e^3*B*x^5*c^3*d+3/4/e^2*A*x^4*b*c^2-1/2/
e^3*A*x^4*c^3*d+3/4/e^2*B*x^4*a*c^2+3/4/e^2*B*x^4*b^2*c+1/e^4/(e*x+d)*A*b^3
*d^3-1/e^7/(e*x+d)*A*c^3*d^6+1/e^2/(e*x+d)*B*a^3*d-1/e^5/(e*x+d)*B*b^3*d^4+
1/e^8/(e*x+d)*B*c^3*d^7+3/e^2*ln(e*x+d)*A*a^2*b+1/e^4*A*x^3*c^3*d^2-6/e^7*B
*c^3*d^5*x+3/e^2*B*a^2*b*x+3/e^4*B*b^3*d^2*x+3/5/e^2*B*x^5*b*c^2+3/4/e^4*B*
x^4*c^3*d^2-4/3/e^5*B*x^3*c^3*d^3-2/e^5*A*x^2*c^3*d^3+3/e^4*ln(e*x+d)*A*b^3
*d^2-6/e^7*ln(e*x+d)*A*c^3*d^5+3/2/e^2*B*x^2*a^2*c+3/2/e^2*B*x^2*a*b^2-1/e^
3*B*x^2*b^3*d+5/2/e^6*B*x^2*c^3*d^4+3/e^2*A*a^2*c*x+3/e^2*A*a*b^2*x+1/e^2*A
*x^3*a*c^2+1/e^2*A*x^3*b^2*c+1/6*B*c^3/e^2*x^6+6/e^4/(e*x+d)*A*a*b*c*d^3-6/
e^5/(e*x+d)*B*a*b*c*d^4+18/e^4*ln(e*x+d)*A*a*b*c*d^2-24/e^5*ln(e*x+d)*B*a*b
*c*d^3-6/e^3*B*x^2*a*b*c*d-12/e^3*A*a*b*c*d*x+18/e^4*B*a*b*c*d^2*x-2/e^3*A*
```

```
x^3*b*c^2*d+2/e^2*B*x^3*a*b*c-2/e^3*B*x^3*a*c^2*d-2/e^3*B*x^3*b^2*c*d-6/e^3
*B*a^2*c*d*x+3/e^2*A*x^2*a*b*c-3/e^3*A*x^2*a*c^2*d-3/e^3*A*x^2*b^2*c*d+9/2/
e^4*A*x^2*b*c^2*d^2+3/e^4*B*x^3*b*c^2*d^2+9/e^4*A*b^2*c*d^2*x-12/e^5*A*b*c^
2*d^3*x+9/2/e^4*B*x^2*a*c^2*d^2+9/2/e^4*B*x^2*b^2*c*d^2-6/e^5*B*x^2*b*c^2*d
^3+15/e^6*B*b*c^2*d^4*x-12/e^5*B*a*c^2*d^3*x-6/e^3*B*a*b^2*d*x+3/e^2/(e*x+d
)*A*d*a^2*b-3/e^3/(e*x+d)*A*d^2*a^2*c-3/e^3/(e*x+d)*A*a*b^2*d^2-3/e^5/(e*x+
d)*A*a*c^2*d^4-3/e^5/(e*x+d)*A*b^2*c*d^4+3/e^6/(e*x+d)*A*b*c^2*d^5-3/e^3/(e
*x+d)*B*a^2*b*d^2+3/e^4/(e*x+d)*B*d^3*a^2*c+3/e^4/(e*x+d)*B*a*b^2*d^3+3/e^6
/(e*x+d)*B*a*c^2*d^5+3/e^6/(e*x+d)*B*b^2*c*d^5-3/e^7/(e*x+d)*B*b*c^2*d^6-3/
2/e^3*B*x^4*b*c^2*d-12/e^5*B*b^2*c*d^3*x+15/e^6*ln(e*x+d)*A*b*c^2*d^4-6/e^3
*ln(e*x+d)*B*a^2*b*d+9/e^4*ln(e*x+d)*B*a^2*c*d^2+9/e^4*ln(e*x+d)*B*a*b^2*d^
2+15/e^6*ln(e*x+d)*B*d^4*a*c^2+15/e^6*ln(e*x+d)*B*b^2*c*d^4-18/e^7*ln(e*x+d
)*B*b*c^2*d^5+9/e^4*A*a*c^2*d^2*x-6/e^3*ln(e*x+d)*A*a^2*c*d-6/e^3*ln(e*x+d)
*A*a*b^2*d-12/e^5*ln(e*x+d)*A*d^3*a*c^2-12/e^5*ln(e*x+d)*A*b^2*c*d^3
```

maxima [**A**] time = 0.58, size = 853, normalized size = 1.62

$$\frac{Bc^3d^7 - Aa^3e^7 - \left(3\,Bbc^2 + Ac^3\right)d^6e + 3\left(Bb^2c + (Ba + Ab)c^2\right)d^5e^2 - \left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + Ab^2\right)c\right)d^4e^3 + (3}{e^9x + de^8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (B*c^3*d^7 - A*a^3*e^7 - (3*B*b*c^2 + A*c^3)*d^6*e + 3*(B*b^2*c + (B*a + A*
b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*
B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A
*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6)/(e^9*x + d*e^8) + 1/60*(10*B*c
^3*e^5*x^6 - 12*(2*B*c^3*d*e^4 - (3*B*b*c^2 + A*c^3)*e^5)*x^5 + 15*(3*B*c^3
*d^2*e^3 - 2*(3*B*b*c^2 + A*c^3)*d*e^4 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^5)
*x^4 - 20*(4*B*c^3*d^3*e^2 - 3*(3*B*b*c^2 + A*c^3)*d^2*e^3 + 6*(B*b^2*c + (
B*a + A*b)*c^2)*d*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^5)*x^
3 + 30*(5*B*c^3*d^4*e - 4*(3*B*b*c^2 + A*c^3)*d^3*e^2 + 9*(B*b^2*c + (B*a +
 A*b)*c^2)*d^2*e^3 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^4 +
(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^5)*x^2 - 60*(6*B*c^3*d^5 - 5*
(3*B*b*c^2 + A*c^3)*d^4*e + 12*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^2 - 3*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^3 + 2*(3*B*a*b^2 + A*b^3 + 3*
(B*a^2 + 2*A*a*b)*c)*d*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^5)*x)/e^7 +
(7*B*c^3*d^6 - 6*(3*B*b*c^2 + A*c^3)*d^5*e + 15*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^3 + 3*(3*B*a
*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^4 - 6*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d*e^5 + (B*a^3 + 3*A*a^2*b)*e^6)*log(e*x + d)/e^8
```

mupad [**B**] time = 2.44, size = 1483, normalized size = 2.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^2,x)
```

```
[Out] x^3*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/(3*e^2) - (d^2*((A*c^3 + 3
*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/(3*e^2) + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)
/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c
^3*d^2)/e^4))/(3*e)) + x^2*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/(2*
e^2) + (d^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c
^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/(2*e^2) - (d*((B*b^3 +
3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^2 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2
*B*c^3*d)/e^3))/e^2 + (2*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3
))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e) -
 x*((2*d*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e^2 + (d^2*((2*d*((A*
c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b
^2*c)/e^2 + (B*c^3*d^2)/e^4))/e^2 - (2*d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
6*B*a*b*c)/e^2 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (2
*d*((2*d*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*
a*c^2 + 3*B*b^2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e))/e - (3*A*a*b^2 + 3*A*a^2
*c + 3*B*a^2*b)/e^2 + (d^2*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^2
 - (d^2*((A*c^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e^2 + (2*d*((2*d*((A*c
^3 + 3*B*b*c^2)/e^2 - (2*B*c^3*d)/e^3))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^
2*c)/e^2 + (B*c^3*d^2)/e^4))/e))/e^2) - x^4*((d*((A*c^3 + 3*B*b*c^2)/e^2 -
(2*B*c^3*d)/e^3))/(2*e) - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/(4*e^2) + (B*
c^3*d^2)/(4*e^4)) + x^5*((A*c^3 + 3*B*b*c^2)/(5*e^2) - (2*B*c^3*d)/(5*e^3))
 - (A*a^3*e^7 - B*c^3*d^7 - B*a^3*d*e^6 + A*c^3*d^6*e - A*b^3*d^3*e^4 + B*b
^3*d^4*e^3 + 3*A*a*b^2*d^2*e^5 + 3*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 - 3*
B*a*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 - 3*A*b*c^2*d^5*e^2 + 3*A*b^2*c*d^4*e^3
 - 3*B*a*c^2*d^5*e^2 - 3*B*a^2*c*d^3*e^4 - 3*B*b^2*c*d^5*e^2 - 3*A*a^2*b*d*
e^6 + 3*B*b*c^2*d^6*e - 6*A*a*b*c*d^3*e^4 + 6*B*a*b*c*d^4*e^3)/(e*(d*e^7 +
e^8*x)) + (log(d + e*x)*(B*a^3*e^6 + 7*B*c^3*d^6 + 3*A*a^2*b*e^6 - 6*A*c^3*
d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b^3*d^3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*
d^2*e^4 + 15*A*b*c^2*d^4*e^2 - 12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*
B*a^2*c*d^2*e^4 + 15*B*b^2*c*d^4*e^2 - 6*A*a*b^2*d*e^5 - 6*A*a^2*c*d*e^5 -
6*B*a^2*b*d*e^5 - 18*B*b*c^2*d^5*e + 18*A*a*b*c*d^2*e^4 - 24*B*a*b*c*d^3*e^
3))/e^8 + (B*c^3*x^6)/(6*e^2)
```

sympy [B] time = 10.14, size = 1056, normalized size = 2.01

$$\frac{Bc^3x^6}{6e^2}+x^5\left(\frac{Ac^3}{5e^2}+\frac{3Bbc^2}{5e^2}-\frac{2Bc^3d}{5e^3}\right)+x^4\left(\frac{3Abc^2}{4e^2}-\frac{Ac^3d}{2e^3}+\frac{3Bac^2}{4e^2}+\frac{3Bb^2c}{4e^2}-\frac{3Bbc^2d}{2e^3}+\frac{3Bc^3d^2}{4e^4}\right)+x^3\left(\frac{Aac^2}{e^2}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**2,x)
```

```
[Out] B*c**3*x**6/(6*e**2) + x**5*(A*c**3/(5*e**2) + 3*B*b*c**2/(5*e**2) - 2*B*c*
*3*d/(5*e**3)) + x**4*(3*A*b*c**2/(4*e**2) - A*c**3*d/(2*e**3) + 3*B*a*c**2
/(4*e**2) + 3*B*b**2*c/(4*e**2) - 3*B*b*c**2*d/(2*e**3) + 3*B*c**3*d**2/(4*
e**4)) + x**3*(A*a*c**2/e**2 + A*b**2*c/e**2 - 2*A*b*c**2*d/e**3 + A*c**3*d
**2/e**4 + 2*B*a*b*c/e**2 - 2*B*a*c**2*d/e**3 + B*b**3/(3*e**2) - 2*B*b**2*
c*d/e**3 + 3*B*b*c**2*d**2/e**4 - 4*B*c**3*d**3/(3*e**5)) + x**2*(3*A*a*b*c
/e**2 - 3*A*a*c**2*d/e**3 + A*b**3/(2*e**2) - 3*A*b**2*c*d/e**3 + 9*A*b*c**
2*d**2/(2*e**4) - 2*A*c**3*d**3/e**5 + 3*B*a**2*c/(2*e**2) + 3*B*a*b**2/(2*
e**2) - 6*B*a*b*c*d/e**3 + 9*B*a*c**2*d**2/(2*e**4) - B*b**3*d/e**3 + 9*B*b
**2*c*d**2/(2*e**4) - 6*B*b*c**2*d**3/e**5 + 5*B*c**3*d**4/(2*e**6)) + x*(3
*A*a**2*c/e**2 + 3*A*a*b**2/e**2 - 12*A*a*b*c*d/e**3 + 9*A*a*c**2*d**2/e**4
 - 2*A*b**3*d/e**3 + 9*A*b**2*c*d**2/e**4 - 12*A*b*c**2*d**3/e**5 + 5*A*c**
3*d**4/e**6 + 3*B*a**2*b/e**2 - 6*B*a**2*c*d/e**3 - 6*B*a*b**2*d/e**3 + 18*
B*a*b*c*d**2/e**4 - 12*B*a*c**2*d**3/e**5 + 3*B*b**3*d**2/e**4 - 12*B*b**2*
c*d**3/e**5 + 15*B*b*c**2*d**4/e**6 - 6*B*c**3*d**5/e**7) + (-A*a**3*e**7 +
 3*A*a**2*b*d*e**6 - 3*A*a**2*c*d**2*e**5 - 3*A*a*b**2*d**2*e**5 + 6*A*a*b*
c*d**3*e**4 - 3*A*a*c**2*d**4*e**3 + A*b**3*d**3*e**4 - 3*A*b**2*c*d**4*e**
3 + 3*A*b*c**2*d**5*e**2 - A*c**3*d**6*e + B*a**3*d*e**6 - 3*B*a**2*b*d**2*
e**5 + 3*B*a**2*c*d**3*e**4 + 3*B*a*b**2*d**3*e**4 - 6*B*a*b*c*d**4*e**3 +
3*B*a*c**2*d**5*e**2 - B*b**3*d**4*e**3 + 3*B*b**2*c*d**5*e**2 - 3*B*b*c**2
*d**6*e + B*c**3*d**7)/(d*e**8 + e**9*x) + (a*e**2 - b*d*e + c*d**2)**2*(3*
A*b*e**2 - 6*A*c*d*e + B*a*e**2 - 4*B*b*d*e + 7*B*c*d**2)*log(d + e*x)/e**8
```

3.2341 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx$

Optimal. Leaf size=531

$$-\frac{x\big(Ae\big(-9c^2de(2bd-ae)+3bce^2(3bd-2ae)-b^3e^3+10c^3d^3\big)-3B\big(ce^2\big(a^2e^2-6abde+6b^2d^2\big)-b^2e^3(bd-ae)-}{e^7}$$

```
[Out] -(A*e*(10*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+3*b*d)-9*c^2*d*e*(-a*e+2*b*d))-
3*B*(5*c^3*d^4-2*c^2*d^2*e*(-3*a*e+5*b*d)-b^2*e^3*(-a*e+b*d)+c*e^2*(a^2*e^2
-6*a*b*d*e+6*b^2*d^2)))*x/e^7-1/2*(B*(10*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+
3*b*d)-9*c^2*d*e*(-a*e+2*b*d))-3*A*c*e*(2*c^2*d^2+b^2*e^2-c*e*(-a*e+3*b*d))
)*x^2/e^6-c*(A*c*e*(-b*e+c*d)-B*(2*c^2*d^2+b^2*e^2-c*e*(-a*e+3*b*d)))*x^3/e
^5-1/4*c^2*(-A*c*e-3*B*b*e+3*B*c*d)*x^4/e^4+1/5*B*c^3*x^5/e^3+1/2*(-A*e+B*d
)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^2+(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*
c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)-3*(a*e^2-b*d*e+c*d^2)*(B*(7*c^
2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(
-a*e+5*b*d)))*ln(e*x+d)/e^8
```

Rubi **[A]** time = 1.08, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{x\big(Ae\big(-9c^2de(2bd-ae)+3bce^2(3bd-2ae)-b^3e^3+10c^3d^3\big)-3B\big(ce^2\big(a^2e^2-6abde+6b^2d^2\big)-b^2e^3(bd-ae)-}{e^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] -(((A*e*(10*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(3*b*d - 2*a*e) - 9*c^2*d*e*(2*b*
d - a*e)) - 3*B*(5*c^3*d^4 - 2*c^2*d^2*e*(5*b*d - 3*a*e) - b^2*e^3*(b*d - a
*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))*x)/e^7) - ((B*(10*c^3*d^3 -
 b^3*e^3 + 3*b*c*e^2*(3*b*d - 2*a*e) - 9*c^2*d*e*(2*b*d - a*e)) - 3*A*c*e*(
2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - a*e)))*x^2)/(2*e^6) - (c*(A*c*e*(c*d - b
*e) - B*(2*c^2*d^2 + b^2*e^2 - c*e*(3*b*d - a*e)))*x^3)/e^5 - (c^2*(3*B*c*d
 - 3*b*B*e - A*c*e)*x^4)/(4*e^4) + (B*c^3*x^5)/(5*e^3) + ((B*d - A*e)*(c*d^
2 - b*d*e + a*e^2)^3)/(2*e^8*(d + e*x)^2) - ((c*d^2 - b*d*e + a*e^2)^2*(7*B
*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(e^8*(d + e*x)) - (3*(c*
d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d -
 a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^3}\,dx = \int \Bigg(\frac{-Ae\big(10c^3d^3-b^3e^3+3bce^2(3bd-2ae)-9c^2de(2bd-ae)\big)+3B\big(5c^3d^4-2}{e^7}$$

$$= -\frac{\big(Ae\big(10c^3d^3-b^3e^3+3bce^2(3bd-2ae)-9c^2de(2bd-ae)\big)-3B\big(5c^3d^4-2c^2d}{e^7}$$

Mathematica [A] time = 0.28, size = 503, normalized size = 0.95

$$20ex(3B(ce^2(a^2e^2-6abde+6b^2d^2)+b^2e^3(ae-bd)+2c^2d^2e(3ae-5bd)+5c^3d^4)+Ae(9c^2de(2bd-ae)+3$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x]
```

```
[Out] (20*e*(A*e*(-10*c^3*d^3 + b^3*e^3 + 9*c^2*d*e*(2*b*d - a*e) + 3*b*c*e^2*(-3
*b*d + 2*a*e)) + 3*B*(5*c^3*d^4 + b^2*e^3*(-(b*d) + a*e) + 2*c^2*d^2*e*(-5*
b*d + 3*a*e) + c*e^2*(6*b^2*d^2 - 6*a*b*d*e + a^2*e^2)))*x + 10*e^2*(3*A*c*
e*(2*c^2*d^2 + b^2*e^2 + c*e*(-3*b*d + a*e)) + B*(-10*c^3*d^3 + b^3*e^3 + 9
*c^2*d*e*(2*b*d - a*e) + 3*b*c*e^2*(-3*b*d + 2*a*e)))*x^2 + 20*c*e^3*(A*c*e
*(-(c*d) + b*e) + B*(2*c^2*d^2 + b^2*e^2 + c*e*(-3*b*d + a*e)))*x^3 + 5*c^2
*e^4*(-3*B*c*d + 3*b*B*e + A*c*e)*x^4 + 4*B*c^3*e^5*x^5 + (10*(B*d - A*e)*(
c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^2 - (20*(c*d^2 + e*(-(b*d) + a*e))^2
*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x) - 60*(c
*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e)))
 + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*a*e)))*Log[d + e*
x])/(20*e^8)
```

fricas [B] time = 0.73, size = 1311, normalized size = 2.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/20*(4*B*c^3*e^7*x^7 - 130*B*c^3*d^7 - 10*A*a^3*e^7 + 110*(3*B*b*c^2 + A*c
^3)*d^6*e - 270*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 70*(B*b^3 + 3*A*a*c^2
 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - 50*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*d^3*e^4 + 90*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*
A*a^2*b)*d*e^6 - (7*B*c^3*d*e^6 - 5*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 2*(7*B*c
^3*d^2*e^5 - 5*(3*B*b*c^2 + A*c^3)*d*e^6 + 10*(B*b^2*c + (B*a + A*b)*c^2)*e
^7)*x^5 - 5*(7*B*c^3*d^3*e^4 - 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 10*(B*b^2*c
+ (B*a + A*b)*c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^
7)*x^4 + 20*(7*B*c^3*d^4*e^3 - 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 10*(B*b^2*c
+ (B*a + A*b)*c^2)*d^2*e^5 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
d*e^6 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 10*(50*B*c^3
*d^5*e^2 - 34*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 63*(B*b^2*c + (B*a + A*b)*c^2)*
d^3*e^4 - 11*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 4*(3*B*a
*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6)*x^2 + 20*(8*B*c^3*d^6*e - 4*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + (B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 - 2*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d^2*e^5 + 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3
+ 3*A*a^2*b)*e^7)*x - 60*(7*B*c^3*d^7 - 5*(3*B*b*c^2 + A*c^3)*d^6*e + 10*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - (B*a
^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (7*B*c^3*d^5*e^2 - 5*(3*B*b*c^2 + A*c^3
)*d^4*e^3 + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 2*(B*b^3 + 3*A*a*c^2 +
 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*
c)*d*e^6 - (B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 2*(7*B*c^3*d^6*e - 5*(3
*B*b*c^2 + A*c^3)*d^5*e^2 + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 2*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d^2*e^5 - (B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6)*x)*log(e*
x + d))/(e^10*x^2 + 2*d*e^9*x + d^2*e^8)
```

giac [A] time = 0.20, size = 1048, normalized size = 1.97

$$-3\bigl(7\,Bc^{3}d^{5}-15\,Bbc^{2}d^{4}e-5\,Ac^{3}d^{4}e+10\,Bb^{2}cd^{3}e^{2}+10\,Bac^{2}d^{3}e^{2}+10\,Abc^{2}d^{3}e^{2}-2\,Bb^{3}d^{2}e^{3}-12\,Babcd^{2}e^{3}-6\,A$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] -3*(7*B*c^3*d^5 - 15*B*b*c^2*d^4*e - 5*A*c^3*d^4*e + 10*B*b^2*c*d^3*e^2 + 1
0*B*a*c^2*d^3*e^2 + 10*A*b*c^2*d^3*e^2 - 2*B*b^3*d^2*e^3 - 12*B*a*b*c*d^2*e
^3 - 6*A*b^2*c*d^2*e^3 - 6*A*a*c^2*d^2*e^3 + 3*B*a*b^2*d*e^4 + A*b^3*d*e^4
+ 3*B*a^2*c*d*e^4 + 6*A*a*b*c*d*e^4 - B*a^2*b*e^5 - A*a*b^2*e^5 - A*a^2*c*e
^5)*e^(-8)*log(abs(x*e + d)) + 1/20*(4*B*c^3*x^5*e^12 - 15*B*c^3*d*x^4*e^11
 + 40*B*c^3*d^2*x^3*e^10 - 100*B*c^3*d^3*x^2*e^9 + 300*B*c^3*d^4*x*e^8 + 15
*B*b*c^2*x^4*e^12 + 5*A*c^3*x^4*e^12 - 60*B*b*c^2*d*x^3*e^11 - 20*A*c^3*d*x
^3*e^11 + 180*B*b*c^2*d^2*x^2*e^10 + 60*A*c^3*d^2*x^2*e^10 - 600*B*b*c^2*d^
3*x*e^9 - 200*A*c^3*d^3*x*e^9 + 20*B*b^2*c*x^3*e^12 + 20*B*a*c^2*x^3*e^12 +
 20*A*b*c^2*x^3*e^12 - 90*B*b^2*c*d*x^2*e^11 - 90*B*a*c^2*d*x^2*e^11 - 90*A
*b*c^2*d*x^2*e^11 + 360*B*b^2*c*d^2*x*e^10 + 360*B*a*c^2*d^2*x*e^10 + 360*A
*b*c^2*d^2*x*e^10 + 10*B*b^3*x^2*e^12 + 60*B*a*b*c*x^2*e^12 + 30*A*b^2*c*x^
2*e^12 + 30*A*a*c^2*x^2*e^12 - 60*B*b^3*d*x*e^11 - 360*B*a*b*c*d*x*e^11 - 1
80*A*b^2*c*d*x*e^11 - 180*A*a*c^2*d*x*e^11 + 60*B*a*b^2*x*e^12 + 20*A*b^3*x
*e^12 + 60*B*a^2*c*x*e^12 + 120*A*a*b*c*x*e^12)*e^(-15) - 1/2*(13*B*c^3*d^7
 - 33*B*b*c^2*d^6*e - 11*A*c^3*d^6*e + 27*B*b^2*c*d^5*e^2 + 27*B*a*c^2*d^5*
e^2 + 27*A*b*c^2*d^5*e^2 - 7*B*b^3*d^4*e^3 - 42*B*a*b*c*d^4*e^3 - 21*A*b^2*
c*d^4*e^3 - 21*A*a*c^2*d^4*e^3 + 15*B*a*b^2*d^3*e^4 + 5*A*b^3*d^3*e^4 + 15*
B*a^2*c*d^3*e^4 + 30*A*a*b*c*d^3*e^4 - 9*B*a^2*b*d^2*e^5 - 9*A*a*b^2*d^2*e^
5 - 9*A*a^2*c*d^2*e^5 + B*a^3*d*e^6 + 3*A*a^2*b*d*e^6 + A*a^3*e^7 + 2*(7*B*
c^3*d^6*e - 18*B*b*c^2*d^5*e^2 - 6*A*c^3*d^5*e^2 + 15*B*b^2*c*d^4*e^3 + 15*
B*a*c^2*d^4*e^3 + 15*A*b*c^2*d^4*e^3 - 4*B*b^3*d^3*e^4 - 24*B*a*b*c*d^3*e^4
 - 12*A*b^2*c*d^3*e^4 - 12*A*a*c^2*d^3*e^4 + 9*B*a*b^2*d^2*e^5 + 3*A*b^3*d^
2*e^5 + 9*B*a^2*c*d^2*e^5 + 18*A*a*b*c*d^2*e^5 - 6*B*a^2*b*d*e^6 - 6*A*a*b^
2*d*e^6 - 6*A*a^2*c*d*e^6 + B*a^3*e^7 + 3*A*a^2*b*e^7)*x)*e^(-8)/(x*e + d)^
2
```

maple [B] time = 0.06, size = 1483, normalized size = 2.79

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x)
```

```
[Out] -A*c^3*d/e^4*x^3-7/(e*x+d)*B*c^3*d^6/e^8-1/2/(e*x+d)^2*A*c^3*d^6/e^7+1/2/(e
*x+d)^2*B*a^3*d/e^2+6/(e*x+d)*A*c^3*d^5/e^7+1/4*A*c^3/e^3*x^4-1/(e*x+d)*B*a
^3/e^2-1/2/(e*x+d)^2*A*a^3/e+1/2/e^4/(e*x+d)^2*A*b^3*d^3-1/2/e^5/(e*x+d)^2*
B*b^3*d^4+3/e^3*ln(e*x+d)*A*a*b^2-3/e^4*ln(e*x+d)*A*b^3*d+3/e^3*ln(e*x+d)*B
*a^2*b+6/e^5*ln(e*x+d)*B*b^3*d^2+1/e^3*B*x^3*b^2*c+1/e^3*A*x^3*b*c^2+3/4/e^
3*B*x^4*b*c^2+3/e^3*B*a*b^2*x-3/e^4*B*b^3*d*x+3/2/e^3*A*x^2*b^2*c-15/(e*x+d
)*B*a*c^2*d^4/e^6-3/2/(e*x+d)^2*A*a^2*c*d^2/e^3-3/2/(e*x+d)^2*A*a*c^2*d^4/e
^5+3/2/(e*x+d)^2*B*a^2*c*d^3/e^4+3/2/(e*x+d)^2*B*a*c^2*d^5/e^6+3*A*c^3*d^2/
e^5*x^2+1/2/(e*x+d)^2*B*c^3*d^7/e^8+3*A*a^2*c/e^3*ln(e*x+d)+15*A*c^3*d^4/e^
7*ln(e*x+d)-21*B*c^3*d^5/e^8*ln(e*x+d)+15*B*c^3*d^4/e^7*x-3/4*B*c^3*d/e^4*x
^4+18*A*a*c^2*d^2/e^5*ln(e*x+d)-9*B*a^2*c*d/e^4*ln(e*x+d)-30*B*a*c^2*d^3/e^
6*ln(e*x+d)-9/2*B*a*c^2*d/e^4*x^2-9*A*a*c^2*d/e^4*x+18*B*a*c^2*d^2/e^5*x+6/
(e*x+d)*A*a^2*c*d/e^3+12/(e*x+d)*A*a*c^2*d^3/e^5-9/(e*x+d)*B*a^2*c*d^2/e^4+
1/e^3*A*b^3*x+1/2/e^3*B*x^2*b^3+3/2*A*a*c^2/e^3*x^2-5*B*c^3*d^3/e^6*x^2-10*
A*c^3*d^3/e^6*x+3*B*a^2*c/e^3*x-3/e^2/(e*x+d)*A*a^2*b-3/e^4/(e*x+d)*A*b^3*d
^2+4/e^5/(e*x+d)*B*b^3*d^3+B*a*c^2/e^3*x^3+2*B*c^3*d^2/e^5*x^3+1/5*B*c^3/e^
```

```
3*x^5+24/e^5/(e*x+d)*B*a*b*c*d^3+3/e^4/(e*x+d)^2*A*a*b*c*d^3-3/e^5/(e*x+d)^
2*B*a*b*c*d^4-18/e^4*ln(e*x+d)*A*a*b*c*d+36/e^5*ln(e*x+d)*B*a*b*c*d^2-18/e^
4*B*a*b*c*d*x-18/e^4/(e*x+d)*A*a*b*c*d^2+3/2/e^6/(e*x+d)^2*A*b*c^2*d^5-3/2/
e^3/(e*x+d)^2*B*d^2*a^2*b-3/2/e^5/(e*x+d)^2*A*b^2*c*d^4-9/e^4/(e*x+d)*B*a*b
^2*d^2-15/e^6/(e*x+d)*B*b^2*c*d^4+18/e^7/(e*x+d)*B*b*c^2*d^5+3/2/e^2/(e*x+d
)^2*A*d*a^2*b-3/2/e^3/(e*x+d)^2*A*d^2*a*b^2+3/e^3*B*x^2*a*b*c-9/2/e^4*B*x^2
*b^2*c*d+9/e^5*B*x^2*b*c^2*d^2-3/2/e^7/(e*x+d)^2*B*b*c^2*d^6-30/e^6*ln(e*x+
d)*A*b*c^2*d^3-9/e^4*ln(e*x+d)*B*a*b^2*d-30/e^6*ln(e*x+d)*B*b^2*c*d^3+45/e^
7*ln(e*x+d)*B*b*c^2*d^4+3/2/e^4/(e*x+d)^2*B*a*b^2*d^3+3/2/e^6/(e*x+d)^2*B*b
^2*c*d^5+18/e^5*ln(e*x+d)*A*b^2*c*d^2+6/e^3/(e*x+d)*A*a*b^2*d+12/e^5/(e*x+d
)*A*b^2*c*d^3-15/e^6/(e*x+d)*A*b*c^2*d^4+6/e^3/(e*x+d)*B*a^2*b*d-9/2/e^4*A*
x^2*b*c^2*d+18/e^5*B*b^2*c*d^2*x-30/e^6*B*b*c^2*d^3*x+6/e^3*A*a*b*c*x-9/e^4
*A*b^2*c*d*x+18/e^5*A*b*c^2*d^2*x-3/e^4*B*x^3*b*c^2*d
```

maxima [A] time = 0.79, size = 861, normalized size = 1.62

$$-\frac{13\,Bc^{3}d^{7} + Aa^{3}e^{7} - 11\left(3\,Bbc^{2} + Ac^{3}\right)d^{6}e + 27\left(Bb^{2}c + (Ba + Ab)c^{2}\right)d^{5}e^{2} - 7\left(Bb^{3} + 3\,Aac^{2} + 3\left(2\,Bab + Ab\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(13*B*c^3*d^7 + A*a^3*e^7 - 11*(3*B*b*c^2 + A*c^3)*d^6*e + 27*(B*b^2*c
 + (B*a + A*b)*c^2)*d^5*e^2 - 7*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 9*(B*a^2
*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6 + 2*(7*B*c^3*d^
6*e - 6*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^
3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 3*(3*B*a*b^2 +
A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*
e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^10*x^2 + 2*d*e^9*x + d^2*e^8) + 1/20*(
4*B*c^3*e^4*x^5 - 5*(3*B*c^3*d*e^3 - (3*B*b*c^2 + A*c^3)*e^4)*x^4 + 20*(2*B
*c^3*d^2*e^2 - (3*B*b*c^2 + A*c^3)*d*e^3 + (B*b^2*c + (B*a + A*b)*c^2)*e^4)
*x^3 - 10*(10*B*c^3*d^3*e - 6*(3*B*b*c^2 + A*c^3)*d^2*e^2 + 9*(B*b^2*c + (B
*a + A*b)*c^2)*d*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^4)*x^2
 + 20*(15*B*c^3*d^4 - 10*(3*B*b*c^2 + A*c^3)*d^3*e + 18*(B*b^2*c + (B*a + A
*b)*c^2)*d^2*e^2 - 3*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^3 + (3
*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^4)*x)/e^7 - 3*(7*B*c^3*d^5 - 5*
(3*B*b*c^2 + A*c^3)*d^4*e + 10*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^2 - 2*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*d*e^4 - (B*a^2*b + A*a*b^2 + A*a^2*c)*e^5)*log(e*x + d)/
e^8
```

mupad [B] time = 2.51, size = 1297, normalized size = 2.44

$$x\left(\frac{3\,B\,c\,a^{2} + 3\,B\,a\,b^{2} + 6\,A\,c\,a\,b + A\,b^{3}}{e^{3}} + \frac{3\,d^{2}\left(\frac{3\,d\left(\frac{A\,c^{3}+3\,B\,b\,c^{2}}{e^{3}} - \frac{3\,B\,c^{3}\,d}{e^{4}}\right)}{e} - \frac{3\,B\,b^{2}\,c+3\,A\,b\,c^{2}+3\,B\,a\,c^{2}}{e^{3}} + \frac{3\,B\,c^{3}\,d^{2}}{e^{5}}\right)}{e^{2}} - \frac{3\,d\left(\frac{B\,b}{}\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^3,x)
```

```
[Out] x*((A*b^3 + 3*B*a*b^2 + 3*B*a^2*c + 6*A*a*b*c)/e^3 + (3*d^2*((3*d*((A*c^3 +
 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)
/e^3 + (3*B*c^3*d^2)/e^5))/e^2 - (3*d*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B
*a*b*c)/e^3 - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^2 + (3*
d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2 + 3*B*a
*c^2 + 3*B*b^2*c)/e^3 + (3*B*c^3*d^2)/e^5))/e - (B*c^3*d^3)/e^6))/e - (d^3*
((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e^3) - ((A*a^3*e^7 + 13*B*c^3*
d^7 + B*a^3*d*e^6 - 11*A*c^3*d^6*e + 5*A*b^3*d^3*e^4 - 7*B*b^3*d^4*e^3 - 9*
A*a*b^2*d^2*e^5 - 21*A*a*c^2*d^4*e^3 - 9*A*a^2*c*d^2*e^5 + 15*B*a*b^2*d^3*e
^4 - 9*B*a^2*b*d^2*e^5 + 27*A*b*c^2*d^5*e^2 - 21*A*b^2*c*d^4*e^3 + 27*B*a*c
^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4 + 27*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 - 33
*B*b*c^2*d^6*e + 30*A*a*b*c*d^3*e^4 - 42*B*a*b*c*d^4*e^3)/(2*e) + x*(B*a^3*
e^6 + 7*B*c^3*d^6 + 3*A*a^2*b*e^6 - 6*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 - 4*B*b
^3*d^3*e^3 - 12*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 15*A*b*c^2*d^4*e^2 -
12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 15*B*b^2*c*d^
4*e^2 - 6*A*a*b^2*d*e^5 - 6*A*a^2*c*d*e^5 - 6*B*a^2*b*d*e^5 - 18*B*b*c^2*d^
5*e + 18*A*a*b*c*d^2*e^4 - 24*B*a*b*c*d^3*e^3))/(d^2*e^7 + e^9*x^2 + 2*d*e^
8*x) - x^3*((d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*c^2
+ 3*B*a*c^2 + 3*B*b^2*c)/(3*e^3) + (B*c^3*d^2)/e^5) + x^4*((A*c^3 + 3*B*b*c
^2)/(4*e^3) - (3*B*c^3*d)/(4*e^4)) + x^2*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c +
6*B*a*b*c)/(2*e^3) - (3*d^2*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/(2
*e^2) + (3*d*((3*d*((A*c^3 + 3*B*b*c^2)/e^3 - (3*B*c^3*d)/e^4))/e - (3*A*b*
c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^3 + (3*B*c^3*d^2)/e^5))/(2*e) - (B*c^3*d^3)/
(2*e^6)) + (log(d + e*x)*(3*A*a*b^2*e^5 - 21*B*c^3*d^5 + 3*A*a^2*c*e^5 + 3*
B*a^2*b*e^5 - 3*A*b^3*d*e^4 + 15*A*c^3*d^4*e + 6*B*b^3*d^2*e^3 + 18*A*a*c^2
*d^2*e^3 - 30*A*b*c^2*d^3*e^2 + 18*A*b^2*c*d^2*e^3 - 30*B*a*c^2*d^3*e^2 - 3
0*B*b^2*c*d^3*e^2 - 9*B*a*b^2*d*e^4 - 9*B*a^2*c*d*e^4 + 45*B*b*c^2*d^4*e +
36*B*a*b*c*d^2*e^3 - 18*A*a*b*c*d*e^4))/e^8 + (B*c^3*x^5)/(5*e^3)
```

sympy [B] time = 86.43, size = 1149, normalized size = 2.16

$$\frac{Bc^3x^5}{5e^3}+x^4\left(\frac{Ac^3}{4e^3}+\frac{3Bbc^2}{4e^3}-\frac{3Bc^3d}{4e^4}\right)+x^3\left(\frac{Abc^2}{e^3}-\frac{Ac^3d}{e^4}+\frac{Bac^2}{e^3}+\frac{Bb^2c}{e^3}-\frac{3Bbc^2d}{e^4}+\frac{2Bc^3d^2}{e^5}\right)+x^2\left(\frac{3Aac^2}{2e^3}+\frac{3Ab}{2e^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**3,x)
```

```
[Out] B*c**3*x**5/(5*e**3) + x**4*(A*c**3/(4*e**3) + 3*B*b*c**2/(4*e**3) - 3*B*c*
*3*d/(4*e**4)) + x**3*(A*b*c**2/e**3 - A*c**3*d/e**4 + B*a*c**2/e**3 + B*b*
*2*c/e**3 - 3*B*b*c**2*d/e**4 + 2*B*c**3*d**2/e**5) + x**2*(3*A*a*c**2/(2*e
**3) + 3*A*b**2*c/(2*e**3) - 9*A*b*c**2*d/(2*e**4) + 3*A*c**3*d**2/e**5 + 3
*B*a*b*c/e**3 - 9*B*a*c**2*d/(2*e**4) + B*b**3/(2*e**3) - 9*B*b**2*c*d/(2*e
**4) + 9*B*b*c**2*d**2/e**5 - 5*B*c**3*d**3/e**6) + x*(6*A*a*b*c/e**3 - 9*A
*a*c**2*d/e**4 + A*b**3/e**3 - 9*A*b**2*c*d/e**4 + 18*A*b*c**2*d**2/e**5 -
10*A*c**3*d**3/e**6 + 3*B*a**2*c/e**3 + 3*B*a*b**2/e**3 - 18*B*a*b*c*d/e**4
 + 18*B*a*c**2*d**2/e**5 - 3*B*b**3*d/e**4 + 18*B*b**2*c*d**2/e**5 - 30*B*b
*c**2*d**3/e**6 + 15*B*c**3*d**4/e**7) + (-A*a**3*e**7 - 3*A*a**2*b*d*e**6
+ 9*A*a**2*c*d**2*e**5 + 9*A*a*b**2*d**2*e**5 - 30*A*a*b*c*d**3*e**4 + 21*A
*a*c**2*d**4*e**3 - 5*A*b**3*d**3*e**4 + 21*A*b**2*c*d**4*e**3 - 27*A*b*c**
2*d**5*e**2 + 11*A*c**3*d**6*e - B*a**3*d*e**6 + 9*B*a**2*b*d**2*e**5 - 15*
B*a**2*c*d**3*e**4 - 15*B*a*b**2*d**3*e**4 + 42*B*a*b*c*d**4*e**3 - 27*B*a*
c**2*d**5*e**2 + 7*B*b**3*d**4*e**3 - 27*B*b**2*c*d**5*e**2 + 33*B*b*c**2*d
**6*e - 13*B*c**3*d**7 + x*(-6*A*a**2*b*e**7 + 12*A*a**2*c*d*e**6 + 12*A*a*
b**2*d*e**6 - 36*A*a*b*c*d**2*e**5 + 24*A*a*c**2*d**3*e**4 - 6*A*b**3*d**2*
e**5 + 24*A*b**2*c*d**3*e**4 - 30*A*b*c**2*d**4*e**3 + 12*A*c**3*d**5*e**2
- 2*B*a**3*e**7 + 12*B*a**2*b*d*e**6 - 18*B*a**2*c*d**2*e**5 - 18*B*a*b**2*
d**2*e**5 + 48*B*a*b*c*d**3*e**4 - 30*B*a*c**2*d**4*e**3 + 8*B*b**3*d**3*e*
*4 - 30*B*b**2*c*d**4*e**3 + 36*B*b*c**2*d**5*e**2 - 14*B*c**3*d**6*e))/(2*
d**2*e**8 + 4*d*e**9*x + 2*e**10*x**2) + 3*(a*e**2 - b*d*e + c*d**2)*(A*a*c
*e**3 + A*b**2*e**3 - 5*A*b*c*d*e**2 + 5*A*c**2*d**2*e + B*a*b*e**3 - 3*B*a
*c*d*e**2 - 2*B*b**2*d*e**2 + 8*B*b*c*d**2*e - 7*B*c**2*d**3)*log(d + e*x)/
e**8
```

3.2342 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx$

Optimal. Leaf size=521

$$-\frac{\log(d+ex)\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{e^8}$$

```
[Out] -(B*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-A*c*e*(10*c^2*d^
2+3*b^2*e^2-3*c*e*(-a*e+4*b*d)))*x/e^7-1/2*c*(A*c*e*(-3*b*e+4*c*d)-B*(10*c^
2*d^2+3*b^2*e^2-3*c*e*(-a*e+4*b*d)))*x^2/e^6-1/3*c^2*(-A*c*e-3*B*b*e+4*B*c*
d)*x^3/e^5+1/4*B*c^3*x^4/e^4+1/3*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+
d)^3+1/2*(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d
)))/e^8/(e*x+d)^2+3*(a*e^2-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+
b*e^2*(-a*e+2*b*d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)-(
A*e*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^
2*e^3*(-3*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+1
0*b^2*d^2)))*ln(e*x+d)/e^8
```

Rubi **[A]** time = 0.99, antiderivative size = 519, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{\log(d+ex)\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3a\right.\right.}{e^8}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] -(((B*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - A*c*e*
(10*c^2*d^2 + 3*b^2*e^2 - 3*c*e*(4*b*d - a*e)))*x)/e^7) - (c*(A*c*e*(4*c*d
- 3*b*e) - B*(10*c^2*d^2 + 3*b^2*e^2 - 3*c*e*(4*b*d - a*e)))*x^2)/(2*e^6) -
 (c^2*(4*B*c*d - 3*b*B*e - A*c*e)*x^3)/(3*e^5) + (B*c^3*x^4)/(4*e^4) + ((B*
d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(3*e^8*(d + e*x)^3) - ((c*d^2 - b*d*e +
 a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(2*e^8*(d
+ e*x)^2) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e
) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))))/
(e^8*(d + e*x)) - ((A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d
- 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d -
 a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int\frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^4}\,dx=\int\left(\frac{-B(2cd-be)\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)+Ace\left(10c^2d^2+3b^2e^2-3c\right.}{e^7}\right.$$

$$=-\frac{\left(B(2cd-be)\left(10c^2d^2+b^2e^2-2ce(5bd-3ae)\right)-Ace\left(10c^2d^2+3b^2e^2-3ce(4\right.\right.}{e^7}$$

Mathematica [A] time = 0.26, size = 488, normalized size = 0.94

$$\frac{12\log(d+ex)\left(B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)+b^2e^3(3ae-4bd)+30c^2d^2e(ae-2bd)+35c^3d^4\right)+Ae(be-2c}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x]
```

```
[Out] (12*e*(A*c*e*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(-4*b*d + a*e)) - B*(2*c*d - b
*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e)))*x + 6*c*e^2*(A*c*e*(-4
*c*d + 3*b*e) + B*(10*c^2*d^2 + 3*b^2*e^2 + 3*c*e*(-4*b*d + a*e)))*x^2 + 4*
c^2*e^3*(-4*B*c*d + 3*b*B*e + A*c*e)*x^3 + 3*B*c^3*e^4*x^4 + (4*(B*d - A*e)
*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^3 - (6*(c*d^2 + e*(-(b*d) + a*e))^
2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d + e*x)^2 + (3
6*(c*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*
e))) + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*a*e))))/(d +
e*x) + 12*(A*e*(-2*c*d + b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e*(-5*b*d + 3*a*e
)) + B*(35*c^3*d^4 + 30*c^2*d^2*e*(-2*b*d + a*e) + b^2*e^3*(-4*b*d + 3*a*e)
 + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))*Log[d + e*x])/(12*e^8)
```

fricas [B] time = 1.07, size = 1369, normalized size = 2.63

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/12*(3*B*c^3*e^7*x^7 + 214*B*c^3*d^7 - 4*A*a^3*e^7 - 148*(3*B*b*c^2 + A*c^
3)*d^6*e + 282*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 52*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 22*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^4 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 2*(B*a^3 + 3*A*
a^2*b)*d*e^6 - (7*B*c^3*d*e^6 - 4*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 3*(7*B*c^3
*d^2*e^5 - 4*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2)*e^7)
*x^5 - 3*(35*B*c^3*d^3*e^4 - 20*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 30*(B*b^2*c +
 (B*a + A*b)*c^2)*d*e^6 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7
)*x^4 - 2*(278*B*c^3*d^4*e^3 - 146*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 189*(B*b^2
*c + (B*a + A*b)*c^2)*d^2*e^5 - 18*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6)*x^3 - 6*(68*B*c^3*d^5*e^2 - 26*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 9*(
B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + 6*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^2*e^5 - 6*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 6*(
B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 6*(37*B*c^3*d^6*e - 34*(3*B*b*c^2 +
 A*c^3)*d^5*e^2 + 81*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 18*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*d^2*e^5 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*
a^2*b)*e^7)*x + 12*(35*B*c^3*d^7 - 20*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B*b^2
*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + (35*B*c^
3*d^4*e^3 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)*c^2)
*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 3*(35*B*c^3*d^5*e^2 - 20*(3*B*
b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*(B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^
2 + 2*A*a*b)*c)*d*e^6)*x^2 + 3*(35*B*c^3*d^6*e - 20*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^
2*e^5)*x)*log(e*x + d))/(e^11*x^3 + 3*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8)
```

giac [B] time = 0.18, size = 1021, normalized size = 1.96

$$\left(35\,Bc^3d^4 - 60\,Bbc^2d^3e - 20\,Ac^3d^3e + 30\,Bb^2cd^2e^2 + 30\,Bac^2d^2e^2 + 30\,Abc^2d^2e^2 - 4\,Bb^3de^3 - 24\,Babcde^3 - 12\,A\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] (35*B*c^3*d^4 - 60*B*b*c^2*d^3*e - 20*A*c^3*d^3*e + 30*B*b^2*c*d^2*e^2 + 30
*B*a*c^2*d^2*e^2 + 30*A*b*c^2*d^2*e^2 - 4*B*b^3*d*e^3 - 24*B*a*b*c*d*e^3 -
12*A*b^2*c*d*e^3 - 12*A*a*c^2*d*e^3 + 3*B*a*b^2*e^4 + A*b^3*e^4 + 3*B*a^2*c
*e^4 + 6*A*a*b*c*e^4)*e^(-8)*log(abs(x*e + d)) + 1/12*(3*B*c^3*x^4*e^12 - 1
6*B*c^3*d*x^3*e^11 + 60*B*c^3*d^2*x^2*e^10 - 240*B*c^3*d^3*x*e^9 + 12*B*b*c
^2*x^3*e^12 + 4*A*c^3*x^3*e^12 - 72*B*b*c^2*d*x^2*e^11 - 24*A*c^3*d*x^2*e^1
1 + 360*B*b*c^2*d^2*x*e^10 + 120*A*c^3*d^2*x*e^10 + 18*B*b^2*c*x^2*e^12 + 1
8*B*a*c^2*x^2*e^12 + 18*A*b*c^2*x^2*e^12 - 144*B*b^2*c*d*x*e^11 - 144*B*a*c
^2*d*x*e^11 - 144*A*b*c^2*d*x*e^11 + 12*B*b^3*x*e^12 + 72*B*a*b*c*x*e^12 +
36*A*b^2*c*x*e^12 + 36*A*a*c^2*x*e^12)*e^(-16) + 1/6*(107*B*c^3*d^7 - 222*B
*b*c^2*d^6*e - 74*A*c^3*d^6*e + 141*B*b^2*c*d^5*e^2 + 141*B*a*c^2*d^5*e^2 +
 141*A*b*c^2*d^5*e^2 - 26*B*b^3*d^4*e^3 - 156*B*a*b*c*d^4*e^3 - 78*A*b^2*c*
d^4*e^3 - 78*A*a*c^2*d^4*e^3 + 33*B*a*b^2*d^3*e^4 + 11*A*b^3*d^3*e^4 + 33*B
*a^2*c*d^3*e^4 + 66*A*a*b*c*d^3*e^4 - 6*B*a^2*b*d^2*e^5 - 6*A*a*b^2*d^2*e^5
 - 6*A*a^2*c*d^2*e^5 - B*a^3*d*e^6 - 3*A*a^2*b*d*e^6 - 2*A*a^3*e^7 + 18*(7*
B*c^3*d^5*e^2 - 15*B*b*c^2*d^4*e^3 - 5*A*c^3*d^4*e^3 + 10*B*b^2*c*d^3*e^4 +
 10*B*a*c^2*d^3*e^4 + 10*A*b*c^2*d^3*e^4 - 2*B*b^3*d^2*e^5 - 12*B*a*b*c*d^2
*e^5 - 6*A*b^2*c*d^2*e^5 - 6*A*a*c^2*d^2*e^5 + 3*B*a*b^2*d*e^6 + A*b^3*d*e^
6 + 3*B*a^2*c*d*e^6 + 6*A*a*b*c*d*e^6 - B*a^2*b*e^7 - A*a*b^2*e^7 - A*a^2*c
*e^7)*x^2 + 3*(77*B*c^3*d^6*e - 162*B*b*c^2*d^5*e^2 - 54*A*c^3*d^5*e^2 + 10
5*B*b^2*c*d^4*e^3 + 105*B*a*c^2*d^4*e^3 + 105*A*b*c^2*d^4*e^3 - 20*B*b^3*d^
3*e^4 - 120*B*a*b*c*d^3*e^4 - 60*A*b^2*c*d^3*e^4 - 60*A*a*c^2*d^3*e^4 + 27*
B*a*b^2*d^2*e^5 + 9*A*b^3*d^2*e^5 + 27*B*a^2*c*d^2*e^5 + 54*A*a*b*c*d^2*e^5
 - 6*B*a^2*b*d*e^6 - 6*A*a*b^2*d*e^6 - 6*A*a^2*c*d*e^6 - B*a^3*e^7 - 3*A*a^
2*b*e^7)*x)*e^(-8)/(x*e + d)^3
```

maple [B] time = 0.07, size = 1545, normalized size = 2.97

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x)
```

```
[Out] -1/2/e^2/(e*x+d)^2*B*a^3+1/e^4*ln(e*x+d)*A*b^3-1/3/e/(e*x+d)^3*A*a^3+1/3/e^
4*A*x^3*c^3+1/e^4*B*b^3*x+1/3/e^8/(e*x+d)^3*B*c^3*d^7-3/e^3/(e*x+d)*A*a^2*c
-3/e^3/(e*x+d)*A*a*b^2+3/e^4/(e*x+d)*A*b^3*d-15/e^7/(e*x+d)*A*c^3*d^4-3/e^3
/(e*x+d)*B*a^2*b-6/e^5/(e*x+d)*B*b^3*d^2+21/e^8/(e*x+d)*B*c^3*d^5-3/2/e^2/(
e*x+d)^2*A*a^2*b-3/2/e^4/(e*x+d)^2*A*b^3*d^2+3/e^7/(e*x+d)^2*A*c^3*d^5+2/e^
5/(e*x+d)^2*B*b^3*d^3-7/2/e^8/(e*x+d)^2*B*c^3*d^6+3/2/e^4*A*x^2*b*c^2-2/e^5
*A*x^2*c^3*d+3/2/e^4*B*x^2*a*c^2+3/2/e^4*B*x^2*b^2*c+5/e^6*B*x^2*c^3*d^2+3/
e^4*A*a*c^2*x+3/e^4*A*b^2*c*x+10/e^6*A*c^3*d^2*x-20/e^7*B*c^3*d^3*x-20/e^7*
ln(e*x+d)*A*c^3*d^3+3/e^4*ln(e*x+d)*B*a^2*c+3/e^4*ln(e*x+d)*B*a*b^2+1/e^4*B
*x^3*b*c^2-4/3/e^5*B*x^3*c^3*d+1/3/e^4/(e*x+d)^3*A*d^3*b^3-1/3/e^7/(e*x+d)^
3*A*c^3*d^6+1/3/e^2/(e*x+d)^3*B*a^3*d-1/3/e^5/(e*x+d)^3*B*b^3*d^4-4/e^5*ln(
e*x+d)*B*b^3*d+35/e^8*ln(e*x+d)*B*c^3*d^4+1/4*B*c^3/e^4*x^4+1/e^6/(e*x+d)^3
*B*b^2*c*d^5-1/e^7/(e*x+d)^3*B*b*c^2*d^6+6/e^4*ln(e*x+d)*A*a*b*c-12/e^5*ln(
e*x+d)*A*a*c^2*d-12/e^5*ln(e*x+d)*A*b^2*c*d+30/e^6*ln(e*x+d)*A*b*c^2*d^2+30
/e^6*ln(e*x+d)*B*a*c^2*d^2+30/e^6*ln(e*x+d)*B*b^2*c*d^2-60/e^7*ln(e*x+d)*B*
b*c^2*d^3+1/e^2/(e*x+d)^3*A*d*a^2*b-1/e^3/(e*x+d)^3*A*d^2*a^2*c-1/e^3/(e*x+
d)^3*A*d^2*a*b^2+9/e^4/(e*x+d)*B*a^2*c*d+9/e^4/(e*x+d)*B*a*b^2*d+30/e^6*B*b
```

```
*c^2*d^2*x+2/e^4/(e*x+d)^3*A*d^3*a*b*c-2/e^5/(e*x+d)^3*B*a*b*c*d^4+18/e^4/(
e*x+d)*A*a*b*c*d-36/e^5/(e*x+d)*B*a*b*c*d^2-9/e^4/(e*x+d)^2*A*a*b*c*d^2-24/
e^5*ln(e*x+d)*B*a*b*c*d+12/e^5/(e*x+d)^2*B*a*b*c*d^3+3/e^3/(e*x+d)^2*B*a^2*
b*d-9/2/e^4/(e*x+d)^2*B*a^2*c*d^2-9/2/e^4/(e*x+d)^2*B*a*b^2*d^2-15/2/e^6/(e
*x+d)^2*B*d^4*a*c^2-15/2/e^6/(e*x+d)^2*B*b^2*c*d^4+9/e^7/(e*x+d)^2*B*b*c^2*
d^5+6/e^5/(e*x+d)^2*A*d^3*a*c^2+6/e^5/(e*x+d)^2*A*b^2*c*d^3-15/2/e^6/(e*x+d
)^2*A*b*c^2*d^4+30/e^6/(e*x+d)*B*a*c^2*d^3+30/e^6/(e*x+d)*B*b^2*c*d^3-45/e^
7/(e*x+d)*B*b*c^2*d^4+3/e^3/(e*x+d)^2*A*a^2*c*d+3/e^3/(e*x+d)^2*A*a*b^2*d+3
0/e^6/(e*x+d)*A*b*c^2*d^3-18/e^5/(e*x+d)*A*a*c^2*d^2-18/e^5/(e*x+d)*A*b^2*c
*d^2+6/e^4*B*a*b*c*x-12/e^5*B*a*c^2*d*x-12/e^5*B*b^2*c*d*x-6/e^5*B*x^2*b*c^
2*d-12/e^5*A*b*c^2*d*x-1/e^5/(e*x+d)^3*A*a*c^2*d^4-1/e^5/(e*x+d)^3*A*b^2*c*
d^4+1/e^6/(e*x+d)^3*A*b*c^2*d^5-1/e^3/(e*x+d)^3*B*d^2*a^2*b+1/e^4/(e*x+d)^3
*B*d^3*a^2*c+1/e^4/(e*x+d)^3*B*d^3*a*b^2+1/e^6/(e*x+d)^3*B*a*c^2*d^5
```

maxima [**A**] time = 0.79, size = 875, normalized size = 1.68

$$\frac{107\,Bc^{3}d^{7}-2\,Aa^{3}e^{7}-74\,(3\,Bbc^{2}+Ac^{3})d^{6}e+141\,(Bb^{2}c+(Ba+Ab)c^{2})d^{5}e^{2}-26\,(Bb^{3}+3\,Aac^{2}+3\,(2\,Bab+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(107*B*c^3*d^7 - 2*A*a^3*e^7 - 74*(3*B*b*c^2 + A*c^3)*d^6*e + 141*(B*b^
2*c + (B*a + A*b)*c^2)*d^5*e^2 - 26*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^4*e^3 + 11*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 6*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)*d*e^6 + 18*(7*B*
c^3*d^5*e^2 - 5*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 10*(B*b^2*c + (B*a + A*b)*c^2
)*d^3*e^4 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*
b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - (B*a^2*b + A*a*b^2 + A*a^2*c)*
e^7)*x^2 + 3*(77*B*c^3*d^6*e - 54*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 105*(B*b^2*
c + (B*a + A*b)*c^2)*d^4*e^3 - 20*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*d^3*e^4 + 9*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 6*(B*a
^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^11*x^3 + 3
*d*e^10*x^2 + 3*d^2*e^9*x + d^3*e^8) + 1/12*(3*B*c^3*e^3*x^4 - 4*(4*B*c^3*d
*e^2 - (3*B*b*c^2 + A*c^3)*e^3)*x^3 + 6*(10*B*c^3*d^2*e - 4*(3*B*b*c^2 + A*
c^3)*d*e^2 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^3)*x^2 - 12*(20*B*c^3*d^3 - 10
*(3*B*b*c^2 + A*c^3)*d^2*e + 12*(B*b^2*c + (B*a + A*b)*c^2)*d*e^2 - (B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*x)/e^7 + (35*B*c^3*d^4 - 20*(3*B*
b*c^2 + A*c^3)*d^3*e + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^2 - 4*(B*b^3 +
3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*e^4)*log(e*x + d)/e^8
```

mupad [**B**] time = 2.53, size = 1151, normalized size = 2.21

$$x\left(\frac{B\,b^{3}+3\,A\,b^{2}\,c+6\,B\,a\,b\,c+3\,A\,a\,c^{2}}{e^{4}}-\frac{6\,d^{2}\,\left(\frac{A\,c^{3}+3\,B\,b\,c^{2}}{e^{4}}-\frac{4\,B\,c^{3}\,d}{e^{5}}\right)}{e^{2}}+\frac{4\,d\,\left(\frac{4\,d\,\left(\frac{A\,c^{3}+3\,B\,b\,c^{2}}{e^{4}}-\frac{4\,B\,c^{3}\,d}{e^{5}}\right)}{e}-\frac{3\,B\,b^{2}\,c+3\,A\,b\,c^{2}}{e^{4}}\right.}{e}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^4,x)
```

```
[Out] x*((B*b^3 + 3*A*a*c^2 + 3*A*b^2*c + 6*B*a*b*c)/e^4 - (6*d^2*((A*c^3 + 3*B*b
*c^2)/e^4 - (4*B*c^3*d)/e^5))/e^2 + (4*d*((4*d*((A*c^3 + 3*B*b*c^2)/e^4 - (
4*B*c^3*d)/e^5))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^4 + (6*B*c^3*d^2
)/e^6))/e - (4*B*c^3*d^3)/e^7) - x^2*((2*d*((A*c^3 + 3*B*b*c^2)/e^4 - (4*B*
c^3*d)/e^5))/e - (3*A*b*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/(2*e^4) + (3*B*c^3*d^2
)/e^6) - ((2*A*a^3*e^7 - 107*B*c^3*d^7 + B*a^3*d*e^6 + 74*A*c^3*d^6*e - 11*
A*b^3*d^3*e^4 + 26*B*b^3*d^4*e^3 + 6*A*a*b^2*d^2*e^5 + 78*A*a*c^2*d^4*e^3 +
 6*A*a^2*c*d^2*e^5 - 33*B*a*b^2*d^3*e^4 + 6*B*a^2*b*d^2*e^5 - 141*A*b*c^2*d
^5*e^2 + 78*A*b^2*c*d^4*e^3 - 141*B*a*c^2*d^5*e^2 - 33*B*a^2*c*d^3*e^4 - 14
1*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 + 222*B*b*c^2*d^6*e - 66*A*a*b*c*d^3*e^
4 + 156*B*a*b*c*d^4*e^3)/(6*e) + x*((B*a^3*e^6)/2 - (77*B*c^3*d^6)/2 + (3*A
*a^2*b*e^6)/2 + 27*A*c^3*d^5*e - (9*A*b^3*d^2*e^4)/2 + 10*B*b^3*d^3*e^3 + 3
0*A*a*c^2*d^3*e^3 - (27*B*a*b^2*d^2*e^4)/2 - (105*A*b*c^2*d^4*e^2)/2 + 30*A
*b^2*c*d^3*e^3 - (105*B*a*c^2*d^4*e^2)/2 - (27*B*a^2*c*d^2*e^4)/2 - (105*B*
b^2*c*d^4*e^2)/2 + 3*A*a*b^2*d*e^5 + 3*A*a^2*c*d*e^5 + 3*B*a^2*b*d*e^5 + 81
*B*b*c^2*d^5*e - 27*A*a*b*c*d^2*e^4 + 60*B*a*b*c*d^3*e^3) + x^2*(3*A*a*b^2*
e^6 + 3*A*a^2*c*e^6 + 3*B*a^2*b*e^6 - 3*A*b^3*d*e^5 - 21*B*c^3*d^5*e + 15*A
*c^3*d^4*e^2 + 6*B*b^3*d^2*e^4 + 18*A*a*c^2*d^2*e^4 - 30*A*b*c^2*d^3*e^3 +
18*A*b^2*c*d^2*e^4 - 30*B*a*c^2*d^3*e^3 + 45*B*b*c^2*d^4*e^2 - 30*B*b^2*c*d
^3*e^3 - 9*B*a*b^2*d*e^5 - 9*B*a^2*c*d*e^5 + 36*B*a*b*c*d^2*e^4 - 18*A*a*b*
c*d*e^5))/(d^3*e^7 + e^10*x^3 + 3*d^2*e^8*x + 3*d*e^9*x^2) + x^3*((A*c^3 +
3*B*b*c^2)/(3*e^4) - (4*B*c^3*d)/(3*e^5)) + (log(d + e*x)*(A*b^3*e^4 + 35*B
*c^3*d^4 + 3*B*a*b^2*e^4 + 3*B*a^2*c*e^4 - 20*A*c^3*d^3*e - 4*B*b^3*d*e^3 +
 30*A*b*c^2*d^2*e^2 + 30*B*a*c^2*d^2*e^2 + 30*B*b^2*c*d^2*e^2 + 6*A*a*b*c*e
^4 - 12*A*a*c^2*d*e^3 - 12*A*b^2*c*d*e^3 - 60*B*b*c^2*d^3*e - 24*B*a*b*c*d*
e^3))/e^8 + (B*c^3*x^4)/(4*e^4)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**4,x)
```

```
[Out] Timed out
```

3.2343 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^5} \, dx$

Optimal. Leaf size=533

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{e^8(d+ex)}$$

```
[Out] -c*(A*c*e*(-3*b*e+5*c*d)-3*B*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*x/e^7-1/
2*c^2*(-A*c*e-3*B*b*e+5*B*c*d)*x^2/e^6+1/3*B*c^3*x^3/e^5+1/4*(-A*e+B*d)*(a*
e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^4+1/3*(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c
*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^3+3/2*(a*e^2-b*d*e+c*d^2)*(B*(7
*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*c^2*d^2+b^2*e^2-c*
e*(-a*e+5*b*d)))/e^8/(e*x+d)^2+(A*e*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*
(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b
*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e*x+d)-(B*(35*c^3*d^3-b^3
*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e+3*b*d))-3*A*c*e*(5*c^2*d^2+b
^2*e^2-c*e*(-a*e+5*b*d)))*ln(e*x+d)/e^8
```

Rubi [A] time = 0.94, antiderivative size = 531, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{e^8(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] -((c*(A*c*e*(5*c*d - 3*b*e) - 3*B*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))
)*x)/e^7) - (c^2*(5*B*c*d - 3*b*B*e - A*c*e)*x^2)/(2*e^6) + (B*c^3*x^3)/(3*
e^5) + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(4*e^8*(d + e*x)^4) - ((c*d^
2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))
/(3*e^8*(d + e*x)^3) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*
b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d
 - a*e))))/(2*e^8*(d + e*x)^2) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 -
 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*
d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(e^8*(d
+ e*x)) - ((B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*
e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^5}\,dx &= \int \left(\frac{c\left(-Ace(5cd-3be)+3B\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)\right)}{e^7}+\frac{c^2(-5Bcd+}{e}\right.\\ &= -\frac{c\left(Ace(5cd-3be)-3B\left(5c^2d^2+b^2e^2-ce(5bd-ae)\right)\right)x}{e^7}-\frac{c^2(5Bcd-3bBe}{2e^6}\end{aligned}$$

Mathematica [A] time = 0.25, size = 496, normalized size = 0.93

$$-\frac{12\Big(B\Big(3ce^2\big(a^2e^2-8abde+10b^2d^2\big)+b^2e^3(3ae-4bd)+30c^2d^2e(ae-2bd)+35c^3d^4\Big)+Ae(be-2cd)\Big(2ce(3ae-5bd)+b^2e^2+10c^2d^2\Big)\Big)}{d+ex}+12cex\Big(3B\Big(ce(ae-$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x]
```

```
[Out] (12*c*e*(A*c*e*(-5*c*d + 3*b*e) + 3*B*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d +
a*e)))*x + 6*c^2*e^2*(-5*B*c*d + 3*b*B*e + A*c*e)*x^2 + 4*B*c^3*e^3*x^3 + (
3*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))^3)/(d + e*x)^4 - (4*(c*d^2 + e*(-(
b*d) + a*e))^2*(7*B*c*d^2 + B*e*(-4*b*d + a*e) + 3*A*e*(-2*c*d + b*e)))/(d
+ e*x)^3 + (18*(c*d^2 + e*(-(b*d) + a*e))*(-(A*e*(5*c^2*d^2 + b^2*e^2 + c*e
*(-5*b*d + a*e))) + B*(7*c^2*d^3 + b*e^2*(2*b*d - a*e) + c*d*e*(-8*b*d + 3*
a*e))))/(d + e*x)^2 - (12*(A*e*(-2*c*d + b*e)*(10*c^2*d^2 + b^2*e^2 + 2*c*e
*(-5*b*d + 3*a*e)) + B*(35*c^3*d^4 + 30*c^2*d^2*e*(-2*b*d + a*e) + b^2*e^3*
(-4*b*d + 3*a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2))))/(d + e*x)
+ 12*(3*A*c*e*(5*c^2*d^2 + b^2*e^2 + c*e*(-5*b*d + a*e)) + B*(-35*c^3*d^3 +
 b^3*e^3 + 15*c^2*d*e*(3*b*d - a*e) + 3*b*c*e^2*(-5*b*d + 2*a*e)))*Log[d +
e*x])/(12*e^8)
```

fricas [B] time = 1.14, size = 1343, normalized size = 2.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] 1/12*(4*B*c^3*e^7*x^7 - 319*B*c^3*d^7 - 3*A*a^3*e^7 + 171*(3*B*b*c^2 + A*c^
3)*d^6*e - 231*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 25*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*
b)*d*e^6 - 2*(7*B*c^3*d*e^6 - 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 12*(7*B*c^3*
d^2*e^5 - 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^7)*
x^5 + 4*(139*B*c^3*d^3*e^4 - 51*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 36*(B*b^2*c +
 (B*a + A*b)*c^2)*d*e^6)*x^4 + 4*(136*B*c^3*d^4*e^3 - 24*(3*B*b*c^2 + A*c^3
)*d^3*e^4 - 36*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 12*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*e^7)*x^3 - 6*(74*B*c^3*d^5*e^2 - 66*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 126*(
B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 18*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*d^2*e^5 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 3*
(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 - 4*(214*B*c^3*d^6*e - 126*(3*B*b*c^
2 + A*c^3)*d^5*e^2 + 186*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 22*(B*b^3 +
3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^
2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + (B*a^3 +
3*A*a^2*b)*e^7)*x - 12*(35*B*c^3*d^7 - 15*(3*B*b*c^2 + A*c^3)*d^6*e + 15*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^4*e^3 + (35*B*c^3*d^3*e^4 - 15*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b
^2*c + (B*a + A*b)*c^2)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
*e^7)*x^4 + 4*(35*B*c^3*d^4*e^3 - 15*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*d*e^6)*x^3 + 6*(35*B*c^3*d^5*e^2 - 15*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B
*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^2*e^5)*x^2 + 4*(35*B*c^3*d^6*e - 15*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 15
*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^3*e^4)*x)*log(e*x + d))/(e^12*x^4 + 4*d*e^11*x^3 + 6*d^2*e^10*x^2
 + 4*d^3*e^9*x + d^4*e^8)
```

giac [B] time = 0.42, size = 1567, normalized size = 2.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] 1/6*(2*B*c^3 - 3*(7*B*c^3*d*e - 3*B*b*c^2*e^2 - A*c^3*e^2)*e^(-1)/(x*e + d)
 + 18*(7*B*c^3*d^2*e^2 - 6*B*b*c^2*d*e^3 - 2*A*c^3*d*e^3 + B*b^2*c*e^4 + B*
a*c^2*e^4 + A*b*c^2*e^4)*e^(-2)/(x*e + d)^2)*(x*e + d)^3*e^(-8) + (35*B*c^3
*d^3 - 45*B*b*c^2*d^2*e - 15*A*c^3*d^2*e + 15*B*b^2*c*d*e^2 + 15*B*a*c^2*d*
e^2 + 15*A*b*c^2*d*e^2 - B*b^3*e^3 - 6*B*a*b*c*e^3 - 3*A*b^2*c*e^3 - 3*A*a*
c^2*e^3)*e^(-8)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) - 1/12*(420*B*c^3*d^4*
e^36/(x*e + d) - 126*B*c^3*d^5*e^36/(x*e + d)^2 + 28*B*c^3*d^6*e^36/(x*e +
d)^3 - 3*B*c^3*d^7*e^36/(x*e + d)^4 - 720*B*b*c^2*d^3*e^37/(x*e + d) - 240*
A*c^3*d^3*e^37/(x*e + d) + 270*B*b*c^2*d^4*e^37/(x*e + d)^2 + 90*A*c^3*d^4*
e^37/(x*e + d)^2 - 72*B*b*c^2*d^5*e^37/(x*e + d)^3 - 24*A*c^3*d^5*e^37/(x*e
 + d)^3 + 9*B*b*c^2*d^6*e^37/(x*e + d)^4 + 3*A*c^3*d^6*e^37/(x*e + d)^4 + 3
60*B*b^2*c*d^2*e^38/(x*e + d) + 360*B*a*c^2*d^2*e^38/(x*e + d) + 360*A*b*c^
2*d^2*e^38/(x*e + d) - 180*B*b^2*c*d^3*e^38/(x*e + d)^2 - 180*B*a*c^2*d^3*e
^38/(x*e + d)^2 - 180*A*b*c^2*d^3*e^38/(x*e + d)^2 + 60*B*b^2*c*d^4*e^38/(x
*e + d)^3 + 60*B*a*c^2*d^4*e^38/(x*e + d)^3 + 60*A*b*c^2*d^4*e^38/(x*e + d)
^3 - 9*B*b^2*c*d^5*e^38/(x*e + d)^4 - 9*B*a*c^2*d^5*e^38/(x*e + d)^4 - 9*A*
b*c^2*d^5*e^38/(x*e + d)^4 - 48*B*b^3*d*e^39/(x*e + d) - 288*B*a*b*c*d*e^39
/(x*e + d) - 144*A*b^2*c*d*e^39/(x*e + d) - 144*A*a*c^2*d*e^39/(x*e + d) +
36*B*b^3*d^2*e^39/(x*e + d)^2 + 216*B*a*b*c*d^2*e^39/(x*e + d)^2 + 108*A*b^
2*c*d^2*e^39/(x*e + d)^2 + 108*A*a*c^2*d^2*e^39/(x*e + d)^2 - 16*B*b^3*d^3*
e^39/(x*e + d)^3 - 96*B*a*b*c*d^3*e^39/(x*e + d)^3 - 48*A*b^2*c*d^3*e^39/(x
*e + d)^3 - 48*A*a*c^2*d^3*e^39/(x*e + d)^3 + 3*B*b^3*d^4*e^39/(x*e + d)^4
+ 18*B*a*b*c*d^4*e^39/(x*e + d)^4 + 9*A*b^2*c*d^4*e^39/(x*e + d)^4 + 9*A*a*
c^2*d^4*e^39/(x*e + d)^4 + 36*B*a*b^2*e^40/(x*e + d) + 12*A*b^3*e^40/(x*e +
 d) + 36*B*a^2*c*e^40/(x*e + d) + 72*A*a*b*c*e^40/(x*e + d) - 54*B*a*b^2*d*
e^40/(x*e + d)^2 - 18*A*b^3*d*e^40/(x*e + d)^2 - 54*B*a^2*c*d*e^40/(x*e + d
)^2 - 108*A*a*b*c*d*e^40/(x*e + d)^2 + 36*B*a*b^2*d^2*e^40/(x*e + d)^3 + 12
*A*b^3*d^2*e^40/(x*e + d)^3 + 36*B*a^2*c*d^2*e^40/(x*e + d)^3 + 72*A*a*b*c*
d^2*e^40/(x*e + d)^3 - 9*B*a*b^2*d^3*e^40/(x*e + d)^4 - 3*A*b^3*d^3*e^40/(x
*e + d)^4 - 9*B*a^2*c*d^3*e^40/(x*e + d)^4 - 18*A*a*b*c*d^3*e^40/(x*e + d)^
4 + 18*B*a^2*b*e^41/(x*e + d)^2 + 18*A*a*b^2*e^41/(x*e + d)^2 + 18*A*a^2*c*
e^41/(x*e + d)^2 - 24*B*a^2*b*d*e^41/(x*e + d)^3 - 24*A*a*b^2*d*e^41/(x*e +
 d)^3 - 24*A*a^2*c*d*e^41/(x*e + d)^3 + 9*B*a^2*b*d^2*e^41/(x*e + d)^4 + 9*
A*a*b^2*d^2*e^41/(x*e + d)^4 + 9*A*a^2*c*d^2*e^41/(x*e + d)^4 + 4*B*a^3*e^4
2/(x*e + d)^3 + 12*A*a^2*b*e^42/(x*e + d)^3 - 3*B*a^3*d*e^42/(x*e + d)^4 -
9*A*a^2*b*d*e^42/(x*e + d)^4 + 3*A*a^3*e^43/(x*e + d)^4)*e^(-44)
```

maple [B] time = 0.07, size = 1605, normalized size = 3.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x)
```

```
[Out] 1/e^5*ln(e*x+d)*B*b^3-1/3/e^2/(e*x+d)^3*B*a^3-1/4/e/(e*x+d)^4*A*a^3+1/2*c^3
/e^5*A*x^2+3*c/e^5*B*b^2*x+15*c^3/e^7*B*d^2*x+20/e^7/(e*x+d)*A*c^3*d^3-3/e^
4/(e*x+d)*B*a^2*c-3/e^4/(e*x+d)*B*a*b^2+4/e^5/(e*x+d)*B*b^3*d-35/e^8/(e*x+d
)*B*c^3*d^4-3/2/e^3/(e*x+d)^2*A*a^2*c-3/2/e^3/(e*x+d)^2*A*a*b^2+3/2/e^4/(e*
x+d)^2*A*b^3*d-15/2/e^7/(e*x+d)^2*A*c^3*d^4-3/2/e^3/(e*x+d)^2*B*a^2*b-3/e^5
/(e*x+d)^2*B*b^3*d^2+21/2/e^8/(e*x+d)^2*B*c^3*d^5+1/4/e^4/(e*x+d)^4*A*d^3*b
^3-1/4/e^7/(e*x+d)^4*A*c^3*d^6+1/4/e^2/(e*x+d)^4*B*a^3*d-1/4/e^5/(e*x+d)^4*
B*d^4*b^3+1/4/e^8/(e*x+d)^4*B*c^3*d^7+3/e^5*ln(e*x+d)*A*a*c^2+3/e^5*ln(e*x+
d)*A*b^2*c+15/e^7*ln(e*x+d)*A*c^3*d^2-35/e^8*ln(e*x+d)*B*c^3*d^3-1/e^2/(e*x
+d)^3*A*a^2*b-1/e^4/(e*x+d)^3*A*b^3*d^2+2/e^7/(e*x+d)^3*A*c^3*d^5+4/3/e^5/(
e*x+d)^3*B*b^3*d^3-7/3/e^8/(e*x+d)^3*B*c^3*d^6+3/2*c^2/e^5*B*x^2*b-5/2*c^3/
e^6*B*x^2*d-1/e^4/(e*x+d)*A*b^3+3*c^2/e^5*B*x*a+1/3*B*c^3/e^5*x^3+3*c^2/e^5
*A*b*x-5*c^3/e^6*A*x*d-45/2/e^7/(e*x+d)^2*B*b*c^2*d^4+3/4/e^2/(e*x+d)^4*A*d
*a^2*b-3/4/e^3/(e*x+d)^4*A*d^2*a^2*c+12/e^5/(e*x+d)*A*b^2*c*d-30/e^6/(e*x+d
)*A*b*c^2*d^2-30/e^6/(e*x+d)*B*a*c^2*d^2-30/e^6/(e*x+d)*B*b^2*c*d^2+60/e^7/
(e*x+d)*B*b*c^2*d^3-9/e^5/(e*x+d)^2*A*a*c^2*d^2-9/e^5/(e*x+d)^2*A*b^2*c*d^2
+15/e^6/(e*x+d)^2*A*b*c^2*d^3+9/2/e^4/(e*x+d)^2*B*a^2*c*d+9/2/e^4/(e*x+d)^2
*B*a*b^2*d+15/e^6/(e*x+d)^2*B*a*c^2*d^3+15/e^6/(e*x+d)^2*B*b^2*c*d^3+2/e^3/
(e*x+d)^3*A*a*b^2*d+4/e^5/(e*x+d)^3*A*d^3*a*c^2+4/e^5/(e*x+d)^3*A*b^2*c*d^3
-15*c^2/e^6*B*b*d*x-6/e^4/(e*x+d)*A*a*b*c+12/e^5/(e*x+d)*A*a*c^2*d+3/4/e^4/
(e*x+d)^4*B*d^3*a^2*c+9/e^4/(e*x+d)^2*A*a*b*c*d-6/e^4/(e*x+d)^3*A*a*b*c*d^2
+8/e^5/(e*x+d)^3*B*a*b*c*d^3+24/e^5/(e*x+d)*B*a*b*c*d-18/e^5/(e*x+d)^2*B*a*
b*c*d^2+3/2/e^4/(e*x+d)^4*A*d^3*a*b*c-3/2/e^5/(e*x+d)^4*B*d^4*a*b*c-5/e^6/(
e*x+d)^3*B*b^2*c*d^4-5/e^6/(e*x+d)^3*B*d^4*a*c^2-3/e^4/(e*x+d)^3*B*a*b^2*d^
2-5/e^6/(e*x+d)^3*A*b*c^2*d^4+2/e^3/(e*x+d)^3*B*a^2*b*d-3/e^4/(e*x+d)^3*B*a
^2*c*d^2+3/4/e^4/(e*x+d)^4*B*d^3*a*b^2+3/4/e^6/(e*x+d)^4*B*a*c^2*d^5+3/4/e^
6/(e*x+d)^4*B*b^2*c*d^5-3/4/e^7/(e*x+d)^4*B*b*c^2*d^6-15/e^6*ln(e*x+d)*A*b*
c^2*d+6/e^5*ln(e*x+d)*B*a*b*c-15/e^6*ln(e*x+d)*B*a*c^2*d-15/e^6*ln(e*x+d)*B
*b^2*c*d+45/e^7*ln(e*x+d)*B*b*c^2*d^2+2/e^3/(e*x+d)^3*A*a^2*c*d+3/4/e^6/(e*
x+d)^4*A*b*c^2*d^5-3/4/e^3/(e*x+d)^4*B*d^2*a^2*b+6/e^7/(e*x+d)^3*B*b*c^2*d^
5-3/4/e^3/(e*x+d)^4*A*d^2*a*b^2-3/4/e^5/(e*x+d)^4*A*a*c^2*d^4-3/4/e^5/(e*x+
d)^4*A*d^4*b^2*c
```

maxima [**A**] time = 0.72, size = 884, normalized size = 1.66

$$-\frac{319\,Bc^3d^7 + 3\,Aa^3e^7 - 171\left(3\,Bbc^2 + Ac^3\right)d^6e + 231\left(Bb^2c + (Ba + Ab)c^2\right)d^5e^2 - 25\,(Bb^3 + 3\,Aac^2 + 3\,(2\,Bab +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(319*B*c^3*d^7 + 3*A*a^3*e^7 - 171*(3*B*b*c^2 + A*c^3)*d^6*e + 231*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 25*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + 3
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + (B*a^3 + 3*A*a^2*b)*d*e^6 + 12*(35
*B*c^3*d^4*e^3 - 20*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)
*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 18*(63*B*c^3*d^5*e^2 - 35
*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 50*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 6*(
B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d*e^6 + (B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 4*(2
59*B*c^3*d^6*e - 141*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 195*(B*b^2*c + (B*a + A*
b)*c^2)*d^4*e^3 - 22*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 +
3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d*e^6 + (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^12*x^4 + 4*d*e^11*x^3 +
 6*d^2*e^10*x^2 + 4*d^3*e^9*x + d^4*e^8) + 1/6*(2*B*c^3*e^2*x^3 - 3*(5*B*c^
3*d*e - (3*B*b*c^2 + A*c^3)*e^2)*x^2 + 6*(15*B*c^3*d^2 - 5*(3*B*b*c^2 + A*c
^3)*d*e + 3*(B*b^2*c + (B*a + A*b)*c^2)*e^2)*x)/e^7 - (35*B*c^3*d^3 - 15*(3
*B*b*c^2 + A*c^3)*d^2*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^2 - (B*b^3 + 3
*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^3)*log(e*x + d)/e^8
```

mupad [**B**] time = 2.54, size = 1106, normalized size = 2.08

$$x^2\left(\frac{A\,c^3+3\,B\,b\,c^2}{2\,e^5}-\frac{5\,B\,c^3\,d}{2\,e^6}\right)-\frac{\frac{B\,a^3\,d\,e^6+3\,A\,a^3\,e^7+3\,B\,a^2\,b\,d^2\,e^5+3\,A\,a^2\,b\,d\,e^6+9\,B\,a^2\,c\,d^3\,e^4+3\,A\,a^2\,c\,d^2\,e^5+9\,B\,a\,b^2\,d^3\,e^4+3\,A\,a\,b^2\,d^2\,e^5-15}{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^5,x)
```

```
[Out] x^2*((A*c^3 + 3*B*b*c^2)/(2*e^5) - (5*B*c^3*d)/(2*e^6)) - ((3*A*a^3*e^7 + 3
19*B*c^3*d^7 + B*a^3*d*e^6 - 171*A*c^3*d^6*e + 3*A*b^3*d^3*e^4 - 25*B*b^3*d
^4*e^3 + 3*A*a*b^2*d^2*e^5 - 75*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 + 9*B*a
*b^2*d^3*e^4 + 3*B*a^2*b*d^2*e^5 + 231*A*b*c^2*d^5*e^2 - 75*A*b^2*c*d^4*e^3
 + 231*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 231*B*b^2*c*d^5*e^2 + 3*A*a^2*
b*d*e^6 - 513*B*b*c^2*d^6*e + 18*A*a*b*c*d^3*e^4 - 150*B*a*b*c*d^4*e^3)/(12
*e) + x^3*(A*b^3*e^6 + 3*B*a*b^2*e^6 + 3*B*a^2*c*e^6 - 4*B*b^3*d*e^5 - 20*A
*c^3*d^3*e^3 + 35*B*c^3*d^4*e^2 + 30*A*b*c^2*d^2*e^4 + 30*B*a*c^2*d^2*e^4 -
 60*B*b*c^2*d^3*e^3 + 30*B*b^2*c*d^2*e^4 + 6*A*a*b*c*e^6 - 12*A*a*c^2*d*e^5
 - 12*A*b^2*c*d*e^5 - 24*B*a*b*c*d*e^5) + x*((B*a^3*e^6)/3 + (259*B*c^3*d^6
)/3 + A*a^2*b*e^6 - 47*A*c^3*d^5*e + A*b^3*d^2*e^4 - (22*B*b^3*d^3*e^3)/3 -
 22*A*a*c^2*d^3*e^3 + 3*B*a*b^2*d^2*e^4 + 65*A*b*c^2*d^4*e^2 - 22*A*b^2*c*d
^3*e^3 + 65*B*a*c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + 65*B*b^2*c*d^4*e^2 + A*a*
b^2*d*e^5 + A*a^2*c*d*e^5 + B*a^2*b*d*e^5 - 141*B*b*c^2*d^5*e + 6*A*a*b*c*d
^2*e^4 - 44*B*a*b*c*d^3*e^3) + x^2*((3*A*a*b^2*e^6)/2 + (3*A*a^2*c*e^6)/2 +
 (3*B*a^2*b*e^6)/2 + (3*A*b^3*d*e^5)/2 + (189*B*c^3*d^5*e)/2 - (105*A*c^3*d
^4*e^2)/2 - 9*B*b^3*d^2*e^4 - 27*A*a*c^2*d^2*e^4 + 75*A*b*c^2*d^3*e^3 - 27*
A*b^2*c*d^2*e^4 + 75*B*a*c^2*d^3*e^3 - (315*B*b*c^2*d^4*e^2)/2 + 75*B*b^2*c
*d^3*e^3 + (9*B*a*b^2*d*e^5)/2 + (9*B*a^2*c*d*e^5)/2 - 54*B*a*b*c*d^2*e^4 +
 9*A*a*b*c*d*e^5))/(d^4*e^7 + e^11*x^4 + 4*d^3*e^8*x + 4*d*e^10*x^3 + 6*d^2
*e^9*x^2) - x*((5*d*((A*c^3 + 3*B*b*c^2)/e^5 - (5*B*c^3*d)/e^6))/e - (3*A*b
*c^2 + 3*B*a*c^2 + 3*B*b^2*c)/e^5 + (10*B*c^3*d^2)/e^7) + (log(d + e*x)*(B*
b^3*e^3 - 35*B*c^3*d^3 + 3*A*a*c^2*e^3 + 3*A*b^2*c*e^3 + 15*A*c^3*d^2*e + 6
*B*a*b*c*e^3 - 15*A*b*c^2*d*e^2 - 15*B*a*c^2*d*e^2 + 45*B*b*c^2*d^2*e - 15*
B*b^2*c*d*e^2))/e^8 + (B*c^3*x^3)/(3*e^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**5,x)
```

```
[Out] Timed out
```

3.2344 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^6}\,dx$

Optimal. Leaf size=534

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{2e^8(d+ex)^2}$$

```
[Out] -c^2*(-A*c*e-3*B*b*e+6*B*c*d)*x/e^7+1/2*B*c^3*x^2/e^6+1/5*(-A*e+B*d)*(a*e^2
-b*d*e+c*d^2)^3/e^8/(e*x+d)^5+1/4*(a*e^2-b*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c*d)
-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^4+(a*e^2-b*d*e+c*d^2)*(B*(7*c^2*d^
3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e
+5*b*d)))/e^8/(e*x+d)^3+1/2*(A*e*(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3
*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b*d)
+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e*x+d)^2+(B*(35*c^3*d^3-b^3*
e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^
2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)-3*c*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b
^2*e^2-c*e*(-a*e+6*b*d)))*ln(e*x+d)/e^8
```

Rubi [**A**] time = 0.90, antiderivative size = 532, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{2e^8(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] -((c^2*(6*B*c*d - 3*b*B*e - A*c*e)*x)/e^7) + (B*c^3*x^2)/(2*e^6) + ((B*d -
A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(5*e^8*(d + e*x)^5) - ((c*d^2 - b*d*e + a*e
^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(4*e^8*(d + e*
x)^4) + ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*
e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e))))/(e^8*(
d + e*x)^3) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a
*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d - a*e)
 + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(2*e^8*(d + e*x)^2) + (B*(3
5*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b*d - a*e))
 - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(e^8*(d + e*x)) - (3*
c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d - a*e)))*Log[d
 + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^6}\,dx=\int \Bigg(\frac{c^2(-6Bcd+3bBe+Ace)}{e^7}+\frac{Bc^3x}{e^6}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^6}+\frac{(cd^2}{}$$

$$=-\frac{c^2(6Bcd-3bBe-Ace)x}{e^7}+\frac{Bc^3x^2}{2e^6}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{5e^8(d+ex)^5}-\frac{(cd^2-b}{}$$

Mathematica [**A**]   time = 0.56, size = 885, normalized size = 1.66

$$\frac{60c\left(Ace(be-2cd)+B\left(7c^2d^2+b^2e^2+ce(ae-6bd)\right)\right)\log(d+ex)(d+ex)^5+Ae\left(-2\left(87d^6+375exd^5+600e^2\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x]
```

```
[Out] (A*e*(-2*c^3*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 50
*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6) - e^3*(4*a^3*e^3 + 3*a^2*b*e^2*(d
 + 5*e*x) + 2*a*b^2*e*(d^2 + 5*d*e*x + 10*e^2*x^2) + b^3*(d^3 + 5*d^2*e*x +
 10*d*e^2*x^2 + 10*e^3*x^3)) - 2*c*e^2*(a^2*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2
) + 3*a*b*e*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + 6*b^2*(d^4 + 5*
d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4)) + c^2*e*(-12*a*e*(d^4
 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3 + 5*e^4*x^4) + b*d*(137*d^4 +
625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*x^3 + 300*e^4*x^4))) + B*(c^3*(4
59*d^7 + 1875*d^6*e*x + 2700*d^5*e^2*x^2 + 1300*d^4*e^3*x^3 - 400*d^3*e^4*x
^4 - 500*d^2*e^5*x^5 - 70*d*e^6*x^6 + 10*e^7*x^7) - e^3*(a^3*e^3*(d + 5*e*x
) + 2*a^2*b*e^2*(d^2 + 5*d*e*x + 10*e^2*x^2) + 3*a*b^2*e*(d^3 + 5*d^2*e*x +
 10*d*e^2*x^2 + 10*e^3*x^3) + 4*b^3*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*
d*e^3*x^3 + 5*e^4*x^4)) + c*e^2*(-3*a^2*e^2*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2
 + 10*e^3*x^3) - 24*a*b*e*(d^4 + 5*d^3*e*x + 10*d^2*e^2*x^2 + 10*d*e^3*x^3
+ 5*e^4*x^4) + b^2*d*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^2 + 900*d*e^3*
x^3 + 300*e^4*x^4)) + c^2*e*(a*d*e*(137*d^4 + 625*d^3*e*x + 1100*d^2*e^2*x^
2 + 900*d*e^3*x^3 + 300*e^4*x^4) - 6*b*(87*d^6 + 375*d^5*e*x + 600*d^4*e^2*
x^2 + 400*d^3*e^3*x^3 + 50*d^2*e^4*x^4 - 50*d*e^5*x^5 - 10*e^6*x^6))) + 60*
c*(A*c*e*(-2*c*d + b*e) + B*(7*c^2*d^2 + b^2*e^2 + c*e*(-6*b*d + a*e)))*(d
+ e*x)^5*Log[d + e*x])/(20*e^8*(d + e*x)^5)
```

fricas [**B**]   time = 0.96, size = 1247, normalized size = 2.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] 1/20*(10*B*c^3*e^7*x^7 + 459*B*c^3*d^7 - 4*A*a^3*e^7 - 174*(3*B*b*c^2 + A*c
^3)*d^6*e + 137*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)
*c)*d^3*e^4 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)
*d*e^6 - 10*(7*B*c^3*d*e^6 - 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 - 100*(5*B*c^3*
d^2*e^5 - (3*B*b*c^2 + A*c^3)*d*e^6)*x^5 - 20*(20*B*c^3*d^3*e^4 + 5*(3*B*b*
c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 10*(130*B*c^3*d^4*e^3 - 80*(3*B*b
*c^2 + A*c^3)*d^3*e^4 + 90*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 - 4*(B*b^3 +
 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
 2*A*a*b)*c)*e^7)*x^3 + 10*(270*B*c^3*d^5*e^2 - 120*(3*B*b*c^2 + A*c^3)*d^4
*e^3 + 110*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*(B*b^3 + 3*A*a*c^2 + 3*(
2*B*a*b + A*b^2)*c)*d^2*e^5 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d
*e^6 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 5*(375*B*c^3*d^6*e - 150*
(3*B*b*c^2 + A*c^3)*d^5*e^2 + 125*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 - 4*(
B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 - (3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 - (B*
a^3 + 3*A*a^2*b)*e^7)*x + 60*(7*B*c^3*d^7 - 2*(3*B*b*c^2 + A*c^3)*d^6*e + (
B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (7*B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^
3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 5*(7*B*c^3*d^3*e^4 - 2*(3
*B*b*c^2 + A*c^3)*d^2*e^5 + (B*b^2*c + (B*a + A*b)*c^2)*d*e^6)*x^4 + 10*(7*
B*c^3*d^4*e^3 - 2*(3*B*b*c^2 + A*c^3)*d^3*e^4 + (B*b^2*c + (B*a + A*b)*c^2)
*d^2*e^5)*x^3 + 10*(7*B*c^3*d^5*e^2 - 2*(3*B*b*c^2 + A*c^3)*d^4*e^3 + (B*b^
2*c + (B*a + A*b)*c^2)*d^3*e^4)*x^2 + 5*(7*B*c^3*d^6*e - 2*(3*B*b*c^2 + A*c
^3)*d^5*e^2 + (B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3)*x)*log(e*x + d))/(e^13*x
^5 + 5*d*e^12*x^4 + 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x + d^5*e
^8)
```

giac [A] time = 0.18, size = 998, normalized size = 1.87

$$3\left(7\,Bc^3d^2-6\,Bbc^2de-2\,Ac^3de+Bb^2ce^2+Bac^2e^2+Abc^2e^2\right)e^{(-8)}\log\left(|xe+d|\right)+\frac{1}{2}\,(Bc^3x^2e^6-12\,Bc^3dxe^5+6\,Bbc$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] 3*(7*B*c^3*d^2 - 6*B*b*c^2*d*e - 2*A*c^3*d*e + B*b^2*c*e^2 + B*a*c^2*e^2 +
A*b*c^2*e^2)*e^(-8)*log(abs(x*e + d)) + 1/2*(B*c^3*x^2*e^6 - 12*B*c^3*d*x*e
^5 + 6*B*b*c^2*x*e^6 + 2*A*c^3*x*e^6)*e^(-12) + 1/20*(459*B*c^3*d^7 - 522*B
*b*c^2*d^6*e - 174*A*c^3*d^6*e + 137*B*b^2*c*d^5*e^2 + 137*B*a*c^2*d^5*e^2
+ 137*A*b*c^2*d^5*e^2 - 4*B*b^3*d^4*e^3 - 24*B*a*b*c*d^4*e^3 - 12*A*b^2*c*d
^4*e^3 - 12*A*a*c^2*d^4*e^3 - 3*B*a*b^2*d^3*e^4 - A*b^3*d^3*e^4 - 3*B*a^2*c
*d^3*e^4 - 6*A*a*b*c*d^3*e^4 - 2*B*a^2*b*d^2*e^5 - 2*A*a*b^2*d^2*e^5 - 2*A*
a^2*c*d^2*e^5 - B*a^3*d*e^6 - 3*A*a^2*b*d*e^6 + 20*(35*B*c^3*d^3*e^4 - 45*B
*b*c^2*d^2*e^5 - 15*A*c^3*d^2*e^5 + 15*B*b^2*c*d*e^6 + 15*B*a*c^2*d*e^6 + 1
5*A*b*c^2*d*e^6 - B*b^3*e^7 - 6*B*a*b*c*e^7 - 3*A*b^2*c*e^7 - 3*A*a*c^2*e^7
)*x^4 - 4*A*a^3*e^7 + 10*(245*B*c^3*d^4*e^3 - 300*B*b*c^2*d^3*e^4 - 100*A*c
^3*d^3*e^4 + 90*B*b^2*c*d^2*e^5 + 90*B*a*c^2*d^2*e^5 + 90*A*b*c^2*d^2*e^5 -
 4*B*b^3*d*e^6 - 24*B*a*b*c*d*e^6 - 12*A*b^2*c*d*e^6 - 12*A*a*c^2*d*e^6 - 3
*B*a*b^2*e^7 - A*b^3*e^7 - 3*B*a^2*c*e^7 - 6*A*a*b*c*e^7)*x^3 + 10*(329*B*c
^3*d^5*e^2 - 390*B*b*c^2*d^4*e^3 - 130*A*c^3*d^4*e^3 + 110*B*b^2*c*d^3*e^4
+ 110*B*a*c^2*d^3*e^4 + 110*A*b*c^2*d^3*e^4 - 4*B*b^3*d^2*e^5 - 24*B*a*b*c*
d^2*e^5 - 12*A*b^2*c*d^2*e^5 - 12*A*a*c^2*d^2*e^5 - 3*B*a*b^2*d*e^6 - A*b^3
*d*e^6 - 3*B*a^2*c*d*e^6 - 6*A*a*b*c*d*e^6 - 2*B*a^2*b*e^7 - 2*A*a*b^2*e^7
- 2*A*a^2*c*e^7)*x^2 + 5*(399*B*c^3*d^6*e - 462*B*b*c^2*d^5*e^2 - 154*A*c^3
*d^5*e^2 + 125*B*b^2*c*d^4*e^3 + 125*B*a*c^2*d^4*e^3 + 125*A*b*c^2*d^4*e^3
- 4*B*b^3*d^3*e^4 - 24*B*a*b*c*d^3*e^4 - 12*A*b^2*c*d^3*e^4 - 12*A*a*c^2*d^
3*e^4 - 3*B*a*b^2*d^2*e^5 - A*b^3*d^2*e^5 - 3*B*a^2*c*d^2*e^5 - 6*A*a*b*c*d
^2*e^5 - 2*B*a^2*b*d*e^6 - 2*A*a*b^2*d*e^6 - 2*A*a^2*c*d*e^6 - B*a^3*e^7 -
3*A*a^2*b*e^7)*x)*e^(-8)/(x*e + d)^5
```

maple [B] time = 0.06, size = 1637, normalized size = 3.07

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x)
```

```
[Out] -1/5/e/(e*x+d)^5*A*a^3-1/2/e^4/(e*x+d)^2*A*b^3-1/4/e^2/(e*x+d)^4*B*a^3+3*c^
2/e^6*B*b*x-6*c^3/e^7*B*d*x+1/e^5/(e*x+d)^4*B*b^3*d^3-7/4/e^8/(e*x+d)^4*B*c
^3*d^6+1/5/e^4/(e*x+d)^5*A*d^3*b^3-1/5/e^7/(e*x+d)^5*A*c^3*d^6+1/5/e^2/(e*x
+d)^5*B*a^3*d-1/5/e^5/(e*x+d)^5*B*d^4*b^3+1/5/e^8/(e*x+d)^5*B*c^3*d^7+6/5/e
^4/(e*x+d)^5*A*d^3*a*b*c-6/5/e^5/(e*x+d)^5*B*d^4*a*b*c-3/2/e^4/(e*x+d)^2*B*
a^2*c-3/2/e^4/(e*x+d)^2*B*a*b^2+2/e^5/(e*x+d)^2*B*b^3*d-35/2/e^8/(e*x+d)^2*
B*c^3*d^4-2/e^5/(e*x+d)^3*B*b^3*d^2+7/e^8/(e*x+d)^3*B*c^3*d^5+3*c^2/e^6*ln(
e*x+d)*A*b-6*c^3/e^7*ln(e*x+d)*A*d+3*c^2/e^6*ln(e*x+d)*a*B+c^3/e^6*A*x-1/e^
5/(e*x+d)*B*b^3+6/e^4/(e*x+d)^3*A*a*b*c*d-9/2/e^4/(e*x+d)^4*A*a*b*c*d^2+6/e
^5/(e*x+d)^4*B*a*b*c*d^3+3*c/e^6*ln(e*x+d)*b^2*B+21*c^3/e^8*ln(e*x+d)*B*d^2
-1/e^3/(e*x+d)^3*A*a^2*c-1/e^3/(e*x+d)^3*A*a*b^2+1/e^4/(e*x+d)^3*A*b^3*d-5/
e^7/(e*x+d)^3*A*c^3*d^4-1/e^3/(e*x+d)^3*B*a^2*b-3/4/e^2/(e*x+d)^4*A*a^2*b-3
/4/e^4/(e*x+d)^4*A*b^3*d^2+3/2/e^7/(e*x+d)^4*A*c^3*d^5+12/e^5/(e*x+d)^2*B*a
*b*c*d-12/e^5/(e*x+d)^3*B*a*b*c*d^2+1/2*B*c^3/e^6*x^2-3/e^5/(e*x+d)*A*a*c^2
```

```
-3/e^5/(e*x+d)*A*b^2*c-15/e^7/(e*x+d)*A*c^3*d^2+35/e^8/(e*x+d)*B*c^3*d^3+10
/e^7/(e*x+d)^2*A*c^3*d^3-15/e^6/(e*x+d)^2*A*b*c^2*d^2-15/e^6/(e*x+d)^2*B*a*
c^2*d^2-15/e^6/(e*x+d)^2*B*b^2*c*d^2+30/e^7/(e*x+d)^2*B*b*c^2*d^3-45/e^7/(e
*x+d)*B*b*c^2*d^2+15/e^6/(e*x+d)*B*b^2*c*d+15/e^6/(e*x+d)*B*a*c^2*d+6/e^5/(
e*x+d)^2*A*b^2*c*d+3/5/e^6/(e*x+d)^5*B*d^5*b^2*c-3/5/e^7/(e*x+d)^5*B*b*c^2*
d^6-3/e^4/(e*x+d)^2*A*a*b*c+6/e^5/(e*x+d)^2*A*a*c^2*d-3/5/e^5/(e*x+d)^5*A*a
*c^2*d^4-3/5/e^5/(e*x+d)^5*A*d^4*b^2*c+3/5/e^6/(e*x+d)^5*A*d^5*b*c^2-3/5/e^
3/(e*x+d)^5*B*d^2*a^2*b+3/5/e^4/(e*x+d)^5*B*d^3*a^2*c+3/5/e^4/(e*x+d)^5*B*d
^3*a*b^2+3/5/e^6/(e*x+d)^5*B*a*c^2*d^5+10/e^6/(e*x+d)^3*B*b^2*c*d^3+3/2/e^3
/(e*x+d)^4*A*a^2*c*d+3/2/e^3/(e*x+d)^4*A*a*b^2*d+3/e^5/(e*x+d)^4*A*d^3*a*c^
2+3/e^5/(e*x+d)^4*A*b^2*c*d^3-15/4/e^6/(e*x+d)^4*A*b*c^2*d^4+3/2/e^3/(e*x+d
)^4*B*a^2*b*d-9/4/e^4/(e*x+d)^4*B*a^2*c*d^2-9/4/e^4/(e*x+d)^4*B*a*b^2*d^2-1
5/4/e^6/(e*x+d)^4*B*d^4*a*c^2-15/4/e^6/(e*x+d)^4*B*b^2*c*d^4+9/2/e^7/(e*x+d
)^4*B*b*c^2*d^5+3/5/e^2/(e*x+d)^5*A*d*a^2*b-3/5/e^3/(e*x+d)^5*A*d^2*a^2*c-3
/5/e^3/(e*x+d)^5*A*d^2*a*b^2+15/e^6/(e*x+d)*A*b*c^2*d-6/e^5/(e*x+d)*B*a*b*c
-15/e^7/(e*x+d)^3*B*b*c^2*d^4-18*c^2/e^7*ln(e*x+d)*B*b*d-6/e^5/(e*x+d)^3*A*
a*c^2*d^2-6/e^5/(e*x+d)^3*A*b^2*c*d^2+10/e^6/(e*x+d)^3*A*b*c^2*d^3+3/e^4/(e
*x+d)^3*B*a^2*c*d+3/e^4/(e*x+d)^3*B*a*b^2*d+10/e^6/(e*x+d)^3*B*a*c^2*d^3
```

maxima [**A**] time = 0.66, size = 898, normalized size = 1.68

$$\frac{459\,Bc^3d^7 - 4\,Aa^3e^7 - 174\left(3\,Bbc^2 + Ac^3\right)d^6e + 137\left(Bb^2c + (Ba + Ab)c^2\right)d^5e^2 - 4\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] 1/20*(459*B*c^3*d^7 - 4*A*a^3*e^7 - 174*(3*B*b*c^2 + A*c^3)*d^6*e + 137*(B*
b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 2*(B*
a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - (B*a^3 + 3*A*a^2*b)*d*e^6 + 20*(35*B*c
^3*d^3*e^4 - 15*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + (B*a + A*b)*c^2
)*d*e^6 - (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 10*(245*B*
c^3*d^4*e^3 - 100*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 90*(B*b^2*c + (B*a + A*b)*c
^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - (3*B*a*
b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 10*(329*B*c^3*d^5*e^2 - 130
*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 110*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 - 4*
(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - (3*B*a*b^2 + A*b^3 +
3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 2*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 5
*(399*B*c^3*d^6*e - 154*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 125*(B*b^2*c + (B*a +
 A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4
- (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 2*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d*e^6 - (B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^13*x^5 + 5*d*e^12*x^4 +
 10*d^2*e^11*x^3 + 10*d^3*e^10*x^2 + 5*d^4*e^9*x + d^5*e^8) + 1/2*(B*c^3*e*
x^2 - 2*(6*B*c^3*d - (3*B*b*c^2 + A*c^3)*e)*x)/e^7 + 3*(7*B*c^3*d^2 - 2*(3*
B*b*c^2 + A*c^3)*d*e + (B*b^2*c + (B*a + A*b)*c^2)*e^2)*log(e*x + d)/e^8
```

mupad [**B**] time = 0.26, size = 1106, normalized size = 2.07

$$x\left(\frac{A\,c^3+3\,B\,b\,c^2}{e^6}-\frac{6\,B\,c^3\,d}{e^7}\right)-\frac{B\,a^3\,d\,e^6+4\,A\,a^3\,e^7+2\,B\,a^2\,b\,d^2\,e^5+3\,A\,a^2\,b\,d\,e^6+3\,B\,a^2\,c\,d^3\,e^4+2\,A\,a^2\,c\,d^2\,e^5+3\,B\,a\,b^2\,d^3\,e^4+2\,A\,a\,b^2\,d^2\,e^5+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^6,x)
```

```
[Out] x*((A*c^3 + 3*B*b*c^2)/e^6 - (6*B*c^3*d)/e^7) - ((4*A*a^3*e^7 - 459*B*c^3*d
^7 + B*a^3*d*e^6 + 174*A*c^3*d^6*e + A*b^3*d^3*e^4 + 4*B*b^3*d^4*e^3 + 2*A*
a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 2*A*a^2*c*d^2*e^5 + 3*B*a*b^2*d^3*e^4
+ 2*B*a^2*b*d^2*e^5 - 137*A*b*c^2*d^5*e^2 + 12*A*b^2*c*d^4*e^3 - 137*B*a*c^
2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 - 137*B*b^2*c*d^5*e^2 + 3*A*a^2*b*d*e^6 + 522
*B*b*c^2*d^6*e + 6*A*a*b*c*d^3*e^4 + 24*B*a*b*c*d^4*e^3)/(20*e) + x^4*(B*b^
3*e^6 + 3*A*a*c^2*e^6 + 3*A*b^2*c*e^6 + 15*A*c^3*d^2*e^4 - 35*B*c^3*d^3*e^3
 + 45*B*b*c^2*d^2*e^4 + 6*B*a*b*c*e^6 - 15*A*b*c^2*d*e^5 - 15*B*a*c^2*d*e^5
 - 15*B*b^2*c*d*e^5) + x^3*((A*b^3*e^6)/2 + (3*B*a*b^2*e^6)/2 + (3*B*a^2*c*
e^6)/2 + 2*B*b^3*d*e^5 + 50*A*c^3*d^3*e^3 - (245*B*c^3*d^4*e^2)/2 - 45*A*b*
c^2*d^2*e^4 - 45*B*a*c^2*d^2*e^4 + 150*B*b*c^2*d^3*e^3 - 45*B*b^2*c*d^2*e^4
 + 3*A*a*b*c*e^6 + 6*A*a*c^2*d*e^5 + 6*A*b^2*c*d*e^5 + 12*B*a*b*c*d*e^5) +
x*((B*a^3*e^6)/4 - (399*B*c^3*d^6)/4 + (3*A*a^2*b*e^6)/4 + (77*A*c^3*d^5*e)
/2 + (A*b^3*d^2*e^4)/4 + B*b^3*d^3*e^3 + 3*A*a*c^2*d^3*e^3 + (3*B*a*b^2*d^2
*e^4)/4 - (125*A*b*c^2*d^4*e^2)/4 + 3*A*b^2*c*d^3*e^3 - (125*B*a*c^2*d^4*e^
2)/4 + (3*B*a^2*c*d^2*e^4)/4 - (125*B*b^2*c*d^4*e^2)/4 + (A*a*b^2*d*e^5)/2
+ (A*a^2*c*d*e^5)/2 + (B*a^2*b*d*e^5)/2 + (231*B*b*c^2*d^5*e)/2 + (3*A*a*b*
c*d^2*e^4)/2 + 6*B*a*b*c*d^3*e^3) + x^2*(A*a*b^2*e^6 + A*a^2*c*e^6 + B*a^2*
b*e^6 + (A*b^3*d*e^5)/2 - (329*B*c^3*d^5*e)/2 + 65*A*c^3*d^4*e^2 + 2*B*b^3*
d^2*e^4 + 6*A*a*c^2*d^2*e^4 - 55*A*b*c^2*d^3*e^3 + 6*A*b^2*c*d^2*e^4 - 55*B
*a*c^2*d^3*e^3 + 195*B*b*c^2*d^4*e^2 - 55*B*b^2*c*d^3*e^3 + (3*B*a*b^2*d*e^
5)/2 + (3*B*a^2*c*d*e^5)/2 + 12*B*a*b*c*d^2*e^4 + 3*A*a*b*c*d*e^5))/(d^5*e^
7 + e^12*x^5 + 5*d^4*e^8*x + 5*d*e^11*x^4 + 10*d^3*e^9*x^2 + 10*d^2*e^10*x^
3) + (log(d + e*x)*(21*B*c^3*d^2 - 6*A*c^3*d*e + 3*A*b*c^2*e^2 + 3*B*a*c^2*
e^2 + 3*B*b^2*c*e^2 - 18*B*b*c^2*d*e))/e^8 + (B*c^3*x^2)/(2*e^6)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**6,x)
```

```
[Out] Timed out
```

3.2345 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^7}\,dx$

Optimal. Leaf size=541

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{3e^8(d+ex)^3}$$

```
[Out] B*c^3*x/e^7+1/6*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^6+1/5*(a*e^2-b
*d*e+c*d^2)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^5
+3/4*(a*e^2-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b
*d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^4+1/3*(A*e*(-b*e
+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3
*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2
)))/e^8/(e*x+d)^3+1/2*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^
2*d*e*(-a*e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+
d)^2+3*c*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))/e^8/(e
*x+d)-c^2*(-A*c*e-3*B*b*e+7*B*c*d)*ln(e*x+d)/e^8
```

Rubi [A] time = 0.81, antiderivative size = 539, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{3e^8(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] (B*c^3*x)/e^7 + ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(6*e^8*(d + e*x)^6)
 - ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d
 - b*e)))/(5*e^8*(d + e*x)^5) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 -
c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c
*e*(5*b*d - a*e))))/(4*e^8*(d + e*x)^4) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 +
b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e)
- 30*c^2*d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))
/(3*e^8*(d + e*x)^3) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e)
 - 15*c^2*d*e*(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d -
a*e)))/(2*e^8*(d + e*x)^2) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2
*e^2 - c*e*(6*b*d - a*e))))/(e^8*(d + e*x)) - (c^2*(7*B*c*d - 3*b*B*e - A*c
*e)*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^7}\,dx=\int \left(\frac{Bc^3}{e^7}+\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^7}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be\right.}{e^7(d+}\right.$$

$$=\frac{Bc^3x}{e^7}+\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{6e^8(d+ex)^6}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd\right.}{5e^8(d+ex)^5}$$

Mathematica [A] time = 0.65, size = 868, normalized size = 1.60

$$-\frac{60c^2(7Bcd-3bBe-Ace)\log(d+ex)(d+ex)^6+Ae\left(-d\left(147d^5+822exd^4+1875e^2x^2d^3+2200e^3x^3d^2+1350e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x]
```

```
[Out] -1/60*(A*e*(-(c^3*d*(147*d^5 + 822*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^
3*x^3 + 1350*d*e^4*x^4 + 360*e^5*x^5)) + e^3*(10*a^3*e^3 + 6*a^2*b*e^2*(d +
 6*e*x) + 3*a*b^2*e*(d^2 + 6*d*e*x + 15*e^2*x^2) + b^3*(d^3 + 6*d^2*e*x + 1
5*d*e^2*x^2 + 20*e^3*x^3)) + 3*c*e^2*(a^2*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2)
+ 2*a*b*e*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*b^2*(d^4 + 6*d^
3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 6*c^2*e*(a*e*(d^4 +
6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e^3*x^3 + 15*e^4*x^4) + 5*b*(d^5 + 6*d^4*
e*x + 15*d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5))) + B*(c^
3*(669*d^7 + 3594*d^6*e*x + 7725*d^5*e^2*x^2 + 8200*d^4*e^3*x^3 + 4050*d^3*
e^4*x^4 + 360*d^2*e^5*x^5 - 360*d*e^6*x^6 - 60*e^7*x^7) + e^3*(2*a^3*e^3*(d
 + 6*e*x) + 3*a^2*b*e^2*(d^2 + 6*d*e*x + 15*e^2*x^2) + 3*a*b^2*e*(d^3 + 6*d
^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + 2*b^3*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x
^2 + 20*d*e^3*x^3 + 15*e^4*x^4)) + 3*c*e^2*(a^2*e^2*(d^3 + 6*d^2*e*x + 15*d
*e^2*x^2 + 20*e^3*x^3) + 4*a*b*e*(d^4 + 6*d^3*e*x + 15*d^2*e^2*x^2 + 20*d*e
^3*x^3 + 15*e^4*x^4) + 10*b^2*(d^5 + 6*d^4*e*x + 15*d^3*e^2*x^2 + 20*d^2*e^
3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5)) + 3*c^2*e*(10*a*e*(d^5 + 6*d^4*e*x + 15*
d^3*e^2*x^2 + 20*d^2*e^3*x^3 + 15*d*e^4*x^4 + 6*e^5*x^5) - b*d*(147*d^5 + 8
22*d^4*e*x + 1875*d^3*e^2*x^2 + 2200*d^2*e^3*x^3 + 1350*d*e^4*x^4 + 360*e^5
*x^5))) + 60*c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d + e*x)^6*Log[d + e*x])/(e^8
*(d + e*x)^6)
```

fricas [B] time = 0.94, size = 1145, normalized size = 2.12

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] 1/60*(60*B*c^3*e^7*x^7 + 360*B*c^3*d*e^6*x^6 - 669*B*c^3*d^7 - 10*A*a^3*e^7
 + 147*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 -
 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 - (3*B*a*b^2 + A*b^3
 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5
 - 2*(B*a^3 + 3*A*a^2*b)*d*e^6 - 180*(2*B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^
3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 - 30*(135*B*c^3*d^3*e^4 - 4
5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 - 20*(410*B*c^3*d^4*e^3 -
110*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 +
2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*a*b^2 + A*b^3 +
3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 - 15*(515*B*c^3*d^5*e^2 - 125*(3*B*b*c^2 +
A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*d*e^6 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 - 6*(599*B*c^3*d^6
*e - 137*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 30*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e
^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A
*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e
^6 + 2*(B*a^3 + 3*A*a^2*b)*e^7)*x - 60*(7*B*c^3*d^7 - (3*B*b*c^2 + A*c^3)*d
^6*e + (7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 6*(7*B*c^3*d^2*e^5 -
 (3*B*b*c^2 + A*c^3)*d*e^6)*x^5 + 15*(7*B*c^3*d^3*e^4 - (3*B*b*c^2 + A*c^3)
*d^2*e^5)*x^4 + 20*(7*B*c^3*d^4*e^3 - (3*B*b*c^2 + A*c^3)*d^3*e^4)*x^3 + 15
*(7*B*c^3*d^5*e^2 - (3*B*b*c^2 + A*c^3)*d^4*e^3)*x^2 + 6*(7*B*c^3*d^6*e - (
3*B*b*c^2 + A*c^3)*d^5*e^2)*x)*log(e*x + d))/(e^14*x^6 + 6*d*e^13*x^5 + 15*
d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 + 6*d^5*e^9*x + d^6*e^8)
```

giac [A] time = 0.23, size = 989, normalized size = 1.83

$$Bc^3xe^{(-7)} - \left(7\,Bc^3d - 3\,Bbc^2e - Ac^3e\right)e^{(-8)}\log\left(|xe+d|\right) - \frac{\left(669\,Bc^3d^7 - 441\,Bbc^2d^6e - 147\,Ac^3d^6e + 30\,Bb^2cd^5e^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] B*c^3*x*e^(-7) - (7*B*c^3*d - 3*B*b*c^2*e - A*c^3*e)*e^(-8)*log(abs(x*e + d
)) - 1/60*(669*B*c^3*d^7 - 441*B*b*c^2*d^6*e - 147*A*c^3*d^6*e + 30*B*b^2*c
*d^5*e^2 + 30*B*a*c^2*d^5*e^2 + 30*A*b*c^2*d^5*e^2 + 2*B*b^3*d^4*e^3 + 12*B
*a*b*c*d^4*e^3 + 6*A*b^2*c*d^4*e^3 + 6*A*a*c^2*d^4*e^3 + 3*B*a*b^2*d^3*e^4
+ A*b^3*d^3*e^4 + 3*B*a^2*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 + 3*B*a^2*b*d^2*e^5
 + 3*A*a*b^2*d^2*e^5 + 3*A*a^2*c*d^2*e^5 + 180*(7*B*c^3*d^2*e^5 - 6*B*b*c^2
*d*e^6 - 2*A*c^3*d*e^6 + B*b^2*c*e^7 + B*a*c^2*e^7 + A*b*c^2*e^7)*x^5 + 2*B
*a^3*d*e^6 + 6*A*a^2*b*d*e^6 + 30*(175*B*c^3*d^3*e^4 - 135*B*b*c^2*d^2*e^5
- 45*A*c^3*d^2*e^5 + 15*B*b^2*c*d*e^6 + 15*B*a*c^2*d*e^6 + 15*A*b*c^2*d*e^6
 + B*b^3*e^7 + 6*B*a*b*c*e^7 + 3*A*b^2*c*e^7 + 3*A*a*c^2*e^7)*x^4 + 10*A*a^
3*e^7 + 20*(455*B*c^3*d^4*e^3 - 330*B*b*c^2*d^3*e^4 - 110*A*c^3*d^3*e^4 + 3
0*B*b^2*c*d^2*e^5 + 30*B*a*c^2*d^2*e^5 + 30*A*b*c^2*d^2*e^5 + 2*B*b^3*d*e^6
 + 12*B*a*b*c*d*e^6 + 6*A*b^2*c*d*e^6 + 6*A*a*c^2*d*e^6 + 3*B*a*b^2*e^7 + A
*b^3*e^7 + 3*B*a^2*c*e^7 + 6*A*a*b*c*e^7)*x^3 + 15*(539*B*c^3*d^5*e^2 - 375
*B*b*c^2*d^4*e^3 - 125*A*c^3*d^4*e^3 + 30*B*b^2*c*d^3*e^4 + 30*B*a*c^2*d^3*
e^4 + 30*A*b*c^2*d^3*e^4 + 2*B*b^3*d^2*e^5 + 12*B*a*b*c*d^2*e^5 + 6*A*b^2*c
*d^2*e^5 + 6*A*a*c^2*d^2*e^5 + 3*B*a*b^2*d*e^6 + A*b^3*d*e^6 + 3*B*a^2*c*d*
e^6 + 6*A*a*b*c*d*e^6 + 3*B*a^2*b*e^7 + 3*A*a*b^2*e^7 + 3*A*a^2*c*e^7)*x^2
+ 6*(609*B*c^3*d^6*e - 411*B*b*c^2*d^5*e^2 - 137*A*c^3*d^5*e^2 + 30*B*b^2*c
*d^4*e^3 + 30*B*a*c^2*d^4*e^3 + 30*A*b*c^2*d^4*e^3 + 2*B*b^3*d^3*e^4 + 12*B
*a*b*c*d^3*e^4 + 6*A*b^2*c*d^3*e^4 + 6*A*a*c^2*d^3*e^4 + 3*B*a*b^2*d^2*e^5
+ A*b^3*d^2*e^5 + 3*B*a^2*c*d^2*e^5 + 6*A*a*b*c*d^2*e^5 + 3*B*a^2*b*d*e^6 +
 3*A*a*b^2*d*e^6 + 3*A*a^2*c*d*e^6 + 2*B*a^3*e^7 + 6*A*a^2*b*e^7)*x)*e^(-8)
/(x*e + d)^6
```

maple [B] time = 0.06, size = 1656, normalized size = 3.06

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x)
```

```
[Out] -21*c^3/e^8/(e*x+d)*B*d^2-3/2/e^5/(e*x+d)^4*B*b^3*d^2+21/4/e^8/(e*x+d)^4*B*
c^3*d^5+1/6/e^4/(e*x+d)^6*A*d^3*b^3-3*c^2/e^6/(e*x+d)*A*b+6*c^3/e^7/(e*x+d)
*A*d-1/2/e^5/(e*x+d)^2*B*b^3-1/6/e/(e*x+d)^6*A*a^3-1/5/e^2/(e*x+d)^5*B*a^3+
c^3/e^7*ln(e*x+d)*A-1/3/e^4/(e*x+d)^3*A*b^3-3/4/e^3/(e*x+d)^4*B*a^2*b+3*c^2
/e^7*ln(e*x+d)*B*b-7*c^3/e^8*ln(e*x+d)*B*d-3/2/e^5/(e*x+d)^2*A*a*c^2-3/2/e^
5/(e*x+d)^2*A*b^2*c-15/2/e^7/(e*x+d)^2*A*c^3*d^2+35/2/e^8/(e*x+d)^2*B*c^3*d
^3+1/6/e^2/(e*x+d)^6*B*a^3*d-1/6/e^5/(e*x+d)^6*B*d^4*b^3+1/6/e^8/(e*x+d)^6*
B*c^3*d^7-18/5/e^4/(e*x+d)^5*A*a*b*c*d^2+8/e^5/(e*x+d)^3*B*a*b*c*d+24/5/e^5
/(e*x+d)^5*B*a*b*c*d^3+9/2/e^4/(e*x+d)^4*A*a*b*c*d-9/e^5/(e*x+d)^4*B*a*b*c*
d^2+1/e^4/(e*x+d)^6*A*d^3*a*b*c-1/e^5/(e*x+d)^6*B*d^4*a*b*c-3*c^2/e^6/(e*x+
d)*a*B-3*c/e^6/(e*x+d)*b^2*B+20/3/e^7/(e*x+d)^3*A*c^3*d^3-1/e^4/(e*x+d)^3*B
*a^2*c-1/e^4/(e*x+d)^3*B*a*b^2+4/3/e^5/(e*x+d)^3*B*b^3*d-35/3/e^8/(e*x+d)^3
*B*c^3*d^4-3/5/e^2/(e*x+d)^5*A*a^2*b-1/6/e^7/(e*x+d)^6*A*d^6*c^3+12/5/e^5/(
e*x+d)^5*A*d^3*a*c^2+12/5/e^5/(e*x+d)^5*A*b^2*c*d^3-3/e^6/(e*x+d)^5*A*b*c^2
*d^4+6/5/e^3/(e*x+d)^5*B*a^2*b*d+6/5/e^3/(e*x+d)^5*A*a^2*c*d+6/5/e^3/(e*x+d
)^5*A*a*b^2*d-10/e^6/(e*x+d)^3*A*b*c^2*d^2-10/e^6/(e*x+d)^3*B*a*c^2*d^2-9/5
```

```
/e^4/(e*x+d)^5*B*a^2*c*d^2-9/5/e^4/(e*x+d)^5*B*a*b^2*d^2-3/e^6/(e*x+d)^5*B*
d^4*a*c^2-3/e^6/(e*x+d)^5*B*b^2*c*d^4+18/5/e^7/(e*x+d)^5*B*b*c^2*d^5-2/e^4/
(e*x+d)^3*A*a*b*c+4/e^5/(e*x+d)^3*A*a*c^2*d+4/e^5/(e*x+d)^3*A*b^2*c*d-3/5/e
^4/(e*x+d)^5*A*b^3*d^2+6/5/e^7/(e*x+d)^5*A*c^3*d^5+4/5/e^5/(e*x+d)^5*B*b^3*
d^3-7/5/e^8/(e*x+d)^5*B*c^3*d^6-3/4/e^3/(e*x+d)^4*A*a^2*c-3/4/e^3/(e*x+d)^4
*A*a*b^2+3/4/e^4/(e*x+d)^4*A*b^3*d-15/4/e^7/(e*x+d)^4*A*c^3*d^4+B*c^3/e^7*x
+18*c^2/e^7/(e*x+d)*B*b*d-3/e^5/(e*x+d)^2*B*a*b*c+15/2/e^6/(e*x+d)^2*B*a*c^
2*d+15/2/e^6/(e*x+d)^2*B*b^2*c*d-45/2/e^7/(e*x+d)^2*B*b*c^2*d^2-9/2/e^5/(e*
x+d)^4*A*a*c^2*d^2-1/2/e^7/(e*x+d)^6*B*d^6*b*c^2+15/2/e^6/(e*x+d)^2*A*b*c^2
*d+1/2/e^6/(e*x+d)^6*B*d^5*b^2*c+1/2/e^4/(e*x+d)^6*B*d^3*a*b^2+1/2/e^6/(e*x
+d)^6*B*a*c^2*d^5-1/2/e^3/(e*x+d)^6*B*d^2*a^2*b+1/2/e^4/(e*x+d)^6*B*d^3*a^2
*c-1/2/e^5/(e*x+d)^6*A*d^4*b^2*c+1/2/e^6/(e*x+d)^6*A*d^5*b*c^2+1/2/e^2/(e*x
+d)^6*A*d*a^2*b-1/2/e^3/(e*x+d)^6*A*d^2*a^2*c-1/2/e^3/(e*x+d)^6*A*d^2*a*b^2
-1/2/e^5/(e*x+d)^6*A*a*c^2*d^4+15/2/e^6/(e*x+d)^4*B*b^2*c*d^3-45/4/e^7/(e*x
+d)^4*B*b*c^2*d^4+9/4/e^4/(e*x+d)^4*B*a*b^2*d+15/2/e^6/(e*x+d)^4*B*a*c^2*d^
3-10/e^6/(e*x+d)^3*B*b^2*c*d^2+20/e^7/(e*x+d)^3*B*b*c^2*d^3-9/2/e^5/(e*x+d)
^4*A*b^2*c*d^2+15/2/e^6/(e*x+d)^4*A*b*c^2*d^3+9/4/e^4/(e*x+d)^4*B*a^2*c*d
```

maxima [**A**] time = 0.71, size = 905, normalized size = 1.67

$$-\frac{669\,Bc^3d^7+10\,Aa^3e^7-147\left(3\,Bbc^2+Ac^3\right)d^6e+30\left(Bb^2c+(Ba+Ab)c^2\right)d^5e^2+2\left(Bb^3+3\,Aac^2+3\left(2\,Bab+\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(669*B*c^3*d^7 + 10*A*a^3*e^7 - 147*(3*B*b*c^2 + A*c^3)*d^6*e + 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 + 3*(B
*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 2*(B*a^3 + 3*A*a^2*b)*d*e^6 + 180*(7*
B*c^3*d^2*e^5 - 2*(3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e
^7)*x^5 + 30*(175*B*c^3*d^3*e^4 - 45*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 15*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*
e^7)*x^4 + 20*(455*B*c^3*d^4*e^3 - 110*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 30*(B*
b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e^6 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 15*(53
9*B*c^3*d^5*e^2 - 125*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 3*(B*a^2*b + A*a*b^2 + A
*a^2*c)*e^7)*x^2 + 6*(609*B*c^3*d^6*e - 137*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 3
0*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b +
 A*b^2)*c)*d^3*e^4 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 +
3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 2*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^14
*x^6 + 6*d*e^13*x^5 + 15*d^2*e^12*x^4 + 20*d^3*e^11*x^3 + 15*d^4*e^10*x^2 +
 6*d^5*e^9*x + d^6*e^8) + B*c^3*x/e^7 - (7*B*c^3*d - (3*B*b*c^2 + A*c^3)*e)
*log(e*x + d)/e^8
```

mupad [**B**] time = 2.54, size = 1598, normalized size = 2.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^7,x)
```

```
[Out] -(10*A*a^3*e^7 + 669*B*c^3*d^7 + 2*B*a^3*d*e^6 - 147*A*c^3*d^6*e + 420*B*c^
3*d^7*log(d + e*x) + 12*B*a^3*e^7*x + A*b^3*d^3*e^4 + 2*B*b^3*d^4*e^3 + 20*
A*b^3*e^7*x^3 + 30*B*b^3*e^7*x^4 - 60*B*c^3*e^7*x^7 + 3594*B*c^3*d^6*e*x +
3*A*a*b^2*d^2*e^5 + 6*A*a*c^2*d^4*e^3 + 3*A*a^2*c*d^2*e^5 + 3*B*a*b^2*d^3*e
^4 + 3*B*a^2*b*d^2*e^5 + 30*A*b*c^2*d^5*e^2 + 6*A*b^2*c*d^4*e^3 + 30*B*a*c^
2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 30*B*b^2*c*d^5*e^2 + 45*A*a*b^2*e^7*x^2 + 4
5*A*a^2*c*e^7*x^2 + 45*B*a^2*b*e^7*x^2 + 60*B*a*b^2*e^7*x^3 + 90*A*a*c^2*e^
7*x^4 + 60*B*a^2*c*e^7*x^3 + 90*A*b^2*c*e^7*x^4 + 180*A*b*c^2*e^7*x^5 + 180
*B*a*c^2*e^7*x^5 + 6*A*b^3*d^2*e^5*x + 15*A*b^3*d*e^6*x^2 + 180*B*b^2*c*e^7
*x^5 - 822*A*c^3*d^5*e^2*x + 12*B*b^3*d^3*e^4*x + 40*B*b^3*d*e^6*x^3 - 360*
A*c^3*d*e^6*x^5 - 360*B*c^3*d*e^6*x^6 - 60*A*c^3*e^7*x^6*log(d + e*x) - 187
5*A*c^3*d^4*e^3*x^2 + 30*B*b^3*d^2*e^5*x^2 - 2200*A*c^3*d^3*e^4*x^3 - 1350*
A*c^3*d^2*e^5*x^4 + 7725*B*c^3*d^5*e^2*x^2 + 8200*B*c^3*d^4*e^3*x^3 + 4050*
B*c^3*d^3*e^4*x^4 + 360*B*c^3*d^2*e^5*x^5 + 6*A*a^2*b*d*e^6 - 441*B*b*c^2*d
^6*e - 60*A*c^3*d^6*e*log(d + e*x) + 36*A*a^2*b*e^7*x + 90*A*a*c^2*d^2*e^5*
x^2 + 450*A*b*c^2*d^3*e^4*x^2 + 90*A*b^2*c*d^2*e^5*x^2 + 450*B*a*c^2*d^3*e^
4*x^2 + 600*A*b*c^2*d^2*e^5*x^3 + 600*B*a*c^2*d^2*e^5*x^3 - 5625*B*b*c^2*d^
4*e^3*x^2 + 450*B*b^2*c*d^3*e^4*x^2 - 6600*B*b*c^2*d^3*e^4*x^3 + 600*B*b^2*
c*d^2*e^5*x^3 - 4050*B*b*c^2*d^2*e^5*x^4 - 900*A*c^3*d^4*e^3*x^2*log(d + e*
x) - 1200*A*c^3*d^3*e^4*x^3*log(d + e*x) - 900*A*c^3*d^2*e^5*x^4*log(d + e*
x) + 6300*B*c^3*d^5*e^2*x^2*log(d + e*x) + 8400*B*c^3*d^4*e^3*x^3*log(d + e
*x) + 6300*B*c^3*d^3*e^4*x^4*log(d + e*x) + 2520*B*c^3*d^2*e^5*x^5*log(d +
e*x) + 6*A*a*b*c*d^3*e^4 + 12*B*a*b*c*d^4*e^3 - 180*B*b*c^2*d^6*e*log(d + e
*x) + 120*A*a*b*c*e^7*x^3 + 18*A*a*b^2*d*e^6*x + 180*B*a*b*c*e^7*x^4 + 18*A
*a^2*c*d*e^6*x + 18*B*a^2*b*d*e^6*x + 2520*B*c^3*d^6*e*x*log(d + e*x) + 36*
A*a*c^2*d^3*e^4*x + 18*B*a*b^2*d^2*e^5*x + 45*B*a*b^2*d*e^6*x^2 + 120*A*a*c
^2*d*e^6*x^3 + 180*A*b*c^2*d^4*e^3*x + 36*A*b^2*c*d^3*e^4*x + 180*B*a*c^2*d
^4*e^3*x + 18*B*a^2*c*d^2*e^5*x + 45*B*a^2*c*d*e^6*x^2 + 120*A*b^2*c*d*e^6*
x^3 + 450*A*b*c^2*d*e^6*x^4 + 450*B*a*c^2*d*e^6*x^4 - 2466*B*b*c^2*d^5*e^2*
x + 180*B*b^2*c*d^4*e^3*x + 450*B*b^2*c*d*e^6*x^4 - 1080*B*b*c^2*d*e^6*x^5
- 180*B*b*c^2*e^7*x^6*log(d + e*x) - 360*A*c^3*d^5*e^2*x*log(d + e*x) - 360
*A*c^3*d*e^6*x^5*log(d + e*x) + 420*B*c^3*d*e^6*x^6*log(d + e*x) + 180*B*a*
b*c*d^2*e^5*x^2 - 1080*B*b*c^2*d^5*e^2*x*log(d + e*x) - 1080*B*b*c^2*d*e^6*
x^5*log(d + e*x) - 2700*B*b*c^2*d^4*e^3*x^2*log(d + e*x) - 3600*B*b*c^2*d^3
*e^4*x^3*log(d + e*x) - 2700*B*b*c^2*d^2*e^5*x^4*log(d + e*x) + 36*A*a*b*c*
d^2*e^5*x + 90*A*a*b*c*d*e^6*x^2 + 72*B*a*b*c*d^3*e^4*x + 240*B*a*b*c*d*e^6
*x^3)/(60*e^8*(d + e*x)^6)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**7,x)
```

```
[Out] Timed out
```

3.2346 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8} dx$

Optimal. Leaf size=548

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{4e^8(d+ex)^4}$$

```
[Out] 1/7*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^7+1/6*(a*e^2-b*d*e+c*d^2)^
2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^6+3/5*(a*e^2-
b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*
c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^5+1/4*(A*e*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)-
30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e*x
+d)^4+1/3*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e+
3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^3+3/2*c*(
A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))/e^8/(e*x+d)^2+c^
2*(-A*c*e-3*B*b*e+7*B*c*d)/e^8/(e*x+d)+B*c^3*ln(e*x+d)/e^8
```

Rubi [A] time = 0.77, antiderivative size = 546, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{4e^8(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(7*e^8*(d + e*x)^7) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(6*e^8
*(d + e*x)^6) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3
*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)
)))/(5*e^8*(d + e*x)^5) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(4*e^8*(d + e*x
)^4) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3
*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(3*e^8*(d
 + e*x)^3) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*
d - a*e))))/(2*e^8*(d + e*x)^2) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(e^8*(d
 + e*x)) + (B*c^3*Log[d + e*x])/e^8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^8} dx = \int \Bigg(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^8} + \frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)\right.}{e^7(d+ex)^7}$$

$$= \frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{7e^8(d+ex)^7} - \frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-3A\right.}{6e^8(d+ex)^6}$$

Mathematica [A] time = 0.49, size = 863, normalized size = 1.57

$$\frac{420Bc^3\log(d+ex)(d+ex)^7 - 3Ae\left(20\left(d^6+7exd^5+21e^2x^2d^4+35e^3x^3d^3+35e^4x^4d^2+21e^5x^5d+7e^6x^6\right)c^3 -}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x]
```

```
[Out] (-3*A*e*(20*c^3*(d^6 + 7*d^5*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2
*e^4*x^4 + 21*d*e^5*x^5 + 7*e^6*x^6) + e^3*(20*a^3*e^3 + 10*a^2*b*e^2*(d +
7*e*x) + 4*a*b^2*e*(d^2 + 7*d*e*x + 21*e^2*x^2) + b^3*(d^3 + 7*d^2*e*x + 21
*d*e^2*x^2 + 35*e^3*x^3)) + 2*c*e^2*(2*a^2*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2)
 + 3*a*b*e*(d^3 + 7*d^2*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 2*b^2*(d^4 + 7*d
^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4)) + 2*c^2*e*(2*a*e*(d^4
 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e^3*x^3 + 35*e^4*x^4) + 5*b*(d^5 + 7*d
^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5))) + B
*(c^3*d*(1089*d^6 + 7203*d^5*e*x + 20139*d^4*e^2*x^2 + 30625*d^3*e^3*x^3 +
26950*d^2*e^4*x^4 + 13230*d*e^5*x^5 + 2940*e^6*x^6) - e^3*(10*a^3*e^3*(d +
7*e*x) + 12*a^2*b*e^2*(d^2 + 7*d*e*x + 21*e^2*x^2) + 9*a*b^2*e*(d^3 + 7*d^2
*e*x + 21*d*e^2*x^2 + 35*e^3*x^3) + 4*b^3*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2
 + 35*d*e^3*x^3 + 35*e^4*x^4)) - 3*c*e^2*(3*a^2*e^2*(d^3 + 7*d^2*e*x + 21*d
*e^2*x^2 + 35*e^3*x^3) + 8*a*b*e*(d^4 + 7*d^3*e*x + 21*d^2*e^2*x^2 + 35*d*e
^3*x^3 + 35*e^4*x^4) + 10*b^2*(d^5 + 7*d^4*e*x + 21*d^3*e^2*x^2 + 35*d^2*e^
3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5)) - 30*c^2*e*(a*e*(d^5 + 7*d^4*e*x + 21*d
^3*e^2*x^2 + 35*d^2*e^3*x^3 + 35*d*e^4*x^4 + 21*e^5*x^5) + 6*b*(d^6 + 7*d^5
*e*x + 21*d^4*e^2*x^2 + 35*d^3*e^3*x^3 + 35*d^2*e^4*x^4 + 21*d*e^5*x^5 + 7*
e^6*x^6))) + 420*B*c^3*(d + e*x)^7*Log[d + e*x])/(420*e^8*(d + e*x)^7)
```

fricas [A] time = 0.87, size = 1023, normalized size = 1.87

$$\frac{1089\,Bc^3d^7 - 60\,Aa^3e^7 - 60\left(3\,Bbc^2 + Ac^3\right)d^6e - 30\left(Bb^2c + (Ba+Ab)c^2\right)d^5e^2 - 4\left(Bb^3 + 3\,Aac^2 + 3\left(2\,Bab + \right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="fricas")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 12
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*A*a^2*b)*d*e^6 + 420
*(7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*
(3*B*b*c^2 + A*c^3)*d*e^6 - (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 70*(385*
B*c^3*d^3*e^4 - 30*(3*B*b*c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*
c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 35*(8
75*B*c^3*d^4*e^3 - 60*(3*B*b*c^2 + A*c^3)*d^3*e^4 - 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 21*(959*B*c^3*d^5*e^2
 - 60*(3*B*b*c^2 + A*c^3)*d^4*e^3 - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4
- 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*
x^2 + 7*(1029*B*c^3*d^6*e - 60*(3*B*b*c^2 + A*c^3)*d^5*e^2 - 30*(B*b^2*c +
(B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^
3*e^4 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 12*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d*e^6 - 10*(B*a^3 + 3*A*a^2*b)*e^7)*x + 420*(B*c^3*e^
7*x^7 + 7*B*c^3*d*e^6*x^6 + 21*B*c^3*d^2*e^5*x^5 + 35*B*c^3*d^3*e^4*x^4 + 3
5*B*c^3*d^4*e^3*x^3 + 21*B*c^3*d^5*e^2*x^2 + 7*B*c^3*d^6*e*x + B*c^3*d^7)*l
og(e*x + d))/(e^15*x^7 + 7*d*e^14*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 +
 35*d^4*e^11*x^3 + 21*d^5*e^10*x^2 + 7*d^6*e^9*x + d^7*e^8)
```

giac [A] time = 0.18, size = 1001, normalized size = 1.83

$$Bc^3e^{(-8)}\log\left(|xe+d|\right)+\frac{\left(420\left(7\,Bc^3de^5-3\,Bbc^2e^6-Ac^3e^6\right)x^6+630\left(21\,Bc^3d^2e^4-6\,Bbc^2de^5-2\,Ac^3de^5-Bb^2ce^6-\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="giac")
```

```
[Out] B*c^3*e^(-8)*log(abs(x*e + d)) + 1/420*(420*(7*B*c^3*d*e^5 - 3*B*b*c^2*e^6
- A*c^3*e^6)*x^6 + 630*(21*B*c^3*d^2*e^4 - 6*B*b*c^2*d*e^5 - 2*A*c^3*d*e^5
- B*b^2*c*e^6 - B*a*c^2*e^6 - A*b*c^2*e^6)*x^5 + 70*(385*B*c^3*d^3*e^3 - 90
*B*b*c^2*d^2*e^4 - 30*A*c^3*d^2*e^4 - 15*B*b^2*c*d*e^5 - 15*B*a*c^2*d*e^5 -
 15*A*b*c^2*d*e^5 - 2*B*b^3*e^6 - 12*B*a*b*c*e^6 - 6*A*b^2*c*e^6 - 6*A*a*c^
2*e^6)*x^4 + 35*(875*B*c^3*d^4*e^2 - 180*B*b*c^2*d^3*e^3 - 60*A*c^3*d^3*e^3
 - 30*B*b^2*c*d^2*e^4 - 30*B*a*c^2*d^2*e^4 - 30*A*b*c^2*d^2*e^4 - 4*B*b^3*d
*e^5 - 24*B*a*b*c*d*e^5 - 12*A*b^2*c*d*e^5 - 12*A*a*c^2*d*e^5 - 9*B*a*b^2*e
^6 - 3*A*b^3*e^6 - 9*B*a^2*c*e^6 - 18*A*a*b*c*e^6)*x^3 + 21*(959*B*c^3*d^5*
e - 180*B*b*c^2*d^4*e^2 - 60*A*c^3*d^4*e^2 - 30*B*b^2*c*d^3*e^3 - 30*B*a*c^
2*d^3*e^3 - 30*A*b*c^2*d^3*e^3 - 4*B*b^3*d^2*e^4 - 24*B*a*b*c*d^2*e^4 - 12*
A*b^2*c*d^2*e^4 - 12*A*a*c^2*d^2*e^4 - 9*B*a*b^2*d*e^5 - 3*A*b^3*d*e^5 - 9*
B*a^2*c*d*e^5 - 18*A*a*b*c*d*e^5 - 12*B*a^2*b*e^6 - 12*A*a*b^2*e^6 - 12*A*a
^2*c*e^6)*x^2 + 7*(1029*B*c^3*d^6 - 180*B*b*c^2*d^5*e - 60*A*c^3*d^5*e - 30
*B*b^2*c*d^4*e^2 - 30*B*a*c^2*d^4*e^2 - 30*A*b*c^2*d^4*e^2 - 4*B*b^3*d^3*e^
3 - 24*B*a*b*c*d^3*e^3 - 12*A*b^2*c*d^3*e^3 - 12*A*a*c^2*d^3*e^3 - 9*B*a*b^
2*d^2*e^4 - 3*A*b^3*d^2*e^4 - 9*B*a^2*c*d^2*e^4 - 18*A*a*b*c*d^2*e^4 - 12*B
*a^2*b*d*e^5 - 12*A*a*b^2*d*e^5 - 12*A*a^2*c*d*e^5 - 10*B*a^3*e^6 - 30*A*a^
2*b*e^6)*x + (1089*B*c^3*d^7 - 180*B*b*c^2*d^6*e - 60*A*c^3*d^6*e - 30*B*b^
2*c*d^5*e^2 - 30*B*a*c^2*d^5*e^2 - 30*A*b*c^2*d^5*e^2 - 4*B*b^3*d^4*e^3 - 2
4*B*a*b*c*d^4*e^3 - 12*A*b^2*c*d^4*e^3 - 12*A*a*c^2*d^4*e^3 - 9*B*a*b^2*d^3
*e^4 - 3*A*b^3*d^3*e^4 - 9*B*a^2*c*d^3*e^4 - 18*A*a*b*c*d^3*e^4 - 12*B*a^2*
b*d^2*e^5 - 12*A*a*b^2*d^2*e^5 - 12*A*a^2*c*d^2*e^5 - 10*B*a^3*d*e^6 - 30*A
*a^2*b*d*e^6 - 60*A*a^3*e^7)*e^(-1))*e^(-7)/(x*e + d)^7
```

maple [B] time = 0.06, size = 1661, normalized size = 3.03

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x)
```

```
[Out] -36/5/e^5/(e*x+d)^5*B*d^2*a*b*c+4/e^5/(e*x+d)^6*B*d^3*a*b*c+6/7/e^4/(e*x+d)
^7*A*d^3*a*b*c-6/7/e^5/(e*x+d)^7*B*d^4*a*b*c+18/5/e^4/(e*x+d)^5*A*d*a*b*c+6
/e^5/(e*x+d)^4*B*d*a*b*c-3/e^4/(e*x+d)^6*A*d^2*a*b*c-1/3/e^5/(e*x+d)^3*b^3*
B-c^3/e^7/(e*x+d)*A-1/4/e^4/(e*x+d)^4*A*b^3-1/6/e^2/(e*x+d)^6*B*a^3-1/7/e/(
e*x+d)^7*A*a^3-7/6/e^8/(e*x+d)^6*B*d^6*c^3+1/7/e^4/(e*x+d)^7*A*b^3*d^3-1/7/
e^7/(e*x+d)^7*A*d^6*c^3-3/4/e^4/(e*x+d)^4*B*a*b^2+1/e^5/(e*x+d)^4*B*b^3*d-3
5/4/e^8/(e*x+d)^4*B*c^3*d^4-1/2/e^2/(e*x+d)^6*A*a^2*b-1/2/e^4/(e*x+d)^6*A*d
^2*b^3+1/e^7/(e*x+d)^6*A*c^3*d^5-1/e^5/(e*x+d)^3*A*b^2*c-5/e^7/(e*x+d)^3*A*
c^3*d^2+35/3/e^8/(e*x+d)^3*B*d^3*c^3+3*c^3/e^7/(e*x+d)^2*A*d-3/2*c^2/e^6/(e
*x+d)^2*a*B+B*c^3/e^8*ln(e*x+d)-3/2*c/e^6/(e*x+d)^2*b^2*B-21/2*c^3/e^8/(e*x
+d)^2*B*d^2+5/e^7/(e*x+d)^4*A*c^3*d^3-3/4/e^4/(e*x+d)^4*B*a^2*c-1/e^5/(e*x+
d)^3*A*a*c^2-3*c^2/e^7/(e*x+d)*B*b+7*c^3/e^8/(e*x+d)*B*d+1/7/e^2/(e*x+d)^7*
B*a^3*d-1/7/e^5/(e*x+d)^7*B*d^4*b^3+1/7/e^8/(e*x+d)^7*B*c^3*d^7-3/5/e^3/(e*
x+d)^5*A*a^2*c-3/5/e^3/(e*x+d)^5*A*a*b^2+3/5/e^4/(e*x+d)^5*A*d*b^3-3/e^7/(e
*x+d)^5*A*c^3*d^4-3/5/e^3/(e*x+d)^5*B*a^2*b-6/5/e^5/(e*x+d)^5*B*d^2*b^3+21/
5/e^8/(e*x+d)^5*B*d^5*c^3-3/2*c^2/e^6/(e*x+d)^2*A*b+2/3/e^5/(e*x+d)^6*B*b^3
*d^3+5/e^6/(e*x+d)^3*B*d*b^2*c+5/e^6/(e*x+d)^3*B*d*a*c^2-2/e^5/(e*x+d)^3*a*
b*B*c+5/e^6/(e*x+d)^3*A*b*c^2*d+3/e^7/(e*x+d)^6*B*d^5*b*c^2-9/e^7/(e*x+d)^5
```

```
*B*d^4*b*c^2-3/7/e^5/(e*x+d)^7*A*a*c^2*d^4-3/7/e^5/(e*x+d)^7*A*d^4*b^2*c+3/
7/e^6/(e*x+d)^7*A*b*c^2*d^5-3/7/e^3/(e*x+d)^7*B*d^2*a^2*b+3/7/e^4/(e*x+d)^7
*B*d^3*a^2*c-3/2/e^4/(e*x+d)^6*B*d^2*a*b^2-5/2/e^6/(e*x+d)^6*B*d^4*a*c^2-5/
2/e^6/(e*x+d)^6*B*d^4*b^2*c+3/7/e^6/(e*x+d)^7*B*a*c^2*d^5+3/7/e^6/(e*x+d)^7
*B*d^5*b^2*c-3/7/e^7/(e*x+d)^7*B*d^6*b*c^2+3/7/e^2/(e*x+d)^7*A*d*a^2*b-3/7/
e^3/(e*x+d)^7*A*d^2*a^2*c-3/7/e^3/(e*x+d)^7*A*d^2*a*b^2-15/2/e^6/(e*x+d)^4*
B*d^2*a*c^2-15/2/e^6/(e*x+d)^4*B*d^2*b^2*c+15/e^7/(e*x+d)^4*B*d^3*b*c^2+1/e
^3/(e*x+d)^6*A*a^2*c*d+3/7/e^4/(e*x+d)^7*B*a*b^2*d^3-18/5/e^5/(e*x+d)^5*A*a
*c^2*d^2-18/5/e^5/(e*x+d)^5*A*b^2*c*d^2-3/2/e^4/(e*x+d)^6*B*a^2*c*d^2+6/e^6
/(e*x+d)^5*A*b*c^2*d^3+9*c^2/e^7/(e*x+d)^2*B*b*d-3/2/e^4/(e*x+d)^4*A*a*b*c+
3/e^5/(e*x+d)^4*A*d*a*c^2+3/e^5/(e*x+d)^4*A*d*b^2*c-15/2/e^6/(e*x+d)^4*A*b*
c^2*d^2+1/e^3/(e*x+d)^6*A*d*a*b^2+2/e^5/(e*x+d)^6*A*d^3*a*c^2+2/e^5/(e*x+d)
^6*A*d^3*b^2*c-5/2/e^6/(e*x+d)^6*A*b*c^2*d^4+1/e^3/(e*x+d)^6*B*d*a^2*b+6/e^
6/(e*x+d)^5*B*a*c^2*d^3+6/e^6/(e*x+d)^5*B*d^3*b^2*c-15/e^7/(e*x+d)^3*B*b*c^
2*d^2+9/5/e^4/(e*x+d)^5*B*a^2*c*d+9/5/e^4/(e*x+d)^5*B*d*a*b^2
```

maxima [A] time = 1.01, size = 926, normalized size = 1.69

$$\frac{1089\,Bc^3d^7 - 60\,Aa^3e^7 - 60\,(3\,Bbc^2 + Ac^3)d^6e - 30\,(Bb^2c + (Ba + Ab)c^2)d^5e^2 - 4\,(Bb^3 + 3\,Aac^2 + 3\,(2\,Bab +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^8,x, algorithm="maxima")
```

```
[Out] 1/420*(1089*B*c^3*d^7 - 60*A*a^3*e^7 - 60*(3*B*b*c^2 + A*c^3)*d^6*e - 30*(B
*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b
^2)*c)*d^4*e^3 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^4 - 12
*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 - 10*(B*a^3 + 3*A*a^2*b)*d*e^6 + 420
*(7*B*c^3*d*e^6 - (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 630*(21*B*c^3*d^2*e^5 - 2*
(3*B*b*c^2 + A*c^3)*d*e^6 - (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 + 70*(385*
B*c^3*d^3*e^4 - 30*(3*B*b*c^2 + A*c^3)*d^2*e^5 - 15*(B*b^2*c + (B*a + A*b)*
c^2)*d*e^6 - 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 35*(8
75*B*c^3*d^4*e^3 - 60*(3*B*b*c^2 + A*c^3)*d^3*e^4 - 30*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 - 3*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 21*(959*B*c^3*d^5*e^2
 - 60*(3*B*b*c^2 + A*c^3)*d^4*e^3 - 30*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4
- 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 - 3*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 - 12*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*
x^2 + 7*(1029*B*c^3*d^6*e - 60*(3*B*b*c^2 + A*c^3)*d^5*e^2 - 30*(B*b^2*c +
(B*a + A*b)*c^2)*d^4*e^3 - 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^
3*e^4 - 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 - 12*(B*a^2*b
 + A*a*b^2 + A*a^2*c)*d*e^6 - 10*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^15*x^7 + 7*
d*e^14*x^6 + 21*d^2*e^13*x^5 + 35*d^3*e^12*x^4 + 35*d^4*e^11*x^3 + 21*d^5*e
^10*x^2 + 7*d^6*e^9*x + d^7*e^8) + B*c^3*log(e*x + d)/e^8
```

mupad [B] time = 2.58, size = 1353, normalized size = 2.47

$$-\frac{60\,A\,a^3\,e^7 - 1089\,B\,c^3\,d^7 + 10\,B\,a^3\,d\,e^6 + 60\,A\,c^3\,d^6\,e - 420\,B\,c^3\,d^7\,\ln\left(d + e\,x\right) + 70\,B\,a^3\,e^7\,x + 3\,A\,b^3\,d^3\,e^4 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^8,x)
```

```
[Out] -(60*A*a^3*e^7 - 1089*B*c^3*d^7 + 10*B*a^3*d*e^6 + 60*A*c^3*d^6*e - 420*B*c
^3*d^7*log(d + e*x) + 70*B*a^3*e^7*x + 3*A*b^3*d^3*e^4 + 4*B*b^3*d^4*e^3 +
105*A*b^3*e^7*x^3 + 140*B*b^3*e^7*x^4 + 420*A*c^3*e^7*x^6 - 7203*B*c^3*d^6*
e*x + 12*A*a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 12*A*a^2*c*d^2*e^5 + 9*B*a*
b^2*d^3*e^4 + 12*B*a^2*b*d^2*e^5 + 30*A*b*c^2*d^5*e^2 + 12*A*b^2*c*d^4*e^3
+ 30*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 30*B*b^2*c*d^5*e^2 + 252*A*a*b^2
*e^7*x^2 + 252*A*a^2*c*e^7*x^2 + 252*B*a^2*b*e^7*x^2 + 315*B*a*b^2*e^7*x^3
+ 420*A*a*c^2*e^7*x^4 + 315*B*a^2*c*e^7*x^3 + 420*A*b^2*c*e^7*x^4 + 630*A*b
*c^2*e^7*x^5 + 630*B*a*c^2*e^7*x^5 + 21*A*b^3*d^2*e^5*x + 63*A*b^3*d*e^6*x^
2 + 630*B*b^2*c*e^7*x^5 + 1260*B*b*c^2*e^7*x^6 + 420*A*c^3*d^5*e^2*x + 28*B
*b^3*d^3*e^4*x + 140*B*b^3*d*e^6*x^3 + 1260*A*c^3*d*e^6*x^5 - 2940*B*c^3*d*
e^6*x^6 - 420*B*c^3*e^7*x^7*log(d + e*x) + 1260*A*c^3*d^4*e^3*x^2 + 84*B*b^
3*d^2*e^5*x^2 + 2100*A*c^3*d^3*e^4*x^3 + 2100*A*c^3*d^2*e^5*x^4 - 20139*B*c
^3*d^5*e^2*x^2 - 30625*B*c^3*d^4*e^3*x^3 - 26950*B*c^3*d^3*e^4*x^4 - 13230*
B*c^3*d^2*e^5*x^5 + 30*A*a^2*b*d*e^6 + 180*B*b*c^2*d^6*e + 210*A*a^2*b*e^7*
x + 252*A*a*c^2*d^2*e^5*x^2 + 630*A*b*c^2*d^3*e^4*x^2 + 252*A*b^2*c*d^2*e^5
*x^2 + 630*B*a*c^2*d^3*e^4*x^2 + 1050*A*b*c^2*d^2*e^5*x^3 + 1050*B*a*c^2*d^
2*e^5*x^3 + 3780*B*b*c^2*d^4*e^3*x^2 + 630*B*b^2*c*d^3*e^4*x^2 + 6300*B*b*c
^2*d^3*e^4*x^3 + 1050*B*b^2*c*d^2*e^5*x^3 + 6300*B*b*c^2*d^2*e^5*x^4 - 8820
*B*c^3*d^5*e^2*x^2*log(d + e*x) - 14700*B*c^3*d^4*e^3*x^3*log(d + e*x) - 14
700*B*c^3*d^3*e^4*x^4*log(d + e*x) - 8820*B*c^3*d^2*e^5*x^5*log(d + e*x) +
18*A*a*b*c*d^3*e^4 + 24*B*a*b*c*d^4*e^3 + 630*A*a*b*c*e^7*x^3 + 84*A*a*b^2*
d*e^6*x + 840*B*a*b*c*e^7*x^4 + 84*A*a^2*c*d*e^6*x + 84*B*a^2*b*d*e^6*x - 2
940*B*c^3*d^6*e*x*log(d + e*x) + 84*A*a*c^2*d^3*e^4*x + 63*B*a*b^2*d^2*e^5*
x + 189*B*a*b^2*d*e^6*x^2 + 420*A*a*c^2*d*e^6*x^3 + 210*A*b*c^2*d^4*e^3*x +
 84*A*b^2*c*d^3*e^4*x + 210*B*a*c^2*d^4*e^3*x + 63*B*a^2*c*d^2*e^5*x + 189*
B*a^2*c*d*e^6*x^2 + 420*A*b^2*c*d*e^6*x^3 + 1050*A*b*c^2*d*e^6*x^4 + 1050*B
*a*c^2*d*e^6*x^4 + 1260*B*b*c^2*d^5*e^2*x + 210*B*b^2*c*d^4*e^3*x + 1050*B*
b^2*c*d*e^6*x^4 + 3780*B*b*c^2*d*e^6*x^5 - 2940*B*c^3*d*e^6*x^6*log(d + e*x
) + 504*B*a*b*c*d^2*e^5*x^2 + 126*A*a*b*c*d^2*e^5*x + 378*A*a*b*c*d*e^6*x^2
 + 168*B*a*b*c*d^3*e^4*x + 840*B*a*b*c*d*e^6*x^3)/(420*e^8*(d + e*x)^7)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**8,x)
```

```
[Out] Timed out
```

3.2347 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9}\,dx$

Optimal. Leaf size=550

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{5e^8(d+ex)^5}$$

```
[Out] 1/8*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^8+1/7*(a*e^2-b*d*e+c*d^2)^
2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^7+1/2*(a*e^2-
b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*
c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^6+1/5*(A*e*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)-
30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e*x
+d)^5+1/4*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e+
3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^4+c*(A*c*
e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))/e^8/(e*x+d)^3+1/2*c^
2*(-A*c*e-3*B*b*e+7*B*c*d)/e^8/(e*x+d)^2-B*c^3/e^8/(e*x+d)
```

Rubi [A] time = 0.71, antiderivative size = 548, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{5e^8(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(8*e^8*(d + e*x)^8) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(7*e^8
*(d + e*x)^7) + ((c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3*a
*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))
)/(2*e^8*(d + e*x)^6) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5
*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*
b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(5*e^8*(d + e*x)^
5) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b
*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(4*e^8*(d +
 e*x)^4) + (c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d -
a*e))))/(e^8*(d + e*x)^3) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(2*e^8*(d + e
*x)^2) - (B*c^3)/(e^8*(d + e*x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^9}\,dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^9}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-\right.}{e^7(d+ex)^8}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{8e^8(d+ex)^8}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-\right.}{7e^8(d+ex)^7}$$

Mathematica [**A**] time = 0.47, size = 847, normalized size = 1.54

$$-\frac{Ae(5(d^6+8exd^5+28e^2x^2d^4+56e^3x^3d^3+70e^4x^4d^2+56e^5x^5d+28e^6x^6)c^3+e(3ae(d^4+8exd^3+28e^2x^2d^2+}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x]
```

```
[Out] -1/280*(A*e*(5*c^3*(d^6 + 8*d^5*e*x + 28*d^4*e^2*x^2 + 56*d^3*e^3*x^3 + 70*
d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6) + e^3*(35*a^3*e^3 + 15*a^2*b*e^2*(
d + 8*e*x) + 5*a*b^2*e*(d^2 + 8*d*e*x + 28*e^2*x^2) + b^3*(d^3 + 8*d^2*e*x
+ 28*d*e^2*x^2 + 56*e^3*x^3)) + c*e^2*(5*a^2*e^2*(d^2 + 8*d*e*x + 28*e^2*x^
2) + 6*a*b*e*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 + 56*e^3*x^3) + 3*b^2*(d^4 + 8
*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4)) + c^2*e*(3*a*e*(d^4
 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70*e^4*x^4) + 5*b*(d^5 + 8*d
^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5))) + B
*(35*c^3*(d^7 + 8*d^6*e*x + 28*d^5*e^2*x^2 + 56*d^4*e^3*x^3 + 70*d^3*e^4*x^
4 + 56*d^2*e^5*x^5 + 28*d*e^6*x^6 + 8*e^7*x^7) + e^3*(5*a^3*e^3*(d + 8*e*x)
 + 5*a^2*b*e^2*(d^2 + 8*d*e*x + 28*e^2*x^2) + 3*a*b^2*e*(d^3 + 8*d^2*e*x +
28*d*e^2*x^2 + 56*e^3*x^3) + b^3*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e
^3*x^3 + 70*e^4*x^4)) + c*e^2*(3*a^2*e^2*(d^3 + 8*d^2*e*x + 28*d*e^2*x^2 +
56*e^3*x^3) + 6*a*b*e*(d^4 + 8*d^3*e*x + 28*d^2*e^2*x^2 + 56*d*e^3*x^3 + 70
*e^4*x^4) + 5*b^2*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 + 56*d^2*e^3*x^3 + 70*d
*e^4*x^4 + 56*e^5*x^5)) + 5*c^2*e*(a*e*(d^5 + 8*d^4*e*x + 28*d^3*e^2*x^2 +
56*d^2*e^3*x^3 + 70*d*e^4*x^4 + 56*e^5*x^5) + 3*b*(d^6 + 8*d^5*e*x + 28*d^4
*e^2*x^2 + 56*d^3*e^3*x^3 + 70*d^2*e^4*x^4 + 56*d*e^5*x^5 + 28*e^6*x^6))))/
(e^8*(d + e*x)^8)
```

fricas [**A**] time = 1.08, size = 922, normalized size = 1.68

$$-\frac{280\,Bc^3e^7x^7+35\,Bc^3d^7+35\,Aa^3e^7+5(3\,Bbc^2+Ac^3)d^6e+5(Bb^2c+(Ba+Ab)c^2)d^5e^2+(Bb^3+3\,Aac^2+3(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="fricas")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 35*A*a^3*e^7 + 5*(3*B*b*c^2 + A*
c^3)*d^6*e + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (B*b^3 + 3*A*a*c^2 + 3
*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
*d^3*e^4 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 5*(B*a^3 + 3*A*a^2*b)*
d*e^6 + 140*(7*B*c^3*d*e^6 + (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 280*(7*B*c^3*d^
2*e^5 + (3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 +
70*(35*B*c^3*d^3*e^4 + 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 5*(B*b^2*c + (B*a +
A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 56
*(35*B*c^3*d^4*e^3 + 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 5*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 28*(35*B*c^3*d^5*e^2 + 5*
(3*B*b*c^2 + A*c^3)*d^4*e^3 + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^6 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 8*(35*
B*c^3*d^6*e + 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 5*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)
*d*e^6 + 5*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^
14*x^6 + 56*d^3*e^13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*
x^2 + 8*d^7*e^9*x + d^8*e^8)
```

giac [B] time = 0.18, size = 1127, normalized size = 2.05

$$-\frac{\left(280\,Bc^{3}x^{7}e^{7} + 980\,Bc^{3}dx^{6}e^{6} + 1960\,Bc^{3}d^{2}x^{5}e^{5} + 2450\,Bc^{3}d^{3}x^{4}e^{4} + 1960\,Bc^{3}d^{4}x^{3}e^{3} + 980\,Bc^{3}d^{5}x^{2}e^{2} + 280\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="giac")
```

```
[Out] -1/280*(280*B*c^3*x^7*e^7 + 980*B*c^3*d*x^6*e^6 + 1960*B*c^3*d^2*x^5*e^5 +
2450*B*c^3*d^3*x^4*e^4 + 1960*B*c^3*d^4*x^3*e^3 + 980*B*c^3*d^5*x^2*e^2 + 2
80*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 420*B*b*c^2*x^6*e^7 + 140*A*c^3*x^6*e^7 +
 840*B*b*c^2*d*x^5*e^6 + 280*A*c^3*d*x^5*e^6 + 1050*B*b*c^2*d^2*x^4*e^5 + 3
50*A*c^3*d^2*x^4*e^5 + 840*B*b*c^2*d^3*x^3*e^4 + 280*A*c^3*d^3*x^3*e^4 + 42
0*B*b*c^2*d^4*x^2*e^3 + 140*A*c^3*d^4*x^2*e^3 + 120*B*b*c^2*d^5*x*e^2 + 40*
A*c^3*d^5*x*e^2 + 15*B*b*c^2*d^6*e + 5*A*c^3*d^6*e + 280*B*b^2*c*x^5*e^7 +
280*B*a*c^2*x^5*e^7 + 280*A*b*c^2*x^5*e^7 + 350*B*b^2*c*d*x^4*e^6 + 350*B*a
*c^2*d*x^4*e^6 + 350*A*b*c^2*d*x^4*e^6 + 280*B*b^2*c*d^2*x^3*e^5 + 280*B*a*
c^2*d^2*x^3*e^5 + 280*A*b*c^2*d^2*x^3*e^5 + 140*B*b^2*c*d^3*x^2*e^4 + 140*B
*a*c^2*d^3*x^2*e^4 + 140*A*b*c^2*d^3*x^2*e^4 + 40*B*b^2*c*d^4*x*e^3 + 40*B*
a*c^2*d^4*x*e^3 + 40*A*b*c^2*d^4*x*e^3 + 5*B*b^2*c*d^5*e^2 + 5*B*a*c^2*d^5*
e^2 + 5*A*b*c^2*d^5*e^2 + 70*B*b^3*x^4*e^7 + 420*B*a*b*c*x^4*e^7 + 210*A*b^
2*c*x^4*e^7 + 210*A*a*c^2*x^4*e^7 + 56*B*b^3*d*x^3*e^6 + 336*B*a*b*c*d*x^3*
e^6 + 168*A*b^2*c*d*x^3*e^6 + 168*A*a*c^2*d*x^3*e^6 + 28*B*b^3*d^2*x^2*e^5
+ 168*B*a*b*c*d^2*x^2*e^5 + 84*A*b^2*c*d^2*x^2*e^5 + 84*A*a*c^2*d^2*x^2*e^5
 + 8*B*b^3*d^3*x*e^4 + 48*B*a*b*c*d^3*x*e^4 + 24*A*b^2*c*d^3*x*e^4 + 24*A*a
*c^2*d^3*x*e^4 + B*b^3*d^4*e^3 + 6*B*a*b*c*d^4*e^3 + 3*A*b^2*c*d^4*e^3 + 3*
A*a*c^2*d^4*e^3 + 168*B*a*b^2*x^3*e^7 + 56*A*b^3*x^3*e^7 + 168*B*a^2*c*x^3*
e^7 + 336*A*a*b*c*x^3*e^7 + 84*B*a*b^2*d*x^2*e^6 + 28*A*b^3*d*x^2*e^6 + 84*
B*a^2*c*d*x^2*e^6 + 168*A*a*b*c*d*x^2*e^6 + 24*B*a*b^2*d^2*x*e^5 + 8*A*b^3*
d^2*x*e^5 + 24*B*a^2*c*d^2*x*e^5 + 48*A*a*b*c*d^2*x*e^5 + 3*B*a*b^2*d^3*e^4
 + A*b^3*d^3*e^4 + 3*B*a^2*c*d^3*e^4 + 6*A*a*b*c*d^3*e^4 + 140*B*a^2*b*x^2*
e^7 + 140*A*a*b^2*x^2*e^7 + 140*A*a^2*c*x^2*e^7 + 40*B*a^2*b*d*x*e^6 + 40*A
*a*b^2*d*x*e^6 + 40*A*a^2*c*d*x*e^6 + 5*B*a^2*b*d^2*e^5 + 5*A*a*b^2*d^2*e^5
 + 5*A*a^2*c*d^2*e^5 + 40*B*a^3*x*e^7 + 120*A*a^2*b*x*e^7 + 5*B*a^3*d*e^6 +
 15*A*a^2*b*d*e^6 + 35*A*a^3*e^7)*e^(-8)/(x*e + d)^8
```

maple [A] time = 0.05, size = 1067, normalized size = 1.94

$$-\frac{B\,c^{3}}{(ex+d)\,e^{8}}-\frac{(Ace+3Bbe-7Bcd)\,c^{2}}{2\,(ex+d)^{2}\,e^{8}}-\frac{\left(Abc\,e^{2}-2A\,c^{2}de+aBc\,e^{2}+b^{2}B\,e^{2}-6Bbcde+7B\,c^{2}d^{2}\right)c}{(ex+d)^{3}\,e^{8}}-\frac{A\,a^{3}e^{7}-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x)
```

```
[Out] -1/(e*x+d)*B*c^3/e^8-1/8*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a
*b^2*d^2*e^5-6*A*a*b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^
4*e^3-3*A*b*c^2*d^5*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c
*d^3*e^4-3*B*a*b^2*d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^
3-3*B*b^2*c*d^5*e^2+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^8-1/2*c^2*(A*c*e
+3*B*b*e-7*B*c*d)/e^8/(e*x+d)^2-1/4*(3*A*a*c^2*e^3+3*A*b^2*c*e^3-15*A*b*c^2
*d*e^2+15*A*c^3*d^2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B*b^3*e^3-15*B*b^2*c*d
*e^2+45*B*b*c^2*d^2*e-35*B*c^3*d^3)/e^8/(e*x+d)^4-1/6*(3*A*a^2*c*e^5+3*A*a*
b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d^2*e^3-3*A*b^3*d*e^4+18*A*b^2*c*d^2*e^
3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3*B*a^2*b*e^5-9*B*a^2*c*d*e^4-9*B*a*b^2
*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*d^3*e^2+6*B*b^3*d^2*e^3-30*B*b^2*c*d^3
*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e^8/(e*x+d)^6-1/7*(3*A*a^2*b*e^6-6*A*a^
2*c*d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A*a*c^2*d^3*e^3+3*A*b^3*d^2
*e^4-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^3*d^5*e+B*a^3*e^6-6*B*a^2*
b*d*e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*a*b*c*d^3*e^3+15*B*a*c^2*d
^4*e^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*c^2*d^5*e+7*B*c^3*d^6)/e^8
/(e*x+d)^7-1/5*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e^4-12*A*b^2*c*d*e^3+3
0*A*b*c^2*d^2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b^2*e^4-24*B*a*b*c*d*e
^3+30*B*a*c^2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2-60*B*b*c^2*d^3*e+35*
B*c^3*d^4)/e^8/(e*x+d)^5-c*(A*b*c*e^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b
*c*d*e+7*B*c^2*d^2)/e^8/(e*x+d)^3
```

maxima [**A**] time = 1.06, size = 922, normalized size = 1.68

$$-\frac{280\,Bc^3e^7x^7 + 35\,Bc^3d^7 + 35\,Aa^3e^7 + 5\left(3\,Bbc^2 + Ac^3\right)d^6e + 5\left(Bb^2c + (Ba + Ab)c^2\right)d^5e^2 + \left(Bb^3 + 3\,Aac^2 + 3\,(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^9,x, algorithm="maxima")
```

```
[Out] -1/280*(280*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 35*A*a^3*e^7 + 5*(3*B*b*c^2 + A*
c^3)*d^6*e + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + (B*b^3 + 3*A*a*c^2 + 3
*(2*B*a*b + A*b^2)*c)*d^4*e^3 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)
*d^3*e^4 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 5*(B*a^3 + 3*A*a^2*b)*
d*e^6 + 140*(7*B*c^3*d*e^6 + (3*B*b*c^2 + A*c^3)*e^7)*x^6 + 280*(7*B*c^3*d^
2*e^5 + (3*B*b*c^2 + A*c^3)*d*e^6 + (B*b^2*c + (B*a + A*b)*c^2)*e^7)*x^5 +
70*(35*B*c^3*d^3*e^4 + 5*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 5*(B*b^2*c + (B*a +
A*b)*c^2)*d*e^6 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^7)*x^4 + 56
*(35*B*c^3*d^4*e^3 + 5*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 5*(B*b^2*c + (B*a + A*
b)*c^2)*d^2*e^5 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^6 + (3*B*
a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 28*(35*B*c^3*d^5*e^2 + 5*
(3*B*b*c^2 + A*c^3)*d^4*e^3 + 5*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^4 + (B*b^
3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + (3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d*e^6 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^7)*x^2 + 8*(35*
B*c^3*d^6*e + 5*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 5*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^3 + (B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^4 + (3*B*a*b^2
 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 5*(B*a^2*b + A*a*b^2 + A*a^2*c)
*d*e^6 + 5*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^16*x^8 + 8*d*e^15*x^7 + 28*d^2*e^
14*x^6 + 56*d^3*e^13*x^5 + 70*d^4*e^12*x^4 + 56*d^5*e^11*x^3 + 28*d^6*e^10*
x^2 + 8*d^7*e^9*x + d^8*e^8)
```

mupad [**B**] time = 0.28, size = 1115, normalized size = 2.03

$$-\frac{\frac{5\,B\,a^3\,d\,e^6+35\,A\,a^3\,e^7+5\,B\,a^2\,b\,d^2\,e^5+15\,A\,a^2\,b\,d\,e^6+3\,B\,a^2\,c\,d^3\,e^4+5\,A\,a^2\,c\,d^2\,e^5+3\,B\,a\,b^2\,d^3\,e^4+5\,A\,a\,b^2\,d^2\,e^5+6\,B\,a\,b\,c\,d^4\,e^3+6\,A\,a\,b\,c\,d^3\,e^4+5\,B\,a\,c^2\,d^5}{280\,e^8}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^9,x)
```

```
[Out] -((35*A*a^3*e^7 + 35*B*c^3*d^7 + 5*B*a^3*d*e^6 + 5*A*c^3*d^6*e + A*b^3*d^3*
e^4 + B*b^3*d^4*e^3 + 5*A*a*b^2*d^2*e^5 + 3*A*a*c^2*d^4*e^3 + 5*A*a^2*c*d^2
*e^5 + 3*B*a*b^2*d^3*e^4 + 5*B*a^2*b*d^2*e^5 + 5*A*b*c^2*d^5*e^2 + 3*A*b^2*
c*d^4*e^3 + 5*B*a*c^2*d^5*e^2 + 3*B*a^2*c*d^3*e^4 + 5*B*b^2*c*d^5*e^2 + 15*
A*a^2*b*d*e^6 + 15*B*b*c^2*d^6*e + 6*A*a*b*c*d^3*e^4 + 6*B*a*b*c*d^4*e^3)/(
280*e^8) + (x^4*(B*b^3*e^3 + 35*B*c^3*d^3 + 3*A*a*c^2*e^3 + 3*A*b^2*c*e^3 +
 5*A*c^3*d^2*e + 6*B*a*b*c*e^3 + 5*A*b*c^2*d*e^2 + 5*B*a*c^2*d*e^2 + 15*B*b
*c^2*d^2*e + 5*B*b^2*c*d*e^2))/(4*e^4) + (x*(5*B*a^3*e^6 + 35*B*c^3*d^6 + 1
5*A*a^2*b*e^6 + 5*A*c^3*d^5*e + A*b^3*d^2*e^4 + B*b^3*d^3*e^3 + 3*A*a*c^2*d
^3*e^3 + 3*B*a*b^2*d^2*e^4 + 5*A*b*c^2*d^4*e^2 + 3*A*b^2*c*d^3*e^3 + 5*B*a*
c^2*d^4*e^2 + 3*B*a^2*c*d^2*e^4 + 5*B*b^2*c*d^4*e^2 + 5*A*a*b^2*d*e^5 + 5*A
*a^2*c*d*e^5 + 5*B*a^2*b*d*e^5 + 15*B*b*c^2*d^5*e + 6*A*a*b*c*d^2*e^4 + 6*B
*a*b*c*d^3*e^3))/(35*e^7) + (x^2*(35*B*c^3*d^5 + 5*A*a*b^2*e^5 + 5*A*a^2*c*
e^5 + 5*B*a^2*b*e^5 + A*b^3*d*e^4 + 5*A*c^3*d^4*e + B*b^3*d^2*e^3 + 3*A*a*c
^2*d^2*e^3 + 5*A*b*c^2*d^3*e^2 + 3*A*b^2*c*d^2*e^3 + 5*B*a*c^2*d^3*e^2 + 5*
B*b^2*c*d^3*e^2 + 3*B*a*b^2*d*e^4 + 3*B*a^2*c*d*e^4 + 15*B*b*c^2*d^4*e + 6*
B*a*b*c*d^2*e^3 + 6*A*a*b*c*d*e^4))/(10*e^6) + (x^5*(7*B*c^3*d^2 + A*c^3*d*
e + A*b*c^2*e^2 + B*a*c^2*e^2 + B*b^2*c*e^2 + 3*B*b*c^2*d*e))/e^3 + (x^3*(A
*b^3*e^4 + 35*B*c^3*d^4 + 3*B*a*b^2*e^4 + 3*B*a^2*c*e^4 + 5*A*c^3*d^3*e + B
*b^3*d*e^3 + 5*A*b*c^2*d^2*e^2 + 5*B*a*c^2*d^2*e^2 + 5*B*b^2*c*d^2*e^2 + 6*
A*a*b*c*e^4 + 3*A*a*c^2*d*e^3 + 3*A*b^2*c*d*e^3 + 15*B*b*c^2*d^3*e + 6*B*a*
b*c*d*e^3))/(5*e^5) + (c^2*x^6*(A*c*e + 3*B*b*e + 7*B*c*d))/(2*e^2) + (B*c^
3*x^7)/e)/(d^8 + e^8*x^8 + 8*d*e^7*x^7 + 28*d^6*e^2*x^2 + 56*d^5*e^3*x^3 +
70*d^4*e^4*x^4 + 56*d^3*e^5*x^5 + 28*d^2*e^6*x^6 + 8*d^7*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**9,x)
```

```
[Out] Timed out
```

3.2348 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}}\,dx$

Optimal. Leaf size=555

$$\frac{Ae(2cd-be)\bigl(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\bigr)-B\bigl(3ce^2\bigl(a^2e^2-8abde+10b^2d^2\bigr)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{6e^8(d+ex)^6}$$

```
[Out] 1/9*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^9+1/8*(a*e^2-b*d*e+c*d^2)^
2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^8+3/7*(a*e^2-
b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(5*
c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^7+1/6*(A*e*(-b*e+2*c*d)*(10*
c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d)-
30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e*x
+d)^6+1/5*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*e+
3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^5+3/4*c*(
A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))/e^8/(e*x+d)^4+1/
3*c^2*(-A*c*e-3*B*b*e+7*B*c*d)/e^8/(e*x+d)^3-1/2*B*c^3/e^8/(e*x+d)^2
```

Rubi [**A**] time = 0.74, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$\frac{Ae(2cd-be)\bigl(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\bigr)-B\bigl(3ce^2\bigl(a^2e^2-8abde+10b^2d^2\bigr)-b^2e^3(4bd-3ae)-30c^2d^2e(2}{6e^8(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(9*e^8*(d + e*x)^9) - ((c*d^2 - b*d
*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(8*e^8
*(d + e*x)^8) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d - 3
*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)
)))/(7*e^8*(d + e*x)^7) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*
(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(
2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(6*e^8*(d + e*x
)^6) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3
*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(5*e^8*(d
 + e*x)^5) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*
d - a*e))))/(4*e^8*(d + e*x)^4) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(3*e^8*
(d + e*x)^3) - (B*c^3)/(2*e^8*(d + e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{10}}\,dx = \int \Biggl(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{10}}+\frac{\left(cd^2-bde+ae^2\right)^2\bigl(7Bcd^2-Be(4bd-ae)}{e^7(d+ex)^9}$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{9e^8(d+ex)^9}-\frac{\left(cd^2-bde+ae^2\right)^2\bigl(7Bcd^2-Be(4bd-ae)-3A}{8e^8(d+ex)^8}$$

Mathematica [A] time = 0.49, size = 852, normalized size = 1.54

$$-\frac{Ae\Big(10\Big(d^6+9exd^5+36e^2x^2d^4+84e^3x^3d^3+126e^4x^4d^2+126e^5x^5d+84e^6x^6\Big)c^3+3e\Big(4ae\Big(d^4+9exd^3+36e}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x]
```

```
[Out] -1/2520*(A*e*(10*c^3*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 1
26*d^2*e^4*x^4 + 126*d*e^5*x^5 + 84*e^6*x^6) + 5*e^3*(56*a^3*e^3 + 21*a^2*b
*e^2*(d + 9*e*x) + 6*a*b^2*e*(d^2 + 9*d*e*x + 36*e^2*x^2) + b^3*(d^3 + 9*d^
2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3)) + 6*c*e^2*(5*a^2*e^2*(d^2 + 9*d*e*x + 3
6*e^2*x^2) + 5*a*b*e*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 2*b^2*
(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 3*c^2*e*
(4*a*e*(d^4 + 9*d^3*e*x + 36*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*
b*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*
e^5*x^5))) + B*(35*c^3*(d^7 + 9*d^6*e*x + 36*d^5*e^2*x^2 + 84*d^4*e^3*x^3 +
 126*d^3*e^4*x^4 + 126*d^2*e^5*x^5 + 84*d*e^6*x^6 + 36*e^7*x^7) + e^3*(35*a
^3*e^3*(d + 9*e*x) + 30*a^2*b*e^2*(d^2 + 9*d*e*x + 36*e^2*x^2) + 15*a*b^2*e
*(d^3 + 9*d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 4*b^3*(d^4 + 9*d^3*e*x + 3
6*d^2*e^2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4)) + 3*c*e^2*(5*a^2*e^2*(d^3 + 9*
d^2*e*x + 36*d*e^2*x^2 + 84*e^3*x^3) + 8*a*b*e*(d^4 + 9*d^3*e*x + 36*d^2*e^
2*x^2 + 84*d*e^3*x^3 + 126*e^4*x^4) + 5*b^2*(d^5 + 9*d^4*e*x + 36*d^3*e^2*x
^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)) + 15*c^2*e*(a*e*(d^5 +
9*d^4*e*x + 36*d^3*e^2*x^2 + 84*d^2*e^3*x^3 + 126*d*e^4*x^4 + 126*e^5*x^5)
+ 2*b*(d^6 + 9*d^5*e*x + 36*d^4*e^2*x^2 + 84*d^3*e^3*x^3 + 126*d^2*e^4*x^4
+ 126*d*e^5*x^5 + 84*e^6*x^6))))/(e^8*(d + e*x)^9)
```

fricas [A] time = 0.79, size = 945, normalized size = 1.70

$$-\frac{1260\,Bc^3e^7x^7+35\,Bc^3d^7+280\,Aa^3e^7+10\,\Big(3\,Bbc^2+Ac^3\Big)d^6e+15\,\Big(Bb^2c+(Ba+Ab)c^2\Big)d^5e^2+4\,\Big(Bb^3+3\,A}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="fricas")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 280*A*a^3*e^7 + 10*(3*B*b*c^2
+ A*c^3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 4*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*
A*a*b)*c)*d^3*e^4 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 35*(B*a^3 +
3*A*a^2*b)*d*e^6 + 420*(7*B*c^3*d*e^6 + 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 63
0*(7*B*c^3*d^2*e^5 + 2*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)
*c^2)*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4 + 10*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 1
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^7)*x^4 + 84*(35*B*c^3*d^4*e^3 + 10*(3*B*b*c^2 + A*c^3)*d^3*e^4 +
 15*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d*e^6 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3
 + 36*(35*B*c^3*d^5*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B
*a + A*b)*c^2)*d^3*e^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*
e^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 30*(B*a^2*b + A
*a*b^2 + A*a^2*c)*e^7)*x^2 + 9*(35*B*c^3*d^6*e + 10*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*
d^2*e^5 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 35*(B*a^3 + 3*A*a^2*b)*e
^7)*x)/(e^17*x^9 + 9*d*e^16*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d
^4*e^13*x^5 + 126*d^5*e^12*x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*
e^9*x + d^9*e^8)
```

giac [B] time = 0.21, size = 1129, normalized size = 2.03

$$-\frac{\left(1260\,Bc^3x^7e^7 + 2940\,Bc^3dx^6e^6 + 4410\,Bc^3d^2x^5e^5 + 4410\,Bc^3d^3x^4e^4 + 2940\,Bc^3d^4x^3e^3 + 1260\,Bc^3d^5x^2e^2 + 315\,\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="giac")
```

```
[Out] -1/2520*(1260*B*c^3*x^7*e^7 + 2940*B*c^3*d*x^6*e^6 + 4410*B*c^3*d^2*x^5*e^5
 + 4410*B*c^3*d^3*x^4*e^4 + 2940*B*c^3*d^4*x^3*e^3 + 1260*B*c^3*d^5*x^2*e^2
 + 315*B*c^3*d^6*x*e + 35*B*c^3*d^7 + 2520*B*b*c^2*x^6*e^7 + 840*A*c^3*x^6*
e^7 + 3780*B*b*c^2*d*x^5*e^6 + 1260*A*c^3*d*x^5*e^6 + 3780*B*b*c^2*d^2*x^4*
e^5 + 1260*A*c^3*d^2*x^4*e^5 + 2520*B*b*c^2*d^3*x^3*e^4 + 840*A*c^3*d^3*x^3
*e^4 + 1080*B*b*c^2*d^4*x^2*e^3 + 360*A*c^3*d^4*x^2*e^3 + 270*B*b*c^2*d^5*x
*e^2 + 90*A*c^3*d^5*x*e^2 + 30*B*b*c^2*d^6*e + 10*A*c^3*d^6*e + 1890*B*b^2*
c*x^5*e^7 + 1890*B*a*c^2*x^5*e^7 + 1890*A*b*c^2*x^5*e^7 + 1890*B*b^2*c*d*x^
4*e^6 + 1890*B*a*c^2*d*x^4*e^6 + 1890*A*b*c^2*d*x^4*e^6 + 1260*B*b^2*c*d^2*
x^3*e^5 + 1260*B*a*c^2*d^2*x^3*e^5 + 1260*A*b*c^2*d^2*x^3*e^5 + 540*B*b^2*c
*d^3*x^2*e^4 + 540*B*a*c^2*d^3*x^2*e^4 + 540*A*b*c^2*d^3*x^2*e^4 + 135*B*b^
2*c*d^4*x*e^3 + 135*B*a*c^2*d^4*x*e^3 + 135*A*b*c^2*d^4*x*e^3 + 15*B*b^2*c*
d^5*e^2 + 15*B*a*c^2*d^5*e^2 + 15*A*b*c^2*d^5*e^2 + 504*B*b^3*x^4*e^7 + 302
4*B*a*b*c*x^4*e^7 + 1512*A*b^2*c*x^4*e^7 + 1512*A*a*c^2*x^4*e^7 + 336*B*b^3
*d*x^3*e^6 + 2016*B*a*b*c*d*x^3*e^6 + 1008*A*b^2*c*d*x^3*e^6 + 1008*A*a*c^2
*d*x^3*e^6 + 144*B*b^3*d^2*x^2*e^5 + 864*B*a*b*c*d^2*x^2*e^5 + 432*A*b^2*c*
d^2*x^2*e^5 + 432*A*a*c^2*d^2*x^2*e^5 + 36*B*b^3*d^3*x*e^4 + 216*B*a*b*c*d^
3*x*e^4 + 108*A*b^2*c*d^3*x*e^4 + 108*A*a*c^2*d^3*x*e^4 + 4*B*b^3*d^4*e^3 +
 24*B*a*b*c*d^4*e^3 + 12*A*b^2*c*d^4*e^3 + 12*A*a*c^2*d^4*e^3 + 1260*B*a*b^
2*x^3*e^7 + 420*A*b^3*x^3*e^7 + 1260*B*a^2*c*x^3*e^7 + 2520*A*a*b*c*x^3*e^7
 + 540*B*a*b^2*d*x^2*e^6 + 180*A*b^3*d*x^2*e^6 + 540*B*a^2*c*d*x^2*e^6 + 10
80*A*a*b*c*d*x^2*e^6 + 135*B*a*b^2*d^2*x*e^5 + 45*A*b^3*d^2*x*e^5 + 135*B*a
^2*c*d^2*x*e^5 + 270*A*a*b*c*d^2*x*e^5 + 15*B*a*b^2*d^3*e^4 + 5*A*b^3*d^3*e
^4 + 15*B*a^2*c*d^3*e^4 + 30*A*a*b*c*d^3*e^4 + 1080*B*a^2*b*x^2*e^7 + 1080*
A*a*b^2*x^2*e^7 + 1080*A*a^2*c*x^2*e^7 + 270*B*a^2*b*d*x*e^6 + 270*A*a*b^2*
d*x*e^6 + 270*A*a^2*c*d*x*e^6 + 30*B*a^2*b*d^2*e^5 + 30*A*a*b^2*d^2*e^5 + 3
0*A*a^2*c*d^2*e^5 + 315*B*a^3*x*e^7 + 945*A*a^2*b*x*e^7 + 35*B*a^3*d*e^6 +
105*A*a^2*b*d*e^6 + 280*A*a^3*e^7)*e^(-8)/(x*e + d)^9
```

maple [A] time = 0.05, size = 1067, normalized size = 1.92

$$-\frac{B\,c^3}{2\,(ex+d)^2\,e^8}-\frac{(Ace+3Bbe-7Bcd)\,c^2}{3\,(ex+d)^3\,e^8}-\frac{3\left(Abc\,e^2-2A\,c^2de+aBc\,e^2+b^2B\,e^2-6Bbcde+7B\,c^2d^2\right)c}{4\,(ex+d)^4\,e^8}-\frac{3A\,a^2b\,e^6}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x)
```

```
[Out] -1/8*(3*A*a^2*b*e^6-6*A*a^2*c*d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A
*a*c^2*d^3*e^3+3*A*b^3*d^2*e^4-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^
3*d^5*e+B*a^3*e^6-6*B*a^2*b*d*e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*
a*b*c*d^3*e^3+15*B*a*c^2*d^4*e^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*
c^2*d^5*e+7*B*c^3*d^6)/e^8/(e*x+d)^8-1/2/(e*x+d)^2*B*c^3/e^8-3/4*c*(A*b*c*e
^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b*c*d*e+7*B*c^2*d^2)/e^8/(e*x+d)^4-1
/6*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e^4-12*A*b^2*c*d*e^3+30*A*b*c^2*d^
2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b^2*e^4-24*B*a*b*c*d*e^3+30*B*a*c^
2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2-60*B*b*c^2*d^3*e+35*B*c^3*d^4)/e
^8/(e*x+d)^6-1/7*(3*A*a^2*c*e^5+3*A*a*b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d
^2*e^3-3*A*b^3*d*e^4+18*A*b^2*c*d^2*e^3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3
*B*a^2*b*e^5-9*B*a^2*c*d*e^4-9*B*a*b^2*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*
d^3*e^2+6*B*b^3*d^2*e^3-30*B*b^2*c*d^3*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e
```

```
^8/(e*x+d)^7-1/9*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a*b^2*d^2
*e^5-6*A*a*b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^4*e^3-3*
A*b*c^2*d^5*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c*d^3*e^4
-3*B*a*b^2*d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^3-3*B*b^
2*c*d^5*e^2+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^9-1/5*(3*A*a*c^2*e^3+3*A
*b^2*c*e^3-15*A*b*c^2*d*e^2+15*A*c^3*d^2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B
*b^3*e^3-15*B*b^2*c*d*e^2+45*B*b*c^2*d^2*e-35*B*c^3*d^3)/e^8/(e*x+d)^5-1/3*
c^2*(A*c*e+3*B*b*e-7*B*c*d)/e^8/(e*x+d)^3
```

maxima [A] time = 1.05, size = 945, normalized size = 1.70

$$-\frac{1260\,Bc^3e^7x^7+35\,Bc^3d^7+280\,Aa^3e^7+10\left(3\,Bbc^2+Ac^3\right)d^6e+15\left(Bb^2c+(Ba+Ab)c^2\right)d^5e^2+4\left(Bb^3+3\,A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^10,x, algorithm="maxima")
```

```
[Out] -1/2520*(1260*B*c^3*e^7*x^7 + 35*B*c^3*d^7 + 280*A*a^3*e^7 + 10*(3*B*b*c^2
+ A*c^3)*d^6*e + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 4*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*
A*a*b)*c)*d^3*e^4 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 35*(B*a^3 +
3*A*a^2*b)*d*e^6 + 420*(7*B*c^3*d*e^6 + 2*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 63
0*(7*B*c^3*d^2*e^5 + 2*(3*B*b*c^2 + A*c^3)*d*e^6 + 3*(B*b^2*c + (B*a + A*b)
*c^2)*e^7)*x^5 + 126*(35*B*c^3*d^3*e^4 + 10*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 1
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^6 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^7)*x^4 + 84*(35*B*c^3*d^4*e^3 + 10*(3*B*b*c^2 + A*c^3)*d^3*e^4 +
 15*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^5 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d*e^6 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3
 + 36*(35*B*c^3*d^5*e^2 + 10*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 15*(B*b^2*c + (B
*a + A*b)*c^2)*d^3*e^4 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*
e^5 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 30*(B*a^2*b + A
*a*b^2 + A*a^2*c)*e^7)*x^2 + 9*(35*B*c^3*d^6*e + 10*(3*B*b*c^2 + A*c^3)*d^5
*e^2 + 15*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 4*(B*b^3 + 3*A*a*c^2 + 3*(2
*B*a*b + A*b^2)*c)*d^3*e^4 + 5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*
d^2*e^5 + 30*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 35*(B*a^3 + 3*A*a^2*b)*e
^7)*x)/(e^17*x^9 + 9*d*e^16*x^8 + 36*d^2*e^15*x^7 + 84*d^3*e^14*x^6 + 126*d
^4*e^13*x^5 + 126*d^5*e^12*x^4 + 84*d^6*e^11*x^3 + 36*d^7*e^10*x^2 + 9*d^8*
e^9*x + d^9*e^8)
```

mupad [B] time = 2.57, size = 1142, normalized size = 2.06

$$-\frac{\frac{35\,B\,a^3\,d\,e^6+280\,A\,a^3\,e^7+30\,B\,a^2\,b\,d^2\,e^5+105\,A\,a^2\,b\,d\,e^6+15\,B\,a^2\,c\,d^3\,e^4+30\,A\,a^2\,c\,d^2\,e^5+15\,B\,a\,b^2\,d^3\,e^4+30\,A\,a\,b^2\,d^2\,e^5+24\,B\,a\,b\,c\,d^4\,e^3+30\,A\,a\,b\,c}{252}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^10,x)
```

```
[Out] -((280*A*a^3*e^7 + 35*B*c^3*d^7 + 35*B*a^3*d*e^6 + 10*A*c^3*d^6*e + 5*A*b^3
*d^3*e^4 + 4*B*b^3*d^4*e^3 + 30*A*a*b^2*d^2*e^5 + 12*A*a*c^2*d^4*e^3 + 30*A
*a^2*c*d^2*e^5 + 15*B*a*b^2*d^3*e^4 + 30*B*a^2*b*d^2*e^5 + 15*A*b*c^2*d^5*e
^2 + 12*A*b^2*c*d^4*e^3 + 15*B*a*c^2*d^5*e^2 + 15*B*a^2*c*d^3*e^4 + 15*B*b^
2*c*d^5*e^2 + 105*A*a^2*b*d*e^6 + 30*B*b*c^2*d^6*e + 30*A*a*b*c*d^3*e^4 + 2
4*B*a*b*c*d^4*e^3)/(2520*e^8) + (x^4*(4*B*b^3*e^3 + 35*B*c^3*d^3 + 12*A*a*c
^2*e^3 + 12*A*b^2*c*e^3 + 10*A*c^3*d^2*e + 24*B*a*b*c*e^3 + 15*A*b*c^2*d*e^
2 + 15*B*a*c^2*d*e^2 + 30*B*b*c^2*d^2*e + 15*B*b^2*c*d*e^2))/(20*e^4) + (x*
(35*B*a^3*e^6 + 35*B*c^3*d^6 + 105*A*a^2*b*e^6 + 10*A*c^3*d^5*e + 5*A*b^3*d
^2*e^4 + 4*B*b^3*d^3*e^3 + 12*A*a*c^2*d^3*e^3 + 15*B*a*b^2*d^2*e^4 + 15*A*b
*c^2*d^4*e^2 + 12*A*b^2*c*d^3*e^3 + 15*B*a*c^2*d^4*e^2 + 15*B*a^2*c*d^2*e^4
```

```
 + 15*B*b^2*c*d^4*e^2 + 30*A*a*b^2*d*e^5 + 30*A*a^2*c*d*e^5 + 30*B*a^2*b*d*
e^5 + 30*B*b*c^2*d^5*e + 30*A*a*b*c*d^2*e^4 + 24*B*a*b*c*d^3*e^3))/(280*e^7
) + (x^2*(35*B*c^3*d^5 + 30*A*a*b^2*e^5 + 30*A*a^2*c*e^5 + 30*B*a^2*b*e^5 +
 5*A*b^3*d*e^4 + 10*A*c^3*d^4*e + 4*B*b^3*d^2*e^3 + 12*A*a*c^2*d^2*e^3 + 15
*A*b*c^2*d^3*e^2 + 12*A*b^2*c*d^2*e^3 + 15*B*a*c^2*d^3*e^2 + 15*B*b^2*c*d^3
*e^2 + 15*B*a*b^2*d*e^4 + 15*B*a^2*c*d*e^4 + 30*B*b*c^2*d^4*e + 24*B*a*b*c*
d^2*e^3 + 30*A*a*b*c*d*e^4))/(70*e^6) + (x^5*(7*B*c^3*d^2 + 2*A*c^3*d*e + 3
*A*b*c^2*e^2 + 3*B*a*c^2*e^2 + 3*B*b^2*c*e^2 + 6*B*b*c^2*d*e))/(4*e^3) + (x
^3*(5*A*b^3*e^4 + 35*B*c^3*d^4 + 15*B*a*b^2*e^4 + 15*B*a^2*c*e^4 + 10*A*c^3
*d^3*e + 4*B*b^3*d*e^3 + 15*A*b*c^2*d^2*e^2 + 15*B*a*c^2*d^2*e^2 + 15*B*b^2
*c*d^2*e^2 + 30*A*a*b*c*e^4 + 12*A*a*c^2*d*e^3 + 12*A*b^2*c*d*e^3 + 30*B*b*
c^2*d^3*e + 24*B*a*b*c*d*e^3))/(30*e^5) + (c^2*x^6*(2*A*c*e + 6*B*b*e + 7*B
*c*d))/(6*e^2) + (B*c^3*x^7)/(2*e))/(d^9 + e^9*x^9 + 9*d*e^8*x^8 + 36*d^7*e
^2*x^2 + 84*d^6*e^3*x^3 + 126*d^5*e^4*x^4 + 126*d^4*e^5*x^5 + 84*d^3*e^6*x^
6 + 36*d^2*e^7*x^7 + 9*d^8*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**10,x)
```

```
[Out] Timed out
```

3.2349 $\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{11}}\,dx$

Optimal. Leaf size=555

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{7e^8(d+ex)^7}$$

```
[Out] 1/10*(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3/e^8/(e*x+d)^10+1/9*(a*e^2-b*d*e+c*d^2
)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))/e^8/(e*x+d)^9+3/8*(a*e^
2-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*d))-A*e*(
5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^8+1/7*(A*e*(-b*e+2*c*d)*(1
0*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^3*(-3*a*e+4*b*d
)-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^2*d^2)))/e^8/(e
*x+d)^7+1/6*(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5*b*d)-15*c^2*d*e*(-a*
e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))/e^8/(e*x+d)^6+3/5*c
*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*(-a*e+6*b*d)))/e^8/(e*x+d)^5+
1/4*c^2*(-A*c*e-3*B*b*e+7*B*c*d)/e^8/(e*x+d)^4-1/3*B*c^3/e^8/(e*x+d)^3
```

Rubi [**A**] time = 0.67, antiderivative size = 553, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$\frac{Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-3ae)-30c^2d^2}{7e^8(d+ex)^7}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] ((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3)/(10*e^8*(d + e*x)^10) - ((c*d^2 - b
*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d - b*e)))/(9*e
^8*(d + e*x)^9) + (3*(c*d^2 - b*d*e + a*e^2)*(B*(7*c^2*d^3 - c*d*e*(8*b*d -
 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*
e))))/(8*e^8*(d + e*x)^8) + (A*e*(2*c*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*
e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 - b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e
*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2 - 8*a*b*d*e + a^2*e^2)))/(7*e^8*(d + e
*x)^7) + (B*(35*c^3*d^3 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*
(3*b*d - a*e)) - 3*A*c*e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))/(6*e^8*
(d + e*x)^6) + (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*
b*d - a*e))))/(5*e^8*(d + e*x)^5) + (c^2*(7*B*c*d - 3*b*B*e - A*c*e))/(4*e^
8*(d + e*x)^4) - (B*c^3)/(3*e^8*(d + e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int \frac{(A+Bx)\left(a+bx+cx^2\right)^3}{(d+ex)^{11}}\,dx=\int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3}{e^7(d+ex)^{11}}+\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-\right.}{e^7(d+ex)^{10}}\right.$$

$$=\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3}{10e^8(d+ex)^{10}}-\frac{\left(cd^2-bde+ae^2\right)^2\left(7Bcd^2-Be(4bd-ae)-\right.}{9e^8(d+ex)^9}$$

Mathematica [A] time = 0.50, size = 849, normalized size = 1.53

$$-\frac{3Ae\left(\left(d^6+10exd^5+45e^2x^2d^4+120e^3x^3d^3+210e^4x^4d^2+252e^5x^5d+210e^6x^6\right)c^3+2e\left(ae\left(d^4+10exd^3+45e^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x]
```

```
[Out] -1/2520*(3*A*e*(c^3*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*e^3*x^3 +
210*d^2*e^4*x^4 + 252*d*e^5*x^5 + 210*e^6*x^6) + e^3*(84*a^3*e^3 + 28*a^2*b
*e^2*(d + 10*e*x) + 7*a*b^2*e*(d^2 + 10*d*e*x + 45*e^2*x^2) + b^3*(d^3 + 10
*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3)) + c*e^2*(7*a^2*e^2*(d^2 + 10*d*e*x
+ 45*e^2*x^2) + 6*a*b*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2
*b^2*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + 2
*c^2*e*(a*e*(d^4 + 10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^
4) + b*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4
 + 252*e^5*x^5))) + B*(7*c^3*(d^7 + 10*d^6*e*x + 45*d^5*e^2*x^2 + 120*d^4*e
^3*x^3 + 210*d^3*e^4*x^4 + 252*d^2*e^5*x^5 + 210*d*e^6*x^6 + 120*e^7*x^7) +
 e^3*(28*a^3*e^3*(d + 10*e*x) + 21*a^2*b*e^2*(d^2 + 10*d*e*x + 45*e^2*x^2)
+ 9*a*b^2*e*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 2*b^3*(d^4 +
10*d^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4)) + 3*c*e^2*(3*a^
2*e^2*(d^3 + 10*d^2*e*x + 45*d*e^2*x^2 + 120*e^3*x^3) + 4*a*b*e*(d^4 + 10*d
^3*e*x + 45*d^2*e^2*x^2 + 120*d*e^3*x^3 + 210*e^4*x^4) + 2*b^2*(d^5 + 10*d^
4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d*e^4*x^4 + 252*e^5*x^5)) +
3*c^2*e*(2*a*e*(d^5 + 10*d^4*e*x + 45*d^3*e^2*x^2 + 120*d^2*e^3*x^3 + 210*d
*e^4*x^4 + 252*e^5*x^5) + 3*b*(d^6 + 10*d^5*e*x + 45*d^4*e^2*x^2 + 120*d^3*
e^3*x^3 + 210*d^2*e^4*x^4 + 252*d*e^5*x^5 + 210*e^6*x^6))))/(e^8*(d + e*x)^
10)
```

fricas [A] time = 1.27, size = 956, normalized size = 1.72

$$-\frac{840\,Bc^3e^7x^7+7\,Bc^3d^7+252\,Aa^3e^7+3\left(3\,Bbc^2+Ac^3\right)d^6e+6\left(Bb^2c+(Ba+Ab)c^2\right)d^5e^2+2\left(Bb^3+3\,Aac^2+3\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="fricas")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 252*A*a^3*e^7 + 3*(3*B*b*c^2 + A
*c^3)*d^6*e + 6*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 + 21*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 28*(B*a^3 + 3*A*
a^2*b)*d*e^6 + 210*(7*B*c^3*d*e^6 + 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 252*(7
*B*c^3*d^2*e^5 + 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2
)*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 + 3*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 45*(7*
B*c^3*d^5*e^2 + 3*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 6*(B*b^2*c + (B*a + A*b)*c^
2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 21*(B*a^2*b + A*a*b^2 + A*a
^2*c)*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 6*(B*b
^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 21*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 28*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^18*x
^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6
 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2
 + 10*d^9*e^9*x + d^10*e^8)
```

giac [B] time = 0.18, size = 1129, normalized size = 2.03

$$-\frac{\left(840\,Bc^3x^7e^7+1470\,Bc^3dx^6e^6+1764\,Bc^3d^2x^5e^5+1470\,Bc^3d^3x^4e^4+840\,Bc^3d^4x^3e^3+315\,Bc^3d^5x^2e^2+70\,Bc\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="giac")
```

```
[Out] -1/2520*(840*B*c^3*x^7*e^7 + 1470*B*c^3*d*x^6*e^6 + 1764*B*c^3*d^2*x^5*e^5
+ 1470*B*c^3*d^3*x^4*e^4 + 840*B*c^3*d^4*x^3*e^3 + 315*B*c^3*d^5*x^2*e^2 +
70*B*c^3*d^6*x*e + 7*B*c^3*d^7 + 1890*B*b*c^2*x^6*e^7 + 630*A*c^3*x^6*e^7 +
 2268*B*b*c^2*d*x^5*e^6 + 756*A*c^3*d*x^5*e^6 + 1890*B*b*c^2*d^2*x^4*e^5 +
630*A*c^3*d^2*x^4*e^5 + 1080*B*b*c^2*d^3*x^3*e^4 + 360*A*c^3*d^3*x^3*e^4 +
405*B*b*c^2*d^4*x^2*e^3 + 135*A*c^3*d^4*x^2*e^3 + 90*B*b*c^2*d^5*x*e^2 + 30
*A*c^3*d^5*x*e^2 + 9*B*b*c^2*d^6*e + 3*A*c^3*d^6*e + 1512*B*b^2*c*x^5*e^7 +
 1512*B*a*c^2*x^5*e^7 + 1512*A*b*c^2*x^5*e^7 + 1260*B*b^2*c*d*x^4*e^6 + 126
0*B*a*c^2*d*x^4*e^6 + 1260*A*b*c^2*d*x^4*e^6 + 720*B*b^2*c*d^2*x^3*e^5 + 72
0*B*a*c^2*d^2*x^3*e^5 + 720*A*b*c^2*d^2*x^3*e^5 + 270*B*b^2*c*d^3*x^2*e^4 +
 270*B*a*c^2*d^3*x^2*e^4 + 270*A*b*c^2*d^3*x^2*e^4 + 60*B*b^2*c*d^4*x*e^3 +
 60*B*a*c^2*d^4*x*e^3 + 60*A*b*c^2*d^4*x*e^3 + 6*B*b^2*c*d^5*e^2 + 6*B*a*c^
2*d^5*e^2 + 6*A*b*c^2*d^5*e^2 + 420*B*b^3*x^4*e^7 + 2520*B*a*b*c*x^4*e^7 +
1260*A*b^2*c*x^4*e^7 + 1260*A*a*c^2*x^4*e^7 + 240*B*b^3*d*x^3*e^6 + 1440*B*
a*b*c*d*x^3*e^6 + 720*A*b^2*c*d*x^3*e^6 + 720*A*a*c^2*d*x^3*e^6 + 90*B*b^3*
d^2*x^2*e^5 + 540*B*a*b*c*d^2*x^2*e^5 + 270*A*b^2*c*d^2*x^2*e^5 + 270*A*a*c
^2*d^2*x^2*e^5 + 20*B*b^3*d^3*x*e^4 + 120*B*a*b*c*d^3*x*e^4 + 60*A*b^2*c*d^
3*x*e^4 + 60*A*a*c^2*d^3*x*e^4 + 2*B*b^3*d^4*e^3 + 12*B*a*b*c*d^4*e^3 + 6*A
*b^2*c*d^4*e^3 + 6*A*a*c^2*d^4*e^3 + 1080*B*a*b^2*x^3*e^7 + 360*A*b^3*x^3*e
^7 + 1080*B*a^2*c*x^3*e^7 + 2160*A*a*b*c*x^3*e^7 + 405*B*a*b^2*d*x^2*e^6 +
135*A*b^3*d*x^2*e^6 + 405*B*a^2*c*d*x^2*e^6 + 810*A*a*b*c*d*x^2*e^6 + 90*B*
a*b^2*d^2*x*e^5 + 30*A*b^3*d^2*x*e^5 + 90*B*a^2*c*d^2*x*e^5 + 180*A*a*b*c*d
^2*x*e^5 + 9*B*a*b^2*d^3*e^4 + 3*A*b^3*d^3*e^4 + 9*B*a^2*c*d^3*e^4 + 18*A*a
*b*c*d^3*e^4 + 945*B*a^2*b*x^2*e^7 + 945*A*a*b^2*x^2*e^7 + 945*A*a^2*c*x^2*
e^7 + 210*B*a^2*b*d*x*e^6 + 210*A*a*b^2*d*x*e^6 + 210*A*a^2*c*d*x*e^6 + 21*
B*a^2*b*d^2*e^5 + 21*A*a*b^2*d^2*e^5 + 21*A*a^2*c*d^2*e^5 + 280*B*a^3*x*e^7
 + 840*A*a^2*b*x*e^7 + 28*B*a^3*d*e^6 + 84*A*a^2*b*d*e^6 + 252*A*a^3*e^7)*e
^(-8)/(x*e + d)^10
```

maple [A] time = 0.05, size = 1067, normalized size = 1.92

$$-\frac{Bc^3}{3\,(ex+d)^3\,e^8}-\frac{(Ace+3Bbe-7Bcd)\,c^2}{4\,(ex+d)^4\,e^8}-\frac{3\left(Abc\,e^2-2A\,c^2de+aBc\,e^2+b^2B\,e^2-6Bbcde+7B\,c^2d^2\right)c}{5\,(ex+d)^5\,e^8}-\frac{3A\,a^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x)
```

```
[Out] -1/8*(3*A*a^2*c*e^5+3*A*a*b^2*e^5-18*A*a*b*c*d*e^4+18*A*a*c^2*d^2*e^3-3*A*b
^3*d*e^4+18*A*b^2*c*d^2*e^3-30*A*b*c^2*d^3*e^2+15*A*c^3*d^4*e+3*B*a^2*b*e^5
-9*B*a^2*c*d*e^4-9*B*a*b^2*d*e^4+36*B*a*b*c*d^2*e^3-30*B*a*c^2*d^3*e^2+6*B*
b^3*d^2*e^3-30*B*b^2*c*d^3*e^2+45*B*b*c^2*d^4*e-21*B*c^3*d^5)/e^8/(e*x+d)^8
-1/10*(A*a^3*e^7-3*A*a^2*b*d*e^6+3*A*a^2*c*d^2*e^5+3*A*a*b^2*d^2*e^5-6*A*a*
b*c*d^3*e^4+3*A*a*c^2*d^4*e^3-A*b^3*d^3*e^4+3*A*b^2*c*d^4*e^3-3*A*b*c^2*d^5
*e^2+A*c^3*d^6*e-B*a^3*d*e^6+3*B*a^2*b*d^2*e^5-3*B*a^2*c*d^3*e^4-3*B*a*b^2*
d^3*e^4+6*B*a*b*c*d^4*e^3-3*B*a*c^2*d^5*e^2+B*b^3*d^4*e^3-3*B*b^2*c*d^5*e^2
+3*B*b*c^2*d^6*e-B*c^3*d^7)/e^8/(e*x+d)^10-1/4*c^2*(A*c*e+3*B*b*e-7*B*c*d)/
e^8/(e*x+d)^4-1/6*(3*A*a*c^2*e^3+3*A*b^2*c*e^3-15*A*b*c^2*d*e^2+15*A*c^3*d^
2*e+6*B*a*b*c*e^3-15*B*a*c^2*d*e^2+B*b^3*e^3-15*B*b^2*c*d*e^2+45*B*b*c^2*d^
2*e-35*B*c^3*d^3)/e^8/(e*x+d)^6-1/7*(6*A*a*b*c*e^4-12*A*a*c^2*d*e^3+A*b^3*e
^4-12*A*b^2*c*d*e^3+30*A*b*c^2*d^2*e^2-20*A*c^3*d^3*e+3*B*a^2*c*e^4+3*B*a*b
^2*e^4-24*B*a*b*c*d*e^3+30*B*a*c^2*d^2*e^2-4*B*b^3*d*e^3+30*B*b^2*c*d^2*e^2
-60*B*b*c^2*d^3*e+35*B*c^3*d^4)/e^8/(e*x+d)^7-1/9*(3*A*a^2*b*e^6-6*A*a^2*c*
d*e^5-6*A*a*b^2*d*e^5+18*A*a*b*c*d^2*e^4-12*A*a*c^2*d^3*e^3+3*A*b^3*d^2*e^4
-12*A*b^2*c*d^3*e^3+15*A*b*c^2*d^4*e^2-6*A*c^3*d^5*e+B*a^3*e^6-6*B*a^2*b*d*
e^5+9*B*a^2*c*d^2*e^4+9*B*a*b^2*d^2*e^4-24*B*a*b*c*d^3*e^3+15*B*a*c^2*d^4*e
^2-4*B*b^3*d^3*e^3+15*B*b^2*c*d^4*e^2-18*B*b*c^2*d^5*e+7*B*c^3*d^6)/e^8/(e*
x+d)^9-3/5*c*(A*b*c*e^2-2*A*c^2*d*e+B*a*c*e^2+B*b^2*e^2-6*B*b*c*d*e+7*B*c^2
*d^2)/e^8/(e*x+d)^5-1/3/(e*x+d)^3*B*c^3/e^8
```

maxima [**A**] time = 1.02, size = 956, normalized size = 1.72

$$-\frac{840\,Bc^{3}e^{7}x^{7}+7\,Bc^{3}d^{7}+252\,Aa^{3}e^{7}+3\bigl(3\,Bbc^{2}+Ac^{3}\bigr)d^{6}e+6\bigl(Bb^{2}c+(Ba+Ab)c^{2}\bigr)d^{5}e^{2}+2\bigl(Bb^{3}+3\,Aac^{2}+3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x^2+b*x+a)^3/(e*x+d)^11,x, algorithm="maxima")
```

```
[Out] -1/2520*(840*B*c^3*e^7*x^7 + 7*B*c^3*d^7 + 252*A*a^3*e^7 + 3*(3*B*b*c^2 + A
*c^3)*d^6*e + 6*(B*b^2*c + (B*a + A*b)*c^2)*d^5*e^2 + 2*(B*b^3 + 3*A*a*c^2
+ 3*(2*B*a*b + A*b^2)*c)*d^4*e^3 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*
b)*c)*d^3*e^4 + 21*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^5 + 28*(B*a^3 + 3*A*
a^2*b)*d*e^6 + 210*(7*B*c^3*d*e^6 + 3*(3*B*b*c^2 + A*c^3)*e^7)*x^6 + 252*(7
*B*c^3*d^2*e^5 + 3*(3*B*b*c^2 + A*c^3)*d*e^6 + 6*(B*b^2*c + (B*a + A*b)*c^2
)*e^7)*x^5 + 210*(7*B*c^3*d^3*e^4 + 3*(3*B*b*c^2 + A*c^3)*d^2*e^5 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^6 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c
)*e^7)*x^4 + 120*(7*B*c^3*d^4*e^3 + 3*(3*B*b*c^2 + A*c^3)*d^3*e^4 + 6*(B*b^
2*c + (B*a + A*b)*c^2)*d^2*e^5 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)
*c)*d*e^6 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^7)*x^3 + 45*(7*
B*c^3*d^5*e^2 + 3*(3*B*b*c^2 + A*c^3)*d^4*e^3 + 6*(B*b^2*c + (B*a + A*b)*c^
2)*d^3*e^4 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^5 + 3*(3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^6 + 21*(B*a^2*b + A*a*b^2 + A*a
^2*c)*e^7)*x^2 + 10*(7*B*c^3*d^6*e + 3*(3*B*b*c^2 + A*c^3)*d^5*e^2 + 6*(B*b
^2*c + (B*a + A*b)*c^2)*d^4*e^3 + 2*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2
)*c)*d^3*e^4 + 3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^5 + 21*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^6 + 28*(B*a^3 + 3*A*a^2*b)*e^7)*x)/(e^18*x
^10 + 10*d*e^17*x^9 + 45*d^2*e^16*x^8 + 120*d^3*e^15*x^7 + 210*d^4*e^14*x^6
 + 252*d^5*e^13*x^5 + 210*d^6*e^12*x^4 + 120*d^7*e^11*x^3 + 45*d^8*e^10*x^2
 + 10*d^9*e^9*x + d^10*e^8)
```

mupad [**B**] time = 2.68, size = 1153, normalized size = 2.08

$$-\frac{\frac{28\,B\,a^{3}\,d\,e^{6}+252\,A\,a^{3}\,e^{7}+21\,B\,a^{2}\,b\,d^{2}\,e^{5}+84\,A\,a^{2}\,b\,d\,e^{6}+9\,B\,a^{2}\,c\,d^{3}\,e^{4}+21\,A\,a^{2}\,c\,d^{2}\,e^{5}+9\,B\,a\,b^{2}\,d^{3}\,e^{4}+21\,A\,a\,b^{2}\,d^{2}\,e^{5}+12\,B\,a\,b\,c\,d^{4}\,e^{3}+18\,A\,a\,b\,c\,d^{3}\,e^{4}+6}{2520\,e^{8}}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^3)/(d + e*x)^11,x)
```

```
[Out] -((252*A*a^3*e^7 + 7*B*c^3*d^7 + 28*B*a^3*d*e^6 + 3*A*c^3*d^6*e + 3*A*b^3*d
^3*e^4 + 2*B*b^3*d^4*e^3 + 21*A*a*b^2*d^2*e^5 + 6*A*a*c^2*d^4*e^3 + 21*A*a^
2*c*d^2*e^5 + 9*B*a*b^2*d^3*e^4 + 21*B*a^2*b*d^2*e^5 + 6*A*b*c^2*d^5*e^2 +
6*A*b^2*c*d^4*e^3 + 6*B*a*c^2*d^5*e^2 + 9*B*a^2*c*d^3*e^4 + 6*B*b^2*c*d^5*e
^2 + 84*A*a^2*b*d*e^6 + 9*B*b*c^2*d^6*e + 18*A*a*b*c*d^3*e^4 + 12*B*a*b*c*d
^4*e^3)/(2520*e^8) + (x^4*(2*B*b^3*e^3 + 7*B*c^3*d^3 + 6*A*a*c^2*e^3 + 6*A*
b^2*c*e^3 + 3*A*c^3*d^2*e + 12*B*a*b*c*e^3 + 6*A*b*c^2*d*e^2 + 6*B*a*c^2*d*
e^2 + 9*B*b*c^2*d^2*e + 6*B*b^2*c*d*e^2))/(12*e^4) + (x*(28*B*a^3*e^6 + 7*B
*c^3*d^6 + 84*A*a^2*b*e^6 + 3*A*c^3*d^5*e + 3*A*b^3*d^2*e^4 + 2*B*b^3*d^3*e
^3 + 6*A*a*c^2*d^3*e^3 + 9*B*a*b^2*d^2*e^4 + 6*A*b*c^2*d^4*e^2 + 6*A*b^2*c*
d^3*e^3 + 6*B*a*c^2*d^4*e^2 + 9*B*a^2*c*d^2*e^4 + 6*B*b^2*c*d^4*e^2 + 21*A*
a*b^2*d*e^5 + 21*A*a^2*c*d*e^5 + 21*B*a^2*b*d*e^5 + 9*B*b*c^2*d^5*e + 18*A*
a*b*c*d^2*e^4 + 12*B*a*b*c*d^3*e^3))/(252*e^7) + (x^2*(7*B*c^3*d^5 + 21*A*a
*b^2*e^5 + 21*A*a^2*c*e^5 + 21*B*a^2*b*e^5 + 3*A*b^3*d*e^4 + 3*A*c^3*d^4*e
+ 2*B*b^3*d^2*e^3 + 6*A*a*c^2*d^2*e^3 + 6*A*b*c^2*d^3*e^2 + 6*A*b^2*c*d^2*e
^3 + 6*B*a*c^2*d^3*e^2 + 6*B*b^2*c*d^3*e^2 + 9*B*a*b^2*d*e^4 + 9*B*a^2*c*d*
e^4 + 9*B*b*c^2*d^4*e + 12*B*a*b*c*d^2*e^3 + 18*A*a*b*c*d*e^4))/(56*e^6) +
(x^5*(7*B*c^3*d^2 + 3*A*c^3*d*e + 6*A*b*c^2*e^2 + 6*B*a*c^2*e^2 + 6*B*b^2*c
*e^2 + 9*B*b*c^2*d*e))/(10*e^3) + (x^3*(3*A*b^3*e^4 + 7*B*c^3*d^4 + 9*B*a*b
^2*e^4 + 9*B*a^2*c*e^4 + 3*A*c^3*d^3*e + 2*B*b^3*d*e^3 + 6*A*b*c^2*d^2*e^2
+ 6*B*a*c^2*d^2*e^2 + 6*B*b^2*c*d^2*e^2 + 18*A*a*b*c*e^4 + 6*A*a*c^2*d*e^3
+ 6*A*b^2*c*d*e^3 + 9*B*b*c^2*d^3*e + 12*B*a*b*c*d*e^3))/(21*e^5) + (c^2*x^
6*(3*A*c*e + 9*B*b*e + 7*B*c*d))/(12*e^2) + (B*c^3*x^7)/(3*e))/(d^10 + e^10
*x^10 + 10*d*e^9*x^9 + 45*d^8*e^2*x^2 + 120*d^7*e^3*x^3 + 210*d^6*e^4*x^4 +
 252*d^5*e^5*x^5 + 210*d^4*e^6*x^6 + 120*d^3*e^7*x^7 + 45*d^2*e^8*x^8 + 10*
d^9*e*x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(c*x**2+b*x+a)**3/(e*x+d)**11,x)
```

```
[Out] Timed out
```

3.2350 $\int x(d+ex)^m\left(a+bx+cx^2\right)dx$

Optimal. Leaf size=121

$$\frac{(d+ex)^{m+2}\left(3cd^2-e(2bd-ae)\right)}{e^4(m+2)}-\frac{d(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{(3cd-be)(d+ex)^{m+3}}{e^4(m+3)}+\frac{c(d+ex)^{m+4}}{e^4(m+4)}$$

```
[Out] -d*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(1+m)/e^4/(1+m)+(3*c*d^2-e*(-a*e+2*b*d))*(e*
x+d)^(2+m)/e^4/(2+m)-(-b*e+3*c*d)*(e*x+d)^(3+m)/e^4/(3+m)+c*(e*x+d)^(4+m)/e
^4/(4+m)
```

Rubi [A] time = 0.08, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{d(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(3cd^2-e(2bd-ae)\right)}{e^4(m+2)}-\frac{(3cd-be)(d+ex)^{m+3}}{e^4(m+3)}+\frac{c(d+ex)^{m+4}}{e^4(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -((d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) + ((3*c*d^2
- e*(2*b*d - a*e))*(d + e*x)^(2 + m))/(e^4*(2 + m)) - ((3*c*d - b*e)*(d + e
*x)^(3 + m))/(e^4*(3 + m)) + (c*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^m\left(a+bx+cx^2\right)dx &= \int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^{1+m}}{e^3}+\frac{(-3c}{}\right.\\ &= -\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^{2+m}}{e^4(2+m)}-\frac{(3cd-}{e}\end{aligned}$$

Mathematica [A] time = 0.24, size = 142, normalized size = 1.17

$$\frac{(d+ex)^{m+1}\left(e(m+4)\left(ae(m+3)(e(m+1)x-d)+b\left(2d^2-2de(m+1)x+e^2\left(m^2+3m+2\right)x^2\right)\right)+c\left(-6d^3+6d^2\right.\right.}{e^4(m+1)(m+2)(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(c*(-6*d^3 + 6*d^2*e*(1 + m)*x - 3*d*e^2*(2 + 3*m + m^2)
*x^2 + e^3*(6 + 11*m + 6*m^2 + m^3)*x^3) + e*(4 + m)*(a*e*(3 + m)*(-d + e*(
1 + m)*x) + b*(2*d^2 - 2*d*e*(1 + m)*x + e^2*(2 + 3*m + m^2)*x^2))))/(e^4*(
1 + m)*(2 + m)*(3 + m)*(4 + m))
```

fricas [B] time = 1.19, size = 342, normalized size = 2.83

$$-\frac{\left(ad^2e^2m^2+6\,cd^4-8\,bd^3e+12\,ad^2e^2-\left(ce^4m^3+6\,ce^4m^2+11\,ce^4m+6\,ce^4\right)x^4-\left(8\,be^4+\left(cde^3+be^4\right)m^3+\left(3\,c\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] -(a*d^2*e^2*m^2 + 6*c*d^4 - 8*b*d^3*e + 12*a*d^2*e^2 - (c*e^4*m^3 + 6*c*e^4
*m^2 + 11*c*e^4*m + 6*c*e^4)*x^4 - (8*b*e^4 + (c*d*e^3 + b*e^4)*m^3 + (3*c*
d*e^3 + 7*b*e^4)*m^2 + 2*(c*d*e^3 + 7*b*e^4)*m)*x^3 - (12*a*e^4 + (b*d*e^3
+ a*e^4)*m^3 - (3*c*d^2*e^2 - 5*b*d*e^3 - 8*a*e^4)*m^2 - (3*c*d^2*e^2 - 4*b
*d*e^3 - 19*a*e^4)*m)*x^2 - (2*b*d^3*e - 7*a*d^2*e^2)*m - (a*d*e^3*m^3 - (2
*b*d^2*e^2 - 7*a*d*e^3)*m^2 + 2*(3*c*d^3*e - 4*b*d^2*e^2 + 6*a*d*e^3)*m)*x)
*(e*x + d)^m/(e^4*m^4 + 10*e^4*m^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [**B**] time = 0.20, size = 606, normalized size = 5.01

$$\frac{(xe+d)^m cm^3x^4e^4 + (xe+d)^m cdm^3x^3e^3 + (xe+d)^m bm^3x^3e^4 + 6\,(xe+d)^m cm^2x^4e^4 + (xe+d)^m bdm^3x^2e^3 + 3\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*c*m^3*x^4*e^4 + (x*e + d)^m*c*d*m^3*x^3*e^3 + (x*e + d)^m*b*m^
3*x^3*e^4 + 6*(x*e + d)^m*c*m^2*x^4*e^4 + (x*e + d)^m*b*d*m^3*x^2*e^3 + 3*(
x*e + d)^m*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*c*d^2*m^2*x^2*e^2 + (x*e + d)^m*
a*m^3*x^2*e^4 + 7*(x*e + d)^m*b*m^2*x^3*e^4 + 11*(x*e + d)^m*c*m*x^4*e^4 +
(x*e + d)^m*a*d*m^3*x*e^3 + 5*(x*e + d)^m*b*d*m^2*x^2*e^3 + 2*(x*e + d)^m*c
*d*m*x^3*e^3 - 2*(x*e + d)^m*b*d^2*m^2*x*e^2 - 3*(x*e + d)^m*c*d^2*m*x^2*e^
2 + 6*(x*e + d)^m*c*d^3*m*x*e + 8*(x*e + d)^m*a*m^2*x^2*e^4 + 14*(x*e + d)^
m*b*m*x^3*e^4 + 6*(x*e + d)^m*c*x^4*e^4 + 7*(x*e + d)^m*a*d*m^2*x*e^3 + 4*(
x*e + d)^m*b*d*m*x^2*e^3 - (x*e + d)^m*a*d^2*m^2*e^2 - 8*(x*e + d)^m*b*d^2*
m*x*e^2 + 2*(x*e + d)^m*b*d^3*m*e - 6*(x*e + d)^m*c*d^4 + 19*(x*e + d)^m*a*
m*x^2*e^4 + 8*(x*e + d)^m*b*x^3*e^4 + 12*(x*e + d)^m*a*d*m*x*e^3 - 7*(x*e +
 d)^m*a*d^2*m*e^2 + 8*(x*e + d)^m*b*d^3*e + 12*(x*e + d)^m*a*x^2*e^4 - 12*(
x*e + d)^m*a*d^2*e^2)/(m^4*e^4 + 10*m^3*e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^
4)
```

maple [**B**] time = 0.05, size = 281, normalized size = 2.32

$$-\frac{\left(-c\,e^3m^3x^3 - b\,e^3m^3x^2 - 6c\,e^3m^2x^3 - a\,e^3m^3x - 7b\,e^3m^2x^2 + 3cd\,e^2m^2x^2 - 11c\,e^3m\,x^3 - 8a\,e^3m^2x + 2bd\,e^2m^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^m*(c*x^2+b*x+a),x)
```

```
[Out] -(e*x+d)^(m+1)*(-c*e^3*m^3*x^3-b*e^3*m^3*x^2-6*c*e^3*m^2*x^3-a*e^3*m^3*x-7*
b*e^3*m^2*x^2+3*c*d*e^2*m^2*x^2-11*c*e^3*m*x^3-8*a*e^3*m^2*x+2*b*d*e^2*m^2*
x-14*b*e^3*m*x^2+9*c*d*e^2*m*x^2-6*c*e^3*x^3+a*d*e^2*m^2-19*a*e^3*m*x+10*b*
d*e^2*m*x-8*b*e^3*x^2-6*c*d^2*e*m*x+6*c*d*e^2*x^2+7*a*d*e^2*m-12*a*e^3*x-2*
b*d^2*e*m+8*b*d*e^2*x-6*c*d^2*e*x+12*a*d*e^2-8*b*d^2*e+6*c*d^3)/e^4/(m^4+10
*m^3+35*m^2+50*m+24)
```

maxima [**A**] time = 0.65, size = 215, normalized size = 1.78

$$\frac{\left(e^2(m+1)x^2 + demx - d^2\right)(ex+d)^m a}{\left(m^2+3\,m+2\right)e^2} + \frac{\left(\left(m^2+3\,m+2\right)e^3x^3 + \left(m^2+m\right)de^2x^2 - 2\,d^2emx + 2\,d^3\right)(ex+d)^m b}{\left(m^3+6\,m^2+11\,m+6\right)e^3} +$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*a/((m^2 + 3*m + 2)*e^2) + ((m
^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d
)^m*b/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 +
(m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d
^4)*(e*x + d)^m*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.55, size = 300, normalized size = 2.48

$$(d+e\,x)^m\left(\frac{c\,x^4\,\left(m^3+6\,m^2+11\,m+6\right)}{m^4+10\,m^3+35\,m^2+50\,m+24}-\frac{d^2\,\left(6\,c\,d^2-2\,b\,d\,e\,m-8\,b\,d\,e+a\,e^2\,m^2+7\,a\,e^2\,m+12\,a\,e^2\right)}{e^4\,\left(m^4+10\,m^3+35\,m^2+50\,m+24\right)}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] (d + e*x)^m*((c*x^4*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4
 + 24) - (d^2*(12*a*e^2 + 6*c*d^2 + a*e^2*m^2 - 8*b*d*e + 7*a*e^2*m - 2*b*d
*e*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^3*(4*b*e + b*e*m + c*
d*m)*(3*m + m^2 + 2))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (x^2*(m + 1
)*(12*a*e^2 + a*e^2*m^2 + 7*a*e^2*m - 3*c*d^2*m + b*d*e*m^2 + 4*b*d*e*m))/(
e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (d*m*x*(12*a*e^2 + 6*c*d^2 + a*e
^2*m^2 - 8*b*d*e + 7*a*e^2*m - 2*b*d*e*m))/(e^3*(50*m + 35*m^2 + 10*m^3 + m
^4 + 24)))
```

sympy [A] time = 3.38, size = 3267, normalized size = 27.00

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(a*x**2/2 + b*x**3/3 + c*x**4/4), Eq(e, 0)), (-a*d*e**2/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 3*a*e**3*x/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*b*d**2*e/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*b*d*e**2*x/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*b*e**3*x**
2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*c*d**3*
log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
+ 11*c*d**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) +
 18*c*d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2
+ 6*e**7*x**3) + 27*c*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x*
*2 + 6*e**7*x**3) + 18*c*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e*
*5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*c*d*e**2*x**2/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*c*e**3*x**3*log(d/e + x)/(6*
d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (-a
*d*e**2/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 2*a*e**3*x/(2*d**2*e**4
+ 4*d*e**5*x + 2*e**6*x**2) + 2*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e*
*5*x + 2*e**6*x**2) + 3*b*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) +
 4*b*d*e**2*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*b*d
*e**2*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*b*e**3*x**2*log(d/e +
x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*c*d**3*log(d/e + x)/(2*d**2
*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 9*c*d**3/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) - 12*c*d**2*e*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*
x**2) - 12*c*d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*c*d*e**2
*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*c*e**3*x**3
/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2), Eq(m, -3)), (2*a*d*e**2*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 2*a*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*a*e**3*x*
log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*
e**5*x) - 4*b*d**2*e/(2*d*e**4 + 2*e**5*x) - 4*b*d*e**2*x*log(d/e + x)/(2*d
*e**4 + 2*e**5*x) + 2*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*c*d**3*log(d/e
+ x)/(2*d*e**4 + 2*e**5*x) + 6*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*c*d**2*e*x*
log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 3*c*d*e**2*x**2/(2*d*e**4 + 2*e**5*x)
+ c*e**3*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (-a*d*log(d/e + x)/e**2 +
a*x/e + b*d**2*log(d/e + x)/e**3 - b*d*x/e**2 + b*x**2/(2*e) - c*d**3*log(d
/e + x)/e**4 + c*d**2*x/e**3 - c*d*x**2/(2*e**2) + c*x**3/(3*e), Eq(m, -1))
, (-a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) - 7*a*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*a*d**2*e**2*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*d*e**3*m*
*3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) + 7*a*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4
*m**2 + 50*e**4*m + 24*e**4) + 12*a*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10
*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + a*e**4*m**3*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*a
*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) + 19*a*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*a*e**4*x**2*(d + e*x)**m/(e**4*
m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*b*d**3*e*m*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ 8*b*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) - 2*b*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*b*d**2*e**2*m*x*(d + e*x)**m/(e
**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b*d*e**3*m*
*3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
 24*e**4) + 5*b*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 3
5*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*m
**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + b*e**4*m**3*x**3
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 7*b*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 14*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*b*e**4*x**3*(d + e*x)**m
/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*c*d**4
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 6*c*d**3*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 +
 50*e**4*m + 24*e**4) - 3*c*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*c*d**2*e**2*m*x**2*(d
 + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
+ c*d*e**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2
+ 50*e**4*m + 24*e**4) + 3*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*c*d*e**3*m*x**3*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + c*e
**4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 6*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*c*e**4*m*x**4*(d + e*x)**m/(e**
4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*c*e**4*x**4
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4), True))
```

3.2351 $\int x(d+ex)^5\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^7\left(3cd^2-e(2bd-ae)\right)}{7e^4}-\frac{d(d+ex)^6\left(ae^2-bde+cd^2\right)}{6e^4}-\frac{(d+ex)^8(3cd-be)}{8e^4}+\frac{c(d+ex)^9}{9e^4}$$

```
[Out] -1/6*d*(a*e^2-b*d*e+c*d^2)*(e*x+d)^6/e^4+1/7*(3*c*d^2-e*(-a*e+2*b*d))*(e*x+
d)^7/e^4-1/8*(-b*e+3*c*d)*(e*x+d)^8/e^4+1/9*c*(e*x+d)^9/e^4
```

Rubi [A] time = 0.16, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{(d+ex)^7\left(3cd^2-e(2bd-ae)\right)}{7e^4}-\frac{d(d+ex)^6\left(ae^2-bde+cd^2\right)}{6e^4}-\frac{(d+ex)^8(3cd-be)}{8e^4}+\frac{c(d+ex)^9}{9e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^5*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^6)/(6*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^7)/(7*e^4) - ((3*c*d - b*e)*(d + e*x)^8)/(8*e^4) + (c*(d + e
*x)^9)/(9*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^5\left(a+bx+cx^2\right)\,dx&=\int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^5}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^6}{e^3}+\frac{(-3cd+\right.\\&=-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^6}{6e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^7}{7e^4}-\frac{(3cd-be)(d}{8e^4}\end{aligned}$$

Mathematica [A] time = 0.04, size = 166, normalized size = 1.61

$$\frac{5}{6}de^2x^6\left(ae^2+2bde+2cd^2\right)+d^2ex^5\left(2ae^2+2bde+cd^2\right)+\frac{1}{7}e^3x^7\left(ae^2+5bde+10cd^2\right)+\frac{1}{4}d^3x^4\left(10ae^2+5bde+cd^2\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^5*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^5*x^2)/2 + (d^4*(b*d + 5*a*e)*x^3)/3 + (d^3*(c*d^2 + 5*b*d*e + 10*a*e^
2)*x^4)/4 + d^2*e*(c*d^2 + 2*b*d*e + 2*a*e^2)*x^5 + (5*d*e^2*(2*c*d^2 + 2*b
*d*e + a*e^2)*x^6)/6 + (e^3*(10*c*d^2 + 5*b*d*e + a*e^2)*x^7)/7 + (e^4*(5*c
*d + b*e)*x^8)/8 + (c*e^5*x^9)/9
```

fricas [A] time = 0.61, size = 186, normalized size = 1.81

$$\frac{1}{9}x^9e^5c+\frac{5}{8}x^8e^4dc+\frac{1}{8}x^8e^5b+\frac{10}{7}x^7e^3d^2c+\frac{5}{7}x^7e^4db+\frac{1}{7}x^7e^5a+\frac{5}{3}x^6e^2d^3c+\frac{5}{3}x^6e^3d^2b+\frac{5}{6}x^6e^4da+x^5ed^4c+2x^5e^2d^3b+2x^5$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/9*x^9*e^5*c + 5/8*x^8*e^4*d*c + 1/8*x^8*e^5*b + 10/7*x^7*e^3*d^2*c + 5/7*
x^7*e^4*d*b + 1/7*x^7*e^5*a + 5/3*x^6*e^2*d^3*c + 5/3*x^6*e^3*d^2*b + 5/6*x
^6*e^4*d*a + x^5*e*d^4*c + 2*x^5*e^2*d^3*b + 2*x^5*e^3*d^2*a + 1/4*x^4*d^5*
c + 5/4*x^4*e*d^4*b + 5/2*x^4*e^2*d^3*a + 1/3*x^3*d^5*b + 5/3*x^3*e*d^4*a +
 1/2*x^2*d^5*a
```

giac [A] time = 0.15, size = 177, normalized size = 1.72

$$\frac{1}{9}cx^9e^5+\frac{5}{8}cdx^8e^4+\frac{10}{7}cd^2x^7e^3+\frac{5}{3}cd^3x^6e^2+cd^4x^5e+\frac{1}{4}cd^5x^4+\frac{1}{8}bx^8e^5+\frac{5}{7}bdx^7e^4+\frac{5}{3}bd^2x^6e^3+2bd^3x^5e^2+\frac{5}{4}bd^4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/9*c*x^9*e^5 + 5/8*c*d*x^8*e^4 + 10/7*c*d^2*x^7*e^3 + 5/3*c*d^3*x^6*e^2 +
c*d^4*x^5*e + 1/4*c*d^5*x^4 + 1/8*b*x^8*e^5 + 5/7*b*d*x^7*e^4 + 5/3*b*d^2*x
^6*e^3 + 2*b*d^3*x^5*e^2 + 5/4*b*d^4*x^4*e + 1/3*b*d^5*x^3 + 1/7*a*x^7*e^5
+ 5/6*a*d*x^6*e^4 + 2*a*d^2*x^5*e^3 + 5/2*a*d^3*x^4*e^2 + 5/3*a*d^4*x^3*e +
 1/2*a*d^5*x^2
```

maple [A] time = 0.04, size = 172, normalized size = 1.67

$$\frac{ce^5x^9}{9}+\frac{ad^5x^2}{2}+\frac{\left(e^5b+5de^4c\right)x^8}{8}+\frac{\left(e^5a+5de^4b+10d^2e^3c\right)x^7}{7}+\frac{\left(5de^4a+10bd^2e^3+10d^3e^2c\right)x^6}{6}+\left(10d^2e^3a+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^5*(c*x^2+b*x+a),x)
```

```
[Out] 1/9*e^5*c*x^9+1/8*(b*e^5+5*c*d*e^4)*x^8+1/7*(a*e^5+5*b*d*e^4+10*c*d^2*e^3)*
x^7+1/6*(5*a*d*e^4+10*b*d^2*e^3+10*c*d^3*e^2)*x^6+1/5*(10*a*d^2*e^3+10*b*d^
3*e^2+5*c*d^4*e)*x^5+1/4*(10*a*d^3*e^2+5*b*d^4*e+c*d^5)*x^4+1/3*(5*a*d^4*e+
b*d^5)*x^3+1/2*d^5*a*x^2
```

maxima [A] time = 0.57, size = 168, normalized size = 1.63

$$\frac{1}{9}ce^5x^9+\frac{1}{8}\left(5cde^4+be^5\right)x^8+\frac{1}{2}ad^5x^2+\frac{1}{7}\left(10cd^2e^3+5bde^4+ae^5\right)x^7+\frac{5}{6}\left(2cd^3e^2+2bd^2e^3+ade^4\right)x^6+\left(cd^4e+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^5*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/9*c*e^5*x^9 + 1/8*(5*c*d*e^4 + b*e^5)*x^8 + 1/2*a*d^5*x^2 + 1/7*(10*c*d^2
*e^3 + 5*b*d*e^4 + a*e^5)*x^7 + 5/6*(2*c*d^3*e^2 + 2*b*d^2*e^3 + a*d*e^4)*x
^6 + (c*d^4*e + 2*b*d^3*e^2 + 2*a*d^2*e^3)*x^5 + 1/4*(c*d^5 + 5*b*d^4*e + 1
0*a*d^3*e^2)*x^4 + 1/3*(b*d^5 + 5*a*d^4*e)*x^3
```

mupad [B] time = 2.36, size = 160, normalized size = 1.55

$$x^3\left(\frac{bd^5}{3}+\frac{5aed^4}{3}\right)+x^8\left(\frac{be^5}{8}+\frac{5cde^4}{8}\right)+x^4\left(\frac{cd^5}{4}+\frac{5bd^4e}{4}+\frac{5ad^3e^2}{2}\right)+x^7\left(\frac{10cd^2e^3}{7}+\frac{5bde^4}{7}+\frac{ae^5}{7}\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^5*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^5)/3 + (5*a*d^4*e)/3) + x^8*((b*e^5)/8 + (5*c*d*e^4)/8) + x^4*((c
*d^5)/4 + (5*a*d^3*e^2)/2 + (5*b*d^4*e)/4) + x^7*((a*e^5)/7 + (10*c*d^2*e^3
)/7 + (5*b*d*e^4)/7) + (a*d^5*x^2)/2 + (c*e^5*x^9)/9 + d^2*e*x^5*(2*a*e^2 +
 c*d^2 + 2*b*d*e) + (5*d*e^2*x^6*(a*e^2 + 2*c*d^2 + 2*b*d*e))/6
```

sympy [B] time = 0.10, size = 192, normalized size = 1.86

$$\frac{ad^5x^2}{2}+\frac{ce^5x^9}{9}+x^8\left(\frac{be^5}{8}+\frac{5cde^4}{8}\right)+x^7\left(\frac{ae^5}{7}+\frac{5bde^4}{7}+\frac{10cd^2e^3}{7}\right)+x^6\left(\frac{5ade^4}{6}+\frac{5bd^2e^3}{3}+\frac{5cd^3e^2}{3}\right)+x^5\left(2ad^2e^3+2b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**5*(c*x**2+b*x+a),x)
```

```
[Out] a*d**5*x**2/2 + c*e**5*x**9/9 + x**8*(b*e**5/8 + 5*c*d*e**4/8) + x**7*(a*e*
*5/7 + 5*b*d*e**4/7 + 10*c*d**2*e**3/7) + x**6*(5*a*d*e**4/6 + 5*b*d**2*e**
3/3 + 5*c*d**3*e**2/3) + x**5*(2*a*d**2*e**3 + 2*b*d**3*e**2 + c*d**4*e) +
x**4*(5*a*d**3*e**2/2 + 5*b*d**4*e/4 + c*d**5/4) + x**3*(5*a*d**4*e/3 + b*d
**5/3)
```

3.2352 $\int x(d+ex)^4\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^6\left(3cd^2-e(2bd-ae)\right)}{6e^4}-\frac{d(d+ex)^5\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(3cd-be)}{7e^4}+\frac{c(d+ex)^8}{8e^4}$$

```
[Out] -1/5*d*(a*e^2-b*d*e+c*d^2)*(e*x+d)^5/e^4+1/6*(3*c*d^2-e*(-a*e+2*b*d))*(e*x+
d)^6/e^4-1/7*(-b*e+3*c*d)*(e*x+d)^7/e^4+1/8*c*(e*x+d)^8/e^4
```

Rubi [A] time = 0.13, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{(d+ex)^6\left(3cd^2-e(2bd-ae)\right)}{6e^4}-\frac{d(d+ex)^5\left(ae^2-bde+cd^2\right)}{5e^4}-\frac{(d+ex)^7(3cd-be)}{7e^4}+\frac{c(d+ex)^8}{8e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^5)/(5*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^6)/(6*e^4) - ((3*c*d - b*e)*(d + e*x)^7)/(7*e^4) + (c*(d + e
*x)^8)/(8*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^4\left(a+bx+cx^2\right)\,dx &= \int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^4}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^5}{e^3}+\frac{(-3cd\right.\\ &= -\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^5}{5e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^6}{6e^4}-\frac{(3cd-be)}{7e}\end{aligned}$$

Mathematica [A] time = 0.03, size = 140, normalized size = 1.36

$$\frac{1}{6}e^2x^6\left(ae^2+4bde+6cd^2\right)+\frac{2}{5}dex^5\left(2ae^2+3bde+2cd^2\right)+\frac{1}{4}d^2x^4\left(6ae^2+4bde+cd^2\right)+\frac{1}{3}d^3x^3(4ae+bd)+\frac{1}{2}ad^4x^2$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^4*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^4*x^2)/2 + (d^3*(b*d + 4*a*e)*x^3)/3 + (d^2*(c*d^2 + 4*b*d*e + 6*a*e^2
)*x^4)/4 + (2*d*e*(2*c*d^2 + 3*b*d*e + 2*a*e^2)*x^5)/5 + (e^2*(6*c*d^2 + 4*
b*d*e + a*e^2)*x^6)/6 + (e^3*(4*c*d + b*e)*x^7)/7 + (c*e^4*x^8)/8
```

fricas [A] time = 0.89, size = 149, normalized size = 1.45

$$\frac{1}{8}x^8e^4c+\frac{4}{7}x^7e^3dc+\frac{1}{7}x^7e^4b+x^6e^2d^2c+\frac{2}{3}x^6e^3db+\frac{1}{6}x^6e^4a+\frac{4}{5}x^5ed^3c+\frac{6}{5}x^5e^2d^2b+\frac{4}{5}x^5e^3da+\frac{1}{4}x^4d^4c+x^4ed^3b+\frac{3}{2}x^4e^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/8*x^8*e^4*c + 4/7*x^7*e^3*d*c + 1/7*x^7*e^4*b + x^6*e^2*d^2*c + 2/3*x^6*e
^3*d*b + 1/6*x^6*e^4*a + 4/5*x^5*e*d^3*c + 6/5*x^5*e^2*d^2*b + 4/5*x^5*e^3*
d*a + 1/4*x^4*d^4*c + x^4*e*d^3*b + 3/2*x^4*e^2*d^2*a + 1/3*x^3*d^4*b + 4/3
*x^3*e*d^3*a + 1/2*x^2*d^4*a
```

giac [A]   time = 0.16, size = 143, normalized size = 1.39

$$\frac{1}{8}cx^8e^4+\frac{4}{7}cdx^7e^3+cd^2x^6e^2+\frac{4}{5}cd^3x^5e+\frac{1}{4}cd^4x^4+\frac{1}{7}bx^7e^4+\frac{2}{3}bdx^6e^3+\frac{6}{5}bd^2x^5e^2+bd^3x^4e+\frac{1}{3}bd^4x^3+\frac{1}{6}ax^6e^4+\frac{4}{5}adx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/8*c*x^8*e^4 + 4/7*c*d*x^7*e^3 + c*d^2*x^6*e^2 + 4/5*c*d^3*x^5*e + 1/4*c*d
^4*x^4 + 1/7*b*x^7*e^4 + 2/3*b*d*x^6*e^3 + 6/5*b*d^2*x^5*e^2 + b*d^3*x^4*e
+ 1/3*b*d^4*x^3 + 1/6*a*x^6*e^4 + 4/5*a*d*x^5*e^3 + 3/2*a*d^2*x^4*e^2 + 4/3
*a*d^3*x^3*e + 1/2*a*d^4*x^2
```

maple [A]   time = 0.04, size = 139, normalized size = 1.35

$$\frac{c\,e^4x^8}{8}+\frac{a\,d^4x^2}{2}+\frac{\left(e^4b+4cd\,e^3\right)x^7}{7}+\frac{\left(e^4a+4d\,e^3b+6d^2e^2c\right)x^6}{6}+\frac{\left(4ad\,e^3+6d^2e^2b+4c\,d^3e\right)x^5}{5}+\frac{\left(6a\,d^2e^2+4d^3eb+\right.}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^4*(c*x^2+b*x+a),x)
```

```
[Out] 1/8*e^4*c*x^8+1/7*(b*e^4+4*c*d*e^3)*x^7+1/6*(a*e^4+4*b*d*e^3+6*c*d^2*e^2)*x
^6+1/5*(4*a*d*e^3+6*b*d^2*e^2+4*c*d^3*e)*x^5+1/4*(6*a*d^2*e^2+4*b*d^3*e+c*d
^4)*x^4+1/3*(4*a*d^3*e+b*d^4)*x^3+1/2*d^4*a*x^2
```

maxima [A]   time = 0.73, size = 138, normalized size = 1.34

$$\frac{1}{8}\,ce^4x^8+\frac{1}{7}\left(4\,cde^3+be^4\right)x^7+\frac{1}{2}\,ad^4x^2+\frac{1}{6}\left(6\,cd^2e^2+4\,bde^3+ae^4\right)x^6+\frac{2}{5}\left(2\,cd^3e+3\,bd^2e^2+2\,ade^3\right)x^5+\frac{1}{4}\left(cd^4+4\,b\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^4*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/8*c*e^4*x^8 + 1/7*(4*c*d*e^3 + b*e^4)*x^7 + 1/2*a*d^4*x^2 + 1/6*(6*c*d^2*
e^2 + 4*b*d*e^3 + a*e^4)*x^6 + 2/5*(2*c*d^3*e + 3*b*d^2*e^2 + 2*a*d*e^3)*x^
5 + 1/4*(c*d^4 + 4*b*d^3*e + 6*a*d^2*e^2)*x^4 + 1/3*(b*d^4 + 4*a*d^3*e)*x^3
```

mupad [B]   time = 0.06, size = 132, normalized size = 1.28

$$x^3\left(\frac{b\,d^4}{3}+\frac{4\,a\,e\,d^3}{3}\right)+x^7\left(\frac{b\,e^4}{7}+\frac{4\,c\,d\,e^3}{7}\right)+x^4\left(\frac{c\,d^4}{4}+b\,d^3\,e+\frac{3\,a\,d^2\,e^2}{2}\right)+x^6\left(c\,d^2\,e^2+\frac{2\,b\,d\,e^3}{3}+\frac{a\,e^4}{6}\right)+\frac{a\,d^4\,x^2}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^4*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^4)/3 + (4*a*d^3*e)/3) + x^7*((b*e^4)/7 + (4*c*d*e^3)/7) + x^4*((c
*d^4)/4 + (3*a*d^2*e^2)/2 + b*d^3*e) + x^6*((a*e^4)/6 + c*d^2*e^2 + (2*b*d*
e^3)/3) + (a*d^4*x^2)/2 + (c*e^4*x^8)/8 + (2*d*e*x^5*(2*a*e^2 + 2*c*d^2 + 3
*b*d*e))/5
```

sympy [A]   time = 0.09, size = 153, normalized size = 1.49

$$\frac{ad^4x^2}{2}+\frac{ce^4x^8}{8}+x^7\left(\frac{be^4}{7}+\frac{4cde^3}{7}\right)+x^6\left(\frac{ae^4}{6}+\frac{2bde^3}{3}+cd^2e^2\right)+x^5\left(\frac{4ade^3}{5}+\frac{6bd^2e^2}{5}+\frac{4cd^3e}{5}\right)+x^4\left(\frac{3ad^2e^2}{2}+bd^3e+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**4*(c*x**2+b*x+a),x)
```

```
[Out] a*d**4*x**2/2 + c*e**4*x**8/8 + x**7*(b*e**4/7 + 4*c*d*e**3/7) + x**6*(a*e*
*4/6 + 2*b*d*e**3/3 + c*d**2*e**2) + x**5*(4*a*d*e**3/5 + 6*b*d**2*e**2/5 +
 4*c*d**3*e/5) + x**4*(3*a*d**2*e**2/2 + b*d**3*e + c*d**4/4) + x**3*(4*a*d
**3*e/3 + b*d**4/3)
```

3.2353 $\int x(d+ex)^3\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=103

$$\frac{(d+ex)^5\left(3cd^2-e(2bd-ae)\right)}{5e^4}-\frac{d(d+ex)^4\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(3cd-be)}{6e^4}+\frac{c(d+ex)^7}{7e^4}$$

```
[Out] -1/4*d*(a*e^2-b*d*e+c*d^2)*(e*x+d)^4/e^4+1/5*(3*c*d^2-e*(-a*e+2*b*d))*(e*x+
d)^5/e^4-1/6*(-b*e+3*c*d)*(e*x+d)^6/e^4+1/7*c*(e*x+d)^7/e^4
```

Rubi [A] time = 0.10, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}} = 0.053$, Rules used = $\{771\}$

$$\frac{(d+ex)^5\left(3cd^2-e(2bd-ae)\right)}{5e^4}-\frac{d(d+ex)^4\left(ae^2-bde+cd^2\right)}{4e^4}-\frac{(d+ex)^6(3cd-be)}{6e^4}+\frac{c(d+ex)^7}{7e^4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] -(d*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^4)/(4*e^4) + ((3*c*d^2 - e*(2*b*d - a
*e))*(d + e*x)^5)/(5*e^4) - ((3*c*d - b*e)*(d + e*x)^6)/(6*e^4) + (c*(d + e
*x)^7)/(7*e^4)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^3\left(a+bx+cx^2\right)\,dx &= \int\left(-\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^3}{e^3}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^4}{e^3}+\frac{(-3cd+}{}\right.\\ &= -\frac{d\left(cd^2-bde+ae^2\right)(d+ex)^4}{4e^4}+\frac{\left(3cd^2-e(2bd-ae)\right)(d+ex)^5}{5e^4}-\frac{(3cd-be)(d}{6e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 109, normalized size = 1.06

$$\frac{1}{5}ex^5\left(ae^2+3bde+3cd^2\right)+\frac{1}{4}dx^4\left(3ae^2+3bde+cd^2\right)+\frac{1}{3}d^2x^3(3ae+bd)+\frac{1}{2}ad^3x^2+\frac{1}{6}e^2x^6(be+3cd)+\frac{1}{7}ce^3x^7$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^3*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^3*x^2)/2 + (d^2*(b*d + 3*a*e)*x^3)/3 + (d*(c*d^2 + 3*b*d*e + 3*a*e^2)*
x^4)/4 + (e*(3*c*d^2 + 3*b*d*e + a*e^2)*x^5)/5 + (e^2*(3*c*d + b*e)*x^6)/6
+ (c*e^3*x^7)/7
```

fricas [A] time = 0.76, size = 114, normalized size = 1.11

$$\frac{1}{7}x^7e^3c+\frac{1}{2}x^6e^2dc+\frac{1}{6}x^6e^3b+\frac{3}{5}x^5ed^2c+\frac{3}{5}x^5e^2db+\frac{1}{5}x^5e^3a+\frac{1}{4}x^4d^3c+\frac{3}{4}x^4ed^2b+\frac{3}{4}x^4e^2da+\frac{1}{3}x^3d^3b+x^3ed^2a+\frac{1}{2}x^2d^3a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/7*x^7*e^3*c + 1/2*x^6*e^2*d*c + 1/6*x^6*e^3*b + 3/5*x^5*e*d^2*c + 3/5*x^5
*e^2*d*b + 1/5*x^5*e^3*a + 1/4*x^4*d^3*c + 3/4*x^4*e*d^2*b + 3/4*x^4*e^2*d*
a + 1/3*x^3*d^3*b + x^3*e*d^2*a + 1/2*x^2*d^3*a
```

giac [A] time = 0.17, size = 111, normalized size = 1.08

$$\frac{1}{7}\,cx^{7}e^{3}+\frac{1}{2}\,cdx^{6}e^{2}+\frac{3}{5}\,cd^{2}x^{5}e+\frac{1}{4}\,cd^{3}x^{4}+\frac{1}{6}\,bx^{6}e^{3}+\frac{3}{5}\,bdx^{5}e^{2}+\frac{3}{4}\,bd^{2}x^{4}e+\frac{1}{3}\,bd^{3}x^{3}+\frac{1}{5}\,ax^{5}e^{3}+\frac{3}{4}\,adx^{4}e^{2}+ad^{2}x^{3}e+\frac{1}{2}\,a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/7*c*x^7*e^3 + 1/2*c*d*x^6*e^2 + 3/5*c*d^2*x^5*e + 1/4*c*d^3*x^4 + 1/6*b*x
^6*e^3 + 3/5*b*d*x^5*e^2 + 3/4*b*d^2*x^4*e + 1/3*b*d^3*x^3 + 1/5*a*x^5*e^3
+ 3/4*a*d*x^4*e^2 + a*d^2*x^3*e + 1/2*a*d^3*x^2
```

maple [A] time = 0.04, size = 106, normalized size = 1.03

$$\frac{c\,e^{3}x^{7}}{7}+\frac{a\,d^{3}x^{2}}{2}+\frac{\left(b\,e^{3}+3d\,e^{2}c\right)x^{6}}{6}+\frac{\left(a\,e^{3}+3bd\,e^{2}+3c\,d^{2}e\right)x^{5}}{5}+\frac{\left(3ad\,e^{2}+3b\,d^{2}e+c\,d^{3}\right)x^{4}}{4}+\frac{\left(3d^{2}ea+b\,d^{3}\right)x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^3*(c*x^2+b*x+a),x)
```

```
[Out] 1/7*e^3*c*x^7+1/6*(b*e^3+3*c*d*e^2)*x^6+1/5*(a*e^3+3*b*d*e^2+3*c*d^2*e)*x^5
+1/4*(3*a*d*e^2+3*b*d^2*e+c*d^3)*x^4+1/3*(3*a*d^2*e+b*d^3)*x^3+1/2*d^3*a*x^
2
```

maxima [A] time = 0.50, size = 105, normalized size = 1.02

$$\frac{1}{7}\,ce^{3}x^{7}+\frac{1}{6}\,\left(3\,cde^{2}+be^{3}\right)x^{6}+\frac{1}{2}\,ad^{3}x^{2}+\frac{1}{5}\,\left(3\,cd^{2}e+3\,bde^{2}+ae^{3}\right)x^{5}+\frac{1}{4}\,\left(cd^{3}+3\,bd^{2}e+3\,ade^{2}\right)x^{4}+\frac{1}{3}\,\left(bd^{3}+3\,ad\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^3*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/7*c*e^3*x^7 + 1/6*(3*c*d*e^2 + b*e^3)*x^6 + 1/2*a*d^3*x^2 + 1/5*(3*c*d^2*
e + 3*b*d*e^2 + a*e^3)*x^5 + 1/4*(c*d^3 + 3*b*d^2*e + 3*a*d*e^2)*x^4 + 1/3*
(b*d^3 + 3*a*d^2*e)*x^3
```

mupad [B] time = 2.24, size = 104, normalized size = 1.01

$$x^{3}\,\left(\frac{b\,d^{3}}{3}+a\,e\,d^{2}\right)+x^{6}\,\left(\frac{b\,e^{3}}{6}+\frac{c\,d\,e^{2}}{2}\right)+x^{4}\,\left(\frac{c\,d^{3}}{4}+\frac{3\,b\,d^{2}\,e}{4}+\frac{3\,a\,d\,e^{2}}{4}\right)+x^{5}\,\left(\frac{3\,c\,d^{2}\,e}{5}+\frac{3\,b\,d\,e^{2}}{5}+\frac{a\,e^{3}}{5}\right)+\frac{a\,d^{3}\,x^{2}}{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^3*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((b*d^3)/3 + a*d^2*e) + x^6*((b*e^3)/6 + (c*d*e^2)/2) + x^4*((c*d^3)/4
+ (3*a*d*e^2)/4 + (3*b*d^2*e)/4) + x^5*((a*e^3)/5 + (3*b*d*e^2)/5 + (3*c*d^
2*e)/5) + (a*d^3*x^2)/2 + (c*e^3*x^7)/7
```

sympy [A] time = 0.08, size = 116, normalized size = 1.13

$$\frac{ad^{3}x^{2}}{2}+\frac{ce^{3}x^{7}}{7}+x^{6}\left(\frac{be^{3}}{6}+\frac{cde^{2}}{2}\right)+x^{5}\left(\frac{ae^{3}}{5}+\frac{3bde^{2}}{5}+\frac{3cd^{2}e}{5}\right)+x^{4}\left(\frac{3ade^{2}}{4}+\frac{3bd^{2}e}{4}+\frac{cd^{3}}{4}\right)+x^{3}\left(ad^{2}e+\frac{bd^{3}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**3*(c*x**2+b*x+a),x)
```

```
[Out] a*d**3*x**2/2 + c*e**3*x**7/7 + x**6*(b*e**3/6 + c*d*e**2/2) + x**5*(a*e**3
/5 + 3*b*d*e**2/5 + 3*c*d**2*e/5) + x**4*(3*a*d*e**2/4 + 3*b*d**2*e/4 + c*d
**3/4) + x**3*(a*d**2*e + b*d**3/3)
```

3.2354 $\int x(d+ex)^2 \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=78

$$\frac{1}{4}x^4 \left(e(ae+2bd)+cd^2\right)+\frac{1}{3}dx^3(2ae+bd)+\frac{1}{2}ad^2x^2+\frac{1}{5}ex^5(be+2cd)+\frac{1}{6}ce^2x^6$$

```
[Out] 1/2*a*d^2*x^2+1/3*d*(2*a*e+b*d)*x^3+1/4*(c*d^2+e*(a*e+2*b*d))*x^4+1/5*e*(b*
e+2*c*d)*x^5+1/6*c*e^2*x^6
```

Rubi [A] time = 0.07, antiderivative size = 78, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{1}{4}x^4 \left(e(ae+2bd)+cd^2\right)+\frac{1}{3}dx^3(2ae+bd)+\frac{1}{2}ad^2x^2+\frac{1}{5}ex^5(be+2cd)+\frac{1}{6}ce^2x^6$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] (a*d^2*x^2)/2 + (d*(b*d + 2*a*e)*x^3)/3 + ((c*d^2 + e*(2*b*d + a*e))*x^4)/4
 + (e*(2*c*d + b*e)*x^5)/5 + (c*e^2*x^6)/6
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)^2 \left(a+bx+cx^2\right) dx &= \int \left(ad^2x+d(bd+2ae)x^2+\left(cd^2+e(2bd+ae)\right)x^3+e(2cd+be)x^4+ce^2x^5\right) \\ &= \frac{1}{2}ad^2x^2+\frac{1}{3}d(bd+2ae)x^3+\frac{1}{4}\left(cd^2+e(2bd+ae)\right)x^4+\frac{1}{5}e(2cd+be)x^5+\frac{1}{6}\end{aligned}$$

Mathematica [A] time = 0.02, size = 70, normalized size = 0.90

$$\frac{1}{60}x^2 \left(15x^2 \left(e(ae+2bd)+cd^2\right)+20dx(2ae+bd)+30ad^2+12ex^3(be+2cd)+10ce^2x^4\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)^2*(a + b*x + c*x^2),x]
```

```
[Out] (x^2*(30*a*d^2 + 20*d*(b*d + 2*a*e)*x + 15*(c*d^2 + e*(2*b*d + a*e))*x^2 +
12*e*(2*c*d + b*e)*x^3 + 10*c*e^2*x^4))/60
```

fricas [A] time = 1.10, size = 79, normalized size = 1.01

$$\frac{1}{6}x^6e^2c+\frac{2}{5}x^5edc+\frac{1}{5}x^5e^2b+\frac{1}{4}x^4d^2c+\frac{1}{2}x^4edb+\frac{1}{4}x^4e^2a+\frac{1}{3}x^3d^2b+\frac{2}{3}x^3eda+\frac{1}{2}x^2d^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/6*x^6*e^2*c + 2/5*x^5*e*d*c + 1/5*x^5*e^2*b + 1/4*x^4*d^2*c + 1/2*x^4*e*d
*b + 1/4*x^4*e^2*a + 1/3*x^3*d^2*b + 2/3*x^3*e*d*a + 1/2*x^2*d^2*a
```

giac [A] time = 0.15, size = 79, normalized size = 1.01

$$\frac{1}{6}\,cx^{6}e^{2}+\frac{2}{5}\,cdx^{5}e+\frac{1}{4}\,cd^{2}x^{4}+\frac{1}{5}\,bx^{5}e^{2}+\frac{1}{2}\,bdx^{4}e+\frac{1}{3}\,bd^{2}x^{3}+\frac{1}{4}\,ax^{4}e^{2}+\frac{2}{3}\,adx^{3}e+\frac{1}{2}\,ad^{2}x^{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*c*x^6*e^2 + 2/5*c*d*x^5*e + 1/4*c*d^2*x^4 + 1/5*b*x^5*e^2 + 1/2*b*d*x^4
*e + 1/3*b*d^2*x^3 + 1/4*a*x^4*e^2 + 2/3*a*d*x^3*e + 1/2*a*d^2*x^2
```

maple [A] time = 0.04, size = 73, normalized size = 0.94

$$\frac{c\,e^{2}x^{6}}{6}+\frac{a\,d^{2}x^{2}}{2}+\frac{\left(b\,e^{2}+2cde\right)x^{5}}{5}+\frac{\left(a\,e^{2}+2bde+c\,d^{2}\right)x^{4}}{4}+\frac{\left(2ade+b\,d^{2}\right)x^{3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)^2*(c*x^2+b*x+a),x)
```

```
[Out] 1/6*c*e^2*x^6+1/5*(b*e^2+2*c*d*e)*x^5+1/4*(a*e^2+2*b*d*e+c*d^2)*x^4+1/3*(2*
a*d*e+b*d^2)*x^3+1/2*a*d^2*x^2
```

maxima [A] time = 0.57, size = 72, normalized size = 0.92

$$\frac{1}{6}\,ce^{2}x^{6}+\frac{1}{5}\,\left(2\,cde+be^{2}\right)x^{5}+\frac{1}{2}\,ad^{2}x^{2}+\frac{1}{4}\,\left(cd^{2}+2\,bde+ae^{2}\right)x^{4}+\frac{1}{3}\,\left(bd^{2}+2\,ade\right)x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)^2*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/6*c*e^2*x^6 + 1/5*(2*c*d*e + b*e^2)*x^5 + 1/2*a*d^2*x^2 + 1/4*(c*d^2 + 2*
b*d*e + a*e^2)*x^4 + 1/3*(b*d^2 + 2*a*d*e)*x^3
```

mupad [B] time = 0.03, size = 73, normalized size = 0.94

$$x^4\,\left(\frac{c\,d^2}{4}+\frac{b\,d\,e}{2}+\frac{a\,e^2}{4}\right)+x^3\,\left(\frac{b\,d^2}{3}+\frac{2\,a\,e\,d}{3}\right)+x^5\,\left(\frac{b\,e^2}{5}+\frac{2\,c\,d\,e}{5}\right)+\frac{a\,d^2\,x^2}{2}+\frac{c\,e^2\,x^6}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)^2*(a + b*x + c*x^2),x)
```

```
[Out] x^4*((a*e^2)/4 + (c*d^2)/4 + (b*d*e)/2) + x^3*((b*d^2)/3 + (2*a*d*e)/3) + x
^5*((b*e^2)/5 + (2*c*d*e)/5) + (a*d^2*x^2)/2 + (c*e^2*x^6)/6
```

sympy [A] time = 0.08, size = 80, normalized size = 1.03

$$\frac{ad^{2}x^{2}}{2}+\frac{ce^{2}x^{6}}{6}+x^{5}\left(\frac{be^{2}}{5}+\frac{2cde}{5}\right)+x^{4}\left(\frac{ae^{2}}{4}+\frac{bde}{2}+\frac{cd^{2}}{4}\right)+x^{3}\left(\frac{2ade}{3}+\frac{bd^{2}}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)**2*(c*x**2+b*x+a),x)
```

```
[Out] a*d**2*x**2/2 + c*e**2*x**6/6 + x**5*(b*e**2/5 + 2*c*d*e/5) + x**4*(a*e**2/
4 + b*d*e/2 + c*d**2/4) + x**3*(2*a*d*e/3 + b*d**2/3)
```

3.2355 $\int x(d+ex)\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=47

$$\frac{1}{3}x^3(ae+bd)+\frac{1}{2}adx^2+\frac{1}{4}x^4(be+cd)+\frac{1}{5}cex^5$$

```
[Out] 1/2*a*d*x^2+1/3*(a*e+b*d)*x^3+1/4*(b*e+c*d)*x^4+1/5*c*e*x^5
```

Rubi [A] time = 0.04, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 17, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.059, Rules used = {765}

$$\frac{1}{3}x^3(ae+bd)+\frac{1}{2}adx^2+\frac{1}{4}x^4(be+cd)+\frac{1}{5}cex^5$$

Antiderivative was successfully verified.

```
[In] Int[x*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] (a*d*x^2)/2 + ((b*d + a*e)*x^3)/3 + ((c*d + b*e)*x^4)/4 + (c*e*x^5)/5
```

Rule 765

```
Int[((e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_
)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(e*x)^m*(f + g*x)*(a + b*x + c
*x^2)^p, x], x] /; FreeQ[{a, b, c, e, f, g, m}, x] && IntegerQ[p] && (GtQ[p
, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int x(d+ex)\left(a+bx+cx^2\right)\,dx&=\int\left(adx+(bd+ae)x^2+(cd+be)x^3+cex^4\right)\,dx\\&=\frac{1}{2}adx^2+\frac{1}{3}(bd+ae)x^3+\frac{1}{4}(cd+be)x^4+\frac{1}{5}cex^5\end{aligned}$$

Mathematica [A] time = 0.01, size = 41, normalized size = 0.87

$$\frac{1}{60}x^2\left(20x(ae+bd)+30ad+15x^2(be+cd)+12cex^3\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(d + e*x)*(a + b*x + c*x^2),x]
```

```
[Out] (x^2*(30*a*d + 20*(b*d + a*e)*x + 15*(c*d + b*e)*x^2 + 12*c*e*x^3))/60
```

fricas [A] time = 1.01, size = 43, normalized size = 0.91

$$\frac{1}{5}x^5ec+\frac{1}{4}x^4dc+\frac{1}{4}x^4eb+\frac{1}{3}x^3db+\frac{1}{3}x^3ea+\frac{1}{2}x^2da$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/5*x^5*e*c + 1/4*x^4*d*c + 1/4*x^4*e*b + 1/3*x^3*d*b + 1/3*x^3*e*a + 1/2*x
^2*d*a
```

giac [A] time = 0.17, size = 46, normalized size = 0.98

$$\frac{1}{5}cx^5e+\frac{1}{4}cdx^4+\frac{1}{4}bx^4e+\frac{1}{3}bdx^3+\frac{1}{3}ax^3e+\frac{1}{2}adx^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/5*c*x^5*e + 1/4*c*d*x^4 + 1/4*b*x^4*e + 1/3*b*d*x^3 + 1/3*a*x^3*e + 1/2*a
*d*x^2
```

maple [A] time = 0.04, size = 40, normalized size = 0.85

$$\frac{ce\,x^5}{5}+\frac{ad\,x^2}{2}+\frac{(be+cd)\,x^4}{4}+\frac{(ae+bd)\,x^3}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(e*x+d)*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*a*d*x^2+1/3*(a*e+b*d)*x^3+1/4*(b*e+c*d)*x^4+1/5*c*e*x^5
```

maxima [A] time = 0.60, size = 39, normalized size = 0.83

$$\frac{1}{5}cex^5+\frac{1}{4}(cd+be)x^4+\frac{1}{2}adx^2+\frac{1}{3}(bd+ae)x^3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/5*c*e*x^5 + 1/4*(c*d + b*e)*x^4 + 1/2*a*d*x^2 + 1/3*(b*d + a*e)*x^3
```

mupad [B] time = 0.04, size = 41, normalized size = 0.87

$$\frac{c\,e\,x^5}{5}+\left(\frac{b\,e}{4}+\frac{c\,d}{4}\right)\,x^4+\left(\frac{a\,e}{3}+\frac{b\,d}{3}\right)\,x^3+\frac{a\,d\,x^2}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(d + e*x)*(a + b*x + c*x^2),x)
```

```
[Out] x^3*((a*e)/3 + (b*d)/3) + x^4*((b*e)/4 + (c*d)/4) + (a*d*x^2)/2 + (c*e*x^5)
/5
```

sympy [A] time = 0.07, size = 42, normalized size = 0.89

$$\frac{adx^2}{2}+\frac{cex^5}{5}+x^4\left(\frac{be}{4}+\frac{cd}{4}\right)+x^3\left(\frac{ae}{3}+\frac{bd}{3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(e*x+d)*(c*x**2+b*x+a),x)
```

```
[Out] a*d*x**2/2 + c*e*x**5/5 + x**4*(b*e/4 + c*d/4) + x**3*(a*e/3 + b*d/3)
```

3.2356 $\int x\left(a+bx+cx^2\right)\,dx$

Optimal. Leaf size=25

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

```
[Out] 1/2*a*x^2+1/3*b*x^3+1/4*c*x^4
```

Rubi [A] time = 0.01, antiderivative size = 25, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 12, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.083, Rules used = {14}

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Antiderivative was successfully verified.

```
[In] Int[x*(a + b*x + c*x^2),x]
```

```
[Out] (a*x^2)/2 + (b*x^3)/3 + (c*x^4)/4
```

Rule 14

```
Int[(u_)*((c_.)*(x_))^(m_.), x_Symbol] :> Int[ExpandIntegrand[(c*x)^m*u, x]
, x] /; FreeQ[{c, m}, x] && SumQ[u] &&  !LinearQ[u, x] &&  !MatchQ[u, (a_)
+ (b_.)*(v_) /; FreeQ[{a, b}, x] && InverseFunctionQ[v]]
```

Rubi steps

$$\begin{aligned}\int x\left(a+bx+cx^2\right)\,dx&=\int \left(ax+bx^2+cx^3\right)\,dx\\&=\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}\end{aligned}$$

Mathematica [A] time = 0.00, size = 25, normalized size = 1.00

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Antiderivative was successfully verified.

```
[In] Integrate[x*(a + b*x + c*x^2),x]
```

```
[Out] (a*x^2)/2 + (b*x^3)/3 + (c*x^4)/4
```

fricas [A] time = 0.63, size = 19, normalized size = 0.76

$$\frac{1}{4}x^4c+\frac{1}{3}x^3b+\frac{1}{2}x^2a$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] 1/4*x^4*c + 1/3*x^3*b + 1/2*x^2*a
```

giac [A] time = 0.15, size = 19, normalized size = 0.76

$$\frac{1}{4}\,cx^4+\frac{1}{3}\,bx^3+\frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/4*c*x^4 + 1/3*b*x^3 + 1/2*a*x^2
```

maple [A] time = 0.04, size = 20, normalized size = 0.80

$$\frac{1}{4}c\,x^4+\frac{1}{3}b\,x^3+\frac{1}{2}a\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a),x)
```

```
[Out] 1/2*a*x^2+1/3*b*x^3+1/4*c*x^4
```

maxima [A] time = 0.65, size = 19, normalized size = 0.76

$$\frac{1}{4}\,cx^4+\frac{1}{3}\,bx^3+\frac{1}{2}\,ax^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] 1/4*c*x^4 + 1/3*b*x^3 + 1/2*a*x^2
```

mupad [B] time = 0.03, size = 19, normalized size = 0.76

$$\frac{x^2\,\left(3\,c\,x^2+4\,b\,x+6\,a\right)}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(a + b*x + c*x^2),x)
```

```
[Out] (x^2*(6*a + 4*b*x + 3*c*x^2))/12
```

sympy [A] time = 0.06, size = 19, normalized size = 0.76

$$\frac{ax^2}{2}+\frac{bx^3}{3}+\frac{cx^4}{4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a),x)
```

```
[Out] a*x**2/2 + b*x**3/3 + c*x**4/4
```

3.2357 $\int \frac{x\left(a+bx+cx^2\right)}{d+ex}\,dx$

Optimal. Leaf size=79

$$-\frac{d\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}+\frac{x\left(ae^2-bde+cd^2\right)}{e^3}-\frac{x^2(cd-be)}{2e^2}+\frac{cx^3}{3e}$$

```
[Out] (a*e^2-b*d*e+c*d^2)*x/e^3-1/2*(-b*e+c*d)*x^2/e^2+1/3*c*x^3/e-d*(a*e^2-b*d*e
+c*d^2)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.07, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{x\left(ae^2-bde+cd^2\right)}{e^3}-\frac{d\log(d+ex)\left(ae^2-bde+cd^2\right)}{e^4}-\frac{x^2(cd-be)}{2e^2}+\frac{cx^3}{3e}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] ((c*d^2 - b*d*e + a*e^2)*x)/e^3 - ((c*d - b*e)*x^2)/(2*e^2) + (c*x^3)/(3*e)
 - (d*(c*d^2 - b*d*e + a*e^2)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{d+ex}\,dx &= \int \left(\frac{cd^2-bde+ae^2}{e^3}+\frac{(-cd+be)x}{e^2}+\frac{cx^2}{e}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)}\right)dx\\ &= \frac{\left(cd^2-bde+ae^2\right)x}{e^3}-\frac{(cd-be)x^2}{2e^2}+\frac{cx^3}{3e}-\frac{d\left(cd^2-bde+ae^2\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.94

$$\frac{ex\left(3e(2ae-2bd+bex)+c\left(6d^2-3dex+2e^2x^2\right)\right)-6\log(d+ex)\left(de(ae-bd)+cd^3\right)}{6e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x),x]
```

```
[Out] (e*x*(3*e*(-2*b*d + 2*a*e + b*e*x) + c*(6*d^2 - 3*d*e*x + 2*e^2*x^2)) - 6*(
c*d^3 + d*e*(-(b*d) + a*e))*Log[d + e*x])/(6*e^4)
```

fricas [A] time = 0.97, size = 82, normalized size = 1.04

$$\frac{2\,ce^3x^3-3\left(cde^2-be^3\right)x^2+6\left(cd^2e-bde^2+ae^3\right)x-6\left(cd^3-bd^2e+ade^2\right)\log\left(ex+d\right)}{6\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="fricas")
```

```
[Out] 1/6*(2*c*e^3*x^3 - 3*(c*d*e^2 - b*e^3)*x^2 + 6*(c*d^2*e - b*d*e^2 + a*e^3)*
x - 6*(c*d^3 - b*d^2*e + a*d*e^2)*log(e*x + d))/e^4
```

giac [A] time = 0.18, size = 82, normalized size = 1.04

$$-\left(cd^3 - bd^2e + ade^2\right)e^{(-4)}\log\left(|xe + d|\right)+\frac{1}{6}\left(2\,cx^3e^2 - 3\,cdx^2e + 6\,cd^2x + 3\,bx^2e^2 - 6\,bdxe + 6\,axe^2\right)e^{(-3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="giac")
```

```
[Out] -(c*d^3 - b*d^2*e + a*d*e^2)*e^(-4)*log(abs(x*e + d)) + 1/6*(2*c*x^3*e^2 -
3*c*d*x^2*e + 6*c*d^2*x + 3*b*x^2*e^2 - 6*b*d*x*e + 6*a*x*e^2)*e^(-3)
```

maple [A] time = 0.04, size = 95, normalized size = 1.20

$$\frac{c\,x^3}{3e}+\frac{b\,x^2}{2e}-\frac{cd\,x^2}{2e^2}-\frac{ad\ln\left(ex+d\right)}{e^2}+\frac{ax}{e}+\frac{b\,d^2\ln\left(ex+d\right)}{e^3}-\frac{bdx}{e^2}-\frac{c\,d^3\ln\left(ex+d\right)}{e^4}+\frac{c\,d^2x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d),x)
```

```
[Out] 1/3*c*x^3/e+1/2/e*x^2*b-1/2/e^2*c*d*x^2+1/e*a*x-1/e^2*x*b*d+1/e^3*c*d^2*x-d
/e^2*ln(e*x+d)*a+d^2/e^3*ln(e*x+d)*b-d^3/e^4*ln(e*x+d)*c
```

maxima [A] time = 0.50, size = 81, normalized size = 1.03

$$\frac{2\,ce^2x^3 - 3\left(cde - be^2\right)x^2 + 6\left(cd^2 - bde + ae^2\right)x}{6\,e^3} - \frac{\left(cd^3 - bd^2e + ade^2\right)\log\left(ex + d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d),x, algorithm="maxima")
```

```
[Out] 1/6*(2*c*e^2*x^3 - 3*(c*d*e - b*e^2)*x^2 + 6*(c*d^2 - b*d*e + a*e^2)*x)/e^3
 - (c*d^3 - b*d^2*e + a*d*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 2.34, size = 85, normalized size = 1.08

$$x^2\left(\frac{b}{2\,e}-\frac{c\,d}{2\,e^2}\right)+x\left(\frac{a}{e}-\frac{d\left(\frac{b}{e}-\frac{c\,d}{e^2}\right)}{e}\right)-\frac{\ln\left(d+e\,x\right)\,\left(c\,d^3-b\,d^2\,e+a\,d\,e^2\right)}{e^4}+\frac{c\,x^3}{3\,e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x),x)
```

```
[Out] x^2*(b/(2*e) - (c*d)/(2*e^2)) + x*(a/e - (d*(b/e - (c*d)/e^2))/e) - (log(d
+ e*x)*(c*d^3 + a*d*e^2 - b*d^2*e))/e^4 + (c*x^3)/(3*e)
```

sympy [A] time = 0.24, size = 71, normalized size = 0.90

$$\frac{cx^3}{3e} - \frac{d\left(ae^2 - bde + cd^2\right)\log\left(d + ex\right)}{e^4} + x^2\left(\frac{b}{2e} - \frac{cd}{2e^2}\right) + x\left(\frac{a}{e} - \frac{bd}{e^2} + \frac{cd^2}{e^3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d),x)
```

```
[Out] c*x**3/(3*e) - d*(a*e**2 - b*d*e + c*d**2)*log(d + e*x)/e**4 + x**2*(b/(2*e
) - c*d/(2*e**2)) + x*(a/e - b*d/e**2 + c*d**2/e**3)
```

3.2358 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx$

Optimal. Leaf size=84

$$\frac{\log(d+ex)\left(3cd^2-e(2bd-ae)\right)}{e^4}+\frac{d\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}-\frac{x(2cd-be)}{e^3}+\frac{cx^2}{2e^2}$$

```
[Out] -(-b*e+2*c*d)*x/e^3+1/2*c*x^2/e^2+d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)+(3*c*d^
2-e*(-a*e+2*b*d))*ln(e*x+d)/e^4
```

Rubi [A] time = 0.09, antiderivative size = 84, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{d\left(ae^2-bde+cd^2\right)}{e^4(d+ex)}+\frac{\log(d+ex)\left(3cd^2-e(2bd-ae)\right)}{e^4}-\frac{x(2cd-be)}{e^3}+\frac{cx^2}{2e^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] -(((2*c*d - b*e)*x)/e^3) + (c*x^2)/(2*e^2) + (d*(c*d^2 - b*d*e + a*e^2))/(e
^4*(d + e*x)) + ((3*c*d^2 - e*(2*b*d - a*e))*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^2}\,dx &= \int \left(\frac{-2cd+be}{e^3}+\frac{cx}{e^2}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^2}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)}\right)dx\\ &= -\frac{(2cd-be)x}{e^3}+\frac{cx^2}{2e^2}+\frac{d\left(cd^2-bde+ae^2\right)}{e^4(d+ex)}+\frac{\left(3cd^2-e(2bd-ae)\right)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.06, size = 79, normalized size = 0.94

$$\frac{\frac{2\left(de(ae-bd)+cd^3\right)}{d+ex}+2\log(d+ex)\left(e(ae-2bd)+3cd^2\right)+2ex(be-2cd)+ce^2x^2}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^2,x]
```

```
[Out] (2*e*(-2*c*d + b*e)*x + c*e^2*x^2 + (2*(c*d^3 + d*e*(-(b*d) + a*e)))/(d + e
*x) + 2*(3*c*d^2 + e*(-2*b*d + a*e))*Log[d + e*x])/(2*e^4)
```

fricas [A] time = 1.07, size = 131, normalized size = 1.56

$$\frac{ce^3x^3+2\,cd^3-2\,bd^2e+2\,ade^2-\left(3\,cde^2-2\,be^3\right)x^2-2\left(2\,cd^2e-bde^2\right)x+2\left(3\,cd^3-2\,bd^2e+ade^2+\left(3\,cd^2e-\right.\right.}{2\left(e^5x+de^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="fricas")
```

```
[Out] 1/2*(c*e^3*x^3 + 2*c*d^3 - 2*b*d^2*e + 2*a*d*e^2 - (3*c*d*e^2 - 2*b*e^3)*x^
2 - 2*(2*c*d^2*e - b*d*e^2)*x + 2*(3*c*d^3 - 2*b*d^2*e + a*d*e^2 + (3*c*d^2
*e - 2*b*d*e^2 + a*e^3)*x)*log(e*x + d))/(e^5*x + d*e^4)
```

giac [A] time = 0.20, size = 131, normalized size = 1.56

$$\frac{1}{2}\left((xe+d)^2\left(c-\frac{2\left(3\,cde-be^2\right)e^{(-1)}}{xe+d}\right)e^{(-3)}-2\left(3\,cd^2-2\,bde+ae^2\right)e^{(-3)}\log\left(\frac{|xe+d|e^{(-1)}}{(xe+d)^2}\right)+2\left(\frac{cd^3e^2}{xe+d}-\frac{bd^2e^3}{xe+d}+\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="giac")
```

```
[Out] 1/2*((x*e + d)^2*(c - 2*(3*c*d*e - b*e^2)*e^(-1)/(x*e + d))*e^(-3) - 2*(3*c
*d^2 - 2*b*d*e + a*e^2)*e^(-3)*log(abs(x*e + d)*e^(-1)/(x*e + d)^2) + 2*(c*
d^3*e^2/(x*e + d) - b*d^2*e^3/(x*e + d) + a*d*e^4/(x*e + d))*e^(-5))*e^(-1)
```

maple [A] time = 0.05, size = 108, normalized size = 1.29

$$\frac{c\,x^2}{2e^2}+\frac{ad}{(ex+d)\,e^2}+\frac{a\ln(ex+d)}{e^2}-\frac{b\,d^2}{(ex+d)\,e^3}-\frac{2bd\ln(ex+d)}{e^3}+\frac{bx}{e^2}+\frac{c\,d^3}{(ex+d)\,e^4}+\frac{3c\,d^2\ln(ex+d)}{e^4}-\frac{2cdx}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^2,x)
```

```
[Out] 1/2*c*x^2/e^2+1/e^2*b*x-2/e^3*x*c*d+d/e^2/(e*x+d)*a-d^2/e^3/(e*x+d)*b+d^3/e
^4/(e*x+d)*c+1/e^2*ln(e*x+d)*a-2/e^3*ln(e*x+d)*b*d+3/e^4*ln(e*x+d)*c*d^2
```

maxima [A] time = 0.51, size = 85, normalized size = 1.01

$$\frac{cd^3-bd^2e+ade^2}{e^5x+de^4}+\frac{cex^2-2\,(2\,cd-be)x}{2\,e^3}+\frac{\left(3\,cd^2-2\,bde+ae^2\right)\log(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^2,x, algorithm="maxima")
```

```
[Out] (c*d^3 - b*d^2*e + a*d*e^2)/(e^5*x + d*e^4) + 1/2*(c*e*x^2 - 2*(2*c*d - b*e
)*x)/e^3 + (3*c*d^2 - 2*b*d*e + a*e^2)*log(e*x + d)/e^4
```

mupad [B] time = 2.34, size = 88, normalized size = 1.05

$$x\left(\frac{b}{e^2}-\frac{2\,c\,d}{e^3}\right)+\frac{c\,x^2}{2\,e^2}+\frac{\ln(d+e\,x)\,\left(3\,c\,d^2-2\,b\,d\,e+a\,e^2\right)}{e^4}+\frac{c\,d^3-b\,d^2\,e+a\,d\,e^2}{e\,\left(x\,e^4+d\,e^3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^2,x)
```

```
[Out] x*(b/e^2 - (2*c*d)/e^3) + (c*x^2)/(2*e^2) + (log(d + e*x)*(a*e^2 + 3*c*d^2
- 2*b*d*e))/e^4 + (c*d^3 + a*d*e^2 - b*d^2*e)/(e*(d*e^3 + e^4*x))
```

sympy [A] time = 0.42, size = 82, normalized size = 0.98

$$\frac{cx^2}{2e^2}+x\left(\frac{b}{e^2}-\frac{2cd}{e^3}\right)+\frac{ade^2-bd^2e+cd^3}{de^4+e^5x}+\frac{\left(ae^2-2bde+3cd^2\right)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**2,x)
```

```
[Out] c*x**2/(2*e**2) + x*(b/e**2 - 2*c*d/e**3) + (a*d*e**2 - b*d**2*e + c*d**3)/
(d*e**4 + e**5*x) + (a*e**2 - 2*b*d*e + 3*c*d**2)*log(d + e*x)/e**4
```

3.2359 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx$

Optimal. Leaf size=89

$$-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}+\frac{d\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{(3cd-be)\log(d+ex)}{e^4}+\frac{cx}{e^3}$$

```
[Out] c*x/e^3+1/2*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^2+(-3*c*d^2+e*(-a*e+2*b*d))/e
^4/(e*x+d)-(-b*e+3*c*d)*ln(e*x+d)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$\frac{d\left(ae^2-bde+cd^2\right)}{2e^4(d+ex)^2}-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}-\frac{(3cd-be)\log(d+ex)}{e^4}+\frac{cx}{e^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (c*x)/e^3 + (d*(c*d^2 - b*d*e + a*e^2))/(2*e^4*(d + e*x)^2) - (3*c*d^2 - e*
(2*b*d - a*e))/(e^4*(d + e*x)) - ((3*c*d - b*e)*Log[d + e*x])/e^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^3}\,dx &= \int \left(\frac{c}{e^3}-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^3}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^2}+\frac{-3cd+be}{e^3(d+ex)}\right)dx\\ &= \frac{cx}{e^3}+\frac{d\left(cd^2-bde+ae^2\right)}{2e^4(d+ex)^2}-\frac{3cd^2-e(2bd-ae)}{e^4(d+ex)}-\frac{(3cd-be)\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.05, size = 80, normalized size = 0.90

$$\frac{\frac{de(ae-bd)+cd^3}{(d+ex)^2}-\frac{2\left(e(ae-2bd)+3cd^2\right)}{d+ex}+2(be-3cd)\log(d+ex)+2cex}{2e^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^3,x]
```

```
[Out] (2*c*e*x + (c*d^3 + d*e*(-(b*d) + a*e))/(d + e*x)^2 - (2*(3*c*d^2 + e*(-2*b
*d + a*e)))/(d + e*x) + 2*(-3*c*d + b*e)*Log[d + e*x])/(2*e^4)
```

fricas [A] time = 0.87, size = 147, normalized size = 1.65

$$\frac{2\,ce^3x^3+4\,cde^2x^2-5\,cd^3+3\,bd^2e-ade^2-2\left(2\,cd^2e-2\,bde^2+ae^3\right)x-2\left(3\,cd^3-bd^2e+\left(3\,cde^2-be^3\right)x^2+2\,(3}{2\left(e^6x^2+2\,de^5x+d^2e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2*c*e^3*x^3 + 4*c*d*e^2*x^2 - 5*c*d^3 + 3*b*d^2*e - a*d*e^2 - 2*(2*c*d
^2*e - 2*b*d*e^2 + a*e^3)*x - 2*(3*c*d^3 - b*d^2*e + (3*c*d*e^2 - b*e^3)*x^
2 + 2*(3*c*d^2*e - b*d*e^2)*x)*log(e*x + d))/(e^6*x^2 + 2*d*e^5*x + d^2*e^4
)
```

giac [A] time = 0.15, size = 82, normalized size = 0.92

$$cxe^{(-3)} - (3\,cd - be)e^{(-4)}\log\left(|xe+d|\right) - \frac{\left(5\,cd^3 - 3\,bd^2e + ade^2 + 2\left(3\,cd^2e - 2\,bde^2 + ae^3\right)x\right)e^{(-4)}}{2\,(xe+d)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="giac")
```

```
[Out] c*x*e^(-3) - (3*c*d - b*e)*e^(-4)*log(abs(x*e + d)) - 1/2*(5*c*d^3 - 3*b*d^
2*e + a*d*e^2 + 2*(3*c*d^2*e - 2*b*d*e^2 + a*e^3)*x)*e^(-4)/(x*e + d)^2
```

maple [A] time = 0.05, size = 121, normalized size = 1.36

$$\frac{ad}{2\,(ex+d)^2\,e^2} - \frac{b\,d^2}{2\,(ex+d)^2\,e^3} + \frac{c\,d^3}{2\,(ex+d)^2\,e^4} - \frac{a}{(ex+d)\,e^2} + \frac{2bd}{(ex+d)\,e^3} + \frac{b\ln(ex+d)}{e^3} - \frac{3c\,d^2}{(ex+d)\,e^4} - \frac{3cd\ln(ex+}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^3,x)
```

```
[Out] c*x/e^3-1/e^2/(e*x+d)*a+2/e^3/(e*x+d)*b*d-3/e^4/(e*x+d)*c*d^2+1/2*d/e^2/(e*
x+d)^2*a-1/2*d^2/e^3/(e*x+d)^2*b+1/2*d^3/e^4/(e*x+d)^2*c+1/e^3*ln(e*x+d)*b-
3/e^4*ln(e*x+d)*c*d
```

maxima [A] time = 0.63, size = 96, normalized size = 1.08

$$-\frac{5\,cd^3 - 3\,bd^2e + ade^2 + 2\left(3\,cd^2e - 2\,bde^2 + ae^3\right)x}{2\left(e^6x^2 + 2\,de^5x + d^2e^4\right)} + \frac{cx}{e^3} - \frac{(3\,cd - be)\log(ex+d)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^3,x, algorithm="maxima")
```

```
[Out] -1/2*(5*c*d^3 - 3*b*d^2*e + a*d*e^2 + 2*(3*c*d^2*e - 2*b*d*e^2 + a*e^3)*x)/
(e^6*x^2 + 2*d*e^5*x + d^2*e^4) + c*x/e^3 - (3*c*d - b*e)*log(e*x + d)/e^4
```

mupad [B] time = 2.35, size = 96, normalized size = 1.08

$$\frac{\ln(d+e\,x)\,(b\,e-3\,c\,d)}{e^4} - \frac{x\left(3\,c\,d^2 - 2\,b\,d\,e + a\,e^2\right) + \frac{5\,c\,d^3 - 3\,b\,d^2\,e + a\,d\,e^2}{2\,e}}{d^2\,e^3 + 2\,d\,e^4\,x + e^5\,x^2} + \frac{c\,x}{e^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^3,x)
```

```
[Out] (log(d + e*x)*(b*e - 3*c*d))/e^4 - (x*(a*e^2 + 3*c*d^2 - 2*b*d*e) + (5*c*d^
3 + a*d*e^2 - 3*b*d^2*e)/(2*e))/(d^2*e^3 + e^5*x^2 + 2*d*e^4*x) + (c*x)/e^3
```

sympy [A] time = 0.76, size = 97, normalized size = 1.09

$$\frac{cx}{e^3} + \frac{-ade^2 + 3bd^2e - 5cd^3 + x\left(-2ae^3 + 4bde^2 - 6cd^2e\right)}{2d^2e^4 + 4de^5x + 2e^6x^2} + \frac{(be - 3cd)\log(d+ex)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**3,x)
```

```
[Out] c*x/e**3 + (-a*d*e**2 + 3*b*d**2*e - 5*c*d**3 + x*(-2*a*e**3 + 4*b*d*e**2 -
 6*c*d**2*e))/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + (b*e - 3*c*d)*log(
d + e*x)/e**4
```

3.2360 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^4} dx$

Optimal. Leaf size=96

$$-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{d\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}$$

```
[Out] 1/3*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^3+1/2*(-3*c*d^2+e*(-a*e+2*b*d))/e^4/(
e*x+d)^2+(-b*e+3*c*d)/e^4/(e*x+d)+c*ln(e*x+d)/e^4
```

Rubi [A] time = 0.08, antiderivative size = 96, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{d\left(ae^2-bde+cd^2\right)}{3e^4(d+ex)^3}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(3*e^4*(d + e*x)^3) - (3*c*d^2 - e*(2*b*d - a*e
))/(2*e^4*(d + e*x)^2) + (3*c*d - b*e)/(e^4*(d + e*x)) + (c*Log[d + e*x])/e
^4
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^4} dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^4}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^3}+\frac{-3cd+be}{e^3(d+ex)^2}+\frac{c}{e^3(d+ex)}\right) dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{3e^4(d+ex)^3}-\frac{3cd^2-e(2bd-ae)}{2e^4(d+ex)^2}+\frac{3cd-be}{e^4(d+ex)}+\frac{c\log(d+ex)}{e^4}\end{aligned}$$

Mathematica [A] time = 0.03, size = 86, normalized size = 0.90

$$\frac{-e\left(ae(d+3ex)+2b\left(d^2+3dex+3e^2x^2\right)\right)+cd\left(11d^2+27dex+18e^2x^2\right)+6c(d+ex)^3\log(d+ex)}{6e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^4,x]
```

```
[Out] (c*d*(11*d^2 + 27*d*e*x + 18*e^2*x^2) - e*(a*e*(d + 3*e*x) + 2*b*(d^2 + 3*d
*e*x + 3*e^2*x^2)) + 6*c*(d + e*x)^3*Log[d + e*x])/(6*e^4*(d + e*x)^3)
```

fricas [A] time = 1.01, size = 141, normalized size = 1.47

$$\frac{11\,cd^3-2\,bd^2e-ade^2+6\left(3\,cde^2-be^3\right)x^2+3\left(9\,cd^2e-2\,bde^2-ae^3\right)x+6\left(ce^3x^3+3\,cde^2x^2+3\,cd^2ex+cd^3\right)\mathrm{l}}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="fricas")
```

```
[Out] 1/6*(11*c*d^3 - 2*b*d^2*e - a*d*e^2 + 6*(3*c*d*e^2 - b*e^3)*x^2 + 3*(9*c*d^
2*e - 2*b*d*e^2 - a*e^3)*x + 6*(c*e^3*x^3 + 3*c*d*e^2*x^2 + 3*c*d^2*e*x + c
*d^3)*log(e*x + d))/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
```

giac [A] time = 0.16, size = 88, normalized size = 0.92

$$ce^{(-4)}\log\left(|xe+d|\right)+\frac{\left(6\left(3\,cde-be^2\right)x^2+3\left(9\,cd^2-2\,bde-ae^2\right)x+\left(11\,cd^3-2\,bd^2e-ade^2\right)e^{(-1)}\right)e^{(-3)}}{6\,(xe+d)^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="giac")
```

```
[Out] c*e^(-4)*log(abs(x*e + d)) + 1/6*(6*(3*c*d*e - b*e^2)*x^2 + 3*(9*c*d^2 - 2*
b*d*e - a*e^2)*x + (11*c*d^3 - 2*b*d^2*e - a*d*e^2)*e^(-1))*e^(-3)/(x*e + d
)^3
```

maple [A] time = 0.05, size = 128, normalized size = 1.33

$$\frac{ad}{3\,(ex+d)^3\,e^2}-\frac{b\,d^2}{3\,(ex+d)^3\,e^3}+\frac{c\,d^3}{3\,(ex+d)^3\,e^4}-\frac{a}{2\,(ex+d)^2\,e^2}+\frac{bd}{(ex+d)^2\,e^3}-\frac{3c\,d^2}{2\,(ex+d)^2\,e^4}-\frac{b}{(ex+d)\,e^3}+\frac{3cd}{(ex+d)\,e^4}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^4,x)
```

```
[Out] -1/e^3/(e*x+d)*b+3/e^4/(e*x+d)*c*d-1/2/e^2/(e*x+d)^2*a+1/e^3/(e*x+d)^2*b*d-
3/2/e^4/(e*x+d)^2*c*d^2+c*ln(e*x+d)/e^4+1/3*d/e^2/(e*x+d)^3*a-1/3*d^2/e^3/(
e*x+d)^3*b+1/3*d^3/e^4/(e*x+d)^3*c
```

maxima [A] time = 0.61, size = 113, normalized size = 1.18

$$\frac{11\,cd^3-2\,bd^2e-ade^2+6\left(3\,cde^2-be^3\right)x^2+3\left(9\,cd^2e-2\,bde^2-ae^3\right)x}{6\left(e^7x^3+3\,de^6x^2+3\,d^2e^5x+d^3e^4\right)}+\frac{c\log\left(ex+d\right)}{e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^4,x, algorithm="maxima")
```

```
[Out] 1/6*(11*c*d^3 - 2*b*d^2*e - a*d*e^2 + 6*(3*c*d*e^2 - b*e^3)*x^2 + 3*(9*c*d^
2*e - 2*b*d*e^2 - a*e^3)*x)/(e^7*x^3 + 3*d*e^6*x^2 + 3*d^2*e^5*x + d^3*e^4)
 + c*log(e*x + d)/e^4
```

mupad [B] time = 0.08, size = 107, normalized size = 1.11

$$\frac{c\,\ln\left(d+e\,x\right)}{e^4}-\frac{\frac{-11\,c\,d^3+2\,b\,d^2\,e+a\,d\,e^2}{6\,e^4}+\frac{x\,\left(-9\,c\,d^2+2\,b\,d\,e+a\,e^2\right)}{2\,e^3}+\frac{x^2\,\left(b\,e-3\,c\,d\right)}{e^2}}{d^3+3\,d^2\,e\,x+3\,d\,e^2\,x^2+e^3\,x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^4,x)
```

```
[Out] (c*log(d + e*x))/e^4 - ((a*d*e^2 - 11*c*d^3 + 2*b*d^2*e)/(6*e^4) + (x*(a*e^
2 - 9*c*d^2 + 2*b*d*e))/(2*e^3) + (x^2*(b*e - 3*c*d))/e^2)/(d^3 + e^3*x^3 +
 3*d*e^2*x^2 + 3*d^2*e*x)
```

sympy [**A**] time = 1.33, size = 114, normalized size = 1.19

$$\frac{c\log\left(d+ex\right)}{e^4}+\frac{-ade^2-2bd^2e+11cd^3+x^2\left(-6be^3+18cde^2\right)+x\left(-3ae^3-6bde^2+27cd^2e\right)}{6d^3e^4+18d^2e^5x+18de^6x^2+6e^7x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**4,x)
```

```
[Out] c*log(d + e*x)/e**4 + (-a*d*e**2 - 2*b*d**2*e + 11*c*d**3 + x**2*(-6*b*e**3
 + 18*c*d*e**2) + x*(-3*a*e**3 - 6*b*d*e**2 + 27*c*d**2*e))/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3)
```

3.2361 $\int \frac{x(a+bx+cx^2)}{(d+ex)^5}\,dx$

Optimal. Leaf size=101

$$-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{d\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}$$

```
[Out] 1/4*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^4+1/3*(-3*c*d^2+e*(-a*e+2*b*d))/e^4/(
e*x+d)^3+1/2*(-b*e+3*c*d)/e^4/(e*x+d)^2-c/e^4/(e*x+d)
```

Rubi [A] time = 0.07, antiderivative size = 101, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{d\left(ae^2-bde+cd^2\right)}{4e^4(d+ex)^4}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(4*e^4*(d + e*x)^4) - (3*c*d^2 - e*(2*b*d - a*e
))/(3*e^4*(d + e*x)^3) + (3*c*d - b*e)/(2*e^4*(d + e*x)^2) - c/(e^4*(d + e*
x))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^5}\,dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^5}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^4}+\frac{-3cd+be}{e^3(d+ex)^3}+\frac{c}{e^3(d+ex)^2}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{4e^4(d+ex)^4}-\frac{3cd^2-e(2bd-ae)}{3e^4(d+ex)^3}+\frac{3cd-be}{2e^4(d+ex)^2}-\frac{c}{e^4(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.03, size = 77, normalized size = 0.76

$$-\frac{e\left(ae(d+4ex)+b\left(d^2+4dex+6e^2x^2\right)\right)+3c\left(d^3+4d^2ex+6de^2x^2+4e^3x^3\right)}{12e^4(d+ex)^4}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^5,x]
```

```
[Out] -1/12*(3*c*(d^3 + 4*d^2*e*x + 6*d*e^2*x^2 + 4*e^3*x^3) + e*(a*e*(d + 4*e*x)
 + b*(d^2 + 4*d*e*x + 6*e^2*x^2)))/(e^4*(d + e*x)^4)
```

fricas [A] time = 0.97, size = 116, normalized size = 1.15

$$-\frac{12\,ce^3x^3+3\,cd^3+bd^2e+ade^2+6\left(3\,cde^2+be^3\right)x^2+4\left(3\,cd^2e+bde^2+ae^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="fricas")
```

```
[Out] -1/12*(12*c*e^3*x^3 + 3*c*d^3 + b*d^2*e + a*d*e^2 + 6*(3*c*d*e^2 + b*e^3)*x
^2 + 4*(3*c*d^2*e + b*d*e^2 + a*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*
x^2 + 4*d^3*e^5*x + d^4*e^4)
```

giac [A] time = 0.16, size = 128, normalized size = 1.27

$$-\frac{1}{12}\left(\frac{12\,ce^{(-1)}}{xe+d}-\frac{18\,cde^{(-1)}}{(xe+d)^2}+\frac{12\,cd^2e^{(-1)}}{(xe+d)^3}-\frac{3\,cd^3e^{(-1)}}{(xe+d)^4}+\frac{6\,b}{(xe+d)^2}-\frac{8\,bd}{(xe+d)^3}+\frac{3\,bd^2}{(xe+d)^4}+\frac{4\,ae}{(xe+d)^3}-\frac{3\,ac}{(xe+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="giac")
```

```
[Out] -1/12*(12*c*e^(-1)/(x*e + d) - 18*c*d*e^(-1)/(x*e + d)^2 + 12*c*d^2*e^(-1)/
(x*e + d)^3 - 3*c*d^3*e^(-1)/(x*e + d)^4 + 6*b/(x*e + d)^2 - 8*b*d/(x*e + d
)^3 + 3*b*d^2/(x*e + d)^4 + 4*a*e/(x*e + d)^3 - 3*a*d*e/(x*e + d)^4)*e^(-3)
```

maple [A] time = 0.05, size = 93, normalized size = 0.92

$$-\frac{c}{(ex+d)\,e^4}+\frac{\left(a\,e^2-bde+c\,d^2\right)d}{4\,(ex+d)^4\,e^4}-\frac{be-3cd}{2\,(ex+d)^2\,e^4}-\frac{a\,e^2-2bde+3c\,d^2}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^5,x)
```

```
[Out] -c/e^4/(e*x+d)-1/2*(b*e-3*c*d)/e^4/(e*x+d)^2+1/4*d*(a*e^2-b*d*e+c*d^2)/e^4/
(e*x+d)^4-1/3*(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^3
```

maxima [A] time = 0.47, size = 116, normalized size = 1.15

$$-\frac{12\,ce^3x^3+3\,cd^3+bd^2e+ade^2+6\left(3\,cde^2+be^3\right)x^2+4\left(3\,cd^2e+bde^2+ae^3\right)x}{12\left(e^8x^4+4\,de^7x^3+6\,d^2e^6x^2+4\,d^3e^5x+d^4e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^5,x, algorithm="maxima")
```

```
[Out] -1/12*(12*c*e^3*x^3 + 3*c*d^3 + b*d^2*e + a*d*e^2 + 6*(3*c*d*e^2 + b*e^3)*x
^2 + 4*(3*c*d^2*e + b*d*e^2 + a*e^3)*x)/(e^8*x^4 + 4*d*e^7*x^3 + 6*d^2*e^6*
x^2 + 4*d^3*e^5*x + d^4*e^4)
```

mupad [B] time = 0.06, size = 111, normalized size = 1.10

$$-\frac{\frac{c\,x^3}{e}+\frac{d\,\left(3\,c\,d^2+b\,d\,e+a\,e^2\right)}{12\,e^4}+\frac{x\,\left(3\,c\,d^2+b\,d\,e+a\,e^2\right)}{3\,e^3}+\frac{x^2\,\left(b\,e+3\,c\,d\right)}{2\,e^2}}{d^4+4\,d^3\,e\,x+6\,d^2\,e^2\,x^2+4\,d\,e^3\,x^3+e^4\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^5,x)
```

```
[Out] -((c*x^3)/e + (d*(a*e^2 + 3*c*d^2 + b*d*e))/(12*e^4) + (x*(a*e^2 + 3*c*d^2
+ b*d*e))/(3*e^3) + (x^2*(b*e + 3*c*d))/(2*e^2))/(d^4 + e^4*x^4 + 4*d*e^3*x
^3 + 6*d^2*e^2*x^2 + 4*d^3*e*x)
```

sympy [A] time = 2.21, size = 126, normalized size = 1.25

$$\frac{-ade^2-bd^2e-3cd^3-12ce^3x^3+x^2\left(-6be^3-18cde^2\right)+x\left(-4ae^3-4bde^2-12cd^2e\right)}{12d^4e^4+48d^3e^5x+72d^2e^6x^2+48de^7x^3+12e^8x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**5,x)
```

```
[Out] (-a*d*e**2 - b*d**2*e - 3*c*d**3 - 12*c*e**3*x**3 + x**2*(-6*b*e**3 - 18*c*
d*e**2) + x*(-4*a*e**3 - 4*b*d*e**2 - 12*c*d**2*e))/(12*d**4*e**4 + 48*d**3
*e**5*x + 72*d**2*e**6*x**2 + 48*d*e**7*x**3 + 12*e**8*x**4)
```

3.2362 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx$

Optimal. Leaf size=103

$$-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{d\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}$$

```
[Out] 1/5*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^5+1/4*(-3*c*d^2+e*(-a*e+2*b*d))/e^4/(
e*x+d)^4+1/3*(-b*e+3*c*d)/e^4/(e*x+d)^3-1/2*c/e^4/(e*x+d)^2
```

Rubi [A] time = 0.07, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{d\left(ae^2-bde+cd^2\right)}{5e^4(d+ex)^5}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(5*e^4*(d + e*x)^5) - (3*c*d^2 - e*(2*b*d - a*e
))/(4*e^4*(d + e*x)^4) + (3*c*d - b*e)/(3*e^4*(d + e*x)^3) - c/(2*e^4*(d +
e*x)^2)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^6}\,dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^6}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^5}+\frac{-3cd+be}{e^3(d+ex)^4}+\frac{c}{e^3(d+ex)^3}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{5e^4(d+ex)^5}-\frac{3cd^2-e(2bd-ae)}{4e^4(d+ex)^4}+\frac{3cd-be}{3e^4(d+ex)^3}-\frac{c}{2e^4(d+ex)^2}\end{aligned}$$

Mathematica [A] time = 0.03, size = 79, normalized size = 0.77

$$-\frac{e\left(3ae(d+5ex)+2b\left(d^2+5dex+10e^2x^2\right)\right)+3c\left(d^3+5d^2ex+10de^2x^2+10e^3x^3\right)}{60e^4(d+ex)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^6,x]
```

```
[Out] -1/60*(3*c*(d^3 + 5*d^2*e*x + 10*d*e^2*x^2 + 10*e^3*x^3) + e*(3*a*e*(d + 5*
e*x) + 2*b*(d^2 + 5*d*e*x + 10*e^2*x^2)))/(e^4*(d + e*x)^5)
```

fricas [A] time = 0.79, size = 132, normalized size = 1.28

$$-\frac{30\,ce^3x^3+3\,cd^3+2\,bd^2e+3\,ade^2+10\left(3\,cde^2+2\,be^3\right)x^2+5\left(3\,cd^2e+2\,bde^2+3\,ae^3\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="fricas")
```

```
[Out] -1/60*(30*c*e^3*x^3 + 3*c*d^3 + 2*b*d^2*e + 3*a*d*e^2 + 10*(3*c*d*e^2 + 2*b
*e^3)*x^2 + 5*(3*c*d^2*e + 2*b*d*e^2 + 3*a*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 +
 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

giac [A] time = 0.17, size = 80, normalized size = 0.78

$$-\frac{\left(30\,cx^3e^3+30\,cdx^2e^2+15\,cd^2xe+3\,cd^3+20\,bx^2e^3+10\,bdxe^2+2\,bd^2e+15\,axe^3+3\,ade^2\right)e^{(-4)}}{60\,(xe+d)^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="giac")
```

```
[Out] -1/60*(30*c*x^3*e^3 + 30*c*d*x^2*e^2 + 15*c*d^2*x*e + 3*c*d^3 + 20*b*x^2*e^
3 + 10*b*d*x*e^2 + 2*b*d^2*e + 15*a*x*e^3 + 3*a*d*e^2)*e^(-4)/(x*e + d)^5
```

maple [A] time = 0.05, size = 93, normalized size = 0.90

$$-\frac{c}{2\,(ex+d)^2\,e^4}+\frac{\left(a\,e^2-bde+c\,d^2\right)d}{5\,(ex+d)^5\,e^4}-\frac{a\,e^2-2bde+3c\,d^2}{4\,(ex+d)^4\,e^4}-\frac{be-3cd}{3\,(ex+d)^3\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^6,x)
```

```
[Out] -1/2*c/e^4/(e*x+d)^2-1/4*(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^4+1/5*d*(a*e^2
-b*d*e+c*d^2)/e^4/(e*x+d)^5-1/3*(b*e-3*c*d)/e^4/(e*x+d)^3
```

maxima [A] time = 0.53, size = 132, normalized size = 1.28

$$-\frac{30\,ce^3x^3+3\,cd^3+2\,bd^2e+3\,ade^2+10\left(3\,cde^2+2\,be^3\right)x^2+5\left(3\,cd^2e+2\,bde^2+3\,ae^3\right)x}{60\left(e^9x^5+5\,de^8x^4+10\,d^2e^7x^3+10\,d^3e^6x^2+5\,d^4e^5x+d^5e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^6,x, algorithm="maxima")
```

```
[Out] -1/60*(30*c*e^3*x^3 + 3*c*d^3 + 2*b*d^2*e + 3*a*d*e^2 + 10*(3*c*d*e^2 + 2*b
*e^3)*x^2 + 5*(3*c*d^2*e + 2*b*d*e^2 + 3*a*e^3)*x)/(e^9*x^5 + 5*d*e^8*x^4 +
 10*d^2*e^7*x^3 + 10*d^3*e^6*x^2 + 5*d^4*e^5*x + d^5*e^4)
```

mupad [B] time = 0.06, size = 128, normalized size = 1.24

$$-\frac{\frac{c\,x^3}{2\,e}+\frac{d\left(3\,c\,d^2+2\,b\,d\,e+3\,a\,e^2\right)}{60\,e^4}+\frac{x\left(3\,c\,d^2+2\,b\,d\,e+3\,a\,e^2\right)}{12\,e^3}+\frac{x^2\,(2\,b\,e+3\,c\,d)}{6\,e^2}}{d^5+5\,d^4\,e\,x+10\,d^3\,e^2\,x^2+10\,d^2\,e^3\,x^3+5\,d\,e^4\,x^4+e^5\,x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^6,x)
```

```
[Out] -((c*x^3)/(2*e) + (d*(3*a*e^2 + 3*c*d^2 + 2*b*d*e))/(60*e^4) + (x*(3*a*e^2
+ 3*c*d^2 + 2*b*d*e))/(12*e^3) + (x^2*(2*b*e + 3*c*d))/(6*e^2))/(d^5 + e^5*
x^5 + 5*d*e^4*x^4 + 10*d^3*e^2*x^2 + 10*d^2*e^3*x^3 + 5*d^4*e*x)
```

sympy [A] time = 3.66, size = 141, normalized size = 1.37

$$\frac{-3ade^2-2bd^2e-3cd^3-30ce^3x^3+x^2\left(-20be^3-30cde^2\right)+x\left(-15ae^3-10bde^2-15cd^2e\right)}{60d^5e^4+300d^4e^5x+600d^3e^6x^2+600d^2e^7x^3+300de^8x^4+60e^9x^5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**6,x)
```

```
[Out] (-3*a*d*e**2 - 2*b*d**2*e - 3*c*d**3 - 30*c*e**3*x**3 + x**2*(-20*b*e**3 -
30*c*d*e**2) + x*(-15*a*e**3 - 10*b*d*e**2 - 15*c*d**2*e))/(60*d**5*e**4 +
300*d**4*e**5*x + 600*d**3*e**6*x**2 + 600*d**2*e**7*x**3 + 300*d*e**8*x**4
 + 60*e**9*x**5)
```

3.2363 $\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx$

Optimal. Leaf size=103

$$-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{d\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}$$

```
[Out] 1/6*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^6+1/5*(-3*c*d^2+e*(-a*e+2*b*d))/e^4/(
e*x+d)^5+1/4*(-b*e+3*c*d)/e^4/(e*x+d)^4-1/3*c/e^4/(e*x+d)^3
```

Rubi [A] time = 0.07, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.053, Rules used = {771}

$$-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{d\left(ae^2-bde+cd^2\right)}{6e^4(d+ex)^6}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] (d*(c*d^2 - b*d*e + a*e^2))/(6*e^4*(d + e*x)^6) - (3*c*d^2 - e*(2*b*d - a*e
))/(5*e^4*(d + e*x)^5) + (3*c*d - b*e)/(4*e^4*(d + e*x)^4) - c/(3*e^4*(d +
e*x)^3)
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{x\left(a+bx+cx^2\right)}{(d+ex)^7}\,dx &= \int \left(-\frac{d\left(cd^2-bde+ae^2\right)}{e^3(d+ex)^7}+\frac{3cd^2-e(2bd-ae)}{e^3(d+ex)^6}+\frac{-3cd+be}{e^3(d+ex)^5}+\frac{c}{e^3(d+ex)^4}\right)dx\\ &= \frac{d\left(cd^2-bde+ae^2\right)}{6e^4(d+ex)^6}-\frac{3cd^2-e(2bd-ae)}{5e^4(d+ex)^5}+\frac{3cd-be}{4e^4(d+ex)^4}-\frac{c}{3e^4(d+ex)^3}\end{aligned}$$

Mathematica [A] time = 0.03, size = 77, normalized size = 0.75

$$-\frac{e\left(2ae(d+6ex)+b\left(d^2+6dex+15e^2x^2\right)\right)+c\left(d^3+6d^2ex+15de^2x^2+20e^3x^3\right)}{60e^4(d+ex)^6}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(a + b*x + c*x^2))/(d + e*x)^7,x]
```

```
[Out] -1/60*(c*(d^3 + 6*d^2*e*x + 15*d*e^2*x^2 + 20*e^3*x^3) + e*(2*a*e*(d + 6*e*
x) + b*(d^2 + 6*d*e*x + 15*e^2*x^2)))/(e^4*(d + e*x)^6)
```

fricas [A] time = 0.82, size = 137, normalized size = 1.33

$$-\frac{20\,ce^3x^3+cd^3+bd^2e+2\,ade^2+15\left(cde^2+be^3\right)x^2+6\left(cd^2e+bde^2+2\,ae^3\right)x}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="fricas")
```

```
[Out] -1/60*(20*c*e^3*x^3 + c*d^3 + b*d^2*e + 2*a*d*e^2 + 15*(c*d*e^2 + b*e^3)*x^
2 + 6*(c*d^2*e + b*d*e^2 + 2*a*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8
*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

giac [A] time = 0.15, size = 78, normalized size = 0.76

$$-\frac{\left(20\,cx^3e^3+15\,cdx^2e^2+6\,cd^2xe+cd^3+15\,bx^2e^3+6\,bdxe^2+bd^2e+12\,axe^3+2\,ade^2\right)e^{(-4)}}{60\,(xe+d)^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="giac")
```

```
[Out] -1/60*(20*c*x^3*e^3 + 15*c*d*x^2*e^2 + 6*c*d^2*x*e + c*d^3 + 15*b*x^2*e^3 +
 6*b*d*x*e^2 + b*d^2*e + 12*a*x*e^3 + 2*a*d*e^2)*e^(-4)/(x*e + d)^6
```

maple [A] time = 0.05, size = 93, normalized size = 0.90

$$-\frac{c}{3\,(ex+d)^3\,e^4}+\frac{\left(a\,e^2-bde+c\,d^2\right)d}{6\,(ex+d)^6\,e^4}-\frac{be-3cd}{4\,(ex+d)^4\,e^4}-\frac{a\,e^2-2bde+3c\,d^2}{5\,(ex+d)^5\,e^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(c*x^2+b*x+a)/(e*x+d)^7,x)
```

```
[Out] -1/4*(b*e-3*c*d)/e^4/(e*x+d)^4+1/6*d*(a*e^2-b*d*e+c*d^2)/e^4/(e*x+d)^6-1/5*
(a*e^2-2*b*d*e+3*c*d^2)/e^4/(e*x+d)^5-1/3*c/e^4/(e*x+d)^3
```

maxima [A] time = 0.62, size = 137, normalized size = 1.33

$$-\frac{20\,ce^3x^3+cd^3+bd^2e+2\,ade^2+15\left(cde^2+be^3\right)x^2+6\left(cd^2e+bde^2+2\,ae^3\right)x}{60\left(e^{10}x^6+6\,de^9x^5+15\,d^2e^8x^4+20\,d^3e^7x^3+15\,d^4e^6x^2+6\,d^5e^5x+d^6e^4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x^2+b*x+a)/(e*x+d)^7,x, algorithm="maxima")
```

```
[Out] -1/60*(20*c*e^3*x^3 + c*d^3 + b*d^2*e + 2*a*d*e^2 + 15*(c*d*e^2 + b*e^3)*x^
2 + 6*(c*d^2*e + b*d*e^2 + 2*a*e^3)*x)/(e^10*x^6 + 6*d*e^9*x^5 + 15*d^2*e^8
*x^4 + 20*d^3*e^7*x^3 + 15*d^4*e^6*x^2 + 6*d^5*e^5*x + d^6*e^4)
```

mupad [B] time = 2.35, size = 133, normalized size = 1.29

$$-\frac{\frac{c\,x^3}{3\,e}+\frac{d\,\left(c\,d^2+b\,d\,e+2\,a\,e^2\right)}{60\,e^4}+\frac{x\,\left(c\,d^2+b\,d\,e+2\,a\,e^2\right)}{10\,e^3}+\frac{x^2\,\left(b\,e+c\,d\right)}{4\,e^2}}{d^6+6\,d^5\,e\,x+15\,d^4\,e^2\,x^2+20\,d^3\,e^3\,x^3+15\,d^2\,e^4\,x^4+6\,d\,e^5\,x^5+e^6\,x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(a + b*x + c*x^2))/(d + e*x)^7,x)
```

```
[Out] -((c*x^3)/(3*e) + (d*(2*a*e^2 + c*d^2 + b*d*e))/(60*e^4) + (x*(2*a*e^2 + c*
d^2 + b*d*e))/(10*e^3) + (x^2*(b*e + c*d))/(4*e^2))/(d^6 + e^6*x^6 + 6*d*e^
5*x^5 + 15*d^4*e^2*x^2 + 20*d^3*e^3*x^3 + 15*d^2*e^4*x^4 + 6*d^5*e*x)
```

sympy [A] time = 5.83, size = 150, normalized size = 1.46

$$\frac{-2ade^2-bd^2e-cd^3-20ce^3x^3+x^2\left(-15be^3-15cde^2\right)+x\left(-12ae^3-6bde^2-6cd^2e\right)}{60d^6e^4+360d^5e^5x+900d^4e^6x^2+1200d^3e^7x^3+900d^2e^8x^4+360de^9x^5+60e^{10}x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(c*x**2+b*x+a)/(e*x+d)**7,x)
```

```
[Out] (-2*a*d*e**2 - b*d**2*e - c*d**3 - 20*c*e**3*x**3 + x**2*(-15*b*e**3 - 15*c
*d*e**2) + x*(-12*a*e**3 - 6*b*d*e**2 - 6*c*d**2*e))/(60*d**6*e**4 + 360*d*
*5*e**5*x + 900*d**4*e**6*x**2 + 1200*d**3*e**7*x**3 + 900*d**2*e**8*x**4 +
 360*d*e**9*x**5 + 60*e**10*x**6)
```

3.2364 $\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2}\,dx$

Optimal. Leaf size=357

$$\frac{ex\left(B\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(3cd-be)\right)}{c^3}+\frac{\log\left(a+bx+cx^2\right)\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2d\right.\right.}{}$$

```
[Out] e*(A*c*e*(-b*e+3*c*d)+B*(3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d)))*x/c^3+1/2*e^2*
(A*c*e-B*b*e+3*B*c*d)*x^2/c^2+1/3*B*e^3*x^3/c+1/2*(A*c*e*(3*c^2*d^2+b^2*e^2
-c*e*(a*e+3*b*d))+B*(c^3*d^3-b^3*e^3-3*c^2*d*e*(a*e+b*d)+b*c*e^2*(2*a*e+3*b
*d)))*ln(c*x^2+b*x+a)/c^4-(b^4*B*e^3-b^3*c*e^2*(A*e+3*B*d)+b^2*c*e*(3*A*c*d
*e-4*B*a*e^2+3*B*c*d^2)-b*c^2*(-3*A*a*e^3+3*A*c*d^2*e-9*B*a*d*e^2+B*c*d^3)+
2*c^2*(A*c*d*(-3*a*e^2+c*d^2)-a*B*e*(-a*e^2+3*c*d^2)))*arctanh((2*c*x+b)/(-
4*a*c+b^2)^(1/2))/c^4/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.65, antiderivative size = 357, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+B\left(-3c^2de(ae+bd)+bce^2(2ae+3bd)-b^3e^3+c^3d^3\right)\right.}{2c^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*x)/c
^3 + (e^2*(3*B*c*d - b*B*e + A*c*e)*x^2)/(2*c^2) + (B*e^3*x^3)/(3*c) - ((b^
4*B*e^3 - b^3*c*e^2*(3*B*d + A*e) + b^2*c*e*(3*B*c*d^2 + 3*A*c*d*e - 4*a*B*
e^2) - b*c^2*(B*c*d^3 + 3*A*c*d^2*e - 9*a*B*d*e^2 - 3*a*A*e^3) + 2*c^2*(A*c
*d*(c*d^2 - 3*a*e^2) - a*B*e*(3*c*d^2 - a*e^2)))*ArcTanh[(b + 2*c*x)/Sqrt[b
^2 - 4*a*c]])/(c^4*Sqrt[b^2 - 4*a*c]) + ((A*c*e*(3*c^2*d^2 + b^2*e^2 - c*e*
(3*b*d + a*e)) + B*(c^3*d^3 - b^3*e^3 - 3*c^2*d*e*(b*d + a*e) + b*c*e^2*(3*
b*d + 2*a*e)))*Log[a + b*x + c*x^2])/(2*c^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
```

```
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{a+bx+cx^2}\,dx = \int \left(\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x}{c^2}+\right.$$

$$=\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+$$

$$=\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+$$

$$=\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+$$

$$=\frac{e\left(Ace(3cd-be)+B\left(3c^2d^2+b^2e^2-ce(3bd+ae)\right)\right)x}{c^3}+\frac{e^2(3Bcd-bBe+Ace)x^2}{2c^2}+$$

Mathematica [A] time = 0.29, size = 352, normalized size = 0.99

$$6cex\left(B\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)+Ace(3cd-be)\right)+3\log(a+x(b+cx))\left(Ace\left(-ce(ae+3bd)+b^2e^2+3c^2\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x]
```

```
[Out] (6*c*e*(A*c*e*(3*c*d - b*e) + B*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*
x + 3*c^2*e^2*(3*B*c*d - b*B*e + A*c*e)*x^2 + 2*B*c^3*e^3*x^3 + (6*(b^4*B*e
^3 - b^3*c*e^2*(3*B*d + A*e) + b^2*c*e*(3*B*c*d^2 + 3*A*c*d*e - 4*a*B*e^2)
+ b*c^2*(-(B*c*d^3) - 3*A*c*d^2*e + 9*a*B*d*e^2 + 3*a*A*e^3) + 2*c^2*(A*c*d
*(c*d^2 - 3*a*e^2) + a*B*e*(-3*c*d^2 + a*e^2))))*ArcTan[(b + 2*c*x)/Sqrt[-b^
2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + 3*(A*c*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*
d + a*e)) + B*(c^3*d^3 - b^3*e^3 - 3*c^2*d*e*(b*d + a*e) + b*c*e^2*(3*b*d +
 2*a*e)))*Log[a + x*(b + c*x)])/(6*c^4)
```

fricas [A] time = 1.53, size = 1139, normalized size = 3.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/6*(2*(B*b^2*c^3 - 4*B*a*c^4)*e^3*x^3 + 3*(3*(B*b^2*c^3 - 4*B*a*c^4)*d*e^
2 - (B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*e^3)*x^2 - 3*((B*b*c^3
- 2*A*c^4)*d^3 - 3*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d^2*e + 3*(B*b^3*c + 2*A
*a*c^3 - (3*B*a*b + A*b^2)*c^2)*d*e^2 - (B*b^4 + (2*B*a^2 + 3*A*a*b)*c^2 -
(4*B*a*b^2 + A*b^3)*c)*e^3)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^
2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 6*(3*(B*b^2
*c^3 - 4*B*a*c^4)*d^2*e - 3*(B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)
*d*e^2 + (B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*a*b^2 + A*b^3)*c^2)*e^3)*x
 + 3*((B*b^2*c^3 - 4*B*a*c^4)*d^3 - 3*(B*b^3*c^2 + 4*A*a*c^4 - (4*B*a*b + A
*b^2)*c^3)*d^2*e + 3*(B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*a*b^2 + A*b^3)
*c^2)*d*e^2 - (B*b^5 - 4*A*a^2*c^3 + (8*B*a^2*b + 5*A*a*b^2)*c^2 - (6*B*a*b
^3 + A*b^4)*c)*e^3)*log(c*x^2 + b*x + a))/(b^2*c^4 - 4*a*c^5), 1/6*(2*(B*b^
2*c^3 - 4*B*a*c^4)*e^3*x^3 + 3*(3*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (B*b^3*c^
2 + 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*e^3)*x^2 + 6*((B*b*c^3 - 2*A*c^4)*d^
3 - 3*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d^2*e + 3*(B*b^3*c + 2*A*a*c^3 - (3*B
*a*b + A*b^2)*c^2)*d*e^2 - (B*b^4 + (2*B*a^2 + 3*A*a*b)*c^2 - (4*B*a*b^2 +
A*b^3)*c)*e^3)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b
^2 - 4*a*c)) + 6*(3*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e - 3*(B*b^3*c^2 + 4*A*a*c^
4 - (4*B*a*b + A*b^2)*c^3)*d*e^2 + (B*b^4*c + 4*(B*a^2 + A*a*b)*c^3 - (5*B*
a*b^2 + A*b^3)*c^2)*e^3)*x + 3*((B*b^2*c^3 - 4*B*a*c^4)*d^3 - 3*(B*b^3*c^2
+ 4*A*a*c^4 - (4*B*a*b + A*b^2)*c^3)*d^2*e + 3*(B*b^4*c + 4*(B*a^2 + A*a*b)
*c^3 - (5*B*a*b^2 + A*b^3)*c^2)*d*e^2 - (B*b^5 - 4*A*a^2*c^3 + (8*B*a^2*b +
 5*A*a*b^2)*c^2 - (6*B*a*b^3 + A*b^4)*c)*e^3)*log(c*x^2 + b*x + a))/(b^2*c^
4 - 4*a*c^5)]
```

giac [**A**] time = 0.18, size = 402, normalized size = 1.13

$$\frac{2\,Bc^2x^3e^3+9\,Bc^2dx^2e^2+18\,Bc^2d^2xe-3\,Bbcx^2e^3+3\,Ac^2x^2e^3-18\,Bbcdxe^2+18\,Ac^2dxe^2+6\,Bb^2xe^3-6\,Bacx}{6\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/6*(2*B*c^2*x^3*e^3 + 9*B*c^2*d*x^2*e^2 + 18*B*c^2*d^2*x*e - 3*B*b*c*x^2*e
^3 + 3*A*c^2*x^2*e^3 - 18*B*b*c*d*x*e^2 + 18*A*c^2*d*x*e^2 + 6*B*b^2*x*e^3
- 6*B*a*c*x*e^3 - 6*A*b*c*x*e^3)/c^3 + 1/2*(B*c^3*d^3 - 3*B*b*c^2*d^2*e + 3
*A*c^3*d^2*e + 3*B*b^2*c*d*e^2 - 3*B*a*c^2*d*e^2 - 3*A*b*c^2*d*e^2 - B*b^3*
e^3 + 2*B*a*b*c*e^3 + A*b^2*c*e^3 - A*a*c^2*e^3)*log(c*x^2 + b*x + a)/c^4 -
 (B*b*c^3*d^3 - 2*A*c^4*d^3 - 3*B*b^2*c^2*d^2*e + 6*B*a*c^3*d^2*e + 3*A*b*c
^3*d^2*e + 3*B*b^3*c*d*e^2 - 9*B*a*b*c^2*d*e^2 - 3*A*b^2*c^2*d*e^2 + 6*A*a*
c^3*d*e^2 - B*b^4*e^3 + 4*B*a*b^2*c*e^3 + A*b^3*c*e^3 - 2*B*a^2*c^2*e^3 - 3
*A*a*b*c^2*e^3)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*
c^4)
```

maple [**B**] time = 0.05, size = 946, normalized size = 2.65

$$\frac{B\,e^3x^3}{3c}+\frac{3Aab\,e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}-\frac{6Aad\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}-\frac{A\,b^3e^3\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^3}+\frac{3A\,b^2d\,e^2\arctan\left(\right.}{\sqrt{4ac-b^2}\;c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] 1/2/c*ln(c*x^2+b*x+a)*B*d^3+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*A*d^3+1/2*e^3/c*A*x^2+1/2/c^3*ln(c*x^2+b*x+a)*A*b^2*e^3-1/c^3/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^3*e^3+1/c^4/(4*a*c-b^
2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^4*B*e^3-1/c/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*B*d^3-3/2/c^2*ln(c*x^2+b*x+a)*A*b*d
*e^2+1/c^3*ln(c*x^2+b*x+a)*a*b*B*e^3-3/2/c^2*ln(c*x^2+b*x+a)*B*d*a*e^2+3/2/
c^3*ln(c*x^2+b*x+a)*B*d*b^2*e^2+9/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4
*a*c-b^2)^(1/2))*B*a*b*d*e^2+3*e^2/c*A*x*d+e^3/c^3*B*b^2*x+3*e/c*B*d^2*x-1/
2/c^2*ln(c*x^2+b*x+a)*A*a*e^3-1/2/c^4*ln(c*x^2+b*x+a)*b^3*B*e^3+3/2/c*ln(c*
x^2+b*x+a)*A*d^2*e-1/2*e^3/c^2*B*x^2*b+3/2*e^2/c*B*x^2*d-e^3/c^2*B*x*a-e^3/
c^2*A*b*x-3/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^3*B
*d*e^2+3/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*B*d^
2*e-3*e^2/c^2*B*b*d*x-3/2/c^2*ln(c*x^2+b*x+a)*B*b*d^2*e+2/c^2/(4*a*c-b^2)^(
1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a^2*e^3+3/c^2/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*A*d*e^2+3/c^2/(4*a*c-b^2)^(1/2)*arc
tan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*b*e^3-3/c/(4*a*c-b^2)^(1/2)*arctan((2*
c*x+b)/(4*a*c-b^2)^(1/2))*b*A*d^2*e-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
(4*a*c-b^2)^(1/2))*A*a*d*e^2-4/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*B*a*b^2*e^3-6/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2
)^(1/2))*B*a*d^2*e+1/3*B/c*e^3*x^3
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.11, size = 539, normalized size = 1.51

$$x^2\,\left(\frac{A\,e^3+3\,B\,d\,e^2}{2\,c}-\frac{B\,b\,e^3}{2\,c^2}\right)-x\,\left(\frac{b\,\left(\frac{A\,e^3+3\,B\,d\,e^2}{c}-\frac{B\,b\,e^3}{c^2}\right)}{c}-\frac{3\,d\,e\,\left(A\,e+B\,d\right)}{c}+\frac{B\,a\,e^3}{c^2}\right)-\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(-8\,B\,a^2\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2),x)
```

```
[Out] x^2*((A*e^3 + 3*B*d*e^2)/(2*c) - (B*b*e^3)/(2*c^2)) - x*((b*((A*e^3 + 3*B*d
*e^2)/c - (B*b*e^3)/c^2))/c - (3*d*e*(A*e + B*d))/c + (B*a*e^3)/c^2) - (log
(a + b*x + c*x^2)*(A*b^4*c*e^3 - 4*B*a*c^4*d^3 - B*b^5*e^3 + 4*A*a^2*c^3*e^
3 + B*b^2*c^3*d^3 - 5*A*a*b^2*c^2*e^3 - 8*B*a^2*b*c^2*e^3 + 3*A*b^2*c^3*d^2
*e - 3*A*b^3*c^2*d*e^2 + 12*B*a^2*c^3*d*e^2 - 3*B*b^3*c^2*d^2*e + 6*B*a*b^3
*c*e^3 - 12*A*a*c^4*d^2*e + 3*B*b^4*c*d*e^2 + 12*A*a*b*c^3*d*e^2 + 12*B*a*b
*c^3*d^2*e - 15*B*a*b^2*c^2*d*e^2))/(2*(4*a*c^5 - b^2*c^4)) + (atan(b/(4*a*
c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(2*A*c^4*d^3 + B*b^4*e^3 - A*
b^3*c*e^3 - B*b*c^3*d^3 + 2*B*a^2*c^2*e^3 + 3*A*b^2*c^2*d*e^2 + 3*B*b^2*c^2
*d^2*e + 3*A*a*b*c^2*e^3 - 4*B*a*b^2*c*e^3 - 6*A*a*c^3*d*e^2 - 3*A*b*c^3*d^
2*e - 6*B*a*c^3*d^2*e - 3*B*b^3*c*d*e^2 + 9*B*a*b*c^2*d*e^2))/(c^4*(4*a*c -
 b^2)^(1/2)) + (B*e^3*x^3)/(3*c)
```

sympy [B] time = 25.81, size = 2759, normalized size = 7.73

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] B*e**3*x**3/(3*c) + x**2*(A*e**3/(2*c) - B*b*e**3/(2*c**2) + 3*B*d*e**2/(2*
c)) + x*(-A*b*e**3/c**2 + 3*A*d*e**2/c - B*a*e**3/c**2 + B*b**2*e**3/c**3 -
 3*B*b*d*e**2/c**2 + 3*B*d**2*e/c) + (-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e*
*3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*
d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c
**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2
*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A
*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a
*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3
*d**3)/(2*c**4))*log(x + (2*A*a**2*c**2*e**3 - A*a*b**2*c*e**3 + 3*A*a*b*c*
*2*d*e**2 - 6*A*a*c**3*d**2*e + A*b*c**3*d**3 - 3*B*a**2*b*c*e**3 + 6*B*a**
2*c**2*d*e**2 + B*a*b**3*e**3 - 3*B*a*b**2*c*d*e**2 + 3*B*a*b*c**2*d**2*e -
 2*B*a*c**3*d**3 + 4*a*c**4*(-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*A*
a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e +
2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**
2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**
2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c*e
**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d*e
**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/(2
*c**4)) - b**2*c**3*(-sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d
*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4
*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*
a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*
b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c*e**3 - 3*
A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d*e**2 - B*
b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/(2*c**4)))
/(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e
**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c
*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*
d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3)) + (sqrt(-4*a*c + b**2)*(3*A
*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 -
 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3
 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**
2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c
**2*e**3 + A*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*
e**3 - 3*B*a*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**
2*e + B*c**3*d**3)/(2*c**4))*log(x + (2*A*a**2*c**2*e**3 - A*a*b**2*c*e**3
+ 3*A*a*b*c**2*d*e**2 - 6*A*a*c**3*d**2*e + A*b*c**3*d**3 - 3*B*a**2*b*c*e*
*3 + 6*B*a**2*c**2*d*e**2 + B*a*b**3*e**3 - 3*B*a*b**2*c*d*e**2 + 3*B*a*b*c
**2*d**2*e - 2*B*a*c**3*d**3 + 4*a*c**4*(sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*
e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**
3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b
*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b*
*2*c**2*d**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 +
 A*b**2*c*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B
*a*c**2*d*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c*
*3*d**3)/(2*c**4)) - b**2*c**3*(sqrt(-4*a*c + b**2)*(3*A*a*b*c**2*e**3 - 6*
A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**2*c**2*d*e**2 - 3*A*b*c**3*d**2*e
+ 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e
**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d
**2*e - B*b*c**3*d**3)/(2*c**4*(4*a*c - b**2)) + (-A*a*c**2*e**3 + A*b**2*c
*e**3 - 3*A*b*c**2*d*e**2 + 3*A*c**3*d**2*e + 2*B*a*b*c*e**3 - 3*B*a*c**2*d
*e**2 - B*b**3*e**3 + 3*B*b**2*c*d*e**2 - 3*B*b*c**2*d**2*e + B*c**3*d**3)/
(2*c**4)))/(3*A*a*b*c**2*e**3 - 6*A*a*c**3*d*e**2 - A*b**3*c*e**3 + 3*A*b**
2*c**2*d*e**2 - 3*A*b*c**3*d**2*e + 2*A*c**4*d**3 + 2*B*a**2*c**2*e**3 - 4*
B*a*b**2*c*e**3 + 9*B*a*b*c**2*d*e**2 - 6*B*a*c**3*d**2*e + B*b**4*e**3 - 3
*B*b**3*c*d*e**2 + 3*B*b**2*c**2*d**2*e - B*b*c**3*d**3))
```

3.2365 $\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2}\,dx$

Optimal. Leaf size=205

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right)}{2c^3}+\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(bc\left(-3aBe^2+2Acde+\right.\right.}{}$$

```
[Out] e*(A*c*e-B*b*e+2*B*c*d)*x/c^2+1/2*B*e^2*x^2/c+1/2*(A*c*e*(-b*e+2*c*d)+B*(c^
2*d^2+b^2*e^2-c*e*(a*e+2*b*d)))*ln(c*x^2+b*x+a)/c^3+(b^3*B*e^2-b^2*c*e*(A*e
+2*B*d)-2*c^2*(-A*a*e^2+A*c*d^2-2*B*a*d*e)+b*c*(2*A*c*d*e-3*B*a*e^2+B*c*d^2
))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.37, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right)}{2c^3}+\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(bc\left(-3aBe^2+2Acde+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (e*(2*B*c*d - b*B*e + A*c*e)*x)/c^2 + (B*e^2*x^2)/(2*c) + ((b^3*B*e^2 - b^2
*c*e*(2*B*d + A*e) - 2*c^2*(A*c*d^2 - 2*a*B*d*e - a*A*e^2) + b*c*(B*c*d^2 +
 2*A*c*d*e - 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^3*Sqrt[
b^2 - 4*a*c]) + ((A*c*e*(2*c*d - b*e) + B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d +
 a*e)))*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{a+bx+cx^2}\,dx = \int \Bigg(\frac{e(2Bcd-bBe+Ace)}{c^2} + \frac{Be^2x}{c} + \frac{-aBe(2cd-be)+Ac\left(cd^2-ae^2\right)+\big(Ace(2cd-}{c^2\big(a+bx+}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2} + \frac{Be^2x^2}{2c} + \frac{\int \frac{-aBe(2cd-be)+Ac\left(cd^2-ae^2\right)+\big(Ace(2cd-be)+B\big(c^2d^2+b^2e^2-ce}{a+bx+cx^2}}{c^2}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2} + \frac{Be^2x^2}{2c} - \frac{\big(b^3Be^2-b^2ce(2Bd+Ae)-2c^2\big(Acd^2-2aBde-}{2}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2} + \frac{Be^2x^2}{2c} + \frac{\left(Ace(2cd-be)+B\left(c^2d^2+b^2e^2-ce(2bd+ae)\right)\right)}{2c^3}$$

$$= \frac{e(2Bcd-bBe+Ace)x}{c^2} + \frac{Be^2x^2}{2c} + \frac{\big(b^3Be^2-b^2ce(2Bd+Ae)-2c^2\big(Acd^2-2aBde-}{c^3}$$

Mathematica [**A**] time = 0.17, size = 203, normalized size = 0.99

$$\frac{\log(a+x(b+cx))\left(B\left(-ce(ae+2bd)+b^2e^2+c^2d^2\right)+Ace(2cd-be)\right) - \frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(bc\left(-3aBe^2+2Acde+Bcd^2\right)+2c^2\big(}{\sqrt{4ac-b}}}{2c^3}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x]
```

```
[Out] (2*c*e*(2*B*c*d - b*B*e + A*c*e)*x + B*c^2*e^2*x^2 - (2*(b^3*B*e^2 - b^2*c*
e*(2*B*d + A*e) + 2*c^2*(-(A*c*d^2) + 2*a*B*d*e + a*A*e^2) + b*c*(B*c*d^2 +
 2*A*c*d*e - 3*a*B*e^2))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2
+ 4*a*c] + (A*c*e*(2*c*d - b*e) + B*(c^2*d^2 + b^2*e^2 - c*e*(2*b*d + a*e))
)*Log[a + x*(b + c*x)])/(2*c^3)
```

fricas [**A**] time = 0.87, size = 673, normalized size = 3.28

$$\Bigg[\frac{\left(Bb^2c^2-4\,Bac^3\right)e^2x^2+\left(\left(Bbc^2-2\,Ac^3\right)d^2-2\left(Bb^2c-(2\,Ba+Ab)c^2\right)de+\left(Bb^3+2\,Aac^2-\left(3\,Bab+Ab^2\right)c\right)e}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*((B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 + ((B*b*c^2 - 2*A*c^3)*d^2 - 2*(B*b^2
*c - (2*B*a + A*b)*c^2)*d*e + (B*b^3 + 2*A*a*c^2 - (3*B*a*b + A*b^2)*c)*e^2
)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a
*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + 2*(2*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (B
*b^3*c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*e^2)*x + ((B*b^2*c^2 - 4*B*a*c^
3)*d^2 - 2*(B*b^3*c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*d*e + (B*b^4 + 4*(
B*a^2 + A*a*b)*c^2 - (5*B*a*b^2 + A*b^3)*c)*e^2)*log(c*x^2 + b*x + a))/(b^2
*c^3 - 4*a*c^4), 1/2*((B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 + 2*((B*b*c^2 - 2*A*c
^3)*d^2 - 2*(B*b^2*c - (2*B*a + A*b)*c^2)*d*e + (B*b^3 + 2*A*a*c^2 - (3*B*a
*b + A*b^2)*c)*e^2)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x +
b)/(b^2 - 4*a*c)) + 2*(2*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (B*b^3*c + 4*A*a*c^3
 - (4*B*a*b + A*b^2)*c^2)*e^2)*x + ((B*b^2*c^2 - 4*B*a*c^3)*d^2 - 2*(B*b^3*
c + 4*A*a*c^3 - (4*B*a*b + A*b^2)*c^2)*d*e + (B*b^4 + 4*(B*a^2 + A*a*b)*c^2
 - (5*B*a*b^2 + A*b^3)*c)*e^2)*log(c*x^2 + b*x + a))/(b^2*c^3 - 4*a*c^4)]
```

giac [A] time = 0.16, size = 219, normalized size = 1.07

$$\frac{Bcx^2e^2 + 4\,Bcdxe - 2\,Bbxe^2 + 2\,Acxe^2}{2\,c^2} + \frac{(Bc^2d^2 - 2\,Bbcde + 2\,Ac^2de + Bb^2e^2 - Bace^2 - Abce^2)\log(cx^2 + bx + a}{2\,c^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c*x^2*e^2 + 4*B*c*d*x*e - 2*B*b*x*e^2 + 2*A*c*x*e^2)/c^2 + 1/2*(B*c^
2*d^2 - 2*B*b*c*d*e + 2*A*c^2*d*e + B*b^2*e^2 - B*a*c*e^2 - A*b*c*e^2)*log(
c*x^2 + b*x + a)/c^3 - (B*b*c^2*d^2 - 2*A*c^3*d^2 - 2*B*b^2*c*d*e + 4*B*a*c
^2*d*e + 2*A*b*c^2*d*e + B*b^3*e^2 - 3*B*a*b*c*e^2 - A*b^2*c*e^2 + 2*A*a*c^
2*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/(sqrt(-b^2 + 4*a*c)*c^3)
```

maple [B] time = 0.05, size = 543, normalized size = 2.65

$$-\frac{2Aa\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c} + \frac{A\,b^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2} - \frac{2Abde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c} + \frac{2A\,d^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}} + \frac{3Bab\,e^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*B/c*e^2*x^2+1/c*e^2*A*x-1/c^2*e^2*B*b*x+2/c*e*B*d*x-1/2/c^2*ln(c*x^2+b*
x+a)*A*b*e^2+1/c*ln(c*x^2+b*x+a)*A*d*e-1/2/c^2*ln(c*x^2+b*x+a)*a*B*e^2+1/2/
c^3*ln(c*x^2+b*x+a)*b^2*B*e^2-1/c^2*ln(c*x^2+b*x+a)*B*b*d*e+1/2/c*ln(c*x^2+
b*x+a)*B*d^2-2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*
e^2+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*d^2+3/c^2/(4*
a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*b*e^2-4/c/(4*a*c-b^2
)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*d*e+1/c^2/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^2*e^2-2/c/(4*a*c-b^2)^(1/2)*arctan
((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b*d*e-1/c^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*b^3*B*e^2+2/c^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*B*b^2*d*e-1/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*B*b*d^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.78, size = 316, normalized size = 1.54

$$x\left(\frac{A\,e^2 + 2\,B\,d\,e}{c} - \frac{B\,b\,e^2}{c^2}\right) - \frac{\ln(c\,x^2 + b\,x + a)\,(4\,B\,a^2\,c^2\,e^2 - 5\,B\,a\,b^2\,c\,e^2 + 8\,B\,a\,b\,c^2\,d\,e + 4\,A\,a\,b\,c^2\,e^2 - 4\,B\,a\,c^3\,d}{2\,(4\,a\,c^4 - b^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2),x)
```

```
[Out] x*((A*e^2 + 2*B*d*e)/c - (B*b*e^2)/c^2) - (log(a + b*x + c*x^2)*(B*b^4*e^2
- 4*B*a*c^3*d^2 - A*b^3*c*e^2 + 4*B*a^2*c^2*e^2 + B*b^2*c^2*d^2 - 8*A*a*c^3
*d*e - 2*B*b^3*c*d*e + 4*A*a*b*c^2*e^2 - 5*B*a*b^2*c*e^2 + 2*A*b^2*c^2*d*e
+ 8*B*a*b*c^2*d*e))/(2*(4*a*c^4 - b^2*c^3)) - (atan(b/(4*a*c - b^2)^(1/2) +
 (2*c*x)/(4*a*c - b^2)^(1/2))*(B*b^3*e^2 - 2*A*c^3*d^2 + 2*A*a*c^2*e^2 - A*
b^2*c*e^2 + B*b*c^2*d^2 - 3*B*a*b*c*e^2 + 2*A*b*c^2*d*e + 4*B*a*c^2*d*e - 2
*B*b^2*c*d*e))/(c^3*(4*a*c - b^2)^(1/2)) + (B*e^2*x^2)/(2*c)
```

sympy [B] time = 11.09, size = 1532, normalized size = 7.47

$$\frac{Be^2x^2}{2c}+x\left(\frac{Ae^2}{c}-\frac{Bbe^2}{c^2}+\frac{2Bde}{c}\right)+\left(-\frac{\sqrt{-4ac+b^2}\left(-2Aac^2e^2+Ab^2ce^2-2Abc^2de+2Ac^3d^2+3Babce^2-4Bac\right.}{2c^3\left(4ac-b^2\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] B*e**2*x**2/(2*c) + x*(A*e**2/c - B*b*e**2/c**2 + 2*B*d*e/c) + (-sqrt(-4*a*
c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**
2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c*
*2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2
- B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3))*log(x + (A*a*b*c*e**2
- 4*A*a*c**2*d*e + A*b*c**2*d**2 + 2*B*a**2*c*e**2 - B*a*b**2*e**2 + 2*B*a*
b*c*d*e - 2*B*a*c**2*d**2 + 4*a*c**3*(-sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**
2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a
*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c -
b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*
e - B*c**2*d**2)/(2*c**3)) - b**2*c**2*(-sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e
**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B
*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c
- b**2)) - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*
d*e - B*c**2*d**2)/(2*c**3)))/(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**
2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B
*b**2*c*d*e - B*b*c**2*d**2)) + (sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*
b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*
d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2))
 - (A*b*c*e**2 - 2*A*c**2*d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*
c**2*d**2)/(2*c**3))*log(x + (A*a*b*c*e**2 - 4*A*a*c**2*d*e + A*b*c**2*d**2
 + 2*B*a**2*c*e**2 - B*a*b**2*e**2 + 2*B*a*b*c*d*e - 2*B*a*c**2*d**2 + 4*a*
c**3*(sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*
e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**
2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*d
*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3)) - b**2
*c**2*(sqrt(-4*a*c + b**2)*(-2*A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d
*e + 2*A*c**3*d**2 + 3*B*a*b*c*e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b*
*2*c*d*e - B*b*c**2*d**2)/(2*c**3*(4*a*c - b**2)) - (A*b*c*e**2 - 2*A*c**2*
d*e + B*a*c*e**2 - B*b**2*e**2 + 2*B*b*c*d*e - B*c**2*d**2)/(2*c**3)))/(-2*
A*a*c**2*e**2 + A*b**2*c*e**2 - 2*A*b*c**2*d*e + 2*A*c**3*d**2 + 3*B*a*b*c*
e**2 - 4*B*a*c**2*d*e - B*b**3*e**2 + 2*B*b**2*c*d*e - B*b*c**2*d**2))
```

3.2366 $\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2}\,dx$

Optimal. Leaf size=108

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{c^2\sqrt{b^2-4ac}}+\frac{\log\left(a+bx+cx^2\right)(Ace-bBe+Bcd)}{2c^2}+\frac{Bex}{c}$$

```
[Out] B*e*x/c+1/2*(A*c*e-B*b*e+B*c*d)*ln(c*x^2+b*x+a)/c^2-(b^2*B*e-b*c*(A*e+B*d)+
2*c*(A*c*d-B*a*e))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^2/(-4*a*c+b^2)^(
1/2)
```

Rubi [A] time = 0.13, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.217$, Rules used = {773, 634, 618, 206, 628}

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{c^2\sqrt{b^2-4ac}}+\frac{\log\left(a+bx+cx^2\right)(Ace-bBe+Bcd)}{2c^2}+\frac{Bex}{c}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (B*e*x)/c - ((b^2*B*e - b*c*(B*d + A*e) + 2*c*(A*c*d - a*B*e))*ArcTanh[(b +
 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c^2*Sqrt[b^2 - 4*a*c]) + ((B*c*d - b*B*e + A*c
*e)*Log[a + b*x + c*x^2])/(2*c^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{a+bx+cx^2}\,dx &= \frac{Bex}{c}+\frac{\int \frac{Acd-aBe+(Bcd-bBe+Ace)x}{a+bx+cx^2}\,dx}{c}\\ &= \frac{Bex}{c}+\frac{(Bcd-bBe+Ace)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c^2}+\frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\int}{2c^2}\\ &= \frac{Bex}{c}+\frac{(Bcd-bBe+Ace)\log\left(a+bx+cx^2\right)}{2c^2}-\frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aB\right.}{c}\\ &= \frac{Bex}{c}-\frac{\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c^2\sqrt{b^2-4ac}}+\frac{(Bcd-bBe+Ac}{}\end{aligned}$$

Mathematica [**A**] time = 0.09, size = 108, normalized size = 1.00

$$\frac{\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)}{\sqrt{4ac-b^2}}+\log(a+x(b+cx))(Ace-bBe+Bcd)+2Bcex}{2c^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x]
```

```
[Out] (2*B*c*e*x + (2*(b^2*B*e - b*c*(B*d + A*e) + 2*c*(A*c*d - a*B*e))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] + (B*c*d - b*B*e + A*c*e)
*Log[a + x*(b + c*x)])/(2*c^2)
```

fricas [**A**] time = 0.80, size = 369, normalized size = 3.42

$$\left[\frac{2\left(Bb^2c-4\,Bac^2\right)ex+\sqrt{b^2-4\,ac}\left(\left(Bbc-2\,Ac^2\right)d-\left(Bb^2-(2\,Ba+Ab)c\right)e\right)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,c}{cx^2+bx+a}\right.}{2\left(b^2c^2-4\,ac^3\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(B*b^2*c - 4*B*a*c^2)*e*x + sqrt(b^2 - 4*a*c)*((B*b*c - 2*A*c^2)*d
- (B*b^2 - (2*B*a + A*b)*c)*e)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqr
t(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) + ((B*b^2*c - 4*B*a*c^2)*d -
 (B*b^3 + 4*A*a*c^2 - (4*B*a*b + A*b^2)*c)*e)*log(c*x^2 + b*x + a))/(b^2*c^
2 - 4*a*c^3), 1/2*(2*(B*b^2*c - 4*B*a*c^2)*e*x + 2*sqrt(-b^2 + 4*a*c)*((B*b
*c - 2*A*c^2)*d - (B*b^2 - (2*B*a + A*b)*c)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(
2*c*x + b)/(b^2 - 4*a*c)) + ((B*b^2*c - 4*B*a*c^2)*d - (B*b^3 + 4*A*a*c^2 -
 (4*B*a*b + A*b^2)*c)*e)*log(c*x^2 + b*x + a))/(b^2*c^2 - 4*a*c^3)]
```

giac [**A**] time = 0.16, size = 112, normalized size = 1.04

$$\frac{Bxe}{c}+\frac{(Bcd-Bbe+Ace)\log\left(cx^2+bx+a\right)}{2\,c^2}-\frac{\left(Bbcd-2\,Ac^2d-Bb^2e+2\,Bace+Abce\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] B*x*e/c + 1/2*(B*c*d - B*b*e + A*c*e)*log(c*x^2 + b*x + a)/c^2 - (B*b*c*d -
 2*A*c^2*d - B*b^2*e + 2*B*a*c*e + A*b*c*e)*arctan((2*c*x + b)/sqrt(-b^2 +
4*a*c))/(sqrt(-b^2 + 4*a*c)*c^2)
```

maple [B] time = 0.05, size = 261, normalized size = 2.42

$$-\frac{Abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{2Ad\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{2Bae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{B\,b^2e\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c^2}-\frac{Bbd\arctan\left(\right.}{\sqrt{4ac-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] B/c*e*x+1/2/c*ln(c*x^2+b*x+a)*A*e-1/2/c^2*ln(c*x^2+b*x+a)*B*b*e+1/2/c*ln(c*
x^2+b*x+a)*B*d+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*d-
2/c/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*e-1/c/(4*a*c-
b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b*e+1/c^2/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*B*e-1/c/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 2.70, size = 163, normalized size = 1.51

$$\frac{\ln\left(c\,x^2+b\,x+a\right)\,\left(B\,b^3\,e+4\,A\,a\,c^2\,e+4\,B\,a\,c^2\,d-A\,b^2\,c\,e-B\,b^2\,c\,d-4\,B\,a\,b\,c\,e\right)}{2\,\left(4\,a\,c^3-b^2\,c^2\right)}-\frac{\mathrm{atan}\left(\frac{b}{\sqrt{4\,a\,c-b^2}}+\frac{2\,c\,x}{\sqrt{4\,a\,c-b^2}}\right)\,\left(A\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2),x)
```

```
[Out] (log(a + b*x + c*x^2)*(B*b^3*e + 4*A*a*c^2*e + 4*B*a*c^2*d - A*b^2*c*e - B*
b^2*c*d - 4*B*a*b*c*e))/(2*(4*a*c^3 - b^2*c^2)) - (atan(b/(4*a*c - b^2)^(1/
2) + (2*c*x)/(4*a*c - b^2)^(1/2))*(A*b*c*e - B*b^2*e - 2*A*c^2*d + 2*B*a*c*
e + B*b*c*d))/(c^2*(4*a*c - b^2)^(1/2)) + (B*e*x)/c
```

sympy [B] time = 3.44, size = 677, normalized size = 6.27

$$\frac{Bex}{c}+\left(-\frac{\sqrt{-4ac+b^2}\,\left(Abce-2Ac^2d+2Bace-Bb^2e+Bbcd\right)}{2c^2\left(4ac-b^2\right)}-\frac{-Ace+Bbe-Bcd}{2c^2}\right)\log\left(x+\frac{2Aace-Abcd-Ba}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] B*e*x/c + (-sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*
e + B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2))*l
```

```
og(x + (2*A*a*c*e - A*b*c*d - B*a*b*e + 2*B*a*c*d - 4*a*c**2*(-sqrt(-4*a*c
+ b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*
a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)) + b**2*c*(-sqrt(-4*a*c +
b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*a*
c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)))/(A*b*c*e - 2*A*c**2*d + 2*
B*a*c*e - B*b**2*e + B*b*c*d)) + (sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d
 + 2*B*a*c*e - B*b**2*e + B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*
e - B*c*d)/(2*c**2))*log(x + (2*A*a*c*e - A*b*c*d - B*a*b*e + 2*B*a*c*d - 4
*a*c**2*(sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e +
 B*b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)) + b*
*2*c*(sqrt(-4*a*c + b**2)*(A*b*c*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*
b*c*d)/(2*c**2*(4*a*c - b**2)) - (-A*c*e + B*b*e - B*c*d)/(2*c**2)))/(A*b*c
*e - 2*A*c**2*d + 2*B*a*c*e - B*b**2*e + B*b*c*d))
```

3.2367 $\int \frac{A+Bx}{a+bx+cx^2} dx$

Optimal. Leaf size=64

$$\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}$$

```
[Out] 1/2*B*ln(c*x^2+b*x+a)/c+(-2*A*c+B*b)*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/
c/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {634, 618, 206, 628}

$$\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(c*Sqrt[b^2 - 4*a*c]
) + (B*Log[a + b*x + c*x^2])/(2*c)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{a+bx+cx^2}\,dx &= \frac{B\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2c}+\frac{(-bB+2Ac)\int \frac{1}{a+bx+cx^2}\,dx}{2c}\\ &= \frac{B\log\left(a+bx+cx^2\right)}{2c}-\frac{(-bB+2Ac)\,\mathrm{Subst}\left(\int \frac{1}{b^2-4ac-x^2}\,dx,x,b+2cx\right)}{c}\\ &= \frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{c\sqrt{b^2-4ac}}+\frac{B\log\left(a+bx+cx^2\right)}{2c}\end{aligned}$$

Mathematica [**A**] time = 0.05, size = 66, normalized size = 1.03

$$\frac{B\log(a+x(b+cx))-\frac{2(bB-2Ac)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}}{2c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2),x]
```

```
[Out] ((-2*(b*B - 2*A*c)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*
c] + B*Log[a + x*(b + c*x)])/(2*c)
```

fricas [**A**] time = 0.98, size = 207, normalized size = 3.23

$$\left[-\frac{(Bb-2\,Ac)\sqrt{b^2-4\,ac}\,\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac-\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)-\left(Bb^2-4\,Bac\right)\log\left(cx^2+bx+a\right)}{2\left(b^2c-4\,ac^2\right)},\ 2\,(Bb-2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [-1/2*((B*b - 2*A*c)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a
*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - (B*b^2 - 4*B*a*c)*
log(c*x^2 + b*x + a))/(b^2*c - 4*a*c^2), 1/2*(2*(B*b - 2*A*c)*sqrt(-b^2 + 4
*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) + (B*b^2 - 4*B*
a*c)*log(c*x^2 + b*x + a))/(b^2*c - 4*a*c^2)]
```

giac [**A**] time = 0.18, size = 63, normalized size = 0.98

$$\frac{B\log\left(cx^2+bx+a\right)}{2\,c}-\frac{(Bb-2\,Ac)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\sqrt{-b^2+4\,ac}\,c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*B*log(c*x^2 + b*x + a)/c - (B*b - 2*A*c)*arctan((2*c*x + b)/sqrt(-b^2 +
 4*a*c))/(sqrt(-b^2 + 4*a*c)*c)
```

maple [**A**] time = 0.04, size = 93, normalized size = 1.45

$$\frac{2A\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{Bb\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}\;c}+\frac{B\ln\left(c\,x^2+bx+a\right)}{2c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a),x)
```

```
[Out] 1/2*B*ln(c*x^2+b*x+a)/c+2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*A-1/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b/c
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 0.12, size = 162, normalized size = 2.53

$$\frac{2A\,\mathrm{atan}\left(\frac{b}{\sqrt{4ac-b^2}}+\frac{2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}-\frac{Bb^2\ln\left(cx^2+bx+a\right)}{2\left(4ac^2-b^2c\right)}+\frac{2Bac\ln\left(cx^2+bx+a\right)}{4ac^2-b^2c}-\frac{Bb\,\mathrm{atan}\left(\frac{b}{\sqrt{4ac-b^2}}+\frac{2cx}{\sqrt{4ac-b^2}}\right.}{c\sqrt{4ac-b^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2),x)
```

```
[Out] (2*A*atan(b/(4*a*c - b^2)^(1/2) + (2*c*x)/(4*a*c - b^2)^(1/2)))/(4*a*c - b^
2)^(1/2) - (B*b^2*log(a + b*x + c*x^2))/(2*(4*a*c^2 - b^2*c)) + (2*B*a*c*lo
g(a + b*x + c*x^2))/(4*a*c^2 - b^2*c) - (B*b*atan(b/(4*a*c - b^2)^(1/2) + (
2*c*x)/(4*a*c - b^2)^(1/2)))/(c*(4*a*c - b^2)^(1/2))
```

sympy [B] time = 0.69, size = 280, normalized size = 4.38

$$\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c\left(4ac-b^2\right)}\right)\log\left(x+\frac{-Ab+2Ba-4ac\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c\left(4ac-b^2\right)}\right)+b^2\left(\frac{B}{2c}-\frac{(-2Ac+Bb)\sqrt{-4ac+b^2}}{2c\left(4ac-b^2\right)}\right.}{-2Ac+Bb}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a),x)
```

```
[Out] (B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2)))*log(x +
 (-A*b + 2*B*a - 4*a*c*(B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(
4*a*c - b**2))) + b**2*(B/(2*c) - (-2*A*c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(
4*a*c - b**2))))/(-2*A*c + B*b)) + (B/(2*c) + (-2*A*c + B*b)*sqrt(-4*a*c +
b**2)/(2*c*(4*a*c - b**2)))*log(x + (-A*b + 2*B*a - 4*a*c*(B/(2*c) + (-2*A*
c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2))) + b**2*(B/(2*c) + (-2*A*
c + B*b)*sqrt(-4*a*c + b**2)/(2*c*(4*a*c - b**2))))/(-2*A*c + B*b))
```

3.2368 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=146

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(-2aBe+Abe-2Acd+bBd)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)}+\frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2-bde+cd^2}$$

```
[Out] -(-A*e+B*d)*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)+1/2*(-A*e+B*d)*ln(c*x^2+b*x+a)/(a
*e^2-b*d*e+c*d^2)+(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*arctanh((2*c*x+b)/(-4*a*c+b
^2)^(1/2))/(a*e^2-b*d*e+c*d^2)/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(-2aBe+Abe-2Acd+bBd)}{\sqrt{b^2-4ac}\left(ae^2-bde+cd^2\right)}+\frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(ae^2-bde+cd^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{ae^2-bde+cd^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] ((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]]
)/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)) - ((B*d - A*e)*Log[d + e*x])/
(c*d^2 - b*d*e + a*e^2) + ((B*d - A*e)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*
d*e + a*e^2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$
\begin{aligned}
\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)}\,dx &= \int \left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{Acd-Abe+aBe+c(Bd-Ae)x}{\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}\right)dx\\
&= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2}+\frac{\int \frac{Acd-Abe+aBe+c(Bd-Ae)x}{a+bx+cx^2}\,dx}{cd^2-bde+ae^2}\\
&= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2}+\frac{(Bd-Ae)\int \frac{b+2cx}{a+bx+cx^2}\,dx}{2\left(cd^2-bde+ae^2\right)}-\frac{(bBd-2Acd+Abe-2aBe)}{2\left(cd^2-bde+a\right.}\\
&= -\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2}+\frac{(Bd-Ae)\log\left(a+bx+cx^2\right)}{2\left(cd^2-bde+ae^2\right)}+\frac{(bBd-2Acd+Abe-}{}\\
&= \frac{(bBd-2Acd+Abe-2aBe)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\sqrt{b^2-4ac}\,\left(cd^2-bde+ae^2\right)}-\frac{(Bd-Ae)\log(d+ex)}{cd^2-bde+ae^2}+\frac{(Bd-}{2\left(\right.}
\end{aligned}
$$

Mathematica [A] time = 0.12, size = 125, normalized size = 0.86

$$
\frac{\sqrt{4ac-b^2}\,(Bd-Ae)(2\log(d+ex)-\log(a+x(b+cx)))+2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)(-2aBe+Abe-2Acd+bBd)}{2\sqrt{4ac-b^2}\,\left(e(bd-ae)-cd^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x]
```

```
[Out] (2*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c
]] + Sqrt[-b^2 + 4*a*c]*(B*d - A*e)*(2*Log[d + e*x] - Log[a + x*(b + c*x)])
)/(2*Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + e*(b*d - a*e)))
```

fricas [A] time = 11.77, size = 409, normalized size = 2.80

$$
\left[\frac{\sqrt{b^2-4\,ac}\,((Bb-2\,Ac)d-(2\,Ba-Ab)e)\log\left(\frac{2\,c^2x^2+2\,bcx+b^2-2\,ac+\sqrt{b^2-4\,ac}\,(2\,cx+b)}{cx^2+bx+a}\right)+\left(\left(Bb^2-4\,Bac\right)d-\left(Ab^2-4\,A\right.\right.}{2\left(\left(b^2c-4\,ac^2\right)d^2-\left(b^3-4\,abc\right)de+\left(ab^2-4\right.\right.}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(sqrt(b^2 - 4*a*c)*((B*b - 2*A*c)*d - (2*B*a - A*b)*e)*log((2*c^2*x^2
+ 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a))
 + ((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(c*x^2 + b*x + a) - 2*((B
*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(e*x + d))/((b^2*c - 4*a*c^2)*d
^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2), 1/2*(2*sqrt(-b^2 + 4*a*c
)*((B*b - 2*A*c)*d - (2*B*a - A*b)*e)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b
)/(b^2 - 4*a*c)) + ((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(c*x^2 +
b*x + a) - 2*((B*b^2 - 4*B*a*c)*d - (A*b^2 - 4*A*a*c)*e)*log(e*x + d))/((b^
2*c - 4*a*c^2)*d^2 - (b^3 - 4*a*b*c)*d*e + (a*b^2 - 4*a^2*c)*e^2)]
```

giac [A] time = 0.16, size = 155, normalized size = 1.06

$$
\frac{(Bd-Ae)\log\left(cx^2+bx+a\right)}{2\left(cd^2-bde+ae^2\right)}-\frac{\left(Bde-Ae^2\right)\log\left(|xe+d|\right)}{cd^2e-bde^2+ae^3}-\frac{(Bbd-2\,Acd-2\,Bae+Abe)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(cd^2-bde+ae^2\right)\sqrt{-b^2+4\,ac}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*d - A*e)*log(c*x^2 + b*x + a)/(c*d^2 - b*d*e + a*e^2) - (B*d*e - A*e
^2)*log(abs(x*e + d))/(c*d^2*e - b*d*e^2 + a*e^3) - (B*b*d - 2*A*c*d - 2*B*
a*e + A*b*e)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((c*d^2 - b*d*e + a*e^2
)*sqrt(-b^2 + 4*a*c))
```

maple [**B**] time = 0.05, size = 343, normalized size = 2.35

$$-\frac{Abe\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{4ac-b^2}}+\frac{2Acd\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{4ac-b^2}}+\frac{2Bae\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a e^2-bde+c d^2\right)\sqrt{4ac-b^2}}-\frac{Bbd\arctan}{\left(a e^2-bde+c\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x)
```

```
[Out] 1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*A*e-1/(a*e^2-b*d*e+c*d^2)*ln(e*x+d)*B*d-1/2
/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b*x+a)*A*e+1/2/(a*e^2-b*d*e+c*d^2)*ln(c*x^2+b
*x+a)*B*d-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b
^2)^(1/2))*A*b*e+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(
4*a*c-b^2)^(1/2))*A*c*d+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*B*a*e-1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)^(1/2)*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*d
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 8.70, size = 1027, normalized size = 7.03

$$\frac{\ln\left(d+e\,x\right)\,\left(A\,e-B\,d\right)}{c\,d^2-b\,d\,e+a\,e^2}-\frac{\ln\left(B^2\,c\,e\,x-\frac{\left(B\,a\,c\,e^2-A\,b\,c\,e^2-A\,c^2\,d\,e+c\,e\,x\,\left(B\,b\,e-3\,A\,c\,e+B\,c\,d\right)+B\,b\,c\,d\,e+\frac{c\,e\,\left(b^2\,d\,e+2\,x\,b^2\,e^2+b\,c\,d^2-2\,x\,b\,c\,d\,e+a\,b\right.}{}\right.}{}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)),x)
```

```
[Out] (log(d + e*x)*(A*e - B*d))/(a*e^2 + c*d^2 - b*d*e) - (log(B^2*c*e*x - ((B*a
*c*e^2 - A*b*c*e^2 - A*c^2*d*e + c*e*x*(B*b*e - 3*A*c*e + B*c*d) + B*b*c*d*
e + (c*e*(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e
^2*x - 8*a*c*d*e - 2*b*c*d*e*x)*((A*b^2*e)/2 - (B*b^2*d)/2 + (A*b*e*(b^2 -
4*a*c)^(1/2))/2 - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2 - 4*a*c)^(1/2) + (
B*b*d*(b^2 - 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^
2 + c*d^2 - b*d*e)))*((A*b^2*e)/2 - (B*b^2*d)/2 + (A*b*e*(b^2 - 4*a*c)^(1/2
))/2 - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2 - 4*a*c)^(1/2) + (B*b*d*(b^2
- 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2 -
 b*d*e)) + A*B*c*e)*(b*((A*e*(b^2 - 4*a*c)^(1/2))/2 + (B*d*(b^2 - 4*a*c)^(1
/2))/2) + b^2*((A*e)/2 - (B*d)/2) - A*c*d*(b^2 - 4*a*c)^(1/2) - B*a*e*(b^2
- 4*a*c)^(1/2) - 2*A*a*c*e + 2*B*a*c*d))/(a*b^2*e^2 - 4*a*c^2*d^2 - 4*a^2*c
*e^2 + b^2*c*d^2 - b^3*d*e + 4*a*b*c*d*e) - (log(B^2*c*e*x - ((B*a*c*e^2 -
A*b*c*e^2 - A*c^2*d*e + c*e*x*(B*b*e - 3*A*c*e + B*c*d) + B*b*c*d*e + (c*e*
(2*b^2*e^2*x + 2*c^2*d^2*x + a*b*e^2 + b*c*d^2 + b^2*d*e - 6*a*c*e^2*x - 8*
a*c*d*e - 2*b*c*d*e*x)*((A*b^2*e)/2 - (B*b^2*d)/2 - (A*b*e*(b^2 - 4*a*c)^(1
/2))/2 + A*c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^(1/2) - (B*b*d*(b^
2 - 4*a*c)^(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2
 - b*d*e)))*((A*b^2*e)/2 - (B*b^2*d)/2 - (A*b*e*(b^2 - 4*a*c)^(1/2))/2 + A*
c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^(1/2) - (B*b*d*(b^2 - 4*a*c)^
(1/2))/2 - 2*A*a*c*e + 2*B*a*c*d))/((4*a*c - b^2)*(a*e^2 + c*d^2 - b*d*e))
+ A*B*c*e)*(b^2*((A*e)/2 - (B*d)/2) - b*((A*e*(b^2 - 4*a*c)^(1/2))/2 + (B*d
*(b^2 - 4*a*c)^(1/2))/2) + A*c*d*(b^2 - 4*a*c)^(1/2) + B*a*e*(b^2 - 4*a*c)^
(1/2) - 2*A*a*c*e + 2*B*a*c*d))/(a*b^2*e^2 - 4*a*c^2*d^2 - 4*a^2*c*e^2 + b^
2*c*d^2 - b^3*d*e + 4*a*b*c*d*e)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2369 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=255

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\log\left(a+bx+cx^2\right)\left(\right.}{2\left(ae^2\right.}$$

```
[Out] (-A*e+B*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)+(A*e*(-b*e+2*c*d)-B*(-a*e^2+c*d^2))*
ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^2-1/2*(A*e*(-b*e+2*c*d)-B*(-a*e^2+c*d^2))*ln(
c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^2-(A*b^2*e^2+2*c*(-A*a*e^2+A*c*d^2+2*B*a*d
*e)-b*(2*A*c*d*e+B*a*e^2+B*c*d^2))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(a
*e^2-b*d*e+c*d^2)^2/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.44, antiderivative size = 255, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {800, 634, 618, 206, 628}

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{b^2-4ac}\,\left(ae^2-bde+cd^2\right)^2}-\frac{\log\left(a+bx+cx^2\right)\left(\right.}{2\left(ae^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) - ((A*b^2*e^2 + 2*c*(A*c*d^
2 + 2*a*B*d*e - a*A*e^2) - b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*ArcTanh[(b +
2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^2) +
((A*e*(2*c*d - b*e) - B*(c*d^2 - a*e^2))*Log[d + e*x])/(c*d^2 - b*d*e + a*e
^2)^2 - ((A*e*(2*c*d - b*e) - B*(c*d^2 - a*e^2))*Log[a + b*x + c*x^2])/(2*(
c*d^2 - b*d*e + a*e^2)^2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)}\,dx = \int\left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)^2}+\frac{e\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}+\frac{aBe(2cd-}{}\right.$$

$$=\frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}+\int\frac{aBe}{}$$

$$=\frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}-\frac{(Ae(2}{}$$

$$=\frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)}+\frac{\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)\log(d+ex)}{\left(cd^2-bde+ae^2\right)^2}-\frac{(Ae(2}{}$$

$$=\frac{Bd-Ae}{\left(cd^2-bde+ae^2\right)(d+ex)}-\frac{\left(Ab^2e^2+2c\left(Acd^2+2aBde-aAe^2\right)-b\left(Bcd^2+2\right.\right.}{\sqrt{b^2-4ac}\left(cd^2-bde+\right.}$$

Mathematica [A] time = 0.34, size = 219, normalized size = 0.86

$$\frac{\frac{2\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)\left(-b\left(aBe^2+2Acde+Bcd^2\right)+2c\left(-aAe^2+2aBde+Acd^2\right)+Ab^2e^2\right)}{\sqrt{4ac-b^2}}-2\log(d+ex)\left(B\left(cd^2-ae^2\right)+Ae(be-2cd)\right)+\log(}{2\left(e(ae-bd)+cd^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e)))/(d + e*x) + (2*(A*b^2*e^2 + 2*c
*(A*c*d^2 + 2*a*B*d*e - a*A*e^2) - b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c] - 2*(A*e*(-2*c*d + b*
e) + B*(c*d^2 - a*e^2))*Log[d + e*x] + (A*e*(-2*c*d + b*e) + B*(c*d^2 - a*e
^2))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [B] time = 142.53, size = 1594, normalized size = 6.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] [1/2*(2*(B*b^2*c - 4*B*a*c^2)*d^3 - 2*(B*b^3 - 4*A*a*c^2 - (4*B*a*b - A*b^2
)*c)*d^2*e + 2*(B*a*b^2 + A*b^3 - 4*(B*a^2 + A*a*b)*c)*d*e^2 - 2*(A*a*b^2 -
 4*A*a^2*c)*e^3 - (2*(2*B*a - A*b)*c*d^2*e - (B*b*c - 2*A*c^2)*d^3 - (B*a*b
 - A*b^2 + 2*A*a*c)*d*e^2 + (2*(2*B*a - A*b)*c*d*e^2 - (B*b*c - 2*A*c^2)*d^
2*e - (B*a*b - A*b^2 + 2*A*a*c)*e^3)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 +
2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) +
 ((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d^2*e - (B*a*b^2 - A*
b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^2)*d^2*e - 2*(A*b^2*
c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*e^3)*x)*log(
c*x^2 + b*x + a) - 2*((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d
^2*e - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^
2)*d^2*e - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*
a*b)*c)*e^3)*x)*log(e*x + d))/((b^2*c^2 - 4*a*c^3)*d^5 - 2*(b^3*c - 4*a*b*c
^2)*d^4*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^3*e^2 - 2*(a*b^3 - 4*a^2*b*c)*d
^2*e^3 + (a^2*b^2 - 4*a^3*c)*d*e^4 + ((b^2*c^2 - 4*a*c^3)*d^4*e - 2*(b^3*c
 - 4*a*b*c^2)*d^3*e^2 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^3 - 2*(a*b^3 - 4
*a^2*b*c)*d*e^4 + (a^2*b^2 - 4*a^3*c)*e^5)*x), 1/2*(2*(B*b^2*c - 4*B*a*c^2)
*d^3 - 2*(B*b^3 - 4*A*a*c^2 - (4*B*a*b - A*b^2)*c)*d^2*e + 2*(B*a*b^2 + A*b
^3 - 4*(B*a^2 + A*a*b)*c)*d*e^2 - 2*(A*a*b^2 - 4*A*a^2*c)*e^3 - 2*(2*(2*B*a
 - A*b)*c*d^2*e - (B*b*c - 2*A*c^2)*d^3 - (B*a*b - A*b^2 + 2*A*a*c)*d*e^2 +
 (2*(2*B*a - A*b)*c*d*e^2 - (B*b*c - 2*A*c^2)*d^2*e - (B*a*b - A*b^2 + 2*A*
a*c)*e^3)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2
 - 4*a*c)) + ((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c - 4*A*a*c^2)*d^2*e - (
B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*c - 4*B*a*c^2)*d^2*e
 - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*
e^3)*x)*log(c*x^2 + b*x + a) - 2*((B*b^2*c - 4*B*a*c^2)*d^3 - 2*(A*b^2*c -
4*A*a*c^2)*d^2*e - (B*a*b^2 - A*b^3 - 4*(B*a^2 - A*a*b)*c)*d*e^2 + ((B*b^2*
c - 4*B*a*c^2)*d^2*e - 2*(A*b^2*c - 4*A*a*c^2)*d*e^2 - (B*a*b^2 - A*b^3 - 4
*(B*a^2 - A*a*b)*c)*e^3)*x)*log(e*x + d))/((b^2*c^2 - 4*a*c^3)*d^5 - 2*(b^3
*c - 4*a*b*c^2)*d^4*e + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^3*e^2 - 2*(a*b^3 -
4*a^2*b*c)*d^2*e^3 + (a^2*b^2 - 4*a^3*c)*d*e^4 + ((b^2*c^2 - 4*a*c^3)*d^4*e
 - 2*(b^3*c - 4*a*b*c^2)*d^3*e^2 + (b^4 - 2*a*b^2*c - 8*a^2*c^2)*d^2*e^3 -
2*(a*b^3 - 4*a^2*b*c)*d*e^4 + (a^2*b^2 - 4*a^3*c)*e^5)*x)]
```

giac [A] time = 0.17, size = 383, normalized size = 1.50

$$-\frac{\left(Bbcd^2e^2-2\,Ac^2d^2e^2-4\,Bacde^3+2\,Abcde^3+Babe^4-Ab^2e^4+2\,Aace^4\right)\arctan\left(\frac{\left(2\,cd-\frac{2\,cd^2}{xe+d}-be+\frac{2\,bde}{xe+d}-\frac{2\,ae^2}{xe+d}\right)e^{(-1)}}{\sqrt{-b^2+4\,ac}}\right)}{\left(c^2d^4-2\,bcd^3e+b^2d^2e^2+2\,acd^2e^2-2\,abde^3+a^2e^4\right)\sqrt{-b^2+4\,ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] -(B*b*c*d^2*e^2 - 2*A*c^2*d^2*e^2 - 4*B*a*c*d*e^3 + 2*A*b*c*d*e^3 + B*a*b*e
^4 - A*b^2*e^4 + 2*A*a*c*e^4)*arctan((2*c*d - 2*c*d^2/(x*e + d) - b*e + 2*b
*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(-2)/((c^2
*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*s
qrt(-b^2 + 4*a*c)) + 1/2*(B*c*d^2 - 2*A*c*d*e - B*a*e^2 + A*b*e^2)*log(c -
2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a
*e^2/(x*e + d)^2)/(c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*
a*b*d*e^3 + a^2*e^4) + (B*d*e^2/(x*e + d) - A*e^3/(x*e + d))/(c*d^2*e^2 - b
*d*e^3 + a*e^4)
```

maple [B] time = 0.06, size = 729, normalized size = 2.86

$$-\frac{2Aac\,e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}}+\frac{A\,b^2e^2\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}}-\frac{2Abcde\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(a\,e^2-bde+c\,d^2\right)^2\sqrt{4ac-b^2}}+\frac{2A\,c^2d^2\,a}{\left(a\,e^2-bde\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*A*e+1/(a*e^2-b*d*e+c*d^2)/(e*x+d)*B*d-1/(a*e
^2-b*d*e+c*d^2)^2*ln(e*x+d)*A*b*e^2+2/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*A*c*d
*e+1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x+d)*B*a*e^2-1/(a*e^2-b*d*e+c*d^2)^2*ln(e*x
+d)*B*c*d^2+1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a)*A*b*e^2-1/(a*e^2-b*d*
e+c*d^2)^2*c*ln(c*x^2+b*x+a)*A*d*e-1/2/(a*e^2-b*d*e+c*d^2)^2*ln(c*x^2+b*x+a
)*a*B*e^2+1/2/(a*e^2-b*d*e+c*d^2)^2*c*ln(c*x^2+b*x+a)*B*d^2-2/(a*e^2-b*d*e+
c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*e^2*c+1/
(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
*A*b^2*e^2-2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*A*b*c*d*e+2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2
*c*x+b)/(4*a*c-b^2)^(1/2))*A*c^2*d^2-1/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*b*e^2+4/(a*e^2-b*d*e+c*d^2)^2/(
4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*c*d*e-1/(a*e^2-b*d
*e+c*d^2)^2/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*c*d^2
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 7.22, size = 2650, normalized size = 10.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)),x)
```

```
[Out] (log(2*A*a*b^3*e^4 + A*b*c^3*d^4 + 6*B*a*c^3*d^4 + 6*B*a^3*c*e^4 + 2*A*b^4*
e^4*x + 2*A*c^4*d^4*x - A*c^3*d^4*(b^2 - 4*a*c)^(1/2) - 2*B*a^2*b^2*e^4 - 2
*B*b^2*c^2*d^4 - 2*B*a*b^3*e^4*x - B*b*c^3*d^4*x + 2*A*a*b^2*e^4*(b^2 - 4*a
*c)^(1/2) - A*a^2*c*e^4*(b^2 - 4*a*c)^(1/2) - 2*B*a^2*b*e^4*(b^2 - 4*a*c)^(
1/2) + 2*B*b*c^2*d^4*(b^2 - 4*a*c)^(1/2) + 2*A*b^3*e^4*x*(b^2 - 4*a*c)^(1/2
) + 3*B*c^3*d^4*x*(b^2 - 4*a*c)^(1/2) + 16*A*a^2*c^2*d*e^3 + 2*A*b^2*c^2*d^
3*e - A*b^3*c*d^2*e^2 + 2*A*a^2*c^2*e^4*x - 20*B*a^2*c^2*d^2*e^2 - 7*A*a^2*
b*c*e^4 - 16*A*a*c^3*d^3*e + 10*A*b^2*c^2*d^2*e^2*x - 6*A*a*b^2*c*d*e^3 + 4
*B*a*b*c^2*d^3*e + 4*B*a^2*b*c*d*e^3 - 8*A*a*b^2*c*e^4*x + 7*B*a^2*b*c*e^4*
x - 4*A*b*c^3*d^3*e*x - 8*A*b^3*c*d*e^3*x + 16*B*a*c^3*d^3*e*x - 2*A*b*c^2*
d^3*e*(b^2 - 4*a*c)^(1/2) - 8*B*a*c^2*d^3*e*(b^2 - 4*a*c)^(1/2) + 8*B*a^2*c
*d*e^3*(b^2 - 4*a*c)^(1/2) - 2*B*a*b^2*e^4*x*(b^2 - 4*a*c)^(1/2) + 3*B*a^2*
c*e^4*x*(b^2 - 4*a*c)^(1/2) - 8*A*c^3*d^3*e*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*
b*c^2*d^2*e^2 + 2*B*a*b^2*c*d^2*e^2 - 28*A*a*c^3*d^2*e^2*x - 16*B*a^2*c^2*d
*e^3*x - 2*B*b^2*c^2*d^3*e*x + B*b^3*c*d^2*e^2*x + 14*A*a*c^2*d^2*e^2*(b^2
- 4*a*c)^(1/2) + A*b^2*c*d^2*e^2*(b^2 - 4*a*c)^(1/2) + 8*A*a*c^2*d*e^3*x*(b
^2 - 4*a*c)^(1/2) - 8*A*b^2*c*d*e^3*x*(b^2 - 4*a*c)^(1/2) - 2*B*b*c^2*d^3*e
*x*(b^2 - 4*a*c)^(1/2) - 10*B*a*b*c^2*d^2*e^2*x + 12*A*b*c^2*d^2*e^2*x*(b^2
 - 4*a*c)^(1/2) - 10*B*a*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + B*b^2*c*d^2*e^
2*x*(b^2 - 4*a*c)^(1/2) - 10*A*a*b*c*d*e^3*(b^2 - 4*a*c)^(1/2) - 4*A*a*b*c*
e^4*x*(b^2 - 4*a*c)^(1/2) + 28*A*a*b*c^2*d*e^3*x + 6*B*a*b^2*c*d*e^3*x + 6*
B*a*b*c*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(B*a*b^2*e^2 - A*b^3*e^2 + 4*B*a*c^2*d
^2 - 4*B*a^2*c*e^2 - B*b^2*c*d^2 - A*b^2*e^2*(b^2 - 4*a*c)^(1/2) - 2*A*c^2*
d^2*(b^2 - 4*a*c)^(1/2) + 4*A*a*b*c*e^2 - 8*A*a*c^2*d*e + 2*A*b^2*c*d*e + 2
*A*a*c*e^2*(b^2 - 4*a*c)^(1/2) + B*a*b*e^2*(b^2 - 4*a*c)^(1/2) + B*b*c*d^2*
(b^2 - 4*a*c)^(1/2) + 2*A*b*c*d*e*(b^2 - 4*a*c)^(1/2) - 4*B*a*c*d*e*(b^2 -
4*a*c)^(1/2)))/(2*(4*a*c^3*d^4 + 4*a^3*c*e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 -
b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2
*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*e^2)) - (log(d + e*x)*(e^2*(A*b -
B*a) + B*c*d^2 - 2*A*c*d*e))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3
 - 2*b*c*d^3*e + 2*a*c*d^2*e^2) - (log(2*A*a*b^3*e^4 + A*b*c^3*d^4 + 6*B*a*
c^3*d^4 + 6*B*a^3*c*e^4 + 2*A*b^4*e^4*x + 2*A*c^4*d^4*x + A*c^3*d^4*(b^2 -
4*a*c)^(1/2) - 2*B*a^2*b^2*e^4 - 2*B*b^2*c^2*d^4 - 2*B*a*b^3*e^4*x - B*b*c^
3*d^4*x - 2*A*a*b^2*e^4*(b^2 - 4*a*c)^(1/2) + A*a^2*c*e^4*(b^2 - 4*a*c)^(1/
2) + 2*B*a^2*b*e^4*(b^2 - 4*a*c)^(1/2) - 2*B*b*c^2*d^4*(b^2 - 4*a*c)^(1/2)
- 2*A*b^3*e^4*x*(b^2 - 4*a*c)^(1/2) - 3*B*c^3*d^4*x*(b^2 - 4*a*c)^(1/2) + 1
6*A*a^2*c^2*d*e^3 + 2*A*b^2*c^2*d^3*e - A*b^3*c*d^2*e^2 + 2*A*a^2*c^2*e^4*x
 - 20*B*a^2*c^2*d^2*e^2 - 7*A*a^2*b*c*e^4 - 16*A*a*c^3*d^3*e + 10*A*b^2*c^2
*d^2*e^2*x - 6*A*a*b^2*c*d*e^3 + 4*B*a*b*c^2*d^3*e + 4*B*a^2*b*c*d*e^3 - 8*
A*a*b^2*c*e^4*x + 7*B*a^2*b*c*e^4*x - 4*A*b*c^3*d^3*e*x - 8*A*b^3*c*d*e^3*x
 + 16*B*a*c^3*d^3*e*x + 2*A*b*c^2*d^3*e*(b^2 - 4*a*c)^(1/2) + 8*B*a*c^2*d^3
*e*(b^2 - 4*a*c)^(1/2) - 8*B*a^2*c*d*e^3*(b^2 - 4*a*c)^(1/2) + 2*B*a*b^2*e^
4*x*(b^2 - 4*a*c)^(1/2) - 3*B*a^2*c*e^4*x*(b^2 - 4*a*c)^(1/2) + 8*A*c^3*d^3
*e*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*b*c^2*d^2*e^2 + 2*B*a*b^2*c*d^2*e^2 - 28*
A*a*c^3*d^2*e^2*x - 16*B*a^2*c^2*d*e^3*x - 2*B*b^2*c^2*d^3*e*x + B*b^3*c*d^
2*e^2*x - 14*A*a*c^2*d^2*e^2*(b^2 - 4*a*c)^(1/2) - A*b^2*c*d^2*e^2*(b^2 - 4
*a*c)^(1/2) - 8*A*a*c^2*d*e^3*x*(b^2 - 4*a*c)^(1/2) + 8*A*b^2*c*d*e^3*x*(b^
2 - 4*a*c)^(1/2) + 2*B*b*c^2*d^3*e*x*(b^2 - 4*a*c)^(1/2) - 10*B*a*b*c^2*d^2
*e^2*x - 12*A*b*c^2*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 10*B*a*c^2*d^2*e^2*x*(b
^2 - 4*a*c)^(1/2) - B*b^2*c*d^2*e^2*x*(b^2 - 4*a*c)^(1/2) + 10*A*a*b*c*d*e^
3*(b^2 - 4*a*c)^(1/2) + 4*A*a*b*c*e^4*x*(b^2 - 4*a*c)^(1/2) + 28*A*a*b*c^2*
d*e^3*x + 6*B*a*b^2*c*d*e^3*x - 6*B*a*b*c*d*e^3*x*(b^2 - 4*a*c)^(1/2))*(A*b
^3*e^2 - B*a*b^2*e^2 - 4*B*a*c^2*d^2 + 4*B*a^2*c*e^2 + B*b^2*c*d^2 - A*b^2*
e^2*(b^2 - 4*a*c)^(1/2) - 2*A*c^2*d^2*(b^2 - 4*a*c)^(1/2) - 4*A*a*b*c*e^2 +
 8*A*a*c^2*d*e - 2*A*b^2*c*d*e + 2*A*a*c*e^2*(b^2 - 4*a*c)^(1/2) + B*a*b*e^
2*(b^2 - 4*a*c)^(1/2) + B*b*c*d^2*(b^2 - 4*a*c)^(1/2) + 2*A*b*c*d*e*(b^2 -
4*a*c)^(1/2) - 4*B*a*c*d*e*(b^2 - 4*a*c)^(1/2)))/(2*(4*a*c^3*d^4 + 4*a^3*c*
e^4 - a^2*b^2*e^4 - b^2*c^2*d^4 - b^4*d^2*e^2 + 8*a^2*c^2*d^2*e^2 + 2*a*b^3
*d*e^3 + 2*b^3*c*d^3*e - 8*a*b*c^2*d^3*e - 8*a^2*b*c*d*e^3 + 2*a*b^2*c*d^2*
e^2)) - (A*e - B*d)/((d + e*x)*(a*e^2 + c*d^2 - b*d*e))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2370 $\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx$

Optimal. Leaf size=414

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(abe^3-3acde^2+c^2d^3\right)-Ae\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\right)}{2\left(ae^2-bde+cd^2\right)^3}-\frac{\log(d+ex)\left(B\left(abe^3-3acde\right.\right.}{}$$

```
[Out] 1/2*(-A*e+B*d)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2+(-A*e*(-b*e+2*c*d)+B*(-a*e^2+c
*d^2))/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)-(B*(a*b*e^3-3*a*c*d*e^2+c^2*d^3)-A*e*(
3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d)))*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^3+1/2*(B*
(a*b*e^3-3*a*c*d*e^2+c^2*d^3)-A*e*(3*c^2*d^2+b^2*e^2-c*e*(a*e+3*b*d)))*ln(c
*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^3+(A*b^3*e^3-b^2*e^2*(3*A*c*d+B*a*e)+b*c*(-
3*A*a*e^3+3*A*c*d^2*e+3*B*a*d*e^2+B*c*d^3)-2*c*(A*c*d*(-3*a*e^2+c*d^2)+a*B*
e*(-a*e^2+3*c*d^2)))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(a*e^2-b*d*e+c*d
^2)^3/(-4*a*c+b^2)^(1/2)
```

Rubi [A] time = 0.80, antiderivative size = 414, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {800, 634, 618, 206, 628}

$$\frac{\log\left(a+bx+cx^2\right)\left(B\left(abe^3-3acde^2+c^2d^3\right)-Ae\left(-ce(ae+3bd)+b^2e^2+3c^2d^2\right)\right)}{2\left(ae^2-bde+cd^2\right)^3}-\frac{\log(d+ex)\left(B\left(abe^3-3acde\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2) - (A*e*(2*c*d - b*e) -
B*(c*d^2 - a*e^2))/((c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + ((A*b^3*e^3 - b^
2*e^2*(3*A*c*d + a*B*e) + b*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 - 3*a*A*
e^3) - 2*c*(A*c*d*(c*d^2 - 3*a*e^2) + a*B*e*(3*c*d^2 - a*e^2)))*ArcTanh[(b
+ 2*c*x)/Sqrt[b^2 - 4*a*c]])/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^3)
- ((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) - A*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3
*b*d + a*e)))*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^3 + ((B*(c^2*d^3 - 3*a*
c*d*e^2 + a*b*e^3) - A*e*(3*c^2*d^2 + b^2*e^2 - c*e*(3*b*d + a*e)))*Log[a +
 b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)}\,dx=\int\left(\frac{e(-Bd+Ae)}{\left(cd^2-bde+ae^2\right)(d+ex)^3}+\frac{e\left(Ae(2cd-be)-B\left(cd^2-ae^2\right)\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)^2}+\frac{e\left(-B\left(c\right.\right.}{}\right.$$

$$=\frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}-\frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$=\frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}-\frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$=\frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}-\frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}-\frac{\left(B\left(c^2d^3-3ac\right.\right.}{}$$

$$=\frac{Bd-Ae}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}-\frac{Ae(2cd-be)-B\left(cd^2-ae^2\right)}{\left(cd^2-bde+ae^2\right)^2(d+ex)}+\frac{\left(Ab^3e^3-b^2e^2\right.}{}$$

Mathematica [A] time = 0.47, size = 413, normalized size = 1.00

$$-\frac{\log(d+ex)\left(Ae\left(ce(ae+3bd)-b^2e^2-3c^2d^2\right)+B\left(abe^3-3acde^2+c^2d^3\right)\right)}{\left(e(ae-bd)+cd^2\right)^3}+\frac{\log(a+x(b+cx))\left(Ae\left(ce(ae+3\right.\right.}{2\left(\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x]
```

```
[Out] (B*d - A*e)/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)^2) + (A*e*(-2*c*d + b*e
) + B*(c*d^2 - a*e^2))/((c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) + ((A*b^3*e
^3 - b^2*e^2*(3*A*c*d + a*B*e) + b*c*(B*c*d^3 + 3*A*c*d^2*e + 3*a*B*d*e^2 -
 3*a*A*e^3) + 2*c*(a*B*e*(-3*c*d^2 + a*e^2) + A*c*d*(-(c*d^2) + 3*a*e^2)))*
ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + e*(
b*d - a*e))^3) - ((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) + A*e*(-3*c^2*d^2 -
b^2*e^2 + c*e*(3*b*d + a*e)))*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3 +
((B*(c^2*d^3 - 3*a*c*d*e^2 + a*b*e^3) + A*e*(-3*c^2*d^2 - b^2*e^2 + c*e*(3*
b*d + a*e)))*Log[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))^3)
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [A] time = 0.19, size = 797, normalized size = 1.93

$$\frac{\left(Bc^2d^3 - 3\,Ac^2d^2e - 3\,Bacde^2 + 3\,Abcde^2 + Babe^3 - Ab^2e^3 + Aace^3\right)\log\left(cx^2 + bx + a\right)}{2\left(c^3d^6 - 3\,bc^2d^5e + 3\,b^2cd^4e^2 + 3\,ac^2d^4e^2 - b^3d^3e^3 - 6\,abcd^3e^3 + 3\,ab^2d^2e^4 + 3\,a^2cd^2e^4 - 3\,a^2bde^5 + a^3e^6\right)} - \frac{}{c^3d^6e}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] 1/2*(B*c^2*d^3 - 3*A*c^2*d^2*e - 3*B*a*c*d*e^2 + 3*A*b*c*d*e^2 + B*a*b*e^3
- A*b^2*e^3 + A*a*c*e^3)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*
b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d
^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (B*c^2*d^3*e - 3*A*c^
2*d^2*e^2 - 3*B*a*c*d*e^3 + 3*A*b*c*d*e^3 + B*a*b*e^4 - A*b^2*e^4 + A*a*c*e
^4)*log(abs(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*
c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2
*e^5 - 3*a^2*b*d*e^6 + a^3*e^7) - (B*b*c^2*d^3 - 2*A*c^3*d^3 - 6*B*a*c^2*d^
2*e + 3*A*b*c^2*d^2*e + 3*B*a*b*c*d*e^2 - 3*A*b^2*c*d*e^2 + 6*A*a*c^2*d*e^2
 - B*a*b^2*e^3 + A*b^3*e^3 + 2*B*a^2*c*e^3 - 3*A*a*b*c*e^3)*arctan((2*c*x +
 b)/sqrt(-b^2 + 4*a*c))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c
^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*
e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-b^2 + 4*a*c)) + 1/2*(3*B*c^2*d^5 - 4*B
*b*c*d^4*e - 5*A*c^2*d^4*e + B*b^2*d^3*e^2 + 2*B*a*c*d^3*e^2 + 8*A*b*c*d^3*
e^2 - 3*A*b^2*d^2*e^3 - 6*A*a*c*d^2*e^3 - B*a^2*d*e^4 + 4*A*a*b*d*e^4 - A*a
^2*e^5 + 2*(B*c^2*d^4*e - B*b*c*d^3*e^2 - 2*A*c^2*d^3*e^2 + 3*A*b*c*d^2*e^3
 + B*a*b*d*e^4 - A*b^2*d*e^4 - 2*A*a*c*d*e^4 - B*a^2*e^5 + A*a*b*e^5)*x)/((
c*d^2 - b*d*e + a*e^2)^3*(x*e + d)^2)
```

maple [B] time = 0.06, size = 1339, normalized size = 3.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x)
```

```
[Out] -3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/
2))*B*a*b*c*d*e^2-3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b
)/(4*a*c-b^2)^(1/2))*A*b*c^2*d^2*e+6/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2
)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a*c^2*d^2*e-6/(a*e^2-b*d*e+c*d^2)^3
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*a*c^2*d*e^2+3/(a*e
^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b
^2*c*d*e^2+3/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*A*a*b*c*e^3+1/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*A*a*e
^3-3/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)*A*d^2*e+1/2/(a*e^2-b*d*e+c
*d^2)^3*ln(c*x^2+b*x+a)*a*b*B*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*A*b^3*e^3+1/(a*e^2-b*d*e+c*d^2)^3*ln(e
*x+d)*A*b^2*e^3-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*B*c^2*d^3+1/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)*B*c*d^2-1/2/(a*e^2-b*d*e+c*d^2)^3*ln(c*x^2+b*x+a)*A*b^2*e^
3+1/2/(a*e^2-b*d*e+c*d^2)^3*c^2*ln(c*x^2+b*x+a)*B*d^3+1/(a*e^2-b*d*e+c*d^2)
^2/(e*x+d)*A*b*e^2-1/2/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2*A*e+1/2/(a*e^2-b*d*e+c
*d^2)/(e*x+d)^2*B*d-1/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)*B*a*e^2-2/(a*e^2-b*d*e+
c*d^2)^2/(e*x+d)*A*c*d*e-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*a*c*e^3+3/(a*e
^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*c^2*d^2*e-1/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*B
*a*b*e^3+2/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-
b^2)^(1/2))*A*c^3*d^3+1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*B*a*b^2*e^3-1/(a*e^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1
/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*b*c^2*d^3+3/(a*e^2-b*d*e+c*d^2)^3
*ln(e*x+d)*B*a*c*d*e^2-3/(a*e^2-b*d*e+c*d^2)^3*ln(e*x+d)*A*b*c*d*e^2-2/(a*e
^2-b*d*e+c*d^2)^3/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*B*a
^2*c*e^3+3/2/(a*e^2-b*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*A*b*d*e^2-3/2/(a*e^2-b
*d*e+c*d^2)^3*c*ln(c*x^2+b*x+a)*B*d*a*e^2
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad **[B]** time = 26.75, size = 7042, normalized size = 17.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)),x)
```

```
[Out] (log(((A*b^4*e^3 - (3*A*b*e^3*(b^2 - 4*a*c)^(3/2))/4 + (B*a*e^3*(b^2 - 4*a*
c)^(3/2))/2 - B*a*b^3*e^3 + 4*B*a*c^3*d^3 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))
/4 + 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/2) + 4*A*a^2*c^2*e^3 - B*b^2*c^2*d^3 + (B
*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/2) - (3*B*
b^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + 3*A*b^2*c^2*d^2*e - 12*B*a^2*c^2*d*e^2 +
 (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4
- (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/2 - 5*A*a*b^2*c*e^3 + 4*B*a^2*b*c*e^3 -
 12*A*a*c^3*d^2*e - 3*A*b^3*c*d*e^2 + 12*A*a*b*c^2*d*e^2 + 3*B*a*b^2*c*d*e^
2 - 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + (3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1
/2))/2 + (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/2))/2)*(4*B*d*e^5*(b^2 - 4*a*c)^
(7/2) + 3*B*e^6*x*(b^2 - 4*a*c)^(7/2) - 3*A*b^2*e^6*(b^2 - 4*a*c)^(5/2) + 2
*A*b^4*e^6*(b^2 - 4*a*c)^(3/2) + A*b^6*e^6*(b^2 - 4*a*c)^(1/2) + 128*B*a^4*
c^3*e^6 - 32*A*b^6*c*e^6*x - 2*B*a*b^5*e^6*(b^2 - 4*a*c)^(1/2) + B*b^2*d*e^
5*(b^2 - 4*a*c)^(5/2) - 10*B*b^4*d*e^5*(b^2 - 4*a*c)^(3/2) + 5*B*b^6*d*e^5*
(b^2 - 4*a*c)^(1/2) + B*b^2*e^6*x*(b^2 - 4*a*c)^(5/2) - 3*B*b^4*e^6*x*(b^2
- 4*a*c)^(3/2) - B*b^6*e^6*x*(b^2 - 4*a*c)^(1/2) - 320*A*a^3*b*c^3*e^6 + 48
*B*a^2*b^4*c*e^6 + 640*A*a^3*c^4*d*e^5 - 32*A*b^2*c^5*d^5*e + 48*B*b^3*c^4*
d^5*e - 48*A*c^2*d^2*e^4*(b^2 - 4*a*c)^(5/2) - 64*A*c^4*d^4*e^2*(b^2 - 4*a*
c)^(3/2) + 48*B*c^2*d^3*e^3*(b^2 - 4*a*c)^(5/2) + 272*A*a^2*b^3*c^2*e^6 - 2
24*B*a^3*b^2*c^2*e^6 - 1280*A*a^2*c^5*d^3*e^3 - 48*A*b^3*c^4*d^4*e^2 + 96*A
*b^4*c^3*d^3*e^3 - 64*A*b^5*c^2*d^2*e^4 + 640*B*a^2*c^5*d^4*e^2 - 1280*B*a^
3*c^4*d^2*e^4 - 16*B*b^4*c^3*d^4*e^2 + 2*B*a*b*e^6*(b^2 - 4*a*c)^(5/2) - 48
*A*a*b^5*c*e^6 + 128*A*a*c^6*d^5*e + 16*A*b^6*c*d*e^5 - 96*A*c^4*d^3*e^3*x*
(b^2 - 4*a*c)^(3/2) + 40*B*c^2*d^2*e^4*x*(b^2 - 4*a*c)^(5/2) + 48*B*c^4*d^4
*e^2*x*(b^2 - 4*a*c)^(3/2) - 64*A*a*b^2*c^4*d^3*e^3 - 96*A*a*b^3*c^3*d^2*e^
4 + 1408*A*a^2*b*c^4*d^2*e^4 - 928*A*a^2*b^2*c^3*d*e^5 - 96*B*a*b^2*c^4*d^4
*e^2 - 32*B*a*b^3*c^3*d^3*e^3 + 64*B*a*b^4*c^2*d^2*e^4 + 128*B*a^2*b*c^4*d^
3*e^3 - 144*B*a^2*b^3*c^2*d*e^5 - 256*A*a^2*b^2*c^3*e^6*x - 160*B*a^2*b^3*c
^2*e^6*x - 1024*A*a^2*c^5*d^2*e^4*x - 256*A*b^2*c^5*d^4*e^2*x + 512*A*b^3*c
^4*d^3*e^3*x - 448*A*b^4*c^3*d^2*e^4*x + 1536*B*a^2*c^5*d^3*e^3*x - 32*B*b^
3*c^4*d^4*e^2*x + 30*A*b*c*d*e^5*(b^2 - 4*a*c)^(5/2) + 18*A*b*c*e^6*x*(b^2
- 4*a*c)^(5/2) - 192*B*a*b*c^5*d^5*e - 16*B*a*b^5*c*d*e^5 - 24*A*b^2*c^2*d^
2*e^4*(b^2 - 4*a*c)^(3/2) + 80*A*b^2*c^4*d^4*e^2*(b^2 - 4*a*c)^(1/2) - 80*A
*b^3*c^3*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 40*A*b^4*c^2*d^2*e^4*(b^2 - 4*a*c)^(
1/2) - 88*B*b^2*c^2*d^3*e^3*(b^2 - 4*a*c)^(3/2) - 40*B*b^3*c^3*d^4*e^2*(b^2
 - 4*a*c)^(1/2) + 40*B*b^4*c^2*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 32*B*a*b^5*c*e
^6*x - 256*B*a*c^6*d^5*e*x + 64*B*a^2*b^2*c^3*d^2*e^4 - 32*A*b*c^5*d^5*e*(b
^2 - 4*a*c)^(1/2) - 4*A*b^3*c*d*e^5*(b^2 - 4*a*c)^(3/2) - 10*A*b^5*c*d*e^5*
(b^2 - 4*a*c)^(1/2) - 28*B*b*c*d^2*e^4*(b^2 - 4*a*c)^(5/2) + 12*A*b^3*c*e^6
*x*(b^2 - 4*a*c)^(3/2) + 2*A*b^5*c*e^6*x*(b^2 - 4*a*c)^(1/2) - 36*A*c^2*d*e
^5*x*(b^2 - 4*a*c)^(5/2) - 64*A*c^6*d^5*e*x*(b^2 - 4*a*c)^(1/2) + 192*A*a*b
*c^5*d^4*e^2 + 128*A*a*b^4*c^2*d*e^5 + 832*B*a^3*b*c^3*d*e^5 + 192*A*a*b^4*
c^2*e^6*x + 128*B*a^3*b*c^3*e^6*x + 1024*A*a*c^6*d^4*e^2*x + 192*A*b^5*c^2*
d*e^5*x - 256*B*a^3*c^4*d*e^5*x + 64*B*b^2*c^5*d^5*e*x + 80*A*b*c^3*d^3*e^3
*(b^2 - 4*a*c)^(3/2) + 56*B*b*c^3*d^4*e^2*(b^2 - 4*a*c)^(3/2) + 16*B*b^2*c^
4*d^5*e*(b^2 - 4*a*c)^(1/2) + 48*B*b^3*c*d^2*e^4*(b^2 - 4*a*c)^(3/2) - 20*B
*b^5*c*d^2*e^4*(b^2 - 4*a*c)^(1/2) + 32*B*b*c^5*d^5*e*x*(b^2 - 4*a*c)^(1/2)
 + 12*B*b^3*c*d*e^5*x*(b^2 - 4*a*c)^(3/2) + 10*B*b^5*c*d*e^5*x*(b^2 - 4*a*c
)^(1/2) - 2048*A*a*b*c^5*d^3*e^3*x - 1024*A*a*b^3*c^3*d*e^5*x + 1024*A*a^2*
b*c^4*d*e^5*x + 128*B*a*b*c^5*d^4*e^2*x - 192*B*a*b^4*c^2*d*e^5*x + 144*A*b
*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(3/2) + 160*A*b*c^5*d^4*e^2*x*(b^2 - 4*a*c)^(1
/2) - 72*A*b^2*c^2*d*e^5*x*(b^2 - 4*a*c)^(3/2) - 20*A*b^4*c^2*d*e^5*x*(b^2
- 4*a*c)^(1/2) - 48*B*b*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(3/2) + 2048*A*a*b^2*c^
4*d^2*e^4*x - 384*B*a*b^2*c^4*d^3*e^3*x + 448*B*a*b^3*c^3*d^2*e^4*x - 1792*
B*a^2*b*c^4*d^2*e^4*x + 832*B*a^2*b^2*c^3*d*e^5*x - 22*B*b*c*d*e^5*x*(b^2 -
 4*a*c)^(5/2) - 160*A*b^2*c^4*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) + 80*A*b^3*c^3*
d^2*e^4*x*(b^2 - 4*a*c)^(1/2) - 80*B*b^2*c^4*d^4*e^2*x*(b^2 - 4*a*c)^(1/2)
+ 80*B*b^3*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(1/2) - 40*B*b^4*c^2*d^2*e^4*x*(b^2
- 4*a*c)^(1/2)))/(64*(4*a*c - b^2)^2*(a*e^2 + c*d^2 - b*d*e)^6) + (c^2*e*(A
^2*b^3*e^4 + A*B*c^3*d^4 + B^2*a^2*b*e^4 - 2*A^2*c^3*d^3*e + 2*A^2*a*c^2*d*
e^3 - 4*A^2*b^2*c*d*e^3 + 2*B^2*a*c^2*d^3*e - 2*B^2*a^2*c*d*e^3 + 5*A^2*b*c
^2*d^2*e^2 - 2*A*B*a*b^2*e^4 + A*B*a^2*c*e^4 - A^2*a*b*c*e^4 - 2*A*B*b*c^2*
d^3*e - 6*A*B*a*c^2*d^2*e^2 + A*B*b^2*c*d^2*e^2 - B^2*a*b*c*d^2*e^2 + 6*A*B
*a*b*c*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^4 + (c^3*e*x*(A*b*e^2 - B*a*e^2 + B*
c*d^2 - 2*A*c*d*e)^2)/(a*e^2 + c*d^2 - b*d*e)^4)*((A*e^3*(4*a*c - b^2)^2)/4
 - (3*A*b*e^3*(b^2 - 4*a*c)^(3/2))/4 + (B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - (3
*A*b^2*e^3*(4*a*c - b^2))/4 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 + 2*A*c^3*d
^3*(b^2 - 4*a*c)^(1/2) + B*c^2*d^3*(4*a*c - b^2) - (3*B*d*e^2*(4*a*c - b^2)
^2)/4 + (B*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/
2) - 3*A*c^2*d^2*e*(4*a*c - b^2) - (3*B*b^2*d*e^2*(4*a*c - b^2))/4 - (3*B*b
^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + B*a*b*e^3*(4*a*c - b^2) + (3*A*c*d*e^2*(b
^2 - 4*a*c)^(3/2))/2 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 - (3*B*c*d^2*e*(
b^2 - 4*a*c)^(3/2))/2 + 3*A*b*c*d*e^2*(4*a*c - b^2) - 3*A*b*c^2*d^2*e*(b^2
- 4*a*c)^(1/2) + (3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 + (3*B*b^2*c*d^2*e
*(b^2 - 4*a*c)^(1/2))/2))/((4*a*c - b^2)*((4*a*c - b^2)*((3*a*d^2*e^4)/2 -
3*b*d^3*e^3 + (3*c*d^4*e^2)/2) + 2*a^3*e^6 + 2*c^3*d^6 - 5*b^3*d^3*e^3 + (1
5*a*b^2*d^2*e^4)/2 + (15*b^2*c*d^4*e^2)/2 - 6*a^2*b*d*e^5 - 6*b*c^2*d^5*e))
 - (log(d + e*x)*(e^2*(3*A*b*c*d - 3*B*a*c*d) + e^3*(A*a*c - A*b^2 + B*a*b)
 + B*c^2*d^3 - 3*A*c^2*d^2*e))/(a^3*e^6 + c^3*d^6 - b^3*d^3*e^3 + 3*a*b^2*d
^2*e^4 + 3*a*c^2*d^4*e^2 + 3*a^2*c*d^2*e^4 + 3*b^2*c*d^4*e^2 - 3*a^2*b*d*e^
5 - 3*b*c^2*d^5*e - 6*a*b*c*d^3*e^3) - ((A*a*e^3 - 3*B*c*d^3 - 3*A*b*d*e^2
+ B*a*d*e^2 + 5*A*c*d^2*e + B*b*d^2*e)/(2*(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2
- 2*a*b*d*e^3 - 2*b*c*d^3*e + 2*a*c*d^2*e^2)) - (x*(A*b*e^3 - B*a*e^3 - 2*A
*c*d*e^2 + B*c*d^2*e))/(a^2*e^4 + c^2*d^4 + b^2*d^2*e^2 - 2*a*b*d*e^3 - 2*b
*c*d^3*e + 2*a*c*d^2*e^2))/(d^2 + e^2*x^2 + 2*d*e*x) - (log((c^2*e*(A^2*b^3
*e^4 + A*B*c^3*d^4 + B^2*a^2*b*e^4 - 2*A^2*c^3*d^3*e + 2*A^2*a*c^2*d*e^3 -
4*A^2*b^2*c*d*e^3 + 2*B^2*a*c^2*d^3*e - 2*B^2*a^2*c*d*e^3 + 5*A^2*b*c^2*d^2
*e^2 - 2*A*B*a*b^2*e^4 + A*B*a^2*c*e^4 - A^2*a*b*c*e^4 - 2*A*B*b*c^2*d^3*e
- 6*A*B*a*c^2*d^2*e^2 + A*B*b^2*c*d^2*e^2 - B^2*a*b*c*d^2*e^2 + 6*A*B*a*b*c
*d*e^3))/(a*e^2 + c*d^2 - b*d*e)^4 - ((A*b^4*e^3 + (3*A*b*e^3*(b^2 - 4*a*c)
^(3/2))/4 - (B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - B*a*b^3*e^3 + 4*B*a*c^3*d^3 +
 (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 - 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/2) + 4*A*
a^2*c^2*e^3 - B*b^2*c^2*d^3 - (B*a*b^2*e^3*(b^2 - 4*a*c)^(1/2))/2 + B*b*c^2
```

```
*d^3*(b^2 - 4*a*c)^(1/2) + (3*B*b^3*d*e^2*(b^2 - 4*a*c)^(1/2))/4 + 3*A*b^2*
c^2*d^2*e - 12*B*a^2*c^2*d*e^2 - (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2 - (3*B
*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 + (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/2 - 5*A
*a*b^2*c*e^3 + 4*B*a^2*b*c*e^3 - 12*A*a*c^3*d^2*e - 3*A*b^3*c*d*e^2 + 12*A*
a*b*c^2*d*e^2 + 3*B*a*b^2*c*d*e^2 + 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) - (
3*A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 - (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/
2))/2)*(4*B*d*e^5*(b^2 - 4*a*c)^(7/2) + 3*B*e^6*x*(b^2 - 4*a*c)^(7/2) - 3*A
*b^2*e^6*(b^2 - 4*a*c)^(5/2) + 2*A*b^4*e^6*(b^2 - 4*a*c)^(3/2) + A*b^6*e^6*
(b^2 - 4*a*c)^(1/2) - 128*B*a^4*c^3*e^6 + 32*A*b^6*c*e^6*x - 2*B*a*b^5*e^6*
(b^2 - 4*a*c)^(1/2) + B*b^2*d*e^5*(b^2 - 4*a*c)^(5/2) - 10*B*b^4*d*e^5*(b^2
 - 4*a*c)^(3/2) + 5*B*b^6*d*e^5*(b^2 - 4*a*c)^(1/2) + B*b^2*e^6*x*(b^2 - 4*
a*c)^(5/2) - 3*B*b^4*e^6*x*(b^2 - 4*a*c)^(3/2) - B*b^6*e^6*x*(b^2 - 4*a*c)^
(1/2) + 320*A*a^3*b*c^3*e^6 - 48*B*a^2*b^4*c*e^6 - 640*A*a^3*c^4*d*e^5 + 32
*A*b^2*c^5*d^5*e - 48*B*b^3*c^4*d^5*e - 48*A*c^2*d^2*e^4*(b^2 - 4*a*c)^(5/2
) - 64*A*c^4*d^4*e^2*(b^2 - 4*a*c)^(3/2) + 48*B*c^2*d^3*e^3*(b^2 - 4*a*c)^(
5/2) - 272*A*a^2*b^3*c^2*e^6 + 224*B*a^3*b^2*c^2*e^6 + 1280*A*a^2*c^5*d^3*e
^3 + 48*A*b^3*c^4*d^4*e^2 - 96*A*b^4*c^3*d^3*e^3 + 64*A*b^5*c^2*d^2*e^4 - 6
40*B*a^2*c^5*d^4*e^2 + 1280*B*a^3*c^4*d^2*e^4 + 16*B*b^4*c^3*d^4*e^2 + 2*B*
a*b*e^6*(b^2 - 4*a*c)^(5/2) + 48*A*a*b^5*c*e^6 - 128*A*a*c^6*d^5*e - 16*A*b
^6*c*d*e^5 - 96*A*c^4*d^3*e^3*x*(b^2 - 4*a*c)^(3/2) + 40*B*c^2*d^2*e^4*x*(b
^2 - 4*a*c)^(5/2) + 48*B*c^4*d^4*e^2*x*(b^2 - 4*a*c)^(3/2) + 64*A*a*b^2*c^4
*d^3*e^3 + 96*A*a*b^3*c^3*d^2*e^4 - 1408*A*a^2*b*c^4*d^2*e^4 + 928*A*a^2*b^
2*c^3*d*e^5 + 96*B*a*b^2*c^4*d^4*e^2 + 32*B*a*b^3*c^3*d^3*e^3 - 64*B*a*b^4*
c^2*d^2*e^4 - 128*B*a^2*b*c^4*d^3*e^3 + 144*B*a^2*b^3*c^2*d*e^5 + 256*A*a^2
*b^2*c^3*e^6*x + 160*B*a^2*b^3*c^2*e^6*x + 1024*A*a^2*c^5*d^2*e^4*x + 256*A
*b^2*c^5*d^4*e^2*x - 512*A*b^3*c^4*d^3*e^3*x + 448*A*b^4*c^3*d^2*e^4*x - 15
36*B*a^2*c^5*d^3*e^3*x + 32*B*b^3*c^4*d^4*e^2*x + 30*A*b*c*d*e^5*(b^2 - 4*a
*c)^(5/2) + 18*A*b*c*e^6*x*(b^2 - 4*a*c)^(5/2) + 192*B*a*b*c^5*d^5*e + 16*B
*a*b^5*c*d*e^5 - 24*A*b^2*c^2*d^2*e^4*(b^2 - 4*a*c)^(3/2) + 80*A*b^2*c^4*d^
4*e^2*(b^2 - 4*a*c)^(1/2) - 80*A*b^3*c^3*d^3*e^3*(b^2 - 4*a*c)^(1/2) + 40*A
*b^4*c^2*d^2*e^4*(b^2 - 4*a*c)^(1/2) - 88*B*b^2*c^2*d^3*e^3*(b^2 - 4*a*c)^(
3/2) - 40*B*b^3*c^3*d^4*e^2*(b^2 - 4*a*c)^(1/2) + 40*B*b^4*c^2*d^3*e^3*(b^2
 - 4*a*c)^(1/2) - 32*B*a*b^5*c*e^6*x + 256*B*a*c^6*d^5*e*x - 64*B*a^2*b^2*c
^3*d^2*e^4 - 32*A*b*c^5*d^5*e*(b^2 - 4*a*c)^(1/2) - 4*A*b^3*c*d*e^5*(b^2 -
4*a*c)^(3/2) - 10*A*b^5*c*d*e^5*(b^2 - 4*a*c)^(1/2) - 28*B*b*c*d^2*e^4*(b^2
 - 4*a*c)^(5/2) + 12*A*b^3*c*e^6*x*(b^2 - 4*a*c)^(3/2) + 2*A*b^5*c*e^6*x*(b
^2 - 4*a*c)^(1/2) - 36*A*c^2*d*e^5*x*(b^2 - 4*a*c)^(5/2) - 64*A*c^6*d^5*e*x
*(b^2 - 4*a*c)^(1/2) - 192*A*a*b*c^5*d^4*e^2 - 128*A*a*b^4*c^2*d*e^5 - 832*
B*a^3*b*c^3*d*e^5 - 192*A*a*b^4*c^2*e^6*x - 128*B*a^3*b*c^3*e^6*x - 1024*A*
a*c^6*d^4*e^2*x - 192*A*b^5*c^2*d*e^5*x + 256*B*a^3*c^4*d*e^5*x - 64*B*b^2*
c^5*d^5*e*x + 80*A*b*c^3*d^3*e^3*(b^2 - 4*a*c)^(3/2) + 56*B*b*c^3*d^4*e^2*(
b^2 - 4*a*c)^(3/2) + 16*B*b^2*c^4*d^5*e*(b^2 - 4*a*c)^(1/2) + 48*B*b^3*c*d^
2*e^4*(b^2 - 4*a*c)^(3/2) - 20*B*b^5*c*d^2*e^4*(b^2 - 4*a*c)^(1/2) + 32*B*b
*c^5*d^5*e*x*(b^2 - 4*a*c)^(1/2) + 12*B*b^3*c*d*e^5*x*(b^2 - 4*a*c)^(3/2) +
 10*B*b^5*c*d*e^5*x*(b^2 - 4*a*c)^(1/2) + 2048*A*a*b*c^5*d^3*e^3*x + 1024*A
*a*b^3*c^3*d*e^5*x - 1024*A*a^2*b*c^4*d*e^5*x - 128*B*a*b*c^5*d^4*e^2*x + 1
92*B*a*b^4*c^2*d*e^5*x + 144*A*b*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(3/2) + 160*A*
b*c^5*d^4*e^2*x*(b^2 - 4*a*c)^(1/2) - 72*A*b^2*c^2*d*e^5*x*(b^2 - 4*a*c)^(3
/2) - 20*A*b^4*c^2*d*e^5*x*(b^2 - 4*a*c)^(1/2) - 48*B*b*c^3*d^3*e^3*x*(b^2
- 4*a*c)^(3/2) - 2048*A*a*b^2*c^4*d^2*e^4*x + 384*B*a*b^2*c^4*d^3*e^3*x - 4
48*B*a*b^3*c^3*d^2*e^4*x + 1792*B*a^2*b*c^4*d^2*e^4*x - 832*B*a^2*b^2*c^3*d
*e^5*x - 22*B*b*c*d*e^5*x*(b^2 - 4*a*c)^(5/2) - 160*A*b^2*c^4*d^3*e^3*x*(b^
2 - 4*a*c)^(1/2) + 80*A*b^3*c^3*d^2*e^4*x*(b^2 - 4*a*c)^(1/2) - 80*B*b^2*c^
4*d^4*e^2*x*(b^2 - 4*a*c)^(1/2) + 80*B*b^3*c^3*d^3*e^3*x*(b^2 - 4*a*c)^(1/2
) - 40*B*b^4*c^2*d^2*e^4*x*(b^2 - 4*a*c)^(1/2)))/(64*(4*a*c - b^2)^2*(a*e^2
 + c*d^2 - b*d*e)^6) + (c^3*e*x*(A*b*e^2 - B*a*e^2 + B*c*d^2 - 2*A*c*d*e)^2
)/(a*e^2 + c*d^2 - b*d*e)^4)*((B*a*e^3*(b^2 - 4*a*c)^(3/2))/2 - (3*A*b*e^3*
(b^2 - 4*a*c)^(3/2))/4 - (A*e^3*(4*a*c - b^2)^2)/4 + (3*A*b^2*e^3*(4*a*c -
b^2))/4 - (A*b^3*e^3*(b^2 - 4*a*c)^(1/2))/4 + 2*A*c^3*d^3*(b^2 - 4*a*c)^(1/
```

```
2) - B*c^2*d^3*(4*a*c - b^2) + (3*B*d*e^2*(4*a*c - b^2)^2)/4 + (B*a*b^2*e^3
*(b^2 - 4*a*c)^(1/2))/2 - B*b*c^2*d^3*(b^2 - 4*a*c)^(1/2) + 3*A*c^2*d^2*e*(
4*a*c - b^2) + (3*B*b^2*d*e^2*(4*a*c - b^2))/4 - (3*B*b^3*d*e^2*(b^2 - 4*a*
c)^(1/2))/4 - B*a*b*e^3*(4*a*c - b^2) + (3*A*c*d*e^2*(b^2 - 4*a*c)^(3/2))/2
 + (3*B*b*d*e^2*(b^2 - 4*a*c)^(3/2))/4 - (3*B*c*d^2*e*(b^2 - 4*a*c)^(3/2))/
2 - 3*A*b*c*d*e^2*(4*a*c - b^2) - 3*A*b*c^2*d^2*e*(b^2 - 4*a*c)^(1/2) + (3*
A*b^2*c*d*e^2*(b^2 - 4*a*c)^(1/2))/2 + (3*B*b^2*c*d^2*e*(b^2 - 4*a*c)^(1/2)
)/2))/((4*a*c - b^2)*((4*a*c - b^2)*((3*a*d^2*e^4)/2 - 3*b*d^3*e^3 + (3*c*d
^4*e^2)/2) + 2*a^3*e^6 + 2*c^3*d^6 - 5*b^3*d^3*e^3 + (15*a*b^2*d^2*e^4)/2 +
 (15*b^2*c*d^4*e^2)/2 - 6*a^2*b*d*e^5 - 6*b*c^2*d^5*e))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2371 $\int \frac{(d+ex)^4(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=543

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(4c^3e\left(3a^2e^2(4dg+ef)-3abde(3dg+2ef)+b^2d^2(2dg+3ef)\right)-30a^2bc^2e^4g+10ab^3ce^4g}{c^3\left(b^2-4ac\right)^{5/2}}$$

```
[Out] 1/2*(e*x+d)^3*(2*a*c*(d*g+e*f)-b*(a*e*g+c*d*f)-(2*c^2*d*f+b^2*e*g-c*(2*a*e*
g+b*d*g+b*e*f))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^2+1/2*(e*x+d)*(b^3*e*(-2*a*
e^2+c*d^2)*g-b^2*c*d*(a*e^2*g+3*c*d*(d*g+2*e*f))+2*b*c*(3*c^2*d^3*f+7*a^2*e
^3*g+a*c*d*e*(7*d*g+9*e*f))-4*a*c^2*e*(3*c*d^2*f+a*e*(8*d*g+3*e*f))+(12*c^4
*d^3*f-2*b^4*e^3*g+b^2*c*e^2*(15*a*e+b*d)*g-2*c^3*d*(3*b*d*(d*g+3*e*f)-2*a*
e*(4*d*g+3*e*f))-c^2*e*(16*a^2*e^2*g-b^2*d*(5*d*g+6*e*f)+2*a*b*e*(11*d*g+3*
e*f)))*x)/c^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)-(12*c^5*d^4*f-b^5*e^4*g+10*a*b^3
*c*e^4*g-30*a^2*b*c^2*e^4*g-2*c^4*d^2*(3*b*d*(d*g+4*e*f)-4*a*e*(2*d*g+3*e*f
))+4*c^3*e*(b^2*d^2*(2*d*g+3*e*f)-3*a*b*d*e*(3*d*g+2*e*f)+3*a^2*e^2*(4*d*g+
e*f)))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/c^3/(-4*a*c+b^2)^(5/2)+1/2*e^4
*g*ln(c*x^2+b*x+a)/c^3
```

Rubi [A] time = 1.21, antiderivative size = 543, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {818, 634, 618, 206, 628}

$$\frac{(d+ex)\left(x\left(-c^2e\left(16a^2e^2g+2abe(11dg+3ef)+b^2(-d)(5dg+6ef)\right)+b^2ce^2g(15ae+bd)-2c^3d(3bd(dg+3ef\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^3*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g
- c*(b*e*f + b*d*g + 2*a*e*g))*x))/(2*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2)
+ ((d + e*x)*(b^3*e*(c*d^2 - 2*a*e^2)*g - b^2*c*d*(a*e^2*g + 3*c*d*(2*e*f +
 d*g)) + 2*b*c*(3*c^2*d^3*f + 7*a^2*e^3*g + a*c*d*e*(9*e*f + 7*d*g)) - 4*a*
c^2*e*(3*c*d^2*f + a*e*(3*e*f + 8*d*g)) + (12*c^4*d^3*f - 2*b^4*e^3*g + b^2
*c*e^2*(b*d + 15*a*e)*g - 2*c^3*d*(3*b*d*(3*e*f + d*g) - 2*a*e*(3*e*f + 4*d
*g)) - c^2*e*(16*a^2*e^2*g - b^2*d*(6*e*f + 5*d*g) + 2*a*b*e*(3*e*f + 11*d*
g)))*x))/(2*c^2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - ((12*c^5*d^4*f - b^5*e
^4*g + 10*a*b^3*c*e^4*g - 30*a^2*b*c^2*e^4*g - 2*c^4*d^2*(3*b*d*(4*e*f + d*
g) - 4*a*e*(3*e*f + 2*d*g)) + 4*c^3*e*(b^2*d^2*(3*e*f + 2*d*g) - 3*a*b*d*e*
(2*e*f + 3*d*g) + 3*a^2*e^2*(e*f + 4*d*g)))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 -
4*a*c]])/(c^3*(b^2 - 4*a*c)^(5/2)) + (e^4*g*Log[a + b*x + c*x^2])/(2*c^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(d+ex)^4(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

$$= \frac{(d+ex)^3\left(2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x\right)}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+$$

Mathematica [A] time = 1.86, size = 897, normalized size = 1.65

$$cg\log(a+x(b+cx))e^4+\frac{e^4gxb^5+e^3(aeg-c(ef+4dg)x)b^4-ce^2(ae(ef+4dg+5egx)-2cd(2ef+3dg)x)b^3+2ce\left(-2a^2ge^3+ac\left(3gd^2+2e(f+4gx)d+2e^2f\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^4*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^5*e^4*g*x + b^4*e^3*(a*e*g - c*(e*f + 4*d*g)*x) - b^3*c*e^2*(-2*c*d*(2*
e*f + 3*d*g)*x + a*e*(e*f + 4*d*g + 5*e*g*x)) + 2*c^2*(a^3*e^4*g - c^3*d^4*
f*x - a^2*c*e^2*(6*d^2*g + e^2*f*x + 4*d*e*(f + g*x)) + a*c^2*d^2*(d^2*g +
6*e^2*f*x + 4*d*e*(f + g*x))) + b*c^2*(c^2*d^3*(-(d*f) + 4*e*f*x + d*g*x) +
 a^2*e^3*(3*e*f + 12*d*g + 5*e*g*x) - 2*a*c*d*e*(2*d^2*g + 6*e^2*f*x + 3*d*
e*(f + 3*g*x))) + 2*b^2*c*e*(-2*a^2*e^3*g - c^2*d^2*(3*e*f + 2*d*g)*x + a*c
*e*(3*d^2*g + 2*e^2*f*x + 2*d*e*(f + 4*g*x))))/((b^2 - 4*a*c)*(a + x*(b + c
*x))^2) + (-(b^6*e^4*g) + b^5*c*e^3*(4*d*g + e*(f + 4*g*x)) + 2*b^3*c^2*e*(
c*d^2*(3*e*f + 2*d*g) - a*e^2*(4*e*f + 16*d*g + 15*e*g*x)) + b^2*c^2*(-39*a
^2*e^4*g + c^2*d^2*(-12*d*e*f - 3*d^2*g + 12*e^2*f*x + 8*d*e*g*x) + 2*a*c*e
^2*(10*d*e*f + 15*d^2*g + 8*e^2*f*x + 32*d*e*g*x)) + 2*b*c^3*(a^2*e^3*(11*e
*f + 44*d*g + 25*e*g*x) + 2*a*c*d*e*(2*d^2*g - 6*e^2*f*x + 3*d*e*(f - 3*g*x
)) + 3*c^2*d^3*(-4*e*f*x + d*(f - g*x))) - b^4*c*e^2*(-11*a*e^2*g + 2*c*(3*
d^2*g + e^2*f*x + 2*d*e*(f + 2*g*x))) + 4*c^3*(8*a^3*e^4*g + 3*c^3*d^4*f*x
+ 2*a*c^2*d^2*e*(3*e*f + 2*d*g)*x - a^2*c*e^2*(24*d^2*g + 5*e^2*f*x + 4*d*e
*(4*f + 5*g*x))))/((b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (2*c*(12*c^5*d^4*f
- b^5*e^4*g + 10*a*b^3*c*e^4*g - 30*a^2*b*c^2*e^4*g + 2*c^4*d^2*(-3*b*d*(4*
e*f + d*g) + 4*a*e*(3*e*f + 2*d*g)) + 4*c^3*e*(b^2*d^2*(3*e*f + 2*d*g) - 3*
a*b*d*e*(2*e*f + 3*d*g) + 3*a^2*e^2*(e*f + 4*d*g)))*ArcTan[(b + 2*c*x)/Sqrt
[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(5/2) + c*e^4*g*Log[a + x*(b + c*x)])/(2*c^
4)
```

fricas [B] time = 3.56, size = 5676, normalized size = 10.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((6*(b^2*c^6 - 4*a*c^7)*d^4 - 12*(b^3*c^5 - 4*a*b*c^6)*d^3*e + 6*(b
^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^2 - 12*(a*b^3*c^4 - 4*a^2*b*c^5)*d*
e^3 - (b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*c^4 - 40*a^3*c^5)*e^4)*f - (3*(b
^3*c^5 - 4*a*b*c^6)*d^4 - 4*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^3*e + 18*
(a*b^3*c^4 - 4*a^2*b*c^5)*d^2*e^2 + 4*(b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*
c^4 - 40*a^3*c^5)*d*e^3 - (2*b^7*c - 23*a*b^5*c^2 + 85*a^2*b^3*c^3 - 100*a^
3*b*c^4)*e^4)*g)*x^3 + ((18*(b^3*c^5 - 4*a*b*c^6)*d^4 - 36*(b^4*c^4 - 4*a*b
^2*c^5)*d^3*e + 18*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^2*e^2 - 4*(b^6*c
^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d*e^3 - (b^7*c - 12*a*b^5*c
^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*e^4)*f - (9*(b^4*c^4 - 4*a*b^2*c^5)*d^4
- 12*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^3*e + 6*(b^6*c^2 - 3*a*b^4*c^3
 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d^2*e^2 + 4*(b^7*c - 12*a*b^5*c^2 + 30*a^2*
b^3*c^3 + 8*a^3*b*c^4)*d*e^3 - (3*b^8 - 31*a*b^6*c + 87*a^2*b^4*c^2 - 12*a^
3*b^2*c^3 - 128*a^4*c^4)*e^4)*g)*x^2 - ((12*(c^7*d^4 - 2*b*c^6*d^3*e - 2*a*
b*c^5*d*e^3 + a^2*c^5*e^4 + (b^2*c^5 + 2*a*c^6)*d^2*e^2)*f - (6*b*c^6*d^4 +
 36*a*b*c^5*d^2*e^2 - 48*a^2*c^5*d*e^3 - 8*(b^2*c^5 + 2*a*c^6)*d^3*e + (b^5
*c^2 - 10*a*b^3*c^3 + 30*a^2*b*c^4)*e^4)*g)*x^4 + 2*(12*(b*c^6*d^4 - 2*b^2*
c^5*d^3*e - 2*a*b^2*c^4*d*e^3 + a^2*b*c^4*e^4 + (b^3*c^4 + 2*a*b*c^5)*d^2*e
^2)*f - (6*b^2*c^5*d^4 + 36*a*b^2*c^4*d^2*e^2 - 48*a^2*b*c^4*d*e^3 - 8*(b^3
*c^4 + 2*a*b*c^5)*d^3*e + (b^6*c - 10*a*b^4*c^2 + 30*a^2*b^2*c^3)*e^4)*g)*x
^3 + (12*((b^2*c^5 + 2*a*c^6)*d^4 - 2*(b^3*c^4 + 2*a*b*c^5)*d^3*e + (b^4*c^
3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^2 - 2*(a*b^3*c^3 + 2*a^2*b*c^4)*d*e^3 +
(a^2*b^2*c^3 + 2*a^3*c^4)*e^4)*f - (6*(b^3*c^4 + 2*a*b*c^5)*d^4 - 8*(b^4*c^
3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^3*e + 36*(a*b^3*c^3 + 2*a^2*b*c^4)*d^2*e^2 -
 48*(a^2*b^2*c^3 + 2*a^3*c^4)*d*e^3 + (b^7 - 8*a*b^5*c + 10*a^2*b^3*c^2 + 6
0*a^3*b*c^3)*e^4)*g)*x^2 + 12*(a^2*c^5*d^4 - 2*a^2*b*c^4*d^3*e - 2*a^3*b*c^
3*d*e^3 + a^4*c^3*e^4 + (a^2*b^2*c^3 + 2*a^3*c^4)*d^2*e^2)*f - (6*a^2*b*c^4
*d^4 + 36*a^3*b*c^3*d^2*e^2 - 48*a^4*c^3*d*e^3 - 8*(a^2*b^2*c^3 + 2*a^3*c^4
)*d^3*e + (a^2*b^5 - 10*a^3*b^3*c + 30*a^4*b*c^2)*e^4)*g + 2*(12*(a*b*c^5*d
^4 - 2*a*b^2*c^4*d^3*e - 2*a^2*b^2*c^3*d*e^3 + a^3*b*c^3*e^4 + (a*b^3*c^3 +
 2*a^2*b*c^4)*d^2*e^2)*f - (6*a*b^2*c^4*d^4 + 36*a^2*b^2*c^3*d^2*e^2 - 48*a
^3*b*c^3*d*e^3 - 8*(a*b^3*c^3 + 2*a^2*b*c^4)*d^3*e + (a*b^6 - 10*a^2*b^4*c
+ 30*a^3*b^2*c^2)*e^4)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b
^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - ((b^5*c^3
- 14*a*b^3*c^4 + 40*a^2*b*c^5)*d^4 + 4*(a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*
c^5)*d^3*e - 36*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^2*e^2 + 4*(a^2*b^4*c^2 + 4*a^
3*b^2*c^3 - 32*a^4*c^4)*d*e^3 + (a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)
*e^4)*f - ((a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^4 - 24*(a^2*b^3*c^3 -
 4*a^3*b*c^4)*d^3*e + 6*(a^2*b^4*c^2 + 4*a^3*b^2*c^3 - 32*a^4*c^4)*d^2*e^2
+ 4*(a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*d*e^3 - 3*(a^2*b^6 - 11*a^3
*b^4*c + 36*a^4*b^2*c^2 - 32*a^5*c^3)*e^4)*g + 2*((2*(b^4*c^4 + a*b^2*c^5 -
 20*a^2*c^6)*d^4 - 4*(b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^3*e + 6*(5*a*b^
4*c^3 - 22*a^2*b^2*c^4 + 8*a^3*c^5)*d^2*e^2 - 4*(a*b^5*c^2 + a^2*b^3*c^3 -
20*a^3*b*c^4)*d*e^3 - (a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c
^4)*e^4)*f - ((b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^4 - 4*(5*a*b^4*c^3 - 2
2*a^2*b^2*c^4 + 8*a^3*c^5)*d^3*e + 6*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b*c^
4)*d^2*e^2 + 4*(a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*d*e
^3 - (3*a*b^7 - 34*a^2*b^5*c + 119*a^3*b^3*c^2 - 124*a^4*b*c^3)*e^4)*g)*x +
 ((b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*e^4*g*x^4 + 2*(b^7
*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e^4*g*x^3 + (b^8 - 10*a*
b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*e^4*g*x^2 + 2*(a*b^7
 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*e^4*g*x + (a^2*b^6 - 12*a^
3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4*g)*log(c*x^2 + b*x + a))/(a^2*b^
6*c^3 - 12*a^3*b^4*c^4 + 48*a^4*b^2*c^5 - 64*a^5*c^6 + (b^6*c^5 - 12*a*b^4*
c^6 + 48*a^2*b^2*c^7 - 64*a^3*c^8)*x^4 + 2*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2
*b^3*c^6 - 64*a^3*b*c^7)*x^3 + (b^8*c^3 - 10*a*b^6*c^4 + 24*a^2*b^4*c^5 + 3
2*a^3*b^2*c^6 - 128*a^4*c^7)*x^2 + 2*(a*b^7*c^3 - 12*a^2*b^5*c^4 + 48*a^3*b
^3*c^5 - 64*a^4*b*c^6)*x), 1/2*(2*((6*(b^2*c^6 - 4*a*c^7)*d^4 - 12*(b^3*c^5
 - 4*a*b*c^6)*d^3*e + 6*(b^4*c^4 - 2*a*b^2*c^5 - 8*a^2*c^6)*d^2*e^2 - 12*(a
*b^3*c^4 - 4*a^2*b*c^5)*d*e^3 - (b^6*c^2 - 12*a*b^4*c^3 + 42*a^2*b^2*c^4 -
40*a^3*c^5)*e^4)*f - (3*(b^3*c^5 - 4*a*b*c^6)*d^4 - 4*(b^4*c^4 - 2*a*b^2*c^
5 - 8*a^2*c^6)*d^3*e + 18*(a*b^3*c^4 - 4*a^2*b*c^5)*d^2*e^2 + 4*(b^6*c^2 -
12*a*b^4*c^3 + 42*a^2*b^2*c^4 - 40*a^3*c^5)*d*e^3 - (2*b^7*c - 23*a*b^5*c^2
 + 85*a^2*b^3*c^3 - 100*a^3*b*c^4)*e^4)*g)*x^3 + ((18*(b^3*c^5 - 4*a*b*c^6)
*d^4 - 36*(b^4*c^4 - 4*a*b^2*c^5)*d^3*e + 18*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2
*b*c^5)*d^2*e^2 - 4*(b^6*c^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d
*e^3 - (b^7*c - 12*a*b^5*c^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*e^4)*f - (9*(b
^4*c^4 - 4*a*b^2*c^5)*d^4 - 12*(b^5*c^3 - 2*a*b^3*c^4 - 8*a^2*b*c^5)*d^3*e
+ 6*(b^6*c^2 - 3*a*b^4*c^3 + 12*a^2*b^2*c^4 - 64*a^3*c^5)*d^2*e^2 + 4*(b^7*
c - 12*a*b^5*c^2 + 30*a^2*b^3*c^3 + 8*a^3*b*c^4)*d*e^3 - (3*b^8 - 31*a*b^6*
c + 87*a^2*b^4*c^2 - 12*a^3*b^2*c^3 - 128*a^4*c^4)*e^4)*g)*x^2 - 2*((12*(c^
7*d^4 - 2*b*c^6*d^3*e - 2*a*b*c^5*d*e^3 + a^2*c^5*e^4 + (b^2*c^5 + 2*a*c^6)
*d^2*e^2)*f - (6*b*c^6*d^4 + 36*a*b*c^5*d^2*e^2 - 48*a^2*c^5*d*e^3 - 8*(b^2
*c^5 + 2*a*c^6)*d^3*e + (b^5*c^2 - 10*a*b^3*c^3 + 30*a^2*b*c^4)*e^4)*g)*x^4
 + 2*(12*(b*c^6*d^4 - 2*b^2*c^5*d^3*e - 2*a*b^2*c^4*d*e^3 + a^2*b*c^4*e^4 +
 (b^3*c^4 + 2*a*b*c^5)*d^2*e^2)*f - (6*b^2*c^5*d^4 + 36*a*b^2*c^4*d^2*e^2 -
 48*a^2*b*c^4*d*e^3 - 8*(b^3*c^4 + 2*a*b*c^5)*d^3*e + (b^6*c - 10*a*b^4*c^2
 + 30*a^2*b^2*c^3)*e^4)*g)*x^3 + (12*((b^2*c^5 + 2*a*c^6)*d^4 - 2*(b^3*c^4
+ 2*a*b*c^5)*d^3*e + (b^4*c^3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^2*e^2 - 2*(a*b^3
*c^3 + 2*a^2*b*c^4)*d*e^3 + (a^2*b^2*c^3 + 2*a^3*c^4)*e^4)*f - (6*(b^3*c^4
+ 2*a*b*c^5)*d^4 - 8*(b^4*c^3 + 4*a*b^2*c^4 + 4*a^2*c^5)*d^3*e + 36*(a*b^3*
c^3 + 2*a^2*b*c^4)*d^2*e^2 - 48*(a^2*b^2*c^3 + 2*a^3*c^4)*d*e^3 + (b^7 - 8*
a*b^5*c + 10*a^2*b^3*c^2 + 60*a^3*b*c^3)*e^4)*g)*x^2 + 12*(a^2*c^5*d^4 - 2*
a^2*b*c^4*d^3*e - 2*a^3*b*c^3*d*e^3 + a^4*c^3*e^4 + (a^2*b^2*c^3 + 2*a^3*c^
4)*d^2*e^2)*f - (6*a^2*b*c^4*d^4 + 36*a^3*b*c^3*d^2*e^2 - 48*a^4*c^3*d*e^3
- 8*(a^2*b^2*c^3 + 2*a^3*c^4)*d^3*e + (a^2*b^5 - 10*a^3*b^3*c + 30*a^4*b*c^
2)*e^4)*g + 2*(12*(a*b*c^5*d^4 - 2*a*b^2*c^4*d^3*e - 2*a^2*b^2*c^3*d*e^3 +
a^3*b*c^3*e^4 + (a*b^3*c^3 + 2*a^2*b*c^4)*d^2*e^2)*f - (6*a*b^2*c^4*d^4 + 3
6*a^2*b^2*c^3*d^2*e^2 - 48*a^3*b*c^3*d*e^3 - 8*(a*b^3*c^3 + 2*a^2*b*c^4)*d^
3*e + (a*b^6 - 10*a^2*b^4*c + 30*a^3*b^2*c^2)*e^4)*g)*x)*sqrt(-b^2 + 4*a*c)
```

```
*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^5*c^3 - 14*a*b
^3*c^4 + 40*a^2*b*c^5)*d^4 + 4*(a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^3
*e - 36*(a^2*b^3*c^3 - 4*a^3*b*c^4)*d^2*e^2 + 4*(a^2*b^4*c^2 + 4*a^3*b^2*c^
3 - 32*a^4*c^4)*d*e^3 + (a^2*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*e^4)*f
- ((a*b^4*c^3 + 4*a^2*b^2*c^4 - 32*a^3*c^5)*d^4 - 24*(a^2*b^3*c^3 - 4*a^3*b
*c^4)*d^3*e + 6*(a^2*b^4*c^2 + 4*a^3*b^2*c^3 - 32*a^4*c^4)*d^2*e^2 + 4*(a^2
*b^5*c - 14*a^3*b^3*c^2 + 40*a^4*b*c^3)*d*e^3 - 3*(a^2*b^6 - 11*a^3*b^4*c +
 36*a^4*b^2*c^2 - 32*a^5*c^3)*e^4)*g + 2*((2*(b^4*c^4 + a*b^2*c^5 - 20*a^2*
c^6)*d^4 - 4*(b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^3*e + 6*(5*a*b^4*c^3 -
22*a^2*b^2*c^4 + 8*a^3*c^5)*d^2*e^2 - 4*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b
*c^4)*d*e^3 - (a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*e^4)
*f - ((b^5*c^3 + a*b^3*c^4 - 20*a^2*b*c^5)*d^4 - 4*(5*a*b^4*c^3 - 22*a^2*b^
2*c^4 + 8*a^3*c^5)*d^3*e + 6*(a*b^5*c^2 + a^2*b^3*c^3 - 20*a^3*b*c^4)*d^2*e
^2 + 4*(a*b^6*c - 14*a^2*b^4*c^2 + 46*a^3*b^2*c^3 - 24*a^4*c^4)*d*e^3 - (3*
a*b^7 - 34*a^2*b^5*c + 119*a^3*b^3*c^2 - 124*a^4*b*c^3)*e^4)*g)*x + ((b^6*c
^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*e^4*g*x^4 + 2*(b^7*c - 12*
a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*e^4*g*x^3 + (b^8 - 10*a*b^6*c +
24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*e^4*g*x^2 + 2*(a*b^7 - 12*a^
2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*e^4*g*x + (a^2*b^6 - 12*a^3*b^4*c
+ 48*a^4*b^2*c^2 - 64*a^5*c^3)*e^4*g)*log(c*x^2 + b*x + a))/(a^2*b^6*c^3 -
12*a^3*b^4*c^4 + 48*a^4*b^2*c^5 - 64*a^5*c^6 + (b^6*c^5 - 12*a*b^4*c^6 + 48
*a^2*b^2*c^7 - 64*a^3*c^8)*x^4 + 2*(b^7*c^4 - 12*a*b^5*c^5 + 48*a^2*b^3*c^6
 - 64*a^3*b*c^7)*x^3 + (b^8*c^3 - 10*a*b^6*c^4 + 24*a^2*b^4*c^5 + 32*a^3*b^
2*c^6 - 128*a^4*c^7)*x^2 + 2*(a*b^7*c^3 - 12*a^2*b^5*c^4 + 48*a^3*b^3*c^5 -
 64*a^4*b*c^6)*x)]
```

giac [B] time = 0.25, size = 1316, normalized size = 2.42

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (12*c^5*d^4*f - 6*b*c^4*d^4*g - 24*b*c^4*d^3*f*e + 8*b^2*c^3*d^3*g*e + 16*a
*c^4*d^3*g*e + 12*b^2*c^3*d^2*f*e^2 + 24*a*c^4*d^2*f*e^2 - 36*a*b*c^3*d^2*g
*e^2 - 24*a*b*c^3*d*f*e^3 + 48*a^2*c^3*d*g*e^3 + 12*a^2*c^3*f*e^4 - b^5*g*e
^4 + 10*a*b^3*c*g*e^4 - 30*a^2*b*c^2*g*e^4)*arctan((2*c*x + b)/sqrt(-b^2 +
4*a*c))/((b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5)*sqrt(-b^2 + 4*a*c)) + 1/2*g*e
^4*log(c*x^2 + b*x + a)/c^3 - 1/2*(b^3*c^3*d^4*f - 10*a*b*c^4*d^4*f + a*b^2
*c^3*d^4*g + 8*a^2*c^4*d^4*g + 4*a*b^2*c^3*d^3*f*e + 32*a^2*c^4*d^3*f*e - 2
4*a^2*b*c^3*d^3*g*e - 36*a^2*b*c^3*d^2*f*e^2 + 6*a^2*b^2*c^2*d^2*g*e^2 + 48
*a^3*c^3*d^2*g*e^2 + 4*a^2*b^2*c^2*d*f*e^3 + 32*a^3*c^3*d*f*e^3 + 4*a^2*b^3
*c*d*g*e^3 - 40*a^3*b*c^2*d*g*e^3 + a^2*b^3*c*f*e^4 - 10*a^3*b*c^2*f*e^4 -
3*a^2*b^4*g*e^4 + 21*a^3*b^2*c*g*e^4 - 24*a^4*c^2*g*e^4 - 2*(6*c^6*d^4*f -
3*b*c^5*d^4*g - 12*b*c^5*d^3*f*e + 4*b^2*c^4*d^3*g*e + 8*a*c^5*d^3*g*e + 6*
b^2*c^4*d^2*f*e^2 + 12*a*c^5*d^2*f*e^2 - 18*a*b*c^4*d^2*g*e^2 - 12*a*b*c^4*
d*f*e^3 - 4*b^4*c^2*d*g*e^3 + 32*a*b^2*c^3*d*g*e^3 - 40*a^2*c^4*d*g*e^3 - b
^4*c^2*f*e^4 + 8*a*b^2*c^3*f*e^4 - 10*a^2*c^4*f*e^4 + 2*b^5*c*g*e^4 - 15*a*
b^3*c^2*g*e^4 + 25*a^2*b*c^3*g*e^4)*x^3 - (18*b*c^5*d^4*f - 9*b^2*c^4*d^4*g
 - 36*b^2*c^4*d^3*f*e + 12*b^3*c^3*d^3*g*e + 24*a*b*c^4*d^3*g*e + 18*b^3*c^
3*d^2*f*e^2 + 36*a*b*c^4*d^2*f*e^2 - 6*b^4*c^2*d^2*g*e^2 - 6*a*b^2*c^3*d^2*
g*e^2 - 96*a^2*c^4*d^2*g*e^2 - 4*b^4*c^2*d*f*e^3 - 4*a*b^2*c^3*d*f*e^3 - 64
*a^2*c^4*d*f*e^3 - 4*b^5*c*d*g*e^3 + 32*a*b^3*c^2*d*g*e^3 + 8*a^2*b*c^3*d*g
*e^3 - b^5*c*f*e^4 + 8*a*b^3*c^2*f*e^4 + 2*a^2*b*c^3*f*e^4 + 3*b^6*g*e^4 -
19*a*b^4*c*g*e^4 + 11*a^2*b^2*c^2*g*e^4 + 32*a^3*c^3*g*e^4)*x^2 - 2*(2*b^2*
c^4*d^4*f + 10*a*c^5*d^4*f - b^3*c^3*d^4*g - 5*a*b*c^4*d^4*g - 4*b^3*c^3*d^
3*f*e - 20*a*b*c^4*d^3*f*e + 20*a*b^2*c^3*d^3*g*e - 8*a^2*c^4*d^3*g*e + 30*
a*b^2*c^3*d^2*f*e^2 - 12*a^2*c^4*d^2*f*e^2 - 6*a*b^3*c^2*d^2*g*e^2 - 30*a^2
*b*c^3*d^2*g*e^2 - 4*a*b^3*c^2*d*f*e^3 - 20*a^2*b*c^3*d*f*e^3 - 4*a*b^4*c*d
*g*e^3 + 40*a^2*b^2*c^2*d*g*e^3 - 24*a^3*c^3*d*g*e^3 - a*b^4*c*f*e^4 + 10*a
^2*b^2*c^2*f*e^4 - 6*a^3*c^3*f*e^4 + 3*a*b^5*g*e^4 - 22*a^2*b^3*c*g*e^4 + 3
1*a^3*b*c^2*g*e^4)*x)/((c*x^2 + b*x + a)^2*(b^2 - 4*a*c)^2*c^3)
```

maple [B] time = 0.07, size = 2221, normalized size = 4.09

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] ((25*a^2*b*c^2*e^4*g-40*a^2*c^3*d*e^3*g-10*a^2*c^3*e^4*f-15*a*b^3*c*e^4*g+3
2*a*b^2*c^2*d*e^3*g+8*a*b^2*c^2*e^4*f-18*a*b*c^3*d^2*e^2*g-12*a*b*c^3*d*e^3
*f+8*a*c^4*d^3*e*g+12*a*c^4*d^2*e^2*f+2*b^5*e^4*g-4*b^4*c*d*e^3*g-b^4*c*e^4
*f+4*b^2*c^3*d^3*e*g+6*b^2*c^3*d^2*e^2*f-3*b*c^4*d^4*g-12*b*c^4*d^3*e*f+6*c
^5*d^4*f)/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3+1/2*(32*a^3*c^3*e^4*g+11*a^2*b
^2*c^2*e^4*g+8*a^2*b*c^3*d*e^3*g+2*a^2*b*c^3*e^4*f-96*a^2*c^4*d^2*e^2*g-64*
a^2*c^4*d*e^3*f-19*a*b^4*c*e^4*g+32*a*b^3*c^2*d*e^3*g+8*a*b^3*c^2*e^4*f-6*a
*b^2*c^3*d^2*e^2*g-4*a*b^2*c^3*d*e^3*f+24*a*b*c^4*d^3*e*g+36*a*b*c^4*d^2*e^
2*f+3*b^6*e^4*g-4*b^5*c*d*e^3*g-b^5*c*e^4*f-6*b^4*c^2*d^2*e^2*g-4*b^4*c^2*d
*e^3*f+12*b^3*c^3*d^3*e*g+18*b^3*c^3*d^2*e^2*f-9*b^2*c^4*d^4*g-36*b^2*c^4*d
^3*e*f+18*b*c^5*d^4*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^3*x^2+(31*a^3*b*c^2*e^4
*g-24*a^3*c^3*d*e^3*g-6*a^3*c^3*e^4*f-22*a^2*b^3*c*e^4*g+40*a^2*b^2*c^2*d*e
^3*g+10*a^2*b^2*c^2*e^4*f-30*a^2*b*c^3*d^2*e^2*g-20*a^2*b*c^3*d*e^3*f-8*a^2
*c^4*d^3*e*g-12*a^2*c^4*d^2*e^2*f+3*a*b^5*e^4*g-4*a*b^4*c*d*e^3*g-a*b^4*c*e
^4*f-6*a*b^3*c^2*d^2*e^2*g-4*a*b^3*c^2*d*e^3*f+20*a*b^2*c^3*d^3*e*g+30*a*b^
2*c^3*d^2*e^2*f-5*a*b*c^4*d^4*g-20*a*b*c^4*d^3*e*f+10*a*c^5*d^4*f-b^3*c^3*d
^4*g-4*b^3*c^3*d^3*e*f+2*b^2*c^4*d^4*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^3*x+1/
2/c^3*(24*a^4*c^2*e^4*g-21*a^3*b^2*c*e^4*g+40*a^3*b*c^2*d*e^3*g+10*a^3*b*c^
2*e^4*f-48*a^3*c^3*d^2*e^2*g-32*a^3*c^3*d*e^3*f+3*a^2*b^4*e^4*g-4*a^2*b^3*c
*d*e^3*g-a^2*b^3*c*e^4*f-6*a^2*b^2*c^2*d^2*e^2*g-4*a^2*b^2*c^2*d*e^3*f+24*a
^2*b*c^3*d^3*e*g+36*a^2*b*c^3*d^2*e^2*f-8*a^2*c^4*d^4*g-32*a^2*c^4*d^3*e*f-
a*b^2*c^3*d^4*g-4*a*b^2*c^3*d^3*e*f+10*a*b*c^4*d^4*f-b^3*c^3*d^4*f)/(16*a^2
*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+8/c/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^
2+b*x+a)*a^2*e^4*g-4/c^2/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^2+b*x+a)*a*b^2*e
^4*g+1/2/c^3/(16*a^2*c^2-8*a*b^2*c+b^4)*ln(c*x^2+b*x+a)*b^4*e^4*g-30/c/(16*
a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2)
)*a^2*b*e^4*g+48/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x
+b)/(4*a*c-b^2)^(1/2))*a^2*d*e^3*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2
)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^4*f+10/c^2/(16*a^2*c^2-8*
a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b^3*e^
4*g-36/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c
-b^2)^(1/2))*a*b*d^2*e^2*g-24/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*
arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d*e^3*f+16*c/(16*a^2*c^2-8*a*b^2*c+
b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*d^3*e*g+24*c/(
16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1
/2))*a*d^2*e^2*f+8/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c
*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^3*e*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b
^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d^2*e^2*f-6*c/(16*a^2*c^2
-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*d^4
*g-24*c/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*
c-b^2)^(1/2))*b*d^3*e*f+12*c^2/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*d^4*f-1/c^3/(16*a^2*c^2-8*a*b^2*c+b^4)
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^5*e^4*g
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^4*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 5.59, size = 1763, normalized size = 3.25

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^4)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (atan((x*(32*a^2*c^5*(4*a*c - b^2)^(5/2) + 2*b^4*c^3*(4*a*c - b^2)^(5/2) -
16*a*b^2*c^4*(4*a*c - b^2)^(5/2)))/(c^2*(4*a*c - b^2)^5) + ((32*a^2*c^5*(4*
a*c - b^2)^(5/2) + 2*b^4*c^3*(4*a*c - b^2)^(5/2) - 16*a*b^2*c^4*(4*a*c - b^
2)^(5/2))*(b^5*c^2 - 8*a*b^3*c^3 + 16*a^2*b*c^4))/(2*c^5*(4*a*c - b^2)^5*(b
^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(12*c^5*d^4*f - b^5*e^4*g + 12*a^2*c^3*e^4*f
 - 6*b*c^4*d^4*g + 10*a*b^3*c*e^4*g + 16*a*c^4*d^3*e*g - 24*b*c^4*d^3*e*f -
 30*a^2*b*c^2*e^4*g + 24*a*c^4*d^2*e^2*f + 48*a^2*c^3*d*e^3*g + 8*b^2*c^3*d
^3*e*g + 12*b^2*c^3*d^2*e^2*f - 24*a*b*c^3*d*e^3*f - 36*a*b*c^3*d^2*e^2*g))
/(c^3*(4*a*c - b^2)^(5/2)) - (log(a + b*x + c*x^2)*(b^10*e^4*g - 1024*a^5*c
^5*e^4*g - 20*a*b^8*c*e^4*g + 160*a^2*b^6*c^2*e^4*g - 640*a^3*b^4*c^3*e^4*g
 + 1280*a^4*b^2*c^4*e^4*g))/(2*(1024*a^5*c^8 - b^10*c^3 + 20*a*b^8*c^4 - 16
0*a^2*b^6*c^5 + 640*a^3*b^4*c^6 - 1280*a^4*b^2*c^7)) - ((8*a^2*c^4*d^4*g -
3*a^2*b^4*e^4*g + b^3*c^3*d^4*f - 24*a^4*c^2*e^4*g - 10*a*b*c^4*d^4*f + a*b
^2*c^3*d^4*g + a^2*b^3*c*e^4*f - 10*a^3*b*c^2*e^4*f + 21*a^3*b^2*c*e^4*g +
32*a^2*c^4*d^3*e*f + 32*a^3*c^3*d*e^3*f + 48*a^3*c^3*d^2*e^2*g - 36*a^2*b*c
^3*d^2*e^2*f + 4*a^2*b^2*c^2*d*e^3*f + 6*a^2*b^2*c^2*d^2*e^2*g + 4*a*b^2*c^
3*d^3*e*f - 24*a^2*b*c^3*d^3*e*g + 4*a^2*b^3*c*d*e^3*g - 40*a^3*b*c^2*d*e^3
*g)/(2*c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^3*(6*c^5*d^4*f + 2*b^5*e^4*
g - 10*a^2*c^3*e^4*f - 3*b*c^4*d^4*g - b^4*c*e^4*f - 15*a*b^3*c*e^4*g + 8*a
*c^4*d^3*e*g - 12*b*c^4*d^3*e*f - 4*b^4*c*d*e^3*g + 8*a*b^2*c^2*e^4*f + 25*
a^2*b*c^2*e^4*g + 12*a*c^4*d^2*e^2*f - 40*a^2*c^3*d*e^3*g + 4*b^2*c^3*d^3*e
*g + 6*b^2*c^3*d^2*e^2*f - 12*a*b*c^3*d*e^3*f - 18*a*b*c^3*d^2*e^2*g + 32*a
*b^2*c^2*d*e^3*g))/(c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (x^2*(3*b^6*e^4*g
 + 32*a^3*c^3*e^4*g - 9*b^2*c^4*d^4*g + 18*b*c^5*d^4*f - b^5*c*e^4*f - 19*a
*b^4*c*e^4*g - 4*b^5*c*d*e^3*g + 8*a*b^3*c^2*e^4*f + 2*a^2*b*c^3*e^4*f - 64
*a^2*c^4*d*e^3*f - 36*b^2*c^4*d^3*e*f - 4*b^4*c^2*d*e^3*f + 12*b^3*c^3*d^3*
e*g + 11*a^2*b^2*c^2*e^4*g - 96*a^2*c^4*d^2*e^2*g + 18*b^3*c^3*d^2*e^2*f -
6*b^4*c^2*d^2*e^2*g - 6*a*b^2*c^3*d^2*e^2*g + 24*a*b*c^4*d^3*e*g + 36*a*b*c
^4*d^2*e^2*f - 4*a*b^2*c^3*d*e^3*f + 32*a*b^3*c^2*d*e^3*g + 8*a^2*b*c^3*d*e
^3*g))/(2*c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(6*a^3*c^3*e^4*f - 2*b^2
*c^4*d^4*f + b^3*c^3*d^4*g - 10*a*c^5*d^4*f - 3*a*b^5*e^4*g + 5*a*b*c^4*d^4
*g + a*b^4*c*e^4*f + 22*a^2*b^3*c*e^4*g - 31*a^3*b*c^2*e^4*g + 8*a^2*c^4*d^
3*e*g + 24*a^3*c^3*d*e^3*g + 4*b^3*c^3*d^3*e*f - 10*a^2*b^2*c^2*e^4*f + 12*
a^2*c^4*d^2*e^2*f - 30*a*b^2*c^3*d^2*e^2*f + 6*a*b^3*c^2*d^2*e^2*g + 30*a^2
*b*c^3*d^2*e^2*g - 40*a^2*b^2*c^2*d*e^3*g + 20*a*b*c^4*d^3*e*f + 4*a*b^4*c*
d*e^3*g + 4*a*b^3*c^2*d*e^3*f + 20*a^2*b*c^3*d*e^3*f - 20*a*b^2*c^3*d^3*e*g
))/(c^3*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4
 + 2*a*b*x + 2*b*c*x^3)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**4*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2372 $\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=195

$$-\frac{6\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(2aeg-bdg-bef+2cdf)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^3(-2ag+x(2cf-bg)+bf)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+3(d+ex$$

```
[Out] -1/2*(e*x+d)^3*(b*f-2*a*g+(-b*g+2*c*f)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^2+3/2*
(2*a*e*g-b*d*g-b*e*f+2*c*d*f)*(e*x+d)*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^
2)^2/(c*x^2+b*x+a)-6*(a*e^2-b*d*e+c*d^2)*(2*a*e*g-b*d*g-b*e*f+2*c*d*f)*arct
anh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(5/2)
```

Rubi [A] time = 0.16, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {804, 722, 618, 206}

$$-\frac{6\left(ae^2-bde+cd^2\right)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)(2aeg-bdg-bef+2cdf)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^3(-2ag+x(2cf-bg)+bf)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}+3(d+ex$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^3*(b*f - 2*a*g + (2*c*f - b*g)*x))/(2*(b^2 - 4*a*c)*(a + b*x +
c*x^2)^2) + (3*(2*c*d*f - b*e*f - b*d*g + 2*a*e*g)*(d + e*x)*(b*d - 2*a*e +
 (2*c*d - b*e)*x))/(2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (6*(c*d^2 - b*d*
e + a*e^2)*(2*c*d*f - b*e*f - b*d*g + 2*a*e*g)*ArcTanh[(b + 2*c*x)/Sqrt[b^2
 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)^3(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{(3(2cdf-bef-bdg+2aeg))\int \frac{(d+ex)^2}{\left(a+bx+cx^2\right)^2}\,d}{2\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

$$= -\frac{(d+ex)^3(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cdf-bef-bdg+2aeg)(d+ex)(bd-2a}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Mathematica [B] time = 0.98, size = 550, normalized size = 2.82

$$\frac{1}{2}\left(\frac{bc\left(-3a^2e^3g+3ace\left(d^2g+de(f+3gx)+e^2fx\right)+c^2d^2(d(f-gx)-3efx)\right)+2c^2\left(a^2e^2(3dg+e(f+gx))-a\right.}{c^3\left(4a\right.}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^3*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((b^5*e^3*g + b^3*c*e*(-8*a*e^2*g + 3*c*d*(e*f + d*g)) - b^4*c*e^2*(3*d*g +
 e*(f + 2*g*x)) - 4*c^3*(-3*c^2*d^3*f*x - 3*a*c*d*e*(e*f + d*g)*x + a^2*e^2
*(4*e*f + 12*d*g + 5*e*g*x)) + b^2*c^2*(a*e^2*(5*e*f + 15*d*g + 16*e*g*x) -
 3*c*d*(3*d*e*f + d^2*g - 2*e^2*f*x - 2*d*e*g*x)) + 2*b*c^2*(11*a^2*e^3*g +
 3*a*c*e*(d^2*g - e^2*f*x + d*e*(f - 3*g*x)) + 3*c^2*d^2*(-3*e*f*x + d*(f -
 g*x))))/(c^3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (b^4*e^3*g*x + b^3*e^2*(
a*e*g - c*(e*f + 3*d*g)*x) - b^2*c*e*(-3*c*d*(e*f + d*g)*x + a*e*(e*f + 3*d
*g + 4*e*g*x)) + 2*c^2*(c^2*d^3*f*x + a^2*e^2*(3*d*g + e*(f + g*x)) - a*c*d
*(d^2*g + 3*e^2*f*x + 3*d*e*(f + g*x))) + b*c*(-3*a^2*e^3*g + c^2*d^2*(-3*e
*f*x + d*(f - g*x)) + 3*a*c*e*(d^2*g + e^2*f*x + d*e*(f + 3*g*x))))/(c^3*(-
b^2 + 4*a*c)*(a + x*(b + c*x))^2) + (12*(c*d^2 + e*(-(b*d) + a*e))*(2*c*d*f
 + 2*a*e*g - b*(e*f + d*g))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 +
 4*a*c)^(5/2))/2
```

fricas [B] time = 1.62, size = 3941, normalized size = 20.21

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(3*(2*(b^2*c^5 - 4*a*c^6)*d^3 - 3*(b^3*c^4 - 4*a*b*c^5)*d^2*e + (b^
4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d*e^2 - (a*b^3*c^3 - 4*a^2*b*c^4)*e^3)*f -
 (3*(b^3*c^4 - 4*a*b*c^5)*d^3 - 3*(b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d^2*e
 + 9*(a*b^3*c^3 - 4*a^2*b*c^4)*d*e^2 + (b^6*c - 12*a*b^4*c^2 + 42*a^2*b^2*c
^3 - 40*a^3*c^4)*e^3)*g)*x^3 + ((18*(b^3*c^4 - 4*a*b*c^5)*d^3 - 27*(b^4*c^3
 - 4*a*b^2*c^4)*d^2*e + 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d*e^2 - (b^
6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*e^3)*f - (9*(b^4*c^3 - 4*a
*b^2*c^4)*d^3 - 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^2*e + 3*(b^6*c -
3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^2 + (b^7 - 12*a*b^5*c + 30*a
^2*b^3*c^2 + 8*a^3*b*c^3)*e^3)*g)*x^2 + 6*(((2*c^6*d^3 - 3*b*c^5*d^2*e - a*
b*c^4*e^3 + (b^2*c^4 + 2*a*c^5)*d*e^2)*f - (b*c^5*d^3 + 3*a*b*c^4*d*e^2 - 2
*a^2*c^4*e^3 - (b^2*c^4 + 2*a*c^5)*d^2*e)*g)*x^4 + 2*((2*b*c^5*d^3 - 3*b^2*
c^4*d^2*e - a*b^2*c^3*e^3 + (b^3*c^3 + 2*a*b*c^4)*d*e^2)*f - (b^2*c^4*d^3 +
 3*a*b^2*c^3*d*e^2 - 2*a^2*b*c^3*e^3 - (b^3*c^3 + 2*a*b*c^4)*d^2*e)*g)*x^3
+ ((2*(b^2*c^4 + 2*a*c^5)*d^3 - 3*(b^3*c^3 + 2*a*b*c^4)*d^2*e + (b^4*c^2 +
4*a*b^2*c^3 + 4*a^2*c^4)*d*e^2 - (a*b^3*c^2 + 2*a^2*b*c^3)*e^3)*f - ((b^3*c
^3 + 2*a*b*c^4)*d^3 - (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d^2*e + 3*(a*b^3*
c^2 + 2*a^2*b*c^3)*d*e^2 - 2*(a^2*b^2*c^2 + 2*a^3*c^3)*e^3)*g)*x^2 + (2*a^2
*c^4*d^3 - 3*a^2*b*c^3*d^2*e - a^3*b*c^2*e^3 + (a^2*b^2*c^2 + 2*a^3*c^3)*d*
e^2)*f - (a^2*b*c^3*d^3 + 3*a^3*b*c^2*d*e^2 - 2*a^4*c^2*e^3 - (a^2*b^2*c^2
+ 2*a^3*c^3)*d^2*e)*g + 2*((2*a*b*c^4*d^3 - 3*a*b^2*c^3*d^2*e - a^2*b^2*c^2
*e^3 + (a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2)*f - (a*b^2*c^3*d^3 + 3*a^2*b^2*c^2*
d*e^2 - 2*a^3*b*c^2*e^3 - (a*b^3*c^2 + 2*a^2*b*c^3)*d^2*e)*g)*x)*sqrt(b^2 -
 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x +
 b))/(c*x^2 + b*x + a)) - ((b^5*c^2 - 14*a*b^3*c^3 + 40*a^2*b*c^4)*d^3 + 3*
(a*b^4*c^2 + 4*a^2*b^2*c^3 - 32*a^3*c^4)*d^2*e - 18*(a^2*b^3*c^2 - 4*a^3*b*
c^3)*d*e^2 + (a^2*b^4*c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*e^3)*f - ((a*b^4*c^2
+ 4*a^2*b^2*c^3 - 32*a^3*c^4)*d^3 - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e +
3*(a^2*b^4*c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*d*e^2 + (a^2*b^5 - 14*a^3*b^3*c
+ 40*a^4*b*c^2)*e^3)*g + 2*((2*(b^4*c^3 + a*b^2*c^4 - 20*a^2*c^5)*d^3 - 3*(
b^5*c^2 + a*b^3*c^3 - 20*a^2*b*c^4)*d^2*e + 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3
 + 8*a^3*c^4)*d*e^2 - (a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*e^3)*f - ((b^5
*c^2 + a*b^3*c^3 - 20*a^2*b*c^4)*d^3 - 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*
a^3*c^4)*d^2*e + 3*(a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*d*e^2 + (a*b^6 -
14*a^2*b^4*c + 46*a^3*b^2*c^2 - 24*a^4*c^3)*e^3)*g)*x)/(a^2*b^6*c^2 - 12*a^
3*b^4*c^3 + 48*a^4*b^2*c^4 - 64*a^5*c^5 + (b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*
b^2*c^6 - 64*a^3*c^7)*x^4 + 2*(b^7*c^3 - 12*a*b^5*c^4 + 48*a^2*b^3*c^5 - 64
*a^3*b*c^6)*x^3 + (b^8*c^2 - 10*a*b^6*c^3 + 24*a^2*b^4*c^4 + 32*a^3*b^2*c^5
 - 128*a^4*c^6)*x^2 + 2*(a*b^7*c^2 - 12*a^2*b^5*c^3 + 48*a^3*b^3*c^4 - 64*a
^4*b*c^5)*x), 1/2*(2*(3*(2*(b^2*c^5 - 4*a*c^6)*d^3 - 3*(b^3*c^4 - 4*a*b*c^5
)*d^2*e + (b^4*c^3 - 2*a*b^2*c^4 - 8*a^2*c^5)*d*e^2 - (a*b^3*c^3 - 4*a^2*b*
c^4)*e^3)*f - (3*(b^3*c^4 - 4*a*b*c^5)*d^3 - 3*(b^4*c^3 - 2*a*b^2*c^4 - 8*a
^2*c^5)*d^2*e + 9*(a*b^3*c^3 - 4*a^2*b*c^4)*d*e^2 + (b^6*c - 12*a*b^4*c^2 +
 42*a^2*b^2*c^3 - 40*a^3*c^4)*e^3)*g)*x^3 + ((18*(b^3*c^4 - 4*a*b*c^5)*d^3
- 27*(b^4*c^3 - 4*a*b^2*c^4)*d^2*e + 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4
)*d*e^2 - (b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*e^3)*f - (9*(
b^4*c^3 - 4*a*b^2*c^4)*d^3 - 9*(b^5*c^2 - 2*a*b^3*c^3 - 8*a^2*b*c^4)*d^2*e
+ 3*(b^6*c - 3*a*b^4*c^2 + 12*a^2*b^2*c^3 - 64*a^3*c^4)*d*e^2 + (b^7 - 12*a
*b^5*c + 30*a^2*b^3*c^2 + 8*a^3*b*c^3)*e^3)*g)*x^2 - 12*(((2*c^6*d^3 - 3*b*
c^5*d^2*e - a*b*c^4*e^3 + (b^2*c^4 + 2*a*c^5)*d*e^2)*f - (b*c^5*d^3 + 3*a*b
*c^4*d*e^2 - 2*a^2*c^4*e^3 - (b^2*c^4 + 2*a*c^5)*d^2*e)*g)*x^4 + 2*((2*b*c^
5*d^3 - 3*b^2*c^4*d^2*e - a*b^2*c^3*e^3 + (b^3*c^3 + 2*a*b*c^4)*d*e^2)*f -
(b^2*c^4*d^3 + 3*a*b^2*c^3*d*e^2 - 2*a^2*b*c^3*e^3 - (b^3*c^3 + 2*a*b*c^4)*
d^2*e)*g)*x^3 + ((2*(b^2*c^4 + 2*a*c^5)*d^3 - 3*(b^3*c^3 + 2*a*b*c^4)*d^2*e
 + (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d*e^2 - (a*b^3*c^2 + 2*a^2*b*c^3)*e^
3)*f - ((b^3*c^3 + 2*a*b*c^4)*d^3 - (b^4*c^2 + 4*a*b^2*c^3 + 4*a^2*c^4)*d^2
*e + 3*(a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2 - 2*(a^2*b^2*c^2 + 2*a^3*c^3)*e^3)*g
)*x^2 + (2*a^2*c^4*d^3 - 3*a^2*b*c^3*d^2*e - a^3*b*c^2*e^3 + (a^2*b^2*c^2 +
 2*a^3*c^3)*d*e^2)*f - (a^2*b*c^3*d^3 + 3*a^3*b*c^2*d*e^2 - 2*a^4*c^2*e^3 -
 (a^2*b^2*c^2 + 2*a^3*c^3)*d^2*e)*g + 2*((2*a*b*c^4*d^3 - 3*a*b^2*c^3*d^2*e
 - a^2*b^2*c^2*e^3 + (a*b^3*c^2 + 2*a^2*b*c^3)*d*e^2)*f - (a*b^2*c^3*d^3 +
3*a^2*b^2*c^2*d*e^2 - 2*a^3*b*c^2*e^3 - (a*b^3*c^2 + 2*a^2*b*c^3)*d^2*e)*g)
*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)
```

```
) - ((b^5*c^2 - 14*a*b^3*c^3 + 40*a^2*b*c^4)*d^3 + 3*(a*b^4*c^2 + 4*a^2*b^2
*c^3 - 32*a^3*c^4)*d^2*e - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d*e^2 + (a^2*b^4*
c + 4*a^3*b^2*c^2 - 32*a^4*c^3)*e^3)*f - ((a*b^4*c^2 + 4*a^2*b^2*c^3 - 32*a
^3*c^4)*d^3 - 18*(a^2*b^3*c^2 - 4*a^3*b*c^3)*d^2*e + 3*(a^2*b^4*c + 4*a^3*b
^2*c^2 - 32*a^4*c^3)*d*e^2 + (a^2*b^5 - 14*a^3*b^3*c + 40*a^4*b*c^2)*e^3)*g
 + 2*((2*(b^4*c^3 + a*b^2*c^4 - 20*a^2*c^5)*d^3 - 3*(b^5*c^2 + a*b^3*c^3 -
20*a^2*b*c^4)*d^2*e + 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d*e^2 -
(a*b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*e^3)*f - ((b^5*c^2 + a*b^3*c^3 - 20*
a^2*b*c^4)*d^3 - 3*(5*a*b^4*c^2 - 22*a^2*b^2*c^3 + 8*a^3*c^4)*d^2*e + 3*(a*
b^5*c + a^2*b^3*c^2 - 20*a^3*b*c^3)*d*e^2 + (a*b^6 - 14*a^2*b^4*c + 46*a^3*
b^2*c^2 - 24*a^4*c^3)*e^3)*g)*x)/(a^2*b^6*c^2 - 12*a^3*b^4*c^3 + 48*a^4*b^2
*c^4 - 64*a^5*c^5 + (b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7)*
x^4 + 2*(b^7*c^3 - 12*a*b^5*c^4 + 48*a^2*b^3*c^5 - 64*a^3*b*c^6)*x^3 + (b^8
*c^2 - 10*a*b^6*c^3 + 24*a^2*b^4*c^4 + 32*a^3*b^2*c^5 - 128*a^4*c^6)*x^2 +
2*(a*b^7*c^2 - 12*a^2*b^5*c^3 + 48*a^3*b^3*c^4 - 64*a^4*b*c^5)*x)]
```

giac [B] time = 0.21, size = 979, normalized size = 5.02

$$\frac{6\left(2c^2d^3f - bcd^3g - 3bcd^2fe + b^2d^2ge + 2acd^2ge + b^2dfe^2 + 2acdfe^2 - 3abdge^2 - abfe^3 + 2a^2ge^3\right)\arctan(}{\left(b^4 - 8ab^2c + 16a^2c^2\right)\sqrt{-b^2 + 4ac}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 6*(2*c^2*d^3*f - b*c*d^3*g - 3*b*c*d^2*f*e + b^2*d^2*g*e + 2*a*c*d^2*g*e +
b^2*d*f*e^2 + 2*a*c*d*f*e^2 - 3*a*b*d*g*e^2 - a*b*f*e^3 + 2*a^2*g*e^3)*arct
an((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^
2 + 4*a*c)) + 1/2*(12*c^5*d^3*f*x^3 - 6*b*c^4*d^3*g*x^3 - 18*b*c^4*d^2*f*x^
3*e + 6*b^2*c^3*d^2*g*x^3*e + 12*a*c^4*d^2*g*x^3*e + 18*b*c^4*d^3*f*x^2 - 9
*b^2*c^3*d^3*g*x^2 + 6*b^2*c^3*d*f*x^3*e^2 + 12*a*c^4*d*f*x^3*e^2 - 18*a*b*
c^3*d*g*x^3*e^2 - 27*b^2*c^3*d^2*f*x^2*e + 9*b^3*c^2*d^2*g*x^2*e + 18*a*b*c
^3*d^2*g*x^2*e + 4*b^2*c^3*d^3*f*x + 20*a*c^4*d^3*f*x - 2*b^3*c^2*d^3*g*x -
 10*a*b*c^3*d^3*g*x - 6*a*b*c^3*f*x^3*e^3 - 2*b^4*c*g*x^3*e^3 + 16*a*b^2*c^
2*g*x^3*e^3 - 20*a^2*c^3*g*x^3*e^3 + 9*b^3*c^2*d*f*x^2*e^2 + 18*a*b*c^3*d*f
*x^2*e^2 - 3*b^4*c*d*g*x^2*e^2 - 3*a*b^2*c^2*d*g*x^2*e^2 - 48*a^2*c^3*d*g*x
^2*e^2 - 6*b^3*c^2*d^2*f*x*e - 30*a*b*c^3*d^2*f*x*e + 30*a*b^2*c^2*d^2*g*x*
e - 12*a^2*c^3*d^2*g*x*e - b^3*c^2*d^3*f + 10*a*b*c^3*d^3*f - a*b^2*c^2*d^3
*g - 8*a^2*c^3*d^3*g - b^4*c*f*x^2*e^3 - a*b^2*c^2*f*x^2*e^3 - 16*a^2*c^3*f
*x^2*e^3 - b^5*g*x^2*e^3 + 8*a*b^3*c*g*x^2*e^3 + 2*a^2*b*c^2*g*x^2*e^3 + 30
*a*b^2*c^2*d*f*x*e^2 - 12*a^2*c^3*d*f*x*e^2 - 6*a*b^3*c*d*g*x*e^2 - 30*a^2*
b*c^2*d*g*x*e^2 - 3*a*b^2*c^2*d^2*f*e - 24*a^2*c^3*d^2*f*e + 18*a^2*b*c^2*d
^2*g*e - 2*a*b^3*c*f*x*e^3 - 10*a^2*b*c^2*f*x*e^3 - 2*a*b^4*g*x*e^3 + 20*a^
2*b^2*c*g*x*e^3 - 12*a^3*c^2*g*x*e^3 + 18*a^2*b*c^2*d*f*e^2 - 3*a^2*b^2*c*d
*g*e^2 - 24*a^3*c^2*d*g*e^2 - a^2*b^2*c*f*e^3 - 8*a^3*c^2*f*e^3 - a^2*b^3*g
*e^3 + 10*a^3*b*c*g*e^3)/((b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*(c*x^2 + b*x
 + a)^2)
```

maple [B] time = 0.06, size = 1458, normalized size = 7.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-(10*a^2*c^2*e^3*g-8*a*b^2*c*e^3*g+9*a*b*c^2*d*e^2*g+3*a*b*c^2*e^3*f-6*a*c
^3*d^2*e*g-6*a*c^3*d*e^2*f+b^4*e^3*g-3*b^2*c^2*d^2*e*g-3*b^2*c^2*d*e^2*f+3*
b*c^3*d^3*g+9*b*c^3*d^2*e*f-6*c^4*d^3*f)/c/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3+1
/2*(2*a^2*b*c^2*e^3*g-48*a^2*c^3*d*e^2*g-16*a^2*c^3*e^3*f+8*a*b^3*c*e^3*g-3
*a*b^2*c^2*d*e^2*g-a*b^2*c^2*e^3*f+18*a*b*c^3*d^2*e*g+18*a*b*c^3*d*e^2*f-b^
5*e^3*g-3*b^4*c*d*e^2*g-b^4*c*e^3*f+9*b^3*c^2*d^2*e*g+9*b^3*c^2*d*e^2*f-9*b
^2*c^3*d^3*g-27*b^2*c^3*d^2*e*f+18*b*c^4*d^3*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/
c^2*x^2-(6*a^3*c^2*e^3*g-10*a^2*b^2*c*e^3*g+15*a^2*b*c^2*d*e^2*g+5*a^2*b*c^
2*e^3*f+6*a^2*c^3*d^2*e*g+6*a^2*c^3*d*e^2*f+a*b^4*e^3*g+3*a*b^3*c*d*e^2*g+a
*b^3*c*e^3*f-15*a*b^2*c^2*d^2*e*g-15*a*b^2*c^2*d*e^2*f+5*a*b*c^3*d^3*g+15*a
*b*c^3*d^2*e*f-10*a*c^4*d^3*f+b^3*c^2*d^3*g+3*b^3*c^2*d^2*e*f-2*b^2*c^3*d^3
*f)/(16*a^2*c^2-8*a*b^2*c+b^4)/c^2*x+1/2/c^2*(10*a^3*b*c*e^3*g-24*a^3*c^2*d
*e^2*g-8*a^3*c^2*e^3*f-a^2*b^3*e^3*g-3*a^2*b^2*c*d*e^2*g-a^2*b^2*c*e^3*f+18
*a^2*b*c^2*d^2*e*g+18*a^2*b*c^2*d*e^2*f-8*a^2*c^3*d^3*g-24*a^2*c^3*d^2*e*f-
a*b^2*c^2*d^3*g-3*a*b^2*c^2*d^2*e*f+10*a*b*c^3*d^3*f-b^3*c^2*d^3*f)/(16*a^2
*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b
^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a^2*e^3*g-18/(16*a^2*c^2-8*a*
b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*b*d*e^2*
g-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^
2)^(1/2))*a*b*e^3*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan(
(2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*d^2*e*g+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a
*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*d*e^2*f+6/(16*a^2*c^2
-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d
^2*e*g+6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a
*c-b^2)^(1/2))*b^2*d*e^2*f-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d^3*g-18/(16*a^2*c^2-8*a*b^2*c+b^4)/
(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d^2*e*f+12/(16*a^
2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*
c^2*d^3*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^3*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 3.36, size = 1167, normalized size = 5.98

$$\frac{6\,\mathrm{atan}\left(\frac{\left(\frac{3\left(16a^2bc^2-8ab^3c+b^5\right)\left(cd^2-bde+ae^2\right)\left(2aeg-bdg-bef+2cdf\right)}{\left(4ac-b^2\right)^{5/2}\left(16a^2c^2-8ab^2c+b^4\right)}+\frac{6cx\left(cd^2-bde+ae^2\right)\left(2aeg-bdg-bef+2cdf\right)}{\left(4ac-b^2\right)^{5/2}}\right)\left(16a^2c^2-8ab^2c+b^4\right)}{6ga^2e^3-9gabde^2-3fabe^3+6gacd^2e+6facde^2+3gb^2d^2e+3fb^2de^2-3gbcd^3-9fbcd^2e+6fc^2d^3}\right)(c\,d^2-b}{\left(4ac-b^2\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^3)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (6*atan((((3*(b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(a*e^2 + c*d^2 - b*d*e)*(2*a*
e*g - b*d*g - b*e*f + 2*c*d*f))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2 - 8*
a*b^2*c)) + (6*c*x*(a*e^2 + c*d^2 - b*d*e)*(2*a*e*g - b*d*g - b*e*f + 2*c*d
*f))/(4*a*c - b^2)^(5/2))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*a^2*e^3*g + 6*
c^2*d^3*f - 3*a*b*e^3*f - 3*b*c*d^3*g + 3*b^2*d*e^2*f + 3*b^2*d^2*e*g - 9*a
*b*d*e^2*g + 6*a*c*d*e^2*f + 6*a*c*d^2*e*g - 9*b*c*d^2*e*f))*(a*e^2 + c*d^2
 - b*d*e)*(2*a*e*g - b*d*g - b*e*f + 2*c*d*f))/(4*a*c - b^2)^(5/2) - ((a^2*
b^3*e^3*g + 8*a^2*c^3*d^3*g + 8*a^3*c^2*e^3*f + b^3*c^2*d^3*f - 10*a*b*c^3*
d^3*f - 10*a^3*b*c*e^3*g + a*b^2*c^2*d^3*g + a^2*b^2*c*e^3*f + 24*a^2*c^3*d
^2*e*f + 24*a^3*c^2*d*e^2*g + 3*a*b^2*c^2*d^2*e*f - 18*a^2*b*c^2*d*e^2*f -
18*a^2*b*c^2*d^2*e*g + 3*a^2*b^2*c*d*e^2*g)/(2*c^2*(b^4 + 16*a^2*c^2 - 8*a*
b^2*c)) + (x*(6*a^3*c^2*e^3*g - 2*b^2*c^3*d^3*f + b^3*c^2*d^3*g - 10*a*c^4*
d^3*f + a*b^4*e^3*g + 5*a*b*c^3*d^3*g + a*b^3*c*e^3*f + 5*a^2*b*c^2*e^3*f -
 10*a^2*b^2*c*e^3*g + 6*a^2*c^3*d*e^2*f + 6*a^2*c^3*d^2*e*g + 3*b^3*c^2*d^2
*e*f + 15*a*b*c^3*d^2*e*f + 3*a*b^3*c*d*e^2*g - 15*a*b^2*c^2*d*e^2*f - 15*a
*b^2*c^2*d^2*e*g + 15*a^2*b*c^2*d*e^2*g))/(c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2*
c)) - (x^3*(6*c^4*d^3*f - b^4*e^3*g - 10*a^2*c^2*e^3*g - 3*b*c^3*d^3*g - 3*
a*b*c^2*e^3*f + 8*a*b^2*c*e^3*g + 6*a*c^3*d*e^2*f + 6*a*c^3*d^2*e*g - 9*b*c
^3*d^2*e*f + 3*b^2*c^2*d*e^2*f + 3*b^2*c^2*d^2*e*g - 9*a*b*c^2*d*e^2*g))/(c
*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x^2*(b^5*e^3*g + 16*a^2*c^3*e^3*f + 9*b
^2*c^3*d^3*g - 18*b*c^4*d^3*f + b^4*c*e^3*f - 8*a*b^3*c*e^3*g + 3*b^4*c*d*e
^2*g + a*b^2*c^2*e^3*f - 2*a^2*b*c^2*e^3*g + 48*a^2*c^3*d*e^2*g + 27*b^2*c^
3*d^2*e*f - 9*b^3*c^2*d*e^2*f - 9*b^3*c^2*d^2*e*g - 18*a*b*c^3*d*e^2*f - 18
*a*b*c^3*d^2*e*g + 3*a*b^2*c^2*d*e^2*g))/(2*c^2*(b^4 + 16*a^2*c^2 - 8*a*b^2
*c)))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**3*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2373 $\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=305

$$-\frac{2\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\left(-c(3bd(dg+2ef)-2ae(2dg+ef))+be(-3aeg+2bdg+bef)+6c^2d^2f\right)}{\left(b^2-4ac\right)^{5/2}}-\frac{(d+ex)^2(-2ag +}{2\left(b^2-4ac\right)}$$

```
[Out] -1/2*(e*x+d)^2*(b*f-2*a*g+(-b*g+2*c*f)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^2+1/2*
(-8*a*c*e*(a*e*g+2*c*d*f)+6*b*c*(c*d^2*f+a*e*(2*d*g+e*f))-b^2*(a*e^2*g+c*d*
(3*d*g+2*e*f))+(12*c^3*d^2*f-b^3*e^2*g-2*b*c*e*(a*e*g-2*b*(d*g+e*f))-2*c^2*
(2*a*e*(-2*d*g+e*f)+3*b*d*(d*g+2*e*f)))*x)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)-2
*(6*c^2*d^2*f+b*e*(-3*a*e*g+2*b*d*g+b*e*f)-c*(3*b*d*(d*g+2*e*f)-2*a*e*(2*d*
g+e*f)))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(5/2)
```

Rubi [A] time = 0.38, antiderivative size = 303, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {820, 777, 618, 206}

$$-\frac{-x\left(-2c^2(2ae(ef-2dg)+3bd(dg+2ef))-2bce(aeg-2b(dg+ef))+b^3\left(-e^2\right)g+12c^3d^2f\right)+b^2\left(ae^2g+cd(3d}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] -((d + e*x)^2*(b*f - 2*a*g + (2*c*f - b*g)*x))/(2*(b^2 - 4*a*c)*(a + b*x +
c*x^2)^2) - (8*a*c*e*(2*c*d*f + a*e*g) - 6*b*c*(c*d^2*f + a*e*(e*f + 2*d*g)
) + b^2*(a*e^2*g + c*d*(2*e*f + 3*d*g)) - (12*c^3*d^2*f - b^3*e^2*g - 2*b*c
*e*(a*e*g - 2*b*(e*f + d*g)) - 2*c^2*(2*a*e*(e*f - 2*d*g) + 3*b*d*(2*e*f +
d*g)))*x)/(2*c*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (2*(6*c^2*d^2*f - 3*b*c
*d*(2*e*f + d*g) + 2*a*c*e*(e*f + 2*d*g) + b*e*(b*e*f + 2*b*d*g - 3*a*e*g))
*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(d+ex)^2(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\int \frac{(d+ex)(6cdf-2bef-3bdg+4aeg+e(2cf-bg)x)}{\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

$$= -\frac{(d+ex)^2(bf-2ag+(2cf-bg)x)}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{8ace(2cdf+aeg)-6bc\left(cd^2f+ae(ef+2dg\right.}{}$$

Mathematica [A] time = 0.67, size = 408, normalized size = 1.34

$$\frac{1}{2}\left(\frac{2c\left(a^2e^2g-ac\left(d^2g+2de(f+gx)+e^2fx\right)+c^2d^2fx\right)+b^2e(cx(2dg+ef)-aeg)+bc(ae(2dg+ef+3egx)-}{c^2\left(4ac-b^2\right)(a+x(b+cx))^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)^2*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] ((-(b^4*e^2*g) + b^3*c*e*(e*f + 2*d*g) + 4*c^2*(-4*a^2*e^2*g + 3*c^2*d^2*f*
x + a*c*e*(e*f + 2*d*g)*x) + 2*b*c^2*(3*c*d*(d*f - 2*e*f*x - d*g*x) + a*e*(
e*f + 2*d*g - 3*e*g*x)) + b^2*c*(5*a*e^2*g + c*(-6*d*e*f - 3*d^2*g + 2*e^2*
f*x + 4*d*e*g*x)))/(c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))) + (-(b^3*e^2*g*x
) + b^2*e*(-(a*e*g) + c*(e*f + 2*d*g)*x) + b*c*(c*d*(d*f - 2*e*f*x - d*g*x)
 + a*e*(e*f + 2*d*g + 3*e*g*x)) + 2*c*(a^2*e^2*g + c^2*d^2*f*x - a*c*(d^2*g
 + e^2*f*x + 2*d*e*(f + g*x))))/(c^2*(-b^2 + 4*a*c)*(a + x*(b + c*x))^2) +
(4*(6*c^2*d^2*f - 3*b*c*d*(2*e*f + d*g) + 2*a*c*e*(e*f + 2*d*g) + b*e*(b*e*
f + 2*b*d*g - 3*a*e*g))*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a
*c)^(5/2))/2
```

fricas [B] time = 1.36, size = 2906, normalized size = 9.53

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*((6*(b^2*c^4 - 4*a*c^5)*d^2 - 6*(b^3*c^3 - 4*a*b*c^4)*d*e + (b^4*c^
2 - 2*a*b^2*c^3 - 8*a^2*c^4)*e^2)*f - (3*(b^3*c^3 - 4*a*b*c^4)*d^2 - 2*(b^4
*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d*e + 3*(a*b^3*c^2 - 4*a^2*b*c^3)*e^2)*g)*x
^3 + (3*(6*(b^3*c^3 - 4*a*b*c^4)*d^2 - 6*(b^4*c^2 - 4*a*b^2*c^3)*d*e + (b^5
*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*e^2)*f - (9*(b^4*c^2 - 4*a*b^2*c^3)*d^2 - 6
*(b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*d*e + (b^6 - 3*a*b^4*c + 12*a^2*b^2*c^
2 - 64*a^3*c^3)*e^2)*g)*x^2 - 2*(((6*c^5*d^2 - 6*b*c^4*d*e + (b^2*c^3 + 2*a
*c^4)*e^2)*f - (3*b*c^4*d^2 + 3*a*b*c^3*e^2 - 2*(b^2*c^3 + 2*a*c^4)*d*e)*g)
*x^4 + 2*((6*b*c^4*d^2 - 6*b^2*c^3*d*e + (b^3*c^2 + 2*a*b*c^3)*e^2)*f - (3*
b^2*c^3*d^2 + 3*a*b^2*c^2*e^2 - 2*(b^3*c^2 + 2*a*b*c^3)*d*e)*g)*x^3 + ((6*(
b^2*c^3 + 2*a*c^4)*d^2 - 6*(b^3*c^2 + 2*a*b*c^3)*d*e + (b^4*c + 4*a*b^2*c^2
 + 4*a^2*c^3)*e^2)*f - (3*(b^3*c^2 + 2*a*b*c^3)*d^2 - 2*(b^4*c + 4*a*b^2*c^
2 + 4*a^2*c^3)*d*e + 3*(a*b^3*c + 2*a^2*b*c^2)*e^2)*g)*x^2 + (6*a^2*c^3*d^2
 - 6*a^2*b*c^2*d*e + (a^2*b^2*c + 2*a^3*c^2)*e^2)*f - (3*a^2*b*c^2*d^2 + 3*
a^3*b*c*e^2 - 2*(a^2*b^2*c + 2*a^3*c^2)*d*e)*g + 2*((6*a*b*c^3*d^2 - 6*a*b^
2*c^2*d*e + (a*b^3*c + 2*a^2*b*c^2)*e^2)*f - (3*a*b^2*c^2*d^2 + 3*a^2*b^2*c
*e^2 - 2*(a*b^3*c + 2*a^2*b*c^2)*d*e)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^
2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a
)) - ((b^5*c - 14*a*b^3*c^2 + 40*a^2*b*c^3)*d^2 + 2*(a*b^4*c + 4*a^2*b^2*c^
2 - 32*a^3*c^3)*d*e - 6*(a^2*b^3*c - 4*a^3*b*c^2)*e^2)*f - ((a*b^4*c + 4*a^
2*b^2*c^2 - 32*a^3*c^3)*d^2 - 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e + (a^2*b^4 +
 4*a^3*b^2*c - 32*a^4*c^2)*e^2)*g + 2*((2*(b^4*c^2 + a*b^2*c^3 - 20*a^2*c^4
)*d^2 - 2*(b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d*e + (5*a*b^4*c - 22*a^2*b^2*
c^2 + 8*a^3*c^3)*e^2)*f - ((b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d^2 - 2*(5*a*
b^4*c - 22*a^2*b^2*c^2 + 8*a^3*c^3)*d*e + (a*b^5 + a^2*b^3*c - 20*a^3*b*c^2
)*e^2)*g)*x)/(a^2*b^6*c - 12*a^3*b^4*c^2 + 48*a^4*b^2*c^3 - 64*a^5*c^4 + (b
^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^4 + 2*(b^7*c^2 - 12*
a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^3 + (b^8*c - 10*a*b^6*c^2 + 24
*a^2*b^4*c^3 + 32*a^3*b^2*c^4 - 128*a^4*c^5)*x^2 + 2*(a*b^7*c - 12*a^2*b^5*
c^2 + 48*a^3*b^3*c^3 - 64*a^4*b*c^4)*x), 1/2*(2*((6*(b^2*c^4 - 4*a*c^5)*d^2
 - 6*(b^3*c^3 - 4*a*b*c^4)*d*e + (b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*e^2)*f
 - (3*(b^3*c^3 - 4*a*b*c^4)*d^2 - 2*(b^4*c^2 - 2*a*b^2*c^3 - 8*a^2*c^4)*d*e
 + 3*(a*b^3*c^2 - 4*a^2*b*c^3)*e^2)*g)*x^3 + (3*(6*(b^3*c^3 - 4*a*b*c^4)*d^
2 - 6*(b^4*c^2 - 4*a*b^2*c^3)*d*e + (b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3)*e^2
)*f - (9*(b^4*c^2 - 4*a*b^2*c^3)*d^2 - 6*(b^5*c - 2*a*b^3*c^2 - 8*a^2*b*c^3
)*d*e + (b^6 - 3*a*b^4*c + 12*a^2*b^2*c^2 - 64*a^3*c^3)*e^2)*g)*x^2 - 4*(((
6*c^5*d^2 - 6*b*c^4*d*e + (b^2*c^3 + 2*a*c^4)*e^2)*f - (3*b*c^4*d^2 + 3*a*b
*c^3*e^2 - 2*(b^2*c^3 + 2*a*c^4)*d*e)*g)*x^4 + 2*((6*b*c^4*d^2 - 6*b^2*c^3*
d*e + (b^3*c^2 + 2*a*b*c^3)*e^2)*f - (3*b^2*c^3*d^2 + 3*a*b^2*c^2*e^2 - 2*(
b^3*c^2 + 2*a*b*c^3)*d*e)*g)*x^3 + ((6*(b^2*c^3 + 2*a*c^4)*d^2 - 6*(b^3*c^2
 + 2*a*b*c^3)*d*e + (b^4*c + 4*a*b^2*c^2 + 4*a^2*c^3)*e^2)*f - (3*(b^3*c^2
+ 2*a*b*c^3)*d^2 - 2*(b^4*c + 4*a*b^2*c^2 + 4*a^2*c^3)*d*e + 3*(a*b^3*c + 2
*a^2*b*c^2)*e^2)*g)*x^2 + (6*a^2*c^3*d^2 - 6*a^2*b*c^2*d*e + (a^2*b^2*c + 2
*a^3*c^2)*e^2)*f - (3*a^2*b*c^2*d^2 + 3*a^3*b*c*e^2 - 2*(a^2*b^2*c + 2*a^3*
c^2)*d*e)*g + 2*((6*a*b*c^3*d^2 - 6*a*b^2*c^2*d*e + (a*b^3*c + 2*a^2*b*c^2)
*e^2)*f - (3*a*b^2*c^2*d^2 + 3*a^2*b^2*c*e^2 - 2*(a*b^3*c + 2*a^2*b*c^2)*d*
e)*g)*x)*sqrt(-b^2 + 4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4
*a*c)) - ((b^5*c - 14*a*b^3*c^2 + 40*a^2*b*c^3)*d^2 + 2*(a*b^4*c + 4*a^2*b^
2*c^2 - 32*a^3*c^3)*d*e - 6*(a^2*b^3*c - 4*a^3*b*c^2)*e^2)*f - ((a*b^4*c +
4*a^2*b^2*c^2 - 32*a^3*c^3)*d^2 - 12*(a^2*b^3*c - 4*a^3*b*c^2)*d*e + (a^2*b
^4 + 4*a^3*b^2*c - 32*a^4*c^2)*e^2)*g + 2*((2*(b^4*c^2 + a*b^2*c^3 - 20*a^2
*c^4)*d^2 - 2*(b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d*e + (5*a*b^4*c - 22*a^2*
b^2*c^2 + 8*a^3*c^3)*e^2)*f - ((b^5*c + a*b^3*c^2 - 20*a^2*b*c^3)*d^2 - 2*(
5*a*b^4*c - 22*a^2*b^2*c^2 + 8*a^3*c^3)*d*e + (a*b^5 + a^2*b^3*c - 20*a^3*b
*c^2)*e^2)*g)*x)/(a^2*b^6*c - 12*a^3*b^4*c^2 + 48*a^4*b^2*c^3 - 64*a^5*c^4
+ (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^4 + 2*(b^7*c^2 -
 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^3 + (b^8*c - 10*a*b^6*c^2
+ 24*a^2*b^4*c^3 + 32*a^3*b^2*c^4 - 128*a^4*c^5)*x^2 + 2*(a*b^7*c - 12*a^2*
b^5*c^2 + 48*a^3*b^3*c^3 - 64*a^4*b*c^4)*x)]
```

giac [B] time = 0.18, size = 645, normalized size = 2.11

$$\frac{2\left(6\,c^2d^2f-3\,bcd^2g-6\,bcdfe+2\,b^2dge+4\,acdge+b^2fe^2+2\,acfe^2-3\,abge^2\right)\arctan\left(\frac{2\,cx+b}{\sqrt{-b^2+4\,ac}}\right)}{\left(b^4-8\,ab^2c+16\,a^2c^2\right)\sqrt{-b^2+4\,ac}}+\frac{12\,c^4d^2f}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2*(6*c^2*d^2*f - 3*b*c*d^2*g - 6*b*c*d*f*e + 2*b^2*d*g*e + 4*a*c*d*g*e + b^
2*f*e^2 + 2*a*c*f*e^2 - 3*a*b*g*e^2)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))
/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c)) + 1/2*(12*c^4*d^2*f*x^
3 - 6*b*c^3*d^2*g*x^3 - 12*b*c^3*d*f*x^3*e + 4*b^2*c^2*d*g*x^3*e + 8*a*c^3*
d*g*x^3*e + 18*b*c^3*d^2*f*x^2 - 9*b^2*c^2*d^2*g*x^2 + 2*b^2*c^2*f*x^3*e^2
+ 4*a*c^3*f*x^3*e^2 - 6*a*b*c^2*g*x^3*e^2 - 18*b^2*c^2*d*f*x^2*e + 6*b^3*c*
d*g*x^2*e + 12*a*b*c^2*d*g*x^2*e + 4*b^2*c^2*d^2*f*x + 20*a*c^3*d^2*f*x - 2
*b^3*c*d^2*g*x - 10*a*b*c^2*d^2*g*x + 3*b^3*c*f*x^2*e^2 + 6*a*b*c^2*f*x^2*e
^2 - b^4*g*x^2*e^2 - a*b^2*c*g*x^2*e^2 - 16*a^2*c^2*g*x^2*e^2 - 4*b^3*c*d*f
*x*e - 20*a*b*c^2*d*f*x*e + 20*a*b^2*c*d*g*x*e - 8*a^2*c^2*d*g*x*e - b^3*c*
d^2*f + 10*a*b*c^2*d^2*f - a*b^2*c*d^2*g - 8*a^2*c^2*d^2*g + 10*a*b^2*c*f*x
*e^2 - 4*a^2*c^2*f*x*e^2 - 2*a*b^3*g*x*e^2 - 10*a^2*b*c*g*x*e^2 - 2*a*b^2*c
*d*f*e - 16*a^2*c^2*d*f*e + 12*a^2*b*c*d*g*e + 6*a^2*b*c*f*e^2 - a^2*b^2*g*
e^2 - 8*a^3*c*g*e^2)/((b^4*c - 8*a*b^2*c^2 + 16*a^2*c^3)*(c*x^2 + b*x + a)^
2)
```

maple [B] time = 0.06, size = 1014, normalized size = 3.32

$$-\frac{6ab\,e^2g\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8a\,b^2c+b^4\right)\sqrt{4ac-b^2}}+\frac{8acdeg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8a\,b^2c+b^4\right)\sqrt{4ac-b^2}}+\frac{4ac\,e^2f\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2-8a\,b^2c+b^4\right)\sqrt{4ac-b^2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (-c*(3*a*b*e^2*g-4*a*c*d*e*g-2*a*c*e^2*f-2*b^2*d*e*g-b^2*e^2*f+3*b*c*d^2*g+
6*b*c*d*e*f-6*c^2*d^2*f)/(16*a^2*c^2-8*a*b^2*c+b^4)*x^3-1/2*(16*a^2*c^2*e^2
*g+a*b^2*c*e^2*g-12*a*b*c^2*d*e*g-6*a*b*c^2*e^2*f+b^4*e^2*g-6*b^3*c*d*e*g-3
*b^3*c*e^2*f+9*b^2*c^2*d^2*g+18*b^2*c^2*d*e*f-18*b*c^3*d^2*f)/c/(16*a^2*c^2
-8*a*b^2*c+b^4)*x^2-1/c*(5*a^2*b*c*e^2*g+4*a^2*c^2*d*e*g+2*a^2*c^2*e^2*f+a*
b^3*e^2*g-10*a*b^2*c*d*e*g-5*a*b^2*c*e^2*f+5*a*b*c^2*d^2*g+10*a*b*c^2*d*e*f
-10*a*c^3*d^2*f+b^3*c*d^2*g+2*b^3*c*d*e*f-2*b^2*c^2*d^2*f)/(16*a^2*c^2-8*a*
b^2*c+b^4)*x-1/2*(8*a^3*c*e^2*g+a^2*b^2*e^2*g-12*a^2*b*c*d*e*g-6*a^2*b*c*e^
2*f+8*a^2*c^2*d^2*g+16*a^2*c^2*d*e*f+a*b^2*c*d^2*g+2*a*b^2*c*d*e*f-10*a*b*c
^2*d^2*f+b^3*c*d^2*f)/c/(16*a^2*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2-6/(16*a
^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))
*a*b*e^2*g+8/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/
(4*a*c-b^2)^(1/2))*a*c*d*e*g+4/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)
*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e^2*f+4/(16*a^2*c^2-8*a*b^2*c+b^4)
/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*d*e*g+2/(16*a^2*
c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^
2*e^2*f-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*
a*c-b^2)^(1/2))*b*c*d^2*g-12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*a
rctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*c*d*e*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/
(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*d^2*f
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)^2*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 3.23, size = 913, normalized size = 2.99

$$\frac{2\,\mathrm{atan}\left(\frac{\left(\frac{2\,c\,x\,\left(2\,g\,b^2\,d\,e+f\,b^2\,e^2-3\,g\,b\,c\,d^2-6\,f\,b\,c\,d\,e-3\,a\,g\,b\,e^2+6\,f\,c^2\,d^2+4\,a\,g\,c\,d\,e+2\,a\,f\,c\,e^2\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}+\frac{\left(16\,a^2\,b\,c^2-8\,a\,b^3\,c+b^5\right)\,\left(2\,g\,b^2\,d\,e+f\,b^2\,e^2-3\,g\,b\,c\,d^2-6\,f\,b\,c\,d\,e-3\,a\,g\,b\,e^2+6\,f\,c^2\right.}{{\left(4\,a\,c-b^2\right)}^{5/2}\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}\right.}{2\,g\,b^2\,d\,e+f\,b^2\,e^2-3\,g\,b\,c\,d^2-6\,f\,b\,c\,d\,e-3\,a\,g\,b\,e^2+6\,f\,c^2\,d^2+4\,a\,g\,c\,d\,e+2\,a\,f\,c\,e^2}\right.}{(4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x)^2)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*atan((((2*c*x*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2*a*c*e^2*f - 3*b
*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/(4*a*c - b^2)^(5/2) +
((b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g +
2*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/((4*a
*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^
2*c))/(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2*a*c*e^2*f - 3*b*c*d^2*g +
2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*
e^2*g + 2*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f
))/(4*a*c - b^2)^(5/2) - ((a^2*b^2*e^2*g + 8*a^2*c^2*d^2*g + b^3*c*d^2*f +
8*a^3*c*e^2*g - 10*a*b*c^2*d^2*f + a*b^2*c*d^2*g - 6*a^2*b*c*e^2*f + 16*a^2
*c^2*d*e*f + 2*a*b^2*c*d*e*f - 12*a^2*b*c*d*e*g)/(2*c*(b^4 + 16*a^2*c^2 - 8
*a*b^2*c)) + (x^2*(b^4*e^2*g + 16*a^2*c^2*e^2*g + 9*b^2*c^2*d^2*g - 18*b*c^
3*d^2*f - 3*b^3*c*e^2*f - 6*a*b*c^2*e^2*f + a*b^2*c*e^2*g + 18*b^2*c^2*d*e*
f - 6*b^3*c*d*e*g - 12*a*b*c^2*d*e*g))/(2*c*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))
 + (x*(2*a^2*c^2*e^2*f - 2*b^2*c^2*d^2*f - 10*a*c^3*d^2*f + a*b^3*e^2*g + b
^3*c*d^2*g + 5*a*b*c^2*d^2*g - 5*a*b^2*c*e^2*f + 5*a^2*b*c*e^2*g + 4*a^2*c^
2*d*e*g + 2*b^3*c*d*e*f + 10*a*b*c^2*d*e*f - 10*a*b^2*c*d*e*g))/(c*(b^4 + 1
6*a^2*c^2 - 8*a*b^2*c)) - (c*x^3*(b^2*e^2*f + 6*c^2*d^2*f - 3*a*b*e^2*g + 2
*a*c*e^2*f - 3*b*c*d^2*g + 2*b^2*d*e*g + 4*a*c*d*e*g - 6*b*c*d*e*f))/(b^4 +
 16*a^2*c^2 - 8*a*b^2*c))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*
b*c*x^3)
```

sympy [B] time = 128.60, size = 2076, normalized size = 6.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)**2*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b
**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f)*log(x
 + (-64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g -
2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*
c**2*d**2*f) + 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g -
 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6
*b*c*d*e*f - 6*c**2*d**2*f) - 12*a*b**4*c*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b
*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d
**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 3*a*b**2*e**2*g - 4*a*b*c*d*e*g - 2*
a*b*c*e**2*f + b**6*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g
- 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f -
6*c**2*d**2*f) - 2*b**3*d*e*g - b**3*e**2*f + 3*b**2*c*d**2*g + 6*b**2*c*d*
e*f - 6*b*c**2*d**2*f)/(6*a*b*c*e**2*g - 8*a*c**2*d*e*g - 4*a*c**2*e**2*f -
 4*b**2*c*d*e*g - 2*b**2*c*e**2*f + 6*b*c**2*d**2*g + 12*b*c**2*d*e*f - 12*
c**3*d**2*f)) - sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*
a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c*
*2*d**2*f)*log(x + (64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g -
 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g + 6
*b*c*d*e*f - 6*c**2*d**2*f) - 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*
(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3
*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 12*a*b**4*c*sqrt(-1/(4*a*c - b
**2)**5)*(3*a*b*e**2*g - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e
**2*f + 3*b*c*d**2*g + 6*b*c*d*e*f - 6*c**2*d**2*f) + 3*a*b**2*e**2*g - 4*a
*b*c*d*e*g - 2*a*b*c*e**2*f - b**6*sqrt(-1/(4*a*c - b**2)**5)*(3*a*b*e**2*g
 - 4*a*c*d*e*g - 2*a*c*e**2*f - 2*b**2*d*e*g - b**2*e**2*f + 3*b*c*d**2*g +
 6*b*c*d*e*f - 6*c**2*d**2*f) - 2*b**3*d*e*g - b**3*e**2*f + 3*b**2*c*d**2*
g + 6*b**2*c*d*e*f - 6*b*c**2*d**2*f)/(6*a*b*c*e**2*g - 8*a*c**2*d*e*g - 4*
a*c**2*e**2*f - 4*b**2*c*d*e*g - 2*b**2*c*e**2*f + 6*b*c**2*d**2*g + 12*b*c
**2*d*e*f - 12*c**3*d**2*f)) + (-8*a**3*c*e**2*g - a**2*b**2*e**2*g + 12*a*
*2*b*c*d*e*g + 6*a**2*b*c*e**2*f - 8*a**2*c**2*d**2*g - 16*a**2*c**2*d*e*f
- a*b**2*c*d**2*g - 2*a*b**2*c*d*e*f + 10*a*b*c**2*d**2*f - b**3*c*d**2*f +
 x**3*(-6*a*b*c**2*e**2*g + 8*a*c**3*d*e*g + 4*a*c**3*e**2*f + 4*b**2*c**2*
d*e*g + 2*b**2*c**2*e**2*f - 6*b*c**3*d**2*g - 12*b*c**3*d*e*f + 12*c**4*d*
*2*f) + x**2*(-16*a**2*c**2*e**2*g - a*b**2*c*e**2*g + 12*a*b*c**2*d*e*g +
6*a*b*c**2*e**2*f - b**4*e**2*g + 6*b**3*c*d*e*g + 3*b**3*c*e**2*f - 9*b**2
*c**2*d**2*g - 18*b**2*c**2*d*e*f + 18*b*c**3*d**2*f) + x*(-10*a**2*b*c*e**
2*g - 8*a**2*c**2*d*e*g - 4*a**2*c**2*e**2*f - 2*a*b**3*e**2*g + 20*a*b**2*
c*d*e*g + 10*a*b**2*c*e**2*f - 10*a*b*c**2*d**2*g - 20*a*b*c**2*d*e*f + 20*
a*c**3*d**2*f - 2*b**3*c*d**2*g - 4*b**3*c*d*e*f + 4*b**2*c**2*d**2*f))/(32
*a**4*c**3 - 16*a**3*b**2*c**2 + 2*a**2*b**4*c + x**4*(32*a**2*c**5 - 16*a*
b**2*c**4 + 2*b**4*c**3) + x**3*(64*a**2*b*c**4 - 32*a*b**3*c**3 + 4*b**5*c
**2) + x**2*(64*a**3*c**4 - 12*a*b**4*c**2 + 2*b**6*c) + x*(64*a**3*b*c**3
- 32*a**2*b**3*c**2 + 4*a*b**5*c))
```

3.2374 $\int \frac{(d+ex)(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=221

$$\frac{(b+2cx)\left(c(2aeg-3b(dg+ef))+b^2eg+6c^2df\right)}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{-x\left(-c(2aeg+bdg+bef)+b^2eg+2c^2df\right)-b(aeg+cdf)+2}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

```
[Out] 1/2*(2*a*c*(d*g+e*f)-b*(a*e*g+c*d*f)-(2*c^2*d*f+b^2*e*g-c*(2*a*e*g+b*d*g+b*
e*f))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^2+1/2*(6*c^2*d*f+b^2*e*g+c*(2*a*e*g-3
*b*(d*g+e*f)))*(2*c*x+b)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)-2*(6*c^2*d*f+b^2*e*
g+c*(2*a*e*g-3*b*(d*g+e*f)))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+
b^2)^(5/2)
```

Rubi [A] time = 0.21, antiderivative size = 219, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}} = 0.174$, Rules used = $\{777, 614, 618, 206\}$

$$\frac{(b+2cx)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{2c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}+\frac{-x\left(-c(2aeg+bdg+bef)+b^2eg+2c^2df\right)-b(aeg+cdf)+2}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(b*e*f +
b*d*g + 2*a*e*g))*x)/(2*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2) + ((6*c^2*d*f
+ b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g))*(b + 2*c*x))/(2*c*(b^2 - 4*a*c)^
2*(a + b*x + c*x^2)) - (2*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d
*g))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
```

```
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(d+ex)(f+gx)}{\left(a+bx+cx^2\right)^3}\,dx = \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{\left(6c^2df+b}{}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b}{2}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b}{2}$$

$$= \frac{2ac(ef+dg)-b(cdf+aeg)-\left(2c^2df+b^2eg-c(bef+bdg+2aeg)\right)x}{2c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{\left(6c^2df+b}{2}$$

Mathematica [A] time = 0.40, size = 216, normalized size = 0.98

$$\frac{1}{2}\left(\frac{(b+2cx)\left(2aceg+b^2eg-3bc(dg+ef)+6c^2df\right)}{c\left(b^2-4ac\right)^2(a+x(b+cx))}+\frac{abeg-2ac(dg+e(f+gx))+b^2egx+bc(d(f-gx)-e}{c\left(4ac-b^2\right)(a+x(b+cx))^2}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((d + e*x)*(f + g*x))/(a + b*x + c*x^2)^3,x]
```

```
[Out] (((6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g))*(b + 2*c*x))/(c*(b^
2 - 4*a*c)^2*(a + x*(b + c*x))) + (a*b*e*g + 2*c^2*d*f*x + b^2*e*g*x + b*c*
(-(e*f*x) + d*(f - g*x)) - 2*a*c*(d*g + e*(f + g*x)))/(c*(-b^2 + 4*a*c)*(a
+ x*(b + c*x))^2) + (4*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*(e*f + d*g)
)*ArcTan[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/(-b^2 + 4*a*c)^(5/2))/2
```

fricas [B] time = 1.29, size = 1879, normalized size = 8.50

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(2*(3*(2*(b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 - 4*a*b*c^3)*e)*f - (3*(b^3*
c^2 - 4*a*b*c^3)*d - (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)*e)*g)*x^3 + 3*(3*(2*
(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 4*a*b^2*c^2)*e)*f - (3*(b^4*c - 4*a*b^2*
c^2)*d - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e)*g)*x^2 + 2*((3*(2*c^4*d - b*c^3
*e)*f - (3*b*c^3*d - (b^2*c^2 + 2*a*c^3)*e)*g)*x^4 + 2*(3*(2*b*c^3*d - b^2*
c^2*e)*f - (3*b^2*c^2*d - (b^3*c + 2*a*b*c^2)*e)*g)*x^3 + (3*(2*(b^2*c^2 +
2*a*c^3)*d - (b^3*c + 2*a*b*c^2)*e)*f - (3*(b^3*c + 2*a*b*c^2)*d - (b^4 + 4
*a*b^2*c + 4*a^2*c^2)*e)*g)*x^2 + 3*(2*a^2*c^2*d - a^2*b*c*e)*f - (3*a^2*b*
c*d - (a^2*b^2 + 2*a^3*c)*e)*g + 2*(3*(2*a*b*c^2*d - a*b^2*c*e)*f - (3*a*b^
2*c*d - (a*b^3 + 2*a^2*b*c)*e)*g)*x)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b
*c*x + b^2 - 2*a*c - sqrt(b^2 - 4*a*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - ((
b^5 - 14*a*b^3*c + 40*a^2*b*c^2)*d + (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*e)*
f - ((a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*d - 6*(a^2*b^3 - 4*a^3*b*c)*e)*g +
2*((2*(b^4*c + a*b^2*c^2 - 20*a^2*c^3)*d - (b^5 + a*b^3*c - 20*a^2*b*c^2)*e
)*f - ((b^5 + a*b^3*c - 20*a^2*b*c^2)*d - (5*a*b^4 - 22*a^2*b^2*c + 8*a^3*c
^2)*e)*g)*x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c
^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*
c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c
^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b
^3*c^2 - 64*a^4*b*c^3)*x), 1/2*(2*(3*(2*(b^2*c^3 - 4*a*c^4)*d - (b^3*c^2 -
4*a*b*c^3)*e)*f - (3*(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 2*a*b^2*c^2 - 8*a^2
*c^3)*e)*g)*x^3 + 3*(3*(2*(b^3*c^2 - 4*a*b*c^3)*d - (b^4*c - 4*a*b^2*c^2)*e
)*f - (3*(b^4*c - 4*a*b^2*c^2)*d - (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*e)*g)*x^
2 - 4*((3*(2*c^4*d - b*c^3*e)*f - (3*b*c^3*d - (b^2*c^2 + 2*a*c^3)*e)*g)*x^
4 + 2*(3*(2*b*c^3*d - b^2*c^2*e)*f - (3*b^2*c^2*d - (b^3*c + 2*a*b*c^2)*e)*
g)*x^3 + (3*(2*(b^2*c^2 + 2*a*c^3)*d - (b^3*c + 2*a*b*c^2)*e)*f - (3*(b^3*c
 + 2*a*b*c^2)*d - (b^4 + 4*a*b^2*c + 4*a^2*c^2)*e)*g)*x^2 + 3*(2*a^2*c^2*d
- a^2*b*c*e)*f - (3*a^2*b*c*d - (a^2*b^2 + 2*a^3*c)*e)*g + 2*(3*(2*a*b*c^2*
d - a*b^2*c*e)*f - (3*a*b^2*c*d - (a*b^3 + 2*a^2*b*c)*e)*g)*x)*sqrt(-b^2 +
4*a*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - ((b^5 - 14*a
*b^3*c + 40*a^2*b*c^2)*d + (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*e)*f - ((a*b^
4 + 4*a^2*b^2*c - 32*a^3*c^2)*d - 6*(a^2*b^3 - 4*a^3*b*c)*e)*g + 2*((2*(b^4
*c + a*b^2*c^2 - 20*a^2*c^3)*d - (b^5 + a*b^3*c - 20*a^2*b*c^2)*e)*f - ((b^
5 + a*b^3*c - 20*a^2*b*c^2)*d - (5*a*b^4 - 22*a^2*b^2*c + 8*a^3*c^2)*e)*g)*
x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*
b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a
^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^
3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 6
4*a^4*b*c^3)*x)]
```

giac [A] time = 0.21, size = 369, normalized size = 1.67

$$\frac{2\left(6c^2df - 3bcdg - 3bcfe + b^2ge + 2acge\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\left(b^4 - 8ab^2c + 16a^2c^2\right)\sqrt{-b^2+4ac}} + \frac{12c^3dfx^3 - 6bc^2dgx^3 - 6bc^2fx^3e + 2b^2cgx^3e +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 2*(6*c^2*d*f - 3*b*c*d*g - 3*b*c*f*e + b^2*g*e + 2*a*c*g*e)*arctan((2*c*x +
 b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c))
 + 1/2*(12*c^3*d*f*x^3 - 6*b*c^2*d*g*x^3 - 6*b*c^2*f*x^3*e + 2*b^2*c*g*x^3*
e + 4*a*c^2*g*x^3*e + 18*b*c^2*d*f*x^2 - 9*b^2*c*d*g*x^2 - 9*b^2*c*f*x^2*e
+ 3*b^3*g*x^2*e + 6*a*b*c*g*x^2*e + 4*b^2*c*d*f*x + 20*a*c^2*d*f*x - 2*b^3*
d*g*x - 10*a*b*c*d*g*x - 2*b^3*f*x*e - 10*a*b*c*f*x*e + 10*a*b^2*g*x*e - 4*
a^2*c*g*x*e - b^3*d*f + 10*a*b*c*d*f - a*b^2*d*g - 8*a^2*c*d*g - a*b^2*f*e
- 8*a^2*c*f*e + 6*a^2*b*g*e)/((b^4 - 8*a*b^2*c + 16*a^2*c^2)*(c*x^2 + b*x +
 a)^2)
```

maple [B] time = 0.06, size = 591, normalized size = 2.67

$$\frac{4aceg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2 - 8ab^2c + b^4\right)\sqrt{4ac-b^2}} + \frac{2b^2eg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2 - 8ab^2c + b^4\right)\sqrt{4ac-b^2}} - \frac{6bcdg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(16a^2c^2 - 8ab^2c + b^4\right)\sqrt{4ac-b^2}} -$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] (c*(2*a*c*e*g+b^2*e*g-3*b*c*d*g-3*b*c*e*f+6*c^2*d*f)/(16*a^2*c^2-8*a*b^2*c+
b^4)*x^3+3/2*b*(2*a*c*e*g+b^2*e*g-3*b*c*d*g-3*b*c*e*f+6*c^2*d*f)/(16*a^2*c^
2-8*a*b^2*c+b^4)*x^2-(2*a^2*c*e*g-5*a*b^2*e*g+5*a*b*c*d*g+5*a*b*c*e*f-10*a*
c^2*d*f+b^3*d*g+b^3*e*f-2*b^2*c*d*f)/(16*a^2*c^2-8*a*b^2*c+b^4)*x+1/2*(6*a^
2*b*e*g-8*a^2*c*d*g-8*a^2*c*e*f-a*b^2*d*g-a*b^2*e*f+10*a*b*c*d*f-b^3*d*f)/(
16*a^2*c^2-8*a*b^2*c+b^4))/(c*x^2+b*x+a)^2+4/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*
a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*a*c*e*g+2/(16*a^2*c^2-8*
a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b^2*e*g-
6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*x+b)/(4*a*c-b^2)
^(1/2))*b*c*d*g-6/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(1/2)*arctan((2*c*
x+b)/(4*a*c-b^2)^(1/2))*b*c*e*f+12/(16*a^2*c^2-8*a*b^2*c+b^4)/(4*a*c-b^2)^(
1/2)*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*c^2*d*f
```

maxima [**F(-2)**]   time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**]   time = 0.59, size = 555, normalized size = 2.51

$$\frac{2\,\mathrm{atan}\left(\frac{\left(\frac{2\,c\,x\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}}+\frac{\left(16\,a^2\,b\,c^2-8\,a\,b^3\,c+b^5\right)\,\left(6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f\right)}{{\left(4\,a\,c-b^2\right)}^{5/2}\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}\right)\,\left(16\,a^2\,c^2-8\,a\,b^2\,c+b^4\right)}{6\,c^2\,d\,f+b^2\,e\,g+2\,a\,c\,e\,g-3\,b\,c\,d\,g-3\,b\,c\,e\,f}\right)\,\left(6\,c^2\,d\,f\right.}{{\left(4\,a\,c-b^2\right)}^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((f + g*x)*(d + e*x))/(a + b*x + c*x^2)^3,x)
```

```
[Out] (2*atan((((2*c*x*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))
/(4*a*c - b^2)^(5/2) + ((b^5 + 16*a^2*b*c^2 - 8*a*b^3*c)*(6*c^2*d*f + b^2*e
*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*c^2*d*f + b^2*e*g +
2*a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*
c*d*g - 3*b*c*e*f))/(4*a*c - b^2)^(5/2) - ((b^3*d*f + a*b^2*d*g + a*b^2*e*f
 - 6*a^2*b*e*g + 8*a^2*c*d*g + 8*a^2*c*e*f - 10*a*b*c*d*f)/(2*(b^4 + 16*a^2
*c^2 - 8*a*b^2*c)) + (x*(b^3*d*g + b^3*e*f - 10*a*c^2*d*f - 5*a*b^2*e*g - 2
*b^2*c*d*f + 2*a^2*c*e*g + 5*a*b*c*d*g + 5*a*b*c*e*f))/(b^4 + 16*a^2*c^2 -
8*a*b^2*c) - (3*b*x^2*(6*c^2*d*f + b^2*e*g + 2*a*c*e*g - 3*b*c*d*g - 3*b*c*
e*f))/(2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) - (c*x^3*(6*c^2*d*f + b^2*e*g + 2*
a*c*e*g - 3*b*c*d*g - 3*b*c*e*f))/(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(x^2*(2*a
*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [**B**]   time = 15.17, size = 1234, normalized size = 5.58

$$- \sqrt{- \frac{1}{\left(4 a c - b^{2}\right)^{5}}} \left(2 a c e g + b^{2} e g - 3 b c d g - 3 b c e f + 6 c^{2} d f\right) \log{\left(x + \frac{- 64 a^{3} c^{3} \sqrt{- \frac{1}{\left(4 a c - b^{2}\right)^{5}}} \left(2 a c e g + b^{2} e g - 3 b c\right.}{} \right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((e*x+d)*(g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] -sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f +
 6*c**2*d*f)*log(x + (-64*a**3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g +
 b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + 48*a**2*b**2*c**2*sqrt(-1
/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*
d*f) - 12*a*b**4*c*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c
*d*g - 3*b*c*e*f + 6*c**2*d*f) + 2*a*b*c*e*g + b**6*sqrt(-1/(4*a*c - b**2)*
*5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + b**3*e*g
- 3*b**2*c*d*g - 3*b**2*c*e*f + 6*b*c**2*d*f)/(4*a*c**2*e*g + 2*b**2*c*e*g
- 6*b*c**2*d*g - 6*b*c**2*e*f + 12*c**3*d*f)) + sqrt(-1/(4*a*c - b**2)**5)*
(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f)*log(x + (64*a**
3*c**3*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c
*e*f + 6*c**2*d*f) - 48*a**2*b**2*c**2*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*
g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + 12*a*b**4*c*sqrt(-1/(4
*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f
) + 2*a*b*c*e*g - b**6*sqrt(-1/(4*a*c - b**2)**5)*(2*a*c*e*g + b**2*e*g - 3
*b*c*d*g - 3*b*c*e*f + 6*c**2*d*f) + b**3*e*g - 3*b**2*c*d*g - 3*b**2*c*e*f
 + 6*b*c**2*d*f)/(4*a*c**2*e*g + 2*b**2*c*e*g - 6*b*c**2*d*g - 6*b*c**2*e*f
 + 12*c**3*d*f)) + (6*a**2*b*e*g - 8*a**2*c*d*g - 8*a**2*c*e*f - a*b**2*d*g
 - a*b**2*e*f + 10*a*b*c*d*f - b**3*d*f + x**3*(4*a*c**2*e*g + 2*b**2*c*e*g
 - 6*b*c**2*d*g - 6*b*c**2*e*f + 12*c**3*d*f) + x**2*(6*a*b*c*e*g + 3*b**3*
e*g - 9*b**2*c*d*g - 9*b**2*c*e*f + 18*b*c**2*d*f) + x*(-4*a**2*c*e*g + 10*
a*b**2*e*g - 10*a*b*c*d*g - 10*a*b*c*e*f + 20*a*c**2*d*f - 2*b**3*d*g - 2*b
**3*e*f + 4*b**2*c*d*f))/(32*a**4*c**2 - 16*a**3*b**2*c + 2*a**2*b**4 + x**
4*(32*a**2*c**4 - 16*a*b**2*c**3 + 2*b**4*c**2) + x**3*(64*a**2*b*c**3 - 32
*a*b**3*c**2 + 4*b**5*c) + x**2*(64*a**3*c**3 - 12*a*b**4*c + 2*b**6) + x*(
64*a**3*b*c**2 - 32*a**2*b**3*c + 4*a*b**5))
```

3.2375 $\int \frac{f+gx}{\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=131

$$\frac{3(b+2cx)(2cf-bg)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}-\frac{-2ag+x(2cf-bg)+bf}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{5/2}}$$

```
[Out] 1/2*(-b*f+2*a*g-(-b*g+2*c*f)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^2+3/2*(-b*g+2*c*
f)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)-6*c*(-b*g+2*c*f)*arctanh((2*c*x+b
)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(5/2)
```

Rubi [A] time = 0.06, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {638, 614, 618, 206}

$$\frac{3(b+2cx)(2cf-bg)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)}-\frac{-2ag+x(2cf-bg)+bf}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2}-\frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)}{\left(b^2-4ac\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] -(b*f - 2*a*g + (2*c*f - b*g)*x)/(2*(b^2 - 4*a*c)*(a + b*x + c*x^2)^2) + (3
*(2*c*f - b*g)*(b + 2*c*x))/(2*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)) - (6*c*(2
*c*f - b*g)*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(b^2 - 4*a*c)^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{f+gx}{\left(a+bx+cx^2\right)^3}\,dx = -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} - \frac{(3(2cf-bg))\int \frac{1}{\left(a+bx+cx^2\right)^2}\,dx}{2\left(b^2-4ac\right)}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} + \frac{(3c(2cf-bg))\int \frac{1}{a+bx+cx^2}}{\left(b^2-4ac\right)^2}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} - \frac{(6c(2cf-bg))\,\text{Subst}\left(\int\right.}{\left(b^2-\right.}$$

$$= -\frac{bf-2ag+(2cf-bg)x}{2\left(b^2-4ac\right)\left(a+bx+cx^2\right)^2} + \frac{3(2cf-bg)(b+2cx)}{2\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)} - \frac{6c(2cf-bg)\tanh^{-1}\left(\frac{b}{\sqrt{b}}\right.}{\left(b^2-4ac\right)^{5/2}}$$

Mathematica [**A**] time = 0.13, size = 128, normalized size = 0.98

$$\frac{\frac{\left(b^2-4ac\right)(2ag-bf+bgx-2cfx)}{(a+x(b+cx))^2}-\frac{12c(bg-2cf)\tan^{-1}\left(\frac{b+2cx}{\sqrt{4ac-b^2}}\right)}{\sqrt{4ac-b^2}}+\frac{3(b+2cx)(2cf-bg)}{a+x(b+cx)}}{2\left(b^2-4ac\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/(a + b*x + c*x^2)^3,x]
```

```
[Out] (((b^2 - 4*a*c)*(-(b*f) + 2*a*g - 2*c*f*x + b*g*x))/(a + x*(b + c*x))^2 + (
3*(2*c*f - b*g)*(b + 2*c*x))/(a + x*(b + c*x)) - (12*c*(-2*c*f + b*g)*ArcTa
n[(b + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/Sqrt[-b^2 + 4*a*c])/(2*(b^2 - 4*a*c)^2)
```

fricas [**B**] time = 0.88, size = 1116, normalized size = 8.52

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] [1/2*(6*(2*(b^2*c^3 - 4*a*c^4)*f - (b^3*c^2 - 4*a*b*c^3)*g)*x^3 + 9*(2*(b^3
*c^2 - 4*a*b*c^3)*f - (b^4*c - 4*a*b^2*c^2)*g)*x^2 - 6*(2*a^2*c^2*f - a^2*b
*c*g + (2*c^4*f - b*c^3*g)*x^4 + 2*(2*b*c^3*f - b^2*c^2*g)*x^3 + (2*(b^2*c^
2 + 2*a*c^3)*f - (b^3*c + 2*a*b*c^2)*g)*x^2 + 2*(2*a*b*c^2*f - a*b^2*c*g)*x
)*sqrt(b^2 - 4*a*c)*log((2*c^2*x^2 + 2*b*c*x + b^2 - 2*a*c + sqrt(b^2 - 4*a
*c)*(2*c*x + b))/(c*x^2 + b*x + a)) - (b^5 - 14*a*b^3*c + 40*a^2*b*c^2)*f -
 (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*g + 2*(2*(b^4*c + a*b^2*c^2 - 20*a^2*c^
3)*f - (b^5 + a*b^3*c - 20*a^2*b*c^2)*g)*x)/(a^2*b^6 - 12*a^3*b^4*c + 48*a^
4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*b^4*c^3 + 48*a^2*b^2*c^4 - 64*a^3*
c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 - 64*a^3*b*c^4)*x^3 + (
b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 - 128*a^4*c^4)*x^2 + 2*(
a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)*x), 1/2*(6*(2*(b^2*c^
3 - 4*a*c^4)*f - (b^3*c^2 - 4*a*b*c^3)*g)*x^3 + 9*(2*(b^3*c^2 - 4*a*b*c^3)*
f - (b^4*c - 4*a*b^2*c^2)*g)*x^2 - 12*(2*a^2*c^2*f - a^2*b*c*g + (2*c^4*f -
 b*c^3*g)*x^4 + 2*(2*b*c^3*f - b^2*c^2*g)*x^3 + (2*(b^2*c^2 + 2*a*c^3)*f -
(b^3*c + 2*a*b*c^2)*g)*x^2 + 2*(2*a*b*c^2*f - a*b^2*c*g)*x)*sqrt(-b^2 + 4*a
*c)*arctan(-sqrt(-b^2 + 4*a*c)*(2*c*x + b)/(b^2 - 4*a*c)) - (b^5 - 14*a*b^3
*c + 40*a^2*b*c^2)*f - (a*b^4 + 4*a^2*b^2*c - 32*a^3*c^2)*g + 2*(2*(b^4*c +
 a*b^2*c^2 - 20*a^2*c^3)*f - (b^5 + a*b^3*c - 20*a^2*b*c^2)*g)*x)/(a^2*b^6
- 12*a^3*b^4*c + 48*a^4*b^2*c^2 - 64*a^5*c^3 + (b^6*c^2 - 12*a*b^4*c^3 + 48
*a^2*b^2*c^4 - 64*a^3*c^5)*x^4 + 2*(b^7*c - 12*a*b^5*c^2 + 48*a^2*b^3*c^3 -
 64*a^3*b*c^4)*x^3 + (b^8 - 10*a*b^6*c + 24*a^2*b^4*c^2 + 32*a^3*b^2*c^3 -
128*a^4*c^4)*x^2 + 2*(a*b^7 - 12*a^2*b^5*c + 48*a^3*b^3*c^2 - 64*a^4*b*c^3)
*x)]
```

giac [**A**] time = 0.17, size = 199, normalized size = 1.52

$$\frac{6\left(2c^2f - bcg\right)\arctan\left(\frac{2cx+b}{\sqrt{-b^2+4ac}}\right)}{\left(b^4 - 8ab^2c + 16a^2c^2\right)\sqrt{-b^2+4ac}} + \frac{12c^3fx^3 - 6bc^2gx^3 + 18bc^2fx^2 - 9b^2cgx^2 + 4b^2cfx + 20ac^2fx - 2b^3g}{2\left(b^4 - 8ab^2c + 16a^2c^2\right)\left(cx^2 + bx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 6*(2*c^2*f - b*c*g)*arctan((2*c*x + b)/sqrt(-b^2 + 4*a*c))/((b^4 - 8*a*b^2*
c + 16*a^2*c^2)*sqrt(-b^2 + 4*a*c)) + 1/2*(12*c^3*f*x^3 - 6*b*c^2*g*x^3 + 1
8*b*c^2*f*x^2 - 9*b^2*c*g*x^2 + 4*b^2*c*f*x + 20*a*c^2*f*x - 2*b^3*g*x - 10
*a*b*c*g*x - b^3*f + 10*a*b*c*f - a*b^2*g - 8*a^2*c*g)/((b^4 - 8*a*b^2*c +
16*a^2*c^2)*(c*x^2 + b*x + a)^2)
```

maple [**A**] time = 0.05, size = 242, normalized size = 1.85

$$-\frac{3bcgx}{\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)} - \frac{6bcg\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{5}{2}}} + \frac{6c^2fx}{\left(4ac-b^2\right)^2\left(cx^2+bx+a\right)} + \frac{12c^2f\arctan\left(\frac{2cx+b}{\sqrt{4ac-b^2}}\right)}{\left(4ac-b^2\right)^{\frac{5}{2}}} - \frac{}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(c*x^2+b*x+a)^3,x)
```

```
[Out] 1/2*(b*f-2*a*g+(-b*g+2*c*f)*x)/(4*a*c-b^2)/(c*x^2+b*x+a)^2-3/(4*a*c-b^2)^2/
(c*x^2+b*x+a)*c*x*b*g+6/(4*a*c-b^2)^2/(c*x^2+b*x+a)*c^2*x*f-3/2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)*b^2*g+3/(4*a*c-b^2)^2/(c*x^2+b*x+a)*b*c*f-6/(4*a*c-b^2)^(5
/2)*c*arctan((2*c*x+b)/(4*a*c-b^2)^(1/2))*b*g+12/(4*a*c-b^2)^(5/2)*c^2*arct
an((2*c*x+b)/(4*a*c-b^2)^(1/2))*f
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 2.57, size = 353, normalized size = 2.69

$$\frac{6c\,\mathrm{atan}\left(\frac{\left(\frac{6c^2x\left(bg-2cf\right)}{\left(4ac-b^2\right)^{5/2}} + \frac{3c\left(bg-2cf\right)\left(16a^2bc^2-8ab^3c+b^5\right)}{\left(4ac-b^2\right)^{5/2}\left(16a^2c^2-8ab^2c+b^4\right)}\right)\left(16a^2c^2-8ab^2c+b^4\right)}{6c^2f-3bcg}\right)\left(bg-2cf\right)}{\left(4ac-b^2\right)^{5/2}} - \frac{\frac{8cga^2+gab^2-10cfab+fb^3}{2\left(16a^2c^2-8ab^2c+b^4\right)} + \frac{x\left(b^2+\right.}{16a^2}}{x^2\left(b^2+2a\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/(a + b*x + c*x^2)^3,x)
```

```
[Out] (6*c*atan((((6*c^2*x*(b*g - 2*c*f))/(4*a*c - b^2)^(5/2) + (3*c*(b*g - 2*c*f
)*(b^5 + 16*a^2*b*c^2 - 8*a*b^3*c))/((4*a*c - b^2)^(5/2)*(b^4 + 16*a^2*c^2
- 8*a*b^2*c)))*(b^4 + 16*a^2*c^2 - 8*a*b^2*c))/(6*c^2*f - 3*b*c*g))*(b*g -
2*c*f))/(4*a*c - b^2)^(5/2) - ((b^3*f + a*b^2*g + 8*a^2*c*g - 10*a*b*c*f)/(
2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)) + (x*(5*a*c + b^2)*(b*g - 2*c*f))/(b^4 +
16*a^2*c^2 - 8*a*b^2*c) + (3*c^2*x^3*(b*g - 2*c*f))/(b^4 + 16*a^2*c^2 - 8*a
*b^2*c) + (9*b*c*x^2*(b*g - 2*c*f))/(2*(b^4 + 16*a^2*c^2 - 8*a*b^2*c)))/(x^
2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3)
```

sympy [B] time = 1.68, size = 651, normalized size = 4.97

$$3c\sqrt{-\frac{1}{\left(4ac-b^2\right)^5}}\left(bg-2cf\right)\log\left(x+\frac{-192a^3c^4\sqrt{-\frac{1}{\left(4ac-b^2\right)^5}}\left(bg-2cf\right)+144a^2b^2c^3\sqrt{-\frac{1}{\left(4ac-b^2\right)^5}}\left(bg-2cf\right)-3}{6bc^2g}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(c*x**2+b*x+a)**3,x)
```

```
[Out] 3*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f)*log(x + (-192*a**3*c**4*sqrt(-
1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 144*a**2*b**2*c**3*sqrt(-1/(4*a*c - b*
*2)**5)*(b*g - 2*c*f) - 36*a*b**4*c**2*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*
c*f) + 3*b**6*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 3*b**2*c*g - 6*b
*c**2*f)/(6*b*c**2*g - 12*c**3*f)) - 3*c*sqrt(-1/(4*a*c - b**2)**5)*(b*g -
2*c*f)*log(x + (192*a**3*c**4*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) - 14
4*a**2*b**2*c**3*sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) + 36*a*b**4*c**2*
sqrt(-1/(4*a*c - b**2)**5)*(b*g - 2*c*f) - 3*b**6*c*sqrt(-1/(4*a*c - b**2)*
*5)*(b*g - 2*c*f) + 3*b**2*c*g - 6*b*c**2*f)/(6*b*c**2*g - 12*c**3*f)) + (-
8*a**2*c*g - a*b**2*g + 10*a*b*c*f - b**3*f + x**3*(-6*b*c**2*g + 12*c**3*f
) + x**2*(-9*b**2*c*g + 18*b*c**2*f) + x*(-10*a*b*c*g + 20*a*c**2*f - 2*b**
3*g + 4*b**2*c*f))/(32*a**4*c**2 - 16*a**3*b**2*c + 2*a**2*b**4 + x**4*(32*
a**2*c**4 - 16*a*b**2*c**3 + 2*b**4*c**2) + x**3*(64*a**2*b*c**3 - 32*a*b**
3*c**2 + 4*b**5*c) + x**2*(64*a**3*c**3 - 12*a*b**4*c + 2*b**6) + x*(64*a**
3*b*c**2 - 32*a**2*b**3*c + 4*a*b**5))
```

3.2376 $\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=666

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\bigl(4c^3de\bigl(3a^2e^2(5ef-2dg)-3abde(dg+5ef)+b^2d^2(4dg+5ef)\bigr)-6c^2e^2\bigl(-2a^3e^3g+a^2be^2(}{\bigl(b^2-4}$$

```
[Out] 1/2*(-b*c*d*f+b^2*e*f-2*a*c*e*f+2*a*c*d*g-a*b*e*g-c*(2*c*d*f+2*a*e*g-b*(d*g
+e*f))*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^2+1/2*(-3*a*c*e*(-
b*e+2*c*d)*(2*c*d*f+2*a*e*g-b*(d*g+e*f))+(2*a*c*e-b^2*e+b*c*d)*(6*c^2*d^2*f
-2*b^2*e*(-d*g+e*f)+c*(2*a*e*(-d*g+4*e*f)-3*b*d*(d*g+e*f)))-c*(3*c*e*(-2*a*
e+b*d)*(2*c*d*f+2*a*e*g-b*(d*g+e*f))-(-b*e+2*c*d)*(6*c^2*d^2*f-2*b^2*e*(-d*
g+e*f)+c*(2*a*e*(-d*g+4*e*f)-3*b*d*(d*g+e*f))))*x)/(-4*a*c+b^2)^2/(a*e^2-b*
d*e+c*d^2)^2/(c*x^2+b*x+a)-(12*c^5*d^5*f-b^5*e^4*(-d*g+e*f)+10*a*b^3*c*e^4*
(-d*g+e*f)+2*c^4*d^3*(2*a*e*(-d*g+10*e*f)-3*b*d*(d*g+5*e*f))-6*c^2*e^2*(2*b
^3*d^3*g-6*a*b^2*d^2*e*g-2*a^3*e^3*g+a^2*b*e^2*(d*g+5*e*f))+4*c^3*d*e*(3*a^
2*e^2*(-2*d*g+5*e*f)-3*a*b*d*e*(d*g+5*e*f)+b^2*d^2*(4*d*g+5*e*f)))*arctanh(
(2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(5/2)/(a*e^2-b*d*e+c*d^2)^3+e^4*
(-d*g+e*f)*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^3-1/2*e^4*(-d*g+e*f)*ln(c*x^2+b*x+
a)/(a*e^2-b*d*e+c*d^2)^3
```

Rubi [A] time = 2.55, antiderivative size = 664, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.240$, Rules used = $\{822, 800, 634, 618, 206, 628\}$

$$-\frac{\tanh^{-1}\left(\frac{b+2cx}{\sqrt{b^2-4ac}}\right)\bigl(-6c^2e^2\bigl(a^2be^2(dg+5ef)-2a^3e^3g-6ab^2d^2eg+2b^3d^3g\bigr)+4c^3de\bigl(3a^2e^2(5ef-2dg)-3abc}{\bigl(b^2-4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] -(b*c*d*f - b^2*e*f + 2*a*c*e*f - 2*a*c*d*g + a*b*e*g + c*(2*c*d*f + 2*a*e*
g - b*(e*f + d*g))*x)/(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c
*x^2)^2) - (3*a*c*e*(2*c*d - b*e)*(2*c*d*f + 2*a*e*g - b*(e*f + d*g)) - (b*
c*d - b^2*e + 2*a*c*e)*(6*c^2*d^2*f - 2*b^2*e*(e*f - d*g) + 2*a*c*e*(4*e*f
- d*g) - 3*b*c*d*(e*f + d*g)) + c*(3*c*e*(b*d - 2*a*e)*(2*c*d*f + 2*a*e*g -
 b*(e*f + d*g)) - (2*c*d - b*e)*(6*c^2*d^2*f - 2*b^2*e*(e*f - d*g) + 2*a*c*
e*(4*e*f - d*g) - 3*b*c*d*(e*f + d*g)))*x)/(2*(b^2 - 4*a*c)^2*(c*d^2 - b*d*
e + a*e^2)^2*(a + b*x + c*x^2)) - ((12*c^5*d^5*f - b^5*e^4*(e*f - d*g) + 10
*a*b^3*c*e^4*(e*f - d*g) + 2*c^4*d^3*(2*a*e*(10*e*f - d*g) - 3*b*d*(5*e*f +
 d*g)) - 6*c^2*e^2*(2*b^3*d^3*g - 6*a*b^2*d^2*e*g - 2*a^3*e^3*g + a^2*b*e^2
*(5*e*f + d*g)) + 4*c^3*d*e*(3*a^2*e^2*(5*e*f - 2*d*g) - 3*a*b*d*e*(5*e*f +
 d*g) + b^2*d^2*(5*e*f + 4*d*g)))*ArcTanh[(b + 2*c*x)/Sqrt[b^2 - 4*a*c]])/(
(b^2 - 4*a*c)^(5/2)*(c*d^2 - b*d*e + a*e^2)^3) + (e^4*(e*f - d*g)*Log[d + e
*x])/(c*d^2 - b*d*e + a*e^2)^3 - (e^4*(e*f - d*g)*Log[a + b*x + c*x^2])/(2*
(c*d^2 - b*d*e + a*e^2)^3)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)\left(a+bx+cx^2\right)^3}\,dx = -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - \int 6$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^2} - 3ac$$

Mathematica [A] time = 2.82, size = 668, normalized size = 1.00

$$\frac{1}{2}\left(\frac{2bc\left(3a^2e^3g-ace\left(d^2g-7def+5degx+7e^2fx\right)+3c^2d^2(df-dgx-3efx)\right)-4c^2\left(a^2e^2(4dg-4ef-3egx)\right.}{(b}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x]
```

```
[Out] ((-(b^2*e*f) + b*(a*e*g - c*e*f*x + c*d*(f - g*x)) + 2*c*(-(a*d*g) + c*d*f*
x + a*e*(f + g*x)))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(a + x*(b + c
*x))^2) + (2*b^4*e^2*(e*f - d*g) + b^3*c*e*(5*d^2*g + 2*e^2*f*x + d*e*(f -
2*g*x)) - 4*c^2*(-3*c^2*d^3*f*x + a*c*d*e*(-7*e*f + d*g)*x + a^2*e^2*(-4*e*
f + 4*d*g - 3*e*g*x)) + 2*b*c*(3*a^2*e^3*g + 3*c^2*d^2*(d*f - 3*e*f*x - d*g
*x) - a*c*e*(-7*d*e*f + d^2*g + 7*e^2*f*x + 5*d*e*g*x)) + b^2*c*(3*a*e^2*(-
5*e*f + d*g) + c*d*(-9*d*e*f - 3*d^2*g + 2*e^2*f*x + 10*d*e*g*x)))/((b^2 -
4*a*c)^2*(c*d^2 + e*(-(b*d) + a*e))^2*(a + x*(b + c*x))) - (2*(12*c^5*d^5*f
 + 10*a*b^3*c*e^4*(e*f - d*g) + b^5*e^4*(-(e*f) + d*g) - 2*c^4*d^3*(2*a*e*(
-10*e*f + d*g) + 3*b*d*(5*e*f + d*g)) + 6*c^2*e^2*(-2*b^3*d^3*g + 6*a*b^2*d
^2*e*g + 2*a^3*e^3*g - a^2*b*e^2*(5*e*f + d*g)) + 4*c^3*d*e*(3*a^2*e^2*(5*e
*f - 2*d*g) - 3*a*b*d*e*(5*e*f + d*g) + b^2*d^2*(5*e*f + 4*d*g)))*ArcTan[(b
 + 2*c*x)/Sqrt[-b^2 + 4*a*c]])/((-b^2 + 4*a*c)^(5/2)*(-(c*d^2) + e*(b*d - a
*e))^3) + (2*e^4*(e*f - d*g)*Log[d + e*x])/(c*d^2 + e*(-(b*d) + a*e))^3 + (
e^4*(-(e*f) + d*g)*Log[a + x*(b + c*x)])/(c*d^2 + e*(-(b*d) + a*e))^3)/2
```

fricas [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [B] time = 0.27, size = 2288, normalized size = 3.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] 1/2*(d*g*e^4 - f*e^5)*log(c*x^2 + b*x + a)/(c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2
*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*
e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6) - (d*g*e^5 - f*e^6)*log(ab
s(x*e + d))/(c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^
3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a
^2*b*d*e^6 + a^3*e^7) + (12*c^5*d^5*f - 6*b*c^4*d^5*g - 30*b*c^4*d^4*f*e +
16*b^2*c^3*d^4*g*e - 4*a*c^4*d^4*g*e + 20*b^2*c^3*d^3*f*e^2 + 40*a*c^4*d^3*
f*e^2 - 12*b^3*c^2*d^3*g*e^2 - 12*a*b*c^3*d^3*g*e^2 - 60*a*b*c^3*d^2*f*e^3
+ 36*a*b^2*c^2*d^2*g*e^3 - 24*a^2*c^3*d^2*g*e^3 + 60*a^2*c^3*d*f*e^4 + b^5*
d*g*e^4 - 10*a*b^3*c*d*g*e^4 - 6*a^2*b*c^2*d*g*e^4 - b^5*f*e^5 + 10*a*b^3*c
*f*e^5 - 30*a^2*b*c^2*f*e^5 + 12*a^3*c^2*g*e^5)*arctan((2*c*x + b)/sqrt(-b^
2 + 4*a*c))/((b^4*c^3*d^6 - 8*a*b^2*c^4*d^6 + 16*a^2*c^5*d^6 - 3*b^5*c^2*d^
5*e + 24*a*b^3*c^3*d^5*e - 48*a^2*b*c^4*d^5*e + 3*b^6*c*d^4*e^2 - 21*a*b^4*
c^2*d^4*e^2 + 24*a^2*b^2*c^3*d^4*e^2 + 48*a^3*c^4*d^4*e^2 - b^7*d^3*e^3 + 2
*a*b^5*c*d^3*e^3 + 32*a^2*b^3*c^2*d^3*e^3 - 96*a^3*b*c^3*d^3*e^3 + 3*a*b^6*
d^2*e^4 - 21*a^2*b^4*c*d^2*e^4 + 24*a^3*b^2*c^2*d^2*e^4 + 48*a^4*c^3*d^2*e^
4 - 3*a^2*b^5*d*e^5 + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 + a^3*b^4*e^6
 - 8*a^4*b^2*c*e^6 + 16*a^5*c^2*e^6)*sqrt(-b^2 + 4*a*c)) - 1/2*(b^3*c^3*d^5
*f - 10*a*b*c^4*d^5*f + a*b^2*c^3*d^5*g + 8*a^2*c^4*d^5*g - 3*b^4*c^2*d^4*f
*e + 29*a*b^2*c^3*d^4*f*e - 8*a^2*c^4*d^4*f*e - 3*a*b^3*c^2*d^4*g*e - 18*a^
2*b*c^3*d^4*g*e + 3*b^5*c*d^3*f*e^2 - 24*a*b^3*c^2*d^3*f*e^2 - 12*a^2*b*c^3
*d^3*f*e^2 + 3*a*b^4*c*d^3*g*e^2 + 10*a^2*b^2*c^2*d^3*g*e^2 + 32*a^3*c^3*d^
3*g*e^2 - b^6*d^2*f*e^3 + a*b^4*c*d^2*f*e^3 + 50*a^2*b^2*c^2*d^2*f*e^3 - 32
*a^3*c^3*d^2*f*e^3 - a*b^5*d^2*g*e^3 - 44*a^3*b*c^2*d^2*g*e^3 + 4*a*b^5*d*f
*e^4 - 27*a^2*b^3*c*d*f*e^4 + 14*a^3*b*c^2*d*f*e^4 + 9*a^3*b^2*c*d*g*e^4 +
24*a^4*c^2*d*g*e^4 - 3*a^2*b^4*f*e^5 + 21*a^3*b^2*c*f*e^5 - 24*a^4*c^2*f*e^
5 + a^3*b^3*g*e^5 - 10*a^4*b*c*g*e^5 - 2*(6*c^6*d^5*f - 3*b*c^5*d^5*g - 15*
b*c^5*d^4*f*e + 8*b^2*c^4*d^4*g*e - 2*a*c^5*d^4*g*e + 10*b^2*c^4*d^3*f*e^2
+ 20*a*c^5*d^3*f*e^2 - 6*b^3*c^3*d^3*g*e^2 - 6*a*b*c^4*d^3*g*e^2 - 30*a*b*c
^4*d^2*f*e^3 + b^4*c^2*d^2*g*e^3 + 10*a*b^2*c^3*d^2*g*e^3 + 4*a^2*c^4*d^2*g
*e^3 - b^4*c^2*d*f*e^4 + 8*a*b^2*c^3*d*f*e^4 + 14*a^2*c^4*d*f*e^4 - a*b^3*c
^2*d*g*e^4 - 11*a^2*b*c^3*d*g*e^4 + a*b^3*c^2*f*e^5 - 7*a^2*b*c^3*f*e^5 + 6
*a^3*c^3*g*e^5)*x^3 - (18*b*c^5*d^5*f - 9*b^2*c^4*d^5*g - 45*b^2*c^4*d^4*f*
e + 24*b^3*c^3*d^4*g*e - 6*a*b*c^4*d^4*g*e + 30*b^3*c^3*d^3*f*e^2 + 60*a*b*
c^4*d^3*f*e^2 - 19*b^4*c^2*d^3*g*e^2 - 10*a*b^2*c^3*d^3*g*e^2 - 16*a^2*c^4*
d^3*g*e^2 + b^4*c^2*d^2*f*e^3 - 98*a*b^2*c^3*d^2*f*e^3 + 16*a^2*c^4*d^2*f*e
^3 + 4*b^5*c*d^2*g*e^3 + 22*a*b^3*c^2*d^2*g*e^3 + 28*a^2*b*c^3*d^2*g*e^3 -
4*b^5*c*d*f*e^4 + 32*a*b^3*c^2*d*f*e^4 + 26*a^2*b*c^3*d*f*e^4 - 4*a*b^4*c*d
*g*e^4 - 25*a^2*b^2*c^2*d*g*e^4 - 16*a^3*c^3*d*g*e^4 + 4*a*b^4*c*f*e^5 - 29
*a^2*b^2*c^2*f*e^5 + 16*a^3*c^3*f*e^5 + 18*a^3*b*c^2*g*e^5)*x^2 - 2*(2*b^2*
c^4*d^5*f + 10*a*c^5*d^5*f - b^3*c^3*d^5*g - 5*a*b*c^4*d^5*g - 5*b^3*c^3*d^
4*f*e - 25*a*b*c^4*d^4*f*e + 3*b^4*c^2*d^4*g*e + 10*a*b^2*c^3*d^4*g*e + 2*a
^2*c^4*d^4*g*e + 3*b^4*c^2*d^3*f*e^2 + 26*a*b^2*c^3*d^3*f*e^2 + 28*a^2*c^4*
d^3*f*e^2 - 3*b^5*c*d^3*g*e^2 - 4*a*b^3*c^2*d^3*g*e^2 - 26*a^2*b*c^3*d^3*g*
e^2 + b^5*c*d^2*f*e^3 - 18*a*b^3*c^2*d^2*f*e^3 - 34*a^2*b*c^3*d^2*f*e^3 + b
^6*d^2*g*e^3 + 26*a^2*b^2*c^2*d^2*g*e^3 + 12*a^3*c^3*d^2*g*e^3 - b^6*d*f*e^
4 + 6*a*b^4*c*d*f*e^4 + 10*a^2*b^2*c^2*d*f*e^4 + 18*a^3*c^3*d*f*e^4 - a*b^5
*d*g*e^4 - 29*a^3*b*c^2*d*g*e^4 + a*b^5*f*e^5 - 6*a^2*b^3*c*f*e^5 - a^3*b*c
^2*f*e^5 + 2*a^3*b^2*c*g*e^5 + 10*a^4*c^2*g*e^5)*x)/((c*d^2 - b*d*e + a*e^2
)^3*(c*x^2 + b*x + a)^2*(b^2 - 4*a*c)^2)
```

maple [**B**] time = 0.08, size = 9360, normalized size = 14.05

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [**B**] time = 8.10, size = 25467, normalized size = 38.24

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)*(a + b*x + c*x^2)^3),x)
```

```
[Out] ((24*a^3*c^2*e^3*f - 8*a^2*c^3*d^3*g - a^2*b^3*e^3*g - b^3*c^2*d^3*f + 3*a*
b^4*e^3*f - b^5*d*e^2*f + 10*a*b*c^3*d^3*f + 10*a^3*b*c*e^3*g - a*b^4*d*e^2
*g + 2*b^4*c*d^2*e*f - a*b^2*c^2*d^3*g - 21*a^2*b^2*c*e^3*f + 8*a^2*c^3*d^2
*e*f - 24*a^3*c^2*d*e^2*g + 6*a*b^3*c*d*e^2*f + 2*a*b^3*c*d^2*e*g - 19*a*b^
2*c^2*d^2*e*f + 10*a^2*b*c^2*d*e^2*f + 10*a^2*b*c^2*d^2*e*g + a^2*b^2*c*d*e
^2*g)/(2*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6
*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5
*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*
c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3)) + (x^2*(16*a^2*c^3*e^
3*f - 9*b^2*c^3*d^3*g + 18*b*c^4*d^3*f + 4*b^4*c*e^3*f - 4*b^4*c*d*e^2*g -
29*a*b^2*c^2*e^3*f + 18*a^2*b*c^2*e^3*g - 16*a^2*c^3*d*e^2*g - 27*b^2*c^3*d
^2*e*f + 3*b^3*c^2*d*e^2*f + 15*b^3*c^2*d^2*e*g + 42*a*b*c^3*d*e^2*f - 6*a*
b*c^3*d^2*e*g - 7*a*b^2*c^2*d*e^2*g))/(2*(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16
*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^
4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e
 - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c
^2*d*e^3)) + (x^3*(6*c^5*d^3*f + 6*a^2*c^3*e^3*g + b^3*c^2*e^3*f - 3*b*c^4*
d^3*g - 7*a*b*c^3*e^3*f + 14*a*c^4*d*e^2*f - 2*a*c^4*d^2*e*g - 9*b*c^4*d^2*
e*f + b^2*c^3*d*e^2*f + 5*b^2*c^3*d^2*e*g - b^3*c^2*d*e^2*g - 5*a*b*c^3*d*e
^2*g))/(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d
^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4 + 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d
*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e - 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^
3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2*d*e^3) + (x*(b^5*e^3*f + 2*b^2*
c^3*d^3*f + 10*a^3*c^2*e^3*g - b^3*c^2*d^3*g + 10*a*c^4*d^3*f - b^5*d*e^2*g
 - 5*a*b*c^3*d^3*g - 6*a*b^3*c*e^3*f + 2*b^4*c*d^2*e*g - a^2*b*c^2*e^3*f +
2*a^2*b^2*c*e^3*g + 18*a^2*c^3*d*e^2*f + 2*a^2*c^3*d^2*e*g - 3*b^3*c^2*d^2*
e*f - 15*a*b*c^3*d^2*e*f + 2*a*b^3*c*d*e^2*g + 9*a*b^2*c^2*d*e^2*f + 5*a*b^
```

```
2*c^2*d^2*e*g - 19*a^2*b*c^2*d*e^2*g))/(a^2*b^4*e^4 + 16*a^2*c^4*d^4 + 16*a
^4*c^2*e^4 + b^4*c^2*d^4 + b^6*d^2*e^2 - 8*a*b^2*c^3*d^4 - 8*a^3*b^2*c*e^4
+ 32*a^3*c^3*d^2*e^2 - 2*a*b^5*d*e^3 - 2*b^5*c*d^3*e + 16*a*b^3*c^2*d^3*e -
 6*a*b^4*c*d^2*e^2 - 32*a^2*b*c^3*d^3*e + 16*a^2*b^3*c*d*e^3 - 32*a^3*b*c^2
*d*e^3))/(x^2*(2*a*c + b^2) + a^2 + c^2*x^4 + 2*a*b*x + 2*b*c*x^3) + symsum
(log(root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*d^7*e^5*z^3 + 30720
*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7680*a^9*b^3*c^4*d*e
^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3*d*e^11*z^3 + 3840*
a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 960*a^2*b^7*c^7*d^11*
e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*e^3*z^3 - 294*a^5*b
^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a^3*b^12*c*d^4*e^8*z
^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*z^3 + 60*a*b^13*c^2
*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c^10*d^11*e*z^3 + 12
0*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a*b^14*c*d^6*e^6*z^3
 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6*e^6*z^3 + 51840*a^
7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 - 42240*a^8*b^2*c^6*d
^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b^5*c^5*d^5*e^7*z^3
- 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*e^7*z^3 + 21120*a^4
*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 17920*a^5*b^3*c^8*d^
9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^6*c^4*d^4*e^8*z^3 -
 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e^10*z^3 - 15360*a^7
*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 15360*a^4*b^4*c^8*d^
10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^6*c^7*d^10*e^2*z^3
+ 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^3*z^3 - 7680*a^9*b^
2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 6400*a^7*b^5*c^4*d^3*e
^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3*d^5*e^7*z^3 - 4560
*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3 - 2600*a^5*b^9*c^2*
d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^10*c^3*d^6*e^6*z^3
+ 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*e^2*z^3 + 1215*a^4*
b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 350*a^2*b^12*c^2*d^6
*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5*d^8*e^4*z^3 + 180*
a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3 - 6*b^15*c*d^7*e^5*
z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*a*b^15*d^5*e^7*z^3
- 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^13*c^3*d^9*e^3*z^3 +
 15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20480*a^8*c^8*d^6*e^6
*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4*z^3 - 6144*a^10*c^
6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^13*d^3*e^9*z^3 + 15*
a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a^10*b^2*c^4*e^12*z^
3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3 + 1280*a^4*b^2*c^10
*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d^12*z^3 - 1024*a^11
*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^3 + b^10*c^6*d^12*z
^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 1960*a^2*b^3*c^5*d^4*e
^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2*c^6*d^5*e^5*f*g*z
+ 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^7*f*g*z - 222*a^2*b
^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4*b^2*c^4*d*e^9*f*g*
z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^9*f*g*z - 856*a*b^2
*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a^2*b^6*c^2*d*e^9*f*
g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^6*f*g*z + 84*a*b^6*
c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^7*c^2*d^2*e^8*f*g*z
 - 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 372*b^3*c^7*d^8*e^2*f
*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f*g*z + 12*b^6*c^4*d
^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e^6*f*g*z + 528*a^3*
c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*c^8*d^7*e^3*f*g*z -
 60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z + 36*a^5*b*c^4*d*e^9*
g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f^2*z + 900*a^4*b*c^
5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3*b^4*c^3*d^2*e^8*g^
2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^4*e^6*g^2*z + 210*a
^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z - 142*a^2*b^6*c^2*
d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b^3*c^4*d^3*e^7*g^2*
```

```
z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2*e^8*f^2*z + 300*a^
2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z - 186*b^2*c^8*d^9*e
*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f*g*z - 12*a*b*c^8*d
^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4*d^5*e^5*g^2*z + 18
0*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z - 96*a^2*b*c^7*d^7*
e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^4*e^6*g^2*z - 18*a*
b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*b^2*c^7*d^8*e^2*g^2
*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e^5*f^2*z - 1300*a*b
^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300*a^3*b^3*c^4*d*e^9*
f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e^7*f^2*z + 30*a^2*b
^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*c^9*d^9*e*f^2*z + 2
0*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^5*c^5*d^7*e^3*g^2*z
 - 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z + 6*b^8*c^2*d^4*e^6*g
^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f^2*z + 300*b^3*c^7*
d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*d^6*e^4*f^2*z - 48*
a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^7*c^3*d^3*e^7*f^2*z
 + 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1200*a^3*c^7*d^4*e^6
*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4*f^2*z - 1185*a^4*b
^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2*b^6*c^2*e^10*f^2*z
 + 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7*d^9*e*g^2*z - 240*
a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^10*g^2*z - 9*b^2*c^
8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2*z - b^10*e^10*f^2*
z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^2*g + 252*a^2*b*c^4
*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d^3*e^6*f*g^2 + 36*a
*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^5*d^4*e^5*f*g^2 + 5
7*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*b^4*c^3*d^2*e^7*f*g
^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2 - 72*a^2*b*c^4*d^2
*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e^6*g^3 + 36*b*c^6*d
^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8*f^2*g + 12*b^5*c^2
*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e^6*f^2*g + 24*a*c^6
*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*e^9*f^2*g - 12*a*b*
c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f^2*g + 36*a^3*c^4*e
^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 + 15*b^3*c^4*d*e^8*f
^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b^3*c^4*d^4*e^5*g^3
- 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5*c^2*d^2*e^7*g^3 +
21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*d^4*e^5*f^3 + 10*b^
4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k)*((a^2*b^9*c*e^10*f - 96*a^7*c^5*
e^10*g + 368*a^6*b*c^5*e^10*f + 96*a^2*c^10*d^9*e*f + 32*a^6*c^6*d*e^9*f +
6*b^4*c^8*d^9*e*f + b^11*c*d^2*e^8*f - 3*b^5*c^7*d^9*e*g - b^11*c*d^3*e^7*g
 - 17*a^3*b^7*c^2*e^10*f + 111*a^4*b^5*c^3*e^10*f - 328*a^5*b^3*c^4*e^10*f
- 6*a^5*b^4*c^3*e^10*g + 48*a^6*b^2*c^4*e^10*g + 320*a^3*c^9*d^7*e^3*f + 38
4*a^4*c^8*d^5*e^5*f + 192*a^5*c^7*d^3*e^7*f - 32*a^3*c^9*d^8*e^2*g - 192*a^
4*c^8*d^6*e^4*g - 384*a^5*c^7*d^4*e^6*g - 320*a^6*c^6*d^2*e^8*g - 21*b^5*c^
7*d^8*e^2*f + 25*b^6*c^6*d^7*e^3*f - 10*b^7*c^5*d^6*e^4*f - b^10*c^2*d^3*e^
7*f + 11*b^6*c^6*d^8*e^2*g - 14*b^7*c^5*d^7*e^3*g + 6*b^8*c^4*d^6*e^4*g + b
^10*c^2*d^4*e^6*g + 168*a*b^3*c^8*d^8*e^2*f - 180*a*b^4*c^7*d^7*e^3*f + 36*
a*b^5*c^6*d^6*e^4*f + 15*a*b^6*c^5*d^5*e^5*f + 11*a*b^7*c^4*d^4*e^6*f + 17*
a*b^8*c^3*d^3*e^7*f - 17*a*b^9*c^2*d^2*e^8*f - 336*a^2*b*c^9*d^8*e^2*f + 35
*a^2*b^8*c^2*d*e^9*f - 704*a^3*b*c^8*d^6*e^4*f - 239*a^3*b^6*c^3*d*e^9*f -
32*a^4*b*c^7*d^4*e^6*f + 746*a^4*b^4*c^4*d*e^9*f + 704*a^5*b*c^6*d^2*e^8*f
- 896*a^5*b^2*c^5*d*e^9*f - 90*a*b^4*c^7*d^8*e^2*g + 108*a*b^5*c^6*d^7*e^3*
g - 27*a*b^6*c^5*d^6*e^4*g - 11*a*b^7*c^4*d^5*e^5*g - 23*a*b^8*c^3*d^4*e^6*
g + 17*a*b^9*c^2*d^3*e^7*g - 64*a^3*b*c^8*d^7*e^3*g + 17*a^3*b^7*c^2*d*e^9*
g + 32*a^4*b*c^7*d^5*e^5*g - 87*a^4*b^5*c^3*d*e^9*g + 64*a^5*b*c^6*d^3*e^7*
g + 136*a^5*b^3*c^4*d*e^9*g - 2*a*b^10*c*d*e^9*f + 240*a^2*b^2*c^8*d^7*e^3*
f + 192*a^2*b^3*c^7*d^6*e^4*f - 96*a^2*b^4*c^6*d^5*e^5*f - 90*a^2*b^5*c^5*d
^4*e^6*f - 153*a^2*b^6*c^4*d^3*e^7*f + 112*a^2*b^7*c^3*d^2*e^8*f + 48*a^3*b
^2*c^7*d^5*e^5*f + 192*a^3*b^3*c^6*d^4*e^6*f + 676*a^3*b^4*c^5*d^3*e^7*f -
292*a^3*b^5*c^4*d^2*e^8*f - 1136*a^4*b^2*c^6*d^3*e^7*f + 32*a^4*b^3*c^5*d^2
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*e^8*f + 192*a^2*b^2*c^8*d^8*e^2*g - 192*a^2*b^3*c^7*d^7*e^3*g - 84*a^2*b^4
*c^6*d^6*e^4*g + 90*a^2*b^5*c^5*d^5*e^5*g + 165*a^2*b^6*c^4*d^4*e^6*g - 88*
a^2*b^7*c^3*d^3*e^7*g - 35*a^2*b^8*c^2*d^2*e^8*g + 432*a^3*b^2*c^7*d^6*e^4*
g - 192*a^3*b^3*c^6*d^5*e^5*g - 496*a^3*b^4*c^5*d^4*e^6*g + 148*a^3*b^5*c^4
*d^3*e^7*g + 203*a^3*b^6*c^3*d^2*e^8*g + 656*a^4*b^2*c^6*d^4*e^6*g - 32*a^4
*b^3*c^5*d^3*e^7*g - 476*a^4*b^4*c^4*d^2*e^8*g + 464*a^5*b^2*c^5*d^2*e^8*g
 - 48*a*b^2*c^9*d^9*e*f + 24*a*b^3*c^8*d^9*e*g + 2*a*b^10*c*d^2*e^8*g - 48*a
^2*b*c^9*d^9*e*g - a^2*b^9*c*d*e^9*g + 16*a^6*b*c^5*d*e^9*g)/(a^4*b^8*e^8 +
 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*
c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3
*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a
^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^
6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 +
512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4
 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*
e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*
d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*
c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^
5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10
*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e
^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e +
52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072
*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*
a^6*b^3*c^3*d*e^7) - root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*d^7
*e^5*z^3 + 30720*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7680
*a^9*b^3*c^4*d*e^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3*d*
e^11*z^3 + 3840*a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 960*a
^2*b^7*c^7*d^11*e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*e^3
*z^3 - 294*a^5*b^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a^3*
b^12*c*d^4*e^8*z^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*z^3
 + 60*a*b^13*c^2*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c^10
*d^11*e*z^3 + 120*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a*b^
14*c*d^6*e^6*z^3 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6*e^
6*z^3 + 51840*a^7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 - 422
40*a^8*b^2*c^6*d^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b^5*
c^5*d^5*e^7*z^3 - 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*e^7
*z^3 + 21120*a^4*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 1792
0*a^5*b^3*c^8*d^9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^6*c
^4*d^4*e^8*z^3 - 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e^10
*z^3 - 15360*a^7*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 1536
0*a^4*b^4*c^8*d^10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^6*c
^7*d^10*e^2*z^3 + 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^3*z
^3 - 7680*a^9*b^2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 6400*a
^7*b^5*c^4*d^3*e^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3*d^
5*e^7*z^3 - 4560*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3 - 2
600*a^5*b^9*c^2*d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^10*
c^3*d^6*e^6*z^3 + 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*e^2
*z^3 + 1215*a^4*b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 350*
a^2*b^12*c^2*d^6*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5*d^
8*e^4*z^3 + 180*a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3 - 6
*b^15*c*d^7*e^5*z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*a*b
^15*d^5*e^7*z^3 - 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^13*c
^3*d^9*e^3*z^3 + 15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20480
*a^8*c^8*d^6*e^6*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4*z^
3 - 6144*a^10*c^6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^13*d
^3*e^9*z^3 + 15*a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a^10
*b^2*c^4*e^12*z^3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3 + 1
280*a^4*b^2*c^10*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d^12
*z^3 - 1024*a^11*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^3 +
 b^10*c^6*d^12*z^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 1960*a
^2*b^3*c^5*d^4*e^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2*c^
6*d^5*e^5*f*g*z + 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^7*f
*g*z - 222*a^2*b^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4*b^
2*c^4*d*e^9*f*g*z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^9*f
*g*z - 856*a*b^2*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a^2*
b^6*c^2*d*e^9*f*g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^6*f
*g*z + 84*a*b^6*c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^7*c
^2*d^2*e^8*f*g*z - 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 372*b
^3*c^7*d^8*e^2*f*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f*g*
z + 12*b^6*c^4*d^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e^6*
f*g*z + 528*a^3*c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*c^8
*d^7*e^3*f*g*z - 60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z + 36*
a^5*b*c^4*d*e^9*g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f^2*
z + 900*a^4*b*c^5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3*b^
4*c^3*d^2*e^8*g^2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^4*e
^6*g^2*z + 210*a^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z -
142*a^2*b^6*c^2*d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b^3*
c^4*d^3*e^7*g^2*z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2*e^
8*f^2*z + 300*a^2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z - 1
86*b^2*c^8*d^9*e*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f*g*
z - 12*a*b*c^8*d^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4*d^
5*e^5*g^2*z + 180*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z - 9
6*a^2*b*c^7*d^7*e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^4*e
^6*g^2*z - 18*a*b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*b^2
*c^7*d^8*e^2*g^2*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e^5*
f^2*z - 1300*a*b^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300*a^
3*b^3*c^4*d*e^9*f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e^7*
f^2*z + 30*a^2*b^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*c^9
*d^9*e*f^2*z + 20*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^5*c
^5*d^7*e^3*g^2*z - 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z + 6*b
^8*c^2*d^4*e^6*g^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f^2*
z + 300*b^3*c^7*d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*d^6
*e^4*f^2*z - 48*a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^7*c
^3*d^3*e^7*f^2*z + 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1200
*a^3*c^7*d^4*e^6*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4*f^
2*z - 1185*a^4*b^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2*b^
6*c^2*e^10*f^2*z + 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7*d^
9*e*g^2*z - 240*a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^10*
g^2*z - 9*b^2*c^8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2*z
- b^10*e^10*f^2*z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^2*g
 + 252*a^2*b*c^4*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d^3*
e^6*f*g^2 + 36*a*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^5*d
^4*e^5*f*g^2 + 57*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*b^4
*c^3*d^2*e^7*f*g^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2 -
72*a^2*b*c^4*d^2*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e^6*
g^3 + 36*b*c^6*d^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8*f^
2*g + 12*b^5*c^2*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e^6*
f^2*g + 24*a*c^6*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*e^9
*f^2*g - 12*a*b*c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f^2*
g + 36*a^3*c^4*e^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 + 15
*b^3*c^4*d*e^8*f^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b^3*
c^4*d^4*e^5*g^3 - 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5*c^
2*d^2*e^7*g^3 + 21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*d^4
*e^5*f^3 + 10*b^4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k)*((a^5*b^9*c*e^11
 + 256*a^9*b*c^5*e^11 - 2048*a^9*c^6*d*e^10 + b^9*c^6*d^10*e + b^14*c*d^5*e
^6 - 16*a^6*b^7*c^2*e^11 + 96*a^7*b^5*c^3*e^11 - 256*a^8*b^3*c^4*e^11 - 204
8*a^5*c^10*d^9*e^2 - 8192*a^6*c^9*d^7*e^4 - 12288*a^7*c^8*d^5*e^6 - 8192*a^
8*c^7*d^3*e^8 - 3*b^10*c^5*d^9*e^2 + 2*b^11*c^4*d^8*e^3 + 2*b^12*c^3*d^7*e^
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4 - 3*b^13*c^2*d^6*e^5 - 160*a^2*b^6*c^7*d^9*e^2 - 400*a^2*b^7*c^6*d^8*e^3
+ 1120*a^2*b^8*c^5*d^7*e^4 - 790*a^2*b^9*c^4*d^6*e^5 + 46*a^2*b^10*c^3*d^5*
e^6 + 86*a^2*b^11*c^2*d^4*e^7 + 3040*a^3*b^5*c^7*d^8*e^3 - 5760*a^3*b^6*c^6
*d^7*e^4 + 2720*a^3*b^7*c^5*d^6*e^5 + 1136*a^3*b^8*c^4*d^5*e^6 - 790*a^3*b^
9*c^3*d^4*e^7 - 92*a^3*b^10*c^2*d^3*e^8 + 1280*a^4*b^2*c^9*d^9*e^2 - 8960*a
^4*b^3*c^8*d^8*e^3 + 12800*a^4*b^4*c^7*d^7*e^4 - 320*a^4*b^5*c^6*d^6*e^5 -
8896*a^4*b^6*c^5*d^5*e^6 + 2720*a^4*b^7*c^4*d^4*e^7 + 1120*a^4*b^8*c^3*d^3*
e^8 + 5*a^4*b^9*c^2*d^2*e^9 - 7168*a^5*b^2*c^8*d^7*e^4 - 17408*a^5*b^3*c^7*
d^6*e^5 + 23552*a^5*b^4*c^6*d^5*e^6 - 320*a^5*b^5*c^5*d^4*e^7 - 5760*a^5*b^
6*c^4*d^3*e^8 - 400*a^5*b^7*c^3*d^2*e^9 - 16896*a^6*b^2*c^7*d^5*e^6 - 17408
*a^6*b^3*c^6*d^4*e^7 + 12800*a^6*b^4*c^5*d^3*e^8 + 3040*a^6*b^5*c^4*d^2*e^9
 - 7168*a^7*b^2*c^6*d^3*e^8 - 8960*a^7*b^3*c^5*d^2*e^9 - 16*a*b^7*c^7*d^10*
e - 3*a*b^13*c*d^4*e^7 + 256*a^4*b*c^10*d^10*e - 3*a^4*b^10*c*d*e^10 + 40*a
*b^8*c^6*d^9*e^2 + 5*a*b^9*c^5*d^8*e^3 - 92*a*b^10*c^4*d^7*e^4 + 86*a*b^11*
c^3*d^6*e^5 - 20*a*b^12*c^2*d^5*e^6 + 96*a^2*b^5*c^8*d^10*e + 2*a^2*b^12*c*
d^3*e^8 - 256*a^3*b^3*c^9*d^10*e + 2*a^3*b^11*c*d^2*e^9 + 9472*a^5*b*c^9*d^
8*e^3 + 40*a^5*b^8*c^2*d*e^10 + 27136*a^6*b*c^8*d^6*e^5 - 160*a^6*b^6*c^3*d
*e^10 + 27136*a^7*b*c^7*d^4*e^7 + 9472*a^8*b*c^6*d^2*e^9 + 1280*a^8*b^2*c^5
*d*e^10)/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b
^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^
3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256
*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^
2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6
+ 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 -
90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3
 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*
e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3
*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^
3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b
^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e
^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 3
84*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a
^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^
6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7) - (x*(1536*a^9*c^6*e^11 - 2*a^4*b
^10*c*e^11 - 512*a^4*c^11*d^10*e - 2*b^8*c^7*d^10*e - 2*b^14*c*d^4*e^7 + 38
*a^5*b^8*c^2*e^11 - 288*a^6*b^6*c^3*e^11 + 1088*a^7*b^4*c^4*e^11 - 2048*a^8
*b^2*c^5*e^11 - 512*a^5*c^10*d^8*e^3 + 3072*a^6*c^9*d^6*e^5 + 7168*a^7*c^8*
d^4*e^7 + 5632*a^8*c^7*d^2*e^9 + 10*b^9*c^6*d^9*e^2 - 22*b^10*c^5*d^8*e^3 +
 28*b^11*c^4*d^7*e^4 - 22*b^12*c^3*d^6*e^5 + 10*b^13*c^2*d^5*e^6 + 960*a^2*
b^5*c^8*d^9*e^2 - 2080*a^2*b^6*c^7*d^8*e^3 + 2560*a^2*b^7*c^6*d^7*e^4 - 178
0*a^2*b^8*c^5*d^6*e^5 + 412*a^2*b^9*c^4*d^5*e^6 + 248*a^2*b^10*c^3*d^4*e^7
- 116*a^2*b^11*c^2*d^3*e^8 - 2560*a^3*b^3*c^9*d^9*e^2 + 5440*a^3*b^4*c^8*d^
8*e^3 - 6400*a^3*b^5*c^7*d^7*e^4 + 3520*a^3*b^6*c^6*d^6*e^5 + 1088*a^3*b^7*
c^5*d^5*e^6 - 2340*a^3*b^8*c^4*d^4*e^7 + 520*a^3*b^9*c^3*d^3*e^8 + 212*a^3*
b^10*c^2*d^2*e^9 - 5120*a^4*b^2*c^9*d^8*e^3 + 5120*a^4*b^3*c^8*d^7*e^4 + 64
0*a^4*b^4*c^7*d^6*e^5 - 9088*a^4*b^5*c^6*d^5*e^6 + 8000*a^4*b^6*c^5*d^4*e^7
 - 1450*a^4*b^8*c^3*d^2*e^9 - 8192*a^5*b^2*c^8*d^6*e^5 + 17408*a^5*b^3*c^7*
d^5*e^6 - 10112*a^5*b^4*c^6*d^4*e^7 - 6400*a^5*b^5*c^5*d^3*e^8 + 4640*a^5*b
^6*c^4*d^2*e^9 - 1024*a^6*b^2*c^7*d^4*e^7 + 17408*a^6*b^3*c^6*d^3*e^8 - 608
0*a^6*b^4*c^5*d^2*e^9 - 512*a^7*b^2*c^6*d^2*e^9 + 32*a*b^6*c^8*d^10*e + 8*a
*b^13*c*d^3*e^8 + 8*a^3*b^11*c*d*e^10 - 5632*a^8*b*c^6*d*e^10 - 160*a*b^7*c
^7*d^9*e^2 + 350*a*b^8*c^6*d^8*e^3 - 440*a*b^9*c^5*d^7*e^4 + 332*a*b^10*c^4
*d^6*e^5 - 128*a*b^11*c^3*d^5*e^6 + 6*a*b^12*c^2*d^4*e^7 - 192*a^2*b^4*c^9*
d^10*e - 12*a^2*b^12*c*d^2*e^9 + 512*a^3*b^2*c^10*d^10*e + 2560*a^4*b*c^10*
d^9*e^2 - 150*a^4*b^9*c^2*d*e^10 + 2048*a^5*b*c^9*d^7*e^4 + 1120*a^5*b^7*c^
3*d*e^10 - 9216*a^6*b*c^8*d^5*e^6 - 4160*a^6*b^5*c^4*d*e^10 - 14336*a^7*b*c
^7*d^3*e^8 + 7680*a^7*b^3*c^5*d*e^10))/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256
*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c
*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*
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e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a
^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d
^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^
2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6
*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*
d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4
*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5
*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 51
2*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*
b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*
e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 +
 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 3
84*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7)) +
(x*(768*a^6*c^6*e^10*f - 96*a^6*b*c^5*e^10*g - 576*a^6*c^6*d*e^9*g + 2*a^2*
b^8*c^2*e^10*f - 33*a^3*b^6*c^3*e^10*f + 216*a^4*b^4*c^4*e^10*f - 656*a^5*b
^2*c^5*e^10*f - 6*a^4*b^5*c^3*e^10*g + 48*a^5*b^3*c^4*e^10*g + 192*a^2*c^10
*d^8*e^2*f + 832*a^3*c^9*d^6*e^4*f + 1856*a^4*c^8*d^4*e^6*f + 1984*a^5*c^7*
d^2*e^8*f - 64*a^3*c^9*d^7*e^3*g - 704*a^4*c^8*d^5*e^5*g - 1216*a^5*c^7*d^3
*e^7*g + 12*b^4*c^8*d^8*e^2*f - 48*b^5*c^7*d^7*e^3*f + 71*b^6*c^6*d^6*e^4*f
 - 45*b^7*c^5*d^5*e^5*f + 11*b^8*c^4*d^4*e^6*f - 3*b^9*c^3*d^3*e^7*f + 2*b^
10*c^2*d^2*e^8*f - 6*b^5*c^7*d^8*e^2*g + 25*b^6*c^6*d^7*e^3*g - 39*b^7*c^5*
d^6*e^4*g + 25*b^8*c^4*d^5*e^5*g - 3*b^9*c^3*d^4*e^6*g - 2*b^10*c^2*d^3*e^7
*g - 96*a*b^2*c^9*d^8*e^2*f + 384*a*b^3*c^8*d^7*e^3*f - 516*a*b^4*c^7*d^6*e
^4*f + 204*a*b^5*c^6*d^5*e^5*f + 49*a*b^6*c^5*d^4*e^6*f + 10*a*b^7*c^4*d^3*
e^7*f - 31*a*b^8*c^3*d^2*e^8*f - 768*a^2*b*c^9*d^7*e^3*f + 67*a^2*b^7*c^3*d
*e^9*f - 2496*a^3*b*c^8*d^5*e^5*f - 468*a^3*b^5*c^4*d*e^9*f - 3712*a^4*b*c^
7*d^3*e^7*f + 1552*a^4*b^3*c^5*d*e^9*f + 48*a*b^3*c^8*d^8*e^2*g - 204*a*b^4
*c^7*d^7*e^3*g + 300*a*b^5*c^6*d^6*e^4*g - 121*a*b^6*c^5*d^5*e^5*g - 82*a*b
^7*c^4*d^4*e^6*g + 55*a*b^8*c^3*d^3*e^7*g + 4*a*b^9*c^2*d^2*e^8*g - 96*a^2*
b*c^9*d^8*e^2*g - 2*a^2*b^8*c^2*d*e^9*g - 192*a^3*b*c^8*d^6*e^4*g + 57*a^3*
b^6*c^3*d*e^9*g + 832*a^4*b*c^7*d^4*e^6*g - 396*a^4*b^4*c^4*d*e^9*g + 832*a
^5*b*c^6*d^2*e^8*g + 944*a^5*b^2*c^5*d*e^9*g + 720*a^2*b^2*c^8*d^6*e^4*f +
528*a^2*b^3*c^7*d^5*e^5*f - 804*a^2*b^4*c^6*d^4*e^6*f - 168*a^2*b^5*c^5*d^3
*e^7*f + 233*a^2*b^6*c^4*d^2*e^8*f + 1264*a^3*b^2*c^7*d^4*e^6*f + 1632*a^3*
b^3*c^6*d^3*e^7*f - 764*a^3*b^4*c^5*d^2*e^8*f + 304*a^4*b^2*c^6*d^2*e^8*f +
 432*a^2*b^2*c^8*d^7*e^3*g - 528*a^2*b^3*c^7*d^6*e^4*g - 276*a^2*b^4*c^6*d^
5*e^5*g + 852*a^2*b^5*c^5*d^4*e^6*g - 281*a^2*b^6*c^4*d^3*e^7*g - 103*a^2*b
^7*c^3*d^2*e^8*g + 1616*a^3*b^2*c^7*d^5*e^5*g - 2112*a^3*b^3*c^6*d^4*e^6*g
+ 44*a^3*b^4*c^5*d^3*e^7*g + 684*a^3*b^5*c^4*d^2*e^8*g + 1616*a^4*b^2*c^6*d
^3*e^7*g - 1552*a^4*b^3*c^5*d^2*e^8*g - 4*a*b^9*c^2*d*e^9*f - 1984*a^5*b*c^
6*d*e^9*f))/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8
+ b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4
*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 -
256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10
*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e
^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3
 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*
e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d
^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*
c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5
*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*
a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*
d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3
 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 9
2*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072
*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7)) - (6*b^3*c^6*d^4*e^5*f^2 - 36
*c^9*d^7*e^2*f^2 - 72*a^2*b^3*c^4*e^9*f^2 - 292*a^2*c^7*d^3*e^6*f^2 - 4*a^2
*c^7*d^5*e^4*g^2 - 8*a^3*c^6*d^3*e^6*g^2 - 93*b^2*c^7*d^5*e^4*f^2 - b^7*c^2
*e^9*f^2 + 11*b^4*c^5*d^3*e^6*f^2 + 7*b^5*c^4*d^2*e^7*f^2 - 9*b^2*c^7*d^7*e
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^2*g^2 + 30*b^3*c^6*d^6*e^3*g^2 - 31*b^4*c^5*d^5*e^4*g^2 + 7*b^5*c^4*d^4*e^
5*g^2 + 4*b^6*c^3*d^3*e^6*g^2 - b^7*c^2*d^2*e^7*g^2 - 96*a^4*c^5*e^9*f*g +
15*a*b^5*c^3*e^9*f^2 + 112*a^3*b*c^5*e^9*f^2 - 168*a*c^8*d^5*e^4*f^2 - 224*
a^3*c^6*d*e^8*f^2 + 108*b*c^8*d^6*e^3*f^2 + 60*a^4*c^5*d*e^8*g^2 - 2*b^6*c^
3*d*e^8*f^2 + 336*a*b*c^7*d^4*e^5*f^2 + 8*a*b^4*c^4*d*e^8*f^2 - 12*a*b*c^7*
d^6*e^3*g^2 - 6*a^2*b^4*c^3*e^9*f*g + 48*a^3*b^2*c^4*e^9*f*g + 80*a^2*c^7*d
^4*e^5*f*g + 88*a^3*c^6*d^2*e^7*f*g - 114*b^2*c^7*d^6*e^3*f*g + 108*b^3*c^6
*d^5*e^4*f*g - 16*b^4*c^5*d^4*e^5*f*g - 14*b^5*c^4*d^3*e^6*f*g - 2*b^6*c^3*
d^2*e^7*f*g - 106*a*b^2*c^6*d^3*e^6*f^2 - 86*a*b^3*c^5*d^2*e^7*f^2 + 340*a^
2*b*c^6*d^2*e^7*f^2 + 47*a^2*b^2*c^5*d*e^8*f^2 - 10*a*b^2*c^6*d^5*e^4*g^2 +
 70*a*b^3*c^5*d^4*e^5*g^2 - 52*a*b^4*c^4*d^3*e^6*g^2 + 3*a*b^5*c^3*d^2*e^7*
g^2 - 32*a^2*b*c^6*d^4*e^5*g^2 + 6*a^2*b^4*c^3*d*e^8*g^2 - 20*a^3*b*c^5*d^2
*e^7*g^2 - 48*a^3*b^2*c^4*d*e^8*g^2 + 24*a*c^8*d^6*e^3*f*g + 36*b*c^8*d^7*e
^2*f*g + 2*b^7*c^2*d*e^8*f*g + 11*a^2*b^2*c^5*d^3*e^6*g^2 + 36*a^2*b^3*c^4*
d^2*e^7*g^2 + 108*a*b*c^7*d^5*e^4*f*g - 18*a*b^5*c^3*d*e^8*f*g + 52*a^3*b*c
^5*d*e^8*f*g - 316*a*b^2*c^6*d^4*e^5*f*g + 160*a*b^3*c^5*d^3*e^6*f*g + 44*a
*b^4*c^4*d^2*e^7*f*g + 124*a^2*b*c^6*d^3*e^6*f*g + 36*a^2*b^3*c^4*d*e^8*f*g
 - 274*a^2*b^2*c^5*d^2*e^7*f*g)/(a^4*b^8*e^8 + 256*a^4*c^8*d^8 + 256*a^8*c^
4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 -
4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 9
6*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 + 96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*
c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4
+ 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^2 + 512*a^2*b^6*c^4*d^6*e^2 - 192
*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*e^4 - 1152*a^3*b^4*c^5*d^6*e^2 -
128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5
 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^
4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^
5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 1152*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b
^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d
^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 5
2*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*e + 52*a^2*b^9*c*d^3*e^5 + 1024*a
^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 - 3072*a^5*b*c^6*d^5*e^3 - 384*a^5*
b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1024*a^6*b^3*c^3*d*e^7) + (x*(36*a
^4*c^5*e^9*g^2 + b^6*c^3*e^9*f^2 + 36*c^9*d^6*e^3*f^2 + 49*a^2*b^2*c^5*e^9*
f^2 + 196*a^2*c^7*d^2*e^7*f^2 + 4*a^2*c^7*d^4*e^5*g^2 - 24*a^3*c^6*d^2*e^7*
g^2 + 93*b^2*c^7*d^4*e^5*f^2 - 6*b^3*c^6*d^3*e^6*f^2 - 17*b^4*c^5*d^2*e^7*f
^2 + 9*b^2*c^7*d^6*e^3*g^2 - 30*b^3*c^6*d^5*e^4*g^2 + 31*b^4*c^5*d^4*e^5*g^
2 - 10*b^5*c^4*d^3*e^6*g^2 + b^6*c^3*d^2*e^7*g^2 - 14*a*b^4*c^4*e^9*f^2 + 1
68*a*c^8*d^4*e^5*f^2 - 108*b*c^8*d^5*e^4*f^2 + 2*b^5*c^4*d*e^8*f^2 - 336*a*
b*c^7*d^3*e^6*f^2 + 14*a*b^3*c^5*d*e^8*f^2 - 196*a^2*b*c^6*d*e^8*f^2 + 12*a
*b*c^7*d^5*e^4*g^2 - 60*a^3*b*c^5*d*e^8*g^2 + 12*a^2*b^3*c^4*e^9*f*g + 16*a
^2*c^7*d^3*e^6*f*g + 114*b^2*c^7*d^5*e^4*f*g - 108*b^3*c^6*d^4*e^5*f*g + 22
*b^4*c^5*d^3*e^6*f*g + 8*b^5*c^4*d^2*e^7*f*g + 154*a*b^2*c^6*d^2*e^7*f^2 +
10*a*b^2*c^6*d^4*e^5*g^2 - 46*a*b^3*c^5*d^3*e^6*g^2 + 10*a*b^4*c^4*d^2*e^7*
g^2 - 16*a^2*b*c^6*d^3*e^6*g^2 - 12*a^2*b^3*c^4*d*e^8*g^2 - 84*a^3*b*c^5*e^
9*f*g - 24*a*c^8*d^5*e^4*f*g + 168*a^3*c^6*d*e^8*f*g - 36*b*c^8*d^6*e^3*f*g
 - 2*b^6*c^3*d*e^8*f*g + 85*a^2*b^2*c^5*d^2*e^7*g^2 - 108*a*b*c^7*d^4*e^5*f
*g + 4*a*b^4*c^4*d*e^8*f*g + 268*a*b^2*c^6*d^3*e^6*f*g - 112*a*b^3*c^5*d^2*
e^7*f*g - 220*a^2*b*c^6*d^2*e^7*f*g + 82*a^2*b^2*c^5*d*e^8*f*g))/(a^4*b^8*e
^8 + 256*a^4*c^8*d^8 + 256*a^8*c^4*e^8 + b^8*c^4*d^8 + b^12*d^4*e^4 - 16*a*
b^6*c^5*d^8 - 16*a^5*b^6*c*e^8 - 4*a*b^11*d^3*e^5 - 4*a^3*b^9*d*e^7 - 4*b^9
*c^3*d^7*e - 4*b^11*c*d^5*e^3 + 96*a^2*b^4*c^6*d^8 - 256*a^3*b^2*c^7*d^8 +
96*a^6*b^4*c^2*e^8 - 256*a^7*b^2*c^3*e^8 + 6*a^2*b^10*d^2*e^6 + 1024*a^5*c^
7*d^6*e^2 + 1536*a^6*c^6*d^4*e^4 + 1024*a^7*c^5*d^2*e^6 + 6*b^10*c^2*d^6*e^
2 + 512*a^2*b^6*c^4*d^6*e^2 - 192*a^2*b^7*c^3*d^5*e^3 - 90*a^2*b^8*c^2*d^4*
e^4 - 1152*a^3*b^4*c^5*d^6*e^2 - 128*a^3*b^5*c^4*d^5*e^3 + 800*a^3*b^6*c^3*
d^4*e^4 - 192*a^3*b^7*c^2*d^3*e^5 + 512*a^4*b^2*c^6*d^6*e^2 + 2048*a^4*b^3*
c^5*d^5*e^3 - 2240*a^4*b^4*c^4*d^4*e^4 - 128*a^4*b^5*c^3*d^3*e^5 + 512*a^4*
b^6*c^2*d^2*e^6 + 1536*a^5*b^2*c^5*d^4*e^4 + 2048*a^5*b^3*c^4*d^3*e^5 - 115
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2*a^5*b^4*c^3*d^2*e^6 + 512*a^6*b^2*c^4*d^2*e^6 + 64*a*b^7*c^4*d^7*e - 4*a*
b^10*c*d^4*e^4 - 1024*a^4*b*c^7*d^7*e + 64*a^4*b^7*c*d*e^7 - 1024*a^7*b*c^4
*d*e^7 - 92*a*b^8*c^3*d^6*e^2 + 52*a*b^9*c^2*d^5*e^3 - 384*a^2*b^5*c^5*d^7*
e + 52*a^2*b^9*c*d^3*e^5 + 1024*a^3*b^3*c^6*d^7*e - 92*a^3*b^8*c*d^2*e^6 -
3072*a^5*b*c^6*d^5*e^3 - 384*a^5*b^5*c^2*d*e^7 - 3072*a^6*b*c^5*d^3*e^5 + 1
024*a^6*b^3*c^3*d*e^7))*root(61440*a^8*b*c^7*d^5*e^7*z^3 + 61440*a^7*b*c^8*
d^7*e^5*z^3 + 30720*a^9*b*c^6*d^3*e^9*z^3 + 30720*a^6*b*c^9*d^9*e^3*z^3 - 7
680*a^9*b^3*c^4*d*e^11*z^3 - 7680*a^4*b^3*c^9*d^11*e*z^3 + 3840*a^8*b^5*c^3
*d*e^11*z^3 + 3840*a^3*b^5*c^8*d^11*e*z^3 - 960*a^7*b^7*c^2*d*e^11*z^3 - 96
0*a^2*b^7*c^7*d^11*e*z^3 + 370*a^4*b^11*c*d^3*e^9*z^3 + 370*a*b^11*c^4*d^9*
e^3*z^3 - 294*a^5*b^10*c*d^2*e^10*z^3 - 294*a*b^10*c^5*d^10*e^2*z^3 - 240*a
^3*b^12*c*d^4*e^8*z^3 - 240*a*b^12*c^3*d^8*e^4*z^3 + 60*a^2*b^13*c*d^5*e^7*
z^3 + 60*a*b^13*c^2*d^7*e^5*z^3 + 6144*a^10*b*c^5*d*e^11*z^3 + 6144*a^5*b*c
^10*d^11*e*z^3 + 120*a^6*b^9*c*d*e^11*z^3 + 120*a*b^9*c^6*d^11*e*z^3 + 10*a
*b^14*c*d^6*e^6*z^3 + 71680*a^6*b^4*c^6*d^6*e^6*z^3 - 66560*a^7*b^2*c^7*d^6
*e^6*z^3 + 51840*a^7*b^4*c^5*d^4*e^8*z^3 + 51840*a^5*b^4*c^7*d^8*e^4*z^3 -
42240*a^8*b^2*c^6*d^4*e^8*z^3 - 42240*a^6*b^2*c^8*d^8*e^4*z^3 - 32256*a^6*b
^5*c^5*d^5*e^7*z^3 - 32256*a^5*b^5*c^6*d^7*e^5*z^3 + 21120*a^5*b^7*c^4*d^5*
e^7*z^3 + 21120*a^4*b^7*c^5*d^7*e^5*z^3 - 17920*a^8*b^3*c^5*d^3*e^9*z^3 - 1
7920*a^5*b^3*c^8*d^9*e^3*z^3 - 17024*a^5*b^6*c^5*d^6*e^6*z^3 - 16800*a^6*b^
6*c^4*d^4*e^8*z^3 - 16800*a^4*b^6*c^6*d^8*e^4*z^3 + 15360*a^8*b^4*c^4*d^2*e
^10*z^3 - 15360*a^7*b^3*c^6*d^5*e^7*z^3 - 15360*a^6*b^3*c^7*d^7*e^5*z^3 + 1
5360*a^4*b^4*c^8*d^10*e^2*z^3 - 8640*a^7*b^6*c^3*d^2*e^10*z^3 - 8640*a^3*b^
6*c^7*d^10*e^2*z^3 + 8000*a^6*b^7*c^3*d^3*e^9*z^3 + 8000*a^3*b^7*c^6*d^9*e^
3*z^3 - 7680*a^9*b^2*c^5*d^2*e^10*z^3 - 7680*a^5*b^2*c^9*d^10*e^2*z^3 - 640
0*a^7*b^5*c^4*d^3*e^9*z^3 - 6400*a^4*b^5*c^7*d^9*e^3*z^3 - 4560*a^4*b^9*c^3
*d^5*e^7*z^3 - 4560*a^3*b^9*c^4*d^7*e^5*z^3 - 3920*a^4*b^8*c^4*d^6*e^6*z^3
- 2600*a^5*b^9*c^2*d^3*e^9*z^3 - 2600*a^2*b^9*c^5*d^9*e^3*z^3 + 2380*a^3*b^
10*c^3*d^6*e^6*z^3 + 2280*a^6*b^8*c^2*d^2*e^10*z^3 + 2280*a^2*b^8*c^6*d^10*
e^2*z^3 + 1215*a^4*b^10*c^2*d^4*e^8*z^3 + 1215*a^2*b^10*c^4*d^8*e^4*z^3 - 3
50*a^2*b^12*c^2*d^6*e^6*z^3 - 300*a^5*b^8*c^3*d^4*e^8*z^3 - 300*a^3*b^8*c^5
*d^8*e^4*z^3 + 180*a^3*b^11*c^2*d^5*e^7*z^3 + 180*a^2*b^11*c^3*d^7*e^5*z^3
- 6*b^15*c*d^7*e^5*z^3 - 6*b^11*c^5*d^11*e*z^3 - 6*a^5*b^11*d*e^11*z^3 - 6*
a*b^15*d^5*e^7*z^3 - 20*a^7*b^8*c*e^12*z^3 - 20*a*b^8*c^7*d^12*z^3 - 20*b^1
3*c^3*d^9*e^3*z^3 + 15*b^14*c^2*d^8*e^4*z^3 + 15*b^12*c^4*d^10*e^2*z^3 - 20
480*a^8*c^8*d^6*e^6*z^3 - 15360*a^9*c^7*d^4*e^8*z^3 - 15360*a^7*c^9*d^8*e^4
*z^3 - 6144*a^10*c^6*d^2*e^10*z^3 - 6144*a^6*c^10*d^10*e^2*z^3 - 20*a^3*b^1
3*d^3*e^9*z^3 + 15*a^4*b^12*d^2*e^10*z^3 + 15*a^2*b^14*d^4*e^8*z^3 + 1280*a
^10*b^2*c^4*e^12*z^3 - 640*a^9*b^4*c^3*e^12*z^3 + 160*a^8*b^6*c^2*e^12*z^3
+ 1280*a^4*b^2*c^10*d^12*z^3 - 640*a^3*b^4*c^9*d^12*z^3 + 160*a^2*b^6*c^8*d
^12*z^3 - 1024*a^11*c^5*e^12*z^3 - 1024*a^5*c^11*d^12*z^3 + b^16*d^6*e^6*z^
3 + b^10*c^6*d^12*z^3 + a^6*b^10*e^12*z^3 + 132*a*b*c^8*d^8*e^2*f*g*z + 196
0*a^2*b^3*c^5*d^4*e^6*f*g*z - 1560*a^3*b^2*c^5*d^3*e^7*f*g*z - 1500*a^2*b^2
*c^6*d^5*e^5*f*g*z + 960*a^3*b^3*c^4*d^2*e^8*f*g*z - 420*a^2*b^4*c^4*d^3*e^
7*f*g*z - 222*a^2*b^5*c^3*d^2*e^8*f*g*z - 40*a*b^8*c*d*e^9*f*g*z + 1830*a^4
*b^2*c^4*d*e^9*f*g*z + 1440*a*b^3*c^6*d^6*e^4*f*g*z - 1080*a^3*b^4*c^3*d*e^
9*f*g*z - 856*a*b^2*c^7*d^7*e^3*f*g*z - 840*a*b^4*c^5*d^5*e^5*f*g*z + 302*a
^2*b^6*c^2*d*e^9*f*g*z + 180*a^4*b*c^5*d^2*e^8*f*g*z - 120*a^3*b*c^6*d^4*e^
6*f*g*z + 84*a*b^6*c^3*d^3*e^7*f*g*z - 24*a^2*b*c^7*d^6*e^4*f*g*z + 18*a*b^
7*c^2*d^2*e^8*f*g*z - 2*a*b^5*c^4*d^4*e^6*f*g*z + 24*a*c^9*d^9*e*f*g*z + 37
2*b^3*c^7*d^8*e^2*f*g*z - 340*b^4*c^6*d^7*e^3*f*g*z + 114*b^5*c^5*d^6*e^4*f
*g*z + 12*b^6*c^4*d^5*e^5*f*g*z - 6*b^8*c^2*d^3*e^7*f*g*z - 2*b^7*c^3*d^4*e
^6*f*g*z + 528*a^3*c^7*d^5*e^5*f*g*z + 480*a^4*c^6*d^3*e^7*f*g*z + 224*a^2*
c^8*d^7*e^3*f*g*z - 60*a^4*b^3*c^3*e^10*f*g*z + 6*a^3*b^5*c^2*e^10*f*g*z +
36*a^5*b*c^4*d*e^9*g^2*z + 20*a*b^8*c*d^2*e^8*g^2*z + 960*a*b*c^8*d^7*e^3*f
^2*z + 900*a^4*b*c^5*d*e^9*f^2*z - 1185*a^4*b^2*c^4*d^2*e^8*g^2*z + 450*a^3
*b^4*c^3*d^2*e^8*g^2*z - 420*a^2*b^4*c^4*d^4*e^6*g^2*z + 300*a^3*b^2*c^5*d^
4*e^6*g^2*z + 210*a^2*b^2*c^6*d^6*e^4*g^2*z + 192*a^2*b^5*c^3*d^3*e^7*g^2*z
 - 142*a^2*b^6*c^2*d^2*e^8*g^2*z + 100*a^2*b^3*c^5*d^5*e^5*g^2*z + 60*a^3*b
```

```
^3*c^4*d^3*e^7*g^2*z - 1950*a^2*b^2*c^6*d^4*e^6*f^2*z - 900*a^3*b^2*c^5*d^2
*e^8*f^2*z + 300*a^2*b^4*c^4*d^2*e^8*f^2*z + 100*a^2*b^3*c^5*d^3*e^7*f^2*z
- 186*b^2*c^8*d^9*e*f*g*z - 1896*a^5*c^5*d*e^9*f*g*z + 180*a^5*b*c^4*e^10*f
*g*z - 12*a*b*c^8*d^9*e*g^2*z - 390*a*b^4*c^5*d^6*e^4*g^2*z + 298*a*b^5*c^4
*d^5*e^5*g^2*z + 180*a*b^3*c^6*d^7*e^3*g^2*z - 120*a^3*b*c^6*d^5*e^5*g^2*z
- 96*a^2*b*c^7*d^7*e^3*g^2*z + 60*a^4*b^3*c^3*d*e^9*g^2*z - 54*a*b^6*c^3*d^
4*e^6*g^2*z - 18*a*b^7*c^2*d^3*e^7*g^2*z - 6*a^3*b^5*c^2*d*e^9*g^2*z - 4*a*
b^2*c^7*d^8*e^2*g^2*z + 2400*a^3*b*c^6*d^3*e^7*f^2*z + 2280*a^2*b*c^7*d^5*e
^5*f^2*z - 1300*a*b^2*c^7*d^6*e^4*f^2*z + 540*a*b^3*c^6*d^5*e^5*f^2*z - 300
*a^3*b^3*c^4*d*e^9*f^2*z + 150*a*b^4*c^5*d^4*e^6*f^2*z - 80*a*b^5*c^4*d^3*e
^7*f^2*z + 30*a^2*b^5*c^3*d*e^9*f^2*z - 30*a*b^6*c^3*d^2*e^8*f^2*z + 180*b*
c^9*d^9*e*f^2*z + 20*a*b^8*c*e^10*f^2*z - 100*b^4*c^6*d^8*e^2*g^2*z + 96*b^
5*c^5*d^7*e^3*g^2*z - 33*b^6*c^4*d^6*e^4*g^2*z - 8*b^7*c^3*d^5*e^5*g^2*z +
6*b^8*c^2*d^4*e^6*g^2*z + 912*a^5*c^5*d^2*e^8*g^2*z - 345*b^2*c^8*d^8*e^2*f
^2*z + 300*b^3*c^7*d^7*e^3*f^2*z - 120*a^4*c^6*d^4*e^6*g^2*z - 100*b^4*c^6*
d^6*e^4*f^2*z - 48*a^3*c^7*d^6*e^4*g^2*z - 15*b^6*c^4*d^4*e^6*f^2*z + 10*b^
7*c^3*d^3*e^7*f^2*z + 6*b^5*c^5*d^5*e^5*f^2*z - 4*a^2*c^8*d^8*e^2*g^2*z - 1
200*a^3*c^7*d^4*e^6*f^2*z - 900*a^4*c^6*d^2*e^8*f^2*z - 760*a^2*c^8*d^6*e^4
*f^2*z - 1185*a^4*b^2*c^4*e^10*f^2*z + 630*a^3*b^4*c^3*e^10*f^2*z - 160*a^2
*b^6*c^2*e^10*f^2*z + 2*b^10*d*e^9*f*g*z + 36*b*c^9*d^10*f*g*z + 48*b^3*c^7
*d^9*e*g^2*z - 240*a*c^9*d^8*e^2*f^2*z - b^10*d^2*e^8*g^2*z - 36*a^6*c^4*e^
10*g^2*z - 9*b^2*c^8*d^10*g^2*z + 768*a^5*c^5*e^10*f^2*z - 36*c^10*d^10*f^2
*z - b^10*e^10*f^2*z - 177*a*b^2*c^4*d^2*e^7*f*g^2 + 285*a*b^2*c^4*d*e^8*f^
2*g + 252*a^2*b*c^4*d*e^8*f*g^2 - 120*a*b^3*c^3*d*e^8*f*g^2 + 108*a*b*c^5*d
^3*e^6*f*g^2 + 36*a*b*c^5*d^2*e^7*f^2*g - 132*a*b*c^5*d*e^8*f^3 - 69*b^2*c^
5*d^4*e^5*f*g^2 + 57*b^2*c^5*d^3*e^6*f^2*g - 45*b^3*c^4*d^2*e^7*f^2*g + 30*
b^4*c^3*d^2*e^7*f*g^2 + 9*b^3*c^4*d^3*e^6*f*g^2 + 156*a^2*c^5*d^2*e^7*f*g^2
 - 72*a^2*b*c^4*d^2*e^7*g^3 + 60*a*b^3*c^3*d^2*e^7*g^3 - 13*a*b^2*c^4*d^3*e
^6*g^3 + 36*b*c^6*d^5*e^4*f*g^2 + 36*b*c^6*d^4*e^5*f^2*g - 30*b^4*c^3*d*e^8
*f^2*g + 12*b^5*c^2*d*e^8*f*g^2 - 408*a^2*c^5*d*e^8*f^2*g - 156*a*c^6*d^3*e
^6*f^2*g + 24*a*c^6*d^4*e^5*f*g^2 - 180*a^2*b*c^4*e^9*f^2*g + 60*a*b^3*c^3*
e^9*f^2*g - 12*a*b*c^5*d^4*e^5*g^3 - 36*c^7*d^5*e^4*f^2*g - 6*b^5*c^2*e^9*f
^2*g + 36*a^3*c^4*e^9*f*g^2 - 72*b*c^6*d^3*e^6*f^3 - 36*a^3*c^4*d*e^8*g^3 +
 15*b^3*c^4*d*e^8*f^3 + 132*a*c^6*d^2*e^7*f^3 - 95*a*b^2*c^4*e^9*f^3 + 21*b
^3*c^4*d^4*e^5*g^3 - 10*b^4*c^3*d^3*e^6*g^3 - 9*b^2*c^5*d^5*e^4*g^3 - 6*b^5
*c^2*d^2*e^7*g^3 + 21*b^2*c^5*d^2*e^7*f^3 - 4*a^2*c^5*d^3*e^6*g^3 + 36*c^7*
d^4*e^5*f^3 + 10*b^4*c^3*e^9*f^3 + 256*a^2*c^5*e^9*f^3, z, k), k, 1, 3)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2377 $\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx$

Optimal. Leaf size=1043

$$\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log(d+ex)e^4}{\left(cd^2-bed+ae^2\right)^4}-\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log\left(cx^2+bx+\right.}{2\left(cd^2-bed+ae^2\right)^4}$$

```
[Out] e*(6*c^4*d^4*f-b^3*e^3*(-a*e*g-2*b*d*g+3*b*e*f)-b*c*e^2*(7*a^2*e^2*g-a*b*e*
(-13*d*g+21*e*f)-3*b^2*d*(-d*g+e*f))+c^3*d^2*(4*a*e*(-d*g+6*e*f)-3*b*d*(d*g
+4*e*f))-c^2*e*(2*a^2*e^2*(-22*d*g+15*e*f)+6*a*b*d*e*(d*g+4*e*f)-b^2*d^2*(7
*d*g+3*e*f)))/(-4*a*c+b^2)^2/(a*e^2-b*d*e+c*d^2)^3/(e*x+d)+1/2*(-b*c*d*f+b^
2*e*f-2*a*c*e*f+2*a*c*d*g-a*b*e*g-c*(2*c*d*f+2*a*e*g-b*(d*g+e*f))*x)/(-4*a*
c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)/(c*x^2+b*x+a)^2+1/2*(-4*a*c*e*(-b*e+2*c*
d)*(2*c*d*f+2*a*e*g-b*(d*g+e*f))+(2*a*c*e-b^2*e+b*c*d)*(6*c^2*d^2*f-b*e*(-a
*e*g-2*b*d*g+3*b*e*f)+c*(2*a*e*(-2*d*g+5*e*f)-b*d*(3*d*g+2*e*f)))+c*(12*c^3
*d^3*f+b^2*e^2*(-a*e*g-2*b*d*g+3*b*e*f)+2*c^2*d*(2*a*e*(-2*d*g+9*e*f)-3*b*d
*(d*g+3*e*f))+c*e*(11*b^2*d^2*g+16*a^2*e^2*g-2*a*b*e*(5*d*g+9*e*f)))*x)/(-4
*a*c+b^2)^2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)/(c*x^2+b*x+a)-(12*c^6*d^6*f+b^5*e
^5*(-a*e*g-2*b*d*g+3*b*e*f)+b^3*c*e^4*(10*a^2*e^2*g-b^2*d*(-5*d*g+6*e*f)-10
*a*b*e*(-2*d*g+3*e*f))-10*a*b*c^2*e^4*(3*a^2*e^2*g-b^2*d*(-5*d*g+6*e*f)-3*a
*b*e*(-2*d*g+3*e*f))-10*c^3*e^2*(2*b^3*d^4*g-8*a*b^2*d^3*e*g+6*a^3*e^3*(-2*
d*g+e*f)+3*a^2*b*d*e^2*(-d*g+6*e*f))+2*c^5*d^4*(2*a*e*(-2*d*g+15*e*f)-3*b*d
*(d*g+6*e*f))+10*c^4*d^2*e*(2*a^2*e^2*(-4*d*g+9*e*f)-a*b*d*e*(d*g+12*e*f)+b
^2*d^2*(2*d*g+3*e*f)))*arctanh((2*c*x+b)/(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(
5/2)/(a*e^2-b*d*e+c*d^2)^4+e^4*(c*d*(-5*d*g+6*e*f)-e*(-a*e*g-2*b*d*g+3*b*e*
f))*ln(e*x+d)/(a*e^2-b*d*e+c*d^2)^4-1/2*e^4*(c*d*(-5*d*g+6*e*f)-e*(-a*e*g-2
*b*d*g+3*b*e*f))*ln(c*x^2+b*x+a)/(a*e^2-b*d*e+c*d^2)^4
```

Rubi [A] time = 6.29, antiderivative size = 1043, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.240, Rules used = {822, 800, 634, 618, 206, 628}

$$\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log(d+ex)e^4}{\left(cd^2-bed+ae^2\right)^4}-\frac{(cd(6ef-5dg)-e(3bef-2bdg-aeg))\log\left(cx^2+bx+\right.}{2\left(cd^2-bed+ae^2\right)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x]
```

```
[Out] (e*(6*c^4*d^4*f - b^3*e^3*(3*b*e*f - 2*b*d*g - a*e*g) - b*c*e^2*(7*a^2*e^2*
g - a*b*e*(21*e*f - 13*d*g) - 3*b^2*d*(e*f - d*g)) + c^3*d^2*(4*a*e*(6*e*f
- d*g) - 3*b*d*(4*e*f + d*g)) - c^2*e*(2*a^2*e^2*(15*e*f - 22*d*g) + 6*a*b*
d*e*(4*e*f + d*g) - b^2*d^2*(3*e*f + 7*d*g))))/((b^2 - 4*a*c)^2*(c*d^2 - b*
d*e + a*e^2)^3*(d + e*x)) - (b*c*d*f - b^2*e*f + 2*a*c*e*f - 2*a*c*d*g + a*
b*e*g + c*(2*c*d*f + 2*a*e*g - b*(e*f + d*g))*x)/(2*(b^2 - 4*a*c)*(c*d^2 -
b*d*e + a*e^2)*(d + e*x)*(a + b*x + c*x^2)^2) - (4*a*c*e*(2*c*d - b*e)*(2*c
*d*f + 2*a*e*g - b*(e*f + d*g)) - (b*c*d - b^2*e + 2*a*c*e)*(6*c^2*d^2*f -
b*e*(3*b*e*f - 2*b*d*g - a*e*g) + c*(2*a*e*(5*e*f - 2*d*g) - b*d*(2*e*f + 3
*d*g))) - c*(12*c^3*d^3*f + b^2*e^2*(3*b*e*f - 2*b*d*g - a*e*g) + 2*c^2*d*(
2*a*e*(9*e*f - 2*d*g) - 3*b*d*(3*e*f + d*g)) + c*e*(11*b^2*d^2*g + 16*a^2*e
^2*g - 2*a*b*e*(9*e*f + 5*d*g)))*x)/(2*(b^2 - 4*a*c)^2*(c*d^2 - b*d*e + a*e
^2)^2*(d + e*x)*(a + b*x + c*x^2)) - ((12*c^6*d^6*f + b^5*e^5*(3*b*e*f - 2*
b*d*g - a*e*g) + b^3*c*e^4*(10*a^2*e^2*g - b^2*d*(6*e*f - 5*d*g) - 10*a*b*e
*(3*e*f - 2*d*g)) - 10*a*b*c^2*e^4*(3*a^2*e^2*g - b^2*d*(6*e*f - 5*d*g) - 3
*a*b*e*(3*e*f - 2*d*g)) - 10*c^3*e^2*(2*b^3*d^4*g - 8*a*b^2*d^3*e*g + 6*a^3
*e^3*(e*f - 2*d*g) + 3*a^2*b*d*e^2*(6*e*f - d*g)) + 2*c^5*d^4*(2*a*e*(15*e*
f - 2*d*g) - 3*b*d*(6*e*f + d*g)) + 10*c^4*d^2*e*(2*a^2*e^2*(9*e*f - 4*d*g)
 - a*b*d*e*(12*e*f + d*g) + b^2*d^2*(3*e*f + 2*d*g)))*ArcTanh[(b + 2*c*x)/S
qrt[b^2 - 4*a*c]])/((b^2 - 4*a*c)^(5/2)*(c*d^2 - b*d*e + a*e^2)^4) + (e^4*(
c*d*(6*e*f - 5*d*g) - e*(3*b*e*f - 2*b*d*g - a*e*g))*Log[d + e*x])/(c*d^2 -
 b*d*e + a*e^2)^4 - (e^4*(c*d*(6*e*f - 5*d*g) - e*(3*b*e*f - 2*b*d*g - a*e*
g))*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)^4)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 628

```
Int[((d_) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> S
imp[(d*Log[RemoveContent[a + b*x + c*x^2, x]])/b, x] /; FreeQ[{a, b, c, d,
e}, x] && EqQ[2*c*d - b*e, 0]
```

Rule 634

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> D
ist[(2*c*d - b*e)/(2*c), Int[1/(a + b*x + c*x^2), x], x] + Dist[e/(2*c), In
t[(b + 2*c*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ
[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] &&  !NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{f+gx}{(d+ex)^2\left(a+bx+cx^2\right)^3}\,dx = -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - \int$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - 4a$$

$$= -\frac{bcdf-b^2ef+2acef-2acdg+abeg+c(2cdf+2aeg-b(ef+dg))x}{2\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^2} - 4a$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b\right.\right.}{}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b\right.\right.}{}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b\right.\right.}{}$$

$$= \frac{e\left(6c^4d^4f-b^3e^3(3bef-2bdg-aeg)-bce^2\left(7a^2e^2g-abe(21ef-13dg)-3b\right.\right.}{}$$

Mathematica [A] time = 6.75, size = 1409, normalized size = 1.35

$$-\frac{(ef-dg)e^4}{\left(cd^2-bed+ae^2\right)^3(d+ex)}+\frac{\left(3e^6fb^6-2de^5gb^6-6cde^5fb^5-ae^6gb^5+5cd^2e^4gb^5-30ace^6fb^4+20acde^5gb^4\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x]
```

```
[Out] -((e^4*(e*f - d*g))/((c*d^2 - b*d*e + a*e^2)^3*(d + e*x))) + (b*c^2*d^2*f -
 2*b^2*c*d*e*f + 4*a*c^2*d*e*f + b^3*e^2*f - 3*a*b*c*e^2*f - 2*a*c^2*d^2*g
+ 2*a*b*c*d*e*g - a*b^2*e^2*g + 2*a^2*c*e^2*g + 2*c^3*d^2*f*x - 2*b*c^2*d*e
*f*x + b^2*c*e^2*f*x - 2*a*c^2*e^2*f*x - b*c^2*d^2*g*x + 4*a*c^2*d*e*g*x -
a*b*c*e^2*g*x)/(2*(-b^2 + 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2
)^2) + (6*b*c^4*d^4*f - 12*b^2*c^3*d^3*e*f + 3*b^3*c^2*d^2*e^2*f + 24*a*b*c
^3*d^2*e^2*f + 7*b^4*c*d*e^3*f - 56*a*b^2*c^2*d*e^3*f + 64*a^2*c^3*d*e^3*f
- 4*b^5*e^4*f + 29*a*b^3*c*e^4*f - 46*a^2*b*c^2*e^4*f - 3*b^2*c^3*d^4*g + 7
*b^3*c^2*d^3*e*g - 4*a*b*c^3*d^3*e*g - 6*b^4*c*d^2*e^2*g + 18*a*b^2*c^2*d^2
*e^2*g - 48*a^2*c^3*d^2*e^2*g + 2*b^5*d*e^3*g - 13*a*b^3*c*d*e^3*g + 44*a^2
*b*c^2*d*e^3*g + 2*a*b^4*e^4*g - 15*a^2*b^2*c*e^4*g + 16*a^3*c^2*e^4*g + 12
*c^5*d^4*f*x - 24*b*c^4*d^3*e*f*x + 6*b^2*c^3*d^2*e^2*f*x + 48*a*c^4*d^2*e^
2*f*x + 6*b^3*c^2*d*e^3*f*x - 48*a*b*c^3*d*e^3*f*x - 4*b^4*c*e^4*f*x + 26*a
*b^2*c^2*e^4*f*x - 28*a^2*c^3*e^4*f*x - 6*b*c^4*d^4*g*x + 14*b^2*c^3*d^3*e*
g*x - 8*a*c^4*d^3*e*g*x - 6*b^3*c^2*d^2*e^2*g*x - 12*a*b*c^3*d^2*e^2*g*x +
2*b^4*c*d*e^3*g*x - 10*a*b^2*c^2*d*e^3*g*x + 56*a^2*c^3*d*e^3*g*x + 2*a*b^3
*c*e^4*g*x - 14*a^2*b*c^2*e^4*g*x)/(2*(-b^2 + 4*a*c)^2*(c*d^2 - b*d*e + a*e
^2)^3*(a + b*x + c*x^2)) + ((12*c^6*d^6*f - 36*b*c^5*d^5*e*f + 30*b^2*c^4*d
^4*e^2*f + 60*a*c^5*d^4*e^2*f - 120*a*b*c^4*d^3*e^3*f + 180*a^2*c^4*d^2*e^4
*f - 6*b^5*c*d*e^5*f + 60*a*b^3*c^2*d*e^5*f - 180*a^2*b*c^3*d*e^5*f + 3*b^6
*e^6*f - 30*a*b^4*c*e^6*f + 90*a^2*b^2*c^2*e^6*f - 60*a^3*c^3*e^6*f - 6*b*c
^5*d^6*g + 20*b^2*c^4*d^5*e*g - 8*a*c^5*d^5*e*g - 20*b^3*c^3*d^4*e^2*g - 10
*a*b*c^4*d^4*e^2*g + 80*a*b^2*c^3*d^3*e^3*g - 80*a^2*c^4*d^3*e^3*g + 5*b^5*
c*d^2*e^4*g - 50*a*b^3*c^2*d^2*e^4*g + 30*a^2*b*c^3*d^2*e^4*g - 2*b^6*d*e^5
*g + 20*a*b^4*c*d*e^5*g - 60*a^2*b^2*c^2*d*e^5*g + 120*a^3*c^3*d*e^5*g - a*
b^5*e^6*g + 10*a^2*b^3*c*e^6*g - 30*a^3*b*c^2*e^6*g)*ArcTan[(b + 2*c*x)/Sqr
t[-b^2 + 4*a*c]])/((b^2 - 4*a*c)^2*Sqrt[-b^2 + 4*a*c]*(-(c*d^2) + b*d*e - a
*e^2)^4) + ((6*c*d*e^5*f - 3*b*e^6*f - 5*c*d^2*e^4*g + 2*b*d*e^5*g + a*e^6*
g)*Log[d + e*x])/(c*d^2 - b*d*e + a*e^2)^4 + ((-6*c*d*e^5*f + 3*b*e^6*f + 5
*c*d^2*e^4*g - 2*b*d*e^5*g - a*e^6*g)*Log[a + b*x + c*x^2])/(2*(c*d^2 - b*d
*e + a*e^2)^4)
```

fricas **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] Timed out
```

giac **[B]** time = 2.14, size = 3417, normalized size = 3.28

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] (12*c^6*d^6*f*e^2 - 6*b*c^5*d^6*g*e^2 - 36*b*c^5*d^5*f*e^3 + 20*b^2*c^4*d^5
*g*e^3 - 8*a*c^5*d^5*g*e^3 + 30*b^2*c^4*d^4*f*e^4 + 60*a*c^5*d^4*f*e^4 - 20
*b^3*c^3*d^4*g*e^4 - 10*a*b*c^4*d^4*g*e^4 - 120*a*b*c^4*d^3*f*e^5 + 80*a*b^
2*c^3*d^3*g*e^5 - 80*a^2*c^4*d^3*g*e^5 + 180*a^2*c^4*d^2*f*e^6 + 5*b^5*c*d^
2*g*e^6 - 50*a*b^3*c^2*d^2*g*e^6 + 30*a^2*b*c^3*d^2*g*e^6 - 6*b^5*c*d*f*e^7
 + 60*a*b^3*c^2*d*f*e^7 - 180*a^2*b*c^3*d*f*e^7 - 2*b^6*d*g*e^7 + 20*a*b^4*
c*d*g*e^7 - 60*a^2*b^2*c^2*d*g*e^7 + 120*a^3*c^3*d*g*e^7 + 3*b^6*f*e^8 - 30
*a*b^4*c*f*e^8 + 90*a^2*b^2*c^2*f*e^8 - 60*a^3*c^3*f*e^8 - a*b^5*g*e^8 + 10
*a^2*b^3*c*g*e^8 - 30*a^3*b*c^2*g*e^8)*arctan((2*c*d - 2*c*d^2/(x*e + d) -
b*e + 2*b*d*e/(x*e + d) - 2*a*e^2/(x*e + d))*e^(-1)/sqrt(-b^2 + 4*a*c))*e^(
-2)/((b^4*c^4*d^8 - 8*a*b^2*c^5*d^8 + 16*a^2*c^6*d^8 - 4*b^5*c^3*d^7*e + 32
*a*b^3*c^4*d^7*e - 64*a^2*b*c^5*d^7*e + 6*b^6*c^2*d^6*e^2 - 44*a*b^4*c^3*d^
6*e^2 + 64*a^2*b^2*c^4*d^6*e^2 + 64*a^3*c^5*d^6*e^2 - 4*b^7*c*d^5*e^3 + 20*
a*b^5*c^2*d^5*e^3 + 32*a^2*b^3*c^3*d^5*e^3 - 192*a^3*b*c^4*d^5*e^3 + b^8*d^
4*e^4 + 4*a*b^6*c*d^4*e^4 - 74*a^2*b^4*c^2*d^4*e^4 + 144*a^3*b^2*c^3*d^4*e^
4 + 96*a^4*c^4*d^4*e^4 - 4*a*b^7*d^3*e^5 + 20*a^2*b^5*c*d^3*e^5 + 32*a^3*b^
3*c^2*d^3*e^5 - 192*a^4*b*c^3*d^3*e^5 + 6*a^2*b^6*d^2*e^6 - 44*a^3*b^4*c*d^
2*e^6 + 64*a^4*b^2*c^2*d^2*e^6 + 64*a^5*c^3*d^2*e^6 - 4*a^3*b^5*d*e^7 + 32*
a^4*b^3*c*d*e^7 - 64*a^5*b*c^2*d*e^7 + a^4*b^4*e^8 - 8*a^5*b^2*c*e^8 + 16*a
^6*c^2*e^8)*sqrt(-b^2 + 4*a*c)) + 1/2*(5*c*d^2*g*e^4 - 6*c*d*f*e^5 - 2*b*d*
g*e^5 + 3*b*f*e^6 - a*g*e^6)*log(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 +
b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)/(c^4*d^8 - 4*b*c^3*d
^7*e + 6*b^2*c^2*d^6*e^2 + 4*a*c^3*d^6*e^2 - 4*b^3*c*d^5*e^3 - 12*a*b*c^2*d
^5*e^3 + b^4*d^4*e^4 + 12*a*b^2*c*d^4*e^4 + 6*a^2*c^2*d^4*e^4 - 4*a*b^3*d^3
*e^5 - 12*a^2*b*c*d^3*e^5 + 6*a^2*b^2*d^2*e^6 + 4*a^3*c*d^2*e^6 - 4*a^3*b*d
*e^7 + a^4*e^8) + (d*g*e^10/(x*e + d) - f*e^11/(x*e + d))/(c^3*d^6*e^6 - 3*
b*c^2*d^5*e^7 + 3*b^2*c*d^4*e^8 + 3*a*c^2*d^4*e^8 - b^3*d^3*e^9 - 6*a*b*c*d
^3*e^9 + 3*a*b^2*d^2*e^10 + 3*a^2*c*d^2*e^10 - 3*a^2*b*d*e^11 + a^3*e^12) +
 1/2*(12*c^7*d^5*f*e - 6*b*c^6*d^5*g*e - 30*b*c^6*d^4*f*e^2 + 17*b^2*c^5*d^
4*g*e^2 - 8*a*c^6*d^4*g*e^2 + 16*b^2*c^5*d^3*f*e^3 + 56*a*c^6*d^3*f*e^3 - 1
2*b^3*c^4*d^3*g*e^3 - 12*a*b*c^5*d^3*g*e^3 + 6*b^3*c^4*d^2*f*e^4 - 84*a*b*c
^5*d^2*f*e^4 + 8*b^4*c^3*d^2*g*e^4 - 34*a*b^2*c^4*d^2*g*e^4 + 128*a^2*c^5*d
^2*g*e^4 - 14*b^4*c^3*d*f*e^5 + 100*a*b^2*c^4*d*f*e^5 - 116*a^2*c^5*d*f*e^5
 - 2*b^5*c^2*d*g*e^5 + 18*a*b^3*c^3*d*g*e^5 - 70*a^2*b*c^4*d*g*e^5 + 5*b^5*
c^2*f*e^6 - 36*a*b^3*c^3*f*e^6 + 58*a^2*b*c^4*f*e^6 - 3*a*b^4*c^2*g*e^6 + 2
1*a^2*b^2*c^3*g*e^6 - 24*a^3*c^4*g*e^6 - 2*(18*c^7*d^6*f*e^2 - 9*b*c^6*d^6*
g*e^2 - 54*b*c^6*d^5*f*e^3 + 30*b^2*c^5*d^5*g*e^3 - 12*a*c^6*d^5*g*e^3 + 47
*b^2*c^5*d^4*f*e^4 + 82*a*c^6*d^4*f*e^4 - 31*b^3*c^4*d^4*g*e^4 - 11*a*b*c^5
*d^4*g*e^4 - 4*b^3*c^4*d^3*f*e^5 - 164*a*b*c^5*d^3*f*e^5 + 24*b^4*c^3*d^3*g
*e^5 - 64*a*b^2*c^4*d^3*g*e^5 + 232*a^2*c^5*d^3*g*e^5 - 29*b^4*c^3*d^2*f*e^
6 + 244*a*b^2*c^4*d^2*f*e^6 - 242*a^2*c^5*d^2*f*e^6 - 11*b^5*c^2*d^2*g*e^6
+ 67*a*b^3*c^3*d^2*g*e^6 - 227*a^2*b*c^4*d^2*g*e^6 + 22*b^5*c^2*d*f*e^7 - 1
62*a*b^3*c^3*d*f*e^7 + 242*a^2*b*c^4*d*f*e^7 + 2*b^6*c*d*g*e^7 - 24*a*b^4*c
^2*d*g*e^7 + 110*a^2*b^2*c^3*d*g*e^7 - 76*a^3*c^4*d*g*e^7 - 5*b^6*c*f*e^8 +
 38*a*b^4*c^2*f*e^8 - 71*a^2*b^2*c^3*f*e^8 + 14*a^3*c^4*f*e^8 + 3*a*b^5*c*g
*e^8 - 22*a^2*b^3*c^2*g*e^8 + 31*a^3*b*c^3*g*e^8)*e^(-1)/(x*e + d) + (36*c^
7*d^7*f*e^3 - 18*b*c^6*d^7*g*e^3 - 126*b*c^6*d^6*f*e^4 + 69*b^2*c^5*d^6*g*e
^4 - 24*a*c^6*d^6*g*e^4 + 144*b^2*c^5*d^5*f*e^5 + 180*a*c^6*d^5*f*e^5 - 90*
b^3*c^4*d^5*g*e^5 - 18*a*b*c^5*d^5*g*e^5 - 45*b^3*c^4*d^4*f*e^6 - 450*a*b*c
^5*d^4*f*e^6 + 80*b^4*c^3*d^4*g*e^6 - 145*a*b^2*c^4*d^4*g*e^6 + 560*a^2*c^5
*d^4*g*e^6 - 70*b^4*c^3*d^3*f*e^7 + 740*a*b^2*c^4*d^3*f*e^7 - 580*a^2*c^5*d
^3*f*e^7 - 50*b^5*c^2*d^3*g*e^7 + 250*a*b^3*c^3*d^3*g*e^7 - 830*a^2*b*c^4*d
^3*g*e^7 + 87*b^5*c^2*d^2*f*e^8 - 660*a*b^3*c^3*d^2*f*e^8 + 870*a^2*b*c^4*d
^2*f*e^8 + 16*b^6*c*d^2*g*e^8 - 129*a*b^4*c^2*d^2*g*e^8 + 471*a^2*b^2*c^3*d
^2*g*e^8 - 88*a^3*c^4*d^2*g*e^8 - 36*b^6*c*d*f*e^9 + 258*a*b^4*c^2*d*f*e^9
- 372*a^2*b^2*c^3*d*f*e^9 - 84*a^3*c^4*d*f*e^9 - 2*b^7*d*g*e^9 + 32*a*b^5*c
*d*g*e^9 - 160*a^2*b^3*c^2*d*g*e^9 + 130*a^3*b*c^3*d*g*e^9 + 5*b^7*f*e^10 -
 34*a*b^5*c*f*e^10 + 41*a^2*b^3*c^2*f*e^10 + 42*a^3*b*c^3*f*e^10 - 3*a*b^6*
g*e^10 + 19*a^2*b^4*c*g*e^10 - 11*a^3*b^2*c^2*g*e^10 - 32*a^4*c^3*g*e^10)*e
^(-2)/(x*e + d)^2 - 2*(6*c^7*d^8*f*e^4 - 3*b*c^6*d^8*g*e^4 - 24*b*c^6*d^7*f
*e^5 + 13*b^2*c^5*d^7*g*e^5 - 4*a*c^6*d^7*g*e^5 + 33*b^2*c^5*d^6*f*e^6 + 36
*a*c^6*d^6*f*e^6 - 20*b^3*c^4*d^6*g*e^6 - 4*a*b*c^5*d^6*g*e^6 - 15*b^3*c^4*
d^5*f*e^7 - 108*a*b*c^5*d^5*f*e^7 + 20*b^4*c^3*d^5*g*e^7 - 25*a*b^2*c^4*d^5
*g*e^7 + 116*a^2*c^5*d^5*g*e^7 - 15*b^4*c^3*d^4*f*e^8 + 195*a*b^2*c^4*d^4*f
*e^8 - 120*a^2*c^5*d^4*f*e^8 - 15*b^5*c^2*d^4*g*e^8 + 65*a*b^3*c^3*d^4*g*e^
8 - 230*a^2*b*c^4*d^4*g*e^8 + 27*b^5*c^2*d^3*f*e^9 - 210*a*b^3*c^3*d^3*f*e^
9 + 240*a^2*b*c^4*d^3*f*e^9 + 6*b^6*c*d^3*g*e^9 - 39*a*b^4*c^2*d^3*g*e^9 +
131*a^2*b^2*c^3*d^3*g*e^9 + 52*a^3*c^4*d^3*g*e^9 - 15*b^6*c*d^2*f*e^10 + 99
*a*b^4*c^2*d^2*f*e^10 - 81*a^2*b^2*c^3*d^2*f*e^10 - 132*a^3*c^4*d^2*f*e^10
- b^7*d^2*g*e^10 + 11*a*b^5*c*d^2*g*e^10 - 46*a^2*b^3*c^2*d^2*g*e^10 - 12*a
^3*b*c^3*d^2*g*e^10 + 3*b^7*d*f*e^11 - 12*a*b^5*c*d*f*e^11 - 39*a^2*b^3*c^2
*d*f*e^11 + 132*a^3*b*c^3*d*f*e^11 - a*b^6*d*g*e^11 + a^2*b^4*c*d*g*e^11 +
41*a^3*b^2*c^2*d*g*e^11 - 68*a^4*c^3*d*g*e^11 - 3*a*b^6*f*e^12 + 24*a^2*b^4
*c*f*e^12 - 51*a^3*b^2*c^2*f*e^12 + 18*a^4*c^3*f*e^12 + 2*a^2*b^5*g*e^12 -
15*a^3*b^3*c*g*e^12 + 25*a^4*b*c^2*g*e^12)*e^(-3)/(x*e + d)^3)/((c*d^2 - b*
d*e + a*e^2)^4*(b^2 - 4*a*c)^2*(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b
*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^2)
```

maple [**B**] time = 0.11, size = 13679, normalized size = 13.12

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)^2/(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 positive or negative?
```

mupad [B] time = 13.00, size = 40079, normalized size = 38.43

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((f + g*x)/((d + e*x)^2*(a + b*x + c*x^2)^3),x)
```

```
[Out] symsum(log(root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^8*b*c^9*d^9*e^7*z^3
 + 172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^11*e^5*z^3 + 57344*
a^11*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3 - 10240*a^11*b^3*c^
4*d*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10*b^5*c^3*d*e^15*z^3
 + 5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^15*z^3 - 1280*a^2*b^
7*c^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a*b^12*c^5*d^12*e^4*
z^3 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^13*e^3*z^3 + 840*a^4
*b^13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552*a^7*b^10*c*d^2*e^1
4*z^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6*e^10*z^3 - 280*a*b
^14*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^15*c^2*d^9*e^7*z^3
+ 8192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^3 + 160*a^8*b^9*c*d
*e^15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e^8*z^3 - 483840*a^8
*b^2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 - 365568*a^6*b^5*c^7*
d^9*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a^7*b^2*c^9*d^10*e^6
*z^3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c^6*d^6*e^10*z^3 + 2
15040*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e^7*z^3 + 215040*a^6
*b^4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3 - 193536*a^5*b^5*c^
8*d^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 136192*a^6*b^2*c^10*d^1
2*e^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*b^4*c^5*d^4*e^12*z^
3 + 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5*d^8*e^8*z^3 + 1067
52*a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*z^3 + 80640*a^7*b^7
*c^4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 77280*a^6*b^8*c^4*d^6*
e^10*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^3*c^6*d^5*e^11*z^3
+ 71680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6*e^10*z^3 + 69888*a
^5*b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3 - 35840*a^4*b^5*c^
9*d^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720*a^4*b^4*c^10*d^14*
e^2*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7*c^8*d^13*e^3*z^3 +
 21510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6*e^10*z^3 + 18536*a
^3*b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^3 - 18480*a^3*b^8*c
^7*d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 18432*a^5*b^2*c^11*d^14
*e^2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^6*c^9*d^14*e^2*z^3
- 14336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d^13*e^3*z^3 - 13440
*a^8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z^3 + 13280*a^5*b^9*
c^4*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*a^4*b^11*c^3*d^7*e^
9*z^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c^2*d^4*e^12*z^3 + 7
868*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^13*z^3 - 7840*a^2*b^
9*c^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 5600*a^3*b^9*c^6*d^11*
e^5*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c^8*d^14*e^2*z^3 - 3
528*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e^5*z^3 + 1520*a^3*b
^13*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 700*a^4*b^12*c^2*d^6*
e^10*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*c^2*d^8*e^8*z^3 + 4
80*a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b^11*c^7*d^15*e*z^3
- 8*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*b^8*c*e^16*z^3 - 20
*a*b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15*c^3*d^11*e^5*z^3 -
```

```
 56*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 28*b^12*c^6*d^14*e^2
*z^3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^10*z^3 - 57344*a^8*
c^10*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*a^7*c^11*d^12*e^4*z
^3 - 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2*z^3 + 70*a^4*b^14*
d^4*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^5*e^11*z^3 + 28*a^6
*b^12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^12*b^2*c^4*e^16*z^3
- 640*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3 + 1280*a^4*b^2*c^12
*d^16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10*d^16*z^3 - 1024*a^
13*c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*z^3 + b^10*c^8*d^16
*z^3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z + 69900*a^4*b^2*c^6*d
^3*e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*a^3*b^4*c^5*d^3*e^9
*f*g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^6*c^4*d^3*e^9*f*g*z
 + 10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^6*e^6*f*g*z - 8460*
a^2*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*g*z - 5040*a^2*b^4*
c^6*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 1260*a^2*b^5*c^5*d^4*e
^8*f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d^2*e^10*f*g*z - 306
36*a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f*g*z - 9720*a^3*b^6
*c^3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*a^3*b*c^8*d^6*e^6*f
*g*z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d*e^11*f*g*z - 2100*
a^4*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z - 1320*a*b^8*c^3*d^3
*e^9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c^2*d^2*e^10*f*g*z +
 924*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g*z - 150*a*b^7*c^4*
d^4*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9*e^3*f*g*z + 570*b^
3*c^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^6*c^6*d^7*e^5*f*g*z
 + 60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z - 42*b^7*c^5*d^6*e^
6*f*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e^9*f*g*z + 3360*a^4
*c^8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^2*c^10*d^9*e^3*f*g*
z + 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*f*g*z + 960*a^3*b^7
*c^2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^10*c*d^2*e^10*g^2*z
+ 80*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2*z + 1800*a*b*c^10*
d^9*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b^2*c^6*d^4*e^8*g^2*
z + 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*d^2*e^10*g^2*z + 15
700*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^9*g^2*z - 11640*a^4
*b^4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z + 4180*a^3*b^6*c^3
*d^2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*a^3*b^3*c^6*d^5*e^7
*g^2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c^5*d^5*e^7*g^2*z +
1185*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^5*g^2*z - 840*a^2*b
^8*c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z - 50760*a^4*b^2*c^6*d
^2*e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600*a^3*b^2*c^7*d^4*e^
8*f^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6*c^4*d^2*e^10*f^2*z
 + 3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5*e^7*f^2*z - 1260*a
^2*b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 54*b^11*c*d^2*e^10*f
*g*z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*f*g*z - 120*a^2*b^9
*c*e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c^6*d^3*e^9*g^2*z -
5340*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*g^2*z + 1680*a^4*b*
c^7*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*a*b^4*c^7*d^8*e^4*g
^2*z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e^11*g^2*z + 570*a*b
^8*c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280*a^2*b*c^9*d^9*e^3*
g^2*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e^5*g^2*z + 50*a*b^2
*c^9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 22860*a^3*b^5*c^4*d*
e^11*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b*c^7*d^3*e^9*f^2*z
+ 7920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11*f^2*z - 3060*a*b^2
*c^9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260*a*b^5*c^6*d^5*e^7*
f^2*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2*e^10*f^2*z + 180*a
*b^7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^11*c*d*e^11*f^2*z -
 4*a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b^5*c^7*d^9*e^3*g^2*
z - 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*z + 70*b^8*c^4*d^6*
e^6*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e^8*g^2*z - 20*b^9*c
^3*d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a^6*c^6*d^2*e^10*g^2
```

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*z - 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^2*z - 504*b^2*c^10*
d^10*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8*d^8*e^4*f^2*z + 14
4*b^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45*b^8*c^4*d^4*e^8*f^
2*z - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^2*z - 16*a^2*c^10*d
^10*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*c^8*d^4*e^8*f^2*z -
 5040*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*z - 1185*a^6*b^2*c^
4*e^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*c^2*e^12*g^2*z - 11
565*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z + 5760*a^3*b^6*c^3
*e^12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^11*f*g*z + 36*b*c^1
1*d^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g^2*z + 20*b^11*c*d^
3*e^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e^12*g^2*z - 4*b^12*
d^2*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^12*g^2*z - 900*a^6*c
^6*e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z - 9*b^12*e^12*f^2*
z + 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^8*f*g^2 - 2436*a*b^
2*c^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 1470*a*b^3*c^5*d^2*e^8
*f*g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^6*f*g^2 + 720*a*b*c
^7*d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3*c^5*d*e^9*f^2*g +
981*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g + 468*b^2*c^7*d^4*e
^6*f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e^5*f*g^2 + 396*b^4*
c^5*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c^6*d^4*e^6*f*g^2 -
7452*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2 + 1512*a^2*b^2*c^5*
e^10*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6*d^3*e^7*g^3 + 796*
a*b^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*a^2*b^3*c^4*d*e^9*g
^3 + 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g + 180*b*c^8*d^6*e^4*
f*g^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g - 1332*a*c^8*d^4*e
^6*f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*f*g^2 - 1404*a^3*b*
c^5*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3*e^10*f*g^2 + 760*a
^3*b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*c^3*d*e^9*g^3 - 194
4*a*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c^9*d^6*e^4*f^2*g +
90*b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c^8*d^4*e^6*f^3 + 16
2*b^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^8*d^3*e^7*f^3 - 270
0*a^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3*c^6*d^5*e^5*g^3 -
98*b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2*c^7*d^6*e^4*g^3 +
40*b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*b^3*c^6*d^2*e^8*f^3
 + 216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95*a^3*b^2*c^4*e^10*g
^3 + 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256*a^4*c^5*e^10*g^3 -
 135*b^5*c^4*e^10*f^3, z, k)*(root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^
8*b*c^9*d^9*e^7*z^3 + 172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^
11*e^5*z^3 + 57344*a^11*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3
- 10240*a^11*b^3*c^4*d*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10
*b^5*c^3*d*e^15*z^3 + 5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^1
5*z^3 - 1280*a^2*b^7*c^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a
*b^12*c^5*d^12*e^4*z^3 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^1
3*e^3*z^3 + 840*a^4*b^13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552
*a^7*b^10*c*d^2*e^14*z^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6
*e^10*z^3 - 280*a*b^14*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^
15*c^2*d^9*e^7*z^3 + 8192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^
3 + 160*a^8*b^9*c*d*e^15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e
^8*z^3 - 483840*a^8*b^2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 -
365568*a^6*b^5*c^7*d^9*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a
^7*b^2*c^9*d^10*e^6*z^3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c
^6*d^6*e^10*z^3 + 215040*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e
^7*z^3 + 215040*a^6*b^4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3
- 193536*a^5*b^5*c^8*d^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 1361
92*a^6*b^2*c^10*d^12*e^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*
b^4*c^5*d^4*e^12*z^3 + 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5
*d^8*e^8*z^3 + 106752*a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*
z^3 + 80640*a^7*b^7*c^4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 772
80*a^6*b^8*c^4*d^6*e^10*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^
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3*c^6*d^5*e^11*z^3 + 71680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6
*e^10*z^3 + 69888*a^5*b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3
 - 35840*a^4*b^5*c^9*d^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720
*a^4*b^4*c^10*d^14*e^2*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7
*c^8*d^13*e^3*z^3 + 21510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6
*e^10*z^3 + 18536*a^3*b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^
3 - 18480*a^3*b^8*c^7*d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 1843
2*a^5*b^2*c^11*d^14*e^2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^
6*c^9*d^14*e^2*z^3 - 14336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d
^13*e^3*z^3 - 13440*a^8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z
^3 + 13280*a^5*b^9*c^4*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*
a^4*b^11*c^3*d^7*e^9*z^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c
^2*d^4*e^12*z^3 + 7868*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^1
3*z^3 - 7840*a^2*b^9*c^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 560
0*a^3*b^9*c^6*d^11*e^5*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c
^8*d^14*e^2*z^3 - 3528*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e
^5*z^3 + 1520*a^3*b^13*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 70
0*a^4*b^12*c^2*d^6*e^10*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*
c^2*d^8*e^8*z^3 + 480*a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b
^11*c^7*d^15*e*z^3 - 8*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*
b^8*c*e^16*z^3 - 20*a*b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15
*c^3*d^11*e^5*z^3 - 56*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 2
8*b^12*c^6*d^14*e^2*z^3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^
10*z^3 - 57344*a^8*c^10*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*
a^7*c^11*d^12*e^4*z^3 - 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2
*z^3 + 70*a^4*b^14*d^4*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^
5*e^11*z^3 + 28*a^6*b^12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^1
2*b^2*c^4*e^16*z^3 - 640*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3
+ 1280*a^4*b^2*c^12*d^16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10
*d^16*z^3 - 1024*a^13*c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*
z^3 + b^10*c^8*d^16*z^3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z +
69900*a^4*b^2*c^6*d^3*e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*
a^3*b^4*c^5*d^3*e^9*f*g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^
6*c^4*d^3*e^9*f*g*z + 10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^
6*e^6*f*g*z - 8460*a^2*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*
g*z - 5040*a^2*b^4*c^6*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 126
0*a^2*b^5*c^5*d^4*e^8*f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d
^2*e^10*f*g*z - 30636*a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f
*g*z - 9720*a^3*b^6*c^3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*
a^3*b*c^8*d^6*e^6*f*g*z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d
*e^11*f*g*z - 2100*a^4*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z -
 1320*a*b^8*c^3*d^3*e^9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c
^2*d^2*e^10*f*g*z + 924*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g
*z - 150*a*b^7*c^4*d^4*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9
*e^3*f*g*z + 570*b^3*c^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^
6*c^6*d^7*e^5*f*g*z + 60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z
- 42*b^7*c^5*d^6*e^6*f*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e
^9*f*g*z + 3360*a^4*c^8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^
2*c^10*d^9*e^3*f*g*z + 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*
f*g*z + 960*a^3*b^7*c^2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^1
0*c*d^2*e^10*g^2*z + 80*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2
*z + 1800*a*b*c^10*d^9*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b
^2*c^6*d^4*e^8*g^2*z + 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*
d^2*e^10*g^2*z + 15700*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^
9*g^2*z - 11640*a^4*b^4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z
 + 4180*a^3*b^6*c^3*d^2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*
a^3*b^3*c^6*d^5*e^7*g^2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c
^5*d^5*e^7*g^2*z + 1185*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^
5*g^2*z - 840*a^2*b^8*c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z -
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50760*a^4*b^2*c^6*d^2*e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600
*a^3*b^2*c^7*d^4*e^8*f^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6
*c^4*d^2*e^10*f^2*z + 3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5
*e^7*f^2*z - 1260*a^2*b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 5
4*b^11*c*d^2*e^10*f*g*z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*
f*g*z - 120*a^2*b^9*c*e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c
^6*d^3*e^9*g^2*z - 5340*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*
g^2*z + 1680*a^4*b*c^7*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*
a*b^4*c^7*d^8*e^4*g^2*z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e
^11*g^2*z + 570*a*b^8*c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280
*a^2*b*c^9*d^9*e^3*g^2*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e
^5*g^2*z + 50*a*b^2*c^9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 2
2860*a^3*b^5*c^4*d*e^11*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b
*c^7*d^3*e^9*f^2*z + 7920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11
*f^2*z - 3060*a*b^2*c^9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260
*a*b^5*c^6*d^5*e^7*f^2*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2
*e^10*f^2*z + 180*a*b^7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^
11*c*d*e^11*f^2*z - 4*a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b
^5*c^7*d^9*e^3*g^2*z - 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*
z + 70*b^8*c^4*d^6*e^6*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e
^8*g^2*z - 20*b^9*c^3*d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a
^6*c^6*d^2*e^10*g^2*z - 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^
2*z - 504*b^2*c^10*d^10*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8
*d^8*e^4*f^2*z + 144*b^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45
*b^8*c^4*d^4*e^8*f^2*z - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^
2*z - 16*a^2*c^10*d^10*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*
c^8*d^4*e^8*f^2*z - 5040*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*
z - 1185*a^6*b^2*c^4*e^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*
c^2*e^12*g^2*z - 11565*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z
 + 5760*a^3*b^6*c^3*e^12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^
11*f*g*z + 36*b*c^11*d^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g
^2*z + 20*b^11*c*d^3*e^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e
^12*g^2*z - 4*b^12*d^2*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^1
2*g^2*z - 900*a^6*c^6*e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z
 - 9*b^12*e^12*f^2*z + 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^
8*f*g^2 - 2436*a*b^2*c^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 147
0*a*b^3*c^5*d^2*e^8*f*g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^
6*f*g^2 + 720*a*b*c^7*d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3
*c^5*d*e^9*f^2*g + 981*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g
+ 468*b^2*c^7*d^4*e^6*f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e
^5*f*g^2 + 396*b^4*c^5*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c
^6*d^4*e^6*f*g^2 - 7452*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2
+ 1512*a^2*b^2*c^5*e^10*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6
*d^3*e^7*g^3 + 796*a*b^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*
a^2*b^3*c^4*d*e^9*g^3 + 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g +
 180*b*c^8*d^6*e^4*f*g^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g
 - 1332*a*c^8*d^4*e^6*f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*
f*g^2 - 1404*a^3*b*c^5*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3
*e^10*f*g^2 + 760*a^3*b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*
c^3*d*e^9*g^3 - 1944*a*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c
^9*d^6*e^4*f^2*g + 90*b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c
^8*d^4*e^6*f^3 + 162*b^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^
8*d^3*e^7*f^3 - 2700*a^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3
*c^6*d^5*e^5*g^3 - 98*b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2
*c^7*d^6*e^4*g^3 + 40*b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*
b^3*c^6*d^2*e^8*f^3 + 216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95
*a^3*b^2*c^4*e^10*g^3 + 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256
*a^4*c^5*e^10*g^3 - 135*b^5*c^4*e^10*f^3, z, k)*((2048*a^11*c^6*d*e^14 - 25
6*a^11*b*c^5*e^15 - a^7*b^9*c*e^15 - b^9*c^8*d^14*e - b^16*c*d^7*e^8 + 16*a
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^8*b^7*c^2*e^15 - 96*a^9*b^5*c^3*e^15 + 256*a^10*b^3*c^4*e^15 + 2048*a^5*c^
12*d^13*e^2 + 12288*a^6*c^11*d^11*e^4 + 30720*a^7*c^10*d^9*e^6 + 40960*a^8*
c^9*d^7*e^8 + 30720*a^9*c^8*d^5*e^10 + 12288*a^10*c^7*d^3*e^12 + 5*b^10*c^7
*d^13*e^2 - 9*b^11*c^6*d^12*e^3 + 5*b^12*c^5*d^11*e^4 + 5*b^13*c^4*d^10*e^5
 - 9*b^14*c^3*d^9*e^6 + 5*b^15*c^2*d^8*e^7 + 352*a^2*b^6*c^9*d^13*e^2 + 16*
a^2*b^7*c^8*d^12*e^3 - 1872*a^2*b^8*c^7*d^11*e^4 + 3499*a^2*b^9*c^6*d^10*e^
5 - 2549*a^2*b^10*c^5*d^9*e^6 + 438*a^2*b^11*c^4*d^8*e^7 + 334*a^2*b^12*c^3
*d^7*e^8 - 113*a^2*b^13*c^2*d^6*e^9 - 512*a^3*b^4*c^10*d^13*e^2 - 2976*a^3*
b^5*c^9*d^12*e^3 + 12352*a^3*b^6*c^8*d^11*e^4 - 16784*a^3*b^7*c^7*d^10*e^5
+ 6984*a^3*b^8*c^6*d^9*e^6 + 4157*a^3*b^9*c^5*d^8*e^7 - 4204*a^3*b^10*c^4*d
^7*e^8 + 438*a^3*b^11*c^3*d^6*e^9 + 284*a^3*b^12*c^2*d^5*e^10 - 768*a^4*b^2
*c^11*d^13*e^2 + 11776*a^4*b^3*c^10*d^12*e^3 - 32512*a^4*b^4*c^9*d^11*e^4 +
 28704*a^4*b^5*c^8*d^10*e^5 + 13216*a^4*b^6*c^7*d^9*e^6 - 36752*a^4*b^7*c^6
*d^8*e^7 + 15264*a^4*b^8*c^5*d^7*e^8 + 4157*a^4*b^9*c^4*d^6*e^9 - 2549*a^4*
b^10*c^3*d^5*e^10 - 285*a^4*b^11*c^2*d^4*e^11 + 26112*a^5*b^2*c^10*d^11*e^4
 + 14336*a^5*b^3*c^9*d^10*e^5 - 94720*a^5*b^4*c^8*d^9*e^6 + 88032*a^5*b^5*c
^7*d^8*e^7 + 4480*a^5*b^6*c^6*d^7*e^8 - 36752*a^5*b^7*c^5*d^6*e^9 + 6984*a^
5*b^8*c^4*d^5*e^10 + 3499*a^5*b^9*c^3*d^4*e^11 + 70*a^5*b^10*c^2*d^3*e^12 +
 111360*a^6*b^2*c^9*d^9*e^6 - 14080*a^6*b^3*c^8*d^8*e^7 - 125440*a^6*b^4*c^
7*d^7*e^8 + 88032*a^6*b^5*c^6*d^6*e^9 + 13216*a^6*b^6*c^5*d^5*e^10 - 16784*
a^6*b^7*c^4*d^4*e^11 - 1872*a^6*b^8*c^3*d^3*e^12 + 89*a^6*b^9*c^2*d^2*e^13
+ 168960*a^7*b^2*c^8*d^7*e^8 - 14080*a^7*b^3*c^7*d^6*e^9 - 94720*a^7*b^4*c^
6*d^5*e^10 + 28704*a^7*b^5*c^5*d^4*e^11 + 12352*a^7*b^6*c^4*d^3*e^12 + 16*a
^7*b^7*c^3*d^2*e^13 + 111360*a^8*b^2*c^7*d^5*e^10 + 14336*a^8*b^3*c^6*d^4*e
^11 - 32512*a^8*b^4*c^5*d^3*e^12 - 2976*a^8*b^5*c^4*d^2*e^13 + 26112*a^9*b^
2*c^6*d^3*e^12 + 11776*a^9*b^3*c^5*d^2*e^13 + 16*a*b^7*c^9*d^14*e + 5*a*b^1
5*c*d^6*e^9 - 256*a^4*b*c^12*d^14*e + 5*a^6*b^10*c*d*e^14 - 72*a*b^8*c^8*d^
13*e^2 + 89*a*b^9*c^7*d^12*e^3 + 70*a*b^10*c^6*d^11*e^4 - 285*a*b^11*c^5*d^
10*e^5 + 284*a*b^12*c^4*d^9*e^6 - 113*a*b^13*c^3*d^8*e^7 + 6*a*b^14*c^2*d^7
*e^8 - 96*a^2*b^5*c^10*d^14*e - 9*a^2*b^14*c*d^5*e^10 + 256*a^3*b^3*c^11*d^
14*e + 5*a^3*b^13*c*d^4*e^11 + 5*a^4*b^12*c*d^3*e^12 - 14080*a^5*b*c^11*d^1
2*e^3 - 9*a^5*b^11*c*d^2*e^13 - 66816*a^6*b*c^10*d^10*e^5 - 131840*a^7*b*c^
9*d^8*e^7 - 72*a^7*b^8*c^2*d*e^14 - 131840*a^8*b*c^8*d^6*e^9 + 352*a^8*b^6*
c^3*d*e^14 - 66816*a^9*b*c^7*d^4*e^11 - 512*a^9*b^4*c^4*d*e^14 - 14080*a^10
*b*c^6*d^2*e^13 - 768*a^10*b^2*c^5*d*e^14)/(256*a^4*c^10*d^12 + a^6*b^8*e^1
2 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 1
6*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e -
 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4
*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^
9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5
120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^1
0*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c
^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*
b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 22
40*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^
5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d
^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b
^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a
^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6
+ 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^
3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^
5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 256
0*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^
10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96
*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*
b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*
b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*
b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b
^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7
```

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*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) - (x*(2
*a^6*b^10*c*e^15 - 1536*a^11*c^6*e^15 + 512*a^4*c^13*d^14*e + 2*b^8*c^9*d^1
4*e + 2*b^16*c*d^6*e^9 - 38*a^7*b^8*c^2*e^15 + 288*a^8*b^6*c^3*e^15 - 1088*
a^9*b^4*c^4*e^15 + 2048*a^10*b^2*c^5*e^15 + 1536*a^5*c^12*d^12*e^3 - 1536*a
^6*c^11*d^10*e^5 - 12800*a^7*c^10*d^8*e^7 - 23040*a^8*c^9*d^6*e^9 - 19968*a
^9*c^8*d^4*e^11 - 8704*a^10*c^7*d^2*e^13 - 14*b^9*c^8*d^13*e^2 + 44*b^10*c^
7*d^12*e^3 - 82*b^11*c^6*d^11*e^4 + 100*b^12*c^5*d^10*e^5 - 82*b^13*c^4*d^9
*e^6 + 44*b^14*c^3*d^8*e^7 - 14*b^15*c^2*d^7*e^8 - 1344*a^2*b^5*c^10*d^13*e
^2 + 4128*a^2*b^6*c^9*d^12*e^3 - 7296*a^2*b^7*c^8*d^11*e^4 + 7962*a^2*b^8*c
^7*d^10*e^5 - 4962*a^2*b^9*c^6*d^9*e^6 + 834*a^2*b^10*c^5*d^8*e^7 + 1092*a^
2*b^11*c^4*d^7*e^8 - 714*a^2*b^12*c^3*d^6*e^9 + 78*a^2*b^13*c^2*d^5*e^10 +
3584*a^3*b^3*c^11*d^13*e^2 - 10688*a^3*b^4*c^10*d^12*e^3 + 17536*a^3*b^5*c^
9*d^11*e^4 - 15712*a^3*b^6*c^8*d^10*e^5 + 3232*a^3*b^7*c^7*d^9*e^6 + 9326*a
^3*b^8*c^6*d^8*e^7 - 10232*a^3*b^9*c^5*d^7*e^8 + 3164*a^3*b^10*c^4*d^6*e^9
+ 752*a^3*b^11*c^3*d^5*e^10 - 410*a^3*b^12*c^2*d^4*e^11 + 9728*a^4*b^2*c^11
*d^12*e^3 - 11776*a^4*b^3*c^10*d^11*e^4 - 1088*a^4*b^4*c^9*d^10*e^5 + 27968
*a^4*b^5*c^8*d^9*e^6 - 44576*a^4*b^6*c^7*d^8*e^7 + 27392*a^4*b^7*c^6*d^7*e^
8 + 2086*a^4*b^8*c^5*d^6*e^9 - 8882*a^4*b^9*c^4*d^5*e^10 + 1520*a^4*b^10*c^
3*d^4*e^11 + 670*a^4*b^11*c^2*d^3*e^12 + 27648*a^5*b^2*c^10*d^10*e^5 - 5376
0*a^5*b^3*c^9*d^9*e^6 + 56640*a^5*b^4*c^8*d^8*e^7 - 5376*a^5*b^5*c^7*d^7*e^
8 - 45024*a^5*b^6*c^6*d^6*e^9 + 29472*a^5*b^7*c^5*d^5*e^10 + 2802*a^5*b^8*c
^4*d^4*e^11 - 4164*a^5*b^9*c^3*d^3*e^12 - 546*a^5*b^10*c^2*d^2*e^13 + 5120*
a^6*b^2*c^9*d^8*e^7 - 66560*a^6*b^3*c^8*d^7*e^8 + 96320*a^6*b^4*c^7*d^6*e^9
 - 23744*a^6*b^5*c^6*d^5*e^10 - 32032*a^6*b^6*c^5*d^4*e^11 + 10624*a^6*b^7*
c^4*d^3*e^12 + 3902*a^6*b^8*c^3*d^2*e^13 - 43520*a^7*b^2*c^8*d^6*e^9 - 4864
0*a^7*b^3*c^7*d^5*e^10 + 71872*a^7*b^4*c^6*d^4*e^11 - 2944*a^7*b^5*c^5*d^3*
e^12 - 13472*a^7*b^6*c^4*d^2*e^13 - 41472*a^8*b^2*c^7*d^4*e^11 - 32256*a^8*
b^3*c^6*d^3*e^12 + 21312*a^8*b^4*c^5*d^2*e^13 - 8192*a^9*b^2*c^6*d^2*e^13 -
 32*a*b^6*c^10*d^14*e - 12*a*b^15*c*d^5*e^10 - 12*a^5*b^11*c*d*e^14 + 8704*
a^10*b*c^6*d*e^14 + 224*a*b^7*c^9*d^13*e^2 - 698*a*b^8*c^8*d^12*e^3 + 1276*
a*b^9*c^7*d^11*e^4 - 1498*a*b^10*c^6*d^10*e^5 + 1132*a*b^11*c^5*d^9*e^6 - 4
94*a*b^12*c^4*d^8*e^7 + 68*a*b^13*c^3*d^7*e^8 + 34*a*b^14*c^2*d^6*e^9 + 192
*a^2*b^4*c^11*d^14*e + 30*a^2*b^14*c*d^4*e^11 - 512*a^3*b^2*c^12*d^14*e - 4
0*a^3*b^13*c*d^3*e^12 - 3584*a^4*b*c^12*d^13*e^2 + 30*a^4*b^12*c*d^2*e^13 -
 9216*a^5*b*c^11*d^11*e^4 + 7680*a^6*b*c^10*d^9*e^6 + 226*a^6*b^9*c^2*d*e^1
4 + 51200*a^7*b*c^9*d^7*e^8 - 1696*a^7*b^7*c^3*d*e^14 + 69120*a^8*b*c^8*d^5
*e^10 + 6336*a^8*b^5*c^4*d*e^14 + 39936*a^9*b*c^7*d^3*e^12 - 11776*a^9*b^3*
c^5*d*e^14))/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^
6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^
5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4
*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^
12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 153
6*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8
*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d
^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5
*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10
*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*
a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 +
 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9
*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c
^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5
*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1
680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*
e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c
^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a
^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*
a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b
*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c
^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c
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*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c
*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^
7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c
^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11)) + (480*a^8*c^6*e^13*f - 3*a^3*b^10*c
*e^13*f + a^4*b^9*c*e^13*g + 368*a^8*b*c^5*e^13*g + 96*a^2*c^12*d^12*e*f -
448*a^8*c^6*d*e^12*g + 6*b^4*c^10*d^12*e*f + 3*b^13*c*d^3*e^10*f - 3*b^5*c^
9*d^12*e*g - 2*b^13*c*d^4*e^9*g + 51*a^4*b^8*c^2*e^13*f - 333*a^5*b^6*c^3*e
^13*f + 1014*a^6*b^4*c^4*e^13*f - 1344*a^7*b^2*c^5*e^13*f - 17*a^5*b^7*c^2*
e^13*g + 111*a^6*b^5*c^3*e^13*g - 328*a^7*b^3*c^4*e^13*g + 576*a^3*c^11*d^1
0*e^3*f + 1824*a^4*c^10*d^8*e^5*f + 3456*a^5*c^9*d^6*e^7*f + 3744*a^6*c^8*d
^4*e^9*f + 2112*a^7*c^7*d^2*e^11*f - 64*a^3*c^11*d^11*e^2*g - 704*a^4*c^10*
d^9*e^4*g - 2176*a^5*c^9*d^7*e^6*g - 2944*a^6*c^8*d^5*e^8*g - 1856*a^7*c^7*
d^3*e^10*g - 30*b^5*c^9*d^11*e^2*f + 57*b^6*c^8*d^10*e^3*f - 48*b^7*c^7*d^9
*e^4*f + 15*b^8*c^6*d^8*e^5*f - 6*b^10*c^4*d^6*e^7*f + 15*b^11*c^3*d^5*e^8*
f - 12*b^12*c^2*d^4*e^9*f + 16*b^6*c^8*d^11*e^2*g - 33*b^7*c^7*d^10*e^3*g +
 30*b^8*c^6*d^9*e^4*g - 10*b^9*c^5*d^8*e^5*g + 5*b^10*c^4*d^7*e^6*g - 12*b^
11*c^3*d^6*e^7*g + 9*b^12*c^2*d^5*e^8*g + 240*a*b^3*c^10*d^11*e^2*f - 420*a
*b^4*c^9*d^10*e^3*f + 246*a*b^5*c^8*d^9*e^4*f + 39*a*b^6*c^7*d^8*e^5*f - 36
*a*b^7*c^6*d^7*e^6*f + 78*a*b^8*c^5*d^6*e^7*f - 252*a*b^9*c^4*d^5*e^8*f + 1
86*a*b^10*c^3*d^4*e^9*f - 24*a*b^11*c^2*d^3*e^10*f - 480*a^2*b*c^11*d^11*e^
2*f - 2208*a^3*b*c^10*d^9*e^4*f - 150*a^3*b^9*c^2*d*e^12*f - 4032*a^4*b*c^9
*d^7*e^6*f + 948*a^4*b^7*c^3*d*e^12*f - 3648*a^5*b*c^8*d^5*e^8*f - 2706*a^5
*b^5*c^4*d*e^12*f - 1632*a^6*b*c^7*d^3*e^10*f + 3024*a^6*b^3*c^5*d*e^12*f -
 132*a*b^4*c^9*d^11*e^2*g + 264*a*b^5*c^8*d^10*e^3*g - 184*a*b^6*c^7*d^9*e^
4*g - 17*a*b^7*c^6*d^8*e^5*g - 48*a*b^8*c^5*d^7*e^6*g + 212*a*b^9*c^4*d^6*e
^7*g - 139*a*b^10*c^3*d^5*e^8*g + 15*a*b^11*c^2*d^4*e^9*g - 3*a^2*b^11*c*d^
2*e^11*g + 848*a^4*b*c^9*d^8*e^5*g + 18*a^4*b^8*c^2*d*e^12*g + 2432*a^5*b*c
^8*d^6*e^7*g - 128*a^5*b^6*c^3*d*e^12*g + 2928*a^6*b*c^7*d^4*e^9*g + 388*a^
6*b^4*c^4*d*e^12*g + 1664*a^7*b*c^6*d^2*e^11*g - 288*a^7*b^2*c^5*d*e^12*g +
 624*a^2*b^2*c^10*d^10*e^3*f + 336*a^2*b^3*c^9*d^9*e^4*f - 918*a^2*b^4*c^8*
d^8*e^5*f + 36*a^2*b^5*c^7*d^7*e^6*f - 414*a^2*b^6*c^6*d^6*e^7*f + 1740*a^2
*b^7*c^5*d^5*e^8*f - 1038*a^2*b^8*c^4*d^4*e^9*f - 126*a^2*b^9*c^3*d^3*e^10*
f + 135*a^2*b^10*c^2*d^2*e^11*f + 1632*a^3*b^2*c^9*d^8*e^5*f + 1440*a^3*b^3
*c^8*d^7*e^6*f + 1320*a^3*b^4*c^7*d^6*e^7*f - 5892*a^3*b^5*c^6*d^5*e^8*f +
1974*a^3*b^6*c^5*d^4*e^9*f + 2004*a^3*b^7*c^4*d^3*e^10*f - 690*a^3*b^8*c^3*
d^2*e^11*f - 2976*a^4*b^2*c^8*d^6*e^7*f + 8928*a^4*b^3*c^7*d^5*e^8*f + 2010
*a^4*b^4*c^6*d^4*e^9*f - 7782*a^4*b^5*c^5*d^3*e^10*f + 981*a^4*b^6*c^4*d^2*
e^11*f - 9456*a^5*b^2*c^7*d^4*e^9*f + 10608*a^5*b^3*c^6*d^3*e^10*f + 2364*a
^5*b^4*c^5*d^2*e^11*f - 6864*a^6*b^2*c^6*d^2*e^11*f + 288*a^2*b^2*c^10*d^11
*e^2*g - 528*a^2*b^3*c^9*d^10*e^3*g - 12*a^2*b^4*c^8*d^9*e^4*g + 669*a^2*b^
5*c^7*d^8*e^5*g + 328*a^2*b^6*c^6*d^7*e^6*g - 1430*a^2*b^7*c^5*d^6*e^7*g +
708*a^2*b^8*c^4*d^5*e^8*g + 101*a^2*b^9*c^3*d^4*e^9*g - 73*a^2*b^10*c^2*d^3
*e^10*g + 1248*a^3*b^2*c^9*d^9*e^4*g - 1976*a^3*b^3*c^8*d^8*e^5*g - 1736*a^
3*b^4*c^7*d^7*e^6*g + 4488*a^3*b^5*c^6*d^6*e^7*g - 1064*a^3*b^6*c^5*d^5*e^8
*g - 1294*a^3*b^7*c^4*d^4*e^9*g + 348*a^3*b^8*c^3*d^3*e^10*g + 48*a^3*b^9*c
^2*d^2*e^11*g + 4032*a^4*b^2*c^8*d^7*e^6*g - 6176*a^4*b^3*c^7*d^6*e^7*g - 1
592*a^4*b^4*c^6*d^5*e^8*g + 4407*a^4*b^5*c^5*d^4*e^9*g - 504*a^4*b^6*c^4*d^
3*e^10*g - 281*a^4*b^7*c^3*d^2*e^11*g + 5184*a^5*b^2*c^7*d^5*e^8*g - 5912*a
^5*b^3*c^6*d^4*e^9*g - 500*a^5*b^4*c^5*d^3*e^10*g + 816*a^5*b^5*c^4*d^2*e^1
1*g + 1824*a^6*b^2*c^6*d^3*e^10*g - 1488*a^6*b^3*c^5*d^2*e^11*g - 48*a*b^2*
c^11*d^12*e*f - 9*a*b^12*c*d^2*e^11*f + 9*a^2*b^11*c*d*e^12*f - 288*a^7*b*c
^6*d*e^12*f + 24*a*b^3*c^10*d^12*e*g + 5*a*b^12*c*d^3*e^10*g - 48*a^2*b*c^1
1*d^12*e*g - a^3*b^10*c*d*e^12*g)/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a
^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6
*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c
*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12
 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^
4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c
^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^1
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0*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e
^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d
^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^
5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*
a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 +
 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^
7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^
2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^
5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 1
7920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3
*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3
*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a
*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*
c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d
^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d
^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^
4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*
e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*
d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) + (x*(768*a^8*c^
6*e^13*g - 1824*a^7*b*c^6*e^13*f + 3648*a^7*c^7*d*e^12*f - 6*a^3*b^9*c^2*e^
13*f + 99*a^4*b^7*c^3*e^13*f - 618*a^5*b^5*c^4*e^13*f + 1728*a^6*b^3*c^5*e^
13*f + 2*a^4*b^8*c^2*e^13*g - 33*a^5*b^6*c^3*e^13*g + 216*a^6*b^4*c^4*e^13*
g - 656*a^7*b^2*c^5*e^13*g + 192*a^2*c^12*d^11*e^2*f + 1344*a^3*c^11*d^9*e^
4*f + 6528*a^4*c^10*d^7*e^6*f + 13440*a^5*c^9*d^5*e^8*f + 11712*a^6*c^8*d^3
*e^10*f - 128*a^3*c^11*d^10*e^3*g - 2816*a^4*c^10*d^8*e^5*g - 6912*a^5*c^9*
d^6*e^7*g - 5120*a^6*c^8*d^4*e^9*g - 128*a^7*c^7*d^2*e^11*g + 12*b^4*c^10*d
^11*e^2*f - 66*b^5*c^9*d^10*e^3*f + 144*b^6*c^8*d^9*e^4*f - 153*b^7*c^7*d^8
*e^5*f + 84*b^8*c^6*d^7*e^6*f - 42*b^9*c^5*d^6*e^7*f + 42*b^10*c^4*d^5*e^8*
f - 27*b^11*c^3*d^4*e^9*f + 6*b^12*c^2*d^3*e^10*f - 6*b^5*c^9*d^11*e^2*g +
35*b^6*c^8*d^10*e^3*g - 82*b^7*c^7*d^9*e^4*g + 88*b^8*c^6*d^8*e^5*g - 28*b^
9*c^5*d^7*e^6*g - 23*b^10*c^4*d^6*e^7*g + 20*b^11*c^3*d^5*e^8*g - 4*b^12*c^
2*d^4*e^9*g - 96*a*b^2*c^11*d^11*e^2*f + 528*a*b^3*c^10*d^10*e^3*f - 1068*a
*b^4*c^9*d^9*e^4*f + 846*a*b^5*c^8*d^8*e^5*f - 120*a*b^6*c^7*d^7*e^6*f + 16
8*a*b^7*c^6*d^6*e^7*f - 588*a*b^8*c^5*d^5*e^8*f + 384*a*b^9*c^4*d^4*e^9*f -
 36*a*b^10*c^3*d^3*e^10*f - 18*a*b^11*c^2*d^2*e^11*f - 1056*a^2*b*c^11*d^10
*e^3*f + 18*a^2*b^10*c^2*d*e^12*f - 6048*a^3*b*c^10*d^8*e^5*f - 288*a^3*b^8
*c^3*d*e^12*f - 22848*a^4*b*c^9*d^6*e^7*f + 1704*a^4*b^6*c^4*d*e^12*f - 336
00*a^5*b*c^8*d^4*e^9*f - 4188*a^5*b^4*c^5*d*e^12*f - 17568*a^6*b*c^7*d^2*e^
11*f + 2400*a^6*b^2*c^6*d*e^12*f + 48*a*b^3*c^10*d^11*e^2*g - 288*a*b^4*c^9
*d^10*e^3*g + 654*a*b^5*c^8*d^9*e^4*g - 517*a*b^6*c^7*d^8*e^5*g - 284*a*b^7
*c^6*d^7*e^6*g + 698*a*b^8*c^5*d^6*e^7*g - 344*a*b^9*c^4*d^5*e^8*g + 23*a*b
^10*c^3*d^4*e^9*g + 10*a*b^11*c^2*d^3*e^10*g - 96*a^2*b*c^11*d^11*e^2*g - 3
2*a^3*b*c^10*d^9*e^4*g - 2*a^3*b^9*c^2*d*e^12*g + 8000*a^4*b*c^9*d^7*e^6*g
+ 34*a^4*b^7*c^3*d*e^12*g + 14016*a^5*b*c^8*d^5*e^8*g - 282*a^5*b^5*c^4*d*e
^12*g + 4384*a^6*b*c^7*d^3*e^10*g + 1136*a^6*b^3*c^5*d*e^12*g + 1632*a^2*b^
2*c^10*d^9*e^4*f + 576*a^2*b^3*c^9*d^8*e^5*f - 2664*a^2*b^4*c^8*d^7*e^6*f -
 756*a^2*b^5*c^7*d^6*e^7*f + 4200*a^2*b^6*c^6*d^5*e^8*f - 1986*a^2*b^7*c^5*
d^4*e^9*f - 408*a^2*b^8*c^4*d^3*e^10*f + 252*a^2*b^9*c^3*d^2*e^11*f + 5568*
a^3*b^2*c^9*d^7*e^6*f + 8736*a^3*b^3*c^8*d^6*e^7*f - 15288*a^3*b^4*c^7*d^5*
e^8*f + 2268*a^3*b^5*c^6*d^4*e^9*f + 4824*a^3*b^6*c^5*d^3*e^10*f - 1104*a^3
*b^7*c^4*d^2*e^11*f + 17472*a^4*b^2*c^8*d^5*e^8*f + 13440*a^4*b^3*c^7*d^4*e
^9*f - 16740*a^4*b^4*c^6*d^3*e^10*f + 246*a^4*b^5*c^5*d^2*e^11*f + 16032*a^
5*b^2*c^7*d^3*e^10*f + 9552*a^5*b^3*c^6*d^2*e^11*f + 624*a^2*b^2*c^10*d^10*
e^3*g - 1296*a^2*b^3*c^9*d^9*e^4*g - 264*a^2*b^4*c^8*d^8*e^5*g + 4116*a^2*b
^5*c^7*d^7*e^6*g - 4674*a^2*b^6*c^6*d^6*e^7*g + 1296*a^2*b^7*c^5*d^5*e^8*g
+ 438*a^2*b^8*c^4*d^4*e^9*g - 138*a^2*b^9*c^3*d^3*e^10*g - 6*a^2*b^10*c^2*d
^2*e^11*g + 4400*a^3*b^2*c^9*d^8*e^5*g - 12128*a^3*b^3*c^8*d^7*e^6*g + 9344
*a^3*b^4*c^7*d^6*e^7*g + 1900*a^3*b^5*c^6*d^5*e^8*g - 3834*a^3*b^6*c^5*d^4*
e^9*g + 380*a^3*b^7*c^4*d^3*e^10*g + 94*a^3*b^8*c^3*d^2*e^11*g + 352*a^4*b^
2*c^8*d^6*e^7*g - 14944*a^4*b^3*c^7*d^5*e^8*g + 8560*a^4*b^4*c^6*d^4*e^9*g
+ 1298*a^4*b^5*c^5*d^3*e^10*g - 385*a^4*b^6*c^4*d^2*e^11*g - 1440*a^5*b^2*c
^7*d^4*e^9*g - 6096*a^5*b^3*c^6*d^3*e^10*g + 96*a^5*b^4*c^5*d^2*e^11*g + 13
28*a^6*b^2*c^6*d^2*e^11*g - 1696*a^7*b*c^6*d*e^12*g))/(256*a^4*c^10*d^12 +
a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c
^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c
^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 +
 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*
b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*
d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^
10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 134
4*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4
 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^
10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7
*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^
4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 +
 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*
e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c
^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5
*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 +
2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^
4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2
*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*
d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e
^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5
 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e
 - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3
- 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^
7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^
11)) - (1728*a^3*b^3*c^5*e^11*f^2 - 36*c^11*d^9*e^2*f^2 - 738*a^2*b^5*c^4*e
^11*f^2 - 9*b^9*c^2*e^11*f^2 - a^2*b^7*c^2*e^11*g^2 + 15*a^3*b^5*c^3*e^11*g
^2 - 72*a^4*b^3*c^4*e^11*g^2 - 792*a^2*c^9*d^5*e^6*f^2 - 864*a^3*c^8*d^3*e^
8*f^2 - 16*a^2*c^9*d^7*e^4*g^2 + 32*a^3*c^8*d^5*e^6*g^2 + 1648*a^4*c^7*d^3*
e^8*g^2 - 180*b^2*c^9*d^7*e^4*f^2 + 36*b^3*c^8*d^6*e^5*f^2 + 63*b^4*c^7*d^5
*e^6*f^2 - 45*b^6*c^5*d^3*e^8*f^2 + 9*b^7*c^4*d^2*e^9*f^2 - 9*b^2*c^9*d^9*e
^2*g^2 + 42*b^3*c^8*d^8*e^3*g^2 - 67*b^4*c^7*d^7*e^4*g^2 + 39*b^5*c^6*d^6*e
^5*g^2 + 4*b^6*c^5*d^5*e^6*g^2 - 17*b^7*c^4*d^4*e^7*g^2 + 12*b^8*c^3*d^3*e^
8*g^2 - 4*b^9*c^2*d^2*e^9*g^2 + 480*a^5*c^6*e^11*f*g + 135*a*b^7*c^3*e^11*f
^2 - 1440*a^4*b*c^6*e^11*f^2 + 112*a^5*b*c^5*e^11*g^2 - 288*a*c^10*d^7*e^4*
f^2 + 1980*a^4*c^7*d*e^10*f^2 + 144*b*c^10*d^8*e^3*f^2 - 704*a^5*c^6*d*e^10
*g^2 + 18*b^8*c^3*d*e^10*f^2 + 864*a*b*c^9*d^6*e^5*f^2 - 288*a*b^6*c^4*d*e^
10*f^2 - 24*a*b*c^9*d^8*e^3*g^2 - 4*a*b^8*c^2*d*e^10*g^2 - 90*a^2*b^6*c^3*e
^11*f*g + 462*a^3*b^4*c^4*e^11*f*g - 912*a^4*b^2*c^5*e^11*f*g + 144*a^2*c^9
*d^6*e^5*f*g - 144*a^3*c^8*d^4*e^7*f*g - 4368*a^4*c^7*d^2*e^9*f*g - 156*b^2
*c^9*d^8*e^3*f*g + 222*b^3*c^8*d^7*e^4*f*g - 90*b^4*c^7*d^6*e^5*f*g - 48*b^
5*c^6*d^5*e^6*f*g + 36*b^6*c^5*d^4*e^7*f*g + 18*b^7*c^4*d^3*e^8*f*g - 30*b^
8*c^3*d^2*e^9*f*g - 684*a*b^2*c^8*d^5*e^6*f^2 - 216*a*b^3*c^7*d^4*e^7*f^2 +
 450*a*b^4*c^6*d^3*e^8*f^2 + 18*a*b^5*c^5*d^2*e^9*f^2 + 1872*a^2*b*c^8*d^4*
e^7*f^2 + 1575*a^2*b^4*c^5*d*e^10*f^2 + 2016*a^3*b*c^7*d^2*e^9*f^2 - 3348*a
^3*b^2*c^6*d*e^10*f^2 + 20*a*b^2*c^8*d^7*e^4*g^2 + 102*a*b^3*c^7*d^6*e^5*g^
2 - 180*a*b^4*c^6*d^5*e^6*g^2 + 145*a*b^5*c^5*d^4*e^7*g^2 - 130*a*b^6*c^4*d
^3*e^8*g^2 + 62*a*b^7*c^3*d^2*e^9*g^2 - 24*a^2*b*c^8*d^6*e^5*g^2 + 58*a^2*b
^6*c^3*d*e^10*g^2 + 168*a^3*b*c^7*d^4*e^7*g^2 - 310*a^3*b^4*c^4*d*e^10*g^2
- 1256*a^4*b*c^6*d^2*e^9*g^2 + 735*a^4*b^2*c^5*d*e^10*g^2 + 6*a*b^8*c^2*e^1
1*f*g + 48*a*c^10*d^8*e^3*f*g + 36*b*c^10*d^9*e^2*f*g + 12*b^9*c^2*d*e^10*f
*g - 1116*a^2*b^2*c^7*d^3*e^8*f^2 - 684*a^2*b^3*c^6*d^2*e^9*f^2 + 18*a^2*b^
2*c^7*d^5*e^6*g^2 - 98*a^2*b^3*c^6*d^4*e^7*g^2 + 585*a^2*b^4*c^5*d^3*e^8*g^
2 - 399*a^2*b^5*c^4*d^2*e^9*g^2 - 1692*a^3*b^2*c^6*d^3*e^8*g^2 + 1210*a^3*b
^3*c^5*d^2*e^9*g^2 + 120*a*b*c^9*d^7*e^4*f*g - 180*a*b^7*c^3*d*e^10*f*g + 3
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708*a^4*b*c^6*d*e^10*f*g - 684*a*b^2*c^8*d^6*e^5*f*g + 774*a*b^3*c^7*d^5*e^
6*f*g - 186*a*b^4*c^6*d^4*e^7*f*g - 258*a*b^5*c^5*d^3*e^8*f*g + 378*a*b^6*c
^4*d^2*e^9*f*g + 192*a^2*b*c^8*d^5*e^6*f*g + 1086*a^2*b^5*c^4*d*e^10*f*g -
24*a^3*b*c^7*d^3*e^8*f*g - 3150*a^3*b^3*c^5*d*e^10*f*g - 804*a^2*b^2*c^7*d^
4*e^7*f*g + 1002*a^2*b^3*c^6*d^3*e^8*f*g - 1770*a^2*b^4*c^5*d^2*e^9*f*g + 3
900*a^3*b^2*c^6*d^2*e^9*f*g)/(256*a^4*c^10*d^12 + a^6*b^8*e^12 + 256*a^10*c
^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^6*c^7*d^12 - 16*a^7*b^6*c*e^
12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^9*c^5*d^11*e - 6*b^13*c*d^7*
e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^12 + 96*a^8*b^4*c^2*e^12 - 25
6*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a^3*b^11*d^3*e^9 + 15*a^4*b^1
0*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c^8*d^8*e^4 + 5120*a^7*c^7*d^
6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2*e^10 + 15*b^10*c^4*d^10*e^2
 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 + 1344*a^2*b^6*c^6*d^10*e^2 -
1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*e^4 + 324*a^2*b^9*c^3*d^7*e^
5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7*d^10*e^2 + 2240*a^3*b^5*c^6
*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*b^7*c^4*d^7*e^5 + 1204*a^3*b
^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304*a^4*b^2*c^8*d^10*e^2 + 2560
*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^4 + 8064*a^4*b^5*c^5*d^7*e^5
 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d^5*e^7 + 495*a^4*b^8*c^2*d^4
*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^4*c^5*d^6*e^6 + 8064*a^5*b^5
*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*a^5*b^7*c^2*d^3*e^9 + 17920*
a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8 + 2240*a^6*b^5*c^3*d^3*e^9
 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5*d^4*e^8 + 2560*a^7*b^3*c^4*
d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*b^2*c^4*d^2*e^10 + 96*a*b^7*
c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c^9*d^11*e + 96*a^6*b^7*c*d*e
^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^10*e^2 + 290*a*b^9*c^4*d^9*e^
3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*e^5 - 576*a^2*b^5*c^7*d^11*e
 + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^11*e - 180*a^3*b^10*c*d^4*e^8
 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e^3 - 234*a^5*b^8*c*d^2*e^10
- 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5*e^7 - 576*a^7*b^5*c^2*d*e^1
1 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d*e^11) - (x*(1260*a^3*b^2*c^
6*e^11*f^2 - 9*b^8*c^3*e^11*f^2 - 36*c^11*d^8*e^3*f^2 - 621*a^2*b^4*c^5*e^1
1*f^2 - 900*a^4*c^7*e^11*f^2 - a^2*b^6*c^3*e^11*g^2 + 14*a^3*b^4*c^4*e^11*g
^2 - 49*a^4*b^2*c^5*e^11*g^2 - 216*a^2*c^9*d^4*e^7*f^2 + 1440*a^3*c^8*d^2*e
^9*f^2 - 16*a^2*c^9*d^6*e^5*g^2 + 352*a^3*c^8*d^4*e^7*g^2 - 1936*a^4*c^7*d^
2*e^9*g^2 - 180*b^2*c^9*d^6*e^5*f^2 + 36*b^3*c^8*d^5*e^6*f^2 + 99*b^4*c^7*d
^4*e^7*f^2 - 90*b^5*c^6*d^3*e^8*f^2 + 9*b^6*c^5*d^2*e^9*f^2 - 9*b^2*c^9*d^8
*e^3*g^2 + 42*b^3*c^8*d^7*e^4*g^2 - 67*b^4*c^7*d^6*e^5*g^2 + 54*b^5*c^6*d^5
*e^6*g^2 - 37*b^6*c^5*d^4*e^7*g^2 + 12*b^7*c^4*d^3*e^8*g^2 - 4*b^8*c^3*d^2*
e^9*g^2 + 126*a*b^6*c^4*e^11*f^2 - 288*a*c^10*d^6*e^5*f^2 + 144*b*c^10*d^7*
e^4*f^2 + 18*b^7*c^4*d*e^10*f^2 + 864*a*b*c^9*d^5*e^6*f^2 - 270*a*b^5*c^5*d
*e^10*f^2 - 1440*a^3*b*c^7*d*e^10*f^2 - 24*a*b*c^9*d^7*e^4*g^2 - 4*a*b^7*c^
3*d*e^10*g^2 + 616*a^4*b*c^6*d*e^10*g^2 - 84*a^2*b^5*c^4*e^11*f*g + 354*a^3
*b^3*c^5*e^11*f*g - 336*a^2*c^9*d^5*e^6*f*g - 2352*a^3*c^8*d^3*e^8*f*g - 15
6*b^2*c^9*d^7*e^4*f*g + 222*b^3*c^8*d^6*e^5*f*g - 120*b^4*c^7*d^5*e^6*f*g +
 6*b^5*c^6*d^4*e^7*f*g + 48*b^6*c^5*d^3*e^8*f*g - 30*b^7*c^4*d^2*e^9*f*g -
972*a*b^2*c^8*d^4*e^7*f^2 + 504*a*b^3*c^7*d^3*e^8*f^2 + 162*a*b^4*c^6*d^2*e
^9*f^2 + 432*a^2*b*c^8*d^3*e^8*f^2 + 1188*a^2*b^3*c^6*d*e^10*f^2 + 20*a*b^2
*c^8*d^6*e^5*g^2 - 18*a*b^3*c^7*d^5*e^6*g^2 + 168*a*b^4*c^6*d^4*e^7*g^2 - 6
8*a*b^5*c^5*d^3*e^8*g^2 + 58*a*b^6*c^4*d^2*e^9*g^2 + 216*a^2*b*c^8*d^5*e^6*
g^2 + 54*a^2*b^5*c^4*d*e^10*g^2 + 472*a^3*b*c^7*d^3*e^8*g^2 - 270*a^3*b^3*c
^5*d*e^10*g^2 + 6*a*b^7*c^3*e^11*f*g - 420*a^4*b*c^6*e^11*f*g + 48*a*c^10*d
^7*e^4*f*g + 2640*a^4*c^7*d*e^10*f*g + 36*b*c^10*d^8*e^3*f*g + 12*b^8*c^3*d
*e^10*f*g - 1404*a^2*b^2*c^7*d^2*e^9*f^2 - 798*a^2*b^2*c^7*d^4*e^7*g^2 + 21
4*a^2*b^3*c^6*d^3*e^8*g^2 - 375*a^2*b^4*c^5*d^2*e^9*g^2 + 1060*a^3*b^2*c^6*
d^2*e^9*g^2 + 120*a*b*c^9*d^6*e^5*f*g - 168*a*b^6*c^4*d*e^10*f*g - 444*a*b^
2*c^8*d^5*e^6*f*g + 342*a*b^3*c^7*d^4*e^7*f*g - 420*a*b^4*c^6*d^3*e^8*f*g +
 258*a*b^5*c^5*d^2*e^9*f*g + 1056*a^2*b*c^8*d^4*e^7*f*g + 1020*a^2*b^4*c^5*
d*e^10*f*g + 2088*a^3*b*c^7*d^2*e^9*f*g - 2964*a^3*b^2*c^6*d*e^10*f*g + 492
*a^2*b^2*c^7*d^3*e^8*f*g - 822*a^2*b^3*c^6*d^2*e^9*f*g))/(256*a^4*c^10*d^12
 + a^6*b^8*e^12 + 256*a^10*c^4*e^12 + b^8*c^6*d^12 + b^14*d^6*e^6 - 16*a*b^
6*c^7*d^12 - 16*a^7*b^6*c*e^12 - 6*a*b^13*d^5*e^7 - 6*a^5*b^9*d*e^11 - 6*b^
9*c^5*d^11*e - 6*b^13*c*d^7*e^5 + 96*a^2*b^4*c^8*d^12 - 256*a^3*b^2*c^9*d^1
2 + 96*a^8*b^4*c^2*e^12 - 256*a^9*b^2*c^3*e^12 + 15*a^2*b^12*d^4*e^8 - 20*a
^3*b^11*d^3*e^9 + 15*a^4*b^10*d^2*e^10 + 1536*a^5*c^9*d^10*e^2 + 3840*a^6*c
^8*d^8*e^4 + 5120*a^7*c^7*d^6*e^6 + 3840*a^8*c^6*d^4*e^8 + 1536*a^9*c^5*d^2
*e^10 + 15*b^10*c^4*d^10*e^2 - 20*b^11*c^3*d^9*e^3 + 15*b^12*c^2*d^8*e^4 +
1344*a^2*b^6*c^6*d^10*e^2 - 1440*a^2*b^7*c^5*d^9*e^3 + 495*a^2*b^8*c^4*d^8*
e^4 + 324*a^2*b^9*c^3*d^7*e^5 - 294*a^2*b^10*c^2*d^6*e^6 - 3264*a^3*b^4*c^7
*d^10*e^2 + 2240*a^3*b^5*c^6*d^9*e^3 + 1680*a^3*b^6*c^5*d^8*e^4 - 3264*a^3*
b^7*c^4*d^7*e^5 + 1204*a^3*b^8*c^3*d^6*e^6 + 324*a^3*b^9*c^2*d^5*e^7 + 2304
*a^4*b^2*c^8*d^10*e^2 + 2560*a^4*b^3*c^7*d^9*e^3 - 10080*a^4*b^4*c^6*d^8*e^
4 + 8064*a^4*b^5*c^5*d^7*e^5 + 896*a^4*b^6*c^4*d^6*e^6 - 3264*a^4*b^7*c^3*d
^5*e^7 + 495*a^4*b^8*c^2*d^4*e^8 + 11520*a^5*b^2*c^7*d^8*e^4 - 13440*a^5*b^
4*c^5*d^6*e^6 + 8064*a^5*b^5*c^4*d^5*e^7 + 1680*a^5*b^6*c^3*d^4*e^8 - 1440*
a^5*b^7*c^2*d^3*e^9 + 17920*a^6*b^2*c^6*d^6*e^6 - 10080*a^6*b^4*c^4*d^4*e^8
 + 2240*a^6*b^5*c^3*d^3*e^9 + 1344*a^6*b^6*c^2*d^2*e^10 + 11520*a^7*b^2*c^5
*d^4*e^8 + 2560*a^7*b^3*c^4*d^3*e^9 - 3264*a^7*b^4*c^3*d^2*e^10 + 2304*a^8*
b^2*c^4*d^2*e^10 + 96*a*b^7*c^6*d^11*e + 14*a*b^12*c*d^6*e^6 - 1536*a^4*b*c
^9*d^11*e + 96*a^6*b^7*c*d*e^11 - 1536*a^9*b*c^4*d*e^11 - 234*a*b^8*c^5*d^1
0*e^2 + 290*a*b^9*c^4*d^9*e^3 - 180*a*b^10*c^3*d^8*e^4 + 36*a*b^11*c^2*d^7*
e^5 - 576*a^2*b^5*c^7*d^11*e + 36*a^2*b^11*c*d^5*e^7 + 1536*a^3*b^3*c^8*d^1
1*e - 180*a^3*b^10*c*d^4*e^8 + 290*a^4*b^9*c*d^3*e^9 - 7680*a^5*b*c^8*d^9*e
^3 - 234*a^5*b^8*c*d^2*e^10 - 15360*a^6*b*c^7*d^7*e^5 - 15360*a^7*b*c^6*d^5
*e^7 - 576*a^7*b^5*c^2*d*e^11 - 7680*a^8*b*c^5*d^3*e^9 + 1536*a^8*b^3*c^3*d
*e^11))*root(286720*a^9*b*c^8*d^7*e^9*z^3 + 286720*a^8*b*c^9*d^9*e^7*z^3 +
172032*a^10*b*c^7*d^5*e^11*z^3 + 172032*a^7*b*c^10*d^11*e^5*z^3 + 57344*a^1
1*b*c^6*d^3*e^13*z^3 + 57344*a^6*b*c^11*d^13*e^3*z^3 - 10240*a^11*b^3*c^4*d
*e^15*z^3 - 10240*a^4*b^3*c^11*d^15*e*z^3 + 5120*a^10*b^5*c^3*d*e^15*z^3 +
5120*a^3*b^5*c^10*d^15*e*z^3 - 1280*a^9*b^7*c^2*d*e^15*z^3 - 1280*a^2*b^7*c
^9*d^15*e*z^3 - 1232*a^5*b^12*c*d^4*e^12*z^3 - 1232*a*b^12*c^5*d^12*e^4*z^3
 + 1064*a^6*b^11*c*d^3*e^13*z^3 + 1064*a*b^11*c^6*d^13*e^3*z^3 + 840*a^4*b^
13*c*d^5*e^11*z^3 + 840*a*b^13*c^4*d^11*e^5*z^3 - 552*a^7*b^10*c*d^2*e^14*z
^3 - 552*a*b^10*c^7*d^14*e^2*z^3 - 280*a^3*b^14*c*d^6*e^10*z^3 - 280*a*b^14
*c^3*d^10*e^6*z^3 - 8*a^2*b^15*c*d^7*e^9*z^3 - 8*a*b^15*c^2*d^9*e^7*z^3 + 8
192*a^12*b*c^5*d*e^15*z^3 + 8192*a^5*b*c^12*d^15*e*z^3 + 160*a^8*b^9*c*d*e^
15*z^3 + 160*a*b^9*c^8*d^15*e*z^3 + 36*a*b^16*c*d^8*e^8*z^3 - 483840*a^8*b^
2*c^8*d^8*e^8*z^3 - 365568*a^7*b^5*c^6*d^7*e^9*z^3 - 365568*a^6*b^5*c^7*d^9
*e^7*z^3 - 358400*a^9*b^2*c^7*d^6*e^10*z^3 - 358400*a^7*b^2*c^9*d^10*e^6*z^
3 + 241920*a^7*b^4*c^7*d^8*e^8*z^3 + 215040*a^8*b^4*c^6*d^6*e^10*z^3 + 2150
40*a^8*b^3*c^7*d^7*e^9*z^3 + 215040*a^7*b^3*c^8*d^9*e^7*z^3 + 215040*a^6*b^
4*c^8*d^10*e^6*z^3 - 193536*a^8*b^5*c^5*d^5*e^11*z^3 - 193536*a^5*b^5*c^8*d
^11*e^5*z^3 - 136192*a^10*b^2*c^6*d^4*e^12*z^3 - 136192*a^6*b^2*c^10*d^12*e
^4*z^3 + 133056*a^6*b^6*c^6*d^8*e^8*z^3 + 125440*a^9*b^4*c^5*d^4*e^12*z^3 +
 125440*a^5*b^4*c^9*d^12*e^4*z^3 - 109944*a^5*b^8*c^5*d^8*e^8*z^3 + 106752*
a^6*b^7*c^5*d^7*e^9*z^3 + 106752*a^5*b^7*c^6*d^9*e^7*z^3 + 80640*a^7*b^7*c^
4*d^5*e^11*z^3 + 80640*a^4*b^7*c^7*d^11*e^5*z^3 - 77280*a^6*b^8*c^4*d^6*e^1
0*z^3 - 77280*a^4*b^8*c^6*d^10*e^6*z^3 + 71680*a^9*b^3*c^6*d^5*e^11*z^3 + 7
1680*a^6*b^3*c^9*d^11*e^5*z^3 + 69888*a^7*b^6*c^5*d^6*e^10*z^3 + 69888*a^5*
b^6*c^7*d^10*e^6*z^3 - 35840*a^9*b^5*c^4*d^3*e^13*z^3 - 35840*a^4*b^5*c^9*d
^13*e^3*z^3 + 30720*a^10*b^4*c^4*d^2*e^14*z^3 + 30720*a^4*b^4*c^10*d^14*e^2
*z^3 + 26880*a^8*b^7*c^3*d^3*e^13*z^3 + 26880*a^3*b^7*c^8*d^13*e^3*z^3 + 21
510*a^4*b^10*c^4*d^8*e^8*z^3 + 18536*a^5*b^10*c^3*d^6*e^10*z^3 + 18536*a^3*
b^10*c^5*d^10*e^6*z^3 - 18480*a^7*b^8*c^3*d^4*e^12*z^3 - 18480*a^3*b^8*c^7*
d^12*e^4*z^3 - 18432*a^11*b^2*c^5*d^2*e^14*z^3 - 18432*a^5*b^2*c^11*d^14*e^
2*z^3 - 16640*a^9*b^6*c^3*d^2*e^14*z^3 - 16640*a^3*b^6*c^9*d^14*e^2*z^3 - 1
4336*a^10*b^3*c^5*d^3*e^13*z^3 - 14336*a^5*b^3*c^10*d^13*e^3*z^3 - 13440*a^
8*b^6*c^4*d^4*e^12*z^3 - 13440*a^4*b^6*c^8*d^12*e^4*z^3 + 13280*a^5*b^9*c^4
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*d^7*e^9*z^3 + 13280*a^4*b^9*c^5*d^9*e^7*z^3 - 10840*a^4*b^11*c^3*d^7*e^9*z
^3 - 10840*a^3*b^11*c^4*d^9*e^7*z^3 + 7868*a^6*b^10*c^2*d^4*e^12*z^3 + 7868
*a^2*b^10*c^6*d^12*e^4*z^3 - 7840*a^7*b^9*c^2*d^3*e^13*z^3 - 7840*a^2*b^9*c
^7*d^13*e^3*z^3 - 5600*a^6*b^9*c^3*d^5*e^11*z^3 - 5600*a^3*b^9*c^6*d^11*e^5
*z^3 + 4320*a^8*b^8*c^2*d^2*e^14*z^3 + 4320*a^2*b^8*c^8*d^14*e^2*z^3 - 3528
*a^5*b^11*c^2*d^5*e^11*z^3 - 3528*a^2*b^11*c^5*d^11*e^5*z^3 + 1520*a^3*b^13
*c^2*d^7*e^9*z^3 + 1520*a^2*b^13*c^3*d^9*e^7*z^3 - 700*a^4*b^12*c^2*d^6*e^1
0*z^3 - 700*a^2*b^12*c^4*d^10*e^6*z^3 - 540*a^2*b^14*c^2*d^8*e^8*z^3 + 480*
a^3*b^12*c^3*d^8*e^8*z^3 - 8*b^17*c*d^9*e^7*z^3 - 8*b^11*c^7*d^15*e*z^3 - 8
*a^7*b^11*d*e^15*z^3 - 8*a*b^17*d^7*e^9*z^3 - 20*a^9*b^8*c*e^16*z^3 - 20*a*
b^8*c^9*d^16*z^3 + 70*b^14*c^4*d^12*e^4*z^3 - 56*b^15*c^3*d^11*e^5*z^3 - 56
*b^13*c^5*d^13*e^3*z^3 + 28*b^16*c^2*d^10*e^6*z^3 + 28*b^12*c^6*d^14*e^2*z^
3 - 71680*a^9*c^9*d^8*e^8*z^3 - 57344*a^10*c^8*d^6*e^10*z^3 - 57344*a^8*c^1
0*d^10*e^6*z^3 - 28672*a^11*c^7*d^4*e^12*z^3 - 28672*a^7*c^11*d^12*e^4*z^3
- 8192*a^12*c^6*d^2*e^14*z^3 - 8192*a^6*c^12*d^14*e^2*z^3 + 70*a^4*b^14*d^4
*e^12*z^3 - 56*a^5*b^13*d^3*e^13*z^3 - 56*a^3*b^15*d^5*e^11*z^3 + 28*a^6*b^
12*d^2*e^14*z^3 + 28*a^2*b^16*d^6*e^10*z^3 + 1280*a^12*b^2*c^4*e^16*z^3 - 6
40*a^11*b^4*c^3*e^16*z^3 + 160*a^10*b^6*c^2*e^16*z^3 + 1280*a^4*b^2*c^12*d^
16*z^3 - 640*a^3*b^4*c^11*d^16*z^3 + 160*a^2*b^6*c^10*d^16*z^3 - 1024*a^13*
c^5*e^16*z^3 - 1024*a^5*c^13*d^16*z^3 + b^18*d^8*e^8*z^3 + b^10*c^8*d^16*z^
3 + a^8*b^10*e^16*z^3 + 96*a*b*c^10*d^10*e^2*f*g*z + 69900*a^4*b^2*c^6*d^3*
e^9*f*g*z - 64590*a^4*b^3*c^5*d^2*e^10*f*g*z - 40200*a^3*b^4*c^5*d^3*e^9*f*
g*z + 32820*a^3*b^5*c^4*d^2*e^10*f*g*z + 10680*a^2*b^6*c^4*d^3*e^9*f*g*z +
10500*a^3*b^3*c^6*d^4*e^8*f*g*z + 8820*a^2*b^3*c^7*d^6*e^6*f*g*z - 8460*a^2
*b^7*c^3*d^2*e^10*f*g*z - 5880*a^3*b^2*c^7*d^5*e^7*f*g*z - 5040*a^2*b^4*c^6
*d^5*e^7*f*g*z - 3240*a^2*b^2*c^8*d^7*e^5*f*g*z - 1260*a^2*b^5*c^5*d^4*e^8*
f*g*z - 252*a*b^10*c*d*e^11*f*g*z + 55872*a^5*b*c^6*d^2*e^10*f*g*z - 30636*
a^5*b^2*c^5*d*e^11*f*g*z + 24180*a^4*b^4*c^4*d*e^11*f*g*z - 9720*a^3*b^6*c^
3*d*e^11*f*g*z + 3690*a*b^3*c^8*d^8*e^4*f*g*z - 3360*a^3*b*c^8*d^6*e^6*f*g*
z - 3240*a*b^4*c^7*d^7*e^5*f*g*z + 2160*a^2*b^8*c^2*d*e^11*f*g*z - 2100*a^4
*b*c^7*d^4*e^8*f*g*z - 1500*a*b^2*c^9*d^9*e^3*f*g*z - 1320*a*b^8*c^3*d^3*e^
9*f*g*z - 1260*a^2*b*c^9*d^8*e^4*f*g*z + 1080*a*b^9*c^2*d^2*e^10*f*g*z + 92
4*a*b^6*c^5*d^5*e^7*f*g*z + 252*a*b^5*c^6*d^6*e^6*f*g*z - 150*a*b^7*c^4*d^4
*e^8*f*g*z + 48*a*c^11*d^11*e*f*g*z - 660*b^4*c^8*d^9*e^3*f*g*z + 570*b^3*c
^9*d^10*e^2*f*g*z + 270*b^5*c^7*d^8*e^4*f*g*z + 84*b^6*c^6*d^7*e^5*f*g*z +
60*b^10*c^2*d^3*e^9*f*g*z - 60*b^8*c^4*d^5*e^7*f*g*z - 42*b^7*c^5*d^6*e^6*f
*g*z + 30*b^9*c^3*d^4*e^8*f*g*z - 59280*a^5*c^7*d^3*e^9*f*g*z + 3360*a^4*c^
8*d^5*e^7*f*g*z + 2400*a^3*c^9*d^7*e^5*f*g*z + 720*a^2*c^10*d^9*e^3*f*g*z +
 7410*a^5*b^3*c^4*e^12*f*g*z - 3810*a^4*b^5*c^3*e^12*f*g*z + 960*a^3*b^7*c^
2*e^12*f*g*z + 4872*a^6*b*c^5*d*e^11*g^2*z + 90*a*b^10*c*d^2*e^10*g^2*z + 8
0*a^2*b^9*c*d*e^11*g^2*z - 33048*a^5*b*c^6*d*e^11*f^2*z + 1800*a*b*c^10*d^9
*e^3*f^2*z - 720*a*b^9*c^2*d*e^11*f^2*z - 31575*a^4*b^2*c^6*d^4*e^8*g^2*z +
 24700*a^4*b^3*c^5*d^3*e^9*g^2*z + 16722*a^5*b^2*c^5*d^2*e^10*g^2*z + 15700
*a^3*b^4*c^5*d^4*e^8*g^2*z - 12140*a^3*b^5*c^4*d^3*e^9*g^2*z - 11640*a^4*b^
4*c^4*d^2*e^10*g^2*z - 4485*a^2*b^6*c^4*d^4*e^8*g^2*z + 4180*a^3*b^6*c^3*d^
2*e^10*g^2*z + 3120*a^2*b^7*c^3*d^3*e^9*g^2*z - 1960*a^3*b^3*c^6*d^5*e^7*g^
2*z + 1820*a^3*b^2*c^7*d^6*e^6*g^2*z + 1596*a^2*b^5*c^5*d^5*e^7*g^2*z + 118
5*a^2*b^2*c^8*d^8*e^4*g^2*z - 1080*a^2*b^3*c^7*d^7*e^5*g^2*z - 840*a^2*b^8*
c^2*d^2*e^10*g^2*z - 840*a^2*b^4*c^6*d^6*e^6*g^2*z - 50760*a^4*b^2*c^6*d^2*
e^10*f^2*z + 25380*a^3*b^4*c^5*d^2*e^10*f^2*z - 12600*a^3*b^2*c^7*d^4*e^8*f
^2*z - 10080*a^2*b^2*c^8*d^6*e^6*f^2*z - 6030*a^2*b^6*c^4*d^2*e^10*f^2*z +
3150*a^2*b^4*c^6*d^4*e^8*f^2*z + 2520*a^2*b^3*c^7*d^5*e^7*f^2*z - 1260*a^2*
b^5*c^5*d^3*e^9*f^2*z - 228*b^2*c^10*d^11*e*f*g*z - 54*b^11*c*d^2*e^10*f*g*
z + 12816*a^6*c^6*d*e^11*f*g*z - 5508*a^6*b*c^5*e^12*f*g*z - 120*a^2*b^9*c*
e^12*f*g*z - 24*a*b*c^10*d^11*e*g^2*z - 18360*a^5*b*c^6*d^3*e^9*g^2*z - 534
0*a^5*b^3*c^4*d*e^11*g^2*z + 2580*a^4*b^5*c^3*d*e^11*g^2*z + 1680*a^4*b*c^7
*d^5*e^7*g^2*z + 1380*a*b^5*c^6*d^7*e^5*g^2*z - 1050*a*b^4*c^7*d^8*e^4*g^2*
z - 686*a*b^6*c^5*d^6*e^6*g^2*z - 640*a^3*b^7*c^2*d*e^11*g^2*z + 570*a*b^8*
c^3*d^4*e^8*g^2*z - 400*a*b^9*c^2*d^3*e^9*g^2*z - 280*a^2*b*c^9*d^9*e^3*g^2
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*z + 260*a*b^3*c^8*d^9*e^3*g^2*z + 80*a^3*b*c^8*d^7*e^5*g^2*z + 50*a*b^2*c^
9*d^10*e^2*g^2*z + 44460*a^4*b^3*c^5*d*e^11*f^2*z - 22860*a^3*b^5*c^4*d*e^1
1*f^2*z + 15120*a^3*b*c^8*d^5*e^7*f^2*z + 12600*a^4*b*c^7*d^3*e^9*f^2*z + 7
920*a^2*b*c^9*d^7*e^5*f^2*z + 5760*a^2*b^7*c^3*d*e^11*f^2*z - 3060*a*b^2*c^
9*d^8*e^4*f^2*z + 1440*a*b^3*c^8*d^7*e^5*f^2*z - 1260*a*b^5*c^6*d^5*e^7*f^2
*z + 1260*a*b^4*c^7*d^6*e^6*f^2*z + 720*a*b^8*c^3*d^2*e^10*f^2*z + 180*a*b^
7*c^4*d^3*e^9*f^2*z + 216*b*c^11*d^11*e*f^2*z + 36*b^11*c*d*e^11*f^2*z - 4*
a*b^11*d*e^11*g^2*z + 180*a*b^10*c*e^12*f^2*z + 200*b^5*c^7*d^9*e^3*g^2*z -
 160*b^4*c^8*d^10*e^2*g^2*z - 85*b^6*c^6*d^8*e^4*g^2*z + 70*b^8*c^4*d^6*e^6
*g^2*z - 56*b^7*c^5*d^7*e^5*g^2*z - 25*b^10*c^2*d^4*e^8*g^2*z - 20*b^9*c^3*
d^5*e^7*g^2*z + 24000*a^5*c^7*d^4*e^8*g^2*z - 11280*a^6*c^6*d^2*e^10*g^2*z
- 1120*a^4*c^8*d^6*e^6*g^2*z + 540*b^3*c^9*d^9*e^3*f^2*z - 504*b^2*c^10*d^1
0*e^2*f^2*z - 320*a^3*c^9*d^8*e^4*g^2*z - 225*b^4*c^8*d^8*e^4*f^2*z + 144*b
^7*c^5*d^5*e^7*f^2*z - 126*b^6*c^6*d^6*e^6*f^2*z - 45*b^8*c^4*d^4*e^8*f^2*z
 - 36*b^10*c^2*d^2*e^10*f^2*z + 36*b^5*c^7*d^7*e^5*f^2*z - 16*a^2*c^10*d^10
*e^2*g^2*z + 33048*a^5*c^7*d^2*e^10*f^2*z - 6300*a^4*c^8*d^4*e^8*f^2*z - 50
40*a^3*c^9*d^6*e^6*f^2*z - 1980*a^2*c^10*d^8*e^4*f^2*z - 1185*a^6*b^2*c^4*e
^12*g^2*z + 630*a^5*b^4*c^3*e^12*g^2*z - 160*a^4*b^6*c^2*e^12*g^2*z - 11565
*a^4*b^4*c^4*e^12*f^2*z + 9612*a^5*b^2*c^5*e^12*f^2*z + 5760*a^3*b^6*c^3*e^
12*f^2*z - 1440*a^2*b^8*c^2*e^12*f^2*z + 12*b^12*d*e^11*f*g*z + 36*b*c^11*d
^12*f*g*z + 6*a*b^11*e^12*f*g*z + 60*b^3*c^9*d^11*e*g^2*z + 20*b^11*c*d^3*e
^9*g^2*z - 360*a*c^11*d^10*e^2*f^2*z + 20*a^3*b^8*c*e^12*g^2*z - 4*b^12*d^2
*e^10*g^2*z + 768*a^7*c^5*e^12*g^2*z - 9*b^2*c^10*d^12*g^2*z - 900*a^6*c^6*
e^12*f^2*z - a^2*b^10*e^12*g^2*z - 36*c^12*d^12*f^2*z - 9*b^12*e^12*f^2*z +
 4644*a*b^2*c^6*d^2*e^8*f^2*g + 3420*a^2*b*c^6*d^2*e^8*f*g^2 - 2436*a*b^2*c
^6*d^3*e^7*f*g^2 - 2142*a^2*b^2*c^5*d*e^9*f*g^2 - 1470*a*b^3*c^5*d^2*e^8*f*
g^2 + 1020*a*b^4*c^4*d*e^9*f*g^2 + 732*a*b*c^7*d^4*e^6*f*g^2 + 720*a*b*c^7*
d^3*e^7*f^2*g - 648*a^2*b*c^6*d*e^9*f^2*g - 468*a*b^3*c^5*d*e^9*f^2*g + 981
*a^2*b^2*c^5*d^2*e^8*g^3 - 540*b^3*c^6*d^3*e^7*f^2*g + 468*b^2*c^7*d^4*e^6*
f^2*g - 459*b^4*c^5*d^2*e^8*f^2*g - 438*b^2*c^7*d^5*e^5*f*g^2 + 396*b^4*c^5
*d^3*e^7*f*g^2 + 120*b^5*c^4*d^2*e^8*f*g^2 + 87*b^3*c^6*d^4*e^6*f*g^2 - 745
2*a^2*c^7*d^2*e^8*f^2*g + 2688*a^2*c^7*d^3*e^7*f*g^2 + 1512*a^2*b^2*c^5*e^1
0*f^2*g + 555*a^2*b^3*c^4*e^10*f*g^2 - 1184*a^2*b*c^6*d^3*e^7*g^3 + 796*a*b
^3*c^5*d^3*e^7*g^3 - 360*a*b^4*c^4*d^2*e^8*g^3 - 350*a^2*b^3*c^4*d*e^9*g^3
+ 7*a*b^2*c^6*d^4*e^6*g^3 + 216*b*c^8*d^5*e^5*f^2*g + 180*b*c^8*d^6*e^4*f*g
^2 - 120*b^6*c^3*d*e^9*f*g^2 + 90*b^5*c^4*d*e^9*f^2*g - 1332*a*c^8*d^4*e^6*
f^2*g + 1008*a^3*c^6*d*e^9*f*g^2 + 240*a*c^8*d^5*e^5*f*g^2 - 1404*a^3*b*c^5
*e^10*f*g^2 - 765*a*b^4*c^4*e^10*f^2*g - 60*a*b^5*c^3*e^10*f*g^2 + 760*a^3*
b*c^5*d*e^9*g^3 - 120*a*b*c^7*d^5*e^5*g^3 + 40*a*b^5*c^3*d*e^9*g^3 - 1944*a
*b*c^7*d^2*e^8*f^3 - 1728*a*b^2*c^6*d*e^9*f^3 - 180*c^9*d^6*e^4*f^2*g + 90*
b^6*c^3*e^10*f^2*g + 900*a^3*c^6*e^10*f^2*g - 540*b*c^8*d^4*e^6*f^3 + 162*b
^4*c^5*d*e^9*f^3 + 5400*a^2*c^7*d*e^9*f^3 + 1296*a*c^8*d^3*e^7*f^3 - 2700*a
^2*b*c^6*e^10*f^3 + 1188*a*b^3*c^5*e^10*f^3 + 138*b^3*c^6*d^5*e^5*g^3 - 98*
b^4*c^5*d^4*e^6*g^3 - 80*b^5*c^4*d^3*e^7*g^3 - 45*b^2*c^7*d^6*e^4*g^3 + 40*
b^6*c^3*d^2*e^8*g^3 - 1264*a^3*c^6*d^2*e^8*g^3 + 216*b^3*c^6*d^2*e^8*f^3 +
216*b^2*c^7*d^3*e^7*f^3 - 80*a^2*c^7*d^4*e^6*g^3 - 95*a^3*b^2*c^4*e^10*g^3
+ 10*a^2*b^4*c^3*e^10*g^3 + 216*c^9*d^5*e^5*f^3 + 256*a^4*c^5*e^10*g^3 - 13
5*b^5*c^4*e^10*f^3, z, k), k, 1, 3) + ((b^6*d^2*e^3*f - 8*a^2*c^4*d^5*g - 3
2*a^4*c^2*e^5*f - b^3*c^3*d^5*f - 2*a^2*b^4*e^5*f + 10*a*b*c^4*d^5*f - 5*a*
b^5*d*e^4*f - a*b^2*c^3*d^5*g + 16*a^3*b^2*c*e^5*f + a*b^5*d^2*e^3*g + 5*a^
2*b^4*d*e^4*g + 16*a^2*c^4*d^4*e*f + 56*a^4*c^2*d*e^4*g + 3*b^4*c^2*d^4*e*f
 - 3*b^5*c*d^3*e^2*f + 80*a^3*c^3*d^2*e^3*f - 48*a^3*c^3*d^3*e^2*g + 21*a*b
^3*c^2*d^3*e^2*f - 9*a^2*b^3*c*d^2*e^3*g + 44*a^3*b*c^2*d^2*e^3*g - 56*a^2*
b^2*c^2*d^2*e^3*f + 6*a^2*b^2*c^2*d^3*e^2*g - 28*a*b^2*c^3*d^4*e*f + 2*a*b^
4*c*d^2*e^3*f + 36*a^2*b^3*c*d*e^4*f - 58*a^3*b*c^2*d*e^4*f + 3*a*b^3*c^2*d
^4*e*g - 3*a*b^4*c*d^3*e^2*g + 12*a^2*b*c^3*d^4*e*g - 37*a^3*b^2*c*d*e^4*g)
/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*
e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5
 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*
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e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*
e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*
b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*
e^4 - 96*a^3*b*c^3*d^3*e^3)) - (x^4*(30*a^2*c^4*e^5*f + 3*b^4*c^2*e^5*f - 6
*c^6*d^4*e*f + 3*b*c^5*d^4*e*g - 21*a*b^2*c^3*e^5*f - a*b^3*c^2*e^5*g + 7*a
^2*b*c^3*e^5*g - 24*a*c^5*d^2*e^3*f + 4*a*c^5*d^3*e^2*g + 12*b*c^5*d^3*e^2*
f - 44*a^2*c^4*d*e^4*g - 3*b^3*c^3*d*e^4*f - 2*b^4*c^2*d*e^4*g - 3*b^2*c^4*
d^2*e^3*f - 7*b^2*c^4*d^3*e^2*g + 3*b^3*c^3*d^2*e^3*g + 24*a*b*c^4*d*e^4*f
+ 6*a*b*c^4*d^2*e^3*g + 13*a*b^2*c^3*d*e^4*g))/(16*a^2*c^5*d^6 + a^3*b^4*e^
6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^
2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4
*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 3
2*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b
^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5
 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3) - (x
^2*(6*b^6*e^5*f + 100*a^3*c^3*e^5*f + 9*b^2*c^4*d^5*g - 2*a*b^5*e^5*g - 18*
b*c^5*d^5*f - 4*b^6*d*e^4*g - 36*a*b^4*c*e^5*f - 20*a*c^5*d^4*e*f + 12*a^2*
b^3*c*e^5*g + 2*a^3*b*c^2*e^5*g - 152*a^3*c^3*d*e^4*g + 32*b^2*c^4*d^4*e*f
- 19*b^3*c^3*d^4*e*g + 2*b^5*c*d^2*e^3*g + 14*a^2*b^2*c^2*e^5*f - 112*a^2*c
^4*d^2*e^3*f + 40*a^2*c^4*d^3*e^2*g - b^3*c^3*d^3*e^2*f - 13*b^4*c^2*d^2*e^
3*f + 6*b^4*c^2*d^3*e^2*g + 62*a*b^2*c^3*d^2*e^3*f - 16*a*b^2*c^3*d^3*e^2*g
 + 5*a*b^3*c^2*d^2*e^3*g - 16*a^2*b*c^3*d^2*e^3*g - 5*a^2*b^2*c^2*d*e^4*g +
 22*a*b*c^4*d^4*e*g + 20*a*b^4*c*d*e^4*g - 32*a*b*c^4*d^3*e^2*f - a*b^3*c^2
*d*e^4*f + 58*a^2*b*c^3*d*e^4*f))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5
*c^2*e^6 + b^4*c^3*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 +
3*a*b^6*d^2*e^4 - 3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*
a^3*c^4*d^4*e^2 + 48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*
c^2*d^3*e^3 + 24*a^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e
^3 - 48*a^2*b*c^4*d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^
4*c^2*d^4*e^2 - 21*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)) + (x^3*(12*c^
6*d^5*f + 16*a^3*c^3*e^5*g - 6*b*c^5*d^5*g - 12*b^5*c*e^5*f + 4*a*b^4*c*e^5
*g - 8*a*c^5*d^4*e*g - 6*b*c^5*d^4*e*f + 8*b^5*c*d*e^4*g + 87*a*b^3*c^2*e^5
*f - 138*a^2*b*c^3*e^5*f + 48*a*c^5*d^3*e^2*f + 36*a^2*c^4*d*e^4*f + 9*b^4*
c^2*d*e^4*f + 5*b^2*c^4*d^4*e*g - 29*a^2*b^2*c^2*e^5*g + 8*a^2*c^4*d^2*e^3*
g - 30*b^2*c^4*d^3*e^2*f + 15*b^3*c^3*d^2*e^3*f + 15*b^3*c^3*d^3*e^2*g - 10
*b^4*c^2*d^2*e^3*g - 4*a*b^2*c^3*d^2*e^3*g + 24*a*b*c^4*d^2*e^3*f - 78*a*b^
2*c^3*d*e^4*f - 24*a*b*c^4*d^3*e^2*g - 53*a*b^3*c^2*d*e^4*g + 150*a^2*b*c^3
*d*e^4*g))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3*d^6
- b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 - 3*a^2
*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 + 48*a^
4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a^3*b^
2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*d^5*e
 + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21*a^2*
b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)) + (x*(3*a^2*b^4*e^5*g + 4*b^2*c^4*d^
5*f + 24*a^4*c^2*e^5*g - 2*b^3*c^3*d^5*g + 2*b^6*d^2*e^3*g - 9*a*b^5*e^5*f
+ 20*a*c^5*d^5*f - 3*b^6*d*e^4*f - 10*a*b*c^4*d^5*g + 7*a*b^5*d*e^4*g + 68*
a^2*b^3*c*e^5*f - 122*a^3*b*c^2*e^5*f - 21*a^3*b^2*c*e^5*g + 44*a^3*c^3*d*e
^4*f - 9*b^3*c^3*d^4*e*f + 5*b^5*c*d^2*e^3*f + 6*b^4*c^2*d^4*e*g - 6*b^5*c*
d^3*e^2*g + 64*a^2*c^4*d^3*e^2*f + 24*a^3*c^3*d^2*e^3*g + 3*b^4*c^2*d^3*e^2
*f + 14*a*b^2*c^3*d^3*e^2*f - 33*a*b^3*c^2*d^2*e^3*f + 16*a^2*b*c^3*d^2*e^3
*f - 70*a^2*b^2*c^2*d*e^4*f + 21*a*b^3*c^2*d^3*e^2*g - 72*a^2*b*c^3*d^3*e^2
*g - 30*a*b*c^4*d^4*e*f + 26*a*b^4*c*d*e^4*f + 40*a^2*b^2*c^2*d^2*e^3*g + 9
*a*b^2*c^3*d^4*e*g - 15*a*b^4*c*d^2*e^3*g - 53*a^2*b^3*c*d*e^4*g + 106*a^3*
b*c^2*d*e^4*g))/(2*(16*a^2*c^5*d^6 + a^3*b^4*e^6 + 16*a^5*c^2*e^6 + b^4*c^3
*d^6 - b^7*d^3*e^3 - 8*a*b^2*c^4*d^6 - 8*a^4*b^2*c*e^6 + 3*a*b^6*d^2*e^4 -
3*a^2*b^5*d*e^5 - 3*b^5*c^2*d^5*e + 3*b^6*c*d^4*e^2 + 48*a^3*c^4*d^4*e^2 +
48*a^4*c^3*d^2*e^4 + 24*a^2*b^2*c^3*d^4*e^2 + 32*a^2*b^3*c^2*d^3*e^3 + 24*a
^3*b^2*c^2*d^2*e^4 + 24*a*b^3*c^3*d^5*e + 2*a*b^5*c*d^3*e^3 - 48*a^2*b*c^4*
d^5*e + 24*a^3*b^3*c*d*e^5 - 48*a^4*b*c^2*d*e^5 - 21*a*b^4*c^2*d^4*e^2 - 21
```

```
*a^2*b^4*c*d^2*e^4 - 96*a^3*b*c^3*d^3*e^3)))/(x^2*(b^2*d + 2*a*b*e + 2*a*c*
d) + x^3*(b^2*e + 2*a*c*e + 2*b*c*d) + x*(a^2*e + 2*a*b*d) + a^2*d + x^4*(c
^2*d + 2*b*c*e) + c^2*e*x^5)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((g*x+f)/(e*x+d)**2/(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2378 $\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2} \, dx$

Optimal. Leaf size=43

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}-6\log(x+1)+\frac{10625}{243}\log(3x+2)$$

```
[Out] 11576/81*x+1156/27*x^2+32/27*x^3-4/3*x^4-6*ln(1+x)+10625/243*ln(2+3*x)
```

Rubi [A] time = 0.02, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}-6\log(x+1)+\frac{10625}{243}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (11576*x)/81 + (1156*x^2)/27 + (32*x^3)/27 - (4*x^4)/3 - 6*Log[1 + x] + (10
625*Log[2 + 3*x])/243
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{2+5x+3x^2} \, dx &= \int \left(\frac{11576}{81}+\frac{2312x}{27}+\frac{32x^2}{9}-\frac{16x^3}{3}+\frac{9653+9167x}{81\left(2+5x+3x^2\right)}\right) dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}+\frac{1}{81}\int \frac{9653+9167x}{2+5x+3x^2} \, dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}-18\int \frac{1}{3+3x} \, dx+\frac{10625}{81}\int \frac{1}{2+3x} \, dx \\
&= \frac{11576x}{81}+\frac{1156x^2}{27}+\frac{32x^3}{27}-\frac{4x^4}{3}-6\log(1+x)+\frac{10625}{243}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.02, size = 43, normalized size = 1.00

$$\frac{1}{972}\left(42500\log(-6x-4)-3\left(432x^4-384x^3-13872x^2-46304x+1944\log(-2(x+1))-41727\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (42500*Log[-4 - 6*x] - 3*(-41727 - 46304*x - 13872*x^2 - 384*x^3 + 432*x^4
+ 1944*Log[-2*(1 + x)]))/972
```

fricas [A] time = 0.70, size = 33, normalized size = 0.77

$$-\frac{4}{3}\,x^{4}+\frac{32}{27}\,x^{3}+\frac{1156}{27}\,x^{2}+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(3*x + 2) -
6*log(x + 1)
```

giac [A] time = 0.16, size = 35, normalized size = 0.81

$$-\frac{4}{3}\,x^{4}+\frac{32}{27}\,x^{3}+\frac{1156}{27}\,x^{2}+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(abs(3*x + 2
)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 34, normalized size = 0.79

$$-\frac{4x^{4}}{3}+\frac{32x^{3}}{27}+\frac{1156x^{2}}{27}+\frac{11576x}{81}+\frac{10625\ln\left(3x+2\right)}{243}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2),x)
```

```
[Out] 11576/81*x+1156/27*x^2+32/27*x^3-4/3*x^4-6*ln(x+1)+10625/243*ln(3*x+2)
```

maxima [A] time = 0.49, size = 33, normalized size = 0.77

$$-\frac{4}{3}\,x^{4}+\frac{32}{27}\,x^{3}+\frac{1156}{27}\,x^{2}+\frac{11576}{81}\,x+\frac{10625}{243}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -4/3*x^4 + 32/27*x^3 + 1156/27*x^2 + 11576/81*x + 10625/243*log(3*x + 2) -
6*log(x + 1)
```

mupad [B] time = 0.05, size = 31, normalized size = 0.72

$$\frac{11576\,x}{81}-6\,\ln\left(x+1\right)+\frac{10625\,\ln\left(x+\frac{2}{3}\right)}{243}+\frac{1156\,x^2}{27}+\frac{32\,x^3}{27}-\frac{4\,x^4}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (11576*x)/81 - 6*log(x + 1) + (10625*log(x + 2/3))/243 + (1156*x^2)/27 + (3
2*x^3)/27 - (4*x^4)/3
```

sympy [**A**] time = 0.13, size = 41, normalized size = 0.95

$$-\frac{4x^4}{3}+\frac{32x^3}{27}+\frac{1156x^2}{27}+\frac{11576x}{81}+\frac{10625\log\left(x+\frac{2}{3}\right)}{243}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2),x)
```

```
[Out] -4*x**4/3 + 32*x**3/27 + 1156*x**2/27 + 11576*x/81 + 10625*log(x + 2/3)/243
 - 6*log(x + 1)
```

3.2379 $\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2}\,dx$

Optimal. Leaf size=36

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}-6\log(x+1)+\frac{2125}{81}\log(3x+2)$$

```
[Out] 922/27*x+26/9*x^2-8/9*x^3-6*ln(1+x)+2125/81*ln(2+3*x)
```

Rubi [A] time = 0.02, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}-6\log(x+1)+\frac{2125}{81}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (922*x)/27 + (26*x^2)/9 - (8*x^3)/9 - 6*Log[1 + x] + (2125*Log[2 + 3*x])/81
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{2+5x+3x^2}\,dx &= \int \left(\frac{922}{27}+\frac{52x}{9}-\frac{8x^2}{3}+\frac{1801+1639x}{27\left(2+5x+3x^2\right)}\right)dx\\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}+\frac{1}{27}\int \frac{1801+1639x}{2+5x+3x^2}\,dx\\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}-18\int \frac{1}{3+3x}\,dx+\frac{2125}{27}\int \frac{1}{2+3x}\,dx\\
&= \frac{922x}{27}+\frac{26x^2}{9}-\frac{8x^3}{9}-6\log(1+x)+\frac{2125}{81}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 35, normalized size = 0.97

$$\frac{1}{162}\left(-144x^3+468x^2+5532x+4250\log(-6x-4)-972\log(-2(x+1))+6759\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (6759 + 5532*x + 468*x^2 - 144*x^3 + 4250*Log[-4 - 6*x] - 972*Log[-2*(1 + x
)])/162
```

fricas [A] time = 0.52, size = 28, normalized size = 0.78

$$-\frac{8}{9}\,x^{3}+\frac{26}{9}\,x^{2}+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.15, size = 30, normalized size = 0.83

$$-\frac{8}{9}\,x^{3}+\frac{26}{9}\,x^{2}+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(abs(3*x + 2)) - 6*log(abs(x +
1))
```

maple [A] time = 0.05, size = 29, normalized size = 0.81

$$-\frac{8x^{3}}{9}+\frac{26x^{2}}{9}+\frac{922x}{27}+\frac{2125\ln\left(3x+2\right)}{81}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2),x)
```

```
[Out] 922/27*x+26/9*x^2-8/9*x^3-6*ln(x+1)+2125/81*ln(3*x+2)
```

maxima [A] time = 0.50, size = 28, normalized size = 0.78

$$-\frac{8}{9}\,x^{3}+\frac{26}{9}\,x^{2}+\frac{922}{27}\,x+\frac{2125}{81}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -8/9*x^3 + 26/9*x^2 + 922/27*x + 2125/81*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 2.31, size = 26, normalized size = 0.72

$$\frac{922\,x}{27}-6\,\ln\left(x+1\right)+\frac{2125\,\ln\left(x+\frac{2}{3}\right)}{81}+\frac{26\,x^2}{9}-\frac{8\,x^3}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (922*x)/27 - 6*log(x + 1) + (2125*log(x + 2/3))/81 + (26*x^2)/9 - (8*x^3)/9
```

sympy [**A**] time = 0.13, size = 34, normalized size = 0.94

$$-\frac{8x^3}{9}+\frac{26x^2}{9}+\frac{922x}{27}+\frac{2125\log\left(x+\frac{2}{3}\right)}{81}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2),x)
```

```
[Out] -8*x**3/9 + 26*x**2/9 + 922*x/27 + 2125*log(x + 2/3)/81 - 6*log(x + 1)
```

3.2380 $\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2} \, dx$

Optimal. Leaf size=29

$$-\frac{2x^2}{3}+\frac{44x}{9}-6\log(x+1)+\frac{425}{27}\log(3x+2)$$

```
[Out] 44/9*x-2/3*x^2-6*ln(1+x)+425/27*ln(2+3*x)
```

Rubi [A] time = 0.02, antiderivative size = 29, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {800, 632, 31}

$$-\frac{2x^2}{3}+\frac{44x}{9}-6\log(x+1)+\frac{425}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2),x]
```

```
[Out] (44*x)/9 - (2*x^2)/3 - 6*Log[1 + x] + (425*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{2+5x+3x^2} \, dx &= \int \left(\frac{44}{9}-\frac{4x}{3}+\frac{317+263x}{9\left(2+5x+3x^2\right)}\right) dx \\
&= \frac{44x}{9}-\frac{2x^2}{3}+\frac{1}{9}\int \frac{317+263x}{2+5x+3x^2} \, dx \\
&= \frac{44x}{9}-\frac{2x^2}{3}-18\int \frac{1}{3+3x} \, dx+\frac{425}{9}\int \frac{1}{2+3x} \, dx \\
&= \frac{44x}{9}-\frac{2x^2}{3}-6\log(1+x)+\frac{425}{27}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 34, normalized size = 1.17

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425}{27}\log(-6x-4)-6\log(-2(x+1))+\frac{53}{6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2),x]
[Out] 53/6 + (44*x)/9 - (2*x^2)/3 + (425*Log[-4 - 6*x])/27 - 6*Log[-2*(1 + x)]
```

fricas [**A**] time = 0.71, size = 23, normalized size = 0.79

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="fricas")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(3*x + 2) - 6*log(x + 1)
```

giac [**A**] time = 0.17, size = 25, normalized size = 0.86

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="giac")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [**A**] time = 0.06, size = 24, normalized size = 0.83

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425\ln\left(3x+2\right)}{27}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2),x)
[Out] 44/9*x-2/3*x^2-6*ln(x+1)+425/27*ln(3*x+2)
```

maxima [**A**] time = 0.56, size = 23, normalized size = 0.79

$$-\frac{2}{3}\,x^2+\frac{44}{9}\,x+\frac{425}{27}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="maxima")
[Out] -2/3*x^2 + 44/9*x + 425/27*log(3*x + 2) - 6*log(x + 1)
```

mupad [**B**] time = 0.03, size = 21, normalized size = 0.72

$$\frac{44\,x}{9}-6\,\ln\left(x+1\right)+\frac{425\,\ln\left(x+\frac{2}{3}\right)}{27}-\frac{2\,x^2}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2),x)
[Out] (44*x)/9 - 6*log(x + 1) + (425*log(x + 2/3))/27 - (2*x^2)/3
```

sympy [**A**] time = 0.12, size = 27, normalized size = 0.93

$$-\frac{2x^2}{3}+\frac{44x}{9}+\frac{425\log\left(x+\frac{2}{3}\right)}{27}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2),x)
```

```
[Out] -2*x**2/3 + 44*x/9 + 425*log(x + 2/3)/27 - 6*log(x + 1)
```

3.2381 $\int \frac{(5-x)(3+2x)}{2+5x+3x^2}\,dx$

Optimal. Leaf size=22

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

```
[Out] -2/3*x-6*ln(1+x)+85/9*ln(2+3*x)
```

Rubi [A] time = 0.01, antiderivative size = 22, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = {773, 632, 31}

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*x)/3 - 6*Log[1 + x] + (85*Log[2 + 3*x])/9
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 773

```
Int[(((d_.) + (e_.)*(x_))*((f_) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) + (c_.)*
(x_)^2), x_Symbol] :> Simp[(e*g*x)/c, x] + Dist[1/c, Int[(c*d*f - a*e*g + (
c*e*f + c*d*g - b*e*g)*x)/(a + b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e
, f, g}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)}{2+5x+3x^2}\,dx &= -\frac{2x}{3}+\frac{1}{3}\int \frac{49+31x}{2+5x+3x^2}\,dx\\
&= -\frac{2x}{3}-18\int \frac{1}{3+3x}\,dx+\frac{85}{3}\int \frac{1}{2+3x}\,dx\\
&= -\frac{2x}{3}-6\log(1+x)+\frac{85}{9}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 1.00

$$-\frac{2x}{3}-6\log(x+1)+\frac{85}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*x)/3 - 6*Log[1 + x] + (85*Log[2 + 3*x])/9
```

fricas [A] time = 0.69, size = 18, normalized size = 0.82

$$-\frac{2}{3}\,x+\frac{85}{9}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -2/3*x + 85/9*log(3*x + 2) - 6*log(x + 1)
```

giac [A] time = 0.21, size = 20, normalized size = 0.91

$$-\frac{2}{3}\,x+\frac{85}{9}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/3*x + 85/9*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 19, normalized size = 0.86

$$-\frac{2x}{3}+\frac{85\ln\left(3x+2\right)}{9}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2),x)
```

```
[Out] -2/3*x-6*ln(x+1)+85/9*ln(3*x+2)
```

maxima [A] time = 0.48, size = 18, normalized size = 0.82

$$-\frac{2}{3}\,x+\frac{85}{9}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/3*x + 85/9*log(3*x + 2) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 16, normalized size = 0.73

$$\frac{85\,\ln\left(x+\frac{2}{3}\right)}{9}-6\,\ln\left(x+1\right)-\frac{2\,x}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (85*log(x + 2/3))/9 - 6*log(x + 1) - (2*x)/3
```

sympy [A] time = 0.12, size = 20, normalized size = 0.91

$$-\frac{2x}{3}+\frac{85\log\left(x+\frac{2}{3}\right)}{9}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2),x)
```

```
[Out] -2*x/3 + 85*log(x + 2/3)/9 - 6*log(x + 1)
```

3.2382 $\int \frac{5-x}{2+5x+3x^2}\,dx$

Optimal. Leaf size=17

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

```
[Out] -6*ln(1+x)+17/3*ln(2+3*x)
```

Rubi [A] time = 0.01, antiderivative size = 17, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {632, 31}

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2),x]
```

```
[Out] -6*Log[1 + x] + (17*Log[2 + 3*x])/3
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{2+5x+3x^2}\,dx &= 17\int \frac{1}{2+3x}\,dx-18\int \frac{1}{3+3x}\,dx\\ &= -6\log(1+x)+\frac{17}{3}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.00, size = 17, normalized size = 1.00

$$\frac{17}{3}\log(3x+2)-6\log(x+1)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2),x]
```

```
[Out] -6*Log[1 + x] + (17*Log[2 + 3*x])/3
```

fricas [A] time = 0.61, size = 15, normalized size = 0.88

$$\frac{17}{3}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 17/3*log(3*x + 2) - 6*log(x + 1)
```

giac [**A**] time = 0.15, size = 17, normalized size = 1.00

$$\frac{17}{3}\,\log\left(|3\,x+2|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/3*log(abs(3*x + 2)) - 6*log(abs(x + 1))
```

maple [**A**] time = 0.05, size = 16, normalized size = 0.94

$$\frac{17\ln\left(3x+2\right)}{3}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2),x)
```

```
[Out] -6*ln(x+1)+17/3*ln(3*x+2)
```

maxima [**A**] time = 0.73, size = 15, normalized size = 0.88

$$\frac{17}{3}\,\log\left(3\,x+2\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/3*log(3*x + 2) - 6*log(x + 1)
```

mupad [**B**] time = 2.32, size = 13, normalized size = 0.76

$$\frac{17\,\ln\left(x+\frac{2}{3}\right)}{3}-6\,\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2),x)
```

```
[Out] (17*log(x + 2/3))/3 - 6*log(x + 1)
```

sympy [**A**] time = 0.10, size = 15, normalized size = 0.88

$$\frac{17\log\left(x+\frac{2}{3}\right)}{3}-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2),x)
```

```
[Out] 17*log(x + 2/3)/3 - 6*log(x + 1)
```

3.2383 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=27

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

```
[Out] -6*ln(1+x)+13/5*ln(3+2*x)+17/5*ln(2+3*x)
```

Rubi [A] time = 0.03, antiderivative size = 27, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -6*Log[1 + x] + (13*Log[3 + 2*x])/5 + (17*Log[2 + 3*x])/5
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)}+\frac{51}{5(2+3x)}\right)dx\\ &= -6\log(1+x)+\frac{13}{5}\log(3+2x)+\frac{17}{5}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 27, normalized size = 1.00

$$-6\log(x+1)+\frac{13}{5}\log(2x+3)+\frac{17}{5}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -6*Log[1 + x] + (13*Log[3 + 2*x])/5 + (17*Log[2 + 3*x])/5
```

fricas [A] time = 0.68, size = 23, normalized size = 0.85

$$\frac{17}{5}\log\left(3x+2\right)+\frac{13}{5}\log\left(2x+3\right)-6\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 17/5*log(3*x + 2) + 13/5*log(2*x + 3) - 6*log(x + 1)
```

giac [**A**]   time = 0.15, size = 26, normalized size = 0.96

$$\frac{17}{5}\,\log\left(|3\,x+2|\right)+\frac{13}{5}\,\log\left(|2\,x+3|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/5*log(abs(3*x + 2)) + 13/5*log(abs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [**A**]   time = 0.05, size = 24, normalized size = 0.89

$$\frac{17\ln\left(3x+2\right)}{5}+\frac{13\ln\left(2x+3\right)}{5}-6\ln\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2),x)
```

```
[Out] -6*ln(x+1)+13/5*ln(2*x+3)+17/5*ln(3*x+2)
```

maxima [**A**]   time = 0.55, size = 23, normalized size = 0.85

$$\frac{17}{5}\,\log\left(3\,x+2\right)+\frac{13}{5}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/5*log(3*x + 2) + 13/5*log(2*x + 3) - 6*log(x + 1)
```

mupad [**B**]   time = 0.05, size = 19, normalized size = 0.70

$$\frac{17\,\ln\left(x+\frac{2}{3}\right)}{5}-6\,\ln\left(x+1\right)+\frac{13\,\ln\left(x+\frac{3}{2}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (17*log(x + 2/3))/5 - 6*log(x + 1) + (13*log(x + 3/2))/5
```

sympy [**A**]   time = 0.14, size = 26, normalized size = 0.96

$$\frac{17\log\left(x+\frac{2}{3}\right)}{5}-6\log\left(x+1\right)+\frac{13\log\left(x+\frac{3}{2}\right)}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2),x)
```

```
[Out] 17*log(x + 2/3)/5 - 6*log(x + 1) + 13*log(x + 3/2)/5
```

3.2384 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=38

$$-\frac{13}{5(2x+3)}-6\log(x+1)+\frac{99}{25}\log(2x+3)+\frac{51}{25}\log(3x+2)$$

```
[Out] -13/5/(3+2*x)-6*ln(1+x)+99/25*ln(3+2*x)+51/25*ln(2+3*x)
```

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-\frac{13}{5(2x+3)}-6\log(x+1)+\frac{99}{25}\log(2x+3)+\frac{51}{25}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(5*(3 + 2*x)) - 6*Log[1 + x] + (99*Log[3 + 2*x])/25 + (51*Log[2 + 3*x])
/25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^2}+\frac{198}{25(3+2x)}+\frac{153}{25(2+3x)}\right)dx\\ &= -\frac{13}{5(3+2x)}-6\log(1+x)+\frac{99}{25}\log(3+2x)+\frac{51}{25}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 38, normalized size = 1.00

$$\frac{1}{25}\left(-\frac{65}{2x+3}+51\log(-6x-4)-150\log(-2(x+1))+99\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-65/(3 + 2*x) + 51*Log[-4 - 6*x] - 150*Log[-2*(1 + x)] + 99*Log[3 + 2*x])/
25
```

fricas [A] time = 0.61, size = 48, normalized size = 1.26

$$\frac{51\,(2\,x+3)\log\left(3\,x+2\right)+99\,(2\,x+3)\log\left(2\,x+3\right)-150\,(2\,x+3)\log\left(x+1\right)-65}{25\,(2\,x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/25*(51*(2*x + 3)*log(3*x + 2) + 99*(2*x + 3)*log(2*x + 3) - 150*(2*x + 3)
*log(x + 1) - 65)/(2*x + 3)
```

giac [A] time = 0.19, size = 40, normalized size = 1.05

$$-\frac{13}{5\,(2\,x+3)}-6\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)+\frac{51}{25}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -13/5/(2*x + 3) - 6*log(abs(-1/(2*x + 3) + 1)) + 51/25*log(abs(-5/(2*x + 3)
 + 3))
```

maple [A] time = 0.06, size = 33, normalized size = 0.87

$$\frac{51\ln(3x+2)}{25}+\frac{99\ln(2x+3)}{25}-6\ln(x+1)-\frac{13}{5\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2),x)
```

```
[Out] -13/5/(2*x+3)-6*ln(x+1)+99/25*ln(2*x+3)+51/25*ln(3*x+2)
```

maxima [A] time = 0.73, size = 32, normalized size = 0.84

$$-\frac{13}{5\,(2\,x+3)}+\frac{51}{25}\,\log\left(3\,x+2\right)+\frac{99}{25}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -13/5/(2*x + 3) + 51/25*log(3*x + 2) + 99/25*log(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 2.29, size = 28, normalized size = 0.74

$$\frac{51\,\ln\left(x+\frac{2}{3}\right)}{25}-6\,\ln\left(x+1\right)+\frac{99\,\ln\left(x+\frac{3}{2}\right)}{25}-\frac{13}{10\,\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (51*log(x + 2/3))/25 - 6*log(x + 1) + (99*log(x + 3/2))/25 - 13/(10*(x + 3/
2))
```

sympy [A] time = 0.16, size = 32, normalized size = 0.84

$$\frac{51\log\left(x+\frac{2}{3}\right)}{25}-6\log\left(x+1\right)+\frac{99\log\left(x+\frac{3}{2}\right)}{25}-\frac{13}{10x+15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2),x)
```

```
[Out] 51*log(x + 2/3)/25 - 6*log(x + 1) + 99*log(x + 3/2)/25 - 13/(10*x + 15)
```

3.2385 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=49

$$-\frac{99}{25(2x+3)}-\frac{13}{10(2x+3)^2}-6\log(x+1)+\frac{597}{125}\log(2x+3)+\frac{153}{125}\log(3x+2)$$

```
[Out] -13/10/(3+2*x)^2-99/25/(3+2*x)-6*ln(1+x)+597/125*ln(3+2*x)+153/125*ln(2+3*x
)
```

Rubi [A] time = 0.03, antiderivative size = 49, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {800}

$$-\frac{99}{25(2x+3)}-\frac{13}{10(2x+3)^2}-6\log(x+1)+\frac{597}{125}\log(2x+3)+\frac{153}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(10*(3 + 2*x)^2) - 99/(25*(3 + 2*x)) - 6*Log[1 + x] + (597*Log[3 + 2*x]
)/125 + (153*Log[2 + 3*x])/125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^3}+\frac{198}{25(3+2x)^2}+\frac{1194}{125(3+2x)}+\frac{459}{125(2+3x)}\right)dx\\ &= -\frac{13}{10(3+2x)^2}-\frac{99}{25(3+2x)}-6\log(1+x)+\frac{597}{125}\log(3+2x)+\frac{153}{125}\log(2+\end{aligned}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 0.96

$$\frac{1}{250}\left(-\frac{990}{2x+3}-\frac{325}{(2x+3)^2}+306\log(-6x-4)-1500\log(-2(x+1))+1194\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (-325/(3 + 2*x)^2 - 990/(3 + 2*x) + 306*Log[-4 - 6*x] - 1500*Log[-2*(1 + x)
] + 1194*Log[3 + 2*x])/250
```

fricas [A] time = 0.81, size = 71, normalized size = 1.45

$$\frac{306\left(4x^2+12x+9\right)\log(3x+2)+1194\left(4x^2+12x+9\right)\log(2x+3)-1500\left(4x^2+12x+9\right)\log(x+1)-}{250\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/250*(306*(4*x^2 + 12*x + 9)*log(3*x + 2) + 1194*(4*x^2 + 12*x + 9)*log(2*
x + 3) - 1500*(4*x^2 + 12*x + 9)*log(x + 1) - 1980*x - 3295)/(4*x^2 + 12*x
+ 9)
```

giac [A] time = 0.16, size = 40, normalized size = 0.82

$$-\frac{396\,x+659}{50\,(2\,x+3)^2}+\frac{153}{125}\,\log\left(|3\,x+2|\right)+\frac{597}{125}\,\log\left(|2\,x+3|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/50*(396*x + 659)/(2*x + 3)^2 + 153/125*log(abs(3*x + 2)) + 597/125*log(a
bs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 42, normalized size = 0.86

$$\frac{153\ln(3x+2)}{125}+\frac{597\ln(2x+3)}{125}-6\ln(x+1)-\frac{13}{10\,(2x+3)^2}-\frac{99}{25\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2),x)
```

```
[Out] -13/10/(2*x+3)^2-99/25/(2*x+3)-6*ln(x+1)+597/125*ln(2*x+3)+153/125*ln(3*x+2
)
```

maxima [A] time = 0.58, size = 42, normalized size = 0.86

$$-\frac{396\,x+659}{50\,\left(4\,x^2+12\,x+9\right)}+\frac{153}{125}\,\log\left(3\,x+2\right)+\frac{597}{125}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/50*(396*x + 659)/(4*x^2 + 12*x + 9) + 153/125*log(3*x + 2) + 597/125*log
(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 36, normalized size = 0.73

$$\frac{153\,\ln\left(x+\frac{2}{3}\right)}{125}-6\,\ln\left(x+1\right)+\frac{597\,\ln\left(x+\frac{3}{2}\right)}{125}-\frac{\frac{99\,x}{50}+\frac{659}{200}}{x^2+3\,x+\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (153*log(x + 2/3))/125 - 6*log(x + 1) + (597*log(x + 3/2))/125 - ((99*x)/50
 + 659/200)/(3*x + x^2 + 9/4)
```

sympy [A] time = 0.18, size = 41, normalized size = 0.84

$$-\frac{396x+659}{200x^2+600x+450}+\frac{153\log\left(x+\frac{2}{3}\right)}{125}-6\log\left(x+1\right)+\frac{597\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2),x)
```

```
[Out] -(396*x + 659)/(200*x**2 + 600*x + 450) + 153*log(x + 2/3)/125 - 6*log(x +
1) + 597*log(x + 3/2)/125
```

3.2386 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=60

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}-6\log(x+1)+\frac{3291}{625}\log(2x+3)+\frac{459}{625}\log(3x+2)$$

```
[Out] -13/15/(3+2*x)^3-99/50/(3+2*x)^2-597/125/(3+2*x)-6*ln(1+x)+3291/625*ln(3+2*
x)+459/625*ln(2+3*x)
```

Rubi [A] time = 0.04, antiderivative size = 60, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {800}

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}-6\log(x+1)+\frac{3291}{625}\log(2x+3)+\frac{459}{625}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(15*(3 + 2*x)^3) - 99/(50*(3 + 2*x)^2) - 597/(125*(3 + 2*x)) - 6*Log[1
+ x] + (3291*Log[3 + 2*x])/625 + (459*Log[2 + 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx &= \int \left(-\frac{6}{1+x}+\frac{26}{5(3+2x)^4}+\frac{198}{25(3+2x)^3}+\frac{1194}{125(3+2x)^2}+\frac{6582}{625(3+2x)}+\right.\\ &= -\frac{13}{15(3+2x)^3}-\frac{99}{50(3+2x)^2}-\frac{597}{125(3+2x)}-6\log(1+x)+\frac{3291}{625}\log(3+2\end{aligned}$$

Mathematica [A] time = 0.03, size = 62, normalized size = 1.03

$$-\frac{597}{125(2x+3)}-\frac{99}{50(2x+3)^2}-\frac{13}{15(2x+3)^3}+\frac{459}{625}\log(-6x-4)-6\log(-2(x+1))+\frac{3291}{625}\log(2x+3)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -13/(15*(3 + 2*x)^3) - 99/(50*(3 + 2*x)^2) - 597/(125*(3 + 2*x)) + (459*Log
[-4 - 6*x])/625 - 6*Log[-2*(1 + x)] + (3291*Log[3 + 2*x])/625
```

fricas [A] time = 0.59, size = 96, normalized size = 1.60

$$-\frac{71640\,x^2-2754\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(3\,x+2\right)-19746\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(2\,x+3\right)+2}{3750\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/3750*(71640*x^2 - 2754*(8*x^3 + 36*x^2 + 54*x + 27)*log(3*x + 2) - 19746
*(8*x^3 + 36*x^2 + 54*x + 27)*log(2*x + 3) + 22500*(8*x^3 + 36*x^2 + 54*x +
 27)*log(x + 1) + 229770*x + 186715)/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [A] time = 0.17, size = 45, normalized size = 0.75

$$-\frac{14328\,x^2+45954\,x+37343}{750\,(2\,x+3)^3}+\frac{459}{625}\,\log\left(|3\,x+2|\right)+\frac{3291}{625}\,\log\left(|2\,x+3|\right)-6\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/750*(14328*x^2 + 45954*x + 37343)/(2*x + 3)^3 + 459/625*log(abs(3*x + 2)
) + 3291/625*log(abs(2*x + 3)) - 6*log(abs(x + 1))
```

maple [A] time = 0.05, size = 51, normalized size = 0.85

$$\frac{459\ln(3x+2)}{625}+\frac{3291\ln(2x+3)}{625}-6\ln(x+1)-\frac{13}{15\,(2x+3)^3}-\frac{99}{50\,(2x+3)^2}-\frac{597}{125\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+5*x+2),x)
```

```
[Out] -13/15/(2*x+3)^3-99/50/(2*x+3)^2-597/125/(2*x+3)-6*ln(x+1)+3291/625*ln(2*x+
3)+459/625*ln(3*x+2)
```

maxima [A] time = 0.55, size = 52, normalized size = 0.87

$$-\frac{14328\,x^2+45954\,x+37343}{750\left(8\,x^3+36\,x^2+54\,x+27\right)}+\frac{459}{625}\,\log\left(3\,x+2\right)+\frac{3291}{625}\,\log\left(2\,x+3\right)-6\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/750*(14328*x^2 + 45954*x + 37343)/(8*x^3 + 36*x^2 + 54*x + 27) + 459/625
*log(3*x + 2) + 3291/625*log(2*x + 3) - 6*log(x + 1)
```

mupad [B] time = 0.04, size = 46, normalized size = 0.77

$$\frac{459\,\ln\left(x+\frac{2}{3}\right)}{625}-6\,\ln\left(x+1\right)+\frac{3291\,\ln\left(x+\frac{3}{2}\right)}{625}-\frac{\frac{597\,x^2}{250}+\frac{7659\,x}{1000}+\frac{37343}{6000}}{x^3+\frac{9\,x^2}{2}+\frac{27\,x}{4}+\frac{27}{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)),x)
```

```
[Out] (459*log(x + 2/3))/625 - 6*log(x + 1) + (3291*log(x + 3/2))/625 - ((7659*x)
/1000 + (597*x^2)/250 + 37343/6000)/((27*x)/4 + (9*x^2)/2 + x^3 + 27/8)
```

sympy [A] time = 0.20, size = 51, normalized size = 0.85

$$-\frac{14328x^2+45954x+37343}{6000x^3+27000x^2+40500x+20250}+\frac{459\log\left(x+\frac{2}{3}\right)}{625}-6\log\left(x+1\right)+\frac{3291\log\left(x+\frac{3}{2}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2),x)
```

```
[Out] -(14328*x**2 + 45954*x + 37343)/(6000*x**3 + 27000*x**2 + 40500*x + 20250)
+ 459*log(x + 2/3)/625 - 6*log(x + 1) + 3291*log(x + 3/2)/625
```

3.2387 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2} \, dx$

Optimal. Leaf size=50

$$-\frac{8x^2}{9}-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}+\frac{112x}{27}+83\log(x+1)-\frac{1625}{27}\log(3x+2)$$

```
[Out] 112/27*x-8/9*x^2+1/81*(-11597-12083*x)/(3*x^2+5*x+2)+83*ln(1+x)-1625/27*ln(
2+3*x)
```

Rubi [A] time = 0.06, antiderivative size = 50, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 1657, 632, 31}

$$-\frac{8x^2}{9}-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}+\frac{112x}{27}+83\log(x+1)-\frac{1625}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (112*x)/27 - (8*x^2)/9 - (11597 + 12083*x)/(81*(2 + 5*x + 3*x^2)) + 83*Log[
1 + x] - (1625*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx &= \int \frac{\frac{13}{2}(3+2x)^4-\frac{1}{2}(3+2x)^5}{\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\int \frac{\frac{169}{27}-\frac{2312x}{27}-\frac{32x^2}{9}+\frac{16x^3}{3}}{2+5x+3x^2}\,dx\\
&= -\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\int \left(-\frac{112}{27}+\frac{16x}{9}+\frac{131-616x}{9\left(2+5x+3x^2\right)}\right)dx\\
&= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\frac{1}{9}\int \frac{131-616x}{2+5x+3x^2}\,dx\\
&= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}-\frac{1625}{9}\int \frac{1}{2+3x}\,dx+249\int \frac{1}{3+3x}\,dx\\
&= \frac{112x}{27}-\frac{8x^2}{9}-\frac{11597+12083x}{81\left(2+5x+3x^2\right)}+83\log(1+x)-\frac{1625}{27}\log(2+3x)
\end{aligned}
$$

Mathematica [A] time = 0.04, size = 56, normalized size = 1.12

$$\frac{1}{81}\left(-\frac{12083x+11597}{3x^2+5x+2}-18(2x+3)^2+276(2x+3)-4875\log(-6x-4)+6723\log(-2(x+1))\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (276*(3 + 2*x) - 18*(3 + 2*x)^2 - (11597 + 12083*x)/(2 + 5*x + 3*x^2) - 487
5*Log[-4 - 6*x] + 6723*Log[-2*(1 + x)])/81
```

fricas [A] time = 0.65, size = 68, normalized size = 1.36

$$-\frac{216\,x^4-648\,x^3-1536\,x^2+4875\left(3\,x^2+5\,x+2\right)\log\left(3\,x+2\right)-6723\left(3\,x^2+5\,x+2\right)\log\left(x+1\right)+11411\,x+11}{81\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/81*(216*x^4 - 648*x^3 - 1536*x^2 + 4875*(3*x^2 + 5*x + 2)*log(3*x + 2) -
 6723*(3*x^2 + 5*x + 2)*log(x + 1) + 11411*x + 11597)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.16, size = 44, normalized size = 0.88

$$-\frac{8}{9}\,x^2+\frac{112}{27}\,x-\frac{12083\,x+11597}{81\,(3\,x+2)(x+1)}-\frac{1625}{27}\,\log\left(|3\,x+2|\right)+83\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/9*x^2 + 112/27*x - 1/81*(12083*x + 11597)/((3*x + 2)*(x + 1)) - 1625/27*
log(abs(3*x + 2)) + 83*log(abs(x + 1))
```

maple [A] time = 0.05, size = 40, normalized size = 0.80

$$-\frac{8x^2}{9}+\frac{112x}{27}-\frac{1625\ln(3x+2)}{27}+83\ln(x+1)-\frac{10625}{81(3x+2)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*x^2+112/27*x-10625/81/(3*x+2)-1625/27*ln(3*x+2)-6/(x+1)+83*ln(x+1)
```

maxima [A] time = 0.82, size = 42, normalized size = 0.84

$$-\frac{8}{9}x^2+\frac{112}{27}x-\frac{12083x+11597}{81\left(3x^2+5x+2\right)}-\frac{1625}{27}\log(3x+2)+83\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/9*x^2 + 112/27*x - 1/81*(12083*x + 11597)/(3*x^2 + 5*x + 2) - 1625/27*lo
g(3*x + 2) + 83*log(x + 1)
```

mupad [B] time = 0.04, size = 38, normalized size = 0.76

$$\frac{112x}{27}+83\ln(x+1)-\frac{1625\ln\left(x+\frac{2}{3}\right)}{27}-\frac{\frac{12083x}{243}+\frac{11597}{243}}{x^2+\frac{5x}{3}+\frac{2}{3}}-\frac{8x^2}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (112*x)/27 + 83*log(x + 1) - (1625*log(x + 2/3))/27 - ((12083*x)/243 + 1159
7/243)/((5*x)/3 + x^2 + 2/3) - (8*x^2)/9
```

sympy [A] time = 0.16, size = 42, normalized size = 0.84

$$-\frac{8x^2}{9}+\frac{112x}{27}-\frac{12083x+11597}{243x^2+405x+162}-\frac{1625\log\left(x+\frac{2}{3}\right)}{27}+83\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**2,x)
```

```
[Out] -8*x**2/9 + 112*x/27 - (12083*x + 11597)/(243*x**2 + 405*x + 162) - 1625*lo
g(x + 2/3)/27 + 83*log(x + 1)
```

3.2388 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2} \, dx$

Optimal. Leaf size=43

$$-\frac{2611x+2449}{27\left(3x^2+5x+2\right)}-\frac{8x}{9}+71\log(x+1)-\frac{1825}{27}\log(3x+2)$$

```
[Out] -8/9*x+1/27*(-2449-2611*x)/(3*x^2+5*x+2)+71*ln(1+x)-1825/27*ln(2+3*x)
```

Rubi [A] time = 0.05, antiderivative size = 43, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 1657, 632, 31}

$$-\frac{2611x+2449}{27\left(3x^2+5x+2\right)}-\frac{8x}{9}+71\log(x+1)-\frac{1825}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-8*x)/9 - (2449 + 2611*x)/(27*(2 + 5*x + 3*x^2)) + 71*Log[1 + x] - (1825*L
og[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
- 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^2}\,dx &= \int \frac{\frac{13}{2}(3+2x)^3-\frac{1}{2}(3+2x)^4}{\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\int \frac{\frac{563}{9}-\frac{52x}{9}+\frac{8x^2}{3}}{2+5x+3x^2}\,dx\\
&= -\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\int \left(\frac{8}{9}+\frac{547-92x}{9\left(2+5x+3x^2\right)}\right)dx\\
&= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\frac{1}{9}\int \frac{547-92x}{2+5x+3x^2}\,dx\\
&= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}-\frac{1825}{9}\int \frac{1}{2+3x}\,dx+213\int \frac{1}{3+3x}\,dx\\
&= -\frac{8x}{9}-\frac{2449+2611x}{27\left(2+5x+3x^2\right)}+71\log(1+x)-\frac{1825}{27}\log(2+3x)
\end{aligned}$$

Mathematica [A] time = 0.03, size = 47, normalized size = 1.09

$$-\frac{2611x+2449}{81x^2+135x+54}-\frac{4}{9}(2x+3)-\frac{1825}{27}\log(-6x-4)+71\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-4*(3 + 2*x))/9 - (2449 + 2611*x)/(54 + 135*x + 81*x^2) - (1825*Log[-4 - 6
*x])/27 + 71*Log[-2*(1 + x)]
```

fricas [A] time = 0.64, size = 63, normalized size = 1.47

$$-\frac{72\,x^3+120\,x^2+1825\left(3\,x^2+5\,x+2\right)\log\left(3\,x+2\right)-1917\left(3\,x^2+5\,x+2\right)\log\left(x+1\right)+2659\,x+2449}{27\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/27*(72*x^3 + 120*x^2 + 1825*(3*x^2 + 5*x + 2)*log(3*x + 2) - 1917*(3*x^2
 + 5*x + 2)*log(x + 1) + 2659*x + 2449)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.19, size = 39, normalized size = 0.91

$$-\frac{8}{9}\,x-\frac{2611\,x+2449}{27\,(3\,x+2)(x+1)}-\frac{1825}{27}\,\log\left(|3\,x+2|\right)+71\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/9*x - 1/27*(2611*x + 2449)/((3*x + 2)*(x + 1)) - 1825/27*log(abs(3*x + 2
)) + 71*log(abs(x + 1))
```

maple [A] time = 0.05, size = 35, normalized size = 0.81

$$-\frac{8x}{9}-\frac{1825\ln\left(3x+2\right)}{27}+71\ln\left(x+1\right)-\frac{2125}{27\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*x-2125/27/(3*x+2)-1825/27*ln(3*x+2)-6/(x+1)+71*ln(x+1)
```

maxima [A] time = 0.56, size = 37, normalized size = 0.86

$$-\frac{8}{9}x-\frac{2611x+2449}{27\left(3x^{2}+5x+2\right)}-\frac{1825}{27}\log\left(3x+2\right)+71\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/9*x - 1/27*(2611*x + 2449)/(3*x^2 + 5*x + 2) - 1825/27*log(3*x + 2) + 71
*log(x + 1)
```

mupad [B] time = 2.26, size = 33, normalized size = 0.77

$$71\ln\left(x+1\right)-\frac{8x}{9}-\frac{1825\ln\left(x+\frac{2}{3}\right)}{27}-\frac{\frac{2611x}{81}+\frac{2449}{81}}{x^{2}+\frac{5x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 71*log(x + 1) - (8*x)/9 - (1825*log(x + 2/3))/27 - ((2611*x)/81 + 2449/81)/
((5*x)/3 + x^2 + 2/3)
```

sympy [A] time = 0.16, size = 36, normalized size = 0.84

$$-\frac{8x}{9}-\frac{2611x+2449}{81x^{2}+135x+54}-\frac{1825\log\left(x+\frac{2}{3}\right)}{27}+71\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**2,x)
```

```
[Out] -8*x/9 - (2611*x + 2449)/(81*x**2 + 135*x + 54) - 1825*log(x + 2/3)/27 + 71
*log(x + 1)
```

3.2389 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=38

$$-\frac{587x+533}{9\left(3x^2+5x+2\right)}+59\log(x+1)-\frac{535}{9}\log(3x+2)$$

```
[Out] 1/9*(-533-587*x)/(3*x^2+5*x+2)+59*ln(1+x)-535/9*ln(2+3*x)
```

Rubi [A] time = 0.04, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {816, 1660, 632, 31}

$$-\frac{587x+533}{9\left(3x^2+5x+2\right)}+59\log(x+1)-\frac{535}{9}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(533 + 587*x)/(9*(2 + 5*x + 3*x^2)) + 59*Log[1 + x] - (535*Log[2 + 3*x])/9
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx &= \int \frac{45+51x+8x^2-4x^3}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{533+587x}{9\left(2+5x+3x^2\right)}-\int \frac{\frac{181}{3}+\frac{4x}{3}}{2+5x+3x^2}\,dx\\ &= -\frac{533+587x}{9\left(2+5x+3x^2\right)}+177\int \frac{1}{3+3x}\,dx-\frac{535}{3}\int \frac{1}{2+3x}\,dx\\ &= -\frac{533+587x}{9\left(2+5x+3x^2\right)}+59\log(1+x)-\frac{535}{9}\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 38, normalized size = 1.00

$$-\frac{587x+533}{27x^2+45x+18}-\frac{535}{9}\log(-6x-4)+59\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((533 + 587*x)/(18 + 45*x + 27*x^2)) - (535*Log[-4 - 6*x])/9 + 59*Log[-2*(
1 + x)]
```

fricas [A] time = 0.64, size = 53, normalized size = 1.39

$$-\frac{535\left(3\,x^2+5\,x+2\right)\log\left(3\,x+2\right)-531\left(3\,x^2+5\,x+2\right)\log\left(x+1\right)+587\,x+533}{9\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/9*(535*(3*x^2 + 5*x + 2)*log(3*x + 2) - 531*(3*x^2 + 5*x + 2)*log(x + 1)
 + 587*x + 533)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.19, size = 36, normalized size = 0.95

$$-\frac{587\,x+533}{9\,(3\,x+2)(x+1)}-\frac{535}{9}\log\left(|3\,x+2|\right)+59\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/9*(587*x + 533)/((3*x + 2)*(x + 1)) - 535/9*log(abs(3*x + 2)) + 59*log(a
bs(x + 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.84

$$-\frac{535\ln\left(3x+2\right)}{9}+59\ln\left(x+1\right)-\frac{425}{9\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2)^2,x)
```

```
[Out] -425/9/(3*x+2)-535/9*ln(3*x+2)-6/(x+1)+59*ln(x+1)
```

maxima [A] time = 0.47, size = 34, normalized size = 0.89

$$-\frac{587\,x+533}{9\,\left(3\,x^{2}+5\,x+2\right)}-\frac{535}{9}\,\log\left(3\,x+2\right)+59\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/9*(587*x + 533)/(3*x^2 + 5*x + 2) - 535/9*log(3*x + 2) + 59*log(x + 1)
```

mupad [B] time = 0.05, size = 30, normalized size = 0.79

$$59\,\ln\left(x+1\right)-\frac{535\,\ln\left(x+\frac{2}{3}\right)}{9}-\frac{\frac{587\,x}{27}+\frac{533}{27}}{x^2+\frac{5\,x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 59*log(x + 1) - (535*log(x + 2/3))/9 - ((587*x)/27 + 533/27)/((5*x)/3 + x^2
 + 2/3)
```

sympy [A] time = 0.15, size = 31, normalized size = 0.82

$$-\frac{587x+533}{27x^{2}+45x+18}-\frac{535\log\left(x+\frac{2}{3}\right)}{9}+59\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(587*x + 533)/(27*x**2 + 45*x + 18) - 535*log(x + 2/3)/9 + 59*log(x + 1)
```

3.2390 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=36

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}+47\log(x+1)-47\log(3x+2)$$

```
[Out] 1/3*(-121-139*x)/(3*x^2+5*x+2)+47*ln(1+x)-47*ln(2+3*x)
```

Rubi [A] time = 0.01, antiderivative size = 36, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.130, Rules used = $\{777, 616, 31\}$

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}+47\log(x+1)-47\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(121 + 139*x)/(3*(2 + 5*x + 3*x^2)) + 47*Log[1 + x] - 47*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^2} dx &= -\frac{121+139x}{3\left(2+5x+3x^2\right)}-47\int \frac{1}{2+5x+3x^2} dx\\ &= -\frac{121+139x}{3\left(2+5x+3x^2\right)}-141\int \frac{1}{2+3x} dx+141\int \frac{1}{3+3x} dx\\ &= -\frac{121+139x}{3\left(2+5x+3x^2\right)}+47\log(1+x)-47\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 34, normalized size = 0.94

$$-\frac{139x+121}{9x^2+15x+6}+47\log(x+1)-47\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((121 + 139*x)/(6 + 15*x + 9*x^2)) + 47*Log[1 + x] - 47*Log[2 + 3*x]
```

fricas [A] time = 0.61, size = 53, normalized size = 1.47

$$-\frac{141\left(3x^2+5x+2\right)\log\left(3x+2\right)-141\left(3x^2+5x+2\right)\log\left(x+1\right)+139x+121}{3\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/3*(141*(3*x^2 + 5*x + 2)*log(3*x + 2) - 141*(3*x^2 + 5*x + 2)*log(x + 1)
 + 139*x + 121)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.16, size = 36, normalized size = 1.00

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}-47\log\left(|3x+2|\right)+47\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/3*(139*x + 121)/(3*x^2 + 5*x + 2) - 47*log(abs(3*x + 2)) + 47*log(abs(x
+ 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.89

$$-47\ln\left(3x+2\right)+47\ln\left(x+1\right)-\frac{85}{3\left(3x+2\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -85/3/(3*x+2)-47*ln(3*x+2)-6/(x+1)+47*ln(x+1)
```

maxima [A] time = 0.61, size = 34, normalized size = 0.94

$$-\frac{139x+121}{3\left(3x^2+5x+2\right)}-47\log\left(3x+2\right)+47\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/3*(139*x + 121)/(3*x^2 + 5*x + 2) - 47*log(3*x + 2) + 47*log(x + 1)
```

mupad [B] time = 2.27, size = 26, normalized size = 0.72

$$94\,\mathrm{atanh}\left(6x+5\right)-\frac{\frac{139x}{9}+\frac{121}{9}}{x^2+\frac{5x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 94*atanh(6*x + 5) - ((139*x)/9 + 121/9)/((5*x)/3 + x^2 + 2/3)
```

sympy [**A**] time = 0.13, size = 29, normalized size = 0.81

$$-\frac{139x+121}{9x^2+15x+6}-47\log\left(x+\frac{2}{3}\right)+47\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(139*x + 121)/(9*x**2 + 15*x + 6) - 47*log(x + 2/3) + 47*log(x + 1)
```

3.2391 $\int \frac{5-x}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=34

$$-\frac{35x+29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

```
[Out] (-29-35*x)/(3*x^2+5*x+2)+35*ln(1+x)-35*ln(2+3*x)
```

Rubi [A] time = 0.01, antiderivative size = 34, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.167, Rules used = {638, 616, 31}

$$-\frac{35x+29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((29 + 35*x)/(2 + 5*x + 3*x^2)) + 35*Log[1 + x] - 35*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{29+35x}{2+5x+3x^2}-35\int \frac{1}{2+5x+3x^2}\,dx\\ &= -\frac{29+35x}{2+5x+3x^2}-105\int \frac{1}{2+3x}\,dx+105\int \frac{1}{3+3x}\,dx\\ &= -\frac{29+35x}{2+5x+3x^2}+35\log(1+x)-35\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.01, size = 33, normalized size = 0.97

$$\frac{-35x-29}{3x^2+5x+2}+35\log(x+1)-35\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (-29 - 35*x)/(2 + 5*x + 3*x^2) + 35*Log[1 + x] - 35*Log[2 + 3*x]
```

fricas [A] time = 0.55, size = 53, normalized size = 1.56

$$-\frac{35\left(3x^2+5x+2\right)\log\left(3x+2\right)-35\left(3x^2+5x+2\right)\log\left(x+1\right)+35x+29}{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -(35*(3*x^2 + 5*x + 2)*log(3*x + 2) - 35*(3*x^2 + 5*x + 2)*log(x + 1) + 35*
x + 29)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.15, size = 36, normalized size = 1.06

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(|3x+2|\right)+35\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -(35*x + 29)/(3*x^2 + 5*x + 2) - 35*log(abs(3*x + 2)) + 35*log(abs(x + 1))
```

maple [A] time = 0.05, size = 32, normalized size = 0.94

$$-35\ln\left(3x+2\right)+35\ln\left(x+1\right)-\frac{17}{3x+2}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -17/(3*x+2)-35*ln(3*x+2)-6/(x+1)+35*ln(x+1)
```

maxima [A] time = 0.53, size = 34, normalized size = 1.00

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(3x+2\right)+35\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -(35*x + 29)/(3*x^2 + 5*x + 2) - 35*log(3*x + 2) + 35*log(x + 1)
```

mupad [B] time = 2.26, size = 26, normalized size = 0.76

$$70\,\mathrm{atanh}\left(6x+5\right)-\frac{\frac{35x}{3}+\frac{29}{3}}{x^2+\frac{5x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] 70*atanh(6*x + 5) - ((35*x)/3 + 29/3)/((5*x)/3 + x^2 + 2/3)
```

sympy [A] time = 0.13, size = 29, normalized size = 0.85

$$-\frac{35x+29}{3x^2+5x+2}-35\log\left(x+\frac{2}{3}\right)+35\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(35*x + 29)/(3*x**2 + 5*x + 2) - 35*log(x + 2/3) + 35*log(x + 1)
```

3.2392 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=48

$$-\frac{3(47x+37)}{5\left(3x^2+5x+2\right)}+23\log(x+1)+\frac{52}{25}\log(2x+3)-\frac{627}{25}\log(3x+2)$$

```
[Out] -3/5*(37+47*x)/(3*x^2+5*x+2)+23*ln(1+x)+52/25*ln(3+2*x)-627/25*ln(2+3*x)
```

Rubi [A] time = 0.04, antiderivative size = 48, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5\left(3x^2+5x+2\right)}+23\log(x+1)+\frac{52}{25}\log(2x+3)-\frac{627}{25}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) + 23*Log[1 + x] + (52*Log[3 + 2*x])/
25 - (627*Log[2 + 3*x])/25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{397+282x}{(3+2x)\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(-\frac{115}{1+x}-\frac{104}{5(3+2x)}+\frac{1881}{5(2+3x)}\right)dx\\
&= -\frac{3(37+47x)}{5\left(2+5x+3x^2\right)}+23\log(1+x)+\frac{52}{25}\log(3+2x)-\frac{627}{25}\log(2+3x)
\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 48, normalized size = 1.00

$$\frac{1}{25}\left(-\frac{15(47x+37)}{3x^2+5x+2}-627\log(-6x-4)+575\log(-2(x+1))+52\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] ((-15*(37 + 47*x))/(2 + 5*x + 3*x^2) - 627*Log[-4 - 6*x] + 575*Log[-2*(1 +
x)] + 52*Log[3 + 2*x])/25
```

fricas [**A**] time = 0.83, size = 71, normalized size = 1.48

$$-\frac{627\left(3x^2+5x+2\right)\log(3x+2)-52\left(3x^2+5x+2\right)\log(2x+3)-575\left(3x^2+5x+2\right)\log(x+1)+705x}{25\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/25*(627*(3*x^2 + 5*x + 2)*log(3*x + 2) - 52*(3*x^2 + 5*x + 2)*log(2*x +
3) - 575*(3*x^2 + 5*x + 2)*log(x + 1) + 705*x + 555)/(3*x^2 + 5*x + 2)
```

giac [**A**] time = 0.15, size = 45, normalized size = 0.94

$$-\frac{3(47x+37)}{5(3x+2)(x+1)}-\frac{627}{25}\log(|3x+2|)+\frac{52}{25}\log(|2x+3|)+23\log(|x+1|)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -3/5*(47*x + 37)/((3*x + 2)*(x + 1)) - 627/25*log(abs(3*x + 2)) + 52/25*log
(abs(2*x + 3)) + 23*log(abs(x + 1))
```

maple [**A**] time = 0.05, size = 40, normalized size = 0.83

$$-\frac{627\ln(3x+2)}{25}+\frac{52\ln(2x+3)}{25}+23\ln(x+1)-\frac{51}{5(3x+2)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -51/5/(3*x+2)-627/25*ln(3*x+2)+52/25*ln(2*x+3)-6/(x+1)+23*ln(x+1)
```

maxima [**A**] time = 0.46, size = 42, normalized size = 0.88

$$-\frac{3(47x+37)}{5\left(3x^2+5x+2\right)}-\frac{627}{25}\log(3x+2)+\frac{52}{25}\log(2x+3)+23\log(x+1)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -3/5*(47*x + 37)/(3*x^2 + 5*x + 2) - 627/25*log(3*x + 2) + 52/25*log(2*x +
3) + 23*log(x + 1)
```

mupad [**B**] time = 0.04, size = 36, normalized size = 0.75

$$23\ln(x+1)-\frac{627\ln\left(x+\frac{2}{3}\right)}{25}+\frac{52\ln\left(x+\frac{3}{2}\right)}{25}-\frac{\frac{47x}{5}+\frac{37}{5}}{x^2+\frac{5x}{3}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 23*log(x + 1) - (627*log(x + 2/3))/25 + (52*log(x + 3/2))/25 - ((47*x)/5 +
37/5)/((5*x)/3 + x^2 + 2/3)
```

sympy **[A]** time = 0.18, size = 41, normalized size = 0.85

$$-\frac{141x+111}{15x^2+25x+10}-\frac{627\log\left(x+\frac{2}{3}\right)}{25}+23\log\left(x+1\right)+\frac{52\log\left(x+\frac{3}{2}\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(141*x + 111)/(15*x**2 + 25*x + 10) - 627*log(x + 2/3)/25 + 23*log(x + 1)
+ 52*log(x + 3/2)/25
```

3.2393 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=66

$$-\frac{3(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)}-\frac{454}{25(2x+3)}+11\log(x+1)+\frac{812}{125}\log(2x+3)-\frac{2187}{125}\log(3x+2)$$

```
[Out] -454/25/(3+2*x)-3/5*(37+47*x)/(3+2*x)/(3*x^2+5*x+2)+11*ln(1+x)+812/125*ln(3
+2*x)-2187/125*ln(2+3*x)
```

Rubi [A] time = 0.05, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)}-\frac{454}{25(2x+3)}+11\log(x+1)+\frac{812}{125}\log(2x+3)-\frac{2187}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -454/(25*(3 + 2*x)) - (3*(37 + 47*x))/(5*(3 + 2*x)*(2 + 5*x + 3*x^2)) + 11*
Log[1 + x] + (812*Log[3 + 2*x])/125 - (2187*Log[2 + 3*x])/125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{619+564x}{(3+2x)^2\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(-\frac{55}{1+x}-\frac{908}{5(3+2x)^2}-\frac{1624}{25(3+2x)}+\right.\\ &= -\frac{454}{25(3+2x)}-\frac{3(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)}+11\log(1+x)+\frac{812}{125}\log(3+2x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 57, normalized size = 0.86

$$\frac{1}{125}\left(-\frac{15(201x+151)}{3x^2+5x+2}-\frac{260}{2x+3}-2187\log(-6x-4)+1375\log(-2(x+1))+812\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-260/(3 + 2*x) - (15*(151 + 201*x))/(2 + 5*x + 3*x^2) - 2187*Log[-4 - 6*x]
 + 1375*Log[-2*(1 + x)] + 812*Log[3 + 2*x])/125
```

fricas [A] time = 0.70, size = 96, normalized size = 1.45

$$-\frac{6810\,x^2+2187\left(6\,x^3+19\,x^2+19\,x+6\right)\log\left(3\,x+2\right)-812\left(6\,x^3+19\,x^2+19\,x+6\right)\log\left(2\,x+3\right)-1375\left(6\,x^3\right.}{125\left(6\,x^3+19\,x^2+19\,x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/125*(6810*x^2 + 2187*(6*x^3 + 19*x^2 + 19*x + 6)*log(3*x + 2) - 812*(6*x
^3 + 19*x^2 + 19*x + 6)*log(2*x + 3) - 1375*(6*x^3 + 19*x^2 + 19*x + 6)*log
(x + 1) + 14875*x + 7315)/(6*x^3 + 19*x^2 + 19*x + 6)
```

giac [A] time = 0.17, size = 77, normalized size = 1.17

$$-\frac{52}{25\left(2\,x+3\right)}+\frac{6\left(\frac{1403}{2\,x+3}-903\right)}{125\left(\frac{5}{2\,x+3}-3\right)\left(\frac{1}{2\,x+3}-1\right)}+11\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)-\frac{2187}{125}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -52/25/(2*x + 3) + 6/125*(1403/(2*x + 3) - 903)/((5/(2*x + 3) - 3)*(1/(2*x
+ 3) - 1)) + 11*log(abs(-1/(2*x + 3) + 1)) - 2187/125*log(abs(-5/(2*x + 3)
+ 3))
```

maple [A] time = 0.06, size = 49, normalized size = 0.74

$$-\frac{2187\ln\left(3x+2\right)}{125}+\frac{812\ln\left(2x+3\right)}{125}+11\ln\left(x+1\right)-\frac{153}{25\left(3x+2\right)}-\frac{52}{25\left(2x+3\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2)^2,x)
```

```
[Out] -153/25/(3*x+2)-2187/125*ln(3*x+2)-52/25/(2*x+3)+812/125*ln(2*x+3)-6/(x+1)+
11*ln(x+1)
```

maxima [A] time = 0.56, size = 52, normalized size = 0.79

$$-\frac{1362\,x^2+2975\,x+1463}{25\left(6\,x^3+19\,x^2+19\,x+6\right)}-\frac{2187}{125}\,\log\left(3\,x+2\right)+\frac{812}{125}\,\log\left(2\,x+3\right)+11\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/25*(1362*x^2 + 2975*x + 1463)/(6*x^3 + 19*x^2 + 19*x + 6) - 2187/125*log
(3*x + 2) + 812/125*log(2*x + 3) + 11*log(x + 1)
```

mupad [**B**] time = 2.32, size = 46, normalized size = 0.70

$$11\ \ln\left(x+1\right)-\frac{2187\ \ln\left(x+\frac{2}{3}\right)}{125}+\frac{812\ \ln\left(x+\frac{3}{2}\right)}{125}-\frac{\frac{227\,x^2}{25}+\frac{119\,x}{6}+\frac{1463}{150}}{x^3+\frac{19\,x^2}{6}+\frac{19\,x}{6}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 11*log(x + 1) - (2187*log(x + 2/3))/125 + (812*log(x + 3/2))/125 - ((119*x)
/6 + (227*x^2)/25 + 1463/150)/((19*x)/6 + (19*x^2)/6 + x^3 + 1)
```

sympy [**A**] time = 0.19, size = 51, normalized size = 0.77

$$-\frac{1362x^2+2975x+1463}{150x^3+475x^2+475x+150}-\frac{2187\log\left(x+\frac{2}{3}\right)}{125}+11\log\left(x+1\right)+\frac{812\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(1362*x**2 + 2975*x + 1463)/(150*x**3 + 475*x**2 + 475*x + 150) - 2187*log
(x + 2/3)/125 + 11*log(x + 1) + 812*log(x + 3/2)/125
```

3.2394 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=77

$$-\frac{3(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)}-\frac{2618}{125(2x+3)}-\frac{428}{25(2x+3)^2}-\log(x+1)+\frac{8104}{625}\log(2x+3)-\frac{7479}{625}\log(3x+2)$$

```
[Out] -428/25/(3+2*x)^2-2618/125/(3+2*x)-3/5*(37+47*x)/(3+2*x)^2/(3*x^2+5*x+2)-ln
(1+x)+8104/625*ln(3+2*x)-7479/625*ln(2+3*x)
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)}-\frac{2618}{125(2x+3)}-\frac{428}{25(2x+3)^2}-\log(x+1)+\frac{8104}{625}\log(2x+3)-\frac{7479}{625}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -428/(25*(3 + 2*x)^2) - 2618/(125*(3 + 2*x)) - (3*(37 + 47*x))/(5*(3 + 2*x)
^2*(2 + 5*x + 3*x^2)) - Log[1 + x] + (8104*Log[3 + 2*x])/625 - (7479*Log[2
+ 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{841+846x}{(3+2x)^3\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{3(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(\frac{5}{1+x}-\frac{1712}{5(3+2x)^3}-\frac{5236}{25(3+2x)^2}-\frac{16}{125(}\right.\\ &= -\frac{428}{25(3+2x)^2}-\frac{2618}{125(3+2x)}-\frac{3(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)}-\log(1+x)+\frac{8104}{625}\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 66, normalized size = 0.86

$$\frac{1}{625}\left(-\frac{15(903x+653)}{3x^2+5x+2}-\frac{4060}{2x+3}-\frac{650}{(2x+3)^2}-7479\log(-6x-4)-625\log(-2(x+1))+8104\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-650/(3 + 2*x)^2 - 4060/(3 + 2*x) - (15*(653 + 903*x))/(2 + 5*x + 3*x^2) -
 7479*Log[-4 - 6*x] - 625*Log[-2*(1 + x)] + 8104*Log[3 + 2*x])/625
```

fricas [**A**] time = 0.67, size = 121, normalized size = 1.57

$$-\frac{78540\,x^3+280810\,x^2+7479\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)\log\left(3\,x+2\right)-8104\left(12\,x^4+56\,x^3+95\,x^2\right.}{625\left(12\,x^4+56\,x^3+95\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/625*(78540*x^3 + 280810*x^2 + 7479*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18
)*log(3*x + 2) - 8104*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log(2*x + 3) +
 625*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log(x + 1) + 319835*x + 113815)
/(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [**A**] time = 0.15, size = 62, normalized size = 0.81

$$-\frac{15708\,x^3+56162\,x^2+63967\,x+22763}{125\,(3\,x+2)(2\,x+3)^2(x+1)}-\frac{7479}{625}\,\log\left(|3\,x+2|\right)+\frac{8104}{625}\,\log\left(|2\,x+3|\right)-\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/125*(15708*x^3 + 56162*x^2 + 63967*x + 22763)/((3*x + 2)*(2*x + 3)^2*(x
+ 1)) - 7479/625*log(abs(3*x + 2)) + 8104/625*log(abs(2*x + 3)) - log(abs(x
 + 1))
```

maple [**A**] time = 0.06, size = 58, normalized size = 0.75

$$-\frac{7479\ln\left(3x+2\right)}{625}+\frac{8104\ln\left(2x+3\right)}{625}-\ln\left(x+1\right)-\frac{459}{125\left(3x+2\right)}-\frac{26}{25\left(2x+3\right)^2}-\frac{812}{125\left(2x+3\right)}-\frac{6}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2)^2,x)
```

```
[Out] -459/125/(3*x+2)-7479/625*ln(3*x+2)-26/25/(2*x+3)^2-812/125/(2*x+3)+8104/62
5*ln(2*x+3)-6/(x+1)-ln(x+1)
```

maxima [**A**] time = 0.62, size = 62, normalized size = 0.81

$$-\frac{15708\,x^3+56162\,x^2+63967\,x+22763}{125\left(12\,x^4+56\,x^3+95\,x^2+69\,x+18\right)}-\frac{7479}{625}\,\log\left(3\,x+2\right)+\frac{8104}{625}\,\log\left(2\,x+3\right)-\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/125*(15708*x^3 + 56162*x^2 + 63967*x + 22763)/(12*x^4 + 56*x^3 + 95*x^2
+ 69*x + 18) - 7479/625*log(3*x + 2) + 8104/625*log(2*x + 3) - log(x + 1)
```

mupad [**B**] time = 2.31, size = 56, normalized size = 0.73

$$\frac{8104\,\ln\left(x+\frac{3}{2}\right)}{625}-\frac{7479\,\ln\left(x+\frac{2}{3}\right)}{625}-\ln\left(x+1\right)-\frac{\frac{1309\,x^3}{125}+\frac{28081\,x^2}{750}+\frac{63967\,x}{1500}+\frac{22763}{1500}}{x^4+\frac{14\,x^3}{3}+\frac{95\,x^2}{12}+\frac{23\,x}{4}+\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (8104*log(x + 3/2))/625 - (7479*log(x + 2/3))/625 - log(x + 1) - ((63967*x)
/1500 + (28081*x^2)/750 + (1309*x^3)/125 + 22763/1500)/((23*x)/4 + (95*x^2)
/12 + (14*x^3)/3 + x^4 + 3/2)
```

sympy [**A**] time = 0.21, size = 60, normalized size = 0.78

$$-\frac{15708x^3+56162x^2+63967x+22763}{1500x^4+7000x^3+11875x^2+8625x+2250}-\frac{7479\log\left(x+\frac{2}{3}\right)}{625}-\log\left(x+1\right)+\frac{8104\log\left(x+\frac{3}{2}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(15708*x**3 + 56162*x**2 + 63967*x + 22763)/(1500*x**4 + 7000*x**3 + 11875
*x**2 + 8625*x + 2250) - 7479*log(x + 2/3)/625 - log(x + 1) + 8104*log(x +
3/2)/625
```

3.2395 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=88

$$-\frac{3(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)}-\frac{16522}{625(2x+3)}-\frac{2212}{125(2x+3)^2}-\frac{1258}{75(2x+3)^3}-13\log(x+1)+\frac{65816\log(2x+3)}{3125}-\frac{2519}{}$$

```
[Out] -1258/75/(3+2*x)^3-2212/125/(3+2*x)^2-16522/625/(3+2*x)-3/5*(37+47*x)/(3+2*
x)^3/(3*x^2+5*x+2)-13*ln(1+x)+65816/3125*ln(3+2*x)-25191/3125*ln(2+3*x)
```

Rubi [A] time = 0.06, antiderivative size = 88, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {822, 800}

$$-\frac{3(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)}-\frac{16522}{625(2x+3)}-\frac{2212}{125(2x+3)^2}-\frac{1258}{75(2x+3)^3}-13\log(x+1)+\frac{65816\log(2x+3)}{3125}-\frac{2519}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -1258/(75*(3 + 2*x)^3) - 2212/(125*(3 + 2*x)^2) - 16522/(625*(3 + 2*x)) - (
3*(37 + 47*x))/(5*(3 + 2*x)^3*(2 + 5*x + 3*x^2)) - 13*Log[1 + x] + (65816*L
og[3 + 2*x])/3125 - (25191*Log[2 + 3*x])/3125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{1063+1128x}{(3+2x)^4\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{3(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)}-\frac{1}{5}\int \left(\frac{65}{1+x}-\frac{2516}{5(3+2x)^4}-\frac{8848}{25(3+2x)^3}-\frac{}{12}\right.\\
&= -\frac{1258}{75(3+2x)^3}-\frac{2212}{125(3+2x)^2}-\frac{16522}{625(3+2x)}-\frac{3(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)}-
\end{aligned}$$

Mathematica [A] time = 0.04, size = 75, normalized size = 0.85

$$\frac{-\frac{45(4209x+2959)}{3x^2+5x+2}-\frac{121560}{2x+3}-\frac{30450}{(2x+3)^2}-\frac{6500}{(2x+3)^3}-75573\log(-6x-4)-121875\log(-2(x+1))+197448\log(2x+3)}{9375}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-6500/(3 + 2*x)^3 - 30450/(3 + 2*x)^2 - 121560/(3 + 2*x) - (45*(2959 + 420
9*x))/(2 + 5*x + 3*x^2) - 75573*Log[-4 - 6*x] - 121875*Log[-2*(1 + x)] + 19
7448*Log[3 + 2*x])/9375
```

fricas [A] time = 0.76, size = 146, normalized size = 1.66

$$-\frac{2973960\,x^4+14873880\,x^3+27167700\,x^2+75573\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)\log\left(3\,x+\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/9375*(2973960*x^4 + 14873880*x^3 + 27167700*x^2 + 75573*(24*x^5 + 148*x^
4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(3*x + 2) - 197448*(24*x^5 + 148*x^4
 + 358*x^3 + 423*x^2 + 243*x + 54)*log(2*x + 3) + 121875*(24*x^5 + 148*x^4
+ 358*x^3 + 423*x^2 + 243*x + 54)*log(x + 1) + 21302995*x + 5978965)/(24*x^
5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)
```

giac [A] time = 0.17, size = 67, normalized size = 0.76

$$-\frac{594792\,x^4+2974776\,x^3+5433540\,x^2+4260599\,x+1195793}{1875\,(3\,x+2)(2\,x+3)^3(x+1)}-\frac{25191}{3125}\log\left(|3\,x+2|\right)+\frac{65816}{3125}\log\left(|2\,x+3|\right)-1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -1/1875*(594792*x^4 + 2974776*x^3 + 5433540*x^2 + 4260599*x + 1195793)/((3*
x + 2)*(2*x + 3)^3*(x + 1)) - 25191/3125*log(abs(3*x + 2)) + 65816/3125*log
(abs(2*x + 3)) - 13*log(abs(x + 1))
```

maple [A] time = 0.06, size = 67, normalized size = 0.76

$$-\frac{25191\ln(3x+2)}{3125}+\frac{65816\ln(2x+3)}{3125}-13\ln(x+1)-\frac{1377}{625\,(3x+2)}-\frac{52}{75\,(2x+3)^3}-\frac{406}{125\,(2x+3)^2}-\frac{8104}{625\,(2x+3)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^4/(3*x^2+5*x+2)^2,x)
```

```
[Out] -1377/625/(3*x+2)-25191/3125*ln(3*x+2)-52/75/(2*x+3)^3-406/125/(2*x+3)^2-81
04/625/(2*x+3)+65816/3125*ln(2*x+3)-6/(x+1)-13*ln(x+1)
```

maxima [A] time = 0.51, size = 72, normalized size = 0.82

$$-\frac{594792\,x^4+2974776\,x^3+5433540\,x^2+4260599\,x+1195793}{1875\left(24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54\right)}-\frac{25191}{3125}\log\left(3\,x+2\right)+\frac{65816}{3125}\log\left(2\,x+3\right)-13$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -1/1875*(594792*x^4 + 2974776*x^3 + 5433540*x^2 + 4260599*x + 1195793)/(24*
x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54) - 25191/3125*log(3*x + 2) +
 65816/3125*log(2*x + 3) - 13*log(x + 1)
```

mupad [B] time = 2.37, size = 66, normalized size = 0.75

$$\frac{65816\,\ln\left(x+\frac{3}{2}\right)}{3125}-\frac{25191\,\ln\left(x+\frac{2}{3}\right)}{3125}-13\,\ln(x+1)-\frac{\frac{8261\,x^4}{625}+\frac{123949\,x^3}{1875}+\frac{90559\,x^2}{750}+\frac{4260599\,x}{45000}+\frac{1195793}{45000}}{x^5+\frac{37\,x^4}{6}+\frac{179\,x^3}{12}+\frac{141\,x^2}{8}+\frac{81\,x}{8}+\frac{9}{4}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (65816*log(x + 3/2))/3125 - (25191*log(x + 2/3))/3125 - 13*log(x + 1) - ((4
260599*x)/45000 + (90559*x^2)/750 + (123949*x^3)/1875 + (8261*x^4)/625 + 11
95793/45000)/((81*x)/8 + (141*x^2)/8 + (179*x^3)/12 + (37*x^4)/6 + x^5 + 9/
4)
```

sympy [A] time = 0.23, size = 71, normalized size = 0.81

$$-\frac{594792x^4+2974776x^3+5433540x^2+4260599x+1195793}{45000x^5+277500x^4+671250x^3+793125x^2+455625x+101250}-\frac{25191\log\left(x+\frac{2}{3}\right)}{3125}-13\log(x+1)+\frac{658}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**2,x)
```

```
[Out] -(594792*x**4 + 2974776*x**3 + 5433540*x**2 + 4260599*x + 1195793)/(45000*x
**5 + 277500*x**4 + 671250*x**3 + 793125*x**2 + 455625*x + 101250) - 25191*
log(x + 2/3)/3125 - 13*log(x + 1) + 65816*log(x + 3/2)/3125
```

3.2396 $\int \frac{(5-x)(3+2x)^5}{\left(2+5x+3x^2\right)^3} \, dx$

Optimal. Leaf size=64

$$\frac{502254x+398585}{486\left(3x^2+5x+2\right)}-\frac{57499x+56041}{486\left(3x^2+5x+2\right)^2}-\frac{32x}{27}-1085\log(x+1)+\frac{29375}{27}\log(3x+2)$$

```
[Out] -32/27*x+1/486*(-56041-57499*x)/(3*x^2+5*x+2)^2+1/486*(398585+502254*x)/(3*
x^2+5*x+2)-1085*ln(1+x)+29375/27*ln(2+3*x)
```

Rubi [A] time = 0.08, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = {816, 1660, 1657, 632, 31}

$$\frac{502254x+398585}{486\left(3x^2+5x+2\right)}-\frac{57499x+56041}{486\left(3x^2+5x+2\right)^2}-\frac{32x}{27}-1085\log(x+1)+\frac{29375}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-32*x)/27 - (56041 + 57499*x)/(486*(2 + 5*x + 3*x^2)^2) + (398585 + 502254
*x)/(486*(2 + 5*x + 3*x^2)) - 1085*Log[1 + x] + (29375*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1657

```
Int[(Pq_)*((a_) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[Expand
Integrand[Pq*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c}, x] && PolyQ[Pq
, x] && IGtQ[p, -2]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx &= \int \frac{\frac{13}{2}(3+2x)^5-\frac{1}{2}(3+2x)^6}{\left(2+5x+3x^2\right)^3}\,dx \\
&= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{-\frac{72539}{243}-\frac{87920x}{81}-\frac{9824x^2}{27}+\frac{160x^3}{9}+\frac{64x^4}{3}}{\left(2+5x+3x^2\right)^2}\,dx \\
&= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{1}{2}\int \frac{\frac{58942}{27}+\frac{160x}{27}-\frac{64x^2}{9}}{2+5x+3x^2}\,dx \\
&= -\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{1}{2}\int \left(-\frac{64}{27}+\frac{10(1969+16x)}{9\left(2+5x+3x^2\right)}\right)dx \\
&= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}+\frac{5}{9}\int \frac{1969+16x}{2+5x+3x^2}\,dx \\
&= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}-3255\int \frac{1}{3+3x}\,dx+\frac{29375}{9}\int \\
&= -\frac{32x}{27}-\frac{56041+57499x}{486\left(2+5x+3x^2\right)^2}+\frac{398585+502254x}{486\left(2+5x+3x^2\right)}-1085\log(1+x)+\frac{29375}{27}\log(2
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 81, normalized size = 1.27

$$
\frac{-1728x^5-8352x^4+486510x^3+1221179x^2+176250\left(3x^2+5x+2\right)^2\log(-6x-4)-175770\left(3x^2+5x+2\right)^2}{162\left(3x^2+5x+2\right)^2}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^5)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (245891 + 973450*x + 1221179*x^2 + 486510*x^3 - 8352*x^4 - 1728*x^5 + 17625
0*(2 + 5*x + 3*x^2)^2*Log[-4 - 6*x] - 175770*(2 + 5*x + 3*x^2)^2*Log[-2*(1
+ x)])/(162*(2 + 5*x + 3*x^2)^2)
```

fricas [A] time = 0.60, size = 103, normalized size = 1.61

$$
-\frac{1728\,x^5+5760\,x^4-495150\,x^3-1231835\,x^2-176250\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)+1757}{162\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/162*(1728*x^5 + 5760*x^4 - 495150*x^3 - 1231835*x^2 - 176250*(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4)*log(3*x + 2) + 175770*(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4)*log(x + 1) - 979210*x - 247043)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4)
```

giac [A] time = 0.15, size = 49, normalized size = 0.77

$$-\frac{32}{27}\,x+\frac{502254\,x^{3}+1235675\,x^{2}+979978\,x+247043}{162\,(3\,x+2)^{2}(x+1)^{2}}+\frac{29375}{27}\,\log\left(|3\,x+2|\right)-1085\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -32/27*x + 1/162*(502254*x^3 + 1235675*x^2 + 979978*x + 247043)/((3*x + 2)^
2*(x + 1)^2) + 29375/27*log(abs(3*x + 2)) - 1085*log(abs(x + 1))
```

maple [A] time = 0.06, size = 51, normalized size = 0.80

$$-\frac{32x}{27}+\frac{29375\ln\left(3x+2\right)}{27}-1085\ln\left(x+1\right)-\frac{53125}{162\left(3x+2\right)^{2}}+\frac{6250}{9\left(3x+2\right)}+\frac{3}{\left(x+1\right)^{2}}+\frac{113}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^5/(3*x^2+5*x+2)^3,x)
```

```
[Out] -32/27*x-53125/162/(3*x+2)^2+6250/9/(3*x+2)+29375/27*ln(3*x+2)+3/(x+1)^2+11
3/(x+1)-1085*ln(x+1)
```

maxima [A] time = 0.55, size = 57, normalized size = 0.89

$$-\frac{32}{27}\,x+\frac{502254\,x^{3}+1235675\,x^{2}+979978\,x+247043}{162\,\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}+\frac{29375}{27}\,\log\left(3\,x+2\right)-1085\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^5/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -32/27*x + 1/162*(502254*x^3 + 1235675*x^2 + 979978*x + 247043)/(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4) + 29375/27*log(3*x + 2) - 1085*log(x + 1)
```

mupad [B] time = 2.44, size = 52, normalized size = 0.81

$$\frac{29375\,\ln\left(x+\frac{2}{3}\right)}{27}-1085\,\ln\left(x+1\right)-\frac{32\,x}{27}+\frac{\frac{9301\,x^{3}}{27}+\frac{1235675\,x^{2}}{1458}+\frac{489989\,x}{729}+\frac{247043}{1458}}{x^{4}+\frac{10\,x^{3}}{3}+\frac{37\,x^{2}}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^5*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (29375*log(x + 2/3))/27 - 1085*log(x + 1) - (32*x)/27 + ((489989*x)/729 + (
1235675*x^2)/1458 + (9301*x^3)/27 + 247043/1458)/((20*x)/9 + (37*x^2)/9 + (
10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.19, size = 58, normalized size = 0.91

$$-\frac{32x}{27}-\frac{-502254x^{3}-1235675x^{2}-979978x-247043}{1458x^{4}+4860x^{3}+5994x^{2}+3240x+648}+\frac{29375\log\left(x+\frac{2}{3}\right)}{27}-1085\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**5/(3*x**2+5*x+2)**3,x)
```

```
[Out] -32*x/27 - (-502254*x**3 - 1235675*x**2 - 979978*x - 247043)/(1458*x**4 + 4
860*x**3 + 5994*x**2 + 3240*x + 648) + 29375*log(x + 2/3)/27 - 1085*log(x +
 1)
```

3.2397 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=59

$$-\frac{12083x+11597}{162\left(3x^2+5x+2\right)^2}+\frac{7(20298x+16651)}{162\left(3x^2+5x+2\right)}-883\log(x+1)+\frac{23825}{27}\log(3x+2)$$

```
[Out] 1/162*(-11597-12083*x)/(3*x^2+5*x+2)^2+7/162*(16651+20298*x)/(3*x^2+5*x+2)-
883*ln(1+x)+23825/27*ln(2+3*x)
```

Rubi [A] time = 0.05, antiderivative size = 59, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = $\{816, 1660, 632, 31\}$

$$-\frac{12083x+11597}{162\left(3x^2+5x+2\right)^2}+\frac{7(20298x+16651)}{162\left(3x^2+5x+2\right)}-883\log(x+1)+\frac{23825}{27}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(11597 + 12083*x)/(162*(2 + 5*x + 3*x^2)^2) + (7*(16651 + 20298*x))/(162*(
2 + 5*x + 3*x^2)) - 883*Log[1 + x] + (23825*Log[2 + 3*x])/27
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 632

```
Int[((d_.) + (e_.)*(x_))/((a_) + (b_.)*(x_) + (c_.)*(x_)^2), x_Symbol] :> W
ith[{q = Rt[b^2 - 4*a*c, 2]}, Dist[(c*d - e*(b/2 - q/2))/q, Int[1/(b/2 - q/
2 + c*x), x], x] - Dist[(c*d - e*(b/2 + q/2))/q, Int[1/(b/2 + q/2 + c*x), x
], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a
*c, 0] && NiceSqrtQ[b^2 - 4*a*c]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^3}\,dx = \int \frac{\frac{13}{2}(3+2x)^4 - \frac{1}{2}(3+2x)^5}{\left(2+5x+3x^2\right)^3}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2} - \frac{1}{2}\int \frac{\frac{13097}{81} - \frac{4624x}{27} - \frac{64x^2}{9} + \frac{32x^3}{3}}{\left(2+5x+3x^2\right)^2}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2} + \frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)} + \frac{1}{2}\int \frac{\frac{15862}{9} - \frac{32x}{9}}{2+5x+3x^2}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2} + \frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)} + \frac{23825}{9}\int \frac{1}{2+3x}\,dx - 2649\int \frac{1}{3+3x}\,dx$$
$$= -\frac{11597+12083x}{162\left(2+5x+3x^2\right)^2} + \frac{7(16651+20298x)}{162\left(2+5x+3x^2\right)} - 883\log(1+x) + \frac{23825}{27}\log(2+3x)$$

Mathematica [**A**] time = 0.04, size = 62, normalized size = 1.05

$$\frac{1}{54}\left(47650\log(-6x-4) - \frac{3\left(-47362x^3 - 117789x^2 + 15894\left(3x^2+5x+2\right)^2\log(-2(x+1)) - 94986x - 24613\right)}{\left(3x^2+5x+2\right)^2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (47650*Log[-4 - 6*x] - (3*(-24613 - 94986*x - 117789*x^2 - 47362*x^3 + 1589
4*(2 + 5*x + 3*x^2)^2*Log[-2*(1 + x)]))/(2 + 5*x + 3*x^2)^2)/54
```

fricas [**A**] time = 0.64, size = 93, normalized size = 1.58

$$\frac{142086\,x^3 + 353367\,x^2 + 47650\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 20\,x + 4\right)\log\left(3\,x+2\right) - 47682\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 2}{54\left(9\,x^4 + 30\,x^3 + 37\,x^2 + 20\,x + 4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(142086*x^3 + 353367*x^2 + 47650*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*
log(3*x + 2) - 47682*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 2849
58*x + 73839)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [**A**] time = 0.17, size = 46, normalized size = 0.78

$$\frac{47362\,x^3 + 117789\,x^2 + 94986\,x + 24613}{18\,(3\,x+2)^2(x+1)^2} + \frac{23825}{27}\log\left(|3\,x+2|\right) - 883\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/18*(47362*x^3 + 117789*x^2 + 94986*x + 24613)/((3*x + 2)^2*(x + 1)^2) + 2
3825/27*log(abs(3*x + 2)) - 883*log(abs(x + 1))
```

maple [**A**] time = 0.05, size = 48, normalized size = 0.81

$$\frac{23825\ln(3x+2)}{27} - 883\ln(x+1) - \frac{10625}{54\,(3x+2)^2} + \frac{15500}{27\,(3x+2)} + \frac{3}{(x+1)^2} + \frac{101}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4/(3*x^2+5*x+2)^3,x)
```

```
[Out] -10625/54/(3*x+2)^2+15500/27/(3*x+2)+23825/27*ln(3*x+2)+3/(x+1)^2+101/(x+1)
-883*ln(x+1)
```

maxima [A] time = 0.49, size = 54, normalized size = 0.92

$$\frac{47362\,x^3+117789\,x^2+94986\,x+24613}{18\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+\frac{23825}{27}\,\log\left(3\,x+2\right)-883\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/18*(47362*x^3 + 117789*x^2 + 94986*x + 24613)/(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4) + 23825/27*log(3*x + 2) - 883*log(x + 1)
```

mupad [B] time = 2.45, size = 49, normalized size = 0.83

$$\frac{23825\,\ln\left(x+\frac{2}{3}\right)}{27}-883\,\ln\left(x+1\right)+\frac{\frac{23681\,x^3}{81}+\frac{39263\,x^2}{54}+\frac{1759\,x}{3}+\frac{24613}{162}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (23825*log(x + 2/3))/27 - 883*log(x + 1) + ((1759*x)/3 + (39263*x^2)/54 + (
23681*x^3)/81 + 24613/162)/((20*x)/9 + (37*x^2)/9 + (10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.19, size = 53, normalized size = 0.90

$$-\frac{-47362x^3-117789x^2-94986x-24613}{162x^4+540x^3+666x^2+360x+72}+\frac{23825\log\left(x+\frac{2}{3}\right)}{27}-883\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-47362*x**3 - 117789*x**2 - 94986*x - 24613)/(162*x**4 + 540*x**3 + 666*x
**2 + 360*x + 72) + 23825*log(x + 2/3)/27 - 883*log(x + 1)
```

3.2398 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=69

$$-\frac{(35x+29)(2x+3)^3}{2\left(3x^2+5x+2\right)^2}+\frac{141(8x+7)(2x+3)}{2\left(3x^2+5x+2\right)}-705\log(x+1)+705\log(3x+2)$$

```
[Out] -1/2*(3+2*x)^3*(29+35*x)/(3*x^2+5*x+2)^2+141/2*(3+2*x)*(7+8*x)/(3*x^2+5*x+2
)-705*ln(1+x)+705*ln(2+3*x)
```

Rubi [A] time = 0.03, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.160, Rules used = {804, 722, 616, 31}

$$-\frac{(35x+29)(2x+3)^3}{2\left(3x^2+5x+2\right)^2}+\frac{141(8x+7)(2x+3)}{2\left(3x^2+5x+2\right)}-705\log(x+1)+705\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^3*(29 + 35*x))/(2*(2 + 5*x + 3*x^2)^2) + (141*(3 + 2*x)*(7 + 8*
x))/(2*(2 + 5*x + 3*x^2)) - 705*Log[1 + x] + 705*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2}-\frac{141}{2}\int \frac{(3+2x)^2}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)}+705\int \frac{1}{2+5x+3x^2}\,dx\\ &= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)}+2115\int \frac{1}{2+3x}\,dx-2115\int \frac{1}{3+3x}\\ &= -\frac{(3+2x)^3(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{141(3+2x)(7+8x)}{2\left(2+5x+3x^2\right)}-705\log(1+x)+705\log(2+3x)\end{aligned}$$

Mathematica [A] time = 0.03, size = 59, normalized size = 0.86

$$-\frac{2611x+2449}{54\left(3x^2+5x+2\right)^2}+\frac{38118x+31673}{54\left(3x^2+5x+2\right)}+705\log(-6x-4)-705\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/54*(2449 + 2611*x)/(2 + 5*x + 3*x^2)^2 + (31673 + 38118*x)/(54*(2 + 5*x
+ 3*x^2)) + 705*Log[-4 - 6*x] - 705*Log[-2*(1 + x)]
```

fricas [A] time = 0.58, size = 93, normalized size = 1.35

$$\frac{38118\,x^3+95203\,x^2+12690\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-12690\left(9\,x^4+30\,x^3+37\,x^2+2\right.}{18\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 12690*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*lo
g(3*x + 2) - 12690*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 77330*
x + 20299)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 46, normalized size = 0.67

$$\frac{38118\,x^3+95203\,x^2+77330\,x+20299}{18\left(3\,x^2+5\,x+2\right)^2}+705\,\log\left(|3\,x+2|\right)-705\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 77330*x + 20299)/(3*x^2 + 5*x + 2)^2 + 705*lo
g(abs(3*x + 2)) - 705*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.70

$$705\ln\left(3x+2\right)-705\ln\left(x+1\right)-\frac{2125}{18\left(3x+2\right)^2}+\frac{3950}{9\left(3x+2\right)}+\frac{3}{\left(x+1\right)^2}+\frac{89}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3/(3*x^2+5*x+2)^3,x)
```

```
[Out] -2125/18/(3*x+2)^2+3950/9/(3*x+2)+705*ln(3*x+2)+3/(x+1)^2+89/(x+1)-705*ln(x
+1)
```

maxima [A] time = 0.55, size = 54, normalized size = 0.78

$$\frac{38118\,x^{3} + 95203\,x^{2} + 77330\,x + 20299}{18\left(9\,x^{4} + 30\,x^{3} + 37\,x^{2} + 20\,x + 4\right)} + 705\,\log\left(3\,x + 2\right) - 705\,\log\left(x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/18*(38118*x^3 + 95203*x^2 + 77330*x + 20299)/(9*x^4 + 30*x^3 + 37*x^2 + 2
0*x + 4) + 705*log(3*x + 2) - 705*log(x + 1)
```

mupad [B] time = 0.05, size = 45, normalized size = 0.65

$$\frac{\frac{6353\,x^{3}}{27} + \frac{95203\,x^{2}}{162} + \frac{38665\,x}{81} + \frac{20299}{162}}{x^{4} + \frac{10\,x^{3}}{3} + \frac{37\,x^{2}}{9} + \frac{20\,x}{9} + \frac{4}{9}} - 1410\,\mathrm{atanh}\left(6\,x + 5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((38665*x)/81 + (95203*x^2)/162 + (6353*x^3)/27 + 20299/162)/((20*x)/9 + (3
7*x^2)/9 + (10*x^3)/3 + x^4 + 4/9) - 1410*atanh(6*x + 5)
```

sympy [A] time = 0.17, size = 51, normalized size = 0.74

$$-\frac{-38118x^{3} - 95203x^{2} - 77330x - 20299}{162x^{4} + 540x^{3} + 666x^{2} + 360x + 72} + 705\log\left(x + \frac{2}{3}\right) - 705\log\left(x + 1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-38118*x**3 - 95203*x**2 - 77330*x - 20299)/(162*x**4 + 540*x**3 + 666*x*
*2 + 360*x + 72) + 705*log(x + 2/3) - 705*log(x + 1)
```

3.2399 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=57

$$-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{18\left(3x^2+5x+2\right)}-551\log(x+1)+551\log(3x+2)$$

```
[Out] 1/18*(-533-587*x)/(3*x^2+5*x+2)^2+1/18*(8269+9918*x)/(3*x^2+5*x+2)-551*ln(1
+x)+551*ln(2+3*x)
```

Rubi [A] time = 0.04, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {816, 1660, 638, 616, 31}

$$-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{18\left(3x^2+5x+2\right)}-551\log(x+1)+551\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(533 + 587*x)/(18*(2 + 5*x + 3*x^2)^2) + (8269 + 9918*x)/(18*(2 + 5*x + 3*
x^2)) - 551*Log[1 + x] + 551*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rule 816

```
Int[((d_) + (e_.)*(x_))^(m_)*((f_) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.
)*(x_)^2)^(p_), x_Symbol] :> Int[(a + b*x + c*x^2)^p*ExpandIntegrand[(d + e
*x)^m*(f + g*x), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a
*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && ILtQ[p, -1] && IGtQ[m, 0] && Rat
ionalQ[a, b, c, d, e, f, g]
```

Rule 1660

```
Int[(Pq_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> With[{Q =
PolynomialQuotient[Pq, a + b*x + c*x^2, x], f = Coeff[PolynomialRemainder[P
q, a + b*x + c*x^2, x], x, 0], g = Coeff[PolynomialRemainder[Pq, a + b*x +
c*x^2, x], x, 1]}, Simp[((b*f - 2*a*g + (2*c*f - b*g)*x)*(a + b*x + c*x^2)^
(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p + 1)*(b^2 - 4*a*c)), Int[
(a + b*x + c*x^2)^(p + 1)*ExpandToSum[(p + 1)*(b^2 - 4*a*c)*Q - (2*p + 3)*(
2*c*f - b*g), x], x], x]] /; FreeQ[{a, b, c}, x] && PolyQ[Pq, x] && NeQ[b^2
 - 4*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^3}\,dx &= \int \frac{45+51x+8x^2-4x^3}{\left(2+5x+3x^2\right)^3}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{\frac{1673}{9}+\frac{8x}{3}}{\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}+551\int \frac{1}{2+5x+3x^2}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}+1653\int \frac{1}{2+3x}\,dx-1653\int \frac{1}{3+3x}\,dx\\
&= -\frac{533+587x}{18\left(2+5x+3x^2\right)^2}+\frac{8269+9918x}{18\left(2+5x+3x^2\right)}-551\log(1+x)+551\log(2+3x)
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 56, normalized size = 0.98

$$-\frac{587x+533}{18\left(3x^2+5x+2\right)^2}+\frac{9918x+8269}{54x^2+90x+36}+551\log(-6x-4)-551\log(-2(x+1))$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/18*(533 + 587*x)/(2 + 5*x + 3*x^2)^2 + (8269 + 9918*x)/(36 + 90*x + 54*x
^2) + 551*Log[-4 - 6*x] - 551*Log[-2*(1 + x)]
```

fricas [**A**] time = 0.56, size = 93, normalized size = 1.63

$$\frac{9918\,x^3+24799\,x^2+3306\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-3306\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right.}{6\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 3306*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3
*x + 2) - 3306*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 20198*x +
5335)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [**A**] time = 0.16, size = 46, normalized size = 0.81

$$\frac{9918\,x^3+24799\,x^2+20198\,x+5335}{6\left(3\,x^2+5\,x+2\right)^2}+551\,\log\left(|3\,x+2|\right)-551\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 20198*x + 5335)/(3*x^2 + 5*x + 2)^2 + 551*log(a
bs(3*x + 2)) - 551*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.84

$$551\ln\left(3x+2\right)-551\ln\left(x+1\right)-\frac{425}{6\left(3x+2\right)^{2}}+\frac{320}{3x+2}+\frac{3}{\left(x+1\right)^{2}}+\frac{77}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2/(3*x^2+5*x+2)^3,x)
```

```
[Out] -425/6/(3*x+2)^2+320/(3*x+2)+551*ln(3*x+2)+3/(x+1)^2+77/(x+1)-551*ln(x+1)
```

maxima [A] time = 0.54, size = 54, normalized size = 0.95

$$\frac{9918\,x^{3}+24799\,x^{2}+20198\,x+5335}{6\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}+551\,\log\left(3\,x+2\right)-551\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/6*(9918*x^3 + 24799*x^2 + 20198*x + 5335)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x
 + 4) + 551*log(3*x + 2) - 551*log(x + 1)
```

mupad [B] time = 2.84, size = 45, normalized size = 0.79

$$\frac{\frac{551\,x^{3}}{3}+\frac{24799\,x^{2}}{54}+\frac{10099\,x}{27}+\frac{5335}{54}}{x^{4}+\frac{10\,x^{3}}{3}+\frac{37\,x^{2}}{9}+\frac{20\,x}{9}+\frac{4}{9}}-1102\,\mathrm{atanh}\left(6\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((10099*x)/27 + (24799*x^2)/54 + (551*x^3)/3 + 5335/54)/((20*x)/9 + (37*x^2
)/9 + (10*x^3)/3 + x^4 + 4/9) - 1102*atanh(6*x + 5)
```

sympy [A] time = 0.17, size = 51, normalized size = 0.89

$$-\frac{-9918x^{3}-24799x^{2}-20198x-5335}{54x^{4}+180x^{3}+222x^{2}+120x+24}+551\log\left(x+\frac{2}{3}\right)-551\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-9918*x**3 - 24799*x**2 - 20198*x - 5335)/(54*x**4 + 180*x**3 + 222*x**2
+ 120*x + 24) + 551*log(x + 2/3) - 551*log(x + 1)
```

3.2400 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3} \, dx$

Optimal. Leaf size=57

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)}-\frac{139x+121}{6\left(3x^2+5x+2\right)^2}-421\log(x+1)+421\log(3x+2)$$

```
[Out] 1/6*(-121-139*x)/(3*x^2+5*x+2)^2+421/6*(5+6*x)/(3*x^2+5*x+2)-421*ln(1+x)+42
1*ln(2+3*x)
```

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.174, Rules used = {777, 614, 616, 31}

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)}-\frac{139x+121}{6\left(3x^2+5x+2\right)^2}-421\log(x+1)+421\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(121 + 139*x)/(6*(2 + 5*x + 3*x^2)^2) + (421*(5 + 6*x))/(6*(2 + 5*x + 3*x^
2)) - 421*Log[1 + x] + 421*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2}-\frac{421}{6}\int \frac{1}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2}+\frac{421(5+6x)}{6\left(2+5x+3x^2\right)}+421\int \frac{1}{2+5x+3x^2}\,dx\\ &= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2}+\frac{421(5+6x)}{6\left(2+5x+3x^2\right)}+1263\int \frac{1}{2+3x}\,dx-1263\int \frac{1}{3+3x}\,dx\\ &= -\frac{121+139x}{6\left(2+5x+3x^2\right)^2}+\frac{421(5+6x)}{6\left(2+5x+3x^2\right)}-421\log(1+x)+421\log(2+3x)\end{aligned}$$

Mathematica [**A**] time = 0.02, size = 57, normalized size = 1.00

$$\frac{421(6x+5)}{6\left(3x^2+5x+2\right)}-\frac{139x+121}{6\left(3x^2+5x+2\right)^2}-421\log(x+1)+421\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/6*(121 + 139*x)/(2 + 5*x + 3*x^2)^2 + (421*(5 + 6*x))/(6*(2 + 5*x + 3*x^
2)) - 421*Log[1 + x] + 421*Log[2 + 3*x]
```

fricas [**A**] time = 0.58, size = 93, normalized size = 1.63

$$\frac{2526\,x^3+6315\,x^2+842\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-842\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right.}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 842*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3*x
 + 2) - 842*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 5146*x + 1363
)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [**A**] time = 0.20, size = 46, normalized size = 0.81

$$\frac{2526\,x^3+6315\,x^2+5146\,x+1363}{2\left(3\,x^2+5\,x+2\right)^2}+421\,\log\left(|3\,x+2|\right)-421\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 5146*x + 1363)/(3*x^2 + 5*x + 2)^2 + 421*log(abs
(3*x + 2)) - 421*log(abs(x + 1))
```

maple [**A**] time = 0.05, size = 48, normalized size = 0.84

$$421\ln\left(3x+2\right)-421\ln\left(x+1\right)-\frac{85}{2\left(3x+2\right)^2}+\frac{226}{3x+2}+\frac{3}{\left(x+1\right)^2}+\frac{65}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -85/2/(3*x+2)^2+226/(3*x+2)+421*ln(3*x+2)+3/(x+1)^2+65/(x+1)-421*ln(x+1)
```

maxima [A] time = 0.48, size = 54, normalized size = 0.95

$$\frac{2526\,x^3+6315\,x^2+5146\,x+1363}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+421\,\log\left(3\,x+2\right)-421\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(2526*x^3 + 6315*x^2 + 5146*x + 1363)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4) + 421*log(3*x + 2) - 421*log(x + 1)
```

mupad [B] time = 2.30, size = 45, normalized size = 0.79

$$\frac{\frac{421\,x^3}{3}+\frac{2105\,x^2}{6}+\frac{2573\,x}{9}+\frac{1363}{18}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}-842\,\mathrm{atanh}\left(6\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((2573*x)/9 + (2105*x^2)/6 + (421*x^3)/3 + 1363/18)/((20*x)/9 + (37*x^2)/9
+ (10*x^3)/3 + x^4 + 4/9) - 842*atanh(6*x + 5)
```

sympy [A] time = 0.16, size = 51, normalized size = 0.89

$$-\frac{-2526x^3-6315x^2-5146x-1363}{18x^4+60x^3+74x^2+40x+8}+421\log\left(x+\frac{2}{3}\right)-421\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-2526*x**3 - 6315*x**2 - 5146*x - 1363)/(18*x**4 + 60*x**3 + 74*x**2 + 40
*x + 8) + 421*log(x + 2/3) - 421*log(x + 1)
```

3.2401 $\int \frac{5-x}{(2+5x+3x^2)^3}\,dx$

Optimal. Leaf size=57

$$\frac{105(6x+5)}{2(3x^2+5x+2)}-\frac{35x+29}{2(3x^2+5x+2)^2}-315\log(x+1)+315\log(3x+2)$$

```
[Out] 1/2*(-29-35*x)/(3*x^2+5*x+2)^2+105/2*(5+6*x)/(3*x^2+5*x+2)-315*ln(1+x)+315*
ln(2+3*x)
```

Rubi [A] time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 18, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {638, 614, 616, 31}

$$\frac{105(6x+5)}{2(3x^2+5x+2)}-\frac{35x+29}{2(3x^2+5x+2)^2}-315\log(x+1)+315\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(29 + 35*x)/(2*(2 + 5*x + 3*x^2)^2) + (105*(5 + 6*x))/(2*(2 + 5*x + 3*x^2)
) - 315*Log[1 + x] + 315*Log[2 + 3*x]
```

Rule 31

```
Int[((a_) + (b_.)*(x_))^(-1), x_Symbol] :> Simp[Log[RemoveContent[a + b*x,
x]]/b, x] /; FreeQ[{a, b}, x]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 616

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> With[{q = Rt[b^2
 - 4*a*c, 2]}, Dist[c/q, Int[1/Simp[b/2 - q/2 + c*x, x], x], x] - Dist[c/q,
 Int[1/Simp[b/2 + q/2 + c*x, x], x], x]] /; FreeQ[{a, b, c}, x] && NeQ[b^2
- 4*a*c, 0] && PosQ[b^2 - 4*a*c] && PerfectSquareQ[b^2 - 4*a*c]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{29+35x}{2\left(2+5x+3x^2\right)^2}-\frac{105}{2}\int \frac{1}{\left(2+5x+3x^2\right)^2}\,dx \\
&= -\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}+315\int \frac{1}{2+5x+3x^2}\,dx \\
&= -\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}+945\int \frac{1}{2+3x}\,dx-945\int \frac{1}{3+3x}\,dx \\
&= -\frac{29+35x}{2\left(2+5x+3x^2\right)^2}+\frac{105(5+6x)}{2\left(2+5x+3x^2\right)}-315\log(1+x)+315\log(2+3x)
\end{aligned}
$$

Mathematica [A] time = 0.01, size = 57, normalized size = 1.00

$$
\frac{-35x-29}{2\left(3x^2+5x+2\right)^2}+\frac{105(6x+5)}{2\left(3x^2+5x+2\right)}-315\log(x+1)+315\log(3x+2)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-29 - 35*x)/(2*(2 + 5*x + 3*x^2)^2) + (105*(5 + 6*x))/(2*(2 + 5*x + 3*x^2)
) - 315*Log[1 + x] + 315*Log[2 + 3*x]
```

fricas [A] time = 0.58, size = 93, normalized size = 1.63

$$
\frac{1890\,x^3+4725\,x^2+630\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)-630\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\mathrm{lo}}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 630*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(3*x
 + 2) - 630*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 3850*x + 1021
)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.16, size = 46, normalized size = 0.81

$$
\frac{1890\,x^3+4725\,x^2+3850\,x+1021}{2\left(3\,x^2+5\,x+2\right)^2}+315\,\log\left(|3\,x+2|\right)-315\,\log\left(|x+1|\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 3850*x + 1021)/(3*x^2 + 5*x + 2)^2 + 315*log(abs
(3*x + 2)) - 315*log(abs(x + 1))
```

maple [A] time = 0.05, size = 48, normalized size = 0.84

$$
315\ln\left(3x+2\right)-315\ln\left(x+1\right)-\frac{51}{2\left(3x+2\right)^2}+\frac{156}{3x+2}+\frac{3}{\left(x+1\right)^2}+\frac{53}{x+1}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -51/2/(3*x+2)^2+156/(3*x+2)+315*ln(3*x+2)+3/(x+1)^2+53/(x+1)-315*ln(x+1)
```

maxima [A] time = 0.50, size = 54, normalized size = 0.95

$$\frac{1890\,x^3+4725\,x^2+3850\,x+1021}{2\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+315\,\log\left(3\,x+2\right)-315\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/2*(1890*x^3 + 4725*x^2 + 3850*x + 1021)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
 4) + 315*log(3*x + 2) - 315*log(x + 1)
```

mupad [B] time = 0.05, size = 45, normalized size = 0.79

$$\frac{105\,x^3+\frac{525\,x^2}{2}+\frac{1925\,x}{9}+\frac{1021}{18}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}-630\,\mathrm{atanh}\left(6\,x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((1925*x)/9 + (525*x^2)/2 + 105*x^3 + 1021/18)/((20*x)/9 + (37*x^2)/9 + (10
*x^3)/3 + x^4 + 4/9) - 630*atanh(6*x + 5)
```

sympy [A] time = 0.15, size = 51, normalized size = 0.89

$$-\frac{-1890x^3-4725x^2-3850x-1021}{18x^4+60x^3+74x^2+40x+8}+315\log\left(x+\frac{2}{3}\right)-315\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-1890*x**3 - 4725*x**2 - 3850*x - 1021)/(18*x**4 + 60*x**3 + 74*x**2 + 40
*x + 8) + 315*log(x + 2/3) - 315*log(x + 1)
```

3.2402 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=69

$$-\frac{3(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{11442x+9587}{50\left(3x^2+5x+2\right)}-233\log(x+1)+\frac{208}{125}\log(2x+3)+\frac{28917}{125}\log(3x+2)$$

```
[Out] -3/10*(37+47*x)/(3*x^2+5*x+2)^2+1/50*(9587+11442*x)/(3*x^2+5*x+2)-233*ln(1+
x)+208/125*ln(3+2*x)+28917/125*ln(2+3*x)
```

Rubi [A] time = 0.05, antiderivative size = 69, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.080$, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{11442x+9587}{50\left(3x^2+5x+2\right)}-233\log(x+1)+\frac{208}{125}\log(2x+3)+\frac{28917}{125}\log(3x+2)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-3*(37 + 47*x))/(10*(2 + 5*x + 3*x^2)^2) + (9587 + 11442*x)/(50*(2 + 5*x +
 3*x^2)) - 233*Log[1 + x] + (208*Log[3 + 2*x])/125 + (28917*Log[2 + 3*x])/1
25
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int\frac{1217+846x}{(3+2x)\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}+\frac{1}{50}\int\frac{34534+22884x}{(3+2x)\left(2+5x+3x^2\right)}\,d$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}+\frac{1}{50}\int\left(-\frac{11650}{1+x}+\frac{832}{5(3+2x)}+\right.$$

$$= -\frac{3(37+47x)}{10\left(2+5x+3x^2\right)^2}+\frac{9587+11442x}{50\left(2+5x+3x^2\right)}-233\log(1+x)+\frac{208}{125}\log(3+2$$

Mathematica [A]   time = 0.05, size = 68, normalized size = 0.99

$$\frac{1}{125}\left(-\frac{75(47x+37)}{2\left(3x^2+5x+2\right)^2}+\frac{57210x+47935}{6x^2+10x+4}+28917\log(-6x-4)-29125\log(-2(x+1))+208\log(2x+3)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((-75*(37 + 47*x))/(2*(2 + 5*x + 3*x^2)^2) + (47935 + 57210*x)/(4 + 10*x +
6*x^2) + 28917*Log[-4 - 6*x] - 29125*Log[-2*(1 + x)] + 208*Log[3 + 2*x])/12
5
```

fricas [A]   time = 0.71, size = 121, normalized size = 1.75

$$\frac{171630\,x^3+429855\,x^2+57834\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(3\,x+2\right)+416\left(9\,x^4+30\,x^3+37\,x^2+2\right.}{250\left(9\,x^4+30\,x^3+37\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/250*(171630*x^3 + 429855*x^2 + 57834*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
*log(3*x + 2) + 416*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(2*x + 3) - 582
50*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(x + 1) + 350570*x + 93095)/(9*x
^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A]   time = 0.15, size = 55, normalized size = 0.80

$$\frac{34326\,x^3+85971\,x^2+70114\,x+18619}{50\,(3\,x+2)^2(x+1)^2}+\frac{28917}{125}\,\log\left(|3\,x+2|\right)+\frac{208}{125}\,\log\left(|2\,x+3|\right)-233\,\log\left(|x+1|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/50*(34326*x^3 + 85971*x^2 + 70114*x + 18619)/((3*x + 2)^2*(x + 1)^2) + 28
917/125*log(abs(3*x + 2)) + 208/125*log(abs(2*x + 3)) - 233*log(abs(x + 1))
```

maple [A]   time = 0.05, size = 56, normalized size = 0.81

$$\frac{28917\ln\left(3x+2\right)}{125}+\frac{208\ln\left(2x+3\right)}{125}-233\ln\left(x+1\right)-\frac{153}{10\left(3x+2\right)^2}+\frac{2646}{25\left(3x+2\right)}+\frac{3}{\left(x+1\right)^2}+\frac{41}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -153/10/(3*x+2)^2+2646/25/(3*x+2)+28917/125*ln(3*x+2)+208/125*ln(2*x+3)+3/(
x+1)^2+41/(x+1)-233*ln(x+1)
```

maxima [A] time = 0.59, size = 62, normalized size = 0.90

$$\frac{34326\,x^3+85971\,x^2+70114\,x+18619}{50\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}+\frac{28917}{125}\,\log\left(3\,x+2\right)+\frac{208}{125}\,\log\left(2\,x+3\right)-233\,\log\left(x+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/50*(34326*x^3 + 85971*x^2 + 70114*x + 18619)/(9*x^4 + 30*x^3 + 37*x^2 + 2
0*x + 4) + 28917/125*log(3*x + 2) + 208/125*log(2*x + 3) - 233*log(x + 1)
```

mupad [B] time = 2.32, size = 55, normalized size = 0.80

$$\frac{28917\,\ln\left(x+\frac{2}{3}\right)}{125}-233\,\ln\left(x+1\right)+\frac{208\,\ln\left(x+\frac{3}{2}\right)}{125}+\frac{\frac{1907\,x^3}{25}+\frac{28657\,x^2}{150}+\frac{35057\,x}{225}+\frac{18619}{450}}{x^4+\frac{10\,x^3}{3}+\frac{37\,x^2}{9}+\frac{20\,x}{9}+\frac{4}{9}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (28917*log(x + 2/3))/125 - 233*log(x + 1) + (208*log(x + 3/2))/125 + ((3505
7*x)/225 + (28657*x^2)/150 + (1907*x^3)/25 + 18619/450)/((20*x)/9 + (37*x^2
)/9 + (10*x^3)/3 + x^4 + 4/9)
```

sympy [A] time = 0.21, size = 63, normalized size = 0.91

$$-\frac{-34326x^3-85971x^2-70114x-18619}{450x^4+1500x^3+1850x^2+1000x+200}+\frac{28917\log\left(x+\frac{2}{3}\right)}{125}-233\log\left(x+1\right)+\frac{208\log\left(x+\frac{3}{2}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-34326*x**3 - 85971*x**2 - 70114*x - 18619)/(450*x**4 + 1500*x**3 + 1850*
x**2 + 1000*x + 200) + 28917*log(x + 2/3)/125 - 233*log(x + 1) + 208*log(x
+ 3/2)/125
```

3.2403 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=94

$$-\frac{3(47x+37)}{10(2x+3)\left(3x^2+5x+2\right)^2}+\frac{10848x+9293}{50(2x+3)\left(3x^2+5x+2\right)}+\frac{12946}{125(2x+3)}-175\log(x+1)+\frac{4912}{625}\log(2x+3)+\frac{1044}{62}$$

```
[Out] 12946/125/(3+2*x)-3/10*(37+47*x)/(3+2*x)/(3*x^2+5*x+2)^2+1/50*(9293+10848*x
)/(3+2*x)/(3*x^2+5*x+2)-175*ln(1+x)+4912/625*ln(3+2*x)+104463/625*ln(2+3*x)
```

Rubi [A] time = 0.06, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.080$, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10(2x+3)\left(3x^2+5x+2\right)^2}+\frac{10848x+9293}{50(2x+3)\left(3x^2+5x+2\right)}+\frac{12946}{125(2x+3)}-175\log(x+1)+\frac{4912}{625}\log(2x+3)+\frac{1044}{62}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 12946/(125*(3 + 2*x)) - (3*(37 + 47*x))/(10*(3 + 2*x)*(2 + 5*x + 3*x^2)^2)
+ (9293 + 10848*x)/(50*(3 + 2*x)*(2 + 5*x + 3*x^2)) - 175*Log[1 + x] + (491
2*Log[3 + 2*x])/625 + (104463*Log[2 + 3*x])/625
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1439+1128x}{(3+2x)^2\left(2+5x+3x^2\right)^2}\,dx \\ &= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{52142}{(3+2x)^2\left(\right.} \\ &= -\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}+\frac{1}{50}\int \left(-\frac{8750}{1+x}-\right. \\ &= \frac{12946}{125(3+2x)}-\frac{3(37+47x)}{10(3+2x)\left(2+5x+3x^2\right)^2}+\frac{9293+10848x}{50(3+2x)\left(2+5x+3x^2\right)}-175\end{aligned}$$

Mathematica [A] time = 0.04, size = 78, normalized size = 0.83

$$\frac{1}{625}\left(-\frac{75(201x+151)}{2\left(3x^2+5x+2\right)^2}+\frac{5(39462x+33697)}{6x^2+10x+4}-\frac{1040}{2x+3}+104463\log(-6x-4)-109375\log(-2(x+1))+491\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-1040/(3 + 2*x) - (75*(151 + 201*x))/(2*(2 + 5*x + 3*x^2)^2) + (5*(33697 +
 39462*x))/(4 + 10*x + 6*x^2) + 104463*Log[-4 - 6*x] - 109375*Log[-2*(1 + x
)] + 4912*Log[3 + 2*x])/625
```

fricas [A] time = 0.60, size = 146, normalized size = 1.55

$$\frac{1165140\,x^4+4697400\,x^3+6842995\,x^2+208926\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)\log\left(3\,x+2\right)+98}{1250\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/1250*(1165140*x^4 + 4697400*x^3 + 6842995*x^2 + 208926*(18*x^5 + 87*x^4 +
 164*x^3 + 151*x^2 + 68*x + 12)*log(3*x + 2) + 9824*(18*x^5 + 87*x^4 + 164*
x^3 + 151*x^2 + 68*x + 12)*log(2*x + 3) - 218750*(18*x^5 + 87*x^4 + 164*x^3
 + 151*x^2 + 68*x + 12)*log(x + 1) + 4275600*x + 968615)/(18*x^5 + 87*x^4 +
 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [A] time = 0.16, size = 95, normalized size = 1.01

$$-\frac{208}{125\,(2\,x+3)}-\frac{2\left(\frac{168231}{2\,x+3}-\frac{211036}{(2\,x+3)^2}+\frac{82447}{(2\,x+3)^3}-42642\right)}{125\left(\frac{5}{2\,x+3}-3\right)^2\left(\frac{1}{2\,x+3}-1\right)^2}-175\,\log\left(\left|-\frac{1}{2\,x+3}+1\right|\right)+\frac{104463}{625}\,\log\left(\left|-\frac{5}{2\,x+3}+3\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -208/125/(2*x + 3) - 2/125*(168231/(2*x + 3) - 211036/(2*x + 3)^2 + 82447/(
2*x + 3)^3 - 42642)/((5/(2*x + 3) - 3)^2*(1/(2*x + 3) - 1)^2) - 175*log(abs
(-1/(2*x + 3) + 1)) + 104463/625*log(abs(-5/(2*x + 3) + 3))
```

maple [A] time = 0.05, size = 65, normalized size = 0.69

$$\frac{104463\ln\left(3x+2\right)}{625}+\frac{4912\ln\left(2x+3\right)}{625}-175\ln\left(x+1\right)-\frac{459}{50\left(3x+2\right)^2}+\frac{8856}{125\left(3x+2\right)}-\frac{208}{125\left(2x+3\right)}+\frac{3}{\left(x+1\right)^2}+\frac{29}{x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^2/(3*x^2+5*x+2)^3,x)
```

```
[Out] -459/50/(3*x+2)^2+8856/125/(3*x+2)+104463/625*ln(3*x+2)-208/125/(2*x+3)+491
2/625*ln(2*x+3)+3/(x+1)^2+29/(x+1)-175*ln(x+1)
```

maxima [A] time = 0.69, size = 72, normalized size = 0.77

$$\frac{233028\,x^4+939480\,x^3+1368599\,x^2+855120\,x+193723}{250\left(18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12\right)}+\frac{104463}{625}\,\log\left(3\,x+2\right)+\frac{4912}{625}\,\log\left(2\,x+3\right)-175\ \mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/250*(233028*x^4 + 939480*x^3 + 1368599*x^2 + 855120*x + 193723)/(18*x^5 +
 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12) + 104463/625*log(3*x + 2) + 4912/6
25*log(2*x + 3) - 175*log(x + 1)
```

mupad [B] time = 0.04, size = 65, normalized size = 0.69

$$\frac{104463\,\ln\left(x+\frac{2}{3}\right)}{625}-175\,\ln\left(x+1\right)+\frac{4912\,\ln\left(x+\frac{3}{2}\right)}{625}+\frac{\frac{6473\,x^4}{125}+\frac{15658\,x^3}{75}+\frac{1368599\,x^2}{4500}+\frac{14252\,x}{75}+\frac{193723}{4500}}{x^5+\frac{29\,x^4}{6}+\frac{82\,x^3}{9}+\frac{151\,x^2}{18}+\frac{34\,x}{9}+\frac{2}{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (104463*log(x + 2/3))/625 - 175*log(x + 1) + (4912*log(x + 3/2))/625 + ((14
252*x)/75 + (1368599*x^2)/4500 + (15658*x^3)/75 + (6473*x^4)/125 + 193723/4
500)/((34*x)/9 + (151*x^2)/18 + (82*x^3)/9 + (29*x^4)/6 + x^5 + 2/3)
```

sympy [A] time = 0.23, size = 73, normalized size = 0.78

$$-\frac{-233028x^4-939480x^3-1368599x^2-855120x-193723}{4500x^5+21750x^4+41000x^3+37750x^2+17000x+3000}+\frac{104463\log\left(x+\frac{2}{3}\right)}{625}-175\log\left(x+1\right)+\frac{4912\log(}{62}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-233028*x**4 - 939480*x**3 - 1368599*x**2 - 855120*x - 193723)/(4500*x**5
 + 21750*x**4 + 41000*x**3 + 37750*x**2 + 17000*x + 3000) + 104463*log(x +
2/3)/625 - 175*log(x + 1) + 4912*log(x + 3/2)/625
```

3.2404 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=105

$$-\frac{3(47x+37)}{10(2x+3)^2\left(3x^2+5x+2\right)^2}+\frac{10254x+8999}{50(2x+3)^2\left(3x^2+5x+2\right)}+\frac{35886}{625(2x+3)}+\frac{11856}{125(2x+3)^2}-141\log(x+1)+\frac{68592\,\mathrm{lo}}{31}$$

```
[Out] 11856/125/(3+2*x)^2+35886/625/(3+2*x)-3/10*(37+47*x)/(3+2*x)^2/(3*x^2+5*x+2
)^2+1/50*(8999+10254*x)/(3+2*x)^2/(3*x^2+5*x+2)-141*ln(1+x)+68592/3125*ln(3
+2*x)+372033/3125*ln(2+3*x)
```

Rubi [A] time = 0.07, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.080$, Rules used = {822, 800}

$$-\frac{3(47x+37)}{10(2x+3)^2\left(3x^2+5x+2\right)^2}+\frac{10254x+8999}{50(2x+3)^2\left(3x^2+5x+2\right)}+\frac{35886}{625(2x+3)}+\frac{11856}{125(2x+3)^2}-141\log(x+1)+\frac{68592\,\mathrm{lo}}{31}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 11856/(125*(3 + 2*x)^2) + 35886/(625*(3 + 2*x)) - (3*(37 + 47*x))/(10*(3 +
2*x)^2*(2 + 5*x + 3*x^2)^2) + (8999 + 10254*x)/(50*(3 + 2*x)^2*(2 + 5*x + 3
*x^2)) - 141*Log[1 + x] + (68592*Log[3 + 2*x])/3125 + (372033*Log[2 + 3*x])
/3125
```

Rule 800

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[((d + e*x)^m*(f + g*x))/(a
+ b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*
c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && IntegerQ[m]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1661+1410x}{(3+2x)^3\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2} + \frac{8999+10254x}{50(3+2x)^2\left(2+5x+3x^2\right)} + \frac{1}{50}\int \frac{68}{(3+2}$$

$$= -\frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2} + \frac{8999+10254x}{50(3+2x)^2\left(2+5x+3x^2\right)} + \frac{1}{50}\int \Big(-\frac{705}{1+}$$

$$= \frac{11856}{125(3+2x)^2} + \frac{35886}{625(3+2x)} - \frac{3(37+47x)}{10(3+2x)^2\left(2+5x+3x^2\right)^2} + \frac{8999+}{50(3+2x)^2(}$$

Mathematica [A] time = 0.05, size = 86, normalized size = 0.82

$$\frac{-\frac{75(903x+653)}{2\left(3x^2+5x+2\right)^2} + \frac{611970x+550495}{6x^2+10x+4} - \frac{24560}{2x+3} - \frac{2600}{(2x+3)^2} + 372033\log(-6x-4) - 440625\log(-2(x+1)) + 68592\log(2}{3125}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-2600/(3 + 2*x)^2 - 24560/(3 + 2*x) - (75*(653 + 903*x))/(2*(2 + 5*x + 3*x
^2)^2) + (550495 + 611970*x)/(4 + 10*x + 6*x^2) + 372033*Log[-4 - 6*x] - 44
0625*Log[-2*(1 + x)] + 68592*Log[3 + 2*x])/3125
```

fricas [A] time = 0.68, size = 171, normalized size = 1.63

$$6459480\,x^5 + 36556020\,x^4 + 80482290\,x^3 + 85904835\,x^2 + 744066\left(36\,x^6 + 228\,x^5 + 589\,x^4 + 794\,x^3 + 589\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6250*(6459480*x^5 + 36556020*x^4 + 80482290*x^3 + 85904835*x^2 + 744066*(
36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log(3*x + 2) +
 137184*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log(2
*x + 3) - 881250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x +
36)*log(x + 1) + 44358230*x + 8857895)/(36*x^6 + 228*x^5 + 589*x^4 + 794*x^
3 + 589*x^2 + 228*x + 36)
```

giac [A] time = 0.16, size = 70, normalized size = 0.67

$$\frac{1291896\,x^5 + 7311204\,x^4 + 16096458\,x^3 + 17180967\,x^2 + 8871646\,x + 1771579}{1250\left(6\,x^3 + 19\,x^2 + 19\,x + 6\right)^2} + \frac{372033}{3125}\log\left(|3\,x+2|\right) + \frac{685}{312}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1/1250*(1291896*x^5 + 7311204*x^4 + 16096458*x^3 + 17180967*x^2 + 8871646*x
 + 1771579)/(6*x^3 + 19*x^2 + 19*x + 6)^2 + 372033/3125*log(abs(3*x + 2)) +
 68592/3125*log(abs(2*x + 3)) - 141*log(abs(x + 1))
```

maple [A] time = 0.06, size = 74, normalized size = 0.70

$$\frac{372033\ln(3x+2)}{3125} + \frac{68592\ln(2x+3)}{3125} - 141\ln(x+1) - \frac{1377}{250\,(3x+2)^2} + \frac{29322}{625\,(3x+2)} - \frac{104}{125\,(2x+3)^2} - \frac{4912}{625\,(2x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^3/(3*x^2+5*x+2)^3,x)
```

```
[Out] -1377/250/(3*x+2)^2+29322/625/(3*x+2)+372033/3125*ln(3*x+2)-104/125/(2*x+3)
^2-4912/625/(2*x+3)+68592/3125*ln(2*x+3)+3/(x+1)^2+17/(x+1)-141*ln(x+1)
```

maxima [A] time = 0.59, size = 82, normalized size = 0.78

$$\frac{1291896\,x^5+7311204\,x^4+16096458\,x^3+17180967\,x^2+8871646\,x+1771579}{1250\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)}+\frac{372033}{3125}\log\left(3\,x+2\right)+\frac{68592}{3125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1/1250*(1291896*x^5 + 7311204*x^4 + 16096458*x^3 + 17180967*x^2 + 8871646*x
 + 1771579)/(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36) +
 372033/3125*log(3*x + 2) + 68592/3125*log(2*x + 3) - 141*log(x + 1)
```

mupad [B] time = 2.29, size = 75, normalized size = 0.71

$$\frac{372033\,\ln\left(x+\frac{2}{3}\right)}{3125}-141\,\ln\left(x+1\right)+\frac{68592\,\ln\left(x+\frac{3}{2}\right)}{3125}+\frac{\frac{17943\,x^5}{625}+\frac{203089\,x^4}{1250}+\frac{2682743\,x^3}{7500}+\frac{5726989\,x^2}{15000}+\frac{4435823\,x}{22500}+}{x^6+\frac{19\,x^5}{3}+\frac{589\,x^4}{36}+\frac{397\,x^3}{18}+\frac{589\,x^2}{36}+\frac{19\,x}{3}+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] (372033*log(x + 2/3))/3125 - 141*log(x + 1) + (68592*log(x + 3/2))/3125 + (
(4435823*x)/22500 + (5726989*x^2)/15000 + (2682743*x^3)/7500 + (203089*x^4)
/1250 + (17943*x^5)/625 + 1771579/45000)/((19*x)/3 + (589*x^2)/36 + (397*x^
3)/18 + (589*x^4)/36 + (19*x^5)/3 + x^6 + 1)
```

sympy [A] time = 0.24, size = 83, normalized size = 0.79

$$-\frac{-1291896x^5-7311204x^4-16096458x^3-17180967x^2-8871646x-1771579}{45000x^6+285000x^5+736250x^4+992500x^3+736250x^2+285000x+45000}+\frac{372033\log\left(x+\frac{2}{3}\right)}{3125}-141\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**3,x)
```

```
[Out] -(-1291896*x**5 - 7311204*x**4 - 16096458*x**3 - 17180967*x**2 - 8871646*x
- 1771579)/(45000*x**6 + 285000*x**5 + 736250*x**4 + 992500*x**3 + 736250*x
**2 + 285000*x + 45000) + 372033*log(x + 2/3)/3125 - 141*log(x + 1) + 68592
*log(x + 3/2)/3125
```

3.2405 $\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3} \, dx$

Optimal. Leaf size=33

$$-\frac{(x+1)(2x+1)}{6\left(x^2+x+1\right)^2}-\frac{1}{6\left(x^2+x+1\right)}$$

```
[Out] -1/6*(1+x)*(1+2*x)/(x^2+x+1)^2-1/6/(x^2+x+1)
```

Rubi [A] time = 0.01, antiderivative size = 33, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 15, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.133, Rules used = {818, 629}

$$-\frac{(x+1)(2x+1)}{6\left(x^2+x+1\right)^2}-\frac{1}{6\left(x^2+x+1\right)}$$

Antiderivative was successfully verified.

```
[In] Int[(x*(1 + x)^2)/(1 + x + x^2)^3,x]
```

```
[Out] -((1 + x)*(1 + 2*x))/(6*(1 + x + x^2)^2) - 1/(6*(1 + x + x^2))
```

Rule 629

```
Int[((d_) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_.), x_Symbol
] :> Simp[(d*(a + b*x + c*x^2)^(p + 1))/(b*(p + 1)), x] /; FreeQ[{a, b, c,
d, e, p}, x] && EqQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{x(1+x)^2}{\left(1+x+x^2\right)^3} \, dx &= -\frac{(1+x)(1+2x)}{6\left(1+x+x^2\right)^2}-\frac{1}{6}\int \frac{-1-2x}{\left(1+x+x^2\right)^2} \, dx\\ &= -\frac{(1+x)(1+2x)}{6\left(1+x+x^2\right)^2}-\frac{1}{6\left(1+x+x^2\right)}\end{aligned}$$

Mathematica [A] time = 0.01, size = 22, normalized size = 0.67

$$-\frac{3x^2+4x+2}{6\left(x^2+x+1\right)^2}$$

Antiderivative was successfully verified.

```
[In] Integrate[(x*(1 + x)^2)/(1 + x + x^2)^3,x]
```

```
[Out] -1/6*(2 + 4*x + 3*x^2)/(1 + x + x^2)^2
```

fricas [A] time = 0.73, size = 32, normalized size = 0.97

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^4+2\,x^3+3\,x^2+2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="fricas")
```

```
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^4 + 2*x^3 + 3*x^2 + 2*x + 1)
```

giac [A] time = 0.15, size = 20, normalized size = 0.61

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="giac")
```

```
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^2 + x + 1)^2
```

maple [A] time = 0.04, size = 20, normalized size = 0.61

$$\frac{-\frac{1}{2}x^2-\frac{2}{3}x-\frac{1}{3}}{\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(x*(x+1)^2/(x^2+x+1)^3,x)
```

```
[Out] (-1/2*x^2-2/3*x-1/3)/(x^2+x+1)^2
```

maxima [A] time = 0.52, size = 32, normalized size = 0.97

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^4+2\,x^3+3\,x^2+2\,x+1\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)^2/(x^2+x+1)^3,x, algorithm="maxima")
```

```
[Out] -1/6*(3*x^2 + 4*x + 2)/(x^4 + 2*x^3 + 3*x^2 + 2*x + 1)
```

mupad [B] time = 0.04, size = 20, normalized size = 0.61

$$-\frac{3\,x^2+4\,x+2}{6\,\left(x^2+x+1\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x*(x + 1)^2)/(x + x^2 + 1)^3,x)
```

```
[Out] -(4*x + 3*x^2 + 2)/(6*(x + x^2 + 1)^2)
```

sympy [A] time = 0.12, size = 31, normalized size = 0.94

$$\frac{-3x^2 - 4x - 2}{6x^4 + 12x^3 + 18x^2 + 12x + 6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate(x*(1+x)**2/(x**2+x+1)**3,x)
```

```
[Out] (-3*x**2 - 4*x - 2)/(6*x**4 + 12*x**3 + 18*x**2 + 12*x + 6)
```

3.2406 $\int (5-x)(3+2x)^4\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=160

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{3/2}(2x+3)^4+\frac{229}{378}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{478}{315}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(378774x+874}{}$$

```
[Out] 478/315*(3+2*x)^2*(3*x^2+5*x+2)^(3/2)+229/378*(3+2*x)^3*(3*x^2+5*x+2)^(3/2)
-1/21*(3+2*x)^4*(3*x^2+5*x+2)^(3/2)+1/68040*(874301+378774*x)*(3*x^2+5*x+2)
^(3/2)-25969/93312*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)
+25969/15552*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{3/2}(2x+3)^4+\frac{229}{378}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{478}{315}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(378774x+874}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (25969*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/15552 + (478*(3 + 2*x)^2*(2 + 5*x +
 3*x^2)^(3/2))/315 + (229*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))/378 - ((3 +
2*x)^4*(2 + 5*x + 3*x^2)^(3/2))/21 + ((874301 + 378774*x)*(2 + 5*x + 3*x^2)
^(3/2))/68040 - (25969*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(31104*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^4\sqrt{2+5x+3x^2}\,dx &= -\frac{1}{21}(3+2x)^4\left(2+5x+3x^2\right)^{3/2}+\frac{1}{21}\int (3+2x)^3\left(\frac{707}{2}+229x\right)\sqrt{2+5}\\
&= \frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}(3+2x)^4\left(2+5x+3x^2\right)^{3/2}+\frac{1}{378}\\
&= \frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}\\
&= \frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}-\frac{1}{21}\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}\\
&= \frac{25969(5+6x)\sqrt{2+5x+3x^2}}{15552}+\frac{478}{315}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{229}{378}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 82, normalized size = 0.51

$$\frac{-908915\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(1244160x^6+1624320x^5-28649088x^4-123633360x^3\right.}{3265920}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-47009103 - 161915450*x - 208601544*x^2 - 123633
360*x^3 - 28649088*x^4 + 1624320*x^5 + 1244160*x^6) - 908915*Sqrt[3]*ArcTan
h[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/3265920
```

fricas [A] time = 0.63, size = 83, normalized size = 0.52

$$-\frac{1}{544320}\left(1244160\,x^6+1624320\,x^5-28649088\,x^4-123633360\,x^3-208601544\,x^2-161915450\,x-4700910\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/544320*(1244160*x^6 + 1624320*x^5 - 28649088*x^4 - 123633360*x^3 - 20860
1544*x^2 - 161915450*x - 47009103)*sqrt(3*x^2 + 5*x + 2) + 25969/186624*sqr
t(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.20, size = 79, normalized size = 0.49

$$-\frac{1}{544320}\left(2\left(12\left(6\left(8\left(30\left(36x+47\right)x-24869\right)x-858565\right)x-8691731\right)x-80957725\right)x-47009103\right)\sqrt{3x^2+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/544320*(2*(12*(6*(8*(30*(36*x + 47)*x - 24869)*x - 858565)*x - 8691731)*
x - 80957725)*x - 47009103)*sqrt(3*x^2 + 5*x + 2) + 25969/93312*sqrt(3)*log
(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 130, normalized size = 0.81

$$-\frac{16\left(3x^2+5x+2\right)^{\frac{3}{2}}x^4}{21}+\frac{52\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3}{189}+\frac{5542\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2}{315}+\frac{34931\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{756}-\frac{25969\sqrt{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -16/21*x^4*(3*x^2+5*x+2)^(3/2)+52/189*x^3*(3*x^2+5*x+2)^(3/2)+5542/315*x^2*
(3*x^2+5*x+2)^(3/2)+34931/756*x*(3*x^2+5*x+2)^(3/2)-25969/93312*ln(1/3*(5/2
+3*x)*3^(1/2)+(3*x^2+5*x+2)^(1/2))*3^(1/2)+25969/15552*(6*x+5)*(3*x^2+5*x+2
)^(1/2)+2654033/68040*(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 1.24, size = 138, normalized size = 0.86

$$-\frac{16}{21}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^4+\frac{52}{189}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^3+\frac{5542}{315}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+\frac{34931}{756}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{265403}{68040}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/21*(3*x^2 + 5*x + 2)^(3/2)*x^4 + 52/189*(3*x^2 + 5*x + 2)^(3/2)*x^3 + 5
542/315*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 34931/756*(3*x^2 + 5*x + 2)^(3/2)*x +
 2654033/68040*(3*x^2 + 5*x + 2)^(3/2) + 25969/2592*sqrt(3*x^2 + 5*x + 2)*x
 - 25969/93312*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 129
845/15552*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 3.65, size = 170, normalized size = 1.06

$$\frac{5542x^2\left(3x^2+5x+2\right)^{3/2}}{315}+\frac{52x^3\left(3x^2+5x+2\right)^{3/2}}{189}-\frac{16x^4\left(3x^2+5x+2\right)^{3/2}}{21}-\frac{118159\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\right.}{27216}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (5542*x^2*(5*x + 3*x^2 + 2)^(3/2))/315 + (52*x^3*(5*x + 3*x^2 + 2)^(3/2))/1
89 - (16*x^4*(5*x + 3*x^2 + 2)^(3/2))/21 - (118159*3^(1/2)*log((5*x + 3*x^2
 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/27216 + (118159*(x/2 + 5/12)*(5*x +
 3*x^2 + 2)^(1/2))/378 + (2654033*(5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x^2 -
27))/1632960 + (34931*x*(5*x + 3*x^2 + 2)^(3/2))/756 + (2654033*3^(1/2)*log
(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/653184
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-999x\sqrt{3x^2+5x+2}\right)dx-\int\left(-864x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-264x^3\sqrt{3x^2+5x+2}\right)dx-\int 16x^4\sqrt{3x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-999*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-864*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-264*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(16*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(16*x**5*sqrt(3*x**2 + 5*x +
2), x) - Integral(-405*sqrt(3*x**2 + 5*x + 2), x)
```

3.2407 $\int (5-x)(3+2x)^3\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=135

$$-\frac{1}{18}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{11}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(11538x+27487)\left(3x^2+5x+2\right)^{3/2}}{3240}+\frac{6221(6x+5}{5}$$

```
[Out] 11/15*(3+2*x)^2*(3*x^2+5*x+2)^(3/2)-1/18*(3+2*x)^3*(3*x^2+5*x+2)^(3/2)+1/32
40*(27487+11538*x)*(3*x^2+5*x+2)^(3/2)-6221/31104*arctanh(1/6*(5+6*x)*3^(1/
2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+6221/5184*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{18}\left(3x^2+5x+2\right)^{3/2}(2x+3)^3+\frac{11}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(11538x+27487)\left(3x^2+5x+2\right)^{3/2}}{3240}+\frac{6221(6x+5}{5}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (6221*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5184 + (11*(3 + 2*x)^2*(2 + 5*x + 3*
x^2)^(3/2))/15 - ((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))/18 + ((27487 + 11538
*x)*(2 + 5*x + 3*x^2)^(3/2))/3240 - (6221*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2])])/(10368*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) && !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^3\sqrt{2+5x+3x^2}\,dx &= -\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{1}{18}\int (3+2x)^2\left(\frac{609}{2}+198x\right)\sqrt{2+5}\\ &= \frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{1}{270}\\ &= \frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+2x)^3\left(2+5x+3x^2\right)^{3/2}+\frac{(2748}{}\\ &= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+\\ &= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+\\ &= \frac{6221(5+6x)\sqrt{2+5x+3x^2}}{5184}+\frac{11}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}-\frac{1}{18}(3+\end{aligned}$$

Mathematica [**A**] time = 0.04, size = 77, normalized size = 0.57

$$\frac{-31105\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(34560x^5-14976x^4-825840x^3-2317848x^2-2432350\right.}{155520}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-859701 - 2432350*x - 2317848*x^2 - 825840*x^3 -
 14976*x^4 + 34560*x^5) - 31105*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x
+ 9*x^2])])/155520
```

fricas [**A**] time = 0.73, size = 78, normalized size = 0.58

$$-\frac{1}{25920}\left(34560\,x^5-14976\,x^4-825840\,x^3-2317848\,x^2-2432350\,x-859701\right)\sqrt{3\,x^2+5\,x+2}+\frac{6221}{62208}\,\sqrt{3}\,\mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/25920*(34560*x^5 - 14976*x^4 - 825840*x^3 - 2317848*x^2 - 2432350*x - 85
9701)*sqrt(3*x^2 + 5*x + 2) + 6221/62208*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [**A**] time = 0.20, size = 74, normalized size = 0.55

$$-\frac{1}{25920}\,(2\,(12\,(6\,(8\,(30\,x-13)x-5735)x-96577)x-1216175)x-859701)\sqrt{3\,x^2+5\,x+2}+\frac{6221}{31104}\,\sqrt{3}\,\log\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/25920*(2*(12*(6*(8*(30*x - 13)*x - 5735)*x - 96577)*x - 1216175)*x - 859
701)*sqrt(3*x^2 + 5*x + 2) + 6221/31104*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 113, normalized size = 0.84

$$-\frac{4\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x^{3}}{9}+\frac{14\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x^{2}}{15}+\frac{337\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x}{36}-\frac{6221\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{31104}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+5*x+2)^(3/2)*x^3+14/15*(3*x^2+5*x+2)^(3/2)*x^2+337/36*(3*x^2+5*
x+2)^(3/2)*x+44011/3240*(3*x^2+5*x+2)^(3/2)+6221/5184*(6*x+5)*(3*x^2+5*x+2)
^(1/2)-6221/31104*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.35, size = 121, normalized size = 0.90

$$-\frac{4}{9}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{3}+\frac{14}{15}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x^{2}+\frac{337}{36}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}x+\frac{44011}{3240}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}+\frac{6221}{864}\sqrt{3\,x^{2}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*(3*x^2 + 5*x + 2)^(3/2)*x^3 + 14/15*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 337/
36*(3*x^2 + 5*x + 2)^(3/2)*x + 44011/3240*(3*x^2 + 5*x + 2)^(3/2) + 6221/86
4*sqrt(3*x^2 + 5*x + 2)*x - 6221/31104*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5
*x + 2) + 6*x + 5) + 31105/5184*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 3.47, size = 153, normalized size = 1.13

$$\frac{14\,x^{2}\left(3\,x^{2}+5\,x+2\right)^{3/2}}{15}-\frac{4\,x^{3}\left(3\,x^{2}+5\,x+2\right)^{3/2}}{9}-\frac{2093\,\sqrt{3}\ \ln\left(\sqrt{3\,x^{2}+5\,x+2}+\frac{\sqrt{3}\,\left(3\,x+\frac{5}{2}\right)}{3}\right)}{1296}+\frac{2093\,\left(\frac{x}{2}+\frac{5}{12}\right)\,\sqrt{}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (14*x^2*(5*x + 3*x^2 + 2)^(3/2))/15 - (4*x^3*(5*x + 3*x^2 + 2)^(3/2))/9 - (
2093*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/1296 +
 (2093*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/18 + (44011*(5*x + 3*x^2 + 2)^
(1/2)*(30*x + 72*x^2 - 27))/77760 + (337*x*(5*x + 3*x^2 + 2)^(3/2))/36 + (4
4011*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/31104
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-243x\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-126x^{2}\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-4x^{3}\sqrt{3x^{2}+5x+2}\right)dx-\int 8x^{4}\sqrt{3x^{2}+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-243*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-126*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-4*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(8
*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-135*sqrt(3*x**2 + 5*x + 2), x)
```

3.2408 $\int (5-x)(3+2x)^2\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=110

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(3006x+7969)\left(3x^2+5x+2\right)^{3/2}}{1620}+\frac{2267(6x+5)\sqrt{3x^2+5x+2}}{2592}-\frac{2267\tanh^{-}}{5}$$

```
[Out] -1/15*(3+2*x)^2*(3*x^2+5*x+2)^(3/2)+1/1620*(7969+3006*x)*(3*x^2+5*x+2)^(3/2
)-2267/15552*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+2267/
2592*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 110, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = $\{832, 779, 612, 621, 206\}$

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{3/2}(2x+3)^2+\frac{(3006x+7969)\left(3x^2+5x+2\right)^{3/2}}{1620}+\frac{2267(6x+5)\sqrt{3x^2+5x+2}}{2592}-\frac{2267\tanh^{-}}{5}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (2267*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/2592 - ((3 + 2*x)^2*(2 + 5*x + 3*x^2
)^(3/2))/15 + ((7969 + 3006*x)*(2 + 5*x + 3*x^2)^(3/2))/1620 - (2267*ArcTan
h[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(5184*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\sqrt{2+5x+3x^2}\,dx = -\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{1}{15}\int (3+2x)\left(\frac{511}{2}+167x\right)\sqrt{2+5x+$$

$$= -\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969+3006x)\left(2+5x+3x^2\right)^{3/2}}{1620}+\frac{22}{21}$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969+3}{}$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969+3}{}$$

$$= \frac{2267(5+6x)\sqrt{2+5x+3x^2}}{2592}-\frac{1}{15}(3+2x)^2\left(2+5x+3x^2\right)^{3/2}+\frac{(7969+3}{}$$

Mathematica [A] time = 0.03, size = 72, normalized size = 0.65

$$\frac{-11335\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(10368x^4-23760x^3-229416x^2-375250x-168627\right)}{77760}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-168627 - 375250*x - 229416*x^2 - 23760*x^3 + 10
368*x^4) - 11335*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/777
60
```

fricas [A] time = 0.56, size = 73, normalized size = 0.66

$$-\frac{1}{12960}\left(10368\,x^4-23760\,x^3-229416\,x^2-375250\,x-168627\right)\sqrt{3\,x^2+5\,x+2}+\frac{2267}{31104}\,\sqrt{3}\,\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^2+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/12960*(10368*x^4 - 23760*x^3 - 229416*x^2 - 375250*x - 168627)*sqrt(3*x^
2 + 5*x + 2) + 2267/31104*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
 + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.19, size = 69, normalized size = 0.63

$$-\frac{1}{12960}\,(2\,(12\,(18\,(24\,x-55)x-9559)x-187625)x-168627)\sqrt{3\,x^2+5\,x+2}+\frac{2267}{15552}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/12960*(2*(12*(18*(24*x - 55)*x - 9559)*x - 187625)*x - 168627)*sqrt(3*x^
2 + 5*x + 2) + 2267/15552*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2)) - 5))
```

maple [**A**] time = 0.05, size = 96, normalized size = 0.87

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2}{15}+\frac{19\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{18}-\frac{2267\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{15552}+\frac{6997\left(3x^2+5x+2\right.}{1620}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/15*(3*x^2+5*x+2)^(3/2)*x^2+19/18*(3*x^2+5*x+2)^(3/2)*x+6997/1620*(3*x^2+
5*x+2)^(3/2)+2267/2592*(6*x+5)*(3*x^2+5*x+2)^(1/2)-2267/15552*3^(1/2)*ln(1/
3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [**A**] time = 1.32, size = 104, normalized size = 0.95

$$-\frac{4}{15}\left(3x^2+5x+2\right)^{\frac{3}{2}}x^2+\frac{19}{18}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{6997}{1620}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{2267}{432}\sqrt{3x^2+5x+2}\,x-\frac{2267}{15552}\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 19/18*(3*x^2 + 5*x + 2)^(3/2)*x + 6997/
1620*(3*x^2 + 5*x + 2)^(3/2) + 2267/432*sqrt(3*x^2 + 5*x + 2)*x - 2267/1555
2*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 11335/2592*sqrt(
3*x^2 + 5*x + 2)
```

mupad [**B**] time = 3.51, size = 136, normalized size = 1.24

$$\frac{386\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{9}-\frac{193\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{324}-\frac{4x^2\left(3x^2+5x+2\right)^{3/2}}{15}+6997\sqrt{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (386*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/9 - (193*3^(1/2)*log((5*x + 3*x^
2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/324 - (4*x^2*(5*x + 3*x^2 + 2)^(3/
2))/15 + (6997*(5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x^2 - 27))/38880 + (19*x*
(5*x + 3*x^2 + 2)^(3/2))/18 + (6997*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) +
 (3^(1/2)*(6*x + 5))/3))/15552
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-51x\sqrt{3x^2+5x+2}\right)dx-\int\left(-8x^2\sqrt{3x^2+5x+2}\right)dx-\int 4x^3\sqrt{3x^2+5x+2}\,dx-\int\left(-45\sqrt{3x^2+5x+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-51*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2*sqrt(3*x**2 +
 5*x + 2), x) - Integral(4*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(-45*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2409 $\int (5-x)(3+2x)\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=85

$$\frac{1}{108}(109-18x)\left(3x^2+5x+2\right)^{3/2}+\frac{559}{864}(6x+5)\sqrt{3x^2+5x+2}-\frac{559\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1728\sqrt{3}}$$

```
[Out] 1/108*(109-18*x)*(3*x^2+5*x+2)^(3/2)-559/5184*arctanh(1/6*(5+6*x)*3^(1/2)/(
3*x^2+5*x+2)^(1/2))*3^(1/2)+559/864*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = $\{779, 612, 621, 206\}$

$$\frac{1}{108}(109-18x)\left(3x^2+5x+2\right)^{3/2}+\frac{559}{864}(6x+5)\sqrt{3x^2+5x+2}-\frac{559\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{1728\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (559*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/864 + ((109 - 18*x)*(2 + 5*x + 3*x^2)
^(3/2))/108 - (559*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1
728*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\sqrt{2+5x+3x^2}\,dx = \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} + \frac{559}{72}\int \sqrt{2+5x+3x^2}\,dx$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559}{}$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559}{864}$$

$$= \frac{559}{864}(5+6x)\sqrt{2+5x+3x^2} + \frac{1}{108}(109-18x)\left(2+5x+3x^2\right)^{3/2} - \frac{559}{}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.79

$$\frac{-559\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\left(432x^3-1896x^2-7426x-4539\right)}{5184}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-4539 - 7426*x - 1896*x^2 + 432*x^3) - 559*Sqrt[
3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/5184
```

fricas [A] time = 0.67, size = 68, normalized size = 0.80

$$-\frac{1}{864}\left(432\,x^3-1896\,x^2-7426\,x-4539\right)\sqrt{3\,x^2+5\,x+2}+\frac{559}{10368}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/864*(432*x^3 - 1896*x^2 - 7426*x - 4539)*sqrt(3*x^2 + 5*x + 2) + 559/103
68*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x
+ 49)
```

giac [A] time = 0.25, size = 64, normalized size = 0.75

$$-\frac{1}{864}\left(2\left(12\left(18\,x-79\right)x-3713\right)x-4539\right)\sqrt{3\,x^2+5\,x+2}+\frac{559}{5184}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/864*(2*(12*(18*x - 79)*x - 3713)*x - 4539)*sqrt(3*x^2 + 5*x + 2) + 559/5
184*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 79, normalized size = 0.93

$$-\frac{\left(3x^2+5x+2\right)^{\frac{3}{2}}x}{6}-\frac{559\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{5184}+\frac{109\left(3x^2+5x+2\right)^{\frac{3}{2}}}{108}+\frac{559\,(6x+5)\sqrt{3x^2+5x}}{864}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/6*(3*x^2+5*x+2)^(3/2)*x+109/108*(3*x^2+5*x+2)^(3/2)+559/864*(6*x+5)*(3*x
^2+5*x+2)^(1/2)-559/5184*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/
2))
```

maxima [A] time = 1.33, size = 87, normalized size = 1.02

$$-\frac{1}{6}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{109}{108}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{559}{144}\sqrt{3x^2+5x+2}\,x-\frac{559}{5184}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*(3*x^2 + 5*x + 2)^(3/2)*x + 109/108*(3*x^2 + 5*x + 2)^(3/2) + 559/144*
sqrt(3*x^2 + 5*x + 2)*x - 559/5184*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) + 2795/864*sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.70, size = 119, normalized size = 1.40

$$\frac{46\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}}{3}-\frac{23\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{108}+\frac{109\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{2592}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (46*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/3 - (23*3^(1/2)*log((5*x + 3*x^2
+ 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/108 + (109*(5*x + 3*x^2 + 2)^(1/2)*(
30*x + 72*x^2 - 27))/2592 - (x*(5*x + 3*x^2 + 2)^(3/2))/6 + (545*3^(1/2)*lo
g(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x + 5))/3))/5184
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-7x\sqrt{3x^2+5x+2}\right)dx-\int 2x^2\sqrt{3x^2+5x+2}\,dx-\int\left(-15\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-7*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2*sqrt(3*x**2 + 5
*x + 2), x) - Integral(-15*sqrt(3*x**2 + 5*x + 2), x)
```

3.2410 $\int (5-x)\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=80

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{3/2}+\frac{35}{72}(6x+5)\sqrt{3x^2+5x+2}-\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{144\sqrt{3}}$$

```
[Out] -1/9*(3*x^2+5*x+2)^(3/2)-35/432*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(
1/2))*3^(1/2)+35/72*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 80, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{3/2}+\frac{35}{72}(6x+5)\sqrt{3x^2+5x+2}-\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{144\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (35*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/72 - (2 + 5*x + 3*x^2)^(3/2)/9 - (35*A
rcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(144*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{2+5x+3x^2}\,dx &= -\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}+\frac{35}{6}\int \sqrt{2+5x+3x^2}\,dx\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35}{144}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35}{72}\,\text{Subst}\left(\int \frac{1}{12-x^2}\,dx, x, \frac{}{\sqrt{2}}\right.\\ &= \frac{35}{72}(5+6x)\sqrt{2+5x+3x^2}-\frac{1}{9}\left(2+5x+3x^2\right)^{3/2}-\frac{35\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{144\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 62, normalized size = 0.78

$$\frac{1}{432}\left(-6\sqrt{3x^2+5x+2}\left(24x^2-170x-159\right)-35\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-159 - 170*x + 24*x^2) - 35*Sqrt[3]*ArcTanh[(5 +
 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/432
```

fricas [A] time = 0.59, size = 63, normalized size = 0.79

$$-\frac{1}{72}\left(24\,x^2-170\,x-159\right)\sqrt{3\,x^2+5\,x+2}+\frac{35}{864}\,\sqrt{3}\,\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/72*(24*x^2 - 170*x - 159)*sqrt(3*x^2 + 5*x + 2) + 35/864*sqrt(3)*log(-4*
sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.18, size = 59, normalized size = 0.74

$$-\frac{1}{72}\,(2\,(12\,x-85)x-159)\sqrt{3\,x^2+5\,x+2}+\frac{35}{432}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/72*(2*(12*x - 85)*x - 159)*sqrt(3*x^2 + 5*x + 2) + 35/432*sqrt(3)*log(ab
s(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 64, normalized size = 0.80

$$-\frac{35\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{432}+\frac{35\,(6x+5)\,\sqrt{3x^2+5x+2}}{72}-\frac{\left(3x^2+5x+2\right)^{\frac{3}{2}}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 35/72*(6*x+5)*(3*x^2+5*x+2)^(1/2)-35/432*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(
3*x^2+5*x+2)^(1/2))-1/9*(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 1.35, size = 72, normalized size = 0.90

$$-\frac{1}{9}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{35}{12}\sqrt{3x^2+5x+2}\,x-\frac{35}{432}\sqrt{3}\,\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{175}{72}\sqrt{3x^2+5x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 5*x + 2)^(3/2) + 35/12*sqrt(3*x^2 + 5*x + 2)*x - 35/432*sqrt(
3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 175/72*sqrt(3*x^2 + 5*x
 + 2)
```

mupad [B] time = 2.66, size = 104, normalized size = 1.30

$$5\left(\frac{x}{2}+\frac{5}{12}\right)\sqrt{3x^2+5x+2}-\frac{5\sqrt{3}\,\ln\left(\sqrt{3x^2+5x+2}+\frac{\sqrt{3}\left(3x+\frac{5}{2}\right)}{3}\right)}{72}-\frac{\sqrt{3x^2+5x+2}\,\left(72x^2+30x-27\right)}{216}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] 5*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2) - (5*3^(1/2)*log((5*x + 3*x^2 + 2)^(
1/2) + (3^(1/2)*(3*x + 5/2))/3))/72 - ((5*x + 3*x^2 + 2)^(1/2)*(30*x + 72*x
^2 - 27))/216 - (5*3^(1/2)*log(2*(5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(6*x +
5))/3))/432
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int x\sqrt{3x^2+5x+2}\,dx-\int\left(-5\sqrt{3x^2+5x+2}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-5*sqrt(3*x**2 + 5*x + 2)
, x)
```

3.2411 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{3+2x}\,dx$

Optimal. Leaf size=100

$$\frac{1}{24}\sqrt{3x^2+5x+2}\,(73-6x)-\frac{311\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

```
[Out] -311/144*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+13/8*arct
anh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+1/24*(73-6*x)*(3*x^2+
5*x+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{24}\sqrt{3x^2+5x+2}\,(73-6x)-\frac{311\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x),x]
```

```
[Out] ((73 - 6*x)*Sqrt[2 + 5*x + 3*x^2])/24 - (311*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*S
qrt[2 + 5*x + 3*x^2])])/(48*Sqrt[3]) + (13*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqr
t[5]*Sqrt[2 + 5*x + 3*x^2])])/8
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+5x+3x^2}}{3+2x}\,dx &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{1}{48}\int \frac{543+622x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311}{48}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx+\frac{65}{8}\int \frac{1}{(3+2x)\sqrt{2+}}\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311}{24}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)-\\ &= \frac{1}{24}(73-6x)\sqrt{2+5x+3x^2}-\frac{311\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{48\sqrt{3}}+\frac{13}{8}\sqrt{5}\tanh^{-1}\left(\frac{}{2}\right.\end{aligned}$$

Mathematica [A]   time = 0.04, size = 93, normalized size = 0.93

$$\frac{1}{144}\left(-6\sqrt{3x^2+5x+2}\,(6x-73)-234\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-311\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x),x]
```

```
[Out] (-6*(-73 + 6*x)*Sqrt[2 + 5*x + 3*x^2] - 234*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*S
qrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 311*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/144
```

fricas [A]   time = 0.81, size = 109, normalized size = 1.09

$$-\frac{1}{24}\sqrt{3x^2+5x+2}\,(6x-73)+\frac{311}{288}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+\frac{13}{16}\sqrt{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/24*sqrt(3*x^2 + 5*x + 2)*(6*x - 73) + 311/288*sqrt(3)*log(-4*sqrt(3)*sqr
t(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 13/16*sqrt(5)*log((4*
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9))
```

giac [A]   time = 0.29, size = 126, normalized size = 1.26

$$-\frac{1}{24}\sqrt{3x^2+5x+2}\,(6x-73)+\frac{13}{8}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{311}{144}\sqrt{3}\log\left(\left|\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/24*sqrt(3*x^2 + 5*x + 2)*(6*x - 73) + 13/8*sqrt(5)*log(abs(-4*sqrt(3)*x
- 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqr
t(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 311/144*sqrt(3)*log(abs(-6*s
qrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)))
```

maple [A] time = 0.05, size = 127, normalized size = 1.27

$$-\frac{13\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{8}-\frac{13\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{6}+\frac{\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{}\right.}{144}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3),x)
```

```
[Out] -1/24*(6*x+5)*(3*x^2+5*x+2)^(1/2)+1/144*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))+13/8*(12*(x+3/2)^2-16*x-19)^(1/2)-13/6*ln(1/3*(3*x+5/2)*
3^(1/2)+(3*(x+3/2)^2-4*x-19/4)^(1/2))*3^(1/2)-13/8*5^(1/2)*arctanh(2/5*(-7/
2-4*x)*5^(1/2)/(12*(x+3/2)^2-16*x-19)^(1/2))
```

maxima [A] time = 1.11, size = 99, normalized size = 0.99

$$-\frac{1}{4}\sqrt{3\,x^{2}+5\,x+2}\,x-\frac{311}{144}\sqrt{3}\log\left(\sqrt{3}\sqrt{3\,x^{2}+5\,x+2}+3\,x+\frac{5}{2}\right)-\frac{13}{8}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3\,x^{2}+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/4*sqrt(3*x^2 + 5*x + 2)*x - 311/144*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 3*x + 5/2) - 13/8*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x
 + 3) + 5/2/abs(2*x + 3) - 2) + 73/24*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^{2}+5\,x+2}}{2\,x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+5x+2}}{2x+3}\right)dx-\int\frac{x\sqrt{3x^{2}+5x+2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(x*sqrt(3*x**2
+ 5*x + 2)/(2*x + 3), x)
```

3.2412 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=105

$$-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{2(2x+3)}+\frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{3}}-\frac{57\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}}$$

```
[Out] 43/24*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-57/40*arctan
h(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-1/2*(8+x)*(3*x^2+5*x+2)
^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = $\{812, 843, 621, 206, 724\}$

$$-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{2(2x+3)}+\frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{3}}-\frac{57\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -((8 + x)*Sqrt[2 + 5*x + 3*x^2])/(2*(3 + 2*x)) + (43*ArcTanh[(5 + 6*x)/(2*S
qrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[3]) - (57*ArcTanh[(7 + 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx &= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)}-\frac{1}{8}\int \frac{-72-86x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)}+\frac{43}{8}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx-\frac{57}{8}\int \frac{1}{(3+2x)\sqrt{2+5x+3}}\\ &= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)}+\frac{43}{4}\,\mathrm{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)+\frac{57}{4}\,\mathrm{Sub}\\ &= -\frac{(8+x)\sqrt{2+5x+3x^2}}{2(3+2x)}+\frac{43\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{8\sqrt{3}}-\frac{57\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right.}{8\sqrt{5}}\end{aligned}$$

Mathematica [**A**] time = 0.07, size = 98, normalized size = 0.93

$$-\frac{\sqrt{3x^2+5x+2}\,(x+8)}{4x+6}+\frac{57\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{8\sqrt{5}}+\frac{43\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{8\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2,x]
```

```
[Out] -(((8 + x)*Sqrt[2 + 5*x + 3*x^2])/(6 + 4*x)) + (57*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(8*Sqrt[5]) + (43*ArcTanh[(5 + 6*x)/(2*Sqrt[
6 + 15*x + 9*x^2])])/(8*Sqrt[3])
```

fricas [**A**] time = 0.71, size = 127, normalized size = 1.21

$$\frac{215\sqrt{3}\,(2x+3)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+171\sqrt{5}\,(2x+3)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+}}{4}\right.}{240\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/240*(215*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5)
+ 72*x^2 + 120*x + 49) + 171*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt(3*x^2 +
 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 120*sqrt(
3*x^2 + 5*x + 2)*(x + 8))/(2*x + 3)
```

giac [**B**] time = 0.75, size = 291, normalized size = 2.77

$$-\frac{43}{24}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+\frac{57}{40}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -43/24*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^
2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 57/40*sqrt(5)*log(abs(sqr
t(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))*sgn
(1/(2*x + 3)) - 13/8*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(1/(2*x + 3)
) + 1/4*(4*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))*sgn
(1/(2*x + 3)) - 3*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)
```

maple [A]   time = 0.06, size = 121, normalized size = 1.15

$$\frac{57\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{40}+\frac{43\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{24}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)\right.}{10\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-57/40*(-16*x+12*(x+3/2)^2-19)^
(1/2)+43/24*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))
+57/40*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2)
)+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A]   time = 1.22, size = 105, normalized size = 1.00

$$\frac{43}{24}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)+\frac{57}{40}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1}{4}\sqrt{3x^{2}+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] 43/24*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 57/40*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) -
1/4*sqrt(3*x^2 + 5*x + 2) - 13/4*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\sqrt{3x^{2}+5x+2}}{(2x+3)^{2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^2, x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\frac{x\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(x*sq
rt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x)
```

3.2413 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=107

$$\frac{\sqrt{3x^2+5x+2}\,(124x+121)}{40(2x+3)^2}-\frac{1}{8}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{27\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}$$

```
[Out] -1/8*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+27/400*arctan
h(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+1/40*(121+124*x)*(3*x^2
+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.06, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {810, 843, 621, 206, 724}

$$\frac{\sqrt{3x^2+5x+2}\,(124x+121)}{40(2x+3)^2}-\frac{1}{8}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{27\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((121 + 124*x)*Sqrt[2 + 5*x + 3*x^2])/(40*(3 + 2*x)^2) - (Sqrt[3]*ArcTanh[(
5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/8 + (27*ArcTanh[(7 + 8*x)/(2*S
qrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(80*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx &= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{1}{80}\int \frac{63+60x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}+\frac{27}{80}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx-\frac{3}{8}\int \frac{}{\sqrt{2+5}}\\ &= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{27}{40}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)-\\ &= \frac{(121+124x)\sqrt{2+5x+3x^2}}{40(3+2x)^2}-\frac{1}{8}\sqrt{3}\,\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\,\sqrt{2+5x+3x^2}}\right)+\frac{27\tanh}{}\end{aligned}$$

Mathematica [A] time = 0.08, size = 100, normalized size = 0.93

$$\frac{1}{400}\left(\frac{10\sqrt{3x^2+5x+2}\,(124x+121)}{(2x+3)^2}-27\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right)-50\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^3,x]
```

```
[Out] ((10*(121 + 124*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 - 27*Sqrt[5]*ArcTanh[
(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 50*Sqrt[3]*ArcTanh[(5 + 6*x
)/(2*Sqrt[6 + 15*x + 9*x^2])])/400
```

fricas [A] time = 0.73, size = 143, normalized size = 1.34

$$\frac{50\sqrt{3}\left(4x^2+12x+9\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+27\sqrt{5}\left(4x^2+12x+9\right)\mathrm{lo}}{800\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/800*(50*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) + 27*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*sqrt
(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
 9)) + 20*sqrt(3*x^2 + 5*x + 2)*(124*x + 121))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.31, size = 240, normalized size = 2.24

$$\frac{27}{400}\sqrt{5}\,\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{1}{8}\sqrt{3}\,\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] 27/400*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 1/8*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
- 5)) + 1/40*(886*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 2897*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 9039*sqrt(3)*x + 3037*sqrt(3) - 9039*sq
rt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.06, size = 142, normalized size = 1.33

$$-\frac{27\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{400}-\frac{\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{8}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\right.}{40\left(x+\frac{3}{2}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-21/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(3/2)+27/400*(-16*x+12*(x+3/2)^2-19)^(1/2)-27/400*5^(1/2)*arctanh
(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+21/100*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(1/2)-1/8*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/
2)^2-19/4)^(1/2))
```

maxima [A] time = 1.19, size = 131, normalized size = 1.22

$$-\frac{1}{8}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right)-\frac{27}{400}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{39}{40}\sqrt{3x^{2}+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] -1/8*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 27/400*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) +
39/40*sqrt(3*x^2 + 5*x + 2) - 13/10*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x +
 9) - 21/20*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\sqrt{3x^{2}+5x+2}}{(2x+3)^{3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+5x+2}}{8x^{3}+36x^{2}+54x+27}\right)dx-\int\frac{x\sqrt{3x^{2}+5x+2}}{8x^{3}+36x^{2}+54x+27}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - In
tegral(x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.2414 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=94

$$-\frac{13\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^3}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{200(2x+3)^2}-\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

```
[Out] -13/15*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3-47/2000*arctanh(1/10*(7+8*x)*5^(1/2)/(
3*x^2+5*x+2)^(1/2))*5^(1/2)+47/200*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.04, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^3}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{200(2x+3)^2}-\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (47*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(200*(3 + 2*x)^2) - (13*(2 + 5*x + 3*x
^2)^(3/2))/(15*(3 + 2*x)^3) - (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
 + 3*x^2])])/(400*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3}+\frac{47}{10}\int \frac{\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx\\ &= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3}-\frac{47}{400}\int \frac{1}{(3+2x)\sqrt{2+5x+}}\\ &= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3}+\frac{47}{200}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx,\right.\\ &= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{200(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^3}-\frac{47\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{400\sqrt{5}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 74, normalized size = 0.79

$$\frac{\sqrt{3x^2+5x+2}\left(696x^2+2758x+1921\right)}{600(2x+3)^3}+\frac{47\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{400\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^4,x]
```

```
[Out] (Sqrt[2 + 5*x + 3*x^2]*(1921 + 2758*x + 696*x^2))/(600*(3 + 2*x)^3) + (47*A
rcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(400*Sqrt[5])
```

fricas [A] time = 0.66, size = 111, normalized size = 1.18

$$\frac{141\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(696x^2+2758x+1921\right)\sqrt{3}}{12000\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/12000*(141*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^
2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(69
6*x^2 + 2758*x + 1921)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.32, size = 257, normalized size = 2.73

$$-\frac{47}{2000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{1236\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5-4830\sqrt{3}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -47/2000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) - 1/600*(1236*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 4830*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 90290*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^3 - 144945*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 287985*sq
rt(3)*x - 69339*sqrt(3) + 287985*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)
^3
```

maple [A] time = 0.06, size = 132, normalized size = 1.40

$$\frac{47\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{2000}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{200\left(x+\frac{3}{2}\right)^{2}}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{125\left(x+\frac{3}{2}\right)}-\frac{47\sqrt{-16x+}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^4,x)
```

```
[Out] -47/200/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-47/125/(x+3/2)*(-4*x+3*(x+3
/2)^2-19/4)^(3/2)-47/2000*(-16*x+12*(x+3/2)^2-19)^(1/2)+47/2000*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+47/250*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(1/2)-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.30, size = 135, normalized size = 1.44

$$\frac{47}{2000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{141}{200}\sqrt{3x^{2}+5x+2}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}{15\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{47\,(3}{50\,(4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 47/2000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*
x + 3) - 2) + 141/200*sqrt(3*x^2 + 5*x + 2) - 13/15*(3*x^2 + 5*x + 2)^(3/2)
/(8*x^3 + 36*x^2 + 54*x + 27) - 47/50*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x
 + 9) - 47/50*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\sqrt{3x^{2}+5x+2}}{(2x+3)^{4}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^{2}+5x+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\right)dx-\int\frac{x\sqrt{3x^{2}+5x+2}}{16x^{4}+96x^{3}+216x^{2}+216x+81}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x +
 81), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2
+ 216*x + 81), x)
```

3.2415 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=119

$$-\frac{4\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}+\frac{153(8x+7)\sqrt{3x^2+5x+2}}{800(2x+3)^2}-\frac{153\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1600\sqrt{5}}$$

```
[Out] -13/20*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-4/5*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3-153/
8000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+153/800*(7+8
*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.06, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{4\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}+\frac{153(8x+7)\sqrt{3x^2+5x+2}}{800(2x+3)^2}-\frac{153\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1600\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] (153*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(800*(3 + 2*x)^2) - (13*(2 + 5*x + 3*
x^2)^(3/2))/(20*(3 + 2*x)^4) - (4*(2 + 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3)
- (153*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(1600*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4}-\frac{1}{20}\int \frac{\left(-\frac{123}{2}+39x\right)\sqrt{2+5x+3x^2}}{(3+2x)^4}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4}-\frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3}+\frac{153}{40}\int \frac{\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx\\
&= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4}-\frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3}-\frac{153\int}{}\\
&= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4}-\frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3}+\frac{153}{800}\mathrm{S}\\
&= \frac{153(7+8x)\sqrt{2+5x+3x^2}}{800(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{20(3+2x)^4}-\frac{4\left(2+5x+3x^2\right)^{3/2}}{5(3+2x)^3}-\frac{153\,\mathrm{ta}}{}
\end{aligned}
$$

Mathematica [A] time = 0.05, size = 119, normalized size = 1.00

$$
\frac{1}{20}\left(-\frac{16\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^3}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4}+\frac{153(8x+7)\sqrt{3x^2+5x+2}}{40(2x+3)^2}+\frac{153\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{80\sqrt{5}}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^5,x]
```

```
[Out] ((153*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(40*(3 + 2*x)^2) - (13*(2 + 5*x + 3*
x^2)^(3/2))/(3 + 2*x)^4 - (16*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3 + (153*A
rcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(80*Sqrt[5]))/20
```

fricas [A] time = 0.69, size = 126, normalized size = 1.06

$$
\frac{153\sqrt{5}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(1056x^3+5252x^2-\right.}{16000\left(16x^4+96x^3+216x^2+216x+81\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/16000*(153*sqrt(5)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-(4*sqrt(
5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x +
9)) + 20*(1056*x^3 + 5252*x^2 + 9108*x + 4759)*sqrt(3*x^2 + 5*x + 2))/(16*x
^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A]   time = 0.27, size = 183, normalized size = 1.54

$$-\frac{3}{8000}\sqrt{5}\left(44\sqrt{5}\sqrt{3}+51\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{153}{8000}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -3/8000*sqrt(5)*(44*sqrt(5)*sqrt(3) + 51*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) + 153/8000*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))*sgn(1/(2*x + 3)) - 1/1600*(5*(2*(65*sg
n(1/(2*x + 3))/(2*x + 3) - 24*sgn(1/(2*x + 3)))/(2*x + 3) - 25*sgn(1/(2*x +
 3)))/(2*x + 3) - 132*sgn(1/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3)
```

maple [A]   time = 0.06, size = 153, normalized size = 1.29

$$\frac{153\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8000}-\frac{\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{10\left(x+\frac{3}{2}\right)^3}-\frac{153\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{800\left(x+\frac{3}{2}\right)^2}-\frac{153\left(-4x+\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^5,x)
```

```
[Out] -1/10/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-153/800/(x+3/2)^2*(-4*x+3*(x+
3/2)^2-19/4)^(3/2)-153/500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-153/8000*(
-16*x+12*(x+3/2)^2-19)^(1/2)+153/8000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2
)/(-16*x+12*(x+3/2)^2-19)^(1/2))+153/1000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(
1/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A]   time = 1.25, size = 171, normalized size = 1.44

$$\frac{153}{8000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{459}{800}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5x+2\right)^{\frac{3}{2}}}{20\left(16x^4+96x^3+216x^2+216\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 153/8000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 459/800*sqrt(3*x^2 + 5*x + 2) - 13/20*(3*x^2 + 5*x + 2)^(3/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 4/5*(3*x^2 + 5*x + 2)^(3/2)/(8
*x^3 + 36*x^2 + 54*x + 27) - 153/200*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x
+ 9) - 153/200*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\ \sqrt{3x^2+5x+2}}{(2x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^5, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x
**2 + 810*x + 243), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x
**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x)
```

3.2416 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=144

$$-\frac{87\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^3}-\frac{339\left(3x^2+5x+2\right)^{3/2}}{500(2x+3)^4}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{25(2x+3)^5}+\frac{3159(8x+7)\sqrt{3x^2+5x+2}}{20000(2x+3)^2}-\frac{3159\tanh}{4}$$

```
[Out] -13/25*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5-339/500*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-
87/125*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3-3159/200000*arctanh(1/10*(7+8*x)*5^(1/
2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+3159/20000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2
*x)^2
```

Rubi [A] time = 0.09, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{87\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^3}-\frac{339\left(3x^2+5x+2\right)^{3/2}}{500(2x+3)^4}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{25(2x+3)^5}+\frac{3159(8x+7)\sqrt{3x^2+5x+2}}{20000(2x+3)^2}-\frac{3159\tanh}{4}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] (3159*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20000*(3 + 2*x)^2) - (13*(2 + 5*x +
 3*x^2)^(3/2))/(25*(3 + 2*x)^5) - (339*(2 + 5*x + 3*x^2)^(3/2))/(500*(3 + 2
*x)^4) - (87*(2 + 5*x + 3*x^2)^(3/2))/(125*(3 + 2*x)^3) - (3159*ArcTanh[(7
+ 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
```

```
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx = -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{1}{25}\int \frac{\left(-\frac{105}{2}+78x\right)\sqrt{2+5x+3x^2}}{(3+2x)^5}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} + \frac{1}{500}\int \frac{\left(\frac{2169}{2}-1017x\right)\sqrt{2+5x}}{(3+2x)^4}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - \frac{87\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^3} + \frac{3159\int}{1}$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

$$= \frac{3159(7+8x)\sqrt{2+5x+3x^2}}{20000(3+2x)^2} - \frac{13\left(2+5x+3x^2\right)^{3/2}}{25(3+2x)^5} - \frac{339\left(2+5x+3x^2\right)^{3/2}}{500(3+2x)^4} - 87$$

Mathematica [A] time = 0.11, size = 146, normalized size = 1.01

$$\frac{1}{25}\left(-\frac{87\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3} - \frac{339\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4} - \frac{13\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^5} + \frac{3159\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2} + \sqrt{5}\tanh\right.}{8000}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^6,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5 - (339*(2 + 5*x + 3*x^2)^(3/2))/
(20*(3 + 2*x)^4) - (87*(2 + 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3) + (3159*((1
0*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x)
/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/8000)/25
```

fricas [A] time = 0.71, size = 141, normalized size = 0.98

$$\frac{3159\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)-124x^2-212x-89}{4x^2+12x+9}\right)+20\left(3513\right.}{400000\left(32x^5+240x^4+720x^3+1080x^2+810x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/400000*(3159*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243
)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(
4*x^2 + 12*x + 9)) + 20*(35136*x^4 + 225816*x^3 + 549516*x^2 + 606326*x + 2
44331)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*
x + 243)
```

giac [B] time = 0.41, size = 363, normalized size = 2.52

$$-\frac{3159}{200000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{\sqrt{3}\Big(50544\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -3159/200000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) + 1/60000*sqrt(3)*(50544*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^9 + 2047032*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 11747352*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 121295556*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^6 + 269183136*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 11
64571962*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 1077361162*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^3 + 1845838971*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 592102521*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 244862928)
/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.06, size = 174, normalized size = 1.21

$$\frac{3159\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{200000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{800\left(x+\frac{3}{2}\right)^5}-\frac{339\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{3}{2}}}{8000\left(x+\frac{3}{2}\right)^4}-\frac{87\Big(-4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^6,x)
```

```
[Out] -13/800/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-339/8000/(x+3/2)^4*(-4*x+3*
(x+3/2)^2-19/4)^(3/2)-87/1000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3159/
20000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3159/12500/(x+3/2)*(-4*x+3*(x
+3/2)^2-19/4)^(3/2)-3159/200000*(-16*x+12*(x+3/2)^2-19)^(1/2)+3159/200000*5
^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+3159/2
5000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.42, size = 212, normalized size = 1.47

$$\frac{3159}{200000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{9477}{20000}\sqrt{3x^2+5x+2}-\frac{13\left(3x^2+5\right.}{25\left(32x^5+240x^4+720x^3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 3159/200000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 9477/20000*sqrt(3*x^2 + 5*x + 2) - 13/25*(3*x^2 + 5*x + 2
)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 339/500*(3*
x^2 + 5*x + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 87/125*(3*x
^2 + 5*x + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 3159/5000*(3*x^2 + 5*x +
 2)^(3/2)/(4*x^2 + 12*x + 9) - 3159/5000*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{{(2\,x+3)}^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^6, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*
x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(6
4*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x)
```

3.2417 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=169

$$-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{3750(2x+3)^3}-\frac{3113\left(3x^2+5x+2\right)^{3/2}}{5000(2x+3)^4}-\frac{73\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{30(2x+3)^6}+\frac{26453(8x+7)}{200000(}$$

```
[Out] -13/30*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6-73/125*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5-3
113/5000*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-2237/3750*(3*x^2+5*x+2)^(3/2)/(3+2*x
)^3-26453/2000000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)
+26453/200000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.11, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{3750(2x+3)^3}-\frac{3113\left(3x^2+5x+2\right)^{3/2}}{5000(2x+3)^4}-\frac{73\left(3x^2+5x+2\right)^{3/2}}{125(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{3/2}}{30(2x+3)^6}+\frac{26453(8x+7)}{200000(}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] (26453*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(200000*(3 + 2*x)^2) - (13*(2 + 5*x
 + 3*x^2)^(3/2))/(30*(3 + 2*x)^6) - (73*(2 + 5*x + 3*x^2)^(3/2))/(125*(3 +
2*x)^5) - (3113*(2 + 5*x + 3*x^2)^(3/2))/(5000*(3 + 2*x)^4) - (2237*(2 + 5*
x + 3*x^2)^(3/2))/(3750*(3 + 2*x)^3) - (26453*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*
Sqrt[2 + 5*x + 3*x^2])])/(400000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^7}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{1}{30}\int \frac{\left(-\frac{87}{2}+117x\right)\sqrt{2+5x+3x^2}}{(3+2x)^6}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}+\frac{1}{750}\int \frac{\left(\frac{1455}{2}-2628x\right)\sqrt{2+5x+}}{(3+2x)^5}\\
&= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{3113\left(2+5x+3x^2\right)^{3/2}}{5000(3+2x)^4}-\int \frac{\left(-\frac{5016}{2}\right.}{}\\
&= -\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{3113\left(2+5x+3x^2\right)^{3/2}}{5000(3+2x)^4}-\frac{2237\,(2}{375}\\
&= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}\\
&= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}\\
&= \frac{26453(7+8x)\sqrt{2+5x+3x^2}}{200000(3+2x)^2}-\frac{13\left(2+5x+3x^2\right)^{3/2}}{30(3+2x)^6}-\frac{73\left(2+5x+3x^2\right)^{3/2}}{125(3+2x)^5}-\frac{31}{}
\end{aligned}
$$

Mathematica [**A**] time = 0.09, size = 169, normalized size = 1.00

$$
\frac{1}{750}\left(-\frac{2237\left(3x^2+5x+2\right)^{3/2}}{5(2x+3)^3}-\frac{9339\left(3x^2+5x+2\right)^{3/2}}{20(2x+3)^4}-\frac{438\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^5}-\frac{325\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^6}+\frac{7935}{}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^7,x]
```

```
[Out] ((-325*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6 - (438*(2 + 5*x + 3*x^2)^(3/2))
/(3 + 2*x)^5 - (9339*(2 + 5*x + 3*x^2)^(3/2))/(20*(3 + 2*x)^4) - (2237*(2 +
 5*x + 3*x^2)^(3/2))/(5*(3 + 2*x)^3) + (79359*((10*(7 + 8*x)*Sqrt[2 + 5*x +
 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
 3*x^2])]))/8000)/750
```

fricas [A] time = 0.69, size = 156, normalized size = 0.92

$$\frac{79359\sqrt{5}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)-124x^2-21}{4x^2+12x+9}\right.}{12000000\left(64x^6+576x^5+2160x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/12000000*(79359*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2
 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(1567872*x^5 + 12381040*x^4 + 39304
480*x^3 + 62797200*x^2 + 50707640*x + 16322393)*sqrt(3*x^2 + 5*x + 2))/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.34, size = 410, normalized size = 2.43

$$-\frac{26453}{2000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{2539488\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{11}+4}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] -26453/2000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) + 1/600000*(2539488*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 +
41901552*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 924796880*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^9 + 3988893600*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2))^8 + 33933192480*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 665309
47296*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 275158218192*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^5 + 265623867480*sqrt(3)*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^4 + 526452161650*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 2264
53420305*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 171288605499*sqrt(
3)*x + 19197814536*sqrt(3) - 171288605499*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2)) + 11)^6
```

maple [A] time = 0.06, size = 195, normalized size = 1.15

$$\frac{26453\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{2000000}-\frac{73\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{4000\left(x+\frac{3}{2}\right)^{5}}-\frac{3113\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}{80000\left(x+\frac{3}{2}\right)^{4}}-\frac{223}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^7,x)
```

```
[Out] -73/4000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3113/80000/(x+3/2)^4*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-2237/30000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
-26453/200000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-26453/125000/(x+3/2)*
(-4*x+3*(x+3/2)^2-19/4)^(3/2)-26453/2000000*(-16*x+12*(x+3/2)^2-19)^(1/2)+2
6453/2000000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)
^(1/2))+26453/250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-13/1920/(x+3/2)^
6*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.29, size = 258, normalized size = 1.53

$$\frac{26453}{2000000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{79359}{200000}\sqrt{3x^2+5x+2}-\frac{13(3}{30(64x^6+576x^5+2160x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 26453/2000000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/
abs(2*x + 3) - 2) + 79359/200000*sqrt(3*x^2 + 5*x + 2) - 13/30*(3*x^2 + 5*x
 + 2)^(3/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 7
29) - 73/125*(3*x^2 + 5*x + 2)^(3/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2
 + 810*x + 243) - 3113/5000*(3*x^2 + 5*x + 2)^(3/2)/(16*x^4 + 96*x^3 + 216*
x^2 + 216*x + 81) - 2237/3750*(3*x^2 + 5*x + 2)^(3/2)/(8*x^3 + 36*x^2 + 54*
x + 27) - 26453/50000*(3*x^2 + 5*x + 2)^(3/2)/(4*x^2 + 12*x + 9) - 26453/50
000*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\sqrt{3x^2+5x+2}}{(2x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int\frac{}{128x^7+1344x^6+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 151
20*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(x*sqrt(3
*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**
3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2418 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=183

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{5/2}(2x+3)^4+\frac{299}{648}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{487}{486}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(188910x+4}{}$$

```
[Out] 454969/559872*(5+6*x)*(3*x^2+5*x+2)^(3/2)+487/486*(3+2*x)^2*(3*x^2+5*x+2)^(
5/2)+299/648*(3+2*x)^3*(3*x^2+5*x+2)^(5/2)-1/27*(3+2*x)^4*(3*x^2+5*x+2)^(5/
2)+1/58320*(420721+188910*x)*(3*x^2+5*x+2)^(5/2)+454969/26873856*arctanh(1/
6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-454969/4478976*(5+6*x)*(3*x^
2+5*x+2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 183, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{5/2}(2x+3)^4+\frac{299}{648}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{487}{486}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(188910x+4}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-454969*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/4478976 + (454969*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/559872 + (487*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/486
+ (299*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2))/648 - ((3 + 2*x)^4*(2 + 5*x + 3
*x^2)^(5/2))/27 + ((420721 + 188910*x)*(2 + 5*x + 3*x^2)^(5/2))/58320 + (45
4969*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(8957952*Sqrt[3]
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{1}{27}(3+2x)^4\left(2+5x+3x^2\right)^{5/2}+\frac{1}{27}\int (3+2x)^3\left(\frac{917}{2}+299x\right)\left(2+5\right.$$

$$= \frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}(3+2x)^4\left(2+5x+3x^2\right)^{5/2}+\frac{1}{648}$$

$$= \frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}$$

$$= \frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{299}{648}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}-\frac{1}{27}$$

$$= \frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}+\frac{487}{486}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+$$

$$= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}$$

$$= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}$$

$$= -\frac{454969(5+6x)\sqrt{2+5x+3x^2}}{4478976}+\frac{454969(5+6x)\left(2+5x+3x^2\right)^{3/2}}{559872}$$

Mathematica [A] time = 0.06, size = 92, normalized size = 0.50

$$\frac{2274845\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(119439360x^8+370759680x^7-2143687680x^6-1481148\right.}{134369280}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-2471988351 - 15049298650*x - 37650690888*x^2 -
49917376080*x^3 - 37262745216*x^4 - 14811482880*x^5 - 2143687680*x^6 + 3707
59680*x^7 + 119439360*x^8) + 2274845*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/134369280
```

fricas [A] time = 0.61, size = 93, normalized size = 0.51

$$-\frac{1}{22394880}\left(119439360\,x^8+370759680\,x^7-2143687680\,x^6-14811482880\,x^5-37262745216\,x^4-49917376\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/22394880*(119439360*x^8 + 370759680*x^7 - 2143687680*x^6 - 14811482880*x
^5 - 37262745216*x^4 - 49917376080*x^3 - 37650690888*x^2 - 15049298650*x -
2471988351)*sqrt(3*x^2 + 5*x + 2) + 454969/53747712*sqrt(3)*log(4*sqrt(3)*s
qrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 89, normalized size = 0.49

$$-\frac{1}{22394880}\,(2\,(12\,(6\,(8\,(30\,(36\,(2\,(48\,x+149)x-1723)x-428573)x-32346133)x-346648445)x-1568778$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/22394880*(2*(12*(6*(8*(30*(36*(2*(48*x + 149)*x - 1723)*x - 428573)*x -
32346133)*x - 346648445)*x - 1568778787)*x - 7524649325)*x - 2471988351)*sq
rt(3*x^2 + 5*x + 2) - 454969/26873856*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 149, normalized size = 0.81

$$-\frac{16\left(3x^2+5x+2\right)^{\frac{5}{2}}x^4}{27}+\frac{11\left(3x^2+5x+2\right)^{\frac{5}{2}}x^3}{81}+\frac{6133\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2}{486}+\frac{2317\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{72}+\frac{454969\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -16/27*x^4*(3*x^2+5*x+2)^(5/2)+11/81*x^3*(3*x^2+5*x+2)^(5/2)+6133/486*x^2*(
3*x^2+5*x+2)^(5/2)+2317/72*x*(3*x^2+5*x+2)^(5/2)+454969/26873856*3^(1/2)*ln
(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-454969/4478976*(6*x+5)*(3*x^2+5
*x+2)^(1/2)+454969/559872*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1498291/58320*(3*x^2+
5*x+2)^(5/2)
```

maxima [A] time = 1.17, size = 167, normalized size = 0.91

$$-\frac{16}{27}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^4+\frac{11}{81}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^3+\frac{6133}{486}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^2+\frac{2317}{72}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{149829}{58320}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/27*(3*x^2 + 5*x + 2)^(5/2)*x^4 + 11/81*(3*x^2 + 5*x + 2)^(5/2)*x^3 + 61
33/486*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 2317/72*(3*x^2 + 5*x + 2)^(5/2)*x + 14
98291/58320*(3*x^2 + 5*x + 2)^(5/2) + 454969/93312*(3*x^2 + 5*x + 2)^(3/2)*
x + 2274845/559872*(3*x^2 + 5*x + 2)^(3/2) - 454969/746496*sqrt(3*x^2 + 5*x
 + 2)*x + 454969/26873856*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x
 + 5) - 2274845/4478976*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^4\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-4023x\sqrt{3x^2+5x+2}\right)dx-\int \left(-7938x^2\sqrt{3x^2+5x+2}\right)dx-\int \left(-7845x^3\sqrt{3x^2+5x+2}\right)dx-\int \left(-3880$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-4023*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-7938*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-7845*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-3880*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-680*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(128*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(48
*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-810*sqrt(3*x**2 + 5*x + 2), x)
```

3.2419 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=158

$$-\frac{1}{24}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{67}{126}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(33210x+75451)\left(3x^2+5x+2\right)^{5/2}}{15120}+12277(6$$

```
[Out] 12277/20736*(5+6*x)*(3*x^2+5*x+2)^(3/2)+67/126*(3+2*x)^2*(3*x^2+5*x+2)^(5/2
)-1/24*(3+2*x)^3*(3*x^2+5*x+2)^(5/2)+1/15120*(75451+33210*x)*(3*x^2+5*x+2)^
(5/2)+12277/995328*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)
-12277/165888*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{24}\left(3x^2+5x+2\right)^{5/2}(2x+3)^3+\frac{67}{126}\left(3x^2+5x+2\right)^{5/2}(2x+3)^2+\frac{(33210x+75451)\left(3x^2+5x+2\right)^{5/2}}{15120}+12277(6$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-12277*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/165888 + (12277*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/20736 + (67*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/126 - ((3
 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2))/24 + ((75451 + 33210*x)*(2 + 5*x + 3*x^2
)^(5/2))/15120 + (12277*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
])/(331776*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{3/2}\,dx=-\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+\frac{1}{24}\int (3+2x)^2\left(\frac{819}{2}+268x\right)\bigl(2+5$$

$$=\frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+\frac{1}{504}$$

$$=\frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-\frac{1}{24}(3+2x)^3\left(2+5x+3x^2\right)^{5/2}+(754$$

$$=\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+\frac{67}{126}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}-$$

$$=-\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+$$

$$=-\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+$$

$$=-\frac{12277(5+6x)\sqrt{2+5x+3x^2}}{165888}+\frac{12277(5+6x)\left(2+5x+3x^2\right)^{3/2}}{20736}+$$

Mathematica [**A**] time = 0.05, size = 87, normalized size = 0.55

$$\frac{429695\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\bigl(17418240x^7+25297920x^6-368236800x^5-1650151296x}{34836480}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-233137461 - 1276112350*x - 2762417688*x^2 - 299
3047920*x^3 - 1650151296*x^4 - 368236800*x^5 + 25297920*x^6 + 17418240*x^7)
 + 429695*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/34836480
```

fricas [**A**] time = 0.69, size = 88, normalized size = 0.56

$$-\frac{1}{5806080}\bigl(17418240\,x^7+25297920\,x^6-368236800\,x^5-1650151296\,x^4-2993047920\,x^3-2762417688\,x^2-1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5806080*(17418240*x^7 + 25297920*x^6 - 368236800*x^5 - 1650151296*x^4 -
2993047920*x^3 - 2762417688*x^2 - 1276112350*x - 233137461)*sqrt(3*x^2 + 5*
x + 2) + 12277/1990656*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5
) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 84, normalized size = 0.53

$$-\frac{1}{5806080}\,(2\,(12\,(6\,(8\,(30\,(12\,(42\,x+61)x-10655)x-1432423)x-20785055)x-115100737)x-638056175$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/5806080*(2*(12*(6*(8*(30*(12*(42*x + 61)*x - 10655)*x - 1432423)*x - 207
85055)*x - 115100737)*x - 638056175)*x - 233137461)*sqrt(3*x^2 + 5*x + 2) -
 12277/995328*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
) - 5))
```

maple [A] time = 0.05, size = 132, normalized size = 0.84

$$-\frac{\left(3x^2+5x+2\right)^{\frac{5}{2}}x^3}{3}+\frac{79\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2}{126}+\frac{1063\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{168}+\frac{12277\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x}\right.}{995328}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/3*(3*x^2+5*x+2)^(5/2)*x^3+79/126*(3*x^2+5*x+2)^(5/2)*x^2+1063/168*(3*x^2
+5*x+2)^(5/2)*x+12277/995328*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)
^(1/2))-12277/165888*(6*x+5)*(3*x^2+5*x+2)^(1/2)+12277/20736*(6*x+5)*(3*x^2
+5*x+2)^(3/2)+130801/15120*(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 1.34, size = 150, normalized size = 0.95

$$-\frac{1}{3}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^3+\frac{79}{126}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x^2+\frac{1063}{168}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{130801}{15120}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{12277}{3456}\left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/3*(3*x^2 + 5*x + 2)^(5/2)*x^3 + 79/126*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 106
3/168*(3*x^2 + 5*x + 2)^(5/2)*x + 130801/15120*(3*x^2 + 5*x + 2)^(5/2) + 12
277/3456*(3*x^2 + 5*x + 2)^(3/2)*x + 61385/20736*(3*x^2 + 5*x + 2)^(3/2) -
12277/27648*sqrt(3*x^2 + 5*x + 2)*x + 12277/995328*sqrt(3)*log(2*sqrt(3)*sq
rt(3*x^2 + 5*x + 2) + 6*x + 5) - 61385/165888*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^3\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-1161x\sqrt{3x^2+5x+2}\right)dx-\int\left(-1872x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-1367x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-38\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-1161*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1872*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-1367*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-382*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(28*x**5*sqrt(3*x**2 + 5
*x + 2), x) - Integral(24*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(-270*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2420 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{3/2} \, dx$

Optimal. Leaf size=133

$$-\frac{1}{21}(2x+3)^2\left(3x^2+5x+2\right)^{5/2}+\frac{(2370x+5827)\left(3x^2+5x+2\right)^{5/2}}{1890}+\frac{1129(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-1129(6x+$$

```
[Out] 1129/2592*(5+6*x)*(3*x^2+5*x+2)^(3/2)-1/21*(3+2*x)^2*(3*x^2+5*x+2)^(5/2)+1/
1890*(5827+2370*x)*(3*x^2+5*x+2)^(5/2)+1129/124416*arctanh(1/6*(5+6*x)*3^(1
/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-1129/20736*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{21}(2x+3)^2\left(3x^2+5x+2\right)^{5/2}+\frac{(2370x+5827)\left(3x^2+5x+2\right)^{5/2}}{1890}+\frac{1129(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-1129(6x+$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-1129*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/20736 + (1129*(5 + 6*x)*(2 + 5*x +
3*x^2)^(3/2))/2592 - ((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2))/21 + ((5827 + 23
70*x)*(2 + 5*x + 3*x^2)^(5/2))/1890 + (1129*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/(41472*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{3/2}\,dx &= -\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{1}{21}\int (3+2x)\left(\frac{721}{2}+237x\right)(2+5x\\ &= -\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\frac{(5827+2370x)\left(2+5x+3x^2\right)^{5/2}}{1890}+\\ &= \frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}(3+2x)^2\left(2+5x+3x^2\right)^{5/2}+\\ &= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}\\ &= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}\\ &= -\frac{1129(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{1129(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}-\frac{1}{21}\end{aligned}$$

Mathematica [A] time = 0.05, size = 82, normalized size = 0.62

$$\frac{39515\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\,(1244160x^6-311040x^5-27084672x^4-79049520x^3-9486}{4354560}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-10669737 - 51971350*x - 94861176*x^2 - 79049520
*x^3 - 27084672*x^4 - 311040*x^5 + 1244160*x^6) + 39515*Sqrt[3]*ArcTanh[(5
+ 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/4354560
```

fricas [A] time = 0.68, size = 83, normalized size = 0.62

$$-\frac{1}{725760}\left(1244160\,x^6-311040\,x^5-27084672\,x^4-79049520\,x^3-94861176\,x^2-51971350\,x-10669737\right)\sqrt{3\,x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/725760*(1244160*x^6 - 311040*x^5 - 27084672*x^4 - 79049520*x^3 - 9486117
6*x^2 - 51971350*x - 10669737)*sqrt(3*x^2 + 5*x + 2) + 1129/248832*sqrt(3)*
log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.21, size = 79, normalized size = 0.59

$$-\frac{1}{725760}\,(2\,(12\,(18\,(8\,(90\,(4\,x-1)x-7837)x-182985)x-3952549)x-25985675)x-10669737)\sqrt{3\,x^2+5\,x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/725760*(2*(12*(18*(8*(90*(4*x - 1)*x - 7837)*x - 182985)*x - 3952549)*x
- 25985675)*x - 10669737)*sqrt(3*x^2 + 5*x + 2) - 1129/124416*sqrt(3)*log(a
bs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 115, normalized size = 0.86

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2}{21}+\frac{43\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{63}+\frac{1129\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{124416}+\frac{5017\left(3x^2+5x+2\right)}{1890}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/21*(3*x^2+5*x+2)^(5/2)*x^2+43/63*(3*x^2+5*x+2)^(5/2)*x+5017/1890*(3*x^2+
5*x+2)^(5/2)+1129/2592*(6*x+5)*(3*x^2+5*x+2)^(3/2)-1129/20736*(6*x+5)*(3*x^
2+5*x+2)^(1/2)+1129/124416*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(
1/2))
```

maxima [A] time = 1.31, size = 133, normalized size = 1.00

$$-\frac{4}{21}\left(3x^2+5x+2\right)^{\frac{5}{2}}x^2+\frac{43}{63}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{5017}{1890}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{1129}{432}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{5645}{2592}\left(3x^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/21*(3*x^2 + 5*x + 2)^(5/2)*x^2 + 43/63*(3*x^2 + 5*x + 2)^(5/2)*x + 5017/
1890*(3*x^2 + 5*x + 2)^(5/2) + 1129/432*(3*x^2 + 5*x + 2)^(3/2)*x + 5645/25
92*(3*x^2 + 5*x + 2)^(3/2) - 1129/3456*sqrt(3*x^2 + 5*x + 2)*x + 1129/12441
6*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 5645/20736*sqrt(
3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2x+3)^2\,(x-5)\,\left(3x^2+5x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-327x\sqrt{3x^2+5x+2}\right)dx-\int\left(-406x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-185x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-4x^4\sqrt{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-327*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-406*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-185*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(-4*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(12*x**5*sqrt(3*x**2 + 5*x +
2), x) - Integral(-90*sqrt(3*x**2 + 5*x + 2), x)
```

3.2421 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=108

$$\frac{1}{270}(161-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{839(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{839(6x+5)\sqrt{3x^2+5x+2}}{20736}+\frac{839\tanh^{-1}\left(\frac{}{2\sqrt{3}\sqrt{}}\right.}{41472\sqrt{3}}$$

```
[Out] 839/2592*(5+6*x)*(3*x^2+5*x+2)^(3/2)+1/270*(161-30*x)*(3*x^2+5*x+2)^(5/2)+8
39/124416*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-839/2073
6*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi **[A]** time = 0.04, antiderivative size = 108, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {779, 612, 621, 206}

$$\frac{1}{270}(161-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{839(6x+5)\left(3x^2+5x+2\right)^{3/2}}{2592}-\frac{839(6x+5)\sqrt{3x^2+5x+2}}{20736}+\frac{839\tanh^{-1}\left(\frac{}{2\sqrt{3}\sqrt{}}\right.}{41472\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-839*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/20736 + (839*(5 + 6*x)*(2 + 5*x + 3*
x^2)^(3/2))/2592 + ((161 - 30*x)*(2 + 5*x + 3*x^2)^(5/2))/270 + (839*ArcTan
h[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(41472*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{3/2}\,dx = \frac{1}{270}(161-30x)\left(2+5x+3x^2\right)^{5/2}+\frac{839}{108}\int \left(2+5x+3x^2\right)^{3/2}\,dx$$
$$= \frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}(161-30x)\left(2+5x+3x^2\right)^{5/2}-$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$
$$= -\frac{839(5+6x)\sqrt{2+5x+3x^2}}{20736}+\frac{839(5+6x)\left(2+5x+3x^2\right)^{3/2}}{2592}+\frac{1}{270}$$

Mathematica [**A**] time = 0.04, size = 77, normalized size = 0.71

$$\frac{4195\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(103680x^5-210816x^4-2032560x^3-3567288x^2-240695\right.}{622080}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-561921 - 2406950*x - 3567288*x^2 - 2032560*x^3
- 210816*x^4 + 103680*x^5) + 4195*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*
x + 9*x^2])])/622080
```

fricas [**A**] time = 0.76, size = 78, normalized size = 0.72

$$-\frac{1}{103680}\left(103680\,x^5-210816\,x^4-2032560\,x^3-3567288\,x^2-2406950\,x-561921\right)\sqrt{3\,x^2+5\,x+2}+\frac{839}{248832}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/103680*(103680*x^5 - 210816*x^4 - 2032560*x^3 - 3567288*x^2 - 2406950*x
- 561921)*sqrt(3*x^2 + 5*x + 2) + 839/248832*sqrt(3)*log(4*sqrt(3)*sqrt(3*x
^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [**A**] time = 0.24, size = 74, normalized size = 0.69

$$-\frac{1}{103680}\left(2\left(12\left(18\left(8\left(30\,x-61\right)x-4705\right)x-148637\right)x-1203475\right)x-561921\right)\sqrt{3\,x^2+5\,x+2}-\frac{839}{124416}\sqrt{3}\,l$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/103680*(2*(12*(18*(8*(30*x - 61)*x - 4705)*x - 148637)*x - 1203475)*x -
561921)*sqrt(3*x^2 + 5*x + 2) - 839/124416*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [**A**] time = 0.05, size = 98, normalized size = 0.91

$$-\frac{\left(3x^2+5x+2\right)^{\frac{5}{2}}x}{9}+\frac{839\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{124416}+\frac{161\left(3x^2+5x+2\right)^{\frac{5}{2}}}{270}+\frac{839\left(6x+5\right)\left(3x^2+5x+\right.}{2592}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/9*(3*x^2+5*x+2)^(5/2)*x+161/270*(3*x^2+5*x+2)^(5/2)+839/2592*(6*x+5)*(3*
x^2+5*x+2)^(3/2)-839/20736*(6*x+5)*(3*x^2+5*x+2)^(1/2)+839/124416*3^(1/2)*l
n(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.35, size = 116, normalized size = 1.07

$$-\frac{1}{9}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{161}{270}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{839}{432}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{4195}{2592}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{839}{3456}\sqrt{3\,x^2+5\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/9*(3*x^2 + 5*x + 2)^(5/2)*x + 161/270*(3*x^2 + 5*x + 2)^(5/2) + 839/432*
(3*x^2 + 5*x + 2)^(3/2)*x + 4195/2592*(3*x^2 + 5*x + 2)^(3/2) - 839/3456*sq
rt(3*x^2 + 5*x + 2)*x + 839/124416*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) - 4195/20736*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-89x\sqrt{3x^2+5x+2}\right)dx-\int\left(-76x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-11x^3\sqrt{3x^2+5x+2}\right)dx-\int 6x^4\sqrt{3x^2+5x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-89*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-76*x**2*sqrt(3*x**2
+ 5*x + 2), x) - Integral(-11*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(6*
x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-30*sqrt(3*x**2 + 5*x + 2), x)
```

3.2422 $\int (5-x)\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=103

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{5/2}+\frac{35}{144}(6x+5)\left(3x^2+5x+2\right)^{3/2}-\frac{35(6x+5)\sqrt{3x^2+5x+2}}{1152}+\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2304\sqrt{3}}$$

```
[Out] 35/144*(5+6*x)*(3*x^2+5*x+2)^(3/2)-1/15*(3*x^2+5*x+2)^(5/2)+35/6912*arctanh
(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-35/1152*(5+6*x)*(3*x^2+5*
x+2)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 103, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = $\{640, 612, 621, 206\}$

$$-\frac{1}{15}\left(3x^2+5x+2\right)^{5/2}+\frac{35}{144}(6x+5)\left(3x^2+5x+2\right)^{3/2}-\frac{35(6x+5)\sqrt{3x^2+5x+2}}{1152}+\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2304\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-35*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/1152 + (35*(5 + 6*x)*(2 + 5*x + 3*x^2
)^(3/2))/144 - (2 + 5*x + 3*x^2)^(5/2)/15 + (35*ArcTanh[(5 + 6*x)/(2*Sqrt[3
]*Sqrt[2 + 5*x + 3*x^2])])/(2304*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\left(2+5x+3x^2\right)^{3/2}\,dx &= -\frac{1}{15}\left(2+5x+3x^2\right)^{5/2}+\frac{35}{6}\int \left(2+5x+3x^2\right)^{3/2}\,dx\\ &= \frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x^2\right)^{5/2}-\frac{35}{96}\int \sqrt{2+5x+3x^2}\,dx\\ &= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x\right.\\ &= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x\right.\\ &= -\frac{35(5+6x)\sqrt{2+5x+3x^2}}{1152}+\frac{35}{144}(5+6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{15}\left(2+5x+3x\right.\end{aligned}$$

Mathematica [**A**]   time = 0.06, size = 72, normalized size = 0.70

$$\frac{175\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\,\left(3456x^4-13680x^3-48792x^2-43070x-11589\right)}{34560}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-11589 - 43070*x - 48792*x^2 - 13680*x^3 + 3456*
x^4) + 175*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/34560
```

fricas [**A**]   time = 0.86, size = 73, normalized size = 0.71

$$-\frac{1}{5760}\left(3456\,x^4-13680\,x^3-48792\,x^2-43070\,x-11589\right)\sqrt{3\,x^2+5\,x+2}+\frac{35}{13824}\,\sqrt{3}\,\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5760*(3456*x^4 - 13680*x^3 - 48792*x^2 - 43070*x - 11589)*sqrt(3*x^2 + 5
*x + 2) + 35/13824*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) +
72*x^2 + 120*x + 49)
```

giac [**A**]   time = 0.19, size = 69, normalized size = 0.67

$$-\frac{1}{5760}\left(2\left(12\left(6\left(24\,x-95\right)x-2033\right)x-21535\right)x-11589\right)\sqrt{3\,x^2+5\,x+2}-\frac{35}{6912}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -1/5760*(2*(12*(6*(24*x - 95)*x - 2033)*x - 21535)*x - 11589)*sqrt(3*x^2 +
5*x + 2) - 35/6912*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2)) - 5))
```

maple [**A**]   time = 0.08, size = 83, normalized size = 0.81

$$\frac{35\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{6912}+\frac{35\left(6x+5\right)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{144}-\frac{35\left(6x+5\right)\sqrt{3x^2+5x+2}}{1152}-\frac{\left(3x^2+5x+2\right.}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 35/144*(6*x+5)*(3*x^2+5*x+2)^(3/2)-35/1152*(6*x+5)*(3*x^2+5*x+2)^(1/2)+35/6
912*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/15*(3*x^2+5*x+2
)^(5/2)
```

maxima [A] time = 1.33, size = 101, normalized size = 0.98

$$-\frac{1}{15}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{35}{24}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x+\frac{175}{144}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{35}{192}\sqrt{3\,x^2+5\,x+2}\,x+\frac{35}{6912}\sqrt{3}\,\log(2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 5*x + 2)^(5/2) + 35/24*(3*x^2 + 5*x + 2)^(3/2)*x + 175/144*(
3*x^2 + 5*x + 2)^(3/2) - 35/192*sqrt(3*x^2 + 5*x + 2)*x + 35/6912*sqrt(3)*l
og(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 175/1152*sqrt(3*x^2 + 5*x +
 2)
```

mupad [B] time = 2.87, size = 130, normalized size = 1.26

$$\frac{35\,\sqrt{3}\,\ln\left(\sqrt{3\,x^2+5\,x+2}+\frac{\sqrt{3}\,\left(3\,x+\frac{5}{2}\right)}{3}\right)}{6912}-\frac{5\,\left(6\,x+5\right)\,\sqrt{3\,x^2+5\,x+2}}{1152}+\frac{5\,\left(3\,x+\frac{5}{2}\right)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{12}-5\,(\frac{x}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] (35*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/6912 -
(5*(6*x + 5)*(5*x + 3*x^2 + 2)^(1/2))/1152 + (5*(3*x + 5/2)*(5*x + 3*x^2 +
2)^(3/2))/12 - (5*(x/2 + 5/12)*(5*x + 3*x^2 + 2)^(1/2))/16 + (5*x*(5*x + 3*
x^2 + 2)^(3/2))/24 + (25*(5*x + 3*x^2 + 2)^(3/2))/144 - (5*x + 3*x^2 + 2)^(
5/2)/15
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-23x\sqrt{3x^2+5x+2}\right)dx-\int\left(-10x^2\sqrt{3x^2+5x+2}\right)dx-\int 3x^3\sqrt{3x^2+5x+2}\,dx-\int\left(-10\sqrt{3x^2+5x+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-23*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10*x**2*sqrt(3*x**2
+ 5*x + 2), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10*
sqrt(3*x**2 + 5*x + 2), x)
```

3.2423 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx$

Optimal. Leaf size=123

$$\frac{1}{48}(47-6x)\left(3x^2+5x+2\right)^{3/2}+\frac{1}{128}(175-414x)\sqrt{3x^2+5x+2}-\frac{2011\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{256\sqrt{3}}+\frac{65}{32}\sqrt{5}\tanh^{-1}\left(\frac{}{2\sqrt{}}\right.$$

```
[Out] 1/48*(47-6*x)*(3*x^2+5*x+2)^(3/2)-2011/768*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x
^2+5*x+2)^(1/2))*3^(1/2)+65/32*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(
1/2))*5^(1/2)+1/128*(175-414*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [**A**] time = 0.08, antiderivative size = 123, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{48}(47-6x)\left(3x^2+5x+2\right)^{3/2}+\frac{1}{128}(175-414x)\sqrt{3x^2+5x+2}-\frac{2011\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{256\sqrt{3}}+\frac{65}{32}\sqrt{5}\tanh^{-1}\left(\frac{}{2\sqrt{}}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] ((175 - 414*x)*Sqrt[2 + 5*x + 3*x^2])/128 + ((47 - 6*x)*(2 + 5*x + 3*x^2)^(
3/2))/48 - (2011*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(256
*Sqrt[3]) + (65*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])
])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx &= \frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{1}{96}\int \frac{(1083+1242x)\sqrt{2+5x+3x^2}}{3+2x}\,dx\\
&= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}+\frac{\int \frac{-6179}{(3+2x)}}{4}\\
&= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011}{256}\int\\
&= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011}{128}\,\mathrm{Su}\\
&= \frac{1}{128}(175-414x)\sqrt{2+5x+3x^2}+\frac{1}{48}(47-6x)\left(2+5x+3x^2\right)^{3/2}-\frac{2011\tan}{}
\end{aligned}$$

Mathematica [A] time = 0.04, size = 103, normalized size = 0.84

$$\frac{1}{768}\left(-1560\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-2011\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-2\sqrt{3x^2+5x+2}\left(144\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x),x]
```

```
[Out] (-2*Sqrt[2 + 5*x + 3*x^2]*(-1277 - 542*x - 888*x^2 + 144*x^3) - 1560*Sqrt[5
]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 2011*Sqrt[3]*ArcT
anh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/768
```

fricas [A] time = 0.86, size = 119, normalized size = 0.97

$$-\frac{1}{384}\left(144\,x^3-888\,x^2-542\,x-1277\right)\sqrt{3\,x^2+5\,x+2}+\frac{2011}{1536}\,\sqrt{3}\,\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/384*(144*x^3 - 888*x^2 - 542*x - 1277)*sqrt(3*x^2 + 5*x + 2) + 2011/1536
*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x +
49) + 65/64*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^
2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.30, size = 136, normalized size = 1.11

$$-\frac{1}{384}\,(2\,(12\,(6\,x-37)x-271)x-1277)\sqrt{3\,x^2+5\,x+2}+\frac{65}{32}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x}\right.}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/384*(2*(12*(6*x - 37)*x - 271)*x - 1277)*sqrt(3*x^2 + 5*x + 2) + 65/32*s
qrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) +
2011/768*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)
))
```

maple [A] time = 0.05, size = 183, normalized size = 1.49

$$-\frac{65\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{32}-\frac{377\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{144}-\frac{\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\right.}{2304}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3),x)
```

```
[Out] -1/48*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1/384*(6*x+5)*(3*x^2+5*x+2)^(1/2)-1/2304*
3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+13/12*(-4*x+3*(x+3/2)
^2-19/4)^(3/2)-13/24*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-377/144*3^(1/2)*
ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+65/32*(-16*x+12*(x+
3/2)^2-19)^(1/2)-65/32*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+
3/2)^2-19)^(1/2))
```

maxima [A] time = 1.51, size = 128, normalized size = 1.04

$$-\frac{1}{8}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}x+\frac{47}{48}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{207}{64}\sqrt{3x^{2}+5x+2}\,x-\frac{2011}{768}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^{2}+5x+2}+3x+\frac{5}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/8*(3*x^2 + 5*x + 2)^(3/2)*x + 47/48*(3*x^2 + 5*x + 2)^(3/2) - 207/64*sqr
t(3*x^2 + 5*x + 2)*x - 2011/768*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) +
 3*x + 5/2) - 65/32*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3)
+ 5/2/abs(2*x + 3) - 2) + 175/128*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3x^{2}+5x+2\right)^{3/2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^{2}+5x+2}}{2x+3}\right)dx-\int\left(-\frac{23x\sqrt{3x^{2}+5x+2}}{2x+3}\right)dx-\int\left(-\frac{10x^{2}\sqrt{3x^{2}+5x+2}}{2x+3}\right)dx-\int\frac{3x^{3}\sqrt{3x^{2}+5x+}}{2x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-23*x*sqrt(3*
x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(2
*x + 3), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x)
```

3.2424 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=128

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{3/2}}{6(2x+3)}-\frac{1}{96}(361-726x)\sqrt{3x^2+5x+2}+\frac{3743\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{192\sqrt{3}}-\frac{161}{32}\sqrt{5}\tanh^{-1}\Big($$

```
[Out] -1/6*(21+x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)+3743/576*arctanh(1/6*(5+6*x)*3^(1/2
)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-161/32*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5
*x+2)^(1/2))*5^(1/2)-1/96*(361-726*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{3/2}}{6(2x+3)}-\frac{1}{96}(361-726x)\sqrt{3x^2+5x+2}+\frac{3743\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{192\sqrt{3}}-\frac{161}{32}\sqrt{5}\tanh^{-1}\Big($$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] -((361 - 726*x)*Sqrt[2 + 5*x + 3*x^2])/96 - ((21 + x)*(2 + 5*x + 3*x^2)^(3/
2))/(6*(3 + 2*x)) + (3743*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])])/(192*Sqrt[3]) - (161*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
 + 3*x^2])])/32
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2}\,dx &= -\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)}-\frac{1}{8}\int \frac{(-202-242x)\sqrt{2+5x+3x^2}}{3+2x}\,dx\\
&= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2}-\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)}+\frac{1}{384}\int \frac{127}{(3+2x}\\
&= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2}-\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)}+\frac{3743}{192}\int \frac{}{\sqrt{2+}}\\
&= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2}-\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)}+\frac{3743}{96}\operatorname{Subst}\Bigg(\int\\
&= -\frac{1}{96}(361-726x)\sqrt{2+5x+3x^2}-\frac{(21+x)\left(2+5x+3x^2\right)^{3/2}}{6(3+2x)}+\frac{3743\tanh^{-1}\Big(}{192}
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 110, normalized size = 0.86

$$
\frac{1}{576}\left(2898\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+3743\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(48x^3-\right.}{2x+}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(1755 + 256*x - 364*x^2 + 48*x^3))/(3 + 2*x) + 2
898*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 3743*Sq
rt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/576
```

fricas [A] time = 0.62, size = 139, normalized size = 1.09

$$\frac{3743\sqrt{3}\,(2x+3)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+2898\sqrt{5}\,(2x+3)\log\left(-\frac{4\sqrt{5}\sqrt{3x}{}\right.}{1152\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/1152*(3743*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5
) + 72*x^2 + 120*x + 49) + 2898*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt(3*x^
2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 12*(48
*x^3 - 364*x^2 + 256*x + 1755)*sqrt(3*x^2 + 5*x + 2))/(2*x + 3)
```

giac [B] time = 1.13, size = 481, normalized size = 3.76

$$-\frac{3743}{576}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{161}{32}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -3743/576*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
+ 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x +
3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 161/32*sqrt(5)*log(abs
(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))
*sgn(1/(2*x + 3)) - 65/32*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(1/(2*x
 + 3)) + 1/96*(4069*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x
+ 3))^5*sgn(1/(2*x + 3)) - 4308*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
+ 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 14464*(sqrt(-8/(2*x + 3) + 5
/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 17388*sqrt(5)*(
sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn(1/(2*x +
3)) + 12627*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))*sg
n(1/(2*x + 3)) - 17928*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3) + 5/(2
*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^3
```

maple [A] time = 0.06, size = 158, normalized size = 1.23

$$\frac{161\sqrt{5}\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32}+\frac{3743\sqrt{3}\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{576}-\frac{13\left(-4x+3\left(x+\right.\right.}{10\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-161/60*(-4*x+3*(x+3/2)^2-19/4)
^(3/2)+121/96*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+3743/576*3^(1/2)*ln(1/3
*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-161/32*(-16*x+12*(x+3/2)^
2-19)^(1/2)+161/32*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)
^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.24, size = 134, normalized size = 1.05

$$-\frac{1}{12}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{121}{16}\sqrt{3x^2+5x+2}\,x+\frac{3743}{576}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)+\frac{161}{32}\sqrt{5}\log\left(\sqrt{\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(3/2) + 121/16*sqrt(3*x^2 + 5*x + 2)*x + 3743/576*s
qrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 161/32*sqrt(5)*log(
sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 361/96
*sqrt(3*x^2 + 5*x + 2) - 13/4*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+}}{4x^2+12x+9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-23
*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-10*x**2*sqrt(
3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(3*x**3*sqrt(3*x**2 + 5
*x + 2)/(4*x**2 + 12*x + 9), x)
```

3.2425 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=135

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(43x+93)\sqrt{3x^2+5x+2}}{16(2x+3)}-\frac{343}{64}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{1329\tanh^{-1}}{6}$$

```
[Out] -1/4*(8+x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2-343/64*arctanh(1/6*(5+6*x)*3^(1/2)
/(3*x^2+5*x+2)^(1/2))*3^(1/2)+1329/320*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+
5*x+2)^(1/2))*5^(1/2)+3/16*(93+43*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 135, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{3/2}}{4(2x+3)^2}+\frac{3(43x+93)\sqrt{3x^2+5x+2}}{16(2x+3)}-\frac{343}{64}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{1329\tanh^{-1}}{6}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] (3*(93 + 43*x)*Sqrt[2 + 5*x + 3*x^2])/(16*(3 + 2*x)) - ((8 + x)*(2 + 5*x +
3*x^2)^(3/2))/(4*(3 + 2*x)^2) - (343*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*S
qrt[2 + 5*x + 3*x^2])])/64 + (1329*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*
x + 3*x^2])])/(64*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
```

```
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx = -\frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{3}{32}\int \frac{(-144-172x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx$$

$$= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)} - \frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2} + \frac{3}{256}\int \frac{-2344-}{(3+2x)\sqrt{2+}}$$

$$= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)} - \frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{1029}{64}\int \frac{1}{\sqrt{2+5x+3}}$$

$$= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)} - \frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{1029}{32}\,\text{Subst}\left(\int \frac{1}{12-}\right.$$

$$= \frac{3(93+43x)\sqrt{2+5x+3x^2}}{16(3+2x)} - \frac{(8+x)\left(2+5x+3x^2\right)^{3/2}}{4(3+2x)^2} - \frac{343}{64}\sqrt{3}\,\tanh^{-1}\left(\frac{}{2\sqrt{3}}\right.$$

Mathematica [A] time = 0.09, size = 110, normalized size = 0.81

$$\frac{1}{320}\left(-1329\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right) - 1715\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{20\sqrt{3x^2+5x+2}\,\left(12x^3-\right.}{(2x+}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-20*Sqrt[2 + 5*x + 3*x^2]*(-773 - 777*x - 142*x^2 + 12*x^3))/(3 + 2*x)^2
- 1329*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 1715
*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/320
```

fricas [A] time = 0.73, size = 153, normalized size = 1.13

$$\frac{1715\,\sqrt{3}\left(4\,x^2+12\,x+9\right)\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)+1329\,\sqrt{5}\left(4\,x^2+12\,x+9\right)}{640\left(4\,x^2+12\,x+9\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/640*(1715*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)
*(6*x + 5) + 72*x^2 + 120*x + 49) + 1329*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9)) - 40*(12*x^3 - 142*x^2 - 777*x - 773)*sqrt(3*x^2 + 5*x + 2))/(4*x^
2 + 12*x + 9)
```

giac [B] time = 0.34, size = 259, normalized size = 1.92

$$-\frac{1}{32}\sqrt{3x^2+5x+2}(6x-89)+\frac{1329}{320}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{343}{64}\sqrt{3}\log\Big(\Big|$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/32*sqrt(3*x^2 + 5*x + 2)*(6*x - 89) + 1329/320*sqrt(5)*log(abs(-4*sqrt(3
)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2
*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 343/64*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 5/32*(510*(sqrt(3)*x
- sqrt(3*x^2 + 5*x + 2))^3 + 1869*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^2 + 6259*sqrt(3)*x + 2209*sqrt(3) - 6259*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) + 11)^2
```

maple [A] time = 0.06, size = 179, normalized size = 1.33

$$-\frac{1329\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{320}-\frac{343\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{64}-\frac{13\Big(-4x+3\Big(x}{40\Big(x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+31/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(5/2)+443/200*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-171/160*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(1/2)-343/64*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x
+3/2)^2-19/4)^(1/2))+1329/320*(-16*x+12*(x+3/2)^2-19)^(1/2)-1329/320*5^(1/2
)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-31/100*(6*x
+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.19, size = 160, normalized size = 1.19

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{10\left(4x^2+12x+9\right)}-\frac{513}{80}\sqrt{3x^2+5x+2}\,x-\frac{343}{64}\sqrt{3}\log\Big(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(3/2) - 13/10*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x
 + 9) - 513/80*sqrt(3*x^2 + 5*x + 2)*x - 343/64*sqrt(3)*log(sqrt(3)*sqrt(3*
x^2 + 5*x + 2) + 3*x + 5/2) - 1329/320*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x
 + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 237/80*sqrt(3*x^2 + 5*x + 2) +
 31/20*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\frac{3}{8x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-23*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
- Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
```

3.2426 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=137

$$\frac{(342x+383)\left(3x^2+5x+2\right)^{3/2}}{120(2x+3)^3}-\frac{(402x+845)\sqrt{3x^2+5x+2}}{160(2x+3)}+\frac{51}{32}\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\,\sqrt{3x^2+5x+2}}\right)-\frac{1973\,\mathrm{ta}}{}$$

```
[Out] 1/120*(383+342*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3+51/32*arctanh(1/6*(5+6*x)*3
^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-1973/1600*arctanh(1/10*(7+8*x)*5^(1/2)/
(3*x^2+5*x+2)^(1/2))*5^(1/2)-1/160*(845+402*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(342x+383)\left(3x^2+5x+2\right)^{3/2}}{120(2x+3)^3}-\frac{(402x+845)\sqrt{3x^2+5x+2}}{160(2x+3)}+\frac{51}{32}\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\,\sqrt{3x^2+5x+2}}\right)-\frac{1973\,\mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] -((845 + 402*x)*Sqrt[2 + 5*x + 3*x^2])/(160*(3 + 2*x)) + ((383 + 342*x)*(2
+ 5*x + 3*x^2)^(3/2))/(120*(3 + 2*x)^3) + (51*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*
Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/32 - (1973*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sq
rt[2 + 5*x + 3*x^2])])/(320*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx = \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3} - \frac{1}{80}\int \frac{(361+402x)\sqrt{2+5x+3x^2}}{(3+2x)^2}\,dx$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)} + \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3} + \frac{1}{640}\int$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)} + \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3} + \frac{153}{32}\int$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)} + \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3} + \frac{153}{16}\,\mathrm{Subst}$$

$$= -\frac{(845+402x)\sqrt{2+5x+3x^2}}{160(3+2x)} + \frac{(383+342x)\left(2+5x+3x^2\right)^{3/2}}{120(3+2x)^3} + \frac{51}{32}\sqrt{3}\tanh$$

Mathematica [A] time = 0.10, size = 110, normalized size = 0.80

$$\frac{5919\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) + 7650\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(720x^3+13176x^2+30878x+19751\right)}{(2x+3)^3}}{4800}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(19751 + 30878*x + 13176*x^2 + 720*x^3))/(3 + 2
*x)^3 + 5919*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]
+ 7650*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/4800
```

fricas [**A**] time = 0.56, size = 169, normalized size = 1.23

$$\frac{7650\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+5919\sqrt{5}\left(8x^3\right.}{9600\left(8x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/9600*(7650*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 5919*sqrt(5)*(8*x^3 + 36*x^2
+ 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 21
2*x - 89)/(4*x^2 + 12*x + 9)) - 20*(720*x^3 + 13176*x^2 + 30878*x + 19751)*
sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [**B**] time = 0.34, size = 305, normalized size = 2.23

$$-\frac{1973}{1600}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{51}{32}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1973/1600*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) - 51/32*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) - 5)) - 3/16*sqrt(3*x^2 + 5*x + 2) - 1/480*(62484*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^5 + 390510*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 +
 2835190*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 3307455*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^2 + 5598195*sqrt(3)*x + 1227924*sqrt(3) - 5598195
*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [**A**] time = 0.06, size = 200, normalized size = 1.46

$$\frac{1973\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1600}+\frac{51\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{32}-\frac{37\left(-4x+3\left(x+\right.\right.}{600\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^4,x)
```

```
[Out] -37/600/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-158/375/(x+3/2)*(-4*x+3*(x+
3/2)^2-19/4)^(5/2)-1973/3000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+121/400*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(1/2)+51/32*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+
3*(x+3/2)^2-19/4)^(1/2))-1973/1600*(-16*x+12*(x+3/2)^2-19)^(1/2)+1973/1600*
5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+79/37
5*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-
19/4)^(5/2)
```

maxima [**A**] time = 1.36, size = 191, normalized size = 1.39

$$\frac{37}{200}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{15\left(8x^3+36x^2+54x+27\right)}-\frac{37\left(3x^2+5x+2\right)^{\frac{5}{2}}}{150\left(4x^2+12x+9\right)}+\frac{363}{200}\sqrt{3x^2+5x+2}\,x+\frac{51}{32}\sqrt{3}\ \mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] 37/200*(3*x^2 + 5*x + 2)^(3/2) - 13/15*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 37/150*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) + 363/
200*sqrt(3*x^2 + 5*x + 2)*x + 51/32*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x +
2) + 3*x + 5/2) + 1973/1600*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2
*x + 3) + 5/2/abs(2*x + 3) - 2) - 763/800*sqrt(3*x^2 + 5*x + 2) - 79/75*(3*
x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{10x^2\sqrt{3}}{16x^4+96x^3+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*
x**2 + 216*x + 81), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4
+ 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x
+ 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x)
```

3.2427 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=137

$$\frac{(352x+333)\left(3x^2+5x+2\right)^{3/2}}{240(2x+3)^4}+\frac{(1528x+2087)\sqrt{3x^2+5x+2}}{3200(2x+3)^2}-\frac{3}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{2359}{}$$

```
[Out] 1/240*(333+352*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-3/32*arctanh(1/6*(5+6*x)*3^
(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+2359/32000*arctanh(1/10*(7+8*x)*5^(1/2)/
(3*x^2+5*x+2)^(1/2))*5^(1/2)+1/3200*(2087+1528*x)*(3*x^2+5*x+2)^(1/2)/(3+2*
x)^2
```

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {810, 843, 621, 206, 724}

$$\frac{(352x+333)\left(3x^2+5x+2\right)^{3/2}}{240(2x+3)^4}+\frac{(1528x+2087)\sqrt{3x^2+5x+2}}{3200(2x+3)^2}-\frac{3}{32}\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)+\frac{2359}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] ((2087 + 1528*x)*Sqrt[2 + 5*x + 3*x^2])/(3200*(3 + 2*x)^2) + ((333 + 352*x)
*(2 + 5*x + 3*x^2)^(3/2))/(240*(3 + 2*x)^4) - (3*Sqrt[3]*ArcTanh[(5 + 6*x)/
(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/32 + (2359*ArcTanh[(7 + 8*x)/(2*Sqrt[5]
*Sqrt[2 + 5*x + 3*x^2])])/(6400*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx &= \frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{1}{160}\int \frac{(139+120x)\sqrt{2+5x+3x^2}}{(3+2x)^3}\,dx\\ &= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}+\frac{\int \frac{-6082-}{(3+2x)\sqrt{2+}}}{128}\\ &= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{9}{32}\int \frac{}{\sqrt{2+}}\\ &= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{9}{16}\text{Subst}\Big(\\ &= \frac{(2087+1528x)\sqrt{2+5x+3x^2}}{3200(3+2x)^2}+\frac{(333+352x)\left(2+5x+3x^2\right)^{3/2}}{240(3+2x)^4}-\frac{3}{32}\sqrt{3}\tanh\end{aligned}$$

Mathematica [A] time = 0.11, size = 110, normalized size = 0.80

$$\frac{-7077\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-9000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+\frac{10\sqrt{3x^2+5x+2}\left(60576x^3+190412x^2+211148x+82989\right)}{(2x+3)^4}}{96000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^5,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(82989 + 211148*x + 190412*x^2 + 60576*x^3))/(3
+ 2*x)^4 - 7077*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2]
)] - 9000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/96000
```

fricas [A] time = 0.62, size = 183, normalized size = 1.34

$$\frac{9000\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+7077}{1920}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/192000*(9000*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqrt
(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 7077*sqrt(5)*(
16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2
)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(60576*x^3 + 1
90412*x^2 + 211148*x + 82989)*sqrt(3*x^2 + 5*x + 2))/(16*x^4 + 96*x^3 + 216
*x^2 + 216*x + 81)
```

giac [A] time = 0.29, size = 106, normalized size = 0.77

$$-\frac{1}{19200}\left(\frac{5\left(\frac{10\left(\frac{195\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}{2x+3}-488\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}+4109\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)}{2x+3}-7572\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)\right)\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] -1/19200*(5*(10*(195*sgn(1/(2*x + 3))/(2*x + 3) - 488*sgn(1/(2*x + 3)))/(2*
x + 3) + 4109*sgn(1/(2*x + 3)))/(2*x + 3) - 7572*sgn(1/(2*x + 3)))*sqrt(-8/
(2*x + 3) + 5/(2*x + 3)^2 + 3) - 631/1600*sqrt(3)*sgn(1/(2*x + 3))
```

maple [B] time = 0.06, size = 221, normalized size = 1.61

$$-\frac{2359\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{32000}-\frac{3\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{32}-\frac{17\left(-4x+3\left(x+\right.\right.}{300\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^5,x)
```

```
[Out] -17/300/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1129/12000/(x+3/2)^2*(-4*x+
3*(x+3/2)^2-19/4)^(5/2)-911/7500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+2359
/60000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-109/4000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-3/32*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2
))+2359/32000*(-16*x+12*(x+3/2)^2-19)^(1/2)-2359/32000*5^(1/2)*arctanh(2/5*
(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+911/15000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.34, size = 227, normalized size = 1.66

$$\frac{1129}{4000}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{5}{2}}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{34\left(3x^2+5x+2\right)^{\frac{5}{2}}}{75\left(8x^3+36x^2+54x+27\right)}-\frac{1129\left(3x^2+\right.}{3000\left(4x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 1129/4000*(3*x^2 + 5*x + 2)^(3/2) - 13/20*(3*x^2 + 5*x + 2)^(5/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 34/75*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36
*x^2 + 54*x + 27) - 1129/3000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) -
327/2000*sqrt(3*x^2 + 5*x + 2)*x - 3/32*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 3*x + 5/2) - 2359/32000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/
abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 179/16000*sqrt(3*x^2 + 5*x + 2) - 91
1/3000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^5, x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-10*x**2*sqrt
(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243
), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x*
*3 + 1080*x**2 + 810*x + 243), x)
```

3.2428 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=124

$$-\frac{13\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{141(8x+7)\sqrt{3x^2+5x+2}}{16000(2x+3)^2}+\frac{141\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right.}{32000\sqrt{5}}$$

```
[Out] 47/400*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-13/25*(3*x^2+5*x+2)^(5/2)/(3+2
*x)^5+141/160000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-
141/16000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.06, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{141(8x+7)\sqrt{3x^2+5x+2}}{16000(2x+3)^2}+\frac{141\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right.}{32000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] (-141*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(16000*(3 + 2*x)^2) + (47*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(3/2))/(400*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5/2))/(
25*(3 + 2*x)^5) + (141*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]
)/(32000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
```

```
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{25(3+2x)^5}+\frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx\\ &= \frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{25(3+2x)^5}-\frac{141}{800}\int \frac{\sqrt{2+5x+3x^2}}{(3+2x)^3}\,d\\ &= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2}+\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4}-\frac{13(2+5x+3x}{25(3+2x)^5}\\ &= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2}+\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4}-\frac{13(2+5x+3x}{25(3+2x)^5}\\ &= -\frac{141(7+8x)\sqrt{2+5x+3x^2}}{16000(3+2x)^2}+\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{400(3+2x)^4}-\frac{13(2+5x+3x}{25(3+2x)^5}\end{aligned}$$

Mathematica [A] time = 0.08, size = 128, normalized size = 1.03

$$-\frac{83200\left(3x^2+5x+2\right)^{5/2}-47(2x+3)(-30(8x+7)\sqrt{3x^2+5x+2}\,(2x+3)^2+400(8x+7)\left(3x^2+5x+2\right)^{3/2}-3}{160000(2x+3)^5}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^6,x]
```

```
[Out] -1/160000*(83200*(2 + 5*x + 3*x^2)^(5/2) - 47*(3 + 2*x)*(-30*(3 + 2*x)^2*(7
 + 8*x)*Sqrt[2 + 5*x + 3*x^2] + 400*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2) - 3*S
qrt[5]*(3 + 2*x)^4*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/
(3 + 2*x)^5
```

fricas [A] time = 0.72, size = 140, normalized size = 1.13

$$\frac{141\,\sqrt{5}\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)+124\,x^2+212\,x+89}{4\,x^2+12\,x+9}\right)+20\,(6336\,x^4}{320000\,(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/320000*(141*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*
x^2 + 12*x + 9)) + 20*(6336*x^4 + 66616*x^3 + 131516*x^2 + 90126*x + 19031)
*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 24
3)
```

giac [B] time = 0.31, size = 359, normalized size = 2.90

$$\frac{141}{160000}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{146256\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^9+654456\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] 141/160000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) - 1/16000*(146256*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 654456*
sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 415048*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^7 - 15455452*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6
- 140042336*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 207568854*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 544555762*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^3 - 286352757*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 2524548
21*sqrt(3)*x - 31985676*sqrt(3) + 252454821*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2)) + 11)^5
```

maple [B] time = 0.06, size = 211, normalized size = 1.70

$$-\frac{141\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{160000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{800\left(x+\frac{3}{2}\right)^{5}}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{1600\left(x+\frac{3}{2}\right)^{4}}-47(-4x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^6,x)
```

```
[Out] -13/800/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-47/1600/(x+3/2)^4*(-4*x+3*(
x+3/2)^2-19/4)^(5/2)-47/1000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1457/2
0000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1363/12500/(x+3/2)*(-4*x+3*(x+
3/2)^2-19/4)^(5/2)+47/100000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-141/20000*(6*x+5
)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+141/160000*(-16*x+12*(x+3/2)^2-19)^(1/2)-14
1/160000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/
2))+1363/25000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [B] time = 1.29, size = 241, normalized size = 1.94

$$\frac{4371}{20000}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{25\left(32x^{5}+240x^{4}+720x^{3}+1080x^{2}+810x+243\right)}-\frac{47(3x^{2}+5x+2}{100(16x^{4}+96x^{3}+216x^{2}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 4371/20000*(3*x^2 + 5*x + 2)^(3/2) - 13/25*(3*x^2 + 5*x + 2)^(5/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 47/100*(3*x^2 + 5*x + 2)^(5
/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 47/125*(3*x^2 + 5*x + 2)^(5/
2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1457/5000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2
+ 12*x + 9) - 423/10000*sqrt(3*x^2 + 5*x + 2)*x - 141/160000*sqrt(5)*log(sq
rt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 2679/800
00*sqrt(3*x^2 + 5*x + 2) - 1363/5000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{(2\,x+3)^{6}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x}}{64x^6+576x^5+2160x^4+4320x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-23*x*sqrt(3*x**2 + 5*x +
2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729),
 x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x
**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(3*x**3*sqrt(3*x*
*2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 291
6*x + 729), x)
```

3.2429 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=149

$$-\frac{167\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{12000(2x+3)^4}-\frac{1141(8x+7)\sqrt{3x^2+5x+2}}{160000(2x+3)^2}+$$

```
[Out] 1141/12000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-13/30*(3*x^2+5*x+2)^(5/2)/
(3+2*x)^6-167/375*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5+1141/1600000*arctanh(1/10*(
7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-1141/160000*(7+8*x)*(3*x^2+5*x+
2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.08, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = $\{834, 806, 720, 724, 206\}$

$$-\frac{167\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{12000(2x+3)^4}-\frac{1141(8x+7)\sqrt{3x^2+5x+2}}{160000(2x+3)^2}+$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] (-1141*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(160000*(3 + 2*x)^2) + (1141*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(12000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5
/2))/(30*(3 + 2*x)^6) - (167*(2 + 5*x + 3*x^2)^(5/2))/(375*(3 + 2*x)^5) + (
1141*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(320000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{1}{30}\int \frac{\left(-\frac{217}{2}+39x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx \\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{167\left(2+5x+3x^2\right)^{5/2}}{375(3+2x)^5}+\frac{1141}{300}\int \frac{\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx \\
&= \frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{30(3+2x)^6}-\frac{167\left(2+5x+3x^2\right)^{5/2}}{375(3+2x)^5} \\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13(2+5x+}{30(3+2} \\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13(2+5x+}{30(3+2} \\
&= -\frac{1141(7+8x)\sqrt{2+5x+3x^2}}{160000(3+2x)^2}+\frac{1141(7+8x)\left(2+5x+3x^2\right)^{3/2}}{12000(3+2x)^4}-\frac{13(2+5x+}{30(3+2}
\end{aligned}
$$

<u>Mathematica</u> [A] time = 0.09, size = 151, normalized size = 1.01

$$
\frac{1}{30}\left(-\frac{334\left(3x^2+5x+2\right)^{5/2}}{25(2x+3)^5}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6}+\frac{1141(8x+7)\left(3x^2+5x+2\right)^{3/2}}{400(2x+3)^4}-\frac{3423\,(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2}+}{16}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^7,x]
```

```
[Out] ((1141*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(400*(3 + 2*x)^4) - (13*(2 + 5*x
+ 3*x^2)^(5/2))/(3 + 2*x)^6 - (334*(2 + 5*x + 3*x^2)^(5/2))/(25*(3 + 2*x)^5
) - (3423*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTa
nh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/160000)/30
```

<u>fricas</u> [A] time = 0.71, size = 155, normalized size = 1.04

$$
\frac{3423\sqrt{5}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)}{9600000\,(64x^6+576x^5+2160x^4+4320x}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/9600000*(3423*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
+ 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 +
212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(95616*x^5 + 799120*x^4 + 3065440*x^3
+ 4479600*x^2 + 2526920*x + 412679)*sqrt(3*x^2 + 5*x + 2))/(64*x^6 + 576*x^
5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.36, size = 410, normalized size = 2.75

$$\frac{1141}{1600000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)-\frac{109536\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{11}+6127}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 1141/1600000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) - 1/480000*(109536*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 612
7344*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 70129360*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^9 - 83080800*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^8 - 3334681440*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 9802137888*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 - 47432214576*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^5 - 48106882440*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^4 - 94851959950*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 39436262415*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 28403540997*sqrt(3)*x - 3009604
608*sqrt(3) + 28403540997*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^6
```

maple [A] time = 0.06, size = 232, normalized size = 1.56

$$-\frac{1141\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1600000}-\frac{167\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{12000\left(x+\frac{3}{2}\right)^{5}}-\frac{1141\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{48000\left(x+\frac{3}{2}\right)^{4}}-114$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^7,x)
```

```
[Out] -167/12000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1141/48000/(x+3/2)^4*(-4
*x+3*(x+3/2)^2-19/4)^(5/2)-1141/30000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/
2)-35371/600000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-33089/375000/(x+3/2
)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+1141/3000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-
1141/200000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+1141/1600000*(-16*x+12*(x
+3/2)^2-19)^(1/2)-1141/1600000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*
x+12*(x+3/2)^2-19)^(1/2))+33089/750000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2
)-13/1920/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.20, size = 287, normalized size = 1.93

$$\frac{35371}{200000}\left(3x^{2}+5x+2\right)^{\frac{3}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}{30\left(64x^{6}+576x^{5}+2160x^{4}+4320x^{3}+4860x^{2}+2916x+729\right)}-\frac{}{375\left(32x^{5}+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 35371/200000*(3*x^2 + 5*x + 2)^(3/2) - 13/30*(3*x^2 + 5*x + 2)^(5/2)/(64*x^
6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 167/375*(3*x
^2 + 5*x + 2)^(5/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) -
 1141/3000*(3*x^2 + 5*x + 2)^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
 - 1141/3750*(3*x^2 + 5*x + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 35371/1
50000*(3*x^2 + 5*x + 2)^(5/2)/(4*x^2 + 12*x + 9) - 3423/100000*sqrt(3*x^2 +
 5*x + 2)*x - 1141/1600000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*
x + 3) + 5/2/abs(2*x + 3) - 2) - 21679/800000*sqrt(3*x^2 + 5*x + 2) - 33089
/150000*(3*x^2 + 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int\Bigg(-\frac{}{128x^7+1344x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-23*x*s
qrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 2268
0*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-10*x**2*sqrt(3*x**2 +
 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 204
12*x**2 + 10206*x + 2187), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(128
*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 1020
6*x + 2187), x)
```

3.2430 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=174

$$-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{13125(2x+3)^5}-\frac{433\left(3x^2+5x+2\right)^{5/2}}{1050(2x+3)^6}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^7}+\frac{4663(8x+7)\left(3x^2+5x+2\right)^{3/2}}{60000(2x+3)^4}-4663$$

```
[Out] 4663/60000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-13/35*(3*x^2+5*x+2)^(5/2)/
(3+2*x)^7-433/1050*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6-4892/13125*(3*x^2+5*x+2)^(
5/2)/(3+2*x)^5+4663/8000000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2
))*5^(1/2)-4663/800000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.11, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{13125(2x+3)^5}-\frac{433\left(3x^2+5x+2\right)^{5/2}}{1050(2x+3)^6}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^7}+\frac{4663(8x+7)\left(3x^2+5x+2\right)^{3/2}}{60000(2x+3)^4}-4663$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] (-4663*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(800000*(3 + 2*x)^2) + (4663*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(60000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x^2)^(5
/2))/(35*(3 + 2*x)^7) - (433*(2 + 5*x + 3*x^2)^(5/2))/(1050*(3 + 2*x)^6) -
(4892*(2 + 5*x + 3*x^2)^(5/2))/(13125*(3 + 2*x)^5) + (4663*ArcTanh[(7 + 8*x
)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(1600000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7} - \frac{1}{35}\int \frac{\left(-\frac{199}{2}+78x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7} - \frac{433\left(2+5x+3x^2\right)^{5/2}}{1050(3+2x)^6} + \frac{\int \frac{\left(\frac{5887}{2}-1299x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^6}\,dx}{1050}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7} - \frac{433\left(2+5x+3x^2\right)^{5/2}}{1050(3+2x)^6} - \frac{4892\left(2+5x+3x^2\right)^{5/2}}{13125(3+2x)^5} + 466$$

$$= \frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4} - \frac{13\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^7} - \frac{433\left(2+5x+3x^2\right)^{5/2}}{1050(3+2x)^6}$$

$$= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2} + \frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4} - \frac{13\left(2+5x+\right.}{35(3+}$$

$$= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2} + \frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4} - \frac{13\left(2+5x+\right.}{35(3+}$$

$$= -\frac{4663(7+8x)\sqrt{2+5x+3x^2}}{800000(3+2x)^2} + \frac{4663(7+8x)\left(2+5x+3x^2\right)^{3/2}}{60000(3+2x)^4} - \frac{13\left(2+5x+\right.}{35(3+}$$

Mathematica [A] time = 0.15, size = 157, normalized size = 0.90

$$\frac{1}{35}\left(-\frac{4892\left(3x^2+5x+2\right)^{5/2}}{375(2x+3)^5} - \frac{433\left(3x^2+5x+2\right)^{5/2}}{30(2x+3)^6} - \frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^7} + \frac{32641\left(\frac{10\sqrt{3x^2+5x+2}\left(864x^3+2068x^2+1\right.}{(2x+3)^4}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7 - (433*(2 + 5*x + 3*x^2)^(5/2))/
(30*(3 + 2*x)^6) - (4892*(2 + 5*x + 3*x^2)^(5/2))/(375*(3 + 2*x)^5) + (3264
1*((10*Sqrt[2 + 5*x + 3*x^2]*(371 + 1572*x + 2068*x^2 + 864*x^3))/(3 + 2*x)
^4 - 3*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/4800
000)/35
```

fricas [A] time = 0.62, size = 170, normalized size = 0.98

$$\frac{97923\sqrt{5}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x}}{}\right.}{336000000\left(128x^7+1344x^6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/336000000*(97923*sqrt(5)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 226
80*x^3 + 20412*x^2 + 10206*x + 2187)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(
8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(191232*x^6 + 289
3088*x^5 + 16376240*x^4 + 55403520*x^3 + 64140640*x^2 + 15759118*x - 655446
3)*sqrt(3*x^2 + 5*x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 2268
0*x^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.33, size = 461, normalized size = 2.65

$$\frac{4663}{8000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6267072\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{13}+122}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] 4663/8000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) - 1/16800000*(6267072*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 +
122207904*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 3852187808*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 18344551344*sqrt(3)*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^10 + 131374293680*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 +
134399090784*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 - 264419126976*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 1446858601104*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^6 - 6675760646156*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^5 - 5954681858370*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 10149146
991914*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 3640765552263*sqrt(3)*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 2268672558411*sqrt(3)*x - 208833935688*sq
rt(3) + 2268672558411*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [A] time = 0.07, size = 253, normalized size = 1.45

$$-\frac{4663\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{8000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{4480\left(x+\frac{3}{2}\right)^7}-\frac{433\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{5}{2}}}{67200\left(x+\frac{3}{2}\right)^6}-\frac{1223}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^8,x)
```

```
[Out] -13/4480/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-433/67200/(x+3/2)^6*(-4*x+
3*(x+3/2)^2-19/4)^(5/2)-1223/105000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
-4663/240000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-4663/150000/(x+3/2)^3*
(-4*x+3*(x+3/2)^2-19/4)^(5/2)-144553/3000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19
/4)^(5/2)-135227/1875000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+4663/1500000
0*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-4663/1000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4
)^(1/2)+4663/8000000*(-16*x+12*(x+3/2)^2-19)^(1/2)-4663/8000000*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+135227/3750000*(
6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [B] time = 1.30, size = 338, normalized size = 1.94

$$\frac{144553}{1000000}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}{35\left(128\,x^7+1344\,x^6+6048\,x^5+15120\,x^4+22680\,x^3+20412\,x^2+10206\,x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 144553/1000000*(3*x^2 + 5*x + 2)^(3/2) - 13/35*(3*x^2 + 5*x + 2)^(5/2)/(128
*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x +
2187) - 433/1050*(3*x^2 + 5*x + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 432
0*x^3 + 4860*x^2 + 2916*x + 729) - 4892/13125*(3*x^2 + 5*x + 2)^(5/2)/(32*x
^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 4663/15000*(3*x^2 + 5*x
+ 2)^(5/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 4663/18750*(3*x^2 + 5
*x + 2)^(5/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 144553/750000*(3*x^2 + 5*x + 2
)^(5/2)/(4*x^2 + 12*x + 9) - 13989/500000*sqrt(3*x^2 + 5*x + 2)*x - 4663/80
00000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
+ 3) - 2) - 88597/4000000*sqrt(3*x^2 + 5*x + 2) - 135227/750000*(3*x^2 + 5*
x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\Bigg(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-23*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
+ 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
- Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
```

3.2431 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=199

$$-\frac{3879\left(3x^2+5x+2\right)^{5/2}}{12500(2x+3)^5}-\frac{717\left(3x^2+5x+2\right)^{5/2}}{2000(2x+3)^6}-\frac{19\left(3x^2+5x+2\right)^{5/2}}{50(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{40(2x+3)^8}+\frac{51309(8x+7)}{800000}$$

```
[Out] 51309/800000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-13/40*(3*x^2+5*x+2)^(5/2
)/(3+2*x)^8-19/50*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7-717/2000*(3*x^2+5*x+2)^(5/2
)/(3+2*x)^6-3879/12500*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5+153927/320000000*arcta
nh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-153927/32000000*(7+8*x
)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.13, antiderivative size = 199, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{3879\left(3x^2+5x+2\right)^{5/2}}{12500(2x+3)^5}-\frac{717\left(3x^2+5x+2\right)^{5/2}}{2000(2x+3)^6}-\frac{19\left(3x^2+5x+2\right)^{5/2}}{50(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{40(2x+3)^8}+\frac{51309(8x+7)}{800000}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^9,x]
```

```
[Out] (-153927*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(32000000*(3 + 2*x)^2) + (51309*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(800000*(3 + 2*x)^4) - (13*(2 + 5*x + 3*x
^2)^(5/2))/(40*(3 + 2*x)^8) - (19*(2 + 5*x + 3*x^2)^(5/2))/(50*(3 + 2*x)^7)
 - (717*(2 + 5*x + 3*x^2)^(5/2))/(2000*(3 + 2*x)^6) - (3879*(2 + 5*x + 3*x^
2)^(5/2))/(12500*(3 + 2*x)^5) + (153927*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(64000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^9}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{1}{40}\int \frac{\left(-\frac{181}{2}+117x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^8}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}+\frac{\int \frac{\left(\frac{5481}{2}-3192x\right)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^7}\,dx}{1400}\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}-\frac{717\left(2+5x+3x^2\right)^{5/2}}{2000(3+2x)^6}-\int \frac{\left(-\frac{190}{}\right.}{}\\
&= -\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}-\frac{717\left(2+5x+3x^2\right)^{5/2}}{2000(3+2x)^6}-\frac{3879(}{125}\\
&= \frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13\left(2+5x+3x^2\right)^{5/2}}{40(3+2x)^8}-\frac{19\left(2+5x+3x^2\right)^{5/2}}{50(3+2x)^7}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13\left(2+\right.}{40(3}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13\left(2+\right.}{40(3}\\
&= -\frac{153927(7+8x)\sqrt{2+5x+3x^2}}{32000000(3+2x)^2}+\frac{51309(7+8x)\left(2+5x+3x^2\right)^{3/2}}{800000(3+2x)^4}-\frac{13\left(2+\right.}{40(3}
\end{aligned}
$$

Mathematica [**A**] time = 0.13, size = 182, normalized size = 0.91

$$
\frac{1}{40}\left(-\frac{7758\left(3x^2+5x+2\right)^{5/2}}{625(2x+3)^5}-\frac{717\left(3x^2+5x+2\right)^{5/2}}{50(2x+3)^6}-\frac{76\left(3x^2+5x+2\right)^{5/2}}{5(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^8}+\frac{51309\left(\frac{10}{}\right.}{}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^9,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8 - (76*(2 + 5*x + 3*x^2)^(5/2))/(
5*(3 + 2*x)^7) - (717*(2 + 5*x + 3*x^2)^(5/2))/(50*(3 + 2*x)^6) - (7758*(2
+ 5*x + 3*x^2)^(5/2))/(625*(3 + 2*x)^5) + (51309*((10*Sqrt[2 + 5*x + 3*x^2]
*(371 + 1572*x + 2068*x^2 + 864*x^3))/(3 + 2*x)^4 - 3*Sqrt[5]*ArcTanh[(-7 -
 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/8000000)/40
```

fricas [**A**] time = 0.87, size = 185, normalized size = 0.93

$$\frac{153927\,\sqrt{5}\left(256\,x^{8}+3072\,x^{7}+16128\,x^{6}+48384\,x^{5}+90720\,x^{4}+108864\,x^{3}+81648\,x^{2}+34992\,x+6561\right)\mathrm{lo}}{640000000\left(256\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/640000000*(153927*sqrt(5)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 9
0720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log((4*sqrt(5)*sqrt(3*x
^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(5
681664*x^7 + 60161472*x^6 + 272314944*x^5 + 682163760*x^4 + 1007243840*x^3
+ 924451956*x^2 + 512781828*x + 131091161)*sqrt(3*x^2 + 5*x + 2))/(256*x^8
+ 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 3
4992*x + 6561)
```

giac [**B**] time = 0.35, size = 512, normalized size = 2.57

$$\frac{153927}{320000000}\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^{2}+5\,x+2}\right|}\right)-\frac{19702656\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+5\,x+2}\right)^{15}+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 153927/320000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*s
qrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x
^2 + 5*x + 2))) - 1/32000000*(19702656*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^
15 + 443309760*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 13775440320
*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 88813739520*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^12 + 1135723030560*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^11 + 3326100961968*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 2079
5205897360*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 31719485197440*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 108381222834920*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^7 + 93303707056820*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^6 + 182905948708404*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 90199904722
080*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 98616726439110*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^3 + 25302796273485*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^2 + 12323187970155*sqrt(3)*x + 954490882968*sqrt(3) - 12323
187970155*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 +
 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [**A**] time = 0.14, size = 274, normalized size = 1.38

$$-\frac{153927\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{320000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{10240\left(x+\frac{3}{2}\right)^{8}}-\frac{51309\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{5}{2}}}{3200000\left(x+\frac{3}{2}\right)^{4}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^9,x)
```

```
[Out] -13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-51309/3200000/(x+3/2)^4*(
-4*x+3*(x+3/2)^2-19/4)^(5/2)-3879/400000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^
(5/2)-51309/2000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1590579/4000000
0/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+1487961/50000000*(6*x+5)*(-4*x+3*
(x+3/2)^2-19/4)^(3/2)-1487961/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(5/2
)-153927/40000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-153927/320000000*5^
(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-19/6400
/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+153927/320000000*(-16*x+12*(x+3/2)
^2-19)^(1/2)+51309/200000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-717/128000/(x+3/
2)^6*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.31, size = 394, normalized size = 1.98

$$\frac{4771737}{40000000}\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}-\frac{13\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}{40\,\left(256\,x^{8}+3072\,x^{7}+16128\,x^{6}+48384\,x^{5}+90720\,x^{4}+108864\,x^{3}+81648\,x^{2}+3\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 4771737/40000000*(3*x^2 + 5*x + 2)^(3/2) - 13/40*(3*x^2 + 5*x + 2)^(5/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 19/50*(3*x^2 + 5*x + 2)^(5/2)/(128*x^7 + 1344*x^6 +
 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 717/2000*
(3*x^2 + 5*x + 2)^(5/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
+ 2916*x + 729) - 3879/12500*(3*x^2 + 5*x + 2)^(5/2)/(32*x^5 + 240*x^4 + 72
0*x^3 + 1080*x^2 + 810*x + 243) - 51309/200000*(3*x^2 + 5*x + 2)^(5/2)/(16*
x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 51309/250000*(3*x^2 + 5*x + 2)^(5/2)
/(8*x^3 + 36*x^2 + 54*x + 27) - 1590579/10000000*(3*x^2 + 5*x + 2)^(5/2)/(4
*x^2 + 12*x + 9) - 461781/20000000*sqrt(3*x^2 + 5*x + 2)*x - 153927/3200000
00*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3
) - 2) - 2924613/160000000*sqrt(3*x^2 + 5*x + 2) - 1487961/10000000*(3*x^2
+ 5*x + 2)^(3/2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^{2}+5x+2}}{512x^{9}+6912x^{8}+41472x^{7}+145152x^{6}+326592x^{5}+489888x^{4}+489888x^{3}+314928x^{2}+118098x+19}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x*
*8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3
14928*x**2 + 118098*x + 19683), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x +
2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*
x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(3*x**3*
sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 3
26592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x
)
```

3.2432 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{5/2}\, dx$

Optimal. Leaf size=206

$$-\frac{1}{33}\left(3x^2+5x+2\right)^{7/2}(2x+3)^4+\frac{41}{110}\left(3x^2+5x+2\right)^{7/2}(2x+3)^3+\frac{3298\left(3x^2+5x+2\right)^{7/2}(2x+3)^2}{4455}+(3365726x+$$

```
[Out] -249299/4478976*(5+6*x)*(3*x^2+5*x+2)^(3/2)+249299/466560*(5+6*x)*(3*x^2+5*
x+2)^(5/2)+3298/4455*(3+2*x)^2*(3*x^2+5*x+2)^(7/2)+41/110*(3+2*x)^3*(3*x^2+
5*x+2)^(7/2)-1/33*(3+2*x)^4*(3*x^2+5*x+2)^(7/2)+1/1496880*(7405817+3365726*
x)*(3*x^2+5*x+2)^(7/2)-249299/214990848*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+
5*x+2)^(1/2))*3^(1/2)+249299/35831808*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 206, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{33}\left(3x^2+5x+2\right)^{7/2}(2x+3)^4+\frac{41}{110}\left(3x^2+5x+2\right)^{7/2}(2x+3)^3+\frac{3298\left(3x^2+5x+2\right)^{7/2}(2x+3)^2}{4455}+(3365726x+$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (249299*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/35831808 - (249299*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/4478976 + (249299*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/46
6560 + (3298*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/4455 + (41*(3 + 2*x)^3*(2
 + 5*x + 3*x^2)^(7/2))/110 - ((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2))/33 + ((7
405817 + 3365726*x)*(2 + 5*x + 3*x^2)^(7/2))/1496880 - (249299*ArcTanh[(5 +
 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(71663616*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{5/2} dx = -\frac{1}{33}(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} + \frac{1}{33}\int (3+2x)^3 \left(\frac{1127}{2}+369x\right)(2$$

$$= \frac{41}{110}(3+2x)^3 \left(2+5x+3x^2\right)^{7/2} - \frac{1}{33}(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} + \frac{}{9}$$

$$= \frac{3298(3+2x)^2 \left(2+5x+3x^2\right)^{7/2}}{4455} + \frac{41}{110}(3+2x)^3 \left(2+5x+3x^2\right)^{7/2} -$$

$$= \frac{3298(3+2x)^2 \left(2+5x+3x^2\right)^{7/2}}{4455} + \frac{41}{110}(3+2x)^3 \left(2+5x+3x^2\right)^{7/2} -$$

$$= \frac{249299(5+6x) \left(2+5x+3x^2\right)^{5/2}}{466560} + \frac{3298(3+2x)^2 \left(2+5x+3x^2\right)^{7/}}{4455}$$

$$= -\frac{249299(5+6x) \left(2+5x+3x^2\right)^{3/2}}{4478976} + \frac{249299(5+6x) (2+5x+3x}{466560}$$

$$= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808} - \frac{249299(5+6x) \left(2+5x+3x^2\right)^{3/2}}{4478976}$$

$$= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808} - \frac{249299(5+6x) \left(2+5x+3x^2\right)^{3/2}}{4478976}$$

$$= \frac{249299(5+6x)\sqrt{2+5x+3x^2}}{35831808} - \frac{249299(5+6x) \left(2+5x+3x^2\right)^{3/2}}{4478976}$$

Mathematica [A] time = 0.07, size = 102, normalized size = 0.50

$$\underline{-95980115\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\,(180592312320x^{10} + 875872714752x^9 - 1932170526}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-2261297826735 - 19521700361210*x - 730698600565
20*x^2 - 155155370878800*x^3 - 204855126595200*x^4 - 172473366866688*x^5 -
90095929758720*x^6 - 25759323039744*x^7 - 1932170526720*x^8 + 875872714752*
x^9 + 180592312320*x^10) - 95980115*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 1
5*x + 9*x^2])])/82771476480
```

fricas [A] time = 0.64, size = 103, normalized size = 0.50

$$-\frac{1}{13795246080}\,(180592312320\,x^{10} + 875872714752\,x^9 - 1932170526720\,x^8 - 25759323039744\,x^7 - 900959$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/13795246080*(180592312320*x^10 + 875872714752*x^9 - 1932170526720*x^8 -
25759323039744*x^7 - 90095929758720*x^6 - 172473366866688*x^5 - 20485512659
5200*x^4 - 155155370878800*x^3 - 73069860056520*x^2 - 19521700361210*x - 22
61297826735)*sqrt(3*x^2 + 5*x + 2) + 249299/429981696*sqrt(3)*log(-4*sqrt(3
)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 99, normalized size = 0.48

$$-\frac{1}{13795246080}\,(2\,(12\,(6\,(8\,(6\,(36\,(14\,(48\,(54\,(20\,x+97)x-11555)x-7394353)x-362075335)x-24952744049$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/13795246080*(2*(12*(6*(8*(6*(36*(14*(48*(54*(20*x + 97)*x - 11555)*x - 7
394353)*x - 362075335)*x - 24952744049)*x - 177825630725)*x - 1077467853325
)*x - 3044577502355)*x - 9760850180605)*x - 2261297826735)*sqrt(3*x^2 + 5*x
 + 2) + 249299/214990848*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 168, normalized size = 0.82

$$-\frac{16\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{4}}{33}+\frac{4\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{3}}{55}+\frac{8762\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{2}}{891}+\frac{2642401\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x}{106920}-249299\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -16/33*x^4*(3*x^2+5*x+2)^(7/2)+4/55*x^3*(3*x^2+5*x+2)^(7/2)+8762/891*x^2*(3
*x^2+5*x+2)^(7/2)+2642401/106920*x*(3*x^2+5*x+2)^(7/2)-249299/214990848*3^(
1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+249299/35831808*(6*x+5)*
(3*x^2+5*x+2)^(1/2)-249299/4478976*(6*x+5)*(3*x^2+5*x+2)^(3/2)+249299/46656
0*(6*x+5)*(3*x^2+5*x+2)^(5/2)+5753773/299376*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.32, size = 196, normalized size = 0.95

$$-\frac{16}{33}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{4}+\frac{4}{55}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{3}+\frac{8762}{891}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{2}+\frac{2642401}{106920}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{57537}{2993}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/33*(3*x^2 + 5*x + 2)^(7/2)*x^4 + 4/55*(3*x^2 + 5*x + 2)^(7/2)*x^3 + 876
2/891*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 2642401/106920*(3*x^2 + 5*x + 2)^(7/2)*
x + 5753773/299376*(3*x^2 + 5*x + 2)^(7/2) + 249299/77760*(3*x^2 + 5*x + 2)
^(5/2)*x + 249299/93312*(3*x^2 + 5*x + 2)^(5/2) - 249299/746496*(3*x^2 + 5*
x + 2)^(3/2)*x - 1246495/4478976*(3*x^2 + 5*x + 2)^(3/2) + 249299/5971968*s
qrt(3*x^2 + 5*x + 2)*x - 249299/214990848*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2
+ 5*x + 2) + 6*x + 5) + 1246495/35831808*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^{4}\,\left(x-5\right)\,\left(3\,x^{2}+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-12096x\sqrt{3x^2+5x+2}\right) dx - \int \left(-38421x^2\sqrt{3x^2+5x+2}\right) dx - \int \left(-67449x^3\sqrt{3x^2+5x+2}\right) dx - \int \Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-12096*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-38421*x**2*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-67449*x**3*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-70799*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-44295*x**5*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-14784*x**6*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-1304*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(624*x**8*sqrt(3*x**
2 + 5*x + 2), x) - Integral(144*x**9*sqrt(3*x**2 + 5*x + 2), x) - Integral(
-1620*sqrt(3*x**2 + 5*x + 2), x)
```

3.2433 $\int (5-x)(3+2x)^3 \left(2+5x+3x^2\right)^{5/2} \, dx$

Optimal. Leaf size=181

$$-\frac{1}{30}(2x+3)^3\left(3x^2+5x+2\right)^{7/2}+\frac{169}{405}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(213878x+477101)\left(3x^2+5x+2\right)^{7/2}}{136080}+\frac{182917(6}{}$$

```
[Out] -182917/4478976*(5+6*x)*(3*x^2+5*x+2)^(3/2)+182917/466560*(5+6*x)*(3*x^2+5*
x+2)^(5/2)+169/405*(3+2*x)^2*(3*x^2+5*x+2)^(7/2)-1/30*(3+2*x)^3*(3*x^2+5*x+
2)^(7/2)+1/136080*(477101+213878*x)*(3*x^2+5*x+2)^(7/2)-182917/214990848*ar
ctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+182917/35831808*(5+6
*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [**A**] time = 0.10, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = $\{832, 779, 612, 621, 206\}$

$$-\frac{1}{30}(2x+3)^3\left(3x^2+5x+2\right)^{7/2}+\frac{169}{405}(2x+3)^2\left(3x^2+5x+2\right)^{7/2}+\frac{(213878x+477101)\left(3x^2+5x+2\right)^{7/2}}{136080}+\frac{182917(6}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (182917*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/35831808 - (182917*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/4478976 + (182917*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/46
6560 + (169*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/405 - ((3 + 2*x)^3*(2 + 5*
x + 3*x^2)^(7/2))/30 + ((477101 + 213878*x)*(2 + 5*x + 3*x^2)^(7/2))/136080
 - (182917*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(71663616*
Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{5/2}\,dx &= -\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+\frac{1}{30}\int (3+2x)^2\left(\frac{1029}{2}+338x\right)\\
&= \frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+\\
&= \frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}-\frac{1}{30}(3+2x)^3\left(2+5x+3x^2\right)^{7/2}+\\
&= \frac{182917(5+6x)\left(2+5x+3x^2\right)^{5/2}}{466560}+\frac{169}{405}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}\\
&= -\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}+\frac{182917(5+6x)\left(2+5x+3x^2\right.}{466560}\\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}\\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}\\
&= \frac{182917(5+6x)\sqrt{2+5x+3x^2}}{35831808}-\frac{182917(5+6x)\left(2+5x+3x^2\right)^{3/2}}{4478976}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 97, normalized size = 0.54

$$-6402095\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(9029615616x^9+29262643200x^8-147947046912x^7\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-73178684475 - 585749416130*x - 1995914277480*x^
2 - 3762746217360*x^3 - 4253933381760*x^4 - 2893044950784*x^5 - 10866879129
60*x^6 - 147947046912*x^7 + 29262643200*x^8 + 9029615616*x^9) - 6402095*Sqr
t[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/7524679680
```

fricas [A] time = 0.64, size = 98, normalized size = 0.54

$$-\frac{1}{1254113280}\left(9029615616\,x^9+29262643200\,x^8-147947046912\,x^7-1086687912960\,x^6-2893044950784\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/1254113280*(9029615616*x^9 + 29262643200*x^8 - 147947046912*x^7 - 108668
7912960*x^6 - 2893044950784*x^5 - 4253933381760*x^4 - 3762746217360*x^3 - 1
995914277480*x^2 - 585749416130*x - 73178684475)*sqrt(3*x^2 + 5*x + 2) + 18
2917/429981696*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*
x^2 + 120*x + 49)
```

giac [A] time = 0.24, size = 94, normalized size = 0.52

$$-\frac{1}{1254113280}(2(12(6(8(6(36(14(48(54x+175)x-42469)x-4367155)x-418553957)x-3692650505)x-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/1254113280*(2*(12*(6*(8*(6*(36*(14*(48*(54*x + 175)*x - 42469)*x - 43671
55)*x - 418553957)*x - 3692650505)*x - 26130182065)*x - 83163094895)*x - 29
2874708065)*x - 73178684475)*sqrt(3*x^2 + 5*x + 2) + 182917/214990848*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 151, normalized size = 0.83

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{7}{2}}x^3}{15}+\frac{38\left(3x^2+5x+2\right)^{\frac{7}{2}}x^2}{81}+\frac{46453\left(3x^2+5x+2\right)^{\frac{7}{2}}x}{9720}-\frac{182917\sqrt{3}\ \ln\Bigg(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x}}{214990848}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -4/15*(3*x^2+5*x+2)^(7/2)*x^3+38/81*(3*x^2+5*x+2)^(7/2)*x^2+46453/9720*(3*x
^2+5*x+2)^(7/2)*x-182917/214990848*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+
5*x+2)^(1/2))+182917/35831808*(6*x+5)*(3*x^2+5*x+2)^(1/2)-182917/4478976*(6
*x+5)*(3*x^2+5*x+2)^(3/2)+182917/466560*(6*x+5)*(3*x^2+5*x+2)^(5/2)+173137/
27216*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.20, size = 179, normalized size = 0.99

$$-\frac{4}{15}\left(3x^2+5x+2\right)^{\frac{7}{2}}x^3+\frac{38}{81}\left(3x^2+5x+2\right)^{\frac{7}{2}}x^2+\frac{46453}{9720}\left(3x^2+5x+2\right)^{\frac{7}{2}}x+\frac{173137}{27216}\left(3x^2+5x+2\right)^{\frac{7}{2}}+\frac{182917}{77760}\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/15*(3*x^2 + 5*x + 2)^(7/2)*x^3 + 38/81*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 464
53/9720*(3*x^2 + 5*x + 2)^(7/2)*x + 173137/27216*(3*x^2 + 5*x + 2)^(7/2) +
182917/77760*(3*x^2 + 5*x + 2)^(5/2)*x + 182917/93312*(3*x^2 + 5*x + 2)^(5/
2) - 182917/746496*(3*x^2 + 5*x + 2)^(3/2)*x - 914585/4478976*(3*x^2 + 5*x
+ 2)^(3/2) + 182917/5971968*sqrt(3*x^2 + 5*x + 2)*x - 182917/214990848*sqrt
(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 914585/35831808*sqrt(3
*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2x+3)^3\,(x-5)\,\left(3x^2+5x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-3672x\sqrt{3x^2+5x+2}\right)dx-\int\left(-10359x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-15577x^3\sqrt{3x^2+5x+2}\right)dx-\int\bigg(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-3672*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10359*x**2*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-15577*x**3*sqrt(3*x**2 + 5*x + 2), x) - Int
egral(-13215*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-5955*x**5*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-958*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integr
al(204*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(72*x**8*sqrt(3*x**2 + 5*x
 + 2), x) - Integral(-540*sqrt(3*x**2 + 5*x + 2), x)
```

3.2434 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{5/2} dx$

Optimal. Leaf size=156

$$-\frac{1}{27}(2x+3)^2 \left(3x^2+5x+2\right)^{7/2}+\frac{(4298x+10211)\left(3x^2+5x+2\right)^{7/2}}{4536}+\frac{4507(6x+5)\left(3x^2+5x+2\right)^{5/2}}{15552}-\frac{22535(6x+}{}$$

```
[Out] -22535/746496*(5+6*x)*(3*x^2+5*x+2)^(3/2)+4507/15552*(5+6*x)*(3*x^2+5*x+2)^
(5/2)-1/27*(3+2*x)^2*(3*x^2+5*x+2)^(7/2)+1/4536*(10211+4298*x)*(3*x^2+5*x+2
)^(7/2)-22535/35831808*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(
1/2)+22535/5971968*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 156, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{27}(2x+3)^2 \left(3x^2+5x+2\right)^{7/2}+\frac{(4298x+10211)\left(3x^2+5x+2\right)^{7/2}}{4536}+\frac{4507(6x+5)\left(3x^2+5x+2\right)^{5/2}}{15552}-\frac{22535(6x+}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (22535*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5971968 - (22535*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/746496 + (4507*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/15552 -
((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2))/27 + ((10211 + 4298*x)*(2 + 5*x + 3*x
^2)^(7/2))/4536 - (22535*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]
)])/(11943936*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{5/2}\,dx = -\frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}+\frac{1}{27}\int (3+2x)\left(\frac{931}{2}+307x\right)\left(2+\right.$$

$$= -\frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}+\frac{(10211+4298x)\left(2+5x+3x^2\right)^{7}}{4536}$$

$$= \frac{4507(5+6x)\left(2+5x+3x^2\right)^{5/2}}{15552}-\frac{1}{27}(3+2x)^2\left(2+5x+3x^2\right)^{7/2}+$$

$$= -\frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496}+\frac{4507(5+6x)\left(2+5x+3x^2\right)^{5/2}}{15552}$$

$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968}-\frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496}+$$

$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968}-\frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496}+$$

$$= \frac{22535(5+6x)\sqrt{2+5x+3x^2}}{5971968}-\frac{22535(5+6x)\left(2+5x+3x^2\right)^{3/2}}{746496}+$$

Mathematica [A] time = 0.05, size = 92, normalized size = 0.59

$$\frac{-157745\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(167215104x^8+268240896x^7-3275873280x^6-1545\right.}{250822656}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-871825317 - 6434937470*x - 19762157208*x^2 - 32
476001904*x^3 - 30355761024*x^4 - 15455860992*x^5 - 3275873280*x^6 + 268240
896*x^7 + 167215104*x^8) - 157745*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*
x + 9*x^2])])/250822656
```

fricas [A] time = 0.58, size = 93, normalized size = 0.60

$$-\frac{1}{41803776}\left(167215104\,x^8+268240896\,x^7-3275873280\,x^6-15455860992\,x^5-30355761024\,x^4-3247600\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/41803776*(167215104*x^8 + 268240896*x^7 - 3275873280*x^6 - 15455860992*x
^5 - 30355761024*x^4 - 32476001904*x^3 - 19762157208*x^2 - 6434937470*x - 8
71825317)*sqrt(3*x^2 + 5*x + 2) + 22535/71663616*sqrt(3)*log(-4*sqrt(3)*sqr
t(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.44, size = 89, normalized size = 0.57

$$-\frac{1}{41803776}\left(2\left(12\left(6\left(8\left(6\left(36\left(14\left(48\,x+77\right)x-13165\right)x-2236091\right)x-26350487\right)x-225527791\right)x-82342321$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/41803776*(2*(12*(6*(8*(6*(36*(14*(48*x + 77)*x - 13165)*x - 2236091)*x -
 26350487)*x - 225527791)*x - 823423217)*x - 3217468735)*x - 871825317)*sqr
t(3*x^2 + 5*x + 2) + 22535/35831808*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 134, normalized size = 0.86

$$-\frac{4\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x^{2}}{27}+\frac{163\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x}{324}-\frac{22535\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^{2}+5x+2}\right)}{35831808}+\frac{8699\left(3x^{2}+5x+2\right)}{4536}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -4/27*(3*x^2+5*x+2)^(7/2)*x^2+163/324*(3*x^2+5*x+2)^(7/2)*x+8699/4536*(3*x^
2+5*x+2)^(7/2)+4507/15552*(6*x+5)*(3*x^2+5*x+2)^(5/2)-22535/746496*(6*x+5)*
(3*x^2+5*x+2)^(3/2)+22535/5971968*(6*x+5)*(3*x^2+5*x+2)^(1/2)-22535/3583180
8*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.30, size = 162, normalized size = 1.04

$$-\frac{4}{27}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x^{2}+\frac{163}{324}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}x+\frac{8699}{4536}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}+\frac{4507}{2592}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x+\frac{22535}{15552}\left(3\,x^{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4/27*(3*x^2 + 5*x + 2)^(7/2)*x^2 + 163/324*(3*x^2 + 5*x + 2)^(7/2)*x + 869
9/4536*(3*x^2 + 5*x + 2)^(7/2) + 4507/2592*(3*x^2 + 5*x + 2)^(5/2)*x + 2253
5/15552*(3*x^2 + 5*x + 2)^(5/2) - 22535/124416*(3*x^2 + 5*x + 2)^(3/2)*x -
112675/746496*(3*x^2 + 5*x + 2)^(3/2) + 22535/995328*sqrt(3*x^2 + 5*x + 2)*
x - 22535/35831808*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) +
 112675/5971968*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^2\,\left(x-5\right)\,{\left(3\,x^2+5\,x+2\right)}^{5/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-1104x\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-2717x^{2}\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-3381x^{3}\sqrt{3x^{2}+5x+2}\right)dx-\int\left(-2151x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-1104*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-2717*x**2*sqrt(3*x
**2 + 5*x + 2), x) - Integral(-3381*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integ
ral(-2151*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-551*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(48*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(36*
x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-180*sqrt(3*x**2 + 5*x + 2), x)
```

3.2435 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=131

$$\frac{1}{168}(71-14x)\left(3x^2+5x+2\right)^{7/2}+\frac{373(6x+5)\left(3x^2+5x+2\right)^{5/2}}{1728}-\frac{1865(6x+5)\left(3x^2+5x+2\right)^{3/2}}{82944}+\frac{1865(6x+5)\sqrt{}}{6635}$$

```
[Out] -1865/82944*(5+6*x)*(3*x^2+5*x+2)^(3/2)+373/1728*(5+6*x)*(3*x^2+5*x+2)^(5/2
)+1/168*(71-14*x)*(3*x^2+5*x+2)^(7/2)-1865/3981312*arctanh(1/6*(5+6*x)*3^(1
/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+1865/663552*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 131, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = $\{779, 612, 621, 206\}$

$$\frac{1}{168}(71-14x)\left(3x^2+5x+2\right)^{7/2}+\frac{373(6x+5)\left(3x^2+5x+2\right)^{5/2}}{1728}-\frac{1865(6x+5)\left(3x^2+5x+2\right)^{3/2}}{82944}+\frac{1865(6x+5)\sqrt{}}{6635}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (1865*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/663552 - (1865*(5 + 6*x)*(2 + 5*x +
3*x^2)^(3/2))/82944 + (373*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/1728 + ((71 -
 14*x)*(2 + 5*x + 3*x^2)^(7/2))/168 - (1865*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/(1327104*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{5/2}\,dx = \frac{1}{168}(71-14x)\left(2+5x+3x^2\right)^{7/2} + \frac{373}{48}\int \left(2+5x+3x^2\right)^{5/2}\,dx$$

$$= \frac{373(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1728} + \frac{1}{168}(71-14x)\left(2+5x+3x^2\right)^{7/2} -$$

$$= -\frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + \frac{373(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1728} +$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + 37$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + 37$$

$$= \frac{1865(5+6x)\sqrt{2+5x+3x^2}}{663552} - \frac{1865(5+6x)\left(2+5x+3x^2\right)^{3/2}}{82944} + 37$$

Mathematica [**A**] time = 0.08, size = 101, normalized size = 0.77

$$\frac{373\left(6\sqrt{3x^2+5x+2}\left(20736x^5+86400x^4+142128x^3+115320x^2+46166x+7305\right)-5\sqrt{3}\tanh^{-1}\left(\frac{6x+}{2\sqrt{9x^2+1}}\right.\right.}{3981312}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/168*((-71 + 14*x)*(2 + 5*x + 3*x^2)^(7/2)) + (373*(6*Sqrt[2 + 5*x + 3*x^
2]*(7305 + 46166*x + 115320*x^2 + 142128*x^3 + 86400*x^4 + 20736*x^5) - 5*S
qrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/3981312
```

fricas [**A**] time = 0.70, size = 88, normalized size = 0.67

$$-\frac{1}{4644864}\left(10450944\,x^7-746496\,x^6-211154688\,x^5-655212672\,x^4-897818256\,x^3-642995688\,x^2-2352\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/4644864*(10450944*x^7 - 746496*x^6 - 211154688*x^5 - 655212672*x^4 - 897
818256*x^3 - 642995688*x^2 - 235223330*x - 34777419)*sqrt(3*x^2 + 5*x + 2)
+ 1865/7962624*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*
x^2 + 120*x + 49)
```

giac [**A**] time = 0.22, size = 84, normalized size = 0.64

$$-\frac{1}{4644864}\,(2\,(12\,(18\,(8\,(6\,(36\,(14\,x-1)x-10183)x-189587)x-2078283)x-26791487)x-117611665)x-3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/4644864*(2*(12*(18*(8*(6*(36*(14*x - 1)*x - 10183)*x - 189587)*x - 20782
83)*x - 26791487)*x - 117611665)*x - 34777419)*sqrt(3*x^2 + 5*x + 2) + 1865
/3981312*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5
))
```

maple [A] time = 0.05, size = 117, normalized size = 0.89

$$-\frac{\left(3x^2+5x+2\right)^{\frac{7}{2}} x}{12}-\frac{1865\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{3981312}+\frac{71\left(3x^2+5x+2\right)^{\frac{7}{2}}}{168}+\frac{373\left(6x+5\right)\left(3x^2+5x+2\right.}{1728}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -1/12*(3*x^2+5*x+2)^(7/2)*x+71/168*(3*x^2+5*x+2)^(7/2)+373/1728*(6*x+5)*(3*
x^2+5*x+2)^(5/2)-1865/82944*(6*x+5)*(3*x^2+5*x+2)^(3/2)+1865/663552*(6*x+5)
*(3*x^2+5*x+2)^(1/2)-1865/3981312*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5
*x+2)^(1/2))
```

maxima [A] time = 1.26, size = 145, normalized size = 1.11

$$-\frac{1}{12}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{71}{168}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}+\frac{373}{288}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{1865}{1728}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{1865}{13824}\left(3\,x^2+5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(7/2)*x + 71/168*(3*x^2 + 5*x + 2)^(7/2) + 373/288*
(3*x^2 + 5*x + 2)^(5/2)*x + 1865/1728*(3*x^2 + 5*x + 2)^(5/2) - 1865/13824*
(3*x^2 + 5*x + 2)^(3/2)*x - 9325/82944*(3*x^2 + 5*x + 2)^(3/2) + 1865/11059
2*sqrt(3*x^2 + 5*x + 2)*x - 1865/3981312*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 +
 5*x + 2) + 6*x + 5) + 9325/663552*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-328x\sqrt{3x^2+5x+2}\right)dx-\int\left(-687x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-669x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-271x^4\sqrt{3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-328*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-687*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-669*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral
(-271*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3*x**5*sqrt(3*x**2 + 5*x
+ 2), x) - Integral(18*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(-60*sqrt(
3*x**2 + 5*x + 2), x)
```

3.2436 $\int (5-x)\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=126

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2}+\frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2}-\frac{175(6x+5)\left(3x^2+5x+2\right)^{3/2}}{10368}+\frac{175(6x+5)\sqrt{3x^2+5x+}}{82944}$$

```
[Out] -175/10368*(5+6*x)*(3*x^2+5*x+2)^(3/2)+35/216*(5+6*x)*(3*x^2+5*x+2)^(5/2)-1
/21*(3*x^2+5*x+2)^(7/2)-175/497664*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2
)^(1/2))*3^(1/2)+175/82944*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.200$, Rules used = $\{640, 612, 621, 206\}$

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2}+\frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2}-\frac{175(6x+5)\left(3x^2+5x+2\right)^{3/2}}{10368}+\frac{175(6x+5)\sqrt{3x^2+5x+}}{82944}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (175*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/82944 - (175*(5 + 6*x)*(2 + 5*x + 3*x
^2)^(3/2))/10368 + (35*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/216 - (2 + 5*x +
3*x^2)^(7/2)/21 - (175*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(165888*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int (5-x)\left(2+5x+3x^2\right)^{5/2}\,dx &= -\frac{1}{21}\left(2+5x+3x^2\right)^{7/2}+\frac{35}{6}\int \left(2+5x+3x^2\right)^{5/2}\,dx\\ &= \frac{35}{216}(5+6x)\left(2+5x+3x^2\right)^{5/2}-\frac{1}{21}\left(2+5x+3x^2\right)^{7/2}-\frac{175}{432}\int \bigl(2+5x+3x^2\bigr)^{3/}\\ &= -\frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368}+\frac{35}{216}(5+6x)\left(2+5x+3x^2\right)^{5/2}-\frac{1}{21}\bigl(2+5x+\\ &= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944}-\frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368}+\frac{35}{216}(5+6x)\bigl(2+\\ &= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944}-\frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368}+\frac{35}{216}(5+6x)\bigl(2+\\ &= \frac{175(5+6x)\sqrt{2+5x+3x^2}}{82944}-\frac{175(5+6x)\left(2+5x+3x^2\right)^{3/2}}{10368}+\frac{35}{216}(5+6x)\bigl(2+\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 108, normalized size = 0.86

$$-\frac{1}{21}\left(3x^2+5x+2\right)^{7/2}+\frac{35}{216}(6x+5)\left(3x^2+5x+2\right)^{5/2}-\frac{175\Bigl(\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\,\bigl(144x^3+}{497664}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (35*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/216 - (2 + 5*x + 3*x^2)^(7/2)/21 - (
175*(6*Sqrt[2 + 5*x + 3*x^2]*(75 + 290*x + 360*x^2 + 144*x^3) + Sqrt[3]*Arc
Tanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/497664
```

fricas [**A**] time = 0.74, size = 83, normalized size = 0.66

$$-\frac{1}{580608}\left(746496\,x^6-1347840\,x^5-13454208\,x^4-26388720\,x^3-23110872\,x^2-9651790\,x-1568541\right)\sqrt{3\,x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/580608*(746496*x^6 - 1347840*x^5 - 13454208*x^4 - 26388720*x^3 - 2311087
2*x^2 - 9651790*x - 1568541)*sqrt(3*x^2 + 5*x + 2) + 175/995328*sqrt(3)*log
(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [**A**] time = 0.23, size = 79, normalized size = 0.63

$$-\frac{1}{580608}\,(2\,(12\,(18\,(8\,(6\,(36\,x-65)x-3893)x-61085)x-962953)x-4825895)x-1568541)\sqrt{3\,x^2+5\,x+2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -1/580608*(2*(12*(18*(8*(6*(36*x - 65)*x - 3893)*x - 61085)*x - 962953)*x -
 4825895)*x - 1568541)*sqrt(3*x^2 + 5*x + 2) + 175/497664*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [**A**] time = 0.04, size = 102, normalized size = 0.81

$$-\frac{175\sqrt{3}\;\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{497664}+\frac{35\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{216}-\frac{175\,(6x+5)\left(3x^2+5x+2\right)^{\frac{3}{2}}}{10368}+\frac{175\,(6x+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 35/216*(6*x+5)*(3*x^2+5*x+2)^(5/2)-175/10368*(6*x+5)*(3*x^2+5*x+2)^(3/2)+17
5/82944*(6*x+5)*(3*x^2+5*x+2)^(1/2)-175/497664*3^(1/2)*ln(1/3*(3*x+5/2)*3^(
1/2)+(3*x^2+5*x+2)^(1/2))-1/21*(3*x^2+5*x+2)^(7/2)
```

maxima [A] time = 1.21, size = 130, normalized size = 1.03

$$-\frac{1}{21}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}+\frac{35}{36}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x+\frac{175}{216}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{175}{1728}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{875}{10368}\left(3\,x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/21*(3*x^2 + 5*x + 2)^(7/2) + 35/36*(3*x^2 + 5*x + 2)^(5/2)*x + 175/216*(
3*x^2 + 5*x + 2)^(5/2) - 175/1728*(3*x^2 + 5*x + 2)^(3/2)*x - 875/10368*(3*
x^2 + 5*x + 2)^(3/2) + 175/13824*sqrt(3*x^2 + 5*x + 2)*x - 175/497664*sqrt(
3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 875/82944*sqrt(3*x^2 +
5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -\left(x-5\right)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] int(-(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-96x\sqrt{3x^2+5x+2}\right)dx-\int\left(-165x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-113x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-15x^4\sqrt{3\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-96*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-165*x**2*sqrt(3*x**2
 + 5*x + 2), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integral(
-15*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2
), x) - Integral(-20*sqrt(3*x**2 + 5*x + 2), x)
```

3.2437 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx$

Optimal. Leaf size=146

$$\frac{1}{360}(209-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{(25-5586x)\left(3x^2+5x+2\right)^{3/2}}{3456}+\frac{(51455-106734x)\sqrt{3x^2+5x+2}}{27648}-\frac{543811\ \mathrm{ta}}{}$$

```
[Out] 1/3456*(25-5586*x)*(3*x^2+5*x+2)^(3/2)+1/360*(209-30*x)*(3*x^2+5*x+2)^(5/2)
-543811/165888*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+325
/128*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+1/27648*(514
55-106734*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 146, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{360}(209-30x)\left(3x^2+5x+2\right)^{5/2}+\frac{(25-5586x)\left(3x^2+5x+2\right)^{3/2}}{3456}+\frac{(51455-106734x)\sqrt{3x^2+5x+2}}{27648}-\frac{543811\ \mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] ((51455 - 106734*x)*Sqrt[2 + 5*x + 3*x^2])/27648 + ((25 - 5586*x)*(2 + 5*x
+ 3*x^2)^(3/2))/3456 + ((209 - 30*x)*(2 + 5*x + 3*x^2)^(5/2))/360 - (543811
*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(55296*Sqrt[3]) + (3
25*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx &= \frac{1}{360}(209-30x)\left(2+5x+3x^2\right)^{5/2}-\frac{1}{144}\int \frac{(1623+1862x)\left(2+5x+3x^2\right)^{3/}}{3+2x} \\
&= \frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456}+\frac{1}{360}(209-30x)\left(2+5x+3x^2\right)^{5/2}+\int \frac{(-1}{} \\
&= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648}+\frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456}+\frac{1}{360}(\\
&= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648}+\frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456}+\frac{1}{360}(\\
&= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648}+\frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456}+\frac{1}{360}(\\
&= \frac{(51455-106734x)\sqrt{2+5x+3x^2}}{27648}+\frac{(25-5586x)\left(2+5x+3x^2\right)^{3/2}}{3456}+\frac{1}{360}(
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 113, normalized size = 0.77

$$
\frac{-2106000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-2719055\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\left(103680x^5-37\right.}{829440}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-580299 - 583490*x - 1624872*x^2 - 1311120*x^3 -
 376704*x^4 + 103680*x^5) - 2106000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*S
qrt[2 + 5*x + 3*x^2])] - 2719055*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x
 + 9*x^2])])/829440
```

fricas [A] time = 0.77, size = 129, normalized size = 0.88

$$
-\frac{1}{138240}\left(103680\,x^5-376704\,x^4-1311120\,x^3-1624872\,x^2-583490\,x-580299\right)\sqrt{3\,x^2+5\,x+2}+\frac{543811}{331776}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/138240*(103680*x^5 - 376704*x^4 - 1311120*x^3 - 1624872*x^2 - 583490*x -
 580299)*sqrt(3*x^2 + 5*x + 2) + 543811/331776*sqrt(3)*log(-4*sqrt(3)*sqrt(
3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 325/256*sqrt(5)*log((4*
sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12
*x + 9))
```

giac [A] time = 0.33, size = 146, normalized size = 1.00

$$-\frac{1}{138240}\left(2\left(12\left(18\left(8\left(30x-109\right)x-3035\right)x-67703\right)x-291745\right)x-580299\right)\sqrt{3x^2+5x+2}+\frac{325}{128}\sqrt{5}\log\left(\frac{|-}{|-}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/138240*(2*(12*(18*(8*(30*x - 109)*x - 3035)*x - 67703)*x - 291745)*x - 5
80299)*sqrt(3*x^2 + 5*x + 2) + 325/128*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqr
t(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) -
6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 543811/165888*sqrt(3)*log(abs(-6*sq
rt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x + 2)))
```

maple [B] time = 0.04, size = 239, normalized size = 1.64

$$-\frac{325\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{128}-\frac{7553\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{2304}+\frac{5\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}\right.}{165}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3),x)
```

```
[Out] -1/72*(6*x+5)*(3*x^2+5*x+2)^(5/2)+5/3456*(6*x+5)*(3*x^2+5*x+2)^(3/2)-5/2764
8*(6*x+5)*(3*x^2+5*x+2)^(1/2)+5/165888*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*
x^2+5*x+2)^(1/2))+13/20*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/48*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-247/384*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-7553/2
304*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+65/48*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+325/128*(-16*x+12*(x+3/2)^2-19)^(1/2)-325/128*
5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.23, size = 157, normalized size = 1.08

$$-\frac{1}{12}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{209}{360}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{931}{576}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{25}{3456}\left(3x^2+5x+2\right)^{\frac{3}{2}}-\frac{17789}{4608}\sqrt{3x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/12*(3*x^2 + 5*x + 2)^(5/2)*x + 209/360*(3*x^2 + 5*x + 2)^(5/2) - 931/576
*(3*x^2 + 5*x + 2)^(3/2)*x + 25/3456*(3*x^2 + 5*x + 2)^(3/2) - 17789/4608*s
qrt(3*x^2 + 5*x + 2)*x - 543811/165888*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 3*x + 5/2) - 325/128*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(
2*x + 3) + 5/2/abs(2*x + 3) - 2) + 51455/27648*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{113x^3\sqrt{3}}{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-96*x*sqrt(3*
x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(
2*x + 3), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - In
tegral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(9*x**5*sqrt
(3*x**2 + 5*x + 2)/(2*x + 3), x)
```

3.2438 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=151

$$-\frac{(x+34)\left(3x^2+5x+2\right)^{5/2}}{10(2x+3)}-\frac{1}{192}(65-1194x)\left(3x^2+5x+2\right)^{3/2}-\frac{1}{512}(3865-8082x)\sqrt{3x^2+5x+2}+\frac{41053\tanh^{-1}}{10}$$

```
[Out] -1/192*(65-1194*x)*(3*x^2+5*x+2)^(3/2)-1/10*(34+x)*(3*x^2+5*x+2)^(5/2)/(3+2
*x)+41053/3072*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-132
5/128*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-1/512*(3865
-8082*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 151, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+34)\left(3x^2+5x+2\right)^{5/2}}{10(2x+3)}-\frac{1}{192}(65-1194x)\left(3x^2+5x+2\right)^{3/2}-\frac{1}{512}(3865-8082x)\sqrt{3x^2+5x+2}+\frac{41053\tanh^{-1}}{10}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] -((3865 - 8082*x)*Sqrt[2 + 5*x + 3*x^2])/512 - ((65 - 1194*x)*(2 + 5*x + 3*
x^2)^(3/2))/192 - ((34 + x)*(2 + 5*x + 3*x^2)^(5/2))/(10*(3 + 2*x)) + (4105
3*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1024*Sqrt[3]) - (1
325*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/128
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx &= -\frac{(34+x)\left(2+5x+3x^2\right)^{5/2}}{10(3+2x)}-\frac{1}{8}\int \frac{(-332-398x)\left(2+5x+3x^2\right)^{3/2}}{3+2x}\,dx\\
&= -\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2}-\frac{(34+x)\left(2+5x+3x^2\right)^{5/2}}{10(3+2x)}+\frac{1}{768}\int\\
&= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2}-\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2}-\\
&= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2}-\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2}-\\
&= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2}-\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2}-\\
&= -\frac{1}{512}(3865-8082x)\sqrt{2+5x+3x^2}-\frac{1}{192}(65-1194x)\left(2+5x+3x^2\right)^{3/2}-
\end{aligned}
$$

Mathematica [**A**] time = 0.09, size = 120, normalized size = 0.79

$$
\frac{159000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+205265\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{2\sqrt{3x^2+5x+2}\left(6912x^5-28512x^4-80064x^3-1189\right.}{2x+3}}{15360}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-2*Sqrt[2 + 5*x + 3*x^2]*(293973 + 40412*x - 118996*x^2 - 80064*x^3 - 285
12*x^4 + 6912*x^5))/(3 + 2*x) + 159000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])] + 205265*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15
*x + 9*x^2])])/15360
```

fricas [A] time = 0.83, size = 149, normalized size = 0.99

$$\frac{205265\sqrt{3}\,(2x+3)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+159000\sqrt{5}\,(2x+3)\log(-\frac{4\sqrt{5}\sqrt{}}{}}{30720}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/30720*(205265*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
+ 5) + 72*x^2 + 120*x + 49) + 159000*sqrt(5)*(2*x + 3)*log(-(4*sqrt(5)*sqrt
(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 4
*(6912*x^5 - 28512*x^4 - 80064*x^3 - 118996*x^2 + 40412*x + 293973)*sqrt(3*
x^2 + 5*x + 2))/(2*x + 3)
```

giac [B] time = 1.17, size = 671, normalized size = 4.44

$$-\frac{41053}{3072}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)+\frac{1325}{128}\sqrt{5}\log(|\sqrt{5}(\sqrt{-\frac{8}{2x+3}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -41053/3072*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^
2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
+ 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 1325/128*sqrt(5)*log
(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) -
 4))*sgn(1/(2*x + 3)) - 325/128*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)*sgn(
1/(2*x + 3)) + 1/7680*(1304805*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sq
rt(5)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 2064120*sqrt(5)*(sqrt(-8/(2*x + 3) +
5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^8*sgn(1/(2*x + 3)) - 4382950*(sqrt(
-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^7*sgn(1/(2*x + 3)) +
 10490640*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x +
3))^6*sgn(1/(2*x + 3)) + 19083456*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
 sqrt(5)/(2*x + 3))^5*sgn(1/(2*x + 3)) - 33372000*sqrt(5)*(sqrt(-8/(2*x + 3
) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 42760170*(
sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x +
3)) + 60102000*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2
*x + 3))^2*sgn(1/(2*x + 3)) + 21448395*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + sqrt(5)/(2*x + 3))*sgn(1/(2*x + 3)) - 36498600*sqrt(5)*sgn(1/(2*x + 3
)))/((sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^5
```

maple [A] time = 0.06, size = 195, normalized size = 1.29

$$\frac{1325\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{128}+\frac{41053\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{3072}-\frac{13(-4x+3(x+}{10(x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-53/20*(-4*x+3*(x+3/2)^2-19/4)^
(5/2)+199/192*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1347/512*(6*x+5)*(-4*x+
3*(x+3/2)^2-19/4)^(1/2)+41053/3072*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3
*(x+3/2)^2-19/4)^(1/2))-265/48*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-1325/128*(-16*
x+12*(x+3/2)^2-19)^(1/2)+1325/128*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-
16*x+12*(x+3/2)^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.46, size = 163, normalized size = 1.08

$$-\frac{1}{20}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}+\frac{199}{32}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{65}{192}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}{4\,(2\,x+3)}+\frac{4041}{256}\,\sqrt{3\,x^2+5\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/20*(3*x^2 + 5*x + 2)^(5/2) + 199/32*(3*x^2 + 5*x + 2)^(3/2)*x - 65/192*(
3*x^2 + 5*x + 2)^(3/2) - 13/4*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 4041/256*
sqrt(3*x^2 + 5*x + 2)*x + 41053/3072*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 3*x + 5/2) + 1325/128*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2
*x + 3) + 5/2/abs(2*x + 3) - 2) - 3865/512*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{4x^2+12x+9}\right)dx-\int\left(-\frac{113x^3\sqrt{3}}{4x^2+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-96
*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-165*x**2*sqrt
(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-113*x**3*sqrt(3*x**2
 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x +
 2)/(4*x**2 + 12*x + 9), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(4*x**
2 + 12*x + 9), x)
```

3.2439 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=160

$$-\frac{(2x+29)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(164x+573)\left(3x^2+5x+2\right)^{3/2}}{192(2x+3)}+\frac{5(3763-7854x)\sqrt{3x^2+5x+2}}{1536}-\frac{199615\tanh^{-}}{30}$$

```
[Out] 5/192*(573+164*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)-1/16*(29+2*x)*(3*x^2+5*x+2)^(
5/2)/(3+2*x)^2-199615/9216*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))
*3^(1/2)+4295/256*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)
+5/1536*(3763-7854*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 160, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(2x+29)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^2}+\frac{5(164x+573)\left(3x^2+5x+2\right)^{3/2}}{192(2x+3)}+\frac{5(3763-7854x)\sqrt{3x^2+5x+2}}{1536}-\frac{199615\tanh^{-}}{30}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] (5*(3763 - 7854*x)*Sqrt[2 + 5*x + 3*x^2])/1536 + (5*(573 + 164*x)*(2 + 5*x
+ 3*x^2)^(3/2))/(192*(3 + 2*x)) - ((29 + 2*x)*(2 + 5*x + 3*x^2)^(5/2))/(16*
(3 + 2*x)^2) - (199615*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]
)/(3072*Sqrt[3]) + (4295*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/256
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx &= -\frac{(29+2x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^2}-\frac{5}{64}\int \frac{(-274-328x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^2}\,dx \\
&= \frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)}-\frac{(29+2x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^2}+\frac{5}{512}\int \frac{(-8}{} \\
&= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536}+\frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)}-\frac{(29+}{} \\
&= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536}+\frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)}-\frac{(29+}{} \\
&= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536}+\frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)}-\frac{(29+}{} \\
&= \frac{5(3763-7854x)\sqrt{2+5x+3x^2}}{1536}+\frac{5(573+164x)\left(2+5x+3x^2\right)^{3/2}}{192(3+2x)}-\frac{(29+}{}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 120, normalized size = 0.75

$$
\frac{-154620\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-199615\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(1728x^5-8544x^4-14456x^3-5729\right.}{(2x+3)^2}}{9216}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(-295719 - 290742*x - 57292*x^2 - 14456*x^3 - 85
44*x^4 + 1728*x^5))/(3 + 2*x)^2 - 154620*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])] - 199615*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/9216
```

fricas [**A**] time = 0.67, size = 163, normalized size = 1.02

$$\frac{199615\,\sqrt{3}\,\big(4\,x^2+12\,x+9\big)\log\big(-4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\big)+154620\,\sqrt{5}\,\big(4\,x^2+12\,x}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/18432*(199615*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x
+ 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 154620*sqrt(5)*(4*x^2 + 12*x + 9)*l
og((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^
2 + 12*x + 9)) - 12*(1728*x^5 - 8544*x^4 - 14456*x^3 - 57292*x^2 - 290742*x
 - 295719)*sqrt(3*x^2 + 5*x + 2))/(4*x^2 + 12*x + 9)
```

giac [**B**] time = 0.34, size = 269, normalized size = 1.68

$$-\frac{1}{1536}\,(2\,(12\,(18\,x-143)x+2855)x-23731)\sqrt{3\,x^2+5\,x+2}+\frac{4295}{256}\,\sqrt{5}\,\log\Bigg(\frac{\big|-4\,\sqrt{3}\,x-2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2}}{\big|-4\,\sqrt{3}\,x+2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/1536*(2*(12*(18*x - 143)*x + 2855)*x - 23731)*sqrt(3*x^2 + 5*x + 2) + 42
95/256*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 199615/9216*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2)) - 5)) + 5/128*(4214*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 15793*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 53551*sqrt(3)*x + 19053*sqrt
(3) - 53551*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2
 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [**A**] time = 0.06, size = 216, normalized size = 1.35

$$-\frac{4295\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{256}-\frac{199615\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{9216}-\frac{13\Big(-4x+3\Big(x}{40\Big(x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^3,x)
```

```
[Out] -13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+83/50/(x+3/2)*(-4*x+3*(x+3/2
)^2-19/4)^(7/2)+859/200*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-109/64*(6*x+5)*(-4*x+
3*(x+3/2)^2-19/4)^(3/2)-6545/1536*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-199
615/9216*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+85
9/96*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+4295/256*(-16*x+12*(x+3/2)^2-19)^(1/2)-4
295/256*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2
))-83/100*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [A] time = 1.33, size = 189, normalized size = 1.18

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{10\left(4x^2+12x+9\right)}-\frac{327}{32}\left(3x^2+5x+2\right)^{\frac{3}{2}}x+\frac{83}{192}\left(3x^2+5x+2\right)^{\frac{3}{2}}+\frac{83\left(3x^2+5x+2\right)}{20\left(2x+3\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(5/2) - 13/10*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x
 + 9) - 327/32*(3*x^2 + 5*x + 2)^(3/2)*x + 83/192*(3*x^2 + 5*x + 2)^(3/2) +
 83/20*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) - 6545/256*sqrt(3*x^2 + 5*x + 2)*x
 - 199615/9216*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 429
5/256*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
+ 3) - 2) + 18815/1536*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-96*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x)
 - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27)
, x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x +
27), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x +
 27), x)
```

3.2440 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=165

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(43x+93)\left(3x^2+5x+2\right)^{3/2}}{48(2x+3)^2}-\frac{5(343x+736)\sqrt{3x^2+5x+2}}{64(2x+3)}+\frac{13505\tanh^{-1}\left(\frac{6}{2\sqrt{3}\sqrt{}}\right.}{256\sqrt{3}}$$

```
[Out] 5/48*(93+43*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2-1/6*(8+x)*(3*x^2+5*x+2)^(5/2)/
(3+2*x)^3+13505/768*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2
)-3487/256*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-5/64*(
736+343*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.11, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{5/2}}{6(2x+3)^3}+\frac{5(43x+93)\left(3x^2+5x+2\right)^{3/2}}{48(2x+3)^2}-\frac{5(343x+736)\sqrt{3x^2+5x+2}}{64(2x+3)}+\frac{13505\tanh^{-1}\left(\frac{6}{2\sqrt{3}\sqrt{}}\right.}{256\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] (-5*(736 + 343*x)*Sqrt[2 + 5*x + 3*x^2])/(64*(3 + 2*x)) + (5*(93 + 43*x)*(2
 + 5*x + 3*x^2)^(3/2))/(48*(3 + 2*x)^2) - ((8 + x)*(2 + 5*x + 3*x^2)^(5/2))
/(6*(3 + 2*x)^3) + (13505*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])])/(256*Sqrt[3]) - (3487*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*
x + 3*x^2])])/256
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx &= -\frac{(8+x)\left(2+5x+3x^2\right)^{5/2}}{6(3+2x)^3}-\frac{5}{72}\int \frac{(-216-258x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^3}\,dx\\
&= \frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2}-\frac{(8+x)\left(2+5x+3x^2\right)^{5/2}}{6(3+2x)^3}+\frac{5}{768}\int \frac{(-7032}{}\\
&= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)}+\frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2}-\frac{(8+x)\,(}{6(}\\
&= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)}+\frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2}-\frac{(8+x)\,(}{6(}\\
&= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)}+\frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2}-\frac{(8+x)\,(}{6(}\\
&= -\frac{5(736+343x)\sqrt{2+5x+3x^2}}{64(3+2x)}+\frac{5(93+43x)\left(2+5x+3x^2\right)^{3/2}}{48(3+2x)^2}-\frac{(8+x)\,(}{6(}
\end{aligned}
$$

Mathematica [A] time = 0.10, size = 120, normalized size = 0.73

$$
\frac{1}{768}\left(10461\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+13505\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{4\sqrt{3x^2+5x+2}\,(288}{}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-4*Sqrt[2 + 5*x + 3*x^2]*(89224 + 143533*x + 64332*x^2 + 1944*x^3 - 1896*
x^4 + 288*x^5))/(3 + 2*x)^3 + 10461*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*S
qrt[2 + 5*x + 3*x^2])] + 13505*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x +
 9*x^2])])/768
```

fricas [A] time = 0.81, size = 179, normalized size = 1.08

$$
\frac{13505\,\sqrt{3}\left(8\,x^3+36\,x^2+54\,x+27\right)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)+10461\,\sqrt{5}\,\left(8\,x\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/1536*(13505*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(3*x^2
 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 10461*sqrt(5)*(8*x^3 + 36*x^
2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 -
212*x - 89)/(4*x^2 + 12*x + 9)) - 8*(288*x^5 - 1896*x^4 + 1944*x^3 + 64332*
x^2 + 143533*x + 89224)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [**B**] time = 0.34, size = 315, normalized size = 1.91

$$-\frac{1}{128}\,(2\,(12\,x-133)x+1197)\sqrt{3\,x^2+5\,x+2}-\frac{3487}{256}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/128*(2*(12*x - 133)*x + 1197)*sqrt(3*x^2 + 5*x + 2) - 3487/256*sqrt(5)*l
og(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(
-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) - 13505/76
8*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 1/
384*(203604*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 1334970*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^4 + 10053790*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2
))^3 + 12051375*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 20819415*sq
rt(3)*x + 4639299*sqrt(3) - 20819415*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) +
 11)^3
```

maple [**A**] time = 0.06, size = 237, normalized size = 1.44

$$\frac{3487\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{256}+\frac{13505\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{768}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^4,x)
```

```
[Out] 67/600/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-197/125/(x+3/2)*(-4*x+3*(x+3
/2)^2-19/4)^(7/2)-3487/1000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+329/240*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+443/128*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+
13505/768*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-3
487/480*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-3487/256*(-16*x+12*(x+3/2)^2-19)^(1/2
)+3487/256*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(
1/2))+197/250*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/120/(x+3/2)^3*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)
```

maxima [**A**] time = 1.36, size = 220, normalized size = 1.33

$$-\frac{67}{200}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{15\left(8\,x^3+36\,x^2+54\,x+27\right)}+\frac{67\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{150\left(4\,x^2+12\,x+9\right)}+\frac{329}{40}\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}x-\frac{197}{480}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -67/200*(3*x^2 + 5*x + 2)^(5/2) - 13/15*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36
*x^2 + 54*x + 27) + 67/150*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) + 329
/40*(3*x^2 + 5*x + 2)^(3/2)*x - 197/480*(3*x^2 + 5*x + 2)^(3/2) - 197/50*(3
*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 1329/64*sqrt(3*x^2 + 5*x + 2)*x + 13505/7
68*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 3487/256*sqrt(5
)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) -
159/16*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{165x}{16x^4+96x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*
x**2 + 216*x + 81), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4
 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-113*x**3*sqrt(3*x**2 +
5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-15*x**
4*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) -
Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*
x + 81), x)
```

3.2441 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=167

$$-\frac{(4x+19)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^4}-\frac{(2898x+3727)\left(3x^2+5x+2\right)^{3/2}}{384(2x+3)^3}+\frac{(5718x+12265)\sqrt{3x^2+5x+2}}{512(2x+3)}-\frac{1875}{256}\sqrt{3}\,\text{tan}$$

```
[Out] -1/384*(3727+2898*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3-1/16*(19+4*x)*(3*x^2+5*x
+2)^(5/2)/(3+2*x)^4-1875/256*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2
))*3^(1/2)+29047/5120*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(
1/2)+1/512*(12265+5718*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi **[A]** time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(4x+19)\left(3x^2+5x+2\right)^{5/2}}{16(2x+3)^4}-\frac{(2898x+3727)\left(3x^2+5x+2\right)^{3/2}}{384(2x+3)^3}+\frac{(5718x+12265)\sqrt{3x^2+5x+2}}{512(2x+3)}-\frac{1875}{256}\sqrt{3}\,\text{tan}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((12265 + 5718*x)*Sqrt[2 + 5*x + 3*x^2])/(512*(3 + 2*x)) - ((3727 + 2898*x)
*(2 + 5*x + 3*x^2)^(3/2))/(384*(3 + 2*x)^3) - ((19 + 4*x)*(2 + 5*x + 3*x^2)
^(5/2))/(16*(3 + 2*x)^4) - (1875*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[
2 + 5*x + 3*x^2])])/256 + (29047*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/(1024*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5}\,dx &= -\frac{(19+4x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^4}-\frac{5}{64}\int \frac{(-158-188x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx\\
&= -\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3}-\frac{(19+4x)\left(2+5x+3x^2\right)^{5/2}}{16(3+2x)^4}+\int \frac{(19556}{}\\
&= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)}-\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3}-\frac{(19 -}{}\\
&= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)}-\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3}-\frac{(19 -}{}\\
&= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)}-\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3}-\frac{(19 -}{}\\
&= \frac{(12265+5718x)\sqrt{2+5x+3x^2}}{512(3+2x)}-\frac{(3727+2898x)\left(2+5x+3x^2\right)^{3/2}}{384(3+2x)^3}-\frac{(19 -}{}
\end{aligned}$$

Mathematica [A] time = 0.13, size = 120, normalized size = 0.72

$$\frac{-87141\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-112500\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(3456x^5-39744x^4-533280x^3-16\right.}{(2x+3)^4}}{15360}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(-896721 - 2059268*x - 1672268*x^2 - 533280*x^3
 - 39744*x^4 + 3456*x^5))/(3 + 2*x)^4 - 87141*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2
*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 112500*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt
[6 + 15*x + 9*x^2])])/15360
```

fricas [A] time = 0.69, size = 193, normalized size = 1.16

$$112500\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+87$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/30720*(112500*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqr
t(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 87141*sqrt(5)
*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x +
 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(3456*x^5 -
39744*x^4 - 533280*x^3 - 1672268*x^2 - 2059268*x - 896721)*sqrt(3*x^2 + 5*x
 + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [B] time = 1.06, size = 445, normalized size = 2.66

$$\frac{1875}{256}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{29047}{5120}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 1875/256*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3
)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) - 29047/5120*sqrt(5)*log(
abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) -
4))*sgn(1/(2*x + 3)) - 1/3072*((10*(195*sgn(1/(2*x + 3))/(2*x + 3) - 904*sg
n(1/(2*x + 3)))/(2*x + 3) + 18577*sgn(1/(2*x + 3)))/(2*x + 3) - 27132*sgn(1
/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 9/128*(157*(sqrt(-8/(
2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) - 126
*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn
(1/(2*x + 3)) - 409*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x
+ 3))*sgn(1/(2*x + 3)) + 330*sqrt(5)*sgn(1/(2*x + 3)))/((sqrt(-8/(2*x + 3)
+ 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^2
```

maple [A] time = 0.06, size = 258, normalized size = 1.54

$$-\frac{29047\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{5120}-\frac{1875\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{256}-\frac{\left(-4x+3\left(x+\right.\right.}{75\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^5,x)
```

```
[Out] -1/75/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1627/12000/(x+3/2)^2*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)+1307/2500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+29047
```

```
/20000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1387/2400*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-461/320*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1875/256*3^(1/2)*ln
(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+29047/9600*(-4*x+3*(x
+3/2)^2-19/4)^(3/2)+29047/5120*(-16*x+12*(x+3/2)^2-19)^(1/2)-29047/5120*5^(
1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-1307/500
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-
19/4)^(7/2)
```

maxima [A] time = 1.26, size = 256, normalized size = 1.53

$$\frac{1627}{4000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{20\left(16x^4+96x^3+216x^2+216x+81\right)}-\frac{8\left(3x^2+5x+2\right)^{\frac{7}{2}}}{75\left(8x^3+36x^2+54x+27\right)}-\frac{1627\,(3x^2+}{3000\,(4x^2+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 1627/4000*(3*x^2 + 5*x + 2)^(5/2) - 13/20*(3*x^2 + 5*x + 2)^(7/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) - 8/75*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 1627/3000*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 1
387/400*(3*x^2 + 5*x + 2)^(3/2)*x + 1307/9600*(3*x^2 + 5*x + 2)^(3/2) + 130
7/1000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) - 1383/160*sqrt(3*x^2 + 5*x + 2)*x
 - 1875/256*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 29047/
5120*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x +
 3) - 2) + 10607/2560*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\Bigg(-\frac{96x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-165*x**2*sqr
t(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 24
3), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 72
0*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x
 + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integ
ral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**
2 + 810*x + 243), x)
```

3.2442 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=167

$$\frac{(114x+119)\left(3x^2+5x+2\right)^{5/2}}{80(2x+3)^5}+\frac{(13074x+17051)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^3}-\frac{(26934x+57845)\sqrt{3x^2+5x+2}}{12800(2x+3)}+\frac{177}{128}\sqrt{3}$$

```
[Out] 1/9600*(17051+13074*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3+1/80*(119+114*x)*(3*x^
2+5*x+2)^(5/2)/(3+2*x)^5+177/128*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^
(1/2))*3^(1/2)-137111/128000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/
2))*5^(1/2)-1/12800*(57845+26934*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.11, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(114x+119)\left(3x^2+5x+2\right)^{5/2}}{80(2x+3)^5}+\frac{(13074x+17051)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^3}-\frac{(26934x+57845)\sqrt{3x^2+5x+2}}{12800(2x+3)}+\frac{177}{128}\sqrt{3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] -((57845 + 26934*x)*Sqrt[2 + 5*x + 3*x^2])/(12800*(3 + 2*x)) + ((17051 + 13
074*x)*(2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^3) + ((119 + 114*x)*(2 + 5*
x + 3*x^2)^(5/2))/(80*(3 + 2*x)^5) + (177*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2])])/128 - (137111*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqr
t[2 + 5*x + 3*x^2])])/(25600*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx &= \frac{(119+114x)\left(2+5x+3x^2\right)^{5/2}}{80(3+2x)^5}-\frac{1}{160}\int \frac{(437+462x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^4}\,dx\\
&= \frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3}+\frac{(119+114x)\left(2+5x+3x^2\right)^{5/2}}{80(3+2x)^5}+\int\\
&= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)}+\frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3}+\\
&= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)}+\frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3}+\\
&= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)}+\frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3}+\\
&= -\frac{(57845+26934x)\sqrt{2+5x+3x^2}}{12800(3+2x)}+\frac{(17051+13074x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^3}+
\end{aligned}$$

Mathematica [A] time = 0.14, size = 120, normalized size = 0.72

$$\frac{411333\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+531000\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(172800x^5+4630848x^4+2158680\right.}{(2x+3)}}{384000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(12600183 + 37019838*x + 41641148*x^2 + 2158680
8*x^3 + 4630848*x^4 + 172800*x^5))/(3 + 2*x)^5 + 411333*Sqrt[5]*ArcTanh[(-7
 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 531000*Sqrt[3]*ArcTanh[(5 + 6*
x)/(2*Sqrt[6 + 15*x + 9*x^2])])/384000
```

fricas [A] time = 0.71, size = 209, normalized size = 1.25

$$531000\,\sqrt{3}\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/768000*(531000*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 2
43)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) +
411333*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log(-(
4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 +
12*x + 9)) - 20*(172800*x^5 + 4630848*x^4 + 21586808*x^3 + 41641148*x^2 + 3
7019838*x + 12600183)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 +
1080*x^2 + 810*x + 243)
```

giac [B] time = 0.40, size = 407, normalized size = 2.44

$$-\frac{137111}{128000}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{177}{128}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}x-\sqrt{3\,x^2+5\,x+2}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -137111/128000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) - 177/128*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2)) - 5)) - 9/64*sqrt(3*x^2 + 5*x + 2) - 1/38400*(27201072*(sqrt(3)
*x - sqrt(3*x^2 + 5*x + 2))^9 + 316934472*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^8 + 4873277176*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 143743412
76*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 80473660448*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^5 + 98380998102*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^4 + 236231795506*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 119385279
741*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 103767800973*sqrt(3)*x
+ 13144069068*sqrt(3) - 103767800973*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) +
 11)^5
```

maple [B] time = 0.06, size = 279, normalized size = 1.67

$$\frac{137111\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{128000}+\frac{177\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{128}-\frac{521\left(-4x+3\left(x+\right.\right.}{15000\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^6,x)
```

```
[Out] -521/15000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/800/(x+3/2)^5*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-9349/300000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+
11491/125000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+6281/60000*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-11491/62500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+
4361/16000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+137111/128000*5^(1/2)*arct
anh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+177/128*3^(1/2)*l
n(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-137111/128000*(-16*x
+12*(x+3/2)^2-19)^(1/2)-131/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13
7111/240000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-137111/500000*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)
```

maxima [B] time = 1.53, size = 297, normalized size = 1.78

$$\frac{9349}{100000}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{25\left(32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243\right)}-\frac{131\left(3\,x^2+5\,x+\right.}{500\left(16\,x^4+96\,x^3+216\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] 9349/100000*(3*x^2 + 5*x + 2)^(5/2) - 13/25*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5
 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 131/500*(3*x^2 + 5*x + 2)^
(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 521/1875*(3*x^2 + 5*x + 2)
^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 9349/75000*(3*x^2 + 5*x + 2)^(7/2)/(4
*x^2 + 12*x + 9) + 6281/10000*(3*x^2 + 5*x + 2)^(3/2)*x - 11491/240000*(3*x
^2 + 5*x + 2)^(3/2) - 11491/25000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 13083
/8000*sqrt(3*x^2 + 5*x + 2)*x + 177/128*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 3*x + 5/2) + 137111/128000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x +
2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 49891/64000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+}}{64x^6+576x^5+2160x^4+4320}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-96*x*sqrt(3*x**2 + 5*x +
2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729),
 x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*
x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-113*x**3*sqrt(
3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 +
 2916*x + 729), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 57
6*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(9
*x**5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 +
4860*x**2 + 2916*x + 729), x)
```

3.2443 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=167

$$\frac{(116x+109)\left(3x^2+5x+2\right)^{5/2}}{120(2x+3)^6}+\frac{(328x+437)\left(3x^2+5x+2\right)^{3/2}}{1920(2x+3)^4}+\frac{(10952x+14083)\sqrt{3x^2+5x+2}}{25600(2x+3)^2}-\frac{9}{128}\sqrt{3}\,\text{tanh}$$

```
[Out] 1/1920*(437+328*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4+1/120*(109+116*x)*(3*x^2+5
*x+2)^(5/2)/(3+2*x)^6-9/128*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2)
)*3^(1/2)+13931/256000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^
(1/2)+1/25600*(14083+10952*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.10, antiderivative size = 167, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {810, 843, 621, 206, 724}

$$\frac{(116x+109)\left(3x^2+5x+2\right)^{5/2}}{120(2x+3)^6}+\frac{(328x+437)\left(3x^2+5x+2\right)^{3/2}}{1920(2x+3)^4}+\frac{(10952x+14083)\sqrt{3x^2+5x+2}}{25600(2x+3)^2}-\frac{9}{128}\sqrt{3}\,\text{tanh}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] ((14083 + 10952*x)*Sqrt[2 + 5*x + 3*x^2])/(25600*(3 + 2*x)^2) + ((437 + 328
*x)*(2 + 5*x + 3*x^2)^(3/2))/(1920*(3 + 2*x)^4) + ((109 + 116*x)*(2 + 5*x +
 3*x^2)^(5/2))/(120*(3 + 2*x)^6) - (9*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/128 + (13931*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 +
 5*x + 3*x^2])])/(51200*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx &= \frac{(109+116x)\left(2+5x+3x^2\right)^{5/2}}{120(3+2x)^6}-\frac{1}{240}\int \frac{(215+180x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^5}\,dx\\
&= \frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4}+\frac{(109+116x)\left(2+5x+3x^2\right)^{5/2}}{120(3+2x)^6}+\int \frac{(-1833}{}\\
&= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2}+\frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4}+\frac{(109}{}\\
&= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2}+\frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4}+\frac{(109}{}\\
&= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2}+\frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4}+\frac{(109}{}\\
&= \frac{(14083+10952x)\sqrt{2+5x+3x^2}}{25600(3+2x)^2}+\frac{(437+328x)\left(2+5x+3x^2\right)^{3/2}}{1920(3+2x)^4}+\frac{(109}{}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 120, normalized size = 0.72

$$\frac{-41793\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-54000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+\frac{10\sqrt{3x^2+5x+2}\left(1351296x^5+7629680x^4+1821776\right.}{(2x+3)^6}}{768000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^7,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(4015849 + 14921560*x + 22854480*x^2 + 18217760*
x^3 + 7629680*x^4 + 1351296*x^5))/(3 + 2*x)^6 - 41793*Sqrt[5]*ArcTanh[(-7 -
 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 54000*Sqrt[3]*ArcTanh[(5 + 6*x)/
(2*Sqrt[6 + 15*x + 9*x^2])])/768000
```

fricas [A] time = 0.78, size = 223, normalized size = 1.34

$$\frac{54000\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/1536000*(54000*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
 + 2916*x + 729)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 +
120*x + 49) + 41793*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^
2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(1351296*x^5 + 7629680*x^4 + 18217
760*x^3 + 22854480*x^2 + 14921560*x + 4015849)*sqrt(3*x^2 + 5*x + 2))/(64*x
^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.37, size = 444, normalized size = 2.66

$$\frac{13931}{256000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{9}{128}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] 13931/256000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))) + 9/128*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2)) - 5)) + 1/76800*(20435424*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 +
269619696*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 4893810640*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 17834042400*sqrt(3)*(sqrt(3)*x - sqrt(3*
x^2 + 5*x + 2))^8 + 129909086880*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 21
9870810528*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 791797675536*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 672745449240*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^4 + 1187868124850*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3
+ 460902113505*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 318216938187
*sqrt(3)*x + 32907940848*sqrt(3) - 318216938187*sqrt(3*x^2 + 5*x + 2))/(2*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2)) + 11)^6
```

maple [B] time = 0.07, size = 300, normalized size = 1.80

$$-\frac{13931\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{256000}-\frac{9\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{128}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right.\right.}{1920\left(x+\frac{3}{2}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^7,x)
```

```
[Out] -13/1920/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-709/30000/(x+3/2)^3*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)-23/2400/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-222
71/600000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+6089/250000*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(5/2)-1001/120000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-
6089/125000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-431/32000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(1/2)-13931/256000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/
(-16*x+12*(x+3/2)^2-19)^(1/2))-9/128*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x
+3*(x+3/2)^2-19/4)^(1/2))+13931/256000*(-16*x+12*(x+3/2)^2-19)^(1/2)-249/16
000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+13931/480000*(-4*x+3*(x+3/2)^2-
19/4)^(3/2)+13931/1000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.32, size = 343, normalized size = 2.05

$$\frac{22271}{200000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{30\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)}-\frac{2}{75\left(32x^5+240x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 22271/200000*(3*x^2 + 5*x + 2)^(5/2) - 13/30*(3*x^2 + 5*x + 2)^(7/2)/(64*x^
6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 23/75*(3*x^2
 + 5*x + 2)^(7/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 2
49/1000*(3*x^2 + 5*x + 2)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) -
709/3750*(3*x^2 + 5*x + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 22271/15000
0*(3*x^2 + 5*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 1001/20000*(3*x^2 + 5*x + 2)
^(3/2)*x - 6089/480000*(3*x^2 + 5*x + 2)^(3/2) - 6089/50000*(3*x^2 + 5*x +
2)^(5/2)/(2*x + 3) - 1293/16000*sqrt(3*x^2 + 5*x + 2)*x - 9/128*sqrt(3)*log
(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 13931/256000*sqrt(5)*log(sqrt
(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 5311/12800
0*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^7}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int\left(-\frac{}{128x^7+1344}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-96*x*s
qrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 2268
0*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-165*x**2*sqrt(3*x**2
+ 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20
412*x**2 + 10206*x + 2187), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/
(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 +
10206*x + 2187), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(128*x**7 +
1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 21
87), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 60
48*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2444 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=154

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6}-\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{128000(2x+3)^2}-$$

```
[Out] -47/9600*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4+47/600*(7+8*x)*(3*x^2+5*x+2)
^(5/2)/(3+2*x)^6-13/35*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7-47/1280000*arctanh(1/1
0*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+47/128000*(7+8*x)*(3*x^2+5*x
+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.08, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{806, 720, 724, 206\}$

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6}-\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4}+\frac{47(8x+7)\sqrt{3x^2+5x+2}}{128000(2x+3)^2}-$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (47*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(128000*(3 + 2*x)^2) - (47*(7 + 8*x)*(
2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^4) + (47*(7 + 8*x)*(2 + 5*x + 3*x^2
)^(5/2))/(600*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(35*(3 + 2*x)^7)
- (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(256000*Sqrt[5]
)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx = -\frac{13\left(2+5x+3x^2\right)^{7/2}}{35(3+2x)^7}+\frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx$$

$$= \frac{47(7+8x)\left(2+5x+3x^2\right)^{5/2}}{600(3+2x)^6}-\frac{13\left(2+5x+3x^2\right)^{7/2}}{35(3+2x)^7}-\frac{47}{240}\int \frac{\left(2+5x+3x^2\right.}{(3+2x)^5}$$

$$= -\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4}+\frac{47(7+8x)\left(2+5x+3x^2\right)^{5/2}}{600(3+2x)^6}-\frac{13\left(2+5x\right.}{35(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2}-\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4}+\frac{47(7+8x)\left(2+\right.}{600(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2}-\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4}+\frac{47(7+8x)\left(2+\right.}{600(3+}$$

$$= \frac{47(7+8x)\sqrt{2+5x+3x^2}}{128000(3+2x)^2}-\frac{47(7+8x)\left(2+5x+3x^2\right)^{3/2}}{9600(3+2x)^4}+\frac{47(7+8x)\left(2+\right.}{600(3+}$$

Mathematica [A] time = 0.08, size = 154, normalized size = 1.00

$$-\frac{13\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{5/2}}{600(2x+3)^6}-\frac{47(8x+7)\left(3x^2+5x+2\right)^{3/2}}{9600(2x+3)^4}+\frac{47\left(\frac{10\sqrt{3x^2+5x+2}\,(8x+7)}{(2x+3)^2}+\sqrt{}\right.}{128}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^8,x]
```

```
[Out] (-47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(9600*(3 + 2*x)^4) + (47*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(5/2))/(600*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(
35*(3 + 2*x)^7) + (47*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + S
qrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/1280000
```

fricas [A] time = 0.67, size = 171, normalized size = 1.11

$$\frac{987\sqrt{5}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(-\frac{4\sqrt{5}\sqrt{3x^2+5x+}}{4}\right.}{53760000\left(128x^7+1344x^6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/53760000*(987*sqrt(5)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*
x^3 + 20412*x^2 + 10206*x + 2187)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*
x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(1089792*x^6 + 2262
0128*x^5 + 81951440*x^4 + 127557120*x^3 + 100711840*x^2 + 39981058*x + 6404
247)*sqrt(3*x^2 + 5*x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22
680*x^3 + 20412*x^2 + 10206*x + 2187)
```

giac [B] time = 0.33, size = 461, normalized size = 2.99

$$-\frac{47}{1280000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{72512832\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{13}+651}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] -47/1280000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3
*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
5*x + 2))) - 1/2688000*(72512832*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 6
51952224*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 6898276448*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 8494566864*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2))^10 - 58878767920*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 - 326
450774496*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 - 2207907445056*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 3147944405424*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^6 - 9314774279636*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5
 - 6492162811470*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 9472821206
534*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 3070624865553*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 - 1792565462541*sqrt(3)*x - 158637115728*sqrt(
3) + 1792565462541*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [B] time = 0.07, size = 290, normalized size = 1.88

$$\frac{47\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{1280000}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{9600\left(x+\frac{3}{2}\right)^6}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}\right)^{\frac{7}{2}}}{4480\left(x+\frac{3}{2}\right)^7}-\frac{2867\left(-4x+\right.}{15000}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^8,x)
```

```
[Out] -47/9600/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/4480/(x+3/2)^7*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)-2867/150000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-4
7/6000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-87373/3000000/(x+3/2)^2*(-4*
x+3*(x+3/2)^2-19/4)^(7/2)+27307/1250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/
2)-1363/600000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-27307/625000/(x+3/2)*(
-4*x+3*(x+3/2)^2-19/4)^(7/2)+47/160000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2
)+47/1280000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)
^(1/2))-47/1280000*(-16*x+12*(x+3/2)^2-19)^(1/2)-987/80000/(x+3/2)^4*(-4*x+
3*(x+3/2)^2-19/4)^(7/2)-47/2400000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-47/5000000
*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
```

maxima [B] time = 1.48, size = 367, normalized size = 2.38

$$\frac{87373}{1000000}\left(3x^2+5x+2\right)^{\frac{5}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{7}{2}}}{35\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 87373/1000000*(3*x^2 + 5*x + 2)^(5/2) - 13/35*(3*x^2 + 5*x + 2)^(7/2)/(128*
x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2
187) - 47/150*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x
^3 + 4860*x^2 + 2916*x + 729) - 94/375*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 24
0*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 987/5000*(3*x^2 + 5*x + 2)^(7/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 2867/18750*(3*x^2 + 5*x + 2)^(
7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 87373/750000*(3*x^2 + 5*x + 2)^(7/2)/(4
*x^2 + 12*x + 9) - 1363/100000*(3*x^2 + 5*x + 2)^(3/2)*x - 27307/2400000*(3
*x^2 + 5*x + 2)^(3/2) - 27307/250000*(3*x^2 + 5*x + 2)^(5/2)/(2*x + 3) + 14
1/80000*sqrt(3*x^2 + 5*x + 2)*x + 47/1280000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2
 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 893/640000*sqrt(3*x^2 +
5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}{{(2\,x+3)}^8}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int\left(-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-96*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6
 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x)
 - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*
x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561)
, x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 161
28*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 65
61), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16
128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6
561), x)
```

3.2445 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=179

$$-\frac{107\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8}+\frac{1517(8x+7)\left(3x^2+5x+2\right)^{5/2}}{24000(2x+3)^6}-\frac{1517(8x+7)\left(3x^2+5x+2\right)^{3/2}}{384000(2x+3)^4}+$$

```
[Out] -1517/384000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4+1517/24000*(7+8*x)*(3*x^
2+5*x+2)^(5/2)/(3+2*x)^6-13/40*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8-107/350*(3*x^2
+5*x+2)^(7/2)/(3+2*x)^7-1517/51200000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5
*x+2)^(1/2))*5^(1/2)+1517/5120000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.10, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{107\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8}+\frac{1517(8x+7)\left(3x^2+5x+2\right)^{5/2}}{24000(2x+3)^6}-\frac{1517(8x+7)\left(3x^2+5x+2\right)^{3/2}}{384000(2x+3)^4}+$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] (1517*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(5120000*(3 + 2*x)^2) - (1517*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(384000*(3 + 2*x)^4) + (1517*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(5/2))/(24000*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(40*(3
 + 2*x)^8) - (107*(2 + 5*x + 3*x^2)^(7/2))/(350*(3 + 2*x)^7) - (1517*ArcTan
h[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(10240000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8}-\frac{1}{40}\int \frac{\left(-\frac{311}{2}+39x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8}-\frac{107\left(2+5x+3x^2\right)^{7/2}}{350(3+2x)^7}+\frac{1517}{400}\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\\
&= \frac{1517(7+8x)\left(2+5x+3x^2\right)^{5/2}}{24000(3+2x)^6}-\frac{13\left(2+5x+3x^2\right)^{7/2}}{40(3+2x)^8}-\frac{107\left(2+5x+3x^2\right)}{350(3+2x)^7}\\
&= -\frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4}+\frac{1517(7+8x)\left(2+5x+3x^2\right)^{5/2}}{24000(3+2x)^6}-\frac{13\left(2+\right.}{40}\\
&= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2}-\frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4}+\frac{1517(7+8}{240}\\
&= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2}-\frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4}+\frac{1517(7+8}{240}\\
&= \frac{1517(7+8x)\sqrt{2+5x+3x^2}}{5120000(3+2x)^2}-\frac{1517(7+8x)\left(2+5x+3x^2\right)^{3/2}}{384000(3+2x)^4}+\frac{1517(7+8}{240}
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 182, normalized size = 1.02

$$
\frac{1}{40}\left(-\frac{428\left(3x^2+5x+2\right)^{7/2}}{35(2x+3)^7}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8}+\frac{1517\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6}-\frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4}+\frac{3(8x+7)\sqrt{}}{20(2}\right.}{19200}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^9,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8 - (428*(2 + 5*x + 3*x^2)^(7/2))/
(35*(3 + 2*x)^7) + (1517*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)
^2) - (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2
+ 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(40*Sqrt[5])))/19200)/40
```

fricas [A] time = 0.66, size = 186, normalized size = 1.04

$$\frac{31857\sqrt{5}\left(256\,x^{8}+3072\,x^{7}+16128\,x^{6}+48384\,x^{5}+90720\,x^{4}+108864\,x^{3}+81648\,x^{2}+34992\,x+6561\right)\log\left(-\right.}{2150400000\,(25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/2150400000*(31857*sqrt(5)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 9
0720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-(4*sqrt(5)*sqrt(3*
x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) + 20*(
35495424*x^7 + 395685952*x^6 + 2141523904*x^5 + 5486222160*x^4 + 7363989440
*x^3 + 5395613996*x^2 + 2061624348*x + 325079151)*sqrt(3*x^2 + 5*x + 2))/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561)
```

giac [B] time = 0.35, size = 512, normalized size = 2.86

$$-\frac{1517}{51200000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)+\frac{4077696\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{15}-281}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] -1517/51200000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqr
t(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))) + 1/107520000*(4077696*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15
 - 2811291840*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 54242130880*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 23829496320*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^12 + 4407279220960*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^11 + 22617729467088*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 1950
51199819760*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 377875254407040*sqrt(3)
*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 1580087388997720*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^7 + 1627784736400620*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^6 + 3742975645158764*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 21150
26806109280*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 257338275980401
0*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 709918795444635*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 + 358308332266605*sqrt(3)*x + 27766562618088*s
qrt(3) - 358308332266605*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [B] time = 0.08, size = 311, normalized size = 1.74

$$\frac{1517\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{51200000}-\frac{1517\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{384000\left(x+\frac{3}{2}\right)^{6}}-\frac{107\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{44800\left(x+\frac{3}{2}\right)^{7}}-\frac{92537\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^9,x)
```

```
[Out] -1517/384000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-107/44800/(x+3/2)^7*(-
4*x+3*(x+3/2)^2-19/4)^(7/2)-92537/6000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)
^(7/2)-1517/240000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-2820103/12000000
0/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+881377/50000000*(6*x+5)*(-4*x+3*(
x+3/2)^2-19/4)^(5/2)-43993/24000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-8
81377/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+1517/6400000*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(1/2)+1517/51200000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5
^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-1517/51200000*(-16*x+12*(x+3/2)^2-19)
^(1/2)-31857/3200000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1517/96000000*
(-4*x+3*(x+3/2)^2-19/4)^(3/2)-1517/200000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-
13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.63, size = 423, normalized size = 2.36

$$\frac{2820103}{40000000}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}}{40\left(256\,x^8+3072\,x^7+16128\,x^6+48384\,x^5+90720\,x^4+108864\,x^3+81648\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 2820103/40000000*(3*x^2 + 5*x + 2)^(5/2) - 13/40*(3*x^2 + 5*x + 2)^(7/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 107/350*(3*x^2 + 5*x + 2)^(7/2)/(128*x^7 + 1344*x^6
 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 1517/60
00*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x
^2 + 2916*x + 729) - 1517/7500*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 240*x^4 +
720*x^3 + 1080*x^2 + 810*x + 243) - 31857/200000*(3*x^2 + 5*x + 2)^(7/2)/(1
6*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 92537/750000*(3*x^2 + 5*x + 2)^(7/
2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2820103/30000000*(3*x^2 + 5*x + 2)^(7/2)/
(4*x^2 + 12*x + 9) - 43993/4000000*(3*x^2 + 5*x + 2)^(3/2)*x - 881377/96000
000*(3*x^2 + 5*x + 2)^(3/2) - 881377/10000000*(3*x^2 + 5*x + 2)^(5/2)/(2*x
+ 3) + 4551/3200000*sqrt(3*x^2 + 5*x + 2)*x + 1517/51200000*sqrt(5)*log(sqr
t(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 28823/256
00000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x*
*8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3
14928*x**2 + 118098*x + 19683), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x +
 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888
*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(-113*x
**3*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6
 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683
), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41
472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x
**2 + 118098*x + 19683), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(512*x
**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 48
9888*x**3 + 314928*x**2 + 118098*x + 19683), x)
```

3.2446 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=204

$$-\frac{1321\left(3x^2+5x+2\right)^{7/2}}{5250(2x+3)^7}-\frac{527\left(3x^2+5x+2\right)^{7/2}}{1800(2x+3)^8}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{45(2x+3)^9}+\frac{6167(8x+7)\left(3x^2+5x+2\right)^{5/2}}{120000(2x+3)^6}-6167($$

```
[Out] -6167/1920000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4+6167/120000*(7+8*x)*(3*
x^2+5*x+2)^(5/2)/(3+2*x)^6-13/45*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9-527/1800*(3*
x^2+5*x+2)^(7/2)/(3+2*x)^8-1321/5250*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7-6167/256
000000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+6167/25600
000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.13, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = $\{834, 806, 720, 724, 206\}$

$$-\frac{1321\left(3x^2+5x+2\right)^{7/2}}{5250(2x+3)^7}-\frac{527\left(3x^2+5x+2\right)^{7/2}}{1800(2x+3)^8}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{45(2x+3)^9}+\frac{6167(8x+7)\left(3x^2+5x+2\right)^{5/2}}{120000(2x+3)^6}-6167($$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] (6167*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(25600000*(3 + 2*x)^2) - (6167*(7 +
8*x)*(2 + 5*x + 3*x^2)^(3/2))/(1920000*(3 + 2*x)^4) + (6167*(7 + 8*x)*(2 +
5*x + 3*x^2)^(5/2))/(120000*(3 + 2*x)^6) - (13*(2 + 5*x + 3*x^2)^(7/2))/(45
*(3 + 2*x)^9) - (527*(2 + 5*x + 3*x^2)^(7/2))/(1800*(3 + 2*x)^8) - (1321*(2
 + 5*x + 3*x^2)^(7/2))/(5250*(3 + 2*x)^7) - (6167*ArcTanh[(7 + 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])])/(51200000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{10}}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9}-\frac{1}{45}\int \frac{\left(-\frac{293}{2}+78x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^9}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9}-\frac{527\left(2+5x+3x^2\right)^{7/2}}{1800(3+2x)^8}+\frac{\int \frac{\left(\frac{11109}{2}-1581x\right)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^8}\,dx}{1800}\\
&= -\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9}-\frac{527\left(2+5x+3x^2\right)^{7/2}}{1800(3+2x)^8}-\frac{1321\left(2+5x+3x^2\right)^{7/2}}{5250(3+2x)^7}+\\
&= \frac{6167(7+8x)\left(2+5x+3x^2\right)^{5/2}}{120000(3+2x)^6}-\frac{13\left(2+5x+3x^2\right)^{7/2}}{45(3+2x)^9}-\frac{527\left(2+5x+3x^2\right)^{7/2}}{1800(3+2x)^8}\\
&= -\frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4}+\frac{6167(7+8x)\left(2+5x+3x^2\right)^{5/2}}{120000(3+2x)^6}-\\
&= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2}-\frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4}+\\
&= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2}-\frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4}+\\
&= \frac{6167(7+8x)\sqrt{2+5x+3x^2}}{25600000(3+2x)^2}-\frac{6167(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1920000(3+2x)^4}+
\end{aligned}$$

Mathematica [A] time = 0.15, size = 207, normalized size = 1.01

$$\frac{1}{45}\left(-\frac{3963\left(3x^2+5x+2\right)^{7/2}}{350(2x+3)^7}-\frac{527\left(3x^2+5x+2\right)^{7/2}}{40(2x+3)^8}-\frac{13\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^9}+\frac{18501\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6}-\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^10,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9 - (527*(2 + 5*x + 3*x^2)^(7/2))/
(40*(3 + 2*x)^8) - (3963*(2 + 5*x + 3*x^2)^(7/2))/(350*(3 + 2*x)^7) + (1850
1*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^2) - (2*(7 + 8*x)*(2 +
 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(
3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40*
Sqrt[5])))/256000)/45
```

fricas [A] time = 0.83, size = 201, normalized size = 0.99

$$388521\sqrt{5}\,\big(512\,x^{9}+6912\,x^{8}+41472\,x^{7}+145152\,x^{6}+326592\,x^{5}+489888\,x^{4}+489888\,x^{3}+314928\,x^{2}+11$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/32256000000*(388521*sqrt(5)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6
+ 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*log
(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2
 + 12*x + 9)) + 20*(333241344*x^8 + 4204480128*x^7 + 23288995392*x^6 + 7643
5267296*x^5 + 149661252080*x^4 + 173974546136*x^3 + 117870367452*x^2 + 4324
6799138*x + 6706847909)*sqrt(3*x^2 + 5*x + 2))/(512*x^9 + 6912*x^8 + 41472*
x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 1180
98*x + 19683)
```

giac [B] time = 0.35, size = 563, normalized size = 2.76

$$-\frac{6167}{256000000}\sqrt{5}\,\log\left(\frac{\left|-4\sqrt{3}\,x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3\,x^{2}+5\,x+2}\right|}{\left|-4\sqrt{3}\,x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3\,x^{2}+5\,x+2}\right|}\right)+99461376\left(\sqrt{3}\,x-\sqrt{3\,x^{2}+5\,x+2}\right)^{17}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] -6167/256000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sq
rt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))) + 1/1612800000*(99461376*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^17 + 2536265088*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16 - 839543550
72*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 - 341000936640*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^14 + 17778066768000*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^13 + 177356386111968*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12
+ 2399974462831392*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 684460112355662
4*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 41172892580130560*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 60936872688585000*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^8 + 204498063708405624*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^7 + 174436297943297292*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 +
 339439601929212792*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 164994557892929
730*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 174936772514694750*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 42504221165006223*sqrt(3)*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^2 + 19065836258759367*sqrt(3)*x + 1323473153587704*s
qrt(3) - 19065836258759367*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^9
```

maple [A] time = 0.10, size = 332, normalized size = 1.63

$$\frac{6167\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{256000000}-\frac{6167\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{1920000\left(x+\frac{3}{2}\right)^{6}}-\frac{1321\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{7}{2}}}{672000\left(x+\frac{3}{2}\right)^{7}}-37618$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^10,x)
```

```
[Out] -6167/1920000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1321/672000/(x+3/2)^7
*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-376187/30000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-
19/4)^(7/2)-6167/1200000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-11464453/6
00000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+3583027/250000000*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(5/2)-178843/120000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-3583027/125000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+6167/3200
0000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)+6167/256000000*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-6167/256000000*(-16*x+
12*(x+3/2)^2-19)^(1/2)-129507/16000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(7
/2)-6167/480000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-6167/1000000000*(-4*x+3*(x
+3/2)^2-19/4)^(5/2)-527/460800/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/2
3040/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [B] time = 1.40, size = 484, normalized size = 2.37

$$\frac{11464453}{200000000}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}}{45\,(512\,x^{9}+6912\,x^{8}+41472\,x^{7}+145152\,x^{6}+326592\,x^{5}+489888\,x^{4}+489888\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 11464453/200000000*(3*x^2 + 5*x + 2)^(5/2) - 13/45*(3*x^2 + 5*x + 2)^(7/2)/
(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 48
9888*x^3 + 314928*x^2 + 118098*x + 19683) - 527/1800*(3*x^2 + 5*x + 2)^(7/2
)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81
648*x^2 + 34992*x + 6561) - 1321/5250*(3*x^2 + 5*x + 2)^(7/2)/(128*x^7 + 13
44*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 6
167/30000*(3*x^2 + 5*x + 2)^(7/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
 4860*x^2 + 2916*x + 729) - 6167/37500*(3*x^2 + 5*x + 2)^(7/2)/(32*x^5 + 24
0*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 129507/1000000*(3*x^2 + 5*x + 2
)^(7/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 376187/3750000*(3*x^2 +
5*x + 2)^(7/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 11464453/150000000*(3*x^2 + 5
*x + 2)^(7/2)/(4*x^2 + 12*x + 9) - 178843/20000000*(3*x^2 + 5*x + 2)^(3/2)*
x - 3583027/480000000*(3*x^2 + 5*x + 2)^(3/2) - 3583027/50000000*(3*x^2 + 5
*x + 2)^(5/2)/(2*x + 3) + 18501/16000000*sqrt(3*x^2 + 5*x + 2)*x + 6167/256
000000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) + 117173/128000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^{2}+5\,x+2\right)^{5/2}}{(2\,x+3)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^10,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^10, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{1024x^{10}+15360x^9+103680x^8+414720x^7+1088640x^6+1959552x^5+2449440x^4+2099520x^3+1}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**10,x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8
 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3
+ 1180980*x**2 + 393660*x + 59049), x) - Integral(-96*x*sqrt(3*x**2 + 5*x +
 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1
959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049
), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9
+ 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 +
2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(-113*x**3*sq
rt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 +
 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 +
 393660*x + 59049), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(1024*x**
10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 +
 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integ
ral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 +
414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1
180980*x**2 + 393660*x + 59049), x)
```

3.2447 $\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{7/2} \, dx$

Optimal. Leaf size=229

$$-\frac{1}{39}(2x+3)^4\left(3x^2+5x+2\right)^{9/2}+\frac{439(2x+3)^3\left(3x^2+5x+2\right)^{9/2}}{1404}+\frac{205}{351}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(389394x+852}{2}$$

```
[Out] 2595845/644972544*(5+6*x)*(3*x^2+5*x+2)^(3/2)-519169/13436928*(5+6*x)*(3*x^
2+5*x+2)^(5/2)+74167/186624*(5+6*x)*(3*x^2+5*x+2)^(7/2)+205/351*(3+2*x)^2*(
3*x^2+5*x+2)^(9/2)+439/1404*(3+2*x)^3*(3*x^2+5*x+2)^(9/2)-1/39*(3+2*x)^4*(3
*x^2+5*x+2)^(9/2)+1/227448*(852175+389394*x)*(3*x^2+5*x+2)^(9/2)+2595845/30
958682112*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2595845/
5159780352*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{39}(2x+3)^4\left(3x^2+5x+2\right)^{9/2}+\frac{439(2x+3)^3\left(3x^2+5x+2\right)^{9/2}}{1404}+\frac{205}{351}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(389394x+852}{2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-2595845*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/5159780352 + (2595845*(5 + 6*x)*
(2 + 5*x + 3*x^2)^(3/2))/644972544 - (519169*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5
/2))/13436928 + (74167*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/186624 + (205*(3
+ 2*x)^2*(2 + 5*x + 3*x^2)^(9/2))/351 + (439*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^
(9/2))/1404 - ((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(9/2))/39 + ((852175 + 389394*
x)*(2 + 5*x + 3*x^2)^(9/2))/227448 + (2595845*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/(10319560704*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int (5-x)(3+2x)^4 \left(2+5x+3x^2\right)^{7/2}\,dx = -\frac{1}{39}(3+2x)^4\left(2+5x+3x^2\right)^{9/2} + \frac{1}{39}\int (3+2x)^3\left(\frac{1337}{2}+439x\right)(2$$

$$= \frac{439(3+2x)^3\left(2+5x+3x^2\right)^{9/2}}{1404} - \frac{1}{39}(3+2x)^4\left(2+5x+3x^2\right)^{9/2} +$$

$$= \frac{205}{351}(3+2x)^2\left(2+5x+3x^2\right)^{9/2} + \frac{439(3+2x)^3\left(2+5x+3x^2\right)^{9/2}}{1404} -$$

$$= \frac{205}{351}(3+2x)^2\left(2+5x+3x^2\right)^{9/2} + \frac{439(3+2x)^3\left(2+5x+3x^2\right)^{9/2}}{1404} -$$

$$= \frac{74167(5+6x)\left(2+5x+3x^2\right)^{7/2}}{186624} + \frac{205}{351}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}$$

$$= -\frac{519169(5+6x)\left(2+5x+3x^2\right)^{5/2}}{13436928} + \frac{74167(5+6x)\left(2+5x+3x^2\right)}{186624}$$

$$= \frac{2595845(5+6x)\left(2+5x+3x^2\right)^{3/2}}{644972544} - \frac{519169(5+6x)\left(2+5x+3x^2\right.}{13436928}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x)\left(2+5x+3x\right.}{644972544}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x)\left(2+5x+3x\right.}{644972544}$$

$$= -\frac{2595845(5+6x)\sqrt{2+5x+3x^2}}{5159780352} + \frac{2595845(5+6x)\left(2+5x+3x\right.}{644972544}$$

Mathematica [A] time = 0.22, size = 184, normalized size = 0.80

$$-36(2x+3)^4\left(3x^2+5x+2\right)^{9/2} + 439(2x+3)^3\left(3x^2+5x+2\right)^{9/2} + 820(2x+3)^2\left(3x^2+5x+2\right)^{9/2} + \frac{1}{162}(3893$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (820*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2) + 439*(3 + 2*x)^3*(2 + 5*x + 3*x^2
)^(9/2) - 36*(3 + 2*x)^4*(2 + 5*x + 3*x^2)^(9/2) + ((852175 + 389394*x)*(2
+ 5*x + 3*x^2)^(9/2))/162 + (964171*(6*Sqrt[2 + 5*x + 3*x^2]*(1054785 + 929
8342*x + 34858680*x^2 + 72023472*x^3 + 88560000*x^4 + 64800000*x^5 + 261273
60*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x
^2])]))/286654464)/1404
```

fricas [A] time = 0.72, size = 113, normalized size = 0.49

$$-\frac{1}{67077144576}\left(2229025112064\,x^{12}+14643456638976\,x^{11}-2110350163968\,x^{10}-333952593887232\,x^{9}-159\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/67077144576*(2229025112064*x^12 + 14643456638976*x^11 - 2110350163968*x^
10 - 333952593887232*x^9 - 1590604366381056*x^8 - 4022427759003648*x^7 - 65
24509131334656*x^6 - 7203650864723712*x^5 - 5499074981552256*x^4 - 28658562
28323984*x^3 - 975104480077800*x^2 - 195441229635490*x - 17510968283403)*sq
rt(3*x^2 + 5*x + 2) + 2595845/61917364224*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2
+ 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 109, normalized size = 0.48

$$-\frac{1}{67077144576}\,(2\,(12\,(6\,(8\,(6\,(36\,(2\,(48\,(54\,(4\,(6\,(72\,x+473)x-409)x-258889)x-66586273)x-8082617507)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/67077144576*(2*(12*(6*(8*(6*(36*(2*(48*(54*(4*(6*(72*x + 473)*x - 409)*x
 - 258889)*x - 66586273)*x - 8082617507)*x - 26220538883)*x - 1042194858901
)*x - 4773502588153)*x - 19901779363361)*x - 40629353336575)*x - 9772061481
7745)*x - 17510968283403)*sqrt(3*x^2 + 5*x + 2) - 2595845/30958682112*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.06, size = 187, normalized size = 0.82

$$-\frac{16\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{4}}{39}+\frac{14\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{3}}{351}+\frac{2827\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x^{2}}{351}+\frac{84521\left(3x^{2}+5x+2\right)^{\frac{9}{2}}x}{4212}+2595845\sqrt{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^4*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -16/39*x^4*(3*x^2+5*x+2)^(9/2)+14/351*x^3*(3*x^2+5*x+2)^(9/2)+2827/351*x^2*
(3*x^2+5*x+2)^(9/2)+84521/4212*x*(3*x^2+5*x+2)^(9/2)+74167/186624*(6*x+5)*(
3*x^2+5*x+2)^(7/2)+2595845/30958682112*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*
x^2+5*x+2)^(1/2))-2595845/5159780352*(6*x+5)*(3*x^2+5*x+2)^(1/2)+2595845/64
4972544*(6*x+5)*(3*x^2+5*x+2)^(3/2)-519169/13436928*(6*x+5)*(3*x^2+5*x+2)^(
5/2)+3495529/227448*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.34, size = 225, normalized size = 0.98

$$-\frac{16}{39}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{4}+\frac{14}{351}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{3}+\frac{2827}{351}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x^{2}+\frac{84521}{4212}\left(3\,x^{2}+5\,x+2\right)^{\frac{9}{2}}x+\frac{349552}{22744}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -16/39*(3*x^2 + 5*x + 2)^(9/2)*x^4 + 14/351*(3*x^2 + 5*x + 2)^(9/2)*x^3 + 2
827/351*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 84521/4212*(3*x^2 + 5*x + 2)^(9/2)*x
```

```
+ 3495529/227448*(3*x^2 + 5*x + 2)^(9/2) + 74167/31104*(3*x^2 + 5*x + 2)^(7
/2)*x + 370835/186624*(3*x^2 + 5*x + 2)^(7/2) - 519169/2239488*(3*x^2 + 5*x
 + 2)^(5/2)*x - 2595845/13436928*(3*x^2 + 5*x + 2)^(5/2) + 2595845/10749542
4*(3*x^2 + 5*x + 2)^(3/2)*x + 12979225/644972544*(3*x^2 + 5*x + 2)^(3/2) -
2595845/859963392*sqrt(3*x^2 + 5*x + 2)*x + 2595845/30958682112*sqrt(3)*log
(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 12979225/5159780352*sqrt(3*x^
2 + 5*x + 2)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^4\,\left(x-5\right)\,{\left(3\,x^2+5\,x+2\right)}^{7/2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^4*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(- 32292 x \sqrt{3 x^{2} + 5 x + 2}\right)\, dx - \int \left(- 142182 x^{2} \sqrt{3 x^{2} + 5 x + 2}\right)\, dx - \int \left(- 363291 x^{3} \sqrt{3 x^{2} + 5 x + 2}\right)\, dx - \int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-32292*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-142182*x**2*sqrt(
3*x**2 + 5*x + 2), x) - Integral(-363291*x**3*sqrt(3*x**2 + 5*x + 2), x) -
Integral(-594106*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-644932*x**5*sq
rt(3*x**2 + 5*x + 2), x) - Integral(-463440*x**6*sqrt(3*x**2 + 5*x + 2), x)
 - Integral(-209413*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-49624*x**8*
sqrt(3*x**2 + 5*x + 2), x) - Integral(-504*x**9*sqrt(3*x**2 + 5*x + 2), x)
- Integral(2592*x**10*sqrt(3*x**2 + 5*x + 2), x) - Integral(432*x**11*sqrt(
3*x**2 + 5*x + 2), x) - Integral(-3240*sqrt(3*x**2 + 5*x + 2), x)
```

3.2448 $\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{7/2}\,dx$

Optimal. Leaf size=204

$$-\frac{1}{36}(2x+3)^3\left(3x^2+5x+2\right)^{9/2}+\frac{34}{99}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825)\left(3x^2+5x+2\right)^{9/2}}{320760}+91087(6x$$

```
[Out] 637609/214990848*(5+6*x)*(3*x^2+5*x+2)^(3/2)-637609/22394880*(5+6*x)*(3*x^2
+5*x+2)^(5/2)+91087/311040*(5+6*x)*(3*x^2+5*x+2)^(7/2)+34/99*(3+2*x)^2*(3*x
^2+5*x+2)^(9/2)-1/36*(3+2*x)^3*(3*x^2+5*x+2)^(9/2)+1/320760*(863825+390798*
x)*(3*x^2+5*x+2)^(9/2)+637609/10319560704*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^
2+5*x+2)^(1/2))*3^(1/2)-637609/1719926784*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi **[A]** time = 0.11, antiderivative size = 204, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{36}(2x+3)^3\left(3x^2+5x+2\right)^{9/2}+\frac{34}{99}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825)\left(3x^2+5x+2\right)^{9/2}}{320760}+91087(6x$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-637609*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/1719926784 + (637609*(5 + 6*x)*(2
 + 5*x + 3*x^2)^(3/2))/214990848 - (637609*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2
))/22394880 + (91087*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/311040 + (34*(3 + 2
*x)^2*(2 + 5*x + 3*x^2)^(9/2))/99 - ((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(9/2))/3
6 + ((863825 + 390798*x)*(2 + 5*x + 3*x^2)^(9/2))/320760 + (637609*ArcTanh[
(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(3439853568*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^3\left(2+5x+3x^2\right)^{7/2}\,dx &= -\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\frac{1}{36}\int (3+2x)^2\left(\frac{1239}{2}+408x\right)(2\\
&= \frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\\
&= \frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\frac{1}{36}(3+2x)^3\left(2+5x+3x^2\right)^{9/2}+\\
&= \frac{91087(5+6x)\left(2+5x+3x^2\right)^{7/2}}{311040}+\frac{34}{99}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}-\\
&= -\frac{637609(5+6x)\left(2+5x+3x^2\right)^{5/2}}{22394880}+\frac{91087(5+6x)\left(2+5x+3x^2\right.}{311040}\\
&= \frac{637609(5+6x)\left(2+5x+3x^2\right)^{3/2}}{214990848}-\frac{637609(5+6x)\left(2+5x+3x^2\right)}{22394880}\\
&= -\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)}{214990848}\\
&= -\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)}{214990848}\\
&= -\frac{637609(5+6x)\sqrt{2+5x+3x^2}}{1719926784}+\frac{637609(5+6x)\left(2+5x+3x^2\right)}{214990848}
\end{aligned}$$

Mathematica [A]   time = 0.15, size = 163, normalized size = 0.80

$$\frac{1}{36}\left(-(2x+3)^3\left(3x^2+5x+2\right)^{9/2}+\frac{136}{11}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(390798x+863825)\left(3x^2+5x+2\right)^{9/2}}{8910}+\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] ((136*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2))/11 - (3 + 2*x)^3*(2 + 5*x + 3*x^
2)^(9/2) + ((863825 + 390798*x)*(2 + 5*x + 3*x^2)^(9/2))/8910 + (91087*(6*S
qrt[2 + 5*x + 3*x^2]*(1054785 + 9298342*x + 34858680*x^2 + 72023472*x^3 + 8
8560000*x^4 + 64800000*x^5 + 26127360*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTa
nh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/1433272320)/36
```

fricas [A]   time = 0.64, size = 108, normalized size = 0.53

$$-\frac{1}{94595973120}\left(1702727516160\,x^{11}+8487838679040\,x^{10}-1559156627865\,6x^{9}-235832896880640\,x^{8}-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/94595973120*(1702727516160*x^11 + 8487838679040*x^10 - 15591566278656*x^
9 - 235832896880640*x^8 - 866110416795648*x^7 - 1766184385305600*x^6 - 2298
912734198016*x^5 - 1992318117275520*x^4 - 1149328734822000*x^3 - 4250359847
88120*x^2 - 91318722047870*x - 8675936123685)*sqrt(3*x^2 + 5*x + 2) + 63760
9/20639121408*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^
2 + 120*x + 49)
```

giac [A] time = 0.33, size = 104, normalized size = 0.51

$$-\frac{1}{94595973120}(2(12(6(8(6(36(2(48(54(20(66x+329)x-12087)x-9872495)x-1740351757)x-7097898$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/94595973120*(2*(12*(6*(8*(6*(36*(2*(48*(54*(20*(66*x + 329)*x - 12087)*x
 - 9872495)*x - 1740351757)*x - 7097898925)*x - 332597328443)*x - 172944281
0135)*x - 7981449547375)*x - 17709832699505)*x - 45659361023935)*x - 867593
6123685)*sqrt(3*x^2 + 5*x + 2) - 637609/10319560704*sqrt(3)*log(abs(-2*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 170, normalized size = 0.83

$$-\frac{2\left(3x^2+5x+2\right)^{\frac{9}{2}}x^3}{9}+\frac{37\left(3x^2+5x+2\right)^{\frac{9}{2}}x^2}{99}+\frac{22807\left(3x^2+5x+2\right)^{\frac{9}{2}}x}{5940}+\frac{637609\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x}\right.}{10319560704}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^3*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -2/9*(3*x^2+5*x+2)^(9/2)*x^3+37/99*(3*x^2+5*x+2)^(9/2)*x^2+22807/5940*(3*x^
2+5*x+2)^(9/2)*x+91087/311040*(6*x+5)*(3*x^2+5*x+2)^(7/2)+637609/1031956070
4*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-637609/1719926784*(
6*x+5)*(3*x^2+5*x+2)^(1/2)+637609/214990848*(6*x+5)*(3*x^2+5*x+2)^(3/2)-637
609/22394880*(6*x+5)*(3*x^2+5*x+2)^(5/2)+322939/64152*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.26, size = 208, normalized size = 1.02

$$-\frac{2}{9}\left(3x^2+5x+2\right)^{\frac{9}{2}}x^3+\frac{37}{99}\left(3x^2+5x+2\right)^{\frac{9}{2}}x^2+\frac{22807}{5940}\left(3x^2+5x+2\right)^{\frac{9}{2}}x+\frac{322939}{64152}\left(3x^2+5x+2\right)^{\frac{9}{2}}+\frac{91087}{51840}(3$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -2/9*(3*x^2 + 5*x + 2)^(9/2)*x^3 + 37/99*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 2280
7/5940*(3*x^2 + 5*x + 2)^(9/2)*x + 322939/64152*(3*x^2 + 5*x + 2)^(9/2) + 9
1087/51840*(3*x^2 + 5*x + 2)^(7/2)*x + 91087/62208*(3*x^2 + 5*x + 2)^(7/2)
- 637609/3732480*(3*x^2 + 5*x + 2)^(5/2)*x - 637609/4478976*(3*x^2 + 5*x +
2)^(5/2) + 637609/35831808*(3*x^2 + 5*x + 2)^(3/2)*x + 3188045/214990848*(3
*x^2 + 5*x + 2)^(3/2) - 637609/286654464*sqrt(3*x^2 + 5*x + 2)*x + 637609/1
0319560704*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 3188045
/1719926784*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2x+3)^3\,(x-5)\,\left(3x^2+5x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^3*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-10044x\sqrt{3x^2+5x+2}\right)dx-\int \left(-40698x^2\sqrt{3x^2+5x+2}\right)dx-\int \left(-93965x^3\sqrt{3x^2+5x+2}\right)dx-\int \left(\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-10044*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-40698*x**2*sqrt(3
*x**2 + 5*x + 2), x) - Integral(-93965*x**3*sqrt(3*x**2 + 5*x + 2), x) - In
tegral(-135392*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-124716*x**5*sqrt
(3*x**2 + 5*x + 2), x) - Integral(-71336*x**6*sqrt(3*x**2 + 5*x + 2), x) -
Integral(-22247*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1710*x**8*sqrt(
3*x**2 + 5*x + 2), x) - Integral(972*x**9*sqrt(3*x**2 + 5*x + 2), x) - Inte
gral(216*x**10*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1080*sqrt(3*x**2 + 5*
x + 2), x)
```

3.2449 $\int (5-x)(3+2x)^2 \left(2+5x+3x^2\right)^{7/2} \, dx$

Optimal. Leaf size=179

$$-\frac{1}{33}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(20358x+47425)\left(3x^2+5x+2\right)^{9/2}}{26730}+\frac{5627(6x+5)\left(3x^2+5x+2\right)^{7/2}}{25920}-39389(6x$$

```
[Out] 39389/17915904*(5+6*x)*(3*x^2+5*x+2)^(3/2)-39389/1866240*(5+6*x)*(3*x^2+5*x
+2)^(5/2)+5627/25920*(5+6*x)*(3*x^2+5*x+2)^(7/2)-1/33*(3+2*x)^2*(3*x^2+5*x+
2)^(9/2)+1/26730*(47425+20358*x)*(3*x^2+5*x+2)^(9/2)+39389/859963392*arctan
h(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-39389/143327232*(5+6*x)*
(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 179, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {832, 779, 612, 621, 206}

$$-\frac{1}{33}(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{(20358x+47425)\left(3x^2+5x+2\right)^{9/2}}{26730}+\frac{5627(6x+5)\left(3x^2+5x+2\right)^{7/2}}{25920}-39389(6x$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-39389*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/143327232 + (39389*(5 + 6*x)*(2 +
5*x + 3*x^2)^(3/2))/17915904 - (39389*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/18
66240 + (5627*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/25920 - ((3 + 2*x)^2*(2 +
5*x + 3*x^2)^(9/2))/33 + ((47425 + 20358*x)*(2 + 5*x + 3*x^2)^(9/2))/26730
+ (39389*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(286654464*S
qrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\begin{aligned}
\int (5-x)(3+2x)^2\left(2+5x+3x^2\right)^{7/2}\,dx &= -\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\frac{1}{33}\int (3+2x)\left(\frac{1141}{2}+377x\right)\Big(2\\
&= -\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\frac{(47425+20358x)\left(2+5x+3x^2\right)}{26730}\\
&= \frac{5627(5+6x)\left(2+5x+3x^2\right)^{7/2}}{25920}-\frac{1}{33}(3+2x)^2\left(2+5x+3x^2\right)^{9/2}+\\
&= -\frac{39389(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1866240}+\frac{5627(5+6x)\left(2+5x+3x^2\right)^{7/2}}{25920}\\
&= \frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}-\frac{39389(5+6x)\left(2+5x+3x^2\right)^{5/2}}{1866240}\\
&= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}\\
&= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}\\
&= -\frac{39389(5+6x)\sqrt{2+5x+3x^2}}{143327232}+\frac{39389(5+6x)\left(2+5x+3x^2\right)^{3/2}}{17915904}
\end{aligned}$$

Mathematica [A] time = 0.14, size = 138, normalized size = 0.77

$$\frac{1}{33}\Bigg(-(2x+3)^2\left(3x^2+5x+2\right)^{9/2}+\frac{1}{810}(20358x+47425)\left(3x^2+5x+2\right)^{9/2}+\frac{61897\Big(35\sqrt{3}\tanh^{-1}\Big(\frac{6x+5}{2\sqrt{9x^2+15}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(9/2)) + ((47425 + 20358*x)*(2 + 5*x + 3*x
^2)^(9/2))/810 + (61897*(6*Sqrt[2 + 5*x + 3*x^2]*(1054785 + 9298342*x + 348
58680*x^2 + 72023472*x^3 + 88560000*x^4 + 64800000*x^5 + 26127360*x^6 + 447
8976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/1433
272320)/33
```

fricas [A] time = 0.59, size = 103, normalized size = 0.58

$$-\frac{1}{7882997760}\Big(77396705280\,x^{10}+261858852864\,x^{9}-1156531322880\,x^{8}-9116575930368\,x^{7}-257234919$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/7882997760*(77396705280*x^10 + 261858852864*x^9 - 1156531322880*x^8 - 91
16575930368*x^7 - 25723491978240*x^6 - 41190616509696*x^5 - 41472321125760*
x^4 - 26847121235760*x^3 - 10882383306360*x^2 - 2519542755670*x - 254668717
065)*sqrt(3*x^2 + 5*x + 2) + 39389/1719926784*sqrt(3)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 99, normalized size = 0.55

$$-\frac{1}{7882997760}(2(12(6(8(6(36(2(48(54(60x+203)x-48415)x-18318737)x-103376945)x-5959290583)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/7882997760*(2*(12*(6*(8*(6*(36*(2*(48*(54*(60*x + 203)*x - 48415)*x - 18
318737)*x - 103376945)*x - 5959290583)*x - 36000278755)*x - 186438341915)*x
 - 453432637765)*x - 1259771377835)*x - 254668717065)*sqrt(3*x^2 + 5*x + 2)
 - 39389/859963392*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2)) - 5))
```

maple [A] time = 0.06, size = 153, normalized size = 0.85

$$-\frac{4\left(3x^2+5x+2\right)^{\frac{9}{2}}x^2}{33}+\frac{197\left(3x^2+5x+2\right)^{\frac{9}{2}}x}{495}+\frac{39389\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{859963392}+\frac{5627(6x+5)\left(3x^2+\right.}{25920}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^2*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -4/33*(3*x^2+5*x+2)^(9/2)*x^2+197/495*(3*x^2+5*x+2)^(9/2)*x+5627/25920*(6*x
+5)*(3*x^2+5*x+2)^(7/2)+39389/859963392*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))-39389/143327232*(6*x+5)*(3*x^2+5*x+2)^(1/2)+39389/179159
04*(6*x+5)*(3*x^2+5*x+2)^(3/2)-39389/1866240*(6*x+5)*(3*x^2+5*x+2)^(5/2)+80
27/5346*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.31, size = 191, normalized size = 1.07

$$-\frac{4}{33}\left(3x^2+5x+2\right)^{\frac{9}{2}}x^2+\frac{197}{495}\left(3x^2+5x+2\right)^{\frac{9}{2}}x+\frac{8027}{5346}\left(3x^2+5x+2\right)^{\frac{9}{2}}+\frac{5627}{4320}\left(3x^2+5x+2\right)^{\frac{7}{2}}x+\frac{5627}{5184}\left(3x^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -4/33*(3*x^2 + 5*x + 2)^(9/2)*x^2 + 197/495*(3*x^2 + 5*x + 2)^(9/2)*x + 802
7/5346*(3*x^2 + 5*x + 2)^(9/2) + 5627/4320*(3*x^2 + 5*x + 2)^(7/2)*x + 5627
/5184*(3*x^2 + 5*x + 2)^(7/2) - 39389/311040*(3*x^2 + 5*x + 2)^(5/2)*x - 39
389/373248*(3*x^2 + 5*x + 2)^(5/2) + 39389/2985984*(3*x^2 + 5*x + 2)^(3/2)*
x + 196945/17915904*(3*x^2 + 5*x + 2)^(3/2) - 39389/23887872*sqrt(3*x^2 + 5
*x + 2)*x + 39389/859963392*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6
*x + 5) - 196945/143327232*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2x+3)^2\,(x-5)\,\left(3x^2+5x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)^2*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-3108x\sqrt{3x^2+5x+2}\right)dx-\int\left(-11494x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-23659x^3\sqrt{3x^2+5x+2}\right)dx-\int\Big(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-3108*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-11494*x**2*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-23659*x**3*sqrt(3*x**2 + 5*x + 2), x) - Int
egral(-29358*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-22000*x**5*sqrt(3*
x**2 + 5*x + 2), x) - Integral(-9112*x**6*sqrt(3*x**2 + 5*x + 2), x) - Inte
gral(-1341*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(324*x**8*sqrt(3*x**2
+ 5*x + 2), x) - Integral(108*x**9*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3
60*sqrt(3*x**2 + 5*x + 2), x)
```

3.2450 $\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{7/2}\,dx$

Optimal. Leaf size=154

$$\frac{1}{810}(265-54x)\left(3x^2+5x+2\right)^{9/2}+\frac{1399(6x+5)\left(3x^2+5x+2\right)^{7/2}}{8640}-\frac{9793(6x+5)\left(3x^2+5x+2\right)^{5/2}}{622080}+\frac{9793(6x+5}{5}$$

```
[Out] 9793/5971968*(5+6*x)*(3*x^2+5*x+2)^(3/2)-9793/622080*(5+6*x)*(3*x^2+5*x+2)^
(5/2)+1399/8640*(5+6*x)*(3*x^2+5*x+2)^(7/2)+1/810*(265-54*x)*(3*x^2+5*x+2)^
(9/2)+9793/286654464*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/
2)-9793/47775744*(5+6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 154, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.160$, Rules used = {779, 612, 621, 206}

$$\frac{1}{810}(265-54x)\left(3x^2+5x+2\right)^{9/2}+\frac{1399(6x+5)\left(3x^2+5x+2\right)^{7/2}}{8640}-\frac{9793(6x+5)\left(3x^2+5x+2\right)^{5/2}}{622080}+\frac{9793(6x+5}{5}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-9793*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/47775744 + (9793*(5 + 6*x)*(2 + 5*x
 + 3*x^2)^(3/2))/5971968 - (9793*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/622080
+ (1399*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/8640 + ((265 - 54*x)*(2 + 5*x +
3*x^2)^(9/2))/810 + (9793*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])])/(95551488*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int (5-x)(3+2x)\left(2+5x+3x^2\right)^{7/2}\,dx = \frac{1}{810}(265-54x)\left(2+5x+3x^2\right)^{9/2}+\frac{1399}{180}\int \left(2+5x+3x^2\right)^{7/2}\,dx$$

$$= \frac{1399(5+6x)\left(2+5x+3x^2\right)^{7/2}}{8640}+\frac{1}{810}(265-54x)\left(2+5x+3x^2\right)^{9/2}$$

$$= -\frac{9793(5+6x)\left(2+5x+3x^2\right)^{5/2}}{622080}+\frac{1399(5+6x)\left(2+5x+3x^2\right)^{7/2}}{8640}+$$

$$= \frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-\frac{9793(5+6x)\left(2+5x+3x^2\right)^{5/2}}{622080}+$$

$$= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-$$

$$= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-$$

$$= -\frac{9793(5+6x)\sqrt{2+5x+3x^2}}{47775744}+\frac{9793(5+6x)\left(2+5x+3x^2\right)^{3/2}}{5971968}-$$

Mathematica [A] time = 0.06, size = 111, normalized size = 0.72

$$\frac{1399\left(35\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+6\sqrt{3x^2+5x+2}\,\left(4478976x^7+26127360x^6+64800000x^5+88560000x\right.\right.}{1433272320}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] -1/810*((-265 + 54*x)*(2 + 5*x + 3*x^2)^(9/2)) + (1399*(6*Sqrt[2 + 5*x + 3*
x^2]*(1054785 + 9298342*x + 34858680*x^2 + 72023472*x^3 + 88560000*x^4 + 64
800000*x^5 + 26127360*x^6 + 4478976*x^7) + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*
Sqrt[6 + 15*x + 9*x^2])]))/1433272320
```

fricas [A] time = 0.82, size = 98, normalized size = 0.64

$$-\frac{1}{238878720}\left(1289945088\,x^9+2269347840\,x^8-23529056256\,x^7-117850567680\,x^6-250227954432\,x^5-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/238878720*(1289945088*x^9 + 2269347840*x^8 - 23529056256*x^7 - 117850567
680*x^6 - 250227954432*x^5 - 302902600320*x^4 - 224097754320*x^3 - 10061282
2920*x^2 - 25257845290*x - 2726071095)*sqrt(3*x^2 + 5*x + 2) + 9793/5733089
28*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x +
 49)
```

giac [A] time = 0.23, size = 94, normalized size = 0.61

$$-\frac{1}{238878720}\left(2\left(12\left(6\left(8\left(6\left(36\left(2\left(48\left(54\,x+95\right)x-47279\right)x-473615\right)x-36201961\right)x-262936285\right)x-1556\right.\right.\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/238878720*(2*(12*(6*(8*(6*(36*(2*(48*(54*x + 95)*x - 47279)*x - 473615)*
x - 36201961)*x - 262936285)*x - 1556234405)*x - 4192200955)*x - 1262892264
5)*x - 2726071095)*sqrt(3*x^2 + 5*x + 2) - 9793/286654464*sqrt(3)*log(abs(-
2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 136, normalized size = 0.88

$$-\frac{\left(3x^2+5x+2\right)^{\frac{9}{2}} x}{15}+\frac{9793\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{286654464}+\frac{53\left(3x^2+5x+2\right)^{\frac{9}{2}}}{162}+\frac{1399\left(6x+5\right)\left(3x^2+5x+\right.}{8640}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] -1/15*(3*x^2+5*x+2)^(9/2)*x+53/162*(3*x^2+5*x+2)^(9/2)+1399/8640*(6*x+5)*(3
*x^2+5*x+2)^(7/2)-9793/622080*(6*x+5)*(3*x^2+5*x+2)^(5/2)+9793/5971968*(6*x
+5)*(3*x^2+5*x+2)^(3/2)-9793/47775744*(6*x+5)*(3*x^2+5*x+2)^(1/2)+9793/2866
54464*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.23, size = 174, normalized size = 1.13

$$-\frac{1}{15}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}x+\frac{53}{162}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}+\frac{1399}{1440}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{1399}{1728}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{9793}{103680}\left(3\,x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/15*(3*x^2 + 5*x + 2)^(9/2)*x + 53/162*(3*x^2 + 5*x + 2)^(9/2) + 1399/144
0*(3*x^2 + 5*x + 2)^(7/2)*x + 1399/1728*(3*x^2 + 5*x + 2)^(7/2) - 9793/1036
80*(3*x^2 + 5*x + 2)^(5/2)*x - 9793/124416*(3*x^2 + 5*x + 2)^(5/2) + 9793/9
95328*(3*x^2 + 5*x + 2)^(3/2)*x + 48965/5971968*(3*x^2 + 5*x + 2)^(3/2) - 9
793/7962624*sqrt(3*x^2 + 5*x + 2)*x + 9793/286654464*sqrt(3)*log(2*sqrt(3)*
sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 48965/47775744*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] -int((2*x + 3)*(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-956x\sqrt{3x^2+5x+2}\right)dx-\int\left(-3194x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-5757x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-5948x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-956*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3194*x**2*sqrt(3*x*
*2 + 5*x + 2), x) - Integral(-5757*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integr
al(-5948*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3368*x**5*sqrt(3*x**2
+ 5*x + 2), x) - Integral(-792*x**6*sqrt(3*x**2 + 5*x + 2), x) - Integral(8
1*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(54*x**8*sqrt(3*x**2 + 5*x + 2)
, x) - Integral(-120*sqrt(3*x**2 + 5*x + 2), x)
```

3.2451 $\int (5-x)\left(2+5x+3x^2\right)^{7/2}\,dx$

Optimal. Leaf size=149

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{9/2}+\frac{35}{288}(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245(6x+5)\left(3x^2+5x+2\right)^{5/2}}{20736}+\frac{1225(6x+5)(3x^2+5x}{995328}$$

```
[Out] 1225/995328*(5+6*x)*(3*x^2+5*x+2)^(3/2)-245/20736*(5+6*x)*(3*x^2+5*x+2)^(5/
2)+35/288*(5+6*x)*(3*x^2+5*x+2)^(7/2)-1/27*(3*x^2+5*x+2)^(9/2)+1225/4777574
4*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-1225/7962624*(5+
6*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 149, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.200, Rules used = {640, 612, 621, 206}

$$-\frac{1}{27}\left(3x^2+5x+2\right)^{9/2}+\frac{35}{288}(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245(6x+5)\left(3x^2+5x+2\right)^{5/2}}{20736}+\frac{1225(6x+5)(3x^2+5x}{995328}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (-1225*(5 + 6*x)*Sqrt[2 + 5*x + 3*x^2])/7962624 + (1225*(5 + 6*x)*(2 + 5*x
+ 3*x^2)^(3/2))/995328 - (245*(5 + 6*x)*(2 + 5*x + 3*x^2)^(5/2))/20736 + (3
5*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2))/288 - (2 + 5*x + 3*x^2)^(9/2)/27 + (12
25*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(15925248*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 612

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^p)/(2*c*(2*p + 1)), x] - Dist[(p*(b^2 - 4*a*c))/(2*c*(2
*p + 1)), Int[(a + b*x + c*x^2)^(p - 1), x], x] /; FreeQ[{a, b, c}, x] && N
eQ[b^2 - 4*a*c, 0] && GtQ[p, 0] && IntegerQ[4*p]
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\int (5-x)\left(2+5x+3x^2\right)^{7/2}\,dx = -\frac{1}{27}\left(2+5x+3x^2\right)^{9/2}+\frac{35}{6}\int \left(2+5x+3x^2\right)^{7/2}\,dx$$

$$= \frac{35}{288}(5+6x)\left(2+5x+3x^2\right)^{7/2}-\frac{1}{27}\left(2+5x+3x^2\right)^{9/2}-\frac{245}{576}\int \Big(2+5x+3x^2\Big)^{5/}$$

$$= -\frac{245(5+6x)\left(2+5x+3x^2\right)^{5/2}}{20736}+\frac{35}{288}(5+6x)\left(2+5x+3x^2\right)^{7/2}-\frac{1}{27}\Big(2+5x+$$

$$= \frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328}-\frac{245(5+6x)\left(2+5x+3x^2\right)^{5/2}}{20736}+\frac{35}{288}(5+6x)$$

$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624}+\frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328}-\frac{245(5+6x)}{2}$$

$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624}+\frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328}-\frac{245(5+6x)}{2}$$

$$= -\frac{1225(5+6x)\sqrt{2+5x+3x^2}}{7962624}+\frac{1225(5+6x)\left(2+5x+3x^2\right)^{3/2}}{995328}-\frac{245(5+6x)}{2}$$

Mathematica [A] time = 0.12, size = 119, normalized size = 0.80

$$\frac{-64\left(3x^2+5x+2\right)^{9/2}+210(6x+5)\left(3x^2+5x+2\right)^{7/2}-\frac{245\Big(6\sqrt{3x^2+5x+2}\,(20736x^5+86400x^4+142128x^3+115320x^2+46166x+730}{27648}}{1728}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(2 + 5*x + 3*x^2)^(7/2),x]
```

```
[Out] (210*(5 + 6*x)*(2 + 5*x + 3*x^2)^(7/2) - 64*(2 + 5*x + 3*x^2)^(9/2) - (245*
(6*Sqrt[2 + 5*x + 3*x^2]*(7305 + 46166*x + 115320*x^2 + 142128*x^3 + 86400*
x^4 + 20736*x^5) - 5*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])
)/27648)/1728
```

fricas [A] time = 0.86, size = 93, normalized size = 0.62

$$-\frac{1}{7962624}\Big(23887872\,x^8+2488320\,x^7-452625408\,x^6-1507127040\,x^5-2320737408\,x^4-2013572880\,x^3-10$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/7962624*(23887872*x^8 + 2488320*x^7 - 452625408*x^6 - 1507127040*x^5 - 2
320737408*x^4 - 2013572880*x^3 - 1014795048*x^2 - 278256050*x - 32198883)*s
qrt(3*x^2 + 5*x + 2) + 1225/95551488*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x
 + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 89, normalized size = 0.60

$$-\frac{1}{7962624}(2(12(6(8(6(36(2(48\,x+5)x-1819)x-218045)x-2014529)x-13983145)x-42283127)x-1391$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="giac")
```

```
[Out] -1/7962624*(2*(12*(6*(8*(6*(36*(2*(48*x + 5)*x - 1819)*x - 218045)*x - 2014
529)*x - 13983145)*x - 42283127)*x - 139128025)*x - 32198883)*sqrt(3*x^2 +
5*x + 2) - 1225/47775744*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5))
```

maple [A] time = 0.05, size = 121, normalized size = 0.81

$$\frac{1225\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{47775744}+\frac{35\,(6x+5)\left(3x^2+5x+2\right)^{\frac{7}{2}}}{288}-\frac{245\,(6x+5)\left(3x^2+5x+2\right)^{\frac{5}{2}}}{20736}+1225\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2),x)
```

```
[Out] 35/288*(6*x+5)*(3*x^2+5*x+2)^(7/2)-245/20736*(6*x+5)*(3*x^2+5*x+2)^(5/2)+12
25/995328*(6*x+5)*(3*x^2+5*x+2)^(3/2)-1225/7962624*(6*x+5)*(3*x^2+5*x+2)^(1
/2)+1225/47775744*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/2
7*(3*x^2+5*x+2)^(9/2)
```

maxima [A] time = 1.39, size = 159, normalized size = 1.07

$$-\frac{1}{27}\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}+\frac{35}{48}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}x+\frac{175}{288}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{245}{3456}\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}x-\frac{1225}{20736}\left(3\,x^2+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2),x, algorithm="maxima")
```

```
[Out] -1/27*(3*x^2 + 5*x + 2)^(9/2) + 35/48*(3*x^2 + 5*x + 2)^(7/2)*x + 175/288*(
3*x^2 + 5*x + 2)^(7/2) - 245/3456*(3*x^2 + 5*x + 2)^(5/2)*x - 1225/20736*(3
*x^2 + 5*x + 2)^(5/2) + 1225/165888*(3*x^2 + 5*x + 2)^(3/2)*x + 6125/995328
*(3*x^2 + 5*x + 2)^(3/2) - 1225/1327104*sqrt(3*x^2 + 5*x + 2)*x + 1225/4777
5744*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 6125/7962624*
sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int -(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)*(5*x + 3*x^2 + 2)^(7/2),x)
```

```
[Out] int(-(x - 5)*(5*x + 3*x^2 + 2)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-292x\sqrt{3x^2+5x+2}\right)dx-\int\left(-870x^2\sqrt{3x^2+5x+2}\right)dx-\int\left(-1339x^3\sqrt{3x^2+5x+2}\right)dx-\int\left(-1090\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2),x)
```

```
[Out] -Integral(-292*x*sqrt(3*x**2 + 5*x + 2), x) - Integral(-870*x**2*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2), x) - Integra
l(-1090*x**4*sqrt(3*x**2 + 5*x + 2), x) - Integral(-396*x**5*sqrt(3*x**2 +
5*x + 2), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2), x) - Integral(-40*s
qrt(3*x**2 + 5*x + 2), x)
```

3.2452 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{3+2x}\,dx$

Optimal. Leaf size=169

$$\frac{1}{672}(277-42x)\left(3x^2+5x+2\right)^{7/2}-\frac{(7446x+589)\left(3x^2+5x+2\right)^{5/2}}{6912}+\frac{5(6205-127338x)\left(3x^2+5x+2\right)^{3/2}}{331776}+\frac{5(122}{}$$

```
[Out] 5/331776*(6205-127338*x)*(3*x^2+5*x+2)^(3/2)-1/6912*(589+7446*x)*(3*x^2+5*x
+2)^(5/2)+1/672*(277-42*x)*(3*x^2+5*x+2)^(7/2)-65251715/15925248*arctanh(1/
6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+1625/512*arctanh(1/10*(7+8*x
)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+5/2654208*(1229315-2568342*x)*(3*x^2
+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {814, 843, 621, 206, 724}

$$\frac{1}{672}(277-42x)\left(3x^2+5x+2\right)^{7/2}-\frac{(7446x+589)\left(3x^2+5x+2\right)^{5/2}}{6912}+\frac{5(6205-127338x)\left(3x^2+5x+2\right)^{3/2}}{331776}+\frac{5(122}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x),x]
```

```
[Out] (5*(1229315 - 2568342*x)*Sqrt[2 + 5*x + 3*x^2])/2654208 + (5*(6205 - 127338
*x)*(2 + 5*x + 3*x^2)^(3/2))/331776 - ((589 + 7446*x)*(2 + 5*x + 3*x^2)^(5/
2))/6912 + ((277 - 42*x)*(2 + 5*x + 3*x^2)^(7/2))/672 - (65251715*ArcTanh[(
5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(5308416*Sqrt[3]) + (1625*Sqrt
[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/512
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{3+2x}\,dx = \frac{1}{672}(277-42x)\left(2+5x+3x^2\right)^{7/2} - \frac{1}{192}\int \frac{(2163+2482x)\left(2+5x+3x^2\right)^{5/}}{3+2x}$$

$$= -\frac{(589+7446x)\left(2+5x+3x^2\right)^{5/2}}{6912} + \frac{1}{672}(277-42x)\left(2+5x+3x^2\right)^{7/2} + \int$$

$$= \frac{5(6205-127338x)\left(2+5x+3x^2\right)^{3/2}}{331776} - \frac{(589+7446x)\left(2+5x+3x^2\right)^{5/2}}{6912} +$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\big(2+5x+3x^2}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\big(2+5x+3x^2}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\big(2+5x+3x^2}{331776}$$

$$= \frac{5(1229315-2568342x)\sqrt{2+5x+3x^2}}{2654208} + \frac{5(6205-127338x)\big(2+5x+3x^2}{331776}$$

Mathematica [A] time = 0.08, size = 123, normalized size = 0.73

$$\frac{-353808000\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - 456762005\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\,\big(31352832}{1114}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x),x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-101435865 - 185981750*x - 722869752*x^2 - 12248
44848*x^3 - 1167854976*x^4 - 529784064*x^5 - 50015232*x^6 + 31352832*x^7) -
 353808000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] -
456762005*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/111476736
```

fricas [A] time = 0.73, size = 139, normalized size = 0.82

$$-\frac{1}{18579456}\big(31352832\,x^7 - 50015232\,x^6 - 529784064\,x^5 - 1167854976\,x^4 - 1224844848\,x^3 - 722869752\,x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="fricas")
```

```
[Out] -1/18579456*(31352832*x^7 - 50015232*x^6 - 529784064*x^5 - 1167854976*x^4 -
 1224844848*x^3 - 722869752*x^2 - 185981750*x - 101435865)*sqrt(3*x^2 + 5*x
 + 2) + 65251715/31850496*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x
 + 5) + 72*x^2 + 120*x + 49) + 1625/1024*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2
+ 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.36, size = 156, normalized size = 0.92

$$-\frac{1}{18579456}(2(12(18(8(6(36(42x-67)x-25549)x-337921)x-2835289)x-30119573)x-92990875)x-10$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="giac")
```

```
[Out] -1/18579456*(2*(12*(18*(8*(6*(36*(42*x - 67)*x - 25549)*x - 337921)*x - 283
5289)*x - 30119573)*x - 92990875)*x - 101435865)*sqrt(3*x^2 + 5*x + 2) + 16
25/512*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
 2))) + 65251715/15925248*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt
(3*x^2 + 5*x + 2)))
```

maple [B] time = 0.05, size = 295, normalized size = 1.75

$$-\frac{1625\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{512}-\frac{679705\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{165888}-35\sqrt{3}\ \ln((3x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3),x)
```

```
[Out] -1/96*(6*x+5)*(3*x^2+5*x+2)^(7/2)+7/6912*(6*x+5)*(3*x^2+5*x+2)^(5/2)-35/331
776*(6*x+5)*(3*x^2+5*x+2)^(3/2)+35/2654208*(6*x+5)*(3*x^2+5*x+2)^(1/2)-35/1
5925248*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))+13/28*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-13/72*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-1105/345
6*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-22295/27648*(6*x+5)*(-4*x+3*(x+3/2)
^2-19/4)^(1/2)-679705/165888*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/
2)^2-19/4)^(1/2))+13/16*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+325/192*(-4*x+3*(x+3/
2)^2-19/4)^(3/2)+1625/512*(-16*x+12*(x+3/2)^2-19)^(1/2)-1625/512*5^(1/2)*ar
ctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.31, size = 186, normalized size = 1.10

$$-\frac{1}{16}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}x+\frac{277}{672}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}-\frac{1241}{1152}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}x-\frac{589}{6912}\left(3x^{2}+5x+2\right)^{\frac{5}{2}}-\frac{106115}{55296}(3x^{2}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x),x, algorithm="maxima")
```

```
[Out] -1/16*(3*x^2 + 5*x + 2)^(7/2)*x + 277/672*(3*x^2 + 5*x + 2)^(7/2) - 1241/11
52*(3*x^2 + 5*x + 2)^(5/2)*x - 589/6912*(3*x^2 + 5*x + 2)^(5/2) - 106115/55
296*(3*x^2 + 5*x + 2)^(3/2)*x + 31025/331776*(3*x^2 + 5*x + 2)^(3/2) - 2140
285/442368*sqrt(3*x^2 + 5*x + 2)*x - 65251715/15925248*sqrt(3)*log(sqrt(3)*
sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 1625/512*sqrt(5)*log(sqrt(5)*sqrt(3*x^
2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 6146575/2654208*sqrt(3*
x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{2x+3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{2x+3}\right)dx-\int\Bigg(-\,1339x^{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x),x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-292*x*sqrt(3
*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/
(2*x + 3), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) -
Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(-396*x*
*5*sqrt(3*x**2 + 5*x + 2)/(2*x + 3), x) - Integral(27*x**7*sqrt(3*x**2 + 5*
x + 2)/(2*x + 3), x)
```

3.2453 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^2}\,dx$

Optimal. Leaf size=174

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{7/2}}{14(2x+3)}+\frac{(8310x+283)\left(3x^2+5x+2\right)^{5/2}}{1440}-\frac{(6925-151098x)\left(3x^2+5x+2\right)^{3/2}}{13824}-(1454315-$$

```
[Out] -1/13824*(6925-151098*x)*(3*x^2+5*x+2)^(3/2)+1/1440*(283+8310*x)*(3*x^2+5*x
+2)^(5/2)-1/14*(47+x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)+15434623/663552*arctanh(1
/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-9225/512*arctanh(1/10*(7+8*
x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-1/110592*(1454315-3037062*x)*(3*x^2
+5*x+2)^(1/2)
```

Rubi [**A**] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{7/2}}{14(2x+3)}+\frac{(8310x+283)\left(3x^2+5x+2\right)^{5/2}}{1440}-\frac{(6925-151098x)\left(3x^2+5x+2\right)^{3/2}}{13824}-(1454315-$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^2,x]
```

```
[Out] -((1454315 - 3037062*x)*Sqrt[2 + 5*x + 3*x^2])/110592 - ((6925 - 151098*x)*
(2 + 5*x + 3*x^2)^(3/2))/13824 + ((283 + 8310*x)*(2 + 5*x + 3*x^2)^(5/2))/1
440 - ((47 + x)*(2 + 5*x + 3*x^2)^(7/2))/(14*(3 + 2*x)) + (15434623*ArcTanh
[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(221184*Sqrt[3]) - (9225*Sqr
t[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/512
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^2}\,dx &= -\frac{(47+x)\left(2+5x+3x^2\right)^{7/2}}{14(3+2x)}-\frac{1}{8}\int \frac{(-462-554x)\left(2+5x+3x^2\right)^{5/2}}{3+2x}\,dx\\
&= \frac{(283+8310x)\left(2+5x+3x^2\right)^{5/2}}{1440}-\frac{(47+x)\left(2+5x+3x^2\right)^{7/2}}{14(3+2x)}+\int \frac{(84678+100}{}\\
&= -\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3/2}}{13824}+\frac{(283+8310x)\left(2+5x+3x^2\right)^{5/2}}{1440}-\\
&= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592}-\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3}}{13824}\\
&= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592}-\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3}}{13824}\\
&= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592}-\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3}}{13824}\\
&= -\frac{(1454315-3037062x)\sqrt{2+5x+3x^2}}{110592}-\frac{(6925-151098x)\left(2+5x+3x^2\right)^{3}}{13824}
\end{aligned}
$$

Mathematica [A] time = 0.11, size = 130, normalized size = 0.75

$$
\frac{418446000\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right)+540211805\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\left(7464960x^7-13893120x^6\right.}{}}{23224320}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^2,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(259165107 + 28017108*x - 179819084*x^2 - 275126
016*x^3 - 273531168*x^4 - 125632512*x^5 - 13893120*x^6 + 7464960*x^7))/(3 +
 2*x) + 418446000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^
2])] + 540211805*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/232
24320
```

fricas [A] time = 0.78, size = 159, normalized size = 0.91

$$540211805 \sqrt{3} (2x+3) \log\left(4 \sqrt{3} \sqrt{3x^2+5x+2} (6x+5) + 72x^2 + 120x + 49\right) + 418446000 \sqrt{5} (2x+3) \log\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="fricas")
```

```
[Out] 1/46448640*(540211805*sqrt(3)*(2*x + 3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)
*(6*x + 5) + 72*x^2 + 120*x + 49) + 418446000*sqrt(5)*(2*x + 3)*log(-(4*sqr
t(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x
+ 9)) - 12*(7464960*x^7 - 13893120*x^6 - 125632512*x^5 - 273531168*x^4 - 27
5126016*x^3 - 179819084*x^2 + 28017108*x + 259165107)*sqrt(3*x^2 + 5*x + 2)
)/(2*x + 3)
```

giac [B] time = 1.45, size = 861, normalized size = 4.95

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="giac")
```

```
[Out] -15434623/663552*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
+ 3)^2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/
(2*x + 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) + 9225/512*sqrt(5
)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x +
3)) - 4))*sgn(1/(2*x + 3)) - 1625/512*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
)*sgn(1/(2*x + 3)) + 1/3870720*(1702084195*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)
^2 + 3) + sqrt(5)/(2*x + 3))^13*sgn(1/(2*x + 3)) - 3595838400*sqrt(5)*(sqrt
(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^12*sgn(1/(2*x + 3))
 - 462583100*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^1
1*sgn(1/(2*x + 3)) + 12803555520*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2
 + 3) + sqrt(5)/(2*x + 3))^10*sgn(1/(2*x + 3)) + 91554292599*(sqrt(-8/(2*x
+ 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^9*sgn(1/(2*x + 3)) - 1329506
43840*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^
8*sgn(1/(2*x + 3)) - 221215739904*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
 sqrt(5)/(2*x + 3))^7*sgn(1/(2*x + 3)) + 432202780800*sqrt(5)*(sqrt(-8/(2*x
 + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^6*sgn(1/(2*x + 3)) + 252015
304401*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^5*sgn(1
/(2*x + 3)) - 680038027200*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3)
+ sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) - 506502404100*(sqrt(-8/(2*x + 3) +
 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x + 3)) + 786343723200*
sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2*sgn(
1/(2*x + 3)) + 178876045845*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(
5)/(2*x + 3))*sgn(1/(2*x + 3)) - 339366412800*sqrt(5)*sgn(1/(2*x + 3)))/((s
qrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^7
```

maple [A] time = 0.06, size = 232, normalized size = 1.33

$$\frac{9225\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{512}+\frac{15434623\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{663552}-\frac{13\left(-4x+\right.}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^2,x)
```

```
[Out] -13/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-369/140*(-4*x+3*(x+3/2)^2-19/4
)^(7/2)+277/288*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+25183/13824*(6*x+5)*(
-4*x+3*(x+3/2)^2-19/4)^(3/2)+506177/110592*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^
(1/2)+15434623/663552*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19
/4)^(1/2))-369/80*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-615/64*(-4*x+3*(x+3/2)^2-19
/4)^(3/2)-9225/512*(-16*x+12*(x+3/2)^2-19)^(1/2)+9225/512*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+13/20*(6*x+5)*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.31, size = 192, normalized size = 1.10

$$-\frac{1}{28}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}+\frac{277}{48}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}x+\frac{283}{1440}\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}-\frac{13\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}}{4\left(2\,x+3\right)}+\frac{25183}{2304}\left(3\,x^{2}+5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2,x, algorithm="maxima")
```

```
[Out] -1/28*(3*x^2 + 5*x + 2)^(7/2) + 277/48*(3*x^2 + 5*x + 2)^(5/2)*x + 283/1440
*(3*x^2 + 5*x + 2)^(5/2) - 13/4*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 25183/2
304*(3*x^2 + 5*x + 2)^(3/2)*x - 6925/13824*(3*x^2 + 5*x + 2)^(3/2) + 506177
/18432*sqrt(3*x^2 + 5*x + 2)*x + 15434623/663552*sqrt(3)*log(sqrt(3)*sqrt(3
*x^2 + 5*x + 2) + 3*x + 5/2) + 9225/512*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*
x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 1454315/110592*sqrt(3*x^2 + 5
*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\left(x-5\right)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{{\left(2\,x+3\right)}^2} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^2,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^2, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{292x\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{870x^{2}\sqrt{3x^{2}+5x+2}}{4x^{2}+12x+9}\right)dx-\int\left(-\frac{1339x^{3}}{4x^{2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**2,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-29
2*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-870*x**2*sqr
t(3*x**2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-1339*x**3*sqrt(3*x*
*2 + 5*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5
*x + 2)/(4*x**2 + 12*x + 9), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)
/(4*x**2 + 12*x + 9), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(4*x**2
+ 12*x + 9), x)
```

3.2454 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^3}\,dx$

Optimal. Leaf size=181

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^2}+\frac{7(121x+584)\left(3x^2+5x+2\right)^{5/2}}{240(2x+3)}+\frac{7(805-17394x)\left(3x^2+5x+2\right)^{3/2}}{4608}+\frac{7(167495}{}$$

```
[Out] 7/4608*(805-17394*x)*(3*x^2+5*x+2)^(3/2)+7/240*(584+121*x)*(3*x^2+5*x+2)^(5
/2)/(3+2*x)-1/12*(21+x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^2-12443893/221184*arcta
nh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+44625/1024*arctanh(1/10
*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+7/36864*(167495-349806*x)*(3*
x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 181, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^2}+\frac{7(121x+584)\left(3x^2+5x+2\right)^{5/2}}{240(2x+3)}+\frac{7(805-17394x)\left(3x^2+5x+2\right)^{3/2}}{4608}+\frac{7(167495}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^3,x]
```

```
[Out] (7*(167495 - 349806*x)*Sqrt[2 + 5*x + 3*x^2])/36864 + (7*(805 - 17394*x)*(2
 + 5*x + 3*x^2)^(3/2))/4608 + (7*(584 + 121*x)*(2 + 5*x + 3*x^2)^(5/2))/(24
0*(3 + 2*x)) - ((21 + x)*(2 + 5*x + 3*x^2)^(7/2))/(12*(3 + 2*x)^2) - (12443
893*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(73728*Sqrt[3]) +
 (44625*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/1024
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^3}\,dx &= -\frac{(21+x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^2}-\frac{7}{96}\int \frac{(-404-484x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^2}\,dx\\
&= \frac{7(584+121x)\left(2+5x+3x^2\right)^{5/2}}{240(3+2x)}-\frac{(21+x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^2}+\frac{7}{768}\int \frac{(-1948}{}\\
&= \frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608}+\frac{7(584+121x)\left(2+5x+3x^2\right)^{5/2}}{240(3+2x)}-\frac{(21+}{}\\
&= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864}+\frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608}+\frac{7}{}\\
&= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864}+\frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608}+\frac{7}{}\\
&= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864}+\frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608}+\frac{7}{}\\
&= \frac{7(167495-349806x)\sqrt{2+5x+3x^2}}{36864}+\frac{7(805-17394x)\left(2+5x+3x^2\right)^{3/2}}{4608}+\frac{7}{}
\end{aligned}
$$

Mathematica [**A**]   time = 0.11, size = 130, normalized size = 0.72

$$
\frac{-48195000\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-62219465\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{6\sqrt{3x^2+5x+2}\,(414720x^7-926208x^6-68307}{}}{1105920}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^3,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(-91912653 - 89867034*x - 19284852*x^2 - 1284807
2*x^3 - 15112992*x^4 - 6830784*x^5 - 926208*x^6 + 414720*x^7))/(3 + 2*x)^2
- 48195000*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] -
62219465*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/1105920
```

fricas [A] time = 0.57, size = 173, normalized size = 0.96

$$62219465\,\sqrt{3}\left(4\,x^2+12\,x+9\right)\log\left(-4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)+48195000\,\sqrt{5}\left(4\,x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="fricas")
```

```
[Out] 1/2211840*(62219465*sqrt(3)*(4*x^2 + 12*x + 9)*log(-4*sqrt(3)*sqrt(3*x^2 +
5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 48195000*sqrt(5)*(4*x^2 + 12*x
+ 9)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)
/(4*x^2 + 12*x + 9)) - 12*(414720*x^7 - 926208*x^6 - 6830784*x^5 - 15112992
*x^4 - 12848072*x^3 - 19284852*x^2 - 89867034*x - 91912653)*sqrt(3*x^2 + 5*
x + 2))/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.38, size = 279, normalized size = 1.54

$$-\frac{1}{184320}\,(2\,(12\,(18\,(8\,(30\,x-157)x-725)x-67409)x+1173065)x-8219517)\sqrt{3\,x^2+5\,x+2}+\frac{44625}{1024}\,\sqrt{5}\,\mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="giac")
```

```
[Out] -1/184320*(2*(12*(18*(8*(30*x - 157)*x - 725)*x - 67409)*x + 1173065)*x - 8
219517)*sqrt(3*x^2 + 5*x + 2) + 44625/1024*sqrt(5)*log(abs(-4*sqrt(3)*x - 2
*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5
) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 12443893/221184*sqrt(3)*log(abs
(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 25/512*(5878*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 22241*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^2 + 75807*sqrt(3)*x + 27061*sqrt(3) - 75807*sqrt(3*x^2 + 5*x + 2))
/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.06, size = 253, normalized size = 1.40

$$-\frac{44625\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1024}-\frac{12443893\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{221184}+27\left(-4x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^3,x)
```

```
[Out] 27/10/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+51/8*(-4*x+3*(x+3/2)^2-19/4)^(7
/2)-1127/480*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-20293/4608*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(3/2)-408107/36864*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

```
-12443893/221184*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(
1/2))+357/32*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+2975/128*(-4*x+3*(x+3/2)^2-19/4)
^(3/2)+44625/1024*(-16*x+12*(x+3/2)^2-19)^(1/2)-44625/1024*5^(1/2)*arctanh(
2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-27/20*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(7/2)-13/40/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [A] time = 1.14, size = 218, normalized size = 1.20

$$\frac{39}{40}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{10\left(4x^2+12x+9\right)}-\frac{1127}{80}\left(3x^2+5x+2\right)^{\frac{5}{2}}x-\frac{7}{12}\left(3x^2+5x+2\right)^{\frac{5}{2}}+\frac{27\left(3x^2+5x+2\right)^{\frac{7}{2}}}{4(2x+3)}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3,x, algorithm="maxima")
```

```
[Out] 39/40*(3*x^2 + 5*x + 2)^(7/2) - 13/10*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x
 + 9) - 1127/80*(3*x^2 + 5*x + 2)^(5/2)*x - 7/12*(3*x^2 + 5*x + 2)^(5/2) +
27/4*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 20293/768*(3*x^2 + 5*x + 2)^(3/2)*
x + 5635/4608*(3*x^2 + 5*x + 2)^(3/2) - 408107/6144*sqrt(3*x^2 + 5*x + 2)*x
 - 12443893/221184*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) -
 44625/1024*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 1172465/36864*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^3,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^3, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{870x^2\sqrt{3x^2+5x+2}}{8x^3+36x^2+54x+27}\right)dx-\int\left(-\frac{1}{8}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**3,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) - I
ntegral(-292*x*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x) -
Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 27), x
) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*x + 2
7), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 + 54*
x + 27), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2 +
 54*x + 27), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(8*x**3 + 36*x**2
 + 54*x + 27), x)
```

3.2455 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^4}\,dx$

Optimal. Leaf size=190

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^3}+\frac{7(414x+1171)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^2}-\frac{7(1652x+5713)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)}-\frac{7(3737}{}$$

```
[Out] -7/768*(5713+1652*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)+7/960*(1171+414*x)*(3*x^2+
5*x+2)^(5/2)/(3+2*x)^2-1/30*(37+3*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^3+2776697/
36864*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-59745/1024*a
rctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-7/6144*(37375-7805
4*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 190, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 814, 843, 621, 206, 724}

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^3}+\frac{7(414x+1171)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^2}-\frac{7(1652x+5713)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)}-\frac{7(3737}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^4,x]
```

```
[Out] (-7*(37375 - 78054*x)*Sqrt[2 + 5*x + 3*x^2])/6144 - (7*(5713 + 1652*x)*(2 +
 5*x + 3*x^2)^(3/2))/(768*(3 + 2*x)) + (7*(1171 + 414*x)*(2 + 5*x + 3*x^2)^
(5/2))/(960*(3 + 2*x)^2) - ((37 + 3*x)*(2 + 5*x + 3*x^2)^(7/2))/(30*(3 + 2*
x)^3) + (2776697*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(122
88*Sqrt[3]) - (59745*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*
x^2])])/1024
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^4}\,dx = -\frac{(37+3x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^3} - \frac{7}{120}\int \frac{(-346-414x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^3}\,dx$$

$$= \frac{7(1171+414x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^2} - \frac{(37+3x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^3} + 7\int \frac{(-16796-1$$

$$= -\frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + \frac{7(1171+414x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^2} - (37$$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + 7($$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + 7($$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + 7($$

$$= -\frac{7(37375-78054x)\sqrt{2+5x+3x^2}}{6144} - \frac{7(5713+1652x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)} + 7($$

Mathematica [A] time = 0.11, size = 130, normalized size = 0.68

$$\frac{10754100\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) + 13883485\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{6\sqrt{3x^2+5x+2}\left(82944x^7-231552x^6-1266816x^5}{}}{184320}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^4,x]
```

```
[Out] ((-6*Sqrt[2 + 5*x + 3*x^2]*(61268351 + 98927312*x + 44770416*x^2 + 746240*x
^3 - 3277520*x^4 - 1266816*x^5 - 231552*x^6 + 82944*x^7))/(3 + 2*x)^3 + 107
54100*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] + 13883
485*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/184320
```

fricas [A] time = 0.70, size = 189, normalized size = 0.99

$$13883485\,\sqrt{3}\left(8\,x^{3}+36\,x^{2}+54\,x+27\right)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}\,(6\,x+5)+72\,x^{2}+120\,x+49\right)+10754100$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="fricas")
```

```
[Out] 1/368640*(13883485*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(4*sqrt(3)*sqrt(
3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 10754100*sqrt(5)*(8*x^3
 + 36*x^2 + 54*x + 27)*log(-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 12
4*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)) - 12*(82944*x^7 - 231552*x^6 - 1266
816*x^5 - 3277520*x^4 + 746240*x^3 + 44770416*x^2 + 98927312*x + 61268351)*
sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [B] time = 0.48, size = 325, normalized size = 1.71

$$-\frac{1}{30720}\,(2\,(12\,(18\,(24\,x-175)x+4661)x-218885)x+1563313)\sqrt{3\,x^{2}+5\,x+2}-\frac{59745}{1024}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-\right.}{\left|-4\,\sqrt{3}\,x+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="giac")
```

```
[Out] -1/30720*(2*(12*(18*(24*x - 175)*x + 4661)*x - 218885)*x + 1563313)*sqrt(3*
x^2 + 5*x + 2) - 59745/1024*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sq
rt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) +
 4*sqrt(3*x^2 + 5*x + 2))) - 2776697/36864*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 5/1536*(424596*(sqrt(3)*x - sqrt(3*x
^2 + 5*x + 2))^5 + 2828550*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 +
21565510*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 26086815*sqrt(3)*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^2 + 45375675*sqrt(3)*x + 10164786*sqrt(3) - 4537
5675*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sq
rt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.06, size = 274, normalized size = 1.44

$$\frac{59745\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1024}+\frac{2776697\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{36864}+\frac{57\left(-4x+\right.}{20}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^4,x)
```

```
[Out] 57/200/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/120/(x+3/2)^3*(-4*x+3*(x+
3/2)^2-19/4)^(9/2)+48/25*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+1253/400*(6*
x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-96/25/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)+4529/768*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+91063/6144*(6*x+5)*(-4*x
+3*(x+3/2)^2-19/4)^(1/2)+59745/1024*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/
(-16*x+12*(x+3/2)^2-19)^(1/2))+2776697/36864*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/
2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-59745/1024*(-16*x+12*(x+3/2)^2-19)^(1/2)-
3983/128*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-11949/800*(-4*x+3*(x+3/2)^2-19/4)^(5
/2)-1707/200*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.25, size = 249, normalized size = 1.31

$$-\frac{171}{200}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{15\left(8x^3+36x^2+54x+27\right)}+\frac{57\left(3x^2+5x+2\right)^{\frac{9}{2}}}{50\left(4x^2+12x+9\right)}+\frac{3759}{200}\left(3x^2+5x+2\right)^{\frac{5}{2}}x+\frac{581}{800}(3x^2$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4,x, algorithm="maxima")
```

```
[Out] -171/200*(3*x^2 + 5*x + 2)^(7/2) - 13/15*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 3
6*x^2 + 54*x + 27) + 57/50*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) + 375
9/200*(3*x^2 + 5*x + 2)^(5/2)*x + 581/800*(3*x^2 + 5*x + 2)^(5/2) - 48/5*(3
*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 4529/128*(3*x^2 + 5*x + 2)^(3/2)*x - 1253
/768*(3*x^2 + 5*x + 2)^(3/2) + 91063/1024*sqrt(3*x^2 + 5*x + 2)*x + 2776697
/36864*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) + 59745/1024*
sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) -
 2) - 261625/6144*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^4}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^4,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^4, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{16x^4+96x^3+216x^2+216x+81}\right)dx-\int\left(-\frac{870x^2}{16x^4+96x^3+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**4,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x
+ 81), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216
*x**2 + 216*x + 81), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**
4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-1339*x**3*sqrt(3*x**2
+ 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x) - Integral(-1090
*x**4*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2 + 216*x + 81), x
) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*x**3 + 216*x**2
 + 216*x + 81), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(16*x**4 + 96*
x**3 + 216*x**2 + 216*x + 81), x)
```

3.2456 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^5}\,dx$

Optimal. Leaf size=195

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{7/2}}{8(2x+3)^4}+\frac{7(43x+93)\left(3x^2+5x+2\right)^{5/2}}{96(2x+3)^3}-\frac{35(343x+736)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)^2}+\frac{35(2701x+57}{1024}$$

```
[Out] -35/768*(736+343*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^2+7/96*(93+43*x)*(3*x^2+5*x
+2)^(5/2)/(3+2*x)^3-1/8*(8+x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^4-744275/12288*ar
ctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+192171/4096*arctanh(
1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+35/1024*(5795+2701*x)*(3*
x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.13, antiderivative size = 195, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {812, 843, 621, 206, 724}

$$-\frac{(x+8)\left(3x^2+5x+2\right)^{7/2}}{8(2x+3)^4}+\frac{7(43x+93)\left(3x^2+5x+2\right)^{5/2}}{96(2x+3)^3}-\frac{35(343x+736)\left(3x^2+5x+2\right)^{3/2}}{768(2x+3)^2}+\frac{35(2701x+57}{1024}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^5,x]
```

```
[Out] (35*(5795 + 2701*x)*Sqrt[2 + 5*x + 3*x^2])/(1024*(3 + 2*x)) - (35*(736 + 34
3*x)*(2 + 5*x + 3*x^2)^(3/2))/(768*(3 + 2*x)^2) + (7*(93 + 43*x)*(2 + 5*x +
 3*x^2)^(5/2))/(96*(3 + 2*x)^3) - ((8 + x)*(2 + 5*x + 3*x^2)^(7/2))/(8*(3 +
 2*x)^4) - (744275*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(4
096*Sqrt[3]) + (192171*Sqrt[5]*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])/4096
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^5}\,dx = -\frac{(8+x)\left(2+5x+3x^2\right)^{7/2}}{8(3+2x)^4} - \frac{7}{128}\int \frac{(-288-344x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^4}\,dx$$

$$= \frac{7(93+43x)\left(2+5x+3x^2\right)^{5/2}}{96(3+2x)^3} - \frac{(8+x)\left(2+5x+3x^2\right)^{7/2}}{8(3+2x)^4} + \frac{35\int \frac{(-14064-16464x}{(3+2}}{921}$$

$$= -\frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+43x)\left(2+5x+3x^2\right)^{5/2}}{96(3+2x)^3} - \frac{(8+x)\,(}{8}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

$$= \frac{35(5795+2701x)\sqrt{2+5x+3x^2}}{1024(3+2x)} - \frac{35(736+343x)\left(2+5x+3x^2\right)^{3/2}}{768(3+2x)^2} + \frac{7(93+}{}$$

Mathematica [A] time = 0.12, size = 130, normalized size = 0.67

$$\frac{-576513\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right) - 744275\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - \frac{12\sqrt{3x^2+5x+2}\left(3456x^7-12864x^6-38288x^5-25368\right.}{(2x}}{12288}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^5,x]
```

```
[Out] ((-12*Sqrt[2 + 5*x + 3*x^2]*(-4933171 - 11295211*x - 9107922*x^2 - 2869312*
x^3 - 253688*x^4 - 38288*x^5 - 12864*x^6 + 3456*x^7))/(3 + 2*x)^4 - 576513*
Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 744275*Sqrt
[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/12288
```

fricas [A] time = 0.86, size = 203, normalized size = 1.04

$$\frac{744275\sqrt{3}\left(16x^4+96x^3+216x^2+216x+81\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)+57}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="fricas")
```

```
[Out] 1/24576*(744275*sqrt(3)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log(-4*sqr
t(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 576513*sqrt(5
)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x
+ 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 24*(3456*x^7 -
 12864*x^6 - 38288*x^5 - 253688*x^4 - 2869312*x^3 - 9107922*x^2 - 11295211*
x - 4933171)*sqrt(3*x^2 + 5*x + 2))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81
)
```

giac [B]   time = 1.31, size = 636, normalized size = 3.26

$$\frac{744275}{12288}\sqrt{3}\log\left(\frac{\left|-2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}{\left|2\sqrt{3}+2\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{2\sqrt{5}}{2x+3}\right|}\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{192171}{4096}\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+}}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="giac")
```

```
[Out] 744275/12288*sqrt(3)*log(abs(-2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x + 3)
^2 + 3) + 2*sqrt(5)/(2*x + 3))/abs(2*sqrt(3) + 2*sqrt(-8/(2*x + 3) + 5/(2*x
 + 3)^2 + 3) + 2*sqrt(5)/(2*x + 3)))*sgn(1/(2*x + 3)) - 192171/4096*sqrt(5)
*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3
)) - 4))*sgn(1/(2*x + 3)) - 1/4096*(5*(50*(13*sgn(1/(2*x + 3))/(2*x + 3) -
88*sgn(1/(2*x + 3)))/(2*x + 3) + 14343*sgn(1/(2*x + 3)))/(2*x + 3) - 181996
*sgn(1/(2*x + 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 1/2048*(479709*
(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^7*sgn(1/(2*x +
 3)) - 499296*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*
x + 3))^6*sgn(1/(2*x + 3)) - 3133183*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
) + sqrt(5)/(2*x + 3))^5*sgn(1/(2*x + 3)) + 3365712*sqrt(5)*(sqrt(-8/(2*x +
 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^4*sgn(1/(2*x + 3)) + 7550211*
(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^3*sgn(1/(2*x +
 3)) - 8139744*sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2
*x + 3))^2*sgn(1/(2*x + 3)) - 6574257*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
3) + sqrt(5)/(2*x + 3))*sgn(1/(2*x + 3)) + 6966000*sqrt(5)*sgn(1/(2*x + 3))
)/((sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))^2 - 3)^4
```

maple [A]   time = 0.06, size = 295, normalized size = 1.51

$$-\frac{192171\sqrt{5}\;\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{4096}-\frac{744275\sqrt{3}\;\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{12288}-\frac{13\left(-4x+\right.}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^5,x)
```

```
[Out] -13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1263/4000/(x+3/2)^2*(-4*x+3
*(x+3/2)^2-19/4)^(9/2)+3/100/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1479/1
000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-10101/4000*(6*x+5)*(-4*x+3*(x+3/2
)^2-19/4)^(5/2)+1479/500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-6069/1280*(6
*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-24409/2048*(6*x+5)*(-4*x+3*(x+3/2)^2-19
/4)^(1/2)-192171/4096*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3
/2)^2-19)^(1/2))-744275/12288*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3
/2)^2-19/4)^(1/2))+192171/4096*(-16*x+12*(x+3/2)^2-19)^(1/2)+64057/2560*(-4
*x+3*(x+3/2)^2-19/4)^(3/2)+192171/16000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+27453
/4000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)
```

maxima [A] time = 1.18, size = 285, normalized size = 1.46

$$\frac{3789}{4000}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}}{20\left(16\,x^4+96\,x^3+216\,x^2+216\,x+81\right)}+\frac{6\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}}{25\left(8\,x^3+36\,x^2+54\,x+27\right)}-\frac{1263\left(3\,x^2+5\right.}{1000\left(4\,x^2+12\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5,x, algorithm="maxima")
```

```
[Out] 3789/4000*(3*x^2 + 5*x + 2)^(7/2) - 13/20*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 +
 96*x^3 + 216*x^2 + 216*x + 81) + 6/25*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*
x^2 + 54*x + 27) - 1263/1000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 3
0303/2000*(3*x^2 + 5*x + 2)^(5/2)*x - 9849/16000*(3*x^2 + 5*x + 2)^(5/2) +
1479/200*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 18207/640*(3*x^2 + 5*x + 2)^(3
/2)*x + 3367/2560*(3*x^2 + 5*x + 2)^(3/2) - 73227/1024*sqrt(3*x^2 + 5*x + 2
)*x - 744275/12288*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) -
 192171/4096*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/a
bs(2*x + 3) - 2) + 35063/1024*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^5}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^5,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^5, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x+2}}{32x^5+240x^4+720x^3+1080x^2+810x+243}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**5,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*
x**2 + 810*x + 243), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(32*x**5 +
 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-870*x**2*sq
rt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 2
43), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 +
720*x**3 + 1080*x**2 + 810*x + 243), x) - Integral(-1090*x**4*sqrt(3*x**2 +
 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x) - I
ntegral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(32*x**5 + 240*x**4 + 720*x**3 + 1
080*x**2 + 810*x + 243), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(32*x
**5 + 240*x**4 + 720*x**3 + 1080*x**2 + 810*x + 243), x)
```

3.2457 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^6}\,dx$

Optimal. Leaf size=197

$$-\frac{(5x+27)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^5}+\frac{7(548x+1003)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^4}+\frac{7(33142x+42733)\left(3x^2+5x+2\right)^{3/2}}{7680(2x+3)^3}-21(2$$

```
[Out] 7/7680*(42733+33142*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3+7/960*(1003+548*x)*(3*
x^2+5*x+2)^(5/2)/(3+2*x)^4-1/30*(27+5*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^5+3027
5/1024*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2345091/102
400*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-21/10240*(471
45+21974*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(5x+27)\left(3x^2+5x+2\right)^{7/2}}{30(2x+3)^5}+\frac{7(548x+1003)\left(3x^2+5x+2\right)^{5/2}}{960(2x+3)^4}+\frac{7(33142x+42733)\left(3x^2+5x+2\right)^{3/2}}{7680(2x+3)^3}-21(2$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^6,x]
```

```
[Out] (-21*(47145 + 21974*x)*Sqrt[2 + 5*x + 3*x^2])/(10240*(3 + 2*x)) + (7*(42733
 + 33142*x)*(2 + 5*x + 3*x^2)^(3/2))/(7680*(3 + 2*x)^3) + (7*(1003 + 548*x)
*(2 + 5*x + 3*x^2)^(5/2))/(960*(3 + 2*x)^4) - ((27 + 5*x)*(2 + 5*x + 3*x^2)
^(7/2))/(30*(3 + 2*x)^5) + (30275*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2])])/1024 - (2345091*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 +
5*x + 3*x^2])])/(20480*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^6}\,dx = -\frac{(27+5x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^5} - \frac{7}{120}\int \frac{(-230-274x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^5}\,dx$$

$$= \frac{7(1003+548x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^4} - \frac{(27+5x)\left(2+5x+3x^2\right)^{7/2}}{30(3+2x)^5} + \frac{7\int \frac{(-11292-1}{}}{}$$

$$= \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3} + \frac{7(1003+548x)\left(2+5x+3x^2\right)^{5/2}}{960(3+2x)^4} - (2$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)} + \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3} +$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)} + \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3} +$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)} + \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3} +$$

$$= -\frac{21(47145+21974x)\sqrt{2+5x+3x^2}}{10240(3+2x)} + \frac{7(42733+33142x)\left(2+5x+3x^2\right)^{3/2}}{7680(3+2x)^3} +$$

Mathematica [**A**] time = 0.15, size = 130, normalized size = 0.66

$$\frac{2345091\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+3027500\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(46080x^7-257280x^6+483840}{}}{102400}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^6,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(72189541 + 213122626*x + 242016116*x^2 + 12766
5096*x^3 + 27897856*x^4 + 483840*x^5 - 257280*x^6 + 46080*x^7))/(3 + 2*x)^5
 + 2345091*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] +
3027500*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/102400
```

fricas [**A**] time = 0.71, size = 219, normalized size = 1.11

$$3027500\sqrt{3}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="fricas")
```

```
[Out] 1/204800*(3027500*sqrt(3)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) +
 2345091*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)*log(
-(4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2
+ 12*x + 9)) - 20*(46080*x^7 - 257280*x^6 + 483840*x^5 + 27897856*x^4 + 127
665096*x^3 + 242016116*x^2 + 213122626*x + 72189541)*sqrt(3*x^2 + 5*x + 2))
/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
```

giac [**B**] time = 0.37, size = 417, normalized size = 2.12

$$-\frac{3}{512}\left(2\left(12x-157\right)x+2067\right)\sqrt{3x^2+5x+2}-\frac{2345091}{102400}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+}\right.}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+}\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="giac")
```

```
[Out] -3/512*(2*(12*x - 157)*x + 2067)*sqrt(3*x^2 + 5*x + 2) - 2345091/102400*sqr
t(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2)
)/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) - 30
275/1024*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5
)) - 1/10240*(60397264*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 739203704*sq
rt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 11836231432*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^7 + 36096211012*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^6 + 207702455456*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 259725515674*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 635418284542*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^3 + 326158305587*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^2 + 287216072451*sqrt(3)*x + 36785380096*sqrt(3) - 287216072451*sqrt
(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.06, size = 316, normalized size = 1.60

$$\frac{2345091\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{102400}+\frac{30275\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}\right)}{1024}-\frac{27\left(-4x+3\left(\right.\right.}{8000\left(\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^6,x)
```

```
[Out] -27/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+10023/100000/(x+3/2)^2*(-4
*x+3*(x+3/2)^2-19/4)^(9/2)-251/5000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
+19059/25000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+122871/100000*(6*x+5)*(-
4*x+3*(x+3/2)^2-19/4)^(5/2)-19059/12500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/
2)+37037/16000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+37233/6400*(6*x+5)*(-4
*x+3*(x+3/2)^2-19/4)^(1/2)+2345091/102400*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^
(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+30275/1024*3^(1/2)*ln(1/3*(3*x+5/2)*3^
(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))-2345091/102400*(-16*x+12*(x+3/2)^2-19)
^(1/2)-781697/64000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-2345091/400000*(-4*x+3*(x
+3/2)^2-19/4)^(5/2)-335013/100000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-13/800/(x+3
/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.29, size = 326, normalized size = 1.65

$$-\frac{30069}{100000}\left(3x^2+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^2+5x+2\right)^{\frac{9}{2}}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)}-\frac{27\left(3x^2+5x+2\right)}{500\left(16x^4+96x^3+216x^2+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6,x, algorithm="maxima")
```

```
[Out] -30069/100000*(3*x^2 + 5*x + 2)^(7/2) - 13/25*(3*x^2 + 5*x + 2)^(9/2)/(32*x
^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 27/500*(3*x^2 + 5*x + 2)
^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 251/625*(3*x^2 + 5*x + 2)
^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) + 10023/25000*(3*x^2 + 5*x + 2)^(9/2)/(
4*x^2 + 12*x + 9) + 368613/50000*(3*x^2 + 5*x + 2)^(5/2)*x + 112329/400000*
(3*x^2 + 5*x + 2)^(5/2) - 19059/5000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 11
1111/8000*(3*x^2 + 5*x + 2)^(3/2)*x - 40957/64000*(3*x^2 + 5*x + 2)^(3/2) +
 111699/3200*sqrt(3*x^2 + 5*x + 2)*x + 30275/1024*sqrt(3)*log(sqrt(3)*sqrt(
3*x^2 + 5*x + 2) + 3*x + 5/2) + 2345091/102400*sqrt(5)*log(sqrt(5)*sqrt(3*x
^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 855771/51200*sqrt(3*x^
2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^6}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^6,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^6, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729}\right)dx-\int\left(-\frac{292x\sqrt{3x^2+5x}}{64x^6+576x^5+2160x^4+4320x^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**6,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320
*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-292*x*sqrt(3*x**2 + 5*x +
 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729)
, x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160
*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(-1339*x**3*sqr
t(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2
 + 2916*x + 729), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(64*x**6
+ 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729), x) - Integr
al(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*
x**3 + 4860*x**2 + 2916*x + 729), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x +
 2)/(64*x**6 + 576*x**5 + 2160*x**4 + 4320*x**3 + 4860*x**2 + 2916*x + 729)
, x)
```

3.2458 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^7}\,dx$

Optimal. Leaf size=197

$$-\frac{(3x+11)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^6}-\frac{7(1046x+1301)\left(3x^2+5x+2\right)^{5/2}}{1920(2x+3)^5}-\frac{7(31174x+40201)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}+63(206$$

```
[Out] -7/25600*(40201+31174*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3-7/1920*(1301+1046*x)
*(3*x^2+5*x+2)^(5/2)/(3+2*x)^5-1/12*(11+3*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^6-
8547/1024*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+6620481/
1024000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+63/102400
*(44365+20678*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.222$, Rules used = {812, 810, 843, 621, 206, 724}

$$-\frac{(3x+11)\left(3x^2+5x+2\right)^{7/2}}{12(2x+3)^6}-\frac{7(1046x+1301)\left(3x^2+5x+2\right)^{5/2}}{1920(2x+3)^5}-\frac{7(31174x+40201)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}+63(206$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^7,x]
```

```
[Out] (63*(44365 + 20678*x)*Sqrt[2 + 5*x + 3*x^2])/(102400*(3 + 2*x)) - (7*(40201
 + 31174*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600*(3 + 2*x)^3) - (7*(1301 + 1046*
x)*(2 + 5*x + 3*x^2)^(5/2))/(1920*(3 + 2*x)^5) - ((11 + 3*x)*(2 + 5*x + 3*x
^2)^(7/2))/(12*(3 + 2*x)^6) - (8547*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])])/1024 + (6620481*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
+ 5*x + 3*x^2])])/(204800*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^7}\,dx &= -\frac{(11+3x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^6}-\frac{7}{96}\int \frac{(-172-204x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx\\
&= -\frac{7(1301+1046x)\left(2+5x+3x^2\right)^{5/2}}{1920(3+2x)^5}-\frac{(11+3x)\left(2+5x+3x^2\right)^{7/2}}{12(3+2x)^6}+\frac{7\int \frac{(31}{}}{}\\
&= -\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}-\frac{7(1301+1046x)\left(2+5x+3x^2\right)^{5/2}}{1920(3+2x)^5}\\
&= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)}-\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}\\
&= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)}-\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}\\
&= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)}-\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}\\
&= \frac{63(44365+20678x)\sqrt{2+5x+3x^2}}{102400(3+2x)}-\frac{7(40201+31174x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3}
\end{aligned}
$$

Mathematica [A] time = 0.17, size = 130, normalized size = 0.66

$$\frac{-19861443\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-25641000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(2073600x^7-23155200x^6-55\right.}{}}{3072000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^7,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(-1835461379 - 6648875480*x - 9799959120*x^2 -
7425343520*x^3 - 2968126160*x^4 - 550079616*x^5 - 23155200*x^6 + 2073600*x^
7))/(3 + 2*x)^6 - 19861443*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5
*x + 3*x^2])] - 25641000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2
])])/3072000
```

fricas [A] time = 0.68, size = 233, normalized size = 1.18

$$\frac{25641000\sqrt{3}\left(64x^6+576x^5+2160x^4+4320x^3+4860x^2+2916x+729\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="fricas")
```

```
[Out] 1/6144000*(25641000*sqrt(3)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*
x^2 + 2916*x + 729)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2
 + 120*x + 49) + 19861443*sqrt(5)*(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
 4860*x^2 + 2916*x + 729)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) +
124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(2073600*x^7 - 23155200*x^6
- 550079616*x^5 - 2968126160*x^4 - 7425343520*x^3 - 9799959120*x^2 - 664887
5480*x - 1835461379)*sqrt(3*x^2 + 5*x + 2))/(64*x^6 + 576*x^5 + 2160*x^4 +
4320*x^3 + 4860*x^2 + 2916*x + 729)
```

giac [B] time = 0.39, size = 467, normalized size = 2.37

$$-\frac{9}{512}\sqrt{3x^2+5x+2}(6x-121)+\frac{6620481}{1024000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{8547}{1024}\sqrt{3}\,\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="giac")
```

```
[Out] -9/512*sqrt(3*x^2 + 5*x + 2)*(6*x - 121) + 6620481/1024000*sqrt(5)*log(abs(
-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt
(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x + 2))) + 8547/1024*sqrt(
3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) + 1/921600*
sqrt(3)*(1761054624*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 783595
19088*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 522182992240*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2))^9 + 6180007168800*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^8 + 16013156565600*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 +
85756996584864*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 107556795368496*sqrt
(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 284279833881720*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^4 + 172447244925750*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^3 + 205883289380025*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 48408
731804817*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 15295619190024)/(2*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2)) + 11)^6
```

maple [B] time = 0.07, size = 337, normalized size = 1.71

$$-\frac{6620481\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1024000}-\frac{8547\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{1024}-\frac{1143\left(-4x\right.}{80}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^7,x)
```

```
[Out] -1143/80000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-63693/1000000/(x+3/2)^2
*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-459/50000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^
(9/2)-47169/250000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-349461/1000000*(6*
x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+47169/125000/(x+3/2)*(-4*x+3*(x+3/2)^2-1
9/4)^(9/2)-104517/160000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-210231/12800
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-6620481/1024000*5^(1/2)*arctanh(2/5
*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-8547/1024*3^(1/2)*ln(1/3
*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)^2-19/4)^(1/2))+6620481/1024000*(-16*x+12
*(x+3/2)^2-19)^(1/2)+2206827/640000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+6620481/4
000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+945783/1000000*(-4*x+3*(x+3/2)^2-19/4)
^(7/2)-21/4000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/1920/(x+3/2)^6*(-
4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.35, size = 372, normalized size = 1.89

$$\frac{191079}{1000000}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{30\left(64x^{6}+576x^{5}+2160x^{4}+4320x^{3}+4860x^{2}+2916x+729\right)}-\frac{}{125\left(32x^{5}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7,x, algorithm="maxima")
```

```
[Out] 191079/1000000*(3*x^2 + 5*x + 2)^(7/2) - 13/30*(3*x^2 + 5*x + 2)^(9/2)/(64*
x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 21/125*(3*
x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243)
- 1143/5000*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81
) - 459/6250*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 63693/2
50000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 1048383/500000*(3*x^2 +
5*x + 2)^(5/2)*x - 368739/4000000*(3*x^2 + 5*x + 2)^(5/2) + 47169/50000*(3*
x^2 + 5*x + 2)^(7/2)/(2*x + 3) - 313551/80000*(3*x^2 + 5*x + 2)^(3/2)*x + 1
16487/640000*(3*x^2 + 5*x + 2)^(3/2) - 630693/64000*sqrt(3*x^2 + 5*x + 2)*x
 - 8547/1024*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 66204
81/1024000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs
(2*x + 3) - 2) + 2415861/512000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(x-5)\,\left(3x^{2}+5x+2\right)^{7/2}}{(2x+3)^{7}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^7,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^7, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187}\right)dx-\int\Bigg(-\frac{}{128x^7+1344x^6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**7,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15
120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-292*x*
sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 226
80*x**3 + 20412*x**2 + 10206*x + 2187), x) - Integral(-870*x**2*sqrt(3*x**2
 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 2
0412*x**2 + 10206*x + 2187), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2
)/(128*x**7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2
+ 10206*x + 2187), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(128*x**
7 + 1344*x**6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x
+ 2187), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x*
*6 + 6048*x**5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
 - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(128*x**7 + 1344*x**6 + 6048*x**
5 + 15120*x**4 + 22680*x**3 + 20412*x**2 + 10206*x + 2187), x)
```

3.2459 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^8}\,dx$

Optimal. Leaf size=197

$$\frac{(266x+269)\left(3x^2+5x+2\right)^{7/2}}{280(2x+3)^7}+\frac{3(106x+135)\left(3x^2+5x+2\right)^{5/2}}{640(2x+3)^5}+\frac{(30858x+39767)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}-3(61$$

```
[Out] 1/25600*(39767+30858*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^3+3/640*(135+106*x)*(3*
x^2+5*x+2)^(5/2)/(3+2*x)^5+1/280*(269+266*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^7+
603/512*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-934161/102
4000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-3/102400*(13
1465+61278*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.222, Rules used = {810, 812, 843, 621, 206, 724}

$$\frac{(266x+269)\left(3x^2+5x+2\right)^{7/2}}{280(2x+3)^7}+\frac{3(106x+135)\left(3x^2+5x+2\right)^{5/2}}{640(2x+3)^5}+\frac{(30858x+39767)\left(3x^2+5x+2\right)^{3/2}}{25600(2x+3)^3}-3(61$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8,x]
```

```
[Out] (-3*(131465 + 61278*x)*Sqrt[2 + 5*x + 3*x^2])/(102400*(3 + 2*x)) + ((39767
+ 30858*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600*(3 + 2*x)^3) + (3*(135 + 106*x)*
(2 + 5*x + 3*x^2)^(5/2))/(640*(3 + 2*x)^5) + ((269 + 266*x)*(2 + 5*x + 3*x^
2)^(7/2))/(280*(3 + 2*x)^7) + (603*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqr
t[2 + 5*x + 3*x^2])])/512 - (934161*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5
*x + 3*x^2])])/(204800*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^8}\,dx = \frac{(269+266x)\left(2+5x+3x^2\right)^{7/2}}{280(3+2x)^7} - \frac{1}{240}\int \frac{(513+522x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^6}\,dx$$

$$= \frac{3(135+106x)\left(2+5x+3x^2\right)^{5/2}}{640(3+2x)^5} + \frac{(269+266x)\left(2+5x+3x^2\right)^{7/2}}{280(3+2x)^7} + \int \frac{(-78210-}{}$$

$$= \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} + \frac{3(135+106x)\left(2+5x+3x^2\right)^{5/2}}{640(3+2x)^5} + \frac{(269}{}$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} +$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} +$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} +$$

$$= -\frac{3(131465+61278x)\sqrt{2+5x+3x^2}}{102400(3+2x)} + \frac{(39767+30858x)\left(2+5x+3x^2\right)^{3/2}}{25600(3+2x)^3} +$$

Mathematica [A] time = 0.18, size = 130, normalized size = 0.66

$$\frac{6539127\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+8442000\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-\frac{10\sqrt{3x^2+5x+2}\,(9676800x^7+338443008x^6+}{}}{7168000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8,x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(1810375853 + 7753535702*x + 13975079520*x^2 +
13619671040*x^3 + 7622049520*x^4 + 2361590432*x^5 + 338443008*x^6 + 9676800
*x^7))/(3 + 2*x)^7 + 6539127*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 +
 5*x + 3*x^2])] + 8442000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^
2])])/7168000
```

fricas [A] time = 0.61, size = 249, normalized size = 1.26

$$\frac{8442000\sqrt{3}\left(128x^7+1344x^6+6048x^5+15120x^4+22680x^3+20412x^2+10206x+2187\right)\log\left(4\sqrt{3}\sqrt{3x}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="fricas")
```

```
[Out] 1/14336000*(8442000*sqrt(3)*(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22
680*x^3 + 20412*x^2 + 10206*x + 2187)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) + 6539127*sqrt(5)*(128*x^7 + 1344*x^6 + 604
8*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187)*log(-(4*sqrt(5)
*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) - 124*x^2 - 212*x - 89)/(4*x^2 + 12*x + 9)
) - 20*(9676800*x^7 + 338443008*x^6 + 2361590432*x^5 + 7622049520*x^4 + 136
19671040*x^3 + 13975079520*x^2 + 7753535702*x + 1810375853)*sqrt(3*x^2 + 5*
x + 2))/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2
+ 10206*x + 2187)
```

giac [B] time = 0.41, size = 509, normalized size = 2.58

$$-\frac{934161}{1024000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{603}{512}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="giac")
```

```
[Out] -934161/1024000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sq
rt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))) - 603/512*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5)) - 27/256*sqrt(3*x^2 + 5*x + 2) - 1/716800*(2310353472*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 39459777504*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^12 + 930047331808*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^1
1 + 4439192854544*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 + 42996771
835920*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 98991221694624*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 500967391220544*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^7 + 626374342937616*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^6 + 1740466332835804*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 1179088946690
970*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 1703610278292706*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 552456024942507*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^2 + 324453464706399*sqrt(3)*x + 28970271150072*sqrt(3) -
```

```
 324453464706399*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^7
```

maple [B] time = 0.08, size = 358, normalized size = 1.82

$$\frac{934161\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{1024000}+\frac{603\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{512}-\frac{13\left(-4x+3\left(x+\right.\right.}{4480\left(x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^8,x)
```

```
[Out] -13/4480/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-4719/560000/(x+3/2)^4*(-4*
x+3*(x+3/2)^2-19/4)^(9/2)-15267/1000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)-5147/350000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+78423/1750000*(6*x
+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)+47541/1000000*(6*x+5)*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)-78423/875000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+14777/160000*
(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+29661/128000*(6*x+5)*(-4*x+3*(x+3/2)^
2-19/4)^(1/2)+934161/1024000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+
12*(x+3/2)^2-19)^(1/2))+603/512*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x
+3/2)^2-19/4)^(1/2))-934161/1024000*(-16*x+12*(x+3/2)^2-19)^(1/2)-311387/64
0000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-934161/4000000*(-4*x+3*(x+3/2)^2-19/4)^(
5/2)-934161/7000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-3/500/(x+3/2)^5*(-4*x+3*(
x+3/2)^2-19/4)^(9/2)-3/896/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.63, size = 423, normalized size = 2.15

$$\frac{45801}{1000000}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^{2}+5x+2\right)^{\frac{9}{2}}}{35\left(128x^{7}+1344x^{6}+6048x^{5}+15120x^{4}+22680x^{3}+20412x^{2}+10206x+2187\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8,x, algorithm="maxima")
```

```
[Out] 45801/1000000*(3*x^2 + 5*x + 2)^(7/2) - 13/35*(3*x^2 + 5*x + 2)^(9/2)/(128*
x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2
187) - 3/14*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3
 + 4860*x^2 + 2916*x + 729) - 24/125*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*
x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 4719/35000*(3*x^2 + 5*x + 2)^(9/2
)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 5147/43750*(3*x^2 + 5*x + 2)^(
9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 15267/250000*(3*x^2 + 5*x + 2)^(9/2)/(4
*x^2 + 12*x + 9) + 142623/500000*(3*x^2 + 5*x + 2)^(5/2)*x + 16659/4000000*
(3*x^2 + 5*x + 2)^(5/2) - 78423/350000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) +
44331/80000*(3*x^2 + 5*x + 2)^(3/2)*x - 15847/640000*(3*x^2 + 5*x + 2)^(3/2
) + 88983/64000*sqrt(3*x^2 + 5*x + 2)*x + 603/512*sqrt(3)*log(sqrt(3)*sqrt(
3*x^2 + 5*x + 2) + 3*x + 5/2) + 934161/1024000*sqrt(5)*log(sqrt(5)*sqrt(3*x
^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 340941/512000*sqrt(3*x
^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\left(3x^{2}+5x+2\right)^{7/2}}{(2x+3)^{8}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^8,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^8, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{40\sqrt{3x^2+5x+2}}{256x^8+3072x^7+16128x^6+48384x^5+90720x^4+108864x^3+81648x^2+34992x+6561}\right)dx-\int \left(-\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**8,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 + 4
8384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) - I
ntegral(-292*x*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**6 +
48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x) -
Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 16128*x**
6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 6561), x
) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 + 1612
8*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x + 656
1), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x**7 +
 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34992*x
+ 6561), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*x*
*7 + 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 3499
2*x + 6561), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(256*x**8 + 3072*
x**7 + 16128*x**6 + 48384*x**5 + 90720*x**4 + 108864*x**3 + 81648*x**2 + 34
992*x + 6561), x)
```

3.2460 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,dx$

Optimal. Leaf size=197

$$\frac{(808x+757)\left(3x^2+5x+2\right)^{7/2}}{1120(2x+3)^8}+\frac{(664x+881)\left(3x^2+5x+2\right)^{5/2}}{6400(2x+3)^6}+\frac{(17096x+20959)\left(3x^2+5x+2\right)^{3/2}}{102400(2x+3)^4}+3(434104$$

```
[Out] 1/102400*(20959+17096*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4+1/6400*(881+664*x)*(
3*x^2+5*x+2)^(5/2)/(3+2*x)^6+1/1120*(757+808*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)
^8-27/512*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+1673211/
40960000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+3/409600
0*(559841+434104*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {810, 843, 621, 206, 724}

$$\frac{(808x+757)\left(3x^2+5x+2\right)^{7/2}}{1120(2x+3)^8}+\frac{(664x+881)\left(3x^2+5x+2\right)^{5/2}}{6400(2x+3)^6}+\frac{(17096x+20959)\left(3x^2+5x+2\right)^{3/2}}{102400(2x+3)^4}+3(434104$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9,x]
```

```
[Out] (3*(559841 + 434104*x)*Sqrt[2 + 5*x + 3*x^2])/(4096000*(3 + 2*x)^2) + ((209
59 + 17096*x)*(2 + 5*x + 3*x^2)^(3/2))/(102400*(3 + 2*x)^4) + ((881 + 664*x
)*(2 + 5*x + 3*x^2)^(5/2))/(6400*(3 + 2*x)^6) + ((757 + 808*x)*(2 + 5*x + 3
*x^2)^(7/2))/(1120*(3 + 2*x)^8) - (27*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*
Sqrt[2 + 5*x + 3*x^2])])/512 + (1673211*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2
 + 5*x + 3*x^2])])/(8192000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,dx &= \frac{(757+808x)\left(2+5x+3x^2\right)^{7/2}}{1120(3+2x)^8} - \frac{1}{320}\int \frac{(291+240x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx \\
&= \frac{(881+664x)\left(2+5x+3x^2\right)^{5/2}}{6400(3+2x)^6} + \frac{(757+808x)\left(2+5x+3x^2\right)^{7/2}}{1120(3+2x)^8} + \int \frac{(-3669}{} \\
&= \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} + \frac{(881+664x)\left(2+5x+3x^2\right)^{5/2}}{6400(3+2x)^6} + \frac{(75}{} \\
&= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} \\
&= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} \\
&= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4} \\
&= \frac{3(559841+434104x)\sqrt{2+5x+3x^2}}{4096000(3+2x)^2} + \frac{(20959+17096x)\left(2+5x+3x^2\right)^{3/2}}{102400(3+2x)^4}
\end{aligned}
$$

Mathematica **[A]** time = 0.19, size = 130, normalized size = 0.66

$$
\frac{-11712477\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right) - 15120000\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) + \frac{10\sqrt{3x^2+5x+2}\,\left(1478785536x^7+1218261\right.}{}}{286720000}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^9,x]
```

```
[Out] ((10*Sqrt[2 + 5*x + 3*x^2]*(9818427389 + 48950756372*x + 105874603844*x^2 +
 129405924160*x^3 + 97176896240*x^4 + 45214440256*x^5 + 12182619328*x^6 + 1
478785536*x^7))/(3 + 2*x)^8 - 11712477*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])] - 15120000*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 +
15*x + 9*x^2])])/286720000
```

fricas [A] time = 0.61, size = 263, normalized size = 1.34

$$\frac{15120000\sqrt{3}\left(256x^{8}+3072x^{7}+16128x^{6}+48384x^{5}+90720x^{4}+108864x^{3}+81648x^{2}+34992x+6561\right)\mathrm{lo}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="fricas")
```

```
[Out] 1/573440000*(15120000*sqrt(3)*(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)*log(-4*sqrt(3)*sqrt(3
*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 11712477*sqrt(5)*(256*x^
8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 +
 34992*x + 6561)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 +
 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(1478785536*x^7 + 12182619328*x^6 + 4
5214440256*x^5 + 97176896240*x^4 + 129405924160*x^3 + 105874603844*x^2 + 48
950756372*x + 9818427389)*sqrt(3*x^2 + 5*x + 2))/(256*x^8 + 3072*x^7 + 1612
8*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561)
```

giac [B] time = 0.51, size = 546, normalized size = 2.77

$$\frac{1673211}{40960000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)+\frac{27}{512}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="giac")
```

```
[Out] 1673211/40960000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*s
qrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x
^2 + 5*x + 2))) + 27/512*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
 + 5*x + 2)) - 5)) + 1/28672000*(25982914944*(sqrt(3)*x - sqrt(3*x^2 + 5*x
+ 2))^15 + 475461282240*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 12
329944383680*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 + 66497191380480*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 + 747738478510240*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^11 + 2056338758898032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^10 + 12823219634258640*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 2
0470141041874560*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 7577479745
7107080*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 + 72179382871515780*sqrt(3)*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 + 157788604924552196*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^5 + 86325470670757920*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^4 + 102935771527447390*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 28
057073003987265*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 14067886443
441495*sqrt(3)*x + 1086949713645432*sqrt(3) - 14067886443441495*sqrt(3*x^2
+ 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2)) + 11)^8
```

maple [B] time = 0.08, size = 379, normalized size = 1.92

$$-\frac{1673211\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{40960000}-\frac{27\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}\right)}{512}-\frac{13\left(-4x+3\left(x+\right.\right.}{10240\left(x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^9,x)
```

```
[Out] -13/10240/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-81/44800/(x+3/2)^7*(-4*x+
3*(x+3/2)^2-19/4)^(9/2)-158331/22400000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)-664383/40000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-150503/1400000
0/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+767427/70000000*(6*x+5)*(-4*x+3*(
x+3/2)^2-19/4)^(7/2)-135591/40000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)-
767427/35000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25627/6400000*(6*x+5)
*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-53211/5120000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4
)^(1/2)-1673211/40960000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(
x+3/2)^2-19)^(1/2))-27/512*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(-4*x+3*(x+3/2)
^2-19/4)^(1/2))+1673211/40960000*(-16*x+12*(x+3/2)^2-19)^(1/2)+557737/25600
000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1673211/160000000*(-4*x+3*(x+3/2)^2-19/4)
^(5/2)+1673211/280000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-363/80000/(x+3/2)^5*
(-4*x+3*(x+3/2)^2-19/4)^(9/2)-523/179200/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^
(9/2)
```

maxima [B] time = 1.64, size = 479, normalized size = 2.43

$$\frac{1993149}{40000000}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}}{40\left(256\,x^8+3072\,x^7+16128\,x^6+48384\,x^5+90720\,x^4+108864\,x^3+81648\,x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^9,x, algorithm="maxima")
```

```
[Out] 1993149/40000000*(3*x^2 + 5*x + 2)^(7/2) - 13/40*(3*x^2 + 5*x + 2)^(9/2)/(2
56*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*
x^2 + 34992*x + 6561) - 81/350*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^6
+ 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 523/2800
*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2
 + 2916*x + 729) - 363/2500*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720
*x^3 + 1080*x^2 + 810*x + 243) - 158331/1400000*(3*x^2 + 5*x + 2)^(9/2)/(16
*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 150503/1750000*(3*x^2 + 5*x + 2)^(9
/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 664383/10000000*(3*x^2 + 5*x + 2)^(9/2)/
(4*x^2 + 12*x + 9) - 406773/20000000*(3*x^2 + 5*x + 2)^(5/2)*x - 1038609/16
0000000*(3*x^2 + 5*x + 2)^(5/2) - 767427/14000000*(3*x^2 + 5*x + 2)^(7/2)/(
2*x + 3) - 76881/3200000*(3*x^2 + 5*x + 2)^(3/2)*x + 45197/25600000*(3*x^2
+ 5*x + 2)^(3/2) - 159633/2560000*sqrt(3*x^2 + 5*x + 2)*x - 27/512*sqrt(3)*
log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 1673211/40960000*sqrt(5)*l
og(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) + 608
991/20480000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^9}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^9,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^9, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098x+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**9,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 1
45152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098
*x + 19683), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x
**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 +
314928*x**2 + 118098*x + 19683), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x
+ 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 48988
8*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(-1339
*x**3*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x*
*6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 196
83), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8
+ 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x**4 + 489888*x**3 + 3149
28*x**2 + 118098*x + 19683), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)
/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 326592*x**5 + 489888*x*
*4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x) - Integral(27*x**7*s
qrt(3*x**2 + 5*x + 2)/(512*x**9 + 6912*x**8 + 41472*x**7 + 145152*x**6 + 32
6592*x**5 + 489888*x**4 + 489888*x**3 + 314928*x**2 + 118098*x + 19683), x)
```

3.2461 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx$

Optimal. Leaf size=184

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8}-\frac{329(8x+7)\left(3x^2+5x+2\right)^{5/2}}{96000(2x+3)^6}+\frac{329(8x+7)\left(3x^2+5x+\right.}{1536000(2x+3)^4}$$

```
[Out] 329/1536000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-329/96000*(7+8*x)*(3*x^2+
5*x+2)^(5/2)/(3+2*x)^6+47/800*(7+8*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^8-13/45*(
3*x^2+5*x+2)^(9/2)/(3+2*x)^9+329/204800000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*
x^2+5*x+2)^(1/2))*5^(1/2)-329/20480000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^
2
```

Rubi [A] time = 0.10, antiderivative size = 184, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {806, 720, 724, 206}

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9}+\frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8}-\frac{329(8x+7)\left(3x^2+5x+2\right)^{5/2}}{96000(2x+3)^6}+\frac{329(8x+7)\left(3x^2+5x+\right.}{1536000(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^10,x]
```

```
[Out] (-329*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20480000*(3 + 2*x)^2) + (329*(7 + 8
*x)*(2 + 5*x + 3*x^2)^(3/2))/(1536000*(3 + 2*x)^4) - (329*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(5/2))/(96000*(3 + 2*x)^6) + (47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/
2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(45*(3 + 2*x)^9) + (32
9*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40960000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{45(3+2x)^9} + \frac{47}{10}\int \frac{\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^9}\,dx$$

$$= \frac{47(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800(3+2x)^8} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{45(3+2x)^9} - \frac{329\int \frac{\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^7}\,dx}{1600}$$

$$= -\frac{329(7+8x)\left(2+5x+3x^2\right)^{5/2}}{96000(3+2x)^6} + \frac{47(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800(3+2x)^8} - \frac{13(2+5x+}{45(3+2.}$$

$$= \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x)\left(2+5x+3x^2\right)^{5/2}}{96000(3+2x)^6} + \frac{47(7+8x)(2}{800(3}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x)(2}{96000(}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x)(2}{96000(}$$

$$= -\frac{329(7+8x)\sqrt{2+5x+3x^2}}{20480000(3+2x)^2} + \frac{329(7+8x)\left(2+5x+3x^2\right)^{3/2}}{1536000(3+2x)^4} - \frac{329(7+8x)(2}{96000(}$$

Mathematica [A] time = 0.14, size = 185, normalized size = 1.01

$$-\frac{13\left(3x^2+5x+2\right)^{9/2}}{45(2x+3)^9} + \frac{47(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8} - \frac{329\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^6} - \frac{2(8x+7)\left(3x^2+5x+2\right)^{3/2}}{(2x+3)^4} + \frac{3(8x+7)\sqrt{3x^2+}}{20(2x+3)^{}}\right.}{3072000}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^10,x]
```

```
[Out] (47*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x + 3
*x^2)^(9/2))/(45*(3 + 2*x)^9) - (329*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(
20*(3 + 2*x)^2) - (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(40*Sqrt[5])))/3072000
```

fricas [A] time = 0.77, size = 200, normalized size = 1.09

$$\frac{2961\sqrt{5}\left(512x^9+6912x^8+41472x^7+145152x^6+326592x^5+489888x^4+489888x^3+314928x^2+118098\right.}{3686}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="fricas")
```

```
[Out] 1/3686400000*(2961*sqrt(5)*(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 3
26592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683)*log((4
*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 1
2*x + 9)) + 20*(28394496*x^8 + 2848109952*x^7 + 15895201728*x^6 + 385583672
64*x^5 + 51825176720*x^4 + 41530110824*x^3 + 19810691268*x^2 + 5201574542*x
 + 578701331)*sqrt(3*x^2 + 5*x + 2))/(512*x^9 + 6912*x^8 + 41472*x^7 + 1451
52*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 196
83)
```

giac [B] time = 0.38, size = 563, normalized size = 3.06

$$\frac{329}{204800000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{14930678016\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^{1}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="giac")
```

```
[Out] 329/204800000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt
(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))) - 1/184320000*(14930678016*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))
^17 + 204061569408*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16 + 3866707
486848*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 + 14840812733760*sqrt(3)*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^14 + 114102022608000*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^13 + 198779998219488*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^12 + 649357338634272*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 + 207317438
979984*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 2217334591351040*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 - 5247913396815000*sqrt(3)*(sqrt(3)*x -
 sqrt(3*x^2 + 5*x + 2))^8 - 20151247122371016*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^7 - 17924557725783828*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6
- 35125577732048328*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 169531618535930
70*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 17752204726475250*(sqrt(
3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 4253745315948057*sqrt(3)*(sqrt(3)*x - sqr
t(3*x^2 + 5*x + 2))^2 - 1882391465118753*sqrt(3)*x - 129047626217736*sqrt(3
) + 1882391465118753*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^9
```

maple [B] time = 0.11, size = 369, normalized size = 2.01

$$-\frac{329\sqrt{5}\ \mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{204800000}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{51200\left(x+\frac{3}{2}\right)^{8}}-\frac{47\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{32000\left(x+\frac{3}{2}\right)^{7}}-\frac{90287(}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^10,x)
```

```
[Out] -47/51200/(x+3/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-47/32000/(x+3/2)^7*(-4*x+
3*(x+3/2)^2-19/4)^(9/2)-90287/16000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)-2621237/200000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-259393/300000
00/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+491479/50000000*(6*x+5)*(-4*x+3*
(x+3/2)^2-19/4)^(7/2)-191149/200000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2
)-491479/25000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+9541/96000000*(6*x+
5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-329/25600000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-329/204800000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+
3/2)^2-19)^(1/2))+329/204800000*(-16*x+12*(x+3/2)^2-19)^(1/2)+329/384000000
*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+329/800000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+
47/200000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-1457/400000/(x+3/2)^5*(-4*x+3*(x
+3/2)^2-19/4)^(9/2)-893/384000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/2
3040/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.40, size = 513, normalized size = 2.79

$$\frac{7863711}{200000000}\left(3\,x^2+5\,x+2\right)^{\frac{7}{2}}-\frac{13\left(3\,x^2+5\,x+2\right)^{\frac{9}{2}}}{45\left(512\,x^9+6912\,x^8+41472\,x^7+145152\,x^6+326592\,x^5+489888\,x^4+489888\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^10,x, algorithm="maxima")
```

```
[Out] 7863711/200000000*(3*x^2 + 5*x + 2)^(7/2) - 13/45*(3*x^2 + 5*x + 2)^(9/2)/(
512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489
888*x^3 + 314928*x^2 + 118098*x + 19683) - 47/200*(3*x^2 + 5*x + 2)^(9/2)/(
256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648
*x^2 + 34992*x + 6561) - 47/250*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^6
 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 893/600
0*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^
2 + 2916*x + 729) - 1457/12500*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 +
720*x^3 + 1080*x^2 + 810*x + 243) - 90287/1000000*(3*x^2 + 5*x + 2)^(9/2)/(
16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 259393/3750000*(3*x^2 + 5*x + 2)^
(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 2621237/50000000*(3*x^2 + 5*x + 2)^(9/
2)/(4*x^2 + 12*x + 9) - 573447/100000000*(3*x^2 + 5*x + 2)^(5/2)*x - 382265
1/800000000*(3*x^2 + 5*x + 2)^(5/2) - 491479/10000000*(3*x^2 + 5*x + 2)^(7/
2)/(2*x + 3) + 9541/16000000*(3*x^2 + 5*x + 2)^(3/2)*x + 191149/384000000*(
3*x^2 + 5*x + 2)^(3/2) - 987/12800000*sqrt(3*x^2 + 5*x + 2)*x - 329/2048000
00*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3
) - 2) - 6251/102400000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^{10}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^10,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^10, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{1024x^{10}+15360x^9+103680x^8+414720x^7+1088640x^6+1959552x^5+2449440x^4+2099520x^3+118}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**10,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8
 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3
+ 1180980*x**2 + 393660*x + 59049), x) - Integral(-292*x*sqrt(3*x**2 + 5*x
+ 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 +
1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 5904
9), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9
 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 +
 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(-1339*x**3*
sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7
 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2
 + 393660*x + 59049), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(1024
*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x*
*5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x + 59049), x) - I
ntegral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*
x**8 + 414720*x**7 + 1088640*x**6 + 1959552*x**5 + 2449440*x**4 + 2099520*x
**3 + 1180980*x**2 + 393660*x + 59049), x) - Integral(27*x**7*sqrt(3*x**2 +
 5*x + 2)/(1024*x**10 + 15360*x**9 + 103680*x**8 + 414720*x**7 + 1088640*x*
*6 + 1959552*x**5 + 2449440*x**4 + 2099520*x**3 + 1180980*x**2 + 393660*x +
 59049), x)
```

3.2462 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx$

Optimal. Leaf size=209

$$-\frac{29\left(3x^2+5x+2\right)^{9/2}}{125(2x+3)^9}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}}+\frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{40000(2x+3)^8}-\frac{4417(8x+7)\left(3x^2+5x+2\right)^{5/2}}{1600000(2x+3)^6}+4$$

```
[Out] 4417/25600000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-4417/1600000*(7+8*x)*(3
*x^2+5*x+2)^(5/2)/(3+2*x)^6+1893/40000*(7+8*x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^
8-13/50*(3*x^2+5*x+2)^(9/2)/(3+2*x)^10-29/125*(3*x^2+5*x+2)^(9/2)/(3+2*x)^9
+13251/10240000000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2
)-13251/1024000000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.12, antiderivative size = 209, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {834, 806, 720, 724, 206}

$$-\frac{29\left(3x^2+5x+2\right)^{9/2}}{125(2x+3)^9}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}}+\frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{40000(2x+3)^8}-\frac{4417(8x+7)\left(3x^2+5x+2\right)^{5/2}}{1600000(2x+3)^6}+4$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^11,x]
```

```
[Out] (-13251*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(1024000000*(3 + 2*x)^2) + (4417*(
7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(25600000*(3 + 2*x)^4) - (4417*(7 + 8*x)*
(2 + 5*x + 3*x^2)^(5/2))/(1600000*(3 + 2*x)^6) + (1893*(7 + 8*x)*(2 + 5*x +
 3*x^2)^(7/2))/(40000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(50*(3 +
2*x)^10) - (29*(2 + 5*x + 3*x^2)^(9/2))/(125*(3 + 2*x)^9) + (13251*ArcTanh[
(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(2048000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{1}{50}\int \frac{\left(-\frac{405}{2}+39x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx \\
&= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{29\left(2+5x+3x^2\right)^{9/2}}{125(3+2x)^{9}} + \frac{1893}{500}\int \frac{\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{9}}\,d \\
&= \frac{1893(7+8x)\left(2+5x+3x^2\right)^{7/2}}{40000(3+2x)^{8}} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{50(3+2x)^{10}} - \frac{29\left(2+5x+3x^2\right)^{9/}}{125(3+2x)^{9}} \\
&= -\frac{4417(7+8x)\left(2+5x+3x^2\right)^{5/2}}{1600000(3+2x)^{6}} + \frac{1893(7+8x)\left(2+5x+3x^2\right)^{7/2}}{40000(3+2x)^{8}} - \frac{13\left(2+\right.}{50} \\
&= \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^{4}} - \frac{4417(7+8x)\left(2+5x+3x^2\right)^{5/2}}{1600000(3+2x)^{6}} + \frac{1893(7}{} \\
&= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^{2}} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^{4}} - \frac{4417(7}{1} \\
&= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^{2}} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^{4}} - \frac{4417(7}{1} \\
&= -\frac{13251(7+8x)\sqrt{2+5x+3x^2}}{1024000000(3+2x)^{2}} + \frac{4417(7+8x)\left(2+5x+3x^2\right)^{3/2}}{25600000(3+2x)^{4}} - \frac{4417(7}{1}
\end{aligned}
$$

Mathematica [A] time = 0.16, size = 212, normalized size = 1.01

$$
\frac{1}{50}\left(-\frac{58\left(3x^2+5x+2\right)^{9/2}}{5(2x+3)^9} - \frac{13\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{10}} + \frac{1893(8x+7)\left(3x^2+5x+2\right)^{7/2}}{800(2x+3)^8} - \frac{4417\left(\frac{32(8x+7)\left(3x^2+5x+2\right)^{5}}{(2x+3)^6}\right.}{}\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^11,x]
```

```
[Out] ((1893*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(800*(3 + 2*x)^8) - (13*(2 + 5*x
+ 3*x^2)^(9/2))/(3 + 2*x)^10 - (58*(2 + 5*x + 3*x^2)^(9/2))/(5*(3 + 2*x)^9)
 - (4417*((3*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^2) - (2*(7 + 8*
x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^4 + (32*(7 + 8*x)*(2 + 5*x + 3*x^2)^(
5/2))/(3 + 2*x)^6 + (3*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])
])/(40*Sqrt[5])))/1024000)/50
```

fricas [A] time = 0.71, size = 215, normalized size = 1.03

$$\frac{13251\sqrt{5}\left(1024\,x^{10}+15360\,x^{9}+103680\,x^{8}+414720\,x^{7}+1088640\,x^{6}+1959552\,x^{5}+2449440\,x^{4}+2099520\,x^{3}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="fricas")
```

```
[Out] 1/20480000000*(13251*sqrt(5)*(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x
^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 +
393660*x + 59049)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2
+ 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(371791872*x^9 + 5268182272*x^8 + 40
186580992*x^7 + 148740043392*x^6 + 304078211712*x^5 + 372602220928*x^4 + 28
1702072128*x^3 + 128970753208*x^2 + 32786922608*x + 3544392763)*sqrt(3*x^2
+ 5*x + 2))/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6
+ 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049)
```

giac [B] time = 0.41, size = 614, normalized size = 2.94

$$\frac{13251}{10240000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)-\frac{6784512\left(\sqrt{3}x-\sqrt{3x^{2}+5x+2}\right)^{19}+8}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="giac")
```

```
[Out] 13251/10240000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*
sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))) - 1/1024000000*(6784512*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^19 + 83137358592*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^18 + 2689605
043456*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^17 + 9174489217536*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^16 - 53080570863872*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^15 - 898783135722624*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)
)^14 - 13174687008250752*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 405071727
95248512*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 27016959672711001
6*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 458790099197766656*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 1833183533173743552*(sqrt(3)*x - sqrt(3
*x^2 + 5*x + 2))^9 - 1939024456450048032*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^8 - 4903074367120921776*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^7 - 3
280073192617110456*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^6 - 51648562
11259534888*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 2082844158764403144*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 1869656136275991262*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^3 - 391066159205340747*sqrt(3)*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^2 - 153124376229353121*sqrt(3)*x - 9387541838830536*sqrt(
3) + 153124376229353121*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^10
```

maple [B] time = 0.15, size = 390, normalized size = 1.87

$$-\frac{13251\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{10240000000}-\frac{13\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{51200\left(x+\frac{3}{2}\right)^{10}}-\frac{1893\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{2560000\left(x+\frac{3}{2}\right)^{8}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^11,x)
```

```
[Out] -13/51200/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-1893/2560000/(x+3/2)^8*(
-4*x+3*(x+3/2)^2-19/4)^(9/2)-1893/1600000/(x+3/2)^7*(-4*x+3*(x+3/2)^2-19/4)
^(9/2)-3636453/800000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-105574503/
10000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-3482489/500000000/(x+3/
2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+19795101/2500000000*(6*x+5)*(-4*x+3*(x+3
/2)^2-19/4)^(7/2)-7698831/10000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(5/2)
-19795101/1250000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+128093/160000000
0*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-13251/1280000000*(6*x+5)*(-4*x+3*(x
+3/2)^2-19/4)^(1/2)-13251/10240000000*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2
)/(-16*x+12*(x+3/2)^2-19)^(1/2))+13251/10240000000*(-16*x+12*(x+3/2)^2-19)^
(1/2)+4417/6400000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+13251/40000000000*(-4*x
+3*(x+3/2)^2-19/4)^(5/2)+1893/10000000000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-586
83/20000000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-11989/6400000/(x+3/2)^6
*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-29/64000/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(
9/2)
```

maxima [B] time = 1.50, size = 579, normalized size = 2.77

$$\frac{316723509}{10000000000}\left(3\,x^{2}+5\,x+2\right)^{\frac{7}{2}}-\frac{13\left(3\,x^{2}+5\,x+\right.}{50\left(1024\,x^{10}+15360\,x^{9}+103680\,x^{8}+414720\,x^{7}+1088640\,x^{6}+1959552\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^11,x, algorithm="maxima")
```

```
[Out] 316723509/10000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/50*(3*x^2 + 5*x + 2)^(9/
2)/(1024*x^10 + 15360*x^9 + 103680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552
*x^5 + 2449440*x^4 + 2099520*x^3 + 1180980*x^2 + 393660*x + 59049) - 29/125
*(3*x^2 + 5*x + 2)^(9/2)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326
592*x^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683) - 1893/1
0000*(3*x^2 + 5*x + 2)^(9/2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 +
90720*x^4 + 108864*x^3 + 81648*x^2 + 34992*x + 6561) - 1893/12500*(3*x^2 +
5*x + 2)^(9/2)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 204
12*x^2 + 10206*x + 2187) - 11989/100000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 5
76*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729) - 58683/625000*(3*x
^2 + 5*x + 2)^(9/2)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) -
 3636453/50000000*(3*x^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*
x + 81) - 3482489/62500000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x +
 27) - 105574503/2500000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 23
096493/5000000000*(3*x^2 + 5*x + 2)^(5/2)*x - 153963369/40000000000*(3*x^2
+ 5*x + 2)^(5/2) - 19795101/500000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 3
84279/800000000*(3*x^2 + 5*x + 2)^(3/2)*x + 2566277/6400000000*(3*x^2 + 5*x
 + 2)^(3/2) - 39753/640000000*sqrt(3*x^2 + 5*x + 2)*x - 13251/10240000000*s
qrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) -
2) - 251769/5120000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^{11}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^11,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^11, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{2048x^{11}+33792x^{10}+253440x^{9}+1140480x^{8}+3421440x^{7}+7185024x^{6}+10777536x^{5}+11547360x^{4}+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**11,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**
9 + 1140480*x**8 + 3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x
**4 + 8660520*x**3 + 4330260*x**2 + 1299078*x + 177147), x) - Integral(-292
*x*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480
*x**8 + 3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 86605
20*x**3 + 4330260*x**2 + 1299078*x + 177147), x) - Integral(-870*x**2*sqrt(
3*x**2 + 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 +
3421440*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3
+ 4330260*x**2 + 1299078*x + 177147), x) - Integral(-1339*x**3*sqrt(3*x**2
+ 5*x + 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440
*x**7 + 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 43302
60*x**2 + 1299078*x + 177147), x) - Integral(-1090*x**4*sqrt(3*x**2 + 5*x +
 2)/(2048*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 +
 7185024*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2
 + 1299078*x + 177147), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x + 2)/(204
8*x**11 + 33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 + 7185024
*x**6 + 10777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2 + 12990
78*x + 177147), x) - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(2048*x**11 +
33792*x**10 + 253440*x**9 + 1140480*x**8 + 3421440*x**7 + 7185024*x**6 + 10
777536*x**5 + 11547360*x**4 + 8660520*x**3 + 4330260*x**2 + 1299078*x + 177
147), x)
```

3.2463 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx$

Optimal. Leaf size=234

$$-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{20625(2x+3)^9}-\frac{621\left(3x^2+5x+2\right)^{9/2}}{2750(2x+3)^{10}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}+\frac{7671(8x+7)\left(3x^2+5x+2\right)^{7/2}}{200000(2x+3)^8}-1789$$

```
[Out] 17899/128000000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-17899/8000000*(7+8*x)
*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6+7671/200000*(7+8*x)*(3*x^2+5*x+2)^(7/2)/(3+2
*x)^8-13/55*(3*x^2+5*x+2)^(9/2)/(3+2*x)^11-621/2750*(3*x^2+5*x+2)^(9/2)/(3+
2*x)^10-3904/20625*(3*x^2+5*x+2)^(9/2)/(3+2*x)^9+53697/51200000000*arctanh(
1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-53697/5120000000*(7+8*x)*
(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.15, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{20625(2x+3)^9}-\frac{621\left(3x^2+5x+2\right)^{9/2}}{2750(2x+3)^{10}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}+\frac{7671(8x+7)\left(3x^2+5x+2\right)^{7/2}}{200000(2x+3)^8}-1789$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^12,x]
```

```
[Out] (-53697*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(5120000000*(3 + 2*x)^2) + (17899*
(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(128000000*(3 + 2*x)^4) - (17899*(7 + 8*
x)*(2 + 5*x + 3*x^2)^(5/2))/(8000000*(3 + 2*x)^6) + (7671*(7 + 8*x)*(2 + 5*
x + 3*x^2)^(7/2))/(200000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(55*(
3 + 2*x)^11) - (621*(2 + 5*x + 3*x^2)^(9/2))/(2750*(3 + 2*x)^10) - (3904*(2
 + 5*x + 3*x^2)^(9/2))/(20625*(3 + 2*x)^9) + (53697*ArcTanh[(7 + 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(10240000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx = -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{1}{55}\int \frac{\left(-\frac{387}{2}+78x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}} + \frac{\int \frac{\left(\frac{17835}{2}-1863x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{10}}\,dx}{2750}$$

$$= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}} - \frac{3904\left(2+5x+3x^2\right)^{9/2}}{20625(3+2x)^{9}} + 767$$

$$= \frac{7671(7+8x)\left(2+5x+3x^2\right)^{7/2}}{200000(3+2x)^{8}} - \frac{13\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}} - \frac{621\left(2+5x+3x^2\right)^{9/2}}{2750(3+2x)^{10}}$$

$$= -\frac{17899(7+8x)\left(2+5x+3x^2\right)^{5/2}}{8000000(3+2x)^{6}} + \frac{7671(7+8x)\left(2+5x+3x^2\right)^{7/2}}{200000(3+2x)^{8}} - \frac{13(2+5}{55(3}$$

$$= \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^{4}} - \frac{17899(7+8x)\left(2+5x+3x^2\right)^{5/2}}{8000000(3+2x)^{6}} + \frac{7671(7+}{2}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^{2}} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^{4}} - \frac{17899(7-}{80}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^{2}} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^{4}} - \frac{17899(7-}{80}$$

$$= -\frac{53697(7+8x)\sqrt{2+5x+3x^2}}{5120000000(3+2x)^{2}} + \frac{17899(7+8x)\left(2+5x+3x^2\right)^{3/2}}{128000000(3+2x)^{4}} - \frac{17899(7-}{80}$$

Mathematica **[A]** time = 0.31, size = 239, normalized size = 1.02

$$\frac{1}{55}\left(-\frac{3904\left(3x^2+5x+2\right)^{9/2}}{375(2x+3)^9}-\frac{621\left(3x^2+5x+2\right)^{9/2}}{50(2x+3)^{10}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{11}}+\frac{84381\left(\frac{2(8x+7)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8}-7(8\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^12,x]
```

```
[Out] ((-13*(2 + 5*x + 3*x^2)^(9/2))/(3 + 2*x)^11 - (621*(2 + 5*x + 3*x^2)^(9/2))
/(50*(3 + 2*x)^10) - (3904*(2 + 5*x + 3*x^2)^(9/2))/(375*(3 + 2*x)^9) + (84
381*((7*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(960*(3 + 2*x)^4) - (7*(7 + 8*x)
*(2 + 5*x + 3*x^2)^(5/2))/(60*(3 + 2*x)^6) + (2*(7 + 8*x)*(2 + 5*x + 3*x^2)
^(7/2))/(3 + 2*x)^8 - (7*((10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2
+ Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/128000))/
80000)/55
```

fricas **[A]** time = 0.78, size = 230, normalized size = 0.98

$$\frac{1772001\sqrt{5}\left(2048x^{11}+33792x^{10}+253440x^{9}+1140480x^{8}+3421440x^{7}+7185024x^{6}+10777536x^{5}+11\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="fricas")
```

```
[Out] 1/3379200000000*(1772001*sqrt(5)*(2048*x^11 + 33792*x^10 + 253440*x^9 + 114
0480*x^8 + 3421440*x^7 + 7185024*x^6 + 10777536*x^5 + 11547360*x^4 + 866052
0*x^3 + 4330260*x^2 + 1299078*x + 177147)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x +
 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 20*(30557343744
*x^10 + 479034140160*x^9 + 3387337708800*x^8 + 14992486229760*x^7 + 4148530
8553600*x^6 + 72251114756992*x^5 + 80329740407040*x^4 + 56898923222800*x^3
+ 24817198954840*x^2 + 6058472990850*x + 629890144539)*sqrt(3*x^2 + 5*x + 2
))/(2048*x^11 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 71850
24*x^6 + 10777536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078*
x + 177147)
```

giac **[B]** time = 0.38, size = 665, normalized size = 2.84

$$\frac{53697}{51200000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{1814529024\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="giac")
```

```
[Out] 53697/51200000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*
sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))) - 1/168960000000*(1814529024*(sqrt(3)*x - sqrt(3*x^2 + 5*x
 + 2))^21 + 57157664256*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^20 + 57
290941171200*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^19 + 557490020440320*sqrt(
3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^18 + 3116590396465920*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^17 - 40571342658595584*sqrt(3)*(sqrt(3)*x - sqrt(3*x^
2 + 5*x + 2))^16 - 1098653419392131328*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^
15 - 4929229513296950400*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 4
486043968562825152O*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 10106712442952
7527040*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 530008429621517017
088*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 7359449118844O3670592*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 2465807894359584887200*(sqrt(3)*x
- sqrt(3*x^2 + 5*x + 2))^9 - 2226326899649908579920*sqrt(3)*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^8 - 4870616002552398497520*(sqrt(3)*x - sqrt(3*x^2 + 5
*x + 2))^7 - 2849658548882889760632*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^6 - 3959763769847021107884*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 142
016354104095987615O*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 1141537
424727199856070*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 2151306177862497217
65*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 76323347715579462729*sqr
t(3)*x - 4261520459402725896*sqrt(3) + 76323347715579462729*sqrt(3*x^2 + 5*
x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2)) + 11)^11
```

maple [B] time = 0.19, size = 411, normalized size = 1.76

$$-\frac{53697\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{51200000000}-\frac{621\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{2816000\left(x+\frac{3}{2}\right)^{10}}-\frac{7671\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{12800000\left(x+\frac{3}{2}\right)^{8}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^12,x)
```

```
[Out] -621/2816000/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-7671/12800000/(x+3/2)
^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-7671/8000000/(x+3/2)^7*(-4*x+3*(x+3/2)^2-1
9/4)^(9/2)-14735991/4000000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-4278
19341/50000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-14112083/25000000
00/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+80215647/12500000000*(6*x+5)*(-4
*x+3*(x+3/2)^2-19/4)^(7/2)-31197957/50000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-1
9/4)^(5/2)-80215647/6250000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+519071
/8000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-53697/6400000000*(6*x+5)*
(-4*x+3*(x+3/2)^2-19/4)^(1/2)-53697/51200000000*5^(1/2)*arctanh(2/5*(-4*x-7
/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+53697/51200000000*(-16*x+12*(x+3
/2)^2-19)^(1/2)+17899/32000000000*(-4*x+3*(x+3/2)^2-19/4)^(3/2)+53697/20000
0000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+7671/50000000000*(-4*x+3*(x+3/2)^2-19
/4)^(7/2)-237801/100000000/(x+3/2)^5*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-48583/32
000000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-13/112640/(x+3/2)^11*(-4*x+3
*(x+3/2)^2-19/4)^(9/2)-61/165000/(x+3/2)^9*(-4*x+3*(x+3/2)^2-19/4)^(9/2)
```

maxima [B] time = 1.42, size = 650, normalized size = 2.78

$$\frac{1283458023}{50000000000}\left(3x^{2}+5x+2\right)^{\frac{7}{2}}-\frac{13\left(3x^{2}\right.}{55\left(2048x^{11}+33792x^{10}+253440x^{9}+1140480x^{8}+3421440x^{7}+7185024x^{6}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^12,x, algorithm="maxima")
```

```
[Out] 1283458023/50000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/55*(3*x^2 + 5*x + 2)^(9
/2)/(2048*x^11 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185
024*x^6 + 10777536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078
*x + 177147) - 621/2750*(3*x^2 + 5*x + 2)^(9/2)/(1024*x^10 + 15360*x^9 + 10
3680*x^8 + 414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x
^3 + 1180980*x^2 + 393660*x + 59049) - 3904/20625*(3*x^2 + 5*x + 2)^(9/2)/(
512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489
888*x^3 + 314928*x^2 + 118098*x + 19683) - 7671/50000*(3*x^2 + 5*x + 2)^(9/
2)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 8
1648*x^2 + 34992*x + 6561) - 7671/62500*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 +
1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) -
 48583/500000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x
^3 + 4860*x^2 + 2916*x + 729) - 237801/3125000*(3*x^2 + 5*x + 2)^(9/2)/(32*
x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 14735991/250000000*(3*x
^2 + 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 14112083/312
500000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 427819341/125
00000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 93593871/25000000000*
(3*x^2 + 5*x + 2)^(5/2)*x - 623905443/200000000000*(3*x^2 + 5*x + 2)^(5/2)
- 80215647/2500000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 1557213/400000000
0*(3*x^2 + 5*x + 2)^(3/2)*x + 10399319/32000000000*(3*x^2 + 5*x + 2)^(3/2)
- 161091/3200000000*sqrt(3*x^2 + 5*x + 2)*x - 53697/51200000000*sqrt(5)*log
(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2) - 10202
43/25600000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^{12}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^12,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^12, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x+2}}{4096x^{12}+73728x^{11}+608256x^{10}+3041280x^9+10264320x^8+24634368x^7+43110144x^6+554273}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**12,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**
10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 5542732
8*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441
), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 +
608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6
 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*
x + 531441), x) - Integral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 7
3728*x**11 + 608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 +
43110144*x**6 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x*
*2 + 4251528*x + 531441), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2)/(
4096*x**12 + 73728*x**11 + 608256*x**10 + 3041280*x**9 + 10264320*x**8 + 24
634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51963120*x**4 + 34642080*x**3
 + 15588936*x**2 + 4251528*x + 531441), x) - Integral(-1090*x**4*sqrt(3*x**
2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**10 + 3041280*x**9 + 1026
4320*x**8 + 24634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51963120*x**4 +
 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441), x) - Integral(-396*x*
*5*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**10 + 304128
0*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 55427328*x**5 + 51
963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441), x) - Int
egral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(4096*x**12 + 73728*x**11 + 608256*x**
10 + 3041280*x**9 + 10264320*x**8 + 24634368*x**7 + 43110144*x**6 + 5542732
8*x**5 + 51963120*x**4 + 34642080*x**3 + 15588936*x**2 + 4251528*x + 531441
), x)
```

3.2464 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{13}}\,dx$

Optimal. Leaf size=259

$$-\frac{6379\left(3x^2+5x+2\right)^{9/2}}{41250(2x+3)^9}-\frac{2067\left(3x^2+5x+2\right)^{9/2}}{11000(2x+3)^{10}}-\frac{12\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{60(2x+3)^{12}}+\frac{25017(8x+7)\,(3x}{800000(2}$$

```
[Out] 58373/512000000*(7+8*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^4-58373/32000000*(7+8*x
)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^6+25017/800000*(7+8*x)*(3*x^2+5*x+2)^(7/2)/(3
+2*x)^8-13/60*(3*x^2+5*x+2)^(9/2)/(3+2*x)^12-12/55*(3*x^2+5*x+2)^(9/2)/(3+2
*x)^11-2067/11000*(3*x^2+5*x+2)^(9/2)/(3+2*x)^10-6379/41250*(3*x^2+5*x+2)^(
9/2)/(3+2*x)^9+175119/204800000000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+
2)^(1/2))*5^(1/2)-175119/20480000000*(7+8*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2
```

Rubi [A] time = 0.18, antiderivative size = 259, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {834, 806, 720, 724, 206}

$$-\frac{6379\left(3x^2+5x+2\right)^{9/2}}{41250(2x+3)^9}-\frac{2067\left(3x^2+5x+2\right)^{9/2}}{11000(2x+3)^{10}}-\frac{12\left(3x^2+5x+2\right)^{9/2}}{55(2x+3)^{11}}-\frac{13\left(3x^2+5x+2\right)^{9/2}}{60(2x+3)^{12}}+\frac{25017(8x+7)\,(3x}{800000(2}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^13,x]
```

```
[Out] (-175119*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(20480000000*(3 + 2*x)^2) + (5837
3*(7 + 8*x)*(2 + 5*x + 3*x^2)^(3/2))/(512000000*(3 + 2*x)^4) - (58373*(7 +
8*x)*(2 + 5*x + 3*x^2)^(5/2))/(32000000*(3 + 2*x)^6) + (25017*(7 + 8*x)*(2
+ 5*x + 3*x^2)^(7/2))/(800000*(3 + 2*x)^8) - (13*(2 + 5*x + 3*x^2)^(9/2))/(
60*(3 + 2*x)^12) - (12*(2 + 5*x + 3*x^2)^(9/2))/(55*(3 + 2*x)^11) - (2067*(
2 + 5*x + 3*x^2)^(9/2))/(11000*(3 + 2*x)^10) - (6379*(2 + 5*x + 3*x^2)^(9/2
))/(41250*(3 + 2*x)^9) + (175119*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x
+ 3*x^2])])/(40960000000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 720

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((d + e*x)^(m + 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
 + c*x^2)^p)/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[(p*(b^2 - 4*a*c
))/(2*(m + 1)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*
x^2)^(p - 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &&
 NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2, 0
] && GtQ[p, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{13}}\,dx &= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}}-\frac{1}{60}\int \frac{\left(-\frac{369}{2}+117x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{12}}\,dx\\
&= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}}-\frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}}+\frac{\int \frac{\left(\frac{18045}{2}-4320x\right)\left(2+5x+3x^2\right)^{7/2}}{(3+2x)^{11}}\,dx}{3300}\\
&= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}}-\frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}}-\frac{2067\left(2+5x+3x^2\right)^{9/2}}{11000(3+2x)^{10}}-\int\\
&= -\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}}-\frac{12\left(2+5x+3x^2\right)^{9/2}}{55(3+2x)^{11}}-\frac{2067\left(2+5x+3x^2\right)^{9/2}}{11000(3+2x)^{10}}-63\\
&= \frac{25017(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800000(3+2x)^{8}}-\frac{13\left(2+5x+3x^2\right)^{9/2}}{60(3+2x)^{12}}-\frac{12\left(2+5x+3x^2\right)}{55(3+2x)^{11}}\\
&= -\frac{58373(7+8x)\left(2+5x+3x^2\right)^{5/2}}{32000000(3+2x)^{6}}+\frac{25017(7+8x)\left(2+5x+3x^2\right)^{7/2}}{800000(3+2x)^{8}}-13\\
&= \frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}}-\frac{58373(7+8x)\left(2+5x+3x^2\right)^{5/2}}{32000000(3+2x)^{6}}+2501\\
&= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}}+\frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}}-5837\\
&= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}}+\frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}}-5837\\
&= -\frac{175119(7+8x)\sqrt{2+5x+3x^2}}{20480000000(3+2x)^{2}}+\frac{58373(7+8x)\left(2+5x+3x^2\right)^{3/2}}{512000000(3+2x)^{4}}-5837
\end{aligned}
$$

Mathematica [**A**] time = 0.24, size = 262, normalized size = 1.01

$$\frac{-\frac{12758\left(3x^2+5x+2\right)^{9/2}}{25(2x+3)^9}-\frac{6201\left(3x^2+5x+2\right)^{9/2}}{10(2x+3)^{10}}-\frac{720\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{11}}-\frac{715\left(3x^2+5x+2\right)^{9/2}}{(2x+3)^{12}}+\frac{825561\left(\frac{2(8x+7)\left(3x^2+5x+2\right)^{7/2}}{(2x+3)^8}-\frac{7(8x+7)\left(3x^2+5x+2\right)^{5/2}}{60(2x+3)^6}+\right.}{}}{3300}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^13,x]
```

```
[Out] ((-715*(2 + 5*x + 3*x^2)^(9/2))/(3 + 2*x)^12 - (720*(2 + 5*x + 3*x^2)^(9/2)
)/(3 + 2*x)^11 - (6201*(2 + 5*x + 3*x^2)^(9/2))/(10*(3 + 2*x)^10) - (12758*
(2 + 5*x + 3*x^2)^(9/2))/(25*(3 + 2*x)^9) + (825561*((7*(7 + 8*x)*(2 + 5*x
+ 3*x^2)^(3/2))/(960*(3 + 2*x)^4) - (7*(7 + 8*x)*(2 + 5*x + 3*x^2)^(5/2))/(
60*(3 + 2*x)^6) + (2*(7 + 8*x)*(2 + 5*x + 3*x^2)^(7/2))/(3 + 2*x)^8 - (7*((
10*(7 + 8*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 + Sqrt[5]*ArcTanh[(-7 - 8*x
)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/128000))/16000)/3300
```

fricas [**A**] time = 0.77, size = 245, normalized size = 0.95

$$5778927\sqrt{5}\,(4096\,x^{12}+73728\,x^{11}+608256\,x^{10}+3041280\,x^{9}+10264320\,x^{8}+24634368\,x^{7}+43110144\,x^{6}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="fricas")
```

```
[Out] 1/13516800000000*(5778927*sqrt(5)*(4096*x^12 + 73728*x^11 + 608256*x^10 + 3
041280*x^9 + 10264320*x^8 + 24634368*x^7 + 43110144*x^6 + 55427328*x^5 + 51
963120*x^4 + 34642080*x^3 + 15588936*x^2 + 4251528*x + 531441)*log((4*sqrt(
5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
9)) + 20*(60734693376*x^11 + 1044584776704*x^10 + 8182662620160*x^9 + 38544
695427840*x^8 + 123629135656960*x^7 + 273282692080768*x^6 + 410468875350912
*x^5 + 412855931529440*x^4 + 271870111600160*x^3 + 111795175925940*x^2 + 25
843081681156*x + 2531527640959)*sqrt(3*x^2 + 5*x + 2))/(4096*x^12 + 73728*x
^11 + 608256*x^10 + 3041280*x^9 + 10264320*x^8 + 24634368*x^7 + 43110144*x^
6 + 55427328*x^5 + 51963120*x^4 + 34642080*x^3 + 15588936*x^2 + 4251528*x +
 531441)
```

giac [**B**] time = 0.54, size = 716, normalized size = 2.76

$$\frac{175119}{204800000000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}\,x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\sqrt{3}\,x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{11835242496\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="giac")
```

```
[Out] 175119/204800000000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) +
4*sqrt(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(
3*x^2 + 5*x + 2))) - 1/675840000000*(11835242496*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^23 + 408315866112*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^22
+ 20039038086144*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^21 + 535243596890112*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^20 + 13859706456921600*(sqrt(3)*
x - sqrt(3*x^2 + 5*x + 2))^19 + 31535346744025344*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2))^18 - 789031961976842496*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^17 - 7977976824329385984*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^16
```

```
 - 113078650509677476096*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^15 - 358779889
050339715200*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^14 - 2538162771649
151164032*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^13 - 4660243350382625915904*s
qrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^12 - 20499122524155108829248*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^11 - 24347916060701730772704*sqrt(3)*(sqrt
(3)*x - sqrt(3*x^2 + 5*x + 2))^10 - 70788415443572756925600*(sqrt(3)*x - sq
rt(3*x^2 + 5*x + 2))^9 - 56076083911431114398208*sqrt(3)*(sqrt(3)*x - sqrt(
3*x^2 + 5*x + 2))^8 - 108598043564223524909928*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^7 - 56663550021725424101412*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^6 - 70668287639831997261828*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 - 22
876037084903247115200*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 - 16680
770211437743348146*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 - 2864949797863813
201587*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 - 93027830676920644626
9*sqrt(3)*x - 47729262032858665512*sqrt(3) + 930278306769206446269*sqrt(3*x
^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3
)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^12
```

maple [A] time = 9.36, size = 432, normalized size = 1.67

$$-\frac{175119\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{204800000000}-\frac{2067\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{11264000\left(x+\frac{3}{2}\right)^{10}}-\frac{25017\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{9}{2}}}{51200000\left(x+\frac{3}{2}\right)^{8}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(7/2)/(2*x+3)^13,x)
```

```
[Out] -2067/11264000/(x+3/2)^10*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25017/51200000/(x+3
/2)^8*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-25017/32000000/(x+3/2)^7*(-4*x+3*(x+3/2
)^2-19/4)^(9/2)-48057657/16000000000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(9/2
)-1395223107/200000000000/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-46022941/
10000000000/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(9/2)+261602769/50000000000*(
6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-101744139/200000000000*(6*x+5)*(-4*x+3
*(x+3/2)^2-19/4)^(5/2)-261602769/25000000000/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4
)^(9/2)+1692817/32000000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(3/2)-175119/25
600000000*(6*x+5)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-175119/204800000000*5^(1/2)
*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))+175119/20480
0000000*(-16*x+12*(x+3/2)^2-19)^(1/2)+58373/128000000000*(-4*x+3*(x+3/2)^2-
19/4)^(3/2)+175119/800000000000*(-4*x+3*(x+3/2)^2-19/4)^(5/2)+25017/2000000
00000*(-4*x+3*(x+3/2)^2-19/4)^(7/2)-775527/400000000/(x+3/2)^5*(-4*x+3*(x+3
/2)^2-19/4)^(9/2)-158441/128000000/(x+3/2)^6*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-
3/28160/(x+3/2)^11*(-4*x+3*(x+3/2)^2-19/4)^(9/2)-6379/21120000/(x+3/2)^9*(-
4*x+3*(x+3/2)^2-19/4)^(9/2)-13/245760/(x+3/2)^12*(-4*x+3*(x+3/2)^2-19/4)^(9
/2)
```

maxima [B] time = 1.40, size = 726, normalized size = 2.80

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(7/2)/(3+2*x)^13,x, algorithm="maxima")
```

```
[Out] 4185669321/200000000000*(3*x^2 + 5*x + 2)^(7/2) - 13/60*(3*x^2 + 5*x + 2)^(
9/2)/(4096*x^12 + 73728*x^11 + 608256*x^10 + 3041280*x^9 + 10264320*x^8 + 2
4634368*x^7 + 43110144*x^6 + 55427328*x^5 + 51963120*x^4 + 34642080*x^3 + 1
5588936*x^2 + 4251528*x + 531441) - 12/55*(3*x^2 + 5*x + 2)^(9/2)/(2048*x^1
1 + 33792*x^10 + 253440*x^9 + 1140480*x^8 + 3421440*x^7 + 7185024*x^6 + 107
77536*x^5 + 11547360*x^4 + 8660520*x^3 + 4330260*x^2 + 1299078*x + 177147)
```

```
- 2067/11000*(3*x^2 + 5*x + 2)^(9/2)/(1024*x^10 + 15360*x^9 + 103680*x^8 +
414720*x^7 + 1088640*x^6 + 1959552*x^5 + 2449440*x^4 + 2099520*x^3 + 118098
0*x^2 + 393660*x + 59049) - 6379/41250*(3*x^2 + 5*x + 2)^(9/2)/(512*x^9 + 6
912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x^5 + 489888*x^4 + 489888*x^3 + 3
14928*x^2 + 118098*x + 19683) - 25017/200000*(3*x^2 + 5*x + 2)^(9/2)/(256*x
^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4 + 108864*x^3 + 81648*x^2
+ 34992*x + 6561) - 25017/250000*(3*x^2 + 5*x + 2)^(9/2)/(128*x^7 + 1344*x^
6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*x + 2187) - 158441
/2000000*(3*x^2 + 5*x + 2)^(9/2)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 +
4860*x^2 + 2916*x + 729) - 775527/12500000*(3*x^2 + 5*x + 2)^(9/2)/(32*x^5
+ 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243) - 48057657/1000000000*(3*x^2
+ 5*x + 2)^(9/2)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81) - 46022941/125000
0000*(3*x^2 + 5*x + 2)^(9/2)/(8*x^3 + 36*x^2 + 54*x + 27) - 1395223107/5000
0000000*(3*x^2 + 5*x + 2)^(9/2)/(4*x^2 + 12*x + 9) - 305232417/10000000000
*(3*x^2 + 5*x + 2)^(5/2)*x - 2034707661/800000000000*(3*x^2 + 5*x + 2)^(5/2
) - 261602769/10000000000*(3*x^2 + 5*x + 2)^(7/2)/(2*x + 3) + 5078451/16000
000000*(3*x^2 + 5*x + 2)^(3/2)*x + 33914713/128000000000*(3*x^2 + 5*x + 2)^
(3/2) - 525357/12800000000*sqrt(3*x^2 + 5*x + 2)*x - 175119/20480000000*sq
rt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2
) - 3327261/102400000000*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{7/2}}{(2\,x+3)^{13}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^13,x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(7/2))/(2*x + 3)^13, x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{40\sqrt{3x^2+5x}}{8192x^{13}+159744x^{12}+1437696x^{11}+7907328x^{10}+29652480x^9+80061696x^8+160123392x^7+24018}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(7/2)/(3+2*x)**13,x)
```

```
[Out] -Integral(-40*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437696*x
**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7 + 240
185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269864*x
**2 + 13817466*x + 1594323), x) - Integral(-292*x*sqrt(3*x**2 + 5*x + 2)/(8
192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480*x**9 +
80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 + 22517352
0*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x) - Integ
ral(-870*x**2*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437696*x
**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7 + 240
185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269864*x
**2 + 13817466*x + 1594323), x) - Integral(-1339*x**3*sqrt(3*x**2 + 5*x + 2
)/(8192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480*x**
9 + 80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 + 2251
73520*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x) - I
ntegral(-1090*x**4*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 1437
696*x**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7
+ 240185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 55269
864*x**2 + 13817466*x + 1594323), x) - Integral(-396*x**5*sqrt(3*x**2 + 5*x
 + 2)/(8192*x**13 + 159744*x**12 + 1437696*x**11 + 7907328*x**10 + 29652480
*x**9 + 80061696*x**8 + 160123392*x**7 + 240185088*x**6 + 270208224*x**5 +
225173520*x**4 + 135104112*x**3 + 55269864*x**2 + 13817466*x + 1594323), x)
 - Integral(27*x**7*sqrt(3*x**2 + 5*x + 2)/(8192*x**13 + 159744*x**12 + 143
7696*x**11 + 7907328*x**10 + 29652480*x**9 + 80061696*x**8 + 160123392*x**7
 + 240185088*x**6 + 270208224*x**5 + 225173520*x**4 + 135104112*x**3 + 5526
9864*x**2 + 13817466*x + 1594323), x)
```

3.2465 $\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=407

$$\frac{\sqrt{a+bx+cx^2}\,\Big(2cex\Big(B\big(-4ce(9ae+16bd)+35b^2e^2+24c^2d^2\big)+40Ace(2cd-be)\Big)+8Ace\big(-2ce(8ae+27bd)+1}{192c^4}$$

```
[Out] 1/128*(35*b^4*B*e^3-40*b^3*c*e^2*(A*e+3*B*d)+24*b^2*c*e*(6*A*c*d*e-5*B*a*e^
2+6*B*c*d^2)-32*b*c^2*(-3*A*a*e^3+6*A*c*d^2*e-9*B*a*d*e^2+2*B*c*d^3)+16*c^2
*(4*A*c*d*(-3*a*e^2+2*c*d^2)-3*a*B*e*(-a*e^2+4*c*d^2)))*arctanh(1/2*(2*c*x+
b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)+1/24*(8*A*c*e-7*B*b*e+6*B*c*d)*(e*x
+d)^2*(c*x^2+b*x+a)^(1/2)/c^2+1/4*B*(e*x+d)^3*(c*x^2+b*x+a)^(1/2)/c+1/192*(
8*A*c*e*(64*c^2*d^2+15*b^2*e^2-2*c*e*(8*a*e+27*b*d))+B*(96*c^3*d^3-105*b^3*
e^3+20*b*c*e^2*(11*a*e+18*b*d)-8*c^2*d*e*(48*a*e+47*b*d))+2*c*e*(40*A*c*e*(
-b*e+2*c*d)+B*(24*c^2*d^2+35*b^2*e^2-4*c*e*(9*a*e+16*b*d)))*x)*(c*x^2+b*x+a
)^(1/2)/c^4
```

Rubi [**A**] time = 0.68, antiderivative size = 407, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$\frac{\sqrt{a+bx+cx^2}\,\Big(2cex\Big(B\big(-4ce(9ae+16bd)+35b^2e^2+24c^2d^2\big)+40Ace(2cd-be)\Big)+8Ace\big(-2ce(8ae+27bd)+1}{192c^4}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] ((6*B*c*d - 7*b*B*e + 8*A*c*e)*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(24*c^2)
+ (B*(d + e*x)^3*Sqrt[a + b*x + c*x^2])/(4*c) + ((8*A*c*e*(64*c^2*d^2 + 15*
b^2*e^2 - 2*c*e*(27*b*d + 8*a*e)) + B*(96*c^3*d^3 - 105*b^3*e^3 + 20*b*c*e^
2*(18*b*d + 11*a*e) - 8*c^2*d*e*(47*b*d + 48*a*e)) + 2*c*e*(40*A*c*e*(2*c*d
 - b*e) + B*(24*c^2*d^2 + 35*b^2*e^2 - 4*c*e*(16*b*d + 9*a*e)))*x)*Sqrt[a +
 b*x + c*x^2])/(192*c^4) + ((35*b^4*B*e^3 - 40*b^3*c*e^2*(3*B*d + A*e) + 24
*b^2*c*e*(6*B*c*d^2 + 6*A*c*d*e - 5*a*B*e^2) - 32*b*c^2*(2*B*c*d^3 + 6*A*c*
d^2*e - 9*a*B*d*e^2 - 3*a*A*e^3) + 16*c^2*(4*A*c*d*(2*c*d^2 - 3*a*e^2) - 3*
a*B*e*(4*c*d^2 - a*e^2)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x
^2])])/(128*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx = \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{\int \frac{(d+ex)^2\left(\frac{1}{2}(-bBd+8Acd-6aBe)+\frac{1}{2}(6Bcd-7bBe+8Ace)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{4c}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \int \frac{(d+}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{(8Ac}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{(8Ac}{}$$

$$= \frac{(6Bcd-7bBe+8Ace)(d+ex)^2\sqrt{a+bx+cx^2}}{24c^2} + \frac{B(d+ex)^3\sqrt{a+bx+cx^2}}{4c} + \frac{(8Ac}{}$$

Mathematica [A] time = 0.53, size = 357, normalized size = 0.88

$$\frac{2\sqrt{c}\,\sqrt{a+x(b+cx)}\,\left(8Ace\left(-2ce(8ae+27bd+5bex)+15b^2e^2+4c^2\left(18d^2+9dex+2e^2x^2\right)\right)+B\left(-8c^2e\left(3ae(1\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[c]*Sqrt[a + x*(b + c*x)]*(8*A*c*e*(15*b^2*e^2 - 2*c*e*(27*b*d + 8*a
*e + 5*b*e*x) + 4*c^2*(18*d^2 + 9*d*e*x + 2*e^2*x^2)) + B*(-105*b^3*e^3 + 1
0*b*c*e^2*(36*b*d + 22*a*e + 7*b*e*x) + 48*c^3*(4*d^3 + 6*d^2*e*x + 4*d*e^2
*x^2 + e^3*x^3) - 8*c^2*e*(3*a*e*(16*d + 3*e*x) + b*(54*d^2 + 30*d*e*x + 7*
e^2*x^2)))) + 3*(35*b^4*B*e^3 - 40*b^3*c*e^2*(3*B*d + A*e) + 24*b^2*c*e*(6*
B*c*d^2 + 6*A*c*d*e - 5*a*B*e^2) - 32*b*c^2*(2*B*c*d^3 + 6*A*c*d^2*e - 9*a*
B*d*e^2 - 3*a*A*e^3) + 16*c^2*(4*A*c*d*(2*c*d^2 - 3*a*e^2) + 3*a*B*e*(-4*c*
d^2 + a*e^2)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(384
*c^(9/2))
```

fricas [A] time = 1.12, size = 811, normalized size = 1.99

$$\left[-\frac{3\left(64\left(Bbc^3-2\,Ac^4\right)d^3-48\left(3\,Bb^2c^2-4\,(Ba+Ab)c^3\right)d^2e+24\left(5\,Bb^3c+8\,Aac^3-6\left(2\,Bab+Ab^2\right)c^2\right)de^2-\right.}{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/768*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*(B*a + A*b)*c^
3)*d^2*e + 24*(5*B*b^3*c + 8*A*a*c^3 - 6*(2*B*a*b + A*b^2)*c^2)*d*e^2 - (35
*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*e^3)*sqrt(c)*
log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c
) - 4*a*c) - 4*(48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4
)*d^2*e + 24*(15*B*b^2*c^2 - 2*(8*B*a + 9*A*b)*c^3)*d*e^2 - (105*B*b^3*c +
128*A*a*c^3 - 20*(11*B*a*b + 6*A*b^2)*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b
*c^3 - 8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*
e^2 + (35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a)
)/c^5, 1/384*(3*(64*(B*b*c^3 - 2*A*c^4)*d^3 - 48*(3*B*b^2*c^2 - 4*(B*a + A*
b)*c^3)*d^2*e + 24*(5*B*b^3*c + 8*A*a*c^3 - 6*(2*B*a*b + A*b^2)*c^2)*d*e^2
- (35*B*b^4 + 48*(B*a^2 + 2*A*a*b)*c^2 - 40*(3*B*a*b^2 + A*b^3)*c)*e^3)*sqr
t(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*
x + a*c)) + 2*(48*B*c^4*e^3*x^3 + 192*B*c^4*d^3 - 144*(3*B*b*c^3 - 4*A*c^4)
*d^2*e + 24*(15*B*b^2*c^2 - 2*(8*B*a + 9*A*b)*c^3)*d*e^2 - (105*B*b^3*c + 1
28*A*a*c^3 - 20*(11*B*a*b + 6*A*b^2)*c^2)*e^3 + 8*(24*B*c^4*d*e^2 - (7*B*b*
c^3 - 8*A*c^4)*e^3)*x^2 + 2*(144*B*c^4*d^2*e - 24*(5*B*b*c^3 - 6*A*c^4)*d*e
^2 + (35*B*b^2*c^2 - 4*(9*B*a + 10*A*b)*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))
/c^5]
```

giac [A] time = 0.30, size = 412, normalized size = 1.01

$$\frac{1}{192}\sqrt{cx^2+bx+a}\Bigg(2\Bigg(4\Bigg(\frac{6\,Bxe^3}{c}+\frac{24\,Bc^3de^2-7\,Bbc^2e^3+8\,Ac^3e^3}{c^4}\Bigg)x+\frac{144\,Bc^3d^2e-120\,Bbc^2de^2+144\,Ac^3de^2}{c^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/192*sqrt(c*x^2 + b*x + a)*(2*(4*(6*B*x*e^3/c + (24*B*c^3*d*e^2 - 7*B*b*c^
2*e^3 + 8*A*c^3*e^3)/c^4)*x + (144*B*c^3*d^2*e - 120*B*b*c^2*d*e^2 + 144*A*
c^3*d*e^2 + 35*B*b^2*c*e^3 - 36*B*a*c^2*e^3 - 40*A*b*c^2*e^3)/c^4)*x + (192
*B*c^3*d^3 - 432*B*b*c^2*d^2*e + 576*A*c^3*d^2*e + 360*B*b^2*c*d*e^2 - 384*
B*a*c^2*d*e^2 - 432*A*b*c^2*d*e^2 - 105*B*b^3*e^3 + 220*B*a*b*c*e^3 + 120*A
*b^2*c*e^3 - 128*A*a*c^2*e^3)/c^4) + 1/128*(64*B*b*c^3*d^3 - 128*A*c^4*d^3
- 144*B*b^2*c^2*d^2*e + 192*B*a*c^3*d^2*e + 192*A*b*c^3*d^2*e + 120*B*b^3*c
*d*e^2 - 288*B*a*b*c^2*d*e^2 - 144*A*b^2*c^2*d*e^2 + 192*A*a*c^3*d*e^2 - 35
*B*b^4*e^3 + 120*B*a*b^2*c*e^3 + 40*A*b^3*c*e^3 - 48*B*a^2*c^2*e^3 - 96*A*a
*b*c^2*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^
(9/2)
```

maple [B] time = 0.06, size = 981, normalized size = 2.41

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,e^3x^3}{4c}+\frac{\sqrt{c\,x^2+bx+a}\;A\,e^3x^2}{3c}-\frac{7\sqrt{c\,x^2+bx+a}\;Bb\,e^3x^2}{24c^2}+\frac{\sqrt{c\,x^2+bx+a}\;Bd\,e^2x^2}{c}+\frac{3Aab\,e^3\ln\Bigg(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -5/4*b/c^2*x*(c*x^2+b*x+a)^(1/2)*B*d*e^2+9/4*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(
1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e^2+x^2/c*(c*x^2+b*x+a)^(1/2)*B*d*e^2-3/8*B*e
^3*a/c^2*x*(c*x^2+b*x+a)^(1/2)-7/24*B*e^3*b/c^2*x^2*(c*x^2+b*x+a)^(1/2)+35/
96*B*e^3*b^2/c^3*x*(c*x^2+b*x+a)^(1/2)-15/16*B*e^3*b^2/c^(7/2)*a*ln((c*x+1/
2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+55/48*B*e^3*b/c^3*a*(c*x^2+b*x+a)^(1/2)+3
```

```
/4*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^3-2*a/c^2*(c
*x^2+b*x+a)^(1/2)*B*d*e^2+3/2*x/c*(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*x/c*(c*x^
2+b*x+a)^(1/2)*B*d^2*e-5/12*b/c^2*x*(c*x^2+b*x+a)^(1/2)*A*e^3+15/8*b^2/c^3*
(c*x^2+b*x+a)^(1/2)*B*d*e^2-15/16*b^3/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*B*d*e^2-3/2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*A*d*e^2+9/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B
*d^2*e-3/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d^2*e-3/
2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d^2*e-9/4*b/c^2*(
c*x^2+b*x+a)^(1/2)*A*d*e^2-9/4*b/c^2*(c*x^2+b*x+a)^(1/2)*B*d^2*e+9/8*b^2/c^
(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e^2+A*d^3*ln((c*x+1/2
*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)+1/c*(c*x^2+b*x+a)^(1/2)*B*d^3+1/3*
x^2/c*(c*x^2+b*x+a)^(1/2)*A*e^3+5/8*b^2/c^3*(c*x^2+b*x+a)^(1/2)*A*e^3-35/64
*B*e^3*b^3/c^4*(c*x^2+b*x+a)^(1/2)+35/128*B*e^3*b^4/c^(9/2)*ln((c*x+1/2*b)/
c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/8*B*e^3*a^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2
))*B*d^3+1/4*B*e^3*x^3/c*(c*x^2+b*x+a)^(1/2)-5/16*b^3/c^(7/2)*ln((c*x+1/2*b
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^3-2/3*a/c^2*(c*x^2+b*x+a)^(1/2)*A*e^3+3/
c*(c*x^2+b*x+a)^(1/2)*A*d^2*e
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\left(d+e\,x\right)^3}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**3/sqrt(a + b*x + c*x**2), x)
```

3.2466 $\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=234

$$\frac{\sqrt{a+bx+cx^2}\,\left(B\left(-4ce(4ae+9bd)+15b^2e^2+16c^2d^2\right)+2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)\right)}{24c^3}-\tanh^{-}$$

```
[Out] -1/16*(5*b^3*B*e^2-6*b^2*c*e*(A*e+2*B*d)-8*c^2*(-A*a*e^2+2*A*c*d^2-2*B*a*d*
e)+4*b*c*(4*A*c*d*e-3*B*a*e^2+2*B*c*d^2))*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*
x^2+b*x+a)^(1/2))/c^(7/2)+1/3*B*(e*x+d)^2*(c*x^2+b*x+a)^(1/2)/c+1/24*(6*A*c
*e*(-3*b*e+8*c*d)+B*(16*c^2*d^2+15*b^2*e^2-4*c*e*(4*a*e+9*b*d))+2*c*e*(6*A*
c*e-5*B*b*e+4*B*c*d)*x)*(c*x^2+b*x+a)^(1/2)/c^3
```

Rubi [A] time = 0.25, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{832, 779, 621, 206\}$

$$\frac{\sqrt{a+bx+cx^2}\,\left(B\left(-4ce(4ae+9bd)+15b^2e^2+16c^2d^2\right)+2cex(6Ace-5bBe+4Bcd)+6Ace(8cd-3be)\right)}{24c^3}-\tanh^{-}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[a + b*x + c*x^2])/(3*c) + ((6*A*c*e*(8*c*d - 3*b*e) + B
*(16*c^2*d^2 + 15*b^2*e^2 - 4*c*e*(9*b*d + 4*a*e)) + 2*c*e*(4*B*c*d - 5*b*B
*e + 6*A*c*e)*x)*Sqrt[a + b*x + c*x^2])/(24*c^3) - ((5*b^3*B*e^2 - 6*b^2*c*
e*(2*B*d + A*e) - 8*c^2*(2*A*c*d^2 - 2*a*B*d*e - a*A*e^2) + 4*b*c*(2*B*c*d^
2 + 4*A*c*d*e - 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c
*x^2])])/(16*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx = \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\int \frac{(d+ex)\left(\frac{1}{2}(-bBd+6Acd-4aBe)+\frac{1}{2}(4Bcd-5bBe+6Ace)x\right)}{\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\Big(6Ace(8cd-3be)+B\Big(16c^2d^2+15b^2e^2-4ce(9bd+4a}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\Big(6Ace(8cd-3be)+B\Big(16c^2d^2+15b^2e^2-4ce(9bd+4a}{24c^3}$$

$$= \frac{B(d+ex)^2\sqrt{a+bx+cx^2}}{3c} + \frac{\Big(6Ace(8cd-3be)+B\Big(16c^2d^2+15b^2e^2-4ce(9bd+4a}{24c^3}$$

Mathematica [A] time = 0.20, size = 225, normalized size = 0.96

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(B\left(-2ce(8ae+18bd+5bex)+15b^2e^2+8c^2d(2d+ex)\right)+6Ace(-3be+8cd+2cex)\right)}{8c^2} - \frac{3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\Big(4bc\Big(-3aBe^2+4Acde+2Bcd^2\Big)}{16c}}{3c}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*(d + e*x)^2*Sqrt[a + x*(b + c*x)] + (Sqrt[a + x*(b + c*x)]*(6*A*c*e*(8*c
*d - 3*b*e + 2*c*e*x) + B*(15*b^2*e^2 + 8*c^2*d*(2*d + e*x) - 2*c*e*(18*b*d
 + 8*a*e + 5*b*e*x))))/(8*c^2) - (3*(5*b^3*B*e^2 - 6*b^2*c*e*(2*B*d + A*e)
+ 8*c^2*(-2*A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 4*b*c*(2*B*c*d^2 + 4*A*c*d*e -
 3*a*B*e^2))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(16*c^
(5/2)))/(3*c)
```

fricas [A] time = 0.87, size = 487, normalized size = 2.08

$$\Bigg[\frac{3\Big(8\Big(Bbc^2-2\,Ac^3\Big)d^2-4\Big(3\,Bb^2c-4\,(Ba+Ab)c^2\Big)de+\Big(5\,Bb^3+8\,Aac^2-6\Big(2\,Bab+Ab^2\Big)c\Big)e^2\Big)\sqrt{c}\,\log\Big(-8\,c^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/96*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(3*B*b^2*c - 4*(B*a + A*b)*c^2)*d*e
 + (5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A*b^2)*c)*e^2)*sqrt(c)*log(-8*c^2*x^
2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) +
4*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*c^2 - 4*A*c^3)*d*e + (15*B*b^
2*c - 2*(8*B*a + 9*A*b)*c^2)*e^2 + 2*(12*B*c^3*d*e - (5*B*b*c^2 - 6*A*c^3)*
e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4, 1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*
(3*B*b^2*c - 4*(B*a + A*b)*c^2)*d*e + (5*B*b^3 + 8*A*a*c^2 - 6*(2*B*a*b + A
*b^2)*c)*e^2)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c
)/(c^2*x^2 + b*c*x + a*c)) + 2*(8*B*c^3*e^2*x^2 + 24*B*c^3*d^2 - 12*(3*B*b*
c^2 - 4*A*c^3)*d*e + (15*B*b^2*c - 2*(8*B*a + 9*A*b)*c^2)*e^2 + 2*(12*B*c^3
*d*e - (5*B*b*c^2 - 6*A*c^3)*e^2)*x)*sqrt(c*x^2 + b*x + a))/c^4]
```

giac [A] time = 0.26, size = 231, normalized size = 0.99

$$\frac{1}{24}\sqrt{cx^2+bx+a}\left(2\left(\frac{4\,Bxe^2}{c}+\frac{12\,Bc^2de-5\,Bbce^2+6\,Ac^2e^2}{c^3}\right)x+\frac{24\,Bc^2d^2-36\,Bbcde+48\,Ac^2de+15\,Bb^2e^2-1}{c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/24*sqrt(c*x^2 + b*x + a)*(2*(4*B*x*e^2/c + (12*B*c^2*d*e - 5*B*b*c*e^2 +
6*A*c^2*e^2)/c^3)*x + (24*B*c^2*d^2 - 36*B*b*c*d*e + 48*A*c^2*d*e + 15*B*b^
2*e^2 - 16*B*a*c*e^2 - 18*A*b*c*e^2)/c^3) + 1/16*(8*B*b*c^2*d^2 - 16*A*c^3*
d^2 - 12*B*b^2*c*d*e + 16*B*a*c^2*d*e + 16*A*b*c^2*d*e + 5*B*b^3*e^2 - 12*B
*a*b*c*e^2 - 6*A*b^2*c*e^2 + 8*A*a*c^2*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.06, size = 537, normalized size = 2.29

$$\frac{\sqrt{c\,x^2+bx+a}\;B\,e^2x^2}{3c}-\frac{Aa\,e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3A\,b^2e^2\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^2+bx+a}\right)}{8c^{\frac{5}{2}}}-\frac{Abde\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\right.}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*B*e^2*x^2/c*(c*x^2+b*x+a)^(1/2)-5/12*B*e^2*b/c^2*x*(c*x^2+b*x+a)^(1/2)+
5/8*B*e^2*b^2/c^3*(c*x^2+b*x+a)^(1/2)-5/16*B*e^2*b^3/c^(7/2)*ln((c*x+1/2*b)
/c^(1/2)+(c*x^2+b*x+a)^(1/2))+3/4*B*e^2*b/c^(5/2)*a*ln((c*x+1/2*b)/c^(1/2)+
(c*x^2+b*x+a)^(1/2))-2/3*B*e^2*a/c^2*(c*x^2+b*x+a)^(1/2)+1/2*x/c*(c*x^2+b*x
+a)^(1/2)*A*e^2+x/c*(c*x^2+b*x+a)^(1/2)*B*d*e-3/4*b/c^2*(c*x^2+b*x+a)^(1/2)
*A*e^2-3/2*b/c^2*(c*x^2+b*x+a)^(1/2)*B*d*e+3/8*b^2/c^(5/2)*ln((c*x+1/2*b)/c
^(1/2)+(c*x^2+b*x+a)^(1/2))*A*e^2+3/4*b^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c
*x^2+b*x+a)^(1/2))*B*d*e-1/2*a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))*A*e^2-a/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e+2
/c*(c*x^2+b*x+a)^(1/2)*A*d*e+1/c*(c*x^2+b*x+a)^(1/2)*B*d^2-b/c^(3/2)*ln((c*
x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^
(1/2)+(c*x^2+b*x+a)^(1/2))*B*d^2+A*d^2*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)
^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^2}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/sqrt(a + b*x + c*x**2), x)
```

3.2467 $\int \frac{(A+Bx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=116

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(4c(2Acd-aBe)-4bc(Ae+Bd)+3b^2Be\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bce}{4c^2}$$

```
[Out] 1/8*(3*b^2*B*e-4*b*c*(A*e+B*d)+4*c*(2*A*c*d-B*a*e))*arctanh(1/2*(2*c*x+b)/c
^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-1/4*(3*b*B*e-4*c*(A*e+B*d)-2*B*c*e*x)*(
c*x^2+b*x+a)^(1/2)/c^2
```

Rubi [A] time = 0.09, antiderivative size = 115, normalized size of antiderivative = 0.99, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {779, 621, 206}

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(-4aBce-4bc(Ae+Bd)+8Ac^2d+3b^2Be\right)}{8c^{5/2}}-\frac{\sqrt{a+bx+cx^2}\,(-4c(Ae+Bd)+3bBe-2Bc}{4c^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] -((3*b*B*e - 4*c*(B*d + A*e) - 2*B*c*e*x)*Sqrt[a + b*x + c*x^2])/(4*c^2) +
((8*A*c^2*d + 3*b^2*B*e - 4*a*B*c*e - 4*b*c*(B*d + A*e))*ArcTanh[(b + 2*c*x
)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(8*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\sqrt{a+bx+cx^2}}\,dx = -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2} + \frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(B}{8c^2}$$

$$= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2} + \frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(B}{}$$

$$= -\frac{(3bBe-4c(Bd+Ae)-2Bcex)\sqrt{a+bx+cx^2}}{4c^2} + \frac{\left(8Ac^2d+3b^2Be-4aBce-4bc(B}{8c^{5/}}$$

Mathematica [A] time = 0.07, size = 115, normalized size = 0.99

$$\frac{\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)\left(-2aBce-2bc(Ae+Bd)+4Ac^2d+\frac{3}{2}b^2Be\right)+\sqrt{c}\sqrt{a+x(b+cx)}\,(4Ace+B(-3be+4c}{4c^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[c]*Sqrt[a + x*(b + c*x)]*(4*A*c*e + B*(4*c*d - 3*b*e + 2*c*e*x)) + (4
*A*c^2*d + (3*b^2*B*e)/2 - 2*a*B*c*e - 2*b*c*(B*d + A*e))*ArcTanh[(b + 2*c*
x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(4*c^(5/2))
```

fricas [A] time = 0.61, size = 273, normalized size = 2.35

$$\left[\frac{\left(4\left(Bbc-2Ac^2\right)d-\left(3Bb^2-4(Ba+Ab)c\right)e\right)\sqrt{c}\,\log\left(-8c^2x^2-8bcx-b^2+4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-\right.}{16c^3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*(B*a + A*b)*c)*e)*sqrt(c)*log(
-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) -
4*a*c) + 4*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x^2 + b
*x + a))/c^3, 1/8*((4*(B*b*c - 2*A*c^2)*d - (3*B*b^2 - 4*(B*a + A*b)*c)*e)*
sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b
*c*x + a*c)) + 2*(2*B*c^2*e*x + 4*B*c^2*d - (3*B*b*c - 4*A*c^2)*e)*sqrt(c*x
^2 + b*x + a))/c^3]
```

giac [A] time = 0.25, size = 119, normalized size = 1.03

$$\frac{1}{4}\sqrt{cx^2+bx+a}\left(\frac{2Bxe}{c}+\frac{4Bcd-3Bbe+4Ace}{c^2}\right)+\frac{\left(4Bbcd-8Ac^2d-3Bb^2e+4Bace+4Abce\right)\log\left(\left|-2\left(\sqrt{}\right.\right.\right.}{8c^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] 1/4*sqrt(c*x^2 + b*x + a)*(2*B*x*e/c + (4*B*c*d - 3*B*b*e + 4*A*c*e)/c^2) +
 1/8*(4*B*b*c*d - 8*A*c^2*d - 3*B*b^2*e + 4*B*a*c*e + 4*A*b*c*e)*log(abs(-2
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.06, size = 243, normalized size = 2.09

$$-\frac{Abe\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{Ad\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{\sqrt{c}}-\frac{Bae\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{c\,x^{2}+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{3B\,b^{2}e\ln\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/2*B*e*x/c*(c*x^2+b*x+a)^(1/2)-3/4*B*e*b/c^2*(c*x^2+b*x+a)^(1/2)+3/8*B*e*b
^2/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/2*B*e*a/c^(3/2)*ln
((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))+1/c*(c*x^2+b*x+a)^(1/2)*A*e+1/c*(
c*x^2+b*x+a)^(1/2)*B*d-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(
1/2))*A*e-1/2*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d+A*d
*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{(A+B\,x)\,(d+e\,x)}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.2468 $\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=67

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

```
[Out] -1/2*(-2*A*c+B*b)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2
)+B*(c*x^2+b*x+a)^(1/2)/c
```

Rubi [A] time = 0.02, antiderivative size = 67, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + b*x + c*x^2])/c - ((b*B - 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]
*Sqrt[a + b*x + c*x^2])])/(2*c^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\sqrt{a+bx+cx^2}}\,dx &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{2c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}+\frac{(-bB+2Ac)\,\text{Subst}\left(\int \frac{1}{4c-x^2}\,dx,x,\frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{c}\\ &= \frac{B\sqrt{a+bx+cx^2}}{c}-\frac{(bB-2Ac)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{2c^{3/2}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 66, normalized size = 0.99

$$\frac{(2Ac-bB)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{2c^{3/2}}+\frac{B\sqrt{a+x(b+cx)}}{c}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (B*Sqrt[a + x*(b + c*x)])/c + ((-(b*B) + 2*A*c)*ArcTanh[(b + 2*c*x)/(2*Sqrt
[c]*Sqrt[a + x*(b + c*x)])])/(2*c^(3/2))
```

fricas [A] time = 0.65, size = 162, normalized size = 2.42

$$\left[\frac{4\sqrt{cx^2+bx+a}\,Bc-(Bb-2Ac)\sqrt{c}\,\log\left(-8c^2x^2-8bcx-b^2-4\sqrt{cx^2+bx+a}\,(2cx+b)\sqrt{c}-4ac\right)}{4c^2}, 2\sqrt{cx^2+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(4*sqrt(c*x^2 + b*x + a)*B*c - (B*b - 2*A*c)*sqrt(c)*log(-8*c^2*x^2 -
8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/c^2,
1/2*(2*sqrt(c*x^2 + b*x + a)*B*c + (B*b - 2*A*c)*sqrt(-c)*arctan(1/2*sqrt(c
*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/c^2]
```

giac [A] time = 0.24, size = 62, normalized size = 0.93

$$\frac{\sqrt{cx^2+bx+a}\,B}{c}+\frac{(Bb-2Ac)\log\left(\left|-2\left(\sqrt{c}x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{2c^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] sqrt(c*x^2 + b*x + a)*B/c + 1/2*(B*b - 2*A*c)*log(abs(-2*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2)
```

maple [A] time = 0.05, size = 81, normalized size = 1.21

$$\frac{A\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{\sqrt{c}}-\frac{Bb\ln\left(\frac{cx+\frac{b}{2}}{\sqrt{c}}+\sqrt{cx^2+bx+a}\right)}{2c^{\frac{3}{2}}}+\frac{\sqrt{cx^2+bx+a}\,B}{c}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] (c*x^2+b*x+a)^(1/2)*B/c-1/2*B*b/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a
)^(1/2))+A*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.66, size = 80, normalized size = 1.19

$$\frac{B\sqrt{c\,x^2+b\,x+a}}{c}+\frac{A\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{\sqrt{c}}-\frac{B\,b\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^2+b\,x+a}\right)}{2\,c^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] (B*(a + b*x + c*x^2)^(1/2))/c + (A*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x
^2)^(1/2)))/c^(1/2) - (B*b*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2
)))/(2*c^(3/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/sqrt(a + b*x + c*x**2), x)
```

3.2469 $\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=132

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

```
[Out] B*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/e/c^(1/2)-(-A*e+B*d)*a
rctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+
a)^(1/2))/e/(a*e^2-b*d*e+c*d^2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 132, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {843, 621, 206, 724}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{e\sqrt{ae^2-bde+cd^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(Sqrt[c]*e) - ((
B*d - A*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e +
a*e^2]*Sqrt[a + b*x + c*x^2])])/(e*Sqrt[c*d^2 - b*d*e + a*e^2])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx &= \frac{B\int \frac{1}{\sqrt{a+bx+cx^2}}\,dx}{e}+\frac{(-Bd+Ae)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{e}\\ &= \frac{(2B)\operatorname{Subst}\left(\int \frac{1}{4c-x^2}\,dx, x, \frac{b+2cx}{\sqrt{a+bx+cx^2}}\right)}{e}-\frac{(2(-Bd+Ae))\operatorname{Subst}\Big(\int \frac{1}{4cd^2-4bde+4ae^2-}}{e}\\ &= \frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{\sqrt{c}\,e}-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bde+ae^2}\sqrt{a+bx+cx^2}}\right)}{e\sqrt{cd^2-bde+ae^2}}\end{aligned}$$

Mathematica [A] time = 0.15, size = 126, normalized size = 0.95

$$\frac{\frac{(Bd-Ae)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{\sqrt{e(ae-bd)+cd^2}}+\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)}{\sqrt{c}}}{e}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/Sqrt[c] + ((B*d
 - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d
) + a*e)]*Sqrt[a + x*(b + c*x)])])/Sqrt[c*d^2 + e*(-(b*d) + a*e)])/e
```

fricas [B] time = 47.34, size = 1079, normalized size = 8.17

$$\Bigg[\frac{\left(Bcd^2-Bbde+Bae^2\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(2\,cx+b)\sqrt{c}\,-4\,ac\right)-(Bcd-Ace)\sqrt{cd}}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/2*((B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2
- 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - (B*c*d - A*c*e)*sq
rt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 -
(8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*
e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 +
 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)))/(c^2*d^2*e
 - b*c*d*e^2 + a*c*e^3), -1/2*(2*(B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(-c)*arc
tan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
 + (B*c*d - A*c*e)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 -
 (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sq
rt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e
)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*
x + d^2)))/(c^2*d^2*e - b*c*d*e^2 + a*c*e^3), -1/2*(2*(B*c*d - A*c*e)*sqrt(
-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2
 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 +
(c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - (B*
c*d^2 - B*b*d*e + B*a*e^2)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(
c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c))/(c^2*d^2*e - b*c*d*e^2 + a*c
*e^3), -((B*c*d - A*c*e)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d
^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(
a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2
- b^2*d*e + a*b*e^2)*x)) + (B*c*d^2 - B*b*d*e + B*a*e^2)*sqrt(-c)*arctan(1/
2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)))/(c^2
*d^2*e - b*c*d*e^2 + a*c*e^3)]
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: TypeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Exception raised: TypeError >> An error occurred running a Giac command:INP
UT:sage2:=int(sage0,x)::;OUTPUT:Error: Bad Argument Type
```

maple [B] time = 0.06, size = 349, normalized size = 2.64

$$-\frac{A\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a e^{2}-2bde+2c d^{2}}{e^{2}}+2\sqrt{\frac{a e^{2}-bde+c d^{2}}{e^{2}}}\,\sqrt{\left(x+\frac{d}{e}\right)^{2} c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a e^{2}-bde+c d^{2}}{e^{2}}}}{x+\frac{d}{e}}\right)}{\sqrt{\frac{a e^{2}-bde+c d^{2}}{e^{2}}}\, e}+\frac{Bd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a e^{2}-2bde+2c d^{2}}{e^{2}}+2}{}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] B/e*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))/c^(1/2)-1/e/((a*e^2-b*d*e+c
*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e
+c*d^2)/e^2)^(1/2))/(x+d/e))*A+1/e^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b
*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(
1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+
d/e))*B*d
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{(d+e\,x)\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.2470 $\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=150

$$\frac{\sqrt{a+bx+cx^2}\,(Bd-Ae)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

```
[Out] -1/2*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(
a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(3/2)+(-A
*e+B*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)
```

Rubi [A] time = 0.14, antiderivative size = 150, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = $\{806, 724, 206\}$

$$\frac{\sqrt{a+bx+cx^2}\,(Bd-Ae)}{(d+ex)\left(ae^2-bde+cd^2\right)}-\frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\,\sqrt{ae^2-bde+cd^2}}\right)}{2\left(ae^2-bde+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*(d + e*x)) - (
(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)
/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e
+ a*e^2)^(3/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx = \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{(bBd-2Acd+Abe-2aBe)\int \frac{1}{(d+ex)\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} + \frac{(bBd-2Acd+Abe-2aBe)\,\mathrm{Subst}\Bigg(\int \frac{1}{4cd^2-4bde+4}}{cd^2-bde+ae^2}$$

$$= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)(d+ex)} - \frac{(bBd-2Acd+Abe-2aBe)\tanh^{-1}\Bigg(\frac{bd-2ae+}{2\sqrt{cd^2-bde+a}}}{2\left(cd^2-bde+ae^2\right)^{3/2}}$$

Mathematica [A] time = 0.09, size = 147, normalized size = 0.98

$$\frac{\sqrt{a+x(b+cx)}\,(Bd-Ae)}{(d+ex)\left(e(ae-bd)+cd^2\right)} + \frac{(-2aBe+Abe-2Acd+bBd)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{2\left(e(ae-bd)+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + x*(b + c*x)])/((c*d^2 + e*(-(b*d) + a*e))*(d + e*x))
+ ((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])]])/(2*(c*d^2
 + e*(-(b*d) + a*e))^(3/2))
```

fricas [B] time = 2.38, size = 748, normalized size = 4.99

$$\Bigg[\frac{\left(\left(Bb-2\,Ac\right)d^2-\left(2\,Ba-Ab\right)de+\left(\left(Bb-2\,Ac\right)de-\left(2\,Ba-Ab\right)e^2\right)x\right)\sqrt{cd^2-bde+ae^2}\,\log\Bigg(\frac{8\,abde-8\,a^2e^2-\big(b^2+4\,a}{}}{4\left(c^2d^5-2\,bcd^4e-2\,abd^2e^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/4*(((B*b - 2*A*c)*d^2 - (2*B*a - A*b)*d*e + ((B*b - 2*A*c)*d*e - (2*B*a
- A*b)*e^2)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^
2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c
*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)
 - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x +
d^2)) + 4*(B*c*d^3 - A*a*e^3 - (B*b + A*c)*d^2*e + (B*a + A*b)*d*e^2)*sqrt(
c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e - 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2
 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b
^2 + 2*a*c)*d^2*e^3)*x), -1/2*(((B*b - 2*A*c)*d^2 - (2*B*a - A*b)*d*e + ((B
*b - 2*A*c)*d*e - (2*B*a - A*b)*e^2)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan
(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*
c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*
x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(B*c*d^3 - A*a*e^3 - (B*b + A*c
)*d^2*e + (B*a + A*b)*d*e^2)*sqrt(c*x^2 + b*x + a))/(c^2*d^5 - 2*b*c*d^4*e
- 2*a*b*d^2*e^3 + a^2*d*e^4 + (b^2 + 2*a*c)*d^3*e^2 + (c^2*d^4*e - 2*b*c*d^
3*e^2 - 2*a*b*d*e^4 + a^2*e^5 + (b^2 + 2*a*c)*d^2*e^3)*x)]
```

giac [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [B] time = 0.06, size = 1033, normalized size = 6.89

$$\frac{Ab\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^{2}-2bde+2c\,d^{2}}{e^{2}}+2\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}\,\sqrt{\left(x+\frac{d}{e}\right)^{2}c+\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}}{x+\frac{d}{e}}\right)}{2\left(a\,e^{2}-bde+c\,d^{2}\right)\sqrt{\frac{a\,e^{2}-bde+c\,d^{2}}{e^{2}}}}-\frac{Acd\ln\left(\frac{\frac{(be-2cd)\left(x+\frac{d}{e}\right)}{e}+\frac{2a\,e^{2}-2bde+2c\,d^{2}}{e^{2}}+2\sqrt{}}{}\right.}{\left(a\,e^{2}-bde+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*A+1/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2
*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d+1/2/(a*e^2-b*d*e+c*d^2)/
((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*
d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)
/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*A-1/2/e/(a*e^2-b*d*e+c*d^2)/(
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d
^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*B*d-1/e/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d*A+1/e^2/(a*e^2-b*d*e+c*d^2)/(
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d
^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d^2*B-B/e^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                               +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^2 \sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**2*sqrt(a + b*x + c*x**2)), x)
```

3.2471 $\int \frac{A+Bx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=271

$$\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+$$

```
[Out] 1/8*(b^2*e*(3*A*e+B*d)+4*c*(-A*a*e^2+2*A*c*d^2+3*B*a*d*e)-4*b*(2*A*c*d*e+B*
a*e^2+B*c*d^2))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^
(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(5/2)+1/2*(-A*e+B*d)*(c*x^2+
b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2-1/4*(3*A*e*(-b*e+2*c*d)-B*(2*c*d
^2+e*(-4*a*e+b*d)))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)
```

Rubi [A] time = 0.38, antiderivative size = 269, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {834, 806, 724, 206}

$$\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{-2ae+x(2cd-be)+bd}{2\sqrt{a+bx+cx^2}\sqrt{ae^2-bde+cd^2}}\right)}{8\left(ae^2-bde+cd^2\right)^{5/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/(2*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2)
 + ((2*B*c*d^2 + B*e*(b*d - 4*a*e) - 3*A*e*(2*c*d - b*e))*Sqrt[a + b*x + c*
x^2])/(4*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) + ((b^2*e*(B*d + 3*A*e) + 4*c
*(2*A*c*d^2 + 3*a*B*d*e - a*A*e^2) - 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*A
rcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[
a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx &= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}-\frac{\int \frac{\frac{1}{2}(bBd-4Acd+3Abe-4aBe)-c(Bd-Ae)x}{(d+ex)^2\sqrt{a+bx+cx^2}}\,dx}{2\left(cd^2-bde+ae^2\right)}\\ &= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}+\frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}\\ &= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}+\frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}\\ &= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{2\left(cd^2-bde+ae^2\right)(d+ex)^2}+\frac{\left(2Bcd^2+Be(bd-4ae)-3Ae(2cd-be)\right)\sqrt{a+}}{4\left(cd^2-bde+ae^2\right)^2(d+ex)}\end{aligned}$$

Mathematica [A] time = 0.46, size = 264, normalized size = 0.97

$$-\frac{\left(-4b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2+3aBde+2Acd^2\right)+b^2e(3Ae+Bd)\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+}}\right.}{8\left(e(ae-bd)+cd^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + x*(b + c*x)])/(2*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)
^2) + ((2*B*c*d^2 + B*e*(b*d - 4*a*e) + 3*A*e*(-2*c*d + b*e))*Sqrt[a + x*(b
 + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) - ((b^2*e*(B*d + 3*A*e
) + 4*c*(2*A*c*d^2 + 3*a*B*d*e - a*A*e^2) - 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*
e^2))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d)
+ a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2 + e*(-(b*d) + a*e))^(5/2))
```

fricas [B] time = 16.53, size = 1750, normalized size = 6.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [1/16*((4*(B*b*c - 2*A*c^2)*d^4 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^3*e + (4*
B*a*b - 3*A*b^2 + 4*A*a*c)*d^2*e^2 + (4*(B*b*c - 2*A*c^2)*d^2*e^2 - (B*b^2
+ 4*(3*B*a - 2*A*b)*c)*d*e^3 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*e^4)*x^2 + 2*(
4*(B*b*c - 2*A*c^2)*d^3*e - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^2*e^2 + (4*B*a*
b - 3*A*b^2 + 4*A*a*c)*d*e^3)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e
 - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e
^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e
+ (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^
2*x^2 + 2*d*e*x + d^2)) + 4*(4*B*c^2*d^5 - 2*A*a^2*e^5 - (5*B*b*c + 8*A*c^2
)*d^4*e + (B*b^2 + (2*B*a + 13*A*b)*c)*d^3*e^2 + (B*a*b - 5*A*b^2 - 10*A*a*
c)*d^2*e^3 - (2*B*a^2 - 7*A*a*b)*d*e^4 + (2*B*c^2*d^4*e - (B*b*c + 6*A*c^2)
*d^3*e^2 - (B*b^2 + (2*B*a - 9*A*b)*c)*d^2*e^3 + (5*B*a*b - 3*A*b^2 - 6*A*a
*c)*d*e^4 - (4*B*a^2 - 3*A*a*b)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3
*b*c^2*d^7*e - 3*a^2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 -
(b^3 + 6*a*b*c)*d^5*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^
2*d^5*e^3 - 3*a^2*b*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*
a*b*c)*d^3*e^5 + 3*(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^
6*e^2 - 3*a^2*b*d^2*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*
a*b*c)*d^4*e^4 + 3*(a*b^2 + a^2*c)*d^3*e^5)*x), -1/8*((4*(B*b*c - 2*A*c^2)*
d^4 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^3*e + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*d
^2*e^2 + (4*(B*b*c - 2*A*c^2)*d^2*e^2 - (B*b^2 + 4*(3*B*a - 2*A*b)*c)*d*e^3
 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*e^4)*x^2 + 2*(4*(B*b*c - 2*A*c^2)*d^3*e -
(B*b^2 + 4*(3*B*a - 2*A*b)*c)*d^2*e^2 + (4*B*a*b - 3*A*b^2 + 4*A*a*c)*d*e^3
)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*
sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e +
a^2*e^2 + (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)
*x)) - 2*(4*B*c^2*d^5 - 2*A*a^2*e^5 - (5*B*b*c + 8*A*c^2)*d^4*e + (B*b^2 +
(2*B*a + 13*A*b)*c)*d^3*e^2 + (B*a*b - 5*A*b^2 - 10*A*a*c)*d^2*e^3 - (2*B*a
^2 - 7*A*a*b)*d*e^4 + (2*B*c^2*d^4*e - (B*b*c + 6*A*c^2)*d^3*e^2 - (B*b^2 +
 (2*B*a - 9*A*b)*c)*d^2*e^3 + (5*B*a*b - 3*A*b^2 - 6*A*a*c)*d*e^4 - (4*B*a^
2 - 3*A*a*b)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(c^3*d^8 - 3*b*c^2*d^7*e - 3*a^
2*b*d^3*e^5 + a^3*d^2*e^6 + 3*(b^2*c + a*c^2)*d^6*e^2 - (b^3 + 6*a*b*c)*d^5
*e^3 + 3*(a*b^2 + a^2*c)*d^4*e^4 + (c^3*d^6*e^2 - 3*b*c^2*d^5*e^3 - 3*a^2*b
*d*e^7 + a^3*e^8 + 3*(b^2*c + a*c^2)*d^4*e^4 - (b^3 + 6*a*b*c)*d^3*e^5 + 3*
(a*b^2 + a^2*c)*d^2*e^6)*x^2 + 2*(c^3*d^7*e - 3*b*c^2*d^6*e^2 - 3*a^2*b*d^2
*e^6 + a^3*d*e^7 + 3*(b^2*c + a*c^2)*d^5*e^3 - (b^3 + 6*a*b*c)*d^4*e^4 + 3*
(a*b^2 + a^2*c)*d^3*e^5)*x)]
```

giac [B] time = 0.39, size = 1476, normalized size = 5.45

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/4*(4*B*b*c*d^2 - 8*A*c^2*d^2 - B*b^2*d*e - 12*B*a*c*d*e + 8*A*b*c*d*e +
4*B*a*b*e^2 - 3*A*b^2*e^2 + 4*A*a*c*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d
^3*e + b^2*d^2*e^2 + 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b
*d*e - a*e^2)) + 1/4*(8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*c^(5/2)*d^4
 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(3/2)*d^3*e - 24*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*A*c^(5/2)*d^3*e + 8*(sqrt(c)*x - sqrt(c*x^2 +
b*x + a))*B*b*c^2*d^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b*c*d^2*e
^2 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^2*d^2*e^2 - 16*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a*c^2*d^3*e - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*A*b*c^2*d^3*e + 2*B*b^2*c^(3/2)*d^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))^2*B*b^2*sqrt(c)*d^2*e^2 - 20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*
a*c^(3/2)*d^2*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b*c^(3/2)*d^
2*e^2 + B*b^3*sqrt(c)*d^3*e - 8*B*a*b*c^(3/2)*d^3*e - 6*A*b^2*c^(3/2)*d^3*e
 - (sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b^2*d*e^3 - 12*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*B*a*c*d*e^3 + 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
A*b*c*d*e^3 + (sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^3*d^2*e^2 - 16*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))*B*a*b*c*d^2*e^2 + 20*(sqrt(c)*x - sqrt(c*x^2
+ b*x + a))*A*b^2*c*d^2*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*c^
2*d^2*e^2 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b*sqrt(c)*d*e^3 - 9
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b^2*sqrt(c)*d*e^3 + 12*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^2*A*a*c^(3/2)*d*e^3 - 5*B*a*b^2*sqrt(c)*d^2*e^2 +
3*A*b^3*sqrt(c)*d^2*e^2 + 4*B*a^2*c^(3/2)*d^2*e^2 + 20*A*a*b*c^(3/2)*d^2*e^
2 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*b*e^4 - 3*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*A*b^2*e^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*
a*c*e^4 + 3*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a*b^2*d*e^3 - 5*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*A*b^3*d*e^3 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*a^2*c*d*e^3 - 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c*d*e^3 +
 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*sqrt(c)*e^4 + 12*B*a^2*b*sqr
t(c)*d*e^3 - 11*A*a*b^2*sqrt(c)*d*e^3 - 12*A*a^2*c^(3/2)*d*e^3 - 4*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*e^4 + 5*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*A*a*b^2*e^4 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*c*e^4 - 8*B*
a^3*sqrt(c)*e^4 + 8*A*a^2*b*sqrt(c)*e^4)/((c^2*d^4*e - 2*b*c*d^3*e^2 + b^2*
d^2*e^3 + 2*a*c*d^2*e^3 - 2*a*b*d*e^4 + a^2*e^5)*((sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*
e)^2)
```

maple [**B**] time = 0.12, size = 2204, normalized size = 8.13

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -B/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)+1/2*B/e/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/
e^2)^(1/2))/(x+d/e))*b-3/2*B/e^2/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2))/(x+d/e))*c*d-1/2/e/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A+1/2/e^2/(a*e^2-b*d*e
+c*d^2)/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^
2)^(1/2)*B*d+3/4*e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(
x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A-3/4/(a*e^2-b*d*e+c*d^2)^2/(x+d/
e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*B*d-
3/2/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A+3/2/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2*B-3/8*e/(a*
e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/
e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*A+3/8/(a
*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)
/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c
+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2*B*d+3/2
/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d
/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^
2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c*d*A-
3/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c
*d^2*B-3/2/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e
-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/
2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/
e))*c^2*d^2*A+3/2/e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2))/(x+d/e))*c^2*d^3*B+1/2/e*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^2)/e^2
)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e
^2)^(1/2))/(x+d/e))*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,\sqrt{c\,x^2+b\,x+a}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(d + ex\right)^{3} \sqrt{a + bx + cx^{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**3*sqrt(a + b*x + c*x**2)), x)
```

3.2472 $\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=444

$$\frac{\sqrt{a+bx+cx^2}\,\left(B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)-Ae\left(-4ce(4ae+11bd)+15b^2e^2+44c^2d^2\right)\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}-$$

```
[Out] -1/16*(b^3*e^2*(5*A*e+B*d)-2*b^2*e*(9*A*c*d*e+3*B*a*e^2+2*B*c*d^2)+4*b*c*(-
3*A*a*e^3+6*A*c*d^2*e+5*B*a*d*e^2+2*B*c*d^3)-8*c*(A*c*d*(-3*a*e^2+2*c*d^2)+
a*B*e*(-a*e^2+4*c*d^2)))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*
e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(7/2)+1/3*(-A*e+B*d
)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^3-1/12*(5*A*e*(-b*e+2*c*d
)-B*(4*c*d^2+e*(-6*a*e+b*d)))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)^2/(e*
x+d)^2+1/24*(B*(8*c^2*d^3+2*c*d*e*(-26*a*e+5*b*d)-3*b*e^2*(-6*a*e+b*d))-A*e
*(44*c^2*d^2+15*b^2*e^2-4*c*e*(4*a*e+11*b*d)))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b
*d*e+c*d^2)^3/(e*x+d)
```

Rubi [A] time = 0.84, antiderivative size = 442, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$\frac{\sqrt{a+bx+cx^2}\,\left(B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)-Ae\left(-4ce(4ae+11bd)+15b^2e^2+44c^2d^2\right)\right)}{24(d+ex)\left(ae^2-bde+cd^2\right)^3}-$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((B*d - A*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^3)
 + ((4*B*c*d^2 + B*e*(b*d - 6*a*e) - 5*A*e*(2*c*d - b*e))*Sqrt[a + b*x + c*
x^2])/(12*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) + ((B*(8*c^2*d^3 + 2*c*d*e
*(5*b*d - 26*a*e) - 3*b*e^2*(b*d - 6*a*e)) - A*e*(44*c^2*d^2 + 15*b^2*e^2 -
 4*c*e*(11*b*d + 4*a*e)))*Sqrt[a + b*x + c*x^2])/(24*(c*d^2 - b*d*e + a*e^2
)^3*(d + e*x)) - ((b^3*e^2*(B*d + 5*A*e) - 2*b^2*e*(2*B*c*d^2 + 9*A*c*d*e +
 3*a*B*e^2) + 4*b*c*(2*B*c*d^3 + 6*A*c*d^2*e + 5*a*B*d*e^2 - 3*a*A*e^3) - 8
*c*(A*c*d*(2*c*d^2 - 3*a*e^2) + a*B*e*(4*c*d^2 - a*e^2)))*ArcTanh[(b*d - 2*
a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2]
)])/(16*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
```

```
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx &= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}-\frac{\int \frac{\frac{1}{2}(bBd-6Acd+5Abe-6aBe)-2c(Bd-Ae)x}{(d+ex)^3\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}\\
&= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}+\frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+b}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}\\
&= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}+\frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+b}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}\\
&= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}+\frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+b}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}\\
&= \frac{(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^3}+\frac{\left(4Bcd^2+Be(bd-6ae)-5Ae(2cd-be)\right)\sqrt{a+b}}{12\left(cd^2-bde+ae^2\right)^2(d+ex)^2}
\end{aligned}$$

Mathematica [A] time = 0.93, size = 434, normalized size = 0.98

$$\frac{\frac{\sqrt{a+x(b+cx)}\left(Ae\left(4ce(4ae+11bd)-15b^2e^2-44c^2d^2\right)+B\left(2cde(5bd-26ae)-3be^2(bd-6ae)+8c^2d^3\right)\right)}{4(d+ex)\left(e(ae-bd)+cd^2\right)}+\frac{3\left(-2b^2e\left(3aBe^2+9Acde+2Bcd^2\right)+4bc\left(-3aAe^3+5aBde\right.\right.}{}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^4*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((2*(B*d - A*e)*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[a + x*(b + c*x)])/(d + e*x)
^3 + ((4*B*c*d^2 + B*e*(b*d - 6*a*e) + 5*A*e*(-2*c*d + b*e))*Sqrt[a + x*(b
+ c*x)])/(2*(d + e*x)^2) + ((B*(8*c^2*d^3 + 2*c*d*e*(5*b*d - 26*a*e) - 3*b*
e^2*(b*d - 6*a*e)) + A*e*(-44*c^2*d^2 - 15*b^2*e^2 + 4*c*e*(11*b*d + 4*a*e)
))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b*d) + a*e))*(d + e*x)) + (3*(b^
3*e^2*(B*d + 5*A*e) - 2*b^2*e*(2*B*c*d^2 + 9*A*c*d*e + 3*a*B*e^2) + 4*b*c*(
2*B*c*d^3 + 6*A*c*d^2*e + 5*a*B*d*e^2 - 3*a*A*e^3) + 8*c*(a*B*e*(-4*c*d^2 +
 a*e^2) + A*c*d*(-2*c*d^2 + 3*a*e^2)))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(8*(c*d^2
 + e*(-(b*d) + a*e))^(3/2)))/(6*(c*d^2 + e*(-(b*d) + a*e))^2)
```

fricas [**B**] time = 86.90, size = 3684, normalized size = 8.30

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] [-1/96*(3*(8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*
d^5*e + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^4*e^2 - (6*B*a*b^
2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^3*e^3 + (8*(B*b*c^2 - 2*A*c^3)*d^3
*e^3 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^2*e^4 + (B*b^3 + 24*A*a*c^2 +
2*(10*B*a*b - 9*A*b^2)*c)*d*e^5 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a
*b)*c)*e^6)*x^3 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B*b^2*c + 2*(4*B*a
- 3*A*b)*c^2)*d^3*e^3 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^2
*e^4 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d*e^5)*x^2 + 3*(8*(B
*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^4*e^2 + (B*
b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^3*e^3 - (6*B*a*b^2 - 5*A*b^3
 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^2*e^4)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*
a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4
*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d -
 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)
*x)/(e^2*x^2 + 2*d*e*x + d^2)) - 4*(24*B*c^3*d^7 - 8*A*a^3*e^7 - 36*(B*b*c^
2 + 2*A*c^3)*d^6*e + (15*B*b^2*c - 2*(8*B*a - 81*A*b)*c^2)*d^5*e^2 - (3*B*b
^3 + 92*A*a*c^2 - (44*B*a*b - 123*A*b^2)*c)*d^4*e^3 - (13*B*a*b^2 - 33*A*b^
3 + 4*(11*B*a^2 - 34*A*a*b)*c)*d^3*e^4 + (20*B*a^2*b - 59*A*a*b^2 - 28*A*a^
2*c)*d^2*e^5 - 2*(2*B*a^3 - 17*A*a^2*b)*d*e^6 + (8*B*c^3*d^5*e^2 + 2*(B*b*c
^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c + 44*(B*a - 2*A*b)*c^2)*d^3*e^4 + (3*B
*b^3 - 28*A*a*c^2 + (80*B*a*b - 59*A*b^2)*c)*d^2*e^5 - (21*B*a*b^2 - 15*A*b
^3 + 4*(13*B*a^2 - 7*A*a*b)*c)*d*e^6 + (18*B*a^2*b - 15*A*a*b^2 + 16*A*a^2*
c)*e^7)*x^2 + 2*(12*B*c^3*d^6*e - (5*B*b*c^2 + 54*A*c^3)*d^5*e^2 - (11*B*b^
2*c + (42*B*a - 113*A*b)*c^2)*d^4*e^3 + (4*B*b^3 - 48*A*a*c^2 + (86*B*a*b -
 79*A*b^2)*c)*d^3*e^4 - (29*B*a*b^2 - 20*A*b^3 + 2*(30*B*a^2 - 29*A*a*b)*c)
*d^2*e^5 + (31*B*a^2*b - 25*A*a*b^2 + 6*A*a^2*c)*d*e^6 - (6*B*a^3 - 5*A*a^2
*b)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4*b*c^3*d^10*e - 4*a^3*b*d^4
*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9*e^2 - 4*(b^3*c + 3*a*b*c^2
)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e^4 - 4*(a*b^3 + 3*a^2*b*c)*
d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4*d^8*e^3 - 4*b*c^3*d^7*e^4
- 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a*c^3)*d^6*e^5 - 4*(b^3*c +
3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^4*e^7 - 4*(a*b^3 + 3*
a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e^9)*x^3 + 3*(c^4*d^9*e^2 -
4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 + 2*(3*b^2*c^2 + 2*a*c^3)*d^
7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^5*
e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b^2 + 2*a^3*c)*d^3*e^8)*x^2
+ 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*e^8 + a^4*d^2*e^9 + 2*(3*b^
2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)*d^7*e^4 + (b^4 + 12*a*b^2*
c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d^5*e^6 + 2*(3*a^2*b^2 + 2*a
^3*c)*d^4*e^7)*x), -1/48*(3*(8*(B*b*c^2 - 2*A*c^3)*d^6 - 4*(B*b^2*c + 2*(4*
B*a - 3*A*b)*c^2)*d^5*e + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d
^4*e^2 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^3*e^3 + (8*(B*b*
c^2 - 2*A*c^3)*d^3*e^3 - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^2*e^4 + (B*b
^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d*e^5 - (6*B*a*b^2 - 5*A*b^3 -
4*(2*B*a^2 - 3*A*a*b)*c)*e^6)*x^3 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^4*e^2 - 4*(B
*b^2*c + 2*(4*B*a - 3*A*b)*c^2)*d^3*e^3 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b
 - 9*A*b^2)*c)*d^2*e^4 - (6*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d*
e^5)*x^2 + 3*(8*(B*b*c^2 - 2*A*c^3)*d^5*e - 4*(B*b^2*c + 2*(4*B*a - 3*A*b)*
c^2)*d^4*e^2 + (B*b^3 + 24*A*a*c^2 + 2*(10*B*a*b - 9*A*b^2)*c)*d^3*e^3 - (6
*B*a*b^2 - 5*A*b^3 - 4*(2*B*a^2 - 3*A*a*b)*c)*d^2*e^4)*x)*sqrt(-c*d^2 + b*d
*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*
(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b
*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(24*B*c^3*d^7
 - 8*A*a^3*e^7 - 36*(B*b*c^2 + 2*A*c^3)*d^6*e + (15*B*b^2*c - 2*(8*B*a - 81
*A*b)*c^2)*d^5*e^2 - (3*B*b^3 + 92*A*a*c^2 - (44*B*a*b - 123*A*b^2)*c)*d^4*
e^3 - (13*B*a*b^2 - 33*A*b^3 + 4*(11*B*a^2 - 34*A*a*b)*c)*d^3*e^4 + (20*B*a
^2*b - 59*A*a*b^2 - 28*A*a^2*c)*d^2*e^5 - 2*(2*B*a^3 - 17*A*a^2*b)*d*e^6 +
(8*B*c^3*d^5*e^2 + 2*(B*b*c^2 - 22*A*c^3)*d^4*e^3 - (13*B*b^2*c + 44*(B*a -
 2*A*b)*c^2)*d^3*e^4 + (3*B*b^3 - 28*A*a*c^2 + (80*B*a*b - 59*A*b^2)*c)*d^2
*e^5 - (21*B*a*b^2 - 15*A*b^3 + 4*(13*B*a^2 - 7*A*a*b)*c)*d*e^6 + (18*B*a^2
*b - 15*A*a*b^2 + 16*A*a^2*c)*e^7)*x^2 + 2*(12*B*c^3*d^6*e - (5*B*b*c^2 + 5
4*A*c^3)*d^5*e^2 - (11*B*b^2*c + (42*B*a - 113*A*b)*c^2)*d^4*e^3 + (4*B*b^3
 - 48*A*a*c^2 + (86*B*a*b - 79*A*b^2)*c)*d^3*e^4 - (29*B*a*b^2 - 20*A*b^3 +
 2*(30*B*a^2 - 29*A*a*b)*c)*d^2*e^5 + (31*B*a^2*b - 25*A*a*b^2 + 6*A*a^2*c)
*d*e^6 - (6*B*a^3 - 5*A*a^2*b)*e^7)*x)*sqrt(c*x^2 + b*x + a))/(c^4*d^11 - 4
*b*c^3*d^10*e - 4*a^3*b*d^4*e^7 + a^4*d^3*e^8 + 2*(3*b^2*c^2 + 2*a*c^3)*d^9
*e^2 - 4*(b^3*c + 3*a*b*c^2)*d^8*e^3 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^7*e
^4 - 4*(a*b^3 + 3*a^2*b*c)*d^6*e^5 + 2*(3*a^2*b^2 + 2*a^3*c)*d^5*e^6 + (c^4
*d^8*e^3 - 4*b*c^3*d^7*e^4 - 4*a^3*b*d*e^10 + a^4*e^11 + 2*(3*b^2*c^2 + 2*a
*c^3)*d^6*e^5 - 4*(b^3*c + 3*a*b*c^2)*d^5*e^6 + (b^4 + 12*a*b^2*c + 6*a^2*c
^2)*d^4*e^7 - 4*(a*b^3 + 3*a^2*b*c)*d^3*e^8 + 2*(3*a^2*b^2 + 2*a^3*c)*d^2*e
^9)*x^3 + 3*(c^4*d^9*e^2 - 4*b*c^3*d^8*e^3 - 4*a^3*b*d^2*e^9 + a^4*d*e^10 +
 2*(3*b^2*c^2 + 2*a*c^3)*d^7*e^4 - 4*(b^3*c + 3*a*b*c^2)*d^6*e^5 + (b^4 + 1
2*a*b^2*c + 6*a^2*c^2)*d^5*e^6 - 4*(a*b^3 + 3*a^2*b*c)*d^4*e^7 + 2*(3*a^2*b
^2 + 2*a^3*c)*d^3*e^8)*x^2 + 3*(c^4*d^10*e - 4*b*c^3*d^9*e^2 - 4*a^3*b*d^3*
e^8 + a^4*d^2*e^9 + 2*(3*b^2*c^2 + 2*a*c^3)*d^8*e^3 - 4*(b^3*c + 3*a*b*c^2)
*d^7*e^4 + (b^4 + 12*a*b^2*c + 6*a^2*c^2)*d^6*e^5 - 4*(a*b^3 + 3*a^2*b*c)*d
^5*e^6 + 2*(3*a^2*b^2 + 2*a^3*c)*d^4*e^7)*x)]
```

giac [B] time = 0.74, size = 4249, normalized size = 9.57

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] -1/8*(8*B*b*c^2*d^3 - 16*A*c^3*d^3 - 4*B*b^2*c*d^2*e - 32*B*a*c^2*d^2*e + 2
4*A*b*c^2*d^2*e + B*b^3*d*e^2 + 20*B*a*b*c*d*e^2 - 18*A*b^2*c*d*e^2 + 24*A*
a*c^2*d*e^2 - 6*B*a*b^2*e^3 + 5*A*b^3*e^3 + 8*B*a^2*c*e^3 - 12*A*a*b*c*e^3)
*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(-c*d^2 +
b*d*e - a*e^2))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e
^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*
a^2*b*d*e^5 + a^3*e^6)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/24*(64*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^3*B*c^4*d^6 - 16*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^3*B*b*c^3*d^5*e - 352*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^4*d^5*e
+ 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(7/2)*d^6 + 120*(sqrt(c)*x
 - sqrt(c*x^2 + b*x + a))^4*B*b*c^(5/2)*d^4*e^2 - 240*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^4*A*c^(7/2)*d^4*e^2 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*B*b^2*c^(5/2)*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*c^(7
/2)*d^5*e - 528*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b*c^(7/2)*d^5*e + 4
8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^2*c^3*d^6 + 24*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))^5*B*b*c^2*d^3*e^3 - 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^5*A*c^3*d^3*e^3 + 168*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b^2*c^2*d^4
*e^2 - 512*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*c^3*d^4*e^2 + 400*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b*c^3*d^4*e^2 + 36*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*B*b^3*c^2*d^5*e - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B
*a*b*c^3*d^5*e - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^2*c^3*d^5*e +
8*B*b^3*c^(5/2)*d^6 - 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*b^2*c^(3/2
)*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a*c^(5/2)*d^3*e^3 +
 360*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*b*c^(5/2)*d^3*e^3 + 54*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*B*b^3*c^(3/2)*d^4*e^2 - 696*(sqrt(c)*x - sqr
t(c*x^2 + b*x + a))^2*B*a*b*c^(5/2)*d^4*e^2 + 756*(sqrt(c)*x - sqrt(c*x^2 +
 b*x + a))^2*A*b^2*c^(5/2)*d^4*e^2 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a)
)^2*A*a*c^(7/2)*d^4*e^2 + 10*B*b^4*c^(3/2)*d^5*e - 48*B*a*b^2*c^(5/2)*d^5*e
 - 44*A*b^3*c^(5/2)*d^5*e - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*b^2*
c*d^2*e^4 - 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a*c^2*d^2*e^4 + 72*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b*c^2*d^2*e^4 - 74*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))^3*B*b^3*c*d^3*e^3 - 264*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))^3*B*a*b*c^2*d^3*e^3 - 204*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^2*c
^2*d^3*e^3 + 656*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c^3*d^3*e^3 - 6*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*b^4*c*d^4*e^2 - 360*(sqrt(c)*x - sqrt
(c*x^2 + b*x + a))*B*a*b^2*c^2*d^4*e^2 + 336*(sqrt(c)*x - sqrt(c*x^2 + b*x
+ a))*A*b^3*c^2*d^4*e^2 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*c^3*
d^4*e^2 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c^3*d^4*e^2 + 15*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*b^3*sqrt(c)*d^2*e^4 + 300*(sqrt(c)*x
- sqrt(c*x^2 + b*x + a))^4*B*a*b*c^(3/2)*d^2*e^4 - 270*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^4*A*b^2*c^(3/2)*d^2*e^4 + 360*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^4*A*a*c^(5/2)*d^2*e^4 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b
^4*sqrt(c)*d^3*e^3 + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b^2*c^(3
/2)*d^3*e^3 - 498*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*b^3*c^(3/2)*d^3*e
^3 + 816*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^2*c^(5/2)*d^3*e^3 - 648*
(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b*c^(5/2)*d^3*e^3 - 3*B*b^5*sqrt(
c)*d^4*e^2 - 70*B*a*b^3*c^(3/2)*d^4*e^2 + 44*A*b^4*c^(3/2)*d^4*e^2 + 48*B*a
^2*b*c^(5/2)*d^4*e^2 + 204*A*a*b^2*c^(5/2)*d^4*e^2 + 3*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^5*B*b^3*d*e^5 + 60*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*
a*b*c*d*e^5 - 54*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b^2*c*d*e^5 + 72*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*a*c^2*d*e^5 + 8*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*B*b^4*d^2*e^4 + 252*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3
*B*a*b^2*c*d^2*e^4 - 34*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^3*c*d^2*e
^4 + 624*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*c^2*d^2*e^4 - 264*(sqr
t(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b*c^2*d^2*e^4 - 3*(sqrt(c)*x - sqrt(c
*x^2 + b*x + a))*B*b^5*d^3*e^3 + 186*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*
a*b^3*c*d^3*e^3 - 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^4*c*d^3*e^3 +
 864*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*c^2*d^3*e^3 - 900*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))*A*a*b^2*c^2*d^3*e^3 - 480*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))*A*a^2*c^3*d^3*e^3 - 90*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4
*B*a*b^2*sqrt(c)*d*e^5 + 75*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*b^3*sqr
t(c)*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*B*a^2*c^(3/2)*d*e^5
- 180*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^4*A*a*b*c^(3/2)*d*e^5 - 24*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*b^3*sqrt(c)*d^2*e^4 + 120*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^2*A*b^4*sqrt(c)*d^2*e^4 - 144*(sqrt(c)*x - sqrt(c*x^
2 + b*x + a))^2*B*a^2*b*c^(3/2)*d^2*e^4 + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))^2*A*a*b^2*c^(3/2)*d^2*e^4 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^
2*A*a^2*c^(5/2)*d^2*e^4 + 24*B*a*b^4*sqrt(c)*d^3*e^3 - 15*A*b^5*sqrt(c)*d^3
*e^3 + 240*B*a^2*b^2*c^(3/2)*d^3*e^3 - 206*A*a*b^3*c^(3/2)*d^3*e^3 - 16*B*a
^3*c^(5/2)*d^3*e^3 - 240*A*a^2*b*c^(5/2)*d^3*e^3 - 18*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^5*B*a*b^2*e^6 + 15*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*A*b
^3*e^6 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^5*B*a^2*c*e^6 - 36*(sqrt(c)
*x - sqrt(c*x^2 + b*x + a))^5*A*a*b*c*e^6 - 56*(sqrt(c)*x - sqrt(c*x^2 + b*
x + a))^3*B*a*b^3*d*e^5 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b^4*d*
e^5 - 288*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b*c*d*e^5 + 48*(sqrt(
c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*b^2*c*d*e^5 - 192*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^3*A*a^2*c^2*d*e^5 - 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B
*a*b^4*d^2*e^4 + 33*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^5*d^2*e^4 - 432
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b^2*c*d^2*e^4 + 450*(sqrt(c)*x -
 sqrt(c*x^2 + b*x + a))*A*a*b^3*c*d^2*e^4 - 528*(sqrt(c)*x - sqrt(c*x^2 + b
*x + a))*B*a^3*c^2*d^2*e^4 + 432*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*
b*c^2*d^2*e^4 - 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*a*b^3*sqrt(c)*d
*e^5 - 192*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*c^(3/2)*d*e^5 - 87*B
```

```
*a^2*b^3*sqrt(c)*d^2*e^4 + 78*A*a*b^4*sqrt(c)*d^2*e^4 - 284*B*a^3*b*c^(3/2)
*d^2*e^4 + 222*A*a^2*b^2*c^(3/2)*d^2*e^4 + 88*A*a^3*c^(5/2)*d^2*e^4 + 48*(s
qrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a^2*b^2*e^6 - 40*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^3*A*a*b^3*e^6 + 96*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*
a^2*b*c*e^6 + 57*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b^3*d*e^5 - 66*(
sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^4*d*e^5 + 276*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*B*a^3*b*c*d*e^5 - 306*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A
*a^2*b^2*c*d*e^5 + 120*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*c^2*d*e^5
+ 48*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a^3*b*sqrt(c)*e^6 + 96*(sqrt(c
)*x - sqrt(c*x^2 + b*x + a))^2*A*a^3*c^(3/2)*e^6 + 114*B*a^3*b^2*sqrt(c)*d*
e^5 - 111*A*a^2*b^3*sqrt(c)*d*e^5 + 104*B*a^4*c^(3/2)*d*e^5 - 28*A*a^3*b*c^
(3/2)*d*e^5 - 30*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^3*b^2*e^6 + 33*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^2*b^3*e^6 - 24*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))*B*a^4*c*e^6 + 36*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a^3*b*c
*e^6 - 48*B*a^4*b*sqrt(c)*e^6 + 48*A*a^3*b^2*sqrt(c)*e^6 - 32*A*a^4*c^(3/2)
*e^6)/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b
^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*
d*e^6 + a^3*e^7)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^3)
```

maple [B] time = 0.07, size = 3898, normalized size = 8.78

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] -1/3/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^3*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/2*B/e^2/(a*e^2-b*d*e+c*d^2)/(x+d/e)^2*((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)-3/4/(a*e^2-b
*d*e+c*d^2)^2*c/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2
*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*A-5/8*e^2/(a*
e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*b^2*A+5/16*e^2/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b
*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2))/(x+d/e))*b^3*A+1/2*B/e^2*c/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e
+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2))/(x+d/e))+1/3/e^3/(a*e^2-b*d*e+c*d^2)/(x+d/e)^3*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d-5/2/(a*e^2-
b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*c^2*d^2*A+9/4*B/e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/
e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*
d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2))/(x+d/e))*b*c*d-15/4/e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^
2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c
*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^3*B+5/2*e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*
((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d*A-1
5/8*e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2
*c*d*A-5/6/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/
e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A-3*B/e^2/(a*e^2-b*d*e+c*d^2)^2/((a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2
)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^2*d^2+3/4*B/(a*e^2-b*d*e+c*d^2)^
2/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
```

```
*b+5/12/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A-13/6*B/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)*(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d+5/6/e^
2/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2*B+5/8*e/(a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+5/2/e/(
a*e^2-b*d*e+c*d^2)^3/(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*
e+c*d^2)/e^2)^(1/2)*c^2*d^3*B-5/16*e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*
d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2))/(x+d/e))*b^3*B*d+2/3/(a*e^2-b*d*e+c*d^2)^2*c/(x+d/e)*((x
+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-3/8*B/(a*e
^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e
+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(
b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b^2+5/2/e^2/(
a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e
)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c^3*d^4*B+
3/2/e/(a*e^2-b*d*e+c*d^2)^2*c^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*
c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*
((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))
*d*A-5/12/e/(a*e^2-b*d*e+c*d^2)^2/(x+d/e)^2*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*B*d+15/4/(a*e^2-b*d*e+c*d^2)^3/((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^
2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*c^2*d^2*A-5/2/(a*e^2-b*d*e+c*d^2)^3/
(x+d/e)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b
*c*d^2*B+15/8/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*
e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d
/e))*b^2*c*d^2*B-5/2/e/(a*e^2-b*d*e+c*d^2)^3/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2))/(x+d/e))*c^3*d^3*A
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^4/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                             +c*d^2    positive,
negative or zero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{(d+e\,x)^4\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^4*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{(d+ex)^4\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**4/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**4*sqrt(a + b*x + c*x**2)), x)
```

3.2473 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=325

$$\frac{3e\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)\left(B\left(-4ce(ae+3bd)+5b^2e^2+8c^2d^2\right)+4Ace(2cd-be)\right)}{8c^{7/2}}+\frac{2(d+ex)^2\left(-x\left(2c(Acd-\right.\right.}{}$$

```
[Out] 3/8*e*(4*A*c*e*(-b*e+2*c*d)+B*(8*c^2*d^2+5*b^2*e^2-4*c*e*(a*e+3*b*d)))*arct
anh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+2*(e*x+d)^2*(2*a*c*(
A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(A*c*d-B*a*e))*x)/c/(-4
*a*c+b^2)/(c*x^2+b*x+a)^(1/2)-1/4*e*(15*b^3*B*e^2-12*b^2*c*e*(A*e+3*B*d)-32
*c^2*(-A*a*e^2+A*c*d^2-3*B*a*d*e)+4*b*c*(6*A*c*d*e-13*B*a*e^2+4*B*c*d^2)-2*
c*e*(8*A*c^2*d+5*b^2*B*e-4*c*(A*b*e+3*B*a*e+B*b*d))*x)*(c*x^2+b*x+a)^(1/2)/
c^3/(-4*a*c+b^2)
```

Rubi [A] time = 0.34, antiderivative size = 325, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 779, 621, 206}

$$-\frac{e\sqrt{a+bx+cx^2}\left(-2cex\left(-4c(3aBe+Abe+bBd)+8Ac^2d+5b^2Be\right)+4bc\left(-13aBe^2+6Acde+4Bcd^2\right)-32c\right.}{4c^3\left(b^2-4ac\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)^2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
- (e*(15*b^3*B*e^2 - 12*b^2*c*e*(3*B*d + A*e) - 32*c^2*(A*c*d^2 - 3*a*B*d*e
 - a*A*e^2) + 4*b*c*(4*B*c*d^2 + 6*A*c*d*e - 13*a*B*e^2) - 2*c*e*(8*A*c^2*d
 + 5*b^2*B*e - 4*c*(b*B*d + A*b*e + 3*a*B*e))*x)*Sqrt[a + b*x + c*x^2])/(4*
c^3*(b^2 - 4*a*c)) + (3*e*(4*A*c*e*(2*c*d - b*e) + B*(8*c^2*d^2 + 5*b^2*e^2
 - 4*c*e*(3*b*d + a*e)))*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^
2])])/(8*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\ &= \frac{2(d+ex)^2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.64, size = 426, normalized size = 1.31

$$-2\sqrt{c}\,\Big(4Ac\left(-4c\left(2a^2e^3+ace\left(-3d^2-3dex+e^2x^2\right)+c^2d^3x\right)+b^2e^2(3ae+cx(ex-6d))-2bc\left(ae^2(3d+5ex)+cd\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[c]*(4*A*c*(3*b^3*e^3*x + b^2*e^2*(3*a*e + c*x*(-6*d + e*x)) - 2*b*
c*(c*d^2*(d - 3*e*x) + a*e^2*(3*d + 5*e*x)) - 4*c*(2*a^2*e^3 + c^2*d^3*x +
a*c*e*(-3*d^2 - 3*d*e*x + e^2*x^2))) + B*(-4*a^2*c*e^2*(-13*b*e + 6*c*(4*d
+ e*x)) + b*x*(8*c^3*d^3 - 15*b^3*e^3 + b^2*c*e^2*(36*d - 5*e*x) + 2*b*c^2*
e*(-12*d^2 + 6*d*e*x + e^2*x^2)) + a*(-15*b^3*e^3 + 2*b^2*c*e^2*(18*d + 31*
e*x) + 4*b*c^2*e*(-6*d^2 - 30*d*e*x + 5*e^2*x^2) + 8*c^3*(2*d^3 + 6*d^2*e*x
 - 6*d*e^2*x^2 - e^3*x^3)))) - 3*(b^2 - 4*a*c)*e*(4*A*c*e*(2*c*d - b*e) + B
*(8*c^2*d^2 + 5*b^2*e^2 - 4*c*e*(3*b*d + a*e)))*Sqrt[a + x*(b + c*x)]*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/(8*c^(7/2)*(-b^2 + 4*a*c
)*Sqrt[a + x*(b + c*x)])
```

fricas [B] time = 3.21, size = 1605, normalized size = 4.94

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/16*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^2*e - 4*(3*B*a*b^3*c + 8*A*a^2*c
^3 - 2*(6*B*a^2*b + A*a*b^2)*c^2)*d*e^2 + (5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)
*c^2 - 4*(6*B*a^2*b^2 + A*a*b^3)*c)*e^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e
- 4*(3*B*b^3*c^2 + 8*A*a*c^4 - 2*(6*B*a*b + A*b^2)*c^3)*d*e^2 + (5*B*b^4*c
+ 16*(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*e^3)*x^2 + (8*(B*b^3*
c^2 - 4*B*a*b*c^3)*d^2*e - 4*(3*B*b^4*c + 8*A*a*b*c^3 - 2*(6*B*a*b^2 + A*b^
3)*c^2)*d*e^2 + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^
4)*c)*e^3)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 + 4*sqrt(c*x^2 + b*x +
 a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(8*(2*B*a - A*b)*c^4*d^3 + 2*(B*b^2*c^
3 - 4*B*a*c^4)*e^3*x^3 - 24*(B*a*b*c^3 - 2*A*a*c^4)*d^2*e + 12*(3*B*a*b^2*c
^2 - 2*(4*B*a^2 + A*a*b)*c^3)*d*e^2 - (15*B*a*b^3*c + 32*A*a^2*c^3 - 4*(13*
B*a^2*b + 3*A*a*b^2)*c^2)*e^3 + (12*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (5*B*b^
3*c^2 + 16*A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*
c^5)*d^3 - 24*(B*b^2*c^3 - (2*B*a + A*b)*c^4)*d^2*e + 12*(3*B*b^3*c^2 + 4*A
*a*c^4 - 2*(5*B*a*b + A*b^2)*c^3)*d*e^2 - (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*
b)*c^3 - 2*(31*B*a*b^2 + 6*A*b^3)*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*b^
2*c^4 - 4*a^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x), -1/
8*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^2*e - 4*(3*B*a*b^3*c + 8*A*a^2*c^3 -
2*(6*B*a^2*b + A*a*b^2)*c^2)*d*e^2 + (5*B*a*b^4 + 16*(B*a^3 + A*a^2*b)*c^2
- 4*(6*B*a^2*b^2 + A*a*b^3)*c)*e^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^2*e - 4*(
3*B*b^3*c^2 + 8*A*a*c^4 - 2*(6*B*a*b + A*b^2)*c^3)*d*e^2 + (5*B*b^4*c + 16*
(B*a^2 + A*a*b)*c^3 - 4*(6*B*a*b^2 + A*b^3)*c^2)*e^3)*x^2 + (8*(B*b^3*c^2 -
 4*B*a*b*c^3)*d^2*e - 4*(3*B*b^4*c + 8*A*a*b*c^3 - 2*(6*B*a*b^2 + A*b^3)*c^
2)*d*e^2 + (5*B*b^5 + 16*(B*a^2*b + A*a*b^2)*c^2 - 4*(6*B*a*b^3 + A*b^4)*c)
*e^3)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^
2*x^2 + b*c*x + a*c)) - 2*(8*(2*B*a - A*b)*c^4*d^3 + 2*(B*b^2*c^3 - 4*B*a*c
^4)*e^3*x^3 - 24*(B*a*b*c^3 - 2*A*a*c^4)*d^2*e + 12*(3*B*a*b^2*c^2 - 2*(4*B
*a^2 + A*a*b)*c^3)*d*e^2 - (15*B*a*b^3*c + 32*A*a^2*c^3 - 4*(13*B*a^2*b + 3
*A*a*b^2)*c^2)*e^3 + (12*(B*b^2*c^3 - 4*B*a*c^4)*d*e^2 - (5*B*b^3*c^2 + 16*
A*a*c^4 - 4*(5*B*a*b + A*b^2)*c^3)*e^3)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^3 -
24*(B*b^2*c^3 - (2*B*a + A*b)*c^4)*d^2*e + 12*(3*B*b^3*c^2 + 4*A*a*c^4 - 2*
(5*B*a*b + A*b^2)*c^3)*d*e^2 - (15*B*b^4*c + 8*(3*B*a^2 + 5*A*a*b)*c^3 - 2*
(31*B*a*b^2 + 6*A*b^3)*c^2)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^4 - 4*a
^2*c^5 + (b^2*c^5 - 4*a*c^6)*x^2 + (b^3*c^4 - 4*a*b*c^5)*x)]
```

giac [A] time = 0.33, size = 530, normalized size = 1.63

$$\left(\left(\frac{2\left(Bb^2c^2e^3-4\,Bac^3e^3\right)x}{b^2c^3-4\,ac^4}+\frac{12\,Bb^2c^2de^2-48\,Bac^3de^2-5\,Bb^3ce^3+20\,Babc^2e^3+4\,Ab^2c^2e^3-16\,Aac^3e^3}{b^2c^3-4\,ac^4}\right)x+\frac{8\,Bbc^3d^3-16\,Ac^4d^3-24\,Bb^2c^2d^2e+48\,Ba}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 1/4*(((2*(B*b^2*c^2*e^3 - 4*B*a*c^3*e^3)*x/(b^2*c^3 - 4*a*c^4) + (12*B*b^2*
c^2*d*e^2 - 48*B*a*c^3*d*e^2 - 5*B*b^3*c*e^3 + 20*B*a*b*c^2*e^3 + 4*A*b^2*c
^2*e^3 - 16*A*a*c^3*e^3)/(b^2*c^3 - 4*a*c^4))*x + (8*B*b*c^3*d^3 - 16*A*c^4
*d^3 - 24*B*b^2*c^2*d^2*e + 48*B*a*c^3*d^2*e + 24*A*b*c^3*d^2*e + 36*B*b^3*
c*d*e^2 - 120*B*a*b*c^2*d*e^2 - 24*A*b^2*c^2*d*e^2 + 48*A*a*c^3*d*e^2 - 15*
B*b^4*e^3 + 62*B*a*b^2*c*e^3 + 12*A*b^3*c*e^3 - 24*B*a^2*c^2*e^3 - 40*A*a*b
*c^2*e^3)/(b^2*c^3 - 4*a*c^4))*x + (16*B*a*c^3*d^3 - 8*A*b*c^3*d^3 - 24*B*a
*b*c^2*d^2*e + 48*A*a*c^3*d^2*e + 36*B*a*b^2*c*d*e^2 - 96*B*a^2*c^2*d*e^2 -
 24*A*a*b*c^2*d*e^2 - 15*B*a*b^3*e^3 + 52*B*a^2*b*c*e^3 + 12*A*a*b^2*c*e^3
- 32*A*a^2*c^2*e^3)/(b^2*c^3 - 4*a*c^4))/sqrt(c*x^2 + b*x + a) - 3/8*(8*B*c
^2*d^2*e - 12*B*b*c*d*e^2 + 8*A*c^2*d*e^2 + 5*B*b^2*e^3 - 4*B*a*c*e^3 - 4*A
*b*c*e^3)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7
/2)
```

maple [B] time = 0.07, size = 1451, normalized size = 4.46

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d^3-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(1/2)*B*d^3-9/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d
*e^2+6*a/c^2/(c*x^2+b*x+a)^(1/2)*B*d*e^2+3*x^2/c/(c*x^2+b*x+a)^(1/2)*B*d*e^
2-9/4*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^2+2*a/c^2*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*A*e^3-3/2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*
A*e^3-3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*d^2*e+3/2*b^3/c^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
B*d^2*e-6*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e-9/2*b^3/c^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2+4*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*
A*e^3+3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*d*e^2+3*b^2/c/(4*a*c-b^2)
/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e+12*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B
*d*e^2+15/8*B*e^3*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+15/16*B*e^3*b^5
/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-5/4*B*e^3*b/c^2*x^2/(c*x^2+b*x+a)^(1/2
)-3*x/c/(c*x^2+b*x+a)^(1/2)*A*d*e^2+3/2*b/c^2/(c*x^2+b*x+a)^(1/2)*B*d^2*e-1
/c/(c*x^2+b*x+a)^(1/2)*B*d^3+1/2*B*e^3*x^3/c/(c*x^2+b*x+a)^(1/2)+15/16*B*e^
3*b^3/c^4/(c*x^2+b*x+a)^(1/2)+15/8*B*e^3*b^2/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)
+(c*x^2+b*x+a)^(1/2))-3/2*B*e^3*a/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x
+a)^(1/2))+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*A*d*e^2+2*
a/c^2/(c*x^2+b*x+a)^(1/2)*A*e^3-3/2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2
+b*x+a)^(1/2))*A*e^3-3*x/c/(c*x^2+b*x+a)^(1/2)*B*d^2*e+3/2*b/c^2/(c*x^2+b*x
+a)^(1/2)*A*d*e^2+3/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d
^2*e-3/c/(c*x^2+b*x+a)^(1/2)*A*d^2*e-13/2*B*e^3*b^2/c^2*a/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*x+6*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^2-13/4*B
*e^3*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+9/2*b/c^2*x/(c*x^2+b*x+a)^(1
/2)*B*d*e^2+2*A*d^3*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+x^2/c/(c*x^2+
b*x+a)^(1/2)*A*e^3-3/4*b^2/c^3/(c*x^2+b*x+a)^(1/2)*A*e^3-3/4*b^4/c^3/(4*a*c
-b^2)/(c*x^2+b*x+a)^(1/2)*A*e^3-13/4*B*e^3*b/c^3*a/(c*x^2+b*x+a)^(1/2)+3/2*
B*e^3*a/c^2*x/(c*x^2+b*x+a)^(1/2)-15/8*B*e^3*b^2/c^3*x/(c*x^2+b*x+a)^(1/2)+
3/2*b/c^2*x/(c*x^2+b*x+a)^(1/2)*A*e^3-9/4*b^2/c^3/(c*x^2+b*x+a)^(1/2)*B*d*e
^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^3}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
[Out] Integral((A + B*x)*(d + e*x)**3/(a + b*x + c*x**2)**(3/2), x)
```

3.2474 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=210

$$\frac{e\sqrt{a+bx+cx^2}\left(-2c(4aBe+Abe+bBd)+4Ac^2d+3b^2Be\right)}{c^2\left(b^2-4ac\right)}+\frac{2(d+ex)\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2B\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx}}$$

```
[Out] 1/2*e*(2*A*c*e-3*B*b*e+4*B*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)
^(1/2))/c^(5/2)+2*(e*x+d)*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*
e+B*d)+2*c*(A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+e*(4*A*c^2*
d+3*b^2*B*e-2*c*(A*b*e+4*B*a*e+B*b*d))*(c*x^2+b*x+a)^(1/2)/c^2/(-4*a*c+b^2)
```

Rubi [A] time = 0.19, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {818, 640, 621, 206}

$$\frac{e\sqrt{a+bx+cx^2}\left(-2c(4aBe+Abe+bBd)+4Ac^2d+3b^2Be\right)}{c^2\left(b^2-4ac\right)}+\frac{2(d+ex)\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2B\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d +
 A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) +
(e*(4*A*c^2*d + 3*b^2*B*e - 2*c*(b*B*d + A*b*e + 4*a*B*e))*Sqrt[a + b*x + c
*x^2])/(c^2*(b^2 - 4*a*c)) + (e*(4*B*c*d - 3*b*B*e + 2*A*c*e)*ArcTanh[(b +
2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/(2*c^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2(d+ex)\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\
&= \frac{2(d+ex)\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\
&= \frac{2(d+ex)\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}\\
&= \frac{2(d+ex)\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}
\end{aligned}
$$

Mathematica [**A**] time = 0.45, size = 238, normalized size = 1.13

$$
\frac{\frac{2\sqrt{c}\,\big(B\big(8a^2ce^2+a\big(-3b^2e^2+2bce(2d+5ex)-4c^2\big(d^2+2dex-e^2x^2\big)\big)-bx\big(3b^2e^2+bce(ex-4d)+2c^2d^2\big)\big)+2Ac\big(abe^2-2ace(2d+ex)+b^2e^2x+bcd(d-2ex)+2c^2d^2}{\sqrt{a+x(b+cx)}}}{2c^{5/2}\left(4ac-b^2\right)}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(2*A*c*(a*b*e^2 + 2*c^2*d^2*x + b^2*e^2*x + b*c*d*(d - 2*e*x) -
 2*a*c*e*(2*d + e*x)) + B*(8*a^2*c*e^2 - b*x*(2*c^2*d^2 + 3*b^2*e^2 + b*c*e
*(-4*d + e*x)) + a*(-3*b^2*e^2 + 2*b*c*e*(2*d + 5*e*x) - 4*c^2*(d^2 + 2*d*e
*x - e^2*x^2)))))/Sqrt[a + x*(b + c*x)] + (b^2 - 4*a*c)*e*(-4*B*c*d + 3*b*B
*e - 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])]/(2*c^
(5/2)*(-b^2 + 4*a*c))
```

fricas [**B**] time = 2.63, size = 945, normalized size = 4.50

$$
\left[\frac{\big(4\left(Bab^2c-4\,Ba^2c^2\right)de-\big(3\,Bab^3+8\,Aa^2c^2-2\left(6\,Ba^2b+Aab^2\right)c\big)e^2+\big(4\left(Bb^2c^2-4\,Bac^3\right)de-\big(3\,Bb^3c+8\,A}{}\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d*e - (3*B*a*b^3 + 8*A*a^2*c^2 - 2*(6*B*
a^2*b + A*a*b^2)*c)*e^2 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (3*B*b^3*c + 8*A
*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*e^2)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d*e
 - (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*e^2)*x)*sqrt(c)*log(-8
*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*
a*c) + 4*(2*(2*B*a - A*b)*c^3*d^2 + (B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 - 4*(B*
a*b*c^2 - 2*A*a*c^3)*d*e + (3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2)*e^2 + (2
*(B*b*c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d*e + (3*B*b^3
*c + 4*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*e^2)*x)*sqrt(c*x^2 + b*x + a))/(a
*b^2*c^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x),
-1/2*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d*e - (3*B*a*b^3 + 8*A*a^2*c^2 - 2*(6*B*
a^2*b + A*a*b^2)*c)*e^2 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d*e - (3*B*b^3*c + 8*A
*a*c^3 - 2*(6*B*a*b + A*b^2)*c^2)*e^2)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d*e
 - (3*B*b^4 + 8*A*a*b*c^2 - 2*(6*B*a*b^2 + A*b^3)*c)*e^2)*x)*sqrt(-c)*arcta
n(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) -
 2*(2*(2*B*a - A*b)*c^3*d^2 + (B*b^2*c^2 - 4*B*a*c^3)*e^2*x^2 - 4*(B*a*b*c^
2 - 2*A*a*c^3)*d*e + (3*B*a*b^2*c - 2*(4*B*a^2 + A*a*b)*c^2)*e^2 + (2*(B*b*
c^3 - 2*A*c^4)*d^2 - 4*(B*b^2*c^2 - (2*B*a + A*b)*c^3)*d*e + (3*B*b^3*c + 4
*A*a*c^3 - 2*(5*B*a*b + A*b^2)*c^2)*e^2)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c
^3 - 4*a^2*c^4 + (b^2*c^4 - 4*a*c^5)*x^2 + (b^3*c^3 - 4*a*b*c^4)*x)]
```

giac [A] time = 0.31, size = 294, normalized size = 1.40

$$\frac{\left(\frac{\left(Bb^2ce^2-4\,Bac^2e^2\right)x}{b^2c^2-4\,ac^3}+\frac{2\,Bbc^2d^2-4\,Ac^3d^2-4\,Bb^2cde+8\,Bac^2de+4\,Abc^2de+3\,Bb^3e^2-10\,Babce^2-2\,Ab^2ce^2+4\,Aac^2e^2}{b^2c^2-4\,ac^3}\right)x+\frac{4\,Bac^2d^2-2\,Abc^2d^2-4\,Babc}{}}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] (((B*b^2*c*e^2 - 4*B*a*c^2*e^2)*x/(b^2*c^2 - 4*a*c^3) + (2*B*b*c^2*d^2 - 4*
A*c^3*d^2 - 4*B*b^2*c*d*e + 8*B*a*c^2*d*e + 4*A*b*c^2*d*e + 3*B*b^3*e^2 - 1
0*B*a*b*c*e^2 - 2*A*b^2*c*e^2 + 4*A*a*c^2*e^2)/(b^2*c^2 - 4*a*c^3))*x + (4*
B*a*c^2*d^2 - 2*A*b*c^2*d^2 - 4*B*a*b*c*d*e + 8*A*a*c^2*d*e + 3*B*a*b^2*e^2
 - 8*B*a^2*c*e^2 - 2*A*a*b*c*e^2)/(b^2*c^2 - 4*a*c^3))/sqrt(c*x^2 + b*x + a
) - 1/2*(4*B*c*d*e - 3*B*b*e^2 + 2*A*c*e^2)*log(abs(-2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
```

maple [B] time = 0.05, size = 779, normalized size = 3.71

$$\frac{A\,b^2e^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c}-\frac{4Abdex}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}}+\frac{4Bab\,e^2x}{\left(4ac-b^2\right)\sqrt{c\,x^2+bx+a}\;c}-\frac{3B\,b^3e^2x}{2\left(4ac-b^2\right)\sqrt{c\,x^2+bx+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*A*d^2*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3/4*B*e^2*b^2/c^3/(c*x^2+
b*x+a)^(1/2)-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d^2-2*x/c/(c*x^2+b*x+a
)^(1/2)*B*d*e+b/c^2/(c*x^2+b*x+a)^(1/2)*B*d*e+1/2*b^3/c^2/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*A*e^2+3/2*B*e^2*b/c^2*x/(c*x^2+b*x+a)^(1/2)-3/4*B*e^2*b^4/c^
3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d
^2-1/c/(c*x^2+b*x+a)^(1/2)*B*d^2+1/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*
x+a)^(1/2))*A*e^2+2*B*e^2*a/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-2*b^2/c
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*d*e-4*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
x*A*d*e+b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e+b^2/c/(4*a*c-b^2)/(c*
x^2+b*x+a)^(1/2)*x*A*e^2-3/2*B*e^2*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*
x+4*B*e^2*a/c*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+2*b^2/c/(4*a*c-b^2)/(c*x^
2+b*x+a)^(1/2)*x*B*d*e+1/2*b/c^2/(c*x^2+b*x+a)^(1/2)*A*e^2+B*e^2*x^2/c/(c*x
^2+b*x+a)^(1/2)+2/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e
-2/c/(c*x^2+b*x+a)^(1/2)*A*d*e-3/2*B*e^2*b/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(
c*x^2+b*x+a)^(1/2))+2*B*e^2*a/c^2/(c*x^2+b*x+a)^(1/2)-x/c/(c*x^2+b*x+a)^(1/
2)*A*e^2
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^2}{\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**2/(a + b*x + c*x**2)**(3/2), x)
```

3.2475 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=126

$$\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{Be\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

```
[Out] B*e*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(3/2)+2*(2*a*c*(A*
e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(A*c*d-B*a*e))*x)/c/(-4*a
*c+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 126, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {777, 621, 206}

$$\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{Be\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+bx+cx^2}}\right)}{c^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]) + (B*e*ArcTa
nh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(3/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(Be}{}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{(2B}{}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} + \frac{Be\,t}{}$$

Mathematica [**A**] time = 0.37, size = 127, normalized size = 1.01

$$\frac{\frac{2\sqrt{c}\,(Ac(-2ae+b(d-ex)+2cdx)+B(abe-2ac(d+ex)+bx(be-cd)))}{\sqrt{a+x(b+cx)}} - Be\left(b^2-4ac\right)\log\left(2\sqrt{c}\,\sqrt{a+x(b+cx)}\, + b + 2cx\right)}{c^{3/2}\left(4ac-b^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] ((2*Sqrt[c]*(A*c*(-2*a*e + 2*c*d*x + b*(d - e*x)) + B*(a*b*e + b*(-(c*d) +
b*e)*x - 2*a*c*(d + e*x))))/Sqrt[a + x*(b + c*x)] - B*(b^2 - 4*a*c)*e*Log[b
 + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]])/(c^(3/2)*(-b^2 + 4*a*c))
```

fricas [**B**] time = 1.65, size = 489, normalized size = 3.88

$$\left[\frac{\left(\left(Bb^2c-4\,Bac^2\right)ex^2+\left(Bb^3-4\,Babc\right)ex+\left(Bab^2-4\,Ba^2c\right)e\right)\sqrt{c}\,\log\left(-8\,c^2x^2-8\,bcx-b^2-4\,\sqrt{cx^2+bx+a}\,(\right.}{2\left(ab^2c^2-4\,a^2c^3+\right.}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/2*(((B*b^2*c - 4*B*a*c^2)*e*x^2 + (B*b^3 - 4*B*a*b*c)*e*x + (B*a*b^2 - 4
*B*a^2*c)*e)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x +
a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*((2*B*a - A*b)*c^2*d - (B*a*b*c - 2*A*a
*c^2)*e + ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - (2*B*a + A*b)*c^2)*e)*x)*sqrt
(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*x^2 + (b^3*
c^2 - 4*a*b*c^3)*x), -(((B*b^2*c - 4*B*a*c^2)*e*x^2 + (B*b^3 - 4*B*a*b*c)*e
*x + (B*a*b^2 - 4*B*a^2*c)*e)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*
c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) - 2*((2*B*a - A*b)*c^2*d - (B*a*
b*c - 2*A*a*c^2)*e + ((B*b*c^2 - 2*A*c^3)*d - (B*b^2*c - (2*B*a + A*b)*c^2)
*e)*x)*sqrt(c*x^2 + b*x + a))/(a*b^2*c^2 - 4*a^2*c^3 + (b^2*c^3 - 4*a*c^4)*
x^2 + (b^3*c^2 - 4*a*b*c^3)*x)]
```

giac [**A**] time = 0.32, size = 147, normalized size = 1.17

$$-\frac{Be\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{3}{2}}}+\frac{2\left(\frac{\left(Bbcd-2\,Ac^2d-Bb^2e+2\,Bace+Abce\right)x}{b^2c-4\,ac^2}+\frac{2\,Bacd-Abcd-Babe+2\,Aace}{b^2c-4\,ac^2}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] -B*e*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(3/2) +
 2*((B*b*c*d - 2*A*c^2*d - B*b^2*e + 2*B*a*c*e + A*b*c*e)*x/(b^2*c - 4*a*c^
2) + (2*B*a*c*d - A*b*c*d - B*a*b*e + 2*A*a*c*e)/(b^2*c - 4*a*c^2))/sqrt(c*
x^2 + b*x + a)
```

maple [B] time = 0.05, size = 341, normalized size = 2.71

$$-\frac{2Abex}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}+\frac{B\,b^{2}ex}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}\;c}-\frac{2Bbdx}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}-\frac{A\,b^{2}e}{\left(4ac-b^{2}\right)\sqrt{c\,x^{2}+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -B*e*x/c/(c*x^2+b*x+a)^(1/2)+1/2*B*e*b/c^2/(c*x^2+b*x+a)^(1/2)+B*e*b^2/c/(4
*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+1/2*B*e*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(
1/2)+B*e/c^(3/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-1/c/(c*x^2+b*x
+a)^(1/2)*A*e-1/c/(c*x^2+b*x+a)^(1/2)*B*d-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/
2)*x*A*e-2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d-b^2/c/(4*a*c-b^2)/(c*x^2
+b*x+a)^(1/2)*A*e-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d+2*A*d*(2*c*x+b)
/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.28, size = 163, normalized size = 1.29

$$\frac{B\,e\,\ln\left(\frac{\frac{b}{2}+c\,x}{\sqrt{c}}+\sqrt{c\,x^{2}+b\,x+a}\right)}{c^{3/2}}-\frac{4\,A\,a\,e-2\,A\,b\,d+2\,A\,b\,e\,x-4\,A\,c\,d\,x}{\left(4\,a\,c-b^{2}\right)\,\sqrt{c\,x^{2}+b\,x+a}}-\frac{B\,d\,\left(4\,a+2\,b\,x\right)}{\left(4\,a\,c-b^{2}\right)\,\sqrt{c\,x^{2}+b\,x+a}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (B*e*log((b/2 + c*x)/c^(1/2) + (a + b*x + c*x^2)^(1/2)))/c^(3/2) - (4*A*a*e
 - 2*A*b*d + 2*A*b*e*x - 4*A*c*d*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
 - (B*d*(4*a + 2*b*x))/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2)) + (B*e*((a*b
)/2 - x*(a*c - b^2/2)))/(c*(a*c - b^2/4)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(A+Bx)\,(d+ex)}{\left(a+bx+cx^{2}\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.2476 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=45

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

```
[Out] -2*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 45, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.050, Rules used = {636}

$$-\frac{2(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{3/2}}\,dx=-\frac{2(Ab-2aB-(bB-2Ac)x)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Mathematica [A] time = 0.16, size = 44, normalized size = 0.98

$$\frac{2B(2a+bx)-2A(b+2cx)}{\left(b^2-4ac\right)\sqrt{a+x(b+cx)}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*B*(2*a + b*x) - 2*A*(b + 2*c*x))/((b^2 - 4*a*c)*Sqrt[a + x*(b + c*x)])
```

fricas [A] time = 0.52, size = 74, normalized size = 1.64

$$\frac{2\sqrt{cx^2+bx+a}\,(2\,Ba-Ab+(Bb-2\,Ac)x)}{ab^2-4\,a^2c+\left(b^2c-4\,ac^2\right)x^2+\left(b^3-4\,abc\right)x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] 2*sqrt(c*x^2 + b*x + a)*(2*B*a - A*b + (B*b - 2*A*c)*x)/(a*b^2 - 4*a^2*c +
(b^2*c - 4*a*c^2)*x^2 + (b^3 - 4*a*b*c)*x)
```

giac [A] time = 0.29, size = 55, normalized size = 1.22

$$\frac{2\left(\frac{(Bb-2\,Ac)x}{b^2-4\,ac}+\frac{2\,Ba-Ab}{b^2-4\,ac}\right)}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b - 2*A*c)*x/(b^2 - 4*a*c) + (2*B*a - A*b)/(b^2 - 4*a*c))/sqrt(c*x^2
+ b*x + a)
```

maple [A] time = 0.05, size = 45, normalized size = 1.00

$$\frac{4Acx-2Bbx+2Ab-4Ba}{\sqrt{c\,x^2+bx+a}\,\left(4ac-b^2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2/(c*x^2+b*x+a)^(1/2)*(2*A*c*x-B*b*x+A*b-2*B*a)/(4*a*c-b^2)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.51, size = 44, normalized size = 0.98

$$\frac{2\,A\,b-4\,B\,a+4\,A\,c\,x-2\,B\,b\,x}{\left(4\,a\,c-b^2\right)\,\sqrt{c\,x^2+b\,x+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] (2*A*b - 4*B*a + 4*A*c*x - 2*B*b*x)/((4*a*c - b^2)*(a + b*x + c*x^2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.2477 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=188

$$\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+}{2\sqrt{a+bx+c}}\right.}{\left(ae^2-bde+cd^2\right.}$$

```
[Out] -e*(-A*e+B*d)*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1
/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(3/2)+2*(a*B*(-b*e+2*c*d)-A*(2
*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*x)/(-4*a*c+b^2)/(a*e^2-
b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 188, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

$$\frac{2\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{-2ae+}{2\sqrt{a+bx+c}}\right.}{\left(ae^2-bde+cd^2\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*Sqrt[a + b*x +
c*x^2]) - (e*(B*d - A*e)*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*
d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(3/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}} -$$

Mathematica [A] time = 0.16, size = 184, normalized size = 0.98

$$\frac{2\left(2Ac(ae+cdx)+aB(be-2cd+2cex)-Ab^2e+Abc(d-ex)-bBcdx\right)}{\left(b^2-4ac\right)\sqrt{a+x(b+cx)}\left(e(bd-ae)-cd^2\right)}+\frac{e(Bd-Ae)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)}}\right)}{\left(e(ae-bd)+cd^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(-(A*b^2*e) - b*B*c*d*x + 2*A*c*(a*e + c*d*x) + A*b*c*(d - e*x) + a*B*(-
2*c*d + b*e + 2*c*e*x)))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*Sqrt[a +
 x*(b + c*x)]) + (e*(B*d - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/
(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*
d) + a*e))^(3/2)
```

fricas [B] time = 5.07, size = 1656, normalized size = 8.81

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [-1/2*(sqrt(c*d^2 - b*d*e + a*e^2)*((B*a*b^2 - 4*B*a^2*c)*d*e - (A*a*b^2 -
4*A*a^2*c)*e^2 + ((B*b^2*c - 4*B*a*c^2)*d*e - (A*b^2*c - 4*A*a*c^2)*e^2)*x^
2 + ((B*b^3 - 4*B*a*b*c)*d*e - (A*b^3 - 4*A*a*b*c)*e^2)*x)*log((8*a*b*d*e -
 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2
)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e +
(2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*
x^2 + 2*d*e*x + d^2)) - 4*((2*B*a - A*b)*c^2*d^3 - (2*A*a*c^2 + (3*B*a*b -
2*A*b^2)*c)*d^2*e + (B*a*b^2 - A*b^3 + (2*B*a^2 + A*a*b)*c)*d*e^2 - (B*a^2*
b - A*a*b^2 + 2*A*a^2*c)*e^3 - ((2*B*a^2 - A*a*b)*c*e^3 - (B*b*c^2 - 2*A*c^
3)*d^3 + (B*b^2*c + (2*B*a - 3*A*b)*c^2)*d^2*e + (2*A*a*c^2 - (3*B*a*b - A*
b^2)*c)*d*e^2)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^2 - 4*a^2*c^3)*d^4 - 2*(
a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*c - 8*a^3*c^2)*d^2*e^2 -
2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c)*e^4 + ((b^2*c^3 - 4*a*c
^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c - 2*a*b^2*c^2 - 8*a^2*c^3)
*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*b^2*c - 4*a^3*c^2)*e^4)*x
^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b^2*c^2)*d^3*e + (b^5 - 2*
a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*b^2*c)*d*e^3 + (a^2*b^3 -
 4*a^3*b*c)*e^4)*x), -(sqrt(-c*d^2 + b*d*e - a*e^2)*((B*a*b^2 - 4*B*a^2*c)*
d*e - (A*a*b^2 - 4*A*a^2*c)*e^2 + ((B*b^2*c - 4*B*a*c^2)*d*e - (A*b^2*c - 4
*A*a*c^2)*e^2)*x^2 + ((B*b^3 - 4*B*a*b*c)*d*e - (A*b^3 - 4*A*a*b*c)*e^2)*x)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*((2*B*a - A*b)*c^2*d^3 -
 (2*A*a*c^2 + (3*B*a*b - 2*A*b^2)*c)*d^2*e + (B*a*b^2 - A*b^3 + (2*B*a^2 +
A*a*b)*c)*d*e^2 - (B*a^2*b - A*a*b^2 + 2*A*a^2*c)*e^3 - ((2*B*a^2 - A*a*b)*
c*e^3 - (B*b*c^2 - 2*A*c^3)*d^3 + (B*b^2*c + (2*B*a - 3*A*b)*c^2)*d^2*e + (
2*A*a*c^2 - (3*B*a*b - A*b^2)*c)*d*e^2)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c
^2 - 4*a^2*c^3)*d^4 - 2*(a*b^3*c - 4*a^2*b*c^2)*d^3*e + (a*b^4 - 2*a^2*b^2*
c - 8*a^3*c^2)*d^2*e^2 - 2*(a^2*b^3 - 4*a^3*b*c)*d*e^3 + (a^3*b^2 - 4*a^4*c
)*e^4 + ((b^2*c^3 - 4*a*c^4)*d^4 - 2*(b^3*c^2 - 4*a*b*c^3)*d^3*e + (b^4*c -
 2*a*b^2*c^2 - 8*a^2*c^3)*d^2*e^2 - 2*(a*b^3*c - 4*a^2*b*c^2)*d*e^3 + (a^2*
b^2*c - 4*a^3*c^2)*e^4)*x^2 + ((b^3*c^2 - 4*a*b*c^3)*d^4 - 2*(b^4*c - 4*a*b
^2*c^2)*d^3*e + (b^5 - 2*a*b^3*c - 8*a^2*b*c^2)*d^2*e^2 - 2*(a*b^4 - 4*a^2*
b^2*c)*d*e^3 + (a^2*b^3 - 4*a^3*b*c)*e^4)*x)]
```

giac [B] time = 0.31, size = 568, normalized size = 3.02

$$\frac{2\left(\frac{\left(Bbc^2d^3-2\,Ac^3d^3-Bb^2cd^2e-2\,Bac^2d^2e+3\,Abc^2d^2e+3\,Babcde^2-Ab^2cde^2-2\,Aac^2de^2-2\,Ba^2ce^3+Aabce^3\right)x}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+8\,abc^2d^3e+b^4d^2e^2-2\,ab^2cd^2e^2-8\,a^2c^2d^2e^2-2\,ab^3de^3+8\,a^2bcde^3+a^2b^2e^4-4\,a^3ce^4}+\frac{2\,Bac^2d^3-Abc^2d^3-3\,Babcd^2e+2\,A}{b^2c^2d^4-4\,ac^3d^4-2\,b^3cd^3e+}\right.}{\sqrt{cx^2+bx+a}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c^2*d^3 - 2*A*c^3*d^3 - B*b^2*c*d^2*e - 2*B*a*c^2*d^2*e + 3*A*b*c^2
*d^2*e + 3*B*a*b*c*d*e^2 - A*b^2*c*d*e^2 - 2*A*a*c^2*d*e^2 - 2*B*a^2*c*e^3
+ A*a*b*c*e^3)*x/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3
*e + b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 +
8*a^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4) + (2*B*a*c^2*d^3 - A*b*c^2*d^3
 - 3*B*a*b*c*d^2*e + 2*A*b^2*c*d^2*e - 2*A*a*c^2*d^2*e + B*a*b^2*d*e^2 - A*
b^3*d*e^2 + 2*B*a^2*c*d*e^2 + A*a*b*c*d*e^2 - B*a^2*b*e^3 + A*a*b^2*e^3 - 2
*A*a^2*c*e^3)/(b^2*c^2*d^4 - 4*a*c^3*d^4 - 2*b^3*c*d^3*e + 8*a*b*c^2*d^3*e
+ b^4*d^2*e^2 - 2*a*b^2*c*d^2*e^2 - 8*a^2*c^2*d^2*e^2 - 2*a*b^3*d*e^3 + 8*a
^2*b*c*d*e^3 + a^2*b^2*e^4 - 4*a^3*c*e^4))/sqrt(c*x^2 + b*x + a) - 2*(B*d*e
 - A*e^2)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)/sqrt(
-c*d^2 + b*d*e - a*e^2))/((c*d^2 - b*d*e + a*e^2)*sqrt(-c*d^2 + b*d*e - a*e
^2))
```

maple [B] time = 0.06, size = 1261, normalized size = 6.71

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] 2*B/e*(2*c*x+b)/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)+e/(a*e^2-b*d*e+c*d^2)/((x+d
/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/(a*e^2-b*d
*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*B*d-2*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*A+2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*B*d+
4/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d*A-4/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2*B-e
/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+1/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*
c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+2/(a*e^2-b*d
*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2
)/e^2)^(1/2)*b*c*d*A-2/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-
2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d^2*B-e/(a*e^2-b*d*e+c*
d^2)/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d
*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*A+1/(a*e^2-b*d*e+c*d^2)/((
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^
2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e
+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*B*d
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$\int \frac{A+B\,x}{\left(d+e\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\left(d + ex\right) \left(a + bx + cx^{2}\right)^{\frac{3}{2}}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)*(a + b*x + c*x**2)**(3/2)), x)
```

3.2478 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=334

$$\frac{e\sqrt{a+bx+cx^2}\,\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^2}+\frac{2\left(-A\left(2ace+\right.\right.}{}$$

```
[Out] 1/2*e*(3*A*e*(-b*e+2*c*d)-B*(4*c*d^2-e*(2*a*e+b*d)))*arctanh(1/2*(b*d-2*a*e
+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*
e+c*d^2)^(5/2)+2*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d
-2*B*a*e+B*b*d)*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)/(c*x^2+b*x+a)^(
1/2)+e*(b^2*e*(-3*A*e+B*d)-4*c*(-2*A*a*e^2+A*c*d^2+3*B*a*d*e)+2*b*(2*A*c*d*
e+B*a*e^2+B*c*d^2))*(c*x^2+b*x+a)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/
(e*x+d)
```

Rubi [A] time = 0.42, antiderivative size = 332, normalized size of antiderivative = 0.99, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$\frac{e\sqrt{a+bx+cx^2}\,\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(ae^2-bde+cd^2\right)^2}+\frac{2\left(-A\left(2ace+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)*Sqrt[
a + b*x + c*x^2]) + (e*(b^2*e*(B*d - 3*A*e) - 4*c*(A*c*d^2 + 3*a*B*d*e - 2*
a*A*e^2) + 2*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + b*x + c*x^2])/((b^
2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)) - (e*(4*B*c*d^2 - B*e*(b*d
+ 2*a*e) - 3*A*e*(2*c*d - b*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*
Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a*
e^2)^(5/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{3/2}}\,dx &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}-\frac{2}{} \\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{e}{} \\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{e}{} \\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\sqrt{a+bx+cx^2}}+\frac{e}{}
\end{aligned}$$

Mathematica [A] time = 0.85, size = 326, normalized size = 0.98

$$\frac{e\sqrt{a+x(b+cx)}\left(2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(-2aAe^2+3aBde+Acd^2\right)+b^2e(Bd-3Ae)\right)}{\left(b^2-4ac\right)(d+ex)\left(e(ae-bd)+cd^2\right)^2}+\frac{2\left(-2Ac(ae+cd\right.}{\left(b^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (e*(b^2*e*(B*d - 3*A*e) - 4*c*(A*c*d^2 + 3*a*B*d*e - 2*a*A*e^2) + 2*b*(B*c*
d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + x*(b + c*x)])/((b^2 - 4*a*c)*(c*d^2 +
e*(-(b*d) + a*e))^2*(d + e*x)) + (2*(A*b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d
*x) + A*b*c*(-d + e*x) + a*B*(-(b*e) + 2*c*(d - e*x))))/((b^2 - 4*a*c)*(c*d
^2 + e*(-(b*d) + a*e))*(d + e*x)*Sqrt[a + x*(b + c*x)]) + (e*(4*B*c*d^2 - B
*e*(b*d + 2*a*e) + 3*A*e*(-2*c*d + b*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x
+ b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(2*(c*d
^2 + e*(-(b*d) + a*e))^(5/2))
```

fricas [B] time = 23.21, size = 4122, normalized size = 12.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/4*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d^3*e - (B*a*b^3 - 24*A*a^2*c^2 - 2*(2*B
*a^2*b - 3*A*a*b^2)*c)*d^2*e^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*
A*a^2*b)*c)*d*e^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^2*e^2 - (B*b^3*c - 24*A*a*
c^3 - 2*(2*B*a*b - 3*A*b^2)*c^2)*d*e^3 + (4*(2*B*a^2 - 3*A*a*b)*c^2 - (2*B*
a*b^2 - 3*A*b^3)*c)*e^4)*x^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^3*e + 3*(B*b^3*
c + 8*A*a*c^3 - 2*(2*B*a*b + A*b^2)*c^2)*d^2*e^2 - (B*b^4 - 4*(2*B*a^2 + 3*
A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*d*e^3 - (2*B*a*b^3 - 3*A*b^4 - 4*(2*B
*a^2*b - 3*A*a*b^2)*c)*e^4)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d^3*e - (B*b^4
 + 8*(2*B*a^2 - 3*A*a*b)*c^2 - 2*(4*B*a*b^2 - 3*A*b^3)*c)*d^2*e^2 - 3*(B*a*
b^3 - A*b^4 - 8*A*a^2*c^2 - 2*(2*B*a^2*b - 3*A*a*b^2)*c)*d*e^3 - (2*B*a^2*b
^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*A*a^2*b)*c)*e^4)*x)*sqrt(c*d^2 - b*d*e + a*
e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*
e + (b^2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x
 + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 +
 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*(2*(2*B*a - A*b)*c^3*d^5 - 2
*(4*A*a*c^3 + (4*B*a*b - 3*A*b^2)*c^2)*d^4*e - (4*(B*a^2 - 3*A*a*b)*c^2 - (
7*B*a*b^2 - 6*A*b^3)*c)*d^3*e^2 - (3*B*a*b^3 - 2*A*b^4 + 4*A*a^2*c^2 - (4*B
*a^2*b - 3*A*a*b^2)*c)*d^2*e^3 + (3*B*a^2*b^2 - A*a*b^3 - 2*(4*B*a^3 - A*a^
2*b)*c)*d*e^4 - (A*a^2*b^2 - 4*A*a^3*c)*e^5 + (2*(B*b*c^3 - 2*A*c^4)*d^4*e
- (B*b^2*c^2 + 4*(3*B*a - 2*A*b)*c^3)*d^3*e^2 - (B*b^3*c - 4*A*a*c^3 - (16*
B*a*b - 7*A*b^2)*c^2)*d^2*e^3 - (4*(3*B*a^2 + A*a*b)*c^2 + (B*a*b^2 - 3*A*b
^3)*c)*d*e^4 + (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*e^5)*x^2 + (2*(B*b
*c^3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 + (2*B*a - 3*A*b)*c^3)*d^4*e + (B*b^3*c
- 8*A*a*c^3)*d^3*e^2 - (B*b^4 + 8*(B*a^2 - 2*A*a*b)*c^2 - (8*B*a*b^2 - 5*A*
b^3)*c)*d^2*e^3 - (B*a*b^3 - 3*A*b^4 + 4*A*a^2*c^2 + 2*(B*a^2*b + 4*A*a*b^2
)*c)*d*e^4 + (2*B*a^2*b^2 - 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b)*c)*e^5)*x)*
sqrt(c*x^2 + b*x + a))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3*c^2 - 4*a^2*
b*c^3)*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2 - (a*b^5 + 2
*a^2*b^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c - 4*a^4*c^2)*
d^3*e^4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c)*d*e^6 + ((b
^2*c^4 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*(b^4*c^2 - 3*
a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2*b*c^3)*d^3*e
^4 + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*b^3*c - 4*a^3
*b*c^2)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 - 4*a*c^5)*d^7
 - 2*(b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d^5*e^2 + (2*b
^5*c - 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c - 15*a^2*b^2*c
^2 + 12*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (3*a^2*b^4 - 1
3*a^3*b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^2 + ((b^3*c^3
 - 4*a*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6*e + 3*(b^5*c
 - 4*a*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^4
*e^3 + (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^3*b^2*c - 4*a
^4*c^2)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4*a^5*c)*e^7)*
x), -1/2*((4*(B*a*b^2*c - 4*B*a^2*c^2)*d^3*e - (B*a*b^3 - 24*A*a^2*c^2 - 2*
(2*B*a^2*b - 3*A*a*b^2)*c)*d^2*e^2 - (2*B*a^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3
- 3*A*a^2*b)*c)*d*e^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^2*e^2 - (B*b^3*c - 24*
A*a*c^3 - 2*(2*B*a*b - 3*A*b^2)*c^2)*d*e^3 + (4*(2*B*a^2 - 3*A*a*b)*c^2 - (
2*B*a*b^2 - 3*A*b^3)*c)*e^4)*x^3 + (4*(B*b^2*c^2 - 4*B*a*c^3)*d^3*e + 3*(B*
b^3*c + 8*A*a*c^3 - 2*(2*B*a*b + A*b^2)*c^2)*d^2*e^2 - (B*b^4 - 4*(2*B*a^2
+ 3*A*a*b)*c^2 - (2*B*a*b^2 - 3*A*b^3)*c)*d*e^3 - (2*B*a*b^3 - 3*A*b^4 - 4*
(2*B*a^2*b - 3*A*a*b^2)*c)*e^4)*x^2 + (4*(B*b^3*c - 4*B*a*b*c^2)*d^3*e - (B
*b^4 + 8*(2*B*a^2 - 3*A*a*b)*c^2 - 2*(4*B*a*b^2 - 3*A*b^3)*c)*d^2*e^2 - 3*(
B*a*b^3 - A*b^4 - 8*A*a^2*c^2 - 2*(2*B*a^2*b - 3*A*a*b^2)*c)*d*e^3 - (2*B*a
^2*b^2 - 3*A*a*b^3 - 4*(2*B*a^3 - 3*A*a^2*b)*c)*e^4)*x)*sqrt(-c*d^2 + b*d*e
 - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b
*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c
*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*(2*(2*B*a - A*b
)*c^3*d^5 - 2*(4*A*a*c^3 + (4*B*a*b - 3*A*b^2)*c^2)*d^4*e - (4*(B*a^2 - 3*A
*a*b)*c^2 - (7*B*a*b^2 - 6*A*b^3)*c)*d^3*e^2 - (3*B*a*b^3 - 2*A*b^4 + 4*A*a
^2*c^2 - (4*B*a^2*b - 3*A*a*b^2)*c)*d^2*e^3 + (3*B*a^2*b^2 - A*a*b^3 - 2*(4
*B*a^3 - A*a^2*b)*c)*d*e^4 - (A*a^2*b^2 - 4*A*a^3*c)*e^5 + (2*(B*b*c^3 - 2*
A*c^4)*d^4*e - (B*b^2*c^2 + 4*(3*B*a - 2*A*b)*c^3)*d^3*e^2 - (B*b^3*c - 4*A
*a*c^3 - (16*B*a*b - 7*A*b^2)*c^2)*d^2*e^3 - (4*(3*B*a^2 + A*a*b)*c^2 + (B*
a*b^2 - 3*A*b^3)*c)*d*e^4 + (8*A*a^2*c^2 + (2*B*a^2*b - 3*A*a*b^2)*c)*e^5)*
x^2 + (2*(B*b*c^3 - 2*A*c^4)*d^5 - 2*(B*b^2*c^2 + (2*B*a - 3*A*b)*c^3)*d^4*
e + (B*b^3*c - 8*A*a*c^3)*d^3*e^2 - (B*b^4 + 8*(B*a^2 - 2*A*a*b)*c^2 - (8*B
*a*b^2 - 5*A*b^3)*c)*d^2*e^3 - (B*a*b^3 - 3*A*b^4 + 4*A*a^2*c^2 + 2*(B*a^2*
b + 4*A*a*b^2)*c)*d*e^4 + (2*B*a^2*b^2 - 3*A*a*b^3 - 2*(2*B*a^3 - 5*A*a^2*b
)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^3 - 4*a^2*c^4)*d^7 - 3*(a*b^3
*c^2 - 4*a^2*b*c^3)*d^6*e + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^5*e^2
 - (a*b^5 + 2*a^2*b^3*c - 24*a^3*b*c^2)*d^4*e^3 + 3*(a^2*b^4 - 3*a^3*b^2*c
- 4*a^4*c^2)*d^3*e^4 - 3*(a^3*b^3 - 4*a^4*b*c)*d^2*e^5 + (a^4*b^2 - 4*a^5*c
)*d*e^6 + ((b^2*c^4 - 4*a*c^5)*d^6*e - 3*(b^3*c^3 - 4*a*b*c^4)*d^5*e^2 + 3*
(b^4*c^2 - 3*a*b^2*c^3 - 4*a^2*c^4)*d^4*e^3 - (b^5*c + 2*a*b^3*c^2 - 24*a^2
*b*c^3)*d^3*e^4 + 3*(a*b^4*c - 3*a^2*b^2*c^2 - 4*a^3*c^3)*d^2*e^5 - 3*(a^2*
b^3*c - 4*a^3*b*c^2)*d*e^6 + (a^3*b^2*c - 4*a^4*c^2)*e^7)*x^3 + ((b^2*c^4 -
 4*a*c^5)*d^7 - 2*(b^3*c^3 - 4*a*b*c^4)*d^6*e + 3*(a*b^2*c^3 - 4*a^2*c^4)*d
^5*e^2 + (2*b^5*c - 11*a*b^3*c^2 + 12*a^2*b*c^3)*d^4*e^3 - (b^6 - a*b^4*c -
 15*a^2*b^2*c^2 + 12*a^3*c^3)*d^3*e^4 + 3*(a*b^5 - 4*a^2*b^3*c)*d^2*e^5 - (
3*a^2*b^4 - 13*a^3*b^2*c + 4*a^4*c^2)*d*e^6 + (a^3*b^3 - 4*a^4*b*c)*e^7)*x^
2 + ((b^3*c^3 - 4*a*b*c^4)*d^7 - (3*b^4*c^2 - 13*a*b^2*c^3 + 4*a^2*c^4)*d^6
*e + 3*(b^5*c - 4*a*b^3*c^2)*d^5*e^2 - (b^6 - a*b^4*c - 15*a^2*b^2*c^2 + 12
*a^3*c^3)*d^4*e^3 + (2*a*b^5 - 11*a^2*b^3*c + 12*a^3*b*c^2)*d^3*e^4 + 3*(a^
3*b^2*c - 4*a^4*c^2)*d^2*e^5 - 2*(a^3*b^3 - 4*a^4*b*c)*d*e^6 + (a^4*b^2 - 4
*a^5*c)*e^7)*x)]
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.06, size = 3090, normalized size = 9.25

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] -12*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d*A-3*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c
-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b
^2*c*B*d+3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((
(b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)
^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(
x+d/e))*b*A-1/(a*e^2-b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/
e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-B/(a*e^2-b*d*e+c*d^2)/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))+12/e*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)
^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*B*d+6/e*c/(a*e^
2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*b*B*d-6/e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+
(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^3*B+3*e^2/(a*e
^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d
*e+c*d^2)/e^2)^(1/2)*x*b^2*c*A+B/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*
d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)-3/2*e^2/(a*e^2-b*d*e+c*d^2)^2/(
(x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A+3/2*e^
2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*A+3*e/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*
e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d*A+3/(a*e^2-b*d*e+c*d^
2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d
*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x
+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*c*d^2*B+3/2*e/(a*e^2-b*d*e
+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
*b*B*d+12/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e
)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c^2*d^2*B-12/e/(a*e^2-b*d*e+c*d^2)^2
/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*x*c^3*d^3*B-6*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c
*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d*A-3/(a*e^2-b*d*e+c*d^2
)^2/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*c*d^2
*B-B/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*
e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2+12/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^3*d^2*A+6/(
a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-
b*d*e+c*d^2)/e^2)^(1/2)*b^2*c*d^2*B-3/2*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^3*B*d-
3/2*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln(((b*e-2*c*d)
*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+
d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*b*B
*d+6/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(
a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c^2*d^2*A-2*B/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^
2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c-
8*c^2/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a
*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*A-4*c/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/
e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*A+1/e/(a*e^2-
b*d*e+c*d^2)/(x+d/e)/((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)
/e^2)^(1/2)*B*d-3*e/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*l
n(((b*e-2*c*d)*(x+d/e)/e+2*(a*e^2-b*d*e+c*d^2)/e^2+2*((a*e^2-b*d*e+c*d^2)/e
^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)*(x+d/e)/e+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)
)/(x+d/e))*c*d*A
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                 +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2479 $\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=545

$$\frac{3e\left(Ae\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)-B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{-2ae+x(2}{2\sqrt{a+bx+cx^2}}\right.}{8\left(ae^2-bde+cd^2\right)^{7/2}}$$

```
[Out] 3/8*e*(A*e*(16*c^2*d^2+5*b^2*e^2-4*c*e*(a*e+4*b*d))-B*(8*c^2*d^3-4*c*d*e*(3
*a*e+b*d)+b*e^2*(4*a*e+b*d)))*arctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2
-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(7/2)+2*(a*B*(
-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*x)/(-4*
a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^2/(c*x^2+b*x+a)^(1/2)+1/2*e*(b^2*e*(-5
*A*e+B*d)-4*c*(-3*A*a*e^2+2*A*c*d^2+5*B*a*d*e)+4*b*(2*A*c*d*e+B*a*e^2+B*c*d
^2))*(c*x^2+b*x+a)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^2-1/4*e
*(3*b^3*e^2*(-5*A*e+B*d)-2*b^2*e*(-19*A*c*d*e-6*B*a*e^2+5*B*c*d^2)-4*b*c*(-
13*A*a*e^3+6*A*c*d^2*e+9*B*a*d*e^2+2*B*c*d^3)+8*c*(A*c*d*(-13*a*e^2+2*c*d^2
)+a*B*e*(-4*a*e^2+11*c*d^2)))*(c*x^2+b*x+a)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e
+c*d^2)^3/(e*x+d)
```

Rubi [A] time = 0.93, antiderivative size = 545, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$\frac{3e\left(Ae\left(-4ce(ae+4bd)+5b^2e^2+16c^2d^2\right)-B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{-2ae+x(2}{2\sqrt{a+bx+cx^2}}\right.}{8\left(ae^2-bde+cd^2\right)^{7/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^2*Sqr
t[a + b*x + c*x^2]) + (e*(b^2*e*(B*d - 5*A*e) - 4*c*(2*A*c*d^2 + 5*a*B*d*e
- 3*a*A*e^2) + 4*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + b*x + c*x^2])/
(2*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^2) - (e*(3*b^3*e^2*(B*
d - 5*A*e) - 2*b^2*e*(5*B*c*d^2 - 19*A*c*d*e - 6*a*B*e^2) - 4*b*c*(2*B*c*d^
3 + 6*A*c*d^2*e + 9*a*B*d*e^2 - 13*a*A*e^3) + 8*c*(A*c*d*(2*c*d^2 - 13*a*e^
2) + a*B*e*(11*c*d^2 - 4*a*e^2)))*Sqrt[a + b*x + c*x^2])/(4*(b^2 - 4*a*c)*(
c*d^2 - b*d*e + a*e^2)^3*(d + e*x)) + (3*e*(A*e*(16*c^2*d^2 + 5*b^2*e^2 - 4
*c*e*(4*b*d + a*e)) - B*(8*c^2*d^3 - 4*c*d*e*(b*d + 3*a*e) + b*e^2*(b*d + 4
*a*e)))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e
^2]*Sqrt[a + b*x + c*x^2])])/(8*(c*d^2 - b*d*e + a*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^3\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}-\frac{2}{}$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}+\frac{e}{}$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}+\frac{e}{}$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}+\frac{e}{}$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)^2\sqrt{a+bx+cx^2}}+\frac{e}{}$$

Mathematica [**A**]   time = 3.35, size = 527, normalized size = 0.97

$$2\left(\frac{3e\left(b^2-4ac\right)\left(Ae\left(4ce(ae+4bd)-5b^2e^2-16c^2d^2\right)+B\left(-4cde(3ae+bd)+be^2(4ae+bd)+8c^2d^3\right)\right)\tanh^{-1}\left(\frac{2ae-bd+bex-2cdx}{2\sqrt{a+x(b+cx)}\sqrt{e(ae-bd)+cd^2}}\right)}{16\left(e(ae-bd)+cd^2\right)^{5/2}}+\frac{e\sqrt{a+x(b+cx)}\left(4\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*((e*(b^2*e*(B*d - 5*A*e) - 4*c*(2*A*c*d^2 + 5*a*B*d*e - 3*a*A*e^2) + 4*b
*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + x*(b + c*x)])/(4*(c*d^2 + e*(-(b
*d) + a*e))*(d + e*x)^2) - (e*(3*b^3*e^2*(B*d - 5*A*e) + 2*b^2*e*(-5*B*c*d^
2 + 19*A*c*d*e + 6*a*B*e^2) - 4*b*c*(2*B*c*d^3 + 6*A*c*d^2*e + 9*a*B*d*e^2
- 13*a*A*e^3) + 8*c*(A*c*d*(2*c*d^2 - 13*a*e^2) + a*B*e*(11*c*d^2 - 4*a*e^2
)))*Sqrt[a + x*(b + c*x)])/(8*(c*d^2 + e*(-(b*d) + a*e))^2*(d + e*x)) + (A*
b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d*x) + A*b*c*(-d + e*x) + a*B*(-(b*e) +
2*c*(d - e*x)))/((d + e*x)^2*Sqrt[a + x*(b + c*x)]) + (3*(b^2 - 4*a*c)*e*(A
*e*(-16*c^2*d^2 - 5*b^2*e^2 + 4*c*e*(4*b*d + a*e)) + B*(8*c^2*d^3 - 4*c*d*e
*(b*d + 3*a*e) + b*e^2*(b*d + 4*a*e)))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x +
b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(16*(c*d^
2 + e*(-(b*d) + a*e))^(5/2))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [**B**]   time = 134.25, size = 8054, normalized size = 14.78

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] [1/16*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^5*e - 4*(B*a*b^3*c - 16*A*a^2*c^3
 - 4*(B*a^2*b - A*a*b^2)*c^2)*d^4*e^2 + (B*a*b^4 + 16*(3*B*a^3 - 4*A*a^2*b)
*c^2 - 16*(B*a^2*b^2 - A*a*b^3)*c)*d^3*e^3 + (4*B*a^2*b^3 - 5*A*a*b^4 - 16*
A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d^2*e^4 + (8*(B*b^2*c^3 - 4*B*a*
c^4)*d^3*e^3 - 4*(B*b^3*c^2 - 16*A*a*c^4 - 4*(B*a*b - A*b^2)*c^3)*d^2*e^4 +
 (B*b^4*c + 16*(3*B*a^2 - 4*A*a*b)*c^3 - 16*(B*a*b^2 - A*b^3)*c^2)*d*e^5 -
(16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (4*B*a*b^3 - 5*A*b^4)*c)*e^
6)*x^4 + (16*(B*b^2*c^3 - 4*B*a*c^4)*d^4*e^2 - 32*(A*b^2*c^3 - 4*A*a*c^4)*d
^3*e^3 - 2*(B*b^4*c - 16*(3*B*a^2 - 2*A*a*b)*c^3 + 8*(B*a*b^2 - A*b^3)*c^2)
*d^2*e^4 + (B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b - A*a*b^2)*c^2 - 2*(4*B*a*b^
3 - 3*A*b^4)*c)*d*e^5 + (4*B*a*b^4 - 5*A*b^5 - 16*A*a^2*b*c^2 - 8*(2*B*a^2*
b^2 - 3*A*a*b^3)*c)*e^6)*x^3 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^5*e + 4*(3*B*b^
3*c^2 + 16*A*a*c^4 - 4*(3*B*a*b + A*b^2)*c^3)*d^4*e^2 - (7*B*b^4*c - 16*(B*
a^2 + 4*A*a*b)*c^3 - 8*(3*B*a*b^2 - 2*A*b^3)*c^2)*d^3*e^3 + (2*B*b^5 + 48*A
*a^2*c^3 + 24*(4*B*a^2*b - 5*A*a*b^2)*c^2 - (32*B*a*b^3 - 27*A*b^4)*c)*d^2*
e^4 + (9*B*a*b^4 - 10*A*b^5 + 48*(B*a^3 - 2*A*a^2*b)*c^2 - 16*(3*B*a^2*b^2
- 4*A*a*b^3)*c)*d*e^5 + (4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^
3*b - 3*A*a^2*b^2)*c)*e^6)*x^2 + (8*(B*b^3*c^2 - 4*B*a*b*c^3)*d^5*e - 4*(B*
b^4*c + 16*(B*a^2 - A*a*b)*c^3 - 4*(2*B*a*b^2 - A*b^3)*c^2)*d^4*e^2 + (B*b^
5 + 128*A*a^2*c^3 + 16*(5*B*a^2*b - 6*A*a*b^2)*c^2 - 8*(3*B*a*b^3 - 2*A*b^4
)*c)*d^3*e^3 + (6*B*a*b^4 - 5*A*b^5 + 48*(2*B*a^3 - 3*A*a^2*b)*c^2 - 8*(6*B
*a^2*b^2 - 7*A*a*b^3)*c)*d^2*e^4 + 2*(4*B*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^
2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d*e^5)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*lo
g((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^
2 + 4*a*c)*e^2)*x^2 + 4*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(
b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)
*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*(8*(2*B*a - A*b)*c^4*d^7 - 8*(6*A*a
```

```
*c^4 + (5*B*a*b - 4*A*b^2)*c^3)*d^6*e - 4*(4*(5*B*a^2 - 7*A*a*b)*c^3 - 3*(5
*B*a*b^2 - 4*A*b^3)*c^2)*d^5*e^2 + (32*A*a^2*c^3 + 4*(29*B*a^2*b - 24*A*a*b
^2)*c^2 - (49*B*a*b^3 - 32*A*b^4)*c)*d^4*e^3 + (13*B*a*b^4 - 8*A*b^5 - 44*(
2*B*a^3 + A*a^2*b)*c^2 - (10*B*a^2*b^2 - 33*A*a*b^3)*c)*d^3*e^4 - (11*B*a^2
*b^3 + A*a*b^4 - 88*A*a^3*c^2 - 2*(18*B*a^3*b - 7*A*a^2*b^2)*c)*d^2*e^5 - (
2*B*a^3*b^2 - 11*A*a^2*b^3 - 4*(2*B*a^4 - 11*A*a^3*b)*c)*d*e^6 - 2*(A*a^3*b
^2 - 4*A*a^4*c)*e^7 + (8*(B*b*c^4 - 2*A*c^5)*d^5*e^2 + 2*(B*b^2*c^3 - 4*(11
*B*a - 5*A*b)*c^4)*d^4*e^3 - (13*B*b^3*c^2 - 88*A*a*c^4 - 2*(66*B*a*b - 31*
A*b^2)*c^3)*d^3*e^4 + (3*B*b^4*c - 4*(14*B*a^2 + 33*A*a*b)*c^3 - (38*B*a*b^
2 - 53*A*b^3)*c^2)*d^2*e^5 + (104*A*a^2*c^3 + 2*(2*B*a^2*b + 7*A*a*b^2)*c^2
 + 3*(3*B*a*b^3 - 5*A*b^4)*c)*d*e^6 + (4*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*
B*a^2*b^2 - 5*A*a*b^3)*c)*e^7)*x^3 + (16*(B*b*c^4 - 2*A*c^5)*d^6*e - 4*(B*b
^2*c^3 + 2*(16*B*a - 9*A*b)*c^4)*d^5*e^2 - (7*B*b^3*c^2 - 80*A*a*c^4 - 4*(3
7*B*a*b - 20*A*b^2)*c^3)*d^4*e^3 - (8*B*b^4*c + 4*(34*B*a^2 + 7*A*a*b)*c^3
 - (26*B*a*b^2 + 27*A*b^3)*c^2)*d^3*e^4 + (3*B*b^5 + 136*A*a^2*c^3 + 2*(26*B
*a^2*b - 73*A*a*b^2)*c^2 - (25*B*a*b^3 - 28*A*b^4)*c)*d^2*e^5 + (9*B*a*b^4
 - 15*A*b^5 - 4*(2*B*a^3 - 5*A*a^2*b)*c^2 - (22*B*a^2*b^2 - 49*A*a*b^3)*c)*d
*e^6 - (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2
*b^2)*c)*e^7)*x^2 + (8*(B*b*c^4 - 2*A*c^5)*d^7 - 8*(B*b^2*c^3 + (2*B*a - 3*
A*b)*c^4)*d^6*e + 4*(3*B*b^3*c^2 - 16*A*a*c^4 - 4*(3*B*a*b - A*b^2)*c^3)*d^
5*e^2 - (17*B*b^4*c + 8*(17*B*a^2 - 30*A*a*b)*c^3 - 2*(71*B*a*b^2 - 40*A*b^
3)*c^2)*d^4*e^3 + (5*B*b^5 + 40*A*a^2*c^3 + 2*(58*B*a^2*b - 137*A*a*b^2)*c^
2 - (79*B*a*b^3 - 81*A*b^4)*c)*d^3*e^4 + (16*B*a*b^4 - 25*A*b^5 - 4*(26*B*a
^3 - 19*A*a^2*b)*c^2 - (2*B*a^2*b^2 - 63*A*a*b^3)*c)*d^2*e^5 - (17*B*a^2*b^
3 - 20*A*a*b^4 - 88*A*a^3*c^2 - 2*(26*B*a^3*b - 47*A*a^2*b^2)*c)*d*e^6 - (4
*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 - 5*A*a^3*b)*c)*e^7)*x)*sqrt(c*x^2 +
b*x + a))/((a*b^2*c^4 - 4*a^2*c^5)*d^10 - 4*(a*b^3*c^3 - 4*a^2*b*c^4)*d^9*e
 + 2*(3*a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a^3*c^4)*d^8*e^2 - 4*(a*b^5*c - a^2*
b^3*c^2 - 12*a^3*b*c^3)*d^7*e^3 + (a*b^6 + 8*a^2*b^4*c - 42*a^3*b^2*c^2 - 2
4*a^4*c^3)*d^6*e^4 - 4*(a^2*b^5 - a^3*b^3*c - 12*a^4*b*c^2)*d^5*e^5 + 2*(3*
a^3*b^4 - 10*a^4*b^2*c - 8*a^5*c^2)*d^4*e^6 - 4*(a^4*b^3 - 4*a^5*b*c)*d^3*e
^7 + (a^5*b^2 - 4*a^6*c)*d^2*e^8 + ((b^2*c^5 - 4*a*c^6)*d^8*e^2 - 4*(b^3*c^
4 - 4*a*b*c^5)*d^7*e^3 + 2*(3*b^4*c^3 - 10*a*b^2*c^4 - 8*a^2*c^5)*d^6*e^4 -
 4*(b^5*c^2 - a*b^3*c^3 - 12*a^2*b*c^4)*d^5*e^5 + (b^6*c + 8*a*b^4*c^2 - 42
*a^2*b^2*c^3 - 24*a^3*c^4)*d^4*e^6 - 4*(a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^
3)*d^3*e^7 + 2*(3*a^2*b^4*c - 10*a^3*b^2*c^2 - 8*a^4*c^3)*d^2*e^8 - 4*(a^3*
b^3*c - 4*a^4*b*c^2)*d*e^9 + (a^4*b^2*c - 4*a^5*c^2)*e^10)*x^4 + (2*(b^2*c^
5 - 4*a*c^6)*d^9*e - 7*(b^3*c^4 - 4*a*b*c^5)*d^8*e^2 + 8*(b^4*c^3 - 3*a*b^2
*c^4 - 4*a^2*c^5)*d^7*e^3 - 2*(b^5*c^2 + 6*a*b^3*c^3 - 40*a^2*b*c^4)*d^6*e^
4 - 2*(b^6*c - 10*a*b^4*c^2 + 18*a^2*b^2*c^3 + 24*a^3*c^4)*d^5*e^5 + (b^7 -
 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^4*e^6 - 4*(a*b^6 - 4*a^2*b^4*c - 2*a^3*b^
2*c^2 + 8*a^4*c^3)*d^3*e^7 + 2*(3*a^2*b^5 - 14*a^3*b^3*c + 8*a^4*b*c^2)*d^2
*e^8 - 2*(2*a^3*b^4 - 9*a^4*b^2*c + 4*a^5*c^2)*d*e^9 + (a^4*b^3 - 4*a^5*b*c
)*e^10)*x^3 + ((b^2*c^5 - 4*a*c^6)*d^10 - 2*(b^3*c^4 - 4*a*b*c^5)*d^9*e - (
2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*d^8*e^2 + 8*(b^5*c^2 - 5*a*b^3*c^3 +
 4*a^2*b*c^4)*d^7*e^3 - (7*b^6*c - 22*a*b^4*c^2 - 34*a^2*b^2*c^3 + 40*a^3*c
^4)*d^6*e^4 + 2*(b^7 + 4*a*b^5*c - 38*a^2*b^3*c^2 + 24*a^3*b*c^3)*d^5*e^5 -
 (7*a*b^6 - 22*a^2*b^4*c - 34*a^3*b^2*c^2 + 40*a^4*c^3)*d^4*e^6 + 8*(a^2*b^
5 - 5*a^3*b^3*c + 4*a^4*b*c^2)*d^3*e^7 - (2*a^3*b^4 - 13*a^4*b^2*c + 20*a^5
*c^2)*d^2*e^8 - 2*(a^4*b^3 - 4*a^5*b*c)*d*e^9 + (a^5*b^2 - 4*a^6*c)*e^10)*x
^2 + ((b^3*c^4 - 4*a*b*c^5)*d^10 - 2*(2*b^4*c^3 - 9*a*b^2*c^4 + 4*a^2*c^5)*
d^9*e + 2*(3*b^5*c^2 - 14*a*b^3*c^3 + 8*a^2*b*c^4)*d^8*e^2 - 4*(b^6*c - 4*a
*b^4*c^2 - 2*a^2*b^2*c^3 + 8*a^3*c^4)*d^7*e^3 + (b^7 - 34*a^2*b^3*c^2 + 72*
a^3*b*c^3)*d^6*e^4 - 2*(a*b^6 - 10*a^2*b^4*c + 18*a^3*b^2*c^2 + 24*a^4*c^3)
*d^5*e^5 - 2*(a^2*b^5 + 6*a^3*b^3*c - 40*a^4*b*c^2)*d^4*e^6 + 8*(a^3*b^4 -
3*a^4*b^2*c - 4*a^5*c^2)*d^3*e^7 - 7*(a^4*b^3 - 4*a^5*b*c)*d^2*e^8 + 2*(a^5
*b^2 - 4*a^6*c)*d*e^9)*x), -1/8*(3*(8*(B*a*b^2*c^2 - 4*B*a^2*c^3)*d^5*e - 4
*(B*a*b^3*c - 16*A*a^2*c^3 - 4*(B*a^2*b - A*a*b^2)*c^2)*d^4*e^2 + (B*a*b^4
+ 16*(3*B*a^3 - 4*A*a^2*b)*c^2 - 16*(B*a^2*b^2 - A*a*b^3)*c)*d^3*e^3 + (4*B
```

```
*a^2*b^3 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d^2*e^
4 + (8*(B*b^2*c^3 - 4*B*a*c^4)*d^3*e^3 - 4*(B*b^3*c^2 - 16*A*a*c^4 - 4*(B*a
*b - A*b^2)*c^3)*d^2*e^4 + (B*b^4*c + 16*(3*B*a^2 - 4*A*a*b)*c^3 - 16*(B*a*
b^2 - A*b^3)*c^2)*d*e^5 - (16*A*a^2*c^3 + 8*(2*B*a^2*b - 3*A*a*b^2)*c^2 - (
4*B*a*b^3 - 5*A*b^4)*c)*e^6)*x^4 + (16*(B*b^2*c^3 - 4*B*a*c^4)*d^4*e^2 - 32
*(A*b^2*c^3 - 4*A*a*c^4)*d^3*e^3 - 2*(B*b^4*c - 16*(3*B*a^2 - 2*A*a*b)*c^3
+ 8*(B*a*b^2 - A*b^3)*c^2)*d^2*e^4 + (B*b^5 - 32*A*a^2*c^3 + 16*(B*a^2*b -
A*a*b^2)*c^2 - 2*(4*B*a*b^3 - 3*A*b^4)*c)*d*e^5 + (4*B*a*b^4 - 5*A*b^5 - 16
*A*a^2*b*c^2 - 8*(2*B*a^2*b^2 - 3*A*a*b^3)*c)*e^6)*x^3 + (8*(B*b^2*c^3 - 4*
B*a*c^4)*d^5*e + 4*(3*B*b^3*c^2 + 16*A*a*c^4 - 4*(3*B*a*b + A*b^2)*c^3)*d^4
*e^2 - (7*B*b^4*c - 16*(B*a^2 + 4*A*a*b)*c^3 - 8*(3*B*a*b^2 - 2*A*b^3)*c^2)
*d^3*e^3 + (2*B*b^5 + 48*A*a^2*c^3 + 24*(4*B*a^2*b - 5*A*a*b^2)*c^2 - (32*B
*a*b^3 - 27*A*b^4)*c)*d^2*e^4 + (9*B*a*b^4 - 10*A*b^5 + 48*(B*a^3 - 2*A*a^2
*b)*c^2 - 16*(3*B*a^2*b^2 - 4*A*a*b^3)*c)*d*e^5 + (4*B*a^2*b^3 - 5*A*a*b^4
- 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*e^6)*x^2 + (8*(B*b^3*c^2 -
4*B*a*b*c^3)*d^5*e - 4*(B*b^4*c + 16*(B*a^2 - A*a*b)*c^3 - 4*(2*B*a*b^2 - A
*b^3)*c^2)*d^4*e^2 + (B*b^5 + 128*A*a^2*c^3 + 16*(5*B*a^2*b - 6*A*a*b^2)*c^
2 - 8*(3*B*a*b^3 - 2*A*b^4)*c)*d^3*e^3 + (6*B*a*b^4 - 5*A*b^5 + 48*(2*B*a^3
 - 3*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 - 7*A*a*b^3)*c)*d^2*e^4 + 2*(4*B*a^2*b^3
 - 5*A*a*b^4 - 16*A*a^3*c^2 - 8*(2*B*a^3*b - 3*A*a^2*b^2)*c)*d*e^5)*x)*sqrt
(-c*d^2 + b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^
2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 +
 (c^2*d^2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) - 2*
(8*(2*B*a - A*b)*c^4*d^7 - 8*(6*A*a*c^4 + (5*B*a*b - 4*A*b^2)*c^3)*d^6*e -
4*(4*(5*B*a^2 - 7*A*a*b)*c^3 - 3*(5*B*a*b^2 - 4*A*b^3)*c^2)*d^5*e^2 + (32*A
*a^2*c^3 + 4*(29*B*a^2*b - 24*A*a*b^2)*c^2 - (49*B*a*b^3 - 32*A*b^4)*c)*d^4
*e^3 + (13*B*a*b^4 - 8*A*b^5 - 44*(2*B*a^3 + A*a^2*b)*c^2 - (10*B*a^2*b^2 -
 33*A*a*b^3)*c)*d^3*e^4 - (11*B*a^2*b^3 + A*a*b^4 - 88*A*a^3*c^2 - 2*(18*B*
a^3*b - 7*A*a^2*b^2)*c)*d^2*e^5 - (2*B*a^3*b^2 - 11*A*a^2*b^3 - 4*(2*B*a^4
- 11*A*a^3*b)*c)*d*e^6 - 2*(A*a^3*b^2 - 4*A*a^4*c)*e^7 + (8*(B*b*c^4 - 2*A*
c^5)*d^5*e^2 + 2*(B*b^2*c^3 - 4*(11*B*a - 5*A*b)*c^4)*d^4*e^3 - (13*B*b^3*c
^2 - 88*A*a*c^4 - 2*(66*B*a*b - 31*A*b^2)*c^3)*d^3*e^4 + (3*B*b^4*c - 4*(14
*B*a^2 + 33*A*a*b)*c^3 - (38*B*a*b^2 - 53*A*b^3)*c^2)*d^2*e^5 + (104*A*a^2*
c^3 + 2*(2*B*a^2*b + 7*A*a*b^2)*c^2 + 3*(3*B*a*b^3 - 5*A*b^4)*c)*d*e^6 + (4
*(8*B*a^3 - 13*A*a^2*b)*c^2 - 3*(4*B*a^2*b^2 - 5*A*a*b^3)*c)*e^7)*x^3 + (16
*(B*b*c^4 - 2*A*c^5)*d^6*e - 4*(B*b^2*c^3 + 2*(16*B*a - 9*A*b)*c^4)*d^5*e^2
 - (7*B*b^3*c^2 - 80*A*a*c^4 - 4*(37*B*a*b - 20*A*b^2)*c^3)*d^4*e^3 - (8*B*
b^4*c + 4*(34*B*a^2 + 7*A*a*b)*c^3 - (26*B*a*b^2 + 27*A*b^3)*c^2)*d^3*e^4 +
 (3*B*b^5 + 136*A*a^2*c^3 + 2*(26*B*a^2*b - 73*A*a*b^2)*c^2 - (25*B*a*b^3 -
 28*A*b^4)*c)*d^2*e^5 + (9*B*a*b^4 - 15*A*b^5 - 4*(2*B*a^3 - 5*A*a^2*b)*c^2
 - (22*B*a^2*b^2 - 49*A*a*b^3)*c)*d*e^6 - (12*B*a^2*b^3 - 15*A*a*b^4 - 24*A
*a^3*c^2 - 2*(20*B*a^3*b - 31*A*a^2*b^2)*c)*e^7)*x^2 + (8*(B*b*c^4 - 2*A*c^
5)*d^7 - 8*(B*b^2*c^3 + (2*B*a - 3*A*b)*c^4)*d^6*e + 4*(3*B*b^3*c^2 - 16*A*
a*c^4 - 4*(3*B*a*b - A*b^2)*c^3)*d^5*e^2 - (17*B*b^4*c + 8*(17*B*a^2 - 30*A
*a*b)*c^3 - 2*(71*B*a*b^2 - 40*A*b^3)*c^2)*d^4*e^3 + (5*B*b^5 + 40*A*a^2*c^
3 + 2*(58*B*a^2*b - 137*A*a*b^2)*c^2 - (79*B*a*b^3 - 81*A*b^4)*c)*d^3*e^4 +
 (16*B*a*b^4 - 25*A*b^5 - 4*(26*B*a^3 - 19*A*a^2*b)*c^2 - (2*B*a^2*b^2 - 63
*A*a*b^3)*c)*d^2*e^5 - (17*B*a^2*b^3 - 20*A*a*b^4 - 88*A*a^3*c^2 - 2*(26*B*
a^3*b - 47*A*a^2*b^2)*c)*d*e^6 - (4*B*a^3*b^2 - 5*A*a^2*b^3 - 4*(4*B*a^4 -
5*A*a^3*b)*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a*b^2*c^4 - 4*a^2*c^5)*d^10
- 4*(a*b^3*c^3 - 4*a^2*b*c^4)*d^9*e + 2*(3*a*b^4*c^2 - 10*a^2*b^2*c^3 - 8*a
^3*c^4)*d^8*e^2 - 4*(a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^3)*d^7*e^3 + (a*b^6
 + 8*a^2*b^4*c - 42*a^3*b^2*c^2 - 24*a^4*c^3)*d^6*e^4 - 4*(a^2*b^5 - a^3*b^
3*c - 12*a^4*b*c^2)*d^5*e^5 + 2*(3*a^3*b^4 - 10*a^4*b^2*c - 8*a^5*c^2)*d^4*
e^6 - 4*(a^4*b^3 - 4*a^5*b*c)*d^3*e^7 + (a^5*b^2 - 4*a^6*c)*d^2*e^8 + ((b^2
*c^5 - 4*a*c^6)*d^8*e^2 - 4*(b^3*c^4 - 4*a*b*c^5)*d^7*e^3 + 2*(3*b^4*c^3 -
10*a*b^2*c^4 - 8*a^2*c^5)*d^6*e^4 - 4*(b^5*c^2 - a*b^3*c^3 - 12*a^2*b*c^4)*
d^5*e^5 + (b^6*c + 8*a*b^4*c^2 - 42*a^2*b^2*c^3 - 24*a^3*c^4)*d^4*e^6 - 4*(
a*b^5*c - a^2*b^3*c^2 - 12*a^3*b*c^3)*d^3*e^7 + 2*(3*a^2*b^4*c - 10*a^3*b^2
```

```
*c^2 - 8*a^4*c^3)*d^2*e^8 - 4*(a^3*b^3*c - 4*a^4*b*c^2)*d*e^9 + (a^4*b^2*c
- 4*a^5*c^2)*e^10)*x^4 + (2*(b^2*c^5 - 4*a*c^6)*d^9*e - 7*(b^3*c^4 - 4*a*b*
c^5)*d^8*e^2 + 8*(b^4*c^3 - 3*a*b^2*c^4 - 4*a^2*c^5)*d^7*e^3 - 2*(b^5*c^2 +
 6*a*b^3*c^3 - 40*a^2*b*c^4)*d^6*e^4 - 2*(b^6*c - 10*a*b^4*c^2 + 18*a^2*b^2
*c^3 + 24*a^3*c^4)*d^5*e^5 + (b^7 - 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^4*e^6
- 4*(a*b^6 - 4*a^2*b^4*c - 2*a^3*b^2*c^2 + 8*a^4*c^3)*d^3*e^7 + 2*(3*a^2*b^
5 - 14*a^3*b^3*c + 8*a^4*b*c^2)*d^2*e^8 - 2*(2*a^3*b^4 - 9*a^4*b^2*c + 4*a^
5*c^2)*d*e^9 + (a^4*b^3 - 4*a^5*b*c)*e^10)*x^3 + ((b^2*c^5 - 4*a*c^6)*d^10
- 2*(b^3*c^4 - 4*a*b*c^5)*d^9*e - (2*b^4*c^3 - 13*a*b^2*c^4 + 20*a^2*c^5)*d
^8*e^2 + 8*(b^5*c^2 - 5*a*b^3*c^3 + 4*a^2*b*c^4)*d^7*e^3 - (7*b^6*c - 22*a*
b^4*c^2 - 34*a^2*b^2*c^3 + 40*a^3*c^4)*d^6*e^4 + 2*(b^7 + 4*a*b^5*c - 38*a^
2*b^3*c^2 + 24*a^3*b*c^3)*d^5*e^5 - (7*a*b^6 - 22*a^2*b^4*c - 34*a^3*b^2*c^
2 + 40*a^4*c^3)*d^4*e^6 + 8*(a^2*b^5 - 5*a^3*b^3*c + 4*a^4*b*c^2)*d^3*e^7 -
 (2*a^3*b^4 - 13*a^4*b^2*c + 20*a^5*c^2)*d^2*e^8 - 2*(a^4*b^3 - 4*a^5*b*c)*
d*e^9 + (a^5*b^2 - 4*a^6*c)*e^10)*x^2 + ((b^3*c^4 - 4*a*b*c^5)*d^10 - 2*(2*
b^4*c^3 - 9*a*b^2*c^4 + 4*a^2*c^5)*d^9*e + 2*(3*b^5*c^2 - 14*a*b^3*c^3 + 8*
a^2*b*c^4)*d^8*e^2 - 4*(b^6*c - 4*a*b^4*c^2 - 2*a^2*b^2*c^3 + 8*a^3*c^4)*d^
7*e^3 + (b^7 - 34*a^2*b^3*c^2 + 72*a^3*b*c^3)*d^6*e^4 - 2*(a*b^6 - 10*a^2*b
^4*c + 18*a^3*b^2*c^2 + 24*a^4*c^3)*d^5*e^5 - 2*(a^2*b^5 + 6*a^3*b^3*c - 40
*a^4*b*c^2)*d^4*e^6 + 8*(a^3*b^4 - 3*a^4*b^2*c - 4*a^5*c^2)*d^3*e^7 - 7*(a^
4*b^3 - 4*a^5*b*c)*d^2*e^8 + 2*(a^5*b^2 - 4*a^6*c)*d*e^9)*x)]
```

giac [B] time = 0.86, size = 4002, normalized size = 7.34

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] 2*((B*b*c^6*d^9 - 2*A*c^7*d^9 - 3*B*b^2*c^5*d^8*e - 6*B*a*c^6*d^8*e + 9*A*b
*c^6*d^8*e + 3*B*b^3*c^4*d^7*e^2 + 24*B*a*b*c^5*d^7*e^2 - 18*A*b^2*c^5*d^7*
e^2 - B*b^4*c^3*d^6*e^3 - 34*B*a*b^2*c^4*d^6*e^3 + 21*A*b^3*c^4*d^6*e^3 - 1
6*B*a^2*c^5*d^6*e^3 + 21*B*a*b^3*c^3*d^5*e^4 - 15*A*b^4*c^3*d^5*e^4 + 42*B*
a^2*b*c^4*d^5*e^4 - 6*A*a*b^2*c^4*d^5*e^4 + 12*A*a^2*c^5*d^5*e^4 - 6*B*a*b^
4*c^2*d^4*e^5 + 6*A*b^5*c^2*d^4*e^5 - 36*B*a^2*b^2*c^3*d^4*e^5 + 15*A*a*b^3
*c^3*d^4*e^5 - 12*B*a^3*c^4*d^4*e^5 - 30*A*a^2*b*c^4*d^4*e^5 + B*a*b^5*c*d^
3*e^6 - A*b^6*c*d^3*e^6 + 13*B*a^2*b^3*c^2*d^3*e^6 - 12*A*a*b^4*c^2*d^3*e^6
 + 16*B*a^3*b*c^3*d^3*e^6 + 18*A*a^2*b^2*c^3*d^3*e^6 + 16*A*a^3*c^4*d^3*e^6
 - 3*B*a^2*b^4*c*d^2*e^7 + 3*A*a*b^5*c*d^2*e^7 - 6*B*a^3*b^2*c^2*d^2*e^7 +
3*A*a^2*b^3*c^2*d^2*e^7 - 24*A*a^3*b*c^3*d^2*e^7 + 3*B*a^3*b^3*c*d*e^8 - 3*
A*a^2*b^4*c*d*e^8 - 3*B*a^4*b*c^2*d*e^8 + 6*A*a^3*b^2*c^2*d*e^8 + 6*A*a^4*c
^3*d*e^8 - B*a^4*b^2*c*e^9 + A*a^3*b^3*c*e^9 + 2*B*a^5*c^2*e^9 - 3*A*a^4*b*
c^2*e^9)*x/(b^2*c^6*d^12 - 4*a*c^7*d^12 - 6*b^3*c^5*d^11*e + 24*a*b*c^6*d^1
1*e + 15*b^4*c^4*d^10*e^2 - 54*a*b^2*c^5*d^10*e^2 - 24*a^2*c^6*d^10*e^2 - 2
0*b^5*c^3*d^9*e^3 + 50*a*b^3*c^4*d^9*e^3 + 120*a^2*b*c^5*d^9*e^3 + 15*b^6*c
^2*d^8*e^4 - 225*a^2*b^2*c^4*d^8*e^4 - 60*a^3*c^5*d^8*e^4 - 6*b^7*c*d^7*e^5
 - 36*a*b^5*c^2*d^7*e^5 + 180*a^2*b^3*c^3*d^7*e^5 + 240*a^3*b*c^4*d^7*e^5 +
 b^8*d^6*e^6 + 26*a*b^6*c*d^6*e^6 - 30*a^2*b^4*c^2*d^6*e^6 - 340*a^3*b^2*c^
3*d^6*e^6 - 80*a^4*c^4*d^6*e^6 - 6*a*b^7*d^5*e^7 - 36*a^2*b^5*c*d^5*e^7 + 1
80*a^3*b^3*c^2*d^5*e^7 + 240*a^4*b*c^3*d^5*e^7 + 15*a^2*b^6*d^4*e^8 - 225*a
^4*b^2*c^2*d^4*e^8 - 60*a^5*c^3*d^4*e^8 - 20*a^3*b^5*d^3*e^9 + 50*a^4*b^3*c
*d^3*e^9 + 120*a^5*b*c^2*d^3*e^9 + 15*a^4*b^4*d^2*e^10 - 54*a^5*b^2*c*d^2*e
^10 - 24*a^6*c^2*d^2*e^10 - 6*a^5*b^3*d*e^11 + 24*a^6*b*c*d*e^11 + a^6*b^2*
e^12 - 4*a^7*c*e^12) + (2*B*a*c^6*d^9 - A*b*c^6*d^9 - 9*B*a*b*c^5*d^8*e + 6
*A*b^2*c^5*d^8*e - 6*A*a*c^6*d^8*e + 18*B*a*b^2*c^4*d^7*e^2 - 15*A*b^3*c^4*
d^7*e^2 + 24*A*a*b*c^5*d^7*e^2 - 21*B*a*b^3*c^3*d^6*e^3 + 20*A*b^4*c^3*d^6*
e^3 - 34*A*a*b^2*c^4*d^6*e^3 - 16*A*a^2*c^5*d^6*e^3 + 15*B*a*b^4*c^2*d^5*e^
4 - 15*A*b^5*c^2*d^5*e^4 + 6*B*a^2*b^2*c^3*d^5*e^4 + 15*A*a*b^3*c^3*d^5*e^4
 - 12*B*a^3*c^4*d^5*e^4 + 54*A*a^2*b*c^4*d^5*e^4 - 6*B*a*b^5*c*d^4*e^5 + 6*
A*b^6*c*d^4*e^5 - 15*B*a^2*b^3*c^2*d^4*e^5 + 9*A*a*b^4*c^2*d^4*e^5 + 30*B*a
```

```
^3*b*c^3*d^4*e^5 - 66*A*a^2*b^2*c^3*d^4*e^5 - 12*A*a^3*c^4*d^4*e^5 + B*a*b^
6*d^3*e^6 - A*b^7*d^3*e^6 + 12*B*a^2*b^4*c*d^3*e^6 - 11*A*a*b^5*c*d^3*e^6 -
 18*B*a^3*b^2*c^2*d^3*e^6 + 31*A*a^2*b^3*c^2*d^3*e^6 - 16*B*a^4*c^3*d^3*e^6
 + 32*A*a^3*b*c^3*d^3*e^6 - 3*B*a^2*b^5*d^2*e^7 + 3*A*a*b^6*d^2*e^7 - 3*B*a
^3*b^3*c*d^2*e^7 + 24*B*a^4*b*c^2*d^2*e^7 - 30*A*a^3*b^2*c^2*d^2*e^7 + 3*B*
a^3*b^4*d*e^8 - 3*A*a^2*b^5*d*e^8 - 6*B*a^4*b^2*c*d*e^8 + 9*A*a^3*b^3*c*d*e
^8 - 6*B*a^5*c^2*d*e^8 + 3*A*a^4*b*c^2*d*e^8 - B*a^4*b^3*e^9 + A*a^3*b^4*e^
9 + 3*B*a^5*b*c*e^9 - 4*A*a^4*b^2*c*e^9 + 2*A*a^5*c^2*e^9)/(b^2*c^6*d^12 -
 4*a*c^7*d^12 - 6*b^3*c^5*d^11*e + 24*a*b*c^6*d^11*e + 15*b^4*c^4*d^10*e^2 -
 54*a*b^2*c^5*d^10*e^2 - 24*a^2*c^6*d^10*e^2 - 20*b^5*c^3*d^9*e^3 + 50*a*b^
3*c^4*d^9*e^3 + 120*a^2*b*c^5*d^9*e^3 + 15*b^6*c^2*d^8*e^4 - 225*a^2*b^2*c^
4*d^8*e^4 - 60*a^3*c^5*d^8*e^4 - 6*b^7*c*d^7*e^5 - 36*a*b^5*c^2*d^7*e^5 + 1
80*a^2*b^3*c^3*d^7*e^5 + 240*a^3*b*c^4*d^7*e^5 + b^8*d^6*e^6 + 26*a*b^6*c*d
^6*e^6 - 30*a^2*b^4*c^2*d^6*e^6 - 340*a^3*b^2*c^3*d^6*e^6 - 80*a^4*c^4*d^6*
e^6 - 6*a*b^7*d^5*e^7 - 36*a^2*b^5*c*d^5*e^7 + 180*a^3*b^3*c^2*d^5*e^7 + 24
0*a^4*b*c^3*d^5*e^7 + 15*a^2*b^6*d^4*e^8 - 225*a^4*b^2*c^2*d^4*e^8 - 60*a^5
*c^3*d^4*e^8 - 20*a^3*b^5*d^3*e^9 + 50*a^4*b^3*c*d^3*e^9 + 120*a^5*b*c^2*d^
3*e^9 + 15*a^4*b^4*d^2*e^10 - 54*a^5*b^2*c*d^2*e^10 - 24*a^6*c^2*d^2*e^10 -
 6*a^5*b^3*d*e^11 + 24*a^6*b*c*d*e^11 + a^6*b^2*e^12 - 4*a^7*c*e^12))/sqrt(
c*x^2 + b*x + a) - 3/4*(8*B*c^2*d^3*e - 4*B*b*c*d^2*e^2 - 16*A*c^2*d^2*e^2
+ B*b^2*d*e^3 - 12*B*a*c*d*e^3 + 16*A*b*c*d*e^3 + 4*B*a*b*e^4 - 5*A*b^2*e^4
 + 4*A*a*c*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(c)*d)
/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2
+ 3*a*c^2*d^4*e^2 - b^3*d^3*e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2
*c*d^2*e^4 - 3*a^2*b*d*e^5 + a^3*e^6)*sqrt(-c*d^2 + b*d*e - a*e^2)) + 1/4*(
40*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*c^(5/2)*d^4*e + 16*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))^3*B*c^2*d^3*e^2 + 40*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*b*c^2*d^4*e - 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b*c^(3/2)*d
^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*A*c^(5/2)*d^3*e^2 + 10*B*
b^2*c^(3/2)*d^4*e - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*b*c*d^2*e^3
- 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*c^2*d^2*e^3 - 24*(sqrt(c)*x -
sqrt(c*x^2 + b*x + a))*B*b^2*c*d^3*e^2 - 64*(sqrt(c)*x - sqrt(c*x^2 + b*x +
 a))*B*a*c^2*d^3*e^2 - 56*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b*c^2*d^3*e
^2 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*b^2*sqrt(c)*d^2*e^3 - 36*(sq
rt(c)*x - sqrt(c*x^2 + b*x + a))^2*B*a*c^(3/2)*d^2*e^3 + 48*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^2*A*b*c^(3/2)*d^2*e^3 - 3*B*b^3*sqrt(c)*d^3*e^2 - 32*B
*a*b*c^(3/2)*d^3*e^2 - 14*A*b^2*c^(3/2)*d^3*e^2 + 3*(sqrt(c)*x - sqrt(c*x^2
 + b*x + a))^3*B*b^2*d*e^4 - 12*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*B*a*c
*d*e^4 + 24*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*b*c*d*e^4 + 5*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))*B*b^3*d^2*e^3 + 16*(sqrt(c)*x - sqrt(c*x^2 + b*x
 + a))*B*a*b*c*d^2*e^3 + 44*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*b^2*c*d^2
*e^3 + 88*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*c^2*d^2*e^3 + 4*(sqrt(c)*
x - sqrt(c*x^2 + b*x + a))^2*B*a*b*sqrt(c)*d*e^4 - 13*(sqrt(c)*x - sqrt(c*x
^2 + b*x + a))^2*A*b^2*sqrt(c)*d*e^4 + 28*(sqrt(c)*x - sqrt(c*x^2 + b*x + a
))^2*A*a*c^(3/2)*d*e^4 + 7*B*a*b^2*sqrt(c)*d^2*e^3 + 7*A*b^3*sqrt(c)*d^2*e^
3 + 20*B*a^2*c^(3/2)*d^2*e^3 + 44*A*a*b*c^(3/2)*d^2*e^3 + 4*(sqrt(c)*x - sq
rt(c*x^2 + b*x + a))^3*B*a*b*e^5 - 7*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*
A*b^2*e^5 + 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))^3*A*a*c*e^5 - (sqrt(c)*x
- sqrt(c*x^2 + b*x + a))*B*a*b^2*d*e^4 - 9*(sqrt(c)*x - sqrt(c*x^2 + b*x +
a))*A*b^3*d*e^4 + 20*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*c*d*e^4 - 60
*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b*c*d*e^4 + 8*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))^2*B*a^2*sqrt(c)*e^5 - 8*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))
^2*A*a*b*sqrt(c)*e^5 + 4*B*a^2*b*sqrt(c)*d*e^4 - 23*A*a*b^2*sqrt(c)*d*e^4 -
 28*A*a^2*c^(3/2)*d*e^4 - 4*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*B*a^2*b*e^5
 + 9*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*A*a*b^2*e^5 + 4*(sqrt(c)*x - sqrt(
c*x^2 + b*x + a))*A*a^2*c*e^5 - 8*B*a^3*sqrt(c)*e^5 + 16*A*a^2*b*sqrt(c)*e^
5)/((c^3*d^6 - 3*b*c^2*d^5*e + 3*b^2*c*d^4*e^2 + 3*a*c^2*d^4*e^2 - b^3*d^3*
e^3 - 6*a*b*c*d^3*e^3 + 3*a*b^2*d^2*e^4 + 3*a^2*c*d^2*e^4 - 3*a^2*b*d*e^5 +
 a^3*e^6)*((sqrt(c)*x - sqrt(c*x^2 + b*x + a))^2*e + 2*(sqrt(c)*x - sqrt(c*
x^2 + b*x + a))*sqrt(c)*d + b*d - a*e)^2)
```

maple [B] time = 0.07, size = 5528, normalized size = 10.14

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^3/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                                +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^3\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^3*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**3/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2480 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=608

$$\frac{2(d+ex)^3 \Big(-x \big(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\big)-b(aBe+Acd)+2ac(Ae+Bd)\Big)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2(d+ex)\Big(-2b^2c\big(-a}{}$$

```
[Out] 2/3*(e*x+d)^3*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(
A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)+1/2*e^3*(2*A*c*e-5*B*b*
e+8*B*c*d)*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+2/3*(
e*x+d)*(b^3*B*e*(-5*a*e^2+c*d^2)-8*a*c^2*e*(3*A*a*e^2+A*c*d^2+8*B*a*d*e)-2*
b^2*c*(-A*a*e^3+5*A*c*d^2*e-2*B*a*d*e^2+2*B*c*d^3)+4*b*c*(2*A*c*d*(3*a*e^2+
c*d^2)+a*B*e*(7*a*e^2+5*c*d^2))-(5*b^4*B*e^3-2*b^3*c*e^2*(A*e+3*B*d)-4*b^2*
c*e*(A*c*d*e+8*B*a*e^2+B*c*d^2)+8*b*c^2*(2*A*a*e^3+3*A*c*d^2*e+6*B*a*d*e^2+
B*c*d^3)-16*c^2*(2*a*B*e*(-a*e^2+c*d^2)+A*c*d*(2*a*e^2+c*d^2)))*x)/c^2/(-4*
a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)+1/3*e*(15*b^4*B*e^3-2*b^3*c*e^2*(3*A*e+7*B*d
)-4*b^2*c*e*(A*c*d*e+25*B*a*e^2+2*B*c*d^2)+8*b*c^2*(5*A*a*e^3+6*A*c*d^2*e+1
3*B*a*d*e^2+2*B*c*d^3)-16*c^2*(4*a*B*e*(-2*a*e^2+c*d^2)+A*c*d*(5*a*e^2+2*c*
d^2)))*(c*x^2+b*x+a)^(1/2)/c^3/(-4*a*c+b^2)^2
```

Rubi [**A**] time = 0.84, antiderivative size = 608, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{818, 640, 621, 206\}$

$$\frac{e\sqrt{a+bx+cx^2}\,\Big(-4b^2ce\big(25aBe^2+Acde+2Bcd^2\big)+8bc^2\big(5aAe^3+13aBde^2+6Acd^2e+2Bcd^3\big)-16c^2\big(Acd}{3c^3\left(b^2-4ac\right)^2}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^3*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) + (2*(d + e*x)*(b^3*B*e*(c*d^2 - 5*a*e^2) - 8*a*c^2*e*(A*c*d^2 + 8*a*B*
d*e + 3*a*A*e^2) - 2*b^2*c*(2*B*c*d^3 + 5*A*c*d^2*e - 2*a*B*d*e^2 - a*A*e^3
) + 4*b*c*(2*A*c*d*(c*d^2 + 3*a*e^2) + a*B*e*(5*c*d^2 + 7*a*e^2)) - (5*b^4*
B*e^3 - 2*b^3*c*e^2*(3*B*d + A*e) - 4*b^2*c*e*(B*c*d^2 + A*c*d*e + 8*a*B*e^
2) + 8*b*c^2*(B*c*d^3 + 3*A*c*d^2*e + 6*a*B*d*e^2 + 2*a*A*e^3) - 16*c^2*(2*
a*B*e*(c*d^2 - a*e^2) + A*c*d*(c*d^2 + 2*a*e^2)))*x))/(3*c^2*(b^2 - 4*a*c)^
2*Sqrt[a + b*x + c*x^2]) + (e*(15*b^4*B*e^3 - 2*b^3*c*e^2*(7*B*d + 3*A*e) -
 4*b^2*c*e*(2*B*c*d^2 + A*c*d*e + 25*a*B*e^2) + 8*b*c^2*(2*B*c*d^3 + 6*A*c*
d^2*e + 13*a*B*d*e^2 + 5*a*A*e^3) - 16*c^2*(4*a*B*e*(c*d^2 - 2*a*e^2) + A*c
*d*(2*c*d^2 + 5*a*e^2)))*Sqrt[a + b*x + c*x^2])/(3*c^3*(b^2 - 4*a*c)^2) + (
e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + b
*x + c*x^2])])/(2*c^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{5/2}}\,dx = \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

$$= \frac{2(d+ex)^3\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Mathematica [A] time = 2.40, size = 849, normalized size = 1.40

$$\frac{(8Bcd-5bBe+2Ace)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{a+x(b+cx)}}\right)e^3}{2c^{7/2}}+\frac{B\left(128a^4c^2e^4+4a^3c\left(-48\left(d^2+exd-e^2x^2\right)c^2+2be(20d+39e\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*A*c*(3*b^5*e^4*x^2 + 2*b^4*e^4*x*(3*a + 2*c*x^2) + b^3*(3*a^2*e^4 - 18*
a*c*e^4*x^2 + c^2*d*(d^3 + 12*d^2*e*x - 18*d*e^2*x^2 - 4*e^3*x^3)) - 4*b*c*
(5*a^3*e^4 + 2*c^3*d^3*x^2*(3*d - 4*e*x) + 12*a^2*c*d*e^2*(d - 2*e*x) + 3*a
*c^2*d*(d^3 - 4*d^2*e*x + 6*d*e^2*x^2 - 4*e^3*x^3)) + 8*c^2*(-2*c^3*d^4*x^3
 + a^3*e^3*(8*d + 3*e*x) - 3*a*c^2*d^2*x*(d^2 + 2*e^2*x^2) + 4*a^2*c*e*(d^3
 + 3*d*e^2*x^2 + e^3*x^3)) - 2*b^2*c*(21*a^2*e^4*x + 3*c^2*d^2*x*(d^2 - 8*d
*e*x + 2*e^2*x^2) + 2*a*c*e*(-2*d^3 + 18*d^2*e*x - 6*d*e^2*x^2 + 7*e^3*x^3)
)) + B*(128*a^4*c^2*e^4 + b*x*(15*b^5*e^4*x - 16*c^5*d^4*x^2 + 8*b*c^4*d^3*
x*(-3*d + 2*e*x) + b^3*c^2*e^3*x^2*(-32*d + 3*e*x) + 4*b^4*c*e^3*x*(-6*d +
5*e*x) - 6*b^2*c^3*d^2*(d^2 - 4*d*e*x - 2*e^2*x^2)) + 4*a^3*c*e^2*(-25*b^2*
e^2 + 2*b*c*e*(20*d + 39*e*x) - 48*c^2*(d^2 + d*e*x - e^2*x^2)) + a^2*(15*b
^4*e^4 + 48*b^2*c^2*e^3*x*(7*d + e*x) - 6*b^3*c*e^3*(4*d + 35*e*x) + 32*b*c
^3*e*(2*d^3 - 9*d^2*e*x + 8*e^3*x^3) - 16*c^4*(d^4 + 18*d^2*e^2*x^2 + 16*d*
e^3*x^3 - 3*e^4*x^4)) + 2*a*(15*b^5*e^4*x + 32*c^5*d^3*e*x^3 + 2*b^3*c^2*e^
3*x^2*(36*d - 37*e*x) - 3*b^4*c*e^3*x*(8*d + 15*e*x) - 12*b*c^4*d^2*x*(d^2
- 4*d*e*x + 6*e^2*x^2) - 2*b^2*c^3*(d^4 - 24*d^3*e*x + 18*d^2*e^2*x^2 - 56*
d*e^3*x^3 + 6*e^4*x^4))))/(3*c^3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) +
 (e^3*(8*B*c*d - 5*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a +
 x*(b + c*x)])])/(2*c^(7/2))
```

<u>fricas</u> [B] time = 22.00, size = 3181, normalized size = 5.23

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d*e^3 - (5*B*a^2
*b^5 - 32*A*a^4*c^3 + 16*(5*B*a^4*b + A*a^3*b^2)*c^2 - 2*(20*B*a^3*b^3 + A*
a^2*b^4)*c)*e^4 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d*e^3 - (5*
B*b^5*c^2 - 32*A*a^2*c^5 + 16*(5*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A
*b^4)*c^3)*e^4)*x^4 + 2*(8*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d*e
^3 - (5*B*b^6*c - 32*A*a^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B
*a*b^4 + A*b^5)*c^2)*e^4)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)
*d*e^3 - (5*B*b^7 + 12*A*a*b^4*c^2 + 160*B*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15
*B*a*b^5 + A*b^6)*c)*e^4)*x^2 + 2*(8*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^
3*b*c^3)*d*e^3 - (5*B*a*b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)
*c^2 - 2*(20*B*a^2*b^4 + A*a*b^5)*c)*e^4)*x)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c
*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(96*(2*
B*a^3 - A*a^2*b)*c^4*d^2*e^2 - 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)
*e^4*x^4 + 2*(4*(2*B*a^2 - 3*A*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^4 + 16
*(4*A*a^2*c^5 - (4*B*a^2*b - A*a*b^2)*c^4)*d^3*e + 8*(3*B*a^2*b^3*c^2 - 20*
B*a^3*b*c^3 + 16*A*a^3*c^4)*d*e^3 - (15*B*a^2*b^4*c + 8*(16*B*a^4 + 5*A*a^3
*b)*c^3 - 2*(50*B*a^3*b^2 + 3*A*a^2*b^3)*c^2)*e^4 + 4*(4*(B*b*c^6 - 2*A*c^7
)*d^4 - 4*(B*b^2*c^5 + 4*(B*a - A*b)*c^6)*d^3*e - 3*(B*b^3*c^4 + 8*A*a*c^6
- 2*(6*B*a*b - A*b^2)*c^5)*d^2*e^2 + 2*(4*B*b^4*c^3 + 4*(8*B*a^2 + 3*A*a*b)
*c^5 - (28*B*a*b^2 + A*b^3)*c^4)*d*e^3 - (5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(3
2*B*a^2*b + 7*A*a*b^2)*c^4 - (37*B*a*b^3 + 2*A*b^4)*c^3)*e^4)*x^3 + 3*(8*(B
*b^2*c^5 - 2*A*b*c^6)*d^4 - 8*(B*b^3*c^4 + 4*(B*a*b - A*b^2)*c^5)*d^3*e + 1
2*(4*(2*B*a^2 - A*a*b)*c^5 + (2*B*a*b^2 - A*b^3)*c^4)*d^2*e^2 + 8*(B*b^5*c^
2 - 6*B*a*b^3*c^3 + 2*A*a*b^2*c^4 + 8*A*a^2*c^5)*d*e^3 - (5*B*b^6*c + 64*B*
a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*b^5)*c^2)*e^4
)*x^2 + 6*(24*(2*B*a^2*b - A*a*b^2)*c^4*d^2*e^2 + (B*b^3*c^4 - 8*A*a*c^6 +
2*(2*B*a*b - A*b^2)*c^5)*d^4 + 4*(4*A*a*b*c^5 - (4*B*a*b^2 - A*b^3)*c^4)*d^
3*e + 8*(B*a*b^4*c^2 - 7*B*a^2*b^2*c^3 + 4*(B*a^3 + A*a^2*b)*c^4)*d*e^3 - (
5*B*a*b^5*c - 8*A*a^3*c^4 + 2*(26*B*a^3*b + 7*A*a^2*b^2)*c^3 - (35*B*a^2*b^
3 + 2*A*a*b^4)*c^2)*e^4)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^4 - 8*a^3*b^2
*c^5 + 16*a^4*c^6 + (b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*x^4 + 2*(b^5*c^5 -
 8*a*b^3*c^6 + 16*a^2*b*c^7)*x^3 + (b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*x^2
 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*x), -1/6*(3*(8*(B*a^2*b^4*c
 - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d*e^3 - (5*B*a^2*b^5 - 32*A*a^4*c^3 + 16
*(5*B*a^4*b + A*a^3*b^2)*c^2 - 2*(20*B*a^3*b^3 + A*a^2*b^4)*c)*e^4 + (8*(B*
b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d*e^3 - (5*B*b^5*c^2 - 32*A*a^2*c^5
 + 16*(5*B*a^2*b + A*a*b^2)*c^4 - 2*(20*B*a*b^3 + A*b^4)*c^3)*e^4)*x^4 + 2*
(8*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d*e^3 - (5*B*b^6*c - 32*A*a
^2*b*c^4 + 16*(5*B*a^2*b^2 + A*a*b^3)*c^3 - 2*(20*B*a*b^4 + A*b^5)*c^2)*e^4
)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)*d*e^3 - (5*B*b^7 + 12*A
*a*b^4*c^2 + 160*B*a^3*b*c^3 - 64*A*a^3*c^4 - 2*(15*B*a*b^5 + A*b^6)*c)*e^4
)*x^2 + 2*(8*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d*e^3 - (5*B*a*
b^6 - 32*A*a^3*b*c^3 + 16*(5*B*a^3*b^2 + A*a^2*b^3)*c^2 - 2*(20*B*a^2*b^4 +
 A*a*b^5)*c)*e^4)*x)*sqrt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*
sqrt(-c)/(c^2*x^2 + b*c*x + a*c)) + 2*(96*(2*B*a^3 - A*a^2*b)*c^4*d^2*e^2 -
 3*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*e^4*x^4 + 2*(4*(2*B*a^2 - 3*A
*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^4 + 16*(4*A*a^2*c^5 - (4*B*a^2*b - A
*a*b^2)*c^4)*d^3*e + 8*(3*B*a^2*b^3*c^2 - 20*B*a^3*b*c^3 + 16*A*a^3*c^4)*d*
e^3 - (15*B*a^2*b^4*c + 8*(16*B*a^4 + 5*A*a^3*b)*c^3 - 2*(50*B*a^3*b^2 + 3*
A*a^2*b^3)*c^2)*e^4 + 4*(4*(B*b*c^6 - 2*A*c^7)*d^4 - 4*(B*b^2*c^5 + 4*(B*a
 - A*b)*c^6)*d^3*e - 3*(B*b^3*c^4 + 8*A*a*c^6 - 2*(6*B*a*b - A*b^2)*c^5)*d^2
*e^2 + 2*(4*B*b^4*c^3 + 4*(8*B*a^2 + 3*A*a*b)*c^5 - (28*B*a*b^2 + A*b^3)*c^
4)*d*e^3 - (5*B*b^5*c^2 - 16*A*a^2*c^5 + 2*(32*B*a^2*b + 7*A*a*b^2)*c^4 - (
37*B*a*b^3 + 2*A*b^4)*c^3)*e^4)*x^3 + 3*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^4 - 8*
(B*b^3*c^4 + 4*(B*a*b - A*b^2)*c^5)*d^3*e + 12*(4*(2*B*a^2 - A*a*b)*c^5 + (
2*B*a*b^2 - A*b^3)*c^4)*d^2*e^2 + 8*(B*b^5*c^2 - 6*B*a*b^3*c^3 + 2*A*a*b^2*
c^4 + 8*A*a^2*c^5)*d*e^3 - (5*B*b^6*c + 64*B*a^3*c^4 + 4*(4*B*a^2*b^2 + 3*A
*a*b^3)*c^3 - 2*(15*B*a*b^4 + A*b^5)*c^2)*e^4)*x^2 + 6*(24*(2*B*a^2*b - A*a
*b^2)*c^4*d^2*e^2 + (B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B*a*b - A*b^2)*c^5)*d^4 +
 4*(4*A*a*b*c^5 - (4*B*a*b^2 - A*b^3)*c^4)*d^3*e + 8*(B*a*b^4*c^2 - 7*B*a^2
*b^2*c^3 + 4*(B*a^3 + A*a^2*b)*c^4)*d*e^3 - (5*B*a*b^5*c - 8*A*a^3*c^4 + 2*
(26*B*a^3*b + 7*A*a^2*b^2)*c^3 - (35*B*a^2*b^3 + 2*A*a*b^4)*c^2)*e^4)*x)*sq
rt(c*x^2 + b*x + a))/(a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6 + (b^4*c^6 -
 8*a*b^2*c^7 + 16*a^2*c^8)*x^4 + 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*x
^3 + (b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*x^2 + 2*(a*b^5*c^4 - 8*a^2*b^3*c^
5 + 16*a^3*b*c^6)*x)]
```

giac [B] time = 0.40, size = 1185, normalized size = 1.95

$$\frac{\left(\left(\left(\frac{3\left(Bb^4c^2e^4-8\,Bab^2c^3e^4+16\,Ba^2c^4e^4\right)x}{b^4c^3-8\,ab^2c^4+16\,a^2c^5}-\frac{4\left(4\,Bbc^5d^4-8\,Ac^6d^4-4\,Bb^2c^4d^3e-16\,Bac^5d^3e+16\,Abc^5d^3e-3\,Bb^3c^3d^2e^2+36\,Babc^4d^2e^2-6\,Ab^2c^4d^2e^2-24\right.}{}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/3*((((3*(B*b^4*c^2*e^4 - 8*B*a*b^2*c^3*e^4 + 16*B*a^2*c^4*e^4)*x/(b^4*c^3
 - 8*a*b^2*c^4 + 16*a^2*c^5) - 4*(4*B*b*c^5*d^4 - 8*A*c^6*d^4 - 4*B*b^2*c^4
*d^3*e - 16*B*a*c^5*d^3*e + 16*A*b*c^5*d^3*e - 3*B*b^3*c^3*d^2*e^2 + 36*B*a
*b*c^4*d^2*e^2 - 6*A*b^2*c^4*d^2*e^2 - 24*A*a*c^5*d^2*e^2 + 8*B*b^4*c^2*d*e
^3 - 56*B*a*b^2*c^3*d*e^3 - 2*A*b^3*c^3*d*e^3 + 64*B*a^2*c^4*d*e^3 + 24*A*a
*b*c^4*d*e^3 - 5*B*b^5*c*e^4 + 37*B*a*b^3*c^2*e^4 + 2*A*b^4*c^2*e^4 - 64*B*
a^2*b*c^3*e^4 - 14*A*a*b^2*c^3*e^4 + 16*A*a^2*c^4*e^4)/(b^4*c^3 - 8*a*b^2*c
^4 + 16*a^2*c^5))*x - 3*(8*B*b^2*c^4*d^4 - 16*A*b*c^5*d^4 - 8*B*b^3*c^3*d^3
*e - 32*B*a*b*c^4*d^3*e + 32*A*b^2*c^4*d^3*e + 24*B*a*b^2*c^3*d^2*e^2 - 12*
A*b^3*c^3*d^2*e^2 + 96*B*a^2*c^4*d^2*e^2 - 48*A*a*b*c^4*d^2*e^2 + 8*B*b^5*c
*d*e^3 - 48*B*a*b^3*c^2*d*e^3 + 16*A*a*b^2*c^3*d*e^3 + 64*A*a^2*c^4*d*e^3 -
 5*B*b^6*e^4 + 30*B*a*b^4*c*e^4 + 2*A*b^5*c*e^4 - 16*B*a^2*b^2*c^2*e^4 - 12
*A*a*b^3*c^2*e^4 - 64*B*a^3*c^3*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*
x - 6*(B*b^3*c^3*d^4 + 4*B*a*b*c^4*d^4 - 2*A*b^2*c^4*d^4 - 8*A*a*c^5*d^4 -
16*B*a*b^2*c^3*d^3*e + 4*A*b^3*c^3*d^3*e + 16*A*a*b*c^4*d^3*e + 48*B*a^2*b*
c^3*d^2*e^2 - 24*A*a*b^2*c^3*d^2*e^2 + 8*B*a*b^4*c*d*e^3 - 56*B*a^2*b^2*c^2
*d*e^3 + 32*B*a^3*c^3*d*e^3 + 32*A*a^2*b*c^3*d*e^3 - 5*B*a*b^5*e^4 + 35*B*a
^2*b^3*c*e^4 + 2*A*a*b^4*c*e^4 - 52*B*a^3*b*c^2*e^4 - 14*A*a^2*b^2*c^2*e^4
+ 8*A*a^3*c^3*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 16*a^2*c^5))*x - (4*B*a*b^2*c^3
*d^4 + 2*A*b^3*c^3*d^4 + 16*B*a^2*c^4*d^4 - 24*A*a*b*c^4*d^4 - 64*B*a^2*b*c
^3*d^3*e + 16*A*a*b^2*c^3*d^3*e + 64*A*a^2*c^4*d^3*e + 192*B*a^3*c^3*d^2*e^
2 - 96*A*a^2*b*c^3*d^2*e^2 + 24*B*a^2*b^3*c*d*e^3 - 160*B*a^3*b*c^2*d*e^3 +
 128*A*a^3*c^3*d*e^3 - 15*B*a^2*b^4*e^4 + 100*B*a^3*b^2*c*e^4 + 6*A*a^2*b^3
*c*e^4 - 128*B*a^4*c^2*e^4 - 40*A*a^3*b*c^2*e^4)/(b^4*c^3 - 8*a*b^2*c^4 + 1
6*a^2*c^5))/(c*x^2 + b*x + a)^(3/2) - 1/2*(8*B*c*d*e^3 - 5*B*b*e^4 + 2*A*c*
e^4)*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
```

maple [B] time = 0.09, size = 3912, normalized size = 6.43

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -1/6*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d*e^3+2*b^2/c^2*a/(4*a*c-b
^2)/(c*x^2+b*x+a)^(3/2)*x*B*d*e^3+16*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*x*B*d*e^3-4*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d*e^3-4/3*b^4/c^2
/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^3-2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*A*d*e^3-6*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e^2-1
/3/c/(c*x^2+b*x+a)^(3/2)*B*d^4+1/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+
a)^(1/2))*A*e^4+8/3*B*e^4*a^2/c^3/(c*x^2+b*x+a)^(3/2)+5/96*B*e^4*b^4/c^5/(c
*x^2+b*x+a)^(3/2)-5/4*B*e^4*b^2/c^4/(c*x^2+b*x+a)^(1/2)+B*e^4*x^4/c/(c*x^2+
b*x+a)^(3/2)-5/2*B*e^4*b/c^(7/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2)
)-1/c^2*x/(c*x^2+b*x+a)^(1/2)*A*e^4-8/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*B*d^4+4*B*e^4*a^2/c^2*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+8*b^3/c^2*a/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^3-48*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^
(1/2)*x*B*d^2*e^2+b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e^2+2/3*b^2
/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^3*e+2*a/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(3/2)*b*A*d^2*e^2+4/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*B*d*e^3-16*
b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d*e^3-24*b^2/c*a/(4*a*c-b^2)^2/
(c*x^2+b*x+a)^(1/2)*B*d^2*e^2+1/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)
*x*A*e^4+b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d*e^3-38/3*B*e^4*b^3/c
^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+32*B*e^4*a^2/c*b/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x-3*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2-32
*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d*e^3+1/2*b^3/c^2/(4*a*c-b^2)/(c
*x^2+b*x+a)^(3/2)*x*B*d^2*e^2+8/3*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x
*A*d*e^3+4*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^4+4*b^3/c/(4*a*c
-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e^2+1/3*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+
a)^(3/2)*x*A*d*e^3-19/12*B*e^4*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+
64/3*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3*e-64/3*b*c/(4*a*c-b^2)^2
/(c*x^2+b*x+a)^(1/2)*x*A*d^3*e+1/4*b^3/c^3*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
)*A*e^4+4/3*b/c^3*a/(c*x^2+b*x+a)^(3/2)*B*d*e^3+1/2*b^2/c^3*x/(c*x^2+b*x+a)
^(3/2)*B*d*e^3-4/3/c/(c*x^2+b*x+a)^(3/2)*A*d^3*e+4/3*a/c/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*b*B*d^3*e+32*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e^
2+4/c^(5/2)*ln((c*x+1/2*b)/c^(1/2)+(c*x^2+b*x+a)^(1/2))*B*d*e^3-5/2*B*e^4*b
^3/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x+5/48*B*e^4*b^5/c^4/(4*a*c-b^2)/(c*
x^2+b*x+a)^(3/2)*x+5/6*B*e^4*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x-19
/24*B*e^4*b^4/c^4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)+B*e^4*a/c^3*b*x/(c*x^2+
b*x+a)^(3/2)+2*B*e^4*a^2/c^3*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-19/3*B*e^4
*b^4/c^3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+1/4*b^4/c^3/(4*a*c-b^2)/(c*x^2
+b*x+a)^(3/2)*B*d^2*e^2+2/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*B*d*e^3-2
/3*b^5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^3+1/2/c^3*b/(c*x^2+b*x+a
)^(1/2)*A*e^4+16*B*e^4*a^2/c^2*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-3*x/c/
(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+2/3*A*d^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-1
/3*x^3/c/(c*x^2+b*x+a)^(3/2)*A*e^4-1/48*b^3/c^4/(c*x^2+b*x+a)^(3/2)*A*e^4+5
/6*B*e^4*b/c^2*x^3/(c*x^2+b*x+a)^(3/2)+4*B*e^4*a/c^2*x^2/(c*x^2+b*x+a)^(3/2
)+1/2*b/c^2/(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+1/3*b/c^2/(c*x^2+b*x+a)^(3/2)*B*d
^3*e-B*e^4*b^2/c^4*a/(c*x^2+b*x+a)^(3/2)+5/2*B*e^4*b/c^3*x/(c*x^2+b*x+a)^(1
/2)-5/4*B*e^4*b^4/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-5/4*B*e^4*b^2/c^3*x^2
/(c*x^2+b*x+a)^(3/2)+5/12*B*e^4*b^6/c^4/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)-5
/16*B*e^4*b^3/c^4*x/(c*x^2+b*x+a)^(3/2)+5/96*B*e^4*b^6/c^5/(4*a*c-b^2)/(c*x
^2+b*x+a)^(3/2)-1/24*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^4+16/3*b
^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3*e+4*b^3/c/(4*a*c-b^2)^2/(c*x^2
+b*x+a)^(1/2)*A*d^2*e^2+8/3*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d^3*e
+4*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e^2+8/3*a/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*x*B*d^3*e+16*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*A*d^2*e^2+32
/3*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*B*d^3*e-16/3*b*c/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x*B*d^4+1/3*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^3*
e+8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d^2*e^2+2*b^4/c^2/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*B*d^2*e^2-3/2*b/c^2*x/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2+
1/6*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*d*e^3+2*b^3/c^2*a/(4*a*c-b^2)
^2/(c*x^2+b*x+a)^(1/2)*A*e^4-b/c^2*x/(c*x^2+b*x+a)^(3/2)*A*d*e^3-8/3*b/(4*a
*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^3*e-4/3*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(
3/2)*A*d^3*e+2*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)*B*d*e^3+1/2*b^3/c^2/(4*a*c-b^2
)/(c*x^2+b*x+a)^(3/2)*A*d^2*e^2+4/3*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/
2)*A*d*e^3+1/c^2*b^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*x*A*e^4-1/3*b^4/c^2/(4
*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^4-1/12*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x
+a)^(3/2)*B*d*e^3-1/48*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^4-1/6*b^
5/c^3/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*e^4+1/3*b/c^3*a/(c*x^2+b*x+a)^(3/
2)*A*e^4-4/c^2*x/(c*x^2+b*x+a)^(1/2)*B*d*e^3+2/c^3*b/(c*x^2+b*x+a)^(1/2)*B*
d*e^3-4*x^2/c/(c*x^2+b*x+a)^(3/2)*A*d*e^3-6*x^2/c/(c*x^2+b*x+a)^(3/2)*B*d^2
*e^2+1/6*b^2/c^3/(c*x^2+b*x+a)^(3/2)*A*d*e^3-4/3*x^3/c/(c*x^2+b*x+a)^(3/2)*
B*d*e^3+1/4*b^2/c^3/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2-8/3*a/c^2/(c*x^2+b*x+a)^(
3/2)*A*d*e^3+4/3*A*d^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+32/3*A*d^4*c^2/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*A*d^4*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)
^(1/2)*b-2/3*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^4-1/3*b^2/c/(4*a*c-b^2
)/(c*x^2+b*x+a)^(3/2)*B*d^4-32/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d^
3*e-4*a/c^2/(c*x^2+b*x+a)^(3/2)*B*d^2*e^2+1/2*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)
*A*e^4+1/8*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)*A*e^4-1/12*b^3/c^4/(c*x^2+b*x+a)^(
3/2)*B*d*e^3+1/2/c^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)*A*e^4-2*x/c/(c*x^2
+b*x+a)^(3/2)*B*d^3*e
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{\left(d+e\,x\right)}^4}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2481 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=397

$$\frac{2(d+ex)^2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Acd)+2ac(Ae+Bd)\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{2\left(-x\left(2b^2ce\left(11aBe^2+4\right.\right.\right.}{}$$

```
[Out] 2/3*(e*x+d)^2*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(
A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)+B*e^3*arctanh(1/2*(2*c*
x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(5/2)-2/3*(4*b^2*c^2*d^2*(2*A*e+B*d)+16
*a*c^2*e*(A*a*e^2+A*c*d^2+3*B*a*d*e)-b^3*B*(-3*a*e^3+c*d^2*e)-4*b*c*(5*a*B*
e*(a*e^2+c*d^2)+2*A*c*d*(3*a*e^2+c*d^2))-(2*b^3*B*c*d*e^2-3*b^4*B*e^3+2*b^2
*c*e*(4*A*c*d*e+11*B*a*e^2+3*B*c*d^2)-8*b*c^2*(A*a*e^3+3*A*c*d^2*e+4*B*a*d*
e^2+B*c*d^3)+8*c^2*(3*a*B*e*(-a*e^2+c*d^2)+2*A*c*d*(a*e^2+c*d^2)))*x)/c^2/(
-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 397, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{818, 777, 621, 206\}$

$$-\frac{2\left(-x\left(2b^2ce\left(11aBe^2+4Acde+3Bcd^2\right)-8bc^2\left(aAe^3+4aBde^2+3Acd^2e+Bcd^3\right)+8c^2\left(2Acd\left(ae^2+cd^2\right)+3a\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(d + e*x)^2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (2*(4*b^2*c^2*d^2*(B*d + 2*A*e) + 16*a*c^2*e*(A*c*d^2 + 3*a*B*d*e + a
*A*e^2) - b^3*B*(c*d^2*e - 3*a*e^3) - 4*b*c*(5*a*B*e*(c*d^2 + a*e^2) + 2*A*
c*d*(c*d^2 + 3*a*e^2)) - (2*b^3*B*c*d*e^2 - 3*b^4*B*e^3 + 2*b^2*c*e*(3*B*c*
d^2 + 4*A*c*d*e + 11*a*B*e^2) - 8*b*c^2*(B*c*d^3 + 3*A*c*d^2*e + 4*a*B*d*e^
2 + a*A*e^3) + 8*c^2*(3*a*B*e*(c*d^2 - a*e^2) + 2*A*c*d*(c*d^2 + a*e^2)))*x
))/(3*c^2*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2]) + (B*e^3*ArcTanh[(b + 2*c*
x)/(2*Sqrt[c]*Sqrt[a + b*x + c*x^2])])/c^(5/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
```

```
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{(a+bx+cx^2)^{5/2}}\,dx = \frac{2(d+ex)^2\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{3c\,(b^2-4ac)\,(a+bx+cx^2)^{3/2}}$$

$$= \frac{2(d+ex)^2\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{3c\,(b^2-4ac)\,(a+bx+cx^2)^{3/2}}$$

$$= \frac{2(d+ex)^2\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{3c\,(b^2-4ac)\,(a+bx+cx^2)^{3/2}}$$

$$= \frac{2(d+ex)^2\,\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{3c\,(b^2-4ac)\,(a+bx+cx^2)^{3/2}}$$

Mathematica [A] time = 1.34, size = 505, normalized size = 1.27

$$\frac{Be^3\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\,\sqrt{a+x(b+cx)}}\right)}{c^{5/2}} - 2\,\big(Ac^2\,\big(-12b(d-ex)\,\big(2a^2e^2+ac(d-ex)^2+2c^2d^2x^2\big)+8\,\big(2a^3e^3+3a^2ce\,\big(d^2+e^2$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*c^2*(6*b^2*(a*e - c*d*x)*(d^2 - 6*d*e*x + e^2*x^2) + b^3*(d^3 + 9*d^
2*e*x - 9*d*e^2*x^2 - e^3*x^3) - 12*b*(d - e*x)*(2*a^2*e^2 + 2*c^2*d^2*x^2
+ a*c*(d - e*x)^2) + 8*(2*a^3*e^3 - 2*c^3*d^3*x^3 + 3*a^2*c*e*(d^2 + e^2*x^
2) - 3*a*c^2*d*x*(d^2 + e^2*x^2))) + B*(4*a^3*c*e^2*(-5*b*e + 6*c*(2*d + e*
x)) + b*x*(3*b^4*e^3*x + 8*c^4*d^3*x^2 + 4*b^3*c*e^3*x^2 + 6*b*c^3*d^2*x*(2
*d - e*x) + 3*b^2*c^2*d*(d^2 - 3*d*e*x - e^2*x^2)) + 2*a*(3*b^4*e^3*x - 9*b
^3*c*e^3*x^2 - 12*c^4*d^2*e*x^3 + 6*b*c^3*d*x*(d^2 - 3*d*e*x + 3*e^2*x^2) +
 b^2*c^2*(d^3 - 18*d^2*e*x + 9*d*e^2*x^2 - 14*e^3*x^3)) + a^2*(3*b^3*e^3 -
42*b^2*c*e^3*x - 24*b*c^2*d*e*(d - 3*e*x) + 8*c^3*(d^3 + 9*d*e^2*x^2 + 4*e^
3*x^3)))))/(3*c^2*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2)) + (B*e^3*ArcTanh
[(b + 2*c*x)/(2*Sqrt[c]*Sqrt[a + x*(b + c*x)])])/c^(5/2)
```

fricas [B] time = 17.42, size = 1881, normalized size = 4.74

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/6*(3*((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*e^3*x^4 + 2*(B*b^5*c -
8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*e^3*x^3 + (B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c
^3)*e^3*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c^2)*e^3*x + (B*a^2*b
^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*e^3)*sqrt(c)*log(-8*c^2*x^2 - 8*b*c*x -
b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) - 4*(24*(2*B*a^3
 - A*a^2*b)*c^3*d*e^2 + (4*(2*B*a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^
3)*d^3 + 6*(4*A*a^2*c^4 - (4*B*a^2*b - A*a*b^2)*c^3)*d^2*e + (3*B*a^2*b^3*c
 - 20*B*a^3*b*c^2 + 16*A*a^3*c^3)*e^3 + (8*(B*b*c^5 - 2*A*c^6)*d^3 - 6*(B*b
^2*c^4 + 4*(B*a - A*b)*c^5)*d^2*e - 3*(B*b^3*c^3 + 8*A*a*c^5 - 2*(6*B*a*b -
 A*b^2)*c^4)*d*e^2 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c^4 - (28*B*a*b^2
 + A*b^3)*c^3)*e^3)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3 - 3*(B*b^3*c^3 +
 4*(B*a*b - A*b^2)*c^4)*d^2*e + 3*(4*(2*B*a^2 - A*a*b)*c^4 + (2*B*a*b^2 - A
*b^3)*c^3)*d*e^2 + (B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3 + 8*A*a^2*c^4)*
e^3)*x^2 + 3*(12*(2*B*a^2*b - A*a*b^2)*c^3*d*e^2 + (B*b^3*c^3 - 8*A*a*c^5 +
 2*(2*B*a*b - A*b^2)*c^4)*d^3 + 3*(4*A*a*b*c^4 - (4*B*a*b^2 - A*b^3)*c^3)*d
^2*e + 2*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)*c^3)*e^3)*x)*sq
rt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*c^5 + (b^4*c^5 -
 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*x
^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^3 - 8*a^2*b^3*c^
4 + 16*a^3*b*c^5)*x), -1/3*(3*((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*e
^3*x^4 + 2*(B*b^5*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*e^3*x^3 + (B*b^6 - 6*
B*a*b^4*c + 32*B*a^3*c^3)*e^3*x^2 + 2*(B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b
*c^2)*e^3*x + (B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*e^3)*sqrt(-c)*arct
an(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c*x + a*c))
+ 2*(24*(2*B*a^3 - A*a^2*b)*c^3*d*e^2 + (4*(2*B*a^2 - 3*A*a*b)*c^4 + (2*B*a
*b^2 + A*b^3)*c^3)*d^3 + 6*(4*A*a^2*c^4 - (4*B*a^2*b - A*a*b^2)*c^3)*d^2*e
+ (3*B*a^2*b^3*c - 20*B*a^3*b*c^2 + 16*A*a^3*c^3)*e^3 + (8*(B*b*c^5 - 2*A*c
^6)*d^3 - 6*(B*b^2*c^4 + 4*(B*a - A*b)*c^5)*d^2*e - 3*(B*b^3*c^3 + 8*A*a*c^
5 - 2*(6*B*a*b - A*b^2)*c^4)*d*e^2 + (4*B*b^4*c^2 + 4*(8*B*a^2 + 3*A*a*b)*c
^4 - (28*B*a*b^2 + A*b^3)*c^3)*e^3)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^3
- 3*(B*b^3*c^3 + 4*(B*a*b - A*b^2)*c^4)*d^2*e + 3*(4*(2*B*a^2 - A*a*b)*c^4
+ (2*B*a*b^2 - A*b^3)*c^3)*d*e^2 + (B*b^5*c - 6*B*a*b^3*c^2 + 2*A*a*b^2*c^3
 + 8*A*a^2*c^4)*e^3)*x^2 + 3*(12*(2*B*a^2*b - A*a*b^2)*c^3*d*e^2 + (B*b^3*c
^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d^3 + 3*(4*A*a*b*c^4 - (4*B*a*b^2
 - A*b^3)*c^3)*d^2*e + 2*(B*a*b^4*c - 7*B*a^2*b^2*c^2 + 4*(B*a^3 + A*a^2*b)
*c^3)*e^3)*x)*sqrt(c*x^2 + b*x + a))/(a^2*b^4*c^3 - 8*a^3*b^2*c^4 + 16*a^4*
c^5 + (b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*x^4 + 2*(b^5*c^4 - 8*a*b^3*c^5 +
 16*a^2*b*c^6)*x^3 + (b^6*c^3 - 6*a*b^4*c^4 + 32*a^3*c^6)*x^2 + 2*(a*b^5*c^
3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*x)]
```

giac [B] time = 0.39, size = 790, normalized size = 1.99

$$-\frac{Be^3\log\left(\left|-2\left(\sqrt{c}\,x-\sqrt{cx^2+bx+a}\right)\sqrt{c}-b\right|\right)}{c^{\frac{5}{2}}}-\frac{2(((\frac{(8\,Bbc^4d^3-16\,Ac^5d^3-6\,Bb^2c^3d^2e-24\,Bac^4d^2e+24\,Abc^4d^2e-3\,Bb^3c^2de^2+36\,Bab}{b^4c^2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -B*e^3*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(5/2)
 - 2/3*((((8*B*b*c^4*d^3 - 16*A*c^5*d^3 - 6*B*b^2*c^3*d^2*e - 24*B*a*c^4*d^
2*e + 24*A*b*c^4*d^2*e - 3*B*b^3*c^2*d*e^2 + 36*B*a*b*c^3*d*e^2 - 6*A*b^2*c
^3*d*e^2 - 24*A*a*c^4*d*e^2 + 4*B*b^4*c*e^3 - 28*B*a*b^2*c^2*e^3 - A*b^3*c^
2*e^3 + 32*B*a^2*c^3*e^3 + 12*A*a*b*c^3*e^3)*x/(b^4*c^2 - 8*a*b^2*c^3 + 16*
a^2*c^4) + 3*(4*B*b^2*c^3*d^3 - 8*A*b*c^4*d^3 - 3*B*b^3*c^2*d^2*e - 12*B*a*
b*c^3*d^2*e + 12*A*b^2*c^3*d^2*e + 6*B*a*b^2*c^2*d*e^2 - 3*A*b^3*c^2*d*e^2
+ 24*B*a^2*c^3*d*e^2 - 12*A*a*b*c^3*d*e^2 + B*b^5*e^3 - 6*B*a*b^3*c*e^3 + 2
*A*a*b^2*c^2*e^3 + 8*A*a^2*c^3*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x
 + 3*(B*b^3*c^2*d^3 + 4*B*a*b*c^3*d^3 - 2*A*b^2*c^3*d^3 - 8*A*a*c^4*d^3 - 1
2*B*a*b^2*c^2*d^2*e + 3*A*b^3*c^2*d^2*e + 12*A*a*b*c^3*d^2*e + 24*B*a^2*b*c
^2*d*e^2 - 12*A*a*b^2*c^2*d*e^2 + 2*B*a*b^4*e^3 - 14*B*a^2*b^2*c*e^3 + 8*B*
a^3*c^2*e^3 + 8*A*a^2*b*c^2*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))*x +
(2*B*a*b^2*c^2*d^3 + A*b^3*c^2*d^3 + 8*B*a^2*c^3*d^3 - 12*A*a*b*c^3*d^3 - 2
4*B*a^2*b*c^2*d^2*e + 6*A*a*b^2*c^2*d^2*e + 24*A*a^2*c^3*d^2*e + 48*B*a^3*c
^2*d*e^2 - 24*A*a^2*b*c^2*d*e^2 + 3*B*a^2*b^3*e^3 - 20*B*a^3*b*c*e^3 + 16*A
*a^3*c^2*e^3)/(b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.10, size = 2443, normalized size = 6.15

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 1/2*B*e^3*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x+4*B*e^3*b^2/c*a/(4*a*
c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+1/4*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*
x*B*d*e^2+2*b^3/c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2-b/c*a/(4*a*c-
b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^3-3/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3
/2)*B*d*e^2-24*b*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d*e^2-12*b^2/c*a/(
4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B*d*e^2+1/2*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a
)^(3/2)*x*A*d*e^2+1/2*b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e+a/c/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b*A*d*e^2+a/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2
)*b*B*d^2*e+16*a*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*d*e^2+16*a*c/(4*a*
c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e-16*b*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(
1/2)*x*A*d^2*e-1/4*b/c^2*x/(c*x^2+b*x+a)^(3/2)*A*e^3+1/8*b^2/c^3/(c*x^2+b*x
+a)^(3/2)*B*d*e^2+1/24*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^3+1/3*b^
4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*e^3-2*a/c^2/(c*x^2+b*x+a)^(3/2)*B
*d*e^2-3/2*x/c/(c*x^2+b*x+a)^(3/2)*A*d*e^2-3/2*x/c/(c*x^2+b*x+a)^(3/2)*B*d^
2*e+1/4*b/c^2/(c*x^2+b*x+a)^(3/2)*A*d*e^2+1/4*b/c^2/(c*x^2+b*x+a)^(3/2)*B*d
^2*e-2/3*b/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^3-1/3*b^2/c/(4*a*c-b^2)/(c
*x^2+b*x+a)^(3/2)*B*d^3-8*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d^2*e+4/3
*A*d^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+32/3*A*d^3*c^2/(4*a*c-b^2)^2/(c*
x^2+b*x+a)^(1/2)*x+16/3*A*d^3*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b+1/2*B*e
^3*b/c^2*x^2/(c*x^2+b*x+a)^(3/2)+1/8*B*e^3*b^2/c^3*x/(c*x^2+b*x+a)^(3/2)-1/
48*B*e^3*b^5/c^4/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)-1/6*B*e^3*b^5/c^3/(4*a*c-b
^2)^2/(c*x^2+b*x+a)^(1/2)+1/3*B*e^3*b/c^3*a/(c*x^2+b*x+a)^(3/2)+1/2*B*e^3/c
^3*b^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(1/2)-3*x^2/c/(c*x^2+b*x+a)^(3/2)*B*d*e^2+
2*B*e^3*b^3/c^2*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)+B*e^3/c^2*b^2/(4*a*c-b^
2)/(c*x^2+b*x+a)^(1/2)*x-3/4*b/c^2*x/(c*x^2+b*x+a)^(3/2)*B*d*e^2+1/12*b^3/c
^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*e^3+1/8*b^4/c^3/(4*a*c-b^2)/(c*x^2+b
*x+a)^(3/2)*B*d*e^2-1/24*B*e^3*b^4/c^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x-1/
3*B*e^3*b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+2*b^3/c/(4*a*c-b^2)^2/(
c*x^2+b*x+a)^(1/2)*B*d^2*e+2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d*e^2+2*
a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*d^2*e+8*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)
^(1/2)*b*A*d*e^2+8*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*b*B*d^2*e-2*b/(4*a*c
-b^2)/(c*x^2+b*x+a)^(3/2)*x*A*d^2*e-b^2/c/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A
*d^2*e-16/3*b*c/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^3+2/3*b^3/c/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^3+b^4/c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2
)*B*d*e^2-1/2*b^2/c^2*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*e^3-8*b*a/(4*a*c-
b^2)^2/(c*x^2+b*x+a)^(1/2)*x*A*e^3-4*b^2/c*a/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*A*e^3+1/4*b^3/c^2/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*A*d*e^2+1/4*b^3/c^2/(
4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*B*d^2*e+4*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1
/2)*x*A*d*e^2+4*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x*B*d^2*e+2*b^3/c/(4*
a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*A*d*e^2+1/4*B*e^3*b^3/c^3*a/(4*a*c-b^2)/(c*x
^2+b*x+a)^(3/2)-1/3/c/(c*x^2+b*x+a)^(3/2)*B*d^3+B*e^3/c^(5/2)*ln((1/2*b+c*x
)/c^(1/2)+(c*x^2+b*x+a)^(1/2))-3*b/c*a/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*x*B*
d*e^2+2/3*A*d^3/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b-x^2/c/(c*x^2+b*x+a)^(3/2)
*A*e^3+1/24*b^2/c^3/(c*x^2+b*x+a)^(3/2)*A*e^3-2/3*a/c^2/(c*x^2+b*x+a)^(3/2)
*A*e^3-1/3*B*e^3*x^3/c/(c*x^2+b*x+a)^(3/2)-1/48*B*e^3*b^3/c^4/(c*x^2+b*x+a)
^(3/2)-B*e^3/c^2*x/(c*x^2+b*x+a)^(1/2)+1/2*B*e^3/c^3*b/(c*x^2+b*x+a)^(1/2)-
1/c/(c*x^2+b*x+a)^(3/2)*A*d^2*e-8/3*b^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*B
*d^3
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^3}{{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2482 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=121

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

```
[Out] -2/3*(A*b-2*a*B-(-2*A*c+B*b)*x)*(e*x+d)^2/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)-
8/3*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)^2
/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 121, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = {804, 636}

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^2)/(3*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(3/2)) - (8*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(b*d - 2*a*e + (2*
c*d - b*e)*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bBd-2Acd+Abe-2aBe))\int \frac{d+ex}{\left(a+bx+cx\right.}}{3\left(b^2-4ac\right)}\\ &= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bBd-2Acd+Abe-2aBe)(bd-2ae+}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [B] time = 0.95, size = 314, normalized size = 2.60

$$\frac{2A\left(4b\left(2a^2e^2+3ac(d-ex)^2+2c^2dx^2(3d-2ex)\right)+8c\left(-2a^2de+acx\left(3d^2+e^2x^2\right)+2c^2d^2x^3\right)+b^2\left(2cx\left(3d^2\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*A*(-(b^3*(d^2 + 6*d*e*x - 3*e^2*x^2)) + 4*b*(2*a^2*e^2 + 2*c^2*d*x^2*(3*
d - 2*e*x) + 3*a*c*(d - e*x)^2) + 8*c*(-2*a^2*d*e + 2*c^2*d^2*x^3 + a*c*x*(
3*d^2 + e^2*x^2)) + b^2*(-4*a*e*(d - 3*e*x) + 2*c*x*(3*d^2 - 12*d*e*x + e^2
*x^2))) - 2*B*(16*a^3*e^2 + b*x*(8*c^2*d^2*x^2 + 4*b*c*d*x*(3*d - e*x) + b^
2*(3*d^2 - 6*d*e*x - e^2*x^2)) + 8*a^2*(b*e*(-2*d + 3*e*x) + c*(d^2 + 3*e^2
*x^2)) + 2*a*(-8*c^2*d*e*x^3 + 6*b*c*x*(d - e*x)^2 + b^2*(d^2 - 12*d*e*x +
3*e^2*x^2))))/(3*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 14.03, size = 469, normalized size = 3.88

$$-\frac{2\left(\left(8\left(Bbc^2-2\,Ac^3\right)d^2-4\left(Bb^2c+4\,(Ba-Ab)c^2\right)de-\left(Bb^3+8\,Aac^2-2\left(6\,Bab-Ab^2\right)c\right)e^2\right)x^3+\left(2\,Bab^2+Ab\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*((8*(B*b*c^2 - 2*A*c^3)*d^2 - 4*(B*b^2*c + 4*(B*a - A*b)*c^2)*d*e - (B
*b^3 + 8*A*a*c^2 - 2*(6*B*a*b - A*b^2)*c)*e^2)*x^3 + (2*B*a*b^2 + A*b^3 + 4
*(2*B*a^2 - 3*A*a*b)*c)*d^2 - 4*(4*B*a^2*b - A*a*b^2 - 4*A*a^2*c)*d*e + 8*(
2*B*a^3 - A*a^2*b)*e^2 + 3*(4*(B*b^2*c - 2*A*b*c^2)*d^2 - 2*(B*b^3 + 4*(B*a
*b - A*b^2)*c)*d*e + (2*B*a*b^2 - A*b^3 + 4*(2*B*a^2 - A*a*b)*c)*e^2)*x^2 +
 3*((B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b^2)*c)*d^2 - 2*(4*B*a*b^2 - A*b^3
- 4*A*a*b*c)*d*e + 4*(2*B*a^2*b - A*a*b^2)*e^2)*x)*sqrt(c*x^2 + b*x + a)/(a
^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^
4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*
c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 0.33, size = 448, normalized size = 3.70

$$-\frac{2\left(\left(\left(\frac{\left(8\,Bbc^2d^2-16\,Ac^3d^2-4\,Bb^2cde-16\,Bac^2de+16\,Abc^2de-Bb^3e^2+12\,Babce^2-2\,Ab^2ce^2-8\,Aac^2e^2\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(4\,Bb^2cd^2-8\,Abc^2d^2-2\,Bb^3de-8\,Babcde+8\right.}{b^4-8\,ab}\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((((8*B*b*c^2*d^2 - 16*A*c^3*d^2 - 4*B*b^2*c*d*e - 16*B*a*c^2*d*e + 16
*A*b*c^2*d*e - B*b^3*e^2 + 12*B*a*b*c*e^2 - 2*A*b^2*c*e^2 - 8*A*a*c^2*e^2)*
x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(4*B*b^2*c*d^2 - 8*A*b*c^2*d^2 - 2*B*b
^3*d*e - 8*B*a*b*c*d*e + 8*A*b^2*c*d*e + 2*B*a*b^2*e^2 - A*b^3*e^2 + 8*B*a^
2*c*e^2 - 4*A*a*b*c*e^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3*d^2 +
 4*B*a*b*c*d^2 - 2*A*b^2*c*d^2 - 8*A*a*c^2*d^2 - 8*B*a*b^2*d*e + 2*A*b^3*d*
e + 8*A*a*b*c*d*e + 8*B*a^2*b*e^2 - 4*A*a*b^2*e^2)/(b^4 - 8*a*b^2*c + 16*a^
2*c^2))*x + (2*B*a*b^2*d^2 + A*b^3*d^2 + 8*B*a^2*c*d^2 - 12*A*a*b*c*d^2 - 1
6*B*a^2*b*d*e + 4*A*a*b^2*d*e + 16*A*a^2*c*d*e + 16*B*a^3*e^2 - 8*A*a^2*b*e
^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.02, size = 433, normalized size = 3.58

$$\frac{-8Babc\,d^2x-\frac{32}{3}Ab\,c^2de\,x^3-8Babc\,e^2x^3+\frac{32}{3}Ba\,c^2de\,x^3+\frac{8}{3}B\,b^2cde\,x^3+8Aabc\,e^2x^2-16A\,b^2cde\,x^2+16Ba\,b^2dex}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(8*A*a*c^2*e^2*x^3+2*A*b^2*c*e^2*x^3-16*A*b*c^2*d*e
*x^3+16*A*c^3*d^2*x^3-12*B*a*b*c*e^2*x^3+16*B*a*c^2*d*e*x^3+B*b^3*e^2*x^3+4
*B*b^2*c*d*e*x^3-8*B*b*c^2*d^2*x^3+12*A*a*b*c*e^2*x^2+3*A*b^3*e^2*x^2-24*A*
b^2*c*d*e*x^2+24*A*b*c^2*d^2*x^2-24*B*a^2*c*e^2*x^2-6*B*a*b^2*e^2*x^2+24*B*
a*b*c*d*e*x^2+6*B*b^3*d*e*x^2-12*B*b^2*c*d^2*x^2+12*A*a*b^2*e^2*x-24*A*a*b*
c*d*e*x+24*A*a*c^2*d^2*x-6*A*b^3*d*e*x+6*A*b^2*c*d^2*x-24*B*a^2*b*e^2*x+24*
B*a*b^2*d*e*x-12*B*a*b*c*d^2*x-3*B*b^3*d^2*x+8*A*a^2*b*e^2-16*A*a^2*c*d*e-4
*A*a*b^2*d*e+12*A*a*b*c*d^2-A*b^3*d^2-16*B*a^3*e^2+16*B*a^2*b*d*e-8*B*a^2*c
*d^2-2*B*a*b^2*d^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima **[F(-2)]** time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad **[B]** time = 3.09, size = 423, normalized size = 3.50

$$-\frac{2\,\left(16\,B\,a^3\,e^2-16\,B\,a^2\,b\,d\,e+24\,B\,a^2\,b\,e^2\,x-8\,A\,a^2\,b\,e^2+8\,B\,a^2\,c\,d^2+16\,A\,a^2\,c\,d\,e+24\,B\,a^2\,c\,e^2\,x^2+2\,B\,a\,b^2}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d^2 + 16*B*a^3*e^2 - 8*A*a^2*b*e^2 + 2*B*a*b^2*d^2 + 8*B*a^2*c*d
^2 + 3*B*b^3*d^2*x - 3*A*b^3*e^2*x^2 - 16*A*c^3*d^2*x^3 - B*b^3*e^2*x^3 - 6
*A*b^2*c*d^2*x + 24*B*a^2*b*e^2*x - 6*B*b^3*d*e*x^2 - 24*A*b*c^2*d^2*x^2 +
6*B*a*b^2*e^2*x^2 - 8*A*a*c^2*e^2*x^3 + 24*B*a^2*c*e^2*x^2 + 12*B*b^2*c*d^2
*x^2 - 2*A*b^2*c*e^2*x^3 + 8*B*b*c^2*d^2*x^3 - 12*A*a*b*c*d^2 + 4*A*a*b^2*d
*e + 16*A*a^2*c*d*e - 16*B*a^2*b*d*e + 6*A*b^3*d*e*x - 12*A*a*b^2*e^2*x - 2
4*A*a*c^2*d^2*x + 12*B*a*b*c*d^2*x - 24*B*a*b^2*d*e*x - 12*A*a*b*c*e^2*x^2
+ 12*B*a*b*c*e^2*x^3 + 24*A*b^2*c*d*e*x^2 + 16*A*b*c^2*d*e*x^3 - 16*B*a*c^2
*d*e*x^3 - 4*B*b^2*c*d*e*x^3 + 24*A*a*b*c*d*e*x - 24*B*a*b*c*d*e*x^2))/(3*(
4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2483 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=158

$$\frac{2(b+2cx)\left(4c(aBe+2Acd)-4bc(Ae+Bd)+b^2Be\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Ac\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] 2/3*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(A*c*d-B*a*
e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)+2/3*(b^2*B*e-4*b*c*(A*e+B*d)+4*c*
(2*A*c*d+B*a*e))*(2*c*x+b)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 158, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {777, 613}

$$\frac{2(b+2cx)\left(4c(aBe+2Acd)-4bc(Ae+Bd)+b^2Be\right)}{3c\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}+\frac{2\left(-x\left(2c(Acd-aBe)-bc(Ae+Bd)+b^2Be\right)-b(aBe+Ac\right.}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(3*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/2)) + (2*(b^
2*B*e - 4*b*c*(B*d + A*e) + 4*c*(2*A*c*d + a*B*e))*(b + 2*c*x))/(3*c*(b^2 -
 4*a*c)^2*Sqrt[a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{5/2}}\,dx &= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{\left(b^2Be-\right.}{}\\ &= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{3c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{2\left(b^2Be\right.}{}\end{aligned}$$

Mathematica [A] time = 0.31, size = 200, normalized size = 1.27

$$-\frac{2\left(A\left(8c\left(a^2e-3acdx-2c^2dx^3\right)+2b^2\left(ae-3cdx+6cex^2\right)+4bc\left(-3ad+3aex-6cdx^2+2cex^3\right)+b^3(d+3ex)\right)\right.}{3\left(b^2-4ac\right)^2(a+}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b^3*(d + 3*e*x) + 2*b^2*(a*e - 3*c*d*x + 6*c*e*x^2) + 8*c*(a^2*e -
3*a*c*d*x - 2*c^2*d*x^3) + 4*b*c*(-3*a*d + 3*a*e*x - 6*c*d*x^2 + 2*c*e*x^3)
) + B*(8*a^2*(c*d - b*e) + 2*a*(-4*c^2*e*x^3 + b^2*(d - 6*e*x) + 6*b*c*x*(d
 - e*x)) + b*x*(8*c^2*d*x^2 + 3*b^2*(d - e*x) - 2*b*c*x*(-6*d + e*x)))))/(3
*(b^2 - 4*a*c)^2*(a + x*(b + c*x))^(3/2))
```

fricas [B] time = 13.25, size = 353, normalized size = 2.23

$$-\frac{2\bigl(2\left(4\left(Bbc^2-2\,Ac^3\right)d-\left(Bb^2c+4\,(Ba-Ab)c^2\right)e\right)x^3+3\left(4\left(Bb^2c-2\,Abc^2\right)d-\left(Bb^3+4\left(Bab-Ab^2\right)c\right)e\right)x^2}{3\bigl(a^2b^4-8\,a^3b^2c+16\,a^4c^2+\bigl(b^4c^2-8\,ab^2c^3+16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*(4*(B*b*c^2 - 2*A*c^3)*d - (B*b^2*c + 4*(B*a - A*b)*c^2)*e)*x^3 + 3
*(4*(B*b^2*c - 2*A*b*c^2)*d - (B*b^3 + 4*(B*a*b - A*b^2)*c)*e)*x^2 + (2*B*a
*b^2 + A*b^3 + 4*(2*B*a^2 - 3*A*a*b)*c)*d - 2*(4*B*a^2*b - A*a*b^2 - 4*A*a^
2*c)*e + 3*((B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b^2)*c)*d - (4*B*a*b^2 - A*
b^3 - 4*A*a*b*c)*e)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^
4*c^2 + (b^4*c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 +
 16*a^2*b*c^3)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*
b^3*c + 16*a^3*b*c^2)*x)
```

giac [B] time = 0.33, size = 309, normalized size = 1.96

$$-\frac{2\Biggl(\Biggl(\Biggl(\frac{2\left(4\,Bbc^2d-8\,Ac^3d-Bb^2ce-4\,Bac^2e+4\,Abc^2e\right)x}{b^4-8\,ab^2c+16\,a^2c^2}+\frac{3\left(4\,Bb^2cd-8\,Abc^2d-Bb^3e-4\,Babce+4\,Ab^2ce\right)}{b^4-8\,ab^2c+16\,a^2c^2}\Biggr)x+\frac{3\bigl(Bb^3d+4\,Babcd-2\,Ab^2cd-8\,Aac^2d}{b^4-8\,ab^2c+16}}{3\left(cx^2+bx+a\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*(((2*(4*B*b*c^2*d - 8*A*c^3*d - B*b^2*c*e - 4*B*a*c^2*e + 4*A*b*c^2*e)
*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(4*B*b^2*c*d - 8*A*b*c^2*d - B*b^3*e
- 4*B*a*b*c*e + 4*A*b^2*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3*d
 + 4*B*a*b*c*d - 2*A*b^2*c*d - 8*A*a*c^2*d - 4*B*a*b^2*e + A*b^3*e + 4*A*a*
b*c*e)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2*d + A*b^3*d + 8*B*a^2
*c*d - 12*A*a*b*c*d - 8*B*a^2*b*e + 2*A*a*b^2*e + 8*A*a^2*c*e)/(b^4 - 8*a*b
^2*c + 16*a^2*c^2))/(c*x^2 + b*x + a)^(3/2)
```

maple [A] time = 0.01, size = 256, normalized size = 1.62

$$-\frac{2\bigl(8Ab\,c^2e\,x^3-16A\,c^3d\,x^3-8Ba\,c^2e\,x^3-2B\,b^2ce\,x^3+8Bb\,c^2d\,x^3+12A\,b^2ce\,x^2-24Ab\,c^2d\,x^2-12Babce\,x^2-}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3/(c*x^2+b*x+a)^(3/2)*(8*A*b*c^2*e*x^3-16*A*c^3*d*x^3-8*B*a*c^2*e*x^3-2*
B*b^2*c*e*x^3+8*B*b*c^2*d*x^3+12*A*b^2*c*e*x^2-24*A*b*c^2*d*x^2-12*B*a*b*c*
e*x^2-3*B*b^3*e*x^2+12*B*b^2*c*d*x^2+12*A*a*b*c*e*x-24*A*a*c^2*d*x+3*A*b^3*
e*x-6*A*b^2*c*d*x-12*B*a*b^2*e*x+12*B*a*b*c*d*x+3*B*b^3*d*x+8*A*a^2*c*e+2*A
*a*b^2*e-12*A*a*b*c*d+A*b^3*d-8*B*a^2*b*e+8*B*a^2*c*d+2*B*a*b^2*d)/(16*a^2*
c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.82, size = 246, normalized size = 1.56

$$-\frac{2\,\left(A\,b^3\,d+2\,A\,a\,b^2\,e+2\,B\,a\,b^2\,d+8\,A\,a^2\,c\,e-8\,B\,a^2\,b\,e+8\,B\,a^2\,c\,d+3\,A\,b^3\,e\,x+3\,B\,b^3\,d\,x-16\,A\,c^3\,d\,x^3-3\,B\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3*d + 2*A*a*b^2*e + 2*B*a*b^2*d + 8*A*a^2*c*e - 8*B*a^2*b*e + 8*B*
a^2*c*d + 3*A*b^3*e*x + 3*B*b^3*d*x - 16*A*c^3*d*x^3 - 3*B*b^3*e*x^2 - 24*A
*b*c^2*d*x^2 + 12*A*b^2*c*e*x^2 + 12*B*b^2*c*d*x^2 + 8*A*b*c^2*e*x^3 - 8*B*
a*c^2*e*x^3 + 8*B*b*c^2*d*x^3 - 2*B*b^2*c*e*x^3 - 12*A*a*b*c*d - 24*A*a*c^2
*d*x - 6*A*b^2*c*d*x - 12*B*a*b^2*e*x - 12*B*a*b*c*e*x^2 + 12*A*a*b*c*e*x +
 12*B*a*b*c*d*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2484 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}} \, dx$

Optimal. Leaf size=90

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] -2/3*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(3/2)-8/3*(-2*A*
c+B*b)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 90, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$-\frac{8(b+2cx)(bB-2Ac)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(3*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(3/
2)) - (8*(b*B - 2*A*c)*(b + 2*c*x))/(3*(b^2 - 4*a*c)^2*Sqrt[a + b*x + c*x^2
])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{5/2}}\,dx&=-\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}+\frac{(4(bB-2Ac))\int \frac{1}{\left(a+bx+cx^2\right)^{3/2}}\,dx}{3\left(b^2-4ac\right)}\\&=-\frac{2(Ab-2aB-(bB-2Ac)x)}{3\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{3/2}}-\frac{8(bB-2Ac)(b+2cx)}{3\left(b^2-4ac\right)^2\sqrt{a+bx+cx^2}}\end{aligned}$$

Mathematica [A] time = 0.10, size = 99, normalized size = 1.10

$$-\frac{2\left(B\left(8a^2c+2ab(b+6cx)+bx\left(3b^2+12bcx+8c^2x^2\right)\right)+A(b+2cx)\left(-4c\left(3a+2cx^2\right)+b^2-8bcx\right)\right)}{3\left(b^2-4ac\right)^2(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(5/2),x]
```

```
[Out] (-2*(A*(b + 2*c*x)*(b^2 - 8*b*c*x - 4*c*(3*a + 2*c*x^2)) + B*(8*a^2*c + 2*a
*b*(b + 6*c*x) + b*x*(3*b^2 + 12*b*c*x + 8*c^2*x^2))))/(3*(b^2 - 4*a*c)^2*(
a + x*(b + c*x))^(3/2))
```

fricas [B] time = 1.55, size = 245, normalized size = 2.72

$$-\frac{2 (2 \, B a b^{2} + A b^{3} + 8 \, (B b c^{2} - 2 \, A c^{3}) x^{3} + 12 \, (B b^{2} c - 2 \, A b c^{2}) x^{2} + 4 \, (2 \, B a^{2} - 3 \, A a b) c + 3 \, (B b^{3} - 8 \, A a c^{2} + 2}{3 \, (a^{2} b^{4} - 8 \, a^{3} b^{2} c + 16 \, a^{4} c^{2} + (b^{4} c^{2} - 8 \, a b^{2} c^{3} + 16 \, a^{2} c^{4}) x^{4} + 2 \, (b^{5} c - 8 \, a b^{3} c^{2} + 16 \, a^{2} b c^{3}) x^{3} + (b^{6} - 6 \, a b^{4} c + 32 \, a}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] -2/3*(2*B*a*b^2 + A*b^3 + 8*(B*b*c^2 - 2*A*c^3)*x^3 + 12*(B*b^2*c - 2*A*b*c
^2)*x^2 + 4*(2*B*a^2 - 3*A*a*b)*c + 3*(B*b^3 - 8*A*a*c^2 + 2*(2*B*a*b - A*b
^2)*c)*x)*sqrt(c*x^2 + b*x + a)/(a^2*b^4 - 8*a^3*b^2*c + 16*a^4*c^2 + (b^4*
c^2 - 8*a*b^2*c^3 + 16*a^2*c^4)*x^4 + 2*(b^5*c - 8*a*b^3*c^2 + 16*a^2*b*c^3
)*x^3 + (b^6 - 6*a*b^4*c + 32*a^3*c^3)*x^2 + 2*(a*b^5 - 8*a^2*b^3*c + 16*a^
3*b*c^2)*x)
```

giac [B] time = 0.30, size = 193, normalized size = 2.14

$$-\frac{2 \, {\left({\left(4 \, {\left(\frac{2 \, {\left(B b c^{2} - 2 \, A c^{3}\right)} x}{b^{4} - 8 \, a b^{2} c + 16 \, a^{2} c^{2}} + \frac{3 \, {\left(B b^{2} c - 2 \, A b c^{2}\right)}}{b^{4} - 8 \, a b^{2} c + 16 \, a^{2} c^{2}}\right)} x + \frac{3 \, {\left(B b^{3} + 4 \, B a b c - 2 \, A b^{2} c - 8 \, A a c^{2}\right)}}{b^{4} - 8 \, a b^{2} c + 16 \, a^{2} c^{2}}\right)} x + \frac{2 \, B a b^{2} + A b^{3} + 8 \, B a^{2} c - 12 \, A a b c}{b^{4} - 8 \, a b^{2} c + 16 \, a^{2} c^{2}}\right)}}{3 \, {\left(c x^{2} + b x + a\right)}^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2/3*((4*(2*(B*b*c^2 - 2*A*c^3)*x/(b^4 - 8*a*b^2*c + 16*a^2*c^2) + 3*(B*b^2
*c - 2*A*b*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + 3*(B*b^3 + 4*B*a*b*c -
2*A*b^2*c - 8*A*a*c^2)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))*x + (2*B*a*b^2 + A*b
^3 + 8*B*a^2*c - 12*A*a*b*c)/(b^4 - 8*a*b^2*c + 16*a^2*c^2))/(c*x^2 + b*x +
 a)^(3/2)
```

maple [A] time = 0.01, size = 132, normalized size = 1.47

$$\frac{\frac{32}{3} A \,c^{3} x^{3}-\frac{16}{3} B b \,c^{2} x^{3}+16 A b \,c^{2} x^{2}-8 B \,b^{2} c \,x^{2}+16 A a \,c^{2} x +4 A \,b^{2} c x -8 B a b c x -2 B \,b^{3} x +8 A a b c -\frac{2}{3} A \,b^{3}-\frac{16}{3} B}{\left(c \,x^{2}+b x +a \right)^{\frac{3}{2}} \left(16 a^{2} c^{2}-8 a \,b^{2} c +b^{4}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] 2/3/(c*x^2+b*x+a)^(3/2)*(16*A*c^3*x^3-8*B*b*c^2*x^3+24*A*b*c^2*x^2-12*B*b^2
*c*x^2+24*A*a*c^2*x+6*A*b^2*c*x-12*B*a*b*c*x-3*B*b^3*x+12*A*a*b*c-A*b^3-8*B
*a^2*c-2*B*a*b^2)/(16*a^2*c^2-8*a*b^2*c+b^4)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 2.66, size = 121, normalized size = 1.34

$$-\frac{2\left(8\,B\,a^2\,c+2\,B\,a\,b^2+12\,B\,a\,b\,c\,x-12\,A\,a\,b\,c-24\,A\,a\,c^2\,x+3\,B\,b^3\,x+A\,b^3+12\,B\,b^2\,c\,x^2-6\,A\,b^2\,c\,x+8\,B}{3\left(4\,a\,c-b^2\right)^2\,\left(c\,x^2+b\,x+a\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(5/2),x)
```

```
[Out] -(2*(A*b^3 - 16*A*c^3*x^3 + 2*B*a*b^2 + 8*B*a^2*c + 3*B*b^3*x - 24*A*a*c^2*
x - 6*A*b^2*c*x - 24*A*b*c^2*x^2 + 12*B*b^2*c*x^2 + 8*B*b*c^2*x^3 - 12*A*a*
b*c + 12*B*a*b*c*x))/(3*(4*a*c - b^2)^2*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2485 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=436

$$\frac{2\Big(cx\Big((2cd-be)\Big(4c\Big(3aAe^2-aBde+2Acd^2\Big)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\Big)+4ce(bd-2ae)(-2aBe+Abe-}{3\Big(b}$$

```
[Out] 2/3*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*
d)*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(3/2)-e^3*(-A*e+B*d)*a
rctanh(1/2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+
a)^(1/2))/(a*e^2-b*d*e+c*d^2)^(5/2)+2/3*(4*a*c*e*(-b*e+2*c*d)*(A*b*e-2*A*c*
d-2*B*a*e+B*b*d)+(2*a*c*e-b^2*e+b*c*d)*(3*b^2*e*(-A*e+B*d)-4*b*c*d*(A*e+B*d
)+4*c*(3*A*a*e^2+2*A*c*d^2-B*a*d*e))+c*(4*c*e*(-2*a*e+b*d)*(A*b*e-2*A*c*d-2
*B*a*e+B*b*d)+(-b*e+2*c*d)*(3*b^2*e*(-A*e+B*d)-4*b*c*d*(A*e+B*d)+4*c*(3*A*a
*e^2+2*A*c*d^2-B*a*d*e)))*x)/(-4*a*c+b^2)^2/(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*
x+a)^(1/2)
```

Rubi **[A]** time = 0.55, antiderivative size = 436, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {822, 12, 724, 206}

$$\frac{2\Big(cx\Big((2cd-be)\Big(4c\Big(3aAe^2-aBde+2Acd^2\Big)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\Big)+4ce(bd-2ae)(-2aBe+Abe-}{3\Big(b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*
x^2)^(3/2)) + (2*(4*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)
 + (b*c*d - b^2*e + 2*a*c*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) + 4
*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)) + c*(4*c*e*(b*d - 2*a*e)*(b*B*d - 2*A
*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d
 + A*e) + 4*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)))*x))/(3*(b^2 - 4*a*c)^2*(c
*d^2 - b*d*e + a*e^2)^2*Sqrt[a + b*x + c*x^2]) - (e^3*(B*d - A*e)*ArcTanh[(
b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x
+ c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(5/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{5/2}}\,dx &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}}-\\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}}+\\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}}+\\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}}+\\ &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{3/2}}+\end{aligned}$$

Mathematica [A] time = 1.04, size = 437, normalized size = 1.00

$$\frac{4\left(cx\left(\frac{1}{2}(2cd-be)\left(4c\left(3aAe^2-aBde+2Acd^2\right)+3b^2e(Bd-Ae)-4bcd(Ae+Bd)\right)+2ce(bd-2ae)(-2aBe+A\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (4*(2*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + ((b*c*d - b
^2*e + 2*a*c*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) + 4*c*(2*A*c*d^2
 - a*B*d*e + 3*a*A*e^2)))/2 + c*(2*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b
*e - 2*a*B*e) + ((2*c*d - b*e)*(3*b^2*e*(B*d - A*e) - 4*b*c*d*(B*d + A*e) +
 4*c*(2*A*c*d^2 - a*B*d*e + 3*a*A*e^2)))/2)*x))/(3*(b^2 - 4*a*c)^2*(c*d^2 +
 e*(-(b*d) + a*e))^2*Sqrt[a + x*(b + c*x)]) + (2*(-(A*b^2*e) - b*B*c*d*x +
2*A*c*(a*e + c*d*x) + A*b*c*(d - e*x) + a*B*(-2*c*d + b*e + 2*c*e*x)))/(3*(
b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(a + x*(b + c*x))^(3/2)) + (e^3*(B*
d - A*e)*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(2*Sqrt[c*d^2 + e*(-(b*
d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(c*d^2 + e*(-(b*d) + a*e))^(5/2)
```

fricas [**B**]   time = 38.57, size = 6068, normalized size = 13.92

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [-1/6*(3*((B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*d*e^3 - (A*a^2*b^4 - 8
*A*a^3*b^2*c + 16*A*a^4*c^2)*e^4 + ((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c
^4)*d*e^3 - (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*e^4)*x^4 + 2*((B*b^5
*c - 8*B*a*b^3*c^2 + 16*B*a^2*b*c^3)*d*e^3 - (A*b^5*c - 8*A*a*b^3*c^2 + 16*
A*a^2*b*c^3)*e^4)*x^3 + ((B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*d*e^3 - (A*b^
6 - 6*A*a*b^4*c + 32*A*a^3*c^3)*e^4)*x^2 + 2*((B*a*b^5 - 8*B*a^2*b^3*c + 16
*B*a^3*b*c^2)*d*e^3 - (A*a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*e^4)*x)*sq
rt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2 - (b^2 + 4*a*c)*d^2 -
(8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 - 4*sqrt(c*d^2 - b*d*e + a*
e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*e)*x) - 2*(4*b*c*d^2 +
 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e*x + d^2)) + 4*((4*(2*
B*a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^3)*d^5 - (8*A*a^2*c^4 + 2*(8*B
*a^2*b - 17*A*a*b^2)*c^3 + 3*(2*B*a*b^3 + A*b^4)*c^2)*d^4*e + (20*(2*B*a^3
- A*a^2*b)*c^3 + 3*(2*B*a^2*b^2 - 9*A*a*b^3)*c^2 + 3*(2*B*a*b^4 + A*b^5)*c)
*d^3*e^2 - (2*B*a*b^5 + A*b^6 - B*a^2*b^3*c + 40*A*a^3*c^3 + 2*(26*B*a^3*b
- 33*A*a^2*b^2)*c^2)*d^2*e^3 + (B*a^2*b^4 + 5*A*a*b^5 + 16*(2*B*a^4 + A*a^3
*b)*c^2 + 2*(4*B*a^3*b^2 - 17*A*a^2*b^3)*c)*d*e^4 + (B*a^3*b^3 - 4*A*a^2*b^
4 - 32*A*a^4*c^2 - 4*(3*B*a^4*b - 7*A*a^3*b^2)*c)*e^5 + (8*(B*b*c^5 - 2*A*c
^6)*d^5 - 2*(11*B*b^2*c^4 - 4*(B*a + 5*A*b)*c^5)*d^4*e + (17*B*b^3*c^3 - 56
*A*a*c^5 + 2*(6*B*a*b - 13*A*b^2)*c^4)*d^3*e^2 - (3*B*b^4*c^2 + 4*(2*B*a^2
- 21*A*a*b)*c^4 + (26*B*a*b^2 + A*b^3)*c^3)*d^2*e^3 - (40*A*a^2*c^4 - 2*(14
*B*a^2*b - 11*A*a*b^2)*c^3 - 3*(B*a*b^3 + A*b^4)*c^2)*d*e^4 - (3*A*a*b^3*c^
2 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*e^5)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^
5 - (11*B*b^3*c^3 - 4*(B*a*b + 5*A*b^2)*c^4)*d^4*e + (9*B*b^4*c^2 + 4*(2*B*
a^2 - 7*A*a*b)*c^4 + (2*B*a*b^2 - 13*A*b^3)*c^3)*d^3*e^2 - (2*B*b^5*c + 8*A
*a^2*c^4 + 2*(6*B*a^2*b - 23*A*a*b^2)*c^3 + (9*B*a*b^3 + A*b^4)*c^2)*d^2*e^
3 + (4*(2*B*a^3 - 3*A*a^2*b)*c^3 + 5*(2*B*a^2*b^2 - 3*A*a*b^3)*c^2 + 2*(B*a
*b^4 + A*b^5)*c)*d*e^4 - 2*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*
b^2)*c^2)*e^5)*x^2 + 3*((B*b^3*c^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d
^5 - (3*B*b^4*c^2 - 20*A*a*b*c^4 + (8*B*a*b^2 - 5*A*b^3)*c^3)*d^4*e + (3*B*
b^5*c - 24*A*a^2*c^4 + 2*(10*B*a^2*b - 11*A*a*b^2)*c^3 + 3*(B*a*b^3 - A*b^4
)*c^2)*d^3*e^2 - (B*b^6 + A*b^5*c + 4*(2*B*a^3 - 7*A*a^2*b)*c^3 + (22*B*a^2
*b^2 - 17*A*a*b^3)*c^2)*d^2*e^3 + (B*a*b^5 + A*b^6 - 6*A*a*b^4*c - 16*A*a^3
*c^3 + 8*(3*B*a^3*b - A*a^2*b^2)*c^2)*d*e^4 - (A*a*b^5 + 8*B*a^4*c^2 + 2*(B
*a^3*b^2 - 3*A*a^2*b^3)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^3 - 8
*a^3*b^2*c^4 + 16*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*
c^4)*d^5*e + 3*(a^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4
*e^2 - (a^2*b^7 - 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*
(a^3*b^6 - 7*a^4*b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 -
 8*a^5*b^3*c + 16*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e
^6 + ((b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 +
 16*a^2*b*c^6)*d^5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^
6)*d^4*e^2 - (b^7*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^
3 + 3*(a*b^6*c^2 - 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*
(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b
^2*c^3 + 16*a^5*c^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d
^6 - 3*(b^6*c^3 - 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^
5*c^3 + 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a
^2*b^4*c^3 + 96*a^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b
^3*c^3 + 16*a^4*b*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*
c^3)*d*e^5 + (a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^
3 - 6*a*b^4*c^4 + 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5
```

```
)*d^5*e + 3*(b^8*c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*
c^5)*d^4*e^2 - (b^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*
e^3 + 3*(a*b^8 - 5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)
*d^2*e^4 - 3*(a^2*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^
4*b^4*c + 32*a^6*c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c
^5)*d^6 - 3*(a*b^6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c
 - 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b
^6*c - 32*a^3*b^4*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c
+ 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5
*b^2*c^2)*d*e^5 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x), -1/3*(3*(
(B*a^2*b^4 - 8*B*a^3*b^2*c + 16*B*a^4*c^2)*d*e^3 - (A*a^2*b^4 - 8*A*a^3*b^2
*c + 16*A*a^4*c^2)*e^4 + ((B*b^4*c^2 - 8*B*a*b^2*c^3 + 16*B*a^2*c^4)*d*e^3
- (A*b^4*c^2 - 8*A*a*b^2*c^3 + 16*A*a^2*c^4)*e^4)*x^4 + 2*((B*b^5*c - 8*B*a
*b^3*c^2 + 16*B*a^2*b*c^3)*d*e^3 - (A*b^5*c - 8*A*a*b^3*c^2 + 16*A*a^2*b*c^
3)*e^4)*x^3 + ((B*b^6 - 6*B*a*b^4*c + 32*B*a^3*c^3)*d*e^3 - (A*b^6 - 6*A*a*
b^4*c + 32*A*a^3*c^3)*e^4)*x^2 + 2*((B*a*b^5 - 8*B*a^2*b^3*c + 16*B*a^3*b*c
^2)*d*e^3 - (A*a*b^5 - 8*A*a^2*b^3*c + 16*A*a^3*b*c^2)*e^4)*x)*sqrt(-c*d^2
+ b*d*e - a*e^2)*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x
+ a)*(b*d - 2*a*e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^
2 - b*c*d*e + a*c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*((4*(2*B
*a^2 - 3*A*a*b)*c^4 + (2*B*a*b^2 + A*b^3)*c^3)*d^5 - (8*A*a^2*c^4 + 2*(8*B*
a^2*b - 17*A*a*b^2)*c^3 + 3*(2*B*a*b^3 + A*b^4)*c^2)*d^4*e + (20*(2*B*a^3 -
 A*a^2*b)*c^3 + 3*(2*B*a^2*b^2 - 9*A*a*b^3)*c^2 + 3*(2*B*a*b^4 + A*b^5)*c)*
d^3*e^2 - (2*B*a*b^5 + A*b^6 - B*a^2*b^3*c + 40*A*a^3*c^3 + 2*(26*B*a^3*b -
 33*A*a^2*b^2)*c^2)*d^2*e^3 + (B*a^2*b^4 + 5*A*a*b^5 + 16*(2*B*a^4 + A*a^3*
b)*c^2 + 2*(4*B*a^3*b^2 - 17*A*a^2*b^3)*c)*d*e^4 + (B*a^3*b^3 - 4*A*a^2*b^4
 - 32*A*a^4*c^2 - 4*(3*B*a^4*b - 7*A*a^3*b^2)*c)*e^5 + (8*(B*b*c^5 - 2*A*c^
6)*d^5 - 2*(11*B*b^2*c^4 - 4*(B*a + 5*A*b)*c^5)*d^4*e + (17*B*b^3*c^3 - 56*
A*a*c^5 + 2*(6*B*a*b - 13*A*b^2)*c^4)*d^3*e^2 - (3*B*b^4*c^2 + 4*(2*B*a^2 -
 21*A*a*b)*c^4 + (26*B*a*b^2 + A*b^3)*c^3)*d^2*e^3 - (40*A*a^2*c^4 - 2*(14*
B*a^2*b - 11*A*a*b^2)*c^3 - 3*(B*a*b^3 + A*b^4)*c^2)*d*e^4 - (3*A*a*b^3*c^2
 + 4*(4*B*a^3 - 5*A*a^2*b)*c^3)*e^5)*x^3 + 3*(4*(B*b^2*c^4 - 2*A*b*c^5)*d^5
 - (11*B*b^3*c^3 - 4*(B*a*b + 5*A*b^2)*c^4)*d^4*e + (9*B*b^4*c^2 + 4*(2*B*a
^2 - 7*A*a*b)*c^4 + (2*B*a*b^2 - 13*A*b^3)*c^3)*d^3*e^2 - (2*B*b^5*c + 8*A*
a^2*c^4 + 2*(6*B*a^2*b - 23*A*a*b^2)*c^3 + (9*B*a*b^3 + A*b^4)*c^2)*d^2*e^3
 + (4*(2*B*a^3 - 3*A*a^2*b)*c^3 + 5*(2*B*a^2*b^2 - 3*A*a*b^3)*c^2 + 2*(B*a*
b^4 + A*b^5)*c)*d*e^4 - 2*(A*a*b^4*c + 4*A*a^3*c^3 + (4*B*a^3*b - 7*A*a^2*b
^2)*c^2)*e^5)*x^2 + 3*((B*b^3*c^3 - 8*A*a*c^5 + 2*(2*B*a*b - A*b^2)*c^4)*d^
5 - (3*B*b^4*c^2 - 20*A*a*b*c^4 + (8*B*a*b^2 - 5*A*b^3)*c^3)*d^4*e + (3*B*b
^5*c - 24*A*a^2*c^4 + 2*(10*B*a^2*b - 11*A*a*b^2)*c^3 + 3*(B*a*b^3 - A*b^4)
*c^2)*d^3*e^2 - (B*b^6 + A*b^5*c + 4*(2*B*a^3 - 7*A*a^2*b)*c^3 + (22*B*a^2*
b^2 - 17*A*a*b^3)*c^2)*d^2*e^3 + (B*a*b^5 + A*b^6 - 6*A*a*b^4*c - 16*A*a^3*
c^3 + 8*(3*B*a^3*b - A*a^2*b^2)*c^2)*d*e^4 - (A*a*b^5 + 8*B*a^4*c^2 + 2*(B*
a^3*b^2 - 3*A*a^2*b^3)*c)*e^5)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^3 - 8*
a^3*b^2*c^4 + 16*a^4*c^5)*d^6 - 3*(a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c
^4)*d^5*e + 3*(a^2*b^6*c - 7*a^3*b^4*c^2 + 8*a^4*b^2*c^3 + 16*a^5*c^4)*d^4*
e^2 - (a^2*b^7 - 2*a^3*b^5*c - 32*a^4*b^3*c^2 + 96*a^5*b*c^3)*d^3*e^3 + 3*(
a^3*b^6 - 7*a^4*b^4*c + 8*a^5*b^2*c^2 + 16*a^6*c^3)*d^2*e^4 - 3*(a^4*b^5 -
8*a^5*b^3*c + 16*a^6*b*c^2)*d*e^5 + (a^5*b^4 - 8*a^6*b^2*c + 16*a^7*c^2)*e^
6 + ((b^4*c^5 - 8*a*b^2*c^6 + 16*a^2*c^7)*d^6 - 3*(b^5*c^4 - 8*a*b^3*c^5 +
16*a^2*b*c^6)*d^5*e + 3*(b^6*c^3 - 7*a*b^4*c^4 + 8*a^2*b^2*c^5 + 16*a^3*c^6
)*d^4*e^2 - (b^7*c^2 - 2*a*b^5*c^3 - 32*a^2*b^3*c^4 + 96*a^3*b*c^5)*d^3*e^3
 + 3*(a*b^6*c^2 - 7*a^2*b^4*c^3 + 8*a^3*b^2*c^4 + 16*a^4*c^5)*d^2*e^4 - 3*(
a^2*b^5*c^2 - 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d*e^5 + (a^3*b^4*c^2 - 8*a^4*b^
2*c^3 + 16*a^5*c^4)*e^6)*x^4 + 2*((b^5*c^4 - 8*a*b^3*c^5 + 16*a^2*b*c^6)*d^
6 - 3*(b^6*c^3 - 8*a*b^4*c^4 + 16*a^2*b^2*c^5)*d^5*e + 3*(b^7*c^2 - 7*a*b^5
*c^3 + 8*a^2*b^3*c^4 + 16*a^3*b*c^5)*d^4*e^2 - (b^8*c - 2*a*b^6*c^2 - 32*a^
2*b^4*c^3 + 96*a^3*b^2*c^4)*d^3*e^3 + 3*(a*b^7*c - 7*a^2*b^5*c^2 + 8*a^3*b^
3*c^3 + 16*a^4*b*c^4)*d^2*e^4 - 3*(a^2*b^6*c - 8*a^3*b^4*c^2 + 16*a^4*b^2*c
```

```
^3)*d*e^5 + (a^3*b^5*c - 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*e^6)*x^3 + ((b^6*c^3
 - 6*a*b^4*c^4 + 32*a^3*c^6)*d^6 - 3*(b^7*c^2 - 6*a*b^5*c^3 + 32*a^3*b*c^5)
*d^5*e + 3*(b^8*c - 5*a*b^6*c^2 - 6*a^2*b^4*c^3 + 32*a^3*b^2*c^4 + 32*a^4*c
^5)*d^4*e^2 - (b^9 - 36*a^2*b^5*c^2 + 32*a^3*b^3*c^3 + 192*a^4*b*c^4)*d^3*e
^3 + 3*(a*b^8 - 5*a^2*b^6*c - 6*a^3*b^4*c^2 + 32*a^4*b^2*c^3 + 32*a^5*c^4)*
d^2*e^4 - 3*(a^2*b^7 - 6*a^3*b^5*c + 32*a^5*b*c^3)*d*e^5 + (a^3*b^6 - 6*a^4
*b^4*c + 32*a^6*c^3)*e^6)*x^2 + 2*((a*b^5*c^3 - 8*a^2*b^3*c^4 + 16*a^3*b*c^
5)*d^6 - 3*(a*b^6*c^2 - 8*a^2*b^4*c^3 + 16*a^3*b^2*c^4)*d^5*e + 3*(a*b^7*c
- 7*a^2*b^5*c^2 + 8*a^3*b^3*c^3 + 16*a^4*b*c^4)*d^4*e^2 - (a*b^8 - 2*a^2*b^
6*c - 32*a^3*b^4*c^2 + 96*a^4*b^2*c^3)*d^3*e^3 + 3*(a^2*b^7 - 7*a^3*b^5*c +
 8*a^4*b^3*c^2 + 16*a^5*b*c^3)*d^2*e^4 - 3*(a^3*b^6 - 8*a^4*b^4*c + 16*a^5*
b^2*c^2)*d*e^5 + (a^4*b^5 - 8*a^5*b^3*c + 16*a^6*b*c^2)*e^6)*x)]
```

giac [B] time = 0.90, size = 11729, normalized size = 26.90

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] -2*(B*d*e^3 - A*e^4)*arctan(-((sqrt(c)*x - sqrt(c*x^2 + b*x + a))*e + sqrt(
c)*d)/sqrt(-c*d^2 + b*d*e - a*e^2))/((c^2*d^4 - 2*b*c*d^3*e + b^2*d^2*e^2 +
 2*a*c*d^2*e^2 - 2*a*b*d*e^3 + a^2*e^4)*sqrt(-c*d^2 + b*d*e - a*e^2)) - 2/3
*((((8*B*b*c^10*d^15 - 16*A*c^11*d^15 - 62*B*b^2*c^9*d^14*e + 8*B*a*c^10*d^
14*e + 120*A*b*c^10*d^14*e + 207*B*b^3*c^8*d^13*e^2 + 12*B*a*b*c^9*d^13*e^2
 - 386*A*b^2*c^9*d^13*e^2 - 136*A*a*c^10*d^13*e^2 - 388*B*b^4*c^7*d^12*e^3
- 276*B*a*b^2*c^8*d^12*e^3 + 689*A*b^3*c^8*d^12*e^3 + 32*B*a^2*c^9*d^12*e^3
 + 884*A*a*b*c^9*d^12*e^3 + 445*B*b^5*c^6*d^11*e^4 + 938*B*a*b^3*c^7*d^11*e
^4 - 732*A*b^4*c^7*d^11*e^4 + 48*B*a^2*b*c^8*d^11*e^4 - 2412*A*a*b^2*c^8*d^
11*e^4 - 480*A*a^2*c^9*d^11*e^4 - 318*B*b^6*c^5*d^10*e^5 - 1530*B*a*b^4*c^6
*d^10*e^5 + 451*A*b^5*c^6*d^10*e^5 - 810*B*a^2*b^2*c^7*d^10*e^5 + 3542*A*a*
b^3*c^7*d^10*e^5 + 24*B*a^3*c^8*d^10*e^5 + 2640*A*a^2*b*c^8*d^10*e^5 + 137*
B*b^7*c^4*d^9*e^6 + 1392*B*a*b^5*c^5*d^9*e^6 - 130*A*b^6*c^5*d^9*e^6 + 2165
*B*a^2*b^3*c^6*d^9*e^6 - 2950*A*a*b^4*c^6*d^9*e^6 + 340*B*a^3*b*c^7*d^9*e^6
 - 5910*A*a^2*b^2*c^7*d^9*e^6 - 920*A*a^3*c^8*d^9*e^6 - 32*B*b^8*c^3*d^8*e^
7 - 712*B*a*b^6*c^4*d^8*e^7 - 9*A*b^7*c^4*d^8*e^7 - 2640*B*a^2*b^4*c^5*d^8*
e^7 + 1296*A*a*b^5*c^5*d^8*e^7 - 1720*B*a^3*b^2*c^6*d^8*e^7 + 6795*A*a^2*b^
3*c^6*d^8*e^7 - 80*B*a^4*c^7*d^8*e^7 + 4140*A*a^3*b*c^7*d^8*e^7 + 3*B*b^9*c
^2*d^7*e^8 + 186*B*a*b^7*c^3*d^7*e^8 + 16*A*b^8*c^3*d^7*e^8 + 1638*B*a^2*b^
5*c^4*d^7*e^8 - 184*A*a*b^6*c^4*d^7*e^8 + 2940*B*a^3*b^3*c^5*d^7*e^8 - 4080
*A*a^2*b^4*c^5*d^7*e^8 + 840*B*a^4*b*c^6*d^7*e^8 - 7240*A*a^3*b^2*c^6*d^7*e
^8 - 1040*A*a^4*c^7*d^7*e^8 - 18*B*a*b^8*c^2*d^6*e^9 - 3*A*b^9*c^2*d^6*e^9
- 478*B*a^2*b^6*c^3*d^6*e^9 - 58*A*a*b^7*c^3*d^6*e^9 - 2260*B*a^3*b^4*c^4*d
^6*e^9 + 1050*A*a^2*b^5*c^4*d^6*e^9 - 2130*B*a^4*b^2*c^5*d^6*e^9 + 6020*A*a
^3*b^3*c^5*d^6*e^9 - 200*B*a^5*c^6*d^6*e^9 + 3640*A*a^4*b*c^6*d^6*e^9 + 45*
B*a^2*b^7*c^2*d^5*e^10 + 18*A*a*b^8*c^2*d^5*e^10 + 736*B*a^3*b^5*c^3*d^5*e^
10 + 30*A*a^2*b^6*c^3*d^5*e^10 + 2105*B*a^4*b^3*c^4*d^5*e^10 - 2220*A*a^3*b
^4*c^4*d^5*e^10 + 948*B*a^5*b*c^5*d^5*e^10 - 4590*A*a^4*b^2*c^5*d^5*e^10 -
696*A*a^5*c^6*d^5*e^10 - 60*B*a^3*b^6*c^2*d^4*e^11 - 45*A*a^2*b^7*c^2*d^4*e
^11 - 780*B*a^4*b^4*c^3*d^4*e^11 + 160*A*a^3*b^5*c^3*d^4*e^11 - 1332*B*a^5*
b^2*c^4*d^4*e^11 + 2375*A*a^4*b^3*c^4*d^4*e^11 - 192*B*a^6*c^5*d^4*e^11 + 1
740*A*a^5*b*c^5*d^4*e^11 + 45*B*a^4*b^5*c^2*d^3*e^12 + 60*A*a^3*b^6*c^2*d^3
*e^12 + 602*B*a^5*b^3*c^3*d^3*e^12 - 340*A*a^4*b^4*c^3*d^3*e^12 + 512*B*a^6
*b*c^4*d^3*e^12 - 1356*A*a^5*b^2*c^4*d^3*e^12 - 256*A*a^6*c^5*d^3*e^12 - 18
*B*a^5*b^4*c^2*d^2*e^13 - 45*A*a^4*b^5*c^2*d^2*e^13 - 326*B*a^6*b^2*c^3*d^2
*e^13 + 294*A*a^5*b^3*c^3*d^2*e^13 - 88*B*a^7*c^4*d^2*e^13 + 384*A*a^6*b*c^
4*d^2*e^13 + 3*B*a^6*b^3*c^2*d*e^14 + 18*A*a^5*b^4*c^2*d*e^14 + 108*B*a^7*b
*c^3*d*e^14 - 122*A*a^6*b^2*c^3*d*e^14 - 40*A*a^7*c^4*d*e^14 - 3*A*a^6*b^3*
c^2*e^15 - 16*B*a^8*c^3*e^15 + 20*A*a^7*b*c^3*e^15)*x/(b^4*c^8*d^16 - 8*a*b
^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 1
```

```
28*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^
2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5
*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*
c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3
*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*
c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688
*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a
^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6
 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^
2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4
480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2
*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b
^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^
7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c
^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d
^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*
b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7
*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*
a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6
*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a
^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a
^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*
b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d
*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^
2*e^16) + 3*(4*B*b^2*c^9*d^15 - 8*A*b*c^10*d^15 - 31*B*b^3*c^8*d^14*e + 4*B
*a*b*c^9*d^14*e + 60*A*b^2*c^9*d^14*e + 104*B*b^4*c^7*d^13*e^2 + 2*B*a*b^2*
c^8*d^13*e^2 - 193*A*b^3*c^8*d^13*e^2 + 8*B*a^2*c^9*d^13*e^2 - 68*A*a*b*c^9
*d^13*e^2 - 197*B*b^5*c^6*d^12*e^3 - 114*B*a*b^3*c^7*d^12*e^3 + 344*A*b^4*c
^7*d^12*e^3 - 32*B*a^2*b*c^8*d^12*e^3 + 446*A*a*b^2*c^8*d^12*e^3 - 8*A*a^2*
c^9*d^12*e^3 + 230*B*b^6*c^5*d^11*e^4 + 412*B*a*b^4*c^6*d^11*e^4 - 363*A*b^
5*c^6*d^11*e^4 + 120*B*a^2*b^2*c^7*d^11*e^4 - 1230*A*a*b^3*c^7*d^11*e^4 + 4
8*B*a^3*c^8*d^11*e^4 - 192*A*a^2*b*c^8*d^11*e^4 - 169*B*b^7*c^4*d^10*e^5 -
700*B*a*b^5*c^5*d^10*e^5 + 218*A*b^6*c^5*d^10*e^5 - 445*B*a^2*b^3*c^6*d^10*
e^5 + 1828*A*a*b^4*c^6*d^10*e^5 - 228*B*a^3*b*c^7*d^10*e^5 + 1224*A*a^2*b^2
*c^7*d^10*e^5 - 48*A*a^3*c^8*d^10*e^5 + 76*B*b^8*c^3*d^9*e^6 + 666*B*a*b^6*
c^4*d^9*e^6 - 55*A*b^7*c^4*d^9*e^6 + 970*B*a^2*b^4*c^5*d^9*e^6 - 1540*A*a*b
^5*c^5*d^9*e^6 + 590*B*a^3*b^2*c^6*d^9*e^6 - 2915*A*a^2*b^3*c^6*d^9*e^6 + 1
20*B*a^4*c^7*d^9*e^6 - 220*A*a^3*b*c^7*d^9*e^6 - 19*B*b^9*c^2*d^8*e^7 - 362
*B*a*b^7*c^3*d^8*e^7 - 12*A*b^8*c^3*d^8*e^7 - 1158*B*a^2*b^5*c^4*d^8*e^7 +
678*A*a*b^6*c^4*d^8*e^7 - 1100*B*a^3*b^3*c^5*d^8*e^7 + 3510*A*a^2*b^4*c^5*d
^8*e^7 - 520*B*a^4*b*c^6*d^8*e^7 + 1650*A*a^3*b^2*c^6*d^8*e^7 - 120*A*a^4*c
^7*d^8*e^7 + 2*B*b^10*c*d^7*e^8 + 104*B*a*b^8*c^2*d^7*e^8 + 11*A*b^9*c^2*d^
7*e^8 + 752*B*a^2*b^6*c^3*d^7*e^8 - 86*A*a*b^7*c^3*d^7*e^8 + 1360*B*a^3*b^4
*c^4*d^7*e^8 - 2202*A*a^2*b^5*c^4*d^7*e^8 + 1060*B*a^4*b^2*c^5*d^7*e^8 - 33
80*A*a^3*b^3*c^5*d^7*e^8 + 160*B*a^5*c^6*d^7*e^8 - 40*A*a^4*b*c^6*d^7*e^8 -
 12*B*a*b^9*c*d^6*e^9 - 2*A*b^10*c*d^6*e^9 - 245*B*a^2*b^7*c^2*d^6*e^9 - 40
*A*a*b^8*c^2*d^6*e^9 - 968*B*a^3*b^5*c^3*d^6*e^9 + 592*A*a^2*b^6*c^3*d^6*e^
9 - 1305*B*a^4*b^3*c^4*d^6*e^9 + 3120*A*a^3*b^4*c^4*d^6*e^9 - 580*B*a^5*b*c
^5*d^6*e^9 + 1180*A*a^4*b^2*c^5*d^6*e^9 - 160*A*a^5*c^6*d^6*e^9 + 30*B*a^2*
b^8*c*d^5*e^10 + 12*A*a*b^9*c*d^5*e^10 + 338*B*a^3*b^6*c^2*d^5*e^10 + 21*A*
a^2*b^7*c^2*d^5*e^10 + 940*B*a^4*b^4*c^3*d^5*e^10 - 1272*A*a^3*b^5*c^3*d^5*
e^10 + 894*B*a^5*b^2*c^4*d^5*e^10 - 2055*A*a^4*b^3*c^4*d^5*e^10 + 120*B*a^6
*c^5*d^5*e^10 + 132*A*a^5*b*c^5*d^5*e^10 - 40*B*a^3*b^7*c*d^4*e^11 - 30*A*a
^2*b^8*c*d^4*e^11 - 325*B*a^4*b^5*c^2*d^4*e^11 + 110*A*a^3*b^6*c^2*d^4*e^11
 - 706*B*a^5*b^3*c^3*d^4*e^11 + 1300*A*a^4*b^4*c^3*d^4*e^11 - 336*B*a^6*b*c
^4*d^4*e^11 + 450*A*a^5*b^2*c^4*d^4*e^11 - 120*A*a^6*c^5*d^4*e^11 + 30*B*a^
4*b^6*c*d^3*e^12 + 40*A*a^3*b^7*c*d^3*e^12 + 244*B*a^5*b^4*c^2*d^3*e^12 - 2
35*A*a^4*b^5*c^2*d^3*e^12 + 352*B*a^6*b^2*c^3*d^3*e^12 - 638*A*a^5*b^3*c^3*
d^3*e^12 + 48*B*a^7*c^4*d^3*e^12 + 112*A*a^6*b*c^4*d^3*e^12 - 12*B*a^5*b^5*
```

```
c*d^2*e^13 - 30*A*a^4*b^6*c*d^2*e^13 - 139*B*a^6*b^3*c^2*d^2*e^13 + 204*A*a
^5*b^4*c^2*d^2*e^13 - 92*B*a^7*b*c^3*d^2*e^13 + 96*A*a^6*b^2*c^3*d^2*e^13 -
 48*A*a^7*c^4*d^2*e^13 + 2*B*a^6*b^4*c*d*e^14 + 12*A*a^5*b^5*c*d*e^14 + 50*
B*a^7*b^2*c^2*d*e^14 - 85*A*a^6*b^3*c^2*d*e^14 + 8*B*a^8*c^3*d*e^14 + 28*A*
a^7*b*c^3*d*e^14 - 2*A*a^6*b^4*c*e^15 - 8*B*a^8*b*c^2*e^15 + 14*A*a^7*b^2*c
^2*e^15 - 8*A*a^8*c^3*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*
d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b
^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a
^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^
3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c
^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^
4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^
5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b
^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176
*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 -
8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a
^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^
12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^
3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*
c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^
7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^
5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2
*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7
*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5
*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^
4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a
^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*
b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6
*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9
*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^
15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + 3*(B*b^3*c^8*
d^15 + 4*B*a*b*c^9*d^15 - 2*A*b^2*c^9*d^15 - 8*A*a*c^10*d^15 - 8*B*b^4*c^7*
d^14*e - 28*B*a*b^2*c^8*d^14*e + 15*A*b^3*c^8*d^14*e + 60*A*a*b*c^9*d^14*e
+ 28*B*b^5*c^6*d^13*e^2 + 88*B*a*b^3*c^7*d^13*e^2 - 48*A*b^4*c^7*d^13*e^2 +
 40*B*a^2*b*c^8*d^13*e^2 - 212*A*a*b^2*c^8*d^13*e^2 - 64*A*a^2*c^9*d^13*e^2
 - 56*B*b^6*c^5*d^12*e^3 - 170*B*a*b^4*c^6*d^12*e^3 + 84*A*b^5*c^6*d^12*e^3
 - 242*B*a^2*b^2*c^7*d^12*e^3 + 472*A*a*b^3*c^7*d^12*e^3 - 8*B*a^3*c^8*d^12
*e^3 + 408*A*a^2*b*c^8*d^12*e^3 + 70*B*b^7*c^4*d^11*e^4 + 236*B*a*b^5*c^5*d
^11*e^4 - 84*A*b^6*c^5*d^11*e^4 + 615*B*a^2*b^3*c^6*d^11*e^4 - 726*A*a*b^4*
c^6*d^11*e^4 + 204*B*a^3*b*c^7*d^11*e^4 - 1158*A*a^2*b^2*c^7*d^11*e^4 - 216
*A*a^3*c^8*d^11*e^4 - 56*B*b^8*c^3*d^10*e^5 - 254*B*a*b^6*c^4*d^10*e^5 + 42
*A*b^7*c^4*d^10*e^5 - 860*B*a^2*b^4*c^5*d^10*e^5 + 772*A*a*b^5*c^5*d^10*e^5
 - 912*B*a^3*b^2*c^6*d^10*e^5 + 1961*A*a^2*b^3*c^6*d^10*e^5 - 48*B*a^4*c^7*
d^10*e^5 + 1140*A*a^3*b*c^7*d^10*e^5 + 28*B*b^9*c^2*d^9*e^6 + 208*B*a*b^7*c
^3*d^9*e^6 + 745*B*a^2*b^5*c^4*d^9*e^6 - 530*A*a*b^6*c^4*d^9*e^6 + 1770*B*a
^3*b^3*c^5*d^9*e^6 - 2220*A*a^2*b^4*c^5*d^9*e^6 + 560*B*a^4*b*c^6*d^9*e^6 -
 2560*A*a^3*b^2*c^6*d^9*e^6 - 400*A*a^4*c^7*d^9*e^6 - 8*B*b^10*c*d^8*e^7 -
118*B*a*b^8*c^2*d^8*e^7 - 12*A*b^9*c^2*d^8*e^7 - 450*B*a^2*b^6*c^3*d^8*e^7
+ 192*A*a*b^7*c^3*d^8*e^7 - 1780*B*a^3*b^4*c^4*d^8*e^7 + 1719*A*a^2*b^5*c^4
*d^8*e^7 - 1790*B*a^4*b^2*c^5*d^8*e^7 + 3270*A*a^3*b^3*c^5*d^8*e^7 - 120*B*
a^5*c^6*d^8*e^7 + 1680*A*a^4*b*c^6*d^8*e^7 + B*b^11*d^7*e^8 + 40*B*a*b^9*c*
d^7*e^8 + 6*A*b^10*c*d^7*e^8 + 217*B*a^2*b^7*c^2*d^7*e^8 - 2*A*a*b^8*c^2*d^
7*e^8 + 968*B*a^3*b^5*c^3*d^7*e^8 - 838*A*a^2*b^6*c^3*d^7*e^8 + 2495*B*a^4*
b^3*c^4*d^7*e^8 - 2700*A*a^3*b^4*c^4*d^7*e^8 + 860*B*a^5*b*c^5*d^7*e^8 - 28
30*A*a^4*b^2*c^5*d^7*e^8 - 440*A*a^5*c^6*d^7*e^8 - 6*B*a*b^10*d^6*e^9 - A*b
^11*d^6*e^9 - 80*B*a^2*b^8*c*d^6*e^9 - 24*A*a*b^9*c*d^6*e^9 - 304*B*a^3*b^6
*c^2*d^6*e^9 + 183*A*a^2*b^7*c^2*d^6*e^9 - 1640*B*a^4*b^4*c^3*d^6*e^9 + 149
6*A*a^3*b^5*c^3*d^6*e^9 - 1900*B*a^5*b^2*c^4*d^6*e^9 + 2545*A*a^4*b^3*c^4*d
^6*e^9 - 160*B*a^6*c^5*d^6*e^9 + 1380*A*a^5*b*c^5*d^6*e^9 + 15*B*a^2*b^9*d^
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5*e^10 + 6*A*a*b^10*d^5*e^10 + 82*B*a^3*b^7*c*d^5*e^10 + 24*A*a^2*b^8*c*d^5
*e^10 + 458*B*a^4*b^5*c^2*d^5*e^10 - 480*A*a^3*b^6*c^2*d^5*e^10 + 1716*B*a^
5*b^3*c^3*d^5*e^10 - 1440*A*a^4*b^4*c^3*d^5*e^10 + 744*B*a^6*b*c^4*d^5*e^10
 - 1572*A*a^5*b^2*c^4*d^5*e^10 - 288*A*a^6*c^5*d^5*e^10 - 20*B*a^3*b^8*d^4*
e^11 - 15*A*a^2*b^9*d^4*e^11 - 50*B*a^4*b^6*c*d^4*e^11 + 30*A*a^3*b^7*c*d^4
*e^11 - 578*B*a^5*b^4*c^2*d^4*e^11 + 550*A*a^4*b^5*c^2*d^4*e^11 - 1038*B*a^
6*b^2*c^3*d^4*e^11 + 860*A*a^5*b^3*c^3*d^4*e^11 - 120*B*a^7*c^4*d^4*e^11 +
600*A*a^6*b*c^4*d^4*e^11 + 15*B*a^4*b^7*d^3*e^12 + 20*A*a^3*b^8*d^3*e^12 +
28*B*a^5*b^5*c*d^3*e^12 - 90*A*a^4*b^6*c*d^3*e^12 + 473*B*a^6*b^3*c^2*d^3*e
^12 - 318*A*a^5*b^4*c^2*d^3*e^12 + 340*B*a^7*b*c^3*d^3*e^12 - 362*A*a^6*b^2
*c^3*d^3*e^12 - 104*A*a^7*c^4*d^3*e^12 - 6*B*a^5*b^6*d^2*e^13 - 15*A*a^4*b^
7*d^2*e^13 - 20*B*a^6*b^4*c*d^2*e^13 + 84*A*a^5*b^5*c*d^2*e^13 - 232*B*a^7*
b^2*c^2*d^2*e^13 + 87*A*a^6*b^3*c^2*d^2*e^13 - 48*B*a^8*c^3*d^2*e^13 + 108*
A*a^7*b*c^3*d^2*e^13 + B*a^6*b^5*d*e^14 + 6*A*a^5*b^6*d*e^14 + 10*B*a^7*b^3
*c*d*e^14 - 36*A*a^6*b^4*c*d*e^14 + 64*B*a^8*b*c^2*d*e^14 - 8*A*a^7*b^2*c^2
*d*e^14 - 16*A*a^8*c^3*d*e^14 - A*a^6*b^5*e^15 - 2*B*a^8*b^2*c*e^15 + 6*A*a
^7*b^3*c*e^15 - 8*B*a^9*c^2*e^15)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2
*c^10*d^16 - 8*b^5*c^7*d^15*e + 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e
+ 28*b^6*c^6*d^14*e^2 - 216*a*b^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 +
 128*a^3*c^9*d^14*e^2 - 56*b^7*c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*
a^2*b^3*c^7*d^13*e^3 - 896*a^3*b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a
*b^6*c^5*d^12*e^4 - 196*a^2*b^4*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 +
448*a^4*c^8*d^12*e^4 - 56*b^9*c^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*
a^2*b^5*c^5*d^11*e^5 - 3136*a^3*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5
+ 28*b^10*c^2*d^10*e^6 + 56*a*b^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6
+ 1176*a^3*b^4*c^5*d^10*e^6 + 6272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*
e^6 - 8*b^11*c*d^9*e^7 - 104*a*b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 +
1512*a^3*b^5*c^4*d^9*e^7 - 6720*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^
7 + b^12*d^8*e^8 + 48*a*b^10*c*d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*
b^6*c^3*d^8*e^8 + 2310*a^4*b^4*c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 112
0*a^6*c^6*d^8*e^8 - 8*a*b^11*d^7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*
c^2*d^7*e^9 + 1512*a^4*b^5*c^3*d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^
6*b*c^5*d^7*e^9 + 28*a^2*b^10*d^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b
^6*c^2*d^6*e^10 + 1176*a^5*b^4*c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 8
96*a^7*c^5*d^6*e^10 - 56*a^3*b^9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a
^5*b^5*c^2*d^5*e^11 - 3136*a^6*b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 +
 70*a^4*b^8*d^4*e^12 - 392*a^5*b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 +
2464*a^7*b^2*c^3*d^4*e^12 + 448*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 39
2*a^6*b^5*c*d^3*e^13 - 448*a^7*b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 +
28*a^6*b^6*d^2*e^14 - 216*a^7*b^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 1
28*a^9*c^3*d^2*e^14 - 8*a^7*b^5*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^
2*d*e^15 + a^8*b^4*e^16 - 8*a^9*b^2*c*e^16 + 16*a^10*c^2*e^16))*x + (2*B*a*
b^2*c^8*d^15 + A*b^3*c^8*d^15 + 8*B*a^2*c^9*d^15 - 12*A*a*b*c^9*d^15 - 16*B
*a*b^3*c^7*d^14*e - 8*A*b^4*c^7*d^14*e - 56*B*a^2*b*c^8*d^14*e + 94*A*a*b^2
*c^8*d^14*e - 8*A*a^2*c^9*d^14*e + 56*B*a*b^4*c^6*d^13*e^2 + 28*A*b^5*c^6*d
^13*e^2 + 176*B*a^2*b^2*c^7*d^13*e^2 - 312*A*a*b^3*c^7*d^13*e^2 + 80*B*a^3*
c^8*d^13*e^2 - 40*A*a^2*b*c^8*d^13*e^2 - 112*B*a*b^5*c^5*d^12*e^3 - 56*A*b^
6*c^5*d^12*e^3 - 339*B*a^2*b^3*c^6*d^12*e^3 + 560*A*a*b^4*c^6*d^12*e^3 - 49
2*B*a^3*b*c^7*d^12*e^3 + 496*A*a^2*b^2*c^7*d^12*e^3 - 80*A*a^3*c^8*d^12*e^3
 + 140*B*a*b^6*c^4*d^11*e^4 + 70*A*b^7*c^4*d^11*e^4 + 466*B*a^2*b^4*c^5*d^1
1*e^4 - 560*A*a*b^5*c^5*d^11*e^4 + 1278*B*a^3*b^2*c^6*d^11*e^4 - 1649*A*a^2
*b^3*c^6*d^11*e^4 + 312*B*a^4*c^7*d^11*e^4 + 156*A*a^3*b*c^7*d^11*e^4 - 112
*B*a*b^7*c^3*d^10*e^5 - 56*A*b^8*c^3*d^10*e^5 - 493*B*a^2*b^5*c^4*d^10*e^5
+ 252*A*a*b^6*c^4*d^10*e^5 - 1834*B*a^3*b^3*c^5*d^10*e^5 + 2726*A*a^2*b^4*c
^5*d^10*e^5 - 1632*B*a^4*b*c^6*d^10*e^5 + 738*A*a^3*b^2*c^6*d^10*e^5 - 312*
A*a^4*c^7*d^10*e^5 + 56*B*a*b^8*c^2*d^9*e^6 + 28*A*b^9*c^2*d^9*e^6 + 396*B*
a^2*b^6*c^3*d^9*e^6 + 56*A*a*b^7*c^3*d^9*e^6 + 1620*B*a^3*b^4*c^4*d^9*e^6 -
 2447*A*a^2*b^5*c^4*d^9*e^6 + 3460*B*a^4*b^2*c^5*d^9*e^6 - 3150*A*a^3*b^3*c
^5*d^9*e^6 + 640*B*a^5*c^6*d^9*e^6 + 960*A*a^4*b*c^6*d^9*e^6 - 16*B*a*b^9*c
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*d^8*e^7 - 8*A*b^10*c*d^8*e^7 - 221*B*a^2*b^7*c^2*d^8*e^7 - 128*A*a*b^8*c^2
*d^8*e^7 - 960*B*a^3*b^5*c^3*d^8*e^7 + 1060*A*a^2*b^6*c^3*d^8*e^7 - 3785*B*
a^4*b^3*c^4*d^8*e^7 + 4820*A*a^3*b^4*c^4*d^8*e^7 - 2740*B*a^5*b*c^5*d^8*e^7
 - 100*A*a^4*b^2*c^5*d^8*e^7 - 640*A*a^5*c^6*d^8*e^7 + 2*B*a*b^10*d^7*e^8 +
 A*b^11*d^7*e^8 + 74*B*a^2*b^8*c*d^7*e^8 + 60*A*a*b^9*c*d^7*e^8 + 422*B*a^3
*b^6*c^2*d^7*e^8 - 31*A*a^2*b^7*c^2*d^7*e^8 + 2260*B*a^4*b^4*c^3*d^7*e^8 -
3520*A*a^3*b^5*c^3*d^7*e^8 + 4510*B*a^5*b^2*c^4*d^7*e^8 - 2865*A*a^4*b^3*c^
4*d^7*e^8 + 760*B*a^6*c^5*d^7*e^8 + 1900*A*a^5*b*c^5*d^7*e^8 - 11*B*a^2*b^9
*d^6*e^9 - 10*A*a*b^10*d^6*e^9 - 138*B*a^3*b^7*c*d^6*e^9 - 146*A*a^2*b^8*c*
d^6*e^9 - 742*B*a^4*b^5*c^2*d^6*e^9 + 1034*A*a^3*b^6*c^2*d^6*e^9 - 3500*B*a
^5*b^3*c^3*d^6*e^9 + 4180*A*a^4*b^4*c^3*d^6*e^9 - 2520*B*a^6*b*c^4*d^6*e^9
- 1150*A*a^5*b^2*c^4*d^6*e^9 - 760*A*a^6*c^5*d^6*e^9 + 24*B*a^3*b^8*d^5*e^1
0 + 39*A*a^2*b^9*d^5*e^10 + 152*B*a^4*b^6*c*d^5*e^10 + 82*A*a^3*b^7*c*d^5*e
^10 + 1240*B*a^5*b^4*c^2*d^5*e^10 - 2198*A*a^4*b^5*c^2*d^5*e^10 + 2952*B*a^
6*b^2*c^3*d^5*e^10 - 1484*A*a^5*b^3*c^3*d^5*e^10 + 528*B*a^7*c^4*d^5*e^10 +
 1848*A*a^6*b*c^4*d^5*e^10 - 25*B*a^4*b^7*d^4*e^11 - 80*A*a^3*b^8*d^4*e^11
- 160*B*a^5*b^5*c*d^4*e^11 + 240*A*a^4*b^6*c*d^4*e^11 - 1381*B*a^6*b^3*c^2*
d^4*e^11 + 1952*A*a^5*b^4*c^2*d^4*e^11 - 1236*B*a^7*b*c^3*d^4*e^11 - 936*A*
a^6*b^2*c^3*d^4*e^11 - 528*A*a^7*c^4*d^4*e^11 + 10*B*a^5*b^6*d^3*e^12 + 95*
A*a^4*b^7*d^3*e^12 + 186*B*a^6*b^4*c*d^3*e^12 - 512*A*a^5*b^5*c*d^3*e^12 +
866*B*a^7*b^2*c^2*d^3*e^12 - 607*A*a^6*b^3*c^2*d^3*e^12 + 200*B*a^8*c^3*d^3
*e^12 + 900*A*a^7*b*c^3*d^3*e^12 + 3*B*a^6*b^5*d^2*e^13 - 66*A*a^5*b^6*d^2*
e^13 - 154*B*a^7*b^3*c*d^2*e^13 + 430*A*a^6*b^4*c*d^2*e^13 - 272*B*a^8*b*c^
2*d^2*e^13 - 194*A*a^7*b^2*c^2*d^2*e^13 - 200*A*a^8*c^3*d^2*e^13 - 4*B*a^7*
b^4*d*e^14 + 25*A*a^6*b^5*d*e^14 + 68*B*a^8*b^2*c*d*e^14 - 174*A*a^7*b^3*c*
d*e^14 + 32*B*a^9*c^2*d*e^14 + 176*A*a^8*b*c^2*d*e^14 + B*a^8*b^3*e^15 - 4*
A*a^7*b^4*e^15 - 12*B*a^9*b*c*e^15 + 28*A*a^8*b^2*c*e^15 - 32*A*a^9*c^2*e^1
5)/(b^4*c^8*d^16 - 8*a*b^2*c^9*d^16 + 16*a^2*c^10*d^16 - 8*b^5*c^7*d^15*e +
 64*a*b^3*c^8*d^15*e - 128*a^2*b*c^9*d^15*e + 28*b^6*c^6*d^14*e^2 - 216*a*b
^4*c^7*d^14*e^2 + 384*a^2*b^2*c^8*d^14*e^2 + 128*a^3*c^9*d^14*e^2 - 56*b^7*
c^5*d^13*e^3 + 392*a*b^5*c^6*d^13*e^3 - 448*a^2*b^3*c^7*d^13*e^3 - 896*a^3*
b*c^8*d^13*e^3 + 70*b^8*c^4*d^12*e^4 - 392*a*b^6*c^5*d^12*e^4 - 196*a^2*b^4
*c^6*d^12*e^4 + 2464*a^3*b^2*c^7*d^12*e^4 + 448*a^4*c^8*d^12*e^4 - 56*b^9*c
^3*d^11*e^5 + 168*a*b^7*c^4*d^11*e^5 + 1176*a^2*b^5*c^5*d^11*e^5 - 3136*a^3
*b^3*c^6*d^11*e^5 - 2688*a^4*b*c^7*d^11*e^5 + 28*b^10*c^2*d^10*e^6 + 56*a*b
^8*c^3*d^10*e^6 - 1372*a^2*b^6*c^4*d^10*e^6 + 1176*a^3*b^4*c^5*d^10*e^6 + 6
272*a^4*b^2*c^6*d^10*e^6 + 896*a^5*c^7*d^10*e^6 - 8*b^11*c*d^9*e^7 - 104*a*
b^9*c^2*d^9*e^7 + 656*a^2*b^7*c^3*d^9*e^7 + 1512*a^3*b^5*c^4*d^9*e^7 - 6720
*a^4*b^3*c^5*d^9*e^7 - 4480*a^5*b*c^6*d^9*e^7 + b^12*d^8*e^8 + 48*a*b^10*c*
d^8*e^8 - 12*a^2*b^8*c^2*d^8*e^8 - 1904*a^3*b^6*c^3*d^8*e^8 + 2310*a^4*b^4*
c^4*d^8*e^8 + 8400*a^5*b^2*c^5*d^8*e^8 + 1120*a^6*c^6*d^8*e^8 - 8*a*b^11*d^
7*e^9 - 104*a^2*b^9*c*d^7*e^9 + 656*a^3*b^7*c^2*d^7*e^9 + 1512*a^4*b^5*c^3*
d^7*e^9 - 6720*a^5*b^3*c^4*d^7*e^9 - 4480*a^6*b*c^5*d^7*e^9 + 28*a^2*b^10*d
^6*e^10 + 56*a^3*b^8*c*d^6*e^10 - 1372*a^4*b^6*c^2*d^6*e^10 + 1176*a^5*b^4*
c^3*d^6*e^10 + 6272*a^6*b^2*c^4*d^6*e^10 + 896*a^7*c^5*d^6*e^10 - 56*a^3*b^
9*d^5*e^11 + 168*a^4*b^7*c*d^5*e^11 + 1176*a^5*b^5*c^2*d^5*e^11 - 3136*a^6*
b^3*c^3*d^5*e^11 - 2688*a^7*b*c^4*d^5*e^11 + 70*a^4*b^8*d^4*e^12 - 392*a^5*
b^6*c*d^4*e^12 - 196*a^6*b^4*c^2*d^4*e^12 + 2464*a^7*b^2*c^3*d^4*e^12 + 448
*a^8*c^4*d^4*e^12 - 56*a^5*b^7*d^3*e^13 + 392*a^6*b^5*c*d^3*e^13 - 448*a^7*
b^3*c^2*d^3*e^13 - 896*a^8*b*c^3*d^3*e^13 + 28*a^6*b^6*d^2*e^14 - 216*a^7*b
^4*c*d^2*e^14 + 384*a^8*b^2*c^2*d^2*e^14 + 128*a^9*c^3*d^2*e^14 - 8*a^7*b^5
*d*e^15 + 64*a^8*b^3*c*d*e^15 - 128*a^9*b*c^2*d*e^15 + a^8*b^4*e^16 - 8*a^9
*b^2*c*e^16 + 16*a^10*c^2*e^16))/(c*x^2 + b*x + a)^(3/2)
```

maple [B] time = 0.04, size = 2996, normalized size = 6.87

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] -2/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(
a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b*A-4/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)
/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x*d^
2*B-2/3/e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e
)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c*d^2*B-16/3*e/(a*e^2-b*d*e+c*d^2)*c^2/(
4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1
/2)*x*b*A-32/3/e/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*
c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*d^2*B-16/3/e/(a*e^2-b*d*e+c
*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d
^2)/e^2)^(1/2)*b*d^2*B-2*e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c
+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*A+4*e^2/(a*e^2-
b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+
c*d^2)/e^2)^(1/2)*x*c^2*d*A-4*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^
2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*c^2*d^2*B+2*e^2/
(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d*A-2*e/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+
d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b*c*d^2*B+16/
3/(a*e^2-b*d*e+c*d^2)*c^2/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+
(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*B*d+2/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/
((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c*x*b*B*d
-1/3*e/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(
a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b^2*A-e^3/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/(
(x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+e^2/
(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*
d^2)/e^2+(b*e-2*c*d)/e*(x+d/e)+2*((a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2
*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2))/(x+d/e))*B*d+1/3/(
a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*
d*e+c*d^2)/e^2)^(3/2)*b^2*B*d+4/3*B/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*c*x+3
2/3*B/e*c^2/(4*a*c-b^2)^2/(c*x^2+b*x+a)^(1/2)*x+16/3*B/e*c/(4*a*c-b^2)^2/(c
*x^2+b*x+a)^(1/2)*b+1/3*e/(a*e^2-b*d*e+c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x
+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*A+e^3/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2
*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*A-1/3/(a*e^2-b*d*e+
c*d^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*B*
d+2*e^2/(a*e^2-b*d*e+c*d^2)^2/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e
)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x*b*c*B*d+4/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b
^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*c^2*x
*d*A+2/3/(a*e^2-b*d*e+c*d^2)/(4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)
+(a*e^2-b*d*e+c*d^2)/e^2)^(3/2)*b*c*d*A+32/3/(a*e^2-b*d*e+c*d^2)*c^3/(4*a*c
-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*x
*d*A+8/3/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+
d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*B*d+16/3/(a*e^2-b*d*e+c*d^2)*c^2/(4
*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/
2)*b*d*A-8/3*e/(a*e^2-b*d*e+c*d^2)*c/(4*a*c-b^2)^2/((x+d/e)^2*c+(b*e-2*c*d)
/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2)*b^2*A+e^2/(a*e^2-b*d*e+c*d^2)^2/(
4*a*c-b^2)/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*d^2)/e^2)^(1/2
)*b^2*B*d-e^2/(a*e^2-b*d*e+c*d^2)^2/((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e
^2-b*d*e+c*d^2)/e^2)^(1/2)*B*d-e^3/(a*e^2-b*d*e+c*d^2)^2/((a*e^2-b*d*e+c*d^
2)/e^2)^(1/2)*ln((2*(a*e^2-b*d*e+c*d^2)/e^2+(b*e-2*c*d)/e*(x+d/e)+2*((a*e^2
-b*d*e+c*d^2)/e^2)^(1/2)*((x+d/e)^2*c+(b*e-2*c*d)/e*(x+d/e)+(a*e^2-b*d*e+c*
d^2)/e^2)^(1/2))/(x+d/e))*A+2/3*B/e/(4*a*c-b^2)/(c*x^2+b*x+a)^(3/2)*b
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+Bx}{(d+ex)\left(cx^2+bx+a\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2486 $\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx$

Optimal. Leaf size=746

$$\frac{e\sqrt{a+bx+cx^2}\left(-8bc\left(B\left(5a^2e^4+3acd^2e^2+2c^2d^4\right)+2Acde\left(9ae^2+4cd^2\right)\right)-16c^2\left(aBde\left(2cd^2-13ae^2\right)-A\left(\right.\right.}{3\left(b^2-\right.}$$

```
[Out] 2/3*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*
d)*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)/(c*x^2+b*x+a)^(3/2)+1/2*e^3*
(5*A*e*(-b*e+2*c*d)-B*(8*c*d^2-e*(2*a*e+3*b*d)))*arctanh(1/2*(b*d-2*a*e+(-b
*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c*
d^2)^(7/2)+2/3*(6*a*c*e*(-b*e+2*c*d)*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)+(2*a*c*e
-b^2*e+b*c*d)*(b^2*e*(-5*A*e+3*B*d)+8*c*(2*A*a*e^2+A*c*d^2-B*a*d*e)-2*b*(A*
c*d*e-B*a*e^2+2*B*c*d^2))+c*(6*c*e*(-2*a*e+b*d)*(A*b*e-2*A*c*d-2*B*a*e+B*b*
d)+(-b*e+2*c*d)*(b^2*e*(-5*A*e+3*B*d)+8*c*(2*A*a*e^2+A*c*d^2-B*a*d*e)-2*b*(
A*c*d*e-B*a*e^2+2*B*c*d^2)))*x)/(-4*a*c+b^2)^2/(a*e^2-b*d*e+c*d^2)^2/(e*x+d
)/(c*x^2+b*x+a)^(1/2)+1/3*e*(3*b^4*e^3*(-5*A*e+3*B*d)-2*b^3*e^2*(-10*A*c*d*
e-3*B*a*e^2+9*B*c*d^2)+4*b^2*c*e*(25*A*a*e^3+3*A*c*d^2*e-14*B*a*d*e^2+10*B*
c*d^3)-16*c^2*(a*B*d*e*(-13*a*e^2+2*c*d^2)-A*(-8*a^2*e^4+9*a*c*d^2*e^2+2*c^
2*d^4))-8*b*c*(2*A*c*d*e*(9*a*e^2+4*c*d^2)+B*(5*a^2*e^4+3*a*c*d^2*e^2+2*c^2
*d^4)))*(c*x^2+b*x+a)^(1/2)/(-4*a*c+b^2)^2/(a*e^2-b*d*e+c*d^2)^3/(e*x+d)
```

Rubi [A] time = 1.56, antiderivative size = 744, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$\frac{e\sqrt{a+bx+cx^2}\left(-8bc\left(B\left(5a^2e^4+3acd^2e^2+2c^2d^4\right)+2Acde\left(9ae^2+4cd^2\right)\right)-16c^2\left(aBde\left(2cd^2-13ae^2\right)-A\left(\right.\right.}{3\left(b^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)*(a
+ b*x + c*x^2)^(3/2)) + (2*(6*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e
- 2*a*B*e) + (b*c*d - b^2*e + 2*a*c*e)*(b^2*e*(3*B*d - 5*A*e) + 8*c*(A*c*d^
2 - a*B*d*e + 2*a*A*e^2) - 2*b*(2*B*c*d^2 + A*c*d*e - a*B*e^2)) + c*(6*c*e*
(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(b^2*e*(3
*B*d - 5*A*e) + 8*c*(A*c*d^2 - a*B*d*e + 2*a*A*e^2) - 2*b*(2*B*c*d^2 + A*c*
d*e - a*B*e^2)))*x))/(3*(b^2 - 4*a*c)^2*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)
*Sqrt[a + b*x + c*x^2]) + (e*(3*b^4*e^3*(3*B*d - 5*A*e) - 2*b^3*e^2*(9*B*c*
d^2 - 10*A*c*d*e - 3*a*B*e^2) + 4*b^2*c*e*(10*B*c*d^3 + 3*A*c*d^2*e - 14*a*
B*d*e^2 + 25*a*A*e^3) - 16*c^2*(a*B*d*e*(2*c*d^2 - 13*a*e^2) - A*(2*c^2*d^4
 + 9*a*c*d^2*e^2 - 8*a^2*e^4)) - 8*b*c*(2*A*c*d*e*(4*c*d^2 + 9*a*e^2) + B*(
2*c^2*d^4 + 3*a*c*d^2*e^2 + 5*a^2*e^4)))*Sqrt[a + b*x + c*x^2])/(3*(b^2 - 4
*a*c)^2*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)) - (e^3*(8*B*c*d^2 - B*e*(3*b*d
 + 2*a*e) - 5*A*e*(2*c*d - b*e))*ArcTanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2
*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a + b*x + c*x^2])])/(2*(c*d^2 - b*d*e + a
*e^2)^(7/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{A+Bx}{(d+ex)^2\left(a+bx+cx^2\right)^{5/2}}\,dx &= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}-\frac{2}{}\\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}+\frac{2}{}\\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}+\frac{2}{}\\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}+\frac{2}{}\\
&= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{3\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)(d+ex)\left(a+bx+cx^2\right)^{3/2}}+\frac{2}{}
\end{aligned}$$

Mathematica [A] time = 4.71, size = 754, normalized size = 1.01

$$2\left(\frac{-4bc\Big(Ac\big(ae^2(9d-7ex)+2cd^2(d-3ex)\big)-B\big(-4a^2e^3+acde(d+3ex)+2c^2d^3x\big)\Big)-8c^2\Big(a^2e^2(4Ae-5Bd+3Bex)-acde(Ad-7Aex+2Bdx)+2Ac^2d^3x\Big)+b^3e\big(2a}{\big(b^2-4ac\big)(d+ex)\sqrt{a+x(b+cx)}\,\big(e(bd-ae)-}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x]
```

```
[Out] (2*((e*(3*b^4*e^3*(3*B*d - 5*A*e) + 2*b^3*e^2*(-9*B*c*d^2 + 10*A*c*d*e + 3*
a*B*e^2) + 4*b^2*c*e*(10*B*c*d^3 + 3*A*c*d^2*e - 14*a*B*d*e^2 + 25*a*A*e^3)
 + 16*c^2*(a*B*d*e*(-2*c*d^2 + 13*a*e^2) + A*(2*c^2*d^4 + 9*a*c*d^2*e^2 - 8
*a^2*e^4)) - 8*b*c*(2*A*c*d*e*(4*c*d^2 + 9*a*e^2) + B*(2*c^2*d^4 + 3*a*c*d^
2*e^2 + 5*a^2*e^4)))*Sqrt[a + x*(b + c*x)])/(2*(b^2 - 4*a*c)*(c*d^2 + e*(-(
b*d) + a*e))^2*(d + e*x)) + (A*b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d*x) + A*
b*c*(-d + e*x) + a*B*(-(b*e) + 2*c*(d - e*x)))/((d + e*x)*(a + x*(b + c*x))
^(3/2)) + (b^4*e^2*(3*B*d - 5*A*e) + 2*b^2*c*(16*a*A*e^3 + 2*B*c*d^2*(d - 4
*e*x) + a*B*e^2*(-5*d + e*x) + A*c*d*e*(5*d + e*x)) + b^3*e*(2*a*B*e^2 + A*
c*e*(3*d - 5*e*x) + B*c*d*(-7*d + 3*e*x)) - 8*c^2*(2*A*c^2*d^3*x - a*c*d*e*
(A*d + 2*B*d*x - 7*A*e*x) + a^2*e^2*(-5*B*d + 4*A*e + 3*B*e*x)) - 4*b*c*(A*
c*(a*e^2*(9*d - 7*e*x) + 2*c*d^2*(d - 3*e*x)) - B*(-4*a^2*e^3 + 2*c^2*d^3*x
 + a*c*d*e*(d + 3*e*x))))/((b^2 - 4*a*c)*(-(c*d^2) + e*(b*d - a*e))*(d + e*
x)*Sqrt[a + x*(b + c*x)]) + (3*(b^2 - 4*a*c)*e^3*(8*B*c*d^2 - B*e*(3*b*d +
2*a*e) + 5*A*e*(-2*c*d + b*e))*ArcTanh[(-(b*d) + 2*a*e - 2*c*d*x + b*e*x)/(
2*Sqrt[c*d^2 + e*(-(b*d) + a*e)]*Sqrt[a + x*(b + c*x)])])/(4*(c*d^2 + e*(-(
b*d) + a*e))^(5/2))))/(3*(b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [B] time = 141.45, size = 12690, normalized size = 17.01

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="fricas")
```

```
[Out] [1/12*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16*B*a^4*c^3)*d^3*e^3 - (3*B*a
^2*b^5 + 160*A*a^4*c^3 + 16*(3*B*a^4*b - 5*A*a^3*b^2)*c^2 - 2*(12*B*a^3*b^3
 - 5*A*a^2*b^4)*c)*d^2*e^4 - (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A
*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*d*e^5 + (8*(B*b^4*c^3 - 8*B*
a*b^2*c^4 + 16*B*a^2*c^5)*d^2*e^4 - (3*B*b^5*c^2 + 160*A*a^2*c^5 + 16*(3*B*
a^2*b - 5*A*a*b^2)*c^4 - 2*(12*B*a*b^3 - 5*A*b^4)*c^3)*d*e^5 - (16*(2*B*a^3
 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)*c^3 + (2*B*a*b^4 - 5*A*b^5)
*c^2)*e^6)*x^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d^3*e^3 + (1
3*B*b^5*c^2 - 160*A*a^2*c^5 + 16*(13*B*a^2*b + 5*A*a*b^2)*c^4 - 2*(52*B*a*b
^3 + 5*A*b^4)*c^3)*d^2*e^4 - (6*B*b^6*c + 16*(2*B*a^3 + 15*A*a^2*b)*c^4 + 4
0*(2*B*a^2*b^2 - 3*A*a*b^3)*c^3 - (46*B*a*b^4 - 15*A*b^5)*c^2)*d*e^5 - 2*(1
6*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2 + (2*B*a*
b^5 - 5*A*b^6)*c)*e^6)*x^4 + (16*(B*b^5*c^2 - 8*B*a*b^3*c^3 + 16*B*a^2*b*c^
4)*d^3*e^3 + 2*(B*b^6*c - 10*A*b^5*c^2 + 32*(4*B*a^3 - 5*A*a^2*b)*c^4 - 16*
(3*B*a^2*b^2 - 5*A*a*b^3)*c^3)*d^2*e^4 - (3*B*b^7 - 14*B*a*b^5*c + 320*A*a^
3*c^4 + 160*(B*a^3*b - A*a^2*b^2)*c^3 - 4*(8*B*a^2*b^3 - 5*A*a*b^4)*c^2)*d*
e^5 - (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a^3*b)*c^3 - 6*(2*B*a^2*b^4
- 5*A*a*b^5)*c)*e^6)*x^3 + (8*(B*b^6*c - 6*B*a*b^4*c^2 + 32*B*a^3*c^4)*d^3*
e^3 - (3*B*b^7 - 160*B*a^3*b*c^3 + 320*A*a^3*c^4 + 4*(32*B*a^2*b^3 - 15*A*a
*b^4)*c^2 - 2*(17*B*a*b^5 - 5*A*b^6)*c)*d^2*e^4 - (8*B*a*b^6 - 5*A*b^7 + 32
*(2*B*a^4 + 5*A*a^3*b)*c^3 + 32*(3*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 - 10*(6*B*a
^2*b^4 - 5*A*a*b^5)*c)*d*e^5 - 2*(2*B*a^2*b^5 - 5*A*a*b^6 + 16*(2*B*a^4*b -
```

```
 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^6)*x^2 + (16*(B*a*b^
5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d^3*e^3 - 2*(3*B*a*b^6 - 32*(2*B*a^
4 - 5*A*a^3*b)*c^3 + 80*(B*a^3*b^2 - A*a^2*b^3)*c^2 - 2*(14*B*a^2*b^4 - 5*A
*a*b^5)*c)*d^2*e^4 - (7*B*a^2*b^5 - 10*A*a*b^6 + 160*A*a^4*c^3 + 16*(7*B*a^
4*b - 15*A*a^3*b^2)*c^2 - 2*(28*B*a^3*b^3 - 45*A*a^2*b^4)*c)*d*e^5 - (2*B*a
^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*
a^3*b^3)*c)*e^6)*x)*sqrt(c*d^2 - b*d*e + a*e^2)*log((8*a*b*d*e - 8*a^2*e^2
- (b^2 + 4*a*c)*d^2 - (8*c^2*d^2 - 8*b*c*d*e + (b^2 + 4*a*c)*e^2)*x^2 + 4*s
qrt(c*d^2 - b*d*e + a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*e + (2*c*d - b*
e)*x) - 2*(4*b*c*d^2 + 4*a*b*e^2 - (3*b^2 + 4*a*c)*d*e)*x)/(e^2*x^2 + 2*d*e
*x + d^2)) - 4*(2*(4*(2*B*a^2 - 3*A*a*b)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^7
 - 8*(4*A*a^2*c^5 + (4*B*a^2*b - 11*A*a*b^2)*c^4 + (2*B*a*b^3 + A*b^4)*c^3)
*d^6*e + 4*(4*(10*B*a^3 - A*a^2*b)*c^4 - 2*(2*B*a^2*b^2 + 13*A*a*b^3)*c^3 +
 3*(2*B*a*b^4 + A*b^5)*c^2)*d^5*e^2 - 8*(32*A*a^3*c^4 + 4*(9*B*a^3*b - 8*A*
a^2*b^2)*c^3 - (7*B*a^2*b^3 + 3*A*a*b^4)*c^2 + (2*B*a*b^5 + A*b^6)*c)*d^4*e
^3 + (4*B*a*b^6 + 2*A*b^7 + 8*(4*B*a^4 + 45*A*a^3*b)*c^3 + 2*(86*B*a^3*b^2
- 155*A*a^2*b^3)*c^2 - (31*B*a^2*b^4 - 32*A*a*b^5)*c)*d^3*e^4 + (7*B*a^2*b^
5 - 16*A*a*b^6 - 176*A*a^4*c^3 - 16*(B*a^4*b + A*a^3*b^2)*c^2 - (48*B*a^3*b
^3 - 91*A*a^2*b^4)*c)*d^2*e^5 - (11*B*a^3*b^4 - 11*A*a^2*b^5 + 112*(B*a^5 -
 A*a^4*b)*c^2 - 4*(20*B*a^4*b^2 - 19*A*a^3*b^3)*c)*d*e^6 + 3*(A*a^3*b^4 - 8
*A*a^4*b^2*c + 16*A*a^5*c^2)*e^7 + (16*(B*b*c^6 - 2*A*c^7)*d^6*e - 8*(7*B*b
^2*c^5 - 4*(B*a + 3*A*b)*c^6)*d^5*e^2 + 2*(29*B*b^3*c^4 - 88*A*a*c^6 + 2*(2
*B*a*b - 19*A*b^2)*c^5)*d^4*e^3 - (27*B*b^4*c^3 + 176*(B*a^2 - 2*A*a*b)*c^5
 + 8*(B*a*b^2 + A*b^3)*c^4)*d^3*e^4 + (9*B*b^5*c^2 - 16*A*a^2*c^5 + 16*(17*
B*a^2*b - 16*A*a*b^2)*c^4 - (44*B*a*b^3 - 35*A*b^4)*c^3)*d^2*e^5 - (16*(13*
B*a^3 - A*a^2*b)*c^4 - 16*(B*a^2*b^2 + 5*A*a*b^3)*c^3 + 3*(B*a*b^4 + 5*A*b^
5)*c^2)*d*e^6 + (128*A*a^3*c^4 + 20*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*
a^2*b^3 - 5*A*a*b^4)*c^2)*e^7)*x^4 + 2*(8*(B*b*c^6 - 2*A*c^7)*d^7 - 8*(2*B*
b^2*c^5 - (2*B*a + 3*A*b)*c^6)*d^6*e - (13*B*b^3*c^4 + 88*A*a*c^6 - 2*(14*B
*a*b + 17*A*b^2)*c^5)*d^5*e^2 + (36*B*b^4*c^3 + 4*(2*B*a^2 + 11*A*a*b)*c^5
- (46*B*a*b^2 + 61*A*b^3)*c^4)*d^4*e^3 - 2*(12*B*b^5*c^2 + 64*A*a^2*c^5 + 2
*(32*B*a^2*b - 49*A*a*b^2)*c^4 - (19*B*a*b^3 + 2*A*b^4)*c^3)*d^3*e^4 + (9*B
*b^6*c - 16*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(106*B*a^2*b^2 - 121*A*a*b^3)*c^
3 - 6*(8*B*a*b^4 - 5*A*b^5)*c^2)*d^2*e^5 - (56*A*a^3*c^4 + 2*(74*B*a^3*b +
19*A*a^2*b^2)*c^3 - 15*(B*a^2*b^3 + 6*A*a*b^4)*c^2 + 3*(B*a*b^5 + 5*A*b^6)*
c)*d*e^6 - 3*(4*(2*B*a^4 - 13*A*a^3*b)*c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*
c^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^7)*x^3 + 3*(8*(B*b^2*c^5 - 2*A*b*c^6)*
d^7 - 2*(13*B*b^3*c^4 + 8*A*a*c^6 - 2*(6*B*a*b + 11*A*b^2)*c^5)*d^6*e + 2*(
12*B*b^4*c^3 + 4*(6*B*a^2 - 5*A*a*b)*c^5 - (18*B*a*b^2 + 13*A*b^3)*c^4)*d^5
*e^2 - 4*(B*b^5*c^2 + 32*A*a^2*c^5 + 2*(6*B*a^2*b - 17*A*a*b^2)*c^4 - 2*(B*
a*b^3 - 2*A*b^4)*c^3)*d^4*e^3 - (5*B*b^6*c + 68*A*a*b^3*c^3 + 64*(B*a^3 - 2
*A*a^2*b)*c^4 - 14*(B*a*b^4 + A*b^5)*c^2)*d^3*e^4 + (3*B*b^7 - 48*A*a^3*c^4
 + 4*(22*B*a^3*b + 7*A*a^2*b^2)*c^3 + 2*(11*B*a^2*b^3 - 21*A*a*b^4)*c^2 - (
14*B*a*b^5 - 5*A*b^6)*c)*d^2*e^5 - (B*a*b^6 + 5*A*b^7 + 8*(14*B*a^4 + A*a^3
*b)*c^3 + 2*(2*B*a^3*b^2 + 9*A*a^2*b^3)*c^2 - 2*(B*a^2*b^4 + 15*A*a*b^5)*c)
*d*e^6 - (2*B*a^2*b^5 - 5*A*a*b^6 - 16*A*a^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2*
B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^7)*x^2 + 2*(3*(B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B
*a*b - A*b^2)*c^5)*d^7 - (12*B*b^4*c^3 - 4*(2*B*a^2 + 15*A*a*b)*c^5 + (22*B
*a*b^2 - 19*A*b^3)*c^4)*d^6*e + 2*(9*B*b^5*c^2 - 56*A*a^2*c^5 + 4*(13*B*a^2
*b - 8*A*a*b^2)*c^4 - 2*(5*B*a*b^3 + 4*A*b^4)*c^3)*d^5*e^2 - 2*(6*B*b^6*c +
 4*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(44*B*a^2*b^2 - 23*A*a*b^3)*c^3 - 3*(8*B*
a*b^4 - A*b^5)*c^2)*d^4*e^3 + (3*B*b^7 - 152*A*a^3*c^4 + 2*(6*B*a^3*b + 61*
A*a^2*b^2)*c^3 + (91*B*a^2*b^3 - 102*A*a*b^4)*c^2 - (23*B*a*b^5 - 14*A*b^6)
*c)*d^3*e^4 + (5*B*a*b^6 - 5*A*b^7 - 4*(14*B*a^4 - 39*A*a^3*b)*c^3 + (74*B*
a^3*b^2 - 125*A*a^2*b^3)*c^2 - (38*B*a^2*b^4 - 43*A*a*b^5)*c)*d^2*e^5 - (4*
B*a^2*b^5 + 5*A*a*b^6 + 64*A*a^4*c^3 + 20*(4*B*a^4*b + A*a^3*b^2)*c^2 - 2*(
15*B*a^3*b^3 + 16*A*a^2*b^4)*c)*d*e^6 - 2*(2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(
B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2 - 37*A*a^3*b^3)*c)*e^7)*x)*sqrt(c*x^
2 + b*x + a))/((a^2*b^4*c^4 - 8*a^3*b^2*c^5 + 16*a^4*c^6)*d^9 - 4*(a^2*b^5*
```

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c^3 - 8*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^8*e + 2*(3*a^2*b^6*c^2 - 22*a^3*b^4*c
^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^7*e^2 - 4*(a^2*b^7*c - 5*a^3*b^5*c^2 -
8*a^4*b^3*c^3 + 48*a^5*b*c^4)*d^6*e^3 + (a^2*b^8 + 4*a^3*b^6*c - 74*a^4*b^4
*c^2 + 144*a^5*b^2*c^3 + 96*a^6*c^4)*d^5*e^4 - 4*(a^3*b^7 - 5*a^4*b^5*c - 8
*a^5*b^3*c^2 + 48*a^6*b*c^3)*d^4*e^5 + 2*(3*a^4*b^6 - 22*a^5*b^4*c + 32*a^6
*b^2*c^2 + 32*a^7*c^3)*d^3*e^6 - 4*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d
^2*e^7 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*d*e^8 + ((b^4*c^6 - 8*a*b^2*c
^7 + 16*a^2*c^8)*d^8*e - 4*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^7*e^2 +
 2*(3*b^6*c^4 - 22*a*b^4*c^5 + 32*a^2*b^2*c^6 + 32*a^3*c^7)*d^6*e^3 - 4*(b^
7*c^3 - 5*a*b^5*c^4 - 8*a^2*b^3*c^5 + 48*a^3*b*c^6)*d^5*e^4 + (b^8*c^2 + 4*
a*b^6*c^3 - 74*a^2*b^4*c^4 + 144*a^3*b^2*c^5 + 96*a^4*c^6)*d^4*e^5 - 4*(a*b
^7*c^2 - 5*a^2*b^5*c^3 - 8*a^3*b^3*c^4 + 48*a^4*b*c^5)*d^3*e^6 + 2*(3*a^2*b
^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^2*e^7 - 4*(a^3*b^5
*c^2 - 8*a^4*b^3*c^3 + 16*a^5*b*c^4)*d*e^8 + (a^4*b^4*c^2 - 8*a^5*b^2*c^3 +
 16*a^6*c^4)*e^9)*x^5 + ((b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*d^9 - 2*(b^5*
c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^8*e - 2*(b^6*c^4 - 10*a*b^4*c^5 + 32*a^
2*b^2*c^6 - 32*a^3*c^7)*d^7*e^2 + 4*(2*b^7*c^3 - 17*a*b^5*c^4 + 40*a^2*b^3*
c^5 - 16*a^3*b*c^6)*d^6*e^3 - (7*b^8*c^2 - 44*a*b^6*c^3 + 10*a^2*b^4*c^4 +
240*a^3*b^2*c^5 - 96*a^4*c^6)*d^5*e^4 + 2*(b^9*c + 2*a*b^7*c^2 - 64*a^2*b^5
*c^3 + 160*a^3*b^3*c^4)*d^4*e^5 - 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^
4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d^3*e^6 + 4*(3*a^2*b^7*c - 23*a^3*b^5
*c^2 + 40*a^4*b^3*c^3 + 16*a^5*b*c^4)*d^2*e^7 - (8*a^3*b^6*c - 65*a^4*b^4*c
^2 + 136*a^5*b^2*c^3 - 16*a^6*c^4)*d*e^8 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 1
6*a^6*b*c^3)*e^9)*x^4 + (2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^9 - (7*
b^6*c^4 - 58*a*b^4*c^5 + 128*a^2*b^2*c^6 - 32*a^3*c^7)*d^8*e + 8*(b^7*c^3 -
 8*a*b^5*c^4 + 16*a^2*b^3*c^5)*d^7*e^2 - 2*(b^8*c^2 - 4*a*b^6*c^3 - 20*a^2*
b^4*c^4 + 96*a^3*b^2*c^5 - 64*a^4*c^6)*d^6*e^3 - 2*(b^9*c - 10*a*b^7*c^2 +
38*a^2*b^5*c^3 - 80*a^3*b^3*c^4 + 96*a^4*b*c^5)*d^5*e^4 + (b^10 - 2*a*b^8*c
 - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 192*a^5*c^5)*d^4*e^5 - 4*(a*b^9 - 6*a^
2*b^7*c + 4*a^3*b^5*c^2 + 64*a^5*b*c^4)*d^3*e^6 + 2*(3*a^2*b^8 - 20*a^3*b^6
*c + 20*a^4*b^4*c^2 + 32*a^5*b^2*c^3 + 64*a^6*c^4)*d^2*e^7 - 2*(2*a^3*b^7 -
 13*a^4*b^5*c + 8*a^5*b^3*c^2 + 48*a^6*b*c^3)*d*e^8 + (a^4*b^6 - 6*a^5*b^4*
c + 32*a^7*c^3)*e^9)*x^3 + ((b^6*c^4 - 6*a*b^4*c^5 + 32*a^3*c^7)*d^9 - 2*(2
*b^7*c^3 - 13*a*b^5*c^4 + 8*a^2*b^3*c^5 + 48*a^3*b*c^6)*d^8*e + 2*(3*b^8*c^
2 - 20*a*b^6*c^3 + 20*a^2*b^4*c^4 + 32*a^3*b^2*c^5 + 64*a^4*c^6)*d^7*e^2 -
4*(b^9*c - 6*a*b^7*c^2 + 4*a^2*b^5*c^3 + 64*a^4*b*c^5)*d^6*e^3 + (b^10 - 2*
a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 192*a^5*c^5)*d^5*e^4 - 2*(a*b^9
 - 10*a^2*b^7*c + 38*a^3*b^5*c^2 - 80*a^4*b^3*c^3 + 96*a^5*b*c^4)*d^4*e^5 -
 2*(a^2*b^8 - 4*a^3*b^6*c - 20*a^4*b^4*c^2 + 96*a^5*b^2*c^3 - 64*a^6*c^4)*d
^3*e^6 + 8*(a^3*b^7 - 8*a^4*b^5*c + 16*a^5*b^3*c^2)*d^2*e^7 - (7*a^4*b^6 -
58*a^5*b^4*c + 128*a^6*b^2*c^2 - 32*a^7*c^3)*d*e^8 + 2*(a^5*b^5 - 8*a^6*b^3
*c + 16*a^7*b*c^2)*e^9)*x^2 + (2*(a*b^5*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)
*d^9 - (8*a*b^6*c^3 - 65*a^2*b^4*c^4 + 136*a^3*b^2*c^5 - 16*a^4*c^6)*d^8*e
+ 4*(3*a*b^7*c^2 - 23*a^2*b^5*c^3 + 40*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^7*e^2
- 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5
*c^5)*d^6*e^3 + 2*(a*b^9 + 2*a^2*b^7*c - 64*a^3*b^5*c^2 + 160*a^4*b^3*c^3)*
d^5*e^4 - (7*a^2*b^8 - 44*a^3*b^6*c + 10*a^4*b^4*c^2 + 240*a^5*b^2*c^3 - 96
*a^6*c^4)*d^4*e^5 + 4*(2*a^3*b^7 - 17*a^4*b^5*c + 40*a^5*b^3*c^2 - 16*a^6*b
*c^3)*d^3*e^6 - 2*(a^4*b^6 - 10*a^5*b^4*c + 32*a^6*b^2*c^2 - 32*a^7*c^3)*d^
2*e^7 - 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d*e^8 + (a^6*b^4 - 8*a^7*b
^2*c + 16*a^8*c^2)*e^9)*x), -1/6*(3*(8*(B*a^2*b^4*c - 8*B*a^3*b^2*c^2 + 16*
B*a^4*c^3)*d^3*e^3 - (3*B*a^2*b^5 + 160*A*a^4*c^3 + 16*(3*B*a^4*b - 5*A*a^3
*b^2)*c^2 - 2*(12*B*a^3*b^3 - 5*A*a^2*b^4)*c)*d^2*e^4 - (2*B*a^3*b^4 - 5*A*
a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*d
*e^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 + 16*B*a^2*c^5)*d^2*e^4 - (3*B*b^5*c^2
 + 160*A*a^2*c^5 + 16*(3*B*a^2*b - 5*A*a*b^2)*c^4 - 2*(12*B*a*b^3 - 5*A*b^4
)*c^3)*d*e^5 - (16*(2*B*a^3 - 5*A*a^2*b)*c^4 - 8*(2*B*a^2*b^2 - 5*A*a*b^3)*
c^3 + (2*B*a*b^4 - 5*A*b^5)*c^2)*e^6)*x^5 + (8*(B*b^4*c^3 - 8*B*a*b^2*c^4 +
 16*B*a^2*c^5)*d^3*e^3 + (13*B*b^5*c^2 - 160*A*a^2*c^5 + 16*(13*B*a^2*b + 5
*A*a*b^2)*c^4 - 2*(52*B*a*b^3 + 5*A*b^4)*c^3)*d^2*e^4 - (6*B*b^6*c + 16*(2*
B*a^3 + 15*A*a^2*b)*c^4 + 40*(2*B*a^2*b^2 - 3*A*a*b^3)*c^3 - (46*B*a*b^4 -
15*A*b^5)*c^2)*d*e^5 - 2*(16*(2*B*a^3*b - 5*A*a^2*b^2)*c^3 - 8*(2*B*a^2*b^3
 - 5*A*a*b^4)*c^2 + (2*B*a*b^5 - 5*A*b^6)*c)*e^6)*x^4 + (16*(B*b^5*c^2 - 8*
B*a*b^3*c^3 + 16*B*a^2*b*c^4)*d^3*e^3 + 2*(B*b^6*c - 10*A*b^5*c^2 + 32*(4*B
*a^3 - 5*A*a^2*b)*c^4 - 16*(3*B*a^2*b^2 - 5*A*a*b^3)*c^3)*d^2*e^4 - (3*B*b^
7 - 14*B*a*b^5*c + 320*A*a^3*c^4 + 160*(B*a^3*b - A*a^2*b^2)*c^3 - 4*(8*B*a
^2*b^3 - 5*A*a*b^4)*c^2)*d*e^5 - (2*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 - 5*A*a
^3*b)*c^3 - 6*(2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^6)*x^3 + (8*(B*b^6*c - 6*B*a*b
^4*c^2 + 32*B*a^3*c^4)*d^3*e^3 - (3*B*b^7 - 160*B*a^3*b*c^3 + 320*A*a^3*c^4
 + 4*(32*B*a^2*b^3 - 15*A*a*b^4)*c^2 - 2*(17*B*a*b^5 - 5*A*b^6)*c)*d^2*e^4
- (8*B*a*b^6 - 5*A*b^7 + 32*(2*B*a^4 + 5*A*a^3*b)*c^3 + 32*(3*B*a^3*b^2 - 5
*A*a^2*b^3)*c^2 - 10*(6*B*a^2*b^4 - 5*A*a*b^5)*c)*d*e^5 - 2*(2*B*a^2*b^5 -
5*A*a*b^6 + 16*(2*B*a^4*b - 5*A*a^3*b^2)*c^2 - 8*(2*B*a^3*b^3 - 5*A*a^2*b^4
)*c)*e^6)*x^2 + (16*(B*a*b^5*c - 8*B*a^2*b^3*c^2 + 16*B*a^3*b*c^3)*d^3*e^3
- 2*(3*B*a*b^6 - 32*(2*B*a^4 - 5*A*a^3*b)*c^3 + 80*(B*a^3*b^2 - A*a^2*b^3)*
c^2 - 2*(14*B*a^2*b^4 - 5*A*a*b^5)*c)*d^2*e^4 - (7*B*a^2*b^5 - 10*A*a*b^6 +
 160*A*a^4*c^3 + 16*(7*B*a^4*b - 15*A*a^3*b^2)*c^2 - 2*(28*B*a^3*b^3 - 45*A
*a^2*b^4)*c)*d*e^5 - (2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(2*B*a^5 - 5*A*a^4*b)*
c^2 - 8*(2*B*a^4*b^2 - 5*A*a^3*b^3)*c)*e^6)*x)*sqrt(-c*d^2 + b*d*e - a*e^2)
*arctan(-1/2*sqrt(-c*d^2 + b*d*e - a*e^2)*sqrt(c*x^2 + b*x + a)*(b*d - 2*a*
e + (2*c*d - b*e)*x)/(a*c*d^2 - a*b*d*e + a^2*e^2 + (c^2*d^2 - b*c*d*e + a*
c*e^2)*x^2 + (b*c*d^2 - b^2*d*e + a*b*e^2)*x)) + 2*(2*(4*(2*B*a^2 - 3*A*a*b
)*c^5 + (2*B*a*b^2 + A*b^3)*c^4)*d^7 - 8*(4*A*a^2*c^5 + (4*B*a^2*b - 11*A*a
*b^2)*c^4 + (2*B*a*b^3 + A*b^4)*c^3)*d^6*e + 4*(4*(10*B*a^3 - A*a^2*b)*c^4
- 2*(2*B*a^2*b^2 + 13*A*a*b^3)*c^3 + 3*(2*B*a*b^4 + A*b^5)*c^2)*d^5*e^2 - 8
*(32*A*a^3*c^4 + 4*(9*B*a^3*b - 8*A*a^2*b^2)*c^3 - (7*B*a^2*b^3 + 3*A*a*b^4
)*c^2 + (2*B*a*b^5 + A*b^6)*c)*d^4*e^3 + (4*B*a*b^6 + 2*A*b^7 + 8*(4*B*a^4
+ 45*A*a^3*b)*c^3 + 2*(86*B*a^3*b^2 - 155*A*a^2*b^3)*c^2 - (31*B*a^2*b^4 -
32*A*a*b^5)*c)*d^3*e^4 + (7*B*a^2*b^5 - 16*A*a*b^6 - 176*A*a^4*c^3 - 16*(B*
a^4*b + A*a^3*b^2)*c^2 - (48*B*a^3*b^3 - 91*A*a^2*b^4)*c)*d^2*e^5 - (11*B*a
^3*b^4 - 11*A*a^2*b^5 + 112*(B*a^5 - A*a^4*b)*c^2 - 4*(20*B*a^4*b^2 - 19*A*
a^3*b^3)*c)*d*e^6 + 3*(A*a^3*b^4 - 8*A*a^4*b^2*c + 16*A*a^5*c^2)*e^7 + (16*
(B*b*c^6 - 2*A*c^7)*d^6*e - 8*(7*B*b^2*c^5 - 4*(B*a + 3*A*b)*c^6)*d^5*e^2 +
 2*(29*B*b^3*c^4 - 88*A*a*c^6 + 2*(2*B*a*b - 19*A*b^2)*c^5)*d^4*e^3 - (27*B
*b^4*c^3 + 176*(B*a^2 - 2*A*a*b)*c^5 + 8*(B*a*b^2 + A*b^3)*c^4)*d^3*e^4 + (
9*B*b^5*c^2 - 16*A*a^2*c^5 + 16*(17*B*a^2*b - 16*A*a*b^2)*c^4 - (44*B*a*b^3
 - 35*A*b^4)*c^3)*d^2*e^5 - (16*(13*B*a^3 - A*a^2*b)*c^4 - 16*(B*a^2*b^2 +
5*A*a*b^3)*c^3 + 3*(B*a*b^4 + 5*A*b^5)*c^2)*d*e^6 + (128*A*a^3*c^4 + 20*(2*
B*a^3*b - 5*A*a^2*b^2)*c^3 - 3*(2*B*a^2*b^3 - 5*A*a*b^4)*c^2)*e^7)*x^4 + 2*
(8*(B*b*c^6 - 2*A*c^7)*d^7 - 8*(2*B*b^2*c^5 - (2*B*a + 3*A*b)*c^6)*d^6*e -
(13*B*b^3*c^4 + 88*A*a*c^6 - 2*(14*B*a*b + 17*A*b^2)*c^5)*d^5*e^2 + (36*B*b
^4*c^3 + 4*(2*B*a^2 + 11*A*a*b)*c^5 - (46*B*a*b^2 + 61*A*b^3)*c^4)*d^4*e^3
- 2*(12*B*b^5*c^2 + 64*A*a^2*c^5 + 2*(32*B*a^2*b - 49*A*a*b^2)*c^4 - (19*B*
a*b^3 + 2*A*b^4)*c^3)*d^3*e^4 + (9*B*b^6*c - 16*(2*B*a^3 - 11*A*a^2*b)*c^4
+ 2*(106*B*a^2*b^2 - 121*A*a*b^3)*c^3 - 6*(8*B*a*b^4 - 5*A*b^5)*c^2)*d^2*e^
5 - (56*A*a^3*c^4 + 2*(74*B*a^3*b + 19*A*a^2*b^2)*c^3 - 15*(B*a^2*b^3 + 6*A
*a*b^4)*c^2 + 3*(B*a*b^5 + 5*A*b^6)*c)*d*e^6 - 3*(4*(2*B*a^4 - 13*A*a^3*b)*
c^3 - 7*(2*B*a^3*b^2 - 5*A*a^2*b^3)*c^2 + (2*B*a^2*b^4 - 5*A*a*b^5)*c)*e^7)
*x^3 + 3*(8*(B*b^2*c^5 - 2*A*b*c^6)*d^7 - 2*(13*B*b^3*c^4 + 8*A*a*c^6 - 2*(
6*B*a*b + 11*A*b^2)*c^5)*d^6*e + 2*(12*B*b^4*c^3 + 4*(6*B*a^2 - 5*A*a*b)*c^
5 - (18*B*a*b^2 + 13*A*b^3)*c^4)*d^5*e^2 - 4*(B*b^5*c^2 + 32*A*a^2*c^5 + 2*
(6*B*a^2*b - 17*A*a*b^2)*c^4 - 2*(B*a*b^3 - 2*A*b^4)*c^3)*d^4*e^3 - (5*B*b^
6*c + 68*A*a*b^3*c^3 + 64*(B*a^3 - 2*A*a^2*b)*c^4 - 14*(B*a*b^4 + A*b^5)*c^
2)*d^3*e^4 + (3*B*b^7 - 48*A*a^3*c^4 + 4*(22*B*a^3*b + 7*A*a^2*b^2)*c^3 + 2
*(11*B*a^2*b^3 - 21*A*a*b^4)*c^2 - (14*B*a*b^5 - 5*A*b^6)*c)*d^2*e^5 - (B*a
*b^6 + 5*A*b^7 + 8*(14*B*a^4 + A*a^3*b)*c^3 + 2*(2*B*a^3*b^2 + 9*A*a^2*b^3)
*c^2 - 2*(B*a^2*b^4 + 15*A*a*b^5)*c)*d*e^6 - (2*B*a^2*b^5 - 5*A*a*b^6 - 16*
A*a^3*b^2*c^2 - 64*A*a^4*c^3 - 6*(2*B*a^3*b^3 - 5*A*a^2*b^4)*c)*e^7)*x^2 +
2*(3*(B*b^3*c^4 - 8*A*a*c^6 + 2*(2*B*a*b - A*b^2)*c^5)*d^7 - (12*B*b^4*c^3
- 4*(2*B*a^2 + 15*A*a*b)*c^5 + (22*B*a*b^2 - 19*A*b^3)*c^4)*d^6*e + 2*(9*B*
b^5*c^2 - 56*A*a^2*c^5 + 4*(13*B*a^2*b - 8*A*a*b^2)*c^4 - 2*(5*B*a*b^3 + 4*
A*b^4)*c^3)*d^5*e^2 - 2*(6*B*b^6*c + 4*(2*B*a^3 - 11*A*a^2*b)*c^4 + 2*(44*B
*a^2*b^2 - 23*A*a*b^3)*c^3 - 3*(8*B*a*b^4 - A*b^5)*c^2)*d^4*e^3 + (3*B*b^7
- 152*A*a^3*c^4 + 2*(6*B*a^3*b + 61*A*a^2*b^2)*c^3 + (91*B*a^2*b^3 - 102*A*
a*b^4)*c^2 - (23*B*a*b^5 - 14*A*b^6)*c)*d^3*e^4 + (5*B*a*b^6 - 5*A*b^7 - 4*
(14*B*a^4 - 39*A*a^3*b)*c^3 + (74*B*a^3*b^2 - 125*A*a^2*b^3)*c^2 - (38*B*a^
2*b^4 - 43*A*a*b^5)*c)*d^2*e^5 - (4*B*a^2*b^5 + 5*A*a*b^6 + 64*A*a^4*c^3 +
20*(4*B*a^4*b + A*a^3*b^2)*c^2 - 2*(15*B*a^3*b^3 + 16*A*a^2*b^4)*c)*d*e^6 -
 2*(2*B*a^3*b^4 - 5*A*a^2*b^5 + 16*(B*a^5 - 4*A*a^4*b)*c^2 - (14*B*a^4*b^2
- 37*A*a^3*b^3)*c)*e^7)*x)*sqrt(c*x^2 + b*x + a))/((a^2*b^4*c^4 - 8*a^3*b^2
*c^5 + 16*a^4*c^6)*d^9 - 4*(a^2*b^5*c^3 - 8*a^3*b^3*c^4 + 16*a^4*b*c^5)*d^8
*e + 2*(3*a^2*b^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^4 + 32*a^5*c^5)*d^7*e
^2 - 4*(a^2*b^7*c - 5*a^3*b^5*c^2 - 8*a^4*b^3*c^3 + 48*a^5*b*c^4)*d^6*e^3 +
 (a^2*b^8 + 4*a^3*b^6*c - 74*a^4*b^4*c^2 + 144*a^5*b^2*c^3 + 96*a^6*c^4)*d^
5*e^4 - 4*(a^3*b^7 - 5*a^4*b^5*c - 8*a^5*b^3*c^2 + 48*a^6*b*c^3)*d^4*e^5 +
2*(3*a^4*b^6 - 22*a^5*b^4*c + 32*a^6*b^2*c^2 + 32*a^7*c^3)*d^3*e^6 - 4*(a^5
*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*d^2*e^7 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^
8*c^2)*d*e^8 + ((b^4*c^6 - 8*a*b^2*c^7 + 16*a^2*c^8)*d^8*e - 4*(b^5*c^5 - 8
*a*b^3*c^6 + 16*a^2*b*c^7)*d^7*e^2 + 2*(3*b^6*c^4 - 22*a*b^4*c^5 + 32*a^2*b
^2*c^6 + 32*a^3*c^7)*d^6*e^3 - 4*(b^7*c^3 - 5*a*b^5*c^4 - 8*a^2*b^3*c^5 + 4
8*a^3*b*c^6)*d^5*e^4 + (b^8*c^2 + 4*a*b^6*c^3 - 74*a^2*b^4*c^4 + 144*a^3*b^
2*c^5 + 96*a^4*c^6)*d^4*e^5 - 4*(a*b^7*c^2 - 5*a^2*b^5*c^3 - 8*a^3*b^3*c^4
+ 48*a^4*b*c^5)*d^3*e^6 + 2*(3*a^2*b^6*c^2 - 22*a^3*b^4*c^3 + 32*a^4*b^2*c^
4 + 32*a^5*c^5)*d^2*e^7 - 4*(a^3*b^5*c^2 - 8*a^4*b^3*c^3 + 16*a^5*b*c^4)*d*
e^8 + (a^4*b^4*c^2 - 8*a^5*b^2*c^3 + 16*a^6*c^4)*e^9)*x^5 + ((b^4*c^6 - 8*a
*b^2*c^7 + 16*a^2*c^8)*d^9 - 2*(b^5*c^5 - 8*a*b^3*c^6 + 16*a^2*b*c^7)*d^8*e
 - 2*(b^6*c^4 - 10*a*b^4*c^5 + 32*a^2*b^2*c^6 - 32*a^3*c^7)*d^7*e^2 + 4*(2*
b^7*c^3 - 17*a*b^5*c^4 + 40*a^2*b^3*c^5 - 16*a^3*b*c^6)*d^6*e^3 - (7*b^8*c^
2 - 44*a*b^6*c^3 + 10*a^2*b^4*c^4 + 240*a^3*b^2*c^5 - 96*a^4*c^6)*d^5*e^4 +
 2*(b^9*c + 2*a*b^7*c^2 - 64*a^2*b^5*c^3 + 160*a^3*b^3*c^4)*d^4*e^5 - 2*(4*
a*b^8*c - 23*a^2*b^6*c^2 - 10*a^3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d
^3*e^6 + 4*(3*a^2*b^7*c - 23*a^3*b^5*c^2 + 40*a^4*b^3*c^3 + 16*a^5*b*c^4)*d
^2*e^7 - (8*a^3*b^6*c - 65*a^4*b^4*c^2 + 136*a^5*b^2*c^3 - 16*a^6*c^4)*d*e^
8 + 2*(a^4*b^5*c - 8*a^5*b^3*c^2 + 16*a^6*b*c^3)*e^9)*x^4 + (2*(b^5*c^5 - 8
*a*b^3*c^6 + 16*a^2*b*c^7)*d^9 - (7*b^6*c^4 - 58*a*b^4*c^5 + 128*a^2*b^2*c^
6 - 32*a^3*c^7)*d^8*e + 8*(b^7*c^3 - 8*a*b^5*c^4 + 16*a^2*b^3*c^5)*d^7*e^2
- 2*(b^8*c^2 - 4*a*b^6*c^3 - 20*a^2*b^4*c^4 + 96*a^3*b^2*c^5 - 64*a^4*c^6)*
d^6*e^3 - 2*(b^9*c - 10*a*b^7*c^2 + 38*a^2*b^5*c^3 - 80*a^3*b^3*c^4 + 96*a^
4*b*c^5)*d^5*e^4 + (b^10 - 2*a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c^3 + 19
2*a^5*c^5)*d^4*e^5 - 4*(a*b^9 - 6*a^2*b^7*c + 4*a^3*b^5*c^2 + 64*a^5*b*c^4)
*d^3*e^6 + 2*(3*a^2*b^8 - 20*a^3*b^6*c + 20*a^4*b^4*c^2 + 32*a^5*b^2*c^3 +
64*a^6*c^4)*d^2*e^7 - 2*(2*a^3*b^7 - 13*a^4*b^5*c + 8*a^5*b^3*c^2 + 48*a^6*
b*c^3)*d*e^8 + (a^4*b^6 - 6*a^5*b^4*c + 32*a^7*c^3)*e^9)*x^3 + ((b^6*c^4 -
6*a*b^4*c^5 + 32*a^3*c^7)*d^9 - 2*(2*b^7*c^3 - 13*a*b^5*c^4 + 8*a^2*b^3*c^5
 + 48*a^3*b*c^6)*d^8*e + 2*(3*b^8*c^2 - 20*a*b^6*c^3 + 20*a^2*b^4*c^4 + 32*
a^3*b^2*c^5 + 64*a^4*c^6)*d^7*e^2 - 4*(b^9*c - 6*a*b^7*c^2 + 4*a^2*b^5*c^3
+ 64*a^4*b*c^5)*d^6*e^3 + (b^10 - 2*a*b^8*c - 26*a^2*b^6*c^2 + 60*a^3*b^4*c
^3 + 192*a^5*c^5)*d^5*e^4 - 2*(a*b^9 - 10*a^2*b^7*c + 38*a^3*b^5*c^2 - 80*a
^4*b^3*c^3 + 96*a^5*b*c^4)*d^4*e^5 - 2*(a^2*b^8 - 4*a^3*b^6*c - 20*a^4*b^4*
c^2 + 96*a^5*b^2*c^3 - 64*a^6*c^4)*d^3*e^6 + 8*(a^3*b^7 - 8*a^4*b^5*c + 16*
a^5*b^3*c^2)*d^2*e^7 - (7*a^4*b^6 - 58*a^5*b^4*c + 128*a^6*b^2*c^2 - 32*a^7
*c^3)*d*e^8 + 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a^7*b*c^2)*e^9)*x^2 + (2*(a*b^5
*c^4 - 8*a^2*b^3*c^5 + 16*a^3*b*c^6)*d^9 - (8*a*b^6*c^3 - 65*a^2*b^4*c^4 +
136*a^3*b^2*c^5 - 16*a^4*c^6)*d^8*e + 4*(3*a*b^7*c^2 - 23*a^2*b^5*c^3 + 40*
a^3*b^3*c^4 + 16*a^4*b*c^5)*d^7*e^2 - 2*(4*a*b^8*c - 23*a^2*b^6*c^2 - 10*a^
3*b^4*c^3 + 160*a^4*b^2*c^4 - 32*a^5*c^5)*d^6*e^3 + 2*(a*b^9 + 2*a^2*b^7*c
- 64*a^3*b^5*c^2 + 160*a^4*b^3*c^3)*d^5*e^4 - (7*a^2*b^8 - 44*a^3*b^6*c + 1
0*a^4*b^4*c^2 + 240*a^5*b^2*c^3 - 96*a^6*c^4)*d^4*e^5 + 4*(2*a^3*b^7 - 17*a
^4*b^5*c + 40*a^5*b^3*c^2 - 16*a^6*b*c^3)*d^3*e^6 - 2*(a^4*b^6 - 10*a^5*b^4
*c + 32*a^6*b^2*c^2 - 32*a^7*c^3)*d^2*e^7 - 2*(a^5*b^5 - 8*a^6*b^3*c + 16*a
^7*b*c^2)*d*e^8 + (a^6*b^4 - 8*a^7*b^2*c + 16*a^8*c^2)*e^9)*x)]
```

giac [B] time = 3.79, size = 8475, normalized size = 11.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="giac")
```

```
[Out] 1/6*((32*sqrt(c*d^2 - b*d*e + a*e^2)*B*b*c^4*d^4*e^2 - 64*sqrt(c*d^2 - b*d*
e + a*e^2)*A*c^5*d^4*e^2 - 80*sqrt(c*d^2 - b*d*e + a*e^2)*B*b^2*c^3*d^3*e^3
 + 64*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*c^4*d^3*e^3 + 128*sqrt(c*d^2 - b*d*e
+ a*e^2)*A*b*c^4*d^3*e^3 - 24*B*b^4*c^(3/2)*d^2*e^5*log(abs(-2*c*d + b*e +
2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 192*B*a*b^2*c^(5/2)*d^2*e^5*log(a
bs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 384*B*a^2*c^(7/
2)*d^2*e^5*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) +
 36*sqrt(c*d^2 - b*d*e + a*e^2)*B*b^3*c^2*d^2*e^4 + 48*sqrt(c*d^2 - b*d*e +
 a*e^2)*B*a*b*c^3*d^2*e^4 - 24*sqrt(c*d^2 - b*d*e + a*e^2)*A*b^2*c^3*d^2*e^
4 - 288*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*c^4*d^2*e^4 + 9*B*b^5*sqrt(c)*d*e^6
*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 72*B*a*b^
3*c^(3/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c
))) + 30*A*b^4*c^(3/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e +
a*e^2)*sqrt(c))) + 144*B*a^2*b*c^(5/2)*d*e^6*log(abs(-2*c*d + b*e + 2*sqrt(
c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 240*A*a*b^2*c^(5/2)*d*e^6*log(abs(-2*c*d
 + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 480*A*a^2*c^(7/2)*d*e^6*
log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 18*sqrt(c*
d^2 - b*d*e + a*e^2)*B*b^4*c*d*e^5 + 112*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*b^
2*c^2*d*e^5 - 40*sqrt(c*d^2 - b*d*e + a*e^2)*A*b^3*c^2*d*e^5 - 416*sqrt(c*d
^2 - b*d*e + a*e^2)*B*a^2*c^3*d*e^5 + 288*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*b
*c^3*d*e^5 + 6*B*a*b^4*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*
d*e + a*e^2)*sqrt(c))) - 15*A*b^5*sqrt(c)*e^7*log(abs(-2*c*d + b*e + 2*sqrt
(c*d^2 - b*d*e + a*e^2)*sqrt(c))) - 48*B*a^2*b^2*c^(3/2)*e^7*log(abs(-2*c*d
 + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 120*A*a*b^3*c^(3/2)*e^7*
log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) + 96*B*a^3*c
^(5/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^2)*sqrt(c))) -
 240*A*a^2*b*c^(5/2)*e^7*log(abs(-2*c*d + b*e + 2*sqrt(c*d^2 - b*d*e + a*e^
2)*sqrt(c))) - 12*sqrt(c*d^2 - b*d*e + a*e^2)*B*a*b^3*c*e^6 + 30*sqrt(c*d^2
 - b*d*e + a*e^2)*A*b^4*c*e^6 + 80*sqrt(c*d^2 - b*d*e + a*e^2)*B*a^2*b*c^2*
e^6 - 200*sqrt(c*d^2 - b*d*e + a*e^2)*A*a*b^2*c^2*e^6 + 256*sqrt(c*d^2 - b*
d*e + a*e^2)*A*a^2*c^3*e^6)*sgn(1/(x*e + d))/(sqrt(c*d^2 - b*d*e + a*e^2)*b
^4*c^(7/2)*d^6 - 8*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^2*c^(9/2)*d^6 + 16*sqrt(
c*d^2 - b*d*e + a*e^2)*a^2*c^(11/2)*d^6 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*b^5
*c^(5/2)*d^5*e + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^3*c^(7/2)*d^5*e - 48*sq
rt(c*d^2 - b*d*e + a*e^2)*a^2*b*c^(9/2)*d^5*e + 3*sqrt(c*d^2 - b*d*e + a*e^
2)*b^6*c^(3/2)*d^4*e^2 - 21*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^4*c^(5/2)*d^4*e
^2 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^2*c^(7/2)*d^4*e^2 + 48*sqrt(c*d^2
 - b*d*e + a*e^2)*a^3*c^(9/2)*d^4*e^2 - sqrt(c*d^2 - b*d*e + a*e^2)*b^7*sqr
t(c)*d^3*e^3 + 2*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^5*c^(3/2)*d^3*e^3 + 32*sqr
t(c*d^2 - b*d*e + a*e^2)*a^2*b^3*c^(5/2)*d^3*e^3 - 96*sqrt(c*d^2 - b*d*e +
a*e^2)*a^3*b*c^(7/2)*d^3*e^3 + 3*sqrt(c*d^2 - b*d*e + a*e^2)*a*b^6*sqrt(c)*
d^2*e^4 - 21*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^4*c^(3/2)*d^2*e^4 + 24*sqrt(
c*d^2 - b*d*e + a*e^2)*a^3*b^2*c^(5/2)*d^2*e^4 + 48*sqrt(c*d^2 - b*d*e + a*
e^2)*a^4*c^(7/2)*d^2*e^4 - 3*sqrt(c*d^2 - b*d*e + a*e^2)*a^2*b^5*sqrt(c)*d*
e^5 + 24*sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^3*c^(3/2)*d*e^5 - 48*sqrt(c*d^2
- b*d*e + a*e^2)*a^4*b*c^(5/2)*d*e^5 + sqrt(c*d^2 - b*d*e + a*e^2)*a^3*b^4*
sqrt(c)*e^6 - 8*sqrt(c*d^2 - b*d*e + a*e^2)*a^4*b^2*c^(3/2)*e^6 + 16*sqrt(c
*d^2 - b*d*e + a*e^2)*a^5*c^(5/2)*e^6) + 2*((((4*(4*B*b*c^5*d^7*e^16*sgn(1/
(x*e + d)) - 8*A*c^6*d^7*e^16*sgn(1/(x*e + d)) - 16*B*b^2*c^4*d^6*e^17*sgn(
1/(x*e + d)) + 8*B*a*c^5*d^6*e^17*sgn(1/(x*e + d)) + 28*A*b*c^5*d^6*e^17*sg
n(1/(x*e + d)) + 21*B*b^3*c^3*d^5*e^18*sgn(1/(x*e + d)) - 30*A*b^2*c^4*d^5*
e^18*sgn(1/(x*e + d)) - 48*A*a*c^5*d^5*e^18*sgn(1/(x*e + d)) - 18*B*b^4*c^2
*d^4*e^19*sgn(1/(x*e + d)) + 34*B*a*b^2*c^3*d^4*e^19*sgn(1/(x*e + d)) + 5*A
*b^3*c^3*d^4*e^19*sgn(1/(x*e + d)) - 128*B*a^2*c^4*d^4*e^19*sgn(1/(x*e + d)
) + 120*A*a*b*c^4*d^4*e^19*sgn(1/(x*e + d)) + 12*B*b^5*c*d^3*e^20*sgn(1/(x*
e + d)) - 66*B*a*b^3*c^2*d^3*e^20*sgn(1/(x*e + d)) + 18*A*b^4*c^2*d^3*e^20*
sgn(1/(x*e + d)) + 212*B*a^2*b*c^3*d^3*e^20*sgn(1/(x*e + d)) - 164*A*a*b^2*
c^3*d^3*e^20*sgn(1/(x*e + d)) + 88*A*a^2*c^4*d^3*e^20*sgn(1/(x*e + d)) - 3*
B*b^6*d^2*e^21*sgn(1/(x*e + d)) + 18*B*a*b^4*c*d^2*e^21*sgn(1/(x*e + d)) -
18*A*b^5*c*d^2*e^21*sgn(1/(x*e + d)) - 36*B*a^2*b^2*c^2*d^2*e^21*sgn(1/(x*e
 + d)) + 126*A*a*b^3*c^2*d^2*e^21*sgn(1/(x*e + d)) - 120*B*a^3*c^3*d^2*e^21
*sgn(1/(x*e + d)) - 132*A*a^2*b*c^3*d^2*e^21*sgn(1/(x*e + d)) + B*a*b^5*d*e
^22*sgn(1/(x*e + d)) + 5*A*b^6*d*e^22*sgn(1/(x*e + d)) - 11*B*a^2*b^3*c*d*e
^22*sgn(1/(x*e + d)) - 24*A*a*b^4*c*d*e^22*sgn(1/(x*e + d)) + 56*B*a^3*b*c^
2*d*e^22*sgn(1/(x*e + d)) - 30*A*a^2*b^2*c^2*d*e^22*sgn(1/(x*e + d)) + 128*
A*a^3*c^3*d*e^22*sgn(1/(x*e + d)) + 2*B*a^2*b^4*e^23*sgn(1/(x*e + d)) - 5*A
*a*b^5*e^23*sgn(1/(x*e + d)) - 14*B*a^3*b^2*c*e^23*sgn(1/(x*e + d)) + 37*A*
a^2*b^3*c*e^23*sgn(1/(x*e + d)) + 16*B*a^4*c^2*e^23*sgn(1/(x*e + d)) - 64*A
*a^3*b*c^2*e^23*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*
a*b^2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d)
)^2 - 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(
x*e + d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*s
gn(1/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c
^3*d^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b
^7*d^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32
*a^2*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e
 + d))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(
1/(x*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^
2*e^15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^
3*c*d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^
3*b^4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^
5*c^2*e^17*sgn(1/(x*e + d))^2) + 3*(B*b^4*c^2*d^5*e^20*sgn(1/(x*e + d)) - 8
*B*a*b^2*c^3*d^5*e^20*sgn(1/(x*e + d)) + 16*B*a^2*c^4*d^5*e^20*sgn(1/(x*e +
 d)) - 2*B*b^5*c*d^4*e^21*sgn(1/(x*e + d)) + 16*B*a*b^3*c^2*d^4*e^21*sgn(1/
(x*e + d)) - A*b^4*c^2*d^4*e^21*sgn(1/(x*e + d)) - 32*B*a^2*b*c^3*d^4*e^21*
sgn(1/(x*e + d)) + 8*A*a*b^2*c^3*d^4*e^21*sgn(1/(x*e + d)) - 16*A*a^2*c^4*d
^4*e^21*sgn(1/(x*e + d)) + B*b^6*d^3*e^22*sgn(1/(x*e + d)) - 6*B*a*b^4*c*d^
3*e^22*sgn(1/(x*e + d)) + 2*A*b^5*c*d^3*e^22*sgn(1/(x*e + d)) - 16*A*a*b^3*
c^2*d^3*e^22*sgn(1/(x*e + d)) + 32*B*a^3*c^3*d^3*e^22*sgn(1/(x*e + d)) + 32
*A*a^2*b*c^3*d^3*e^22*sgn(1/(x*e + d)) - 2*B*a*b^5*d^2*e^23*sgn(1/(x*e + d)
) - A*b^6*d^2*e^23*sgn(1/(x*e + d)) + 16*B*a^2*b^3*c*d^2*e^23*sgn(1/(x*e +
d)) + 6*A*a*b^4*c*d^2*e^23*sgn(1/(x*e + d)) - 32*B*a^3*b*c^2*d^2*e^23*sgn(1
/(x*e + d)) - 32*A*a^3*c^3*d^2*e^23*sgn(1/(x*e + d)) + B*a^2*b^4*d*e^24*sgn
(1/(x*e + d)) + 2*A*a*b^5*d*e^24*sgn(1/(x*e + d)) - 8*B*a^3*b^2*c*d*e^24*sg
n(1/(x*e + d)) - 16*A*a^2*b^3*c*d*e^24*sgn(1/(x*e + d)) + 16*B*a^4*c^2*d*e^
24*sgn(1/(x*e + d)) + 32*A*a^3*b*c^2*d*e^24*sgn(1/(x*e + d)) - A*a^2*b^4*e^
25*sgn(1/(x*e + d)) + 8*A*a^3*b^2*c*e^25*sgn(1/(x*e + d)) - 16*A*a^4*c^2*e^
25*sgn(1/(x*e + d)))*e^(-1)/((b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2
*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 -
 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e +
 d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/
(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^
4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^
3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*
b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d)
)^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*
e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^1
```

```
5*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d
*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4
*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2
*e^17*sgn(1/(x*e + d))^2)*(x*e + d)))*e^(-1)/(x*e + d) - 3*(16*B*b*c^5*d^6*
e^15*sgn(1/(x*e + d)) - 32*A*c^6*d^6*e^15*sgn(1/(x*e + d)) - 56*B*b^2*c^4*d
^5*e^16*sgn(1/(x*e + d)) + 32*B*a*c^5*d^5*e^16*sgn(1/(x*e + d)) + 96*A*b*c^
5*d^5*e^16*sgn(1/(x*e + d)) + 60*B*b^3*c^3*d^4*e^17*sgn(1/(x*e + d)) - 80*A
*b^2*c^4*d^4*e^17*sgn(1/(x*e + d)) - 160*A*a*c^5*d^4*e^17*sgn(1/(x*e + d))
 - 42*B*b^4*c^2*d^3*e^18*sgn(1/(x*e + d)) + 96*B*a*b^2*c^3*d^3*e^18*sgn(1/(x
*e + d)) - 352*B*a^2*c^4*d^3*e^18*sgn(1/(x*e + d)) + 320*A*a*b*c^4*d^3*e^18
*sgn(1/(x*e + d)) + 20*B*b^5*c*d^2*e^19*sgn(1/(x*e + d)) - 120*B*a*b^3*c^2*
d^2*e^19*sgn(1/(x*e + d)) + 46*A*b^4*c^2*d^2*e^19*sgn(1/(x*e + d)) + 400*B*
a^2*b*c^3*d^2*e^19*sgn(1/(x*e + d)) - 368*A*a*b^2*c^3*d^2*e^19*sgn(1/(x*e +
 d)) + 256*A*a^2*c^4*d^2*e^19*sgn(1/(x*e + d)) - 3*B*b^6*d*e^20*sgn(1/(x*e
+ d)) + 26*B*a*b^4*c*d*e^20*sgn(1/(x*e + d)) - 30*A*b^5*c*d*e^20*sgn(1/(x*e
 + d)) - 88*B*a^2*b^2*c^2*d*e^20*sgn(1/(x*e + d)) + 208*A*a*b^3*c^2*d*e^20*
sgn(1/(x*e + d)) - 64*B*a^3*c^3*d*e^20*sgn(1/(x*e + d)) - 256*A*a^2*b*c^3*d
*e^20*sgn(1/(x*e + d)) - 2*B*a*b^5*e^21*sgn(1/(x*e + d)) + 5*A*b^6*e^21*sgn
(1/(x*e + d)) + 12*B*a^2*b^3*c*e^21*sgn(1/(x*e + d)) - 30*A*a*b^4*c*e^21*sg
n(1/(x*e + d)) + 16*A*a^2*b^2*c^2*e^21*sgn(1/(x*e + d)) + 64*A*a^3*c^3*e^21
*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e
^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2
*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 4
8*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))
^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn
(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn
(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^
3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*
b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2
+ 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x
*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(
1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(
1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(
1/(x*e + d))^2))*e^(-1)/(x*e + d) + 6*(8*B*b*c^5*d^5*e^14*sgn(1/(x*e + d))
- 16*A*c^6*d^5*e^14*sgn(1/(x*e + d)) - 24*B*b^2*c^4*d^4*e^15*sgn(1/(x*e + d
)) + 16*B*a*c^5*d^4*e^15*sgn(1/(x*e + d)) + 40*A*b*c^5*d^4*e^15*sgn(1/(x*e
+ d)) + 19*B*b^3*c^3*d^3*e^16*sgn(1/(x*e + d)) + 4*B*a*b*c^4*d^3*e^16*sgn(1
/(x*e + d)) - 22*A*b^2*c^4*d^3*e^16*sgn(1/(x*e + d)) - 72*A*a*c^5*d^3*e^16*
sgn(1/(x*e + d)) - 11*B*b^4*c^2*d^2*e^17*sgn(1/(x*e + d)) + 38*B*a*b^2*c^3*
d^2*e^17*sgn(1/(x*e + d)) - 7*A*b^3*c^3*d^2*e^17*sgn(1/(x*e + d)) - 136*B*a
^2*c^4*d^2*e^17*sgn(1/(x*e + d)) + 108*A*a*b*c^4*d^2*e^17*sgn(1/(x*e + d))
+ 3*B*b^5*c*d*e^18*sgn(1/(x*e + d)) - 23*B*a*b^3*c^2*d*e^18*sgn(1/(x*e + d)
) + 15*A*b^4*c^2*d*e^18*sgn(1/(x*e + d)) + 84*B*a^2*b*c^3*d*e^18*sgn(1/(x*e
 + d)) - 106*A*a*b^2*c^3*d*e^18*sgn(1/(x*e + d)) + 104*A*a^2*c^4*d*e^18*sgn
(1/(x*e + d)) + 2*B*a*b^4*c*e^19*sgn(1/(x*e + d)) - 5*A*b^5*c*e^19*sgn(1/(x
*e + d)) - 14*B*a^2*b^2*c^2*e^19*sgn(1/(x*e + d)) + 35*A*a*b^3*c^2*e^19*sgn
(1/(x*e + d)) + 8*B*a^3*c^3*e^19*sgn(1/(x*e + d)) - 52*A*a^2*b*c^3*e^19*sgn
(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^2*c^4*d^6*e^11*
sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2 - 3*b^5*c^2*d^5
*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e + d))^2 - 48*a^
2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1/(x*e + d))^2 -
 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d^4*e^13*sgn(1/(
x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d^3*e^14*sgn(1/(
x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2*b^3*c^2*d^3*e^
14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d))^2 + 3*a*b^6*
d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x*e + d))^2 + 24
*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^15*sgn(1/(x*e +
 d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*d*e^16*sgn(1/(x
*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^4*e^17*sgn(1/(x
```

```
*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^2*e^17*sgn(1/(x
*e + d))^2))*e^(-1)/(x*e + d) - (16*B*b*c^5*d^4*e^13*sgn(1/(x*e + d)) - 32*
A*c^6*d^4*e^13*sgn(1/(x*e + d)) - 40*B*b^2*c^4*d^3*e^14*sgn(1/(x*e + d)) +
32*B*a*c^5*d^3*e^14*sgn(1/(x*e + d)) + 64*A*b*c^5*d^3*e^14*sgn(1/(x*e + d))
 + 18*B*b^3*c^3*d^2*e^15*sgn(1/(x*e + d)) + 24*B*a*b*c^4*d^2*e^15*sgn(1/(x*
e + d)) - 12*A*b^2*c^4*d^2*e^15*sgn(1/(x*e + d)) - 144*A*a*c^5*d^2*e^15*sgn
(1/(x*e + d)) - 9*B*b^4*c^2*d*e^16*sgn(1/(x*e + d)) + 56*B*a*b^2*c^3*d*e^16
*sgn(1/(x*e + d)) - 20*A*b^3*c^3*d*e^16*sgn(1/(x*e + d)) - 208*B*a^2*c^4*d*
e^16*sgn(1/(x*e + d)) + 144*A*a*b*c^4*d*e^16*sgn(1/(x*e + d)) - 6*B*a*b^3*c
^2*e^17*sgn(1/(x*e + d)) + 15*A*b^4*c^2*e^17*sgn(1/(x*e + d)) + 40*B*a^2*b*
c^3*e^17*sgn(1/(x*e + d)) - 100*A*a*b^2*c^3*e^17*sgn(1/(x*e + d)) + 128*A*a
^2*c^4*e^17*sgn(1/(x*e + d)))/(b^4*c^3*d^6*e^11*sgn(1/(x*e + d))^2 - 8*a*b^
2*c^4*d^6*e^11*sgn(1/(x*e + d))^2 + 16*a^2*c^5*d^6*e^11*sgn(1/(x*e + d))^2
- 3*b^5*c^2*d^5*e^12*sgn(1/(x*e + d))^2 + 24*a*b^3*c^3*d^5*e^12*sgn(1/(x*e
+ d))^2 - 48*a^2*b*c^4*d^5*e^12*sgn(1/(x*e + d))^2 + 3*b^6*c*d^4*e^13*sgn(1
/(x*e + d))^2 - 21*a*b^4*c^2*d^4*e^13*sgn(1/(x*e + d))^2 + 24*a^2*b^2*c^3*d
^4*e^13*sgn(1/(x*e + d))^2 + 48*a^3*c^4*d^4*e^13*sgn(1/(x*e + d))^2 - b^7*d
^3*e^14*sgn(1/(x*e + d))^2 + 2*a*b^5*c*d^3*e^14*sgn(1/(x*e + d))^2 + 32*a^2
*b^3*c^2*d^3*e^14*sgn(1/(x*e + d))^2 - 96*a^3*b*c^3*d^3*e^14*sgn(1/(x*e + d
))^2 + 3*a*b^6*d^2*e^15*sgn(1/(x*e + d))^2 - 21*a^2*b^4*c*d^2*e^15*sgn(1/(x
*e + d))^2 + 24*a^3*b^2*c^2*d^2*e^15*sgn(1/(x*e + d))^2 + 48*a^4*c^3*d^2*e^
15*sgn(1/(x*e + d))^2 - 3*a^2*b^5*d*e^16*sgn(1/(x*e + d))^2 + 24*a^3*b^3*c*
d*e^16*sgn(1/(x*e + d))^2 - 48*a^4*b*c^2*d*e^16*sgn(1/(x*e + d))^2 + a^3*b^
4*e^17*sgn(1/(x*e + d))^2 - 8*a^4*b^2*c*e^17*sgn(1/(x*e + d))^2 + 16*a^5*c^
2*e^17*sgn(1/(x*e + d))^2))/(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d)^2 + b*e/
(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2)^(3/2) + 3*(8*B*c*d^2*e^6
 - 3*B*b*d*e^7 - 10*A*c*d*e^7 - 2*B*a*e^8 + 5*A*b*e^8)*log(abs(-2*c*d + b*e
 + 2*sqrt(c*d^2 - b*d*e + a*e^2)*(sqrt(c - 2*c*d/(x*e + d) + c*d^2/(x*e + d
)^2 + b*e/(x*e + d) - b*d*e/(x*e + d)^2 + a*e^2/(x*e + d)^2) + sqrt(c*d^2*e
^2 - b*d*e^3 + a*e^4)*e^(-1)/(x*e + d))))/((c^3*d^6*e - 3*b*c^2*d^5*e^2 + 3
*b^2*c*d^4*e^3 + 3*a*c^2*d^4*e^3 - b^3*d^3*e^4 - 6*a*b*c*d^3*e^4 + 3*a*b^2*
d^2*e^5 + 3*a^2*c*d^2*e^5 - 3*a^2*b*d*e^6 + a^3*e^7)*sqrt(c*d^2 - b*d*e + a
*e^2)*sgn(1/(x*e + d))))*e^(-2)
```

maple [B] time = 0.08, size = 6675, normalized size = 8.95

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^2/(c*x^2+b*x+a)^(5/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(a*e^2-b*d*e>0)', see `assume?` for
more details)Is a*e^2-b*d*e                          +c*d^2    positive,
negative or zero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^2\,{\left(c\,x^2+b\,x+a\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^2*(a + b*x + c*x^2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**2/(c*x**2+b*x+a)**(5/2),x)
```

```
[Out] Timed out
```

3.2487 $\int \frac{(A+Bx)(d+ex)^6}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=1401

$$\frac{(12Bcd-7bBe+2Ace)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{2c^{9/2}}+\left(105Be^5b^6-10ce^4(11Bd+3Ae)b^5-4ce^3\left(5Acde+8B\left(2c\right.\right.\right.$$

```
[Out] 2/5*(e*x+d)^5*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(
A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)+2/15*(e*x+d)^3*(b^3*B*e
*(-7*a*e^2+3*c*d^2)-8*a*c^2*e*(5*A*a*e^2+3*A*c*d^2+12*B*a*d*e)-2*b^2*c*(-A*
a*e^3+9*A*c*d^2*e+4*B*c*d^3)+4*b*c*(4*A*c*d*(3*a*e^2+c*d^2)+a*B*e*(11*a*e^2
+9*c*d^2))-(7*b^4*B*e^3-2*b^3*c*e^2*(A*e+3*B*d)-12*b^2*c*e*(A*c*d*e+4*B*a*e
^2+B*c*d^2)+8*b*c^2*(3*A*a*e^3+6*A*c*d^2*e+9*B*a*d*e^2+2*B*c*d^3)-16*c^2*(3
*a*B*e*(-a*e^2+c*d^2)+A*c*d*(3*a*e^2+2*c*d^2)))*x)/c^2/(-4*a*c+b^2)^2/(c*x^
2+b*x+a)^(3/2)+1/2*e^5*(2*A*c*e-7*B*b*e+12*B*c*d)*arctanh(1/2*(2*c*x+b)/c^(
1/2)/(c*x^2+b*x+a)^(1/2))/c^(9/2)+2/15*(e*x+d)*(7*b^5*B*e^3*(-5*a*e^2+c*d^2
)-2*b^4*c*e^3*(-5*A*a*e^2+A*c*d^2-16*B*a*d*e)-8*b^3*c*e*(A*c*d*e*(-a*e^2+21
*c*d^2)+6*B*(-7*a^2*e^4+a*c*d^2*e^2+2*c^2*d^4))+32*a*c^3*e*(6*a*B*d*e*(11*a
*e^2+c*d^2)+A*(15*a^2*e^4+9*a*c*d^2*e^2+4*c^2*d^4))-16*b*c^2*(2*A*c*d*(21*a
^2*e^4+19*a*c*d^2*e^2+4*c^2*d^4)+a*B*e*(57*a^2*e^4+75*a*c*d^2*e^2+16*c^2*d^
4))+16*b^2*c^2*(6*A*e*(-a^2*e^4+6*a*c*d^2*e^2+3*c^2*d^4)+B*(-21*a^2*d*e^4+3
7*a*c*d^3*e^2+4*c^2*d^5))-(35*b^6*B*e^5-2*b^5*c*e^4*(5*A*e+23*B*d)-4*b^4*c*
e^3*(A*c*d*e+91*B*a*e^2+5*B*c*d^2)-8*b^3*c^2*e^2*(-13*A*a*e^3+7*A*c*d^2*e-6
3*B*a*d*e^2+5*B*c*d^3)+64*c^3*(6*a*B*e*(-2*a^2*e^4+4*a*c*d^2*e^2+c^2*d^4)+A
*c*d*(12*a^2*e^4+11*a*c*d^2*e^2+4*c^2*d^4))+16*b^2*c^2*e*(A*c*d*e*(9*a*e^2+
29*c*d^2)+B*(72*a^2*e^4+21*a*c*d^2*e^2+14*c^2*d^4))-32*b*c^3*(A*e*(12*a^2*e
^4+33*a*c*d^2*e^2+20*c^2*d^4)+B*(60*a^2*d*e^4+35*a*c*d^3*e^2+4*c^2*d^5)))*x
)/c^3/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1/2)+1/15*e*(105*b^6*B*e^5-10*b^5*c*e^4
*(3*A*e+11*B*d)-16*b^3*c^2*e^2*(-20*A*a*e^3+A*c*d^2*e-78*B*a*d*e^2+3*B*c*d^
3)-4*b^4*c*e^3*(5*A*c*d*e+8*B*(35*a*e^2+2*c*d^2))+16*b^2*c^2*e*(6*A*c*d*e*(
2*a*e^2+9*c*d^2)+7*B*(33*a^2*e^4+6*a*c*d^2*e^2+4*c^2*d^4))+64*c^3*(6*a*B*e*
(-8*a^2*e^4+9*a*c*d^2*e^2+2*c^2*d^4)+A*c*d*(33*a^2*e^4+26*a*c*d^2*e^2+8*c^2
*d^4))-32*b*c^3*(A*e*(33*a^2*e^4+78*a*c*d^2*e^2+40*c^2*d^4)+B*(141*a^2*d*e^
4+74*a*c*d^3*e^2+8*c^2*d^5)))*(c*x^2+b*x+a)^(1/2)/c^4/(-4*a*c+b^2)^3
```

Rubi [A] time = 2.20, antiderivative size = 1401, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

$$\frac{(12Bcd-7bBe+2Ace)\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{2c^{9/2}}+\left(105Be^5b^6-10ce^4(11Bd+3Ae)b^5-4ce^3\left(5Acde+8B\left(2c\right.\right.\right.$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(d + e*x)^5*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (2*(d + e*x)^3*(b^3*B*e*(3*c*d^2 - 7*a*e^2) - 8*a*c^2*e*(3*A*c*d^2 +
12*a*B*d*e + 5*a*A*e^2) - 2*b^2*c*(4*B*c*d^3 + 9*A*c*d^2*e - a*A*e^3) + 4*b
*c*(4*A*c*d*(c*d^2 + 3*a*e^2) + a*B*e*(9*c*d^2 + 11*a*e^2)) - (7*b^4*B*e^3
- 2*b^3*c*e^2*(3*B*d + A*e) - 12*b^2*c*e*(B*c*d^2 + A*c*d*e + 4*a*B*e^2) +
8*b*c^2*(2*B*c*d^3 + 6*A*c*d^2*e + 9*a*B*d*e^2 + 3*a*A*e^3) - 16*c^2*(3*a*B
*e*(c*d^2 - a*e^2) + A*c*d*(2*c*d^2 + 3*a*e^2)))*x))/(15*c^2*(b^2 - 4*a*c)^
2*(a + b*x + c*x^2)^(3/2)) + (2*(d + e*x)*(7*b^5*B*e^3*(c*d^2 - 5*a*e^2) -
2*b^4*c*e^3*(A*c*d^2 - 16*a*B*d*e - 5*a*A*e^2) - 8*b^3*c*e*(A*c*d*e*(21*c*d
^2 - a*e^2) + 6*B*(2*c^2*d^4 + a*c*d^2*e^2 - 7*a^2*e^4)) + 32*a*c^3*e*(6*a*
B*d*e*(c*d^2 + 11*a*e^2) + A*(4*c^2*d^4 + 9*a*c*d^2*e^2 + 15*a^2*e^4)) - 16
*b*c^2*(2*A*c*d*(4*c^2*d^4 + 19*a*c*d^2*e^2 + 21*a^2*e^4) + a*B*e*(16*c^2*d
^4 + 75*a*c*d^2*e^2 + 57*a^2*e^4)) + 16*b^2*c^2*(6*A*e*(3*c^2*d^4 + 6*a*c*d
^2*e^2 - a^2*e^4) + B*(4*c^2*d^5 + 37*a*c*d^3*e^2 - 21*a^2*d*e^4)) - (35*b^
6*B*e^5 - 2*b^5*c*e^4*(23*B*d + 5*A*e) - 4*b^4*c*e^3*(5*B*c*d^2 + A*c*d*e +
 91*a*B*e^2) - 8*b^3*c^2*e^2*(5*B*c*d^3 + 7*A*c*d^2*e - 63*a*B*d*e^2 - 13*a
*A*e^3) + 64*c^3*(6*a*B*e*(c^2*d^4 + 4*a*c*d^2*e^2 - 2*a^2*e^4) + A*c*d*(4*
c^2*d^4 + 11*a*c*d^2*e^2 + 12*a^2*e^4)) + 16*b^2*c^2*e*(A*c*d*e*(29*c*d^2 +
 9*a*e^2) + B*(14*c^2*d^4 + 21*a*c*d^2*e^2 + 72*a^2*e^4)) - 32*b*c^3*(A*e*(
20*c^2*d^4 + 33*a*c*d^2*e^2 + 12*a^2*e^4) + B*(4*c^2*d^5 + 35*a*c*d^3*e^2 +
 60*a^2*d*e^4)))*x))/(15*c^3*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^2]) + (e*(1
05*b^6*B*e^5 - 10*b^5*c*e^4*(11*B*d + 3*A*e) - 16*b^3*c^2*e^2*(3*B*c*d^3 +
A*c*d^2*e - 78*a*B*d*e^2 - 20*a*A*e^3) - 4*b^4*c*e^3*(5*A*c*d*e + 8*B*(2*c*
d^2 + 35*a*e^2)) + 16*b^2*c^2*e*(6*A*c*d*e*(9*c*d^2 + 2*a*e^2) + 7*B*(4*c^2
*d^4 + 6*a*c*d^2*e^2 + 33*a^2*e^4)) + 64*c^3*(6*a*B*e*(2*c^2*d^4 + 9*a*c*d^
2*e^2 - 8*a^2*e^4) + A*c*d*(8*c^2*d^4 + 26*a*c*d^2*e^2 + 33*a^2*e^4)) - 32*
b*c^3*(A*e*(40*c^2*d^4 + 78*a*c*d^2*e^2 + 33*a^2*e^4) + B*(8*c^2*d^5 + 74*a
*c*d^3*e^2 + 141*a^2*d*e^4)))*Sqrt[a + b*x + c*x^2])/(15*c^4*(b^2 - 4*a*c)^
3) + (e^5*(12*B*c*d - 7*b*B*e + 2*A*c*e)*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sqr
t[a + b*x + c*x^2])])/(2*c^(9/2))
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^6}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^5\big(2ac(Bd+Ae)-b(Acd+aBe)-\big(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\big)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

<u>**Mathematica**</u> **[A]** time = 11.25, size = 2369, normalized size = 1.69

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*A*c*(15*b^8*e^6*x^3 + 5*b^7*e^6*x^2*(9*a + 7*c*x^2) + b^6*e^6*x*(45*a^2
- 100*a*c*x^2 + 23*c^2*x^4) - 2*b^4*c*(245*a^3*e^6*x + 75*a^2*c*e^6*x^3 + 5
*c^3*d^2*x*(d^4 + 24*d^3*e*x - 135*d^2*e^2*x^2 + 40*d*e^3*x^3 + 3*e^4*x^4)
- 3*a*c^2*e*(2*d^5 + 50*d^4*e*x - 300*d^3*e^2*x^2 + 100*d^2*e^3*x^3 + 10*d*
e^4*x^4 - 43*e^5*x^5)) + 40*b^3*c*(-4*a^4*e^6 + 35*a^3*c*e^6*x^2 + c^4*d^3*
x^2*(2*d^3 - 36*d^2*e*x + 45*d*e^2*x^2 - 4*e^3*x^3) + 3*a^2*c^2*e^2*(d^4 -
20*d^3*e*x + 30*d^2*e^2*x^2 - 4*d*e^3*x^3 + 10*e^4*x^4) - a*c^3*d*(d^5 + 18
*d^4*e*x - 75*d^3*e^2*x^2 + 100*d^2*e^3*x^3 - 45*d*e^4*x^4 - 6*e^5*x^5)) +
3*b^5*(5*a^3*e^6 - 155*a^2*c*e^6*x^2 - 125*a*c^2*e^6*x^4 + c^3*d*(d^5 + 10*
d^4*e*x + 75*d^3*e^2*x^2 - 100*d^2*e^3*x^3 - 25*d*e^4*x^4 - 6*e^5*x^5)) + 1
6*b*c^2*(33*a^5*e^6 + 8*c^5*d^5*x^4*(5*d - 6*e*x) + 15*a^4*c*e^4*(8*d^2 - 1
6*d*e*x + e^2*x^2) + 30*a*c^4*d^3*x^2*(2*d^3 - 4*d^2*e*x + 5*d*e^2*x^2 - 4*
e^3*x^3) - 5*a^3*c^2*e^2*(-18*d^4 + 40*d^3*e*x - 60*d^2*e^2*x^2 + 72*d*e^3*
x^3 + 5*e^4*x^4) + 15*a^2*c^3*d*(d^5 - 6*d^4*e*x + 15*d^3*e^2*x^2 - 20*d^2*
e^3*x^3 + 15*d*e^4*x^4 - 6*e^5*x^5)) + 48*b^2*c^2*(35*a^4*e^6*x + 5*c^4*d^4
*x^3*(2*d^2 - 8*d*e*x + 3*e^2*x^2) + 5*a^3*c*e^3*(-4*d^3 + 20*d^2*e*x - 12*
d*e^2*x^2 + 9*e^3*x^3) + 5*a*c^3*d^2*x*(d^4 - 12*d^3*e*x + 15*d^2*e^2*x^2 -
 20*d*e^3*x^3 + 3*e^4*x^4) + a^2*c^2*e*(-6*d^5 + 75*d^4*e*x - 100*d^3*e^2*x
^2 + 150*d^2*e^3*x^3 - 30*d*e^4*x^4 + 19*e^5*x^5)) - 32*c^3*(-8*c^5*d^6*x^5
 + 3*a^5*e^5*(16*d + 5*e*x) - 10*a*c^4*d^4*x^3*(2*d^2 + 3*e^2*x^2) + 5*a^4*
c*e^3*(8*d^3 + 24*d*e^2*x^2 + 7*e^3*x^3) - 15*a^2*c^3*d^2*x*(d^4 + 5*d^2*e^
2*x^2 + 3*e^4*x^4) + a^3*c^2*e*(18*d^5 + 100*d^3*e^2*x^2 + 90*d*e^4*x^4 + 2
3*e^5*x^5))) + B*(3072*a^6*c^3*e^6 + 48*a^5*c^2*e^4*(-77*b^2*e^2 + 2*b*c*e*
(66*d + 115*e*x) - 40*c^2*(4*d^2 + 3*d*e*x - 4*e^2*x^2)) - b*x*(105*b^8*e^6
*x^2 + 256*c^8*d^6*x^4 + 64*b*c^7*d^5*x^3*(10*d - 9*e*x) + 3*b^5*c^3*e^5*x^
4*(-92*d + 5*e*x) + 7*b^6*c^2*e^5*x^3*(-60*d + 23*e*x) + 5*b^7*c*e^5*x^2*(-
36*d + 49*e*x) + 240*b^2*c^6*d^4*x^2*(2*d^2 - 6*d*e*x + e^2*x^2) + 40*b^3*c
^5*d^3*x*(2*d^3 - 27*d^2*e*x + 15*d*e^2*x^2 + 2*e^3*x^3) - 10*b^4*c^4*d^2*(
d^4 + 18*d^3*e*x - 45*d^2*e^2*x^2 - 20*d*e^3*x^3 - 9*e^4*x^4)) + 80*a^4*c*e
^2*(14*b^4*e^4 + 3*b^2*c^2*e^3*x*(84*d + 17*e*x) - 3*b^3*c*e^3*(8*d + 49*e*
x) + 2*b*c^3*e*(32*d^3 - 120*d^2*e*x + 18*d*e^2*x^2 + 121*e^3*x^3) - 24*c^4
*(d^4 + 10*d^2*e^2*x^2 + 7*d*e^3*x^3 - 3*e^4*x^4)) - a^3*(105*b^6*e^6 + 196
0*b^4*c^2*e^5*x*(3*d + 5*e*x) + 240*b^3*c^3*e^5*x^2*(-70*d + 59*e*x) - 10*b
^5*c*e^5*(18*d + 343*e*x) - 80*b^2*c^4*e^2*(-18*d^4 + 160*d^3*e*x - 180*d^2
*e^2*x^2 + 324*d*e^3*x^3 + 71*e^4*x^4) - 32*b*c^5*e*(36*d^5 - 150*d^4*e*x +
 400*d^3*e^2*x^2 - 900*d^2*e^3*x^3 - 150*d*e^4*x^4 + 251*e^5*x^5) + 192*c^6
*(d^6 + 25*d^4*e^2*x^2 + 75*d^2*e^4*x^4 + 46*d*e^5*x^5 - 5*e^6*x^6)) - 3*a^
2*(105*b^7*e^6*x + 10*b^5*c^2*e^5*x^2*(186*d - 35*e*x) + 40*b^4*c^3*e^5*x^3
*(15*d + 71*e*x) - 5*b^6*c*e^5*x*(36*d + 217*e*x) - 640*c^7*d^3*e*x^3*(d^2
+ 2*e^2*x^2) + 160*b*c^6*d^2*x*(d^4 - 6*d^3*e*x + 15*d^2*e^2*x^2 - 20*d*e^3
*x^3 + 15*e^4*x^4) + 16*b^3*c^4*e*(-2*d^5 + 75*d^4*e*x - 200*d^3*e^2*x^2 +
50*d^2*e^3*x^3 - 300*d*e^4*x^4 + 143*e^5*x^5) + 16*b^2*c^5*(2*d^6 - 60*d^5*
e*x + 150*d^4*e^2*x^2 - 400*d^3*e^3*x^3 + 150*d^2*e^4*x^4 - 228*d*e^5*x^5 +
 15*e^6*x^6)) + a*(-315*b^8*e^6*x^2 + 768*c^8*d^5*e*x^5 + 75*b^6*c^2*e^5*x^
3*(-16*d + 35*e*x) + 20*b^7*c*e^5*x^2*(27*d + 35*e*x) + 6*b^5*c^3*e^5*x^4*(
-750*d + 307*e*x) - 320*b*c^7*d^4*x^3*(2*d^2 - 6*d*e*x + 9*e^2*x^2) + 480*b
^2*c^6*d^3*x^2*(-2*d^3 + 6*d^2*e*x - 15*d*e^2*x^2 + 4*e^3*x^3) - 240*b^3*c^
5*d^2*x*(d^4 - 10*d^3*e*x + 25*d^2*e^2*x^2 - 20*d*e^3*x^3 - 5*e^4*x^4) + 4*
b^4*c^4*(d^6 + 60*d^5*e*x - 675*d^4*e^2*x^2 + 400*d^3*e^3*x^3 + 75*d^2*e^4*
x^4 - 774*d*e^5*x^5 + 45*e^6*x^6))))/(15*c^4*(-b^2 + 4*a*c)^3*(a + x*(b + c
*x))^(5/2)) + (e^5*(12*B*c*d - 7*b*B*e + 2*A*c*e)*Log[b + 2*c*x + 2*Sqrt[c]
*Sqrt[a + x*(b + c*x)]])/(2*c^(9/2))
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**B**] time = 0.49, size = 3352, normalized size = 2.39

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 1/15*((((((15*(B*b^6*c^3*e^6 - 12*B*a*b^4*c^4*e^6 + 48*B*a^2*b^2*c^5*e^6 -
64*B*a^3*c^6*e^6)*x/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7)
+ (256*B*b*c^8*d^6 - 512*A*c^9*d^6 - 576*B*b^2*c^7*d^5*e - 768*B*a*c^8*d^5*
e + 1536*A*b*c^8*d^5*e + 240*B*b^3*c^6*d^4*e^2 + 2880*B*a*b*c^7*d^4*e^2 - 1
440*A*b^2*c^7*d^4*e^2 - 1920*A*a*c^8*d^4*e^2 + 80*B*b^4*c^5*d^3*e^3 - 1920*
B*a*b^2*c^6*d^3*e^3 + 320*A*b^3*c^6*d^3*e^3 - 3840*B*a^2*c^7*d^3*e^3 + 3840
*A*a*b*c^7*d^3*e^3 + 90*B*b^5*c^4*d^2*e^4 - 1200*B*a*b^3*c^5*d^2*e^4 + 60*A
*b^4*c^5*d^2*e^4 + 7200*B*a^2*b*c^6*d^2*e^4 - 1440*A*a*b^2*c^6*d^2*e^4 - 28
80*A*a^2*c^7*d^2*e^4 - 276*B*b^6*c^3*d*e^5 + 3096*B*a*b^4*c^4*d*e^5 + 36*A*
b^5*c^4*d*e^5 - 10944*B*a^2*b^2*c^5*d*e^5 - 480*A*a*b^3*c^5*d*e^5 + 8832*B*
a^3*c^6*d*e^5 + 2880*A*a^2*b*c^6*d*e^5 + 161*B*b^7*c^2*e^6 - 1842*B*a*b^5*c
^3*e^6 - 46*A*b^6*c^3*e^6 + 6864*B*a^2*b^3*c^4*e^6 + 516*A*a*b^4*c^4*e^6 -
8032*B*a^3*b*c^5*e^6 - 1824*A*a^2*b^2*c^5*e^6 + 1472*A*a^3*c^6*e^6)/(b^6*c^
4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(128*B*b^2*c^7*d^6 -
 256*A*b*c^8*d^6 - 288*B*b^3*c^6*d^5*e - 384*B*a*b*c^7*d^5*e + 768*A*b^2*c^
7*d^5*e + 120*B*b^4*c^5*d^4*e^2 + 1440*B*a*b^2*c^6*d^4*e^2 - 720*A*b^3*c^6*
d^4*e^2 - 960*A*a*b*c^7*d^4*e^2 + 40*B*b^5*c^4*d^3*e^3 - 960*B*a*b^3*c^5*d^
3*e^3 + 160*A*b^4*c^5*d^3*e^3 - 1920*B*a^2*b*c^6*d^3*e^3 + 1920*A*a*b^2*c^6
*d^3*e^3 - 60*B*a*b^4*c^4*d^2*e^4 + 30*A*b^5*c^4*d^2*e^4 + 1440*B*a^2*b^2*c
^5*d^2*e^4 - 720*A*a*b^3*c^5*d^2*e^4 + 2880*B*a^3*c^6*d^2*e^4 - 1440*A*a^2*
b*c^6*d^2*e^4 - 84*B*b^7*c^2*d*e^5 + 900*B*a*b^5*c^3*d*e^5 - 2880*B*a^2*b^3
*c^4*d*e^5 - 24*A*a*b^4*c^4*d*e^5 + 960*B*a^3*b*c^5*d*e^5 + 576*A*a^2*b^2*c
^5*d*e^5 + 1152*A*a^3*c^6*d*e^5 + 49*B*b^8*c*e^6 - 525*B*a*b^6*c^2*e^6 - 14
*A*b^7*c^2*e^6 + 1704*B*a^2*b^4*c^3*e^6 + 150*A*a*b^5*c^3*e^6 - 1136*B*a^3*
b^2*c^4*e^6 - 480*A*a^2*b^3*c^4*e^6 - 1152*B*a^4*c^5*e^6 + 160*A*a^3*b*c^5*
e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(96*B*b^
3*c^6*d^6 + 128*B*a*b*c^7*d^6 - 192*A*b^2*c^7*d^6 - 256*A*a*c^8*d^6 - 216*B
*b^4*c^5*d^5*e - 576*B*a*b^2*c^6*d^5*e + 576*A*b^3*c^6*d^5*e - 384*B*a^2*c^
7*d^5*e + 768*A*a*b*c^7*d^5*e + 90*B*b^5*c^4*d^4*e^2 + 1200*B*a*b^3*c^5*d^4
*e^2 - 540*A*b^4*c^5*d^4*e^2 + 1440*B*a^2*b*c^6*d^4*e^2 - 1440*A*a*b^2*c^6*
d^4*e^2 - 960*A*a^2*c^7*d^4*e^2 - 320*B*a*b^4*c^4*d^3*e^3 + 120*A*b^5*c^4*d
^3*e^3 - 3840*B*a^2*b^2*c^5*d^3*e^3 + 1600*A*a*b^3*c^5*d^3*e^3 + 1920*A*a^2
*b*c^6*d^3*e^3 + 480*B*a^2*b^3*c^4*d^2*e^4 - 240*A*a*b^4*c^4*d^2*e^4 + 5760
*B*a^3*b*c^5*d^2*e^4 - 2880*A*a^2*b^2*c^5*d^2*e^4 - 36*B*b^8*c*d*e^5 + 240*
B*a*b^6*c^2*d*e^5 + 360*B*a^2*b^4*c^3*d*e^5 - 5184*B*a^3*b^2*c^4*d*e^5 + 19
2*A*a^2*b^3*c^4*d*e^5 + 2688*B*a^4*c^5*d*e^5 + 2304*A*a^3*b*c^5*d*e^5 + 21*
B*b^9*e^6 - 140*B*a*b^7*c*e^6 - 6*A*b^8*c*e^6 - 210*B*a^2*b^5*c^2*e^6 + 40*
A*a*b^6*c^2*e^6 + 2832*B*a^3*b^3*c^3*e^6 + 60*A*a^2*b^4*c^3*e^6 - 3872*B*a^
4*b*c^4*e^6 - 864*A*a^3*b^2*c^4*e^6 + 448*A*a^4*c^5*e^6)/(b^6*c^4 - 12*a*b^
4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x + 5*(16*B*b^4*c^5*d^6 + 192*B*a*b^2
*c^6*d^6 - 32*A*b^3*c^6*d^6 - 384*A*a*b*c^7*d^6 - 36*B*b^5*c^4*d^5*e - 480*
B*a*b^3*c^5*d^5*e + 96*A*b^4*c^5*d^5*e - 576*B*a^2*b*c^6*d^5*e + 1152*A*a*b
^2*c^6*d^5*e + 540*B*a*b^4*c^4*d^4*e^2 - 90*A*b^5*c^4*d^4*e^2 + 1440*B*a^2*
b^2*c^5*d^4*e^2 - 1200*A*a*b^3*c^5*d^4*e^2 + 960*B*a^3*c^6*d^4*e^2 - 1440*A
*a^2*b*c^6*d^4*e^2 - 1920*B*a^2*b^3*c^4*d^3*e^3 + 720*A*a*b^4*c^4*d^3*e^3 -
 2560*B*a^3*b*c^5*d^3*e^3 + 1920*A*a^2*b^2*c^5*d^3*e^3 + 1280*A*a^3*c^6*d^3
*e^3 + 2880*B*a^3*b^2*c^4*d^2*e^4 - 1440*A*a^2*b^3*c^4*d^2*e^4 + 3840*B*a^4
*c^5*d^2*e^4 - 1920*A*a^3*b*c^5*d^2*e^4 - 108*B*a*b^7*c*d*e^5 + 1116*B*a^2*
b^5*c^2*d*e^5 - 3360*B*a^3*b^3*c^3*d*e^5 - 576*B*a^4*b*c^4*d*e^5 + 1152*A*a
^3*b^2*c^4*d*e^5 + 1536*A*a^4*c^5*d*e^5 + 63*B*a*b^8*e^6 - 651*B*a^2*b^6*c*
e^6 - 18*A*a*b^7*c*e^6 + 1960*B*a^3*b^4*c^2*e^6 + 186*A*a^2*b^5*c^2*e^6 - 8
16*B*a^4*b^2*c^3*e^6 - 560*A*a^3*b^3*c^3*e^6 - 1536*B*a^5*c^4*e^6 - 96*A*a^
4*b*c^4*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))*x - 5*
(2*B*b^5*c^4*d^6 - 48*B*a*b^3*c^5*d^6 - 4*A*b^4*c^5*d^6 - 96*B*a^2*b*c^6*d^
6 + 96*A*a*b^2*c^6*d^6 + 192*A*a^2*c^7*d^6 + 48*B*a*b^4*c^4*d^5*e + 12*A*b^
5*c^4*d^5*e + 576*B*a^2*b^2*c^5*d^5*e - 288*A*a*b^3*c^5*d^5*e - 576*A*a^2*b
*c^6*d^5*e - 720*B*a^2*b^3*c^4*d^4*e^2 + 120*A*a*b^4*c^4*d^4*e^2 - 960*B*a^
3*b*c^5*d^4*e^2 + 1440*A*a^2*b^2*c^5*d^4*e^2 + 2560*B*a^3*b^2*c^4*d^3*e^3 -
 960*A*a^2*b^3*c^4*d^3*e^3 - 1280*A*a^3*b*c^5*d^3*e^3 - 3840*B*a^4*b*c^4*d^
2*e^4 + 1920*A*a^3*b^2*c^4*d^2*e^4 + 108*B*a^2*b^6*c*d*e^5 - 1176*B*a^3*b^4
*c^2*d*e^5 + 4032*B*a^4*b^2*c^3*d*e^5 - 1152*B*a^5*c^4*d*e^5 - 1536*A*a^4*b
*c^4*d*e^5 - 63*B*a^2*b^7*e^6 + 686*B*a^3*b^5*c*e^6 + 18*A*a^2*b^6*c*e^6 -
2352*B*a^4*b^3*c^2*e^6 - 196*A*a^3*b^4*c^2*e^6 + 2208*B*a^5*b*c^3*e^6 + 672
*A*a^4*b^2*c^3*e^6 - 192*A*a^5*c^4*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^
2*c^6 - 64*a^3*c^7))*x - (4*B*a*b^4*c^4*d^6 + 6*A*b^5*c^4*d^6 - 96*B*a^2*b^
2*c^5*d^6 - 80*A*a*b^3*c^5*d^6 - 192*B*a^3*c^6*d^6 + 480*A*a^2*b*c^6*d^6 +
96*B*a^2*b^3*c^4*d^5*e + 24*A*a*b^4*c^4*d^5*e + 1152*B*a^3*b*c^5*d^5*e - 57
6*A*a^2*b^2*c^5*d^5*e - 1152*A*a^3*c^6*d^5*e - 1440*B*a^3*b^2*c^4*d^4*e^2 +
 240*A*a^2*b^3*c^4*d^4*e^2 - 1920*B*a^4*c^5*d^4*e^2 + 2880*A*a^3*b*c^5*d^4*
e^2 + 5120*B*a^4*b*c^4*d^3*e^3 - 1920*A*a^3*b^2*c^4*d^3*e^3 - 2560*A*a^4*c^
5*d^3*e^3 - 7680*B*a^5*c^4*d^2*e^4 + 3840*A*a^4*b*c^4*d^2*e^4 + 180*B*a^3*b
^5*c*d*e^5 - 1920*B*a^4*b^3*c^2*d*e^5 + 6336*B*a^5*b*c^3*d*e^5 - 3072*A*a^5
*c^4*d*e^5 - 105*B*a^3*b^6*e^6 + 1120*B*a^4*b^4*c*e^6 + 30*A*a^3*b^5*c*e^6
- 3696*B*a^5*b^2*c^2*e^6 - 320*A*a^4*b^3*c^2*e^6 + 3072*B*a^6*c^3*e^6 + 105
```

```
6*A*a^5*b*c^3*e^6)/(b^6*c^4 - 12*a*b^4*c^5 + 48*a^2*b^2*c^6 - 64*a^3*c^7))/
(c*x^2 + b*x + a)^(5/2) - 1/2*(12*B*c*d*e^5 - 7*B*b*e^6 + 2*A*c*e^6)*log(ab
s(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(9/2)
```

maple [B] time = 0.05, size = 11346, normalized size = 8.10

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^6/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^6}{{\left(c\,x^2+b\,x+a\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^6)/(a + b*x + c*x^2)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**6/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2488 $\int \frac{(A+Bx)(d+ex)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=942

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{c^{7/2}}+\frac{2(5Be^3(cd^2-3ae^2)b^5+4Bc^2d^3e^2b^4-8ce(16Ac^2ed^3+B(11c^2d^4+7ace^2d^2-2}{}$$

```
[Out] 2/5*(e*x+d)^4*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(
A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)+2/15*(e*x+d)^2*(b^3*B*e
*(-5*a*e^2+3*c*d^2)-4*b^2*c*d*(4*A*c*d*e+B*a*e^2+2*B*c*d^2)-16*a*c^2*e*(5*a
*B*d*e+2*A*(a*e^2+c*d^2))+4*b*c*(9*a*B*e*(a*e^2+c*d^2)+4*A*c*d*(3*a*e^2+c*d
^2))+(2*b^3*B*c*d*e^2-5*b^4*B*e^3+2*b^2*c*e*(8*A*c*d*e+19*B*a*e^2+7*B*c*d^2
)-8*b*c^2*(2*A*a*e^3+6*A*c*d^2*e+7*B*a*d*e^2+2*B*c*d^3)+8*c^2*(5*a*B*e*(-a*
e^2+c*d^2)+4*A*c*d*(a*e^2+c*d^2)))*x)/c^2/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2
)+B*e^5*arctanh(1/2*(2*c*x+b)/c^(1/2)/(c*x^2+b*x+a)^(1/2))/c^(7/2)+2/15*(4*
b^4*B*c^2*d^3*e^2+5*b^5*B*e^3*(-3*a*e^2+c*d^2)+32*b^2*c^3*d^2*(16*A*a*e^3+8
*A*c*d^2*e+17*B*a*d*e^2+2*B*c*d^3)+64*a*c^3*e*(4*A*(a*e^2+c*d^2)^2+5*a*B*d*
e*(4*a*e^2+c*d^2))-8*b^3*c*e*(16*A*c^2*d^3*e+B*(-20*a^2*e^4+7*a*c*d^2*e^2+1
1*c^2*d^4))-16*b*c^2*(8*A*c*d*(5*a^2*e^4+6*a*c*d^2*e^2+c^2*d^4)+a*B*e*(33*a
^2*e^4+71*a*c*d^2*e^2+18*c^2*d^4))+(10*b^5*B*c*d*e^4-15*b^6*B*e^5+2*b^4*B*c
*e^3*(85*a*e^2+3*c*d^2)+16*b^3*c^2*d*e^2*(8*A*c*d*e-7*B*a*e^2+6*B*c*d^2)-32
*c^3*(8*A*c*d*(a*e^2+c*d^2)^2+5*a*B*e*(-3*a^2*e^4+5*a*c*d^2*e^2+2*c^2*d^4))
-16*b^2*c^2*e*(16*A*c*d*e*(a*e^2+2*c*d^2)+B*(39*a^2*e^4+29*a*c*d^2*e^2+15*c
^2*d^4))+32*b*c^3*(4*A*e*(a^2*e^4+6*a*c*d^2*e^2+5*c^2*d^4)+B*(29*a^2*d*e^4+
28*a*c*d^3*e^2+4*c^2*d^5)))*x)/c^3/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.96, antiderivative size = 942, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 777, 621, 206}

$$\frac{B\tanh^{-1}\left(\frac{b+2cx}{2\sqrt{c}\sqrt{cx^2+bx+a}}\right)e^5}{c^{7/2}}+\frac{2(5Be^3(cd^2-3ae^2)b^5+4Bc^2d^3e^2b^4-8ce(16Ac^2ed^3+B(11c^2d^4+7ace^2d^2-2}{}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(d + e*x)^4*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d
 + A*e) + 2*c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) + (2*(d + e*x)^2*(b^3*B*e*(3*c*d^2 - 5*a*e^2) - 4*b^2*c*d*(2*B*c*d^2 +
4*A*c*d*e + a*B*e^2) - 16*a*c^2*e*(5*a*B*d*e + 2*A*(c*d^2 + a*e^2)) + 4*b*c
*(9*a*B*e*(c*d^2 + a*e^2) + 4*A*c*d*(c*d^2 + 3*a*e^2)) + (2*b^3*B*c*d*e^2 -
 5*b^4*B*e^3 + 2*b^2*c*e*(7*B*c*d^2 + 8*A*c*d*e + 19*a*B*e^2) - 8*b*c^2*(2*
B*c*d^3 + 6*A*c*d^2*e + 7*a*B*d*e^2 + 2*a*A*e^3) + 8*c^2*(5*a*B*e*(c*d^2 -
a*e^2) + 4*A*c*d*(c*d^2 + a*e^2)))*x))/(15*c^2*(b^2 - 4*a*c)^2*(a + b*x + c
*x^2)^(3/2)) + (2*(4*b^4*B*c^2*d^3*e^2 + 5*b^5*B*e^3*(c*d^2 - 3*a*e^2) + 32
*b^2*c^3*d^2*(2*B*c*d^3 + 8*A*c*d^2*e + 17*a*B*d*e^2 + 16*a*A*e^3) + 64*a*c
^3*e*(4*A*(c*d^2 + a*e^2)^2 + 5*a*B*d*e*(c*d^2 + 4*a*e^2)) - 8*b^3*c*e*(16*
A*c^2*d^3*e + B*(11*c^2*d^4 + 7*a*c*d^2*e^2 - 20*a^2*e^4)) - 16*b*c^2*(8*A*
c*d*(c^2*d^4 + 6*a*c*d^2*e^2 + 5*a^2*e^4) + a*B*e*(18*c^2*d^4 + 71*a*c*d^2*
e^2 + 33*a^2*e^4)) + (10*b^5*B*c*d*e^4 - 15*b^6*B*e^5 + 2*b^4*B*c*e^3*(3*c*
d^2 + 85*a*e^2) + 16*b^3*c^2*d*e^2*(6*B*c*d^2 + 8*A*c*d*e - 7*a*B*e^2) - 32
*c^3*(8*A*c*d*(c*d^2 + a*e^2)^2 + 5*a*B*e*(2*c^2*d^4 + 5*a*c*d^2*e^2 - 3*a^
2*e^4)) - 16*b^2*c^2*e*(16*A*c*d*e*(2*c*d^2 + a*e^2) + B*(15*c^2*d^4 + 29*a
*c*d^2*e^2 + 39*a^2*e^4)) + 32*b*c^3*(4*A*e*(5*c^2*d^4 + 6*a*c*d^2*e^2 + a^
2*e^4) + B*(4*c^2*d^5 + 28*a*c*d^3*e^2 + 29*a^2*d*e^4)))*x))/(15*c^3*(b^2 -
 4*a*c)^3*Sqrt[a + b*x + c*x^2]) + (B*e^5*ArcTanh[(b + 2*c*x)/(2*Sqrt[c]*Sq
rt[a + b*x + c*x^2])])/c^(7/2)
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^5}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

$$= \frac{2(d+ex)^4\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Mathematica [**A**] time = 9.19, size = 1608, normalized size = 1.71

$$\frac{2\sqrt{c}\left(A\left(\left(3d^5+25exd^4+150e^2x^2d^3-150e^3x^3d^2-25e^4x^4d-3e^5x^5\right)b^5+10(ae-cdx)\left(d^4+20exd^3-90e^2x^2d^2+20e^3x^3d+e^4x^4\right)b^4+40(d-ex)\left(2a^2\left(d^2-14exd+\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] ((2*Sqrt[c]*(A*c^3*(10*b^4*(a*e - c*d*x)*(d^4 + 20*d^3*e*x - 90*d^2*e^2*x^2
 + 20*d*e^3*x^3 + e^4*x^4) + b^5*(3*d^5 + 25*d^4*e*x + 150*d^3*e^2*x^2 - 15
0*d^2*e^3*x^3 - 25*d*e^4*x^4 - 3*e^5*x^5) + 40*b^3*(d - e*x)*(2*a^2*e^2*(d^
2 - 14*d*e*x + e^2*x^2) + 2*c^2*d^2*x^2*(d^2 - 14*d*e*x + e^2*x^2) - a*c*(d
 - e*x)^2*(d^2 + 18*d*e*x + e^2*x^2)) + 80*b*(d - e*x)*(8*a^4*e^4 + 8*c^4*d
^4*x^4 + 3*a^2*c^2*(d - e*x)^4 + 4*a^3*c*e^2*(3*d^2 - 2*d*e*x + 3*e^2*x^2)
+ 4*a*c^3*d^2*x^2*(3*d^2 - 2*d*e*x + 3*e^2*x^2)) + 80*b^2*(-2*a^3*e^3*(3*d^
2 - 10*d*e*x + 3*e^2*x^2) + 2*c^3*d^3*x^3*(3*d^2 - 10*d*e*x + 3*e^2*x^2) -
3*a^2*c*e*(d^4 - 10*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + e^4*x^4) + 3*
a*c^2*d*x*(d^4 - 10*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + e^4*x^4)) + 3
2*(-8*a^5*e^5 + 8*c^5*d^5*x^5 - 20*a^4*c*e^3*(d^2 + e^2*x^2) + 20*a*c^4*d^3
*x^3*(d^2 + e^2*x^2) - 5*a^3*c^2*e*(3*d^4 + 10*d^2*e^2*x^2 + 3*e^4*x^4) + 5
*a^2*c^3*d*x*(3*d^4 + 10*d^2*e^2*x^2 + 3*e^4*x^4))) + B*(-16*a^5*c^2*e^4*(8
0*c*d - 33*b*e + 30*c*e*x) - 80*a^4*c*e^2*(2*b^3*e^3 - 21*b^2*c*e^3*x + b*c
^2*e*(-16*d^2 + 40*d*e*x - 3*e^2*x^2) + 2*c^3*(4*d^3 + 20*d*e^2*x^2 + 7*e^3
*x^3)) + b*x*(15*b^7*e^5*x^2 + 35*b^6*c*e^5*x^3 - 128*c^7*d^5*x^4 + 23*b^5*
c^2*e^5*x^4 + 80*b*c^6*d^4*x^3*(-4*d + 3*e*x) - 40*b^2*c^5*d^3*x^2*(6*d^2 -
 15*d*e*x + 2*e^2*x^2) - 10*b^3*c^4*d^2*x*(4*d^3 - 45*d^2*e*x + 20*d*e^2*x^
2 + 2*e^3*x^3) + 5*b^4*c^3*d*(d^4 + 15*d^3*e*x - 30*d^2*e^2*x^2 - 10*d*e^3*
x^3 - 3*e^4*x^4)) + a*(45*b^7*e^5*x^2 - 100*b^6*c*e^5*x^3 - 375*b^5*c^2*e^5
*x^4 + 320*c^7*d^4*e*x^5 - 160*b*c^6*d^3*x^3*(2*d^2 - 5*d*e*x + 6*e^2*x^2)
+ 240*b^2*c^5*d^2*x^2*(-2*d^3 + 5*d^2*e*x - 10*d*e^2*x^2 + 2*e^3*x^3) + 40*
b^3*c^4*d*x*(-3*d^4 + 25*d^3*e*x - 50*d^2*e^2*x^2 + 30*d*e^3*x^3 + 5*e^4*x^
4) + 2*b^4*c^3*(d^5 + 50*d^4*e*x - 450*d^3*e^2*x^2 + 200*d^2*e^3*x^3 + 25*d
*e^4*x^4 - 129*e^5*x^5)) + a^2*(45*b^6*e^5*x - 465*b^5*c*e^5*x^2 - 150*b^4*
c^2*e^5*x^3 + 160*c^6*d^2*e*x^3*(5*d^2 + 6*e^2*x^2) - 240*b*c^5*d*x*(d^4 -
5*d^3*e*x + 10*d^2*e^2*x^2 - 10*d*e^3*x^3 + 5*e^4*x^4) + 40*b^3*c^3*e*(d^4
- 30*d^3*e*x + 60*d^2*e^2*x^2 - 10*d*e^3*x^3 + 30*e^4*x^4) - 48*b^2*c^4*(d^
5 - 25*d^4*e*x + 50*d^3*e^2*x^2 - 100*d^2*e^3*x^3 + 25*d*e^4*x^4 - 19*e^5*x
^5)) - a^3*(-15*b^5*e^5 + 490*b^4*c*e^5*x - 1400*b^3*c^2*e^5*x^2 + 80*b^2*c
^3*e^2*(6*d^3 - 40*d^2*e*x + 30*d*e^2*x^2 - 27*e^3*x^3) + 80*b*c^4*e*(-6*d^
4 + 20*d^3*e*x - 40*d^2*e^2*x^2 + 60*d*e^3*x^3 + 5*e^4*x^4) + 32*c^5*(3*d^5
 + 50*d^3*e^2*x^2 + 75*d*e^4*x^4 + 23*e^5*x^5)))))/(a + x*(b + c*x))^(5/2)
- 15*B*(b^2 - 4*a*c)^3*e^5*Log[b + 2*c*x + 2*Sqrt[c]*Sqrt[a + x*(b + c*x)]]
)/(15*c^(7/2)*(-b^2 + 4*a*c)^3)
```

fricas [B] time = 82.33, size = 5253, normalized size = 5.58

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] [1/30*(15*((B*b^6*c^3 - 12*B*a*b^4*c^4 + 48*B*a^2*b^2*c^5 - 64*B*a^3*c^6)*e
^5*x^6 + 3*(B*b^7*c^2 - 12*B*a*b^5*c^3 + 48*B*a^2*b^3*c^4 - 64*B*a^3*b*c^5)
*e^5*x^5 + 3*(B*b^8*c - 11*B*a*b^6*c^2 + 36*B*a^2*b^4*c^3 - 16*B*a^3*b^2*c^
4 - 64*B*a^4*c^5)*e^5*x^4 + (B*b^9 - 6*B*a*b^7*c - 24*B*a^2*b^5*c^2 + 224*B
*a^3*b^3*c^3 - 384*B*a^4*b*c^4)*e^5*x^3 + 3*(B*a*b^8 - 11*B*a^2*b^6*c + 36*
B*a^3*b^4*c^2 - 16*B*a^4*b^2*c^3 - 64*B*a^5*c^4)*e^5*x^2 + 3*(B*a^2*b^7 - 1
2*B*a^3*b^5*c + 48*B*a^4*b^3*c^2 - 64*B*a^5*b*c^3)*e^5*x + (B*a^3*b^6 - 12*
B*a^4*b^4*c + 48*B*a^5*b^2*c^2 - 64*B*a^6*c^3)*e^5)*sqrt(c)*log(-8*c^2*x^2
- 8*b*c*x - b^2 - 4*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(c) - 4*a*c) + 4*
(640*(2*B*a^5 - A*a^4*b)*c^4*d*e^4 + (48*(2*B*a^3 - 5*A*a^2*b)*c^6 + 8*(6*B
*a^2*b^2 + 5*A*a*b^3)*c^5 - (2*B*a*b^4 + 3*A*b^5)*c^4)*d^5 + 10*(48*A*a^3*c
^6 - 24*(2*B*a^3*b - A*a^2*b^2)*c^5 - (4*B*a^2*b^3 + A*a*b^4)*c^4)*d^4*e +
80*(4*(2*B*a^4 - 3*A*a^3*b)*c^5 + (6*B*a^3*b^2 - A*a^2*b^3)*c^4)*d^3*e^2 +
160*(4*A*a^4*c^5 - (8*B*a^4*b - 3*A*a^3*b^2)*c^4)*d^2*e^3 - (15*B*a^3*b^5*c
 - 160*B*a^4*b^3*c^2 + 528*B*a^5*b*c^3 - 256*A*a^5*c^4)*e^5 + (128*(B*b*c^8
 - 2*A*c^9)*d^5 - 80*(3*B*b^2*c^7 + 4*(B*a - 2*A*b)*c^8)*d^4*e + 80*(B*b^3*
c^6 - 8*A*a*c^8 + 6*(2*B*a*b - A*b^2)*c^7)*d^3*e^2 + 20*(B*b^4*c^5 - 48*(B*
a^2 - A*a*b)*c^7 - 4*(6*B*a*b^2 - A*b^3)*c^6)*d^2*e^3 + 5*(3*B*b^5*c^4 - 96
*A*a^2*c^7 + 48*(5*B*a^2*b - A*a*b^2)*c^6 - 2*(20*B*a*b^3 - A*b^4)*c^5)*d*e
^4 - (23*B*b^6*c^3 - 16*(46*B*a^3 + 15*A*a^2*b)*c^6 + 8*(114*B*a^2*b^2 + 5*
A*a*b^3)*c^5 - 3*(86*B*a*b^4 + A*b^5)*c^4)*e^5)*x^5 + 5*(64*(B*b^2*c^7 - 2*
A*b*c^8)*d^5 - 40*(3*B*b^3*c^6 + 4*(B*a*b - 2*A*b^2)*c^7)*d^4*e + 40*(B*b^4
*c^5 - 8*A*a*b*c^7 + 6*(2*B*a*b^2 - A*b^3)*c^6)*d^3*e^2 + 10*(B*b^5*c^4 - 4
8*(B*a^2*b - A*a*b^2)*c^6 - 4*(6*B*a*b^3 - A*b^4)*c^5)*d^2*e^3 + 5*(48*(2*B
*a^3 - A*a^2*b)*c^6 + 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (2*B*a*b^4 - A*b^5)*
c^4)*d*e^4 - (7*B*b^7*c^2 - 75*B*a*b^5*c^3 - 96*A*a^3*c^6 - 16*(5*B*a^3*b +
 3*A*a^2*b^2)*c^5 + 2*(120*B*a^2*b^3 + A*a*b^4)*c^4)*e^5)*x^4 + 5*(16*(3*B*
b^3*c^6 - 8*A*a*c^8 + 2*(2*B*a*b - 3*A*b^2)*c^7)*d^5 - 10*(9*B*b^4*c^5 + 16
*(B*a^2 - 2*A*a*b)*c^7 + 24*(B*a*b^2 - A*b^3)*c^6)*d^4*e + 10*(3*B*b^5*c^4
- 32*A*a^2*c^7 + 48*(B*a^2*b - A*a*b^2)*c^6 + 2*(20*B*a*b^3 - 9*A*b^4)*c^5)
*d^3*e^2 + 10*(48*A*a^2*b*c^6 - 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c^5 - (8*B*a*b
^4 - 3*A*b^5)*c^4)*d^2*e^3 + 40*(12*(2*B*a^3*b - A*a^2*b^2)*c^5 + (2*B*a^2*
b^3 - A*a*b^4)*c^4)*d*e^4 - (3*B*b^8*c - 20*B*a*b^6*c^2 - 30*B*a^2*b^4*c^3
- 32*(7*B*a^4 + 6*A*a^3*b)*c^5 + 16*(27*B*a^3*b^2 - A*a^2*b^3)*c^4)*e^5)*x^
3 + 5*(8*(B*b^4*c^5 - 24*A*a*b*c^7 + 2*(6*B*a*b^2 - A*b^3)*c^6)*d^5 - 5*(3*
B*b^5*c^4 + 48*(B*a^2*b - 2*A*a*b^2)*c^6 + 8*(5*B*a*b^3 - A*b^4)*c^5)*d^4*e
 + 10*(16*(2*B*a^3 - 3*A*a^2*b)*c^6 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c^5 + 3*(
6*B*a*b^4 - A*b^5)*c^4)*d^3*e^2 + 20*(16*A*a^3*c^6 - 8*(4*B*a^3*b - 3*A*a^2
*b^2)*c^5 - 3*(8*B*a^2*b^3 - 3*A*a*b^4)*c^4)*d^2*e^3 + 80*(4*(2*B*a^4 - A*a
^3*b)*c^5 + 3*(2*B*a^3*b^2 - A*a^2*b^3)*c^4)*d*e^4 - (9*B*a*b^7*c - 93*B*a^
2*b^5*c^2 + 280*B*a^3*b^3*c^3 - 128*A*a^4*c^5 + 48*(B*a^4*b - 2*A*a^3*b^2)*
c^4)*e^5)*x^2 + 5*(320*(2*B*a^4*b - A*a^3*b^2)*c^4*d*e^4 - (B*b^5*c^4 + 96*
```

```
A*a^2*c^7 - 48*(B*a^2*b - A*a*b^2)*c^6 - 2*(12*B*a*b^3 + A*b^4)*c^5)*d^5 +
5*(48*A*a^2*b*c^6 - 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (4*B*a*b^4 + A*b^5)*c^
4)*d^4*e + 40*(4*(2*B*a^3*b - 3*A*a^2*b^2)*c^5 + (6*B*a^2*b^3 - A*a*b^4)*c^
4)*d^3*e^2 + 80*(4*A*a^3*b*c^5 - (8*B*a^3*b^2 - 3*A*a^2*b^3)*c^4)*d^2*e^3 -
 (9*B*a^2*b^6*c - 98*B*a^3*b^4*c^2 + 336*B*a^4*b^2*c^3 - 32*(3*B*a^5 + 4*A*
a^4*b)*c^4)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^6*c^4 - 12*a^4*b^4*c^5 +
48*a^5*b^2*c^6 - 64*a^6*c^7 + (b^6*c^7 - 12*a*b^4*c^8 + 48*a^2*b^2*c^9 - 64
*a^3*c^10)*x^6 + 3*(b^7*c^6 - 12*a*b^5*c^7 + 48*a^2*b^3*c^8 - 64*a^3*b*c^9)
*x^5 + 3*(b^8*c^5 - 11*a*b^6*c^6 + 36*a^2*b^4*c^7 - 16*a^3*b^2*c^8 - 64*a^4
*c^9)*x^4 + (b^9*c^4 - 6*a*b^7*c^5 - 24*a^2*b^5*c^6 + 224*a^3*b^3*c^7 - 384
*a^4*b*c^8)*x^3 + 3*(a*b^8*c^4 - 11*a^2*b^6*c^5 + 36*a^3*b^4*c^6 - 16*a^4*b
^2*c^7 - 64*a^5*c^8)*x^2 + 3*(a^2*b^7*c^4 - 12*a^3*b^5*c^5 + 48*a^4*b^3*c^6
 - 64*a^5*b*c^7)*x), -1/15*(15*((B*b^6*c^3 - 12*B*a*b^4*c^4 + 48*B*a^2*b^2*
c^5 - 64*B*a^3*c^6)*e^5*x^6 + 3*(B*b^7*c^2 - 12*B*a*b^5*c^3 + 48*B*a^2*b^3*
c^4 - 64*B*a^3*b*c^5)*e^5*x^5 + 3*(B*b^8*c - 11*B*a*b^6*c^2 + 36*B*a^2*b^4*
c^3 - 16*B*a^3*b^2*c^4 - 64*B*a^4*c^5)*e^5*x^4 + (B*b^9 - 6*B*a*b^7*c - 24*
B*a^2*b^5*c^2 + 224*B*a^3*b^3*c^3 - 384*B*a^4*b*c^4)*e^5*x^3 + 3*(B*a*b^8 -
 11*B*a^2*b^6*c + 36*B*a^3*b^4*c^2 - 16*B*a^4*b^2*c^3 - 64*B*a^5*c^4)*e^5*x
^2 + 3*(B*a^2*b^7 - 12*B*a^3*b^5*c + 48*B*a^4*b^3*c^2 - 64*B*a^5*b*c^3)*e^5
*x + (B*a^3*b^6 - 12*B*a^4*b^4*c + 48*B*a^5*b^2*c^2 - 64*B*a^6*c^3)*e^5)*sq
rt(-c)*arctan(1/2*sqrt(c*x^2 + b*x + a)*(2*c*x + b)*sqrt(-c)/(c^2*x^2 + b*c
*x + a*c)) - 2*(640*(2*B*a^5 - A*a^4*b)*c^4*d*e^4 + (48*(2*B*a^3 - 5*A*a^2*
b)*c^6 + 8*(6*B*a^2*b^2 + 5*A*a*b^3)*c^5 - (2*B*a*b^4 + 3*A*b^5)*c^4)*d^5 +
 10*(48*A*a^3*c^6 - 24*(2*B*a^3*b - A*a^2*b^2)*c^5 - (4*B*a^2*b^3 + A*a*b^4
)*c^4)*d^4*e + 80*(4*(2*B*a^4 - 3*A*a^3*b)*c^5 + (6*B*a^3*b^2 - A*a^2*b^3)*
c^4)*d^3*e^2 + 160*(4*A*a^4*c^5 - (8*B*a^4*b - 3*A*a^3*b^2)*c^4)*d^2*e^3 -
(15*B*a^3*b^5*c - 160*B*a^4*b^3*c^2 + 528*B*a^5*b*c^3 - 256*A*a^5*c^4)*e^5
+ (128*(B*b*c^8 - 2*A*c^9)*d^5 - 80*(3*B*b^2*c^7 + 4*(B*a - 2*A*b)*c^8)*d^4
*e + 80*(B*b^3*c^6 - 8*A*a*c^8 + 6*(2*B*a*b - A*b^2)*c^7)*d^3*e^2 + 20*(B*b
^4*c^5 - 48*(B*a^2 - A*a*b)*c^7 - 4*(6*B*a*b^2 - A*b^3)*c^6)*d^2*e^3 + 5*(3
*B*b^5*c^4 - 96*A*a^2*c^7 + 48*(5*B*a^2*b - A*a*b^2)*c^6 - 2*(20*B*a*b^3 -
A*b^4)*c^5)*d*e^4 - (23*B*b^6*c^3 - 16*(46*B*a^3 + 15*A*a^2*b)*c^6 + 8*(114
*B*a^2*b^2 + 5*A*a*b^3)*c^5 - 3*(86*B*a*b^4 + A*b^5)*c^4)*e^5)*x^5 + 5*(64*
(B*b^2*c^7 - 2*A*b*c^8)*d^5 - 40*(3*B*b^3*c^6 + 4*(B*a*b - 2*A*b^2)*c^7)*d^
4*e + 40*(B*b^4*c^5 - 8*A*a*b*c^7 + 6*(2*B*a*b^2 - A*b^3)*c^6)*d^3*e^2 + 10
*(B*b^5*c^4 - 48*(B*a^2*b - A*a*b^2)*c^6 - 4*(6*B*a*b^3 - A*b^4)*c^5)*d^2*e
^3 + 5*(48*(2*B*a^3 - A*a^2*b)*c^6 + 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (2*B*
a*b^4 - A*b^5)*c^4)*d*e^4 - (7*B*b^7*c^2 - 75*B*a*b^5*c^3 - 96*A*a^3*c^6 -
16*(5*B*a^3*b + 3*A*a^2*b^2)*c^5 + 2*(120*B*a^2*b^3 + A*a*b^4)*c^4)*e^5)*x^
4 + 5*(16*(3*B*b^3*c^6 - 8*A*a*c^8 + 2*(2*B*a*b - 3*A*b^2)*c^7)*d^5 - 10*(9
*B*b^4*c^5 + 16*(B*a^2 - 2*A*a*b)*c^7 + 24*(B*a*b^2 - A*b^3)*c^6)*d^4*e + 1
0*(3*B*b^5*c^4 - 32*A*a^2*c^7 + 48*(B*a^2*b - A*a*b^2)*c^6 + 2*(20*B*a*b^3
 - 9*A*b^4)*c^5)*d^3*e^2 + 10*(48*A*a^2*b*c^6 - 8*(12*B*a^2*b^2 - 5*A*a*b^3)
*c^5 - (8*B*a*b^4 - 3*A*b^5)*c^4)*d^2*e^3 + 40*(12*(2*B*a^3*b - A*a^2*b^2)*
c^5 + (2*B*a^2*b^3 - A*a*b^4)*c^4)*d*e^4 - (3*B*b^8*c - 20*B*a*b^6*c^2 - 30
*B*a^2*b^4*c^3 - 32*(7*B*a^4 + 6*A*a^3*b)*c^5 + 16*(27*B*a^3*b^2 - A*a^2*b^
3)*c^4)*e^5)*x^3 + 5*(8*(B*b^4*c^5 - 24*A*a*b*c^7 + 2*(6*B*a*b^2 - A*b^3)*c
^6)*d^5 - 5*(3*B*b^5*c^4 + 48*(B*a^2*b - 2*A*a*b^2)*c^6 + 8*(5*B*a*b^3 - A*
b^4)*c^5)*d^4*e + 10*(16*(2*B*a^3 - 3*A*a^2*b)*c^6 + 8*(6*B*a^2*b^2 - 5*A*a
*b^3)*c^5 + 3*(6*B*a*b^4 - A*b^5)*c^4)*d^3*e^2 + 20*(16*A*a^3*c^6 - 8*(4*B*
a^3*b - 3*A*a^2*b^2)*c^5 - 3*(8*B*a^2*b^3 - 3*A*a*b^4)*c^4)*d^2*e^3 + 80*(4
*(2*B*a^4 - A*a^3*b)*c^5 + 3*(2*B*a^3*b^2 - A*a^2*b^3)*c^4)*d*e^4 - (9*B*a*
b^7*c - 93*B*a^2*b^5*c^2 + 280*B*a^3*b^3*c^3 - 128*A*a^4*c^5 + 48*(B*a^4*b
 - 2*A*a^3*b^2)*c^4)*e^5)*x^2 + 5*(320*(2*B*a^4*b - A*a^3*b^2)*c^4*d*e^4 - (
B*b^5*c^4 + 96*A*a^2*c^7 - 48*(B*a^2*b - A*a*b^2)*c^6 - 2*(12*B*a*b^3 + A*b
^4)*c^5)*d^5 + 5*(48*A*a^2*b*c^6 - 24*(2*B*a^2*b^2 - A*a*b^3)*c^5 - (4*B*a*
b^4 + A*b^5)*c^4)*d^4*e + 40*(4*(2*B*a^3*b - 3*A*a^2*b^2)*c^5 + (6*B*a^2*b^
3 - A*a*b^4)*c^4)*d^3*e^2 + 80*(4*A*a^3*b*c^5 - (8*B*a^3*b^2 - 3*A*a^2*b^3)
*c^4)*d^2*e^3 - (9*B*a^2*b^6*c - 98*B*a^3*b^4*c^2 + 336*B*a^4*b^2*c^3 - 32*
```

```
(3*B*a^5 + 4*A*a^4*b)*c^4)*e^5)*x)*sqrt(c*x^2 + b*x + a))/(a^3*b^6*c^4 - 12
*a^4*b^4*c^5 + 48*a^5*b^2*c^6 - 64*a^6*c^7 + (b^6*c^7 - 12*a*b^4*c^8 + 48*a
^2*b^2*c^9 - 64*a^3*c^10)*x^6 + 3*(b^7*c^6 - 12*a*b^5*c^7 + 48*a^2*b^3*c^8
- 64*a^3*b*c^9)*x^5 + 3*(b^8*c^5 - 11*a*b^6*c^6 + 36*a^2*b^4*c^7 - 16*a^3*b
^2*c^8 - 64*a^4*c^9)*x^4 + (b^9*c^4 - 6*a*b^7*c^5 - 24*a^2*b^5*c^6 + 224*a^
3*b^3*c^7 - 384*a^4*b*c^8)*x^3 + 3*(a*b^8*c^4 - 11*a^2*b^6*c^5 + 36*a^3*b^4
*c^6 - 16*a^4*b^2*c^7 - 64*a^5*c^8)*x^2 + 3*(a^2*b^7*c^4 - 12*a^3*b^5*c^5 +
 48*a^4*b^3*c^6 - 64*a^5*b*c^7)*x)]
```

giac [B] time = 0.84, size = 2525, normalized size = 2.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] -B*e^5*log(abs(-2*(sqrt(c)*x - sqrt(c*x^2 + b*x + a))*sqrt(c) - b))/c^(7/2)
 + 2/15*((((((128*B*b*c^7*d^5 - 256*A*c^8*d^5 - 240*B*b^2*c^6*d^4*e - 320*B
*a*c^7*d^4*e + 640*A*b*c^7*d^4*e + 80*B*b^3*c^5*d^3*e^2 + 960*B*a*b*c^6*d^3
*e^2 - 480*A*b^2*c^6*d^3*e^2 - 640*A*a*c^7*d^3*e^2 + 20*B*b^4*c^4*d^2*e^3 -
 480*B*a*b^2*c^5*d^2*e^3 + 80*A*b^3*c^5*d^2*e^3 - 960*B*a^2*c^6*d^2*e^3 + 9
60*A*a*b*c^6*d^2*e^3 + 15*B*b^5*c^3*d*e^4 - 200*B*a*b^3*c^4*d*e^4 + 10*A*b^
4*c^4*d*e^4 + 1200*B*a^2*b*c^5*d*e^4 - 240*A*a*b^2*c^5*d*e^4 - 480*A*a^2*c^
6*d*e^4 - 23*B*b^6*c^2*e^5 + 258*B*a*b^4*c^3*e^5 + 3*A*b^5*c^3*e^5 - 912*B*
a^2*b^2*c^4*e^5 - 40*A*a*b^3*c^4*e^5 + 736*B*a^3*c^5*e^5 + 240*A*a^2*b*c^5*
e^5)*x/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6) + 5*(64*B*b^2
*c^6*d^5 - 128*A*b*c^7*d^5 - 120*B*b^3*c^5*d^4*e - 160*B*a*b*c^6*d^4*e + 32
0*A*b^2*c^6*d^4*e + 40*B*b^4*c^4*d^3*e^2 + 480*B*a*b^2*c^5*d^3*e^2 - 240*A*
b^3*c^5*d^3*e^2 - 320*A*a*b*c^6*d^3*e^2 + 10*B*b^5*c^3*d^2*e^3 - 240*B*a*b^
3*c^4*d^2*e^3 + 40*A*b^4*c^4*d^2*e^3 - 480*B*a^2*b*c^5*d^2*e^3 + 480*A*a*b^
2*c^5*d^2*e^3 - 10*B*a*b^4*c^3*d*e^4 + 5*A*b^5*c^3*d*e^4 + 240*B*a^2*b^2*c^
4*d*e^4 - 120*A*a*b^3*c^4*d*e^4 + 480*B*a^3*c^5*d*e^4 - 240*A*a^2*b*c^5*d*e
^4 - 7*B*b^7*c*e^5 + 75*B*a*b^5*c^2*e^5 - 240*B*a^2*b^3*c^3*e^5 - 2*A*a*b^4
*c^3*e^5 + 80*B*a^3*b*c^4*e^5 + 48*A*a^2*b^2*c^4*e^5 + 96*A*a^3*c^5*e^5)/(b
^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x + 5*(48*B*b^3*c^5*d
^5 + 64*B*a*b*c^6*d^5 - 96*A*b^2*c^6*d^5 - 128*A*a*c^7*d^5 - 90*B*b^4*c^4*d
^4*e - 240*B*a*b^2*c^5*d^4*e + 240*A*b^3*c^5*d^4*e - 160*B*a^2*c^6*d^4*e +
320*A*a*b*c^6*d^4*e + 30*B*b^5*c^3*d^3*e^2 + 400*B*a*b^3*c^4*d^3*e^2 - 180*
A*b^4*c^4*d^3*e^2 + 480*B*a^2*b*c^5*d^3*e^2 - 480*A*a*b^2*c^5*d^3*e^2 - 320
*A*a^2*c^6*d^3*e^2 - 80*B*a*b^4*c^3*d^2*e^3 + 30*A*b^5*c^3*d^2*e^3 - 960*B*
a^2*b^2*c^4*d^2*e^3 + 400*A*a*b^3*c^4*d^2*e^3 + 480*A*a^2*b*c^5*d^2*e^3 + 8
0*B*a^2*b^3*c^3*d*e^4 - 40*A*a*b^4*c^3*d*e^4 + 960*B*a^3*b*c^4*d*e^4 - 480*
A*a^2*b^2*c^4*d*e^4 - 3*B*b^8*e^5 + 20*B*a*b^6*c*e^5 + 30*B*a^2*b^4*c^2*e^5
 - 432*B*a^3*b^2*c^3*e^5 + 16*A*a^2*b^3*c^3*e^5 + 224*B*a^4*c^4*e^5 + 192*A
*a^3*b*c^4*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x +
 5*(8*B*b^4*c^4*d^5 + 96*B*a*b^2*c^5*d^5 - 16*A*b^3*c^5*d^5 - 192*A*a*b*c^6
*d^5 - 15*B*b^5*c^3*d^4*e - 200*B*a*b^3*c^4*d^4*e + 40*A*b^4*c^4*d^4*e - 24
0*B*a^2*b*c^5*d^4*e + 480*A*a*b^2*c^5*d^4*e + 180*B*a*b^4*c^3*d^3*e^2 - 30*
A*b^5*c^3*d^3*e^2 + 480*B*a^2*b^2*c^4*d^3*e^2 - 400*A*a*b^3*c^4*d^3*e^2 + 3
20*B*a^3*c^5*d^3*e^2 - 480*A*a^2*b*c^5*d^3*e^2 - 480*B*a^2*b^3*c^3*d^2*e^3
+ 180*A*a*b^4*c^3*d^2*e^3 - 640*B*a^3*b*c^4*d^2*e^3 + 480*A*a^2*b^2*c^4*d^2
*e^3 + 320*A*a^3*c^5*d^2*e^3 + 480*B*a^3*b^2*c^3*d*e^4 - 240*A*a^2*b^3*c^3*
d*e^4 + 640*B*a^4*c^4*d*e^4 - 320*A*a^3*b*c^4*d*e^4 - 9*B*a*b^7*e^5 + 93*B*
a^2*b^5*c*e^5 - 280*B*a^3*b^3*c^2*e^5 - 48*B*a^4*b*c^3*e^5 + 96*A*a^3*b^2*c
^3*e^5 + 128*A*a^4*c^4*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a
^3*c^6))*x - 5*(B*b^5*c^3*d^5 - 24*B*a*b^3*c^4*d^5 - 2*A*b^4*c^4*d^5 - 48*B
*a^2*b*c^5*d^5 + 48*A*a*b^2*c^5*d^5 + 96*A*a^2*c^6*d^5 + 20*B*a*b^4*c^3*d^4
*e + 5*A*b^5*c^3*d^4*e + 240*B*a^2*b^2*c^4*d^4*e - 120*A*a*b^3*c^4*d^4*e -
240*A*a^2*b*c^5*d^4*e - 240*B*a^2*b^3*c^3*d^3*e^2 + 40*A*a*b^4*c^3*d^3*e^2
- 320*B*a^3*b*c^4*d^3*e^2 + 480*A*a^2*b^2*c^4*d^3*e^2 + 640*B*a^3*b^2*c^3*d
^2*e^3 - 240*A*a^2*b^3*c^3*d^2*e^3 - 320*A*a^3*b*c^4*d^2*e^3 - 640*B*a^4*b*
c^3*d*e^4 + 320*A*a^3*b^2*c^3*d*e^4 + 9*B*a^2*b^6*e^5 - 98*B*a^3*b^4*c*e^5
+ 336*B*a^4*b^2*c^2*e^5 - 96*B*a^5*c^3*e^5 - 128*A*a^4*b*c^3*e^5)/(b^6*c^3
- 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))*x - (2*B*a*b^4*c^3*d^5 + 3*A
*b^5*c^3*d^5 - 48*B*a^2*b^2*c^4*d^5 - 40*A*a*b^3*c^4*d^5 - 96*B*a^3*c^5*d^5
 + 240*A*a^2*b*c^5*d^5 + 40*B*a^2*b^3*c^3*d^4*e + 10*A*a*b^4*c^3*d^4*e + 48
0*B*a^3*b*c^4*d^4*e - 240*A*a^2*b^2*c^4*d^4*e - 480*A*a^3*c^5*d^4*e - 480*B
*a^3*b^2*c^3*d^3*e^2 + 80*A*a^2*b^3*c^3*d^3*e^2 - 640*B*a^4*c^4*d^3*e^2 + 9
60*A*a^3*b*c^4*d^3*e^2 + 1280*B*a^4*b*c^3*d^2*e^3 - 480*A*a^3*b^2*c^3*d^2*e
^3 - 640*A*a^4*c^4*d^2*e^3 - 1280*B*a^5*c^3*d*e^4 + 640*A*a^4*b*c^3*d*e^4 +
 15*B*a^3*b^5*e^5 - 160*B*a^4*b^3*c*e^5 + 528*B*a^5*b*c^2*e^5 - 256*A*a^5*c
^3*e^5)/(b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6))/(c*x^2 + b*
x + a)^(5/2)
```

maple [B] time = 0.02, size = 7765, normalized size = 8.24

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^5/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^5}{{\left(c\,x^2+b\,x+a\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^5)/(a + b*x + c*x^2)^(7/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**5/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2489 $\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=210

$$\frac{128\left(ae^2-bde+cd^2\right)(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^4(-2aB-x(bB-2Ac)+}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

```
[Out] -2/5*(A*b-2*a*B-(-2*A*c+B*b)*x)*(e*x+d)^4/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)-
16/15*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*(e*x+d)^2*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-
4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)+128/15*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*(a*e^
2-b*d*e+c*d^2)*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1/2
)
```

Rubi [A] time = 0.14, antiderivative size = 210, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = $\{804, 722, 636\}$

$$\frac{128\left(ae^2-bde+cd^2\right)(-2ae+x(2cd-be)+bd)(-2aBe+Abe-2Acd+bBd)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{2(d+ex)^4(-2aB-x(bB-2Ac)+}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^4)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (16*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(d + e*x)^2*(b*d
- 2*a*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) +
(128*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(c*d^2 - b*d*e + a*e^2)*(b*d - 2*a
*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 722

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> Simp[((d + e*x)^(m - 1)*(d*b - 2*a*e + (2*c*d - b*e)*x)*(a + b*x
+ c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*(2*p + 3)*(c*d^2 -
b*d*e + a*e^2))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c
*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] &
& NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d - b*e, 0] && EqQ[m + 2*p + 2,
0] && LtQ[p, -1]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^4}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{(8(bBd-2Acd+Abe-2aBe))\int \frac{(d+ex)}{\left(a+bx+cx\right.}}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bBd-2Acd+Abe-2aBe)(d+ex)^2(b}{15\left(b^2-4ac\right)^2\left(a+bx+c\right.}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^4}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bBd-2Acd+Abe-2aBe)(d+ex)^2(b}{15\left(b^2-4ac\right)^2\left(a+bx+c\right.}$$

Mathematica [B] time = 6.30, size = 1196, normalized size = 5.70

$$\frac{2B\left(256e^4a^5+128e^2\left(be(5ex-4d)+c\left(3d^2+5e^2x^2\right)\right)a^4+32\left(3\left(d^4+10e^2x^2d^2+5e^4x^4\right)c^2+2be\left(-6d^3+15e\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*A*(b^5*(3*d^4 + 20*d^3*e*x + 90*d^2*e^2*x^2 - 60*d*e^3*x^3 - 5*e^4*x^4)
 + 16*b*(8*a^4*e^4 + 8*c^4*d^3*x^4*(5*d - 4*e*x) + 15*a^2*c^2*(d - e*x)^4 +
 4*a^3*c*e^2*(9*d^2 - 10*d*e*x + 5*e^2*x^2) + 4*a*c^3*d*x^2*(15*d^3 - 20*d^
2*e*x + 15*d*e^2*x^2 - 6*e^3*x^3)) + 8*b^3*(-5*a*c*(d - e*x)^2*(d^2 + 14*d*
e*x - 3*e^2*x^2) + 6*a^2*e^2*(d^2 - 10*d*e*x + 5*e^2*x^2) + 2*c^2*d*x^2*(5*
d^3 - 60*d^2*e*x + 45*d*e^2*x^2 - 2*e^3*x^3)) + 32*c*(-8*a^4*d*e^3 + 8*c^4*
d^4*x^5 + 4*a*c^3*d^2*x^3*(5*d^2 + 3*e^2*x^2) - 4*a^3*c*d*e*(3*d^2 + 5*e^2*
x^2) + 3*a^2*c^2*x*(5*d^4 + 10*d^2*e^2*x^2 + e^4*x^4)) + 16*b^2*(4*a^3*e^3*
(-3*d + 5*e*x) + 2*c^3*d^2*x^3*(15*d^2 - 40*d*e*x + 9*e^2*x^2) + 6*a^2*c*e*
(-2*d^3 + 15*d^2*e*x - 10*d*e^2*x^2 + 5*e^3*x^3) + 3*a*c^2*x*(5*d^4 - 40*d^
3*e*x + 30*d^2*e^2*x^2 - 20*d*e^3*x^3 + e^4*x^4)) + 2*b^4*(4*a*e*(d^3 + 15*
d^2*e*x - 45*d*e^2*x^2 + 5*e^3*x^3) - c*x*(5*d^4 + 80*d^3*e*x - 270*d^2*e^2
*x^2 + 40*d*e^3*x^3 + e^4*x^4))) + 2*B*(256*a^5*e^4 + 128*a^4*e^2*(b*e*(-4*
d + 5*e*x) + c*(3*d^2 + 5*e^2*x^2)) + b*x*(128*c^4*d^4*x^4 + 64*b*c^3*d^3*x
^3*(5*d - 3*e*x) + 48*b^2*c^2*d^2*x^2*(5*d^2 - 10*d*e*x + e^2*x^2) + 8*b^3*
c*d*x*(5*d^3 - 45*d^2*e*x + 15*d*e^2*x^2 + e^3*x^3) + b^4*(-5*d^4 - 60*d^3*
e*x + 90*d^2*e^2*x^2 + 20*d*e^3*x^3 + 3*e^4*x^4)) + 32*a^3*(b^2*e^2*(9*d^2
- 40*d*e*x + 15*e^2*x^2) + 2*b*c*e*(-6*d^3 + 15*d^2*e*x - 20*d*e^2*x^2 + 15
*e^3*x^3) + 3*c^2*(d^4 + 10*d^2*e^2*x^2 + 5*e^4*x^4)) - 16*a^2*(-15*b*c^2*x
*(d - e*x)^4 + 8*c^3*d*e*x^3*(5*d^2 + 3*e^2*x^2) + b^3*e*(2*d^3 - 45*d^2*e*
x + 60*d*e^2*x^2 - 5*e^3*x^3) - 3*b^2*c*(d^4 - 20*d^3*e*x + 30*d^2*e^2*x^2
- 40*d*e^3*x^3 + 5*e^4*x^4)) - 2*a*(128*c^4*d^3*e*x^5 + 20*b^3*c*x*(d - e*x
)^2*(-3*d^2 + 14*d*e*x + e^2*x^2) - 32*b*c^3*d^2*x^3*(5*d^2 - 10*d*e*x + 9*
e^2*x^2) + 48*b^2*c^2*d*x^2*(-5*d^3 + 10*d^2*e*x - 15*d*e^2*x^2 + 2*e^3*x^3
) + b^4*(d^4 + 40*d^3*e*x - 270*d^2*e^2*x^2 + 80*d*e^3*x^3 + 5*e^4*x^4))))/
(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas [B] time = 80.22, size = 1628, normalized size = 7.75

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*((128*(B*b*c^4 - 2*A*c^5)*d^4 - 64*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4)
*d^3*e + 48*(B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*d^2*e^2 + 8*(
B*b^4*c - 48*(B*a^2 - A*a*b)*c^3 - 4*(6*B*a*b^2 - A*b^3)*c^2)*d*e^3 + (3*B*
b^5 - 96*A*a^2*c^3 + 48*(5*B*a^2*b - A*a*b^2)*c^2 - 2*(20*B*a*b^3 - A*b^4)*
c)*e^4)*x^5 - (2*B*a*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*
a^2*b^2 + 5*A*a*b^3)*c)*d^4 - 8*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*
(2*B*a^3*b - A*a^2*b^2)*c)*d^3*e + 48*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4
 - 3*A*a^3*b)*c)*d^2*e^2 - 64*(8*B*a^4*b - 3*A*a^3*b^2 - 4*A*a^4*c)*d*e^3 +
 128*(2*B*a^5 - A*a^4*b)*e^4 + 5*(64*(B*b^2*c^3 - 2*A*b*c^4)*d^4 - 32*(3*B*
b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d^3*e + 24*(B*b^4*c - 8*A*a*b*c^3 + 6*(2
*B*a*b^2 - A*b^3)*c^2)*d^2*e^2 + 4*(B*b^5 - 48*(B*a^2*b - A*a*b^2)*c^2 - 4*
(6*B*a*b^3 - A*b^4)*c)*d*e^3 - (2*B*a*b^4 - A*b^5 - 48*(2*B*a^3 - A*a^2*b)*
c^2 - 24*(2*B*a^2*b^2 - A*a*b^3)*c)*e^4)*x^4 + 10*(8*(3*B*b^3*c^2 - 8*A*a*c
^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^4 - 4*(9*B*b^4*c + 16*(B*a^2 - 2*A*a*b)*c
^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d^3*e + 3*(3*B*b^5 - 32*A*a^2*c^3 + 48*(B*a^
2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*d^2*e^2 - 2*(8*B*a*b^4 - 3
*A*b^5 - 48*A*a^2*b*c^2 + 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c)*d*e^3 + 4*(2*B*a^
2*b^3 - A*a*b^4 + 12*(2*B*a^3*b - A*a^2*b^2)*c)*e^4)*x^3 + 10*(4*(B*b^4*c -
 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^4 - 2*(3*B*b^5 + 48*(B*a^2*b -
 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d^3*e + 3*(18*B*a*b^4 - 3*A*b^5
+ 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*d^2*e^2 - 4
*(24*B*a^2*b^3 - 9*A*a*b^4 - 16*A*a^3*c^2 + 8*(4*B*a^3*b - 3*A*a^2*b^2)*c)*
d*e^3 + 8*(6*B*a^3*b^2 - 3*A*a^2*b^3 + 4*(2*B*a^4 - A*a^3*b)*c)*e^4)*x^2 -
5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*(12*B*a*b^3 + A*b
^4)*c)*d^4 + 4*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*(2*B*a^2*b^2 - A*a*
b^3)*c)*d^3*e - 24*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b - 3*A*a^2*b^2)*c)*
d^2*e^2 + 32*(8*B*a^3*b^2 - 3*A*a^2*b^3 - 4*A*a^3*b*c)*d*e^3 - 64*(2*B*a^4*
b - A*a^3*b^2)*e^4)*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a
^5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3
*c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5
+ 3*(b^8*c - 11*a*b^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x
^4 + (b^9 - 6*a*b^7*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x
^3 + 3*(a*b^8 - 11*a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4
)*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac **[B]** time = 0.37, size = 1763, normalized size = 8.40

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((((((128*B*b*c^4*d^4 - 256*A*c^5*d^4 - 192*B*b^2*c^3*d^3*e - 256*B*a*
c^4*d^3*e + 512*A*b*c^4*d^3*e + 48*B*b^3*c^2*d^2*e^2 + 576*B*a*b*c^3*d^2*e^
2 - 288*A*b^2*c^3*d^2*e^2 - 384*A*a*c^4*d^2*e^2 + 8*B*b^4*c*d*e^3 - 192*B*a
*b^2*c^2*d*e^3 + 32*A*b^3*c^2*d*e^3 - 384*B*a^2*c^3*d*e^3 + 384*A*a*b*c^3*d
*e^3 + 3*B*b^5*e^4 - 40*B*a*b^3*c*e^4 + 2*A*b^4*c*e^4 + 240*B*a^2*b*c^2*e^4
 - 48*A*a*b^2*c^2*e^4 - 96*A*a^2*c^3*e^4)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*
c^2 - 64*a^3*c^3) + 5*(64*B*b^2*c^3*d^4 - 128*A*b*c^4*d^4 - 96*B*b^3*c^2*d^
3*e - 128*B*a*b*c^3*d^3*e + 256*A*b^2*c^3*d^3*e + 24*B*b^4*c*d^2*e^2 + 288*
B*a*b^2*c^2*d^2*e^2 - 144*A*b^3*c^2*d^2*e^2 - 192*A*a*b*c^3*d^2*e^2 + 4*B*b
^5*d*e^3 - 96*B*a*b^3*c*d*e^3 + 16*A*b^4*c*d*e^3 - 192*B*a^2*b*c^2*d*e^3 +
192*A*a*b^2*c^2*d*e^3 - 2*B*a*b^4*e^4 + A*b^5*e^4 + 48*B*a^2*b^2*c*e^4 - 24
*A*a*b^3*c*e^4 + 96*B*a^3*c^2*e^4 - 48*A*a^2*b*c^2*e^4)/(b^6 - 12*a*b^4*c +
 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 10*(24*B*b^3*c^2*d^4 + 32*B*a*b*c^3*d^4
- 48*A*b^2*c^3*d^4 - 64*A*a*c^4*d^4 - 36*B*b^4*c*d^3*e - 96*B*a*b^2*c^2*d^3
*e + 96*A*b^3*c^2*d^3*e - 64*B*a^2*c^3*d^3*e + 128*A*a*b*c^3*d^3*e + 9*B*b^
5*d^2*e^2 + 120*B*a*b^3*c*d^2*e^2 - 54*A*b^4*c*d^2*e^2 + 144*B*a^2*b*c^2*d^
2*e^2 - 144*A*a*b^2*c^2*d^2*e^2 - 96*A*a^2*c^3*d^2*e^2 - 16*B*a*b^4*d*e^3 +
 6*A*b^5*d*e^3 - 192*B*a^2*b^2*c*d*e^3 + 80*A*a*b^3*c*d*e^3 + 96*A*a^2*b*c^
2*d*e^3 + 8*B*a^2*b^3*e^4 - 4*A*a*b^4*e^4 + 96*B*a^3*b*c*e^4 - 48*A*a^2*b^2
*c*e^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 10*(4*B*b^4*c
*d^4 + 48*B*a*b^2*c^2*d^4 - 8*A*b^3*c^2*d^4 - 96*A*a*b*c^3*d^4 - 6*B*b^5*d^
3*e - 80*B*a*b^3*c*d^3*e + 16*A*b^4*c*d^3*e - 96*B*a^2*b*c^2*d^3*e + 192*A*
a*b^2*c^2*d^3*e + 54*B*a*b^4*d^2*e^2 - 9*A*b^5*d^2*e^2 + 144*B*a^2*b^2*c*d^
2*e^2 - 120*A*a*b^3*c*d^2*e^2 + 96*B*a^3*c^2*d^2*e^2 - 144*A*a^2*b*c^2*d^2*
e^2 - 96*B*a^2*b^3*d*e^3 + 36*A*a*b^4*d*e^3 - 128*B*a^3*b*c*d*e^3 + 96*A*a^
2*b^2*c*d*e^3 + 64*A*a^3*c^2*d*e^3 + 48*B*a^3*b^2*e^4 - 24*A*a^2*b^3*e^4 +
64*B*a^4*c*e^4 - 32*A*a^3*b*c*e^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*
a^3*c^3))*x - 5*(B*b^5*d^4 - 24*B*a*b^3*c*d^4 - 2*A*b^4*c*d^4 - 48*B*a^2*b*
c^2*d^4 + 48*A*a*b^2*c^2*d^4 + 96*A*a^2*c^3*d^4 + 16*B*a*b^4*d^3*e + 4*A*b^
5*d^3*e + 192*B*a^2*b^2*c*d^3*e - 96*A*a*b^3*c*d^3*e - 192*A*a^2*b*c^2*d^3*
e - 144*B*a^2*b^3*d^2*e^2 + 24*A*a*b^4*d^2*e^2 - 192*B*a^3*b*c*d^2*e^2 + 28
8*A*a^2*b^2*c*d^2*e^2 + 256*B*a^3*b^2*d*e^3 - 96*A*a^2*b^3*d*e^3 - 128*A*a^
3*b*c*d*e^3 - 128*B*a^4*b*e^4 + 64*A*a^3*b^2*e^4)/(b^6 - 12*a*b^4*c + 48*a^
2*b^2*c^2 - 64*a^3*c^3))*x - (2*B*a*b^4*d^4 + 3*A*b^5*d^4 - 48*B*a^2*b^2*c*
d^4 - 40*A*a*b^3*c*d^4 - 96*B*a^3*c^2*d^4 + 240*A*a^2*b*c^2*d^4 + 32*B*a^2*
b^3*d^3*e + 8*A*a*b^4*d^3*e + 384*B*a^3*b*c*d^3*e - 192*A*a^2*b^2*c*d^3*e -
 384*A*a^3*c^2*d^3*e - 288*B*a^3*b^2*d^2*e^2 + 48*A*a^2*b^3*d^2*e^2 - 384*B
*a^4*c*d^2*e^2 + 576*A*a^3*b*c*d^2*e^2 + 512*B*a^4*b*d*e^3 - 192*A*a^3*b^2*
d*e^3 - 256*A*a^4*c*d*e^3 - 256*B*a^5*e^4 + 128*A*a^4*b*e^4)/(b^6 - 12*a*b^
4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)
```

maple [B] time = 0.02, size = 1914, normalized size = 9.11

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(96*A*a^2*c^3*e^4*x^5+48*A*a*b^2*c^2*e^4*x^5-384*A
*a*b*c^3*d*e^3*x^5+384*A*a*c^4*d^2*e^2*x^5-2*A*b^4*c*e^4*x^5-32*A*b^3*c^2*d
*e^3*x^5+288*A*b^2*c^3*d^2*e^2*x^5-512*A*b*c^4*d^3*e*x^5+256*A*c^5*d^4*x^5-
240*B*a^2*b*c^2*e^4*x^5+384*B*a^2*c^3*d*e^3*x^5+40*B*a*b^3*c*e^4*x^5+192*B*
a*b^2*c^2*d*e^3*x^5-576*B*a*b*c^3*d^2*e^2*x^5+256*B*a*c^4*d^3*e*x^5-3*B*b^5
*e^4*x^5-8*B*b^4*c*d*e^3*x^5-48*B*b^3*c^2*d^2*e^2*x^5+192*B*b^2*c^3*d^3*e*x
^5-128*B*b*c^4*d^4*x^5+240*A*a^2*b*c^2*e^4*x^4+120*A*a*b^3*c*e^4*x^4-960*A*
a*b^2*c^2*d*e^3*x^4+960*A*a*b*c^3*d^2*e^2*x^4-5*A*b^5*e^4*x^4-80*A*b^4*c*d*
e^3*x^4+720*A*b^3*c^2*d^2*e^2*x^4-1280*A*b^2*c^3*d^3*e*x^4+640*A*b*c^4*d^4*
x^4-480*B*a^3*c^2*e^4*x^4-240*B*a^2*b^2*c*e^4*x^4+960*B*a^2*b*c^2*d*e^3*x^4
+10*B*a*b^4*e^4*x^4+480*B*a*b^3*c*d*e^3*x^4-1440*B*a*b^2*c^2*d^2*e^2*x^4+64
0*B*a*b*c^3*d^3*e*x^4-20*B*b^5*d*e^3*x^4-120*B*b^4*c*d^2*e^2*x^4+480*B*b^3*
c^2*d^3*e*x^4-320*B*b^2*c^3*d^4*x^4+480*A*a^2*b^2*c*e^4*x^3-960*A*a^2*b*c^2
*d*e^3*x^3+960*A*a^2*c^3*d^2*e^2*x^3+40*A*a*b^4*e^4*x^3-800*A*a*b^3*c*d*e^3
*x^3+1440*A*a*b^2*c^2*d^2*e^2*x^3-1280*A*a*b*c^3*d^3*e*x^3+640*A*a*c^4*d^4*
x^3-60*A*b^5*d*e^3*x^3+540*A*b^4*c*d^2*e^2*x^3-960*A*b^3*c^2*d^3*e*x^3+480*
A*b^2*c^3*d^4*x^3-960*B*a^3*b*c*e^4*x^3-80*B*a^2*b^3*e^4*x^3+1920*B*a^2*b^2
*c*d*e^3*x^3-1440*B*a^2*b*c^2*d^2*e^2*x^3+640*B*a^2*c^3*d^3*e*x^3+160*B*a*b
^4*d*e^3*x^3-1200*B*a*b^3*c*d^2*e^2*x^3+960*B*a*b^2*c^2*d^3*e*x^3-320*B*a*b
*c^3*d^4*x^3-90*B*b^5*d^2*e^2*x^3+360*B*b^4*c*d^3*e*x^3-240*B*b^3*c^2*d^4*x
^3+320*A*a^3*b*c*e^4*x^2-640*A*a^3*c^2*d*e^3*x^2+240*A*a^2*b^3*e^4*x^2-960*
A*a^2*b^2*c*d*e^3*x^2+1440*A*a^2*b*c^2*d^2*e^2*x^2-360*A*a*b^4*d*e^3*x^2+12
00*A*a*b^3*c*d^2*e^2*x^2-1920*A*a*b^2*c^2*d^3*e*x^2+960*A*a*b*c^3*d^4*x^2+9
0*A*b^5*d^2*e^2*x^2-160*A*b^4*c*d^3*e*x^2+80*A*b^3*c^2*d^4*x^2-640*B*a^4*c*
e^4*x^2-480*B*a^3*b^2*e^4*x^2+1280*B*a^3*b*c*d*e^3*x^2-960*B*a^3*c^2*d^2*e^
2*x^2+960*B*a^2*b^3*d*e^3*x^2-1440*B*a^2*b^2*c*d^2*e^2*x^2+960*B*a^2*b*c^2*
d^3*e*x^2-540*B*a*b^4*d^2*e^2*x^2+800*B*a*b^3*c*d^3*e*x^2-480*B*a*b^2*c^2*d
^4*x^2+60*B*b^5*d^3*e*x^2-40*B*b^4*c*d^4*x^2+320*A*a^3*b^2*e^4*x-640*A*a^3*
b*c*d*e^3*x-480*A*a^2*b^3*d*e^3*x+1440*A*a^2*b^2*c*d^2*e^2*x-960*A*a^2*b*c^
2*d^3*e*x+480*A*a^2*c^3*d^4*x+120*A*a*b^4*d^2*e^2*x-480*A*a*b^3*c*d^3*e*x+2
40*A*a*b^2*c^2*d^4*x+20*A*b^5*d^3*e*x-10*A*b^4*c*d^4*x-640*B*a^4*b*e^4*x+12
80*B*a^3*b^2*d*e^3*x-960*B*a^3*b*c*d^2*e^2*x-720*B*a^2*b^3*d^2*e^2*x+960*B*
a^2*b^2*c*d^3*e*x-240*B*a^2*b*c^2*d^4*x+80*B*a*b^4*d^3*e*x-120*B*a*b^3*c*d^
4*x+5*B*b^5*d^4*x+128*A*a^4*b*e^4-256*A*a^4*c*d*e^3-192*A*a^3*b^2*d*e^3+576
*A*a^3*b*c*d^2*e^2-384*A*a^3*c^2*d^3*e+48*A*a^2*b^3*d^2*e^2-192*A*a^2*b^2*c
*d^3*e+240*A*a^2*b*c^2*d^4+8*A*a*b^4*d^3*e-40*A*a*b^3*c*d^4+3*A*b^5*d^4-256
*B*a^5*e^4+512*B*a^4*b*d*e^3-384*B*a^4*c*d^2*e^2-288*B*a^3*b^2*d^2*e^2+384*
B*a^3*b*c*d^3*e-96*B*a^3*c^2*d^4+32*B*a^2*b^3*d^3*e-48*B*a^2*b^2*c*d^4+2*B*
a*b^4*d^4)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^4/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 5.48, size = 7972, normalized size = 37.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^4)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((a*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(24*A*b
*c^2*e^4 + 48*B*a*c^2*e^4 - 30*B*b^2*c*e^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2
*e^2 + 96*B*b*c^2*d*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3
*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c
*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - x*((a*((16*c*e^3*(A*c*e - B
*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*
a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*
c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2
*c)*(4*a*c - b^2))))/c + (2*(24*A*b*c^2*e^4 + 48*B*a*c^2*e^4 - 30*B*b^2*c*e
^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2*e^2 + 96*B*b*c^2*d*e^3))/(15*c*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2
- b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c - (2*(4*B*b^3*e^4 - 16*A*a*c^2*e^4 - 2*A*b^2*c*e^4 + 32*B*c^3*d^3*e +
 48*A*c^3*d^2*e^2 + 16*B*a*b*c*e^4 - 64*B*a*c^2*d*e^3 - 8*B*b^2*c*d*e^3))/(
15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(24*A*b*c^2*e^4 + 48*B*a*c^2*e^4
 - 30*B*b^2*c*e^4 - 96*A*c^3*d*e^3 - 144*B*c^3*d^2*e^2 + 96*B*b*c^2*d*e^3))
/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*(4*B*b^3*e^4 - 16*A*a*c^2*e
^4 - 2*A*b^2*c*e^4 + 32*B*c^3*d^3*e + 48*A*c^3*d^2*e^2 + 16*B*a*b*c*e^4 - 6
4*B*a*c^2*d*e^3 - 8*B*b^2*c*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
))/(a + b*x + c*x^2)^(1/2) - ((a*((2*A*b*c^3*e^4 + 4*B*a*c^3*e^4 - 16*A*c^4
*d*e^3 - 2*B*b^2*c^2*e^4 - 24*B*c^4*d^2*e^2 + 8*B*b*c^3*d*e^3)/(15*c^4*(4*a
*c - b^2)) + (b*((2*e^3*(2*A*c*e - B*b*e + 8*B*c*d))/(15*c*(4*a*c - b^2)) -
 (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c + (4*B*a*e^4)/(15*c*(4*a*c - b^2))))/
c - x*((4*A*a*c^3*e^4 + 2*B*b^3*c*e^4 - 16*B*c^4*d^3*e - 2*A*b^2*c^2*e^4 -
24*A*c^4*d^2*e^2 + 12*B*b*c^3*d^2*e^2 - 8*B*b^2*c^2*d*e^3 - 6*B*a*b*c^2*e^4
 + 8*A*b*c^3*d*e^3 + 16*B*a*c^3*d*e^3)/(15*c^4*(4*a*c - b^2)) - (b*((2*A*b*
c^3*e^4 + 4*B*a*c^3*e^4 - 16*A*c^4*d*e^3 - 2*B*b^2*c^2*e^4 - 24*B*c^4*d^2*e
^2 + 8*B*b*c^3*d*e^3)/(15*c^4*(4*a*c - b^2)) + (b*((2*e^3*(2*A*c*e - B*b*e
+ 8*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c + (
4*B*a*e^4)/(15*c*(4*a*c - b^2))))/c + (a*((2*e^3*(2*A*c*e - B*b*e + 8*B*c*d
))/(15*c*(4*a*c - b^2)) - (4*B*b*e^4)/(15*c*(4*a*c - b^2))))/c) + (2*B*b^4*
e^4 + 4*B*c^4*d^4 - 2*A*b^3*c*e^4 + 16*A*c^4*d^3*e + 4*B*a^2*c^2*e^4 - 12*A
*b*c^3*d^2*e^2 + 8*A*b^2*c^2*d*e^3 - 24*B*a*c^3*d^2*e^2 + 12*B*b^2*c^2*d^2*
e^2 + 6*A*a*b*c^2*e^4 - 8*B*a*b^2*c*e^4 - 16*A*a*c^3*d*e^3 - 8*B*b*c^3*d^3*
e - 8*B*b^3*c*d*e^3 + 24*B*a*b*c^2*d*e^3)/(15*c^4*(4*a*c - b^2)))/(a + b*x
+ c*x^2)^(3/2) + (x*((a*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d
^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
)))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c
^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a
*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*A*c^5*d*e^3
- 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^3*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2))))/c + (b*((a*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*
c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48
*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))
/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*
c)*(4*a*c - b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*
e^4 + 48*B*c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a
*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d)
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))
/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*
c)*(4*a*c - b^2))))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*
e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c
^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*
(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(1
5*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^5*d^4 + 12*B*b^4*c*e
^4 + 32*A*c^5*d^3*e - 12*A*b^3*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*
e^4 + 48*A*b^2*c^3*d*e^3 - 288*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*
b^2*c^3*d^2*e^2 + 48*A*a*b*c^3*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^
3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*B*c^5*d^3*e - 48*A*a*
c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2
*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^3*(4*a*c^2 - b^2*
c)*(4*a*c - b^2))))/c + (2*(32*A*c^5*d^4 - 8*B*b^5*e^4 + 8*A*b^4*c*e^4 - 20
*B*b*c^4*d^4 - 8*A*a^2*c^3*e^4 - 20*A*a*b^2*c^2*e^4 - 4*B*a^2*b*c^2*e^4 + 4
8*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 - 32*B*a^2*c^3*d*e^3 + 32*B*b^2*c^3*
d^3*e + 48*A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 + 28*B*a*b^3*c*e^4 - 80
*A*b*c^4*d^3*e + 32*B*a*c^4*d^3*e + 32*B*b^4*c*d*e^3 + 48*A*a*b*c^3*d*e^3 +
 72*B*a*b*c^3*d^2*e^2 - 80*B*a*b^2*c^2*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4
*a*c - b^2)) - (b*(8*B*c^5*d^4 + 12*B*b^4*c*e^4 + 32*A*c^5*d^3*e - 12*A*b^3
*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*e^4 + 48*A*b^2*c^3*d*e^3 - 288
*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*b^2*c^3*d^2*e^2 + 48*A*a*b*c^3
*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*
(4*a*c - b^2))) + (a*((a*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^2
*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))
/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*
e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(15*(4*a*
c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*c^2 - b^
2*c)*(4*a*c - b^2))))/c - (b*((b*((b*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c
^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2))))/c - (2*(32*A*c^5*d*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*
c^5*d^2*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^4)/(
15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^3*(A*e + 4*B*d))/(15*(4*a*
c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^3*(A*e + 4*B*d))/(15*(4*a*c
^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^4)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2))))/c + (2*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 12*A*b^2*c^3*e^4 - 12*B*
b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3 + 48*B*a*b*c^3*e^4 - 19
2*B*a*c^4*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*A*c^5*d
*e^3 - 48*B*a*c^4*e^4 + 12*B*b^2*c^3*e^4 + 48*B*c^5*d^2*e^2))/(15*c^3*(4*a*
c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^5*d^4 + 12*B*b^4*c*e^4 + 32*A*c
^5*d^3*e - 12*A*b^3*c^2*e^4 + 48*B*a^2*c^3*e^4 - 60*B*a*b^2*c^2*e^4 + 48*A*
b^2*c^3*d*e^3 - 288*B*a*c^4*d^2*e^2 - 48*B*b^3*c^2*d*e^3 + 72*B*b^2*c^3*d^2
*e^2 + 48*A*a*b*c^3*e^4 - 192*A*a*c^4*d*e^3 + 192*B*a*b*c^3*d*e^3))/(15*c^2
*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(32*B*c^5*d^3*e - 48*A*a*c^4*e^4 + 1
2*A*b^2*c^3*e^4 - 12*B*b^3*c^2*e^4 + 48*A*c^5*d^2*e^2 + 48*B*b^2*c^3*d*e^3
+ 48*B*a*b*c^3*e^4 - 192*B*a*c^4*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2))))/c + (b*(32*A*c^5*d^4 - 8*B*b^5*e^4 + 8*A*b^4*c*e^4 - 20*B*b*c^4*d^
4 - 8*A*a^2*c^3*e^4 - 20*A*a*b^2*c^2*e^4 - 4*B*a^2*b*c^2*e^4 + 48*A*a*c^4*d
^2*e^2 - 32*A*b^3*c^2*d*e^3 - 32*B*a^2*c^3*d*e^3 + 32*B*b^2*c^3*d^3*e + 48*
A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*d^2*e^2 + 28*B*a*b^3*c*e^4 - 80*A*b*c^4*d^
3*e + 32*B*a*c^4*d^3*e + 32*B*b^4*c*d*e^3 + 48*A*a*b*c^3*d*e^3 + 72*B*a*b*c
^3*d^2*e^2 - 80*B*a*b^2*c^2*d*e^3))/(15*c^3*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
))/(a + b*x + c*x^2)^(3/2) + (x*((a*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(
5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*
a*c - b^2))))/c - (b*((b*((16*c*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2
- b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
))/c - (8*e^2*(5*B*b^2*e^2 + 12*B*c^2*d^2 - 2*A*b*c*e^2 - 14*B*a*c*e^2 + 8*
A*c^2*d*e - 8*B*b*c*d*e))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*e^3*(A
*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^
4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(256*A*c^5*d^4 + 16*B*b^5*e
^4 - 4*A*b^4*c*e^4 - 128*B*b*c^4*d^4 + 160*A*a^2*c^3*e^4 + 40*A*a*b^2*c^2*e
^4 - 64*B*a^2*b*c^2*e^4 + 192*A*a*c^4*d^2*e^2 - 32*A*b^3*c^2*d*e^3 + 640*B*
a^2*c^3*d*e^3 + 224*B*b^2*c^3*d^3*e + 336*A*b^2*c^3*d^2*e^2 - 48*B*b^3*c^2*
d^2*e^2 - 80*B*a*b^3*c*e^4 - 512*A*b*c^4*d^3*e + 128*B*a*c^4*d^3*e - 16*B*b
^4*c*d*e^3 - 384*A*a*b*c^3*d*e^3 - 576*B*a*b*c^3*d^2*e^2 + 160*B*a*b^2*c^2*
d*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) - (4*b*e^2*(5*B*b^2*e^2 +
12*B*c^2*d^2 - 2*A*b*c*e^2 - 14*B*a*c*e^2 + 8*A*c^2*d*e - 8*B*b*c*d*e))/(5*
c*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) - (a*((b*((16*c*e^3*(A*c*e - B*b*e + 4*
B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^4)/(5*(4*a*c^2 - b
^2*c)*(4*a*c - b^2))))/c - (8*e^2*(5*B*b^2*e^2 + 12*B*c^2*d^2 - 2*A*b*c*e^2
 - 14*B*a*c*e^2 + 8*A*c^2*d*e - 8*B*b*c*d*e))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2)) - (8*b*e^3*(A*c*e - B*b*e + 4*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
b^2)) + (16*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(256*A*
c^5*d^4 + 16*B*b^5*e^4 - 4*A*b^4*c*e^4 - 128*B*b*c^4*d^4 + 160*A*a^2*c^3*e^
4 + 40*A*a*b^2*c^2*e^4 - 64*B*a^2*b*c^2*e^4 + 192*A*a*c^4*d^2*e^2 - 32*A*b^
3*c^2*d*e^3 + 640*B*a^2*c^3*d*e^3 + 224*B*b^2*c^3*d^3*e + 336*A*b^2*c^3*d^2
*e^2 - 48*B*b^3*c^2*d^2*e^2 - 80*B*a*b^3*c*e^4 - 512*A*b*c^4*d^3*e + 128*B*
a*c^4*d^3*e - 16*B*b^4*c*d*e^3 - 384*A*a*b*c^3*d*e^3 - 576*B*a*b*c^3*d^2*e^
2 + 160*B*a*b^2*c^2*d*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a
+ b*x + c*x^2)^(1/2) - (x*((b*((a*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5)
)/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*
e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/
(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*((b*((
b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/
(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 -
b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4
)/(5*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*
a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2*d^2*e*(3*
A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d))/(5*(4*a
*c^2 - b^2*c))))/c + (2*c^2*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c^2 - b^2*c
) + (4*b*c*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c))))/c + (a*((b*((b*((
2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(
4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*
c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5
*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^
2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2*d^2*e*(3*A*e
+ 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2
 - b^2*c))))/c - (b*c*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c^2 - b^2*c) - (4
*A*c^2*d^4)/(5*(4*a*c^2 - b^2*c))) + (a*((a*((b*((2*c^2*((2*A*e^4)/5 + (8*B
*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (
b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e
+ 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c -
 (b*((b*((b*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(4*a*c^2 - b^2*c) - (2*B
*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^4)/5 + (8*B*d*e^3)/5))/(
4*a*c^2 - b^2*c) - (8*c^2*d*e^2*(2*A*e + 3*B*d))/(5*(4*a*c^2 - b^2*c)) + (4
*B*a*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c - (a*((2*c^2*((2*A*e^4)/5 + (8*B*d*e^
3)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^4)/(5*(4*a*c^2 - b^2*c))))/c + (8*c^2
*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c)) + (4*b*c*d*e^2*(2*A*e + 3*B*d
))/(5*(4*a*c^2 - b^2*c))))/c + (2*c^2*((2*B*d^4)/5 + (8*A*d^3*e)/5))/(4*a*c
^2 - b^2*c) + (4*b*c*d^2*e*(3*A*e + 2*B*d))/(5*(4*a*c^2 - b^2*c))))/c - (2*
A*b*c*d^4)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**4/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2490 $\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=264

$$-\frac{16(-2ae+x(2cd-be)+bd)\left(-8b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(aAe^2+3aBde+4Acd^2\right)+b^2e(3Ae+5Bd)\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-2($$

```
[Out] -2/5*(A*b-2*a*B-(-2*A*c+B*b)*x)*(e*x+d)^3/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)-
4/15*(e*x+d)^2*(4*a*A*c*e+b^2*(3*A*e+4*B*d)-8*b*(A*c*d+B*a*e)-(b^2*B*e-8*b*
c*(A*e+B*d)+4*c*(4*A*c*d+3*B*a*e))*x)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)-16
/15*(b^2*e*(3*A*e+5*B*d)+4*c*(A*a*e^2+4*A*c*d^2+3*B*a*d*e)-8*b*(2*A*c*d*e+B
*a*e^2+B*c*d^2))*(b*d-2*a*e+(-b*e+2*c*d)*x)/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1
/2)
```

Rubi **[A]** time = 0.36, antiderivative size = 264, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = {820, 804, 636}

$$-\frac{16(-2ae+x(2cd-be)+bd)\left(-8b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(aAe^2+3aBde+4Acd^2\right)+b^2e(3Ae+5Bd)\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-2($$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^3)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (4*(d + e*x)^2*(4*a*A*c*e + b^2*(4*B*d + 3*A*e) - 8*b*(A*
c*d + a*B*e) - (b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + 3*a*B*e))*x))/
(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) - (16*(b^2*e*(5*B*d + 3*A*e) +
 4*c*(4*A*c*d^2 + 3*a*B*d*e + a*A*e^2) - 8*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2
))*(b*d - 2*a*e + (2*c*d - b*e)*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*x^
2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^3}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{2\int \frac{(d+ex)^2(-4bBd+8Acd-3Abe+6aBe-(bB-2Ac)ex)}{\left(a+bx+cx^2\right)^{5/2}}}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{4(d+ex)^2\left(4aAce+b^2(4Bd+3Ae)-8b(\right.}{15\left(b^2\right.}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^3}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{4(d+ex)^2\left(4aAce+b^2(4Bd+3Ae)-8b(\right.}{15\left(b^2\right.}$$

Mathematica [B] time = 1.62, size = 963, normalized size = 3.65

$$\frac{2\left(A\left(-3\left(d^3+5exd^2+15e^2x^2d-5e^3x^3\right)b^5+\left(10cx\left(d^3+12exd^2-27e^2x^2d+2e^3x^3\right)-6ae\left(d^2+10exd-15e^2\right.\right.\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(A*(-3*b^5*(d^3 + 5*d^2*e*x + 15*d*e^2*x^2 - 5*e^3*x^3) - 32*c*(-2*a^4*e
^3 + 8*c^4*d^3*x^5 + 15*a^2*c^2*d*x*(d^2 + e^2*x^2) + 2*a*c^3*d*x^3*(10*d^2
 + 3*e^2*x^2) - a^3*c*e*(9*d^2 + 5*e^2*x^2)) + 16*b*c*(-15*a^2*c*(d - e*x)^
3 + 8*c^3*d^2*x^4*(-5*d + 3*e*x) + 2*a^3*e^2*(-9*d + 5*e*x) + 6*a*c^2*x^2*(
-10*d^3 + 10*d^2*e*x - 5*d*e^2*x^2 + e^3*x^3)) + 48*b^2*(a^3*e^3 + c^3*d*x^
3*(-10*d^2 + 20*d*e*x - 3*e^2*x^2) + a^2*c*e*(3*d^2 - 15*d*e*x + 5*e^2*x^2)
 + 5*a*c^2*x*(-d^3 + 6*d^2*e*x - 3*d*e^2*x^2 + e^3*x^3)) + b^4*(-6*a*e*(d^2
 + 10*d*e*x - 15*e^2*x^2) + 10*c*x*(d^3 + 12*d^2*e*x - 27*d*e^2*x^2 + 2*e^3
*x^3)) - 8*b^3*(3*a^2*e^2*(d - 5*e*x) + c^2*x^2*(10*d^3 - 90*d^2*e*x + 45*d
*e^2*x^2 - e^3*x^3) - 5*a*c*(d^3 + 9*d^2*e*x - 15*d*e^2*x^2 + 5*e^3*x^3)))
+ B*(64*a^4*e^2*(3*c*d - 2*b*e) + 16*a^3*(b^2*e^2*(9*d - 20*e*x) - 2*b*c*e*
(9*d^2 - 15*d*e*x + 10*e^2*x^2) + 6*c^2*(d^3 + 5*d*e^2*x^2)) - 24*a^2*(10*b
*c^2*x*(-d + e*x)^3 + 4*c^3*e*x^3*(5*d^2 + e^2*x^2) + b^3*e*(d^2 - 15*d*e*x
 + 10*e^2*x^2) - 2*b^2*c*(d^3 - 15*d^2*e*x + 15*d*e^2*x^2 - 10*e^3*x^3)) +
b*x*(128*c^4*d^3*x^4 + 16*b*c^3*d^2*x^3*(20*d - 9*e*x) + 24*b^2*c^2*d*x^2*(
10*d^2 - 15*d*e*x + e^2*x^2) - 5*b^4*(d^3 + 9*d^2*e*x - 9*d*e^2*x^2 - e^3*x
^3) + 2*b^3*c*x*(20*d^3 - 135*d^2*e*x + 30*d*e^2*x^2 + e^3*x^3)) - 2*a*(96*
c^4*d^2*e*x^5 - 16*b*c^3*d*x^3*(10*d^2 - 15*d*e*x + 9*e^2*x^2) + 24*b^2*c^2
*x^2*(-10*d^3 + 15*d^2*e*x - 15*d*e^2*x^2 + e^3*x^3) + 60*b^3*c*x*(-d^3 + 5
*d^2*e*x - 5*d*e^2*x^2 + e^3*x^3) + b^4*(d^3 + 30*d^2*e*x - 135*d*e^2*x^2 +
 20*e^3*x^3)))))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas [B] time = 128.11, size = 1370, normalized size = 5.19

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(2*(64*(B*b*c^4 - 2*A*c^5)*d^3 - 24*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4
)*d^2*e + 12*(B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*d*e^2 + (B*b
^4*c - 48*(B*a^2 - A*a*b)*c^3 - 4*(6*B*a*b^2 - A*b^3)*c^2)*e^3)*x^5 + 5*(64
*(B*b^2*c^3 - 2*A*b*c^4)*d^3 - 24*(3*B*b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d
^2*e + 12*(B*b^4*c - 8*A*a*b*c^3 + 6*(2*B*a*b^2 - A*b^3)*c^2)*d*e^2 + (B*b^
5 - 48*(B*a^2*b - A*a*b^2)*c^2 - 4*(6*B*a*b^3 - A*b^4)*c)*e^3)*x^4 - (2*B*a
*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 + 5*A*a*b^3)
*c)*d^3 - 6*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*(2*B*a^3*b - A*a^2*b
^2)*c)*d^2*e + 24*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4 - 3*A*a^3*b)*c)*d*e
^2 - 16*(8*B*a^4*b - 3*A*a^3*b^2 - 4*A*a^4*c)*e^3 + 5*(16*(3*B*b^3*c^2 - 8*
A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^3 - 6*(9*B*b^4*c + 16*(B*a^2 - 2*A*a
*b)*c^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d^2*e + 3*(3*B*b^5 - 32*A*a^2*c^3 + 48*
(B*a^2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*d*e^2 - (8*B*a*b^4 -
3*A*b^5 - 48*A*a^2*b*c^2 + 8*(12*B*a^2*b^2 - 5*A*a*b^3)*c)*e^3)*x^3 + 5*(8*
(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^3 - 3*(3*B*b^5 + 48*
(B*a^2*b - 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d^2*e + 3*(18*B*a*b^4
- 3*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^3)*c)*d
*e^2 - 2*(24*B*a^2*b^3 - 9*A*a*b^4 - 16*A*a^3*c^2 + 8*(4*B*a^3*b - 3*A*a^2*
b^2)*c)*e^3)*x^2 - 5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 -
2*(12*B*a*b^3 + A*b^4)*c)*d^3 + 3*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*
(2*B*a^2*b^2 - A*a*b^3)*c)*d^2*e - 12*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b
 - 3*A*a^2*b^2)*c)*d*e^2 + 8*(8*B*a^3*b^2 - 3*A*a^2*b^3 - 4*A*a^3*b*c)*e^3)
*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6
*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*
c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b
^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7
*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*
a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7
- 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [B] time = 0.36, size = 1437, normalized size = 5.44

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(((((2*(64*B*b*c^4*d^3 - 128*A*c^5*d^3 - 72*B*b^2*c^3*d^2*e - 96*B*a*c
^4*d^2*e + 192*A*b*c^4*d^2*e + 12*B*b^3*c^2*d*e^2 + 144*B*a*b*c^3*d*e^2 - 7
2*A*b^2*c^3*d*e^2 - 96*A*a*c^4*d*e^2 + B*b^4*c*e^3 - 24*B*a*b^2*c^2*e^3 + 4
*A*b^3*c^2*e^3 - 48*B*a^2*c^3*e^3 + 48*A*a*b*c^3*e^3)*x/(b^6 - 12*a*b^4*c +
 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(64*B*b^2*c^3*d^3 - 128*A*b*c^4*d^3 - 72*
B*b^3*c^2*d^2*e - 96*B*a*b*c^3*d^2*e + 192*A*b^2*c^3*d^2*e + 12*B*b^4*c*d*e
^2 + 144*B*a*b^2*c^2*d*e^2 - 72*A*b^3*c^2*d*e^2 - 96*A*a*b*c^3*d*e^2 + B*b^
5*e^3 - 24*B*a*b^3*c*e^3 + 4*A*b^4*c*e^3 - 48*B*a^2*b*c^2*e^3 + 48*A*a*b^2*
c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(48*B*b^3*
c^2*d^3 + 64*B*a*b*c^3*d^3 - 96*A*b^2*c^3*d^3 - 128*A*a*c^4*d^3 - 54*B*b^4*
c*d^2*e - 144*B*a*b^2*c^2*d^2*e + 144*A*b^3*c^2*d^2*e - 96*B*a^2*c^3*d^2*e
+ 192*A*a*b*c^3*d^2*e + 9*B*b^5*d*e^2 + 120*B*a*b^3*c*d*e^2 - 54*A*b^4*c*d*
e^2 + 144*B*a^2*b*c^2*d*e^2 - 144*A*a*b^2*c^2*d*e^2 - 96*A*a^2*c^3*d*e^2 -
8*B*a*b^4*e^3 + 3*A*b^5*e^3 - 96*B*a^2*b^2*c*e^3 + 40*A*a*b^3*c*e^3 + 48*A*
a^2*b*c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B
*b^4*c*d^3 + 96*B*a*b^2*c^2*d^3 - 16*A*b^3*c^2*d^3 - 192*A*a*b*c^3*d^3 - 9*
B*b^5*d^2*e - 120*B*a*b^3*c*d^2*e + 24*A*b^4*c*d^2*e - 144*B*a^2*b*c^2*d^2*
e + 288*A*a*b^2*c^2*d^2*e + 54*B*a*b^4*d*e^2 - 9*A*b^5*d*e^2 + 144*B*a^2*b^
2*c*d*e^2 - 120*A*a*b^3*c*d*e^2 + 96*B*a^3*c^2*d*e^2 - 144*A*a^2*b*c^2*d*e^
2 - 48*B*a^2*b^3*e^3 + 18*A*a*b^4*e^3 - 64*B*a^3*b*c*e^3 + 48*A*a^2*b^2*c*e
^3 + 32*A*a^3*c^2*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x
- 5*(B*b^5*d^3 - 24*B*a*b^3*c*d^3 - 2*A*b^4*c*d^3 - 48*B*a^2*b*c^2*d^3 + 48
*A*a*b^2*c^2*d^3 + 96*A*a^2*c^3*d^3 + 12*B*a*b^4*d^2*e + 3*A*b^5*d^2*e + 14
4*B*a^2*b^2*c*d^2*e - 72*A*a*b^3*c*d^2*e - 144*A*a^2*b*c^2*d^2*e - 72*B*a^2
*b^3*d*e^2 + 12*A*a*b^4*d*e^2 - 96*B*a^3*b*c*d*e^2 + 144*A*a^2*b^2*c*d*e^2
+ 64*B*a^3*b^2*e^3 - 24*A*a^2*b^3*e^3 - 32*A*a^3*b*c*e^3)/(b^6 - 12*a*b^4*c
 + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - (2*B*a*b^4*d^3 + 3*A*b^5*d^3 - 48*B*a^
2*b^2*c*d^3 - 40*A*a*b^3*c*d^3 - 96*B*a^3*c^2*d^3 + 240*A*a^2*b*c^2*d^3 + 2
4*B*a^2*b^3*d^2*e + 6*A*a*b^4*d^2*e + 288*B*a^3*b*c*d^2*e - 144*A*a^2*b^2*c
*d^2*e - 288*A*a^3*c^2*d^2*e - 144*B*a^3*b^2*d*e^2 + 24*A*a^2*b^3*d*e^2 - 1
92*B*a^4*c*d*e^2 + 288*A*a^3*b*c*d*e^2 + 128*B*a^4*b*e^3 - 48*A*a^3*b^2*e^3
 - 64*A*a^4*c*e^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2
 + b*x + a)^(5/2)
```

maple [**B**] time = 0.02, size = 1502, normalized size = 5.69

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(96*A*a*b*c^3*e^3*x^5-192*A*a*c^4*d*e^2*x^5+8*A*b
^3*c^2*e^3*x^5-144*A*b^2*c^3*d*e^2*x^5+384*A*b*c^4*d^2*e*x^5-256*A*c^5*d^3*
x^5-96*B*a^2*c^3*e^3*x^5-48*B*a*b^2*c^2*e^3*x^5+288*B*a*b*c^3*d*e^2*x^5-192
*B*a*c^4*d^2*e*x^5+2*B*b^4*c*e^3*x^5+24*B*b^3*c^2*d*e^2*x^5-144*B*b^2*c^3*d
^2*e*x^5+128*B*b*c^4*d^3*x^5+240*A*a*b^2*c^2*e^3*x^4-480*A*a*b*c^3*d*e^2*x^
4+20*A*b^4*c*e^3*x^4-360*A*b^3*c^2*d*e^2*x^4+960*A*b^2*c^3*d^2*e*x^4-640*A*
b*c^4*d^3*x^4-240*B*a^2*b*c^2*e^3*x^4-120*B*a*b^3*c*e^3*x^4+720*B*a*b^2*c^2
*d*e^2*x^4-480*B*a*b*c^3*d^2*e*x^4+5*B*b^5*e^3*x^4+60*B*b^4*c*d*e^2*x^4-360
*B*b^3*c^2*d^2*e*x^4+320*B*b^2*c^3*d^3*x^4+240*A*a^2*b*c^2*e^3*x^3-480*A*a^
2*c^3*d*e^2*x^3+200*A*a*b^3*c*e^3*x^3-720*A*a*b^2*c^2*d*e^2*x^3+960*A*a*b*c
^3*d^2*e*x^3-640*A*a*c^4*d^3*x^3+15*A*b^5*e^3*x^3-270*A*b^4*c*d*e^2*x^3+720
*A*b^3*c^2*d^2*e*x^3-480*A*b^2*c^3*d^3*x^3-480*B*a^2*b^2*c*e^3*x^3+720*B*a^
2*b*c^2*d*e^2*x^3-480*B*a^2*c^3*d^2*e*x^3-40*B*a*b^4*e^3*x^3+600*B*a*b^3*c*
d*e^2*x^3-720*B*a*b^2*c^2*d^2*e*x^3+320*B*a*b*c^3*d^3*x^3+45*B*b^5*d*e^2*x^
3-270*B*b^4*c*d^2*e*x^3+240*B*b^3*c^2*d^3*x^3+160*A*a^3*c^2*e^3*x^2+240*A*a
^2*b^2*c*e^3*x^2-720*A*a^2*b*c^2*d*e^2*x^2+90*A*a*b^4*e^3*x^2-600*A*a*b^3*c
*d*e^2*x^2+1440*A*a*b^2*c^2*d^2*e*x^2-960*A*a*b*c^3*d^3*x^2-45*A*b^5*d*e^2*
x^2+120*A*b^4*c*d^2*e*x^2-80*A*b^3*c^2*d^3*x^2-320*B*a^3*b*c*e^3*x^2+480*B*
a^3*c^2*d*e^2*x^2-240*B*a^2*b^3*e^3*x^2+720*B*a^2*b^2*c*d*e^2*x^2-720*B*a^2
*b*c^2*d^2*e*x^2+270*B*a*b^4*d*e^2*x^2-600*B*a*b^3*c*d^2*e*x^2+480*B*a*b^2*
c^2*d^3*x^2-45*B*b^5*d^2*e*x^2+40*B*b^4*c*d^3*x^2+160*A*a^3*b*c*e^3*x+120*A
*a^2*b^3*e^3*x-720*A*a^2*b^2*c*d*e^2*x+720*A*a^2*b*c^2*d^2*e*x-480*A*a^2*c^
3*d^3*x-60*A*a*b^4*d*e^2*x+360*A*a*b^3*c*d^2*e*x-240*A*a*b^2*c^2*d^3*x-15*A
*b^5*d^2*e*x+10*A*b^4*c*d^3*x-320*B*a^3*b^2*e^3*x+480*B*a^3*b*c*d*e^2*x+360
*B*a^2*b^3*d*e^2*x-720*B*a^2*b^2*c*d^2*e*x+240*B*a^2*b*c^2*d^3*x-60*B*a*b^4
*d^2*e*x+120*B*a*b^3*c*d^3*x-5*B*b^5*d^3*x+64*A*a^4*c*e^3+48*A*a^3*b^2*e^3-
288*A*a^3*b*c*d*e^2+288*A*a^3*c^2*d^2*e-24*A*a^2*b^3*d*e^2+144*A*a^2*b^2*c*
d^2*e-240*A*a^2*b*c^2*d^3-6*A*a*b^4*d^2*e+40*A*a*b^3*c*d^3-3*A*b^5*d^3-128*
B*a^4*b*e^3+192*B*a^4*c*d*e^2+144*B*a^3*b^2*d*e^2-288*B*a^3*b*c*d^2*e+96*B*
a^3*c^2*d^3-24*B*a^2*b^3*d^2*e+48*B*a^2*b^2*c*d^3-2*B*a*b^4*d^3)/(64*a^3*c^
3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^3/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
```

```
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 4.43, size = 4090, normalized size = 15.49

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^3)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((2*A*b*c^2*e^3 + 4*B*a*c^2*e^3 - 2*B*b^2*c*e^3 - 12*A*c^3*d*e^2 - 12*B*
c^3*d^2*e + 6*B*b*c^2*d*e^2)/(15*c^3*(4*a*c - b^2)) + (b*((2*e^2*(2*A*c*e -
 B*b*e + 6*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^3)/(15*c*(4*a*c - b^2)))
)/c + (4*B*a*e^3)/(15*c*(4*a*c - b^2))) + (2*B*b^3*e^3 - 4*B*c^3*d^3 + 4*A*
a*c^2*e^3 - 2*A*b^2*c*e^3 - 12*A*c^3*d^2*e - 6*B*a*b*c*e^3 + 6*A*b*c^2*d*e^
2 + 12*B*a*c^2*d*e^2 + 6*B*b*c^2*d^2*e - 6*B*b^2*c*d*e^2)/(15*c^3*(4*a*c -
b^2)) + (a*((2*e^2*(2*A*c*e - B*b*e + 6*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B
*b*e^3)/(15*c*(4*a*c - b^2))))/c)/(a + b*x + c*x^2)^(3/2) - (x*((b*((16*c*e
^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*
c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(2*B*b^2*e^3 + 16*B*a*c
*e^3 - 24*A*c^2*d*e^2 - 24*B*c^2*d^2*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2
)) - (8*b*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)
) + (16*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((16*c*e^2*(A*
c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^3)
/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(2*B*b^2*e^3 + 16*B*a*c*e^3 -
 24*A*c^2*d*e^2 - 24*B*c^2*d^2*e))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/
(a + b*x + c*x^2)^(1/2) + (x*((b*((b*((b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a
*c - b^2))))/c - (2*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*
B*b^2*c^2*e^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(
15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*
c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c
^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
 b^2))))/c + (2*(8*B*c^4*d^3 - 48*A*a*c^3*e^3 - 12*B*b^3*c*e^3 + 24*A*c^4*d
^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2*d*e^2 + 48*B*a*b*c^2*e^3 - 144*B*a*c
^3*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (b*(24*A*c^4*d*e^2 - 48
*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e^3))/(15*c^2*(4*a*c^2 - b^2*c
)*(4*a*c - b^2))))/c - (a*((b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^
2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))
)/c - (2*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e
^3))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(15*(4*a*c^2
 - b^2*c)*(4*a*c - b^2)) - (8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c
)*(4*a*c - b^2))))/c + (2*(32*A*c^4*d^3 + 8*B*b^4*e^3 - 8*A*b^3*c*e^3 - 20*
B*b*c^3*d^3 - 8*B*a^2*c^2*e^3 + 24*A*b^2*c^2*d*e^2 + 24*B*b^2*c^2*d^2*e + 1
2*A*a*b*c^2*e^3 - 20*B*a*b^2*c*e^3 + 24*A*a*c^3*d*e^2 - 60*A*b*c^3*d^2*e +
24*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 + 36*B*a*b*c^2*d*e^2))/(15*c*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2)) - (b*(8*B*c^4*d^3 - 48*A*a*c^3*e^3 - 12*B*b^3*c*e^3
+ 24*A*c^4*d^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2*d*e^2 + 48*B*a*b*c^2*e^3
 - 144*B*a*c^3*d*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((b*(
(b*((16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*
b*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (2*(24*A*c^4*d*e^2 -
48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b^2*c^2*e^3))/(15*c*(4*a*c^2 - b^2*c
)*(4*a*c - b^2)) + (16*B*a*c^2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) -
(8*b*c^2*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (a*(
(16*c^3*e^2*(A*e + 3*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^
2*e^3)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*(8*B*c^4*d^3 - 48*A*a*
c^3*e^3 - 12*B*b^3*c*e^3 + 24*A*c^4*d^2*e + 12*A*b^2*c^2*e^3 + 36*B*b^2*c^2
*d*e^2 + 48*B*a*b*c^2*e^3 - 144*B*a*c^3*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*
a*c - b^2)) + (b*(24*A*c^4*d*e^2 - 48*B*a*c^3*e^3 + 24*B*c^4*d^2*e + 12*B*b
^2*c^2*e^3))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(32*A*c^4*d^
3 + 8*B*b^4*e^3 - 8*A*b^3*c*e^3 - 20*B*b*c^3*d^3 - 8*B*a^2*c^2*e^3 + 24*A*b
^2*c^2*d*e^2 + 24*B*b^2*c^2*d^2*e + 12*A*a*b*c^2*e^3 - 20*B*a*b^2*c*e^3 + 2
4*A*a*c^3*d*e^2 - 60*A*b*c^3*d^2*e + 24*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 +
36*B*a*b*c^2*d*e^2))/(15*c^2*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c
*x^2)^(3/2) + (x*((a*((b*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 -
b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A*e^3)/5 + (6*B
*d*e^2)/5))/(4*a*c^2 - b^2*c) - (12*c^2*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*
c)) + (4*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*((2*c^2*((2*B*d^3)/5 + (
6*A*d^2*e)/5))/(4*a*c^2 - b^2*c) - (a*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5)
)/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c + (b*((b*((2*
c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*
a*c^2 - b^2*c))))/c - (b*c*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c)
 - (12*c^2*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*c)) + (4*B*a*c*e^3)/(5*(4*a*c
^2 - b^2*c))))/c + (6*b*c*d*e*(A*e + B*d))/(5*(4*a*c^2 - b^2*c))))/c + (b*c
*((2*B*d^3)/5 + (6*A*d^2*e)/5))/(4*a*c^2 - b^2*c) + (4*A*c^2*d^3)/(5*(4*a*c
^2 - b^2*c))) - (a*((2*c^2*((2*B*d^3)/5 + (6*A*d^2*e)/5))/(4*a*c^2 - b^2*c)
 - (a*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e
^3)/(5*(4*a*c^2 - b^2*c))))/c + (b*((b*((2*c^2*((2*A*e^3)/5 + (6*B*d*e^2)/5
))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*A
*e^3)/5 + (6*B*d*e^2)/5))/(4*a*c^2 - b^2*c) - (12*c^2*d*e*(A*e + B*d))/(5*(
4*a*c^2 - b^2*c)) + (4*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c))))/c + (6*b*c*d*e*(A
*e + B*d))/(5*(4*a*c^2 - b^2*c))))/c + (2*A*b*c*d^3)/(5*(4*a*c^2 - b^2*c)))
/(a + b*x + c*x^2)^(5/2) + (x*((2*(256*A*c^4*d^3 - 4*B*b^4*e^3 - 8*A*b^3*c*
e^3 - 128*B*b*c^3*d^3 + 160*B*a^2*c^2*e^3 + 168*A*b^2*c^2*d*e^2 + 168*B*b^2
*c^2*d^2*e - 96*A*a*b*c^2*e^3 + 40*B*a*b^2*c*e^3 + 96*A*a*c^3*d*e^2 - 384*A
*b*c^3*d^2*e + 96*B*a*c^3*d^2*e - 24*B*b^3*c*d*e^2 - 288*B*a*b*c^2*d*e^2))/
(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (b*((16*c*e^2*(A*c*e - B*b*e + 3*B
*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c*e^3)/(5*(4*a*c^2 - b^
2*c)*(4*a*c - b^2))))/c - (8*b*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2)) + (16*B*a*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
) + (a*((16*c*e^2*(A*c*e - B*b*e + 3*B*c*d))/(5*(4*a*c^2 - b^2*c)*(4*a*c -
b^2)) - (8*B*b*c*e^3)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(256*A*c
^4*d^3 - 4*B*b^4*e^3 - 8*A*b^3*c*e^3 - 128*B*b*c^3*d^3 + 160*B*a^2*c^2*e^3
+ 168*A*b^2*c^2*d*e^2 + 168*B*b^2*c^2*d^2*e - 96*A*a*b*c^2*e^3 + 40*B*a*b^2
*c*e^3 + 96*A*a*c^3*d*e^2 - 384*A*b*c^3*d^2*e + 96*B*a*c^3*d^2*e - 24*B*b^3
*c*d*e^2 - 288*B*a*b*c^2*d*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/
(a + b*x + c*x^2)^(1/2)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**3/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2491 $\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=324

$$-\frac{2(d+ex)^2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}+\frac{8(b+2cx)\,(4bc\,(3aBe^2+8Acde+4Bcd^2)-8c^2\,(aAe^2+2aBde+4Acd}{15c\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}$$

```
[Out] -2/5*(A*b-2*a*B-(-2*A*c+B*b)*x)*(e*x+d)^2/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)-
8/15*(4*a*c*e*(3*A*c*d+B*a*e)-4*b*c*(A*a*e^2+A*c*d^2+2*B*a*d*e)+b^2*(A*c*d*
e+B*a*e^2+2*B*c*d^2)+(b^3*B*e^2-3*b^2*c*e*(A*e+B*d)+4*b*c^2*d*(2*A*e+B*d)-4
*c^2*(-A*a*e^2+2*A*c*d^2+B*a*d*e))*x)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)+
8/15*(b^3*B*e^2-6*b^2*c*e*(A*e+2*B*d)-8*c^2*(A*a*e^2+4*A*c*d^2+2*B*a*d*e)+4
*b*c*(8*A*c*d*e+3*B*a*e^2+4*B*c*d^2))*(2*c*x+b)/c/(-4*a*c+b^2)^3/(c*x^2+b*x
+a)^(1/2)
```

Rubi [A] time = 0.39, antiderivative size = 324, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.111$, Rules used = $\{820, 777, 613\}$

$$\frac{8(b+2cx)\left(4bc\left(3aBe^2+8Acde+4Bcd^2\right)-8c^2\left(aAe^2+2aBde+4Acd^2\right)-6b^2ce(Ae+2Bd)+b^3Be^2\right)}{15c\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-8\,(x\,(-4c$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*(d + e*x)^2)/(5*(b^2 - 4*a*c)*(a + b*x
+ c*x^2)^(5/2)) - (8*(4*a*c*e*(3*A*c*d + a*B*e) - 4*b*c*(A*c*d^2 + 2*a*B*d*
e + a*A*e^2) + b^2*(2*B*c*d^2 + A*c*d*e + a*B*e^2) + (b^3*B*e^2 - 3*b^2*c*e
*(B*d + A*e) + 4*b*c^2*d*(B*d + 2*A*e) - 4*c^2*(2*A*c*d^2 + a*B*d*e - a*A*e
^2))*x))/(15*c*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) + (8*(b^3*B*e^2 - 6
*b^2*c*e*(2*B*d + A*e) - 8*c^2*(4*A*c*d^2 + 2*a*B*d*e + a*A*e^2) + 4*b*c*(4
*B*c*d^2 + 8*A*c*d*e + 3*a*B*e^2))*(b + 2*c*x))/(15*c*(b^2 - 4*a*c)^3*Sqrt[
a + b*x + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^2}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{2\int \frac{(d+ex)(2(4Acd+2aBe-b(2Bd+Ae))-2(bB-2Ac)ex)}{\left(a+bx+cx^2\right)^{5/2}}}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{8\big(4ace(3Acd+aBe)-4bc\big(Acd^2+2aBd}{}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)(d+ex)^2}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{8\big(4ace(3Acd+aBe)-4bc\big(Acd^2+2aBd}{}$$

Mathematica [B] time = 1.41, size = 711, normalized size = 2.19

$$\frac{2B\big(64a^4ce^2+16a^3\big(3b^2e^2+2bce(5ex-6d)+2c^2\big(3d^2+5e^2x^2\big)\big)-8a^2\big(b^3e(2d-15ex)-6b^2c\big(d^2-10dex+5}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*A*(b^5*(3*d^2 + 10*d*e*x + 15*e^2*x^2) + 2*b^4*(2*a*e*(d + 5*e*x) - 5*c
*x*(d^2 + 8*d*e*x - 9*e^2*x^2)) + 32*c^2*(-6*a^3*d*e + 8*c^3*d^2*x^5 + 5*a^
2*c*x*(3*d^2 + e^2*x^2) + 2*a*c^2*x^3*(10*d^2 + e^2*x^2)) + 16*b*c*(6*a^3*e
^2 + 8*c^3*d*x^4*(5*d - 2*e*x) + 15*a^2*c*(d - e*x)^2 + 10*a*c^2*x^2*(6*d^2
 - 4*d*e*x + e^2*x^2)) + 16*b^2*c*(3*a^2*e*(-2*d + 5*e*x) + 15*a*c*x*(d^2 -
 4*d*e*x + e^2*x^2) + c^2*x^3*(30*d^2 - 40*d*e*x + 3*e^2*x^2)) + 8*b^3*(a^2
*e^2 - 5*a*c*(d^2 + 6*d*e*x - 5*e^2*x^2) + 5*c^2*x^2*(2*d^2 - 12*d*e*x + 3*
e^2*x^2))) + 2*B*(64*a^4*c*e^2 + b*x*(128*c^4*d^2*x^4 + 32*b*c^3*d*x^3*(10*
d - 3*e*x) - 5*b^4*(d^2 + 6*d*e*x - 3*e^2*x^2) + 8*b^2*c^2*x^2*(30*d^2 - 30
*d*e*x + e^2*x^2) + 20*b^3*c*x*(2*d^2 - 9*d*e*x + e^2*x^2)) + 16*a^3*(3*b^2
*e^2 + 2*b*c*e*(-6*d + 5*e*x) + 2*c^2*(3*d^2 + 5*e^2*x^2)) - 8*a^2*(40*c^3*
d*e*x^3 + b^3*e*(2*d - 15*e*x) - 30*b*c^2*x*(d - e*x)^2 - 6*b^2*c*(d^2 - 10
*d*e*x + 5*e^2*x^2)) - 2*a*(64*c^4*d*e*x^5 + b^4*(d^2 + 20*d*e*x - 45*e^2*x
^2) - 120*b^2*c^2*x^2*(2*d^2 - 2*d*e*x + e^2*x^2) - 16*b*c^3*x^3*(10*d^2 -
10*d*e*x + 3*e^2*x^2) - 20*b^3*c*x*(3*d^2 - 10*d*e*x + 5*e^2*x^2))))/(15*(b
^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas [B] time = 161.64, size = 1095, normalized size = 3.38

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] 2/15*(8*(16*(B*b*c^4 - 2*A*c^5)*d^2 - 4*(3*B*b^2*c^3 + 4*(B*a - 2*A*b)*c^4)
*d*e + (B*b^3*c^2 - 8*A*a*c^4 + 6*(2*B*a*b - A*b^2)*c^3)*e^2)*x^5 + 20*(16*
(B*b^2*c^3 - 2*A*b*c^4)*d^2 - 4*(3*B*b^3*c^2 + 4*(B*a*b - 2*A*b^2)*c^3)*d*e
 + (B*b^4*c - 8*A*a*b*c^3 + 6*(2*B*a*b^2 - A*b^3)*c^2)*e^2)*x^4 + 5*(16*(3*
B*b^3*c^2 - 8*A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*d^2 - 4*(9*B*b^4*c + 16*
(B*a^2 - 2*A*a*b)*c^3 + 24*(B*a*b^2 - A*b^3)*c^2)*d*e + (3*B*b^5 - 32*A*a^2
*c^3 + 48*(B*a^2*b - A*a*b^2)*c^2 + 2*(20*B*a*b^3 - 9*A*b^4)*c)*e^2)*x^3 -
(2*B*a*b^4 + 3*A*b^5 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 8*(6*B*a^2*b^2 + 5*A*
a*b^3)*c)*d^2 - 4*(4*B*a^2*b^3 + A*a*b^4 - 48*A*a^3*c^2 + 24*(2*B*a^3*b - A
*a^2*b^2)*c)*d*e + 8*(6*B*a^3*b^2 - A*a^2*b^3 + 4*(2*B*a^4 - 3*A*a^3*b)*c)*
e^2 + 5*(8*(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*b^2 - A*b^3)*c^2)*d^2 - 2*(3*
B*b^5 + 48*(B*a^2*b - 2*A*a*b^2)*c^2 + 8*(5*B*a*b^3 - A*b^4)*c)*d*e + (18*B
*a*b^4 - 3*A*b^5 + 16*(2*B*a^3 - 3*A*a^2*b)*c^2 + 8*(6*B*a^2*b^2 - 5*A*a*b^
3)*c)*e^2)*x^2 - 5*((B*b^5 + 96*A*a^2*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*
(12*B*a*b^3 + A*b^4)*c)*d^2 + 2*(4*B*a*b^4 + A*b^5 - 48*A*a^2*b*c^2 + 24*(2
*B*a^2*b^2 - A*a*b^3)*c)*d*e - 4*(6*B*a^2*b^3 - A*a*b^4 + 4*(2*B*a^3*b - 3*
A*a^2*b^2)*c)*e^2)*x)*sqrt(c*x^2 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^
5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*
c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 +
 3*(b^8*c - 11*a*b^6*c^2 + 36*a^2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^
4 + (b^9 - 6*a*b^7*c - 24*a^2*b^5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^
3 + 3*(a*b^8 - 11*a^2*b^6*c + 36*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)
*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [**B**] time = 0.34, size = 1089, normalized size = 3.36

$$2\left(\left(\left(\left(4\left(\frac{2\left(16\,Bbc^4d^2-32\,Ac^5d^2-12\,Bb^2c^3de-16\,Bac^4de+32\,Abc^4de+Bb^3c^2e^2+12\,Babc^3e^2-6\,Ab^2c^3e^2-8\,Aac^4e^2\right)x}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}+\frac{5\left(16\,Bb^2c^3d^2-32\,Abc^4d^2-12\,B\right.}{}\right.\right.\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((((4*(2*(16*B*b*c^4*d^2 - 32*A*c^5*d^2 - 12*B*b^2*c^3*d*e - 16*B*a*c^
4*d*e + 32*A*b*c^4*d*e + B*b^3*c^2*e^2 + 12*B*a*b*c^3*e^2 - 6*A*b^2*c^3*e^2
 - 8*A*a*c^4*e^2)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(1
6*B*b^2*c^3*d^2 - 32*A*b*c^4*d^2 - 12*B*b^3*c^2*d*e - 16*B*a*b*c^3*d*e + 32
*A*b^2*c^3*d*e + B*b^4*c*e^2 + 12*B*a*b^2*c^2*e^2 - 6*A*b^3*c^2*e^2 - 8*A*a
*b*c^3*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(48*B*b
^3*c^2*d^2 + 64*B*a*b*c^3*d^2 - 96*A*b^2*c^3*d^2 - 128*A*a*c^4*d^2 - 36*B*b
^4*c*d*e - 96*B*a*b^2*c^2*d*e + 96*A*b^3*c^2*d*e - 64*B*a^2*c^3*d*e + 128*A
*a*b*c^3*d*e + 3*B*b^5*e^2 + 40*B*a*b^3*c*e^2 - 18*A*b^4*c*e^2 + 48*B*a^2*b
*c^2*e^2 - 48*A*a*b^2*c^2*e^2 - 32*A*a^2*c^3*e^2)/(b^6 - 12*a*b^4*c + 48*a^
2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B*b^4*c*d^2 + 96*B*a*b^2*c^2*d^2 - 16*A*b
^3*c^2*d^2 - 192*A*a*b*c^3*d^2 - 6*B*b^5*d*e - 80*B*a*b^3*c*d*e + 16*A*b^4*
c*d*e - 96*B*a^2*b*c^2*d*e + 192*A*a*b^2*c^2*d*e + 18*B*a*b^4*e^2 - 3*A*b^5
*e^2 + 48*B*a^2*b^2*c*e^2 - 40*A*a*b^3*c*e^2 + 32*B*a^3*c^2*e^2 - 48*A*a^2*
b*c^2*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x - 5*(B*b^5*d
^2 - 24*B*a*b^3*c*d^2 - 2*A*b^4*c*d^2 - 48*B*a^2*b*c^2*d^2 + 48*A*a*b^2*c^2
*d^2 + 96*A*a^2*c^3*d^2 + 8*B*a*b^4*d*e + 2*A*b^5*d*e + 96*B*a^2*b^2*c*d*e
- 48*A*a*b^3*c*d*e - 96*A*a^2*b*c^2*d*e - 24*B*a^2*b^3*e^2 + 4*A*a*b^4*e^2
- 32*B*a^3*b*c*e^2 + 48*A*a^2*b^2*c*e^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
 - 64*a^3*c^3))*x - (2*B*a*b^4*d^2 + 3*A*b^5*d^2 - 48*B*a^2*b^2*c*d^2 - 40*
A*a*b^3*c*d^2 - 96*B*a^3*c^2*d^2 + 240*A*a^2*b*c^2*d^2 + 16*B*a^2*b^3*d*e +
 4*A*a*b^4*d*e + 192*B*a^3*b*c*d*e - 96*A*a^2*b^2*c*d*e - 192*A*a^3*c^2*d*e
 - 48*B*a^3*b^2*e^2 + 8*A*a^2*b^3*e^2 - 64*B*a^4*c*e^2 + 96*A*a^3*b*c*e^2)/
(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)
```

maple [**B**] time = 0.02, size = 1064, normalized size = 3.28

$$\frac{-32B\,a^2b\,c^2d^2x+\frac{16}{3}Ba\,b^4dex-16Ba\,b^3c\,d^2x+32A\,a^2b^2c\,e^2x+32Aa\,b^2c^2d^2x-\frac{64}{3}B\,a^3bc\,e^2x-64Ba\,b^2c^2d^2x^2-3}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(64*A*a*c^4*e^2*x^5+48*A*b^2*c^3*e^2*x^5-256*A*b*c
^4*d*e*x^5+256*A*c^5*d^2*x^5-96*B*a*b*c^3*e^2*x^5+128*B*a*c^4*d*e*x^5-8*B*b
^3*c^2*e^2*x^5+96*B*b^2*c^3*d*e*x^5-128*B*b*c^4*d^2*x^5+160*A*a*b*c^3*e^2*x
^4+120*A*b^3*c^2*e^2*x^4-640*A*b^2*c^3*d*e*x^4+640*A*b*c^4*d^2*x^4-240*B*a*
b^2*c^2*e^2*x^4+320*B*a*b*c^3*d*e*x^4-20*B*b^4*c*e^2*x^4+240*B*b^3*c^2*d*e*
x^4-320*B*b^2*c^3*d^2*x^4+160*A*a^2*c^3*e^2*x^3+240*A*a*b^2*c^2*e^2*x^3-640
*A*a*b*c^3*d*e*x^3+640*A*a*c^4*d^2*x^3+90*A*b^4*c*e^2*x^3-480*A*b^3*c^2*d*e
*x^3+480*A*b^2*c^3*d^2*x^3-240*B*a^2*b*c^2*e^2*x^3+320*B*a^2*c^3*d*e*x^3-20
0*B*a*b^3*c*e^2*x^3+480*B*a*b^2*c^2*d*e*x^3-320*B*a*b*c^3*d^2*x^3-15*B*b^5*
e^2*x^3+180*B*b^4*c*d*e*x^3-240*B*b^3*c^2*d^2*x^3+240*A*a^2*b*c^2*e^2*x^2+2
00*A*a*b^3*c*e^2*x^2-960*A*a*b^2*c^2*d*e*x^2+960*A*a*b*c^3*d^2*x^2+15*A*b^5
*e^2*x^2-80*A*b^4*c*d*e*x^2+80*A*b^3*c^2*d^2*x^2-160*B*a^3*c^2*e^2*x^2-240*
B*a^2*b^2*c*e^2*x^2+480*B*a^2*b*c^2*d*e*x^2-90*B*a*b^4*e^2*x^2+400*B*a*b^3*
c*d*e*x^2-480*B*a*b^2*c^2*d^2*x^2+30*B*b^5*d*e*x^2-40*B*b^4*c*d^2*x^2+240*A
*a^2*b^2*c*e^2*x-480*A*a^2*b*c^2*d*e*x+480*A*a^2*c^3*d^2*x+20*A*a*b^4*e^2*x
-240*A*a*b^3*c*d*e*x+240*A*a*b^2*c^2*d^2*x+10*A*b^5*d*e*x-10*A*b^4*c*d^2*x-
160*B*a^3*b*c*e^2*x-120*B*a^2*b^3*e^2*x+480*B*a^2*b^2*c*d*e*x-240*B*a^2*b*c
^2*d^2*x+40*B*a*b^4*d*e*x-120*B*a*b^3*c*d^2*x+5*B*b^5*d^2*x+96*A*a^3*b*c*e^
2-192*A*a^3*c^2*d*e+8*A*a^2*b^3*e^2-96*A*a^2*b^2*c*d*e+240*A*a^2*b*c^2*d^2+
4*A*a*b^4*d*e-40*A*a*b^3*c*d^2+3*A*b^5*d^2-64*B*a^4*c*e^2-48*B*a^3*b^2*e^2+
192*B*a^3*b*c*d*e-96*B*a^3*c^2*d^2+16*B*a^2*b^3*d*e-48*B*a^2*b^2*c*d^2+2*B*
a*b^4*d^2)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^2/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.77, size = 1996, normalized size = 6.16

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^2)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] (x*((2*c^2*(8*A*e^2 + 16*B*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*
B*b*c*e^2)/(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (b*c*(8*A*e^2 + 16*B*d*e)
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*B*a*c*e^2)/(5*(4*a*c^2 - b^2*c
)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2) - (x*((a*((2*c^2*((2*A*e^2)/5 + (
4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c))))/c +
(b*((2*c^2*((2*B*d^2)/5 + (4*A*d*e)/5))/(4*a*c^2 - b^2*c) - (b*((2*c^2*((2*
A*e^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^
2*c))))/c + (b*c*((2*A*e^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (4*B*a*c*
e^2)/(5*(4*a*c^2 - b^2*c))))/c - (b*c*((2*B*d^2)/5 + (4*A*d*e)/5))/(4*a*c^2
 - b^2*c) - (4*A*c^2*d^2)/(5*(4*a*c^2 - b^2*c))) + (a*((2*c^2*((2*B*d^2)/5
+ (4*A*d*e)/5))/(4*a*c^2 - b^2*c) - (b*((2*c^2*((2*A*e^2)/5 + (4*B*d*e)/5))
/(4*a*c^2 - b^2*c) - (2*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c))))/c + (b*c*((2*A*e
^2)/5 + (4*B*d*e)/5))/(4*a*c^2 - b^2*c) - (4*B*a*c*e^2)/(5*(4*a*c^2 - b^2*c
))))/c - (2*A*b*c*d^2)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2) - (x*
((2*e*(2*A*c*e - B*b*e + 4*B*c*d))/(15*c*(4*a*c - b^2)) - (4*B*b*e^2)/(15*c
*(4*a*c - b^2))) + (2*B*b^2*e^2 + 4*B*c^2*d^2 - 2*A*b*c*e^2 - 4*B*a*c*e^2 +
 8*A*c^2*d*e - 4*B*b*c*d*e)/(15*c^2*(4*a*c - b^2)) - (4*B*a*e^2)/(15*c*(4*a
*c - b^2)))/(a + b*x + c*x^2)^(3/2) + (x*((b*((2*(8*B*c^3*d^2 + 16*A*c^3*d*
e - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
- (b*((16*c^3*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*
b*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (8*b*c^2*e*(A*e + 2*B
*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (16*B*a*c^2*e^2)/(15*(4*a*c^2 -
 b^2*c)*(4*a*c - b^2))))/c + (2*(32*A*c^3*d^2 - 8*B*b^3*e^2 + 8*A*a*c^2*e^2
 + 8*A*b^2*c*e^2 - 20*B*b*c^2*d^2 + 12*B*a*b*c*e^2 - 40*A*b*c^2*d*e + 16*B*
a*c^2*d*e + 16*B*b^2*c*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (a*((16
*c^3*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^2
)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c - (b*(8*B*c^3*d^2 + 16*A*c^3*d*e
 - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/(15*c*(4*a*c^2 - b^2*c)*(4*a*c - b^2))
) + (a*((2*(8*B*c^3*d^2 + 16*A*c^3*d*e - 48*B*a*c^2*e^2 + 12*B*b^2*c*e^2))/
(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (b*((16*c^3*e*(A*e + 2*B*d))/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*
c - b^2))))/c + (8*b*c^2*e*(A*e + 2*B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^
2)) - (16*B*a*c^2*e^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (b*(32*A*
c^3*d^2 - 8*B*b^3*e^2 + 8*A*a*c^2*e^2 + 8*A*b^2*c*e^2 - 20*B*b*c^2*d^2 + 12
*B*a*b*c*e^2 - 40*A*b*c^2*d*e + 16*B*a*c^2*d*e + 16*B*b^2*c*d*e))/(15*c*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + (x*((2*c*(256*A*c^
3*d^2 - 8*B*b^3*e^2 + 32*A*a*c^2*e^2 + 56*A*b^2*c*e^2 - 128*B*b*c^2*d^2 - 9
6*B*a*b*c*e^2 - 256*A*b*c^2*d*e + 64*B*a*c^2*d*e + 112*B*b^2*c*d*e))/(15*(4
*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (8*B*b*c*e^2)/(5*(4*a*c^2 - b^2*c)*(4*a*
c - b^2))) + (b*(256*A*c^3*d^2 - 8*B*b^3*e^2 + 32*A*a*c^2*e^2 + 56*A*b^2*c*
e^2 - 128*B*b*c^2*d^2 - 96*B*a*b*c*e^2 - 256*A*b*c^2*d*e + 64*B*a*c^2*d*e +
 112*B*b^2*c*d*e))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (16*B*a*c*e^2)/
(5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**2/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2492 $\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=225

$$-\frac{16(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{2(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2B\right.}{15c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

```
[Out] 2/5*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(A*c*d-B*a*
e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)+2/15*(3*b^2*B*e-8*b*c*(A*e+B*d)+4
*c*(4*A*c*d+B*a*e))*(2*c*x+b)/c/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)-16/15*(3
*b^2*B*e-8*b*c*(A*e+B*d)+4*c*(4*A*c*d+B*a*e))*(2*c*x+b)/(-4*a*c+b^2)^3/(c*x
^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.18, antiderivative size = 225, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = $\{777, 614, 613\}$

$$-\frac{16(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2Be\right)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}+\frac{2(b+2cx)\left(4c(aBe+4Acd)-8bc(Ae+Bd)+3b^2B\right.}{15c\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B*d + A*e) + 2*
c*(A*c*d - a*B*e))*x))/(5*c*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/2)) + (2*(3*
b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + a*B*e))*(b + 2*c*x))/(15*c*(b^
2 - 4*a*c)^2*(a + b*x + c*x^2)^(3/2)) - (16*(3*b^2*B*e - 8*b*c*(B*d + A*e)
+ 4*c*(4*A*c*d + a*B*e))*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x + c*
x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)}{\left(a+bx+cx^2\right)^{7/2}}\,dx = \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{\left(3b^2Be\right.}{}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{2\left(3b^2\right.}{}$$

$$= \frac{2\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)x\right)}{5c\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{2\left(3b^2\right.}{}$$

Mathematica **[A]** time = 0.59, size = 200, normalized size = 0.89

$$\frac{2\left(-3\left(b^2-4ac\right)^2(Ac(-2ae+b(d-ex)+2cdx)+B(abe-2ac(d+ex)+bx(be-cd)))+\left(b^2-4ac\right)(b+2cx)(a+\right.}{15c\left(b^2-\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*((b^2 - 4*a*c)*(3*b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*A*c*d + a*B*e))*(
b + 2*c*x)*(a + x*(b + c*x)) - 8*c*(3*b^2*B*e - 8*b*c*(B*d + A*e) + 4*c*(4*
A*c*d + a*B*e))*(b + 2*c*x)*(a + x*(b + c*x))^2 - 3*(b^2 - 4*a*c)^2*(A*c*(-
2*a*e + 2*c*d*x + b*(d - e*x)) + B*(a*b*e + b*(-(c*d) + b*e)*x - 2*a*c*(d +
 e*x)))))/(15*c*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac **[B]** time = 0.31, size = 727, normalized size = 3.23

$$\frac{2\left(\left(\left(2\left(4\left(\frac{2\left(8\,Bbc^4d-16\,Ac^5d-3\,Bb^2c^3e-4\,Bac^4e+8\,Abc^4e\right)x}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}+\frac{5\left(8\,Bb^2c^3d-16\,Abc^4d-3\,Bb^3c^2e-4\,Babc^3e+8\,Ab^2c^3e\right)}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}\right)x+\frac{5\left(24\,Bb^3c^2d+32\,Babc\right.}{}\right.\right.\right.\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*(((2*(4*(2*(8*B*b*c^4*d - 16*A*c^5*d - 3*B*b^2*c^3*e - 4*B*a*c^4*e + 8
*A*b*c^4*e)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3) + 5*(8*B*b^2
*c^3*d - 16*A*b*c^4*d - 3*B*b^3*c^2*e - 4*B*a*b*c^3*e + 8*A*b^2*c^3*e)/(b^6
 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(24*B*b^3*c^2*d + 32*B*
a*b*c^3*d - 48*A*b^2*c^3*d - 64*A*a*c^4*d - 9*B*b^4*c*e - 24*B*a*b^2*c^2*e
+ 24*A*b^3*c^2*e - 16*B*a^2*c^3*e + 32*A*a*b*c^3*e)/(b^6 - 12*a*b^4*c + 48*
a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(8*B*b^4*c*d + 96*B*a*b^2*c^2*d - 16*A*b^3
*c^2*d - 192*A*a*b*c^3*d - 3*B*b^5*e - 40*B*a*b^3*c*e + 8*A*b^4*c*e - 48*B*
a^2*b*c^2*e + 96*A*a*b^2*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3
*c^3))*x - 5*(B*b^5*d - 24*B*a*b^3*c*d - 2*A*b^4*c*d - 48*B*a^2*b*c^2*d + 4
8*A*a*b^2*c^2*d + 96*A*a^2*c^3*d + 4*B*a*b^4*e + A*b^5*e + 48*B*a^2*b^2*c*e
 - 24*A*a*b^3*c*e - 48*A*a^2*b*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 -
64*a^3*c^3))*x - (2*B*a*b^4*d + 3*A*b^5*d - 48*B*a^2*b^2*c*d - 40*A*a*b^3*c
*d - 96*B*a^3*c^2*d + 240*A*a^2*b*c^2*d + 8*B*a^2*b^3*e + 2*A*a*b^4*e + 96*
B*a^3*b*c*e - 48*A*a^2*b^2*c*e - 96*A*a^3*c^2*e)/(b^6 - 12*a*b^4*c + 48*a^2
*b^2*c^2 - 64*a^3*c^3))/(c*x^2 + b*x + a)^(5/2)
```

maple [**B**] time = 0.01, size = 608, normalized size = 2.70

$$-\frac{2\left(128 A b c^4 e x^5 - 256 A c^5 d x^5 - 64 B a c^4 e x^5 - 48 B b^2 c^3 e x^5 + 128 B b c^4 d x^5 + 320 A b^2 c^3 e x^4 - 640 A b c^4 d x^4 - \right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] -2/15/(c*x^2+b*x+a)^(5/2)*(128*A*b*c^4*e*x^5-256*A*c^5*d*x^5-64*B*a*c^4*e*x
^5-48*B*b^2*c^3*e*x^5+128*B*b*c^4*d*x^5+320*A*b^2*c^3*e*x^4-640*A*b*c^4*d*x
^4-160*B*a*b*c^3*e*x^4-120*B*b^3*c^2*e*x^4+320*B*b^2*c^3*d*x^4+320*A*a*b*c^
3*e*x^3-640*A*a*c^4*d*x^3+240*A*b^3*c^2*e*x^3-480*A*b^2*c^3*d*x^3-160*B*a^2
*c^3*e*x^3-240*B*a*b^2*c^2*e*x^3+320*B*a*b*c^3*d*x^3-90*B*b^4*c*e*x^3+240*B
*b^3*c^2*d*x^3+480*A*a*b^2*c^2*e*x^2-960*A*a*b*c^3*d*x^2+40*A*b^4*c*e*x^2-8
0*A*b^3*c^2*d*x^2-240*B*a^2*b*c^2*e*x^2-200*B*a*b^3*c*e*x^2+480*B*a*b^2*c^2
*d*x^2-15*B*b^5*e*x^2+40*B*b^4*c*d*x^2+240*A*a^2*b*c^2*e*x-480*A*a^2*c^3*d*
x+120*A*a*b^3*c*e*x-240*A*a*b^2*c^2*d*x-5*A*b^5*e*x+10*A*b^4*c*d*x-240*B*a^
2*b^2*c*e*x+240*B*a^2*b*c^2*d*x-20*B*a*b^4*e*x+120*B*a*b^3*c*d*x-5*B*b^5*d*
x+96*A*a^3*c^2*e+48*A*a^2*b^2*c*e-240*A*a^2*b*c^2*d-2*A*a*b^4*e+40*A*a*b^3*
c*d-3*A*b^5*d-96*B*a^3*b*c*e+96*B*a^3*c^2*d-8*B*a^2*b^3*e+48*B*a^2*b^2*c*d-
2*B*a*b^4*d)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [**B**] time = 3.26, size = 892, normalized size = 3.96

$$\frac{\frac{16 B c^2 e x}{15\left(4 a c^2-b^2 c\right)\left(4 a c-b^2\right)}+\frac{8 B b c e}{15\left(4 a c^2-b^2 c\right)\left(4 a c-b^2\right)}}{\sqrt{c x^2+b x+a}}-\frac{x\left(\frac{b\left(\frac{2 c^2\left(\frac{2 A e}{5}+\frac{2 B d}{5}\right)}{4 a c^2-b^2 c}-\frac{2 B b c e}{5\left(4 a c^2-b^2 c\right)}\right)}{c}-\frac{b c\left(\frac{2 A e}{5}+\frac{2 B d}{5}\right)}{4 a c^2-b^2 c}-\frac{4 A c^2 d}{5\left(4 a c^2-b^2 c\right)}+\right.}{\left(c x^2+b x+a\right)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x))/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((16*B*c^2*e*x)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (8*B*b*c*e)/(15*(4*a
*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(1/2) - (x*((b*((2*c^2*((2*
A*e)/5 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e)/(5*(4*a*c^2 - b^2*c)))
)/c - (b*c*((2*A*e)/5 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (4*A*c^2*d)/(5*(4*a
*c^2 - b^2*c)) + (4*B*a*c*e)/(5*(4*a*c^2 - b^2*c))) + (a*((2*c^2*((2*A*e)/5
 + (2*B*d)/5))/(4*a*c^2 - b^2*c) - (2*B*b*c*e)/(5*(4*a*c^2 - b^2*c))))/c -
(2*A*b*c*d)/(5*(4*a*c^2 - b^2*c)))/(a + b*x + c*x^2)^(5/2) + (x*((b*((16*c^
3*(A*e + B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e)/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2))))/c + (2*c*(32*A*c^2*d + 8*B*b^2*e - 20*A*b*c
*e + 8*B*a*c*e - 20*B*b*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) - (8*b*c
^2*(A*e + B*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16*B*a*c^2*e)/(15*(
4*a*c^2 - b^2*c)*(4*a*c - b^2))) + (a*((16*c^3*(A*e + B*d))/(15*(4*a*c^2 -
b^2*c)*(4*a*c - b^2)) - (8*B*b*c^2*e)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))
)/c + (b*(32*A*c^2*d + 8*B*b^2*e - 20*A*b*c*e + 8*B*a*c*e - 20*B*b*c*d))/(1
5*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) + ((b*c*(256*A*
c^2*d + 56*B*b^2*e - 128*A*b*c*e + 32*B*a*c*e - 128*B*b*c*d))/(15*(4*a*c^2
- b^2*c)*(4*a*c - b^2)^2) + (2*c^2*x*(256*A*c^2*d + 56*B*b^2*e - 128*A*b*c*
e + 32*B*a*c*e - 128*B*b*c*d))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a +
 b*x + c*x^2)^(1/2) - ((4*A*c*e - 2*B*b*e + 4*B*c*d)/(15*c*(4*a*c - b^2)) +
 (4*B*e*x)/(15*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2493 $\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=133

$$\frac{128c(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{16(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

```
[Out] -2/5*(A*b-2*a*B-(-2*A*c+B*b)*x)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(5/2)-16/15*(-2*
A*c+B*b)*(2*c*x+b)/(-4*a*c+b^2)^2/(c*x^2+b*x+a)^(3/2)+128/15*c*(-2*A*c+B*b)
*(2*c*x+b)/(-4*a*c+b^2)^3/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 133, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.150$, Rules used = $\{638, 614, 613\}$

$$\frac{128c(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^3\sqrt{a+bx+cx^2}}-\frac{16(b+2cx)(bB-2Ac)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}}-\frac{2(-2aB-x(bB-2Ac)+Ab)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x))/(5*(b^2 - 4*a*c)*(a + b*x + c*x^2)^(5/
2)) - (16*(b*B - 2*A*c)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^2*(a + b*x + c*x^2)^
(3/2)) + (128*c*(b*B - 2*A*c)*(b + 2*c*x))/(15*(b^2 - 4*a*c)^3*Sqrt[a + b*x
 + c*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 614

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((b + 2*c*x
)*(a + b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(2*c*(2*p +
 3))/((p + 1)*(b^2 - 4*a*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; Free
Q[{a, b, c}, x] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2] && Int
egerQ[4*p]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\int \frac{A+Bx}{\left(a+bx+cx^2\right)^{7/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} + \frac{(8(bB-2Ac))\int \frac{1}{\left(a+bx+cx^2\right)^{5/2}}\,dx}{5\left(b^2-4ac\right)}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bB-2Ac)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}} - \frac{(64c(bB-2Ac))\int}{15\left(b^2-\right.}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)}{5\left(b^2-4ac\right)\left(a+bx+cx^2\right)^{5/2}} - \frac{16(bB-2Ac)(b+2cx)}{15\left(b^2-4ac\right)^2\left(a+bx+cx^2\right)^{3/2}} + \frac{128c(bB-2Ac)}{15\left(b^2-4ac\right)^3\sqrt{a}}$$

Mathematica [**A**] time = 0.20, size = 120, normalized size = 0.90

$$\frac{2\left(3\left(b^2-4ac\right)^2(B(2a+bx)-A(b+2cx))-8\left(b^2-4ac\right)(b+2cx)(a+x(b+cx))(bB-2Ac)+64c(b+2cx)(a+\right.}{15\left(b^2-4ac\right)^3(a+x(b+cx))^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(a + b*x + c*x^2)^(7/2),x]
```

```
[Out] (2*(-8*(b^2 - 4*a*c)*(b*B - 2*A*c)*(b + 2*c*x)*(a + x*(b + c*x)) + 64*c*(b*
B - 2*A*c)*(b + 2*c*x)*(a + x*(b + c*x))^2 + 3*(b^2 - 4*a*c)^2*(B*(2*a + b*
x) - A*(b + 2*c*x))))/(15*(b^2 - 4*a*c)^3*(a + x*(b + c*x))^(5/2))
```

fricas [**B**] time = 7.95, size = 543, normalized size = 4.08

$$-\frac{2\left(2\,Bab^4+3\,Ab^5-128\left(Bbc^4-2\,Ac^5\right)x^5-320\left(Bb^2c^3-2\,Abc^4\right)x^4-80\left(3\,Bb^3c^2-8\right.\right.}{15\left(a^3b^6-12\,a^4b^4c+48\,a^5b^2c^2-64\,a^6c^3+\left(b^6c^3-12\,ab^4c^4+48\,a^2b^2c^5-64\,a^3c^6\right)x^6+3\left(b^7c^2-12\,ab^5c^3+48\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] -2/15*(2*B*a*b^4 + 3*A*b^5 - 128*(B*b*c^4 - 2*A*c^5)*x^5 - 320*(B*b^2*c^3 -
 2*A*b*c^4)*x^4 - 80*(3*B*b^3*c^2 - 8*A*a*c^4 + 2*(2*B*a*b - 3*A*b^2)*c^3)*
x^3 - 48*(2*B*a^3 - 5*A*a^2*b)*c^2 - 40*(B*b^4*c - 24*A*a*b*c^3 + 2*(6*B*a*
b^2 - A*b^3)*c^2)*x^2 - 8*(6*B*a^2*b^2 + 5*A*a*b^3)*c + 5*(B*b^5 + 96*A*a^2
*c^3 - 48*(B*a^2*b - A*a*b^2)*c^2 - 2*(12*B*a*b^3 + A*b^4)*c)*x)*sqrt(c*x^2
 + b*x + a)/(a^3*b^6 - 12*a^4*b^4*c + 48*a^5*b^2*c^2 - 64*a^6*c^3 + (b^6*c^
3 - 12*a*b^4*c^4 + 48*a^2*b^2*c^5 - 64*a^3*c^6)*x^6 + 3*(b^7*c^2 - 12*a*b^5
*c^3 + 48*a^2*b^3*c^4 - 64*a^3*b*c^5)*x^5 + 3*(b^8*c - 11*a*b^6*c^2 + 36*a^
2*b^4*c^3 - 16*a^3*b^2*c^4 - 64*a^4*c^5)*x^4 + (b^9 - 6*a*b^7*c - 24*a^2*b^
5*c^2 + 224*a^3*b^3*c^3 - 384*a^4*b*c^4)*x^3 + 3*(a*b^8 - 11*a^2*b^6*c + 36
*a^3*b^4*c^2 - 16*a^4*b^2*c^3 - 64*a^5*c^4)*x^2 + 3*(a^2*b^7 - 12*a^3*b^5*c
 + 48*a^4*b^3*c^2 - 64*a^5*b*c^3)*x)
```

giac [**B**] time = 0.28, size = 433, normalized size = 3.26

$$\frac{2\left(\left(8\left(2\left(4\left(\frac{2\left(Bbc^4-2\,Ac^5\right)x}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}+\frac{5\left(Bb^2c^3-2\,Abc^4\right)}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}\right)x+\frac{5\left(3\,Bb^3c^2+4\,Babc^3-6\,Ab^2c^3-8\,Aac^4\right)}{b^6-12\,ab^4c+48\,a^2b^2c^2-64\,a^3c^3}\right)x+\frac{5\left(Bb^4c+12\,Bab\right.}{b^6-12\,ab^4c}\right.\right.\right.\right.}{15\left(cx\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] 2/15*((8*(2*(4*(2*(B*b*c^4 - 2*A*c^5)*x/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2
- 64*a^3*c^3) + 5*(B*b^2*c^3 - 2*A*b*c^4)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^
2 - 64*a^3*c^3))*x + 5*(3*B*b^3*c^2 + 4*B*a*b*c^3 - 6*A*b^2*c^3 - 8*A*a*c^4
)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))*x + 5*(B*b^4*c + 12*B*a
*b^2*c^2 - 2*A*b^3*c^2 - 24*A*a*b*c^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 -
 64*a^3*c^3))*x - 5*(B*b^5 - 24*B*a*b^3*c - 2*A*b^4*c - 48*B*a^2*b*c^2 + 48
*A*a*b^2*c^2 + 96*A*a^2*c^3)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^
3))*x - (2*B*a*b^4 + 3*A*b^5 - 48*B*a^2*b^2*c - 40*A*a*b^3*c - 96*B*a^3*c^2
 + 240*A*a^2*b*c^2)/(b^6 - 12*a*b^4*c + 48*a^2*b^2*c^2 - 64*a^3*c^3))/(c*x^
2 + b*x + a)^(5/2)
```

maple [B] time = 0.01, size = 288, normalized size = 2.17

$$\frac{\frac{512}{15} A c^5 x^5 - \frac{256}{15} B b c^4 x^5 + \frac{256}{3} A b c^4 x^4 - \frac{128}{3} B b^2 c^3 x^4 + \frac{256}{3} A a c^4 x^3 + 64 A b^2 c^3 x^3 - \frac{128}{3} B a b c^3 x^3 - 32 B b^3 c^2 x^3 +}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] 2/15/(c*x^2+b*x+a)^(5/2)*(256*A*c^5*x^5-128*B*b*c^4*x^5+640*A*b*c^4*x^4-320
*B*b^2*c^3*x^4+640*A*a*c^4*x^3+480*A*b^2*c^3*x^3-320*B*a*b*c^3*x^3-240*B*b^
3*c^2*x^3+960*A*a*b*c^3*x^2+80*A*b^3*c^2*x^2-480*B*a*b^2*c^2*x^2-40*B*b^4*c
*x^2+480*A*a^2*c^3*x+240*A*a*b^2*c^2*x-10*A*b^4*c*x-240*B*a^2*b*c^2*x-120*B
*a*b^3*c*x+5*B*b^5*x+240*A*a^2*b*c^2-40*A*a*b^3*c+3*A*b^5-96*B*a^3*c^2-48*B
*a^2*b^2*c+2*B*a*b^4)/(64*a^3*c^3-48*a^2*b^2*c^2+12*a*b^4*c-b^6)
```

maxima [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume(4*a*c-b^2>0)', see `assume?` for mo
re details)Is 4*a*c-b^2 zero or nonzero?
```

mupad [B] time = 3.12, size = 394, normalized size = 2.96

$$\frac{\frac{b\,c\,\left(256\,A\,c^2-128\,B\,b\,c\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,{\left(4\,a\,c-b^2\right)}^2}+\frac{2\,c^2\,x\,\left(256\,A\,c^2-128\,B\,b\,c\right)}{15\,\left(4\,a\,c^2-b^2\,c\right)\,{\left(4\,a\,c-b^2\right)}^2}}{\sqrt{c\,x^2+b\,x+a}}+\frac{x\,\left(\frac{4\,A\,c^2}{5\,\left(4\,a\,c^2-b^2\,c\right)}-\frac{2\,B\,b\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}\right)+\frac{2\,A\,b\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}-\frac{4\,B\,a\,c}{5\,\left(4\,a\,c^2-b^2\,c\right)}}{{\left(c\,x^2+b\,x+a\right)}^{5/2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/(a + b*x + c*x^2)^(7/2),x)
```

```
[Out] ((b*c*(256*A*c^2 - 128*B*b*c))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2) + (2*
c^2*x*(256*A*c^2 - 128*B*b*c))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)^2))/(a +
 b*x + c*x^2)^(1/2) + (x*((4*A*c^2)/(5*(4*a*c^2 - b^2*c)) - (2*B*b*c)/(5*(4
*a*c^2 - b^2*c))) + (2*A*b*c)/(5*(4*a*c^2 - b^2*c)) - (4*B*a*c)/(5*(4*a*c^2
 - b^2*c)))/(a + b*x + c*x^2)^(5/2) + (x*((2*c^2*(32*A*c - 20*B*b))/(15*(4*
a*c^2 - b^2*c)*(4*a*c - b^2)) + (8*B*b*c^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c -
b^2))) + (b*c*(32*A*c - 20*B*b))/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)) + (16
*B*a*c^2)/(15*(4*a*c^2 - b^2*c)*(4*a*c - b^2)))/(a + b*x + c*x^2)^(3/2) - (
4*B)/((60*a*c - 15*b^2)*(a + b*x + c*x^2)^(3/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2494 $\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{7/2}}\,dx$

Optimal. Leaf size=974

$$-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bed+ae^2}\,\sqrt{cx^2+bx+a}}\right)e^5}{\left(cd^2-bed+ae^2\right)^{7/2}}+\frac{2\left(4ace(2cd-be)\left(8ce(bd-2ae)(bBd-2Acd+Abe-2aBe)+\right.\right.}{}$$

```
[Out] 2/5*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*
d)*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(5/2)+2/15*(8*a*c*e*(-
b*e+2*c*d)*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)+(2*a*c*e-b^2*e+b*c*d)*(5*b^2*e*(-A
*e+B*d)-8*b*c*d*(A*e+B*d)+4*c*(5*A*a*e^2+4*A*c*d^2-B*a*d*e))+c*(8*c*e*(-2*a
*e+b*d)*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)+(-b*e+2*c*d)*(5*b^2*e*(-A*e+B*d)-8*b*
c*d*(A*e+B*d)+4*c*(5*A*a*e^2+4*A*c*d^2-B*a*d*e)))*x)/(-4*a*c+b^2)^2/(a*e^2-
b*d*e+c*d^2)^2/(c*x^2+b*x+a)^(3/2)-e^5*(-A*e+B*d)*arctanh(1/2*(b*d-2*a*e+(-
b*e+2*c*d)*x)/(a*e^2-b*d*e+c*d^2)^(1/2)/(c*x^2+b*x+a)^(1/2))/(a*e^2-b*d*e+c
*d^2)^(7/2)+2/15*(4*a*c*e*(-b*e+2*c*d)*(8*c*e*(-2*a*e+b*d)*(A*b*e-2*A*c*d-2
*B*a*e+B*b*d)+(-b*e+2*c*d)*(5*b^2*e*(-A*e+B*d)-8*b*c*d*(A*e+B*d)+4*c*(5*A*a
*e^2+4*A*c*d^2-B*a*d*e)))-(2*a*c*e-b^2*e+b*c*d)*(8*c*d*e*(A*b*e-2*A*c*d-2*B
*a*e+B*b*d)*(4*a*c*e-3*b^2*e+4*b*c*d)+(8*c^2*d^2-3*b^2*e^2-4*c*e*(-3*a*e+b*
d))*(5*b^2*e*(-A*e+B*d)-8*b*c*d*(A*e+B*d)+4*c*(5*A*a*e^2+4*A*c*d^2-B*a*d*e)
))+c*(4*c*e*(-2*a*e+b*d)*(8*c*e*(-2*a*e+b*d)*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)+
(-b*e+2*c*d)*(5*b^2*e*(-A*e+B*d)-8*b*c*d*(A*e+B*d)+4*c*(5*A*a*e^2+4*A*c*d^2
-B*a*d*e)))-(-b*e+2*c*d)*(8*c*d*e*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*(4*a*c*e-3*
b^2*e+4*b*c*d)+(8*c^2*d^2-3*b^2*e^2-4*c*e*(-3*a*e+b*d))*(5*b^2*e*(-A*e+B*d)
-8*b*c*d*(A*e+B*d)+4*c*(5*A*a*e^2+4*A*c*d^2-B*a*d*e))))*x)/(-4*a*c+b^2)^3/(
a*e^2-b*d*e+c*d^2)^3/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 1.71, antiderivative size = 974, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{822, 12, 724, 206\}$

$$-\frac{(Bd-Ae)\tanh^{-1}\left(\frac{bd-2ae+(2cd-be)x}{2\sqrt{cd^2-bed+ae^2}\,\sqrt{cx^2+bx+a}}\right)e^5}{\left(cd^2-bed+ae^2\right)^{7/2}}+\frac{2\left(4ace(2cd-be)\left(8ce(bd-2ae)(bBd-2Acd+Abe-2aBe)+\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/(5*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + b*x + c*
x^2)^(5/2)) + (2*(8*a*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)
 + (b*c*d - b^2*e + 2*a*c*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4
*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)) + c*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A
*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d
 + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))*x))/(15*(b^2 - 4*a*c)^2*(
c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2)^(3/2)) + (2*(4*a*c*e*(2*c*d - b*
e)*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)
*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*
a*A*e^2))) - (b*c*d - b^2*e + 2*a*c*e)*(8*c*d*e*(b*B*d - 2*A*c*d + A*b*e -
2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*
d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a
*B*d*e + 5*a*A*e^2))) + c*(4*c*e*(b*d - 2*a*e)*(8*c*e*(b*d - 2*a*e)*(b*B*d
- 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d
*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))) - (2*c*d - b*e)*(8*c
*d*e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8
*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*
(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))))*x))/(15*(b^2 - 4*a*c
)^3*(c*d^2 - b*d*e + a*e^2)^3*Sqrt[a + b*x + c*x^2]) - (e^5*(B*d - A*e)*Arc
Tanh[(b*d - 2*a*e + (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*e^2]*Sqrt[a
+ b*x + c*x^2])])/(c*d^2 - b*d*e + a*e^2)^(7/2)
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)\left(a+bx+cx^2\right)^{7/2}}\,dx=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}-$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}+$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}+$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}+$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}+$$

$$=\frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{5\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)^{5/2}}+$$

Mathematica [**A**] time = 6.24, size = 1120, normalized size = 1.15

$$-\frac{2\left(-\frac{2\left(4ace(2cd-be)(bBd-2Acd+Abe-2aBe)+\frac{1}{2}\left(-eb^2+cdb+2ace\right)\left(5e(Bd-Ae)b^2-8cd(Bd+Ae)b+4c\left(4Acd^2-aBed+5aAe^2\right)\right)+c\left(4ce(bd-2ae)(bBd-2\right.\right.}{3\left(b^2-4ac\right)\left(cd^2-bed+ae^2\right)\left(cx^2+bx+a\right)^{3/2}}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x]
```

```
[Out] (-2*(-(a*B*(2*c*d - b*e)) + A*(b*c*d - b^2*e + 2*a*c*e) + c*(-(B*(b*d - 2*a
*e)) + A*(2*c*d - b*e))*x)*(a + b*x + c*x^2))/(5*(b^2 - 4*a*c)*(c*d^2 - b*d
*e + a*e^2)*(a + x*(b + c*x))^(7/2)) - (2*(a + b*x + c*x^2)^(7/2)*((-2*(4*a
*c*e*(2*c*d - b*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + ((b*c*d - b^2*e +
2*a*c*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*
d*e + 5*a*A*e^2)))/2 + c*(4*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*
a*B*e) + ((2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4
*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))/2)*x))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e +
a*e^2)*(a + b*x + c*x^2)^(3/2)) - (2*((-2*(-(a*c*e*(2*c*d - b*e)*(8*c*e*(b*
d - 2*a*e)*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*
d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))) +
 ((b*c*d - b^2*e + 2*a*c*e)*(8*c*d*e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4
*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))
*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d + A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*
a*A*e^2))))/4 + c*(-(c*e*(b*d - 2*a*e)*(8*c*e*(b*d - 2*a*e)*(b*B*d - 2*A*c*
d + A*b*e - 2*a*B*e) + (2*c*d - b*e)*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d +
A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2)))) + ((2*c*d - b*e)*(8*c*d*e*(
b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(4*b*c*d - 3*b^2*e + 4*a*c*e) + (8*c^2*d
^2 - 3*b^2*e^2 - 4*c*e*(b*d - 3*a*e))*(5*b^2*e*(B*d - A*e) - 8*b*c*d*(B*d +
 A*e) + 4*c*(4*A*c*d^2 - a*B*d*e + 5*a*A*e^2))))/4)*x))/((b^2 - 4*a*c)*(c*d
^2 - b*d*e + a*e^2)*Sqrt[a + b*x + c*x^2]) + (15*(b^2 - 4*a*c)^2*e^5*(B*d -
 A*e)*ArcTanh[(-(b*d) + 2*a*e - (2*c*d - b*e)*x)/(2*Sqrt[c*d^2 - b*d*e + a*
e^2]*Sqrt[a + b*x + c*x^2])])/(Sqrt[c*d^2 - b*d*e + a*e^2]*(4*c*d^2 - 4*b*d
*e + 4*a*e^2))))/(3*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2))))/(5*(b^2 - 4*a*
c)*(c*d^2 - b*d*e + a*e^2)*(a + x*(b + c*x))^(7/2))
```

fricas [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="fricas")
```

```
[Out] Timed out
```

giac [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="giac")
```

```
[Out] Timed out
```

maple [**B**] time = 0.02, size = 5461, normalized size = 5.61

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x)
```

```
[Out] result too large to display
```

maxima [**F(-2)**] time = 0.00, size = 0, normalized size = 0.00

Exception raised: ValueError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x^2+b*x+a)^(7/2),x, algorithm="maxima")
```

```
[Out] Exception raised: ValueError >> Computation failed since Maxima requested a
dditional constraints; using the 'assume' command before evaluation *may* h
elp (example of legal syntax is 'assume((b/e-(2*c*d)/e^2)^2>0)', see `assum
e?` for more details)Is (b/e-(2*c*d)/e^2)^2    -(4*c       *((-(b*d)/e)
    +(c*d^2)/e^2+a))     /e^2 zero or nonzero?
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\left(d+e\,x\right)\,{\left(c\,x^2+b\,x+a\right)}^{7/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)*(a + b*x + c*x^2)^(7/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)/(c*x**2+b*x+a)**(7/2),x)
```

```
[Out] Timed out
```

3.2495 $\int \frac{(5-x)(3+2x)^4}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=137

$$-\frac{1}{15}\sqrt{3x^2+5x+2}\,(2x+3)^4+\frac{53}{60}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{391}{135}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{648}(9650x+27519)\sqrt{3x^2+}$$

```
[Out] 28051/3888*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+391/135
*(3+2*x)^2*(3*x^2+5*x+2)^(1/2)+53/60*(3+2*x)^3*(3*x^2+5*x+2)^(1/2)-1/15*(3+
2*x)^4*(3*x^2+5*x+2)^(1/2)+1/648*(27519+9650*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {832, 779, 621, 206}

$$-\frac{1}{15}\sqrt{3x^2+5x+2}\,(2x+3)^4+\frac{53}{60}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{391}{135}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{648}(9650x+27519)\sqrt{3x^2+}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (391*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/135 + (53*(3 + 2*x)^3*Sqrt[2 + 5*x
+ 3*x^2])/60 - ((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2])/15 + ((27519 + 9650*x)*S
qrt[2 + 5*x + 3*x^2])/648 + (28051*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*
x + 3*x^2])])/(1296*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\sqrt{2+5x+3x^2}}\,dx = -\frac{1}{15}(3+2x)^4\sqrt{2+5x+3x^2} + \frac{1}{15}\int \frac{(3+2x)^3\left(\frac{497}{2}+159x\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+3x^2} + \frac{1}{180}\int \frac{(3+2x)^2\left(\frac{11691}{2}-\right.}{\sqrt{2+5x+}}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

$$= \frac{391}{135}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{53}{60}(3+2x)^3\sqrt{2+5x+3x^2} - \frac{1}{15}(3+2x)^4\sqrt{2+5x+}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.53

$$\frac{140255\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\,\left(3456x^4-2160x^3-93912x^2-268750x-281829\right)}{19440}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-281829 - 268750*x - 93912*x^2 - 2160*x^3 + 3456
*x^4) + 140255*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/19440
```

fricas [A] time = 0.95, size = 73, normalized size = 0.53

$$-\frac{1}{3240}\left(3456\,x^4-2160\,x^3-93912\,x^2-268750\,x-281829\right)\sqrt{3\,x^2+5\,x+2}+\frac{28051}{7776}\,\sqrt{3}\,\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/3240*(3456*x^4 - 2160*x^3 - 93912*x^2 - 268750*x - 281829)*sqrt(3*x^2 +
5*x + 2) + 28051/7776*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5)
 + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.23, size = 69, normalized size = 0.50

$$-\frac{1}{3240}\,(2\,(12\,(18\,(8\,x-5)x-3913)x-134375)x-281829)\sqrt{3\,x^2+5\,x+2}-\frac{28051}{3888}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\right.\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/3240*(2*(12*(18*(8*x - 5)*x - 3913)*x - 134375)*x - 281829)*sqrt(3*x^2 +
 5*x + 2) - 28051/3888*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
 5*x + 2)) - 5))
```

maple [A] time = 0.02, size = 111, normalized size = 0.81

$$-\frac{16\sqrt{3x^2+5x+2}\,x^4}{15}+\frac{2\sqrt{3x^2+5x+2}\,x^3}{3}+\frac{3913\sqrt{3x^2+5x+2}\,x^2}{135}+\frac{26875\sqrt{3x^2+5x+2}\,x}{324}+\frac{28051\sqrt{3}\,\ln\Big(\Big(3x+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -16/15*x^4*(3*x^2+5*x+2)^(1/2)+2/3*x^3*(3*x^2+5*x+2)^(1/2)+3913/135*x^2*(3*
x^2+5*x+2)^(1/2)+26875/324*x*(3*x^2+5*x+2)^(1/2)+93943/1080*(3*x^2+5*x+2)^(
1/2)+28051/3888*ln(1/3*(5/2+3*x)*3^(1/2)+(3*x^2+5*x+2)^(1/2))*3^(1/2)
```

maxima [A] time = 1.29, size = 109, normalized size = 0.80

$$-\frac{16}{15}\sqrt{3x^2+5x+2}\,x^4+\frac{2}{3}\sqrt{3x^2+5x+2}\,x^3+\frac{3913}{135}\sqrt{3x^2+5x+2}\,x^2+\frac{26875}{324}\sqrt{3x^2+5x+2}\,x+\frac{28051}{3888}\sqrt{3}\log$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -16/15*sqrt(3*x^2 + 5*x + 2)*x^4 + 2/3*sqrt(3*x^2 + 5*x + 2)*x^3 + 3913/135
*sqrt(3*x^2 + 5*x + 2)*x^2 + 26875/324*sqrt(3*x^2 + 5*x + 2)*x + 28051/3888
*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 93943/1080*sqrt(3
*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{(2x+3)^4\,(x-5)}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{864x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{264x^3}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{16x^4}{\sqrt{3x^2+5x+2}}\,dx-\int\frac{}{\sqrt{3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-999*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-864*x**2/sqrt(3*x**
2 + 5*x + 2), x) - Integral(-264*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral
(16*x**4/sqrt(3*x**2 + 5*x + 2), x) - Integral(16*x**5/sqrt(3*x**2 + 5*x +
2), x) - Integral(-405/sqrt(3*x**2 + 5*x + 2), x)
```

3.2496 $\int \frac{(5-x)(3+2x)^3}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=112

$$-\frac{1}{12}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{32}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{5}{648}(1078x+3261)\sqrt{3x^2+5x+2}+\frac{19405\tanh^{-1}\Big(\frac{}{2}}{1296}$$

```
[Out] 19405/3888*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+32/27*(
3+2*x)^2*(3*x^2+5*x+2)^(1/2)-1/12*(3+2*x)^3*(3*x^2+5*x+2)^(1/2)+5/648*(3261
+1078*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 112, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$-\frac{1}{12}\sqrt{3x^2+5x+2}\,(2x+3)^3+\frac{32}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{5}{648}(1078x+3261)\sqrt{3x^2+5x+2}+\frac{19405\tanh^{-1}\Big(\frac{}{2}}{1296}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (32*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/27 - ((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x
^2])/12 + (5*(3261 + 1078*x)*Sqrt[2 + 5*x + 3*x^2])/648 + (19405*ArcTanh[(5
 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(1296*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^3}{\sqrt{2+5x+3x^2}}\,dx = -\frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{1}{12}\int \frac{(3+2x)^2\left(\frac{399}{2}+128x\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{1}{108}\int \frac{(3+2x)\left(\frac{6805}{2}+269\right.}{\sqrt{2+5x+3x^2}}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

$$= \frac{32}{27}(3+2x)^2\sqrt{2+5x+3x^2} - \frac{1}{12}(3+2x)^3\sqrt{2+5x+3x^2} + \frac{5}{648}(3261+1078x)\sqrt{2+5x}$$

Mathematica [A] time = 0.03, size = 67, normalized size = 0.60

$$\frac{19405\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right) - 6\sqrt{3x^2+5x+2}\left(432x^3-1128x^2-11690x-21759\right)}{3888}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-21759 - 11690*x - 1128*x^2 + 432*x^3) + 19405*S
qrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/3888
```

fricas [A] time = 0.93, size = 68, normalized size = 0.61

$$-\frac{1}{648}\left(432\,x^3-1128\,x^2-11690\,x-21759\right)\sqrt{3\,x^2+5\,x+2}+\frac{19405}{7776}\,\sqrt{3}\,\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/648*(432*x^3 - 1128*x^2 - 11690*x - 21759)*sqrt(3*x^2 + 5*x + 2) + 19405
/7776*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49)
```

giac [A] time = 0.23, size = 64, normalized size = 0.57

$$-\frac{1}{648}\,(2\,(12\,(18\,x-47)x-5845)x-21759)\sqrt{3\,x^2+5\,x+2}-\frac{19405}{3888}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/648*(2*(12*(18*x - 47)*x - 5845)*x - 21759)*sqrt(3*x^2 + 5*x + 2) - 1940
5/3888*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.01, size = 94, normalized size = 0.84

$$-\frac{2\sqrt{3x^2+5x+2}\;x^3}{3}+\frac{47\sqrt{3x^2+5x+2}\;x^2}{27}+\frac{5845\sqrt{3x^2+5x+2}\;x}{324}+\frac{19405\sqrt{3}\;\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{3888}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -2/3*(3*x^2+5*x+2)^(1/2)*x^3+47/27*(3*x^2+5*x+2)^(1/2)*x^2+5845/324*(3*x^2+
5*x+2)^(1/2)*x+7253/216*(3*x^2+5*x+2)^(1/2)+19405/3888*3^(1/2)*ln(1/3*(3*x+
5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.36, size = 92, normalized size = 0.82

$$-\frac{2}{3}\sqrt{3\,x^2+5\,x+2}\,x^3+\frac{47}{27}\sqrt{3\,x^2+5\,x+2}\,x^2+\frac{5845}{324}\sqrt{3\,x^2+5\,x+2}\,x+\frac{19405}{3888}\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -2/3*sqrt(3*x^2 + 5*x + 2)*x^3 + 47/27*sqrt(3*x^2 + 5*x + 2)*x^2 + 5845/324
*sqrt(3*x^2 + 5*x + 2)*x + 19405/3888*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 6*x + 5) + 7253/216*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^3\,\left(x-5\right)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{126x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{4x^3}{\sqrt{3x^2+5x+2}}\right)dx-\int\frac{8x^4}{\sqrt{3x^2+5x+2}}\,dx-\int\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-243*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-126*x**2/sqrt(3*x**
2 + 5*x + 2), x) - Integral(-4*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral(8
*x**4/sqrt(3*x**2 + 5*x + 2), x) - Integral(-135/sqrt(3*x**2 + 5*x + 2), x)
```

3.2497 $\int \frac{(5-x)(3+2x)^2}{\sqrt{2+5x+3x^2}} dx$

Optimal. Leaf size=87

$$-\frac{1}{9}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{54}(194x+699)\sqrt{3x^2+5x+2}+\frac{1147\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{108\sqrt{3}}$$

```
[Out] 1147/324*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-1/9*(3+2*
x)^2*(3*x^2+5*x+2)^(1/2)+1/54*(699+194*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 87, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {832, 779, 621, 206}

$$-\frac{1}{9}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{1}{54}(194x+699)\sqrt{3x^2+5x+2}+\frac{1147\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{108\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2])/9 + ((699 + 194*x)*Sqrt[2 + 5*x + 3*x^
2])/54 + (1147*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(108*S
qrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^2}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{9}\int \frac{(3+2x)\left(\frac{301}{2}+97x\right)}{\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147}{108}\int \frac{1}{\sqrt{2+5x+}} \\
&= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147}{54}\,\mathrm{Subst}\Bigg(\int \frac{1}{12-} \\
&= -\frac{1}{9}(3+2x)^2\sqrt{2+5x+3x^2} + \frac{1}{54}(699+194x)\sqrt{2+5x+3x^2} + \frac{1147\tanh^{-1}\left(\frac{5-}{2\sqrt{3}\,\sqrt{2}}\right.}{108\sqrt{3}}
\end{aligned}
$$

Mathematica [**A**] time = 0.03, size = 62, normalized size = 0.71

$$\frac{1}{324}\left(1147\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\,\left(24x^2-122x-645\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2]*(-645 - 122*x + 24*x^2) + 1147*Sqrt[3]*ArcTanh[(5
 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/324
```

fricas [**A**] time = 0.96, size = 63, normalized size = 0.72

$$-\frac{1}{54}\left(24\,x^2-122\,x-645\right)\sqrt{3\,x^2+5\,x+2}+\frac{1147}{648}\,\sqrt{3}\,\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/54*(24*x^2 - 122*x - 645)*sqrt(3*x^2 + 5*x + 2) + 1147/648*sqrt(3)*log(4
*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [**A**] time = 0.23, size = 59, normalized size = 0.68

$$-\frac{1}{54}\,(2\,(12\,x-61)x-645)\sqrt{3\,x^2+5\,x+2}-\frac{1147}{324}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/54*(2*(12*x - 61)*x - 645)*sqrt(3*x^2 + 5*x + 2) - 1147/324*sqrt(3)*log(
abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [**A**] time = 0.01, size = 77, normalized size = 0.89

$$-\frac{4\sqrt{3x^2+5x+2}\;x^2}{9}+\frac{61\sqrt{3x^2+5x+2}\;x}{27}+\frac{1147\sqrt{3}\;\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{324}+\frac{215\sqrt{3x^2+5x+2}}{18}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -4/9*(3*x^2+5*x+2)^(1/2)*x^2+61/27*(3*x^2+5*x+2)^(1/2)*x+215/18*(3*x^2+5*x+
2)^(1/2)+1147/324*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.24, size = 75, normalized size = 0.86

$$-\frac{4}{9}\sqrt{3\,x^2+5\,x+2}\,x^2+\frac{61}{27}\sqrt{3\,x^2+5\,x+2}\,x+\frac{1147}{324}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)+\frac{215}{18}\sqrt{3\,x^2+5\,x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -4/9*sqrt(3*x^2 + 5*x + 2)*x^2 + 61/27*sqrt(3*x^2 + 5*x + 2)*x + 1147/324*s
qrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 215/18*sqrt(3*x^2 +
 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^2\,\left(x-5\right)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{51x}{\sqrt{3x^2+5x+2}}\right)dx-\int \left(-\frac{8x^2}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{4x^3}{\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{45}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-51*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2/sqrt(3*x**2 +
 5*x + 2), x) - Integral(4*x**3/sqrt(3*x**2 + 5*x + 2), x) - Integral(-45/s
qrt(3*x**2 + 5*x + 2), x)
```

3.2498 $\int \frac{(5-x)(3+2x)}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=62

$$\frac{1}{6}\sqrt{3x^2+5x+2}\,(19-2x)+\frac{31\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{4\sqrt{3}}$$

```
[Out] 31/12*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+1/6*(19-2*x)
*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = $\{779, 621, 206\}$

$$\frac{1}{6}\sqrt{3x^2+5x+2}\,(19-2x)+\frac{31\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{4\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] ((19 - 2*x)*Sqrt[2 + 5*x + 3*x^2])/6 + (31*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqr
t[2 + 5*x + 3*x^2])])/(4*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\sqrt{2+5x+3x^2}}\,dx &= \frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31}{4}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= \frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31}{2}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\ &= \frac{1}{6}(19-2x)\sqrt{2+5x+3x^2}+\frac{31\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{4\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 57, normalized size = 0.92

$$\frac{1}{12}\left(31\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-2(2x-19)\sqrt{3x^2+5x+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*(-19 + 2*x)*Sqrt[2 + 5*x + 3*x^2] + 31*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqr
t[6 + 15*x + 9*x^2])])/12
```

fricas [A] time = 1.09, size = 58, normalized size = 0.94

$$-\frac{1}{6}\sqrt{3x^2+5x+2}\,(2x-19)+\frac{31}{24}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/6*sqrt(3*x^2 + 5*x + 2)*(2*x - 19) + 31/24*sqrt(3)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49)
```

giac [A] time = 0.22, size = 54, normalized size = 0.87

$$-\frac{1}{6}\sqrt{3x^2+5x+2}\,(2x-19)-\frac{31}{12}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -1/6*sqrt(3*x^2 + 5*x + 2)*(2*x - 19) - 31/12*sqrt(3)*log(abs(-2*sqrt(3)*(s
qrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
```

maple [A] time = 0.01, size = 60, normalized size = 0.97

$$-\frac{\sqrt{3x^2+5x+2}\,x}{3}+\frac{31\sqrt{3}\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{12}+\frac{19\sqrt{3x^2+5x+2}}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/3*(3*x^2+5*x+2)^(1/2)*x+19/6*(3*x^2+5*x+2)^(1/2)+31/12*3^(1/2)*ln(1/3*(3
*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.31, size = 58, normalized size = 0.94

$$-\frac{1}{3}\sqrt{3x^2+5x+2}\,x+\frac{31}{12}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)+\frac{19}{6}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/3*sqrt(3*x^2 + 5*x + 2)*x + 31/12*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x
 + 2) + 6*x + 5) + 19/6*sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int\frac{(2x+3)\,(x-5)}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{7x}{\sqrt{3x^2+5x+2}}\right)dx - \int \frac{2x^2}{\sqrt{3x^2+5x+2}}\,dx - \int \left(-\frac{15}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-7*x/sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2/sqrt(3*x**2 + 5
*x + 2), x) - Integral(-15/sqrt(3*x**2 + 5*x + 2), x)
```

3.2499 $\int \frac{5-x}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=57

$$\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{6\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+5x+2}$$

```
[Out] 35/18*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-1/3*(3*x^2+5
*x+2)^(1/2)
```

Rubi **[A]** time = 0.02, antiderivative size = 57, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.150, Rules used = {640, 621, 206}

$$\frac{35\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{6\sqrt{3}}-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -Sqrt[2 + 5*x + 3*x^2]/3 + (35*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x +
3*x^2])])/(6*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{2+5x+3x^2}}\,dx&=-\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35}{6}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\&=-\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35}{3}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\&=-\frac{1}{3}\sqrt{2+5x+3x^2}+\frac{35\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{6\sqrt{3}}\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 52, normalized size = 0.91

$$\frac{1}{18}\left(35\sqrt{3}\ \tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)-6\sqrt{3x^2+5x+2}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-6*Sqrt[2 + 5*x + 3*x^2] + 35*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x +
 9*x^2])])/18
```

fricas [**A**] time = 0.86, size = 53, normalized size = 0.93

$$\frac{35}{36}\sqrt{3}\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 35/36*sqrt(3)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49) - 1/3*sqrt(3*x^2 + 5*x + 2)
```

giac [**A**] time = 0.25, size = 49, normalized size = 0.86

$$-\frac{35}{18}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] -35/18*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5))
 - 1/3*sqrt(3*x^2 + 5*x + 2)
```

maple [**A**] time = 0.00, size = 45, normalized size = 0.79

$$\frac{35\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{18}-\frac{\sqrt{3x^2+5x+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 35/18*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-1/3*(3*x^2+5*x+
2)^(1/2)
```

maxima [**A**] time = 1.33, size = 43, normalized size = 0.75

$$\frac{35}{18}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{1}{3}\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] 35/18*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 1/3*sqrt(3*x
^2 + 5*x + 2)
```

mupad [**B**] time = 2.68, size = 44, normalized size = 0.77

$$\frac{35\sqrt{3}\ \ln\left(\sqrt{3}\,x+\frac{5\sqrt{3}}{6}+\sqrt{3x^2+5x+2}\right)}{18}-\frac{\sqrt{3x^2+5x+2}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] (35*3^(1/2)*log(3^(1/2)*x + (5*3^(1/2))/6 + (5*x + 3*x^2 + 2)^(1/2)))/18 -
(5*x + 3*x^2 + 2)^(1/2)/3
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/sqrt(3*x**2 + 5*x + 2), x) - Integral(-5/sqrt(3*x**2 + 5*x + 2)
, x)
```

3.2500 $\int \frac{5-x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=77

$$\frac{13\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{5}}-\frac{\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{3}}$$

```
[Out] -1/6*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+13/10*arctanh
(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 77, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{843, 621, 206, 724\}$

$$\frac{13\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{5}}-\frac{\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{2\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])]/(2*Sqrt[3]) + (13*Arc
Tanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(2*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\sqrt{2+5x+3x^2}}\,dx &= -\left(\frac{1}{2}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\right)+\frac{13}{2}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\left(13\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)\right)-\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5}{\sqrt{2+}}\right.\\ &= -\frac{\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{2\sqrt{3}}+\frac{13\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{2\sqrt{5}}\end{aligned}$$

Mathematica [A] time = 0.02, size = 72, normalized size = 0.94

$$\frac{1}{30}\left(-39\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-5\sqrt{3}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-39*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])] - 5*Sqrt
[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/30
```

fricas [A] time = 0.52, size = 90, normalized size = 1.17

$$\frac{1}{12}\sqrt{3}\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+\frac{13}{20}\sqrt{5}\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+}{4x^2+12x+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/12*sqrt(3)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*
x + 49) + 13/20*sqrt(5)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 12
4*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9))
```

giac [A] time = 0.29, size = 107, normalized size = 1.39

$$\frac{13}{10}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{1}{6}\sqrt{3}\log\left(\left|-6\sqrt{3}x-5\sqrt{3}+6\sqrt{3x^2+5x+2}\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 13/10*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
2))) + 1/6*sqrt(3)*log(abs(-6*sqrt(3)*x - 5*sqrt(3) + 6*sqrt(3*x^2 + 5*x +
2)))
```

maple [A] time = 0.01, size = 61, normalized size = 0.79

$$-\frac{13\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{10}-\frac{\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/6*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-13/10*5^(1/2)*ar
ctanh(2/5*(-7/2-4*x)*5^(1/2)/(12*(x+3/2)^2-16*x-19)^(1/2))
```

maxima [A] time = 1.17, size = 70, normalized size = 0.91

$$-\frac{1}{6}\sqrt{3}\log\left(\sqrt{3}\sqrt{3x^2+5x+2}+3x+\frac{5}{2}\right)-\frac{13}{10}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/6*sqrt(3)*log(sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 3*x + 5/2) - 13/10*sqrt(5)
*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x + 3) - 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{2x\sqrt{3x^2+5x+2}+3\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{5}{2x\sqrt{3x^2+5x+2}+3\sqrt{3x^2+5x+2}}\right)dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(2*x*sqrt(3*x**2 + 5*x + 2) + 3*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-5/(2*x*sqrt(3*x**2 + 5*x + 2) + 3*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2501 $\int \frac{5-x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=64

$$\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

```
[Out] 47/50*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-13/5*(3*x^2
+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.04, antiderivative size = 64, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {806, 724, 206}

$$\frac{47\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(5*(3 + 2*x)) + (47*ArcTanh[(7 + 8*x)/(2*Sqrt[5
]*Sqrt[2 + 5*x + 3*x^2])])/(10*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx &= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}+\frac{47}{10}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}-\frac{47}{5}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx, x, \frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)\\
&= -\frac{13\sqrt{2+5x+3x^2}}{5(3+2x)}+\frac{47\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{10\sqrt{5}}
\end{aligned}$$

Mathematica [A] time = 0.02, size = 64, normalized size = 1.00

$$-\frac{13\sqrt{3x^2+5x+2}}{5(2x+3)}-\frac{47\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{10\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(5*(3 + 2*x)) - (47*ArcTanh[(-7 - 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(10*Sqrt[5])
```

fricas [A] time = 0.73, size = 80, normalized size = 1.25

$$\frac{47\sqrt{5}\,(2x+3)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-260\sqrt{3x^2+5x+2}}{100\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/100*(47*sqrt(5)*(2*x + 3)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7)
+ 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 260*sqrt(3*x^2 + 5*x + 2))/(2
*x + 3)
```

giac [B] time = 0.34, size = 127, normalized size = 1.98

$$\frac{1}{50}\sqrt{5}\left(13\sqrt{5}\sqrt{3}+47\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{47\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}+\frac{\sqrt{5}}{2x+3}\right)-\right.\right.}{50\operatorname{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/50*sqrt(5)*(13*sqrt(5)*sqrt(3) + 47*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(2*x
 + 3)) - 47/50*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 +
 3) + sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3)) - 13/10*sqrt(-8/(2*x + 3) +
 5/(2*x + 3)^2 + 3)/sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 53, normalized size = 0.83

$$-\frac{47\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{50}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{10\left(x+\frac{3}{2}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -13/10/(x+3/2)*(3*(x+3/2)^2-4*x-19/4)^(1/2)-47/50*5^(1/2)*arctanh(2/5*(-4*x
-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.29, size = 64, normalized size = 1.00

$$-\frac{47}{50}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2\,|2x+3|}-2\right)-\frac{13\sqrt{3x^2+5x+2}}{5\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -47/50*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) - 13/5*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int \frac{x-5}{(2x+3)^2\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{4x^2\sqrt{3x^2+5x+2}+12x\sqrt{3x^2+5x+2}+9\sqrt{3x^2+5x+2}}\,dx-\int\Bigg(-\frac{5}{4x^2\sqrt{3x^2+5x+2}+12x\sqrt{3x^2+5x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(4*x**2*sqrt(3*x**2 + 5*x + 2) + 12*x*sqrt(3*x**2 + 5*x + 2) +
9*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(4*x**2*sqrt(3*x**2 + 5*x + 2)
+ 12*x*sqrt(3*x**2 + 5*x + 2) + 9*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2502 $\int \frac{5-x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=89

$$-\frac{73\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{13\sqrt{3x^2+5x+2}}{10(2x+3)^2}+\frac{389\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

```
[Out] 389/500*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-13/10*(3*
x^2+5*x+2)^(1/2)/(3+2*x)^2-73/25*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.06, antiderivative size = 89, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{73\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{13\sqrt{3x^2+5x+2}}{10(2x+3)^2}+\frac{389\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(10*(3 + 2*x)^2) - (73*Sqrt[2 + 5*x + 3*x^2])/(
25*(3 + 2*x)) + (389*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/
(100*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx &= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{1}{10}\int \frac{-\frac{29}{2}+39x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{389}{100}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}-\frac{389}{50}\,\text{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7}{\sqrt{2+5}}\right.\\ &= -\frac{13\sqrt{2+5x+3x^2}}{10(3+2x)^2}-\frac{73\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{389\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{100\sqrt{5}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 69, normalized size = 0.78

$$\frac{1}{500}\left(-\frac{10\sqrt{3x^2+5x+2}\,(292x+503)}{(2x+3)^2}-389\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\,\sqrt{3x^2+5x+2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*(503 + 292*x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^2 - 389*Sqrt[5]*ArcTan
h[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/500
```

fricas [A] time = 0.92, size = 95, normalized size = 1.07

$$\frac{389\,\sqrt{5}\left(4\,x^2+12\,x+9\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)+124\,x^2+212\,x+89}{4\,x^2+12\,x+9}\right)-20\,\sqrt{3\,x^2+5\,x+2}\,(292\,x+503)}{1000\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/1000*(389*sqrt(5)*(4*x^2 + 12*x + 9)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)
*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*sqrt(3*x^2 + 5*
x + 2)*(292*x + 503))/(4*x^2 + 12*x + 9)
```

giac [B] time = 0.32, size = 206, normalized size = 2.31

$$\frac{389}{500}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}\,-6\,\sqrt{3}\,+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)-\frac{778\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)^3+3551\,\sqrt{3}\left(\sqrt{3}\,x-\right.}{50\left(2\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 389/500*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 1/50*(778*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 3551*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 13217*sqrt(3)*x + 4971*sqrt(3) - 13217
*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3
)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [A] time = 0.01, size = 74, normalized size = 0.83

$$-\frac{389\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{500}-\frac{73\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{50\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{40\left(x+\frac{3}{2}\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -73/50/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-389/500*5^(1/2)*arctanh(2/5*(-
4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(x+3/2)^2*(-4*x+3*(x+
3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.27, size = 90, normalized size = 1.01

$$-\frac{389}{500}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^{2}+5x+2}}{10\left(4x^{2}+12x+9\right)}-\frac{73\sqrt{3x^{2}+5x+2}}{25(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -389/500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 13/10*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 73/25*sqrt(
3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^{3}\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{8x^{3}\sqrt{3x^{2}+5x+2}+36x^{2}\sqrt{3x^{2}+5x+2}+54x\sqrt{3x^{2}+5x+2}+27\sqrt{3x^{2}+5x+2}}\,dx-\int\left(-\frac{}{8x^{3}\sqrt{3x^{2}+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(8*x**3*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(3*x**2 + 5*x + 2)
 + 54*x*sqrt(3*x**2 + 5*x + 2) + 27*sqrt(3*x**2 + 5*x + 2)), x) - Integral(
-5/(8*x**3*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(3*x**2 + 5*x + 2) + 54*x*s
qrt(3*x**2 + 5*x + 2) + 27*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2503 $\int \frac{5-x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=114

$$-\frac{72\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{49\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{13\sqrt{3x^2+5x+2}}{15(2x+3)^3}+\frac{331\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

```
[Out] 331/500*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-13/15*(3*
x^2+5*x+2)^(1/2)/(3+2*x)^3-49/30*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2-72/25*(3*x^2
+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.07, antiderivative size = 114, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {834, 806, 724, 206}

$$-\frac{72\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{49\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{13\sqrt{3x^2+5x+2}}{15(2x+3)^3}+\frac{331\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{100\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^3) - (49*Sqrt[2 + 5*x + 3*x^2])/(
30*(3 + 2*x)^2) - (72*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)) + (331*ArcTanh[
(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(100*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx = -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{1}{15}\int \frac{-\frac{11}{2}+78x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} + \frac{1}{150}\int \frac{-\frac{45}{2}-735x}{(3+2x)^2\sqrt{2+5x+3x^2}}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} + \frac{331}{100}\int$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} - \frac{331}{50}\,\text{Subst}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{15(3+2x)^3} - \frac{49\sqrt{2+5x+3x^2}}{30(3+2x)^2} - \frac{72\sqrt{2+5x+3x^2}}{25(3+2x)} + 331\tanh^{-1}$$

Mathematica [**A**] time = 0.04, size = 74, normalized size = 0.65

$$\frac{-\frac{10\sqrt{3x^2+5x+2}\left(1728x^2+5674x+4753\right)}{(2x+3)^3} - 993\sqrt{5}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{1500}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(4753 + 5674*x + 1728*x^2))/(3 + 2*x)^3 - 993*S
qrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/1500
```

fricas [**A**] time = 0.76, size = 110, normalized size = 0.96

$$\frac{993\sqrt{5}\left(8x^3+36x^2+54x+27\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 20\left(1728x^2+5674x+4753\right)\sqrt{3}}{3000\left(8x^3+36x^2+54x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/3000*(993*sqrt(5)*(8*x^3 + 36*x^2 + 54*x + 27)*log((4*sqrt(5)*sqrt(3*x^2
+ 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 20*(1728
*x^2 + 5674*x + 4753)*sqrt(3*x^2 + 5*x + 2))/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [**B**] time = 0.31, size = 257, normalized size = 2.25

$$\frac{331}{500}\sqrt{5}\,\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right) - \frac{3972\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^5 + 29790\sqrt{3}\,(}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 331/500*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 1/150*(3972*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 29790*sqrt(3)*
(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 255470*(sqrt(3)*x - sqrt(3*x^2 + 5*
x + 2))^3 + 338835*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 632175*s
qrt(3)*x + 149502*sqrt(3) - 632175*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - s
qrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 1
1)^3
```

maple [A] time = 0.01, size = 95, normalized size = 0.83

$$-\frac{331\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{500}-\frac{49\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{120\left(x+\frac{3}{2}\right)^{2}}-\frac{36\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{25\left(x+\frac{3}{2}\right)}-\frac{13\sqrt{-4x+3}}{120(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -49/120/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-36/25/(x+3/2)*(-4*x+3*(x+3/
2)^2-19/4)^(1/2)-331/500*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(
x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.21, size = 121, normalized size = 1.06

$$-\frac{331}{500}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^{2}+5x+2}}{15\left(8x^{3}+36x^{2}+54x+27\right)}-\frac{49\sqrt{3x^{2}+5x+2}}{30\left(4x^{2}+12x+9\right)}-\frac{72\sqrt{3}}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -331/500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 13/15*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 4
9/30*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 72/25*sqrt(3*x^2 + 5*x + 2)
/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)^{4}\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{16x^{4}\sqrt{3x^{2}+5x+2}+96x^{3}\sqrt{3x^{2}+5x+2}+216x^{2}\sqrt{3x^{2}+5x+2}+216x\sqrt{3x^{2}+5x+2}+81\sqrt{3x^{2}+5x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(16*x**4*sqrt(3*x**2 + 5*x + 2) + 96*x**3*sqrt(3*x**2 + 5*x + 2
) + 216*x**2*sqrt(3*x**2 + 5*x + 2) + 216*x*sqrt(3*x**2 + 5*x + 2) + 81*sqr
t(3*x**2 + 5*x + 2)), x) - Integral(-5/(16*x**4*sqrt(3*x**2 + 5*x + 2) + 96
*x**3*sqrt(3*x**2 + 5*x + 2) + 216*x**2*sqrt(3*x**2 + 5*x + 2) + 216*x*sqrt
(3*x**2 + 5*x + 2) + 81*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2504 $\int \frac{5-x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=139

$$-\frac{681\sqrt{3x^2+5x+2}}{250(2x+3)}-\frac{41\sqrt{3x^2+5x+2}}{24(2x+3)^2}-\frac{86\sqrt{3x^2+5x+2}}{75(2x+3)^3}-\frac{13\sqrt{3x^2+5x+2}}{20(2x+3)^4}+\frac{5771\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2000\sqrt{5}}$$

```
[Out] 5771/10000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-13/20*
(3*x^2+5*x+2)^(1/2)/(3+2*x)^4-86/75*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3-41/24*(3*
x^2+5*x+2)^(1/2)/(3+2*x)^2-681/250*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.10, antiderivative size = 139, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {834, 806, 724, 206}

$$-\frac{681\sqrt{3x^2+5x+2}}{250(2x+3)}-\frac{41\sqrt{3x^2+5x+2}}{24(2x+3)^2}-\frac{86\sqrt{3x^2+5x+2}}{75(2x+3)^3}-\frac{13\sqrt{3x^2+5x+2}}{20(2x+3)^4}+\frac{5771\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{2000\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(20*(3 + 2*x)^4) - (86*Sqrt[2 + 5*x + 3*x^2])/(
75*(3 + 2*x)^3) - (41*Sqrt[2 + 5*x + 3*x^2])/(24*(3 + 2*x)^2) - (681*Sqrt[2
 + 5*x + 3*x^2])/(250*(3 + 2*x)) + (5771*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[
2 + 5*x + 3*x^2])])/(2000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx &= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{1}{20}\int \frac{\frac{7}{2}+117x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3}+\frac{1}{300}\int \frac{-\frac{1067}{2}-2064x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2}-\frac{\int \frac{\frac{5265}{2}+15375x}{(3+2x)^2\sqrt{2+5x+3}}}{3000}\\
&= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2}-\frac{681\sqrt{2+5x+3}}{250(3+2x)}\\
&= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2}-\frac{681\sqrt{2+5x+3}}{250(3+2x)}\\
&= -\frac{13\sqrt{2+5x+3x^2}}{20(3+2x)^4}-\frac{86\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{41\sqrt{2+5x+3x^2}}{24(3+2x)^2}-\frac{681\sqrt{2+5x+3}}{250(3+2x)}
\end{aligned}
$$

Mathematica [**A**] time = 0.05, size = 79, normalized size = 0.57

$$
\frac{-17313\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-\frac{10\sqrt{3x^2+5x+2}\left(65376x^3+314692x^2+509668x+279039\right)}{(2x+3)^4}}{30000}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(279039 + 509668*x + 314692*x^2 + 65376*x^3))/(
3 + 2*x)^4 - 17313*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x
^2])])/30000
```

fricas [**A**] time = 0.89, size = 125, normalized size = 0.90

$$
\frac{17313\,\sqrt{5}\left(16\,x^4+96\,x^3+216\,x^2+216\,x+81\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)+124\,x^2+212\,x+89}{4\,x^2+12\,x+9}\right)-20\left(65376\,x^3+314692\right.}{60000\left(16\,x^4+96\,x^3+216\,x^2+216\,x+81\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/60000*(17313*sqrt(5)*(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)*log((4*sqrt
(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x +
 9)) - 20*(65376*x^3 + 314692*x^2 + 509668*x + 279039)*sqrt(3*x^2 + 5*x + 2
))/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81)
```

giac [A] time = 0.37, size = 193, normalized size = 1.39

$$\frac{1}{10000}\sqrt{5}\left(2724\sqrt{5}\sqrt{3}+5771\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\operatorname{sgn}\left(\frac{1}{2x+3}\right)-\frac{1}{6000}\left(\frac{5\left(\frac{2\left(\frac{344}{\operatorname{sgn}\left(\frac{1}{2x+3}\right)}+\frac{195}{(2x+3)\operatorname{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{10}{\operatorname{sgn}(}\right.}{2x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 1/10000*sqrt(5)*(2724*sqrt(5)*sqrt(3) + 5771*log(-sqrt(5)*sqrt(3) + 4))*sgn
(1/(2*x + 3)) - 1/6000*(5*(2*(344/sgn(1/(2*x + 3)) + 195/((2*x + 3)*sgn(1/(
2*x + 3))))/(2*x + 3) + 1025/sgn(1/(2*x + 3)))/(2*x + 3) + 8172/sgn(1/(2*x
+ 3)))*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 5771/10000*sqrt(5)*log(abs(
sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))/
sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 116, normalized size = 0.83

$$-\frac{5771\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{10000}-\frac{13\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{320\left(x+\frac{3}{2}\right)^{4}}-\frac{43\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}{300\left(x+\frac{3}{2}\right)^{3}}-41\sqrt{-4x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -13/320/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-43/300/(x+3/2)^3*(-4*x+3*(x
+3/2)^2-19/4)^(1/2)-41/96/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-681/500/(
x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-5771/10000*5^(1/2)*arctanh(2/5*(-4*x-7
/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.27, size = 157, normalized size = 1.13

$$-\frac{5771}{10000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^{2}+5x+2}}{20\left(16x^{4}+96x^{3}+216x^{2}+216x+81\right)}-\frac{86\sqrt{3}}{75\left(8x^{3}+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -5771/10000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) - 13/20*sqrt(3*x^2 + 5*x + 2)/(16*x^4 + 96*x^3 + 216*x^2 +
216*x + 81) - 86/75*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2 + 54*x + 27) - 41
/24*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 681/250*sqrt(3*x^2 + 5*x + 2
)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^{5}\sqrt{3x^{2}+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{32x^5\sqrt{3x^2+5x+2}+240x^4\sqrt{3x^2+5x+2}+720x^3\sqrt{3x^2+5x+2}+1080x^2\sqrt{3x^2+5x+2}+810x\sqrt{3x^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(32*x**5*sqrt(3*x**2 + 5*x + 2) + 240*x**4*sqrt(3*x**2 + 5*x +
2) + 720*x**3*sqrt(3*x**2 + 5*x + 2) + 1080*x**2*sqrt(3*x**2 + 5*x + 2) + 8
10*x*sqrt(3*x**2 + 5*x + 2) + 243*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5
/(32*x**5*sqrt(3*x**2 + 5*x + 2) + 240*x**4*sqrt(3*x**2 + 5*x + 2) + 720*x*
*3*sqrt(3*x**2 + 5*x + 2) + 1080*x**2*sqrt(3*x**2 + 5*x + 2) + 810*x*sqrt(3
*x**2 + 5*x + 2) + 243*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2505 $\int \frac{5-x}{(3+2x)^6\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=164

$$-\frac{15891\sqrt{3x^2+5x+2}}{6250(2x+3)}-\frac{1007\sqrt{3x^2+5x+2}}{600(2x+3)^2}-\frac{2321\sqrt{3x^2+5x+2}}{1875(2x+3)^3}-\frac{443\sqrt{3x^2+5x+2}}{500(2x+3)^4}-\frac{13\sqrt{3x^2+5x+2}}{25(2x+3)^5}+$$

```
[Out] 128381/250000*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-13/
25*(3*x^2+5*x+2)^(1/2)/(3+2*x)^5-443/500*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4-2321
/1875*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3-1007/600*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2-
15891/6250*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.14, antiderivative size = 164, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {834, 806, 724, 206}

$$-\frac{15891\sqrt{3x^2+5x+2}}{6250(2x+3)}-\frac{1007\sqrt{3x^2+5x+2}}{600(2x+3)^2}-\frac{2321\sqrt{3x^2+5x+2}}{1875(2x+3)^3}-\frac{443\sqrt{3x^2+5x+2}}{500(2x+3)^4}-\frac{13\sqrt{3x^2+5x+2}}{25(2x+3)^5}+$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-13*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)^5) - (443*Sqrt[2 + 5*x + 3*x^2])/
(500*(3 + 2*x)^4) - (2321*Sqrt[2 + 5*x + 3*x^2])/(1875*(3 + 2*x)^3) - (1007
*Sqrt[2 + 5*x + 3*x^2])/(600*(3 + 2*x)^2) - (15891*Sqrt[2 + 5*x + 3*x^2])/(
6250*(3 + 2*x)) + (128381*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2
])])/(50000*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^6\sqrt{2+5x+3x^2}}\,dx = -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{1}{25}\int \frac{\frac{25}{2}+156x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} + \frac{1}{500}\int \frac{-\frac{2677}{2}-3987x}{(3+2x)^4\sqrt{2+5x+3x^2}}$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} -$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} -$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} -$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} -$$

$$= -\frac{13\sqrt{2+5x+3x^2}}{25(3+2x)^5} - \frac{443\sqrt{2+5x+3x^2}}{500(3+2x)^4} - \frac{2321\sqrt{2+5x+3x^2}}{1875(3+2x)^3} -$$

Mathematica [A] time = 0.06, size = 84, normalized size = 0.51

$$\frac{-385143\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right) - \frac{10\sqrt{3x^2+5x+2}\left(3051072x^4+19313432x^3+46092332x^2+49233702x+19918587\right)}{(2x+3)^5}}{750000}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^6*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((-10*Sqrt[2 + 5*x + 3*x^2]*(19918587 + 49233702*x + 46092332*x^2 + 1931343
2*x^3 + 3051072*x^4))/(3 + 2*x)^5 - 385143*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/750000
```

fricas [A] time = 0.86, size = 140, normalized size = 0.85

$$\frac{385143\sqrt{5}\left(32x^5+240x^4+720x^3+1080x^2+810x+243\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right) - 20}{1500000\left(32x^5+240x^4+720x^3+1080x^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/1500000*(385143*sqrt(5)*(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x +
243)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)
/(4*x^2 + 12*x + 9)) - 20*(3051072*x^4 + 19313432*x^3 + 46092332*x^2 + 4923
3702*x + 19918587)*sqrt(3*x^2 + 5*x + 2))/(32*x^5 + 240*x^4 + 720*x^3 + 108
0*x^2 + 810*x + 243)
```

giac [B] time = 0.56, size = 359, normalized size = 2.19

$$\frac{128381}{250000}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6162288\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)^9+8319}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] 128381/250000*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt
(3*x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
+ 5*x + 2))) - 1/75000*(6162288*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^9 + 831
90888*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^8 + 1461489304*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^7 + 4863585804*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^6 + 30365807072*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 409310117
58*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 107175203674*(sqrt(3)*x
- sqrt(3*x^2 + 5*x + 2))^3 + 58461317289*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2))^2 + 54344360217*sqrt(3)*x + 7303159752*sqrt(3) - 54344360217*sqrt
(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sq
rt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^5
```

maple [A] time = 0.01, size = 137, normalized size = 0.84

$$-\frac{128381\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{250000}-\frac{443\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{8000\left(x+\frac{3}{2}\right)^4}-\frac{2321\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}{15000\left(x+\frac{3}{2}\right)^3}-\frac{10}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -443/8000/(x+3/2)^4*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-2321/15000/(x+3/2)^3*(-4*
x+3*(x+3/2)^2-19/4)^(1/2)-1007/2400/(x+3/2)^2*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
-15891/12500/(x+3/2)*(-4*x+3*(x+3/2)^2-19/4)^(1/2)-128381/250000*5^(1/2)*ar
ctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/800/(x+3/2)^
5*(-4*x+3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.17, size = 198, normalized size = 1.21

$$-\frac{128381}{250000}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{13\sqrt{3x^2+5x+2}}{25\left(32x^5+240x^4+720x^3+1080x^2+810x+24\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^6/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -128381/250000*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2
/abs(2*x + 3) - 2) - 13/25*sqrt(3*x^2 + 5*x + 2)/(32*x^5 + 240*x^4 + 720*x^
3 + 1080*x^2 + 810*x + 243) - 443/500*sqrt(3*x^2 + 5*x + 2)/(16*x^4 + 96*x^
3 + 216*x^2 + 216*x + 81) - 2321/1875*sqrt(3*x^2 + 5*x + 2)/(8*x^3 + 36*x^2
 + 54*x + 27) - 1007/600*sqrt(3*x^2 + 5*x + 2)/(4*x^2 + 12*x + 9) - 15891/6
250*sqrt(3*x^2 + 5*x + 2)/(2*x + 3)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^6\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^6*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^6*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{64x^6\sqrt{3x^2+5x+2}+576x^5\sqrt{3x^2+5x+2}+2160x^4\sqrt{3x^2+5x+2}+4320x^3\sqrt{3x^2+5x+2}+4860x^2\sqrt{3x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**6/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(64*x**6*sqrt(3*x**2 + 5*x + 2) + 576*x**5*sqrt(3*x**2 + 5*x +
2) + 2160*x**4*sqrt(3*x**2 + 5*x + 2) + 4320*x**3*sqrt(3*x**2 + 5*x + 2) +
4860*x**2*sqrt(3*x**2 + 5*x + 2) + 2916*x*sqrt(3*x**2 + 5*x + 2) + 729*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(-5/(64*x**6*sqrt(3*x**2 + 5*x + 2) + 576
*x**5*sqrt(3*x**2 + 5*x + 2) + 2160*x**4*sqrt(3*x**2 + 5*x + 2) + 4320*x**3
*sqrt(3*x**2 + 5*x + 2) + 4860*x**2*sqrt(3*x**2 + 5*x + 2) + 2916*x*sqrt(3*
x**2 + 5*x + 2) + 729*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2506 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=117

$$-\frac{2(139x+121)(2x+3)^3}{3\sqrt{3x^2+5x+2}}+\frac{1664}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{10}{81}(1438x+3369)\sqrt{3x^2+5x+2}+\frac{6265\tanh^{-1}\Big(\frac{}{2\sqrt{3}}}{81\sqrt{3}}$$

```
[Out] 6265/243*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2/3*(3+2*
x)^3*(121+139*x)/(3*x^2+5*x+2)^(1/2)+1664/27*(3+2*x)^2*(3*x^2+5*x+2)^(1/2)+
10/81*(3369+1438*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 117, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {818, 832, 779, 621, 206}

$$-\frac{2(139x+121)(2x+3)^3}{3\sqrt{3x^2+5x+2}}+\frac{1664}{27}\sqrt{3x^2+5x+2}\,(2x+3)^2+\frac{10}{81}(1438x+3369)\sqrt{3x^2+5x+2}+\frac{6265\tanh^{-1}\Big(\frac{}{2\sqrt{3}}}{81\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^3*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (1664*(3 + 2*x)^
2*Sqrt[2 + 5*x + 3*x^2])/27 + (10*(3369 + 1438*x)*Sqrt[2 + 5*x + 3*x^2])/81
 + (6265*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(81*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{(3+2x)^2(723+832x)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2}+\frac{2}{27}\int \frac{(3+2x)(6625+71}{\sqrt{2+5x+3x^2}}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2}+\frac{10}{81}(3369+1438x)\sqrt{2+5}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2}+\frac{10}{81}(3369+1438x)\sqrt{2+5}$$

$$= -\frac{2(3+2x)^3(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{1664}{27}(3+2x)^2\sqrt{2+5x+3x^2}+\frac{10}{81}(3369+1438x)\sqrt{2+5}$$

Mathematica [A] time = 0.04, size = 81, normalized size = 0.69

$$-\frac{6\left(72x^4-102x^3-3331x^2+6920x+9591\right)-6265\sqrt{9x^2+15x+6}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{243\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/243*(6*(9591 + 6920*x - 3331*x^2 - 102*x^3 + 72*x^4) - 6265*Sqrt[6 + 15*
x + 9*x^2]*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*
x^2]
```

fricas [A] time = 0.68, size = 97, normalized size = 0.83

$$\frac{6265\sqrt{3}\left(3x^2+5x+2\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-12\left(72x^4-102x^3-3331x^2\right.}{486\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/486*(6265*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(
6*x + 5) + 72*x^2 + 120*x + 49) - 12*(72*x^4 - 102*x^3 - 3331*x^2 + 6920*x
+ 9591)*sqrt(3*x^2 + 5*x + 2))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 67, normalized size = 0.57

$$-\frac{6265}{243}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left(\left(\left(6\left(12x-17\right)x-3331\right)x+6920\right)x+9591\right)}{81\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -6265/243*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) -
5)) - 2/81*(((6*(12*x - 17)*x - 3331)*x + 6920)*x + 9591)/sqrt(3*x^2 + 5*x
+ 2)
```

maple [A] time = 0.02, size = 130, normalized size = 1.11

$$-\frac{16x^4}{9\sqrt{3x^2+5x+2}}+\frac{68x^3}{27\sqrt{3x^2+5x+2}}+\frac{6662x^2}{81\sqrt{3x^2+5x+2}}-\frac{6265x}{81\sqrt{3x^2+5x+2}}+\frac{6265\sqrt{3}\ \ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2}\right.}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -25739/162/(3*x^2+5*x+2)^(1/2)+6265/243*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))-2525/162*(5+6*x)/(3*x^2+5*x+2)^(1/2)-16/9*x^4/(3*x^2+5*x
+2)^(1/2)+68/27*x^3/(3*x^2+5*x+2)^(1/2)+6662/81*x^2/(3*x^2+5*x+2)^(1/2)-626
5/81*x/(3*x^2+5*x+2)^(1/2)
```

maxima [A] time = 1.11, size = 109, normalized size = 0.93

$$-\frac{16x^4}{9\sqrt{3x^2+5x+2}}+\frac{68x^3}{27\sqrt{3x^2+5x+2}}+\frac{6662x^2}{81\sqrt{3x^2+5x+2}}+\frac{6265}{243}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -16/9*x^4/sqrt(3*x^2 + 5*x + 2) + 68/27*x^3/sqrt(3*x^2 + 5*x + 2) + 6662/81
*x^2/sqrt(3*x^2 + 5*x + 2) + 6265/243*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*
x + 2) + 6*x + 5) - 13840/81*x/sqrt(3*x^2 + 5*x + 2) - 6394/27/sqrt(3*x^2 +
 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{\left(2x+3\right)^4\left(x-5\right)}{\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{864x^2}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-999*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2
) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-864*x**2/(3*x**2*sqrt(3*x**2
+ 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-264*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x +
2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(16*x**4/(3*x**2*sqrt(3*x**2 +
 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - In
tegral(16*x**5/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
+ 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-405/(3*x**2*sqrt(3*x**2 + 5*x +
 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2507 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=92

$$-\frac{2(139x+121)(2x+3)^2}{3\sqrt{3x^2+5x+2}}+\frac{2}{9}(554x+1239)\sqrt{3x^2+5x+2}+\frac{247\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

```
[Out] 247/27*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2/3*(3+2*x)
^2*(121+139*x)/(3*x^2+5*x+2)^(1/2)+2/9*(1239+554*x)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = $\{818, 779, 621, 206\}$

$$-\frac{2(139x+121)(2x+3)^2}{3\sqrt{3x^2+5x+2}}+\frac{2}{9}(554x+1239)\sqrt{3x^2+5x+2}+\frac{247\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (2*(1239 + 554*x
)*Sqrt[2 + 5*x + 3*x^2])/9 + (247*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x
 + 3*x^2])])/(9*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 779

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((b*e*g*(p + 2) - c*(e*f + d*g)*(2*p + 3) -
 2*c*e*g*(p + 1)*x)*(a + b*x + c*x^2)^(p + 1))/(2*c^2*(p + 1)*(2*p + 3)), x
] + Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(2*c*d*f - b*(e*f + d*g))*(2*p +
3))/(2*c^2*(2*p + 3)), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d
, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] &&  !LeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{(3+2x)(481+554x)}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2}+\frac{247}{9}\int \frac{1}{\sqrt{2+5x+3x^2}}\,d\\ &= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2}+\frac{494}{9}\operatorname{Subst}\left(\int \frac{1}{12-x^2}\,d\right.\\ &= -\frac{2(3+2x)^2(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{9}(1239+554x)\sqrt{2+5x+3x^2}+\frac{247\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3}}\right.}{9\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 76, normalized size = 0.83

$$-\frac{6\left(6x^3-31x^2+806x+789\right)-247\sqrt{9x^2+15x+6}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{27\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/27*(6*(789 + 806*x - 31*x^2 + 6*x^3) - 247*Sqrt[6 + 15*x + 9*x^2]*ArcTan
h[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*x^2]
```

fricas [A] time = 1.01, size = 92, normalized size = 1.00

$$\frac{247\,\sqrt{3}\left(3\,x^2+5\,x+2\right)\log\left(4\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)-12\left(6\,x^3-31\,x^2+806\,x+78\right.}{54\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/54*(247*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*
x + 5) + 72*x^2 + 120*x + 49) - 12*(6*x^3 - 31*x^2 + 806*x + 789)*sqrt(3*x^
2 + 5*x + 2))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 62, normalized size = 0.67

$$-\frac{247}{27}\,\sqrt{3}\,\log\left(\left|-2\,\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)-\frac{2\left(((6\,x-31)x+806)x+789\right)}{9\,\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -247/27*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)
) - 2/9*(((6*x - 31)*x + 806)*x + 789)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.01, size = 113, normalized size = 1.23

$$-\frac{4x^3}{3\sqrt{3x^2+5x+2}}+\frac{62x^2}{9\sqrt{3x^2+5x+2}}-\frac{247x}{9\sqrt{3x^2+5x+2}}+\frac{247\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{27}-\frac{881}{18\sqrt{3x^2+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+5*x+2)^(1/2)*x^3+62/9/(3*x^2+5*x+2)^(1/2)*x^2-247/9/(3*x^2+5*x+
2)^(1/2)*x-881/18/(3*x^2+5*x+2)^(1/2)-455/18*(6*x+5)/(3*x^2+5*x+2)^(1/2)+24
7/27*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.40, size = 92, normalized size = 1.00

$$-\frac{4\,x^{3}}{3\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{62\,x^{2}}{9\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{247}{27}\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^{2}+5\,x+2}+6\,x+5\right)-\frac{1612\,x}{9\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^3/sqrt(3*x^2 + 5*x + 2) + 62/9*x^2/sqrt(3*x^2 + 5*x + 2) + 247/27*sq
rt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 1612/9*x/sqrt(3*x^2
+ 5*x + 2) - 526/3/sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^3\,\left(x-5\right)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\right)dx-\int\left(-\frac{126x^{2}}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-243*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2
) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-126*x**2/(3*x**2*sqrt(3*x**2
+ 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-4*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
 + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(8*x**4/(3*x**2*sqrt(3*x**2 + 5*
x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integ
ral(-135/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sq
rt(3*x**2 + 5*x + 2)), x)
```

3.2508 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=83

$$-\frac{2(2x+3)(139x+121)}{3\sqrt{3x^2+5x+2}}+\frac{184}{3}\sqrt{3x^2+5x+2}+2\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)$$

```
[Out] 2*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2/3*(3+2*x)*(121
+139*x)/(3*x^2+5*x+2)^(1/2)+184/3*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 83, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

$$-\frac{2(2x+3)(139x+121)}{3\sqrt{3x^2+5x+2}}+\frac{184}{3}\sqrt{3x^2+5x+2}+2\sqrt{3}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (184*Sqrt[2 + 5*x
+ 3*x^2])/3 + 2*Sqrt[3]*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{239+276x}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{184}{3}\sqrt{2+5x+3x^2}+6\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{184}{3}\sqrt{2+5x+3x^2}+12\,\mathrm{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5 +}{\sqrt{2+5}}\right.\\ &= -\frac{2(3+2x)(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{184}{3}\sqrt{2+5x+3x^2}+2\sqrt{3}\,\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right.\end{aligned}$$

Mathematica [**A**] time = 0.03, size = 68, normalized size = 0.82

$$-\frac{4x^2-6\sqrt{9x^2+15x+6}\,\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+398x+358}{3\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/3*(358 + 398*x + 4*x^2 - 6*Sqrt[6 + 15*x + 9*x^2]*ArcTanh[(5 + 6*x)/(2*S
qrt[6 + 15*x + 9*x^2])])/Sqrt[2 + 5*x + 3*x^2]
```

fricas [**A**] time = 0.55, size = 87, normalized size = 1.05

$$\frac{3\sqrt{3}\left(3\,x^2+5\,x+2\right)\log\left(4\sqrt{3}\sqrt{3\,x^2+5\,x+2}\,(6\,x+5)+72\,x^2+120\,x+49\right)-2\sqrt{3\,x^2+5\,x+2}\left(2\,x^2+199\right.}{3\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3*(3*sqrt(3)*(3*x^2 + 5*x + 2)*log(4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x +
 5) + 72*x^2 + 120*x + 49) - 2*sqrt(3*x^2 + 5*x + 2)*(2*x^2 + 199*x + 179))
/(3*x^2 + 5*x + 2)
```

giac [**A**] time = 0.22, size = 58, normalized size = 0.70

$$-2\sqrt{3}\,\log\left(\left|-2\sqrt{3}\left(\sqrt{3}\,x-\sqrt{3\,x^2+5\,x+2}\right)-5\right|\right)-\frac{2\,((2\,x+199)x+179)}{3\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -2*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) - 2
/3*((2*x + 199)*x + 179)/sqrt(3*x^2 + 5*x + 2)
```

maple [**A**] time = 0.01, size = 96, normalized size = 1.16

$$-\frac{4x^2}{3\sqrt{3x^2+5x+2}}-\frac{6x}{\sqrt{3x^2+5x+2}}+2\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)-\frac{124}{9\sqrt{3x^2+5x+2}}-\frac{190\,(6x+}{9\sqrt{3x^2+5}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -4/3/(3*x^2+5*x+2)^(1/2)*x^2-6/(3*x^2+5*x+2)^(1/2)*x-124/9/(3*x^2+5*x+2)^(1
/2)-190/9*(6*x+5)/(3*x^2+5*x+2)^(1/2)+2*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3
*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.60, size = 75, normalized size = 0.90

$$-\frac{4\,x^2}{3\,\sqrt{3\,x^2+5\,x+2}}+2\,\sqrt{3}\,\log\left(2\,\sqrt{3}\,\sqrt{3\,x^2+5\,x+2}+6\,x+5\right)-\frac{398\,x}{3\,\sqrt{3\,x^2+5\,x+2}}-\frac{358}{3\,\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -4/3*x^2/sqrt(3*x^2 + 5*x + 2) + 2*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x +
 2) + 6*x + 5) - 398/3*x/sqrt(3*x^2 + 5*x + 2) - 358/3/sqrt(3*x^2 + 5*x + 2
)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^2\,\left(x-5\right)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(- \frac{51 x}{3 x^{2} \sqrt{3 x^{2} + 5 x + 2} + 5 x \sqrt{3 x^{2} + 5 x + 2} + 2 \sqrt{3 x^{2} + 5 x + 2}}\right)\, dx - \int \left(- \frac{8 x^{2}}{3 x^{2} \sqrt{3 x^{2} + 5 x + 2} + 5 x \sqrt{3 x^{2} + 5 x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-51*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
 + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-8*x**2/(3*x**2*sqrt(3*x**2 + 5
*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Inte
gral(4*x**3/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2
*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-45/(3*x**2*sqrt(3*x**2 + 5*x + 2)
+ 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2509 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=62

$$-\frac{2(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{2\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3\sqrt{3}}$$

```
[Out] -2/9*arctanh(1/6*(5+6*x)*3^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)-2/3*(121+139*
x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 3, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.120, Rules used = {777, 621, 206}

$$-\frac{2(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{2\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{3\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) - (2*ArcTanh[(5 + 6*x)/(2*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2])])/(3*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{2}{3}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{4}{3}\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+6x}{\sqrt{2+5x+3x^2}}\right)\\ &= -\frac{2(121+139x)}{3\sqrt{2+5x+3x^2}}-\frac{2\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{3\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.09, size = 53, normalized size = 0.85

$$-\frac{2}{9}\left(\frac{417x+363}{\sqrt{3x^2+5x+2}}+\sqrt{3}\log\left(2\sqrt{9x^2+15x+6}+6x+5\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*((363 + 417*x)/Sqrt[2 + 5*x + 3*x^2] + Sqrt[3]*Log[5 + 6*x + 2*Sqrt[6 +
 15*x + 9*x^2]]))/9
```

fricas [A] time = 0.60, size = 81, normalized size = 1.31

$$\frac{\sqrt{3}\left(3x^2+5x+2\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)-6\sqrt{3x^2+5x+2}(139x+121)}{9\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/9*(sqrt(3)*(3*x^2 + 5*x + 2)*log(-4*sqrt(3)*sqrt(3*x^2 + 5*x + 2)*(6*x +
5) + 72*x^2 + 120*x + 49) - 6*sqrt(3*x^2 + 5*x + 2)*(139*x + 121))/(3*x^2 +
 5*x + 2)
```

giac [A] time = 0.21, size = 54, normalized size = 0.87

$$\frac{2}{9}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2(139x+121)}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/9*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) -
2/3*(139*x + 121)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.00, size = 79, normalized size = 1.27

$$\frac{2x}{3\sqrt{3x^2+5x+2}}-\frac{2\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+2}\right)}{9}-\frac{26}{9\sqrt{3x^2+5x+2}}-\frac{140(6x+5)}{9\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 2/3/(3*x^2+5*x+2)^(1/2)*x-26/9/(3*x^2+5*x+2)^(1/2)-140/9*(6*x+5)/(3*x^2+5*x
+2)^(1/2)-2/9*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [A] time = 1.23, size = 58, normalized size = 0.94

$$-\frac{2}{9}\sqrt{3}\log\left(2\sqrt{3}\sqrt{3x^2+5x+2}+6x+5\right)-\frac{278x}{3\sqrt{3x^2+5x+2}}-\frac{242}{3\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -2/9*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 278/3*x/sqrt(
3*x^2 + 5*x + 2) - 242/3/sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.38, size = 78, normalized size = 1.26

$$\frac{352\,x}{3\,\sqrt{3\,x^2+5\,x+2}}-\frac{6\,\left(35\,x+29\right)}{\sqrt{3\,x^2+5\,x+2}}-\frac{2\,\sqrt{3}\,\ln\left(\sqrt{3\,x^2+5\,x+2}+\frac{\sqrt{3}\,\left(3\,x+\frac{5}{2}\right)}{3}\right)}{9}+\frac{280}{3\,\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] (352*x)/(3*(5*x + 3*x^2 + 2)^(1/2)) - (6*(35*x + 29))/(5*x + 3*x^2 + 2)^(1/
2) - (2*3^(1/2)*log((5*x + 3*x^2 + 2)^(1/2) + (3^(1/2)*(3*x + 5/2))/3))/9 +
 280/(3*(5*x + 3*x^2 + 2)^(1/2))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{7x}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{2x^2}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-7*x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2)
+ 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(2*x**2/(3*x**2*sqrt(3*x**2 + 5*x
 + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integr
al(-15/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt
(3*x**2 + 5*x + 2)), x)
```

3.2510 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=21

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

```
[Out] -2*(29+35*x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.00, antiderivative size = 21, normalized size of antiderivative = 1.00, number of steps used = 1, number of rules used = 1, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}} = 0.050$, Rules used = {636}

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(29 + 35*x))/Sqrt[2 + 5*x + 3*x^2]
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rubi steps

$$\int \frac{5-x}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(29+35x)}{\sqrt{2+5x+3x^2}}$$

Mathematica [A] time = 0.04, size = 21, normalized size = 1.00

$$-\frac{2(35x+29)}{\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(29 + 35*x))/Sqrt[2 + 5*x + 3*x^2]
```

fricas [A] time = 0.49, size = 19, normalized size = 0.90

$$-\frac{2\,(35\,x+29)}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] -2*(35*x + 29)/sqrt(3*x^2 + 5*x + 2)
```

giac [A] time = 0.23, size = 19, normalized size = 0.90

$$-\frac{2\,(35\,x+29)}{\sqrt{3\,x^2+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] -2*(35*x + 29)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.00, size = 28, normalized size = 1.33

$$-\frac{2\left(35x+29\right)\left(x+1\right)\left(3x+2\right)}{\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -2*(29+35*x)*(1+x)*(2+3*x)/(3*x^2+5*x+2)^(3/2)
```

maxima [A] time = 0.51, size = 30, normalized size = 1.43

$$-\frac{70\,x}{\sqrt{3\,x^{2}+5\,x+2}}-\frac{58}{\sqrt{3\,x^{2}+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -70*x/sqrt(3*x^2 + 5*x + 2) - 58/sqrt(3*x^2 + 5*x + 2)
```

mupad [B] time = 0.07, size = 19, normalized size = 0.90

$$-\frac{2\,\left(35\,x+29\right)}{\sqrt{3\,x^{2}+5\,x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -(2*(35*x + 29))/(5*x + 3*x^2 + 2)^(1/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+2}+2\sqrt{3x^{2}+5x+2}}\,dx-\int\Bigg(-\frac{5}{3x^{2}\sqrt{3x^{2}+5x+2}+5x\sqrt{3x^{2}+5x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2
*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(3*x**2*sqrt(3*x**2 + 5*x + 2) +
 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2511 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=62

$$\frac{26\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}-\frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

```
[Out] 26/25*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-6/5*(37+47*
x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 62, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 12, 724, 206}

$$\frac{26\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}-\frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*Sqrt[2 + 5*x + 3*x^2]) + (26*ArcTanh[(7 + 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(5*Sqrt[5])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}}-\frac{2}{5}\int -\frac{13}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}}+\frac{26}{5}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}}-\frac{52}{5}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{-7-8x}{\sqrt{2+5x+3x^2}}\right)\\ &= -\frac{6(37+47x)}{5\sqrt{2+5x+3x^2}}+\frac{26\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{5\sqrt{5}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 62, normalized size = 1.00

$$-\frac{2(141x+111)}{5\sqrt{3x^2+5x+2}}-\frac{26\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{5\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(111 + 141*x))/(5*Sqrt[2 + 5*x + 3*x^2]) - (26*ArcTanh[(-7 - 8*x)/(2*Sq
rt[5]*Sqrt[2 + 5*x + 3*x^2])])/(5*Sqrt[5])
```

fricas [A] time = 0.58, size = 95, normalized size = 1.53

$$\frac{13\sqrt{5}\left(3x^2+5x+2\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-30\sqrt{3x^2+5x+2}(47x+37)}{25\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/25*(13*sqrt(5)*(3*x^2 + 5*x + 2)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*
x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 30*sqrt(3*x^2 + 5*x +
2)*(47*x + 37))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.28, size = 93, normalized size = 1.50

$$\frac{26}{25}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6(47x+37)}{5\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 26/25*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 +
 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x +
2))) - 6/5*(47*x + 37)/sqrt(3*x^2 + 5*x + 2)
```

maple [A] time = 0.01, size = 87, normalized size = 1.40

$$-\frac{26\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{25}+\frac{6x+5}{\sqrt{3x^2+5x+2}}+\frac{13}{5\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{52(6x+5)}{5\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] (6*x+5)/(3*x^2+5*x+2)^(1/2)+13/5/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-52/5*(6*x+5)
/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-26/25*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)
/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.36, size = 72, normalized size = 1.16

$$-\frac{26}{25}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{282x}{5\sqrt{3x^2+5x+2}}-\frac{222}{5\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -26/25*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2*x
 + 3) - 2) - 282/5*x/sqrt(3*x^2 + 5*x + 2) - 222/5/sqrt(3*x^2 + 5*x + 2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.02

$$-\int\frac{x-5}{(2x+3)\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{6x^3\sqrt{3x^2+5x+2}+19x^2\sqrt{3x^2+5x+2}+19x\sqrt{3x^2+5x+2}+6\sqrt{3x^2+5x+2}}\,dx-\int\left(-\frac{}{6x^3\sqrt{3x^2+5x+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(6*x**3*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(3*x**2 + 5*x + 2)
 + 19*x*sqrt(3*x**2 + 5*x + 2) + 6*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-
5/(6*x**3*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(3*x**2 + 5*x + 2) + 19*x*sq
rt(3*x**2 + 5*x + 2) + 6*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2512 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=94

$$-\frac{6(47x+37)}{5(2x+3)\sqrt{3x^2+5x+2}}-\frac{856\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{302\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

```
[Out] 302/125*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-6/5*(37+4
7*x)/(3+2*x)/(3*x^2+5*x+2)^(1/2)-856/25*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.05, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)\sqrt{3x^2+5x+2}}-\frac{856\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{302\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]) - (856*Sqrt[2 + 5*x +
3*x^2])/(25*(3 + 2*x)) + (302*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3
*x^2])])/(25*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
```

```
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{209+282x}{(3+2x)^2\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}}-\frac{856\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{302}{25}\int \frac{1}{(3+2x)\sqrt{2+5x+}}\\
&= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}}-\frac{856\sqrt{2+5x+3x^2}}{25(3+2x)}-\frac{604}{25}\,\mathrm{Subst}\left(\int \frac{1}{20-x^2}\,d\right.\\
&= -\frac{6(37+47x)}{5(3+2x)\sqrt{2+5x+3x^2}}-\frac{856\sqrt{2+5x+3x^2}}{25(3+2x)}+\frac{302\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x}}\right.}{25\sqrt{5}}
\end{aligned}
$$

Mathematica [A] time = 0.03, size = 90, normalized size = 0.96

$$
-\frac{2\left(6420x^2+151\sqrt{5}\,(2x+3)\sqrt{3x^2+5x+2}\,\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)+14225x+7055\right)}{125(2x+3)\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(7055 + 14225*x + 6420*x^2 + 151*Sqrt[5]*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2
]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/(125*(3 + 2*x)*Sq
rt[2 + 5*x + 3*x^2])
```

fricas [A] time = 0.67, size = 110, normalized size = 1.17

$$
\frac{151\sqrt{5}\left(6x^3+19x^2+19x+6\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}\,(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-10\left(1284x^2+2845x+1411\right)\sqrt{3x^2+}}{125\left(6x^3+19x^2+19x+6\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/125*(151*sqrt(5)*(6*x^3 + 19*x^2 + 19*x + 6)*log((4*sqrt(5)*sqrt(3*x^2 +
5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) - 10*(1284*x
^2 + 2845*x + 1411)*sqrt(3*x^2 + 5*x + 2))/(6*x^3 + 19*x^2 + 19*x + 6)
```

giac [B] time = 0.32, size = 170, normalized size = 1.81

$$
\frac{2}{125}\sqrt{5}\left(214\sqrt{5}\sqrt{3}+151\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)+\frac{2\left(\frac{\frac{1007}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}-\frac{65}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}-\frac{642}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{25\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^2}+3}}-\frac{302\sqrt{5}\log}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 2/125*sqrt(5)*(214*sqrt(5)*sqrt(3) + 151*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) + 2/25*((1007/sgn(1/(2*x + 3)) - 65/((2*x + 3)*sgn(1/(2*x + 3))))
/(2*x + 3) - 642/sgn(1/(2*x + 3)))/sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) -
 302/125*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) +
sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 90, normalized size = 0.96

$$-\frac{302\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{125}-\frac{13}{10\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}+\frac{151}{25\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -13/10/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+151/25/(-4*x+3*(x+3/2)^2-19/4)
^(1/2)-214/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-302/125*5^(1/2)*arctanh
(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.36, size = 106, normalized size = 1.13

$$-\frac{302}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3\,x^{2}+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)-\frac{1284\,x}{25\sqrt{3\,x^{2}+5\,x+2}}-\frac{919}{25\sqrt{3\,x^{2}+5\,x+2}}-\frac{}{5\left(2\sqrt{3\,x^{2}+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -302/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 1284/25*x/sqrt(3*x^2 + 5*x + 2) - 919/25/sqrt(3*x^2 + 5*x +
2) - 13/5/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{2}\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{12x^{4}\sqrt{3x^{2}+5x+2}+56x^{3}\sqrt{3x^{2}+5x+2}+95x^{2}\sqrt{3x^{2}+5x+2}+69x\sqrt{3x^{2}+5x+2}+18\sqrt{3x^{2}+5x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(12*x**4*sqrt(3*x**2 + 5*x + 2) + 56*x**3*sqrt(3*x**2 + 5*x + 2
) + 95*x**2*sqrt(3*x**2 + 5*x + 2) + 69*x*sqrt(3*x**2 + 5*x + 2) + 18*sqrt(
3*x**2 + 5*x + 2)), x) - Integral(-5/(12*x**4*sqrt(3*x**2 + 5*x + 2) + 56*x
**3*sqrt(3*x**2 + 5*x + 2) + 95*x**2*sqrt(3*x**2 + 5*x + 2) + 69*x*sqrt(3*x
**2 + 5*x + 2) + 18*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2513 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=119

$$-\frac{6(47x+37)}{5(2x+3)^2\sqrt{3x^2+5x+2}}-\frac{864\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{166\sqrt{3x^2+5x+2}}{5(2x+3)^2}+\frac{483\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

```
[Out] 483/125*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-6/5*(37+4
7*x)/(3+2*x)^2/(3*x^2+5*x+2)^(1/2)-166/5*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2-864/
25*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.07, antiderivative size = 119, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^2\sqrt{3x^2+5x+2}}-\frac{864\sqrt{3x^2+5x+2}}{25(2x+3)}-\frac{166\sqrt{3x^2+5x+2}}{5(2x+3)^2}+\frac{483\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]) - (166*Sqrt[2 + 5*x
+ 3*x^2])/(5*(3 + 2*x)^2) - (864*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)) + (4
83*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{431+564x}{(3+2x)^3\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}}-\frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2}+\frac{1}{25}\int \frac{-1575-2}{(3+2x)^2\sqrt{2+}}\\ &= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}}-\frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2}-\frac{864\sqrt{2+5x+3x^2}}{25(3+2x)}+\\ &= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}}-\frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2}-\frac{864\sqrt{2+5x+3x^2}}{25(3+2x)}-\\ &= -\frac{6(37+47x)}{5(3+2x)^2\sqrt{2+5x+3x^2}}-\frac{166\sqrt{2+5x+3x^2}}{5(3+2x)^2}-\frac{864\sqrt{2+5x+3x^2}}{25(3+2x)}+\end{aligned}$$

Mathematica [A] time = 0.05, size = 79, normalized size = 0.66

$$-\frac{483\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}-\frac{2\left(2592x^3+9453x^2+10988x+3977\right)}{25(2x+3)^2\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(3977 + 10988*x + 9453*x^2 + 2592*x^3))/(25*(3 + 2*x)^2*Sqrt[2 + 5*x +
3*x^2]) - (483*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*S
qrt[5])
```

fricas [A] time = 0.88, size = 125, normalized size = 1.05

$$\frac{483\sqrt{5}\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(2592x^3+9453x^2+\right.}{250\left(12x^4+56x^3+95x^2+69x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/250*(483*sqrt(5)*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log((4*sqrt(5)*sq
rt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) -
 20*(2592*x^3 + 9453*x^2 + 10988*x + 3977)*sqrt(3*x^2 + 5*x + 2))/(12*x^4 +
 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [B] time = 0.36, size = 225, normalized size = 1.89

$$\frac{483}{125}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6(903x+653)}{125\sqrt{3x^2+5x+2}}-\frac{2\left(2442\left(\sqrt{3}x-\sqrt{3x^2+5x}\right.\right.}{12}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 483/125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) - 6/125*(903*x + 653)/sqrt(3*x^2 + 5*x + 2) - 2/125*(2442*(sqrt(3)*x
 - sqrt(3*x^2 + 5*x + 2))^3 + 9999*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
2))^2 + 35473*sqrt(3)*x + 12979*sqrt(3) - 35473*sqrt(3*x^2 + 5*x + 2))/(2*(
sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 +
5*x + 2)) + 11)^2
```

maple [A] time = 0.01, size = 111, normalized size = 0.93

$$-\frac{483\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{125}-\frac{5}{2\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}+\frac{483}{50\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{}{25\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -5/2/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+483/50/(-4*x+3*(x+3/2)^2-19/4)^(
1/2)-216/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-483/125*5^(1/2)*arctanh(2
/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(x+3/2)^2/(-4*x+
3*(x+3/2)^2-19/4)^(1/2)
```

maxima [A] time = 1.27, size = 157, normalized size = 1.32

$$-\frac{483}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{1296x}{25\sqrt{3x^2+5x+2}}-\frac{1677}{50\sqrt{3x^2+5x+2}}-\frac{}{10\left(4\sqrt{3x^2+5x}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -483/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) - 1296/25*x/sqrt(3*x^2 + 5*x + 2) - 1677/50/sqrt(3*x^2 + 5*x +
 2) - 13/10/(4*sqrt(3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*s
qrt(3*x^2 + 5*x + 2)) - 5/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x +
 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int\frac{x-5}{(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{24x^5\sqrt{3x^2+5x+2}+148x^4\sqrt{3x^2+5x+2}+358x^3\sqrt{3x^2+5x+2}+423x^2\sqrt{3x^2+5x+2}+243x\sqrt{3x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(24*x**5*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(3*x**2 + 5*x +
2) + 358*x**3*sqrt(3*x**2 + 5*x + 2) + 423*x**2*sqrt(3*x**2 + 5*x + 2) + 24
3*x*sqrt(3*x**2 + 5*x + 2) + 54*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(
24*x**5*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(3*x**2 + 5*x + 2) + 358*x**3
*sqrt(3*x**2 + 5*x + 2) + 423*x**2*sqrt(3*x**2 + 5*x + 2) + 243*x*sqrt(3*x*
*2 + 5*x + 2) + 54*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2514 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=144

$$-\frac{6(47x+37)}{5(2x+3)^3\sqrt{3x^2+5x+2}}-\frac{4632\sqrt{3x^2+5x+2}}{125(2x+3)}-\frac{478\sqrt{3x^2+5x+2}}{15(2x+3)^2}-\frac{2464\sqrt{3x^2+5x+2}}{75(2x+3)^3}+\frac{3289\tanh^{-1}\left(\frac{}{2\sqrt{5}}\right.}{125\sqrt{5}}$$

```
[Out] 3289/625*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-6/5*(37+
47*x)/(3+2*x)^3/(3*x^2+5*x+2)^(1/2)-2464/75*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3-4
78/15*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2-4632/125*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.10, antiderivative size = 144, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^3\sqrt{3x^2+5x+2}}-\frac{4632\sqrt{3x^2+5x+2}}{125(2x+3)}-\frac{478\sqrt{3x^2+5x+2}}{15(2x+3)^2}-\frac{2464\sqrt{3x^2+5x+2}}{75(2x+3)^3}+\frac{3289\tanh^{-1}\left(\frac{}{2\sqrt{5}}\right.}{125\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]) - (2464*Sqrt[2 + 5*x
 + 3*x^2])/(75*(3 + 2*x)^3) - (478*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^2)
- (4632*Sqrt[2 + 5*x + 3*x^2])/(125*(3 + 2*x)) + (3289*ArcTanh[(7 + 8*x)/(2
*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(125*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{653+846x}{(3+2x)^4\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3}+\frac{2}{75}\int \frac{-5113-}{(3+2x)^3\sqrt{2}}\\
&= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2}\\
&= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2}\\
&= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2}\\
&= -\frac{6(37+47x)}{5(3+2x)^3\sqrt{2+5x+3x^2}}-\frac{2464\sqrt{2+5x+3x^2}}{75(3+2x)^3}-\frac{478\sqrt{2+5x+3x^2}}{15(3+2x)^2}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 84, normalized size = 0.58

$$\frac{-9867\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-\frac{10\left(83376x^4+424938x^3+792065x^2+634312x+181559\right)}{(2x+3)^3\sqrt{3x^2+5x+2}}}{1875}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] ((-10*(181559 + 634312*x + 792065*x^2 + 424938*x^3 + 83376*x^4))/((3 + 2*x)
^3*Sqrt[2 + 5*x + 3*x^2]) - 9867*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt
[2 + 5*x + 3*x^2])])/1875
```

fricas [A] time = 0.57, size = 140, normalized size = 0.97

$$\frac{9867\sqrt{5}\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)-20\left(8337\right.}{3750\left(24x^5+148x^4+358x^3+423x^2+243x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/3750*(9867*sqrt(5)*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*lo
g((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2
 + 12*x + 9)) - 20*(83376*x^4 + 424938*x^3 + 792065*x^2 + 634312*x + 181559
)*sqrt(3*x^2 + 5*x + 2))/(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54
)
```

giac [B] time = 0.32, size = 276, normalized size = 1.92

$$\frac{3289}{625}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)-\frac{6(4209x+2959)}{625\sqrt{3x^2+5x+2}}-\frac{2\left(118356\left(\sqrt{3}x-\sqrt{3x^2+}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 3289/625*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) - 6/625*(4209*x + 2959)/sqrt(3*x^2 + 5*x + 2) - 2/1875*(118356*(sqr
t(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 851850*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2
+ 5*x + 2))^4 + 6938110*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 8824815*sqr
t(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 15944775*sqrt(3)*x + 3678471*s
qrt(3) - 15944775*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.01, size = 132, normalized size = 0.92

$$-\frac{3289\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{625}-\frac{349}{600\left(x+\frac{3}{2}\right)^{2}\sqrt{-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}}}-\frac{271}{75\left(x+\frac{3}{2}\right)\sqrt{-4x+3\left(x+\frac{3}{2}\right)}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -349/600/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-271/75/(x+3/2)/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)+3289/250/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1158/125*(6*x+5)/
(-4*x+3*(x+3/2)^2-19/4)^(1/2)-3289/625*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/
2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3/(-4*x+3*(x+3/2)^2-19/4)^
(1/2)
```

maxima [A] time = 1.30, size = 225, normalized size = 1.56

$$-\frac{3289}{625}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{6948x}{125\sqrt{3x^2+5x+2}}-\frac{8291}{250\sqrt{3x^2+5x+2}}-\frac{}{15\left(8\sqrt{3x^2+}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -3289/625*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(
2*x + 3) - 2) - 6948/125*x/sqrt(3*x^2 + 5*x + 2) - 8291/250/sqrt(3*x^2 + 5*
x + 2) - 13/15/(8*sqrt(3*x^2 + 5*x + 2)*x^3 + 36*sqrt(3*x^2 + 5*x + 2)*x^2
+ 54*sqrt(3*x^2 + 5*x + 2)*x + 27*sqrt(3*x^2 + 5*x + 2)) - 349/150/(4*sqrt(
3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*sqrt(3*x^2 + 5*x + 2)
) - 542/75/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 + 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^4\,\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{48x^6\sqrt{3x^2+5x+2}+368x^5\sqrt{3x^2+5x+2}+1160x^4\sqrt{3x^2+5x+2}+1920x^3\sqrt{3x^2+5x+2}+1755x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(48*x**6*sqrt(3*x**2 + 5*x + 2) + 368*x**5*sqrt(3*x**2 + 5*x +
2) + 1160*x**4*sqrt(3*x**2 + 5*x + 2) + 1920*x**3*sqrt(3*x**2 + 5*x + 2) +
1755*x**2*sqrt(3*x**2 + 5*x + 2) + 837*x*sqrt(3*x**2 + 5*x + 2) + 162*sqrt(
3*x**2 + 5*x + 2)), x) - Integral(-5/(48*x**6*sqrt(3*x**2 + 5*x + 2) + 368*
x**5*sqrt(3*x**2 + 5*x + 2) + 1160*x**4*sqrt(3*x**2 + 5*x + 2) + 1920*x**3*
sqrt(3*x**2 + 5*x + 2) + 1755*x**2*sqrt(3*x**2 + 5*x + 2) + 837*x*sqrt(3*x*
*2 + 5*x + 2) + 162*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2515 $\int \frac{5-x}{(3+2x)^5\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=169

$$-\frac{6(47x+37)}{5(2x+3)^4\sqrt{3x^2+5x+2}}-\frac{25458\sqrt{3x^2+5x+2}}{625(2x+3)}-\frac{973\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{11596\sqrt{3x^2+5x+2}}{375(2x+3)^3}-\frac{817\sqrt{3x^2+5x+}}{25(2x+3)^4}$$

```
[Out] 82039/12500*arctanh(1/10*(7+8*x)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)-6/5*(
37+47*x)/(3+2*x)^4/(3*x^2+5*x+2)^(1/2)-817/25*(3*x^2+5*x+2)^(1/2)/(3+2*x)^4
-11596/375*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3-973/30*(3*x^2+5*x+2)^(1/2)/(3+2*x)
^2-25458/625*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.12, antiderivative size = 169, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 834, 806, 724, 206}

$$-\frac{6(47x+37)}{5(2x+3)^4\sqrt{3x^2+5x+2}}-\frac{25458\sqrt{3x^2+5x+2}}{625(2x+3)}-\frac{973\sqrt{3x^2+5x+2}}{30(2x+3)^2}-\frac{11596\sqrt{3x^2+5x+2}}{375(2x+3)^3}-\frac{817\sqrt{3x^2+5x+}}{25(2x+3)^4}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^5*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]) - (817*Sqrt[2 + 5*x
+ 3*x^2])/(25*(3 + 2*x)^4) - (11596*Sqrt[2 + 5*x + 3*x^2])/(375*(3 + 2*x)^3
) - (973*Sqrt[2 + 5*x + 3*x^2])/(30*(3 + 2*x)^2) - (25458*Sqrt[2 + 5*x + 3*
x^2])/(625*(3 + 2*x)) + (82039*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])/(2500*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^5\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{875+1128x}{(3+2x)^5\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}+\frac{1}{50}\int \frac{-10463-1}{(3+2x)^4\sqrt{2+}}\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}-\frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3}\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}-\frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3}\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}-\frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3}\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}-\frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3}\\
&= -\frac{6(37+47x)}{5(3+2x)^4\sqrt{2+5x+3x^2}}-\frac{817\sqrt{2+5x+3x^2}}{25(3+2x)^4}-\frac{11596\sqrt{2+5x+3x^2}}{375(3+2x)^3}
\end{aligned}$$

Mathematica [A] time = 0.06, size = 89, normalized size = 0.53

$$\frac{-246117\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)-\frac{10\left(3665952x^5+24066204x^4+62190544x^3+78737669x^2+48537379x+11545002\right)}{(2x+3)^4\sqrt{3x^2+5x+2}}}{37500}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^5*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] ((-10*(11545002 + 48537379*x + 78737669*x^2 + 62190544*x^3 + 24066204*x^4 +
 3665952*x^5))/((3 + 2*x)^4*Sqrt[2 + 5*x + 3*x^2]) - 246117*Sqrt[5]*ArcTanh
[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/37500
```

fricas [A] time = 0.63, size = 155, normalized size = 0.92

$$\frac{246117\sqrt{5}\left(48x^6+368x^5+1160x^4+1920x^3+1755x^2+837x+162\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right.}{75000\left(48x^6+368x^5+1160x^4+1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] 1/75000*(246117*sqrt(5)*(48*x^6 + 368*x^5 + 1160*x^4 + 1920*x^3 + 1755*x^2
+ 837*x + 162)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 2
12*x + 89)/(4*x^2 + 12*x + 9)) - 20*(3665952*x^5 + 24066204*x^4 + 62190544*
x^3 + 78737669*x^2 + 48537379*x + 11545002)*sqrt(3*x^2 + 5*x + 2))/(48*x^6
+ 368*x^5 + 1160*x^4 + 1920*x^3 + 1755*x^2 + 837*x + 162)
```

giac [A] time = 0.35, size = 235, normalized size = 1.39

$$\frac{1}{12500}\sqrt{5}\left(50916\sqrt{5}\sqrt{3}+82039\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{\frac{5\left(\frac{\frac{10\left(\frac{448}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}+\frac{195}{(2x+3)\mathrm{sgn}\left(\frac{1}{2x+3}\right)}\right)}{2x+3}+\frac{9619}{\mathrm{sgn}\left(\frac{1}{2x+3}\right)}}{2x+3}+\frac{277}{\mathrm{sgn}\left(\frac{}{2}\right.}\right.}{2x+3}}{7500\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] 1/12500*sqrt(5)*(50916*sqrt(5)*sqrt(3) + 82039*log(-sqrt(5)*sqrt(3) + 4))*s
gn(1/(2*x + 3)) - 1/7500*((5*((10*(448/sgn(1/(2*x + 3)) + 195/((2*x + 3)*sg
n(1/(2*x + 3))))/(2*x + 3) + 9619/sgn(1/(2*x + 3)))/(2*x + 3) + 27724/sgn(1
/(2*x + 3)))/(2*x + 3) - 857109/sgn(1/(2*x + 3)))/(2*x + 3) + 458244/sgn(1/
(2*x + 3)))/sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) - 82039/12500*sqrt(5)*lo
g(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3) + sqrt(5)/(2*x + 3))
- 4))/sgn(1/(2*x + 3))
```

maple [A] time = 0.01, size = 153, normalized size = 0.91

$$-\frac{82039\sqrt{5}\,\mathrm{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^2-19}}\right)}{12500}-\frac{13}{320\left(x+\frac{3}{2}\right)^4\sqrt{-4x+3\left(x+\frac{3}{2}\right)^2-\frac{19}{4}}}-\frac{14}{75\left(x+\frac{3}{2}\right)^3\sqrt{-4x+3\left(x+\right.}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -13/320/(x+3/2)^4/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-14/75/(x+3/2)^3/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)-9619/12000/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-6931/
1500/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+82039/5000/(-4*x+3*(x+3/2)^2-19/
4)^(1/2)-12729/1250*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-82039/12500*5^(1/
2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [B] time = 1.25, size = 310, normalized size = 1.83

$$-\frac{82039}{12500}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)-\frac{38187x}{625\sqrt{3x^2+5x+2}}-\frac{172541}{5000\sqrt{3x^2+5x+2}}-\frac{}{20\left(16\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^5/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -82039/12500*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/a
bs(2*x + 3) - 2) - 38187/625*x/sqrt(3*x^2 + 5*x + 2) - 172541/5000/sqrt(3*x
^2 + 5*x + 2) - 13/20/(16*sqrt(3*x^2 + 5*x + 2)*x^4 + 96*sqrt(3*x^2 + 5*x +
 2)*x^3 + 216*sqrt(3*x^2 + 5*x + 2)*x^2 + 216*sqrt(3*x^2 + 5*x + 2)*x + 81*
sqrt(3*x^2 + 5*x + 2)) - 112/75/(8*sqrt(3*x^2 + 5*x + 2)*x^3 + 36*sqrt(3*x^
2 + 5*x + 2)*x^2 + 54*sqrt(3*x^2 + 5*x + 2)*x + 27*sqrt(3*x^2 + 5*x + 2)) -
 9619/3000/(4*sqrt(3*x^2 + 5*x + 2)*x^2 + 12*sqrt(3*x^2 + 5*x + 2)*x + 9*sq
rt(3*x^2 + 5*x + 2)) - 6931/750/(2*sqrt(3*x^2 + 5*x + 2)*x + 3*sqrt(3*x^2 +
 5*x + 2))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^5\left(3x^2+5x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^5*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{96x^7\sqrt{3x^2+5x+2}+880x^6\sqrt{3x^2+5x+2}+3424x^5\sqrt{3x^2+5x+2}+7320x^4\sqrt{3x^2+5x+2}+9270x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**5/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(96*x**7*sqrt(3*x**2 + 5*x + 2) + 880*x**6*sqrt(3*x**2 + 5*x +
2) + 3424*x**5*sqrt(3*x**2 + 5*x + 2) + 7320*x**4*sqrt(3*x**2 + 5*x + 2) +
9270*x**3*sqrt(3*x**2 + 5*x + 2) + 6939*x**2*sqrt(3*x**2 + 5*x + 2) + 2835*
x*sqrt(3*x**2 + 5*x + 2) + 486*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(9
6*x**7*sqrt(3*x**2 + 5*x + 2) + 880*x**6*sqrt(3*x**2 + 5*x + 2) + 3424*x**5
*sqrt(3*x**2 + 5*x + 2) + 7320*x**4*sqrt(3*x**2 + 5*x + 2) + 9270*x**3*sqrt
(3*x**2 + 5*x + 2) + 6939*x**2*sqrt(3*x**2 + 5*x + 2) + 2835*x*sqrt(3*x**2
+ 5*x + 2) + 486*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2516 $\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=115

$$-\frac{2(139x+121)(2x+3)^3}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(7976x+6809)(2x+3)}{27\sqrt{3x^2+5x+2}}-\frac{6848}{9}\sqrt{3x^2+5x+2}+\frac{152\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{27\sqrt{3}}$$

```
[Out] -2/9*(3+2*x)^3*(121+139*x)/(3*x^2+5*x+2)^(3/2)+152/81*arctanh(1/6*(5+6*x)*3
^(1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+4/27*(3+2*x)*(6809+7976*x)/(3*x^2+5*x+2
)^(1/2)-6848/9*(3*x^2+5*x+2)^(1/2)
```

Rubi **[A]** time = 0.06, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 640, 621, 206}

$$-\frac{2(139x+121)(2x+3)^3}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(7976x+6809)(2x+3)}{27\sqrt{3x^2+5x+2}}-\frac{6848}{9}\sqrt{3x^2+5x+2}+\frac{152\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{27\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^3*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*(3 + 2*x)*(
6809 + 7976*x))/(27*Sqrt[2 + 5*x + 3*x^2]) - (6848*Sqrt[2 + 5*x + 3*x^2])/9
 + (152*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])])/(27*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 640

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[(e*(a + b*x + c*x^2)^(p + 1))/(2*c*(p + 1)), x] + Dist[(2*c*d - b
*e)/(2*c), Int[(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, p}, x]
&& NeQ[2*c*d - b*e, 0] && NeQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^4}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(3+2x)^2(-117+272x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}}+\frac{4}{27}\int \frac{-12802-15408x}{\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}}-\frac{6848}{9}\sqrt{2+5x+3x^2}+\frac{152}{27}\\
&= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}}-\frac{6848}{9}\sqrt{2+5x+3x^2}+\frac{304}{27}\\
&= -\frac{2(3+2x)^3(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(3+2x)(6809+7976x)}{27\sqrt{2+5x+3x^2}}-\frac{6848}{9}\sqrt{2+5x+3x^2}+\frac{152}{}
\end{aligned}
$$

Mathematica [**A**] time = 0.07, size = 83, normalized size = 0.72

$$
\frac{2\left(-216x^4+176160x^3+438540x^2+76\sqrt{3}\left(3x^2+5x+2\right)^{3/2}\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)+354459x+92457\right)}{81\left(3x^2+5x+2\right)^{3/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^4)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(92457 + 354459*x + 438540*x^2 + 176160*x^3 - 216*x^4 + 76*Sqrt[3]*(2 +
5*x + 3*x^2)^(3/2)*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])]))/(81*(2 +
 5*x + 3*x^2)^(3/2))
```

fricas [**A**] time = 0.59, size = 117, normalized size = 1.02

$$
\frac{2\left(38\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(4\sqrt{3}\sqrt{3x^2+5x+2}\,(6x+5)+72x^2+120x+49\right)-3\,(72x^4}{81\left(9x^4+30x^3+37x^2+20x+4\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/81*(38*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) - 3*(72*x^4 - 58720*x^3 - 1
46180*x^2 - 118153*x - 30819)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30*x^3 + 37*x
^2 + 20*x + 4)
```

giac [**A**] time = 0.23, size = 68, normalized size = 0.59

$$
-\frac{152}{81}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)-\frac{2\left(\left(4\left(2\left(9x-7340\right)x-36545\right)x-118153\right)x-30819\right)}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -152/81*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)
) - 2/27*((4*(2*(9*x - 7340)*x - 36545)*x - 118153)*x - 30819)/(3*x^2 + 5*x
 + 2)^(3/2)
```

maple [A] time = 0.01, size = 178, normalized size = 1.55

$$-\frac{16x^4}{3\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{152x^3}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{2380x^2}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{152x}{27\sqrt{3x^2+5x+2}}-\frac{14639x}{81\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{152\sqrt{3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -145763/1458/(3*x^2+5*x+2)^(3/2)+380/81/(3*x^2+5*x+2)^(1/2)+152/81*3^(1/2)*
ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))-16181/1458*(6*x+5)/(3*x^2+5*x
+2)^(3/2)+59024/243*(6*x+5)/(3*x^2+5*x+2)^(1/2)-152/27/(3*x^2+5*x+2)^(1/2)*
x-16/3*x^4/(3*x^2+5*x+2)^(3/2)-152/27*x^3/(3*x^2+5*x+2)^(3/2)-2380/27*x^2/(
3*x^2+5*x+2)^(3/2)-14639/81*x/(3*x^2+5*x+2)^(3/2)
```

maxima [B] time = 1.16, size = 214, normalized size = 1.86

$$-\frac{16\,x^4}{3\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{152}{81}\,x\left(\frac{1410\,x}{\sqrt{3\,x^2+5\,x+2}}+\frac{9\,x^2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}+\frac{1175}{\sqrt{3\,x^2+5\,x+2}}-\frac{55\,x}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{}{(3\,x^2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -16/3*x^4/(3*x^2 + 5*x + 2)^(3/2) - 152/81*x*(1410*x/sqrt(3*x^2 + 5*x + 2)
+ 9*x^2/(3*x^2 + 5*x + 2)^(3/2) + 1175/sqrt(3*x^2 + 5*x + 2) - 55*x/(3*x^2
+ 5*x + 2)^(3/2) - 46/(3*x^2 + 5*x + 2)^(3/2)) + 152/81*sqrt(3)*log(2*sqrt(
3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) + 71440/81*sqrt(3*x^2 + 5*x + 2) - 6070
4/81*x/sqrt(3*x^2 + 5*x + 2) - 920/9*x^2/(3*x^2 + 5*x + 2)^(3/2) - 15680/27
/sqrt(3*x^2 + 5*x + 2) - 13066/81*x/(3*x^2 + 5*x + 2)^(3/2) - 6766/81/(3*x^
2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^4\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int(((2*x + 3)^4*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{999x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**4/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-999*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
 + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sq
rt(3*x**2 + 5*x + 2)), x) - Integral(-864*x**2/(9*x**4*sqrt(3*x**2 + 5*x +
2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x
*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-264*x**
3/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2
*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x
 + 2)), x) - Integral(16*x**4/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt
(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*
x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(16*x**5/(9*x**4*sqrt(3*x*
*2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x
+ 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integr
al(-405/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 3
7*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2
 + 5*x + 2)), x)
```

3.2517 $\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=92

$$-\frac{2(139x+121)(2x+3)^2}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2834x+2481)}{9\sqrt{3x^2+5x+2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

```
[Out] -2/9*(3+2*x)^2*(121+139*x)/(3*x^2+5*x+2)^(3/2)-8/27*arctanh(1/6*(5+6*x)*3^(
1/2)/(3*x^2+5*x+2)^(1/2))*3^(1/2)+4/9*(2481+2834*x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.04, antiderivative size = 92, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = $\{818, 777, 621, 206\}$

$$-\frac{2(139x+121)(2x+3)^2}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2834x+2481)}{9\sqrt{3x^2+5x+2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{3}\sqrt{3x^2+5x+2}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*(2481 + 283
4*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (8*ArcTanh[(5 + 6*x)/(2*Sqrt[3]*Sqrt[2 +
5*x + 3*x^2])])/(9*Sqrt[3])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 621

```
Int[1/Sqrt[(a_) + (b_.)*(x_) + (c_.)*(x_)^2], x_Symbol] :> Dist[2, Subst[In
t[1/(4*c - x^2), x], x, (b + 2*c*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a,
 b, c}, x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^3}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-359-6x)(3+2x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{8}{9}\int \frac{1}{\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{16}{9}\text{Subst}\left(\int \frac{1}{12-x^2}\,dx,x,\frac{5+}{\sqrt{2+5}}\right.\\ &= -\frac{2(3+2x)^2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2481+2834x)}{9\sqrt{2+5x+3x^2}}-\frac{8\tanh^{-1}\left(\frac{5+6x}{2\sqrt{3}\sqrt{2+5x+3x^2}}\right)}{9\sqrt{3}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 67, normalized size = 0.73

$$\frac{2\left(16448x^3+41074x^2+33443x+8835\right)}{9\left(3x^2+5x+2\right)^{3/2}}-\frac{8\tanh^{-1}\left(\frac{6x+5}{2\sqrt{9x^2+15x+6}}\right)}{9\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^3)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(8835 + 33443*x + 41074*x^2 + 16448*x^3))/(9*(2 + 5*x + 3*x^2)^(3/2)) -
(8*ArcTanh[(5 + 6*x)/(2*Sqrt[6 + 15*x + 9*x^2])])/(9*Sqrt[3])
```

fricas [A] time = 0.57, size = 112, normalized size = 1.22

$$\frac{2\left(2\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-4\sqrt{3}\sqrt{3x^2+5x+2}(6x+5)+72x^2+120x+49\right)+3\left(1644\right.\right.}{27\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/27*(2*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-4*sqrt(3)*sqrt(3*
x^2 + 5*x + 2)*(6*x + 5) + 72*x^2 + 120*x + 49) + 3*(16448*x^3 + 41074*x^2
+ 33443*x + 8835)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x +
4)
```

giac [A] time = 0.46, size = 63, normalized size = 0.68

$$\frac{8}{27}\sqrt{3}\log\left(\left|-2\sqrt{3}\left(\sqrt{3}x-\sqrt{3x^2+5x+2}\right)-5\right|\right)+\frac{2\left(\left(2\left(8224x+20537\right)x+33443\right)x+8835\right)}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 8/27*sqrt(3)*log(abs(-2*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) - 5)) +
 2/9*((2*(8224*x + 20537)*x + 33443)*x + 8835)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [B] time = 0.01, size = 161, normalized size = 1.75

$$\frac{8x^3}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{32x^2}{9\left(3x^2+5x+2\right)^{\frac{3}{2}}}-\frac{607x}{27\left(3x^2+5x+2\right)^{\frac{3}{2}}}+\frac{8x}{9\sqrt{3x^2+5x+2}}-\frac{8\sqrt{3}\,\ln\left(\frac{\left(3x+\frac{5}{2}\right)\sqrt{3}}{3}+\sqrt{3x^2+5x+}\right.}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 8/9/(3*x^2+5*x+2)^(3/2)*x^3-32/9/(3*x^2+5*x+2)^(3/2)*x^2-607/27/(3*x^2+5*x+
2)^(3/2)*x-10855/486/(3*x^2+5*x+2)^(3/2)-4033/486*(6*x+5)/(3*x^2+5*x+2)^(3/
2)+16432/81*(6*x+5)/(3*x^2+5*x+2)^(1/2)+8/9/(3*x^2+5*x+2)^(1/2)*x-20/27/(3*
x^2+5*x+2)^(1/2)-8/27*3^(1/2)*ln(1/3*(3*x+5/2)*3^(1/2)+(3*x^2+5*x+2)^(1/2))
```

maxima [B] time = 1.23, size = 197, normalized size = 2.14

$$\frac{8}{27}x\left(\frac{1410\,x}{\sqrt{3\,x^2+5\,x+2}}+\frac{9\,x^2}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}+\frac{1175}{\sqrt{3\,x^2+5\,x+2}}-\frac{55\,x}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-\frac{46}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\right)-\frac{8}{27}\sqrt{3}\,\mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8/27*x*(1410*x/sqrt(3*x^2 + 5*x + 2) + 9*x^2/(3*x^2 + 5*x + 2)^(3/2) + 1175
/sqrt(3*x^2 + 5*x + 2) - 55*x/(3*x^2 + 5*x + 2)^(3/2) - 46/(3*x^2 + 5*x + 2
)^(3/2)) - 8/27*sqrt(3)*log(2*sqrt(3)*sqrt(3*x^2 + 5*x + 2) + 6*x + 5) - 37
60/27*sqrt(3*x^2 + 5*x + 2) + 42272/27*x/sqrt(3*x^2 + 5*x + 2) - 4/3*x^2/(3
*x^2 + 5*x + 2)^(3/2) + 11680/9/sqrt(3*x^2 + 5*x + 2) - 2318/27*x/(3*x^2 +
5*x + 2)^(3/2) - 2030/27/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^3\,\left(x-5\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int(((2*x + 3)^3*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{243x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**3/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-243*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
 + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sq
rt(3*x**2 + 5*x + 2)), x) - Integral(-126*x**2/(9*x**4*sqrt(3*x**2 + 5*x +
2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x
*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-4*x**3/
(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*s
qrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x +
 2)), x) - Integral(8*x**4/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*
x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x +
 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-135/(9*x**4*sqrt(3*x**2 + 5
*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) +
 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2518 $\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=54

$$\frac{376(8x+7)}{3\sqrt{3x^2+5x+2}}-\frac{2(2x+3)^2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

```
[Out] -2/3*(3+2*x)^2*(29+35*x)/(3*x^2+5*x+2)^(3/2)+376/3*(7+8*x)/(3*x^2+5*x+2)^(1
/2)
```

Rubi [A] time = 0.02, antiderivative size = 54, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.074, Rules used = {804, 636}

$$\frac{376(8x+7)}{3\sqrt{3x^2+5x+2}}-\frac{2(2x+3)^2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^2*(29 + 35*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (376*(7 + 8*x))/
(3*Sqrt[2 + 5*x + 3*x^2])
```

Rule 636

```
Int[((d_.) + (e_.)*(x_))/((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(3/2), x_Symbo
l] :> Simp[(-2*(b*d - 2*a*e + (2*c*d - b*e)*x))/((b^2 - 4*a*c)*Sqrt[a + b*x
 + c*x^2]), x] /; FreeQ[{a, b, c, d, e}, x] && NeQ[2*c*d - b*e, 0] && NeQ[b
^2 - 4*a*c, 0]
```

Rule 804

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(b*f - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] - Dist[(m*(b*(
e*f + d*g) - 2*(c*d*f + a*e*g)))/((p + 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m
- 1)*(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^2}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{188}{3}\int \frac{3+2x}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(3+2x)^2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{376(7+8x)}{3\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.03, size = 33, normalized size = 0.61

$$\frac{2\left(4372x^3+10932x^2+8925x+2371\right)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^2)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(2371 + 8925*x + 10932*x^2 + 4372*x^3))/(3*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [A] time = 0.68, size = 51, normalized size = 0.94

$$\frac{2\left(4372\,x^{3}+10932\,x^{2}+8925\,x+2371\right)\sqrt{3\,x^{2}+5\,x+2}}{3\left(9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/3*(4372*x^3 + 10932*x^2 + 8925*x + 2371)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 3
0*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.22, size = 28, normalized size = 0.52

$$\frac{2\left(\left(4\left(1093\,x+2733\right)x+8925\right)x+2371\right)}{3\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2/3*((4*(1093*x + 2733)*x + 8925)*x + 2371)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.70

$$\frac{2\left(4372x^{3}+10932x^{2}+8925x+2371\right)\left(x+1\right)\left(3x+2\right)}{3\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/3*(4372*x^3+10932*x^2+8925*x+2371)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.51, size = 76, normalized size = 1.41

$$\frac{8744\,x}{9\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{4\,x^{2}}{3\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}+\frac{21860}{27\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{1114\,x}{27\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}-\frac{1042}{27\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 8744/9*x/sqrt(3*x^2 + 5*x + 2) + 4/3*x^2/(3*x^2 + 5*x + 2)^(3/2) + 21860/27
/sqrt(3*x^2 + 5*x + 2) - 1114/27*x/(3*x^2 + 5*x + 2)^(3/2) - 1042/27/(3*x^2
 + 5*x + 2)^(3/2)
```

mupad [B] time = 0.12, size = 48, normalized size = 0.89

$$\frac{36062\,x+8744\,x\,\left(3\,x^{2}+5\,x+2\right)+21872\,x^{2}+14226}{\sqrt{3\,x^{2}+5\,x+2}\,\left(27\,x^{2}+45\,x+18\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^2*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (36062*x + 8744*x*(5*x + 3*x^2 + 2) + 21872*x^2 + 14226)/((5*x + 3*x^2 + 2)
^(1/2)*(45*x + 27*x^2 + 18))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{51x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**2/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-51*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x
+ 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqr
t(3*x**2 + 5*x + 2)), x) - Integral(-8*x**2/(9*x**4*sqrt(3*x**2 + 5*x + 2)
+ 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sq
rt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(4*x**3/(9*x
**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(
3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2))
, x) - Integral(-45/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 +
5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4
*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2519 $\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=47

$$\frac{1124(6x+5)}{9\sqrt{3x^2+5x+2}}-\frac{2(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}$$

```
[Out] -2/9*(121+139*x)/(3*x^2+5*x+2)^(3/2)+1124/9*(5+6*x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.080$, Rules used = $\{777, 613\}$

$$\frac{1124(6x+5)}{9\sqrt{3x^2+5x+2}}-\frac{2(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (1124*(5 + 6*x))/(9*Sqrt[2
 + 5*x + 3*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 777

```
Int[((d_.) + (e_.)*(x_))*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(
x_)^2)^(p_), x_Symbol] :> -Simp[((2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (
b^2*e*g - b*c*(e*f + d*g) + 2*c*(c*d*f - a*e*g))*x)*(a + b*x + c*x^2)^(p +
1))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[(b^2*e*g*(p + 2) - 2*a*c*e*g + c*(
2*c*d*f - b*(e*f + d*g))*(2*p + 3))/(c*(p + 1)*(b^2 - 4*a*c)), Int[(a + b*x
 + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4
*a*c, 0] && LtQ[p, -1]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}-\frac{562}{9}\int \frac{1}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{1124(5+6x)}{9\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.06, size = 31, normalized size = 0.66

$$\frac{2\left(1124x^3+2810x^2+2295x+611\right)}{\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(611 + 2295*x + 2810*x^2 + 1124*x^3))/(2 + 5*x + 3*x^2)^(3/2)
```

fricas [A] time = 0.65, size = 51, normalized size = 1.09

$$\frac{2\left(1124\,x^{3}+2810\,x^{2}+2295\,x+611\right)\sqrt{3\,x^{2}+5\,x+2}}{9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2*(1124*x^3 + 2810*x^2 + 2295*x + 611)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 30*x^
3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.24, size = 28, normalized size = 0.60

$$\frac{2\left((562\,(2\,x+5)x+2295)x+611\right)}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*((562*(2*x + 5)*x + 2295)*x + 611)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.81

$$\frac{2\left(1124x^{3}+2810x^{2}+2295x+611\right)(x+1)\,(3x+2)}{\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2*(1124*x^3+2810*x^2+2295*x+611)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.53, size = 59, normalized size = 1.26

$$\frac{2248\,x}{3\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{5620}{9\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{278\,x}{9\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}-\frac{242}{9\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 2248/3*x/sqrt(3*x^2 + 5*x + 2) + 5620/9/sqrt(3*x^2 + 5*x + 2) - 278/9*x/(3*
x^2 + 5*x + 2)^(3/2) - 242/9/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [B] time = 2.44, size = 48, normalized size = 1.02

$$\frac{9274\,x+2248\,x\,\left(3\,x^{2}+5\,x+2\right)+5620\,x^{2}+3666}{\sqrt{3\,x^{2}+5\,x+2}\,\left(9\,x^{2}+15\,x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (9274*x + 2248*x*(5*x + 3*x^2 + 2) + 5620*x^2 + 3666)/((5*x + 3*x^2 + 2)^(1
/2)*(15*x + 9*x^2 + 6))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{7x}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-7*x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x +
 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(2*x**2/(9*x**4*sqrt(3*x**2 + 5*x + 2) +
30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt
(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-15/(9*x**4*s
qrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**
2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2520 $\int \frac{5-x}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=47

$$\frac{280(6x+5)}{3\sqrt{3x^2+5x+2}}-\frac{2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

```
[Out] -2/3*(29+35*x)/(3*x^2+5*x+2)^(3/2)+280/3*(5+6*x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.01, antiderivative size = 47, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 20, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.100, Rules used = {638, 613}

$$\frac{280(6x+5)}{3\sqrt{3x^2+5x+2}}-\frac{2(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(29 + 35*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (280*(5 + 6*x))/(3*Sqrt[2 +
5*x + 3*x^2])
```

Rule 613

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-3/2), x_Symbol] :> Simp[(-2*(b +
2*c*x))/((b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]), x] /; FreeQ[{a, b, c}, x] &&
 NeQ[b^2 - 4*a*c, 0]
```

Rule 638

```
Int[((d_.) + (e_.)*(x_))*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol
] :> Simp[((b*d - 2*a*e + (2*c*d - b*e)*x)*(a + b*x + c*x^2)^(p + 1))/((p +
 1)*(b^2 - 4*a*c)), x] - Dist[((2*p + 3)*(2*c*d - b*e))/((p + 1)*(b^2 - 4*a
*c)), Int[(a + b*x + c*x^2)^(p + 1), x], x] /; FreeQ[{a, b, c, d, e}, x] &&
 NeQ[2*c*d - b*e, 0] && NeQ[b^2 - 4*a*c, 0] && LtQ[p, -1] && NeQ[p, -3/2]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{140}{3}\int \frac{1}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{280(5+6x)}{3\sqrt{2+5x+3x^2}}\end{aligned}$$

Mathematica [A] time = 0.04, size = 31, normalized size = 0.66

$$\frac{2\left(840x^3+2100x^2+1715x+457\right)}{\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (2*(457 + 1715*x + 2100*x^2 + 840*x^3))/(2 + 5*x + 3*x^2)^(3/2)
```

fricas [A] time = 0.79, size = 51, normalized size = 1.09

$$\frac{2\left(840\,x^{3}+2100\,x^{2}+1715\,x+457\right)\sqrt{3\,x^{2}+5\,x+2}}{9\,x^{4}+30\,x^{3}+37\,x^{2}+20\,x+4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2*(840*x^3 + 2100*x^2 + 1715*x + 457)*sqrt(3*x^2 + 5*x + 2)/(9*x^4 + 30*x^3
 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.21, size = 29, normalized size = 0.62

$$\frac{2\,(35\,(12\,(2\,x+5)x+49)x+457)}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 2*(35*(12*(2*x + 5)*x + 49)*x + 457)/(3*x^2 + 5*x + 2)^(3/2)
```

maple [A] time = 0.00, size = 38, normalized size = 0.81

$$\frac{2\left(840x^{3}+2100x^{2}+1715x+457\right)(x+1)\,(3x+2)}{\left(3x^{2}+5x+2\right)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2*(840*x^3+2100*x^2+1715*x+457)*(x+1)*(3*x+2)/(3*x^2+5*x+2)^(5/2)
```

maxima [A] time = 0.44, size = 59, normalized size = 1.26

$$\frac{560\,x}{\sqrt{3\,x^{2}+5\,x+2}}+\frac{1400}{3\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{70\,x}{3\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}-\frac{58}{3\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] 560*x/sqrt(3*x^2 + 5*x + 2) + 1400/3/sqrt(3*x^2 + 5*x + 2) - 70/3*x/(3*x^2
+ 5*x + 2)^(3/2) - 58/3/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [B] time = 2.42, size = 36, normalized size = 0.77

$$\frac{2310\,x+560\,x\,\left(3\,x^{2}+5\,x+2\right)+1400\,x^{2}+914}{\left(3\,x^{2}+5\,x+2\right)^{3/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] (2310*x + 560*x*(5*x + 3*x^2 + 2) + 1400*x^2 + 914)/(5*x + 3*x^2 + 2)^(3/2)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\frac{x}{9x^{4}\sqrt{3x^{2}+5x+2}+30x^{3}\sqrt{3x^{2}+5x+2}+37x^{2}\sqrt{3x^{2}+5x+2}+20x\sqrt{3x^{2}+5x+2}+4\sqrt{3x^{2}+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2)
 + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*
x**2 + 5*x + 2)), x) - Integral(-5/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3
*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2
 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2521 $\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=85

$$-\frac{2(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{12(836x+701)}{25\sqrt{3x^2+5x+2}}+\frac{104\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

```
[Out] -2/5*(37+47*x)/(3*x^2+5*x+2)^(3/2)+104/125*arctanh(1/10*(7+8*x)*5^(1/2)/(3*
x^2+5*x+2)^(1/2))*5^(1/2)+12/25*(701+836*x)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {822, 12, 724, 206}

$$-\frac{2(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{12(836x+701)}{25\sqrt{3x^2+5x+2}}+\frac{104\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)^(3/2)) + (12*(701 + 836*x))/(25*Sqrt[
2 + 5*x + 3*x^2]) + (104*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2]
)])/(25*Sqrt[5])
```

Rule 12

```
Int[(a_)*(u_), x_Symbol] :> Dist[a, Int[u, x], x] /; FreeQ[a, x] &&  !Match
Q[u, (b_)*(v_) /; FreeQ[b, x]]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{807+564x}{(3+2x)\left(2+5x+3x^2\right)^{3/2}}\,dx\\ &= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{12(701+836x)}{25\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{78}{(3+2x)\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{12(701+836x)}{25\sqrt{2+5x+3x^2}}+\frac{104}{25}\int \frac{1}{(3+2x)\sqrt{2+5x+3x^2}}\,d\\ &= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{12(701+836x)}{25\sqrt{2+5x+3x^2}}-\frac{208}{25}\operatorname{Subst}\left(\int \frac{1}{20-x^2}\,dx,x,\frac{}{\sqrt{2}}\right.\\ &= -\frac{2(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{12(701+836x)}{25\sqrt{2+5x+3x^2}}+\frac{104\tanh^{-1}\left(\frac{7+8x}{2\sqrt{5}\sqrt{2+5x+3x^2}}\right)}{25\sqrt{5}}\end{aligned}$$

Mathematica [A] time = 0.05, size = 72, normalized size = 0.85

$$\frac{2}{125}\left(\frac{5\left(15048x^3+37698x^2+30827x+8227\right)}{\left(3x^2+5x+2\right)^{3/2}}-52\sqrt{5}\tanh^{-1}\left(\frac{-8x-7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*((5*(8227 + 30827*x + 37698*x^2 + 15048*x^3))/(2 + 5*x + 3*x^2)^(3/2) -
52*Sqrt[5]*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])]))/125
```

fricas [A] time = 0.63, size = 125, normalized size = 1.47

$$\frac{2\left(26\sqrt{5}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+5\left(15048x^3+37698x^2+3\right.}{125\left(9x^4+30x^3+37x^2+20x+4\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/125*(26*sqrt(5)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log((4*sqrt(5)*sqrt(
3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 5*
(15048*x^3 + 37698*x^2 + 30827*x + 8227)*sqrt(3*x^2 + 5*x + 2))/(9*x^4 + 30
*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.28, size = 102, normalized size = 1.20

$$\frac{104}{125}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^2+5x+2}\right|}\right)+\frac{2\left(\left(6\left(2508x+6283\right)x+30827\right)x+8227\right)}{25\left(3x^2+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 104/125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2
 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
+ 2))) + 2/25*((6*(2508*x + 6283)*x + 30827)*x + 8227)/(3*x^2 + 5*x + 2)^(3
/2)
```

maple [B] time = 0.01, size = 144, normalized size = 1.69

$$-\frac{104\sqrt{5}\,\operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{125}+\frac{6x+5}{3\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}-\frac{8\left(6x+5\right)}{\sqrt{3x^{2}+5x+2}}+\frac{13}{15\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/3*(6*x+5)/(3*x^2+5*x+2)^(3/2)-8*(6*x+5)/(3*x^2+5*x+2)^(1/2)+13/15/(-4*x+3
*(x+3/2)^2-19/4)^(3/2)-52/15*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1872/25*
(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1/2)+52/25/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-1
04/125*5^(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2)
)
```

maxima [A] time = 1.45, size = 101, normalized size = 1.19

$$-\frac{104}{125}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^{2}+5\,x+2}}{{\left|2\,x+3\right|}}+\frac{5}{2\,{\left|2\,x+3\right|}}-2\right)+\frac{10032\,x}{25\,\sqrt{3\,x^{2}+5\,x+2}}+\frac{8412}{25\,\sqrt{3\,x^{2}+5\,x+2}}-\frac{94\,x}{5\,\left(3\,x^{2}+5\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -104/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 10032/25*x/sqrt(3*x^2 + 5*x + 2) + 8412/25/sqrt(3*x^2 + 5*x
+ 2) - 94/5*x/(3*x^2 + 5*x + 2)^(3/2) - 74/5/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{\left(2\,x+3\right)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{18x^{5}\sqrt{3x^{2}+5x+2}+87x^{4}\sqrt{3x^{2}+5x+2}+164x^{3}\sqrt{3x^{2}+5x+2}+151x^{2}\sqrt{3x^{2}+5x+2}+68x\sqrt{3x^{2}+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(18*x**5*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(3*x**2 + 5*x + 2
) + 164*x**3*sqrt(3*x**2 + 5*x + 2) + 151*x**2*sqrt(3*x**2 + 5*x + 2) + 68*
x*sqrt(3*x**2 + 5*x + 2) + 12*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(18
*x**5*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(3*x**2 + 5*x + 2) + 164*x**3*sq
rt(3*x**2 + 5*x + 2) + 151*x**2*sqrt(3*x**2 + 5*x + 2) + 68*x*sqrt(3*x**2 +
 5*x + 2) + 12*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2522 $\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=124

$$-\frac{2(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)^{3/2}}+\frac{4416\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{4(462x+401)}{5(2x+3)\sqrt{3x^2+5x+2}}+\frac{408\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

```
[Out] -2/5*(37+47*x)/(3+2*x)/(3*x^2+5*x+2)^(3/2)+408/125*arctanh(1/10*(7+8*x)*5^(
1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+4/5*(401+462*x)/(3+2*x)/(3*x^2+5*x+2)^(1/
2)+4416/25*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.07, antiderivative size = 124, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)\left(3x^2+5x+2\right)^{3/2}}+\frac{4416\sqrt{3x^2+5x+2}}{25(2x+3)}+\frac{4(462x+401)}{5(2x+3)\sqrt{3x^2+5x+2}}+\frac{408\tanh^{-1}\left(\frac{8x+7}{2\sqrt{5}\sqrt{3x^2+5x+2}}\right)}{25\sqrt{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)) + (4*(401 + 462*x))/
(5*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2]) + (4416*Sqrt[2 + 5*x + 3*x^2])/(25*(3 +
 2*x)) + (408*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(25*Sqr
t[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^2\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}} - \frac{2}{15}\int \frac{1029+846x}{(3+2x)^2\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}} + \frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}} + \frac{4}{75}\int \frac{125}{(3+2x}$$

$$= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}} + \frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}} + \frac{4416\sqrt{2+5x}}{25(3+2}$$

$$= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}} + \frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}} + \frac{4416\sqrt{2+5x}}{25(3+2}$$

$$= -\frac{2(37+47x)}{5(3+2x)\left(2+5x+3x^2\right)^{3/2}} + \frac{4(401+462x)}{5(3+2x)\sqrt{2+5x+3x^2}} + \frac{4416\sqrt{2+5x}}{25(3+2}$$

Mathematica [A] time = 0.06, size = 113, normalized size = 0.91

$$\frac{10\left(19872x^4+80100x^3+116826x^2+73215x+16667\right)-408\sqrt{5}\sqrt{3x^2+5x+2}\left(6x^3+19x^2+19x+6\right)\tanh}{125(2x+3)\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^2*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (10*(16667 + 73215*x + 116826*x^2 + 80100*x^3 + 19872*x^4) - 408*Sqrt[5]*Sq
rt[2 + 5*x + 3*x^2]*(6 + 19*x + 19*x^2 + 6*x^3)*ArcTanh[(-7 - 8*x)/(2*Sqrt[
5]*Sqrt[2 + 5*x + 3*x^2])])/(125*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [A] time = 0.83, size = 140, normalized size = 1.13

$$\frac{2\left(102\sqrt{5}\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^2+5x+2}(8x+7)+124x^2+212x+89}{4x^2+12x+9}\right)+5\left(19872x\right.\right.}{125\left(18x^5+87x^4+164x^3+151x^2+68x+12\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/125*(102*sqrt(5)*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log((4
*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 89)/(4*x^2 + 1
2*x + 9)) + 5*(19872*x^4 + 80100*x^3 + 116826*x^2 + 73215*x + 16667)*sqrt(3
*x^2 + 5*x + 2))/(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [B] time = 0.39, size = 235, normalized size = 1.90

$$-\frac{24}{125}\sqrt{5}\left(92\sqrt{5}\sqrt{3}-17\log\left(-\sqrt{5}\sqrt{3}+4\right)\right)\mathrm{sgn}\left(\frac{1}{2x+3}\right)-\frac{408\sqrt{5}\log\left(\left|\sqrt{5}\left(\sqrt{-\frac{8}{2x+3}+\frac{5}{(2x+3)^{2}}+3}+\frac{\sqrt{5}}{2x+3}\right)-\right.\right.}{125\,\mathrm{sgn}\left(\frac{1}{2x+3}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] -24/125*sqrt(5)*(92*sqrt(5)*sqrt(3) - 17*log(-sqrt(5)*sqrt(3) + 4))*sgn(1/(
2*x + 3)) - 408/125*sqrt(5)*log(abs(sqrt(5)*(sqrt(-8/(2*x + 3) + 5/(2*x + 3
)^2 + 3) + sqrt(5)/(2*x + 3)) - 4))/sgn(1/(2*x + 3)) + 8/25*(((5*(972/sgn(1
/(2*x + 3)) + 13/((2*x + 3)*sgn(1/(2*x + 3))))/(2*x + 3) - 12324/sgn(1/(2*x
 + 3)))/(2*x + 3) + 9783/sgn(1/(2*x + 3)))/(2*x + 3) - 2484/sgn(1/(2*x + 3)
))/((8/(2*x + 3) - 5/(2*x + 3)^2 - 3)*sqrt(-8/(2*x + 3) + 5/(2*x + 3)^2 + 3
))
```

maple [A] time = 0.01, size = 127, normalized size = 1.02

$$-\frac{408\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{125}-\frac{13}{10\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{17}{5\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -13/10/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+17/5/(-4*x+3*(x+3/2)^2-19/4)^(
3/2)-16/5*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+1104/25*(6*x+5)/(-4*x+3*(x+
3/2)^2-19/4)^(1/2)+204/25/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-408/125*5^(1/2)*arc
tanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))
```

maxima [A] time = 1.31, size = 135, normalized size = 1.09

$$-\frac{408}{125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^{2}+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{6624x}{25\sqrt{3x^{2}+5x+2}}+\frac{5724}{25\sqrt{3x^{2}+5x+2}}-\frac{96x}{5\left(3x^{2}+5x+2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^2/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -408/125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(2
*x + 3) - 2) + 6624/25*x/sqrt(3*x^2 + 5*x + 2) + 5724/25/sqrt(3*x^2 + 5*x +
 2) - 96/5*x/(3*x^2 + 5*x + 2)^(3/2) - 13/5/(2*(3*x^2 + 5*x + 2)^(3/2)*x +
3*(3*x^2 + 5*x + 2)^(3/2)) - 63/5/(3*x^2 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^{2}\left(3x^{2}+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^2*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{36x^6\sqrt{3x^2+5x+2}+228x^5\sqrt{3x^2+5x+2}+589x^4\sqrt{3x^2+5x+2}+794x^3\sqrt{3x^2+5x+2}+589x^2\sqrt{3x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**2/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(36*x**6*sqrt(3*x**2 + 5*x + 2) + 228*x**5*sqrt(3*x**2 + 5*x +
2) + 589*x**4*sqrt(3*x**2 + 5*x + 2) + 794*x**3*sqrt(3*x**2 + 5*x + 2) + 58
9*x**2*sqrt(3*x**2 + 5*x + 2) + 228*x*sqrt(3*x**2 + 5*x + 2) + 36*sqrt(3*x*
*2 + 5*x + 2)), x) - Integral(-5/(36*x**6*sqrt(3*x**2 + 5*x + 2) + 228*x**5
*sqrt(3*x**2 + 5*x + 2) + 589*x**4*sqrt(3*x**2 + 5*x + 2) + 794*x**3*sqrt(3
*x**2 + 5*x + 2) + 589*x**2*sqrt(3*x**2 + 5*x + 2) + 228*x*sqrt(3*x**2 + 5*
x + 2) + 36*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2523 $\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=147

$$-\frac{2(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}+\frac{11808\sqrt{3x^2+5x+2}}{125(2x+3)}+\frac{152\sqrt{3x^2+5x+2}}{(2x+3)^2}+\frac{4(2112x+1907)}{25(2x+3)^2\sqrt{3x^2+5x+2}}+\frac{4884\ \mathrm{ta}}{}$$

```
[Out] -2/5*(37+47*x)/(3+2*x)^2/(3*x^2+5*x+2)^(3/2)+4884/625*arctanh(1/10*(7+8*x)*
5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+4/25*(1907+2112*x)/(3+2*x)^2/(3*x^2+5*
x+2)^(1/2)+152*(3*x^2+5*x+2)^(1/2)/(3+2*x)^2+11808/125*(3*x^2+5*x+2)^(1/2)/
(3+2*x)
```

Rubi [A] time = 0.09, antiderivative size = 147, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {822, 834, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}+\frac{11808\sqrt{3x^2+5x+2}}{125(2x+3)}+\frac{152\sqrt{3x^2+5x+2}}{(2x+3)^2}+\frac{4(2112x+1907)}{25(2x+3)^2\sqrt{3x^2+5x+2}}+\frac{4884\ \mathrm{ta}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2)) + (4*(1907 + 2112*
x))/(25*(3 + 2*x)^2*Sqrt[2 + 5*x + 3*x^2]) + (152*Sqrt[2 + 5*x + 3*x^2])/(3
 + 2*x)^2 + (11808*Sqrt[2 + 5*x + 3*x^2])/(125*(3 + 2*x)) + (4884*ArcTanh[(
7 + 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x + 3*x^2])])/(125*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
```

```
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^3\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} - \frac{2}{15}\int \frac{1251+1128x}{(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}} + \frac{4}{75}\int \frac{}{(3+}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}} + \frac{152\sqrt{2+5}}{(3+2}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}} + \frac{152\sqrt{2+5}}{(3+2}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}} + \frac{152\sqrt{2+5}}{(3+2}$$

$$= -\frac{2(37+47x)}{5(3+2x)^2\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1907+2112x)}{25(3+2x)^2\sqrt{2+5x+3x^2}} + \frac{152\sqrt{2+5}}{(3+2}$$

Mathematica [A] time = 0.08, size = 143, normalized size = 0.97

$$\frac{2\left(142500\left(3x^2+5x+2\right)^2+50(6336x+5721)\left(3x^2+5x+2\right)+18(2x+3)\left(3x^2+5x+2\right)^{3/2}\left(4920\sqrt{3x^2+5}\right.\right.}{1875(2x+3)^2\left(3x^2+5x+2\right)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^3*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(-375*(37 + 47*x) + 50*(5721 + 6336*x)*(2 + 5*x + 3*x^2) + 142500*(2 + 5
*x + 3*x^2)^2 + 18*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)*(4920*Sqrt[2 + 5*x + 3
*x^2] - 407*Sqrt[5]*(3 + 2*x)*ArcTanh[(-7 - 8*x)/(2*Sqrt[5]*Sqrt[2 + 5*x +
3*x^2])])))/(1875*(3 + 2*x)^2*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [**A**] time = 0.83, size = 155, normalized size = 1.05

$$\frac{2\left(1221\,\sqrt{5}\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+589\,x^2+228\,x+36\right)\log\left(\frac{4\,\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}\,(8\,x+7)+124\,x^2+212\,x+89}{4\,x^2+12\,x+9}\right)+}{625\left(36\,x^6+228\,x^5+589\,x^4+794\,x^3+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/625*(1221*sqrt(5)*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x
 + 36)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 124*x^2 + 212*x + 8
9)/(4*x^2 + 12*x + 9)) + 5*(106272*x^5 + 599148*x^4 + 1316616*x^3 + 1405814
*x^2 + 727887*x + 146063)*sqrt(3*x^2 + 5*x + 2))/(36*x^6 + 228*x^5 + 589*x^
4 + 794*x^3 + 589*x^2 + 228*x + 36)
```

giac [**A**] time = 0.32, size = 234, normalized size = 1.59

$$\frac{4884}{625}\,\sqrt{5}\,\log\left(\frac{\left|-4\,\sqrt{3}\,x-2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}{\left|-4\,\sqrt{3}\,x+2\,\sqrt{5}-6\,\sqrt{3}+4\,\sqrt{3\,x^2+5\,x+2}\right|}\right)+\frac{2\,((6\,(23826\,x+61591)x+309599)x+84259)}{625\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 4884/625*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^
2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5*x
 + 2))) + 2/625*((6*(23826*x + 61591)*x + 309599)*x + 84259)/(3*x^2 + 5*x +
 2)^(3/2) - 8/625*(4106*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^3 + 16447*sqrt(
3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 57729*sqrt(3)*x + 20987*sqrt(3)
- 57729*sqrt(3*x^2 + 5*x + 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6
*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2)) + 11)^2
```

maple [**A**] time = 0.01, size = 148, normalized size = 1.01

$$-\frac{4884\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{625}-\frac{177}{50\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}+\frac{407}{50\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -177/50/(x+3/2)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+407/50/(-4*x+3*(x+3/2)^2-19/4
)^(3/2)-106/25*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+2952/125*(6*x+5)/(-4*x
+3*(x+3/2)^2-19/4)^(1/2)+2442/125/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-4884/625*5^
(1/2)*arctanh(2/5*(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/40/(
x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(3/2)
```

maxima [**A**] time = 1.24, size = 186, normalized size = 1.27

$$-\frac{4884}{625}\,\sqrt{5}\,\log\left(\frac{\sqrt{5}\,\sqrt{3\,x^2+5\,x+2}}{|2\,x+3|}+\frac{5}{2\,|2\,x+3|}-2\right)+\frac{17712\,x}{125\,\sqrt{3\,x^2+5\,x+2}}+\frac{17202}{125\,\sqrt{3\,x^2+5\,x+2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^3/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -4884/625*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/abs(
2*x + 3) - 2) + 17712/125*x/sqrt(3*x^2 + 5*x + 2) + 17202/125/sqrt(3*x^2 +
5*x + 2) - 636/25*x/(3*x^2 + 5*x + 2)^(3/2) - 13/10/(4*(3*x^2 + 5*x + 2)^(3
/2)*x^2 + 12*(3*x^2 + 5*x + 2)^(3/2)*x + 9*(3*x^2 + 5*x + 2)^(3/2)) - 177/2
5/(2*(3*x^2 + 5*x + 2)^(3/2)*x + 3*(3*x^2 + 5*x + 2)^(3/2)) - 653/50/(3*x^2
 + 5*x + 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^3\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^3*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{72x^7\sqrt{3x^2+5x+2}+564x^6\sqrt{3x^2+5x+2}+1862x^5\sqrt{3x^2+5x+2}+3355x^4\sqrt{3x^2+5x+2}+3560x^3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**3/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(72*x**7*sqrt(3*x**2 + 5*x + 2) + 564*x**6*sqrt(3*x**2 + 5*x +
2) + 1862*x**5*sqrt(3*x**2 + 5*x + 2) + 3355*x**4*sqrt(3*x**2 + 5*x + 2) +
3560*x**3*sqrt(3*x**2 + 5*x + 2) + 2223*x**2*sqrt(3*x**2 + 5*x + 2) + 756*x
*sqrt(3*x**2 + 5*x + 2) + 108*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(72
*x**7*sqrt(3*x**2 + 5*x + 2) + 564*x**6*sqrt(3*x**2 + 5*x + 2) + 1862*x**5*
sqrt(3*x**2 + 5*x + 2) + 3355*x**4*sqrt(3*x**2 + 5*x + 2) + 3560*x**3*sqrt(
3*x**2 + 5*x + 2) + 2223*x**2*sqrt(3*x**2 + 5*x + 2) + 756*x*sqrt(3*x**2 +
5*x + 2) + 108*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2524 $\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=174

$$-\frac{2(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}+\frac{9696\sqrt{3x^2+5x+2}}{625(2x+3)}+\frac{1048\sqrt{3x^2+5x+2}}{15(2x+3)^2}+\frac{47552\sqrt{3x^2+5x+2}}{375(2x+3)^3}+\frac{12(638}{25(2x+3)^3}$$

```
[Out] -2/5*(37+47*x)/(3+2*x)^3/(3*x^2+5*x+2)^(3/2)+46108/3125*arctanh(1/10*(7+8*x
)*5^(1/2)/(3*x^2+5*x+2)^(1/2))*5^(1/2)+12/25*(603+638*x)/(3+2*x)^3/(3*x^2+5
*x+2)^(1/2)+47552/375*(3*x^2+5*x+2)^(1/2)/(3+2*x)^3+1048/15*(3*x^2+5*x+2)^(
1/2)/(3+2*x)^2+9696/625*(3*x^2+5*x+2)^(1/2)/(3+2*x)
```

Rubi [A] time = 0.12, antiderivative size = 174, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {822, 834, 806, 724, 206}

$$-\frac{2(47x+37)}{5(2x+3)^3\left(3x^2+5x+2\right)^{3/2}}+\frac{9696\sqrt{3x^2+5x+2}}{625(2x+3)}+\frac{1048\sqrt{3x^2+5x+2}}{15(2x+3)^2}+\frac{47552\sqrt{3x^2+5x+2}}{375(2x+3)^3}+\frac{12(638}{25(2x+3)^3}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2)) + (12*(603 + 638*x
))/(25*(3 + 2*x)^3*Sqrt[2 + 5*x + 3*x^2]) + (47552*Sqrt[2 + 5*x + 3*x^2])/(
375*(3 + 2*x)^3) + (1048*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^2) + (9696*Sq
rt[2 + 5*x + 3*x^2])/(625*(3 + 2*x)) + (46108*ArcTanh[(7 + 8*x)/(2*Sqrt[5]*
Sqrt[2 + 5*x + 3*x^2])])/(625*Sqrt[5])
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^4\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{1473+1410x}{(3+2x)^4\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{3}{(3+}\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2}}{375(3}\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2}}{375(3}\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2}}{375(3}\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2}}{375(3}\\
&= -\frac{2(37+47x)}{5(3+2x)^3\left(2+5x+3x^2\right)^{3/2}}+\frac{12(603+638x)}{25(3+2x)^3\sqrt{2+5x+3x^2}}+\frac{47552\sqrt{2}}{375(3}
\end{aligned}$$

Mathematica [A] time = 0.11, size = 150, normalized size = 0.86

$$\frac{2\left(594400\left(3x^2+5x+2\right)^2+2250(638x+603)\left(3x^2+5x+2\right)+2(2x+3)\left(3x^2+5x+2\right)^{3/2}\left(10(7272x+272\right.\right.}{9375(2x+3)^3\left(3x^2+5x+2\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^4*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(-1875*(37 + 47*x) + 2250*(603 + 638*x)*(2 + 5*x + 3*x^2) + 594400*(2 +
5*x + 3*x^2)^2 + 2*(3 + 2*x)*(2 + 5*x + 3*x^2)^(3/2)*(10*(27283 + 7272*x)*S
qrt[2 + 5*x + 3*x^2] - 34581*Sqrt[5]*(3 + 2*x)^2*ArcTanh[(-7 - 8*x)/(2*Sqrt
[5]*Sqrt[2 + 5*x + 3*x^2])]))/(9375*(3 + 2*x)^3*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [A] time = 0.73, size = 170, normalized size = 0.98

$$\frac{2\left(34581\sqrt{5}\left(72x^{7}+564x^{6}+1862x^{5}+3355x^{4}+3560x^{3}+2223x^{2}+756x+108\right)\log\left(\frac{4\sqrt{5}\sqrt{3x^{2}+5x+2}\,(8x+7)+1}{4x^{2}+12x+9}\right.\right.}{9375\left(72x^{7}+564x^{6}+1862\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] 2/9375*(34581*sqrt(5)*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 +
2223*x^2 + 756*x + 108)*log((4*sqrt(5)*sqrt(3*x^2 + 5*x + 2)*(8*x + 7) + 12
4*x^2 + 212*x + 89)/(4*x^2 + 12*x + 9)) + 5*(523584*x^6 + 4495032*x^5 + 153
34836*x^4 + 26717636*x^3 + 25105026*x^2 + 12060957*x + 2313929)*sqrt(3*x^2
+ 5*x + 2))/(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 +
 756*x + 108)
```

giac [A] time = 0.34, size = 285, normalized size = 1.64

$$\frac{46108}{3125}\sqrt{5}\log\left(\frac{\left|-4\sqrt{3}x-2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}{\left|-4\sqrt{3}x+2\sqrt{5}-6\sqrt{3}+4\sqrt{3x^{2}+5x+2}\right|}\right)+\frac{2\left(\left(12\left(19992x+58207\right)x+636631\right)x+184301\right.}{3125\left(3x^{2}+5x+2\right)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] 46108/3125*sqrt(5)*log(abs(-4*sqrt(3)*x - 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*
x^2 + 5*x + 2))/abs(-4*sqrt(3)*x + 2*sqrt(5) - 6*sqrt(3) + 4*sqrt(3*x^2 + 5
*x + 2))) + 2/3125*((12*(19992*x + 58207)*x + 636631)*x + 184301)/(3*x^2 +
5*x + 2)^(3/2) - 8/9375*(296724*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^5 + 210
3870*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^4 + 16891990*(sqrt(3)*x -
sqrt(3*x^2 + 5*x + 2))^3 + 21246975*sqrt(3)*(sqrt(3)*x - sqrt(3*x^2 + 5*x +
 2))^2 + 38063715*sqrt(3)*x + 8723544*sqrt(3) - 38063715*sqrt(3*x^2 + 5*x +
 2))/(2*(sqrt(3)*x - sqrt(3*x^2 + 5*x + 2))^2 + 6*sqrt(3)*(sqrt(3)*x - sqrt
(3*x^2 + 5*x + 2)) + 11)^3
```

maple [A] time = 0.01, size = 169, normalized size = 0.97

$$-\frac{46108\sqrt{5}\ \operatorname{arctanh}\left(\frac{2\left(-4x-\frac{7}{2}\right)\sqrt{5}}{5\sqrt{-16x+12\left(x+\frac{3}{2}\right)^{2}-19}}\right)}{3125}-\frac{151}{200\left(x+\frac{3}{2}\right)^{2}\left(-4x+3\left(x+\frac{3}{2}\right)^{2}-\frac{19}{4}\right)^{\frac{3}{2}}}-\frac{862}{125\left(x+\frac{3}{2}\right)\left(-4x+3\left(x+\frac{3}{2}\right.\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] -151/200/(x+3/2)^2/(-4*x+3*(x+3/2)^2-19/4)^(3/2)-862/125/(x+3/2)/(-4*x+3*(x
+3/2)^2-19/4)^(3/2)+11527/750/(-4*x+3*(x+3/2)^2-19/4)^(3/2)-2366/375*(6*x+5
)/(-4*x+3*(x+3/2)^2-19/4)^(3/2)+2424/625*(6*x+5)/(-4*x+3*(x+3/2)^2-19/4)^(1
/2)+23054/625/(-4*x+3*(x+3/2)^2-19/4)^(1/2)-46108/3125*5^(1/2)*arctanh(2/5*
(-4*x-7/2)*5^(1/2)/(-16*x+12*(x+3/2)^2-19)^(1/2))-13/120/(x+3/2)^3/(-4*x+3*
(x+3/2)^2-19/4)^(3/2)
```

maxima [A] time = 1.27, size = 254, normalized size = 1.46

$$-\frac{46108}{3125}\sqrt{5}\log\left(\frac{\sqrt{5}\sqrt{3x^2+5x+2}}{|2x+3|}+\frac{5}{2|2x+3|}-2\right)+\frac{14544x}{625\sqrt{3x^2+5x+2}}+\frac{35174}{625\sqrt{3x^2+5x+2}}-\frac{4}{125\,(3\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^4/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -46108/3125*sqrt(5)*log(sqrt(5)*sqrt(3*x^2 + 5*x + 2)/abs(2*x + 3) + 5/2/ab
s(2*x + 3) - 2) + 14544/625*x/sqrt(3*x^2 + 5*x + 2) + 35174/625/sqrt(3*x^2
+ 5*x + 2) - 4732/125*x/(3*x^2 + 5*x + 2)^(3/2) - 13/15/(8*(3*x^2 + 5*x + 2
)^(3/2)*x^3 + 36*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 54*(3*x^2 + 5*x + 2)^(3/2)*x
 + 27*(3*x^2 + 5*x + 2)^(3/2)) - 151/50/(4*(3*x^2 + 5*x + 2)^(3/2)*x^2 + 12
*(3*x^2 + 5*x + 2)^(3/2)*x + 9*(3*x^2 + 5*x + 2)^(3/2)) - 1724/125/(2*(3*x^
2 + 5*x + 2)^(3/2)*x + 3*(3*x^2 + 5*x + 2)^(3/2)) - 12133/750/(3*x^2 + 5*x
+ 2)^(3/2)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2x+3)^4\left(3x^2+5x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^4*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{}{144x^8\sqrt{3x^2+5x+2}+1344x^7\sqrt{3x^2+5x+2}+5416x^6\sqrt{3x^2+5x+2}+12296x^5\sqrt{3x^2+5x+2}+1718}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**4/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(144*x**8*sqrt(3*x**2 + 5*x + 2) + 1344*x**7*sqrt(3*x**2 + 5*x
+ 2) + 5416*x**6*sqrt(3*x**2 + 5*x + 2) + 12296*x**5*sqrt(3*x**2 + 5*x + 2)
 + 17185*x**4*sqrt(3*x**2 + 5*x + 2) + 15126*x**3*sqrt(3*x**2 + 5*x + 2) +
8181*x**2*sqrt(3*x**2 + 5*x + 2) + 2484*x*sqrt(3*x**2 + 5*x + 2) + 324*sqrt
(3*x**2 + 5*x + 2)), x) - Integral(-5/(144*x**8*sqrt(3*x**2 + 5*x + 2) + 13
44*x**7*sqrt(3*x**2 + 5*x + 2) + 5416*x**6*sqrt(3*x**2 + 5*x + 2) + 12296*x
**5*sqrt(3*x**2 + 5*x + 2) + 17185*x**4*sqrt(3*x**2 + 5*x + 2) + 15126*x**3
*sqrt(3*x**2 + 5*x + 2) + 8181*x**2*sqrt(3*x**2 + 5*x + 2) + 2484*x*sqrt(3*
x**2 + 5*x + 2) + 324*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2525 $\int \frac{-1+x}{(1+x)\sqrt{1+x+x^2}}\,dx$

Optimal. Leaf size=35

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right)+\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

```
[Out] arcsinh(1/3*(1+2*x)*3^(1/2))+2*arctanh(1/2*(1-x)/(x^2+x+1)^(1/2))
```

Rubi [A] time = 0.03, antiderivative size = 35, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 5, integrand size = 19, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.263, Rules used = {843, 619, 215, 724, 206}

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right)+\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(-1 + x)/((1 + x)*Sqrt[1 + x + x^2]),x]
```

```
[Out] ArcSinh[(1 + 2*x)/Sqrt[3]] + 2*ArcTanh[(1 - x)/(2*Sqrt[1 + x + x^2])]
```

Rule 206

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> Simp[(1*ArcTanh[(Rt[-b, 2]*x)/
Rt[a, 2]])/(Rt[a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (Gt
Q[a, 0] || LtQ[b, 0])
```

Rule 215

```
Int[1/Sqrt[(a_) + (b_.)*(x_)^2], x_Symbol] :> Simp[ArcSinh[(Rt[b, 2]*x)/Sqr
t[a]]/Rt[b, 2], x] /; FreeQ[{a, b}, x] && GtQ[a, 0] && PosQ[b]
```

Rule 619

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_Symbol] :> Dist[1/(2*c*((-4
*c)/(b^2 - 4*a*c))^p), Subst[Int[Simp[1 - x^2/(b^2 - 4*a*c), x]^p, x], x, b
 + 2*c*x], x] /; FreeQ[{a, b, c, p}, x] && GtQ[4*a - b^2/c, 0]
```

Rule 724

```
Int[1/(((d_.) + (e_.)*(x_))*Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2]), x_Sym
bol] :> Dist[-2, Subst[Int[1/(4*c*d^2 - 4*b*d*e + 4*a*e^2 - x^2), x], x, (2
*a*e - b*d - (2*c*d - b*e)*x)/Sqrt[a + b*x + c*x^2]], x] /; FreeQ[{a, b, c,
 d, e}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[2*c*d - b*e, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{-1+x}{(1+x)\sqrt{1+x+x^2}}\,dx &= -\left(2\int \frac{1}{(1+x)\sqrt{1+x+x^2}}\,dx\right)+\int \frac{1}{\sqrt{1+x+x^2}}\,dx\\ &= 4\,\text{Subst}\left(\int \frac{1}{4-x^2}\,dx,x,\frac{1-x}{\sqrt{1+x+x^2}}\right)+\frac{\text{Subst}\left(\int \frac{1}{\sqrt{1+\frac{x^2}{3}}}\,dx,x,1+2x\right)}{\sqrt{3}}\\ &= \sinh^{-1}\left(\frac{1+2x}{\sqrt{3}}\right)+2\tanh^{-1}\left(\frac{1-x}{2\sqrt{1+x+x^2}}\right)\end{aligned}$$

Mathematica [**A**] time = 0.01, size = 35, normalized size = 1.00

$$2\tanh^{-1}\left(\frac{1-x}{2\sqrt{x^2+x+1}}\right)+\sinh^{-1}\left(\frac{2x+1}{\sqrt{3}}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(-1 + x)/((1 + x)*Sqrt[1 + x + x^2]),x]
[Out] ArcSinh[(1 + 2*x)/Sqrt[3]] + 2*ArcTanh[(1 - x)/(2*Sqrt[1 + x + x^2])]
```

fricas [**A**] time = 0.60, size = 50, normalized size = 1.43

$$2\,\log\left(-x+\sqrt{x^2+x+1}\right)-2\,\log\left(-x+\sqrt{x^2+x+1}-2\right)-\log\left(-2\,x+2\,\sqrt{x^2+x+1}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="fricas")
[Out] 2*log(-x + sqrt(x^2 + x + 1)) - 2*log(-x + sqrt(x^2 + x + 1) - 2) - log(-2*
x + 2*sqrt(x^2 + x + 1) - 1)
```

giac [**A**] time = 0.18, size = 52, normalized size = 1.49

$$-\log\left(-2\,x+2\,\sqrt{x^2+x+1}-1\right)+2\,\log\left(\left|-x+\sqrt{x^2+x+1}\right|\right)-2\,\log\left(\left|-x+\sqrt{x^2+x+1}-2\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="giac")
[Out] -log(-2*x + 2*sqrt(x^2 + x + 1) - 1) + 2*log(abs(-x + sqrt(x^2 + x + 1))) -
 2*log(abs(-x + sqrt(x^2 + x + 1) - 2))
```

maple [**A**] time = 0.01, size = 32, normalized size = 0.91

$$\text{arcsinh}\left(\frac{2\sqrt{3}\,\left(x+\frac{1}{2}\right)}{3}\right)+2\,\text{arctanh}\left(\frac{-x+1}{2\sqrt{-x+(x+1)^2}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((-1+x)/(x+1)/(x^2+x+1)^(1/2),x)
[Out] arcsinh(2/3*3^(1/2)*(x+1/2))+2*arctanh(1/2*(1-x)/((x+1)^2-x)^(1/2))
```

maxima [**A**] time = 1.18, size = 41, normalized size = 1.17

$$\text{arsinh}\left(\frac{2}{3}\,\sqrt{3}\,x+\frac{1}{3}\,\sqrt{3}\right)-2\,\text{arsinh}\left(\frac{\sqrt{3}\,x}{3\,|x+1|}-\frac{\sqrt{3}}{3\,|x+1|}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x^2+x+1)^(1/2),x, algorithm="maxima")
```

```
[Out] arcsinh(2/3*sqrt(3)*x + 1/3*sqrt(3)) - 2*arcsinh(1/3*sqrt(3)*x/abs(x + 1) -
 1/3*sqrt(3)/abs(x + 1))
```

mupad [F] time = 0.00, size = -1, normalized size = -0.03

$$\int \frac{x-1}{(x+1)\ \sqrt{x^2+x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((x - 1)/((x + 1)*(x + x^2 + 1)^(1/2)),x)
```

```
[Out] int((x - 1)/((x + 1)*(x + x^2 + 1)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{x-1}{(x+1)\sqrt{x^2+x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((-1+x)/(1+x)/(x**2+x+1)**(1/2),x)
```

```
[Out] Integral((x - 1)/((x + 1)*sqrt(x**2 + x + 1)), x)
```

3.2526 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{1}{40}(2x+3)^{15/2}+\frac{47}{104}(2x+3)^{13/2}-\frac{109}{88}(2x+3)^{11/2}+\frac{65}{72}(2x+3)^{9/2}$$

```
[Out] 65/72*(3+2*x)^(9/2)-109/88*(3+2*x)^(11/2)+47/104*(3+2*x)^(13/2)-1/40*(3+2*x
)^(15/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{40}(2x+3)^{15/2}+\frac{47}{104}(2x+3)^{13/2}-\frac{109}{88}(2x+3)^{11/2}+\frac{65}{72}(2x+3)^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(9/2))/72 - (109*(3 + 2*x)^(11/2))/88 + (47*(3 + 2*x)^(13/2))
/104 - (3 + 2*x)^(15/2)/40
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{7/2}-\frac{109}{8}(3+2x)^{9/2}+\frac{47}{8}(3+2x)^{11/2}-\frac{3}{8}(3+2x)^{13/2}\right.\\ &= \frac{65}{72}(3+2x)^{9/2}-\frac{109}{88}(3+2x)^{11/2}+\frac{47}{104}(3+2x)^{13/2}-\frac{1}{40}(3+2x)^{15/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{(2x+3)^{9/2}\left(1287x^3-5841x^2-10269x-3727\right)}{6435}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/6435*((3 + 2*x)^(9/2)*(-3727 - 10269*x - 5841*x^2 + 1287*x^3))
```

fricas [A] time = 0.63, size = 44, normalized size = 0.83

$$-\frac{1}{6435}\left(20592\,x^7+30096\,x^6-447048\,x^5-2029120\,x^4-3733305\,x^3-3496257\,x^2-1636821\,x-301887\right)\sqrt{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/6435*(20592*x^7 + 30096*x^6 - 447048*x^5 - 2029120*x^4 - 3733305*x^3 - 3
496257*x^2 - 1636821*x - 301887)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{1}{40}\,(2\,x+3)^{\frac{15}{2}}+\frac{47}{104}\,(2\,x+3)^{\frac{13}{2}}-\frac{109}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{65}{72}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -1/40*(2*x + 3)^(15/2) + 47/104*(2*x + 3)^(13/2) - 109/88*(2*x + 3)^(11/2)
+ 65/72*(2*x + 3)^(9/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(1287x^{3}-5841x^{2}-10269x-3727\right)(2x+3)^{\frac{9}{2}}}{6435}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/6435*(1287*x^3-5841*x^2-10269*x-3727)*(3+2*x)^(9/2)
```

maxima [A] time = 0.54, size = 37, normalized size = 0.70

$$-\frac{1}{40}\,(2\,x+3)^{\frac{15}{2}}+\frac{47}{104}\,(2\,x+3)^{\frac{13}{2}}-\frac{109}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{65}{72}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -1/40*(2*x + 3)^(15/2) + 47/104*(2*x + 3)^(13/2) - 109/88*(2*x + 3)^(11/2)
+ 65/72*(2*x + 3)^(9/2)
```

mupad [B] time = 3.03, size = 37, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{9/2}}{72}-\frac{109\,(2\,x+3)^{11/2}}{88}+\frac{47\,(2\,x+3)^{13/2}}{104}-\frac{(2\,x+3)^{15/2}}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (65*(2*x + 3)^(9/2))/72 - (109*(2*x + 3)^(11/2))/88 + (47*(2*x + 3)^(13/2))
/104 - (2*x + 3)^(15/2)/40
```

sympy [B] time = 3.78, size = 116, normalized size = 2.19

$$-\frac{16x^{7}\sqrt{2x+3}}{5}-\frac{304x^{6}\sqrt{2x+3}}{65}+\frac{49672x^{5}\sqrt{2x+3}}{715}+\frac{405824x^{4}\sqrt{2x+3}}{1287}+\frac{248887x^{3}\sqrt{2x+3}}{429}+\frac{388473x^{2}\sqrt{2x+3}}{715}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2),x)
```

```
[Out] -16*x**7*sqrt(2*x + 3)/5 - 304*x**6*sqrt(2*x + 3)/65 + 49672*x**5*sqrt(2*x
+ 3)/715 + 405824*x**4*sqrt(2*x + 3)/1287 + 248887*x**3*sqrt(2*x + 3)/429 +
 388473*x**2*sqrt(2*x + 3)/715 + 181869*x*sqrt(2*x + 3)/715 + 33543*sqrt(2*
x + 3)/715
```

3.2527 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{3}{104}(2x+3)^{13/2}+\frac{47}{88}(2x+3)^{11/2}-\frac{109}{72}(2x+3)^{9/2}+\frac{65}{56}(2x+3)^{7/2}$$

```
[Out] 65/56*(3+2*x)^(7/2)-109/72*(3+2*x)^(9/2)+47/88*(3+2*x)^(11/2)-3/104*(3+2*x)
^(13/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{3}{104}(2x+3)^{13/2}+\frac{47}{88}(2x+3)^{11/2}-\frac{109}{72}(2x+3)^{9/2}+\frac{65}{56}(2x+3)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(7/2))/56 - (109*(3 + 2*x)^(9/2))/72 + (47*(3 + 2*x)^(11/2))/
88 - (3*(3 + 2*x)^(13/2))/104
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{5/2}-\frac{109}{8}(3+2x)^{7/2}+\frac{47}{8}(3+2x)^{9/2}-\frac{3}{8}(3+2x)^{11/2}\right)\\ &= \frac{65}{56}(3+2x)^{7/2}-\frac{109}{72}(3+2x)^{9/2}+\frac{47}{88}(3+2x)^{11/2}-\frac{3}{104}(3+2x)^{13/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{(2x+3)^{7/2}\left(2079x^3-9891x^2-16429x-5829\right)}{9009}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/9009*((3 + 2*x)^(7/2)*(-5829 - 16429*x - 9891*x^2 + 2079*x^3))
```

fricas [A] time = 0.69, size = 39, normalized size = 0.74

$$-\frac{1}{9009}\left(16632\,x^6-4284\,x^5-375242\,x^4-1116057\,x^3-1364067\,x^2-758349\,x-157383\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/9009*(16632*x^6 - 4284*x^5 - 375242*x^4 - 1116057*x^3 - 1364067*x^2 - 75
8349*x - 157383)*sqrt(2*x + 3)
```

giac [**A**] time = 0.19, size = 37, normalized size = 0.70

$$-\frac{3}{104}\,(2\,x+3)^{\frac{13}{2}}+\frac{47}{88}\,(2\,x+3)^{\frac{11}{2}}-\frac{109}{72}\,(2\,x+3)^{\frac{9}{2}}+\frac{65}{56}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -3/104*(2*x + 3)^(13/2) + 47/88*(2*x + 3)^(11/2) - 109/72*(2*x + 3)^(9/2) +
 65/56*(2*x + 3)^(7/2)
```

maple [**A**] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(2079x^{3}-9891x^{2}-16429x-5829\right)(2x+3)^{\frac{7}{2}}}{9009}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/9009*(2079*x^3-9891*x^2-16429*x-5829)*(2*x+3)^(7/2)
```

maxima [**A**] time = 0.50, size = 37, normalized size = 0.70

$$-\frac{3}{104}\,(2\,x+3)^{\frac{13}{2}}+\frac{47}{88}\,(2\,x+3)^{\frac{11}{2}}-\frac{109}{72}\,(2\,x+3)^{\frac{9}{2}}+\frac{65}{56}\,(2\,x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -3/104*(2*x + 3)^(13/2) + 47/88*(2*x + 3)^(11/2) - 109/72*(2*x + 3)^(9/2) +
 65/56*(2*x + 3)^(7/2)
```

mupad [**B**] time = 0.04, size = 37, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{7/2}}{56}-\frac{109\,(2\,x+3)^{9/2}}{72}+\frac{47\,(2\,x+3)^{11/2}}{88}-\frac{3\,(2\,x+3)^{13/2}}{104}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (65*(2*x + 3)^(7/2))/56 - (109*(2*x + 3)^(9/2))/72 + (47*(2*x + 3)^(11/2))/
88 - (3*(2*x + 3)^(13/2))/104
```

sympy [**B**] time = 1.85, size = 100, normalized size = 1.89

$$-\frac{24x^{6}\sqrt{2x+3}}{13}+\frac{68x^{5}\sqrt{2x+3}}{143}+\frac{53606x^{4}\sqrt{2x+3}}{1287}+\frac{372019x^{3}\sqrt{2x+3}}{3003}+\frac{151563x^{2}\sqrt{2x+3}}{1001}+\frac{84261x\sqrt{2x+3}}{1001}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2),x)
```

```
[Out] -24*x**6*sqrt(2*x + 3)/13 + 68*x**5*sqrt(2*x + 3)/143 + 53606*x**4*sqrt(2*x
 + 3)/1287 + 372019*x**3*sqrt(2*x + 3)/3003 + 151563*x**2*sqrt(2*x + 3)/100
1 + 84261*x*sqrt(2*x + 3)/1001 + 17487*sqrt(2*x + 3)/1001
```

3.2528 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)\,dx$

Optimal. Leaf size=53

$$-\frac{3}{88}(2x+3)^{11/2}+\frac{47}{72}(2x+3)^{9/2}-\frac{109}{56}(2x+3)^{7/2}+\frac{13}{8}(2x+3)^{5/2}$$

```
[Out] 13/8*(3+2*x)^(5/2)-109/56*(3+2*x)^(7/2)+47/72*(3+2*x)^(9/2)-3/88*(3+2*x)^(1
1/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{88}(2x+3)^{11/2}+\frac{47}{72}(2x+3)^{9/2}-\frac{109}{56}(2x+3)^{7/2}+\frac{13}{8}(2x+3)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] (13*(3 + 2*x)^(5/2))/8 - (109*(3 + 2*x)^(7/2))/56 + (47*(3 + 2*x)^(9/2))/72
 - (3*(3 + 2*x)^(11/2))/88
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)\,dx &= \int \left(\frac{65}{8}(3+2x)^{3/2}-\frac{109}{8}(3+2x)^{5/2}+\frac{47}{8}(3+2x)^{7/2}-\frac{3}{8}(3+2x)^{9/2}\right)\\ &= \frac{13}{8}(3+2x)^{5/2}-\frac{109}{56}(3+2x)^{7/2}+\frac{47}{72}(3+2x)^{9/2}-\frac{3}{88}(3+2x)^{11/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{693}(2x+3)^{5/2}\left(189x^3-959x^2-1455x-513\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/693*((3 + 2*x)^(5/2)*(-513 - 1455*x - 959*x^2 + 189*x^3))
```

fricas [A] time = 0.57, size = 34, normalized size = 0.64

$$-\frac{1}{693}\left(756\,x^5-1568\,x^4-15627\,x^3-28143\,x^2-19251\,x-4617\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] -1/693*(756*x^5 - 1568*x^4 - 15627*x^3 - 28143*x^2 - 19251*x - 4617)*sqrt(2
*x + 3)
```

giac [**A**] time = 0.21, size = 37, normalized size = 0.70

$$-\frac{3}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{47}{72}\,(2\,x+3)^{\frac{9}{2}}-\frac{109}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{13}{8}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -3/88*(2*x + 3)^(11/2) + 47/72*(2*x + 3)^(9/2) - 109/56*(2*x + 3)^(7/2) + 1
3/8*(2*x + 3)^(5/2)
```

maple [**A**] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(189x^3-959x^2-1455x-513\right)(2x+3)^{\frac{5}{2}}}{693}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2),x)
```

```
[Out] -1/693*(189*x^3-959*x^2-1455*x-513)*(2*x+3)^(5/2)
```

maxima [**A**] time = 0.55, size = 37, normalized size = 0.70

$$-\frac{3}{88}\,(2\,x+3)^{\frac{11}{2}}+\frac{47}{72}\,(2\,x+3)^{\frac{9}{2}}-\frac{109}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{13}{8}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -3/88*(2*x + 3)^(11/2) + 47/72*(2*x + 3)^(9/2) - 109/56*(2*x + 3)^(7/2) + 1
3/8*(2*x + 3)^(5/2)
```

mupad [**B**] time = 0.04, size = 37, normalized size = 0.70

$$\frac{13\,(2\,x+3)^{5/2}}{8}-\frac{109\,(2\,x+3)^{7/2}}{56}+\frac{47\,(2\,x+3)^{9/2}}{72}-\frac{3\,(2\,x+3)^{11/2}}{88}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (13*(2*x + 3)^(5/2))/8 - (109*(2*x + 3)^(7/2))/56 + (47*(2*x + 3)^(9/2))/72
 - (3*(2*x + 3)^(11/2))/88
```

sympy [**A**] time = 13.96, size = 46, normalized size = 0.87

$$-\frac{3\,(2x+3)^{\frac{11}{2}}}{88}+\frac{47\,(2x+3)^{\frac{9}{2}}}{72}-\frac{109\,(2x+3)^{\frac{7}{2}}}{56}+\frac{13\,(2x+3)^{\frac{5}{2}}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2),x)
```

```
[Out] -3*(2*x + 3)**(11/2)/88 + 47*(2*x + 3)**(9/2)/72 - 109*(2*x + 3)**(7/2)/56
+ 13*(2*x + 3)**(5/2)/8
```

3.2529 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)dx$

Optimal. Leaf size=53

$$-\frac{1}{24}(2x+3)^{9/2}+\frac{47}{56}(2x+3)^{7/2}-\frac{109}{40}(2x+3)^{5/2}+\frac{65}{24}(2x+3)^{3/2}$$

```
[Out] 65/24*(3+2*x)^(3/2)-109/40*(3+2*x)^(5/2)+47/56*(3+2*x)^(7/2)-1/24*(3+2*x)^(
9/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{24}(2x+3)^{9/2}+\frac{47}{56}(2x+3)^{7/2}-\frac{109}{40}(2x+3)^{5/2}+\frac{65}{24}(2x+3)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2),x]
```

```
[Out] (65*(3 + 2*x)^(3/2))/24 - (109*(3 + 2*x)^(5/2))/40 + (47*(3 + 2*x)^(7/2))/5
6 - (3 + 2*x)^(9/2)/24
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)dx &= \int \left(\frac{65}{8}\sqrt{3+2x}-\frac{109}{8}(3+2x)^{3/2}+\frac{47}{8}(3+2x)^{5/2}-\frac{3}{8}(3+2x)^{7/2}\right)dx\\ &= \frac{65}{24}(3+2x)^{3/2}-\frac{109}{40}(3+2x)^{5/2}+\frac{47}{56}(3+2x)^{7/2}-\frac{1}{24}(3+2x)^{9/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{105}(2x+3)^{3/2}\left(35x^3-195x^2-249x-101\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2),x]
```

```
[Out] -1/105*((3 + 2*x)^(3/2)*(-101 - 249*x - 195*x^2 + 35*x^3))
```

fricas [A] time = 0.60, size = 29, normalized size = 0.55

$$-\frac{1}{105}\left(70\,x^4-285\,x^3-1083\,x^2-949\,x-303\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/105*(70*x^4 - 285*x^3 - 1083*x^2 - 949*x - 303)*sqrt(2*x + 3)
```

giac [A] time = 0.15, size = 37, normalized size = 0.70

$$-\frac{1}{24}\,(2\,x+3)^{\frac{9}{2}}+\frac{47}{56}\,(2\,x+3)^{\frac{7}{2}}-\frac{109}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{65}{24}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -1/24*(2*x + 3)^(9/2) + 47/56*(2*x + 3)^(7/2) - 109/40*(2*x + 3)^(5/2) + 65
/24*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(35x^{3}-195x^{2}-249x-101\right)(2x+3)^{\frac{3}{2}}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)*(2*x+3)^(1/2),x)
```

```
[Out] -1/105*(35*x^3-195*x^2-249*x-101)*(2*x+3)^(3/2)
```

maxima [A] time = 0.61, size = 37, normalized size = 0.70

$$-\frac{1}{24}\,(2\,x+3)^{\frac{9}{2}}+\frac{47}{56}\,(2\,x+3)^{\frac{7}{2}}-\frac{109}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{65}{24}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -1/24*(2*x + 3)^(9/2) + 47/56*(2*x + 3)^(7/2) - 109/40*(2*x + 3)^(5/2) + 65
/24*(2*x + 3)^(3/2)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{3/2}}{24}-\frac{109\,(2\,x+3)^{5/2}}{40}+\frac{47\,(2\,x+3)^{7/2}}{56}-\frac{(2\,x+3)^{9/2}}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2),x)
```

```
[Out] (65*(2*x + 3)^(3/2))/24 - (109*(2*x + 3)^(5/2))/40 + (47*(2*x + 3)^(7/2))/5
6 - (2*x + 3)^(9/2)/24
```

sympy [A] time = 2.70, size = 44, normalized size = 0.83

$$-\frac{(2x+3)^{\frac{9}{2}}}{24}+\frac{47\,(2x+3)^{\frac{7}{2}}}{56}-\frac{109\,(2x+3)^{\frac{5}{2}}}{40}+\frac{65\,(2x+3)^{\frac{3}{2}}}{24}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)*(3+2*x)**(1/2),x)
```

```
[Out] -(2*x + 3)**(9/2)/24 + 47*(2*x + 3)**(7/2)/56 - 109*(2*x + 3)**(5/2)/40 + 6
5*(2*x + 3)**(3/2)/24
```

3.2530 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=53

$$-\frac{3}{56}(2x+3)^{7/2}+\frac{47}{40}(2x+3)^{5/2}-\frac{109}{24}(2x+3)^{3/2}+\frac{65}{8}\sqrt{2x+3}$$

```
[Out] -109/24*(3+2*x)^(3/2)+47/40*(3+2*x)^(5/2)-3/56*(3+2*x)^(7/2)+65/8*(3+2*x)^(
1/2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{3}{56}(2x+3)^{7/2}+\frac{47}{40}(2x+3)^{5/2}-\frac{109}{24}(2x+3)^{3/2}+\frac{65}{8}\sqrt{2x+3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x],x]
```

```
[Out] (65*Sqrt[3 + 2*x])/8 - (109*(3 + 2*x)^(3/2))/24 + (47*(3 + 2*x)^(5/2))/40 -
 (3*(3 + 2*x)^(7/2))/56
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{\sqrt{3+2x}}\,dx &= \int \left(\frac{65}{8\sqrt{3+2x}}-\frac{109}{8}\sqrt{3+2x}+\frac{47}{8}(3+2x)^{3/2}-\frac{3}{8}(3+2x)^{5/2}\right)dx\\ &= \frac{65}{8}\sqrt{3+2x}-\frac{109}{24}(3+2x)^{3/2}+\frac{47}{40}(3+2x)^{5/2}-\frac{3}{56}(3+2x)^{7/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{1}{105}\sqrt{2x+3}\left(45x^3-291x^2-223x-381\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x],x]
```

```
[Out] -1/105*(Sqrt[3 + 2*x]*(-381 - 223*x - 291*x^2 + 45*x^3))
```

fricas [A] time = 0.59, size = 24, normalized size = 0.45

$$-\frac{1}{105}\left(45\,x^3-291\,x^2-223\,x-381\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/105*(45*x^3 - 291*x^2 - 223*x - 381)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{3}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{47}{40}\,(2\,x+3)^{\frac{5}{2}}-\frac{109}{24}\,(2\,x+3)^{\frac{3}{2}}+\frac{65}{8}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -3/56*(2*x + 3)^(7/2) + 47/40*(2*x + 3)^(5/2) - 109/24*(2*x + 3)^(3/2) + 65
/8*sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{\left(45x^{3}-291x^{2}-223x-381\right)\sqrt{2x+3}}{105}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(1/2),x)
```

```
[Out] -1/105*(45*x^3-291*x^2-223*x-381)*(2*x+3)^(1/2)
```

maxima [A] time = 0.49, size = 37, normalized size = 0.70

$$-\frac{3}{56}\,(2\,x+3)^{\frac{7}{2}}+\frac{47}{40}\,(2\,x+3)^{\frac{5}{2}}-\frac{109}{24}\,(2\,x+3)^{\frac{3}{2}}+\frac{65}{8}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -3/56*(2*x + 3)^(7/2) + 47/40*(2*x + 3)^(5/2) - 109/24*(2*x + 3)^(3/2) + 65
/8*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 37, normalized size = 0.70

$$\frac{65\,\sqrt{2\,x+3}}{8}-\frac{109\,{(2\,x+3)}^{3/2}}{24}+\frac{47\,{(2\,x+3)}^{5/2}}{40}-\frac{3\,{(2\,x+3)}^{7/2}}{56}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(1/2),x)
```

```
[Out] (65*(2*x + 3)^(1/2))/8 - (109*(2*x + 3)^(3/2))/24 + (47*(2*x + 3)^(5/2))/40
 - (3*(2*x + 3)^(7/2))/56
```

sympy [A] time = 41.28, size = 46, normalized size = 0.87

$$-\frac{3(2x+3)^{\frac{7}{2}}}{56}+\frac{47(2x+3)^{\frac{5}{2}}}{40}-\frac{109(2x+3)^{\frac{3}{2}}}{24}+\frac{65\sqrt{2x+3}}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(1/2),x)
```

```
[Out] -3*(2*x + 3)**(7/2)/56 + 47*(2*x + 3)**(5/2)/40 - 109*(2*x + 3)**(3/2)/24 +
 65*sqrt(2*x + 3)/8
```

3.2531 $\int \frac{(5-x)(2+5x+3x^2)}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{3}{40}(2x+3)^{5/2}+\frac{47}{24}(2x+3)^{3/2}-\frac{109}{8}\sqrt{2x+3}-\frac{65}{8\sqrt{2x+3}}$$

```
[Out] 47/24*(3+2*x)^(3/2)-3/40*(3+2*x)^(5/2)-65/8/(3+2*x)^(1/2)-109/8*(3+2*x)^(1/
2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{40}(2x+3)^{5/2}+\frac{47}{24}(2x+3)^{3/2}-\frac{109}{8}\sqrt{2x+3}-\frac{65}{8\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -65/(8*Sqrt[3 + 2*x]) - (109*Sqrt[3 + 2*x])/8 + (47*(3 + 2*x)^(3/2))/24 - (
3*(3 + 2*x)^(5/2))/40
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{3/2}}\,dx &= \int \left(\frac{65}{8(3+2x)^{3/2}}-\frac{109}{8\sqrt{3+2x}}+\frac{47}{8}\sqrt{3+2x}-\frac{3}{8}(3+2x)^{3/2}\right)dx\\ &= -\frac{65}{8\sqrt{3+2x}}-\frac{109}{8}\sqrt{3+2x}+\frac{47}{24}(3+2x)^{3/2}-\frac{3}{40}(3+2x)^{5/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{9x^3-77x^2+117x+501}{15\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/15*(501 + 117*x - 77*x^2 + 9*x^3)/Sqrt[3 + 2*x]
```

fricas [A] time = 0.61, size = 24, normalized size = 0.45

$$-\frac{9\,x^3-77\,x^2+117\,x+501}{15\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/15*(9*x^3 - 77*x^2 + 117*x + 501)/sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 37, normalized size = 0.70

$$-\frac{3}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{47}{24}\,(2\,x+3)^{\frac{3}{2}}-\frac{109}{8}\,\sqrt{2\,x+3}-\frac{65}{8\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -3/40*(2*x + 3)^(5/2) + 47/24*(2*x + 3)^(3/2) - 109/8*sqrt(2*x + 3) - 65/8/
sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{9x^{3}-77x^{2}+117x+501}{15\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(3/2),x)
```

```
[Out] -1/15*(9*x^3-77*x^2+117*x+501)/(2*x+3)^(1/2)
```

maxima [A] time = 0.51, size = 37, normalized size = 0.70

$$-\frac{3}{40}\,(2\,x+3)^{\frac{5}{2}}+\frac{47}{24}\,(2\,x+3)^{\frac{3}{2}}-\frac{109}{8}\,\sqrt{2\,x+3}-\frac{65}{8\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -3/40*(2*x + 3)^(5/2) + 47/24*(2*x + 3)^(3/2) - 109/8*sqrt(2*x + 3) - 65/8/
sqrt(2*x + 3)
```

mupad [B] time = 0.04, size = 37, normalized size = 0.70

$$\frac{47\,{(2\,x+3)}^{3/2}}{24}-\frac{109\,\sqrt{2\,x+3}}{8}-\frac{65}{8\,\sqrt{2\,x+3}}-\frac{3\,{(2\,x+3)}^{5/2}}{40}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(3/2),x)
```

```
[Out] (47*(2*x + 3)^(3/2))/24 - (109*(2*x + 3)^(1/2))/8 - 65/(8*(2*x + 3)^(1/2))
- (3*(2*x + 3)^(5/2))/40
```

sympy [A] time = 19.15, size = 46, normalized size = 0.87

$$-\frac{3\,(2x+3)^{\frac{5}{2}}}{40}+\frac{47\,(2x+3)^{\frac{3}{2}}}{24}-\frac{109\sqrt{2x+3}}{8}-\frac{65}{8\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(3/2),x)
```

```
[Out] -3*(2*x + 3)**(5/2)/40 + 47*(2*x + 3)**(3/2)/24 - 109*sqrt(2*x + 3)/8 - 65/
(8*sqrt(2*x + 3))
```

3.2532 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{1}{8}(2x+3)^{3/2}+\frac{47}{8}\sqrt{2x+3}+\frac{109}{8\sqrt{2x+3}}-\frac{65}{24(2x+3)^{3/2}}$$

```
[Out] -65/24/(3+2*x)^(3/2)-1/8*(3+2*x)^(3/2)+109/8/(3+2*x)^(1/2)+47/8*(3+2*x)^(1/
2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{1}{8}(2x+3)^{3/2}+\frac{47}{8}\sqrt{2x+3}+\frac{109}{8\sqrt{2x+3}}-\frac{65}{24(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -65/(24*(3 + 2*x)^(3/2)) + 109/(8*Sqrt[3 + 2*x]) + (47*Sqrt[3 + 2*x])/8 - (
3 + 2*x)^(3/2)/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{5/2}}\,dx&=\int \left(\frac{65}{8(3+2x)^{5/2}}-\frac{109}{8(3+2x)^{3/2}}+\frac{47}{8\sqrt{3+2x}}-\frac{3}{8}\sqrt{3+2x}\right)dx\\&=-\frac{65}{24(3+2x)^{3/2}}+\frac{109}{8\sqrt{3+2x}}+\frac{47}{8}\sqrt{3+2x}-\frac{1}{8}(3+2x)^{3/2}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{3x^3-57x^2-273x-263}{3(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/3*(-263 - 273*x - 57*x^2 + 3*x^3)/(3 + 2*x)^(3/2)
```

fricas [A] time = 0.51, size = 36, normalized size = 0.68

$$-\frac{\left(3\,x^3-57\,x^2-273\,x-263\right)\sqrt{2\,x+3}}{3\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/3*(3*x^3 - 57*x^2 - 273*x - 263)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.20, size = 33, normalized size = 0.62

$$-\frac{1}{8}\,(2\,x+3)^{\frac{3}{2}}+\frac{47}{8}\,\sqrt{2\,x+3}+\frac{327\,x+458}{12\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] -1/8*(2*x + 3)^(3/2) + 47/8*sqrt(2*x + 3) + 1/12*(327*x + 458)/(2*x + 3)^(3
/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{3x^{3}-57x^{2}-273x-263}{3\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(5/2),x)
```

```
[Out] -1/3*(3*x^3-57*x^2-273*x-263)/(2*x+3)^(3/2)
```

maxima [A] time = 0.58, size = 33, normalized size = 0.62

$$-\frac{1}{8}\,(2\,x+3)^{\frac{3}{2}}+\frac{47}{8}\,\sqrt{2\,x+3}+\frac{327\,x+458}{12\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -1/8*(2*x + 3)^(3/2) + 47/8*sqrt(2*x + 3) + 1/12*(327*x + 458)/(2*x + 3)^(3
/2)
```

mupad [B] time = 0.05, size = 38, normalized size = 0.72

$$\frac{654\,x+141\,{(2\,x+3)}^2-3\,{(2\,x+3)}^3+916}{\sqrt{2\,x+3}\,\left(48\,x+72\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(5/2),x)
```

```
[Out] (654*x + 141*(2*x + 3)^2 - 3*(2*x + 3)^3 + 916)/((2*x + 3)^(1/2)*(48*x + 72
))
```

sympy [B] time = 0.66, size = 102, normalized size = 1.92

$$-\frac{3x^{3}}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{57x^{2}}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{273x}{6x\sqrt{2x+3}+9\sqrt{2x+3}}+\frac{263}{6x\sqrt{2x+3}+9\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(5/2),x)
```

```
[Out] -3*x**3/(6*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)) + 57*x**2/(6*x*sqrt(2*x + 3)
+ 9*sqrt(2*x + 3)) + 273*x/(6*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)) + 263/(6*x
*sqrt(2*x + 3) + 9*sqrt(2*x + 3))
```

3.2533 $\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=53

$$-\frac{3}{8}\sqrt{2x+3}-\frac{47}{8\sqrt{2x+3}}+\frac{109}{24(2x+3)^{3/2}}-\frac{13}{8(2x+3)^{5/2}}$$

```
[Out] -13/8/(3+2*x)^(5/2)+109/24/(3+2*x)^(3/2)-47/8/(3+2*x)^(1/2)-3/8*(3+2*x)^(1/
2)
```

Rubi [A] time = 0.02, antiderivative size = 53, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{3}{8}\sqrt{2x+3}-\frac{47}{8\sqrt{2x+3}}+\frac{109}{24(2x+3)^{3/2}}-\frac{13}{8(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -13/(8*(3 + 2*x)^(5/2)) + 109/(24*(3 + 2*x)^(3/2)) - 47/(8*Sqrt[3 + 2*x]) -
 (3*Sqrt[3 + 2*x])/8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)}{(3+2x)^{7/2}}\,dx&=\int\left(\frac{65}{8(3+2x)^{7/2}}-\frac{109}{8(3+2x)^{5/2}}+\frac{47}{8(3+2x)^{3/2}}-\frac{3}{8\sqrt{3+2x}}\right)dx\\&=-\frac{13}{8(3+2x)^{5/2}}+\frac{109}{24(3+2x)^{3/2}}-\frac{47}{8\sqrt{3+2x}}-\frac{3}{8}\sqrt{3+2x}\end{aligned}$$

Mathematica [A] time = 0.01, size = 28, normalized size = 0.53

$$-\frac{9x^3+111x^2+245x+153}{3(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/3*(153 + 245*x + 111*x^2 + 9*x^3)/(3 + 2*x)^(5/2)
```

fricas [A] time = 0.69, size = 41, normalized size = 0.77

$$-\frac{\left(9\,x^3+111\,x^2+245\,x+153\right)\sqrt{2\,x+3}}{3\,\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/3*(9*x^3 + 111*x^2 + 245*x + 153)*sqrt(2*x + 3)/(8*x^3 + 36*x^2 + 54*x +
 27)
```

giac [A] time = 0.21, size = 33, normalized size = 0.62

$$-\frac{3}{8}\sqrt{2x+3}-\frac{141(2x+3)^2-218x-288}{24(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -3/8*sqrt(2*x + 3) - 1/24*(141*(2*x + 3)^2 - 218*x - 288)/(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 25, normalized size = 0.47

$$-\frac{9x^3+111x^2+245x+153}{3(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)/(2*x+3)^(7/2),x)
```

```
[Out] -1/3*(9*x^3+111*x^2+245*x+153)/(2*x+3)^(5/2)
```

maxima [A] time = 0.46, size = 33, normalized size = 0.62

$$-\frac{3}{8}\sqrt{2x+3}-\frac{141(2x+3)^2-218x-288}{24(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -3/8*sqrt(2*x + 3) - 1/24*(141*(2*x + 3)^2 - 218*x - 288)/(2*x + 3)^(5/2)
```

mupad [B] time = 2.37, size = 24, normalized size = 0.45

$$-\frac{9x^3+111x^2+245x+153}{3(2x+3)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2))/(2*x + 3)^(7/2),x)
```

```
[Out] -(245*x + 111*x^2 + 9*x^3 + 153)/(3*(2*x + 3)^(5/2))
```

sympy [B] time = 1.37, size = 158, normalized size = 2.98

$$-\frac{9x^3}{12x^2\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}-\frac{111x^2}{12x^2\sqrt{2x+3}+36x\sqrt{2x+3}+27\sqrt{2x+3}}-\frac{24}{12x^2\sqrt{2x+3}+36x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)/(3+2*x)**(7/2),x)
```

```
[Out] -9*x**3/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 1
11*x**2/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 2
45*x/(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)) - 153/
(12*x**2*sqrt(2*x + 3) + 36*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3))
```

3.2534 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{9}{608}(2x+3)^{19/2}+\frac{165}{544}(2x+3)^{17/2}-\frac{359}{240}(2x+3)^{15/2}+\frac{651}{208}(2x+3)^{13/2}-\frac{1065}{352}(2x+3)^{11/2}+\frac{325}{288}(2x+3)^{9/2}$$

```
[Out] 325/288*(3+2*x)^(9/2)-1065/352*(3+2*x)^(11/2)+651/208*(3+2*x)^(13/2)-359/24
0*(3+2*x)^(15/2)+165/544*(3+2*x)^(17/2)-9/608*(3+2*x)^(19/2)
```

Rubi **[A]** time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{608}(2x+3)^{19/2}+\frac{165}{544}(2x+3)^{17/2}-\frac{359}{240}(2x+3)^{15/2}+\frac{651}{208}(2x+3)^{13/2}-\frac{1065}{352}(2x+3)^{11/2}+\frac{325}{288}(2x+3)^{9/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(9/2))/288 - (1065*(3 + 2*x)^(11/2))/352 + (651*(3 + 2*x)^(1
3/2))/208 - (359*(3 + 2*x)^(15/2))/240 + (165*(3 + 2*x)^(17/2))/544 - (9*(3
 + 2*x)^(19/2))/608
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{7/2}-\frac{1065}{32}(3+2x)^{9/2}+\frac{651}{16}(3+2x)^{11/2}-\frac{359}{16}(3+\right.\\ &= \frac{325}{288}(3+2x)^{9/2}-\frac{1065}{352}(3+2x)^{11/2}+\frac{651}{208}(3+2x)^{13/2}-\frac{359}{240}(3+2x\end{aligned}$$

Mathematica **[A]** time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{9/2}\left(984555x^5-2702700x^4-13495911x^3-17037702x^2-8846388x-1670104\right)}{2078505}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/2078505*((3 + 2*x)^(9/2)*(-1670104 - 8846388*x - 17037702*x^2 - 13495911
*x^3 - 2702700*x^4 + 984555*x^5))
```

fricas **[A]** time = 0.68, size = 54, normalized size = 0.68

$$-\frac{1}{2078505}\left(15752880\,x^9+51274080\,x^8-262729896\,x^7-1939330008\,x^6-5196312621\,x^5-7690154020\,x^4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/2078505*(15752880*x^9 + 51274080*x^8 - 262729896*x^7 - 1939330008*x^6 -
5196312621*x^5 - 7690154020*x^4 - 6844462215*x^3 - 3651616134*x^2 - 1077299
892*x - 135278424)*sqrt(2*x + 3)
```

giac [**A**] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{9}{608}\,(2\,x+3)^{\frac{19}{2}}+\frac{165}{544}\,(2\,x+3)^{\frac{17}{2}}-\frac{359}{240}\,(2\,x+3)^{\frac{15}{2}}+\frac{651}{208}\,(2\,x+3)^{\frac{13}{2}}-\frac{1065}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{325}{288}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -9/608*(2*x + 3)^(19/2) + 165/544*(2*x + 3)^(17/2) - 359/240*(2*x + 3)^(15/
2) + 651/208*(2*x + 3)^(13/2) - 1065/352*(2*x + 3)^(11/2) + 325/288*(2*x +
3)^(9/2)
```

maple [**A**] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(984555x^5-2702700x^4-13495911x^3-17037702x^2-8846388x-1670104\right)(2x+3)^{\frac{9}{2}}}{2078505}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/2078505*(984555*x^5-2702700*x^4-13495911*x^3-17037702*x^2-8846388*x-1670
104)*(2*x+3)^(9/2)
```

maxima [**A**] time = 0.53, size = 55, normalized size = 0.70

$$-\frac{9}{608}\,(2\,x+3)^{\frac{19}{2}}+\frac{165}{544}\,(2\,x+3)^{\frac{17}{2}}-\frac{359}{240}\,(2\,x+3)^{\frac{15}{2}}+\frac{651}{208}\,(2\,x+3)^{\frac{13}{2}}-\frac{1065}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{325}{288}\,(2\,x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -9/608*(2*x + 3)^(19/2) + 165/544*(2*x + 3)^(17/2) - 359/240*(2*x + 3)^(15/
2) + 651/208*(2*x + 3)^(13/2) - 1065/352*(2*x + 3)^(11/2) + 325/288*(2*x +
3)^(9/2)
```

mupad [**B**] time = 2.39, size = 55, normalized size = 0.70

$$\frac{325\,{(2\,x+3)}^{9/2}}{288}-\frac{1065\,{(2\,x+3)}^{11/2}}{352}+\frac{651\,{(2\,x+3)}^{13/2}}{208}-\frac{359\,{(2\,x+3)}^{15/2}}{240}+\frac{165\,{(2\,x+3)}^{17/2}}{544}-\frac{9\,{(2\,x+3)}^{19/2}}{608}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(9/2))/288 - (1065*(2*x + 3)^(11/2))/352 + (651*(2*x + 3)^(1
3/2))/208 - (359*(2*x + 3)^(15/2))/240 + (165*(2*x + 3)^(17/2))/544 - (9*(2
*x + 3)^(19/2))/608
```

sympy [**B**] time = 5.88, size = 146, normalized size = 1.85

$$-\frac{144x^9\sqrt{2x+3}}{19}-\frac{7968x^8\sqrt{2x+3}}{323}+\frac{612424x^7\sqrt{2x+3}}{4845}+\frac{19589192x^6\sqrt{2x+3}}{20995}+\frac{577368069x^5\sqrt{2x+3}}{230945}+1538030$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -144*x**9*sqrt(2*x + 3)/19 - 7968*x**8*sqrt(2*x + 3)/323 + 612424*x**7*sqrt
(2*x + 3)/4845 + 19589192*x**6*sqrt(2*x + 3)/20995 + 577368069*x**5*sqrt(2*
x + 3)/230945 + 1538030804*x**4*sqrt(2*x + 3)/415701 + 456297481*x**3*sqrt(
2*x + 3)/138567 + 405735126*x**2*sqrt(2*x + 3)/230945 + 119699988*x*sqrt(2*
x + 3)/230945 + 15030936*sqrt(2*x + 3)/230945
```

3.2535 $\int (5-x)(3+2x)^{5/2} \left(2+5x+3x^2\right)^2 \, dx$

Optimal. Leaf size=79

$$-\frac{9}{544}(2x+3)^{17/2}+\frac{11}{32}(2x+3)^{15/2}-\frac{359}{208}(2x+3)^{13/2}+\frac{651}{176}(2x+3)^{11/2}-\frac{355}{96}(2x+3)^{9/2}+\frac{325}{224}(2x+3)^{7/2}$$

```
[Out] 325/224*(3+2*x)^(7/2)-355/96*(3+2*x)^(9/2)+651/176*(3+2*x)^(11/2)-359/208*(
3+2*x)^(13/2)+11/32*(3+2*x)^(15/2)-9/544*(3+2*x)^(17/2)
```

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{9}{544}(2x+3)^{17/2}+\frac{11}{32}(2x+3)^{15/2}-\frac{359}{208}(2x+3)^{13/2}+\frac{651}{176}(2x+3)^{11/2}-\frac{355}{96}(2x+3)^{9/2}+\frac{325}{224}(2x+3)^{7/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(7/2))/224 - (355*(3 + 2*x)^(9/2))/96 + (651*(3 + 2*x)^(11/2
))/176 - (359*(3 + 2*x)^(13/2))/208 + (11*(3 + 2*x)^(15/2))/32 - (9*(3 + 2*
x)^(17/2))/544
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{5/2}-\frac{1065}{32}(3+2x)^{7/2}+\frac{651}{16}(3+2x)^{9/2}-\frac{359}{16}(3+2x)\right.\\ &= \frac{325}{224}(3+2x)^{7/2}-\frac{355}{96}(3+2x)^{9/2}+\frac{651}{176}(3+2x)^{11/2}-\frac{359}{208}(3+2x)^{13/2}-\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{7/2}\left(27027x^5-78078x^4-371679x^3-461664x^2-236768x-44388\right)}{51051}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/51051*((3 + 2*x)^(7/2)*(-44388 - 236768*x - 461664*x^2 - 371679*x^3 - 78
078*x^4 + 27027*x^5))
```

fricas [A] time = 0.88, size = 49, normalized size = 0.62

$$-\frac{1}{51051}\left(216216\,x^8+348348\,x^7-4324782\,x^6-20560239\,x^5-40692820\,x^4-43843941\,x^3-26848368\,x^2-87\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/51051*(216216*x^8 + 348348*x^7 - 4324782*x^6 - 20560239*x^5 - 40692820*x
^4 - 43843941*x^3 - 26848368*x^2 - 8789688*x - 1198476)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 55, normalized size = 0.70

$$-\frac{9}{544}(2x+3)^{\frac{17}{2}}+\frac{11}{32}(2x+3)^{\frac{15}{2}}-\frac{359}{208}(2x+3)^{\frac{13}{2}}+\frac{651}{176}(2x+3)^{\frac{11}{2}}-\frac{355}{96}(2x+3)^{\frac{9}{2}}+\frac{325}{224}(2x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -9/544*(2*x + 3)^(17/2) + 11/32*(2*x + 3)^(15/2) - 359/208*(2*x + 3)^(13/2)
 + 651/176*(2*x + 3)^(11/2) - 355/96*(2*x + 3)^(9/2) + 325/224*(2*x + 3)^(7
/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(27027x^5-78078x^4-371679x^3-461664x^2-236768x-44388\right)(2x+3)^{\frac{7}{2}}}{51051}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/51051*(27027*x^5-78078*x^4-371679*x^3-461664*x^2-236768*x-44388)*(2*x+3)
^(7/2)
```

maxima [A] time = 0.48, size = 55, normalized size = 0.70

$$-\frac{9}{544}(2x+3)^{\frac{17}{2}}+\frac{11}{32}(2x+3)^{\frac{15}{2}}-\frac{359}{208}(2x+3)^{\frac{13}{2}}+\frac{651}{176}(2x+3)^{\frac{11}{2}}-\frac{355}{96}(2x+3)^{\frac{9}{2}}+\frac{325}{224}(2x+3)^{\frac{7}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -9/544*(2*x + 3)^(17/2) + 11/32*(2*x + 3)^(15/2) - 359/208*(2*x + 3)^(13/2)
 + 651/176*(2*x + 3)^(11/2) - 355/96*(2*x + 3)^(9/2) + 325/224*(2*x + 3)^(7
/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,(2x+3)^{7/2}}{224}-\frac{355\,(2x+3)^{9/2}}{96}+\frac{651\,(2x+3)^{11/2}}{176}-\frac{359\,(2x+3)^{13/2}}{208}+\frac{11\,(2x+3)^{15/2}}{32}-\frac{9\,(2x+3)^{17/2}}{544}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(7/2))/224 - (355*(2*x + 3)^(9/2))/96 + (651*(2*x + 3)^(11/2
))/176 - (359*(2*x + 3)^(13/2))/208 + (11*(2*x + 3)^(15/2))/32 - (9*(2*x +
3)^(17/2))/544
```

sympy [A] time = 29.68, size = 70, normalized size = 0.89

$$-\frac{9\,(2x+3)^{\frac{17}{2}}}{544}+\frac{11\,(2x+3)^{\frac{15}{2}}}{32}-\frac{359\,(2x+3)^{\frac{13}{2}}}{208}+\frac{651\,(2x+3)^{\frac{11}{2}}}{176}-\frac{355\,(2x+3)^{\frac{9}{2}}}{96}+\frac{325\,(2x+3)^{\frac{7}{2}}}{224}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -9*(2*x + 3)**(17/2)/544 + 11*(2*x + 3)**(15/2)/32 - 359*(2*x + 3)**(13/2)/
208 + 651*(2*x + 3)**(11/2)/176 - 355*(2*x + 3)**(9/2)/96 + 325*(2*x + 3)**
(7/2)/224
```

3.2536 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{3}{160}(2x+3)^{15/2}+\frac{165}{416}(2x+3)^{13/2}-\frac{359}{176}(2x+3)^{11/2}+\frac{217}{48}(2x+3)^{9/2}-\frac{1065}{224}(2x+3)^{7/2}+\frac{65}{32}(2x+3)^{5/2}$$

```
[Out] 65/32*(3+2*x)^(5/2)-1065/224*(3+2*x)^(7/2)+217/48*(3+2*x)^(9/2)-359/176*(3+
2*x)^(11/2)+165/416*(3+2*x)^(13/2)-3/160*(3+2*x)^(15/2)
```

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{3}{160}(2x+3)^{15/2}+\frac{165}{416}(2x+3)^{13/2}-\frac{359}{176}(2x+3)^{11/2}+\frac{217}{48}(2x+3)^{9/2}-\frac{1065}{224}(2x+3)^{7/2}+\frac{65}{32}(2x+3)^{5/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (65*(3 + 2*x)^(5/2))/32 - (1065*(3 + 2*x)^(7/2))/224 + (217*(3 + 2*x)^(9/2)
)/48 - (359*(3 + 2*x)^(11/2))/176 + (165*(3 + 2*x)^(13/2))/416 - (3*(3 + 2*
x)^(15/2))/160
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}(3+2x)^{3/2}-\frac{1065}{32}(3+2x)^{5/2}+\frac{651}{16}(3+2x)^{7/2}-\frac{359}{16}(3+2x)\right.\\ &= \frac{65}{32}(3+2x)^{5/2}-\frac{1065}{224}(3+2x)^{7/2}+\frac{217}{48}(3+2x)^{9/2}-\frac{359}{176}(3+2x)^{11/2}+\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{(2x+3)^{5/2}\left(9009x^5-27720x^4-124005x^3-151270x^2-76260x-14304\right)}{15015}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/15015*((3 + 2*x)^(5/2)*(-14304 - 76260*x - 151270*x^2 - 124005*x^3 - 277
20*x^4 + 9009*x^5))
```

fricas [A] time = 0.85, size = 44, normalized size = 0.56

$$-\frac{1}{15015}\left(36036\,x^7-2772\,x^6-747579\,x^5-2342620\,x^4-3236325\,x^3-2333766\,x^2-857988\,x-128736\right)\sqrt{2\,x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] -1/15015*(36036*x^7 - 2772*x^6 - 747579*x^5 - 2342620*x^4 - 3236325*x^3 - 2
333766*x^2 - 857988*x - 128736)*sqrt(2*x + 3)
```

giac [A] time = 0.18, size = 55, normalized size = 0.70

$$-\frac{3}{160}\,(2\,x+3)^{\frac{15}{2}}+\frac{165}{416}\,(2\,x+3)^{\frac{13}{2}}-\frac{359}{176}\,(2\,x+3)^{\frac{11}{2}}+\frac{217}{48}\,(2\,x+3)^{\frac{9}{2}}-\frac{1065}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{65}{32}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -3/160*(2*x + 3)^(15/2) + 165/416*(2*x + 3)^(13/2) - 359/176*(2*x + 3)^(11/
2) + 217/48*(2*x + 3)^(9/2) - 1065/224*(2*x + 3)^(7/2) + 65/32*(2*x + 3)^(5
/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{\left(9009x^{5}-27720x^{4}-124005x^{3}-151270x^{2}-76260x-14304\right)(2x+3)^{\frac{5}{2}}}{15015}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^2,x)
```

```
[Out] -1/15015*(9009*x^5-27720*x^4-124005*x^3-151270*x^2-76260*x-14304)*(2*x+3)^(
5/2)
```

maxima [A] time = 0.47, size = 55, normalized size = 0.70

$$-\frac{3}{160}\,(2\,x+3)^{\frac{15}{2}}+\frac{165}{416}\,(2\,x+3)^{\frac{13}{2}}-\frac{359}{176}\,(2\,x+3)^{\frac{11}{2}}+\frac{217}{48}\,(2\,x+3)^{\frac{9}{2}}-\frac{1065}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{65}{32}\,(2\,x+3)^{\frac{5}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -3/160*(2*x + 3)^(15/2) + 165/416*(2*x + 3)^(13/2) - 359/176*(2*x + 3)^(11/
2) + 217/48*(2*x + 3)^(9/2) - 1065/224*(2*x + 3)^(7/2) + 65/32*(2*x + 3)^(5
/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{65\,(2\,x+3)^{5/2}}{32}-\frac{1065\,(2\,x+3)^{7/2}}{224}+\frac{217\,(2\,x+3)^{9/2}}{48}-\frac{359\,(2\,x+3)^{11/2}}{176}+\frac{165\,(2\,x+3)^{13/2}}{416}-\frac{3\,(2\,x+3)^{15/2}}{160}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (65*(2*x + 3)^(5/2))/32 - (1065*(2*x + 3)^(7/2))/224 + (217*(2*x + 3)^(9/2)
)/48 - (359*(2*x + 3)^(11/2))/176 + (165*(2*x + 3)^(13/2))/416 - (3*(2*x +
3)^(15/2))/160
```

sympy [A] time = 23.80, size = 70, normalized size = 0.89

$$-\frac{3(2x+3)^{\frac{15}{2}}}{160}+\frac{165(2x+3)^{\frac{13}{2}}}{416}-\frac{359(2x+3)^{\frac{11}{2}}}{176}+\frac{217(2x+3)^{\frac{9}{2}}}{48}-\frac{1065(2x+3)^{\frac{7}{2}}}{224}+\frac{65(2x+3)^{\frac{5}{2}}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**2,x)
```

```
[Out] -3*(2*x + 3)**(15/2)/160 + 165*(2*x + 3)**(13/2)/416 - 359*(2*x + 3)**(11/2
)/176 + 217*(2*x + 3)**(9/2)/48 - 1065*(2*x + 3)**(7/2)/224 + 65*(2*x + 3)*
*(5/2)/32
```

3.2537 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^2\,dx$

Optimal. Leaf size=79

$$-\frac{9}{416}(2x+3)^{13/2}+\frac{15}{32}(2x+3)^{11/2}-\frac{359}{144}(2x+3)^{9/2}+\frac{93}{16}(2x+3)^{7/2}-\frac{213}{32}(2x+3)^{5/2}+\frac{325}{96}(2x+3)^{3/2}$$

```
[Out] 325/96*(3+2*x)^(3/2)-213/32*(3+2*x)^(5/2)+93/16*(3+2*x)^(7/2)-359/144*(3+2*
x)^(9/2)+15/32*(3+2*x)^(11/2)-9/416*(3+2*x)^(13/2)
```

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{416}(2x+3)^{13/2}+\frac{15}{32}(2x+3)^{11/2}-\frac{359}{144}(2x+3)^{9/2}+\frac{93}{16}(2x+3)^{7/2}-\frac{213}{32}(2x+3)^{5/2}+\frac{325}{96}(2x+3)^{3/2}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (325*(3 + 2*x)^(3/2))/96 - (213*(3 + 2*x)^(5/2))/32 + (93*(3 + 2*x)^(7/2))/
16 - (359*(3 + 2*x)^(9/2))/144 + (15*(3 + 2*x)^(11/2))/32 - (9*(3 + 2*x)^(1
3/2))/416
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^2\,dx &= \int \left(\frac{325}{32}\sqrt{3+2x}-\frac{1065}{32}(3+2x)^{3/2}+\frac{651}{16}(3+2x)^{5/2}-\frac{359}{16}(3+2x)^{7/2}\right.\\ &= \frac{325}{96}(3+2x)^{3/2}-\frac{213}{32}(3+2x)^{5/2}+\frac{93}{16}(3+2x)^{7/2}-\frac{359}{144}(3+2x)^{9/2}+\frac{15}{32}\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 0.48

$$-\frac{1}{117}(2x+3)^{3/2}\left(81x^5-270x^4-1109x^3-1332x^2-648x-132\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -1/117*((3 + 2*x)^(3/2)*(-132 - 648*x - 1332*x^2 - 1109*x^3 - 270*x^4 + 81*
x^5))
```

fricas [A] time = 0.55, size = 39, normalized size = 0.49

$$-\frac{1}{117}\left(162\,x^6-297\,x^5-3028\,x^4-5991\,x^3-5292\,x^2-2208\,x-396\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/117*(162*x^6 - 297*x^5 - 3028*x^4 - 5991*x^3 - 5292*x^2 - 2208*x - 396)*
sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 55, normalized size = 0.70

$$-\frac{9}{416}\,(2\,x+3)^{\frac{13}{2}}+\frac{15}{32}\,(2\,x+3)^{\frac{11}{2}}-\frac{359}{144}\,(2\,x+3)^{\frac{9}{2}}+\frac{93}{16}\,(2\,x+3)^{\frac{7}{2}}-\frac{213}{32}\,(2\,x+3)^{\frac{5}{2}}+\frac{325}{96}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/416*(2*x + 3)^(13/2) + 15/32*(2*x + 3)^(11/2) - 359/144*(2*x + 3)^(9/2)
+ 93/16*(2*x + 3)^(7/2) - 213/32*(2*x + 3)^(5/2) + 325/96*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{\left(81x^{5}-270x^{4}-1109x^{3}-1332x^{2}-648x-132\right)(2x+3)^{\frac{3}{2}}}{117}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2*(2*x+3)^(1/2),x)
```

```
[Out] -1/117*(81*x^5-270*x^4-1109*x^3-1332*x^2-648*x-132)*(2*x+3)^(3/2)
```

maxima [A] time = 0.64, size = 55, normalized size = 0.70

$$-\frac{9}{416}\,(2\,x+3)^{\frac{13}{2}}+\frac{15}{32}\,(2\,x+3)^{\frac{11}{2}}-\frac{359}{144}\,(2\,x+3)^{\frac{9}{2}}+\frac{93}{16}\,(2\,x+3)^{\frac{7}{2}}-\frac{213}{32}\,(2\,x+3)^{\frac{5}{2}}+\frac{325}{96}\,(2\,x+3)^{\frac{3}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/416*(2*x + 3)^(13/2) + 15/32*(2*x + 3)^(11/2) - 359/144*(2*x + 3)^(9/2)
+ 93/16*(2*x + 3)^(7/2) - 213/32*(2*x + 3)^(5/2) + 325/96*(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,(2\,x+3)^{3/2}}{96}-\frac{213\,(2\,x+3)^{5/2}}{32}+\frac{93\,(2\,x+3)^{7/2}}{16}-\frac{359\,(2\,x+3)^{9/2}}{144}+\frac{15\,(2\,x+3)^{11/2}}{32}-\frac{9\,(2\,x+3)^{13/2}}{416}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (325*(2*x + 3)^(3/2))/96 - (213*(2*x + 3)^(5/2))/32 + (93*(2*x + 3)^(7/2))/
16 - (359*(2*x + 3)^(9/2))/144 + (15*(2*x + 3)^(11/2))/32 - (9*(2*x + 3)^(1
3/2))/416
```

sympy [A] time = 3.56, size = 70, normalized size = 0.89

$$-\frac{9(2x+3)^{\frac{13}{2}}}{416}+\frac{15(2x+3)^{\frac{11}{2}}}{32}-\frac{359(2x+3)^{\frac{9}{2}}}{144}+\frac{93(2x+3)^{\frac{7}{2}}}{16}-\frac{213(2x+3)^{\frac{5}{2}}}{32}+\frac{325(2x+3)^{\frac{3}{2}}}{96}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2*(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(13/2)/416 + 15*(2*x + 3)**(11/2)/32 - 359*(2*x + 3)**(9/2)/1
44 + 93*(2*x + 3)**(7/2)/16 - 213*(2*x + 3)**(5/2)/32 + 325*(2*x + 3)**(3/2
)/96
```

3.2538 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{352}(2x+3)^{11/2}+\frac{55}{96}(2x+3)^{9/2}-\frac{359}{112}(2x+3)^{7/2}+\frac{651}{80}(2x+3)^{5/2}-\frac{355}{32}(2x+3)^{3/2}+\frac{325}{32}\sqrt{2x+3}$$

```
[Out] -355/32*(3+2*x)^(3/2)+651/80*(3+2*x)^(5/2)-359/112*(3+2*x)^(7/2)+55/96*(3+2
*x)^(9/2)-9/352*(3+2*x)^(11/2)+325/32*(3+2*x)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{352}(2x+3)^{11/2}+\frac{55}{96}(2x+3)^{9/2}-\frac{359}{112}(2x+3)^{7/2}+\frac{651}{80}(2x+3)^{5/2}-\frac{355}{32}(2x+3)^{3/2}+\frac{325}{32}\sqrt{2x+3}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/Sqrt[3 + 2*x],x]
```

```
[Out] (325*Sqrt[3 + 2*x])/32 - (355*(3 + 2*x)^(3/2))/32 + (651*(3 + 2*x)^(5/2))/8
0 - (359*(3 + 2*x)^(7/2))/112 + (55*(3 + 2*x)^(9/2))/96 - (9*(3 + 2*x)^(11/
2))/352
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{\sqrt{3+2x}}\,dx &= \int \left(\frac{325}{32\sqrt{3+2x}}-\frac{1065}{32}\sqrt{3+2x}+\frac{651}{16}(3+2x)^{3/2}-\frac{359}{16}(3+2x)^{5/2}+\frac{165}{32}(3+2\right.\\ &= \frac{325}{32}\sqrt{3+2x}-\frac{355}{32}(3+2x)^{3/2}+\frac{651}{80}(3+2x)^{5/2}-\frac{359}{112}(3+2x)^{7/2}+\frac{55}{96}(3+2x)^{9}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{\sqrt{2x+3}\left(945x^5-3500x^4-12645x^3-15354x^2-6252x-4344\right)}{1155}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/Sqrt[3 + 2*x],x]
```

```
[Out] -1/1155*(Sqrt[3 + 2*x]*(-4344 - 6252*x - 15354*x^2 - 12645*x^3 - 3500*x^4 +
 945*x^5))
```

fricas [A] time = 0.52, size = 34, normalized size = 0.43

$$-\frac{1}{1155}\left(945\,x^5-3500\,x^4-12645\,x^3-15354\,x^2-6252\,x-4344\right)\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/1155*(945*x^5 - 3500*x^4 - 12645*x^3 - 15354*x^2 - 6252*x - 4344)*sqrt(2
*x + 3)
```

giac [A] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{9}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{55}{96}\,(2\,x+3)^{\frac{9}{2}}-\frac{359}{112}\,(2\,x+3)^{\frac{7}{2}}+\frac{651}{80}\,(2\,x+3)^{\frac{5}{2}}-\frac{355}{32}\,(2\,x+3)^{\frac{3}{2}}+\frac{325}{32}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/352*(2*x + 3)^(11/2) + 55/96*(2*x + 3)^(9/2) - 359/112*(2*x + 3)^(7/2) +
 651/80*(2*x + 3)^(5/2) - 355/32*(2*x + 3)^(3/2) + 325/32*sqrt(2*x + 3)
```

maple [A] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{\left(945x^5-3500x^4-12645x^3-15354x^2-6252x-4344\right)\sqrt{2x+3}}{1155}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(1/2),x)
```

```
[Out] -1/1155*(945*x^5-3500*x^4-12645*x^3-15354*x^2-6252*x-4344)*(2*x+3)^(1/2)
```

maxima [A] time = 0.52, size = 55, normalized size = 0.70

$$-\frac{9}{352}\,(2\,x+3)^{\frac{11}{2}}+\frac{55}{96}\,(2\,x+3)^{\frac{9}{2}}-\frac{359}{112}\,(2\,x+3)^{\frac{7}{2}}+\frac{651}{80}\,(2\,x+3)^{\frac{5}{2}}-\frac{355}{32}\,(2\,x+3)^{\frac{3}{2}}+\frac{325}{32}\,\sqrt{2\,x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/352*(2*x + 3)^(11/2) + 55/96*(2*x + 3)^(9/2) - 359/112*(2*x + 3)^(7/2) +
 651/80*(2*x + 3)^(5/2) - 355/32*(2*x + 3)^(3/2) + 325/32*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{325\,\sqrt{2\,x+3}}{32}-\frac{355\,{(2\,x+3)}^{3/2}}{32}+\frac{651\,{(2\,x+3)}^{5/2}}{80}-\frac{359\,{(2\,x+3)}^{7/2}}{112}+\frac{55\,{(2\,x+3)}^{9/2}}{96}-\frac{9\,{(2\,x+3)}^{11/2}}{352}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(1/2),x)
```

```
[Out] (325*(2*x + 3)^(1/2))/32 - (355*(2*x + 3)^(3/2))/32 + (651*(2*x + 3)^(5/2))
/80 - (359*(2*x + 3)^(7/2))/112 + (55*(2*x + 3)^(9/2))/96 - (9*(2*x + 3)^(1
1/2))/352
```

sympy [A] time = 85.81, size = 70, normalized size = 0.89

$$-\frac{9\,(2x+3)^{\frac{11}{2}}}{352}+\frac{55\,(2x+3)^{\frac{9}{2}}}{96}-\frac{359\,(2x+3)^{\frac{7}{2}}}{112}+\frac{651\,(2x+3)^{\frac{5}{2}}}{80}-\frac{355\,(2x+3)^{\frac{3}{2}}}{32}+\frac{325\sqrt{2x+3}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(11/2)/352 + 55*(2*x + 3)**(9/2)/96 - 359*(2*x + 3)**(7/2)/11
2 + 651*(2*x + 3)**(5/2)/80 - 355*(2*x + 3)**(3/2)/32 + 325*sqrt(2*x + 3)/3
2
```

3.2539 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{1}{32}(2x+3)^{9/2}+\frac{165}{224}(2x+3)^{7/2}-\frac{359}{80}(2x+3)^{5/2}+\frac{217}{16}(2x+3)^{3/2}-\frac{1065}{32}\sqrt{2x+3}-\frac{325}{32\sqrt{2x+3}}$$

```
[Out] 217/16*(3+2*x)^(3/2)-359/80*(3+2*x)^(5/2)+165/224*(3+2*x)^(7/2)-1/32*(3+2*x
)^(9/2)-325/32/(3+2*x)^(1/2)-1065/32*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{1}{32}(2x+3)^{9/2}+\frac{165}{224}(2x+3)^{7/2}-\frac{359}{80}(2x+3)^{5/2}+\frac{217}{16}(2x+3)^{3/2}-\frac{1065}{32}\sqrt{2x+3}-\frac{325}{32\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(3/2),x]
```

```
[Out] -325/(32*Sqrt[3 + 2*x]) - (1065*Sqrt[3 + 2*x])/32 + (217*(3 + 2*x)^(3/2))/1
6 - (359*(3 + 2*x)^(5/2))/80 + (165*(3 + 2*x)^(7/2))/224 - (3 + 2*x)^(9/2)/
32
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{3/2}}\,dx &= \int \left(\frac{325}{32(3+2x)^{3/2}}-\frac{1065}{32\sqrt{3+2x}}+\frac{651}{16}\sqrt{3+2x}-\frac{359}{16}(3+2x)^{3/2}+\frac{165}{32}(3+2x)\right.\\ &= -\frac{325}{32\sqrt{3+2x}}-\frac{1065}{32}\sqrt{3+2x}+\frac{217}{16}(3+2x)^{3/2}-\frac{359}{80}(3+2x)^{5/2}+\frac{165}{224}(3+2x)\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{35x^5-150x^4-431x^3-632x^2+432x+1996}{35\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/35*(1996 + 432*x - 632*x^2 - 431*x^3 - 150*x^4 + 35*x^5)/Sqrt[3 + 2*x]
```

fricas [A] time = 0.67, size = 34, normalized size = 0.43

$$-\frac{35\,x^5-150\,x^4-431\,x^3-632\,x^2+432\,x+1996}{35\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/35*(35*x^5 - 150*x^4 - 431*x^3 - 632*x^2 + 432*x + 1996)/sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 55, normalized size = 0.70

$$-\frac{1}{32}\,(2\,x+3)^{\frac{9}{2}}+\frac{165}{224}\,(2\,x+3)^{\frac{7}{2}}-\frac{359}{80}\,(2\,x+3)^{\frac{5}{2}}+\frac{217}{16}\,(2\,x+3)^{\frac{3}{2}}-\frac{1065}{32}\,\sqrt{2\,x+3}-\frac{325}{32\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -1/32*(2*x + 3)^(9/2) + 165/224*(2*x + 3)^(7/2) - 359/80*(2*x + 3)^(5/2) +
217/16*(2*x + 3)^(3/2) - 1065/32*sqrt(2*x + 3) - 325/32/sqrt(2*x + 3)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{35x^5-150x^4-431x^3-632x^2+432x+1996}{35\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(3/2),x)
```

```
[Out] -1/35*(35*x^5-150*x^4-431*x^3-632*x^2+432*x+1996)/(2*x+3)^(1/2)
```

maxima [A] time = 0.52, size = 55, normalized size = 0.70

$$-\frac{1}{32}\,(2\,x+3)^{\frac{9}{2}}+\frac{165}{224}\,(2\,x+3)^{\frac{7}{2}}-\frac{359}{80}\,(2\,x+3)^{\frac{5}{2}}+\frac{217}{16}\,(2\,x+3)^{\frac{3}{2}}-\frac{1065}{32}\,\sqrt{2\,x+3}-\frac{325}{32\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -1/32*(2*x + 3)^(9/2) + 165/224*(2*x + 3)^(7/2) - 359/80*(2*x + 3)^(5/2) +
217/16*(2*x + 3)^(3/2) - 1065/32*sqrt(2*x + 3) - 325/32/sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 55, normalized size = 0.70

$$\frac{217\,(2\,x+3)^{3/2}}{16}-\frac{1065\,\sqrt{2\,x+3}}{32}-\frac{325}{32\,\sqrt{2\,x+3}}-\frac{359\,(2\,x+3)^{5/2}}{80}+\frac{165\,(2\,x+3)^{7/2}}{224}-\frac{(2\,x+3)^{9/2}}{32}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(3/2),x)
```

```
[Out] (217*(2*x + 3)^(3/2))/16 - (1065*(2*x + 3)^(1/2))/32 - 325/(32*(2*x + 3)^(1
/2)) - (359*(2*x + 3)^(5/2))/80 + (165*(2*x + 3)^(7/2))/224 - (2*x + 3)^(9/
2)/32
```

sympy [A] time = 35.24, size = 68, normalized size = 0.86

$$-\frac{(2x+3)^{\frac{9}{2}}}{32}+\frac{165\,(2x+3)^{\frac{7}{2}}}{224}-\frac{359\,(2x+3)^{\frac{5}{2}}}{80}+\frac{217\,(2x+3)^{\frac{3}{2}}}{16}-\frac{1065\sqrt{2x+3}}{32}-\frac{325}{32\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(3/2),x)
```

```
[Out] -(2*x + 3)**(9/2)/32 + 165*(2*x + 3)**(7/2)/224 - 359*(2*x + 3)**(5/2)/80 +
 217*(2*x + 3)**(3/2)/16 - 1065*sqrt(2*x + 3)/32 - 325/(32*sqrt(2*x + 3))
```

3.2540 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{224}(2x+3)^{7/2}+\frac{33}{32}(2x+3)^{5/2}-\frac{359}{48}(2x+3)^{3/2}+\frac{651}{16}\sqrt{2x+3}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96(2x+3)^{3/2}}$$

```
[Out] -325/96/(3+2*x)^(3/2)-359/48*(3+2*x)^(3/2)+33/32*(3+2*x)^(5/2)-9/224*(3+2*x
)^(7/2)+1065/32/(3+2*x)^(1/2)+651/16*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{224}(2x+3)^{7/2}+\frac{33}{32}(2x+3)^{5/2}-\frac{359}{48}(2x+3)^{3/2}+\frac{651}{16}\sqrt{2x+3}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(5/2),x]
```

```
[Out] -325/(96*(3 + 2*x)^(3/2)) + 1065/(32*Sqrt[3 + 2*x]) + (651*Sqrt[3 + 2*x])/1
6 - (359*(3 + 2*x)^(3/2))/48 + (33*(3 + 2*x)^(5/2))/32 - (9*(3 + 2*x)^(7/2)
)/224
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{5/2}}\,dx &= \int \left(\frac{325}{32(3+2x)^{5/2}}-\frac{1065}{32(3+2x)^{3/2}}+\frac{651}{16\sqrt{3+2x}}-\frac{359}{16}\sqrt{3+2x}+\frac{165}{32}(3+2x)^{3/}\right.\\ &= -\frac{325}{96(3+2x)^{3/2}}+\frac{1065}{32\sqrt{3+2x}}+\frac{651}{16}\sqrt{3+2x}-\frac{359}{48}(3+2x)^{3/2}+\frac{33}{32}(3+2x)^{5/2}-\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{27x^5-144x^4-215x^3-1530x^2-7164x-7024}{21(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/21*(-7024 - 7164*x - 1530*x^2 - 215*x^3 - 144*x^4 + 27*x^5)/(3 + 2*x)^(3
/2)
```

fricas [A] time = 0.53, size = 46, normalized size = 0.58

$$-\frac{\left(27\,x^5-144\,x^4-215\,x^3-1530\,x^2-7164\,x-7024\right)\sqrt{2\,x+3}}{21\,\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/21*(27*x^5 - 144*x^4 - 215*x^3 - 1530*x^2 - 7164*x - 7024)*sqrt(2*x + 3)
/(4*x^2 + 12*x + 9)
```

giac [A] time = 0.18, size = 51, normalized size = 0.65

$$-\frac{9}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{33}{32}\,(2\,x+3)^{\frac{5}{2}}-\frac{359}{48}\,(2\,x+3)^{\frac{3}{2}}+\frac{651}{16}\,\sqrt{2\,x+3}+\frac{5\,(639\,x+926)}{48\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] -9/224*(2*x + 3)^(7/2) + 33/32*(2*x + 3)^(5/2) - 359/48*(2*x + 3)^(3/2) + 6
51/16*sqrt(2*x + 3) + 5/48*(639*x + 926)/(2*x + 3)^(3/2)
```

maple [A] time = 0.01, size = 35, normalized size = 0.44

$$-\frac{27x^{5}-144x^{4}-215x^{3}-1530x^{2}-7164x-7024}{21\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(5/2),x)
```

```
[Out] -1/21*(27*x^5-144*x^4-215*x^3-1530*x^2-7164*x-7024)/(2*x+3)^(3/2)
```

maxima [A] time = 0.63, size = 51, normalized size = 0.65

$$-\frac{9}{224}\,(2\,x+3)^{\frac{7}{2}}+\frac{33}{32}\,(2\,x+3)^{\frac{5}{2}}-\frac{359}{48}\,(2\,x+3)^{\frac{3}{2}}+\frac{651}{16}\,\sqrt{2\,x+3}+\frac{5\,(639\,x+926)}{48\,(2\,x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -9/224*(2*x + 3)^(7/2) + 33/32*(2*x + 3)^(5/2) - 359/48*(2*x + 3)^(3/2) + 6
51/16*sqrt(2*x + 3) + 5/48*(639*x + 926)/(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 50, normalized size = 0.63

$$\frac{\frac{1065\,x}{16}+\frac{2315}{24}}{(2\,x+3)^{3/2}}+\frac{651\,\sqrt{2\,x+3}}{16}-\frac{359\,(2\,x+3)^{3/2}}{48}+\frac{33\,(2\,x+3)^{5/2}}{32}-\frac{9\,(2\,x+3)^{7/2}}{224}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(5/2),x)
```

```
[Out] ((1065*x)/16 + 2315/24)/(2*x + 3)^(3/2) + (651*(2*x + 3)^(1/2))/16 - (359*(
2*x + 3)^(3/2))/48 + (33*(2*x + 3)^(5/2))/32 - (9*(2*x + 3)^(7/2))/224
```

sympy [A] time = 43.54, size = 70, normalized size = 0.89

$$-\frac{9\,(2x+3)^{\frac{7}{2}}}{224}+\frac{33\,(2x+3)^{\frac{5}{2}}}{32}-\frac{359\,(2x+3)^{\frac{3}{2}}}{48}+\frac{651\sqrt{2x+3}}{16}+\frac{1065}{32\sqrt{2x+3}}-\frac{325}{96\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(5/2),x)
```

```
[Out] -9*(2*x + 3)**(7/2)/224 + 33*(2*x + 3)**(5/2)/32 - 359*(2*x + 3)**(3/2)/48
+ 651*sqrt(2*x + 3)/16 + 1065/(32*sqrt(2*x + 3)) - 325/(96*(2*x + 3)**(3/2)
)
```

3.2541 $\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=79

$$-\frac{9}{160}(2x+3)^{5/2}+\frac{55}{32}(2x+3)^{3/2}-\frac{359}{16}\sqrt{2x+3}-\frac{651}{16\sqrt{2x+3}}+\frac{355}{32(2x+3)^{3/2}}-\frac{65}{32(2x+3)^{5/2}}$$

```
[Out] -65/32/(3+2*x)^(5/2)+355/32/(3+2*x)^(3/2)+55/32*(3+2*x)^(3/2)-9/160*(3+2*x)
^(5/2)-651/16/(3+2*x)^(1/2)-359/16*(3+2*x)^(1/2)
```

Rubi [A] time = 0.02, antiderivative size = 79, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{160}(2x+3)^{5/2}+\frac{55}{32}(2x+3)^{3/2}-\frac{359}{16}\sqrt{2x+3}-\frac{651}{16\sqrt{2x+3}}+\frac{355}{32(2x+3)^{3/2}}-\frac{65}{32(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(7/2),x]
```

```
[Out] -65/(32*(3 + 2*x)^(5/2)) + 355/(32*(3 + 2*x)^(3/2)) - 651/(16*Sqrt[3 + 2*x]
) - (359*Sqrt[3 + 2*x])/16 + (55*(3 + 2*x)^(3/2))/32 - (9*(3 + 2*x)^(5/2))/
160
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^2}{(3+2x)^{7/2}}\,dx &= \int \left(\frac{325}{32(3+2x)^{7/2}}-\frac{1065}{32(3+2x)^{5/2}}+\frac{651}{16(3+2x)^{3/2}}-\frac{359}{16\sqrt{3+2x}}+\frac{165}{32}\sqrt{3+}\right.\\ &= -\frac{65}{32(3+2x)^{5/2}}+\frac{355}{32(3+2x)^{3/2}}-\frac{651}{16\sqrt{3+2x}}-\frac{359}{16}\sqrt{3+2x}+\frac{55}{32}(3+2x)^{3/}\end{aligned}$$

Mathematica [A] time = 0.02, size = 38, normalized size = 0.48

$$-\frac{9x^5-70x^4+275x^3+3300x^2+6760x+4076}{5(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^2)/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/5*(4076 + 6760*x + 3300*x^2 + 275*x^3 - 70*x^4 + 9*x^5)/(3 + 2*x)^(5/2)
```

fricas [A] time = 0.72, size = 51, normalized size = 0.65

$$-\frac{\left(9\,x^5-70\,x^4+275\,x^3+3300\,x^2+6760\,x+4076\right)\sqrt{2\,x+3}}{5\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/5*(9*x^5 - 70*x^4 + 275*x^3 + 3300*x^2 + 6760*x + 4076)*sqrt(2*x + 3)/(8
*x^3 + 36*x^2 + 54*x + 27)
```

giac [**A**] time = 0.17, size = 51, normalized size = 0.65

$$-\frac{9}{160}\,(2\,x+3)^{\frac{5}{2}}+\frac{55}{32}\,(2\,x+3)^{\frac{3}{2}}-\frac{359}{16}\,\sqrt{2\,x+3}-\frac{651\,(2\,x+3)^{2}-355\,x-500}{16\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -9/160*(2*x + 3)^(5/2) + 55/32*(2*x + 3)^(3/2) - 359/16*sqrt(2*x + 3) - 1/1
6*(651*(2*x + 3)^2 - 355*x - 500)/(2*x + 3)^(5/2)
```

maple [**A**] time = 0.00, size = 35, normalized size = 0.44

$$-\frac{9x^{5}-70x^{4}+275x^{3}+3300x^{2}+6760x+4076}{5\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^2/(2*x+3)^(7/2),x)
```

```
[Out] -1/5*(9*x^5-70*x^4+275*x^3+3300*x^2+6760*x+4076)/(2*x+3)^(5/2)
```

maxima [**A**] time = 0.66, size = 51, normalized size = 0.65

$$-\frac{9}{160}\,(2\,x+3)^{\frac{5}{2}}+\frac{55}{32}\,(2\,x+3)^{\frac{3}{2}}-\frac{359}{16}\,\sqrt{2\,x+3}-\frac{651\,(2\,x+3)^{2}-355\,x-500}{16\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^2/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -9/160*(2*x + 3)^(5/2) + 55/32*(2*x + 3)^(3/2) - 359/16*sqrt(2*x + 3) - 1/1
6*(651*(2*x + 3)^2 - 355*x - 500)/(2*x + 3)^(5/2)
```

mupad [**B**] time = 0.04, size = 50, normalized size = 0.63

$$\frac{\frac{355\,x}{16}-\frac{651\,(2\,x+3)^{2}}{16}+\frac{125}{4}}{(2\,x+3)^{5/2}}-\frac{359\,\sqrt{2\,x+3}}{16}+\frac{55\,(2\,x+3)^{3/2}}{32}-\frac{9\,(2\,x+3)^{5/2}}{160}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^2)/(2*x + 3)^(7/2),x)
```

```
[Out] ((355*x)/16 - (651*(2*x + 3)^2)/16 + 125/4)/(2*x + 3)^(5/2) - (359*(2*x + 3
)^(1/2))/16 + (55*(2*x + 3)^(3/2))/32 - (9*(2*x + 3)^(5/2))/160
```

sympy [**B**] time = 1.56, size = 238, normalized size = 3.01

$$-\frac{9x^{5}}{20x^{2}\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}+\frac{70x^{4}}{20x^{2}\sqrt{2x+3}+60x\sqrt{2x+3}+45\sqrt{2x+3}}-\frac{27}{20x^{2}\sqrt{2x+3}+60x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**2/(3+2*x)**(7/2),x)
```

```
[Out] -9*x**5/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) + 7
0*x**4/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 27
5*x**3/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 33
00*x**2/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 6
760*x/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3)) - 407
6/(20*x**2*sqrt(2*x + 3) + 60*x*sqrt(2*x + 3) + 45*sqrt(2*x + 3))
```

3.2542 $\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{23/2}}{2944}+\frac{27}{128}(2x+3)^{21/2}-\frac{3519(2x+3)^{19/2}}{2432}+\frac{10475(2x+3)^{17/2}}{2176}-\frac{17201(2x+3)^{15/2}}{1920}+\frac{16005(2x+3)^{13/2}}{1664}-$$

```
[Out] 1625/1152*(3+2*x)^(9/2)-7925/1408*(3+2*x)^(11/2)+16005/1664*(3+2*x)^(13/2)-
17201/1920*(3+2*x)^(15/2)+10475/2176*(3+2*x)^(17/2)-3519/2432*(3+2*x)^(19/2
)+27/128*(3+2*x)^(21/2)-27/2944*(3+2*x)^(23/2)
```

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{23/2}}{2944}+\frac{27}{128}(2x+3)^{21/2}-\frac{3519(2x+3)^{19/2}}{2432}+\frac{10475(2x+3)^{17/2}}{2176}-\frac{17201(2x+3)^{15/2}}{1920}+\frac{16005(2x+3)^{13/2}}{1664}-$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(9/2))/1152 - (7925*(3 + 2*x)^(11/2))/1408 + (16005*(3 + 2*
x)^(13/2))/1664 - (17201*(3 + 2*x)^(15/2))/1920 + (10475*(3 + 2*x)^(17/2))/
2176 - (3519*(3 + 2*x)^(19/2))/2432 + (27*(3 + 2*x)^(21/2))/128 - (27*(3 +
2*x)^(23/2))/2944
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{7/2}\left(2+5x+3x^2\right)^3\,dx &= \int\left(\frac{1625}{128}(3+2x)^{7/2}-\frac{7925}{128}(3+2x)^{9/2}+\frac{16005}{128}(3+2x)^{11/2}-\frac{17201}{128}(3\right.\\ &= \frac{1625(3+2x)^{9/2}}{1152}-\frac{7925(3+2x)^{11/2}}{1408}+\frac{16005(3+2x)^{13/2}}{1664}-\frac{17201(3+}{1920}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{9/2}\left(56119635x^7-56119635x^6-943203690x^5-2232945000x^4-2481091899x^3-1481619843x^2-46\right.}{47805615}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/47805615*((3 + 2*x)^(9/2)*(-58847566 - 460865502*x - 1481619843*x^2 - 24
81091899*x^3 - 2232945000*x^4 - 943203690*x^5 - 56119635*x^6 + 56119635*x^7
))
```

fricas [A] time = 0.62, size = 64, normalized size = 0.61

$$-\frac{1}{47805615}\left(897914160\,x^{11}+4489570800\,x^{10}-8356902840\,x^{9}-126274674240\,x^{8}-465368338149\,x^{7}-95248\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/47805615*(897914160*x^11 + 4489570800*x^10 - 8356902840*x^9 - 1262746742
40*x^8 - 465368338149*x^7 - 952484547267*x^6 - 1244240822034*x^5 - 10819989
30520*x^4 - 626194644675*x^3 - 232269229971*x^2 - 50041179918*x - 476665284
6)*sqrt(2*x + 3)
```

giac [A] time = 0.18, size = 73, normalized size = 0.70

$$-\frac{27}{2944}(2x+3)^{\frac{23}{2}}+\frac{27}{128}(2x+3)^{\frac{21}{2}}-\frac{3519}{2432}(2x+3)^{\frac{19}{2}}+\frac{10475}{2176}(2x+3)^{\frac{17}{2}}-\frac{17201}{1920}(2x+3)^{\frac{15}{2}}+\frac{16005}{1664}(2x+3)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -27/2944*(2*x + 3)^(23/2) + 27/128*(2*x + 3)^(21/2) - 3519/2432*(2*x + 3)^(
19/2) + 10475/2176*(2*x + 3)^(17/2) - 17201/1920*(2*x + 3)^(15/2) + 16005/1
664*(2*x + 3)^(13/2) - 7925/1408*(2*x + 3)^(11/2) + 1625/1152*(2*x + 3)^(9/
2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{(56119635x^7-56119635x^6-943203690x^5-2232945000x^4-2481091899x^3-1481619843x^2-46086550}{47805615}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/47805615*(56119635*x^7-56119635*x^6-943203690*x^5-2232945000*x^4-2481091
899*x^3-1481619843*x^2-460865502*x-58847566)*(2*x+3)^(9/2)
```

maxima [A] time = 0.71, size = 73, normalized size = 0.70

$$-\frac{27}{2944}(2x+3)^{\frac{23}{2}}+\frac{27}{128}(2x+3)^{\frac{21}{2}}-\frac{3519}{2432}(2x+3)^{\frac{19}{2}}+\frac{10475}{2176}(2x+3)^{\frac{17}{2}}-\frac{17201}{1920}(2x+3)^{\frac{15}{2}}+\frac{16005}{1664}(2x+3)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -27/2944*(2*x + 3)^(23/2) + 27/128*(2*x + 3)^(21/2) - 3519/2432*(2*x + 3)^(
19/2) + 10475/2176*(2*x + 3)^(17/2) - 17201/1920*(2*x + 3)^(15/2) + 16005/1
664*(2*x + 3)^(13/2) - 7925/1408*(2*x + 3)^(11/2) + 1625/1152*(2*x + 3)^(9/
2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625(2x+3)^{9/2}}{1152}-\frac{7925(2x+3)^{11/2}}{1408}+\frac{16005(2x+3)^{13/2}}{1664}-\frac{17201(2x+3)^{15/2}}{1920}+\frac{10475(2x+3)^{17/2}}{2176}-\frac{3519(2x}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(7/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(9/2))/1152 - (7925*(2*x + 3)^(11/2))/1408 + (16005*(2*x +
3)^(13/2))/1664 - (17201*(2*x + 3)^(15/2))/1920 + (10475*(2*x + 3)^(17/2))/
2176 - (3519*(2*x + 3)^(19/2))/2432 + (27*(2*x + 3)^(21/2))/128 - (27*(2*x
+ 3)^(23/2))/2944
```

sympy [**A**] time = 49.99, size = 94, normalized size = 0.90

$$-\frac{27\,(2x+3)^{\frac{23}{2}}}{2944}+\frac{27\,(2x+3)^{\frac{21}{2}}}{128}-\frac{3519\,(2x+3)^{\frac{19}{2}}}{2432}+\frac{10475\,(2x+3)^{\frac{17}{2}}}{2176}-\frac{17201\,(2x+3)^{\frac{15}{2}}}{1920}+\frac{16005\,(2x+3)^{\frac{13}{2}}}{1664}-7925\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -27*(2*x + 3)**(23/2)/2944 + 27*(2*x + 3)**(21/2)/128 - 3519*(2*x + 3)**(19
/2)/2432 + 10475*(2*x + 3)**(17/2)/2176 - 17201*(2*x + 3)**(15/2)/1920 + 16
005*(2*x + 3)**(13/2)/1664 - 7925*(2*x + 3)**(11/2)/1408 + 1625*(2*x + 3)**
(9/2)/1152
```

3.2543 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{9}{896}(2x+3)^{21/2}+\frac{567(2x+3)^{19/2}}{2432}-\frac{207}{128}(2x+3)^{17/2}+\frac{2095}{384}(2x+3)^{15/2}-\frac{17201(2x+3)^{13/2}}{1664}+\frac{1455}{128}(2x+3)^{11/2}-\frac{792}{}$$

```
[Out] 1625/896*(3+2*x)^(7/2)-7925/1152*(3+2*x)^(9/2)+1455/128*(3+2*x)^(11/2)-1720
1/1664*(3+2*x)^(13/2)+2095/384*(3+2*x)^(15/2)-207/128*(3+2*x)^(17/2)+567/24
32*(3+2*x)^(19/2)-9/896*(3+2*x)^(21/2)
```

Rubi [A] time = 0.04, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{896}(2x+3)^{21/2}+\frac{567(2x+3)^{19/2}}{2432}-\frac{207}{128}(2x+3)^{17/2}+\frac{2095}{384}(2x+3)^{15/2}-\frac{17201(2x+3)^{13/2}}{1664}+\frac{1455}{128}(2x+3)^{11/2}-\frac{792}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(7/2))/896 - (7925*(3 + 2*x)^(9/2))/1152 + (1455*(3 + 2*x)^
(11/2))/128 - (17201*(3 + 2*x)^(13/2))/1664 + (2095*(3 + 2*x)^(15/2))/384 -
 (207*(3 + 2*x)^(17/2))/128 + (567*(3 + 2*x)^(19/2))/2432 - (9*(3 + 2*x)^(2
1/2))/896
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^3\,dx &= \int \left(\frac{1625}{128}(3+2x)^{5/2}-\frac{7925}{128}(3+2x)^{7/2}+\frac{16005}{128}(3+2x)^{9/2}-\frac{17201}{128}\right.\\ &= \frac{1625}{896}(3+2x)^{7/2}-\frac{7925(3+2x)^{9/2}}{1152}+\frac{1455}{128}(3+2x)^{11/2}-\frac{17201(3+}{166}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{7/2}\left(20007x^7-22113x^6-339066x^5-791700x^4-871983x^3-517293x^2-160006x-20346\right)}{15561}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/15561*((3 + 2*x)^(7/2)*(-20346 - 160006*x - 517293*x^2 - 871983*x^3 - 79
1700*x^4 - 339066*x^5 - 22113*x^6 + 20007*x^7))
```

fricas [A] time = 0.64, size = 59, normalized size = 0.56

$$-\frac{1}{15561}\bigl(160056\,x^{10}+543348\,x^9-2428218\,x^8-19193889\,x^7-54383679\,x^6-87436314\,x^5-88365578\,x^4-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/15561*(160056*x^10 + 543348*x^9 - 2428218*x^8 - 19193889*x^7 - 54383679*
x^6 - 87436314*x^5 - 88365578*x^4 - 57400347*x^3 - 23339691*x^2 - 5418846*x
 - 549342)*sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{9}{896}\,(2\,x+3)^{\frac{21}{2}}+\frac{567}{2432}\,(2\,x+3)^{\frac{19}{2}}-\frac{207}{128}\,(2\,x+3)^{\frac{17}{2}}+\frac{2095}{384}\,(2\,x+3)^{\frac{15}{2}}-\frac{17201}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{1455}{128}\,(2\,x+3)^{\frac{11}{2}}-\frac{792}{115}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -9/896*(2*x + 3)^(21/2) + 567/2432*(2*x + 3)^(19/2) - 207/128*(2*x + 3)^(17
/2) + 2095/384*(2*x + 3)^(15/2) - 17201/1664*(2*x + 3)^(13/2) + 1455/128*(2
*x + 3)^(11/2) - 7925/1152*(2*x + 3)^(9/2) + 1625/896*(2*x + 3)^(7/2)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{\left(20007x^{7}-22113x^{6}-339066x^{5}-791700x^{4}-871983x^{3}-517293x^{2}-160006x-20346\right)(2x+3)^{\frac{7}{2}}}{15561}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/15561*(20007*x^7-22113*x^6-339066*x^5-791700*x^4-871983*x^3-517293*x^2-1
60006*x-20346)*(2*x+3)^(7/2)
```

maxima [A] time = 0.79, size = 73, normalized size = 0.70

$$-\frac{9}{896}\,(2\,x+3)^{\frac{21}{2}}+\frac{567}{2432}\,(2\,x+3)^{\frac{19}{2}}-\frac{207}{128}\,(2\,x+3)^{\frac{17}{2}}+\frac{2095}{384}\,(2\,x+3)^{\frac{15}{2}}-\frac{17201}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{1455}{128}\,(2\,x+3)^{\frac{11}{2}}-\frac{792}{115}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -9/896*(2*x + 3)^(21/2) + 567/2432*(2*x + 3)^(19/2) - 207/128*(2*x + 3)^(17
/2) + 2095/384*(2*x + 3)^(15/2) - 17201/1664*(2*x + 3)^(13/2) + 1455/128*(2
*x + 3)^(11/2) - 7925/1152*(2*x + 3)^(9/2) + 1625/896*(2*x + 3)^(7/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,(2\,x+3)^{7/2}}{896}-\frac{7925\,(2\,x+3)^{9/2}}{1152}+\frac{1455\,(2\,x+3)^{11/2}}{128}-\frac{17201\,(2\,x+3)^{13/2}}{1664}+\frac{2095\,(2\,x+3)^{15/2}}{384}-\frac{207\,(2\,x+3)^{17/2}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(7/2))/896 - (7925*(2*x + 3)^(9/2))/1152 + (1455*(2*x + 3)^
(11/2))/128 - (17201*(2*x + 3)^(13/2))/1664 + (2095*(2*x + 3)^(15/2))/384 -
 (207*(2*x + 3)^(17/2))/128 + (567*(2*x + 3)^(19/2))/2432 - (9*(2*x + 3)^(2
1/2))/896
```

sympy [A] time = 42.10, size = 94, normalized size = 0.90

$$-\frac{9\,(2x+3)^{\frac{21}{2}}}{896}+\frac{567\,(2x+3)^{\frac{19}{2}}}{2432}-\frac{207\,(2x+3)^{\frac{17}{2}}}{128}+\frac{2095\,(2x+3)^{\frac{15}{2}}}{384}-\frac{17201\,(2x+3)^{\frac{13}{2}}}{1664}+\frac{1455\,(2x+3)^{\frac{11}{2}}}{128}-\frac{7925\,(2x}{1152}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -9*(2*x + 3)**(21/2)/896 + 567*(2*x + 3)**(19/2)/2432 - 207*(2*x + 3)**(17/
2)/128 + 2095*(2*x + 3)**(15/2)/384 - 17201*(2*x + 3)**(13/2)/1664 + 1455*(
2*x + 3)**(11/2)/128 - 7925*(2*x + 3)**(9/2)/1152 + 1625*(2*x + 3)**(7/2)/8
96
```

3.2544 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{19/2}}{2432}+\frac{567(2x+3)^{17/2}}{2176}-\frac{1173}{640}(2x+3)^{15/2}+\frac{10475(2x+3)^{13/2}}{1664}-\frac{17201(2x+3)^{11/2}}{1408}+\frac{5335}{384}(2x+3)^{9/2}-\frac{7925}{896}$$

```
[Out] 325/128*(3+2*x)^(5/2)-7925/896*(3+2*x)^(7/2)+5335/384*(3+2*x)^(9/2)-17201/1
408*(3+2*x)^(11/2)+10475/1664*(3+2*x)^(13/2)-1173/640*(3+2*x)^(15/2)+567/21
76*(3+2*x)^(17/2)-27/2432*(3+2*x)^(19/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{27(2x+3)^{19/2}}{2432}+\frac{567(2x+3)^{17/2}}{2176}-\frac{1173}{640}(2x+3)^{15/2}+\frac{10475(2x+3)^{13/2}}{1664}-\frac{17201(2x+3)^{11/2}}{1408}+\frac{5335}{384}(2x+3)^{9/2}-\frac{7925}{896}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (325*(3 + 2*x)^(5/2))/128 - (7925*(3 + 2*x)^(7/2))/896 + (5335*(3 + 2*x)^(9
/2))/384 - (17201*(3 + 2*x)^(11/2))/1408 + (10475*(3 + 2*x)^(13/2))/1664 -
(1173*(3 + 2*x)^(15/2))/640 + (567*(3 + 2*x)^(17/2))/2176 - (27*(3 + 2*x)^(
19/2))/2432
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^3\,dx &= \int \left(\frac{1625}{128}(3+2x)^{3/2}-\frac{7925}{128}(3+2x)^{5/2}+\frac{16005}{128}(3+2x)^{7/2}-\frac{17201}{128}(3\right.\\ &= \frac{325}{128}(3+2x)^{5/2}-\frac{7925}{896}(3+2x)^{7/2}+\frac{5335}{384}(3+2x)^{9/2}-\frac{17201(3+2x)^{1}}{1408}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{5/2}\left(6891885x^7-8513505x^6-117819702x^5-270695040x^4-295054725x^3-173763625x^2-5336757\right.}{4849845}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/4849845*((3 + 2*x)^(5/2)*(-6778218 - 53367570*x - 173763625*x^2 - 295054
725*x^3 - 270695040*x^4 - 117819702*x^5 - 8513505*x^6 + 6891885*x^7))
```

fricas [A] time = 0.55, size = 54, normalized size = 0.51

$$-\frac{1}{4849845}\left(27567540\,x^9+48648600\,x^8-511413903\,x^7-2573238129\,x^6-5488936698\,x^5-6671966560\,x^4-4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] -1/4849845*(27567540*x^9 + 48648600*x^8 - 511413903*x^7 - 2573238129*x^6 -
5488936698*x^5 - 6671966560*x^4 - 4954126305*x^3 - 2231396337*x^2 - 5616467
46*x - 61003962)*sqrt(2*x + 3)
```

giac [A] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{27}{2432}(2x+3)^{\frac{19}{2}}+\frac{567}{2176}(2x+3)^{\frac{17}{2}}-\frac{1173}{640}(2x+3)^{\frac{15}{2}}+\frac{10475}{1664}(2x+3)^{\frac{13}{2}}-\frac{17201}{1408}(2x+3)^{\frac{11}{2}}+\frac{5335}{384}(2x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] -27/2432*(2*x + 3)^(19/2) + 567/2176*(2*x + 3)^(17/2) - 1173/640*(2*x + 3)^
(15/2) + 10475/1664*(2*x + 3)^(13/2) - 17201/1408*(2*x + 3)^(11/2) + 5335/3
84*(2*x + 3)^(9/2) - 7925/896*(2*x + 3)^(7/2) + 325/128*(2*x + 3)^(5/2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{\left(6891885x^7-8513505x^6-117819702x^5-270695040x^4-295054725x^3-173763625x^2-53367570x-67\right.}{4849845}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^3,x)
```

```
[Out] -1/4849845*(6891885*x^7-8513505*x^6-117819702*x^5-270695040*x^4-295054725*x
^3-173763625*x^2-53367570*x-6778218)*(2*x+3)^(5/2)
```

maxima [A] time = 0.53, size = 73, normalized size = 0.70

$$-\frac{27}{2432}(2x+3)^{\frac{19}{2}}+\frac{567}{2176}(2x+3)^{\frac{17}{2}}-\frac{1173}{640}(2x+3)^{\frac{15}{2}}+\frac{10475}{1664}(2x+3)^{\frac{13}{2}}-\frac{17201}{1408}(2x+3)^{\frac{11}{2}}+\frac{5335}{384}(2x+3)^{\frac{9}{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] -27/2432*(2*x + 3)^(19/2) + 567/2176*(2*x + 3)^(17/2) - 1173/640*(2*x + 3)^
(15/2) + 10475/1664*(2*x + 3)^(13/2) - 17201/1408*(2*x + 3)^(11/2) + 5335/3
84*(2*x + 3)^(9/2) - 7925/896*(2*x + 3)^(7/2) + 325/128*(2*x + 3)^(5/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{325\,(2x+3)^{5/2}}{128}-\frac{7925\,(2x+3)^{7/2}}{896}+\frac{5335\,(2x+3)^{9/2}}{384}-\frac{17201\,(2x+3)^{11/2}}{1408}+\frac{10475\,(2x+3)^{13/2}}{1664}-\frac{1173\,(2x+3)^{1}}{640}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (325*(2*x + 3)^(5/2))/128 - (7925*(2*x + 3)^(7/2))/896 + (5335*(2*x + 3)^(9
/2))/384 - (17201*(2*x + 3)^(11/2))/1408 + (10475*(2*x + 3)^(13/2))/1664 -
(1173*(2*x + 3)^(15/2))/640 + (567*(2*x + 3)^(17/2))/2176 - (27*(2*x + 3)^(
19/2))/2432
```

sympy [A] time = 35.46, size = 94, normalized size = 0.90

$$-\frac{27(2x+3)^{\frac{19}{2}}}{2432}+\frac{567(2x+3)^{\frac{17}{2}}}{2176}-\frac{1173(2x+3)^{\frac{15}{2}}}{640}+\frac{10475(2x+3)^{\frac{13}{2}}}{1664}-\frac{17201(2x+3)^{\frac{11}{2}}}{1408}+\frac{5335(2x+3)^{\frac{9}{2}}}{384}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**3,x)
```

```
[Out] -27*(2*x + 3)**(19/2)/2432 + 567*(2*x + 3)**(17/2)/2176 - 1173*(2*x + 3)**(
15/2)/640 + 10475*(2*x + 3)**(13/2)/1664 - 17201*(2*x + 3)**(11/2)/1408 + 5
335*(2*x + 3)**(9/2)/384 - 7925*(2*x + 3)**(7/2)/896 + 325*(2*x + 3)**(5/2)
/128
```

3.2545 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^3\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{17/2}}{2176}+\frac{189}{640}(2x+3)^{15/2}-\frac{3519(2x+3)^{13/2}}{1664}+\frac{10475(2x+3)^{11/2}}{1408}-\frac{17201(2x+3)^{9/2}}{1152}+\frac{16005}{896}(2x+3)^{7/2}-$$

```
[Out] 1625/384*(3+2*x)^(3/2)-1585/128*(3+2*x)^(5/2)+16005/896*(3+2*x)^(7/2)-17201
/1152*(3+2*x)^(9/2)+10475/1408*(3+2*x)^(11/2)-3519/1664*(3+2*x)^(13/2)+189/
640*(3+2*x)^(15/2)-27/2176*(3+2*x)^(17/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{17/2}}{2176}+\frac{189}{640}(2x+3)^{15/2}-\frac{3519(2x+3)^{13/2}}{1664}+\frac{10475(2x+3)^{11/2}}{1408}-\frac{17201(2x+3)^{9/2}}{1152}+\frac{16005}{896}(2x+3)^{7/2}-$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (1625*(3 + 2*x)^(3/2))/384 - (1585*(3 + 2*x)^(5/2))/128 + (16005*(3 + 2*x)^
(7/2))/896 - (17201*(3 + 2*x)^(9/2))/1152 + (10475*(3 + 2*x)^(11/2))/1408 -
 (3519*(3 + 2*x)^(13/2))/1664 + (189*(3 + 2*x)^(15/2))/640 - (27*(3 + 2*x)^
(17/2))/2176
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^3\,dx &= \int\left(\frac{1625}{128}\sqrt{3+2x}-\frac{7925}{128}(3+2x)^{3/2}+\frac{16005}{128}(3+2x)^{5/2}-\frac{17201}{128}(3\right.\\ &= \frac{1625}{384}(3+2x)^{3/2}-\frac{1585}{128}(3+2x)^{5/2}+\frac{16005}{896}(3+2x)^{7/2}-\frac{17201(3+2}{1152}\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{(2x+3)^{3/2}\left(1216215x^7-1702701x^6-20968794x^5-47286540x^4-50880095x^3-29756385x^2-9013014x\right.}{765765}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -1/765765*((3 + 2*x)^(3/2)*(-1197186 - 9013014*x - 29756385*x^2 - 50880095*
x^3 - 47286540*x^4 - 20968794*x^5 - 1702701*x^6 + 1216215*x^7))
```

fricas [A] time = 0.94, size = 49, normalized size = 0.47

$$-\frac{1}{765765}\left(2432430\,x^8+243243\,x^7-47045691\,x^6-157479462\,x^5-243619810\,x^4-212153055\,x^3-1072951\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/765765*(2432430*x^8 + 243243*x^7 - 47045691*x^6 - 157479462*x^5 - 243619
810*x^4 - 212153055*x^3 - 107295183*x^2 - 29433414*x - 3591558)*sqrt(2*x +
3)
```

giac [A] time = 0.21, size = 73, normalized size = 0.70

$$-\frac{27}{2176}\,(2\,x+3)^{\frac{17}{2}}+\frac{189}{640}\,(2\,x+3)^{\frac{15}{2}}-\frac{3519}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{10475}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{17201}{1152}\,(2\,x+3)^{\frac{9}{2}}+\frac{16005}{896}\,(2\,x+3)^{\frac{7}{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -27/2176*(2*x + 3)^(17/2) + 189/640*(2*x + 3)^(15/2) - 3519/1664*(2*x + 3)^
(13/2) + 10475/1408*(2*x + 3)^(11/2) - 17201/1152*(2*x + 3)^(9/2) + 16005/8
96*(2*x + 3)^(7/2) - 1585/128*(2*x + 3)^(5/2) + 1625/384*(2*x + 3)^(3/2)
```

maple [A] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{\left(1216215x^{7}-1702701x^{6}-20968794x^{5}-47286540x^{4}-50880095x^{3}-29756385x^{2}-9013014x-1197186\right)(2}{765765}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3*(2*x+3)^(1/2),x)
```

```
[Out] -1/765765*(1216215*x^7-1702701*x^6-20968794*x^5-47286540*x^4-50880095*x^3-2
9756385*x^2-9013014*x-1197186)*(2*x+3)^(3/2)
```

maxima [A] time = 0.67, size = 73, normalized size = 0.70

$$-\frac{27}{2176}\,(2\,x+3)^{\frac{17}{2}}+\frac{189}{640}\,(2\,x+3)^{\frac{15}{2}}-\frac{3519}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{10475}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{17201}{1152}\,(2\,x+3)^{\frac{9}{2}}+\frac{16005}{896}\,(2\,x+3)^{\frac{7}{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -27/2176*(2*x + 3)^(17/2) + 189/640*(2*x + 3)^(15/2) - 3519/1664*(2*x + 3)^
(13/2) + 10475/1408*(2*x + 3)^(11/2) - 17201/1152*(2*x + 3)^(9/2) + 16005/8
96*(2*x + 3)^(7/2) - 1585/128*(2*x + 3)^(5/2) + 1625/384*(2*x + 3)^(3/2)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,(2\,x+3)^{3/2}}{384}-\frac{1585\,(2\,x+3)^{5/2}}{128}+\frac{16005\,(2\,x+3)^{7/2}}{896}-\frac{17201\,(2\,x+3)^{9/2}}{1152}+\frac{10475\,(2\,x+3)^{11/2}}{1408}-\frac{3519\,(2\,x+3)^{13/}}{1664}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] (1625*(2*x + 3)^(3/2))/384 - (1585*(2*x + 3)^(5/2))/128 + (16005*(2*x + 3)^
(7/2))/896 - (17201*(2*x + 3)^(9/2))/1152 + (10475*(2*x + 3)^(11/2))/1408 -
 (3519*(2*x + 3)^(13/2))/1664 + (189*(2*x + 3)^(15/2))/640 - (27*(2*x + 3)^
(17/2))/2176
```

sympy [A] time = 4.02, size = 94, normalized size = 0.90

$$-\frac{27\,(2x+3)^{\frac{17}{2}}}{2176}+\frac{189\,(2x+3)^{\frac{15}{2}}}{640}-\frac{3519\,(2x+3)^{\frac{13}{2}}}{1664}+\frac{10475\,(2x+3)^{\frac{11}{2}}}{1408}-\frac{17201\,(2x+3)^{\frac{9}{2}}}{1152}+\frac{16005\,(2x+3)^{\frac{7}{2}}}{896}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3*(3+2*x)**(1/2),x)
```

```
[Out] -27*(2*x + 3)**(17/2)/2176 + 189*(2*x + 3)**(15/2)/640 - 3519*(2*x + 3)**(1
3/2)/1664 + 10475*(2*x + 3)**(11/2)/1408 - 17201*(2*x + 3)**(9/2)/1152 + 16
005*(2*x + 3)**(7/2)/896 - 1585*(2*x + 3)**(5/2)/128 + 1625*(2*x + 3)**(3/2
)/384
```

3.2546 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=105

$$-\frac{9}{640}(2x+3)^{15/2}+\frac{567(2x+3)^{13/2}}{1664}-\frac{3519(2x+3)^{11/2}}{1408}+\frac{10475(2x+3)^{9/2}}{1152}-\frac{17201}{896}(2x+3)^{7/2}+\frac{3201}{128}(2x+3)^{5/2}-\frac{7925}{384}$$

```
[Out] -7925/384*(3+2*x)^(3/2)+3201/128*(3+2*x)^(5/2)-17201/896*(3+2*x)^(7/2)+1047
5/1152*(3+2*x)^(9/2)-3519/1408*(3+2*x)^(11/2)+567/1664*(3+2*x)^(13/2)-9/640
*(3+2*x)^(15/2)+1625/128*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{9}{640}(2x+3)^{15/2}+\frac{567(2x+3)^{13/2}}{1664}-\frac{3519(2x+3)^{11/2}}{1408}+\frac{10475(2x+3)^{9/2}}{1152}-\frac{17201}{896}(2x+3)^{7/2}+\frac{3201}{128}(2x+3)^{5/2}-\frac{7925}{384}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/Sqrt[3 + 2*x],x]
```

```
[Out] (1625*Sqrt[3 + 2*x])/128 - (7925*(3 + 2*x)^(3/2))/384 + (3201*(3 + 2*x)^(5/
2))/128 - (17201*(3 + 2*x)^(7/2))/896 + (10475*(3 + 2*x)^(9/2))/1152 - (351
9*(3 + 2*x)^(11/2))/1408 + (567*(3 + 2*x)^(13/2))/1664 - (9*(3 + 2*x)^(15/2
))/640
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{\sqrt{3+2x}}\,dx &= \int \left(\frac{1625}{128\sqrt{3+2x}}-\frac{7925}{128}\sqrt{3+2x}+\frac{16005}{128}(3+2x)^{3/2}-\frac{17201}{128}(3+2x)^{5/2}+\right.\\ &= \frac{1625}{128}\sqrt{3+2x}-\frac{7925}{384}(3+2x)^{3/2}+\frac{3201}{128}(3+2x)^{5/2}-\frac{17201}{896}(3+2x)^{7/2}+\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{\sqrt{2x+3}\left(81081x^7-130977x^6-1407294x^5-3109960x^4-3285105x^3-1924641x^2-535098x-196506\right)}{45045}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/Sqrt[3 + 2*x],x]
```

```
[Out] -1/45045*(Sqrt[3 + 2*x]*(-196506 - 535098*x - 1924641*x^2 - 3285105*x^3 - 3
109960*x^4 - 1407294*x^5 - 130977*x^6 + 81081*x^7))
```

fricas [A] time = 0.71, size = 44, normalized size = 0.42

$$-\frac{1}{45045}\left(81081\,x^7-130977\,x^6-1407294\,x^5-3109960\,x^4-3285105\,x^3-1924641\,x^2-535098\,x-196506\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] -1/45045*(81081*x^7 - 130977*x^6 - 1407294*x^5 - 3109960*x^4 - 3285105*x^3
- 1924641*x^2 - 535098*x - 196506)*sqrt(2*x + 3)
```

giac [A] time = 0.16, size = 73, normalized size = 0.70

$$-\frac{9}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{567}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{3519}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{10475}{1152}\,(2\,x+3)^{\frac{9}{2}}-\frac{17201}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{3201}{128}\,(2\,x+3)^{\frac{5}{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -9/640*(2*x + 3)^(15/2) + 567/1664*(2*x + 3)^(13/2) - 3519/1408*(2*x + 3)^(
11/2) + 10475/1152*(2*x + 3)^(9/2) - 17201/896*(2*x + 3)^(7/2) + 3201/128*(
2*x + 3)^(5/2) - 7925/384*(2*x + 3)^(3/2) + 1625/128*sqrt(2*x + 3)
```

maple [A] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{\left(81081x^{7}-130977x^{6}-1407294x^{5}-3109960x^{4}-3285105x^{3}-1924641x^{2}-535098x-196506\right)\sqrt{2x+3}}{45045}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(1/2),x)
```

```
[Out] -1/45045*(81081*x^7-130977*x^6-1407294*x^5-3109960*x^4-3285105*x^3-1924641*
x^2-535098*x-196506)*(2*x+3)^(1/2)
```

maxima [A] time = 0.51, size = 73, normalized size = 0.70

$$-\frac{9}{640}\,(2\,x+3)^{\frac{15}{2}}+\frac{567}{1664}\,(2\,x+3)^{\frac{13}{2}}-\frac{3519}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{10475}{1152}\,(2\,x+3)^{\frac{9}{2}}-\frac{17201}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{3201}{128}\,(2\,x+3)^{\frac{5}{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -9/640*(2*x + 3)^(15/2) + 567/1664*(2*x + 3)^(13/2) - 3519/1408*(2*x + 3)^(
11/2) + 10475/1152*(2*x + 3)^(9/2) - 17201/896*(2*x + 3)^(7/2) + 3201/128*(
2*x + 3)^(5/2) - 7925/384*(2*x + 3)^(3/2) + 1625/128*sqrt(2*x + 3)
```

mupad [B] time = 0.03, size = 73, normalized size = 0.70

$$\frac{1625\,\sqrt{2\,x+3}}{128}-\frac{7925\,(2\,x+3)^{3/2}}{384}+\frac{3201\,(2\,x+3)^{5/2}}{128}-\frac{17201\,(2\,x+3)^{7/2}}{896}+\frac{10475\,(2\,x+3)^{9/2}}{1152}-\frac{3519\,(2\,x+3)^{11/2}}{1408}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(1/2),x)
```

```
[Out] (1625*(2*x + 3)^(1/2))/128 - (7925*(2*x + 3)^(3/2))/384 + (3201*(2*x + 3)^(
5/2))/128 - (17201*(2*x + 3)^(7/2))/896 + (10475*(2*x + 3)^(9/2))/1152 - (3
519*(2*x + 3)^(11/2))/1408 + (567*(2*x + 3)^(13/2))/1664 - (9*(2*x + 3)^(15
/2))/640
```

sympy [A] time = 124.64, size = 94, normalized size = 0.90

$$-\frac{9\,(2x+3)^{\frac{15}{2}}}{640}+\frac{567\,(2x+3)^{\frac{13}{2}}}{1664}-\frac{3519\,(2x+3)^{\frac{11}{2}}}{1408}+\frac{10475\,(2x+3)^{\frac{9}{2}}}{1152}-\frac{17201\,(2x+3)^{\frac{7}{2}}}{896}+\frac{3201\,(2x+3)^{\frac{5}{2}}}{128}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(1/2),x)
```

```
[Out] -9*(2*x + 3)**(15/2)/640 + 567*(2*x + 3)**(13/2)/1664 - 3519*(2*x + 3)**(11
/2)/1408 + 10475*(2*x + 3)**(9/2)/1152 - 17201*(2*x + 3)**(7/2)/896 + 3201*
(2*x + 3)**(5/2)/128 - 7925*(2*x + 3)**(3/2)/384 + 1625*sqrt(2*x + 3)/128
```

3.2547 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{13/2}}{1664}+\frac{567(2x+3)^{11/2}}{1408}-\frac{391}{128}(2x+3)^{9/2}+\frac{10475}{896}(2x+3)^{7/2}-\frac{17201}{640}(2x+3)^{5/2}+\frac{5335}{128}(2x+3)^{3/2}-\frac{7925}{128}$$

```
[Out] 5335/128*(3+2*x)^(3/2)-17201/640*(3+2*x)^(5/2)+10475/896*(3+2*x)^(7/2)-391/
128*(3+2*x)^(9/2)+567/1408*(3+2*x)^(11/2)-27/1664*(3+2*x)^(13/2)-1625/128/(
3+2*x)^(1/2)-7925/128*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.037, Rules used = {771}

$$-\frac{27(2x+3)^{13/2}}{1664}+\frac{567(2x+3)^{11/2}}{1408}-\frac{391}{128}(2x+3)^{9/2}+\frac{10475}{896}(2x+3)^{7/2}-\frac{17201}{640}(2x+3)^{5/2}+\frac{5335}{128}(2x+3)^{3/2}-\frac{7925}{128}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1625/(128*Sqrt[3 + 2*x]) - (7925*Sqrt[3 + 2*x])/128 + (5335*(3 + 2*x)^(3/2
))/128 - (17201*(3 + 2*x)^(5/2))/640 + (10475*(3 + 2*x)^(7/2))/896 - (391*(
3 + 2*x)^(9/2))/128 + (567*(3 + 2*x)^(11/2))/1408 - (27*(3 + 2*x)^(13/2))/1
664
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{3/2}}\,dx &= \int \left(\frac{1625}{128(3+2x)^{3/2}}-\frac{7925}{128\sqrt{3+2x}}+\frac{16005}{128}\sqrt{3+2x}-\frac{17201}{128}(3+2x)^{3/2}+\right.\\ &= -\frac{1625}{128\sqrt{3+2x}}-\frac{7925}{128}\sqrt{3+2x}+\frac{5335}{128}(3+2x)^{3/2}-\frac{17201}{640}(3+2x)^{5/2}+\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{10395x^7-19845x^6-180530x^5-392500x^4-398339x^3-256433x^2+77138x+431614}{5005\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(3/2),x]
```

```
[Out] -1/5005*(431614 + 77138*x - 256433*x^2 - 398339*x^3 - 392500*x^4 - 180530*x
^5 - 19845*x^6 + 10395*x^7)/Sqrt[3 + 2*x]
```

fricas [A] time = 0.71, size = 44, normalized size = 0.42

$$-\frac{10395\,x^7-19845\,x^6-180530\,x^5-392500\,x^4-398339\,x^3-256433\,x^2+77138\,x+431614}{5005\,\sqrt{2\,x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] -1/5005*(10395*x^7 - 19845*x^6 - 180530*x^5 - 392500*x^4 - 398339*x^3 - 256
433*x^2 + 77138*x + 431614)/sqrt(2*x + 3)
```

giac [**A**] time = 0.17, size = 73, normalized size = 0.70

$$-\frac{27}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{567}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{391}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{10475}{896}\,(2\,x+3)^{\frac{7}{2}}-\frac{17201}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{5335}{128}\,(2\,x+3)^{\frac{3}{2}}-\frac{7925}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] -27/1664*(2*x + 3)^(13/2) + 567/1408*(2*x + 3)^(11/2) - 391/128*(2*x + 3)^(
9/2) + 10475/896*(2*x + 3)^(7/2) - 17201/640*(2*x + 3)^(5/2) + 5335/128*(2*
x + 3)^(3/2) - 7925/128*sqrt(2*x + 3) - 1625/128/sqrt(2*x + 3)
```

maple [**A**] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{10395x^{7}-19845x^{6}-180530x^{5}-392500x^{4}-398339x^{3}-256433x^{2}+77138x+431614}{5005\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(3/2),x)
```

```
[Out] -1/5005*(10395*x^7-19845*x^6-180530*x^5-392500*x^4-398339*x^3-256433*x^2+77
138*x+431614)/(2*x+3)^(1/2)
```

maxima [**A**] time = 0.51, size = 73, normalized size = 0.70

$$-\frac{27}{1664}\,(2\,x+3)^{\frac{13}{2}}+\frac{567}{1408}\,(2\,x+3)^{\frac{11}{2}}-\frac{391}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{10475}{896}\,(2\,x+3)^{\frac{7}{2}}-\frac{17201}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{5335}{128}\,(2\,x+3)^{\frac{3}{2}}-\frac{7925}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -27/1664*(2*x + 3)^(13/2) + 567/1408*(2*x + 3)^(11/2) - 391/128*(2*x + 3)^(
9/2) + 10475/896*(2*x + 3)^(7/2) - 17201/640*(2*x + 3)^(5/2) + 5335/128*(2*
x + 3)^(3/2) - 7925/128*sqrt(2*x + 3) - 1625/128/sqrt(2*x + 3)
```

mupad [**B**] time = 0.04, size = 73, normalized size = 0.70

$$\frac{5335\,(2\,x+3)^{3/2}}{128}-\frac{7925\,\sqrt{2\,x+3}}{128}-\frac{1625}{128\,\sqrt{2\,x+3}}-\frac{17201\,(2\,x+3)^{5/2}}{640}+\frac{10475\,(2\,x+3)^{7/2}}{896}-\frac{391\,(2\,x+3)^{9/2}}{128}+\frac{567\,(2}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(3/2),x)
```

```
[Out] (5335*(2*x + 3)^(3/2))/128 - (7925*(2*x + 3)^(1/2))/128 - 1625/(128*(2*x +
3)^(1/2)) - (17201*(2*x + 3)^(5/2))/640 + (10475*(2*x + 3)^(7/2))/896 - (39
1*(2*x + 3)^(9/2))/128 + (567*(2*x + 3)^(11/2))/1408 - (27*(2*x + 3)^(13/2)
)/1664
```

sympy [**A**] time = 46.04, size = 94, normalized size = 0.90

$$-\frac{27\,(2x+3)^{\frac{13}{2}}}{1664}+\frac{567\,(2x+3)^{\frac{11}{2}}}{1408}-\frac{391\,(2x+3)^{\frac{9}{2}}}{128}+\frac{10475\,(2x+3)^{\frac{7}{2}}}{896}-\frac{17201\,(2x+3)^{\frac{5}{2}}}{640}+\frac{5335\,(2x+3)^{\frac{3}{2}}}{128}-\frac{7925\sqrt{2x}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(3/2),x)
```

```
[Out] -27*(2*x + 3)**(13/2)/1664 + 567*(2*x + 3)**(11/2)/1408 - 391*(2*x + 3)**(9
/2)/128 + 10475*(2*x + 3)**(7/2)/896 - 17201*(2*x + 3)**(5/2)/640 + 5335*(2
*x + 3)**(3/2)/128 - 7925*sqrt(2*x + 3)/128 - 1625/(128*sqrt(2*x + 3))
```

3.2548 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{27(2x+3)^{11/2}}{1408}+\frac{63}{128}(2x+3)^{9/2}-\frac{3519}{896}(2x+3)^{7/2}+\frac{2095}{128}(2x+3)^{5/2}-\frac{17201}{384}(2x+3)^{3/2}+\frac{16005}{128}\sqrt{2x+3}+\frac{7925}{128\sqrt{2x+3}}$$

```
[Out] -1625/384/(3+2*x)^(3/2)-17201/384*(3+2*x)^(3/2)+2095/128*(3+2*x)^(5/2)-3519
/896*(3+2*x)^(7/2)+63/128*(3+2*x)^(9/2)-27/1408*(3+2*x)^(11/2)+7925/128/(3+
2*x)^(1/2)+16005/128*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{27(2x+3)^{11/2}}{1408}+\frac{63}{128}(2x+3)^{9/2}-\frac{3519}{896}(2x+3)^{7/2}+\frac{2095}{128}(2x+3)^{5/2}-\frac{17201}{384}(2x+3)^{3/2}+\frac{16005}{128}\sqrt{2x+3}+\frac{7925}{128\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1625/(384*(3 + 2*x)^(3/2)) + 7925/(128*Sqrt[3 + 2*x]) + (16005*Sqrt[3 + 2*
x])/128 - (17201*(3 + 2*x)^(3/2))/384 + (2095*(3 + 2*x)^(5/2))/128 - (3519*
(3 + 2*x)^(7/2))/896 + (63*(3 + 2*x)^(9/2))/128 - (27*(3 + 2*x)^(11/2))/140
8
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{5/2}}\,dx &= \int \left(\frac{1625}{128(3+2x)^{5/2}}-\frac{7925}{128(3+2x)^{3/2}}+\frac{16005}{128\sqrt{3+2x}}-\frac{17201}{128}\sqrt{3+2x}+\frac{10475}{128}(\right.\\ &= -\frac{1625}{384(3+2x)^{3/2}}+\frac{7925}{128\sqrt{3+2x}}+\frac{16005}{128}\sqrt{3+2x}-\frac{17201}{384}(3+2x)^{3/2}+\frac{2095}{128}(\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{567x^7-1323x^6-9666x^5-21360x^4-17663x^3-42003x^2-184566x-181486}{231(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/231*(-181486 - 184566*x - 42003*x^2 - 17663*x^3 - 21360*x^4 - 9666*x^5 -
 1323*x^6 + 567*x^7)/(3 + 2*x)^(3/2)
```

fricas [A] time = 0.69, size = 56, normalized size = 0.53

$$-\frac{\left(567\,x^7-1323\,x^6-9666\,x^5-21360\,x^4-17663\,x^3-42003\,x^2-184566\,x-181486\right)\sqrt{2\,x+3}}{231\,\left(4\,x^2+12\,x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] -1/231*(567*x^7 - 1323*x^6 - 9666*x^5 - 21360*x^4 - 17663*x^3 - 42003*x^2 -
 184566*x - 181486)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9)
```

giac [**A**] time = 0.18, size = 69, normalized size = 0.66

$$-\frac{27}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{63}{128}\,(2\,x+3)^{\frac{9}{2}}-\frac{3519}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{2095}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{17201}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{16005}{128}\,\sqrt{2\,x+3}+\frac{25}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] -27/1408*(2*x + 3)^(11/2) + 63/128*(2*x + 3)^(9/2) - 3519/896*(2*x + 3)^(7/
2) + 2095/128*(2*x + 3)^(5/2) - 17201/384*(2*x + 3)^(3/2) + 16005/128*sqrt(
2*x + 3) + 25/192*(951*x + 1394)/(2*x + 3)^(3/2)
```

maple [**A**] time = 0.01, size = 45, normalized size = 0.43

$$-\frac{567x^7-1323x^6-9666x^5-21360x^4-17663x^3-42003x^2-184566x-181486}{231\,(2x+3)^{\frac{3}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(5/2),x)
```

```
[Out] -1/231*(567*x^7-1323*x^6-9666*x^5-21360*x^4-17663*x^3-42003*x^2-184566*x-18
1486)/(2*x+3)^(3/2)
```

maxima [**A**] time = 0.56, size = 69, normalized size = 0.66

$$-\frac{27}{1408}\,(2\,x+3)^{\frac{11}{2}}+\frac{63}{128}\,(2\,x+3)^{\frac{9}{2}}-\frac{3519}{896}\,(2\,x+3)^{\frac{7}{2}}+\frac{2095}{128}\,(2\,x+3)^{\frac{5}{2}}-\frac{17201}{384}\,(2\,x+3)^{\frac{3}{2}}+\frac{16005}{128}\,\sqrt{2\,x+3}+\frac{25}{1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -27/1408*(2*x + 3)^(11/2) + 63/128*(2*x + 3)^(9/2) - 3519/896*(2*x + 3)^(7/
2) + 2095/128*(2*x + 3)^(5/2) - 17201/384*(2*x + 3)^(3/2) + 16005/128*sqrt(
2*x + 3) + 25/192*(951*x + 1394)/(2*x + 3)^(3/2)
```

mupad [**B**] time = 0.03, size = 68, normalized size = 0.65

$$\frac{\frac{7925\,x}{64}+\frac{17425}{96}}{(2\,x+3)^{3/2}}+\frac{16005\,\sqrt{2\,x+3}}{128}-\frac{17201\,(2\,x+3)^{3/2}}{384}+\frac{2095\,(2\,x+3)^{5/2}}{128}-\frac{3519\,(2\,x+3)^{7/2}}{896}+\frac{63\,(2\,x+3)^{9/2}}{128}-27\,($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(5/2),x)
```

```
[Out] ((7925*x)/64 + 17425/96)/(2*x + 3)^(3/2) + (16005*(2*x + 3)^(1/2))/128 - (1
7201*(2*x + 3)^(3/2))/384 + (2095*(2*x + 3)^(5/2))/128 - (3519*(2*x + 3)^(7
/2))/896 + (63*(2*x + 3)^(9/2))/128 - (27*(2*x + 3)^(11/2))/1408
```

sympy [**A**] time = 56.09, size = 94, normalized size = 0.90

$$-\frac{27\,(2x+3)^{\frac{11}{2}}}{1408}+\frac{63\,(2x+3)^{\frac{9}{2}}}{128}-\frac{3519\,(2x+3)^{\frac{7}{2}}}{896}+\frac{2095\,(2x+3)^{\frac{5}{2}}}{128}-\frac{17201\,(2x+3)^{\frac{3}{2}}}{384}+\frac{16005\sqrt{2x+3}}{128}+\frac{7925}{128\sqrt{2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(5/2),x)
```

```
[Out] -27*(2*x + 3)**(11/2)/1408 + 63*(2*x + 3)**(9/2)/128 - 3519*(2*x + 3)**(7/2
)/896 + 2095*(2*x + 3)**(5/2)/128 - 17201*(2*x + 3)**(3/2)/384 + 16005*sqrt
(2*x + 3)/128 + 7925/(128*sqrt(2*x + 3)) - 1625/(384*(2*x + 3)**(3/2))
```

3.2549 $\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=105

$$-\frac{3}{128}(2x+3)^{9/2}+\frac{81}{128}(2x+3)^{7/2}-\frac{3519}{640}(2x+3)^{5/2}+\frac{10475}{384}(2x+3)^{3/2}-\frac{17201}{128}\sqrt{2x+3}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384(2x+3)}$$

```
[Out] -325/128/(3+2*x)^(5/2)+7925/384/(3+2*x)^(3/2)+10475/384*(3+2*x)^(3/2)-3519/
640*(3+2*x)^(5/2)+81/128*(3+2*x)^(7/2)-3/128*(3+2*x)^(9/2)-16005/128/(3+2*x
)^(1/2)-17201/128*(3+2*x)^(1/2)
```

Rubi [A] time = 0.03, antiderivative size = 105, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 1, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.037$, Rules used = {771}

$$-\frac{3}{128}(2x+3)^{9/2}+\frac{81}{128}(2x+3)^{7/2}-\frac{3519}{640}(2x+3)^{5/2}+\frac{10475}{384}(2x+3)^{3/2}-\frac{17201}{128}\sqrt{2x+3}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384(2x+3)}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(7/2),x]
```

```
[Out] -325/(128*(3 + 2*x)^(5/2)) + 7925/(384*(3 + 2*x)^(3/2)) - 16005/(128*Sqrt[3
 + 2*x]) - (17201*Sqrt[3 + 2*x])/128 + (10475*(3 + 2*x)^(3/2))/384 - (3519*
(3 + 2*x)^(5/2))/640 + (81*(3 + 2*x)^(7/2))/128 - (3*(3 + 2*x)^(9/2))/128
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^3}{(3+2x)^{7/2}}\,dx &= \int \left(\frac{1625}{128(3+2x)^{7/2}}-\frac{7925}{128(3+2x)^{5/2}}+\frac{16005}{128(3+2x)^{3/2}}-\frac{17201}{128\sqrt{3+2x}}+\frac{10475}{128}\right.\\ &= -\frac{325}{128(3+2x)^{5/2}}+\frac{7925}{384(3+2x)^{3/2}}-\frac{16005}{128\sqrt{3+2x}}-\frac{17201}{128}\sqrt{3+2x}+\frac{10475}{384}(\end{aligned}$$

Mathematica [A] time = 0.02, size = 48, normalized size = 0.46

$$-\frac{45x^7-135x^6-702x^5-1940x^4+3195x^3+41805x^2+85070x+51162}{15(2x+3)^{5/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^3)/(3 + 2*x)^(7/2),x]
```

```
[Out] -1/15*(51162 + 85070*x + 41805*x^2 + 3195*x^3 - 1940*x^4 - 702*x^5 - 135*x^
6 + 45*x^7)/(3 + 2*x)^(5/2)
```

fricas [A] time = 0.67, size = 61, normalized size = 0.58

$$-\frac{\left(45\,x^7-135\,x^6-702\,x^5-1940\,x^4+3195\,x^3+41805\,x^2+85070\,x+51162\right)\sqrt{2\,x+3}}{15\left(8\,x^3+36\,x^2+54\,x+27\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] -1/15*(45*x^7 - 135*x^6 - 702*x^5 - 1940*x^4 + 3195*x^3 + 41805*x^2 + 85070
*x + 51162)*sqrt(2*x + 3)/(8*x^3 + 36*x^2 + 54*x + 27)
```

giac [**A**] time = 0.18, size = 69, normalized size = 0.66

$$-\frac{3}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{81}{128}\,(2\,x+3)^{\frac{7}{2}}-\frac{3519}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{10475}{384}\,(2\,x+3)^{\frac{3}{2}}-\frac{17201}{128}\,\sqrt{2\,x+3}-\frac{5\left(9603\,(2\,x+3)^{2}-3170\right.}{384\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] -3/128*(2*x + 3)^(9/2) + 81/128*(2*x + 3)^(7/2) - 3519/640*(2*x + 3)^(5/2)
+ 10475/384*(2*x + 3)^(3/2) - 17201/128*sqrt(2*x + 3) - 5/384*(9603*(2*x +
3)^2 - 3170*x - 4560)/(2*x + 3)^(5/2)
```

maple [**A**] time = 0.00, size = 45, normalized size = 0.43

$$-\frac{45x^{7}-135x^{6}-702x^{5}-1940x^{4}+3195x^{3}+41805x^{2}+85070x+51162}{15\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^3/(2*x+3)^(7/2),x)
```

```
[Out] -1/15*(45*x^7-135*x^6-702*x^5-1940*x^4+3195*x^3+41805*x^2+85070*x+51162)/(2
*x+3)^(5/2)
```

maxima [**A**] time = 0.49, size = 69, normalized size = 0.66

$$-\frac{3}{128}\,(2\,x+3)^{\frac{9}{2}}+\frac{81}{128}\,(2\,x+3)^{\frac{7}{2}}-\frac{3519}{640}\,(2\,x+3)^{\frac{5}{2}}+\frac{10475}{384}\,(2\,x+3)^{\frac{3}{2}}-\frac{17201}{128}\,\sqrt{2\,x+3}-\frac{5\left(9603\,(2\,x+3)^{2}-3170\right.}{384\,(2\,x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^3/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -3/128*(2*x + 3)^(9/2) + 81/128*(2*x + 3)^(7/2) - 3519/640*(2*x + 3)^(5/2)
+ 10475/384*(2*x + 3)^(3/2) - 17201/128*sqrt(2*x + 3) - 5/384*(9603*(2*x +
3)^2 - 3170*x - 4560)/(2*x + 3)^(5/2)
```

mupad [**B**] time = 0.03, size = 68, normalized size = 0.65

$$\frac{\frac{7925\,x}{192}-\frac{16005\,(2\,x+3)^{2}}{128}+\frac{475}{8}}{(2\,x+3)^{5/2}}-\frac{17201\,\sqrt{2\,x+3}}{128}+\frac{10475\,(2\,x+3)^{3/2}}{384}-\frac{3519\,(2\,x+3)^{5/2}}{640}+\frac{81\,(2\,x+3)^{7/2}}{128}-\frac{3\,(2\,x+3)^{9/2}}{128}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^3)/(2*x + 3)^(7/2),x)
```

```
[Out] ((7925*x)/192 - (16005*(2*x + 3)^2)/128 + 475/8)/(2*x + 3)^(5/2) - (17201*(
2*x + 3)^(1/2))/128 + (10475*(2*x + 3)^(3/2))/384 - (3519*(2*x + 3)^(5/2))/
640 + (81*(2*x + 3)^(7/2))/128 - (3*(2*x + 3)^(9/2))/128
```

sympy [**A**] time = 62.14, size = 94, normalized size = 0.90

$$-\frac{3\,(2x+3)^{\frac{9}{2}}}{128}+\frac{81\,(2x+3)^{\frac{7}{2}}}{128}-\frac{3519\,(2x+3)^{\frac{5}{2}}}{640}+\frac{10475\,(2x+3)^{\frac{3}{2}}}{384}-\frac{17201\sqrt{2x+3}}{128}-\frac{16005}{128\sqrt{2x+3}}+\frac{7925}{384\,(2x+3)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**3/(3+2*x)**(7/2),x)
```

```
[Out] -3*(2*x + 3)**(9/2)/128 + 81*(2*x + 3)**(7/2)/128 - 3519*(2*x + 3)**(5/2)/6
40 + 10475*(2*x + 3)**(3/2)/384 - 17201*sqrt(2*x + 3)/128 - 16005/(128*sqrt
(2*x + 3)) + 7925/(384*(2*x + 3)**(3/2)) - 325/(128*(2*x + 3)**(5/2))
```

3.2550 $\int \frac{(5-x)(3+2x)^{7/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=94

$$-\frac{2}{21}(2x+3)^{7/2}+\frac{62}{45}(2x+3)^{5/2}+\frac{526}{81}(2x+3)^{3/2}+\frac{3278}{81}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\Bigg(\sqrt{\frac{3}{5}}\sqrt{2x$$

```
[Out] 526/81*(3+2*x)^(3/2)+62/45*(3+2*x)^(5/2)-2/21*(3+2*x)^(7/2)+12*arctanh((3+2
*x)^(1/2))-4250/243*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+3278/81*(3
+2*x)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 94, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{21}(2x+3)^{7/2}+\frac{62}{45}(2x+3)^{5/2}+\frac{526}{81}(2x+3)^{3/2}+\frac{3278}{81}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\Bigg(\sqrt{\frac{3}{5}}\sqrt{2x$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (3278*Sqrt[3 + 2*x])/81 + (526*(3 + 2*x)^(3/2))/81 + (62*(3 + 2*x)^(5/2))/4
5 - (2*(3 + 2*x)^(7/2))/21 + 12*ArcTanh[Sqrt[3 + 2*x]] - (4250*Sqrt[5/3]*Ar
cTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/81
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{7/2}}{2+5x+3x^2}\,dx &= -\frac{2}{21}(3+2x)^{7/2}+\frac{1}{3}\int \frac{(3+2x)^{5/2}(49+31x)}{2+5x+3x^2}\,dx \\
&= \frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}+\frac{1}{9}\int \frac{(3+2x)^{3/2}(317+263x)}{2+5x+3x^2}\,dx \\
&= \frac{526}{81}(3+2x)^{3/2}+\frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}+\frac{1}{27}\int \frac{\sqrt{3+2x}\,(1801+1639x)}{2+5x+3x^2}\,d \\
&= \frac{3278}{81}\sqrt{3+2x}+\frac{526}{81}(3+2x)^{3/2}+\frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}+\frac{1}{81}\int \frac{965}{\sqrt{3+2x}} \\
&= \frac{3278}{81}\sqrt{3+2x}+\frac{526}{81}(3+2x)^{3/2}+\frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}+\frac{2}{81}\,\text{Subst}\Bigg(\int \\
&= \frac{3278}{81}\sqrt{3+2x}+\frac{526}{81}(3+2x)^{3/2}+\frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}-36\,\text{Subst}\Bigg(\int \\
&= \frac{3278}{81}\sqrt{3+2x}+\frac{526}{81}(3+2x)^{3/2}+\frac{62}{45}(3+2x)^{5/2}-\frac{2}{21}(3+2x)^{7/2}+12\tanh^{-1}\left(\sqrt{3}\right.
\end{aligned}
$$

Mathematica [A] time = 0.07, size = 70, normalized size = 0.74

$$-\frac{8\sqrt{2x+3}\left(270x^3-738x^2-8639x-24728\right)}{2835}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4250}{81}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-8*Sqrt[3 + 2*x]*(-24728 - 8639*x - 738*x^2 + 270*x^3))/2835 + 12*ArcTanh[
Sqrt[3 + 2*x]] - (4250*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/81
```

fricas [A] time = 0.48, size = 86, normalized size = 0.91

$$\frac{2125}{243}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)-\frac{8}{2835}\left(270x^3-738x^2-8639x-24728\right)\sqrt{2x+3}+6\log\left(\sqrt{}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 2125/243*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*
x + 2)) - 8/2835*(270*x^3 - 738*x^2 - 8639*x - 24728)*sqrt(2*x + 3) + 6*log
(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [A] time = 0.22, size = 101, normalized size = 1.07

$$-\frac{2}{21}(2x+3)^{\frac{7}{2}}+\frac{62}{45}(2x+3)^{\frac{5}{2}}+\frac{526}{81}(2x+3)^{\frac{3}{2}}+\frac{2125}{243}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{3278}{81}\sqrt{2x+3}+6\,\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/21*(2*x + 3)^(7/2) + 62/45*(2*x + 3)^(5/2) + 526/81*(2*x + 3)^(3/2) + 21
25/243*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) + 3278/81*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(ab
s(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 80, normalized size = 0.85

$$-\frac{4250\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{243}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}\ +1\right)-\frac{2\,(2x+3)^{\frac{7}{2}}}{21}+\frac{62\,(2x+3)^{\frac{5}{2}}}{45}+\frac{526\,(2}{8}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/21*(2*x+3)^(7/2)+62/45*(2*x+3)^(5/2)+526/81*(2*x+3)^(3/2)+3278/81*(2*x+3
)^(1/2)-4250/243*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^
(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 1.22, size = 97, normalized size = 1.03

$$-\frac{2}{21}\,(2\,x+3)^{\frac{7}{2}}+\frac{62}{45}\,(2\,x+3)^{\frac{5}{2}}+\frac{526}{81}\,(2\,x+3)^{\frac{3}{2}}+\frac{2125}{243}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}\,-3\,\sqrt{2\,x+3}}{\sqrt{15}\,+3\,\sqrt{2\,x+3}}\right)+\frac{3278}{81}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/21*(2*x + 3)^(7/2) + 62/45*(2*x + 3)^(5/2) + 526/81*(2*x + 3)^(3/2) + 21
25/243*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) + 3278/81*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x +
3) - 1)
```

mupad [**B**] time = 2.38, size = 71, normalized size = 0.76

$$\frac{3278\,\sqrt{2\,x+3}}{81}+\frac{526\,{\left(2\,x+3\right)}^{3/2}}{81}+\frac{62\,{\left(2\,x+3\right)}^{5/2}}{45}-\frac{2\,{\left(2\,x+3\right)}^{7/2}}{21}-\operatorname{atan}\left(\sqrt{2\,x+3}\ 1\mathrm{i}\right)\,12\mathrm{i}+\frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1\mathrm{i}}{5}\right.}{243}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*4250i)/243 - atan((2*x + 3)
^(1/2)*1i)*12i + (3278*(2*x + 3)^(1/2))/81 + (526*(2*x + 3)^(3/2))/81 + (62
*(2*x + 3)^(5/2))/45 - (2*(2*x + 3)^(7/2))/21
```

sympy [**A**] time = 113.48, size = 138, normalized size = 1.47

$$-\frac{2\,(2x+3)^{\frac{7}{2}}}{21}+\frac{62\,(2x+3)^{\frac{5}{2}}}{45}+\frac{526\,(2x+3)^{\frac{3}{2}}}{81}+\frac{3278\sqrt{2x+3}}{81}+\frac{21250\left(\begin{cases}-\frac{\sqrt{15}\ \operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{81}-6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(7/2)/21 + 62*(2*x + 3)**(5/2)/45 + 526*(2*x + 3)**(3/2)/81 +
 3278*sqrt(2*x + 3)/81 + 21250*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x
 + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15,
 2*x + 3 < 5/3))/81 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2551 $\int \frac{(5-x)(3+2x)^{5/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=81

$$-\frac{2}{15}(2x+3)^{5/2}+\frac{62}{27}(2x+3)^{3/2}+\frac{526}{27}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 62/27*(3+2*x)^(3/2)-2/15*(3+2*x)^(5/2)+12*arctanh((3+2*x)^(1/2))-850/81*arc
tanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+526/27*(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{15}(2x+3)^{5/2}+\frac{62}{27}(2x+3)^{3/2}+\frac{526}{27}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (526*Sqrt[3 + 2*x])/27 + (62*(3 + 2*x)^(3/2))/27 - (2*(3 + 2*x)^(5/2))/15 +
 12*ArcTanh[Sqrt[3 + 2*x]] - (850*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/27
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{5/2}}{2+5x+3x^2}\,dx &= -\frac{2}{15}(3+2x)^{5/2}+\frac{1}{3}\int \frac{(3+2x)^{3/2}(49+31x)}{2+5x+3x^2}\,dx\\ &= \frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{1}{9}\int \frac{\sqrt{3+2x}\,(317+263x)}{2+5x+3x^2}\,dx\\ &= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{1}{27}\int \frac{1801+1639x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx\\ &= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+\frac{2}{27}\,\mathrm{Subst}\left(\int \frac{-1315+1639x^2}{5-8x^2+3x^4}\,dx,x,\right.\\ &= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}-36\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right.\\ &= \frac{526}{27}\sqrt{3+2x}+\frac{62}{27}(3+2x)^{3/2}-\frac{2}{15}(3+2x)^{5/2}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{850}{27}\sqrt{\frac{5}{3}}\,\tanh\end{aligned}$$

Mathematica [A] time = 0.07, size = 64, normalized size = 0.79

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2}{405}\left(3\sqrt{2x+3}\left(36x^2-202x-1699\right)+2125\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (2*(3*Sqrt[3 + 2*x]*(-1699 - 202*x + 36*x^2) +
2125*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/405
```

fricas [A] time = 0.55, size = 81, normalized size = 1.00

$$\frac{425}{81}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)-\frac{2}{135}\left(36x^2-202x-1699\right)\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\,\mathrm{lo}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 425/81*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x
+ 2)) - 2/135*(36*x^2 - 202*x - 1699)*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) +
 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [A] time = 0.18, size = 92, normalized size = 1.14

$$-\frac{2}{15}(2x+3)^{\frac{5}{2}}+\frac{62}{27}(2x+3)^{\frac{3}{2}}+\frac{425}{81}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{526}{27}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/15*(2*x + 3)^(5/2) + 62/27*(2*x + 3)^(3/2) + 425/81*sqrt(15)*log(1/2*abs
(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 526/27*sqrt
(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 71, normalized size = 0.88

$$-\frac{850\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{81}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{2\,(2x+3)^{\frac{5}{2}}}{15}+\frac{62\,(2x+3)^{\frac{3}{2}}}{27}+\frac{526\sqrt{2x}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/15*(2*x+3)^(5/2)+62/27*(2*x+3)^(3/2)+526/27*(2*x+3)^(1/2)-850/81*arctanh
(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)
^(1/2))
```

maxima [A] time = 1.13, size = 88, normalized size = 1.09

$$-\frac{2}{15}\,(2\,x+3)^{\frac{5}{2}}+\frac{62}{27}\,(2\,x+3)^{\frac{3}{2}}+\frac{425}{81}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}\,-3\,\sqrt{2\,x+3}}{\sqrt{15}\,+3\,\sqrt{2\,x+3}}\right)+\frac{526}{27}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2\,x+3}\,+1\right)-6$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/15*(2*x + 3)^(5/2) + 62/27*(2*x + 3)^(3/2) + 425/81*sqrt(15)*log(-(sqrt(
15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 526/27*sqrt(2*x + 3)
 + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 62, normalized size = 0.77

$$\frac{526\,\sqrt{2\,x+3}}{27}+\frac{62\,{(2\,x+3)}^{3/2}}{27}-\frac{2\,{(2\,x+3)}^{5/2}}{15}-\mathrm{atan}\left(\sqrt{2\,x+3}\,1{}\mathrm{i}\right)\,12{}\mathrm{i}+\frac{\sqrt{15}\,\mathrm{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1{}\mathrm{i}}{5}\right)\,850{}\mathrm{i}}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*850i)/81 - atan((2*x + 3)^(
1/2)*1i)*12i + (526*(2*x + 3)^(1/2))/27 + (62*(2*x + 3)^(3/2))/27 - (2*(2*x
 + 3)^(5/2))/15
```

sympy [A] time = 83.33, size = 126, normalized size = 1.56

$$-\frac{2(2x+3)^{\frac{5}{2}}}{15}+\frac{62(2x+3)^{\frac{3}{2}}}{27}+\frac{526\sqrt{2x+3}}{27}+\frac{4250\left(\begin{cases}-\frac{\sqrt{15}\operatorname{acoth}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\: 2x+3>\frac{5}{3}\\-\frac{\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\: 2x+3<\frac{5}{3}\end{cases}\right)}{27}-6\log\left(\sqrt{2x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(5/2)/15 + 62*(2*x + 3)**(3/2)/27 + 526*sqrt(2*x + 3)/27 + 42
50*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3),
 (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/27 - 6*log(
sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2552 $\int \frac{(5-x)(3+2x)^{3/2}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=68

$$-\frac{2}{9}(2x+3)^{3/2}+\frac{62}{9}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -2/9*(3+2*x)^(3/2)+12*arctanh((3+2*x)^(1/2))-170/27*arctanh(1/5*15^(1/2)*(3
+2*x)^(1/2))*15^(1/2)+62/9*(3+2*x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{9}(2x+3)^{3/2}+\frac{62}{9}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (62*Sqrt[3 + 2*x])/9 - (2*(3 + 2*x)^(3/2))/9 + 12*ArcTanh[Sqrt[3 + 2*x]] -
(170*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{3/2}}{2+5x+3x^2}\,dx = -\frac{2}{9}(3+2x)^{3/2}+\frac{1}{3}\int \frac{\sqrt{3+2x}\,(49+31x)}{2+5x+3x^2}\,dx$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+\frac{1}{9}\int\frac{317+263x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+\frac{2}{9}\,\text{Subst}\left(\int\frac{-155+263x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)$$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}-36\,\text{Subst}\left(\int\frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)+\frac{850}{9}\,\text{Subst}\Big($$
$$= \frac{62}{9}\sqrt{3+2x}-\frac{2}{9}(3+2x)^{3/2}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{170}{9}\sqrt{\frac{5}{3}}\,\tanh^{-1}\Big(\sqrt{\frac{3}{5}}\,\sqrt{3+2}$$

Mathematica [A] time = 0.03, size = 56, normalized size = 0.82

$$-\frac{2}{27}\left(6\sqrt{2x+3}\,(x-14)-162\tanh^{-1}\left(\sqrt{2x+3}\right)+85\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*(6*(-14 + x)*Sqrt[3 + 2*x] - 162*ArcTanh[Sqrt[3 + 2*x]] + 85*Sqrt[15]*A
rcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/27
```

fricas [A] time = 0.64, size = 74, normalized size = 1.09

$$\frac{85}{27}\sqrt{5}\sqrt{3}\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)-\frac{4}{9}\sqrt{2x+3}\,(x-14)+6\log\left(\sqrt{2x+3}+1\right)-6\log\Big(\sqrt{2x+3}-1$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 85/27*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x +
 2)) - 4/9*sqrt(2*x + 3)*(x - 14) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2
*x + 3) - 1)
```

giac [A] time = 0.18, size = 83, normalized size = 1.22

$$-\frac{2}{9}(2x+3)^{\frac{3}{2}}+\frac{85}{27}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{62}{9}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\log\Big(\Big|\sqrt{2x+3}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] -2/9*(2*x + 3)^(3/2) + 85/27*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x
+ 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 62/9*sqrt(2*x + 3) + 6*log(sqrt(2*x +
 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 62, normalized size = 0.91

$$-\frac{170\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{27}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{2\,(2x+3)^{\frac{3}{2}}}{9}+\frac{62\sqrt{2x+3}}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/9*(2*x+3)^(3/2)+62/9*(2*x+3)^(1/2)-170/27*arctanh(1/5*15^(1/2)*(2*x+3)^(
1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.20, size = 79, normalized size = 1.16

$$-\frac{2}{9}\,(2\,x+3)^{\frac{3}{2}}+\frac{85}{27}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{62}{9}\,\sqrt{2\,x+3}+6\,\log\left(\sqrt{2\,x+3}+1\right)-6\,\log\left(\sqrt{2\,x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] -2/9*(2*x + 3)^(3/2) + 85/27*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sq
rt(15) + 3*sqrt(2*x + 3))) + 62/9*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1)
- 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 53, normalized size = 0.78

$$\frac{62\,\sqrt{2\,x+3}}{9}-\frac{2\,{(2\,x+3)}^{3/2}}{9}-\mathrm{atan}\left(\sqrt{2\,x+3}\,1\mathrm{i}\right)\,12\mathrm{i}+\frac{\sqrt{15}\,\mathrm{atan}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}\,1\mathrm{i}}{5}\right)\,170\mathrm{i}}{27}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*170i)/27 - atan((2*x + 3)^(
1/2)*1i)*12i + (62*(2*x + 3)^(1/2))/9 - (2*(2*x + 3)^(3/2))/9
```

sympy [A] time = 59.21, size = 114, normalized size = 1.68

$$-\frac{2(2x+3)^{\frac{3}{2}}}{9}+\frac{62\sqrt{2x+3}}{9}+\frac{850\left(\begin{cases}-\frac{\sqrt{15}\operatorname{acoth}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\: 2x+3>\frac{5}{3}\\-\frac{\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{15} & \text{for}\: 2x+3<\frac{5}{3}\end{cases}\right)}{9}-6\log\left(\sqrt{2x+3}-1\right)+6\log\bigl(\sqrt{2x+3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*(2*x + 3)**(3/2)/9 + 62*sqrt(2*x + 3)/9 + 850*Piecewise((-sqrt(15)*acoth
(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sq
rt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/9 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqr
t(2*x + 3) + 1)
```

3.2553 $\int \frac{(5-x)\sqrt{3+2x}}{2+5x+3x^2}\,dx$

Optimal. Leaf size=55

$$-\frac{2}{3}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 12*arctanh((3+2*x)^(1/2))-34/9*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)
-2/3*(3+2*x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {824, 826, 1166, 207}

$$-\frac{2}{3}\sqrt{2x+3}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x])/3 + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[5/3]*ArcTanh[Sq
rt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{3+2x}}{2+5x+3x^2}\,dx &= -\frac{2}{3}\sqrt{3+2x} + \frac{1}{3}\int \frac{49+31x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{2}{3}\sqrt{3+2x} + \frac{2}{3}\,\mathrm{Subst}\left(\int \frac{5+31x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right) \\
&= -\frac{2}{3}\sqrt{3+2x} - 36\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x, \sqrt{3+2x}\right) + \frac{170}{3}\,\mathrm{Subst}\left(\int \frac{1}{-5+3x^2}\,dx, x,\right. \\
&= -\frac{2}{3}\sqrt{3+2x} + 12\tanh^{-1}\left(\sqrt{3+2x}\right) - \frac{34}{3}\sqrt{\frac{5}{3}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{3+2x}\right)
\end{aligned}
$$

Mathematica [A] time = 0.02, size = 55, normalized size = 1.00

$$
-\frac{2}{3}\sqrt{2x+3} + 12\tanh^{-1}\left(\sqrt{2x+3}\right) - \frac{34}{3}\sqrt{\frac{5}{3}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x])/3 + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[5/3]*ArcTanh[Sq
rt[3/5]*Sqrt[3 + 2*x]])/3
```

fricas [A] time = 0.57, size = 71, normalized size = 1.29

$$
\frac{17}{9}\,\sqrt{5}\,\sqrt{3}\,\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3} - 3\,x - 7}{3\,x+2}\right) - \frac{2}{3}\,\sqrt{2\,x+3} + 6\,\log\left(\sqrt{2\,x+3} + 1\right) - 6\,\log\left(\sqrt{2\,x+3} - 1\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 17/9*sqrt(5)*sqrt(3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x +
2)) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) -
1)
```

giac [A] time = 0.17, size = 74, normalized size = 1.35

$$
\frac{17}{9}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15} + 6\,\sqrt{2\,x+3}\right|}{2\,\left(\sqrt{15} + 3\,\sqrt{2\,x+3}\right)}\right) - \frac{2}{3}\,\sqrt{2\,x+3} + 6\,\log\left(\sqrt{2\,x+3} + 1\right) - 6\,\log\left(\left|\sqrt{2\,x+3} - 1\right|\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/9*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt
(2*x + 3))) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt
(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 53, normalized size = 0.96

$$
-\frac{34\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9} - 6\ln\left(-1+\sqrt{2x+3}\right) + 6\ln\left(\sqrt{2x+3}+1\right) - \frac{2\sqrt{2x+3}}{3}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2),x)
```

```
[Out] -2/3*(2*x+3)^(1/2)-34/9*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((
2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.30, size = 70, normalized size = 1.27

$$\frac{17}{9}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2}{3}\sqrt{2x+3}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/9*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3)
)) - 2/3*sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 0.07, size = 38, normalized size = 0.69

$$12\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{34\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{9}-\frac{2\sqrt{2x+3}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/9 - (2*(2*x + 3)^(1/2))/3
```

sympy [A] time = 8.20, size = 102, normalized size = 1.85

$$-\frac{2\sqrt{2x+3}}{3}+\frac{170\left(\begin{cases}-\frac{\sqrt{15}\,\mathrm{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{3}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2),x)
```

```
[Out] -2*sqrt(2*x + 3)/3 + 170*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/
5)/15, 2*x + 3 > 5/3), (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x +
 3 < 5/3))/3 - 6*log(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1)
```

3.2554 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=38

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

```
[Out] 12*arctanh((3+2*x)^(1/2))-34/15*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2
)
```

Rubi [A] time = 0.03, antiderivative size = 38, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 3, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.111, Rules used = {826, 1166, 207}

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (34*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{13-x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\ &= 34\,\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,x,\sqrt{3+2x}\right)-36\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right.\\ &= 12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)}{\sqrt{15}}\end{aligned}$$

Mathematica [A] time = 0.01, size = 38, normalized size = 1.00

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (34*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

fricas [A] time = 0.57, size = 56, normalized size = 1.47

$$\frac{17}{15}\sqrt{15}\log\left(-\frac{\sqrt{15}\sqrt{2x+3}-3x-7}{3x+2}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 17/15*sqrt(15)*log(-(sqrt(15)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 6*log(s
qrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

giac [B] time = 0.17, size = 65, normalized size = 1.71

$$\frac{17}{15}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] 17/15*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 44, normalized size = 1.16

$$-\frac{34\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)/(2*x+3)^(1/2),x)
```

```
[Out] -34/15*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)-6
*ln(-1+(2*x+3)^(1/2))
```

maxima [B] time = 1.18, size = 61, normalized size = 1.61

$$\frac{17}{15}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 17/15*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 29, normalized size = 0.76

$$12\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{34\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{15}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/15
```

sympy [A] time = 82.71, size = 95, normalized size = 2.50

$$34\left(\begin{cases}-\frac{\sqrt{15}\,\mathrm{acoth}\left(\frac{\sqrt{15}}{3\sqrt{2x+3}}\right)}{15} & \text{for}\ \frac{1}{2x+3}>\frac{3}{5}\\ -\frac{\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}}{3\sqrt{2x+3}}\right)}{15} & \text{for}\ \frac{1}{2x+3}<\frac{3}{5}\end{cases}\right)-6\log\left(-1+\frac{1}{\sqrt{2x+3}}\right)+6\log\left(1+\frac{1}{\sqrt{2x+3}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)/(3+2*x)**(1/2),x)
```

```
[Out] 34*Piecewise((-sqrt(15)*acoth(sqrt(15)/(3*sqrt(2*x + 3)))/15, 1/(2*x + 3) >
 3/5), (-sqrt(15)*atanh(sqrt(15)/(3*sqrt(2*x + 3)))/15, 1/(2*x + 3) < 3/5))
 - 6*log(-1 + 1/sqrt(2*x + 3)) + 6*log(1 + 1/sqrt(2*x + 3))
```

3.2555 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=55

$$-\frac{26}{5\sqrt{2x+3}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 12*arctanh((3+2*x)^(1/2))-34/25*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2
)-26/5/(3+2*x)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 55, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{26}{5\sqrt{2x+3}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(5*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[3/5]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx &= -\frac{26}{5\sqrt{3+2x}}+\frac{1}{5}\int \frac{-9-39x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{26}{5\sqrt{3+2x}}+\frac{2}{5}\,\mathrm{Subst}\left(\int \frac{99-39x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\ &= -\frac{26}{5\sqrt{3+2x}}+\frac{102}{5}\,\mathrm{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,x,\sqrt{3+2x}\right)-36\,\mathrm{Subst}\left(\int \frac{1}{-3+}\right.\\ &= -\frac{26}{5\sqrt{3+2x}}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)\end{aligned}$$

Mathematica [A] time = 0.04, size = 55, normalized size = 1.00

$$-\frac{26}{5\sqrt{2x+3}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{34}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(5*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (34*Sqrt[3/5]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/5
```

fricas [B] time = 0.53, size = 95, normalized size = 1.73

$$\frac{17\sqrt{5}\sqrt{3}\,(2x+3)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+150\,(2x+3)\log\left(\sqrt{2x+3}+1\right)-150\,(2x+3)\log\left(\sqrt{2x+3}-1\right.}{25\,(2x+3)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/25*(17*sqrt(5)*sqrt(3)*(2*x + 3)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*
x - 7)/(3*x + 2)) + 150*(2*x + 3)*log(sqrt(2*x + 3) + 1) - 150*(2*x + 3)*lo
g(sqrt(2*x + 3) - 1) - 130*sqrt(2*x + 3))/(2*x + 3)
```

giac [A] time = 0.18, size = 74, normalized size = 1.35

$$\frac{17}{25}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{26}{5\sqrt{2x+3}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 17/25*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) - 26/5/sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(abs(sq
rt(2*x + 3) - 1))
```

maple [A] time = 0.01, size = 53, normalized size = 0.96

$$-\frac{34\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2),x)
```

```
[Out] -26/5/(2*x+3)^(1/2)-34/25*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln
((2*x+3)^(1/2)+1)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.37, size = 70, normalized size = 1.27

$$\frac{17}{25}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{26}{5\sqrt{2x+3}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 17/25*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) - 26/5/sqrt(2*x + 3) + 6*log(sqrt(2*x + 3) + 1) - 6*log(sqrt(2*x + 3) -
 1)
```

mupad [B] time = 2.37, size = 38, normalized size = 0.69

$$12\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{34\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{25}-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - (34*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5
))/25 - 26/(5*(2*x + 3)^(1/2))
```

sympy [A] time = 76.67, size = 102, normalized size = 1.85

$$\frac{102\left(\begin{cases}-\frac{\sqrt{15}\,\mathrm{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{5}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)-\frac{26}{5\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2),x)
```

```
[Out] 102*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/5 - 6*log(
sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 26/(5*sqrt(2*x + 3))
```

3.2556 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=68

$$-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15(2x+3)^{3/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -26/15/(3+2*x)^(3/2)+12*arctanh((3+2*x)^(1/2))-102/125*arctanh(1/5*15^(1/2)
*(3+2*x)^(1/2))*15^(1/2)-198/25/(3+2*x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 68, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15(2x+3)^{3/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(15*(3 + 2*x)^(3/2)) - 198/(25*Sqrt[3 + 2*x]) + 12*ArcTanh[Sqrt[3 + 2*x
]] - (102*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx &= -\frac{26}{15(3+2x)^{3/2}}+\frac{1}{5}\int \frac{-9-39x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{1}{25}\int \frac{-147-297x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{2}{25}\text{Subst}\Bigg(\int \frac{597-297x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\\ &= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+\frac{306}{25}\text{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,x,\sqrt{3+2x}\right)-\\ &= -\frac{26}{15(3+2x)^{3/2}}-\frac{198}{25\sqrt{3+2x}}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{102}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\Bigg(\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 65, normalized size = 0.96

$$12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2\left(2970x+153\sqrt{15}(2x+3)^{3/2}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)+4780\right)}{375(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] 12*ArcTanh[Sqrt[3 + 2*x]] - (2*(4780 + 2970*x + 153*Sqrt[15]*(3 + 2*x)^(3/2
)*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/(375*(3 + 2*x)^(3/2))
```

fricas [**B**] time = 0.82, size = 120, normalized size = 1.76

$$\frac{153\sqrt{5}\sqrt{3}\left(4x^2+12x+9\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+2250\left(4x^2+12x+9\right)\log\left(\sqrt{2x+3}+1\right)-2250\,(4x}{375\left(4x^2+12x+9\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/375*(153*sqrt(5)*sqrt(3)*(4*x^2 + 12*x + 9)*log(-(sqrt(5)*sqrt(3)*sqrt(2*
x + 3) - 3*x - 7)/(3*x + 2)) + 2250*(4*x^2 + 12*x + 9)*log(sqrt(2*x + 3) +
1) - 2250*(4*x^2 + 12*x + 9)*log(sqrt(2*x + 3) - 1) - 20*(297*x + 478)*sqrt
(2*x + 3))/(4*x^2 + 12*x + 9)
```

giac [**A**] time = 0.17, size = 79, normalized size = 1.16

$$\frac{51}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{4(297x+478)}{75(2x+3)^{\frac{3}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+3}-1\right|\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 51/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) - 4/75*(297*x + 478)/(2*x + 3)^(3/2) + 6*log(sqrt(2*x + 3) +
1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.01, size = 62, normalized size = 0.91

$$-\frac{102\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\sqrt{2x+3}}{5}\right)}{125}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{26}{15(2x+3)^{\frac{3}{2}}}-\frac{198}{25\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2),x)
```

```
[Out] -102/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)
-26/15/(2*x+3)^(3/2)-198/25/(2*x+3)^(1/2)-6*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.21, size = 75, normalized size = 1.10

$$\frac{51}{125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{4(297x+478)}{75(2x+3)^{\frac{3}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}-1\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 51/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) - 4/75*(297*x + 478)/(2*x + 3)^(3/2) + 6*log(sqrt(2*x + 3) + 1) - 6*lo
g(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 43, normalized size = 0.63

$$12\,\mathrm{atanh}\left(\sqrt{2x+3}\right)-\frac{\frac{396x}{25}+\frac{1912}{75}}{(2x+3)^{3/2}}-\frac{102\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - ((396*x)/25 + 1912/75)/(2*x + 3)^(3/2) - (102*1
5^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125
```

sympy [A] time = 105.82, size = 114, normalized size = 1.68

$$\frac{306\left(\begin{cases}-\frac{\sqrt{15}\,\mathrm{acoth}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\ -\frac{\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{25}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)-\frac{198}{25\sqrt{2x+3}}-\frac{26}{15\,(2x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2),x)
```

```
[Out] 306*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/25 - 6*log
(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 198/(25*sqrt(2*x + 3)) - 2
6/(15*(2*x + 3)**(3/2))
```

3.2557 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx$

Optimal. Leaf size=81

$$-\frac{1194}{125\sqrt{2x+3}}-\frac{66}{25(2x+3)^{3/2}}-\frac{26}{25(2x+3)^{5/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{306}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -26/25/(3+2*x)^(5/2)-66/25/(3+2*x)^(3/2)+12*arctanh((3+2*x)^(1/2))-306/625*
arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)-1194/125/(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {828, 826, 1166, 207}

$$-\frac{1194}{125\sqrt{2x+3}}-\frac{66}{25(2x+3)^{3/2}}-\frac{26}{25(2x+3)^{5/2}}+12\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{306}{125}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] -26/(25*(3 + 2*x)^(5/2)) - 66/(25*(3 + 2*x)^(3/2)) - 1194/(125*Sqrt[3 + 2*x
]) + 12*ArcTanh[Sqrt[3 + 2*x]] - (306*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
2*x]])/125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx &= -\frac{26}{25(3+2x)^{5/2}}+\frac{1}{5}\int \frac{-9-39x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}+\frac{1}{25}\int \frac{-147-297x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{1}{125}\int \frac{-1041-1791x}{\sqrt{3+2x}\left(2+5x+3\right.} \\
&= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{2}{125}\operatorname{Subst}\left(\int \frac{3291-1791}{5-8x^2+3}\right. \\
&= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+\frac{918}{125}\operatorname{Subst}\left(\int \frac{1}{-5+3x^2}\,dx,\right. \\
&= -\frac{26}{25(3+2x)^{5/2}}-\frac{66}{25(3+2x)^{3/2}}-\frac{1194}{125\sqrt{3+2x}}+12\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{306}{125}
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 63, normalized size = 0.78

$$
\frac{2}{625}\left(-\frac{5\left(2388x^2+7494x+5933\right)}{(2x+3)^{5/2}}+3750\tanh^{-1}\left(\sqrt{2x+3}\right)-153\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)),x]
```

```
[Out] (2*((-5*(5933 + 7494*x + 2388*x^2))/(3 + 2*x)^(5/2) + 3750*ArcTanh[Sqrt[3 +
 2*x]] - 153*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]))/625
```

fricas [B] time = 0.85, size = 145, normalized size = 1.79

$$
\frac{153\sqrt{5}\sqrt{3}\left(8x^3+36x^2+54x+27\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+3750\left(8x^3+36x^2+54x+27\right)\log\left(\sqrt{2x+3}\right.}{625\left(8x^3+36x^2+54\right.}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="fricas")
```

```
[Out] 1/625*(153*sqrt(5)*sqrt(3)*(8*x^3 + 36*x^2 + 54*x + 27)*log(-(sqrt(5)*sqrt(
3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 3750*(8*x^3 + 36*x^2 + 54*x + 27)*
log(sqrt(2*x + 3) + 1) - 3750*(8*x^3 + 36*x^2 + 54*x + 27)*log(sqrt(2*x + 3
) - 1) - 10*(2388*x^2 + 7494*x + 5933)*sqrt(2*x + 3))/(8*x^3 + 36*x^2 + 54*
x + 27)
```

giac [A] time = 0.17, size = 88, normalized size = 1.09

$$
\frac{153}{625}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(597(2x+3)^2+330x+560\right)}{125(2x+3)^{\frac{5}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\left|\sqrt{2x+\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="giac")
```

```
[Out] 153/625*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 2/125*(597*(2*x + 3)^2 + 330*x + 560)/(2*x + 3)^(5/2) + 6*
log(sqrt(2*x + 3) + 1) - 6*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 71, normalized size = 0.88

$$-\frac{306\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{625}-6\ln\left(-1+\sqrt{2x+3}\right)+6\ln\left(\sqrt{2x+3}+1\right)-\frac{26}{25\left(2x+3\right)^{\frac{5}{2}}}-\frac{66}{25\left(2x+3\right)^{\frac{3}{2}}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2),x)
```

```
[Out] -306/625*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+6*ln((2*x+3)^(1/2)+1)
-26/25/(2*x+3)^(5/2)-66/25/(2*x+3)^(3/2)-1194/125/(2*x+3)^(1/2)-6*ln(-1+(2*
x+3)^(1/2))
```

maxima [A] time = 1.04, size = 84, normalized size = 1.04

$$\frac{153}{625}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(597\left(2x+3\right)^{2}+330x+560\right)}{125\left(2x+3\right)^{\frac{5}{2}}}+6\log\left(\sqrt{2x+3}+1\right)-6\log\left(\sqrt{2x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2),x, algorithm="maxima")
```

```
[Out] 153/625*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 2/125*(597*(2*x + 3)^2 + 330*x + 560)/(2*x + 3)^(5/2) + 6*log(sqrt(
2*x + 3) + 1) - 6*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 52, normalized size = 0.64

$$12\operatorname{atanh}\left(\sqrt{2x+3}\right)-\frac{\frac{132x}{25}+\frac{1194\left(2x+3\right)^{2}}{125}+\frac{224}{25}}{\left(2x+3\right)^{5/2}}-\frac{306\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{625}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)),x)
```

```
[Out] 12*atanh((2*x + 3)^(1/2)) - ((132*x)/25 + (1194*(2*x + 3)^2)/125 + 224/25)/
(2*x + 3)^(5/2) - (306*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/625
```

sympy [A] time = 94.03, size = 126, normalized size = 1.56

$$\frac{918\left(\begin{cases}-\frac{\sqrt{15}\ \operatorname{acoth}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3>\frac{5}{3}\\-\frac{\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15} & \text{for}\ 2x+3<\frac{5}{3}\end{cases}\right)}{125}-6\log\left(\sqrt{2x+3}-1\right)+6\log\left(\sqrt{2x+3}+1\right)-\frac{1194}{125\sqrt{2x+3}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2),x)
```

```
[Out] 918*Piecewise((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3)
, (-sqrt(15)*atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3))/125 - 6*lo
g(sqrt(2*x + 3) - 1) + 6*log(sqrt(2*x + 3) + 1) - 1194/(125*sqrt(2*x + 3))
- 66/(25*(2*x + 3)**(3/2)) - 26/(25*(2*x + 3)**(5/2))
```

3.2558 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=98

$$-\frac{(139x+121)(2x+3)^{5/2}}{3\left(3x^2+5x+2\right)}+\frac{826}{27}(2x+3)^{3/2}+\frac{1358}{27}\sqrt{2x+3}-154\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{2800}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+}\right.$$

```
[Out] 826/27*(3+2*x)^(3/2)-1/3*(3+2*x)^(5/2)*(121+139*x)/(3*x^2+5*x+2)-154*arctan
h((3+2*x)^(1/2))+2800/81*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+1358/
27*(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{5/2}}{3\left(3x^2+5x+2\right)}+\frac{826}{27}(2x+3)^{3/2}+\frac{1358}{27}\sqrt{2x+3}-154\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{2800}{27}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] (1358*Sqrt[3 + 2*x])/27 + (826*(3 + 2*x)^(3/2))/27 - ((3 + 2*x)^(5/2)*(121
+ 139*x))/(3*(2 + 5*x + 3*x^2)) - 154*ArcTanh[Sqrt[3 + 2*x]] + (2800*Sqrt[5
/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/27
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{(3+2x)^{3/2}(182+413x)}{2+5x+3x^2}\,dx\\
&= \frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{9}\int \frac{\sqrt{3+2x}\,(-14+679x)}{2+5x+3x^2}\,dx\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{27}\int \frac{-2842-7}{\sqrt{3+2x}\,(2+5}\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{27}\,\mathrm{Subst}\left(\int \frac{-3395\,-}{5-8x^2}\right.\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}+462\,\mathrm{Subst}\left(\int \frac{1}{-3+3}\right.\\
&= \frac{1358}{27}\sqrt{3+2x}+\frac{826}{27}(3+2x)^{3/2}-\frac{(3+2x)^{5/2}(121+139x)}{3\left(2+5x+3x^2\right)}-154\tanh^{-1}\left(\sqrt{3+2x}\right)
\end{aligned}
$$

Mathematica [A] time = 0.09, size = 81, normalized size = 0.83

$$
\frac{1}{81}\left(2800\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)-\frac{3\sqrt{2x+3}\,\left(48x^3-400x^2+1843x+2129\right)}{3x^2+5x+2}\right)-154\tanh^{-1}\left(\sqrt{2x+3}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -154*ArcTanh[Sqrt[3 + 2*x]] + ((-3*Sqrt[3 + 2*x]*(2129 + 1843*x - 400*x^2 +
 48*x^3))/(2 + 5*x + 3*x^2) + 2800*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/81
```

fricas [A] time = 0.92, size = 129, normalized size = 1.32

$$
\frac{1400\,\sqrt{5}\,\sqrt{3}\left(3\,x^2+5\,x+2\right)\log\left(\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}+3\,x+7}{3\,x+2}\right)-6237\left(3\,x^2+5\,x+2\right)\log\left(\sqrt{2\,x+3}+1\right)+6237\left(3\,x^2+\right.}{81\left(3\,x^2+5\,x+2\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/81*(1400*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x
+ 3) + 3*x + 7)/(3*x + 2)) - 6237*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1)
+ 6237*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 3*(48*x^3 - 400*x^2 + 184
3*x + 2129)*sqrt(2*x + 3))/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.18, size = 120, normalized size = 1.22

$$-\frac{8}{27}(2x+3)^{\frac{3}{2}}-\frac{1400}{81}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{184}{27}\sqrt{2x+3}-\frac{2\left(2611(2x+3)^{\frac{3}{2}}-2935\sqrt{2x+3}\right)}{27\left(3(2x+3)^{2}-16x-19\right)}-7$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -8/27*(2*x + 3)^(3/2) - 1400/81*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2
*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3))) + 184/27*sqrt(2*x + 3) - 2/27*(2611*
(2*x + 3)^(3/2) - 2935*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19) - 77*log(
sqrt(2*x + 3) + 1) + 77*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.03, size = 104, normalized size = 1.06

$$\frac{2800\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{81}+77\ln\left(-1+\sqrt{2x+3}\right)-77\ln\left(\sqrt{2x+3}+1\right)-\frac{8(2x+3)^{\frac{3}{2}}}{27}+\frac{184\sqrt{2x+3}}{27}-\frac{4250\sqrt{}}{81\left(2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/27*(2*x+3)^(3/2)+184/27*(2*x+3)^(1/2)-4250/81*(2*x+3)^(1/2)/(4/3+2*x)+28
00/81*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)-77*l
n((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+77*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.23, size = 116, normalized size = 1.18

$$-\frac{8}{27}(2x+3)^{\frac{3}{2}}-\frac{1400}{81}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{184}{27}\sqrt{2x+3}-\frac{2\left(2611(2x+3)^{\frac{3}{2}}-2935\sqrt{2x+3}\right)}{27\left(3(2x+3)^{2}-16x-19\right)}-77\,\mathrm{l}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -8/27*(2*x + 3)^(3/2) - 1400/81*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/
(sqrt(15) + 3*sqrt(2*x + 3))) + 184/27*sqrt(2*x + 3) - 2/27*(2611*(2*x + 3)
^(3/2) - 2935*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19) - 77*log(sqrt(2*x
+ 3) + 1) + 77*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.06, size = 90, normalized size = 0.92

$$\frac{184\sqrt{2x+3}}{27}-\frac{\frac{5870\sqrt{2x+3}}{81}-\frac{5222(2x+3)^{3/2}}{81}}{\frac{16x}{3}-(2x+3)^{2}+\frac{19}{3}}-\frac{8(2x+3)^{3/2}}{27}+\operatorname{atan}\left(\sqrt{2x+3}\,1\mathrm{i}\right)154\mathrm{i}-\frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2x+3}\,1\mathrm{i}}{5}\right)2800}{81}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] atan((2*x + 3)^(1/2)*1i)*154i - ((5870*(2*x + 3)^(1/2))/81 - (5222*(2*x + 3
)^(3/2))/81)/((16*x)/3 - (2*x + 3)^2 + 19/3) - (15^(1/2)*atan((15^(1/2)*(2*
x + 3)^(1/2)*1i)/5)*2800i)/81 + (184*(2*x + 3)^(1/2))/27 - (8*(2*x + 3)^(3/
2))/27
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2559 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=81

$$-\frac{(139x+121)(2x+3)^{3/2}}{3\left(3x^2+5x+2\right)}+30\sqrt{2x+3}-130\tanh^{-1}\left(\sqrt{2x+3}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -1/3*(3+2*x)^(3/2)*(121+139*x)/(3*x^2+5*x+2)-130*arctanh((3+2*x)^(1/2))+100
/3*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+30*(3+2*x)^(1/2)
```

Rubi [A] time = 0.07, antiderivative size = 81, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{3/2}}{3\left(3x^2+5x+2\right)}+30\sqrt{2x+3}-130\tanh^{-1}\left(\sqrt{2x+3}\right)+100\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] 30*Sqrt[3 + 2*x] - ((3 + 2*x)^(3/2)*(121 + 139*x))/(3*(2 + 5*x + 3*x^2)) -
130*ArcTanh[Sqrt[3 + 2*x]] + 100*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
```

```
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{\sqrt{3+2x}\,(-60+135x)}{2+5x+3x^2}\,dx\\ &= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{9}\int \frac{-1080-495x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx\\ &= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{9}\,\mathrm{Subst}\left(\int \frac{-675-495x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right.\\ &= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}+390\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)-\\ &= 30\sqrt{3+2x}-\frac{(3+2x)^{3/2}(121+139x)}{3\left(2+5x+3x^2\right)}-130\tanh^{-1}\left(\sqrt{3+2x}\right)+100\sqrt{\frac{5}{3}}\,\tanh^{-1}\left(\right.\end{aligned}$$

Mathematica [A] time = 0.05, size = 92, normalized size = 1.14

$$-\frac{\sqrt{2x+3}\,\left(8x^2+209x+183\right)+390\left(3x^2+5x+2\right)\tanh^{-1}\left(\sqrt{2x+3}\right)-100\sqrt{15}\,\left(3x^2+5x+2\right)\tanh^{-1}\left(\sqrt{\frac{3}{5}}\right.}{9x^2+15x+6}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(183 + 209*x + 8*x^2) + 390*(2 + 5*x + 3*x^2)*ArcTanh[Sqrt
[3 + 2*x]] - 100*Sqrt[15]*(2 + 5*x + 3*x^2)*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]
])/(6 + 15*x + 9*x^2))
```

fricas [A] time = 0.75, size = 124, normalized size = 1.53

$$\frac{50\sqrt{5}\,\sqrt{3}\left(3\,x^2+5\,x+2\right)\log\left(\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}+3\,x+7}{3\,x+2}\right)-195\left(3\,x^2+5\,x+2\right)\log\left(\sqrt{2\,x+3}+1\right)+195\left(3\,x^2+5\,x\right.}{3\left(3\,x^2+5\,x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/3*(50*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x + 3
) + 3*x + 7)/(3*x + 2)) - 195*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 19
5*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - (8*x^2 + 209*x + 183)*sqrt(2*x
 + 3))/(3*x^2 + 5*x + 2)
```

giac [**A**] time = 0.30, size = 111, normalized size = 1.37

$$-\frac{50}{3}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{8}{9}\sqrt{2x+3}-\frac{2\left(587(2x+3)^{\frac{3}{2}}-695\sqrt{2x+3}\right)}{9\left(3(2x+3)^{2}-16x-19\right)}-65\log\left(\sqrt{2x+3}+1\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -50/3*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sqr
t(2*x + 3))) - 8/9*sqrt(2*x + 3) - 2/9*(587*(2*x + 3)^(3/2) - 695*sqrt(2*x
+ 3))/(3*(2*x + 3)^2 - 16*x - 19) - 65*log(sqrt(2*x + 3) + 1) + 65*log(abs(
sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 95, normalized size = 1.17

$$\frac{100\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{3}+65\ln\left(-1+\sqrt{2x+3}\right)-65\ln\left(\sqrt{2x+3}+1\right)-\frac{8\sqrt{2x+3}}{9}-\frac{850\sqrt{2x+3}}{27\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -8/9*(2*x+3)^(1/2)-850/27*(2*x+3)^(1/2)/(2*x+4/3)+100/3*arctanh(1/5*15^(1/2
)*(2*x+3)^(1/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)-65*ln((2*x+3)^(1/2)+1)-6/(-1+
(2*x+3)^(1/2))+65*ln(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 1.39, size = 107, normalized size = 1.32

$$-\frac{50}{3}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{8}{9}\sqrt{2x+3}-\frac{2\left(587(2x+3)^{\frac{3}{2}}-695\sqrt{2x+3}\right)}{9\left(3(2x+3)^{2}-16x-19\right)}-65\log\left(\sqrt{2x+3}+1\right)+65$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -50/3*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x + 3
))) - 8/9*sqrt(2*x + 3) - 2/9*(587*(2*x + 3)^(3/2) - 695*sqrt(2*x + 3))/(3*
(2*x + 3)^2 - 16*x - 19) - 65*log(sqrt(2*x + 3) + 1) + 65*log(sqrt(2*x + 3)
 - 1)
```

mupad [**B**] time = 0.08, size = 81, normalized size = 1.00

$$-\frac{\frac{1390\sqrt{2x+3}}{27}-\frac{1174(2x+3)^{3/2}}{27}}{\frac{16x}{3}-(2x+3)^{2}+\frac{19}{3}}-\frac{8\sqrt{2x+3}}{9}+\operatorname{atan}\left(\sqrt{2x+3}\;1\mathrm{i}\right)130\mathrm{i}-\frac{\sqrt{15}\,\operatorname{atan}\left(\frac{\sqrt{15}\,\sqrt{2x+3}\;1\mathrm{i}}{5}\right)100\mathrm{i}}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] atan((2*x + 3)^(1/2)*1i)*130i - ((1390*(2*x + 3)^(1/2))/27 - (1174*(2*x + 3
)^(3/2))/27)/((16*x)/3 - (2*x + 3)^2 + 19/3) - (15^(1/2)*atan((15^(1/2)*(2*
x + 3)^(1/2)*1i)/5)*100i)/3 - (8*(2*x + 3)^(1/2))/9
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2560 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=72

$$-\frac{\sqrt{2x+3}\,(139x+121)}{3\left(3x^2+5x+2\right)}-106\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -106*arctanh((3+2*x)^(1/2))+248/9*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1
/2)-1/3*(121+139*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(139x+121)}{3\left(3x^2+5x+2\right)}-106\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(121 + 139*x))/(3*(2 + 5*x + 3*x^2)) - 106*ArcTanh[Sqrt[3 +
 2*x]] + (248*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{1}{3}\int \frac{-302-143x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+\frac{2}{3}\,\text{Subst}\left(\int \frac{-175-143x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\ &= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}+318\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)-\frac{1240}{3}\,\text{Subst}\Bigg(\\ &= -\frac{\sqrt{3+2x}\,(121+139x)}{3\left(2+5x+3x^2\right)}-106\tanh^{-1}\left(\sqrt{3+2x}\right)+\frac{248}{3}\sqrt{\frac{5}{3}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{3+2x}\right.\end{aligned}$$

Mathematica [A] time = 0.05, size = 70, normalized size = 0.97

$$\frac{1}{9}\left(-\frac{3\sqrt{2x+3}\,(139x+121)}{3x^2+5x+2}-954\tanh^{-1}\left(\sqrt{2x+3}\right)+248\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] ((-3*Sqrt[3 + 2*x]*(121 + 139*x))/(2 + 5*x + 3*x^2) - 954*ArcTanh[Sqrt[3 +
2*x]] + 248*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9
```

fricas [B] time = 0.86, size = 119, normalized size = 1.65

$$\frac{124\sqrt{5}\,\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2x+3}+3x+7}{3x+2}\right)-477\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right)+477\left(3x^2+5x\right.}{9\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/9*(124*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x +
3) + 3*x + 7)/(3*x + 2)) - 477*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 4
77*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 3*(139*x + 121)*sqrt(2*x + 3)
)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.18, size = 102, normalized size = 1.42

$$-\frac{124}{9}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(139\,(2x+3)^{\frac{3}{2}}-175\sqrt{2x+3}\right)}{3\left(3\,(2x+3)^2-16x-19\right)}-53\log\left(\sqrt{2x+3}+1\right)+53\log\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -124/9*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) - 2/3*(139*(2*x + 3)^(3/2) - 175*sqrt(2*x + 3))/(3*(2*x + 3)^
2 - 16*x - 19) - 53*log(sqrt(2*x + 3) + 1) + 53*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 86, normalized size = 1.19

$$\frac{248\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{9}+53\ln\left(-1+\sqrt{2x+3}\right)-53\ln\left(\sqrt{2x+3}\ +1\right)-\frac{170\sqrt{2x+3}}{9\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}\ +1}-\frac{}{-1+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -170/9*(2*x+3)^(1/2)/(2*x+4/3)+248/9*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-53*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+53*l
n(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 1.37, size = 98, normalized size = 1.36

$$-\frac{124}{9}\sqrt{15}\log\left(-\frac{\sqrt{15}\ -3\sqrt{2x+3}}{\sqrt{15}\ +3\sqrt{2x+3}}\right)-\frac{2\left(139\,(2x+3)^{\frac{3}{2}}-175\sqrt{2x+3}\right)}{3\left(3\,(2x+3)^2-16x-19\right)}-53\log\left(\sqrt{2x+3}\ +1\right)+53\log\left(\sqrt{2x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -124/9*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) - 2/3*(139*(2*x + 3)^(3/2) - 175*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x
- 19) - 53*log(sqrt(2*x + 3) + 1) + 53*log(sqrt(2*x + 3) - 1)
```

mupad [**B**] time = 2.41, size = 66, normalized size = 0.92

$$\frac{248\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{9}-\frac{\frac{350\sqrt{2x+3}}{9}-\frac{278\,(2x+3)^{3/2}}{9}}{\frac{16x}{3}-(2x+3)^2+\frac{19}{3}}-106\operatorname{atanh}\left(\sqrt{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (248*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/9 - ((350*(2*x + 3)^(1/2
))/9 - (278*(2*x + 3)^(3/2))/9)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 106*atanh
((2*x + 3)^(1/2))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2561 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=66

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2}-82\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)}{\sqrt{15}}$$

```
[Out] -82*arctanh((3+2*x)^(1/2))+316/15*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1
/2)-(29+35*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.04, antiderivative size = 66, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {820, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2}-82\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(29 + 35*x))/(2 + 5*x + 3*x^2)) - 82*ArcTanh[Sqrt[3 + 2*x]
] + (316*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx &= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2}-\int \frac{76+35x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,dx\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2}-2\,\mathrm{Subst}\left(\int \frac{47+35x^2}{5-8x^2+3x^4}\,dx,x,\sqrt{3+2x}\right)\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2}+246\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{3+2x}\right)-316\,\mathrm{Subst}\Bigg(\int \frac{1}{-5+}\\ &= -\frac{\sqrt{3+2x}\,(29+35x)}{2+5x+3x^2}-82\tanh^{-1}\left(\sqrt{3+2x}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3+2x}\right)}{\sqrt{15}}\end{aligned}$$

Mathematica [**A**] time = 0.06, size = 66, normalized size = 1.00

$$-\frac{\sqrt{2x+3}\,(35x+29)}{3x^2+5x+2}-82\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{316\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{\sqrt{15}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^2,x]
```

```
[Out] -((Sqrt[3 + 2*x]*(29 + 35*x))/(2 + 5*x + 3*x^2)) - 82*ArcTanh[Sqrt[3 + 2*x]
] + (316*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/Sqrt[15]
```

fricas [**B**] time = 0.90, size = 113, normalized size = 1.71

$$\frac{158\sqrt{15}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{15}\sqrt{2x+3}+3x+7}{3x+2}\right)-615\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right)+615\left(3x^2+5x+2\right)\mathrm{lo}}{15\left(3x^2+5x+2\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/15*(158*sqrt(15)*(3*x^2 + 5*x + 2)*log((sqrt(15)*sqrt(2*x + 3) + 3*x + 7)
/(3*x + 2)) - 615*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) + 615*(3*x^2 + 5
*x + 2)*log(sqrt(2*x + 3) - 1) - 15*(35*x + 29)*sqrt(2*x + 3))/(3*x^2 + 5*x
 + 2)
```

giac [**A**] time = 0.18, size = 102, normalized size = 1.55

$$-\frac{158}{15}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(35(2x+3)^{\frac{3}{2}}-47\sqrt{2x+3}\right)}{3(2x+3)^2-16x-19}-41\log\left(\sqrt{2x+3}+1\right)+41\log\left(\left|\sqrt{2x}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -158/15*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 2*(35*(2*x + 3)^(3/2) - 47*sqrt(2*x + 3))/(3*(2*x + 3)^2 -
 16*x - 19) - 41*log(sqrt(2*x + 3) + 1) + 41*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 86, normalized size = 1.30

$$\frac{316\sqrt{15}\ \mathrm{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{15}+41\ln\left(-1+\sqrt{2x+3}\right)-41\ln\left(\sqrt{2x+3}+1\right)-\frac{34\sqrt{2x+3}}{3\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{6}{-1+\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -34/3*(2*x+3)^(1/2)/(2*x+4/3)+316/15*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-41*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+41*l
n(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.12, size = 98, normalized size = 1.48

$$-\frac{158}{15}\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(35\,(2x+3)^{\frac{3}{2}}-47\sqrt{2x+3}\right)}{3\,(2x+3)^{2}-16x-19}-41\,\log\left(\sqrt{2x+3}+1\right)+41\,\log\left(\sqrt{2x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -158/15*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 2*(35*(2*x + 3)^(3/2) - 47*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 1
9) - 41*log(sqrt(2*x + 3) + 1) + 41*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.40, size = 66, normalized size = 1.00

$$\frac{316\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{15}-\frac{\frac{94\sqrt{2x+3}}{3}-\frac{70\,(2x+3)^{3/2}}{3}}{\frac{16x}{3}-(2x+3)^{2}+\frac{19}{3}}-82\,\mathrm{atanh}\left(\sqrt{2x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^2,x)
```

```
[Out] (316*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/15 - ((94*(2*x + 3)^(1/2
))/3 - (70*(2*x + 3)^(3/2))/3)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 82*atanh((
2*x + 3)^(1/2))
```

sympy [A] time = 122.22, size = 212, normalized size = 3.21

$$340\left(\begin{cases}\frac{\sqrt{15}\left(-\frac{\log\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}-1\right)}{4}+\frac{\log\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}+1\right)}{4}-\frac{1}{4\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}+1\right)}-\frac{1}{4\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}-1\right)}\right)}{75} & \text{for}\ x\geq-\frac{3}{2}\wedge x<-\frac{2}{3}\end{cases}\right)-282\left(\begin{cases}-\sqrt{15}\\ -\sqrt{15}\end{cases}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] 340*Piecewise((sqrt(15)*(-log(sqrt(15)*sqrt(2*x + 3)/5 - 1)/4 + log(sqrt(15
)*sqrt(2*x + 3)/5 + 1)/4 - 1/(4*(sqrt(15)*sqrt(2*x + 3)/5 + 1)) - 1/(4*(sqr
t(15)*sqrt(2*x + 3)/5 - 1)))/75, (x >= -3/2) & (x < -2/3))) - 282*Piecewise
((-sqrt(15)*acoth(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 > 5/3), (-sqrt(15)*
atanh(sqrt(15)*sqrt(2*x + 3)/5)/15, 2*x + 3 < 5/3)) + 41*log(sqrt(2*x + 3)
- 1) - 41*log(sqrt(2*x + 3) + 1) - 6/(sqrt(2*x + 3) + 1) - 6/(sqrt(2*x + 3)
 - 1)
```

3.2562 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2} dx$

Optimal. Leaf size=72

$$-\frac{3\sqrt{2x+3}(47x+37)}{5\left(3x^2+5x+2\right)}-58\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -58*arctanh((3+2*x)^(1/2))+384/25*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1
/2)-3/5*(37+47*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.05, antiderivative size = 72, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {822, 826, 1166, 207}

$$-\frac{3\sqrt{2x+3}(47x+37)}{5\left(3x^2+5x+2\right)}-58\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{384}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) - 58*ArcTanh[Sqrt[3 +
2*x]] + (384*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
```

```
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - \frac{1}{5}\int \frac{286+141x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,dx \\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - \frac{2}{5}\,\mathrm{Subst}\left(\int \frac{149+141x^2}{5-8x^2+3x^4}\,dx, x, \sqrt{3+2x}\right) \\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} + 174\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx, x, \sqrt{3+2x}\right) - \frac{1152}{5}\,\mathrm{S} \\
&= -\frac{3\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)} - 58\tanh^{-1}\left(\sqrt{3+2x}\right) + \frac{384}{5}\sqrt{\frac{3}{5}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{3}
\end{aligned}
$$

Mathematica [A] time = 0.06, size = 72, normalized size = 1.00

$$
-\frac{3\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)} - 58\tanh^{-1}\left(\sqrt{2x+3}\right) + \frac{384}{5}\sqrt{\frac{3}{5}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)) - 58*ArcTanh[Sqrt[3 +
2*x]] + (384*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

fricas [B] time = 0.71, size = 119, normalized size = 1.65

$$
\frac{192\sqrt{5}\sqrt{3}\left(3x^2+5x+2\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right) - 725\left(3x^2+5x+2\right)\log\left(\sqrt{2x+3}+1\right) + 725\left(3x^2+5x\right.}{25\left(3x^2+5x+2\right)}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/25*(192*sqrt(5)*sqrt(3)*(3*x^2 + 5*x + 2)*log((sqrt(5)*sqrt(3)*sqrt(2*x +
 3) + 3*x + 7)/(3*x + 2)) - 725*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) + 1) +
725*(3*x^2 + 5*x + 2)*log(sqrt(2*x + 3) - 1) - 15*(47*x + 37)*sqrt(2*x + 3)
)/(3*x^2 + 5*x + 2)
```

giac [A] time = 0.17, size = 102, normalized size = 1.42

$$
-\frac{192}{25}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right) - \frac{6\left(47(2x+3)^{\frac{3}{2}}-67\sqrt{2x+3}\right)}{5\left(3(2x+3)^2-16x-19\right)} - 29\log\left(\sqrt{2x+3}+1\right) + 29\log\left(\left|\sqrt{\right.\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] -192/25*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) - 6/5*(47*(2*x + 3)^(3/2) - 67*sqrt(2*x + 3))/(3*(2*x + 3)^2
 - 16*x - 19) - 29*log(sqrt(2*x + 3) + 1) + 29*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 86, normalized size = 1.19

$$\frac{384\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{25}+29\ln\left(-1+\sqrt{2x+3}\right)-29\ln\left(\sqrt{2x+3}\ +1\right)-\frac{34\sqrt{2x+3}}{5\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}\ +1}-\frac{6}{-1+\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^2/(2*x+3)^(1/2),x)
```

```
[Out] -34/5*(2*x+3)^(1/2)/(2*x+4/3)+384/25*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15
^(1/2)-6/((2*x+3)^(1/2)+1)-29*ln((2*x+3)^(1/2)+1)-6/(-1+(2*x+3)^(1/2))+29*l
n(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.21, size = 98, normalized size = 1.36

$$-\frac{192}{25}\sqrt{15}\log\left(-\frac{\sqrt{15}\ -3\sqrt{2\,x+3}}{\sqrt{15}\ +3\sqrt{2\,x+3}}\right)-\frac{6\left(47\,(2\,x+3)^{\frac{3}{2}}-67\sqrt{2\,x+3}\right)}{5\left(3\,(2\,x+3)^{2}-16\,x-19\right)}-29\log\left(\sqrt{2\,x+3}\ +1\right)+29\log\left(\sqrt{2\,x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -192/25*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) - 6/5*(47*(2*x + 3)^(3/2) - 67*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x -
 19) - 29*log(sqrt(2*x + 3) + 1) + 29*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 66, normalized size = 0.92

$$\frac{384\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2\,x+3}}{5}\right)}{25}-\frac{\frac{134\sqrt{2\,x+3}}{5}-\frac{94\,(2\,x+3)^{3/2}}{5}}{\frac{16\,x}{3}-(2\,x+3)^{2}+\frac{19}{3}}-58\,\operatorname{atanh}\left(\sqrt{2\,x+3}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (384*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/25 - ((134*(2*x + 3)^(1/
2))/5 - (94*(2*x + 3)^(3/2))/5)/((16*x)/3 - (2*x + 3)^2 + 19/3) - 58*atanh(
(2*x + 3)^(1/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**2/(3+2*x)**(1/2),x)
```

```
[Out] Timed out
```

3.2563 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=85

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -34*arctanh((3+2*x)^(1/2))+1356/125*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^
(1/2)-506/25/(3+2*x)^(1/2)-3/5*(37+47*x)/(3*x^2+5*x+2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.06, antiderivative size = 85, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -506/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2
)) - 34*ArcTanh[Sqrt[3 + 2*x]] + (1356*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{508+423x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{1}{25}\int \frac{1184+759x}{\sqrt{3+2x}\left(2+5x+3x^2\right)}\,d\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-\frac{2}{25}\operatorname{Subst}\Bigg(\int \frac{91+759x^2}{5-8x^2+3x^4}\,dx,\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}+102\operatorname{Subst}\Bigg(\int \frac{1}{-3+3x^2}\,dx,x,\sqrt{}\\
&= -\frac{506}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5\sqrt{3+2x}\left(2+5x+3x^2\right)}-34\tanh^{-1}\left(\sqrt{3+2x}\right)+\frac{1356}{25}\sqrt{}
\end{aligned}$$

Mathematica [**A**] time = 0.08, size = 85, normalized size = 1.00

$$-\frac{3(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)}-\frac{506}{25\sqrt{2x+3}}-34\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{1356}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -506/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2
)) - 34*ArcTanh[Sqrt[3 + 2*x]] + (1356*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/25
```

fricas [**B**] time = 0.63, size = 144, normalized size = 1.69

$$\frac{678\sqrt{5}\sqrt{3}\left(6x^3+19x^2+19x+6\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-2125\left(6x^3+19x^2+19x+6\right)\log\left(\sqrt{2x+3}+1\right)}{125\left(6x^3+19x^2+19x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/125*(678*sqrt(5)*sqrt(3)*(6*x^3 + 19*x^2 + 19*x + 6)*log((sqrt(5)*sqrt(3)
*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) - 2125*(6*x^3 + 19*x^2 + 19*x + 6)*log
(sqrt(2*x + 3) + 1) + 2125*(6*x^3 + 19*x^2 + 19*x + 6)*log(sqrt(2*x + 3) -
1) - 5*(1518*x^2 + 3235*x + 1567)*sqrt(2*x + 3))/(6*x^3 + 19*x^2 + 19*x + 6
)
```

giac [A] time = 0.17, size = 111, normalized size = 1.31

$$-\frac{678}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{2\left(759(2x+3)^2-2638x-3697\right)}{25\left(3(2x+3)^{\frac{5}{2}}-8(2x+3)^{\frac{3}{2}}+5\sqrt{2x+3}\right)}-17\log\left(\sqrt{2x+3}+1\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -678/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 2/25*(759*(2*x + 3)^2 - 2638*x - 3697)/(3*(2*x + 3)^(5/2)
 - 8*(2*x + 3)^(3/2) + 5*sqrt(2*x + 3)) - 17*log(sqrt(2*x + 3) + 1) + 17*lo
g(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 95, normalized size = 1.12

$$\frac{1356\sqrt{15}\,\operatorname{arctanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}+17\ln\left(-1+\sqrt{2x+3}\right)-17\ln\left(\sqrt{2x+3}+1\right)-\frac{102\sqrt{2x+3}}{25\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-\frac{}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -102/25*(2*x+3)^(1/2)/(2*x+4/3)+1356/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2)
)*15^(1/2)-6/((2*x+3)^(1/2)+1)-17*ln((2*x+3)^(1/2)+1)-104/25/(2*x+3)^(1/2)-
6/(-1+(2*x+3)^(1/2))+17*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.23, size = 107, normalized size = 1.26

$$-\frac{678}{125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(759(2x+3)^2-2638x-3697\right)}{25\left(3(2x+3)^{\frac{5}{2}}-8(2x+3)^{\frac{3}{2}}+5\sqrt{2x+3}\right)}-17\log\left(\sqrt{2x+3}+1\right)+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -678/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 2/25*(759*(2*x + 3)^2 - 2638*x - 3697)/(3*(2*x + 3)^(5/2) - 8*(2*x
 + 3)^(3/2) + 5*sqrt(2*x + 3)) - 17*log(sqrt(2*x + 3) + 1) + 17*log(sqrt(2*
x + 3) - 1)
```

mupad [B] time = 0.07, size = 72, normalized size = 0.85

$$\frac{1356\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2x+3}}{5}\right)}{125}-34\,\mathrm{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{5276x}{75}-\frac{506(2x+3)^2}{25}+\frac{7394}{75}}{\frac{5\sqrt{2x+3}}{3}-\frac{8(2x+3)^{3/2}}{3}+(2x+3)^{5/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (1356*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125 - 34*atanh((2*x + 3
)^(1/2)) + ((5276*x)/75 - (506*(2*x + 3)^2)/25 + 7394/75)/((5*(2*x + 3)^(1/
2))/3 - (8*(2*x + 3)^(3/2))/3 + (2*x + 3)^(5/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2564 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=98

$$-\frac{3(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{686}{25\sqrt{2x+3}}-\frac{262}{15(2x+3)^{3/2}}-10\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{936}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\Bigg(\sqrt{\frac{3}{5}}\sqrt{2x}$$

```
[Out] -262/15/(3+2*x)^(3/2)-3/5*(37+47*x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)-10*arctanh(
(3+2*x)^(1/2))+936/125*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)-686/25/
(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 98, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{686}{25\sqrt{2x+3}}-\frac{262}{15(2x+3)^{3/2}}-10\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{936}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\Bigg(\sqrt{\frac{3}{5}}\sqrt{2x}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -262/(15*(3 + 2*x)^(3/2)) - 686/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(5*(3
+ 2*x)^(3/2)*(2 + 5*x + 3*x^2)) - 10*ArcTanh[Sqrt[3 + 2*x]] + (936*Sqrt[3/5
]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx = -\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{730+705x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)}\,dx$$

$$= -\frac{262}{15(3+2x)^{3/2}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{25}\int \frac{2090+1965x}{(3+2x)^{3/2}\left(2+5x+3\right.}$$

$$= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{1}{125}\int \frac{5}{\sqrt{3+2}}$$

$$= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-\frac{2}{125}\,\mathrm{Subst}\left(\int\right.$$

$$= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}+30\,\mathrm{Subst}\left(\int\right.$$

$$= -\frac{262}{15(3+2x)^{3/2}}-\frac{686}{25\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)}-10\tanh^{-1}\left(\sqrt{3}\right.$$

Mathematica [A] time = 0.11, size = 94, normalized size = 0.96

$$\frac{1}{75}\left(-\frac{45(47x+37)}{(2x+3)^{3/2}\left(3x^2+5x+2\right)}-\frac{2058}{\sqrt{2x+3}}-\frac{1310}{(2x+3)^{3/2}}-750\tanh^{-1}\left(\sqrt{2x+3}\right)+2808\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x}\right.\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] (-1310/(3 + 2*x)^(3/2) - 2058/Sqrt[3 + 2*x] - (45*(37 + 47*x))/((3 + 2*x)^(
3/2)*(2 + 5*x + 3*x^2)) - 750*ArcTanh[Sqrt[3 + 2*x]] + 2808*Sqrt[3/5]*ArcTa
nh[Sqrt[3/5]*Sqrt[3 + 2*x]])/75
```

fricas [B] time = 0.68, size = 169, normalized size = 1.72

$$\frac{1404\sqrt{5}\sqrt{3}\left(12x^4+56x^3+95x^2+69x+18\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)-1875\left(12x^4+56x^3+95x^2+69x+18\right.}{375\left(1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/375*(1404*sqrt(5)*sqrt(3)*(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)*log((sqr
t(5)*sqrt(3)*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) - 1875*(12*x^4 + 56*x^3 +
95*x^2 + 69*x + 18)*log(sqrt(2*x + 3) + 1) + 1875*(12*x^4 + 56*x^3 + 95*x^2
 + 69*x + 18)*log(sqrt(2*x + 3) - 1) - 5*(12348*x^3 + 43032*x^2 + 47767*x +
 16633)*sqrt(2*x + 3))/(12*x^4 + 56*x^3 + 95*x^2 + 69*x + 18)
```

giac [A] time = 0.18, size = 116, normalized size = 1.18

$$-\frac{468}{125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{6\left(903(2x+3)^{\frac{3}{2}}-1403\sqrt{2x+3}\right)}{125\left(3(2x+3)^2-16x-19\right)}-\frac{16(609x+946)}{375(2x+3)^{\frac{3}{2}}}-5\log\left(\sqrt{2x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -468/125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 6/125*(903*(2*x + 3)^(3/2) - 1403*sqrt(2*x + 3))/(3*(2*x
+ 3)^2 - 16*x - 19) - 16/375*(609*x + 946)/(2*x + 3)^(3/2) - 5*log(sqrt(2*x
 + 3) + 1) + 5*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 104, normalized size = 1.06

$$\frac{936\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}+5\ln\left(-1+\sqrt{2x+3}\right)-5\ln\left(\sqrt{2x+3}\ +1\right)-\frac{306\sqrt{2x+3}}{125\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}\ +1}-\frac{1}{75\,(2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -306/125*(2*x+3)^(1/2)/(2*x+4/3)+936/125*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2)
)*15^(1/2)-6/((2*x+3)^(1/2)+1)-5*ln((2*x+3)^(1/2)+1)-104/75/(2*x+3)^(3/2)-1
624/125/(2*x+3)^(1/2)-6/(-1+(2*x+3)^(1/2))+5*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.17, size = 116, normalized size = 1.18

$$-\frac{468}{125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(3087(2x+3)^3-6267(2x+3)^2+4040x+6320\right)}{75\left(3(2x+3)^{\frac{7}{2}}-8(2x+3)^{\frac{5}{2}}+5(2x+3)^{\frac{3}{2}}\right)}-5\log\left(\sqrt{2x+3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -468/125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 2/75*(3087*(2*x + 3)^3 - 6267*(2*x + 3)^2 + 4040*x + 6320)/(3*(2*x
 + 3)^(7/2) - 8*(2*x + 3)^(5/2) + 5*(2*x + 3)^(3/2)) - 5*log(sqrt(2*x + 3)
+ 1) + 5*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 82, normalized size = 0.84

$$\frac{936\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}-10\operatorname{atanh}\left(\sqrt{2x+3}\right)-\frac{\frac{1616x}{45}-\frac{4178(2x+3)^2}{75}+\frac{686(2x+3)^3}{25}+\frac{2528}{45}}{\frac{5(2x+3)^{3/2}}{3}-\frac{8(2x+3)^{5/2}}{3}+(2x+3)^{7/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] (936*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125 - 10*atanh((2*x + 3)
^(1/2)) - ((1616*x)/45 - (4178*(2*x + 3)^2)/75 + (686*(2*x + 3)^3)/25 + 252
8/45)/((5*(2*x + 3)^(3/2))/3 - (8*(2*x + 3)^(5/2))/3 + (2*x + 3)^(7/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2565 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx$

Optimal. Leaf size=111

$$-\frac{3(47x+37)}{5(2x+3)^{5/2}\left(3x^2+5x+2\right)}-\frac{24626}{625\sqrt{2x+3}}-\frac{7042}{375(2x+3)^{3/2}}-\frac{2114}{125(2x+3)^{5/2}}+14\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{15876}{625}\sqrt{}$$

```
[Out] -2114/125/(3+2*x)^(5/2)-7042/375/(3+2*x)^(3/2)-3/5*(37+47*x)/(3+2*x)^(5/2)/
(3*x^2+5*x+2)+14*arctanh((3+2*x)^(1/2))+15876/3125*arctanh(1/5*15^(1/2)*(3+
2*x)^(1/2))*15^(1/2)-24626/625/(3+2*x)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 111, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{5(2x+3)^{5/2}\left(3x^2+5x+2\right)}-\frac{24626}{625\sqrt{2x+3}}-\frac{7042}{375(2x+3)^{3/2}}-\frac{2114}{125(2x+3)^{5/2}}+14\tanh^{-1}\left(\sqrt{2x+3}\right)+\frac{15876}{625}\sqrt{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] -2114/(125*(3 + 2*x)^(5/2)) - 7042/(375*(3 + 2*x)^(3/2)) - 24626/(625*Sqrt[
3 + 2*x]) - (3*(37 + 47*x))/(5*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 14*ArcT
anh[Sqrt[3 + 2*x]] + (15876*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/625
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx &= -\frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)}-\frac{1}{5}\int \frac{952+987x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)}\,dx\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)}-\frac{1}{25}\int \frac{2996+3171x}{(3+2x)^{5/2}(2+5x+}\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{7042}{375(3+2x)^{3/2}}-\frac{3(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)}-\frac{1}{125}\int \frac{}{(3}\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{7042}{375(3+2x)^{3/2}}-\frac{24626}{625\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{5/2}(2+5x+3}\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{7042}{375(3+2x)^{3/2}}-\frac{24626}{625\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{5/2}(2+5x+3}\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{7042}{375(3+2x)^{3/2}}-\frac{24626}{625\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{5/2}(2+5x+3}\\
&= -\frac{2114}{125(3+2x)^{5/2}}-\frac{7042}{375(3+2x)^{3/2}}-\frac{24626}{625\sqrt{3+2x}}-\frac{3(37+47x)}{5(3+2x)^{5/2}(2+5x+3}
\end{aligned}
$$

Mathematica [A] time = 0.20, size = 86, normalized size = 0.77

$$
\frac{47628\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)-\frac{5\left(886536x^4+4348428x^3+7782530x^2+5977997x+1646109\right)}{(2x+3)^{5/2}\left(3x^2+5x+2\right)}}{9375}+14\tanh^{-1}\left(\sqrt{2x+3}\right)
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^2),x]
```

```
[Out] 14*ArcTanh[Sqrt[3 + 2*x]] + ((-5*(1646109 + 5977997*x + 7782530*x^2 + 43484
28*x^3 + 886536*x^4))/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 47628*Sqrt[15]*
ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/9375
```

fricas [B] time = 0.54, size = 194, normalized size = 1.75

$$
\frac{23814\sqrt{5}\sqrt{3}\left(24x^5+148x^4+358x^3+423x^2+243x+54\right)\log\left(\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}+3x+7}{3x+2}\right)+65625\left(24x^5+148x^4+\right.}{}
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="fricas")
```

```
[Out] 1/9375*(23814*sqrt(5)*sqrt(3)*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x
 + 54)*log((sqrt(5)*sqrt(3)*sqrt(2*x + 3) + 3*x + 7)/(3*x + 2)) + 65625*(24
*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(sqrt(2*x + 3) + 1) - 6
5625*(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)*log(sqrt(2*x + 3)
- 1) - 5*(886536*x^4 + 4348428*x^3 + 7782530*x^2 + 5977997*x + 1646109)*sqr
t(2*x + 3))/(24*x^5 + 148*x^4 + 358*x^3 + 423*x^2 + 243*x + 54)
```

giac [**A**] time = 0.20, size = 125, normalized size = 1.13

$$-\frac{7938}{3125}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{6\left(4209\,(2x+3)^{\frac{3}{2}}-6709\sqrt{2x+3}\right)}{625\left(3\,(2x+3)^2-16x-19\right)}-\frac{16\left(3039\,(2x+3)^2+1015x\right.}{1875\,(2x+3)^{\frac{5}{2}}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="giac")
```

```
[Out] -7938/3125*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) +
3*sqrt(2*x + 3))) - 6/625*(4209*(2*x + 3)^(3/2) - 6709*sqrt(2*x + 3))/(3*(2
*x + 3)^2 - 16*x - 19) - 16/1875*(3039*(2*x + 3)^2 + 1015*x + 1620)/(2*x +
3)^(5/2) + 7*log(sqrt(2*x + 3) + 1) - 7*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 113, normalized size = 1.02

$$\frac{15876\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{3125}-7\ln\left(-1+\sqrt{2x+3}\right)+7\ln\left(\sqrt{2x+3}+1\right)-\frac{918\sqrt{2x+3}}{625\left(2x+\frac{4}{3}\right)}-\frac{6}{\sqrt{2x+3}+1}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^2,x)
```

```
[Out] -918/625*(2*x+3)^(1/2)/(2*x+4/3)+15876/3125*arctanh(1/5*15^(1/2)*(2*x+3)^(1
/2))*15^(1/2)-6/((2*x+3)^(1/2)+1)+7*ln((2*x+3)^(1/2)+1)-104/125/(2*x+3)^(5/
2)-1624/375/(2*x+3)^(3/2)-16208/625/(2*x+3)^(1/2)-6/(-1+(2*x+3)^(1/2))-7*ln
(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 1.31, size = 125, normalized size = 1.13

$$-\frac{7938}{3125}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{2\left(110817\,(2x+3)^4-242697\,(2x+3)^3+91420\,(2x+3)^2+28120x\right.}{1875\left(3\,(2x+3)^{\frac{9}{2}}-8\,(2x+3)^{\frac{7}{2}}+5\,(2x+3)^{\frac{5}{2}}\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^2,x, algorithm="maxima")
```

```
[Out] -7938/3125*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*
x + 3))) - 2/1875*(110817*(2*x + 3)^4 - 242697*(2*x + 3)^3 + 91420*(2*x + 3
)^2 + 28120*x + 46080)/(3*(2*x + 3)^(9/2) - 8*(2*x + 3)^(7/2) + 5*(2*x + 3)
^(5/2)) + 7*log(sqrt(2*x + 3) + 1) - 7*log(sqrt(2*x + 3) - 1)
```

mupad [**B**] time = 0.07, size = 91, normalized size = 0.82

$$14\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{15876\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{3125}-\frac{\frac{11248x}{1125}+\frac{36568\,(2x+3)^2}{1125}-\frac{161798\,(2x+3)^3}{1875}+\frac{24626\,(2x+3)^4}{625}+}{\frac{5\,(2x+3)^{5/2}}{3}-\frac{8\,(2x+3)^{7/2}}{3}+(2x+3)^{9/2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^2),x)
```

```
[Out] 14*atanh((2*x + 3)^(1/2)) + (15876*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2)
)/5))/3125 - ((11248*x)/1125 + (36568*(2*x + 3)^2)/1125 - (161798*(2*x + 3)
^3)/1875 + (24626*(2*x + 3)^4)/625 + 2048/125)/((5*(2*x + 3)^(5/2))/3 - (8*
(2*x + 3)^(7/2))/3 + (2*x + 3)^(9/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**2,x)
```

```
[Out] Timed out
```

3.2566 $\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=115

$$-\frac{(139x+121)(2x+3)^{7/2}}{6\left(3x^2+5x+2\right)^2}+\frac{(12473x+10832)(2x+3)^{3/2}}{18\left(3x^2+5x+2\right)}-\frac{3983}{9}\sqrt{2x+3}+1962\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{13675}{9}\sqrt{\frac{5}{3}}$$

```
[Out] -1/6*(3+2*x)^(7/2)*(121+139*x)/(3*x^2+5*x+2)^2+1/18*(3+2*x)^(3/2)*(10832+12
473*x)/(3*x^2+5*x+2)+1962*arctanh((3+2*x)^(1/2))-13675/27*arctanh(1/5*15^(1
/2)*(3+2*x)^(1/2))*15^(1/2)-3983/9*(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {818, 824, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{7/2}}{6\left(3x^2+5x+2\right)^2}+\frac{(12473x+10832)(2x+3)^{3/2}}{18\left(3x^2+5x+2\right)}-\frac{3983}{9}\sqrt{2x+3}+1962\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{13675}{9}\sqrt{\frac{5}{3}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (-3983*Sqrt[3 + 2*x])/9 - ((3 + 2*x)^(7/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x
^2)^2) + ((3 + 2*x)^(3/2)*(10832 + 12473*x))/(18*(2 + 5*x + 3*x^2)) + 1962*
ArcTanh[Sqrt[3 + 2*x]] - (13675*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])
/9
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 824

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[(g*(d + e*x)^m)/(c*m), x] + Dist[1/c, Int[
((d + e*x)^(m - 1)*Simp[c*d*f - a*e*g + (g*c*d - b*e*g + c*e*f)*x, x])/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && GtQ[m, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(3+2x)^{5/2}(-416+131x)}{\left(2+5x+3x^2\right)^2}\,dx\\ &= -\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{18}\int \frac{(5709-11949x)\sqrt{3}}{2+5x+3x^2}\\ &= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{54}\int\\ &= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+\frac{1}{27}\text{Subst}\\ &= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}-5886\,\text{Sub}\\ &= -\frac{3983}{9}\sqrt{3+2x}-\frac{(3+2x)^{7/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{(3+2x)^{3/2}(10832+12473x)}{18\left(2+5x+3x^2\right)}+1962\,\text{tan}\end{aligned}$$

Mathematica [A] time = 0.12, size = 86, normalized size = 0.75

$$\frac{1}{54}\left(-\frac{3\sqrt{2x+3}\left(192x^4-45083x^3-112467x^2-90465x-23327\right)}{\left(3x^2+5x+2\right)^2}-27350\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)\right)+1962\,\text{t}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] 1962*ArcTanh[Sqrt[3 + 2*x]] + ((-3*Sqrt[3 + 2*x]*(-23327 - 90465*x - 112467
*x^2 - 45083*x^3 + 192*x^4))/(2 + 5*x + 3*x^2)^2 - 27350*Sqrt[15]*ArcTanh[S
qrt[3/5]*Sqrt[3 + 2*x]])/54
```

fricas [A] time = 0.66, size = 175, normalized size = 1.52

$$13675\,\sqrt{5}\,\sqrt{3}\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+52974\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/54*(13675*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt
(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 52974*(9*x^4 + 30*x^3 + 3
7*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 52974*(9*x^4 + 30*x^3 + 37*x^2 +
 20*x + 4)*log(sqrt(2*x + 3) - 1) - 3*(192*x^4 - 45083*x^3 - 112467*x^2 - 9
0465*x - 23327)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.20, size = 129, normalized size = 1.12

$$\frac{13675}{54}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)-\frac{32}{27}\sqrt{2x+3}+\frac{137169\,(2x+3)^{\frac{7}{2}}-554983\,(2x+3)^{\frac{5}{2}}+717035\,(2x}{27\left(3\,(2x+3)^2-16x-19\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 13675/54*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*
sqrt(2*x + 3))) - 32/27*sqrt(2*x + 3) + 1/27*(137169*(2*x + 3)^(7/2) - 5549
83*(2*x + 3)^(5/2) + 717035*(2*x + 3)^(3/2) - 297925*sqrt(2*x + 3))/(3*(2*x
 + 3)^2 - 16*x - 19)^2 + 981*log(sqrt(2*x + 3) + 1) - 981*log(abs(sqrt(2*x
+ 3) - 1))
```

maple [A] time = 0.02, size = 133, normalized size = 1.16

$$-\frac{13675\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{27}-981\ln\left(-1+\sqrt{2x+3}\right)+981\ln\left(\sqrt{2x+3}\ +1\right)-\frac{32\sqrt{2x+3}}{27}+\frac{\frac{9625(2x+3)^{\frac{3}{2}}}{3}-}{(6x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(9/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] -32/27*(2*x+3)^(1/2)+1250/3*(77/10*(2*x+3)^(3/2)-265/18*(2*x+3)^(1/2))/(6*x
+4)^2-13675/27*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2
)+1)^2+104/((2*x+3)^(1/2)+1)+981*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2
+104/(-1+(2*x+3)^(1/2))-981*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.38, size = 143, normalized size = 1.24

$$\frac{13675}{54}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)-\frac{32}{27}\sqrt{2x+3}+\frac{137169\,(2x+3)^{\frac{7}{2}}-554983\,(2x+3)^{\frac{5}{2}}+717035\,(2x+}{27\left(9\,(2x+3)^4-48\,(2x+3)^3+94\,(2x+3)^2\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 13675/54*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
+ 3))) - 32/27*sqrt(2*x + 3) + 1/27*(137169*(2*x + 3)^(7/2) - 554983*(2*x +
 3)^(5/2) + 717035*(2*x + 3)^(3/2) - 297925*sqrt(2*x + 3))/(9*(2*x + 3)^4 -
 48*(2*x + 3)^3 + 94*(2*x + 3)^2 - 160*x - 215) + 981*log(sqrt(2*x + 3) + 1
) - 981*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.41, size = 116, normalized size = 1.01

$$\frac{\frac{297925\sqrt{2x+3}}{243}-\frac{717035\,(2x+3)^{3/2}}{243}+\frac{554983\,(2x+3)^{5/2}}{243}-\frac{15241\,(2x+3)^{7/2}}{27}}{\frac{160x}{9}-\frac{94\,(2x+3)^2}{9}+\frac{16\,(2x+3)^3}{3}-(2x+3)^4+\frac{215}{9}}-\frac{32\sqrt{2x+3}}{27}-\operatorname{atan}\left(\sqrt{2x+3}\ 1\mathrm{i}\right)1962\mathrm{i}+\frac{\sqrt{15}\ a}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(9/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] ((297925*(2*x + 3)^(1/2))/243 - (717035*(2*x + 3)^(3/2))/243 + (554983*(2*x
 + 3)^(5/2))/243 - (15241*(2*x + 3)^(7/2))/27)/((160*x)/9 - (94*(2*x + 3)^2
)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - atan((2*x + 3)^(1/2)*1i)*
1962i + (15^(1/2)*atan((15^(1/2)*(2*x + 3)^(1/2)*1i)/5)*13675i)/27 - (32*(2
*x + 3)^(1/2))/27
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(9/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2567 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=100

$$-\frac{(139x+121)(2x+3)^{5/2}}{6\left(3x^2+5x+2\right)^2}+\frac{7(619x+546)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right.$$

```
[Out] -1/6*(3+2*x)^(5/2)*(121+139*x)/(3*x^2+5*x+2)^2+1582*arctanh((3+2*x)^(1/2))-
1225/3*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+7/6*(546+619*x)*(3+2*x)
^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.06, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.148, Rules used = {818, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{5/2}}{6\left(3x^2+5x+2\right)^2}+\frac{7(619x+546)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right.$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^(5/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (7*Sqrt[3 + 2*x]
*(546 + 619*x))/(6*(2 + 5*x + 3*x^2)) + 1582*ArcTanh[Sqrt[3 + 2*x]] - 1225*
Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(-658-147x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^2}\,dx \\
&= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+\frac{1}{18}\int \frac{26649+12411x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)} \\
&= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+\frac{1}{9}\,\mathrm{Subst}\Bigg(\int \frac{16065+12411x^2}{5-8x^2+3x^4} \\
&= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}-4746\,\mathrm{Subst}\Bigg(\int \frac{1}{-3+3x^2}\,dx, x, \\
&= -\frac{(3+2x)^{5/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{7\sqrt{3+2x}\,(546+619x)}{6\left(2+5x+3x^2\right)}+1582\tanh^{-1}\left(\sqrt{3+2x}\right)-1225
\end{aligned}$$

Mathematica [A] time = 0.08, size = 80, normalized size = 0.80

$$\frac{\sqrt{2x+3}\left(12443x^3+30979x^2+25073x+6555\right)}{6\left(3x^2+5x+2\right)^2}+1582\tanh^{-1}\left(\sqrt{2x+3}\right)-1225\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(6555 + 25073*x + 30979*x^2 + 12443*x^3))/(6*(2 + 5*x + 3*x^
2)^2) + 1582*ArcTanh[Sqrt[3 + 2*x]] - 1225*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]]
```

fricas [B] time = 0.62, size = 169, normalized size = 1.69

$$\frac{1225\,\sqrt{5}\,\sqrt{3}\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+4746\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)}{6\,\Big(9\,x^4}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/6*(1225*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(5
)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 4746*(9*x^4 + 30*x^3 + 37*x
^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 4746*(9*x^4 + 30*x^3 + 37*x^2 + 20*
x + 4)*log(sqrt(2*x + 3) - 1) + (12443*x^3 + 30979*x^2 + 25073*x + 6555)*sq
rt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.19, size = 120, normalized size = 1.20

$$\frac{1225}{6}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)+\frac{12443\,(2\,x+3)^{\frac{7}{2}}-50029\,(2\,x+3)^{\frac{5}{2}}+64505\,(2\,x+3)^{\frac{3}{2}}-26775\,\sqrt{2\,x+}}{3\left(3\,(2\,x+3)^2-16\,x-19\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1225/6*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*sq
rt(2*x + 3))) + 1/3*(12443*(2*x + 3)^(7/2) - 50029*(2*x + 3)^(5/2) + 64505*
(2*x + 3)^(3/2) - 26775*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 791*
log(sqrt(2*x + 3) + 1) - 791*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.24

$$-\frac{1225\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{3}-791\ln\left(-1+\sqrt{2x+3}\right)+791\ln\left(\sqrt{2x+3}\ +1\right)+\frac{\frac{7475(2x+3)^{\frac{3}{2}}}{3}-4625\sqrt{2x+3}}{(6x+4)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 450*(299/54*(2*x+3)^(3/2)-185/18*(2*x+3)^(1/2))/(6*x+4)^2-1225/3*arctanh(1/
5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+92/((2*x+3)^(1/2)+
1)+791*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+92/(-1+(2*x+3)^(1/2))-791
*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.29, size = 134, normalized size = 1.34

$$\frac{1225}{6}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{12443\,(2x+3)^{\frac{7}{2}}-50029\,(2x+3)^{\frac{5}{2}}+64505\,(2x+3)^{\frac{3}{2}}-26775\sqrt{2x+}}{3\left(9\,(2x+3)^{4}-48\,(2x+3)^{3}+94\,(2x+3)^{2}-160\,x-215\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1225/6*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
3))) + 1/3*(12443*(2*x + 3)^(7/2) - 50029*(2*x + 3)^(5/2) + 64505*(2*x + 3)
^(3/2) - 26775*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 791*log(sqrt(2*x + 3) + 1) - 791*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 2.42, size = 101, normalized size = 1.01

$$1582\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{2975\sqrt{2x+3}}{3}-\frac{64505\,(2x+3)^{3/2}}{27}+\frac{50029\,(2x+3)^{5/2}}{27}-\frac{12443\,(2x+3)^{7/2}}{27}}{\frac{160\,x}{9}-\frac{94\,(2x+3)^{2}}{9}+\frac{16\,(2x+3)^{3}}{3}-(2x+3)^{4}+\frac{215}{9}}-\frac{1225\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2x}}{5}\right)}{3}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 1582*atanh((2*x + 3)^(1/2)) + ((2975*(2*x + 3)^(1/2))/3 - (64505*(2*x + 3)^
(3/2))/27 + (50029*(2*x + 3)^(5/2))/27 - (12443*(2*x + 3)^(7/2))/27)/((160*
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (12
25*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/3
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2568 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{(139x+121)(2x+3)^{3/2}}{6\left(3x^2+5x+2\right)^2}+\frac{25(131x+112)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] -1/6*(3+2*x)^(3/2)*(121+139*x)/(3*x^2+5*x+2)^2+1250*arctanh((3+2*x)^(1/2))-
2905/9*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+25/6*(112+131*x)*(3+2*x
)^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {818, 820, 826, 1166, 207}

$$-\frac{(139x+121)(2x+3)^{3/2}}{6\left(3x^2+5x+2\right)^2}+\frac{25(131x+112)\sqrt{2x+3}}{6\left(3x^2+5x+2\right)}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -((3 + 2*x)^(3/2)*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (25*Sqrt[3 + 2*x
]*(112 + 131*x))/(6*(2 + 5*x + 3*x^2)) + 1250*ArcTanh[Sqrt[3 + 2*x]] - (290
5*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^3}\,dx = -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{(-900-425x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-\frac{1}{6}\int \frac{-7025-3275x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}$$

$$= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-\frac{1}{3}\,\text{Subst}\left(\int \frac{-4225-3275x}{5-8x^2+3x^4}\right.$$

$$= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}-3750\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,d\right.$$

$$= -\frac{(3+2x)^{3/2}(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{25\sqrt{3+2x}\,(112+131x)}{6\left(2+5x+3x^2\right)}+1250\tanh^{-1}\left(\sqrt{3+2x}\right)-$$

Mathematica [A] time = 0.08, size = 82, normalized size = 0.80

$$\frac{\sqrt{2x+3}\,\left(9825x^3+24497x^2+19891x+5237\right)}{6\left(3x^2+5x+2\right)^2}+1250\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{2905}{3}\sqrt{\frac{5}{3}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(5237 + 19891*x + 24497*x^2 + 9825*x^3))/(6*(2 + 5*x + 3*x^2
)^2) + 1250*ArcTanh[Sqrt[3 + 2*x]] - (2905*Sqrt[5/3]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]])/3
```

fricas [B] time = 0.62, size = 170, normalized size = 1.67

$$\frac{2905\,\sqrt{5}\,\sqrt{3}\,\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+11250\,\left(9\,x^4+30\,x^3+37\,x^2+20\,x+\right.}{18\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/18*(2905*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 11250*(9*x^4 + 30*x^3 + 37
*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 11250*(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4)*log(sqrt(2*x + 3) - 1) + 3*(9825*x^3 + 24497*x^2 + 19891*x + 5237
)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [**A**] time = 0.19, size = 120, normalized size = 1.18

$$\frac{2905}{18}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\,\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)+\frac{9825\,(2\,x+3)^{\frac{7}{2}}-39431\,(2\,x+3)^{\frac{5}{2}}+50875\,(2\,x+3)^{\frac{3}{2}}-21125\,\sqrt{2\,x+}}{3\,\left(3\,(2\,x+3)^{2}-16\,x-19\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 2905/18*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + 1/3*(9825*(2*x + 3)^(7/2) - 39431*(2*x + 3)^(5/2) + 50875*
(2*x + 3)^(3/2) - 21125*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 625*
log(sqrt(2*x + 3) + 1) - 625*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{2905\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{9}-625\ln\left(-1+\sqrt{2x+3}\right)+625\ln\left(\sqrt{2x+3}+1\right)+\frac{1835\,(2x+3)^{\frac{3}{2}}-\frac{10025\sqrt{2x+3}}{3}}{(6x+4)^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 90*(367/18*(2*x+3)^(3/2)-2005/54*(2*x+3)^(1/2))/(6*x+4)^2-2905/9*arctanh(1/
5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+80/((2*x+3)^(1/2)+
1)+625*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+80/(-1+(2*x+3)^(1/2))-625
*ln(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 1.36, size = 134, normalized size = 1.31

$$\frac{2905}{18}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{9825\,(2\,x+3)^{\frac{7}{2}}-39431\,(2\,x+3)^{\frac{5}{2}}+50875\,(2\,x+3)^{\frac{3}{2}}-21125\,\sqrt{2\,x+3}}{3\,\left(9\,(2\,x+3)^{4}-48\,(2\,x+3)^{3}+94\,(2\,x+3)^{2}-160\,x-215\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 2905/18*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + 1/3*(9825*(2*x + 3)^(7/2) - 39431*(2*x + 3)^(5/2) + 50875*(2*x + 3)
^(3/2) - 21125*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 625*log(sqrt(2*x + 3) + 1) - 625*log(sqrt(2*x + 3) - 1
)
```

mupad [**B**] time = 0.07, size = 101, normalized size = 0.99

$$1250\operatorname{atanh}\left(\sqrt{2\,x+3}\right)+\frac{\frac{21125\,\sqrt{2\,x+3}}{27}-\frac{50875\,{(2\,x+3)}^{3/2}}{27}+\frac{39431\,{(2\,x+3)}^{5/2}}{27}-\frac{3275\,{(2\,x+3)}^{7/2}}{9}}{\frac{160\,x}{9}-\frac{94\,{(2\,x+3)}^{2}}{9}+\frac{16\,{(2\,x+3)}^{3}}{3}-{(2\,x+3)}^{4}+\frac{215}{9}}-\frac{2905\,\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right.}{9}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 1250*atanh((2*x + 3)^(1/2)) + ((21125*(2*x + 3)^(1/2))/27 - (50875*(2*x + 3
)^(3/2))/27 + (39431*(2*x + 3)^(5/2))/27 - (3275*(2*x + 3)^(7/2))/9)/((160*
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (29
05*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/9
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2569 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=100

$$-\frac{\sqrt{2x+3}\,(139x+121)}{6\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(2529x+2090)}{6\left(3x^2+5x+2\right)}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 966*arctanh((3+2*x)^(1/2))-1247/5*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1
/2)-1/6*(121+139*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2+1/6*(2090+2529*x)*(3+2*x)
^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.07, antiderivative size = 100, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {818, 822, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(139x+121)}{6\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(2529x+2090)}{6\left(3x^2+5x+2\right)}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(121 + 139*x))/(6*(2 + 5*x + 3*x^2)^2) + (Sqrt[3 + 2*x]*(20
90 + 2529*x))/(6*(2 + 5*x + 3*x^2)) + 966*ArcTanh[Sqrt[3 + 2*x]] - 1247*Sqr
t[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]]
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{1}{6}\int \frac{-1142-703x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-\frac{1}{30}\int \frac{-27135-12645x}{\sqrt{3+2x}\,\left(2+5x+3x\right.}\\
&= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-\frac{1}{15}\,\mathrm{Subst}\left(\int \frac{-16335-1264}{5-8x^2+3x}\right.\\
&= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}-2898\,\mathrm{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,\right.\\
&= -\frac{\sqrt{3+2x}\,(121+139x)}{6\left(2+5x+3x^2\right)^2}+\frac{\sqrt{3+2x}\,(2090+2529x)}{6\left(2+5x+3x^2\right)}+966\tanh^{-1}\left(\sqrt{3+2x}\right)-124
\end{aligned}
$$

Mathematica [A] time = 0.08, size = 80, normalized size = 0.80

$$\frac{\sqrt{2x+3}\,\left(2529x^3+6305x^2+5123x+1353\right)}{2\left(3x^2+5x+2\right)^2}+966\tanh^{-1}\left(\sqrt{2x+3}\right)-1247\sqrt{\frac{3}{5}}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] (Sqrt[3 + 2*x]*(1353 + 5123*x + 6305*x^2 + 2529*x^3))/(2*(2 + 5*x + 3*x^2)^
2) + 966*ArcTanh[Sqrt[3 + 2*x]] - 1247*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]]
```

fricas [B] time = 0.73, size = 170, normalized size = 1.70

$$\frac{1247\,\sqrt{5}\,\sqrt{3}\,\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+4830\,\left(9\,x^4+30\,x^3+37\,x^2+20\,x+\right.}{10\left(9\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/10*(1247*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 4830*(9*x^4 + 30*x^3 + 37*
x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 4830*(9*x^4 + 30*x^3 + 37*x^2 + 20
*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(2529*x^3 + 6305*x^2 + 5123*x + 1353)*sq
rt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 119, normalized size = 1.19

$$\frac{1247}{10}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}\,+6\,\sqrt{2\,x+3}\right|}{2\,\left(\sqrt{15}\,+3\,\sqrt{2\,x+3}\right)}\right)+\frac{2529\,(2\,x+3)^{\frac{7}{2}}-10151\,(2\,x+3)^{\frac{5}{2}}+13115\,(2\,x+3)^{\frac{3}{2}}-5445\,\sqrt{2\,x+3}}{\left(3\,(2\,x+3)^2-16\,x-19\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 1247/10*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + (2529*(2*x + 3)^(7/2) - 10151*(2*x + 3)^(5/2) + 13115*(2*x
 + 3)^(3/2) - 5445*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 483*log(s
qrt(2*x + 3) + 1) - 483*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.24

$$-\frac{1247\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{5}-483\ln\left(-1+\sqrt{2x+3}\right)+483\ln\left(\sqrt{2x+3}\ +1\right)+\frac{1305\,(2x+3)^{\frac{3}{2}}-2345\sqrt{2x+}}{(6x+4)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 18*(145/2*(2*x+3)^(3/2)-2345/18*(2*x+3)^(1/2))/(6*x+4)^2-1247/5*arctanh(1/5
*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+68/((2*x+3)^(1/2)+1
)+483*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+68/(-1+(2*x+3)^(1/2))-483*
ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.31, size = 133, normalized size = 1.33

$$\frac{1247}{10}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}\,-3\,\sqrt{2\,x+3}}{\sqrt{15}\,+3\,\sqrt{2\,x+3}}\right)+\frac{2529\,(2\,x+3)^{\frac{7}{2}}-10151\,(2\,x+3)^{\frac{5}{2}}+13115\,(2\,x+3)^{\frac{3}{2}}-5445\,\sqrt{2\,x+3}}{9\,(2\,x+3)^4-48\,(2\,x+3)^3+94\,(2\,x+3)^2-160\,x-215}+4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 1247/10*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + (2529*(2*x + 3)^(7/2) - 10151*(2*x + 3)^(5/2) + 13115*(2*x + 3)^(3/
2) - 5445*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3)^2 -
 160*x - 215) + 483*log(sqrt(2*x + 3) + 1) - 483*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 0.07, size = 101, normalized size = 1.01

$$966\,\operatorname{atanh}\left(\sqrt{2\,x+3}\right)+\frac{605\,\sqrt{2\,x+3}-\frac{13115\,(2\,x+3)^{3/2}}{9}+\frac{10151\,(2\,x+3)^{5/2}}{9}-281\,(2\,x+3)^{7/2}}{\frac{160\,x}{9}-\frac{94\,(2\,x+3)^2}{9}+\frac{16\,(2\,x+3)^3}{3}-(2\,x+3)^4+\frac{215}{9}}-\frac{1247\,\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2}}{5}\right.}{5}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 966*atanh((2*x + 3)^(1/2)) + (605*(2*x + 3)^(1/2) - (13115*(2*x + 3)^(3/2))
/9 + (10151*(2*x + 3)^(5/2))/9 - 281*(2*x + 3)^(7/2))/((160*x)/9 - (94*(2*x
 + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (1247*15^(1/2)*ata
nh((15^(1/2)*(2*x + 3)^(1/2))/5))/5
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2570 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=102

$$-\frac{\sqrt{2x+3}\,(35x+29)}{2\left(3x^2+5x+2\right)^2}+\frac{3\sqrt{2x+3}\,(1063x+878)}{10\left(3x^2+5x+2\right)}+730\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 730*arctanh((3+2*x)^(1/2))-4713/25*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(
1/2)-1/2*(29+35*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2+3/10*(878+1063*x)*(3+2*x)^
(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.185$, Rules used = {820, 822, 826, 1166, 207}

$$-\frac{\sqrt{2x+3}\,(35x+29)}{2\left(3x^2+5x+2\right)^2}+\frac{3\sqrt{2x+3}\,(1063x+878)}{10\left(3x^2+5x+2\right)}+730\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{4713}{5}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] -(Sqrt[3 + 2*x]*(29 + 35*x))/(2*(2 + 5*x + 3*x^2)^2) + (3*Sqrt[3 + 2*x]*(87
8 + 1063*x))/(10*(2 + 5*x + 3*x^2)) + 730*ArcTanh[Sqrt[3 + 2*x]] - (4713*Sq
rt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/5
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^3}\,dx &= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}-\frac{1}{2}\int \frac{286+175x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+\frac{1}{10}\int \frac{6839+3189x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)}\,d\\
&= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+\frac{1}{5}\,\text{Subst}\left(\int \frac{4111+3189x^2}{5-8x^2+3x^4}\,dx,x\right.\\
&= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}-2190\,\text{Subst}\left(\int \frac{1}{-3+3x^2}\,dx,x,\right.\\
&= -\frac{\sqrt{3+2x}\,(29+35x)}{2\left(2+5x+3x^2\right)^2}+\frac{3\sqrt{3+2x}\,(878+1063x)}{10\left(2+5x+3x^2\right)}+730\tanh^{-1}\left(\sqrt{3+2x}\right)-\frac{4713}{5}\sqrt{}
\end{aligned}$$

Mathematica [A] time = 0.15, size = 81, normalized size = 0.79

$$\frac{1}{50}\left(\frac{5\sqrt{2x+3}\,\left(9567x^3+23847x^2+19373x+5123\right)}{\left(3x^2+5x+2\right)^2}-9426\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\,\sqrt{2x+3}\right)\right)+730\tanh^{-1}\left(\sqrt{2x}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^3,x]
```

```
[Out] 730*ArcTanh[Sqrt[3 + 2*x]] + ((5*Sqrt[3 + 2*x]*(5123 + 19373*x + 23847*x^2
+ 9567*x^3))/(2 + 5*x + 3*x^2)^2 - 9426*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 +
 2*x]])/50
```

fricas [B] time = 0.62, size = 170, normalized size = 1.67

$$\frac{4713\,\sqrt{5}\,\sqrt{3}\left(9\,x^4+30\,x^3+37\,x^2+20\,x+4\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3\,x-7}{3\,x+2}\right)+18250\left(9\,x^4+30\,x^3+37\,x^2+20\,x+\right.}{50\,(}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/50*(4713*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqrt(
5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 18250*(9*x^4 + 30*x^3 + 37
*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 18250*(9*x^4 + 30*x^3 + 37*x^2 +
20*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(9567*x^3 + 23847*x^2 + 19373*x + 5123
)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.19, size = 120, normalized size = 1.18

$$\frac{4713}{50}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{9567\,(2x+3)^{\frac{7}{2}}-38409\,(2x+3)^{\frac{5}{2}}+49637\,(2x+3)^{\frac{3}{2}}-20555\sqrt{2x+}}{5\left(3\,(2x+3)^{2}-16x-19\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 4713/50*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3*s
qrt(2*x + 3))) + 1/5*(9567*(2*x + 3)^(7/2) - 38409*(2*x + 3)^(5/2) + 49637*
(2*x + 3)^(3/2) - 20555*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 365*
log(sqrt(2*x + 3) + 1) - 365*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{4713\sqrt{15}\;\operatorname{arctanh}\left(\frac{\sqrt{15}\;\sqrt{2x+3}}{5}\right)}{25}-365\ln\left(-1+\sqrt{2x+3}\right)+365\ln\left(\sqrt{2x+3}\;+1\right)+\frac{\frac{4527(2x+3)^{\frac{3}{2}}}{5}-1611\sqrt{2x+3}}{(6x+4)^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 162*(503/90*(2*x+3)^(3/2)-179/18*(2*x+3)^(1/2))/(6*x+4)^2-4713/25*arctanh(1
/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+56/((2*x+3)^(1/2)
+1)+365*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+56/(-1+(2*x+3)^(1/2))-36
5*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 1.06, size = 134, normalized size = 1.31

$$\frac{4713}{50}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{9567\,(2x+3)^{\frac{7}{2}}-38409\,(2x+3)^{\frac{5}{2}}+49637\,(2x+3)^{\frac{3}{2}}-20555\sqrt{2x+3}}{5\left(9\,(2x+3)^{4}-48\,(2x+3)^{3}+94\,(2x+3)^{2}-160x-215\right)}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 4713/50*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x +
 3))) + 1/5*(9567*(2*x + 3)^(7/2) - 38409*(2*x + 3)^(5/2) + 49637*(2*x + 3)
^(3/2) - 20555*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2*x + 3
)^2 - 160*x - 215) + 365*log(sqrt(2*x + 3) + 1) - 365*log(sqrt(2*x + 3) - 1
)
```

mupad [B] time = 2.39, size = 101, normalized size = 0.99

$$730\operatorname{atanh}\left(\sqrt{2x+3}\right)+\frac{\frac{4111\sqrt{2x+3}}{9}-\frac{49637\,(2x+3)^{3/2}}{45}+\frac{12803\,(2x+3)^{5/2}}{15}-\frac{1063\,(2x+3)^{7/2}}{5}}{\frac{160x}{9}-\frac{94\,(2x+3)^{2}}{9}+\frac{16\,(2x+3)^{3}}{3}-(2x+3)^{4}+\frac{215}{9}}-\frac{4713\sqrt{15}\operatorname{atanh}\left(\frac{\sqrt{15}\;\sqrt{2x+3}}{5}\right)}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^3,x)
```

```
[Out] 730*atanh((2*x + 3)^(1/2)) + ((4111*(2*x + 3)^(1/2))/9 - (49637*(2*x + 3)^(
3/2))/45 + (12803*(2*x + 3)^(5/2))/15 - (1063*(2*x + 3)^(7/2))/5)/((160*x)/
9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (4713*
15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/25
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2571 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^3} \, dx$

Optimal. Leaf size=102

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(11739x+9734)}{50\left(3x^2+5x+2\right)}+542\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{17463}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

```
[Out] 542*arctanh((3+2*x)^(1/2))-17463/125*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15
^(1/2)-3/10*(37+47*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^2+1/50*(9734+11739*x)*(3+
2*x)^(1/2)/(3*x^2+5*x+2)
```

Rubi [A] time = 0.06, antiderivative size = 102, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 4, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.148$, Rules used = {822, 826, 1166, 207}

$$-\frac{3\sqrt{2x+3}\,(47x+37)}{10\left(3x^2+5x+2\right)^2}+\frac{\sqrt{2x+3}\,(11739x+9734)}{50\left(3x^2+5x+2\right)}+542\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{17463}{25}\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (-3*Sqrt[3 + 2*x]*(37 + 47*x))/(10*(2 + 5*x + 3*x^2)^2) + (Sqrt[3 + 2*x]*(9
734 + 11739*x))/(50*(2 + 5*x + 3*x^2)) + 542*ArcTanh[Sqrt[3 + 2*x]] - (1746
3*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^3}\,dx = -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1106+705x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2} + \frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)} + \frac{1}{50}\int \frac{25289+11}{\sqrt{3+2x}\,(2+}$$

$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2} + \frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)} + \frac{1}{25}\,\text{Subst}\Bigg(\int \frac{15361-}{5-8}$$

$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2} + \frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)} - 1626\,\text{Subst}\Bigg(\int \frac{1}{-3+}$$

$$= -\frac{3\sqrt{3+2x}\,(37+47x)}{10\left(2+5x+3x^2\right)^2} + \frac{\sqrt{3+2x}\,(9734+11739x)}{50\left(2+5x+3x^2\right)} + 542\tanh^{-1}\Big(\sqrt{3+2x}$$

Mathematica [A] time = 0.10, size = 81, normalized size = 0.79

$$\frac{1}{50}\left(\frac{\sqrt{2x+3}\left(35217x^3+87897x^2+71443x+18913\right)}{\left(3x^2+5x+2\right)^2}+27100\tanh^{-1}\left(\sqrt{2x+3}\right)-34926\sqrt{\frac{3}{5}}\tanh^{-1}\Bigg(\sqrt{\frac{3}{5}}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((Sqrt[3 + 2*x]*(18913 + 71443*x + 87897*x^2 + 35217*x^3))/(2 + 5*x + 3*x^2
)^2 + 27100*ArcTanh[Sqrt[3 + 2*x]] - 34926*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt
[3 + 2*x]])/50
```

fricas [B] time = 0.67, size = 170, normalized size = 1.67

$$\frac{17463\sqrt{5}\sqrt{3}\left(9x^4+30x^3+37x^2+20x+4\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+67750\left(9x^4+30x^3+37x^2+20x\right.}{25}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] 1/250*(17463*sqrt(5)*sqrt(3)*(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)*log(-(sqr
t(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 67750*(9*x^4 + 30*x^3 +
37*x^2 + 20*x + 4)*log(sqrt(2*x + 3) + 1) - 67750*(9*x^4 + 30*x^3 + 37*x^2
+ 20*x + 4)*log(sqrt(2*x + 3) - 1) + 5*(35217*x^3 + 87897*x^2 + 71443*x + 1
8913)*sqrt(2*x + 3))/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4)
```

giac [A] time = 0.18, size = 120, normalized size = 1.18

$$\frac{17463}{250}\sqrt{15}\log\left(\frac{\left|-2\sqrt{15}+6\sqrt{2x+3}\right|}{2\left(\sqrt{15}+3\sqrt{2x+3}\right)}\right)+\frac{35217(2x+3)^{\frac{7}{2}}-141159(2x+3)^{\frac{5}{2}}+181867(2x+3)^{\frac{3}{2}}-74725}{25\left(3(2x+3)^2-16x-19\right)^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] 17463/250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3
*sqrt(2*x + 3))) + 1/25*(35217*(2*x + 3)^(7/2) - 141159*(2*x + 3)^(5/2) + 1
81867*(2*x + 3)^(3/2) - 74725*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2
+ 271*log(sqrt(2*x + 3) + 1) - 271*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.02, size = 124, normalized size = 1.22

$$-\frac{17463\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}-271\ln\left(-1+\sqrt{2x+3}\right)+271\ln\left(\sqrt{2x+3}\ +1\right)+\frac{\frac{15417(2x+3)^{\frac{3}{2}}}{25}-1089\sqrt{2x+3}}{(6x+4)^{2}}-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^3/(2*x+3)^(1/2),x)
```

```
[Out] 486*(571/450*(2*x+3)^(3/2)-121/54*(2*x+3)^(1/2))/(6*x+4)^2-17463/125*arctan
h(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+44/((2*x+3)^(1
/2)+1)+271*ln((2*x+3)^(1/2)+1)+3/(-1+(2*x+3)^(1/2))^2+44/(-1+(2*x+3)^(1/2))
-271*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.96, size = 134, normalized size = 1.31

$$\frac{17463}{250}\sqrt{15}\log\left(-\frac{\sqrt{15}-3\sqrt{2x+3}}{\sqrt{15}+3\sqrt{2x+3}}\right)+\frac{35217\,(2x+3)^{\frac{7}{2}}-141159\,(2x+3)^{\frac{5}{2}}+181867\,(2x+3)^{\frac{3}{2}}-74725\sqrt{2x+}}{25\left(9\,(2x+3)^{4}-48\,(2x+3)^{3}+94\,(2x+3)^{2}-160\,x-215\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^3/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] 17463/250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
 + 3))) + 1/25*(35217*(2*x + 3)^(7/2) - 141159*(2*x + 3)^(5/2) + 181867*(2*
x + 3)^(3/2) - 74725*sqrt(2*x + 3))/(9*(2*x + 3)^4 - 48*(2*x + 3)^3 + 94*(2
*x + 3)^2 - 160*x - 215) + 271*log(sqrt(2*x + 3) + 1) - 271*log(sqrt(2*x +
3) - 1)
```

mupad [B] time = 2.40, size = 101, normalized size = 0.99

$$542\operatorname{atanh}\left(\sqrt{2\,x+3}\right)+\frac{\frac{2989\,\sqrt{2\,x+3}}{9}-\frac{181867\,(2\,x+3)^{3/2}}{225}+\frac{47053\,(2\,x+3)^{5/2}}{75}-\frac{3913\,(2\,x+3)^{7/2}}{25}}{\frac{160\,x}{9}-\frac{94\,(2\,x+3)^{2}}{9}+\frac{16\,(2\,x+3)^{3}}{3}-(2\,x+3)^{4}+\frac{215}{9}}-\frac{17463\,\sqrt{15}\,\operatorname{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{125}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 542*atanh((2*x + 3)^(1/2)) + ((2989*(2*x + 3)^(1/2))/9 - (181867*(2*x + 3)^
(3/2))/225 + (47053*(2*x + 3)^(5/2))/75 - (3913*(2*x + 3)^(7/2))/25)/((160*
x)/9 - (94*(2*x + 3)^2)/9 + (16*(2*x + 3)^3)/3 - (2*x + 3)^4 + 215/9) - (17
463*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2))/5))/125
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**3/(3+2*x)**(1/2),x)
```

```
[Out] Timed out
```

3.2572 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=115

$$-\frac{3(47x+37)}{10\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+\frac{2229x+1888}{10\sqrt{2x+3}\left(3x^2+5x+2\right)}+\frac{2667}{25\sqrt{2x+3}}+402\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{12717}{25}\sqrt{\frac{3}{5}}\ \mathrm{ta}$$

```
[Out] 402*arctanh((3+2*x)^(1/2))-12717/125*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15
^(1/2)+2667/25/(3+2*x)^(1/2)-3/10*(37+47*x)/(3*x^2+5*x+2)^2/(3+2*x)^(1/2)+1
/10*(1888+2229*x)/(3*x^2+5*x+2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 115, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+\frac{2229x+1888}{10\sqrt{2x+3}\left(3x^2+5x+2\right)}+\frac{2667}{25\sqrt{2x+3}}+402\tanh^{-1}\left(\sqrt{2x+3}\right)-\frac{12717}{25}\sqrt{\frac{3}{5}}\ \mathrm{ta}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 2667/(25*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(10*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^
2)^2) + (1888 + 2229*x)/(10*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)) + 402*ArcTanh[
Sqrt[3 + 2*x]] - (12717*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/25
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1328+987x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^2}\,dx \\
&= -\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}+\frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{434}{(3+2x)} \\
&= \frac{2667}{25\sqrt{3+2x}}-\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}+\frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)}+ \\
&= \frac{2667}{25\sqrt{3+2x}}-\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}+\frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)}+ \\
&= \frac{2667}{25\sqrt{3+2x}}-\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}+\frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)}-12 \\
&= \frac{2667}{25\sqrt{3+2x}}-\frac{3(37+47x)}{10\sqrt{3+2x}\left(2+5x+3x^2\right)^2}+\frac{1888+2229x}{10\sqrt{3+2x}\left(2+5x+3x^2\right)}+4
\end{aligned}
$$

Mathematica [A] time = 0.14, size = 86, normalized size = 0.75

$$
\frac{1}{50}\left(\frac{48006x^4+193455x^3+281403x^2+175465x+39661}{\sqrt{2x+3}\left(3x^2+5x+2\right)^2}+20100\tanh^{-1}\left(\sqrt{2x+3}\right)-25434\sqrt{\frac{3}{5}}\tanh^{-1}\left(\sqrt{\frac{3}{5}}\right.\right.
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] ((39661 + 175465*x + 281403*x^2 + 193455*x^3 + 48006*x^4)/(Sqrt[3 + 2*x]*(2
 + 5*x + 3*x^2)^2) + 20100*ArcTanh[Sqrt[3 + 2*x]] - 25434*Sqrt[3/5]*ArcTanh
[Sqrt[3/5]*Sqrt[3 + 2*x]])/50
```

fricas [B] time = 0.68, size = 195, normalized size = 1.70

$$
12717\sqrt{5}\sqrt{3}\left(18x^5+87x^4+164x^3+151x^2+68x+12\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+50250\left(18x^5+87x^4+16\right.
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/250*(12717*sqrt(5)*sqrt(3)*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x +
12)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2)) + 50250*(18*x
^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log(sqrt(2*x + 3) + 1) - 50250
*(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)*log(sqrt(2*x + 3) - 1) +
 5*(48006*x^4 + 193455*x^3 + 281403*x^2 + 175465*x + 39661)*sqrt(2*x + 3))/
(18*x^5 + 87*x^4 + 164*x^3 + 151*x^2 + 68*x + 12)
```

giac [A] time = 0.18, size = 129, normalized size = 1.12

$$\frac{12717}{250}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\,\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)-\frac{416}{125\,\sqrt{2\,x+3}}+\frac{123759\,(2\,x+3)^{\frac{7}{2}}-492873\,(2\,x+3)^{\frac{5}{2}}+628469\,(2}{125\,\left(3\,(2\,x+3)^{2}-16\,x-1\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 12717/250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) + 3
*sqrt(2*x + 3))) - 416/125/sqrt(2*x + 3) + 1/125*(123759*(2*x + 3)^(7/2) -
492873*(2*x + 3)^(5/2) + 628469*(2*x + 3)^(3/2) - 253355*sqrt(2*x + 3))/(3*
(2*x + 3)^2 - 16*x - 19)^2 + 201*log(sqrt(2*x + 3) + 1) - 201*log(abs(sqrt(
2*x + 3) - 1))
```

maple [A] time = 0.02, size = 133, normalized size = 1.16

$$-\frac{12717\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{125}-201\ln\left(-1+\sqrt{2x+3}\right)+201\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{51759(2x+3)^{\frac{3}{2}}}{125}-\frac{18171\sqrt{2x+3}}{25}}{(6x+4)^{2}}+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 486/125*(213/2*(2*x+3)^(3/2)-3365/18*(2*x+3)^(1/2))/(6*x+4)^2-12717/125*arc
tanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)+32/((2*x+3)^(1/2)+1)-3/((2*x+3)^(
1/2)+1)^2+201*ln((2*x+3)^(1/2)+1)-416/125/(2*x+3)^(1/2)+32/(-1+(2*x+3)^(1/2
))+3/(-1+(2*x+3)^(1/2))^2-201*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.99, size = 143, normalized size = 1.24

$$\frac{12717}{250}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{24003\,(2\,x+3)^{4}-94581\,(2\,x+3)^{3}+117873\,(2\,x+3)^{2}-88030\,x-}{25\,\left(9\,(2\,x+3)^{\frac{9}{2}}-48\,(2\,x+3)^{\frac{7}{2}}+94\,(2\,x+3)^{\frac{5}{2}}-80\,(2\,x+3)^{\frac{3}{2}}+25\,\sqrt{}\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 12717/250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*x
 + 3))) + 1/25*(24003*(2*x + 3)^4 - 94581*(2*x + 3)^3 + 117873*(2*x + 3)^2
- 88030*x - 134125)/(9*(2*x + 3)^(9/2) - 48*(2*x + 3)^(7/2) + 94*(2*x + 3)^
(5/2) - 80*(2*x + 3)^(3/2) + 25*sqrt(2*x + 3)) + 201*log(sqrt(2*x + 3) + 1)
 - 201*log(sqrt(2*x + 3) - 1)
```

mupad [B] time = 2.40, size = 109, normalized size = 0.95

$$402\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{12717\,\sqrt{15}\ \mathrm{atanh}\left(\frac{\sqrt{15}\ \sqrt{2\,x+3}}{5}\right)}{125}-\frac{\frac{17606\,x}{45}-\frac{13097\,(2\,x+3)^{2}}{25}+\frac{10509\,(2\,x+3)^{3}}{25}-\frac{2667\,(2\,x+3)^{4}}{25}+}{\frac{25\,\sqrt{2\,x+3}}{9}-\frac{80\,(2\,x+3)^{3/2}}{9}+\frac{94\,(2\,x+3)^{5/2}}{9}-\frac{16\,(2\,x+3)^{7/2}}{3}+(2\,x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 402*atanh((2*x + 3)^(1/2)) - (12717*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2
))/5))/125 - ((17606*x)/45 - (13097*(2*x + 3)^2)/25 + (10509*(2*x + 3)^3)/2
5 - (2667*(2*x + 3)^4)/25 + 5365/9)/((25*(2*x + 3)^(1/2))/9 - (80*(2*x + 3)
^(3/2))/9 + (94*(2*x + 3)^(5/2))/9 - (16*(2*x + 3)^(7/2))/3 + (2*x + 3)^(9/
2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2573 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=128

$$-\frac{3(47x+37)}{10(2x+3)^{3/2}\left(3x^2+5x+2\right)^2}+\frac{10551x+9146}{50(2x+3)^{3/2}\left(3x^2+5x+2\right)}+\frac{6853}{125\sqrt{2x+3}}+\frac{7451}{75(2x+3)^{3/2}}+310\tanh^{-1}\left(\sqrt{2x}\right.$$

```
[Out] 7451/75/(3+2*x)^(3/2)-3/10*(37+47*x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^2+1/50*(91
46+10551*x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)+310*arctanh((3+2*x)^(1/2))-45603/62
5*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2)+6853/125/(3+2*x)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 128, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10(2x+3)^{3/2}\left(3x^2+5x+2\right)^2}+\frac{10551x+9146}{50(2x+3)^{3/2}\left(3x^2+5x+2\right)}+\frac{6853}{125\sqrt{2x+3}}+\frac{7451}{75(2x+3)^{3/2}}+310\tanh^{-1}\left(\sqrt{2x}\right.$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 7451/(75*(3 + 2*x)^(3/2)) + 6853/(125*Sqrt[3 + 2*x]) - (3*(37 + 47*x))/(10*
(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2) + (9146 + 10551*x)/(50*(3 + 2*x)^(3/2)
*(2 + 5*x + 3*x^2)) + 310*ArcTanh[Sqrt[3 + 2*x]] - (45603*Sqrt[3/5]*ArcTanh
[Sqrt[3/5]*Sqrt[3 + 2*x]])/125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^3}\,dx = -\frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} - \frac{1}{10}\int \frac{1550+1269x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}\,dx$$

$$= -\frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146+10551x}{50(3+2x)^{3/2}\left(2+5x+3x^2\right)} + \frac{1}{50}\int \frac{}{(3+}$$

$$= \frac{7451}{75(3+2x)^{3/2}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146+10551x}{50(3+2x)^{3/2}\left(2+5x+3x^2\right.}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146}{50(3+2x)^{3/}}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146}{50(3+2x)^{3/}}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146}{50(3+2x)^{3/}}$$

$$= \frac{7451}{75(3+2x)^{3/2}} + \frac{6853}{125\sqrt{3+2x}} - \frac{3(37+47x)}{10(3+2x)^{3/2}\left(2+5x+3x^2\right)^2} + \frac{9146}{50(3+2x)^{3/}}$$

Mathematica [A] time = 0.29, size = 91, normalized size = 0.71

$$\frac{\frac{5\left(740124x^5+4247856x^4+9453447x^3+10168583x^2+5278129x+1057511\right)}{(2x+3)^{3/2}\left(3x^2+5x+2\right)^2} - 273618\sqrt{15}\,\tanh^{-1}\left(\sqrt{\frac{3}{5}}\sqrt{2x+3}\right)}{3750} + 310\tanh^{-1}\left(\sqrt{2x\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 310*ArcTanh[Sqrt[3 + 2*x]] + ((5*(1057511 + 5278129*x + 10168583*x^2 + 9453
447*x^3 + 4247856*x^4 + 740124*x^5))/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^2)
- 273618*Sqrt[15]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3750
```

fricas [B] time = 0.83, size = 220, normalized size = 1.72

$$\frac{136809\sqrt{5}\sqrt{3}\left(36x^6+228x^5+589x^4+794x^3+589x^2+228x+36\right)\log\left(-\frac{\sqrt{5}\sqrt{3}\sqrt{2x+3}-3x-7}{3x+2}\right)+581250\left(36x\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/3750*(136809*sqrt(5)*sqrt(3)*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*
x^2 + 228*x + 36)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*x - 7)/(3*x + 2))
 + 581250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)*log
(sqrt(2*x + 3) + 1) - 581250*(36*x^6 + 228*x^5 + 589*x^4 + 794*x^3 + 589*x^
2 + 228*x + 36)*log(sqrt(2*x + 3) - 1) + 5*(740124*x^5 + 4247856*x^4 + 9453
447*x^3 + 10168583*x^2 + 5278129*x + 1057511)*sqrt(2*x + 3))/(36*x^6 + 228*
x^5 + 589*x^4 + 794*x^3 + 589*x^2 + 228*x + 36)
```

giac [**A**] time = 0.18, size = 134, normalized size = 1.05

$$\frac{45603}{1250}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)-\frac{64\,(921\,x+1414)}{1875\,(2\,x+3)^{\frac{3}{2}}}+\frac{396801\,(2\,x+3)^{\frac{7}{2}}-1551207\,(2\,x+3)^{\frac{5}{2}}+1922}{625\left(3\,(2\,x+3)^{2}-16\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 45603/1250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15) +
3*sqrt(2*x + 3))) - 64/1875*(921*x + 1414)/(2*x + 3)^(3/2) + 1/625*(396801*
(2*x + 3)^(7/2) - 1551207*(2*x + 3)^(5/2) + 1922011*(2*x + 3)^(3/2) - 73760
5*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x - 19)^2 + 155*log(sqrt(2*x + 3) + 1)
 - 155*log(abs(sqrt(2*x + 3) - 1))
```

maple [**A**] time = 0.02, size = 142, normalized size = 1.11

$$-\frac{45603\sqrt{15}\ \operatorname{arctanh}\left(\frac{\sqrt{15}\ \sqrt{2x+3}}{5}\right)}{625}-155\ln\left(-1+\sqrt{2x+3}\right)+155\ln\left(\sqrt{2x+3}+1\right)+\frac{\frac{171801(2x+3)^{\frac{3}{2}}}{625}-\frac{60021\sqrt{2x+3}}{125}}{(6x+4)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 4374/625*(707/18*(2*x+3)^(3/2)-1235/18*(2*x+3)^(1/2))/(6*x+4)^2-45603/625*a
rctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+20/((2*x+
3)^(1/2)+1)+155*ln((2*x+3)^(1/2)+1)-416/375/(2*x+3)^(3/2)-9824/625/(2*x+3)^
(1/2)+3/(-1+(2*x+3)^(1/2))^2+20/(-1+(2*x+3)^(1/2))-155*ln(-1+(2*x+3)^(1/2))
```

maxima [**A**] time = 0.98, size = 152, normalized size = 1.19

$$\frac{45603}{1250}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)+\frac{185031\,(2\,x+3)^{5}-651537\,(2\,x+3)^{4}+619101\,(2\,x+3)^{3}-10115\,(2\,x}{375\left(9\,(2\,x+3)^{\frac{11}{2}}-48\,(2\,x+3)^{\frac{9}{2}}+94\,(2\,x+3)^{\frac{7}{2}}-80\,(2\,x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 45603/1250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(2*
x + 3))) + 1/375*(185031*(2*x + 3)^5 - 651537*(2*x + 3)^4 + 619101*(2*x + 3
)^3 - 10115*(2*x + 3)^2 - 228160*x - 352640)/(9*(2*x + 3)^(11/2) - 48*(2*x
+ 3)^(9/2) + 94*(2*x + 3)^(7/2) - 80*(2*x + 3)^(5/2) + 25*(2*x + 3)^(3/2))
+ 155*log(sqrt(2*x + 3) + 1) - 155*log(sqrt(2*x + 3) - 1)
```

mupad [**B**] time = 0.08, size = 118, normalized size = 0.92

$$310\,\operatorname{atanh}\left(\sqrt{2\,x+3}\right)-\frac{45603\,\sqrt{15}\ \operatorname{atanh}\left(\frac{\sqrt{15}\ \sqrt{2\,x+3}}{5}\right)}{625}-\frac{\frac{45632\,x}{675}+\frac{2023\,(2\,x+3)^{2}}{675}-\frac{68789\,(2\,x+3)^{3}}{375}+\frac{24131\,(2\,x+3)^{4}}{125}-68}{\frac{25\,(2\,x+3)^{3/2}}{9}-\frac{80\,(2\,x+3)^{5/2}}{9}+\frac{94\,(2\,x+3)^{7/2}}{9}-\frac{16\,(2\,x+3)^{9/2}}{3}+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 310*atanh((2*x + 3)^(1/2)) - (45603*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/2
))/5))/625 - ((45632*x)/675 + (2023*(2*x + 3)^2)/675 - (68789*(2*x + 3)^3)/
375 + (24131*(2*x + 3)^4)/125 - (6853*(2*x + 3)^5)/125 + 70528/675)/((25*(2
*x + 3)^(3/2))/9 - (80*(2*x + 3)^(5/2))/9 + (94*(2*x + 3)^(7/2))/9 - (16*(2
*x + 3)^(9/2))/3 + (2*x + 3)^(11/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2574 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^3}\,dx$

Optimal. Leaf size=141

$$-\frac{3(47x+37)}{10(2x+3)^{5/2}\left(3x^2+5x+2\right)^2}+\frac{9957x+8852}{50(2x+3)^{5/2}\left(3x^2+5x+2\right)}-\frac{24409}{3125\sqrt{2x+3}}+\frac{102697}{1875(2x+3)^{3/2}}+\frac{56399}{625(2x+3)^{5}}$$

```
[Out] 56399/625/(3+2*x)^(5/2)+102697/1875/(3+2*x)^(3/2)-3/10*(37+47*x)/(3+2*x)^(5
/2)/(3*x^2+5*x+2)^2+1/50*(8852+9957*x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)+266*arct
anh((3+2*x)^(1/2))-806841/15625*arctanh(1/5*15^(1/2)*(3+2*x)^(1/2))*15^(1/2
)-24409/3125/(3+2*x)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 5, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.185, Rules used = {822, 828, 826, 1166, 207}

$$-\frac{3(47x+37)}{10(2x+3)^{5/2}\left(3x^2+5x+2\right)^2}+\frac{9957x+8852}{50(2x+3)^{5/2}\left(3x^2+5x+2\right)}-\frac{24409}{3125\sqrt{2x+3}}+\frac{102697}{1875(2x+3)^{3/2}}+\frac{56399}{625(2x+3)^{5}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] 56399/(625*(3 + 2*x)^(5/2)) + 102697/(1875*(3 + 2*x)^(3/2)) - 24409/(3125*S
qrt[3 + 2*x]) - (3*(37 + 47*x))/(10*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^2) +
(8852 + 9957*x)/(50*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)) + 266*ArcTanh[Sqrt[3
 + 2*x]] - (806841*Sqrt[3/5]*ArcTanh[Sqrt[3/5]*Sqrt[3 + 2*x]])/3125
```

Rule 207

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTanh[(Rt[b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[b, 2]), x] /; FreeQ[{a, b}, x] && NegQ[a/b] && (LtQ[a
, 0] || GtQ[b, 0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 828

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1))/((m + 1)*(
c*d^2 - b*d*e + a*e^2)), x] + Dist[1/(c*d^2 - b*d*e + a*e^2), Int[((d + e*x
)^(m + 1)*Simp[c*d*f - f*b*e + a*e*g - c*(e*f - d*g)*x, x])/(a + b*x + c*x^
2), x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && FractionQ[m] && LtQ[m, -1]
```

Rule 1166

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[b^2 - 4*a*c, 2]}, Dist[e/2 + (2*c*d - b*e)/(2*q), Int[1/(b/2
 - q/2 + c*x^2), x], x] + Dist[e/2 - (2*c*d - b*e)/(2*q), Int[1/(b/2 + q/2
+ c*x^2), x], x]] /; FreeQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && Ne
Q[c*d^2 - a*e^2, 0] && PosQ[b^2 - 4*a*c]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^3}\,dx &= -\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}-\frac{1}{10}\int \frac{1772+1551x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^2}\,dx\\
&= -\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}+\frac{8852+9957x}{50(3+2x)^{5/2}\left(2+5x+3x^2\right)}+\frac{1}{50}\int \frac{}{(3+}\\
&= \frac{56399}{625(3+2x)^{5/2}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}+\frac{8852+9957x}{50(3+2x)^{5/2}\left(2+5x+3x\right.}\\
&= \frac{56399}{625(3+2x)^{5/2}}+\frac{102697}{1875(3+2x)^{3/2}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+3x^2\right)^2}+\frac{8}{50(3+}\\
&= \frac{56399}{625(3+2x)^{5/2}}+\frac{102697}{1875(3+2x)^{3/2}}-\frac{24409}{3125\sqrt{3+2x}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+\right.}\\
&= \frac{56399}{625(3+2x)^{5/2}}+\frac{102697}{1875(3+2x)^{3/2}}-\frac{24409}{3125\sqrt{3+2x}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+\right.}\\
&= \frac{56399}{625(3+2x)^{5/2}}+\frac{102697}{1875(3+2x)^{3/2}}-\frac{24409}{3125\sqrt{3+2x}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+\right.}\\
&= \frac{56399}{625(3+2x)^{5/2}}+\frac{102697}{1875(3+2x)^{3/2}}-\frac{24409}{3125\sqrt{3+2x}}-\frac{3(37+47x)}{10(3+2x)^{5/2}\left(2+5x+\right.}
\end{aligned}
$$

Mathematica [A] time = 0.18, size = 121, normalized size = 0.86

$$
\frac{-\frac{28125(47x+37)}{\left(3x^2+5x+2\right)^2}+\frac{1875(9957x+8852)}{3x^2+5x+2}+2(2x+3)\left(21(2x+3)\left(593750\sqrt{2x+3}\,\tanh^{-1}\left(\sqrt{2x+3}\right)-115263\sqrt{30x+45}\right.\right.}{93750(2x+3)^{5/2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^3),x]
```

```
[Out] (8459850 - (28125*(37 + 47*x))/(2 + 5*x + 3*x^2)^2 + (1875*(8852 + 9957*x))
/(2 + 5*x + 3*x^2) + 2*(3 + 2*x)*(2567425 + 21*(3 + 2*x)*(-17435 + 593750*S
qrt[3 + 2*x]*ArcTanh[Sqrt[3 + 2*x]] - 115263*Sqrt[45 + 30*x]*ArcTanh[Sqrt[3
/5]*Sqrt[3 + 2*x]])))/(93750*(3 + 2*x)^(5/2))
```

fricas [B] time = 0.59, size = 245, normalized size = 1.74

$$\frac{2420523\,\sqrt{5}\,\sqrt{3}\left(72\,x^{7}+564\,x^{6}+1862\,x^{5}+3355\,x^{4}+3560\,x^{3}+2223\,x^{2}+756\,x+108\right)\log\left(-\frac{\sqrt{5}\,\sqrt{3}\,\sqrt{2\,x+3}-3}{3\,x+2}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="fricas")
```

```
[Out] 1/93750*(2420523*sqrt(5)*sqrt(3)*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 +
3560*x^3 + 2223*x^2 + 756*x + 108)*log(-(sqrt(5)*sqrt(3)*sqrt(2*x + 3) - 3*
x - 7)/(3*x + 2)) + 12468750*(72*x^7 + 564*x^6 + 1862*x^5 + 3355*x^4 + 3560
*x^3 + 2223*x^2 + 756*x + 108)*log(sqrt(2*x + 3) + 1) - 12468750*(72*x^7 +
564*x^6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 + 756*x + 108)*log(sqrt
(2*x + 3) - 1) - 5*(5272344*x^6 + 14906052*x^5 - 18312714*x^4 - 114099329*x
^3 - 160041829*x^2 - 94082723*x - 20250051)*sqrt(2*x + 3))/(72*x^7 + 564*x^
6 + 1862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 + 756*x + 108)
```

giac [A] time = 0.19, size = 143, normalized size = 1.01

$$\frac{806841}{31250}\,\sqrt{15}\,\log\left(\frac{\left|-2\,\sqrt{15}+6\,\sqrt{2\,x+3}\right|}{2\left(\sqrt{15}+3\,\sqrt{2\,x+3}\right)}\right)+\frac{202995\,(2\,x+3)^{\frac{7}{2}}-745077\,(2\,x+3)^{\frac{5}{2}}+831169\,(2\,x+3)^{\frac{3}{2}}-259}{625\left(3\,(2\,x+3)^{2}-16\,x-19\right)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="giac")
```

```
[Out] 806841/31250*sqrt(15)*log(1/2*abs(-2*sqrt(15) + 6*sqrt(2*x + 3))/(sqrt(15)
+ 3*sqrt(2*x + 3))) + 1/625*(202995*(2*x + 3)^(7/2) - 745077*(2*x + 3)^(5/2
) + 831169*(2*x + 3)^(3/2) - 259087*sqrt(2*x + 3))/(3*(2*x + 3)^2 - 16*x -
19)^2 - 32/9375*(12861*(2*x + 3)^2 + 3070*x + 4800)/(2*x + 3)^(5/2) + 133*l
og(sqrt(2*x + 3) + 1) - 133*log(abs(sqrt(2*x + 3) - 1))
```

maple [A] time = 0.03, size = 151, normalized size = 1.07

$$-\frac{806841\sqrt{15}\;\operatorname{arctanh}\left(\frac{\sqrt{15}\;\sqrt{2x+3}}{5}\right)}{15625}-133\ln\left(-1+\sqrt{2x+3}\right)+133\ln\left(\sqrt{2x+3}\;+1\right)+\frac{\frac{22599(2x+3)^{\frac{3}{2}}}{125}-\frac{196587\sqrt{2x+}}{625}}{(6x+4)^{2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^3,x)
```

```
[Out] 13122/3125*(775/18*(2*x+3)^(3/2)-4045/54*(2*x+3)^(1/2))/(6*x+4)^2-806841/15
625*arctanh(1/5*15^(1/2)*(2*x+3)^(1/2))*15^(1/2)-3/((2*x+3)^(1/2)+1)^2+8/((
2*x+3)^(1/2)+1)+133*ln((2*x+3)^(1/2)+1)-416/625/(2*x+3)^(5/2)-9824/1875/(2*
x+3)^(3/2)-137184/3125/(2*x+3)^(1/2)+3/(-1+(2*x+3)^(1/2))^2+8/(-1+(2*x+3)^(
1/2))-133*ln(-1+(2*x+3)^(1/2))
```

maxima [A] time = 0.98, size = 161, normalized size = 1.14

$$\frac{806841}{31250}\,\sqrt{15}\,\log\left(-\frac{\sqrt{15}-3\,\sqrt{2\,x+3}}{\sqrt{15}+3\,\sqrt{2\,x+3}}\right)-\frac{659043\,(2\,x+3)^{6}-8136261\,(2\,x+3)^{5}+23916753\,(2\,x+3)^{4}-247}{9375\left(9\,(2\,x+3)^{\frac{13}{2}}-48\,(2\,x+3)^{\frac{11}{2}}+94\,(2\,x\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^3,x, algorithm="maxima")
```

```
[Out] 806841/31250*sqrt(15)*log(-(sqrt(15) - 3*sqrt(2*x + 3))/(sqrt(15) + 3*sqrt(
2*x + 3))) - 1/9375*(659043*(2*x + 3)^6 - 8136261*(2*x + 3)^5 + 23916753*(2
*x + 3)^4 - 24720095*(2*x + 3)^3 + 6945760*(2*x + 3)^2 + 1457600*x + 234240
0)/(9*(2*x + 3)^(13/2) - 48*(2*x + 3)^(11/2) + 94*(2*x + 3)^(9/2) - 80*(2*x
 + 3)^(7/2) + 25*(2*x + 3)^(5/2)) + 133*log(sqrt(2*x + 3) + 1) - 133*log(sq
rt(2*x + 3) - 1)
```

mupad [B] time = 0.08, size = 127, normalized size = 0.90

$$266\,\mathrm{atanh}\left(\sqrt{2\,x+3}\right)-\frac{806841\,\sqrt{15}\,\mathrm{atanh}\left(\frac{\sqrt{15}\,\sqrt{2\,x+3}}{5}\right)}{15625}-\frac{\frac{58304\,x}{3375}+\frac{1389152\,{\left(2\,x+3\right)}^2}{16875}-\frac{4944019\,{\left(2\,x+3\right)}^3}{16875}+\frac{2657417\,{\left(2\,x+3\right)}^4}{9375}}{\frac{25\,{\left(2\,x+3\right)}^{5/2}}{9}-\frac{80\,{\left(2\,x+3\right)}^{7/2}}{9}+\frac{94\,{\left(2\,x+3\right)}^{9/2}}{9}-16}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^3),x)
```

```
[Out] 266*atanh((2*x + 3)^(1/2)) - (806841*15^(1/2)*atanh((15^(1/2)*(2*x + 3)^(1/
2))/5))/15625 - ((58304*x)/3375 + (1389152*(2*x + 3)^2)/16875 - (4944019*(2
*x + 3)^3)/16875 + (2657417*(2*x + 3)^4)/9375 - (301343*(2*x + 3)^5)/3125 +
 (24409*(2*x + 3)^6)/3125 + 31232/1125)/((25*(2*x + 3)^(5/2))/9 - (80*(2*x
+ 3)^(7/2))/9 + (94*(2*x + 3)^(9/2))/9 - (16*(2*x + 3)^(11/2))/3 + (2*x + 3
)^(13/2))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**3,x)
```

```
[Out] Timed out
```

3.2575 $\int \frac{5+\sqrt{35}+10x}{\sqrt{1+2x}\left(2+3x+5x^2\right)}\,dx$

Optimal. Leaf size=105

$$2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{20x+10}+\sqrt{2+\sqrt{35}}}{\sqrt{\sqrt{35}-2}}\right)-2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{2+\sqrt{35}}-\sqrt{20x+10}}{\sqrt{\sqrt{35}-2}}\right)$$

```
[Out] -2*arctan((-(10+20*x)^(1/2)+(2+35^(1/2))^(1/2))/(-2+35^(1/2))^(1/2))*10^(1/
2)/(-2+35^(1/2))^(1/2)+2*arctan(((10+20*x)^(1/2)+(2+35^(1/2))^(1/2))/(-2+35
^(1/2))^(1/2))*10^(1/2)/(-2+35^(1/2))^(1/2)
```

Rubi [A] time = 0.24, antiderivative size = 115, normalized size of antiderivative = 1.10, number of steps used = 6, number of rules used = 4, integrand size = 32, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.125, Rules used = {826, 1161, 618, 204}

$$2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{10\sqrt{2x+1}+\sqrt{10\left(2+\sqrt{35}\right)}}{\sqrt{10\left(\sqrt{35}-2\right)}}\right)-2\sqrt{\frac{10}{\sqrt{35}-2}}\tan^{-1}\left(\frac{\sqrt{10\left(2+\sqrt{35}\right)}-10\sqrt{2x+1}}{\sqrt{10\left(\sqrt{35}-2\right)}}\right)$$

Antiderivative was successfully verified.

```
[In] Int[(5 + Sqrt[35] + 10*x)/(Sqrt[1 + 2*x]*(2 + 3*x + 5*x^2)),x]
```

```
[Out] -2*Sqrt[10/(-2 + Sqrt[35])]*ArcTan[(Sqrt[10*(2 + Sqrt[35])] - 10*Sqrt[1 + 2
*x])/Sqrt[10*(-2 + Sqrt[35])]] + 2*Sqrt[10/(-2 + Sqrt[35])]*ArcTan[(Sqrt[10
*(2 + Sqrt[35])] + 10*Sqrt[1 + 2*x])/Sqrt[10*(-2 + Sqrt[35])]]
```

Rule 204

```
Int[((a_) + (b_.)*(x_)^2)^(-1), x_Symbol] :> -Simp[ArcTan[(Rt[-b, 2]*x)/Rt[
-a, 2]]/(Rt[-a, 2]*Rt[-b, 2]), x] /; FreeQ[{a, b}, x] && PosQ[a/b] && (LtQ[
a, 0] || LtQ[b, 0])
```

Rule 618

```
Int[((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(-1), x_Symbol] :> Dist[-2, Subst[I
nt[1/Simp[b^2 - 4*a*c - x^2, x], x], x, b + 2*c*x], x] /; FreeQ[{a, b, c},
x] && NeQ[b^2 - 4*a*c, 0]
```

Rule 826

```
Int[((f_.) + (g_.)*(x_))/(Sqrt[(d_.) + (e_.)*(x_)]*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)), x_Symbol] :> Dist[2, Subst[Int[(e*f - d*g + g*x^2)/(c*d^2 - b
*d*e + a*e^2 - (2*c*d - b*e)*x^2 + c*x^4), x], x, Sqrt[d + e*x]], x] /; Fre
eQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e +
a*e^2, 0]
```

Rule 1161

```
Int[((d_) + (e_.)*(x_)^2)/((a_) + (b_.)*(x_)^2 + (c_.)*(x_)^4), x_Symbol] :
> With[{q = Rt[(2*d)/e - b/c, 2]}, Dist[e/(2*c), Int[1/Simp[d/e + q*x + x^2
, x], x], x] + Dist[e/(2*c), Int[1/Simp[d/e - q*x + x^2, x], x], x]] /; Fre
eQ[{a, b, c, d, e}, x] && NeQ[b^2 - 4*a*c, 0] && EqQ[c*d^2 - a*e^2, 0] && (
GtQ[(2*d)/e - b/c, 0] || ( !LtQ[(2*d)/e - b/c, 0] && EqQ[d - e*Rt[a/c, 2],
0]))
```

Rubi steps

$$\begin{aligned}\int \frac{5+\sqrt{35}+10x}{\sqrt{1+2x}\left(2+3x+5x^2\right)}\,dx &= 2\,\text{Subst}\left(\int \frac{-10+2\left(5+\sqrt{35}\right)+10x^2}{7-4x^2+5x^4}\,dx, x, \sqrt{1+2x}\right)\\ &= 2\,\text{Subst}\left(\int \frac{1}{\sqrt{\frac{7}{5}}-\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}\,x+x^2}\,dx, x, \sqrt{1+2x}\right)+2\,\text{Subst}\left(\int \frac{}{\sqrt{\frac{7}{5}}+} \right.\\ &= -\left(4\,\text{Subst}\left(\int \frac{1}{\frac{2}{5}\left(2-\sqrt{35}\right)-x^2}\,dx, x, -\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}+2\sqrt{1+2x}\right)\right)-4\,\text{Sub}\\ &= -2\sqrt{\frac{10}{-2+\sqrt{35}}}\tan^{-1}\left(\sqrt{\frac{5}{2\left(-2+\sqrt{35}\right)}}\left(\sqrt{\frac{2}{5}\left(2+\sqrt{35}\right)}-2\sqrt{1+2x}\right)\right)+2\end{aligned}$$

Mathematica [C] time = 0.27, size = 141, normalized size = 1.34

$$\frac{2}{217}\left(\sqrt{2-i\sqrt{31}}\left(31\sqrt{7}-7i\sqrt{155}-2i\sqrt{217}\right)\tanh^{-1}\left(\frac{\sqrt{10x+5}}{\sqrt{2-i\sqrt{31}}}\right)+\sqrt{2+i\sqrt{31}}\left(31\sqrt{7}+7i\sqrt{155}+2i\sqrt{217}\right)\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 + Sqrt[35] + 10*x)/(Sqrt[1 + 2*x]*(2 + 3*x + 5*x^2)),x]
```

```
[Out] (2*(Sqrt[2 - I*Sqrt[31]]*(31*Sqrt[7] - (7*I)*Sqrt[155] - (2*I)*Sqrt[217])*A
rcTanh[Sqrt[5 + 10*x]/Sqrt[2 - I*Sqrt[31]]] + Sqrt[2 + I*Sqrt[31]]*(31*Sqrt
[7] + (7*I)*Sqrt[155] + (2*I)*Sqrt[217])*ArcTanh[Sqrt[5 + 10*x]/Sqrt[2 + I*
Sqrt[31]]]))/217
```

fricas [A] time = 0.56, size = 52, normalized size = 0.50

$$-\frac{2}{31}\sqrt{31}\sqrt{10\sqrt{35}+20}\arctan\left(-\frac{\left(5\sqrt{31}\left(2x+1\right)-\sqrt{35}\sqrt{31}\right)\sqrt{10\sqrt{35}+20}}{310\sqrt{2x+1}}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="frica
s")
```

```
[Out] -2/31*sqrt(31)*sqrt(10*sqrt(35) + 20)*arctan(-1/310*(5*sqrt(31)*(2*x + 1) -
 sqrt(35)*sqrt(31))*sqrt(10*sqrt(35) + 20)/sqrt(2*x + 1))
```

giac [B] time = 1.01, size = 313, normalized size = 2.98

$$\frac{1}{7443100}\sqrt{31}\left(210\sqrt{31}\left(\frac{7}{5}\right)^{\frac{3}{4}}\left(2\sqrt{35}+35\right)\sqrt{-140\sqrt{35}+2450}-\sqrt{31}\left(\frac{7}{5}\right)^{\frac{3}{4}}\left(-140\sqrt{35}+2450\right)^{\frac{3}{2}}+2\left(\frac{7}{5}\right)^{\frac{3}{4}}\left(14\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="giac"
)
```

```
[Out] 1/7443100*sqrt(31)*(210*sqrt(31)*(7/5)^(3/4)*(2*sqrt(35) + 35)*sqrt(-140*sq
rt(35) + 2450) - sqrt(31)*(7/5)^(3/4)*(-140*sqrt(35) + 2450)^(3/2) + 2*(7/5
)^(3/4)*(140*sqrt(35) + 2450)^(3/2) + 420*(7/5)^(3/4)*sqrt(140*sqrt(35) + 2
450)*(2*sqrt(35) - 35) + 980*sqrt(35)*sqrt(31)*(7/5)^(1/4)*sqrt(-140*sqrt(3
5) + 2450) + 1960*sqrt(35)*(7/5)^(1/4)*sqrt(140*sqrt(35) + 2450))*arctan(5/
7*(7/5)^(3/4)*((7/5)^(1/4)*sqrt(1/35*sqrt(35) + 1/2) + sqrt(2*x + 1))/sqrt(
-1/35*sqrt(35) + 1/2)) + 1/7443100*sqrt(31)*(210*sqrt(31)*(7/5)^(3/4)*(2*sq
rt(35) + 35)*sqrt(-140*sqrt(35) + 2450) - sqrt(31)*(7/5)^(3/4)*(-140*sqrt(3
5) + 2450)^(3/2) + 2*(7/5)^(3/4)*(140*sqrt(35) + 2450)^(3/2) + 420*(7/5)^(3
/4)*sqrt(140*sqrt(35) + 2450)*(2*sqrt(35) - 35) + 980*sqrt(35)*sqrt(31)*(7/
5)^(1/4)*sqrt(-140*sqrt(35) + 2450) + 1960*sqrt(35)*(7/5)^(1/4)*sqrt(140*sq
rt(35) + 2450))*arctan(-5/7*(7/5)^(3/4)*((7/5)^(1/4)*sqrt(1/35*sqrt(35) + 1
/2) - sqrt(2*x + 1))/sqrt(-1/35*sqrt(35) + 1/2))
```

maple [A] time = 0.33, size = 111, normalized size = 1.06

$$\frac{20\arctan\left(\frac{10\sqrt{2x+1}-\sqrt{5}\,\sqrt{2\sqrt{5}\,\sqrt{7}+4}}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}\right)}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}+\frac{20\arctan\left(\frac{10\sqrt{2x+1}+\sqrt{5}\,\sqrt{2\sqrt{5}\,\sqrt{7}+4}}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}\right)}{\sqrt{10\sqrt{5}\,\sqrt{7}-20}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x)
```

```
[Out] 20/(10*5^(1/2)*7^(1/2)-20)^(1/2)*arctan((10*(1+2*x)^(1/2)-5^(1/2)*(2*5^(1/2
)*7^(1/2)+4)^(1/2))/(10*5^(1/2)*7^(1/2)-20)^(1/2))+20/(10*5^(1/2)*7^(1/2)-2
0)^(1/2)*arctan((10*(1+2*x)^(1/2)+5^(1/2)*(2*5^(1/2)*7^(1/2)+4)^(1/2))/(10*
5^(1/2)*7^(1/2)-20)^(1/2))
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{10\,x+\sqrt{35}+5}{\left(5\,x^2+3\,x+2\right)\sqrt{2\,x+1}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35^(1/2))/(5*x^2+3*x+2)/(1+2*x)^(1/2),x, algorithm="maxim
a")
```

```
[Out] integrate((10*x + sqrt(35) + 5)/((5*x^2 + 3*x + 2)*sqrt(2*x + 1)), x)
```

mupad [B] time = 3.27, size = 143, normalized size = 1.36

$$2\sqrt{\frac{10\sqrt{35}}{31}+\frac{20}{31}}\left(\mathrm{atan}\left(\frac{\sqrt{434}\,\left(39\sqrt{35}+140\right)\sqrt{2\,x+1}\,\left(\sqrt{35}-2\right)^2\sqrt{\sqrt{35}+2}}{417074}\right)+\mathrm{atan}\left(\frac{31\sqrt{2\,x+1}\,\left(\sqrt{}\right.}{}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((10*x + 35^(1/2) + 5)/((2*x + 1)^(1/2)*(3*x + 5*x^2 + 2)),x)
```

```
[Out] 2*((10*35^(1/2))/31 + 20/31)^(1/2)*(atan((434^(1/2)*(39*35^(1/2) + 140)*(2*
x + 1)^(1/2)*(35^(1/2) - 2)^2*(35^(1/2) + 2)^(1/2))/417074) + atan((31*(2*x
 + 1)^(1/2)*((((10*35^(1/2))/31 + 20/31)^(1/2)*(10000*35^(1/2) + 20000))/(3
9*35^(1/2) + 140) - (434^(1/2)*((390000*35^(1/2))/31 + 1400000/31)*(35^(1/2
) - 2)^2*(35^(1/2) + 2)^(1/2))/417074))/10000 + (434^(1/2)*((200000*35^(1/2
))/31 + 1950000/31)*(2*x + 1)^(3/2)*(35^(1/2) - 2)^2*(35^(1/2) + 2)^(1/2))/
134540000))
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{10x + 5 + \sqrt{35}}{\sqrt{2x + 1}\,\left(5x^2 + 3x + 2\right)}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5+10*x+35**(1/2))/(5*x**2+3*x+2)/(1+2*x)**(1/2),x)
```

```
[Out] Integral((10*x + 5 + sqrt(35))/(sqrt(2*x + 1)*(5*x**2 + 3*x + 2)), x)
```

3.2576 $\int (5-x)(3+2x)^{5/2}\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=224

$$-\frac{2}{33}\left(3x^2+5x+2\right)^{3/2}(2x+3)^{5/2}+\frac{730}{891}\left(3x^2+5x+2\right)^{3/2}(2x+3)^{3/2}+\frac{12130\left(3x^2+5x+2\right)^{3/2}\sqrt{2x+3}}{6237}+\frac{(28035}{}$$

```
[Out] 730/891*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(3/2)-2/33*(3+2*x)^(5/2)*(3*x^2+5*x+2)^
(3/2)+12130/6237*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)-32567/48114*EllipticE(3^
(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)
^(1/2)+168145/336798*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5
*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/56133*(250447+280359*x)*(3+2*x)^(
1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{33}\left(3x^2+5x+2\right)^{3/2}(2x+3)^{5/2}+\frac{730}{891}\left(3x^2+5x+2\right)^{3/2}(2x+3)^{3/2}+\frac{12130\left(3x^2+5x+2\right)^{3/2}\sqrt{2x+3}}{6237}+\frac{(28035}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[3 + 2*x]*(250447 + 280359*x)*Sqrt[2 + 5*x + 3*x^2])/56133 + (12130*Sq
rt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2))/6237 + (730*(3 + 2*x)^(3/2)*(2 + 5*x +
 3*x^2)^(3/2))/891 - (2*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2))/33 - (3256
7*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(160
38*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (168145*Sqrt[-2 - 5*x - 3*x^2]*Elliptic
F[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(112266*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]
)
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int (5-x)(3+2x)^{5/2}\sqrt{2+5x+3x^2}\,dx &= -\frac{2}{33}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{33}\int (3+2x)^{3/2}\left(280+\frac{365x}{2}\right)\sqrt{2+} \\
&= \frac{730}{891}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}-\frac{2}{33}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}+ \\
&= \frac{12130\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}}{6237}+\frac{730}{891}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}- \\
&= \frac{\sqrt{3+2x}\,(250447+280359x)\sqrt{2+5x+3x^2}}{56133}+\frac{12130\sqrt{3+2x}\,(2+5x}{6237} \\
&= \frac{\sqrt{3+2x}\,(250447+280359x)\sqrt{2+5x+3x^2}}{56133}+\frac{12130\sqrt{3+2x}\,(2+5x}{6237} \\
&= \frac{\sqrt{3+2x}\,(250447+280359x)\sqrt{2+5x+3x^2}}{56133}+\frac{12130\sqrt{3+2x}\,(2+5x}{6237} \\
&= \frac{\sqrt{3+2x}\,(250447+280359x)\sqrt{2+5x+3x^2}}{56133}+\frac{12130\sqrt{3+2x}\,(2+5x}{6237}
\end{aligned}
$$

Mathematica **[A]** time = 0.37, size = 208, normalized size = 0.93

$$-\frac{2\left(734832x^7+789264x^6-18348768x^5-80563032x^4-147414969x^3-137602437x^2-64194200x-11846\right.}{3367}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/336798*(2*Sqrt[3 + 2*x]*(-11846900 - 64194200*x - 137602437*x^2 - 147414
969*x^3 - 80563032*x^4 - 18348768*x^5 + 789264*x^6 + 734832*x^7) + 227969*S
qrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ellipt
icE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 127082*Sqrt[5]*Sqrt[(1 + x)/(3
+ 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sq
rt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas **[F]** time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(4\,x^{3}-8\,x^{2}-51\,x-45\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(4*x^3 - 8*x^2 - 51*x - 45)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3),
x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3\,x^{2}+5\,x+2}\,(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(5/2)*(x - 5), x)
```

maple **[A]** time = 0.12, size = 156, normalized size = 0.70

$$-\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(14696640x^7+15785280x^6-366975360x^5-1611260640x^4-2948299380x^3-27\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/3367980*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(14696640*x^7+15785280*x^6-366
975360*x^5+59824*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-20-30*x)^(1/2)*Ell
ipticF(1/5*(45+30*x)^(1/2),1/3*15^(1/2))-227969*(2*x+3)^(1/2)*15^(1/2)*(-2*
x-2)^(1/2)*(-20-30*x)^(1/2)*EllipticE(1/5*(45+30*x)^(1/2),1/3*15^(1/2))-161
1260640*x^4-2948299380*x^3-2765726880*x^2-1306680900*x-246056760)/(6*x^3+19
*x^2+19*x+6)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^{2}+5\,x+2}\,(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(5/2)*(x - 5), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^{5/2}\,(x-5)\,\sqrt{3\,x^2+5\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-45\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-51x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-8x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-45*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-51*x*sqr
t(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2*sqrt(2*x + 3)*sqrt
(3*x**2 + 5*x + 2), x) - Integral(4*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x +
2), x)
```

3.2577 $\int (5-x)(3+2x)^{3/2}\sqrt{2+5x+3x^2}\,dx$

Optimal. Leaf size=197

$$-\frac{2}{27}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{3/2}+\frac{202}{189}\sqrt{2x+3}\left(3x^2+5x+2\right)^{3/2}+\frac{\sqrt{2x+3}\,(30033x+27914)\sqrt{3x^2+5x+2}}{8505}+$$

```
[Out] -2/27*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(3/2)+202/189*(3*x^2+5*x+2)^(3/2)*(3+2*x)
^(1/2)-4729/7290*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2
)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+5773/10206*EllipticF(3^(1/2)*(1+x)^(1/2
),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/8505*(2
7914+30033*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{27}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{3/2}+\frac{202}{189}\sqrt{2x+3}\left(3x^2+5x+2\right)^{3/2}+\frac{\sqrt{2x+3}\,(30033x+27914)\sqrt{3x^2+5x+2}}{8505}+$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[3 + 2*x]*(27914 + 30033*x)*Sqrt[2 + 5*x + 3*x^2])/8505 + (202*Sqrt[3
+ 2*x]*(2 + 5*x + 3*x^2)^(3/2))/189 - (2*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^
(3/2))/27 - (4729*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 +
x]], -2/3])/(2430*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (5773*Sqrt[-2 - 5*x - 3*
x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(3402*Sqrt[3]*Sqrt[2 + 5
*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)(3+2x)^{3/2}\sqrt{2+5x+3x^2}\,dx = -\frac{2}{27}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{27}\int\sqrt{3+2x}\left(231+\frac{303x}{2}\right)\sqrt{2+5}$$

$$=\frac{202}{189}\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}-\frac{2}{27}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}+\frac{4}{567}$$

$$=\frac{\sqrt{3+2x}\,(27914+30033x)\sqrt{2+5x+3x^2}}{8505}+\frac{202}{189}\sqrt{3+2x}\left(2+5x+3x^2\right.$$

$$=\frac{\sqrt{3+2x}\,(27914+30033x)\sqrt{2+5x+3x^2}}{8505}+\frac{202}{189}\sqrt{3+2x}\left(2+5x+3x\right.$$

$$=\frac{\sqrt{3+2x}\,(27914+30033x)\sqrt{2+5x+3x^2}}{8505}+\frac{202}{189}\sqrt{3+2x}\left(2+5x+3x\right.$$

$$=\frac{\sqrt{3+2x}\,(27914+30033x)\sqrt{2+5x+3x^2}}{8505}+\frac{202}{189}\sqrt{3+2x}\left(2+5x+3x\right.$$

Mathematica **[A]** time = 0.32, size = 203, normalized size = 1.03

$$-\frac{2\left(68040x^6-59940x^5-1799874x^4-5185953x^3-6208230x^2-3389617x-695446\right)\sqrt{2x+3}-15784\sqrt{5}}{51030(2x+3)\sqrt{3x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/51030*(2*Sqrt[3 + 2*x]*(-695446 - 3389617*x - 6208230*x^2 - 5185953*x^3
- 1799874*x^4 - 59940*x^5 + 68040*x^6) + 33103*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*
x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3
 + 2*x]], 3/5] - 15784*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2
+ 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*
x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas **[F]** time = 0.68, size = 0, normalized size = 0.00

$$\text{integral}\left(-\sqrt{3\,x^2+5\,x+2}\left(2\,x^2-7\,x-15\right)\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(2*x^2 - 7*x - 15)*sqrt(2*x + 3), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int-\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(3/2)*(x - 5), x)
```

maple **[A]** time = 0.01, size = 151, normalized size = 0.77

$$-\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(1360800x^6-1198800x^5-35997480x^4-103719060x^3-126150780x^2-7110264\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] -1/510300*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(1360800*x^6-1198800*x^5+4238*(
2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+4
5)^(1/2),1/3*15^(1/2))-33103*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-35997480*x^4-103719060
*x^3-126150780*x^2-71102640*x-15233040)/(6*x^3+19*x^2+19*x+6)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(3/2)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int (2\,x+3)^{3/2}\,(x-5)\,\sqrt{3\,x^2+5\,x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-15\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-7x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int 2x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-15*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-7*x*sqrt
(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2*sqrt(2*x + 3)*sqrt(3
*x**2 + 5*x + 2), x)
```

3.2578 $\int (5-x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}\;dx$

Optimal. Leaf size=170

$$-\frac{2}{21}\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{3/2}+\frac{1}{945}\sqrt{2x+3}\,(2169x+2327)\sqrt{3x^2+5x+2}+\frac{1039\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{\right.\right.}{378\sqrt{3}\,\sqrt{3x^2+5x+}}$$

```
[Out] -2/21*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)-697/810*EllipticE(3^(1/2)*(1+x)^(1/
2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1039/113
4*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)
/(3*x^2+5*x+2)^(1/2)+1/945*(2327+2169*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.12, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{21}\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{3/2}+\frac{1}{945}\sqrt{2x+3}\,(2169x+2327)\sqrt{3x^2+5x+2}+\frac{1039\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{\right.\right.}{378\sqrt{3}\,\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (Sqrt[3 + 2*x]*(2327 + 2169*x)*Sqrt[2 + 5*x + 3*x^2])/945 - (2*Sqrt[3 + 2*x
]*(2 + 5*x + 3*x^2)^(3/2))/21 - (697*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSi
n[Sqrt[3]*Sqrt[1 + x]], -2/3])/(270*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (1039*
Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(378*S
qrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}\,dx = -\frac{2}{21}\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}+\frac{2}{21}\int \frac{\left(182+\frac{241x}{2}\right)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}\,dx$$

$$=\frac{1}{945}\sqrt{3+2x}\,(2327+2169x)\sqrt{2+5x+3x^2}-\frac{2}{21}\sqrt{3+2x}\left(2+5x+3x^2\right)$$

$$=\frac{1}{945}\sqrt{3+2x}\,(2327+2169x)\sqrt{2+5x+3x^2}-\frac{2}{21}\sqrt{3+2x}\left(2+5x+3x^2\right)$$

$$=\frac{1}{945}\sqrt{3+2x}\,(2327+2169x)\sqrt{2+5x+3x^2}-\frac{2}{21}\sqrt{3+2x}\left(2+5x+3x^2\right)$$

$$=\frac{1}{945}\sqrt{3+2x}\,(2327+2169x)\sqrt{2+5x+3x^2}-\frac{2}{21}\sqrt{3+2x}\left(2+5x+3x^2\right)$$

Mathematica [**A**] time = 0.30, size = 198, normalized size = 1.16

$$-\frac{2\left(4860x^5-15552x^4-121239x^3-200865x^2-128926x-28888\right)\sqrt{2x+3}-1762\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2}{5670(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/5670*(2*Sqrt[3 + 2*x]*(-28888 - 128926*x - 200865*x^2 - 121239*x^3 - 155
52*x^4 + 4860*x^5) + 4879*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[
(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 1762
*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*Elli
pticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^
2])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5),x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5), x)
```

maple [A] time = 0.01, size = 146, normalized size = 0.86

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-97200x^5+311040x^4+2424780x^3+4310040x^2+3066420x+4879\sqrt{2x+3}\,\sqrt{15}\right.}{340200x^3+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/56700*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-97200*x^5+316*(2*x+3)^(1/2)*15^
(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^
(1/2))+4879*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Elliptic
E(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+311040*x^4+2424780*x^3+4310040*x^2+3066
420*x+772920)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \sqrt{2\,x+3}\;(x-5)\;\sqrt{3\,x^2+5\,x+2}\;dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int((2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-5\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)*(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(x*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2579 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=143

$$\frac{1}{45}\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,(88-9x)+\frac{191\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{18\sqrt{3}\,\sqrt{3x^2+5x+2}}-\frac{761\sqrt{-3x^2-5x-2}\,E\left(\right.}{90\sqrt{3}\,\sqrt{3x}}$$

```
[Out] -761/270*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*
3^(1/2)/(3*x^2+5*x+2)^(1/2)+191/54*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/45*(88-9*x)*(3+2*x)
^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {814, 843, 718, 424, 419}

$$\frac{1}{45}\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,(88-9x)+\frac{191\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{18\sqrt{3}\,\sqrt{3x^2+5x+2}}-\frac{761\sqrt{-3x^2-5x-2}\,E\left(\right.}{90\sqrt{3}\,\sqrt{3x}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/Sqrt[3 + 2*x],x]
```

```
[Out] ((88 - 9*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/45 - (761*Sqrt[-2 - 5*x -
3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(90*Sqrt[3]*Sqrt[2 + 5
*x + 3*x^2]) + (191*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1
+ x]], -2/3])/(18*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}\,dx &= \frac{1}{45}(88-9x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{1}{90}\int \frac{664+761x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{1}{45}(88-9x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{761}{180}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx+\frac{191}{36}\int \frac{}{\sqrt{3+}}\\
&= \frac{1}{45}(88-9x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{\left(761\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx\right.}{90\sqrt{3}\,\sqrt{2+5x+3x^2}}\\
&= \frac{1}{45}(88-9x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{761\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)\right|}{90\sqrt{3}\,\sqrt{2+5x+3x^2}}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 193, normalized size = 1.35

$$-\frac{2\left(162x^4-1071x^3-2220x^2-1049x-62\right)\sqrt{2x+3}\;-188\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+76}{270(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/Sqrt[3 + 2*x],x]
```

```
[Out] -1/270*(2*Sqrt[3 + 2*x]*(-62 - 1049*x - 2220*x^2 - 1071*x^3 + 162*x^4) + 76
1*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ell
ipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 188*Sqrt[5]*Sqrt[(1 + x)/(3
+ 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sq
rt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.90, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{\sqrt{2\,x+3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/sqrt(2*x + 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/sqrt(2*x + 3), x)
```

maple [A] time = 0.02, size = 141, normalized size = 0.99

$$\frac{\sqrt{3x^2+5x+2}\ \sqrt{2x+3}\ \left(-3240x^4+21420x^3+90060x^2+97080x+761\sqrt{2x+3}\ \sqrt{15}\ \sqrt{-2x-2}\ \sqrt{-30x-2}\right.}{16200x^3+51300x^2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^(1/2),x)
```

```
[Out] 1/2700*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(194*(2*x+3)^(1/2)*15^(1/2)*(-2*x-
2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+761*(
2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+4
5)^(1/2),1/3*15^(1/2))-3240*x^4+21420*x^3+90060*x^2+97080*x+31680)/(6*x^3+1
9*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(x - 5)/sqrt(2*x + 3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\ \sqrt{3\,x^2+5\,x+2}}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(1/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}\right)dx-\int \frac{x\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**(1/2),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/sqrt(2*x + 3), x) - Integral(x*sqrt(3*x
**2 + 5*x + 2)/sqrt(2*x + 3), x)
```

3.2580 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=141

$$-\frac{\sqrt{3x^2+5x+2}\,(x+21)}{3\sqrt{2x+3}}-\frac{161\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{6\sqrt{3}\,\sqrt{3x^2+5x+2}}+\frac{121\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x}\right.\right.}{6\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

```
[Out] 121/18*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)-161/18*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2
))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/3*(21+x)*(3*x^2+5*x+2
)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {812, 843, 718, 424, 419}

$$-\frac{\sqrt{3x^2+5x+2}\,(x+21)}{3\sqrt{2x+3}}-\frac{161\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{6\sqrt{3}\,\sqrt{3x^2+5x+2}}+\frac{121\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x}\right.\right.}{6\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(3/2),x]
```

```
[Out] -((21 + x)*Sqrt[2 + 5*x + 3*x^2])/(3*Sqrt[3 + 2*x]) + (121*Sqrt[-2 - 5*x -
3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(6*Sqrt[3]*Sqrt[2 + 5*
x + 3*x^2]) - (161*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 +
 x]], -2/3])/(6*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{3/2}}\,dx &= -\frac{(21+x)\sqrt{2+5x+3x^2}}{3\sqrt{3+2x}} - \frac{1}{6}\int \frac{-101-121x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{(21+x)\sqrt{2+5x+3x^2}}{3\sqrt{3+2x}} + \frac{121}{12}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx - \frac{161}{12}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+}} \\
&= -\frac{(21+x)\sqrt{2+5x+3x^2}}{3\sqrt{3+2x}} + \frac{\left(121\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{6+6}}{\sqrt{2}}\right.}{6\sqrt{3}\,\sqrt{2+5x+3x^2}} \\
&= -\frac{(21+x)\sqrt{2+5x+3x^2}}{3\sqrt{3+2x}} + \frac{121\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)\middle|-\frac{2}{3}\right)}{6\sqrt{3}\,\sqrt{2+5x+3x^2}} -
\end{aligned}
$$

Mathematica [A] time = 0.34, size = 185, normalized size = 1.31

$$
\frac{10\left(-9x^3+159x^2+284x+116\right)-122\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)+605\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+}{2x+}}}{90\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(3/2),x]
```

```
[Out] (10*(116 + 284*x + 159*x^2 - 9*x^3) + 605*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(
3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3
+ 2*x]], 3/5] - 122*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2
 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/(90*Sqr
t[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$
\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{4\,x^2+12\,x+9}, x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(4*x^2 + 12*x + 9), x
)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(3/2), x)
```

maple [A] time = 0.04, size = 136, normalized size = 0.96

$$-\frac{\sqrt{3x^2+5x+2}\;\sqrt{2x+3}\;\Big(180x^3+4080x^2+6420x+121\sqrt{2x+3}\;\sqrt{15}\;\sqrt{-2x-2}\;\sqrt{-30x-20}\;\,\mathrm{EllipticE}\Big(\frac{\sqrt{30x}}{5}}{180\left(6x^3+19x^2+19x+\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^(3/2),x)
```

```
[Out] -1/180*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(40*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2
)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+121*(2
*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))+180*x^3+4080*x^2+6420*x+2520)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{{(2\,x+3)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(3/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int \frac{x\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**(3/2),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)),
x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)
), x)
```

3.2581 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=143

$$\frac{\sqrt{3x^2+5x+2}\,(119x+146)}{15(2x+3)^{3/2}}+\frac{17\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{2\sqrt{3}\sqrt{3x^2+5x+2}}-\frac{67\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\right.\right.}{10\sqrt{3}\sqrt{3x^2+5x+}}$$

```
[Out] -67/30*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)+17/6*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))
*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/15*(146+119*x)*(3*x^2+5
*x+2)^(1/2)/(3+2*x)^(3/2)
```

Rubi [A] time = 0.09, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {810, 843, 718, 424, 419}

$$\frac{\sqrt{3x^2+5x+2}\,(119x+146)}{15(2x+3)^{3/2}}+\frac{17\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{2\sqrt{3}\sqrt{3x^2+5x+2}}-\frac{67\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\right.\right.}{10\sqrt{3}\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(5/2),x]
```

```
[Out] ((146 + 119*x)*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^(3/2)) - (67*Sqrt[-2 -
5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(10*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2]) + (17*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sq
rt[1 + x]], -2/3])/(2*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{5/2}}\,dx &= \frac{(146+119x)\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}} - \frac{1}{30}\int \frac{174+201x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= \frac{(146+119x)\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}} - \frac{67}{20}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx + \frac{17}{4}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5}} \\
&= \frac{(146+119x)\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}} - \frac{\left(67\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{6+6x}}{\sqrt{2}}\right.}{10\sqrt{3}\,\sqrt{2+5x+3x^2}} \\
&= \frac{(146+119x)\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}} - \frac{67\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)\middle|-\frac{2}{3}\right)}{10\sqrt{3}\,\sqrt{2+5x+3x^2}} +
\end{aligned}$$

Mathematica [A] time = 0.30, size = 182, normalized size = 1.27

$$-\frac{90x^3+480x^2+610x-16\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+3)^{5/2}\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)+67\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+3)^{5/2}\sqrt{\frac{3x+2}{2x+3}}E\left(\right.}{30(2x+3)^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/30*(220 + 610*x + 480*x^2 + 90*x^3 + 67*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*
(3 + 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3
 + 2*x]], 3/5] - 16*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2
 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2
*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{8\,x^3+36\,x^2+54\,x+27}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(8*x^3 + 36*x^2 + 54*
x + 27), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^{2}+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(5/2), x)
```

maple [A] time = 0.04, size = 203, normalized size = 1.42

$$\frac{7140x^{3}+20660x^{2}+134\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+36\sqrt{15}\,\sqrt{2x+3}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^(5/2),x)
```

```
[Out] 1/300*(36*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1
/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+134*15^(1/2)*EllipticE(1/5*(30*x+45)^(1
/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+54*(2*x+3
)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1
/2),1/3*15^(1/2))+201*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+7140*x^3+20660*x^2+19360*x+58
40)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^{2}+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^{2}+5\,x+2}}{(2\,x+3)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(5/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5\sqrt{3x^{2}+5x+2}}{4x^{2}\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\right)dx-\int \frac{x\sqrt{3x^{2}+5x+2}}{4x^{2}\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**(5/2),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x +
 3) + 9*sqrt(2*x + 3)), x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt
(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x)
```

3.2582 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=170

$$\frac{\sqrt{3x^2+5x+2}\,(43x+32)}{25(2x+3)^{5/2}}+\frac{49\sqrt{3x^2+5x+2}}{125\sqrt{2x+3}}+\frac{9\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{50\sqrt{3x^2+5x+2}}-\frac{49\sqrt{3}\,\sqrt{-3}}{}$$

```
[Out] -49/250*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3
^(1/2)/(3*x^2+5*x+2)^(1/2)+9/50*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2)
)*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/25*(32+43*x)*(3*x^2+5*
x+2)^(1/2)/(3+2*x)^(5/2)+49/125*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {810, 834, 843, 718, 424, 419}

$$\frac{\sqrt{3x^2+5x+2}\,(43x+32)}{25(2x+3)^{5/2}}+\frac{49\sqrt{3x^2+5x+2}}{125\sqrt{2x+3}}+\frac{9\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{50\sqrt{3x^2+5x+2}}-\frac{49\sqrt{3}\,\sqrt{-3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(7/2),x]
```

```
[Out] (49*Sqrt[2 + 5*x + 3*x^2])/(125*Sqrt[3 + 2*x]) + ((32 + 43*x)*Sqrt[2 + 5*x
 + 3*x^2])/(25*(3 + 2*x)^(5/2)) - (49*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*Ellipti
cE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(250*Sqrt[2 + 5*x + 3*x^2]) + (9*Sqr
t[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(
50*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{7/2}}\,dx &= \frac{(32+43x)\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}}-\frac{1}{150}\int \frac{-48-81x}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{49\sqrt{2+5x+3x^2}}{125\sqrt{3+2x}}+\frac{(32+43x)\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}}+\frac{1}{375}\int \frac{-\frac{459}{2}-\frac{441x}{2}}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\\
&= \frac{49\sqrt{2+5x+3x^2}}{125\sqrt{3+2x}}+\frac{(32+43x)\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}}+\frac{27}{100}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\\
&= \frac{49\sqrt{2+5x+3x^2}}{125\sqrt{3+2x}}+\frac{(32+43x)\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}}+\frac{\left(9\sqrt{3}\,\sqrt{-2-5x-3x^2}\right)\mathrm{Subst}\Bigg(}{50\sqrt{2+5}}\\
&= \frac{49\sqrt{2+5x+3x^2}}{125\sqrt{3+2x}}+\frac{(32+43x)\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}}-\frac{49\sqrt{3}\,\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\right.}{250\sqrt{2+5x+3}}
\end{aligned}$$

Mathematica [A] time = 0.29, size = 182, normalized size = 1.07

$$\frac{1290x^3+3110x^2+2460x+22\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{7/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-49\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{7/2}}{250(2x+3)^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(7/2),x]
```

```
[Out] (640 + 2460*x + 3110*x^2 + 1290*x^3 - 49*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3
 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
 2*x]], 3/5] + 22*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 +
 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/(250*(3 +
 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{16\,x^{4}+96\,x^{3}+216\,x^{2}+216\,x+81},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(16*x^4 + 96*x^3 + 21
6*x^2 + 216*x + 81), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^{2}+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(7/2), x)
```

maple [B] time = 0.04, size = 296, normalized size = 1.74

$$-\frac{-11760x^{4}-67780x^{3}-196\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{2}\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+16\sqrt{15}\,\sqrt{2x}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^(7/2),x)
```

```
[Out] -1/2500*(16*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3
)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-196*15^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+48*
15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-
2)^(1/2)*(-30*x-20)^(1/2)-588*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15
^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+36*(2*x+3)^(1/2)*15
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15
^(1/2))-441*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Elliptic
E(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-11760*x^4-67780*x^3-124200*x^2-92220*x-
24040)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^{2}+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{(2\,x+3)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(7/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x\sqrt{2x+3}+27\sqrt{2x+3}}\right)dx-\int\frac{x\sqrt{3x^2+5x+2}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**(7/2),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*
x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(x*sqrt(3*x**
2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt(2*x
+ 3) + 27*sqrt(2*x + 3)), x)
```

3.2583 $\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{9/2}}\,dx$

Optimal. Leaf size=197

$$\frac{\sqrt{3x^2+5x+2}\,(139x+46)}{175(2x+3)^{7/2}}+\frac{159\sqrt{3x^2+5x+2}}{625\sqrt{2x+3}}+\frac{183\sqrt{3x^2+5x+2}}{875(2x+3)^{3/2}}+\frac{183\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{\right.\right.}}{1750\sqrt{3x^2+5x+2}}$$

```
[Out] -159/1250*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)
*3^(1/2)/(3*x^2+5*x+2)^(1/2)+183/1750*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6
^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+183/875*(3*x^2+5*x
+2)^(1/2)/(3+2*x)^(3/2)+1/175*(46+139*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2)+
159/625*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.14, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{810, 834, 843, 718, 424, 419\}$

$$\frac{\sqrt{3x^2+5x+2}\,(139x+46)}{175(2x+3)^{7/2}}+\frac{159\sqrt{3x^2+5x+2}}{625\sqrt{2x+3}}+\frac{183\sqrt{3x^2+5x+2}}{875(2x+3)^{3/2}}+\frac{183\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{\right.\right.}}{1750\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(9/2),x]
```

```
[Out] (183*Sqrt[2 + 5*x + 3*x^2])/(875*(3 + 2*x)^(3/2)) + (159*Sqrt[2 + 5*x + 3*x
^2])/(625*Sqrt[3 + 2*x]) + ((46 + 139*x)*Sqrt[2 + 5*x + 3*x^2])/(175*(3 + 2
*x)^(7/2)) - (159*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*S
qrt[1 + x]], -2/3])/(1250*Sqrt[2 + 5*x + 3*x^2]) + (183*Sqrt[3]*Sqrt[-2 - 5
*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(1750*Sqrt[2 + 5*
x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\sqrt{2+5x+3x^2}}{(3+2x)^{9/2}}\,dx &= \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} - \frac{1}{350}\int \frac{-270-363x}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{183\sqrt{2+5x+3x^2}}{875(3+2x)^{3/2}} + \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} + \frac{\int \frac{\frac{801}{2}+\frac{1647x}{2}}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx}{2625}\\
&= \frac{183\sqrt{2+5x+3x^2}}{875(3+2x)^{3/2}} + \frac{159\sqrt{2+5x+3x^2}}{625\sqrt{3+2x}} + \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} -\\
&= \frac{183\sqrt{2+5x+3x^2}}{875(3+2x)^{3/2}} + \frac{159\sqrt{2+5x+3x^2}}{625\sqrt{3+2x}} + \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} +\\
&= \frac{183\sqrt{2+5x+3x^2}}{875(3+2x)^{3/2}} + \frac{159\sqrt{2+5x+3x^2}}{625\sqrt{3+2x}} + \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} +\\
&= \frac{183\sqrt{2+5x+3x^2}}{875(3+2x)^{3/2}} + \frac{159\sqrt{2+5x+3x^2}}{625\sqrt{3+2x}} + \frac{(46+139x)\sqrt{2+5x+3x^2}}{175(3+2x)^{7/2}} -
\end{aligned}
$$

Mathematica [**A**]   time = 0.38, size = 217, normalized size = 1.10

$$-\frac{6(2x+3)^3\left(742\left(3x^2+5x+2\right)-188\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+371\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+}{2x+}}\right.}{17500(2x+3)^{7/2}\sqrt{3x^2-}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[2 + 5*x + 3*x^2])/(3 + 2*x)^(9/2),x]
```

```
[Out] -1/17500*(-4*(2 + 5*x + 3*x^2)*(39436 + 74557*x + 43728*x^2 + 8904*x^3) + 6
*(3 + 2*x)^3*(742*(2 + 5*x + 3*x^2) + 371*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(
3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3
+ 2*x]], 3/5] - 188*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2
 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 +
2*x)^(7/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**]   time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{32\,x^5+240\,x^4+720\,x^3+1080\,x^2+810\,x+243},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(32*x^5 + 240*x^4 + 7
20*x^3 + 1080*x^2 + 810*x + 243), x)
```

giac [**F**]   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(9/2), x)
```

maple [**B**]   time = 0.04, size = 389, normalized size = 1.97

$$-\frac{-534240x^5-3514080x^4-8904\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^3\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+1584\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(1/2)/(2*x+3)^(9/2),x)
```

```
[Out] -1/87500*(1584*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-8904*15^(1/2)*EllipticE(1/5*(30*
x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)
+7128*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2
)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-40068*15^(1/2)*EllipticE(1/5*(30*x+45)^(1
/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+10692*1
5^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2
)^(1/2)*(-30*x-20)^(1/2)-60102*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*1
5^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+5346*(2*x+3)^(1/2)
*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3
*15^(1/2))-30051*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ell
ipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-534240*x^5-3514080*x^4-9202380*x^3
-11570980*x^2-6925880*x-1577440)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{3\,x^2+5\,x+2}\,(x-5)}{(2\,x+3)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(9/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(3*x^2 + 5*x + 2)*(x - 5)/(2*x + 3)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\sqrt{3\,x^2+5\,x+2}}{{(2\,x+3)}^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(9/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(1/2))/(2*x + 3)^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{3x^2+5x+2}}{16x^4\sqrt{2x+3}+96x^3\sqrt{2x+3}+216x^2\sqrt{2x+3}+216x\sqrt{2x+3}+81\sqrt{2x+3}}\right)dx-\int\frac{}{16x^4\sqrt{2x+3}+96}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(1/2)/(3+2*x)**(9/2),x)
```

```
[Out] -Integral(-5*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sqrt(2
*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x + 3)),
 x) - Integral(x*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sq
rt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x +
3)), x)
```

3.2584 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=256

$$-\frac{2}{45}(2x+3)^{5/2}\left(3x^2+5x+2\right)^{5/2}+\frac{202}{351}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{5/2}+\frac{13318\sqrt{2x+3}\left(3x^2+5x+2\right)^{5/2}}{11583}+\frac{\sqrt{2x+3}}{}$$

```
[Out] 202/351*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(5/2)-2/45*(3+2*x)^(5/2)*(3*x^2+5*x+2)^
(5/2)+1/243243*(534271+629153*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)+13318/11
583*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2)-207851/18764460*EllipticE(3^(1/2)*(1+
x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+10
15187/26270244*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^
(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/21891870*(6006884+7817373*x)*(3+2*x)^(1
/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{45}(2x+3)^{5/2}\left(3x^2+5x+2\right)^{5/2}+\frac{202}{351}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{5/2}+\frac{13318\sqrt{2x+3}\left(3x^2+5x+2\right)^{5/2}}{11583}+\frac{\sqrt{2x+3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -(Sqrt[3 + 2*x]*(6006884 + 7817373*x)*Sqrt[2 + 5*x + 3*x^2])/21891870 + (Sq
rt[3 + 2*x]*(534271 + 629153*x)*(2 + 5*x + 3*x^2)^(3/2))/243243 + (13318*Sq
rt[3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2))/11583 + (202*(3 + 2*x)^(3/2)*(2 + 5*x
+ 3*x^2)^(5/2))/351 - (2*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(5/2))/45 - (207
851*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(6
254820*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (1015187*Sqrt[-2 - 5*x - 3*x^2]*Ell
ipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(8756748*Sqrt[3]*Sqrt[2 + 5*x +
3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}dx = -\frac{2}{45}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}+\frac{2}{45}\int (3+2x)^{3/2}\left(385+\frac{505x}{2}\right.$$

$$=\frac{202}{351}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}-\frac{2}{45}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}$$

$$=\frac{13318\sqrt{3+2x}\left(2+5x+3x^2\right)^{5/2}}{11583}+\frac{202}{351}(3+2x)^{3/2}\left(2+5x+3x^2\right)$$

$$=\frac{\sqrt{3+2x}\,(534271+629153x)\left(2+5x+3x^2\right)^{3/2}}{243243}+\frac{13318\sqrt{3+2x}}{11}$$

$$=-\frac{\sqrt{3+2x}\,(6006884+7817373x)\sqrt{2+5x+3x^2}}{21891870}+\frac{\sqrt{3+2x}\,(5342}{}$$

$$=-\frac{\sqrt{3+2x}\,(6006884+7817373x)\sqrt{2+5x+3x^2}}{21891870}+\frac{\sqrt{3+2x}\,(5342}{}$$

$$=-\frac{\sqrt{3+2x}\,(6006884+7817373x)\sqrt{2+5x+3x^2}}{21891870}+\frac{\sqrt{3+2x}\,(5342}{}$$

$$=-\frac{\sqrt{3+2x}\,(6006884+7817373x)\sqrt{2+5x+3x^2}}{21891870}+\frac{\sqrt{3+2x}\,(5342}{}$$

Mathematica [A] time = 0.35, size = 218, normalized size = 0.85

$$-\frac{2\left(630485856x^9+1907623872x^8-11776907520x^7-82311172272x^6-217661096106x^5-319887585072x\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/131351220*(2*Sqrt[3 + 2*x]*(-5523159638 - 44206631441*x - 150475882830*x
^2 - 283276026729*x^3 - 319887585072*x^4 - 217661096106*x^5 - 82311172272*x
^6 - 11776907520*x^7 + 1907623872*x^8 + 630485856*x^9) + 1454957*Sqrt[5]*Sq
rt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSi
n[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 1590604*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*
(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2
*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(12\,x^5-4\,x^4-185\,x^3-406\,x^2-327\,x-90\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(12*x^5 - 4*x^4 - 185*x^3 - 406*x^2 - 327*x - 90)*sqrt(3*x^2 + 5*
x + 2)*sqrt(2*x + 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(5/2)*(x - 5), x)
```

maple [A] time = 0.03, size = 166, normalized size = 0.65

$$\frac{\sqrt{2x+3}\ \sqrt{3x^2+5x+2}\ \left(-12609717120x^9-38152477440x^8+235538150400x^7+1646223445440x^6+435322\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/1313512200*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-12609717120*x^9-3815247744
0*x^8+235538150400*x^7+1646223445440*x^6+4353221922120*x^5+3620978*(2*x+3)^
(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2
),1/3*15^(1/2))+1454957*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1
/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+6397751701440*x^4+566552053
4580*x^3+3009604954020*x^2+884278124520*x+110521391040)/(6*x^3+19*x^2+19*x+
6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(5/2)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int(2\,x+3)^{5/2}\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-90\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-327x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-406x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-90*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-327*x*sq
rt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-406*x**2*sqrt(2*x + 3)*s
qrt(3*x**2 + 5*x + 2), x) - Integral(-185*x**3*sqrt(2*x + 3)*sqrt(3*x**2 +
5*x + 2), x) - Integral(-4*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) -
Integral(12*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2585 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=229

$$-\frac{2}{39}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{5/2}+\frac{886\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{5/2}}{1287}+\frac{\sqrt{2x+3}\,(50771x+43822)\left(3x^2+5x+2\right)^{3/}}{27027}$$

```
[Out] -2/39*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(5/2)+1/27027*(43822+50771*x)*(3*x^2+5*x+
2)^(3/2)*(3+2*x)^(1/2)+886/1287*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2)-152657/20
84940*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(
1/2)/(3*x^2+5*x+2)^(1/2)+332459/2918916*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I
*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/2432430*(48686
3+783711*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{39}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{5/2}+\frac{886\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{5/2}}{1287}+\frac{\sqrt{2x+3}\,(50771x+43822)\left(3x^2+5x+2\right)^{3/}}{27027}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -(Sqrt[3 + 2*x]*(486863 + 783711*x)*Sqrt[2 + 5*x + 3*x^2])/2432430 + (Sqrt[
3 + 2*x]*(43822 + 50771*x)*(2 + 5*x + 3*x^2)^(3/2))/27027 + (886*Sqrt[3 + 2
*x]*(2 + 5*x + 3*x^2)^(5/2))/1287 - (2*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(5
/2))/39 - (152657*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 +
x]], -2/3])/(694980*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (332459*Sqrt[-2 - 5*x
- 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(972972*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{2}{39}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}+\frac{2}{39}\int \sqrt{3+2x}\left(336+\frac{443x}{2}\right)\big(2$$

$$= \frac{886\sqrt{3+2x}\left(2+5x+3x^2\right)^{5/2}}{1287}-\frac{2}{39}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}+$$

$$= \frac{\sqrt{3+2x}\,(43822+50771x)\left(2+5x+3x^2\right)^{3/2}}{27027}+\frac{886\sqrt{3+2x}\,\big(2+5x}{1287}$$

$$= -\frac{\sqrt{3+2x}\,(486863+783711x)\sqrt{2+5x+3x^2}}{2432430}+\frac{\sqrt{3+2x}\,(43822+5}{2}$$

$$= -\frac{\sqrt{3+2x}\,(486863+783711x)\sqrt{2+5x+3x^2}}{2432430}+\frac{\sqrt{3+2x}\,(43822+5}{2}$$

$$= -\frac{\sqrt{3+2x}\,(486863+783711x)\sqrt{2+5x+3x^2}}{2432430}+\frac{\sqrt{3+2x}\,(43822+5}{2}$$

$$= -\frac{\sqrt{3+2x}\,(486863+783711x)\sqrt{2+5x+3x^2}}{2432430}+\frac{\sqrt{3+2x}\,(43822+5}{2}$$

Mathematica [**A**] time = 0.33, size = 213, normalized size = 0.93

$$-\frac{2\left(40415760x^8+52050600x^7-895236300x^6-4079217510x^5-7944858702x^4-8470029969x^3-5141306\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/14594580*(2*Sqrt[3 + 2*x]*(-224705588 - 1668494576*x - 5141306625*x^2 -
8470029969*x^3 - 7944858702*x^4 - 4079217510*x^5 - 895236300*x^6 + 52050600
*x^7 + 40415760*x^8) + 1068599*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*
Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] -
 71222*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)
]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x
+ 3*x^2])
```

fricas [**F**] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(6\,x^4-11\,x^3-76\,x^2-89\,x-30\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(6*x^4 - 11*x^3 - 76*x^2 - 89*x - 30)*sqrt(3*x^2 + 5*x + 2)*sqrt(
2*x + 3), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(3/2)*(x - 5), x)
```

maple [**A**] time = 0.01, size = 161, normalized size = 0.70

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-808315200x^8-1041012000x^7+17904726000x^6+81584350200x^5+158897174\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/145945800*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-808315200*x^8-1041012000*x^
7+17904726000*x^6+81584350200*x^5+593696*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1
/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+1068599*(2
*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))+158897174040*x^4+169400599380*x^3+102890248440*x^2+33
476751420*x+4536855720)/(6*x^3+19*x^2+19*x+6)
```

maxima [**F**] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(3/2)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^{3/2}\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-30\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-89x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-76x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-30*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-89*x*sqr
t(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-76*x**2*sqrt(2*x + 3)*sqr
t(3*x**2 + 5*x + 2), x) - Integral(-11*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x
 + 2), x) - Integral(6*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2586 $\int (5-x)\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}\,dx$

Optimal. Leaf size=202

$$-\frac{2}{33}\sqrt{2x+3}\left(3x^2+5x+2\right)^{5/2}+\frac{1}{99}\sqrt{2x+3}\,(127x+119)\left(3x^2+5x+2\right)^{3/2}-\frac{\sqrt{2x+3}\,(3987x+1246)\sqrt{3x^2+5}}{8910}$$

```
[Out] 1/99*(119+127*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)-2/33*(3*x^2+5*x+2)^(5/2)
*(3+2*x)^(1/2)-15283/53460*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3
*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+4153/10692*EllipticF(3^(1/2)*
(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)
-1/8910*(1246+3987*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{832, 814, 843, 718, 424, 419\}$

$$-\frac{2}{33}\sqrt{2x+3}\left(3x^2+5x+2\right)^{5/2}+\frac{1}{99}\sqrt{2x+3}\,(127x+119)\left(3x^2+5x+2\right)^{3/2}-\frac{\sqrt{2x+3}\,(3987x+1246)\sqrt{3x^2+5}}{8910}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -(Sqrt[3 + 2*x]*(1246 + 3987*x)*Sqrt[2 + 5*x + 3*x^2])/8910 + (Sqrt[3 + 2*x
]*(119 + 127*x)*(2 + 5*x + 3*x^2)^(3/2))/99 - (2*Sqrt[3 + 2*x]*(2 + 5*x + 3
*x^2)^(5/2))/33 - (15283*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sq
rt[1 + x]], -2/3])/(17820*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (4153*Sqrt[-2 -
5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(3564*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}\,dx = -\frac{2}{33}\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{5/2}+\frac{2}{33}\int\frac{\left(287+\frac{381x}{2}\right)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{3+2x}}$$

$$=\frac{1}{99}\sqrt{3+2x}\,(119+127x)\left(2+5x+3x^2\right)^{3/2}-\frac{2}{33}\sqrt{3+2x}\,\Big(2+5x+3x^2$$

$$=-\frac{\sqrt{3+2x}\,(1246+3987x)\sqrt{2+5x+3x^2}}{8910}+\frac{1}{99}\sqrt{3+2x}\,(119+127x)\Big($$

$$=-\frac{\sqrt{3+2x}\,(1246+3987x)\sqrt{2+5x+3x^2}}{8910}+\frac{1}{99}\sqrt{3+2x}\,(119+127x)\Big($$

$$=-\frac{\sqrt{3+2x}\,(1246+3987x)\sqrt{2+5x+3x^2}}{8910}+\frac{1}{99}\sqrt{3+2x}\,(119+127x)\Big($$

$$=-\frac{\sqrt{3+2x}\,(1246+3987x)\sqrt{2+5x+3x^2}}{8910}+\frac{1}{99}\sqrt{3+2x}\,(119+127x)\Big($$

Mathematica [A] time = 0.33, size = 208, normalized size = 1.03

$$-\frac{2\left(87480x^7-48600x^6-2001510x^5-6002964x^4-8112483x^3-5740860x^2-2059597x-293686\right)\sqrt{2x+}}{53460(2x+}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/53460*(2*Sqrt[3 + 2*x]*(-293686 - 2059597*x - 5740860*x^2 - 8112483*x^3
- 6002964*x^4 - 2001510*x^5 - 48600*x^6 + 87480*x^7) + 15283*Sqrt[5]*Sqrt[(
1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sq
rt[5/3]/Sqrt[3 + 2*x]], 3/5] - 2824*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*
x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3
/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(3\,x^3-10\,x^2-23\,x-10\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*sqrt(2*x + 3)*(x - 5), x)
```

maple [A] time = 0.01, size = 156, normalized size = 0.77

$$\frac{\sqrt{3x^2+5x+2}\,\sqrt{2x+3}\,\left(-1749600x^7+972000x^6+40030200x^5+120059280x^4+162249660x^3+1157341\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)*(2*x+3)^(1/2),x)
```

```
[Out] 1/534600*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(-1749600*x^7+972000*x^6+4003020
0*x^5+5482*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+15283*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1
/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+120059280*
x^4+162249660*x^3+115734180*x^2+42720240*x+6485040)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*sqrt(2*x + 3)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \sqrt{2\,x+3}\,\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int((2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \Big(-10\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\Big)\,dx-\int \Big(-23x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\Big)\,dx-\int \Big(-10x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)*(3+2*x)**(1/2),x)
```

```
[Out] -Integral(-10*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-23*x*sqr
t(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-10*x**2*sqrt(2*x + 3)*sqr
t(3*x**2 + 5*x + 2), x) - Integral(3*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x +
 2), x)
```

3.2587 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=175

$$\frac{1}{63}(52-7x)\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{3/2}-\frac{\sqrt{2x+3}\,(12429x+107)\sqrt{3x^2+5x+2}}{5670}+\frac{20501\sqrt{-3x^2-5x-2}\,F\Big(\sin}{2268\sqrt{3}\,\sqrt{3x^2+}}$$

```
[Out] 1/63*(52-7*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)-11123/4860*EllipticE(3^(1/2
)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/
2)+20501/6804*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(
1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/5670*(107+12429*x)*(3+2*x)^(1/2)*(3*x^2+
5*x+2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{814, 843, 718, 424, 419\}$

$$\frac{1}{63}(52-7x)\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{3/2}-\frac{\sqrt{2x+3}\,(12429x+107)\sqrt{3x^2+5x+2}}{5670}+\frac{20501\sqrt{-3x^2-5x-2}\,F\Big(\sin}{2268\sqrt{3}\,\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/Sqrt[3 + 2*x],x]
```

```
[Out] -(Sqrt[3 + 2*x]*(107 + 12429*x)*Sqrt[2 + 5*x + 3*x^2])/5670 + ((52 - 7*x)*S
qrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2))/63 - (11123*Sqrt[-2 - 5*x - 3*x^2]*El
lipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(1620*Sqrt[3]*Sqrt[2 + 5*x + 3*
x^2]) + (20501*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]]
, -2/3])/(2268*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{3+2x}}\,dx = \frac{1}{63}(52-7x)\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2} - \frac{1}{126}\int \frac{(1204+1381x)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}$$

$$= -\frac{\sqrt{3+2x}\,(107+12429x)\sqrt{2+5x+3x^2}}{5670} + \frac{1}{63}(52-7x)\sqrt{3+2x}\left(2+5x+3x^2\right.$$

$$= -\frac{\sqrt{3+2x}\,(107+12429x)\sqrt{2+5x+3x^2}}{5670} + \frac{1}{63}(52-7x)\sqrt{3+2x}\left(2+5x+3x^2\right.$$

$$= -\frac{\sqrt{3+2x}\,(107+12429x)\sqrt{2+5x+3x^2}}{5670} + \frac{1}{63}(52-7x)\sqrt{3+2x}\left(2+5x+3x^2\right.$$

$$= -\frac{\sqrt{3+2x}\,(107+12429x)\sqrt{2+5x+3x^2}}{5670} + \frac{1}{63}(52-7x)\sqrt{3+2x}\left(2+5x+3x^2\right.$$

Mathematica [A] time = 0.32, size = 203, normalized size = 1.16

$$-\frac{2\left(34020x^6-88290x^5-687798x^4-1306791x^3-1043385x^2-312914x-10832\right)\sqrt{2x+3}-16358\sqrt{5}\sqrt{\frac{x+1}{2x+3}}}{34020(2x+3)\sqrt{3x^2+5}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/Sqrt[3 + 2*x],x]
```

```
[Out] -1/34020*(2*Sqrt[3 + 2*x]*(-10832 - 312914*x - 1043385*x^2 - 1306791*x^3 -
687798*x^4 - 88290*x^5 + 34020*x^6) + 77861*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]
*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
2*x]], 3/5] - 16358*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3
*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*
Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.58, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3\,x^{3}-10\,x^{2}-23\,x-10\right)\sqrt{3\,x^{2}+5\,x+2}}{\sqrt{2\,x+3}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)/sqrt(2*x + 3),
 x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/sqrt(2*x + 3), x)
```

maple [A] time = 0.01, size = 151, normalized size = 0.86

$$\frac{\sqrt{3x^{2}+5x+2}\,\sqrt{2x+3}\,\left(-680400x^{6}+1765800x^{5}+13755960x^{4}+26135820x^{3}+25539360x^{2}+14044380x\right.}{2}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(1/2),x)
```

```
[Out] 1/340200*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(-680400*x^6+1765800*x^5+24644*(
2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+4
5)^(1/2),1/3*15^(1/2))+77861*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+13755960*x^4+26135820*
x^3+25539360*x^2+14044380*x+3331080)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/sqrt(2*x + 3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(1/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}\right)dx-\int\frac{3x^3\sqrt{3x^2+5x+}}{\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(1/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/sqrt(2*x + 3), x) - Integral(-23*x*sqr
t(3*x**2 + 5*x + 2)/sqrt(2*x + 3), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x
 + 2)/sqrt(2*x + 3), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/sqrt(2*x +
 3), x)
```

3.2588 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=173

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{3/2}}{7\sqrt{2x+3}}-\frac{1}{210}(136-2493x)\sqrt{2x+3}\,\sqrt{3x^2+5x+2}-\frac{4427\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\big(\sqrt{3}\,\sqrt{x}}{84\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

```
[Out] -1/7*(47+x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2)+2411/180*EllipticE(3^(1/2)*(1
+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-4
427/252*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3
^(1/2)/(3*x^2+5*x+2)^(1/2)-1/210*(136-2493*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(
1/2)
```

Rubi [A] time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{812, 814, 843, 718, 424, 419\}$

$$-\frac{(x+47)\left(3x^2+5x+2\right)^{3/2}}{7\sqrt{2x+3}}-\frac{1}{210}(136-2493x)\sqrt{2x+3}\,\sqrt{3x^2+5x+2}-\frac{4427\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\big(\sqrt{3}\,\sqrt{x}}{84\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -((136 - 2493*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/210 - ((47 + x)*(2 +
5*x + 3*x^2)^(3/2))/(7*Sqrt[3 + 2*x]) + (2411*Sqrt[-2 - 5*x - 3*x^2]*Ellipt
icE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(60*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
- (4427*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3]
)/(84*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{3/2}}\,dx &= -\frac{(47+x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{3+2x}}-\frac{3}{14}\int \frac{(-231-277x)\sqrt{2+5x+3x^2}}{\sqrt{3+2x}}\,dx \\
&= -\frac{1}{210}(136-2493x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{(47+x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{3+2x}}+\frac{1}{420} \\
&= -\frac{1}{210}(136-2493x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{(47+x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{3+2x}}+\frac{241}{12} \\
&= -\frac{1}{210}(136-2493x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{(47+x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{3+2x}}+\frac{(24}{} \\
&= -\frac{1}{210}(136-2493x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}-\frac{(47+x)\left(2+5x+3x^2\right)^{3/2}}{7\sqrt{3+2x}}+\frac{241}{}
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 192, normalized size = 1.11

$$
\frac{-1620x^5+8208x^4+18846x^3+53340x^2+73094x-3596\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\,(2x+3)^{3/2}\sqrt{\frac{3x+2}{2x+3}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+16}{1260\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(3/2),x]
```

```
[Out] (28772 + 73094*x + 53340*x^2 + 18846*x^3 + 8208*x^4 - 1620*x^5 + 16877*Sqrt
[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ellip
ticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 3596*Sqrt[5]*Sqrt[(1 + x)/(3 +
 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]
/Sqrt[3 + 2*x]], 3/5])/(1260*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(3\,x^{3}-10\,x^{2}-23\,x-10\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{4\,x^{2}+12\,x+9},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(4*x^2 + 12*x + 9), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(3/2), x)
```

maple [A] time = 0.02, size = 146, normalized size = 0.84

$$-\frac{\sqrt{3x^{2}+5x+2}\,\sqrt{2x+3}\,\left(16200x^{5}-82080x^{4}-188460x^{3}+479220x^{2}+956760x+16877\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-}\right.}{1260}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(3/2),x)
```

```
[Out] -1/12600*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(5258*(2*x+3)^(1/2)*15^(1/2)*(-2
*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+16
877*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(3
0*x+45)^(1/2),1/3*15^(1/2))+16200*x^5-82080*x^4-188460*x^3+479220*x^2+95676
0*x+387360)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(3/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int\left(-\frac{10x^2\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(3/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)),
 x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x
 + 3)), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) +
3*sqrt(2*x + 3)), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x
 + 3) + 3*sqrt(2*x + 3)), x)
```

3.2589 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^{3/2}}+\frac{(69x+241)\sqrt{3x^2+5x+2}}{10\sqrt{2x+3}}+\frac{289\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{4\sqrt{3}\sqrt{3x^2+5x+2}}-$$

```
[Out] -1/15*(37+3*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(3/2)+289/12*EllipticF(3^(1/2)*(
1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-
367/20*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)+1/10*(241+69*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {812, 843, 718, 424, 419}

$$-\frac{(3x+37)\left(3x^2+5x+2\right)^{3/2}}{15(2x+3)^{3/2}}+\frac{(69x+241)\sqrt{3x^2+5x+2}}{10\sqrt{2x+3}}+\frac{289\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{4\sqrt{3}\sqrt{3x^2+5x+2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(5/2),x]
```

```
[Out] ((241 + 69*x)*Sqrt[2 + 5*x + 3*x^2])/(10*Sqrt[3 + 2*x]) - ((37 + 3*x)*(2 +
5*x + 3*x^2)^(3/2))/(15*(3 + 2*x)^(3/2)) - (367*Sqrt[3]*Sqrt[-2 - 5*x - 3*x
^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(20*Sqrt[2 + 5*x + 3*x^2]
) + (289*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3
])/(4*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{5/2}}\,dx &= -\frac{(37+3x)\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^{3/2}}-\frac{1}{10}\int \frac{(-173-207x)\sqrt{2+5x+3x^2}}{(3+2x)^{3/2}}\,dx\\ &= \frac{(241+69x)\sqrt{2+5x+3x^2}}{10\sqrt{3+2x}}-\frac{(37+3x)\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^{3/2}}+\frac{1}{60}\int \frac{-2787 -}{\sqrt{3+2x}\,\sqrt{2}}\\ &= \frac{(241+69x)\sqrt{2+5x+3x^2}}{10\sqrt{3+2x}}-\frac{(37+3x)\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^{3/2}}-\frac{1101}{40}\int \frac{\sqrt{3+2}}{\sqrt{2+5x+}}\\ &= \frac{(241+69x)\sqrt{2+5x+3x^2}}{10\sqrt{3+2x}}-\frac{(37+3x)\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^{3/2}}+\frac{\left(289\sqrt{-2-5x-3}\right.}{}\\ &= \frac{(241+69x)\sqrt{2+5x+3x^2}}{10\sqrt{3+2x}}-\frac{(37+3x)\left(2+5x+3x^2\right)^{3/2}}{15(3+2x)^{3/2}}-\frac{367\sqrt{3}\,\sqrt{-2-5x-}}{20}\end{aligned}$$

Mathematica [A] time = 0.31, size = 195, normalized size = 1.11

$$-\frac{2\left(54x^5-396x^4+777x^3+6107x^2+7444x-117\sqrt{5}\,\sqrt{\frac{x+1}{2x+3}}\,(2x+3)^{5/2}\sqrt{\frac{3x+2}{2x+3}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)+2564\right)+1}{60(2x+3)^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/60*(1101*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2 + 3*x)/
(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 2*(2564 + 7444
*x + 6107*x^2 + 777*x^3 - 396*x^4 + 54*x^5 - 117*Sqrt[5]*Sqrt[(1 + x)/(3 +
2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/
Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3\,x^{3}-10\,x^{2}-23\,x-10\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{8\,x^{3}+36\,x^{2}+54\,x+27},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(8*x^3 + 36*x^2 + 54*x + 27), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(5/2), x)
```

maple [A] time = 0.02, size = 213, normalized size = 1.22

$$\frac{-1080x^{5}+7920x^{4}+116580x^{3}+296240x^{2}+2202\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(5/2),x)
```

```
[Out] 1/600*(2202*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^
(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+688*15^(1/2)*EllipticF(1/5*(30*x+45)^
(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+3303*(2
*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))+1032*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)
^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-1080*x^5+7920*x^4+116580
*x^3+296240*x^2+269500*x+80840)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}{(2\,x+3)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(5/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^{2}+5x+2}}{4x^{2}\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\right)dx-\int\left(-\frac{23x\sqrt{3x^{2}+5x+2}}{4x^{2}\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\right)dx-\int\Bigg($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(5/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x
+ 3) + 9*sqrt(2*x + 3)), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2
*sqrt(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x) - Integral(-10*x
**2*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*s
qrt(2*x + 3)), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x
 + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x)
```

3.2590 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=175

$$\frac{(337x+408)\left(3x^2+5x+2\right)^{3/2}}{75(2x+3)^{5/2}}-\frac{(181x+614)\sqrt{3x^2+5x+2}}{50\sqrt{2x+3}}-\frac{243\sqrt{3}\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|\right.}{20\sqrt{3x^2+5x+2}}$$

```
[Out] 1/75*(408+337*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2)+2779/300*EllipticE(3^(1/
2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1
/2)-243/20*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2
)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/50*(614+181*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^
(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {810, 812, 843, 718, 424, 419}

$$\frac{(337x+408)\left(3x^2+5x+2\right)^{3/2}}{75(2x+3)^{5/2}}-\frac{(181x+614)\sqrt{3x^2+5x+2}}{50\sqrt{2x+3}}-\frac{243\sqrt{3}\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|\right.}{20\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -((614 + 181*x)*Sqrt[2 + 5*x + 3*x^2])/(50*Sqrt[3 + 2*x]) + ((408 + 337*x)*
(2 + 5*x + 3*x^2)^(3/2))/(75*(3 + 2*x)^(5/2)) + (2779*Sqrt[-2 - 5*x - 3*x^2
]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(100*Sqrt[3]*Sqrt[2 + 5*x +
 3*x^2]) - (243*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqr
t[1 + x]], -2/3])/(20*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{7/2}}\,dx &= \frac{(408+337x)\left(2+5x+3x^2\right)^{3/2}}{75(3+2x)^{5/2}}-\frac{1}{50}\int \frac{(472+543x)\sqrt{2+5x+3x^2}}{(3+2x)^{3/2}}\,dx \\
&= -\frac{(614+181x)\sqrt{2+5x+3x^2}}{50\sqrt{3+2x}}+\frac{(408+337x)\left(2+5x+3x^2\right)^{3/2}}{75(3+2x)^{5/2}}+\frac{1}{300}\int \frac{}{\sqrt{3 -}} \\
&= -\frac{(614+181x)\sqrt{2+5x+3x^2}}{50\sqrt{3+2x}}+\frac{(408+337x)\left(2+5x+3x^2\right)^{3/2}}{75(3+2x)^{5/2}}+\frac{2779}{200}\int \frac{}{\sqrt{2}} \\
&= -\frac{(614+181x)\sqrt{2+5x+3x^2}}{50\sqrt{3+2x}}+\frac{(408+337x)\left(2+5x+3x^2\right)^{3/2}}{75(3+2x)^{5/2}}+\frac{\left(2779\sqrt{-2-}\right.}{} \\
&= -\frac{(614+181x)\sqrt{2+5x+3x^2}}{50\sqrt{3+2x}}+\frac{(408+337x)\left(2+5x+3x^2\right)^{3/2}}{75(3+2x)^{5/2}}+\frac{2779\sqrt{-2-}}{}
\end{aligned}
$$

Mathematica [A] time = 0.34, size = 192, normalized size = 1.10

$$
\frac{-900x^5+16800x^4+100610x^3+190440x^2+147790x-592\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+3)^{7/2}\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+}{300(2x+3)^{5/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(7/2),x]
```

```
[Out] (40260 + 147790*x + 190440*x^2 + 100610*x^3 + 16800*x^4 - 900*x^5 + 2779*Sq
rt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ell
ipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 592*Sqrt[5]*Sqrt[(1 + x)/(3
+ 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3
]/Sqrt[3 + 2*x]], 3/5])/(300*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3\,x^{3} - 10\,x^{2} - 23\,x - 10\right)\sqrt{3\,x^{2} + 5\,x + 2}\,\sqrt{2\,x + 3}}{16\,x^{4} + 96\,x^{3} + 216\,x^{2} + 216\,x + 81}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{{\left(3\,x^{2} + 5\,x + 2\right)}^{\frac{3}{2}}{\left(x - 5\right)}}{{\left(2\,x + 3\right)}^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(7/2), x)
```

maple [B] time = 0.02, size = 301, normalized size = 1.72

$$-\frac{9000x^{5} + 498960x^{4} + 2106380x^{3} + 11116\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{2}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5}, \frac{\sqrt{15}}{3}\right)}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(7/2),x)
```

```
[Out] -1/3000*(3464*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x
+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+11116*15^(1/2)*EllipticE(1/5*(30*
x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)
+10392*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)
*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+33348*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/
2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+7794*(2*x+
3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(
1/2),1/3*15^(1/2))+25011*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(
1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+9000*x^5+498960*x^4+210638
0*x^3+3375700*x^2+2357120*x+597840)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{{\left(3\,x^{2} + 5\,x + 2\right)}^{\frac{3}{2}}{\left(x - 5\right)}}{{\left(2\,x + 3\right)}^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(7/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(7/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(7/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x\sqrt{2x+3}+27\sqrt{2x+3}}\right)dx-\int\left(-\frac{23x\sqrt{3x^2+5x}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(7/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2
*x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(-23*x*sqrt(
3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt
(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2
)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt(2*x + 3) + 27*s
qrt(2*x + 3)), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x
 + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x)
```

3.2591 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{9/2}}\,dx$

Optimal. Leaf size=175

$$\frac{(347x+358)\left(3x^2+5x+2\right)^{3/2}}{175(2x+3)^{7/2}}+\frac{(6179x+8561)\sqrt{3x^2+5x+2}}{1750(2x+3)^{3/2}}+\frac{1327\sqrt{3}\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\Big(\sqrt{3}\sqrt{x+}{700\sqrt{3x^2+5x+2}}$$

```
[Out] 1/175*(358+347*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(7/2)-721/500*EllipticE(3^(1/
2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1
/2)+1327/700*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1
/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/1750*(8561+6179*x)*(3*x^2+5*x+2)^(1/2)/(3
+2*x)^(3/2)
```

Rubi [A] time = 0.10, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {810, 843, 718, 424, 419}

$$\frac{(347x+358)\left(3x^2+5x+2\right)^{3/2}}{175(2x+3)^{7/2}}+\frac{(6179x+8561)\sqrt{3x^2+5x+2}}{1750(2x+3)^{3/2}}+\frac{1327\sqrt{3}\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\Big(\sqrt{3}\sqrt{x+}{700\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(9/2),x]
```

```
[Out] ((8561 + 6179*x)*Sqrt[2 + 5*x + 3*x^2])/(1750*(3 + 2*x)^(3/2)) + ((358 + 34
7*x)*(2 + 5*x + 3*x^2)^(3/2))/(175*(3 + 2*x)^(7/2)) - (721*Sqrt[3]*Sqrt[-2
- 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(500*Sqrt[2 +
5*x + 3*x^2]) + (1327*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[
3]*Sqrt[1 + x]], -2/3])/(700*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{9/2}}\,dx = \frac{(358+347x)\left(2+5x+3x^2\right)^{3/2}}{175(3+2x)^{7/2}} - \frac{3}{350}\int \frac{(250+261x)\sqrt{2+5x+3x^2}}{(3+2x)^{5/2}}\,dx$$

$$= \frac{(8561+6179x)\sqrt{2+5x+3x^2}}{1750(3+2x)^{3/2}} + \frac{(358+347x)\left(2+5x+3x^2\right)^{3/2}}{175(3+2x)^{7/2}} + \frac{\int \frac{-12759-}{\sqrt{3+2x}\,\sqrt{2-}}}{35}$$

$$= \frac{(8561+6179x)\sqrt{2+5x+3x^2}}{1750(3+2x)^{3/2}} + \frac{(358+347x)\left(2+5x+3x^2\right)^{3/2}}{175(3+2x)^{7/2}} - \frac{2163\int \frac{\sqrt{}}{\sqrt{2+}}}{100}$$

$$= \frac{(8561+6179x)\sqrt{2+5x+3x^2}}{1750(3+2x)^{3/2}} + \frac{(358+347x)\left(2+5x+3x^2\right)^{3/2}}{175(3+2x)^{7/2}} - \frac{\left(721\sqrt{3}\,\sqrt{-}\right.}{}$$

$$= \frac{(8561+6179x)\sqrt{2+5x+3x^2}}{1750(3+2x)^{3/2}} + \frac{(358+347x)\left(2+5x+3x^2\right)^{3/2}}{175(3+2x)^{7/2}} - \frac{721\sqrt{3}\,\sqrt{-2}}{}$$

Mathematica [A] time = 0.33, size = 192, normalized size = 1.10

$$-\frac{31500x^5+323760x^4+1009230x^3+1386750x^2+878020x-1066\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+3)^{9/2}\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right.\right.}{3500(2x+3)^{7/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(9/2),x]
```

```
[Out] -1/3500*(208240 + 878020*x + 1386750*x^2 + 1009230*x^3 + 323760*x^4 + 31500
*x^5 + 5047*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(9/2)*Sqrt[(2 + 3*x)/
(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 1066*Sqrt[5]*S
qrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(9/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[
ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)^(7/2)*Sqrt[2 + 5*x + 3*x^
2])
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3\,x^{3}-10\,x^{2}-23\,x-10\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{32\,x^{5}+240\,x^{4}+720\,x^{3}+1080\,x^{2}+810\,x+243},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(9/2), x)
```

maple [B] time = 0.02, size = 389, normalized size = 2.22

$$\frac{2107560x^{5}+11701520x^{4}+40376\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{3}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+12704}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(9/2),x)
```

```
[Out] 1/35000*(12704*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+40376*15^(1/2)*EllipticE(1/5*(30
*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)+57168*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1
/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+181692*15^(1/2)*EllipticE(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+8575
2*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*
x-2)^(1/2)*(-30*x-20)^(1/2)+272538*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1
/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+42876*(2*x+3)^
(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2
),1/3*15^(1/2))+136269*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/
2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+2107560*x^5+11701520*x^4+260
44220*x^3+28830120*x^2+15748220*x+3368360)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(7/2
)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(9/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^{9/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(9/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{10\sqrt{3x^2+5x+2}}{16x^4\sqrt{2x+3}+96x^3\sqrt{2x+3}+216x^2\sqrt{2x+3}+216x\sqrt{2x+3}+81\sqrt{2x+3}}\right)dx-\int \left(-\frac{}{16x^4\sqrt{2x+3}+}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(9/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sqrt(
2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x + 3))
, x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x*
*3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2
*x + 3)), x) - Integral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x +
 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3)
+ 81*sqrt(2*x + 3)), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(16*x**4*s
qrt(2*x + 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(
2*x + 3) + 81*sqrt(2*x + 3)), x)
```

3.2592 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{11/2}}\,dx$

Optimal. Leaf size=202

$$\frac{(51x+44)\left(3x^2+5x+2\right)^{3/2}}{45(2x+3)^{9/2}}-\frac{(211x+189)\sqrt{3x^2+5x+2}}{2250(2x+3)^{5/2}}-\frac{23\sqrt{3x^2+5x+2}}{11250\sqrt{2x+3}}+\frac{7\sqrt{-3x^2-5x-2}\,F\big(\sin^{-1}\big(\sqrt{}}{1500\sqrt{3}\,\sqrt{3x^2+5x}}$$

```
[Out] 1/45*(44+51*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(9/2)+23/22500*EllipticE(3^(1/2)
*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2
)+7/4500*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*
3^(1/2)/(3*x^2+5*x+2)^(1/2)-1/2250*(189+211*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^
(5/2)-23/11250*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{810, 834, 843, 718, 424, 419\}$

$$\frac{(51x+44)\left(3x^2+5x+2\right)^{3/2}}{45(2x+3)^{9/2}}-\frac{(211x+189)\sqrt{3x^2+5x+2}}{2250(2x+3)^{5/2}}-\frac{23\sqrt{3x^2+5x+2}}{11250\sqrt{2x+3}}+\frac{7\sqrt{-3x^2-5x-2}\,F\big(\sin^{-1}\big(\sqrt{}}{1500\sqrt{3}\,\sqrt{3x^2+5x}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(11/2),x]
```

```
[Out] (-23*Sqrt[2 + 5*x + 3*x^2])/(11250*Sqrt[3 + 2*x]) - ((189 + 211*x)*Sqrt[2 +
 5*x + 3*x^2])/(2250*(3 + 2*x)^(5/2)) + ((44 + 51*x)*(2 + 5*x + 3*x^2)^(3/2
))/(45*(3 + 2*x)^(9/2)) + (23*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[
3]*Sqrt[1 + x]], -2/3])/(7500*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (7*Sqrt[-2 -
 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(1500*Sqrt[3]*S
qrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{11/2}}\,dx = \frac{(44+51x)\left(2+5x+3x^2\right)^{3/2}}{45(3+2x)^{9/2}} - \frac{1}{210}\int \frac{(28-21x)\sqrt{2+5x+3x^2}}{(3+2x)^{7/2}}\,dx$$

$$= -\frac{(189+211x)\sqrt{2+5x+3x^2}}{2250(3+2x)^{5/2}} + \frac{(44+51x)\left(2+5x+3x^2\right)^{3/2}}{45(3+2x)^{9/2}} + \frac{\int \frac{301+147x}{(3+2x)^{3/2}\sqrt{2+5x}}}{31500}$$

$$= -\frac{23\sqrt{2+5x+3x^2}}{11250\sqrt{3+2x}} - \frac{(189+211x)\sqrt{2+5x+3x^2}}{2250(3+2x)^{5/2}} + \frac{(44+51x)\left(2+5x+3x^2\right)}{45(3+2x)^{9/2}}$$

$$= -\frac{23\sqrt{2+5x+3x^2}}{11250\sqrt{3+2x}} - \frac{(189+211x)\sqrt{2+5x+3x^2}}{2250(3+2x)^{5/2}} + \frac{(44+51x)\left(2+5x+3x^2\right)}{45(3+2x)^{9/2}}$$

$$= -\frac{23\sqrt{2+5x+3x^2}}{11250\sqrt{3+2x}} - \frac{(189+211x)\sqrt{2+5x+3x^2}}{2250(3+2x)^{5/2}} + \frac{(44+51x)\left(2+5x+3x^2\right)}{45(3+2x)^{9/2}}$$

$$= -\frac{23\sqrt{2+5x+3x^2}}{11250\sqrt{3+2x}} - \frac{(189+211x)\sqrt{2+5x+3x^2}}{2250(3+2x)^{5/2}} + \frac{(44+51x)\left(2+5x+3x^2\right)}{45(3+2x)^{9/2}}$$

Mathematica [**A**] time = 0.44, size = 192, normalized size = 0.95

$$\frac{204180x^5 + 822160x^4 + 1297210x^3 + 998860x^2 + 373610x - 44\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{11/2}F\Bigg(\sin^{-1}\Bigg(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}}{22500(2x+3)^{9/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(11/2),x]
```

```
[Out] (53980 + 373610*x + 998860*x^2 + 1297210*x^3 + 822160*x^4 + 204180*x^5 + 23
*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(11/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]
*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 44*Sqrt[5]*Sqrt[(1 + x)/
(3 + 2*x)]*(3 + 2*x)^(11/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt
[5/3]/Sqrt[3 + 2*x]], 3/5])/(22500*(3 + 2*x)^(9/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**] time = 0.83, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3x^3 - 10x^2 - 23x - 10\right)\sqrt{3x^2+5x+2}\sqrt{2x+3}}{64x^6 + 576x^5 + 2160x^4 + 4320x^3 + 4860x^2 + 2916x + 729}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(11/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 2916*x + 729), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3x^2+5x+2\right)^{\frac{3}{2}}(x-5)}{(2x+3)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(11/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(11/2), x)
```

maple [**B**] time = 0.04, size = 482, normalized size = 2.39

$$\frac{-22080x^6 + 1872520x^5 - 368\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\sqrt{2x+3}\,x^4\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5}, \frac{\sqrt{15}}{3}\right) + 928\sqrt{15}\,\sqrt{}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(11/2),x)
```

```
[Out] 1/225000*(928*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*
x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)-368*15^(1/2)*EllipticE(1/5*(30*x+
45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+5
568*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*
(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-2208*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2)
,1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+12528*15^(
1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)-4968*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^
(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+12528*15^(1/2)*Ell
ipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-3
0*x-20)^(1/2)-4968*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(
2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-22080*x^6+4698*(2*x+3)^(1/2)*1
5^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*1
5^(1/2))-1863*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ellipt
icE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+1872520*x^5+7688000*x^4+12088900*x^3+
9181300*x^2+3351080*x+465280)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(11/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(11/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(11/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{10\sqrt{3x^2+5x+2}}{32x^5\sqrt{2x+3}+240x^4\sqrt{2x+3}+720x^3\sqrt{2x+3}+1080x^2\sqrt{2x+3}+810x\sqrt{2x+3}+243\sqrt{2x+3}}\right)dx-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(11/2),x)
```

```
[Out] -Integral(-10*sqrt(3*x**2 + 5*x + 2)/(32*x**5*sqrt(2*x + 3) + 240*x**4*sqrt
(2*x + 3) + 720*x**3*sqrt(2*x + 3) + 1080*x**2*sqrt(2*x + 3) + 810*x*sqrt(2
*x + 3) + 243*sqrt(2*x + 3)), x) - Integral(-23*x*sqrt(3*x**2 + 5*x + 2)/(3
2*x**5*sqrt(2*x + 3) + 240*x**4*sqrt(2*x + 3) + 720*x**3*sqrt(2*x + 3) + 10
80*x**2*sqrt(2*x + 3) + 810*x*sqrt(2*x + 3) + 243*sqrt(2*x + 3)), x) - Inte
gral(-10*x**2*sqrt(3*x**2 + 5*x + 2)/(32*x**5*sqrt(2*x + 3) + 240*x**4*sqrt
(2*x + 3) + 720*x**3*sqrt(2*x + 3) + 1080*x**2*sqrt(2*x + 3) + 810*x*sqrt(2
*x + 3) + 243*sqrt(2*x + 3)), x) - Integral(3*x**3*sqrt(3*x**2 + 5*x + 2)/(
32*x**5*sqrt(2*x + 3) + 240*x**4*sqrt(2*x + 3) + 720*x**3*sqrt(2*x + 3) + 1
080*x**2*sqrt(2*x + 3) + 810*x*sqrt(2*x + 3) + 243*sqrt(2*x + 3)), x)
```

3.2593 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{13/2}}\,dx$

Optimal. Leaf size=229

$$\frac{(367x+258)\left(3x^2+5x+2\right)^{3/2}}{495(2x+3)^{11/2}}-\frac{(14773x+15647)\sqrt{3x^2+5x+2}}{57750(2x+3)^{7/2}}+\frac{5861\sqrt{3x^2+5x+2}}{618750\sqrt{2x+3}}+\frac{14807\sqrt{3x^2+5x+}}{866250(2x+3)^{3/2}}$$

```
[Out] 1/495*(258+367*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(11/2)-5861/1237500*EllipticE
(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x
+2)^(1/2)+14807/1732500*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^
2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+14807/866250*(3*x^2+5*x+2)^(1/2)
/(3+2*x)^(3/2)-1/57750*(15647+14773*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2)+58
61/618750*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.15, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {810, 834, 843, 718, 424, 419}

$$\frac{(367x+258)\left(3x^2+5x+2\right)^{3/2}}{495(2x+3)^{11/2}}-\frac{(14773x+15647)\sqrt{3x^2+5x+2}}{57750(2x+3)^{7/2}}+\frac{5861\sqrt{3x^2+5x+2}}{618750\sqrt{2x+3}}+\frac{14807\sqrt{3x^2+5x+}}{866250(2x+3)^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(13/2),x]
```

```
[Out] (14807*Sqrt[2 + 5*x + 3*x^2])/(866250*(3 + 2*x)^(3/2)) + (5861*Sqrt[2 + 5*x
 + 3*x^2])/(618750*Sqrt[3 + 2*x]) - ((15647 + 14773*x)*Sqrt[2 + 5*x + 3*x^2
])/(57750*(3 + 2*x)^(7/2)) + ((258 + 367*x)*(2 + 5*x + 3*x^2)^(3/2))/(495*(
3 + 2*x)^(11/2)) - (5861*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sq
rt[1 + x]], -2/3])/(412500*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (14807*Sqrt[-2
- 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(577500*Sqrt[3
]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{13/2}}\,dx = \frac{(258+367x)\left(2+5x+3x^2\right)^{3/2}}{495(3+2x)^{11/2}} - \frac{1}{330}\int \frac{(-194-303x)\sqrt{2+5x+3x^2}}{(3+2x)^{9/2}}\,dx$$

$$= -\frac{(15647+14773x)\sqrt{2+5x+3x^2}}{57750(3+2x)^{7/2}} + \frac{(258+367x)\left(2+5x+3x^2\right)^{3/2}}{495(3+2x)^{11/2}} + \int \frac{}{(3}$$

$$= \frac{14807\sqrt{2+5x+3x^2}}{866250(3+2x)^{3/2}} - \frac{(15647+14773x)\sqrt{2+5x+3x^2}}{57750(3+2x)^{7/2}} + \frac{(258+367x)\,(2}{495(3+}$$

$$= \frac{14807\sqrt{2+5x+3x^2}}{866250(3+2x)^{3/2}} + \frac{5861\sqrt{2+5x+3x^2}}{618750\sqrt{3+2x}} - \frac{(15647+14773x)\sqrt{2+5x+}}{57750(3+2x)^{7/2}}$$

$$= \frac{14807\sqrt{2+5x+3x^2}}{866250(3+2x)^{3/2}} + \frac{5861\sqrt{2+5x+3x^2}}{618750\sqrt{3+2x}} - \frac{(15647+14773x)\sqrt{2+5x+}}{57750(3+2x)^{7/2}}$$

$$= \frac{14807\sqrt{2+5x+3x^2}}{866250(3+2x)^{3/2}} + \frac{5861\sqrt{2+5x+3x^2}}{618750\sqrt{3+2x}} - \frac{(15647+14773x)\sqrt{2+5x+}}{57750(3+2x)^{7/2}}$$

$$= \frac{14807\sqrt{2+5x+3x^2}}{866250(3+2x)^{3/2}} + \frac{5861\sqrt{2+5x+3x^2}}{618750\sqrt{3+2x}} - \frac{(15647+14773x)\sqrt{2+5x+}}{57750(3+2x)^{7/2}}$$

Mathematica [A] time = 0.47, size = 227, normalized size = 0.99

$$-\frac{2(2x+3)^5\left(82054\left(3x^2+5x+2\right)+3394\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+41027\sqrt{5}\sqrt{\frac{x+1}{2x+}}\right.}{1}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(3/2))/(3 + 2*x)^(13/2),x]
```

```
[Out] -1/17325000*(-4*(2 + 5*x + 3*x^2)*(9919671 + 42879355*x + 65139670*x^2 + 41
848650*x^3 + 11031040*x^4 + 1312864*x^5) + 2*(3 + 2*x)^5*(82054*(2 + 5*x +
3*x^2) + 41027*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*
x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 3394*Sqrt[5
]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ellipti
cF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(11/2)*Sqrt[2 + 5*x +
 3*x^2])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(3\,x^3-10\,x^2-23\,x-10\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{128\,x^7+1344\,x^6+6048\,x^5+15120\,x^4+22680\,x^3+20412\,x^2+10206\,x+2187},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(13/2),x, algorithm="fricas")
```

```
[Out] integral(-(3*x^3 - 10*x^2 - 23*x - 10)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/
(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3 + 20412*x^2 + 10206*
x + 2187), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(13/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(13/2), x)
```

maple [B] time = 0.04, size = 575, normalized size = 2.51

$$78771840x^7+793148800x^6+1312864\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^5\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+1056$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(3/2)/(2*x+3)^(13/2),x)
```

```
[Out] 1/86625000*(1056256*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^
5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1312864*15^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)+7921920*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(
-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+9846480*15^(1/2)*EllipticE(1/5
*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^
(1/2)+23765760*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+29539440*15^(1/2)*EllipticE(1/5*
(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(
1/2)+35648640*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x
+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+44309160*15^(1/2)*EllipticE(1/5*(
30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1
/2)+78771840*x^7+26736480*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/
2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+33231870*15^(1/2)*Ellip
ticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*
x-20)^(1/2)+793148800*x^6+8020944*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-3
0*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+9969561*(2*x+3)^(
1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2)
,1/3*15^(1/2))+3666537560*x^5+8534486800*x^4+10760674300*x^3+7488702560*x^2
+2707141300*x+396786840)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(x-5)}{(2\,x+3)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(13/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(3/2)*(x - 5)/(2*x + 3)^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{3/2}}{(2\,x+3)^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(13/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(3/2))/(2*x + 3)^(13/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(3/2)/(3+2*x)**(13/2),x)
```

```
[Out] Timed out
```

3.2594 $\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=288

$$-\frac{2}{57}(2x+3)^{5/2}\left(3x^2+5x+2\right)^{7/2}+\frac{430}{969}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{7/2}+\frac{2350\sqrt{2x+3}\left(3x^2+5x+2\right)^{7/2}}{2907}+\frac{25\sqrt{2x+3}}{}$$

```
[Out] 430/969*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(7/2)-2/57*(3+2*x)^(5/2)*(3*x^2+5*x+2)^
(7/2)-125/52378326*(64006+79583*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)+25/124
7103*(72737+86493*x)*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2)+2350/2907*(3*x^2+5*x
+2)^(7/2)*(3+2*x)^(1/2)-16503475/808122744*EllipticE(3^(1/2)*(1+x)^(1/2),1/
3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+142149125/565
6859208*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3
^(1/2)/(3*x^2+5*x+2)^(1/2)+25/942809868*(749099+216603*x)*(3+2*x)^(1/2)*(3*
x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.22, antiderivative size = 288, normalized size of antiderivative = 1.00, number of steps used = 11, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{57}(2x+3)^{5/2}\left(3x^2+5x+2\right)^{7/2}+\frac{430}{969}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{7/2}+\frac{2350\sqrt{2x+3}\left(3x^2+5x+2\right)^{7/2}}{2907}+\frac{25\sqrt{2x+3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (25*Sqrt[3 + 2*x]*(749099 + 216603*x)*Sqrt[2 + 5*x + 3*x^2])/942809868 - (1
25*Sqrt[3 + 2*x]*(64006 + 79583*x)*(2 + 5*x + 3*x^2)^(3/2))/52378326 + (25*
Sqrt[3 + 2*x]*(72737 + 86493*x)*(2 + 5*x + 3*x^2)^(5/2))/1247103 + (2350*Sq
rt[3 + 2*x]*(2 + 5*x + 3*x^2)^(7/2))/2907 + (430*(3 + 2*x)^(3/2)*(2 + 5*x +
 3*x^2)^(7/2))/969 - (2*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(7/2))/57 - (1650
3475*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(
269374248*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (142149125*Sqrt[-2 - 5*x - 3*x^2
]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(1885619736*Sqrt[3]*Sqrt[2
+ 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}\,dx=-\frac{2}{57}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{7/2}+\frac{2}{57}\int (3+2x)^{3/2}\Bigg(490+\frac{645x}{2}\Bigg)\Bigg(2$$

$$=\frac{430}{969}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{7/2}-\frac{2}{57}(3+2x)^{5/2}\left(2+5x+3x^2\right)^{7/2}+$$

$$=\frac{2350\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{7/2}}{2907}+\frac{430}{969}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{7/2}-$$

$$=\frac{25\sqrt{3+2x}\,(72737+86493x)\left(2+5x+3x^2\right)^{5/2}}{1247103}+\frac{2350\sqrt{3+2x}\,(2+}{2907}$$

$$=-\frac{125\sqrt{3+2x}\,(64006+79583x)\left(2+5x+3x^2\right)^{3/2}}{52378326}+\frac{25\sqrt{3+2x}\,(727}{}$$

$$=\frac{25\sqrt{3+2x}\,(749099+216603x)\sqrt{2+5x+3x^2}}{942809868}-\frac{125\sqrt{3+2x}\,(6400}{}$$

$$=\frac{25\sqrt{3+2x}\,(749099+216603x)\sqrt{2+5x+3x^2}}{942809868}-\frac{125\sqrt{3+2x}\,(6400}{}$$

$$=\frac{25\sqrt{3+2x}\,(749099+216603x)\sqrt{2+5x+3x^2}}{942809868}-\frac{125\sqrt{3+2x}\,(6400}{}$$

$$=\frac{25\sqrt{3+2x}\,(749099+216603x)\sqrt{2+5x+3x^2}}{942809868}-\frac{125\sqrt{3+2x}\,(6400}{}$$

Mathematica [A] time = 0.38, size = 228, normalized size = 0.79

$$-\frac{-30234850\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+115524325\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2E\Bigg(\sin^{-1}\Bigg(\frac{}{\sqrt{2}}}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/5656859208*(2*Sqrt[3 + 2*x]*(-341519551612 - 3595384785664*x - 167352724
62363*x^2 - 45255052994607*x^3 - 78460508136978*x^4 - 90580760151282*x^5 -
69684837178068*x^6 - 34294970344572*x^7 - 9445976815968*x^8 - 694795413312*
x^9 + 311460012864*x^10 + 64309557312*x^11) + 115524325*Sqrt[5]*Sqrt[(1 + x
)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/
3]/Sqrt[3 + 2*x]], 3/5] - 30234850*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x
)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/
5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(36\,x^7+48\,x^6-551\,x^5-2151\,x^4-3381\,x^3-2717\,x^2-1104\,x-180\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(36*x^7 + 48*x^6 - 551*x^5 - 2151*x^4 - 3381*x^3 - 2717*x^2 - 110
4*x - 180)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(5/2)*(x - 5), x)
```

maple [A] time = 0.03, size = 176, normalized size = 0.61

$$\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-257238229248x^{11}-1245840051456x^{10}+2779181653248x^{9}+37783907263872x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/11313718416*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-257238229248*x^11-1245840
051456*x^10+2779181653248*x^9+37783907263872*x^8+137179881378288*x^7+278739
348712272*x^6+362323040605128*x^5+5324960*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(
1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+23104865*
(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+
45)^(1/2),1/3*15^(1/2))+313842032547912*x^4+181020211978428*x^3+66942476141
352*x^2+14383849629156*x+1367002401048)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{5}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(5/2)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^{5/2}\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^(5/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-180\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int \left(-1104x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int \left(-2717x^2\sqrt{2x+3}\,\sqrt{3x^2\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-180*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-1104*x*
sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-2717*x**2*sqrt(2*x + 3
)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-3381*x**3*sqrt(2*x + 3)*sqrt(3*x**
2 + 5*x + 2), x) - Integral(-2151*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
, x) - Integral(-551*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integr
al(48*x**6*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(36*x**7*sqrt
(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2595 $\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=261

$$-\frac{2}{51}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{7/2}+\frac{1166\sqrt{2x+3}\left(3x^2+5x+2\right)^{7/2}}{2295}+\frac{\sqrt{2x+3}\,(1253571x+1063774)\,(3x^2+5x -}{984555}$$

```
[Out] -2/51*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(7/2)-1/8270262*(949997+1332121*x)*(3*x^2
+5*x+2)^(3/2)*(3+2*x)^(1/2)+1/984555*(1063774+1253571*x)*(3*x^2+5*x+2)^(5/2
)*(3+2*x)^(1/2)+1166/2295*(3*x^2+5*x+2)^(7/2)*(3+2*x)^(1/2)-34355693/637991
640*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/
2)/(3*x^2+5*x+2)^(1/2)+62005241/893188296*EllipticF(3^(1/2)*(1+x)^(1/2),1/3
*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1/744323580*(1
2174838-22593339*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.20, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{51}(2x+3)^{3/2}\left(3x^2+5x+2\right)^{7/2}+\frac{1166\sqrt{2x+3}\left(3x^2+5x+2\right)^{7/2}}{2295}+\frac{\sqrt{2x+3}\,(1253571x+1063774)\,(3x^2+5x -}{984555}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] ((12174838 - 22593339*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/744323580 - (
Sqrt[3 + 2*x]*(949997 + 1332121*x)*(2 + 5*x + 3*x^2)^(3/2))/8270262 + (Sqrt
[3 + 2*x]*(1063774 + 1253571*x)*(2 + 5*x + 3*x^2)^(5/2))/984555 + (1166*Sqr
t[3 + 2*x]*(2 + 5*x + 3*x^2)^(7/2))/2295 - (2*(3 + 2*x)^(3/2)*(2 + 5*x + 3*
x^2)^(7/2))/51 - (34355693*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*
Sqrt[1 + x]], -2/3])/(212663880*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (62005241*
Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(29772
9432*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}dx = -\frac{2}{51}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{7/2}+\frac{2}{51}\int\sqrt{3+2x}\left(441+\frac{583x}{2}\right)($$

$$=\frac{1166\sqrt{3+2x}\left(2+5x+3x^2\right)^{7/2}}{2295}-\frac{2}{51}(3+2x)^{3/2}\left(2+5x+3x^2\right)^{7/2}$$

$$=\frac{\sqrt{3+2x}\,(1063774+1253571x)\left(2+5x+3x^2\right)^{5/2}}{984555}+\frac{1166\sqrt{3+2x}$$

$$=-\frac{\sqrt{3+2x}\,(949997+1332121x)\left(2+5x+3x^2\right)^{3/2}}{8270262}+\frac{\sqrt{3+2x}\,(106$$

$$=\frac{(12174838-22593339x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{744323580}-\frac{\sqrt{3+2x}\,(949$$

$$=\frac{(12174838-22593339x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{744323580}-\frac{\sqrt{3+2x}\,(949$$

$$=\frac{(12174838-22593339x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{744323580}-\frac{\sqrt{3+2x}\,(949$$

$$=\frac{(12174838-22593339x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{744323580}-\frac{\sqrt{3+2x}\,(949$$

Mathematica [**A**] time = 0.37, size = 223, normalized size = 0.85

$$-\frac{2\left(28371863520x^{10}+90474720336x^9-474654810168x^8-3544442250300x^7-9891695193912x^6-15763\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/4465941480*(2*Sqrt[3 + 2*x]*(-96409103246 - 956384897657*x - 41380966536
00*x^2 - 10225439632143*x^3 - 15827034250764*x^4 - 15763726088406*x^5 - 989
1695193912*x^6 - 3544442250300*x^7 - 474654810168*x^8 + 90474720336*x^9 + 2
8371863520*x^10) + 240489851*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sq
rt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 5
4474128*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x
)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x
 + 3*x^2])
```

fricas [**F**] time = 0.70, size = 0, normalized size = 0.00

$$\text{integral}\left(-\left(18\,x^6-3\,x^5-271\,x^4-669\,x^3-687\,x^2-328\,x-60\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,,x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(18*x^6 - 3*x^5 - 271*x^4 - 669*x^3 - 687*x^2 - 328*x - 60)*sqrt(
3*x^2 + 5*x + 2)*sqrt(2*x + 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(3/2)*(x - 5), x)
```

maple [A] time = 0.01, size = 171, normalized size = 0.66

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\big(-567437270400x^{10}-1809494406720x^9+9493096203360x^8+70888845006000x^7+}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)*(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 1/44659414800*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-567437270400*x^10-1809494
406720*x^9+9493096203360*x^8+70888845006000*x^7+197833903878240*x^6+3152745
21768120*x^5+69536354*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+240489851*(2*x+3)^(1/2)*15^(1
/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1
/2))+316540685015280*x^4+204508792642860*x^3+82776362463060*x^2+19151746938
240*x+1937801658960)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{3}{2}}(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(3/2)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int (2\,x+3)^{3/2}\,(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^(3/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-60\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-328x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\Big(-687x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)*(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-60*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-328*x*sq
rt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-687*x**2*sqrt(2*x + 3)*s
qrt(3*x**2 + 5*x + 2), x) - Integral(-669*x**3*sqrt(2*x + 3)*sqrt(3*x**2 +
5*x + 2), x) - Integral(-271*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
- Integral(-3*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(18*x
**6*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2596 $\int (5-x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{5/2}\,dx$

Optimal. Leaf size=234

$$-\frac{2}{45}\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{7/2}+\frac{\sqrt{2x+3}\,(17193x+15467)\left(3x^2+5x+2\right)^{5/2}}{19305}-\frac{\sqrt{2x+3}\,(34643x+15076)\,(3x}{162162}$$

```
[Out] -1/162162*(15076+34643*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)+1/19305*(15467+
17193*x)*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2)-2/45*(3*x^2+5*x+2)^(7/2)*(3+2*x)
^(1/2)-2742319/12509640*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^
2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+5021353/17513496*EllipticF(3^(1/
2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1
/2)+1/14594580*(287729-2667537*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {832, 814, 843, 718, 424, 419}

$$-\frac{2}{45}\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{7/2}+\frac{\sqrt{2x+3}\,(17193x+15467)\left(3x^2+5x+2\right)^{5/2}}{19305}-\frac{\sqrt{2x+3}\,(34643x+15076)\,(3x}{162162}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] ((287729 - 2667537*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/14594580 - (Sqrt
[3 + 2*x]*(15076 + 34643*x)*(2 + 5*x + 3*x^2)^(3/2))/162162 + (Sqrt[3 + 2*x
]*(15467 + 17193*x)*(2 + 5*x + 3*x^2)^(5/2))/19305 - (2*Sqrt[3 + 2*x]*(2 +
5*x + 3*x^2)^(7/2))/45 - (2742319*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[S
qrt[3]*Sqrt[1 + x]], -2/3])/(4169880*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (5021
353*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(5
837832*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int (5-x)\sqrt{3+2x}\,\Big(2+5x+3x^2\Big)^{5/2}\,dx = -\frac{2}{45}\sqrt{3+2x}\,\Big(2+5x+3x^2\Big)^{7/2} + \frac{2}{45}\int \frac{\Big(392+\frac{521x}{2}\Big)\Big(2+5x+3x^2}{\sqrt{3+2x}}$$

$$= \frac{\sqrt{3+2x}\,(15467+17193x)\Big(2+5x+3x^2\Big)^{5/2}}{19305} - \frac{2}{45}\sqrt{3+2x}\,\Big(2+5x$$

$$= -\frac{\sqrt{3+2x}\,(15076+34643x)\Big(2+5x+3x^2\Big)^{3/2}}{162162} + \frac{\sqrt{3+2x}\,(15467+}{}$$

$$= \frac{(287729-2667537x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{14594580} - \frac{\sqrt{3+2x}\,(15076+}{}$$

$$= \frac{(287729-2667537x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{14594580} - \frac{\sqrt{3+2x}\,(15076+}{}$$

$$= \frac{(287729-2667537x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{14594580} - \frac{\sqrt{3+2x}\,(15076+}{}$$

$$= \frac{(287729-2667537x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{14594580} - \frac{\sqrt{3+2x}\,(15076+}{}$$

Mathematica [**A**] time = 0.36, size = 218, normalized size = 0.93

$$-\frac{2\Big(315242928x^9+468822816x^8-6333945660x^7-30512259036x^6-63978029658x^5-76896556902x^4-}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/87567480*(2*Sqrt[3 + 2*x]*(-666434848 - 6298405666*x - 25296672765*x^2 -
 56607962679*x^3 - 76896556902*x^4 - 63978029658*x^5 - 30512259036*x^6 - 63
33945660*x^7 + 468822816*x^8 + 315242928*x^9) + 19196233*Sqrt[5]*Sqrt[(1 +
x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5
/3]/Sqrt[3 + 2*x]], 3/5] - 4132174*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x
)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/
5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**] time = 0.78, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\left(9\,x^5-15\,x^4-113\,x^3-165\,x^2-96\,x-20\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*sqrt(2*x + 3)*(x - 5), x)
```

maple [A] time = 0.01, size = 166, normalized size = 0.71

$$\frac{\sqrt{3x^2+5x+2}\,\sqrt{2x+3}\,\left(-6304858560x^9-9376456320x^8+126678913200x^7+610245180720x^6+127956059\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)*(2*x+3)^(1/2),x)
```

```
[Out] 1/875674800*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(-6304858560*x^9-9376456320*x
^8+126678913200*x^7+610245180720*x^6+1279560593160*x^5+5910532*(2*x+3)^(1/2
)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/
3*15^(1/2))+19196233*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)
*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+1537931138040*x^4+113215925358
0*x^3+507085229280*x^2+127887736620*x+14096546280)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{2\,x+3}\,(x-5)\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*sqrt(2*x + 3)*(x - 5), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \sqrt{2\,x+3}\;\;(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int((2*x + 3)^(1/2)*(x - 5)*(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-20\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-96x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\right)dx-\int\left(-165x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)*(3+2*x)**(1/2),x)
```

```
[Out] -Integral(-20*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-96*x*sqr
t(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) - Integral(-165*x**2*sqrt(2*x + 3)*sq
rt(3*x**2 + 5*x + 2), x) - Integral(-113*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5
*x + 2), x) - Integral(-15*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x) -
Integral(9*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2), x)
```

3.2597 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{\sqrt{3+2x}}\,dx$

Optimal. Leaf size=207

$$\frac{1}{429}(224-33x)\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{5/2}-\frac{5\sqrt{2x+3}\,(4669x+563)\left(3x^2+5x+2\right)^{3/2}}{18018}+\frac{(34372-676791x)\sqrt{2}}{3243}$$

```
[Out] -5/18018*(563+4669*x)*(3*x^2+5*x+2)^(3/2)*(3+2*x)^(1/2)+1/429*(224-33*x)*(3
*x^2+5*x+2)^(5/2)*(3+2*x)^(1/2)-651617/277992*EllipticE(3^(1/2)*(1+x)^(1/2)
,1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+5983645/19
45944*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(
1/2)/(3*x^2+5*x+2)^(1/2)+1/324324*(34372-676791*x)*(3+2*x)^(1/2)*(3*x^2+5*x
+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {814, 843, 718, 424, 419}

$$\frac{1}{429}(224-33x)\sqrt{2x+3}\,\left(3x^2+5x+2\right)^{5/2}-\frac{5\sqrt{2x+3}\,(4669x+563)\left(3x^2+5x+2\right)^{3/2}}{18018}+\frac{(34372-676791x)\sqrt{2}}{3243}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/Sqrt[3 + 2*x],x]
```

```
[Out] ((34372 - 676791*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/324324 - (5*Sqrt[3
 + 2*x]*(563 + 4669*x)*(2 + 5*x + 3*x^2)^(3/2))/18018 + ((224 - 33*x)*Sqrt[
3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2))/429 - (651617*Sqrt[-2 - 5*x - 3*x^2]*Elli
pticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(92664*Sqrt[3]*Sqrt[2 + 5*x + 3*x
^2]) + (5983645*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]
], -2/3])/(648648*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{\sqrt{3+2x}}\,dx &= \frac{1}{429}(224-33x)\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{5/2}-\frac{5}{858}\int \frac{(1744+2001x)\left(2+5x+\right.}{\sqrt{3+2x}} \\
&= -\frac{5\sqrt{3+2x}\,(563+4669x)\left(2+5x+3x^2\right)^{3/2}}{18018}+\frac{1}{429}(224-33x)\sqrt{3+2x}\,\left(2+5x\right. \\
&= \frac{(34372-676791x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{324324}-\frac{5\sqrt{3+2x}\,(563+4669x)\left(2+5x\right.}{18018} \\
&= \frac{(34372-676791x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{324324}-\frac{5\sqrt{3+2x}\,(563+4669x)\left(2+5x\right.}{18018} \\
&= \frac{(34372-676791x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{324324}-\frac{5\sqrt{3+2x}\,(563+4669x)\left(2+5x\right.}{18018} \\
&= \frac{(34372-676791x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{324324}-\frac{5\sqrt{3+2x}\,(563+4669x)\left(2+5x\right.}{18018}
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 213, normalized size = 1.03

$$
-\frac{2\left(4041576x^8-1163484x^7-83553120x^6-268524558x^5-406647648x^4-349849791x^3-170798082x^2-39\right.}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/Sqrt[3 + 2*x],x]
```

```
[Out] -1/1945944*(2*Sqrt[3 + 2*x]*(-1864706 - 39284147*x - 170798082*x^2 - 349849
791*x^3 - 406647648*x^4 - 268524558*x^5 - 83553120*x^6 - 1163484*x^7 + 4041
576*x^8) + 4561319*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*
x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 971132*Sqrt
[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF
[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9x^5-15x^4-113x^3-165x^2-96x-20\right)\sqrt{3x^2+5x+2}}{\sqrt{2x+3}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)/sqrt(2*x + 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3x^2+5x+2\right)^{\frac{5}{2}}(x-5)}{\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/sqrt(2*x + 3), x)
```

maple [A] time = 0.01, size = 161, normalized size = 0.78

$$\sqrt{3x^2+5x+2}\,\sqrt{2x+3}\,\left(-80831520x^8+23269680x^7+1671062400x^6+5370491160x^5+8132952960x^4+\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(1/2),x)
```

```
[Out] 1/19459440*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(-80831520*x^8+23269680*x^7+16
71062400*x^6+5370491160*x^5+1422326*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(
-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+4561319*(2*x+3)
^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/
2),1/3*15^(1/2))+8132952960*x^4+6996995820*x^3+3689640780*x^2+1241814840*x+
219746880)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3x^2+5x+2\right)^{\frac{5}{2}}(x-5)}{\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/sqrt(2*x + 3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{\sqrt{2x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(1/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(1/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(1/2),x)
```

```
[Out] Timed out
```

3.2598 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{3/2}}\,dx$

Optimal. Leaf size=205

$$-\frac{(x+73)\left(3x^2+5x+2\right)^{5/2}}{11\sqrt{2x+3}}+\frac{5\sqrt{2x+3}\,(3031x+218)\left(3x^2+5x+2\right)^{3/2}}{1386}-\frac{(21871-471213x)\sqrt{2x+3}\,\sqrt{3x^2+}}{24948}$$

```
[Out] -1/11*(73+x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2)+5/1386*(218+3031*x)*(3*x^2+5
*x+2)^(3/2)*(3+2*x)^(1/2)+451331/21384*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*
6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-4145485/149688*El
lipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*
x^2+5*x+2)^(1/2)-1/24948*(21871-471213*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [**A**] time = 0.13, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {812, 814, 843, 718, 424, 419}

$$-\frac{(x+73)\left(3x^2+5x+2\right)^{5/2}}{11\sqrt{2x+3}}+\frac{5\sqrt{2x+3}\,(3031x+218)\left(3x^2+5x+2\right)^{3/2}}{1386}-\frac{(21871-471213x)\sqrt{2x+3}\,\sqrt{3x^2+}}{24948}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(3/2),x]
```

```
[Out] -((21871 - 471213*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/24948 + (5*Sqrt[3
 + 2*x]*(218 + 3031*x)*(2 + 5*x + 3*x^2)^(3/2))/1386 - ((73 + x)*(2 + 5*x +
 3*x^2)^(5/2))/(11*Sqrt[3 + 2*x]) + (451331*Sqrt[-2 - 5*x - 3*x^2]*Elliptic
E[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(7128*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
- (4145485*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2
/3])/(49896*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{3/2}}\,dx = -\frac{(73+x)\left(2+5x+3x^2\right)^{5/2}}{11\sqrt{3+2x}} - \frac{5}{22}\int \frac{(-361-433x)\left(2+5x+3x^2\right)^{3/2}}{\sqrt{3+2x}}\,dx$$

$$= \frac{5\sqrt{3+2x}\,(218+3031x)\left(2+5x+3x^2\right)^{3/2}}{1386} - \frac{(73+x)\left(2+5x+3x^2\right)^{5/2}}{11\sqrt{3+2x}} + 5\int$$

$$= -\frac{(21871-471213x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{24948} + \frac{5\sqrt{3+2x}\,(218+3031x)\,(2+5}{1386}$$

$$= -\frac{(21871-471213x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{24948} + \frac{5\sqrt{3+2x}\,(218+3031x)\,(2+5}{1386}$$

$$= -\frac{(21871-471213x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{24948} + \frac{5\sqrt{3+2x}\,(218+3031x)\,(2+5}{1386}$$

$$= -\frac{(21871-471213x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}{24948} + \frac{5\sqrt{3+2x}\,(218+3031x)\,(2+5}{1386}$$

Mathematica [A] time = 0.40, size = 205, normalized size = 1.00

$$\frac{2\left(-183708x^7+401436x^6+3305934x^5+7163046x^4+6935769x^3+6834513x^2+6998740x-336013\sqrt{5}\sqrt{}\right.}{149688\sqrt{2x}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(3/2),x]
```

```
[Out] (3159317*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3
+ 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 2*(2657740 + 6998
740*x + 6834513*x^2 + 6935769*x^3 + 7163046*x^4 + 3305934*x^5 + 401436*x^6
- 183708*x^7 - 336013*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[
(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(149
688*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9\,x^{5}-15\,x^{4}-113\,x^{3}-165\,x^{2}-96\,x-20\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{4\,x^{2}+12\,x+9},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(4*x^2 + 12*x + 9), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(3/2), x)
```

maple [A] time = 0.02, size = 156, normalized size = 0.76

$$-\frac{\sqrt{3x^2+5x+2}\,\sqrt{2x+3}\,\left(3674160x^7-8028720x^6-66118680x^5-143260920x^4-138715380x^3+5286876\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(3/2),x)
```

```
[Out] -1/1496880*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(3674160*x^7-8028720*x^6+98616
8*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*
x+45)^(1/2),1/3*15^(1/2))+3159317*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-3
0*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-66118680*x^5-1432
60920*x^4-138715380*x^3+52868760*x^2+175956900*x+73217880)/(6*x^3+19*x^2+19
*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(3/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(3/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(3/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int\left(-\frac{165x^2\sqrt{3x^2+5x+2}}{2x\sqrt{2x+3}+3\sqrt{2x+3}}\right)dx-\int$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(3/2),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)),
 x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x
 + 3)), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt(2*x + 3) +
 3*sqrt(2*x + 3)), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(2*x*sqrt
(2*x + 3) + 3*sqrt(2*x + 3)), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)
/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)), x) - Integral(9*x**5*sqrt(3*x**2 +
5*x + 2)/(2*x*sqrt(2*x + 3) + 3*sqrt(2*x + 3)), x)
```

3.2599 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{5/2}}\,dx$

Optimal. Leaf size=205

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{5/2}}{9(2x+3)^{3/2}}+\frac{5(121x+745)\left(3x^2+5x+2\right)^{3/2}}{126\sqrt{2x+3}}+\frac{5}{756}(326-6957x)\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+\frac{306}{}$$

```
[Out] -1/9*(21+x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(3/2)+5/126*(745+121*x)*(3*x^2+5*x+
2)^(3/2)/(3+2*x)^(1/2)-33335/648*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2
))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+306175/4536*EllipticF(3
^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2
)^(1/2)+5/756*(326-6957*x)*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 205, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {812, 814, 843, 718, 424, 419}

$$-\frac{(x+21)\left(3x^2+5x+2\right)^{5/2}}{9(2x+3)^{3/2}}+\frac{5(121x+745)\left(3x^2+5x+2\right)^{3/2}}{126\sqrt{2x+3}}+\frac{5}{756}(326-6957x)\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+\frac{306}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(5/2),x]
```

```
[Out] (5*(326 - 6957*x)*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/756 + (5*(745 + 121*
x)*(2 + 5*x + 3*x^2)^(3/2))/(126*Sqrt[3 + 2*x]) - ((21 + x)*(2 + 5*x + 3*x^
2)^(5/2))/(9*(3 + 2*x)^(3/2)) - (33335*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[Arc
Sin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(216*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (306
175*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(1
512*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 814

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(c*e*f*(m + 2*p + 2
) - g*(c*d + 2*c*d*p - b*e*p) + g*c*e*(m + 2*p + 1)*x)*(a + b*x + c*x^2)^p)
/(c*e^2*(m + 2*p + 1)*(m + 2*p + 2)), x] - Dist[p/(c*e^2*(m + 2*p + 1)*(m +
 2*p + 2)), Int[(d + e*x)^m*(a + b*x + c*x^2)^(p - 1)*Simp[c*e*f*(b*d - 2*a
*e)*(m + 2*p + 2) + g*(a*e*(b*e - 2*c*d*m + b*e*m) + b*d*(b*e*p - c*d - 2*c
*d*p)) + (c*e*f*(2*c*d - b*e)*(m + 2*p + 2) + g*(b^2*e^2*(p + m + 1) - 2*c^
2*d^2*(1 + 2*p) - c*e*(b*d*(m - 2*p) + 2*a*e*(m + 2*p + 1))))*x, x], x], x]
 /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2
- b*d*e + a*e^2, 0] && GtQ[p, 0] && (IntegerQ[p] ||  !RationalQ[m] || (GeQ[
m, -1] && LtQ[m, 0])) &&  !ILtQ[m + 2*p, 0] && (IntegerQ[m] || IntegerQ[p]
|| IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{5/2}}\,dx = -\frac{(21+x)\left(2+5x+3x^2\right)^{5/2}}{9(3+2x)^{3/2}} - \frac{5}{54}\int \frac{(-303-363x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{3/2}}\,dx$$

$$= \frac{5(745+121x)\left(2+5x+3x^2\right)^{3/2}}{126\sqrt{3+2x}} - \frac{(21+x)\left(2+5x+3x^2\right)^{5/2}}{9(3+2x)^{3/2}} + \frac{5}{252}\int \frac{(-9723$$

$$= \frac{5}{756}(326-6957x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{5(745+121x)\left(2+5x+3x^2\right)^{3/2}}{126\sqrt{3+2x}} -$$

$$= \frac{5}{756}(326-6957x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{5(745+121x)\left(2+5x+3x^2\right)^{3/2}}{126\sqrt{3+2x}} -$$

$$= \frac{5}{756}(326-6957x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{5(745+121x)\left(2+5x+3x^2\right)^{3/2}}{126\sqrt{3+2x}} -$$

$$= \frac{5}{756}(326-6957x)\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{5(745+121x)\left(2+5x+3x^2\right)^{3/2}}{126\sqrt{3+2x}} -$$

Mathematica **[A]**   time = 0.31, size = 202, normalized size = 0.99

$$-\frac{13608x^7-38232x^6-234684x^5-561564x^4+120594x^3+2607724x^2+3207982x-49640\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+}{4536(2x+3)^{3/2}\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(5/2),x]
```

```
[Out] -1/4536*(1099572 + 3207982*x + 2607724*x^2 + 120594*x^3 - 561564*x^4 - 2346
84*x^5 - 38232*x^6 + 13608*x^7 + 233345*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3
+ 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
2*x]], 3/5] - 49640*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2
 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2
*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas **[F]**   time = 0.69, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9\,x^{5}-15\,x^{4}-113\,x^{3}-165\,x^{2}-96\,x-20\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{8\,x^{3}+36\,x^{2}+54\,x+27},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(8*x^3 + 36*x^2 + 54*x + 27), x)
```

giac **[F]**   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(5/2), x)
```

maple **[A]**   time = 0.02, size = 223, normalized size = 1.09

$$\frac{-27216x^7+76464x^6+469368x^5+1123128x^4+5359092x^3+12518772x^2+93338\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(5/2),x)
```

```
[Out] 1/9072*(-27216*x^7+29132*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2
))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+93338*15^(1/2)*EllipticE
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20
)^(1/2)+76464*x^6+43698*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1
/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+140007*(2*x+3)^(1/2)*15^(1/
2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/
2))+469368*x^5+1123128*x^4+5359092*x^3+12518772*x^2+11318256*x+3401136)/(3*
x^2+5*x+2)^(1/2)/(2*x+3)^(3/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(5/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{4x^2\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x+2}}{4x^2\sqrt{2x+3}+12x\sqrt{2x+3}+9\sqrt{2x+3}}\right)dx-\int\Bigg(-$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(5/2),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x
+ 3) + 9*sqrt(2*x + 3)), x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(4*x**2
*sqrt(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x) - Integral(-165*
x**2*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*
sqrt(2*x + 3)), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt
(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x) - Integral(-15*x**4*s
qrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3) + 12*x*sqrt(2*x + 3) + 9*sqrt(2
*x + 3)), x) - Integral(9*x**5*sqrt(3*x**2 + 5*x + 2)/(4*x**2*sqrt(2*x + 3)
 + 12*x*sqrt(2*x + 3) + 9*sqrt(2*x + 3)), x)
```

3.2600 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{7/2}}\,dx$

Optimal. Leaf size=207

$$-\frac{(5x+53)\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^{5/2}}+\frac{(879x+2291)\left(3x^2+5x+2\right)^{3/2}}{210(2x+3)^{3/2}}-\frac{(3117x+10763)\sqrt{3x^2+5x+2}}{140\sqrt{2x+3}}-\frac{12857\sqrt{-3}}{}$$

```
[Out] 1/210*(2291+879*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(3/2)-1/35*(53+5*x)*(3*x^2+5
*x+2)^(5/2)/(3+2*x)^(5/2)-12857/168*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(
1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+2333/40*EllipticE(3^
(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)
^(1/2)-1/140*(10763+3117*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{812, 843, 718, 424, 419\}$

$$-\frac{(5x+53)\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^{5/2}}+\frac{(879x+2291)\left(3x^2+5x+2\right)^{3/2}}{210(2x+3)^{3/2}}-\frac{(3117x+10763)\sqrt{3x^2+5x+2}}{140\sqrt{2x+3}}-\frac{12857\sqrt{-3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(7/2),x]
```

```
[Out] -((10763 + 3117*x)*Sqrt[2 + 5*x + 3*x^2])/(140*Sqrt[3 + 2*x]) + ((2291 + 87
9*x)*(2 + 5*x + 3*x^2)^(3/2))/(210*(3 + 2*x)^(3/2)) - ((53 + 5*x)*(2 + 5*x
+ 3*x^2)^(5/2))/(35*(3 + 2*x)^(5/2)) + (2333*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]
*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(40*Sqrt[2 + 5*x + 3*x^2]) -
 (12857*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3]
)/(56*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{7/2}}\,dx = -\frac{(53+5x)\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^{5/2}} - \frac{1}{14}\int \frac{(-245-293x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{5/2}}\,dx$$

$$= \frac{(2291+879x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{3/2}} - \frac{(53+5x)\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^{5/2}} + \frac{1}{140}\int (-793$$

$$= -\frac{(10763+3117x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} + \frac{(2291+879x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{3/2}} - (53+5$$

$$= -\frac{(10763+3117x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} + \frac{(2291+879x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{3/2}} - (53+5$$

$$= -\frac{(10763+3117x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} + \frac{(2291+879x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{3/2}} - (53+5$$

$$= -\frac{(10763+3117x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} + \frac{(2291+879x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{3/2}} - (53+5$$

Mathematica [A] time = 0.43, size = 202, normalized size = 0.98

$$\frac{-3240x^7+12744x^6+41220x^5+335988x^4+1717690x^3+3262382x^2+2556580x-10422\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\,(2x+3)^{7/}}{840(2x+3)^{5/2}\sqrt{3x^2+}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(7/2),x]
```

```
[Out] (701136 + 2556580*x + 3262382*x^2 + 1717690*x^3 + 335988*x^4 + 41220*x^5 +
12744*x^6 - 3240*x^7 + 48993*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(7/2
)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]
 - 10422*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3
+ 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/(840*(3 + 2*x)^(5/
2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.66, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(9\,x^{5}-15\,x^{4}-113\,x^{3}-165\,x^{2}-96\,x-20\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{16\,x^{4}+96\,x^{3}+216\,x^{2}+216\,x+81},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(7/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(16*x^4 + 96*x^3 + 216*x^2 + 216*x + 81), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(7/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(7/2), x)
```

maple [A] time = 0.02, size = 311, normalized size = 1.50

$$-\frac{32400x^{7}-127440x^{6}-412200x^{5}+8398440x^{4}+37695260x^{3}+195972\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-2}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(7/2),x)
```

```
[Out] -1/8400*(61168*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+195972*15^(1/2)*EllipticE(1/5*(3
0*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/
2)+32400*x^7+183504*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*
(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+587916*15^(1/2)*EllipticE(1/5
*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1
/2)-127440*x^6+137628*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+440937*(2*x+3)^(1/2)*15^(1/2)
*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2)
)-412200*x^5+8398440*x^4+37695260*x^3+60462880*x^2+42044540*x+10626120)/(3*
x^2+5*x+2)^(1/2)/(2*x+3)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(7/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(7/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\left(3x^2+5x+2\right)^{5/2}}{(2x+3)^{7/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(7/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(7/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{20\sqrt{3x^2+5x+2}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x\sqrt{2x+3}+27\sqrt{2x+3}}\right)dx-\int\left(-\frac{96x\sqrt{3x^2+5x}}{8x^3\sqrt{2x+3}+36x^2\sqrt{2x+3}+54x}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(7/2),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2
*x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(-96*x*sqrt(
3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt
(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x +
2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt(2*x + 3) + 27*
sqrt(2*x + 3)), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt
(2*x + 3) + 36*x**2*sqrt(2*x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)),
 x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x
**2*sqrt(2*x + 3) + 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x) - Integral(9
*x**5*sqrt(3*x**2 + 5*x + 2)/(8*x**3*sqrt(2*x + 3) + 36*x**2*sqrt(2*x + 3)
+ 54*x*sqrt(2*x + 3) + 27*sqrt(2*x + 3)), x)
```

3.2601 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{9/2}}\,dx$

Optimal. Leaf size=207

$$-\frac{(7x+43)\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^{7/2}}-\frac{(2531x+3354)\left(3x^2+5x+2\right)^{3/2}}{210(2x+3)^{5/2}}+\frac{(1823x+6292)\sqrt{3x^2+5x+2}}{140\sqrt{2x+3}}+\frac{2505\sqrt{3}\sqrt{\ }}{}$$

```
[Out] -1/210*(3354+2531*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2)-1/35*(43+7*x)*(3*x^2
+5*x+2)^(5/2)/(3+2*x)^(7/2)-4091/120*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^
(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+2505/56*EllipticF(3
^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2
)^(1/2)+1/140*(6292+1823*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {812, 810, 843, 718, 424, 419}

$$-\frac{(7x+43)\left(3x^2+5x+2\right)^{5/2}}{35(2x+3)^{7/2}}-\frac{(2531x+3354)\left(3x^2+5x+2\right)^{3/2}}{210(2x+3)^{5/2}}+\frac{(1823x+6292)\sqrt{3x^2+5x+2}}{140\sqrt{2x+3}}+\frac{2505\sqrt{3}\sqrt{\ }}{}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(9/2),x]
```

```
[Out] ((6292 + 1823*x)*Sqrt[2 + 5*x + 3*x^2])/(140*Sqrt[3 + 2*x]) - ((3354 + 2531
*x)*(2 + 5*x + 3*x^2)^(3/2))/(210*(3 + 2*x)^(5/2)) - ((43 + 7*x)*(2 + 5*x +
 3*x^2)^(5/2))/(35*(3 + 2*x)^(7/2)) - (4091*Sqrt[-2 - 5*x - 3*x^2]*Elliptic
E[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(40*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) +
(2505*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]],
 -2/3])/(56*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{9/2}}\,dx &= -\frac{(43+7x)\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^{7/2}} - \frac{1}{14}\int \frac{(-187-223x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{7/2}}\,dx \\
&= -\frac{(3354+2531x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{5/2}} - \frac{(43+7x)\left(2+5x+3x^2\right)^{5/2}}{35(3+2x)^{7/2}} + \frac{1}{700}\int \frac{(23}{} \\
&= \frac{(6292+1823x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} - \frac{(3354+2531x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{5/2}} - \frac{(43+7x}{35} \\
&= \frac{(6292+1823x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} - \frac{(3354+2531x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{5/2}} - \frac{(43+7x}{35} \\
&= \frac{(6292+1823x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} - \frac{(3354+2531x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{5/2}} - \frac{(43+7x}{35} \\
&= \frac{(6292+1823x)\sqrt{2+5x+3x^2}}{140\sqrt{3+2x}} - \frac{(3354+2531x)\left(2+5x+3x^2\right)^{3/2}}{210(3+2x)^{5/2}} - \frac{(43+7x}{35}
\end{aligned}$$

Mathematica [**A**] time = 0.39, size = 202, normalized size = 0.98

$$-\frac{4536x^7 - 29736x^6 + 158172x^5 + 2140148x^4 + 6437058x^3 + 8516152x^2 + 5250234x - 6092\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x +}{840(2x+3)^{7/2}\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(9/2),x]
```

```
[Out] -1/840*(1223436 + 5250234*x + 8516152*x^2 + 6437058*x^3 + 2140148*x^4 + 158
172*x^5 - 29736*x^6 + 4536*x^7 + 28637*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 +
 2*x)^(9/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2
*x]], 3/5] - 6092*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(9/2)*Sqrt[(2 +
 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x
)^(7/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9\,x^5 - 15\,x^4 - 113\,x^3 - 165\,x^2 - 96\,x - 20\right)\sqrt{3\,x^2 + 5\,x + 2}\,\sqrt{2\,x + 3}}{32\,x^5 + 240\,x^4 + 720\,x^3 + 1080\,x^2 + 810\,x + 243}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(9/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(32*x^5 + 240*x^4 + 720*x^3 + 1080*x^2 + 810*x + 243),
x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2 + 5\,x + 2\right)^{\frac{5}{2}}(x - 5)}{(2\,x + 3)^{\frac{9}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(9/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(9/2), x)
```

maple [**B**] time = 0.02, size = 399, normalized size = 1.93

$$\frac{-45360x^7 + 297360x^6 + 12164040x^5 + 63364040x^4 + 229096\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^3\,\text{Ellipti}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(9/2),x)
```

```
[Out] 1/8400*(71504*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x
+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+229096*15^(1/2)*EllipticE(1/5*(30
*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)+321768*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(
1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1030932*15^(1/2)*EllipticE(1/5*(30*x+4
5)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-45
360*x^7+482652*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+
3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1546398*15^(1/2)*EllipticE(1/5*(30
*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+
297360*x^6+241326*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*El
lipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+773199*(2*x+3)^(1/2)*15^(1/2)*(-2
*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+12
164040*x^5+63364040*x^4+140670340*x^3+157107500*x^2+86673480*x+18693600)/(3
*x^2+5*x+2)^(1/2)/(2*x+3)^(7/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{{\left(3 \, x^{2} + 5 \, x + 2\right)}^{\frac{5}{2}} {\left(x - 5\right)}}{{\left(2 \, x + 3\right)}^{\frac{9}{2}}}\,{d x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(9/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(9/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{\left(x-5\right)\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}{{\left(2\,x+3\right)}^{9/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(9/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(9/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$- \int \left(- \frac{20 \sqrt{3 x^{2} + 5 x + 2}}{16 x^{4} \sqrt{2 x + 3} + 96 x^{3} \sqrt{2 x + 3} + 216 x^{2} \sqrt{2 x + 3} + 216 x \sqrt{2 x + 3} + 81 \sqrt{2 x + 3}}\right)\, dx - \int \left(- \frac{}{16 x^{4} \sqrt{2 x + 3} +}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(9/2),x)
```

```
[Out] -Integral(-20*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sqrt(
2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x + 3))
, x) - Integral(-96*x*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x*
*3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2
*x + 3)), x) - Integral(-165*x**2*sqrt(3*x**2 + 5*x + 2)/(16*x**4*sqrt(2*x
+ 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*sqrt(2*x + 3)
 + 81*sqrt(2*x + 3)), x) - Integral(-113*x**3*sqrt(3*x**2 + 5*x + 2)/(16*x*
*4*sqrt(2*x + 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3) + 216*x*s
qrt(2*x + 3) + 81*sqrt(2*x + 3)), x) - Integral(-15*x**4*sqrt(3*x**2 + 5*x
+ 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqrt(2*x + 3
) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x + 3)), x) - Integral(9*x**5*sqrt(3*x*
*2 + 5*x + 2)/(16*x**4*sqrt(2*x + 3) + 96*x**3*sqrt(2*x + 3) + 216*x**2*sqr
t(2*x + 3) + 216*x*sqrt(2*x + 3) + 81*sqrt(2*x + 3)), x)
```

3.2602 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{11/2}}\,dx$

Optimal. Leaf size=207

$$\frac{(113x+124)\left(3x^2+5x+2\right)^{5/2}}{63(2x+3)^{9/2}}+\frac{(10729x+14311)\left(3x^2+5x+2\right)^{3/2}}{3150(2x+3)^{5/2}}-\frac{(7877x+27213)\sqrt{3x^2+5x+2}}{2100\sqrt{2x+3}}-32513$$

```
[Out] 1/3150*(14311+10729*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(5/2)+1/63*(124+113*x)*(
3*x^2+5*x+2)^(5/2)/(3+2*x)^(9/2)+17699/1800*EllipticE(3^(1/2)*(1+x)^(1/2),1
/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-32513/2520*E
llipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3
*x^2+5*x+2)^(1/2)-1/2100*(27213+7877*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [**A**] time = 0.13, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {810, 812, 843, 718, 424, 419}

$$\frac{(113x+124)\left(3x^2+5x+2\right)^{5/2}}{63(2x+3)^{9/2}}+\frac{(10729x+14311)\left(3x^2+5x+2\right)^{3/2}}{3150(2x+3)^{5/2}}-\frac{(7877x+27213)\sqrt{3x^2+5x+2}}{2100\sqrt{2x+3}}-32513$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(11/2),x]
```

```
[Out] -((27213 + 7877*x)*Sqrt[2 + 5*x + 3*x^2])/(2100*Sqrt[3 + 2*x]) + ((14311 +
10729*x)*(2 + 5*x + 3*x^2)^(3/2))/(3150*(3 + 2*x)^(5/2)) + ((124 + 113*x)*(
2 + 5*x + 3*x^2)^(5/2))/(63*(3 + 2*x)^(9/2)) + (17699*Sqrt[-2 - 5*x - 3*x^2
]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(600*Sqrt[3]*Sqrt[2 + 5*x +
 3*x^2]) - (32513*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 +
x]], -2/3])/(840*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 812

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(e*f*(m + 2*p + 2)
- d*g*(2*p + 1) + e*g*(m + 1)*x)*(a + b*x + c*x^2)^p)/(e^2*(m + 1)*(m + 2*p
 + 2)), x] + Dist[p/(e^2*(m + 1)*(m + 2*p + 2)), Int[(d + e*x)^(m + 1)*(a +
 b*x + c*x^2)^(p - 1)*Simp[g*(b*d + 2*a*e + 2*a*e*m + 2*b*d*p) - f*b*e*(m +
 2*p + 2) + (g*(2*c*d + b*e + b*e*m + 4*c*d*p) - 2*c*e*f*(m + 2*p + 2))*x,
x], x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && RationalQ[p] && p > 0 && (LtQ[m, -1] || Eq
Q[p, 1] || (IntegerQ[p] &&  !RationalQ[m])) && NeQ[m, -1] &&  !ILtQ[m + 2*p
 + 1, 0] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{11/2}}\,dx = \frac{(124+113x)\left(2+5x+3x^2\right)^{5/2}}{63(3+2x)^{9/2}} - \frac{1}{126}\int \frac{(548+603x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{7/2}}\,dx$$

$$= \frac{(14311+10729x)\left(2+5x+3x^2\right)^{3/2}}{3150(3+2x)^{5/2}} + \frac{(124+113x)\left(2+5x+3x^2\right)^{5/2}}{63(3+2x)^{9/2}} + \int$$

$$= -\frac{(27213+7877x)\sqrt{2+5x+3x^2}}{2100\sqrt{3+2x}} + \frac{(14311+10729x)\left(2+5x+3x^2\right)^{3/2}}{3150(3+2x)^{5/2}} +$$

$$= -\frac{(27213+7877x)\sqrt{2+5x+3x^2}}{2100\sqrt{3+2x}} + \frac{(14311+10729x)\left(2+5x+3x^2\right)^{3/2}}{3150(3+2x)^{5/2}} +$$

$$= -\frac{(27213+7877x)\sqrt{2+5x+3x^2}}{2100\sqrt{3+2x}} + \frac{(14311+10729x)\left(2+5x+3x^2\right)^{3/2}}{3150(3+2x)^{5/2}} +$$

$$= -\frac{(27213+7877x)\sqrt{2+5x+3x^2}}{2100\sqrt{3+2x}} + \frac{(14311+10729x)\left(2+5x+3x^2\right)^{3/2}}{3150(3+2x)^{5/2}} +$$

Mathematica [A] time = 0.44, size = 227, normalized size = 1.10

$$-\frac{8\left(3x^2+5x+2\right)\left(18900x^5+1579088x^4+8510198x^3+17853828x^2+16893773x+6047963\right)-4(2x+3)^4}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(11/2),x]
```

```
[Out] -1/50400*(8*(2 + 5*x + 3*x^2)*(6047963 + 16893773*x + 17853828*x^2 + 851019
8*x^3 + 1579088*x^4 + 18900*x^5) - 4*(3 + 2*x)^4*(247786*(2 + 5*x + 3*x^2)
+ 123893*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3
+ 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 26354*Sqrt[5]*Sqr
t[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[Ar
cSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(9/2)*Sqrt[2 + 5*x + 3*x^2
])
```

fricas [F] time = 0.60, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(9\,x^5-15\,x^4-113\,x^3-165\,x^2-96\,x-20\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{64\,x^6+576\,x^5+2160\,x^4+4320\,x^3+4860\,x^2+2916\,x+729},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(11/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(64*x^6 + 576*x^5 + 2160*x^4 + 4320*x^3 + 4860*x^2 + 29
16*x + 729), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(11/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(11/2), x)
```

maple [B] time = 0.03, size = 487, normalized size = 2.35

$$-\frac{1134000x^7+96635280x^6+669276680x^5+1982288\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\sqrt{2x+3}\,x^4\,\mathrm{EllipticE}\left(\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(11/2),x)
```

```
[Out] -1/126000*(618752*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*
(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+1982288*15^(1/2)*EllipticE(1/
5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)
^(1/2)+3712512*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+11893728*15^(1/2)*EllipticE(1/5*
(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(
1/2)+8353152*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+
3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+26760888*15^(1/2)*EllipticE(1/5*(3
0*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/
2)+1134000*x^7+8353152*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))
*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+26760888*15^(1/2)*Elliptic
E(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)+96635280*x^6+3132432*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-
20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+10035333*(2*x+3)^(1/2
)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/
3*15^(1/2))+669276680*x^5+1985413000*x^4+3139417100*x^3+2766408200*x^2+1280
547220*x+241918520)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(9/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{11}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(11/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(11/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^{11/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(11/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(11/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(11/2),x)
```

```
[Out] Timed out
```

3.2603 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{13/2}}\,dx$

Optimal. Leaf size=207

$$\frac{(115x+114)\left(3x^2+5x+2\right)^{5/2}}{99(2x+3)^{11/2}}+\frac{(18699x+24161)\left(3x^2+5x+2\right)^{3/2}}{34650(2x+3)^{7/2}}+\frac{(948443x+1301762)\sqrt{3x^2+5x+2}}{346500(2x+3)^{3/2}}+$$

```
[Out] 1/34650*(24161+18699*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(7/2)+1/99*(114+115*x)*
(3*x^2+5*x+2)^(5/2)/(3+2*x)^(11/2)-107857/99000*EllipticE(3^(1/2)*(1+x)^(1/
2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+198109/1
38600*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(
1/2)/(3*x^2+5*x+2)^(1/2)+1/346500*(1301762+948443*x)*(3*x^2+5*x+2)^(1/2)/(3
+2*x)^(3/2)
```

Rubi [A] time = 0.13, antiderivative size = 207, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {810, 843, 718, 424, 419}

$$\frac{(115x+114)\left(3x^2+5x+2\right)^{5/2}}{99(2x+3)^{11/2}}+\frac{(18699x+24161)\left(3x^2+5x+2\right)^{3/2}}{34650(2x+3)^{7/2}}+\frac{(948443x+1301762)\sqrt{3x^2+5x+2}}{346500(2x+3)^{3/2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(13/2),x]
```

```
[Out] ((1301762 + 948443*x)*Sqrt[2 + 5*x + 3*x^2])/(346500*(3 + 2*x)^(3/2)) + ((2
4161 + 18699*x)*(2 + 5*x + 3*x^2)^(3/2))/(34650*(3 + 2*x)^(7/2)) + ((114 +
115*x)*(2 + 5*x + 3*x^2)^(5/2))/(99*(3 + 2*x)^(11/2)) - (107857*Sqrt[-2 - 5
*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(33000*Sqrt[3]*Sq
rt[2 + 5*x + 3*x^2]) + (198109*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt
[3]*Sqrt[1 + x]], -2/3])/(46200*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{13/2}}\,dx &= \frac{(114+115x)\left(2+5x+3x^2\right)^{5/2}}{99(3+2x)^{11/2}}-\frac{1}{198}\int \frac{(326+321x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{9/2}}\,dx\\
&= \frac{(24161+18699x)\left(2+5x+3x^2\right)^{3/2}}{34650(3+2x)^{7/2}}+\frac{(114+115x)\left(2+5x+3x^2\right)^{5/2}}{99(3+2x)^{11/2}}+\int \frac{(-319}{}\\
&= \frac{(1301762+948443x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{3/2}}+\frac{(24161+18699x)\left(2+5x+3x^2\right)^{3/2}}{34650(3+2x)^{7/2}}+\\
&= \frac{(1301762+948443x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{3/2}}+\frac{(24161+18699x)\left(2+5x+3x^2\right)^{3/2}}{34650(3+2x)^{7/2}}+\\
&= \frac{(1301762+948443x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{3/2}}+\frac{(24161+18699x)\left(2+5x+3x^2\right)^{3/2}}{34650(3+2x)^{7/2}}+\\
&= \frac{(1301762+948443x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{3/2}}+\frac{(24161+18699x)\left(2+5x+3x^2\right)^{3/2}}{34650(3+2x)^{7/2}}+
\end{aligned}
$$

Mathematica [A] time = 0.45, size = 227, normalized size = 1.10

$$
-\frac{4(2x+3)^5\left(1509998\left(3x^2+5x+2\right)-160672\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+754999\sqrt{5}\sqrt{}\right.}{}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(13/2),x]
```

```
[Out] -1/2772000*(-8*(2 + 5*x + 3*x^2)*(111387702 + 387631385*x + 544712540*x^2 +
 387989550*x^3 + 140915480*x^4 + 21041468*x^5) + 4*(3 + 2*x)^5*(1509998*(2
+ 5*x + 3*x^2) + 754999*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqr
t[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 16
0672*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*
x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(11/2)*Sqr
t[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(9\,x^{5}-15\,x^{4}-113\,x^{3}-165\,x^{2}-96\,x-20\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{128\,x^{7}+1344\,x^{6}+6048\,x^{5}+15120\,x^{4}+22680\,x^{3}+20412\,x^{2}+10206\,x+2187},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(13/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(128*x^7 + 1344*x^6 + 6048*x^5 + 15120*x^4 + 22680*x^3
+ 20412*x^2 + 10206*x + 2187), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(13/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(13/2), x)
```

maple [B] time = 0.03, size = 575, normalized size = 2.78

$$1262488080x^{7}+10559075600x^{6}+24159968\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{5}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(13/2),x)
```

```
[Out] 1/6930000*(7537472*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5
*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+24159968*15^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)+56531040*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*
(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+181199760*15^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+
3)^(1/2)+169593120*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3
*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+543599280*15^(1/2)*EllipticE
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-
20)^(1/2)+254389680*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^
2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+815398920*15^(1/2)*Elliptic
E(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x
-20)^(1/2)+1262488080*x^7+190792260*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),
1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+611549190*15^
(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^
(1/2)*(-30*x-20)^(1/2)+10559075600*x^6+57237678*(2*x+3)^(1/2)*15^(1/2)*(-2*
x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+183
464757*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5
*(30*x+45)^(1/2),1/3*15^(1/2))+38212579720*x^5+77118326600*x^4+93248719100*
x^3+67234902220*x^2+26644025600*x+4455508080)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(
11/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{13}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(13/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(13/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^{13/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(13/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(13/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(13/2),x)
```

```
[Out] Timed out
```

3.2604 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{15/2}}\,dx$

Optimal. Leaf size=234

$$\frac{(9x+8)\left(3x^2+5x+2\right)^{5/2}}{11(2x+3)^{13/2}}+\frac{(73-33x)\left(3x^2+5x+2\right)^{3/2}}{6930(2x+3)^{9/2}}+\frac{(17833x+21492)\sqrt{3x^2+5x+2}}{346500(2x+3)^{5/2}}-\frac{5083\sqrt{3x^2+5x}}{247500\sqrt{2x+}}$$

```
[Out] 1/6930*(73-33*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(9/2)+1/11*(8+9*x)*(3*x^2+5*x+
2)^(5/2)/(3+2*x)^(13/2)+5083/495000*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(
1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-9421/693000*Elliptic
F(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*
x+2)^(1/2)+1/346500*(21492+17833*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/2)-5083/
247500*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 234, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {810, 834, 843, 718, 424, 419}

$$\frac{(9x+8)\left(3x^2+5x+2\right)^{5/2}}{11(2x+3)^{13/2}}+\frac{(73-33x)\left(3x^2+5x+2\right)^{3/2}}{6930(2x+3)^{9/2}}+\frac{(17833x+21492)\sqrt{3x^2+5x+2}}{346500(2x+3)^{5/2}}-\frac{5083\sqrt{3x^2+5x}}{247500\sqrt{2x+}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(15/2),x]
```

```
[Out] (-5083*Sqrt[2 + 5*x + 3*x^2])/(247500*Sqrt[3 + 2*x]) + ((21492 + 17833*x)*S
qrt[2 + 5*x + 3*x^2])/(346500*(3 + 2*x)^(5/2)) + ((73 - 33*x)*(2 + 5*x + 3*
x^2)^(3/2))/(6930*(3 + 2*x)^(9/2)) + ((8 + 9*x)*(2 + 5*x + 3*x^2)^(5/2))/(1
1*(3 + 2*x)^(13/2)) + (5083*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]
*Sqrt[1 + x]], -2/3])/(165000*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (9421*Sqrt[-
2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(231000*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{15/2}}\,dx=\frac{(8+9x)\left(2+5x+3x^2\right)^{5/2}}{11(3+2x)^{13/2}}-\frac{1}{286}\int \frac{(104+39x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{11/2}}\,dx$$

$$=\frac{(73-33x)\left(2+5x+3x^2\right)^{3/2}}{6930(3+2x)^{9/2}}+\frac{(8+9x)\left(2+5x+3x^2\right)^{5/2}}{11(3+2x)^{13/2}}+\frac{\int \frac{(-4979-6357x)\surd}{(3+2x)^{7}}}{6006}$$

$$=\frac{(21492+17833x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{5/2}}+\frac{(73-33x)\left(2+5x+3x^2\right)^{3/2}}{6930(3+2x)^{9/2}}+\frac{(8+9x)}{11}$$

$$=-\frac{5083\sqrt{2+5x+3x^2}}{247500\sqrt{3+2x}}+\frac{(21492+17833x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{5/2}}+\frac{(73-33x)\left(2\right.}{6930(3}$$

$$=-\frac{5083\sqrt{2+5x+3x^2}}{247500\sqrt{3+2x}}+\frac{(21492+17833x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{5/2}}+\frac{(73-33x)\left(2\right.}{6930(3}$$

$$=-\frac{5083\sqrt{2+5x+3x^2}}{247500\sqrt{3+2x}}+\frac{(21492+17833x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{5/2}}+\frac{(73-33x)\left(2\right.}{6930(3}$$

$$=-\frac{5083\sqrt{2+5x+3x^2}}{247500\sqrt{3+2x}}+\frac{(21492+17833x)\sqrt{2+5x+3x^2}}{346500(3+2x)^{5/2}}+\frac{(73-33x)\left(2\right.}{6930(3}$$

Mathematica [A] time = 0.51, size = 232, normalized size = 0.99

$$-\frac{8\left(3x^2+5x+2\right)\left(2277184x^6+6409516x^5+12953760x^4+33648370x^3+54318160x^2+41339721x+1186\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(15/2),x]
```

```
[Out] -1/13860000*(8*(2 + 5*x + 3*x^2)*(11865789 + 41339721*x + 54318160*x^2 + 33
648370*x^3 + 12953760*x^4 + 6409516*x^5 + 2277184*x^6) - 4*(3 + 2*x)^6*(711
62*(2 + 5*x + 3*x^2) + 35581*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2
)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]
 - 7318*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 +
 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(13/2)*
Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.82, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9\,x^5-15\,x^4-113\,x^3-165\,x^2-96\,x-20\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{256\,x^8+3072\,x^7+16128\,x^6+48384\,x^5+90720\,x^4+108864\,x^3+81648\,x^2+34992\,x+6561},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(15/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(256*x^8 + 3072*x^7 + 16128*x^6 + 48384*x^5 + 90720*x^4
 + 108864*x^3 + 81648*x^2 + 34992*x + 6561), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(15/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(15/2), x)
```

maple [B] time = 0.04, size = 668, normalized size = 2.85

$$-\frac{136631040x^{8}+612289360x^{7}+2277184\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{6}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+7}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(15/2),x)
```

```
[Out] -1/34650000*(737536*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^
6*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+2277184*15^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^6*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)+6637824*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5*(
2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+20494656*15^(1/2)*EllipticE(1/
5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)
^(1/2)+24891840*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-
2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+76854960*15^(1/2)*EllipticE(1/5
*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^
(1/2)+49783680*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+153709920*15^(1/2)*EllipticE(1/5
*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^
(1/2)+136631040*x^8+56006640*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^
(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+172923660*15^(1/2)
*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/
2)*(-30*x-20)^(1/2)+612289360*x^7+33603984*15^(1/2)*EllipticF(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+103754
196*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-
2*x-2)^(1/2)*(-30*x-20)^(1/2)+1509264560*x^6+8400996*(2*x+3)^(1/2)*15^(1/2)
*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2)
)+25938549*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+3570658840*x^5+7142077000*x^4+9258134060
*x^3+7018645840*x^2+2840167740*x+474631560)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(13
/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{15}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(15/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(15/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^{2}+5\,x+2\right)^{5/2}}{(2\,x+3)^{15/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(15/2),x)
```

```
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(15/2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(15/2),x)
```

```
[Out] Timed out
```

3.2605 $\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{17/2}}\,dx$

Optimal. Leaf size=261

$$\frac{(119x+94)\left(3x^2+5x+2\right)^{5/2}}{195(2x+3)^{15/2}}-\frac{(8399x+8901)\left(3x^2+5x+2\right)^{3/2}}{64350(2x+3)^{11/2}}-\frac{(328339x+386846)\sqrt{3x^2+5x+2}}{7507500(2x+3)^{7/2}}+\frac{335723}{80437}$$

```
[Out] -1/64350*(8901+8399*x)*(3*x^2+5*x+2)^(3/2)/(3+2*x)^(11/2)+1/195*(94+119*x)*
(3*x^2+5*x+2)^(5/2)/(3+2*x)^(15/2)-335723/160875000*EllipticE(3^(1/2)*(1+x)
^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+5948
51/225225000*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1
/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+594851/112612500*(3*x^2+5*x+2)^(1/2)/(3+2*x
)^(3/2)-1/7507500*(386846+328339*x)*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(7/2)+33572
3/80437500*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.19, antiderivative size = 261, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {810, 834, 843, 718, 424, 419}

$$\frac{(119x+94)\left(3x^2+5x+2\right)^{5/2}}{195(2x+3)^{15/2}}-\frac{(8399x+8901)\left(3x^2+5x+2\right)^{3/2}}{64350(2x+3)^{11/2}}-\frac{(328339x+386846)\sqrt{3x^2+5x+2}}{7507500(2x+3)^{7/2}}+\frac{335723}{80437}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(17/2),x]
```

```
[Out] (594851*Sqrt[2 + 5*x + 3*x^2])/(112612500*(3 + 2*x)^(3/2)) + (335723*Sqrt[2
 + 5*x + 3*x^2])/(80437500*Sqrt[3 + 2*x]) - ((386846 + 328339*x)*Sqrt[2 + 5
*x + 3*x^2])/(7507500*(3 + 2*x)^(7/2)) - ((8901 + 8399*x)*(2 + 5*x + 3*x^2)
^(3/2))/(64350*(3 + 2*x)^(11/2)) + ((94 + 119*x)*(2 + 5*x + 3*x^2)^(5/2))/(
195*(3 + 2*x)^(15/2)) - (335723*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqr
t[3]*Sqrt[1 + x]], -2/3])/(53625000*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (59485
1*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(750
75000*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
```

```
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 810

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m + 1)*(a + b*x + c*x^2)^
p*((d*g - e*f*(m + 2))*(c*d^2 - b*d*e + a*e^2) - d*p*(2*c*d - b*e)*(e*f - d
*g) - e*(g*(m + 1)*(c*d^2 - b*d*e + a*e^2) + p*(2*c*d - b*e)*(e*f - d*g))*x
))/(e^2*(m + 1)*(m + 2)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[p/(e^2*(m + 1)*
(m + 2)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 2)*(a + b*x + c*x^2)^(
p - 1)*Simp[2*a*c*e*(e*f - d*g)*(m + 2) + b^2*e*(d*g*(p + 1) - e*f*(m + p +
 2)) + b*(a*e^2*g*(m + 1) - c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2))) - c*(2
*c*d*(d*g*(2*p + 1) - e*f*(m + 2*p + 2)) - e*(2*a*e*g*(m + 1) - b*(d*g*(m -
 2*p) + e*f*(m + 2*p + 2))))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g},
x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && GtQ[p, 0] &&
LtQ[m, -2] && LtQ[m + 2*p, 0] &&  !ILtQ[m + 2*p + 3, 0]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\left(2+5x+3x^2\right)^{5/2}}{(3+2x)^{17/2}}\,dx=\frac{(94+119x)\left(2+5x+3x^2\right)^{5/2}}{195(3+2x)^{15/2}}-\frac{1}{390}\int \frac{(-118-243x)\left(2+5x+3x^2\right)^{3/2}}{(3+2x)^{13/2}}\,dx$$

$$=-\frac{(8901+8399x)\left(2+5x+3x^2\right)^{3/2}}{64350(3+2x)^{11/2}}+\frac{(94+119x)\left(2+5x+3x^2\right)^{5/2}}{195(3+2x)^{15/2}}+\frac{\int \frac{(20841+}{}}{}$$

$$=-\frac{(386846+328339x)\sqrt{2+5x+3x^2}}{7507500(3+2x)^{7/2}}-\frac{(8901+8399x)\left(2+5x+3x^2\right)^{3/2}}{64350(3+2x)^{11/2}}+\frac{(9}{}$$

$$=\frac{594851\sqrt{2+5x+3x^2}}{112612500(3+2x)^{3/2}}-\frac{(386846+328339x)\sqrt{2+5x+3x^2}}{7507500(3+2x)^{7/2}}-\frac{(8901+8399x}{64350}$$

$$=\frac{594851\sqrt{2+5x+3x^2}}{112612500(3+2x)^{3/2}}+\frac{335723\sqrt{2+5x+3x^2}}{80437500\sqrt{3+2x}}-\frac{(386846+328339x)\sqrt{2+5}}{7507500(3+2x)^{7/2}}$$

$$=\frac{594851\sqrt{2+5x+3x^2}}{112612500(3+2x)^{3/2}}+\frac{335723\sqrt{2+5x+3x^2}}{80437500\sqrt{3+2x}}-\frac{(386846+328339x)\sqrt{2+5}}{7507500(3+2x)^{7/2}}$$

$$=\frac{594851\sqrt{2+5x+3x^2}}{112612500(3+2x)^{3/2}}+\frac{335723\sqrt{2+5x+3x^2}}{80437500\sqrt{3+2x}}-\frac{(386846+328339x)\sqrt{2+5}}{7507500(3+2x)^{7/2}}$$

$$=\frac{594851\sqrt{2+5x+3x^2}}{112612500(3+2x)^{3/2}}+\frac{335723\sqrt{2+5x+3x^2}}{80437500\sqrt{3+2x}}-\frac{(386846+328339x)\sqrt{2+5}}{7507500(3+2x)^{7/2}}$$

Mathematica [A] time = 0.53, size = 237, normalized size = 0.91

$$-\frac{2(2x+3)^7\left(9400244\left(3x^2+5x+2\right)-1131016\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)+4700122\sqrt{5}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(2 + 5*x + 3*x^2)^(5/2))/(3 + 2*x)^(17/2),x]
```

```
[Out] -1/4504500000*(-8*(2 + 5*x + 3*x^2)*(4641518352 + 24502214271*x + 552834499
32*x^2 + 67557035830*x^3 + 46830142120*x^4 + 17742950508*x^5 + 3348834304*x
^6 + 300807808*x^7) + 2*(3 + 2*x)^7*(9400244*(2 + 5*x + 3*x^2) + 4700122*Sq
rt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ell
ipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 1131016*Sqrt[5]*Sqrt[(1 + x)
/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt
[5/3]/Sqrt[3 + 2*x]], 3/5]))/((3 + 2*x)^(15/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.62, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(9\,x^5-15\,x^4-113\,x^3-165\,x^2-96\,x-20\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{512\,x^9+6912\,x^8+41472\,x^7+145152\,x^6+326592\,x^5+489888\,x^4+489888\,x^3+314928\,x^2+11809}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(17/2),x, algorithm="fricas")
```

```
[Out] integral(-(9*x^5 - 15*x^4 - 113*x^3 - 165*x^2 - 96*x - 20)*sqrt(3*x^2 + 5*x
 + 2)*sqrt(2*x + 3)/(512*x^9 + 6912*x^8 + 41472*x^7 + 145152*x^6 + 326592*x
^5 + 489888*x^4 + 489888*x^3 + 314928*x^2 + 118098*x + 19683), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(17/2),x, algorithm="giac")
```

```
[Out] integrate(-(3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(17/2), x)
```

maple [B] time = 0.05, size = 761, normalized size = 2.92

$$18048468480x^9+231010839040x^8+300807808\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\sqrt{2x+3}\,x^7\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(3*x^2+5*x+2)^(5/2)/(2*x+3)^(17/2),x)
```

```
[Out] 1/11261250000*(185660734080+1444240406040*x+14213168928*15^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-2
0)^(1/2)+53299383480*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x
^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+47969445132*15^(1/2)*Ellip
ticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-3
0*x-20)^(1/2)+3775125312*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2
))*x^5*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+12741047928*15^(1/2)*E
llipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)
*(-30*x-20)^(1/2)+3158481984*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^
(1/2))*x^6*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+838916736*15^(1/2)
*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^6*(2*x+3)^(1/2)*(-2*x-2)^(1/
2)*(-30*x-20)^(1/2)+35532922320*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*
15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+23984722566*15^
(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^
(1/2)*(-30*x-20)^(1/2)+9437813280*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/
3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+14156719920*1
5^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x
-2)^(1/2)*(-30*x-20)^(1/2)+6370523964*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2
),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+49400505255
00*x^2+9446154382120*x^5+4718056950160*x^6+1411492773200*x^7+11945916263720
*x^4+9700759282660*x^3+231010839040*x^8+18048468480*x^9+1365112278*(2*x+3)^
(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2
),1/3*15^(1/2))+5139583407*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)
^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+79896832*15^(1/2)*Ellipt
icF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^7*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(
2*x+3)^(1/2)+300807808*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))
*x^7*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2))/(3*x^2+5*x+2)^(1/2)/(2*
x+3)^(15/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(x-5)}{(2\,x+3)^{\frac{17}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x^2+5*x+2)^(5/2)/(3+2*x)^(17/2),x, algorithm="maxima")
```

```
[Out] -integrate((3*x^2 + 5*x + 2)^(5/2)*(x - 5)/(2*x + 3)^(17/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(x-5)\,\left(3\,x^2+5\,x+2\right)^{5/2}}{(2\,x+3)^{17/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(17/2),x)
[Out] -int(((x - 5)*(5*x + 3*x^2 + 2)^(5/2))/(2*x + 3)^(17/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3*x**2+5*x+2)**(5/2)/(3+2*x)**(17/2),x)
[Out] Timed out
```

3.2606 $\int \frac{(5-x)(3+2x)^{5/2}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=192

$$-\frac{2}{21}\sqrt{3x^2+5x+2}\,(2x+3)^{5/2}+\frac{10}{7}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{1010}{189}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{2525\sqrt{-3x^2-5x-}}{189\sqrt{}}$$

```
[Out] 865/81*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)-2525/567*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+10/7*(3+2*x)^(3/2)*(3
*x^2+5*x+2)^(1/2)-2/21*(3+2*x)^(5/2)*(3*x^2+5*x+2)^(1/2)+1010/189*(3+2*x)^(
1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {832, 843, 718, 424, 419}

$$-\frac{2}{21}\sqrt{3x^2+5x+2}\,(2x+3)^{5/2}+\frac{10}{7}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{1010}{189}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{2525\sqrt{-3x^2-5x-}}{189\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (1010*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/189 + (10*(3 + 2*x)^(3/2)*Sqrt[2
 + 5*x + 3*x^2])/7 - (2*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2])/21 + (865*Sq
rt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(27*Sqrt
[3]*Sqrt[2 + 5*x + 3*x^2]) - (2525*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[
Sqrt[3]*Sqrt[1 + x]], -2/3])/(189*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{5/2}}{\sqrt{2+5x+3x^2}}\,dx = -\frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x+3x^2} + \frac{2}{21}\int \frac{(3+2x)^{3/2}\left(175+\frac{225x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= \frac{10}{7}(3+2x)^{3/2}\sqrt{2+5x+3x^2} - \frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x+3x^2} + \frac{4}{315}\int \frac{\sqrt{3+2x}\left(\frac{9675}{4}+\right.}{\sqrt{2+5x+3}}$$

$$= \frac{1010}{189}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{10}{7}(3+2x)^{3/2}\sqrt{2+5x+3x^2} - \frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x}$$

$$= \frac{1010}{189}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{10}{7}(3+2x)^{3/2}\sqrt{2+5x+3x^2} - \frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x}$$

$$= \frac{1010}{189}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{10}{7}(3+2x)^{3/2}\sqrt{2+5x+3x^2} - \frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x}$$

$$= \frac{1010}{189}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{10}{7}(3+2x)^{3/2}\sqrt{2+5x+3x^2} - \frac{2}{21}(3+2x)^{5/2}\sqrt{2+5x}$$

Mathematica [A] time = 0.32, size = 198, normalized size = 1.03

$$-\frac{8\left(162x^5-216x^4-5526x^3-18501x^2-20111x-6758\right)\sqrt{2x+3}+4540\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\right.\right.}{567(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/567*(8*Sqrt[3 + 2*x]*(-6758 - 20111*x - 18501*x^2 - 5526*x^3 - 216*x^4 +
 162*x^5) - 6055*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)
/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 4540*Sqrt[5]*
Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[Arc
Sin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(4\,x^3-8\,x^2-51\,x-45\right)\sqrt{2\,x+3}}{\sqrt{3\,x^2+5\,x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(4*x^3 - 8*x^2 - 51*x - 45)*sqrt(2*x + 3)/sqrt(3*x^2 + 5*x + 2),
x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(5/2)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.03, size = 146, normalized size = 0.76

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-2592x^5+3456x^4+88416x^3+223356x^2+200676x-1211\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-}\right.}{6804x^3+21}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/1134*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(-2592*x^5+706*(2*x+3)^(1/2)*15^(1
/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1
/2))-1211*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))+3456*x^4+88416*x^3+223356*x^2+200676*x+59
688)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(5/2)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{(2\,x+3)}^{5/2}\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{45\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \left(-\frac{51x\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \left(-\frac{8x^2\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{4x^3\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-45*sqrt(2*x + 3)/sqrt(3*x**2 + 5*x + 2), x) - Integral(-51*x*sqr
t(2*x + 3)/sqrt(3*x**2 + 5*x + 2), x) - Integral(-8*x**2*sqrt(2*x + 3)/sqrt
(3*x**2 + 5*x + 2), x) - Integral(4*x**3*sqrt(2*x + 3)/sqrt(3*x**2 + 5*x +
2), x)
```

3.2607 $\int \frac{(5-x)(3+2x)^{3/2}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=165

$$-\frac{2}{15}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{326}{135}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{163\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\,\sqrt{3x^2+5x+2}}+$$

```
[Out] 2743/405*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*
3^(1/2)/(3*x^2+5*x+2)^(1/2)-163/81*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-2/15*(3+2*x)^(3/2)*(3
*x^2+5*x+2)^(1/2)+326/135*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{832, 843, 718, 424, 419\}$

$$-\frac{2}{15}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{326}{135}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{163\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\,\sqrt{3x^2+5x+2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (326*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/135 - (2*(3 + 2*x)^(3/2)*Sqrt[2 +
 5*x + 3*x^2])/15 + (2743*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*S
qrt[1 + x]], -2/3])/(135*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (163*Sqrt[-2 - 5*
x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(27*Sqrt[3]*Sqrt[2
 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{3/2}}{\sqrt{2+5x+3x^2}}\,dx &= -\frac{2}{15}(3+2x)^{3/2}\sqrt{2+5x+3x^2}+\frac{2}{15}\int \frac{\sqrt{3+2x}\left(126+\frac{163x}{2}\right)}{\sqrt{2+5x+3x^2}}\,dx\\
&= \frac{326}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2}-\frac{2}{15}(3+2x)^{3/2}\sqrt{2+5x+3x^2}+\frac{4}{135}\int \frac{\frac{3707}{4}+\frac{2743}{4}}{\sqrt{3+2x}\sqrt{2+5}}\\
&= \frac{326}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2}-\frac{2}{15}(3+2x)^{3/2}\sqrt{2+5x+3x^2}-\frac{163}{54}\int \frac{1}{\sqrt{3+2x}\sqrt{2+5}}\\
&= \frac{326}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2}-\frac{2}{15}(3+2x)^{3/2}\sqrt{2+5x+3x^2}-\frac{\left(163\sqrt{-2-5x-3x^2}\right)S}{27\sqrt{3}}\\
&= \frac{326}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2}-\frac{2}{15}(3+2x)^{3/2}\sqrt{2+5x+3x^2}+\frac{2743\sqrt{-2-5x-3x^2}\,E(}{135\sqrt{3}\sqrt{2}}
\end{aligned}
$$

Mathematica [A] time = 0.29, size = 193, normalized size = 1.17

$$
-\frac{2\left(324x^4-1422x^3-14955x^2-21143x-7934\right)\sqrt{2x+3}+2254\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right.}{405(2x+3)\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/405*(2*Sqrt[3 + 2*x]*(-7934 - 21143*x - 14955*x^2 - 1422*x^3 + 324*x^4)
- 2743*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)
]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 2254*Sqrt[5]*Sqrt[(1 +
x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5
/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$
\mathrm{integral}\left(-\frac{\left(2\,x^2-7\,x-15\right)\sqrt{2\,x+3}}{\sqrt{3\,x^2+5\,x+2}},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-(2*x^2 - 7*x - 15)*sqrt(2*x + 3)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(3/2)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.02, size = 141, normalized size = 0.85

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-6480x^4+28440x^3+134520x^2+148560x-2743\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x\right.}}{24300x^3+76950}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/4050*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(1928*(2*x+3)^(1/2)*15^(1/2)*(-2*x
-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-2743
*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x
+45)^(1/2),1/3*15^(1/2))-6480*x^4+28440*x^3+134520*x^2+148560*x+48960)/(6*x
^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(3/2)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^{3/2}\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{15\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \left(-\frac{7x\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{2x^2\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-15*sqrt(2*x + 3)/sqrt(3*x**2 + 5*x + 2), x) - Integral(-7*x*sqrt
(2*x + 3)/sqrt(3*x**2 + 5*x + 2), x) - Integral(2*x**2*sqrt(2*x + 3)/sqrt(3
*x**2 + 5*x + 2), x)
```

3.2608 $\int \frac{(5-x)\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=138

$$-\frac{2}{9}\sqrt{2x+3}\sqrt{3x^2+5x+2}+\frac{5\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{9\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{101\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x}\right.\right.}{9\sqrt{3}\sqrt{3x^2+5x+2}}$$

```
[Out] 101/27*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)+5/27*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))
*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-2/9*(3+2*x)^(1/2)*(3*x^2+
5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 138, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {832, 843, 718, 424, 419}

$$-\frac{2}{9}\sqrt{2x+3}\sqrt{3x^2+5x+2}+\frac{5\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{9\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{101\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x}\right.\right.}{9\sqrt{3}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/9 + (101*Sqrt[-2 - 5*x - 3*x^2]*El
lipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(9*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
]) + (5*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3]
)/(9*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx = -\frac{2}{9}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{2}{9}\int \frac{77+\frac{101x}{2}}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2}{9}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{5}{18}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx + \frac{101}{18}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+}}$$

$$= -\frac{2}{9}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{\left(5\sqrt{-2-5x-3x^2}\right)\mathrm{Subst}\bigg(\int \frac{1}{\sqrt{1-x^2}\,\sqrt{1+\frac{2x^2}{3}}}\,dx, x, \frac{\sqrt{6+6x}}{\sqrt{2}}}{9\sqrt{3}\,\sqrt{2+5x+3x^2}}$$

$$= -\frac{2}{9}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{101\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)|-\frac{2}{3}\right)}{9\sqrt{3}\,\sqrt{2+5x+3x^2}} + \frac{5\sqrt{-}}{}$$

Mathematica [A] time = 0.31, size = 188, normalized size = 1.36

$$-\frac{4\left(9x^3-123x^2-224x-92\right)\sqrt{2x+3}+104\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-101\sqrt{5}\sqrt{\frac{x+1}{2x+3}}}{27(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/Sqrt[2 + 5*x + 3*x^2],x]
```

```
[Out] -1/27*(4*Sqrt[3 + 2*x]*(-92 - 224*x - 123*x^2 + 9*x^3) - 101*Sqrt[5]*Sqrt[(
1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sq
rt[5/3]/Sqrt[3 + 2*x]], 3/5] + 104*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x
)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/
5])/((3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{2\,x+3}\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(2*x + 3)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{2\,x+3}\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(2*x + 3)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

maple [A] time = 0.02, size = 136, normalized size = 0.99

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\Big(-360x^3-1140x^2-1140x-101\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\Big(\frac{\sqrt{30x+}}{5}}{1620x^3+5130x^2+5130x+1}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/270*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(106*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2
)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-101*(2
*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))-360*x^3-1140*x^2-1140*x-360)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{2\,x+3}\,(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(2*x + 3)*(x - 5)/sqrt(3*x^2 + 5*x + 2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{2\,x+3}\;(x-5)}{\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2),x)
```

```
[Out] -int(((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\right)dx-\int \frac{x\sqrt{2x+3}}{\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-5*sqrt(2*x + 3)/sqrt(3*x**2 + 5*x + 2), x) - Integral(x*sqrt(2*x
 + 3)/sqrt(3*x**2 + 5*x + 2), x)
```

3.2609 $\int \frac{5-x}{\sqrt{3+2x}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=107

$$\frac{13\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)\middle|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}-\frac{\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)\middle|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}$$

```
[Out] -1/3*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1
/2)/(3*x^2+5*x+2)^(1/2)+13/3*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(
-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.05, antiderivative size = 107, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.138$, Rules used = $\{843, 718, 424, 419\}$

$$\frac{13\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)\middle|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}-\frac{\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)\middle|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -((Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(Sq
rt[3]*Sqrt[2 + 5*x + 3*x^2])) + (13*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin
[Sqrt[3]*Sqrt[1 + x]], -2/3])/(Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx = -\left(\frac{1}{2}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx\right)+\frac{13}{2}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{\sqrt{-2-5x-3x^2}\ \text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{6+6x}}{\sqrt{2}}\right)}{\sqrt{3}\,\sqrt{2+5x+3x^2}} + \frac{\left(13\sqrt{-2-5x-3x^2}\,\right)\text{Subst}}{\sqrt{3}\,\sqrt{2}}$$

$$= -\frac{\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\,\right)|-\frac{2}{3}\right)}{\sqrt{3}\,\sqrt{2+5x+3x^2}} + \frac{13\sqrt{-2-5x-3x^2}\,F\left(\sin^{-1}\left(\sqrt{}\right.\right.}{\sqrt{3}\,\sqrt{2+5x+3}}$$

Mathematica [A] time = 0.40, size = 177, normalized size = 1.65

$$-\frac{30x^2+50x+34\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\,(2x+3)^{3/2}\sqrt{\frac{3x+2}{2x+3}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+5\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\,(2x+3)^{3/2}\sqrt{\frac{3x+2}{2x+3}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x}}\right.\right.}{15\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -1/15*(20 + 50*x + 30*x^2 + 5*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/
2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5
] + 34*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 +
2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/(Sqrt[3 + 2*x]*Sqrt[
2 + 5*x + 3*x^2])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{6\,x^3+19\,x^2+19\,x+6}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(6*x^3 + 19*x^2 + 19*
x + 6), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/(sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)), x)
```

maple [A] time = 0.02, size = 65, normalized size = 0.61

$$\frac{\left(\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5}, \frac{\sqrt{15}}{3}\right)+12\,\text{EllipticF}\left(\frac{\sqrt{30x+45}}{5}, \frac{\sqrt{15}}{3}\right)\right)\sqrt{-30x-20}\,\sqrt{-2x-2}\,\sqrt{15}}{30\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(1/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/30*(12*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2)))*(-30*x-20)^(1/2)*(-2*x-2)^(1/2)*15^(1/2)/(3*x^2+5*x+
2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/(sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{\sqrt{2\,x+3}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \left(-\frac{5}{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}\right) dx - \int \frac{x}{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(1/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(-5/(sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(x/(sqrt(
2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2610 $\int \frac{5-x}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=136

$$-\frac{26\sqrt{3x^2+5x+2}}{5\sqrt{2x+3}}-\frac{\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{13\sqrt{3}\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|\right.}{5\sqrt{3x^2+5x+2}}$$

```
[Out] -1/3*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1
/2)/(3*x^2+5*x+2)^(1/2)+13/5*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(
-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-26/5*(3*x^2+5*x+2)^(1/2)/(3
+2*x)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 136, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {834, 843, 718, 424, 419}

$$-\frac{26\sqrt{3x^2+5x+2}}{5\sqrt{2x+3}}-\frac{\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{13\sqrt{3}\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|\right.}{5\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-26*Sqrt[2 + 5*x + 3*x^2])/(5*Sqrt[3 + 2*x]) + (13*Sqrt[3]*Sqrt[-2 - 5*x -
 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(5*Sqrt[2 + 5*x + 3*x
^2]) - (Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3]
)/(Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx &= -\frac{26\sqrt{2+5x+3x^2}}{5\sqrt{3+2x}}-\frac{2}{5}\int \frac{-28-\frac{39x}{2}}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{26\sqrt{2+5x+3x^2}}{5\sqrt{3+2x}}-\frac{1}{2}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx+\frac{39}{10}\int \frac{\sqrt{3+2}}{\sqrt{2+5x+}}\\
&= -\frac{26\sqrt{2+5x+3x^2}}{5\sqrt{3+2x}}-\frac{\sqrt{-2-5x-3x^2}\ \text{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sqrt{1+\frac{2x^2}{3}}}\,dx,x,\frac{\sqrt{6+6x}}{\sqrt{2}}\right.}{\sqrt{3}\,\sqrt{2+5x+3x^2}}\\
&= -\frac{26\sqrt{2+5x+3x^2}}{5\sqrt{3+2x}}+\frac{13\sqrt{3}\,\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)|-\frac{2}{3}\right)}{5\sqrt{2+5x+3x^2}}-
\end{aligned}
$$

Mathematica [A] time = 0.17, size = 104, normalized size = 0.76

$$
\frac{(x+1)\sqrt{\frac{3x+2}{2x+3}}\left(13E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-12F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)\right)}{\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] ((1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*(13*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
2*x]], 3/5] - 12*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(Sqrt[5]
*Sqrt[(1 + x)/(3 + 2*x)]*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$
\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{12\,x^4+56\,x^3+95\,x^2+69\,x+18},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(12*x^4 + 56*x^3 + 95
*x^2 + 69*x + 18), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(3/2)), x)
```

maple [A] time = 0.02, size = 131, normalized size = 0.96

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-2340x^2-3900x-39\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)\right.}{900x^3+2850x^2+2850x+900}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/150*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(34*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-39*(2*x
+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^
(1/2),1/3*15^(1/2))-2340*x^2-3900*x-1560)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{3/2}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{2x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}\,dx-\int \left(-\frac{5}{2x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+3\sqrt{2x+3}\,\sqrt{3}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(2*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 3*sqrt(2*x + 3)*sqr
t(3*x**2 + 5*x + 2)), x) - Integral(-5/(2*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x
 + 2) + 3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2611 $\int \frac{5-x}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=165

$$-\frac{386\sqrt{3x^2+5x+2}}{75\sqrt{2x+3}}-\frac{26\sqrt{3x^2+5x+2}}{15(2x+3)^{3/2}}-\frac{13\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{193\sqrt{-3x^2-5x-}}{25\sqrt{3}}$$

```
[Out] 193/75*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)-13/15*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2)
)*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-26/15*(3*x^2+5*x+2)^(1/2
)/(3+2*x)^(3/2)-386/75*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 165, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {834, 843, 718, 424, 419}

$$-\frac{386\sqrt{3x^2+5x+2}}{75\sqrt{2x+3}}-\frac{26\sqrt{3x^2+5x+2}}{15(2x+3)^{3/2}}-\frac{13\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{193\sqrt{-3x^2-5x-}}{25\sqrt{3}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-26*Sqrt[2 + 5*x + 3*x^2])/(15*(3 + 2*x)^(3/2)) - (386*Sqrt[2 + 5*x + 3*x^
2])/(75*Sqrt[3 + 2*x]) + (193*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[
3]*Sqrt[1 + x]], -2/3])/(25*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (13*Sqrt[-2 -
5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(5*Sqrt[3]*Sqrt[
2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx &= -\frac{26\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}}-\frac{2}{15}\int \frac{-19+\frac{39x}{2}}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{26\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}}-\frac{386\sqrt{2+5x+3x^2}}{75\sqrt{3+2x}}+\frac{4}{75}\int \frac{\frac{771}{4}+\frac{579x}{4}}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{26\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}}-\frac{386\sqrt{2+5x+3x^2}}{75\sqrt{3+2x}}-\frac{13}{10}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{26\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}}-\frac{386\sqrt{2+5x+3x^2}}{75\sqrt{3+2x}}-\frac{\left(13\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{}{\sqrt{1}}\right.}{5\sqrt{3}\,\sqrt{2+5x}}\\
&= -\frac{26\sqrt{2+5x+3x^2}}{15(3+2x)^{3/2}}-\frac{386\sqrt{2+5x+3x^2}}{75\sqrt{3+2x}}+\frac{193\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\right.\right.}{25\sqrt{3}\,\sqrt{2+5x+3x}}
\end{aligned}
$$

Mathematica [A] time = 0.31, size = 183, normalized size = 1.11

$$
\frac{193\sqrt{5}\sqrt{\frac{x+1}{2x+3}}(2x+3)^{5/2}\sqrt{\frac{3x+2}{2x+3}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-2\left(65\left(3x^2+5x+2\right)+77\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{5/2}F\left(\text{s}\right.\right.}{75(2x+3)^{3/2}\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (193*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 + 2*
x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 2*(65*(2 + 5*x + 3*x^
2) + 77*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 +
 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(75*(3 + 2*x)^(3/2
)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.64, size = 0, normalized size = 0.00

$$
\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{24\,x^5+148\,x^4+358\,x^3+423\,x^2+243\,x+54},x\right)
$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(24*x^5 + 148*x^4 + 3
58*x^3 + 423*x^2 + 243*x + 54), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(5/2)), x)
```

maple [A]   time = 0.02, size = 203, normalized size = 1.23

$$-23160x^3 - 77240x^2 - 386\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5}, \frac{\sqrt{15}}{3}\right) + 256\sqrt{15}\,\sqrt{2x+$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/750*(256*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(
1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-386*15^(1/2)*EllipticE(1/5*(30*x+45)^(
1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+384*(2*x
+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^
(1/2),1/3*15^(1/2))-579*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1
/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-23160*x^3-77240*x^2-79840*x
-25760)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(3/2)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\sqrt{3\,x^2+5\,x+2}\,(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(5/2)), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{5/2}\,\sqrt{3\,x^2+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{4x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2} + 12x\sqrt{2x+3}\,\sqrt{3x^2+5x+2} + 9\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}\,dx - \int\Bigg(-\frac{}{4x^2\sqrt{2x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(4*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 12*x*sqrt(2*x +
3)*sqrt(3*x**2 + 5*x + 2) + 9*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-5/(4*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 12*x*sqrt(2*x + 3
)*sqrt(3*x**2 + 5*x + 2) + 9*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2612 $\int \frac{5-x}{(3+2x)^{7/2}\sqrt{2+5x+3x^2}}\,dx$

Optimal. Leaf size=192

$$-\frac{9002\sqrt{3x^2+5x+2}}{1875\sqrt{2x+3}}-\frac{782\sqrt{3x^2+5x+2}}{375(2x+3)^{3/2}}-\frac{26\sqrt{3x^2+5x+2}}{25(2x+3)^{5/2}}-\frac{391\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\right.}{125\sqrt{3}\sqrt{3x^2+5x+2}}$$

```
[Out] 4501/1875*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)
*3^(1/2)/(3*x^2+5*x+2)^(1/2)-391/375*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^
(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-26/25*(3*x^2+5*x+2)
^(1/2)/(3+2*x)^(5/2)-782/375*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2)-9002/1875*(3
*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 192, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = $\{834, 843, 718, 424, 419\}$

$$-\frac{9002\sqrt{3x^2+5x+2}}{1875\sqrt{2x+3}}-\frac{782\sqrt{3x^2+5x+2}}{375(2x+3)^{3/2}}-\frac{26\sqrt{3x^2+5x+2}}{25(2x+3)^{5/2}}-\frac{391\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\right.}{125\sqrt{3}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] (-26*Sqrt[2 + 5*x + 3*x^2])/(25*(3 + 2*x)^(5/2)) - (782*Sqrt[2 + 5*x + 3*x^
2])/(375*(3 + 2*x)^(3/2)) - (9002*Sqrt[2 + 5*x + 3*x^2])/(1875*Sqrt[3 + 2*x
]) + (4501*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2
/3])/(625*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (391*Sqrt[-2 - 5*x - 3*x^2]*Elli
pticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(125*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2
])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\sqrt{2+5x+3x^2}}\,dx = -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{2}{25}\int \frac{-10+\frac{117x}{2}}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{782\sqrt{2+5x+3x^2}}{375(3+2x)^{3/2}} + \frac{4}{375}\int \frac{\frac{491}{4}-\frac{1173x}{4}}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}$$

$$= -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{782\sqrt{2+5x+3x^2}}{375(3+2x)^{3/2}} - \frac{9002\sqrt{2+5x+3x^2}}{1875\sqrt{3+2x}} - \frac{8\int \frac{-\frac{866}{4}}{\sqrt{3+2x}}}{1}$$

$$= -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{782\sqrt{2+5x+3x^2}}{375(3+2x)^{3/2}} - \frac{9002\sqrt{2+5x+3x^2}}{1875\sqrt{3+2x}} - \frac{391}{250}\int \frac{}{\sqrt{3}}$$

$$= -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{782\sqrt{2+5x+3x^2}}{375(3+2x)^{3/2}} - \frac{9002\sqrt{2+5x+3x^2}}{1875\sqrt{3+2x}} - \frac{\left(391\sqrt{-2}\right.}{}$$

$$= -\frac{26\sqrt{2+5x+3x^2}}{25(3+2x)^{5/2}} - \frac{782\sqrt{2+5x+3x^2}}{375(3+2x)^{3/2}} - \frac{9002\sqrt{2+5x+3x^2}}{1875\sqrt{3+2x}} + \frac{4501\sqrt{-2}}{}$$

Mathematica [A] time = 0.29, size = 182, normalized size = 0.95

$$-\frac{23460x^3+80140x^2+84040x+3328\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{7/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-4501\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}}{1875(2x+3)^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*Sqrt[2 + 5*x + 3*x^2]),x]
```

```
[Out] -1/1875*(27360 + 84040*x + 80140*x^2 + 23460*x^3 - 4501*Sqrt[5]*Sqrt[(1 + x
)/(3 + 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqr
t[5/3]/Sqrt[3 + 2*x]], 3/5] + 3328*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x
)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]]
, 3/5])/((3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{48\,x^6+368\,x^5+1160\,x^4+1920\,x^3+1755\,x^2+837\,x+162},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(48*x^6 + 368*x^5 + 1
160*x^4 + 1920*x^3 + 1755*x^2 + 837*x + 162), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\sqrt{3\,x^{2}+5\,x+2}\,(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(7/2)), x)
```

maple [A] time = 0.02, size = 296, normalized size = 1.54

$$\frac{-1080240x^{4}-5275720x^{3}-18004\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{2}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+10184}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^(1/2),x)
```

```
[Out] 1/18750*(10184*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*
x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-18004*15^(1/2)*EllipticE(1/5*(30
*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2
)+30552*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2
)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-54012*15^(1/2)*EllipticE(1/5*(30*x+45)^(1
/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+22914*(2*
x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))-40509*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)
^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-1080240*x^4-5275720*x^3-
9353300*x^2-7051780*x-1893960)/(3*x^2+5*x+2)^(1/2)/(2*x+3)^(5/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\sqrt{3\,x^{2}+5\,x+2}\,(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/(sqrt(3*x^2 + 5*x + 2)*(2*x + 3)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{7/2}\,\sqrt{3\,x^{2}+5\,x+2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(1/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{8x^3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+36x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+54x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+27\sqrt{2x+3}\,\sqrt{3x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**(1/2),x)
```

```
[Out] -Integral(x/(8*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2) + 54*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) +
27*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(8*x**3*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2) + 36*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
 + 54*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 27*sqrt(2*x + 3)*sqrt(3*x**2
 + 5*x + 2)), x)
```

3.2613 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=197

$$-\frac{2(139x+121)(2x+3)^{5/2}}{3\sqrt{3x^2+5x+2}}+\frac{308}{5}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{12068}{135}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{6034\sqrt{-3x^2-5x-}}{27\sqrt{}}$$

```
[Out] -2/3*(3+2*x)^(5/2)*(121+139*x)/(3*x^2+5*x+2)^(1/2)+34174/405*EllipticE(3^(1
/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(
1/2)-6034/81*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1
/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+308/5*(3+2*x)^(3/2)*(3*x^2+5*x+2)^(1/2)+120
68/135*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {818, 832, 843, 718, 424, 419}

$$-\frac{2(139x+121)(2x+3)^{5/2}}{3\sqrt{3x^2+5x+2}}+\frac{308}{5}\sqrt{3x^2+5x+2}\,(2x+3)^{3/2}+\frac{12068}{135}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{6034\sqrt{-3x^2-5x-}}{27\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^(5/2)*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (12068*Sqrt[
3 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/135 + (308*(3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3
*x^2])/5 + (34174*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 +
x]], -2/3])/(135*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (6034*Sqrt[-2 - 5*x - 3*x
^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(27*Sqrt[3]*Sqrt[2 + 5*x
+ 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\int \frac{(3+2x)^{3/2}(602+693x)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{308}{5}(3+2x)^{3/2}\sqrt{2+5x+3x^2} + \frac{4}{45}\int \frac{\sqrt{3+2x}\left(\frac{8379}{2}+\right.}{\sqrt{2+5x+3}}$$

$$= -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{12068}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{308}{5}(3+2x)^{3/2}\sqrt{2+5x}$$

$$= -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{12068}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{308}{5}(3+2x)^{3/2}\sqrt{2+5x}$$

$$= -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{12068}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{308}{5}(3+2x)^{3/2}\sqrt{2+5x}$$

$$= -\frac{2(3+2x)^{5/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{12068}{135}\sqrt{3+2x}\sqrt{2+5x+3x^2} + \frac{308}{5}(3+2x)^{3/2}\sqrt{2+5x}$$

Mathematica [A] time = 0.33, size = 192, normalized size = 0.97

$$-\frac{2\left(\left(432x^4-936x^3-30120x^2+13231x+39553\right)\sqrt{2x+3}+8036\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right.\right.\right.}{405(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(Sqrt[3 + 2*x]*(39553 + 13231*x - 30120*x^2 - 936*x^3 + 432*x^4) - 1708
7*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ell
ipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 8036*Sqrt[5]*Sqrt[(1 + x)/(3
 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/S
qrt[3 + 2*x]], 3/5]))/(405*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(8\,x^4-4\,x^3-126\,x^2-243\,x-135\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(8*x^4 - 4*x^3 - 126*x^2 - 243*x - 135)*sqrt(3*x^2 + 5*x + 2)*sqr
t(2*x + 3)/(9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{7}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(7/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.05, size = 141, normalized size = 0.72

$$\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-4320x^4+9360x^3-724020x^2-1841010x-17087\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30\right.}{12150x^3+3847}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/2025*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(2002*(2*x+3)^(1/2)*15^(1/2)*(-2*x
-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-1708
7*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*
x+45)^(1/2),1/3*15^(1/2))-4320*x^4+9360*x^3-724020*x^2-1841010*x-1079010)/(
6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{7}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(7/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^{7/2}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{135\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{243x\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-135*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x*
*2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-243*x*sqrt(2*x +
3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x
**2 + 5*x + 2)), x) - Integral(-126*x**2*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2
+ 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - I
ntegral(-4*x**3*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x
**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(8*x**4*sqrt(2*x +
 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*
x**2 + 5*x + 2)), x)
```

3.2614 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{2(139x+121)(2x+3)^{3/2}}{3\sqrt{3x^2+5x+2}}+\frac{1660}{27}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{4150\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\sqrt{3x^2+5x+2}}+$$

```
[Out] -2/3*(3+2*x)^(3/2)*(121+139*x)/(3*x^2+5*x+2)^(1/2)+3830/81*EllipticE(3^(1/2
)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/
2)-4150/81*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2
)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+1660/27*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {818, 832, 843, 718, 424, 419}

$$-\frac{2(139x+121)(2x+3)^{3/2}}{3\sqrt{3x^2+5x+2}}+\frac{1660}{27}\sqrt{3x^2+5x+2}\,\sqrt{2x+3}-\frac{4150\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\sqrt{3x^2+5x+2}}+$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(3 + 2*x)^(3/2)*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (1660*Sqrt[3
 + 2*x]*Sqrt[2 + 5*x + 3*x^2])/27 + (3830*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[
ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(27*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (4
150*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(2
7*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{2(3+2x)^{3/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{2}{3}\int \frac{\sqrt{3+2x}\,(360+415x)}{\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{2(3+2x)^{3/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1660}{27}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{4}{27}\int \frac{\frac{1835}{2}+\frac{1915x}{2}}{\sqrt{3+2x}\,\sqrt{2+5x}}$$

$$= -\frac{2(3+2x)^{3/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1660}{27}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{1915}{27}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}$$

$$= -\frac{2(3+2x)^{3/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1660}{27}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{\left(3830\sqrt{-2-5x-3x^2}\right) S}{27\sqrt{3}\,\sqrt{}}$$

$$= -\frac{2(3+2x)^{3/2}(121+139x)}{3\sqrt{2+5x+3x^2}} + \frac{1660}{27}\sqrt{3+2x}\,\sqrt{2+5x+3x^2} + \frac{3830\sqrt{-2-5x-3x^2}\,E\left(\right.}{27\sqrt{3}\,\sqrt{2-}}$$

Mathematica [A] time = 0.32, size = 187, normalized size = 1.10

$$-\frac{2\left(\left(72x^3-696x^2+6521x+6803\right)\sqrt{2x+3}+670\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-1915\sqrt{5}\sqrt{}\right.}{81(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*(Sqrt[3 + 2*x]*(6803 + 6521*x - 696*x^2 + 72*x^3) - 1915*Sqrt[5]*Sqrt[(
1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sq
rt[5/3]/Sqrt[3 + 2*x]], 3/5] + 670*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x
)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/
5]))/(81*(3 + 2*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.78, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\left(4\,x^3-8\,x^2-51\,x-45\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-(4*x^3 - 8*x^2 - 51*x - 45)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/(
9*x^4 + 30*x^3 + 37*x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(5/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.02, size = 136, normalized size = 0.80

$$-\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\bigl(144x^3+21588x^2+51342x+383\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\mathrm{EllipticE}}{81\bigl(6x^3+19x^2+19}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/81*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(32*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+383*(2*
x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))+144*x^3+21588*x^2+51342*x+28926)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(5/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{(2\,x+3)}^{5/2}\,(x-5)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{45\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\left(-\frac{51x\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-45*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**
2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-51*x*sqrt(2*x + 3)
/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**
2 + 5*x + 2)), x) - Integral(-8*x**2*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*
x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integ
ral(4*x**3*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 +
 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2615 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{3/2}} \, dx$

Optimal. Leaf size=143

$$-\frac{2\sqrt{2x+3}\,(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{350\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{3\sqrt{3}\,\sqrt{3x^2+5x+2}}+\frac{274\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\right.\right.}{3\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

```
[Out] -2/3*(121+139*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2)+274/9*EllipticE(3^(1/2)*
(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)
-350/9*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^
(1/2)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 143, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {818, 843, 718, 424, 419}

$$-\frac{2\sqrt{2x+3}\,(139x+121)}{3\sqrt{3x^2+5x+2}}-\frac{350\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{3\sqrt{3}\,\sqrt{3x^2+5x+2}}+\frac{274\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\right.\right.}{3\sqrt{3}\,\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(121 + 139*x))/(3*Sqrt[2 + 5*x + 3*x^2]) + (274*Sqrt[-2 -
 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(3*Sqrt[3]*Sqrt
[2 + 5*x + 3*x^2]) - (350*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*S
qrt[1 + x]], -2/3])/(3*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2\sqrt{3+2x}\,(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{2}{3}\int \frac{118+137x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{137}{3}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx-\frac{175}{3}\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x}}\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{\left(274\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx,x,\frac{\sqrt{6+6x}}{\sqrt{2}}\right)}{3\sqrt{3}\,\sqrt{2+5x+3x^2}}-\frac{(3}{}\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{3\sqrt{2+5x+3x^2}}+\frac{274\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)|-\frac{2}{3}\right)}{3\sqrt{3}\,\sqrt{2+5x+3x^2}}-\frac{350\sqrt{-}}{}
\end{aligned}$$

Mathematica [A] time = 0.33, size = 183, normalized size = 1.28

$$-\frac{2\left(12x^2+607x+541\right)\sqrt{2x+3}\;+64\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-274\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x}{9(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/9*(2*Sqrt[3 + 2*x]*(541 + 607*x + 12*x^2) - 274*Sqrt[5]*Sqrt[(1 + x)/(3
+ 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sq
rt[3 + 2*x]], 3/5] + 64*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2
 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2
*x)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.61, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\left(2\,x^2-7\,x-15\right)\sqrt{2\,x+3}}{9\,x^4+30\,x^3+37\,x^2+20\,x+4},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(2*x^2 - 7*x - 15)*sqrt(2*x + 3)/(9*x^4 + 3
0*x^3 + 37*x^2 + 20*x + 4), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(3/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A] time = 0.02, size = 131, normalized size = 0.92

$$-\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\Bigl(8340x^2+19770x+137\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\Bigl(\frac{\sqrt{30x+45}}{5},}{45\,\bigl(6x^3+19x^2+19x+6}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/45*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(38*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+137*(2*
x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))+8340*x^2+19770*x+10890)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(3/2)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{(2\,x+3)}^{3/2}\,(x-5)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{15\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\Bigl(-\frac{7x\sqrt{2x+}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-15*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**
2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-7*x*sqrt(2*x + 3)/
(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2
 + 5*x + 2)), x) - Integral(2*x**2*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x
+ 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2616 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=137

$$-\frac{2\sqrt{2x+3}\,(35x+29)}{\sqrt{3x^2+5x+2}}-\frac{94\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{70\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+}\right.\right.}{\sqrt{3}\sqrt{3x^2+5x+2}}$$

```
[Out] -2*(29+35*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2)+70/3*EllipticE(3^(1/2)*(1+x)
^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-94/3
*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/
(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.08, antiderivative size = 137, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {820, 843, 718, 424, 419}

$$-\frac{2\sqrt{2x+3}\,(35x+29)}{\sqrt{3x^2+5x+2}}-\frac{94\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{70\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+}\right.\right.}{\sqrt{3}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(29 + 35*x))/Sqrt[2 + 5*x + 3*x^2] + (70*Sqrt[-2 - 5*x -
3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(Sqrt[3]*Sqrt[2 + 5*x
+ 3*x^2]) - (94*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]
], -2/3])/(Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{2\sqrt{3+2x}\,(29+35x)}{\sqrt{2+5x+3x^2}} - 2\int \frac{-29-35x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{2\sqrt{3+2x}\,(29+35x)}{\sqrt{2+5x+3x^2}} + 35\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx - 47\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx \\
&= -\frac{2\sqrt{3+2x}\,(29+35x)}{\sqrt{2+5x+3x^2}} + \frac{\left(70\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2x^2}{3}}}{\sqrt{1-x^2}}\,dx, x, \frac{\sqrt{6+6x}}{\sqrt{2}}\right)}{\sqrt{3}\,\sqrt{2+5x+3x^2}} - \frac{(94\surd}{} \\
&= -\frac{2\sqrt{3+2x}\,(29+35x)}{\sqrt{2+5x+3x^2}} + \frac{70\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)|-\frac{2}{3}\right)}{\sqrt{3}\,\sqrt{2+5x+3x^2}} - \frac{94\sqrt{-2-5}}{}
\end{aligned}$$

Mathematica [A] time = 0.32, size = 178, normalized size = 1.30

$$-\frac{10(139x+121)\sqrt{2x+3}+68\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-350\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^2E}{15(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^(3/2),x]
```

```
[Out] -1/15*(10*Sqrt[3 + 2*x]*(121 + 139*x) - 350*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]
*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
2*x]], 3/5] + 68*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)
/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/((3 + 2*x)*Sqr
t[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.79, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{9\,x^4+30\,x^3+37\,x^2+20\,x+4}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(9*x^4 + 30*x^3 + 37*
x^2 + 20*x + 4), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{2\,x+3}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(2*x + 3)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

maple [A]   time = 0.02, size = 131, normalized size = 0.96

$$-\frac{\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(2100x^2+4890x+35\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\right.\right.}{15\left(6x^3+19x^2+19x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/15*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(12*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+35*(2*x
+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^
(1/2),1/3*15^(1/2))+2100*x^2+4890*x+2610)/(6*x^3+19*x^2+19*x+6)
```

maxima [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{2\,x+3}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate(sqrt(2*x + 3)*(x - 5)/(3*x^2 + 5*x + 2)^(3/2), x)
```

mupad [F]   time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{2\,x+3}\;\,(x-5)}{{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2),x)
```

```
[Out] -int(((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(3/2), x)
```

sympy [F]   time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x+2}+2\sqrt{3x^2+5x+2}}\right)dx-\int\frac{x\sqrt{2x+3}}{3x^2\sqrt{3x^2+5x+2}+5x\sqrt{3x^2+5x}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(-5*sqrt(2*x + 3)/(3*x**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2
 + 5*x + 2) + 2*sqrt(3*x**2 + 5*x + 2)), x) - Integral(x*sqrt(2*x + 3)/(3*x
**2*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(3*x**2 + 5
*x + 2)), x)
```

3.2617 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=141

$$-\frac{6\sqrt{2x+3}\,(47x+37)}{5\sqrt{3x^2+5x+2}}-\frac{70\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{94\sqrt{3}\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x}\right.\right.}{5\sqrt{3x^2+5x+2}}$$

```
[Out] -6/5*(37+47*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2)-70/3*EllipticF(3^(1/2)*(1+
x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+94
/5*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2
)/(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.09, antiderivative size = 141, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {822, 843, 718, 424, 419}

$$-\frac{6\sqrt{2x+3}\,(47x+37)}{5\sqrt{3x^2+5x+2}}-\frac{70\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}+\frac{94\sqrt{3}\sqrt{-3x^2-5x-2}\,E\left(\sin^{-1}\left(\sqrt{3}\sqrt{x}\right.\right.}{5\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*Sqrt[3 + 2*x]*(37 + 47*x))/(5*Sqrt[2 + 5*x + 3*x^2]) + (94*Sqrt[3]*Sqrt
[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(5*Sqrt[2
+ 5*x + 3*x^2]) - (70*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[
1 + x]], -2/3])/(Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
```

```
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}
\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6\sqrt{3+2x}\,(37+47x)}{5\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{-124-141x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\,dx\\
&= -\frac{6\sqrt{3+2x}\,(37+47x)}{5\sqrt{2+5x+3x^2}}+\frac{141}{5}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx-35\int \frac{1}{\sqrt{3+2x}\,\sqrt{2+}}\\
&= -\frac{6\sqrt{3+2x}\,(37+47x)}{5\sqrt{2+5x+3x^2}}-\frac{\left(70\sqrt{-2-5x-3x^2}\right)\operatorname{Subst}\left(\int \frac{1}{\sqrt{1-x^2}\,\sqrt{1+\frac{2x^2}{3}}}\,dx,\right.}{\sqrt{3}\,\sqrt{2+5x+3x^2}}\\
&= -\frac{6\sqrt{3+2x}\,(37+47x)}{5\sqrt{2+5x+3x^2}}+\frac{94\sqrt{3}\,\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{1+x}\right)\middle|-\right.}{5\sqrt{2+5x+3x^2}}
\end{aligned}$$

Mathematica [A] time = 0.31, size = 178, normalized size = 1.26

$$\frac{-10(35x+29)\sqrt{2x+3}\;-24\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)+94\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^2E}{5(2x+3)\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-10*Sqrt[3 + 2*x]*(29 + 35*x) + 94*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*
x)^2*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3
/5] - 24*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^2*Sqrt[(2 + 3*x)/(3 + 2*
x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/(5*(3 + 2*x)*Sqrt[2 +
5*x + 3*x^2])
```

fricas [F] time = 0.73, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{18\,x^5+87\,x^4+164\,x^3+151\,x^2+68\,x+12},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(18*x^5 + 87*x^4 + 16
4*x^3 + 151*x^2 + 68*x + 12), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(3/2)*sqrt(2*x + 3)), x)
```

maple [A] time = 0.02, size = 131, normalized size = 0.93

$$-\frac{\sqrt{3x^2+5x+2}\,\sqrt{2x+3}\,\bigg(8460x^2+19350x+141\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\bigg(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{1}}{3}}{75\left(6x^3+19x^2+19x+6\right)}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(3/2)/(2*x+3)^(1/2),x)
```

```
[Out] -1/75*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)*(34*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)
^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+141*(2*
x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))+8460*x^2+19350*x+9990)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(3/2)*sqrt(2*x + 3)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{\sqrt{2\,x+3}\,{\left(3\,x^2+5\,x+2\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{3x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+5x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}}\,dx-\int\bigg(-\frac{}{3x^2\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(3/2)/(3+2*x)**(1/2),x)
```

```
[Out] -Integral(x/(3*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(2*x + 3
)*sqrt(3*x**2 + 5*x + 2) + 2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - In
tegral(-5/(3*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 5*x*sqrt(2*x + 3)*
sqrt(3*x**2 + 5*x + 2) + 2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2618 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=170

$$-\frac{6(47x+37)}{5\sqrt{2x+3}\sqrt{3x^2+5x+2}}-\frac{908\sqrt{3x^2+5x+2}}{25\sqrt{2x+3}}-\frac{94\sqrt{3}\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3x^2+5x+2}}+\frac{454\sqrt{3}}{}$$

```
[Out] -6/5*(37+47*x)/(3+2*x)^(1/2)/(3*x^2+5*x+2)^(1/2)+454/25*EllipticE(3^(1/2)*(
1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-
94/5*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1
/2)/(3*x^2+5*x+2)^(1/2)-908/25*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 170, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {822, 834, 843, 718, 424, 419}

$$-\frac{6(47x+37)}{5\sqrt{2x+3}\sqrt{3x^2+5x+2}}-\frac{908\sqrt{3x^2+5x+2}}{25\sqrt{2x+3}}-\frac{94\sqrt{3}\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3x^2+5x+2}}+\frac{454\sqrt{3}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2]) - (908*Sqrt[2 + 5*
x + 3*x^2])/(25*Sqrt[3 + 2*x]) + (454*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*Ellipt
icE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(25*Sqrt[2 + 5*x + 3*x^2]) - (94*Sq
rt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/
(5*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\begin{aligned}\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx &= -\frac{6(37+47x)}{5\sqrt{3+2x}\sqrt{2+5x+3x^2}}-\frac{2}{5}\int \frac{98+141x}{(3+2x)^{3/2}\sqrt{2+5x+3x^2}}\,dx\\ &= -\frac{6(37+47x)}{5\sqrt{3+2x}\sqrt{2+5x+3x^2}}-\frac{908\sqrt{2+5x+3x^2}}{25\sqrt{3+2x}}+\frac{4}{25}\int \frac{\frac{669}{2}+\frac{681x}{2}}{\sqrt{3+2x}\sqrt{2+5x}}\\ &= -\frac{6(37+47x)}{5\sqrt{3+2x}\sqrt{2+5x+3x^2}}-\frac{908\sqrt{2+5x+3x^2}}{25\sqrt{3+2x}}+\frac{681}{25}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\\ &= -\frac{6(37+47x)}{5\sqrt{3+2x}\sqrt{2+5x+3x^2}}-\frac{908\sqrt{2+5x+3x^2}}{25\sqrt{3+2x}}+\frac{\left(454\sqrt{3}\sqrt{-2-5x-3x}\right.}{25}\\ &= -\frac{6(37+47x)}{5\sqrt{3+2x}\sqrt{2+5x+3x^2}}-\frac{908\sqrt{2+5x+3x^2}}{25\sqrt{3+2x}}+\frac{454\sqrt{3}\sqrt{-2-5x-3x^2}}{25\sqrt{2}}\end{aligned}$$

Mathematica [**A**] time = 0.32, size = 172, normalized size = 1.01

$$-\frac{2\left(705x+86\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-227\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^{3/2}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right.\right.\right.}{25\sqrt{2x+3}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(555 + 705*x - 227*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt
[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 86*
Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*E
llipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(25*Sqrt[3 + 2*x]*Sqrt[2 +
 5*x + 3*x^2])
```

fricas [F] time = 0.72, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{36\,x^{6}+228\,x^{5}+589\,x^{4}+794\,x^{3}+589\,x^{2}+228\,x+36},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(36*x^6 + 228*x^5 + 5
89*x^4 + 794*x^3 + 589*x^2 + 228*x + 36), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(3/2)), x)
```

maple [A] time = 0.03, size = 131, normalized size = 0.77

$$-\frac{\left(13620x^{2}+29750x+227\sqrt{2x+3}\,\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\operatorname{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+8\sqrt{2x+3}\,\sqrt{15}\right.}{125\left(6x^{3}+19x^{2}+19x+6\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/125*(8*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(
1/5*(30*x+45)^(1/2),1/3*15^(1/2))+227*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)
*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+13620*x^2+297
50*x+14630)*(3*x^2+5*x+2)^(1/2)*(2*x+3)^(1/2)/(6*x^3+19*x^2+19*x+6)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^{2}+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{3/2}\,\left(3\,x^{2}+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{6x^3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+19x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+19x\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+6\sqrt{2x+3}\,\sqrt{3x^2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(6*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2) + 19*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) +
6*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-5/(6*x**3*sqrt(2*x
+ 3)*sqrt(3*x**2 + 5*x + 2) + 19*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
+ 19*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 6*sqrt(2*x + 3)*sqrt(3*x**2 +
 5*x + 2)), x)
```

3.2619 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=197

$$-\frac{6(47x+37)}{5(2x+3)^{3/2}\sqrt{3x^2+5x+2}}-\frac{14876\sqrt{3x^2+5x+2}}{375\sqrt{2x+3}}-\frac{2516\sqrt{3x^2+5x+2}}{75(2x+3)^{3/2}}-\frac{1258\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\big(\sqrt{3}}{25\sqrt{3}\,\sqrt{3x^2+5x+}}$$

```
[Out] -6/5*(37+47*x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(1/2)+7438/375*EllipticE(3^(1/2)
*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2
)-1258/75*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)
*3^(1/2)/(3*x^2+5*x+2)^(1/2)-2516/75*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2)-1487
6/375*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 197, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{822, 834, 843, 718, 424, 419\}$

$$-\frac{6(47x+37)}{5(2x+3)^{3/2}\sqrt{3x^2+5x+2}}-\frac{14876\sqrt{3x^2+5x+2}}{375\sqrt{2x+3}}-\frac{2516\sqrt{3x^2+5x+2}}{75(2x+3)^{3/2}}-\frac{1258\sqrt{-3x^2-5x-2}\,F\Big(\sin^{-1}\big(\sqrt{3}}{25\sqrt{3}\,\sqrt{3x^2+5x+}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2]) - (2516*Sqrt[2 +
 5*x + 3*x^2])/(75*(3 + 2*x)^(3/2)) - (14876*Sqrt[2 + 5*x + 3*x^2])/(375*Sq
rt[3 + 2*x]) + (7438*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1
 + x]], -2/3])/(125*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (1258*Sqrt[-2 - 5*x -
3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(25*Sqrt[3]*Sqrt[2 + 5
*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{320+423x}{(3+2x)^{5/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2516\sqrt{2+5x+3x^2}}{75(3+2x)^{3/2}} + \frac{4}{75}\int \frac{-\frac{971}{2} -}{(3+2x)^{3/2}\sqrt{2}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2516\sqrt{2+5x+3x^2}}{75(3+2x)^{3/2}} - \frac{14876\sqrt{2+5x+3x^2}}{375\sqrt{3+2x}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2516\sqrt{2+5x+3x^2}}{75(3+2x)^{3/2}} - \frac{14876\sqrt{2+5x+3x^2}}{375\sqrt{3+2x}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2516\sqrt{2+5x+3x^2}}{75(3+2x)^{3/2}} - \frac{14876\sqrt{2+5x+3x^2}}{375\sqrt{3+2x}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{3/2}\sqrt{2+5x+3x^2}} - \frac{2516\sqrt{2+5x+3x^2}}{75(3+2x)^{3/2}} - \frac{14876\sqrt{2+5x+3x^2}}{375\sqrt{3+2x}}$$

Mathematica [A] time = 0.34, size = 177, normalized size = 0.90

$$\frac{2\left(-18870x^2-42025x-1832\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{5/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+3719\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+\right.}{375(2x+3)^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (2*(-20905 - 42025*x - 18870*x^2 + 3719*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3
+ 2*x)^(5/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 +
2*x]], 3/5] - 1832*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(5/2)*Sqrt[(2
+ 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(375*(3
 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [F] time = 0.83, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{72\,x^7+564\,x^6+1862\,x^5+3355\,x^4+3560\,x^3+2223\,x^2+756\,x+108},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(72*x^7 + 564*x^6 + 1
862*x^5 + 3355*x^4 + 3560*x^3 + 2223*x^2 + 756*x + 108), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(5/2)), x)
```

maple [A] time = 0.03, size = 203, normalized size = 1.03

$$\frac{-446280x^3-1601920x^2-7438\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+1148\sqrt{15}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] 1/1875*(1148*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-7438*15^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1722*
(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+
45)^(1/2),1/3*15^(1/2))-11157*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-
20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))-446280*x^3-1601920*x^
2-1833470*x-655330)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(5/2)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{(2\,x+3)^{5/2}\,\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{12x^4\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+56x^3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+95x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+69x\sqrt{2x+3}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(12*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 56*x**3*sqrt(2*
x + 3)*sqrt(3*x**2 + 5*x + 2) + 95*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2
) + 69*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 18*sqrt(2*x + 3)*sqrt(3*x**
2 + 5*x + 2)), x) - Integral(-5/(12*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x +
2) + 56*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 95*x**2*sqrt(2*x + 3)*s
qrt(3*x**2 + 5*x + 2) + 69*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 18*sqrt
(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2620 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$

Optimal. Leaf size=224

$$-\frac{6(47x+37)}{5(2x+3)^{5/2}\sqrt{3x^2+5x+2}}-\frac{426748\sqrt{3x^2+5x+2}}{9375\sqrt{2x+3}}-\frac{61468\sqrt{3x^2+5x+2}}{1875(2x+3)^{3/2}}-\frac{4124\sqrt{3x^2+5x+2}}{125(2x+3)^{5/2}}-\frac{30734\sqrt{-}}{}$$

```
[Out] -6/5*(37+47*x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(1/2)+213374/9375*EllipticE(3^(1
/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(
1/2)-30734/1875*EllipticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)
^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)-4124/125*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/
2)-61468/1875*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2)-426748/9375*(3*x^2+5*x+2)^(
1/2)/(3+2*x)^(1/2)
```

Rubi [**A**] time = 0.15, antiderivative size = 224, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {822, 834, 843, 718, 424, 419}

$$-\frac{6(47x+37)}{5(2x+3)^{5/2}\sqrt{3x^2+5x+2}}-\frac{426748\sqrt{3x^2+5x+2}}{9375\sqrt{2x+3}}-\frac{61468\sqrt{3x^2+5x+2}}{1875(2x+3)^{3/2}}-\frac{4124\sqrt{3x^2+5x+2}}{125(2x+3)^{5/2}}-\frac{30734\sqrt{-}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-6*(37 + 47*x))/(5*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2]) - (4124*Sqrt[2 +
 5*x + 3*x^2])/(125*(3 + 2*x)^(5/2)) - (61468*Sqrt[2 + 5*x + 3*x^2])/(1875*
(3 + 2*x)^(3/2)) - (426748*Sqrt[2 + 5*x + 3*x^2])/(9375*Sqrt[3 + 2*x]) + (2
13374*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/
(3125*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) - (30734*Sqrt[-2 - 5*x - 3*x^2]*Ellipt
icF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(625*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx = -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{2}{5}\int \frac{542+705x}{(3+2x)^{7/2}\sqrt{2+5x+3x^2}}\,dx$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} + \frac{4}{125}\int \frac{-\frac{6235}{2}}{(3+2x)^{5/2}\sqrt{}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} - \frac{61468\sqrt{2+5x+3x^2}}{1875(3+2x)^{3/2}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} - \frac{61468\sqrt{2+5x+3x^2}}{1875(3+2x)^{3/2}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} - \frac{61468\sqrt{2+5x+3x^2}}{1875(3+2x)^{3/2}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} - \frac{61468\sqrt{2+5x+3x^2}}{1875(3+2x)^{3/2}}$$

$$= -\frac{6(37+47x)}{5(3+2x)^{5/2}\sqrt{2+5x+3x^2}} - \frac{4124\sqrt{2+5x+3x^2}}{125(3+2x)^{5/2}} - \frac{61468\sqrt{2+5x+3x^2}}{1875(3+2x)^{3/2}}$$

Mathematica [**A**] time = 0.37, size = 182, normalized size = 0.81

$$-\frac{2\left(922020x^3+3383680x^2+3957355x+60586\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}\,(2x+3)^{7/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)-106687\right.}{9375(2x+3)^{5/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^(3/2)),x]
```

```
[Out] (-2*(1439445 + 3957355*x + 3383680*x^2 + 922020*x^3 - 106687*Sqrt[5]*Sqrt[(
1 + x)/(3 + 2*x)]*(3 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSi
n[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 60586*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3
 + 2*x)^(7/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 +
 2*x]], 3/5]))/(9375*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2])
```

fricas [**F**] time = 0.54, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{144\,x^8+1344\,x^7+5416\,x^6+12296\,x^5+17185\,x^4+15126\,x^3+8181\,x^2+2484\,x+324},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(144*x^8 + 1344*x^7 +
 5416*x^6 + 12296*x^5 + 17185*x^4 + 15126*x^3 + 8181*x^2 + 2484*x + 324), x
)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(7/2)), x)
```

maple [**A**] time = 0.03, size = 296, normalized size = 1.32

$$-\frac{25604880x^4+128709640x^3+426748\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)-1}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^(3/2),x)
```

```
[Out] -1/46875*(426748*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(
2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-119408*15^(1/2)*EllipticF(1/5*
(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(
1/2)+1280244*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)-358224*15^(1/2)*EllipticF(1/5*(30*x+
45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+960
183*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(3
0*x+45)^(1/2),1/3*15^(1/2))-268668*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-
30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+25604880*x^4+128
709640*x^3+236542100*x^2+186801610*x+52801770)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^
(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{3}{2}}(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(3/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(3/2)*(2*x + 3)^(7/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x-5}{(2\,x+3)^{7/2}\,\left(3\,x^2+5\,x+2\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(3/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(3/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{24x^5\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+148x^4\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+358x^3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+423x^2\sqrt{2x}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**(3/2),x)
```

```
[Out] -Integral(x/(24*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(2
*x + 3)*sqrt(3*x**2 + 5*x + 2) + 358*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x +
 2) + 423*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 243*x*sqrt(2*x + 3)*s
qrt(3*x**2 + 5*x + 2) + 54*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - Inte
gral(-5/(24*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 148*x**4*sqrt(2*x +
 3)*sqrt(3*x**2 + 5*x + 2) + 358*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
+ 423*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 243*x*sqrt(2*x + 3)*sqrt(
3*x**2 + 5*x + 2) + 54*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2621 $\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=202

$$-\frac{2(139x+121)(2x+3)^{7/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2571x+2164)(2x+3)^{3/2}}{9\sqrt{3x^2+5x+2}}-\frac{59512}{81}\sqrt{3x^2+5x+2}\sqrt{2x+3}+\frac{148780\sqrt{-3x^2-5x}}{81\sqrt{}}$$

```
[Out] -2/9*(3+2*x)^(7/2)*(121+139*x)/(3*x^2+5*x+2)^(3/2)+4/9*(3+2*x)^(3/2)*(2164+
2571*x)/(3*x^2+5*x+2)^(1/2)-110516/243*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*
6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+148780/243*Ellipt
icF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+
5*x+2)^(1/2)-59512/81*(3+2*x)^(1/2)*(3*x^2+5*x+2)^(1/2)
```

Rubi [A] time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {818, 832, 843, 718, 424, 419}

$$-\frac{2(139x+121)(2x+3)^{7/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4(2571x+2164)(2x+3)^{3/2}}{9\sqrt{3x^2+5x+2}}-\frac{59512}{81}\sqrt{3x^2+5x+2}\sqrt{2x+3}+\frac{148780\sqrt{-3x^2-5x}}{81\sqrt{}}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^(7/2)*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*(3 + 2*
x)^(3/2)*(2164 + 2571*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (59512*Sqrt[3 + 2*x]*
Sqrt[2 + 5*x + 3*x^2])/81 - (110516*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin
[Sqrt[3]*Sqrt[1 + x]], -2/3])/(81*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (148780*
Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(81*Sq
rt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)(3+2x)^{9/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{2}{9}\int \frac{(3+2x)^{5/2}(4+411x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)^{3/2}(2164+2571x)}{9\sqrt{2+5x+3x^2}} + \frac{4}{27}\int \frac{(-18243-22317x)}{\sqrt{2+5x+3x}}$$

$$= -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)^{3/2}(2164+2571x)}{9\sqrt{2+5x+3x^2}} - \frac{59512}{81}\sqrt{3+2x}\,\sqrt{2+5x+}$$

$$= -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)^{3/2}(2164+2571x)}{9\sqrt{2+5x+3x^2}} - \frac{59512}{81}\sqrt{3+2x}\,\sqrt{2+5x+}$$

$$= -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)^{3/2}(2164+2571x)}{9\sqrt{2+5x+3x^2}} - \frac{59512}{81}\sqrt{3+2x}\,\sqrt{2+5x+}$$

$$= -\frac{2(3+2x)^{7/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}} + \frac{4(3+2x)^{3/2}(2164+2571x)}{9\sqrt{2+5x+3x^2}} - \frac{59512}{81}\sqrt{3+2x}\,\sqrt{2+5x+}$$

Mathematica [A]   time = 0.48, size = 220, normalized size = 1.09

$$-\frac{2\left(2\left(3x^2+5x+2\right)\left(55258\left(3x^2+5x+2\right)-5312\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{\frac{3x+2}{2x+3}}(2x+3)^{3/2}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)+27629\right.\right.\right.}{243\sqrt{2x+3}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(9/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3*(3 + 2*x)*(-85285 - 330053*x - 411640*x^2 - 166566*x^3 + 144*x^4) +
2*(2 + 5*x + 3*x^2)*(55258*(2 + 5*x + 3*x^2) + 27629*Sqrt[5]*Sqrt[(1 + x)/(
3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5
/3]/Sqrt[3 + 2*x]], 3/5] - 5312*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(
3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3
/5])))/(243*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F]   time = 0.77, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(16\,x^{5}+16\,x^{4}-264\,x^{3}-864\,x^{2}-999\,x-405\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{27\,x^{6}+135\,x^{5}+279\,x^{4}+305\,x^{3}+186\,x^{2}+60\,x+8}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(16*x^5 + 16*x^4 - 264*x^3 - 864*x^2 - 999*x - 405)*sqrt(3*x^2 +
5*x + 2)*sqrt(2*x + 3)/(27*x^6 + 135*x^5 + 279*x^4 + 305*x^3 + 186*x^2 + 60
*x + 8), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{9}{2}}(x-5)}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(9/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [A]   time = 0.06, size = 325, normalized size = 1.61

$$\frac{2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}\,\left(-4320x^5+4990500x^4+19844670x^3+82887\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-2\right.}}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(9/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/1215*(2*x+3)^(1/2)*(3*x^2+5*x+2)^(1/2)*(82887*15^(1/2)*EllipticE(1/5*(30*
x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)
+28698*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/
2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+138145*15^(1/2)*EllipticE(1/5*(30*x+45)^
(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+47830*1
5^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2
)^(1/2)*(-30*x-20)^(1/2)+55258*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x
-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+19132*(2*x+3)^(1/2)*
15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*
15^(1/2))-4320*x^5+4990500*x^4+19844670*x^3+28425390*x^2+17410935*x+3837825
)/(x+1)/(2*x^2+5*x+3)/(3*x+2)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{9}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(9/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
[Out] -integrate((2*x + 3)^(9/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{(2\,x+3)^{9/2}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(9/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int(((2*x + 3)^(9/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(9/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.2622 $\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{2(139x+121)(2x+3)^{5/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{28(1177x+1018)\sqrt{2x+3}}{27\sqrt{3x^2+5x+2}}+\frac{41860\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\,\sqrt{3x^2+5x+2}}-$$

```
[Out] -2/9*(3+2*x)^(5/2)*(121+139*x)/(3*x^2+5*x+2)^(3/2)+28/27*(1018+1177*x)*(3+2
*x)^(1/2)/(3*x^2+5*x+2)^(1/2)-31892/81*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*
6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+41860/81*Elliptic
F(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*
x+2)^(1/2)
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {818, 843, 718, 424, 419}

$$-\frac{2(139x+121)(2x+3)^{5/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{28(1177x+1018)\sqrt{2x+3}}{27\sqrt{3x^2+5x+2}}+\frac{41860\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{27\sqrt{3}\,\sqrt{3x^2+5x+2}}-$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^(5/2)*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (28*Sqrt[3
 + 2*x]*(1018 + 1177*x))/(27*Sqrt[2 + 5*x + 3*x^2]) - (31892*Sqrt[-2 - 5*x
- 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(27*Sqrt[3]*Sqrt[2 +
 5*x + 3*x^2]) + (41860*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqr
t[1 + x]], -2/3])/(27*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{7/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^{5/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(3+2x)^{3/2}(-238+133x)}{\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2(3+2x)^{5/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{28\sqrt{3+2x}\,(1018+1177x)}{27\sqrt{2+5x+3x^2}}+\frac{4}{27}\int \frac{-6727-7973x}{\sqrt{3+2x}\,\sqrt{2+5x+}}\\
&= -\frac{2(3+2x)^{5/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{28\sqrt{3+2x}\,(1018+1177x)}{27\sqrt{2+5x+3x^2}}-\frac{15946}{27}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,d\\
&= -\frac{2(3+2x)^{5/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{28\sqrt{3+2x}\,(1018+1177x)}{27\sqrt{2+5x+3x^2}}-\frac{\left(31892\sqrt{-2-5x-3x^2}\right)\mathrm{Su}}{27\sqrt{3}\,\sqrt{2}}\\
&= -\frac{2(3+2x)^{5/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{28\sqrt{3+2x}\,(1018+1177x)}{27\sqrt{2+5x+3x^2}}-\frac{31892\sqrt{-2-5x-3x^2}\,E\Big(\mathrm{si}}{27\sqrt{3}\,\sqrt{2+}}
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 196, normalized size = 1.12

$$
-\frac{\frac{63784\left(3x^2+5x+2\right)}{\sqrt{2x+3}}-\frac{6\sqrt{2x+3}\left(47766x^3+118690x^2+96107x+25237\right)}{3x^2+5x+2}-\frac{6776(x+1)\sqrt{\frac{3x+2}{2x+3}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)}{\sqrt{\frac{x+1}{10x+15}}}+\frac{31892(x+1)\sqrt{\frac{3x+2}{2x+3}}\,E\Big(\sin^{-1}\Big(}{\sqrt{\frac{x+1}{10x+15}}}}{81\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(7/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/81*((63784*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x] - (6*Sqrt[3 + 2*x]*(25237 +
96107*x + 118690*x^2 + 47766*x^3))/(2 + 5*x + 3*x^2) + (31892*(1 + x)*Sqrt[
(2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[
(1 + x)/(15 + 10*x)] - (6776*(1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[Ar
cSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(15 + 10*x)])/Sqrt[2 + 5*
x + 3*x^2]
```

fricas [F] time = 0.63, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(8\,x^{4}-4\,x^{3}-126\,x^{2}-243\,x-135\right)\sqrt{3\,x^{2}+5\,x+2}\,\sqrt{2\,x+3}}{27\,x^{6}+135\,x^{5}+279\,x^{4}+305\,x^{3}+186\,x^{2}+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(8*x^4 - 4*x^3 - 126*x^2 - 243*x - 135)*sqrt(3*x^2 + 5*x + 2)*sqr
t(2*x + 3)/(27*x^6 + 135*x^5 + 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{7}{2}}(x-5)}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(7/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [B] time = 0.03, size = 308, normalized size = 1.76

$$\frac{2\left(1432980x^{4}+5710170x^{3}+23919\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^{2}\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+7476\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(7/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/405*(23919*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+
3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+7476*15^(1/2)*EllipticF(1/5*(30*x+
45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+3
9865*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(
-2*x-2)^(1/2)*(-30*x-20)^(1/2)+12460*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2)
,1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+15946*(2*x+3
)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1
/2),1/3*15^(1/2))+4984*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/
2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+1432980*x^4+5710170*x^3+8224
260*x^2+5081925*x+1135665)*(3*x^2+5*x+2)^(1/2)/(x+1)^2/(3*x+2)^2/(2*x+3)^(1
/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{7}{2}}(x-5)}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(7/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{(2\,x+3)^{7/2}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int(((2*x + 3)^(7/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(7/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.2623 $\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{2(139x+121)(2x+3)^{3/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{20(431x+364)\sqrt{2x+3}}{9\sqrt{3x^2+5x+2}}+\frac{11300\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{9\sqrt{3}\sqrt{3x^2+5x+2}}-86$$

```
[Out] -2/9*(3+2*x)^(3/2)*(121+139*x)/(3*x^2+5*x+2)^(3/2)+20/9*(364+431*x)*(3+2*x)
^(1/2)/(3*x^2+5*x+2)^(1/2)-8620/27*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+11300/27*EllipticF(3^
(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)
^(1/2)
```

Rubi [A] time = 0.10, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {818, 820, 843, 718, 424, 419}

$$-\frac{2(139x+121)(2x+3)^{3/2}}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{20(431x+364)\sqrt{2x+3}}{9\sqrt{3x^2+5x+2}}+\frac{11300\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{9\sqrt{3}\sqrt{3x^2+5x+2}}-86$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*(3 + 2*x)^(3/2)*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (20*Sqrt[3
 + 2*x]*(364 + 431*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (8620*Sqrt[-2 - 5*x - 3*
x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(9*Sqrt[3]*Sqrt[2 + 5*x
+ 3*x^2]) + (11300*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 +
 x]], -2/3])/(9*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{5/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(3+2x)^{3/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{(-480-145x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{3/2}}\,dx \\
&= -\frac{2(3+2x)^{3/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{20\sqrt{3+2x}\,(364+431x)}{9\sqrt{2+5x+3x^2}}-\frac{4}{9}\int \frac{1820+2155x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}} \\
&= -\frac{2(3+2x)^{3/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{20\sqrt{3+2x}\,(364+431x)}{9\sqrt{2+5x+3x^2}}-\frac{4310}{9}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx+ \\
&= -\frac{2(3+2x)^{3/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{20\sqrt{3+2x}\,(364+431x)}{9\sqrt{2+5x+3x^2}}-\frac{\left(8620\sqrt{-2-5x-3x^2}\right)\text{Subs}}{9\sqrt{3}\,\sqrt{2+5} \\
&= -\frac{2(3+2x)^{3/2}(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{20\sqrt{3+2x}\,(364+431x)}{9\sqrt{2+5x+3x^2}}-\frac{8620\sqrt{-2-5x-3x^2}\,E\left(\sin^{-}\right.}{9\sqrt{3}\,\sqrt{2+5x}}
\end{aligned}
$$

Mathematica [A]   time = 0.34, size = 196, normalized size = 1.12

$$-\frac{\frac{17240\left(3x^2+5x+2\right)}{\sqrt{2x+3}}-\frac{6\sqrt{2x+3}\left(12930x^3+32192x^2+26161x+6917\right)}{3x^2+5x+2}-\frac{1840(x+1)\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)}{\sqrt{\frac{x+1}{10x+15}}}+\frac{8620(x+1)\sqrt{\frac{3x+2}{2x+3}}E\left(\sin^{-1}\left(\right.\right.}{\sqrt{\frac{x+1}{10x+15}}}}{27\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(5/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/27*((17240*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x] - (6*Sqrt[3 + 2*x]*(6917 + 2
6161*x + 32192*x^2 + 12930*x^3))/(2 + 5*x + 3*x^2) + (8620*(1 + x)*Sqrt[(2
+ 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1
+ x)/(15 + 10*x)] - (1840*(1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSi
n[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(15 + 10*x)])/Sqrt[2 + 5*x +
 3*x^2]
```

fricas [F]   time = 0.56, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\left(4\,x^3-8\,x^2-51\,x-45\right)\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-(4*x^3 - 8*x^2 - 51*x - 45)*sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)/(
27*x^6 + 135*x^5 + 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(5/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [B]   time = 0.03, size = 308, normalized size = 1.76

$$\frac{2\left(77580x^4+309522x^3+1293\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^2\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+402\sqrt{15}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(5/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/27*(402*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^
(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1293*15^(1/2)*EllipticE(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+670*
15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-
2)^(1/2)*(-30*x-20)^(1/2)+2155*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*1
5^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+268*(2*x+3)^(1/2)*
15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*
15^(1/2))+862*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ellipt
icE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+77580*x^4+309522*x^3+446694*x^2+27695
1*x+62253)*(3*x^2+5*x+2)^(1/2)/(x+1)^2/(3*x+2)^2/(2*x+3)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{5}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
[Out] -integrate((2*x + 3)^(5/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^{5/2}\,\left(x-5\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int(((2*x + 3)^(5/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(5/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.2624 $\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{2\sqrt{2x+3}\,(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(1689x+1390)}{9\sqrt{3x^2+5x+2}}+\frac{2956\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{3\sqrt{3}\sqrt{3x^2+5x+2}}-2252$$

```
[Out] -2/9*(121+139*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2)+4/9*(1390+1689*x)*(3+2*x
)^(1/2)/(3*x^2+5*x+2)^(1/2)-2252/9*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+2956/9*EllipticF(3^(1
/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(
1/2)
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {818, 822, 843, 718, 424, 419}

$$-\frac{2\sqrt{2x+3}\,(139x+121)}{9\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(1689x+1390)}{9\sqrt{3x^2+5x+2}}+\frac{2956\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{3\sqrt{3}\sqrt{3x^2+5x+2}}-2252$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(121 + 139*x))/(9*(2 + 5*x + 3*x^2)^(3/2)) + (4*Sqrt[3 +
2*x]*(1390 + 1689*x))/(9*Sqrt[2 + 5*x + 3*x^2]) - (2252*Sqrt[-2 - 5*x - 3*x
^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(3*Sqrt[3]*Sqrt[2 + 5*x +
 3*x^2]) + (2956*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x
]], -2/3])/(3*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{(5-x)(3+2x)^{3/2}}{\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2\sqrt{3+2x}\,(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{2}{9}\int \frac{-722-423x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1390+1689x)}{9\sqrt{2+5x+3x^2}}-\frac{4}{45}\int \frac{7125+8445x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1390+1689x)}{9\sqrt{2+5x+3x^2}}-\frac{1126}{3}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx+\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1390+1689x)}{9\sqrt{2+5x+3x^2}}-\frac{\left(2252\sqrt{-2-5x-3x^2}\right)\text{Subst}}{3\sqrt{3}\,\sqrt{2+5}}\\
&= -\frac{2\sqrt{3+2x}\,(121+139x)}{9\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1390+1689x)}{9\sqrt{2+5x+3x^2}}-\frac{2252\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\right.}{3\sqrt{3}\,\sqrt{2+5x+}}
\end{aligned}
$$

Mathematica [A] time = 0.35, size = 196, normalized size = 1.12

$$-\frac{\frac{22520\left(3x^2+5x+2\right)}{\sqrt{2x+3}}-\frac{30\sqrt{2x+3}\left(3378x^3+8410x^2+6839x+1813\right)}{3x^2+5x+2}-\frac{2392(x+1)\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)}{\sqrt{\frac{x+1}{10x+15}}}+\frac{11260(x+1)\sqrt{\frac{3x+2}{2x+3}}E\left(\sin^{-1}\left(\frac{\sqrt{}}{\sqrt{2}}\right.\right.}{\sqrt{\frac{x+1}{10x+15}}}}{45\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*(3 + 2*x)^(3/2))/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/45*((22520*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x] - (30*Sqrt[3 + 2*x]*(1813 +
6839*x + 8410*x^2 + 3378*x^3))/(2 + 5*x + 3*x^2) + (11260*(1 + x)*Sqrt[(2 +
 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 +
 x)/(15 + 10*x)] - (2392*(1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin
[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(15 + 10*x)])/Sqrt[2 + 5*x +
3*x^2]
```

fricas [F] time = 0.59, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\left(2\,x^2-7\,x-15\right)\sqrt{2\,x+3}}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*(2*x^2 - 7*x - 15)*sqrt(2*x + 3)/(27*x^6 +
135*x^5 + 279*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(2*x + 3)^(3/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple [B] time = 0.03, size = 308, normalized size = 1.76

$$2\left(101340x^4+404310x^3+1689\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+528\sqrt{15}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(3/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/45*(1689*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+528*15^(1/2)*EllipticF(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+2815
*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x
-2)^(1/2)*(-30*x-20)^(1/2)+880*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*1
5^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1126*(2*x+3)^(1/2)
*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3
*15^(1/2))+352*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ellip
ticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+101340*x^4+404310*x^3+583620*x^2+362
145*x+81585)*(3*x^2+5*x+2)^(1/2)/(x+1)^2/(3*x+2)^2/(2*x+3)^(1/2)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{(2\,x+3)^{\frac{3}{2}}(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((2*x + 3)^(3/2)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{{\left(2\,x+3\right)}^{3/2}\,\left(x-5\right)}{{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
```

```
[Out] -int(((2*x + 3)^(3/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int\Bigg(-\frac{15\sqrt{2x+3}}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(3/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(-15*sqrt(2*x + 3)/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3
*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x
+ 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(-7*x*sqrt(2*x + 3)/(9*x**4*
sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x*
*2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
 - Integral(2*x**2*sqrt(2*x + 3)/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*s
qrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 +
 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2625 $\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=173

$$-\frac{2\sqrt{2x+3}\,(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(2139x+1759)}{15\sqrt{3x^2+5x+2}}+\frac{748\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}-2852\sqrt{-}$$

```
[Out] -2/3*(29+35*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2)+4/15*(1759+2139*x)*(3+2*x)
^(1/2)/(3*x^2+5*x+2)^(1/2)-2852/15*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+748/3*EllipticF(3^(1/
2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1
/2)
```

Rubi [A] time = 0.10, antiderivative size = 173, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {820, 822, 843, 718, 424, 419}

$$-\frac{2\sqrt{2x+3}\,(35x+29)}{3\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(2139x+1759)}{15\sqrt{3x^2+5x+2}}+\frac{748\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\sqrt{x+1}\right)|-\frac{2}{3}\right)}{\sqrt{3}\sqrt{3x^2+5x+2}}-2852\sqrt{-}$$

Antiderivative was successfully verified.

```
[In] Int[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(29 + 35*x))/(3*(2 + 5*x + 3*x^2)^(3/2)) + (4*Sqrt[3 + 2*
x]*(1759 + 2139*x))/(15*Sqrt[2 + 5*x + 3*x^2]) - (2852*Sqrt[-2 - 5*x - 3*x^
2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(5*Sqrt[3]*Sqrt[2 + 5*x +
3*x^2]) + (748*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]]
, -2/3])/(Sqrt[3]*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(5-x)\sqrt{3+2x}}{\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2\sqrt{3+2x}\,(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{3}\int \frac{181+105x}{\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2\sqrt{3+2x}\,(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1759+2139x)}{15\sqrt{2+5x+3x^2}}+\frac{4}{15}\int \frac{-1806-2139x}{\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}$$

$$= -\frac{2\sqrt{3+2x}\,(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1759+2139x)}{15\sqrt{2+5x+3x^2}}-\frac{1426}{5}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x^2}}\,dx+37$$

$$= -\frac{2\sqrt{3+2x}\,(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1759+2139x)}{15\sqrt{2+5x+3x^2}}-\frac{\left(2852\sqrt{-2-5x-3x^2}\right)\text{Subst}\left(\right.}{5\sqrt{3}\,\sqrt{2+5x-}}$$

$$= -\frac{2\sqrt{3+2x}\,(29+35x)}{3\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(1759+2139x)}{15\sqrt{2+5x+3x^2}}-\frac{2852\sqrt{-2-5x-3x^2}\,E\left(\sin^{-1}\left(\right.\right.}{5\sqrt{3}\,\sqrt{2+5x+3}}$$

Mathematica **[A]** time = 0.34, size = 196, normalized size = 1.13

$$-\frac{\frac{5704\left(3x^2+5x+2\right)}{\sqrt{2x+3}}-\frac{6\sqrt{2x+3}\left(4278x^3+10648x^2+8657x+2297\right)}{3x^2+5x+2}-\frac{608(x+1)\sqrt{\frac{3x+2}{2x+3}}F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)|\frac{3}{5}\right)}{\sqrt{\frac{x+1}{10x+15}}}+\frac{2852(x+1)\sqrt{\frac{3x+2}{2x+3}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right.\right.}{\sqrt{\frac{x+1}{10x+15}}}}{15\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((5 - x)*Sqrt[3 + 2*x])/(2 + 5*x + 3*x^2)^(5/2),x]
```

```
[Out] -1/15*((5704*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x] - (6*Sqrt[3 + 2*x]*(2297 + 86
57*x + 10648*x^2 + 4278*x^3))/(2 + 5*x + 3*x^2) + (2852*(1 + x)*Sqrt[(2 + 3
*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x
)/(15 + 10*x)] - (608*(1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sq
rt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(15 + 10*x)])/Sqrt[2 + 5*x + 3*x
^2]
```

fricas **[F]** time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{27\,x^6+135\,x^5+279\,x^4+305\,x^3+186\,x^2+60\,x+8},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(27*x^6 + 135*x^5 + 2
79*x^4 + 305*x^3 + 186*x^2 + 60*x + 8), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{\sqrt{2\,x+3}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-sqrt(2*x + 3)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

maple **[B]** time = 0.03, size = 308, normalized size = 1.78

$$\frac{2\left(128340x^4+511950x^3+2139\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^2\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+666\sqrt{15}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)*(2*x+3)^(1/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/75*(2139*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+666*15^(1/2)*EllipticF(1/5*(30*x+45)
^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+3565
*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x
-2)^(1/2)*(-30*x-20)^(1/2)+1110*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*
15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+1426*(2*x+3)^(1/2
)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/
3*15^(1/2))+444*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Elli
pticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+128340*x^4+511950*x^3+738870*x^2+45
8475*x+103365)*(3*x^2+5*x+2)^(1/2)/(x+1)^2/(3*x+2)^2/(2*x+3)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{\sqrt{2\,x+3}\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
[Out] -integrate(sqrt(2*x + 3)*(x - 5)/(3*x^2 + 5*x + 2)^(5/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{\sqrt{2\,x+3}\;\,(x-5)}{\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2),x)
[Out] -int(((2*x + 3)^(1/2)*(x - 5))/(5*x + 3*x^2 + 2)^(5/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int\left(-\frac{5\sqrt{2x+3}}{9x^4\sqrt{3x^2+5x+2}+30x^3\sqrt{3x^2+5x+2}+37x^2\sqrt{3x^2+5x+2}+20x\sqrt{3x^2+5x+2}+4\sqrt{3x^2+5x+2}}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)*(3+2*x)**(1/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] -Integral(-5*sqrt(2*x + 3)/(9*x**4*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*
x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 + 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x +
 2) + 4*sqrt(3*x**2 + 5*x + 2)), x) - Integral(x*sqrt(2*x + 3)/(9*x**4*sqrt
(3*x**2 + 5*x + 2) + 30*x**3*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(3*x**2 +
 5*x + 2) + 20*x*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2626 $\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=175

$$-\frac{2\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(2607x+2152)}{25\sqrt{3x^2+5x+2}}+\frac{916\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3x^2+5x+2}}-\frac{3476}{}$$

```
[Out] -2/5*(37+47*x)*(3+2*x)^(1/2)/(3*x^2+5*x+2)^(3/2)+4/25*(2152+2607*x)*(3+2*x)
^(1/2)/(3*x^2+5*x+2)^(1/2)-3476/25*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1
/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+916/5*EllipticF(3^(1/
2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1
/2)
```

Rubi [A] time = 0.11, antiderivative size = 175, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {822, 843, 718, 424, 419}

$$-\frac{2\sqrt{2x+3}\,(47x+37)}{5\left(3x^2+5x+2\right)^{3/2}}+\frac{4\sqrt{2x+3}\,(2607x+2152)}{25\sqrt{3x^2+5x+2}}+\frac{916\sqrt{3}\,\sqrt{-3x^2-5x-2}\,F\left(\sin^{-1}\left(\sqrt{3}\,\sqrt{x+1}\right)|-\frac{2}{3}\right)}{5\sqrt{3x^2+5x+2}}-\frac{3476}{}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*Sqrt[3 + 2*x]*(37 + 47*x))/(5*(2 + 5*x + 3*x^2)^(3/2)) + (4*Sqrt[3 + 2*
x]*(2152 + 2607*x))/(25*Sqrt[2 + 5*x + 3*x^2]) - (3476*Sqrt[3]*Sqrt[-2 - 5*
x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(25*Sqrt[2 + 5*x +
 3*x^2]) + (916*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqr
t[1 + x]], -2/3])/(5*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{696+423x}{\sqrt{3+2x}\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(2152+2607x)}{25\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{-6579-78}{\sqrt{3+2x}\,\sqrt{2+5}}\\
&= -\frac{2\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(2152+2607x)}{25\sqrt{2+5x+3x^2}}-\frac{5214}{25}\int \frac{\sqrt{3+2x}}{\sqrt{2+5x+3x}}\\
&= -\frac{2\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(2152+2607x)}{25\sqrt{2+5x+3x^2}}-\frac{\left(3476\sqrt{3}\,\sqrt{-2-5x-}\right.}{25}\\
&= -\frac{2\sqrt{3+2x}\,(37+47x)}{5\left(2+5x+3x^2\right)^{3/2}}+\frac{4\sqrt{3+2x}\,(2152+2607x)}{25\sqrt{2+5x+3x^2}}-\frac{3476\sqrt{3}\,\sqrt{-2-5x-3}}{25\sqrt{}}
\end{aligned}
$$

Mathematica [A] time = 0.33, size = 196, normalized size = 1.12

$$
\frac{-\frac{6952\left(3x^2+5x+2\right)}{\sqrt{2x+3}}+\frac{2\sqrt{2x+3}\left(15642x^3+38982x^2+31713x+8423\right)}{3x^2+5x+2}+\frac{728(x+1)\sqrt{\frac{3x+2}{2x+3}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\middle|\frac{3}{5}\right)}{\sqrt{\frac{x+1}{10x+15}}}-\frac{3476(x+1)\sqrt{\frac{3x+2}{2x+3}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{5}{3}}}{\sqrt{2x+3}}\right)\right|}{\sqrt{\frac{x+1}{10x+15}}}}{25\sqrt{3x^2+5x+2}}
$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/(Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] ((-6952*(2 + 5*x + 3*x^2))/Sqrt[3 + 2*x] + (2*Sqrt[3 + 2*x]*(8423 + 31713*x
 + 38982*x^2 + 15642*x^3))/(2 + 5*x + 3*x^2) - (3476*(1 + x)*Sqrt[(2 + 3*x)
/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(
15 + 10*x)] + (728*(1 + x)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[
5/3]/Sqrt[3 + 2*x]], 3/5])/Sqrt[(1 + x)/(15 + 10*x)])/(25*Sqrt[2 + 5*x + 3*
x^2])
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{54\,x^7+351\,x^6+963\,x^5+1447\,x^4+1287\,x^3+678\,x^2+196\,x+24},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(54*x^7 + 351*x^6 + 9
63*x^5 + 1447*x^4 + 1287*x^3 + 678*x^2 + 196*x + 24), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(5/2)*sqrt(2*x + 3)), x)
```

maple [B] time = 0.03, size = 308, normalized size = 1.76

$$\frac{2\left(156420x^4+624450x^3+2607\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^2\,\text{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\frac{\sqrt{15}}{3}\right)+828\sqrt{15}\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(3*x^2+5*x+2)^(5/2)/(2*x+3)^(1/2),x)
```

```
[Out] 2/125*(828*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)
^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+2607*15^(1/2)*EllipticE(1/5*(30*x+45
)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+138
0*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*
x-2)^(1/2)*(-30*x-20)^(1/2)+4345*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3
*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+552*(2*x+3)^(1/2
)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/
3*15^(1/2))+1738*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ell
ipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+156420*x^4+624450*x^3+901860*x^2+5
59925*x+126345)*(3*x^2+5*x+2)^(1/2)/(x+1)^2/(3*x+2)^2/(2*x+3)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}\sqrt{2\,x+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x^2+5*x+2)^(5/2)/(3+2*x)^(1/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(5/2)*sqrt(2*x + 3)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.01

$$-\int \frac{x-5}{\sqrt{2\,x+3}\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(1/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{9x^4\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+30x^3\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+37x^2\sqrt{2x+3}\,\sqrt{3x^2+5x+2}+20x\sqrt{2x+3}\,\sqrt{}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3*x**2+5*x+2)**(5/2)/(3+2*x)**(1/2),x)
```

```
[Out] -Integral(x/(9*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 30*x**3*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
 + 20*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(2*x + 3)*sqrt(3*x**2
+ 5*x + 2)), x) - Integral(-5/(9*x**4*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)
+ 30*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 37*x**2*sqrt(2*x + 3)*sqrt
(3*x**2 + 5*x + 2) + 20*x*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 4*sqrt(2*x
 + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2627 $\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=202

$$-\frac{2(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)^{3/2}}+\frac{23464\sqrt{3x^2+5x+2}}{125\sqrt{2x+3}}+\frac{4(2409x+2054)}{25\sqrt{2x+3}\sqrt{3x^2+5x+2}}+\frac{3212\sqrt{3}\sqrt{-3x^2-5x-2}\,F}{25\sqrt{3x^2}}$$

```
[Out] -2/5*(37+47*x)/(3*x^2+5*x+2)^(3/2)/(3+2*x)^(1/2)+4/25*(2054+2409*x)/(3+2*x)
^(1/2)/(3*x^2+5*x+2)^(1/2)-11732/125*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^
(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+3212/25*EllipticF(3
^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2
)^(1/2)+23464/125*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi **[A]** time = 0.13, antiderivative size = 202, normalized size of antiderivative = 1.00, number of steps used = 8, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{822, 834, 843, 718, 424, 419\}$

$$-\frac{2(47x+37)}{5\sqrt{2x+3}\left(3x^2+5x+2\right)^{3/2}}+\frac{23464\sqrt{3x^2+5x+2}}{125\sqrt{2x+3}}+\frac{4(2409x+2054)}{25\sqrt{2x+3}\sqrt{3x^2+5x+2}}+\frac{3212\sqrt{3}\sqrt{-3x^2-5x-2}\,F}{25\sqrt{3x^2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*Sqrt[3 + 2*x]*(2 + 5*x + 3*x^2)^(3/2)) + (4*(2054 + 240
9*x))/(25*Sqrt[3 + 2*x]*Sqrt[2 + 5*x + 3*x^2]) + (23464*Sqrt[2 + 5*x + 3*x^
2])/(125*Sqrt[3 + 2*x]) - (11732*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[A
rcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(125*Sqrt[2 + 5*x + 3*x^2]) + (3212*Sqrt
[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(2
5*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] && !IGtQ[m, 0]
```

Rubi steps

$$
\begin{aligned}
\int \frac{5-x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{5/2}}\,dx &= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}-\frac{2}{15}\int \frac{918+705x}{(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}}\,dx\\
&= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2054+2409x)}{25\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}+\frac{4}{75}\int \frac{6}{(3+2}\\
&= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2054+2409x)}{25\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}+\frac{23464\sqrt{2+5}}{125\sqrt{3+}}\\
&= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2054+2409x)}{25\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}+\frac{23464\sqrt{2+5}}{125\sqrt{3+}}\\
&= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2054+2409x)}{25\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}+\frac{23464\sqrt{2+5}}{125\sqrt{3+}}\\
&= -\frac{2(37+47x)}{5\sqrt{3+2x}\,\left(2+5x+3x^2\right)^{3/2}}+\frac{4(2054+2409x)}{25\sqrt{3+2x}\,\sqrt{2+5x+3x^2}}+\frac{23464\sqrt{2+5}}{125\sqrt{3+}}
\end{aligned}
$$

Mathematica [**A**] time = 0.38, size = 215, normalized size = 1.06

$$\frac{2\left(5\left(14454x^3+36414x^2+29941x+8031\right)+1048\sqrt{5}\sqrt{\frac{x+1}{2x+3}}\sqrt{2x+3}\sqrt{\frac{3x+2}{2x+3}}\left(6x^3+19x^2+19x+6\right)F\left(\sin^{-1}\right.\right.}{125\sqrt{2x+3}\left(3x^2+5x\right.}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(5*(8031 + 29941*x + 36414*x^2 + 14454*x^3) - 5866*Sqrt[5]*Sqrt[(1 + x)/
(3 + 2*x)]*Sqrt[3 + 2*x]*Sqrt[(2 + 3*x)/(3 + 2*x)]*(6 + 19*x + 19*x^2 + 6*x
^3)*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 1048*Sqrt[5]*Sqrt[(1
+ x)/(3 + 2*x)]*Sqrt[3 + 2*x]*Sqrt[(2 + 3*x)/(3 + 2*x)]*(6 + 19*x + 19*x^2
+ 6*x^3)*EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5]))/(125*Sqrt[3 + 2*
x]*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [**F**] time = 0.71, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{108\,x^8+864\,x^7+2979\,x^6+5783\,x^5+6915\,x^4+5217\,x^3+2426\,x^2+636\,x+72},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(108*x^8 + 864*x^7 +
2979*x^6 + 5783*x^5 + 6915*x^4 + 5217*x^3 + 2426*x^2 + 636*x + 72), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(3/2)), x)
```

maple [**A**] time = 0.03, size = 308, normalized size = 1.52

$$\frac{2\sqrt{3x^2+5x+2}\left(527940x^4+2121150x^3+8799\sqrt{15}\sqrt{2x+3}\sqrt{-2x-2}\sqrt{-30x-20}\,x^2\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+45}}{5},\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(3/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/625*(3*x^2+5*x+2)^(1/2)*(3246*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*
15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+8799*15^(1/2)*E
llipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)
*(-30*x-20)^(1/2)+5410*15^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))
*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+14665*15^(1/2)*EllipticE(1
/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^
(1/2)+2164*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+5866*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/
2)*(-30*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+527940*x^4+
2121150*x^3+3080770*x^2+1921725*x+435415)/(3*x+2)^2/(x+1)^2/(2*x+3)^(1/2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^{2}+5\,x+2\right)^{\frac{5}{2}}\left(2\,x+3\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x-5}{{\left(2\,x+3\right)}^{3/2}\,{\left(3\,x^2+5\,x+2\right)}^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(3/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x}{18x^{5}\sqrt{2x+3}\,\sqrt{3x^{2}+5x+2}+87x^{4}\sqrt{2x+3}\,\sqrt{3x^{2}+5x+2}+164x^{3}\sqrt{2x+3}\,\sqrt{3x^{2}+5x+2}+151x^{2}\sqrt{2x+}}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(3/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] -Integral(x/(18*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(2*
x + 3)*sqrt(3*x**2 + 5*x + 2) + 164*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x +
2) + 151*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 68*x*sqrt(2*x + 3)*sqr
t(3*x**2 + 5*x + 2) + 12*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x) - Integr
al(-5/(18*x**5*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 87*x**4*sqrt(2*x + 3)
*sqrt(3*x**2 + 5*x + 2) + 164*x**3*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 1
51*x**2*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2) + 68*x*sqrt(2*x + 3)*sqrt(3*x*
*2 + 5*x + 2) + 12*sqrt(2*x + 3)*sqrt(3*x**2 + 5*x + 2)), x)
```

3.2628 $\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=229

$$-\frac{2(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)^{3/2}}+\frac{190792\sqrt{3x^2+5x+2}}{1875\sqrt{2x+3}}+\frac{61672\sqrt{3x^2+5x+2}}{375(2x+3)^{3/2}}+\frac{12(737x+652)}{25(2x+3)^{3/2}\sqrt{3x^2+5x+2}}$$

```
[Out] -2/5*(37+47*x)/(3+2*x)^(3/2)/(3*x^2+5*x+2)^(3/2)+12/25*(652+737*x)/(3+2*x)^
(3/2)/(3*x^2+5*x+2)^(1/2)-95396/1875*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I*6^
(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+30836/375*EllipticF
(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x
+2)^(1/2)+61672/375*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(3/2)+190792/1875*(3*x^2+5*
x+2)^(1/2)/(3+2*x)^(1/2)
```

Rubi [A] time = 0.16, antiderivative size = 229, normalized size of antiderivative = 1.00, number of steps used = 9, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = $\{822, 834, 843, 718, 424, 419\}$

$$-\frac{2(47x+37)}{5(2x+3)^{3/2}\left(3x^2+5x+2\right)^{3/2}}+\frac{190792\sqrt{3x^2+5x+2}}{1875\sqrt{2x+3}}+\frac{61672\sqrt{3x^2+5x+2}}{375(2x+3)^{3/2}}+\frac{12(737x+652)}{25(2x+3)^{3/2}\sqrt{3x^2+5x+2}}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2)) + (12*(652 + 7
37*x))/(25*(3 + 2*x)^(3/2)*Sqrt[2 + 5*x + 3*x^2]) + (61672*Sqrt[2 + 5*x + 3
*x^2])/(375*(3 + 2*x)^(3/2)) + (190792*Sqrt[2 + 5*x + 3*x^2])/(1875*Sqrt[3
+ 2*x]) - (95396*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x
]], -2/3])/(625*Sqrt[3]*Sqrt[2 + 5*x + 3*x^2]) + (30836*Sqrt[-2 - 5*x - 3*x
^2]*EllipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(125*Sqrt[3]*Sqrt[2 + 5*x
 + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{2}{15}\int \frac{1140+987x}{(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{4}{75}\int$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{61672}{37}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{61672}{37}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{61672}{37}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{61672}{37}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{3/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{12(652+737x)}{25(3+2x)^{3/2}\sqrt{2+5x+3x^2}} + \frac{61672}{37}$$

Mathematica [A] time = 0.52, size = 222, normalized size = 0.97

$$\frac{2\left(1717128x^5 + 9687072x^4 + 21265294x^3 + 22647906x^2 - 2(2x+3)\left(3x^2+5x+2\right)\left(47698\left(3x^2+5x+2\right) - \right.\right.}{18}$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(2334397 + 11683203*x + 22647906*x^2 + 21265294*x^3 + 9687072*x^4 + 1717
128*x^5 - 2*(3 + 2*x)*(2 + 5*x + 3*x^2)*(47698*(2 + 5*x + 3*x^2) + 23849*Sq
rt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*Ell
ipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] - 722*Sqrt[5]*Sqrt[(1 + x)/(3
+ 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*EllipticF[ArcSin[Sqrt[5/3
]/Sqrt[3 + 2*x]], 3/5])))/(1875*(3 + 2*x)^(3/2)*(2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.67, size = 0, normalized size = 0.00

$$\text{integral}\left(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{216\,x^9+2052\,x^8+8550\,x^7+20503\,x^6+31179\,x^5+31179\,x^4+20503\,x^3+8550\,x^2+2052\,x+21}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(216*x^9 + 2052*x^8 +
 8550*x^7 + 20503*x^6 + 31179*x^5 + 31179*x^4 + 20503*x^3 + 8550*x^2 + 2052
*x + 216), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(5/2)), x)
```

maple [B] time = 0.03, size = 401, normalized size = 1.75

$$\frac{2\sqrt{3x^2+5x+2}\,\left(8585640x^5+48435360x^4+143094\sqrt{15}\,\sqrt{2x+3}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,x^3\,\mathrm{EllipticE}\left(\frac{\sqrt{30x+4}}{5}\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(5/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/9375*(3*x^2+5*x+2)^(1/2)*(143094*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1
/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+88176*15^(1/
2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(
1/2)*(-30*x-20)^(1/2)+453131*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^
(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+279224*15^(1/2)*El
lipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*
(-30*x-20)^(1/2)+453131*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2)
)*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+279224*15^(1/2)*EllipticF
(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20
)^(1/2)+143094*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*Ellip
ticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+88176*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2
)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+858564
0*x^5+48435360*x^4+106326470*x^3+113239530*x^2+58416015*x+11671985)/(2*x+3)
^(3/2)/(3*x+2)^2/(x+1)^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x-5}{(2\,x+3)^{5/2}\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
```

```
[Out] -int((x - 5)/((2*x + 3)^(5/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(5/2)/(3*x**2+5*x+2)**(5/2),x)
```

```
[Out] Timed out
```

3.2629 $\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{5/2}}\,dx$

Optimal. Leaf size=256

$$-\frac{2(47x+37)}{5(2x+3)^{5/2}\left(3x^2+5x+2\right)^{3/2}}+\frac{215096\sqrt{3x^2+5x+2}}{15625\sqrt{2x+3}}+\frac{258536\sqrt{3x^2+5x+2}}{3125(2x+3)^{3/2}}+\frac{87144\sqrt{3x^2+5x+2}}{625(2x+3)^{5/2}}+\frac{4}{25(2x}$$

```
[Out] -2/5*(37+47*x)/(3+2*x)^(5/2)/(3*x^2+5*x+2)^(3/2)+4/25*(1858+2013*x)/(3+2*x)
^(5/2)/(3*x^2+5*x+2)^(1/2)-107548/15625*EllipticE(3^(1/2)*(1+x)^(1/2),1/3*I
*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^2+5*x+2)^(1/2)+129268/3125*Elli
pticF(3^(1/2)*(1+x)^(1/2),1/3*I*6^(1/2))*(-3*x^2-5*x-2)^(1/2)*3^(1/2)/(3*x^
2+5*x+2)^(1/2)+87144/625*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(5/2)+258536/3125*(3*x
^2+5*x+2)^(1/2)/(3+2*x)^(3/2)+215096/15625*(3*x^2+5*x+2)^(1/2)/(3+2*x)^(1/2
)
```

Rubi [A] time = 0.19, antiderivative size = 256, normalized size of antiderivative = 1.00, number of steps used = 10, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {822, 834, 843, 718, 424, 419}

$$-\frac{2(47x+37)}{5(2x+3)^{5/2}\left(3x^2+5x+2\right)^{3/2}}+\frac{215096\sqrt{3x^2+5x+2}}{15625\sqrt{2x+3}}+\frac{258536\sqrt{3x^2+5x+2}}{3125(2x+3)^{3/2}}+\frac{87144\sqrt{3x^2+5x+2}}{625(2x+3)^{5/2}}+\frac{4}{25(2x}$$

Antiderivative was successfully verified.

```
[In] Int[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (-2*(37 + 47*x))/(5*(3 + 2*x)^(5/2)*(2 + 5*x + 3*x^2)^(3/2)) + (4*(1858 + 2
013*x))/(25*(3 + 2*x)^(5/2)*Sqrt[2 + 5*x + 3*x^2]) + (87144*Sqrt[2 + 5*x +
3*x^2])/(625*(3 + 2*x)^(5/2)) + (258536*Sqrt[2 + 5*x + 3*x^2])/(3125*(3 + 2
*x)^(3/2)) + (215096*Sqrt[2 + 5*x + 3*x^2])/(15625*Sqrt[3 + 2*x]) - (107548
*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*EllipticE[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3
])/(15625*Sqrt[2 + 5*x + 3*x^2]) + (129268*Sqrt[3]*Sqrt[-2 - 5*x - 3*x^2]*E
llipticF[ArcSin[Sqrt[3]*Sqrt[1 + x]], -2/3])/(3125*Sqrt[2 + 5*x + 3*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
```

```
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{5-x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{5/2}}\,dx = -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} - \frac{2}{15}\int \frac{1362+1269x}{(3+2x)^{7/2}\left(2+5x+3x^2\right)^{3/2}}\,dx$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{4}{75}\int \frac{}{(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

$$= -\frac{2(37+47x)}{5(3+2x)^{5/2}\left(2+5x+3x^2\right)^{3/2}} + \frac{4(1858+2013x)}{25(3+2x)^{5/2}\sqrt{2+5x+3x^2}} + \frac{87144\sqrt{2}}{625(3}$$

Mathematica [A] time = 0.51, size = 229, normalized size = 0.89

$$2\Bigg(3871728x^6 + 36155064x^5 + 129381052x^4 + 231620622x^3 + 220795962x^2 - 2(2x+3)^2\left(3x^2+5x+2\right)\Bigg(53774$$

Antiderivative was successfully verified.

```
[In] Integrate[(5 - x)/((3 + 2*x)^(7/2)*(2 + 5*x + 3*x^2)^(5/2)),x]
```

```
[Out] (2*(20514383 + 106756189*x + 220795962*x^2 + 231620622*x^3 + 129381052*x^4
+ 36155064*x^5 + 3871728*x^6 - 2*(3 + 2*x)^2*(2 + 5*x + 3*x^2)*(53774*(2 +
5*x + 3*x^2) + 26887*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(
2 + 3*x)/(3 + 2*x)]*EllipticE[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5] + 70064
*Sqrt[5]*Sqrt[(1 + x)/(3 + 2*x)]*(3 + 2*x)^(3/2)*Sqrt[(2 + 3*x)/(3 + 2*x)]*
EllipticF[ArcSin[Sqrt[5/3]/Sqrt[3 + 2*x]], 3/5])))/(15625*(3 + 2*x)^(5/2)*(
2 + 5*x + 3*x^2)^(3/2))
```

fricas [F] time = 0.76, size = 0, normalized size = 0.00

$$\mathrm{integral}\Bigg(-\frac{\sqrt{3\,x^2+5\,x+2}\,\sqrt{2\,x+3}\,(x-5)}{432\,x^{10}+4752\,x^9+23256\,x^8+66656\,x^7+123867\,x^6+155895\,x^5+134543\,x^4+78609\,x^3+29754}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="fricas")
```

```
[Out] integral(-sqrt(3*x^2 + 5*x + 2)*sqrt(2*x + 3)*(x - 5)/(432*x^10 + 4752*x^9
+ 23256*x^8 + 66656*x^7 + 123867*x^6 + 155895*x^5 + 134543*x^4 + 78609*x^3
+ 29754*x^2 + 6588*x + 648), x)
```

giac **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int -\frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="giac")
```

```
[Out] integrate(-(x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(7/2)), x)
```

maple **[B]** time = 0.03, size = 494, normalized size = 1.93

$$2\sqrt{3x^2+5x+2}\,\Big(19358640x^6+180775320x^5+322644\sqrt{15}\,\sqrt{-2x-2}\,\sqrt{-30x-20}\,\sqrt{2x+3}\,x^4\,\mathrm{EllipticE}\Big($$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((5-x)/(2*x+3)^(7/2)/(3*x^2+5*x+2)^(5/2),x)
```

```
[Out] 2/78125*(3*x^2+5*x+2)^(1/2)*(322644*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),
1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*(2*x+3)^(1/2)+1616376*15^
(1/2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^4*(-2*x-2)^(1/2)*(-30*x
-20)^(1/2)*(2*x+3)^(1/2)+1505672*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3
*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+7543088*15^(1/
2)*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^3*(2*x+3)^(1/2)*(-2*x-2)^(
1/2)*(-30*x-20)^(1/2)+2554265*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15
^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+12796310*15^(1/2)
*EllipticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x^2*(2*x+3)^(1/2)*(-2*x-2)^(1/
2)*(-30*x-20)^(1/2)+1855203*15^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(
1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)+9294162*15^(1/2)*Elli
pticF(1/5*(30*x+45)^(1/2),1/3*15^(1/2))*x*(2*x+3)^(1/2)*(-2*x-2)^(1/2)*(-30
*x-20)^(1/2)+19358640*x^6+483966*(2*x+3)^(1/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30
*x-20)^(1/2)*EllipticE(1/5*(30*x+45)^(1/2),1/3*15^(1/2))+2424564*(2*x+3)^(1
/2)*15^(1/2)*(-2*x-2)^(1/2)*(-30*x-20)^(1/2)*EllipticF(1/5*(30*x+45)^(1/2),
1/3*15^(1/2))+180775320*x^5+646905260*x^4+1158103110*x^3+1103979810*x^2+533
780945*x+102571915)/(2*x+3)^(5/2)/(3*x+2)^2/(x+1)^2
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$-\int \frac{x-5}{\left(3\,x^2+5\,x+2\right)^{\frac{5}{2}}(2\,x+3)^{\frac{7}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)^(7/2)/(3*x^2+5*x+2)^(5/2),x, algorithm="maxima")
```

```
[Out] -integrate((x - 5)/((3*x^2 + 5*x + 2)^(5/2)*(2*x + 3)^(7/2)), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$-\int \frac{x-5}{(2\,x+3)^{7/2}\,\left(3\,x^2+5\,x+2\right)^{5/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(-(x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(5/2)),x)
[Out] -int((x - 5)/((2*x + 3)^(7/2)*(5*x + 3*x^2 + 2)^(5/2)), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((5-x)/(3+2*x)**(7/2)/(3*x**2+5*x+2)**(5/2),x)
[Out] Timed out
```

3.2630 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=545

$$-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}(5Ace-4bBe+3Bcd)F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2}}{\sqrt{b^2-4a}}}}{\sqrt{2}}\right.\right.}{15c^3e\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] 2/5*B*(e*x+d)^(3/2)*(c*x^2+b*x+a)^(1/2)/c+2/15*(5*A*c*e-4*B*b*e+3*B*c*d)*(e
*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2+1/15*(10*A*c*e*(-b*e+2*c*d)+B*(3*c^2*d^
2+8*b^2*e^2-c*e*(9*a*e+13*b*d)))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-
4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*
x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^3/e/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-
e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/15*(5*A*c*e-4*B*b*e+3*B*c*d)*(a*e^2-b*d*
e+c*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1
/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2
))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x
+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^3/e/(e*x+d)^(1/2)/(c*x^2+b*x+
a)^(1/2)
```

Rubi [A] time = 0.78, antiderivative size = 545, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {832, 843, 718, 424, 419}

$$-\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}(5Ace-4bBe+3Bcd)F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2}}{\sqrt{b^2-4a}}}}{\sqrt{2}}\right.\right.}{15c^3e\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*(3*B*c*d - 4*b*B*e + 5*A*c*e)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])/(15*c
^2) + (2*B*(d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2])/(5*c) + (Sqrt[2]*Sqrt[b^2
 - 4*a*c]*(10*A*c*e*(2*c*d - b*e) + B*(3*c^2*d^2 + 8*b^2*e^2 - c*e*(13*b*d
+ 9*a*e)))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Ellip
ticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]
], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(15*c^3*e
*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x
^2]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(3*B*c*d - 4*b*B*e + 5*A*c*e)*(c*d^2 -
b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt
[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^
2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(
2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(15*c^3*e*Sqrt[d + e*x]*Sqrt[a + b*x +
 c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\sqrt{a+bx+cx^2}}\,dx = \frac{2B(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} + \frac{2\int \frac{\sqrt{d+ex}\left(\frac{1}{2}(-bBd+5Acd-3aBe)+\frac{1}{2}(3Bcd-4bBe+5Ace)x\right)}{\sqrt{a+bx+cx^2}}dx}{5c}$$

$$= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{2B(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} +$$

$$= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{2B(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} -$$

$$= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{2B(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} +$$

$$= \frac{2(3Bcd-4bBe+5Ace)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{15c^2} + \frac{2B(d+ex)^{3/2}\sqrt{a+bx+cx^2}}{5c} +$$

Mathematica [C] time = 10.58, size = 978, normalized size = 1.79

$$2\sqrt{cx^2+bx+a}\left(\left(10Ace(2cd-be)+B\left(3c^2d^2+8b^2e^2-ce(13bd+9ae)\right)\right)\left(c\left(\frac{d}{d+ex}-1\right)^2+\frac{e\left(-\frac{db}{d+ex}+b+\frac{ae}{d+ex}\right)}{d+ex}\right)-\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (Sqrt[d + e*x]*((2*(6*B*c*d - 4*b*B*e + 5*A*c*e))/(15*c^2) + (2*B*e*x)/(5*c
))*(a + b*x + c*x^2))/Sqrt[a + x*(b + c*x)] + (2*(d + e*x)^(3/2)*Sqrt[a + b
*x + c*x^2]*((10*A*c*e*(2*c*d - b*e) + B*(3*c^2*d^2 + 8*b^2*e^2 - c*e*(13*b
*d + 9*a*e)))*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d
+ e*x)))/(d + e*x)) - ((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*
d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*
d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((2*c*d -
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(10*A*c*e*(2*c*d - b*e) + B*(3*c^2*d^2 + 8*
b^2*e^2 - c*e*(13*b*d + 9*a*e)))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 -
 b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]],
-((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c
)*e^2]))] + (8*b^3*B*e^3 - b^2*e^2*(21*B*c*d + 10*A*c*e + 8*B*Sqrt[(b^2 - 4
*a*c)*e^2]) + c*(-3*B*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] + 3*a*B*e^2*(8*c*d + 3*
Sqrt[(b^2 - 4*a*c)*e^2]) - 10*A*c*e*(3*c*d^2 - a*e^2 + 2*d*Sqrt[(b^2 - 4*a*
c)*e^2])) + b*c*e*(10*A*e*(3*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + B*(15*c*d^2 -
```

```
 17*a*e^2 + 13*d*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*Sq
rt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[
d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(
b^2 - 4*a*c)*e^2]))]))/(Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b
*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[d + e*x])))/(15*c^3*e^2*Sqrt[a + x*(b +
 c*x)]*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x)
+ (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.81, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\left(Bex^2 + Ad + (Bd + Ae)x\right)\sqrt{ex + d}}{\sqrt{cx^2 + bx + a}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a
), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\sqrt{cx^2 + bx + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x + a), x)
```

maple [B] time = 0.15, size = 7523, normalized size = 13.80

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{3}{2}}}{\sqrt{cx^2 + bx + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,{(d + e\,x)}^{3/2}}{\sqrt{c\,x^2 + b\,x + a}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\,(d+ex)^{\frac{3}{2}}}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**(3/2)/sqrt(a + b*x + c*x**2), x)
```

3.2631 $\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=452

$$\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}(3Ace-2bBe+Bcd)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3c^2e\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-\quad 2\sqrt{2}B$$

```
[Out] 2/3*B*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c+1/3*(3*A*c*e-2*B*b*e+B*c*d)*Ellip
ticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-
2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4
*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^2/e/(
c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/3*B
*(a*e^2-b*d*e+c*d^2)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^
2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(
1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(
1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^2/e/(e*x+d)^(1/2)
/(c*x^2+b*x+a)^(1/2)
```

Rubi **[A]** time = 0.40, antiderivative size = 452, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {832, 843, 718, 424, 419}

$$\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}(3Ace-2bBe+Bcd)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3c^2e\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-\quad 2\sqrt{2}B$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*B*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])/(3*c) + (Sqrt[2]*Sqrt[b^2 - 4*a*c
]*(B*c*d - 2*b*B*e + 3*A*c*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b
^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^
2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a
*c])*e)])/(3*c^2*e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*
Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2]*B*Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*
e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a +
 b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c]
 + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b
 + Sqrt[b^2 - 4*a*c])*e)])/(3*c^2*e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx = \frac{2B\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{2\int \frac{\frac{1}{2}(-bBd+3Acd-aBe)+\frac{1}{2}(Bcd-2bBe+3Ace)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{3c}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{(Bcd-2bBe+3Ace)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{3ce} - \frac{\left(B\left(cd^2-bde\right.\right.}{}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{\left(\sqrt{2}\,\sqrt{b^2-4ac}\,(Bcd-2bBe+3Ace)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+b\right.}{b^2-}}\right.}{3c^2e\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-}}}}$$

$$= \frac{2B\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}{3c} + \frac{\sqrt{2}\,\sqrt{b^2-4ac}\,(Bcd-2bBe+3Ace)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx\right.}{b^2-4}}}{3c^2e\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right.}}}$$

Mathematica [C]   time = 7.12, size = 653, normalized size = 1.44

$$2\sqrt{d+ex}\left(Bc(a+x(b+cx))+\frac{(d+ex)\left(\frac{e^2(a+x(b+cx))(3Ace-2bBe+Bcd)}{(d+ex)^2}+\frac{i\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\sqrt{\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+be-2cd\right)}+1}\left(\left(-be\left(2B\right.\right.\right.}{}\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/Sqrt[a + b*x + c*x^2],x]
```

```
[Out] (2*Sqrt[d + e*x]*(B*c*(a + x*(b + c*x)) + ((d + e*x)*((e^2*(B*c*d - 2*b*B*e
 + 3*A*c*e)*(a + x*(b + c*x)))/(d + e*x)^2 + ((I/2)*Sqrt[1 - (2*(c*d^2 + e*
(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[
1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2]
)*(d + e*x))]*((-(B*c*d) + 2*b*B*e - 3*A*c*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*
a*c)*e^2])*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*
d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt
[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (2*b^2*B*e
^2 - b*e*(3*B*c*d + 3*A*c*e + 2*B*Sqrt[(b^2 - 4*a*c)*e^2]) + c*(-2*a*B*e^2
+ B*d*Sqrt[(b^2 - 4*a*c)*e^2] + 3*A*e*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2])))*E
llipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sq
rt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*
c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(Sqrt[2]*Sqrt[(c*d^2 +
 e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[d + e*x])
))/e^2))/(3*c^2*Sqrt[a + x*(b + c*x)])
```

fricas [F]   time = 0.71, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

giac [F]   time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

maple [B] time = 0.04, size = 3804, normalized size = 8.42

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] 1/3*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2*(6*A*2^(1/2)*(-c*(e*x+d)/(e*(-4*a
*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c
+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^
2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1
/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1
/2)-e*b+2*c*d))^(1/2))*a*c*e^3-6*A*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2
)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-
e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b
-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*
d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*
d))^(1/2))*b*c*d*e^2+6*A*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*
d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d)
)^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(
1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),
(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))
*c^2*d^2*e-6*A*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*
((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((
2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*Ellip
ticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a
*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*a*c*e^3+6
*A*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4
*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*
c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticE(2^(1/2)
*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2
)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b*c*d*e^2-6*A*2^(1/2)
*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^
(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/
2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticE(2^(1/2)*(-c*(e*x+
d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*
d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*c^2*d^2*e+B*2^(1/2)*(-c*(e*x+d)
/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(
e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(
-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*
c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*
c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*(-4*a*c+b^2)^(1/2)*a*e^3-B*2^(1/2)*(-c*(e*x
+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*
e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(
e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4
*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4
*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*(-4*a*c+b^2)^(1/2)*b*d*e^2+B*2^(1/2)*(-c
*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2
)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b
)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(
e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(
e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*(-4*a*c+b^2)^(1/2)*c*d^2*e-3*B*2^(1
/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^
2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^
(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e
*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2
*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*a*b*e^3+3*B*2^(1/2)*(-c*(e*x
+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*
e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(
e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4
*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4
*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b^2*d*e^2-3*B*2^(1/2)*(-c*(e*x+d)/(e*(-4
*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a
*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+
b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^
(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^
(1/2)-e*b+2*c*d))^(1/2))*b*c*d^2*e+4*B*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^
(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1
/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)
+e*b-2*c*d))^(1/2)*EllipticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-
2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+
2*c*d))^(1/2))*a*b*e^3-2*B*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*
c*d))^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*
d))^(1/2)*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))
^(1/2)*EllipticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2
),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2
))*a*c*d*e^2-4*B*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2
)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*
((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*Ell
ipticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4
*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b^2*d*e
^2+6*B*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x
+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-
4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticE(2^(
1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^
(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b*c*d^2*e-2*B*2^(
1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*((-2*c*x+(-4*a*c+b
^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2)*((2*c*x+(-4*a*c+b^2)
^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*EllipticE(2^(1/2)*(-c*(
e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-
2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*c^2*d^3+2*B*x^3*c^2*e^3+2*B
*x^2*b*c*e^3+2*B*x^2*c^2*d*e^2+2*B*x*a*c*e^3+2*B*x*b*c*d*e^2+2*B*a*c*d*e^2)
/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)/e^2
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\sqrt{cx^2+bx+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/sqrt(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(1/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(1/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/sqrt(a + b*x + c*x**2), x)
```

3.2632 $\int \frac{A+Bx}{\sqrt{d+ex}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=393

$$\frac{\sqrt{2}B\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{ce\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c(a+bx+c}{b^2-4a}}$$

```
[Out] B*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(
1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1
/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/
c/e/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-
2*(-A*e+B*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2)
)^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^
(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*
(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e/(e*x+d)^(1/2)/(c*x^2+b*
x+a)^(1/2)
```

Rubi **[A]** time = 0.21, antiderivative size = 393, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 4, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.138$, Rules used = {843, 718, 424, 419}

$$\frac{\sqrt{2}B\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c(a+bx+cx^2)}{b^2-4ac}}E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{ce\sqrt{a+bx+cx^2}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}-2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c(a+bx+c}{b^2-4a}}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[2]*B*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^
2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2
 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*
c])*e)])/(c*e*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[
a + b*x + c*x^2]) - (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(B*d - A*e)*Sqrt[(c*(d + e
*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2
 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2
- 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c
])*e)])/(c*e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx = \frac{B\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{e} + \frac{(-Bd+Ae)\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{e}$$

$$= \frac{\left(\sqrt{2}\,B\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)\text{Subst}\left(\int \frac{\sqrt{1+\frac{2\sqrt{b^2-4ac}\,ex^2}{2cd-be-\sqrt{b^2-4ac}\,e}}}{\sqrt{1-x^2}}\,dx, x, \right.}{ce\sqrt{\frac{c(d+ex)}{2cd-be-\sqrt{b^2-4ac}\,e}}\,\sqrt{a+bx+cx^2}}$$

$$= \frac{\sqrt{2}\,B\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+\sqrt{b^2-4ac}+2cx}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle| -\frac{2\sqrt{b^2-4}}{2cd-\left(b+\sqrt{b^2}\right.}\right.}{ce\sqrt{\frac{c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}}\,\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 5.20, size = 814, normalized size = 2.07

$$-\frac{(d+ex)^{3/2}\left(-\frac{4B\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}}}\,(a+x(b+cx))e^2}{(d+ex)^2}+\frac{i\sqrt{2}\,B\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)\sqrt{\frac{-2ae^2+2cdxe+b(d-ex)e+\sqrt{\left(b^2-4ac\right)e^2}\,(d+ex)}{\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)(d+ex)}}\,\sqrt{\frac{2ae^2-2c}{(-}}}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] -1/2*((d + e*x)^(3/2)*((-4*B*e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d +
b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c*x)))/(d + e*x)^2 + (I*Sqrt[2]
*B*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + 2*c*d*e*x + b*e
*(d - e*x) + Sqrt[(b^2 - 4*a*c)*e^2]*(d + e*x))/((2*c*d - b*e + Sqrt[(b^2 -
 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 - 2*c*d*e*x + b*e*(-d + e*x) + Sqrt
[(b^2 - 4*a*c)*e^2]*(d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d
 + e*x))]*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d
 + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[
(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]])/Sqrt[d + e*x
] - (I*Sqrt[2]*(-(b*B*e) + 2*A*c*e + B*Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*
e^2 + 2*c*d*e*x + b*e*(d - e*x) + Sqrt[(b^2 - 4*a*c)*e^2]*(d + e*x))/((2*c*
d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 - 2*c*d*e*x +
b*e*(-d + e*x) + Sqrt[(b^2 - 4*a*c)*e^2]*(d + e*x))/((-2*c*d + b*e + Sqrt[(
b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b
*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*
e^2]))]])/Sqrt[d + e*x]))/(c*e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b
*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 0.71, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{cex^3+(cd+be)x^2+ad+(bd+ae)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c*e*x^3 + (c*d + b*
e)*x^2 + a*d + (b*d + a*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

maple [B] time = 0.05, size = 1014, normalized size = 2.58

$$\left(-Ab\,e^2\,\text{EllipticF}\left(\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\,e}},\sqrt{-\frac{be-2cd+\sqrt{-4ac+b^2}\,e}{-be+2cd+\sqrt{-4ac+b^2}\,e}}\right)+2Acde\,\text{EllipticF}\left(\sqrt{2}\,\sqrt{-\frac{(ex+d)c}{be-2cd+\sqrt{-4ac+b^2}\,e}}\right.\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] (-A*(-4*a*c+b^2)^(1/2)*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+
e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-
e*b+2*c*d))^(1/2))*e^2-A*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2
)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2
)-e*b+2*c*d))^(1/2))*b*e^2+2*A*EllipticF(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2
)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2
)^(1/2)-e*b+2*c*d))^(1/2))*c*d*e+B*(-4*a*c+b^2)^(1/2)*EllipticF(2^(1/2)*(-c
*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2)+e*
b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*d*e+2*B*EllipticF(2^(1/2)
*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^(1/2
)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*a*e^2-B*EllipticF(2^(
1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c+b^2)^
(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b*d*e-2*B*Ellipti
cE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(-4*a*c
+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*a*e^2+2*B*E
llipticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),(-(e*(
-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))*b*d*e
-2*B*EllipticE(2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2),
(-(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d)/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(1/2))
*c*d^2)/c*((2*c*x+(-4*a*c+b^2)^(1/2)+b)*e/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))
^(1/2)*((-2*c*x+(-4*a*c+b^2)^(1/2)-b)*e/(e*(-4*a*c+b^2)^(1/2)-e*b+2*c*d))^(
1/2)*2^(1/2)*(-c*(e*x+d)/(e*(-4*a*c+b^2)^(1/2)+e*b-2*c*d))^(1/2)*(e*x+d)^(1
/2)*(c*x^2+b*x+a)^(1/2)/e^2/(c*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx + a}\,\sqrt{ex + d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{\sqrt{d + e\,x}\,\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{\sqrt{d + ex}\,\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/(sqrt(d + e*x)*sqrt(a + b*x + c*x**2)), x)
```

3.2633 $\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=460

$$-\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}+\frac{2\sqrt{a+bx+cx^2}\,(}{\sqrt{d+ex}\,(ae^2-b}$$

```
[Out] 2*(-A*e+B*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)-(-A*e+B*
d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^
(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(
1/2)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)
/e/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b
^2)^(1/2))))^(1/2)+2*B*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+
b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)
^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))
^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/e/(e*x+d)^(1/2)
/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.34, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {834, 843, 718, 424, 419}

$$-\frac{\sqrt{2}\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(Bd-Ae)E\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{e\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}}+\frac{2\sqrt{a+bx+cx^2}\,(}{\sqrt{d+ex}\,(ae^2-b}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[a + b*x + c*x^2])/((c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x
]) - (Sqrt[2]*Sqrt[b^2 - 4*a*c]*(B*d - A*e)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*
x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] +
2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b +
Sqrt[b^2 - 4*a*c])*e)])/(e*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*
d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*B*Sqrt[
b^2 - 4*a*c]*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-
((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2
- 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*
c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c*e*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2]
)
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx = \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{2\int \frac{\frac{1}{2}(bBd-Acd-aBe)+\frac{1}{2}c(Bd-Ae)x}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{cd^2-bde+ae^2}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} + \frac{B\int \frac{1}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{e} - \frac{(c(Bd-Ae))\int \frac{\sqrt{d-}}{\sqrt{a+b}}}{e\left(cd^2-bde+a\right.}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{\left(\sqrt{2}\,\sqrt{b^2-4ac}\,(Bd-Ae)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx\right.}{b^2-4ac}}\right.}{e\left(cd^2-bde+ae^2\right)\sqrt{\frac{-}{2}}}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{\left(cd^2-bde+ae^2\right)\sqrt{d+ex}} - \frac{\sqrt{2}\,\sqrt{b^2-4ac}\,(Bd-Ae)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right.}{b^2-4ac}}}{e\left(cd^2-bde+ae^2\right)\sqrt{\frac{}{2cd-(}}}$$

Mathematica [**C**] time = 4.50, size = 550, normalized size = 1.20

$$-\frac{i(d+ex)\sqrt{1-\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}-be+2cd\right)}}\sqrt{\frac{2\left(e(ae-bd)+cd^2\right)}{(d+ex)\left(\sqrt{e^2\left(b^2-4ac\right)}+be-2cd\right)}+1}\left(\left(-Ae\left(\sqrt{e^2\left(b^2-4ac\right)}+2cd\right)+Bd\sqrt{e^2\left(\right.}\right.\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] ((-I)*(d + e*x)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqr
t[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/(
(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((-(B*d) + A*e)*(2*c*d
 - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2
- b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]],
 -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*
c)*e^2]))] + (-2*a*B*e^2 + B*d*Sqrt[(b^2 - 4*a*c)*e^2] + b*e*(B*d + A*e) -
A*e*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c
*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e
*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 -
 4*a*c)*e^2]))]))/(Sqrt[2]*e^2*(c*d^2 + e*(-(b*d) + a*e))*Sqrt[(c*d^2 + e*(
-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[a + x*(b + c*
x)])
```

fricas [**F**] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{ce^2x^4+\left(2\,cde+be^2\right)x^3+ad^2+\left(cd^2+2\,bde+ae^2\right)x^2+\left(bd^2+2\,ade\right)x},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c*e^2*x^4 + (2*c*d*
e + b*e^2)*x^3 + a*d^2 + (c*d^2 + 2*b*d*e + a*e^2)*x^2 + (b*d^2 + 2*a*d*e)*
x), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

maple [**B**] time = 0.08, size = 3388, normalized size = 7.37

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] (2*A*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b
+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(
-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1
/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*e^3-2*A*2^(1/
2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b
^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2
)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x
+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/
2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d*e^2+2*A*2^(1/2)*(-(e*
x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2
))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))
/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-
b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^2*e-2*A*2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e
+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(
-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*
d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*e^3+2*A*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4
*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*
c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2
)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+
b^2)^(1/2)*e))^(1/2))*b*c*d*e^2-2*A*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*
e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/
2)*e))^(1/2))*c^2*d^2*e-B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2
),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/
2))*a*b*e^3-B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*(
(-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((
2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Ellip
ticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+
b^2)^(1/2)*a*e^3+B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1
/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/
2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*
EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2
*d*e^2-B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c
*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x
+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(
2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e+B*2
^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a
*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(1/2)*(-
(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)
^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/2)*b*d*
e^2-B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-
b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+
(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticF(2^(
1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*(-4*a*c+b^2)^(1/
2)*c*d^2*e+2*B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*
((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*(
(2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*Elli
pticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*
c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e
^2-2*B*2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x
-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b
+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^
(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d^2*e+2*B*2
^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a
*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*EllipticE(2^(1/2)*(-
(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)
^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^3-2*A*x^2*c^2*e^3
+2*B*x^2*c^2*d*e^2-2*A*x*b*c*e^3+2*B*x*b*c*d*e^2-2*A*a*c*e^3+2*B*a*c*d*e^2)
*(c*x^2+b*x+a)^(1/2)*(e*x+d)^(1/2)/e^2/c/(a*e^2-b*d*e+c*d^2)/(c*e*x^3+b*e*x
^2+c*d*x^2+a*e*x+b*d*x+a*d)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx + A}{\sqrt{cx^2 + bx + a}\,(ex + d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(3/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A + B\,x}{(d + e\,x)^{3/2}\,\sqrt{c\,x^2 + b\,x + a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^{\frac{3}{2}}\,\sqrt{a + bx + cx^2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**(3/2)*sqrt(a + b*x + c*x**2)), x)
```

3.2634 $\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}}\,dx$

Optimal. Leaf size=591

$$\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(Bd-Ae)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3e\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}+\sqrt{2}$$

```
[Out] 2/3*(-A*e+B*d)*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(3/2)-2/3*(2
*A*e*(-b*e+2*c*d)-B*(c*d^2+e*(-3*a*e+b*d)))*(c*x^2+b*x+a)^(1/2)/(a*e^2-b*d*
e+c*d^2)^2/(e*x+d)^(1/2)+1/3*(2*A*e*(-b*e+2*c*d)-B*(c*d^2+e*(-3*a*e+b*d)))*
EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/
2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2
)*(-4*a*c+b^2)^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/e/
(a*e^2-b*d*e+c*d^2)^2/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^
2)^(1/2))))^(1/2)+2/3*(-A*e+B*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-
4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-4*a*c+b^2)^(1/2)*(-c*(c*x^2+b*x+a)/(-4
*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/e/(a*e^
2-b*d*e+c*d^2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi **[A]** time = 0.62, antiderivative size = 587, normalized size of antiderivative = 0.99, number of steps used = 7, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {834, 843, 718, 424, 419}

$$\frac{2\sqrt{2}\sqrt{b^2-4ac}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(Bd-Ae)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)\middle|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{3e\sqrt{d+ex}\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\sqrt{2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (2*(B*d - A*e)*Sqrt[a + b*x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^
(3/2)) + (2*(B*c*d^2 + B*e*(b*d - 3*a*e) - 2*A*e*(2*c*d - b*e))*Sqrt[a + b*
x + c*x^2])/(3*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - (Sqrt[2]*Sqrt[b^2
 - 4*a*c]*(B*c*d^2 + B*e*(b*d - 3*a*e) - 2*A*e*(2*c*d - b*e))*Sqrt[d + e*x]
*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sq
rt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]
*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*e*(c*d^2 - b*d*e + a*e^2)^2*Sq
rt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]
) + (2*Sqrt[2]*Sqrt[b^2 - 4*a*c]*(B*d - A*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b
 + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*Elli
pticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2
]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(3*e*(c*
d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
```

```
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{5/2}\sqrt{a+bx+cx^2}}\,dx = \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} - \frac{2\int \frac{\frac{1}{2}(bBd-3Acd+2Abe-3aBe)-\frac{1}{2}c(Bd-Ae)x}{(d+ex)^{3/2}\sqrt{a+bx+cx^2}}\,dx}{3\left(cd^2-bde+ae^2\right)}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(Bcd^2+Be(bd-3ae)-2Ae(2cd-be)\right)}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(Bcd^2+Be(bd-3ae)-2Ae(2cd-be)\right)}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(Bcd^2+Be(bd-3ae)-2Ae(2cd-be)\right)}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

$$= \frac{2(Bd-Ae)\sqrt{a+bx+cx^2}}{3\left(cd^2-bde+ae^2\right)(d+ex)^{3/2}} + \frac{2\left(Bcd^2+Be(bd-3ae)-2Ae(2cd-be)\right)}{3\left(cd^2-bde+ae^2\right)^2\sqrt{d+ex}}$$

Mathematica [C] time = 9.68, size = 992, normalized size = 1.68

$$2\sqrt{cx^2+bx+a}\left(\frac{i\sqrt{1-\frac{2\left(cd^2+e(ae-bd)\right)}{\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)(d+ex)}}\sqrt{\frac{2\left(cd^2+e(ae-bd)\right)}{\left(-2cd+be+\sqrt{\left(b^2-4ac\right)e^2}\right)(d+ex)}+1}\left(\left(2cd-be+\sqrt{\left(b^2-4ac\right)e^2}\right)\left(Bcd^2+Be(bd-3ae)+2Ae(be-2c\right.\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(5/2)*Sqrt[a + b*x + c*x^2]),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)*((-2*(-(B*d) + A*e))/(3*(c*d^2 - b*d*e + a
*e^2)*(d + e*x)^2) - (2*(-(B*c*d^2) - b*B*d*e + 4*A*c*d*e - 2*A*b*e^2 + 3*a
*B*e^2))/(3*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x))))/Sqrt[a + x*(b + c*x)] +
(2*(d + e*x)^(3/2)*Sqrt[a + b*x + c*x^2]*(-((B*c*d^2 + B*e*(b*d - 3*a*e) +
2*A*e*(-2*c*d + b*e))*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (
a*e)/(d + e*x)))/(d + e*x))) + ((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)
))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2
+ e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*
((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(B*c*d^2 + B*e*(b*d - 3*a*e) + 2*A
*e*(-2*c*d + b*e))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2
)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] - (-
8*a*B*c*d*e^2 + B*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] - 3*a*B*e^2*Sqrt[(b^2 - 4*a
*c)*e^2] - b^2*e^2*(B*d + 2*A*e) + 2*A*c*e*(-3*c*d^2 + a*e^2 - 2*d*Sqrt[(b^
2 - 4*a*c)*e^2]) + b*e*(2*A*e*(3*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + B*(3*c*d^
2 + 3*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqr
t[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d
 + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b
^2 - 4*a*c)*e^2]))]))/(Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*
e + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[d + e*x])))/(3*e^2*(c*d^2 - b*d*e + a*e^
2)^2*Sqrt[a + x*(b + c*x)]*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(
b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.65, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{ce^3x^5+\left(3\,cde^2+be^3\right)x^4+ad^3+\left(3\,cd^2e+3\,bde^2+ae^3\right)x^3+\left(cd^3+3\,bd^2e+3\,ade^2\right)x^2+\left(bd^3+3\,ad^2e\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c*e^3*x^5 + (3*c*d*
e^2 + b*e^3)*x^4 + a*d^3 + (3*c*d^2*e + 3*b*d*e^2 + a*e^3)*x^3 + (c*d^3 + 3
*b*d^2*e + 3*a*d*e^2)*x^2 + (b*d^3 + 3*a*d^2*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

maple [B] time = 0.12, size = 11733, normalized size = 19.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\sqrt{cx^2+bx+a}\,(ex+d)^{\frac{5}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(5/2)/(c*x^2+b*x+a)^(1/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/(sqrt(c*x^2 + b*x + a)*(e*x + d)^(5/2)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^{5/2}\,\sqrt{c\,x^2+b\,x+a}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)^(1/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(5/2)*(a + b*x + c*x^2)^(1/2)), x)
```

sympy **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{A + Bx}{(d + ex)^{\frac{5}{2}} \sqrt{a + bx + cx^2}}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(5/2)/(c*x**2+b*x+a)**(1/2),x)
```

```
[Out] Integral((A + B*x)/((d + e*x)**(5/2)*sqrt(a + b*x + c*x**2)), x)
```

3.2635 $\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=678

$$-\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\left(2c(3Acd-5aBe)-3bc(Ae+Bd)+4b^2Be\right)F\Bigg(\sin^{-1}\Bigg(}{3c^3\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

```
[Out] 2*(e*x+d)^(3/2)*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c
*(A*c*d-B*a*e))*x)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+2/3*e*(4*b^2*B*e-3*b*
c*(A*e+B*d)+2*c*(3*A*c*d-5*B*a*e))*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c^2/(-
4*a*c+b^2)-1/3*(8*b^3*B*e^2-b^2*c*e*(6*A*e+13*B*d)-2*c^2*(-9*A*a*e^2+3*A*c*
d^2-20*B*a*d*e)+b*c*(6*A*c*d*e-29*B*a*e^2+3*B*c*d^2))*EllipticE(1/2*((b+2*c
*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)
^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(
c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c^3/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)
/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)-2/3*(a*e^2-b*d*e+c*d^2)
*(4*b^2*B*e-3*b*c*(A*e+B*d)+2*c*(3*A*c*d-5*B*a*e))*EllipticF(1/2*((b+2*c*x+
(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1
/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*
a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c^3/(-4*
a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 1.03, antiderivative size = 678, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.207$, Rules used = {818, 832, 843, 718, 424, 419}

$$-\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\left(2c(3Acd-5aBe)-3bc(Ae+Bd)+4b^2Be\right)F\Bigg(\sin^{-1}\Bigg(}{3c^3\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*(d + e*x)^(3/2)*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*
(B*d + A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^
2]) + (2*e*(4*b^2*B*e - 3*b*c*(B*d + A*e) + 2*c*(3*A*c*d - 5*a*B*e))*Sqrt[d
 + e*x]*Sqrt[a + b*x + c*x^2])/(3*c^2*(b^2 - 4*a*c)) - (Sqrt[2]*(8*b^3*B*e^
2 - b^2*c*e*(13*B*d + 6*A*e) - 2*c^2*(3*A*c*d^2 - 20*a*B*d*e - 9*a*A*e^2) +
 b*c*(3*B*c*d^2 + 6*A*c*d*e - 29*a*B*e^2))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x
 + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2
*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + S
qrt[b^2 - 4*a*c])*e)])/(3*c^3*Sqrt[b^2 - 4*a*c]*Sqrt[(c*(d + e*x))/(2*c*d -
 (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) - (2*Sqrt[2]*(c*d^2 - b
*d*e + a*e^2)*(4*b^2*B*e - 3*b*c*(B*d + A*e) + 2*c*(3*A*c*d - 5*a*B*e))*Sqr
t[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c
*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x
)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[
b^2 - 4*a*c])*e)])/(3*c^3*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[a + b*x + c*
x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 832

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[(g*(d + e*x)^m*(a + b*x + c*x^2)^(p +
1))/(c*(m + 2*p + 2)), x] + Dist[1/(c*(m + 2*p + 2)), Int[(d + e*x)^(m - 1)
*(a + b*x + c*x^2)^p*Simp[m*(c*d*f - a*e*g) + d*(2*c*f - b*g)*(p + 1) + (m*
(c*e*f + c*d*g - b*e*g) + e*(p + 1)*(2*c*f - b*g))*x, x], x], x] /; FreeQ[{
a, b, c, d, e, f, g, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a
*e^2, 0] && GtQ[m, 0] && NeQ[m + 2*p + 2, 0] && (IntegerQ[m] || IntegerQ[p]
 || IntegersQ[2*m, 2*p]) &&  !(IGtQ[m, 0] && EqQ[f, 0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{5/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2(d+ex)^{3/2}\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)^{3/2}\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)^{3/2}\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)^{3/2}\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2(d+ex)^{3/2}\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right)\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 12.43, size = 1287, normalized size = 1.90

$$\frac{\sqrt{d+ex}\left(\frac{2Be^2}{3c^2}+\frac{2\left(-Be^2xb^3-aBe^2b^2+Ace^2xb^2+2Bcdexb^2+Ac^2d^2b+aAce^2b+2aBcdeb-Bc^2d^2xb+3aBce^2xb-2Ac^2dexb-2aBc^2d^2+2a^2Bce^2-4aAc^2d\right.}{c^2\left(4ac-b^2\right)\left(cx^2+bx+a\right)}\right.}{(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^2*((2*B*e^2)/(3*c^2) + (2*(A*b*c^2*d^2 - 2
*a*B*c^2*d^2 + 2*a*b*B*c*d*e - 4*a*A*c^2*d*e - a*b^2*B*e^2 + a*A*b*c*e^2 +
2*a^2*B*c*e^2 - b*B*c^2*d^2*x + 2*A*c^3*d^2*x + 2*b^2*B*c*d*e*x - 2*A*b*c^2
*d*e*x - 4*a*B*c^2*d*e*x - b^3*B*e^2*x + A*b^2*c*e^2*x + 3*a*b*B*c*e^2*x -
2*a*A*c^2*e^2*x))/(c^2*(-b^2 + 4*a*c)*(a + b*x + c*x^2))))/(a + x*(b + c*x)
)^(3/2) + (2*(d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)*((8*b^3*B*e^2 - b^2*c*
e*(13*B*d + 6*A*e) + 2*c^2*(-3*A*c*d^2 + 20*a*B*d*e + 9*a*A*e^2) + b*c*(3*B
*c*d^2 + 6*A*c*d*e - 29*a*B*e^2))*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(
d + e*x) + (a*e)/(d + e*x)))/(d + e*x)) - ((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(
b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[1 +
 (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(
d + e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(8*b^3*B*e^2 - b^2*c*e*
(13*B*d + 6*A*e) + 2*c^2*(-3*A*c*d^2 + 20*a*B*d*e + 9*a*A*e^2) + b*c*(3*B*c
*d^2 + 6*A*c*d*e - 29*a*B*e^2))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 -
b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -
((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)
*e^2]))] + (8*b^4*B*e^3 - b^3*e^2*(21*B*c*d + 6*A*c*e + 8*B*Sqrt[(b^2 - 4*a
*c)*e^2]) + b*c*(-3*c*d*Sqrt[(b^2 - 4*a*c)*e^2]*(B*d + 2*A*e) + a*e^2*(84*B
*c*d + 24*A*c*e + 29*B*Sqrt[(b^2 - 4*a*c)*e^2])) + b^2*c*e*(6*A*e*(2*c*d +
Sqrt[(b^2 - 4*a*c)*e^2]) + B*(15*c*d^2 - 37*a*e^2 + 13*d*Sqrt[(b^2 - 4*a*c)
*e^2])) + 2*c^2*(10*a^2*B*e^3 + 3*A*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2] - a*e*(10
*B*d*(3*c*d + 2*Sqrt[(b^2 - 4*a*c)*e^2]) + 3*A*e*(8*c*d + 3*Sqrt[(b^2 - 4*a
*c)*e^2]))))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*
c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sq
rt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/(Sqrt[2]
*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])]*
Sqrt[d + e*x])))/(3*c^3*(-b^2 + 4*a*c)*e*(a + x*(b + c*x))^(3/2)*Sqrt[((d +
 e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)
))/(d + e*x)))/e^2])
```

fricas [F] time = 0.75, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Be^{2}x^{3} + Ad^{2} + \left(2\,Bde + Ae^{2}\right)x^{2} + \left(Bd^{2} + 2\,Ade\right)x\right)\sqrt{cx^{2} + bx + a}\,\sqrt{ex + d}}{c^{2}x^{4} + 2\,bcx^{3} + 2\,abx + \left(b^{2} + 2\,ac\right)x^{2} + a^{2}}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e^2*x^3 + A*d^2 + (2*B*d*e + A*e^2)*x^2 + (B*d^2 + 2*A*d*e)*x)*
sqrt(c*x^2 + b*x + a)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 +
 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(cx^{2} + bx + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.13, size = 10385, normalized size = 15.32

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^{\frac{5}{2}}}{\left(cx^{2} + bx + a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(5/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(5/2)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+Bx)\,(d+ex)^{5/2}}{\left(cx^2+bx+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(5/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(5/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2636 $\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=530

$$\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(bB-2Ac)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)}\right.}{c^2\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

```
[Out] 2*(2*a*c*(A*e+B*d)-b*(A*c*d+B*a*e)-(b^2*B*e-b*c*(A*e+B*d)+2*c*(A*c*d-B*a*e)
)*x)*(e*x+d)^(1/2)/c/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2)+(2*A*c^2*d+2*b^2*B*e-
c*(A*b*e+6*B*a*e+B*b*d))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*
c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^
2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1
/2)/c^2/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a
*c+b^2)^(1/2))))^(1/2)+2*(-2*A*c+B*b)*(a*e^2-b*d*e+c*d^2)*EllipticF(1/2*((b
+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+
b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+
a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c
^2/(-4*a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.51, antiderivative size = 530, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {818, 843, 718, 424, 419}

$$\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,(bB-2Ac)\left(ae^2-bde+cd^2\right)\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,F\left(\sin^{-1}\left(\frac{\sqrt{\frac{b+2cx+\sqrt{b^2-4ac}}{\sqrt{b^2-4ac}}}}{\sqrt{2}}\right)|-\frac{2\sqrt{b^2-4ac}\,e}{2cd-\left(b+\sqrt{b^2-4ac}\right)}\right.}{c^2\sqrt{b^2-4ac}\,\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(2*a*c*(B*d + A*e) - b*(A*c*d + a*B*e) - (b^2*B*e - b*c*(B
*d + A*e) + 2*c*(A*c*d - a*B*e))*x))/(c*(b^2 - 4*a*c)*Sqrt[a + b*x + c*x^2]
) + (Sqrt[2]*(2*A*c^2*d + 2*b^2*B*e - c*(b*B*d + A*b*e + 6*a*B*e))*Sqrt[d +
 e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b
 + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4
*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c^2*Sqrt[b^2 - 4*a*c]*Sqrt[
(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) +
 (2*Sqrt[2]*(b*B - 2*A*c)*(c*d^2 - b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d
 - (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]
*EllipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/S
qrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c^
2*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 818

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((d + e*x)^(m - 1)*(a + b*x + c*x^2)^
(p + 1)*(2*a*c*(e*f + d*g) - b*(c*d*f + a*e*g) - (2*c^2*d*f + b^2*e*g - c*(
b*e*f + b*d*g + 2*a*e*g))*x))/(c*(p + 1)*(b^2 - 4*a*c)), x] - Dist[1/(c*(p
+ 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 2)*(a + b*x + c*x^2)^(p + 1)*Simp[2
*c^2*d^2*f*(2*p + 3) + b*e*g*(a*e*(m - 1) + b*d*(p + 2)) - c*(2*a*e*(e*f*(m
 - 1) + d*g*m) + b*d*(d*g*(2*p + 3) - e*f*(m - 2*p - 4))) + e*(b^2*e*g*(m +
 p + 1) + 2*c^2*d*f*(m + 2*p + 2) - c*(2*a*e*g*m + b*(e*f + d*g)*(m + 2*p +
 2)))*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c,
0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 1] && ((EqQ[m,
2] && EqQ[p, -3] && RationalQ[a, b, c, d, e, f, g]) ||  !ILtQ[m + 2*p + 3,
0])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^{3/2}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\sqrt{d+ex}\,\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\left(2ac(Bd+Ae)-b(Acd+aBe)-\left(b^2Be-bc(Bd+Ae)+2c(Acd-aBe)\right.\right.}{c\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}$$

Mathematica **[C]** time = 9.70, size = 932, normalized size = 1.76

$$2(d$$

$$\frac{2\sqrt{d+ex}\,\left(Bexb^2+Acdb+aBeb-Bcdxb-Acexb-2aBcd-2aAce+2Ac^2dx-2aBcex\right)\left(cx^2+bx+a\right)}{c\left(4ac-b^2\right)(a+x(b+cx))^{3/2}}-$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (2*Sqrt[d + e*x]*(A*b*c*d - 2*a*B*c*d + a*b*B*e - 2*a*A*c*e - b*B*c*d*x + 2
*A*c^2*d*x + b^2*B*e*x - A*b*c*e*x - 2*a*B*c*e*x)*(a + b*x + c*x^2))/(c*(-b
^2 + 4*a*c)*(a + x*(b + c*x))^(3/2)) - (2*(d + e*x)^(3/2)*(a + b*x + c*x^2)
^(3/2)*(-((b*B*c*d - 2*A*c^2*d - 2*b^2*B*e + A*b*c*e + 6*a*B*c*e)*(c*(-1 +
d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x))) -
((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d +
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a
*c)*e^2])*(2*b^2*B*e - b*c*(B*d + A*e) + 2*c*(A*c*d - 3*a*B*e))*EllipticE[I
*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 -
4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(
2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))] + (2*b^3*B*e^2 - b^2*e*(3*B*c*d +
A*c*e + 2*B*Sqrt[(b^2 - 4*a*c)*e^2]) + b*c*(-8*a*B*e^2 + Sqrt[(b^2 - 4*a*c)
*e^2]*(B*d + A*e)) + 2*c*(-(A*c*d*Sqrt[(b^2 - 4*a*c)*e^2]) + a*e*(6*B*c*d +
 2*A*c*e + 3*B*Sqrt[(b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt
[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d
+ e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^
2 - 4*a*c)*e^2]))]))/(Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e
 + Sqrt[(b^2 - 4*a*c)*e^2])]*Sqrt[d + e*x])))/(c^2*(-b^2 + 4*a*c)*e*(a + x*
(b + c*x))^(3/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)/
(d + e*x) + (a*e)/(d + e*x))))/(d + e*x)))/e^2])
```

fricas [F] time = 0.74, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{\left(Bex^{2}+Ad+(Bd+Ae)x\right)\sqrt{cx^{2}+bx+a}\,\sqrt{ex+d}}{c^{2}x^{4}+2\,bcx^{3}+2\,abx+\left(b^{2}+2\,ac\right)x^{2}+a^{2}},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral((B*e*x^2 + A*d + (B*d + A*e)*x)*sqrt(c*x^2 + b*x + a)*sqrt(e*x + d
)/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.09, size = 5490, normalized size = 10.36

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{\frac{3}{2}}}{\left(cx^{2}+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(3/2)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,{(d+e\,x)}^{3/2}}{{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(3/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(3/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2637 $\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=460

$$-\frac{2\sqrt{d+ex}\,(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,(-2aBe+Abe-2Acd+bBd)F\left(\mathrm{s}\right.}{c\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+c}}$$

```
[Out] -2*(A*b-2*a*B-(-2*A*c+B*b)*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/(c*x^2+b*x+a)^(1/2
)-(-2*A*c+B*b)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/
2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2)))
)^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/c/(-4*
a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2
))))^(1/2)+2*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*EllipticF(1/2*((b+2*c*x+(-4*a*c+
b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c
*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2)
)^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/(-4*a*c+b^2)^(
1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.38, antiderivative size = 460, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.172, Rules used = {820, 843, 718, 424, 419}

$$-\frac{2\sqrt{d+ex}\,(-2aB-x(bB-2Ac)+Ab)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}}+\frac{2\sqrt{2}\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\sqrt{\frac{c(d+ex)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}}\,(-2aBe+Abe-2Acd+bBd)F\left(\mathrm{s}\right.}{c\sqrt{b^2-4ac}\sqrt{d+ex}\sqrt{a+bx+c}}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (-2*(A*b - 2*a*B - (b*B - 2*A*c)*x)*Sqrt[d + e*x])/((b^2 - 4*a*c)*Sqrt[a +
b*x + c*x^2]) - (Sqrt[2]*(b*B - 2*A*c)*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c
*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x
)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[
b^2 - 4*a*c])*e)])/(c*Sqrt[b^2 - 4*a*c]*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*(b*B*d - 2*A*c*d +
 A*b*e - 2*a*B*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*S
qrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt
[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e
)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c*Sqrt[b^2 - 4*a*c]*Sqrt[d + e*x]*
Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 820

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^m*(a + b*x + c*x^2)^(p + 1)*
(f*b - 2*a*g + (2*c*f - b*g)*x))/((p + 1)*(b^2 - 4*a*c)), x] + Dist[1/((p +
 1)*(b^2 - 4*a*c)), Int[(d + e*x)^(m - 1)*(a + b*x + c*x^2)^(p + 1)*Simp[g*
(2*a*e*m + b*d*(2*p + 3)) - f*(b*e*m + 2*c*d*(2*p + 3)) - e*(2*c*f - b*g)*(
m + 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1] && GtQ[m, 0] && (I
ntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{3/2}}\,dx = -\frac{2(Ab-2aB-(bB-2Ac)x)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{2\int \frac{-\frac{1}{2}(Ab-2aB)e+\frac{1}{2}(bB-2Ac)ex}{\sqrt{d+ex}\,\sqrt{a+bx+cx^2}}\,dx}{b^2-4ac}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{(bB-2Ac)\int \frac{\sqrt{d+ex}}{\sqrt{a+bx+cx^2}}\,dx}{b^2-4ac} + (bBd-2Ac$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{\left(\sqrt{2}\,(bB-2Ac)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\right)S}{c\sqrt{b^2-4ac}\,\sqrt{\frac{c(}{2cd-be}}}$$

$$= -\frac{2(Ab-2aB-(bB-2Ac)x)\sqrt{d+ex}}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}} - \frac{\sqrt{2}\,(bB-2Ac)\sqrt{d+ex}\,\sqrt{-\frac{c\left(a+bx+cx^2\right)}{b^2-4ac}}\,E\left(s\right.}{c\sqrt{b^2-4ac}\,\sqrt{\frac{c(d+e}{2cd-\left(b+\sqrt{b}\right.}}}$$

Mathematica [C] time = 9.05, size = 962, normalized size = 2.09

$$\sqrt{d+ex}\left(\frac{4(B(2a+bx)-A(b+2cx))}{b^2-4ac}+\frac{(d+ex)\left(\frac{4(bB-2Ac)\sqrt{\frac{cd^2+e(ae-bd)}{-2cd+be+\sqrt{(b^2-4ac)e^2}}}\,(a+x(b+cx))e^2}{(d+ex)^2}-\frac{i\sqrt{2}\,(bB-2Ac)\left(2cd-be+\sqrt{(b^2-4ac)e^2}\right)\sqrt{\frac{-2ae^2+2cdxe+\sqrt{(b^2-4}}{\left(2cd-be+\right.}}}{}\right.}{}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*Sqrt[d + e*x])/(a + b*x + c*x^2)^(3/2),x]
```

```
[Out] (Sqrt[d + e*x]*((4*(B*(2*a + b*x) - A*(b + 2*c*x)))/(b^2 - 4*a*c) + ((d + e
*x)*((4*(b*B - 2*A*c)*e^2*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + S
qrt[(b^2 - 4*a*c)*e^2])]*(a + x*(b + c*x)))/(d + e*x)^2 - (I*Sqrt[2]*(b*B -
 2*A*c)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*Sqrt[(-2*a*e^2 + d*Sqrt[(b^
2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(d - e*x))/
((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*Sqrt[(2*a*e^2 + d*Sqrt
[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)*e^2]*x + b*e*(-d + e
*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*EllipticE[I*ArcS
inh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c
)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d
 - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x] - (I*Sqrt[2]*(b^2*B*e -
4*a*B*c*e - b*B*Sqrt[(b^2 - 4*a*c)*e^2] + 2*A*c*Sqrt[(b^2 - 4*a*c)*e^2])*Sq
rt[(-2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] + 2*c*d*e*x + e*Sqrt[(b^2 - 4*a*c)
*e^2]*x + b*e*(d - e*x))/((2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x)
)]*Sqrt[(2*a*e^2 + d*Sqrt[(b^2 - 4*a*c)*e^2] - 2*c*d*e*x + e*Sqrt[(b^2 - 4*
a*c)*e^2]*x + b*e*(-d + e*x))/((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d
+ e*x))]*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d
+ b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d + b*e + Sqrt[(
b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))])/Sqrt[d + e*x]
))/(c*(-b^2 + 4*a*c)*e*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt
[(b^2 - 4*a*c)*e^2])])))/(2*Sqrt[a + x*(b + c*x)])
```

fricas [F] time = 1.03, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c^2*x^4 + 2*b*c*x^3
 + 2*a*b*x + (b^2 + 2*a*c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int\frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(3/2), x)
```

maple [B] time = 0.09, size = 3171, normalized size = 6.89

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] (-4*A*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*
c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*
e))^(1/2))*a*c*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2
*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c
*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+A*2^(1/2
)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b
^2*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a
*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c
+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+A*2^(1/2)*EllipticF(
2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-
4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*e^2*(-4*a*c
+b^2)^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+
(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-
4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-2*A*2^(1/2)*Ell
ipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2
*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c*d*e*
(-4*a*c+b^2)^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2
*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c
*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+4*A*2^(1
/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(
-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))
*a*c*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4
*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a
*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-4*A*2^(1/2)*Ellipt
icE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*
d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b*c*d*e*(
-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^
(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1
/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+4*A*2^(1/2)*EllipticE(2^(1/2
)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+
b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*c^2*d^2*(-(e*x+d)/(
b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b
*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-
2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+4*B*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d
)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)
*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*c*d*e*(-(e*x+d)/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*e)^(1/2)-2*B*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+
2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*e^2*(-4*a*c+b^2)^(1/2)*(-(e*x+d)/(b*e
-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+
2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)-B*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*
e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(
-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e*(-(e*x+d)/(b*e-2*c*d+(-4*a
*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*
c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b
^2)^(1/2)*e)*e)^(1/2)+B*2^(1/2)*EllipticF(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e))^(1/2))*b*d*e*(-4*a*c+b^2)^(1/2)*(-(e*x+d)/(b*e-2*c*d+
(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(
-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*
a*c+b^2)^(1/2)*e)*e)^(1/2)-2*B*2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c
*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+
2*c*d+(-4*a*c+b^2)^(1/2)*e))^(1/2))*a*b*e^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^
2)^(1/2)*e)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2
)^(1/2)*e)*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(
1/2)*e)*e)^(1/2)+2*B*2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c
+b^2)^(1/2)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*
a*c+b^2)^(1/2)*e))^(1/2))*b^2*d*e*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e
)*c)^(1/2)*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)
*e)^(1/2)*((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)
^(1/2)-2*B*2^(1/2)*EllipticE(2^(1/2)*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2
)*e)*c)^(1/2),(-(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)/(-b*e+2*c*d+(-4*a*c+b^2)^(
1/2)*e))^(1/2))*b*c*d^2*(-(e*x+d)/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*c)^(1/2)
*((-2*c*x-b+(-4*a*c+b^2)^(1/2))/(-b*e+2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)*
((2*c*x+b+(-4*a*c+b^2)^(1/2))/(b*e-2*c*d+(-4*a*c+b^2)^(1/2)*e)*e)^(1/2)+4*A
*x^2*c^2*e^2-2*B*x^2*b*c*e^2+2*A*x*b*c*e^2+4*A*x*c^2*d*e-4*B*x*a*c*e^2-2*B*
x*b*c*d*e+2*A*b*c*d*e-4*B*a*c*d*e)*(e*x+d)^(1/2)*(c*x^2+b*x+a)^(1/2)/c/e/(c
*e*x^3+b*e*x^2+c*d*x^2+a*e*x+b*d*x+a*d)/(4*a*c-b^2)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\sqrt{ex+d}}{\left(cx^2+bx+a\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*sqrt(e*x + d)/(c*x^2 + b*x + a)^(3/2), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,\sqrt{d+e\,x}}{\left(c\,x^2+b\,x+a\right)^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(3/2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(1/2))/(a + b*x + c*x^2)^(3/2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A+Bx)\sqrt{d+ex}}{\left(a+bx+cx^2\right)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Integral((A + B*x)*sqrt(d + e*x)/(a + b*x + c*x**2)**(3/2), x)
```

3.2638 $\int \frac{A+Bx}{\sqrt{d+ex}\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=528

$$\frac{2\sqrt{d+ex}\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{d+ex}\sqrt{-\frac{c(a+}{b^2}}}{}$$

```
[Out] 2*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)
*x)*(e*x+d)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)^(1/2)-(A*b
*e-2*A*c*d-2*B*a*e+B*b*d)*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a
*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b
^2)^(1/2))))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(
1/2)/(a*e^2-b*d*e+c*d^2)/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/
(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2*(-2*A*c+B*b)*EllipticF(1/2*((b+2*
c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2
)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^2+b*x+a)/
(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2)/c/(-
4*a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)
```

Rubi [A] time = 0.40, antiderivative size = 528, normalized size of antiderivative = 1.00, number of steps used = 6, number of rules used = 5, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}} = 0.172$, Rules used = {822, 843, 718, 424, 419}

$$\frac{2\sqrt{d+ex}\left(-A\left(2ace+b^2(-e)+bcd\right)+cx(-2aBe+Abe-2Acd+bBd)+aB(2cd-be)\right)}{\left(b^2-4ac\right)\sqrt{a+bx+cx^2}\left(ae^2-bde+cd^2\right)}-\frac{\sqrt{2}\sqrt{d+ex}\sqrt{-\frac{c(a+}{b^2}}}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*Sqrt[d + e*x]*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*
d - 2*A*c*d + A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*S
qrt[a + b*x + c*x^2]) - (Sqrt[2]*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*Sqrt[d
 + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticE[ArcSin[Sqrt[
(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 -
 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(Sqrt[b^2 - 4*a*c]*(c*d^2
- b*d*e + a*e^2)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*Sq
rt[a + b*x + c*x^2]) + (2*Sqrt[2]*(b*B - 2*A*c)*Sqrt[(c*(d + e*x))/(2*c*d -
 (b + Sqrt[b^2 - 4*a*c])*e)]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*E
llipticF[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqr
t[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(c*Sq
rt[b^2 - 4*a*c]*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{\sqrt{d+ex}\,\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\sqrt{d+ex}\,\big(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\big(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\big(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}$$

$$= \frac{2\sqrt{d+ex}\,\big(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{a+bx+cx^2}}$$

Mathematica [C] time = 9.00, size = 893, normalized size = 1.69

2(

$$\frac{2\sqrt{d+ex}\,\left(-Aeb^2+Acdb+aBeb-Bcdxb-Acexb-2aBcd+2aAce+2Ac^2dx+2aBcex\right)\left(cx^2+bx+a\right)}{\left(4ac-b^2\right)\left(cd^2-bed+ae^2\right)(a+x(b+cx))^{3/2}} -$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/(Sqrt[d + e*x]*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*Sqrt[d + e*x]*(A*b*c*d - 2*a*B*c*d - A*b^2*e + a*b*B*e + 2*a*A*c*e - b*B
*c*d*x + 2*A*c^2*d*x - A*b*c*e*x + 2*a*B*c*e*x)*(a + b*x + c*x^2))/((-b^2 +
 4*a*c)*(c*d^2 - b*d*e + a*e^2)*(a + x*(b + c*x))^(3/2)) - (2*(d + e*x)^(3/
2)*(a + b*x + c*x^2)^(3/2)*(-((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(c*(-1 +
d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x))) +
((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d +
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((b*B*d - 2*A*c*d + A*b*e - 2*a
*B*e)*(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])*EllipticE[I*ArcSinh[(Sqrt[2]*
Sqrt[(c*d^2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqr
t[d + e*x]], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt
[(b^2 - 4*a*c)*e^2]))] - (-2*A*c*d*Sqrt[(b^2 - 4*a*c)*e^2] + b^2*e*(B*d - A
*e) + b*Sqrt[(b^2 - 4*a*c)*e^2]*(B*d + A*e) - 2*a*e*(2*B*c*d - 2*A*c*e + B*
Sqrt[(b^2 - 4*a*c)*e^2]))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e
+ a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c
*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2])
)]))/(Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4
*a*c)*e^2])]*Sqrt[d + e*x])))/((-b^2 + 4*a*c)*e*(c*d^2 - b*d*e + a*e^2)*(a
+ x*(b + c*x))^(3/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b
*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.84, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{c^2ex^5+\left(c^2d+2\,bce\right)x^4+\left(2\,bcd+\left(b^2+2\,ac\right)e\right)x^3+a^2d+\left(2\,abe+\left(b^2+2\,ac\right)d\right)x^2+\left(2\,abd+a^2e\right)x},x\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c^2*e*x^5 + (c^2*d
+ 2*b*c*e)*x^4 + (2*b*c*d + (b^2 + 2*a*c)*e)*x^3 + a^2*d + (2*a*b*e + (b^2
+ 2*a*c)*d)*x^2 + (2*a*b*d + a^2*e)*x), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx+a\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x + a)^(3/2)*sqrt(e*x + d)), x)
```

maple [B] time = 0.10, size = 5059, normalized size = 9.58

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx+a\right)^{\frac{3}{2}}\sqrt{ex+d}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x + a)^(3/2)*sqrt(e*x + d)), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{\sqrt{d+e\,x}\,{\left(c\,x^2+b\,x+a\right)}^{3/2}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(1/2)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(1/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2639 $\int \frac{A+Bx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}}\,dx$

Optimal. Leaf size=705

$$\frac{2e\sqrt{a+bx+cx^2}\,\left(b\left(aBe^2+2Acde+Bcd^2\right)-2c\left(-3aAe^2+4aBde+Acd^2\right)+b^2e(Bd-2Ae)\right)}{\left(b^2-4ac\right)\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}+\frac{2(-A(2ace+b^2}{(b^2}$$

```
[Out] 2*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)
*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/2)+2*e*
(b^2*e*(-2*A*e+B*d)-2*c*(-3*A*a*e^2+A*c*d^2+4*B*a*d*e)+b*(2*A*c*d*e+B*a*e^2
+B*c*d^2))*(c*x^2+b*x+a)^(1/2)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)^2/(e*x+d)^(
1/2)-(b^2*e*(-2*A*e+B*d)-2*c*(-3*A*a*e^2+A*c*d^2+4*B*a*d*e)+b*(2*A*c*d*e+B*
a*e^2+B*c*d^2))*EllipticE(1/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1
/2))^(1/2)*2^(1/2),(-2*e*(-4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))
))^(1/2))*2^(1/2)*(e*x+d)^(1/2)*(-c*(c*x^2+b*x+a)/(-4*a*c+b^2))^(1/2)/(a*e^
2-b*d*e+c*d^2)^2/(-4*a*c+b^2)^(1/2)/(c*x^2+b*x+a)^(1/2)/(c*(e*x+d)/(2*c*d-e
*(b+(-4*a*c+b^2)^(1/2))))^(1/2)+2*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*EllipticF(1
/2*((b+2*c*x+(-4*a*c+b^2)^(1/2))/(-4*a*c+b^2)^(1/2))^(1/2)*2^(1/2),(-2*e*(-
4*a*c+b^2)^(1/2)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(1/2))*2^(1/2)*(-c*(c*x^
2+b*x+a)/(-4*a*c+b^2))^(1/2)*(c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^(
1/2)/(a*e^2-b*d*e+c*d^2)/(-4*a*c+b^2)^(1/2)/(e*x+d)^(1/2)/(c*x^2+b*x+a)^(1/
2)
```

Rubi [A] time = 0.85, antiderivative size = 705, normalized size of antiderivative = 1.00, number of steps used = 7, number of rules used = 6, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.207, Rules used = {822, 834, 843, 718, 424, 419}

$$\frac{2e\sqrt{a+bx+cx^2}\,\left(b\left(aBe^2+2Acde+Bcd^2\right)-2c\left(-3aAe^2+4aBde+Acd^2\right)+b^2e(Bd-2Ae)\right)}{\left(b^2-4ac\right)\sqrt{d+ex}\,\left(ae^2-bde+cd^2\right)^2}+\frac{2(-A(2ace+b^2}{(b^2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (2*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*B*d - 2*A*c*d +
A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)*Sqrt[d + e*x]*S
qrt[a + b*x + c*x^2]) + (2*e*(b^2*e*(B*d - 2*A*e) - 2*c*(A*c*d^2 + 4*a*B*d*
e - 3*a*A*e^2) + b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*Sqrt[a + b*x + c*x^2])/
((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[d + e*x]) - (Sqrt[2]*(b^2*e*(
B*d - 2*A*e) - 2*c*(A*c*d^2 + 4*a*B*d*e - 3*a*A*e^2) + b*(B*c*d^2 + 2*A*c*d
*e + a*B*e^2))*Sqrt[d + e*x]*Sqrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*E
llipticE[ArcSin[Sqrt[(b + Sqrt[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqr
t[2]], (-2*Sqrt[b^2 - 4*a*c]*e)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(Sqrt
[b^2 - 4*a*c]*(c*d^2 - b*d*e + a*e^2)^2*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)]*Sqrt[a + b*x + c*x^2]) + (2*Sqrt[2]*(b*B*d - 2*A*c*d +
 A*b*e - 2*a*B*e)*Sqrt[(c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)]*S
qrt[-((c*(a + b*x + c*x^2))/(b^2 - 4*a*c))]*EllipticF[ArcSin[Sqrt[(b + Sqrt
[b^2 - 4*a*c] + 2*c*x)/Sqrt[b^2 - 4*a*c]]/Sqrt[2]], (-2*Sqrt[b^2 - 4*a*c]*e
)/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/(Sqrt[b^2 - 4*a*c]*(c*d^2 - b*d*e +
 a*e^2)*Sqrt[d + e*x]*Sqrt[a + b*x + c*x^2])
```

Rule 419

```
Int[1/(Sqrt[(a_) + (b_.)*(x_)^2]*Sqrt[(c_) + (d_.)*(x_)^2]), x_Symbol] :> S
imp[(1*EllipticF[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[a]*Sqrt[c]*Rt
[-(d/c), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ
[a, 0] &&  !(NegQ[b/a] && SimplerSqrtQ[-(b/a), -(d/c)])
```

Rule 424

```
Int[Sqrt[(a_) + (b_.)*(x_)^2]/Sqrt[(c_) + (d_.)*(x_)^2], x_Symbol] :> Simp[
(Sqrt[a]*EllipticE[ArcSin[Rt[-(d/c), 2]*x], (b*c)/(a*d)])/(Sqrt[c]*Rt[-(d/c
), 2]), x] /; FreeQ[{a, b, c, d}, x] && NegQ[d/c] && GtQ[c, 0] && GtQ[a, 0]
```

Rule 718

```
Int[((d_.) + (e_.)*(x_))^(m_)/Sqrt[(a_.) + (b_.)*(x_) + (c_.)*(x_)^2], x_Sy
mbol] :> Dist[(2*Rt[b^2 - 4*a*c, 2]*(d + e*x)^m*Sqrt[-((c*(a + b*x + c*x^2)
)/(b^2 - 4*a*c))])/(c*Sqrt[a + b*x + c*x^2]*((2*c*(d + e*x))/(2*c*d - b*e -
 e*Rt[b^2 - 4*a*c, 2]))^m), Subst[Int[(1 + (2*e*Rt[b^2 - 4*a*c, 2]*x^2)/(2*
c*d - b*e - e*Rt[b^2 - 4*a*c, 2]))^m/Sqrt[1 - x^2], x], x, Sqrt[(b + Rt[b^2
 - 4*a*c, 2] + 2*c*x)/(2*Rt[b^2 - 4*a*c, 2])]], x] /; FreeQ[{a, b, c, d, e}
, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && NeQ[2*c*d -
 b*e, 0] && EqQ[m^2, 1/4]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 834

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^(p + 1))/((m + 1)*(c*d^2 - b*d*e + a*e^2)), x] + Dist[1/((m + 1)
*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m + 1)*(a + b*x + c*x^2)^p*Simp[(
c*d*f - f*b*e + a*e*g)*(m + 1) + b*(d*g - e*f)*(p + 1) - c*(e*f - d*g)*(m +
 2*p + 3)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g, p}, x] && NeQ[b^2 -
4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[m, -1] && (IntegerQ[m] ||
 IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 843

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> Dist[g/e, Int[(d + e*x)^(m + 1)*(a + b*x +
c*x^2)^p, x], x] + Dist[(e*f - d*g)/e, Int[(d + e*x)^m*(a + b*x + c*x^2)^p,
 x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] && NeQ[b^2 - 4*a*c, 0] &&
NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !IGtQ[m, 0]
```

Rubi steps

$$\int \frac{A+Bx}{(d+ex)^{3/2}\left(a+bx+cx^2\right)^{3/2}}\,dx = \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}} -$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}} +$$

$$= \frac{2\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right)}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\sqrt{d+ex}\,\sqrt{a+bx+cx^2}} +$$

Mathematica [C] time = 11.65, size = 1267, normalized size = 1.80

$$\frac{\sqrt{d+ex}\,\left(cx^2+bx+a\right)^2\left(\frac{2\left(Ae^2b^3-aBe^2b^2-2Acdeb^2+Ace^2xb^2+Ac^2d^2b-3aAce^2b+2aBcdeb-Bc^2d^2xb-aBce^2xb-2Ac^2dexb-2aBc^2d^2+2a^2Bce^2\right.}{\left(4ac-b^2\right)\left(cd^2-bed+ae^2\right)^2\left(cx^2+bx+a\right)}\right.}{(a+x(b+cx))^{3/2}}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x]
```

```
[Out] (Sqrt[d + e*x]*(a + b*x + c*x^2)^2*((-2*e^2*(-(B*d) + A*e))/((c*d^2 - b*d*e
 + a*e^2)^2*(d + e*x)) + (2*(A*b*c^2*d^2 - 2*a*B*c^2*d^2 - 2*A*b^2*c*d*e +
2*a*b*B*c*d*e + 4*a*A*c^2*d*e + A*b^3*e^2 - a*b^2*B*e^2 - 3*a*A*b*c*e^2 + 2
*a^2*B*c*e^2 - b*B*c^2*d^2*x + 2*A*c^3*d^2*x - 2*A*b*c^2*d*e*x + 4*a*B*c^2*
d*e*x + A*b^2*c*e^2*x - a*b*B*c*e^2*x - 2*a*A*c^2*e^2*x))/((-b^2 + 4*a*c)*(
c*d^2 - b*d*e + a*e^2)^2*(a + b*x + c*x^2))))/(a + x*(b + c*x))^(3/2) - (2*
(d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)*(-((b^2*e*(B*d - 2*A*e) - 2*c*(A*c*
d^2 + 4*a*B*d*e - 3*a*A*e^2) + b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*(c*(-1 +
d/(d + e*x))^2 + (e*(b - (b*d)/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x))) -
((I/2)*Sqrt[1 - (2*(c*d^2 + e*(-(b*d) + a*e)))/((2*c*d - b*e + Sqrt[(b^2 -
4*a*c)*e^2])*(d + e*x))]*Sqrt[1 + (2*(c*d^2 + e*(-(b*d) + a*e)))/((-2*c*d +
 b*e + Sqrt[(b^2 - 4*a*c)*e^2])*(d + e*x))]*((2*c*d - b*e + Sqrt[(b^2 - 4*a
*c)*e^2])*(b^2*e*(-(B*d) + 2*A*e) + 2*c*(A*c*d^2 + 4*a*B*d*e - 3*a*A*e^2) -
 b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2))*EllipticE[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^
2 - b*d*e + a*e^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]
], -((-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*
a*c)*e^2]))] + (b^3*e^2*(-(B*d) + 2*A*e) + b*(c*d*Sqrt[(b^2 - 4*a*c)*e^2]*(
B*d + 2*A*e) + a*e^2*(4*B*c*d - 8*A*c*e + B*Sqrt[(b^2 - 4*a*c)*e^2])) - b^2
*e*(2*A*e*(2*c*d + Sqrt[(b^2 - 4*a*c)*e^2]) + B*(-3*c*d^2 + a*e^2 - d*Sqrt[
(b^2 - 4*a*c)*e^2])) - 2*c*(-2*a^2*B*e^3 + A*c*d^2*Sqrt[(b^2 - 4*a*c)*e^2]
+ a*e*(6*B*c*d^2 - 8*A*c*d*e + 4*B*d*Sqrt[(b^2 - 4*a*c)*e^2] - 3*A*e*Sqrt[(
b^2 - 4*a*c)*e^2])))*EllipticF[I*ArcSinh[(Sqrt[2]*Sqrt[(c*d^2 - b*d*e + a*e
^2)/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)*e^2])])/Sqrt[d + e*x]], -((-2*c*d +
b*e + Sqrt[(b^2 - 4*a*c)*e^2])/(2*c*d - b*e + Sqrt[(b^2 - 4*a*c)*e^2]))]))/
(Sqrt[2]*Sqrt[(c*d^2 + e*(-(b*d) + a*e))/(-2*c*d + b*e + Sqrt[(b^2 - 4*a*c)
*e^2])]*Sqrt[d + e*x])))/((-b^2 + 4*a*c)*e*(c*d^2 - b*d*e + a*e^2)^2*(a + x
*(b + c*x))^(3/2)*Sqrt[((d + e*x)^2*(c*(-1 + d/(d + e*x))^2 + (e*(b - (b*d)
/(d + e*x) + (a*e)/(d + e*x)))/(d + e*x)))/e^2])
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\operatorname{integral}\left(\frac{\sqrt{cx^2+bx+a}\,(Bx+A)\sqrt{ex+d}}{c^2e^2x^6+2\left(c^2de+bce^2\right)x^5+\left(c^2d^2+4\,bcde+\left(b^2+2\,ac\right)e^2\right)x^4+a^2d^2+2\left(bcd^2+abe^2+\left(b^2+2\,ac\right)}\right.$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="fricas")
```

```
[Out] integral(sqrt(c*x^2 + b*x + a)*(B*x + A)*sqrt(e*x + d)/(c^2*e^2*x^6 + 2*(c^
2*d*e + b*c*e^2)*x^5 + (c^2*d^2 + 4*b*c*d*e + (b^2 + 2*a*c)*e^2)*x^4 + a^2*
d^2 + 2*(b*c*d^2 + a*b*e^2 + (b^2 + 2*a*c)*d*e)*x^3 + (4*a*b*d*e + a^2*e^2
+ (b^2 + 2*a*c)*d^2)*x^2 + 2*(a*b*d^2 + a^2*d*e)*x), x)
```

giac [F(-2)] time = 0.00, size = 0, normalized size = 0.00

Exception raised: RuntimeError

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="giac")
```

```
[Out] Exception raised: RuntimeError >> An error occurred running a Giac command:
INPUT:sage2OUTPUT:Evaluation time: 7.46Unable to transpose Error: Bad Argum
ent Value
```

maple [B] time = 0.18, size = 8357, normalized size = 11.85

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x)
```

```
[Out] result too large to display
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{Bx+A}{\left(cx^2+bx+a\right)^{\frac{3}{2}}(ex+d)^{\frac{3}{2}}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)^(3/2)/(c*x^2+b*x+a)^(3/2),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)/((c*x^2 + b*x + a)^(3/2)*(e*x + d)^(3/2)), x)
```

mupad [**F**] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{A+B\,x}{{\left(d+e\,x\right)}^{3/2}\,{\left(c\,x^2+b\,x+a\right)}^{3/2}} \,d x$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)),x)
```

```
[Out] int((A + B*x)/((d + e*x)^(3/2)*(a + b*x + c*x^2)^(3/2)), x)
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)/(e*x+d)**(3/2)/(c*x**2+b*x+a)**(3/2),x)
```

```
[Out] Timed out
```

3.2640 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx$

Optimal. Leaf size=594

$$-\frac{(d+ex)^{m+4}\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-\right.\right.}{e^8(m+4)}$$

```
[Out] -(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^3*(e*x+d)^(1+m)/e^8/(1+m)-(a*e^2-b*d*e+c*d^
2)^2*(3*A*e*(-b*e+2*c*d)-B*(7*c*d^2-e*(-a*e+4*b*d)))*(e*x+d)^(2+m)/e^8/(2+m
)-3*(a*e^2-b*d*e+c*d^2)*(B*(7*c^2*d^3-c*d*e*(-3*a*e+8*b*d)+b*e^2*(-a*e+2*b*
d))-A*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d)))*(e*x+d)^(3+m)/e^8/(3+m)-(A*e*
(-b*e+2*c*d)*(10*c^2*d^2+b^2*e^2-2*c*e*(-3*a*e+5*b*d))-B*(35*c^3*d^4-b^2*e^
3*(-3*a*e+4*b*d)-30*c^2*d^2*e*(-a*e+2*b*d)+3*c*e^2*(a^2*e^2-8*a*b*d*e+10*b^
2*d^2)))*(e*x+d)^(4+m)/e^8/(4+m)-(B*(35*c^3*d^3-b^3*e^3+3*b*c*e^2*(-2*a*e+5
*b*d)-15*c^2*d*e*(-a*e+3*b*d))-3*A*c*e*(5*c^2*d^2+b^2*e^2-c*e*(-a*e+5*b*d))
)*(e*x+d)^(5+m)/e^8/(5+m)-3*c*(A*c*e*(-b*e+2*c*d)-B*(7*c^2*d^2+b^2*e^2-c*e*
(-a*e+6*b*d)))*(e*x+d)^(6+m)/e^8/(6+m)-c^2*(-A*c*e-3*B*b*e+7*B*c*d)*(e*x+d)
^(7+m)/e^8/(7+m)+B*c^3*(e*x+d)^(8+m)/e^8/(8+m)
```

Rubi [A] time = 0.69, antiderivative size = 591, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.040, Rules used = {771}

$$-\frac{(d+ex)^{m+4}\left(Ae(2cd-be)\left(-2ce(5bd-3ae)+b^2e^2+10c^2d^2\right)-B\left(3ce^2\left(a^2e^2-8abde+10b^2d^2\right)-b^2e^3(4bd-\right.\right.}{e^8(m+4)}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^3*(d + e*x)^(1 + m))/(e^8*(1 + m)))
+ ((c*d^2 - b*d*e + a*e^2)^2*(7*B*c*d^2 - B*e*(4*b*d - a*e) - 3*A*e*(2*c*d
- b*e))*(d + e*x)^(2 + m))/(e^8*(2 + m)) - (3*(c*d^2 - b*d*e + a*e^2)*(B*(7
*c^2*d^3 - c*d*e*(8*b*d - 3*a*e) + b*e^2*(2*b*d - a*e)) - A*e*(5*c^2*d^2 +
b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*x)^(3 + m))/(e^8*(3 + m)) - ((A*e*(2*c
*d - b*e)*(10*c^2*d^2 + b^2*e^2 - 2*c*e*(5*b*d - 3*a*e)) - B*(35*c^3*d^4 -
b^2*e^3*(4*b*d - 3*a*e) - 30*c^2*d^2*e*(2*b*d - a*e) + 3*c*e^2*(10*b^2*d^2
- 8*a*b*d*e + a^2*e^2)))*(d + e*x)^(4 + m))/(e^8*(4 + m)) - ((B*(35*c^3*d^3
 - b^3*e^3 + 3*b*c*e^2*(5*b*d - 2*a*e) - 15*c^2*d*e*(3*b*d - a*e)) - 3*A*c*
e*(5*c^2*d^2 + b^2*e^2 - c*e*(5*b*d - a*e)))*(d + e*x)^(5 + m))/(e^8*(5 + m
)) - (3*c*(A*c*e*(2*c*d - b*e) - B*(7*c^2*d^2 + b^2*e^2 - c*e*(6*b*d - a*e)
))*(d + e*x)^(6 + m))/(e^8*(6 + m)) - (c^2*(7*B*c*d - 3*b*B*e - A*c*e)*(d +
 e*x)^(7 + m))/(e^8*(7 + m)) + (B*c^3*(d + e*x)^(8 + m))/(e^8*(8 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^3 \, dx = \int \Biggl(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^m}{e^7} + \frac{\left(cd^2-bde+ae^2\right)^2 \bigl(7B}{}$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^3 (d+ex)^{1+m}}{e^8(1+m)} + \frac{\left(cd^2-bde+ae^2\right)^2 \bigl(7Bc}{}$$

Mathematica [B] time = 6.70, size = 4291, normalized size = 7.22

Result too large to show

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(B*(7*c*d - 3*b*e)) + A*c*e*(8 + m) + B*c*e*(7 + m)*x)
*(a + b*x + c*x^2)^3)/(c*e^2*(7 + m)*(8 + m)) - (3*(((d + e*x)^(1 + m)*(c*e
*(6 + m)*(-(b*B*d*(7*c*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2
*c*d*m - b*e*(1 + m))) - (5*c*d - 2*b*e)*(A*c*e*(2*c*d - b*e)*(8 + m) - B*(
14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m) - 2*a*e*(7 + m)))) + c*e*(5
 + m)*(A*c*e*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*
(b*d*(6 - m) - 2*a*e*(7 + m))))*x)*(a + b*x + c*x^2)^2)/(c*e^2*(5 + m)*(6 +
 m)) - (2*(((d + e*x)^(1 + m)*(c*e*(4 + m)*(c*e*(b*d - 2*a*e)*(6 + m)*(-(b*
B*d*(7*c*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(
1 + m))) + (b*d*(-5*c*d + 2*b*e) + a*e*(b*e - 2*c*d*m + b*e*m))*(A*c*e*(2*c
*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m) - 2*
a*e*(7 + m))))) - (3*c*d - b*e)*(c*e*(2*c*d - b*e)*(6 + m)*(-(b*B*d*(7*c*d
 - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(1 + m))) +
(-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(A*c*e
*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 - m)
 - 2*a*e*(7 + m))))) + c*e*(3 + m)*(c*e*(2*c*d - b*e)*(6 + m)*(-(b*B*d*(7*c
*d - 3*b*e)) + A*c*e*(b*d - 2*a*e)*(8 + m) - a*B*e*(2*c*d*m - b*e*(1 + m)))
 + (-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))*(A*
c*e*(2*c*d - b*e)*(8 + m) - B*(14*c^2*d^2 - b^2*e^2*(4 + m) - c*e*(b*d*(6 -
 m) - 2*a*e*(7 + m)))))*x)*(a + b*x + c*x^2))/(c*e^2*(3 + m)*(4 + m)) - (((
840*B*c^6*d^7 - 2460*b*B*c^5*d^6*e - 960*A*c^6*d^6*e + 2340*b^2*B*c^4*d^5*e
^2 + 2880*A*b*c^5*d^5*e^2 + 2520*a*B*c^5*d^5*e^2 - 684*b^3*B*c^3*d^4*e^3 -
2832*A*b^2*c^4*d^4*e^3 - 4764*a*b*B*c^4*d^4*e^3 - 3072*a*A*c^5*d^4*e^3 - 12
*b^4*B*c^2*d^3*e^4 + 864*A*b^3*c^3*d^3*e^4 + 1968*a*b^2*B*c^3*d^3*e^4 + 614
4*a*A*b*c^4*d^3*e^4 + 2520*a^2*B*c^4*d^3*e^4 - 12*b^5*B*c*d^2*e^5 + 24*A*b^
4*c^2*d^2*e^5 + 132*a*b^3*B*c^2*d^2*e^5 - 2784*a*A*b^2*c^3*d^2*e^5 - 1956*a
^2*b*B*c^3*d^2*e^5 - 3648*a^2*A*c^4*d^2*e^5 - 12*b^6*B*d*e^6 + 24*A*b^5*c*d
*e^6 + 144*a*b^4*B*c*d*e^6 - 288*a*A*b^3*c^2*d*e^6 - 564*a^2*b^2*B*c^2*d*e^
6 + 3648*a^2*A*b*c^3*d*e^6 + 840*a^3*B*c^3*d*e^6 + 12*a*b^5*B*e^7 - 24*a*A*
b^4*c*e^7 - 120*a^2*b^3*B*c*e^7 + 240*a^2*A*b^2*c^2*e^7 + 348*a^3*b*B*c^2*e
^7 - 1536*a^3*A*c^3*e^7 + 60*b*B*c^5*d^6*e*m - 120*A*c^6*d^6*e*m - 160*b^2*
B*c^4*d^5*e^2*m + 360*A*b*c^5*d^5*e^2*m - 80*a*B*c^5*d^5*e^2*m + 111*b^3*B*
c^3*d^4*e^3*m - 322*A*b^2*c^4*d^4*e^3*m + 456*a*b*B*c^4*d^4*e^3*m - 512*a*A
*c^5*d^4*e^3*m + 15*b^4*B*c^2*d^3*e^4*m + 44*A*b^3*c^3*d^3*e^4*m - 608*a*b^
2*B*c^3*d^3*e^4*m + 1024*a*A*b*c^4*d^3*e^4*m - 208*a^2*B*c^4*d^3*e^4*m - 7*
b^5*B*c*d^2*e^5*m + 3*A*b^4*c^2*d^2*e^5*m + 22*a*b^3*B*c^2*d^2*e^5*m - 156*
a*A*b^2*c^3*d^2*e^5*m + 924*a^2*b*B*c^3*d^2*e^5*m - 1224*a^2*A*c^4*d^2*e^5*
m - 19*b^6*B*d*e^6*m + 35*A*b^5*c*d*e^6*m + 207*a*b^4*B*c*d*e^6*m - 356*a*A
*b^3*c^2*d*e^6*m - 672*a^2*b^2*B*c^2*d*e^6*m + 1224*a^2*A*b*c^3*d*e^6*m - 1
28*a^3*B*c^3*d*e^6*m + 19*a*b^5*B*e^7*m - 35*a*A*b^4*c*e^7*m - 181*a^2*b^3*
B*c*e^7*m + 318*a^2*A*b^2*c^2*e^7*m + 480*a^3*b*B*c^2*e^7*m - 832*a^3*A*c^3
*e^7*m + 20*b^2*B*c^4*d^5*e^2*m^2 - 80*a*B*c^5*d^5*e^2*m^2 - 44*b^3*B*c^3*d
^4*e^3*m^2 - 12*A*b^2*c^4*d^4*e^3*m^2 + 176*a*b*B*c^4*d^4*e^3*m^2 + 48*a*A*
c^5*d^4*e^3*m^2 + 24*b^4*B*c^2*d^3*e^4*m^2 + 24*A*b^3*c^3*d^3*e^4*m^2 - 40*
a*b^2*B*c^3*d^3*e^4*m^2 - 96*a*A*b*c^4*d^3*e^4*m^2 - 224*a^2*B*c^4*d^3*e^4*
m^2 + 8*b^5*B*c*d^2*e^5*m^2 - 24*A*b^4*c^2*d^2*e^5*m^2 - 128*a*b^3*B*c^2*d^
2*e^5*m^2 + 120*a*A*b^2*c^3*d^2*e^5*m^2 + 384*a^2*b*B*c^3*d^2*e^5*m^2 - 96*
a^2*A*c^4*d^2*e^5*m^2 - 8*b^6*B*d*e^6*m^2 + 12*A*b^5*c*d*e^6*m^2 + 68*a*b^4
*B*c*d*e^6*m^2 - 72*a*A*b^3*c^2*d*e^6*m^2 - 108*a^2*b^2*B*c^2*d*e^6*m^2 + 9
6*a^2*A*b*c^3*d*e^6*m^2 - 144*a^3*B*c^3*d*e^6*m^2 + 8*a*b^5*B*e^7*m^2 - 12*
a*A*b^4*c*e^7*m^2 - 68*a^2*b^3*B*c*e^7*m^2 + 84*a^2*A*b^2*c^2*e^7*m^2 + 144
*a^3*b*B*c^2*e^7*m^2 - 144*a^3*A*c^3*e^7*m^2 + b^3*B*c^3*d^4*e^3*m^3 - 2*A*
b^2*c^4*d^4*e^3*m^3 - 4*a*b*B*c^4*d^4*e^3*m^3 + 8*a*A*c^5*d^4*e^3*m^3 - 3*b
^4*B*c^2*d^3*e^4*m^3 + 4*A*b^3*c^3*d^3*e^4*m^3 + 16*a*b^2*B*c^3*d^3*e^4*m^3
 - 16*a*A*b*c^4*d^3*e^4*m^3 - 16*a^2*B*c^4*d^3*e^4*m^3 + 3*b^5*B*c*d^2*e^5*
m^3 - 3*A*b^4*c^2*d^2*e^5*m^3 - 18*a*b^3*B*c^2*d^2*e^5*m^3 + 12*a*A*b^2*c^3
*d^2*e^5*m^3 + 24*a^2*b*B*c^3*d^2*e^5*m^3 - b^6*B*d*e^6*m^3 + A*b^5*c*d*e^6
*m^3 + 5*a*b^4*B*c*d*e^6*m^3 - 4*a*A*b^3*c^2*d*e^6*m^3 - 16*a^3*B*c^3*d*e^6
*m^3 + a*b^5*B*e^7*m^3 - a*A*b^4*c*e^7*m^3 - 7*a^2*b^3*B*c*e^7*m^3 + 6*a^2*
A*b^2*c^2*e^7*m^3 + 12*a^3*b*B*c^2*e^7*m^3 - 8*a^3*A*c^3*e^7*m^3)*(d + e*x)
^(1 + m))/(e^2*(1 + m)) + ((-840*B*c^6*d^6 + 2040*b*B*c^5*d^5*e + 960*A*c^6
*d^5*e - 1320*b^2*B*c^4*d^4*e^2 - 2400*A*b*c^5*d^4*e^2 - 2520*a*B*c^5*d^4*e
^2 + 24*b^3*B*c^3*d^3*e^3 + 1632*A*b^2*c^4*d^3*e^3 + 3504*a*b*B*c^4*d^3*e^3
 + 3072*a*A*c^5*d^3*e^3 + 24*b^4*B*c^2*d^2*e^4 - 48*A*b^3*c^3*d^2*e^4 - 216
*a*b^2*B*c^3*d^2*e^4 - 4608*a*A*b*c^4*d^2*e^4 - 2520*a^2*B*c^4*d^2*e^4 + 24
*b^5*B*c*d*e^5 - 48*A*b^4*c^2*d*e^5 - 240*a*b^3*B*c^2*d*e^5 + 480*a*A*b^2*c
^3*d*e^5 + 696*a^2*b*B*c^3*d*e^5 + 3648*a^2*A*c^4*d*e^5 + 24*b^6*B*e^6 - 48
*A*b^5*c*e^6 - 264*a*b^4*B*c*e^6 + 528*a*A*b^3*c^2*e^6 + 912*a^2*b^2*B*c^2*
e^6 - 1824*a^2*A*b*c^3*e^6 - 840*a^3*B*c^3*e^6 - 60*b*B*c^5*d^5*e*m + 120*A
*c^6*d^5*e*m + 200*b^2*B*c^4*d^4*e^2*m - 300*A*b*c^5*d^4*e^2*m - 200*a*B*c^
5*d^4*e^2*m - 146*b^3*B*c^3*d^3*e^3*m + 92*A*b^2*c^4*d^3*e^3*m - 16*a*b*B*c
^4*d^3*e^3*m + 832*a*A*c^5*d^3*e^3*m - 42*b^4*B*c^2*d^2*e^4*m + 162*A*b^3*c
^3*d^2*e^4*m + 612*a*b^2*B*c^3*d^2*e^4*m - 1248*a*A*b*c^4*d^2*e^4*m - 576*a
^2*B*c^4*d^2*e^4*m + 2*b^5*B*c*d*e^5*m + 18*A*b^4*c^2*d*e^5*m + 46*a*b^3*B*
c^2*d*e^5*m - 468*a*A*b^2*c^3*d*e^5*m - 516*a^2*b*B*c^3*d*e^5*m + 2184*a^2*
A*c^4*d*e^5*m + 26*b^6*B*e^6*m - 46*A*b^5*c*e^6*m - 268*a*b^4*B*c*e^6*m + 4
42*a*A*b^3*c^2*e^6*m + 828*a^2*b^2*B*c^2*e^6*m - 1092*a^2*A*b*c^3*e^6*m - 5
68*a^3*B*c^3*e^6*m - 20*b^2*B*c^4*d^4*e^2*m^2 + 80*a*B*c^5*d^4*e^2*m^2 + 39
*b^3*B*c^3*d^3*e^3*m^2 + 2*A*b^2*c^4*d^3*e^3*m^2 - 156*a*b*B*c^4*d^3*e^3*m^
2 - 8*a*A*c^5*d^3*e^3*m^2 - 21*b^4*B*c^2*d^2*e^4*m^2 - 3*A*b^3*c^3*d^2*e^4*
m^2 + 54*a*b^2*B*c^3*d^2*e^4*m^2 + 12*a*A*b*c^4*d^2*e^4*m^2 + 120*a^2*B*c^4
*d^2*e^4*m^2 - 11*b^5*B*c*d*e^5*m^2 + 27*A*b^4*c^2*d*e^5*m^2 + 125*a*b^3*B*
c^2*d*e^5*m^2 - 210*a*A*b^2*c^3*d*e^5*m^2 - 324*a^2*b*B*c^3*d*e^5*m^2 + 408
*a^2*A*c^4*d*e^5*m^2 + 9*b^6*B*e^6*m^2 - 13*A*b^5*c*e^6*m^2 - 84*a*b^4*B*c*
e^6*m^2 + 103*a*A*b^3*c^2*e^6*m^2 + 222*a^2*b^2*B*c^2*e^6*m^2 - 204*a^2*A*b
*c^3*e^6*m^2 - 120*a^3*B*c^3*e^6*m^2 - b^3*B*c^3*d^3*e^3*m^3 + 2*A*b^2*c^4*
d^3*e^3*m^3 + 4*a*b*B*c^4*d^3*e^3*m^3 - 8*a*A*c^5*d^3*e^3*m^3 + 3*b^4*B*c^2
*d^2*e^4*m^3 - 3*A*b^3*c^3*d^2*e^4*m^3 - 18*a*b^2*B*c^3*d^2*e^4*m^3 + 12*a*
A*b*c^4*d^2*e^4*m^3 + 24*a^2*B*c^4*d^2*e^4*m^3 - 3*b^5*B*c*d*e^5*m^3 + 3*A*
b^4*c^2*d*e^5*m^3 + 21*a*b^3*B*c^2*d*e^5*m^3 - 18*a*A*b^2*c^3*d*e^5*m^3 - 3
6*a^2*b*B*c^3*d*e^5*m^3 + 24*a^2*A*c^4*d*e^5*m^3 + b^6*B*e^6*m^3 - A*b^5*c*
e^6*m^3 - 8*a*b^4*B*c*e^6*m^3 + 7*a*A*b^3*c^2*e^6*m^3 + 18*a^2*b^2*B*c^2*e^
6*m^3 - 12*a^2*A*b*c^3*e^6*m^3 - 8*a^3*B*c^3*e^6*m^3)*(d + e*x)^(2 + m))/(e
^2*(2 + m)))/(c*e^2*(3 + m)*(4 + m))))/(c*e^2*(5 + m)*(6 + m))))/(c*e^2*(7
+ m)*(8 + m))
```

fricas [B] time = 1.05, size = 5919, normalized size = 9.96

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="fricas")
```

```
[Out] (A*a^3*d*e^7*m^7 - 5040*B*c^3*d^8 + 40320*A*a^3*d*e^7 + 5760*(3*B*b*c^2 + A
*c^3)*d^7*e - 20160*(B*b^2*c + (B*a + A*b)*c^2)*d^6*e^2 + 8064*(B*b^3 + 3*A
*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^5*e^3 - 10080*(3*B*a*b^2 + A*b^3 + 3*(B*a
^2 + 2*A*a*b)*c)*d^4*e^4 + 40320*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 20
160*(B*a^3 + 3*A*a^2*b)*d^2*e^6 + (B*c^3*e^8*m^7 + 28*B*c^3*e^8*m^6 + 322*B
*c^3*e^8*m^5 + 1960*B*c^3*e^8*m^4 + 6769*B*c^3*e^8*m^3 + 13132*B*c^3*e^8*m^
2 + 13068*B*c^3*e^8*m + 5040*B*c^3*e^8)*x^8 + (5760*(3*B*b*c^2 + A*c^3)*e^8
 + (B*c^3*d*e^7 + (3*B*b*c^2 + A*c^3)*e^8)*m^7 + (21*B*c^3*d*e^7 + 29*(3*B*
b*c^2 + A*c^3)*e^8)*m^6 + 7*(25*B*c^3*d*e^7 + 49*(3*B*b*c^2 + A*c^3)*e^8)*m
^5 + 35*(21*B*c^3*d*e^7 + 61*(3*B*b*c^2 + A*c^3)*e^8)*m^4 + 56*(29*B*c^3*d*
e^7 + 134*(3*B*b*c^2 + A*c^3)*e^8)*m^3 + 28*(63*B*c^3*d*e^7 + 527*(3*B*b*c^
2 + A*c^3)*e^8)*m^2 + 144*(5*B*c^3*d*e^7 + 103*(3*B*b*c^2 + A*c^3)*e^8)*m)*
x^7 + (35*A*a^3*d*e^7 - (B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^6 + (20160*(B*b^2*c
+ (B*a + A*b)*c^2)*e^8 + ((3*B*b*c^2 + A*c^3)*d*e^7 + 3*(B*b^2*c + (B*a + A
*b)*c^2)*e^8)*m^7 - (7*B*c^3*d^2*e^6 - 23*(3*B*b*c^2 + A*c^3)*d*e^7 - 90*(B
*b^2*c + (B*a + A*b)*c^2)*e^8)*m^6 - (105*B*c^3*d^2*e^6 - 205*(3*B*b*c^2 +
A*c^3)*d*e^7 - 1098*(B*b^2*c + (B*a + A*b)*c^2)*e^8)*m^5 - 5*(119*B*c^3*d^2
*e^6 - 181*(3*B*b*c^2 + A*c^3)*d*e^7 - 1404*(B*b^2*c + (B*a + A*b)*c^2)*e^8
)*m^4 - (1575*B*c^3*d^2*e^6 - 2074*(3*B*b*c^2 + A*c^3)*d*e^7 - 25227*(B*b^2
*c + (B*a + A*b)*c^2)*e^8)*m^3 - 2*(959*B*c^3*d^2*e^6 - 1156*(3*B*b*c^2 + A
*c^3)*d*e^7 - 25245*(B*b^2*c + (B*a + A*b)*c^2)*e^8)*m^2 - 24*(35*B*c^3*d^2
*e^6 - 40*(3*B*b*c^2 + A*c^3)*d*e^7 - 2143*(B*b^2*c + (B*a + A*b)*c^2)*e^8)
*m)*x^6 + (511*A*a^3*d*e^7 + 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 33*(
B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^5 + (8064*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A
*b^2)*c)*e^8 + (3*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + (B*b^3 + 3*A*a*c^2 +
3*(2*B*a*b + A*b^2)*c)*e^8)*m^7 - (6*(3*B*b*c^2 + A*c^3)*d^2*e^6 - 75*(B*b^
2*c + (B*a + A*b)*c^2)*d*e^7 - 31*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*
c)*e^8)*m^6 + (42*B*c^3*d^3*e^5 - 108*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 723*(B*
b^2*c + (B*a + A*b)*c^2)*d*e^7 + 391*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*e^8)*m^5 + (420*B*c^3*d^3*e^5 - 690*(3*B*b*c^2 + A*c^3)*d^2*e^6 + 340
5*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 2581*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
+ A*b^2)*c)*e^8)*m^4 + 2*(735*B*c^3*d^3*e^5 - 990*(3*B*b*c^2 + A*c^3)*d^2*e
^6 + 4101*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 4772*(B*b^3 + 3*A*a*c^2 + 3*(
2*B*a*b + A*b^2)*c)*e^8)*m^3 + 4*(525*B*c^3*d^3*e^5 - 636*(3*B*b*c^2 + A*c^
3)*d^2*e^6 + 2370*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 4891*(B*b^3 + 3*A*a*c
^2 + 3*(2*B*a*b + A*b^2)*c)*e^8)*m^2 + 144*(7*B*c^3*d^3*e^5 - 8*(3*B*b*c^2
+ A*c^3)*d^2*e^6 + 28*(B*b^2*c + (B*a + A*b)*c^2)*d*e^7 + 141*(B*b^3 + 3*A*
a*c^2 + 3*(2*B*a*b + A*b^2)*c)*e^8)*m)*x^5 + (4025*A*a^3*d*e^7 - 6*(3*B*a*b
^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 180*(B*a^2*b + A*a*b^2 + A*a^
2*c)*d^3*e^5 - 445*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^4 + (10080*(3*B*a*b^2 + A
*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8 + ((B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^
2)*c)*d*e^7 + (3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^7 - (15*(B
*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 27*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*
b^2)*c)*d*e^7 - 32*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^6 + (
30*(3*B*b*c^2 + A*c^3)*d^3*e^5 - 315*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 +
283*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 + 418*(3*B*a*b^2 + A*
b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m^5 - (210*B*c^3*d^4*e^4 - 420*(3*B*b*c^2
 + A*c^3)*d^3*e^5 + 2355*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 1449*(B*b^3
+ 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 - 2864*(3*B*a*b^2 + A*b^3 + 3*(B
*a^2 + 2*A*a*b)*c)*e^8)*m^4 - (1260*B*c^3*d^4*e^4 - 1770*(3*B*b*c^2 + A*c^3
)*d^3*e^5 + 7605*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 3748*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d*e^7 - 10993*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 +
2*A*a*b)*c)*e^8)*m^3 - 2*(1155*B*c^3*d^4*e^4 - 1410*(3*B*b*c^2 + A*c^3)*d^3
*e^5 + 5295*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 2286*(B*b^3 + 3*A*a*c^2 +
 3*(2*B*a*b + A*b^2)*c)*d*e^7 - 11656*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*e^8)*m^2 - 36*(35*B*c^3*d^4*e^4 - 40*(3*B*b*c^2 + A*c^3)*d^3*e^5 + 1
40*(B*b^2*c + (B*a + A*b)*c^2)*d^2*e^6 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d*e^7 - 691*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*e^8)*m
)*x^4 + (18424*A*a^3*d*e^7 + 24*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)
```

```
*d^5*e^3 - 156*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 2130*(
B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 3135*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^
3 + (40320*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8 + ((3*B*a*b^2 + A*b^3 + 3*(B*a
^2 + 2*A*a*b)*c)*d*e^7 + 3*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^7 - (4*(B*b
^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 - 29*(3*B*a*b^2 + A*b^3 + 3
*(B*a^2 + 2*A*a*b)*c)*d*e^7 - 99*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^6 + (
60*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 96*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b
 + A*b^2)*c)*d^2*e^6 + 331*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^
7 + 1341*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^5 - (120*(3*B*b*c^2 + A*c^3)*
d^4*e^4 - 1080*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 + 844*(B*b^3 + 3*A*a*c^2
 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 - 1871*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*
A*a*b)*c)*d*e^7 - 9585*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^4 + 4*(210*B*c^
3*d^5*e^3 - 330*(3*B*b*c^2 + A*c^3)*d^4*e^4 + 1545*(B*b^2*c + (B*a + A*b)*c
^2)*d^3*e^5 - 816*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 134
5*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 + 9648*(B*a^2*b + A*a*b
^2 + A*a^2*c)*e^8)*m^3 + 4*(630*B*c^3*d^5*e^3 - 780*(3*B*b*c^2 + A*c^3)*d^4
*e^4 + 2970*(B*b^2*c + (B*a + A*b)*c^2)*d^3*e^5 - 1300*(B*b^3 + 3*A*a*c^2 +
 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 1793*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*
a*b)*c)*d*e^7 + 21519*(B*a^2*b + A*a*b^2 + A*a^2*c)*e^8)*m^2 + 48*(35*B*c^3
*d^5*e^3 - 40*(3*B*b*c^2 + A*c^3)*d^4*e^4 + 140*(B*b^2*c + (B*a + A*b)*c^2)
*d^3*e^5 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^2*e^6 + 70*(3*B
*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d*e^7 + 2003*(B*a^2*b + A*a*b^2 + A
*a^2*c)*e^8)*m)*x^3 + 2*(24430*A*a^3*d*e^7 - 180*(B*b^2*c + (B*a + A*b)*c^2
)*d^6*e^2 + 252*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^5*e^3 - 753*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^4*e^4 + 6210*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d^3*e^5 - 6077*(B*a^3 + 3*A*a^2*b)*d^2*e^6)*m^2 + (20160*(B*a^
3 + 3*A*a^2*b)*e^8 + (3*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 + (B*a^3 + 3*A*
a^2*b)*e^8)*m^7 - (3*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 -
93*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 34*(B*a^3 + 3*A*a^2*b)*e^8)*m^6 +
(12*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 - 81*(3*B*a*b^2 + A
*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 + 1155*(B*a^2*b + A*a*b^2 + A*a^2*c)*
d*e^7 + 478*(B*a^3 + 3*A*a^2*b)*e^8)*m^5 - (180*(B*b^2*c + (B*a + A*b)*c^2)
*d^4*e^4 - 264*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 831*(3
*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^2*e^6 - 7275*(B*a^2*b + A*a*b^2
 + A*a^2*c)*d*e^7 - 3580*(B*a^3 + 3*A*a^2*b)*e^8)*m^4 + (360*(3*B*b*c^2 + A
*c^3)*d^5*e^3 - 2880*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 + 2004*(B*b^3 + 3*
A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 - 3951*(3*B*a*b^2 + A*b^3 + 3*(B*a
^2 + 2*A*a*b)*c)*d^2*e^6 + 24042*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 + 1528
9*(B*a^3 + 3*A*a^2*b)*e^8)*m^3 - 2*(1260*B*c^3*d^6*e^2 - 1620*(3*B*b*c^2 +
A*c^3)*d^5*e^3 + 6390*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 - 2892*(B*b^3 + 3
*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 4119*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d^2*e^6 - 18996*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 183
53*(B*a^3 + 3*A*a^2*b)*e^8)*m^2 - 72*(35*B*c^3*d^6*e^2 - 40*(3*B*b*c^2 + A*
c^3)*d^5*e^3 + 140*(B*b^2*c + (B*a + A*b)*c^2)*d^4*e^4 - 56*(B*b^3 + 3*A*a*
c^2 + 3*(2*B*a*b + A*b^2)*c)*d^3*e^5 + 70*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2
*A*a*b)*c)*d^2*e^6 - 280*(B*a^2*b + A*a*b^2 + A*a^2*c)*d*e^7 - 621*(B*a^3 +
 3*A*a^2*b)*e^8)*m)*x^2 + 12*(5772*A*a^3*d*e^7 + 60*(3*B*b*c^2 + A*c^3)*d^7
*e - 450*(B*b^2*c + (B*a + A*b)*c^2)*d^6*e^2 + 292*(B*b^3 + 3*A*a*c^2 + 3*(
2*B*a*b + A*b^2)*c)*d^5*e^3 - 533*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*
c)*d^4*e^4 + 2972*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^3*e^5 - 2046*(B*a^3 + 3*A
*a^2*b)*d^2*e^6)*m + (40320*A*a^3*e^8 + (A*a^3*e^8 + (B*a^3 + 3*A*a^2*b)*d*
e^7)*m^7 + (35*A*a^3*e^8 - 6*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 33*(B*
a^3 + 3*A*a^2*b)*d*e^7)*m^6 + (511*A*a^3*e^8 + 6*(3*B*a*b^2 + A*b^3 + 3*(B*
a^2 + 2*A*a*b)*c)*d^3*e^5 - 180*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 445
*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^5 + (4025*A*a^3*e^8 - 24*(B*b^3 + 3*A*a*c^2 +
 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 156*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a
*b)*c)*d^3*e^5 - 2130*(B*a^2*b + A*a*b^2 + A*a^2*c)*d^2*e^6 + 3135*(B*a^3 +
 3*A*a^2*b)*d*e^7)*m^4 + 2*(9212*A*a^3*e^8 + 180*(B*b^2*c + (B*a + A*b)*c^2
)*d^5*e^3 - 252*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 753*(
3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 6210*(B*a^2*b + A*a*b^
2 + A*a^2*c)*d^2*e^6 + 6077*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^3 + 4*(12215*A*a^3
*e^8 - 180*(3*B*b*c^2 + A*c^3)*d^6*e^2 + 1350*(B*b^2*c + (B*a + A*b)*c^2)*d
^5*e^3 - 876*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^4 + 1599*(3*
B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 8916*(B*a^2*b + A*a*b^2
+ A*a^2*c)*d^2*e^6 + 6138*(B*a^3 + 3*A*a^2*b)*d*e^7)*m^2 + 144*(35*B*c^3*d^
7*e + 481*A*a^3*e^8 - 40*(3*B*b*c^2 + A*c^3)*d^6*e^2 + 140*(B*b^2*c + (B*a
+ A*b)*c^2)*d^5*e^3 - 56*(B*b^3 + 3*A*a*c^2 + 3*(2*B*a*b + A*b^2)*c)*d^4*e^
4 + 70*(3*B*a*b^2 + A*b^3 + 3*(B*a^2 + 2*A*a*b)*c)*d^3*e^5 - 280*(B*a^2*b +
 A*a*b^2 + A*a^2*c)*d^2*e^6 + 140*(B*a^3 + 3*A*a^2*b)*d*e^7)*m)*x)*(e*x + d
)^m/(e^8*m^8 + 36*e^8*m^7 + 546*e^8*m^6 + 4536*e^8*m^5 + 22449*e^8*m^4 + 67
284*e^8*m^3 + 118124*e^8*m^2 + 109584*e^8*m + 40320*e^8)
```

giac [**B**] time = 0.82, size = 14376, normalized size = 24.20

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^3*m^7*x^8*e^8 + (x*e + d)^m*B*c^3*d*m^7*x^7*e^7 + 3*(x*e +
 d)^m*B*b*c^2*m^7*x^7*e^8 + (x*e + d)^m*A*c^3*m^7*x^7*e^8 + 28*(x*e + d)^m*
B*c^3*m^6*x^8*e^8 + 3*(x*e + d)^m*B*b*c^2*d*m^7*x^6*e^7 + (x*e + d)^m*A*c^3
*d*m^7*x^6*e^7 + 21*(x*e + d)^m*B*c^3*d*m^6*x^7*e^7 - 7*(x*e + d)^m*B*c^3*d
^2*m^6*x^6*e^6 + 3*(x*e + d)^m*B*b^2*c*m^7*x^6*e^8 + 3*(x*e + d)^m*B*a*c^2*
m^7*x^6*e^8 + 3*(x*e + d)^m*A*b*c^2*m^7*x^6*e^8 + 87*(x*e + d)^m*B*b*c^2*m^
6*x^7*e^8 + 29*(x*e + d)^m*A*c^3*m^6*x^7*e^8 + 322*(x*e + d)^m*B*c^3*m^5*x^
8*e^8 + 3*(x*e + d)^m*B*b^2*c*d*m^7*x^5*e^7 + 3*(x*e + d)^m*B*a*c^2*d*m^7*x
^5*e^7 + 3*(x*e + d)^m*A*b*c^2*d*m^7*x^5*e^7 + 69*(x*e + d)^m*B*b*c^2*d*m^6
*x^6*e^7 + 23*(x*e + d)^m*A*c^3*d*m^6*x^6*e^7 + 175*(x*e + d)^m*B*c^3*d*m^5
*x^7*e^7 - 18*(x*e + d)^m*B*b*c^2*d^2*m^6*x^5*e^6 - 6*(x*e + d)^m*A*c^3*d^2
*m^6*x^5*e^6 - 105*(x*e + d)^m*B*c^3*d^2*m^5*x^6*e^6 + 42*(x*e + d)^m*B*c^3
*d^3*m^5*x^5*e^5 + (x*e + d)^m*B*b^3*m^7*x^5*e^8 + 6*(x*e + d)^m*B*a*b*c*m^
7*x^5*e^8 + 3*(x*e + d)^m*A*b^2*c*m^7*x^5*e^8 + 3*(x*e + d)^m*A*a*c^2*m^7*x
^5*e^8 + 90*(x*e + d)^m*B*b^2*c*m^6*x^6*e^8 + 90*(x*e + d)^m*B*a*c^2*m^6*x^
6*e^8 + 90*(x*e + d)^m*A*b*c^2*m^6*x^6*e^8 + 1029*(x*e + d)^m*B*b*c^2*m^5*x
^7*e^8 + 343*(x*e + d)^m*A*c^3*m^5*x^7*e^8 + 1960*(x*e + d)^m*B*c^3*m^4*x^8
*e^8 + (x*e + d)^m*B*b^3*d*m^7*x^4*e^7 + 6*(x*e + d)^m*B*a*b*c*d*m^7*x^4*e^
7 + 3*(x*e + d)^m*A*b^2*c*d*m^7*x^4*e^7 + 3*(x*e + d)^m*A*a*c^2*d*m^7*x^4*e
^7 + 75*(x*e + d)^m*B*b^2*c*d*m^6*x^5*e^7 + 75*(x*e + d)^m*B*a*c^2*d*m^6*x^
5*e^7 + 75*(x*e + d)^m*A*b*c^2*d*m^6*x^5*e^7 + 615*(x*e + d)^m*B*b*c^2*d*m^
5*x^6*e^7 + 205*(x*e + d)^m*A*c^3*d*m^5*x^6*e^7 + 735*(x*e + d)^m*B*c^3*d*m
^4*x^7*e^7 - 15*(x*e + d)^m*B*b^2*c*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*B*a*c^
2*d^2*m^6*x^4*e^6 - 15*(x*e + d)^m*A*b*c^2*d^2*m^6*x^4*e^6 - 324*(x*e + d)^
m*B*b*c^2*d^2*m^5*x^5*e^6 - 108*(x*e + d)^m*A*c^3*d^2*m^5*x^5*e^6 - 595*(x*
e + d)^m*B*c^3*d^2*m^4*x^6*e^6 + 90*(x*e + d)^m*B*b*c^2*d^3*m^5*x^4*e^5 + 3
0*(x*e + d)^m*A*c^3*d^3*m^5*x^4*e^5 + 420*(x*e + d)^m*B*c^3*d^3*m^4*x^5*e^5
 - 210*(x*e + d)^m*B*c^3*d^4*m^4*x^4*e^4 + 3*(x*e + d)^m*B*a*b^2*m^7*x^4*e^
8 + (x*e + d)^m*A*b^3*m^7*x^4*e^8 + 3*(x*e + d)^m*B*a^2*c*m^7*x^4*e^8 + 6*(
x*e + d)^m*A*a*b*c*m^7*x^4*e^8 + 31*(x*e + d)^m*B*b^3*m^6*x^5*e^8 + 186*(x*
e + d)^m*B*a*b*c*m^6*x^5*e^8 + 93*(x*e + d)^m*A*b^2*c*m^6*x^5*e^8 + 93*(x*e
 + d)^m*A*a*c^2*m^6*x^5*e^8 + 1098*(x*e + d)^m*B*b^2*c*m^5*x^6*e^8 + 1098*(
x*e + d)^m*B*a*c^2*m^5*x^6*e^8 + 1098*(x*e + d)^m*A*b*c^2*m^5*x^6*e^8 + 640
5*(x*e + d)^m*B*b*c^2*m^4*x^7*e^8 + 2135*(x*e + d)^m*A*c^3*m^4*x^7*e^8 + 67
69*(x*e + d)^m*B*c^3*m^3*x^8*e^8 + 3*(x*e + d)^m*B*a*b^2*d*m^7*x^3*e^7 + (x
*e + d)^m*A*b^3*d*m^7*x^3*e^7 + 3*(x*e + d)^m*B*a^2*c*d*m^7*x^3*e^7 + 6*(x*
e + d)^m*A*a*b*c*d*m^7*x^3*e^7 + 27*(x*e + d)^m*B*b^3*d*m^6*x^4*e^7 + 162*(
x*e + d)^m*B*a*b*c*d*m^6*x^4*e^7 + 81*(x*e + d)^m*A*b^2*c*d*m^6*x^4*e^7 + 8
1*(x*e + d)^m*A*a*c^2*d*m^6*x^4*e^7 + 723*(x*e + d)^m*B*b^2*c*d*m^5*x^5*e^7
 + 723*(x*e + d)^m*B*a*c^2*d*m^5*x^5*e^7 + 723*(x*e + d)^m*A*b*c^2*d*m^5*x^
```

```
5*e^7 + 2715*(x*e + d)^m*B*b*c^2*d*m^4*x^6*e^7 + 905*(x*e + d)^m*A*c^3*d*m^
4*x^6*e^7 + 1624*(x*e + d)^m*B*c^3*d*m^3*x^7*e^7 - 4*(x*e + d)^m*B*b^3*d^2*
m^6*x^3*e^6 - 24*(x*e + d)^m*B*a*b*c*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*b^2
*c*d^2*m^6*x^3*e^6 - 12*(x*e + d)^m*A*a*c^2*d^2*m^6*x^3*e^6 - 315*(x*e + d)
^m*B*b^2*c*d^2*m^5*x^4*e^6 - 315*(x*e + d)^m*B*a*c^2*d^2*m^5*x^4*e^6 - 315*
(x*e + d)^m*A*b*c^2*d^2*m^5*x^4*e^6 - 2070*(x*e + d)^m*B*b*c^2*d^2*m^4*x^5*
e^6 - 690*(x*e + d)^m*A*c^3*d^2*m^4*x^5*e^6 - 1575*(x*e + d)^m*B*c^3*d^2*m^
3*x^6*e^6 + 60*(x*e + d)^m*B*b^2*c*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*B*a*c^2
*d^3*m^5*x^3*e^5 + 60*(x*e + d)^m*A*b*c^2*d^3*m^5*x^3*e^5 + 1260*(x*e + d)^
m*B*b*c^2*d^3*m^4*x^4*e^5 + 420*(x*e + d)^m*A*c^3*d^3*m^4*x^4*e^5 + 1470*(x
*e + d)^m*B*c^3*d^3*m^3*x^5*e^5 - 360*(x*e + d)^m*B*b*c^2*d^4*m^4*x^3*e^4 -
 120*(x*e + d)^m*A*c^3*d^4*m^4*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m^3*x^4
*e^4 + 840*(x*e + d)^m*B*c^3*d^5*m^3*x^3*e^3 + 3*(x*e + d)^m*B*a^2*b*m^7*x^
3*e^8 + 3*(x*e + d)^m*A*a*b^2*m^7*x^3*e^8 + 3*(x*e + d)^m*A*a^2*c*m^7*x^3*e
^8 + 96*(x*e + d)^m*B*a*b^2*m^6*x^4*e^8 + 32*(x*e + d)^m*A*b^3*m^6*x^4*e^8
+ 96*(x*e + d)^m*B*a^2*c*m^6*x^4*e^8 + 192*(x*e + d)^m*A*a*b*c*m^6*x^4*e^8
+ 391*(x*e + d)^m*B*b^3*m^5*x^5*e^8 + 2346*(x*e + d)^m*B*a*b*c*m^5*x^5*e^8
+ 1173*(x*e + d)^m*A*b^2*c*m^5*x^5*e^8 + 1173*(x*e + d)^m*A*a*c^2*m^5*x^5*e
^8 + 7020*(x*e + d)^m*B*b^2*c*m^4*x^6*e^8 + 7020*(x*e + d)^m*B*a*c^2*m^4*x^
6*e^8 + 7020*(x*e + d)^m*A*b*c^2*m^4*x^6*e^8 + 22512*(x*e + d)^m*B*b*c^2*m^
3*x^7*e^8 + 7504*(x*e + d)^m*A*c^3*m^3*x^7*e^8 + 13132*(x*e + d)^m*B*c^3*m^
2*x^8*e^8 + 3*(x*e + d)^m*B*a^2*b*d*m^7*x^2*e^7 + 3*(x*e + d)^m*A*a*b^2*d*m
^7*x^2*e^7 + 3*(x*e + d)^m*A*a^2*c*d*m^7*x^2*e^7 + 87*(x*e + d)^m*B*a*b^2*d
*m^6*x^3*e^7 + 29*(x*e + d)^m*A*b^3*d*m^6*x^3*e^7 + 87*(x*e + d)^m*B*a^2*c*
d*m^6*x^3*e^7 + 174*(x*e + d)^m*A*a*b*c*d*m^6*x^3*e^7 + 283*(x*e + d)^m*B*b
^3*d*m^5*x^4*e^7 + 1698*(x*e + d)^m*B*a*b*c*d*m^5*x^4*e^7 + 849*(x*e + d)^m
*A*b^2*c*d*m^5*x^4*e^7 + 849*(x*e + d)^m*A*a*c^2*d*m^5*x^4*e^7 + 3405*(x*e
+ d)^m*B*b^2*c*d*m^4*x^5*e^7 + 3405*(x*e + d)^m*B*a*c^2*d*m^4*x^5*e^7 + 340
5*(x*e + d)^m*A*b*c^2*d*m^4*x^5*e^7 + 6222*(x*e + d)^m*B*b*c^2*d*m^3*x^6*e^
7 + 2074*(x*e + d)^m*A*c^3*d*m^3*x^6*e^7 + 1764*(x*e + d)^m*B*c^3*d*m^2*x^7
*e^7 - 9*(x*e + d)^m*B*a*b^2*d^2*m^6*x^2*e^6 - 3*(x*e + d)^m*A*b^3*d^2*m^6*
x^2*e^6 - 9*(x*e + d)^m*B*a^2*c*d^2*m^6*x^2*e^6 - 18*(x*e + d)^m*A*a*b*c*d^
2*m^6*x^2*e^6 - 96*(x*e + d)^m*B*b^3*d^2*m^5*x^3*e^6 - 576*(x*e + d)^m*B*a*
b*c*d^2*m^5*x^3*e^6 - 288*(x*e + d)^m*A*b^2*c*d^2*m^5*x^3*e^6 - 288*(x*e +
d)^m*A*a*c^2*d^2*m^5*x^3*e^6 - 2355*(x*e + d)^m*B*b^2*c*d^2*m^4*x^4*e^6 - 2
355*(x*e + d)^m*B*a*c^2*d^2*m^4*x^4*e^6 - 2355*(x*e + d)^m*A*b*c^2*d^2*m^4*
x^4*e^6 - 5940*(x*e + d)^m*B*b*c^2*d^2*m^3*x^5*e^6 - 1980*(x*e + d)^m*A*c^3
*d^2*m^3*x^5*e^6 - 1918*(x*e + d)^m*B*c^3*d^2*m^2*x^6*e^6 + 12*(x*e + d)^m*
B*b^3*d^3*m^5*x^2*e^5 + 72*(x*e + d)^m*B*a*b*c*d^3*m^5*x^2*e^5 + 36*(x*e +
d)^m*A*b^2*c*d^3*m^5*x^2*e^5 + 36*(x*e + d)^m*A*a*c^2*d^3*m^5*x^2*e^5 + 108
0*(x*e + d)^m*B*b^2*c*d^3*m^4*x^3*e^5 + 1080*(x*e + d)^m*B*a*c^2*d^3*m^4*x^
3*e^5 + 1080*(x*e + d)^m*A*b*c^2*d^3*m^4*x^3*e^5 + 5310*(x*e + d)^m*B*b*c^2
*d^3*m^3*x^4*e^5 + 1770*(x*e + d)^m*A*c^3*d^3*m^3*x^4*e^5 + 2100*(x*e + d)^
m*B*c^3*d^3*m^2*x^5*e^5 - 180*(x*e + d)^m*B*b^2*c*d^4*m^4*x^2*e^4 - 180*(x*
e + d)^m*B*a*c^2*d^4*m^4*x^2*e^4 - 180*(x*e + d)^m*A*b*c^2*d^4*m^4*x^2*e^4
- 3960*(x*e + d)^m*B*b*c^2*d^4*m^3*x^3*e^4 - 1320*(x*e + d)^m*A*c^3*d^4*m^3
*x^3*e^4 - 2310*(x*e + d)^m*B*c^3*d^4*m^2*x^4*e^4 + 1080*(x*e + d)^m*B*b*c^
2*d^5*m^3*x^2*e^3 + 360*(x*e + d)^m*A*c^3*d^5*m^3*x^2*e^3 + 2520*(x*e + d)^
m*B*c^3*d^5*m^2*x^3*e^3 - 2520*(x*e + d)^m*B*c^3*d^6*m^2*x^2*e^2 + (x*e + d
)^m*B*a^3*m^7*x^2*e^8 + 3*(x*e + d)^m*A*a^2*b*m^7*x^2*e^8 + 99*(x*e + d)^m*
B*a^2*b*m^6*x^3*e^8 + 99*(x*e + d)^m*A*a*b^2*m^6*x^3*e^8 + 99*(x*e + d)^m*A
*a^2*c*m^6*x^3*e^8 + 1254*(x*e + d)^m*B*a*b^2*m^5*x^4*e^8 + 418*(x*e + d)^m
*A*b^3*m^5*x^4*e^8 + 1254*(x*e + d)^m*B*a^2*c*m^5*x^4*e^8 + 2508*(x*e + d)^
m*A*a*b*c*m^5*x^4*e^8 + 2581*(x*e + d)^m*B*b^3*m^4*x^5*e^8 + 15486*(x*e + d
)^m*B*a*b*c*m^4*x^5*e^8 + 7743*(x*e + d)^m*A*b^2*c*m^4*x^5*e^8 + 7743*(x*e
+ d)^m*A*a*c^2*m^4*x^5*e^8 + 25227*(x*e + d)^m*B*b^2*c*m^3*x^6*e^8 + 25227*
(x*e + d)^m*B*a*c^2*m^3*x^6*e^8 + 25227*(x*e + d)^m*A*b*c^2*m^3*x^6*e^8 + 4
4268*(x*e + d)^m*B*b*c^2*m^2*x^7*e^8 + 14756*(x*e + d)^m*A*c^3*m^2*x^7*e^8
+ 13068*(x*e + d)^m*B*c^3*m*x^8*e^8 + (x*e + d)^m*B*a^3*d*m^7*x*e^7 + 3*(x*
e + d)^m*A*a^2*b*d*m^7*x*e^7 + 93*(x*e + d)^m*B*a^2*b*d*m^6*x^2*e^7 + 93*(x
*e + d)^m*A*a*b^2*d*m^6*x^2*e^7 + 93*(x*e + d)^m*A*a^2*c*d*m^6*x^2*e^7 + 99
3*(x*e + d)^m*B*a*b^2*d*m^5*x^3*e^7 + 331*(x*e + d)^m*A*b^3*d*m^5*x^3*e^7 +
 993*(x*e + d)^m*B*a^2*c*d*m^5*x^3*e^7 + 1986*(x*e + d)^m*A*a*b*c*d*m^5*x^3
*e^7 + 1449*(x*e + d)^m*B*b^3*d*m^4*x^4*e^7 + 8694*(x*e + d)^m*B*a*b*c*d*m^
4*x^4*e^7 + 4347*(x*e + d)^m*A*b^2*c*d*m^4*x^4*e^7 + 4347*(x*e + d)^m*A*a*c
^2*d*m^4*x^4*e^7 + 8202*(x*e + d)^m*B*b^2*c*d*m^3*x^5*e^7 + 8202*(x*e + d)^
m*B*a*c^2*d*m^3*x^5*e^7 + 8202*(x*e + d)^m*A*b*c^2*d*m^3*x^5*e^7 + 6936*(x*
e + d)^m*B*b*c^2*d*m^2*x^6*e^7 + 2312*(x*e + d)^m*A*c^3*d*m^2*x^6*e^7 + 720
*(x*e + d)^m*B*c^3*d*m*x^7*e^7 - 6*(x*e + d)^m*B*a^2*b*d^2*m^6*x*e^6 - 6*(x
*e + d)^m*A*a*b^2*d^2*m^6*x*e^6 - 6*(x*e + d)^m*A*a^2*c*d^2*m^6*x*e^6 - 243
*(x*e + d)^m*B*a*b^2*d^2*m^5*x^2*e^6 - 81*(x*e + d)^m*A*b^3*d^2*m^5*x^2*e^6
 - 243*(x*e + d)^m*B*a^2*c*d^2*m^5*x^2*e^6 - 486*(x*e + d)^m*A*a*b*c*d^2*m^
5*x^2*e^6 - 844*(x*e + d)^m*B*b^3*d^2*m^4*x^3*e^6 - 5064*(x*e + d)^m*B*a*b*
c*d^2*m^4*x^3*e^6 - 2532*(x*e + d)^m*A*b^2*c*d^2*m^4*x^3*e^6 - 2532*(x*e +
d)^m*A*a*c^2*d^2*m^4*x^3*e^6 - 7605*(x*e + d)^m*B*b^2*c*d^2*m^3*x^4*e^6 - 7
605*(x*e + d)^m*B*a*c^2*d^2*m^3*x^4*e^6 - 7605*(x*e + d)^m*A*b*c^2*d^2*m^3*
x^4*e^6 - 7632*(x*e + d)^m*B*b*c^2*d^2*m^2*x^5*e^6 - 2544*(x*e + d)^m*A*c^3
*d^2*m^2*x^5*e^6 - 840*(x*e + d)^m*B*c^3*d^2*m*x^6*e^6 + 18*(x*e + d)^m*B*a
*b^2*d^3*m^5*x*e^5 + 6*(x*e + d)^m*A*b^3*d^3*m^5*x*e^5 + 18*(x*e + d)^m*B*a
^2*c*d^3*m^5*x*e^5 + 36*(x*e + d)^m*A*a*b*c*d^3*m^5*x*e^5 + 264*(x*e + d)^m
*B*b^3*d^3*m^4*x^2*e^5 + 1584*(x*e + d)^m*B*a*b*c*d^3*m^4*x^2*e^5 + 792*(x*
e + d)^m*A*b^2*c*d^3*m^4*x^2*e^5 + 792*(x*e + d)^m*A*a*c^2*d^3*m^4*x^2*e^5
+ 6180*(x*e + d)^m*B*b^2*c*d^3*m^3*x^3*e^5 + 6180*(x*e + d)^m*B*a*c^2*d^3*m
^3*x^3*e^5 + 6180*(x*e + d)^m*A*b*c^2*d^3*m^3*x^3*e^5 + 8460*(x*e + d)^m*B*
b*c^2*d^3*m^2*x^4*e^5 + 2820*(x*e + d)^m*A*c^3*d^3*m^2*x^4*e^5 + 1008*(x*e
+ d)^m*B*c^3*d^3*m*x^5*e^5 - 24*(x*e + d)^m*B*b^3*d^4*m^4*x*e^4 - 144*(x*e
+ d)^m*B*a*b*c*d^4*m^4*x*e^4 - 72*(x*e + d)^m*A*b^2*c*d^4*m^4*x*e^4 - 72*(x
*e + d)^m*A*a*c^2*d^4*m^4*x*e^4 - 2880*(x*e + d)^m*B*b^2*c*d^4*m^3*x^2*e^4
- 2880*(x*e + d)^m*B*a*c^2*d^4*m^3*x^2*e^4 - 2880*(x*e + d)^m*A*b*c^2*d^4*m
^3*x^2*e^4 - 9360*(x*e + d)^m*B*b*c^2*d^4*m^2*x^3*e^4 - 3120*(x*e + d)^m*A*
c^3*d^4*m^2*x^3*e^4 - 1260*(x*e + d)^m*B*c^3*d^4*m*x^4*e^4 + 360*(x*e + d)^
m*B*b^2*c*d^5*m^3*x*e^3 + 360*(x*e + d)^m*B*a*c^2*d^5*m^3*x*e^3 + 360*(x*e
+ d)^m*A*b*c^2*d^5*m^3*x*e^3 + 9720*(x*e + d)^m*B*b*c^2*d^5*m^2*x^2*e^3 + 3
240*(x*e + d)^m*A*c^3*d^5*m^2*x^2*e^3 + 1680*(x*e + d)^m*B*c^3*d^5*m*x^3*e^
3 - 2160*(x*e + d)^m*B*b*c^2*d^6*m^2*x*e^2 - 720*(x*e + d)^m*A*c^3*d^6*m^2*
x*e^2 - 2520*(x*e + d)^m*B*c^3*d^6*m*x^2*e^2 + 5040*(x*e + d)^m*B*c^3*d^7*m
*x*e + (x*e + d)^m*A*a^3*m^7*x*e^8 + 34*(x*e + d)^m*B*a^3*m^6*x^2*e^8 + 102
*(x*e + d)^m*A*a^2*b*m^6*x^2*e^8 + 1341*(x*e + d)^m*B*a^2*b*m^5*x^3*e^8 + 1
341*(x*e + d)^m*A*a*b^2*m^5*x^3*e^8 + 1341*(x*e + d)^m*A*a^2*c*m^5*x^3*e^8
+ 8592*(x*e + d)^m*B*a*b^2*m^4*x^4*e^8 + 2864*(x*e + d)^m*A*b^3*m^4*x^4*e^8
 + 8592*(x*e + d)^m*B*a^2*c*m^4*x^4*e^8 + 17184*(x*e + d)^m*A*a*b*c*m^4*x^4
*e^8 + 9544*(x*e + d)^m*B*b^3*m^3*x^5*e^8 + 57264*(x*e + d)^m*B*a*b*c*m^3*x
^5*e^8 + 28632*(x*e + d)^m*A*b^2*c*m^3*x^5*e^8 + 28632*(x*e + d)^m*A*a*c^2*
m^3*x^5*e^8 + 50490*(x*e + d)^m*B*b^2*c*m^2*x^6*e^8 + 50490*(x*e + d)^m*B*a
*c^2*m^2*x^6*e^8 + 50490*(x*e + d)^m*A*b*c^2*m^2*x^6*e^8 + 44496*(x*e + d)^
m*B*b*c^2*m*x^7*e^8 + 14832*(x*e + d)^m*A*c^3*m*x^7*e^8 + 5040*(x*e + d)^m*
B*c^3*x^8*e^8 + (x*e + d)^m*A*a^3*d*m^7*e^7 + 33*(x*e + d)^m*B*a^3*d*m^6*x*
e^7 + 99*(x*e + d)^m*A*a^2*b*d*m^6*x*e^7 + 1155*(x*e + d)^m*B*a^2*b*d*m^5*x
^2*e^7 + 1155*(x*e + d)^m*A*a*b^2*d*m^5*x^2*e^7 + 1155*(x*e + d)^m*A*a^2*c*
d*m^5*x^2*e^7 + 5613*(x*e + d)^m*B*a*b^2*d*m^4*x^3*e^7 + 1871*(x*e + d)^m*A
*b^3*d*m^4*x^3*e^7 + 5613*(x*e + d)^m*B*a^2*c*d*m^4*x^3*e^7 + 11226*(x*e +
d)^m*A*a*b*c*d*m^4*x^3*e^7 + 3748*(x*e + d)^m*B*b^3*d*m^3*x^4*e^7 + 22488*(
x*e + d)^m*B*a*b*c*d*m^3*x^4*e^7 + 11244*(x*e + d)^m*A*b^2*c*d*m^3*x^4*e^7
+ 11244*(x*e + d)^m*A*a*c^2*d*m^3*x^4*e^7 + 9480*(x*e + d)^m*B*b^2*c*d*m^2*
x^5*e^7 + 9480*(x*e + d)^m*B*a*c^2*d*m^2*x^5*e^7 + 9480*(x*e + d)^m*A*b*c^2
*d*m^2*x^5*e^7 + 2880*(x*e + d)^m*B*b*c^2*d*m*x^6*e^7 + 960*(x*e + d)^m*A*c
^3*d*m*x^6*e^7 - (x*e + d)^m*B*a^3*d^2*m^6*e^6 - 3*(x*e + d)^m*A*a^2*b*d^2*
m^6*e^6 - 180*(x*e + d)^m*B*a^2*b*d^2*m^5*x*e^6 - 180*(x*e + d)^m*A*a*b^2*d
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^2*m^5*x*e^6 - 180*(x*e + d)^m*A*a^2*c*d^2*m^5*x*e^6 - 2493*(x*e + d)^m*B*a
*b^2*d^2*m^4*x^2*e^6 - 831*(x*e + d)^m*A*b^3*d^2*m^4*x^2*e^6 - 2493*(x*e +
d)^m*B*a^2*c*d^2*m^4*x^2*e^6 - 4986*(x*e + d)^m*A*a*b*c*d^2*m^4*x^2*e^6 - 3
264*(x*e + d)^m*B*b^3*d^2*m^3*x^3*e^6 - 19584*(x*e + d)^m*B*a*b*c*d^2*m^3*x
^3*e^6 - 9792*(x*e + d)^m*A*b^2*c*d^2*m^3*x^3*e^6 - 9792*(x*e + d)^m*A*a*c^
2*d^2*m^3*x^3*e^6 - 10590*(x*e + d)^m*B*b^2*c*d^2*m^2*x^4*e^6 - 10590*(x*e
+ d)^m*B*a*c^2*d^2*m^2*x^4*e^6 - 10590*(x*e + d)^m*A*b*c^2*d^2*m^2*x^4*e^6
- 3456*(x*e + d)^m*B*b*c^2*d^2*m*x^5*e^6 - 1152*(x*e + d)^m*A*c^3*d^2*m*x^5
*e^6 + 6*(x*e + d)^m*B*a^2*b*d^3*m^5*e^5 + 6*(x*e + d)^m*A*a*b^2*d^3*m^5*e^
5 + 6*(x*e + d)^m*A*a^2*c*d^3*m^5*e^5 + 468*(x*e + d)^m*B*a*b^2*d^3*m^4*x*e
^5 + 156*(x*e + d)^m*A*b^3*d^3*m^4*x*e^5 + 468*(x*e + d)^m*B*a^2*c*d^3*m^4*
x*e^5 + 936*(x*e + d)^m*A*a*b*c*d^3*m^4*x*e^5 + 2004*(x*e + d)^m*B*b^3*d^3*
m^3*x^2*e^5 + 12024*(x*e + d)^m*B*a*b*c*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*
A*b^2*c*d^3*m^3*x^2*e^5 + 6012*(x*e + d)^m*A*a*c^2*d^3*m^3*x^2*e^5 + 11880*
(x*e + d)^m*B*b^2*c*d^3*m^2*x^3*e^5 + 11880*(x*e + d)^m*B*a*c^2*d^3*m^2*x^3
*e^5 + 11880*(x*e + d)^m*A*b*c^2*d^3*m^2*x^3*e^5 + 4320*(x*e + d)^m*B*b*c^2
*d^3*m*x^4*e^5 + 1440*(x*e + d)^m*A*c^3*d^3*m*x^4*e^5 - 18*(x*e + d)^m*B*a*
b^2*d^4*m^4*e^4 - 6*(x*e + d)^m*A*b^3*d^4*m^4*e^4 - 18*(x*e + d)^m*B*a^2*c*
d^4*m^4*e^4 - 36*(x*e + d)^m*A*a*b*c*d^4*m^4*e^4 - 504*(x*e + d)^m*B*b^3*d^
4*m^3*x*e^4 - 3024*(x*e + d)^m*B*a*b*c*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*b
^2*c*d^4*m^3*x*e^4 - 1512*(x*e + d)^m*A*a*c^2*d^4*m^3*x*e^4 - 12780*(x*e +
d)^m*B*b^2*c*d^4*m^2*x^2*e^4 - 12780*(x*e + d)^m*B*a*c^2*d^4*m^2*x^2*e^4 -
12780*(x*e + d)^m*A*b*c^2*d^4*m^2*x^2*e^4 - 5760*(x*e + d)^m*B*b*c^2*d^4*m*
x^3*e^4 - 1920*(x*e + d)^m*A*c^3*d^4*m*x^3*e^4 + 24*(x*e + d)^m*B*b^3*d^5*m
^3*e^3 + 144*(x*e + d)^m*B*a*b*c*d^5*m^3*e^3 + 72*(x*e + d)^m*A*b^2*c*d^5*m
^3*e^3 + 72*(x*e + d)^m*A*a*c^2*d^5*m^3*e^3 + 5400*(x*e + d)^m*B*b^2*c*d^5*
m^2*x*e^3 + 5400*(x*e + d)^m*B*a*c^2*d^5*m^2*x*e^3 + 5400*(x*e + d)^m*A*b*c
^2*d^5*m^2*x*e^3 + 8640*(x*e + d)^m*B*b*c^2*d^5*m*x^2*e^3 + 2880*(x*e + d)^
m*A*c^3*d^5*m*x^2*e^3 - 360*(x*e + d)^m*B*b^2*c*d^6*m^2*e^2 - 360*(x*e + d)
^m*B*a*c^2*d^6*m^2*e^2 - 360*(x*e + d)^m*A*b*c^2*d^6*m^2*e^2 - 17280*(x*e +
 d)^m*B*b*c^2*d^6*m*x*e^2 - 5760*(x*e + d)^m*A*c^3*d^6*m*x*e^2 + 2160*(x*e
+ d)^m*B*b*c^2*d^7*m*e + 720*(x*e + d)^m*A*c^3*d^7*m*e - 5040*(x*e + d)^m*B
*c^3*d^8 + 35*(x*e + d)^m*A*a^3*m^6*x*e^8 + 478*(x*e + d)^m*B*a^3*m^5*x^2*e
^8 + 1434*(x*e + d)^m*A*a^2*b*m^5*x^2*e^8 + 9585*(x*e + d)^m*B*a^2*b*m^4*x^
3*e^8 + 9585*(x*e + d)^m*A*a*b^2*m^4*x^3*e^8 + 9585*(x*e + d)^m*A*a^2*c*m^4
*x^3*e^8 + 32979*(x*e + d)^m*B*a*b^2*m^3*x^4*e^8 + 10993*(x*e + d)^m*A*b^3*
m^3*x^4*e^8 + 32979*(x*e + d)^m*B*a^2*c*m^3*x^4*e^8 + 65958*(x*e + d)^m*A*a
*b*c*m^3*x^4*e^8 + 19564*(x*e + d)^m*B*b^3*m^2*x^5*e^8 + 117384*(x*e + d)^m
*B*a*b*c*m^2*x^5*e^8 + 58692*(x*e + d)^m*A*b^2*c*m^2*x^5*e^8 + 58692*(x*e +
 d)^m*A*a*c^2*m^2*x^5*e^8 + 51432*(x*e + d)^m*B*b^2*c*m*x^6*e^8 + 51432*(x*
e + d)^m*B*a*c^2*m*x^6*e^8 + 51432*(x*e + d)^m*A*b*c^2*m*x^6*e^8 + 17280*(x
*e + d)^m*B*b*c^2*x^7*e^8 + 5760*(x*e + d)^m*A*c^3*x^7*e^8 + 35*(x*e + d)^m
*A*a^3*d*m^6*e^7 + 445*(x*e + d)^m*B*a^3*d*m^5*x*e^7 + 1335*(x*e + d)^m*A*a
^2*b*d*m^5*x*e^7 + 7275*(x*e + d)^m*B*a^2*b*d*m^4*x^2*e^7 + 7275*(x*e + d)^
m*A*a*b^2*d*m^4*x^2*e^7 + 7275*(x*e + d)^m*A*a^2*c*d*m^4*x^2*e^7 + 16140*(x
*e + d)^m*B*a*b^2*d*m^3*x^3*e^7 + 5380*(x*e + d)^m*A*b^3*d*m^3*x^3*e^7 + 16
140*(x*e + d)^m*B*a^2*c*d*m^3*x^3*e^7 + 32280*(x*e + d)^m*A*a*b*c*d*m^3*x^3
*e^7 + 4572*(x*e + d)^m*B*b^3*d*m^2*x^4*e^7 + 27432*(x*e + d)^m*B*a*b*c*d*m
^2*x^4*e^7 + 13716*(x*e + d)^m*A*b^2*c*d*m^2*x^4*e^7 + 13716*(x*e + d)^m*A*
a*c^2*d*m^2*x^4*e^7 + 4032*(x*e + d)^m*B*b^2*c*d*m*x^5*e^7 + 4032*(x*e + d)
^m*B*a*c^2*d*m*x^5*e^7 + 4032*(x*e + d)^m*A*b*c^2*d*m*x^5*e^7 - 33*(x*e + d
)^m*B*a^3*d^2*m^5*e^6 - 99*(x*e + d)^m*A*a^2*b*d^2*m^5*e^6 - 2130*(x*e + d)
^m*B*a^2*b*d^2*m^4*x*e^6 - 2130*(x*e + d)^m*A*a*b^2*d^2*m^4*x*e^6 - 2130*(x
*e + d)^m*A*a^2*c*d^2*m^4*x*e^6 - 11853*(x*e + d)^m*B*a*b^2*d^2*m^3*x^2*e^6
 - 3951*(x*e + d)^m*A*b^3*d^2*m^3*x^2*e^6 - 11853*(x*e + d)^m*B*a^2*c*d^2*m
^3*x^2*e^6 - 23706*(x*e + d)^m*A*a*b*c*d^2*m^3*x^2*e^6 - 5200*(x*e + d)^m*B
*b^3*d^2*m^2*x^3*e^6 - 31200*(x*e + d)^m*B*a*b*c*d^2*m^2*x^3*e^6 - 15600*(x
*e + d)^m*A*b^2*c*d^2*m^2*x^3*e^6 - 15600*(x*e + d)^m*A*a*c^2*d^2*m^2*x^3*e
^6 - 5040*(x*e + d)^m*B*b^2*c*d^2*m*x^4*e^6 - 5040*(x*e + d)^m*B*a*c^2*d^2*
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m*x^4*e^6 - 5040*(x*e + d)^m*A*b*c^2*d^2*m*x^4*e^6 + 180*(x*e + d)^m*B*a^2*
b*d^3*m^4*e^5 + 180*(x*e + d)^m*A*a*b^2*d^3*m^4*e^5 + 180*(x*e + d)^m*A*a^2
*c*d^3*m^4*e^5 + 4518*(x*e + d)^m*B*a*b^2*d^3*m^3*x*e^5 + 1506*(x*e + d)^m*
A*b^3*d^3*m^3*x*e^5 + 4518*(x*e + d)^m*B*a^2*c*d^3*m^3*x*e^5 + 9036*(x*e +
d)^m*A*a*b*c*d^3*m^3*x*e^5 + 5784*(x*e + d)^m*B*b^3*d^3*m^2*x^2*e^5 + 34704
*(x*e + d)^m*B*a*b*c*d^3*m^2*x^2*e^5 + 17352*(x*e + d)^m*A*b^2*c*d^3*m^2*x^
2*e^5 + 17352*(x*e + d)^m*A*a*c^2*d^3*m^2*x^2*e^5 + 6720*(x*e + d)^m*B*b^2*
c*d^3*m*x^3*e^5 + 6720*(x*e + d)^m*B*a*c^2*d^3*m*x^3*e^5 + 6720*(x*e + d)^m
*A*b*c^2*d^3*m*x^3*e^5 - 468*(x*e + d)^m*B*a*b^2*d^4*m^3*e^4 - 156*(x*e + d
)^m*A*b^3*d^4*m^3*e^4 - 468*(x*e + d)^m*B*a^2*c*d^4*m^3*e^4 - 936*(x*e + d)
^m*A*a*b*c*d^4*m^3*e^4 - 3504*(x*e + d)^m*B*b^3*d^4*m^2*x*e^4 - 21024*(x*e
+ d)^m*B*a*b*c*d^4*m^2*x*e^4 - 10512*(x*e + d)^m*A*b^2*c*d^4*m^2*x*e^4 - 10
512*(x*e + d)^m*A*a*c^2*d^4*m^2*x*e^4 - 10080*(x*e + d)^m*B*b^2*c*d^4*m*x^2
*e^4 - 10080*(x*e + d)^m*B*a*c^2*d^4*m*x^2*e^4 - 10080*(x*e + d)^m*A*b*c^2*
d^4*m*x^2*e^4 + 504*(x*e + d)^m*B*b^3*d^5*m^2*e^3 + 3024*(x*e + d)^m*B*a*b*
c*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*b^2*c*d^5*m^2*e^3 + 1512*(x*e + d)^m*A*a
*c^2*d^5*m^2*e^3 + 20160*(x*e + d)^m*B*b^2*c*d^5*m*x*e^3 + 20160*(x*e + d)^
m*B*a*c^2*d^5*m*x*e^3 + 20160*(x*e + d)^m*A*b*c^2*d^5*m*x*e^3 - 5400*(x*e +
 d)^m*B*b^2*c*d^6*m*e^2 - 5400*(x*e + d)^m*B*a*c^2*d^6*m*e^2 - 5400*(x*e +
d)^m*A*b*c^2*d^6*m*e^2 + 17280*(x*e + d)^m*B*b*c^2*d^7*e + 5760*(x*e + d)^m
*A*c^3*d^7*e + 511*(x*e + d)^m*A*a^3*m^5*x*e^8 + 3580*(x*e + d)^m*B*a^3*m^4
*x^2*e^8 + 10740*(x*e + d)^m*A*a^2*b*m^4*x^2*e^8 + 38592*(x*e + d)^m*B*a^2*
b*m^3*x^3*e^8 + 38592*(x*e + d)^m*A*a*b^2*m^3*x^3*e^8 + 38592*(x*e + d)^m*A
*a^2*c*m^3*x^3*e^8 + 69936*(x*e + d)^m*B*a*b^2*m^2*x^4*e^8 + 23312*(x*e + d
)^m*A*b^3*m^2*x^4*e^8 + 69936*(x*e + d)^m*B*a^2*c*m^2*x^4*e^8 + 139872*(x*e
 + d)^m*A*a*b*c*m^2*x^4*e^8 + 20304*(x*e + d)^m*B*b^3*m*x^5*e^8 + 121824*(x
*e + d)^m*B*a*b*c*m*x^5*e^8 + 60912*(x*e + d)^m*A*b^2*c*m*x^5*e^8 + 60912*(
x*e + d)^m*A*a*c^2*m*x^5*e^8 + 20160*(x*e + d)^m*B*b^2*c*x^6*e^8 + 20160*(x
*e + d)^m*B*a*c^2*x^6*e^8 + 20160*(x*e + d)^m*A*b*c^2*x^6*e^8 + 511*(x*e +
d)^m*A*a^3*d*m^5*e^7 + 3135*(x*e + d)^m*B*a^3*d*m^4*x*e^7 + 9405*(x*e + d)^
m*A*a^2*b*d*m^4*x*e^7 + 24042*(x*e + d)^m*B*a^2*b*d*m^3*x^2*e^7 + 24042*(x*
e + d)^m*A*a*b^2*d*m^3*x^2*e^7 + 24042*(x*e + d)^m*A*a^2*c*d*m^3*x^2*e^7 +
21516*(x*e + d)^m*B*a*b^2*d*m^2*x^3*e^7 + 7172*(x*e + d)^m*A*b^3*d*m^2*x^3*
e^7 + 21516*(x*e + d)^m*B*a^2*c*d*m^2*x^3*e^7 + 43032*(x*e + d)^m*A*a*b*c*d
*m^2*x^3*e^7 + 2016*(x*e + d)^m*B*b^3*d*m*x^4*e^7 + 12096*(x*e + d)^m*B*a*b
*c*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*b^2*c*d*m*x^4*e^7 + 6048*(x*e + d)^m*A*
a*c^2*d*m*x^4*e^7 - 445*(x*e + d)^m*B*a^3*d^2*m^4*e^6 - 1335*(x*e + d)^m*A*
a^2*b*d^2*m^4*e^6 - 12420*(x*e + d)^m*B*a^2*b*d^2*m^3*x*e^6 - 12420*(x*e +
d)^m*A*a*b^2*d^2*m^3*x*e^6 - 12420*(x*e + d)^m*A*a^2*c*d^2*m^3*x*e^6 - 2471
4*(x*e + d)^m*B*a*b^2*d^2*m^2*x^2*e^6 - 8238*(x*e + d)^m*A*b^3*d^2*m^2*x^2*
e^6 - 24714*(x*e + d)^m*B*a^2*c*d^2*m^2*x^2*e^6 - 49428*(x*e + d)^m*A*a*b*c
*d^2*m^2*x^2*e^6 - 2688*(x*e + d)^m*B*b^3*d^2*m*x^3*e^6 - 16128*(x*e + d)^m
*B*a*b*c*d^2*m*x^3*e^6 - 8064*(x*e + d)^m*A*b^2*c*d^2*m*x^3*e^6 - 8064*(x*e
 + d)^m*A*a*c^2*d^2*m*x^3*e^6 + 2130*(x*e + d)^m*B*a^2*b*d^3*m^3*e^5 + 2130
*(x*e + d)^m*A*a*b^2*d^3*m^3*e^5 + 2130*(x*e + d)^m*A*a^2*c*d^3*m^3*e^5 + 1
9188*(x*e + d)^m*B*a*b^2*d^3*m^2*x*e^5 + 6396*(x*e + d)^m*A*b^3*d^3*m^2*x*e
^5 + 19188*(x*e + d)^m*B*a^2*c*d^3*m^2*x*e^5 + 38376*(x*e + d)^m*A*a*b*c*d^
3*m^2*x*e^5 + 4032*(x*e + d)^m*B*b^3*d^3*m*x^2*e^5 + 24192*(x*e + d)^m*B*a*
b*c*d^3*m*x^2*e^5 + 12096*(x*e + d)^m*A*b^2*c*d^3*m*x^2*e^5 + 12096*(x*e +
d)^m*A*a*c^2*d^3*m*x^2*e^5 - 4518*(x*e + d)^m*B*a*b^2*d^4*m^2*e^4 - 1506*(x
*e + d)^m*A*b^3*d^4*m^2*e^4 - 4518*(x*e + d)^m*B*a^2*c*d^4*m^2*e^4 - 9036*(
x*e + d)^m*A*a*b*c*d^4*m^2*e^4 - 8064*(x*e + d)^m*B*b^3*d^4*m*x*e^4 - 48384
*(x*e + d)^m*B*a*b*c*d^4*m*x*e^4 - 24192*(x*e + d)^m*A*b^2*c*d^4*m*x*e^4 -
24192*(x*e + d)^m*A*a*c^2*d^4*m*x*e^4 + 3504*(x*e + d)^m*B*b^3*d^5*m*e^3 +
21024*(x*e + d)^m*B*a*b*c*d^5*m*e^3 + 10512*(x*e + d)^m*A*b^2*c*d^5*m*e^3 +
 10512*(x*e + d)^m*A*a*c^2*d^5*m*e^3 - 20160*(x*e + d)^m*B*b^2*c*d^6*e^2 -
20160*(x*e + d)^m*B*a*c^2*d^6*e^2 - 20160*(x*e + d)^m*A*b*c^2*d^6*e^2 + 402
5*(x*e + d)^m*A*a^3*m^4*x*e^8 + 15289*(x*e + d)^m*B*a^3*m^3*x^2*e^8 + 45867
*(x*e + d)^m*A*a^2*b*m^3*x^2*e^8 + 86076*(x*e + d)^m*B*a^2*b*m^2*x^3*e^8 +
86076*(x*e + d)^m*A*a*b^2*m^2*x^3*e^8 + 86076*(x*e + d)^m*A*a^2*c*m^2*x^3*e
^8 + 74628*(x*e + d)^m*B*a*b^2*m*x^4*e^8 + 24876*(x*e + d)^m*A*b^3*m*x^4*e^
8 + 74628*(x*e + d)^m*B*a^2*c*m*x^4*e^8 + 149256*(x*e + d)^m*A*a*b*c*m*x^4*
e^8 + 8064*(x*e + d)^m*B*b^3*x^5*e^8 + 48384*(x*e + d)^m*B*a*b*c*x^5*e^8 +
24192*(x*e + d)^m*A*b^2*c*x^5*e^8 + 24192*(x*e + d)^m*A*a*c^2*x^5*e^8 + 402
5*(x*e + d)^m*A*a^3*d*m^4*e^7 + 12154*(x*e + d)^m*B*a^3*d*m^3*x*e^7 + 36462
*(x*e + d)^m*A*a^2*b*d*m^3*x*e^7 + 37992*(x*e + d)^m*B*a^2*b*d*m^2*x^2*e^7
+ 37992*(x*e + d)^m*A*a*b^2*d*m^2*x^2*e^7 + 37992*(x*e + d)^m*A*a^2*c*d*m^2
*x^2*e^7 + 10080*(x*e + d)^m*B*a*b^2*d*m*x^3*e^7 + 3360*(x*e + d)^m*A*b^3*d
*m*x^3*e^7 + 10080*(x*e + d)^m*B*a^2*c*d*m*x^3*e^7 + 20160*(x*e + d)^m*A*a*
b*c*d*m*x^3*e^7 - 3135*(x*e + d)^m*B*a^3*d^2*m^3*e^6 - 9405*(x*e + d)^m*A*a
^2*b*d^2*m^3*e^6 - 35664*(x*e + d)^m*B*a^2*b*d^2*m^2*x*e^6 - 35664*(x*e + d
)^m*A*a*b^2*d^2*m^2*x*e^6 - 35664*(x*e + d)^m*A*a^2*c*d^2*m^2*x*e^6 - 15120
*(x*e + d)^m*B*a*b^2*d^2*m*x^2*e^6 - 5040*(x*e + d)^m*A*b^3*d^2*m*x^2*e^6 -
 15120*(x*e + d)^m*B*a^2*c*d^2*m*x^2*e^6 - 30240*(x*e + d)^m*A*a*b*c*d^2*m*
x^2*e^6 + 12420*(x*e + d)^m*B*a^2*b*d^3*m^2*e^5 + 12420*(x*e + d)^m*A*a*b^2
*d^3*m^2*e^5 + 12420*(x*e + d)^m*A*a^2*c*d^3*m^2*e^5 + 30240*(x*e + d)^m*B*
a*b^2*d^3*m*x*e^5 + 10080*(x*e + d)^m*A*b^3*d^3*m*x*e^5 + 30240*(x*e + d)^m
*B*a^2*c*d^3*m*x*e^5 + 60480*(x*e + d)^m*A*a*b*c*d^3*m*x*e^5 - 19188*(x*e +
 d)^m*B*a*b^2*d^4*m*e^4 - 6396*(x*e + d)^m*A*b^3*d^4*m*e^4 - 19188*(x*e + d
)^m*B*a^2*c*d^4*m*e^4 - 38376*(x*e + d)^m*A*a*b*c*d^4*m*e^4 + 8064*(x*e + d
)^m*B*b^3*d^5*e^3 + 48384*(x*e + d)^m*B*a*b*c*d^5*e^3 + 24192*(x*e + d)^m*A
*b^2*c*d^5*e^3 + 24192*(x*e + d)^m*A*a*c^2*d^5*e^3 + 18424*(x*e + d)^m*A*a^
3*m^3*x*e^8 + 36706*(x*e + d)^m*B*a^3*m^2*x^2*e^8 + 110118*(x*e + d)^m*A*a^
2*b*m^2*x^2*e^8 + 96144*(x*e + d)^m*B*a^2*b*m*x^3*e^8 + 96144*(x*e + d)^m*A
*a*b^2*m*x^3*e^8 + 96144*(x*e + d)^m*A*a^2*c*m*x^3*e^8 + 30240*(x*e + d)^m*
B*a*b^2*x^4*e^8 + 10080*(x*e + d)^m*A*b^3*x^4*e^8 + 30240*(x*e + d)^m*B*a^2
*c*x^4*e^8 + 60480*(x*e + d)^m*A*a*b*c*x^4*e^8 + 18424*(x*e + d)^m*A*a^3*d*
m^3*e^7 + 24552*(x*e + d)^m*B*a^3*d*m^2*x*e^7 + 73656*(x*e + d)^m*A*a^2*b*d
*m^2*x*e^7 + 20160*(x*e + d)^m*B*a^2*b*d*m*x^2*e^7 + 20160*(x*e + d)^m*A*a*
b^2*d*m*x^2*e^7 + 20160*(x*e + d)^m*A*a^2*c*d*m*x^2*e^7 - 12154*(x*e + d)^m
*B*a^3*d^2*m^2*e^6 - 36462*(x*e + d)^m*A*a^2*b*d^2*m^2*e^6 - 40320*(x*e + d
)^m*B*a^2*b*d^2*m*x*e^6 - 40320*(x*e + d)^m*A*a*b^2*d^2*m*x*e^6 - 40320*(x*
e + d)^m*A*a^2*c*d^2*m*x*e^6 + 35664*(x*e + d)^m*B*a^2*b*d^3*m*e^5 + 35664*
(x*e + d)^m*A*a*b^2*d^3*m*e^5 + 35664*(x*e + d)^m*A*a^2*c*d^3*m*e^5 - 30240
*(x*e + d)^m*B*a*b^2*d^4*e^4 - 10080*(x*e + d)^m*A*b^3*d^4*e^4 - 30240*(x*e
 + d)^m*B*a^2*c*d^4*e^4 - 60480*(x*e + d)^m*A*a*b*c*d^4*e^4 + 48860*(x*e +
d)^m*A*a^3*m^2*x*e^8 + 44712*(x*e + d)^m*B*a^3*m*x^2*e^8 + 134136*(x*e + d)
^m*A*a^2*b*m*x^2*e^8 + 40320*(x*e + d)^m*B*a^2*b*x^3*e^8 + 40320*(x*e + d)^
m*A*a*b^2*x^3*e^8 + 40320*(x*e + d)^m*A*a^2*c*x^3*e^8 + 48860*(x*e + d)^m*A
*a^3*d*m^2*e^7 + 20160*(x*e + d)^m*B*a^3*d*m*x*e^7 + 60480*(x*e + d)^m*A*a^
2*b*d*m*x*e^7 - 24552*(x*e + d)^m*B*a^3*d^2*m*e^6 - 73656*(x*e + d)^m*A*a^2
*b*d^2*m*e^6 + 40320*(x*e + d)^m*B*a^2*b*d^3*e^5 + 40320*(x*e + d)^m*A*a*b^
2*d^3*e^5 + 40320*(x*e + d)^m*A*a^2*c*d^3*e^5 + 69264*(x*e + d)^m*A*a^3*m*x
*e^8 + 20160*(x*e + d)^m*B*a^3*x^2*e^8 + 60480*(x*e + d)^m*A*a^2*b*x^2*e^8
+ 69264*(x*e + d)^m*A*a^3*d*m*e^7 - 20160*(x*e + d)^m*B*a^3*d^2*e^6 - 60480
*(x*e + d)^m*A*a^2*b*d^2*e^6 + 40320*(x*e + d)^m*A*a^3*x*e^8 + 40320*(x*e +
 d)^m*A*a^3*d*e^7)/(m^8*e^8 + 36*m^7*e^8 + 546*m^6*e^8 + 4536*m^5*e^8 + 224
49*m^4*e^8 + 67284*m^3*e^8 + 118124*m^2*e^8 + 109584*m*e^8 + 40320*e^8)
```

maple [B] time = 0.05, size = 8232, normalized size = 13.86

output too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x)
```

```
[Out] result too large to display
```

<u>maxima</u> [**B**] time = 0.90, size = 2662, normalized size = 4.48

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^3,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^3/((m^2 + 3*m + 2)*e^2) +
 3*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a^2*b/((m^2 + 3*m + 2)*e
^2) + (e*x + d)^(m + 1)*A*a^3/(e*(m + 1)) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m
^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a^2*b/((m^3 + 6*m^2
+ 11*m + 6)*e^3) + 3*((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2
*e*m*x + 2*d^3)*(e*x + d)^m*A*a*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 3*((m^
2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)
^m*A*a^2*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4
*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*
x - 6*d^4)*(e*x + d)^m*B*a*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) +
((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2
+ m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b^3/((m^4 + 10*m^3 +
35*m^2 + 50*m + 24)*e^4) + 3*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m
^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x +
 d)^m*B*a^2*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 6*((m^3 + 6*m^2 +
 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^
2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*a*b*c/((m^4 + 10*m^3 + 35*m^2 + 50*m
 + 24)*e^4) + ((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 +
 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)
*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*B*b^3/((m^5 + 15*m^4 + 85
*m^3 + 225*m^2 + 274*m + 120)*e^5) + 6*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)
*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d
^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*
B*a*b*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^4 + 1
0*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^
4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e
*m*x + 24*d^5)*(e*x + d)^m*A*b^2*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*
m + 120)*e^5) + 3*((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m
^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2
+ m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x + d)^m*A*a*c^2/((m^5 + 15*m^
4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*
m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*
x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d
^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^
m*B*b^2*c/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6
) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 + (m^5 + 10*
m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^
2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 +
 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*a*c^2/((m^6 + 21*m^5 + 175*m^4 + 73
5*m^3 + 1624*m^2 + 1764*m + 720)*e^6) + 3*((m^5 + 15*m^4 + 85*m^3 + 225*m^2
 + 274*m + 120)*e^6*x^6 + (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5
 - 5*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*
e^3*x^3 - 60*(m^2 + m)*d^4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*A
*b*c^2/((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6) +
 3*((m^6 + 21*m^5 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 +
(m^6 + 15*m^5 + 85*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10
*m^4 + 35*m^3 + 50*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m
)*d^3*e^4*x^4 - 120*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2
*x^2 - 720*d^6*e*m*x + 720*d^7)*(e*x + d)^m*B*b*c^2/((m^7 + 28*m^6 + 322*m^
5 + 1960*m^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^6 + 21*m^5
 + 175*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^7*x^7 + (m^6 + 15*m^5 + 8
5*m^4 + 225*m^3 + 274*m^2 + 120*m)*d*e^6*x^6 - 6*(m^5 + 10*m^4 + 35*m^3 + 5
0*m^2 + 24*m)*d^2*e^5*x^5 + 30*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^3*e^4*x^4 - 1
20*(m^3 + 3*m^2 + 2*m)*d^4*e^3*x^3 + 360*(m^2 + m)*d^5*e^2*x^2 - 720*d^6*e*
m*x + 720*d^7)*(e*x + d)^m*A*c^3/((m^7 + 28*m^6 + 322*m^5 + 1960*m^4 + 6769
*m^3 + 13132*m^2 + 13068*m + 5040)*e^7) + ((m^7 + 28*m^6 + 322*m^5 + 1960*m
^4 + 6769*m^3 + 13132*m^2 + 13068*m + 5040)*e^8*x^8 + (m^7 + 21*m^6 + 175*m
^5 + 735*m^4 + 1624*m^3 + 1764*m^2 + 720*m)*d*e^7*x^7 - 7*(m^6 + 15*m^5 + 8
5*m^4 + 225*m^3 + 274*m^2 + 120*m)*d^2*e^6*x^6 + 42*(m^5 + 10*m^4 + 35*m^3
+ 50*m^2 + 24*m)*d^3*e^5*x^5 - 210*(m^4 + 6*m^3 + 11*m^2 + 6*m)*d^4*e^4*x^4
 + 840*(m^3 + 3*m^2 + 2*m)*d^5*e^3*x^3 - 2520*(m^2 + m)*d^6*e^2*x^2 + 5040*
d^7*e*m*x - 5040*d^8)*(e*x + d)^m*B*c^3/((m^8 + 36*m^7 + 546*m^6 + 4536*m^5
 + 22449*m^4 + 67284*m^3 + 118124*m^2 + 109584*m + 40320)*e^8)
```

mupad [B] time = 5.85, size = 6425, normalized size = 10.82

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^3,x)
```

```
[Out] ((d + e*x)^m*(40320*A*a^3*d*e^7 - 5040*B*c^3*d^8 + 5760*A*c^3*d^7*e - 10080
*A*b^3*d^4*e^4 - 20160*B*a^3*d^2*e^6 + 8064*B*b^3*d^5*e^3 + 40320*A*a*b^2*d
^3*e^5 - 60480*A*a^2*b*d^2*e^6 + 24192*A*a*c^2*d^5*e^3 + 40320*A*a^2*c*d^3*
e^5 - 30240*B*a*b^2*d^4*e^4 + 40320*B*a^2*b*d^3*e^5 - 20160*A*b*c^2*d^6*e^2
 + 24192*A*b^2*c*d^5*e^3 - 20160*B*a*c^2*d^6*e^2 - 30240*B*a^2*c*d^4*e^4 -
20160*B*b^2*c*d^6*e^2 + 48860*A*a^3*d*e^7*m^2 + 18424*A*a^3*d*e^7*m^3 + 402
5*A*a^3*d*e^7*m^4 + 511*A*a^3*d*e^7*m^5 + 35*A*a^3*d*e^7*m^6 + A*a^3*d*e^7*
m^7 - 6396*A*b^3*d^4*e^4*m - 24552*B*a^3*d^2*e^6*m + 3504*B*b^3*d^5*e^3*m -
 1506*A*b^3*d^4*e^4*m^2 - 12154*B*a^3*d^2*e^6*m^2 - 156*A*b^3*d^4*e^4*m^3 -
 3135*B*a^3*d^2*e^6*m^3 - 6*A*b^3*d^4*e^4*m^4 - 445*B*a^3*d^2*e^6*m^4 - 33*
B*a^3*d^2*e^6*m^5 - B*a^3*d^2*e^6*m^6 + 504*B*b^3*d^5*e^3*m^2 + 24*B*b^3*d^
5*e^3*m^3 + 17280*B*b*c^2*d^7*e + 69264*A*a^3*d*e^7*m + 720*A*c^3*d^7*e*m +
 12420*A*a*b^2*d^3*e^5*m^2 - 36462*A*a^2*b*d^2*e^6*m^2 + 2130*A*a*b^2*d^3*e
^5*m^3 - 9405*A*a^2*b*d^2*e^6*m^3 + 180*A*a*b^2*d^3*e^5*m^4 - 1335*A*a^2*b*
d^2*e^6*m^4 + 6*A*a*b^2*d^3*e^5*m^5 - 99*A*a^2*b*d^2*e^6*m^5 - 3*A*a^2*b*d^
2*e^6*m^6 + 1512*A*a*c^2*d^5*e^3*m^2 + 12420*A*a^2*c*d^3*e^5*m^2 - 4518*B*a
*b^2*d^4*e^4*m^2 + 12420*B*a^2*b*d^3*e^5*m^2 + 72*A*a*c^2*d^5*e^3*m^3 + 213
0*A*a^2*c*d^3*e^5*m^3 - 468*B*a*b^2*d^4*e^4*m^3 + 2130*B*a^2*b*d^3*e^5*m^3
+ 180*A*a^2*c*d^3*e^5*m^4 - 18*B*a*b^2*d^4*e^4*m^4 + 180*B*a^2*b*d^3*e^5*m^
4 + 6*A*a^2*c*d^3*e^5*m^5 + 6*B*a^2*b*d^3*e^5*m^5 - 360*A*b*c^2*d^6*e^2*m^2
 + 1512*A*b^2*c*d^5*e^3*m^2 - 360*B*a*c^2*d^6*e^2*m^2 - 4518*B*a^2*c*d^4*e^
4*m^2 + 72*A*b^2*c*d^5*e^3*m^3 - 468*B*a^2*c*d^4*e^4*m^3 - 18*B*a^2*c*d^4*e
^4*m^4 - 360*B*b^2*c*d^6*e^2*m^2 - 60480*A*a*b*c*d^4*e^4 + 48384*B*a*b*c*d^
5*e^3 + 2160*B*b*c^2*d^7*e*m + 35664*A*a*b^2*d^3*e^5*m - 73656*A*a^2*b*d^2*
e^6*m + 10512*A*a*c^2*d^5*e^3*m + 35664*A*a^2*c*d^3*e^5*m - 19188*B*a*b^2*d
^4*e^4*m + 35664*B*a^2*b*d^3*e^5*m - 5400*A*b*c^2*d^6*e^2*m + 10512*A*b^2*c
*d^5*e^3*m - 5400*B*a*c^2*d^6*e^2*m - 19188*B*a^2*c*d^4*e^4*m - 5400*B*b^2*
c*d^6*e^2*m - 9036*A*a*b*c*d^4*e^4*m^2 - 936*A*a*b*c*d^4*e^4*m^3 - 36*A*a*b
*c*d^4*e^4*m^4 + 3024*B*a*b*c*d^5*e^3*m^2 + 144*B*a*b*c*d^5*e^3*m^3 - 38376
*A*a*b*c*d^4*e^4*m + 21024*B*a*b*c*d^5*e^3*m))/(e^8*(109584*m + 118124*m^2
+ 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x*
(d + e*x)^m*(40320*A*a^3*e^8 + 69264*A*a^3*e^8*m + 48860*A*a^3*e^8*m^2 + 18
424*A*a^3*e^8*m^3 + 4025*A*a^3*e^8*m^4 + 511*A*a^3*e^8*m^5 + 35*A*a^3*e^8*m
^6 + A*a^3*e^8*m^7 + 10080*A*b^3*d^3*e^5*m + 24552*B*a^3*d*e^7*m^2 + 12154*
B*a^3*d*e^7*m^3 + 3135*B*a^3*d*e^7*m^4 + 445*B*a^3*d*e^7*m^5 + 33*B*a^3*d*e
^7*m^6 + B*a^3*d*e^7*m^7 - 5760*A*c^3*d^6*e^2*m - 8064*B*b^3*d^4*e^4*m + 63
96*A*b^3*d^3*e^5*m^2 + 1506*A*b^3*d^3*e^5*m^3 + 156*A*b^3*d^3*e^5*m^4 + 6*A
*b^3*d^3*e^5*m^5 - 720*A*c^3*d^6*e^2*m^2 - 3504*B*b^3*d^4*e^4*m^2 - 504*B*b
^3*d^4*e^4*m^3 - 24*B*b^3*d^4*e^4*m^4 + 20160*B*a^3*d*e^7*m + 5040*B*c^3*d^
7*e*m - 35664*A*a*b^2*d^2*e^6*m^2 - 12420*A*a*b^2*d^2*e^6*m^3 - 2130*A*a*b^
2*d^2*e^6*m^4 - 180*A*a*b^2*d^2*e^6*m^5 - 6*A*a*b^2*d^2*e^6*m^6 - 10512*A*a
```

```
*c^2*d^4*e^4*m^2 - 35664*A*a^2*c*d^2*e^6*m^2 + 19188*B*a*b^2*d^3*e^5*m^2 -
35664*B*a^2*b*d^2*e^6*m^2 - 1512*A*a*c^2*d^4*e^4*m^3 - 12420*A*a^2*c*d^2*e^
6*m^3 + 4518*B*a*b^2*d^3*e^5*m^3 - 12420*B*a^2*b*d^2*e^6*m^3 - 72*A*a*c^2*d
^4*e^4*m^4 - 2130*A*a^2*c*d^2*e^6*m^4 + 468*B*a*b^2*d^3*e^5*m^4 - 2130*B*a^
2*b*d^2*e^6*m^4 - 180*A*a^2*c*d^2*e^6*m^5 + 18*B*a*b^2*d^3*e^5*m^5 - 180*B*
a^2*b*d^2*e^6*m^5 - 6*A*a^2*c*d^2*e^6*m^6 - 6*B*a^2*b*d^2*e^6*m^6 + 5400*A*
b*c^2*d^5*e^3*m^2 - 10512*A*b^2*c*d^4*e^4*m^2 + 5400*B*a*c^2*d^5*e^3*m^2 +
19188*B*a^2*c*d^3*e^5*m^2 + 360*A*b*c^2*d^5*e^3*m^3 - 1512*A*b^2*c*d^4*e^4*
m^3 + 360*B*a*c^2*d^5*e^3*m^3 + 4518*B*a^2*c*d^3*e^5*m^3 - 72*A*b^2*c*d^4*e
^4*m^4 + 468*B*a^2*c*d^3*e^5*m^4 + 18*B*a^2*c*d^3*e^5*m^5 - 2160*B*b*c^2*d^
6*e^2*m^2 + 5400*B*b^2*c*d^5*e^3*m^2 + 360*B*b^2*c*d^5*e^3*m^3 + 60480*A*a^
2*b*d*e^7*m - 40320*A*a*b^2*d^2*e^6*m + 73656*A*a^2*b*d*e^7*m^2 + 36462*A*a
^2*b*d*e^7*m^3 + 9405*A*a^2*b*d*e^7*m^4 + 1335*A*a^2*b*d*e^7*m^5 + 99*A*a^2
*b*d*e^7*m^6 + 3*A*a^2*b*d*e^7*m^7 - 24192*A*a*c^2*d^4*e^4*m - 40320*A*a^2*
c*d^2*e^6*m + 30240*B*a*b^2*d^3*e^5*m - 40320*B*a^2*b*d^2*e^6*m + 20160*A*b
*c^2*d^5*e^3*m - 24192*A*b^2*c*d^4*e^4*m + 20160*B*a*c^2*d^5*e^3*m + 30240*
B*a^2*c*d^3*e^5*m - 17280*B*b*c^2*d^6*e^2*m + 20160*B*b^2*c*d^5*e^3*m + 383
76*A*a*b*c*d^3*e^5*m^2 + 9036*A*a*b*c*d^3*e^5*m^3 + 936*A*a*b*c*d^3*e^5*m^4
 + 36*A*a*b*c*d^3*e^5*m^5 - 21024*B*a*b*c*d^4*e^4*m^2 - 3024*B*a*b*c*d^4*e^
4*m^3 - 144*B*a*b*c*d^4*e^4*m^4 + 60480*A*a*b*c*d^3*e^5*m - 48384*B*a*b*c*d
^4*e^4*m))/(e^8*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 +
 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 +
6)*(1680*A*b^3*e^4 + 5040*B*a*b^2*e^4 + 5040*B*a^2*c*e^4 + 1066*A*b^3*e^4*m
 - 210*B*c^3*d^4*m + 251*A*b^3*e^4*m^2 + 26*A*b^3*e^4*m^3 + A*b^3*e^4*m^4 +
 753*B*a*b^2*e^4*m^2 + 78*B*a*b^2*e^4*m^3 + 3*B*a*b^2*e^4*m^4 + 753*B*a^2*c
*e^4*m^2 + 78*B*a^2*c*e^4*m^3 + 3*B*a^2*c*e^4*m^4 + 30*A*c^3*d^3*e*m^2 + 14
6*B*b^3*d*e^3*m^2 + 21*B*b^3*d*e^3*m^3 + B*b^3*d*e^3*m^4 + 10080*A*a*b*c*e^
4 + 3198*B*a*b^2*e^4*m + 3198*B*a^2*c*e^4*m + 240*A*c^3*d^3*e*m + 336*B*b^3
*d*e^3*m - 225*A*b*c^2*d^2*e^2*m^2 - 225*B*a*c^2*d^2*e^2*m^2 - 15*A*b*c^2*d
^2*e^2*m^3 - 15*B*a*c^2*d^2*e^2*m^3 - 225*B*b^2*c*d^2*e^2*m^2 - 15*B*b^2*c*
d^2*e^2*m^3 + 1506*A*a*b*c*e^4*m^2 + 156*A*a*b*c*e^4*m^3 + 6*A*a*b*c*e^4*m^
4 + 1008*A*a*c^2*d*e^3*m + 1008*A*b^2*c*d*e^3*m + 720*B*b*c^2*d^3*e*m + 438
*A*a*c^2*d*e^3*m^2 + 63*A*a*c^2*d*e^3*m^3 + 3*A*a*c^2*d*e^3*m^4 - 840*A*b*c
^2*d^2*e^2*m - 840*B*a*c^2*d^2*e^2*m + 438*A*b^2*c*d*e^3*m^2 + 63*A*b^2*c*d
*e^3*m^3 + 3*A*b^2*c*d*e^3*m^4 - 840*B*b^2*c*d^2*e^2*m + 90*B*b*c^2*d^3*e*m
^2 + 6396*A*a*b*c*e^4*m + 2016*B*a*b*c*d*e^3*m + 876*B*a*b*c*d*e^3*m^2 + 12
6*B*a*b*c*d*e^3*m^3 + 6*B*a*b*c*d*e^3*m^4))/(e^4*(109584*m + 118124*m^2 + 6
7284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (B*c^3
*x^8*(d + e*x)^m*(13068*m + 13132*m^2 + 6769*m^3 + 1960*m^4 + 322*m^5 + 28*
m^6 + m^7 + 5040))/(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^
5 + 546*m^6 + 36*m^7 + m^8 + 40320) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(201
60*A*a*b^2*e^5 + 20160*A*a^2*c*e^5 + 20160*B*a^2*b*e^5 + 840*B*c^3*d^5*m +
6210*A*a*b^2*e^5*m^2 + 1065*A*a*b^2*e^5*m^3 + 90*A*a*b^2*e^5*m^4 + 3*A*a*b^
2*e^5*m^5 + 6210*A*a^2*c*e^5*m^2 + 6210*B*a^2*b*e^5*m^2 + 1065*A*a^2*c*e^5*
m^3 + 1065*B*a^2*b*e^5*m^3 + 90*A*a^2*c*e^5*m^4 + 90*B*a^2*b*e^5*m^4 + 3*A*
a^2*c*e^5*m^5 + 3*B*a^2*b*e^5*m^5 + 1066*A*b^3*d*e^4*m^2 + 251*A*b^3*d*e^4*
m^3 + 26*A*b^3*d*e^4*m^4 + A*b^3*d*e^4*m^5 - 1344*B*b^3*d^2*e^3*m - 120*A*c
^3*d^4*e*m^2 - 584*B*b^3*d^2*e^3*m^2 - 84*B*b^3*d^2*e^3*m^3 - 4*B*b^3*d^2*e
^3*m^4 + 17832*A*a*b^2*e^5*m + 17832*A*a^2*c*e^5*m + 17832*B*a^2*b*e^5*m +
1680*A*b^3*d*e^4*m - 960*A*c^3*d^4*e*m - 1752*A*a*c^2*d^2*e^3*m^2 - 252*A*a
*c^2*d^2*e^3*m^3 - 12*A*a*c^2*d^2*e^3*m^4 + 900*A*b*c^2*d^3*e^2*m^2 - 1752*
A*b^2*c*d^2*e^3*m^2 + 900*B*a*c^2*d^3*e^2*m^2 + 60*A*b*c^2*d^3*e^2*m^3 - 25
2*A*b^2*c*d^2*e^3*m^3 + 60*B*a*c^2*d^3*e^2*m^3 - 12*A*b^2*c*d^2*e^3*m^4 + 9
00*B*b^2*c*d^3*e^2*m^2 + 60*B*b^2*c*d^3*e^2*m^3 + 5040*B*a*b^2*d*e^4*m + 50
40*B*a^2*c*d*e^4*m - 2880*B*b*c^2*d^4*e*m - 4032*A*a*c^2*d^2*e^3*m + 3198*B
*a*b^2*d*e^4*m^2 + 753*B*a*b^2*d*e^4*m^3 + 78*B*a*b^2*d*e^4*m^4 + 3*B*a*b^2
*d*e^4*m^5 + 3360*A*b*c^2*d^3*e^2*m - 4032*A*b^2*c*d^2*e^3*m + 3360*B*a*c^2
*d^3*e^2*m + 3198*B*a^2*c*d*e^4*m^2 + 753*B*a^2*c*d*e^4*m^3 + 78*B*a^2*c*d*
e^4*m^4 + 3*B*a^2*c*d*e^4*m^5 + 3360*B*b^2*c*d^3*e^2*m - 360*B*b*c^2*d^4*e*
```

```
m^2 - 3504*B*a*b*c*d^2*e^3*m^2 - 504*B*a*b*c*d^2*e^3*m^3 - 24*B*a*b*c*d^2*e
^3*m^4 + 10080*A*a*b*c*d*e^4*m + 6396*A*a*b*c*d*e^4*m^2 + 1506*A*a*b*c*d*e^
4*m^3 + 156*A*a*b*c*d*e^4*m^4 + 6*A*a*b*c*d*e^4*m^5 - 8064*B*a*b*c*d^2*e^3*
m))/(e^5*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^
6 + 36*m^7 + m^8 + 40320)) + (x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4
 + 24)*(336*B*b^3*e^3 + 1008*A*a*c^2*e^3 + 1008*A*b^2*c*e^3 + 146*B*b^3*e^3
*m + 42*B*c^3*d^3*m + 21*B*b^3*e^3*m^2 + B*b^3*e^3*m^3 + 63*A*a*c^2*e^3*m^2
 + 3*A*a*c^2*e^3*m^3 + 63*A*b^2*c*e^3*m^2 + 3*A*b^2*c*e^3*m^3 - 6*A*c^3*d^2
*e*m^2 + 2016*B*a*b*c*e^3 + 438*A*a*c^2*e^3*m + 438*A*b^2*c*e^3*m - 48*A*c^
3*d^2*e*m + 126*B*a*b*c*e^3*m^2 + 6*B*a*b*c*e^3*m^3 + 168*A*b*c^2*d*e^2*m +
 168*B*a*c^2*d*e^2*m - 144*B*b*c^2*d^2*e*m + 168*B*b^2*c*d*e^2*m + 45*A*b*c
^2*d*e^2*m^2 + 45*B*a*c^2*d*e^2*m^2 + 3*A*b*c^2*d*e^2*m^3 + 3*B*a*c^2*d*e^2
*m^3 - 18*B*b*c^2*d^2*e*m^2 + 45*B*b^2*c*d*e^2*m^2 + 3*B*b^2*c*d*e^2*m^3 +
876*B*a*b*c*e^3*m))/(e^3*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4
536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (x^2*(m + 1)*(d + e*x)^m*(2016
0*B*a^3*e^6 + 60480*A*a^2*b*e^6 + 24552*B*a^3*e^6*m - 2520*B*c^3*d^6*m + 12
154*B*a^3*e^6*m^2 + 3135*B*a^3*e^6*m^3 + 445*B*a^3*e^6*m^4 + 33*B*a^3*e^6*m
^5 + B*a^3*e^6*m^6 + 36462*A*a^2*b*e^6*m^2 + 9405*A*a^2*b*e^6*m^3 + 1335*A*
a^2*b*e^6*m^4 + 99*A*a^2*b*e^6*m^5 + 3*A*a^2*b*e^6*m^6 - 5040*A*b^3*d^2*e^4
*m + 4032*B*b^3*d^3*e^3*m + 360*A*c^3*d^5*e*m^2 - 3198*A*b^3*d^2*e^4*m^2 -
753*A*b^3*d^2*e^4*m^3 - 78*A*b^3*d^2*e^4*m^4 - 3*A*b^3*d^2*e^4*m^5 + 1752*B
*b^3*d^3*e^3*m^2 + 252*B*b^3*d^3*e^3*m^3 + 12*B*b^3*d^3*e^3*m^4 + 73656*A*a
^2*b*e^6*m + 2880*A*c^3*d^5*e*m + 5256*A*a*c^2*d^3*e^3*m^2 - 9594*B*a*b^2*d
^2*e^4*m^2 + 756*A*a*c^2*d^3*e^3*m^3 - 2259*B*a*b^2*d^2*e^4*m^3 + 36*A*a*c^
2*d^3*e^3*m^4 - 234*B*a*b^2*d^2*e^4*m^4 - 9*B*a*b^2*d^2*e^4*m^5 - 2700*A*b*
c^2*d^4*e^2*m^2 + 5256*A*b^2*c*d^3*e^3*m^2 - 2700*B*a*c^2*d^4*e^2*m^2 - 959
4*B*a^2*c*d^2*e^4*m^2 - 180*A*b*c^2*d^4*e^2*m^3 + 756*A*b^2*c*d^3*e^3*m^3 -
 180*B*a*c^2*d^4*e^2*m^3 - 2259*B*a^2*c*d^2*e^4*m^3 + 36*A*b^2*c*d^3*e^3*m^
4 - 234*B*a^2*c*d^2*e^4*m^4 - 9*B*a^2*c*d^2*e^4*m^5 - 2700*B*b^2*c*d^4*e^2*
m^2 - 180*B*b^2*c*d^4*e^2*m^3 + 20160*A*a*b^2*d*e^5*m + 20160*A*a^2*c*d*e^5
*m + 20160*B*a^2*b*d*e^5*m + 8640*B*b*c^2*d^5*e*m + 17832*A*a*b^2*d*e^5*m^2
 + 6210*A*a*b^2*d*e^5*m^3 + 1065*A*a*b^2*d*e^5*m^4 + 90*A*a*b^2*d*e^5*m^5 +
 3*A*a*b^2*d*e^5*m^6 + 12096*A*a*c^2*d^3*e^3*m - 15120*B*a*b^2*d^2*e^4*m +
17832*A*a^2*c*d*e^5*m^2 + 17832*B*a^2*b*d*e^5*m^2 + 6210*A*a^2*c*d*e^5*m^3
+ 6210*B*a^2*b*d*e^5*m^3 + 1065*A*a^2*c*d*e^5*m^4 + 1065*B*a^2*b*d*e^5*m^4
+ 90*A*a^2*c*d*e^5*m^5 + 90*B*a^2*b*d*e^5*m^5 + 3*A*a^2*c*d*e^5*m^6 + 3*B*a
^2*b*d*e^5*m^6 - 10080*A*b*c^2*d^4*e^2*m + 12096*A*b^2*c*d^3*e^3*m - 10080*
B*a*c^2*d^4*e^2*m - 15120*B*a^2*c*d^2*e^4*m - 10080*B*b^2*c*d^4*e^2*m + 108
0*B*b*c^2*d^5*e*m^2 - 19188*A*a*b*c*d^2*e^4*m^2 - 4518*A*a*b*c*d^2*e^4*m^3
- 468*A*a*b*c*d^2*e^4*m^4 - 18*A*a*b*c*d^2*e^4*m^5 + 10512*B*a*b*c*d^3*e^3*
m^2 + 1512*B*a*b*c*d^3*e^3*m^3 + 72*B*a*b*c*d^3*e^3*m^4 - 30240*A*a*b*c*d^2
*e^4*m + 24192*B*a*b*c*d^3*e^3*m))/(e^6*(109584*m + 118124*m^2 + 67284*m^3
+ 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^8 + 40320)) + (c*x^6*(d + e*x
)^m*(274*m + 225*m^2 + 85*m^3 + 15*m^4 + m^5 + 120)*(168*B*b^2*e^2 + 168*A*
b*c*e^2 + 168*B*a*c*e^2 + 45*B*b^2*e^2*m - 7*B*c^2*d^2*m + 3*B*b^2*e^2*m^2
+ 45*A*b*c*e^2*m + 45*B*a*c*e^2*m + 8*A*c^2*d*e*m + 3*A*b*c*e^2*m^2 + 3*B*a
*c*e^2*m^2 + A*c^2*d*e*m^2 + 24*B*b*c*d*e*m + 3*B*b*c*d*e*m^2))/(e^2*(10958
4*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36*m^7 + m^
8 + 40320)) + (c^2*x^7*(d + e*x)^m*(8*A*c*e + 24*B*b*e + A*c*e*m + 3*B*b*e*
m + B*c*d*m)*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))/
(e*(109584*m + 118124*m^2 + 67284*m^3 + 22449*m^4 + 4536*m^5 + 546*m^6 + 36
*m^7 + m^8 + 40320))
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a)**3,x)
```

```
[Out] Timed out
```

3.2641 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx$

Optimal. Leaf size=333

$$-\frac{(d+ex)^{m+4}\left(2Ace(2cd-be)-B\left(-2ce(4bd-ae)+b^2e^2+10c^2d^2\right)\right)}{e^6(m+4)}-\frac{(d+ex)^{m+3}\left(B\left(-6cde(2bd-ae)+be^2(3\right.\right.}{}$$

```
[Out] -(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)^2*(e*x+d)^(1+m)/e^6/(1+m)-(a*e^2-b*d*e+c*d^
2)*(2*A*e*(-b*e+2*c*d)-B*(5*c*d^2-e*(-a*e+3*b*d)))*(e*x+d)^(2+m)/e^6/(2+m)-
(B*(10*c^2*d^3+b*e^2*(-2*a*e+3*b*d)-6*c*d*e*(-a*e+2*b*d))-A*e*(6*c^2*d^2+b^
2*e^2-2*c*e*(-a*e+3*b*d)))*(e*x+d)^(3+m)/e^6/(3+m)-(2*A*c*e*(-b*e+2*c*d)-B*
(10*c^2*d^2+b^2*e^2-2*c*e*(-a*e+4*b*d)))*(e*x+d)^(4+m)/e^6/(4+m)-c*(-A*c*e-
2*B*b*e+5*B*c*d)*(e*x+d)^(5+m)/e^6/(5+m)+B*c^2*(e*x+d)^(6+m)/e^6/(6+m)
```

Rubi [A] time = 0.35, antiderivative size = 330, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.040$, Rules used = {771}

$$-\frac{(d+ex)^{m+3}\left(B\left(-6cde(2bd-ae)+be^2(3bd-2ae)+10c^2d^3\right)-Ae\left(-2ce(3bd-ae)+b^2e^2+6c^2d^2\right)\right)}{e^6(m+3)}-\frac{(d+ex}{}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)^2*(d + e*x)^(1 + m))/(e^6*(1 + m)))
+ ((c*d^2 - b*d*e + a*e^2)*(5*B*c*d^2 - B*e*(3*b*d - a*e) - 2*A*e*(2*c*d -
b*e))*(d + e*x)^(2 + m))/(e^6*(2 + m)) - ((B*(10*c^2*d^3 + b*e^2*(3*b*d - 2
*a*e) - 6*c*d*e*(2*b*d - a*e)) - A*e*(6*c^2*d^2 + b^2*e^2 - 2*c*e*(3*b*d -
a*e)))*(d + e*x)^(3 + m))/(e^6*(3 + m)) - ((2*A*c*e*(2*c*d - b*e) - B*(10*c
^2*d^2 + b^2*e^2 - 2*c*e*(4*b*d - a*e)))*(d + e*x)^(4 + m))/(e^6*(4 + m)) -
 (c*(5*B*c*d - 2*b*B*e - A*c*e)*(d + e*x)^(5 + m))/(e^6*(5 + m)) + (B*c^2*(
d + e*x)^(6 + m))/(e^6*(6 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right)^2 \, dx = \int \left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^m}{e^5}+\frac{\left(cd^2-bde+ae^2\right)(5}{}\right.$$

$$= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)^2 (d+ex)^{1+m}}{e^6(1+m)}+\frac{\left(cd^2-bde+ae^2\right)(5B}{}$$

Mathematica [A] time = 1.45, size = 633, normalized size = 1.90

$$\frac{(d+ex)^{m+1}\left(\frac{2\left(\frac{(d+ex)\left(B\left(c^2e^2\left(4a^2e^2\left(m^2+8m+15\right)+2abde\left(4m^2+11m-18\right)+b^2d^2\left(m^2-13m+6\right)\right)-b^2ce^3(m+2)(ae(5m+21)+bd(2m-3))+2c^3d^2e\left(3bd(m-14)-2ae\left(m^2-4m-\right.\right.\right.\right.}{e^2(m+2)}\right.}{}\right.}{}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*((B*(-5*c*d + 2*b*e) + A*c*e*(6 + m) + B*c*e*(5 + m)*x)*
(a + x*(b + c*x))^2 + (2*(((c*d^2 + e*(-(b*d) + a*e))*(A*c*e*(6 + m)*(12*c^
2*d^2 - b^2*e^2*(1 + m) + 4*c*e*(-3*b*d + a*e*(4 + m))) + B*(-60*c^3*d^3 +
b^3*e^3*(3 + 4*m + m^2) - b*c*e^2*(1 + m)*(b*d*(-6 + m) + 2*a*e*(9 + 2*m))
+ 2*c^2*d*e*(-3*b*d*(-9 + m) + 2*a*e*(-15 + m + m^2)))))/(e^2*(1 + m)) + ((
-(A*c*e*(2*c*d - b*e)*(6 + m)*(6*c^2*d^2 - b^2*e^2*(2 + m) + 2*c*e*(-3*b*d
+ a*e*(7 + 2*m)))) + B*(60*c^4*d^4 + b^4*e^4*(6 + 5*m + m^2) - b^2*c*e^3*(2
 + m)*(b*d*(-3 + 2*m) + a*e*(21 + 5*m)) + 2*c^3*d^2*e*(3*b*d*(-14 + m) - 2*
a*e*(-30 - 4*m + m^2)) + c^2*e^2*(b^2*d^2*(6 - 13*m + m^2) + 4*a^2*e^2*(15
+ 8*m + m^2) + 2*a*b*d*e*(-18 + 11*m + 4*m^2))))*(d + e*x))/(e^2*(2 + m)) -
 (c*e*(4 + m)*(b*B*d*(-5*c*d + 2*b*e) - 2*a*B*c*d*e*m + a*b*B*e^2*(1 + m) +
 A*c*e*(b*d - 2*a*e)*(6 + m)) - (3*c*d - b*e)*(A*c*e*(2*c*d - b*e)*(6 + m)
+ B*(-10*c^2*d^2 + b^2*e^2*(3 + m) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m)))) +
 c*e*(3 + m)*(A*c*e*(2*c*d - b*e)*(6 + m) + B*(-10*c^2*d^2 + b^2*e^2*(3 + m
) - c*e*(b*d*(-4 + m) + 2*a*e*(5 + m))))*x)*(a + x*(b + c*x))))/(c*e^2*(3 +
 m)*(4 + m))))/(c*e^2*(5 + m)*(6 + m))
```

fricas [B] time = 1.12, size = 2156, normalized size = 6.47

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] (A*a^2*d*e^5*m^5 - 120*B*c^2*d^6 + 720*A*a^2*d*e^5 + 144*(2*B*b*c + A*c^2)*
d^5*e - 180*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e^2 + 240*(2*B*a*b + A*b^2 + 2*A*
a*c)*d^3*e^3 - 360*(B*a^2 + 2*A*a*b)*d^2*e^4 + (B*c^2*e^6*m^5 + 15*B*c^2*e^
6*m^4 + 85*B*c^2*e^6*m^3 + 225*B*c^2*e^6*m^2 + 274*B*c^2*e^6*m + 120*B*c^2*
e^6)*x^6 + (144*(2*B*b*c + A*c^2)*e^6 + (B*c^2*d*e^5 + (2*B*b*c + A*c^2)*e^
6)*m^5 + 2*(5*B*c^2*d*e^5 + 8*(2*B*b*c + A*c^2)*e^6)*m^4 + 5*(7*B*c^2*d*e^5
 + 19*(2*B*b*c + A*c^2)*e^6)*m^3 + 10*(5*B*c^2*d*e^5 + 26*(2*B*b*c + A*c^2)
*e^6)*m^2 + 12*(2*B*c^2*d*e^5 + 27*(2*B*b*c + A*c^2)*e^6)*m)*x^5 + (20*A*a^
2*d*e^5 - (B*a^2 + 2*A*a*b)*d^2*e^4)*m^4 + (180*(B*b^2 + 2*(B*a + A*b)*c)*e
^6 + ((2*B*b*c + A*c^2)*d*e^5 + (B*b^2 + 2*(B*a + A*b)*c)*e^6)*m^5 - (5*B*c
^2*d^2*e^4 - 12*(2*B*b*c + A*c^2)*d*e^5 - 17*(B*b^2 + 2*(B*a + A*b)*c)*e^6)
*m^4 - (30*B*c^2*d^2*e^4 - 47*(2*B*b*c + A*c^2)*d*e^5 - 107*(B*b^2 + 2*(B*a
 + A*b)*c)*e^6)*m^3 - (55*B*c^2*d^2*e^4 - 72*(2*B*b*c + A*c^2)*d*e^5 - 307*
(B*b^2 + 2*(B*a + A*b)*c)*e^6)*m^2 - 6*(5*B*c^2*d^2*e^4 - 6*(2*B*b*c + A*c^
2)*d*e^5 - 66*(B*b^2 + 2*(B*a + A*b)*c)*e^6)*m)*x^4 + (155*A*a^2*d*e^5 + 2*
(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 18*(B*a^2 + 2*A*a*b)*d^2*e^4)*m^3 + (
240*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6 + ((B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + (2
*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^5 - 2*(2*(2*B*b*c + A*c^2)*d^2*e^4 - 7*(B*
b^2 + 2*(B*a + A*b)*c)*d*e^5 - 9*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^4 + (20
*B*c^2*d^3*e^3 - 36*(2*B*b*c + A*c^2)*d^2*e^4 + 65*(B*b^2 + 2*(B*a + A*b)*c
)*d*e^5 + 121*(2*B*a*b + A*b^2 + 2*A*a*c)*e^6)*m^3 + 4*(15*B*c^2*d^3*e^3 -
20*(2*B*b*c + A*c^2)*d^2*e^4 + 28*(B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + 93*(2*B
*a*b + A*b^2 + 2*A*a*c)*e^6)*m^2 + 4*(10*B*c^2*d^3*e^3 - 12*(2*B*b*c + A*c^
2)*d^2*e^4 + 15*(B*b^2 + 2*(B*a + A*b)*c)*d*e^5 + 127*(2*B*a*b + A*b^2 + 2*
A*a*c)*e^6)*m)*x^3 + (580*A*a^2*d*e^5 - 6*(B*b^2 + 2*(B*a + A*b)*c)*d^4*e^2
 + 30*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 119*(B*a^2 + 2*A*a*b)*d^2*e^4)*
m^2 + (360*(B*a^2 + 2*A*a*b)*e^6 + ((2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 + (B*
a^2 + 2*A*a*b)*e^6)*m^5 - (3*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 - 16*(2*B*a*
b + A*b^2 + 2*A*a*c)*d*e^5 - 19*(B*a^2 + 2*A*a*b)*e^6)*m^4 + (12*(2*B*b*c +
 A*c^2)*d^3*e^3 - 36*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 + 89*(2*B*a*b + A*b^
2 + 2*A*a*c)*d*e^5 + 137*(B*a^2 + 2*A*a*b)*e^6)*m^3 - (60*B*c^2*d^4*e^2 - 8
4*(2*B*b*c + A*c^2)*d^3*e^3 + 123*(B*b^2 + 2*(B*a + A*b)*c)*d^2*e^4 - 194*(
2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 - 461*(B*a^2 + 2*A*a*b)*e^6)*m^2 - 6*(10*B
*c^2*d^4*e^2 - 12*(2*B*b*c + A*c^2)*d^3*e^3 + 15*(B*b^2 + 2*(B*a + A*b)*c)*
d^2*e^4 - 20*(2*B*a*b + A*b^2 + 2*A*a*c)*d*e^5 - 117*(B*a^2 + 2*A*a*b)*e^6)
*m)*x^2 + 2*(522*A*a^2*d*e^5 + 12*(2*B*b*c + A*c^2)*d^5*e - 33*(B*b^2 + 2*(
B*a + A*b)*c)*d^4*e^2 + 74*(2*B*a*b + A*b^2 + 2*A*a*c)*d^3*e^3 - 171*(B*a^2
 + 2*A*a*b)*d^2*e^4)*m + (720*A*a^2*e^6 + (A*a^2*e^6 + (B*a^2 + 2*A*a*b)*d*
e^5)*m^5 + 2*(10*A*a^2*e^6 - (2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 9*(B*a^2
 + 2*A*a*b)*d*e^5)*m^4 + (155*A*a^2*e^6 + 6*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e
^3 - 30*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 119*(B*a^2 + 2*A*a*b)*d*e^5)*
m^3 + 2*(290*A*a^2*e^6 - 12*(2*B*b*c + A*c^2)*d^4*e^2 + 33*(B*b^2 + 2*(B*a
+ A*b)*c)*d^3*e^3 - 74*(2*B*a*b + A*b^2 + 2*A*a*c)*d^2*e^4 + 171*(B*a^2 + 2
*A*a*b)*d*e^5)*m^2 + 12*(10*B*c^2*d^5*e + 87*A*a^2*e^6 - 12*(2*B*b*c + A*c^
2)*d^4*e^2 + 15*(B*b^2 + 2*(B*a + A*b)*c)*d^3*e^3 - 20*(2*B*a*b + A*b^2 + 2
*A*a*c)*d^2*e^4 + 30*(B*a^2 + 2*A*a*b)*d*e^5)*m)*x)*(e*x + d)^m/(e^6*m^6 +
21*e^6*m^5 + 175*e^6*m^4 + 735*e^6*m^3 + 1624*e^6*m^2 + 1764*e^6*m + 720*e^
6)
```

giac [B] time = 0.34, size = 4940, normalized size = 14.83

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c^2*m^5*x^6*e^6 + (x*e + d)^m*B*c^2*d*m^5*x^5*e^5 + 2*(x*e +
 d)^m*B*b*c*m^5*x^5*e^6 + (x*e + d)^m*A*c^2*m^5*x^5*e^6 + 15*(x*e + d)^m*B*
c^2*m^4*x^6*e^6 + 2*(x*e + d)^m*B*b*c*d*m^5*x^4*e^5 + (x*e + d)^m*A*c^2*d*m
^5*x^4*e^5 + 10*(x*e + d)^m*B*c^2*d*m^4*x^5*e^5 - 5*(x*e + d)^m*B*c^2*d^2*m
^4*x^4*e^4 + (x*e + d)^m*B*b^2*m^5*x^4*e^6 + 2*(x*e + d)^m*B*a*c*m^5*x^4*e^
6 + 2*(x*e + d)^m*A*b*c*m^5*x^4*e^6 + 32*(x*e + d)^m*B*b*c*m^4*x^5*e^6 + 16
*(x*e + d)^m*A*c^2*m^4*x^5*e^6 + 85*(x*e + d)^m*B*c^2*m^3*x^6*e^6 + (x*e +
d)^m*B*b^2*d*m^5*x^3*e^5 + 2*(x*e + d)^m*B*a*c*d*m^5*x^3*e^5 + 2*(x*e + d)^
m*A*b*c*d*m^5*x^3*e^5 + 24*(x*e + d)^m*B*b*c*d*m^4*x^4*e^5 + 12*(x*e + d)^m
*A*c^2*d*m^4*x^4*e^5 + 35*(x*e + d)^m*B*c^2*d*m^3*x^5*e^5 - 8*(x*e + d)^m*B
*b*c*d^2*m^4*x^3*e^4 - 4*(x*e + d)^m*A*c^2*d^2*m^4*x^3*e^4 - 30*(x*e + d)^m
*B*c^2*d^2*m^3*x^4*e^4 + 20*(x*e + d)^m*B*c^2*d^3*m^3*x^3*e^3 + 2*(x*e + d)
^m*B*a*b*m^5*x^3*e^6 + (x*e + d)^m*A*b^2*m^5*x^3*e^6 + 2*(x*e + d)^m*A*a*c*
m^5*x^3*e^6 + 17*(x*e + d)^m*B*b^2*m^4*x^4*e^6 + 34*(x*e + d)^m*B*a*c*m^4*x
^4*e^6 + 34*(x*e + d)^m*A*b*c*m^4*x^4*e^6 + 190*(x*e + d)^m*B*b*c*m^3*x^5*e
^6 + 95*(x*e + d)^m*A*c^2*m^3*x^5*e^6 + 225*(x*e + d)^m*B*c^2*m^2*x^6*e^6 +
 2*(x*e + d)^m*B*a*b*d*m^5*x^2*e^5 + (x*e + d)^m*A*b^2*d*m^5*x^2*e^5 + 2*(x
*e + d)^m*A*a*c*d*m^5*x^2*e^5 + 14*(x*e + d)^m*B*b^2*d*m^4*x^3*e^5 + 28*(x*
e + d)^m*B*a*c*d*m^4*x^3*e^5 + 28*(x*e + d)^m*A*b*c*d*m^4*x^3*e^5 + 94*(x*e
 + d)^m*B*b*c*d*m^3*x^4*e^5 + 47*(x*e + d)^m*A*c^2*d*m^3*x^4*e^5 + 50*(x*e
+ d)^m*B*c^2*d*m^2*x^5*e^5 - 3*(x*e + d)^m*B*b^2*d^2*m^4*x^2*e^4 - 6*(x*e +
 d)^m*B*a*c*d^2*m^4*x^2*e^4 - 6*(x*e + d)^m*A*b*c*d^2*m^4*x^2*e^4 - 72*(x*e
 + d)^m*B*b*c*d^2*m^3*x^3*e^4 - 36*(x*e + d)^m*A*c^2*d^2*m^3*x^3*e^4 - 55*(
x*e + d)^m*B*c^2*d^2*m^2*x^4*e^4 + 24*(x*e + d)^m*B*b*c*d^3*m^3*x^2*e^3 + 1
2*(x*e + d)^m*A*c^2*d^3*m^3*x^2*e^3 + 60*(x*e + d)^m*B*c^2*d^3*m^2*x^3*e^3
- 60*(x*e + d)^m*B*c^2*d^4*m^2*x^2*e^2 + (x*e + d)^m*B*a^2*m^5*x^2*e^6 + 2*
(x*e + d)^m*A*a*b*m^5*x^2*e^6 + 36*(x*e + d)^m*B*a*b*m^4*x^3*e^6 + 18*(x*e
+ d)^m*A*b^2*m^4*x^3*e^6 + 36*(x*e + d)^m*A*a*c*m^4*x^3*e^6 + 107*(x*e + d)
^m*B*b^2*m^3*x^4*e^6 + 214*(x*e + d)^m*B*a*c*m^3*x^4*e^6 + 214*(x*e + d)^m*
A*b*c*m^3*x^4*e^6 + 520*(x*e + d)^m*B*b*c*m^2*x^5*e^6 + 260*(x*e + d)^m*A*c
^2*m^2*x^5*e^6 + 274*(x*e + d)^m*B*c^2*m*x^6*e^6 + (x*e + d)^m*B*a^2*d*m^5*
x*e^5 + 2*(x*e + d)^m*A*a*b*d*m^5*x*e^5 + 32*(x*e + d)^m*B*a*b*d*m^4*x^2*e^
5 + 16*(x*e + d)^m*A*b^2*d*m^4*x^2*e^5 + 32*(x*e + d)^m*A*a*c*d*m^4*x^2*e^5
 + 65*(x*e + d)^m*B*b^2*d*m^3*x^3*e^5 + 130*(x*e + d)^m*B*a*c*d*m^3*x^3*e^5
 + 130*(x*e + d)^m*A*b*c*d*m^3*x^3*e^5 + 144*(x*e + d)^m*B*b*c*d*m^2*x^4*e^
5 + 72*(x*e + d)^m*A*c^2*d*m^2*x^4*e^5 + 24*(x*e + d)^m*B*c^2*d*m*x^5*e^5 -
```

```
 4*(x*e + d)^m*B*a*b*d^2*m^4*x*e^4 - 2*(x*e + d)^m*A*b^2*d^2*m^4*x*e^4 - 4*
(x*e + d)^m*A*a*c*d^2*m^4*x*e^4 - 36*(x*e + d)^m*B*b^2*d^2*m^3*x^2*e^4 - 72
*(x*e + d)^m*B*a*c*d^2*m^3*x^2*e^4 - 72*(x*e + d)^m*A*b*c*d^2*m^3*x^2*e^4 -
 160*(x*e + d)^m*B*b*c*d^2*m^2*x^3*e^4 - 80*(x*e + d)^m*A*c^2*d^2*m^2*x^3*e
^4 - 30*(x*e + d)^m*B*c^2*d^2*m*x^4*e^4 + 6*(x*e + d)^m*B*b^2*d^3*m^3*x*e^3
 + 12*(x*e + d)^m*B*a*c*d^3*m^3*x*e^3 + 12*(x*e + d)^m*A*b*c*d^3*m^3*x*e^3
+ 168*(x*e + d)^m*B*b*c*d^3*m^2*x^2*e^3 + 84*(x*e + d)^m*A*c^2*d^3*m^2*x^2*
e^3 + 40*(x*e + d)^m*B*c^2*d^3*m*x^3*e^3 - 48*(x*e + d)^m*B*b*c*d^4*m^2*x*e
^2 - 24*(x*e + d)^m*A*c^2*d^4*m^2*x*e^2 - 60*(x*e + d)^m*B*c^2*d^4*m*x^2*e^
2 + 120*(x*e + d)^m*B*c^2*d^5*m*x*e + (x*e + d)^m*A*a^2*m^5*x*e^6 + 19*(x*e
 + d)^m*B*a^2*m^4*x^2*e^6 + 38*(x*e + d)^m*A*a*b*m^4*x^2*e^6 + 242*(x*e + d
)^m*B*a*b*m^3*x^3*e^6 + 121*(x*e + d)^m*A*b^2*m^3*x^3*e^6 + 242*(x*e + d)^m
*A*a*c*m^3*x^3*e^6 + 307*(x*e + d)^m*B*b^2*m^2*x^4*e^6 + 614*(x*e + d)^m*B*
a*c*m^2*x^4*e^6 + 614*(x*e + d)^m*A*b*c*m^2*x^4*e^6 + 648*(x*e + d)^m*B*b*c
*m*x^5*e^6 + 324*(x*e + d)^m*A*c^2*m*x^5*e^6 + 120*(x*e + d)^m*B*c^2*x^6*e^
6 + (x*e + d)^m*A*a^2*d*m^5*e^5 + 18*(x*e + d)^m*B*a^2*d*m^4*x*e^5 + 36*(x*
e + d)^m*A*a*b*d*m^4*x*e^5 + 178*(x*e + d)^m*B*a*b*d*m^3*x^2*e^5 + 89*(x*e
+ d)^m*A*b^2*d*m^3*x^2*e^5 + 178*(x*e + d)^m*A*a*c*d*m^3*x^2*e^5 + 112*(x*e
 + d)^m*B*b^2*d*m^2*x^3*e^5 + 224*(x*e + d)^m*B*a*c*d*m^2*x^3*e^5 + 224*(x*
e + d)^m*A*b*c*d*m^2*x^3*e^5 + 72*(x*e + d)^m*B*b*c*d*m*x^4*e^5 + 36*(x*e +
 d)^m*A*c^2*d*m*x^4*e^5 - (x*e + d)^m*B*a^2*d^2*m^4*e^4 - 2*(x*e + d)^m*A*a
*b*d^2*m^4*e^4 - 60*(x*e + d)^m*B*a*b*d^2*m^3*x*e^4 - 30*(x*e + d)^m*A*b^2*
d^2*m^3*x*e^4 - 60*(x*e + d)^m*A*a*c*d^2*m^3*x*e^4 - 123*(x*e + d)^m*B*b^2*
d^2*m^2*x^2*e^4 - 246*(x*e + d)^m*B*a*c*d^2*m^2*x^2*e^4 - 246*(x*e + d)^m*A
*b*c*d^2*m^2*x^2*e^4 - 96*(x*e + d)^m*B*b*c*d^2*m*x^3*e^4 - 48*(x*e + d)^m*
A*c^2*d^2*m*x^3*e^4 + 4*(x*e + d)^m*B*a*b*d^3*m^3*e^3 + 2*(x*e + d)^m*A*b^2
*d^3*m^3*e^3 + 4*(x*e + d)^m*A*a*c*d^3*m^3*e^3 + 66*(x*e + d)^m*B*b^2*d^3*m
^2*x*e^3 + 132*(x*e + d)^m*B*a*c*d^3*m^2*x*e^3 + 132*(x*e + d)^m*A*b*c*d^3*
m^2*x*e^3 + 144*(x*e + d)^m*B*b*c*d^3*m*x^2*e^3 + 72*(x*e + d)^m*A*c^2*d^3*
m*x^2*e^3 - 6*(x*e + d)^m*B*b^2*d^4*m^2*e^2 - 12*(x*e + d)^m*B*a*c*d^4*m^2*
e^2 - 12*(x*e + d)^m*A*b*c*d^4*m^2*e^2 - 288*(x*e + d)^m*B*b*c*d^4*m*x*e^2
- 144*(x*e + d)^m*A*c^2*d^4*m*x*e^2 + 48*(x*e + d)^m*B*b*c*d^5*m*e + 24*(x*
e + d)^m*A*c^2*d^5*m*e - 120*(x*e + d)^m*B*c^2*d^6 + 20*(x*e + d)^m*A*a^2*m
^4*x*e^6 + 137*(x*e + d)^m*B*a^2*m^3*x^2*e^6 + 274*(x*e + d)^m*A*a*b*m^3*x^
2*e^6 + 744*(x*e + d)^m*B*a*b*m^2*x^3*e^6 + 372*(x*e + d)^m*A*b^2*m^2*x^3*e
^6 + 744*(x*e + d)^m*A*a*c*m^2*x^3*e^6 + 396*(x*e + d)^m*B*b^2*m*x^4*e^6 +
792*(x*e + d)^m*B*a*c*m*x^4*e^6 + 792*(x*e + d)^m*A*b*c*m*x^4*e^6 + 288*(x*
e + d)^m*B*b*c*x^5*e^6 + 144*(x*e + d)^m*A*c^2*x^5*e^6 + 20*(x*e + d)^m*A*a
^2*d*m^4*e^5 + 119*(x*e + d)^m*B*a^2*d*m^3*x*e^5 + 238*(x*e + d)^m*A*a*b*d*
m^3*x*e^5 + 388*(x*e + d)^m*B*a*b*d*m^2*x^2*e^5 + 194*(x*e + d)^m*A*b^2*d*m
^2*x^2*e^5 + 388*(x*e + d)^m*A*a*c*d*m^2*x^2*e^5 + 60*(x*e + d)^m*B*b^2*d*m
*x^3*e^5 + 120*(x*e + d)^m*B*a*c*d*m*x^3*e^5 + 120*(x*e + d)^m*A*b*c*d*m*x^
3*e^5 - 18*(x*e + d)^m*B*a^2*d^2*m^3*e^4 - 36*(x*e + d)^m*A*a*b*d^2*m^3*e^4
 - 296*(x*e + d)^m*B*a*b*d^2*m^2*x*e^4 - 148*(x*e + d)^m*A*b^2*d^2*m^2*x*e^
4 - 296*(x*e + d)^m*A*a*c*d^2*m^2*x*e^4 - 90*(x*e + d)^m*B*b^2*d^2*m*x^2*e^
4 - 180*(x*e + d)^m*B*a*c*d^2*m*x^2*e^4 - 180*(x*e + d)^m*A*b*c*d^2*m*x^2*e
^4 + 60*(x*e + d)^m*B*a*b*d^3*m^2*e^3 + 30*(x*e + d)^m*A*b^2*d^3*m^2*e^3 +
60*(x*e + d)^m*A*a*c*d^3*m^2*e^3 + 180*(x*e + d)^m*B*b^2*d^3*m*x*e^3 + 360*
(x*e + d)^m*B*a*c*d^3*m*x*e^3 + 360*(x*e + d)^m*A*b*c*d^3*m*x*e^3 - 66*(x*e
 + d)^m*B*b^2*d^4*m*e^2 - 132*(x*e + d)^m*B*a*c*d^4*m*e^2 - 132*(x*e + d)^m
*A*b*c*d^4*m*e^2 + 288*(x*e + d)^m*B*b*c*d^5*e + 144*(x*e + d)^m*A*c^2*d^5*
e + 155*(x*e + d)^m*A*a^2*m^3*x*e^6 + 461*(x*e + d)^m*B*a^2*m^2*x^2*e^6 + 9
22*(x*e + d)^m*A*a*b*m^2*x^2*e^6 + 1016*(x*e + d)^m*B*a*b*m*x^3*e^6 + 508*(
x*e + d)^m*A*b^2*m*x^3*e^6 + 1016*(x*e + d)^m*A*a*c*m*x^3*e^6 + 180*(x*e +
d)^m*B*b^2*x^4*e^6 + 360*(x*e + d)^m*B*a*c*x^4*e^6 + 360*(x*e + d)^m*A*b*c*
x^4*e^6 + 155*(x*e + d)^m*A*a^2*d*m^3*e^5 + 342*(x*e + d)^m*B*a^2*d*m^2*x*e
^5 + 684*(x*e + d)^m*A*a*b*d*m^2*x*e^5 + 240*(x*e + d)^m*B*a*b*d*m*x^2*e^5
+ 120*(x*e + d)^m*A*b^2*d*m*x^2*e^5 + 240*(x*e + d)^m*A*a*c*d*m*x^2*e^5 - 1
19*(x*e + d)^m*B*a^2*d^2*m^2*e^4 - 238*(x*e + d)^m*A*a*b*d^2*m^2*e^4 - 480*
```

```
(x*e + d)^m*B*a*b*d^2*m*x*e^4 - 240*(x*e + d)^m*A*b^2*d^2*m*x*e^4 - 480*(x*
e + d)^m*A*a*c*d^2*m*x*e^4 + 296*(x*e + d)^m*B*a*b*d^3*m*e^3 + 148*(x*e + d
)^m*A*b^2*d^3*m*e^3 + 296*(x*e + d)^m*A*a*c*d^3*m*e^3 - 180*(x*e + d)^m*B*b
^2*d^4*e^2 - 360*(x*e + d)^m*B*a*c*d^4*e^2 - 360*(x*e + d)^m*A*b*c*d^4*e^2
+ 580*(x*e + d)^m*A*a^2*m^2*x*e^6 + 702*(x*e + d)^m*B*a^2*m*x^2*e^6 + 1404*
(x*e + d)^m*A*a*b*m*x^2*e^6 + 480*(x*e + d)^m*B*a*b*x^3*e^6 + 240*(x*e + d)
^m*A*b^2*x^3*e^6 + 480*(x*e + d)^m*A*a*c*x^3*e^6 + 580*(x*e + d)^m*A*a^2*d*
m^2*e^5 + 360*(x*e + d)^m*B*a^2*d*m*x*e^5 + 720*(x*e + d)^m*A*a*b*d*m*x*e^5
 - 342*(x*e + d)^m*B*a^2*d^2*m*e^4 - 684*(x*e + d)^m*A*a*b*d^2*m*e^4 + 480*
(x*e + d)^m*B*a*b*d^3*e^3 + 240*(x*e + d)^m*A*b^2*d^3*e^3 + 480*(x*e + d)^m
*A*a*c*d^3*e^3 + 1044*(x*e + d)^m*A*a^2*m*x*e^6 + 360*(x*e + d)^m*B*a^2*x^2
*e^6 + 720*(x*e + d)^m*A*a*b*x^2*e^6 + 1044*(x*e + d)^m*A*a^2*d*m*e^5 - 360
*(x*e + d)^m*B*a^2*d^2*e^4 - 720*(x*e + d)^m*A*a*b*d^2*e^4 + 720*(x*e + d)^
m*A*a^2*x*e^6 + 720*(x*e + d)^m*A*a^2*d*e^5)/(m^6*e^6 + 21*m^5*e^6 + 175*m^
4*e^6 + 735*m^3*e^6 + 1624*m^2*e^6 + 1764*m*e^6 + 720*e^6)
```

maple [B] time = 0.02, size = 2557, normalized size = 7.68

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x)
```

```
[Out] (e*x+d)^(1+m)*(B*c^2*e^5*m^5*x^5+A*c^2*e^5*m^5*x^4+2*B*b*c*e^5*m^5*x^4+15*B
*c^2*e^5*m^4*x^5+2*A*b*c*e^5*m^5*x^3+16*A*c^2*e^5*m^4*x^4+2*B*a*c*e^5*m^5*x
^3+B*b^2*e^5*m^5*x^3+32*B*b*c*e^5*m^4*x^4-5*B*c^2*d*e^4*m^4*x^4+85*B*c^2*e^
5*m^3*x^5+2*A*a*c*e^5*m^5*x^2+A*b^2*e^5*m^5*x^2+34*A*b*c*e^5*m^4*x^3-4*A*c^
2*d*e^4*m^4*x^3+95*A*c^2*e^5*m^3*x^4+2*B*a*b*e^5*m^5*x^2+34*B*a*c*e^5*m^4*x
^3+17*B*b^2*e^5*m^4*x^3-8*B*b*c*d*e^4*m^4*x^3+190*B*b*c*e^5*m^3*x^4-50*B*c^
2*d*e^4*m^3*x^4+225*B*c^2*e^5*m^2*x^5+2*A*a*b*e^5*m^5*x+36*A*a*c*e^5*m^4*x^
2+18*A*b^2*e^5*m^4*x^2-6*A*b*c*d*e^4*m^4*x^2+214*A*b*c*e^5*m^3*x^3-48*A*c^2
*d*e^4*m^3*x^3+260*A*c^2*e^5*m^2*x^4+B*a^2*e^5*m^5*x+36*B*a*b*e^5*m^4*x^2-6
*B*a*c*d*e^4*m^4*x^2+214*B*a*c*e^5*m^3*x^3-3*B*b^2*d*e^4*m^4*x^2+107*B*b^2*
e^5*m^3*x^3-96*B*b*c*d*e^4*m^3*x^3+520*B*b*c*e^5*m^2*x^4+20*B*c^2*d^2*e^3*m
^3*x^3-175*B*c^2*d*e^4*m^2*x^4+274*B*c^2*e^5*m*x^5+A*a^2*e^5*m^5+38*A*a*b*e
^5*m^4*x-4*A*a*c*d*e^4*m^4*x+242*A*a*c*e^5*m^3*x^2-2*A*b^2*d*e^4*m^4*x+121*
A*b^2*e^5*m^3*x^2-84*A*b*c*d*e^4*m^3*x^2+614*A*b*c*e^5*m^2*x^3+12*A*c^2*d^2
*e^3*m^3*x^2-188*A*c^2*d*e^4*m^2*x^3+324*A*c^2*e^5*m*x^4+19*B*a^2*e^5*m^4*x
-4*B*a*b*d*e^4*m^4*x+242*B*a*b*e^5*m^3*x^2-84*B*a*c*d*e^4*m^3*x^2+614*B*a*c
*e^5*m^2*x^3-42*B*b^2*d*e^4*m^3*x^2+307*B*b^2*e^5*m^2*x^3+24*B*b*c*d^2*e^3*
m^3*x^2-376*B*b*c*d*e^4*m^2*x^3+648*B*b*c*e^5*m*x^4+120*B*c^2*d^2*e^3*m^2*x
^3-250*B*c^2*d*e^4*m*x^4+120*B*c^2*e^5*x^5+20*A*a^2*e^5*m^4-2*A*a*b*d*e^4*m
^4+274*A*a*b*e^5*m^3*x-64*A*a*c*d*e^4*m^3*x+744*A*a*c*e^5*m^2*x^2-32*A*b^2*
d*e^4*m^3*x+372*A*b^2*e^5*m^2*x^2+12*A*b*c*d^2*e^3*m^3*x-390*A*b*c*d*e^4*m^
2*x^2+792*A*b*c*e^5*m*x^3+108*A*c^2*d^2*e^3*m^2*x^2-288*A*c^2*d*e^4*m*x^3+1
44*A*c^2*e^5*x^4-B*a^2*d*e^4*m^4+137*B*a^2*e^5*m^3*x-64*B*a*b*d*e^4*m^3*x+7
44*B*a*b*e^5*m^2*x^2+12*B*a*c*d^2*e^3*m^3*x-390*B*a*c*d*e^4*m^2*x^2+792*B*a
*c*e^5*m*x^3+6*B*b^2*d^2*e^3*m^3*x-195*B*b^2*d*e^4*m^2*x^2+396*B*b^2*e^5*m*
x^3+216*B*b*c*d^2*e^3*m^2*x^2-576*B*b*c*d*e^4*m*x^3+288*B*b*c*e^5*x^4-60*B*
c^2*d^3*e^2*m^2*x^2+220*B*c^2*d^2*e^3*m*x^3-120*B*c^2*d*e^4*x^4+155*A*a^2*e
^5*m^3-36*A*a*b*d*e^4*m^3+922*A*a*b*e^5*m^2*x+4*A*a*c*d^2*e^3*m^3-356*A*a*c
*d*e^4*m^2*x+1016*A*a*c*e^5*m*x^2+2*A*b^2*d^2*e^3*m^3-178*A*b^2*d*e^4*m^2*x
+508*A*b^2*e^5*m*x^2+144*A*b*c*d^2*e^3*m^2*x-672*A*b*c*d*e^4*m*x^2+360*A*b*
c*e^5*x^3-24*A*c^2*d^3*e^2*m^2*x+240*A*c^2*d^2*e^3*m*x^2-144*A*c^2*d*e^4*x^
3-18*B*a^2*d*e^4*m^3+461*B*a^2*e^5*m^2*x+4*B*a*b*d^2*e^3*m^3-356*B*a*b*d*e^
4*m^2*x+1016*B*a*b*e^5*m*x^2+144*B*a*c*d^2*e^3*m^2*x-672*B*a*c*d*e^4*m*x^2+
360*B*a*c*e^5*x^3+72*B*b^2*d^2*e^3*m^2*x-336*B*b^2*d*e^4*m*x^2+180*B*b^2*e^
5*x^3-48*B*b*c*d^3*e^2*m^2*x+480*B*b*c*d^2*e^3*m*x^2-288*B*b*c*d*e^4*x^3-18
0*B*c^2*d^3*e^2*m*x^2+120*B*c^2*d^2*e^3*x^3+580*A*a^2*e^5*m^2-238*A*a*b*d*e
^4*m^2+1404*A*a*b*e^5*m*x+60*A*a*c*d^2*e^3*m^2-776*A*a*c*d*e^4*m*x+480*A*a*
c*e^5*x^2+30*A*b^2*d^2*e^3*m^2-388*A*b^2*d*e^4*m*x+240*A*b^2*e^5*x^2-12*A*b
*c*d^3*e^2*m^2+492*A*b*c*d^2*e^3*m*x-360*A*b*c*d*e^4*x^2-168*A*c^2*d^3*e^2*
m*x+144*A*c^2*d^2*e^3*x^2-119*B*a^2*d*e^4*m^2+702*B*a^2*e^5*m*x+60*B*a*b*d^
2*e^3*m^2-776*B*a*b*d*e^4*m*x+480*B*a*b*e^5*x^2-12*B*a*c*d^3*e^2*m^2+492*B*
a*c*d^2*e^3*m*x-360*B*a*c*d*e^4*x^2-6*B*b^2*d^3*e^2*m^2+246*B*b^2*d^2*e^3*m
*x-180*B*b^2*d*e^4*x^2-336*B*b*c*d^3*e^2*m*x+288*B*b*c*d^2*e^3*x^2+120*B*c^
2*d^4*e*m*x-120*B*c^2*d^3*e^2*x^2+1044*A*a^2*e^5*m-684*A*a*b*d*e^4*m+720*A*
a*b*e^5*x+296*A*a*c*d^2*e^3*m-480*A*a*c*d*e^4*x+148*A*b^2*d^2*e^3*m-240*A*b
^2*d*e^4*x-132*A*b*c*d^3*e^2*m+360*A*b*c*d^2*e^3*x+24*A*c^2*d^4*e*m-144*A*c
^2*d^3*e^2*x-342*B*a^2*d*e^4*m+360*B*a^2*e^5*x+296*B*a*b*d^2*e^3*m-480*B*a*
b*d*e^4*x-132*B*a*c*d^3*e^2*m+360*B*a*c*d^2*e^3*x-66*B*b^2*d^3*e^2*m+180*B*
b^2*d^2*e^3*x+48*B*b*c*d^4*e*m-288*B*b*c*d^3*e^2*x+120*B*c^2*d^4*e*x+720*A*
a^2*e^5-720*A*a*b*d*e^4+480*A*a*c*d^2*e^3+240*A*b^2*d^2*e^3-360*A*b*c*d^3*e
^2+144*A*c^2*d^4*e-360*B*a^2*d*e^4+480*B*a*b*d^2*e^3-360*B*a*c*d^3*e^2-180*
B*b^2*d^3*e^2+288*B*b*c*d^4*e-120*B*c^2*d^5)/e^6/(m^6+21*m^5+175*m^4+735*m^
3+1624*m^2+1764*m+720)
```

maxima [B] time = 0.66, size = 1118, normalized size = 3.36

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a^2/((m^2 + 3*m + 2)*e^2) +
 2*(e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*a*b/((m^2 + 3*m + 2)*e^2
) + (e*x + d)^(m + 1)*A*a^2/(e*(m + 1)) + 2*((m^2 + 3*m + 2)*e^3*x^3 + (m^2
 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*a*b/((m^3 + 6*m^2 + 11
*m + 6)*e^3) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x
 + 2*d^3)*(e*x + d)^m*A*b^2/((m^3 + 6*m^2 + 11*m + 6)*e^3) + 2*((m^2 + 3*m
+ 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*A*a*c
/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3
+ 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(
e*x + d)^m*B*b^2/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*((m^3 + 6*m^
2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2
*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*B*a*c/((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^4) + 2*((m^3 + 6*m^2 + 11*m + 6)*e^4*x^4 + (m^3 + 3*m^2 + 2*m)*d*
e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m*x - 6*d^4)*(e*x + d)^m*A*b*c/
((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4) + 2*((m^4 + 10*m^3 + 35*m^2 + 50*
m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4*x^4 - 4*(m^3 + 3*m^2 +
 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^4*e*m*x + 24*d^5)*(e*x
+ d)^m*B*b*c/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^5) + ((m^4
+ 10*m^3 + 35*m^2 + 50*m + 24)*e^5*x^5 + (m^4 + 6*m^3 + 11*m^2 + 6*m)*d*e^4
*x^4 - 4*(m^3 + 3*m^2 + 2*m)*d^2*e^3*x^3 + 12*(m^2 + m)*d^3*e^2*x^2 - 24*d^
4*e*m*x + 24*d^5)*(e*x + d)^m*A*c^2/((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274
*m + 120)*e^5) + ((m^5 + 15*m^4 + 85*m^3 + 225*m^2 + 274*m + 120)*e^6*x^6 +
 (m^5 + 10*m^4 + 35*m^3 + 50*m^2 + 24*m)*d*e^5*x^5 - 5*(m^4 + 6*m^3 + 11*m^
2 + 6*m)*d^2*e^4*x^4 + 20*(m^3 + 3*m^2 + 2*m)*d^3*e^3*x^3 - 60*(m^2 + m)*d^
4*e^2*x^2 + 120*d^5*e*m*x - 120*d^6)*(e*x + d)^m*B*c^2/((m^6 + 21*m^5 + 175
*m^4 + 735*m^3 + 1624*m^2 + 1764*m + 720)*e^6)
```

mupad [B] time = 3.80, size = 2307, normalized size = 6.93

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2)^2,x)
```

```
[Out] ((d + e*x)^m*(720*A*a^2*d*e^5 - 120*B*c^2*d^6 + 144*A*c^2*d^5*e + 240*A*b^2
*d^3*e^3 - 360*B*a^2*d^2*e^4 - 180*B*b^2*d^4*e^2 + 580*A*a^2*d*e^5*m^2 + 15
5*A*a^2*d*e^5*m^3 + 20*A*a^2*d*e^5*m^4 + A*a^2*d*e^5*m^5 + 148*A*b^2*d^3*e^
3*m - 342*B*a^2*d^2*e^4*m - 66*B*b^2*d^4*e^2*m + 288*B*b*c*d^5*e + 30*A*b^2
*d^3*e^3*m^2 - 119*B*a^2*d^2*e^4*m^2 + 2*A*b^2*d^3*e^3*m^3 - 18*B*a^2*d^2*e
^4*m^3 - B*a^2*d^2*e^4*m^4 - 6*B*b^2*d^4*e^2*m^2 - 720*A*a*b*d^2*e^4 + 480*
A*a*c*d^3*e^3 + 480*B*a*b*d^3*e^3 - 360*A*b*c*d^4*e^2 - 360*B*a*c*d^4*e^2 +
 1044*A*a^2*d*e^5*m + 24*A*c^2*d^5*e*m - 684*A*a*b*d^2*e^4*m + 296*A*a*c*d^
3*e^3*m + 296*B*a*b*d^3*e^3*m - 132*A*b*c*d^4*e^2*m - 132*B*a*c*d^4*e^2*m -
 238*A*a*b*d^2*e^4*m^2 - 36*A*a*b*d^2*e^4*m^3 - 2*A*a*b*d^2*e^4*m^4 + 60*A*
a*c*d^3*e^3*m^2 + 60*B*a*b*d^3*e^3*m^2 + 4*A*a*c*d^3*e^3*m^3 + 4*B*a*b*d^3*
e^3*m^3 - 12*A*b*c*d^4*e^2*m^2 - 12*B*a*c*d^4*e^2*m^2 + 48*B*b*c*d^5*e*m))/
(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x*(d
+ e*x)^m*(720*A*a^2*e^6 + 1044*A*a^2*e^6*m + 580*A*a^2*e^6*m^2 + 155*A*a^2*
e^6*m^3 + 20*A*a^2*e^6*m^4 + A*a^2*e^6*m^5 - 240*A*b^2*d^2*e^4*m + 342*B*a^
2*d*e^5*m^2 + 119*B*a^2*d*e^5*m^3 + 18*B*a^2*d*e^5*m^4 + B*a^2*d*e^5*m^5 -
144*A*c^2*d^4*e^2*m + 180*B*b^2*d^3*e^3*m - 148*A*b^2*d^2*e^4*m^2 - 30*A*b^
2*d^2*e^4*m^3 - 2*A*b^2*d^2*e^4*m^4 - 24*A*c^2*d^4*e^2*m^2 + 66*B*b^2*d^3*e
^3*m^2 + 6*B*b^2*d^3*e^3*m^3 + 360*B*a^2*d*e^5*m + 120*B*c^2*d^5*e*m + 684*
A*a*b*d*e^5*m^2 + 238*A*a*b*d*e^5*m^3 + 36*A*a*b*d*e^5*m^4 + 2*A*a*b*d*e^5*
m^5 - 480*A*a*c*d^2*e^4*m - 480*B*a*b*d^2*e^4*m + 360*A*b*c*d^3*e^3*m + 360
*B*a*c*d^3*e^3*m - 288*B*b*c*d^4*e^2*m - 296*A*a*c*d^2*e^4*m^2 - 296*B*a*b*
d^2*e^4*m^2 - 60*A*a*c*d^2*e^4*m^3 - 60*B*a*b*d^2*e^4*m^3 - 4*A*a*c*d^2*e^4
*m^4 - 4*B*a*b*d^2*e^4*m^4 + 132*A*b*c*d^3*e^3*m^2 + 132*B*a*c*d^3*e^3*m^2
+ 12*A*b*c*d^3*e^3*m^3 + 12*B*a*c*d^3*e^3*m^3 - 48*B*b*c*d^4*e^2*m^2 + 720*
A*a*b*d*e^5*m))/(e^6*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6
+ 720)) + (x^4*(d + e*x)^m*(11*m + 6*m^2 + m^3 + 6)*(30*B*b^2*e^2 + 60*A*b*
c*e^2 + 60*B*a*c*e^2 + 11*B*b^2*e^2*m - 5*B*c^2*d^2*m + B*b^2*e^2*m^2 + 22*
A*b*c*e^2*m + 22*B*a*c*e^2*m + 6*A*c^2*d*e*m + 2*A*b*c*e^2*m^2 + 2*B*a*c*e^
2*m^2 + A*c^2*d*e*m^2 + 12*B*b*c*d*e*m + 2*B*b*c*d*e*m^2))/(e^2*(1764*m + 1
624*m^2 + 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (x^3*(d + e*x)^m*(3*m
+ m^2 + 2)*(120*A*b^2*e^3 + 240*A*a*c*e^3 + 240*B*a*b*e^3 + 74*A*b^2*e^3*m
+ 20*B*c^2*d^3*m + 15*A*b^2*e^3*m^2 + A*b^2*e^3*m^3 - 4*A*c^2*d^2*e*m^2 + 1
1*B*b^2*d*e^2*m^2 + B*b^2*d*e^2*m^3 + 148*A*a*c*e^3*m + 148*B*a*b*e^3*m + 3
0*A*a*c*e^3*m^2 + 30*B*a*b*e^3*m^2 + 2*A*a*c*e^3*m^3 + 2*B*a*b*e^3*m^3 - 24
*A*c^2*d^2*e*m + 30*B*b^2*d*e^2*m + 22*A*b*c*d*e^2*m^2 + 22*B*a*c*d*e^2*m^2
 + 2*A*b*c*d*e^2*m^3 + 2*B*a*c*d*e^2*m^3 - 8*B*b*c*d^2*e*m^2 + 60*A*b*c*d*e
^2*m + 60*B*a*c*d*e^2*m - 48*B*b*c*d^2*e*m))/(e^3*(1764*m + 1624*m^2 + 735*
m^3 + 175*m^4 + 21*m^5 + m^6 + 720)) + (B*c^2*x^6*(d + e*x)^m*(274*m + 225*
m^2 + 85*m^3 + 15*m^4 + m^5 + 120))/(1764*m + 1624*m^2 + 735*m^3 + 175*m^4
+ 21*m^5 + m^6 + 720) + (x^2*(m + 1)*(d + e*x)^m*(360*B*a^2*e^4 + 720*A*a*b
*e^4 + 342*B*a^2*e^4*m - 60*B*c^2*d^4*m + 119*B*a^2*e^4*m^2 + 18*B*a^2*e^4*
m^3 + B*a^2*e^4*m^4 + 74*A*b^2*d*e^3*m^2 + 15*A*b^2*d*e^3*m^3 + A*b^2*d*e^3
*m^4 - 90*B*b^2*d^2*e^2*m + 12*A*c^2*d^3*e*m^2 + 684*A*a*b*e^4*m - 33*B*b^2
*d^2*e^2*m^2 - 3*B*b^2*d^2*e^2*m^3 + 238*A*a*b*e^4*m^2 + 36*A*a*b*e^4*m^3 +
 2*A*a*b*e^4*m^4 + 120*A*b^2*d*e^3*m + 72*A*c^2*d^3*e*m + 148*A*a*c*d*e^3*m
^2 + 148*B*a*b*d*e^3*m^2 + 30*A*a*c*d*e^3*m^3 + 30*B*a*b*d*e^3*m^3 + 2*A*a*
c*d*e^3*m^4 + 2*B*a*b*d*e^3*m^4 - 180*A*b*c*d^2*e^2*m - 180*B*a*c*d^2*e^2*m
 + 24*B*b*c*d^3*e*m^2 - 66*A*b*c*d^2*e^2*m^2 - 66*B*a*c*d^2*e^2*m^2 - 6*A*b
*c*d^2*e^2*m^3 - 6*B*a*c*d^2*e^2*m^3 + 240*A*a*c*d*e^3*m + 240*B*a*b*d*e^3*
m + 144*B*b*c*d^3*e*m))/(e^4*(1764*m + 1624*m^2 + 735*m^3 + 175*m^4 + 21*m^
5 + m^6 + 720)) + (c*x^5*(d + e*x)^m*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)*(6
*A*c*e + 12*B*b*e + A*c*e*m + 2*B*b*e*m + B*c*d*m))/(e*(1764*m + 1624*m^2 +
 735*m^3 + 175*m^4 + 21*m^5 + m^6 + 720))
```

sympy [**F(-1)**] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.2642 $\int (A+Bx)(d+ex)^m \left(a+bx+cx^2\right) dx$

Optimal. Leaf size=153

$$-\frac{(d+ex)^{m+2}\left(Ae(2cd-be)-B\left(3cd^2-e(2bd-ae)\right)\right)}{e^4(m+2)}-\frac{(Bd-Ae)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}-\frac{(d+ex)^{m+3}(-}{e^4}$$

```
[Out] -(-A*e+B*d)*(a*e^2-b*d*e+c*d^2)*(e*x+d)^(1+m)/e^4/(1+m)-(A*e*(-b*e+2*c*d)-B
*(3*c*d^2-e*(-a*e+2*b*d)))*(e*x+d)^(2+m)/e^4/(2+m)-(-A*c*e-B*b*e+3*B*c*d)*(
e*x+d)^(3+m)/e^4/(3+m)+B*c*(e*x+d)^(4+m)/e^4/(4+m)
```

Rubi [A] time = 0.11, antiderivative size = 151, normalized size of antiderivative = 0.99, number of steps used = 2, number of rules used = 1, integrand size = 23, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.043, Rules used = {771}

$$-\frac{(Bd-Ae)(d+ex)^{m+1}\left(ae^2-bde+cd^2\right)}{e^4(m+1)}+\frac{(d+ex)^{m+2}\left(-Be(2bd-ae)-Ae(2cd-be)+3Bcd^2\right)}{e^4(m+2)}-\frac{(d+ex)^{m+3}(}{e}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] -(((B*d - A*e)*(c*d^2 - b*d*e + a*e^2)*(d + e*x)^(1 + m))/(e^4*(1 + m))) +
((3*B*c*d^2 - B*e*(2*b*d - a*e) - A*e*(2*c*d - b*e))*(d + e*x)^(2 + m))/(e^
4*(2 + m)) - ((3*B*c*d - b*B*e - A*c*e)*(d + e*x)^(3 + m))/(e^4*(3 + m)) +
(B*c*(d + e*x)^(4 + m))/(e^4*(4 + m))
```

Rule 771

```
Int[((d_.) + (e_.)*(x_))^(m_.)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (
c_.)*(x_)^2)^(p_.), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m*(f + g*x)*
(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m}, x] && NeQ[b^
2 - 4*a*c, 0] && IntegerQ[p] && (GtQ[p, 0] || (EqQ[a, 0] && IntegerQ[m]))
```

Rubi steps

$$\begin{aligned}\int (A+Bx)(d+ex)^m\left(a+bx+cx^2\right)dx &= \int\left(\frac{(-Bd+Ae)\left(cd^2-bde+ae^2\right)(d+ex)^m}{e^3}+\frac{\left(3Bcd^2-Be(2bd-ae\right.}{}\right.\\ &= -\frac{(Bd-Ae)\left(cd^2-bde+ae^2\right)(d+ex)^{1+m}}{e^4(1+m)}+\frac{\left(3Bcd^2-Be(2bd-ae)\right.}{e^4(}\end{aligned}$$

Mathematica [A] time = 0.34, size = 181, normalized size = 1.18

$$\frac{(d+ex)^{m+1}\left(\frac{(d+ex)\left(B\left(ce(2ae(m+3)+bd(m-2))-b^2e^2(m+2)+6c^2d^2\right)-Ace(m+4)(2cd-be)\right)}{e^2(m+2)}-\frac{\left(e(ae-bd)+cd^2\right)(-2Ace(m+4)+bBe(m+1)+6Bcd)}{e^2(m+1)}\right.}{ce^2(m+3)(m+4)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((c*d^2 + e*(-(b*d) + a*e))*(6*B*c*d + b*B*e*(1 + m)
- 2*A*c*e*(4 + m)))/(e^2*(1 + m))) + ((-(A*c*e*(2*c*d - b*e)*(4 + m)) + B*(
6*c^2*d^2 - b^2*e^2*(2 + m) + c*e*(b*d*(-2 + m) + 2*a*e*(3 + m))))*(d + e*x
))/(e^2*(2 + m)) + (B*(-3*c*d + b*e) + A*c*e*(4 + m) + B*c*e*(3 + m)*x)*(a
+ x*(b + c*x))))/(c*e^2*(3 + m)*(4 + m))
```

fricas [B] time = 0.92, size = 538, normalized size = 3.52

$$(Aade^3m^3 - 6\,Bcd^4 + 24\,Aade^3 + 8\,(Bb + Ac)d^3e - 12\,(Ba + Ab)d^2e^2 + (Bce^4m^3 + 6\,Bce^4m^2 + 11\,Bce^4m + 6\,Bce^4$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] (A*a*d*e^3*m^3 - 6*B*c*d^4 + 24*A*a*d*e^3 + 8*(B*b + A*c)*d^3*e - 12*(B*a +
 A*b)*d^2*e^2 + (B*c*e^4*m^3 + 6*B*c*e^4*m^2 + 11*B*c*e^4*m + 6*B*c*e^4)*x^
4 + (8*(B*b + A*c)*e^4 + (B*c*d*e^3 + (B*b + A*c)*e^4)*m^3 + (3*B*c*d*e^3 +
 7*(B*b + A*c)*e^4)*m^2 + 2*(B*c*d*e^3 + 7*(B*b + A*c)*e^4)*m)*x^3 + (9*A*a
*d*e^3 - (B*a + A*b)*d^2*e^2)*m^2 + (12*(B*a + A*b)*e^4 + ((B*b + A*c)*d*e^
3 + (B*a + A*b)*e^4)*m^3 - (3*B*c*d^2*e^2 - 5*(B*b + A*c)*d*e^3 - 8*(B*a +
A*b)*e^4)*m^2 - (3*B*c*d^2*e^2 - 4*(B*b + A*c)*d*e^3 - 19*(B*a + A*b)*e^4)*
m)*x^2 + (26*A*a*d*e^3 + 2*(B*b + A*c)*d^3*e - 7*(B*a + A*b)*d^2*e^2)*m + (
24*A*a*e^4 + (A*a*e^4 + (B*a + A*b)*d*e^3)*m^3 + (9*A*a*e^4 - 2*(B*b + A*c)
*d^2*e^2 + 7*(B*a + A*b)*d*e^3)*m^2 + 2*(3*B*c*d^3*e + 13*A*a*e^4 - 4*(B*b
+ A*c)*d^2*e^2 + 6*(B*a + A*b)*d*e^3)*m)*x)*(e*x + d)^m/(e^4*m^4 + 10*e^4*m
^3 + 35*e^4*m^2 + 50*e^4*m + 24*e^4)
```

giac [B] time = 0.22, size = 1162, normalized size = 7.59

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] ((x*e + d)^m*B*c*m^3*x^4*e^4 + (x*e + d)^m*B*c*d*m^3*x^3*e^3 + (x*e + d)^m*
B*b*m^3*x^3*e^4 + (x*e + d)^m*A*c*m^3*x^3*e^4 + 6*(x*e + d)^m*B*c*m^2*x^4*e
^4 + (x*e + d)^m*B*b*d*m^3*x^2*e^3 + (x*e + d)^m*A*c*d*m^3*x^2*e^3 + 3*(x*e
 + d)^m*B*c*d*m^2*x^3*e^3 - 3*(x*e + d)^m*B*c*d^2*m^2*x^2*e^2 + (x*e + d)^m
*B*a*m^3*x^2*e^4 + (x*e + d)^m*A*b*m^3*x^2*e^4 + 7*(x*e + d)^m*B*b*m^2*x^3*
e^4 + 7*(x*e + d)^m*A*c*m^2*x^3*e^4 + 11*(x*e + d)^m*B*c*m*x^4*e^4 + (x*e +
 d)^m*B*a*d*m^3*x*e^3 + (x*e + d)^m*A*b*d*m^3*x*e^3 + 5*(x*e + d)^m*B*b*d*m
^2*x^2*e^3 + 5*(x*e + d)^m*A*c*d*m^2*x^2*e^3 + 2*(x*e + d)^m*B*c*d*m*x^3*e^
3 - 2*(x*e + d)^m*B*b*d^2*m^2*x*e^2 - 2*(x*e + d)^m*A*c*d^2*m^2*x*e^2 - 3*(
x*e + d)^m*B*c*d^2*m*x^2*e^2 + 6*(x*e + d)^m*B*c*d^3*m*x*e + (x*e + d)^m*A*
a*m^3*x*e^4 + 8*(x*e + d)^m*B*a*m^2*x^2*e^4 + 8*(x*e + d)^m*A*b*m^2*x^2*e^4
 + 14*(x*e + d)^m*B*b*m*x^3*e^4 + 14*(x*e + d)^m*A*c*m*x^3*e^4 + 6*(x*e + d
)^m*B*c*x^4*e^4 + (x*e + d)^m*A*a*d*m^3*e^3 + 7*(x*e + d)^m*B*a*d*m^2*x*e^3
 + 7*(x*e + d)^m*A*b*d*m^2*x*e^3 + 4*(x*e + d)^m*B*b*d*m*x^2*e^3 + 4*(x*e +
 d)^m*A*c*d*m*x^2*e^3 - (x*e + d)^m*B*a*d^2*m^2*e^2 - (x*e + d)^m*A*b*d^2*m
^2*e^2 - 8*(x*e + d)^m*B*b*d^2*m*x*e^2 - 8*(x*e + d)^m*A*c*d^2*m*x*e^2 + 2*
(x*e + d)^m*B*b*d^3*m*e + 2*(x*e + d)^m*A*c*d^3*m*e - 6*(x*e + d)^m*B*c*d^4
 + 9*(x*e + d)^m*A*a*m^2*x*e^4 + 19*(x*e + d)^m*B*a*m*x^2*e^4 + 19*(x*e + d
)^m*A*b*m*x^2*e^4 + 8*(x*e + d)^m*B*b*x^3*e^4 + 8*(x*e + d)^m*A*c*x^3*e^4 +
 9*(x*e + d)^m*A*a*d*m^2*e^3 + 12*(x*e + d)^m*B*a*d*m*x*e^3 + 12*(x*e + d)^
m*A*b*d*m*x*e^3 - 7*(x*e + d)^m*B*a*d^2*m*e^2 - 7*(x*e + d)^m*A*b*d^2*m*e^2
 + 8*(x*e + d)^m*B*b*d^3*e + 8*(x*e + d)^m*A*c*d^3*e + 26*(x*e + d)^m*A*a*m
*x*e^4 + 12*(x*e + d)^m*B*a*x^2*e^4 + 12*(x*e + d)^m*A*b*x^2*e^4 + 26*(x*e
+ d)^m*A*a*d*m*e^3 - 12*(x*e + d)^m*B*a*d^2*e^2 - 12*(x*e + d)^m*A*b*d^2*e^
2 + 24*(x*e + d)^m*A*a*x*e^4 + 24*(x*e + d)^m*A*a*d*e^3)/(m^4*e^4 + 10*m^3*
e^4 + 35*m^2*e^4 + 50*m*e^4 + 24*e^4)
```

maple [B] time = 0.01, size = 498, normalized size = 3.25

$$(Bc\,e^3m^3x^3 + Ac\,e^3m^3x^2 + Bb\,e^3m^3x^2 + 6Bc\,e^3m^2x^3 + Ab\,e^3m^3x + 7Ac\,e^3m^2x^2 + Ba\,e^3m^3x + 7Bb\,e^3m^2x^2 - 3Bcd$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x)
```

```
[Out] (e*x+d)^(m+1)*(B*c*e^3*m^3*x^3+A*c*e^3*m^3*x^2+B*b*e^3*m^3*x^2+6*B*c*e^3*m^
2*x^3+A*b*e^3*m^3*x+7*A*c*e^3*m^2*x^2+B*a*e^3*m^3*x+7*B*b*e^3*m^2*x^2-3*B*c
*d*e^2*m^2*x^2+11*B*c*e^3*m*x^3+A*a*e^3*m^3+8*A*b*e^3*m^2*x-2*A*c*d*e^2*m^2
*x+14*A*c*e^3*m*x^2+8*B*a*e^3*m^2*x-2*B*b*d*e^2*m^2*x+14*B*b*e^3*m*x^2-9*B*
c*d*e^2*m*x^2+6*B*c*e^3*x^3+9*A*a*e^3*m^2-A*b*d*e^2*m^2+19*A*b*e^3*m*x-10*A
*c*d*e^2*m*x+8*A*c*e^3*x^2-B*a*d*e^2*m^2+19*B*a*e^3*m*x-10*B*b*d*e^2*m*x+8*
B*b*e^3*x^2+6*B*c*d^2*e*m*x-6*B*c*d*e^2*x^2+26*A*a*e^3*m-7*A*b*d*e^2*m+12*A
*b*e^3*x+2*A*c*d^2*e*m-8*A*c*d*e^2*x-7*B*a*d*e^2*m+12*B*a*e^3*x+2*B*b*d^2*e
*m-8*B*b*d*e^2*x+6*B*c*d^2*e*x+24*A*a*e^3-12*A*b*d*e^2+8*A*c*d^2*e-12*B*a*d
*e^2+8*B*b*d^2*e-6*B*c*d^3)/e^4/(m^4+10*m^3+35*m^2+50*m+24)
```

maxima [B] time = 0.53, size = 352, normalized size = 2.30

$$\frac{\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Ba}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{\left(e^{2}(m+1)x^{2}+demx-d^{2}\right)(ex+d)^{m}Ab}{\left(m^{2}+3\,m+2\right)e^{2}}+\frac{(ex+d)^{m+1}Aa}{e(m+1)}+\frac{\left(\left(m^{2}+3\,\right.\right.}{}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m*(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] (e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*B*a/((m^2 + 3*m + 2)*e^2) + (
e^2*(m + 1)*x^2 + d*e*m*x - d^2)*(e*x + d)^m*A*b/((m^2 + 3*m + 2)*e^2) + (e
*x + d)^(m + 1)*A*a/(e*(m + 1)) + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^
2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e*x + d)^m*B*b/((m^3 + 6*m^2 + 11*m + 6)*e^3)
 + ((m^2 + 3*m + 2)*e^3*x^3 + (m^2 + m)*d*e^2*x^2 - 2*d^2*e*m*x + 2*d^3)*(e
*x + d)^m*A*c/((m^3 + 6*m^2 + 11*m + 6)*e^3) + ((m^3 + 6*m^2 + 11*m + 6)*e^
4*x^4 + (m^3 + 3*m^2 + 2*m)*d*e^3*x^3 - 3*(m^2 + m)*d^2*e^2*x^2 + 6*d^3*e*m
*x - 6*d^4)*(e*x + d)^m*B*c/((m^4 + 10*m^3 + 35*m^2 + 50*m + 24)*e^4)
```

mupad [B] time = 2.97, size = 602, normalized size = 3.93

$$\frac{(d+e\,x)^{m}\,\left(24\,A\,a\,d\,e^{3}-6\,B\,c\,d^{4}+8\,A\,c\,d^{3}\,e+8\,B\,b\,d^{3}\,e-12\,A\,b\,d^{2}\,e^{2}-12\,B\,a\,d^{2}\,e^{2}-A\,b\,d^{2}\,e^{2}\,m^{2}-B\,a\,d^{2}\,e^{2}\right.}{e^{4}\,\left(m^{4}+10\,m^{3}+35\right.}$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((A + B*x)*(d + e*x)^m*(a + b*x + c*x^2),x)
```

```
[Out] ((d + e*x)^m*(24*A*a*d*e^3 - 6*B*c*d^4 + 8*A*c*d^3*e + 8*B*b*d^3*e - 12*A*b
*d^2*e^2 - 12*B*a*d^2*e^2 - A*b*d^2*e^2*m^2 - B*a*d^2*e^2*m^2 + 26*A*a*d*e^
3*m + 2*A*c*d^3*e*m + 2*B*b*d^3*e*m + 9*A*a*d*e^3*m^2 + A*a*d*e^3*m^3 - 7*A
*b*d^2*e^2*m - 7*B*a*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
+ (x*(d + e*x)^m*(24*A*a*e^4 + 26*A*a*e^4*m + 9*A*a*e^4*m^2 + A*a*e^4*m^3 -
 2*A*c*d^2*e^2*m^2 - 2*B*b*d^2*e^2*m^2 + 12*A*b*d*e^3*m + 12*B*a*d*e^3*m +
6*B*c*d^3*e*m + 7*A*b*d*e^3*m^2 + 7*B*a*d*e^3*m^2 + A*b*d*e^3*m^3 + B*a*d*e
^3*m^3 - 8*A*c*d^2*e^2*m - 8*B*b*d^2*e^2*m))/(e^4*(50*m + 35*m^2 + 10*m^3 +
 m^4 + 24)) + (x^3*(d + e*x)^m*(3*m + m^2 + 2)*(4*A*c*e + 4*B*b*e + A*c*e*m
 + B*b*e*m + B*c*d*m))/(e*(50*m + 35*m^2 + 10*m^3 + m^4 + 24)) + (B*c*x^4*(
d + e*x)^m*(11*m + 6*m^2 + m^3 + 6))/(50*m + 35*m^2 + 10*m^3 + m^4 + 24) +
(x^2*(m + 1)*(d + e*x)^m*(12*A*b*e^2 + 12*B*a*e^2 + 7*A*b*e^2*m + 7*B*a*e^2
*m - 3*B*c*d^2*m + A*b*e^2*m^2 + B*a*e^2*m^2 + 4*A*c*d*e*m + 4*B*b*d*e*m +
A*c*d*e*m^2 + B*b*d*e*m^2))/(e^2*(50*m + 35*m^2 + 10*m^3 + m^4 + 24))
```

sympy [A] time = 5.25, size = 5930, normalized size = 38.76

result too large to display

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m*(c*x**2+b*x+a),x)
```

```
[Out] Piecewise((d**m*(A*a*x + A*b*x**2/2 + A*c*x**3/3 + B*a*x**2/2 + B*b*x**3/3
+ B*c*x**4/4), Eq(e, 0)), (-2*A*a*e**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - A*b*d*e**2/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d
*e**6*x**2 + 6*e**7*x**3) - 3*A*b*e**3*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18
*d*e**6*x**2 + 6*e**7*x**3) - 2*A*c*d**2*e/(6*d**3*e**4 + 18*d**2*e**5*x +
18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*c*d*e**2*x/(6*d**3*e**4 + 18*d**2*e**5*
x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*A*c*e**3*x**2/(6*d**3*e**4 + 18*d**2*
e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - B*a*d*e**2/(6*d**3*e**4 + 18*d**2*
e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 3*B*a*e**3*x/(6*d**3*e**4 + 18*d**
2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 2*B*b*d**2*e/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*B*b*d*e**2*x/(6*d**3*e**4 +
18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) - 6*B*b*e**3*x**2/(6*d**3*e*
*4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*d**3*log(d/e +
x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 11*B*c*d
**3/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*
d**2*e*x*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e*
*7*x**3) + 27*B*c*d**2*e*x/(6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 +
 6*e**7*x**3) + 18*B*c*d*e**2*x**2*log(d/e + x)/(6*d**3*e**4 + 18*d**2*e**5
*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 18*B*c*d*e**2*x**2/(6*d**3*e**4 + 18*d
**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3) + 6*B*c*e**3*x**3*log(d/e + x)/(
6*d**3*e**4 + 18*d**2*e**5*x + 18*d*e**6*x**2 + 6*e**7*x**3), Eq(m, -4)), (
-A*a*e**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - A*b*d*e**2/(2*d**2*e**
4 + 4*d*e**5*x + 2*e**6*x**2) - 2*A*b*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*
e**6*x**2) + 2*A*c*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x
**2) + 3*A*c*d**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2
*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*A*c*d*e**2*x/(
2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*A*c*e**3*x**2*log(d/e + x)/(2*d
**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - B*a*d*e**2/(2*d**2*e**4 + 4*d*e**5*x
 + 2*e**6*x**2) - 2*B*a*e**3*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2
*B*b*d**2*e*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 3*B*b*d
**2*e/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*b*d*e**2*x*log(d/e + x
)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 4*B*b*d*e**2*x/(2*d**2*e**4 +
4*d*e**5*x + 2*e**6*x**2) + 2*B*b*e**3*x**2*log(d/e + x)/(2*d**2*e**4 + 4*d
*e**5*x + 2*e**6*x**2) - 6*B*c*d**3*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x
+ 2*e**6*x**2) - 9*B*c*d**3/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B
*c*d**2*e*x*log(d/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 12*B*c*
d**2*e*x/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) - 6*B*c*d*e**2*x**2*log(d
/e + x)/(2*d**2*e**4 + 4*d*e**5*x + 2*e**6*x**2) + 2*B*c*e**3*x**3/(2*d**2*
e**4 + 4*d*e**5*x + 2*e**6*x**2), Eq(m, -3)), (-2*A*a*e**3/(2*d*e**4 + 2*e*
*5*x) + 2*A*b*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*b*d*e**2/(2*d
*e**4 + 2*e**5*x) + 2*A*b*e**3*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c
*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*A*c*d**2*e/(2*d*e**4 + 2*e**
5*x) - 4*A*c*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2*A*c*e**3*x**2/
(2*d*e**4 + 2*e**5*x) + 2*B*a*d*e**2*log(d/e + x)/(2*d*e**4 + 2*e**5*x) + 2
*B*a*d*e**2/(2*d*e**4 + 2*e**5*x) + 2*B*a*e**3*x*log(d/e + x)/(2*d*e**4 + 2
*e**5*x) - 4*B*b*d**2*e*log(d/e + x)/(2*d*e**4 + 2*e**5*x) - 4*B*b*d**2*e/(
2*d*e**4 + 2*e**5*x) - 4*B*b*d*e**2*x*log(d/e + x)/(2*d*e**4 + 2*e**5*x) +
2*B*b*e**3*x**2/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**3*log(d/e + x)/(2*d*e**4 +
 2*e**5*x) + 6*B*c*d**3/(2*d*e**4 + 2*e**5*x) + 6*B*c*d**2*e*x*log(d/e + x)
/(2*d*e**4 + 2*e**5*x) - 3*B*c*d*e**2*x**2/(2*d*e**4 + 2*e**5*x) + B*c*e**3
*x**3/(2*d*e**4 + 2*e**5*x), Eq(m, -2)), (A*a*log(d/e + x)/e - A*b*d*log(d/
e + x)/e**2 + A*b*x/e + A*c*d**2*log(d/e + x)/e**3 - A*c*d*x/e**2 + A*c*x**
2/(2*e) - B*a*d*log(d/e + x)/e**2 + B*a*x/e + B*b*d**2*log(d/e + x)/e**3 -
B*b*d*x/e**2 + B*b*x**2/(2*e) - B*c*d**3*log(d/e + x)/e**4 + B*c*d**2*x/e**
3 - B*c*d*x**2/(2*e**2) + B*c*x**3/(3*e), Eq(m, -1)), (A*a*d*e**3*m**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
9*A*a*d*e**3*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 26*A*a*d*e**3*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
```

```
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*d*e**3*(d + e*x)**m/(e**4*
m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*a*e**4*m**3*x
*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**
4) + 9*A*a*e**4*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 26*A*a*e**4*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**
4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 24*A*a*e**4*x*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - A*b*d**2*e
**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m
+ 24*e**4) - 7*A*b*d**2*e**2*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*
e**4*m**2 + 50*e**4*m + 24*e**4) - 12*A*b*d**2*e**2*(d + e*x)**m/(e**4*m**4
 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b*d*e**3*m**3*x*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + 7*A*b*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 12*A*b*d*e**3*m*x*(d + e*x)**m/(e**4*m**4 + 10*e
**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + A*b*e**4*m**3*x**2*(d + e*
x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*A
*b*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 5
0*e**4*m + 24*e**4) + 19*A*b*e**4*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*A*b*e**4*x**2*(d + e*x)**m/
(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*A*c*d**
3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) + 8*A*c*d**3*e*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) - 2*A*c*d**2*e**2*m**2*x*(d + e*x)**m/(e**4*m**4 +
 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 8*A*c*d**2*e**2*m*x*(
d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4)
 + A*c*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m*
*2 + 50*e**4*m + 24*e**4) + 5*A*c*d*e**3*m**2*x**2*(d + e*x)**m/(e**4*m**4
+ 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 4*A*c*d*e**3*m*x**2*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + A*c*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 7*A*c*e**4*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 14*A*c*e**4*m*x**3*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
8*A*c*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*
e**4*m + 24*e**4) - B*a*d**2*e**2*m**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m*
*3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 7*B*a*d**2*e**2*m*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 12*B*a*d**
2*e**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) + B*a*d*e**3*m**3*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + 7*B*a*d*e**3*m**2*x*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 12*B*a*d*e**3*m*x*
(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4
) + B*a*e**4*m**3*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**
2 + 50*e**4*m + 24*e**4) + 8*B*a*e**4*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 1
0*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 19*B*a*e**4*m*x**2*(d +
 e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) +
12*B*a*e**4*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50
*e**4*m + 24*e**4) + 2*B*b*d**3*e*m*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
+ 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 8*B*b*d**3*e*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 2*B*b*d**2*e**2*m*
*2*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24
*e**4) - 8*B*b*d**2*e**2*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e*
*4*m**2 + 50*e**4*m + 24*e**4) + B*b*d*e**3*m**3*x**2*(d + e*x)**m/(e**4*m*
*4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 5*B*b*d*e**3*m**2
*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4) + 4*B*b*d*e**3*m*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e
**4*m**2 + 50*e**4*m + 24*e**4) + B*b*e**4*m**3*x**3*(d + e*x)**m/(e**4*m**
4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 7*B*b*e**4*m**2*x*
*3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e
**4) + 14*B*b*e**4*m*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*
m**2 + 50*e**4*m + 24*e**4) + 8*B*b*e**4*x**3*(d + e*x)**m/(e**4*m**4 + 10*
e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 6*B*c*d**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*d**3
*e*m*x*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m +
24*e**4) - 3*B*c*d**2*e**2*m**2*x**2*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3
 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) - 3*B*c*d**2*e**2*m*x**2*(d + e*x)**
m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*d*e
**3*m**3*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e*
*4*m + 24*e**4) + 3*B*c*d*e**3*m**2*x**3*(d + e*x)**m/(e**4*m**4 + 10*e**4*
m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 2*B*c*d*e**3*m*x**3*(d + e*x)*
*m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + B*c*e*
*4*m**3*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**
4*m + 24*e**4) + 6*B*c*e**4*m**2*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**
3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 11*B*c*e**4*m*x**4*(d + e*x)**m/(
e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 24*e**4) + 6*B*c*e**4
*x**4*(d + e*x)**m/(e**4*m**4 + 10*e**4*m**3 + 35*e**4*m**2 + 50*e**4*m + 2
4*e**4), True))
```

3.2643 $\int \frac{(A+Bx)(d+ex)^m}{a+bx+cx^2}\,dx$

Optimal. Leaf size=212

$$-\frac{(d+ex)^{m+1}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{(d+ex)^{m+1}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m\right.}{(m+1)\left(2cd-e\left(\sqrt{b^2-4a\right.\right.}$$

```
[Out] -(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b-(-4*a*c+b^2
)^(1/2))))*(B+(2*A*c-B*b)/(-4*a*c+b^2)^(1/2))/(1+m)/(2*c*d-e*(b-(-4*a*c+b^2
)^(1/2)))-(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b+(-
4*a*c+b^2)^(1/2))))*(B+(-2*A*c+B*b)/(-4*a*c+b^2)^(1/2))/(1+m)/(2*c*d-e*(b+(
-4*a*c+b^2)^(1/2)))
```

Rubi [A] time = 0.46, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.080, Rules used = {830, 68}

$$-\frac{(d+ex)^{m+1}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+1)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{(d+ex)^{m+1}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m\right.}{(m+1)\left(2cd-e\left(\sqrt{b^2-4a\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2),x]
```

```
[Out] -(((B - (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*(d + e*x)^(1 + m)*Hypergeometric2F
1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)])/((
2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*(1 + m))) - ((B + (b*B - 2*A*c)/Sqrt[b^2
 - 4*a*c])*(d + e*x)^(1 + m)*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e
*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((2*c*d - (b + Sqrt[b^2 - 4*a*c]
)*e)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !RationalQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^m}{a+bx+cx^2}\,dx = \int \left(\frac{\left(B+\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^m}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(B-\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^m}{b+\sqrt{b^2-4ac}+2cx}\right)dx$$

$$= \left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(d+ex)^m}{b-\sqrt{b^2-4ac}+2cx}\,dx + \left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(d+ex)^m}{b+\sqrt{b^2-4ac}+}$$

$$= -\frac{\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^{1+m}\,{}_2F_1\left(1,1+m;2+m;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)(1+m)} - \frac{\left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)(d}{(2}$$

Mathematica [**A**] time = 0.40, size = 197, normalized size = 0.93

$$\frac{(d+ex)^{m+1}\left(-\frac{\left(\frac{2Ac-bB}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd+\left(\sqrt{b^2-4ac}-b\right)e}\right)}{e\left(\sqrt{b^2-4ac}-b\right)+2cd} - \frac{\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\right)}{m+1}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(1 + m)*(-(((B + (-(b*B) + 2*A*c)/Sqrt[b^2 - 4*a*c])*Hypergeomet
ric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e
)])/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)) - ((B + (b*B - 2*A*c)/Sqrt[b^2 -
4*a*c])*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)])/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)))/(1 + m)
```

fricas [**F**] time = 0.88, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{cx^2+bx+a},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

maple [**F**] time = 0.20, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{c\,x^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a),x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a),x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx + A)(ex + d)^m}{cx^2 + bx + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + b*x + a), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\, x)\, (d + e\, x)^m}{c\, x^2 + b\, x + a}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2), x)
```

sympy [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(A + Bx)\,(d + ex)^m}{a + bx + cx^2}\, dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(c*x**2+b*x+a),x)
```

```
[Out] Integral((A + B*x)*(d + e*x)**m/(a + b*x + c*x**2), x)
```

3.2644 $\int \frac{(A+Bx)(d+ex)^m}{\left(a+bx+cx^2\right)^2} \, dx$

Optimal. Leaf size=538

$$\frac{c(d+ex)^{m+1}\left(em(-2aBe+Abe-2Acd+bBd)-\frac{2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(A\left(ae^2(1-m)+cd^2\right)+aBdem\right)+b^2(-e)(Aem+Bd(2-m))}{\sqrt{b^2-4ac}}\right) 2}{(m+1)\left(b^2-4ac\right)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)\left(ae^2-bde+cd^2\right)}$$

```
[Out] (e*x+d)^(1+m)*(a*B*(-b*e+2*c*d)-A*(2*a*c*e-b^2*e+b*c*d)+c*(A*b*e-2*A*c*d-2*
B*a*e+B*b*d)*x)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(c*x^2+b*x+a)+c*(e*x+d)^(1
+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2))))*
(e*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*m+(-2*b*(2*A*c*d*e+B*a*e^2+B*c*d^2)+b^2*e*
(B*d*(2-m)+A*e*m)+4*c*(A*(c*d^2+a*e^2*(1-m))+a*B*d*e*m))/(-4*a*c+b^2)^(1/2)
)/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(1+m)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))+c
*(e*x+d)^(1+m)*hypergeom([1, 1+m],[2+m],2*c*(e*x+d)/(2*c*d-e*(b+(-4*a*c+b^2
)^(1/2))))*(e*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*m+(2*b*(2*A*c*d*e+B*a*e^2+B*c*d
^2)-b^2*e*(B*d*(2-m)+A*e*m)-4*c*(A*(c*d^2+a*e^2*(1-m))+a*B*d*e*m))/(-4*a*c+
b^2)^(1/2))/(-4*a*c+b^2)/(a*e^2-b*d*e+c*d^2)/(1+m)/(2*c*d-e*(b+(-4*a*c+b^2)
^(1/2)))
```

Rubi [**A**] time = 3.49, antiderivative size = 536, normalized size of antiderivative = 1.00, number of steps used = 5, number of rules used = 3, integrand size = 25, $\frac{\text{number of rules}}{\text{integrand size}} = 0.120$, Rules used = {822, 830, 68}

$$\frac{c(d+ex)^{m+1}\left(em(-2aBe+Abe-2Acd+bBd)-\frac{2b\left(aBe^2+2Acde+Bcd^2\right)-4c\left(aAe^2(1-m)+aBdem+Acd^2\right)+b^2(-e)(Aem+Bd(2-m))}{\sqrt{b^2-4ac}}\right) 2}{(m+1)\left(b^2-4ac\right)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)\left(ae^2-bde+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*(a*B*(2*c*d - b*e) - A*(b*c*d - b^2*e + 2*a*c*e) + c*(b*
B*d - 2*A*c*d + A*b*e - 2*a*B*e)*x))/((b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)
*(a + b*x + c*x^2)) + (c*(e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*m - (2*b*(B
*c*d^2 + 2*A*c*d*e + a*B*e^2) - b^2*e*(B*d*(2 - m) + A*e*m) - 4*c*(A*c*d^2
+ a*A*e^2*(1 - m) + a*B*d*e*m))/Sqrt[b^2 - 4*a*c])*(d + e*x)^(1 + m)*Hyperg
eometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b - Sqrt[b^2 - 4*a*c
])*e)])/((b^2 - 4*a*c)*(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*(c*d^2 - b*d*e +
 a*e^2)*(1 + m)) + (c*(e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*m + (2*b*(B*c*
d^2 + 2*A*c*d*e + a*B*e^2) - b^2*e*(B*d*(2 - m) + A*e*m) - 4*c*(A*c*d^2 + a
*A*e^2*(1 - m) + a*B*d*e*m))/Sqrt[b^2 - 4*a*c])*(d + e*x)^(1 + m)*Hypergeom
etric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*
e)])/((b^2 - 4*a*c)*(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)*(c*d^2 - b*d*e + a*
e^2)*(1 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 822

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_), x_Symbol] :> Simp[((d + e*x)^(m + 1)*(f*(b*c*d - b^2*e +
2*a*c*e) - a*g*(2*c*d - b*e) + c*(f*(2*c*d - b*e) - g*(b*d - 2*a*e))*x)*(a
+ b*x + c*x^2)^(p + 1))/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), x]
 + Dist[1/((p + 1)*(b^2 - 4*a*c)*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^m*
(a + b*x + c*x^2)^(p + 1)*Simp[f*(b*c*d*e*(2*p - m + 2) + b^2*e^2*(p + m +
2) - 2*c^2*d^2*(2*p + 3) - 2*a*c*e^2*(m + 2*p + 3)) - g*(a*e*(b*e - 2*c*d*m
 + b*e*m) - b*d*(3*c*d - b*e + 2*c*d*p - b*e*p)) + c*e*(g*(b*d - 2*a*e) - f
*(2*c*d - b*e))*(m + 2*p + 4)*x, x], x], x] /; FreeQ[{a, b, c, d, e, f, g,
m}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && LtQ[p, -1
] && (IntegerQ[m] || IntegerQ[p] || IntegersQ[2*m, 2*p])
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !RationalQ[m]
```

Rubi steps

$$\int \frac{(A+Bx)(d+ex)^m}{\left(a+bx+cx^2\right)^2}\,dx = \frac{(d+ex)^{1+m}\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right.}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}$$

$$= \frac{(d+ex)^{1+m}\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right.}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}$$

$$= \frac{(d+ex)^{1+m}\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right.}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}$$

$$= \frac{(d+ex)^{1+m}\left(aB(2cd-be)-A\left(bcd-b^2e+2ace\right)+c(bBd-2Acd+Abe-2aBe)x\right.}{\left(b^2-4ac\right)\left(cd^2-bde+ae^2\right)\left(a+bx+cx^2\right)}$$

Mathematica [A] time = 5.67, size = 452, normalized size = 0.84

$$(d+ex)^{m+1}\left(\frac{c\left(\frac{-2b\left(aBe^2+2Acde+Bcd^2\right)+4c\left(-aAe^2(m-1)+aBdem+Acd^2\right)+b^2e(Aem-Bd(m-2))}{\sqrt{b^2-4ac}}+em(-2aBe+Abe-2Acd+bBd)\right){}_2F_1\left(1,m+1;m+2;\frac{2c(d+e}{2cd+\left(\sqrt{b^2-}\right.}\right.}{(m+1)\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)}\right.$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x]
```

```
[Out] ((d + e*x)^(1 + m)*((A*b^2*e + b*B*c*d*x - 2*A*c*(a*e + c*d*x) + A*b*c*(-d
+ e*x) + a*B*(-(b*e) + 2*c*(d - e*x))))/(a + x*(b + c*x)) + (c*(e*(b*B*d - 2
*A*c*d + A*b*e - 2*a*B*e)*m + (-2*b*(B*c*d^2 + 2*A*c*d*e + a*B*e^2) + b^2*e
*(-(B*d*(-2 + m)) + A*e*m) + 4*c*(A*c*d^2 - a*A*e^2*(-1 + m) + a*B*d*e*m))/
Sqrt[b^2 - 4*a*c])*Hypergeometric2F1[1, 1 + m, 2 + m, (2*c*(d + e*x))/(2*c*
d + (-b + Sqrt[b^2 - 4*a*c])*e)])/((2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)*(1
+ m)) + (c*(e*(b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*m + (2*b*(B*c*d^2 + 2*A*c
*d*e + a*B*e^2) + b^2*e*(B*d*(-2 + m) - A*e*m) - 4*c*(A*c*d^2 - a*A*e^2*(-1
 + m) + a*B*d*e*m))/Sqrt[b^2 - 4*a*c])*Hypergeometric2F1[1, 1 + m, 2 + m, (
2*c*(d + e*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((2*c*d - (b + Sqrt[b^
2 - 4*a*c])*e)*(1 + m))))/((b^2 - 4*a*c)*(c*d^2 + e*(-(b*d) + a*e)))
```

fricas [F] time = 0.95, size = 0, normalized size = 0.00

$$\text{integral}\left(\frac{(Bx+A)(ex+d)^m}{c^2x^4+2\,bcx^3+2\,abx+\left(b^2+2\,ac\right)x^2+a^2},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^m/(c^2*x^4 + 2*b*c*x^3 + 2*a*b*x + (b^2 + 2*a*
c)*x^2 + a^2), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + b*x + a)^2, x)
```

maple [F] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^m}{\left(c\,x^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a)^2,x)
```

```
[Out] int((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a)^2,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^m}{\left(cx^2+bx+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^m/(c*x^2+b*x+a)^2,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^m/(c*x^2 + b*x + a)^2, x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^m}{\left(c\,x^2+b\,x+a\right)^2}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2,x)
```

```
[Out] int(((A + B*x)*(d + e*x)^m)/(a + b*x + c*x^2)^2, x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**m/(c*x**2+b*x+a)**2,x)
```

```
[Out] Timed out
```

3.2645 $\int \frac{(A+Bx)(d+ex)^{1+m}}{a+bx+cx^2}\,dx$

Optimal. Leaf size=212

$$-\frac{(d+ex)^{m+2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+2;m+3;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+2)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{(d+ex)^{m+2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+2;m+\right.}{(m+2)\left(2cd-e\left(\sqrt{b^2-4ac}+\right.\right.}$$

```
[Out] -(e*x+d)^(2+m)*hypergeom([1, 2+m],[3+m],2*c*(e*x+d)/(2*c*d-e*(b-(-4*a*c+b^2
)^(1/2))))*(B+(2*A*c-B*b)/(-4*a*c+b^2)^(1/2))/(2+m)/(2*c*d-e*(b-(-4*a*c+b^2
)^(1/2)))-(e*x+d)^(2+m)*hypergeom([1, 2+m],[3+m],2*c*(e*x+d)/(2*c*d-e*(b+(-
4*a*c+b^2)^(1/2))))*(B+(-2*A*c+B*b)/(-4*a*c+b^2)^(1/2))/(2+m)/(2*c*d-e*(b+(
-4*a*c+b^2)^(1/2)))
```

Rubi [A] time = 0.31, antiderivative size = 212, normalized size of antiderivative = 1.00, number of steps used = 4, number of rules used = 2, integrand size = 27, $\frac{\text{number of rules}}{\text{integrand size}} = 0.074$, Rules used = $\{830, 68\}$

$$-\frac{(d+ex)^{m+2}\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right){}_2F_1\left(1,m+2;m+3;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{(m+2)\left(2cd-e\left(b-\sqrt{b^2-4ac}\right)\right)}-\frac{(d+ex)^{m+2}\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+2;m+\right.}{(m+2)\left(2cd-e\left(\sqrt{b^2-4ac}+\right.\right.}$$

Antiderivative was successfully verified.

```
[In] Int[((A + B*x)*(d + e*x)^(1 + m))/(a + b*x + c*x^2),x]
```

```
[Out] -(((B - (b*B - 2*A*c)/Sqrt[b^2 - 4*a*c])*(d + e*x)^(2 + m)*Hypergeometric2F
1[1, 2 + m, 3 + m, (2*c*(d + e*x))/(2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)])/((
2*c*d - (b - Sqrt[b^2 - 4*a*c])*e)*(2 + m))) - ((B + (b*B - 2*A*c)/Sqrt[b^2
 - 4*a*c])*(d + e*x)^(2 + m)*Hypergeometric2F1[1, 2 + m, 3 + m, (2*c*(d + e
*x))/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)])/((2*c*d - (b + Sqrt[b^2 - 4*a*c]
)*e)*(2 + m))
```

Rule 68

```
Int[((a_) + (b_.)*(x_))^(m_)*((c_) + (d_.)*(x_))^(n_), x_Symbol] :> Simp[((
b*c - a*d)^n*(a + b*x)^(m + 1)*Hypergeometric2F1[-n, m + 1, m + 2, -((d*(a
+ b*x))/(b*c - a*d))])/(b^(n + 1)*(m + 1)), x] /; FreeQ[{a, b, c, d, m}, x]
 && NeQ[b*c - a*d, 0] &&  !IntegerQ[m] && IntegerQ[n]
```

Rule 830

```
Int[(((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_)))/((a_.) + (b_.)*(x_) +
(c_.)*(x_)^2), x_Symbol] :> Int[ExpandIntegrand[(d + e*x)^m, (f + g*x)/(a +
 b*x + c*x^2), x], x] /; FreeQ[{a, b, c, d, e, f, g}, x] && NeQ[b^2 - 4*a*c
, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &&  !RationalQ[m]
```

Rubi steps

$$\begin{aligned}\int \frac{(A+Bx)(d+ex)^{1+m}}{a+bx+cx^2}\,dx &= \int \left(\frac{\left(B+\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^{1+m}}{b-\sqrt{b^2-4ac}+2cx} + \frac{\left(B-\frac{-bB+2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^{1+m}}{b+\sqrt{b^2-4ac}+2cx} \right) dx \\ &= \left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(d+ex)^{1+m}}{b-\sqrt{b^2-4ac}+2cx}\,dx + \left(B+\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)\int \frac{(d+e}{b+\sqrt{b^2-} \\ &= -\frac{\left(B-\frac{bB-2Ac}{\sqrt{b^2-4ac}}\right)(d+ex)^{2+m}\,{}_2F_1\left(1,2+m;3+m;\frac{2c(d+ex)}{2cd-\left(b-\sqrt{b^2-4ac}\right)e}\right)}{\left(2cd-\left(b-\sqrt{b^2-4ac}\right)e\right)(2+m)} - \frac{\left(B+\frac{bB-2A}{\sqrt{b^2-4}}\right.}{}\end{aligned}$$

Mathematica [**A**] time = 0.34, size = 197, normalized size = 0.93

$$\frac{(d+ex)^{m+2}\left(-\frac{\left(\frac{2Ac-bB}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+2;m+3;\frac{2c(d+ex)}{2cd+\left(\sqrt{b^2-4ac}-b\right)e}\right)}{e\left(\sqrt{b^2-4ac}-b\right)+2cd} - \frac{\left(\frac{bB-2Ac}{\sqrt{b^2-4ac}}+B\right){}_2F_1\left(1,m+2;m+3;\frac{2c(d+ex)}{2cd-\left(b+\sqrt{b^2-4ac}\right)e}\right)}{2cd-e\left(\sqrt{b^2-4ac}+b\right)}\right)}{m+2}$$

Antiderivative was successfully verified.

```
[In] Integrate[((A + B*x)*(d + e*x)^(1 + m))/(a + b*x + c*x^2),x]
```

```
[Out] ((d + e*x)^(2 + m)*(-(((B + (-(b*B) + 2*A*c)/Sqrt[b^2 - 4*a*c])*Hypergeomet
ric2F1[1, 2 + m, 3 + m, (2*c*(d + e*x))/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e
)])/(2*c*d + (-b + Sqrt[b^2 - 4*a*c])*e)) - ((B + (b*B - 2*A*c)/Sqrt[b^2 -
4*a*c])*Hypergeometric2F1[1, 2 + m, 3 + m, (2*c*(d + e*x))/(2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)])/(2*c*d - (b + Sqrt[b^2 - 4*a*c])*e)))/(2 + m)
```

fricas [**F**] time = 0.97, size = 0, normalized size = 0.00

$$\mathrm{integral}\left(\frac{(Bx+A)(ex+d)^{m+1}}{cx^2+bx+a}, x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+b*x+a),x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + b*x + a), x)
```

giac [**F**] time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{m+1}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+b*x+a),x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + b*x + a), x)
```

maple [**F**] time = 0.12, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)\,(ex+d)^{m+1}}{c\,x^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(m+1)/(c*x^2+b*x+a),x)
```

```
[Out] int((B*x+A)*(e*x+d)^(m+1)/(c*x^2+b*x+a),x)
```

maxima **[F]** time = 0.00, size = 0, normalized size = 0.00

$$\int \frac{(Bx+A)(ex+d)^{m+1}}{cx^2+bx+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(1+m)/(c*x^2+b*x+a),x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(e*x + d)^(m + 1)/(c*x^2 + b*x + a), x)
```

mupad **[F]** time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A+B\,x)\,(d+e\,x)^{m+1}}{c\,x^2+b\,x+a}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(d + e*x)^(m + 1))/(a + b*x + c*x^2),x)
```

```
[Out] int(((A + B*x)*(d + e*x)^(m + 1))/(a + b*x + c*x^2), x)
```

sympy **[F(-1)]** time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(1+m)/(c*x**2+b*x+a),x)
```

```
[Out] Timed out
```

3.2646 $\int (A+Bx)(d+ex)^{-3-2p}\left(a+bx+cx^2\right)^p\,dx$

Optimal. Leaf size=349

$$\frac{(Bd-Ae)(d+ex)^{-2(p+1)}\left(a+bx+cx^2\right)^{p+1}}{2(p+1)\left(ae^2-bde+cd^2\right)}-\frac{\left(-\sqrt{b^2-4ac}+b+2cx\right)(d+ex)^{-2p-1}\left(a+bx+cx^2\right)^p(-2aBe+A}{2(2}$$

```
[Out] 1/2*(-A*e+B*d)*(c*x^2+b*x+a)^(1+p)/(a*e^2-b*d*e+c*d^2)/(1+p)/((e*x+d)^(2+2*
p))-1/2*(A*b*e-2*A*c*d-2*B*a*e+B*b*d)*(e*x+d)^(-1-2*p)*(c*x^2+b*x+a)^p*hype
rgeom([-p, -1-2*p],[-2*p],-4*c*(e*x+d)*(-4*a*c+b^2)^(1/2)/(b+2*c*x-(-4*a*c+
b^2)^(1/2))/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))*(b+2*c*x-(-4*a*c+b^2)^(1/2))/
(a*e^2-b*d*e+c*d^2)/(1+2*p)/(2*c*d-e*(b-(-4*a*c+b^2)^(1/2)))/(((2*c*d-e*(b-
(-4*a*c+b^2)^(1/2)))*(b+2*c*x+(-4*a*c+b^2)^(1/2))/(b+2*c*x-(-4*a*c+b^2)^(1/
2))/(2*c*d-e*(b+(-4*a*c+b^2)^(1/2))))^p)
```

Rubi [**A**] time = 0.27, antiderivative size = 349, normalized size of antiderivative = 1.00, number of steps used = 2, number of rules used = 2, integrand size = 29, $\frac{\text{number of rules}}{\text{integrand size}}$ = 0.069, Rules used = {806, 726}

$$\frac{(Bd-Ae)(d+ex)^{-2(p+1)}\left(a+bx+cx^2\right)^{p+1}}{2(p+1)\left(ae^2-bde+cd^2\right)}-\frac{\left(-\sqrt{b^2-4ac}+b+2cx\right)(d+ex)^{-2p-1}\left(a+bx+cx^2\right)^p(-2aBe+A}{2(2}$$

Antiderivative was successfully verified.

```
[In] Int[(A + B*x)*(d + e*x)^(-3 - 2*p)*(a + b*x + c*x^2)^p,x]
```

```
[Out] ((B*d - A*e)*(a + b*x + c*x^2)^(1 + p))/(2*(c*d^2 - b*d*e + a*e^2)*(1 + p)*
(d + e*x)^(2*(1 + p))) - ((b*B*d - 2*A*c*d + A*b*e - 2*a*B*e)*(b - Sqrt[b^2
 - 4*a*c] + 2*c*x)*(d + e*x)^(-1 - 2*p)*(a + b*x + c*x^2)^p*Hypergeometric2
F1[-1 - 2*p, -p, -2*p, (-4*c*Sqrt[b^2 - 4*a*c]*(d + e*x))/((2*c*d - (b + Sq
rt[b^2 - 4*a*c])*e)*(b - Sqrt[b^2 - 4*a*c] + 2*c*x))])/(2*(2*c*d - (b - Sqr
t[b^2 - 4*a*c])*e)*(c*d^2 - b*d*e + a*e^2)*(1 + 2*p)*(((2*c*d - (b - Sqrt[b
^2 - 4*a*c])*e)*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/((2*c*d - (b + Sqrt[b^2 -
4*a*c])*e)*(b - Sqrt[b^2 - 4*a*c] + 2*c*x)))^p)
```

Rule 726

```
Int[((d_.) + (e_.)*(x_))^(m_)*((a_.) + (b_.)*(x_) + (c_.)*(x_)^2)^(p_), x_S
ymbol] :> -Simp[((b - Rt[b^2 - 4*a*c, 2] + 2*c*x)*(d + e*x)^(m + 1)*(a + b*
x + c*x^2)^p*Hypergeometric2F1[m + 1, -p, m + 2, (-4*c*Rt[b^2 - 4*a*c, 2]*(
d + e*x))/((2*c*d - b*e - e*Rt[b^2 - 4*a*c, 2])*(b - Rt[b^2 - 4*a*c, 2] + 2
*c*x))])/((m + 1)*(2*c*d - b*e + e*Rt[b^2 - 4*a*c, 2])*(((2*c*d - b*e + e*R
t[b^2 - 4*a*c, 2])*(b + Rt[b^2 - 4*a*c, 2] + 2*c*x))/((2*c*d - b*e - e*Rt[b
^2 - 4*a*c, 2])*(b - Rt[b^2 - 4*a*c, 2] + 2*c*x)))^p), x] /; FreeQ[{a, b, c
, d, e, m, p}, x] && NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] &
& NeQ[2*c*d - b*e, 0] &&  !IntegerQ[p] && EqQ[m + 2*p + 2, 0]
```

Rule 806

```
Int[((d_.) + (e_.)*(x_))^(m_)*((f_.) + (g_.)*(x_))*((a_.) + (b_.)*(x_) + (c
_.)*(x_)^2)^(p_.), x_Symbol] :> -Simp[((e*f - d*g)*(d + e*x)^(m + 1)*(a + b
*x + c*x^2)^(p + 1))/(2*(p + 1)*(c*d^2 - b*d*e + a*e^2)), x] - Dist[(b*(e*f
 + d*g) - 2*(c*d*f + a*e*g))/(2*(c*d^2 - b*d*e + a*e^2)), Int[(d + e*x)^(m
+ 1)*(a + b*x + c*x^2)^p, x], x] /; FreeQ[{a, b, c, d, e, f, g, m, p}, x] &
& NeQ[b^2 - 4*a*c, 0] && NeQ[c*d^2 - b*d*e + a*e^2, 0] && EqQ[Simplify[m +
2*p + 3], 0]
```

Rubi steps

$$\int (A+Bx)(d+ex)^{-3-2p}\left(a+bx+cx^2\right)^p\,dx = \frac{(Bd-Ae)(d+ex)^{-2(1+p)}\left(a+bx+cx^2\right)^{1+p}}{2\left(cd^2-bde+ae^2\right)(1+p)} - \frac{(bBd-2Acd+Abe}{}$$

$$= \frac{(Bd-Ae)(d+ex)^{-2(1+p)}\left(a+bx+cx^2\right)^{1+p}}{2\left(cd^2-bde+ae^2\right)(1+p)} - \frac{(bBd-2Acd+Abe}{}$$

Mathematica [A] time = 0.62, size = 311, normalized size = 0.89

$$\frac{(d+ex)^{-2(p+1)}(a+x(b+cx))^p\left(\frac{(d+ex)\left(\sqrt{b^2-4ac}+b+2cx\right)(-2aBe+Abe-2Acd+bBd)\left(\frac{\left(\sqrt{b^2-4ac}+b+2cx\right)\left(e\left(\sqrt{b^2-4ac}-b\right)+2cd\right)}{\left(\sqrt{b^2-4ac}-b-2cx\right)\left(e\left(\sqrt{b^2-4ac}+b\right)-2cd\right)}\right)^{-p-1}{}_2F_1\left(-2p-1,-\right.}{(2p+1)\left(e\left(\sqrt{b^2-4ac}+b\right)-2cd\right)}\right.}{2\left(e(ae-bd)+cd^2\right)}$$

Antiderivative was successfully verified.

```
[In] Integrate[(A + B*x)*(d + e*x)^(-3 - 2*p)*(a + b*x + c*x^2)^p,x]
```

```
[Out] ((a + x*(b + c*x))^p*(((B*d - A*e)*(a + x*(b + c*x)))/(1 + p) + ((b*B*d - 2
*A*c*d + A*b*e - 2*a*B*e)*(b + Sqrt[b^2 - 4*a*c] + 2*c*x)*(((2*c*d + (-b +
Sqrt[b^2 - 4*a*c])*e)*(b + Sqrt[b^2 - 4*a*c] + 2*c*x))/((-2*c*d + (b + Sqrt
[b^2 - 4*a*c])*e)*(-b + Sqrt[b^2 - 4*a*c] - 2*c*x)))^(-1 - p)*(d + e*x)*Hyp
ergeometric2F1[-1 - 2*p, -p, -2*p, (-4*c*Sqrt[b^2 - 4*a*c]*(d + e*x))/((-2*
c*d + (b + Sqrt[b^2 - 4*a*c])*e)*(-b + Sqrt[b^2 - 4*a*c] - 2*c*x))])/((-2*c
*d + (b + Sqrt[b^2 - 4*a*c])*e)*(1 + 2*p))))/(2*(c*d^2 + e*(-(b*d) + a*e))*
(d + e*x)^(2*(1 + p)))
```

fricas [F] time = 1.08, size = 0, normalized size = 0.00

$$\text{integral}\left((Bx+A)\left(cx^2+bx+a\right)^p(ex+d)^{-2p-3},x\right)$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(-3-2*p)*(c*x^2+b*x+a)^p,x, algorithm="fricas")
```

```
[Out] integral((B*x + A)*(c*x^2 + b*x + a)^p*(e*x + d)^(-2*p - 3), x)
```

giac [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx+A)\left(cx^2+bx+a\right)^p(ex+d)^{-2p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(-3-2*p)*(c*x^2+b*x+a)^p,x, algorithm="giac")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*(e*x + d)^(-2*p - 3), x)
```

maple [F] time = 0.13, size = 0, normalized size = 0.00

$$\int (Bx+A)\,(ex+d)^{-2p-3}\left(c\,x^2+bx+a\right)^p\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int((B*x+A)*(e*x+d)^(-3-2*p)*(c*x^2+b*x+a)^p,x)
```

```
[Out] int((B*x+A)*(e*x+d)^(-3-2*p)*(c*x^2+b*x+a)^p,x)
```

maxima [F] time = 0.00, size = 0, normalized size = 0.00

$$\int (Bx + A)\left(cx^2 + bx + a\right)^p (ex + d)^{-2p-3}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)^(-3-2*p)*(c*x^2+b*x+a)^p,x, algorithm="maxima")
```

```
[Out] integrate((B*x + A)*(c*x^2 + b*x + a)^p*(e*x + d)^(-2*p - 3), x)
```

mupad [F] time = 0.00, size = -1, normalized size = -0.00

$$\int \frac{(A + B\,x)\,\left(c\,x^2 + b\,x + a\right)^p}{(d + e\,x)^{2\,p+3}}\,dx$$

Verification of antiderivative is not currently implemented for this CAS.

```
[In] int(((A + B*x)*(a + b*x + c*x^2)^p)/(d + e*x)^(2*p + 3),x)
```

```
[Out] int(((A + B*x)*(a + b*x + c*x^2)^p)/(d + e*x)^(2*p + 3), x)
```

sympy [F(-1)] time = 0.00, size = 0, normalized size = 0.00

Timed out

Verification of antiderivative is not currently implemented for this CAS.

```
[In] integrate((B*x+A)*(e*x+d)**(-3-2*p)*(c*x**2+b*x+a)**p,x)
```

```
[Out] Timed out
```

Chapter 4

Listing of Grading functions

The following are the current version of the grading functions used for grading the quality of the antiderivative with reference to the optimal antiderivative included in the test suite.

There is a version for Maple and for Mathematica/Rubi. There is a version for grading Sympy and version for use with Sagemath.

The following are links to the current source code.

The following are the listings of source code of the grading functions.

4.0.1 Mathematica and Rubi grading function

```
(* Original version thanks to Albert Rich emailed on 03/21/2017 *)
(* ::Package:: *)

(* ::Subsection:: *)
(*GradeAntiderivative[result,optimal]*)


(* ::Text:: *)
(*If result and optimal are mathematical expressions, *)
(*          GradeAntiderivative[result,optimal] returns*)
(*  "F" if the result fails to integrate an expression that*)
(*      is integrable*)
(*  "C" if result involves higher level functions than necessary*)
(*  "B" if result is more than twice the size of the optimal*)
(*      antiderivative*)
(*  "A" if result can be considered optimal*)


GradeAntiderivative[result_,optimal_] :=
  If[ExpnType[result]<=ExpnType[optimal],
    If[FreeQ[result,Complex] || Not[FreeQ[optimal,Complex]],
      If[LeafCount[result]<=2*LeafCount[optimal],
        "A",
      "B"],
    "C"],
  If[FreeQ[result,Integrate] && FreeQ[result,Int],
    "C",
  "F"]]


(* ::Text:: *)
(*The following summarizes the type number assigned an *)
(*expression based on the functions it involves*)
(*1 = rational function*)
(*2 = algebraic function*)
```

```
(*3 = elementary function*)
(*4 = special function*)
(*5 = hyperpergeometric function*)
(*6 = appell function*)
(*7 = rootsum function*)
(*8 = integrate function*)
(*9 = unknown function*)


ExpnType[expn_] :=
  If[AtomQ[expn],
    1,
  If[ListQ[expn],
    Max[Map[ExpnType,expn]],
  If[Head[expn]===Power,
    If[IntegerQ[expn[[2]]],
      ExpnType[expn[[1]]],
    If[Head[expn[[2]]]===Rational,
      If[IntegerQ[expn[[1]]] || Head[expn[[1]]]===Rational,
        1,
      Max[ExpnType[expn[[1]]],2]],
    Max[ExpnType[expn[[1]]],ExpnType[expn[[2]]],3]]],
  If[Head[expn]===Plus || Head[expn]===Times,
    Max[ExpnType[First[expn]],ExpnType[Rest[expn]]],
  If[ElementaryFunctionQ[Head[expn]],
    Max[3,ExpnType[expn[[1]]]],
  If[SpecialFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],4]],
  If[HypergeometricFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],5]],
  If[AppellFunctionQ[Head[expn]],
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],6]],
  If[Head[expn]===RootSum,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],7]],
  If[Head[expn]===Integrate || Head[expn]===Int,
    Apply[Max,Append[Map[ExpnType,Apply[List,expn]],8]],
  9]]]]]]]]]]


ElementaryFunctionQ[func_] :=
  MemberQ[{
        Exp,Log,
        Sin,Cos,Tan,Cot,Sec,Csc,
        ArcSin,ArcCos,ArcTan,ArcCot,ArcSec,ArcCsc,
        Sinh,Cosh,Tanh,Coth,Sech,Csch,
        ArcSinh,ArcCosh,ArcTanh,ArcCoth,ArcSech,ArcCsch
},func]


SpecialFunctionQ[func_] :=
  MemberQ[{
        Erf, Erfc, Erfi,
        FresnelS, FresnelC,
        ExpIntegralE, ExpIntegralEi, LogIntegral,
        SinIntegral, CosIntegral, SinhIntegral, CoshIntegral,
        Gamma, LogGamma, PolyGamma,
        Zeta, PolyLog, ProductLog,
        EllipticF, EllipticE, EllipticPi
},func]


HypergeometricFunctionQ[func_] :=
  MemberQ[{Hypergeometric1F1,Hypergeometric2F1,HypergeometricPFQ},func]
```

```
AppellFunctionQ[func_] :=
  MemberQ[{AppellF1},func]
```

4.0.2 Maple grading function

```
# File: GradeAntiderivative.mpl
# Original version thanks to Albert Rich emailed on 03/21/2017

#Nasser 03/22/2017  Use Maple leaf count instead since buildin
#Nasser 03/23/2017  missing 'ln' for ElementaryFunctionQ added
#Nasser 03/24/2017  corrected the check for complex result
#Nasser 10/27/2017  check for leafsize and do not call ExpnType()
#                   if leaf size is "too large". Set at 500,000
#Nasser 12/22/2019  Added debug flag, added 'dilog' to special functions
#                   see problem 156, file Apostol_Problems

GradeAntiderivative := proc(result,optimal)
local leaf_count_result, leaf_count_optimal,ExpnType_result,ExpnType_optimal,
   debug:=false;

      leaf_count_result:=leafcount(result);
      #do NOT call ExpnType() if leaf size is too large. Recursion problem
      if leaf_count_result > 500000 then
          return "B";
      fi;

      leaf_count_optimal:=leafcount(optimal);

      ExpnType_result:=ExpnType(result);
      ExpnType_optimal:=ExpnType(optimal);

      if debug then
         print("ExpnType_result",ExpnType_result," ExpnType_optimal=",
   ExpnType_optimal);
      fi;

# If result and optimal are mathematical expressions,
#  GradeAntiderivative[result,optimal] returns
#   "F" if the result fails to integrate an expression that
#       is integrable
#   "C" if result involves higher level functions than necessary
#   "B" if result is more than twice the size of the optimal
#       antiderivative
#   "A" if result can be considered optimal

  #This check below actually is not needed, since I only
  #call this grading only for passed integrals. i.e. I check
  #for "F" before calling this. But no harm of keeping it here.
  #just in case.


  if not type(result,freeof('int')) then
     return "F";
  end if;


  if ExpnType_result<=ExpnType_optimal then
      if debug then
           print("ExpnType_result<=ExpnType_optimal");
      fi;
      if is_contains_complex(result) then
         if is_contains_complex(optimal) then
            if debug then
               print("both result and optimal complex");
            fi;
            #both result and optimal complex
            if leaf_count_result<=2*leaf_count_optimal then
               return "A";
            else
               return "B";
            end if
         else #result contains complex but optimal is not
            if debug then
               print("result contains complex but optimal is not");
            fi;
            return "C";
         end if
      else # result do not contain complex
           # this assumes optimal do not as well
           if debug then
               print("result do not contain complex, this assumes optimal do
   not as well");
           fi;
           if leaf_count_result<=2*leaf_count_optimal then
              if debug then
                 print("leaf_count_result<=2*leaf_count_optimal");
              fi;
              return "A";
           else
              if debug then
                 print("leaf_count_result>2*leaf_count_optimal");
              fi;
              return "B";
           end if
      end if
  else #ExpnType(result) > ExpnType(optimal)
      if debug then
         print("ExpnType(result) > ExpnType(optimal)");
      fi;
      return "C";
  end if

end proc:

#
# is_contains_complex(result)
# takes expressions and returns true if it contains "I" else false
#
#Nasser 032417
is_contains_complex:= proc(expression)
  return (has(expression,I));
end proc:

# The following summarizes the type number assigned an expression
# based on the functions it involves
# 1 = rational function
# 2 = algebraic function
# 3 = elementary function
# 4 = special function
# 5 = hyperpergeometric function
# 6 = appell function
# 7 = rootsum function
# 8 = integrate function
# 9 = unknown function

ExpnType := proc(expn)
  if type(expn,'atomic') then
    1
  elif type(expn,'list') then
    apply(max,map(ExpnType,expn))
  elif type(expn,'sqrt') then
    if type(op(1,expn),'rational') then
       1
    else
       max(2,ExpnType(op(1,expn)))
    end if
  elif type(expn,'`^`') then
    if type(op(2,expn),'integer') then
      ExpnType(op(1,expn))
    elif type(op(2,expn),'rational') then
      if type(op(1,expn),'rational') then
         1
      else
         max(2,ExpnType(op(1,expn)))
      end if
    else
         max(3,ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    end if
  elif type(expn,'`+`') or type(expn,'`*`') then
    max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
  elif ElementaryFunctionQ(op(0,expn)) then
    max(3,ExpnType(op(1,expn)))
  elif SpecialFunctionQ(op(0,expn)) then
    max(4,apply(max,map(ExpnType,[op(expn)])))
  elif HypergeometricFunctionQ(op(0,expn)) then
    max(5,apply(max,map(ExpnType,[op(expn)])))
  elif AppellFunctionQ(op(0,expn)) then
    max(6,apply(max,map(ExpnType,[op(expn)])))
  elif op(0,expn)='int' then
    max(8,apply(max,map(ExpnType,[op(expn)]))) else
  9
  end if
end proc:


ElementaryFunctionQ := proc(func)
  member(func,[
        exp,log,ln,
        sin,cos,tan,cot,sec,csc,
        arcsin,arccos,arctan,arccot,arcsec,arccsc,
        sinh,cosh,tanh,coth,sech,csch,
        arcsinh,arccosh,arctanh,arccoth,arcsech,arccsch])
end proc:

SpecialFunctionQ := proc(func)
  member(func,[
        erf,erfc,erfi,
        FresnelS,FresnelC,
        Ei,Ei,Li,Si,Ci,Shi,Chi,
        GAMMA,lnGAMMA,Psi,Zeta,polylog,dilog,LambertW,
        EllipticF,EllipticE,EllipticPi])
end proc:

HypergeometricFunctionQ := proc(func)
  member(func,[Hypergeometric1F1,hypergeom,HypergeometricPFQ])
end proc:
```

```
AppellFunctionQ := proc(func)
  member(func,[AppellF1])
end proc:

# u is a sum or product.  rest(u) returns all but the
# first term or factor of u.
rest := proc(u) local v;
  if nops(u)=2 then
     op(2,u)
  else
     apply(op(0,u),op(2..nops(u),u))
  end if
end proc:

#leafcount(u) returns the number of nodes in u.
#Nasser 3/23/17  Replaced by build-in leafCount from package in Maple
leafcount := proc(u)
   MmaTranslator[Mma][LeafCount](u);
end proc:
```

4.0.3 Sympy grading function

```
#Dec 24, 2019. Nasser M. Abbasi:
#              Port of original Maple grading function by
#              Albert Rich to use with Sympy/Python
#Dec 27, 2019  Nasser. Added `RootSum`. See problem 177, Timofeev file
#              added 'exp_polar'
from sympy import *

def leaf_count(expr):
    #sympy do not have leaf count function. This is approximation
    return round(1.7*count_ops(expr))

def is_sqrt(expr):
    if isinstance(expr,Pow):
        if expr.args[1] == Rational(1,2):
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    return func in [exp,log,ln,sin,cos,tan,cot,sec,csc,
            asin,acos,atan,acot,asec,acsc,sinh,cosh,tanh,coth,sech,csch,
            asinh,acosh,atanh,acoth,asech,acsch
        ]

def is_special_function(func):
    return func in [ erf,erfc,erfi,
             fresnels,fresnelc,Ei,Ei,Li,Si,Ci,Shi,Chi,
             gamma,loggamma,digamma,zeta,polylog,LambertW,
             elliptic_f,elliptic_e,elliptic_pi,exp_polar
         ]

def is_hypergeometric_function(func):
    return func in [hyper]

def is_appell_function(func):
    return func in [appellf1]
```

```
def is_atom(expn):
    try:
        if expn.isAtom or isinstance(expn,int) or isinstance(expn,float):
           return True
        else:
           return False

    except AttributeError as error:
        return False

def expnType(expn):
    debug=False
    if debug:
        print("expn=",expn,"type(expn)=",type(expn))

    if is_atom(expn):
       return 1
    elif isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
            return 1
        else:
            return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn)))
    elif isinstance(expn,Pow):   #type(expn,'`^`')
        if isinstance(expn.args[1],Integer):  #type(op(2,expn),'integer')
            return expnType(expn.args[0])   #ExpnType(op(1,expn))
        elif isinstance(expn.args[1],Rational):  #type(op(2,expn),'rational')
            if isinstance(expn.args[0],Rational): #type(op(1,expn),'rational')
                return 1
            else:
                return max(2,expnType(expn.args[0]))  #max(2,ExpnType(op(1,expn
   )))
        else:
            return max(3,expnType(expn.args[0]),expnType(expn.args[1])) #max(3,
   ExpnType(op(1,expn)),ExpnType(op(2,expn)))
    elif isinstance(expn,Add) or isinstance(expn,Mul): #type(expn,'`+`') or
   type(expn,'`*`')
        m1 = expnType(expn.args[0])
        m2 = expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.func):  #ElementaryFunctionQ(op(0,expn))
        return max(3,expnType(expn.args[0]))  #max(3,ExpnType(op(1,expn)))
    elif is_special_function(expn.func): #SpecialFunctionQ(op(0,expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(4,m1)   #max(4,apply(max,map(ExpnType,[op(expn)])))
    elif is_hypergeometric_function(expn.func): #HypergeometricFunctionQ(op(0,
   expn))
        m1 = max(map(expnType, list(expn.args)))
        return max(5,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif is_appell_function(expn.func):
        m1 = max(map(expnType, list(expn.args)))
        return max(6,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    elif isinstance(expn,RootSum):
        m1 = max(map(expnType, list(expn.args))) #Apply[Max,Append[Map[ExpnType
   ,Apply[List,expn]],7]],
        return max(7,m1)
    elif str(expn).find("Integral") != -1:
        m1 = max(map(expnType, list(expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9
```

```
#main function
def grade_antiderivative(result,optimal):

    leaf_count_result  = leaf_count(result)
    leaf_count_optimal = leaf_count(optimal)

    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if str(result).find("Integral") != -1:
        return "F"

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
   well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```

4.0.4 SageMath grading function

```
#Dec 24, 2019. Nasser: Ported original Maple grading function by
#              Albert Rich to use with Sagemath. This is used to
#              grade Fricas, Giac and Maxima results.
#Dec 24, 2019. Nasser: Added 'exp_integral_e' and 'sng', 'sin_integral'
#              'arctan2','floor','abs','log_integral'

from sage.all import *
from sage.symbolic.operators import add_vararg, mul_vararg

debug=False;

def tree_size(expr):
    r"""
    Return the tree size of this expression.
    """
    if expr not in SR:
        # deal with lists, tuples, vectors
        return 1 + sum(tree_size(a) for a in expr)
    expr = SR(expr)
    x, aa = expr.operator(), expr.operands()
    if x is None:
        return 1
    else:
        return 1 + sum(tree_size(a) for a in aa)

def is_sqrt(expr):
    if expr.operator() == operator.pow:   #isinstance(expr,Pow):
        if expr.operands()[1]==1/2: #expr.args[1] == Rational(1,2):
            if debug: print ("expr is sqrt")
            return True
        else:
            return False
    else:
        return False

def is_elementary_function(func):
    debug=False
    m = func.name() in ['exp','log','ln',
            'sin','cos','tan','cot','sec','csc',
            'arcsin','arccos','arctan','arccot','arcsec','arccsc',
            'sinh','cosh','tanh','coth','sech','csch',
            'arcsinh','arccosh','arctanh','arccoth','arcsech','arccsch','sgn',
        'arctan2','floor','abs'
        ]
    if debug:
        if m:
            print ("func ", func , " is elementary_function")
        else:
            print ("func ", func , " is NOT elementary_function")


    return m

def is_special_function(func):
    debug=False
    if debug: print ("type(func)=", type(func))

    m= func.name() in ['erf','erfc','erfi','fresnel_sin','fresnel_cos','Ei',
           'Ei','Li','Si','sin_integral','Ci','cos_integral','Shi','
   sinh_integral'
           'Chi','cosh_integral','gamma','log_gamma','psi,zeta',
           'polylog','lambert_w','elliptic_f','elliptic_e',
           'elliptic_pi','exp_integral_e','log_integral']

    if debug:
        print ("m=",m)
        if m:
            print ("func ", func ," is special_function")
        else:
            print ("func ", func ," is NOT special_function")


    return m


def is_hypergeometric_function(func):
    return func.name() in ['hypergeometric','hypergeometric_M','
   hypergeometric_U']

def is_appell_function(func):
    return func.name() in ['hypergeometric']   #[appellf1] can't find this in
   sagemath

def is_atom(expn):

    debug=False
    if debug: print ("Enter is_atom")


    #thanks to answer at https://ask.sagemath.org/question/49179/what-is-
   sagemath-equivalent-to-atomic-type-in-maple/
    try:
        if expn.parent() is SR:
            return expn.operator() is None
        if expn.parent() in (ZZ, QQ, AA, QQbar):
            return expn in expn.parent() # Should always return True
        if hasattr(expn.parent(),"base_ring") and hasattr(expn.parent(),"gens")
   :
            return expn in expn.parent().base_ring() or expn in expn.parent().
   gens()
        return False

    except AttributeError as error:
        return False


def expnType(expn):

    if debug:
        print (">>>>>Enter expnType, expn=", expn)
        print (">>>>>is_atom(expn)=", is_atom(expn))

    if is_atom(expn):
        return 1
    elif type(expn)==list:   #isinstance(expn,list):
        return max(map(expnType, expn))   #apply(max,map(ExpnType,expn))
    elif  is_sqrt(expn):
        if  type(expn.operands()[0])==Rational: #type(isinstance(expn.args[0],
   Rational):
            return 1
        else:
            return max(2,expnType(expn.operands()[0]))  #max(2,expnType(expn.
   args[0]))
    elif expn.operator() == operator.pow:   #isinstance(expn,Pow)
        if type(expn.operands()[1])==Integer:  #isinstance(expn.args[1],Integer
   )
            return expnType(expn.operands()[0])   #expnType(expn.args[0])
        elif type(expn.operands()[1])==Rational:  #isinstance(expn.args[1],
   Rational)
            if type(expn.operands()[0])==Rational: #isinstance(expn.args[0],
   Rational)
                return 1
            else:
                return max(2,expnType(expn.operands()[0]))  #max(2,expnType(
   expn.args[0]))
        else:
            return max(3,expnType(expn.operands()[0]),expnType(expn.operands()
   [1])) #max(3,expnType(expn.operands()[0]),expnType(expn.operands()[1]))
    elif expn.operator() == add_vararg or expn.operator() == mul_vararg: #
   isinstance(expn,Add) or isinstance(expn,Mul)
        m1 = expnType(expn.operands()[0]) #expnType(expn.args[0])
        m2 = expnType(expn.operands()[1:]) #expnType(list(expn.args[1:]))
        return max(m1,m2)  #max(ExpnType(op(1,expn)),max(ExpnType(rest(expn))))
    elif is_elementary_function(expn.operator()):  #is_elementary_function(expn
   .func)
        return max(3,expnType(expn.operands()[0]))
    elif is_special_function(expn.operator()): #is_special_function(expn.func)
        m1 = max(map(expnType, expn.operands()))      #max(map(expnType, list(
   expn.args)))
        return max(4,m1)   #max(4,m1)
    elif is_hypergeometric_function(expn.operator()): #
   is_hypergeometric_function(expn.func)
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
   expn.args)))
        return max(5,m1)   #max(5,m1)
    elif is_appell_function(expn.operator()):
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(6,m1)   #max(6,m1)
    elif str(expn).find("Integral") != -1: #this will never happen, since it
                #is checked before calling the grading function that is passed.
                #but kept it here.
        m1 = max(map(expnType, expn.operands()))       #max(map(expnType, list(
    expn.args)))
        return max(8,m1)   #max(5,apply(max,map(ExpnType,[op(expn)])))
    else:
        return 9

#main function
def grade_antiderivative(result,optimal):

    if debug: print ("Enter grade_antiderivative for sagemath")

    leaf_count_result  = tree_size(result) #leaf_count(result)
    leaf_count_optimal = tree_size(optimal) #leaf_count(optimal)

    if debug: print ("leaf_count_result=", leaf_count_result, "
    leaf_count_optimal=",leaf_count_optimal)


    expnType_result  = expnType(result)
    expnType_optimal = expnType(optimal)

    if debug: print ("expnType_result=", expnType_result, "expnType_optimal=",
    expnType_optimal)

    if expnType_result <= expnType_optimal:
        if result.has(I):
            if optimal.has(I): #both result and optimal complex
                if leaf_count_result <= 2*leaf_count_optimal:
                    return "A"
                else:
                    return "B"
            else: #result contains complex but optimal is not
                return "C"
        else: # result do not contain complex, this assumes optimal do not as
    well
            if leaf_count_result <= 2*leaf_count_optimal:
                return "A"
            else:
                return "B"
    else:
        return "C"
```